2004 Acura TSX Service Manual

2004 ACCESSORIES/SAFETY EQUIPMENT

Acura - Air Bag Restraint Systems

DESCRIPTION & OPERATION

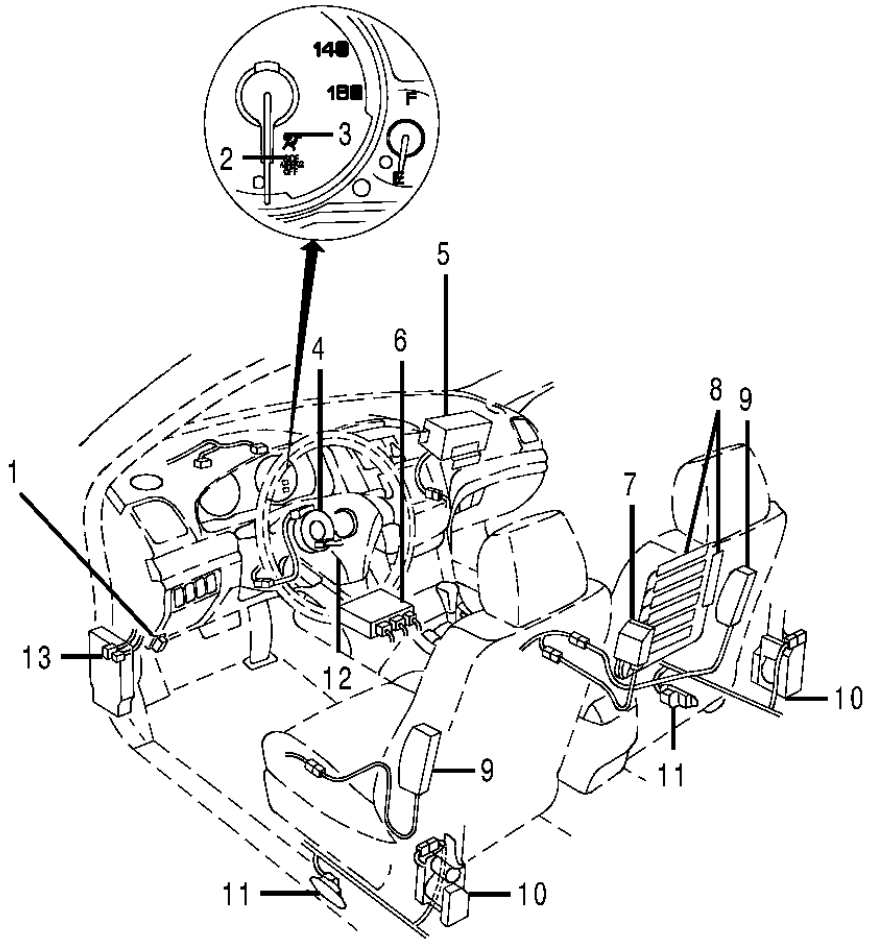
WARNING: Accidental air bag deployment is possible. Personal injury may result. Read and follow all WARNINGS and AIR BAG SAFETY PRECAUTIONS before working on air bag system or related components.

Supplemental Restraint System (SRS), also known as air bag system, is designed to protect driver and front passenger by activating when vehicle receives a sufficient front-end or side impact. System includes dual-stage driver-side air bag, dual-stage passenger-side air bag, driver and front passenger side air bags, side curtain air bags, rear, side and front impact sensors, cable reel, seat belt pretensioners, Occupant Position Detection System (OPDS), and SRS unit (with internal safing). See **COMPONENT LOCATIONS** .

COMPONENT LOCATIONS

Refer to illustration for component locations. See **Fig. 1** & **Fig. 2** .

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1. Data Link Connector (DLC)
2. Side Air Bag Cutoff Indicator
3. AIR BAG Warning Light
4. Cable Reel
5. Passenger-Side Air Bag Module
6. SRS Unit
7. OPDS Unit
8. OPDS Sensors
9. Side Air Bag Module
10. Seat Belt Pretensioner
11. Side Impact Sensor
12. Driver-Side Air Bag Module
13. Memory Erase Signal (MES) Connector

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Fig. 1: Locating Restraint System Components (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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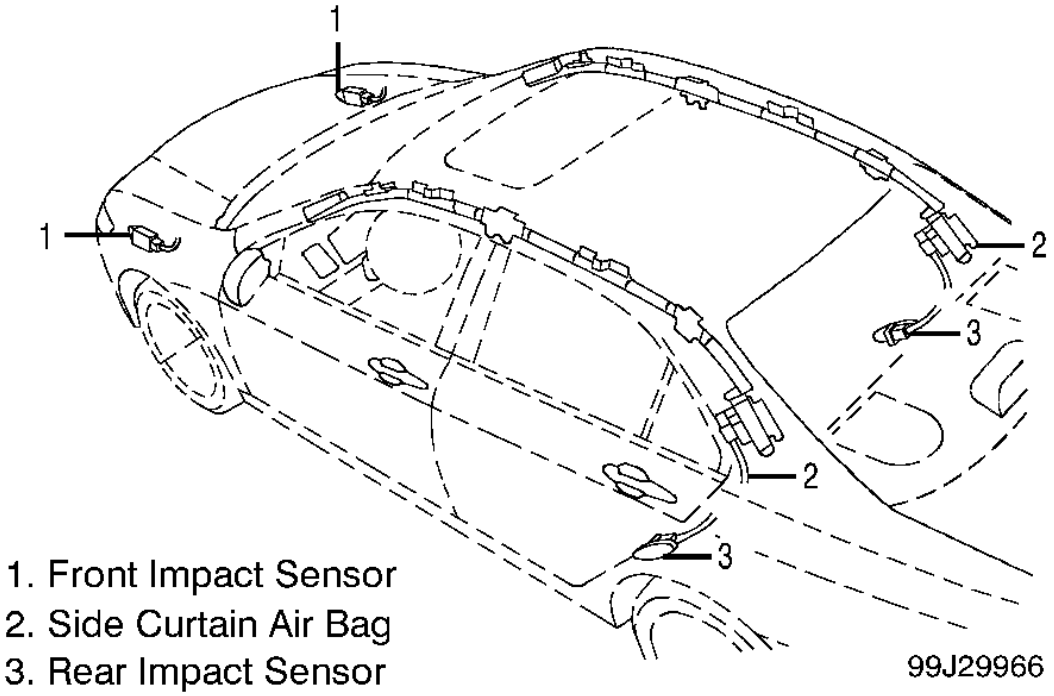


Fig. 2: Locating Restraint System Components (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM OPERATION CHECK

Turn ignition switch on. AIR BAG warning light should illuminate for about 6 seconds, then go off. If AIR BAG warning light illuminates while driving, does not illuminate at all or flashes, an air bag system malfunction has been detected. See **DIAGNOSTICS** .

AIR BAG SAFETY PRECAUTIONS

Observe these precautions when working with air bag system:

- Carefully inspect any SRS part before installing. DO NOT install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.
- Use only a digital multimeter to check system. Ensure multimeter output is 10 milliamp (0.01 amp) or less when switched to lowest value in ohmmeter range.
- DO NOT install used SRS parts from another vehicle. When making SRS repairs, use only NEW parts.
- Except when indicated, always disconnect negative battery cable, and wait at least 3 minutes before making SRS repairs.
- When ignition is on, or has been turned off for less than 3 minutes, DO NOT bump SRS unit. Air bags could accidentally deploy.

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- Radio contains anti-theft protection circuit. Obtain anti-theft code before disconnecting battery.
- DO NOT disassemble air bags or SRS unit. There are no serviceable parts. Once deployed, an air bag cannot be repaired or reused.
- Store removed air bags with deployment side facing up. If stored face down, accidental deployment could propel unit with enough force to cause serious injury.
- Store removed air bags on secure flat surface away from high heat source and free of oil, grease, detergent or water.
- Store SRS unit in cool and dry place. DO NOT spill water or oil on SRS unit and keep away from dust.
- Disconnect air bag connectors before disconnecting SRS harness connectors.

DISABLING & ACTIVATING AIR BAG SYSTEM

WARNING: Accidental air bag deployment is possible. Personal injury may result. Read and follow all WARNINGS and AIR BAG SAFETY PRECAUTIONS .

NOTE: When battery is disconnected, certain memory circuits will lose data. When battery is reconnected, it may be necessary to perform appropriate computer relearn procedure. See COMPUTER RELEARN .

SPRING-LOADED LOCK CONNECTORS

To disconnect, pull spring-loaded sleeve toward stop while holding opposite half of connector. Then pull connector halves apart. Be sure to pull on sleeve and not on connector itself. See **Fig. 3** .

To connect, hold pawl-side connector half, and press on back of sleeve-side connector half in direction shown. As connector halves are pressed together, sleeve is pushed back by pawl. DO NOT touch sleeve. When connector halves are completely connected, pawl is released, and spring-loaded sleeve locks connector.

When backprobing spring-loaded lock connectors, remove retainer before inserting test probes from wire side. Carefully pry out retainer with flat-tip screwdriver. Retainer may be discarded after removal.

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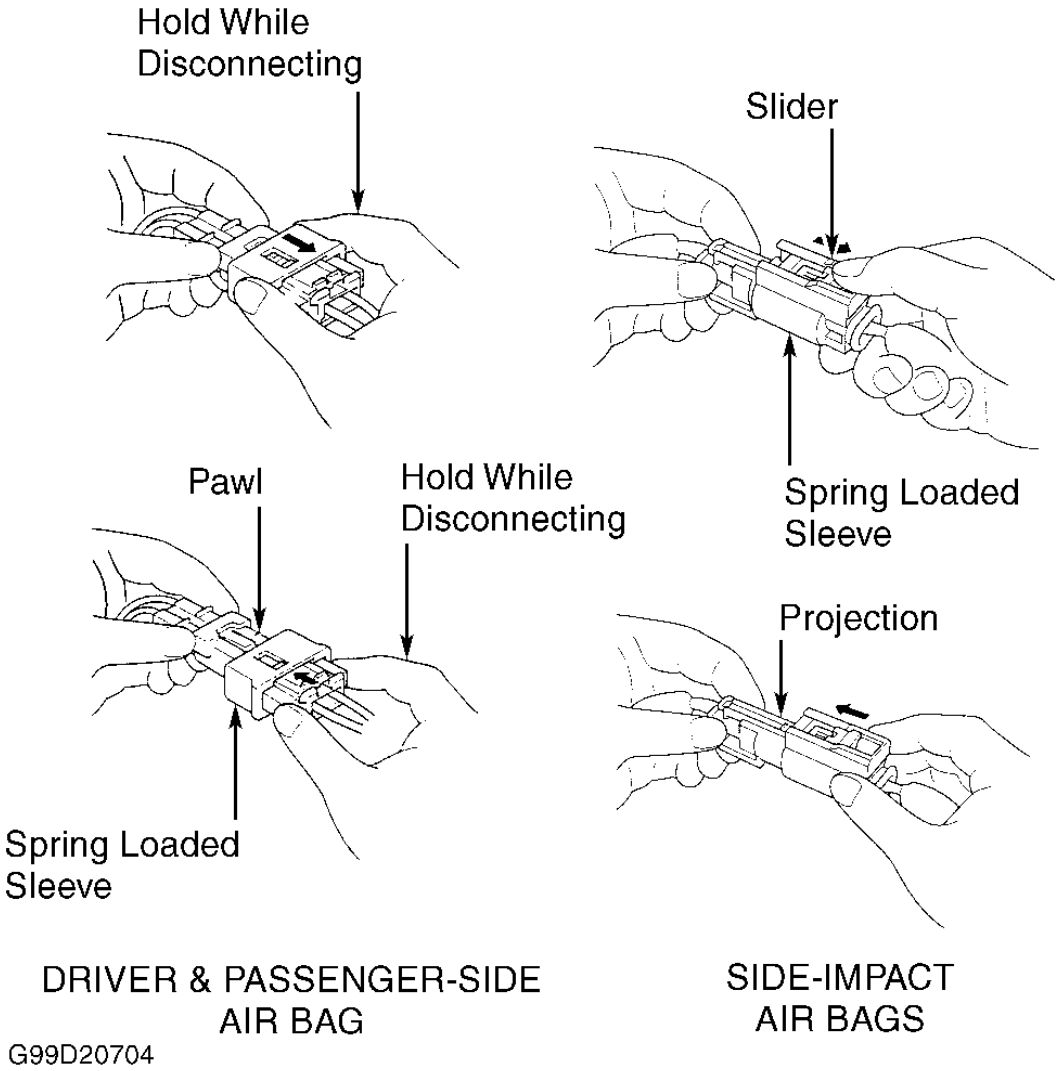


Fig. 3: Identifying Spring-loaded Lock Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DISABLING SYSTEM

Obtain anti-theft codes for radio and navigation system, if equipped. Record frequencies for radio's preset buttons. Disconnect negative battery cable. Disconnect auxiliary battery or power source, if equipped. Wait 3 minutes before working on air bag system or related components.

ACTIVATING SYSTEM

Reconnect negative battery cable. Enter anti-theft codes for radio and navigation system. Enter radio station presets. Perform idle and window control unit relearn procedures. See **COMPUTER RELEARN** . Perform

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SYSTEM OPERATION CHECK .

COMPUTER RELEARN

Idle Relearn

Ensure sure all electrical accessories (A/C, audio, rear defogger, lights, etc.) are off. Using HDS tester or HDS, perform PCM RESET in the CLEAR MENU. Turn ignition switch to ON position and wait 2 seconds. Start engine and hold at 3000 RPM (in Park or Neutral with no load) until radiator fan comes on, or until engine temperature reaches 194°F (90°C). Let engine idle for about 5 minutes, with throttle fully closed. If radiator fan comes on, do not include its running time in the 5 minutes.

Window Control Unit Relearn

Turn ignition off. Turn ignition on. Push driver's window switch down to second detent to fully lower window. When window reaches bottom position, continue to depress switch for 2 seconds, then release switch. Pull driver's window switch up to second detent to fully raise window. When window reaches top position, continue to pull switch for 2 seconds, then release switch. If window does not operate in AUTO position, repeat procedure.

DISPOSAL PROCEDURES

Before scrapping air bags or seat belt pretensioners, including those installed in vehicle to be scrapped, they must be deployed. Treat undeployed air bags and seat belt pretensioners with extreme care. Wear safety glasses and gloves when handling deployed them. Wash hands and rinse well with water after handling deployed air bag assemblies and seat belt pretensioners.

If vehicle is still within warranty period, contact manufacturer for disposal instructions before deploying air bags.

AIR BAG DEPLOYMENT

WARNING: Air bag assemblies become very hot when deployed. Personal injury may result. Wait at least 30 minutes before handling deployed air bag assemblies.
Flying debris is possible. Personal injury may result. Ensure air bag assemblies are securely mounted to vehicle.

NOTE: If vehicle is to be scrapped, deploy air bags and pretensioners on vehicle.

On-vehicle

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disconnect negative battery cable and wait at least 3 minutes. Ensure each air bag and pretensioner is securely mounted. Ensure proper operation of Deployment Tool (07HAZ-SG00500) by connecting a 12-volt battery per instructions supplied with tool.

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2. To deploy driver-side air bag, remove access panel from bottom of steering wheel and disconnect driver-side air bag connector from cable reel connector. See **Fig. 4** . To deploy passenger-side air bag, remove glove box and disconnect passenger-side air bag connector from dashboard wire harness. See **Fig. 5** .
3. To deploy side air bag, disconnect side air bag connector from SRS floor harness. See **Fig. 6** . To deploy side curtain air bag, remove headliner and disconnect side curtain air bag module connector from roof wire harness. See **Fig. 7** .
4. To deploy seat belt pretensioner, remove B-pillar trim panel and disconnect seat belt pretensioner connector. See **Fig. 8** . Pull seat belt webbing out all the way and cut it off.

NOTE: Driver-side and passenger-side air bags have 4 wires each, 2 Yellow and 2 Red. Twist each pair of unlike colored wires together then connect alligator clip to each pair.

5. To deploy air bags and seat belt pretensioners, cut off air bag connector and strip back 1" (25 mm) of insulation from wire ends. Connect Yellow alligator clips of deployment tool to uninsulated wire ends. Place deployment tool at least 30 feet (10 m) feet away from air bag.
6. Connect 12-volt battery to deployment tool. If Red light on deployment tool comes on, go to next step. If Green light on deployment tool comes on, ignitor circuit is faulty. See **DAMAGED AIR BAG SPECIAL PROCEDURE** .
7. Stand at least 30 feet (10 m) away from air bag. Push deployment switch, being prepared for rapid inflation of air bag and loud noise. If air bag and seat belt pretensioner deploys, wait 30 minutes to allow air bag to cool before removing and disposing of complete air bag module. Place in a sturdy plastic bag and seal securely.
8. If air bag or seat belt pretensioner does not deploy, ignitor circuit is faulty. See **DAMAGED AIR BAG SPECIAL PROCEDURE** .

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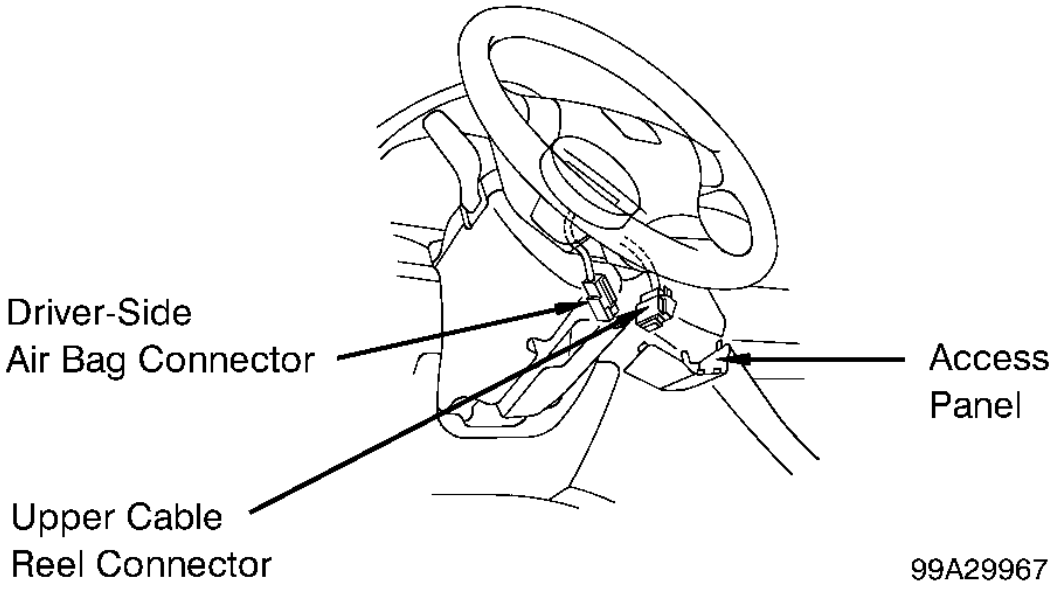


Fig. 4: Identifying Upper Cable Reel Connector
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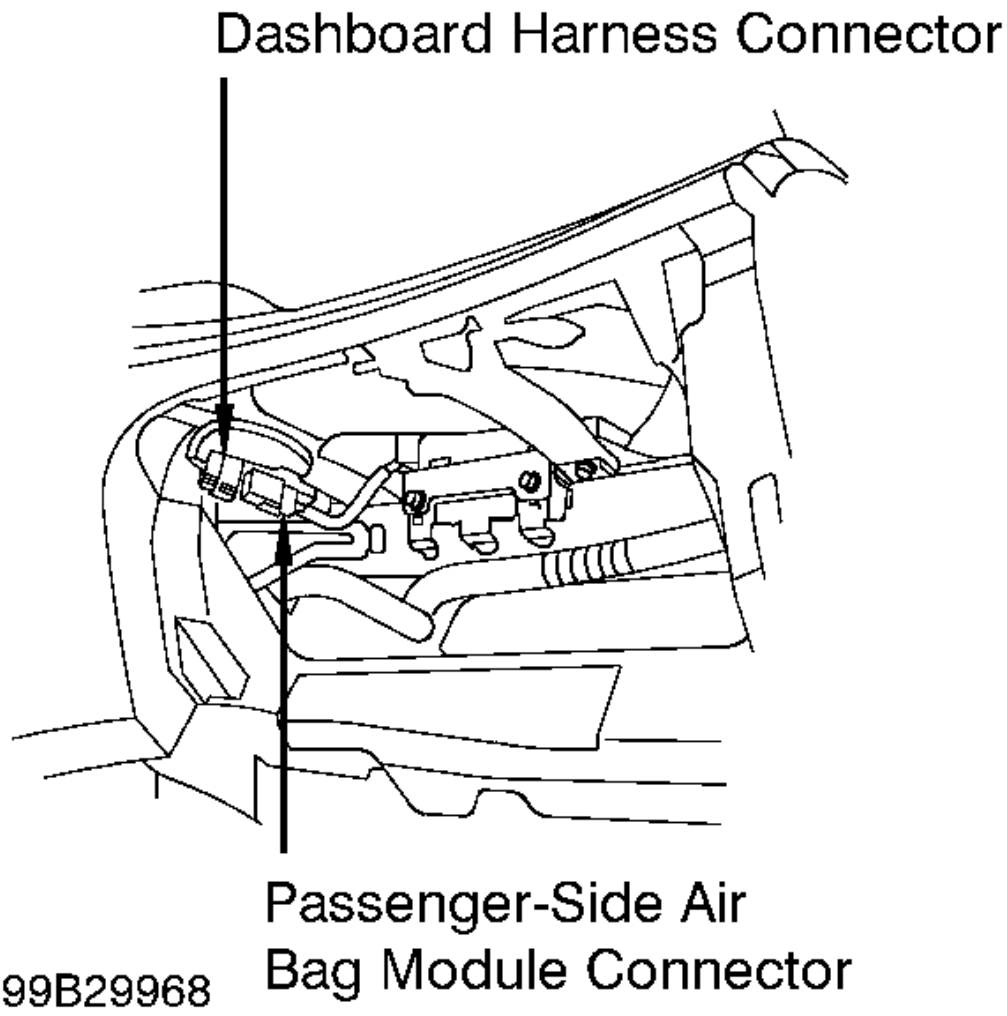


Fig. 5: Identifying Passenger-side Air Bag Module Connector
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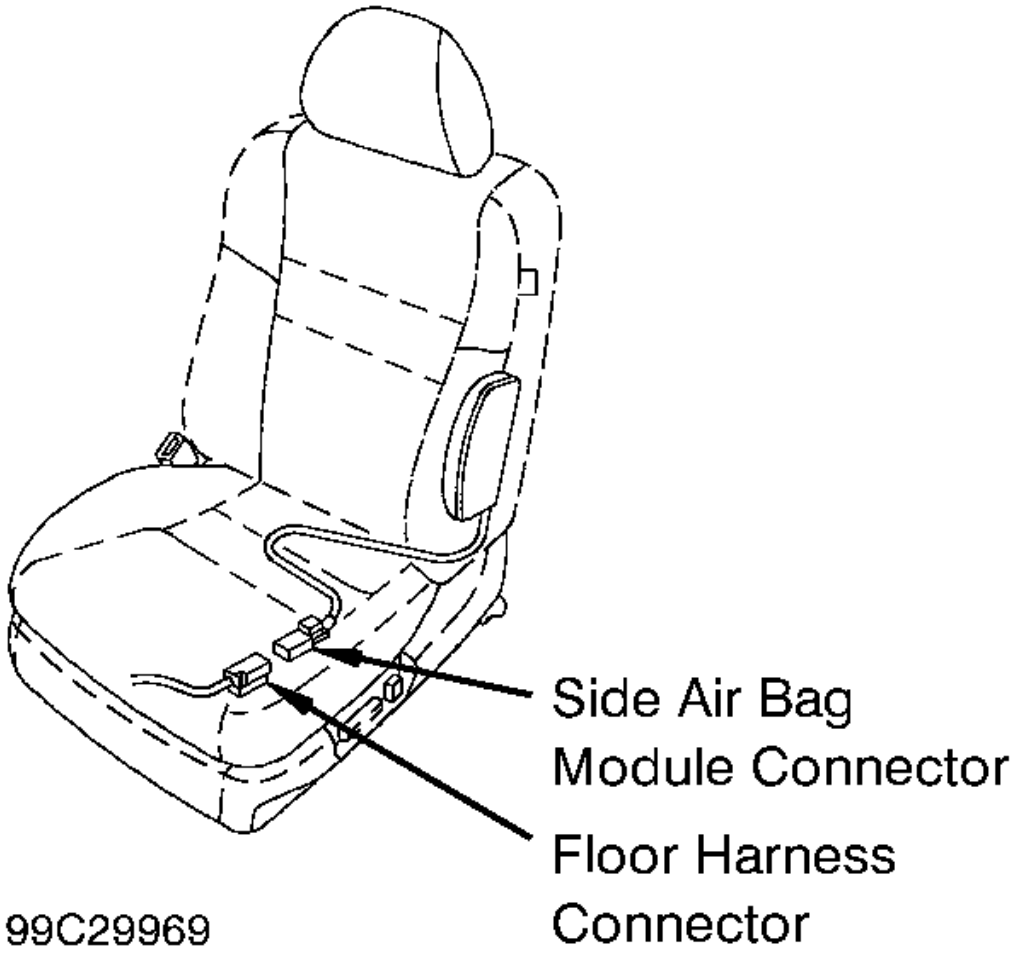


Fig. 6: Identifying Side Air Bag Module Connector
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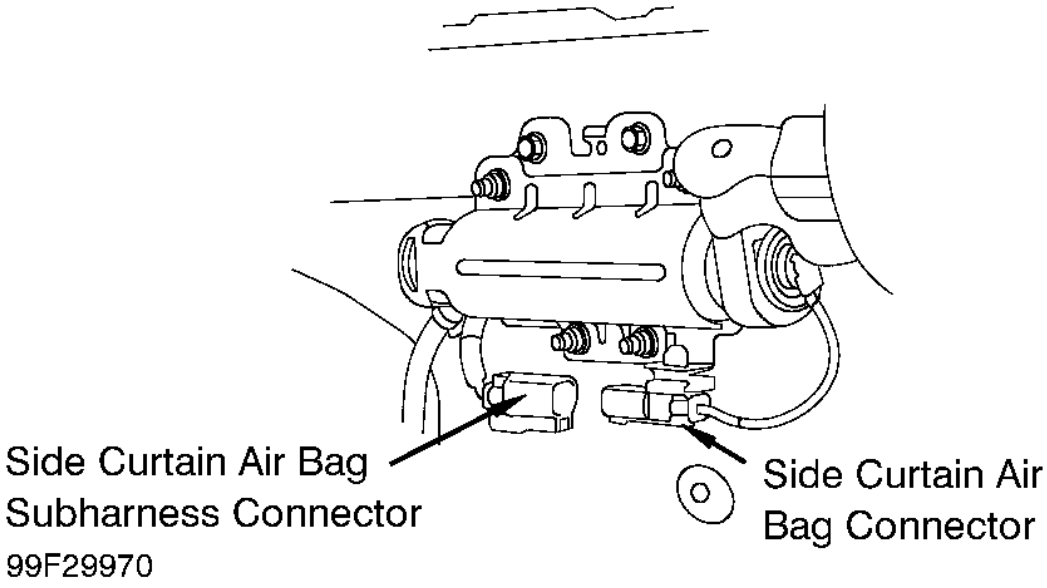


Fig. 7: Identifying Side Curtain Air Bag Module Connector
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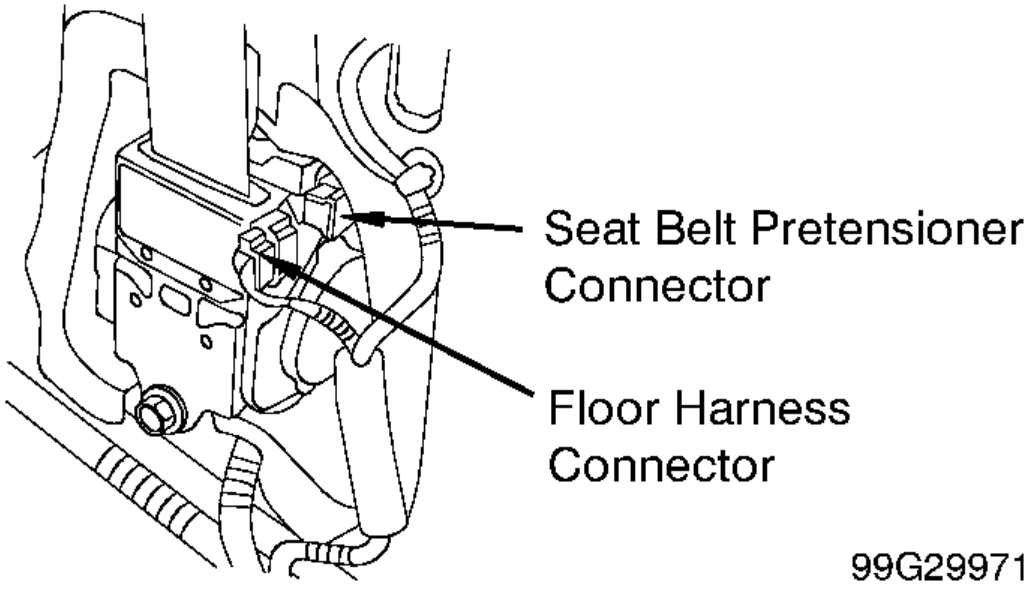


Fig. 8: Identifying Seat Belt Pretensioner Connector

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Courtesy of AMERICAN HONDA MOTOR CO., INC.

Off-vehicle

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Ensure proper operation of Deployment Tool (07HAZ-SG00500) by connecting a 12-volt battery per instructions supplied with tool. Remove appropriate air bag module. See **REMOVAL & INSTALLATION** .

   NOTE: Driver-side and passenger-side air bags have 4 wires each, 2 Yellow and 2 Red. Twist each pair of unlike colored wires together then connect alligator clip to each pair.

2. Position air bag module deployment side up, outdoors on flat ground and at least 30 feet (10 m) from people or obstacles. Cut off air bag connector, and strip back 1" (25 mm) of insulation from wire ends. Connect Yellow alligator clips of deployment tool to uninsulated wire ends. See **Fig. 9** . Place tool at least 30 feet (10 m) away from air bag.
3. Connect a 12-volt battery to deployment tool. If Red light on deployment tool comes on, go to next step. If Green light on deployment tool comes on, air bag ignitor circuit is faulty. See **DAMAGED AIR BAG SPECIAL PROCEDURE** .
4. Push deployment switch, being prepared for rapid inflation of air bag and loud noise. If air bag deploys, wait 30 minutes to allow air bag to cool before removing and disposing of complete air bag module. Place in a sturdy plastic bag and seal securely.
5. If air bag does not deploy, ignitor circuit is faulty. See **DAMAGED AIR BAG SPECIAL PROCEDURE** .

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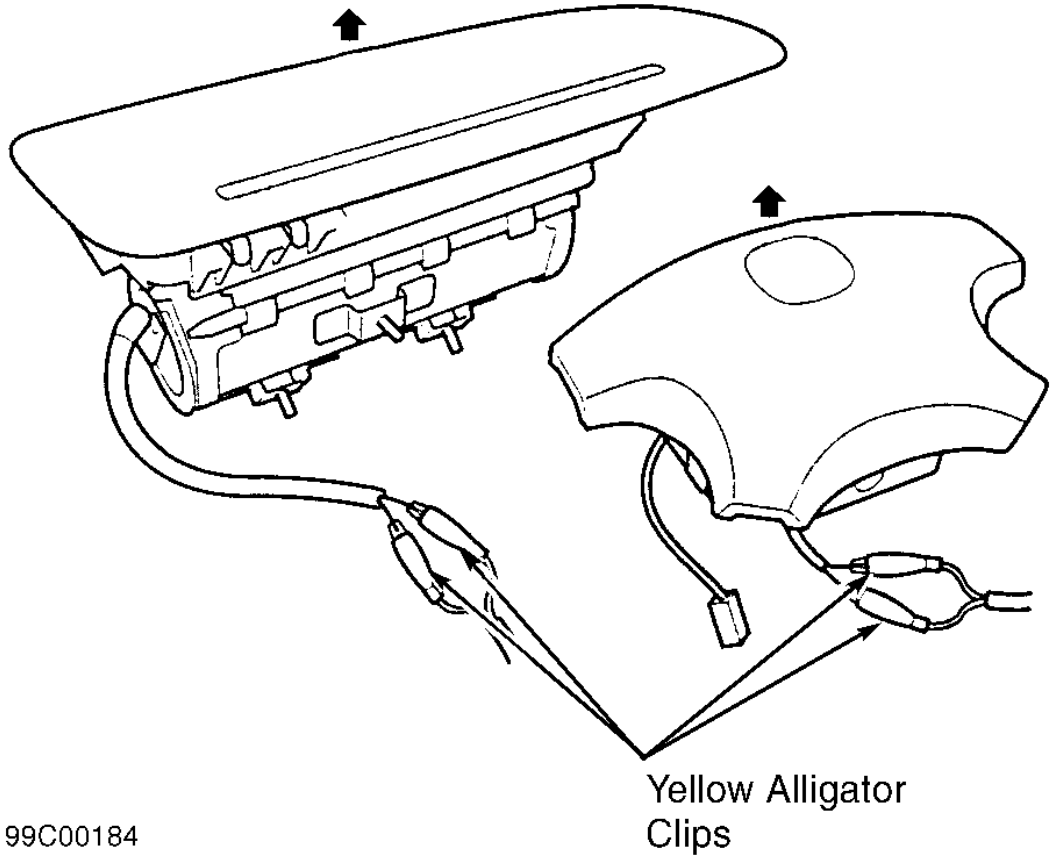


Fig. 9: Deploying Removed Air Bag
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DAMAGED AIR BAG SPECIAL PROCEDURE

WARNING: Accidental air bag deployment is possible. Personal injury may result. An undeployed air bag should be considered a potentially explosive device that can cause serious injury.

1. If air bag or pretensioner is installed in vehicle, follow appropriate removal procedure. See **REMOVAL & INSTALLATION** . Remove connector and short together inflator by twisting wires together.
2. Package air bag in exactly same packaging that replacement part came in. Mark outside of box "DAMAGED AIR BAG NOT DEPLOYED" so it is not confused in parts stock. Contact manufacturer for instructions on returning air bag for disposal.

POST-COLLISION INSPECTION

When a vehicle has been involved in a collision, certain components of the passive restraint system must be

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inspected or replaced. See **AIR BAG/SRS COMPONENT INSPECTION & REPLACEMENT TABLES** article in the GENERAL INFORMATION section.

REMOVAL & INSTALLATION

WARNING: Accidental air bag deployment is possible. Personal injury may result. Read and follow all WARNINGS and AIR BAG SAFETY PRECAUTIONS before working on air bag system or related components.

CABLE REEL

Removal

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Ensure front wheels are in straight-ahead position. Remove driver-side air bag. See **DRIVER-SIDE AIR BAG MODULE** .
2. Remove steering wheel. Remove left instrument panel side and lower covers. Remove upper and lower steering column covers. Disconnect 4- and 13-pin connectors. See **Fig. 10** . Release tabs and remove cable reel from column.

Installation

To install, reverse removal procedure. Ensure front wheels are in straight-ahead position. Install cancel sleeve so projections are aligned vertically. See **Fig. 11** . Center cable reel if necessary. See **CABLE REEL CENTERING** under ADJUSTMENTS. Tighten steering wheel bolt to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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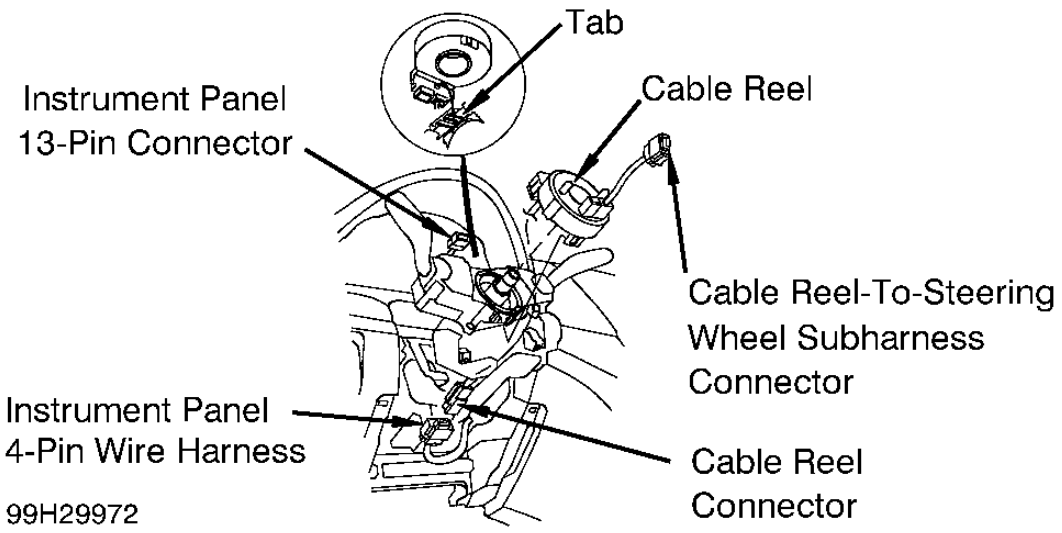


Fig. 10: Identifying Cable Reel
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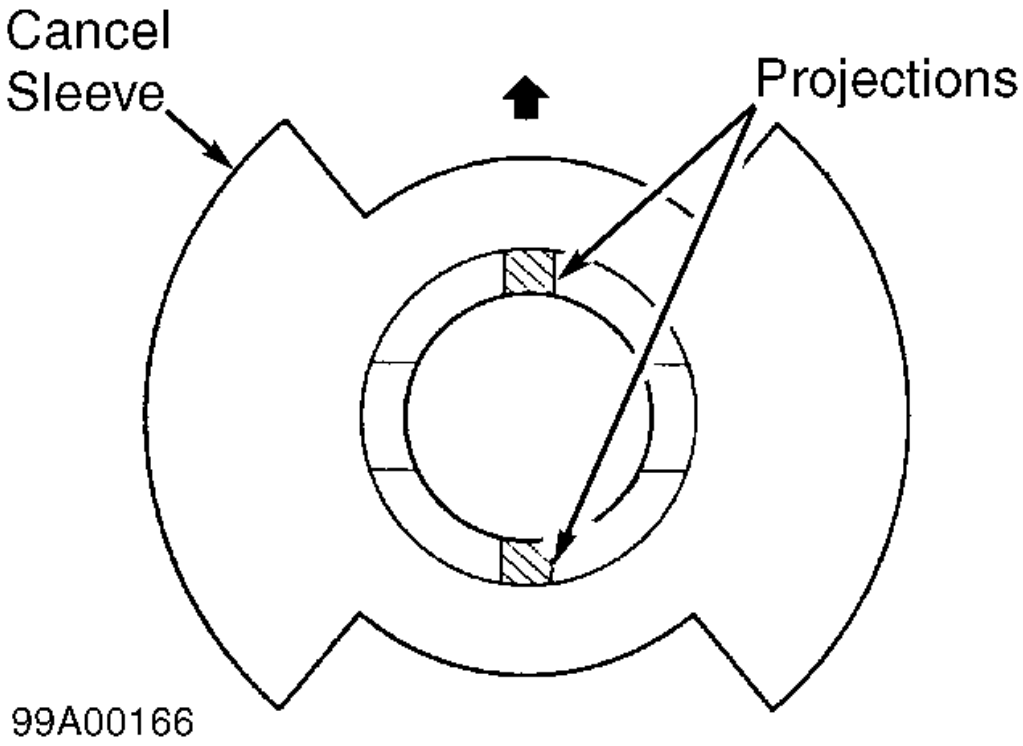


Fig. 11: Aligning Cancel Sleeve & Cable Reel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CENTER CONSOLE

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Loosen lock nut and remove manual gearshift lever knob, if equipped.
2. Starting at front, pull up on center console trim panel, detaching clips. See **Fig. 12** . Disconnect heated seat switch connectors, if equipped and remove center console trim panel.
3. Open center upper pocket lid, then pull at lower edge and detach clips and remove center upper pocket. See **Fig. 13** . Remove screws, disconnect front power socket connector and remove center lower pocket.
4. Open console lid and remove console mat. See **Fig. 14** . Remove console mounting screws. Disconnect rear power socket. Pull up on areas of center console, release hooks at front of console and remove center console.
5. To install, reverse removal procedure. Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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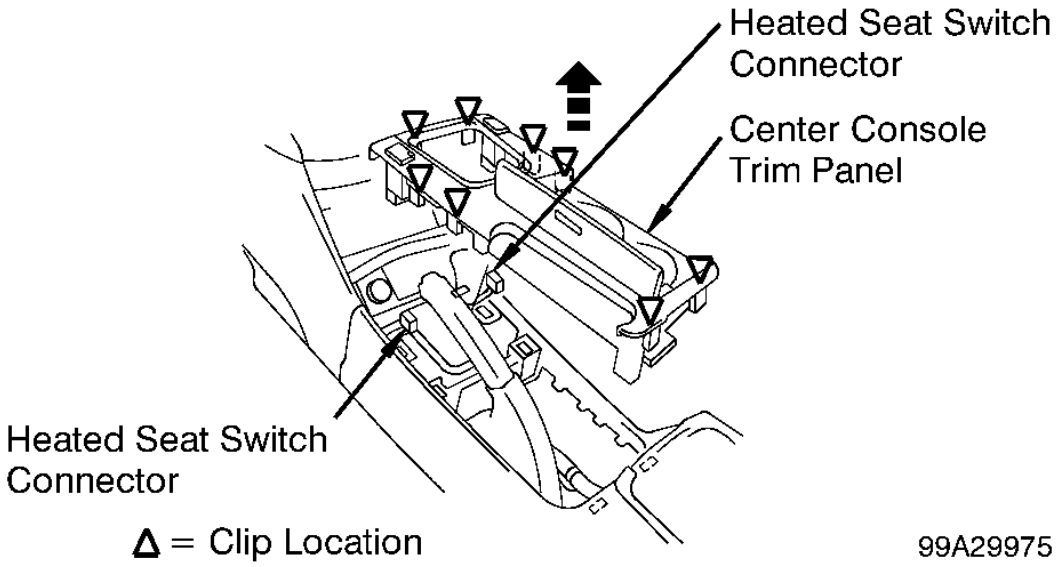


Fig. 12: Identifying Center Console Trim Panel
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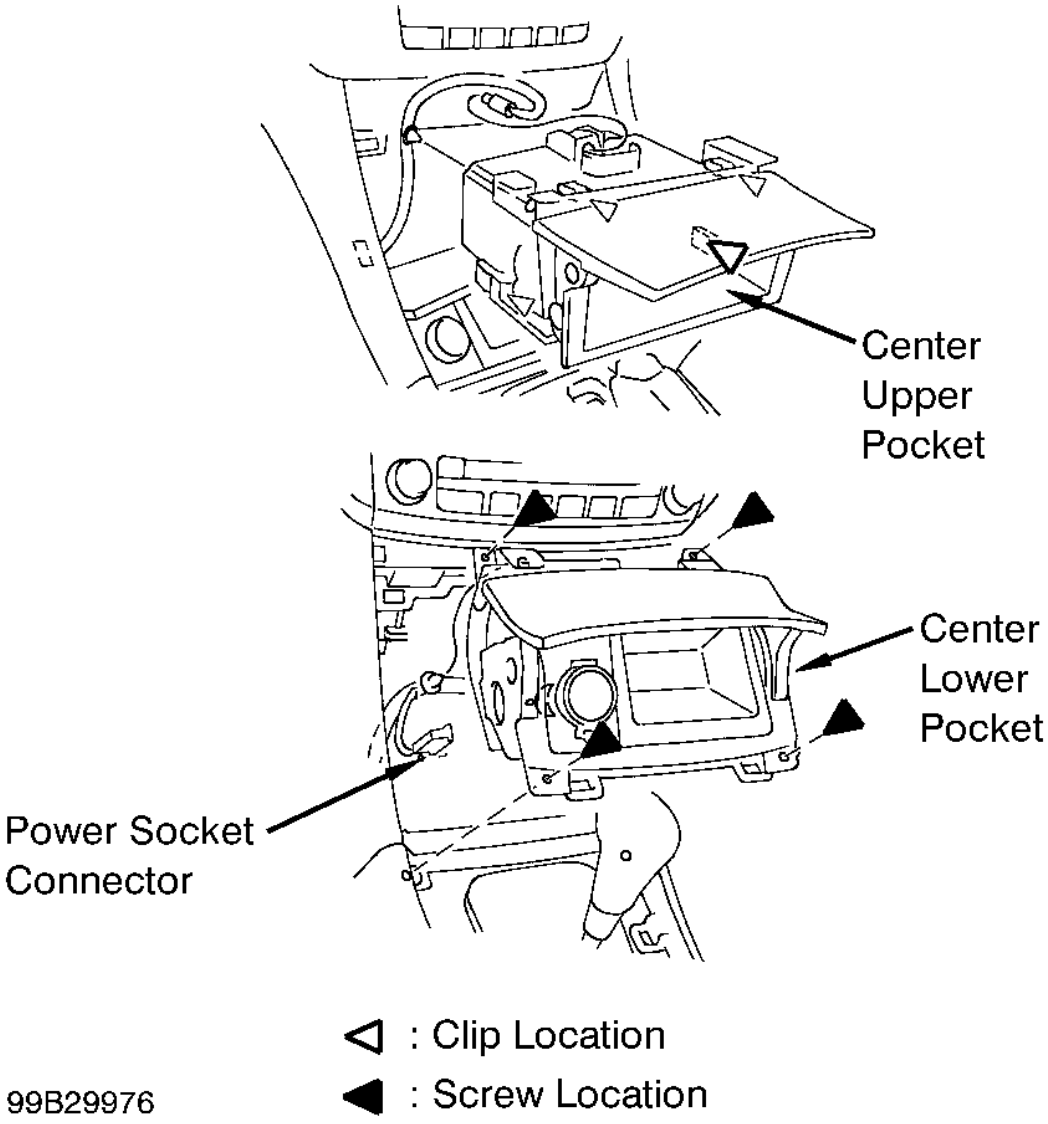


Fig. 13: Identifying Center Upper & Lower Pockets
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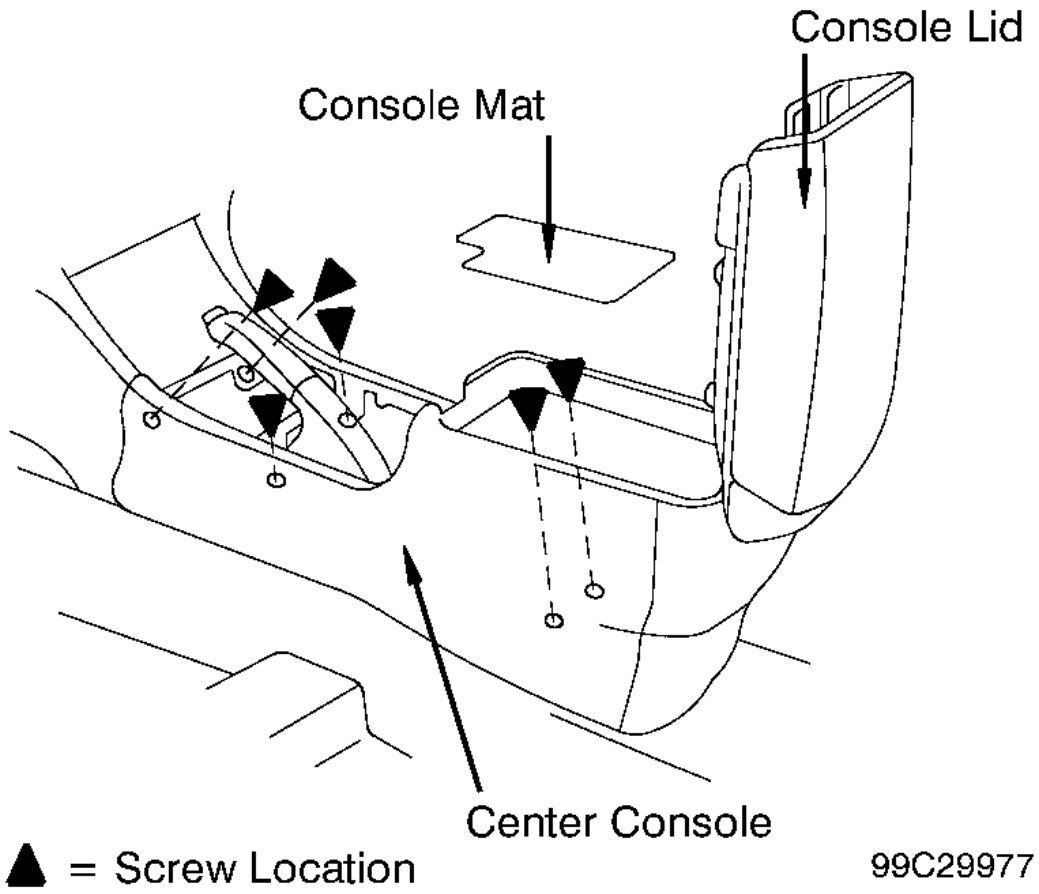


Fig. 14: Identifying Center Console
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVER-SIDE AIR BAG MODULE

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove access panel from bottom of steering wheel. Disconnect air bag connector from cable reel connector. Remove Torx bolt covers. Using Torx T30 bit, remove and discard Torx bolts securing air bag module to steering wheel. See **Fig. 15** . Remove air bag module.
2. To install, reverse removal procedure. Tighten NEW air bag module Torx bolts to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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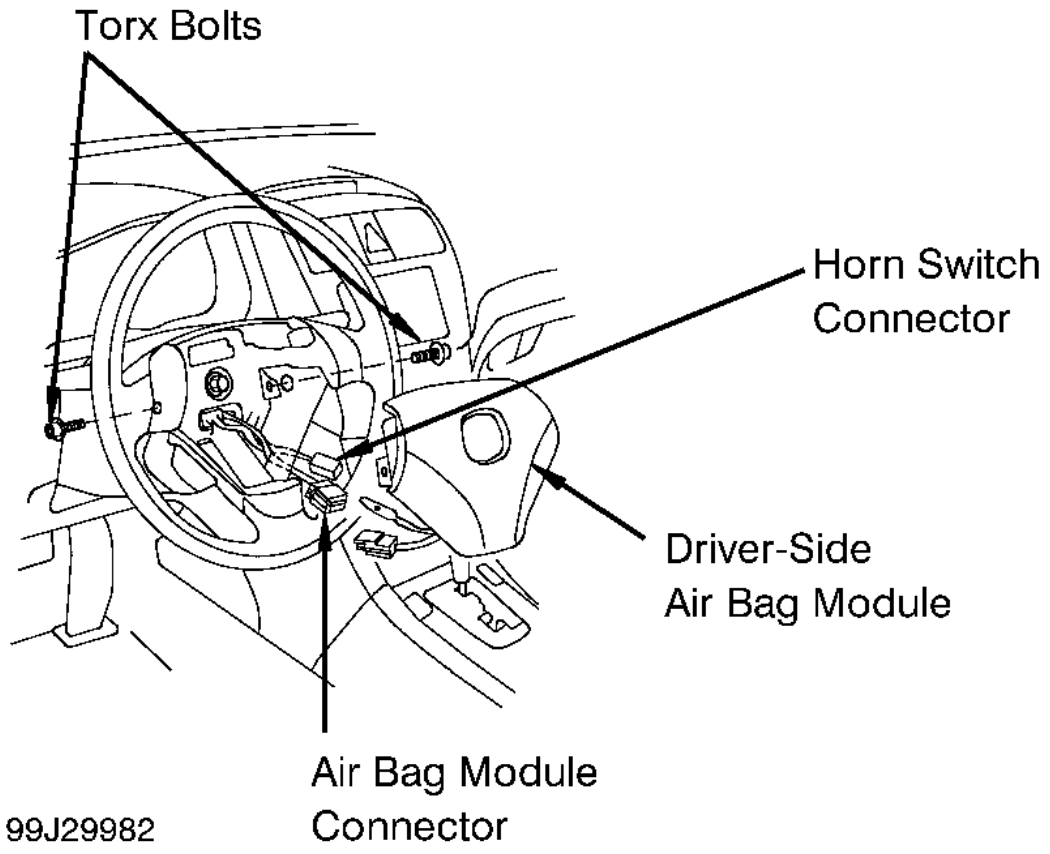


Fig. 15: Identifying Driver-side Air Bag Module
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FRONT IMPACT SENSORS

Removal & Installation

WARNING: Accidental air bag deployment is possible. Personal injury may result. Disconnect driver-side air bag module, passenger-side air bag module and right and left seat belt pretensioners before disconnecting front impact sensor connector. Avoid turning ignition on and connecting battery.

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove appropriate front inner fender panel. Disconnect engine compartment wire harness connector. See **Fig. 16** . Using T30 Torx bit, remove front impact sensor mounting screws. Remove front impact sensor.
2. To install, reverse removal procedure. Tighten front impact sensor mounting Torx screws to specification.

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See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

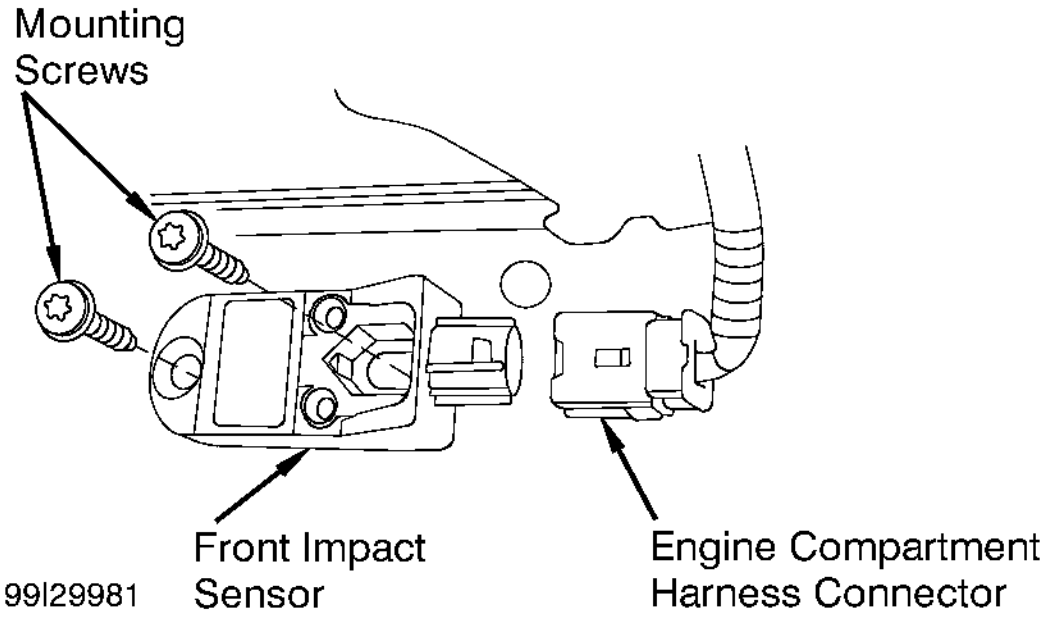


Fig. 16: Identifying Front Impact Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HEADLINER

Removal & Installation

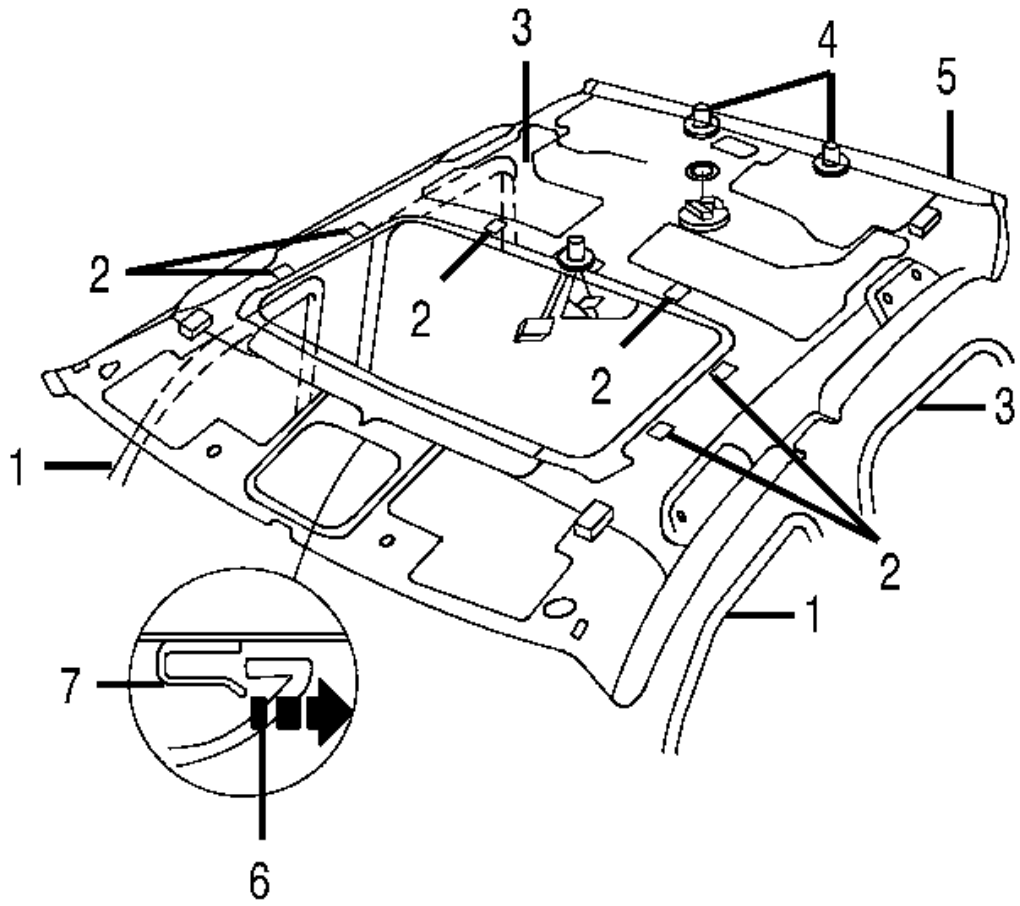
1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove left and right front door opening weatherstrip as necessary. Remove left and right A-pillar trim panels.
2. Using small screwdriver, pry off dome light lens, remove mounting screws and remove dome light. Remove left and right front seat belt shoulder anchor bolts. Remove bottom, then upper B-pillar trim panels. Remove left and right C-pillar trim panels.
3. Using trim tool, release tabs on both sides of left sun visor cap, then turn and remove cap. Repeat for right sun visor cap. Using T25 Torx bit, remove left sun visor retaining screws. Remove sun visor from body and holder. Disconnect vanity mirror light connector. Using flat-blade screwdriver, push hook and turn holder 90 degrees, then pull out sun visor. Repeat for left sun visor.
4. Remove roof console map light lenses, mounting bolts, disconnect harness connectors and remove roof console. Lower grab handle, pry out screw covers, remove screws and remove grab handles. Remove socket plug. See **Fig. 17** . Remove front and rear door weatherstrip.
5. Detach clip and release fasteners, then pull front portion of headliner down. With help of assistant, pull

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rear portion of headliner down releasing clips. Slide headliner rearward, releasing headliner from frame. Remove headliner through right front door.

6. To install, reverse removal procedure. Tighten bolts and screws to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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1. Front Door Weatherstrip
2. Clips
3. Rear Door Weatherstrip
4. Clips
5. Headliner
6. Socket Plug
7. Frame

Fig. 17: Identifying Headliner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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INSTRUMENT CLUSTER

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove driver's instrument panel lower cover. Remove upper steering column cover.
2. Place clean shop towel under instrument cluster. Remove screws securing instrument cluster to instrument panel. Disconnect electrical connectors and remove instrument cluster.
3. To install, reverse removal procedure. Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

INSTRUMENT PANEL

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove right front seat. Remove center console. See **CENTER CONSOLE** .
2. Remove left instrument panel lower cover. Remove glove box assembly. Remove left and right kick panels and both A-pillar trim panels. Remove driver-side air bag module. See **DRIVER-SIDE AIR BAG MODULE** . Remove steering wheel, steering column covers and steering column joint cover.
3. Release tilt/telescopic lever and adjust steering column to full tilt up position, and full telescopic position. Tighten tilt/telescopic lever. Hold slider shaft on steering column with wire between bottom yoke and upper yoke to prevent slider shaft from pulling out.
4. Remove combination switch assembly. Disconnect ignition switch connector. Remove bolt from lower steering column yoke. Remove steering column mounting bolts and nuts and remove steering column from vehicle.
5. Remove 2 connectors, 2 mounting nuts and stereo amplifier. Remove A/T shift lever brackets, if equipped. Remove SRS unit. Remove screw, clips and left and right center lower covers and rear vent ducts. From under left side of instrument panel, disconnect all necessary wiring and connectors. Lift White wire harness connector locks before removing connectors from fuse box.
6. Disconnect parking brake switch connector, radio antenna connector, antenna lead, A/C subharness connector, then release wire harness clamp. Using T30 Torx bit, remove ground bolt. Disconnect ECM/PCM connectors, power transistor connector and engine wire harness connectors, then release wire harness clips.
7. From under right side of instrument panel, disconnect right door wire harness connectors, floor wire harness connectors, interior wire harness connector and blower motor connector, then release all harness clips.
8. Remove bolt and brake pedal support member. Cover parking brake to protect it. Remove instrument panel mounting bolts and clips, then remove instrument panel. See **Fig. 18** . Lay instrument panel on front or rear of instrument panel. DO NOT lay it on lower console opening.
9. To install, reverse removal procedure. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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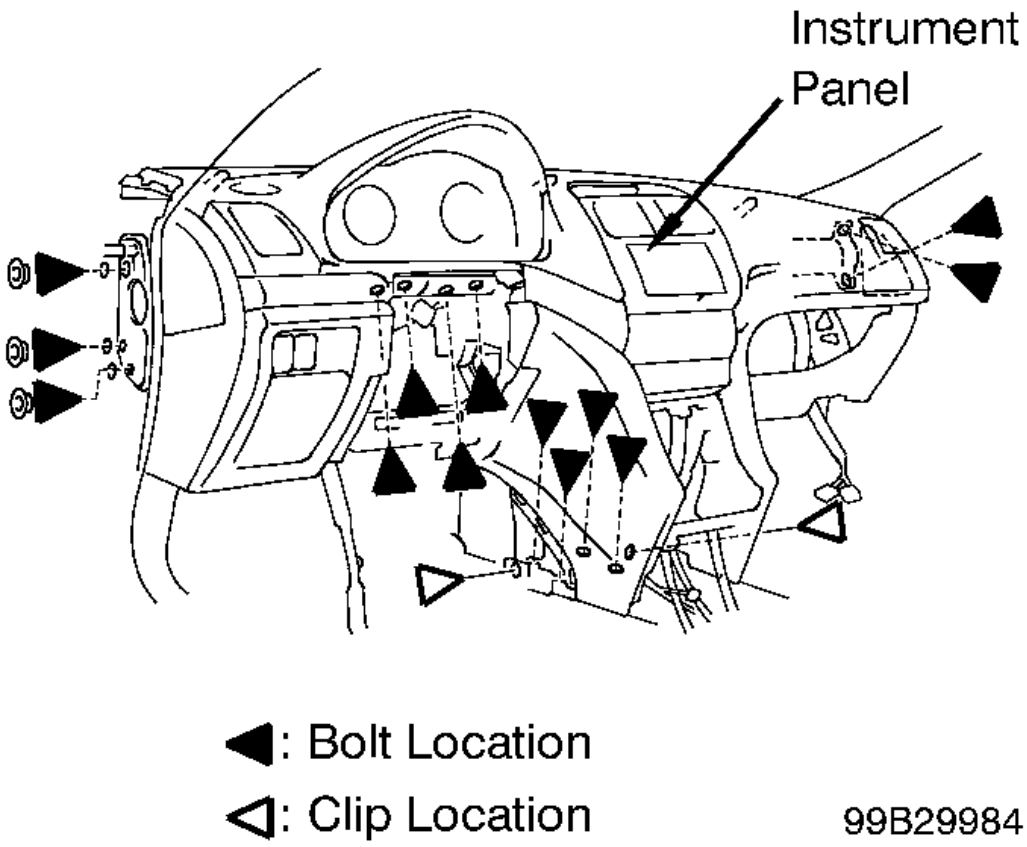


Fig. 18: Identifying Instrument Panel Mounting Bolt Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove front passenger seat and seat back cover. Remove OPDS unit cover, Disconnect 8-pin and sensor connector, remove 3 screws and remove OPDS unit. See **Fig. 19** .
2. To install, reverse removal procedure. Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Initialize OPDS system. See **INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under DIAGNOSTICS.

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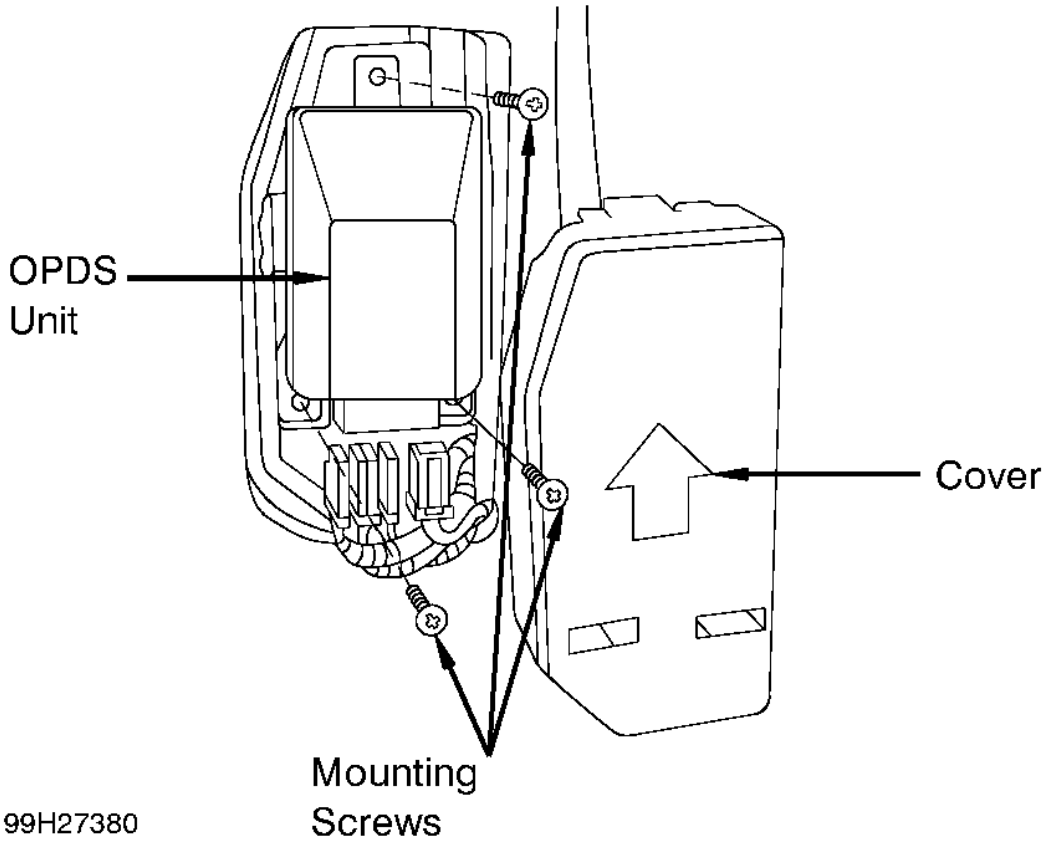


Fig. 19: Identifying OPDS Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PASSENGER-SIDE AIR BAG MODULE

Removal & Installation (Without Deployment)

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove glove box striker bracket and A/C duct. Disconnect passenger-side air bag module connector from dashboard wire harness connector. See **Fig. 20** . Disconnect instrument panel lower panel. Remove passenger-side air bag module mounting bolts and nuts from bracket, then remove air bag module.
2. To install, reverse removal procedure. Tighten passenger-side air bag mounting bolts and nuts to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

Removal & Installation (After Deployment)

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See

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DISABLING SYSTEM under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove instrument panel. See **INSTRUMENT PANEL** .

2. Remove gauge control module. Remove audio-HVAC-display module. Remove both side vents. Remove left and right tweeter speakers and sun light sensor. Remove glove box striker. Remove screws and passenger's A/C duct.
3. Remove passenger-side air bag module mounting bolts and nuts from bracket, then remove air bag module. See **Fig. 20** . Remove screws and separate upper instrument panel from lower instrument panel. See **Fig. 21** .
4. To install, reverse removal procedure. Remove anti-contamination cover from NEW upper instrument panel and install NEW passenger-side air bag module. Tighten passenger-side air bag mounting bolts and nuts in sequence to specification. See **Fig. 22** . See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

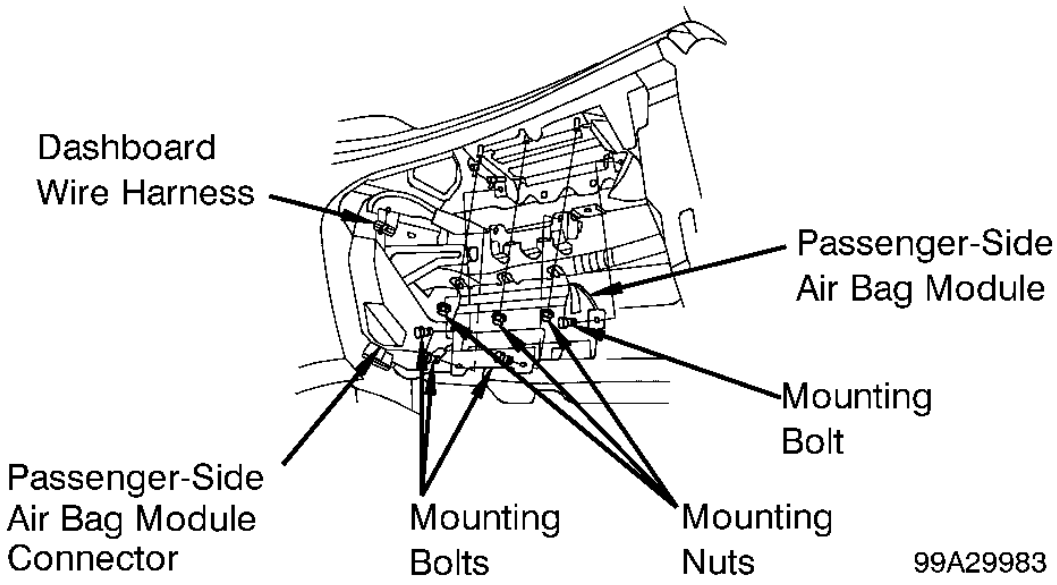


Fig. 20: Identifying Passenger-side Air Bag Module
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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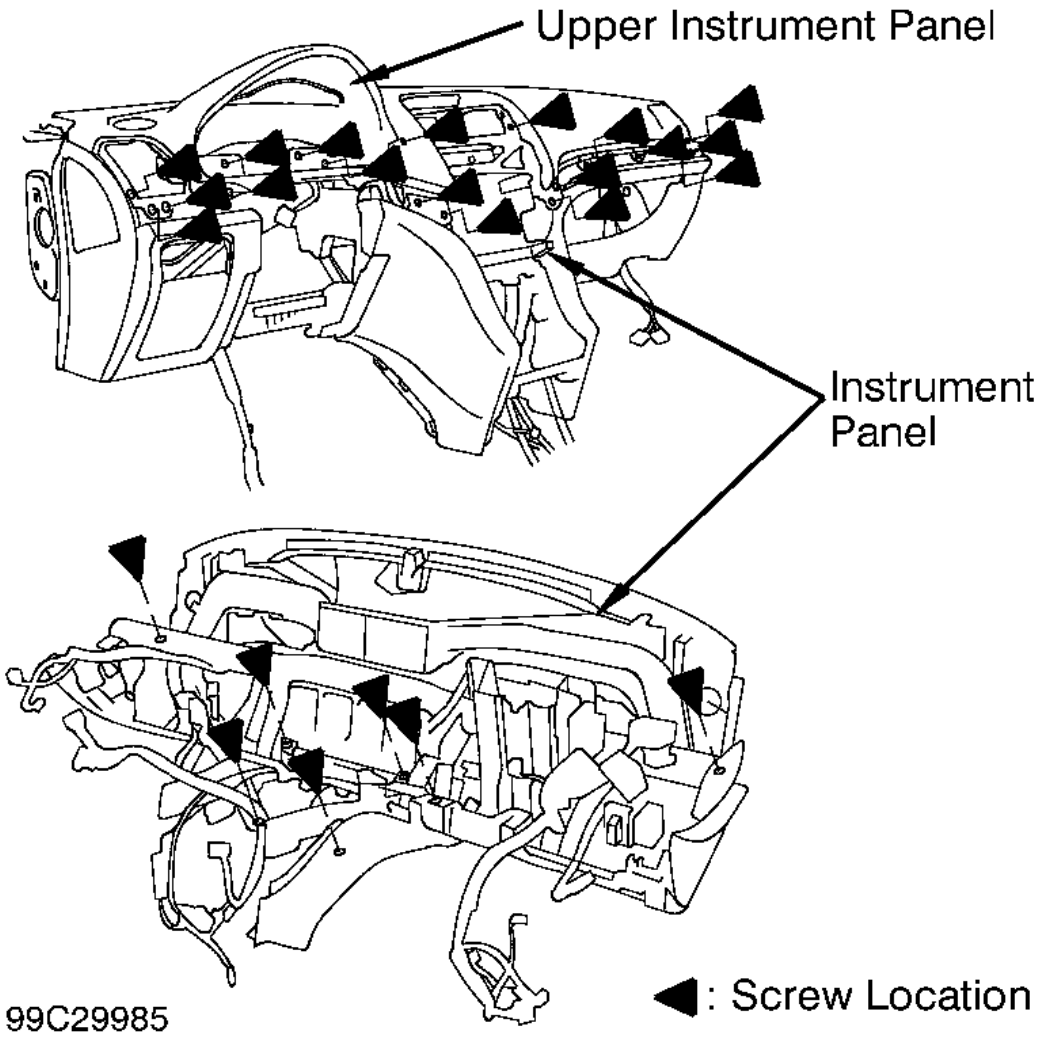


Fig. 21: Identifying Upper Instrument Panel Screw Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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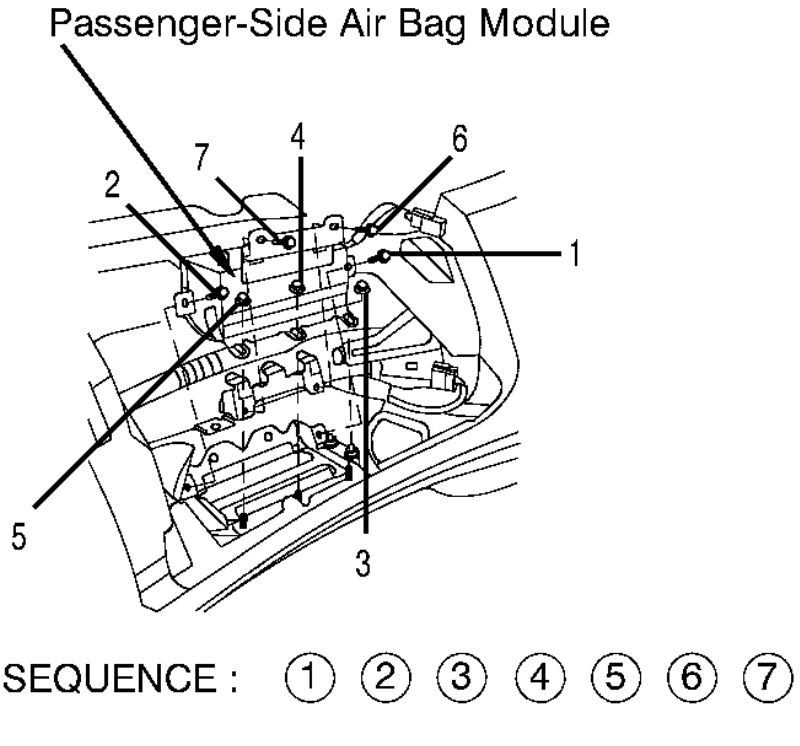


Fig. 22: Passenger-side Air Bag Module Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR IMPACT SENSORS (AFTER DEPLOYMENT)

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect appropriate side curtain air bag module connector. See **SIDE CURTAIN AIR BAG MODULES** .
2. Disconnect rear impact sensor from side curtain air bag subharness. Using T30 Torx bit, remove mounting screws and rear impact sensor. See **Fig. 23** .
3. To install, reverse removal procedure. Tighten rear impact sensor mounting screws to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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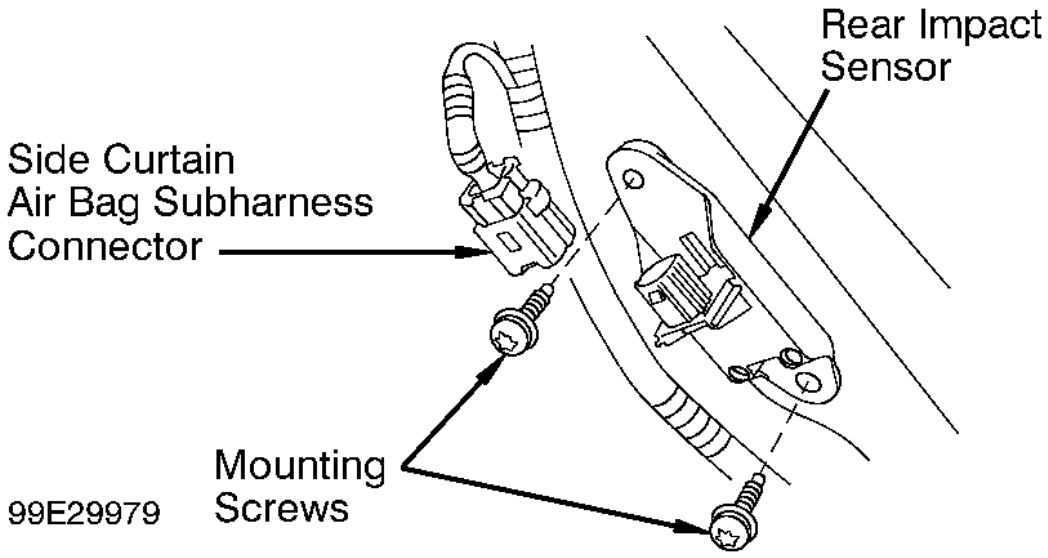


Fig. 23: Identifying Rear Impact Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SEAT BELT PRETENSIONERS

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Position appropriate front seat fully forward. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove seat belt upper and lower anchor bolts. Remove lower B-pillar trim panel. Disconnect side wire harness connector from seat belt pretensioner connector. See **Fig. 24** . Remove seat belt pretensioner mounting bolts and pretensioner.
2. To install, reverse removal procedure. Tighten seat belt pretensioner mounting bolts to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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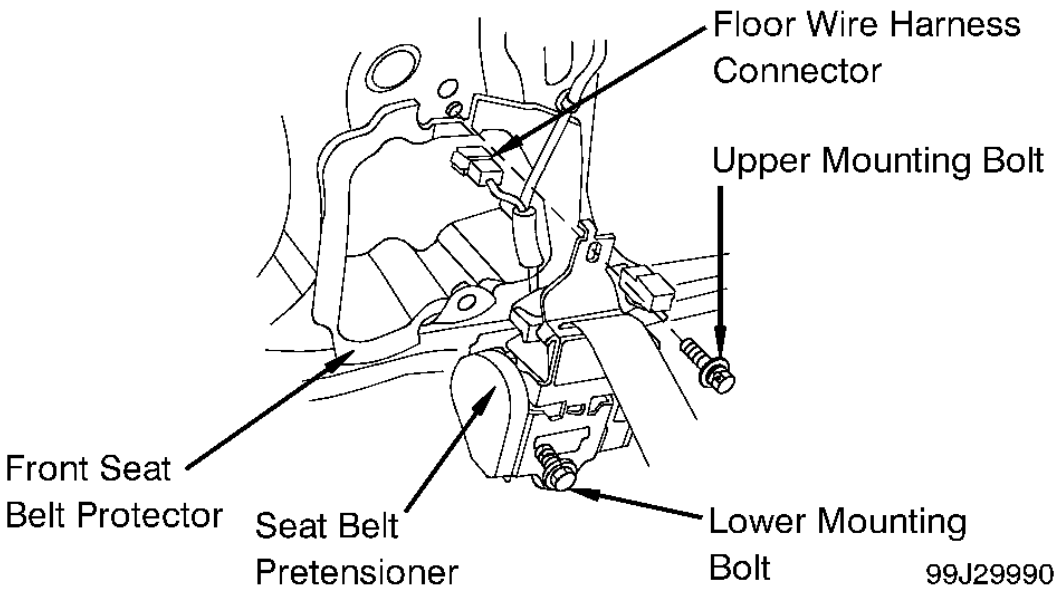


Fig. 24: Identifying Front Seat Belt Pretensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SIDE AIR BAG MODULES

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove appropriate front seat and seat back cover. Remove side air bag module mounting nuts and side air bag module. See **Fig. 25** .
2. To install, reverse removal procedure. Tighten side air bag module mounting nuts to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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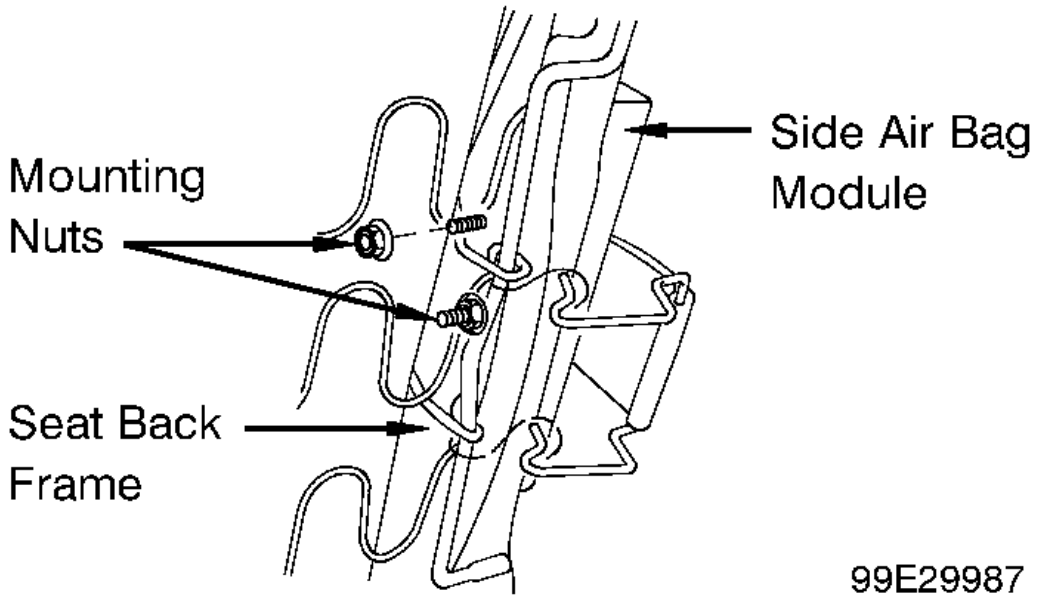


Fig. 25: Identifying Side Air Bag Module
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SIDE CURTAIN AIR BAG MODULES

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove headliner. See **HEADLINER** . Disconnect side curtain air bag module from roof wire harness. Remove mounting bolts and side curtain air bag module. See **Fig. 26** .
2. To install, reverse removal procedure. Tighten side curtain air bag module mounting bolts to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

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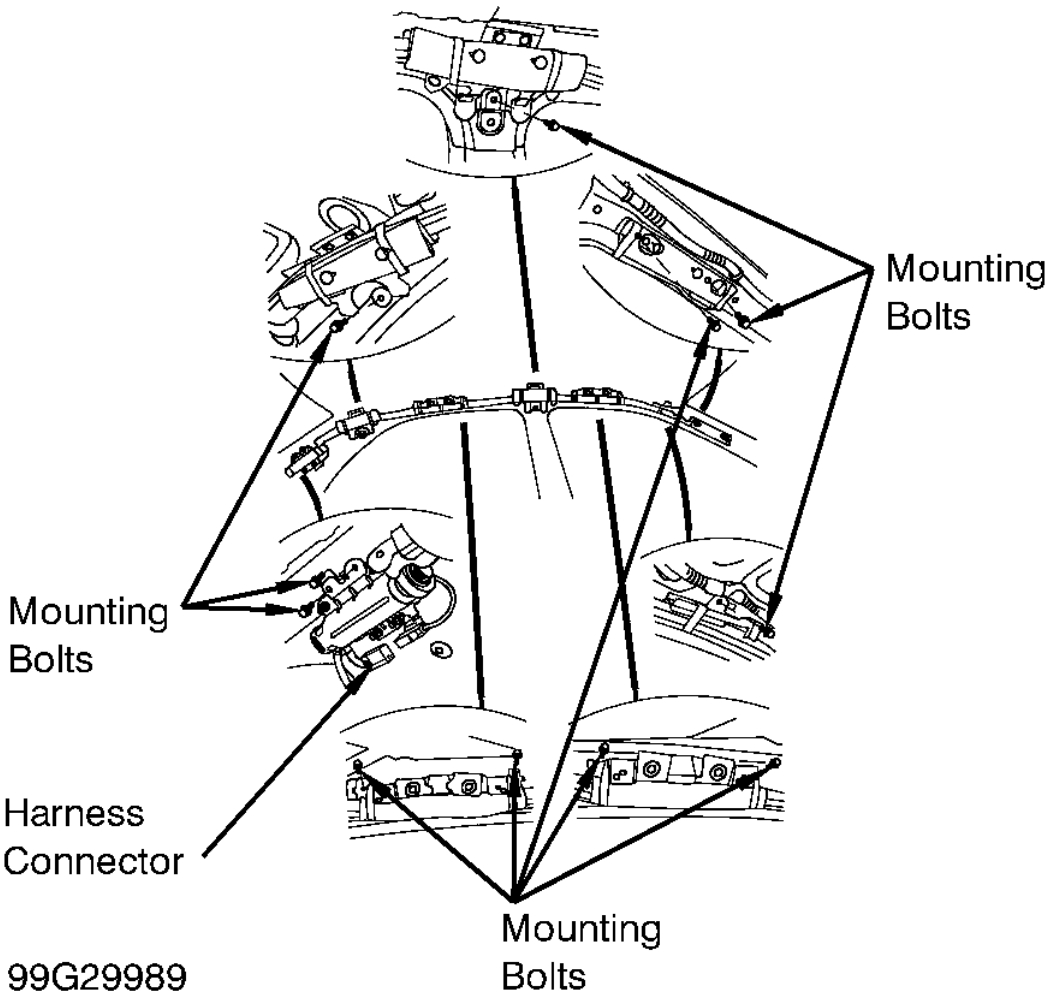


Fig. 26: Identifying Side Curtain Air Bag Module Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SIDE IMPACT SENSORS

Removal & Installation

WARNING: Accidental air bag deployment is possible. Personal injury may result. Disconnect side air bag connector from SRS floor harness connector before disconnecting side impact sensor connector. Avoid turning ignition on and connecting battery.

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Remove appropriate front seat assembly. Remove scuff plate and lower B-pillar trim panel. Turn up carpet and

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disconnect SRS floor harness connector from side impact sensor. Using T30 Torx bit, remove mounting screws and side impact sensor. See **Fig. 27** .

2. To install, reverse removal procedure. Tighten side impact sensor mounting screws to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM.

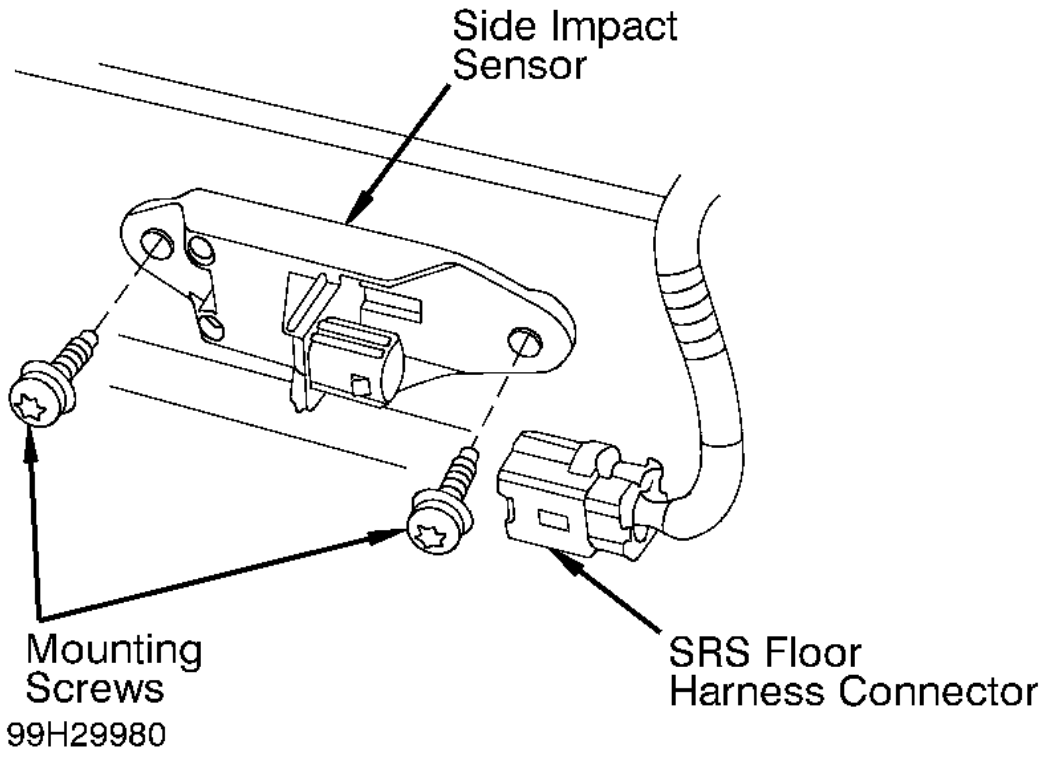


Fig. 27: Identifying Side Impact Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SRS UNIT

Removal & Installation

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right and left seat belt pretensioner connectors. See **SEAT BELT PRETENSIONERS** .
2. Remove center console, front panel and cup holder. See **CENTER CONSOLE** . Remove left and right center lower cover and heater ducts. Disconnect SRS unit connectors, remove mounting screws and remove SRS unit. See **Fig. 28** .
3. To install, reverse removal procedure. Tighten SRS unit mounting screws to specification. See **TORQUE SPECIFICATIONS** . Activate air bag system. See **ACTIVATING SYSTEM** under DISABLING &

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ACTIVATING AIR BAG SYSTEM. Initialize OPDS system. See **INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under DIAGNOSTICS.

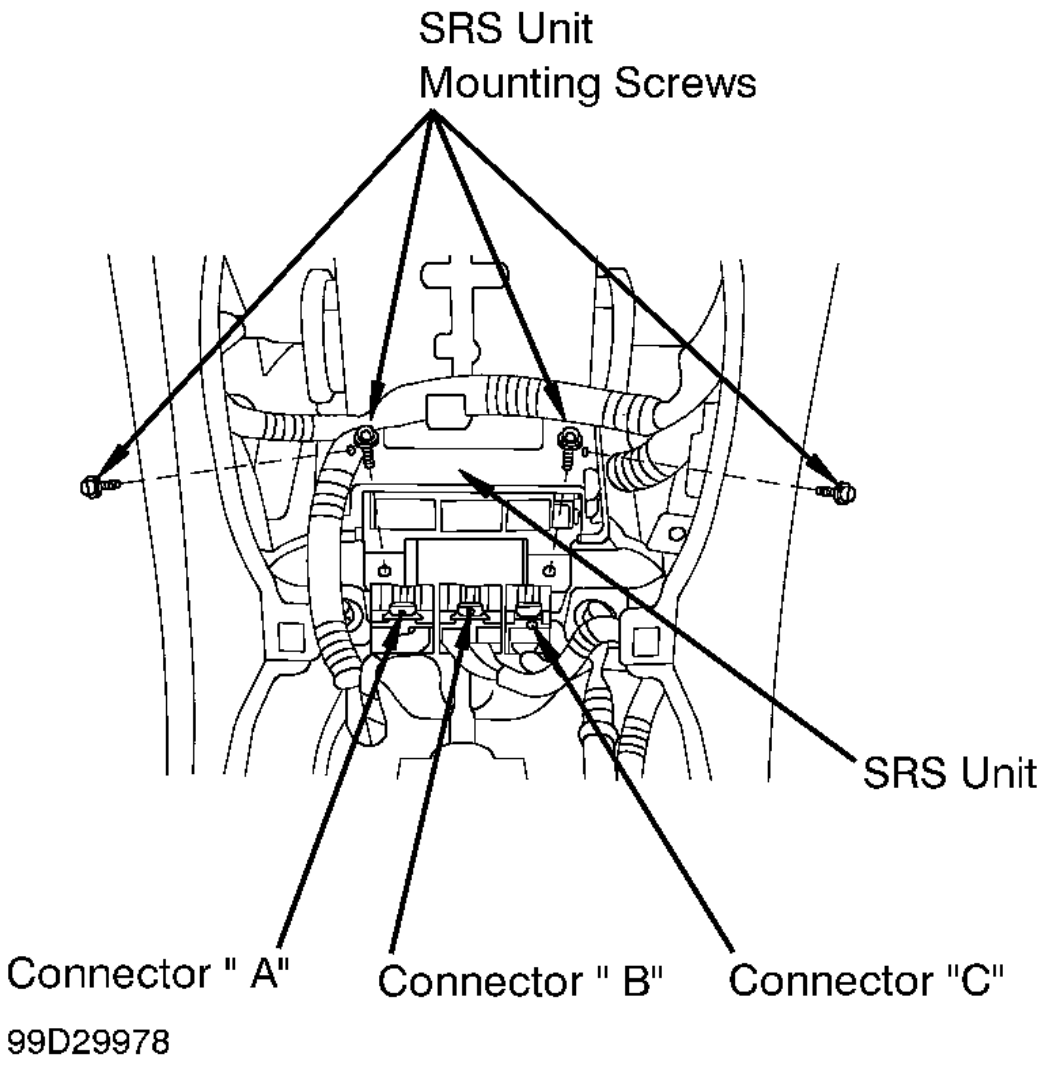


Fig. 28: Identifying SRS Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ADJUSTMENTS

CABLE REEL CENTERING

NOTE: New replacement cable reels are pre-centered.

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With cable reel installed, rotate cable reel clockwise until it stops. Rotate cable reel counterclockwise about 3 turns until arrow mark on cable reel label points straight up. See **Fig. 29** .

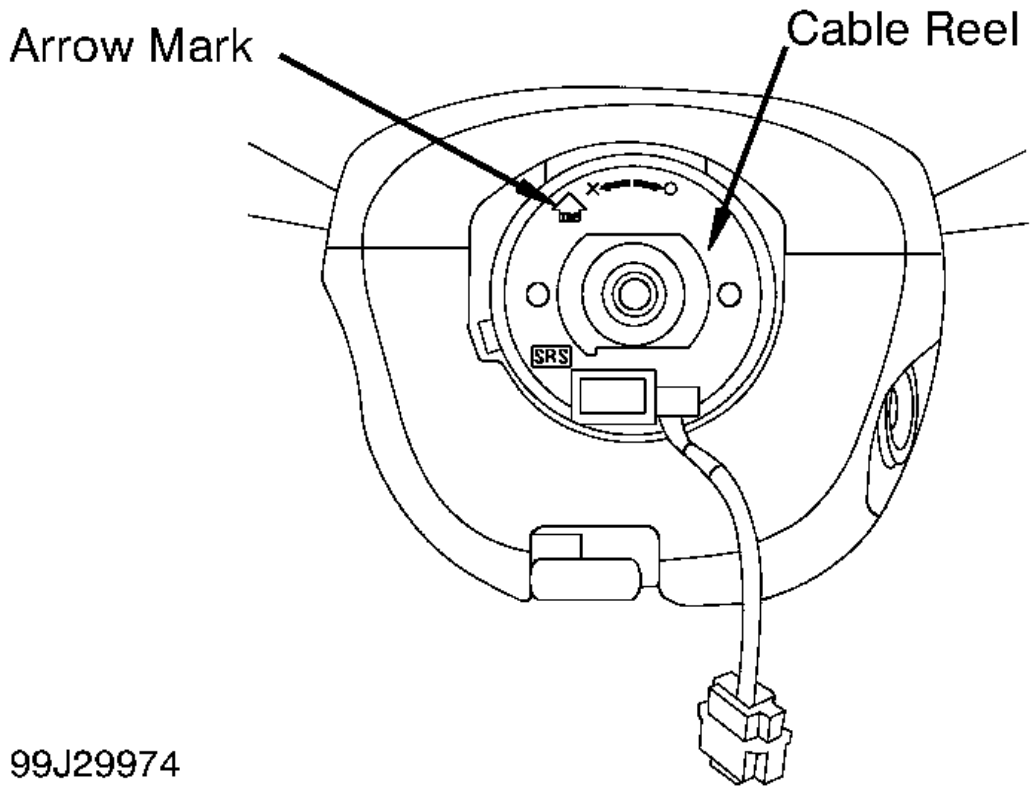


Fig. 29: Identifying Cable Reel Arrow Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WIRE REPAIR

NOTE: SRS wiring can be identified by special Yellow outer protective covering.

DO NOT attempt to modify, splice or repair SRS wiring. If there is an open or damage in SRS wiring or terminals, replace harness.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Brake pedal support member bolt	12 (16)

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Seat belt buckle anchor bolt	24 (32)
Seat belt lower anchor bolt	24 (32)
Seat belt pretensioner Lower mounting bolt	24 (32)
Seat belt shoulder anchor bolt	24 (32)
Steering column mounting bolts & nuts	29 (39)
Steering column yoke bolt	21 (28)
Steering wheel bolt	12 (16)
	INCH Lbs. (N.m)
Driver-side air bag module Torx bolts	87 (9.8)
Front impact sensor mounting screws	87 (9.8)
Passenger-side air bag mounting bolts & nuts	87 (9.8)
Rear impact sensor mounting screws	87 (9.8)
Seat belt pretensioner upper mounting bolt	87 (9.8)
Side air bag module mounting bolts	56 (6.3)
Side curtain air bag module mounting bolts	87 (9.8)
Side impact sensor mounting screws	87 (9.8)
SRS unit mounting screws	87 (9.8)
Sun visor retaining screws	30 (3.4)

DIAGNOSTICS

WARNING: Accidental air bag deployment is possible. Personal injury may result. Read and follow all WARNINGS and AIR BAG SAFETY PRECAUTIONS before working on air bag system or related components.
Accidental air bag deployment is possible. Personal injury may result. Use only digital multimeter with 10 milliamp or less output rating in smallest ohmmeter range.

SELF-DIAGNOSTIC SYSTEM

SRS includes a self-diagnostic function that checks system for faults in SRS components and related wiring. A fault exists if AIR BAG warning light on instrument cluster continues to glow more than 6 seconds after ignition is turned on, or glows or flashes while vehicle is driven.

RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)

NOTE: Ensure battery is sufficiently charged prior to performing diagnostic procedures. A dead or low-charged battery may cause inaccurate test values to be obtained.

When AIR BAG warning light is on, read DTC by connecting a HDS tester to 16-pin data link connector, and following tester prompts to read directly from HDS tester, or reading AIR BAG warning light flashes. If AIR BAG warning light stays on or does not come on, or side air bag cutoff warning light stays on, go to **DIAGNOSTIC TESTS** .

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Retrieving DTC Using Hds Tester

Ensure ignition is off. Connect HDS tester to 16-pin Data Link Connector (DLC), located under left side of instrument panel. Turn ignition on. Following manufacturers instructions, check DTCs. Turn ignition off and wait at least 10 seconds. Disconnect HDS tester from DLC. Perform appropriate diagnostic test. See **DIAGNOSTIC TROUBLE CODE (DTC) CHART** table.

Retrieving DTC Using AIR Bag Warning Light

1. Turn ignition off. Connect HDS tester to 16-pin data link connector, located under left side of instrument panel. Follow tester prompts in SCS menu.
2. Turn ignition on. AIR BAG warning light will come on for about 6 seconds and go off. DTC will be indicated next. DTC consists of a main code and a sub-code. Including most recent malfunction, up to 3 different malfunctions can be indicated. If AIR BAG warning light does not come on, check for short to ground or open in SCS circuit before troubleshooting SRS system.
3. In case of a continuous failure, DTC will be indicated repeatedly. In case of an intermittent failure, AIR BAG warning light will indicate DTC once, then will stay on. If both a continuous and an intermittent failure occur, both DTC's will be shown as continuous failure. If AIR BAG warning light comes on continuously and no DTC is detected, SRS system malfunction may be present.
4. Retrieve DTC. If DTCs are retrieved, go to DTC chart to continue diagnostics. See **DIAGNOSTIC TROUBLE CODE (DTC) CHART** table. Turn ignition switch to OFF position and wait 10 seconds. Disconnect HDS tester from data link connector.

ERASING DIAGNOSTIC TROUBLE CODE MEMORY

Erase Diagnostic Trouble Code (DTC) memory with HDS tester connected to data link 16-pin connector, or by connecting an SCS Service Connector (07PAZ-0010100) to Memory Erase Signal (MES) connector.

Erasing DTC Memory Using Hds Tester

Connect HDS tester to 16-pin Data Link Connector (DLC). Turn ignition switch to ON position. Select DTC CLEAR in TEST MODE MENU on HDS tester. Turn ignition switch to OFF position and wait at least 10 seconds. Disconnect HDS tester from DLC.

NOTE: Do not use a jumper wire in place of SCS service connector. Jumper wire may be difficult to connect and disconnect quickly enough.

Erasing DTC Memory Using SCS Service Connector

1. Turn ignition off. Connect SCS Service Connector (07PAZ-0010100) to Memory Erase Signal (MES) connector. See **Fig. 30** .
2. Turn ignition on. AIR BAG warning light will come on for about 6 seconds then go off.
3. Disconnect SCS service connector from MES connector within 4 seconds after AIR BAG warning light goes off. AIR BAG warning light will come on again.
4. Reconnect SCS service connector to MES connector within 4 seconds after AIR BAG warning light comes on. AIR BAG warning light will go off.

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5. Disconnect SCS service connector from MES connector within 4 seconds. AIR BAG warning light will indicate that memory is erased by blinking 2 times. Turn ignition off and wait 10 seconds. DTCs are erased if AIR BAG warning light comes on for 6 seconds and then goes out.

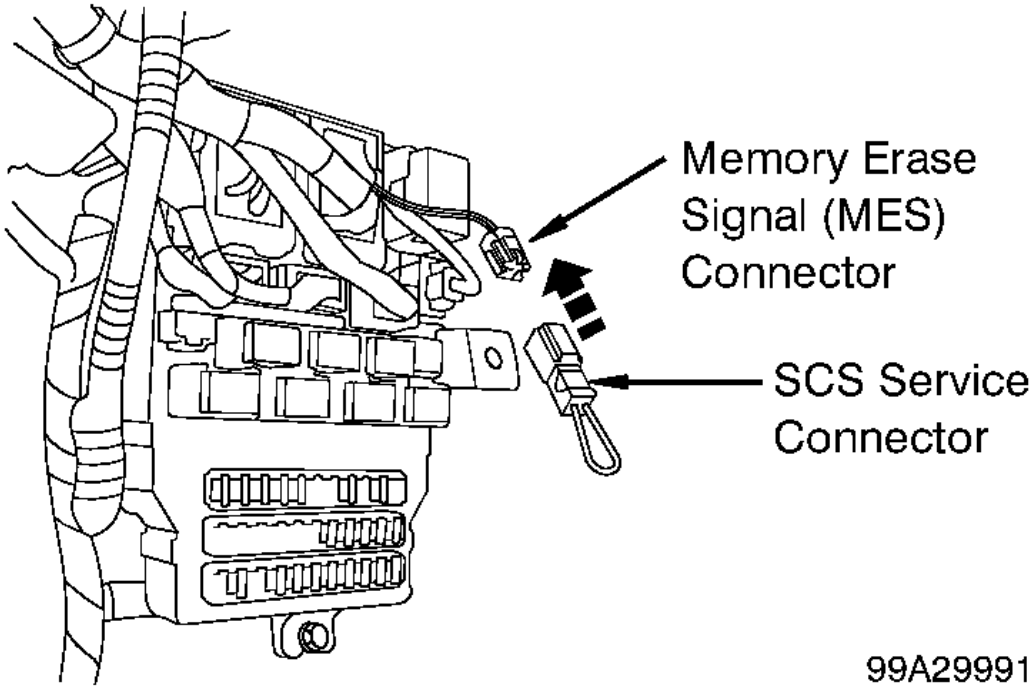


Fig. 30: Locating Memory Erase Signal (MES) Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TROUBLESHOOTING INTERMITTENT FAILURES

NOTE: If malfunction occurs, but does not recur, it will be stored in DTC memory as an intermittent failure, and AIR BAG warning light will come on.

1. Retrieve DTCs. Erase DTC memory. With vehicle in Neutral, start engine and let idle. AIR BAG warning light will come on for about 6 seconds and then go off. Shake wire harness and connector. Test drive vehicle (quick acceleration, quick braking, cornering), and turn steering wheel fully left and right, holding 5-10 seconds to determine cause of intermittent failure.
2. If problem recurs, AIR BAG warning light will stay on. If intermittent failure is not duplicated, system is okay at this time.

INTERMITTENT DTC 11-1 TO 11-9, 11-A & 11-B

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Check vehicle's service history. If any repair has been done requiring removal of sub-frame, steering wheel or steering rack, cable reel may have been incorrectly installed or damaged.

INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT

1. Using HDS tester, erase DTCs. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Ensure passenger's front seat is dry. Set seat back in normal position and ensure nothing is on seat. Ensure MES connector is not shorted.
2. With HDS tester connected to DLC, turn ignition on. From HDS tester menu, select SRS, then MISC TEST, then ADJUSTMENTS. Select OPDS INIT in ADJUSTMENTS menu. Follow screen prompts to initialize OPDS. Turn ignition off and disconnect HDS.
3. If OPDS system fails to initialize several times, replace OPDS sensor and retry. If OPDS system continues to fail to initialize, replace OPDS unit.

DEFEATING SHORT CONNECTOR

When SRS unit connector is disconnected, a short circuit is created in the connector to prevent air bag deployment. In certain diagnostic test situations, the circuit will be required to be open. When SRS Short Canceler (070AZ-SAA0100) is installed in specified connector cavities, short connector is defeated. See **Fig. 31** . Observe the following precautions, when using SRS short canceler:

- To prevent damage of the connector cavity, insert the SRS short canceler straight into the cavity, from the terminal side of connector.
- Before installing SRS short canceler, wash tool with neutral detergent, then blow-dry tool with air.
- DO NOT use SRS short canceler, if it is damaged.
- Ensure SRS short canceler is removed prior to reconnecting connector.

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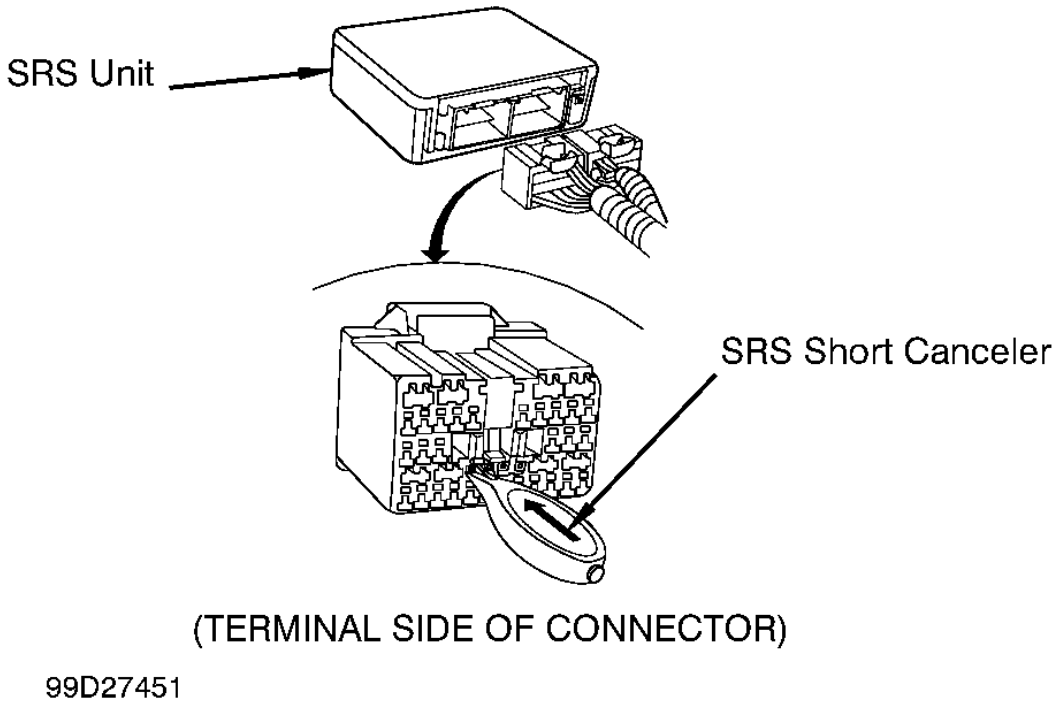


Fig. 31: Installing SRS Short Canceler
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DIAGNOSTIC TROUBLE CODE (DTC) CHART

DTC(1)	Possible Cause
11-1	Open or increased resistance in driver-side air bag first inflator
11-3	Short to another wire or decreased resistance in driver-side air bag first inflator
11-4	Open or increased resistance in driver-side air bag second inflator
11-6	Short to another wire or decreased resistance in driver-side air bag second inflator
11-8	Short to power in driver-side air bag first inflator
11-9	Short to ground in driver-side air bag inflator
11-A	Short to power in driver-side air bag second inflator
11-B	Short to ground in driver-side air bag inflator
12-1	Open or increased resistance in passenger-side air bag first inflator
12-3	Short to another wire or decreased resistance in passenger-side air bag first inflator
12-4	Open or increased resistance in passenger-side air bag first inflator
12-6	Short to another wire or decreased resistance in passenger-side air bag second inflator
12-8	Short to power in passenger-side air bag first inflator
12-9	Short to ground in passenger-side air bag first inflator
12-A	Short to power in passenger-side air bag second inflator

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12-B	Short to ground in passenger-side air bag second inflator
21-1	Open or increased resistance in left front pretensioner
21-3	Short to another wire or decreased resistance in left front pretensioner
21-8	Short to power in left front pretensioner
21-9	Short to ground in left front pretensioner
22-1	Open or increased resistance in right front pretensioner
22-3	Short to another wire or decreased resistance in right front pretensioner
22-8	Short to power in right front pretensioner
22-9	Short to ground in right front pretensioner
31-1	Open or increased resistance in left side air bag inflator
31-3	Short to another wire or decreased resistance in left side air bag inflator
31-8	Short to power in left side air bag inflator
31-9	Short to ground in left side air bag inflator
32-1	Open or increased resistance in right side air bag inflator
32-3	Short to another wire or decreased resistance in right side air bag inflator
32-8	Short to power in right side air bag inflator
32-9	Short to ground in right side air bag inflator
33-1	Open or increased resistance in left side curtain air bag inflator
33-3	Short to another wire or decreased resistance in left side curtain air bag inflator
33-8	Short to power in left side curtain air bag inflator
33-9	Short to ground in left side curtain air bag inflator
34-1	Open or increased resistance in right side curtain air bag inflator
34-3	Short to another wire or decreased resistance in right side curtain air bag inflator
34-8	Short to power in right side curtain air bag inflator
33-9	Short to ground in right side curtain air bag inflator
41-1	No signal from left front impact sensor
41-2	(2) Faulty left front impact sensor
41-3	(2) Faulty left front impact sensor
41-8	(2) Faulty left front impact sensor
41-B	(2) Faulty left front impact sensor
42-1	No signal from right front impact sensor
42-2	(2) Faulty right front impact sensor
42-3	(2) Faulty right front impact sensor
42-8	(2) Faulty right front impact sensor
42-B	(2) Faulty right front impact sensor
43-1	No signal from left side impact sensor
43-2	(2) Faulty left side impact sensor
43-3	(2) Faulty left side impact sensor
43-8	(2) Faulty left side impact sensor

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43-B	(2) Faulty left side impact sensor
44-1	No signal from right side impact sensor
44-2	(2) Faulty right side impact sensor
44-3	(2) Faulty right side impact sensor
44-8	(2) Faulty right side impact sensor
44-B	(2) Faulty right side impact sensor
45-1	No signal from left rear impact sensor
45-2	(2) Faulty left rear impact sensor
45-3	(2) Faulty left rear impact sensor
45-8	(2) Faulty left rear impact sensor
45-B	(2) Faulty left rear impact sensor
46-1	No signal from right rear impact sensor
46-2	(2) Faulty right rear impact sensor
46-3	(2) Faulty right rear impact sensor
46-8	(2) Faulty right rear impact sensor
46-B	(2) Faulty right rear impact sensor
51-2	(3) Internal failure of SRS unit
51-4	(3) Internal failure of SRS unit
52-8	(3) Internal failure of SRS unit
52-9	(3) Internal failure of SRS unit
52-A	(3) Internal failure of SRS unit
52-B	(3) Internal failure of SRS unit
52-C	(3) Internal failure of SRS unit
52-D	(3) Internal failure of SRS unit
52-E	(3) Internal failure of SRS unit
52-F	(3) Internal failure of SRS unit
53-1	(3) Internal failure of SRS unit
53-2	(3) Internal failure of SRS unit
53-3	(3) Internal failure of SRS unit
53-4	(3) Internal failure of SRS unit
54-1	(3) Internal failure of SRS unit
54-2	(3) Internal failure of SRS unit
54-3	(3) Internal failure of SRS unit
54-4	(3) Internal failure of SRS unit
54-5	(3) Internal failure of SRS unit

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54-6	(3) Internal failure of SRS unit
54-7	(3) Internal failure of SRS unit
55-1	(3) Internal failure of SRS unit
55-2	(3) Internal failure of SRS unit
55-3	(3) Internal failure of SRS unit
55-4	(3) Internal failure of SRS unit
61-1	Open in left front seat belt switch
61-2	Short in left front seat belt switch
62-1	Open in right front seat belt switch
62-2	Open in right front seat belt switch
85-4	(4) Faulty OPDS unit
85-5	(4) Faulty OPDS unit
85-61	No signal from OPDS unit
85-62	Non-stipulated response data
85-63	(4) Faulty OPDS unit
85-64	(4) Faulty OPDS unit
85-71	(5) OPDS unit not initialized
85-78	(5) OPDS unit not initialized
85-79	OPDS drift check failure
86-1	Faulty seat back OPDS sensor
86-2	Faulty seat support OPDS sensor
87-31,	Side air bag cut-off indicator stays on/off
87-32	Side air bag cut-off indicator stays on/off
91-1	(3) Internal failure of SRS unit
A1-1	Faulty power supply (VA line)
A2-1	Faulty power supply (VB line)
E4-11	(6) right side air bag deployed
F1-11	(6) Driver-side air bag & left front seat belt pretensioner deployed
F2-11	(6) Passenger-side air bag & right front seat belt pretensioner deployed
F3-11	(6) left side air bag deployed
F4-11	(6) right side air bag deployed

(1) An alpha character (A-F) or numeric character (0-9) may follow DTC. This character is unrelated to troubleshooting; it designates SRS unit manufacturer and other details used for product analysis.

(2) Clear DTCs. Turn ignition switch to ON position. If AIR BAG warning light stays ON, replace appropriate impact sensor. If AIR BAG warning light does not stay on, check for intermittent problem. See **TROUBLESHOOTING INTERMITTENT FAILURES** .

(3) Before replacing SRS unit, ensure battery is fully charged. Clear DTCs. Turn ignition switch to ON position. If AIR BAG warning light stays ON, replace SRS unit. If AIR BAG warning light does not

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stay on, check for intermittent problem. See **TROUBLESHOOTING INTERMITTENT FAILURES** .

(4) Replace Occupant Position Detection System (OPDS) unit. See **OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under REMOVAL & INSTALLATION.

(5) Perform Occupant Position Detection System (OPDS) unit initialization procedure. See **INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under DIAGNOSTICS.

(6) SRS unit must be replaced if any air bags and/or pretensioners have deployed.

DIAGNOSTIC TESTS

WARNING: Accidental air bag deployment is possible. Personal injury may result. Read and follow all WARNINGS and AIR BAG SAFETY PRECAUTIONS before working on air bag system or related components. Bumping SRS unit can cause air bags to accidently deploy. Personal injury may result. Whenever ignition is on, or has been turned off for less than 3 minutes, be careful not to bump SRS unit

AIR BAG WARNING LIGHT DOES NOT COME ON

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Turn ignition on, and check whether other indicator lights come on or not (brake system, etc.). If other indicator lights do not operate, go to step 5 . If other indicator lights operate, go to next step.
2. Turn ignition off. Access instrument cluster. See **INSTRUMENT CLUSTER** under REMOVAL & INSTALLATION. Disconnect instrument cluster connectors "A" and "B". See **Fig. 32** . Measure resistance between ground and instrument cluster connector "A", terminal No. 18 (Black wire). If resistance is 0-1.0 ohm, go to next step. If resistance is not 0-1.0 ohm, check for open in Black wire or faulty ground terminal. See **WIRING DIAGRAMS** . If ground terminal is okay, replace appropriate wire harness.
3. Reconnect negative battery, if disconnected. Connect voltmeter between ground and instrument cluster connector "A", terminal No. 7 (Pink wire). Turn ignition on and observe voltmeter. Voltage should be one volt for first 6 seconds, then more than 11 volts. If voltage is not as specified, go to next step. If voltage is as specified, replace instrument cluster.
4. Turn ignition off. Access SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. Disconnect SRS unit connector "A". See **Fig. 33** . Connect voltmeter between ground and instrument cluster connector "A", terminal No. 7. (Pink wire). Turn ignition on. If voltage is less than 0.5 volt, replace SRS unit. If voltage is more than 0.5 volt, check for short to voltage in Pink wire or junction connector. Replace appropriate wire harness.
5. Turn ignition off. Check fuse No. 21 (7.5-amp) in under-dash fuse/relay box. If fuse is blown, go to step 8 . If fuse is okay, go to next step.
6. Connect voltmeter between ground and instrument cluster connector "A", terminal No. 10 (Yellow wire). Turn ignition on and observe voltmeter. Go to next step.
7. If battery voltage is present, check for faulty SRS indicator circuit in instrument cluster or poor contact at instrument cluster connector "A" and instrument cluster. If connections are okay, replace instrument

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cluster. If battery is not present, check for open in driver-side under-dash fuse/relay box fuse No. 21 circuit, open in Yellow wire of instrument cluster wire harness or in left side wire harness. If driver-side under-dash fuse/relay box is okay, replace appropriate wire harness.

8. Replace fuse No. 21. Turn ignition on and recheck AIR BAG warning light. If warning light illuminates, system is okay at this time. If warning light does not illuminate, check for short to ground in driver-side under-dash fuse/relay box fuse No. 21 line. Repair or replace as necessary.

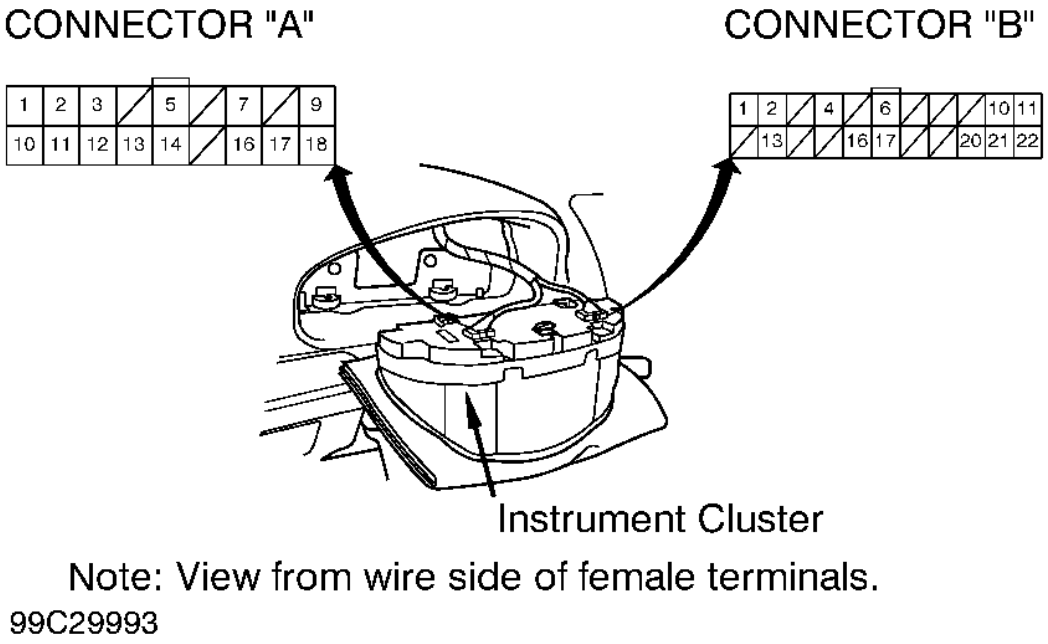


Fig. 32: Identifying Instrument Cluster Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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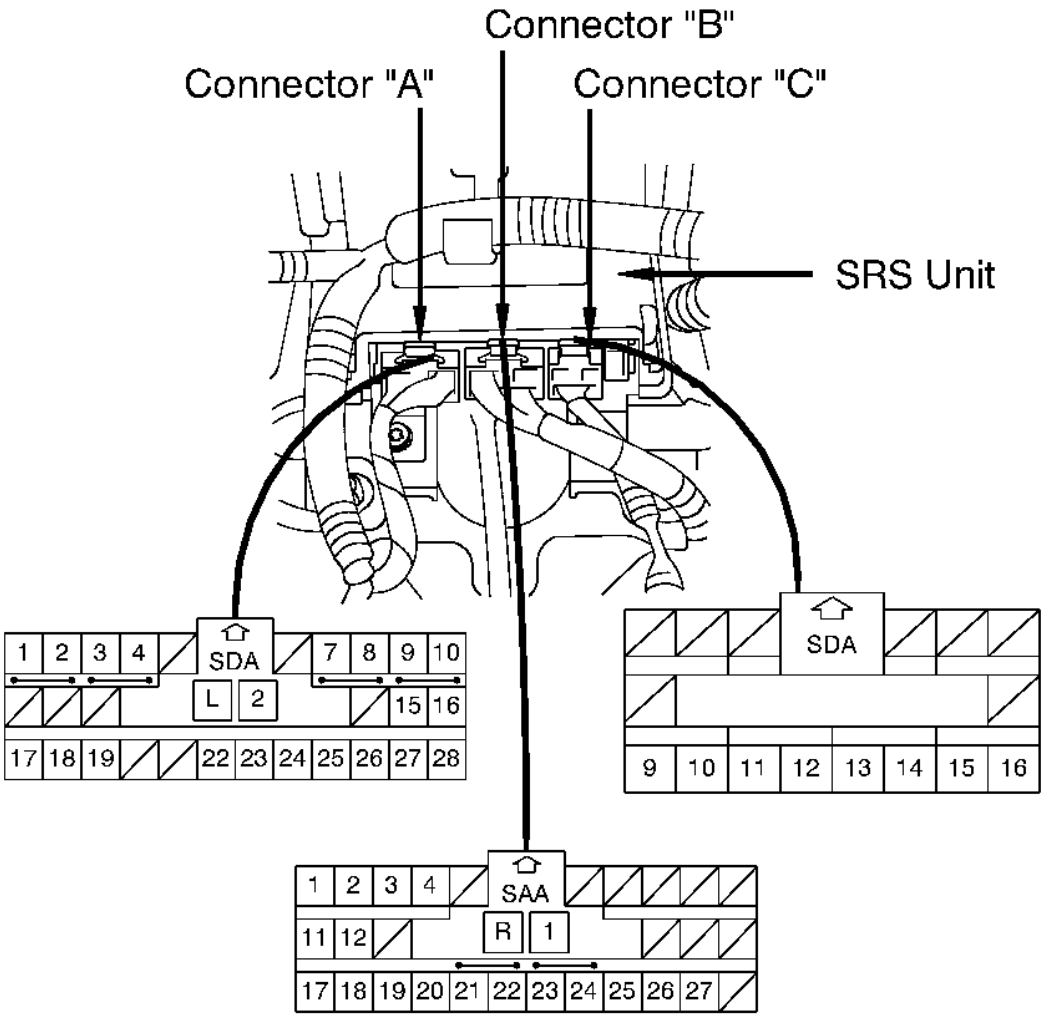


Fig. 33: Identifying SRS Unit Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

AIR BAG WARNING LIGHT STAYS ON

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Retrieve DTCs. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTCs no are retrieved, go to next step. If DTCs are retrieved, go to appropriate DTC to continue diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) CHART** table.
2. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL &

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INSTALLATION. Access and disconnect instrument cluster connector "A". See **INSTRUMENT CLUSTER** under REMOVAL & INSTALLATION.

3. Measure resistance between instrument cluster connector "A", terminal No. 7 (Pink wire) and SRS unit connector "A" terminal No. 19 (Blue wire). See **Fig. 32** & **Fig. 33** . If resistance is less than one ohm, go to next step. If resistance is more than one ohm, check both connectors for poor connection. If connection is okay, replace dashboard wire harness.
4. Reconnect battery. Reconnect instrument cluster harness connectors. Turn ignition on. Install jumper wire between instrument cluster connector "A", terminals No. 7 and 10. If AIR BAG warning light turns off, check for faulty at SRS unit connector "A". If connector and connection is okay, replace SRS unit. If AIR BAG warning light does not turn off, check for faulty connection at instrument cluster connector "A". If connector and connection is okay, replace instrument cluster.

SIDE AIR BAG WARNING LIGHT STAYS ON AFTER BULB CHECK

Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Ensure nothing is on right front seat. If side AIR BAG warning light stays on after ignition switch is turned to ON position, initialize Occupant Position Detection System (OPDS) unit. See **INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under DIAGNOSTICS. If after initializing OPDS unit, side AIR BAG warning light stays on, replace OPDS sensor, located in seat back pad. If after initializing OPDS unit, side AIR BAG warning light operates normally, system is functioning normally at this time. Also, check for **DTC 87-31, 87-32** .

SIDE AIR BAG WARNING FLASHING

Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Ensure nothing is on right front seat. If side AIR BAG warning light stays on after ignition switch is turned to ON position, initialize Occupant Position Detection System (OPDS) unit. See **INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under DIAGNOSTICS. If after initializing OPDS unit, side AIR BAG warning light stays on, replace OPDS sensor, located in seat back pad. If after initializing OPDS unit, side AIR BAG warning light operates normally, system is functioning normally at this time. Also, check for **DTC 87-31, 87-32** .

DTC 11-1, 11-4

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position and check that AIR BAG warning light comes on for about 6 seconds and then goes off. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect driver-side air bag module connector from upper cable reel connector. See **Fig. 4** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to upper cable reel connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 11-1 or 11-4 is indicated, go to next step. If DTC 11-1 or 11-4 is not indicated, replace driver-side air bag. See **DRIVER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect dashboard wire harness

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connector from lower cable reel connector. Connect SRS simulator lead and SRS inflator simulator to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. If DTC 11-1 or 11-4 is indicated, go to next step. If DTC 11-1 or 11-4 is not indicated, replace cable reel. See **CABLE REEL** under REMOVAL & INSTALLATION.

4. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit harness connector "A" from SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Measure resistance between each pair of SRS inflator simulator connector terminals. If resistance is less than one ohm, check connection between SRS unit connector "A" and SRS unit. If connection is okay, replace SRS unit. If resistance is more than one ohm, replace appropriate wire harness. See **WIRING DIAGRAMS** .

DTC 11-3, 11-6

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect driver-side air bag connector from upper cable reel connector. See **Fig. 4** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to upper cable reel connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 11-3 or 11-6 is indicated, go to next step. If DTC 11-3 or 11-6 is not indicated, replace driver-side air bag module. See **DRIVER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect dashboard wire harness connector from lower cable reel connector. Connect SRS simulator lead and SRS inflator simulator to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. If DTC 11-3 or 11-6 is indicated, go to next step. If DTC 11-3 or 11-6 is not indicated, replace cable reel. See **CABLE REEL** under REMOVAL & INSTALLATION.
4. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "A" from SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. Defeat short connector between SRS unit connector "A" terminals No. 1 and 2, and terminal No. 7 and 8. See **DEFEATING SHORT CONNECTOR** under DIAGNOSTICS. Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Measure resistance between each pair of SRS inflator simulator connector terminals. If resistance is at least one megohm, replace SRS unit. If resistance is less than one megohm, replace dashboard wire harness.

DTC 11-8, 11-A

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

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2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect driver-side air bag connector from upper cable reel connector. See **Fig. 4** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to upper cable reel connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 11-8 or 11-A is indicated, go to next step. If DTC 11-8 or 11-A is not indicated, replace driver-side air bag module. See **DRIVER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect dashboard wire harness connector from lower cable reel connector. Connect SRS simulator lead and SRS inflator simulator to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. If DTC 11-8 or 11-A is indicated, go to next step. If DTC 11-8 or 11-A is not indicated, replace cable reel. See **CABLE REEL** under REMOVAL & INSTALLATION.
4. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Reconnect negative battery cable. Turn ignition switch to ON position. Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Measure voltage between ground and each SRS inflator simulator connector terminal. If voltage is less than 0.5 volt at all terminals, replace SRS unit. If voltage is more than 0.5 volt at any terminal, replace dashboard wire harness.

DTC 11-9, 11-B

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect driver-side air bag connector from upper cable reel connector. See **Fig. 4** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to upper cable reel connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 11-9 or 11-B is indicated, go to next step. If DTC 11-9 or 11-B is not indicated, replace driver-side air bag module. See **DRIVER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect dashboard wire harness connector from lower cable reel connector. Connect SRS simulator lead and SRS inflator simulator to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. If DTC 11-9 or 11-B is indicated, go to next step. If DTC 11-9 or 11-B is not indicated, replace cable reel. See **CABLE REEL** under REMOVAL & INSTALLATION.
4. Disable air bag system. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS inflator simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Measure resistance between ground and each SRS inflator simulator connector terminal. If resistance is more than one megohm at all terminals, replace SRS unit. If resistance is less than one megohm at any terminal, replace dashboard wire harness.

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DTC 12-1, 12-4

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect passenger-side air bag module connector from dashboard wire harness. See **Fig. 5** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 12-1 or 12-4 is indicated, go to next step. If DTC 12-1 or 12-4 is not indicated, replace passenger-side air bag module. See **PASSENGER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Measure resistance between each pair of SRS inflator simulator connector terminals. If resistance is less than one ohm, check connection between SRS unit connector "A" and SRS unit. If connection is okay, replace SRS unit. If resistance is more than one ohm, replace dashboard wire harness.

DTC 12-3, 12-6

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect passenger-side air bag module connector from dashboard wire harness. See **Fig. 5** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 12-3 or 12-6 is indicated, go to next step. If DTC 12-3 or 12-6 is not indicated, replace passenger-side air bag module. See **PASSENGER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Disable air bag system. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Defeat short connector between SRS unit connector "A" terminals No. 3 and 4, or terminals No. 9 and 10. See **DEFEATING SHORT CONNECTOR** under DIAGNOSTICS. Measure resistance between each pair of SRS inflator simulator connector terminals. If resistance is more than one megohm, replace SRS unit. If resistance is less than one megohm, replace dashboard wire harness.

DTC 12-8, 12-A

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1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect passenger-side air bag module connector from dashboard wire harness. See **Fig. 5** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 12-4 or 12-A is indicated, go to next step. If DTC 12-4 or 12-A is not indicated, replace passenger-side air bag module. See **PASSENGER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Disable air bag system. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Reconnect negative battery cable. Turn ignition switch to ON position. Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Measure voltage between ground and each SRS inflator simulator connector terminal. If voltage is less than 0.5 volt at all terminals, replace SRS unit. If voltage is more than 0.5 volt at any terminal, replace dashboard wire harness.

DTC 12-9, 12-B

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect passenger-side air bag module connector from dashboard wire harness. See **Fig. 5** . Connect SRS Simulator Lead (07XAZ-SZ30100) and SRS Inflator Simulator (07SAZ-TB4011A) to dashboard wire harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 12-9 or 12-B is indicated, go to next step. If DTC 12-9 or 12-B is not indicated, replace passenger-side air bag module. See **PASSENGER-SIDE AIR BAG MODULE** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from dashboard wire harness connector. Measure resistance between ground and each SRS inflator simulator connector terminal. If resistance is more than one megohm at all terminals, replace SRS unit. If resistance is less than one megohm at any terminal, replace dashboard wire harness.

DTC 21-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning

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light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left seat belt pretensioner connector from SRS left floor harness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 21-1 is indicated, go to next step. If DTC 21-1 is not indicated, replace left seat belt pretensioner.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right seat belt pretensioner connector from SRS right floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Measure resistance between SRS unit connector "B", terminals No. 1 and 2. If resistance is 2-3 ohms, check connection between SRS unit connector "B" and SRS unit. If connection is okay, replace SRS unit. If resistance is not 2-3 ohms, replace floor harness.

DTC 21-3

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left seat belt pretensioner connector from SRS left floor harness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to side harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 21-3 is indicated, go to next step. If DTC 21-3 is not indicated, replace left seat belt pretensioner.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right seat belt pretensioner connector from SRS right floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect inflator simulator from left seat belt pretensioner connector. Measure resistance between SRS unit connector "B", terminals No. 1 and 2. If resistance is more than one megohm, replace SRS unit. If resistance is less than one megohm, replace floor harness.

DTC 21-8

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left seat belt pretensioner

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connector from SRS side harness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to left floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 21-8 is indicated, go to next step. If DTC 21-8 is not indicated, replace left seat belt pretensioner.

3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right seat belt pretensioner connector from SRS right floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect inflator simulator from left floor harness. Reconnect negative battery cable. Turn ignition switch to ON position. Measure voltage between ground and SRS unit connector "B", terminals No. 1 and 2. If voltage is less than 0.5 volts at both terminals, replace SRS unit. If voltage is more than 0.5 volts at either terminal, replace floor harness.

DTC 21-9

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left seat belt pretensioner connector from SRS left floor harness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to left floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 21-9 is indicated, go to next step. If DTC 21-9 is not indicated, replace left seat belt pretensioner.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right seat belt pretensioner connector from SRS right side floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect inflator simulator from left floor harness connector. Measure resistance between ground and SRS unit connector "B", terminals No. 1 and 2. If resistance is more than one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace floor harness.

DTC 22-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right seat belt pretensioner connector from SRS right floor harness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to right floor harness connector. Reconnect negative battery cable. Erase

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DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 22-1 is indicated, go to next step. If DTC 22-1 is not indicated, replace right seat belt pretensioner.

3. Turn ignition switch to OFF position. Disable air bag system. Disconnect left seat belt pretensioner connector from SRS left side floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Measure resistance between SRS unit connector "B", terminals No. 3 and 4. If resistance is 2-3 ohms, replace SRS unit. If resistance is not 2-3 ohms, replace floor harness.

DTC 22-3

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right seat belt pretensioner connector from SRS right floor harness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 22-3 is indicated, go to next step. If DTC 22-3 is not indicated, replace right seat belt pretensioner.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect left seat belt pretensioner connector from SRS left floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect inflator simulator from right seat belt pretensioner connector. Measure resistance between SRS unit connector "B", terminals No. 3 and 4. If resistance is more than one megohm, replace SRS unit. If resistance is less than one megohm, replace floor harness.

DTC 22-8

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right seat belt pretensioner connector from SRS right floor harness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 22-8 is indicated, go to next step. If DTC 22-8 is not indicated, replace right seat belt pretensioner.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect left seat belt pretensioner

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connector from SRS left floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect inflator simulator from right floor harness. Reconnect negative battery cable. Turn ignition switch to ON position. Measure voltage between ground and SRS unit connector "B", terminals No. 3 and 4. If voltage is less than 0.5 volts at both terminals, replace SRS unit. If voltage is more than 0.5 volts at either terminal, replace floor harness.

DTC 22-9

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right seat belt pretensioner connector from SRS right side subharness. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Connect SRS Simulator Lead (07TAZ-SZ5011A) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 22-9 is indicated, go to next step. If DTC 22-9 is not indicated, replace right seat belt pretensioner.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect left seat belt pretensioner connector from SRS left side floor harness. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect inflator simulator from right floor harness connector. Measure resistance between ground and SRS unit connector "B", terminals No. 3 and 4. If resistance is more than one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace floor harness.

DTC 31-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect left side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 31-1 is indicated, go to next step. If DTC 31-1 is not indicated, replace left side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from left floor harness connector. Measure resistance between SRS inflator simulator lead connector

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terminals. If resistance is less than one ohm, check for poor contact between SRS unit connector "B" and SRS unit. If connection is okay, replace SRS unit. If resistance is more than one ohm, replace floor harness.

DTC 31-3

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect left side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 31-3 is indicated, go to next step. If DTC 31-3 is not indicated, replace left side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Connect Short Canceller (070AZ-SAA0100) between SRS unit connector "B", terminals No. 9 and 10. Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from left floor harness connector. Measure resistance between SRS inflator simulator lead connector terminals. If resistance is at least one megohm, check for poor contact between SRS unit connector "B" and SRS unit. If connection is okay, replace SRS unit. If resistance is less than one megohm, replace floor harness.

DTC 31-8

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect left side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 31-8 is indicated, go to next step. If DTC 31-8 is not indicated, replace left side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Connect negative battery cable. Remove SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from left floor harness connector. Turn ignition switch to ON position.

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Measure voltage between ground and each SRS inflator simulator connector terminals. If voltage is less than 0.5 volt at both terminals, replace SRS unit. If voltage is more than 0.5 volt at either terminal, replace floor harness.

DTC 31-9

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect left side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 31-9 is indicated, go to next step. If DTC 31-9 is not indicated, replace left side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from left side air bag connector. Measure resistance between ground and SRS inflator simulator lead connector terminals. If resistance is more than one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace floor harness.

DTC 32-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect left side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 32-1 is indicated, go to next step. If DTC 32-1 is not indicated, replace right side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from right floor harness connector. Measure resistance between SRS inflator simulator lead connector terminals. If resistance is less than one ohm, check for poor contact between SRS unit connector "B" and SRS unit. If connection is okay, replace SRS unit. If resistance is more than one ohm, replace floor

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harness.

DTC 32-3

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect left side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 32-3 is indicated, go to next step. If DTC 32-3 is not indicated, replace right side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from right floor harness connector. Connect Short Canceller (070AZ-SAA0100) between SRS unit connector "B", terminals No. 21 and 22. Measure resistance between SRS inflator simulator lead connector terminals. If resistance is at least one megohm, check for poor contact between SRS unit connector "B" and SRS unit. If connection is okay, replace SRS unit. If resistance is less than one megohm, replace floor harness.

DTC 32-8

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect left side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 32-8 is indicated, go to next step. If DTC 32-8 is not indicated, replace right side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Connect negative battery cable. Remove SRS inflator simulator from SRS simulator lead. DO NOT disconnect simulator lead from floor harness connector. Turn ignition switch to ON position. Measure voltage between ground and each SRS inflator simulator connector terminals. If voltage is less than 0.5 volt at both terminals, replace SRS unit. If voltage is more than 0.5 volt at either terminal,

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replace floor harness.

DTC 32-9

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right side air bag connector from SRS floor harness. See **Fig. 6** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to floor harness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 32-9 is indicated, go to next step. If DTC 32-9 is not indicated, replace right side air bag module. See **SIDE AIR BAG MODULES** under REMOVAL & INSTALLATION.
3. Turn ignition switch to OFF position. Disable air bag system. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from right side air bag connector. Measure resistance between ground and SRS inflator simulator lead connector terminals. If resistance is more than one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace floor harness.

DTC 33-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left side curtain air bag connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 33-1 is indicated, go to next step. If DTC 33-1 is not indicated, replace left side curtain air bag module.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Measure resistance between SRS inflator simulator lead connector terminals. If resistance is less than one ohm at both terminals, replace SRS unit. If resistance is more than one ohm at either terminal, replace side curtain air bag subharness.

DTC 33-3

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1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left side curtain air bag connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 33-3 is indicated, go to next step. If DTC 33-3 is not indicated, replace left side curtain air bag module.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Connect Short Canceller (070AZ-SAA0100) between SRS unit connector "C", terminals No. 11 and 12. Measure resistance between SRS inflator simulator lead connector terminals. If resistance is at least one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace side curtain air bag subharness.

DTC 33-8

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left side curtain air bag connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 33-8 is indicated, go to next step. If DTC 33-8 is not indicated, replace left side curtain air bag module.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Connect negative battery cable. Turn ignition on. Measure voltage between ground and SRS inflator simulator lead connector terminals. If voltage is less than 0.5 volt at both terminals, replace SRS unit. If voltage is more than 0.5 volt at either terminal, replace side curtain air bag subharness.

DTC 33-9

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn

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ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect left side curtain air bag connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 33-9 is indicated, go to next step. If DTC 33-9 is not indicated, replace left side curtain air bag module.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Measure resistance between ground and SRS inflator simulator lead connector terminals. If resistance is at least one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace side curtain air bag subharness.

DTC 34-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect right side curtain air bag connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 34-1 is indicated, go to next step. If DTC 34-1 is not indicated, replace right side curtain air bag module.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Measure resistance between SRS inflator simulator lead terminals. If resistance is less than one ohm at both terminals, replace SRS unit. If resistance is more than one ohm at either terminal, replace side curtain air bag subharness.

DTC 34-3

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

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2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect right side curtain air bag connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 34-3 is indicated, go to next step. If DTC 34-3 is not indicated, replace right side curtain air bag module.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Connect Short Canceller (070AZ-SAA0100) between SRS unit connector "C", terminals No. 13 and 14. Measure resistance between SRS inflator simulator lead connector terminals. If resistance is at least one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace side curtain air bag subharness.

DTC 34-8

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect right side curtain air bag connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 34-8 is indicated, go to next step. If DTC 34-8 is not indicated, replace right side curtain air bag module.
3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Connect negative battery cable. Turn ignition on. Measure voltage between ground and SRS inflator simulator lead connector terminals. If voltage is less than 0.5 volt at both terminals, replace SRS unit. If voltage is more than 0.5 volt at either terminal, replace side curtain air bag subharness.

DTC 34-9

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect right side curtain air bag

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connector. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. See **Fig. 7** . Connect SRS Simulator Lead (07XAZ-S1A0200) and SRS Inflator Simulator (07SAZ-TB4011A) to side curtain air bag subharness connector. Reconnect negative battery cable. Erase DTC memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 34-9 is indicated, go to next step. If DTC 34-9 is not indicated, replace right side curtain air bag module.

3. Turn ignition switch to OFF position. Disable air bag system. Access and disconnect SRS unit connector "C". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Disconnect SRS inflator simulator from SRS simulator. DO NOT disconnect simulator lead from side curtain air bag subharness connector. Measure resistance between ground and SRS inflator simulator lead connector terminals. If resistance is at least one megohm at both terminals, replace SRS unit. If resistance is less than one megohm at either terminal, replace side curtain air bag subharness.

DTC 41-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Access and check SRS unit harness connector "A" and between engine compartment wire harness connector at left front impact sensor for proper connection. See **SRS UNIT** and **FRONT IMPACT SENSORS** under REMOVAL & INSTALLATION. If connections are okay, go to next step. If connections are not okay, repair poor connection as necessary and retest. If AIR BAG warning light stays on, go to next step.
3. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect driver-side air bag connector from cable reel connector. See **Fig. 4** . Disconnect passenger-side air bag module connector from dashboard wire harness. See **Fig. 5** . Disconnect right and left seat belt pretensioner connector from SRS harness. See **Fig. 8** . Disconnect left front impact sensor from engine compartment wire harness. Disconnect SRS unit connector "A". Measure resistance between SRS unit connector "A", terminals No. 15 and 27. See **Fig. 33** . If resistance is more than one megohm, go to next step. If resistance is less than one megohm, replace appropriate wire harness. See **WIRING DIAGRAMS** .
4. Reconnect negative battery cable. Turn ignition switch to ON position. Measure voltage between ground and SRS unit connector "A", terminals No. 15 and 27. If voltage is less than one volt, go to next step. If voltage is more than one volt, replace appropriate wire harness.
5. Turn ignition switch to OFF position. Connect SRS Simulator Lead "H" (07YAZ-S3AA100) and SRS inflator simulator (07SAZ-TB4011A) to engine compartment left front impact sensor connector. Measure resistance between SRS unit connector "A", terminals No. 15 and 27. If resistance is less than one ohm, fault exists in left front impact sensor or SRS unit. Replace left front impact sensor. If problem still is present, replace SRS unit. If resistance is more than one ohm, replace appropriate wire harness.

DTC 42-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** . Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after

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about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

2. Turn ignition switch to OFF position. Access and check SRS unit harness connector "A" and between engine compartment wire harness connector at right front impact sensor for proper connection. See **SRS UNIT** and **FRONT IMPACT SENSORS** under REMOVAL & INSTALLATION. If connections are okay, go to next step. If connections are not okay, repair poor connection as necessary and retest. If AIR BAG warning light stays on, go to next step.
3. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect driver-side air bag connector from cable reel connector. See **Fig. 4** . Disconnect passenger-side air bag module connector from dashboard wire harness. See **Fig. 5** . Disconnect right and left seat belt pretensioner connector from SRS harness. See **Fig. 8** . Disconnect right front impact sensor from engine compartment wire harness. Disconnect SRS unit connector "A". Measure resistance between SRS unit connector "A", terminals No. 16 and 28. See **Fig. 33** . If resistance is more than one megohm, go to next step. If resistance is less than one megohm, replace appropriate wire harness. See **WIRING DIAGRAMS** .
4. Reconnect negative battery cable. Turn ignition switch to ON position. Measure voltage between ground and SRS unit connector "A", terminals No. 16 and 28. If voltage is less than one volt, go to next step. If voltage is more than one volt, replace appropriate wire harness.
5. Turn ignition switch to OFF position. Connect SRS Simulator Lead "H" (07YAZ-S3AA100) and SRS inflator simulator (07SAZ-TB4011A) to engine compartment right front impact sensor connector. Measure resistance between SRS unit connector "A", terminals No. 16 and 28. If resistance is less than one ohm, fault exists in right front impact sensor or SRS unit. Replace right front impact sensor. If problem still is present, replace SRS unit. If resistance is more than one ohm, replace appropriate wire harness.

DTC 43-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Disable air bag system. See **DISABLING & ACTIVATING AIR BAG SYSTEM** . Access and check for poor connection between SRS left floor harness connector and left side impact sensor. See **SIDE IMPACT SENSORS** under REMOVAL & INSTALLATION. If connection is okay, go to next step. If connection is faulty, repair poor connection as necessary and retest. If AIR BAG warning light stays on, go to next step.
3. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Disconnect SRS left floor connector from left side impact sensor. Disconnect SRS unit connector "B" from SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Measure resistance between SRS unit connector "B", terminals No. 19 and 20. If resistance is at least one megohm, go to next step. If resistance is less than megohm, replace floor wire harness. See **WIRING DIAGRAMS** .
4. Reconnect negative battery cable. Turn ignition switch to ON position. Measure voltage between ground and SRS unit connector "B", terminals No. 19 and 20. If voltage is less than one volt, go to next step. If voltage is more than one volt, replace floor wire harness.

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5. Turn ignition switch to OFF position. Connect SRS Simulator Lead "H" (07YAZ-S3AA100) and SRS inflator simulator (07SAZ-TB4011A) to floor wire harness connector. Measure resistance between SRS unit connector "B", terminals No. 19 and 20. If resistance is less than one ohm, fault exists in side impact sensor or SRS unit. Replace side impact sensor. If problem still is present, replace SRS unit. If resistance is more than one ohm, replace floor wire harness.

DTC 44-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Disable air bag system. See **DISABLING & ACTIVATING AIR BAG SYSTEM** . Access and check for poor connection between SRS right floor harness connector and right side impact sensor. See **SIDE IMPACT SENSORS** under REMOVAL & INSTALLATION. If connection is okay, go to next step. If connection is faulty, repair poor connection as necessary and retest. If AIR BAG warning light stays on, go to next step.
3. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Disconnect SRS right floor connector from right side impact sensor. Disconnect SRS unit connector "B" from SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Measure resistance between SRS unit connector "B", terminals No. 25 and 26. If resistance is at least one megohm, go to next step. If resistance is less than one megohm, replace floor wire harness. See **WIRING DIAGRAMS** .
4. Reconnect negative battery cable. Turn ignition switch to ON position. Measure voltage between ground and SRS unit connector "B", terminals No. 25 and 26. If voltage is less than one volt, go to next step. If voltage is more than one volt, replace floor wire harness.
5. Turn ignition switch to OFF position. Connect SRS Simulator Lead "H" (07YAZ-S3AA100) and SRS inflator simulator (07SAZ-TB4011A) to floor wire harness connector. Measure resistance between SRS unit connector "B", terminals No. 25 and 26. If resistance is less than one ohm, fault exists in side impact sensor or SRS unit. Replace side impact sensor. If problem still is present, replace SRS unit. If resistance is more than one ohm, replace floor wire harness.

DTC 45-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access left rear impact sensor and check for poor connection between SRS left floor harness connector and left rear impact sensor. See **REAR IMPACT SENSORS** under REMOVAL & INSTALLATION. If connection is okay, go to next step. If connection is faulty, repair poor connection as necessary and retest. If AIR BAG warning light stays on, go to next step.
3. Access and disconnect left side curtain air bag module connector from side curtain air bag subharness.

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See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. Disconnect left rear impact sensor connector from side curtain air bag subharness. Disconnect SRS unit connector "C" from SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Measure resistance between SRS unit connector "C", terminals No. 9 and 10. If resistance is at least one megohm, go to next step. If resistance is at less than one megohm, replace side curtain air bag subharness.

4. Reconnect battery and turn ignition on. Measure voltage between ground and SRS unit connector "C", terminals No. 9 and 10. If voltage is less than one volt, go to next step. If voltage is more than one volt, replace side curtain air bag subharness.
5. Turn ignition off. Connect SRS Simulator Lead (07YAZ-S3AA100) and SRS Inflator Simulator (07SAZ-TB4011A) to subharness side of left rear impact sensor connector. Measure resistance between SRS unit connector "C", terminals No. 9 and 10. If resistance is one ohm or less, replace left rear impact sensor. If problem persists, replace SRS unit. If resistance is more than one ohm, replace side curtain air bag subharness.

DTC 46-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access right rear impact sensor and check for poor connection between SRS right floor harness connector and right rear impact sensor. See **REAR IMPACT SENSORS** under REMOVAL & INSTALLATION. If connection is okay, go to next step. If connection is faulty, repair poor connection as necessary and retest. If AIR BAG warning light stays on, go to next step.
3. Access and disconnect right side curtain air bag module connector from side curtain air bag subharness. See **SIDE CURTAIN AIR BAG MODULES** under REMOVAL & INSTALLATION. Disconnect right rear impact sensor connector from side curtain air bag subharness. Disconnect SRS unit connector "C" from SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Measure resistance between SRS unit connector "C", terminals No. 15 and 16. If resistance is at least one megohm, go to next step. If resistance is at less than one megohm, replace side curtain air bag subharness.
4. Reconnect battery and turn ignition on. Measure voltage between ground and SRS unit connector "C", terminals No. 15 and 16. If voltage is less than one volt, go to next step. If voltage is more than one volt, replace side curtain air bag subharness.
5. Turn ignition off. Connect SRS Simulator Lead (07YAZ-S3AA100) and SRS Inflator Simulator (07SAZ-TB4011A) to subharness side of right rear impact sensor connector. Measure resistance between SRS unit connector "C", terminals No. 15 and 16. If resistance is one ohm or less, replace right rear impact sensor. If problem persists, replace SRS unit. If resistance is more than one ohm, replace side curtain air bag subharness.

DTC 61-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Turn ignition switch to ON position. Buckle and unbuckle left front seat belt buckle several times. Read Diagnostic Trouble Code (DTC). See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 61-1 is

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indicated, go to next step. If DTC 61-1 is not indicated, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

2. Turn ignition switch to OFF position. Disconnect left front seat belt buckle switch 3-pin connector located under seat. Buckle left front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. See **Fig. 34** . Measure resistance between seat belt buckle switch connector terminals No. 2 and 3. If resistance between terminals No. 1 and 3 is 0-1 ohm and resistance between terminals No. 2 and 3 is more than one megohm, go to next step. If resistance between terminals No. 1 and 3 is more than one ohm and resistance between terminals No. 2 and 3 is less than one megohm, replace left front seat belt buckle assembly.
3. Unbuckle left front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 2 and 3. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. If resistance between terminals No. 2 and 3 is 0-1 ohm and resistance between terminals No. 1 and 3 is more than one megohm, go to next step. If resistance between terminals No. 2 and 3 is more than one ohm and resistance between terminals No. 1 and 3 is less than one megohm, replace left front seat belt buckle assembly.
4. Measure resistance between ground and seat wire harness connector terminal No. 3. See **Fig. 34** . If resistance is 0-1 ohm, go to next step. If resistance is more than one ohm, check open in seat wire harness, floor harness connector or poor ground connection at G601, located at left floor pan under front seat. If ground No. G601 is okay, replace appropriate harness.
5. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right and left seat belt pretensioners. See **Fig. 8** . Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. Measure resistance between SRS unit connector "B", terminal No. 17 and seat wire harness connector terminal No. 3. See **Fig. 33** & **Fig. 34** . If resistance is 0-1 ohm, go to next step. If resistance is more than one ohm, open exists in seat wire harness or floor wire harness. Replace appropriate harness.
6. Measure resistance between SRS unit connector "B", terminal No. 11 and seat wire harness connector terminal No. 2. If resistance is 0-1 ohm, replace SRS unit. If resistance is more than one ohm, poor connection may exist in seat wire harness, floor wire harnesses, SRS main subharness or multiplex control unit. Replace faulty wire harness or component as necessary.

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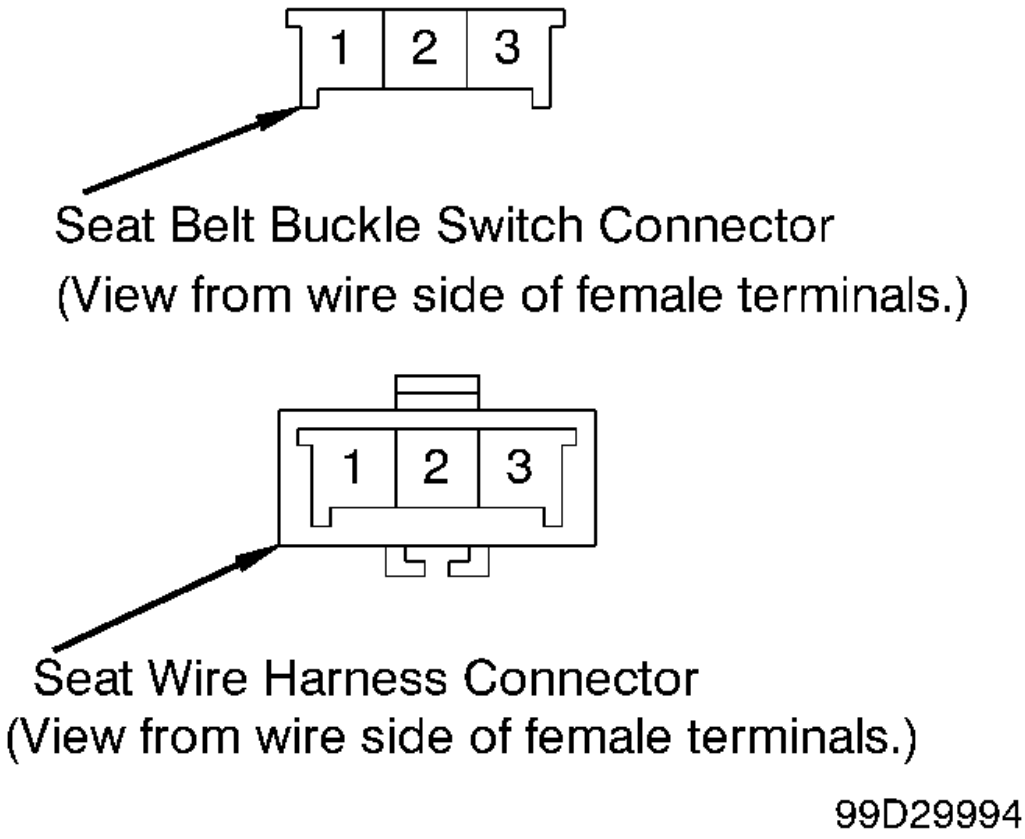


Fig. 34: Identifying Seat Belt Buckle Switch 3-pin Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC 61-2

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Turn ignition switch to ON position. Buckle and unbuckle left front seat belt buckle several times. Read Diagnostic Trouble Code (DTC). See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 61-2 is indicated, go to next step. If DTC 61-2 is not indicated, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disconnect left front seat belt buckle switch 3-pin connector located under seat. Check for continuity between ground and left front seat belt buckle switch 3-pin connector terminals No. 1 and 2. See **Fig. 34** . If continuity exists, replace left seat belt buckle. If continuity does not exist, go to next step.
3. Buckle left front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. Measure resistance between seat belt buckle switch connector terminals No. 2 and 3. If resistance between terminals No. 1 and 3 is 0-1 ohm and resistance between terminals No. 2 and 3 is more than one megohm, go to next step. If resistance between terminals No. 1 and 3 is more than one ohm and resistance

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between terminals No. 2 and 3 is less than one megohm, replace left front seat belt buckle assembly.

4. Unbuckle left front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 2 and 3. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. If resistance between terminals No. 2 and 3 is 0-1 ohm and resistance between terminals No. 1 and 3 is more than one megohm, go to next step. If resistance between terminals No. 2 and 3 is more than one ohm and resistance between terminals No. 1 and 3 is less than one megohm, replace left front seat belt buckle assembly.
5. Measure resistance between ground and seat wire harness connector terminal No. 3. See **Fig. 34** . If resistance is 0-1 ohm, go to next step. If resistance is not 0-1 ohm, open in left seat wire harness or floor wire harness, or poor ground connection at G601, located at left floor pan under front seat. If G601 is okay, replace appropriate wire harness. See **WIRING DIAGRAMS** .
6. Measure resistance between ground and seat wire harness connector terminal No. 2. If resistance is more than one megohm, go to next step. If resistance is less than one megohm, short to ground in left seat wire harness, floor wire harness or multiplex control unit. Replace faulty component or wire harness as necessary.
7. Measure resistance between ground and seat wire harness connector terminal No. 1. If resistance is more than one megohm, Replace SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. If resistance is less than one megohm, short to ground in left seat wire harness or floor wire harness. Replace appropriate wire harness.

DTC 62-1

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Turn ignition switch to ON position. Buckle and unbuckle right front seat belt buckle several times. Read Diagnostic Trouble Code (DTC). See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 62-1 is indicated, go to next step. If DTC 62-1 is not indicated, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disconnect right front seat belt buckle switch 3-pin connector located under seat. Buckle right front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. See **Fig. 34** . Measure resistance between seat belt buckle switch connector terminals No. 1 and 2. If resistance between terminals No. 1 and 3 is 0-1 ohm and resistance between terminals No. 1 and 2 is more than one megohm, go to next step. If resistance between terminals No. 1 and 3 is more than one ohm and resistance between terminals No. 1 and 2 is less than one megohm, replace right front seat belt buckle assembly.
3. Unbuckle right front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 1 and 2. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. If resistance between terminals No. 1 and 2 is 0-1 ohm and resistance between terminals No. 1 and 3 is more than one megohm, go to next step. If resistance between terminals No. 1 and 2 is more than one ohm and resistance between terminals No. 1 and 3 is less than one megohm, replace right front seat belt buckle assembly.
4. Measure resistance between ground and seat wire harness connector terminal No. 1. See **Fig. 34** . If resistance is 0-1 ohm, go to next step. If resistance is more than one ohm, check open in seat wire harness, floor harness connector or poor ground connection at G602, located at right floor pan under front seat. If ground No. G602 is okay, replace appropriate harness.
5. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right and right seat belt pretensioners. See **Fig. 8** . Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL &

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INSTALLATION. Measure resistance between SRS unit connector "B", terminal No. 18 and seat wire harness connector terminal No. 3. See **Fig. 33** & **Fig. 34** . If resistance is 0-1 ohm, go to next step. If resistance is more than one ohm, open exists in seat wire harness or floor wire harness. Replace appropriate harness.

6. Measure resistance between SRS unit connector "B", terminal No. 12 and seat wire harness connector terminal No. 2. If resistance is 0-1 ohm, replace SRS unit. If resistance is more than one ohm, floor wire harness.

DTC 62-2

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Turn ignition switch to ON position. Buckle and unbuckle right front seat belt buckle several times. Read Diagnostic Trouble Code (DTC). See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 62-2 is indicated, go to next step. If DTC 62-2 is not indicated, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Disconnect right front seat belt buckle switch 3-pin connector located under seat. Check for continuity between ground and right front seat belt buckle switch 3-pin connector terminals No. 2 and 3. See **Fig. 34** . If continuity exists, replace right seat belt buckle. If continuity does not exist, go to next step.
3. Buckle right front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. Measure resistance between seat belt buckle switch connector terminals No. 1 and 2. If resistance between terminals No. 1 and 3 is 0-1 ohm and resistance between terminals No. 1 and 2 is more than one megohm, go to next step. If resistance between terminals No. 1 and 3 is more than one ohm and resistance between terminals No. 1 and 2 is less than one megohm, replace right front seat belt buckle assembly.
4. Unbuckle right front seat belt. Measure resistance between seat belt buckle switch connector terminals No. 1 and 2. Measure resistance between seat belt buckle switch connector terminals No. 1 and 3. If resistance between terminals No. 1 and 2 is 0-1 ohm and resistance between terminals No. 1 and 3 is more than one megohm, go to next step. If resistance between terminals No. 1 and 2 is more than one ohm and resistance between terminals No. 1 and 3 is less than one megohm, replace right front seat belt buckle assembly.
5. Measure resistance between ground and seat wire harness connector terminal No. 1. See **Fig. 34** . If resistance is 0-1 ohm, go to next step. If resistance is not 0-1 ohm, open in right seat wire harness or floor wire harness, or poor ground connection at G602, located at right floor pan under front seat. If G602 is okay, replace appropriate wire harness. See **WIRING DIAGRAMS** .
6. Measure resistance between ground and seat wire harness connector terminal No. 2. If resistance is more than one megohm, go to next step. If resistance is less than one megohm, short to ground in right seat wire harness, floor wire harness or multiplex control unit. Replace faulty component or wire harness as necessary.
7. Measure resistance between ground and seat wire harness connector terminal No. 3. If resistance is more than one megohm, replace SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. If resistance is less than one megohm, short to ground in right seat wire harness or floor wire harness. Replace appropriate wire harness.

DTC 85-61, 85-62

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Ensure nothing is on right front seat.

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Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 85-61 or 85-62 is indicated, go to next step. If DTC 85-61 or 85-62 is not indicated, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

2. Visually inspect connection between OPDS unit and harness connector. See **OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under REMOVAL & INSTALLATION. See **Fig. 35** . If OPDS unit and connectors are okay, go to next step. If OPDS and connectors are not okay, repair poor connection as necessary and retest. If DTC 85-61 or 85-62 is indicated, go to next step
3. Turn ignition switch to OFF position. Check fuse No. 10 (7.5-amp), located in instrument panel fuse/relay box. If fuse is okay, go to next step. If fuse is blown, replace fuse. Turn ignition switch to ON position. If fuse blows again, check for short to ground in fuse No. 10 circuit, dashboard wire harness, floor wire harness or OPDS unit harness. Repair as necessary.
4. Disconnect OPDS unit 8-pin harness connector. See **Fig. 35** . Turn ignition switch to ON position. Measure voltage between ground and OPDS unit harness 8-pin connector terminal No. 4. If battery voltage is present, go to step 6 . If battery voltage is not present, go to next step.
5. Turn ignition switch to OFF position. Disconnect dashboard wire harness 24-pin connector from floor harness. See **Fig. 36** . Turn ignition switch to ON position. Measure voltage between ground and dashboard wire harness 24-pin connector, terminal No. 19. If battery voltage is present, open exists in White wire in floor wire harness or OPDS unit harness. Replace appropriate wire harness. See **WIRING DIAGRAMS** . If battery voltage is not present, replace dashboard wire harness.
6. Turn ignition switch to OFF position. Measure resistance between ground and OPDS 8-pin connector terminal No. 8. See **Fig. 35** . If resistance is 0-1 ohm, go to next step. If resistance is not 0-1 ohm, check for open in Black wire of floor wire harness or OPDS unit harness. Replace appropriate harness.
7. Turn ignition switch to OFF position. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Disconnect right and left seat belt pretensioners. See **SEAT BELT PRETENSIONERS** under REMOVAL & INSTALLATION. See **Fig. 8** . Access and disconnect SRS unit connector "B". See **SRS UNIT** under REMOVAL & INSTALLATION. See **Fig. 33** . Measure resistance between ground and SRS unit connector "B", terminal No. 27. If resistance is more than one megohm, go to next step. If resistance less than one megohm, go to step 10 .
8. Measure resistance between SRS unit connector "B", terminal No. 27 and OPDS unit harness 8-pin connector terminal No. 7. If resistance is 0-1 ohm, faulty OPDS unit or SRS unit exists. Replace OPDS unit. If problem still exists, replace SRS unit. If resistance more than one ohm, go to next step.
9. Disconnect floor wire harness from OPDS harness. See **Fig. 35** . Measure resistance between SRS unit connector "B", terminal No. 27 and floor harness 4-pin connector terminal No. 4. If resistance is 0-1 ohm, replace OPDS unit harness. If resistance is more than one ohm, replace floor wire harness.
10. Disconnect floor wire harness from OPDS harness. See **Fig. 35** . Measure resistance between ground and SRS unit connector "B", terminal No. 27. If resistance is more than one megohm, replace OPDS wire harness. If resistance is less than one megohm, replace floor wire harness. See **WIRING DIAGRAMS** .

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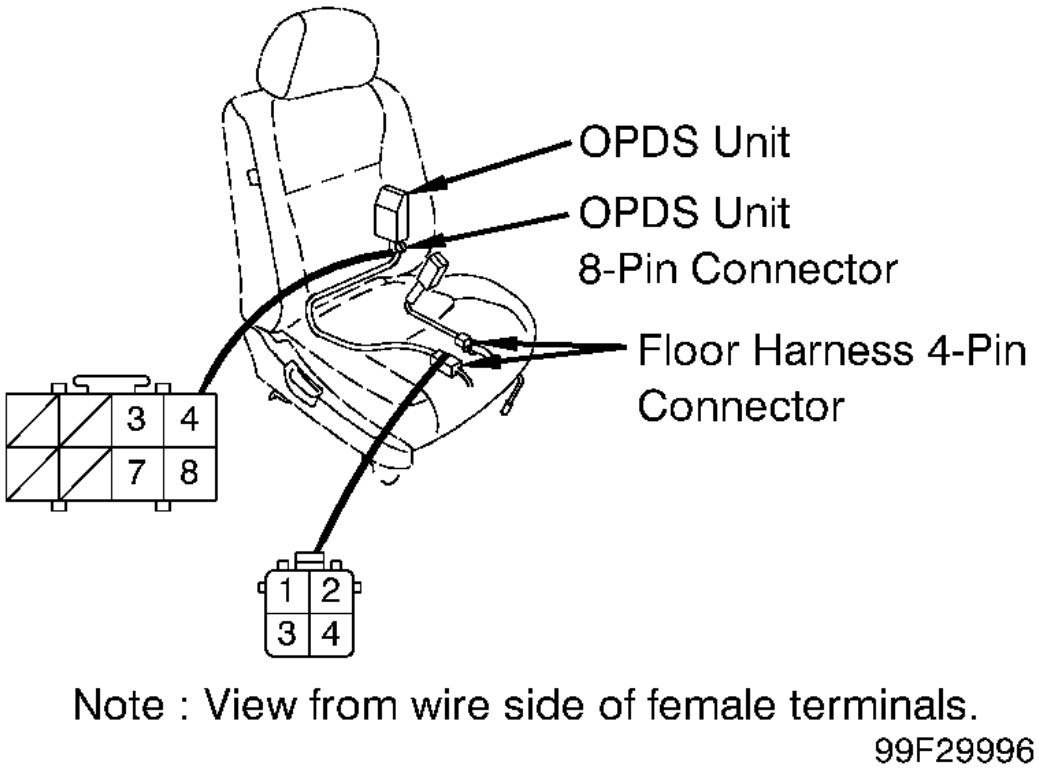


Fig. 35: Identifying OPDS Unit Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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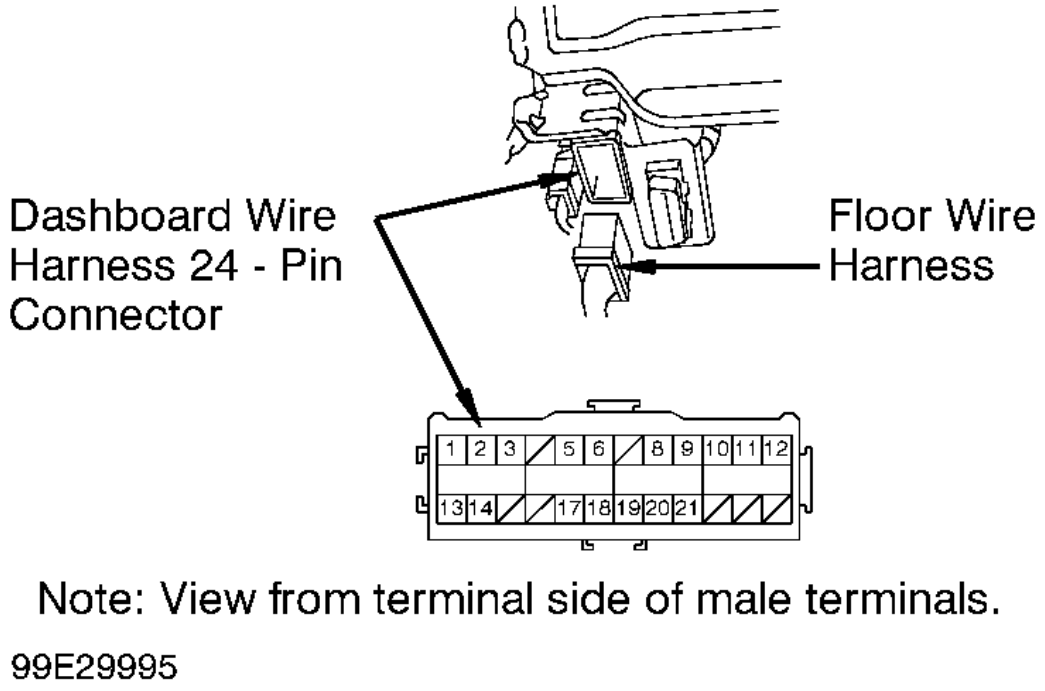


Fig. 36: Identifying Dashboard Wire Harness 24-pin Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC 85-79

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Ensure nothing is on right front seat. Turn ignition switch to ON position. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. If AIR BAG warning light stays on, initialize Occupant Position Detection System (OPDS) unit. See **INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under DIAGNOSTICS.

DTC 86-1, 86-2

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.

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2. Access Occupant Position Detection System (OPDS) unit and OPDS sensor and check connectors for proper connection. See **OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under REMOVAL & INSTALLATION. If connections are okay, go to next step. If connections are not okay, reconnect connectors. Erase Diagnostic Trouble Code (DTC) memory.
3. Replace OPDS sensor and seat back foam. Erase Diagnostic Trouble Code (DTC) memory. Retrieve DTC. See **RETRIEVING DIAGNOSTIC TROUBLE CODE (DTC)** under DIAGNOSTICS. If DTC 86-1 or 86-2 is indicated, go to next step. If DTC 86-1 or 86-2 is not indicated, system is okay at this time.
4. Replace OPDS unit. See **OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under REMOVAL & INSTALLATION. Initialize OPDS unit. See **INITIALIZING OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under DIAGNOSTICS. Erase Diagnostic Trouble Code (DTC) memory. Retrieve DTC. If DTC 86-1 or 86-2 is indicated, replace SRS unit. See **SRS UNIT** under REMOVAL & INSTALLATION. If DTC 86-1 or 86-2 is not indicated, system is okay at this time.

DTC 87-31, 87-32

1. Before proceeding, see **AIR BAG SAFETY PRECAUTIONS** . Erase Diagnostic Trouble Code (DTC) memory. See **ERASING DIAGNOSTIC TROUBLE CODE MEMORY** under DIAGNOSTICS. Turn ignition switch to ON position. If AIR BAG warning light stays on, go to next step. If AIR BAG warning light goes off after about 6 seconds, system is okay at this time. Check for intermittent malfunction. See **TROUBLESHOOTING INTERMITTENT FAILURES** under DIAGNOSTICS.
2. Turn ignition switch to OFF position. Ensure nothing is on right front seat. Access Occupant Position Detection System (OPDS) unit and disconnect OPDS unit 8-pin connector. See **OCCUPANT POSITION DETECTION SYSTEM (OPDS) UNIT** under REMOVAL & INSTALLATION. Turn ignition switch to ON position. Measure voltage between ground and OPDS harness 8-pin connector terminal No. 3. See **Fig. 35** . If battery voltage is present, replace OPDS unit. If battery voltage is not present, go to next step.
3. Turn ignition switch to OFF position. Access instrument cluster harness connectors. See **INSTRUMENT CLUSTER** under REMOVAL & INSTALLATION. Disconnect instrument cluster 22-pin harness connector "B". See **Fig. 32** . Measure resistance between ground and OPDS harness 8-pin connector terminal No. 3. If resistance is more than one megohm, go to next step. If resistance is less than one megohm, short to ground exists in OPDS harness, floor wire harness or dashboard wire harness. Replace appropriate wire harness.
4. Measure resistance between instrument cluster 22-pin harness connector "B", terminal No. 10 and OPDS harness 8-pin connector terminal No. 3. If resistance is 0-1 ohm, replace instrument cluster. If resistance is not 0-1 ohm, check for open in OPDS unit harness, floor wire harness or dashboard wire harness. Replace appropriate harness. See **WIRING DIAGRAMS** .

DTC A1-1

1. Check fuse No. 10 (7.5-amp) located in instrument panel fuse/relay box. If fuse is okay, go to next step. If fuse is blown, repair short to ground in fuse No. 10 circuit. See **WIRING DIAGRAMS** .
2. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. Reconnect negative battery cable. Connect voltmeter between ground and SRS unit connector "A", terminal No. 17. See **Fig. 33** . Turn ignition switch to ON position and measure voltage. If

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battery voltage is present, check connection between SRS unit connector "A" and SRS unit. If connection is okay, replace SRS unit. If battery voltage is not present, go to next step.

3. Turn ignition switch to OFF position. Disconnect instrument panel fuse/relay box connector "S". See **Fig. 37** . Measure resistance between connector "S", terminal No. 1 and SRS unit connector "A", terminal No. 17. If resistance is 0-1 ohm, check connections between fuse/relay box connector "S" and instrument panel fuse/relay box. If connection is okay, replace instrument panel fuse box. If resistance is more than one ohm, replace dashboard wire harness.

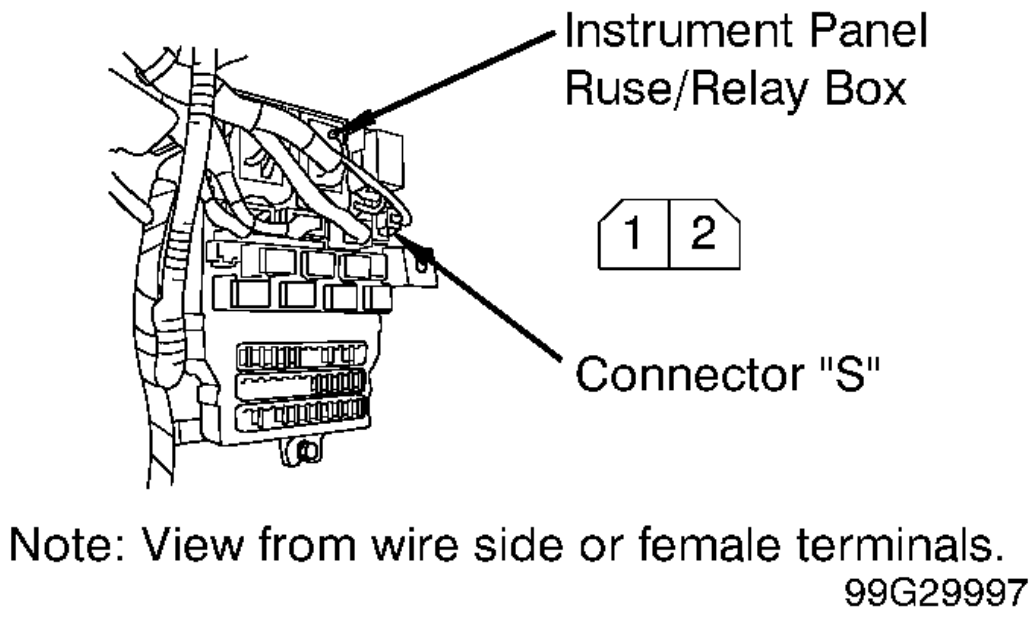


Fig. 37: Identifying Instrument Panel Fuse/relay Box Connector "S"
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC A2-1

1. Check fuse No. 22 (10-amp) in instrument panel fuse/relay box. If fuse is okay, go to step 4 . If fuse is blown, go to next step.
2. Replace fuse No. 22 (10-amp). Turn ignition switch to ON position and wait at least 30 seconds. Check fuse No. 22. If fuse No. 22 is okay, system is okay at this time. If fuse No. 22 is blown, go to next step.
3. Replace fuse No. 22 (10-amp). Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG SYSTEM. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. Reconnect negative battery cable. Turn ignition switch to ON position and wait at least 30 seconds. Check fuse No. 22. If fuse No. 22 is okay, replace SRS unit. If fuse No. 22 is blown, short to ground exists in dashboard wire harness or fuse No. 22 circuit. Replace dashboard wire harness. If problem persists, replace instrument panel fuse/relay box.
4. Disable air bag system. See **DISABLING SYSTEM** under DISABLING & ACTIVATING AIR BAG

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SYSTEM. Access and disconnect SRS unit connector "A". See **SRS UNIT** under REMOVAL & INSTALLATION. Reconnect negative battery cable. Connect voltmeter between ground and SRS unit connector "A", terminal No. 18. Turn ignition switch to ON position and measure voltage. If battery voltage is present, check connection between SRS unit connector "A" and SRS unit. If connection is okay, replace SRS unit. If battery voltage is not present, go to next step.

5. Turn ignition switch to OFF position. Disconnect instrument panel fuse/relay box connector "S". See **Fig. 37** . Measure resistance between instrument panel fuse/relay box connector "S", terminal No. 2 and SRS unit connector "A", terminal No. 18. If resistance is 0-1 ohm, check connections between fuse/relay box connector "S" and instrument panel fuse/relay box. If connection is okay, replace instrument panel fuse box. If resistance is more than one ohm, replace dashboard wire harness.
6. Disconnect SRS main harness connector C801. See **Fig. 33** . Measure resistance between SRS main harness connector terminal No. 2 and SRS main harness C803, terminal No. 18. If resistance is 0-1 ohm, replace SRS main subharness. If resistance is more than one ohm, replace SRS main harness.

WIRING DIAGRAMS

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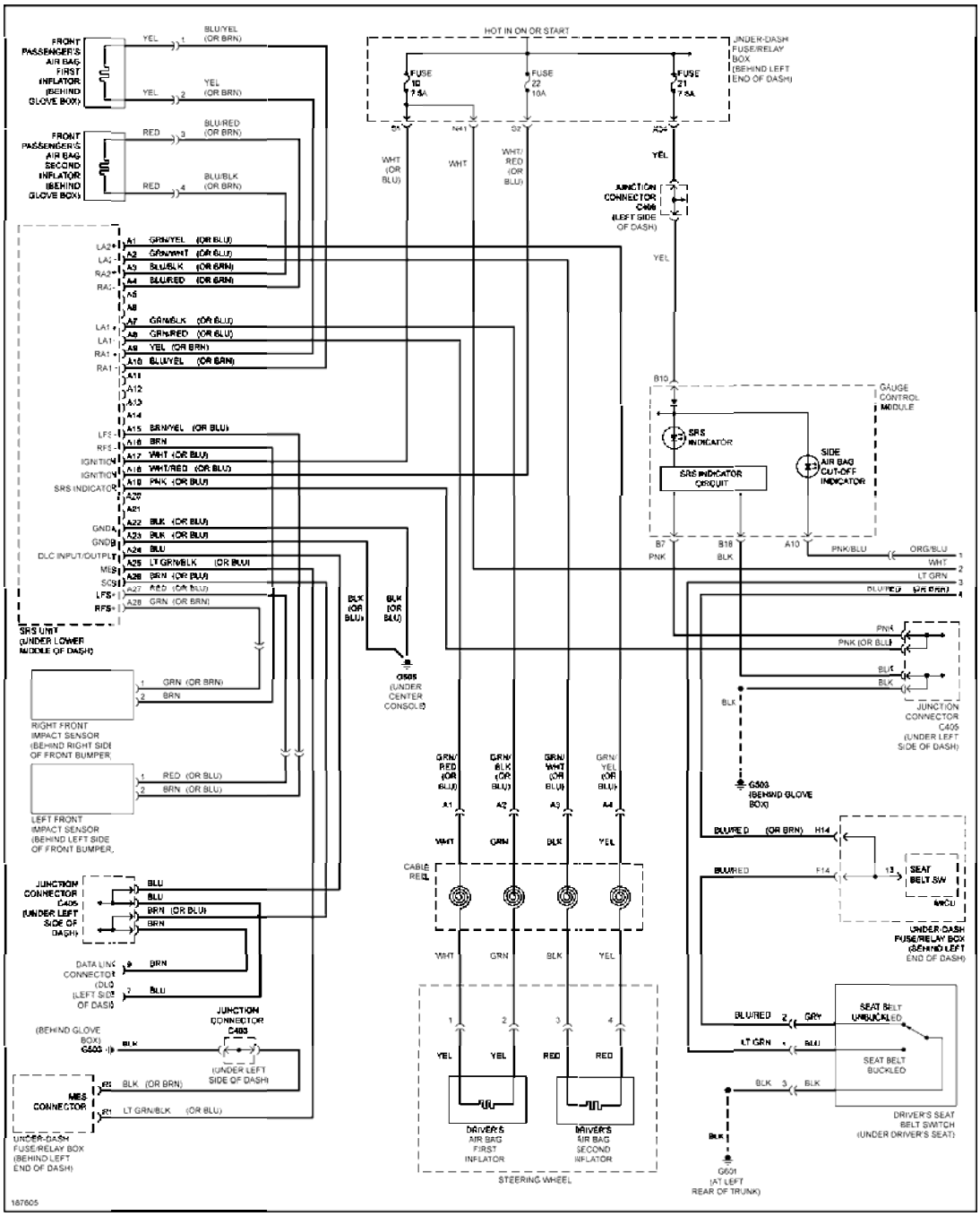


Fig. 38: Air Bag System Wiring Diagram (TSX-1 Of 2)

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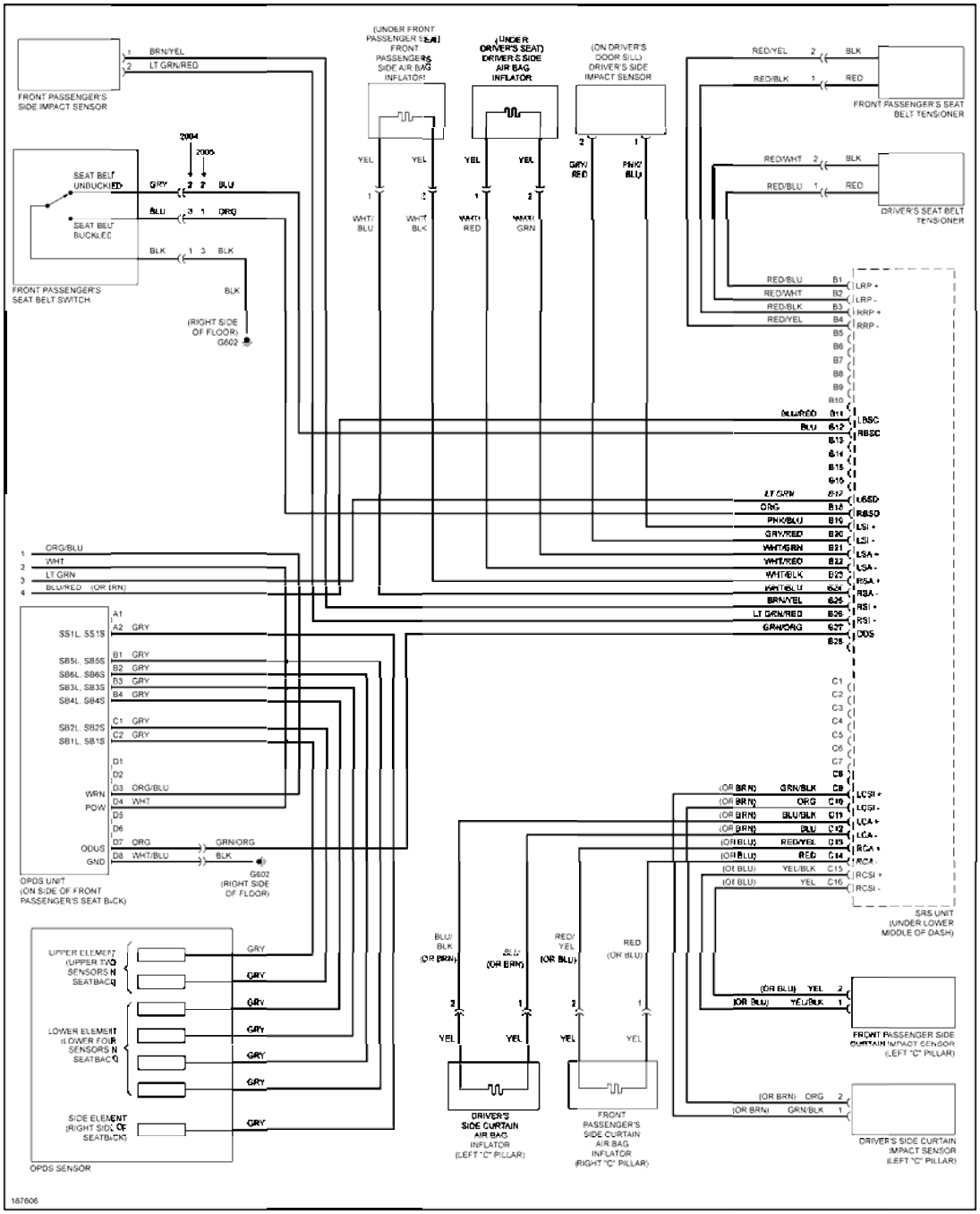


Fig. 39: Air Bag System Wiring Diagram (TSX-2 Of 2)

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2004 ACCESSORIES & EQUIPMENT

Audio System - TSX

COMPONENT LOCATION INDEX

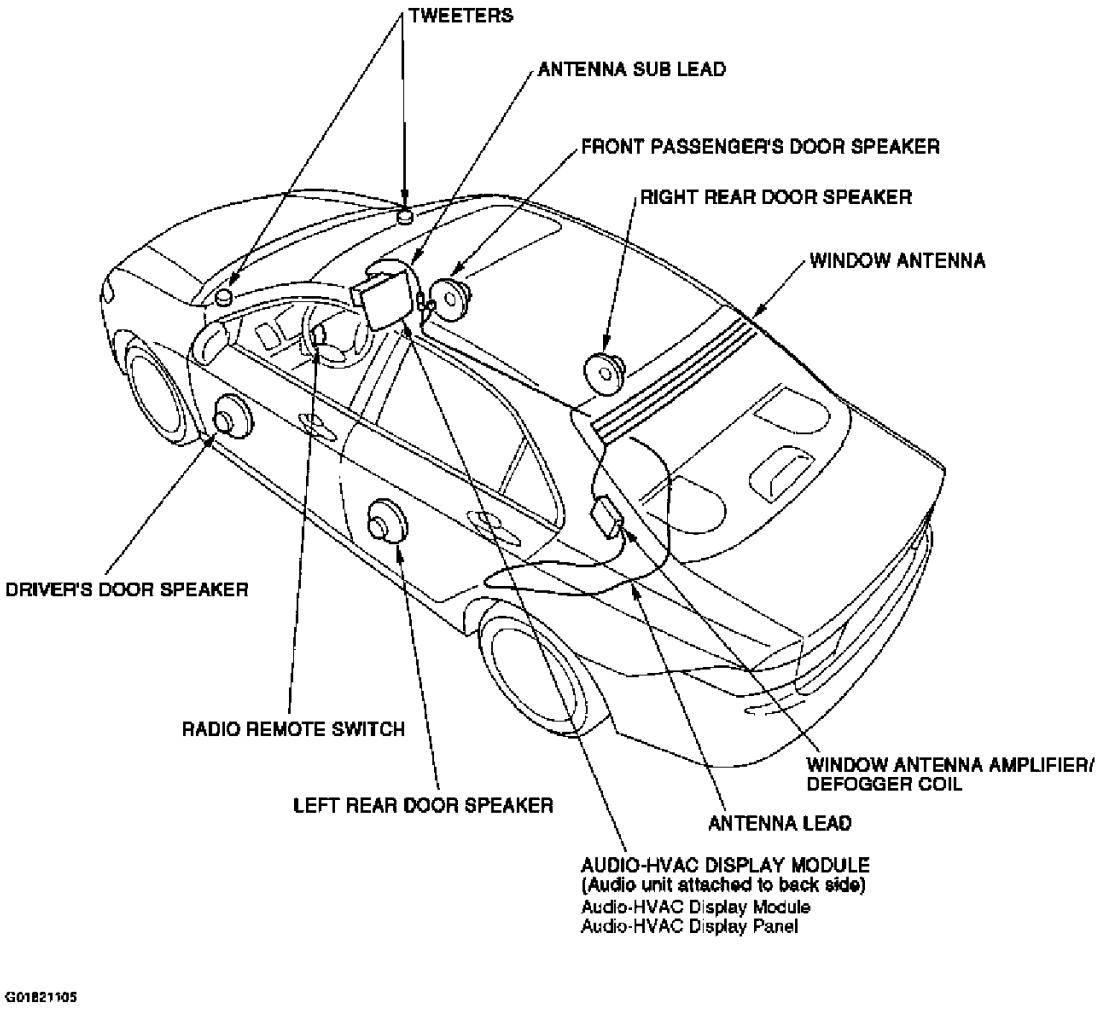


Fig. 1: Locating Audio System Components (1 Of 2)

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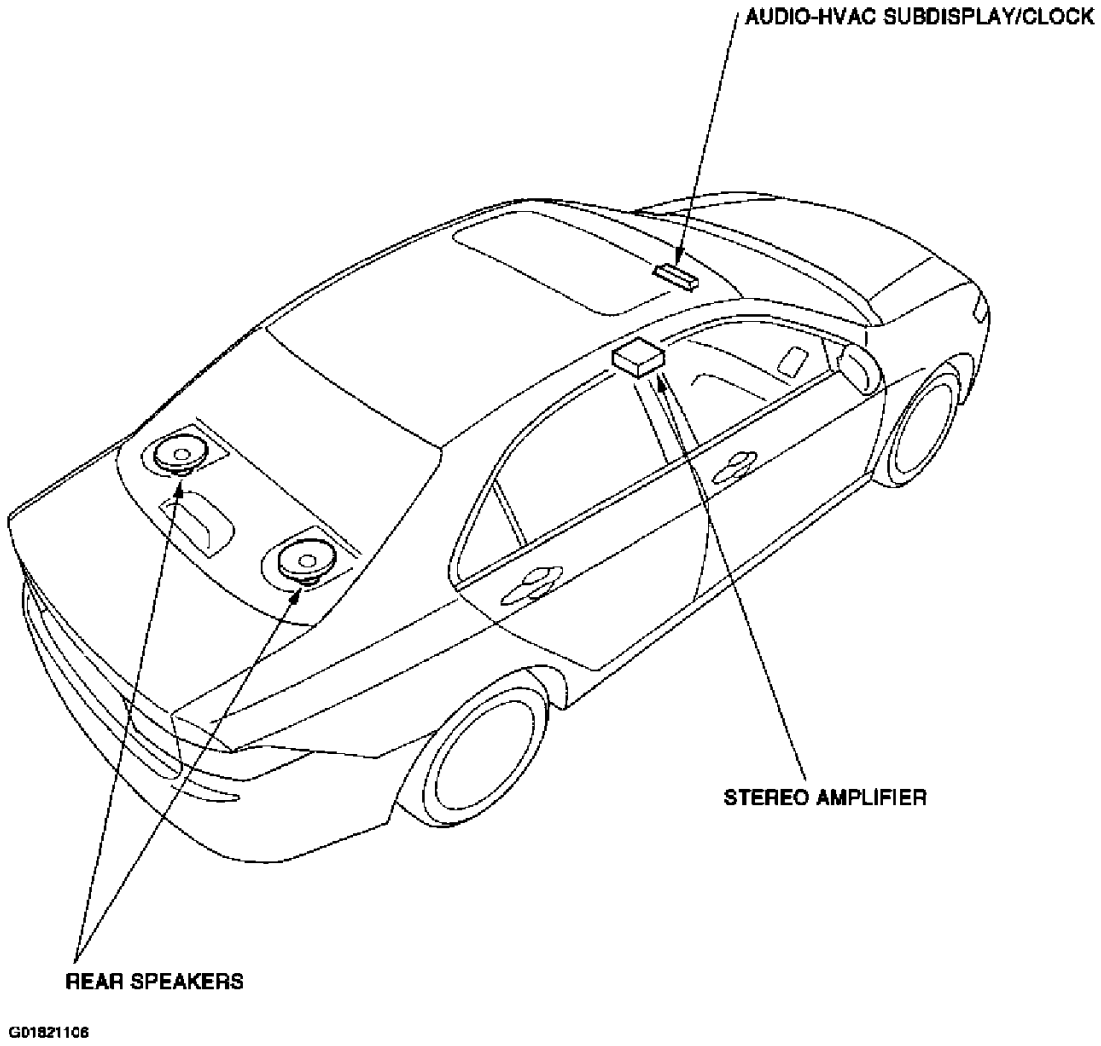


Fig. 2: Locating Audio System Components (2 Of 2)

CIRCUIT DIAGRAM

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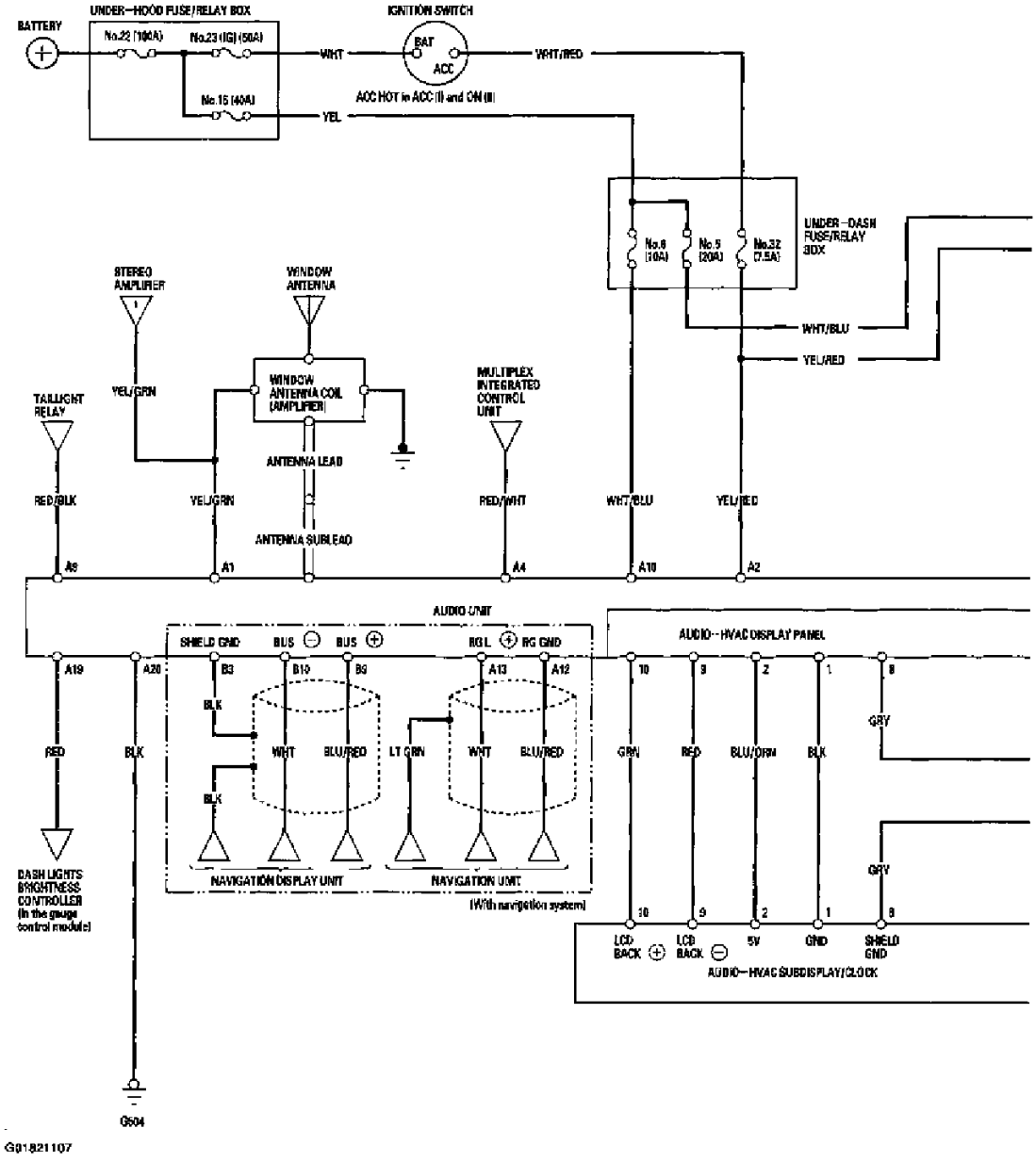


Fig. 3: Audio System Wiring Diagram (1 Of 2)

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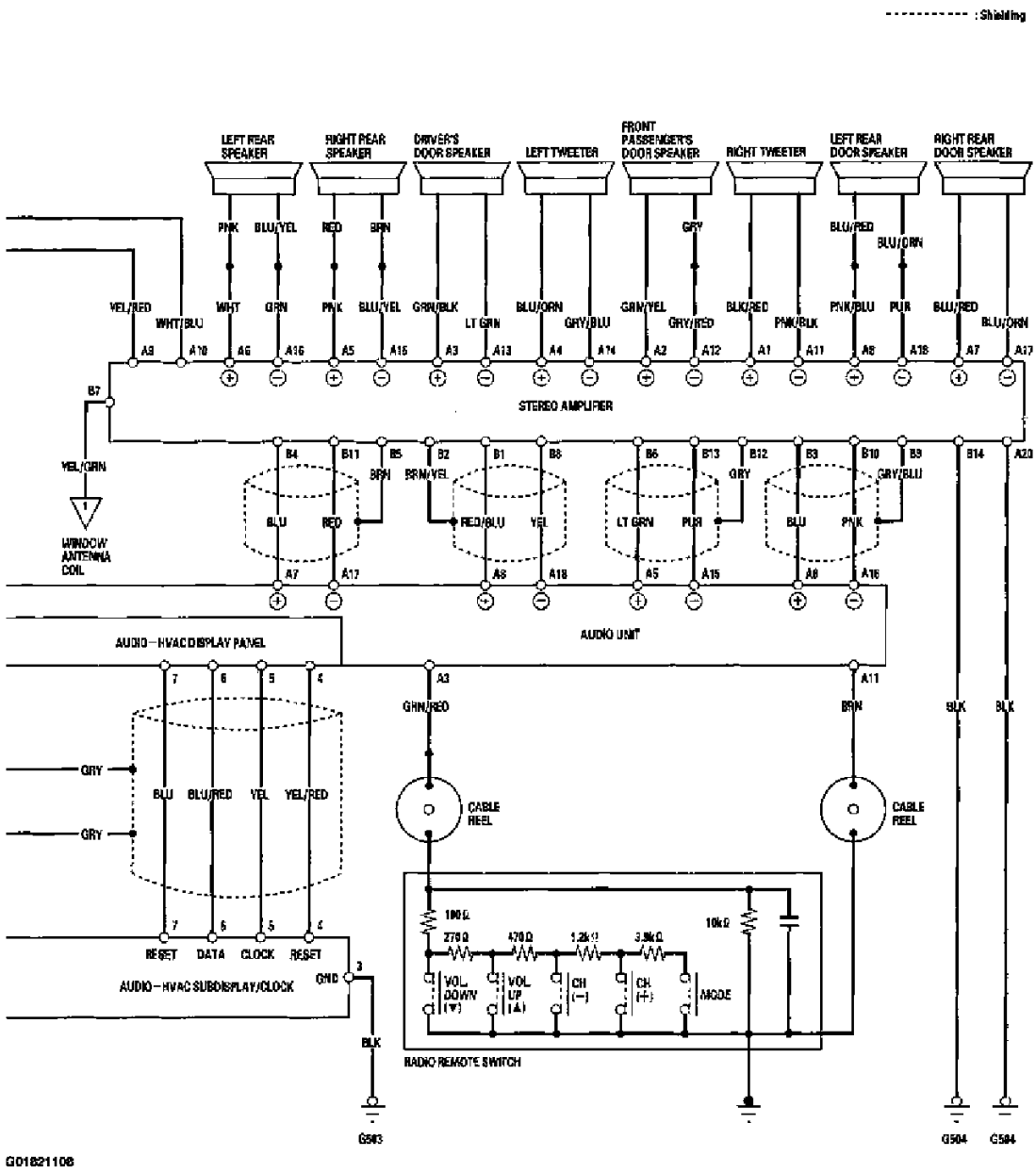


Fig. 4: Audio System Wiring Diagram (2 Of 2)

SPEAKER REPLACEMENT

FRONT SPEAKER

1. Remove the door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).

NOTE: **If you pull the speaker out too far from the door, you will damage the lower clips (C).**

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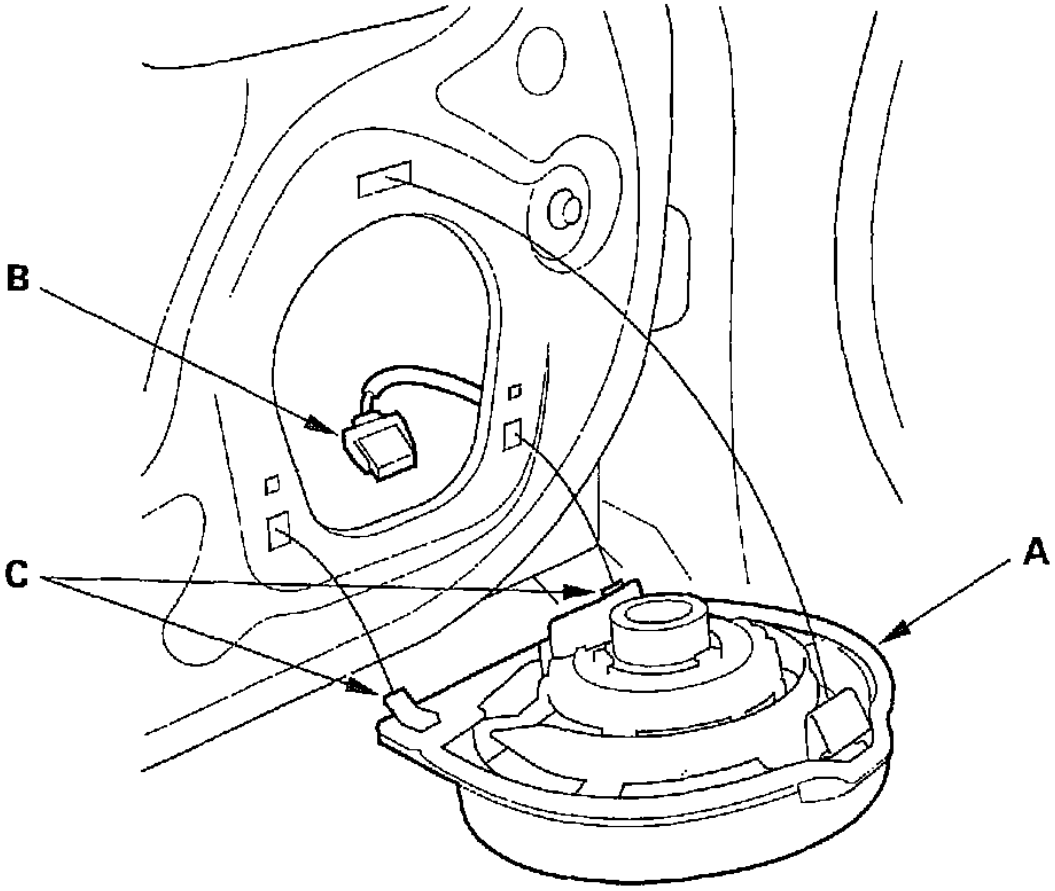


Fig. 5: Removing The Front Speaker

2. Pull the speaker (A) straight out, just enough to release the upper clips. Then lift the speaker straight up to release the lower clips (C).
3. Disconnect the 2P connector (B), and remove the speaker.

TWEETER

1. Remove the tweeter speaker grille and tweeter (A).

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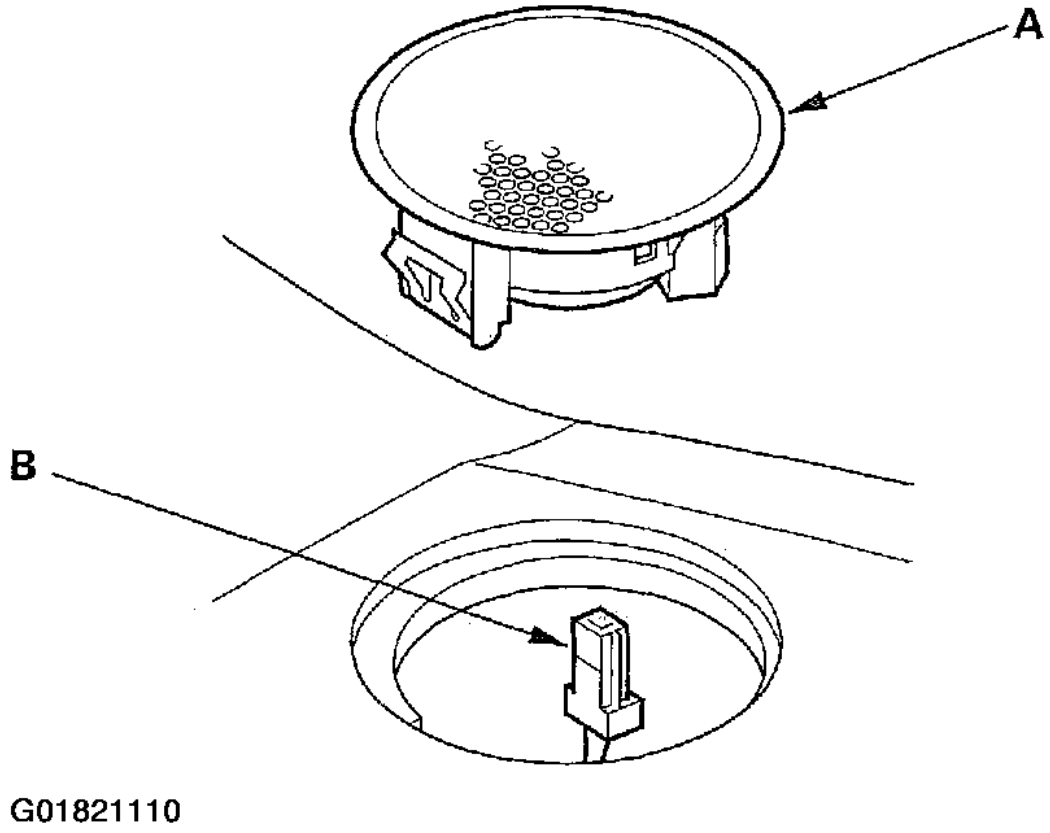
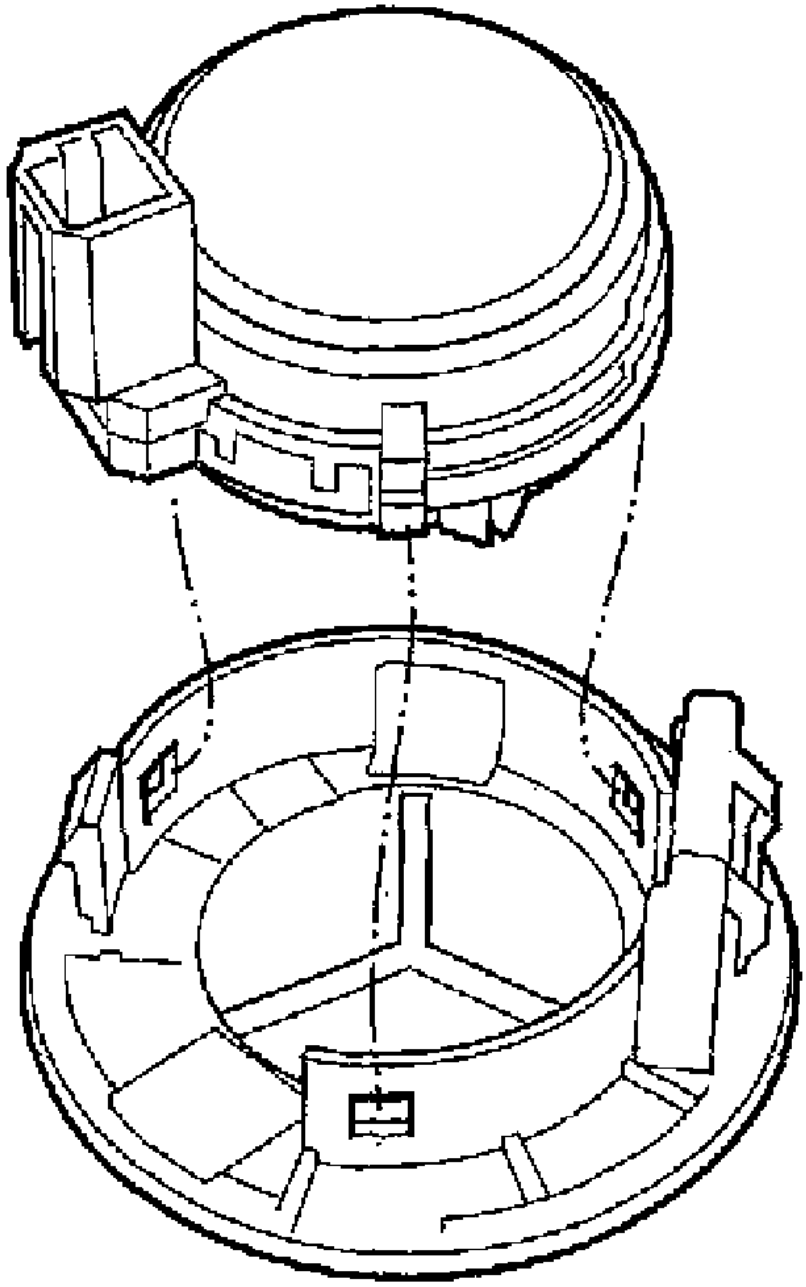


Fig. 6: Removing The Tweeter & Grille

2. Disconnect the 2P connector (B) from the tweeter.
3. Remove the tweeter speaker grille from the tweeter.

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Fig. 7: Removing The Tweeter

REAR SPEAKER

1. Remove the rear speaker cover by prying straight up to release the clips.

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2. Remove the four mounting bolts from the rear speaker (A).

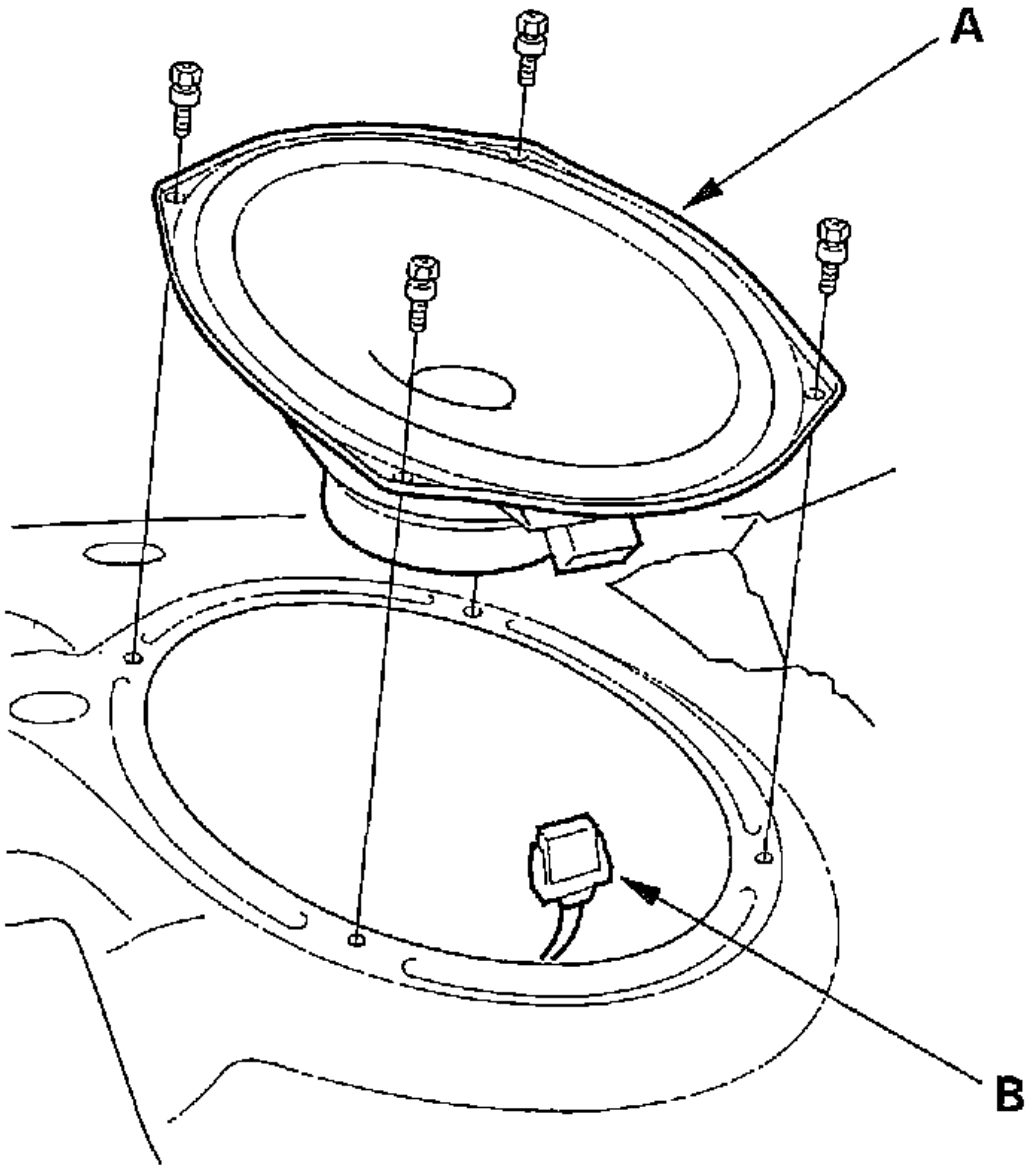


Fig. 8: Removing The Rear Speaker

3. Disconnect the 2P connector (B), and remove the speaker.

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RADIO REMOTE SWITCH TEST

1. Remove the driver's airbag assembly (see **AIR BAG RESTRAINT SYSTEMS**).
2. Remove the 4P connector (A) from the radio remote switch (B).

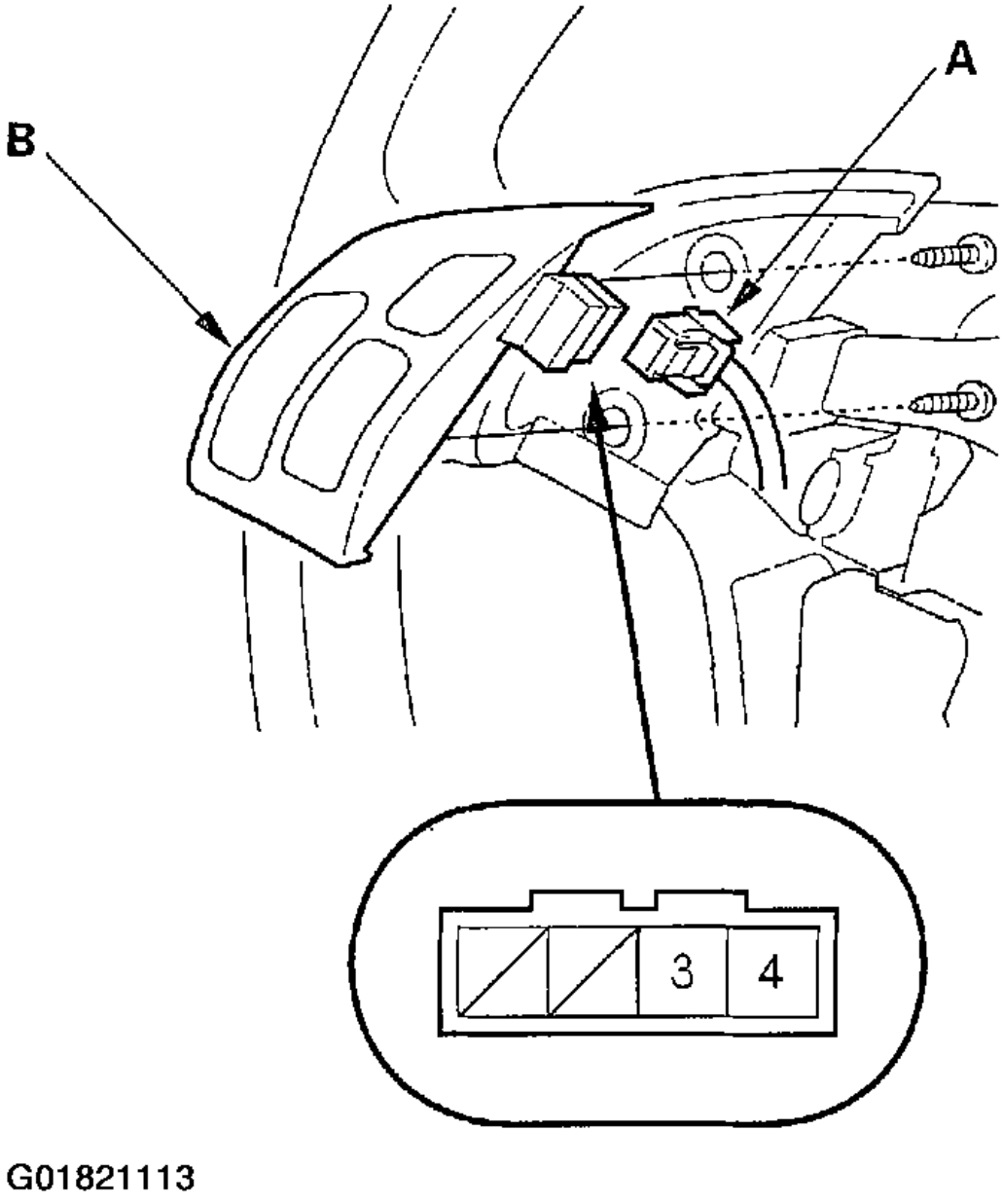


Fig. 9: Removing The 4P Connector From The Radio Remote Switch

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3. Remove the two mounting screws and the switch.
4. Measure resistance between the No. 3 and No. 4 terminals in each switch position according to the table. See **Fig. 10** .

Position	Resistance
OFF	About 10 kΩ
MODE	About 4 kΩ
CH (+)	About 2 kΩ
CH (−)	About 800 Ω
▲ (VOL. UP)	About 370 Ω
▼ (VOL. DOWN)	About 100 Ω

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Fig. 10: Radio Remote Switch Test Table

5. If the resistance is not as specified, replace the remote switch.

WINDOW ANTENNA AMPLIFIER/DEFOGGER COIL REPLACEMENT

1. Remove the left rear pillar trim (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).
2. Disconnect the 1P connectors (A) the antenna cable (B), from the window antenna coil (C).

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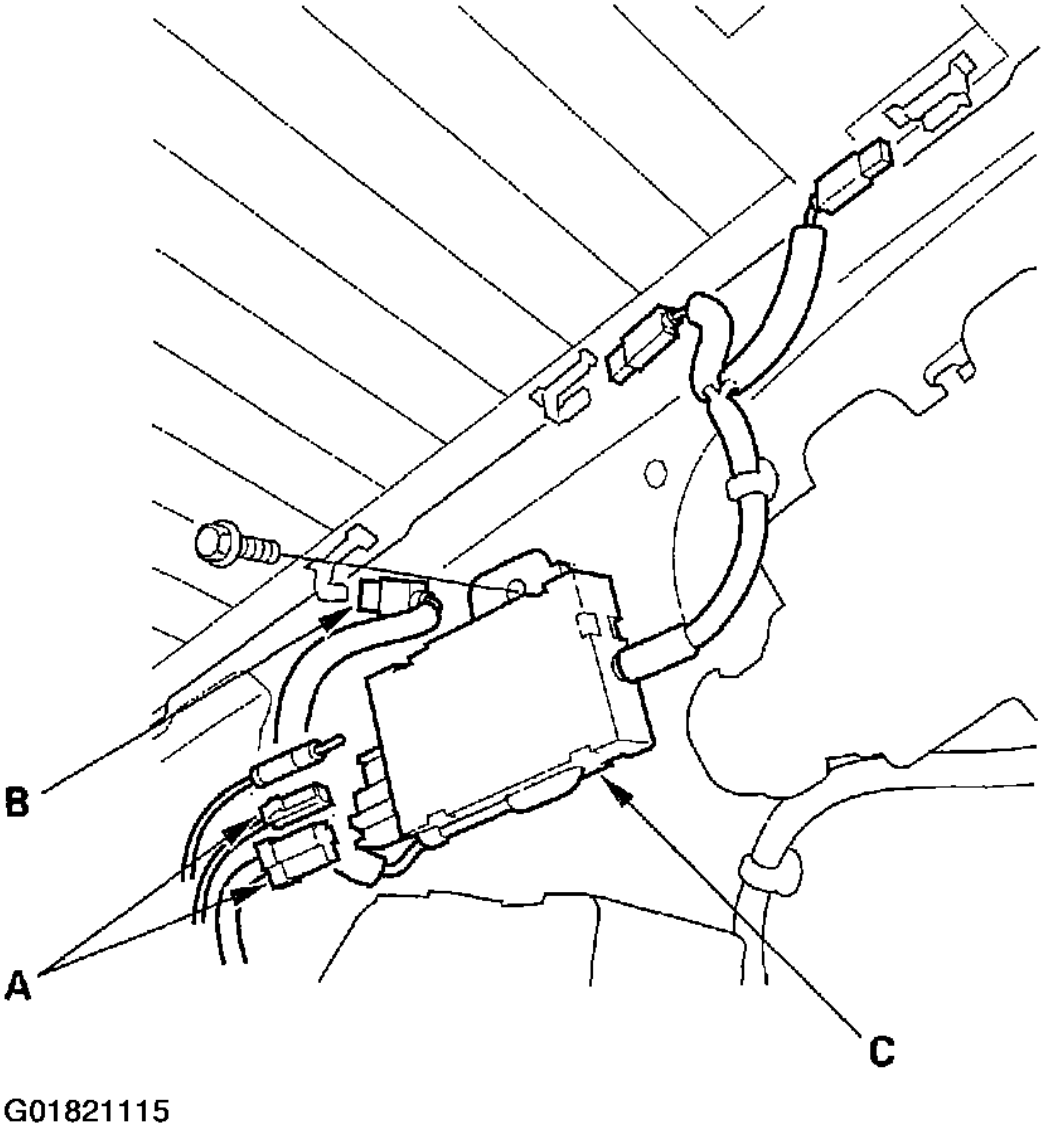


Fig. 11: Removing The Window Antenna Amplifier/Defogger Coil

3. Remove the bolt and the window antenna amplifier/defogger coil.

STEREO AMPLIFIER REPLACEMENT

1. Remove the center console pocket (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Disconnect the connectors (A) from the stereo amplifier (B).

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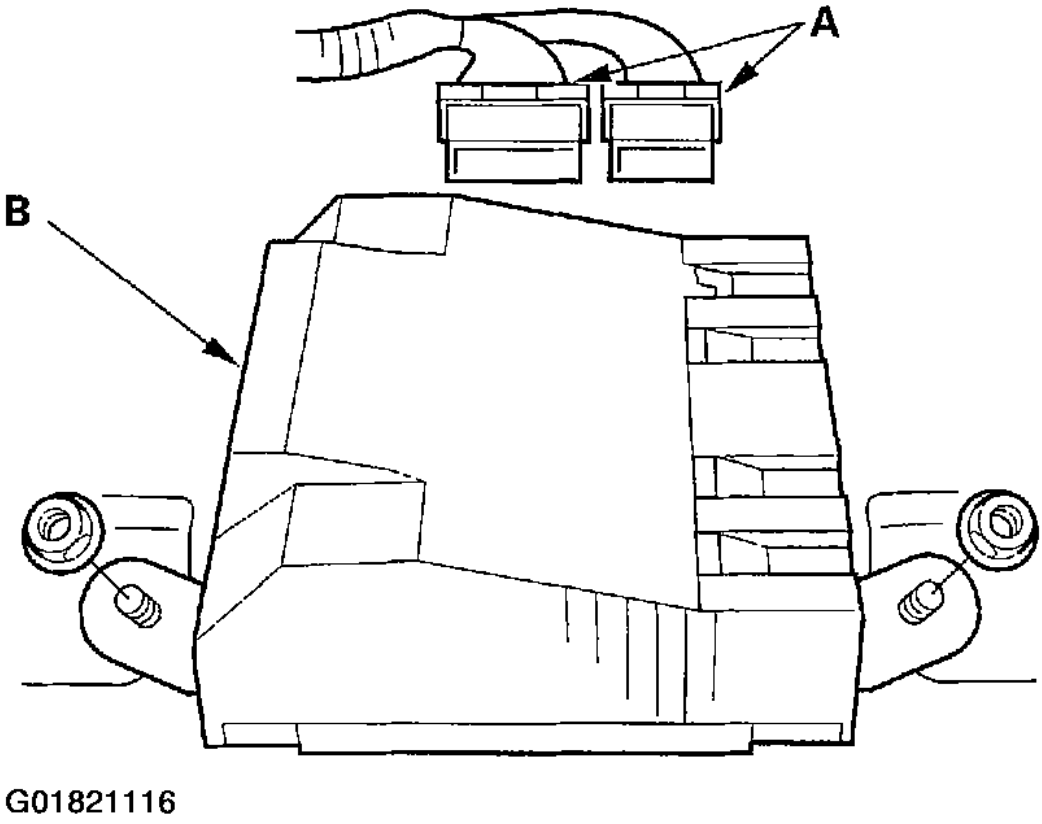


Fig. 12: Removing The Stereo Amplifier

3. Remove the nuts and the stereo amplifier.

WINDOW ANTENNA TEST

1. Wrap aluminum foil (A) around the tip of the tester probe (B) as shown.

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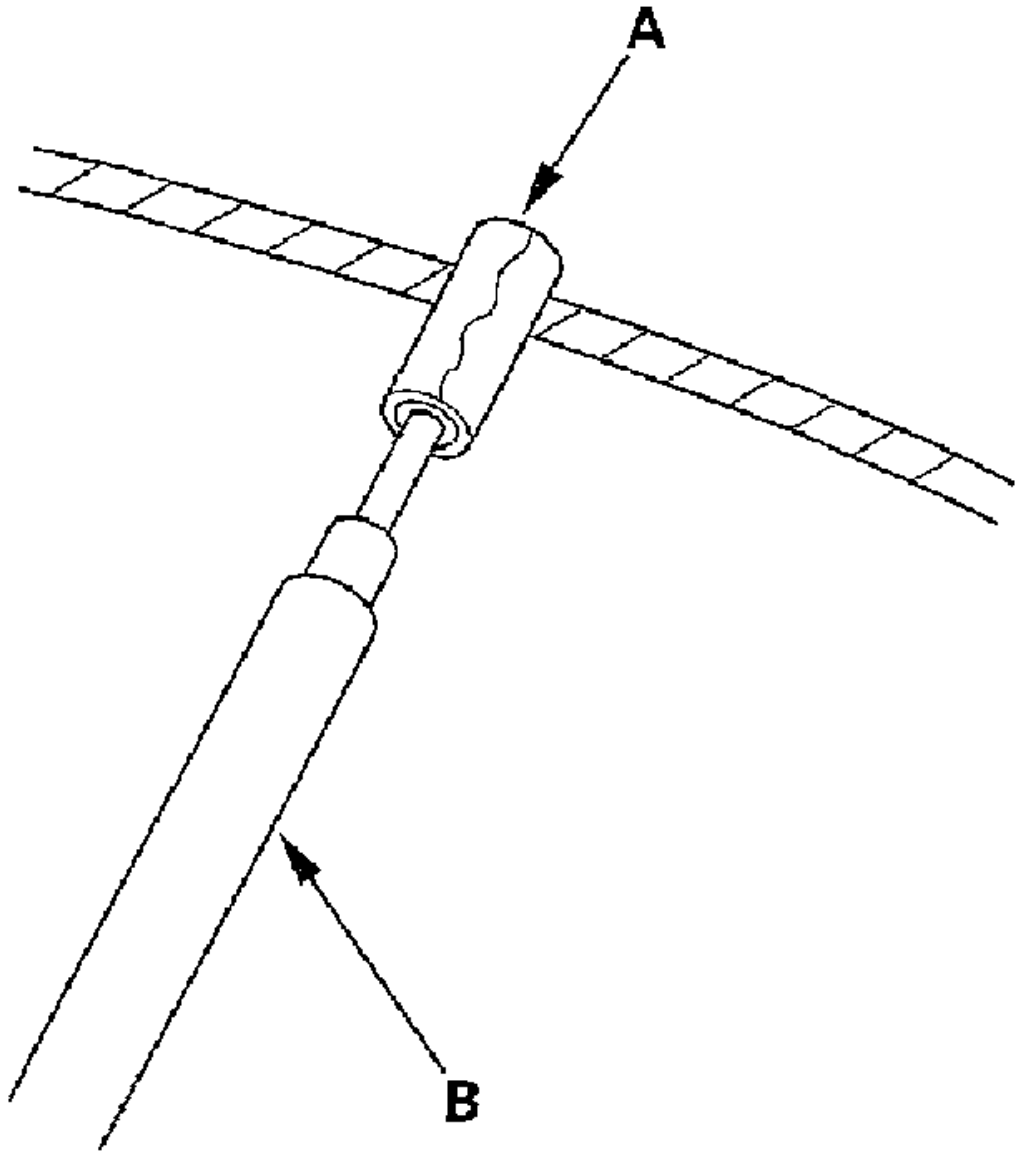


Fig. 13: Wrapping Aluminum Foil Around The Tip Of The Tester Probe

2. Touch one tester probe to the window antenna terminal (A), and move the other tester probe along the antenna wires to check that continuity exists. Repair the window antenna if continuity does not exist.

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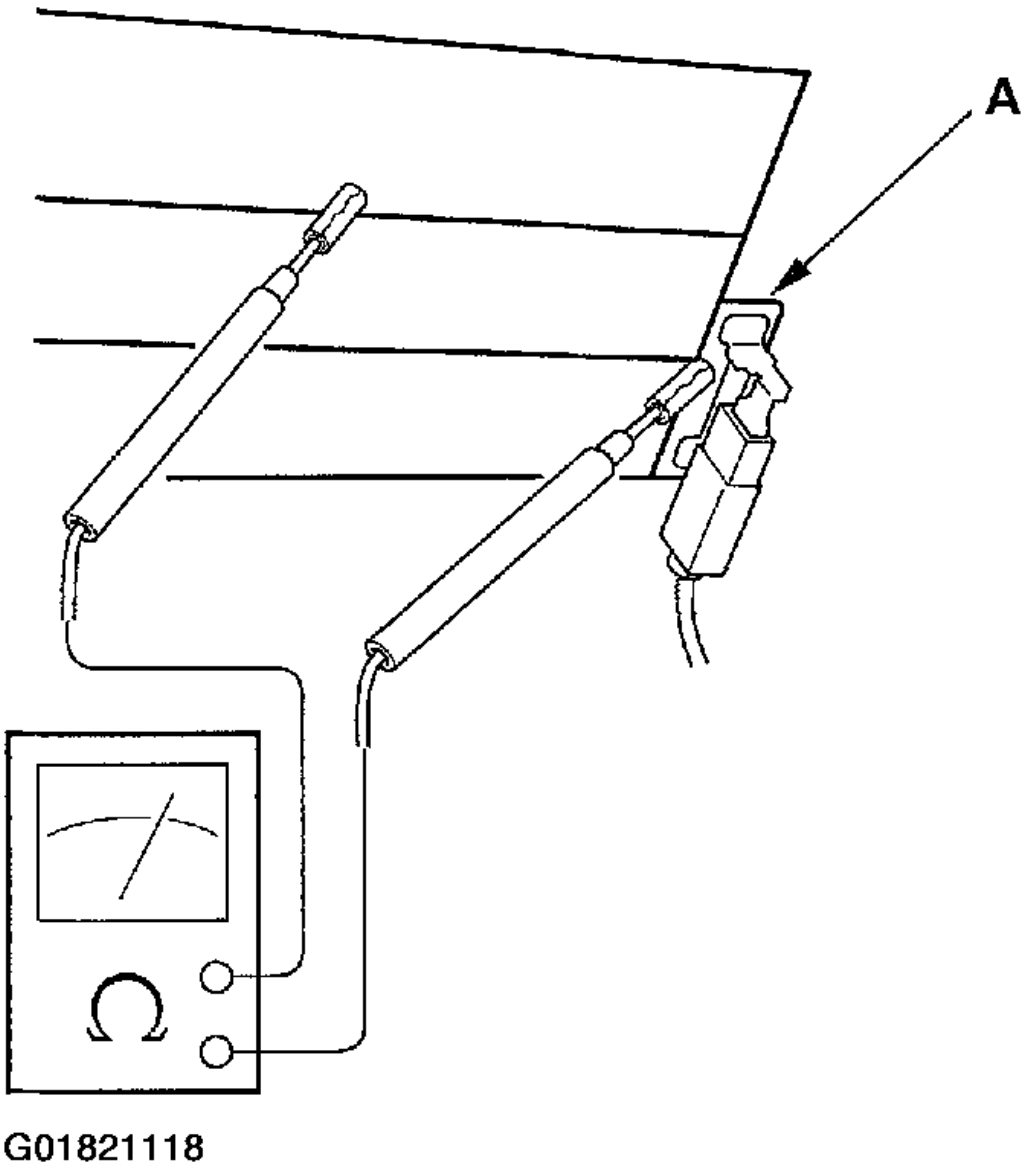


Fig. 14: Window Antenna Test

WINDOW ANTENNA REPAIR

NOTE: To make an effective repair, the broken section must be no longer than one inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.

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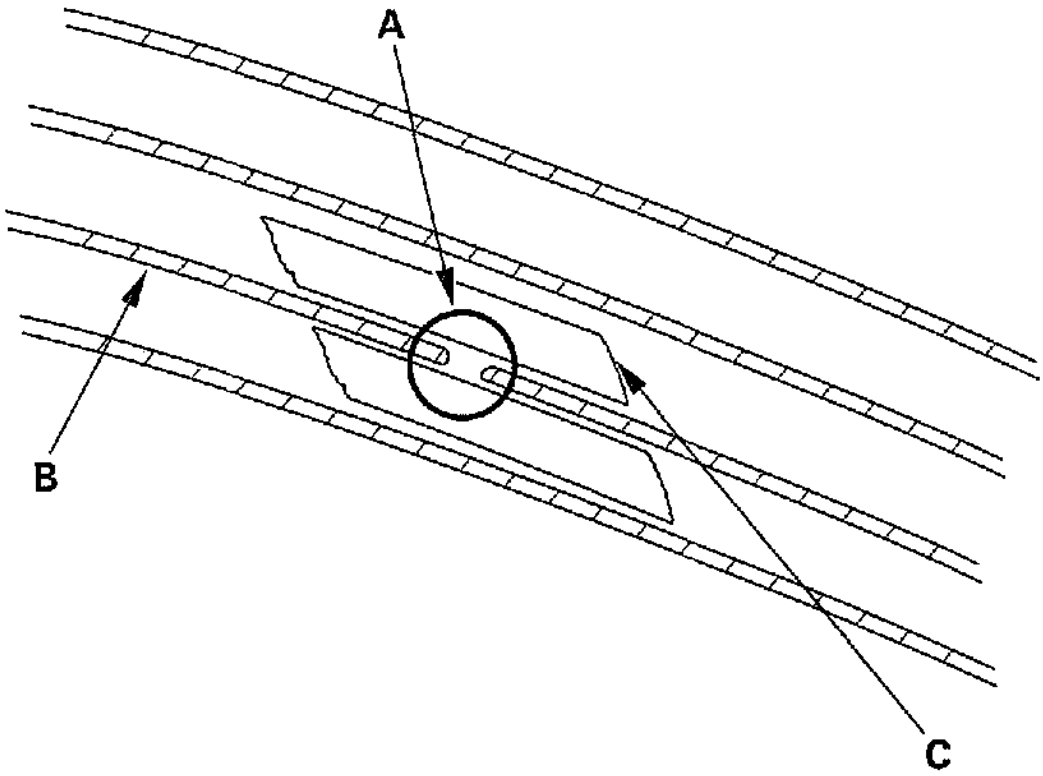


Fig. 15: Cleaning & Masking Repair Area

2. Carefully mask above and below the broken portion of the window antenna wire (B) with cellophane tape (C).
3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of paint (A) extending about 1/8" on both sides of the break. Allow 30 minutes to dry.

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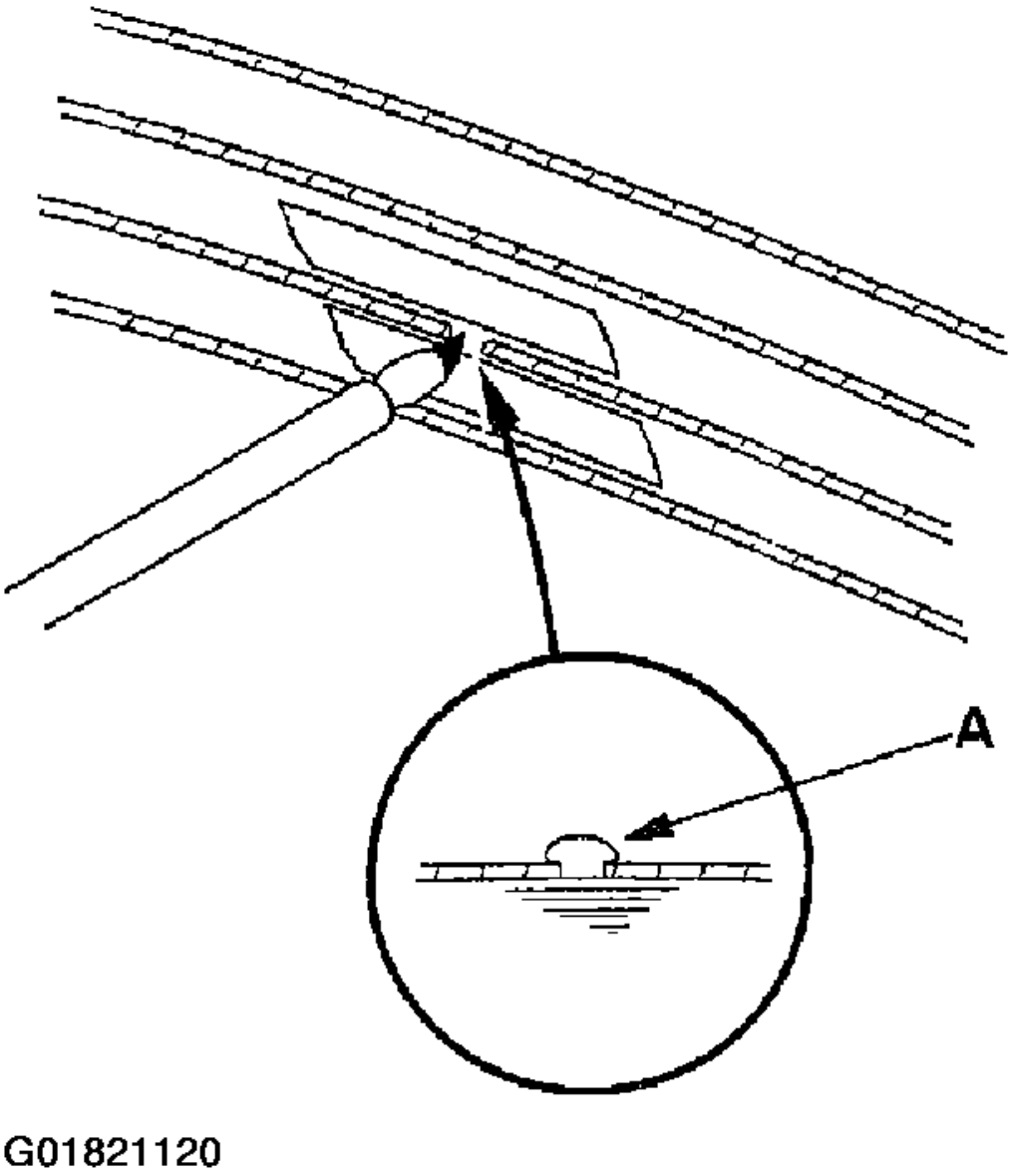


Fig. 16: Applying A Heavy Coat Of Silver Conductive Paint

4. Check for continuity in the repaired wire.
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

AUDIO UNIT CONNECTOR REPLACEMENT

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WITH NAVIGATION

When replacing an audio unit connector, match the wires to the cavities listed in the following tables. See **Fig. 17** through **Fig. 20** .

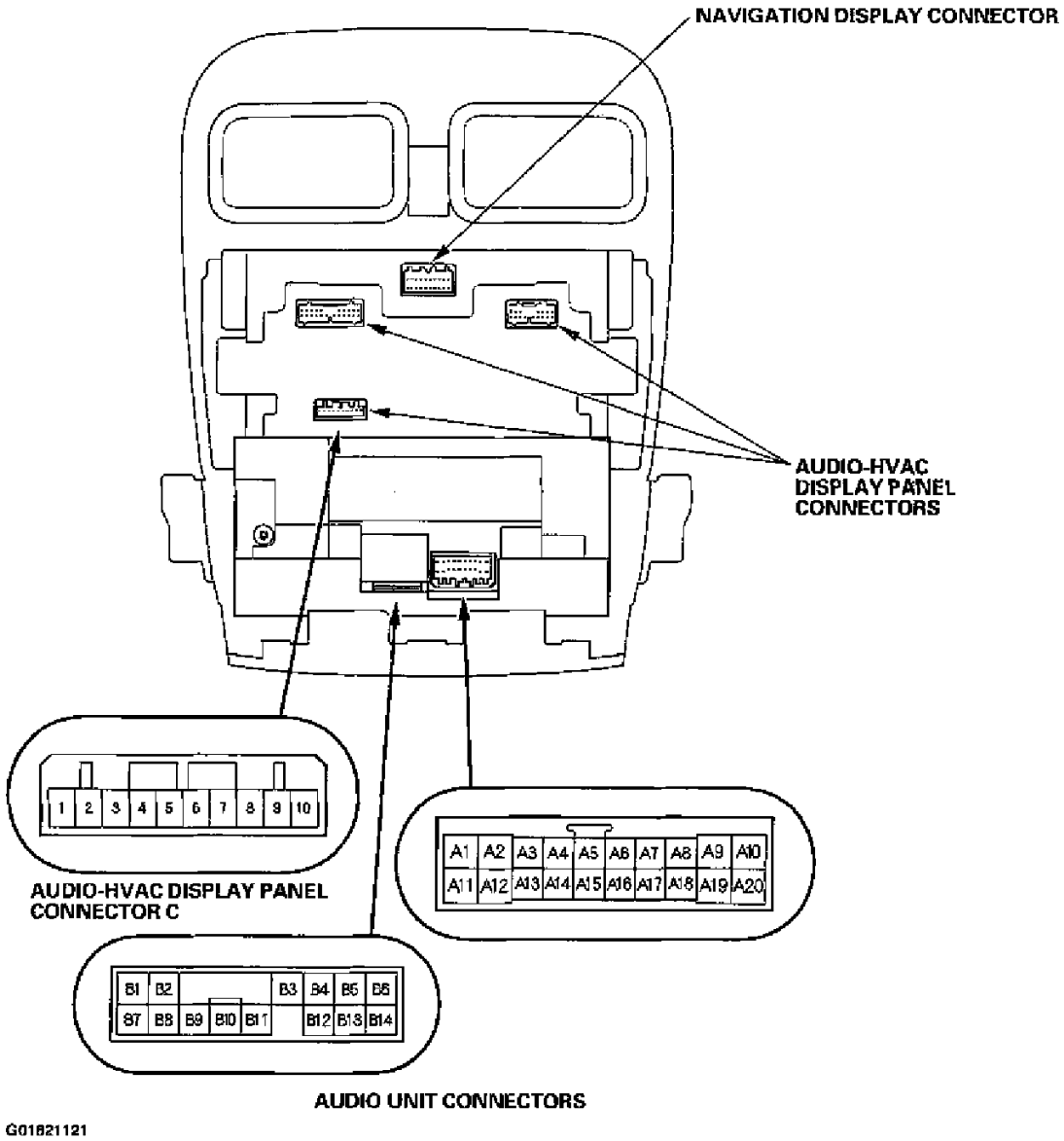


Fig. 17: Identifying Connectors & Terminals (With Navigation)

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Cavity	Wire	Connect to	Cavity	Wire	Connect to
A1	YEL/GRN	Radio switch (Amp.)	A11	BRN	Radio remote switch ground
A2	YEL/RED	ACC (main stereo power supply)	A12	BLU/RED	Navigation unit (RG GND)
A3	GRN/RED	Radio remote switch	A13	WHT	Navigation unit (RG L+)
A4	RED/WHT	(Security input)	A14	———	Not used
A5	LT GRN	Stereo amplifier (Right rear speaker (+))	A15	PUR	Stereo amplifier (Right rear speaker (−))
A6	BLU	Stereo amplifier (Left rear speaker (+))	A16	PNK	Stereo amplifier (Left rear speaker (−))
A7	BLU	Stereo amplifier (Front passenger's door speaker (+), Right tweeter (+))	A17	RED	Stereo amplifier (Front passenger's door speaker (−), Right tweeter (−))
A8	RED/BLU	Stereo amplifier (Driver's door speaker (+), Left tweeter (+))	A18	YEL	Stereo amplifier (Driver's door speaker (−), Left tweeter (−))
A9	RED/BLK	Lights-on signal	A19	RED	Dash lights brightness controller
A10	WHT/BLU	Constant power	A20	BLK	Ground (G504)

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Fig. 18: Identifying Audio Unit Connector A Terminal Wiring Table

Cavity	Wire	Connect to	Cavity	Wire	Connect to
B1	———	Not used	B8	———	Not used
B2	———	Not used	B9	BLU/RED	BUS (+)
B3	BLK	Ground (BUS)	B10	WHT	BUS (−)
B4	———	Not used	B11	———	Not used
B5	———	Not used	B12	———	Not used
B6	———	Not used	B13	———	Not used
B7	———	Not used	B14	———	Not used

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Fig. 19: Identifying Audio Unit Connector B Terminal Wiring Table

Cavity	Wire	Connect to	Cavity	Wire	Connect to
C1	BLK	Audio-HVAC subdisplay ground (5V)	C6	BLU/RED	Audio-HVAC subdisplay data signal line
C2	BLU/ORN	Audio-HVAC subdisplay 5V signal line	C7	BLU	Audio-HVAC subdisplay CE signal line
C3	———	Not used	C8	GRY	Audio-HVAC subdisplay shielding ground
C4	YEL/RED	Audio-HVAC subdisplay reset signal line	C9	RED	Audio-HVAC subdisplay LCD (BL−) signal line
C5	YEL	Audio-HVAC subdisplay clock signal line	C10	GRN	Audio-HVAC subdisplay LCD (BL+) signal line

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Fig. 20: Identifying Audio-HVAC Display Panel Connector C Terminal Wiring Table

WITHOUT NAVIGATION

When replacing an audio unit connector, match the wires to the cavities listed in the following table. See **Fig. 21** through **Fig. 23** .

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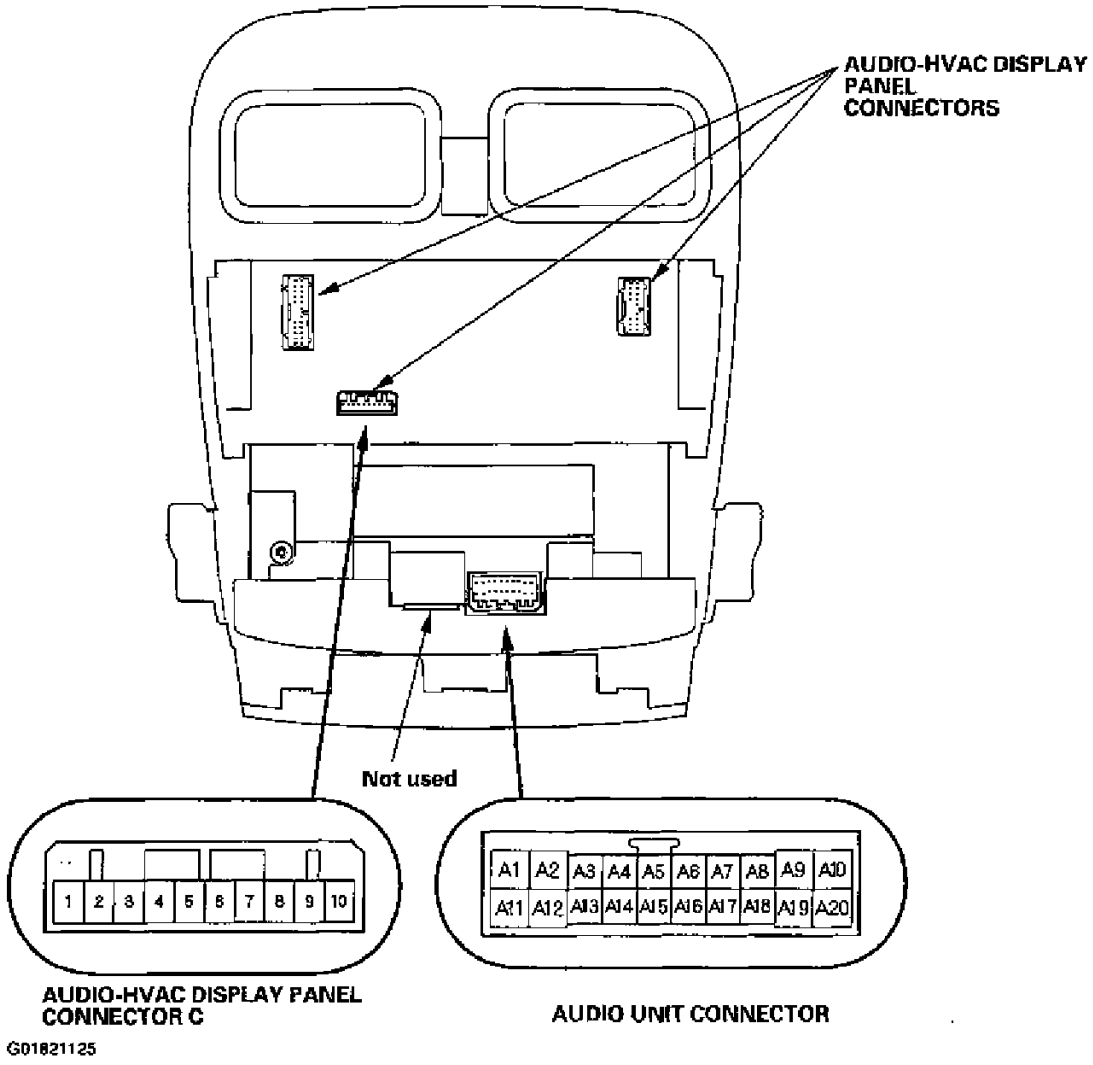


Fig. 21: Identifying Connectors & Terminals (Without Navigation)

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Cavity	Wire	Connect to	Cavity	Wire	Connect to
A1	YEL/GRN	Radio switch (Amp.)	A11	BRN	Radio remote switch ground
A2	YEL/RED	ACC (main stereo power supply)	A12	BLU/RED	Navigation unit (RG GND)
A3	GRN/RED	Radio remote switch	A13	WHT	Navigation unit (RG L+)
A4	RED/WHT	(Security input)	A14	—	Not used
A5	LT GRN	Stereo amplifier (Right rear speaker (+))	A15	PUR	Stereo amplifier (Right rear speaker (−))
A6	BLU	Stereo amplifier (Left rear speaker (+))	A16	PNK	Stereo amplifier (Left rear speaker (−))
A7	BLU	Stereo amplifier (Front passenger's door speaker (+), Right tweeter (+))	A17	RED	Stereo amplifier (Front passenger's door speaker (−), Right tweeter (−))
A8	RED/BLU	Stereo amplifier (Driver's door speaker (+), Left tweeter (+))	A18	YEL	Stereo amplifier (Driver's door speaker (−), Left tweeter (−))
A9	RED/BLK	Lights-on signal	A19	RED	Dash lights brightness controller
A10	WHT/BLU	Constant power	A20	BLK	Ground (G504)

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Fig. 22: Identifying Audio Unit Connector A Terminal Wiring Table

Cavity	Wire	Connect to	Cavity	Wire	Connect to
C1	BLK	Clock ground (5V)	C6	BLU/RED	Clock data signal line
C2	BLU/ORN	Clock 5V signal line	C7	BLU	Clock CE signal line
C3	—	Not used	C8	GRY	Clock shielding ground
C4	YEL/RED	Clock reset signal line	C9	RED	Clock LCD (BL−) signal line
C5	YEL	Clock clock signal line	C10	GRN	Clock LCD (BL+) signal line

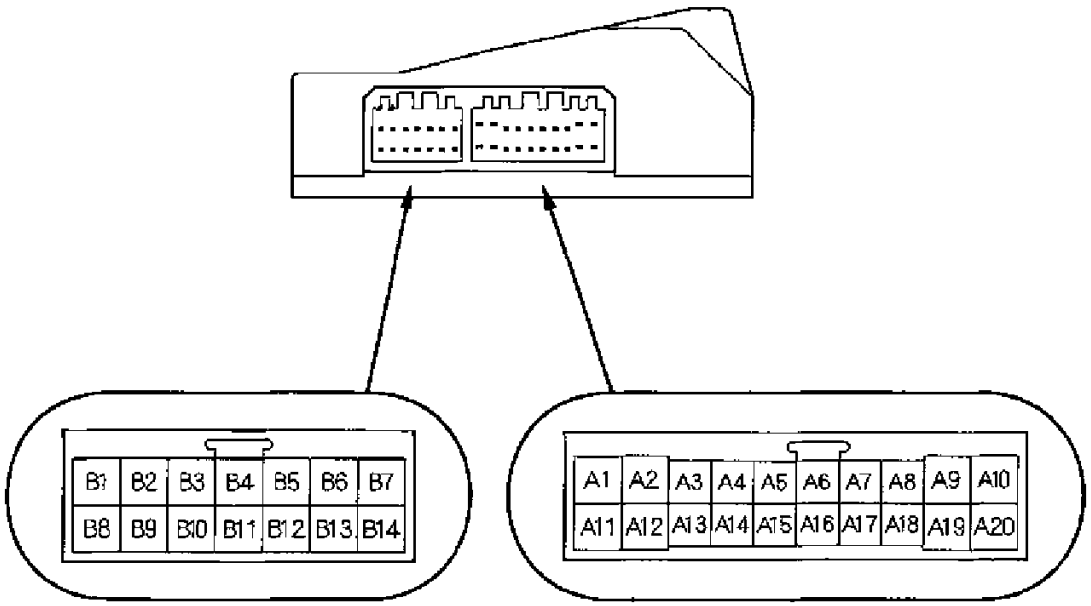
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Fig. 23: Identifying Audio-HVAC Display Panel Connector C Terminal Wiring Table

STEREO AMPLIFIER CONNECTOR REPLACEMENT

When replacing the stereo amplifier connector, match the wires to the cavities listed in the following tables. **Fig. 24** through **Fig. 26** .

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Fig. 24: Identifying Connectors & Terminals

Cavity	Wire	Connect to	Cavity	Wire	Connect to
A1	BLK/RED	Right tweeter (+)	A11	PNK/BLK	Right tweeter (−)
A2	GRN/YEL	Front passenger's door speaker (+)	A12	GRY/RED	Front passenger's door speaker (−)
A3	GRN/BLK	Driver's door speaker (+)	A13	LT GRN	Driver's door speaker (−)
A4	BLU/ORN	Left tweeter (+)	A14	GRY/BLU	Left tweeter (−)
A5	PNK	Right rear speaker (+)	A15	BLU/YEL	Right rear speaker (−)
A6	WHT	Left rear speaker (+)	A16	GRN	Left rear speaker (−)
A7	BLU/RED	Right rear door speaker (+)	A17	BLU/ORN	Right rear door speaker (−)
A8	PNK/BLU	Left rear door speaker (+)	A18	PUR	Left rear door speaker (−)
A9	YEL/RED	ACC (main stereo power supply)	A19		Not used
A10	WHT/BLU	Constant power	A20	BLK	Ground (G504)

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Fig. 25: Identifying Stereo Amplifier Connector A Terminal Wiring Table

Cavity	Wire	Connect to	Cavity	Wire	Connect to
B1	RED/BLU	Audio unit (Driver's door speaker (+))	B8	YEL	Audio unit (Driver's door speaker (−))
B2	BRN/YEL	Front passenger's shielding	B9	GRY/BLU	Left rear shielding
B3	BLU	Audio unit (Left rear speaker (+))	B10	PNK	Audio unit (Left rear speaker (−))
B4	BLU	Audio unit (Front passenger's door speaker (+))	B11	RED	Audio unit (Front passenger's door speaker (−))
B5	BRN	Driver's shielding	B12	GRY	Right rear shielding
B6	LT GRN	Audio unit (Right rear speaker (+))	B13	PUR	Audio unit (Right rear speaker (−))
B7	YEL/GRN	Audio unit (Radio switch)	B14	BLK	Ground (G504)

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Fig. 26: Identifying Stereo Amplifier Connector B Terminal Wiring Table

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AUDIO-HVAC SUBDISPLAY/CLOCK CONNECTOR REPLACEMENT

When replacing an audio unit connector, match the wires to the cavities listed in the following table. See **Fig. 27** and **Fig. 28** .

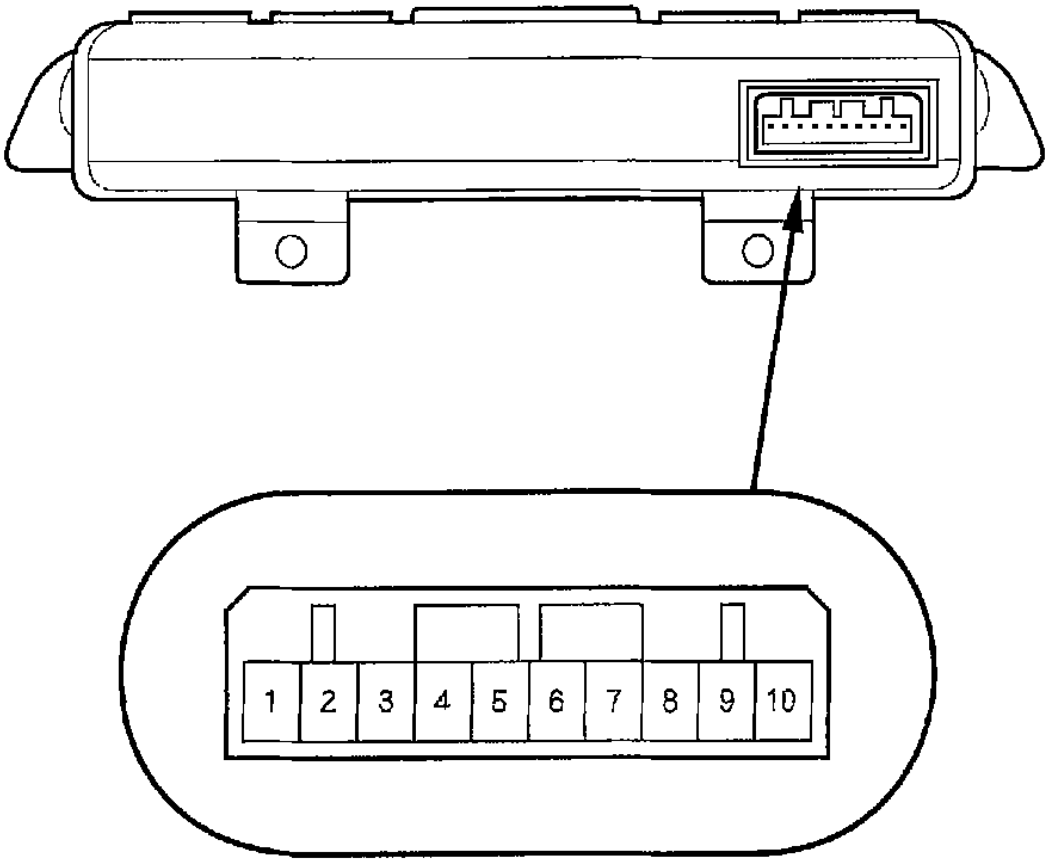


Fig. 27: Identifying Connectors & Terminals (With Navigation)

Cavity	Wire	Connect to	Cavity	Wire	Connect to
1	BLK	GND (5 V)	6	BLU/RED	DATA
2	BLU/ORN	5 V	7	BLU	CE (LOAD)
3	BLK	GND	8	GRY	SHELDING GND
4	YEL/RED	RESET	9	RED	LCD BACKLIGHT (+)
5	YEL	CLOCK	10	GRN	LCD BACKLIGHT (−)

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Fig. 28: Identifying Audio-HVAC Subdisplay/Clock Connector Terminal Wiring Table

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AUDIO-HVAC SUBDISPLAY/CLOCK REPLACEMENT

1. Remove the Audio-HVAC Display Module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**).
2. Remove the two mounting screws.
3. Disconnect the 10P connector (A) from the sub display unit (B).

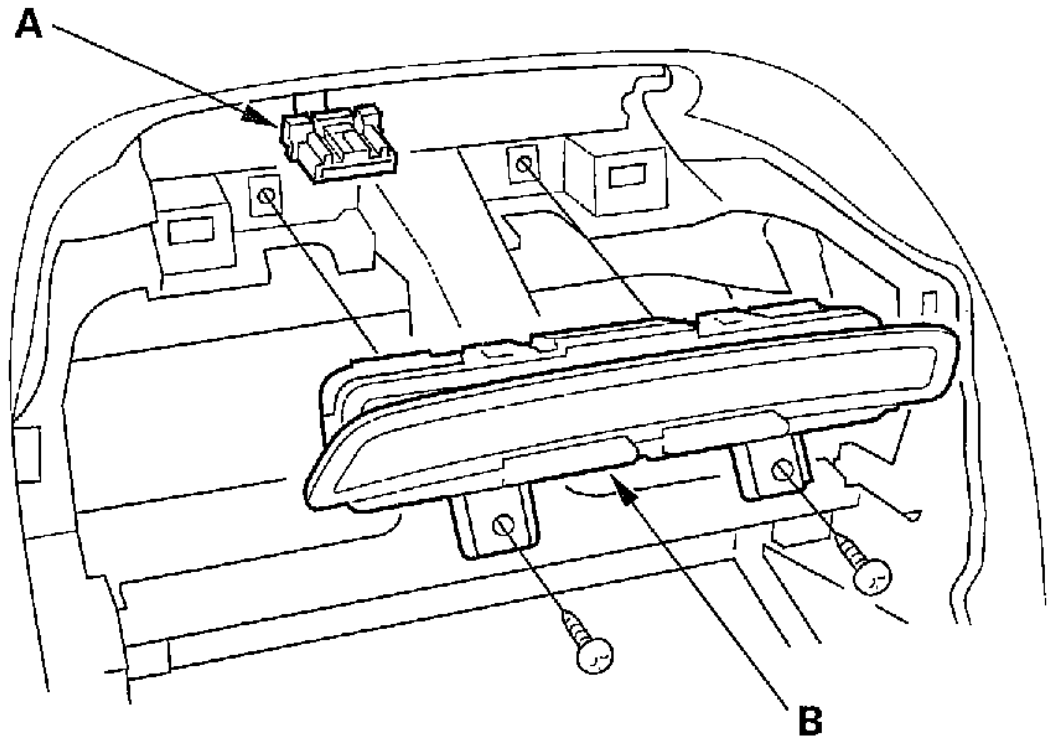


Fig. 29: Removing Audio-HVAC Subdisplay/Clock

4. Install in the reverse order of removal.

AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION

SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the dashboard and related parts.**

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- **Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.**
- **Do not work in a dusty or dirty environment.**
- **Discharge static electricity from your body before and during the work.**
- **Do not touch the circuit board with your bare hands.**
- **Be careful not to fold the flat plate cable.**
- **Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)**

1. Make sure you have the anti-theft codes for the radio and navigation system, then write down the frequencies for the radio's preset buttons.
2. Remove the driver's inner dashboard trim (see **DRIVER'S INNER DASHBOARD TRIM REMOVAL/INSTALLATION**) and passenger's dashboard trim (see **PASSENGER'S DASHBOARD TRIM REMOVAL/INSTALLATION**).
3. Remove the hazard warning switch.
4. Remove the screws and bolts. Disconnect the audio-HVAC-display module connectors (A) and the antenna lead (B), then remove the audio-HVAC display module.

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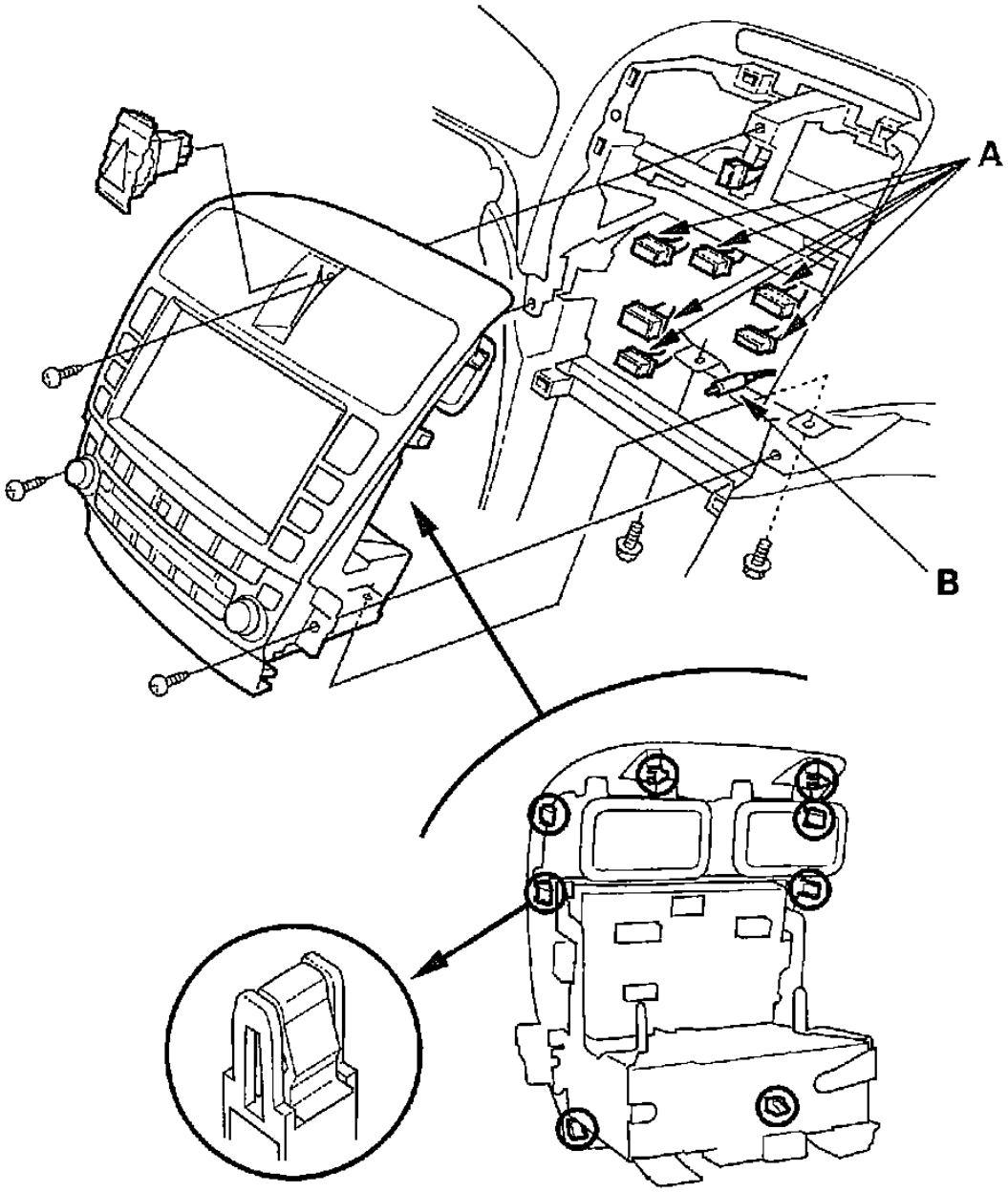


Fig. 30: Removing Audio-HVAC Display Module

5. Install the audio-HVAC-display module and note these items:
   - Make sure all connectors are secure.
   - Enter the anti-theft codes for the radio, then enter the customer's radio station presets, and set the clock.

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- If need, enter the navigation system code.

AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION

1. Remove the audio-HVAC display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**).
2. Remove the mounting screws and audio unit (A) from the radio bracket (B), and separate the audio unit from the audio-HVAC display panel (C).

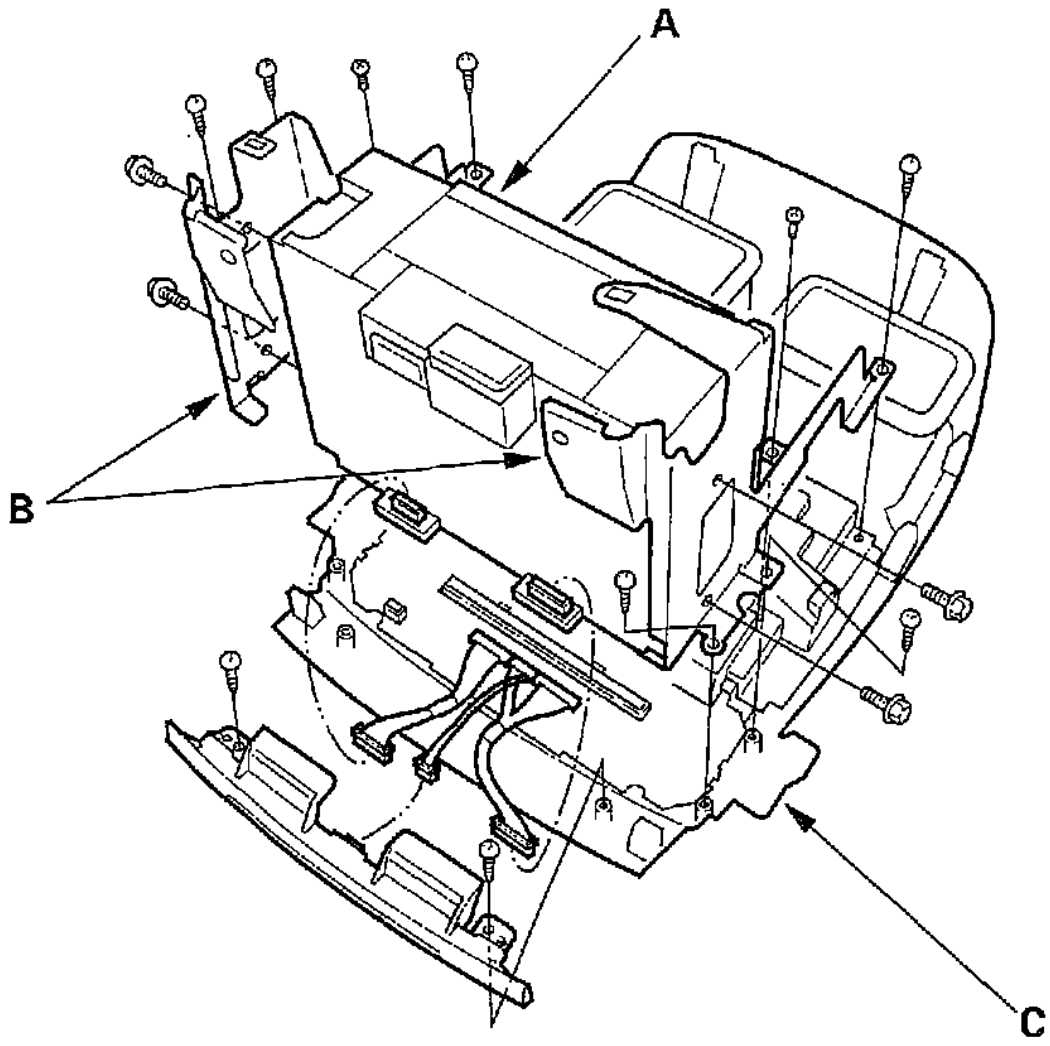


Fig. 31: Removing Audio-HVAC Display Panel (With Navigation)

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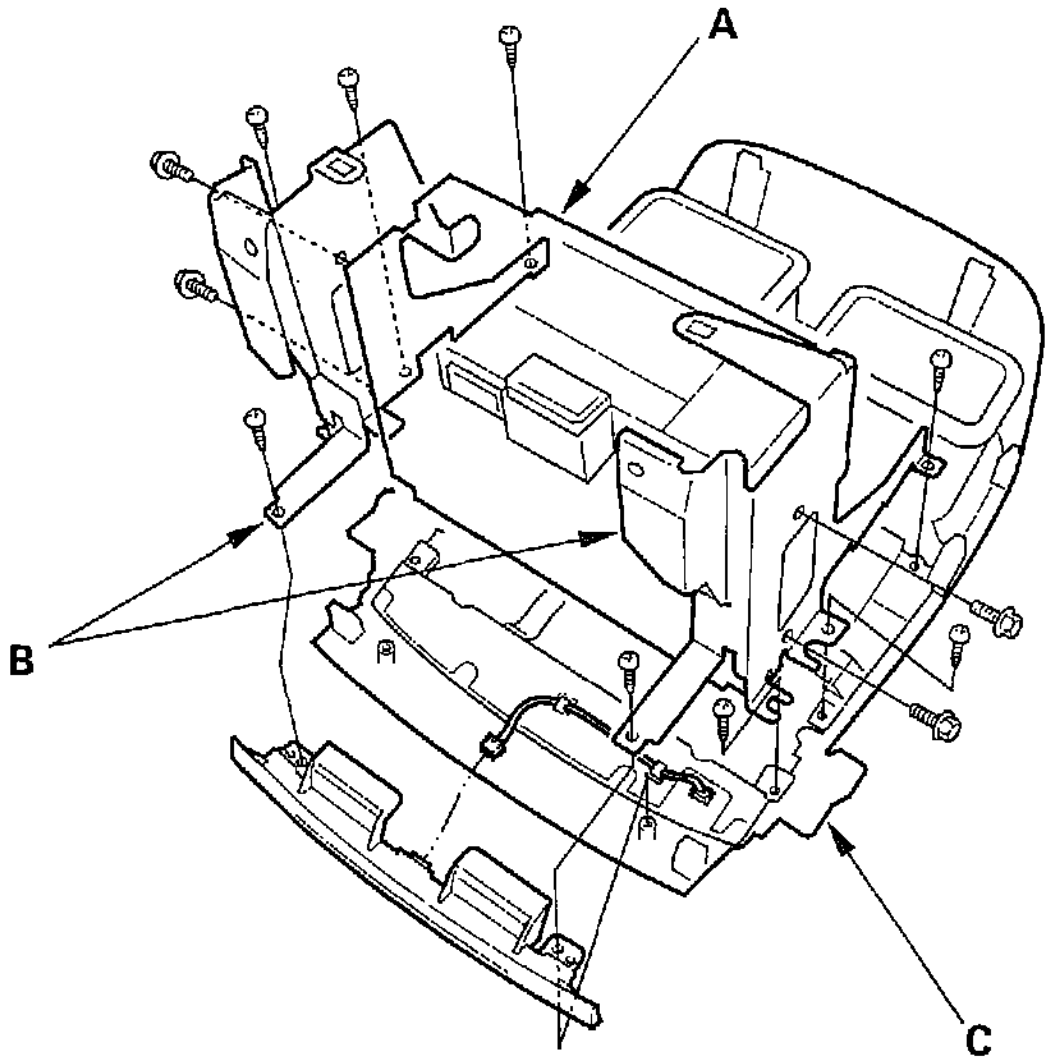


Fig. 32: Removing Audio-HVAC Display Panel (Without Navigation)

3. Install the audio unit and audio-HVAC display module in the reverse order of removal.

SYMPTOM TROUBLESHOOTING INDEX

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Symptom	Diagnostic procedure	Also check for
Poor radio reception or interference	Symptom Troubleshooting	• Antenna lead short or open in the wire • Window antenna open
CD does not load	Symptom Troubleshooting	
Radio preset memory is lost	Symptom Troubleshooting	• Battery condition • Battery cable condition
CD does not play	Symptom Troubleshooting	
CD skips	Symptom Troubleshooting	Tire pressure (over inflated)
Audio system sound is weak or distorted, or no sound is heard from speakers	Symptom Troubleshooting	
CD does not eject	Symptom Troubleshooting	
Power switch will not turn ON	Symptom Troubleshooting	
Radio tuner does not change	Symptom Troubleshooting	
CD changer does not move between CDs	Symptom Troubleshooting	
Volume does not change	Symptom Troubleshooting	
CD changer does not load all six CDs	Symptom Troubleshooting	
Radio remote switch does not work properly	Symptom Troubleshooting	
Audio-HVAC subdisplay/clock does not display	Symptom Troubleshooting	
No display appears on the screen (without navigation)	Symptom Troubleshooting	
Security indicator does not work properly	Symptom Troubleshooting	

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Fig. 33: Symptom Troubleshooting Index Table

SYMPTOM TROUBLESHOOTING

POOR RADIO RECEPTION OR INTERFERENCE

NOTE: Check the radio reception in an open area. Poor reception/interference can be caused by the following:

- **The radio station is far away.**
- **A tall building, a mountain, or high-voltage power line is nearby.**

1. Check if each radio station can be received normally. Compare the radio reception/interference to another vehicle of the same model and trim level in the exact same conditions.

   Are they the same?

   YES: Operation is normal.

   NO: Go to step 2.
2. Check if the radio reception/interference is the same in several locations.

   Is the reception/interference the same?

   YES: Go to step 3.

   NO: Multipath interference or weak station. Operation is normal.

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3. Check the reception/interference when the rear window defogger is on.

   Is the reception poor with the rear window defogger on?

   YES: Check for a break in the rear window defogger grid (see **REAR WINDOW DEFOGGER**), a poor connection, or a faulty antenna amplifier/defogger coil/noise condenser (see **WINDOW ANTENNA AMPLIFIER/DEFOGGER COIL REPLACEMENT**).

   NO: Go to step 4.

4. Check to see if the problem is interference while the engine is running.

   Is there noise (static or while) with the engine running?

   YES: Check the antenna and radio grounds. If OK, check the charging system and the ignition system.

   NO: Go to step 5.

5. Wrap aluminum foil (A) around the tip of a tester probe (B) as shown.

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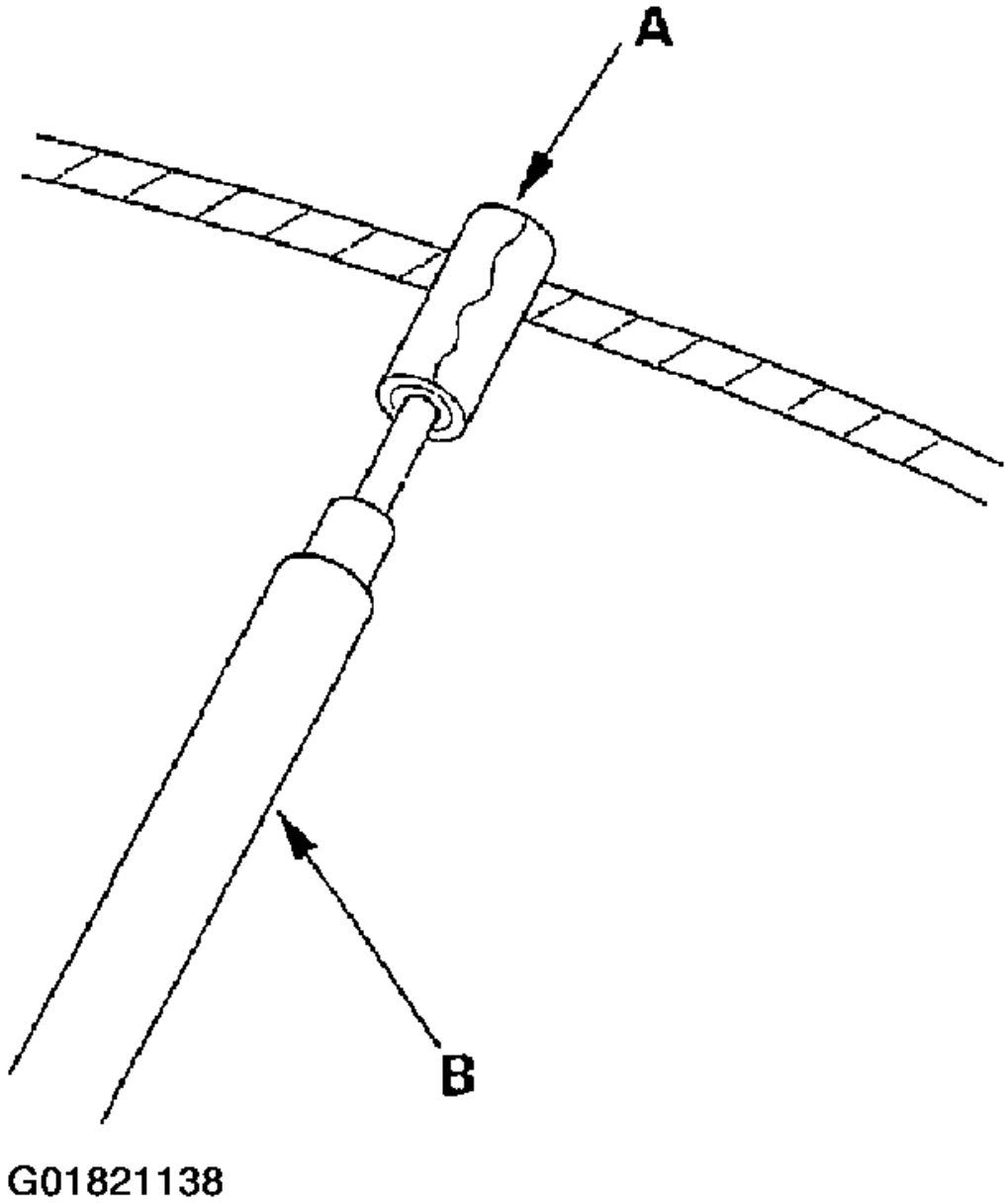


Fig. 34: Wrapping Aluminum Foil Around The Tip Of A Tester Probe

6. Check for continuity by touching one tester probe to the window antenna terminal (A), and move the other tester probe along the antenna wires.

   Is there continuity in all sections of the antenna?

   YES: Go to step 7.

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NO: Repair the antenna wires (see **REAR WINDOW DEFOGGER**).

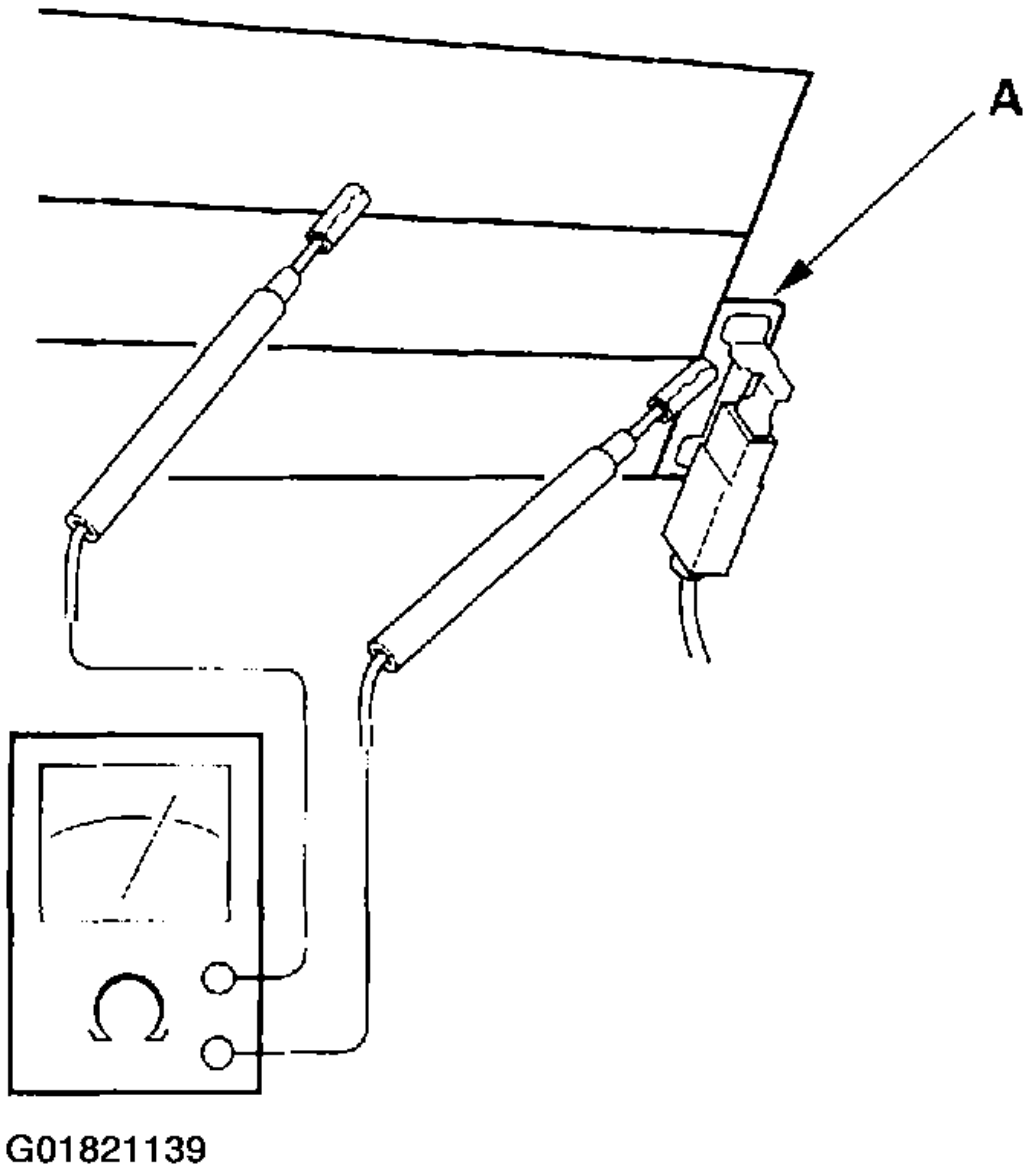


Fig. 35: Testing Window Antenna

7. Turn the radio ON, and measure the voltage between antenna amplifier connector A terminal 1 and body ground.

   Is there 12 V?

   YES: Go to step 8.

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NO: Go to step 13 .

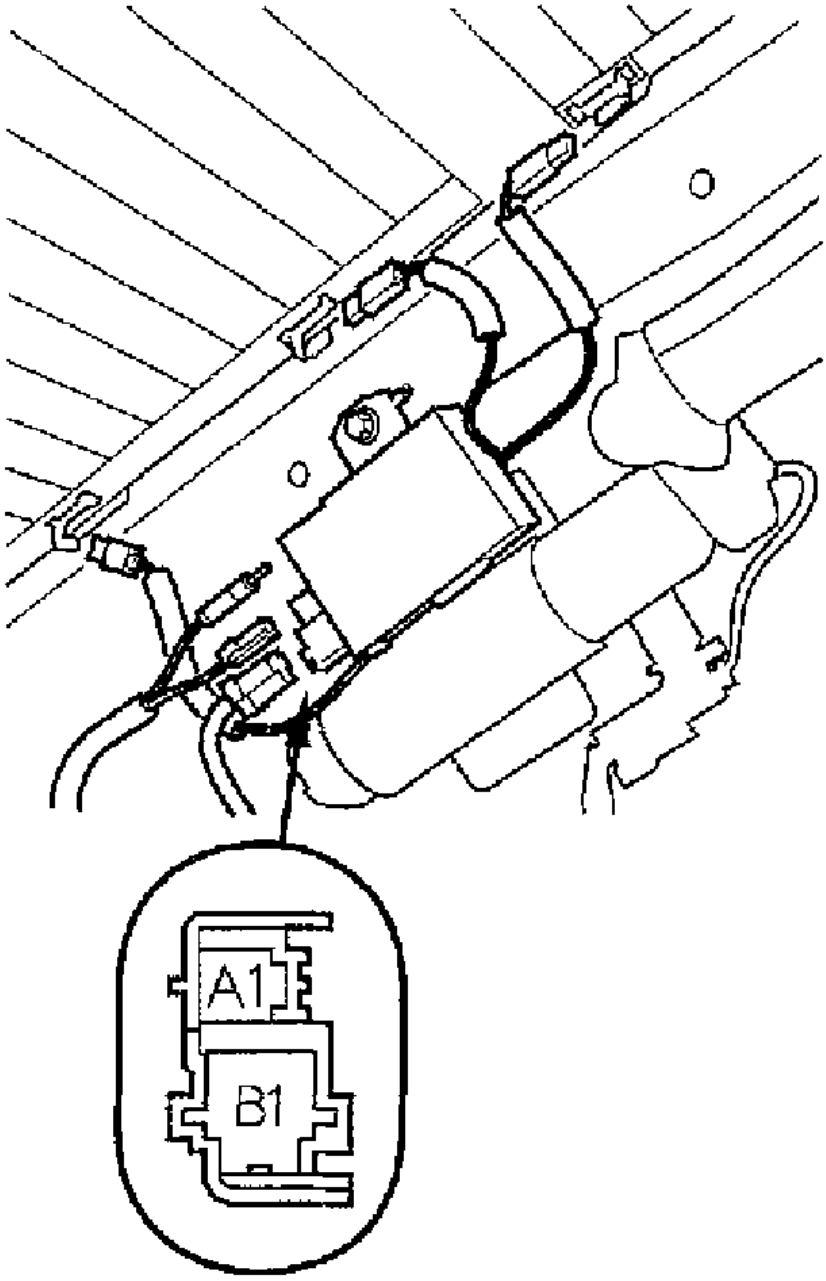


Fig. 36: Measuring The Voltage Between Antenna Amplifier Connector A Terminal 1 & Body Ground

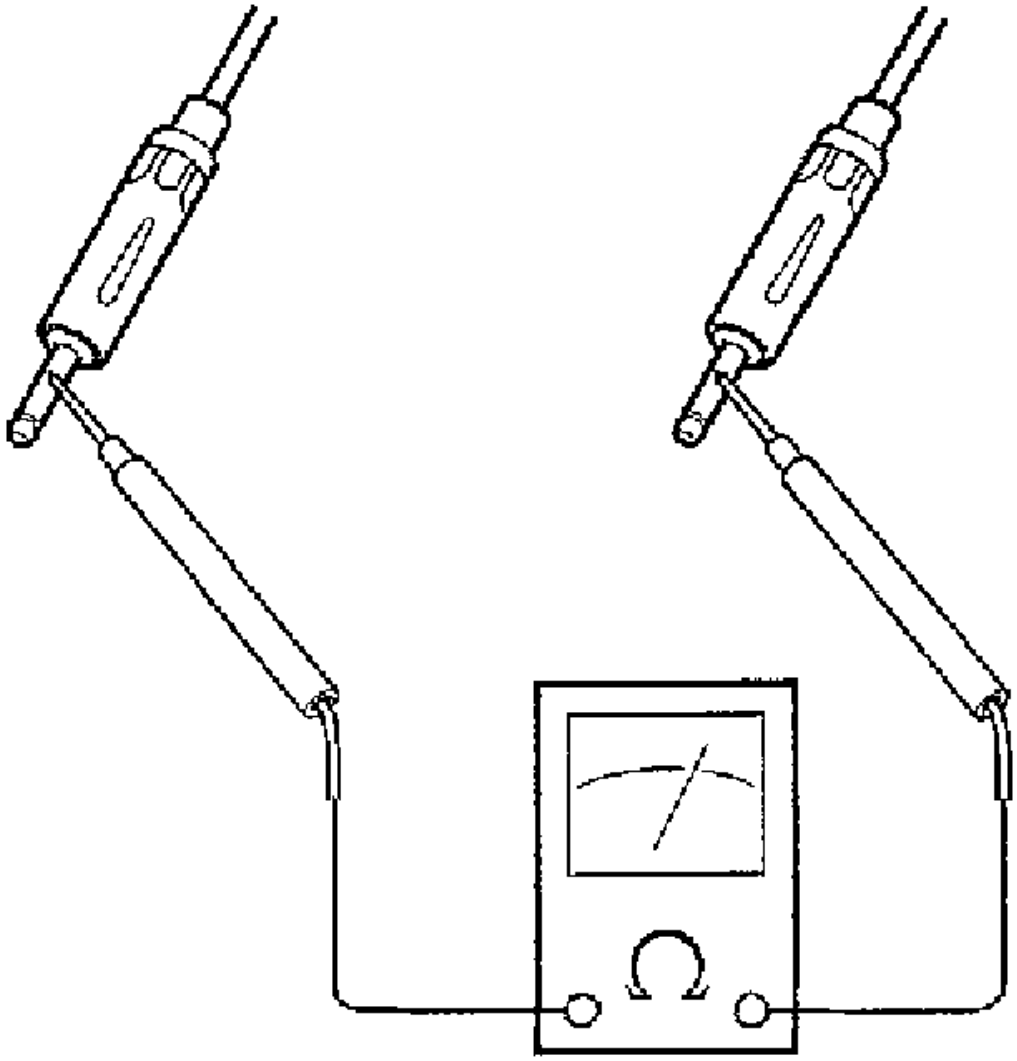
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8. Remove the audio-HVAC display module, and disconnect the antenna lead.
9. Disconnect the antenna lead from the antenna amplifier.
10. Check for continuity between the antenna cable center pin at the audio unit lead and the antenna cable center pin at the antenna amplifier lead.

Is there continuity?

YES: Go to step 11.

NO: Replace the antenna cable.



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Fig. 37: Checking For Continuity Between The Antenna Cable Center Pin At The Audio Unit Lead & The Antenna Cable Center Pin At The Antenna Amplifier Lead

11. Check for continuity between the shield surface of the audio unit lead and the antenna cable shield surface of the antenna amplifier lead.

    Is there continuity?

    YES: Go to step 12.

    NO: Replace the antenna cable.

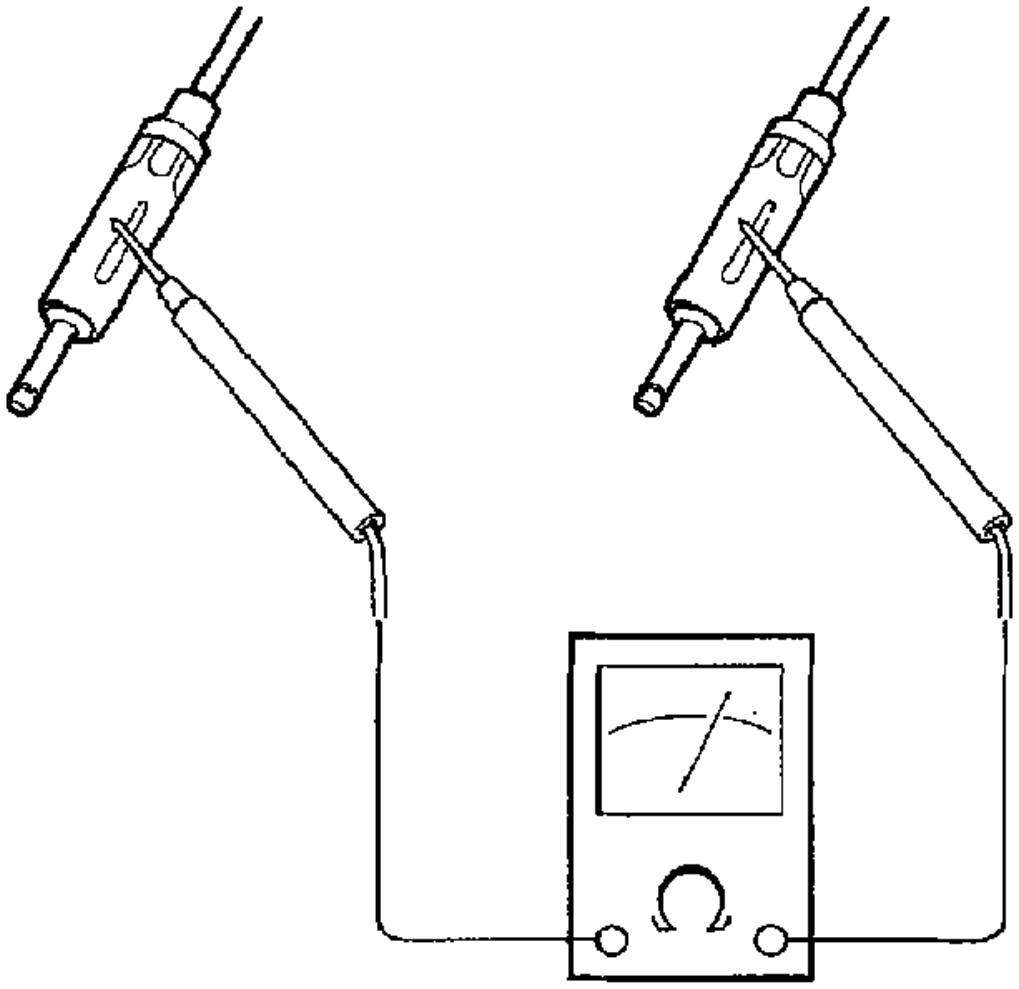


Fig. 38: Checking For Continuity Between The Shield Surface Of The Audio Unit Lead &

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The Antenna Cable Shield Surface Of The Antenna Amplifier Lead

12. Check for continuity between the antenna cable center pin and the surface of the antenna lead.

Is there continuity?

YES: Replace the antenna cable.

NO: Replace the antenna amplifier and recheck. If the reception is still poor, replace the audio-HVAC display module.

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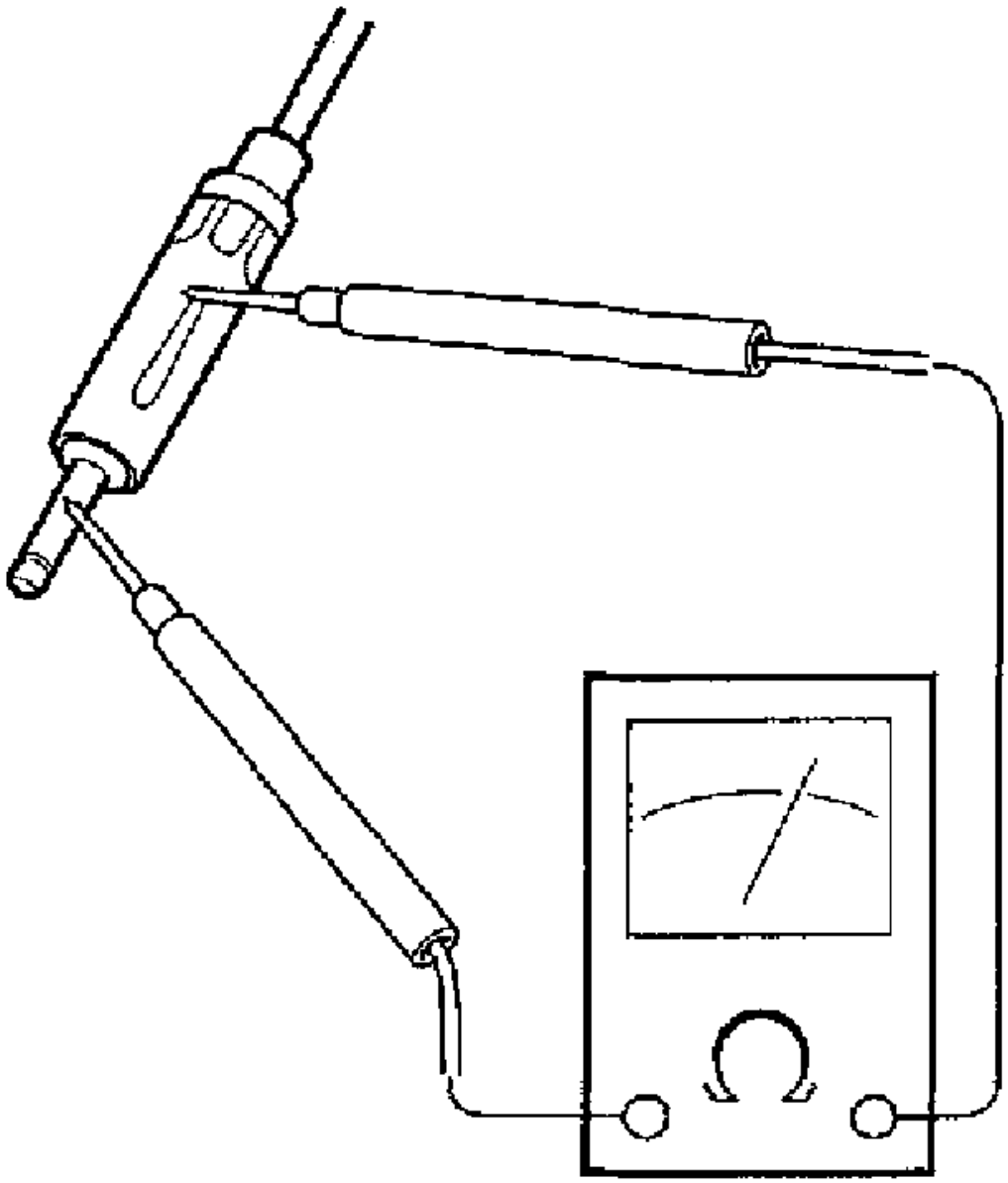


Fig. 39: Checking For Continuity Between The Antenna Cable Center Pin & The Surface Of The Antenna Lead

13. Remove the audio-HVAC-display module and disconnect the radio unit connector A (20P).
14. Check for continuity between audio unit connector A (20P) terminal No. 1 and antenna amplifier

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connector A terminal No. 1.

Is there continuity?

YES: Substitute a known-good audio-HVAC display module and retest.

NO: Repair the open in the wire between the audio unit and the antenna amplifier.

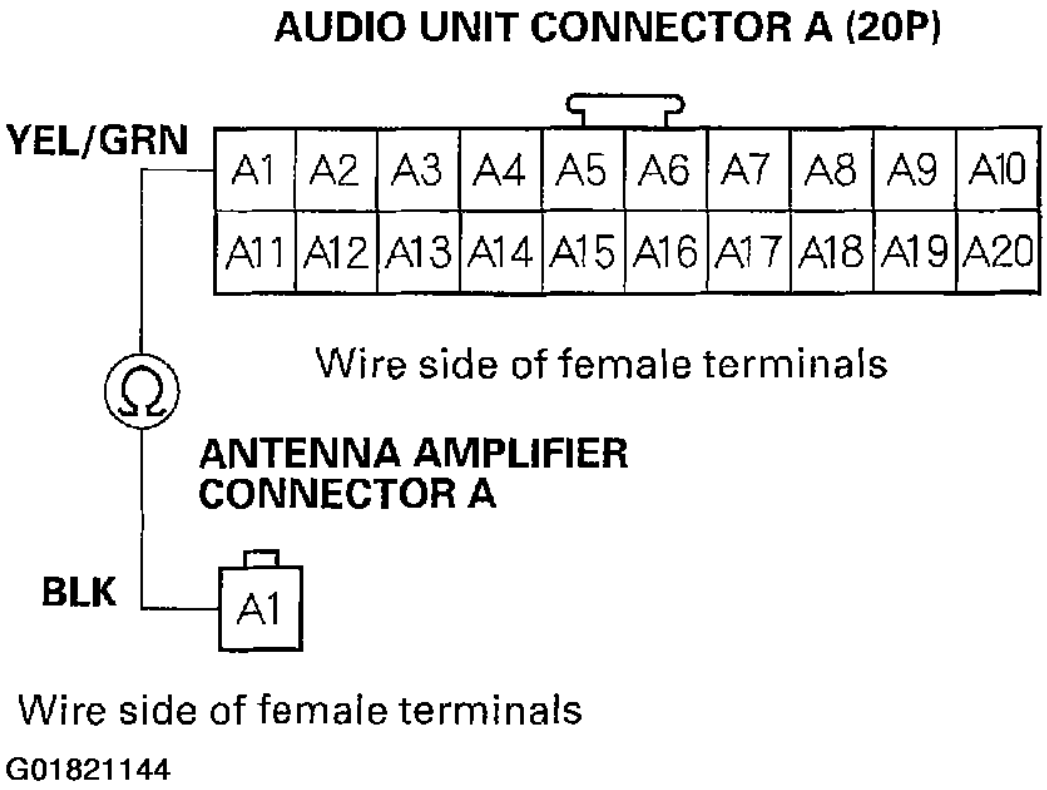


Fig. 40: Checking For Continuity Between Audio Unit Connector A (20P) Terminal No. 1 & Antenna Amplifier Connector A Terminal No. 1

CD DOES NOT LOAD

1. Insert a CD to see if the symptom can be duplicated.

   Does the CD load?

   YES: Operation is normal. If the CD loads normally, but will not play, go to CD does not play (see **CD DOES NOT PLAY**).

   NO: Go to step 2.

2. Insert another CD.

   Does the CD load?

   YES: The original CD is faulty.

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NO: Replace audio-HVAC display module.

RADIO PRESET MEMORY IS LOST

1. Set each of the radio station preset buttons.
   Do each of the preset buttons set properly?
   YES: Go to step 2.
   NO: Replace the audio-HVAC display module.
2. Turn the ignition switch OFF for 1 minute, then turn it back to ON (II).
3. Test all the preset buttons for proper recall operation.
   Do the preset buttons recall the set radio stations?
   YES: System is normal at this time. Check connections at the audio unit.
   NO: Go to step 4.
4. Inspect the under-dash fuse/relay box No. 6 (10A) fuse.
   Is it OK?
   YES: Go to step 5.
   NO: Replace the fuse and reset. If it fails again, repair the short to ground in the harness.
5. Remove the audio-HVAC-display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**).
6. Turn the ignition switch ON (II).
7. Measure voltage between the audio unit connector A 10 terminal and body ground.
   Is there battery voltage?
   YES: Go to step 8.
   NO: An open wire between the under-dash fuse/relay box and audio unit A10 terminal.

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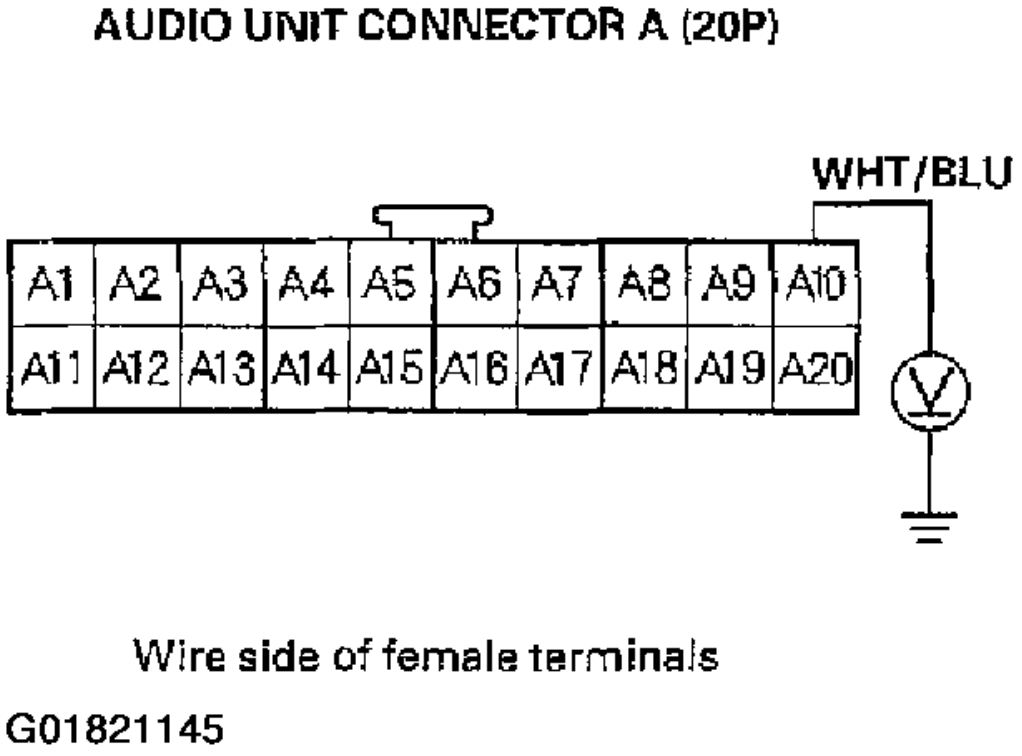


Fig. 41: Measuring Voltage Between The Audio Unit Connector A 10 Terminal & Body Ground

8. Check for continuity between the audio unit A20 terminal and body ground.

   Is there continuity?

   YES: Replace the audio-HVAC display module.

   NO: An open wire between the audio unit A20 terminal and body ground (G504).

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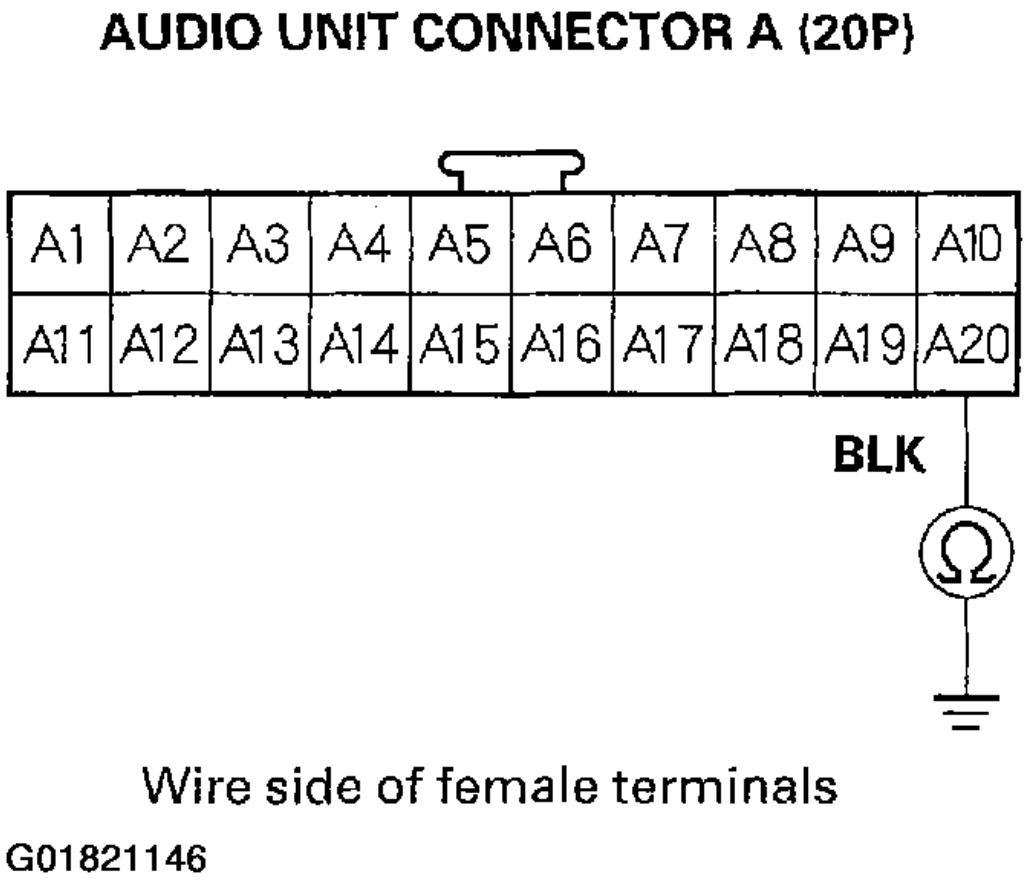


Fig. 42: Checking For Continuity Between The Audio Unit A20 Terminal & Body Ground

CD DOES NOT PLAY

1. Try loading a CD.
   Does the CD load?
   YES: Go to step 2.
   NO: Go to CD does not load (see **CD DOES NOT LOAD**).
2. Insert a CD to see if the symptom can be duplicated.
   Does the CD play?
   YES: Operation is normal.
   NO: Go to step 3.
3. Insert another CD.
   Does the CD play?

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YES: The original CD is faulty.

NO: Replace the audio unit.

CD SKIPS

1. Confirm that the tires are properly inflated.
2. Check the system for when the skipping occurs.

   Does the skipping only occur on rough roads?

   YES: Go to step 4 .

   NO: Go to step 3.
3. Check the CD for damage.

   Is the CD damaged?

   YES: Go to step 5 .

   NO: Replace the audio-HVAC display module.
4. Compare the CD skipping to a similar vehicle under the same conditions.

   Does the similar vehicle's CD skip under the same conditions?

   YES: Operation is normal.

   NO: Go to step 5.
5. Try a known-good CD.

   Does the symptom recur?

   YES: Replace the audio-HVAC display module.

   NO: The original CD is faulty.

AUDIO SYSTEM SOUND IS WEAK OR DISTORTED, OR NO SOUND IS HEARD FROM SPEAKERS

NOTE: Set the fader and balance position to the center.

1. See if the problem recurs with the tuner and more than one CD.

   Does the problem recur using the tuner as well as CDs?

   YES: Go to step 2.

   NO: Go to "poor radio reception or interference" troubleshooting.
2. Check to see if the problem affects all speakers.

   Are all speakers affected?

   YES: Go to step 4 .

   NO: Go to step 3.
3. Check the speaker(s) with the problem for damage.

   Is the speaker(s) damaged?

   YES: Replace the damaged speaker(s) and recheck.

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NO: Go to step 4.

4. Check fuse No. 5 (20A) and No. 32 (7.5A) in the under-dash fuse/relay box.

   Are the fuses OK?

   YES: Go to step 5.

   NO: Replace the fuse and recheck.

5. Turn the ignition switch OFF.
6. Remove the audio-HVAC display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**).
7. Disconnect stereo amplifier connectors A (20P) and B (14P).
8. Measure voltage between stereo amplifier connector A (20P) terminal No. 10 and body ground.

   Is there battery voltage?

   YES: Go to step 9.

   NO: Repair open in the wire between fuse No. 5 (20A) in the under-dash fuse/relay box and the stereo amplifier.

9. Turn the ignition switch to ACC (I).
10. Measure voltage between stereo amplifier connector A (20P) terminal No. 9 and body ground.

    Is there battery voltage?

    YES: Go to step 11.

    NO: Repair open in the wire between fuse No. 32 (7.5A) in the under-dash fuse/relay box and the stereo amplifier.

11. Connect audio unit connector A (20P).
12. Measure voltage between stereo amplifier connector B (14P) terminal No. 7 and body ground.

    Is there battery voltage?

    YES: Go to step 13.

    NO: Repair an open in the wire between the audio unit and the stereo amplifier.

13. Turn the ignition switch OFF.
14. Check for continuity between stereo amplifier connector B (14P) No. 14 terminal and body ground.

    Is there continuity?

    YES: Go to step 15.

    NO: Repair open in the wire between the stereo amplifier and ground (G504). If the wire is OK inspect the ground.

15. Check for continuity between stereo amplifier connector A (20P) No. 20 terminal and body ground.

    Is there continuity?

    YES: Go to step 16.

    NO: Repair open in the wire between the stereo amplifier and ground (G504). If the wire is OK inspect the ground.

16. Disconnect audio unit connector A (20P).
17. Check for continuity between the audio unit connector A and body ground on the following terminals. See **Fig. 43** .

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Is there continuity?

YES: Repair the short to ground between the audio unit and the stereo amplifier.

NO: Go to step 18.

Audio unit terminal	Wire Color
A7 (FR+)	BLU
A17 (FR−)	RED
A8 (FL+)	RED/BLU
A18 (FL−)	YEL
A5 (RR+)	LT GRN
A15 (RR−)	PUR
A6 (RL+)	BLU
A16 (RL−)	PNK

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Fig. 43: Audio Unit Connector A Continuity Table

18. Check for continuity between the stereo amplifier connector B (14P) stereo amplifier input terminals and the appropriate shield terminals. See **Fig. 44** .

Is there continuity?

YES: Repair the short in the harness between the audio unit and the stereo amplifier.

NO: Go to step 19.

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Stereo amplifier input terminals	Shield terminal
B4	B5
B11	
B1	B2
B8	
B6	B12
B13	
B3	B9
B10	

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Fig. 44: Stereo Amplifier & Shield Continuity Table

19. Measure resistance between the stereo amplifier connector A (20P) terminals listed for each of the speaker circuits. See **Fig. 45** .

    Is the resistance as specified?

    YES: Go to step 20.

    NO: Replace the appropriate speaker and retry.

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Speaker	Terminals		Resistance
Drivers Door	A3	A13	4 Ω
Front Passenger's door	A2	A12	4 Ω
Left Tweeter	A4	A14	4 Ω
Right Tweeter	A1	A11	4 Ω
Left Rear Door	A8	A18	4 Ω
Right Rear Door	A7	A17	4 Ω
Left Rear	A6	A16	4 Ω
Right Rear	A5	A15	4 Ω

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Fig. 45: Speaker Circuit Resistance Table

20. Measure resistance between the stereo amplifier connector A (20P) speaker circuit terminals and body ground according to the chart. See **Fig. 46** .

Is there continuity?

YES: Repair short to ground between the stereo amplifier and the appropriate speaker.

NO: Go to step 21.

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Speaker Circuit	Terminal
Drivers Door	A3
	A13
Front Passenger's door	A2
	A12
Left Tweeter	A4
	A14
Right Tweeter	A1
	A11
Left Rear Door	A8
	A18
Right Rear Door	A7
	A17
Left Rear	A6
	A16
Right Rear	A5
	A15

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Fig. 46: Speaker Circuit Ground Short Check Table

21. Substitute a known good stereo amplifier and retest.

    Is the problem still present?

    YES: Substitute a known good audio-HVAC display module and retest. If the original problem is gone, replace the original audio-HVAC display module.

    NO: Replace the original stereo amplifier.

CD DOES NOT EJECT

1. Turn the audio unit on.

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Does the system turn on?

YES: Go to step 2.

NO: Go to power switch will not turn ON (see **POWER SWITCH WILL NOT TURN ON**).

2. Check to see if the CD is ejected correctly with no binding by pushing the EJECT button.

Is it normal?

YES: Operation is normal.

NO: Go to step 3.

3. Insert another CD and recheck.

Does the problem continue?

YES: Replace the audio-HVAC display module.

NO: The original CD is faulty.

POWER SWITCH WILL NOT TURN ON

1. With the ignition switch ON (II), push the power switch ON to see if the audio unit turns ON.

Does the power turn on?

YES: Operation is normal. If the display turns on, but no sound is heard from the speakers, go to audio system is weak or distorted, or no sound is heard from speakers (see **AUDIO SYSTEM SOUND IS WEAK OR DISTORTED, OR NO SOUND IS HEARD FROM SPEAKERS**).

NO: Go to step 2.

2. Turn the ignition switch OFF, then check the No. 6 (10A) and No. 32 (7.5A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

YES: Go to step 3.

NO: Replace the fuse(s) and recheck.

3. Remove the audio-HVAC-display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**). Check that audio unit connector A (20P) is properly connected.

Is it connected properly?

YES: Go to step 4.

NO: Reconnect the connector, and recheck the function.

4. Measure voltage between audio unit connector A10 terminal and body ground.

Is there battery voltage?

YES: Go to step 5.

NO: Repair the open circuit or poor connection in wire between the under-dash fuse/relay box and audio unit connector A terminal No. 10.

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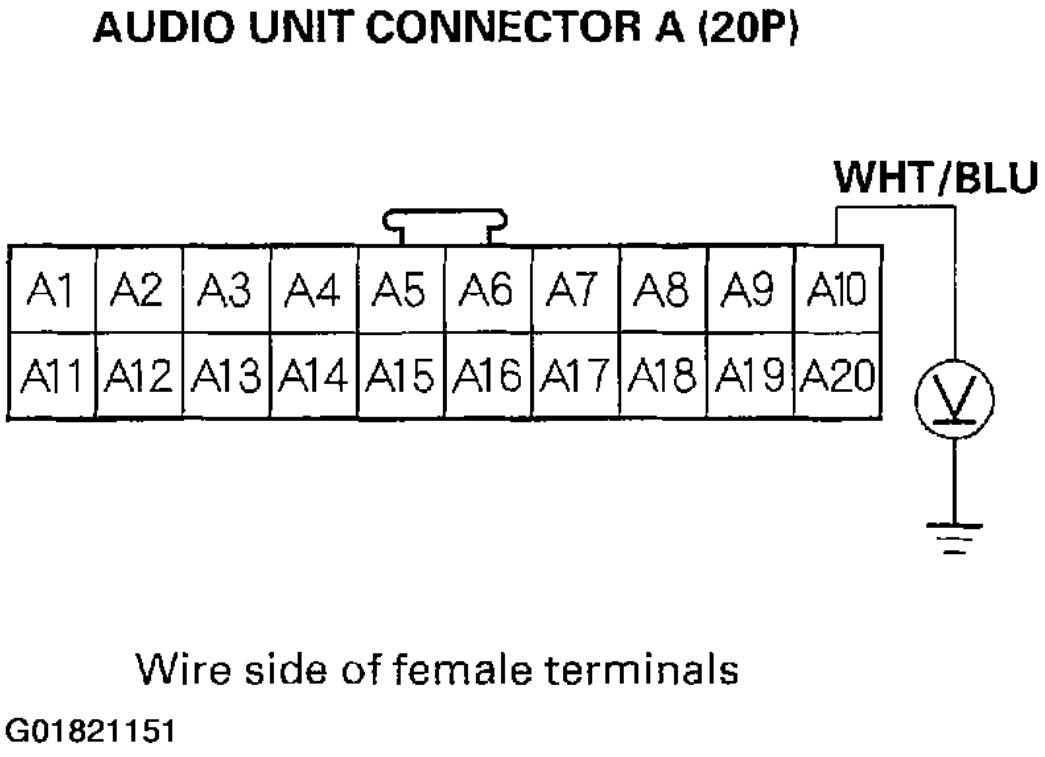


Fig. 47: Measuring Voltage Between Audio Unit Connector A10 Terminal & Body Ground

5. Turn the ignition switch ON (II).
6. Measure the voltage between the audio unit connector A terminal No. 2 and body ground.

Is there battery voltage?

YES: Go to step 7.

NO: Repair the open circuit or poor connection in the wire between the under-dash fuse/relay box and audio unit connector A terminal No. 2.

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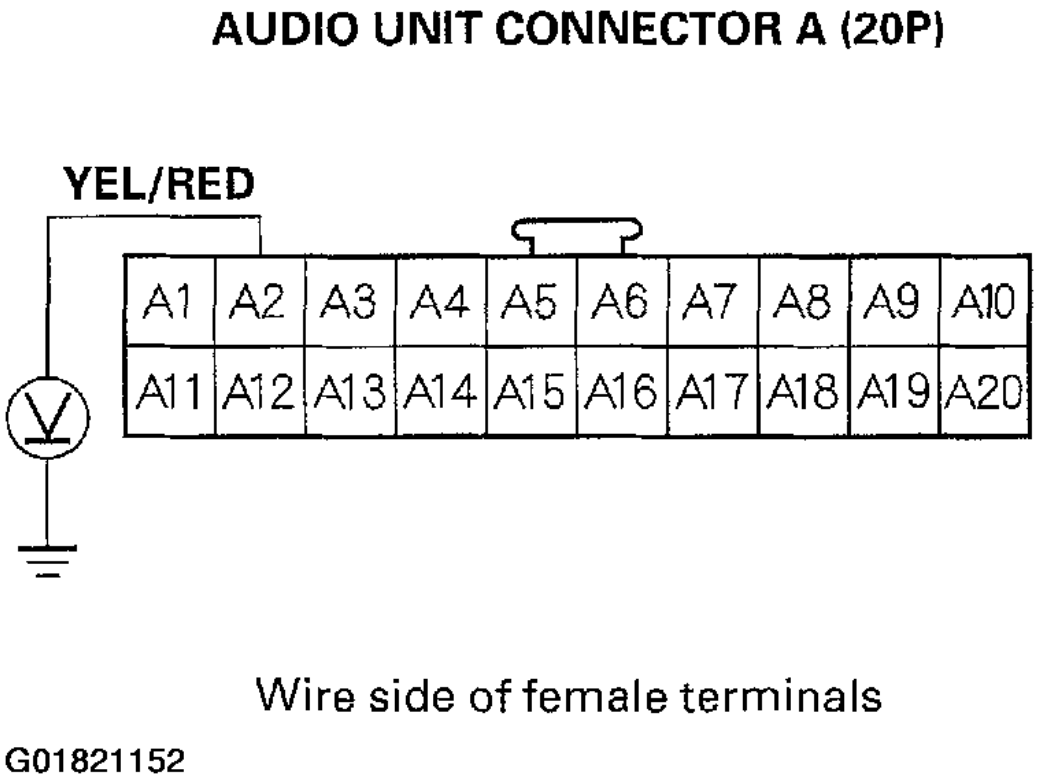


Fig. 48: Measuring The Voltage Between The Audio Unit Connector A Terminal No. 2 & Body Ground

7. Turn the ignition switch OFF, then check for continuity between audio unit connector A terminal No. 20 and body ground.

   Is there continuity?

   YES: Replace the audio-HVAC display module.

   NO: Repair the open wire between audio unit connector A20 and body ground (G504).

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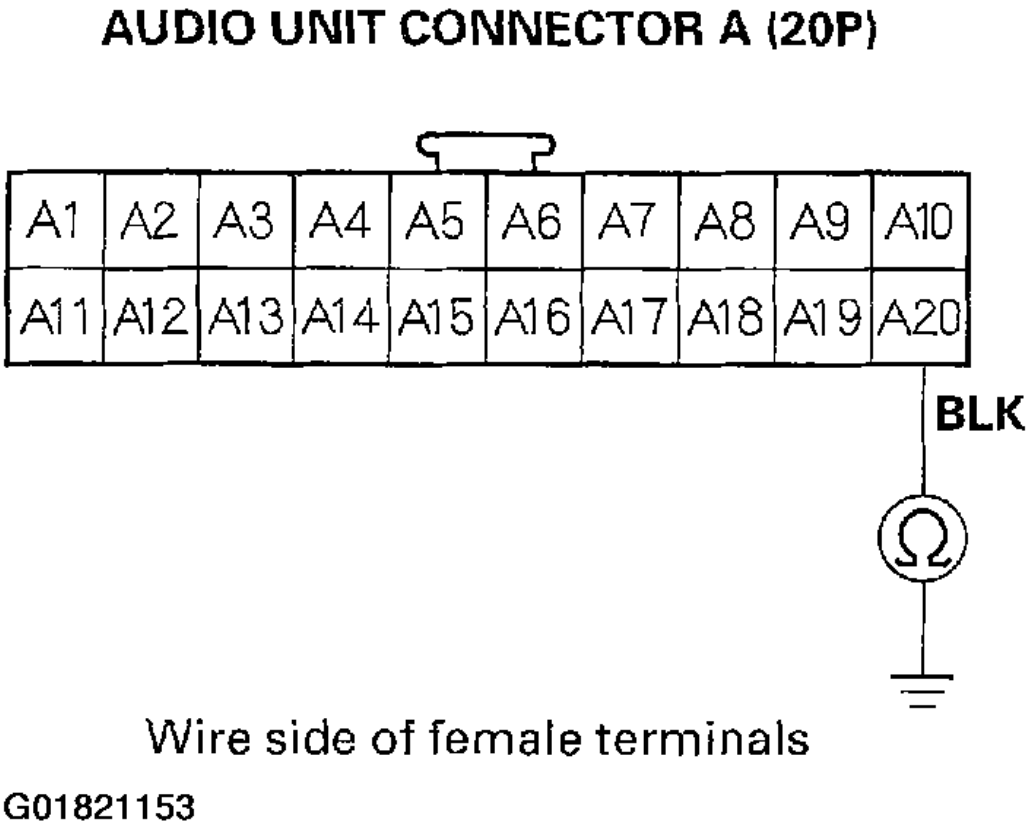


Fig. 49: Checking For Continuity Between Audio Unit Connector A Terminal No. 20 & Body Ground

RADIO TUNER DOES NOT CHANGE

1. Operate the turning knob to see if the radio station changes.

   Does it change?

   YES: Intermittent failure, the tuning knob is OK at this time.

   NO: Replace the audio-HVAC display module.

VOLUME DOES NOT CHANGE

NOTE: Set the fader and balance position to the center.

1. Listen for sound from the speakers.

   Is the sound normal?

   YES: Go to step 2.

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NO: Go to audio system sound is weak or distorted, or no sound is heard from speakers (see **AUDIO SYSTEM SOUND IS WEAK OR DISTORTED, OR NO SOUND IS HEARD FROM SPEAKERS**).

2. Operate the volume knob to see if the volume changes.

Does it change?

YES: Operation is normal.

NO: Replace the audio-HVAC display module.

CD CHANGER DOES NOT MOVE BETWEEN CDS

1. Insert the six CDs into the audio unit and see if the changer moves between CDs.

Does the changer operate normally?

YES: Intermittent failure, the CD changer is OK at this time.

NO: Go to step 2.

2. Insert six different CDs into the audio unit.

Does the changer operate normally?

YES: At least one of the original CDs is faulty.

NO: Replace the audio-HVAC display module.

CD CHANGER DOES NOT LOAD ALL SIX CDS

1. Load six CDs into the audio unit.

Does the audio unit accept all six CDs?

YES: Intermittent failure, the audio unit is OK at this time.

NO: Go to step 2.

2. Try to load the CDs again.

Does the audio unit accept all six CDs?

YES: At least one of the original CDs is faulty.

NO: Replace the audio unit.

RADIO REMOTE SWITCH DOES NOT WORK PROPERLY

1. Test the radio remote switch (see **RADIO REMOTE SWITCH TEST**).

Is the radio remote switch OK?

YES: Go to step 2.

NO: Replace the radio remote switch.

2. Remove the audio-HVAC display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**
3. Measure resistance between the A3 and A11 terminals as specified in the check list. See **Fig. 50** and **Fig. 51** .

Is resistance OK?

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YES: Go to step 4.

NO: Repair open or high resistance in the circuit between the audio unit and the radio remote switch. If the wires are OK, replace the cable reel (see **AIR BAG RESTRAINT SYSTEMS**).

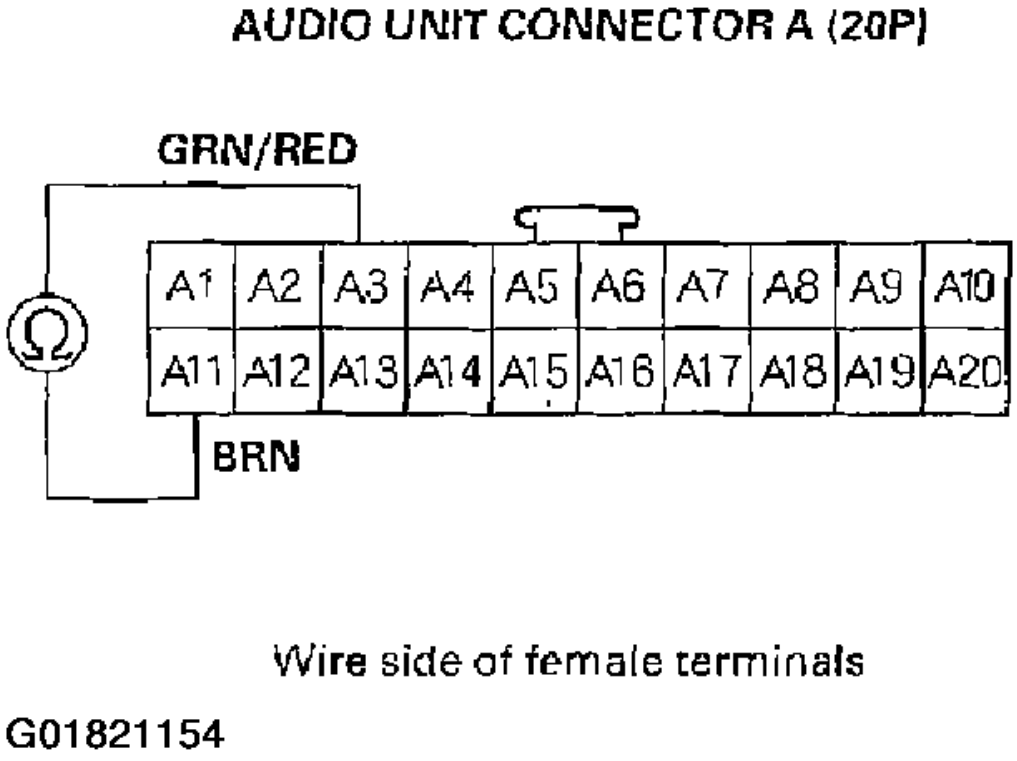


Fig. 50: Measuring Resistance Between The A3 & A11 Terminals

Button held down	VOL DOWN	VOL UP	CH (−)	CH (+)	MODE	(NONE)
Resistance	about 100 Ω	about 370 Ω	about 800 Ω	about 2 KΩ	about 4 KΩ	10 kΩ

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Fig. 51: Radio Remote Switch Resistance Check List

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4. Check for continuity between body ground and terminals A3 and A11 individually.

Is there continuity?

YES: Repair the short to body ground in the circuit between the audio unit and the radio remote switch. If the wires are OK, replace the cable reel (see **AIR BAG RESTRAINT SYSTEMS**).

NO: Replace the audio-HVAC display module.

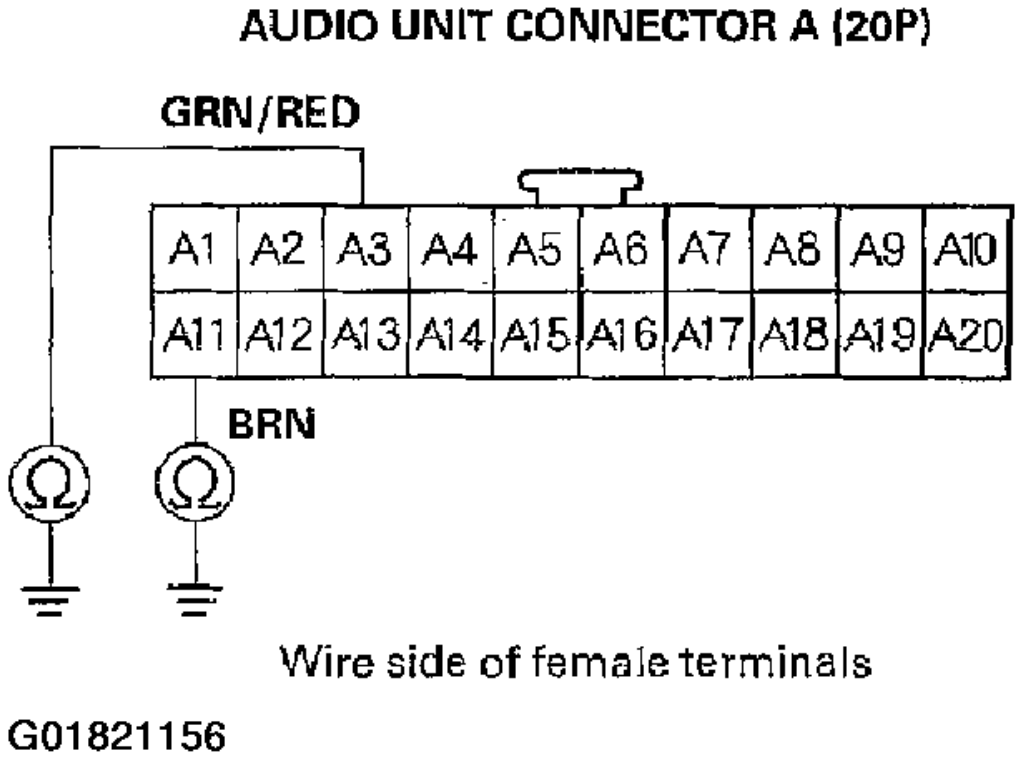


Fig. 52: Checking For Continuity Between Body Ground & Terminals A3 & A11

AUDIO-HVAC SUBDISPLAY/CLOCK DOES NOT DISPLAY

1. Check the connections at the audio-HVAC subdisplay/clock 10P connector and the audio-HVAC display panel connector C (10P).

Are the connectors and terminals connected properly?

YES: Go to step 2.

NO: Repair the connection and recheck.

2. Check for continuity between the audio-HVAC subdisplay/clock 10P connector and the audio-HVAC display panel connector C (10P) terminals for each wire listed in the chart. See **Fig. 53** .

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Is there continuity?

YES: Go to step 3.

NO: Repair the open in the wire between the audio-HVAC display panel and the audio-HVAC subdisplay/clock.

Wire	Audio-HVAC subdisplay/ clock 10P connector terminal	Audio-HVAC display panel connector C (10P) terminal
BLU/ORN	2	2
YEL/RED	4	4
YEL	5	5
BLU/RED	6	6
BLU	7	7
GRY	8	8
BLK	1	1
RED	9	9
GRN	10	10
BLK	3	(body ground)

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Fig. 53: Audio-HVAC Subdisplay/Clock & Audio-HVAC Display Panel Circuit Continuity Chart

3. Check for continuity between each audio-HVAC subdisplay/clock 10P connector terminal and body ground.

Is there continuity?

YES: Repair the short to ground in the wire between the audio-HVAC display panel and the audio-HVAC subdisplay/clock.

NO: Go to step 4.

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Wire	Audio-HVAC subdisplay/ clock 10P connector terminal
BLU/ORN	2
YEL/RED	4
YEL	5
BLU/RED	6
BLU	7
GRY	8
BLK	1
RED	9
GRN	10
BLK	3

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Fig. 54: Checking For Continuity Between The Audio-HVAC Subdisplay/Clock 10P Connector Terminals & Body Ground

4. Substitute a known audio-HVAC subdisplay/clock and recheck.

   Does the subdisplay work properly?

   YES: Replace the original audio-HVAC subdisplay/clock.

   NO: Substitute a known good audio-HVAC display panel and retest. If the problem is gone, replace the original audio-HVAC display panel.

NO DISPLAY APPEARS ON THE SCREEN (WITHOUT NAVIGATION)

1. Turn the ignition switch ON (II) and OFF a few times to see if the problem appears.

   Does the problem appear?

   YES: Go to step 2.

   NO: Operation is normal.

2. Turn the audio unit on and off several times, while listening to the sound from the speakers.

   Is sound heard from the speakers, but no display appears on the screen?

   YES: Go to step 3.

   NO: Go to power switch will not turn on (see **POWER SWITCH WILL NOT TURN ON**).

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3. Remove the audio-HVAC-display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**), and check the connection of audio unit connector A (20P).

   Is it connected properly?

   YES: Replace the audio-HVAC-display panel.

   NO: Reconnect the connector, and recheck the problem.

SECURITY INDICATOR DOES NOT WORK PROPERLY

1. Check if the operation of the security indicator when turning the ignition switch OFF.

   Does the security indicator flash?

   YES: Operation is normal.

   NO: Go to step 2.
2. Check the operation of the radio station preset buttons.

   Do the preset buttons set and keep their memory?

   YES: Replace the audio-HVAC display module.

   NO: Go to radio preset memory is lost (see **RADIO PRESET MEMORY IS LOST**).

AUDIO-HVAC DISPLAY MODULE ILLUMINATION TROUBLESHOOTING

1. Turn the ignition switch to the ON (II) position.
2. Turn the combination light switch ON.
3. Turn the illumination control dial on the gauge control module back and forth between full dim and full bright.

   Does the problem with the illumination affect only the audio-HVAC display panel?

   YES: Go to step 4.

   NO: Go to B-CAN Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
4. Turn the illumination control dial on the gauge control module back and forth between full dim and full bright while watching the audio-HVAC display panel buttons, button LEDs, LCD displays and lower panel ambient light.
5. Proceed with the diagnostic procedure for the appropriate symptom(s).

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Symptom	Diagnostic Procedure
• Buttons stay bright and do not adjust with dimmer • LEDs dim with dimmer off of full bright position • LCD display is full bright and does not adjust with dimmer • Lower panel ambient light may or may not dim with dimmer	Go to step 6.
• Buttons do not light up • LEDs do not dim • LCD display is full bright and does not adjust with dimmer • Lower panel ambient light may or may not dim with dimmer	Go to step 9.
• Lower panel ambient light does not light up • Buttons dim with dimmer • LEDs dim with dimmer off of full bright position • LCD display dims with dimmer	Go to step 12.
• Symptom other than those listed above	Replace the audio-HVAC display module.■

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Fig. 55: Symptom Table

6. Remove the audio-HVAC display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**) and check for loose wires terminals or poor connections at audio unit connector A (20P).

   Are all the wire terminals tight, and is audio unit connector A (20P) connected properly?

   YES: Go to step 7.

   NO: Repair the loose wire terminal, or properly connect audio unit connector A (20P) and recheck the symptom.
7. Turn the illumination control dial on the gauge control module to the full bright position.
8. Measure the voltage between the No. 19 and No. 20 terminals of audio unit connector A (20P).

   Is there 1 V or less?

   YES: Check connections at audio unit connector A (20P). If connections are OK substitute a known-good audio-HVAC display module and recheck the symptom. If the symptom is gone, replace the original audio-HAVC display module.

   NO: Repair open in the RED wire between the MICU and the audio-HVAC display module.
9. Remove the audio-HVAC display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**) and check for loose wire terminals or poor connections at audio unit connector A (20P).

   Are all the wire terminals tight, and is audio unit connector A (20P) connected properly?

   YES: Go to step 10.

   NO: Repair the loose wire terminal, or properly connect audio unit connector A (20P) and recheck the symptom.
10. With the combination light switch still ON, turn the illumination control dial on the gauge control module to the full bright position.
11. Measure the voltage between the No. 9 and No. 20 terminals of the audio unit connector A (20P).

    Is there battery voltage?

    YES: Check connections at the audio unit connector A (20P). If connections are OK substitute a known-good audio-HVAC display module and recheck the symptom. If the symptom is gone, replace the original audio-HVAC display module.

    NO: Repair open in the RED/BLK wire between the under-hood fuse/relay box and the audio-HVAC display panel.
12. Remove the audio-HVAC display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**) and check for loose wire terminals or poor connections at climate control unit connector B (16P).

    Are all the wire terminals tight, and is climate control unit connector B (16P) connector connected properly?

    YES: Go to step 13.

    NO: Repair the loose wire terminal, or properly connect climate control unit connector B (16P) and recheck the symptom.
13. Turn the illumination control dial on the gauge control module to the full bright position.
14. Measure the voltage between the No. 12 and No. 6 terminals of climate control unit connector B (16P).

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Is there 1 V or less?

YES: Go to step 15.

NO: Repair open in the RED wire between the MICU and the climate control unit.

15. Measure the voltage between the No. 8 and No. 6 terminals of the climate control unit connector B (16P).

Is there battery voltage?

YES: Check connections at climate control unit connector B (16P). If connections are OK substitute a known-good audio-HVAC display module and recheck the symptom. If the symptom is gone, replace the original audio-HVAC display module.

NO: Repair open in the RED/BLK wire between the under-hood fuse/relay box and the climate control unit.

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2004 AUTOMATIC TRANSMISSIONS

A/T Interlock System - TSX

A/T INTERLOCK SYSTEM

COMPONENT LOCATION INDEX

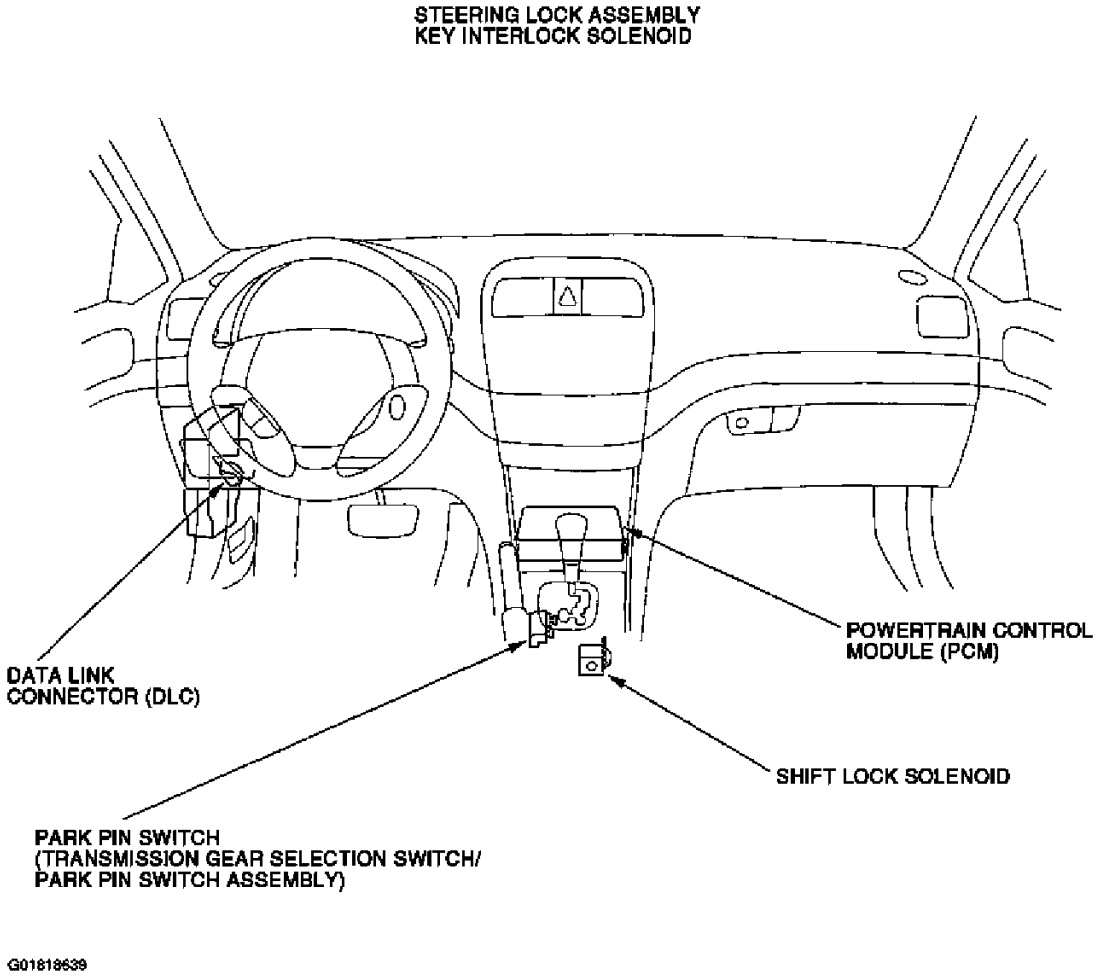


Fig. 1: Locating A/T Interlock System Components

CIRCUIT DIAGRAM

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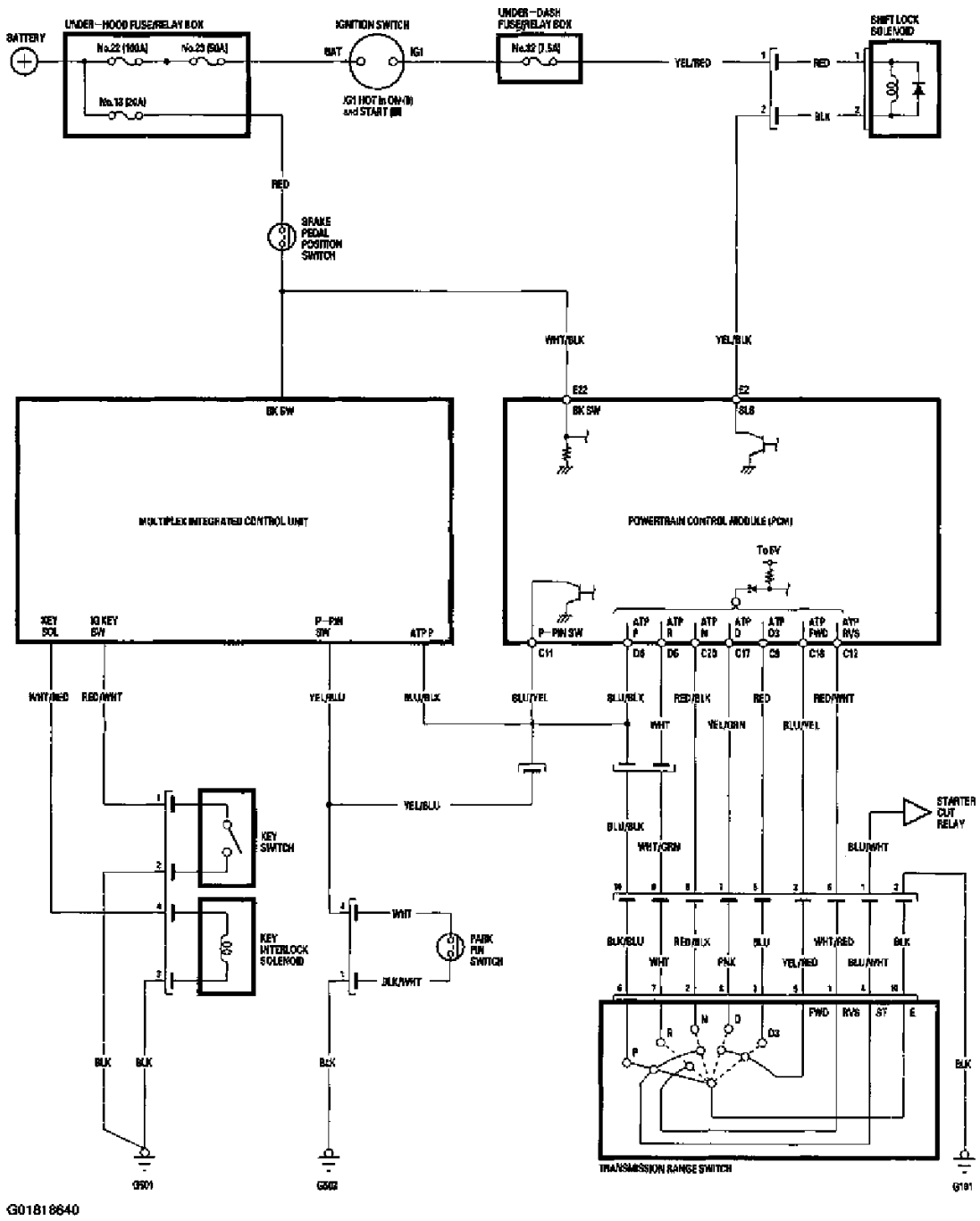


Fig. 2: A/T Interlock System Wiring Diagram

SHIFT LOCK SYSTEM/REVERSE LOCK SYSTEM CIRCUIT TROUBLESHOOTING

1. Press the brake pedal.

   Are the brake lights ON?

   YES: Go to step 2.

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NO: Repair faulty brake light circuit.

2. Connect the HDS to the DLC. Check engine speed and throttle position in the A/T data list.

   Is the engine speed at idle, and TPS about 0.5 V?

   YES: Go to step 3.

   NO: Repair engine speed or throttle position input.

3. Select SHIFT LOCK SOL TEST in MISC. TEST MENU, then carry out shift lock solenoid function test.

   Does the shift lock solenoid work properly?

   YES: System circuit is OK. Check the mechanism, if necessary.

   NO: Go to step 4.

4. Remove the center console cover (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
5. Disconnect the shift lock solenoid connector.
6. Turn the ignition switch ON (II).
7. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

   Is there battery voltage?

   YES: Go to step 8.

   NO: Check for blown No. 32 (7.5A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the shift lock solenoid connector and the under-dash fuse/relay box.

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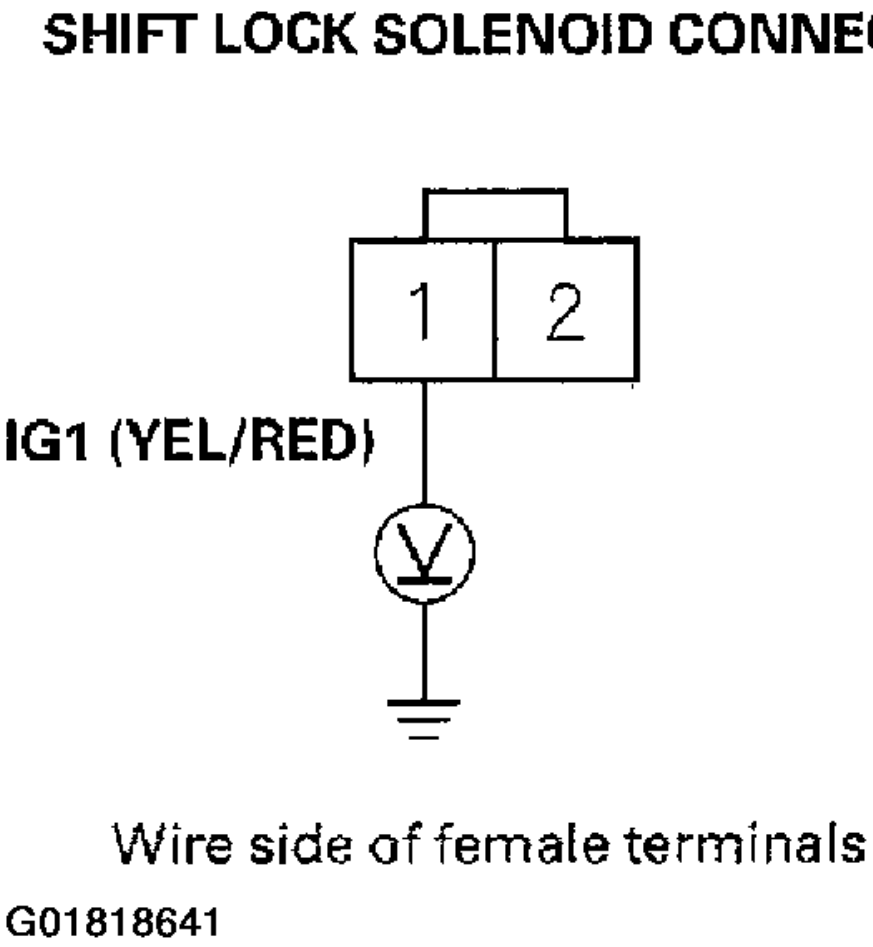


Fig. 3: Measuring The Voltage Between Shift Lock Solenoid Connector Terminal No. 1 & Body Ground

8. Shift to the **P** position, and press the brake pedal. Do not press the accelerator.
9. Measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2 while pressing the brake pedal.

Is there battery voltage?

YES: Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see **Shift Lock Solenoid Replacement**).

NO: Check for poor connection or loose E2 terminal at the PCM, and check for an open in the wire between PCM connector terminal E2 and shift lock solenoid connector. If the connection and wire are OK, substitute a known-good PCM and recheck.

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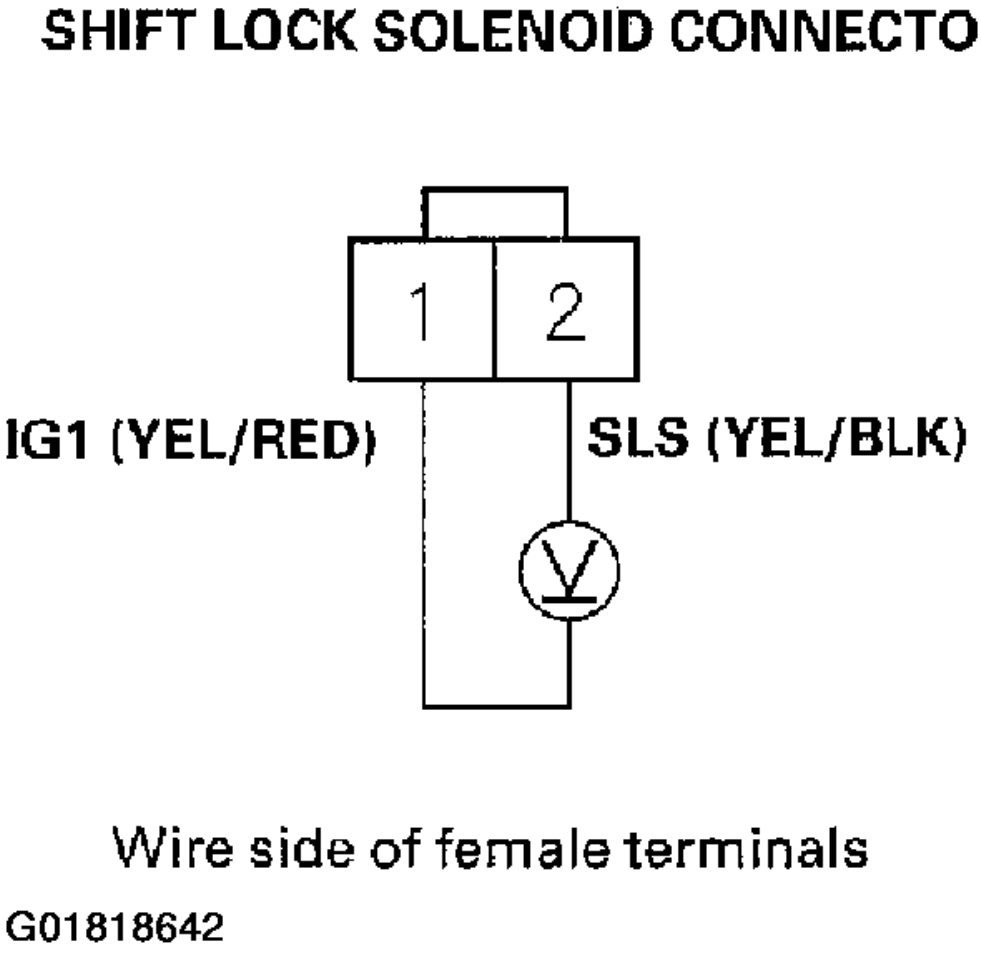


Fig. 4: Measuring The Voltage Between Shift Lock Solenoid Connector Terminals No. 1 & No. 2

KEY INTERLOCK SYSTEM CIRCUIT TROUBLESHOOTING

SRS components are located in this area. Review the SRS components precautions and procedure (see **AIR BAG RESTRAINT SYSTEMS**) before you troubleshoot.

1. Turn the ignition switch to ACC (I). The shift lever must be in the **P** position.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition key can be moved to LOCK (0) position, and remove the key from the cylinder.

Is the ignition key able to move to the LOCK (0) position, and then removed?

YES: Go to step 4.

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NO: Replace the ignition key cylinder/steering lock assembly (see **STEERING LOCK REPLACEMENT**).

4. Turn the ignition switch to ACC (I) or ON (II), and shift to the **N** position.
5. Check the voltage between the No. 4 terminal of the steering lock assembly connector and body ground.

Is there battery voltage?

YES: Go to step 6.

NO: Check for an open in WHT/RED wire between the multiplex integrated control unit and the steering lock assembly connector. If the wire is OK, substitute a known-good multiplex integrated control unit and recheck.

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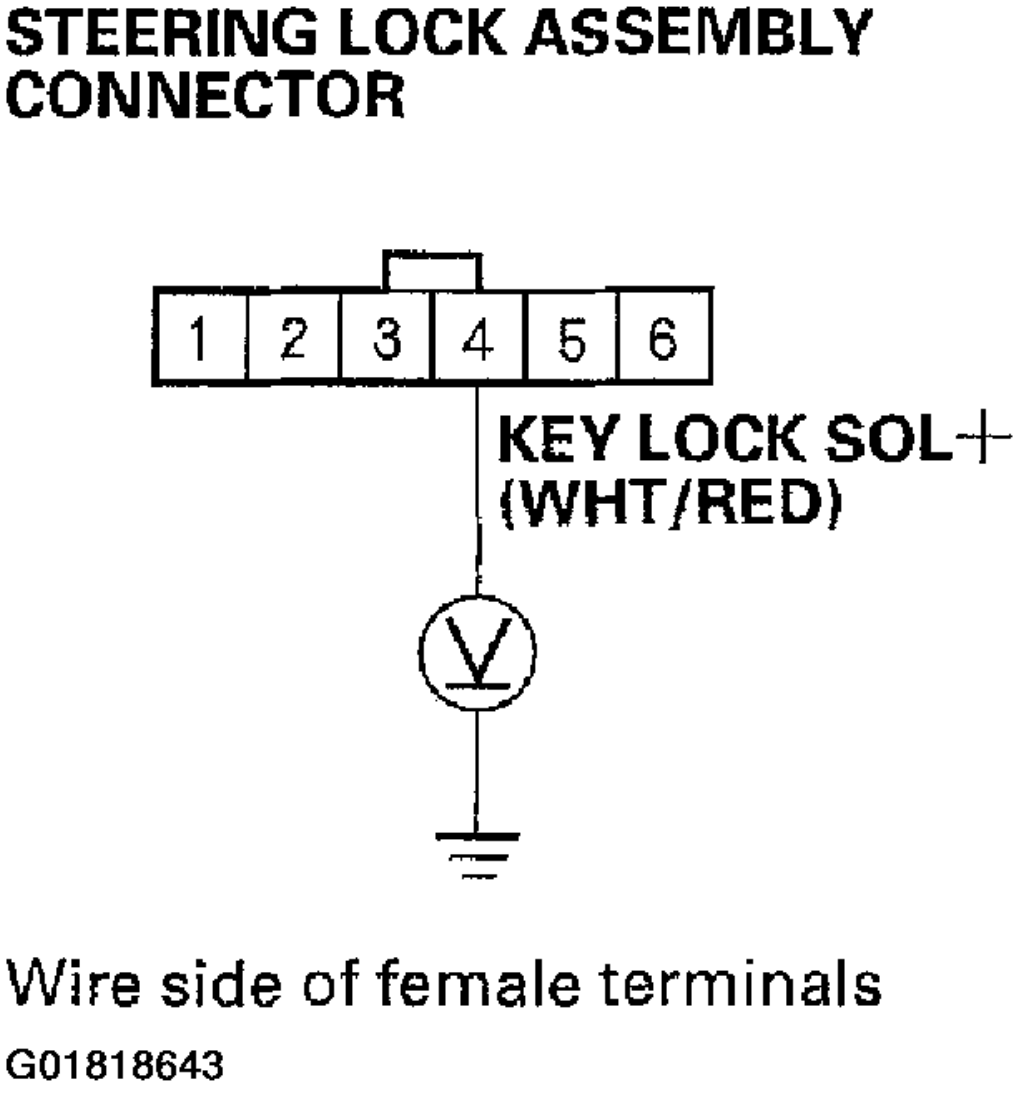


Fig. 5: Checking Voltage Between The No. 4 Terminal Of The Steering Lock Assembly Connector & Body Ground

6. Turn the ignition switch to ACC (I), and shift to the **P** position.
7. Remove the center console cover (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
8. Disconnect transmission gear selection switch/park pin switch connector.
9. Check for continuity between transmission gear selection switch/park pin switch connector terminals No. 1 and No. 4 when shift lever in the **P** position, and when shift lever shift out of the **P** position.

   Is there continuity when shift lever in any position other than P and no continuity when shift lever in P?

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YES: Check for an open in the wire between the multiplex integrated control unit and the park pin switch connector. If the wire is OK, replace the multiplex integrated control unit.

NO: Replace the park pin switch.

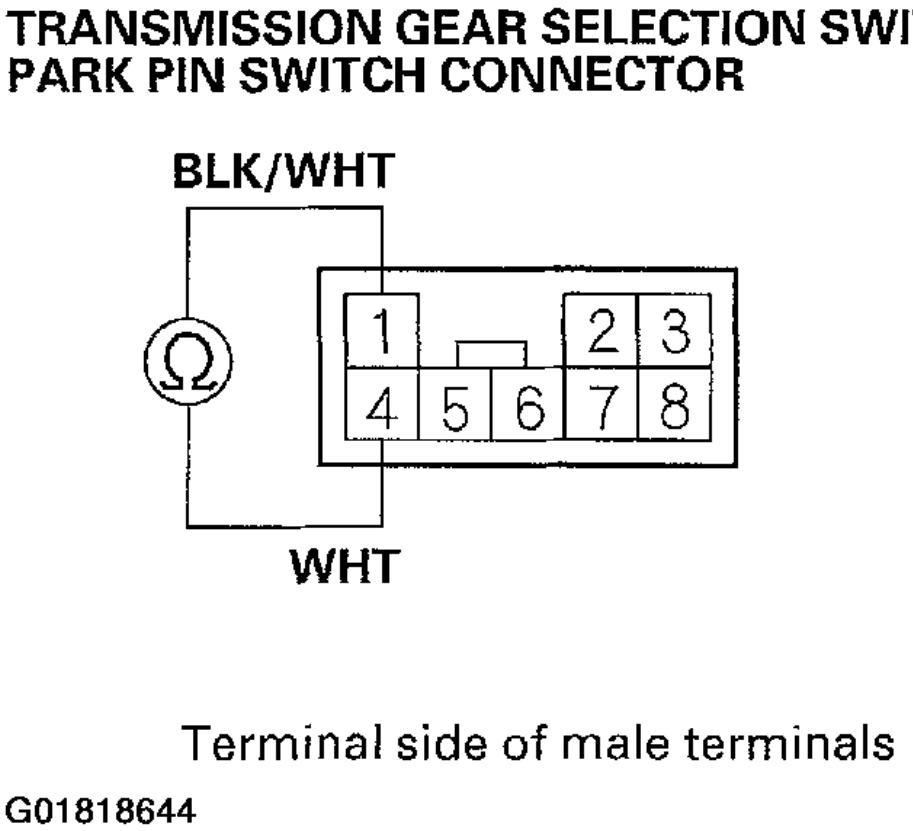


Fig. 6: Checking For Continuity Between Transmission Gear Selection Switch/Park Pin Switch Connector Terminals No. 1 & No. 4

KEY INTERLOCK SOLENOID TEST

SRS components are located in this area. Review the SRS components precautions and procedures (see **AIR BAG RESTRAINT SYSTEMS**) before testing the solenoid.

1. Remove the driver's dashboard lower cover and lower steering column cover.
2. Disconnect steering lock assembly connector.
3. Insert the ignition key in the key cylinder, then turn the ignition key to ACC (I).
4. Connect the battery positive terminal to steering lock assembly connector terminal No. 4, and connect the battery negative terminal to No. 3 terminal. Make sure that the ignition key cannot be turned to LOCK (0)

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position. Release the battery terminals, and make sure that the key can be turned to LOCK (0) position and removed from the cylinder.

5. If the key interlock solenoid works improperly, replace the ignition key cylinder/steering lock assembly (see **STEERING LOCK REPLACEMENT**).

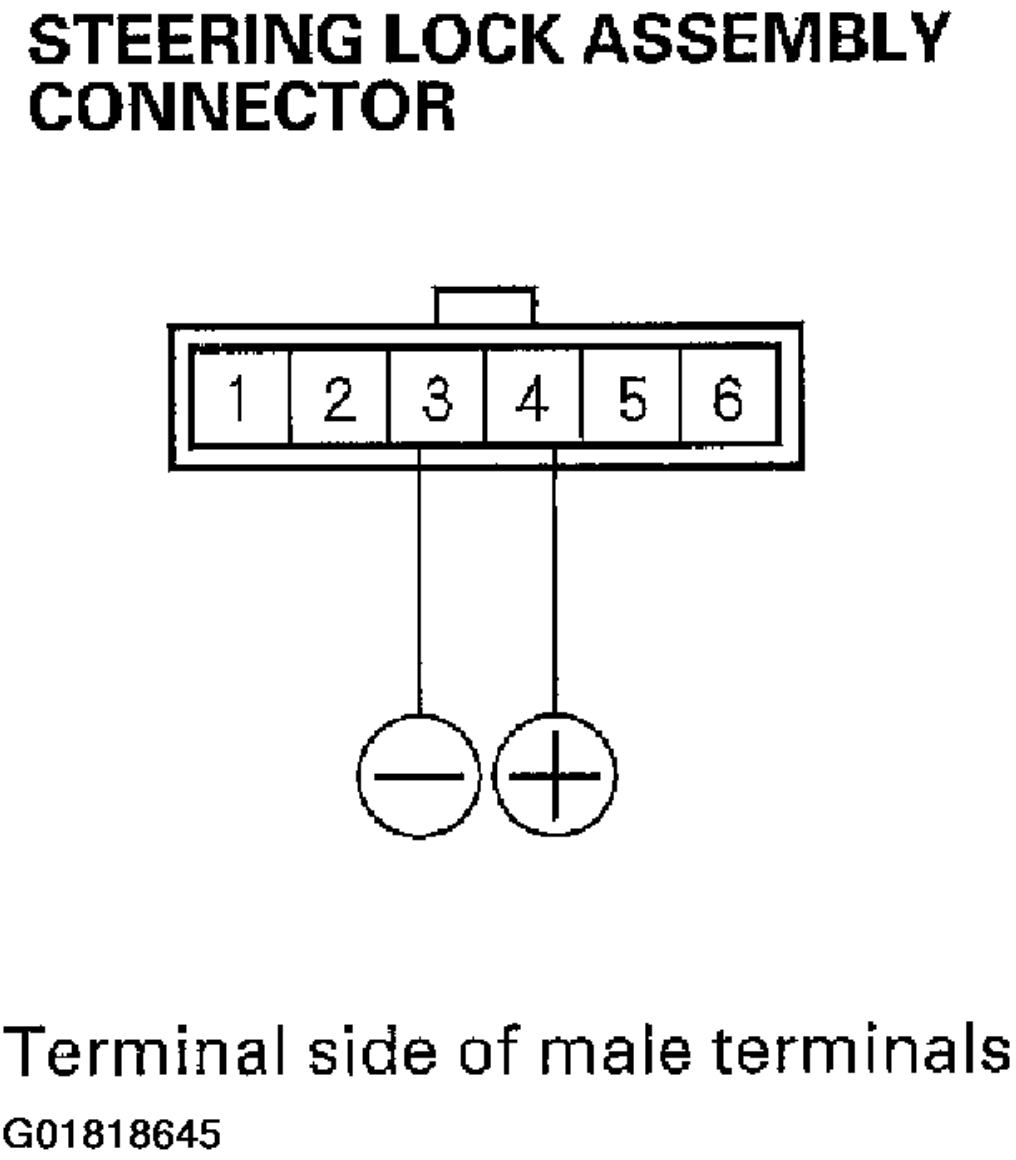


Fig. 7: Connecting Battery Positive Terminal To Steering Lock Assembly Connector Terminal No. 4 & Battery Negative Terminal To No. 3 Terminal

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SHIFT LOCK SOLENOID TEST

1. Connect the HDS to the DLC.
2. Select SHIFT LOCK SOL TEST in MISC. TEST MENU with the HDS.
3. Carry out shift lock solenoid function test: Check that the shift lever can be moved from the **P** position when SOLENOID ON. Move the shift lever back to the **P** position, and make sure it locks with SOLENOID OFF.
4. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.
5. If the shift lock solenoid does not work properly, perform shift lock system troubleshooting (see **SHIFT LOCK SYSTEM/REVERSE LOCK SYSTEM CIRCUIT TROUBLESHOOTING**).

SHIFT LOCK SOLENOID REPLACEMENT

1. Remove the shift lever assembly (see **SHIFT LEVER** .
2. Release the shift lock solenoid bushing (A) securing the shift lock solenoid, and remove the shift lock solenoid.

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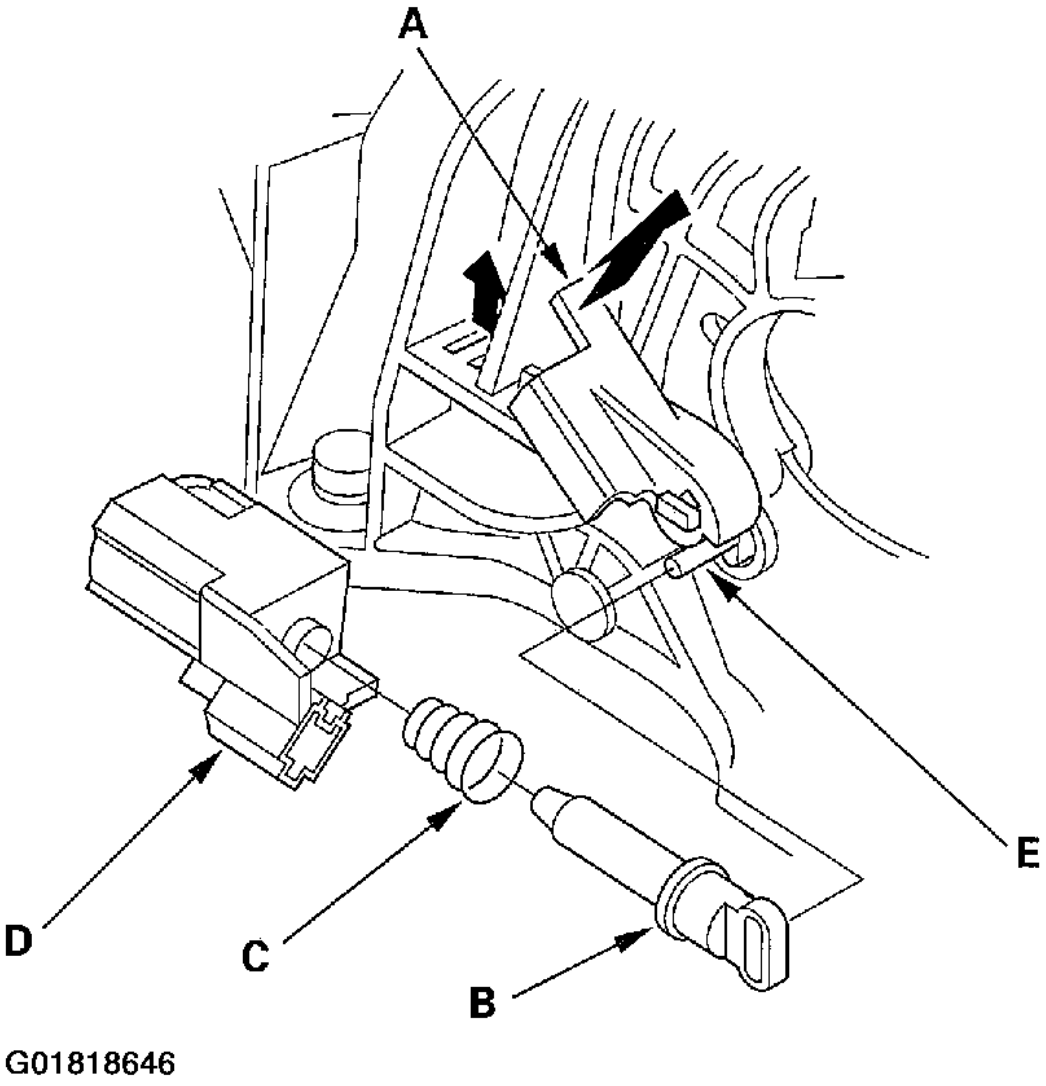


Fig. 8: Removing The Shift Lock Solenoid

3. Install the shift lock solenoid plunger (B) and plunger spring (C) in the new shift lock solenoid (D).
4. Apply silicon grease to joint of the shift lock solenoid plunger, if necessary.
5. Install the new shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop (E).
6. Install the shift lever assembly (see **SHIFT LEVER** .

PARK PIN SWITCH TEST

1. Remove the center console cover (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

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2. Disconnect transmission gear selection switch/park pin switch connector.

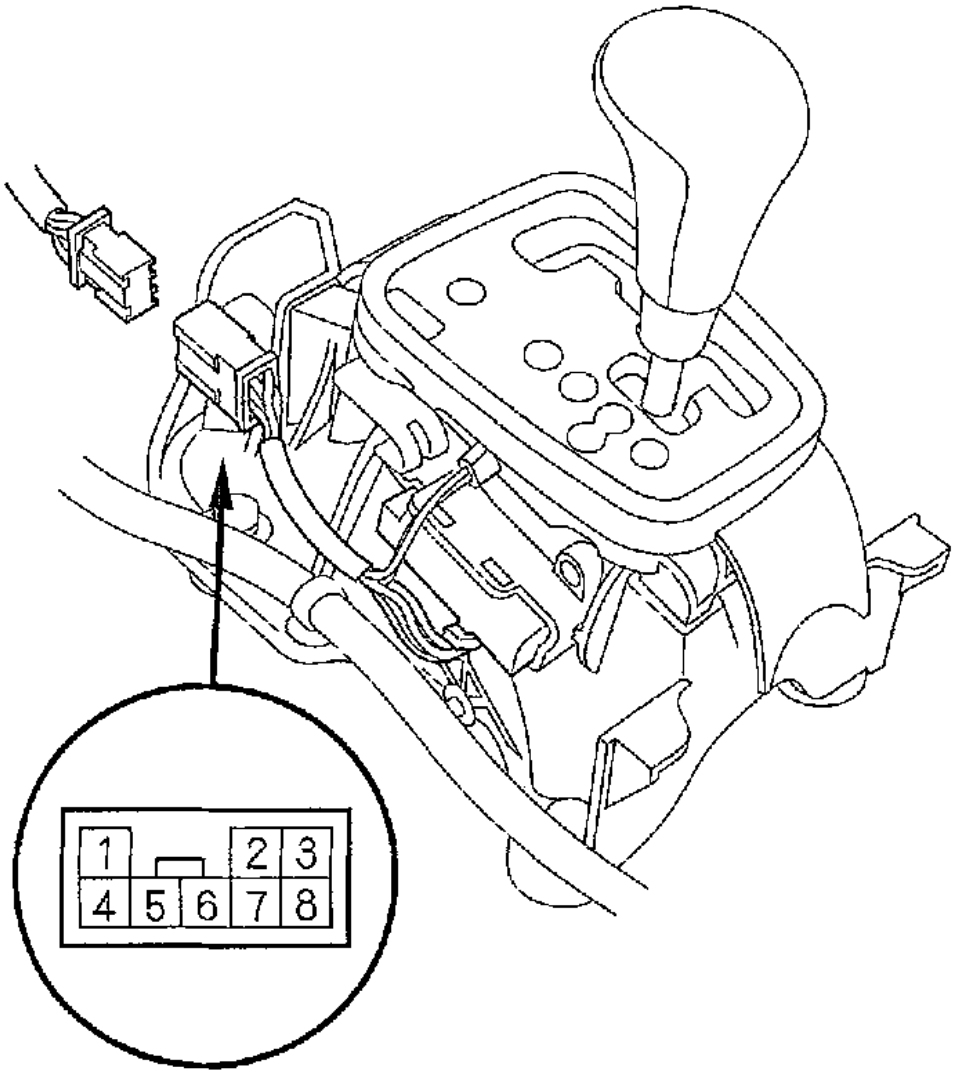


Fig. 9: Disconnecting Transmission Gear Selection Switch/Park Pin Switch Connector & Identifying Terminals

3. Shift to the **P** position, then check for continuity between connector terminals No. 1 and No. 4. There should be no continuity.
4. Shift out of the **P** position, and check for continuity between terminals No. 1 and No. 4. There should be

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continuity.

5. If the park pin switch is faulty, replace it.

PARK PIN SWITCH REPLACEMENT

1. Remove the shift lever assembly (see **SHIFT LEVER**).
2. Disconnect transmission gear selection switch/park pin switch connector (A), then remove the connector from the shift lever bracket base.

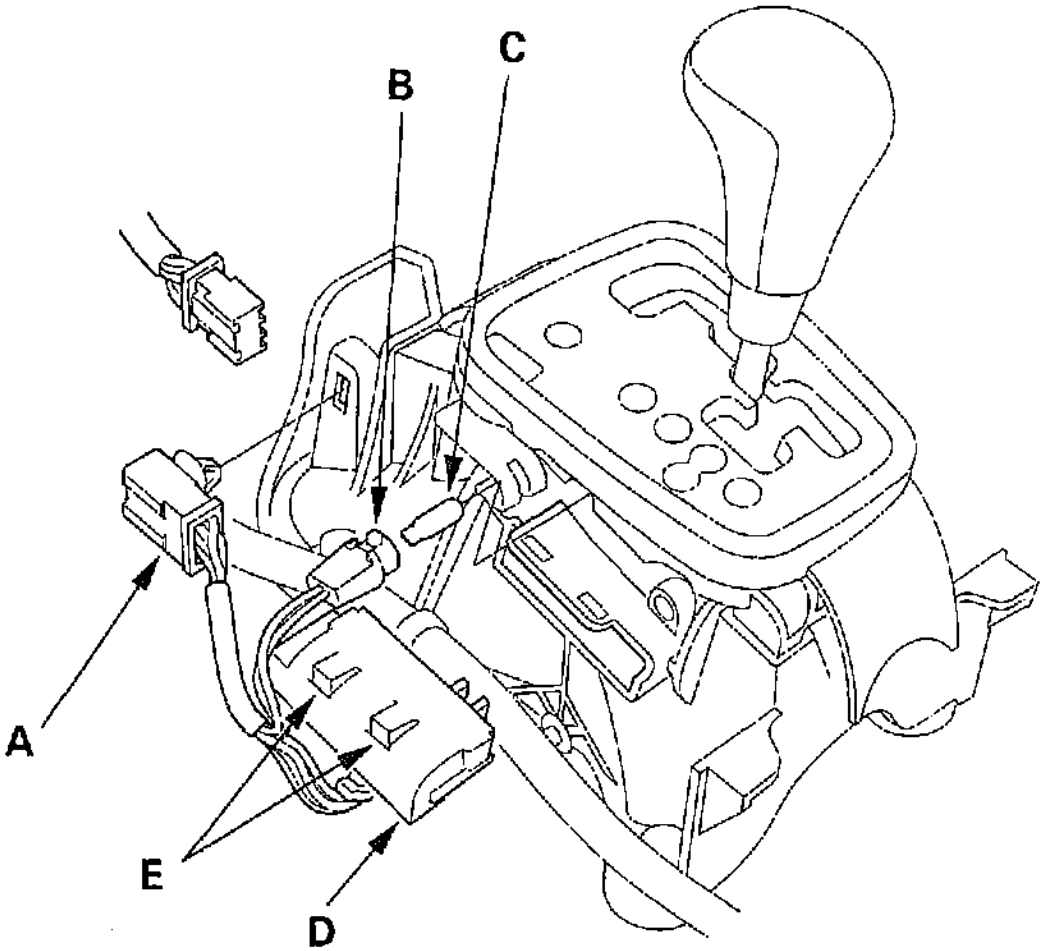


Fig. 10: Removing The Connector From The Shift Lever Bracket Base

3. Remove the A/T gear position indicator panel light bulb socket (B), then remove the bulb (C) from the socket.

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4. Remove the transmission gear selection switch/park pin switch (D) by releasing the lock tabs (E).
5. Install the new switch assembly in the shift lever bracket base.
6. Install the bulb in the socket, then install the socket in the bracket base.
7. Install the switch connector on the bracket base, then connect the connector.
8. Install the shift lever assembly (see **SHIFT LEVER**).

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2004 ELECTRICAL

Body Electrical Connectors & Harnesses - TSX

CONNECTORS AND HARNESSES

CONNECTOR INDEX

Identification numbers have been assigned to in-line connectors. The number is preceded by the letter "C" for connectors, "G" for ground terminals or "T" for non-ground terminals.

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Harness	Location		
	Engine Compartment	Dashboard	Others (Floor, Door, Trunk, and Roof)
Battery ground cable	(−) G1		
Engine ground cable A	T1 G2		
Engine ground cable B	T2 G3		
Starter subharness	C101 and C151 T101 through T104 (+)		
Engine Wire harness	C101 and C102 C152 G101	C201 and C251	
Transmission range switch subharness	C152		
Front engine compartment wire harness (right branch)	G201		
Front engine compartment wire harness (left branch)	C301 G301		
Engine compartment wire harness (right branch)	G202 and G203		
Engine compartment wire harness (left branch)	C151 and C301 G302	C401 through C404	
Dashboard wire harness (left branch)		C401 through C407, C451, C501 and C502, C601, C851 G501 and G502, G504	
Dashboard wire harness (right branch)		C201, C551 through C556, C651, C731 and C732 G503, G505 and G506	
Floor wire harness (left side)		C501 and C502	C701, C751 and C901 G601 and G603
Floor wire harness (right side)		C551 and C552	C781 and C801 G602
Rear window defogger ground wire			G604
Rear wire harness			C702 and C703 G701
Roof wire harness		C601 and C651	
Cable reel subharness		C451	
Throttle actuator control module subharness		C251	
Driver's door wire harness			C631 and C632
Driver's door subharness			C631 and C632
Front passenger's door wire harness			C731 and C732
Left rear door wire harness			C751
Right rear door wire harness			C781
OPDS unit harness			
Side curtain airbag harness			
Driver's seat wire harness			C901
A/C wire harness		C851	

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Fig. 1: Connector Index

CONNECTOR TO HARNESS INDEX

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
G1	6		Left side of engine compartment	Body ground, via battery ground cable	
(−)	5		Battery	Battery negative terminal	

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Fig. 2: Battery Ground Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T1	2		Right side of engine compartment	Body ground, via battery ground cable	
G2	1		Right side of engine compartment	Body ground, via engine ground cable A	

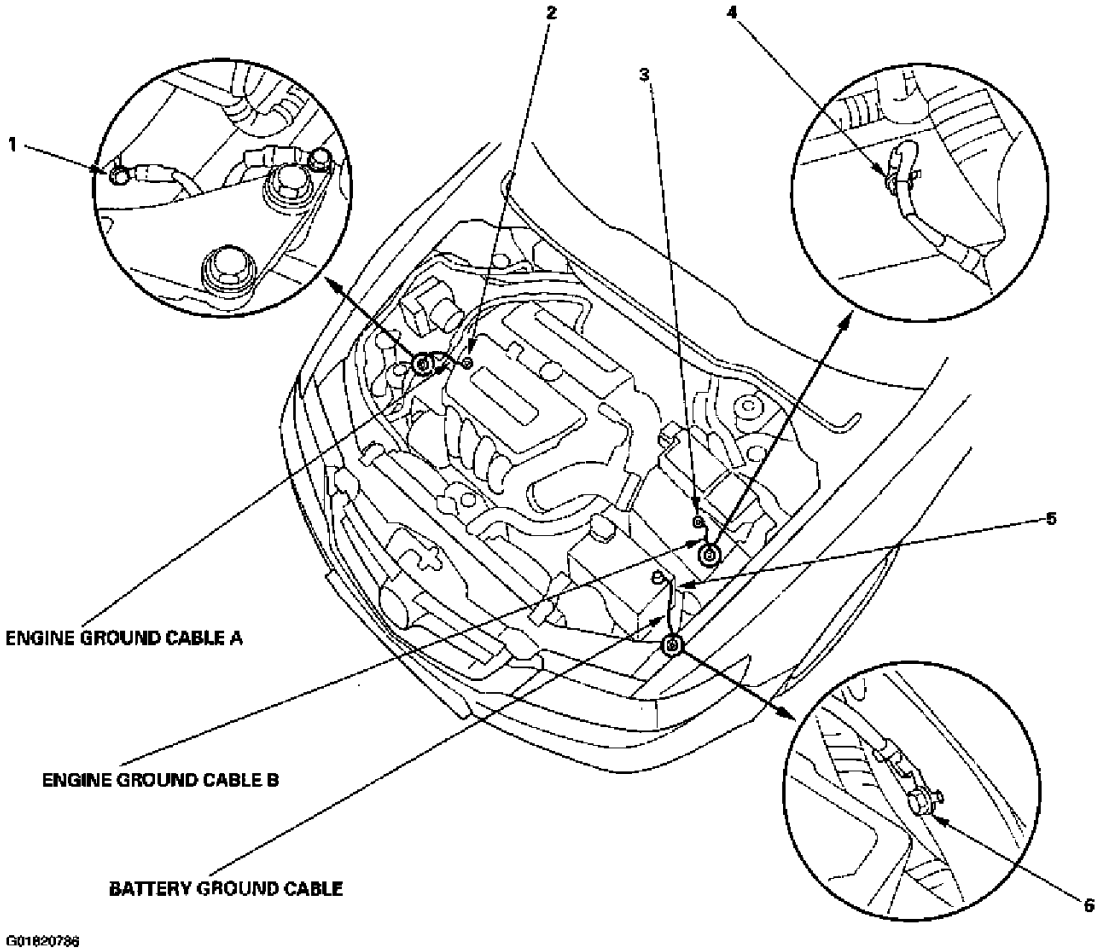
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Fig. 3: Engine Ground Cable A

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T2	3		Left side of engine compartment	Transmission housing	
G3	4		Left side of engine compartment	Body ground, via engine ground cable B	

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Fig. 4: Engine Ground Cable B



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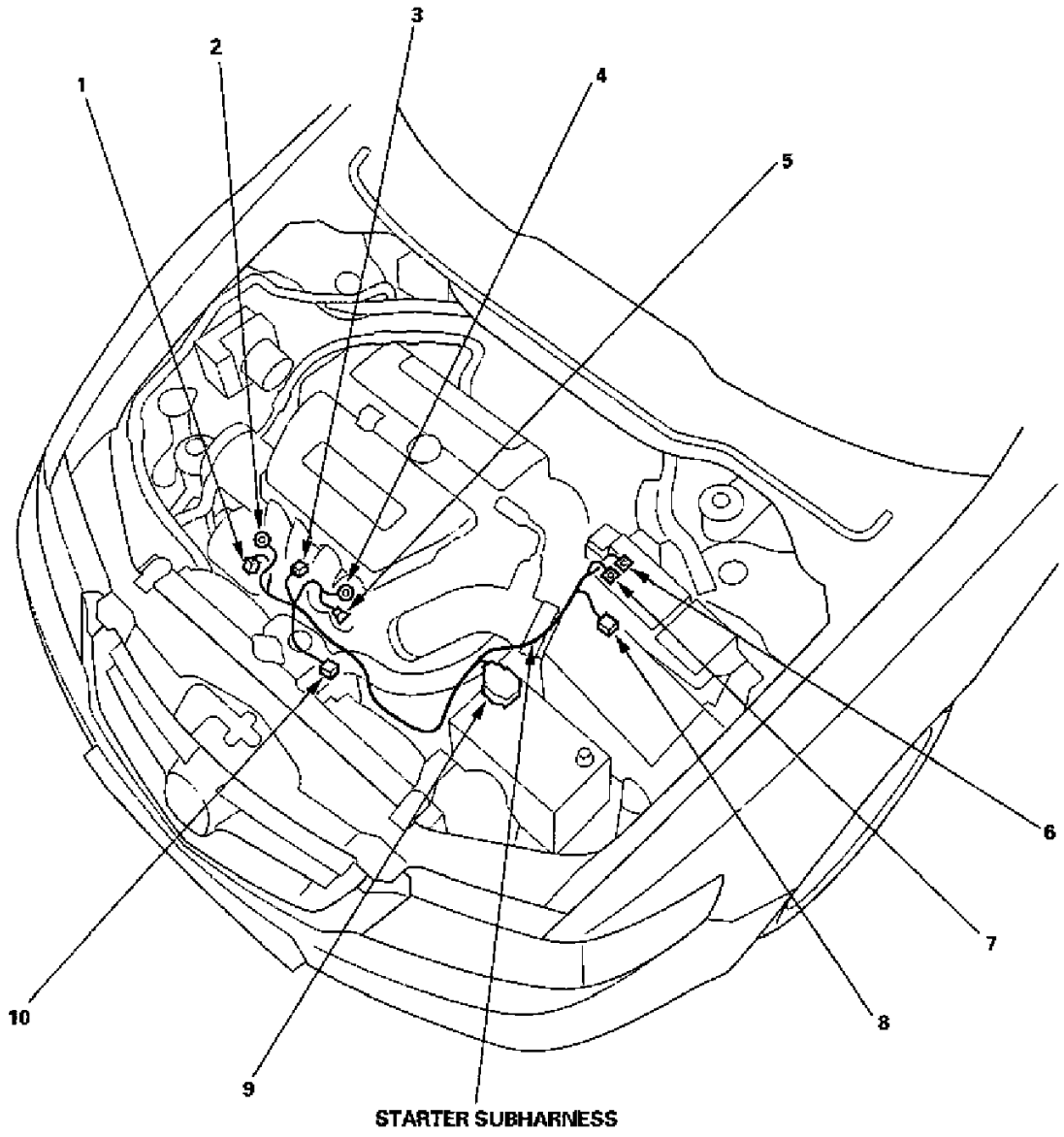
Fig. 5: Locating Cables

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Alternator	1	4	Middle of engine compartment		
Knock sensor	3	1	Middle of engine compartment		
Starter solenoid	5	1	Middle of engine compartment		
C101	10	6	Left side of engine compartment	Engine wire harness	
C151	8	1	Left side of engine compartment	Engine compartment wire harness	
T101	6		Left side of engine compartment	Under-hood fuse/relay box	
T102	7		Left side of engine compartment	Under-hood fuse/relay box	
T103	2		Alternator		
T104	4		Middle of engine compartment	Starter motor	
(+)	9		Battery	Battery positive terminal	

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Fig. 6: Starter Subharness



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Fig. 7: Locating Starter Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/F sensor 1	22	4	Left side of engine compartment		A/T
A/F sensor 1	20	4	Left side of engine compartment		M/T
A/T clutch pressure control solenoid valve connector A	24	2	Left side of engine compartment		
A/T clutch pressure control solenoid valve connector B	29	2	Left side of engine compartment		
A/T clutch pressure control solenoid valve connector C	27	2	Left side of engine compartment		
APP sensor	2	6	Right side of engine compartment		
Back-up light switch	26	2	Left side of engine compartment		M/T
CMP sensor A	13	3	Left side of engine compartment		
CMP sensor B	12	3	Left side of engine compartment		
CKP sensor	41	3	Right side of engine compartment		
Countershaft speed sensor	16	3	Left side of engine compartment		A/T
Countershaft speed sensor	21	3	Left side of engine compartment		M/T
EVAP canister purge valve	11	2	Left side of engine compartment		
Engine coolant temperature (ECT) sensor	14	2	Left side of engine compartment		
Engine mount control solenoid valve	40	2	Right side of engine compartment		
Engine oil pressure switch	43	1	Right side of engine compartment		
ECM/PCM connector A	6	31	Under middle of dash		
ECM/PCM connector B	7	24	Under middle of dash		
Ignition coil No. 1	1	3	Middle of engine compartment		
Ignition coil No. 2	4	3	Middle of engine compartment		
Ignition coil No. 3	9	3	Middle of engine compartment		
Ignition coil No. 4	10	3	Middle of engine compartment		
Injector No. 1	39	2	Middle of engine compartment		
Injector No. 2	38	2	Middle of engine compartment		
Injector No. 3	37	2	Middle of engine compartment		
Injector No. 4	35	2	Middle of engine compartment		
Intake air temperature (IAT) sensor	31	2	Left side of engine compartment		
MAP sensor	34	3	Left side of engine compartment		
Mainshaft speed sensor	15	3	Left side of engine compartment		A/T
PCM connector C	8	22	Under middle of dash		
Reverse lockout solenoid	17	2	Left side of engine compartment		M/T
Shift control solenoid valves/ATF temperature sensor	28	8	Left side of engine compartment		
Throttle body	32	6	Left side of engine compartment		
VTC oil control solenoid valve	42	2	Right side of engine compartment		
VTEC oil pressure switch	44	2	Right side of engine compartment		
VTEC solenoid valve	45	2	Right side of engine compartment		
2nd clutch pressure switch	30	1	Left side of engine compartment		A/T
3rd clutch pressure switch	23	1	Left side of engine compartment		A/T

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Fig. 8: Engine Wire Harness (1 Of 2)

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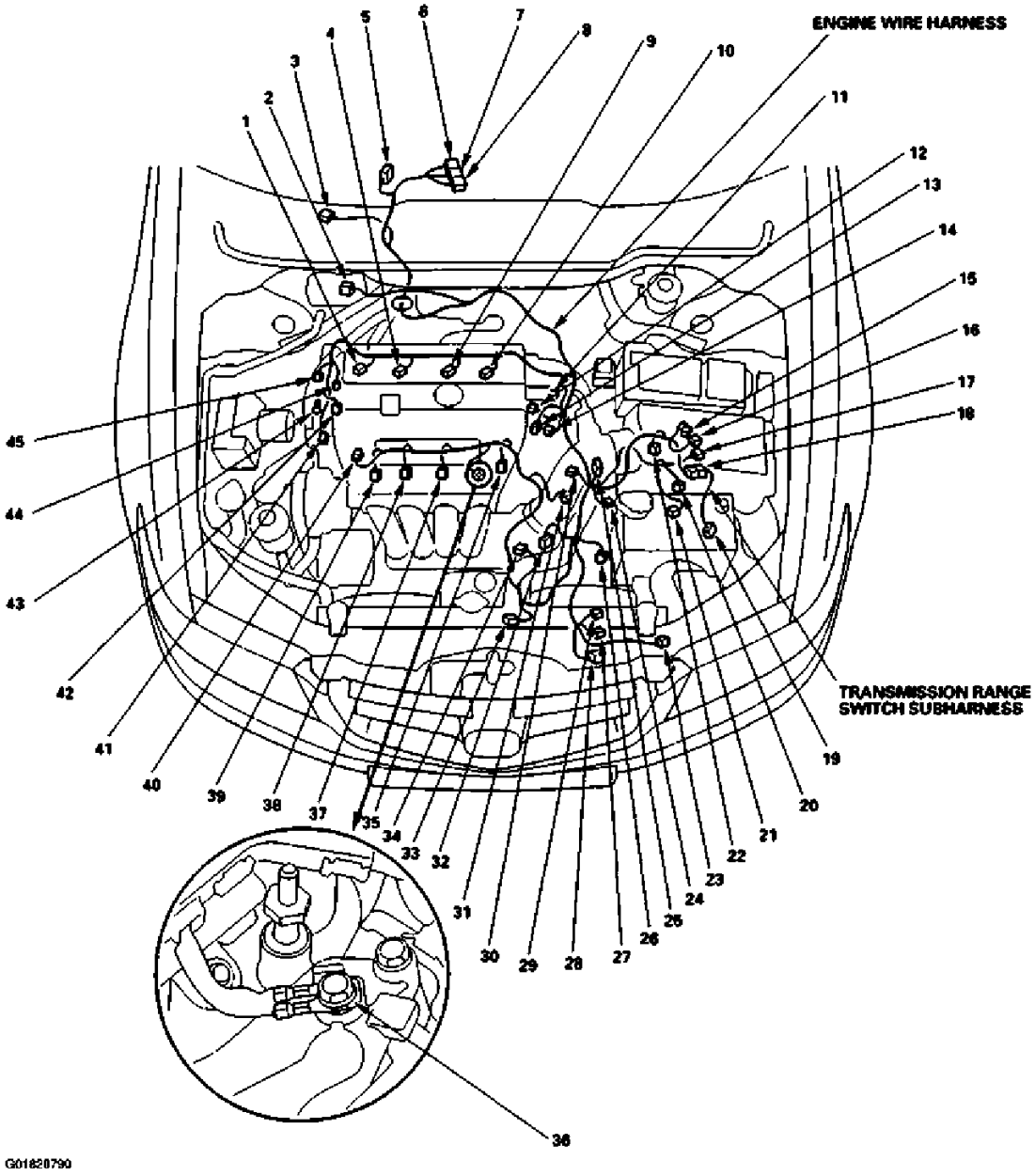


Fig. 9: Locating Engine Wire Harness

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C101	33	6	Left side of engine compartment	Starter subharness	
C102 (Junction connector)	25	24	Left side of engine compartment		
C152	18	10	Transmission housing	Transmission range switch subharness	
C201	5	13	Under middle of dash	Dashboard wire harness	
C251	3	13	Under right side of dash	Throttle actuator control module subharness	
G101	36		Middle of engine compartment	Engine ground via engine wire harness	

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Fig. 10: Engine Wire Harness (2 Of 2)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Transmission range switch	19	10	Transmission housing		
C152	18	10	Transmission housing	Engine wire harness	

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Fig. 11: Transmission Range Switch Subharness

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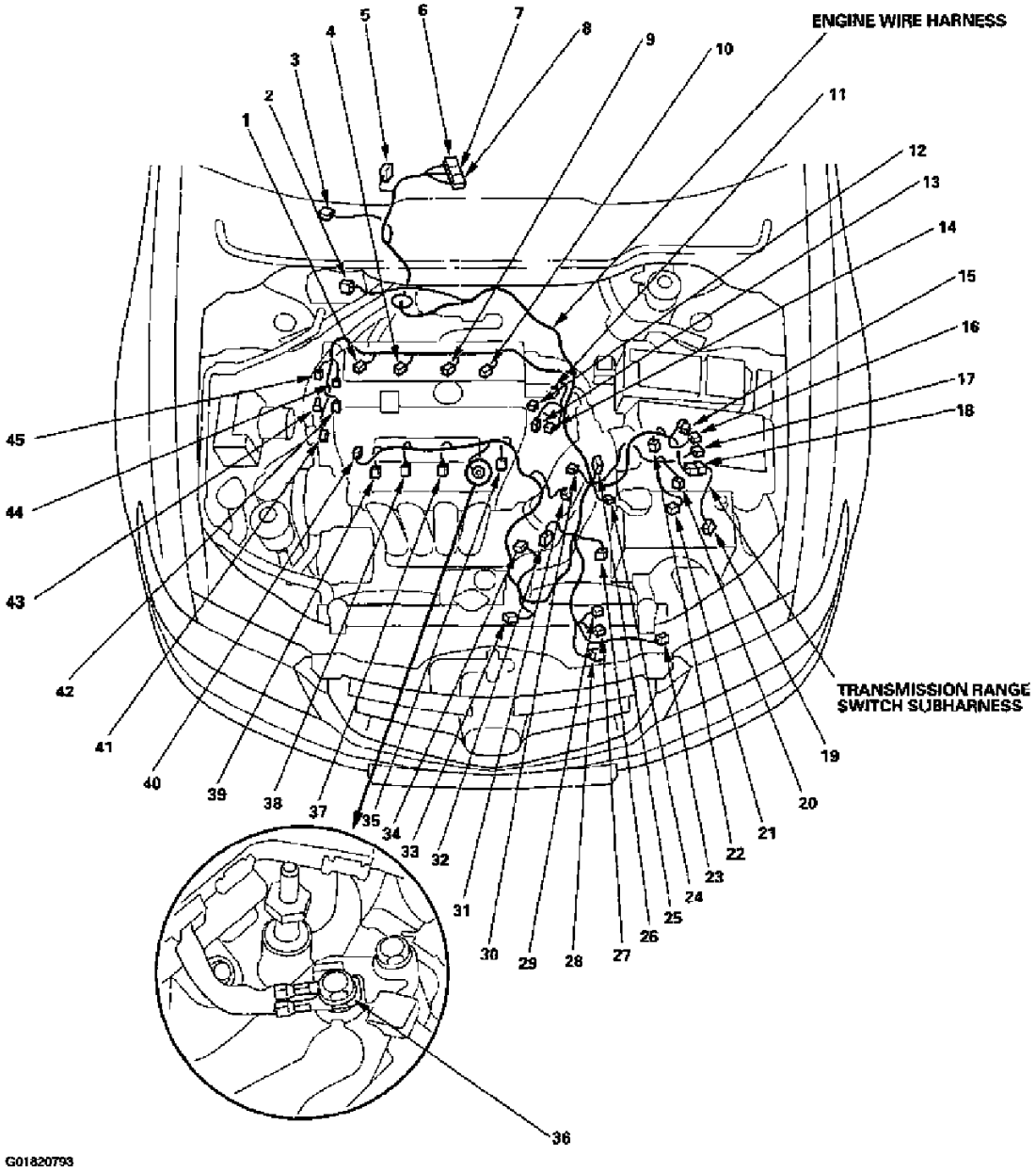


Fig. 12: Locating Transmission Range Switch Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor clutch	7	3	Right side of engine compartment		
A/C pressure switch	4	2	Right side of engine compartment		
Condenser fan motor	8	2	Right side of engine compartment		
Horn (high)	9	1	Behind middle of front bumper		
Right front parking light	1	2	Behind right headlight		
Right front turn signal light	5	2	Behind right headlight		
Right headlight (high)	6	3	Behind right headlight		
Right headlight (low)	2	2	Behind right headlight		
G201	3		Right side of engine compartment	Body ground, via front engine compartment wire harness	

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Fig. 13: Front Engine Compartment Wire Harness (Right Branch)

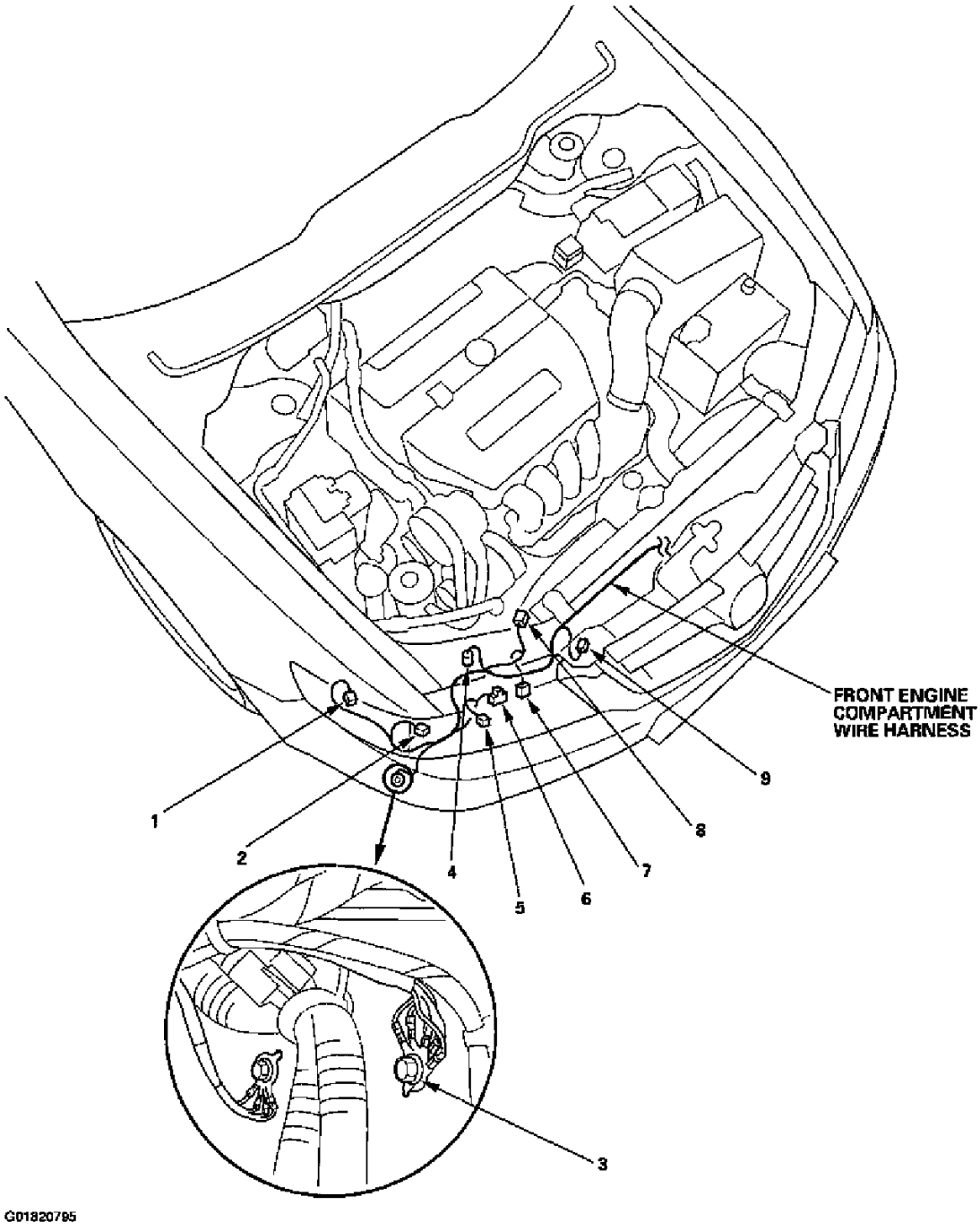


Fig. 14: Locating Front Engine Compartment Wire Harness (Right Branch)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Hood switch	14	2	Behind middle of front bumper		
Horn (low)	11	1	Behind middle of front bumper		
Left front parking light	5	2	Behind left headlight		
Left front turn signal light	8	2	Behind left headlight		
Left headlight (high)	9	3	Behind left headlight		
Left headlight (low)	6	2	Behind left headlight		
Outside air temperature sensor	13	2	Middle of engine compartment		
Radiator fan motor	12	2	Left side of engine compartment		
Radiator fan switch	10	2	Left side of engine compartment		
Under-hood fuse/relay box connector F	2	20	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector H	3	14	Behind under-hood fuse/relay box		
Under-hood multi-relay box	1	5	In multi-relay box		Canada
C301	4	6	Left side of engine compartment	Engine compartment wire harness	Canada
G301	7		Left side of engine compartment	Body ground, via front engine compartment wire harness	

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Fig. 15: Front Engine Compartment Wire Harness (Left Branch)

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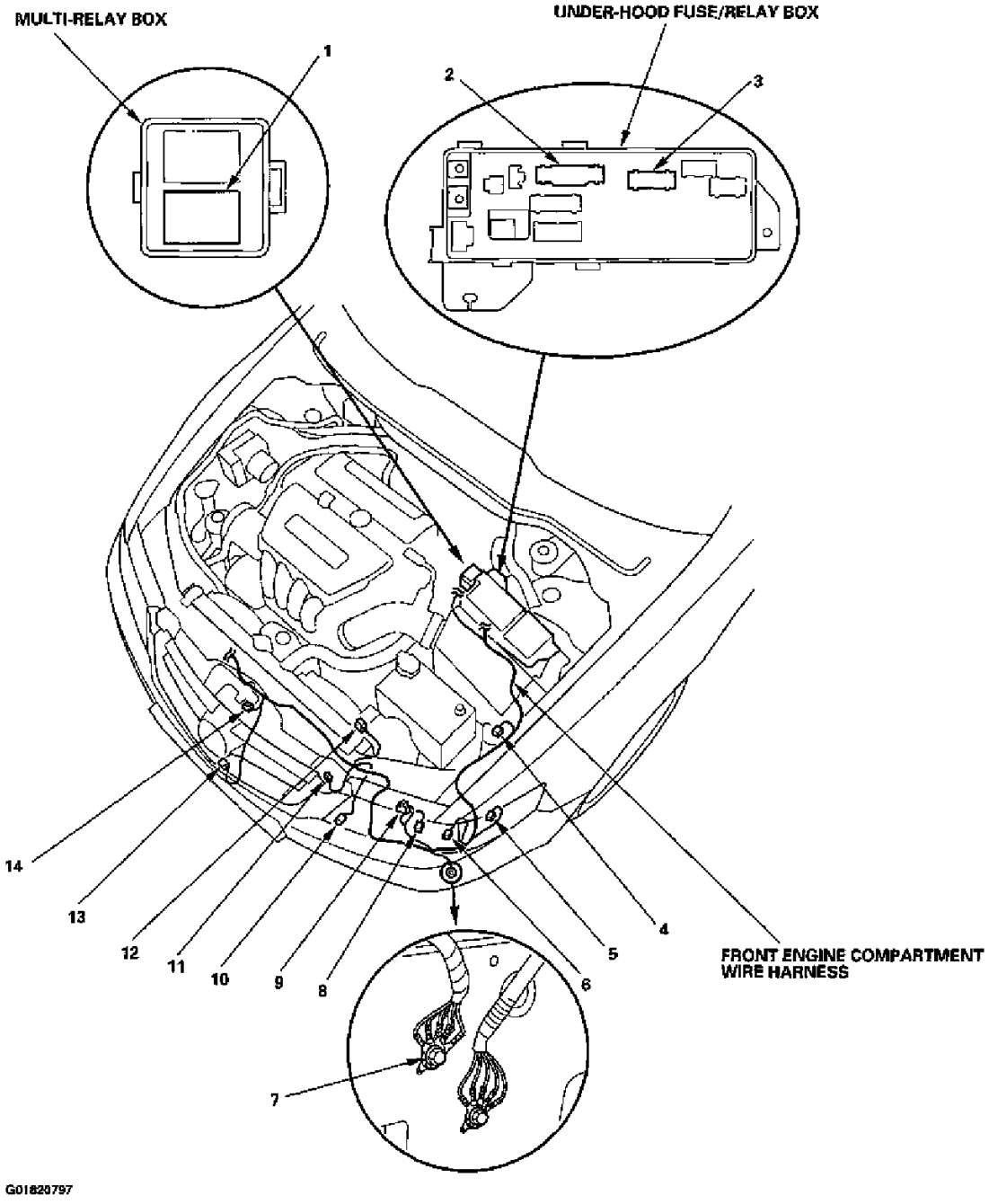


Fig. 16: Locating Front Engine Compartment Wire Harness (Left Branch)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS right front wheel sensor	1	2	Right side of engine compartment		
Power steering pressure (PSP) switch	2	2	Right side of engine compartment		
Right front airbag sensor	7	2	Right side of engine compartment		
VSA modulator-control unit	8	47	Right side of engine compartment		
Washer fluid level switch	5	2	Behind right of front bumper		Canada
Windshield washer motor	4	2	Behind right of front bumper		
G202	6		Right side of engine compartment	Body ground, via engine compartment wire harness	
G203	3		Right side of engine compartment	Body ground, via engine compartment wire harness	

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Fig. 17: Engine Compartment Wire Harness (Right Branch)

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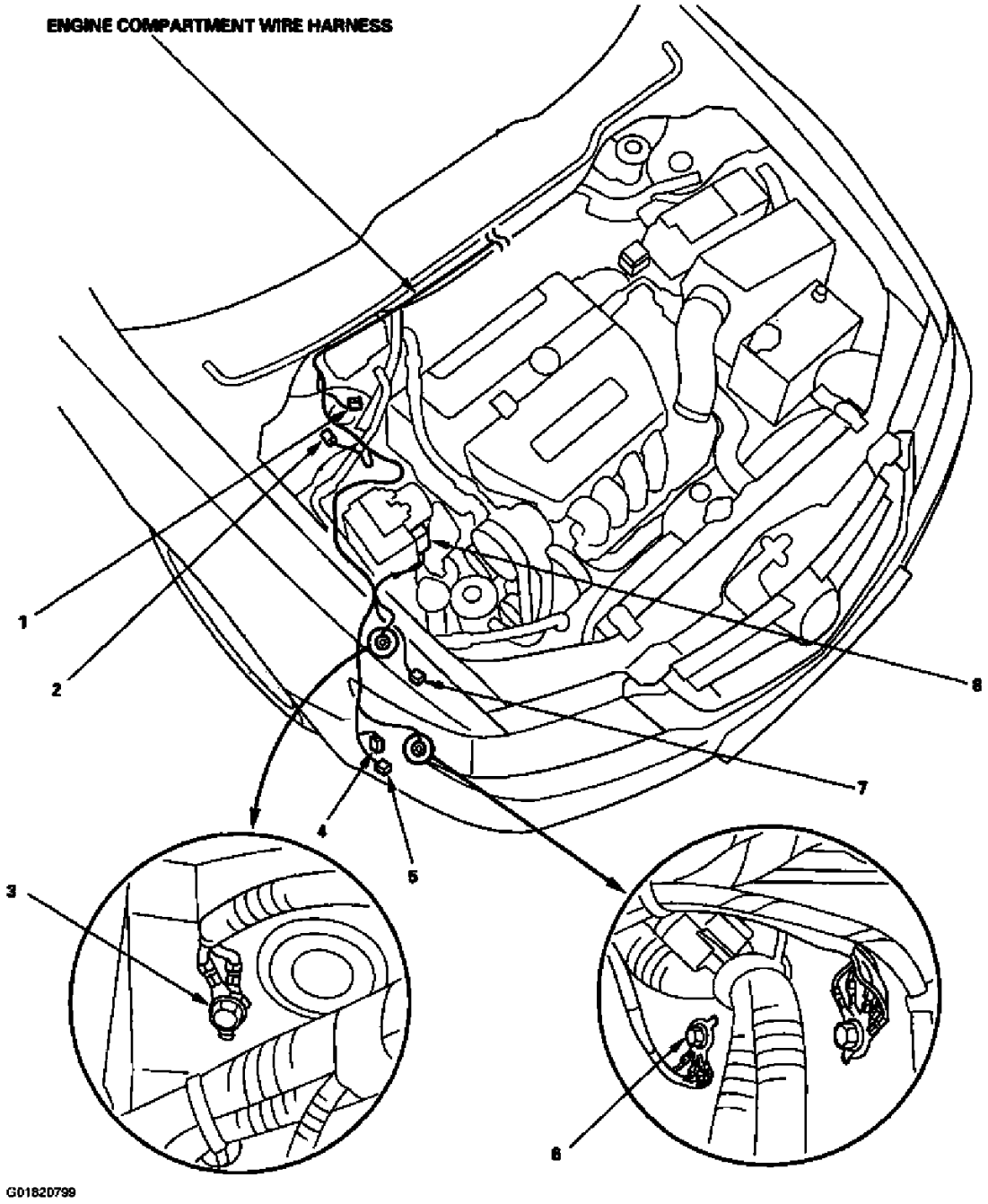


Fig. 18: Locating Engine Compartment Wire Harness (Right Branch)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS left front wheel sensor	19	2	Left side of engine compartment		
Brake fluid level switch	8	2	Left side of engine compartment		
Left front airbag sensor	23	2	Left side of engine compartment		
Optional connector A	12	2	Left side of dash		
Optional connector B	18	2	Left side of engine compartment		
Under-dash fuse/relay box connector B	14	6	Under left side of dash		
Under-dash fuse/relay box connector C	15	12	Under left side of dash		
Under-dash fuse/relay box connector D	13	17	Under left side of dash		
Under-hood fuse/relay box connector A (ELD unit)	6	3	In under-hood fuse/relay box		
Under-hood fuse/relay box connector C	1	2	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector D	7	9	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector E	2	18	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector G	5	2	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector	4	10	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector J	3	5	Behind under-hood fuse/relay box		
Windshield wiper motor	9	5	Left side of engine compartment		
C151	20	1	Left side of engine compartment	Starter subharness	
C301	22	6	Left side of engine compartment	Front engine compartment wire harness	Canada
C401	16	20	Under left side of dash	Dashboard wire harness	
C402	10	1	Under left side of dash	Dashboard wire harness	
C403	17	4	Under left side of dash	Dashboard wire harness	
C404	11	13	Under left side of dash	Dashboard wire harness	
G302	21		Left side of engine compartment	Body ground, via engine compartment wire harness	

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Fig. 19: Engine Compartment Wire Harness (Left Branch)

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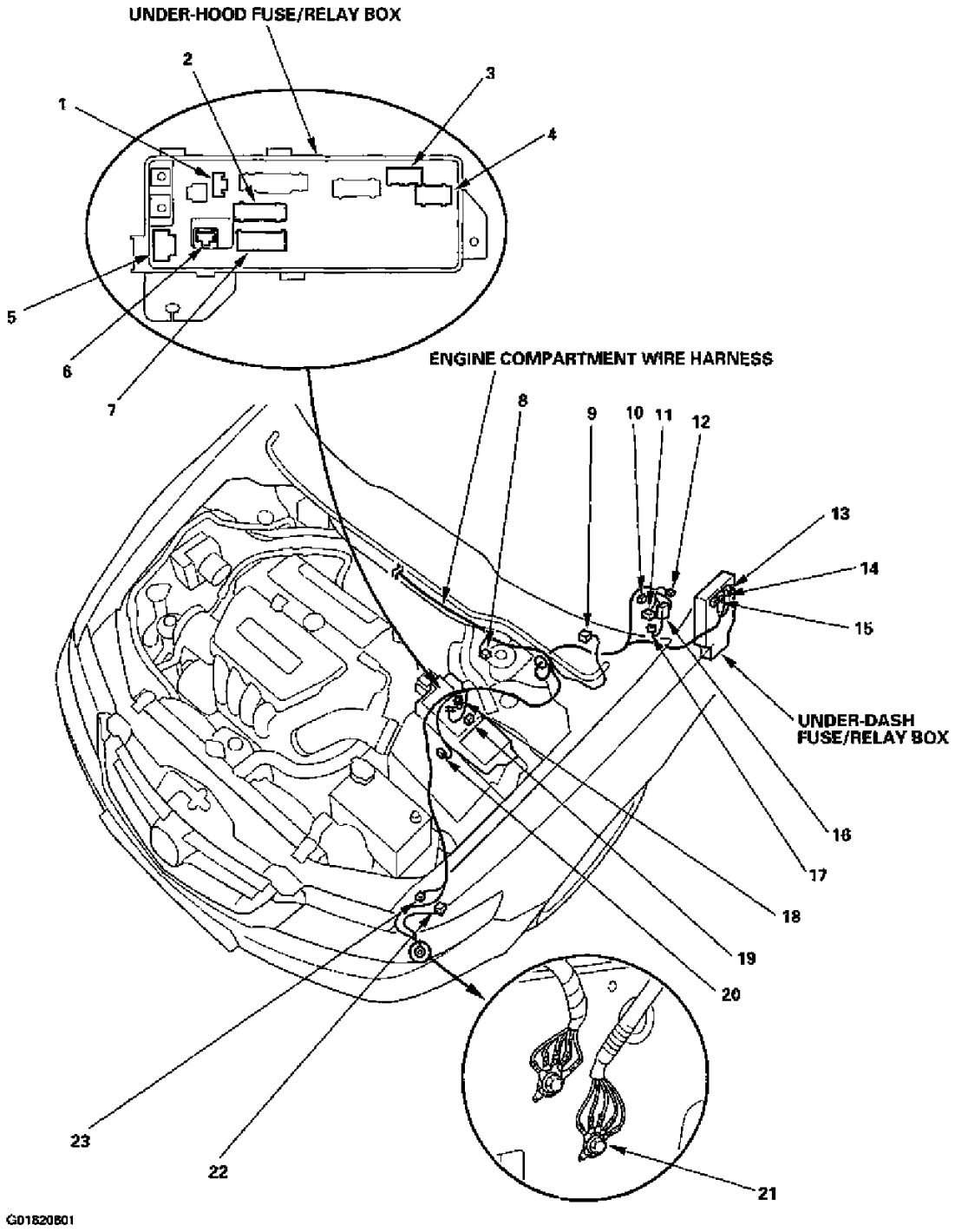


Fig. 20: Locating Engine Compartment Wire Harness (Left Branch)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Antenna lead	19	1	Under middle of dash		
Audio-HVAC display panel unit connector A	15	22	Under middle of dash		
Audio-HVAC display panel unit connector B	16	16	Under middle of dash		
Audio-HVAC display panel connector C	14	10	Under middle of dash		
Audio unit connector A	20	20	Under middle of dash		
Audio unit connector B	22	14	Under middle of dash		
Brake pedal position switch	33	4	Under left side of dash		
Clutch interlock switch	36	2	Under left side of dash		M/T
Clutch pedal position switch	37	3	Under left side of dash		M/T
Combination switch control unit	21	8	In steering column cover		
Data link connector (DLC)	39	16	Under left side of dash		
Driver's airbag inflator	31	4	In steering column cover		
Gauge control module connector A	12	22	Behind gauges assembly		
Gauge control module connector B	9	18	Behind gauges assembly		
Hazard warning switch	13	5	Middle of dash		
Ignition switch	26	7	In steering column cover		
Immobilizer control unit-receiver	30	7	In steering column cover		
Ignition key switch	27	6	In steering column cover		
In-car temperature sensor	23	2	Under left side of dash		
Moonroof switch	38	8	Under left side of dash		
Navigation display unit	17	20	Under middle of dash		
Sunlight sensor	11	2	Middle of dash		
Stereo amplifier connector A	24	14	Under middle of dash		
Stereo amplifier connector B	25	20	Under middle of dash		
Steering angle sensor	32	5	Under middle of dash		
Tweeter (left side)	5	2	In steering column cover		
Under-dash fuse/relay box connector A	45	6	Left kick panel		
Under-dash fuse/relay box connector N	46	45	Left kick panel		
Under-dash fuse/relay box connector P 【Multiplex integrated control unit (MICU)】	43	30	Left kick panel		
Under-dash fuse/relay box connector Q 【Multiplex integrated control unit (MICU)】	44	14	Left kick panel		
Under-dash fuse/relay box connector R	47	2	Left kick panel		
Under-dash fuse/relay box connector S	48	2	Left kick panel		
Under-dash fuse/relay box connector X	42	39	Left kick panel		
VSA off switch	35	5	Under left side of dash		

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Fig. 21: Dashboard Wire Harness (Left Branch - 1 Of 2)

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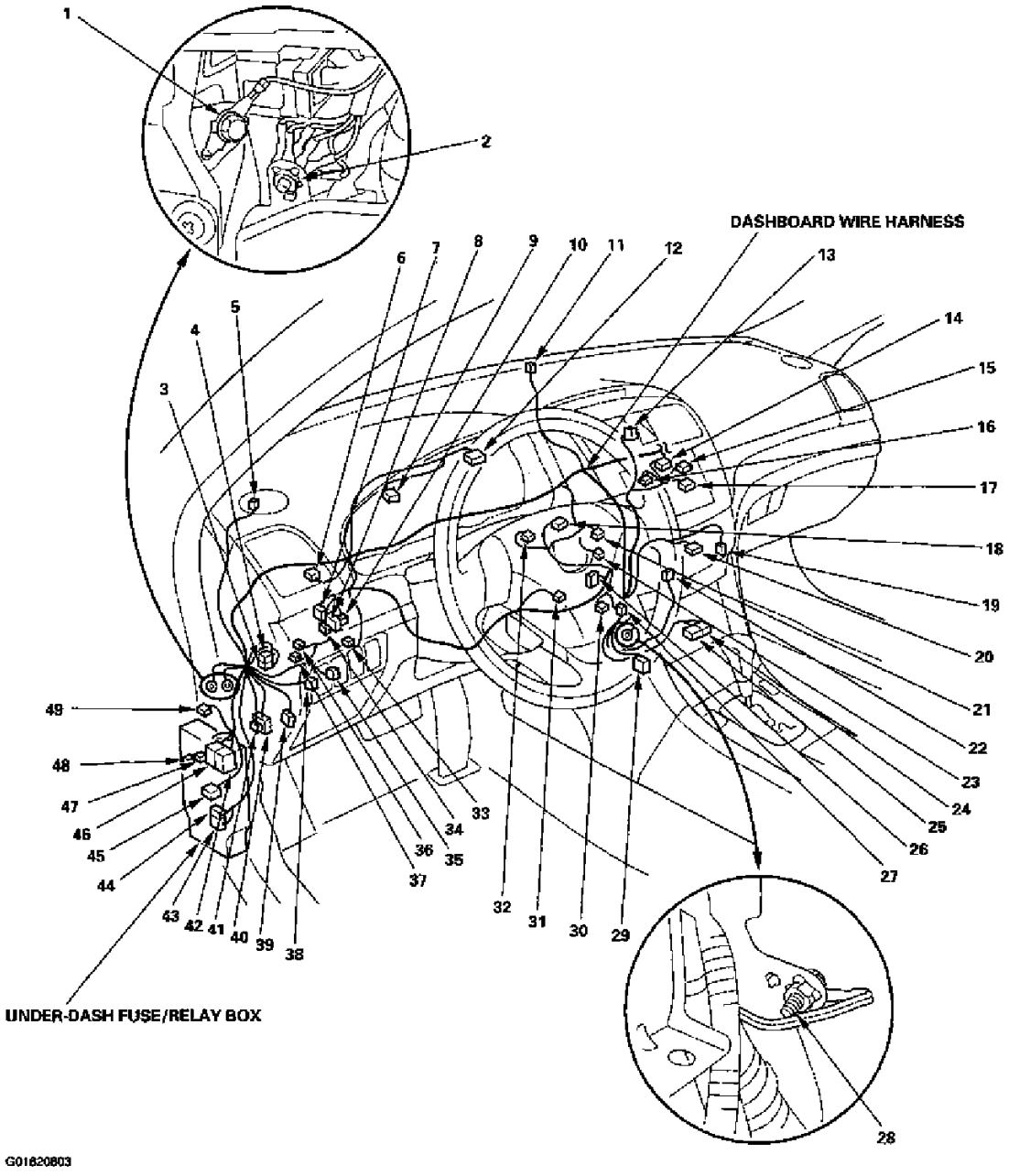


Fig. 22: Locating Dashboard Wire Harness (Left Branch)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C401	8	20	Under left side of dash	Engine compartment wire harness	
C402	34	1	Under left side of dash	Engine compartment wire harness	
C403	10	4	Under left side of dash	Engine compartment wire harness	
C404	7	13	Under left side of dash	Engine compartment wire harness	
C406 (Junction connector A)	6	28	Under left side of dash		
C406 (Junction connector B)	4	28	Under left side of dash		
C407 (Junction connector C)	3	28	Under left side of dash		
C451	18	13	In steering column cover	Cable reel subharness	
C501	40	24	Under left side of dash	Floor wire harness	
C502	41	4	Under left side of dash	Floor wire harness	
C601	49	10	Under left side of dash	Roof wire harness	
C851	29	21	Under middle of dash	A/C wire harness	
G501	2		Behind left side of dash	Body ground, via dashboard wire harness	
G502	1		Behind left side of dash	Body ground, via dashboard wire harness	
G504	28		Under middle of dash	Body ground, via dashboard wire harness	

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Fig. 23: Dashboard Wire Harness (Left Branch - 2 Of 2)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Audio-HVAC sub display unit	5	10	Middle of dash		with navigation
Blower motor	20	2	Under right side of dash		
Center pocket light	4	2	Behind center console		
Clock	5	10	Middle of dash		without navigation
Driver's seat heater switch	31	6	Under console panel		
ECM/PCM connector D	26	31	Under middle of dash		
ECM/PCM connector E	25	17	Under middle of dash		
Front accessory power socket	2	2	Under console panel		
Front passenger's airbag inflator	6	4	Under right side of dash		
Front passenger's seat heater switch	29	6	Under console panel		
Glove box light	22	2	Under right side of dash		
Park pin switch/transmission gear selection switch/A/T gear position console light	30	8	Under console panel		A/T
Parking brake switch	32	1	Behind rear console		
Power transistor	21	4	Under right side of dash		
Rear accessory power socket	33	2	Behind rear console		
SRS unit connector A	3	28	Under console panel		
Seat heater relay	12	4	Under right side of dash		
Shift lock solenoid	28	2	Under console panel		A/T
Trunk Lid opener main switch	23	2	Under right side of dash		
Tweeter (right)	13	2	Right side of dash		
Throttle actuator control relay	11	4	Under right side of dash		

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Fig. 24: Dashboard Wire Harness (Right Branch - 1 Of 2)

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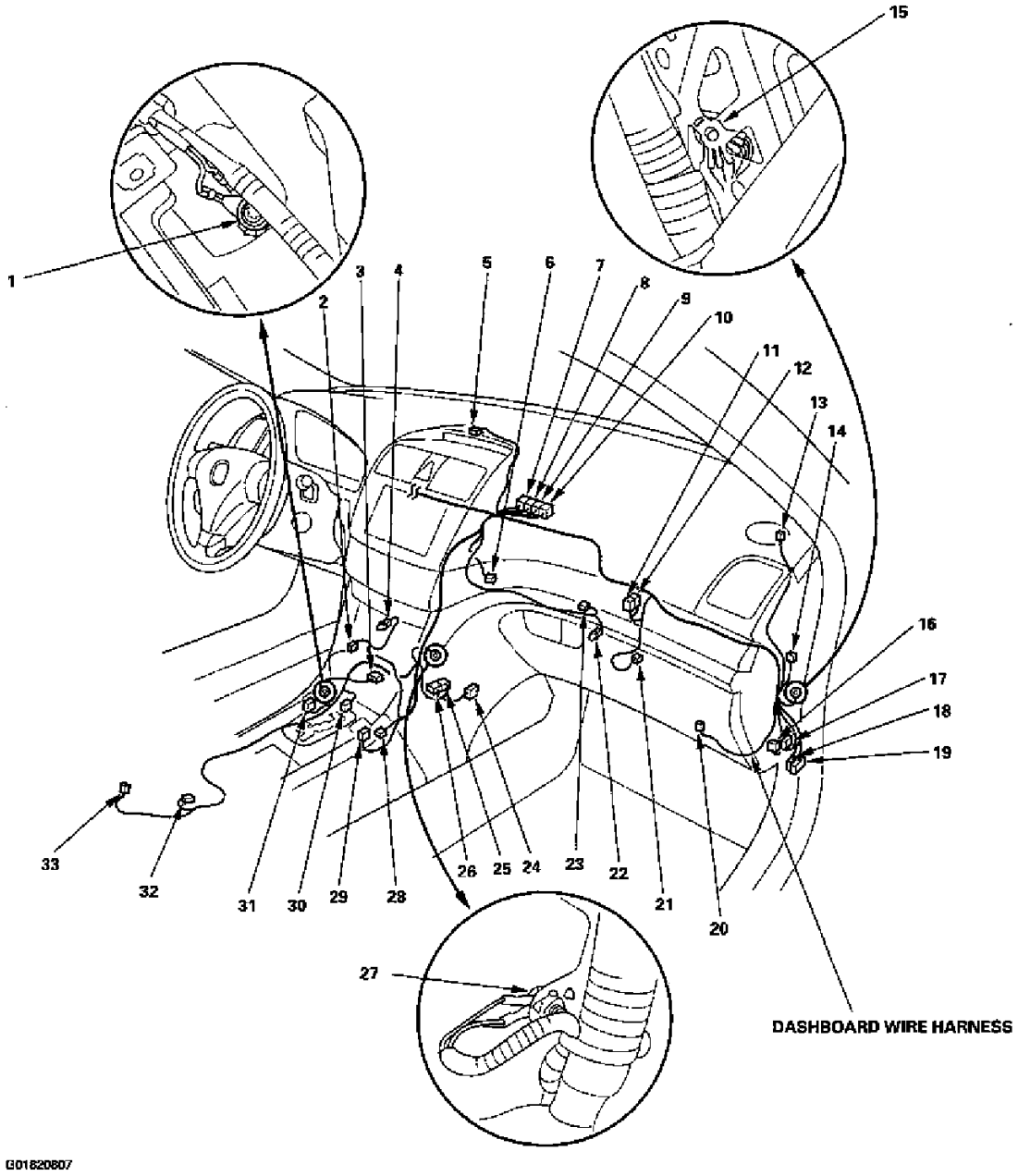


Fig. 25: Locating Dashboard Wire Harness (Right Branch)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C201	24	13	Under middle of dash	Engine wire harness	
C551	18	14	Under right side of dash	Floor wire harness	
C552	19	21	Under right side of dash	Floor wire harness	Navigation
C553 (Junction connector A)	7	28	Under right side of dash		
C554 (Junction connector B)	8	28	Under right side of dash		
C555 (Junction connector C)	9	28	Under right side of dash		
C556 (Junction connector D)	10	28	Under right side of dash		
C651	14	6	Under right side of dash	Roof wire harness	Navigation
C731	16	13	Under right side of dash	Front passenger's door wire harness	
C732	17	12	Under right side of dash	Front passenger's door wire harness	
G503	15		Behind right side of dash	Body ground, via dashboard wire harness	
G505	1		Under middle of dash	Body ground, via dashboard wire harness	
G506	27		Under middle of dash	Body ground, via dashboard wire harness	

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Fig. 26: Dashboard Wire Harness (Right Branch - 2 Of 2)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS left rear wheel sensor	11	2	Under left side of vehicle		
Driver's door switch	19	1	Left B-pillar		
Driver's seat belt tensioner	18	4	Left B-pillar		
Driver's side airbag inflator	17	2	Under driver's seat		
Driver's side impact sensor	20	2	Under driver's seat		
EVAP canister vent shut valve	12	2	Under left side of vehicle		
Fuel pump/fuel gauge sending unit	6	5	Fuel tank		
Fuel tank pressure (FTP) sensor	13	3	Under left side of vehicle		
Left rear door switch	10	1	Left C-pillar		
Noise condenser	8	2	Under left side seatback		
Under-dash fuse/relay box connector E	2	16	Under left side of dash		
Under-dash fuse/relay box connector F	1	14	Under left side of dash		
Under-dash fuse/relay box connector H	3	14	Under left side of dash		
Window antenna coil	7	1	Left C-pillar		
Yaw rate-lateral accelaration sensor	15	5	Under driver's seat		
C501	21	24	Under left side of dash	Dashboard wire harness	
C502	22	4	Under left side of dash	Dashboard wire harness	
C701	9	18	Left side of trunk	Rear wire harness connectors C702 and C703 via junction connector	
C751	16	17	Left B-pillar	Left rear door wire harness	
C901	14	10	Under driver's seat	Driver's seat wire harness	
G601	4		Left side of floor	Body ground, via floor wire harness	
G603	5		Left front of trunk	Body ground, via floor wire harness	

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Fig. 27: Floor Wire Harness (Left Side)

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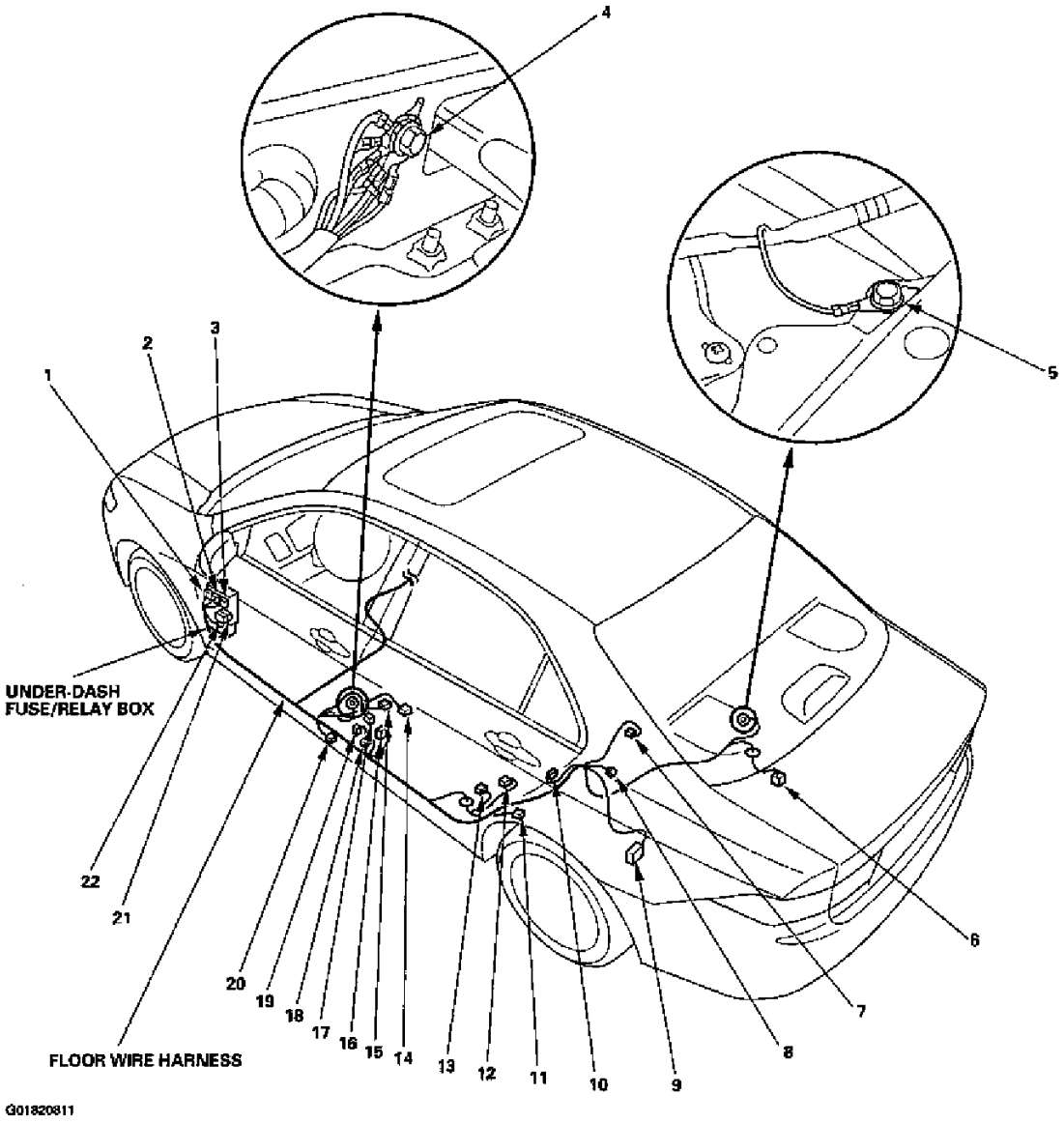


Fig. 28: Locating Floor Wire Harness (Left Side)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS right rear wheel sensor	14	2	Under right side of vehicle		
Front passenger's door switch	10	1	Right B-pillar		
Front passenger's seat belt switch	7	3	Under front passenger's seat		
Front passenger's seat belt tensioner	11	4	Right B-pillar		
Front passenger's seat heater	6	4	Under front passenger's seat		
Front passenger's side airbag inflator	2	2	Under front passenger's seat		
Front passenger's side impact sensor	8	2	Under front passenger's seat		
High mount brake light	22	2	Middle of rear shelf		
Left rear speaker	17	2	Left side of rear shelf		
Navigation inspection connector	24	2	Right side of rear shelf		
Navigation unit connector A	19	20	Middle of rear shelf		
Navigation unit connector B	20	14	Middle of rear shelf		
Navigation unit connector C	18	8	Middle of rear shelf		
Right rear door switch	15	1	Right C-pillar		
Right rear speaker	23	2	Right side of rear shelf		
Secondary heated oxygen sensor	9	4	Under front passenger's seat		
SRS unit connector B	1	28	Under middle of dash		
Trunk light	21	2	Under middle of rear shelf		
C551	4	14	Under right side of dash	Dashboard wire harness	
C552	5	21	Under right side dash	Dashboard wire harness	Navigation
C781	12	17	Right B-pillar	Right rear door wire harness	
C801	3	4	Under front passenger's seat	OPDS unit harness	
G802	13		Right side of floor	Body ground, via floor wire harness	

G01820812

Fig. 29: Floor Wire Harness (Right Side)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rear window defogger connector B	16	1	Right C-pillar		
G604	25		Right C-pillar	Body ground, via rear window defogger ground wire	

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Fig. 30: Rear Window Defogger Ground Wire

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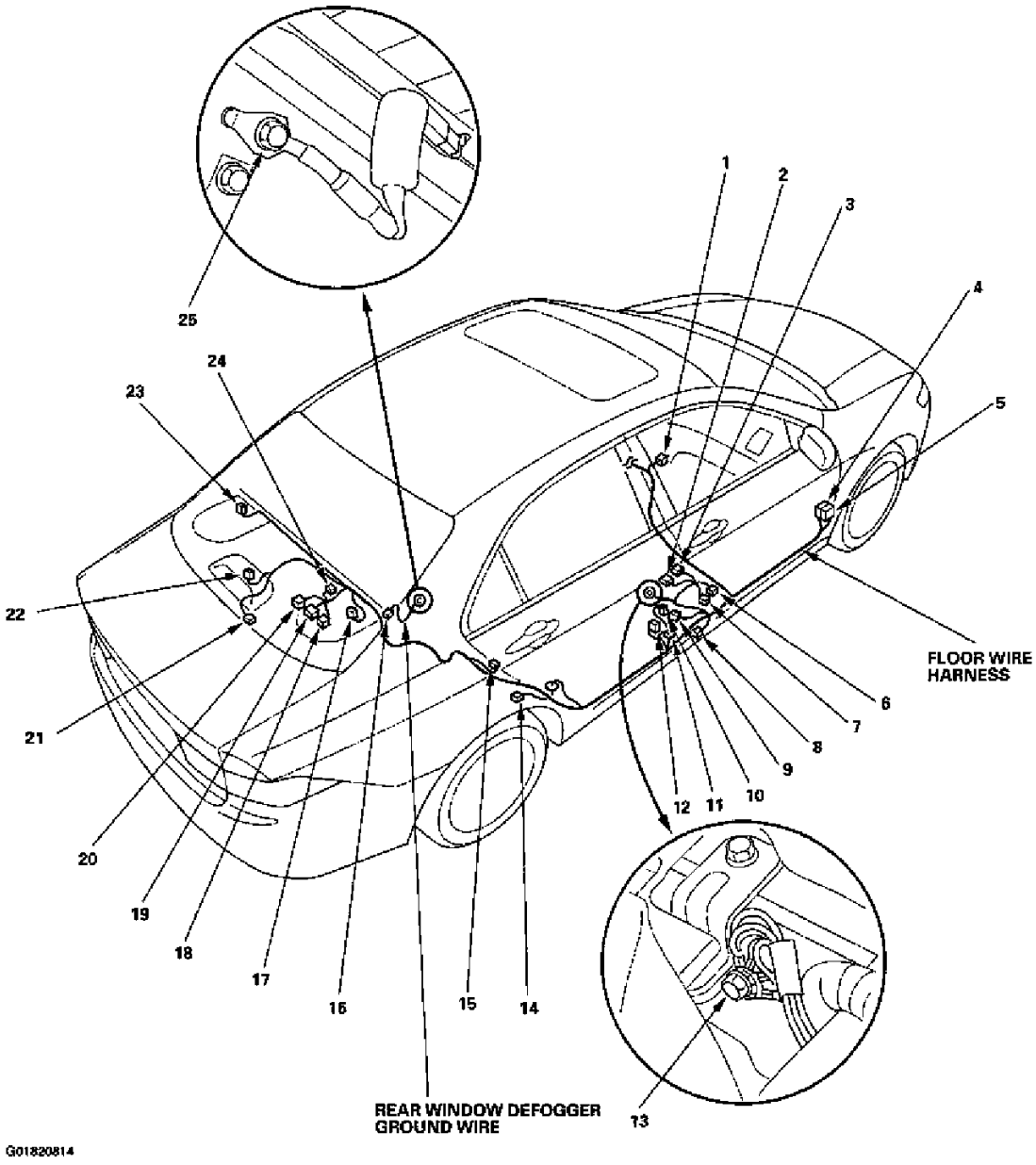


Fig. 31: Locating Floor Wire Harness (Right Side) & Rear Window Defogger Ground Wire

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left back-up light	11	3	Left side of trunk lid		
Left inner taillight	12	2	Left side of trunk lid		
Left rear turn signal light	15	3	Left side of trunk		
Left rear side marker light	14	2	Left side of trunk		
Left taillight	13	4	Left side of trunk		
License plate light connector A	9	2	Behind middle of trunk lid		
License plate light connector B	6	2	Behind middle of trunk lid		
Right back-up light	5	3	Right side of trunk lid		
Right inner taillight	4	2	Right side of trunk lid		
Right rear turn signal light	1	3	Right side of trunk		
Right rear side marker light	2	2	Right side of trunk		
Right taillight	3	4	Right side of trunk		
Trailer lighting connector	16	2	Left side of trunk		
Trunk latch switch/trunk lid opener solenoid	7	3	Behind middle of trunk lid		
Trunk lid opener switch	8	2	Behind middle of trunk lid		
C702	17	14	Left side of trunk	Floor wire harness connector C701 via junction connector	
C703	18	10	Left side of trunk	Floor wire harness connector C701 via junction connector	
G701	10		Left side of trunk	Body ground, via rear wire harness	

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Fig. 32: Rear Wire Harness

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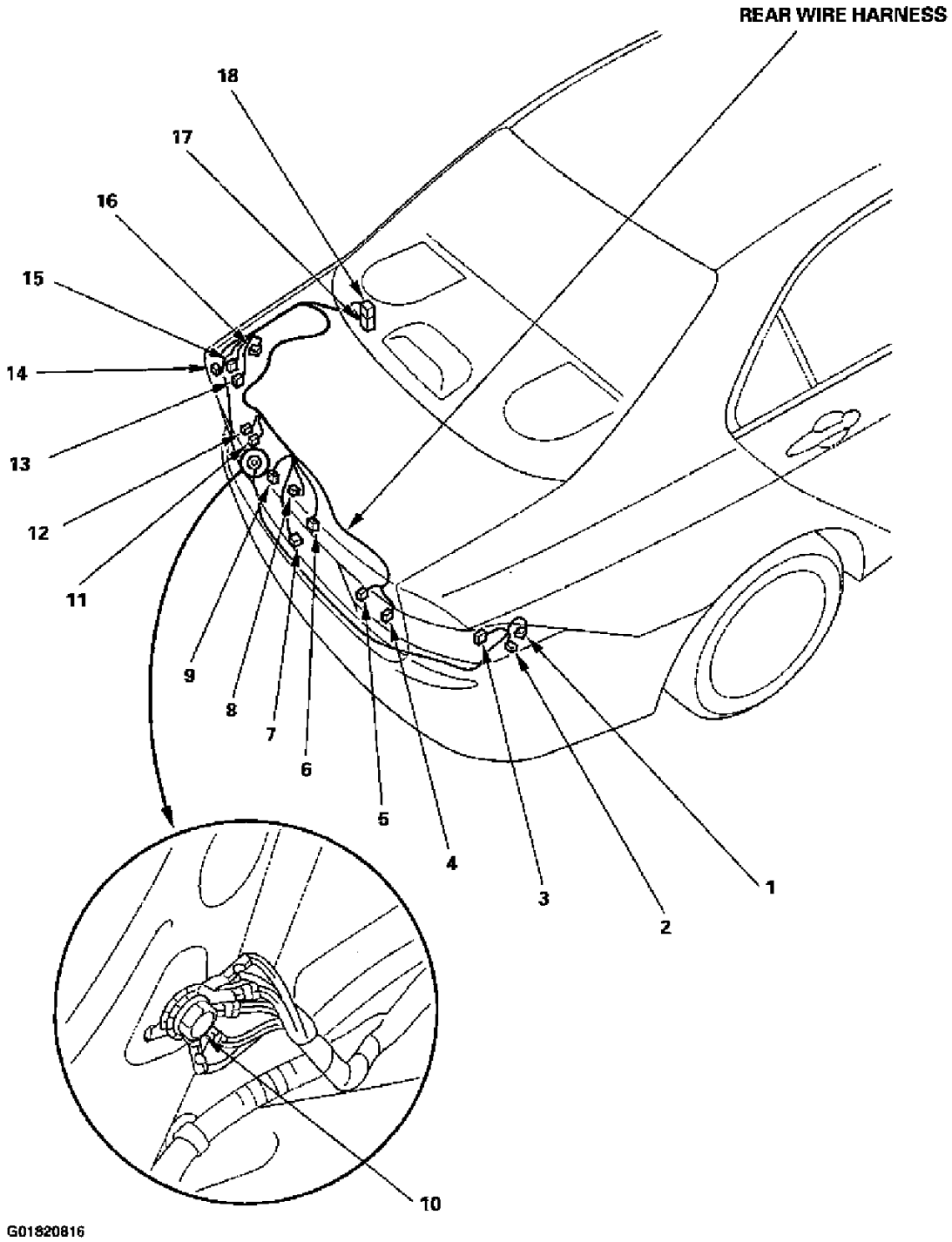


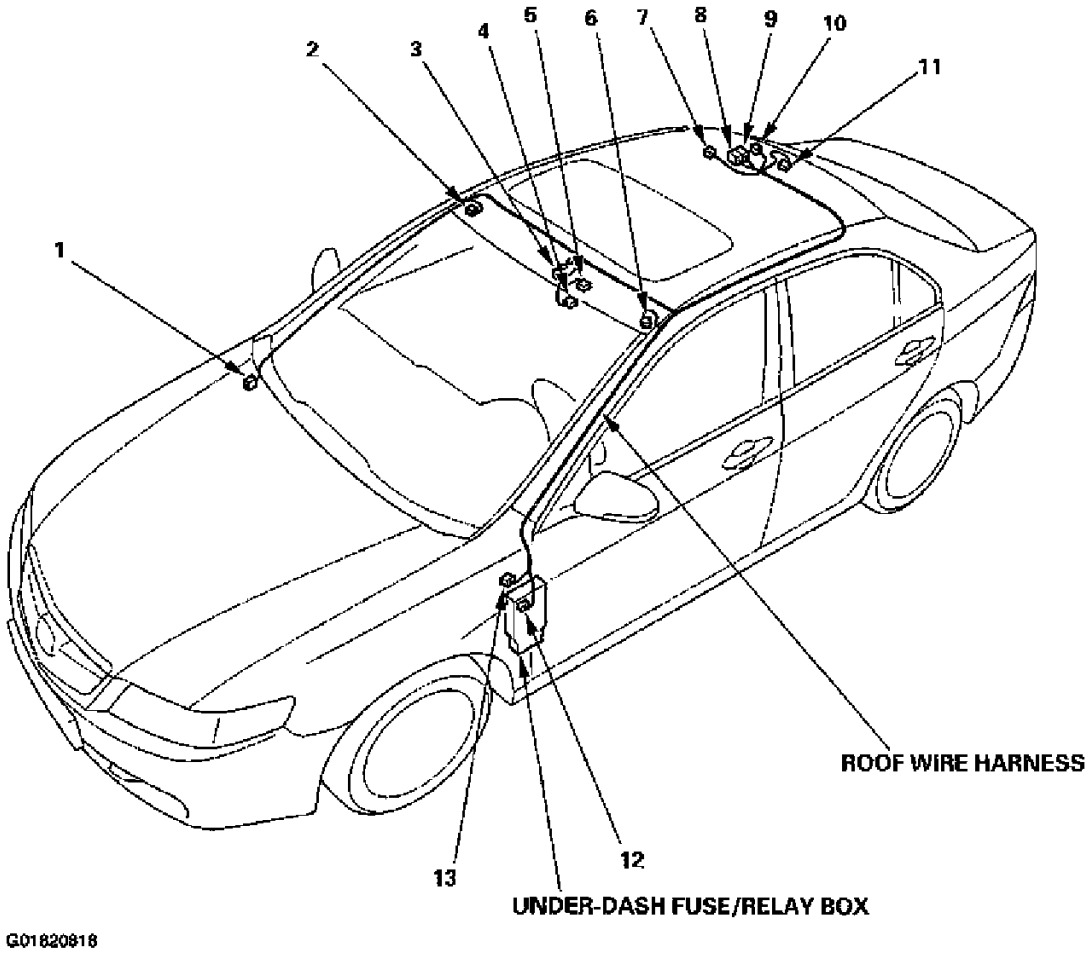
Fig. 33: Locating Rear Wire Harness

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front ceiling light/Homelink	5	10	Roof		
Automatic inside dimming mirror	4	7	Behind rearview mirror		
Ceiling light	11	3	Roof		
Driver's vanity mirror light	6	2	Roof		
Front passenger's vanity mirror light	2	2	Roof		
Individual map light	3	3	Roof		
Moonroof close relay	9	5	Roof		
Moonroof motor	7	2	Right side of trunk		
Moonroof open relay	8	5	Roof		
Moonroof Limit Switch	10	4	Roof		
Under-dash fuse/relay box connector I	12	5	Under left side of dash		
C601	13	10	Under left side of dash	Dashboard wire harness	
C651	1	6	Under right side of dash	Dashboard wire harness	Navigation

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Fig. 34: Roof Wire Harness



G01820818

Fig. 35: Locating Roof Wire Harness

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cruise Set/Resume/Cancel switch	5	5	In steering column cover		
Horn switch	4	1	In steering column cover		
Voice control switch	2	4	In steering column cover		
Radio remote switch	1	4	In steering column cover		
C451	3	13	In steering column cover	Dashboard wire harness	

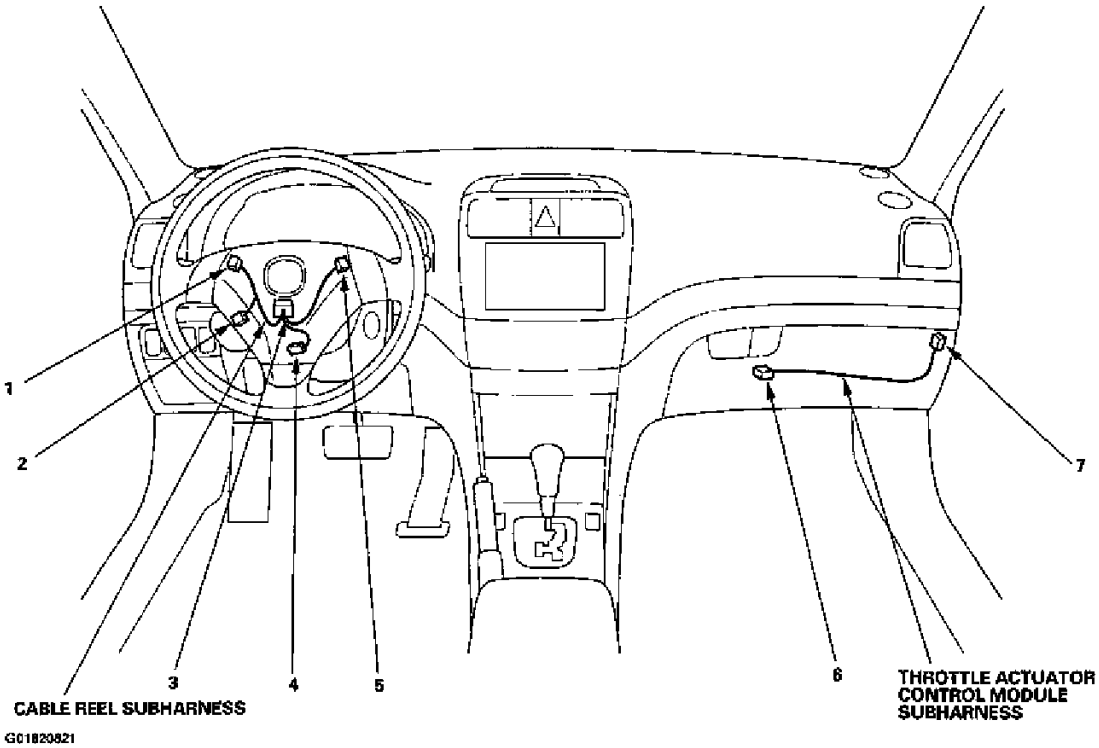
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Fig. 36: Cable Reel Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Throttle actuator control module	7	16	Under right side of dash		
C251	6	13	Under right side of dash	Engine wire harness	

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Fig. 37: Throttle Actuator Control Module Subharness



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Fig. 38: Locating Cable Reel Subharness & Throttle Actuator Control Module Subharness

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Door multiplex control unit	2	23	Driver's door		
Driver's door courtesy light	11	2	Driver's door		
Driver's door key cylinder switch	1	3	Driver's door		
Driver's door lock actuator	12	2	Driver's door		
Driver's door lock knob switch	13	3	Driver's door		
Driver's door speaker	9	2	Driver's door		
Driver's power window motor	10	6	Driver's door		
Left power mirror/left side turn signal light	4	13	Driver's door		
Power mirror switch	3	13	Driver's door		
C631	5	20	Driver's door	Driver's door subharness	
C632	8	17	Driver's door	Driver's door subharness	

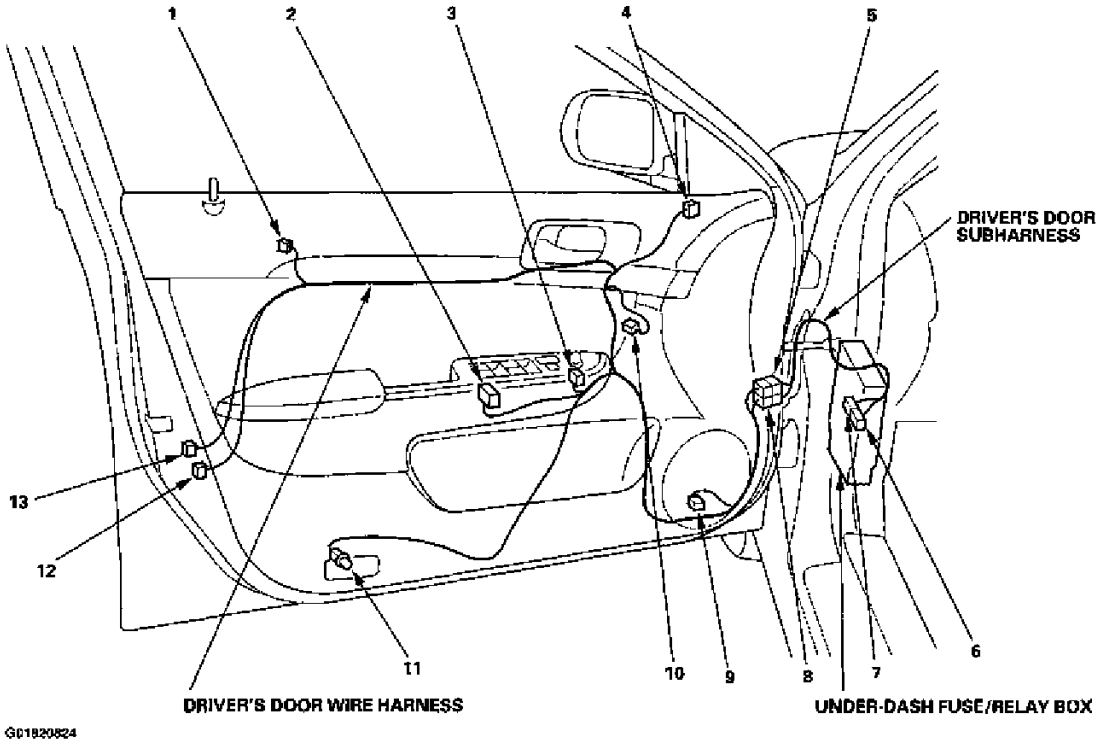
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Fig. 39: Driver's Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Under-dash fuse/relay box connector J	6	21	Left kick panel		
Under-dash fuse/relay box connector K	7	12	Left kick panel		
C631	5	20	Driver's door	Driver's door wire harness	
C632	8	17	Driver's door	Driver's door wire harness	

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Fig. 40: Driver's Door Subharness



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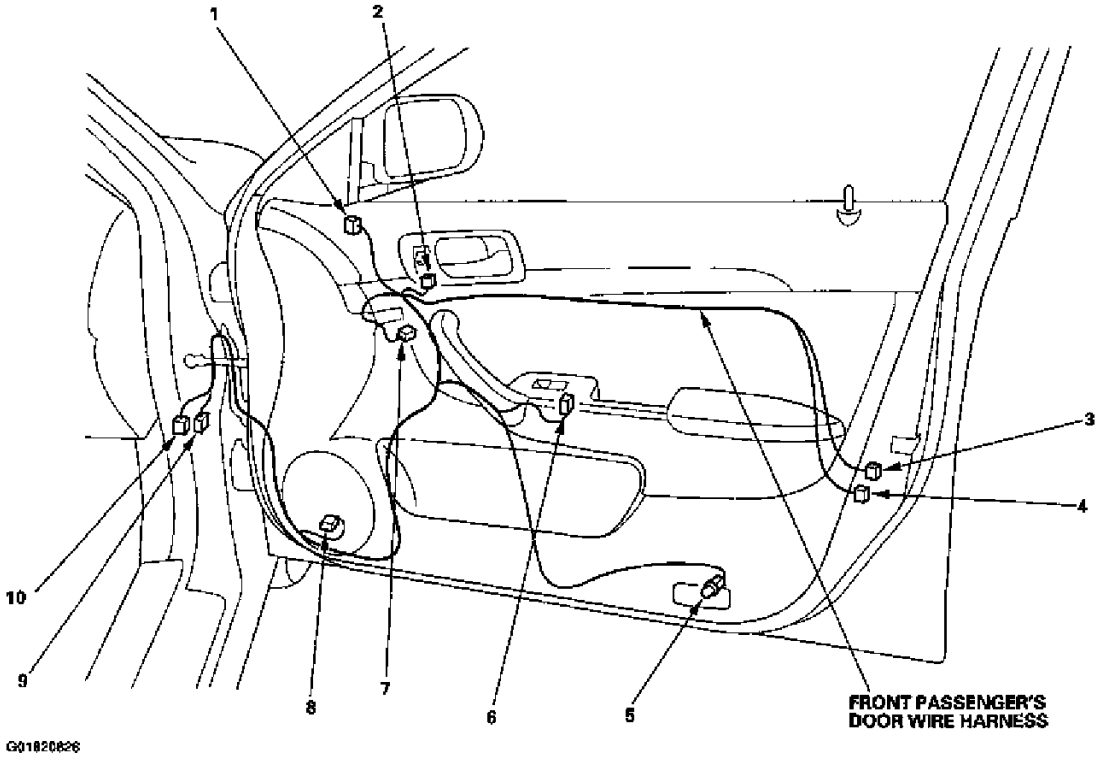
Fig. 41: Locating Driver's Door Wire Harness & Driver's Door Subharness

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front passenger's door courtesy light	5	2	Front passenger's door		
Front passenger's door lock actuator	4	2	Front passenger's door		
Front passenger's door lock switch	2	3	Front passenger's door		
Front passenger's door lock knob switch	3	3	Front passenger's door		
Front passenger's door speaker	8	2	Front passenger's door		
Front passenger's power window motor	7	6	Front passenger's door		
Front passenger's power window switch	6	6	Front passenger's door		
Right power mirror/right side turn signal light	1	13	Front passenger's door		
C731	9	13	Under right side of dash	Dashboard wire harness	
C732	10	12	Under right side of dash	Dashboard wire harness	

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Fig. 42: Front Passenger's Door Wire Harness



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Fig. 43: Locating Front Passenger's Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left rear door speaker	3	2	Left rear door		
Left rear power door lock actuator	5	2	Left rear door		
Left rear power door lock knob switch	6	3	Left rear door		
Left rear power window motor	1	6	Left rear door		
Left rear power window switch	4	6	Left rear door		
C751	2	17	Left B-pillar	Floor wire harness	

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Fig. 44: Left Rear Door Wire Harness

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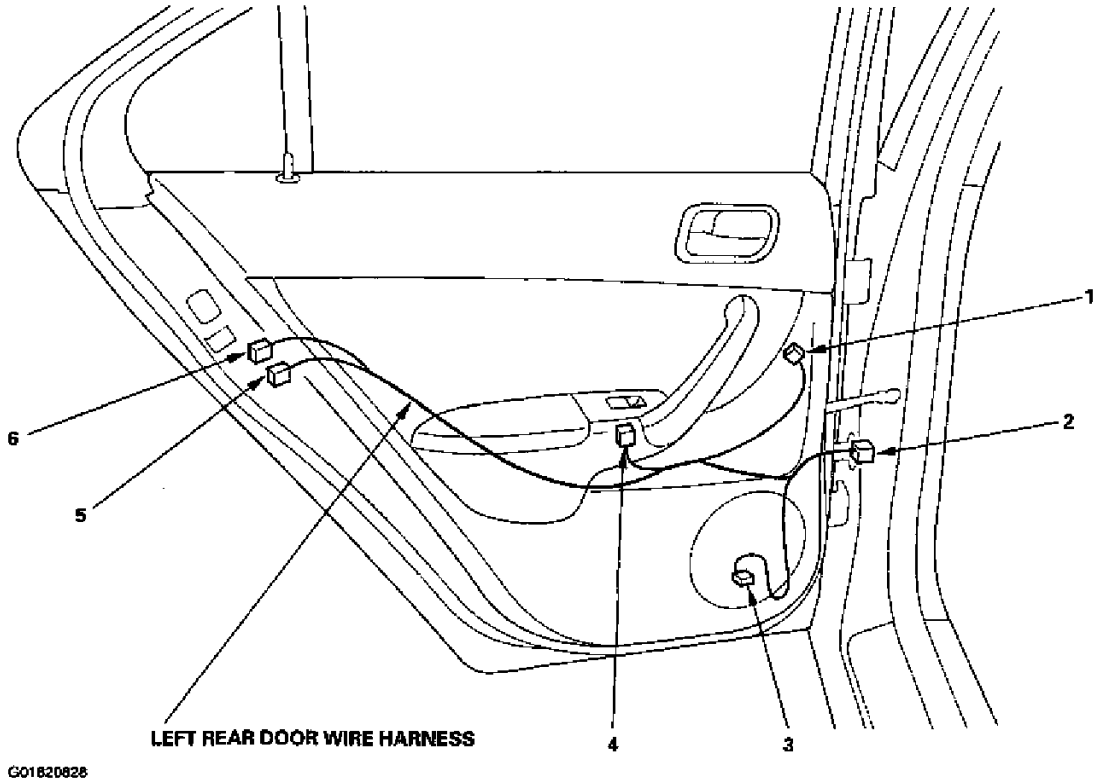


Fig. 45: Locating Left Rear Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right rear door speaker	4	2	Right rear door		
Right rear power door lock actuator	2	2	Right rear door		
Right rear power door lock knob switch	1	3	Right rear door		
Right rear power window motor	6	6	Right rear door		
Right rear power window switch	3	6	Right rear door		
C781	5	17	Right B-pillar	Floor wire harness	

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Fig. 46: Right Rear Door Wire Harness

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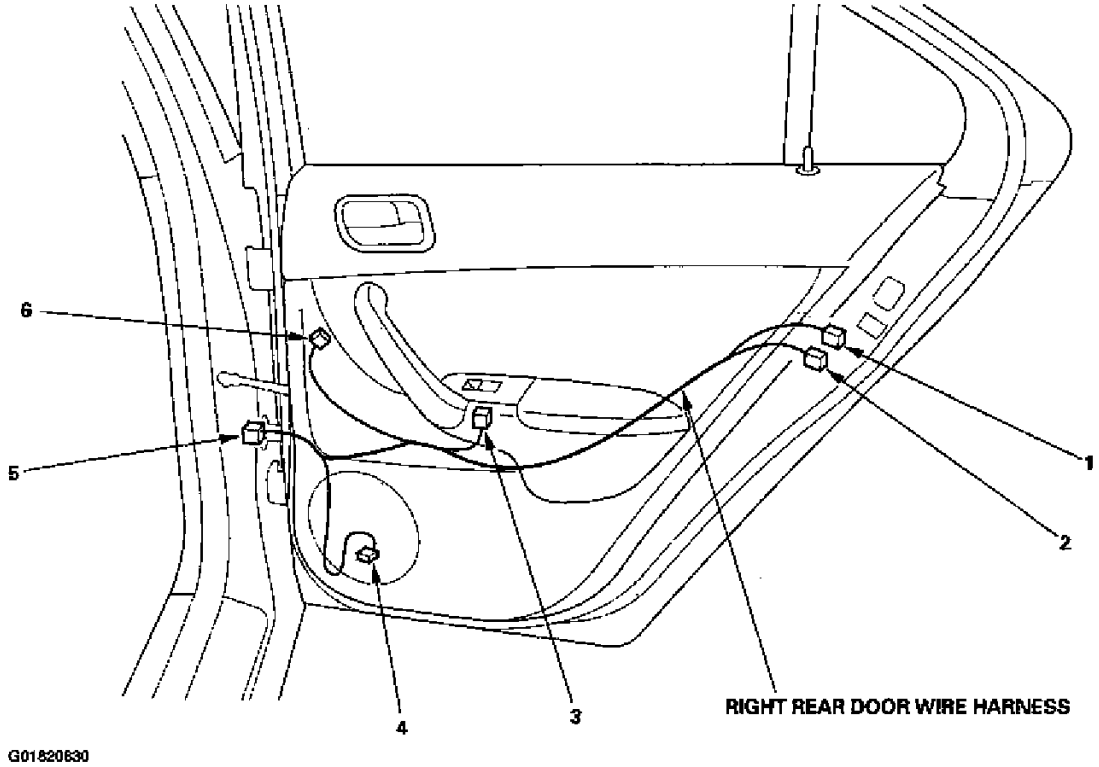


Fig. 47: Locating Right Rear Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's airbag	15	4	Under left side of dash		
Front passenger's airbag	5	4	Under right side of dash		
SRS unit connector A	2	28	Under middle of dash		
Under-dash fuse/relay box connector R	17	2	Under left side of dash		
Under-dash fuse/relay box connector S	18	2	Under left side of dash		
C403	1	4	Under left side of dash	Engine compartment wire harness	
C501	16	24	Under left side of dash	Floor wire harness	
G505	12			Body ground, via dashboard wire harness	

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Fig. 48: Dashboard Wire Harness (SRS Branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt tensioner	11	4	Left B-pillar		
Driver's side airbag	14	2	Under left side of dash		
Front passenger's seat belt tensioner	8	4	Right B-pillar		
Front passenger's side airbag	7	2	Under front passenger's seat		
Left side impact sensor (1st)	13	2	Under driver's seat		
Right side impact sensor (1st)	9	2	Under front passenger's seat		
SRS unit connector B	3	28	Under middle of dash		
C501	16	24	Under light side dash	Dashboard wire harness	
C801	6	4	Under front passenger's seat	OPDS unit harness	

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Fig. 49: Floor Wire Harness (SRS Branch)

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Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
OPDS unit	10	8	In front passenger's seat		
C801	6	4	Under front passenger's seat	Floor wire harness	

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Fig. 50: OPDS Unit Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
SRS unit connector C	4	16	Under middle of dash		

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Fig. 51: Side Curtain Airbag Harness

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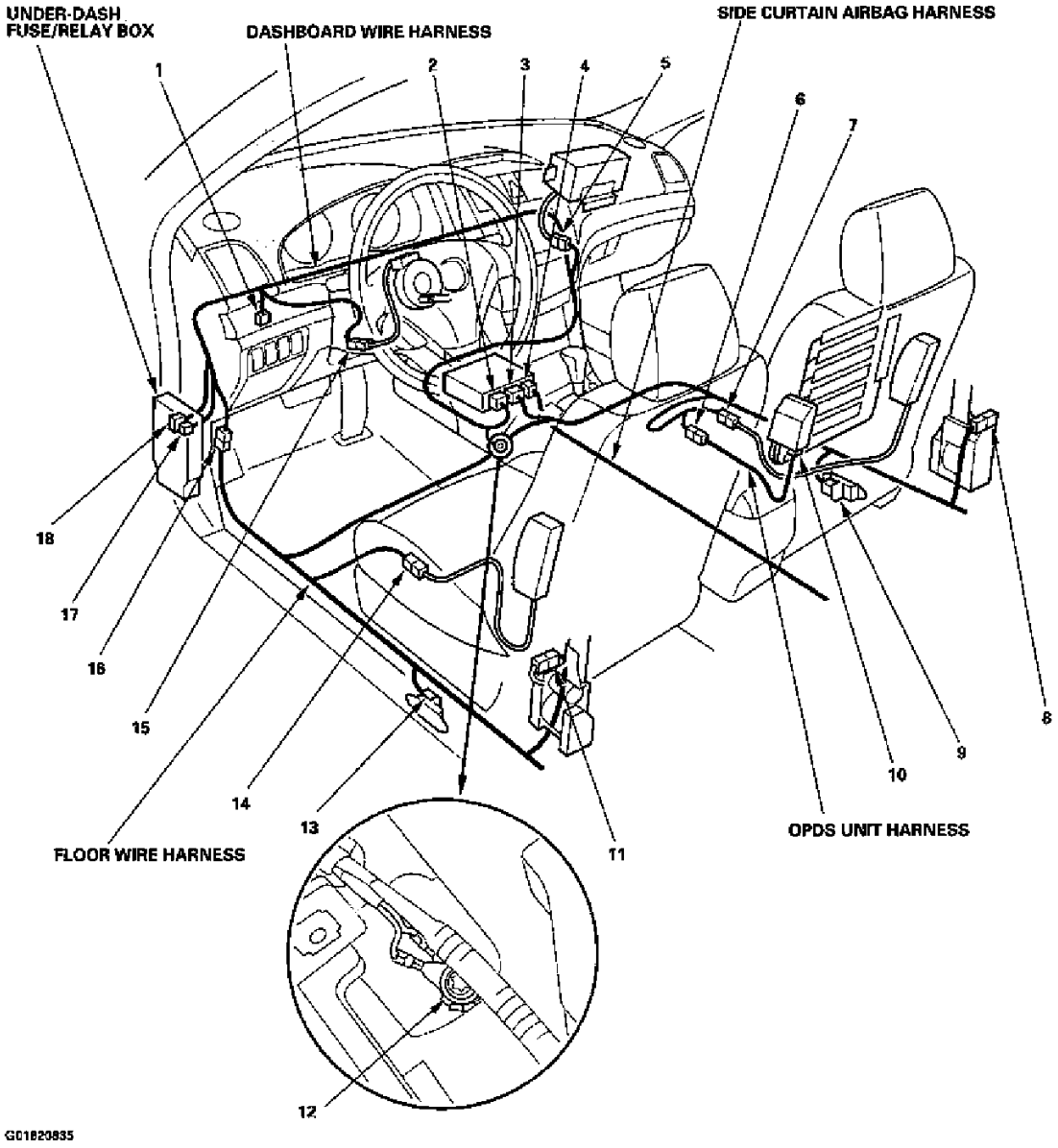


Fig. 52: Locating SRS Harnesses

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
SRS unit connector A	1	28	Under middle of dash		

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Fig. 53: Dashboard Wire Harness (SRS Branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
SRS unit connector B	2	28	Under middle of dash		

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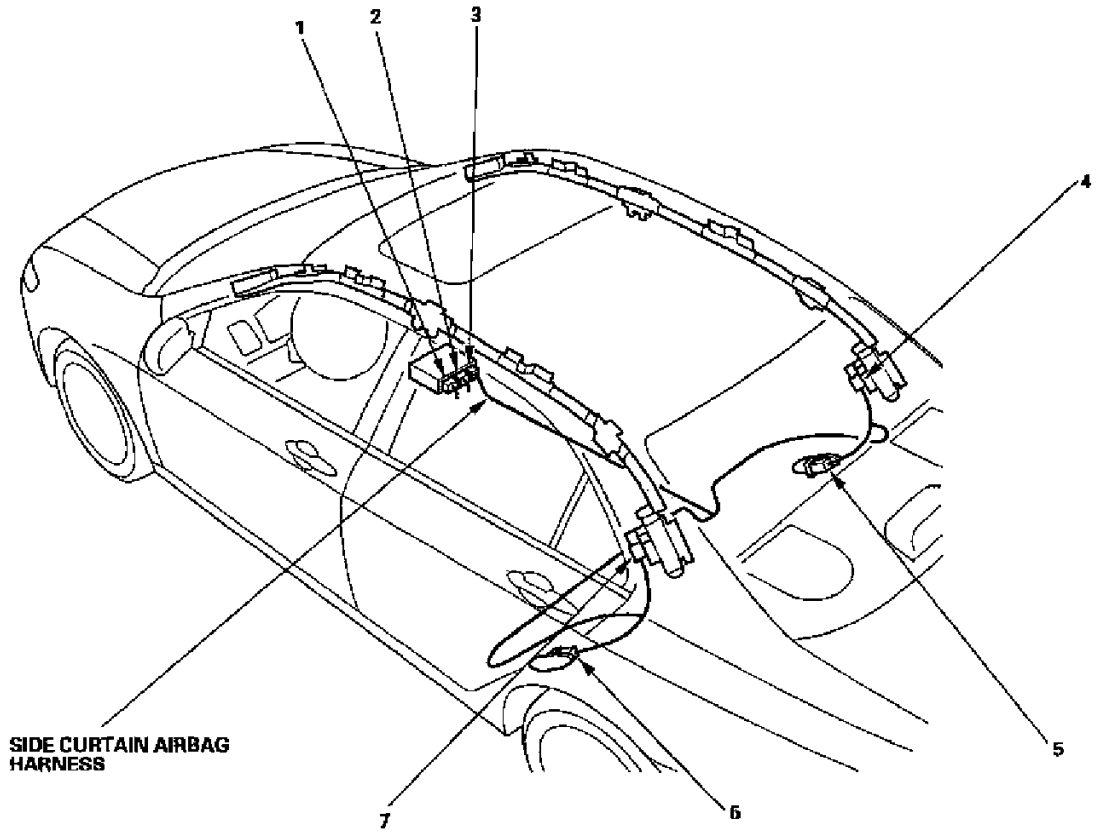
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Fig. 54: Floor Wire Harness (SRS Branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left side impact sensor (2nd)	6	2	Left quarter panel		
Left side curtain airbag	7	2	Left C-pillar		
Right side curtain airbag	4	2	Right quarter panel		
Right side impact sensor (2nd)	5	2	Right C-pillar		
SRS unit connector C	3	16	Under middle of dash		

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Fig. 55: Side Curtain Airbag Harness



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Fig. 56: Locating SRS Harnesses

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's power seat adjustment switch	6	12	Left side of driver's seat		
Driver's seat belt switch	4	3	Under driver's seat		
Driver's seat heater	5	4	Under driver's seat		
Front up-down motor	7	2	Under driver's seat		
Rear up-down motor	1	2	Under driver's seat		
Recline motor	8	5	Under driver's seat		
Slide motor	2	2	Under driver's seat		
C901	3	10	Under driver's seat	Floor wire harness	

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Fig. 57: Driver's Seat Wire Harness

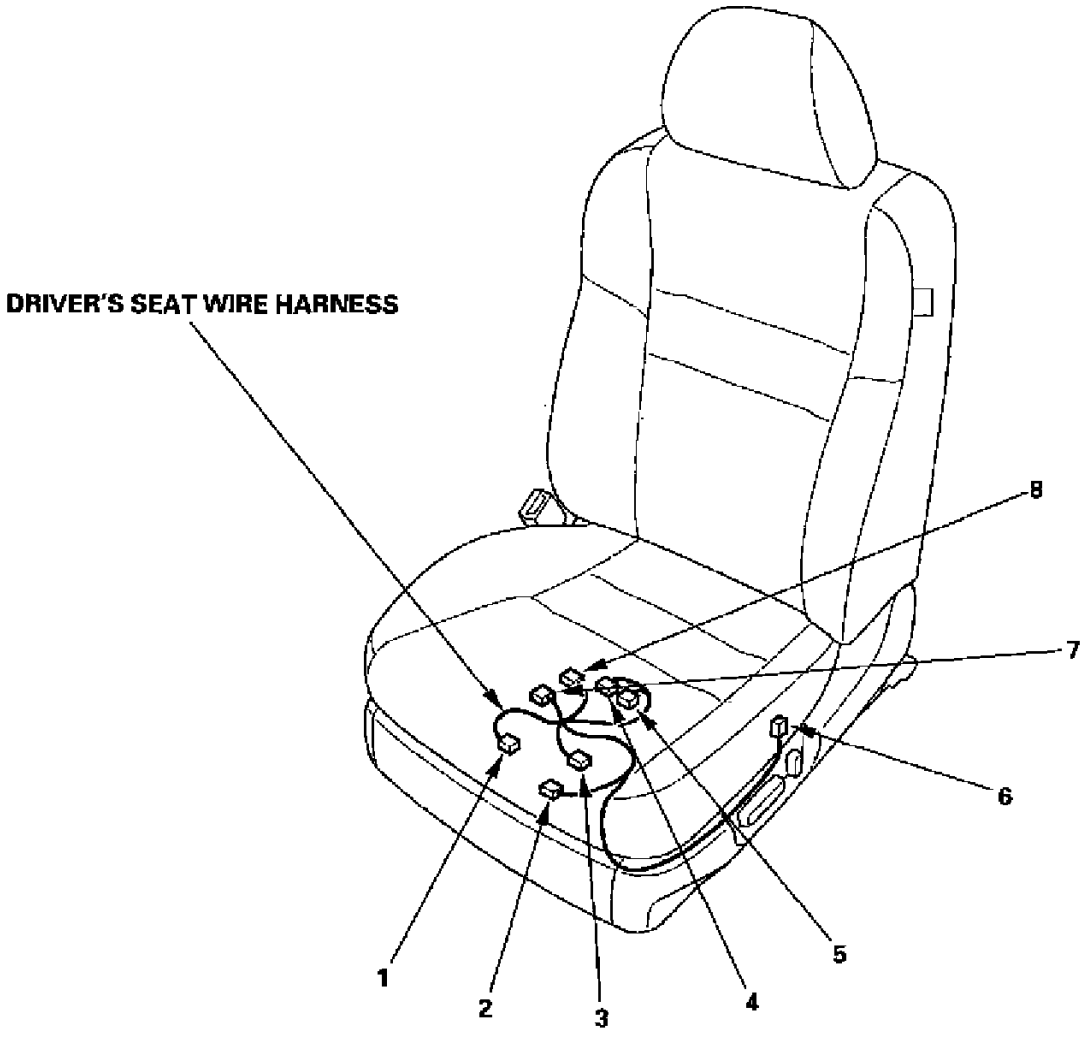


Fig. 58: Locating Driver's Seat Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's air mix control motor	5	7	Under middle of dash		
Evaporator temperature sensor	6	2	Under middle of dash		
Front passenger's air mix control motor	3	7	Under middle of dash		
Mode control motor	2	7	Under middle of dash		
Recirculation control motor	1	7	Under middle of dash		
C851	4	21	Under middle of dash	Dashboard wire harness	

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Fig. 59: A/C Wire Harness

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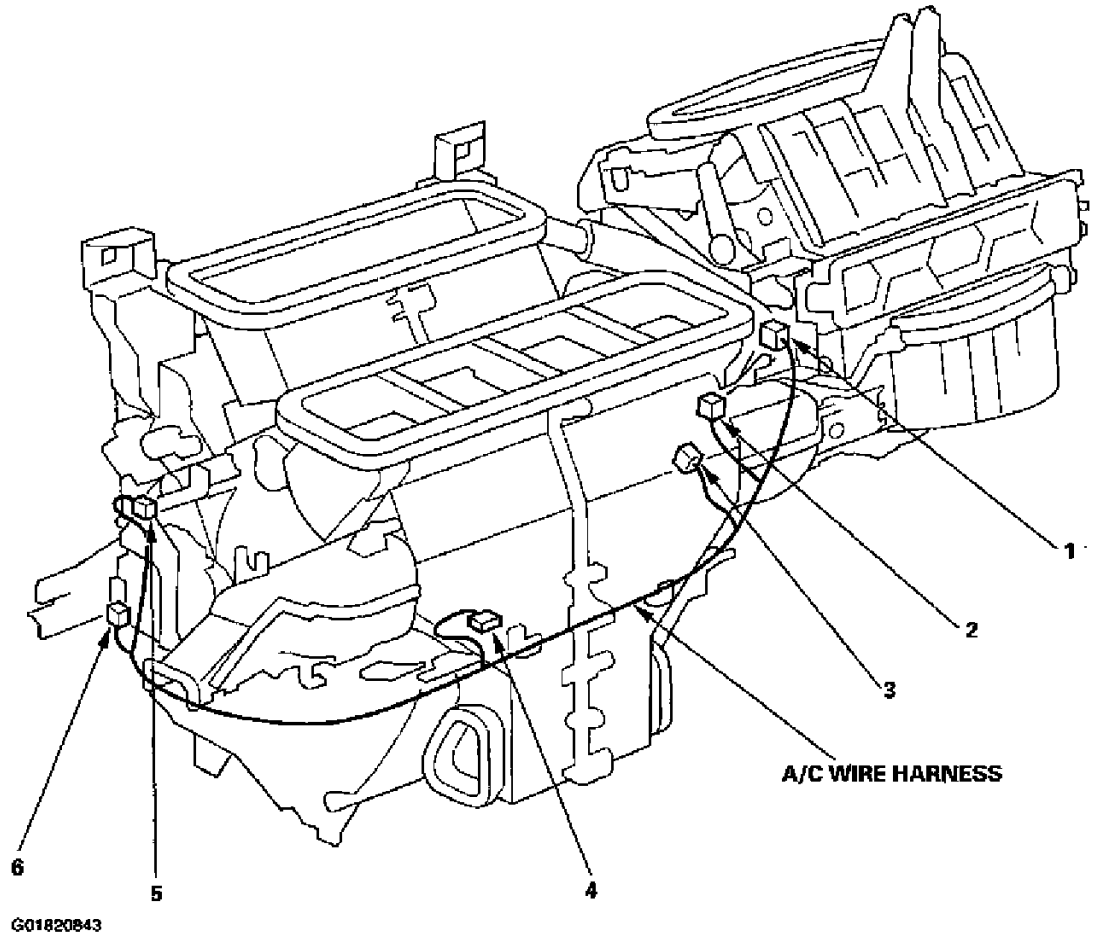


Fig. 60: Locating A/C Wire Harness

GROUND DISTRIBUTION

GROUND TO COMPONENTS INDEX

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Ground	Component or circuit grounded
G1	Battery terminal
G2	Engine mount bracket
G3	Transmission housing
G101	ECM/PCM (PG1 and PG2 are BLK; LG1 and LG2 are BRN/YEL) BLK: A/T clutch pressure control solenoid valve A, A/T clutch pressure control solenoid valve B, A/T clutch pressure control solenoid valve C, Ignition coils, Mainshaft speed sensor (A/T), Thermal joints, Transmission range switch, Throttle actuator control module, VTEC solenoid valve BRN/YEL CKP sensor, CMP sensor A, CMP sensor B, Countershaft speed sensor, VTEC oil pressure switch
	Shielding between the ECM/PCM and knock sensor, throttle actuator control module and throttle body have BRN/YEL wire
G201	Condenser fan motor, Hood switch, Right headlights, Right front turn signal light, Right front parking light
G202	Brake fluid level switch, Power steering pressure (PSP) switch, Washer fluid level switch (Canada)
G203	VSA modulator-control unit
G301	Daytime running lights relay (Canada), Left headlights, Left front turn signal light, Left front parking light, Radiator fan motor, Radiator fan switch
G302	Blower motor relay, ELD unit, Relay control module, Windshield wiper motor
G501	Accessory power socket relay, Ambient light, Clutch interlock switch (M/T), Clutch pedal position switch (M/T), Combination switch control unit, Cruise control main switch, Data link connector (DLC), Driver's door lock knob switch, Driver's door key cylinder switch, Gauge control module, Ignition key switch, Key interlock solenoid, Moonroof switch, Moonroof open/close relays, Relay control module, Vanity mirror lights, VSA off switch (G501 connects to G601 via under-dash fuse/relay box)
G502	Multiplex integrated control unit (MICU)
G503	Automatic inside dimming mirror, Audio-HVAC sub display unit (with navigation), Climate control unit (audio-HVAC display module), Clock (without navigation), Console box light, Data link connector (DLC), Front accessory power socket, Front passenger's door lock switch, Front passenger's door lock knob switch, Front passenger's power window switch, Gauge control module, Glove box light, Memory erase signal (MES) connector, Navigation display unit (audio-HVAC display module), Power transistor, Park pin switch, Rear accessory power socket, Right power mirror defogger (Canada), Right side turn signal light, Transmission gear selection switch
	Shielding between the ECM/PCM, Gauge control module, Navigation unit and VSA modulator-control unit have BRN wire
G504	Audio unit (audio-HVAC display module), Stereo amplifier (2 wires)
G505	SRS unit
G506	Driver's seat heater switch, Front passenger's seat heater switch, Seat heater relay
G601	Driver's power seat switch (2 wires), Driver's seat belt switch, Driver's seat heater, Door multiplex control unit, Left power mirror defogger (Canada), Left rear door lock knob switch, Left power window switch, Left side turn signal light, Multiplex integrated control unit (MICU) (2 wires), MICU service check connector, Noise condenser, Power mirror switch, Turn signal/hazard relay, (G601 connects to G501 via under-dash fuse/relay box)
G602	Front passenger's seat belt switch, Front passenger's seat heater, High mount brake light, Navigation unit, OPDS unit, Right rear door lock knob switch, Right rear power window switch
G603	Fuel pump
G604	Rear window defogger
G701	Back-up lights, Brake lights, License plate lights, Rear turn signal lights, Rear side marker lights, Taillights, Trunk latch switch/trunk lid opener solenoid, Trunk lid opener switch

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Fig. 61: Ground to Components Index

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2004 STARTING & CHARGING SYSTEMS

Generators & Regulators - TSX

COMPONENT LOCATIONS

For component location, see **Fig. 1** .

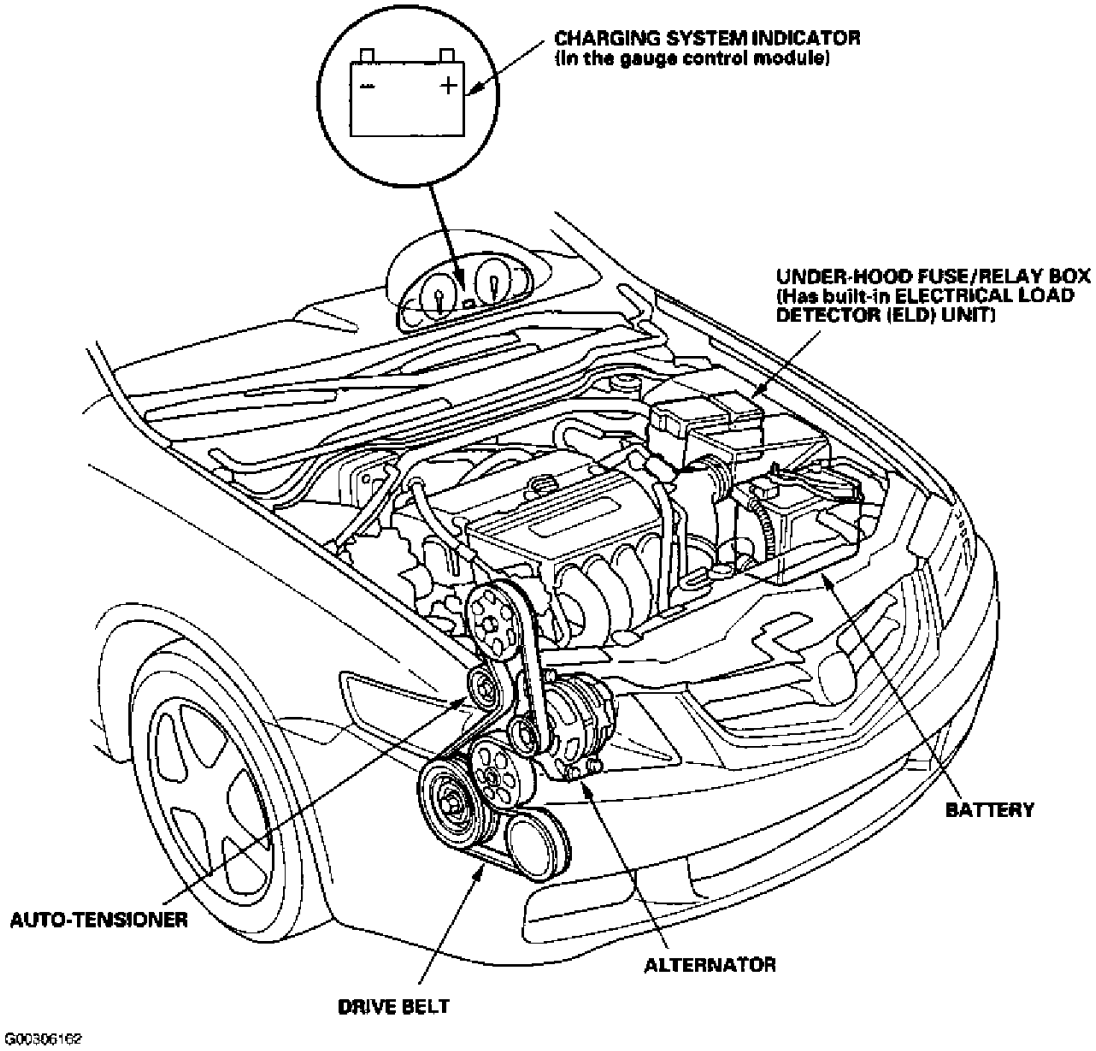


Fig. 1: Identifying Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ADJUSTMENTS

DRIVE BELT

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1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it. See **DRIVE BELT** under REMOVAL AND INSTALLATION.
2. Check that the auto-tensioner indicator "A" is within the standard range "B". If it is out of the standard range, replace the drive belt. See **Fig. 2** .

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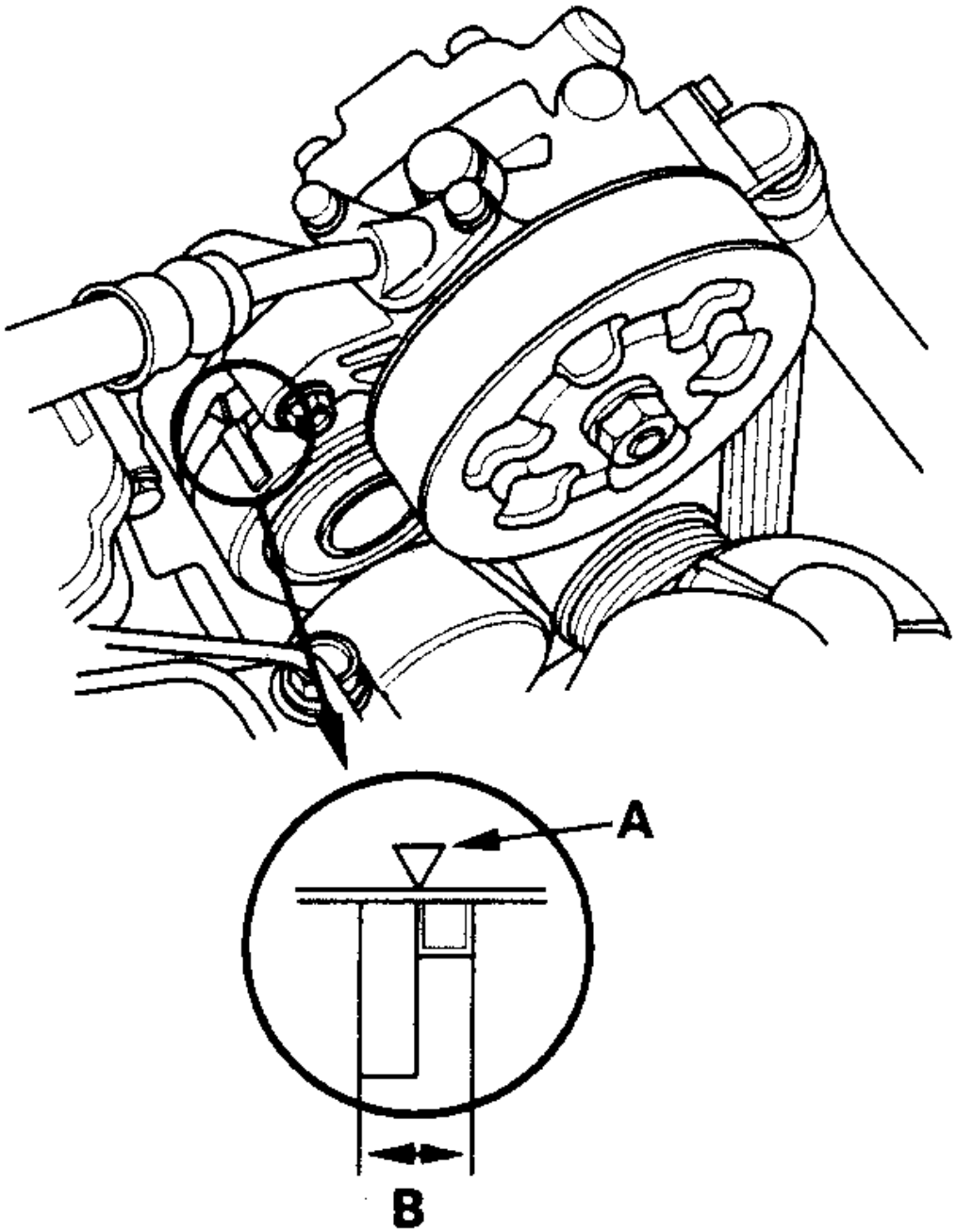


Fig. 2: Checking Auto-Tensioner Indicator Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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TROUBLE SHOOTING

CHARGING CIRCUIT

If the charging system indicator does not illuminate or does not go off, or the battery is dead or low, test the following items in the order below.

1. Battery
2. Charging System Indicator
3. Alternator/Regulator Circuit
4. Alternator Control System

Charging System Indicator Test

For charging system indicator test, see **Fig. 3** .

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1. Turn the ignition switch ON (II).

   Does the charging system indicator come on?

   YES – Go to step 2.

   NO – Go to step 3.

2. Start the engine.

   Does the charging system indicator go off?

   YES – Charging system indicator circuit is OK. Go to the Alternator and Regulator Circuit Test.■

   NO – Go to step 3.

3. Troubleshoot the multiplex integrated control system.

   Is the multiplex integrated control system OK?

   YES – Go to step 4.

   NO – Check the multiplex integrated control system as indicated by the DTC.■

4. Perform the gauge control module self test procedure. See APPROPRIATE INSTRUMENT PANELS article.
   Does the charging system indicator flash?

   YES – Go to step 5.

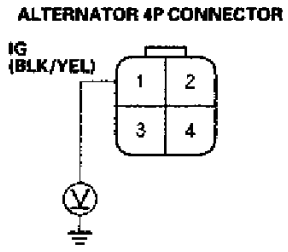
   NO – Replace the gauge control module.■

5. Turn the ignition switch OFF.

6. Disconnect the alternator 4P connector.

7. Turn the ignition switch ON (II).

8. Measure the voltage between alternator 4P connector terminal No. 1 and body ground.



Wire side of female terminals

   Is there battery voltage?

   YES – Go to step 9.

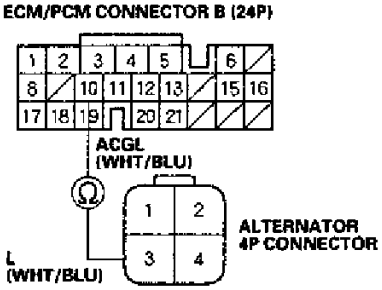
   NO – Check for a blown No.18 (15A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the alternator and under-dash fuse/relay box.■

9. Connect the Honda Diagnostic System (HDS) to the data link connecter (DLC). Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

   NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

10. Disconnect ECM/PCM connector B (24P).

11. Check for continuity between ECM/PCM connector terminal B10 and alternator 4P connector terminal No. 3.



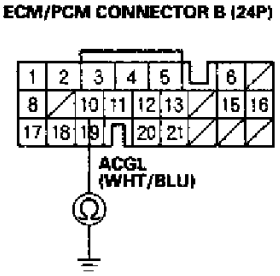
Wire side of female terminals

   Is there continuity?

   YES – Go to step 12.

   NO – Repair an open in the wire between the alternator and the ECM/PCM.■

12. Check for continuity between ECM/PCM connector terminal B10 and body ground.



Wire side of female terminals

   Is there continuity?

   YES – Repair a short in the wire between the alternator and the ECM/PCM.■

   NO – Go to the Alternator and Regulator Circuit Test.■

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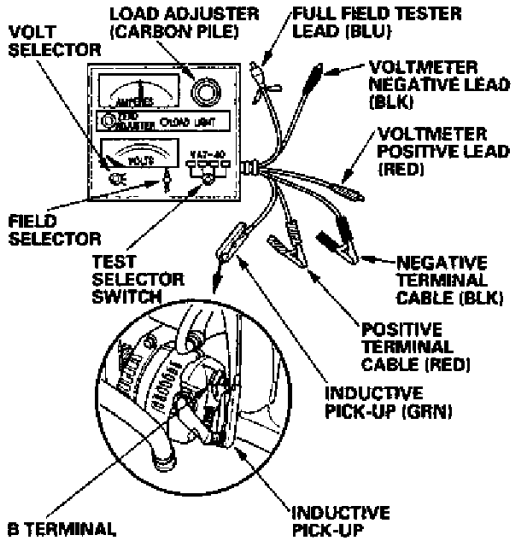
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Fig. 3: Charging Indicator Test
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Alternator & Regulator Circuit Test

For alternator and regulator circuit test, see **Fig. 4** .

1. Be sure the battery connections are good, and that the battery is sufficiently charged.
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).



3. Shift to Park or Neutral, and start the engine. Hold the engine at 3,000 rpm, with no load until the radiator fan comes on, then let it idle.
4. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage over 15.1 V?

   YES -- Replace the alternator or the rear housing assembly. ■

   NO -- Go to step 5.

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5. Release the accelerator pedal, and let the engine idle.
6. Make sure all accessories are turned off. Turn the selector switch to position 2 (charging).
7. Remove the inductive pick-up, and zero the ammeter.
8. Place the inductive pick-up over the B terminal wire of the alternator so that the arrow points away from the alternator.
9. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage less than 13.5 V?

   YES – Go to Alternator Control System Test. ■

   NO – Go to step 10.

10. Apply a load with the VAT-40 until the battery voltage drops to between 12 – 13.5 V.

    Is the amperage 60A or more?

    YES – The charging system is OK. ■

    NOTE: If the charging system indicator is still on, replace the alternator or the rear housing assembly.

    NO – Replace or repair the alternator. ■

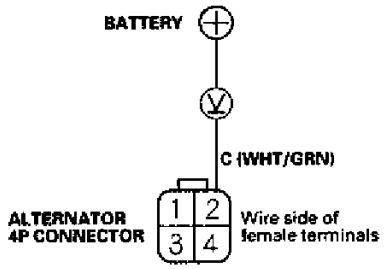
Fig. 4: Alternator & Regulator Circuit Test
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Alternator Control System Test

For alternator control system test, see **Fig. 5** .

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1. Check for proper operation of the electrical load detector (ELD) by checking the malfunction indicator lamp (MIL).
2. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC), and check for DTC's. If a DTC is present, diagnose and repair the cause before continuing with this test.
3. Disconnect the alternator 4P connector from the alternator.
4. Start the engine, and turn the headlights ON to high beam.
5. Measure voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.



Is there 1 V or less?

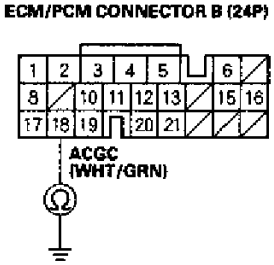
YES – Go to step 6.

NO – Go to step 9.

6. Jump the SCS line with the HDS, then turn the ignition switch OFF.

   NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

7. Disconnect engine control module ECM/PCM connector B (24P).
8. Check for continuity between ECM/PCM connector terminal B18 and body ground.



Is there continuity?

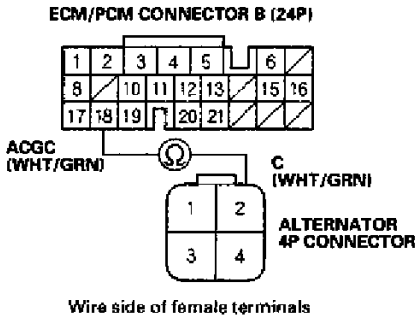
YES – Repair short in the wire between the alternator and ECM/PCM. ■

NO – Update the ECM/PCM if it does not have the latest software or substitute a known-good ECM/PCM, then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

9. Jump the SCS line with the HDS, then turn the ignition switch OFF.

   NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) for damage.

10. Disconnect ECM/PCM connector B (24P).
11. Check for continuity between ECM/PCM connector terminal B18 and alternator 4P connector terminal No. 2.



Is there continuity?

YES – Replace or repair the alternator. ■

NO – Repair an open in the wire between the alternator and ECM/PCM. ■

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Fig. 5: Alternator Control System Test
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLE SHOOTING

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For symptom trouble shooting diagnose chart, see **Fig. 6** .

Symptom	Diagnostic procedure	Also check for
Charging system indicator stays on	1. Troubleshoot the charging system indicator circuit. 2. Check for a broken drive belt. 3. Check the drive belt auto-tensioner. 4. Test the alternator.	
Battery discharged	1. Check for poor connection, open or shorted wire(s) in charging system. 2. Check for electrical current draw. 3. Check for a broken drive belt. 4. Check the drive belt auto-tensioner. 5. Test the alternator. 6. Troubleshoot the alternator control system. 7. Check for poor connection at battery terminal. 8. Test the battery.	
Battery overcharged	1. Test the alternator. 2. Troubleshoot the alternator control system. 3. Test the battery.	

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Fig. 6: Identifying Symptom Trouble Shooting Diagnose Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BENCH TESTING

BRUSHES

Measure the length of both brushes "A" with a vernier caliper "B". See **Fig. 7** . If either brush is shorter than the service limit, replace the brush assembly. If brush length is OK, go to **ROTOR SLIP RING** .

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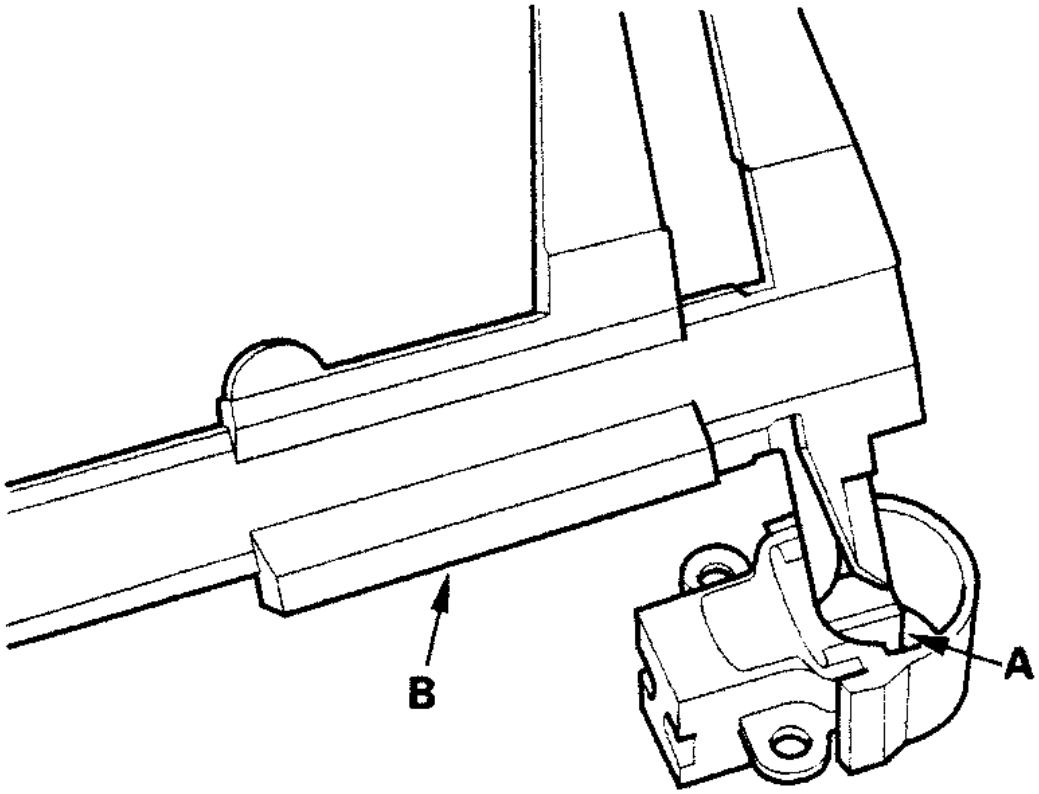


Fig. 7: Measuring Alternator Brush Length
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROTOR SLIP RING

1. Check that there is continuity between the slip rings "A". See **Fig. 8** . If there is continuity, go to next step. If there is no continuity, replace the rotor assembly.
2. Check that there is no continuity between each slip ring and the rotor "B" and the rotor shaft "C". If there is no continuity, replace the rear housing assembly, and go to **REASSEMBLY** under ALTERNATOR in OVERHAUL. If there is continuity, replace the rotor assembly.

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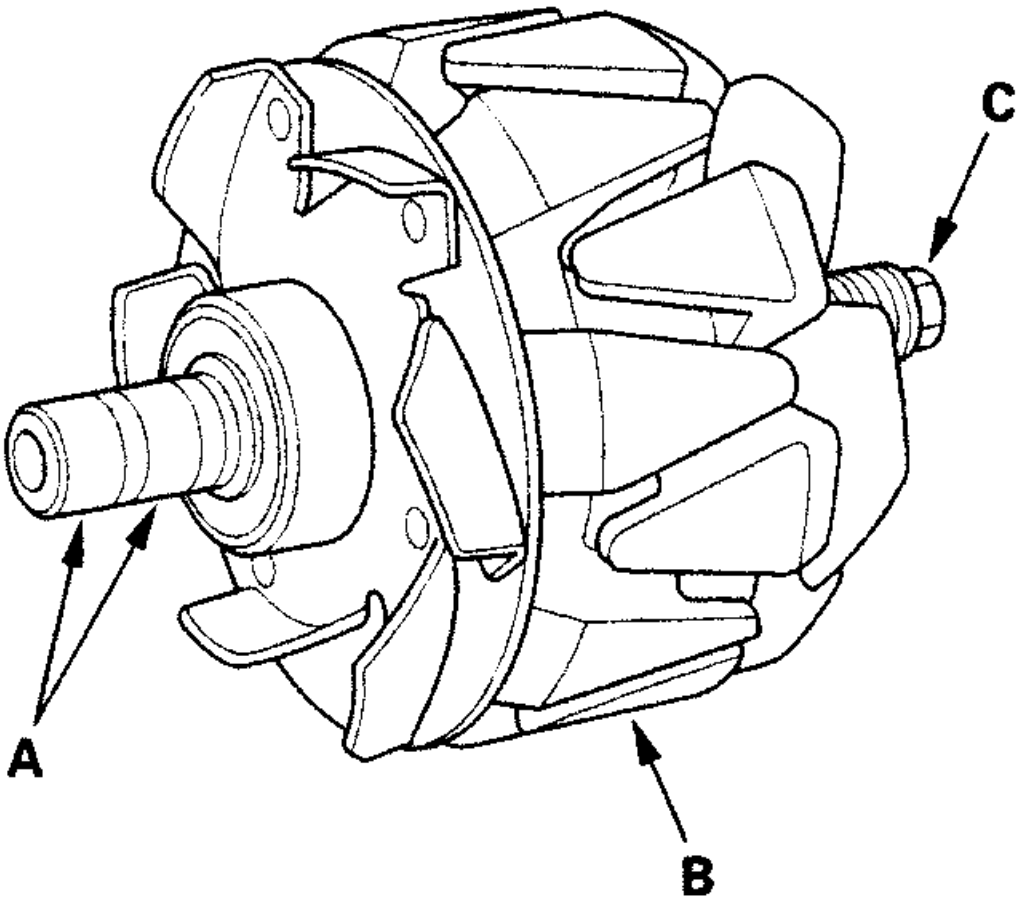


Fig. 8: Inspecting Rotor Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REMOVAL & INSTALLATION

ALTERNATOR

Removal

1. Ensure you have the anti-theft codes for the radio, and the navigation system. Write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery. Disconnect the positive cable.
3. Remove the drive belt. See **DRIVE BELT** .

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4. Remove the auto-tensioner. See **DRIVE BELT AUTO-TENSIONER** .
5. Disconnect the alternator connector "A" and Black wire "B" from the alternator. See **Fig. 9** .
6. Remove the three bolts securing the alternator. See **Fig. 10**

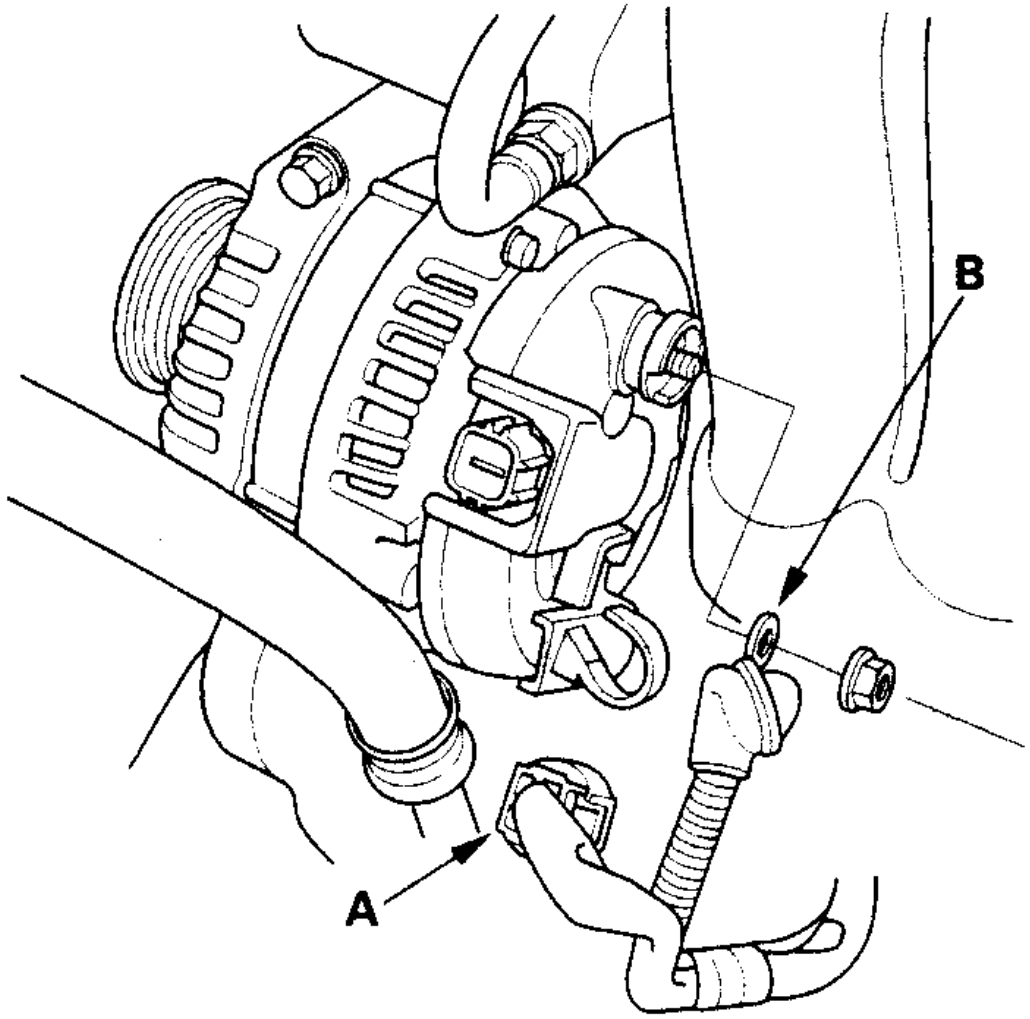
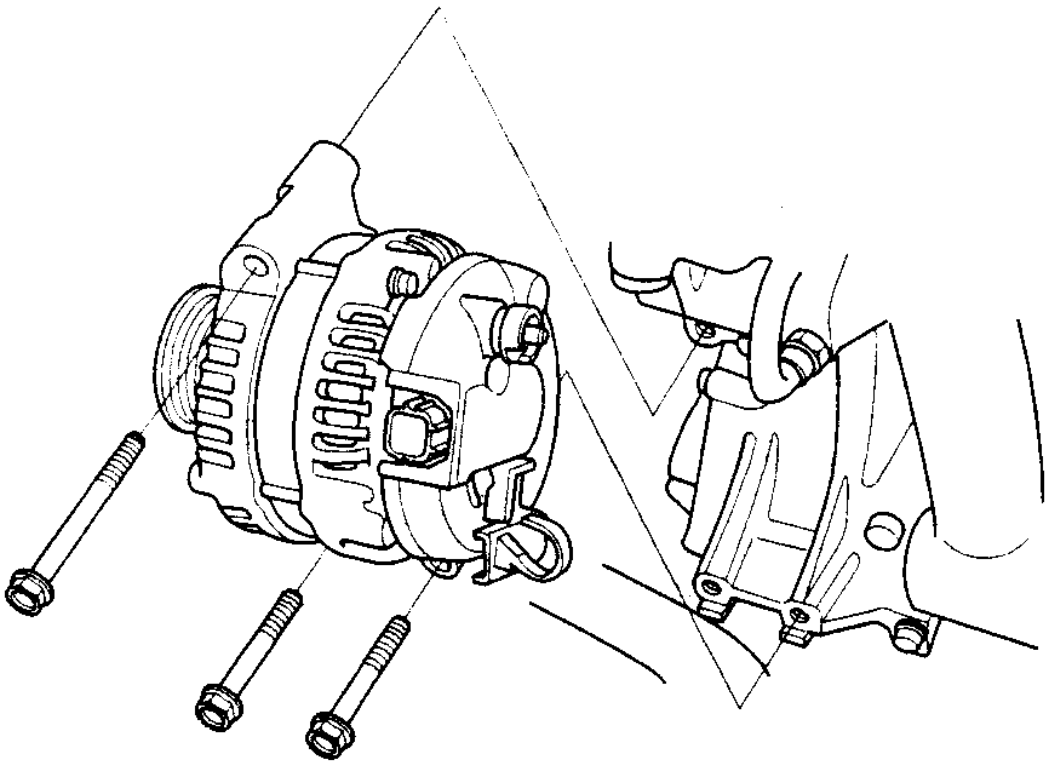


Fig. 9: Disconnecting Alternator Harness
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 10: Removing Alternator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Install the alternator and drive belt in the reverse order of removal.
2. Connect the battery positive cable and negative cable to the battery.
3. Enter the anti-theft codes for the radio and the navigation system. Enter the customer's radio station preset. Set the clock.

DRIVE BELT

Removal & Installation

1. Move the auto-tensioner "A" to relieve tension from the drive belt "B", and remove the drive belt. See **Fig. 11** .
2. Install the new belt in the reverse order of removal.

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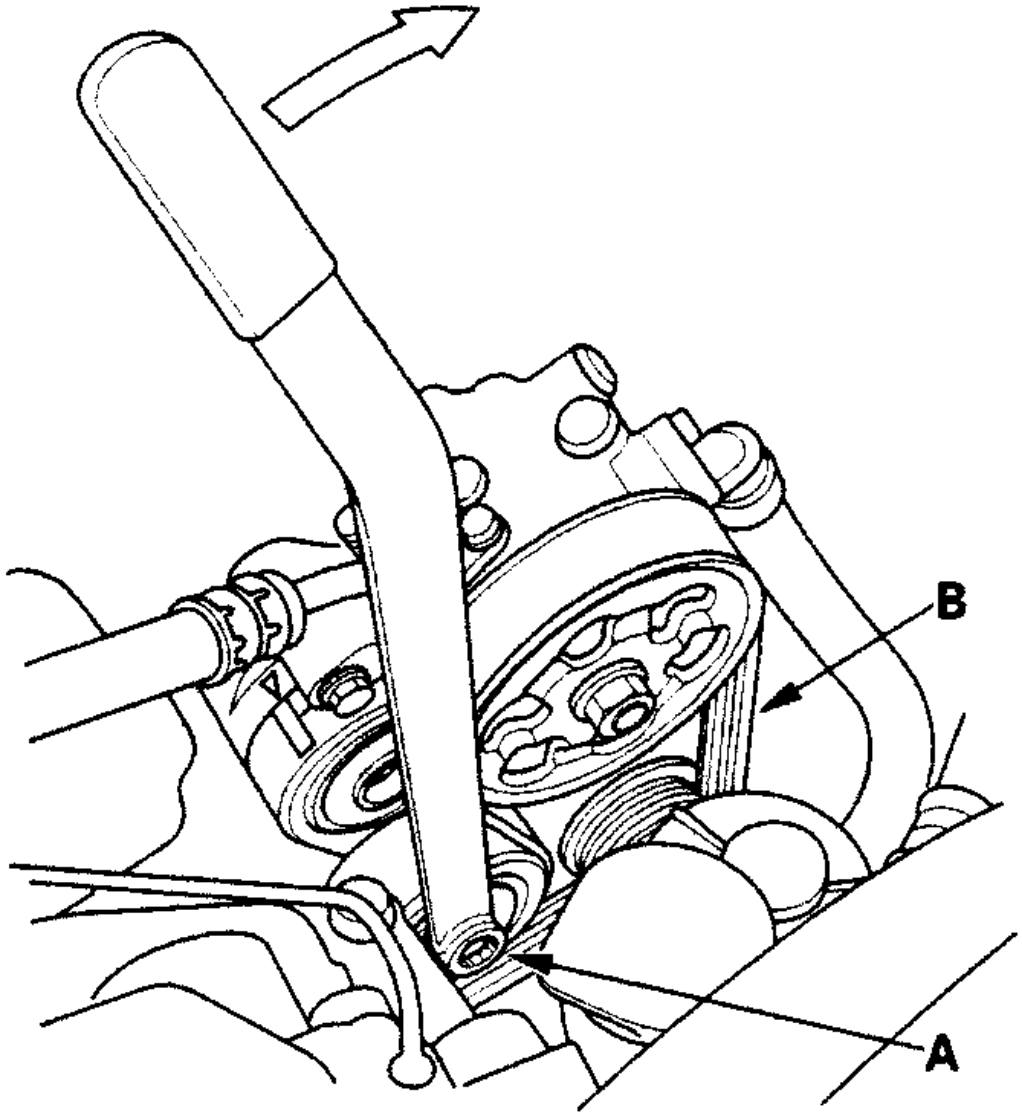


Fig. 11: Removing/Installing Drive Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVE BELT AUTO-TENSIONER

Inspection

1. Check whether there is a change in the position of the auto-tensioner indicator before starring the engine and after starting the engine. If there is a change in the position, replace the auto-tensioner. See **Fig. 2** .

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2. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner pulley. See **REPLACEMENT** .
3. Remove the drive belt. See **DRIVE BELT** .
4. Move the auto-tensioner within its limit with the wrench. See **Fig. 11** . Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly or there is abnormal noise, replace the auto-tensioner.
5. Remove the auto-tensioner. See **REPLACEMENT** .
6. Clamp the auto-tensioner "A" by using two 8 mm bolts "B" and a vise "C". Do not clamp the auto-tensioner itself.
7. Set the torque wrench "D" in the pulley bolt in the direction. See **Fig. 12**

NOTE: If the indicator exceeds the center mark, recheck the torque.

8. Align the indicator "E" on the tensioner base with center mark on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is not 24-30 ft.lbs (32-40 N.m), replace the auto-tensioner.

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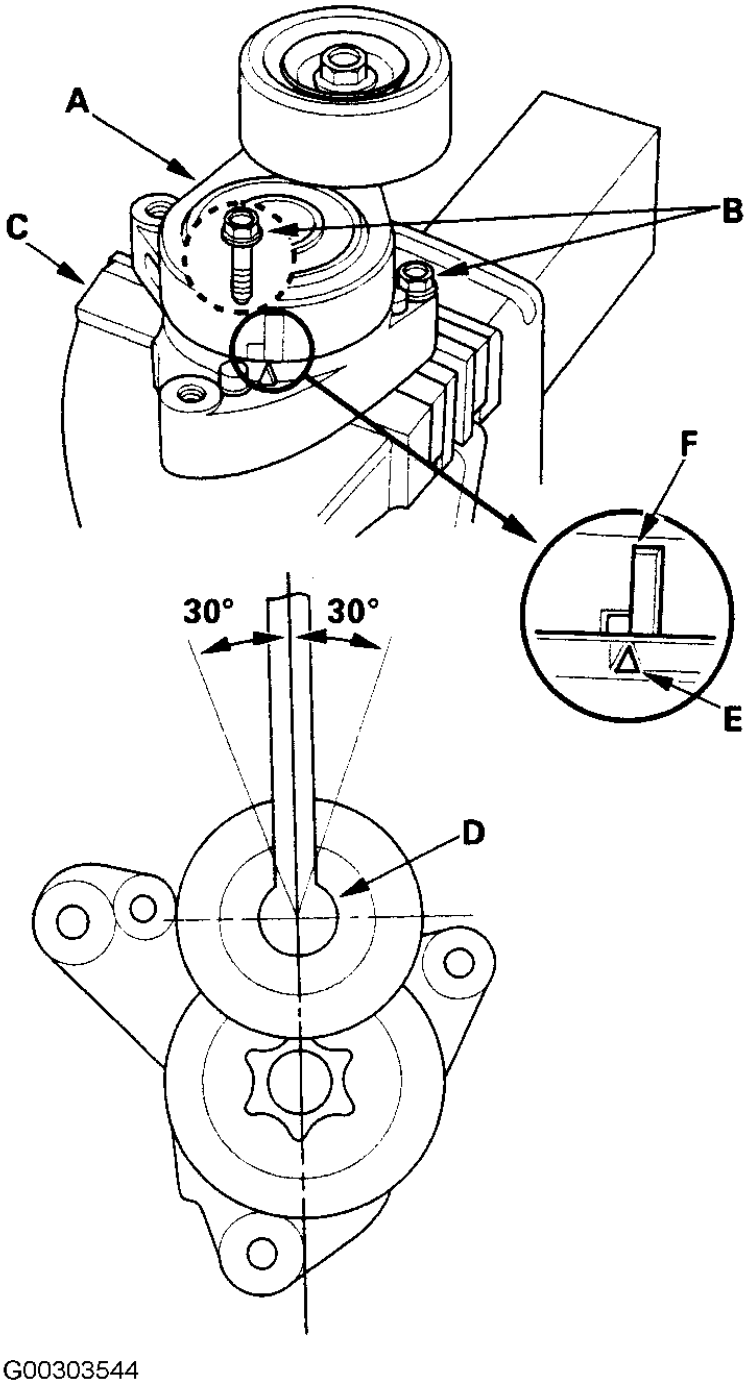


Fig. 12: Connecting Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Replacement

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1. Remove the drive belt. See **DRIVE BELT** .
2. Remove the Power Steering (P/S) pump without disconnecting the P/S hoses. See **Fig. 13** .
3. Remove the auto-tensioner. See **Fig. 14** .
4. Install the auto-tensioner in the reverse order of removal.

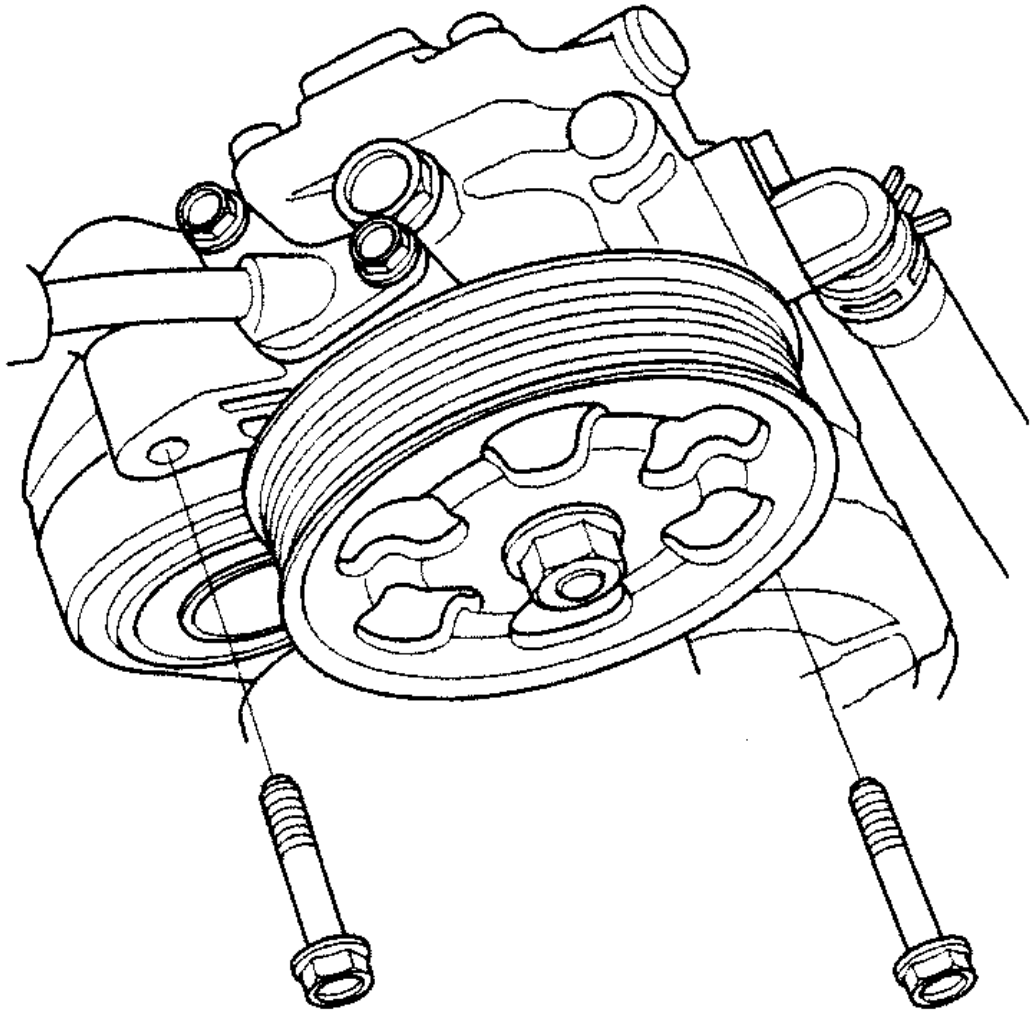


Fig. 13: Removing Power Steering Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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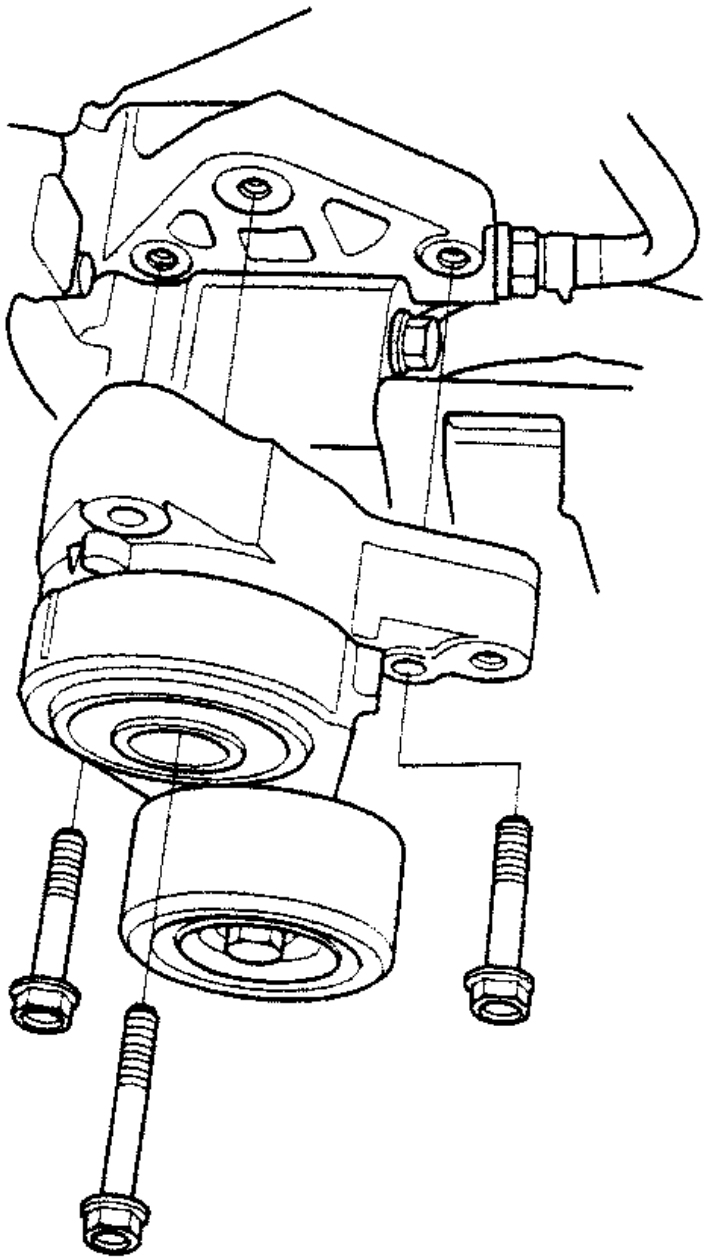


Fig. 14: Removing/Installing Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TENSIONER PULLEY

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Replacement

1. Remove the drive belt. See **DRIVE BELT** .
2. Remove the pulley bolt "A", and remove the tensioner pulley "B".
3. Install the tensioner pulley in the reverse order of removal. See **Fig. 15** .

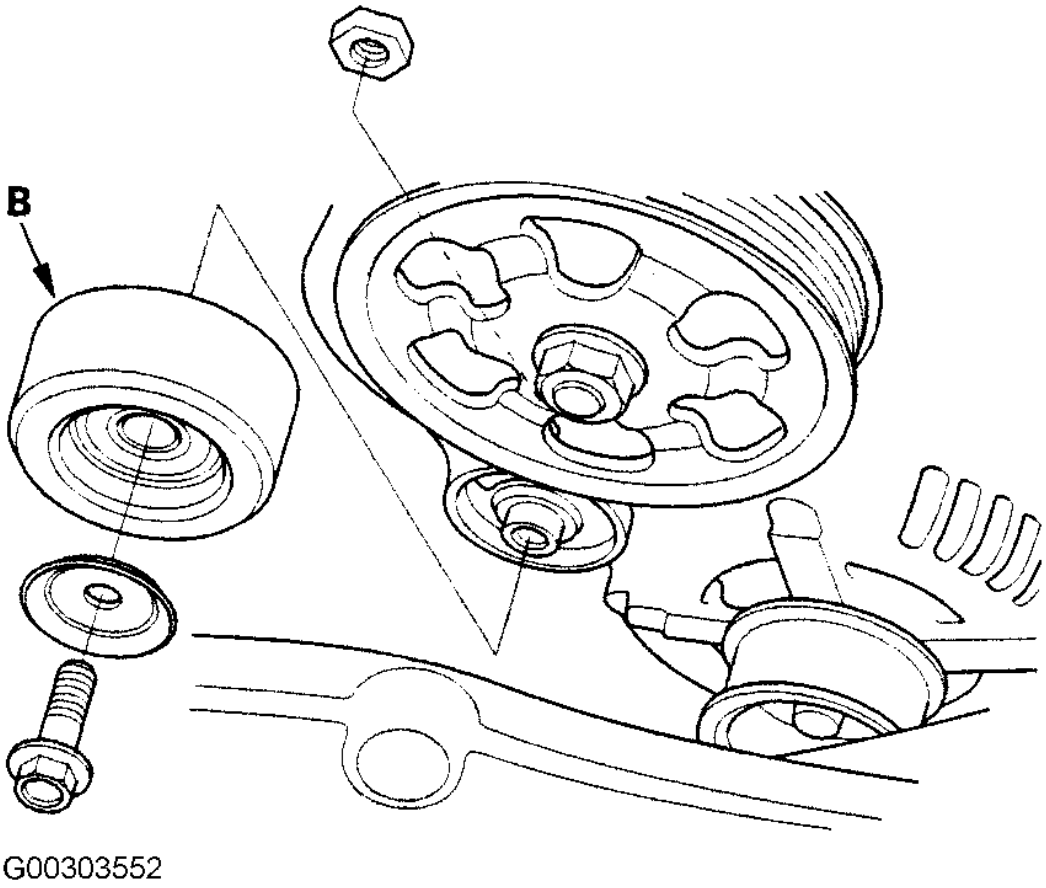


Fig. 15: Removing/Installing Tensioner Pulley
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OVERHAUL

ALTERNATOR

Disassembly

NOTE: For overhaul information, see exploded view of alternator. See Fig. 16 .

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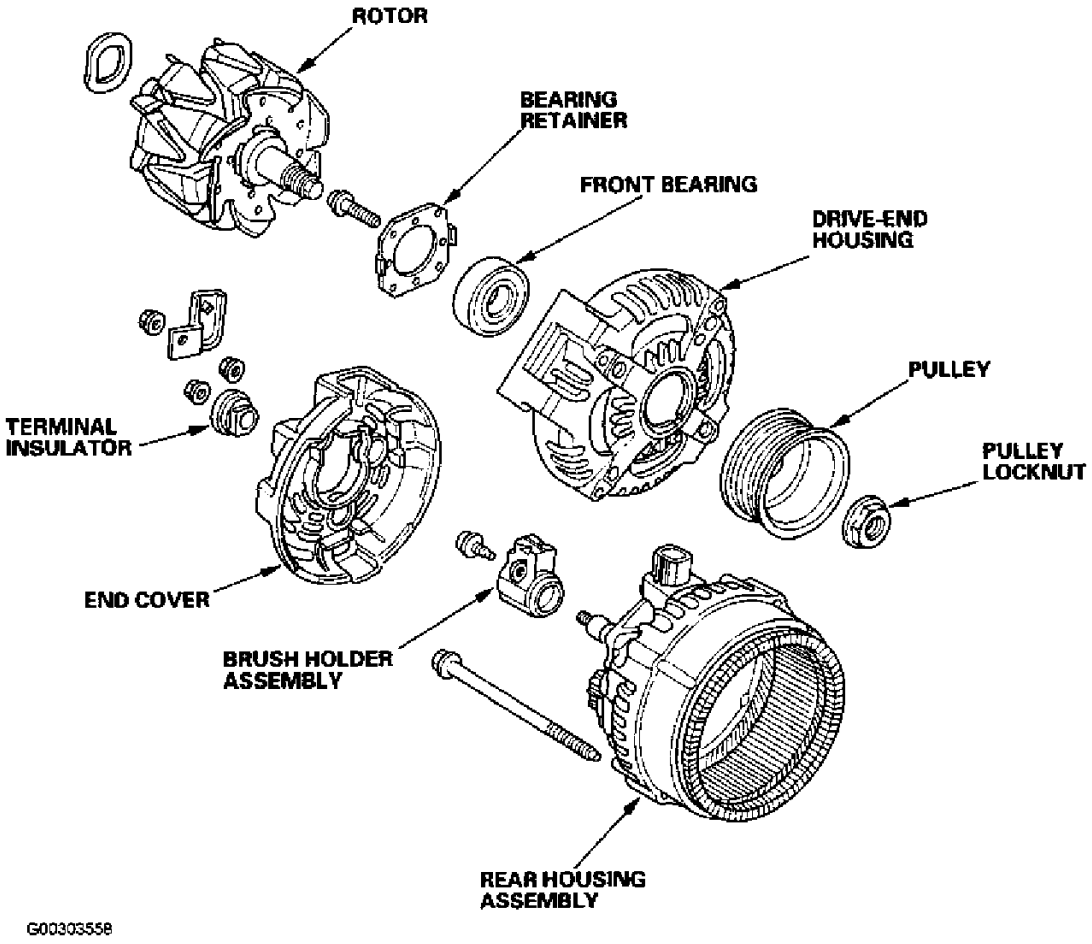


Fig. 16: Exploded View Of Alternator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. Test the alternator and regulator before you remove them. See **CHARGING SYSTEM INDICATOR TEST** under TROUBLE SHOOTING.
2. Remove the alternator. See **ALTERNATOR** under REMOVAL & INSTALLATION.
3. If the front bearing needs replacing, remove the pulley locknut with a 10-mm wrench "A" and a 22-mm wrench "B". If necessary, use an impact wrench. See **Fig. 17** .
4. Remove harness stay and flange nuts. See **Fig. 18** .
5. Remove the end cover. See **Fig. 19** .
6. Remove the brush holder. See **Fig. 20** .
7. Remove the 4 bolts. Remove the rear housing assembly "A", and washer "B". See **Fig. 21** .
8. If you are not replacing the front bearing "A", go to **BRUSHES** . Remove the rotor from the stator drive-end housing. See **Fig. 22** .
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the stator housing for seizure marks. If either the rotor or stator housing is damaged, replace the alternator. If both the rotor and the stator housing are OK, go to next step.

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10. Remove the front bearing retainer plate. See **Fig. 23** .
11. Drive out the front bearing with a brass drift and hammer. See **Fig. 24** .
12. With a hammer, driver and attachment, install a new front bearing in the drive-end housing. See **Fig. 25** .

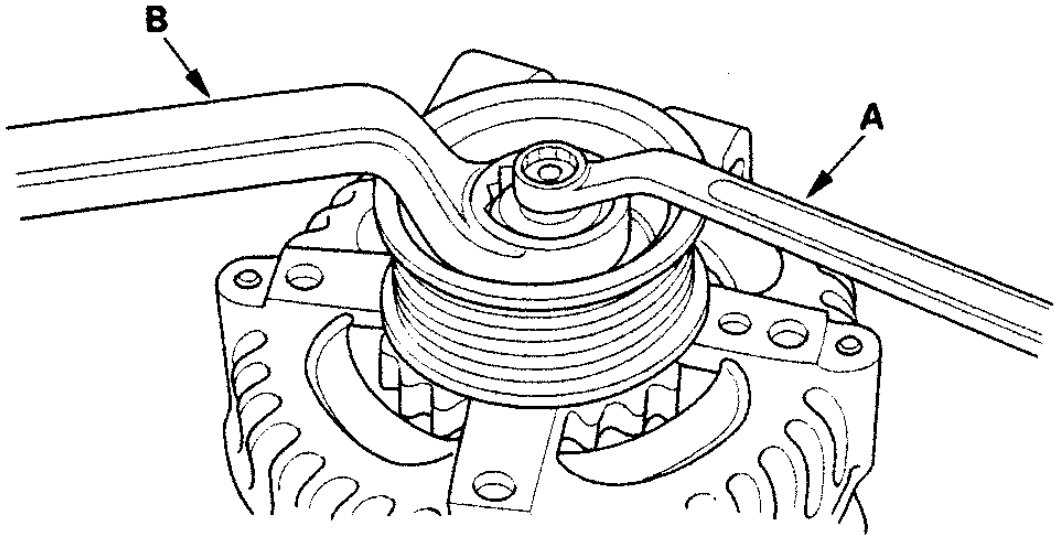


Fig. 17: Removing Drive-End Housing Pulley Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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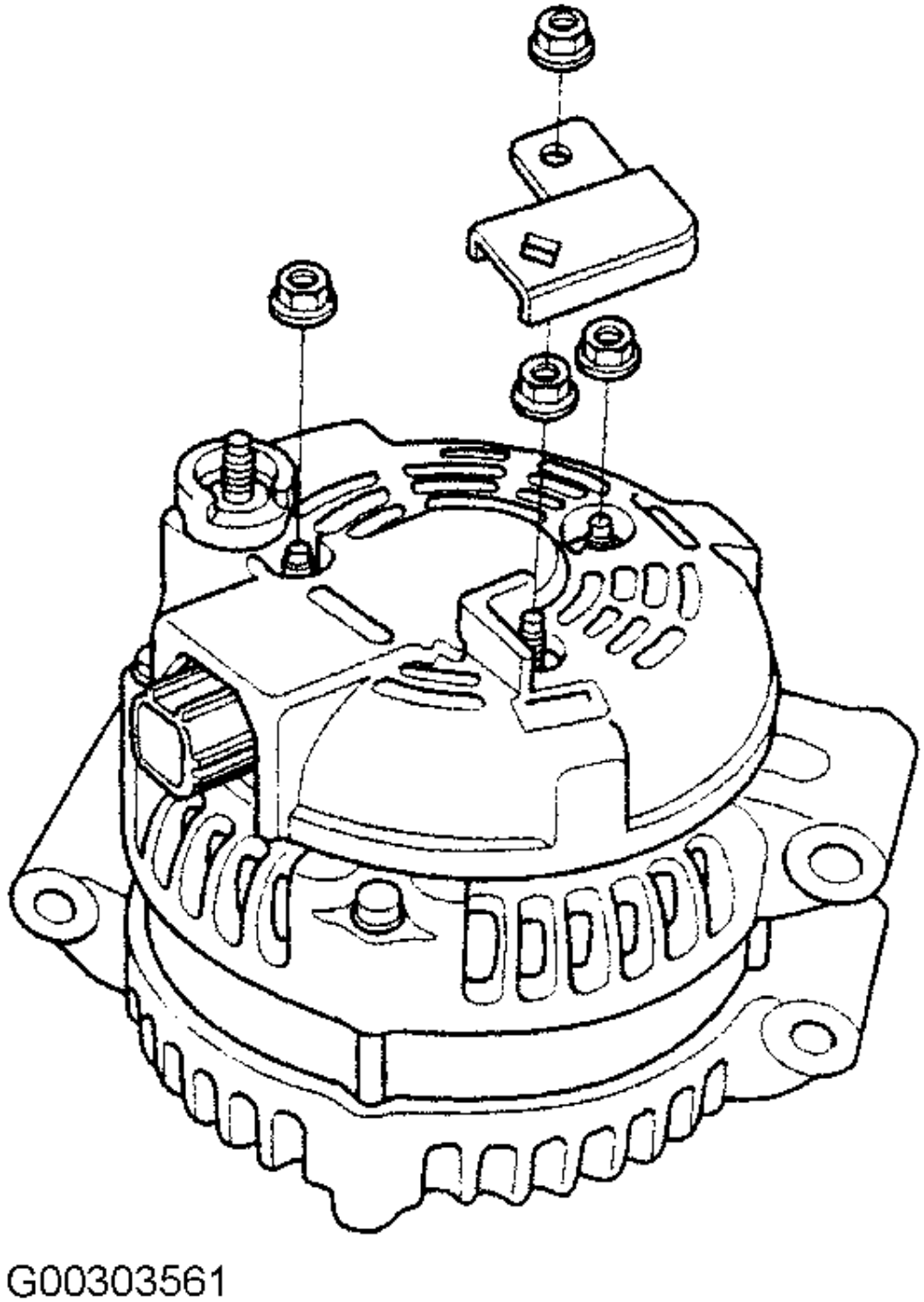
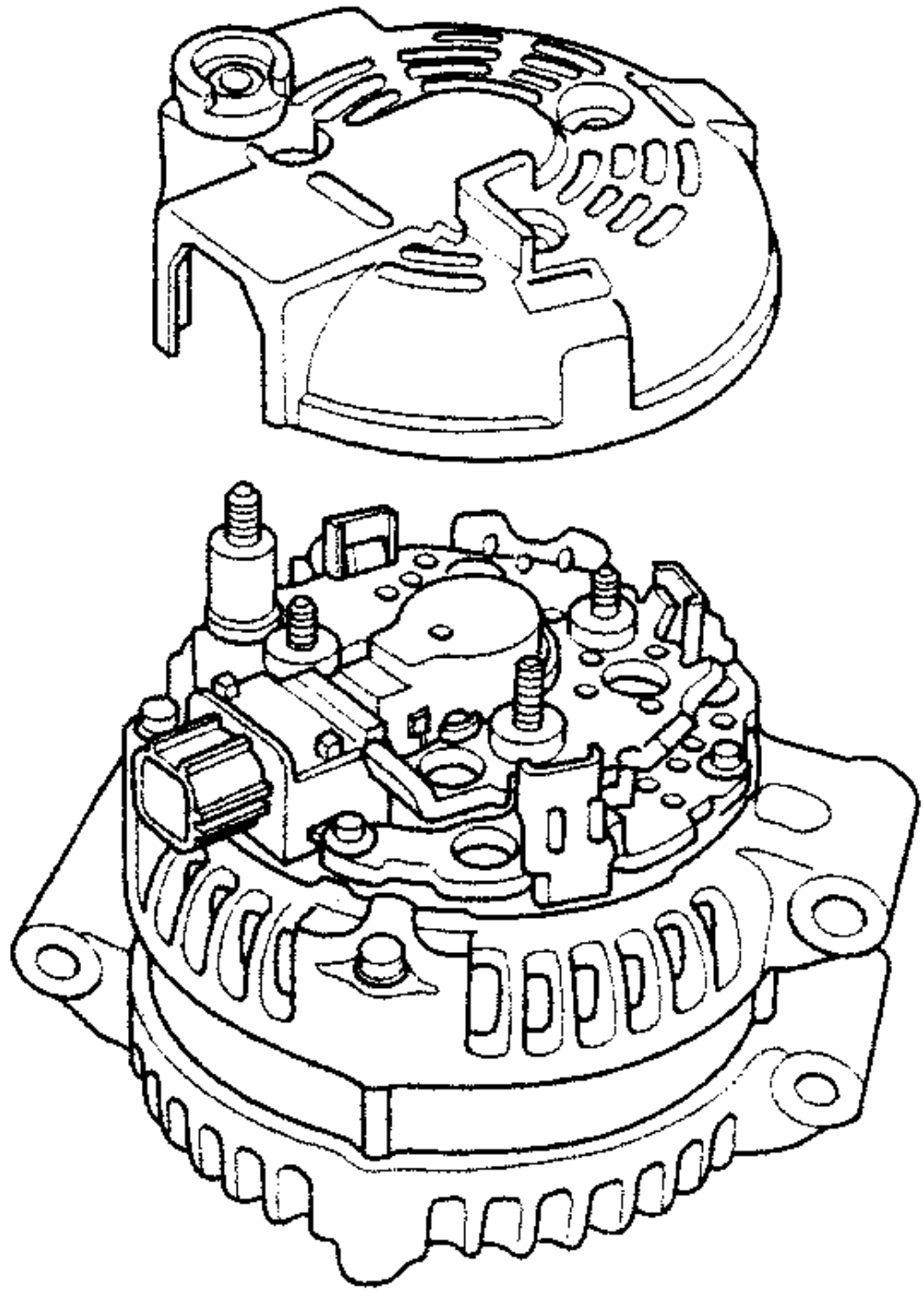


Fig. 18: Removing Harness Stay And Flange Nuts

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Courtesy of AMERICAN HONDA MOTOR CO., INC.

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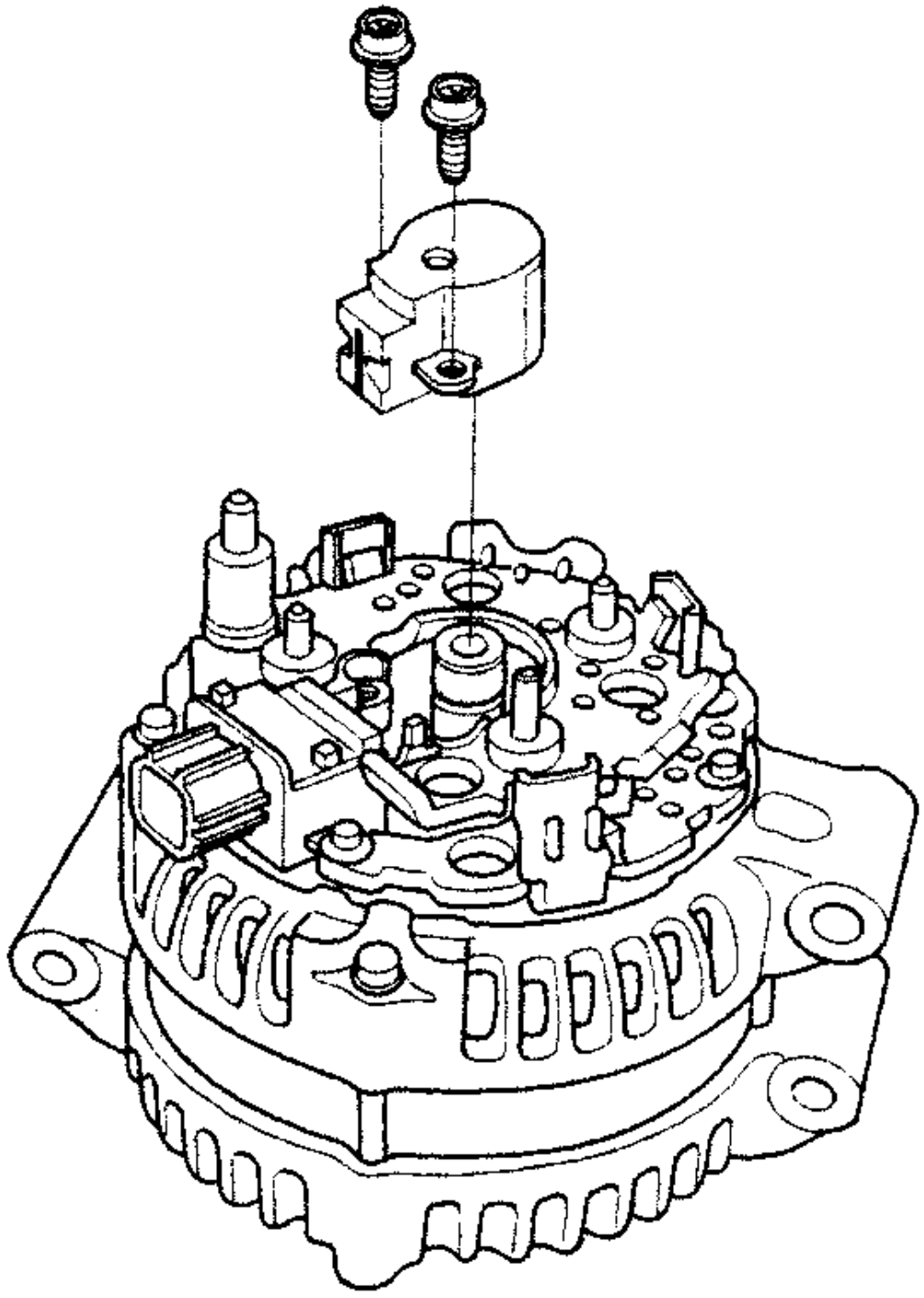


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Fig. 19: Removing End Cover
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Fig. 20: Removing Brush Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

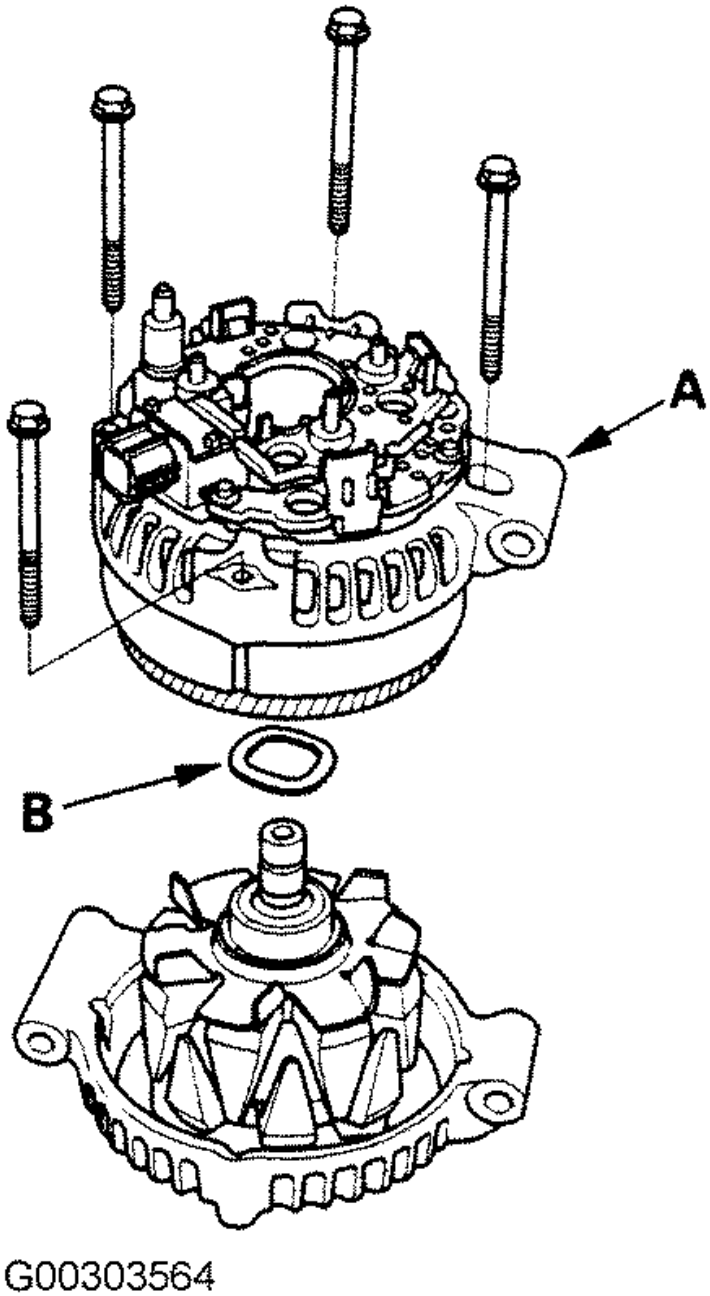


Fig. 21: Removing Rear Housing Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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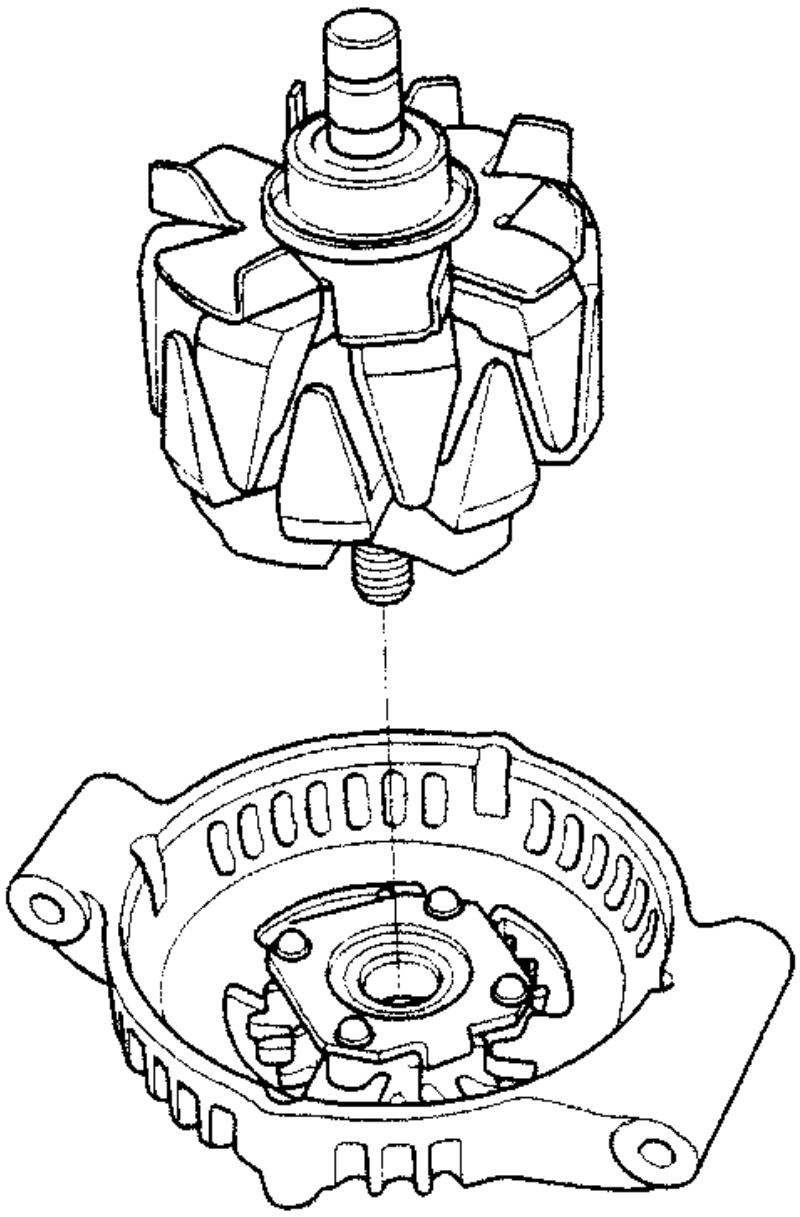


Fig. 22: Removing Rotor From Stator Drive-End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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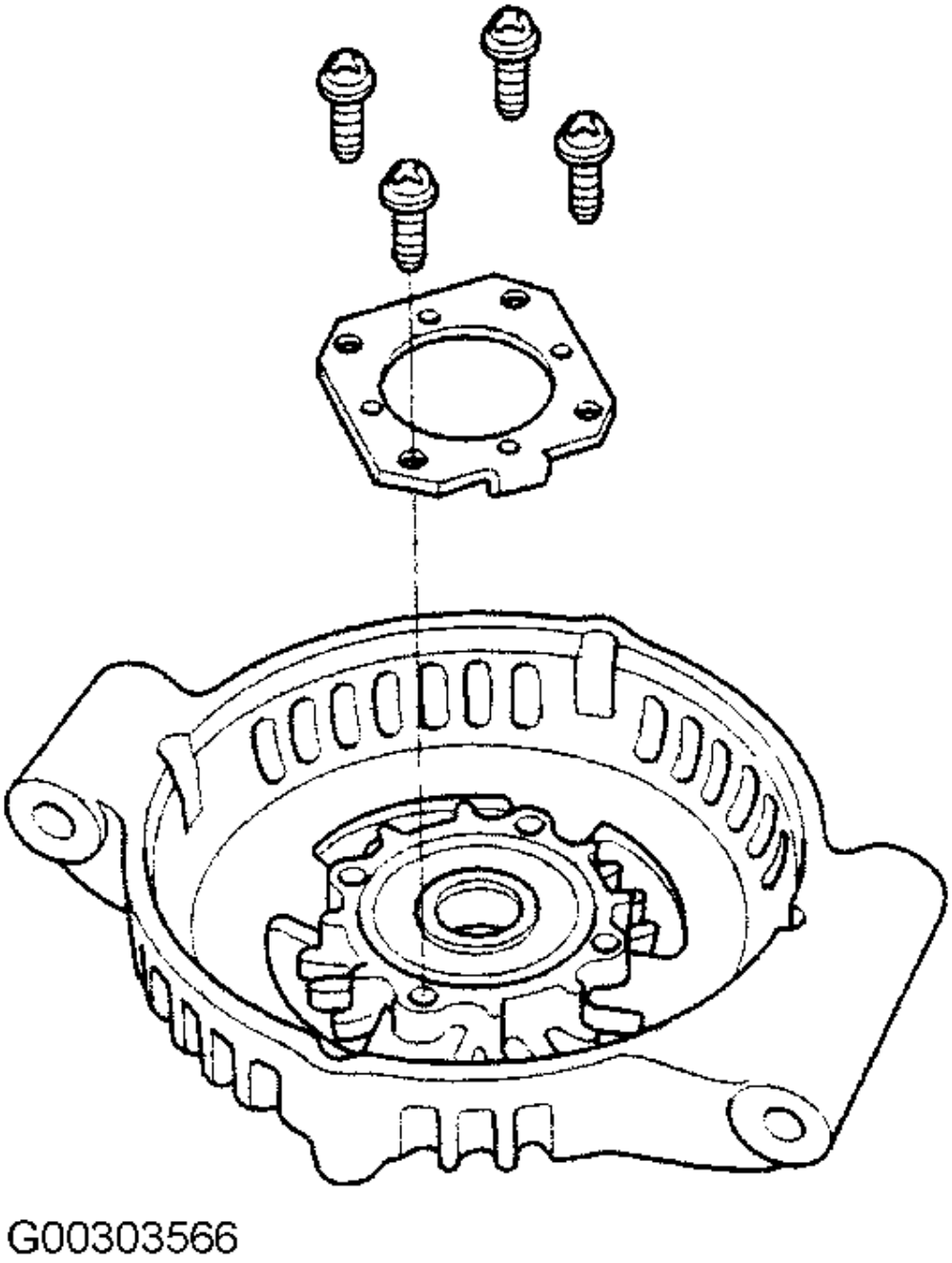
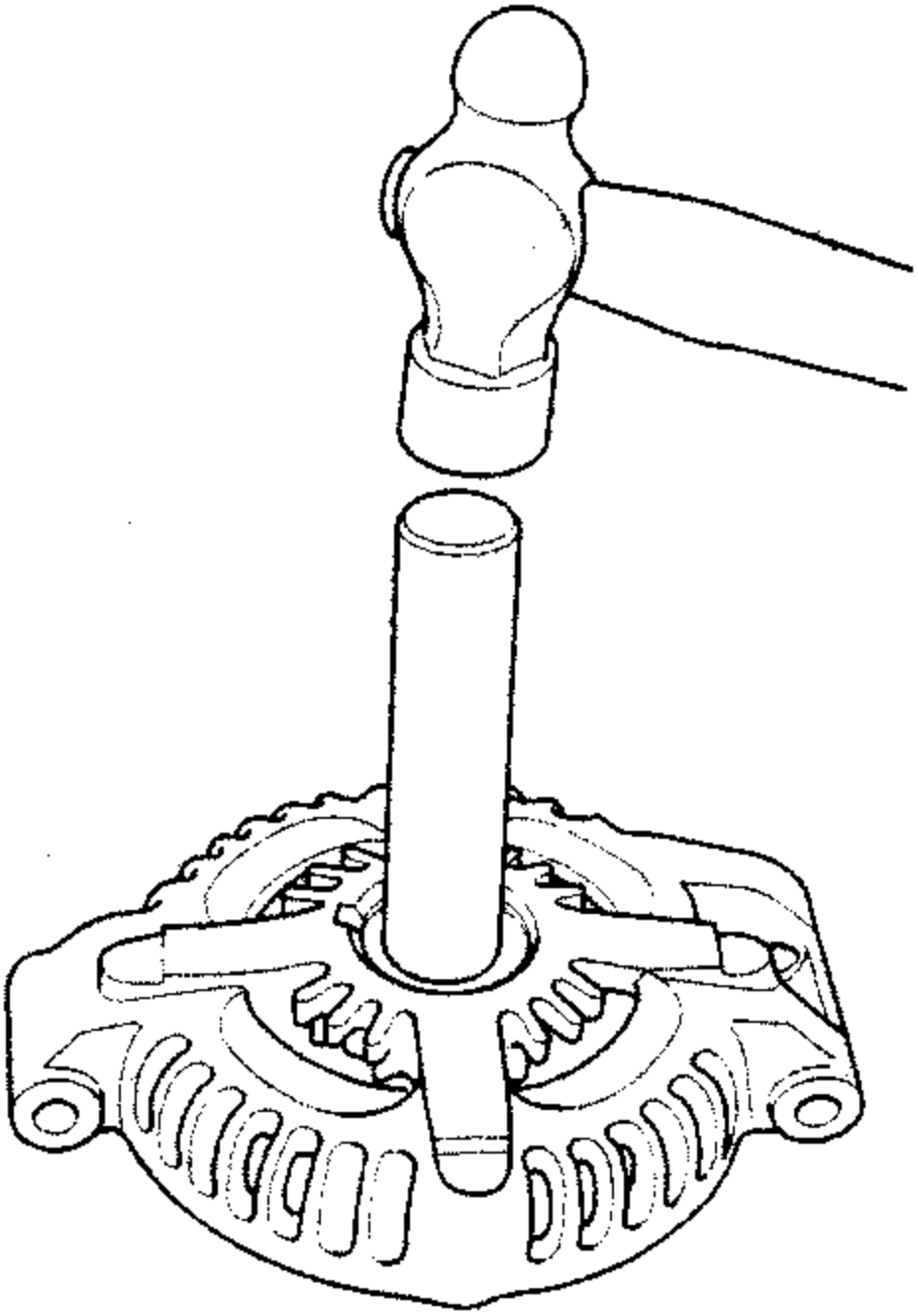


Fig. 23: Removing Front Bearing Retainer Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

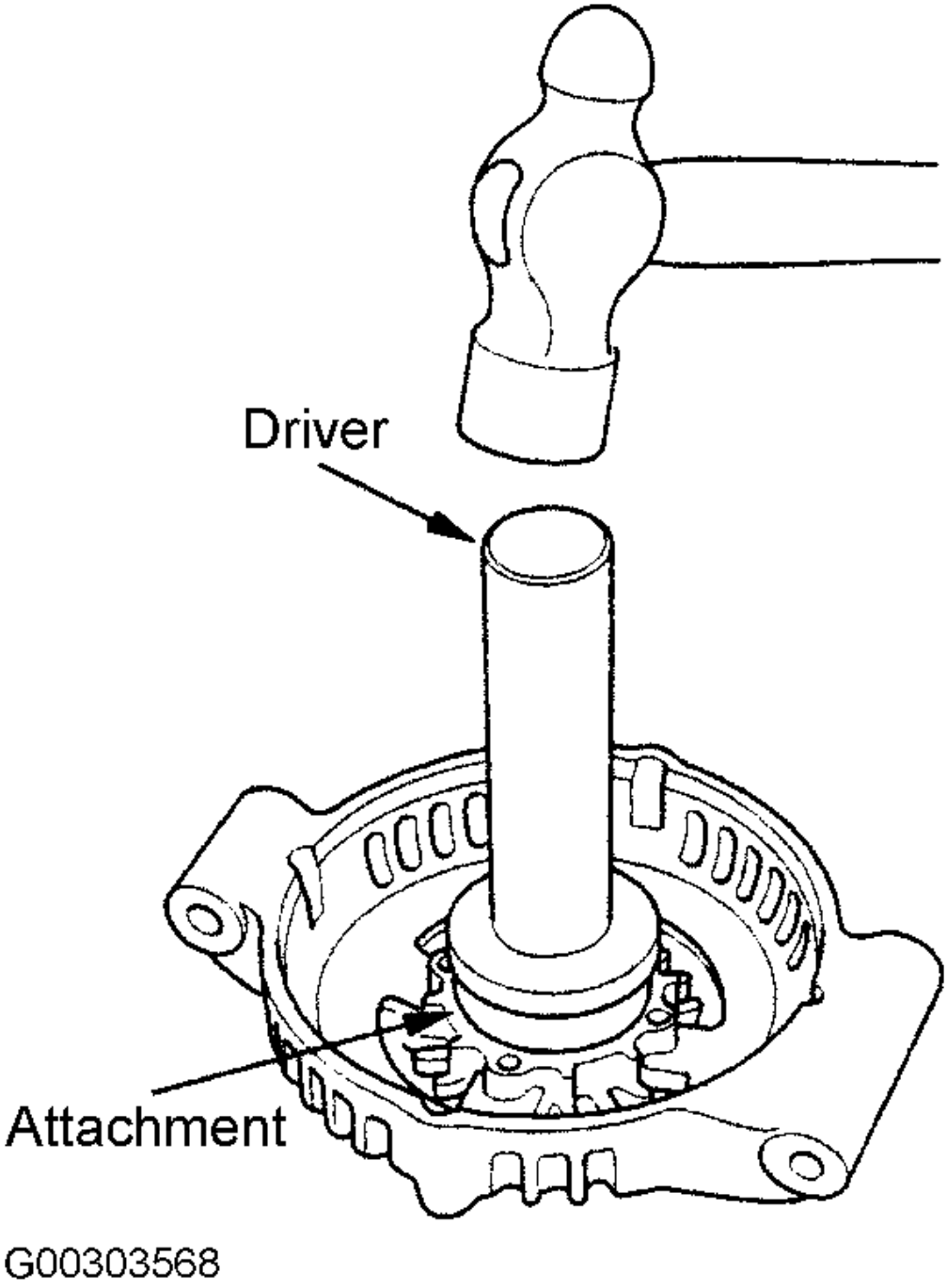
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Fig. 24: Driving Out Front Bearing With Hammer
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 25: Installing Front Bearing In Drive-End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reassembly

1. If you removed the pulley, put the rotor in the drive-end housing. Tighten locknut to specification. See **TORQUE SPECIFICATIONS** .
2. Remove any grease or any oil from the slip rings.
3. Put the rear housing assembly and drive end housing/rotor assembly together. Tighten the 4 through bolts.
4. Push the brushes "A" inward. Insert a pin or drill bit "B" .06" (1.6 mm diameter) to hold them there. See **Fig. 26** .
5. Install the brush holder, and pull out the pin. See **Fig. 27** .
6. Install the end cover.
7. After assembling the alternator, turn the pulley by hand to ensure the rotor rotates smoothly and without noise.
8. Install the alternator and drive belt **ALTERNATOR** and **DRIVE BELT** under REMOVAL & INSTALLATION.

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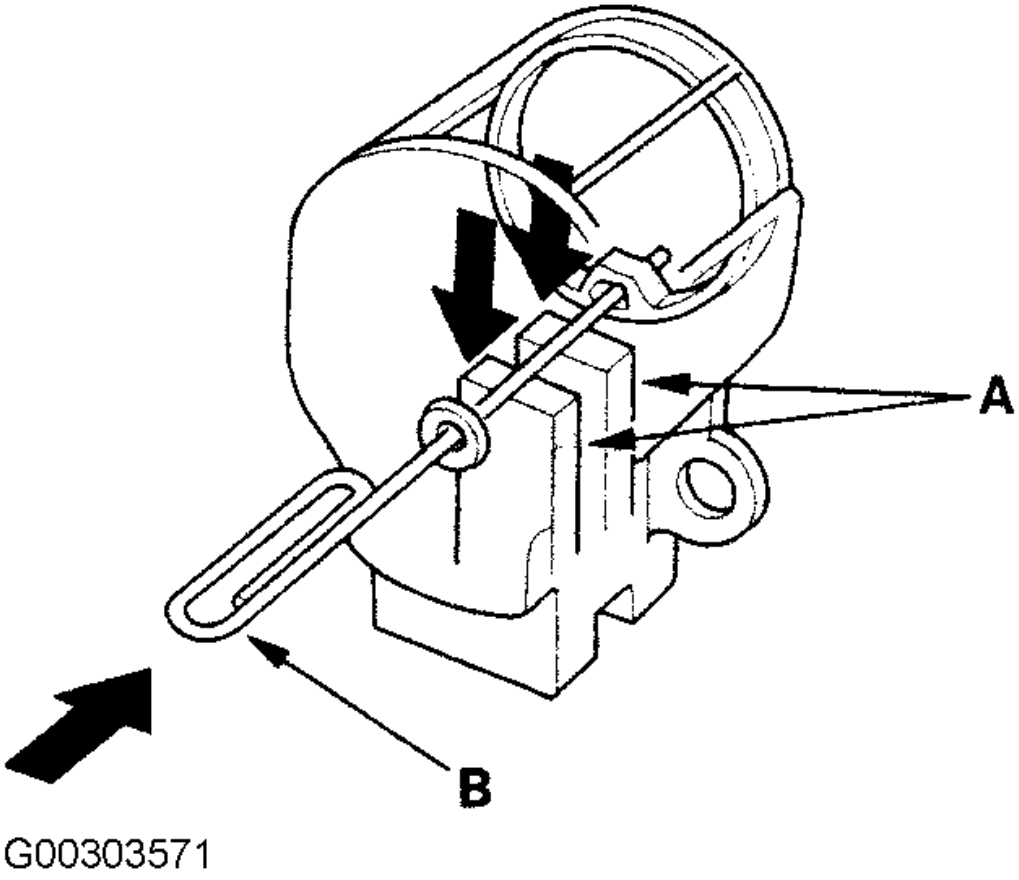


Fig. 26: Retaining Brushes In Installation Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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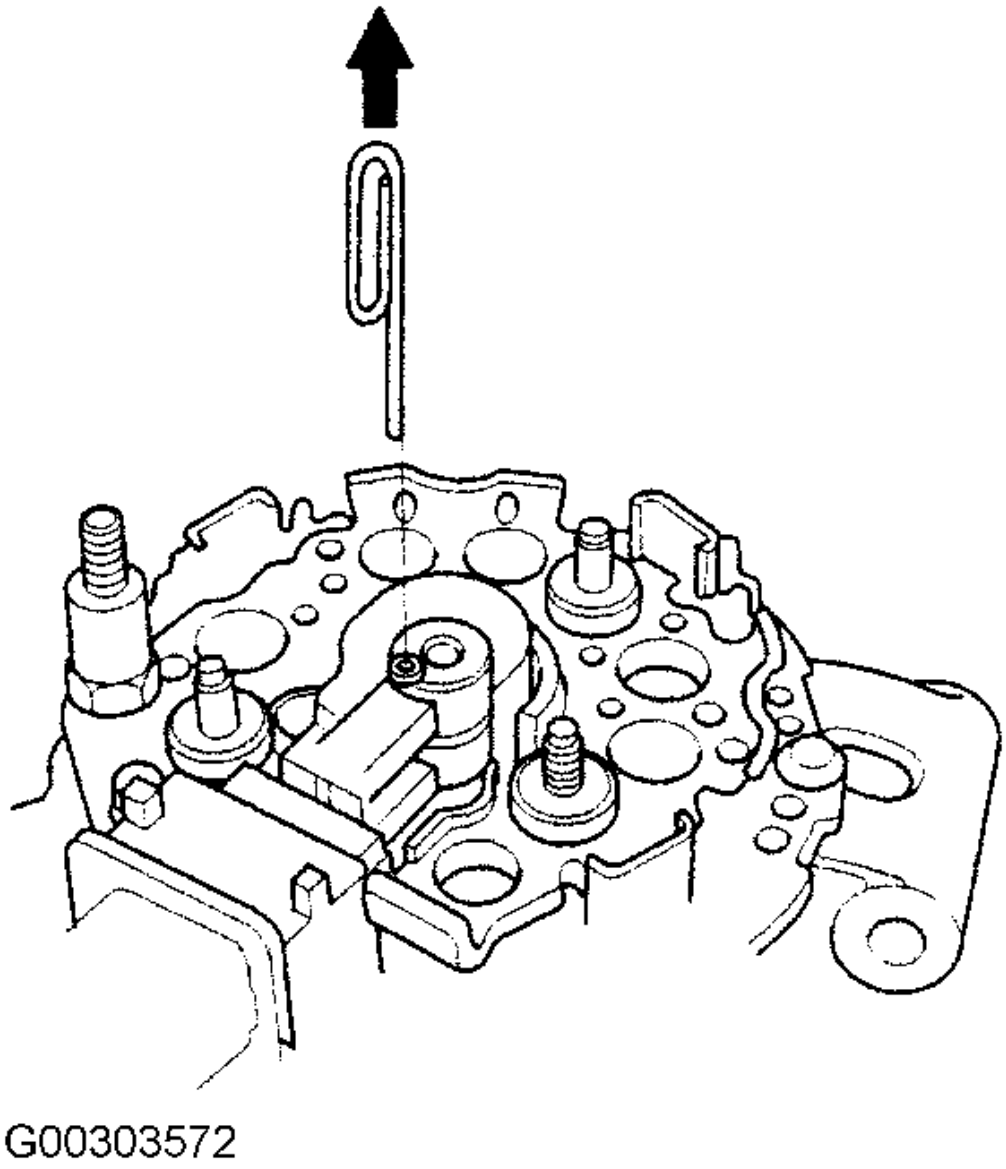


Fig. 27: Installing Brush Holder
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GENERATOR SPECIFICATIONS

For generator service specifications, see **SERVICE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

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TORQUE SPECIFICATIONS

For generator torque specifications, see **TORQUE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

WIRING DIAGRAMS

For wiring diagram on 2004 TSX models, see **STARTING/CHARGING** in SYSTEM WIRING DIAGRAM article in ELECTRICAL.

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2004 AUTOMATIC A/C SYSTEMS

Climate Control System - TSX

SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2

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Fig. 1: Special Tools (1 Of 2)

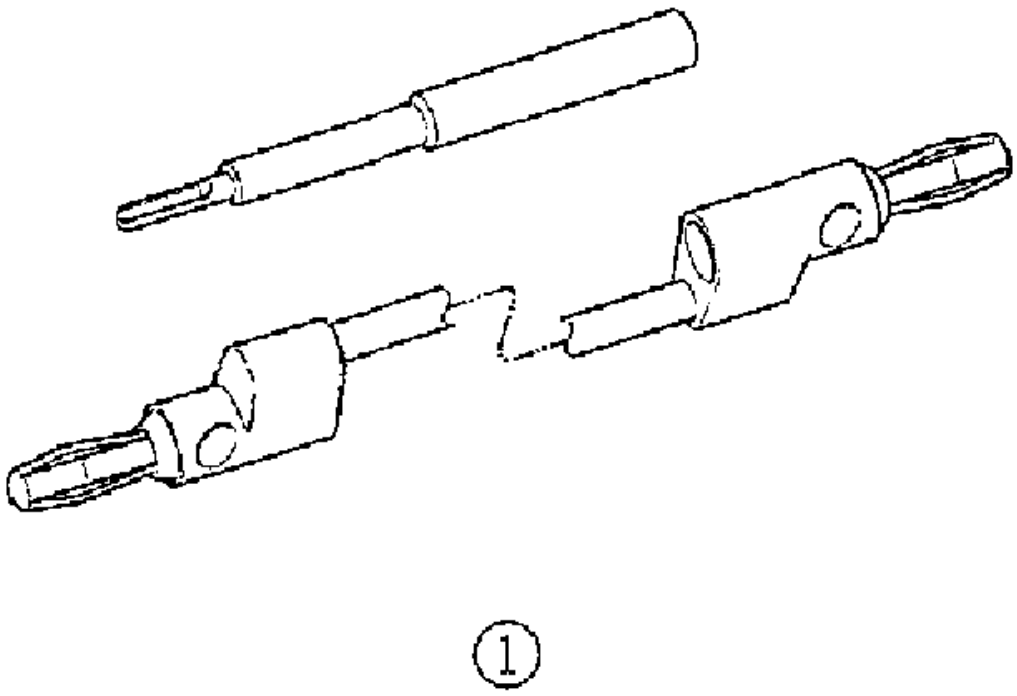


Fig. 2: Special Tools (2 Of 2)

COMPONENT LOCATION INDEX

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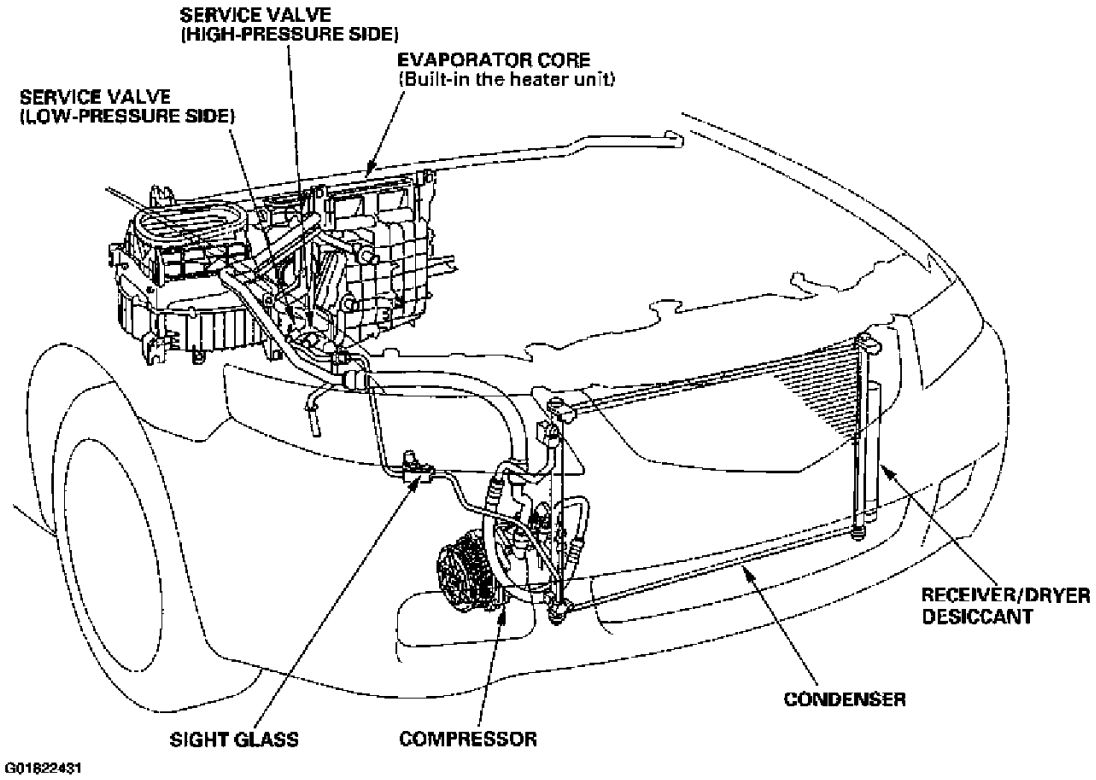


Fig. 3: Locating Climate Control Components (1 Of 3)

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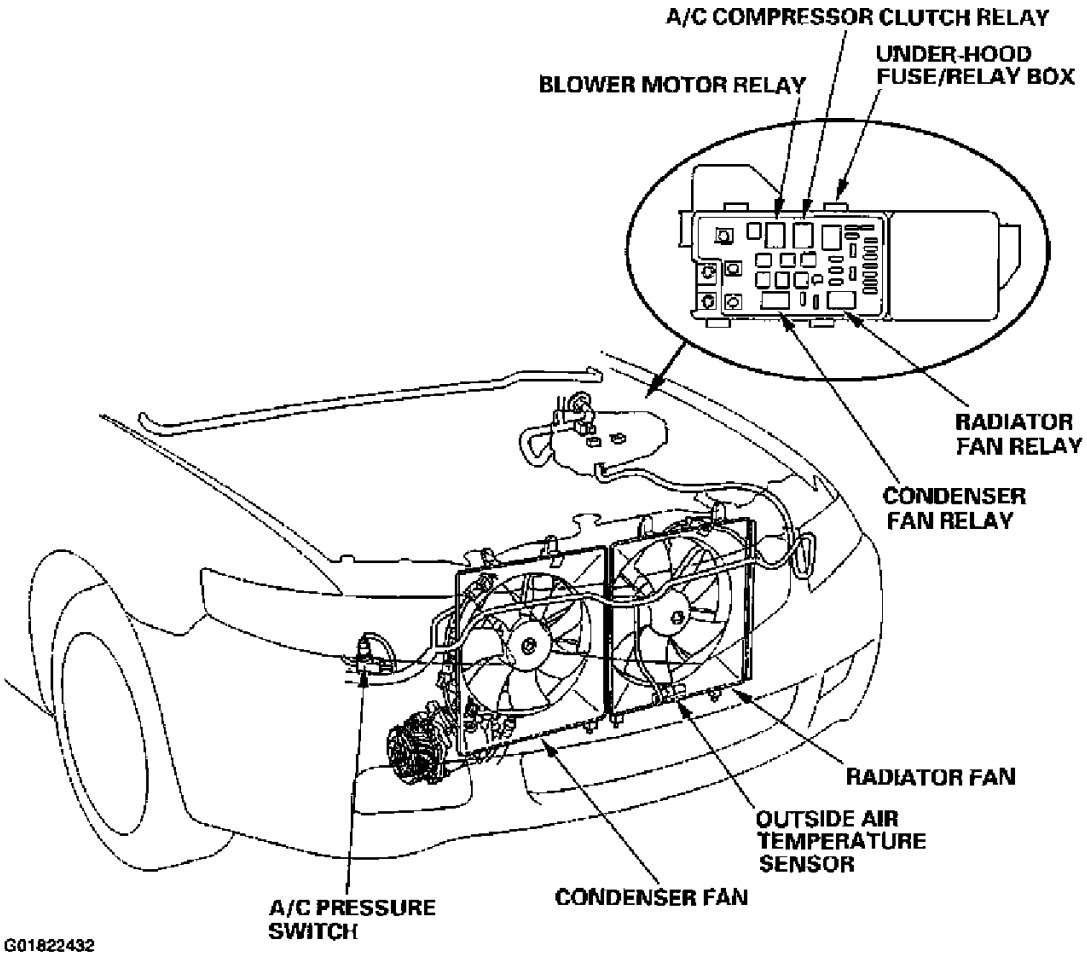


Fig. 4: Locating Climate Control Components (2 Of 3)

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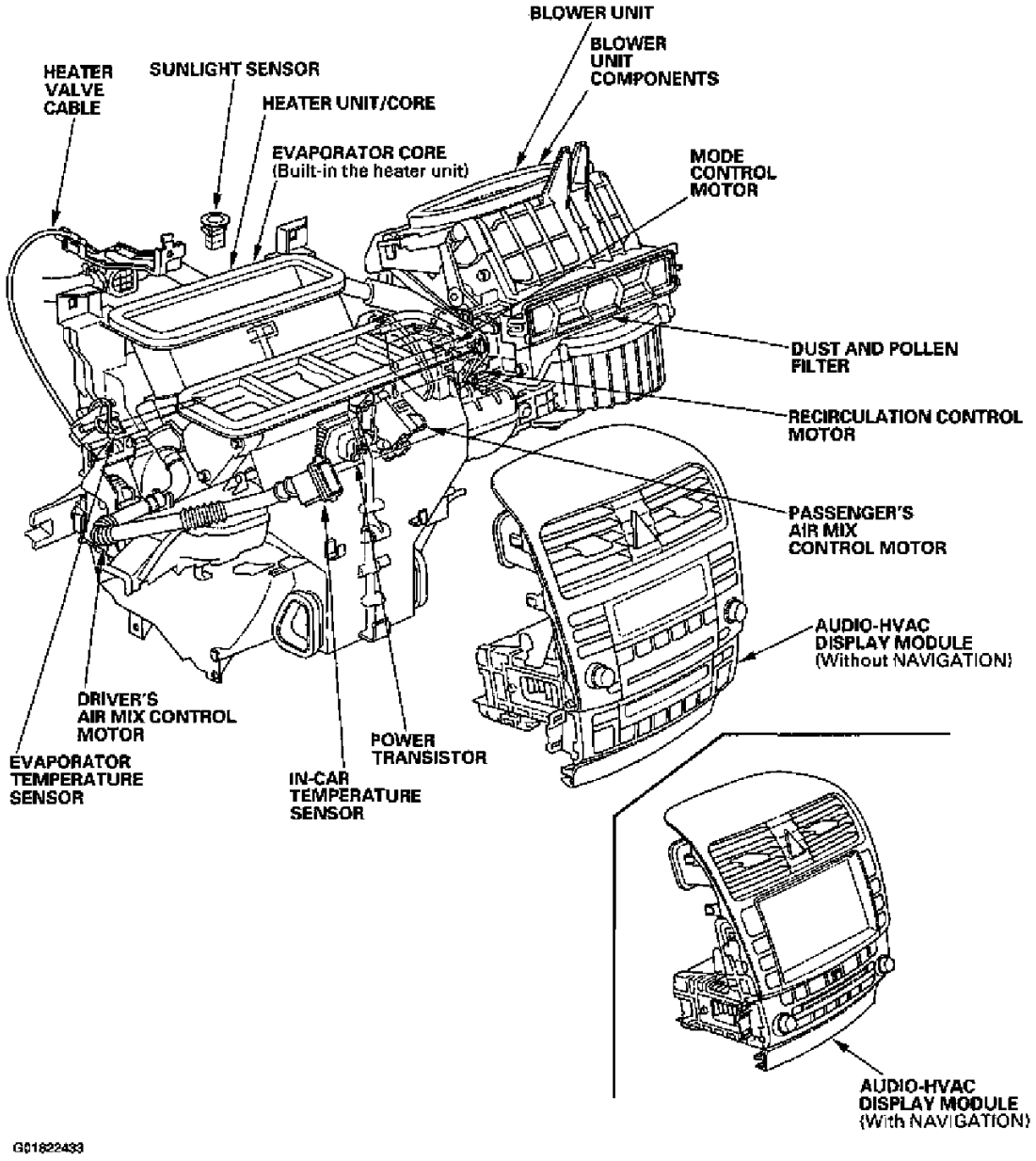


Fig. 5: Locating Climate Control Components (3 Of 3)

A/C SERVICE TIPS & PRECAUTIONS

WARNING:

- **Compressed air mixed with R-134a forms a combustible vapor.**
- **The vapor can burn or explode causing serious injury.**
- **Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.**

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CAUTION:
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result. Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use a R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C REFRIGERANT OIL REPLACEMENT

Recommended PAG Oil: KEIHIN SP-10
- **P/N 38897-P13-003:** 120 ml (4 fl. oz.)
- **P/N 38899-P13-A01:** 40 ml (1 1/3 fl. oz.)

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts:

Condenser: 25 ml (5/6 fl. oz.)

Evaporator: 45 ml (1 1/2 fl. oz.)

Line Or Hose: 10 ml (1/3 fl. oz.)

Receiver/Dryer: 10 ml (1/3 fl. oz.)

Leakage Repair: 25 ml (5/6 fl. oz.)

Compressor For Compressor Replacement: Subtract the volume of oil drained from the removed compressor from 130 ml (5 1/3 fl. oz.), and drain the calculated volume of oil from the new compressor:

Example: 130 ml (5 1/3 fl. oz.) - Volume of removed compressor = Volume to drain from new compressor

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NOTE: Even if no oil is drained from the removed compressor, don't drain more than 50 ml (1 2/3 fl. oz.) from the new compressor.

- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

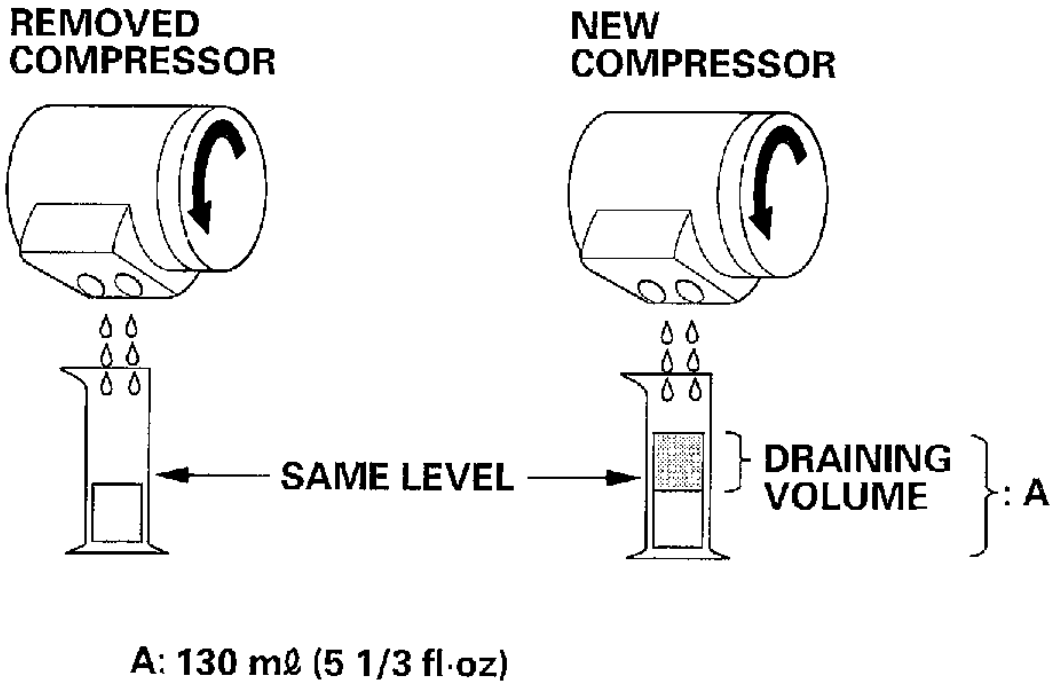
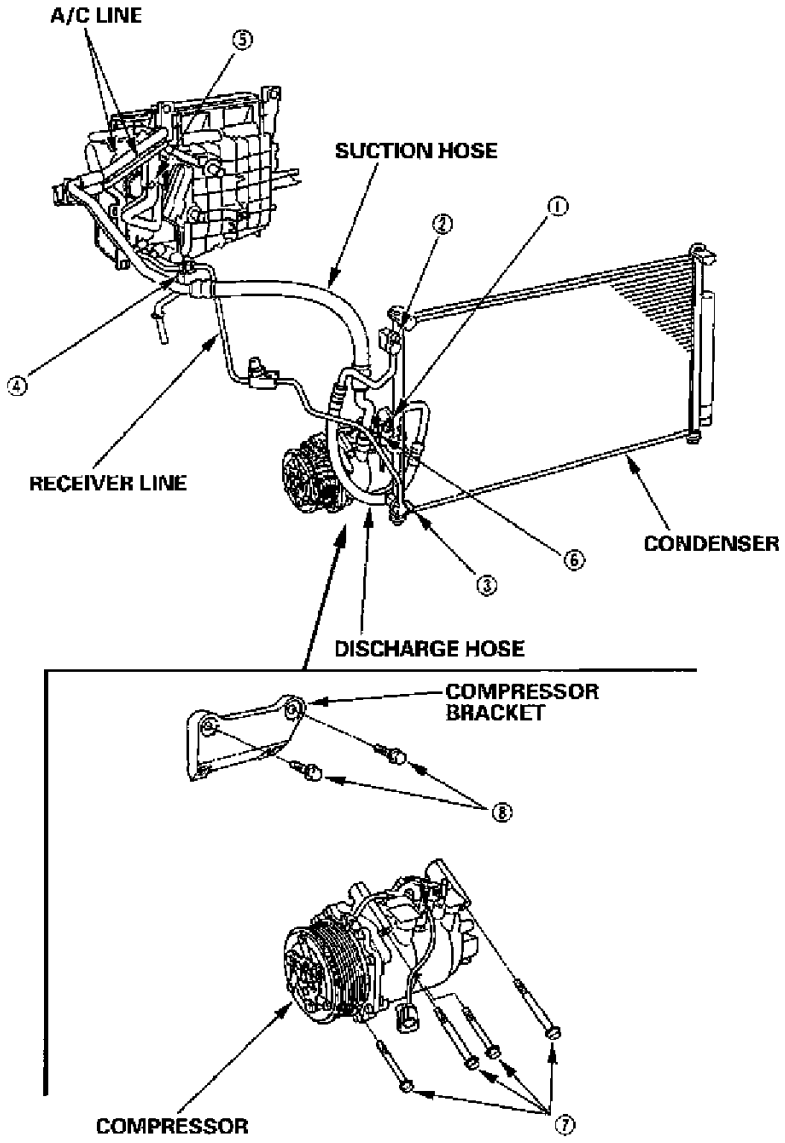


Fig. 6: For Compressor Replacement, Subtract The Volume Of Oil Drained From The Removed Compressor

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① Discharge hose to the compressor (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the condenser (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Receiver line to the condenser (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ Receiver line to the A/C line : 13 N·m (1.3 kgf·m, 9.4 lbf·ft)
⑤ A/C line to the evaporator (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑥ Suction hose to the compressor (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑦ Compressor to the compressor bracket (8 x 1.25 mm) : 22 N·m (2.2 kgf·m, 16 lbf·ft)
⑧ Compressor bracket to the engine block (10 x 1.25 mm) : 44 N·m (4.5 kgf·m, 33 lbf·t)

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Fig. 7: Replacing A/C Refrigerant Oil

GENERAL TROUBLESHOOTING INFORMATION

HOW TO CHECK FOR DTCS WITH THE HDS

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1. Make sure the ignition switch is OFF.
2. Connect the HDS to the Data Link Connector (DLC) located under the driver's side of the dashboard.

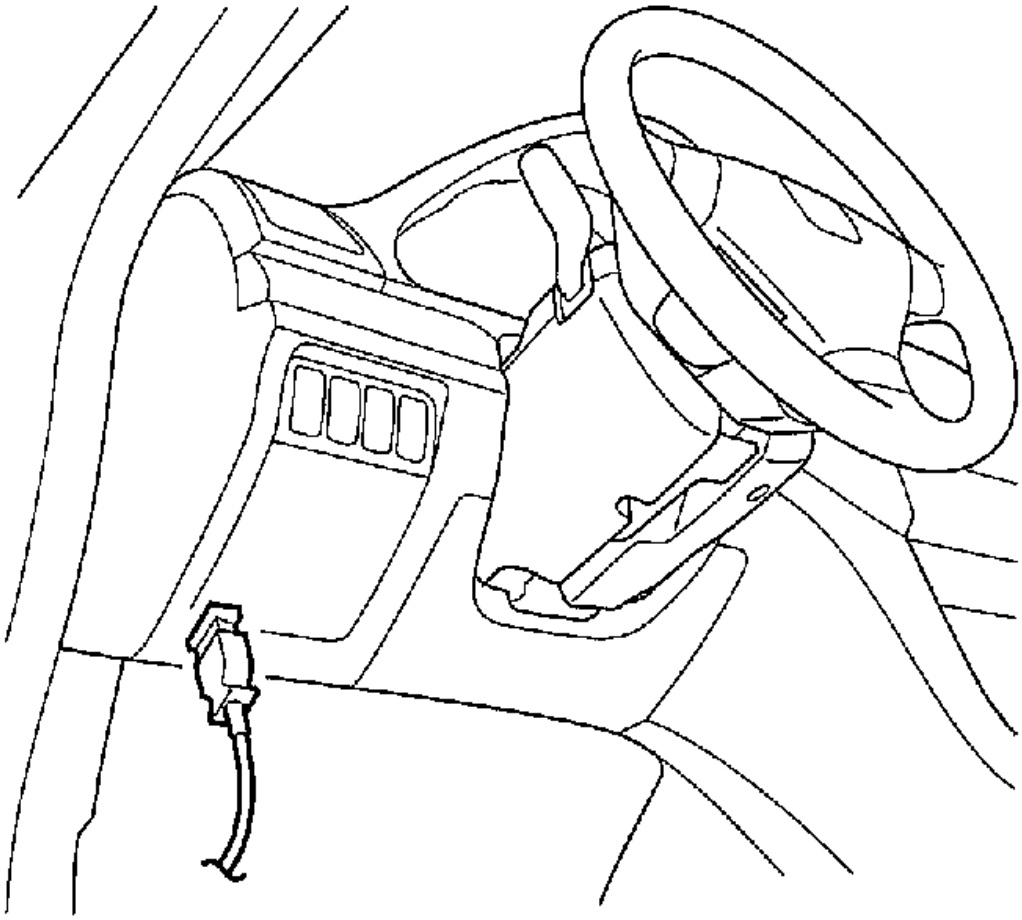


Fig. 8: Connecting The HDS To The Data Link Connector (DLC) Located Under The Driver's Side Of The Dashboard

3. Turn the ignition switch ON (II).
4. Select DTCs in the body electrical/climate control mode MENU of the HDS.
5. Check for DTCs. If a DTCs indicated, go to the next step. If no DTC(s) indicated, refer to symptom troubleshooting.
6. Turn the ignition switch OFF.
7. Disconnect the HDS from the DLC.

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8. Do the troubleshooting procedure for the DTC indicated.

HOW TO RETRIEVE A DTC (WITHOUT HDS)

The audio-HVAC display module has a self-diagnosis function for climate control. To run the self-diagnosis function, do the following:

NOTE: Before troubleshooting the climate control system, refer to the multiplex integrated control system test mode A (see TROUBLESHOOTING).

1. Turn the ignition switch ON (II).
2. Press the AUTO button, and set the temperature to Lo.
3. Press and hold the OFF button. While holding the OFF button, press the rear window defogger button five times within 10 seconds. The self-diagnosis will begin.

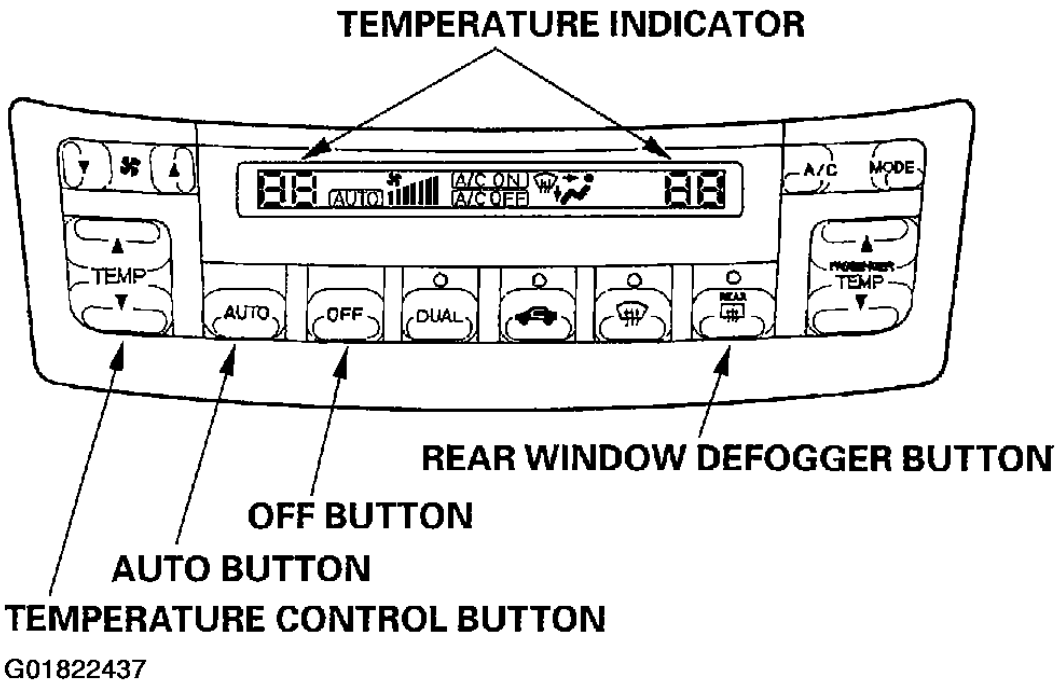


Fig. 9: Retrieving a DTC Without Navigation System

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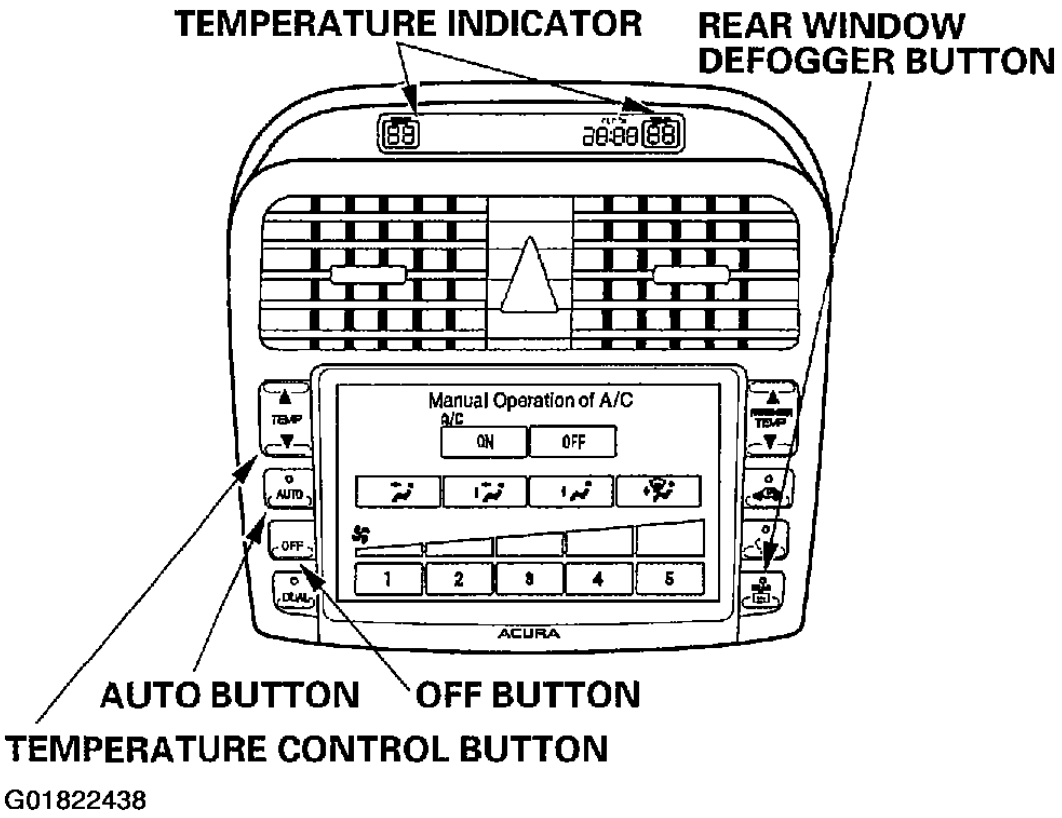


Fig. 10: Retrieving a DTC With Navigation System

If there is any problem in the system, the temperature indicator will light up the segment (A through Q) corresponding to the error. The temperature indicator will then alternate every second between displaying "88" (all segments lit) and the error code segment (A through Q). To determine the meaning of the DTC, refer to the DTC Troubleshooting Index.

If there are no problems detected, the screen will go blank in about 10 seconds.

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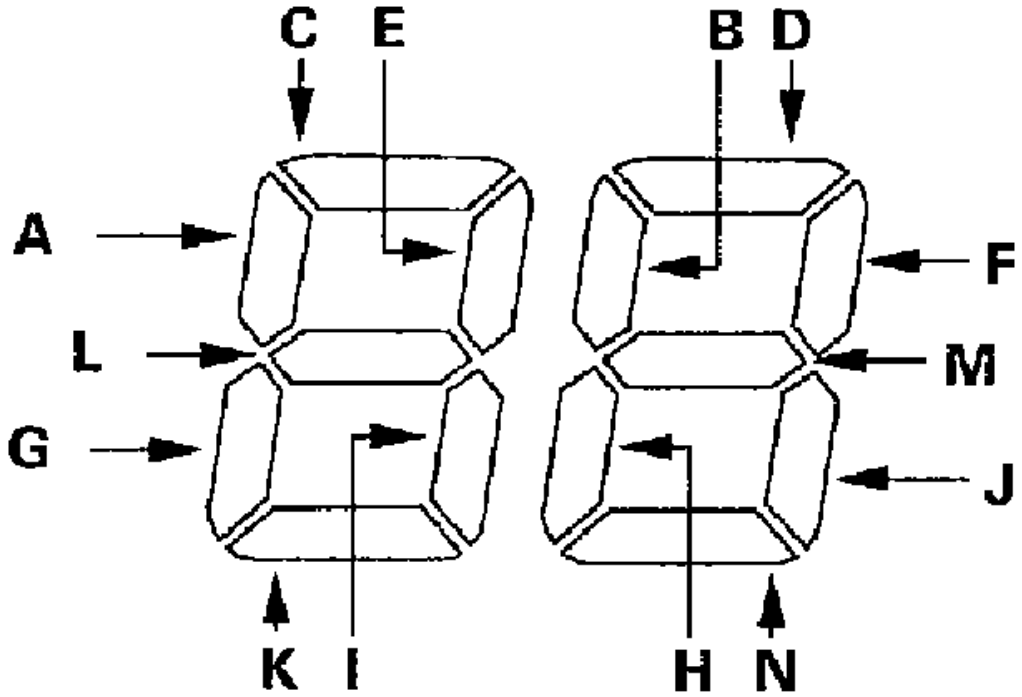


Fig. 11: Driver's Side Temperature Indicator Segments

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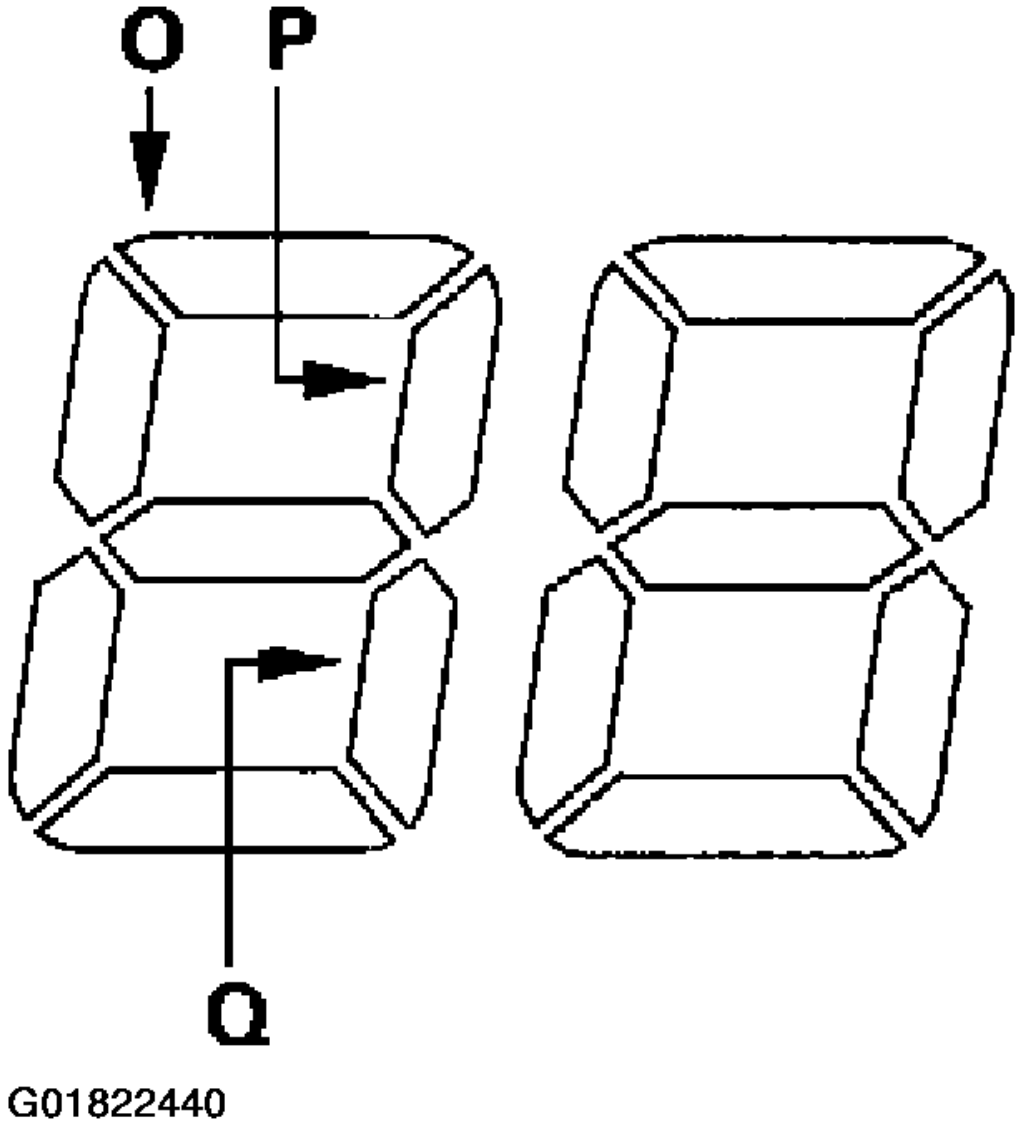


Fig. 12: Passenger's Side Temperature Indicator Segments

Cancelling the Self-diagnosis Function

4. Turn the ignition switch OFF or press the AUTO button to cancel the self-diagnosis function. After completing repair work, run the self-diagnosis function again to make sure that there are no other malfunctions.

CHECKING DTCS BY DTC INDICATOR

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NOTE: Before troubleshooting the climate control system, refer to the multiplex integrated control system test mode A (see TROUBLESHOOTING).

To retrieve the DTC, you must run the self-diagnosis function. In the case of multiple problems, the respective indicator segments will come on. If indicator segments A, C, E, G, I, L, and O come on at the same time, there may be an open in the common ground wire of the sensors.

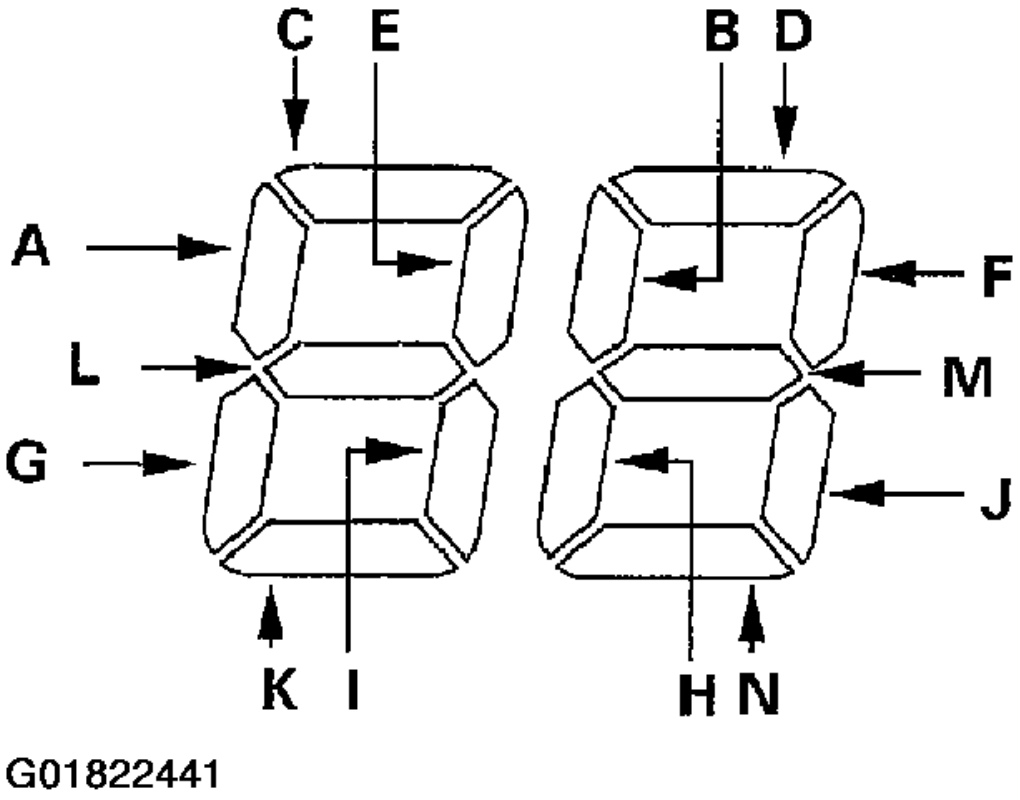


Fig. 13: Driver's Temperature Indicator Segments

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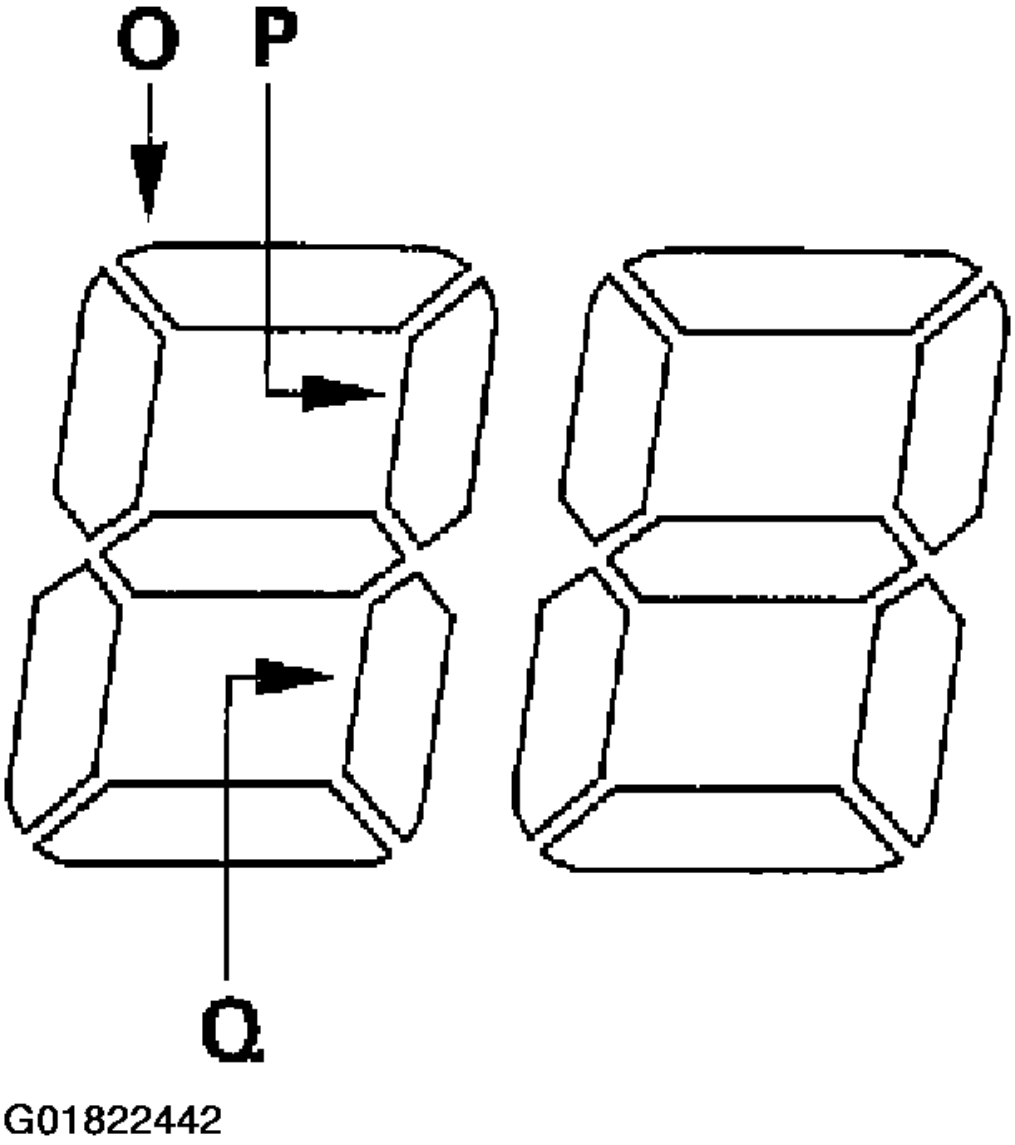


Fig. 14: Passenger's Temperature Indicator Segments

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DTC (Temperature Indicator segment)	Detection Item
A	An open in the in-car temperature sensor circuit
B	A short in the in-car temperature sensor circuit
C	An open in the outside air temperature sensor circuit
D	A short in the outside air temperature sensor circuit
E	An open in the sunlight sensor circuit
F	A short in the sunlight sensor circuit
G	An open in the evaporator temperature sensor circuit
H	A short in the evaporator temperature sensor circuit
I	An open in the driver's air mix control motor circuit
J	A short in the driver's air mix control motor circuit
K	A problem in the driver's air mix control linkage, door, or motor
L	A short or open in the mode control motor circuit
M	A problem in the mode control linkage, doors, or motor
N	A problem in the blower motor circuit
O	An open in the passenger's air mix control motor circuit
P	An short in the passenger's air mix control motor circuit
Q	An problem in the passenger's air mix control linkage, door, or motor

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Fig. 15: Segment Table

DISPLAYING SENSOR INPUTS AT THE CLIMATE CONTROL UNIT

The climate control unit has a mode that displays sensor inputs it receives. This mode shows you what the climate control unit is receiving from each of the sensors, one at a time, and it can help you determine if a sensor is faulty.

CHECK THESE ITEMS BEFORE USING THE SENSOR INPUT DISPLAY MODE

1. Turn the ignition switch ON (II), and check the recirculation door function; press the recirculation button to switch from FRESH to RECIRC. The air volume and sound should change slightly.
2. Set the temperature control knob to the desired test temperature. When selecting the test temperatures, note these items:
   - "Lo" temperature setting will default to MAX COOL, VENT, and RECIRC.
   - "Hi" temperature setting will default to MAX HOT, FLOOR, and FRESH.
   - 61°F through 89°F settings will use the automatic climate control logic.
   - Turn the ignition switch OFF.

TO RUN THE SENSOR INPUT DISPLAY MODE, FOLLOW THESE STEPS

1. Turn the ignition switch OFF.
2. Press and hold both the AUTO and DUAL buttons, then start the engine.
3. After the engine starts, release the buttons. The audio-HVAC display module display will flash the sensor number and then the value for that sensor. Record the value displayed.
4. To advance to the next sensor, press the rear window defogger button.

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Sensor	Item	Displayed Value
1	In-car Temperature Sensor	℃
2	Ambient Temperature	℃
3	Solar Radiation Sensor Value: Dark = 00, Flashlight = 04, Cloudy =10, Sunny =65	Kcal/m2·h
4	Engine coolant Temperature	℃
5	Evaporator Outlet Air Temperature	℃
6	Driver's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution.)	% of opening
7	Passenger's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution.)	% of opening
8	Vehicle Speed (Vehicle must be driven to display speed)	Km/h
9	Vent Temperature Air Out (TAO)	℃

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Fig. 16: Sensor Input Display Mode Chart

NOTE:

- **The sensor values will be displayed in degrees Celsius (°C) or an alphanumeric code. Use the chart to convert the value to degrees Fahrenheit (°F).**
- **If the sensor value displays "Er" this indicates there is an open or short in the circuit or sensor. Check for DTCs using the HDS, or refer to checking DTCs by DTC indication to check for DTCs.**
- **If necessary, compare the sensor input display to an alike, known-good vehicle under the same test conditions.**
- **If the sensor is out of the normal range, refer to the sensor test, or substitute the sensor with a known-good, and recheck.**

5. To cancel the sensor input display mode, press the AUTO button, or turn the ignition off.

℃	℉	℃	℉	℃	℉	℃	℉	℃	℉
0	32	10	50	20	68	30	86	40	104
1	34	11	52	21	70	31	88	41	106
2	36	12	54	22	72	32	90	42	108
3	37	13	55	23	73	33	91	43	109
4	39	14	57	24	75	34	93	44	111
5	41	15	59	25	77	35	95	45	113
6	43	16	61	26	79	36	97	46	115
7	45	17	63	27	81	37	99	47	117
8	46	18	64	28	82	38	100	48	118
9	48	19	66	29	84	39	102	49	120

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Fig. 17: Celsius To Fahrenheit Conversion Table (1 Of 2)

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℃	℉	℃	℉	℃	℉	℃	℉	℃	℉
50	122	60	140	70	158	80	176	90	194
51	124	61	142	71	160	81	178	91	196
52	126	62	144	72	162	82	180	92	198
53	127	63	145	73	163	83	181	93	199
54	128	64	147	74	165	84	183	94	201
55	131	65	149	75	167	85	185	95	203
56	133	66	151	76	169	86	187	96	205
57	135	67	152	77	170	87	188	97	207
58	136	68	154	78	172	88	190	98	208
59	139	69	158	79	174	89	192	99	210

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Fig. 18: Celsius To Fahrenheit Conversion Table (2 Of 2)

Display Reading (Alphanumeric)	℃	℉
A1 thru A9	−1 thru −9	30 thru 16
B0 thru B9	−10 thru −19	14 thru −2
C0 thru C9	−20 thru −29	−4 thru −20
D0 thru D9	−30 thru −39	−22 thru −38
E0 thru E9	−40 thru −49	−40 thru −58
F0 thru F9	+100 thru +109	212 thru 226

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Fig. 19: Alphanumeric Conversion Table

DTC TROUBLESHOOTING INDEX

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DTC	Detection Item or Symptom	ECU	DTC type
B1200	Communication circuit error (BUS Off)	Climate control unit	Loss of communication
B1202	Climate control unit internal error	Climate control unit	Internal error
B1205	Climate control unit lost communication with gauge control module (VSP/NE message)	Climate control unit	Loss of communication
B1206	Climate control unit lost communication with gauge control module (ECT message)	Climate control unit	Loss of communication
B1207	Climate control unit lost communication with gauge control module (ILLUMI message)	Climate control unit	Loss of communication
B1225	Open in the in-car temperature sensor circuit	Climate control unit	Signal error
B1226	Short in the in-car temperature sensor circuit	Climate control unit	Signal error
B1227	Open in the outside air temperature sensor circuit	Climate control unit	Signal error
B1228	Short in the outside air temperature sensor circuit	Climate control unit	Signal error
B1229	Open in the sunlight sensor circuit	Climate control unit	Signal error
B1230	Short in the sunlight sensor circuit	Climate control unit	Signal error
B1231	Open in the evaporator temperature sensor circuit	Climate control unit	Signal error
B1232	Short in the evaporator temperature sensor circuit	Climate control unit	Signal error
B1233	Open in the driver's air mix control motor circuit	Climate control unit	Signal error
B1234	Short in the driver's air mix control motor circuit	Climate control unit	Signal error
B1235	Problem in the driver's air mix control linkage, door, or circuit	Climate control unit	Signal error
B1236	Open in the passenger's air mix control motor circuit	Climate control unit	Signal error
B1237	Short in the passenger's air mix control motor circuit	Climate control unit	Signal error
B1238	Problem in the passenger's air mix control linkage, door, or motor	Climate control unit	Signal error
B1239	Short or open in the mode control motor circuit	Climate control unit	Signal error
B1240	Problem in the mode control linkage, doors, or motor	Climate control unit	Signal error
B1241	Problem in the blower motor circuit	Climate control unit	Signal error

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Fig. 20: Checking the DTCs by HDS

SYMPTOM TROUBLESHOOTING INDEX

NOTE: Before performing symptom troubleshooting, check for body DTCs (see TROUBLESHOOTING), and power train DTCs (see GENERAL TROUBLESHOOTING INFORMATION).

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Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation control motor circuit troubleshooting	• DTCs • Blown fuse No. 30 (7.5A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
Blower, heater controls, and A/C do not work	Climate control power and ground circuits troubleshooting	• DTCs • Blown fuse No. 30 (7.5A) in the under-dash fuse/relay box • Poor ground at G503 • Cleanliness and tightness of all connectors
Condenser fan does not run at all (but radiator fan runs with the A/C on)	Condenser fan circuit troubleshooting	• DTCs • Blown fuse No. 9 (20A) in the under-hood fuse/relay box, and No. 30 (7.5A) in the under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all connectors
Both fans do not run with the A/C on (but the compressor runs with the A/C on)	Radiator and condenser fans common circuit troubleshooting	• DTCs • Blown fuse No. 9 (20A) and No. 11 (20A) in the under-hood fuse/relay box, and No. 30 (7.5A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
Compressor clutch does not engage (but both fans run with the A/C on)	Compressor clutch circuit troubleshooting	• DTCs • Blown fuse No. 9 (20A) in the under-hood fuse/relay box, and No. 30 (7.5A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors • Blower motor operation
A/C system does not come on (both fans and compressor do not work); heater is OK	A/C Pressure switch and thermal protector circuit troubleshooting	• DTCs • Cleanliness and tightness of all connectors
Blower fan runs slower than expected in cold weather	ECT Troubleshooting NOTE: It is normal for the blower to run slowly until the engine coolant temperature begins to rise. If the blower continues to run slowly for an abnormal length of time, continue to troubleshoot the problem.	DTCs

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Fig. 21: Symptom Troubleshooting Table (1 Of 3)

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Symptom	Diagnostic procedure	Also check for
AUTO button does not work	1. Turn the ignition switch ON (II). 2. Press the AUTO button and check the display. • If AUTO is displayed, but the climate control is not working properly, do the self-diagnosis. • If AUTO is not displayed, check for poor connections at the climate control connector. If the connections are OK, replace the audio-HVAC display panel.	
OFF button does not work	1. Turn the ignition switch ON (II). 2. Press the AUTO button, then press the OFF button and check the display. • If the climate control display turns off, go to self-diagnosis. • If the climate control display does not turn off, replace the audio-HVAC display panel.	Faulty relays.
Dual button does not work	1. Turn the ignition switch ON (II). 2. Press the AUTO button, then press the DUAL button and check the DUAL button LED. • If the LED turns on, go to self-diagnosis. • If the LED does not turn on, replace the audio-HVAC display panel.	
Recirculation button does not work	1. Turn the ignition switch ON (II). 2. Press the recirculation button and check the operation of the button's LED. • If the LED turns on, go to Recirculation control motor test. • If the LED does not turn on, replace the audio-HVAC display panel.	
Defroster button does not work	1. Turn the ignition switch ON (II). 2. Press the AUTO button, then the defroster button and check the defroster button's LED. • If the LED turns on, go to self-diagnosis. • If the LED does not turn on, replace the audio-HVAC display panel.	
Rear window defogger button does not work	1. Turn the ignition switch ON (II). 2. Press the rear window defogger button and check the button's LED. • If the LED turns on, go to rear window defogger troubleshooting. • If the LED does not turn on, replace the audio-HVAC display panel.	

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Fig. 22: Symptom Troubleshooting Table (2 Of 3)

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Symptom	Diagnostic procedure	Also check for
MODE button does not work	1. Turn the ignition switch ON (II). 2. Press the MODE button and check the display. • If the display scrolls through the modes as the MODE button is pressed, go to self-diagnosis. • If the display does not scroll through the modes as the MODE button is pressed, replace the audio-HVAC display panel.	
Fan control button does not work	1. Turn the ignition switch ON (II). 2. Press the AUTO button, then adjust the fan control button up/down and check the display. • If the display indicates the fan speed selection up/down, go to self-diagnosis. • If the display does not indicate the fan speed selection up/down, replace the audio-HVAC display panel.	
TEMP control button does not work	1. Turn the ignition switch ON (II). 2. Press the AUTO button, then adjust the TEMP control button up/down and check the display. • If the display indicates the change in temperature up/down, go to self-diagnosis. • If the display does not indicate the change in temperature up/down, replace the audio-HVAC display panel.	
Passenger TEMP button does not work	1. Turn the ignition switch ON (II). 2. Press the AUTO button. Press the Dual button then the Passenger TEMP button up/down. Check the display. • If the display indicates the change in passenger's temperature up/down, go to self-diagnosis. • If the display does not indicate the change in temperature up/down, replace the audio-HVAC display panel.	
Climate control does not work with voice control (with navigation)	Voice control troubleshooting.	
Climate control will not run self-diagnosis	1. Turn the ignition switch ON (II). 2. Press the AUTO button, then the TEMP control button up/down and check the display • If the display does not work, check for loose or poor connections at the audio-HVAC display module, and recheck. • If the connections are OK, and the display still does not work, go to climate control power and ground circuit troubleshooting.	
More than one button is not working	Climate control power and ground circuit troubleshooting.	
Audio-HVAC display/button illumination problems	Audio-HVAC display module illumination troubleshooting.	

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Fig. 23: Symptom Troubleshooting Table (3 Of 3)

SYSTEM DESCRIPTION

The air conditioning system removes heat from the passenger compartment by circulating refrigerant through the system as shown below.

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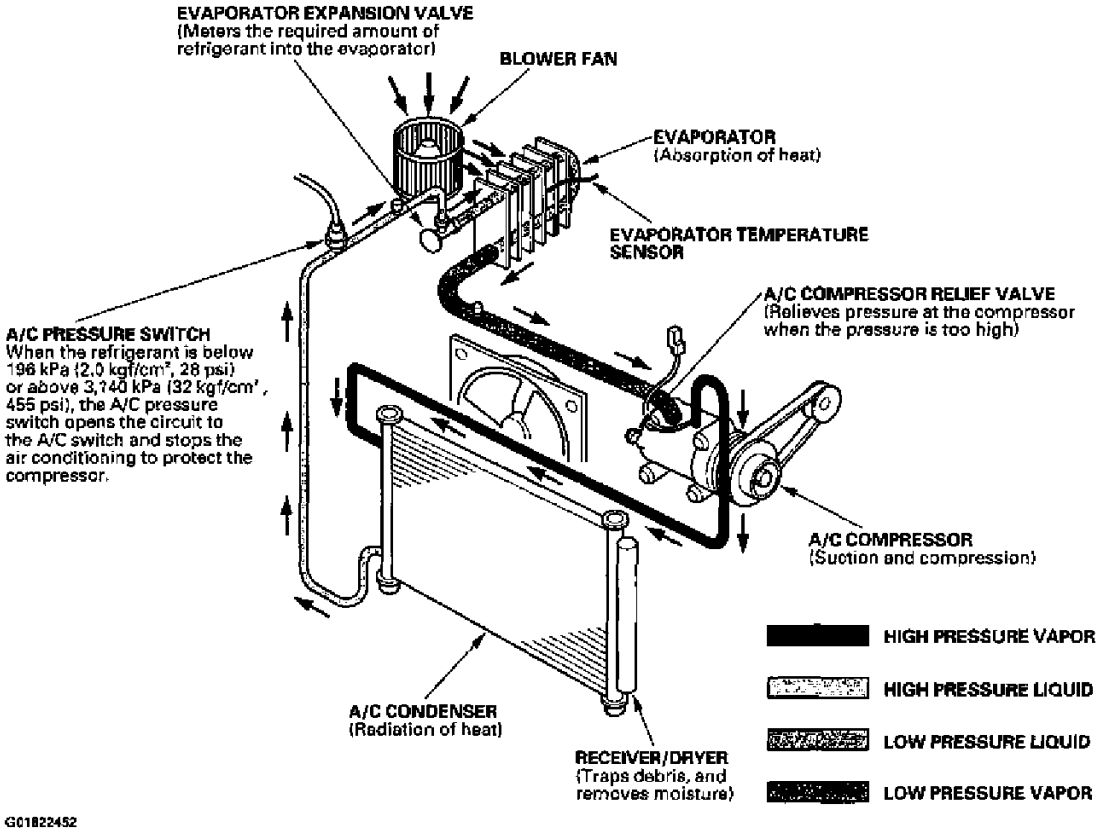


Fig. 24: Climate Control System Operation

This vehicle uses HFC-134a (R-134a) refrigerant which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (KEIHIN SP-10) designed for the R-134a compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in compressor failure.
- All A/C system parts (compressor, discharge line, suction line, evaporator, condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service R-134a air conditioning system.
- Always recover the refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

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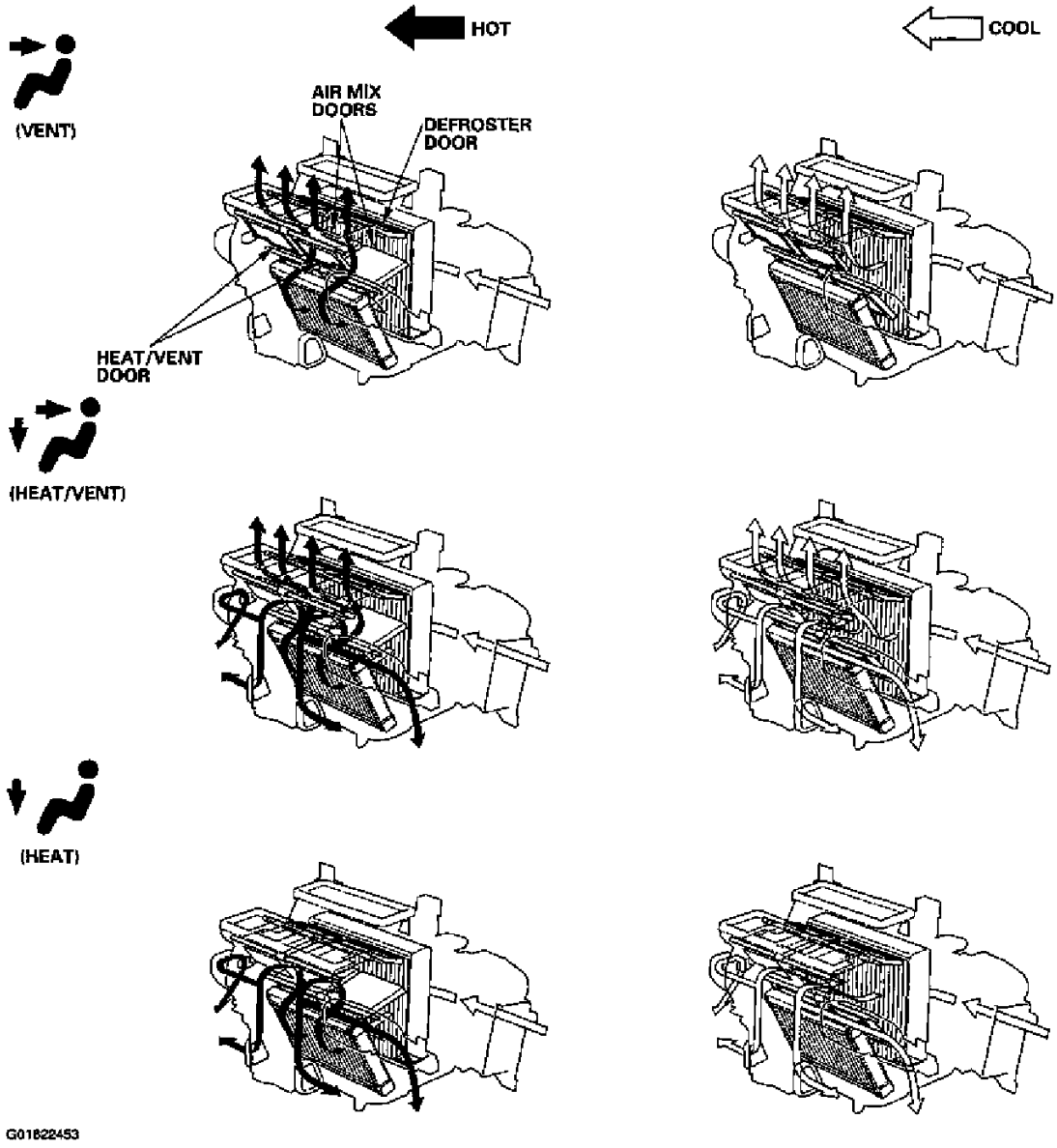


Fig. 25: Identifying Climate Control System Operating Modes (1 Of 2)

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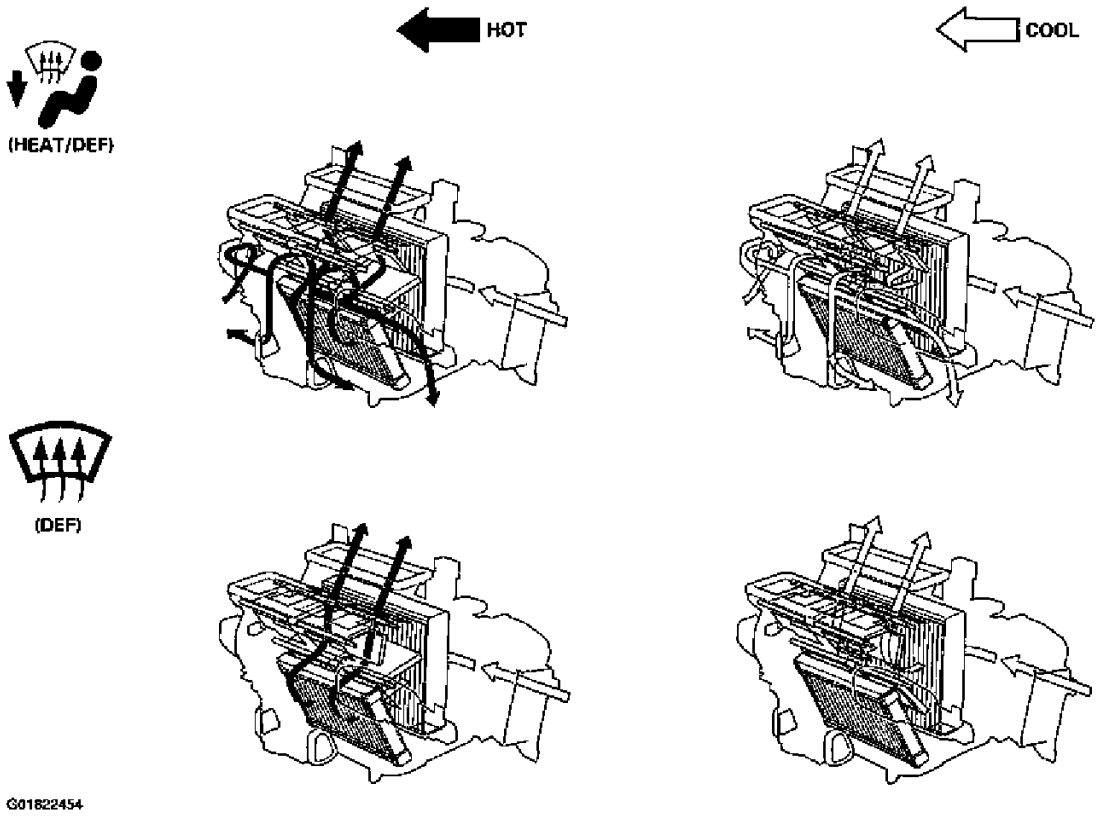


Fig. 26: Identifying Climate Control System Operating Modes (2 Of 2)

DUAL AIR MIX CONTROL SYSTEM

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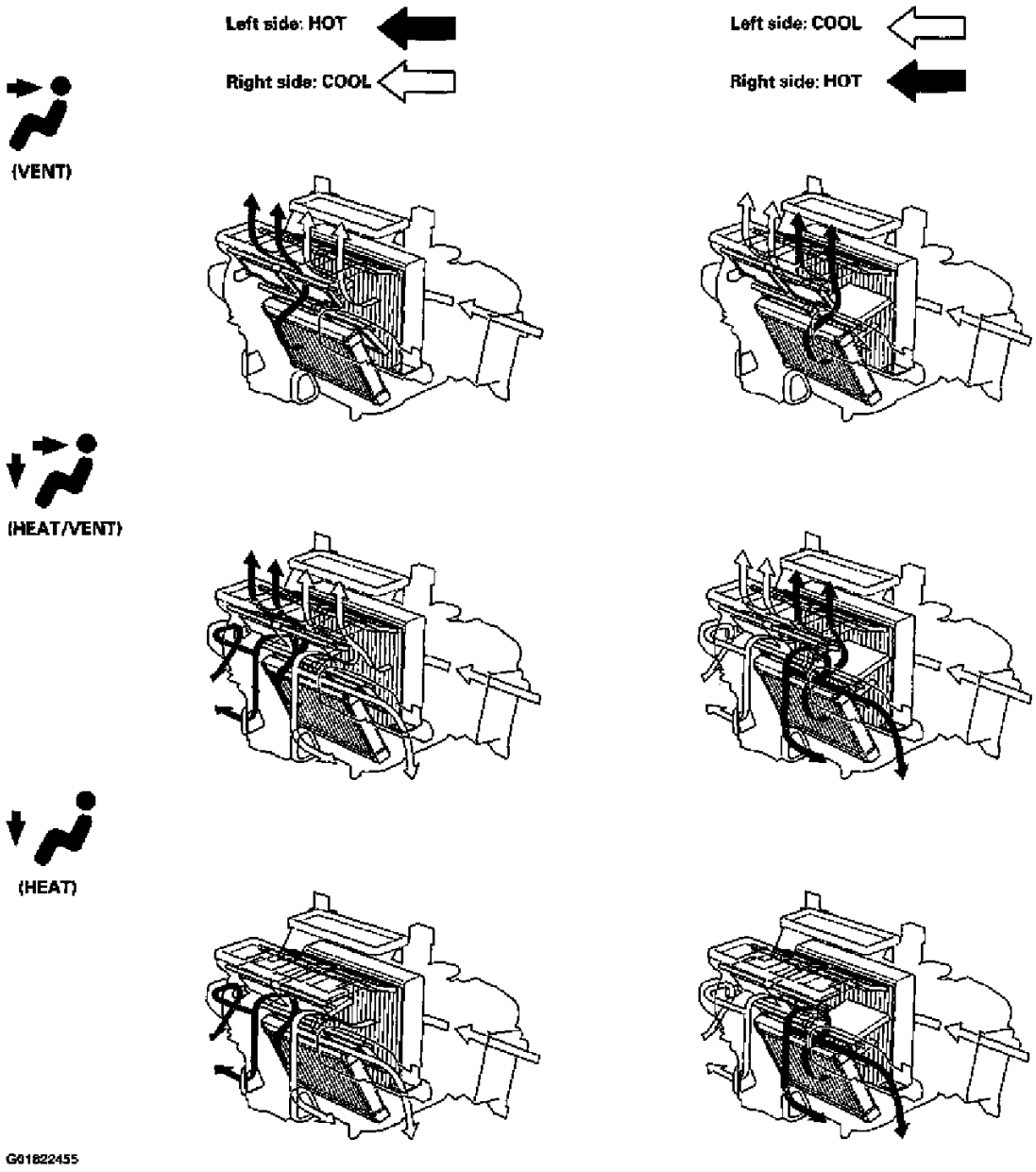


Fig. 27: Identifying Dual Air Mix Climate Control System Operating Modes (1 Of 2)

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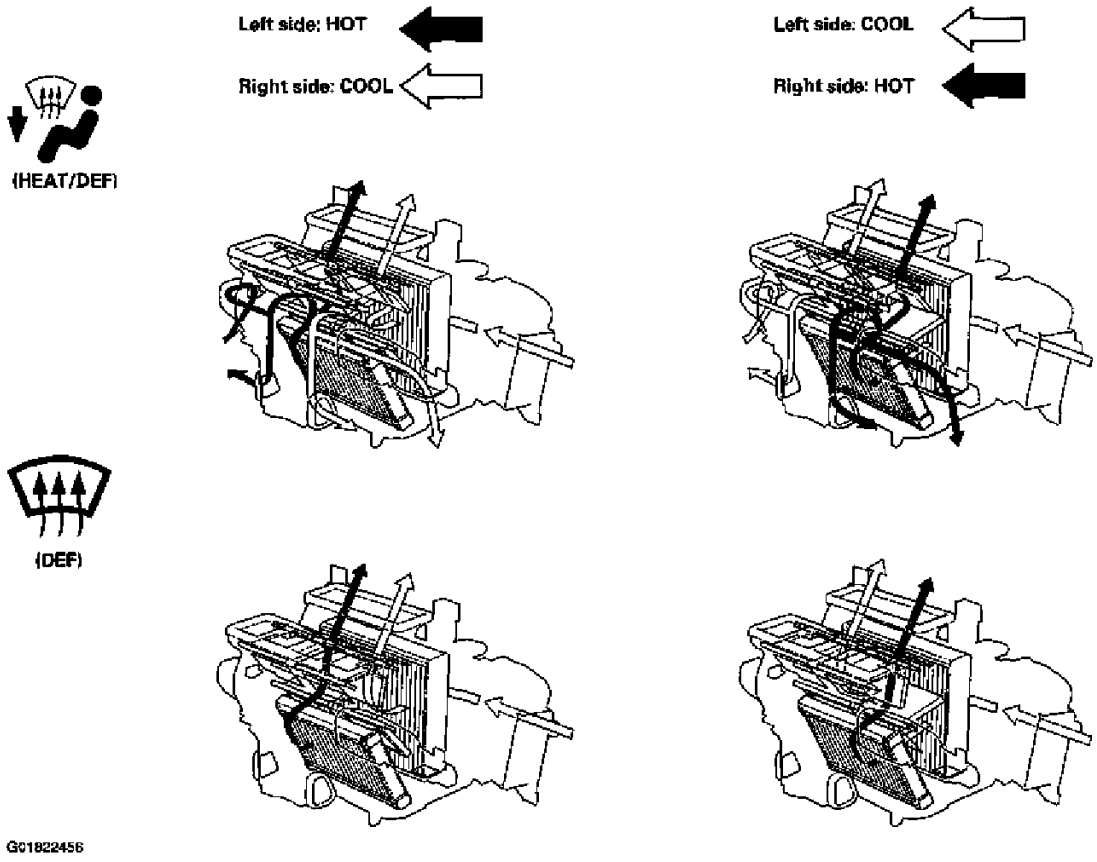


Fig. 28: Identifying Dual Air Mix Climate Control System Operating Modes (2 Of 2)

AUDIO-HVAC DISPLAY PANEL INPUTS AND OUTPUTS

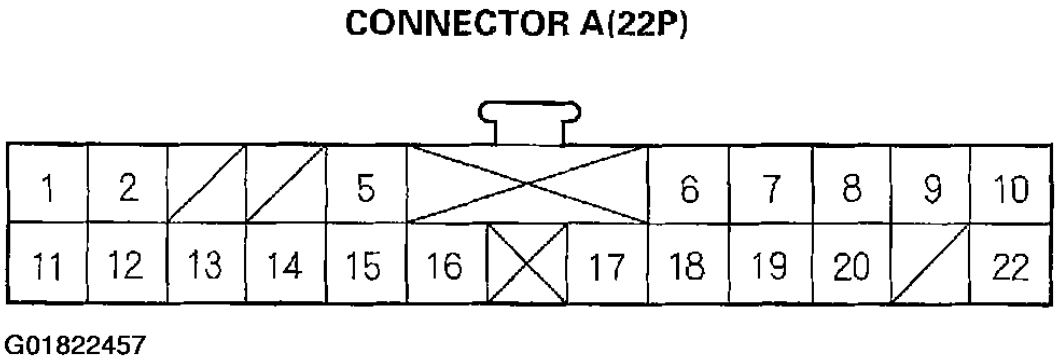


Fig. 29: Identifying Audio-HVAC Display Panel Connector A Terminals

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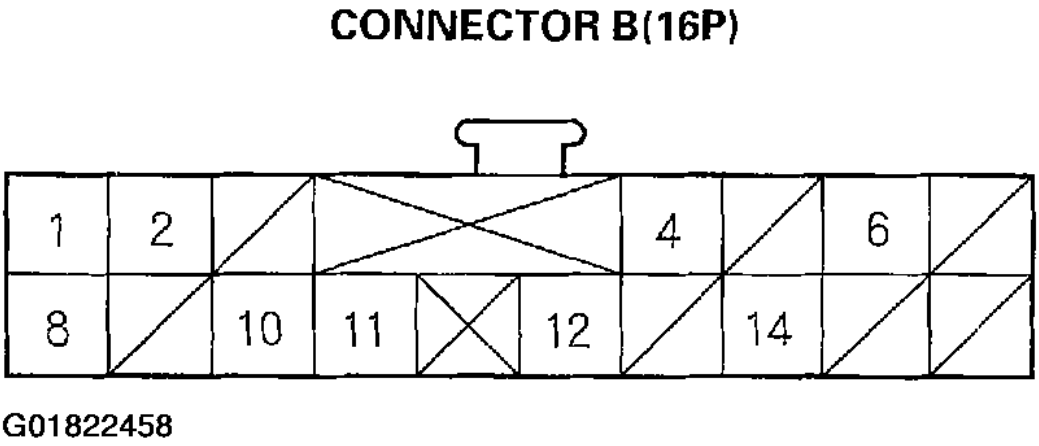


Fig. 30: Identifying Audio-HVAC Display Panel Connector B Terminals

NOTE: **For audio-HVAC display panel connector location, go to Audio Unit Connector Replacement; with navigation (see AUDIO UNIT CONNECTOR REPLACEMENT), without navigation (see AUDIO UNIT CONNECTOR REPLACEMENT).**

Cavity	Wire color	Signal	
1	PNK/BLK	DRIVER'S AIR MIX POTENTIAL	INPUT
2	YEL	PASSENGER'S AIR MIX POTENTIAL	INPUT
3	—	—	—
4	—	—	—
5	BLU	A/C PRESSURE SWITCH	OUTPUT
6	YEL/BLU	MODE DEF	OUTPUT
7	YEL/RED	MODE VENT	OUTPUT
8	GRN	DRIVER'S AIR MIX COOL	OUTPUT
9	PNK/BLU	DRIVER'S AIR MIX HOT	OUTPUT
10	YEL/BLK	PASSENGER'S AIR MIX COOL	OUTPUT
11	LT BLU	IN-CAR TEMPERATURE SENSOR	INPUT
12	PNK	OUTSIDE AIR TEMPERATURE SENSOR	INPUT
13	ORN	SUNLIGHT SENSOR	INPUT
14	BRN	EVAPORATOR TEMPERATURE SENSOR	INPUT
15	RED/BLK	SENSOR COMMON GROUND	OUTPUT
16	YEL/GRN	MODE 4	INPUT
17	WHT/BLU	MODE 3	INPUT
18	RED/BLU	MODE 2	INPUT
19	RED/YEL	MODE 1	INPUT
20	GRY	AIR MIX POTENTIAL +5 V	OUTPUT
21	—	—	—
22	LT GRN	PASSENGER'S AIR MIX HOT	OUTPUT

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Fig. 31: Audio-HVAC Display Panel Connector A Pin Voltage Chart

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Cavity	Wire color	Signal	
1	BLU/YEL	POWER TRANSISTOR CONTROL	OUTPUT
2	BLU/RED	BLOWER FEEDBACK	INPUT
3	—	—	—
4	BLK/YEL	IG2 (Power)	INPUT
5	—	—	—
6	BLK	GROUND (G503)	INPUT
7	—	—	—
8	RED/BLK	TAILLIGHT RELAY	INPUT
9	—	—	—
10	GRN/WHT	FRESH	OUTPUT
11	LT GRN/RED	RECIRCULATE	OUTPUT
12	RED	GAUGE ASSEMBLY	OUTPUT
13	—	—	—
14	LT BLU	MULTIPLEX INTEGRATED CONTROL UNIT	INPUT
15	—	—	—
16	—	—	—

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Fig. 32: Audio-HVAC Display Panel Connector B Pin Voltage Chart

CIRCUIT DIAGRAM

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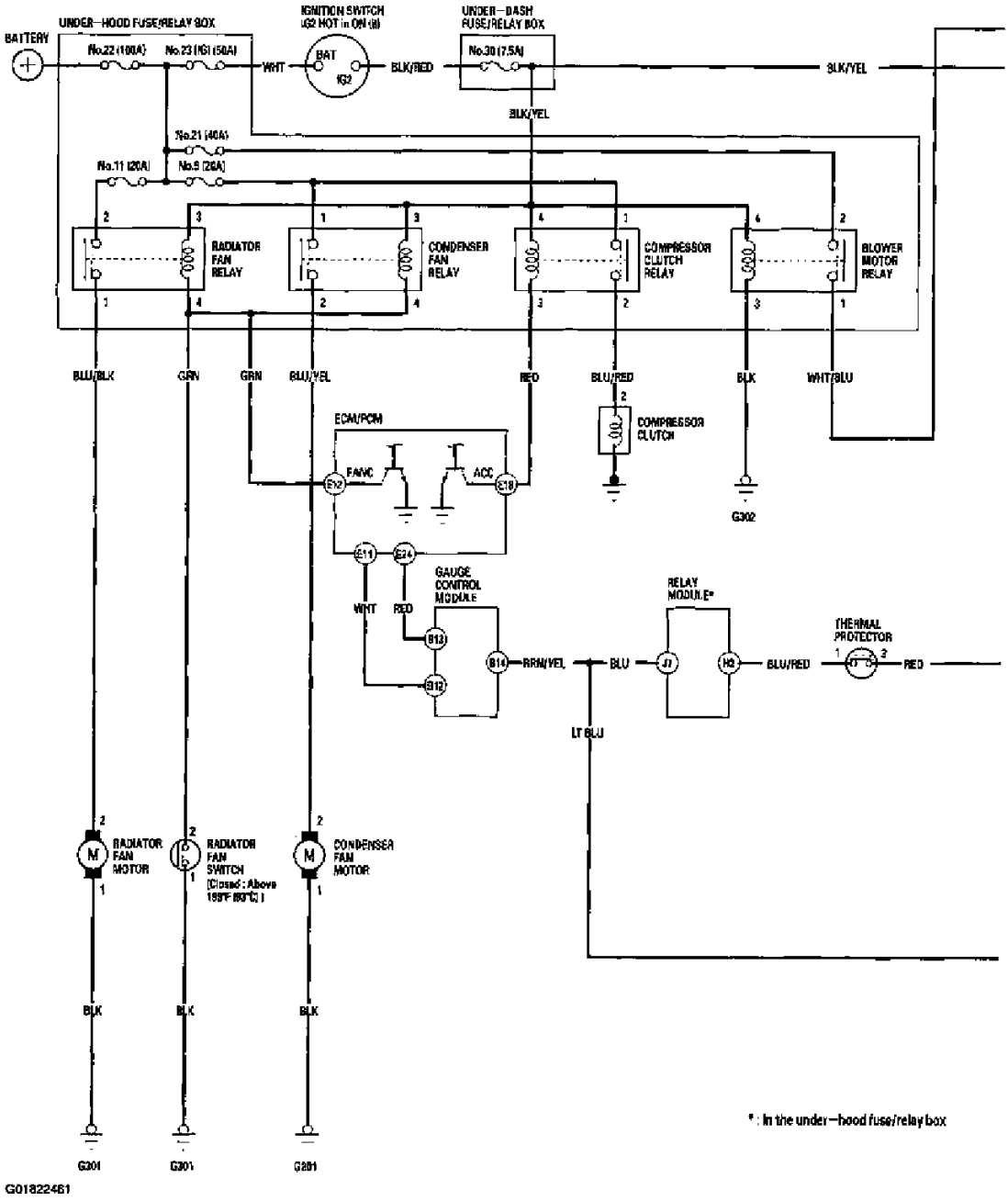


Fig. 33: Climate Control Circuit Diagram (1 Of 2)

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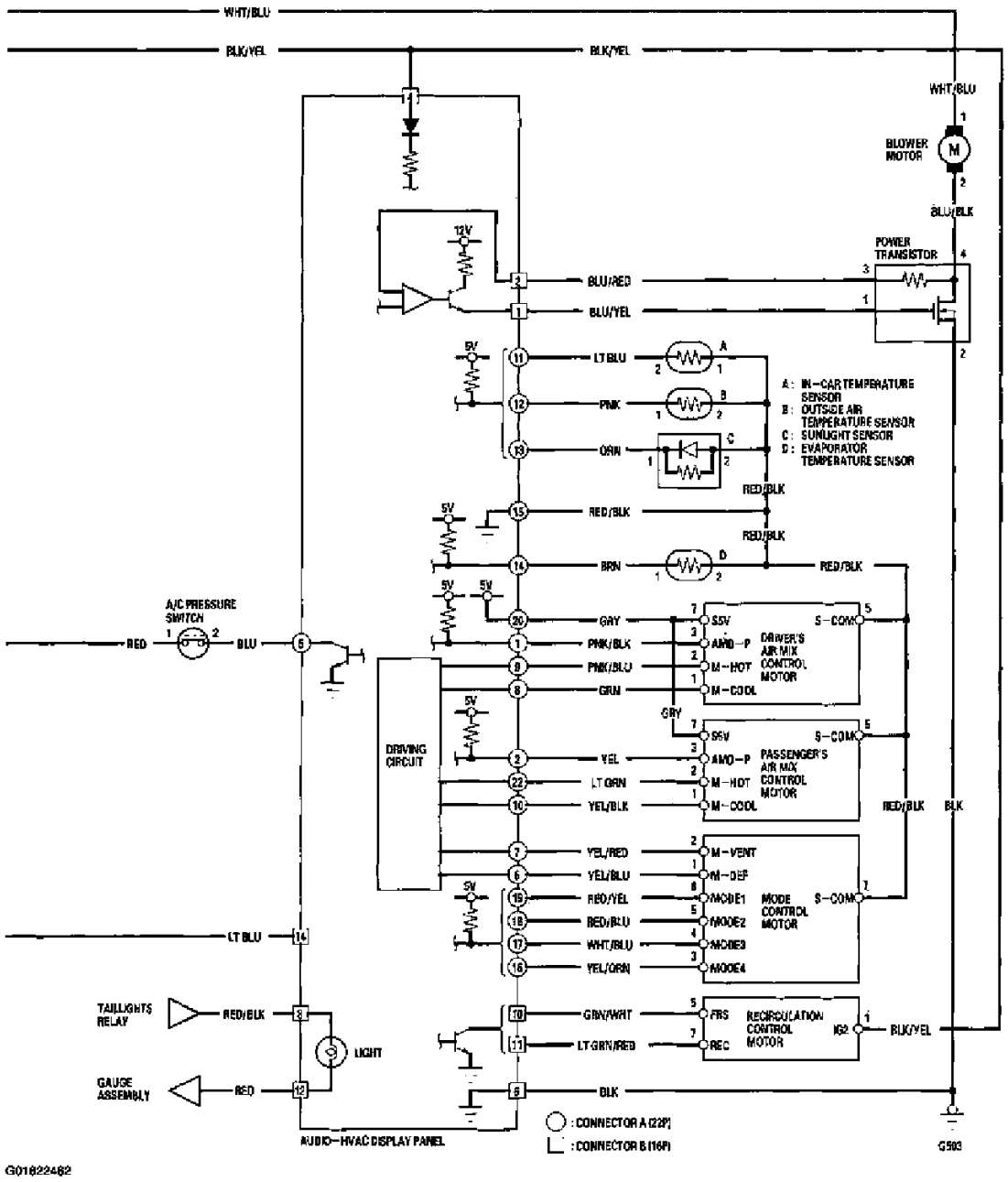


Fig. 34: Climate Control Circuit Diagram (2 Of 2)

DTC TROUBLESHOOTING

DTC INDICATOR A OR DTC B1225: AN OPEN IN THE IN-CAR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.

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3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC A or B1225 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, check for loose wires or poor connections on the in-car temperature sensor circuit.
5. Remove the in-car temperature sensor and test it (see **IN-CAR TEMPERATURE SENSOR TEST**).

   Does the in-car temperature sensor test OK?

   YES: Go to step 6.

   NO: Replace the in-car temperature sensor.
6. Disconnect audio-HVAC display panel connector A (22P).
7. Check for continuity between the No. 11 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the in-car temperature sensor 2P connector.

   Is there continuity?

   YES: Go to step 8.

   NO: Repair open in the wire between the audio-HVAC display panel and the in-car temperature sensor.

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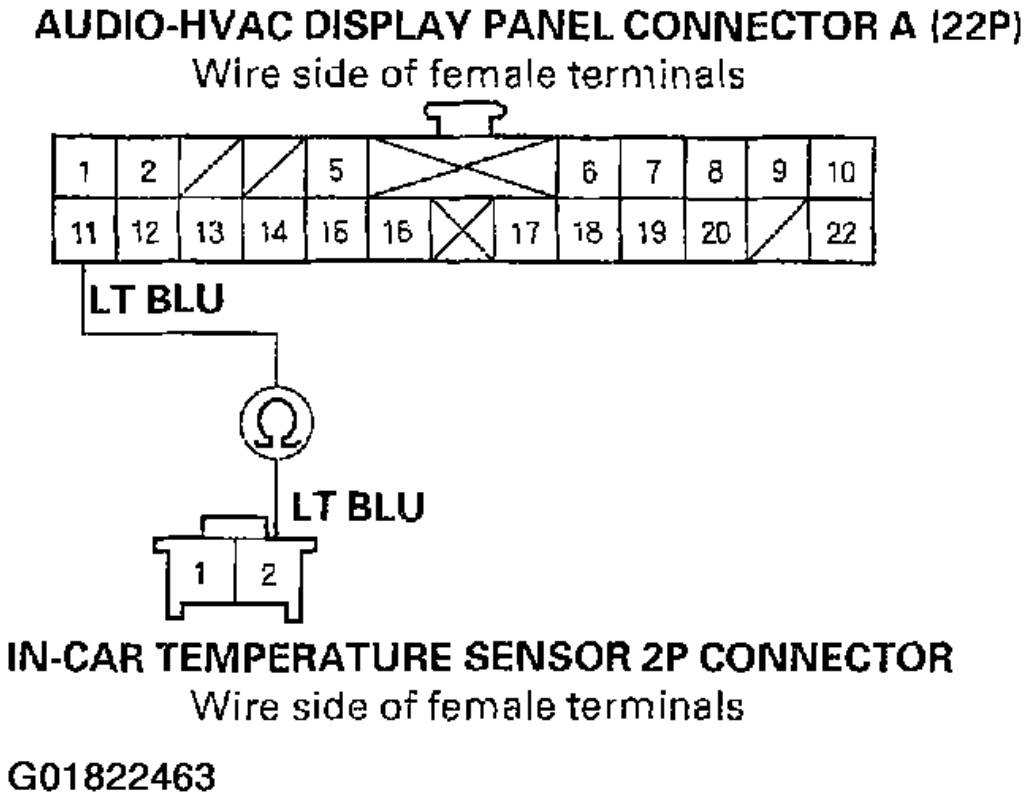


Fig. 35: Checking For Continuity Between The No. 11 Terminal Of Audio-HVAC Display Panel Connector A (22P) & The No. 2 Terminal Of The In-Car Temperature Sensor 2P Connector

8. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the in-car temperature sensor 2P connector.

   Is there continuity?

   YES: Check for loose wires or poor connections at audio-HVAC display panel connector A (22P) and at the in-car temperature sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

   NO: Repair open in the wire between the climate control unit and the in-car temperature sensor.

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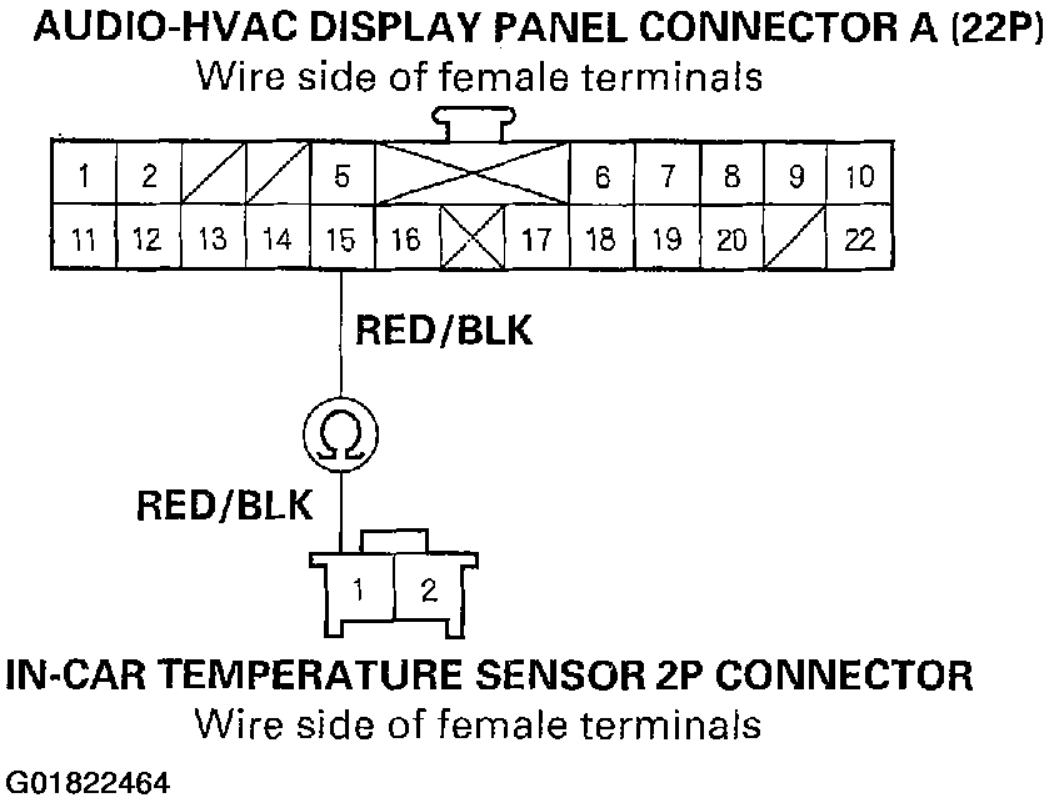


Fig. 36: Checking For Continuity Between The No. 15 Terminal Of Audio-HVAC Display Panel Connector A (22P) & The No. 1 Terminal Of The In-Car Temperature Sensor 2P Connector

DTC INDICATOR B OR DTC B1226: A SHORT IN THE IN-CAR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC B or B1226 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Remove the in-car temperature sensor (see **IN-CAR TEMPERATURE SENSOR REPLACEMENT**).
6. Test the in-car temperature sensor (see **IN-CAR TEMPERATURE SENSOR TEST**).

   Is the resistance within the specifications shown on the graph?

   YES: Go to step 7.

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NO: Replace the in-car temperature sensor.

7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between the No. 11 terminal of audio-HVAC display panel connector A (22P) and body ground.

Is there continuity?

YES: Repair short to body ground in the wire between the audio-HVAC display panel and the in-car temperature sensor.

NO: Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

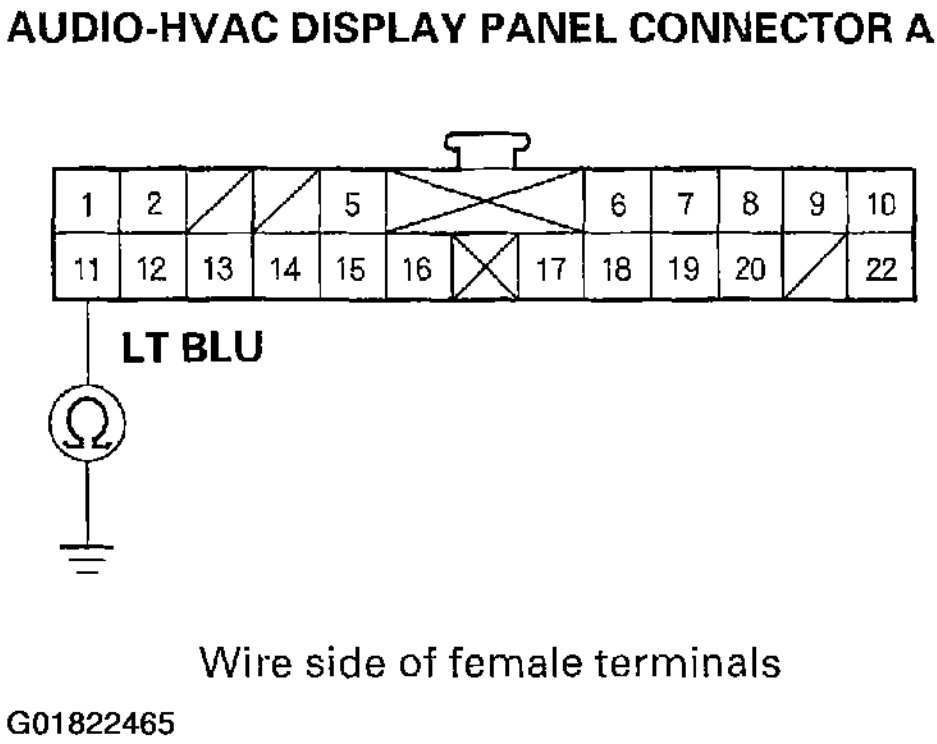


Fig. 37: Checking For Continuity Between The No. 11 Terminal Of Audio-HVAC Display Panel Connector A (22P) & Body Ground

DTC INDICATOR C OR DTC B1227: AN OPEN IN THE OUTSIDE AIR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.

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4. Check the DTCs.

   Is DTC C or B1227 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, check for loose wires or poor connections on the outside air temperature sensor circuit.

5. Remove the outside air temperature sensor (see **OUTSIDE AIR TEMPERATURE SENSOR TEST**) and test it (see **OUTSIDE AIR TEMPERATURE SENSOR REPLACEMENT**).

   Does the outside air temperature sensor test OK?

   YES: Go to step 6.

   NO: Replace the outside air temperature sensor.

6. Disconnect climate control unit connector A (22P).
7. Check for continuity between the No. 12 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the outside air temperature sensor 2P connector.

   Is there continuity?

   YES: Go to step 8.

   NO: Repair open in the wire between the audio-HVAC display panel and the outside air temperature sensor.

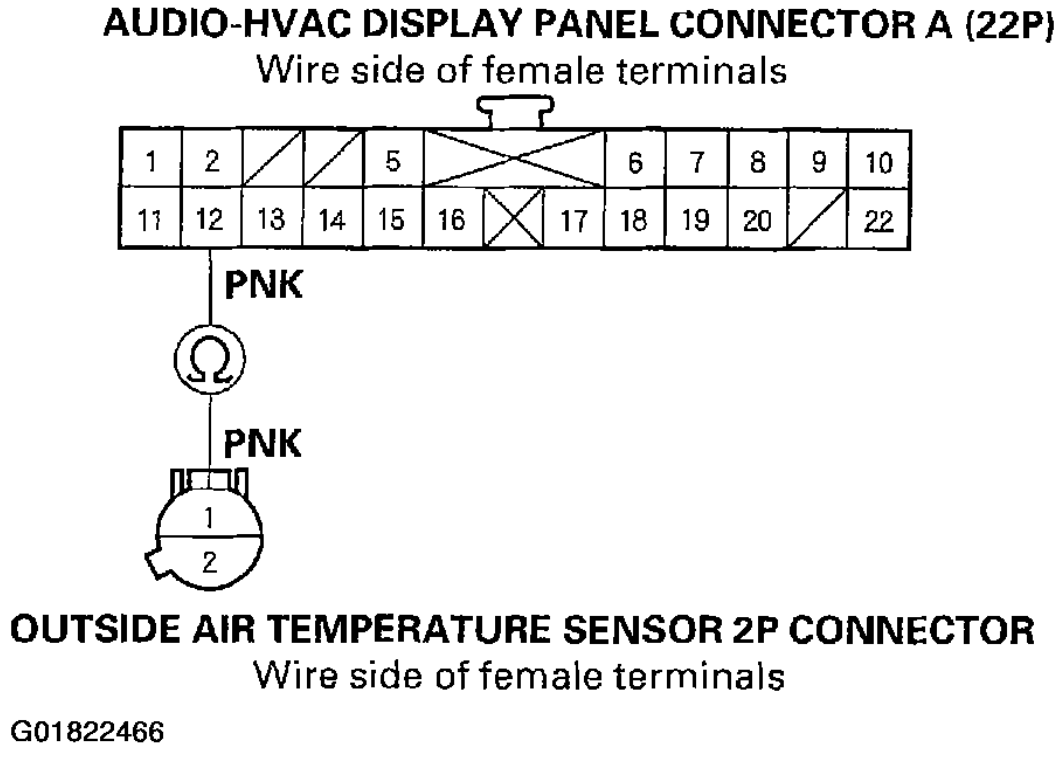


Fig. 38: Checking For Continuity Between The No. 12 Terminal Of Audio-HVAC Display

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Panel Connector A (22P) & The No. 1 Terminal Of The Outside Air Temperature Sensor 2P Connector

8. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the outside air temperature sensor 2P connector.

   Is there continuity?

   YES: Check for loose wires or poor connections at audio-HVAC display panel connector A (22P) and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

   NO: Repair open in the wire between the audio-HVAC display panel and the outside air temperature sensor.

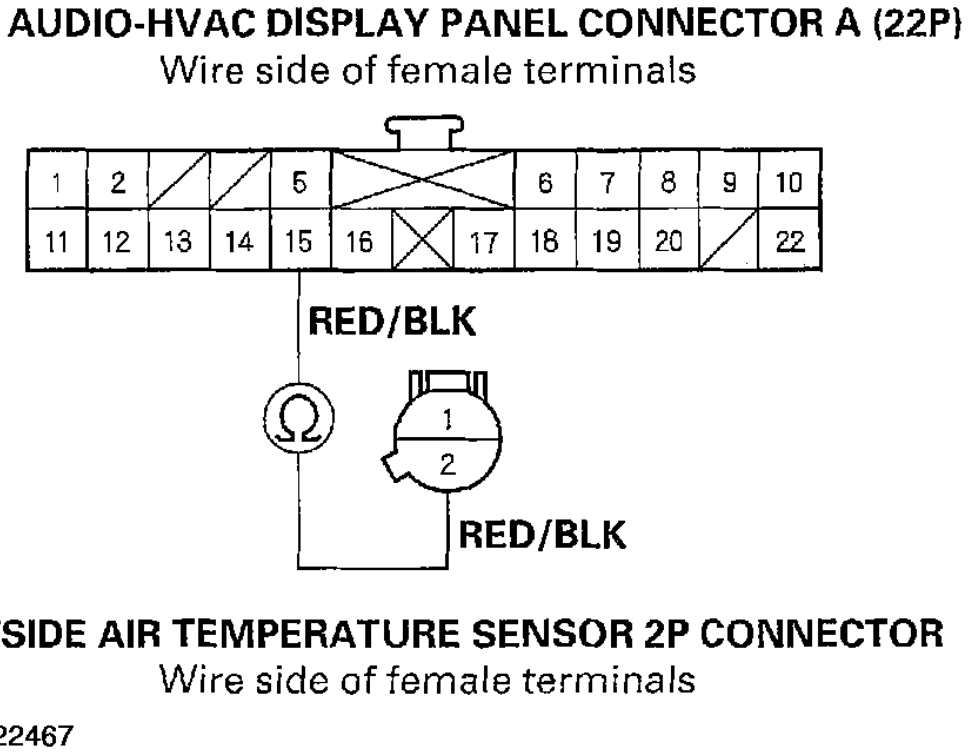


Fig. 39: Checking For Continuity Between The No. 15 Terminal Of Audio-HVAC Display Panel Connector A (22P) & The No. 2 Terminal Of The Outside Air Temperature Sensor 2P Connector

DTC INDICATOR D OR DTC 1228: A SHORT IN THE OUTSIDE AIR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC.

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2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC D or B1228 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Remove the outside air temperature sensor (see **OUTSIDE AIR TEMPERATURE SENSOR REPLACEMENT**).
6. Test the outside air temperature sensor (see **OUTSIDE AIR TEMPERATURE SENSOR TEST**).

   Is the resistance within the specifications shown on the graph?

   YES: Go to step 7.

   NO: Replace the outside air temperature sensor.
7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between the No. 12 terminal of audio-HVAC display panel connector A (22P) and body ground.

   Is there continuity?

   YES: Repair short to body ground in the wire between the audio-HVAC display panel and the outside air temperature sensor.

   NO: Substitute a known-good audio-HVAC display module, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

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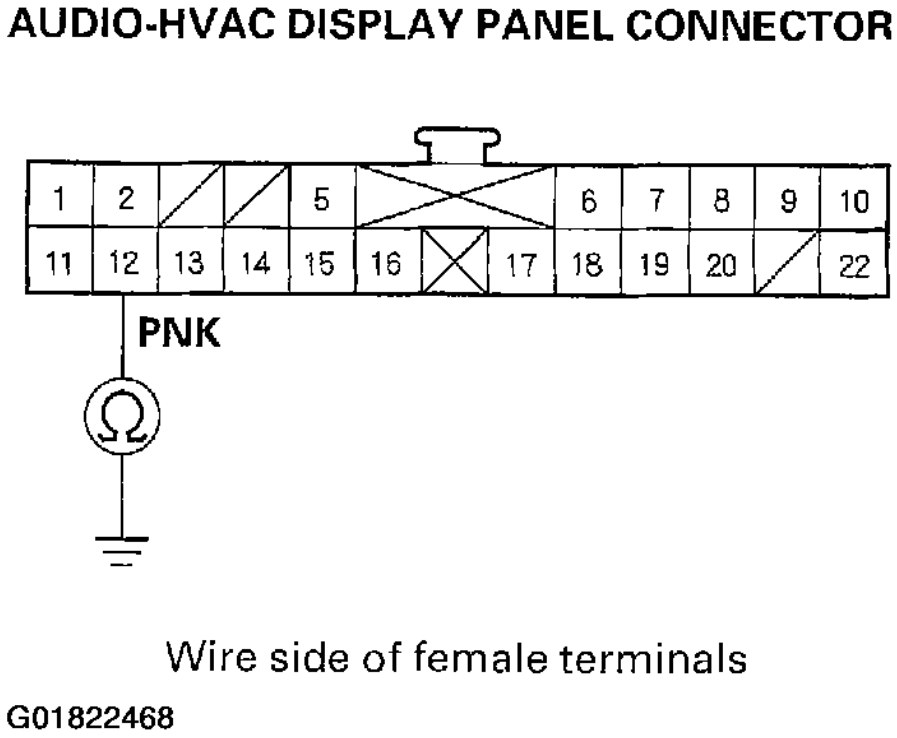


Fig. 40: Checking For Continuity Between The No. 12 Terminal Of Audio-HVAC Display Panel Connector A (22P) & Body Ground

DTC INDICATOR E OR DTC B1229: AN OPEN IN THE SUNLIGHT SENSOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC E or B1229 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, check for loose wires or poor connections on the sunlight sensor circuit.
5. Test the sunlight sensor (see **SUNLIGHT SENSOR TEST**).

   Is the sunlight sensor OK?

   YES: Go to step 6.

   NO: Replace the sunlight sensor.
6. Disconnect the sunlight sensor 2P connector.
7. Disconnect audio-HVAC display panel connector A (22P).

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8. Check for continuity between the No. 13 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the sunlight sensor 2P connector.

Is there continuity?

YES: Go to step 9.

NO: Repair open in the wire between the audio-HVAC display panel and the sunlight sensor.

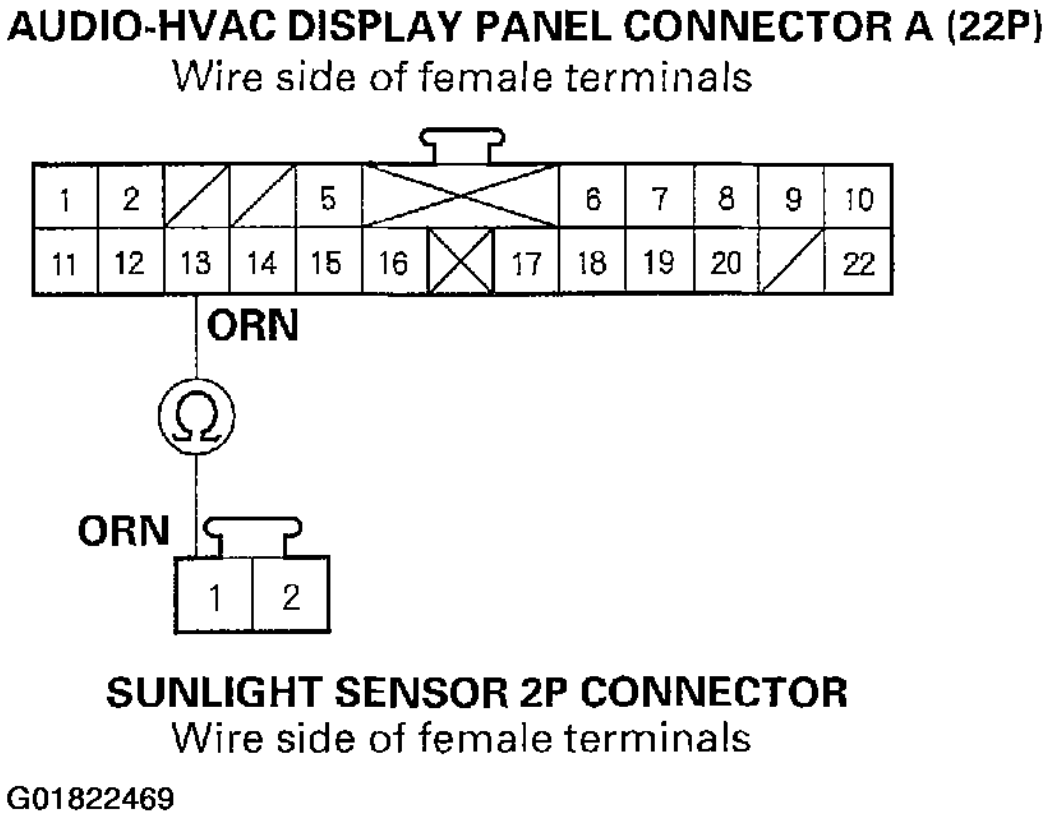


Fig. 41: Checking For Continuity Between The No. 13 Terminal Of Audio-HVAC Display Panel Connector A (22P) & The No. 1 Terminal Of The Sunlight Sensor 2P Connector

9. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the sunlight sensor 2P connector.

Is there continuity?

YES: Check for loose wires or poor connections at audio-HVAC display panel connector A (22P) and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Repair open in the wire between the audio-HVAC display panel and the sunlight sensor.

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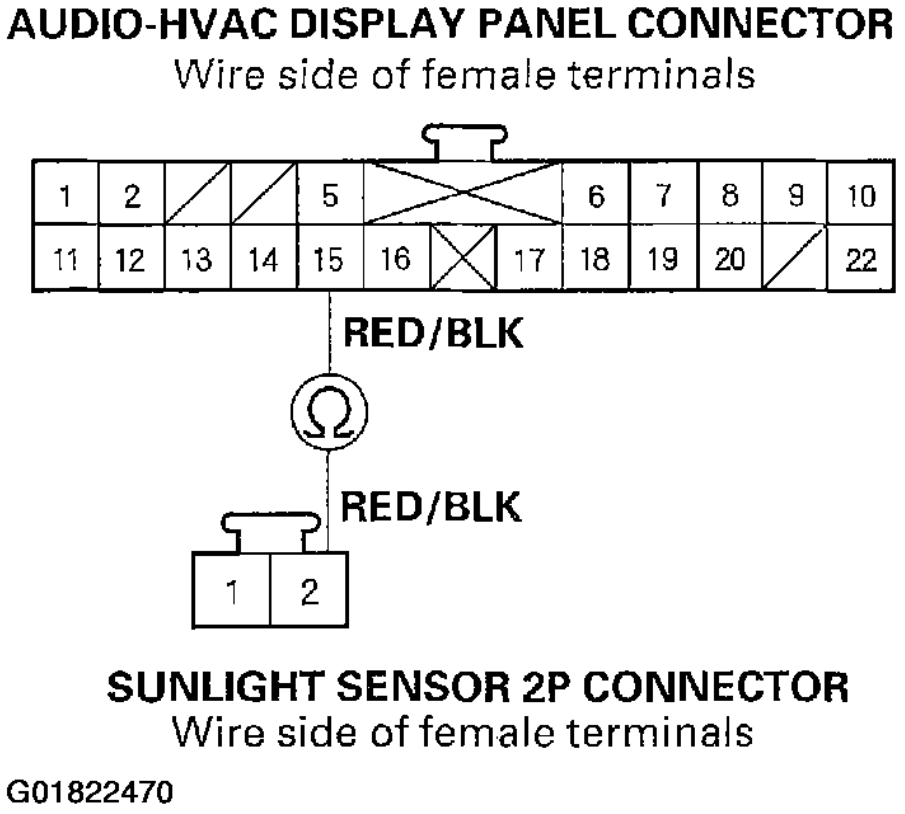


Fig. 42: Checking For Continuity Between The No. 15 Terminal Of Audio-HVAC Display Panel Connector A (22P) & The No. 2 Terminal Of The Sunlight Sensor 2P Connector

DTC INDICATOR F OR DTC B1230: A SHORT IN THE SUNLIGHT SENSOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC F or B1230 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Test the sunlight sensor (see **SUNLIGHT SENSOR TEST**).

   Is the sunlight sensor OK?

   YES: Go to step 6.

   NO: Replace the sunlight sensor.
6. Disconnect the sunlight sensor 2P connector.

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7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between the No. 13 terminal of audio-HVAC display panel connector A (22P) and body ground.

Is there continuity?

YES: Repair short to body ground in the wire between the audio-HVAC display panel and the sunlight sensor.

NO: Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

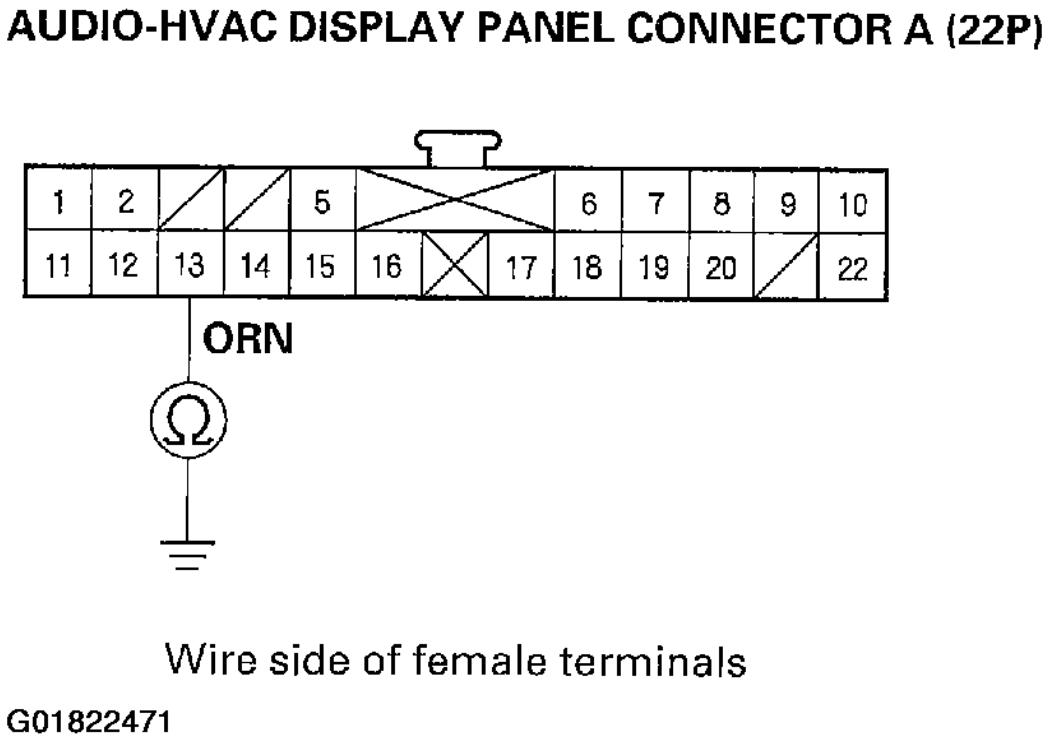


Fig. 43: Checking For Continuity Between The No. 13 Terminal Of Audio-HVAC Display Panel Connector A (22P) & Body Ground

DTC INDICATOR G OR DTC B1231: AN OPEN IN THE EVAPORATOR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

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Is DTC G or B1231 indicated?

YES: Go to step 5.

NO: Intermittent failure, check for loose wires or poor connections on the evaporator temperature sensor circuit.

5. Remove the evaporator temperature sensor (see **EVAPORATOR TEMPERATURE SENSOR TEST**) and test it (see **EVAPORATOR TEMPERATURE SENSOR REPLACEMENT**).

Does the evaporator temperature sensor test OK?

YES: Go to step 6.

NO: Replace the evaporator temperature sensor.

6. Disconnect audio-HVAC display panel connector A (22P).
7. Check for continuity between the No. 14 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

Is there continuity?

YES: Go to step 8.

NO: Repair open in the wire between the audio-HVAC display panel and the evaporator temperature sensor.

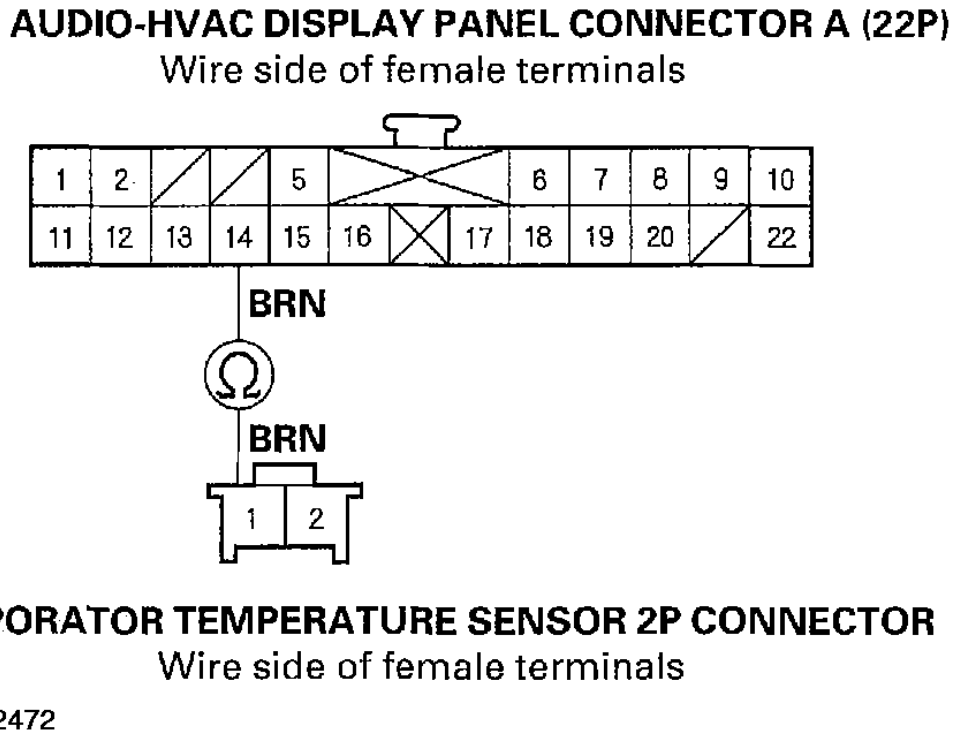


Fig. 44: Checking For Continuity Between The No. 14 Terminal Of Audio-HVAC Display Panel Connector A (22P) & The No. 1 Terminal Of The Evaporator Temperature Sensor 2P

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Connector

8. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

   Is there continuity?

   YES: Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

   NO: Repair open in the wire between the audio-HVAC display panel and the evaporator temperature sensor.

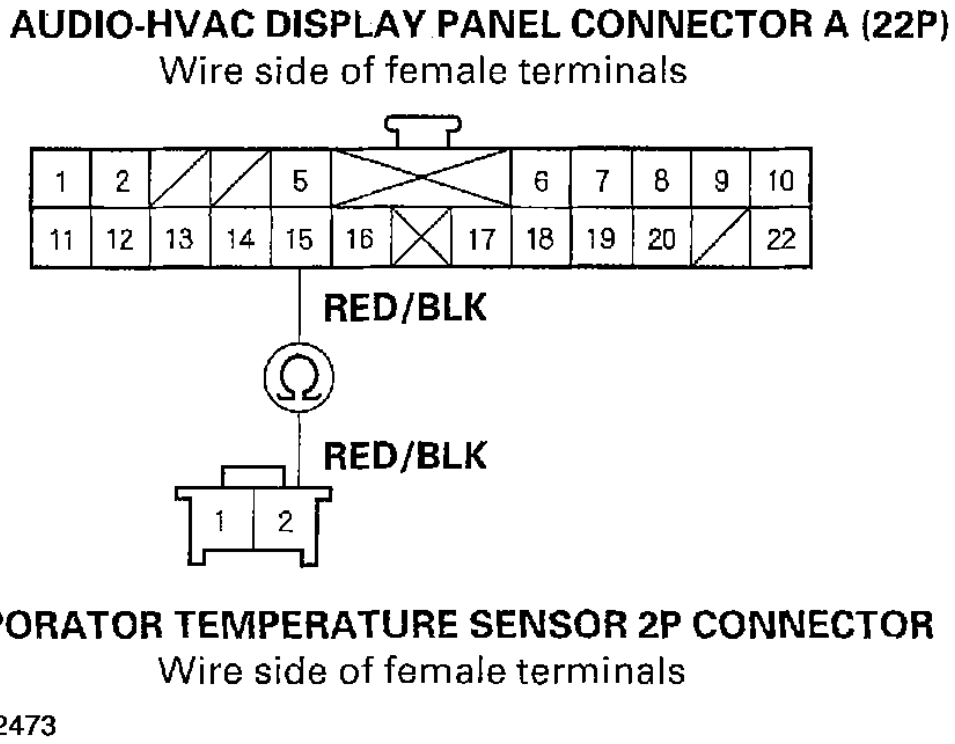


Fig. 45: Checking For Continuity Between The No. 15 Terminal Of Audio-HVAC Display Panel Connector A (22P) & The No. 2 Terminal Of The Evaporator Temperature Sensor 2P Connector

DTC INDICATOR H OR DTC B1232: A SHORT IN THE EVAPORATOR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.

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3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC H or B1232 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Disconnect the evaporator temperature sensor 2P connector.
6. Test the evaporator temperature sensor (see **EVAPORATOR TEMPERATURE SENSOR TEST**).

   Is the resistance within the specifications shown on the graph?

   YES: Go to step 7.

   NO: Replace the evaporator temperature sensor.
7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between the No. 14 terminal of audio-HVAC display panel connector A (22P) and body ground.

   Is there continuity?

   YES: Repair short to body ground in the wire between the audio-HVAC display panel and the evaporator temperature sensor.

   NO: Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

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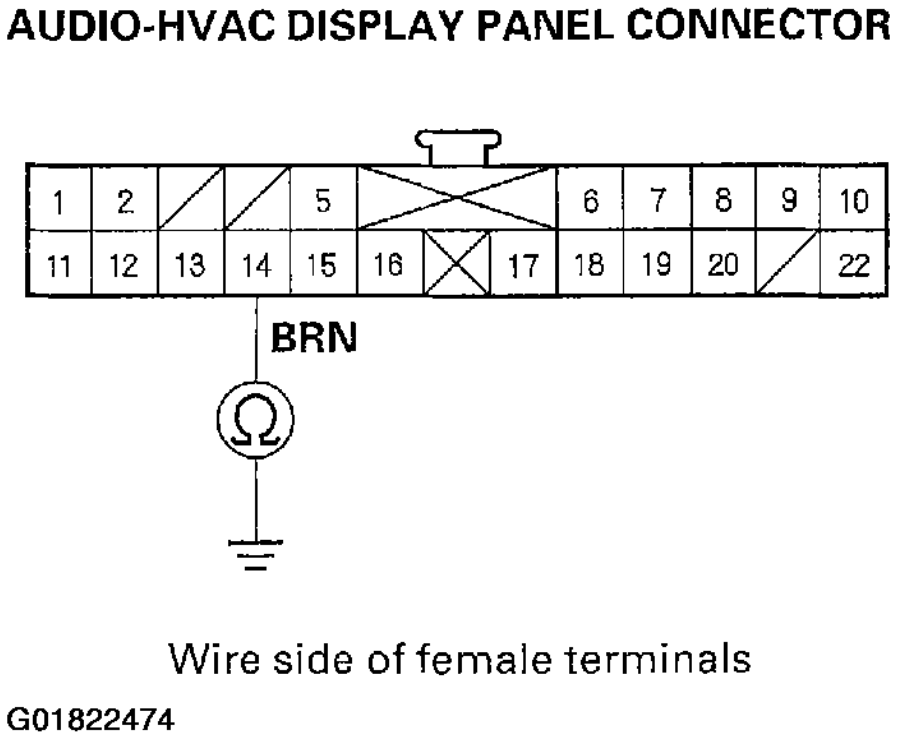


Fig. 46: Checking For Continuity Between The No. 14 Terminal Of Audio-HVAC Display Panel Connector A (22P) & Body Ground

DTC INDICATOR I OR DTC B1233: AN OPEN IN THE DRIVER'S AIR MIX CONTROL MOTOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC I or B1233 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, check for loose wires or poor connections on the driver's air mix control motor circuit.
5. Test the driver's air mix control motor (see **DRIVER'S AIR MIX CONTROL MOTOR TEST**).

   Is driver's air mix control motor OK?

   YES: Go to step 6.

   NO: Replace the driver's air mix control motor.
6. Disconnect the driver's air mix control motor 7P connector.

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7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between following terminals of audio-HVAC display panel connector A (22P) and the driver's air mix control motor 7P connector.

Is there continuity?

YES: Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the driver's air mix control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Repair any open in the wire(s) between the audio-HVAC display panel and the driver's air mix control motor.

CONNECTOR CONTINUITY TESTING

Audio-HVAC Display Panel Connector A (22P) Terminal No.	Driver's Air Mix Control Motor 7P Con Termin
1	
8	
9	
15	
20	

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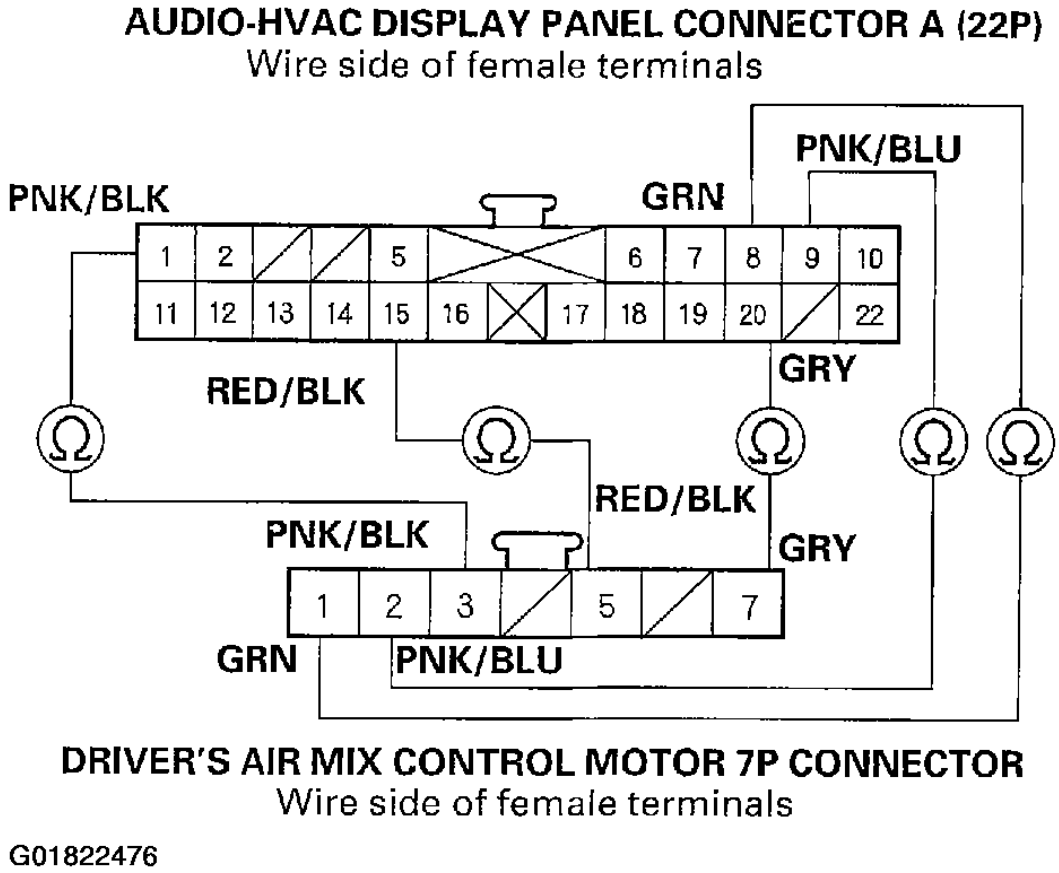


Fig. 47: Checking For Continuity Between Terminals Of Audio-HVAC Display Panel Connector A (22P) & The Driver's Air Mix Control Motor 7P Connector

DTC INDICATOR J OR DTC B1234: A SHORT IN THE DRIVER'S AIR MIX CONTROL MOTOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC J or B1234 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Test the driver's air mix control motor (see **DRIVER'S AIR MIX CONTROL MOTOR TEST**).

   Is the driver's air mix control motor OK?

   YES: Go to step 6.

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NO: Replace the driver's air mix control motor.

6. Disconnect the driver's air mix control motor 7P connector.
7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between body ground and audio-HVAC display panel connector A (22P) terminals No. 1, 8, 9, 15 and 20 individually.

Is there continuity?

YES: Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the driver's air mix control motor.

NO: Go to step 9.

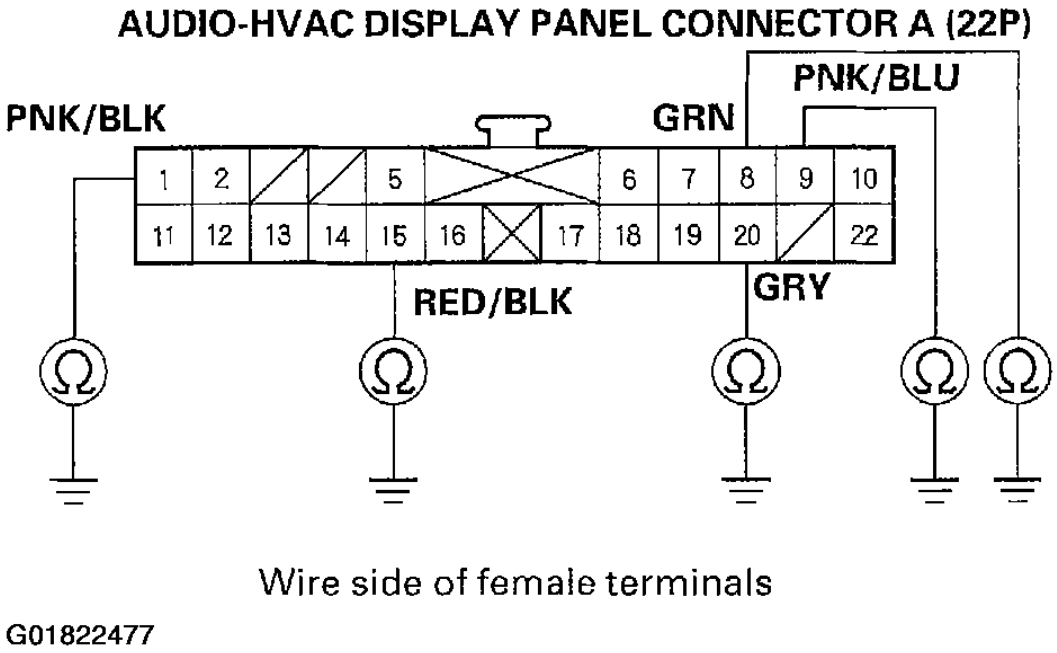


Fig. 48: Checking For Continuity Between Body Ground & Audio-HVAC Display Panel Connector A (22P) Terminals No. 1, 8, 9, 15 & 20

9. Turn the ignition switch ON (II), and check the same terminals for voltage.

Is there any voltage?

YES: Repair any short to power in the wire(s) between the audio-HVAC display panel and the driver's air mix control motor. This short also damages the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel.

NO: Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

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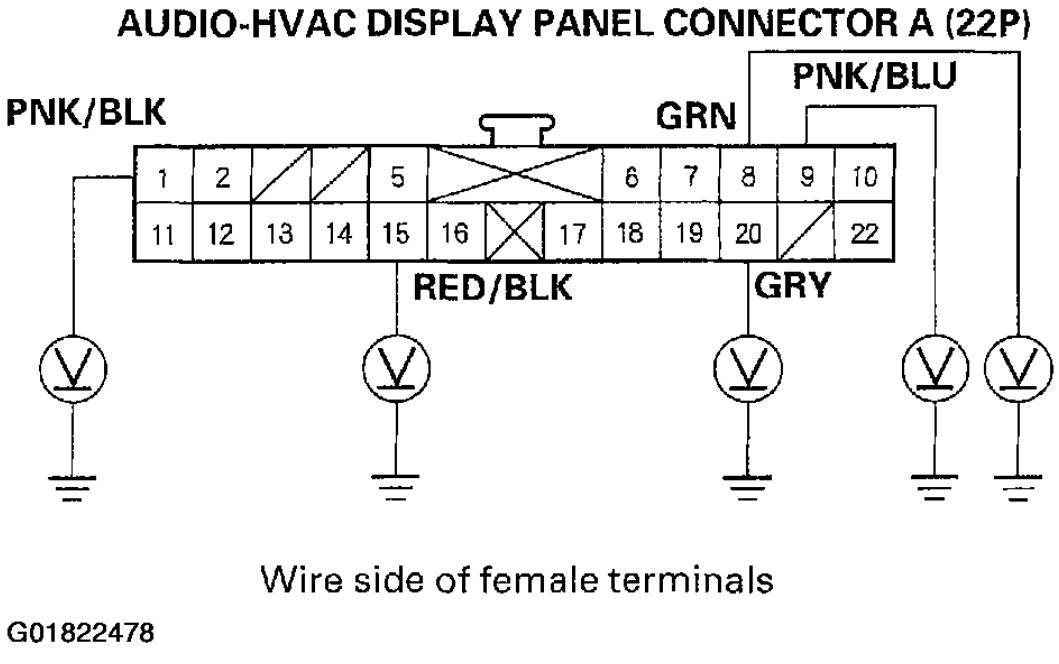


Fig. 49: Checking For Voltage Between Body Ground & Audio-HVAC Display Panel Connector A (22P) Terminals No. 1, 8, 9, 15 & 20

DTC INDICATOR K OR DTC B1235: A PROBLEM IN THE DRIVER'S AIR MIX CONTROL LINKAGE, DOOR, OR MOTOR

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC K or B1235 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Test the driver's air mix control motor (see **DRIVER'S AIR MIX CONTROL MOTOR TEST**).

   Is the driver's air mix control motor OK?

   YES: Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

   NO: Replace the driver's air mix control motor, or repair the driver's air mix control linkage or door.

DTC INDICATOR L OR DTC B1239: A SHORT OR OPEN IN THE MODE CONTROL MOTOR CIRCUIT

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1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC L or B1239 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, check for loose wires or poor connections on the mode control motor circuit.
5. Test the mode control motor (see **MODE CONTROL MOTOR TEST**).

   Is the mode control motor OK?

   YES: Go to step 6.

   NO: Replace the mode control motor.
6. Disconnect the mode control motor 7P connector.
7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between body ground and audio-HVAC display panel connector A (22P) terminals No. 6, 7, 15, 16, 17, 18 and 19 individually.

   Is there continuity?

   YES: Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the mode control motor.

   NO: Go to step 9.

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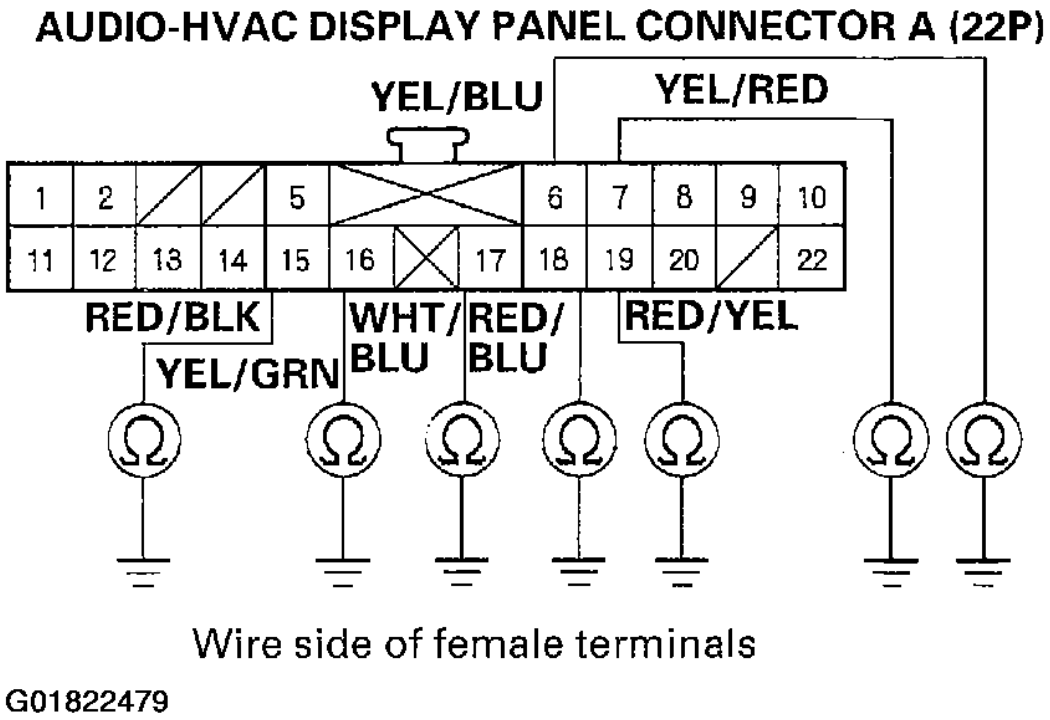


Fig. 50: Checking For Continuity Between Body Ground & Audio-HVAC Display Panel Connector A (22P) Terminals No. 6, 7, 15, 16, 17, 18 & 19

9. Turn the ignition switch ON (II), and check the same terminals for voltage.

   Is there any voltage?

   YES: Repair any short to power in the wire(s) between the audio-HVAC display panel and the mode control motor. This short may also damage the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel.

   NO: Go to step 10.

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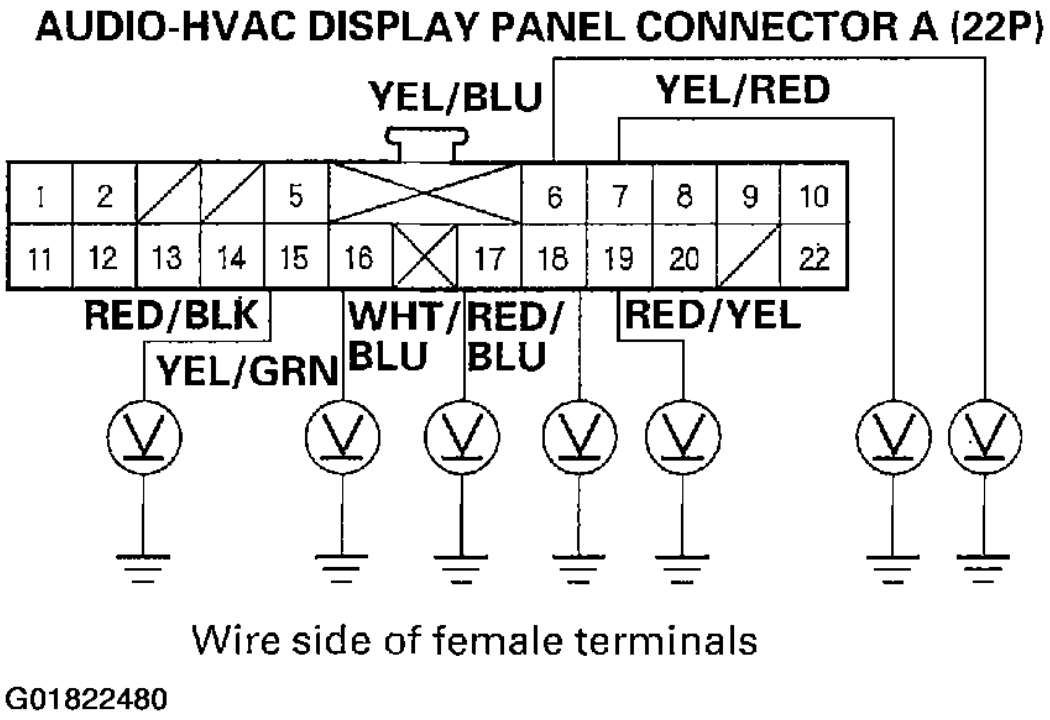


Fig. 51: Checking For Voltage Between Body Ground & Audio-HVAC Display Panel Connector A (22P) Terminals No. 6, 7, 15, 16, 17, 18 & 19

10. Turn the ignition switch OFF, and check for continuity between following terminals of audio-HVAC display panel connector A (22P) and the mode control motor 7P connector.

Is there continuity?

YES: Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the mode control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Repair any open in the wire(s) between the audio-HVAC display panel and the mode control motor.

CONNECTOR CONTINUITY TESTING

Audio-HVAC Display Panel Connector A (22P) Terminal No.	Driver's Air Mix Control Motor 7P Con Termin
6	
7	
15	
16	
17	

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18	
19	

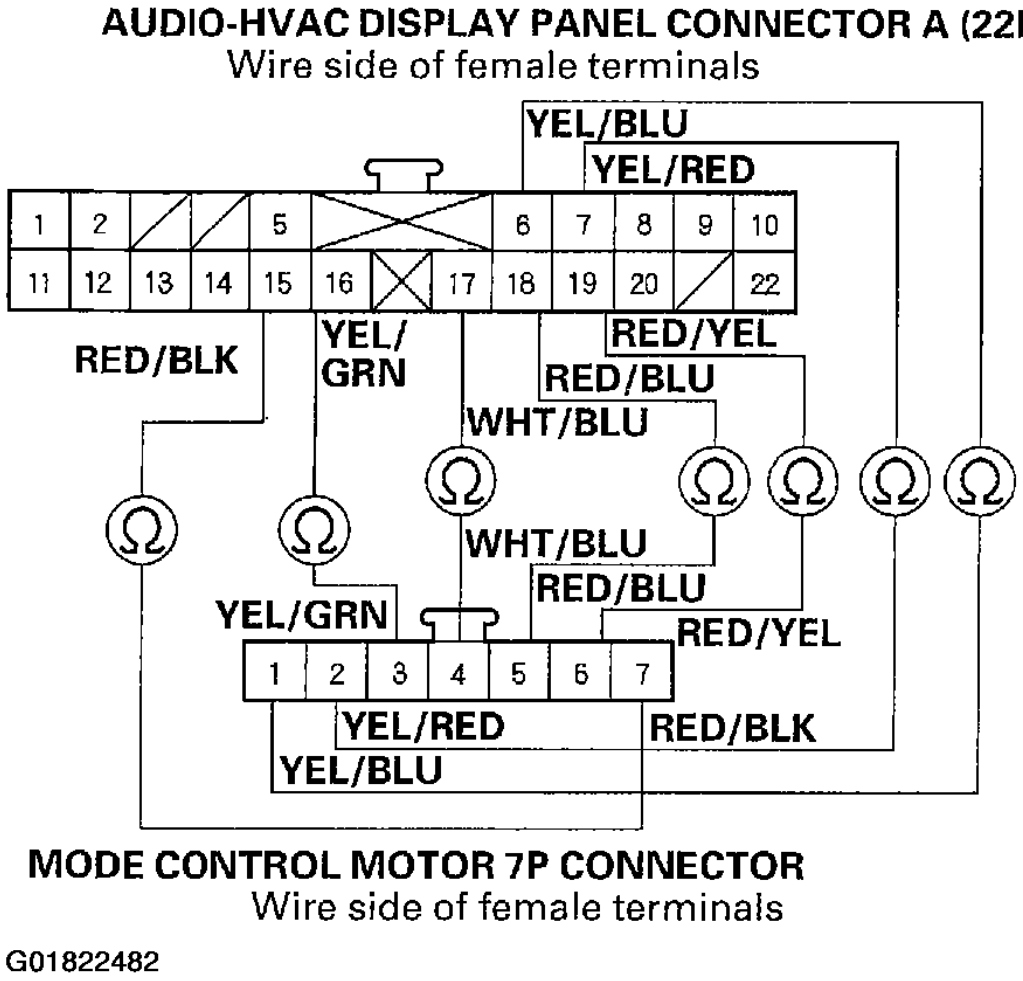


Fig. 52: Checking For Continuity Between Terminals Of Audio-HVAC Display Panel Connector A (22P) & The Mode Control Motor 7P Connector

DTC INDICATOR M OR DTC B1240: A PROBLEM IN THE MODE CONTROL LINKAGE, DOORS, OR MOTOR

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

Is DTC M or B1240 indicated?

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YES: Go to step 5.

NO: Intermittent failure.

5. Test the mode control motor (see **MODE CONTROL MOTOR TEST**).

Is the mode control motor and linkage OK?

YES: Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Replace the mode control motor, or repair the mode control linkage or doors.

DTC INDICATOR N OR DTC B1241: A PROBLEM IN THE BLOWER MOTOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

Is DTC N or B1241 indicated?

YES: Go to step 5.

NO: Intermittent failure, check for loose wires or poor connections on the blower motor circuit.

5. Check the No. 21 (40A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5A) fuse in the under-dash fuse/relay box.

Are the fuses OK?

YES: Go to step 6.

NO: Replace the fuse(s), and recheck.

6. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

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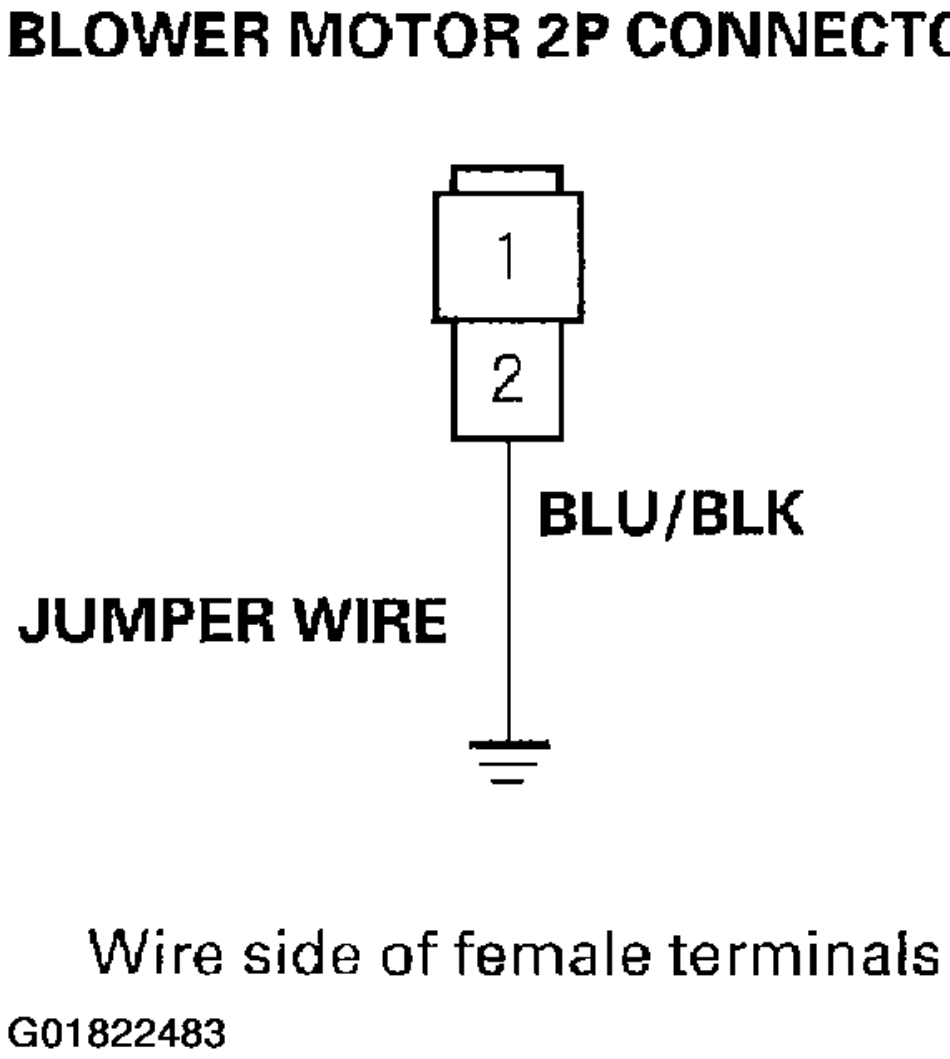


Fig. 53: Connecting The No. 2 Terminal Of The Blower Motor 2P Connector To Body Ground With A Jumper Wire

7. Turn the ignition switch ON (II).
   Does the blower motor run?
   YES: Go to step 8.
   NO: Go to step 22 .
8. Turn the ignition switch OFF.
9. Disconnect the jumper wire.
10. Disconnect the power transistor 4P connector.

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11. Check for continuity between the No. 2 terminal of the power transistor 4P connector and body ground.

Is there continuity?

YES: Go to step 12.

NO: Check for an open in the BLK wire between the power transistor and body ground. If the wire is OK, check for poor ground at G503.

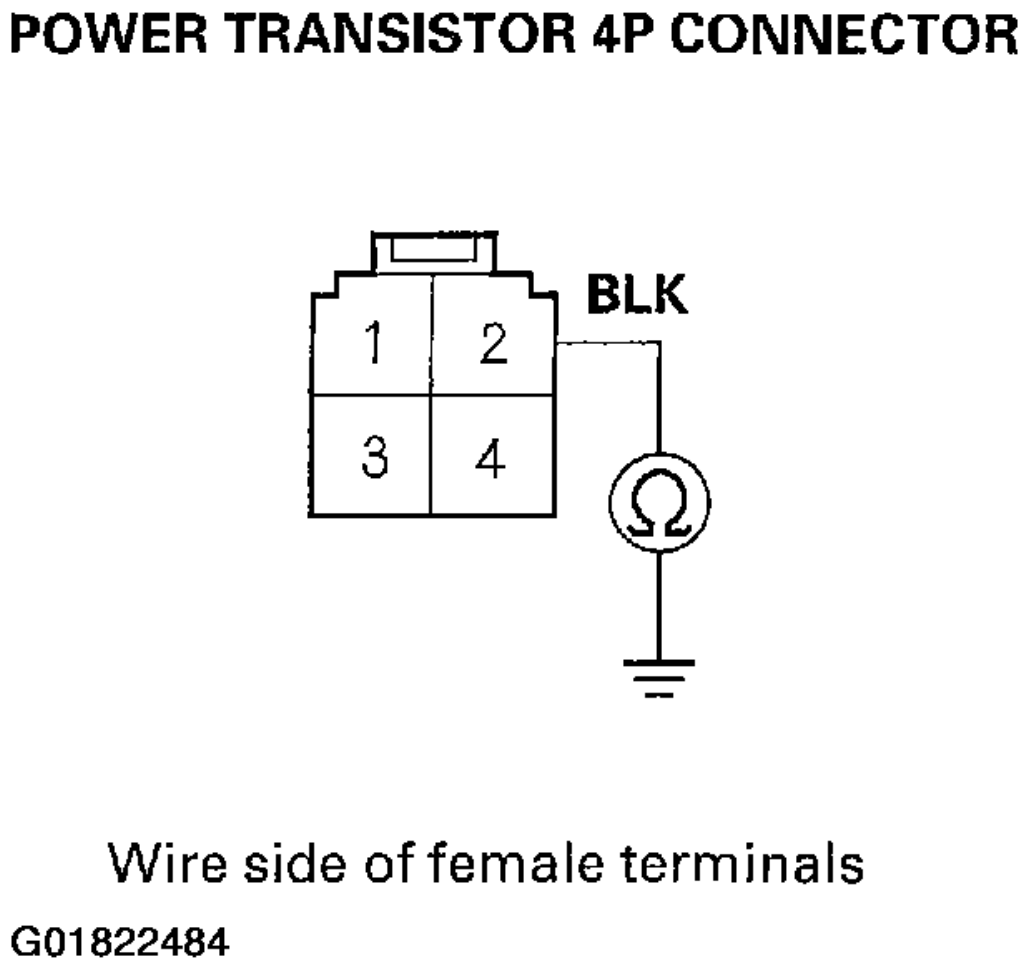


Fig. 54: Checking For Continuity Between The No. 2 Terminal Of The Power Transistor 4P Connector & Body Ground

12. Connect the No. 2 and No. 4 terminals of the power transistor 4P connector with a jumper wire.

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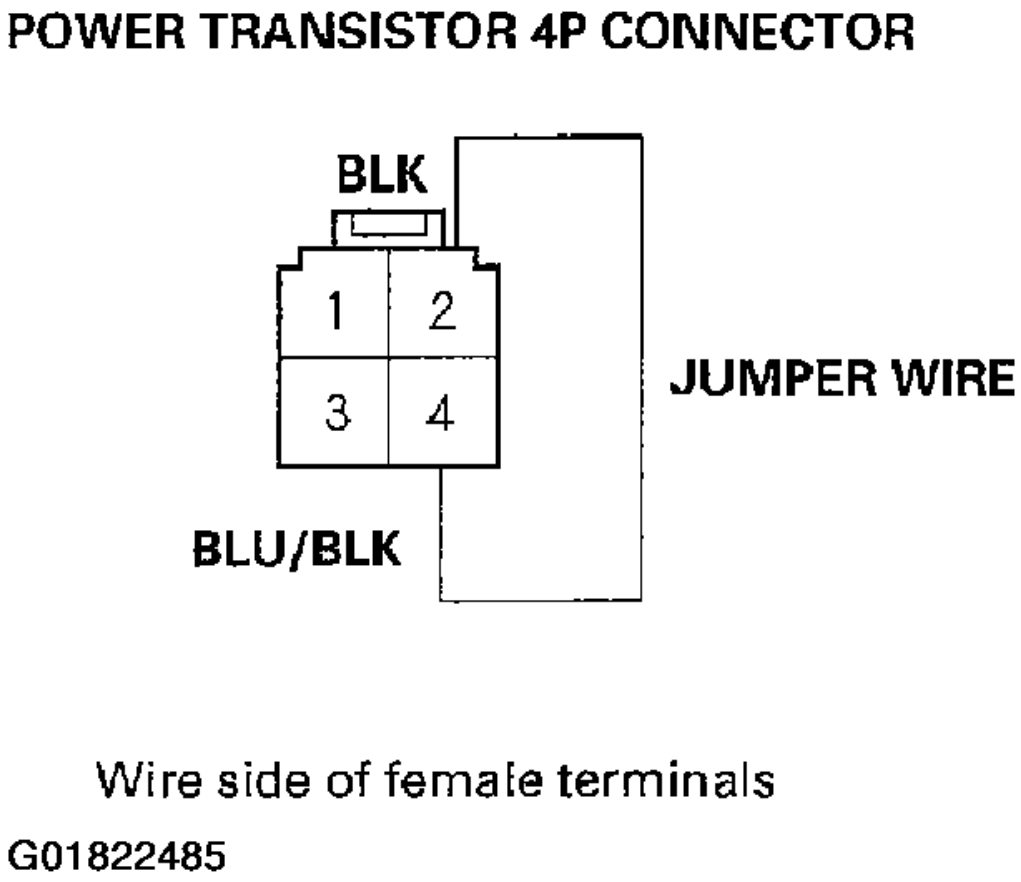


Fig. 55: Connecting The No. 2 & No. 4 Terminals Of The Power Transistor 4P Connector With A Jumper Wire

13. Turn the ignition switch ON (II).

    Does the blower motor run at high speed?

    YES: Go to step 14.

    NO: Repair open in the BLU/BLK wire between the power transistor and the blower motor.
14. Turn the ignition switch OFF.
15. Disconnect the jumper wire.
16. Disconnect climate control unit connector B (16P).
17. Check for continuity between the No. 1 and No. 2 terminals of audio-HVAC display panel connector B (16P) and body ground individually.

    Is there continuity?

    YES: Repair any short to body ground in the wire(s) between the audio-HVAC display panel

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and the power transistor.

NO: Go to step 18.

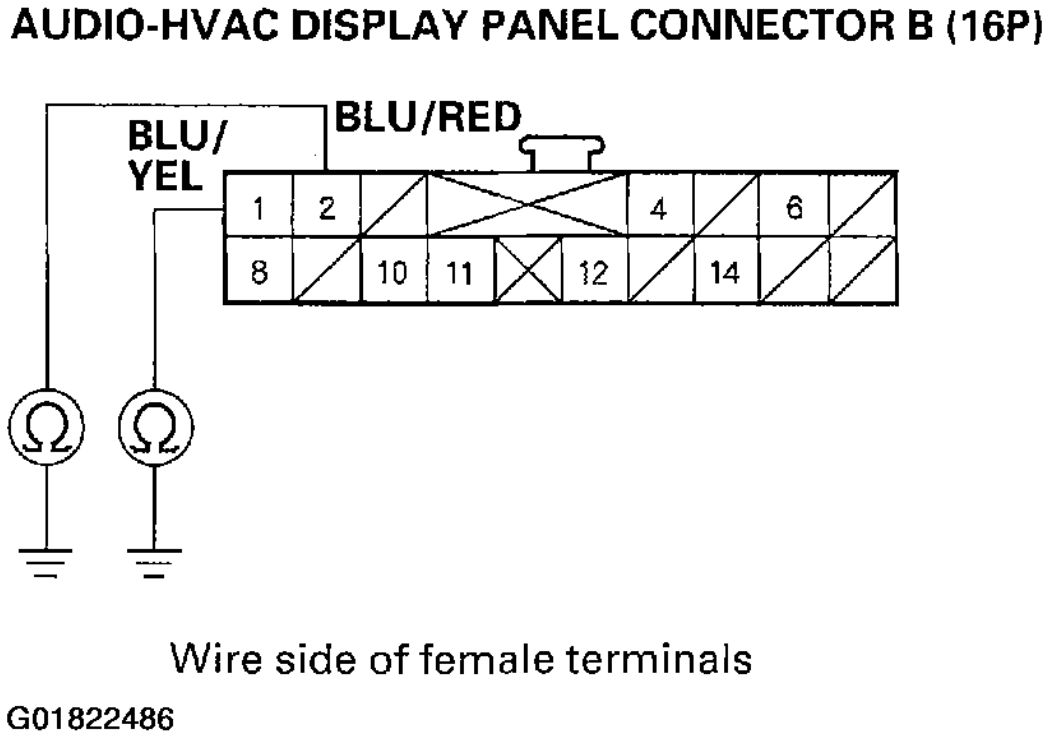


Fig. 56: Checking For Continuity Between The No. 1 And No. 2 Terminals Of Audio-HVAC Display Panel Connector B (16P) & Body Ground

18. Check for continuity between the following terminals of audio-HVAC display panel connector B (16P) and power transistor 4P connector.

Is there continuity?

YES: Go to step 19.

NO: Repair any open in the wire(s) between the audio-HVAC display panel and the power transistor.

CONNECTOR CONTINUITY TESTING

Audio-HVAC Display Panel Connector B (16P) Terminal No.	Power Transistor 4P Connector Ter
1	
2	

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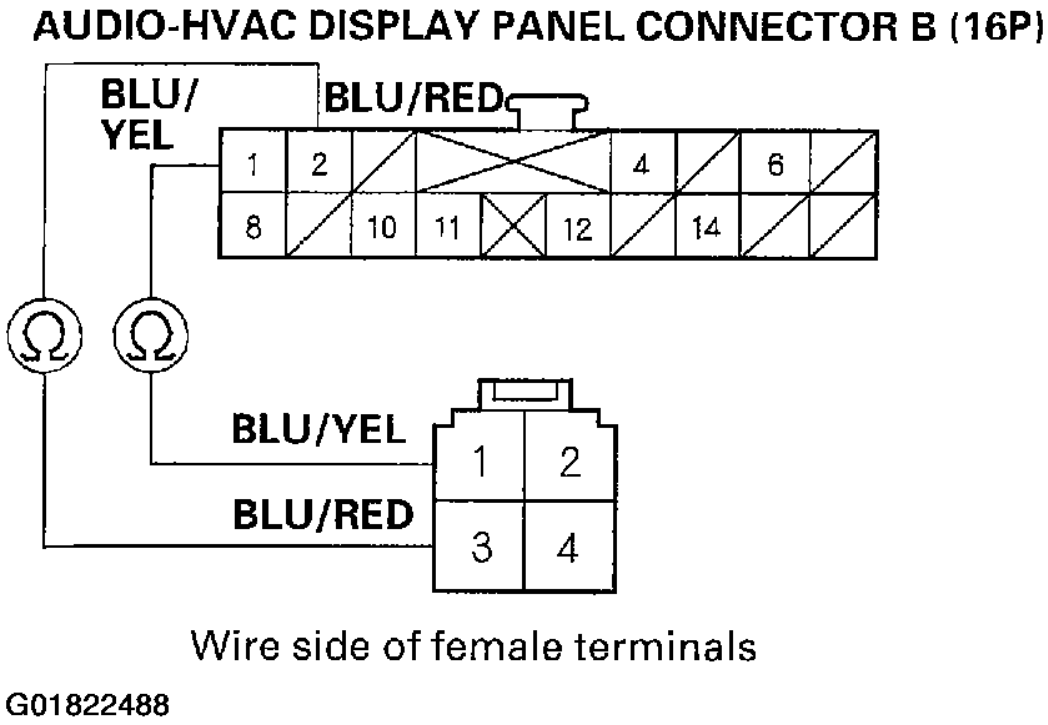


Fig. 57: Checking For Continuity Between The Terminals Of Audio-HVAC Display Panel Connector B (16P) & Power Transistor 4P Connector

19. Reconnect audio-HVAC display panel connector B (16P).
20. Test the power transistor (see **POWER TRANSISTOR TEST**).

    Is the power transistor OK?

    YES: Check for loose wire or poor connections at audio-HVAC display panel connector B (16P) and at the power transistor 4P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

    NO: Replace the power transistor.
21. Disconnect the jumper wire.
22. Disconnect the blower motor 2P connector.
23. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

    Is there battery voltage?

    YES: Replace the blower motor.

    NO: Go to step 25 .

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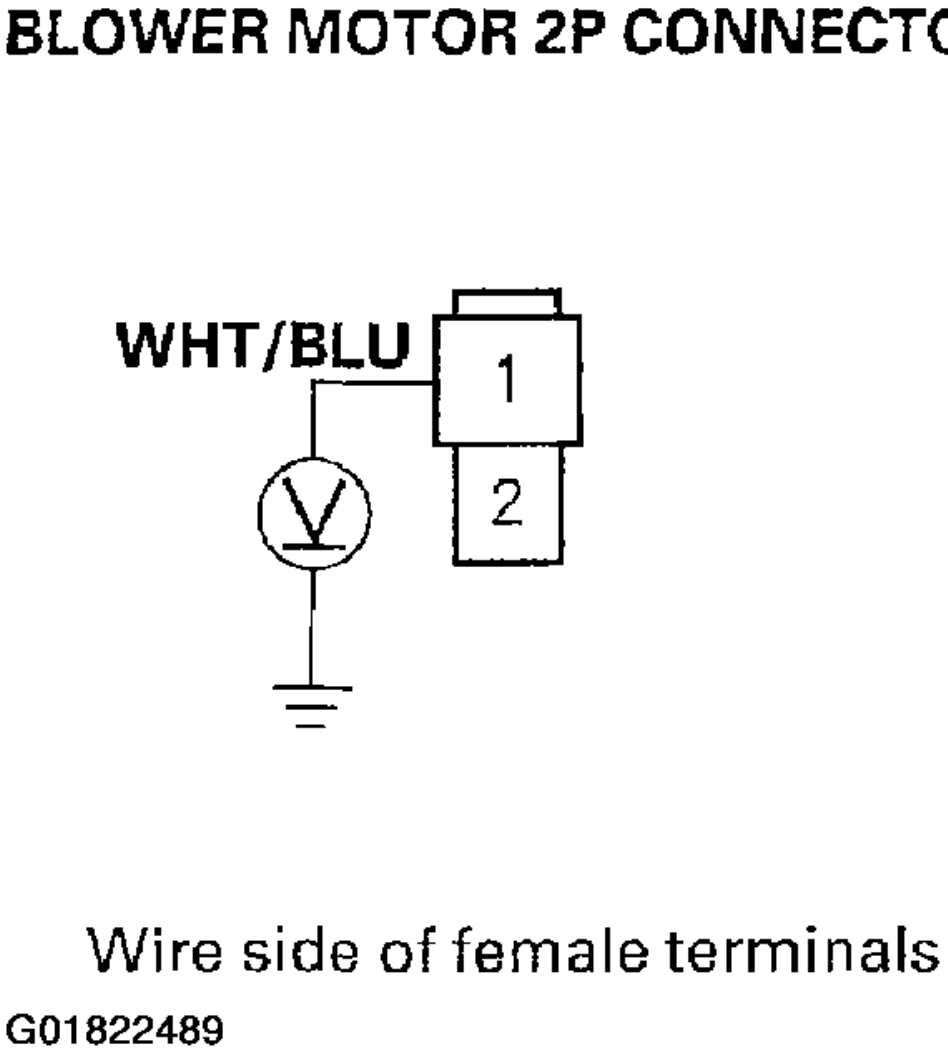


Fig. 58: Measuring The Voltage Between The No. 1 Terminal Of The Blower Motor 2P Connector & Body Ground

24. Turn the ignition switch OFF.
25. Remove the blower motor relay from the underhood fuse/relay box, and test it (see **POWER RELAY TEST**).

    Is the relay OK?

    YES: Go to step 27 .

    NO: Replace the blower motor relay.
26. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

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Is there battery voltage?

YES: Go to step 28 .

NO: Replace the under-hood fuse/relay box.

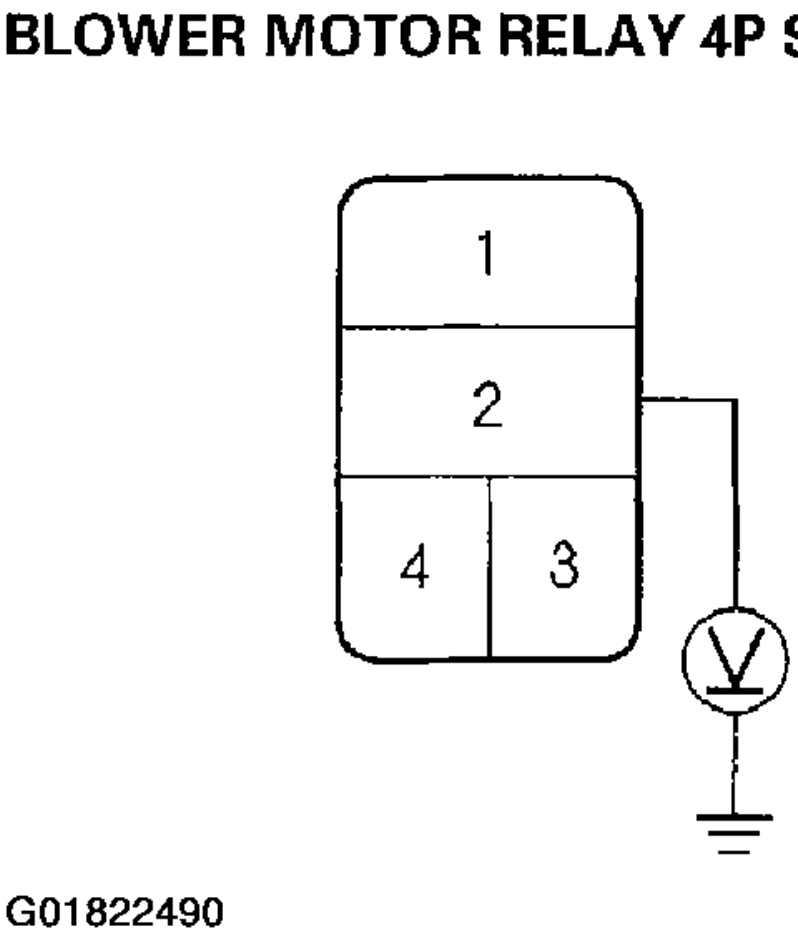


Fig. 59: Measuring The Voltage Between The No. 2 Terminal Of The Blower Motor Relay 4P Socket & Body Ground

27. Turn the ignition switch ON (II).
28. Measure the voltage between the No. 4 terminal of the blower motor relay 4P socket and body ground.

Is there battery voltage?

YES: Go to step 30 .

NO: Repair open in the wire between the No. 30 fuse in the driver's under-dash fuse/relay box and the blower motor relay.

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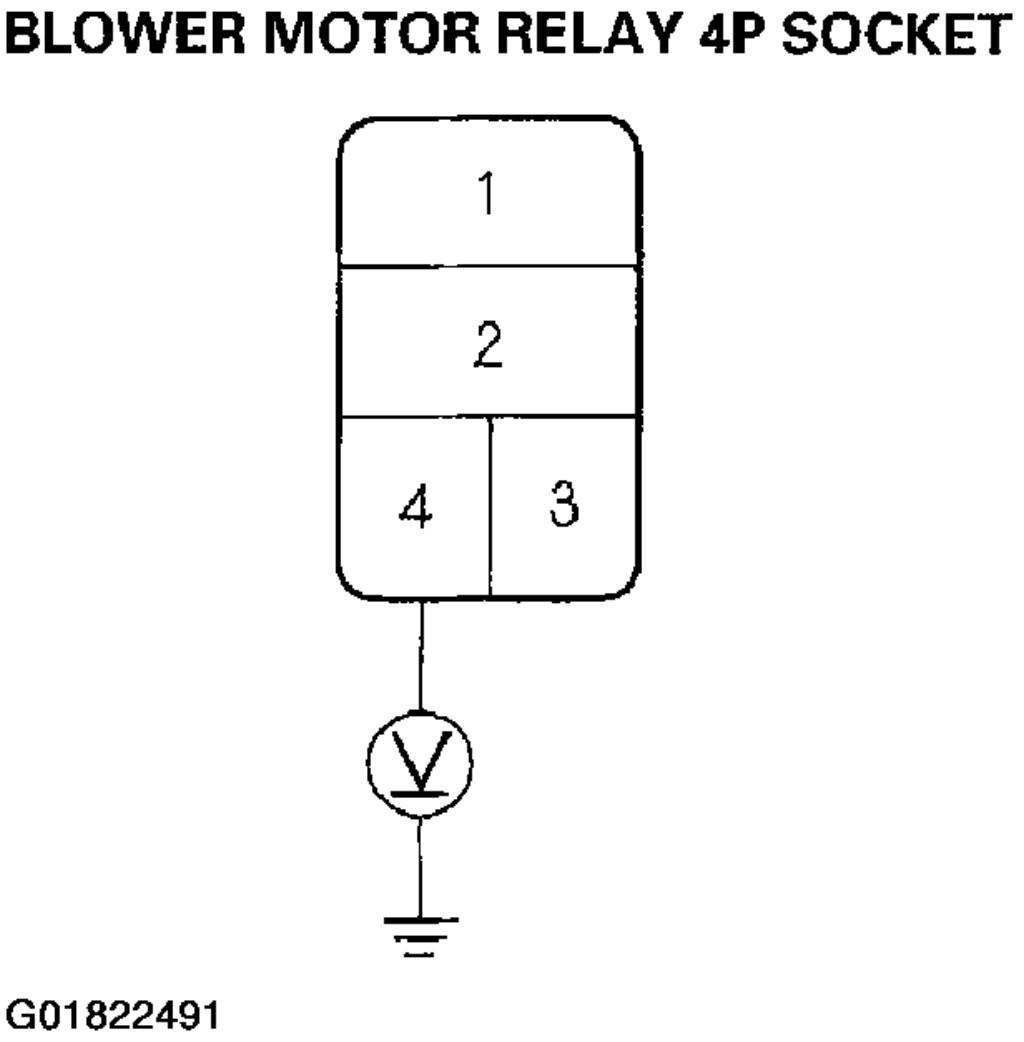


Fig. 60: Measuring The Voltage Between The No. 4 Terminal Of The Blower Motor Relay 4P Socket & Body Ground

29. Turn the ignition switch OFF.
30. Check for continuity between the No. 3 terminal of the blower motor relay 4P socket and body ground.

Is there continuity?

YES: Repair open in the WHT/BLU wire between the blower motor relay and the blower motor.

NO: Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G302.

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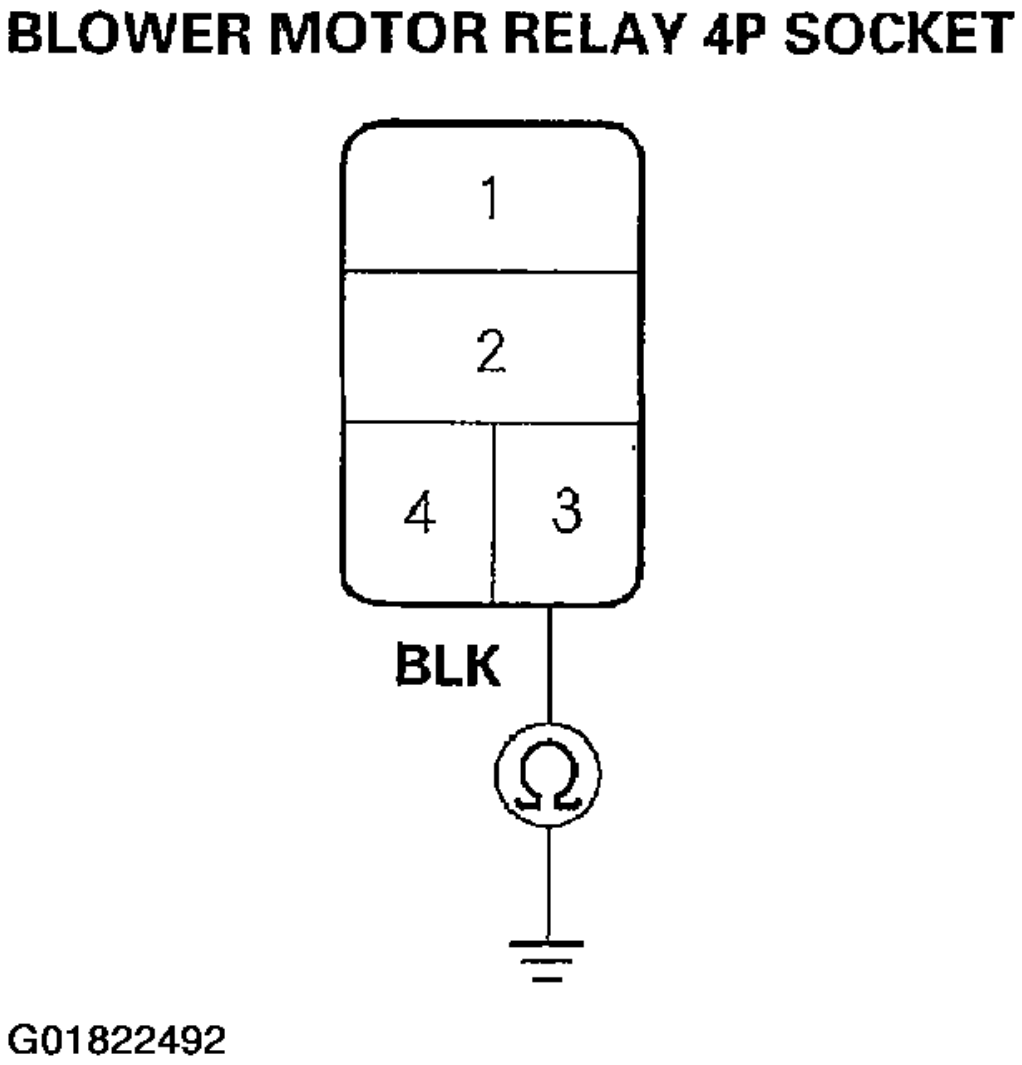


Fig. 61: Checking For Continuity Between The No. 3 Terminal Of The Blower Motor Relay 4P Socket & Body Ground

DTC INDICATOR O OR DTC B1236: AN OPEN IN THE PASSENGER'S AIR MIX CONTROL MOTOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

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Is DTC O or B1236 indicated?

YES: Go to step 5.

NO: Intermittent failure, check for loose wires or poor connections on the passenger's air mix control motor circuit.

5. Test the passenger's air mix control motor (see **PASSENGER'S AIR MIX CONTROL MOTOR TEST**).

Is the passenger's air mix control motor OK?

YES: Go to step 6.

NO: Replace the passenger's air mix control motor.

6. Disconnect the passenger's air mix control motor 7P connector.
7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between following terminals of audio-HVAC display panel connector A (22P) and the passenger's air mix control motor 7P connector.

Is there continuity?

YES: Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the passenger's air mix control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Repair any open in the wire(s) between the audio-HVAC display panel and the passenger's air mix control motor.

CONNECTOR CONTINUITY TESTING

Audio-HVAC Display Panel Connector A (22P) Terminal No.	Driver's Air Mix Control Motor 7P Con Termin
2	
10	
15	
20	
22	

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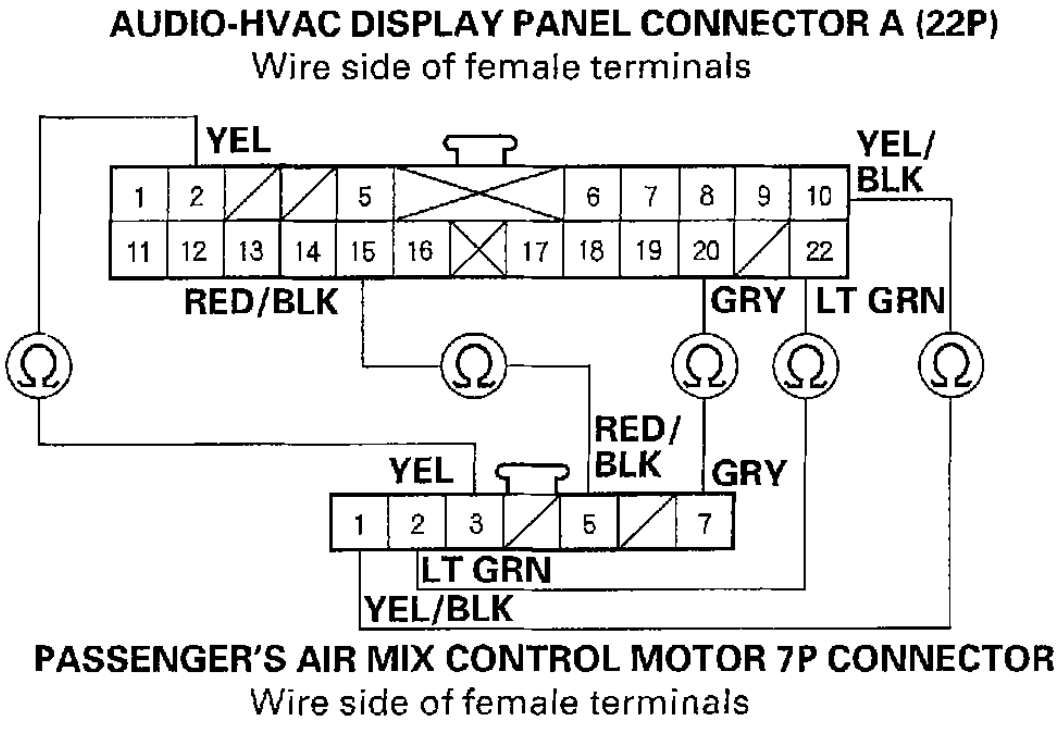


Fig. 62: Checking For Continuity Between Terminals Of Audio-HVAC Display Panel Connector A (22P) & The Passenger's Air Mix Control Motor 7P Connector

DTC INDICATOR P OR DTC B1237: A SHORT IN THE PASSENGER'S AIR MIX CONTROL MOTOR CIRCUIT

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC P or B1237 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Test the passenger's air mix control motor (see **PASSENGER'S AIR MIX CONTROL MOTOR TEST**).

   Is the passenger's air mix control motor OK?

   YES: Go to step 6.

   NO: Replace the passenger's air mix control motor.
6. Disconnect the passenger's air mix control motor 7P connector.

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7. Disconnect audio-HVAC display panel connector A (22P).
8. Check for continuity between body ground and audio-HVAC display panel connector A (22P) terminals No. 2, 10, 15, 20 and 22 individually.

Is there continuity?

YES: Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the passenger's air mix control motor.

NO: Go to step 9.

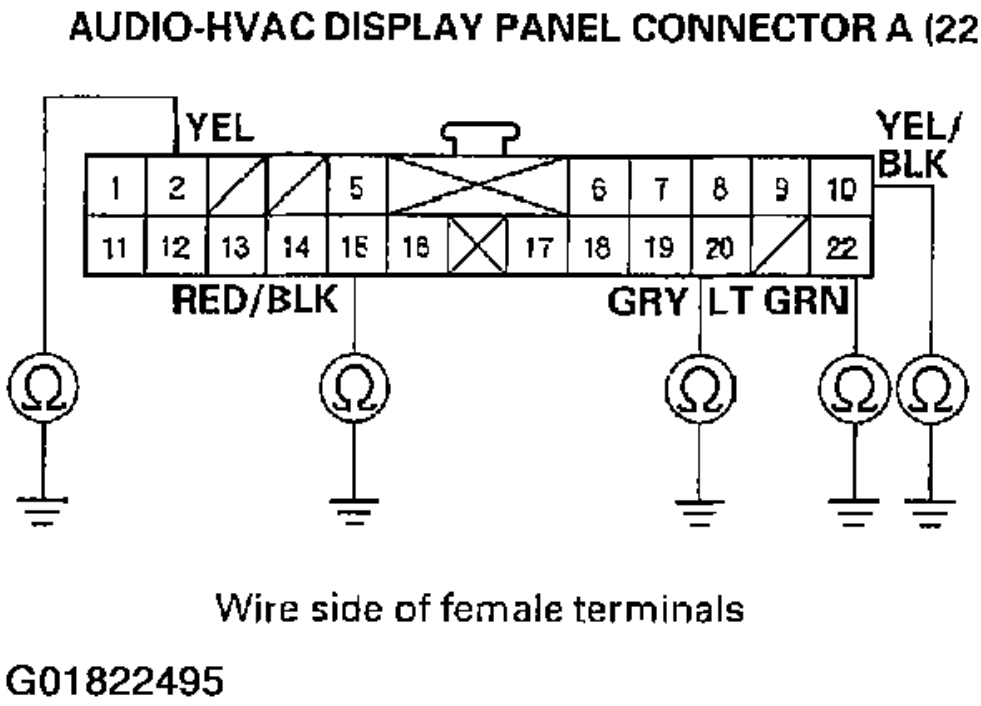


Fig. 63: Checking For Continuity Between Body Ground & Audio-HVAC Display Panel Connector A (22P) Terminals No. 2, 10, 15, 20 & 22

9. Turn the ignition switch ON (II), and check the same terminals for voltage.

Is there any voltage?

YES: Repair any short to power in the wire(s) between the audio-HVAC display panel and the passenger's air mix control motor. This short also may damage the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel.

NO: Check for loose wire or poor connection at audio-HVAC display panel connector A (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication

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goes away, replace the original audio-HVAC display panel.

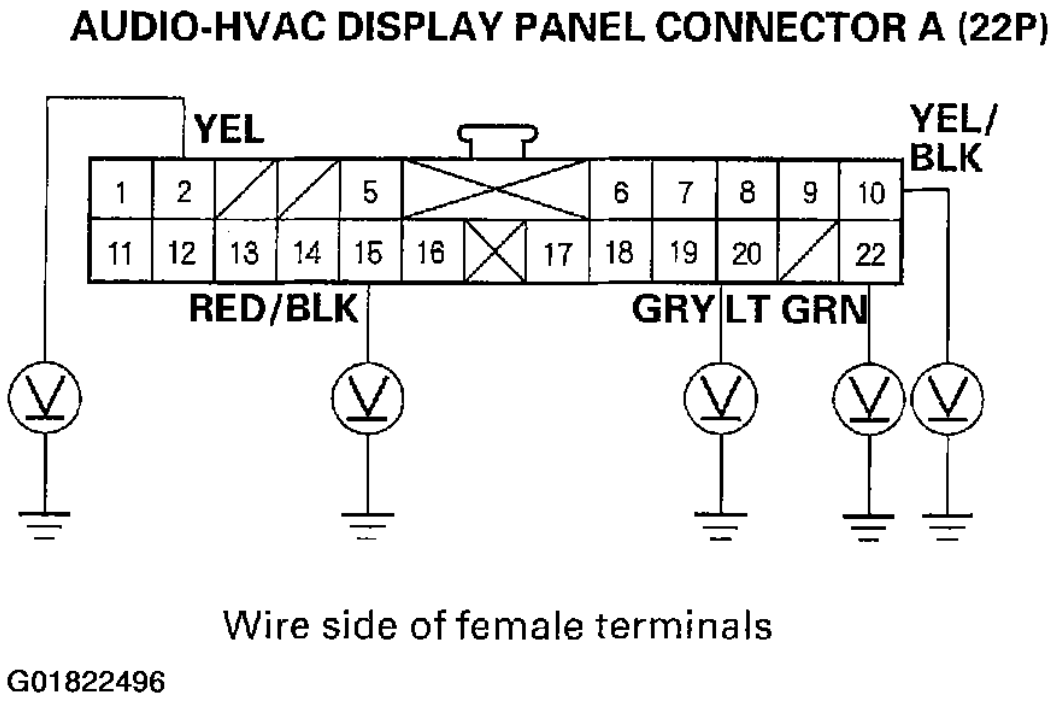


Fig. 64: Checking For Voltage Between Body Ground & Audio-HVAC Display Panel Connector A (22P) Terminals No. 2, 10, 15, 20 & 22

DTC INDICATOR Q OR DTC B1238: A PROBLEM IN THE PASSENGER'S AIR MIX CONTROL LINKAGE, DOOR, OR MOTOR

1. Clear the DTC.
2. Turn the ignition switch OFF, and then ON.
3. Operate the climate control system is several modes.
4. Check the DTCs.

   Is DTC Q or B1238 indicated?

   YES: Go to step 5.

   NO: Intermittent failure.
5. Test the passenger's air mix control motor (see **PASSENGER'S AIR MIX CONTROL MOTOR TEST**).

   Is the passenger's air mix control motor OK?

   YES: Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

   NO: Replace the passenger's air mix control motor, or repair the passenger's air mix control

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linkage or door.

DTC B1202: CLIMATE CONTROL UNIT INTERNAL ERROR

1. Clear the DTCs using the HDS.
2. Turn the ignition switch OFF then ON.
3. Turn the climate control system on and operate several functions. (A/C on/off, air mix and blend door operations, temperature settings etc.)
4. Check the DTCs by selecting the DTC MENU (DTCs) from the HDS.

   IS DTC B1202 indicated?

   YES: The audio-HVAC display panel is faulty, replace the audio-HVAC display panel.

   NO: Intermittent failure, the audio-HVAC display panel is OK at this time. Check for loose or poor connections at audio-HVAC display panel connector A (22P). If the connections are good, check the battery condition and the charging system (see **GENERATORS & REGULATORS**).

DTC B1205: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (VSP/NE MESSAGES); DTC B1206: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (ECT MESSAGES); DTC B1207: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (ILLUMI MESSAGES)

1. Push the AUTO button.

   Does the climate control turn on?

   YES: Go to step 2.

   NO: Go to climate control power and ground circuits troubleshooting (see **BODY ELECTRICAL CONNECTORS & HARNESSES**).
2. Clear the DTCs using the HDS.
3. Turn the ignition switch OFF then ON.
4. Turn the climate control system on and operate several functions. (A/C on/off, air mix and blend door operations, temperature settings etc.)
5. Check the DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1205, B1206 and/or B1207 indicated?

   YES: Go to step 6.

   NO: Intermittent failure, the gauge control module and audio-HVAC display panel are ok at this time.
6. Check the DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1008, B1060 and/or B1061 indicated?

   YES: Perform the gauge control module self test procedure (see **SELF-DIAGNOSTIC PROCEDURE**).

   NO: The climate control unit is faulty, replace the audio-HVAC display panel.

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RECIRCULATION CONTROL MOTOR CIRCUIT TROUBLESHOOTING

1. Check the No. 30 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES: Go to step 2.

   NO: Replace the fuse, and recheck.
2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 1 terminal of the recirculation control motor 7P connector and body ground.

   Is there battery voltage?

   YES: Go to step 5.

   NO: Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and the recirculation control motor.

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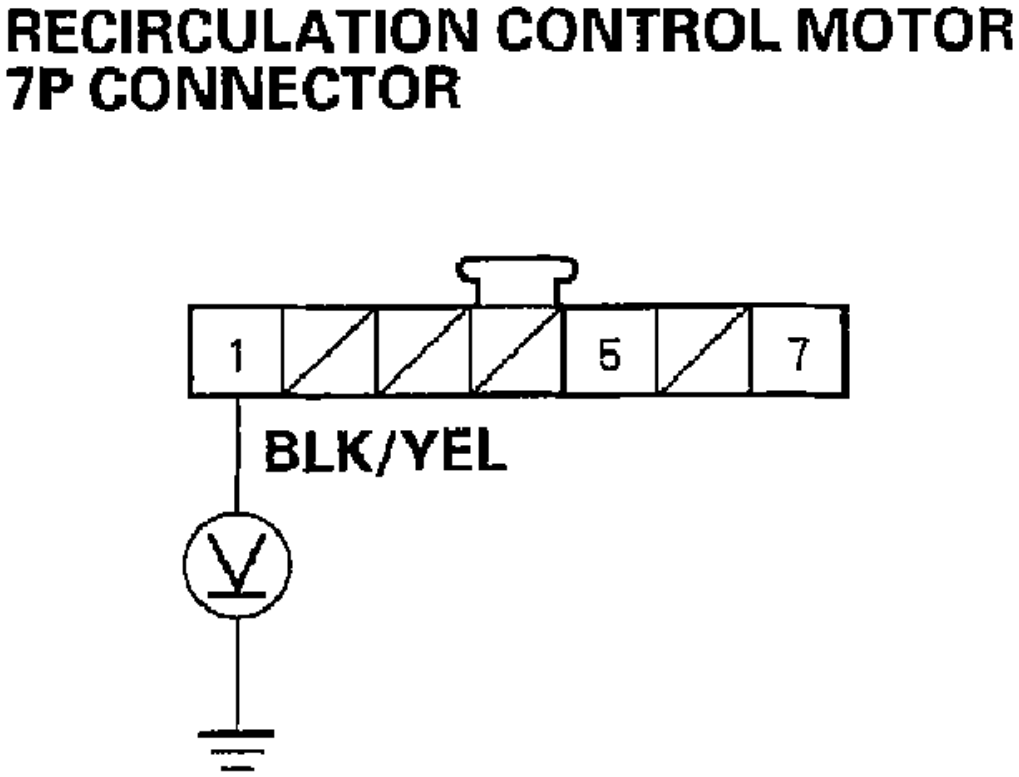


Fig. 65: Measuring The Voltage Between The No. 1 Terminal Of The Recirculation Control Motor 7P Connector & Body Ground

5. Turn the ignition switch OFF.
6. Test the recirculation control motor (see **RECIRCULATION CONTROL MOTOR TEST**).

   Is the recirculation control motor OK?

   YES: Go to step 7.

   NO: Replace the recirculation control motor, or repair the recirculation control linkage or doors.
7. Disconnect audio-HVAC display panel connector B (16P).
8. Check for continuity between the No. 10 and No. 11 terminals of audio-HVAC display panel connector B

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(16P) and body ground individually.

Is there continuity?

YES: Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the recirculation control motor.

NO: Go to step 9.

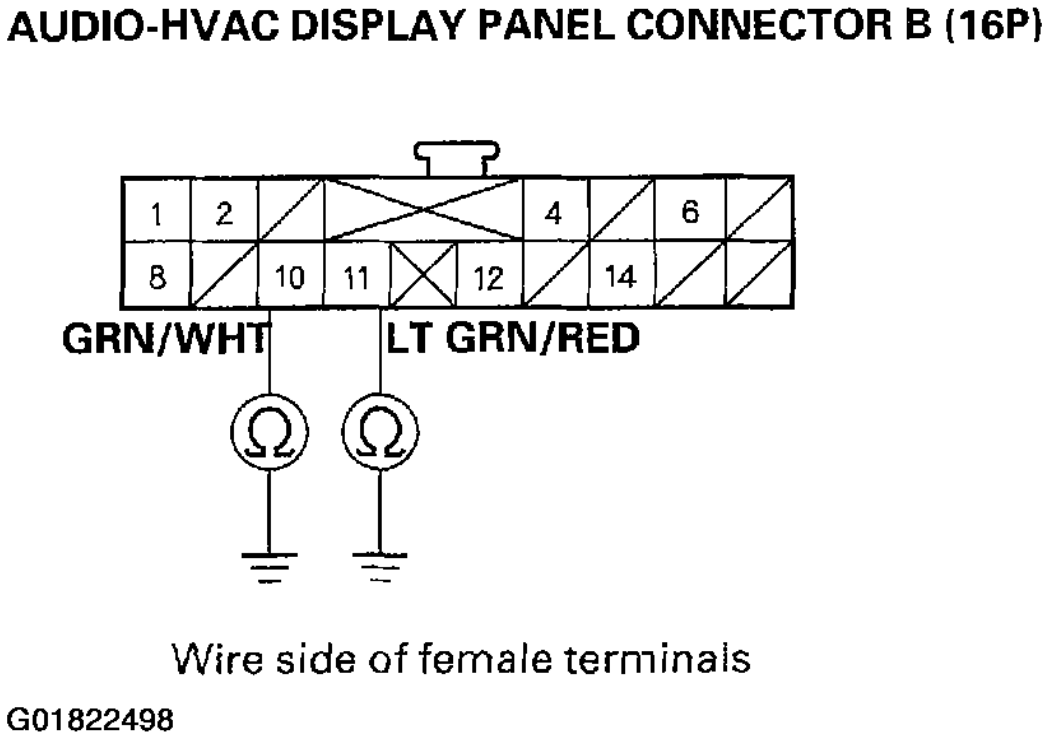


Fig. 66: Checking For Continuity Between The No. 10 & No. 11 Terminals Of Audio-HVAC Display Panel Connector B (16P) & Body Ground

9. Turn the ignition switch ON (II), and check the same wires for voltage.

Is there any voltage?

YES: Repair any short to power in the wire(s) between the audio-HVAC display panel and the recirculation control motor. This short may also damage the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel.

NO: Go to step 10.

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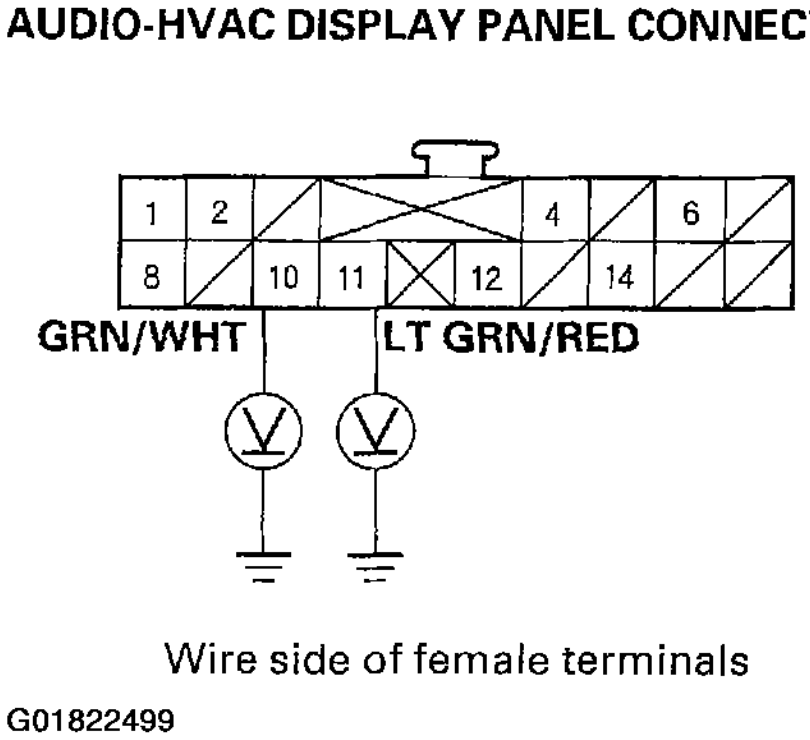


Fig. 67: Checking For Voltage Between The No. 10 & No. 11 Terminals Of Audio-HVAC Display Panel Connector B (16P) & Body Ground

10. Turn the ignition switch OFF.
11. Check for continuity between the following terminals of audio-HVAC display panel connector B (16P) and the recirculation control motor 7P connector.

Is there continuity?

YES: Check for loose wire or poor connections at audio-HVAC display panel connector B (16P) and at the recirculation control motor. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Repair any open in the wire(s) between the audio-HVAC display panel and the recirculation control motor.

CONNECTOR CONTINUITY TESTING

Audio-HVAC Display Panel Connector B (16P) Terminal No.	Recirculation Control Motor 7P Conn Termin
10	
11	

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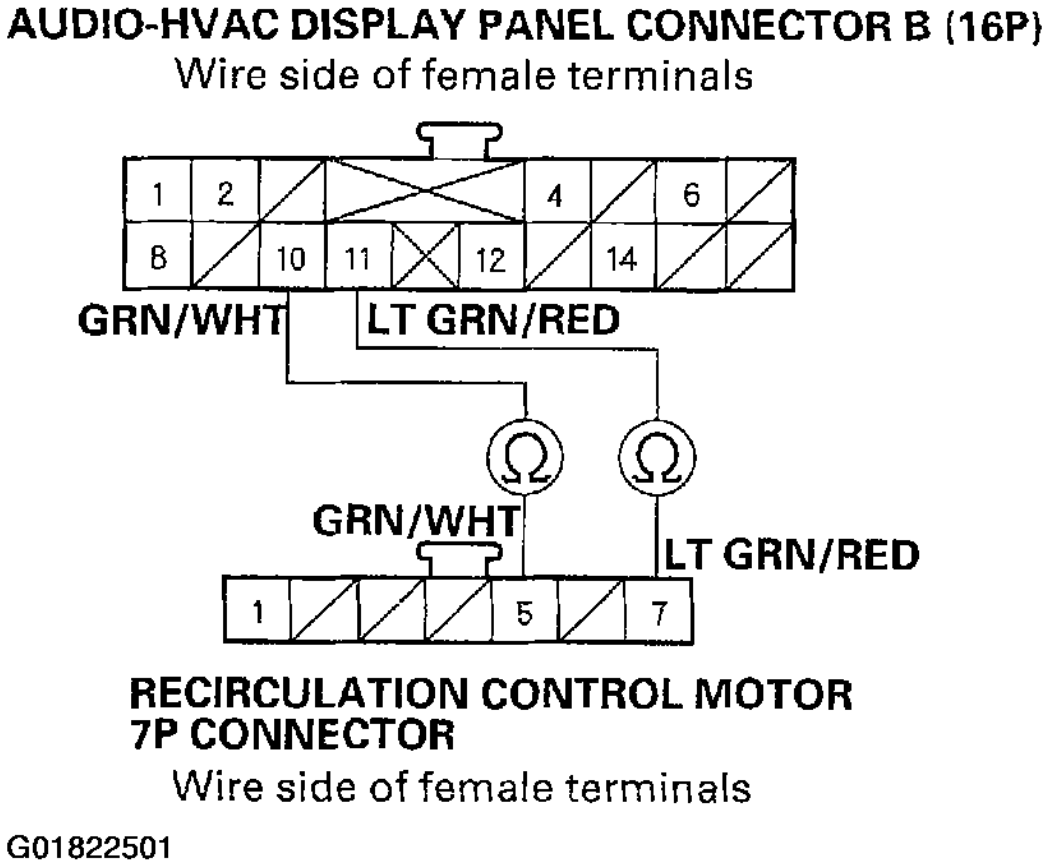


Fig. 68: Checking For Continuity Between The Terminals Of Audio-HVAC Display Panel Connector B (16P) & The Recirculation Control Motor 7P Connector

CLIMATE CONTROL POWER & GROUND CIRCUIT TROUBLESHOOTING

1. Check the No. 30 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES: Go to step 2.

   NO: Replace the fuse, and recheck.
2. Disconnect audio-HVAC display panel connector B (16P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 4 terminal of audio-HVAC display panel connector B (16P) and body ground.

   Is there battery voltage?

   YES: Go to step 5.

   NO: Repair open in the wire between the No. 30 fuse in the driver's under-dash fuse/relay

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box and the audio-HVAC display panel.

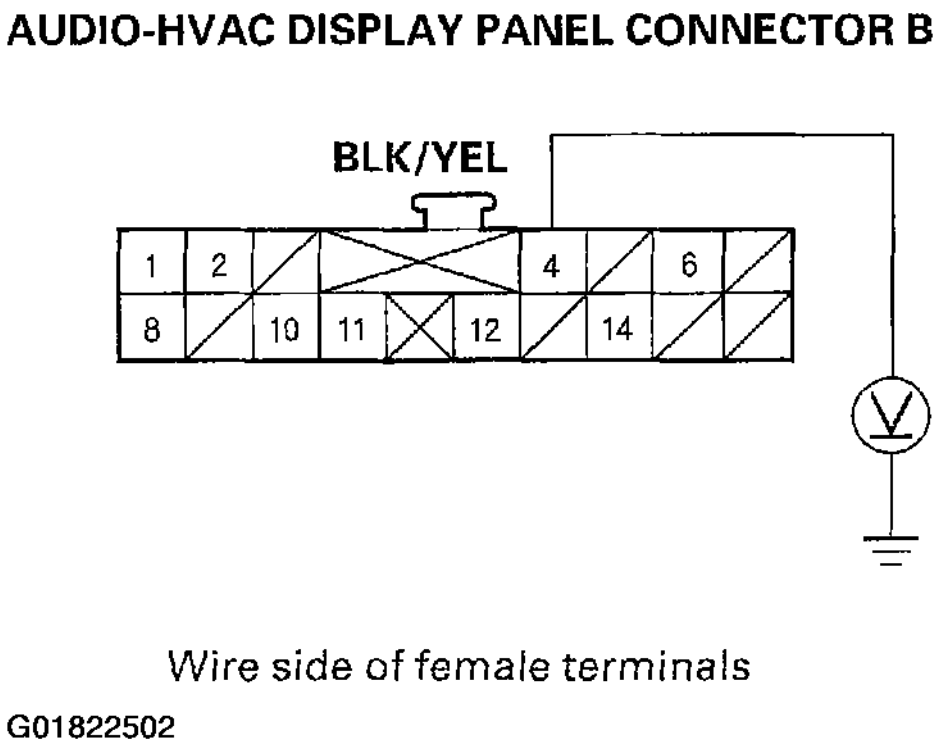


Fig. 69: Measuring The Voltage Between The No. 4 Terminal Of Audio-HVAC Display Panel Connector B (16P) & Body Ground

5. Turn the ignition switch OFF.
6. Check for continuity between the No. 6 terminal of audio-HVAC display panel connector B (16P) and body ground.

Is there continuity?

YES: Check for loose wire or poor connections at audio-HVAC display panel connector B (16P). If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Check for an open in the wire between the audio-HVAC display panel and body ground. If the wire is OK, check for poor ground at G503.

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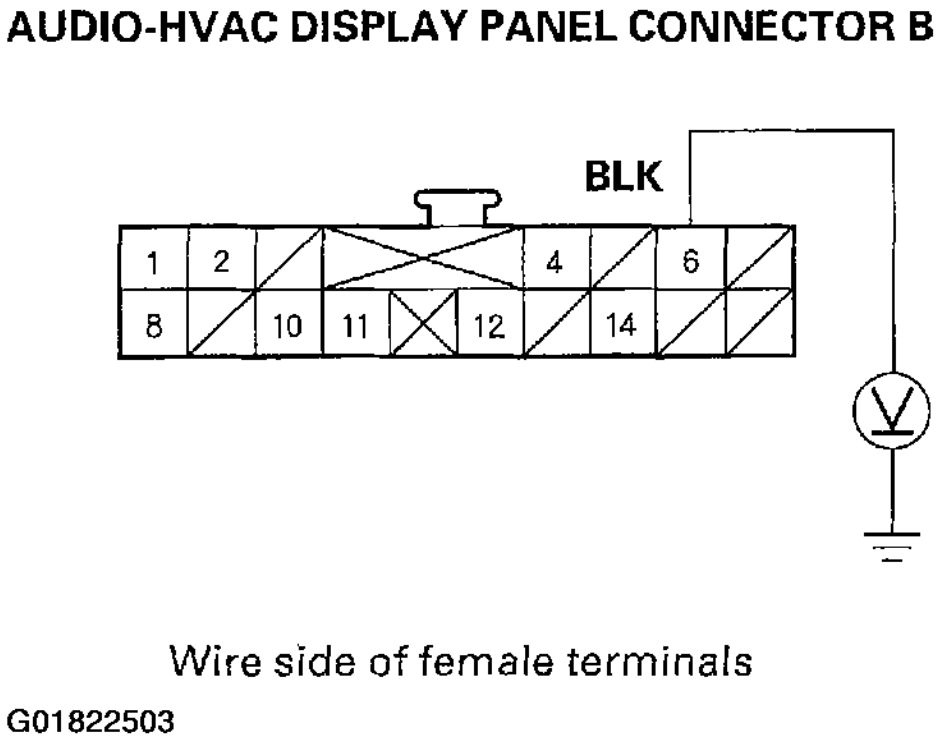


Fig. 70: Checking For Continuity Between The No. 6 Terminal Of Audio-HVAC Display Panel Connector B (16P) & Body Ground

CONDENSER FAN CIRCUIT TROUBLESHOOTING

NOTE: Do not use this troubleshooting procedure if the radiator fan and/or the compressor is inoperative, refer to the symptom troubleshooting index.

1. Check the No. 9 (20A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES: Go to step 2.

   NO: Replace the fuse(s), and recheck.

2. Remove the condenser fan relay from the under-hood fuse/relay box, and test it (see **POWER RELAY TEST**).

   Is the relay OK?

   YES: Go to step 3.

   NO: Replace the condenser fan relay.

3. Measure the voltage between the No. 1 terminal of the condenser fan relay 4P socket and body ground.

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Is there battery voltage?

YES: Go to step 4.

NO: Replace the under-hood fuse/relay box.

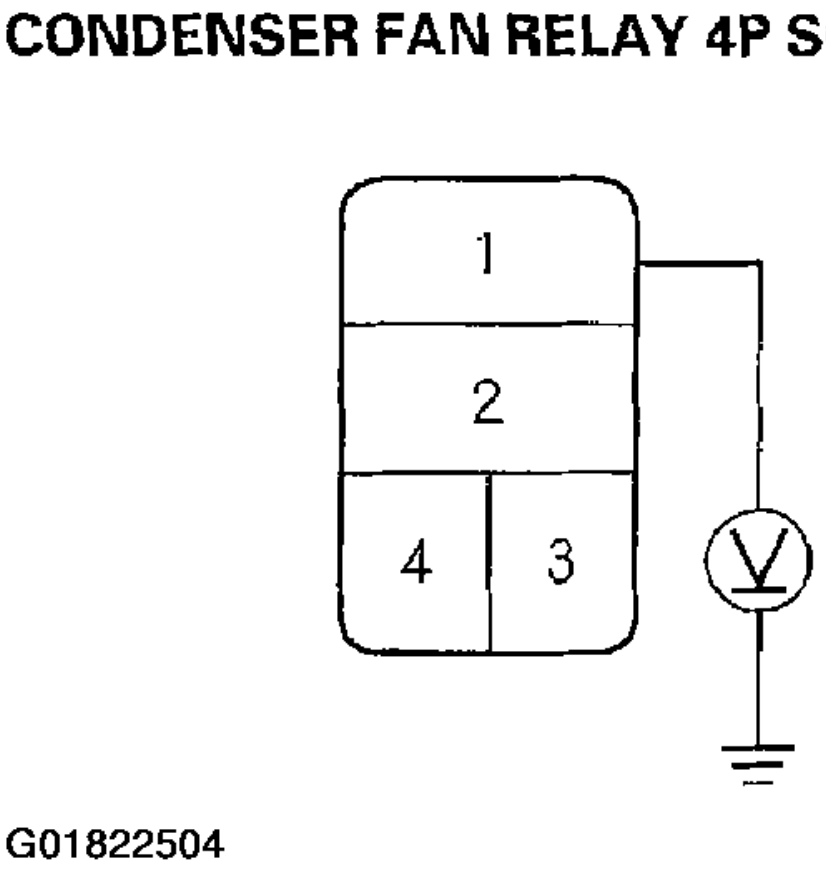


Fig. 71: Measuring The Voltage Between The No. 1 Terminal Of The Condenser Fan Relay 4P Socket & Body Ground

4. Connect the No. 1 and No. 2 terminals of the condenser fan relay 4P socket with a jumper wire.

Does the condenser fan run?

YES: Go to step 5.

NO: Go to step 8 .

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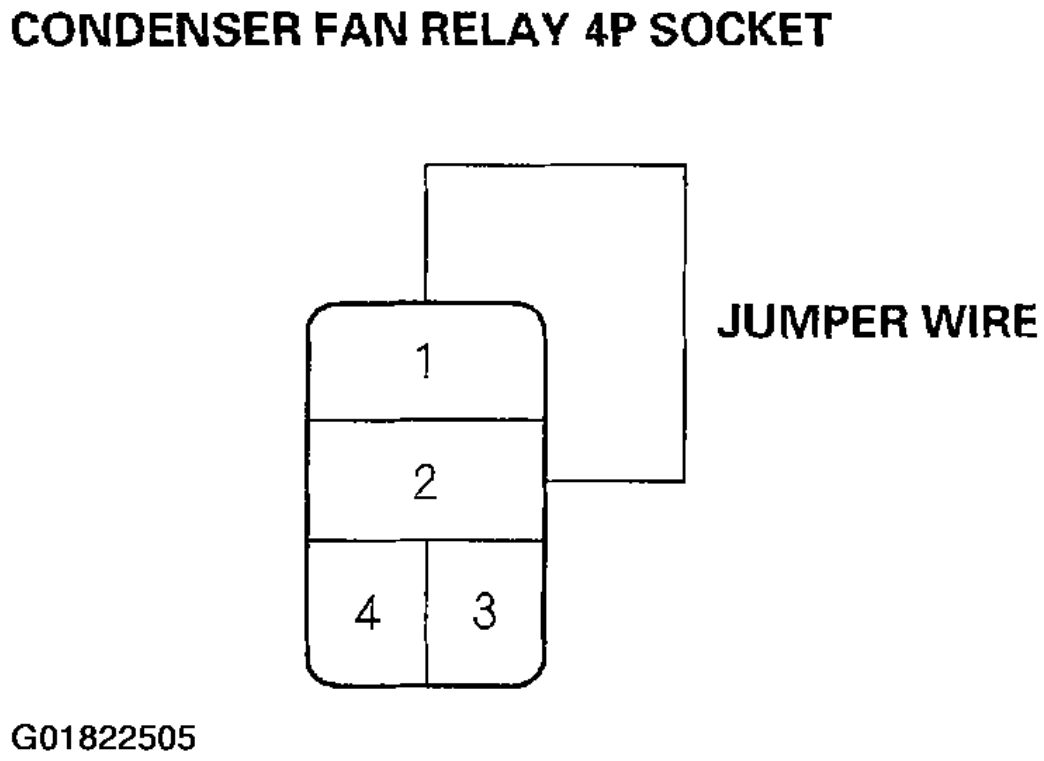


Fig. 72: Connecting The No. 1 & No. 2 Terminals Of The Condenser Fan Relay 4P Socket With A Jumper Wire

5. Disconnect the jumper wire.
6. Turn the ignition switch ON (II).
7. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

Is there battery voltage?

YES: Replace the under-hood fuse/relay box.

NO: Repair open in the BLK/YEL wire between the No. 30 fuse in the under-dash fuse/relay box and the condenser fan relay.

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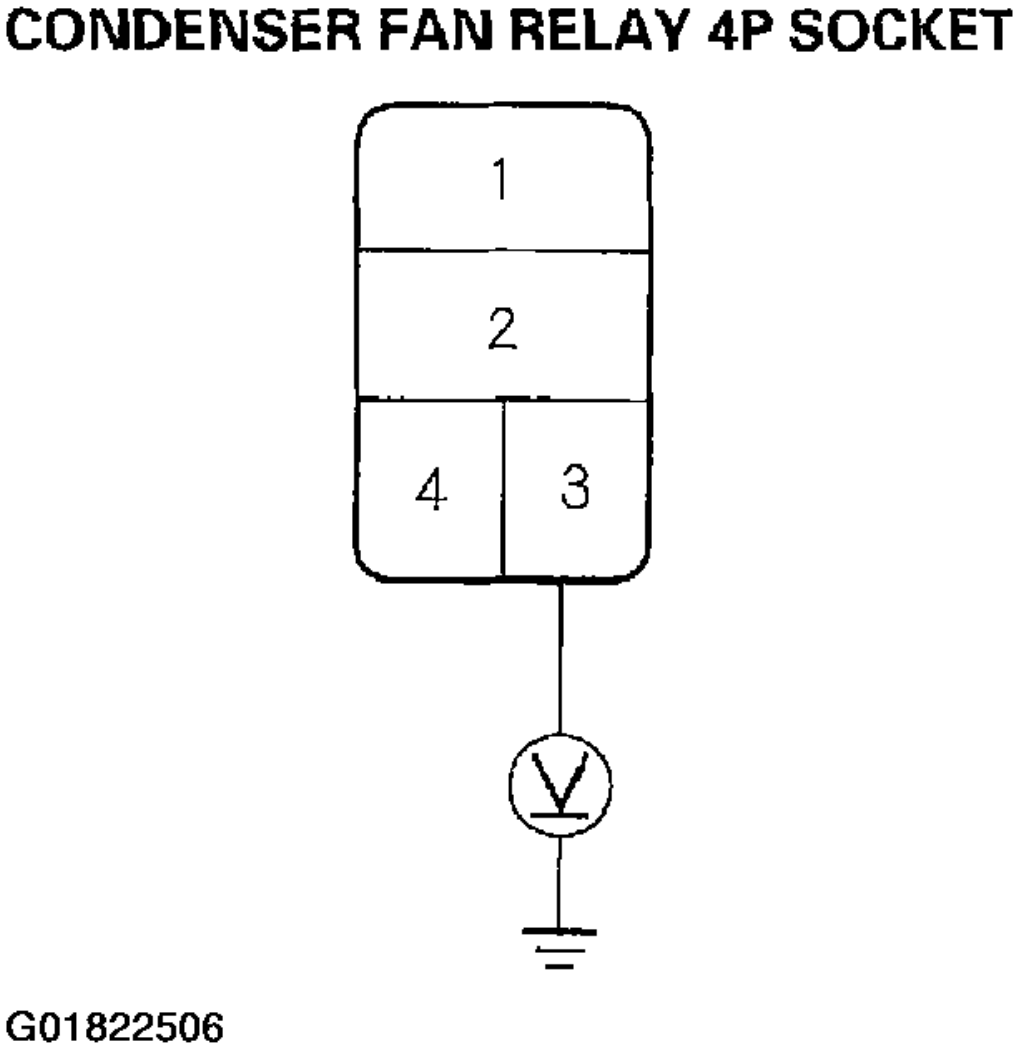


Fig. 73: Measuring The Voltage Between The No. 3 Terminal Of The Condenser Fan Relay 4P Socket & Body Ground

8. Disconnect the jumper wire.
9. Disconnect the condenser fan 2P connector.
10. Check for continuity between the No. 2 terminal of the condenser fan relay 4P socket and the No. 2 terminal of the condenser fan 2P connector.

Is there continuity?

YES: Go to step 11.

NO: Repair open in the wire between the condenser fan relay and the condenser fan.

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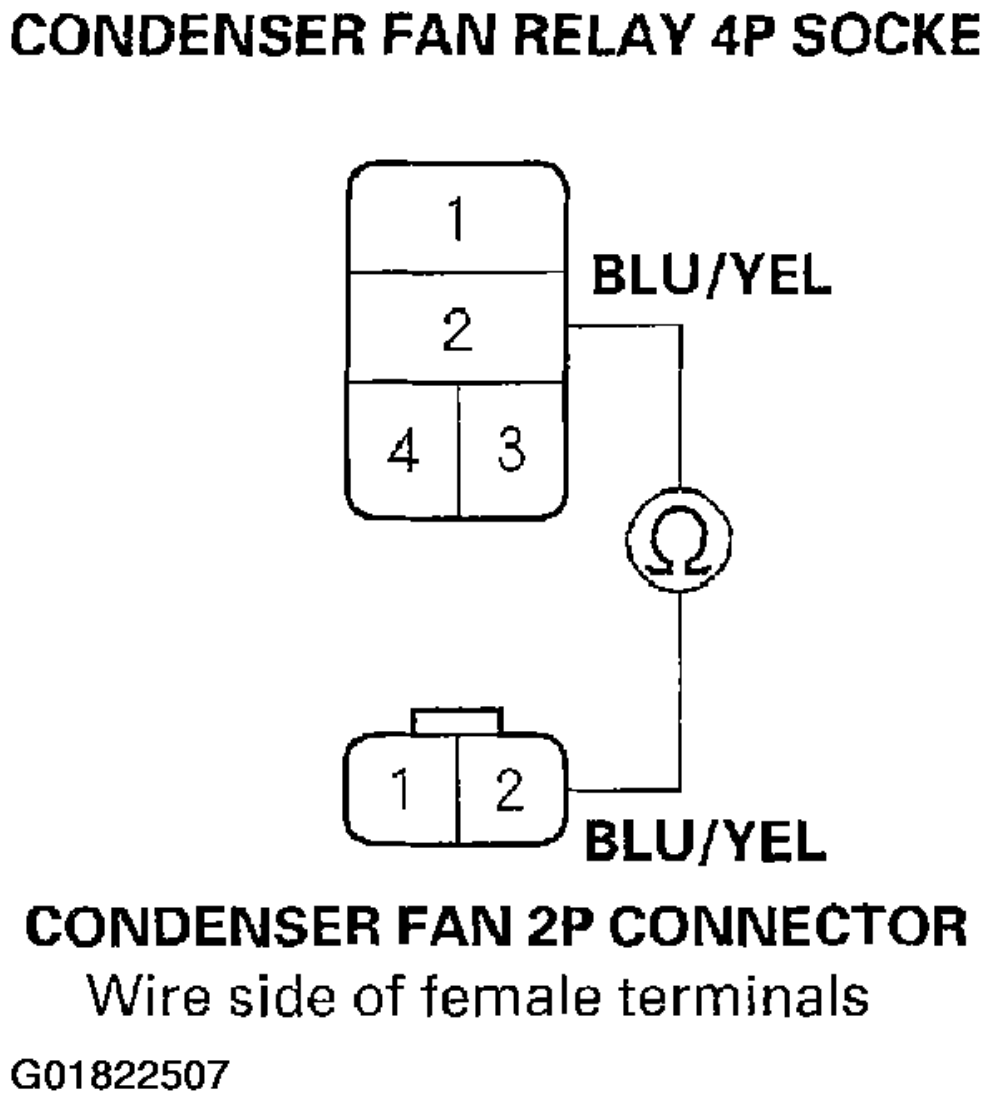


Fig. 74: Checking For Continuity Between The No. 2 Terminal Of The Condenser Fan Relay 4P Socket & The No. 2 Terminal Of The Condenser Fan 2P Connector

11. Check for continuity between the No. 1 terminal of the condenser fan 2P connector and body ground.

    Is there continuity?

    YES: Replace the condenser fan motor.

    NO: Check for an open in the wire between the condenser fan and body ground. If the wire is OK, check for poor ground at G201.

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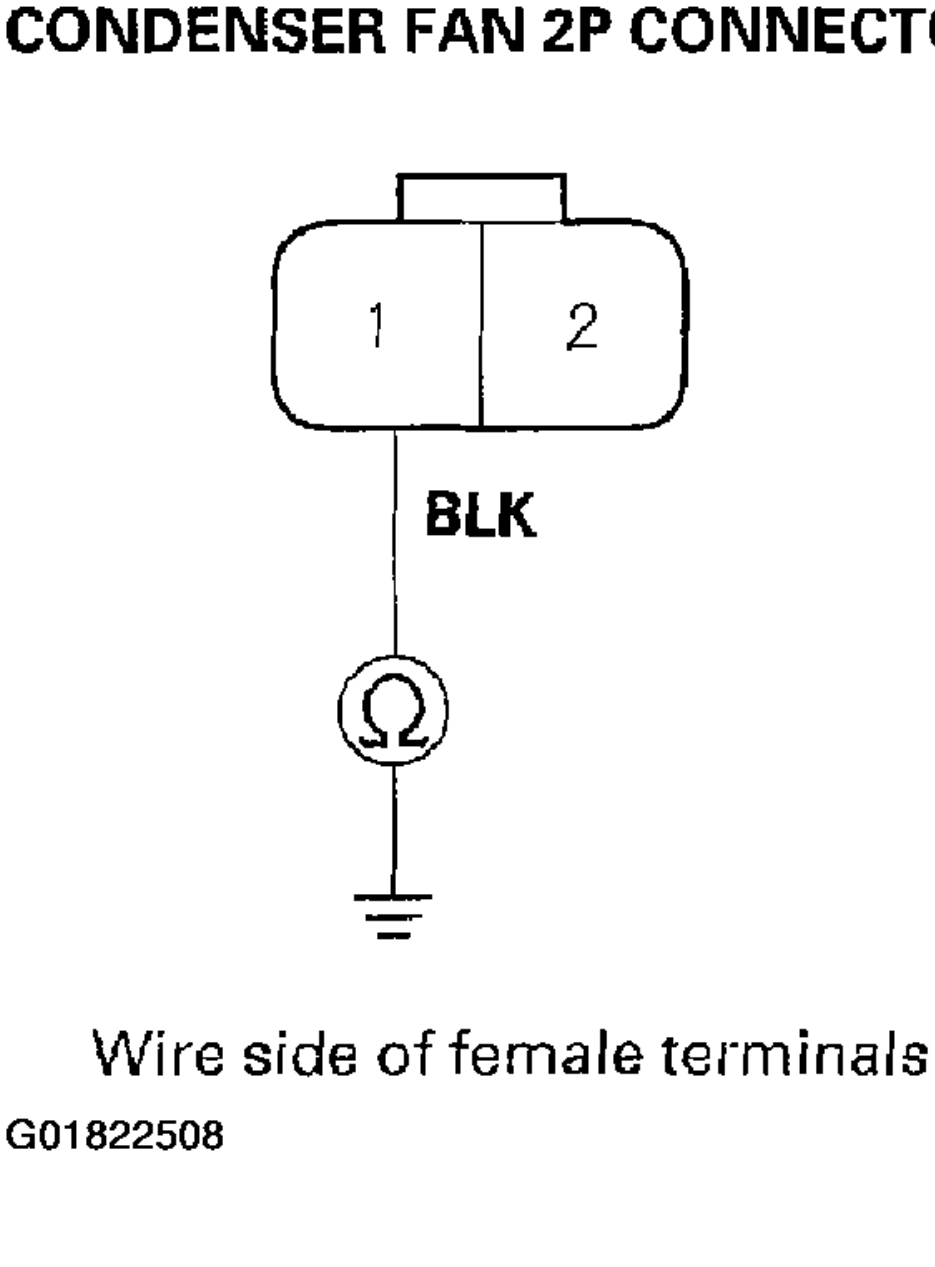


Fig. 75: Checking For Continuity Between The No. 1 Terminal Of The Condenser Fan 2P Connector & Body Ground

RADIATOR & CONDENSER FAN COMMON CIRCUIT TROUBLESHOOTING

NOTE: **Do not use this troubleshooting procedure if only one fan is inoperative, or it the compressor is inoperative, refer to the symptom troubleshooting index.**

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1. Check the No. 9 (20A) and No. 11 (20A) fuses in the under-hood fuse/relay box, and the No. 30 (7.5A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES: Go to step 2.

   NO: Replace the fuse(s), and recheck.

2. Remove the condenser fan relay from the under-hood fuse/relay box.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

   Is there battery voltage?

   YES: Go to step 5.

   NO: Repair open in the BLK/YEL wire between the No. 30 fuse in the under-dash fuse/relay box and the condenser fan relay.

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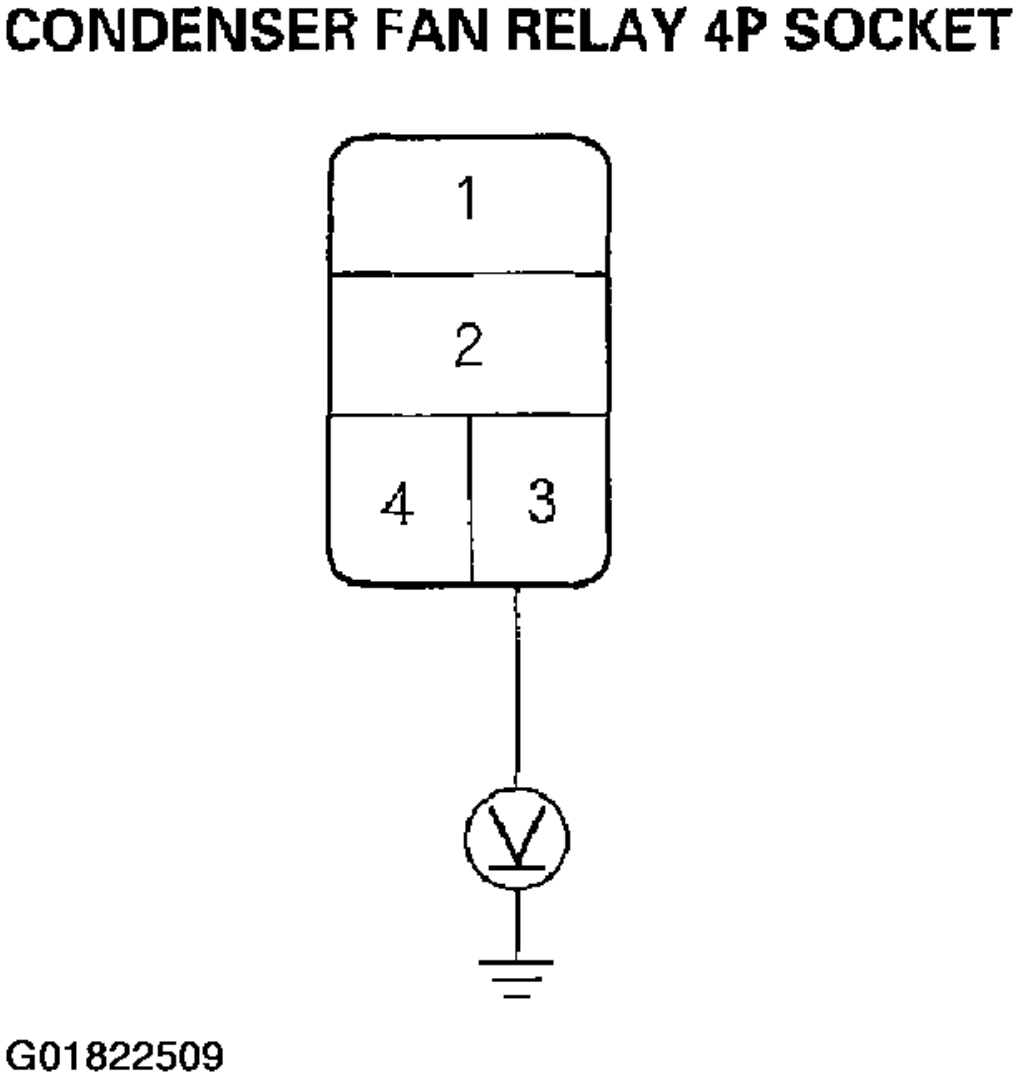


Fig. 76: Measuring The Voltage Between The No. 3 Terminal Of The Condenser Fan Relay 4P Socket & Body Ground

5. Turn the ignition switch OFF.
6. Reinstall the condenser fan relay.
7. Make sure the A/C switch is OFF, and the engine coolant temperature is below 199°F (93°C).
8. Turn the ignition switch ON (II).
9. Using a backprobe set, measure the voltage between the No. 12 terminal of ECM/PCM connector E (31P) and body ground with the ECM/PCM connectors connected.

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Is there battery voltage?

YES: Check for loose wires or poor connections at terminal E12 of the ECM/PCM connector E (31P). If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

NO: Repair open in the wire between the radiator fan relay, the condenser fan relay, and the ECM/PCM.

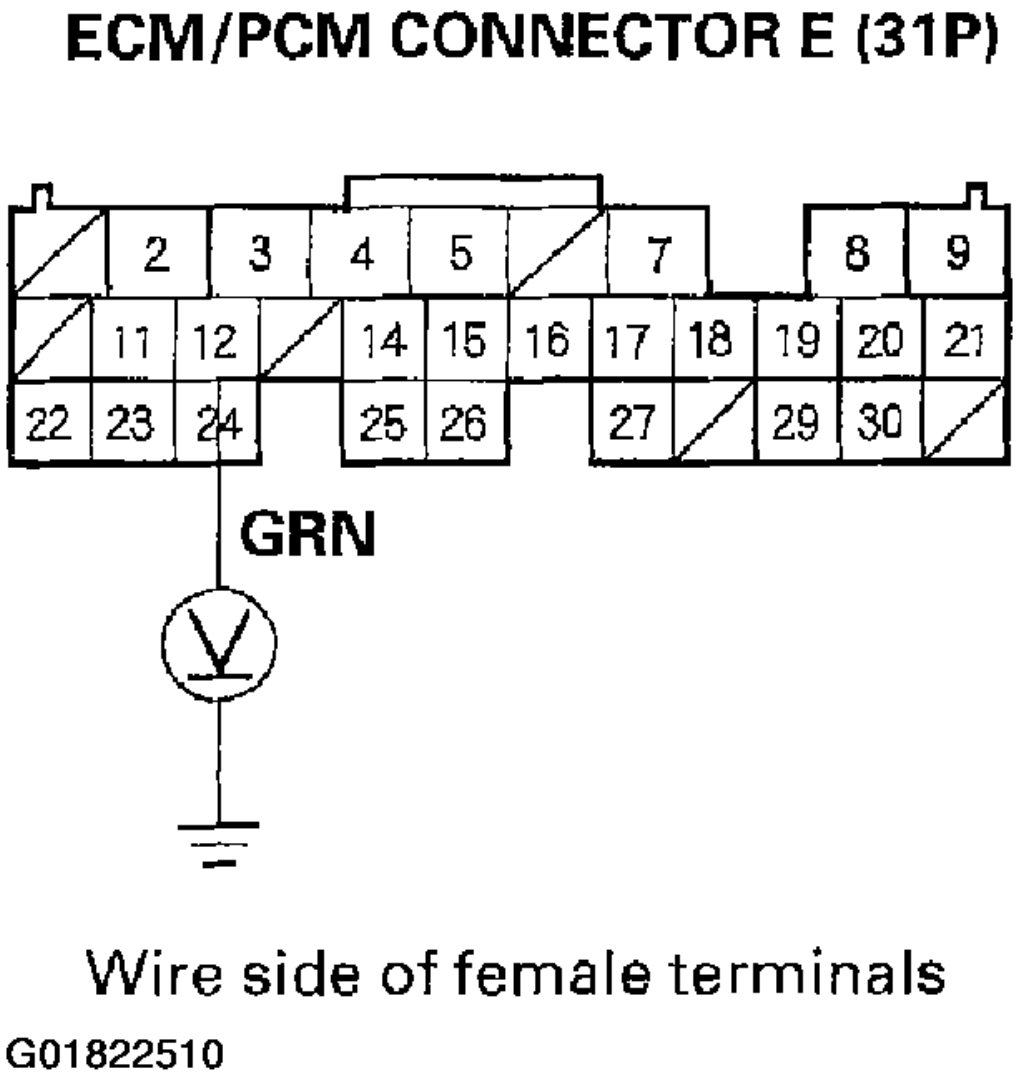


Fig. 77: Measuring The Voltage Between The No. 12 Terminal Of ECM/PCM Connector E (31P) & Body Ground (ECM/PCM Connectors Connected)

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NOTE: After replacing the ECM/PCM, do the following items:

- **ECM/PCM idle learn procedure (see ECM/PCM IDLE LEARN PROCEDURE).**
- **Enter the anti-theft codes for the radio and navigation system, then enter the customer's radio station presets.**
- **Replace ECM/PCM procedure with HDS.**

COMPRESSOR CLUTCH CIRCUIT TROUBLESHOOTING

NOTE: Do not use this troubleshooting procedure if the fans are also inoperative, refer to the symptom troubleshooting index.

1. Check the No. 9 (20A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES: Go to step 2.

   NO: Replace the fuse(s), and recheck.

2. Check the engine coolant temperature, throttle position, and idle speed (use the HDS PGM-FI data list if possible).

   Is the coolant temperature, throttle position, and idle speed OK?

   YES: Go to step 3.

   NO: Troubleshoot and repair the cause of the high engine coolant temperature, low idle, or excessively high throttle position sensor reading.

Sensor	Normal range at idle
TPS	About 0.5 V
RPM	More than 650

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Fig. 78: Coolant Temperature, Throttle Position & Idle Speed Test Specifications Table

3. Remove the compressor clutch relay from the under-hood fuse/relay box, and test it (see **POWER RELAY TEST**).

   Is the relay OK?

   YES: Go to step 4.

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NO: Replace the compressor clutch relay.

4. Measure the voltage between the No. 1 terminal of the compressor clutch relay 4P socket and body ground.

   Is there battery voltage?

   YES: Go to step 5.

   NO: Replace the under-hood fuse/relay box.

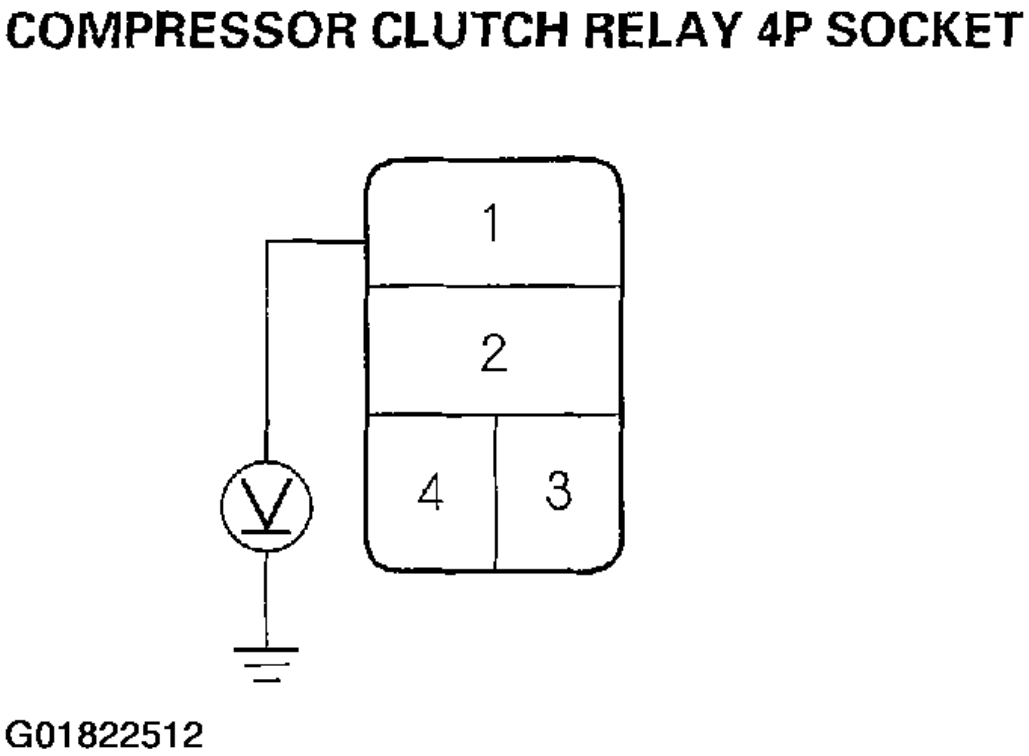


Fig. 79: Measuring The Voltage Between The No. 1 Terminal Of The Compressor Clutch Relay 4P Socket & Body Ground

5. Connect the No. 1 and No. 2 terminals of the compressor clutch relay 4P socket with a jumper wire.

   Does the compressor clutch click?

   YES: Go to step 6.

   NO: Go to step 14 .

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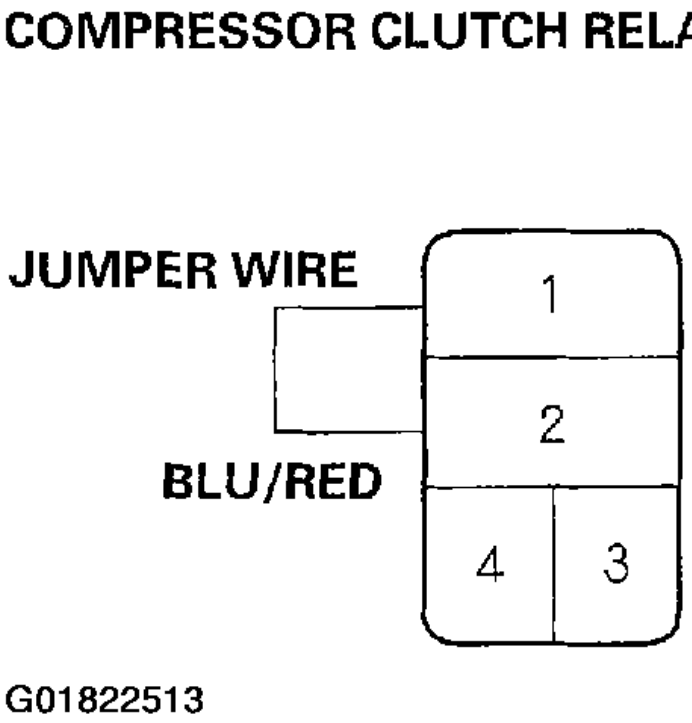


Fig. 80: Connecting The No. 1 & No. 2 Terminals Of The Compressor Clutch Relay 4P Socket With A Jumper Wire

6. Disconnect the jumper wire.
7. Turn the ignition switch ON (II).
8. Measure the voltage between the No. 4 terminal of the compressor clutch relay 4P socket and body ground.

Is there battery voltage?

YES: Go to step 9.

NO: Repair open in the BLK/YEL wire between the No. 30 fuse in the under-dash fuse/relay box and the compressor clutch relay.

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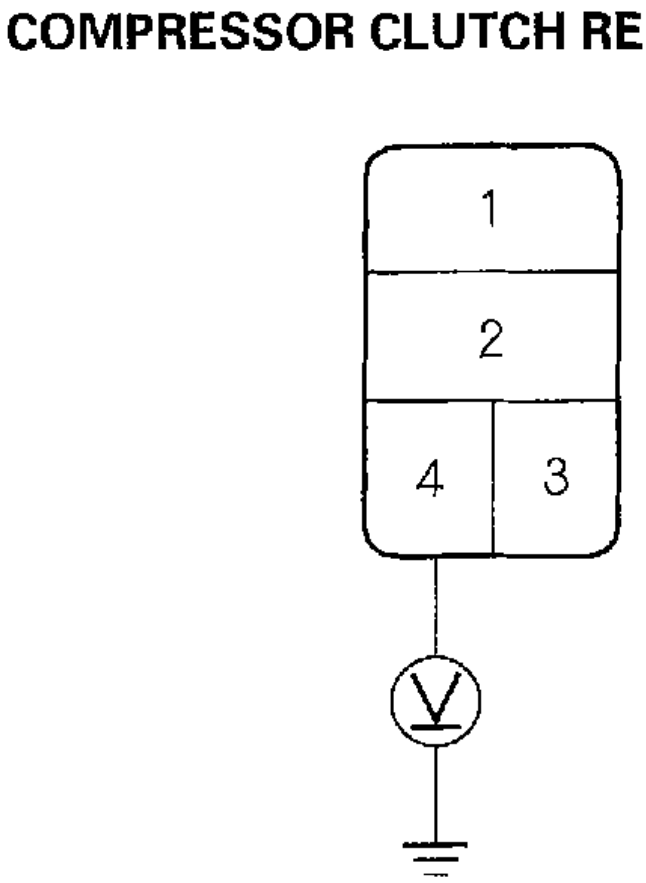


Fig. 81: Measuring The Voltage Between The No. 4 Terminal Of The Compressor Clutch Relay 4P Socket & Body Ground

9. Turn the ignition switch OFF.
10. Reinstall the compressor clutch relay.
11. Make sure the A/C switch is OFF.
12. Turn the ignition switch ON (II).
13. Using a backprobe set, measure the voltage between the No. 18 terminal of ECM/PCM connector E (31P) and body ground with the ECM/PCM connectors connected.

    Is there battery voltage?

    YES: Check for loose wires or poor connections at terminal E18 of the ECM/PCM connector E (31P). If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM.

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NO: Repair open in the wire between the compressor clutch relay and the ECM/PCM.

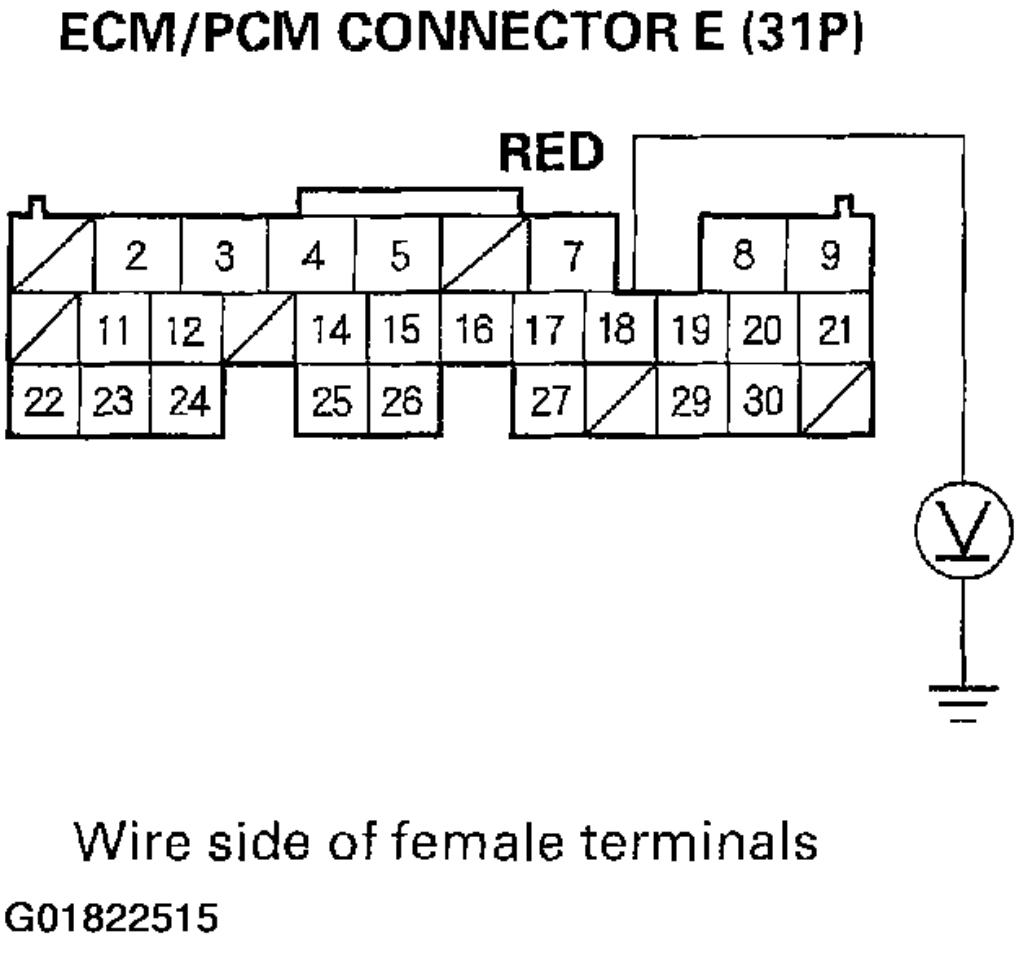


Fig. 82: Measuring The Voltage Between The No. 18 Terminal Of ECM/PCM Connector E (31P) & Body Ground (ECM/PCM Connectors Connected)

14. Disconnect the jumper wire.
15. Disconnect the compressor clutch 3P connector.
16. Check for continuity between the No. 2 terminal of the compressor clutch relay 4P socket and the No. 2 terminal of the compressor clutch 3P connector.

Is there continuity?

YES: Check the compressor clutch clearance, and the compressor clutch field coil (see **COMPRESSOR CLUTCH CHECK**). Repair as needed.

NO: Repair open in the wire between the compressor clutch relay and the compressor clutch.

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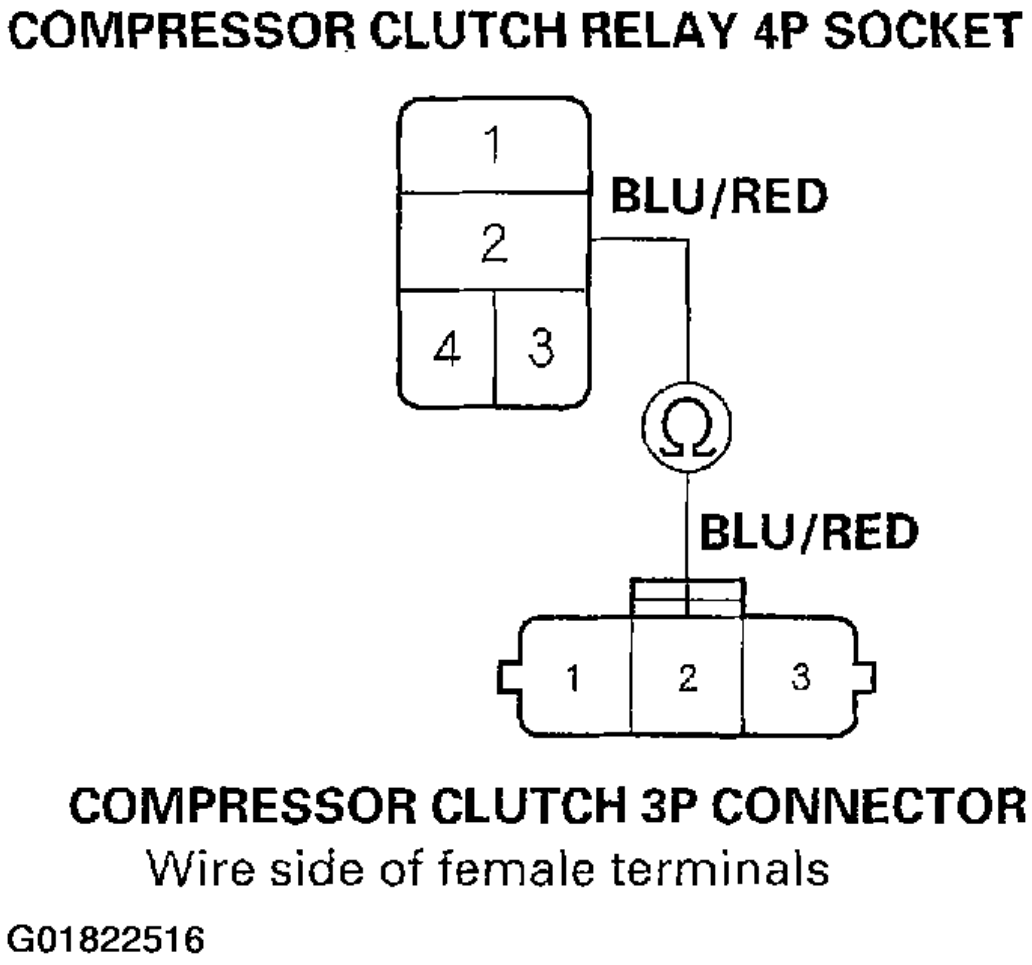


Fig. 83: Checking For Continuity Between The No. 2 Terminal Of The Compressor Clutch Relay 4P Socket & The No. 2 Terminal Of The Compressor Clutch 3P Connector

A/C PRESSURE SWITCH & THERMAL PROTECTOR CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).
2. Press the AUTO button, then press the A/C button and check the display.

   Does the display indicate A/C on?

   YES: Go to step 3.

   NO: Check for loose or poor connection at the climate control connector. If the connections are OK, replace the audio-HVAC display panel.
3. Disconnect the thermal protector 3P connector.

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4. Turn the ignition switch ON (II).
5. Measure the voltage between the No. 1 terminal of the thermal protector 3P connector and body ground.

Is there about 5 V or more?

YES: Go to step 6.

NO: Go to step 20 .

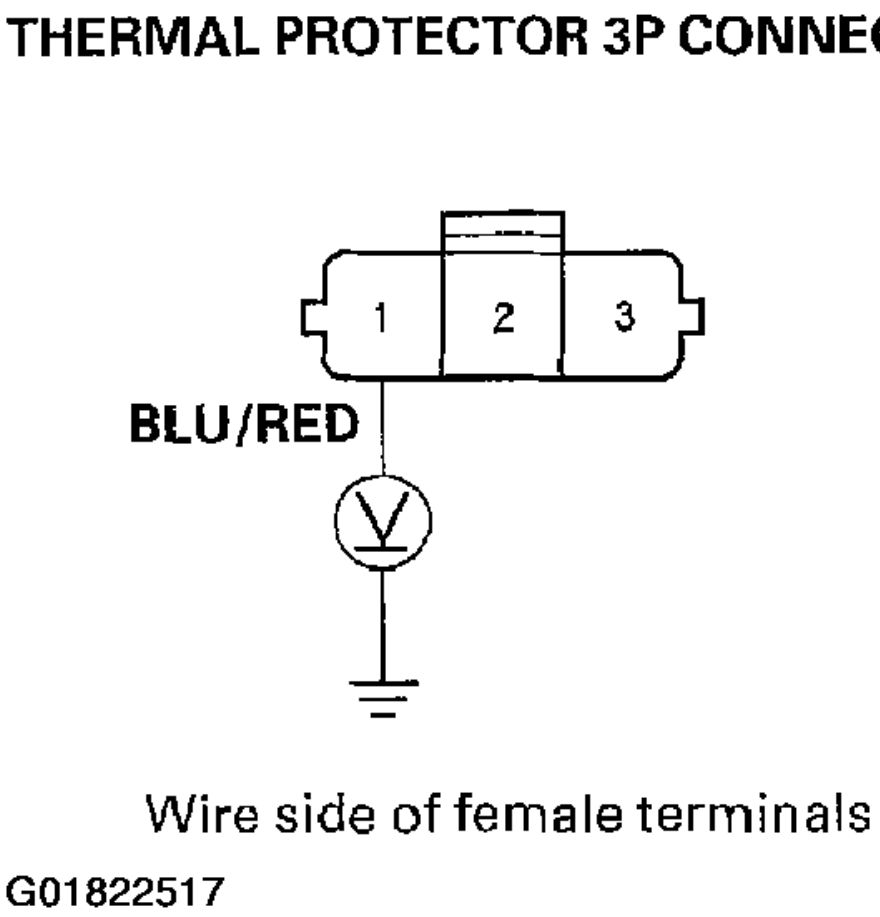


Fig. 84: Measuring The Voltage Between The No. 1 Terminal Of The Thermal Protector 3P Connector & Body Ground

6. Turn the ignition switch OFF.
7. Check for continuity between the No. 1 and No. 3 terminals of the thermal protector.

Is there continuity?

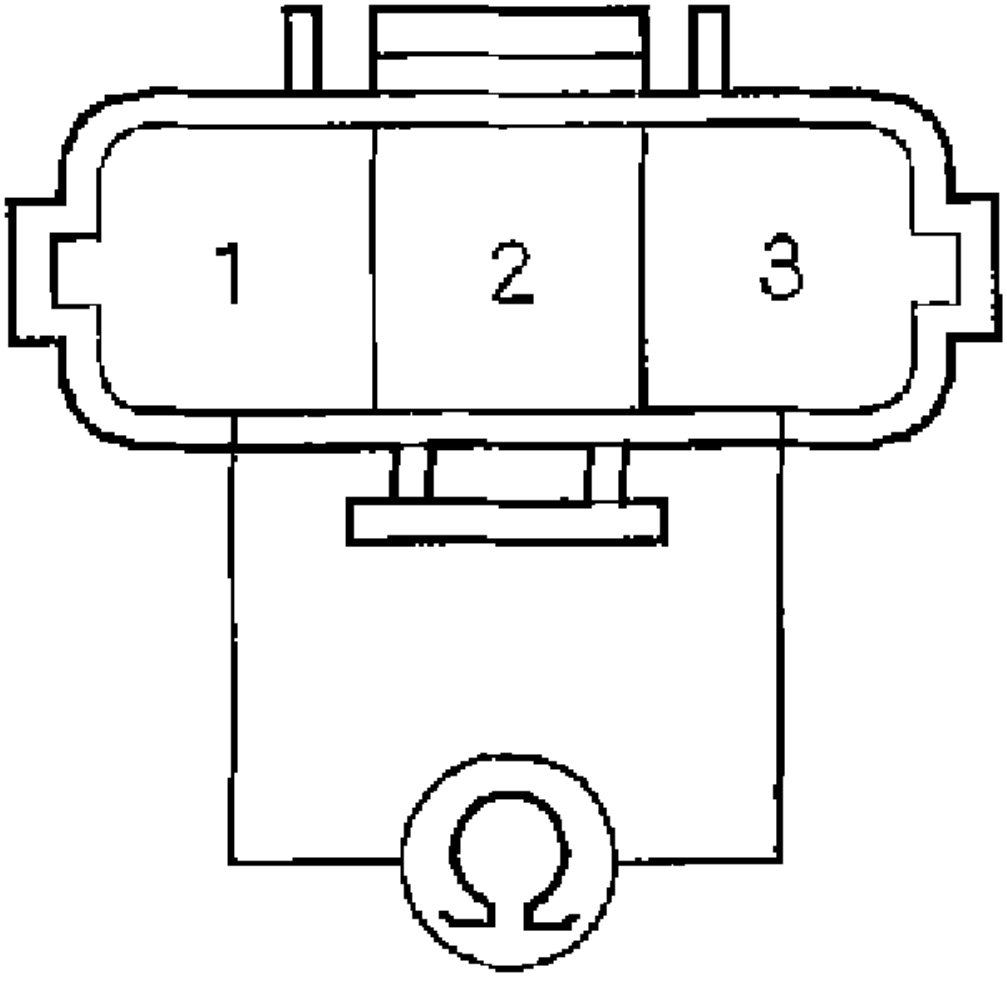
YES: Go to step 8.

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NO: Replace the thermal protector.

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THERMAL PROTECTOR



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Fig. 85: Checking For Continuity Between The No. 1 & No. 3 Terminals Of The Thermal Protector

8. Reconnect the thermal protector 3P connector.
9. Disconnect the A/C pressure switch 2P connector.
10. Turn the ignition switch ON (II).
11. Measure the voltage between the No. 1 terminal of the A/C pressure switch 2P connector and body ground.

Is there about 5 V or more?

YES: Go to step 12.

NO: Repair open in the wire between the A/C pressure switch and the thermal protector.

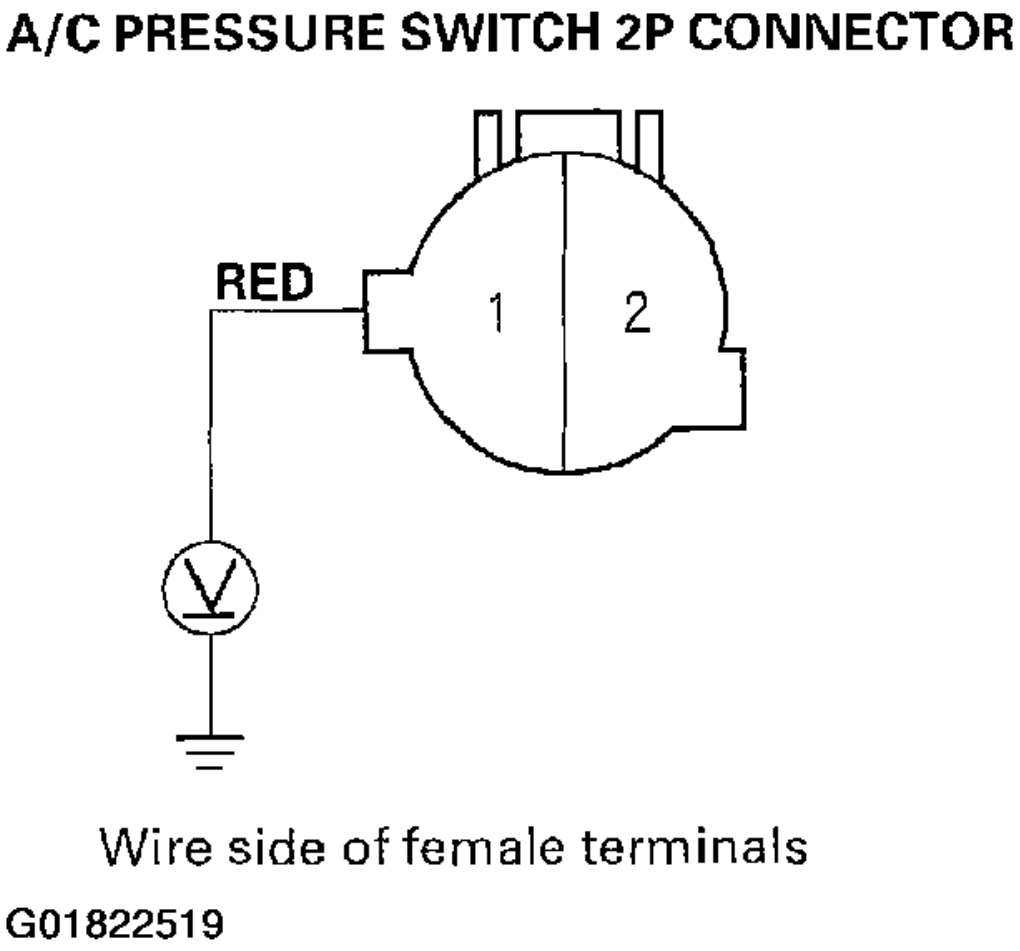


Fig. 86: Measuring The Voltage Between The No. 1 Terminal Of The A/C Pressure Switch 2P

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Connector & Body Ground

12. Turn the ignition switch OFF.
13. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

Is there continuity?

YES: Go to step 14.

NO: Go to step 21 .

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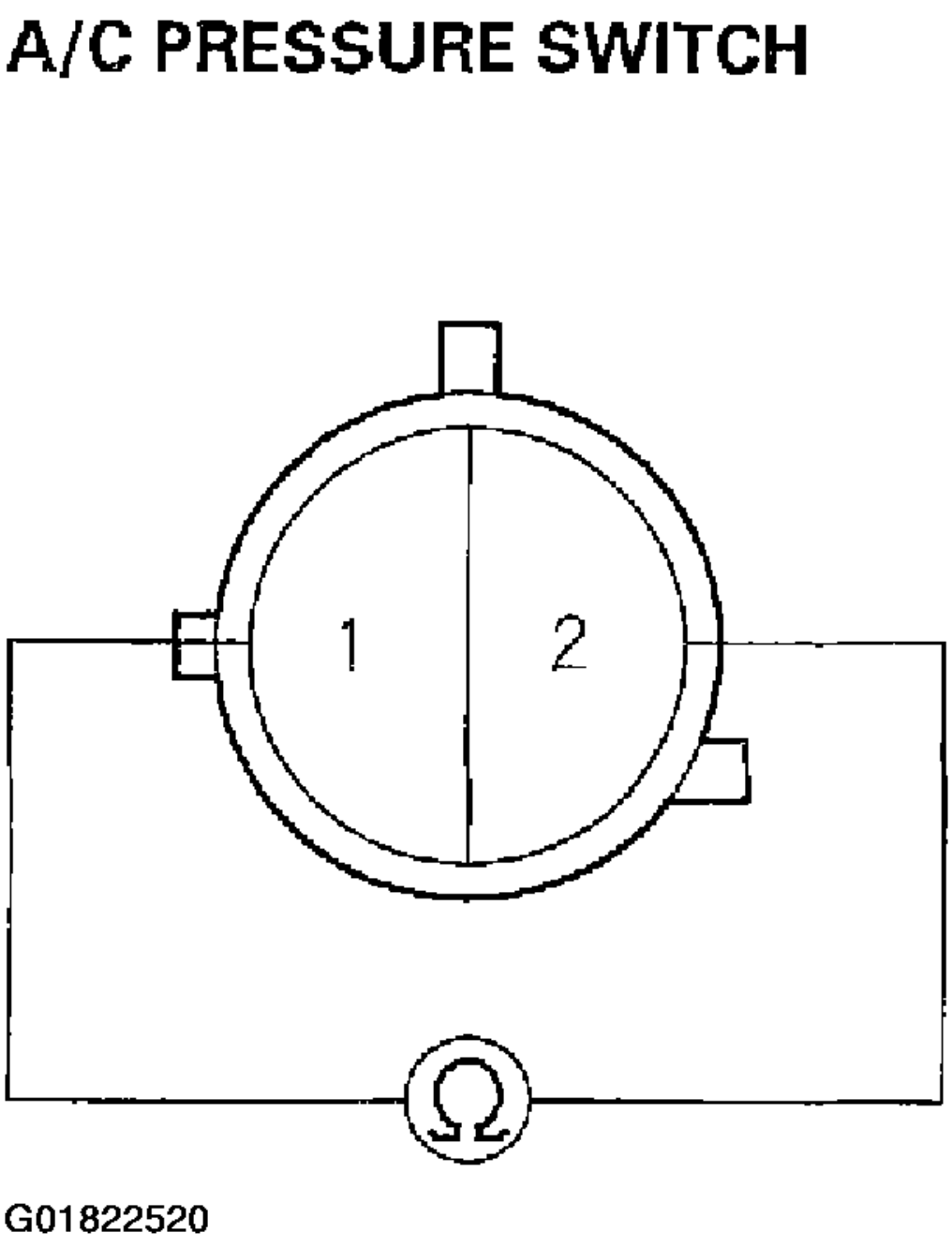


Fig. 87: Checking For Continuity Between The No. 1 & No. 2 Terminals Of The A/C Pressure Switch

14. Reconnect the A/C pressure switch 2P connector.

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15. Disconnect climate control unit connector A (22P).
16. Turn the ignition switch ON (II).
17. Measure the voltage between the No. 5 terminal of audio-HVAC display panel connector A (22P) and body ground.

Is there about 5 V or more?

YES: Go to step 18.

NO: Repair open in the wire between the audio-HVAC display panel and the A/C pressure switch.

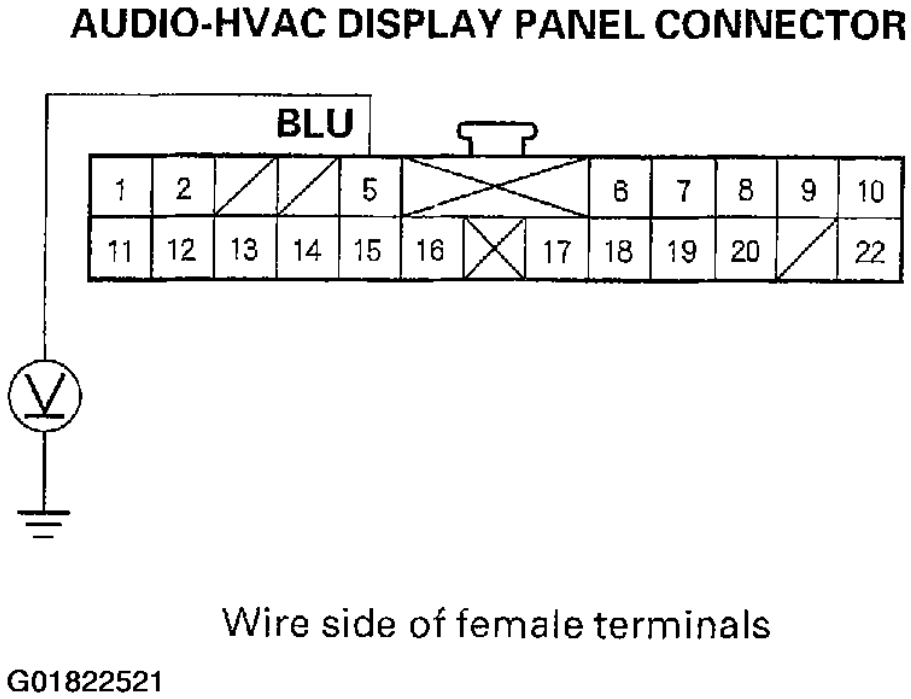


Fig. 88: Measuring The Voltage Between The No. 5 Terminal Of Audio-HVAC Display Panel Connector A (22P) & Body Ground

18. Turn the ignition switch off.
19. Measure the resistance between the No. 14 and No. 15 terminals of the audio-HVAC display panel connector A (22P).

Is the resistance less than 24k ohms?

YES: Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the A/C pressure switch 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel.

NO: Repair cause of high resistance in the evaporator temperature circuit.

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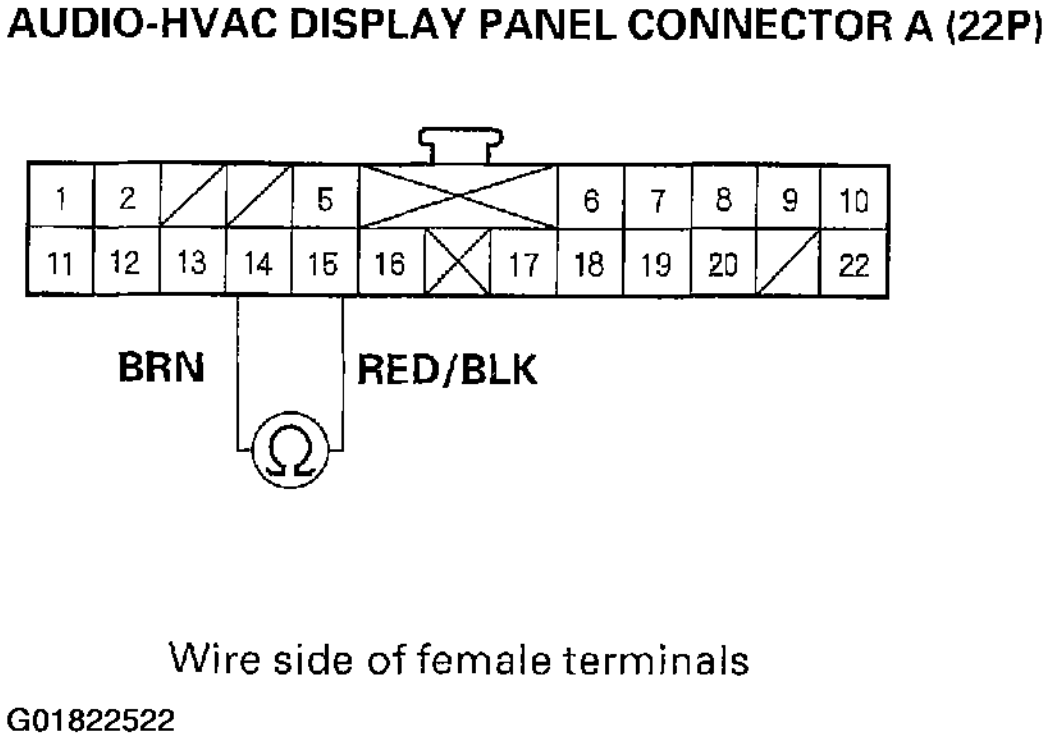


Fig. 89: Measuring The Resistance Between The No. 14 & No. 15 Terminals Of The Audio-HVAC Display Panel Connector A (22P)

20. Using a backprobe set, measure the voltage between the No. 2 terminal of under-hood fuse/relay box connector H (14P) and body ground with the under-hood fuse/relay box connectors connected.

    Is there 5 V or more?

    YES: Repair open in the wire between the under-hood fuse/relay box and the A/C pressure switch.

    NO: Check for loose or poor connections at the No. 2 terminal of the under-hood fuse/relay box, if the connections are OK, replace the under-hood fuse/relay box.

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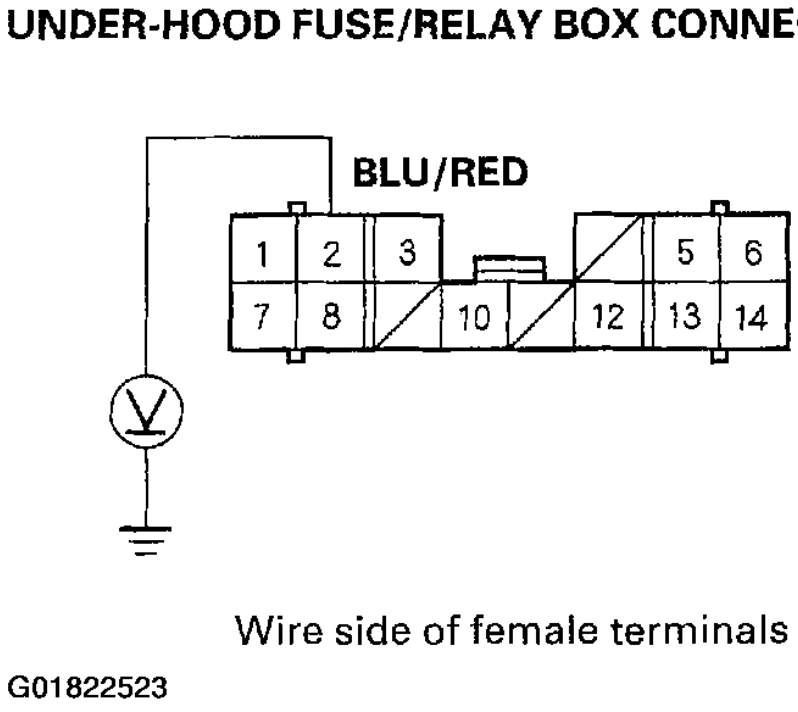


Fig. 90: Measuring The Voltage Between The No. 2 Terminal Of Under-Hood Fuse/Relay Box Connector H (14P) & Body Ground (Under-Hood Fuse/Relay Box Connectors Connected)

21. Check for proper A/C system pressure.

    Is the pressure within specifications?

    YES: Replace the A/C pressure switch.

    NO: Repair the A/C pressure problem.

IN-CAR TEMPERATURE SENSOR TEST

Check for a change in resistance by heating or cooling the sensor with a hair drier. Compare the resistance reading between the No. 1 and No. 2 terminals of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

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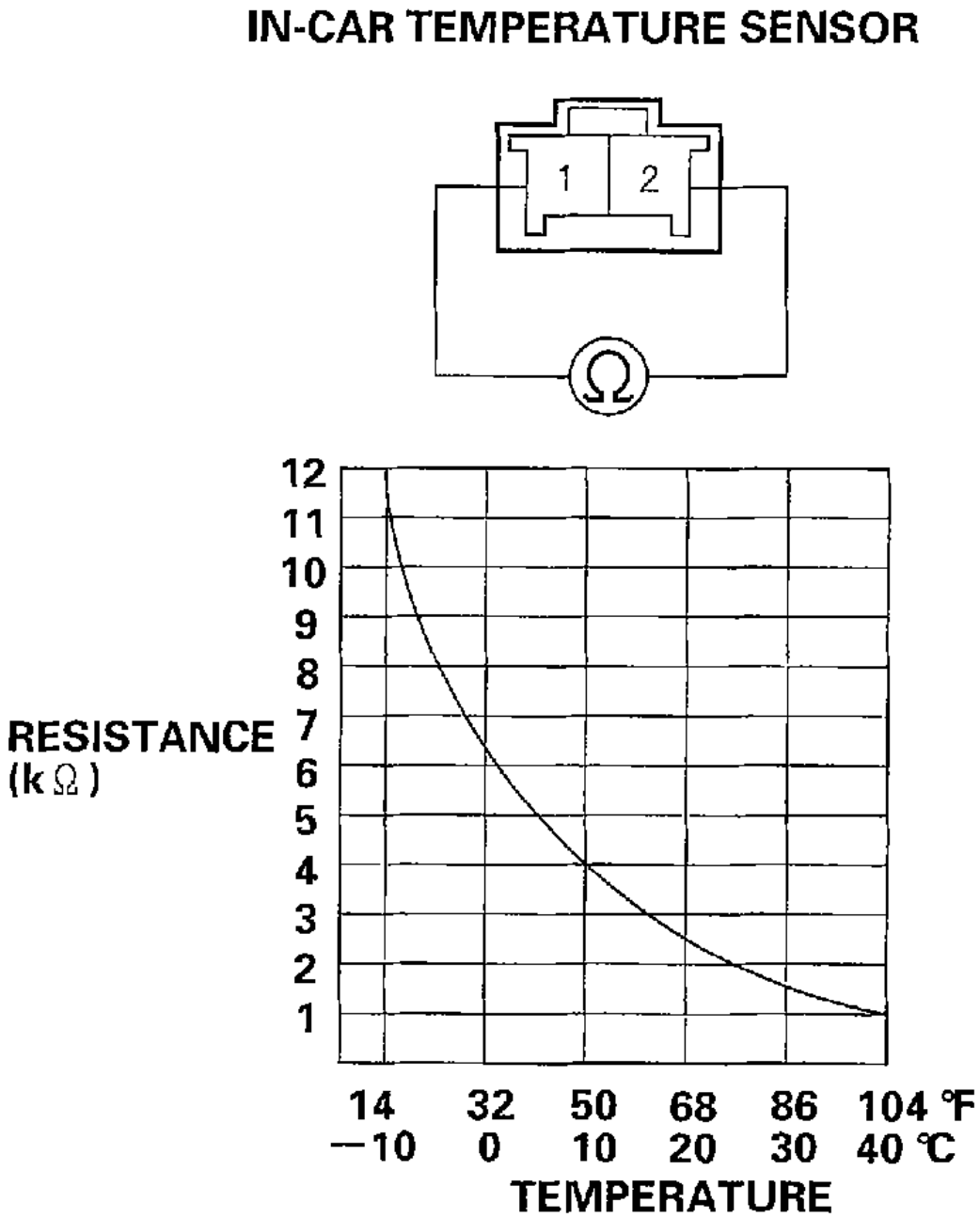


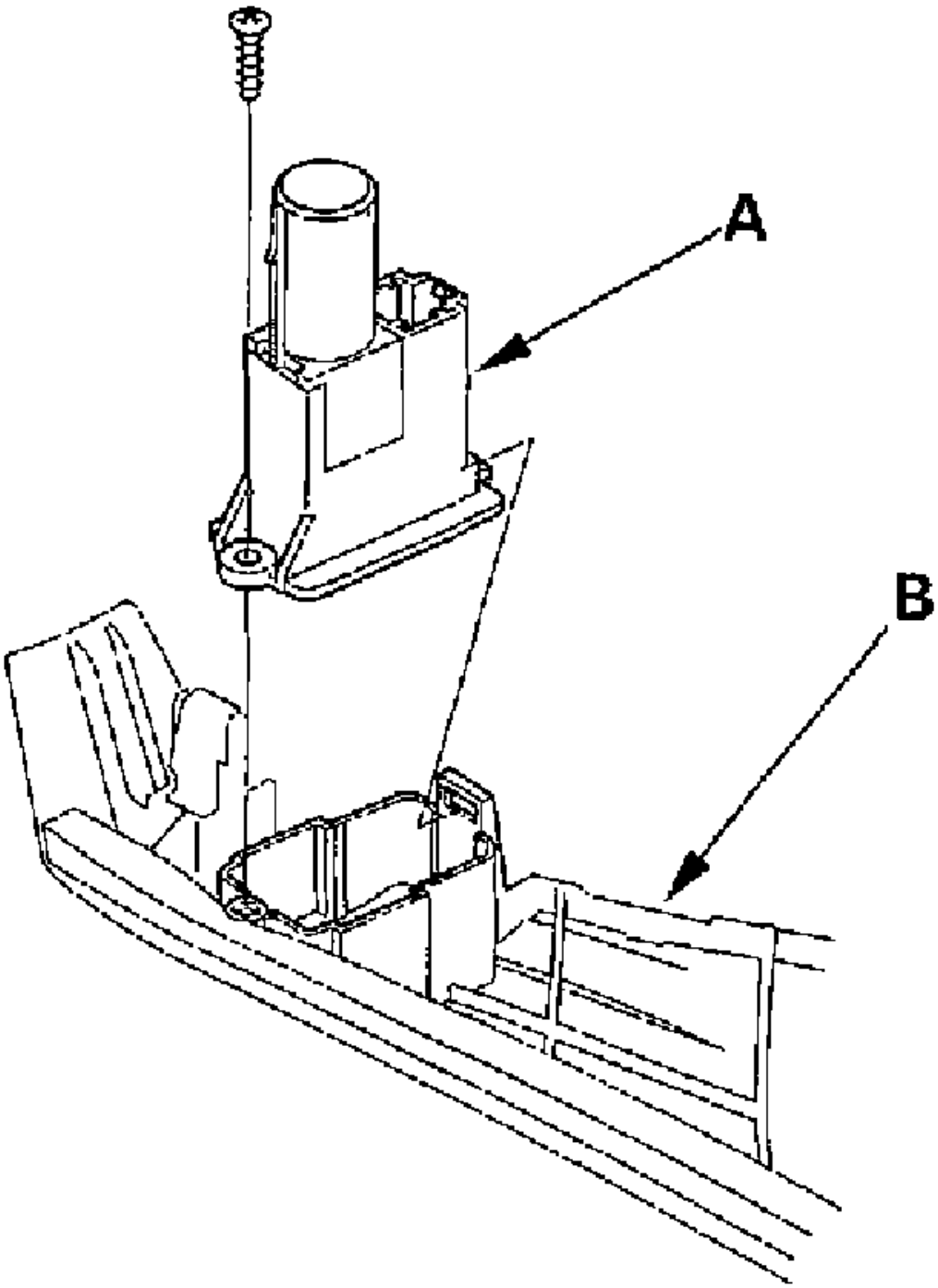
Fig. 91: Testing In-Car Temperature Sensor

IN-CAR TEMPERATURE SENSOR REPLACEMENT

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1. Remove the driver's inner dashboard trim (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Remove the self-tapping screw and the in-car temperature sensor (A) from the driver's inner dashboard trim (B).

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Fig. 92: Removing The In-Car Temperature Sensor

3. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

OUTSIDE AIR TEMPERATURE SENSOR TEST

Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance. Compare the resistance reading between the No. 1 and No. 2 terminals of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

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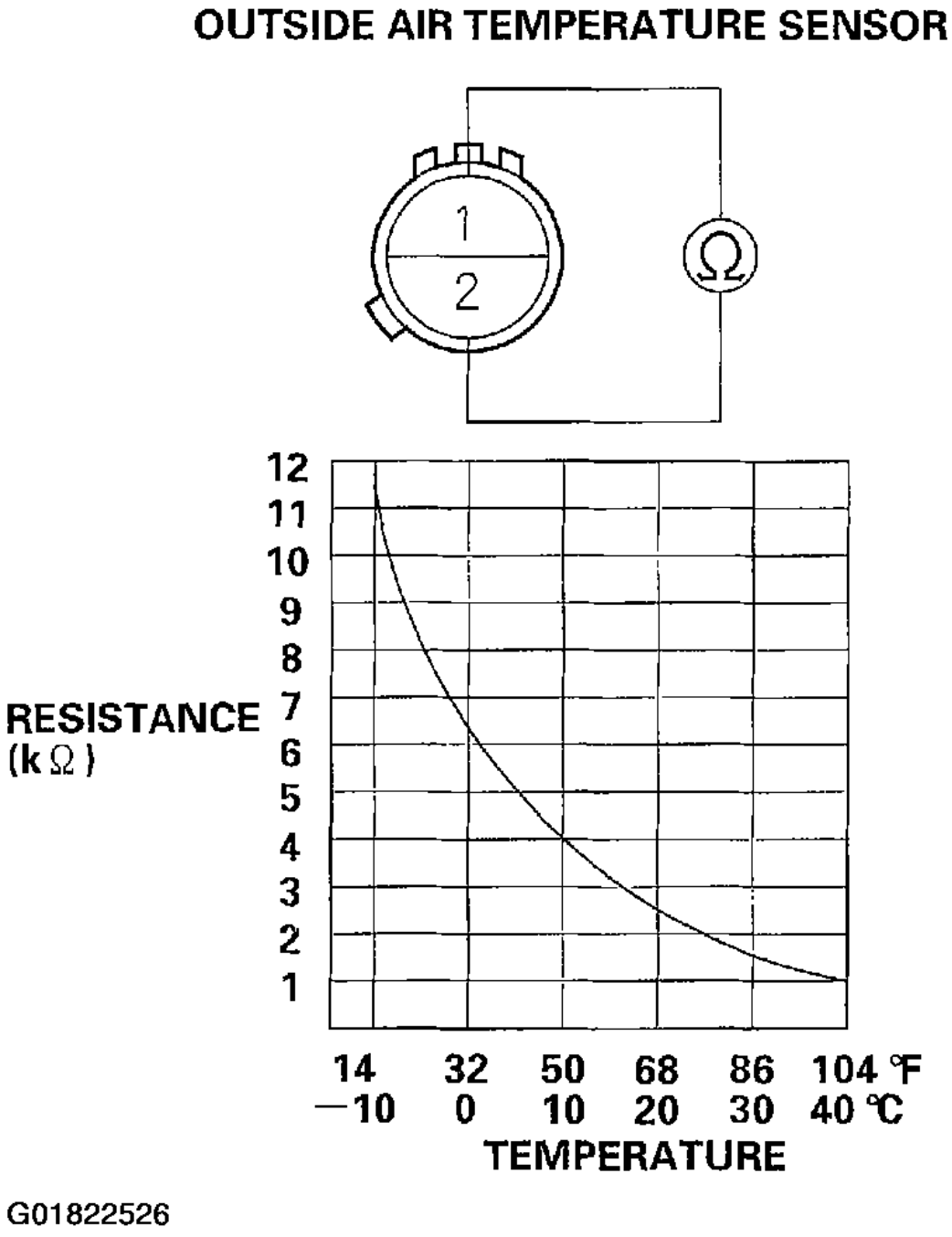


Fig. 93: Testing Outside Air Temperature Sensor

OUTSIDE AIR TEMPERATURE SENSOR REPLACEMENT

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Lift the tab (A) to release the lock, and remove the outside air temperature sensor (B) from the back of the front bumper beam. Disconnect the 2P connector (C) from the outside air temperature sensor. Install the sensor in the reverse order of removal.

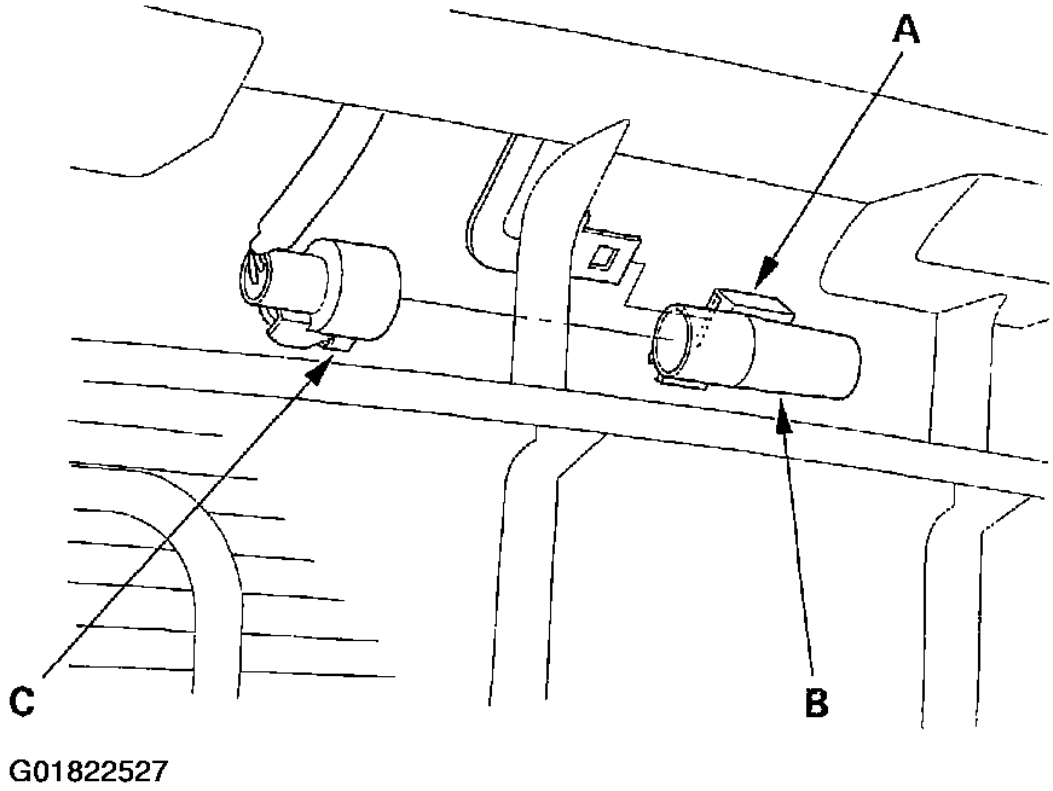


Fig. 94: Removing Outside Air Temperature Sensor

SUNLIGHT SENSOR TEST

1. Turn the ignition switch ON (II). Measure the voltage between the terminals with the (+) probe on the No. 1 terminal and the (-) probe on the No. 2 terminal with the 2P connector connected. The voltage readings will not change under the light of a flashlight or a fluorescent lamp. Voltage should be:
    - **3.6-3.7 V Or More:** Sensor Out Of Direct Sunlight.
    - **3.3-3.5 V Or Less:** Sensor In Direct Sunlight.

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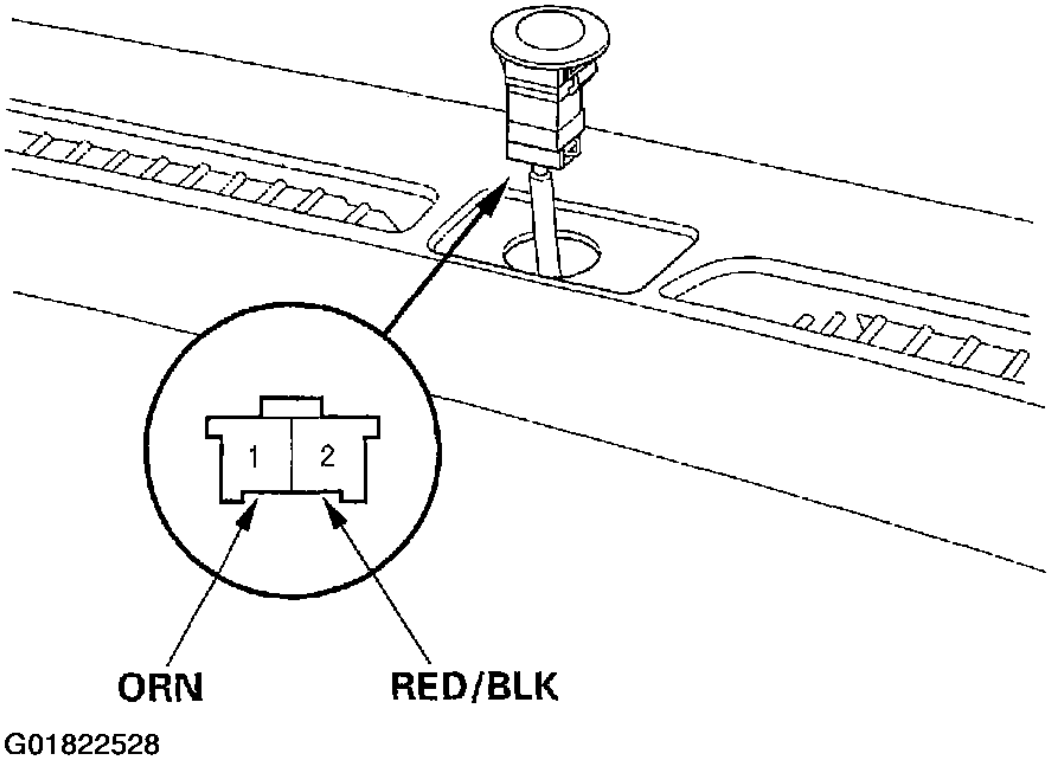


Fig. 95: Testing Sunlight Sensor

SUNLIGHT SENSOR REPLACEMENT

Remove the sunlight sensor (A) from the dashboard then disconnect the 2P connector (B). Be careful not to damage the sensor and the dashboard. Install the sensor in the reverse order of removal.

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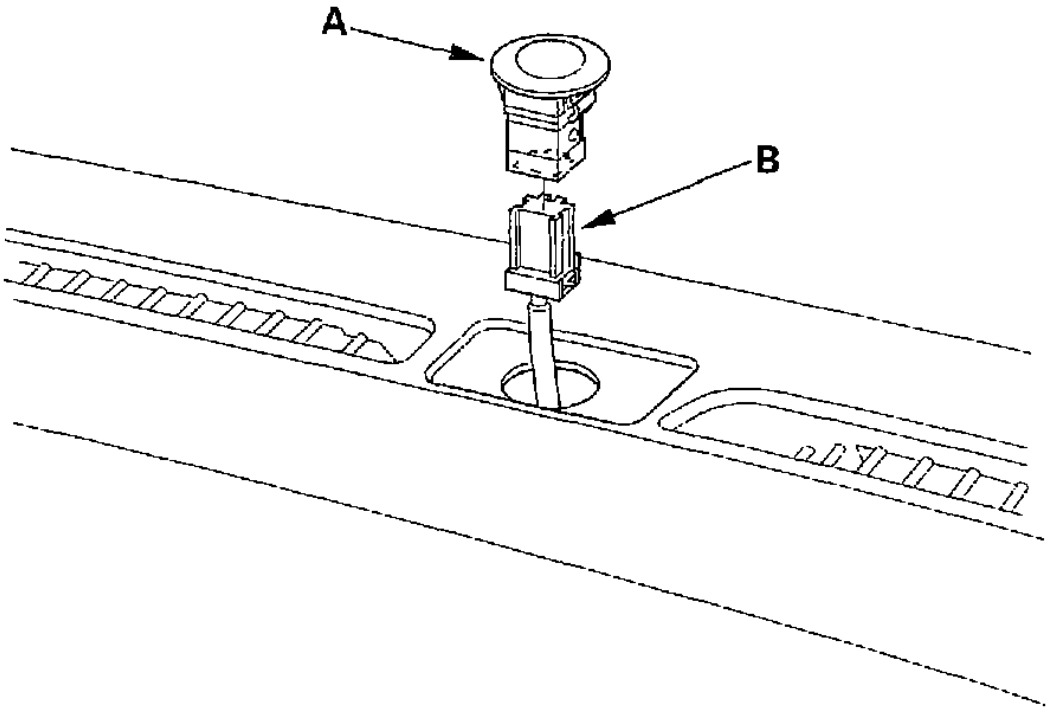


Fig. 96: Removing Sunlight Sensor

EVAPORATOR TEMPERATURE SENSOR TEST

1. Dip the sensor in ice water, and measure the resistance between its terminals.

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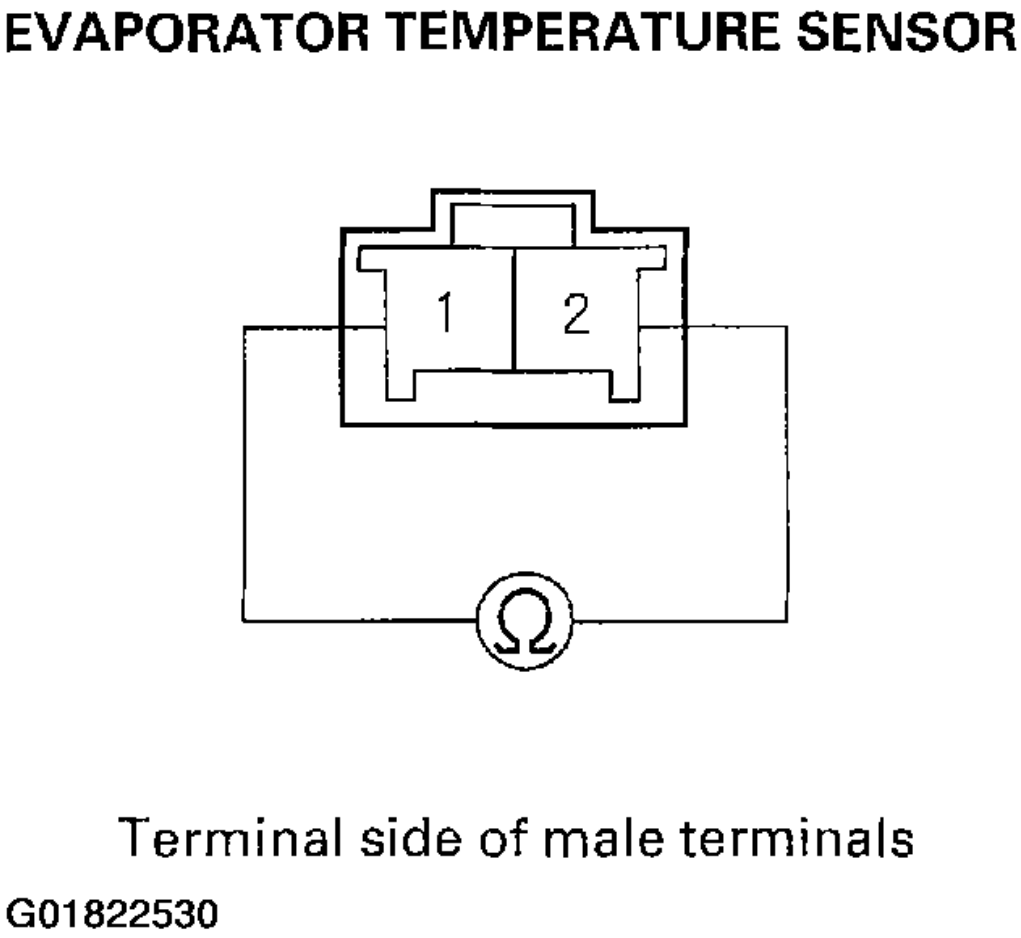


Fig. 97: Evaporator Temperature Sensor Test

2. Then pour warm water on the sensor, and check for a change in resistance.
3. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.

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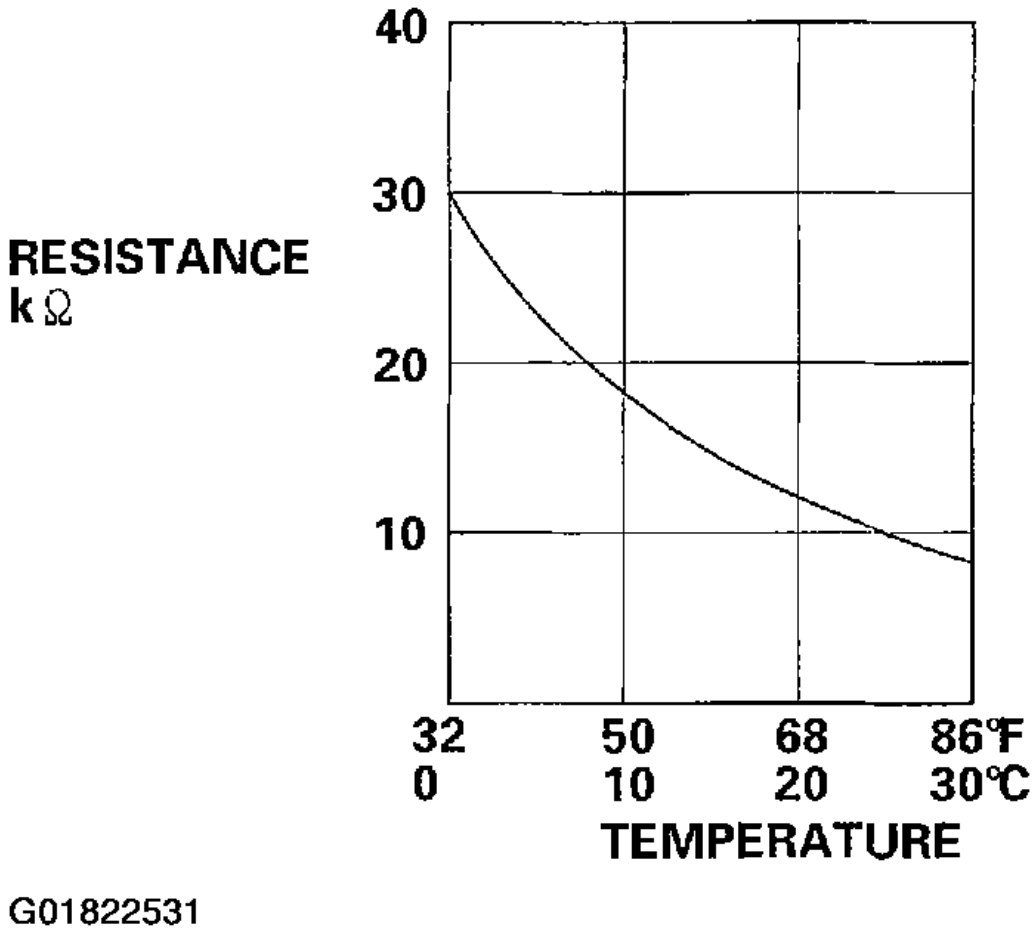


Fig. 98: Evaporator Temperature Sensor Resistance Graph

EVAPORATOR TEMPERATURE SENSOR REPLACEMENT

Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C). Remove the self-tapping screw, and carefully pull out the evaporator temperature. Install the sensor in the reverse order of removal.

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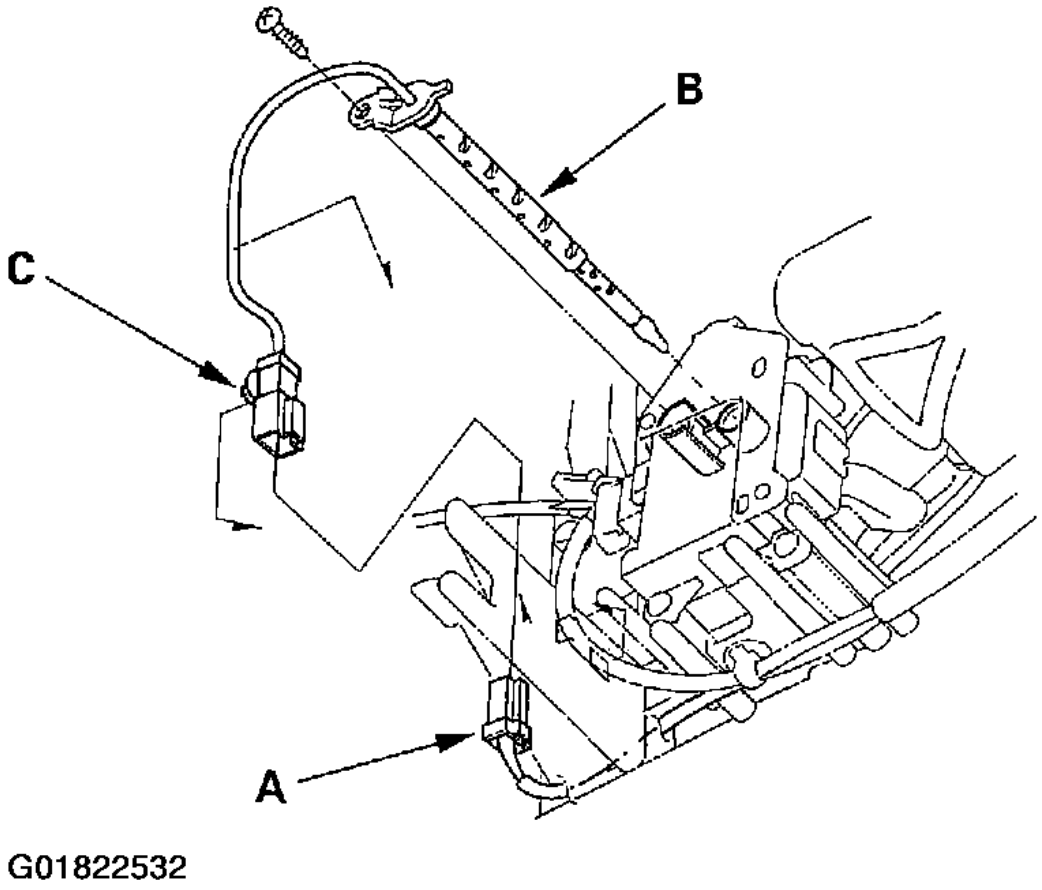


Fig. 99: Removing Evaporator Temperature Sensor

POWER TRANSISTOR TEST

1. Disconnect the 4P connector from the power transistor.
2. Measure the resistance between the No. 3 and No. 4 terminals of the power transistor. It should be about 1.4-1.5 kohm.
   - If the resistance is within the specifications, go to step 3.
   - If the resistance is not within the specifications, replace the power transistor.

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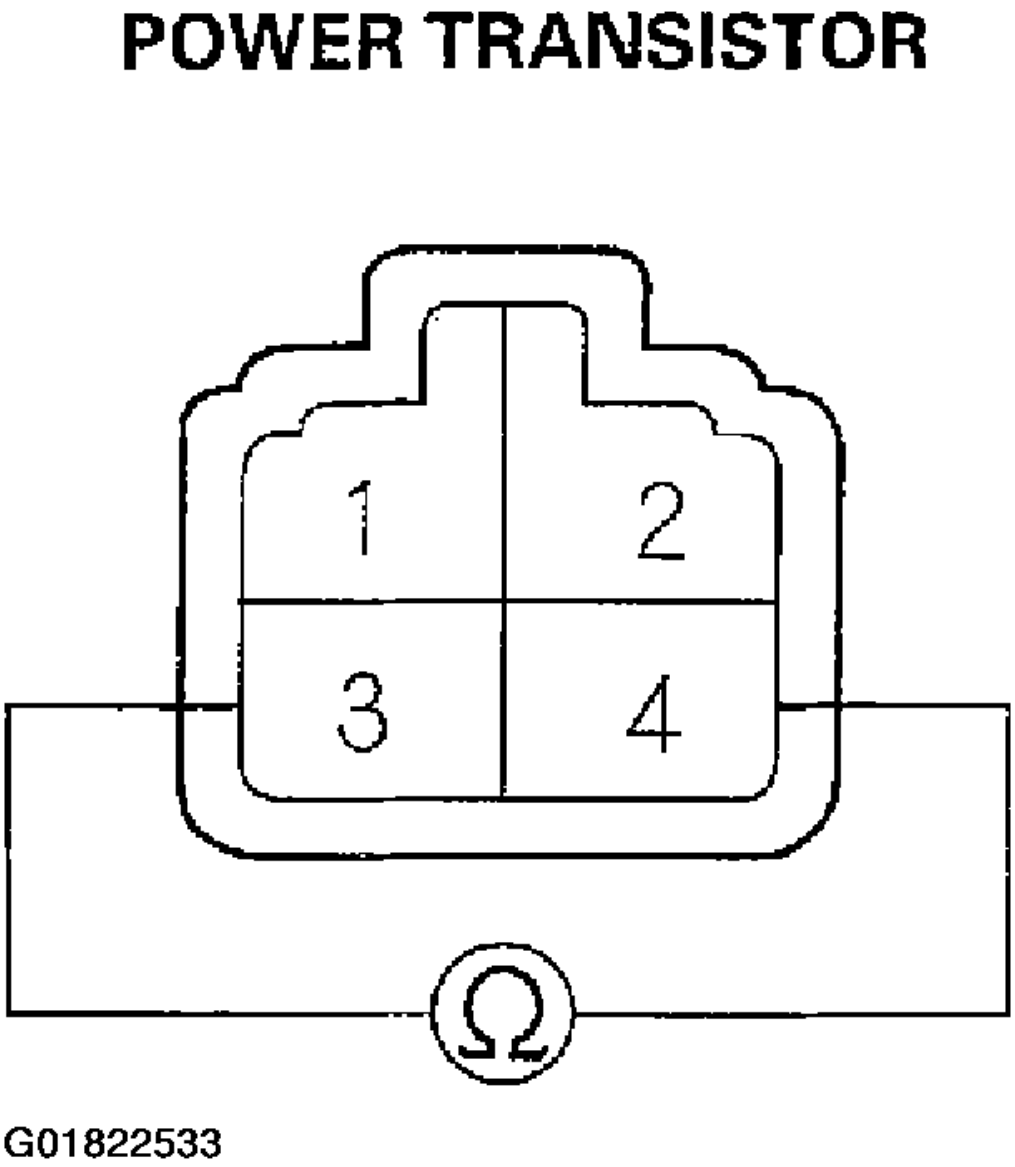


Fig. 100: Measuring The Resistance Between The No. 3 & No. 4 Terminals Of The Power Transistor

3. Carefully release the lock tab on the No. 1 terminal (BLU/YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.

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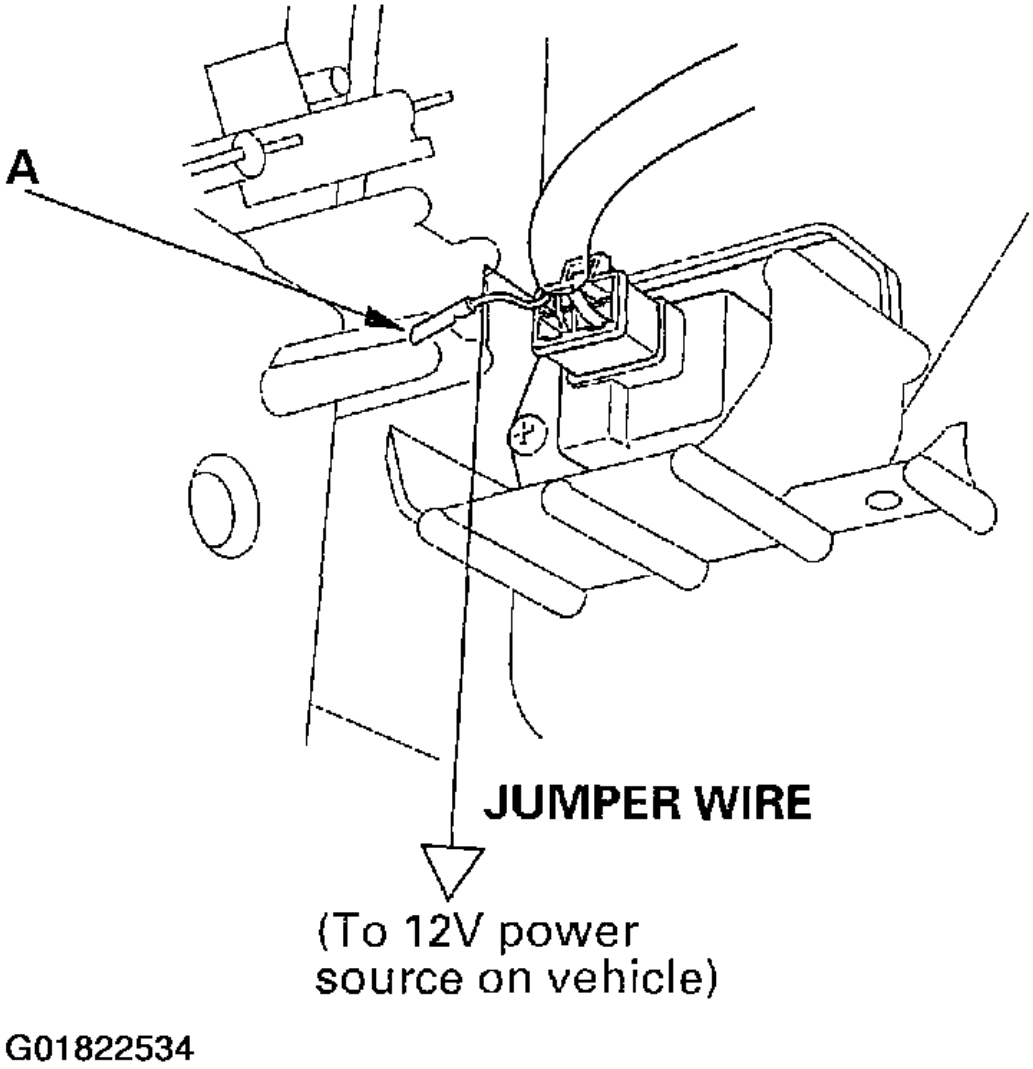


Fig. 101: Supplying 12 Volts To The No. 1 Cavity With A Jumper Wire

4. Reconnect the 4P connector to the power transistor.
5. Supply 12 volts to the No. 1 cavity with a jumper wire.
6. Turn the ignition switch ON (II), and check that the blower motor runs.
   - If the blower motor does not run, replace the power transistor.
   - If the blower motor runs, the power transistor is OK.

DRIVER'S AIR MIX CONTROL MOTOR TEST

1. Disconnect the 7P connector from the driver's air mix control motor.

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NOTE: Incorrectly applying power and ground to the driver's air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the driver's air mix control motor, and ground the No. 2 terminal; the driver's air mix control motor should run, Cool side. If it doesn't, reverse the connections; the driver's air mix control motor should run, Hot side.
3. If the driver's air mix control motor did not run in step 2, remove it, then check the driver's air mix control linkage and door for smooth movement.
   - If the linkage and door move smoothly, replace the driver's air mix control motor.
   - If the linkage or door sticks or binds, repair them as needed.
   - If the driver's air mix control motor runs smoothly, go to step 4.

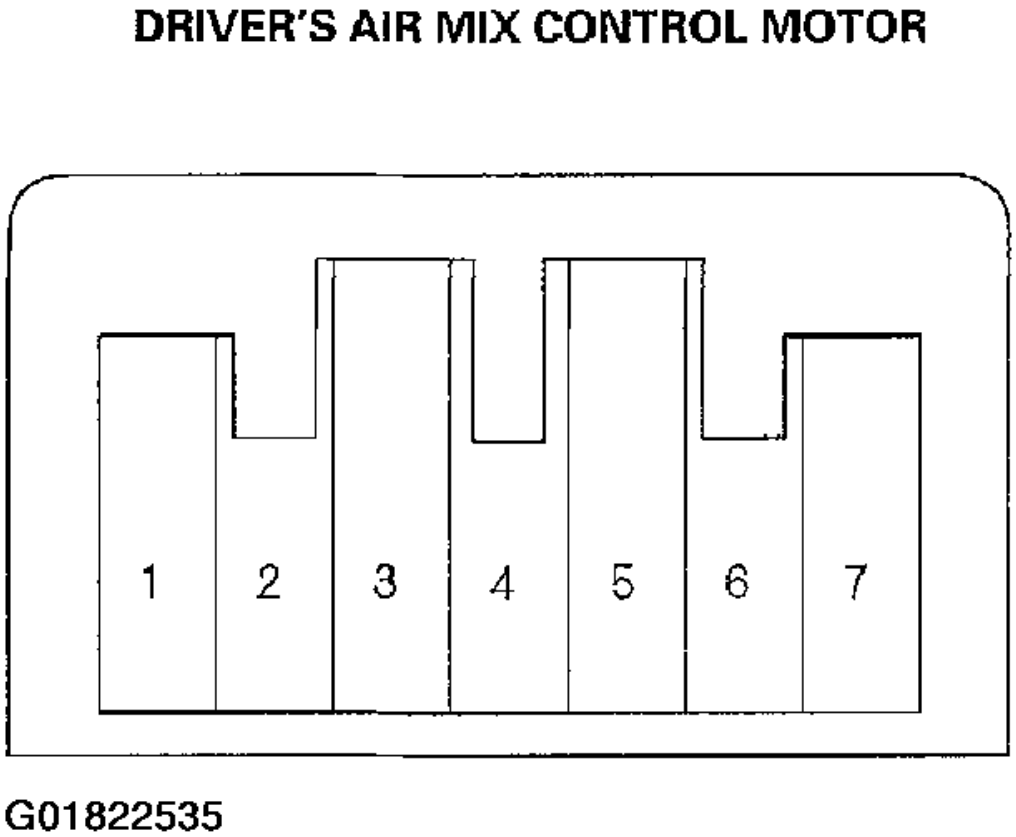


Fig. 102: Identifying Driver's Air Mix Control Motor Connector Terminals

4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 k to 7.8 k ohm.

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5. Reconnect the driver's air mix control motor 7P connector, then turn the ignition switch ON (II).
6. Measure the voltage between the No. 3 and No. 5 terminals.

   Max Cool: About 0.5 V

   Max Hot: About 4.5 V
7. If either the resistance or voltage readings are not as specified, replace the driver's air mix control motor.

DRIVER'S AIR MIX CONTROL MOTOR REPLACEMENT

1. Disconnect the 7P connector (A) from the driver's air mix control motor (B). Remove the self-tapping screws and the driver's air mix control motor from the heater unit.

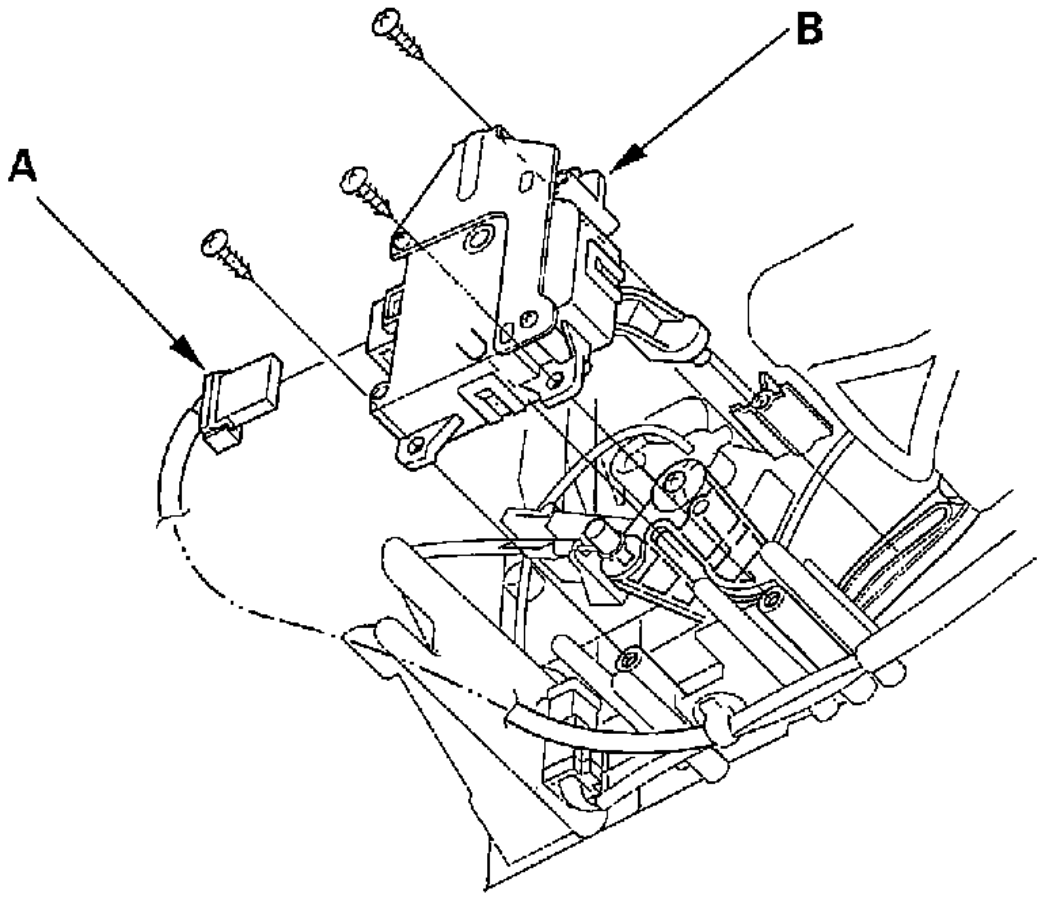


Fig. 103: Removing Driver's Air Mix Control Motor

2. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with

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the linkage. After installation, make sure the motor runs smoothly.

PASSENGER'S AIR MIX CONTROL MOTOR TEST

1. Disconnect the 7P connector from the passenger's air mix control motor.

   NOTE: Incorrectly applying power and ground to the passenger's air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the passenger's air mix control motor, and ground the No. 2 terminal; the passenger's air mix control motor should run, Cool side. If it doesn't, reverse the connections; the passenger's air mix control motor should run Hot side.
3. If the passenger's air mix control motor did not run in step 2, remove it, then check the passenger's air mix control linkage and door for smooth movement.
   - If the linkage and door move smoothly, replace the passenger's air mix control motor.
   - If the linkage or door sticks or binds, repair them as needed.
   - If the passenger's air mix control motor runs smoothly, go to step 4.

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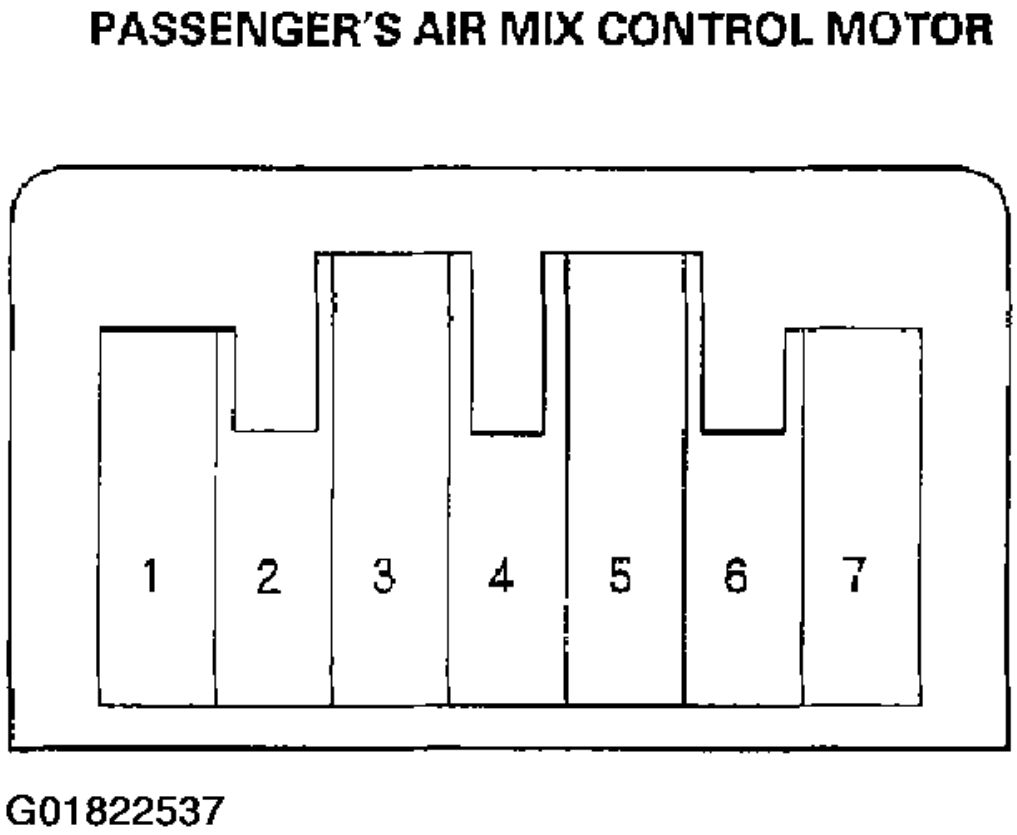


Fig. 104: Identifying Passenger's Air Mix Control Motor Connector Terminals

4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 k to 7.8 kohm.
5. Reconnect the passenger's air mix control motor 7P connector, then turn the ignition switch ON (II).
6. Measure the voltage between the No. 3 and No. 5 terminals.

   Max Cool: About 1.5 V

   Max Hot: About 4.5 V
7. If either the resistance or voltage readings are not as specified, replace the passenger's air mix control motor.

PASSENGER'S AIR MIX CONTROL MOTOR REPLACEMENT

1. Disconnect the 7P connector (A) from the passenger's air mix control motor (B). Remove the self-tapping screws and the passenger's air mix control motor from the heater unit.

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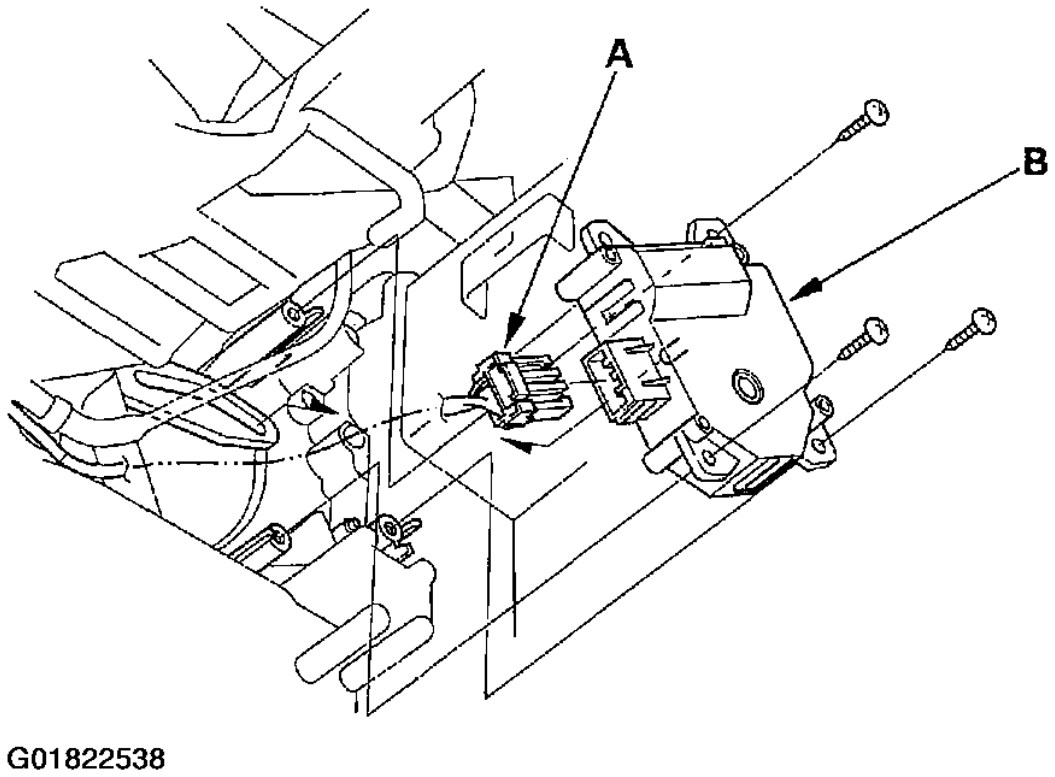


Fig. 105: Removing Passenger's Air Mix Control Motor

2. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

MODE CONTROL MOTOR TEST

1. Disconnect the 7P connector from the mode control motor.

NOTE: Incorrectly applying power and ground to the mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 2 terminal of the mode control motor, and ground the No. 1 terminal; the mode control motor should run smoothly, Vent side. If it doesn't, reverse the connections; the mode control motor should run smoothly, Defrost side. When the mode control motor stops running, disconnect battery power immediately.

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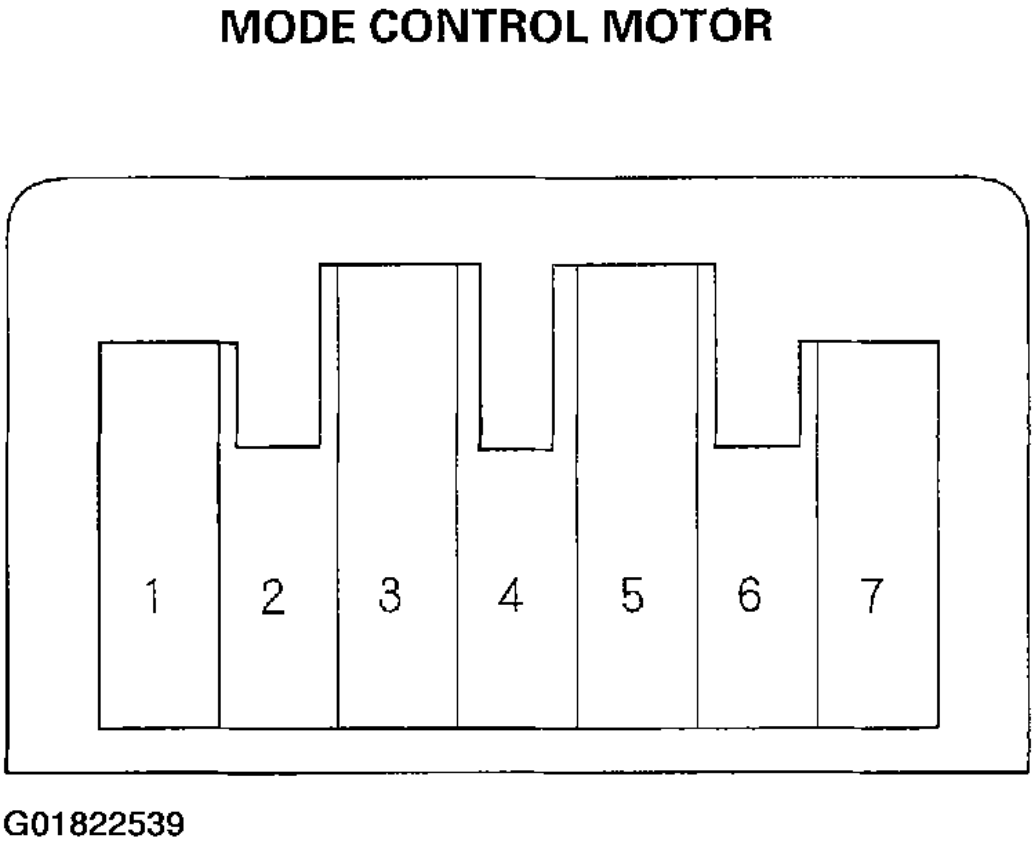


Fig. 106: Identifying Mode Control Motor Connector Terminals

3. If the mode control motor did not run in step 2, remove it, then check the mode control linkage and doors for smooth movement.
   - If the linkage and doors move smoothly, replace the mode control motor.
   - If the linkage or doors stick or bind, repair them as needed.
   - If the mode control runs smoothly, go to step 4.
4. Use a digital multimeter with an output of 1 mA or less at the 20 kohm range. With the mode control motor running as in step 2, check for continuity between the No. 3, 4, 5 and 6 terminals and the No. 7 terminal individually. There should be continuity for a moment at each terminal as the motor moves past the switch's terminal.
5. If there is no continuity for a moment at each terminal, replace the mode control motor.

MODE CONTROL MOTOR REPLACEMENT

1. Open the glove box. Remove the damper from the glove box, then let the glove box hang down (see **GLOVE BOX REMOVAL/INSTALLATION**)

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2. Remove the relays from the bracket.

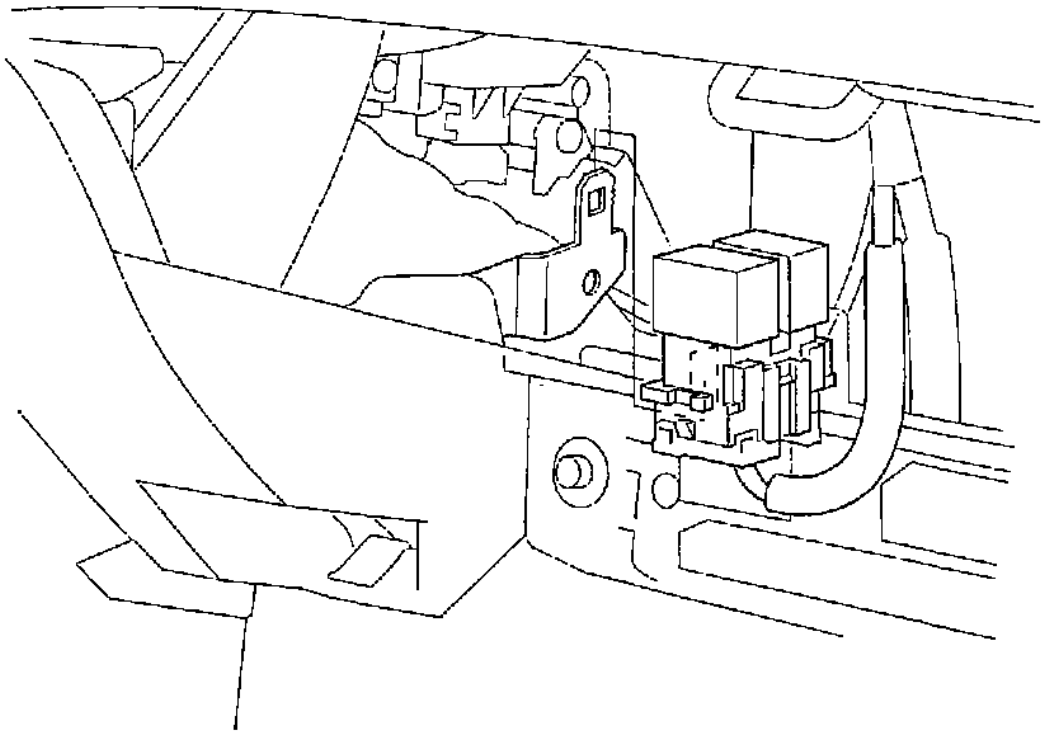


Fig. 107: Removing The Relays From The Bracket

3. Disconnect the 7P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control from the heater unit.

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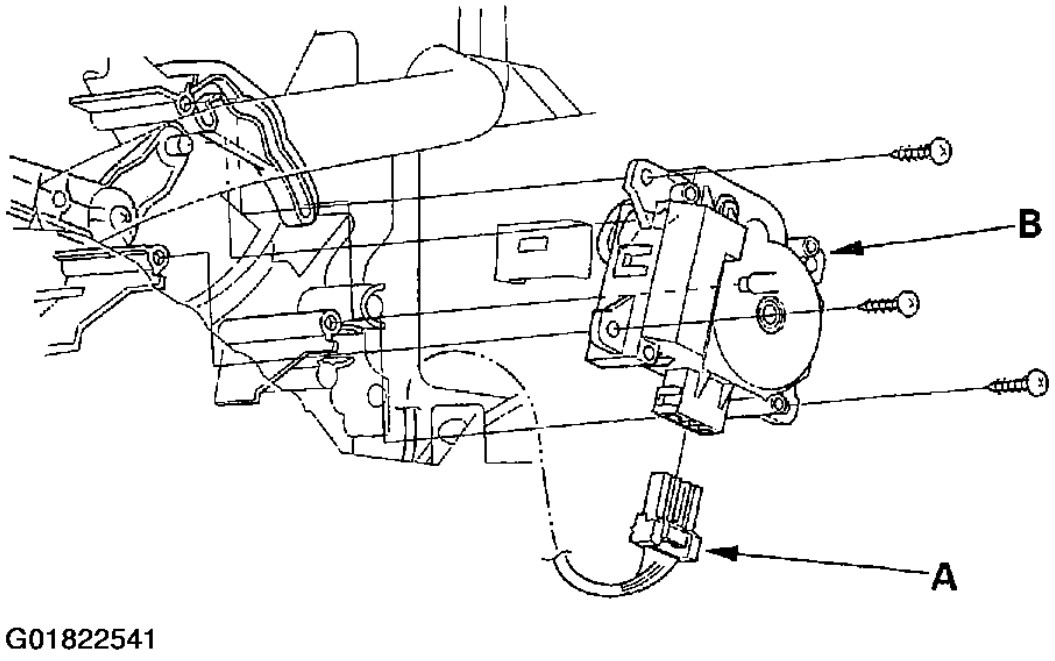


Fig. 108: Removing Mode Control Motor

4. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

RECIRCULATION CONTROL MOTOR TEST

1. Disconnect the 7P connector from the recirculation control motor.

NOTE: Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the recirculation control motor, and ground the No. 5 or No. 7 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 5 or No. 7 terminals from ground; the recirculation control motor should stop at Fresh (when the No. 7 terminal is disconnected) or Recirculate (when the No. 5 terminal is disconnected). Don't cycle the recirculation control motor for a long time.

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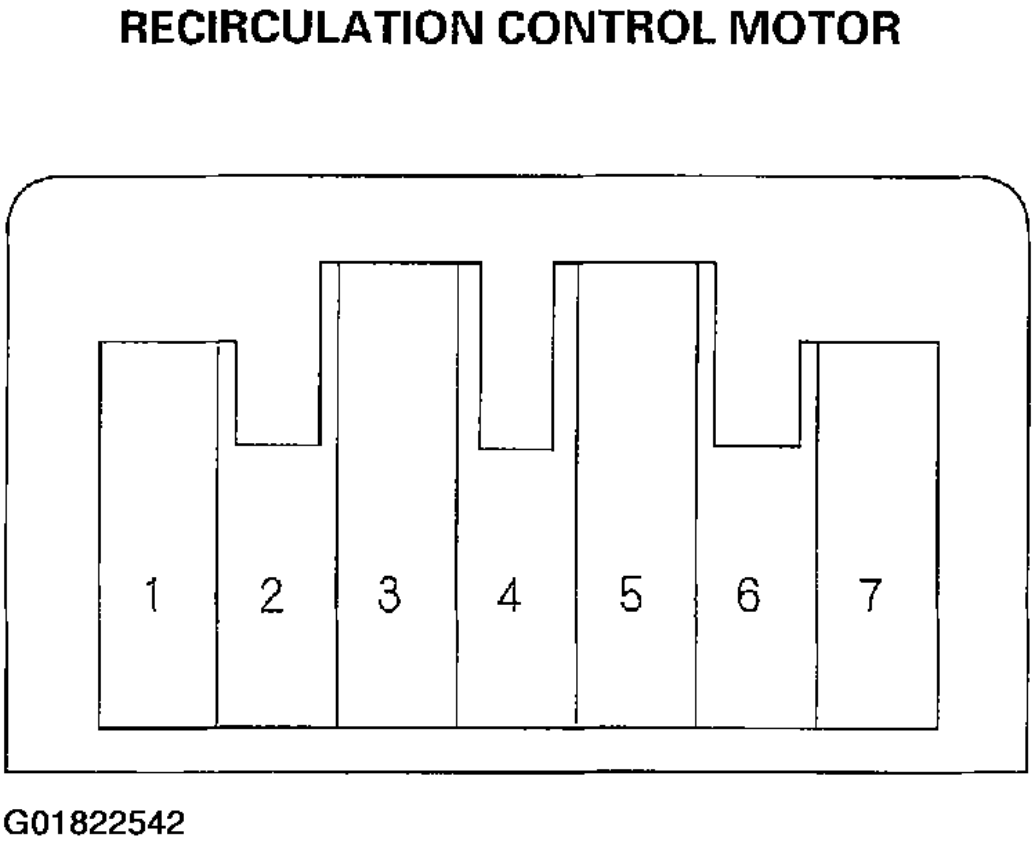


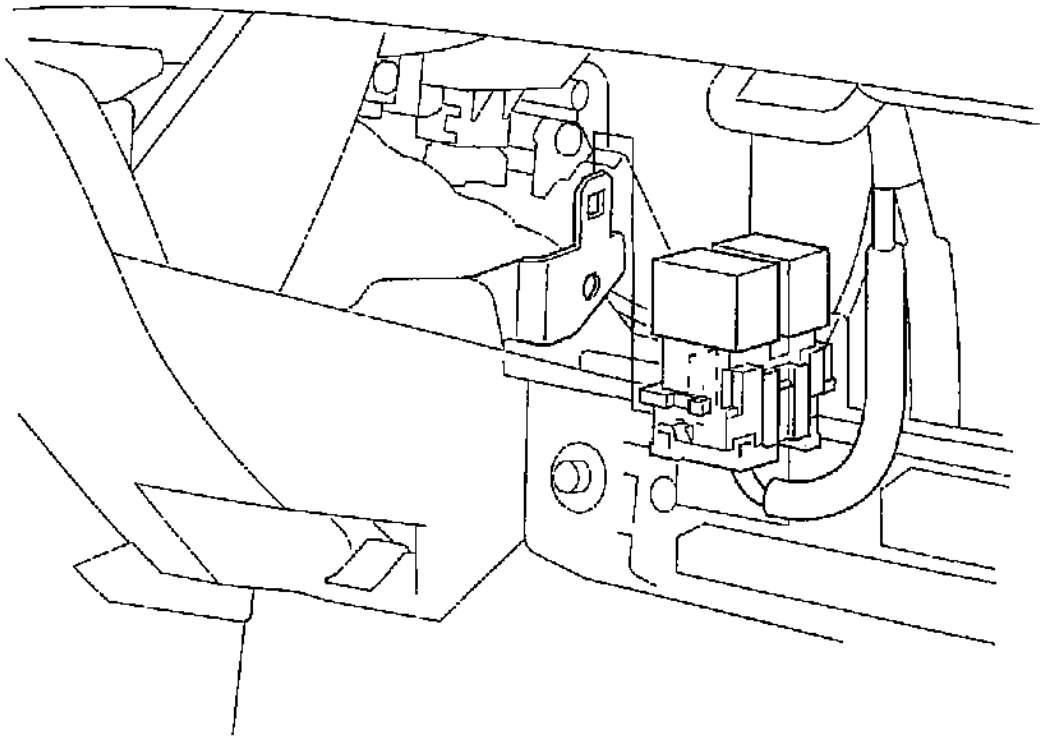
Fig. 109: Identifying Recirculation Control Motor Connector Terminals

3. If the recirculation control motor did not run in step 2, remove it, then check the recirculation control linkage and doors for smooth movement.
   - If the linkage and doors move smoothly, replace the recirculation control motor.
   - If the linkage or doors stick or bind, repair them as needed.

RECIRCULATION CONTROL MOTOR REPLACEMENT

1. Open the glove box. Remove the damper from the glove box, then let the glove box hang down (see **GLOVE BOX REMOVAL/INSTALLATION**).
2. Remove the relays from the bracket.

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Fig. 110: Removing The Relays From The Bracket

3. Disconnect the 7P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.

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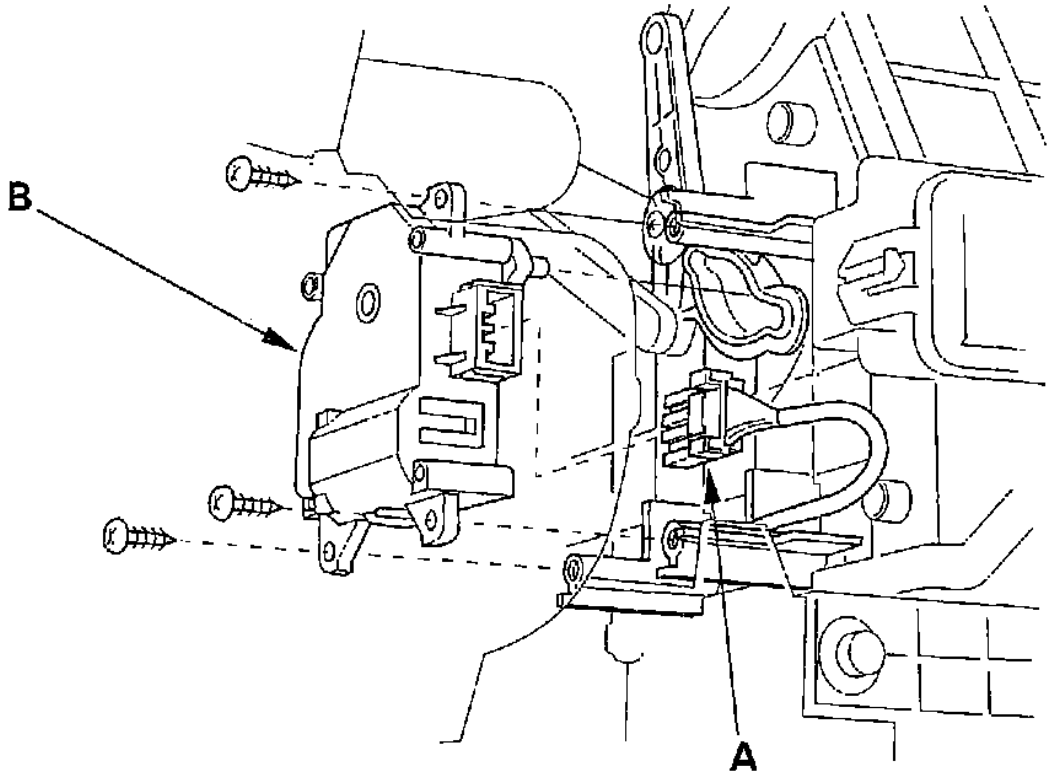


Fig. 111: Removing Recirculation Control Motor

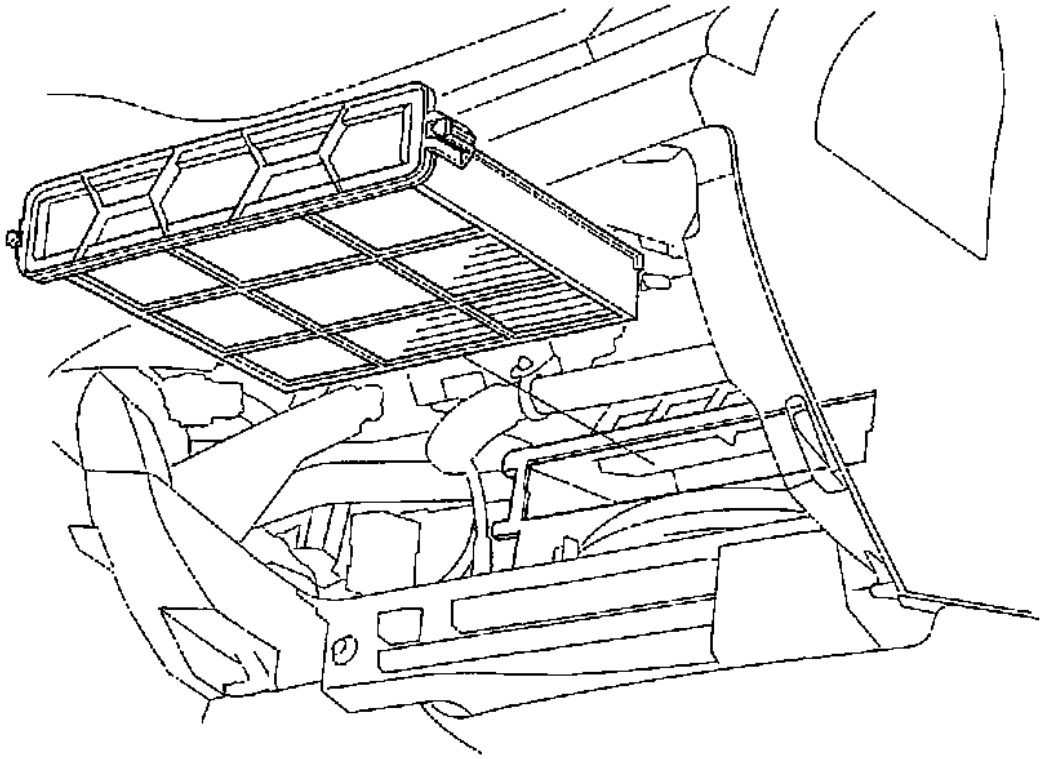
4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

DUST & POLLEN FILTER REPLACEMENT

The dust and pollen filter should be replaced every 30,000 miles (48,000 km) or 24 months whichever comes first. Replace the filter more often if the air flow is less than usual, or if the vehicle is driven in areas that have high concentrations of soot from industry or diesel powered vehicles.

1. Open the glove box. Remove the damper from the glove box, then let the glove box hang down (see **GLOVE BOX REMOVAL/INSTALLATION**).
2. Remove the dust and pollen filter assembly from the evaporator.

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Fig. 112: Removing The Dust & Pollen Filter Assembly From The Evaporator

3. Remove the filter (A) from the housing (B), and replace the filter.

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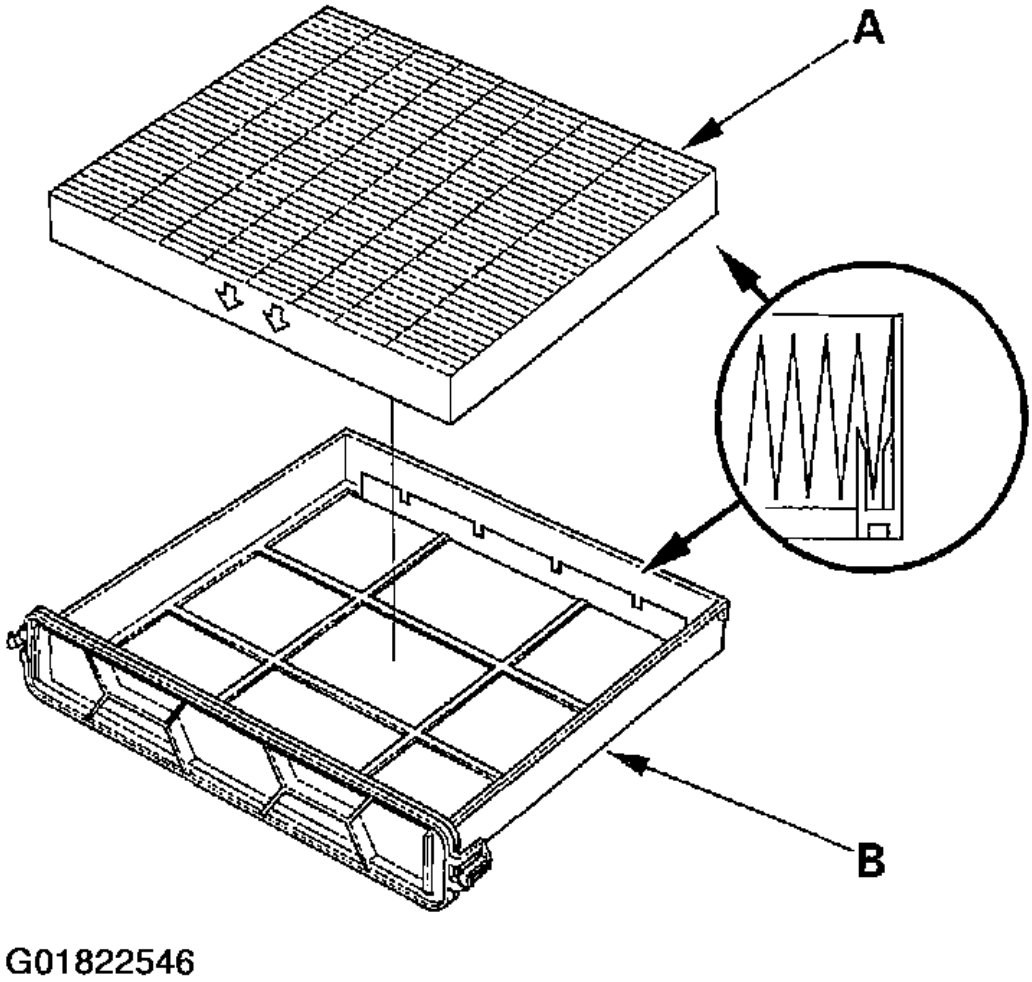


Fig. 113: Removing The Filter From The Housing & Replacing The Filter

4. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the evaporator.

BLOWER UNIT REMOVAL & INSTALLATION

1. Remove the glove box and the passenger's kick panel (see **GLOVE BOX REMOVAL/INSTALLATION**).
2. Remove the wire harness connector clips (A), the wire harness clip (B), and bolt. Cut the plastic cross brace (C) in the glove box opening with diagonal cutters in the area shown.

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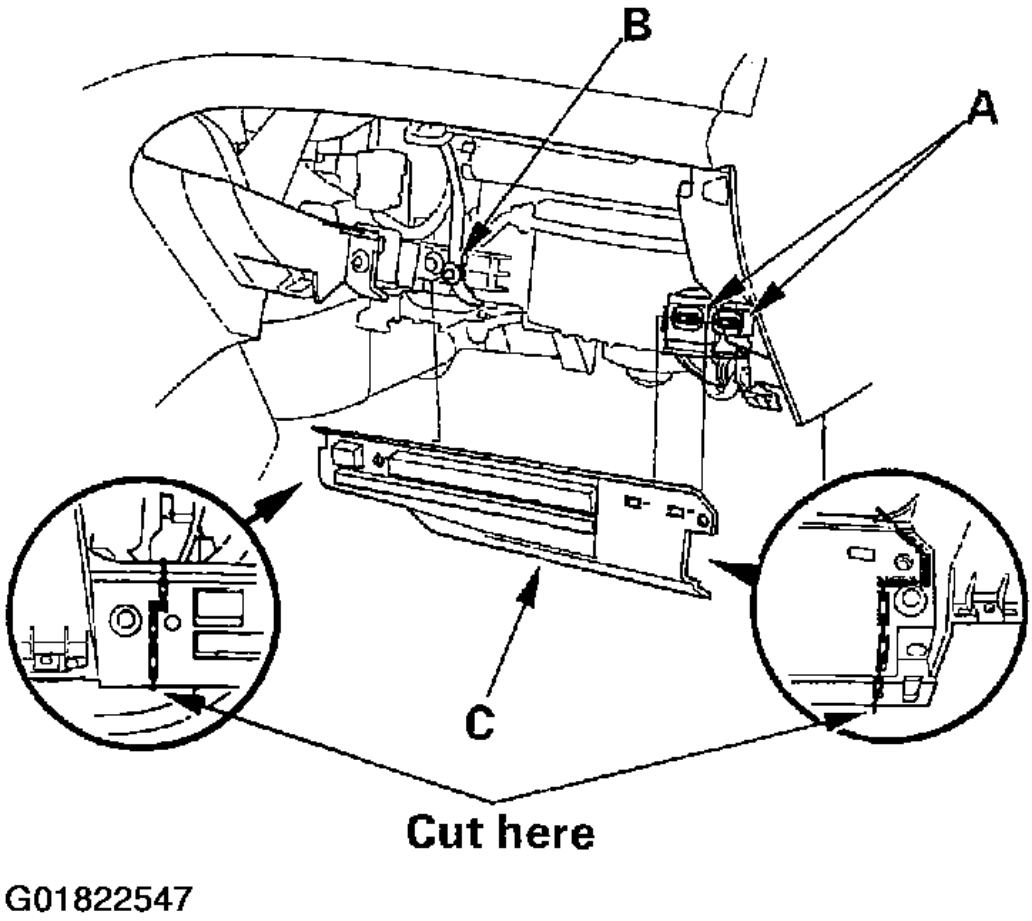


Fig. 114: Cutting The Plastic Cross Brace In The Glove Box Opening

3. Disconnect the connectors (A) from the blower motor, the floor wire harness, and the recirculation control motor, then remove the wire farness clips (B) and the connector clips (C). Remove the mounting nuts, the mounting bolts and the blower unit (D).

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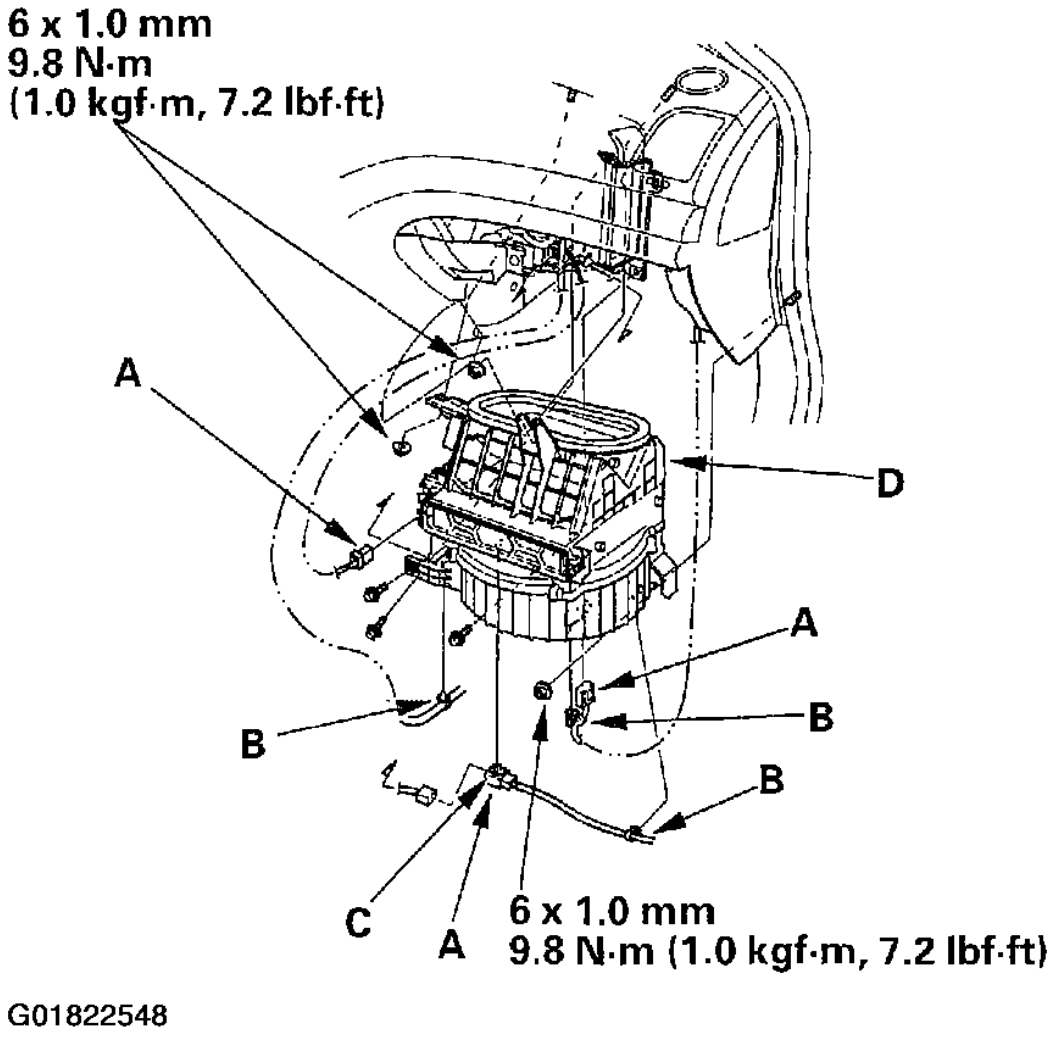


Fig. 115: Removing Blower Unit

4. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

BLOWER UNIT COMPONENT REPLACEMENT

Note these items when overhauling the blower unit:

- The recirculation control motor (A), the blower motor (B), and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and doors move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see **RECIRCULATION**

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CONTROL MOTOR TEST).

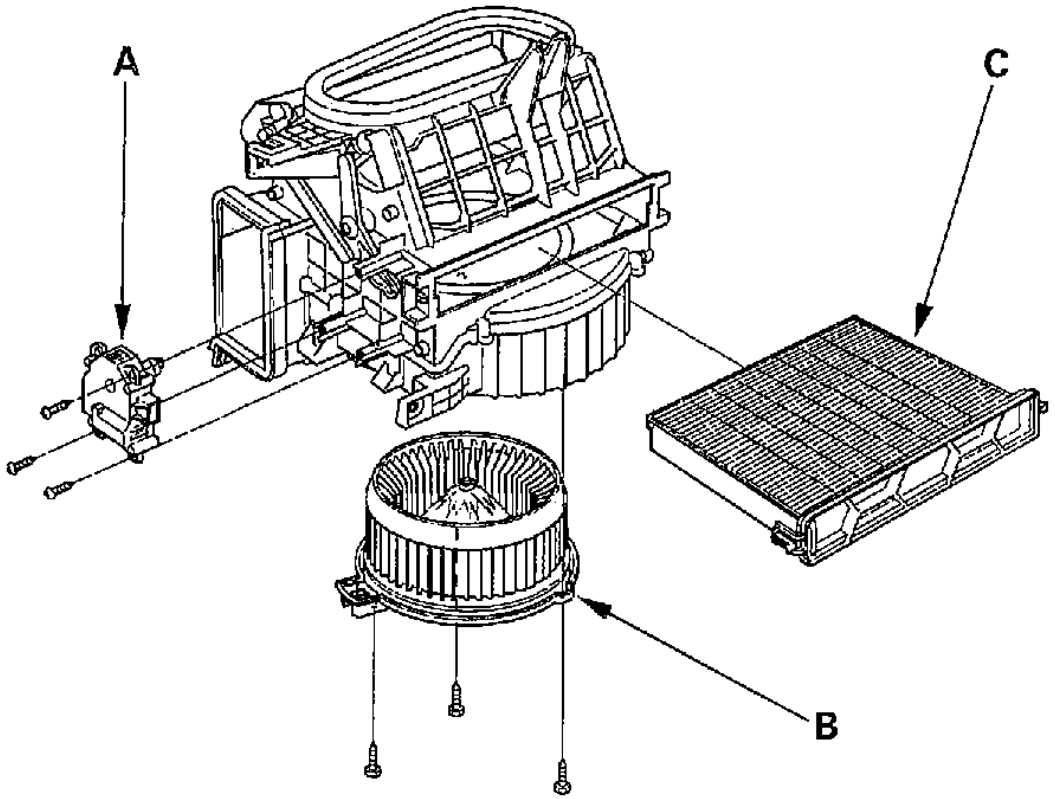


Fig. 116: Exploded View Of Blower Unit Components

EVAPORATOR CORE REPLACEMENT

1. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
2. Remove the bolt, then disconnect the suction line (A) and the receiver line (B) from the evaporator core.

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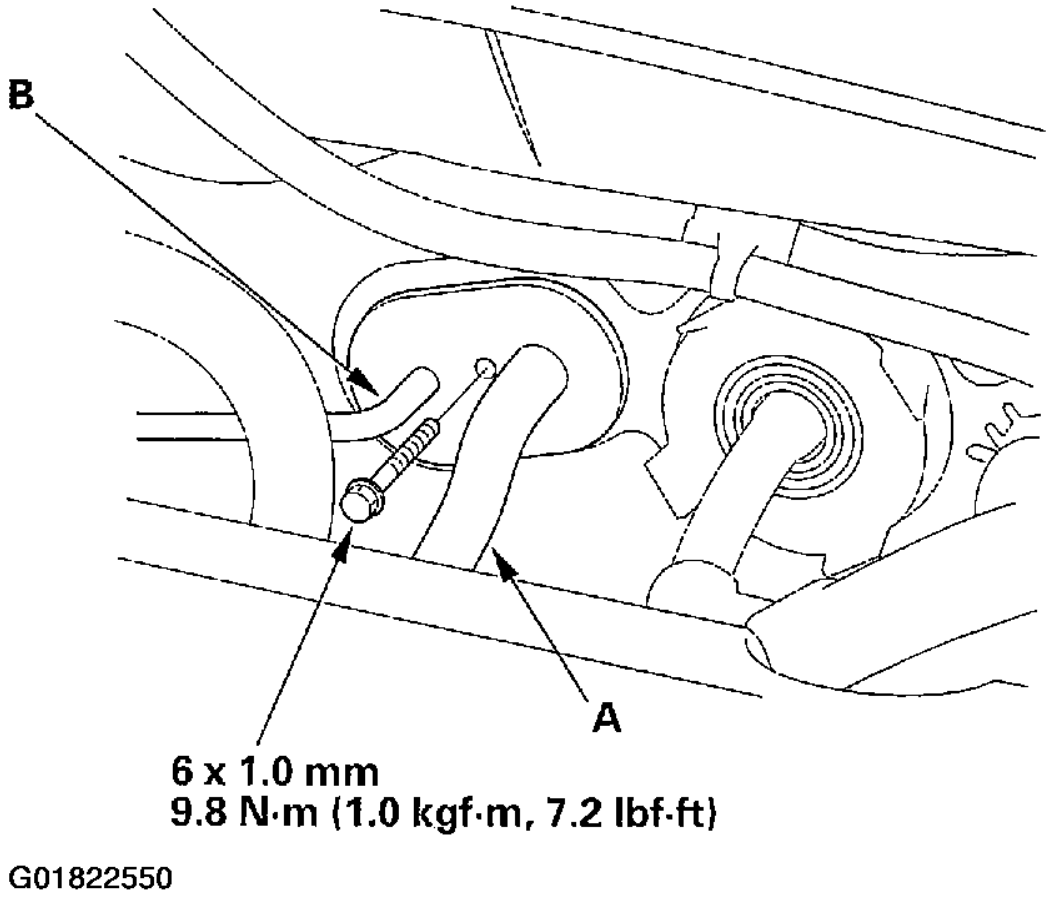
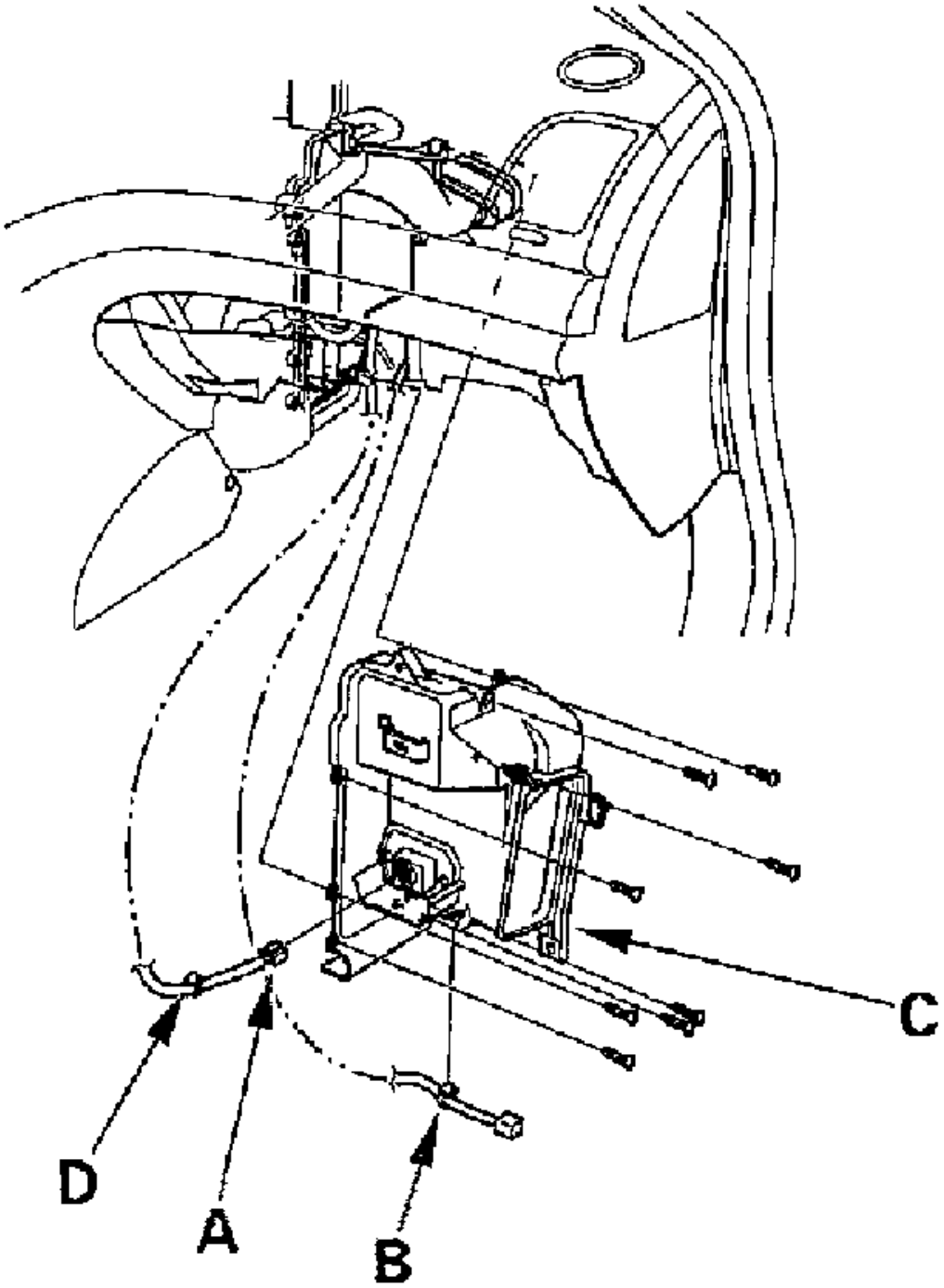


Fig. 117: Disconnecting The Suction Line & The Receiver Line From The Evaporator Core

3. Remove the blower unit (see **BLOWER UNIT REMOVAL & INSTALLATION**).
4. Disconnect the connector (A) from the power transistor, then remove the wire harness clip (B) the self-tapping screws, and the expansion valve cover (C).

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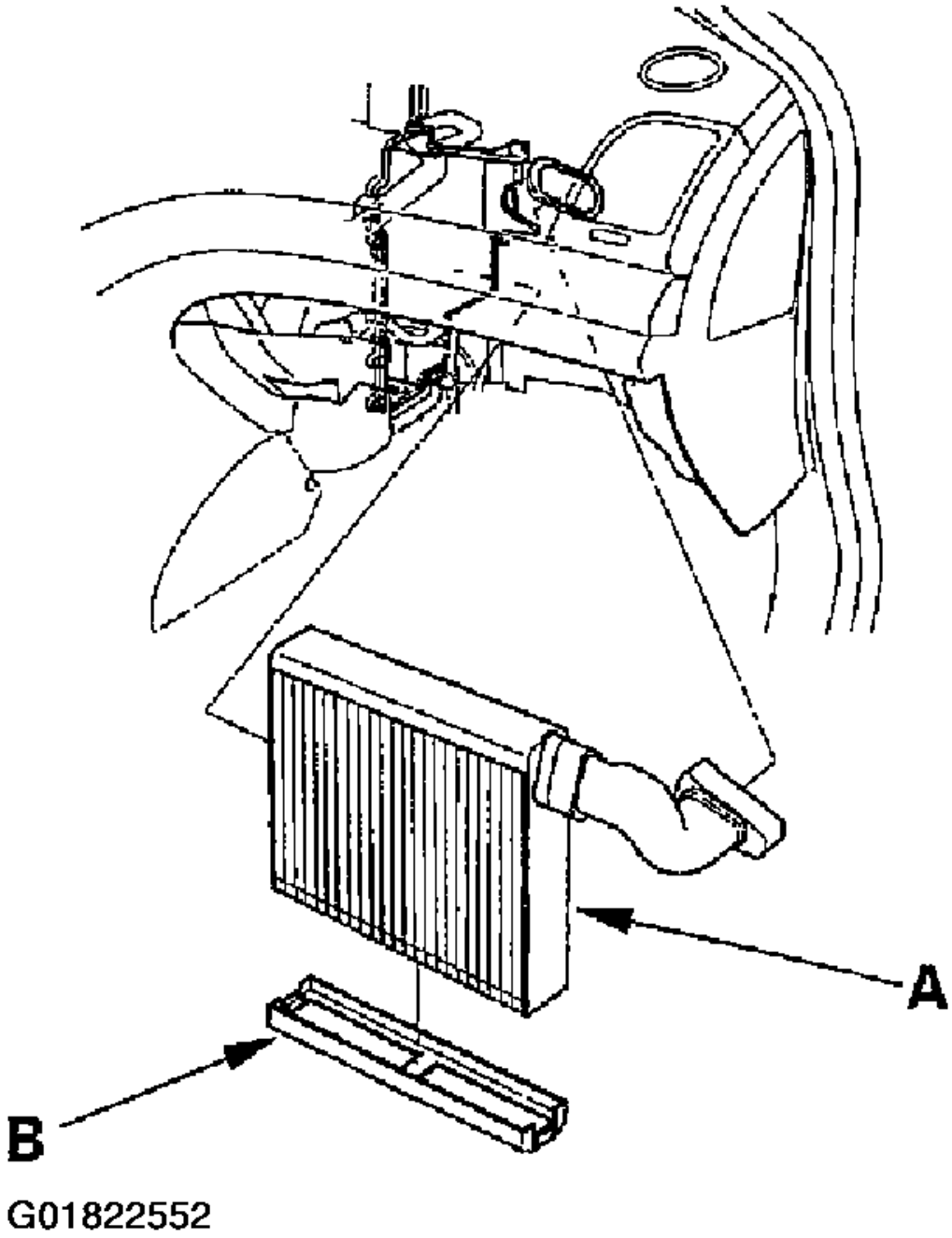


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Fig. 118: Disconnecting The Connector

5. Carefully pull out the evaporator core (A) and the plate (B) without bending the pipes.



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Fig. 119: Pulling Out The Evaporator Core And The Plate

6. Install the core in the reverse order of removal, and note these items.
   - If you're installing a new evaporator core, add refrigerant oil (KEIHIN SP-10) (see **A/C Refrigerant Oil Replacement**).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Make sure that there is no air leakage.
   - Charge the system (see **SYSTEM CHARGING**).

HEATER UNIT/CORE REPLACEMENT

SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery.
3. Disconnect the suction and receiver lines from the evaporator core (see **EVAPORATOR CORE REPLACEMENT**)
4. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.

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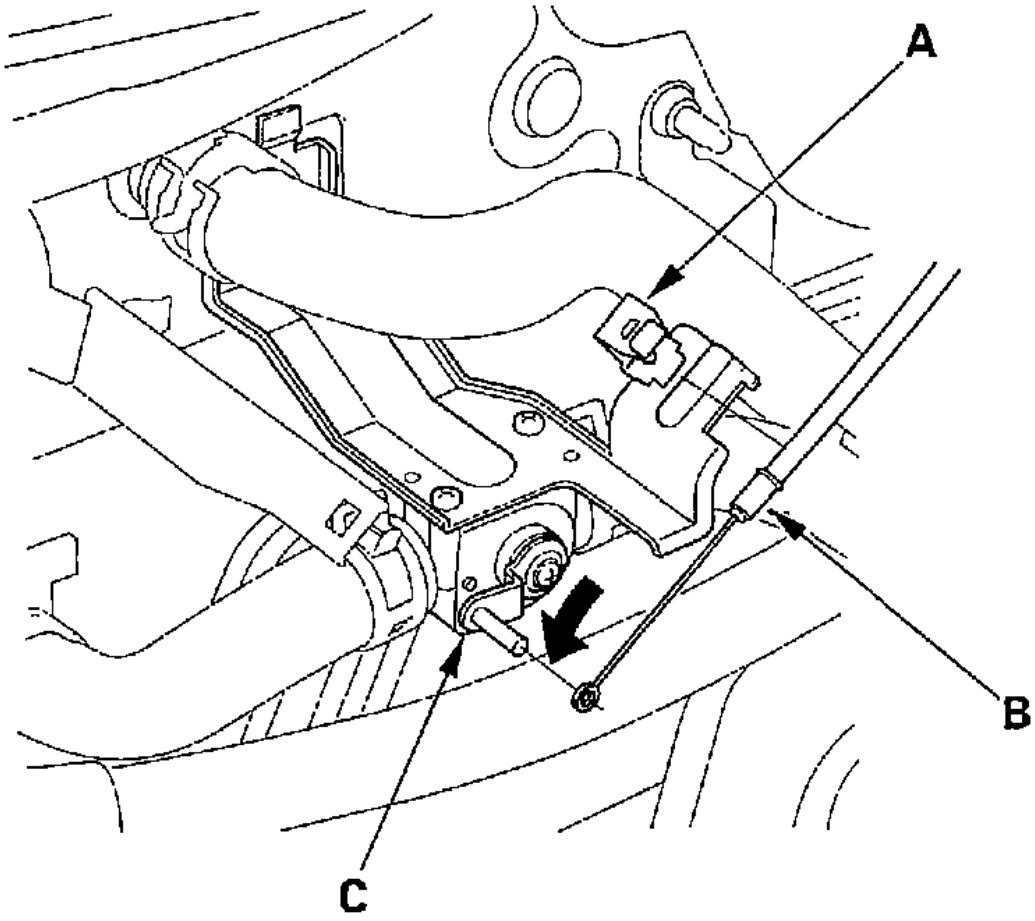


Fig. 120: Disconnecting The Heater Valve Cable

5. When the engine is cool, drain the engine coolant from the radiator (see **COOLANT REPLACEMENT**).
6. Slide the hose clamps (A) back. Remove the bolt and water valve bracket, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater unit. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.

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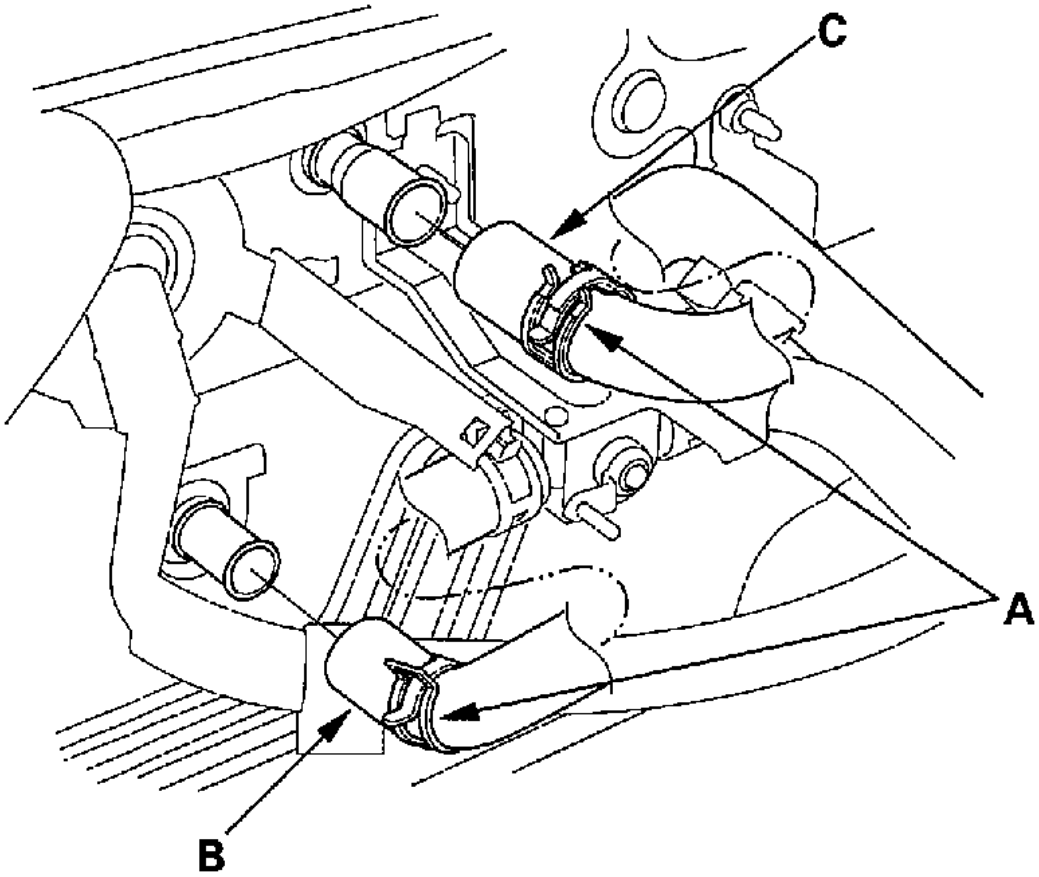


Fig. 121: Disconnecting The Inlet Heater Hose & The Outlet Heater Hose From The Heater Unit

7. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc.

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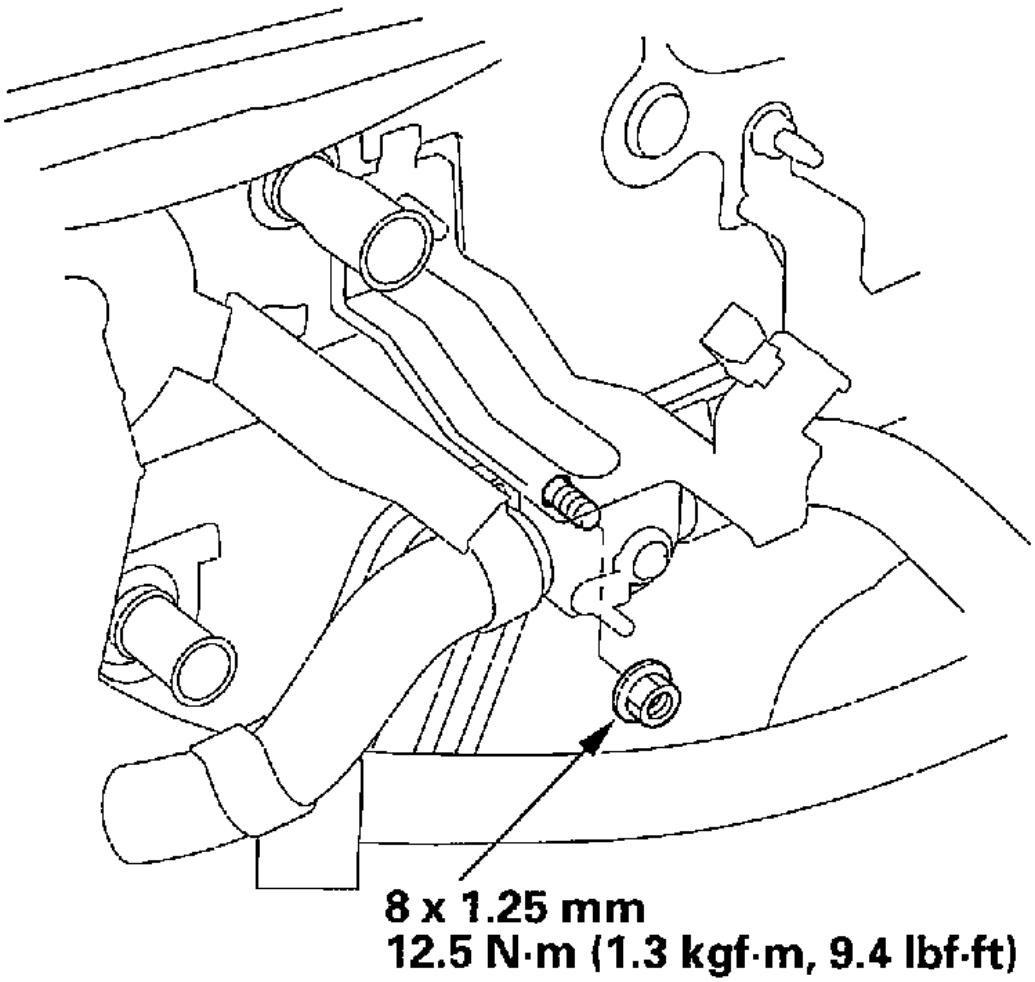


Fig. 122: Removing The Mounting Nut From The Heater Unit

8. Remove the dashboard (see **DASHBOARD**).
9. Remove the footrest and the footrest bracket.
10. Disconnect the connectors (A) from the driver's air mix control motor, the evaporator temperature sensor, the power transistor, the mode control motor, passenger's air mix control motor, and the recirculation control motor, then remove the wire harness clips (B), the connector clips (C) and the wire harness (D). Remove the heater ducts (E). then remove the mounting nuts and the blower-heater unit (F).

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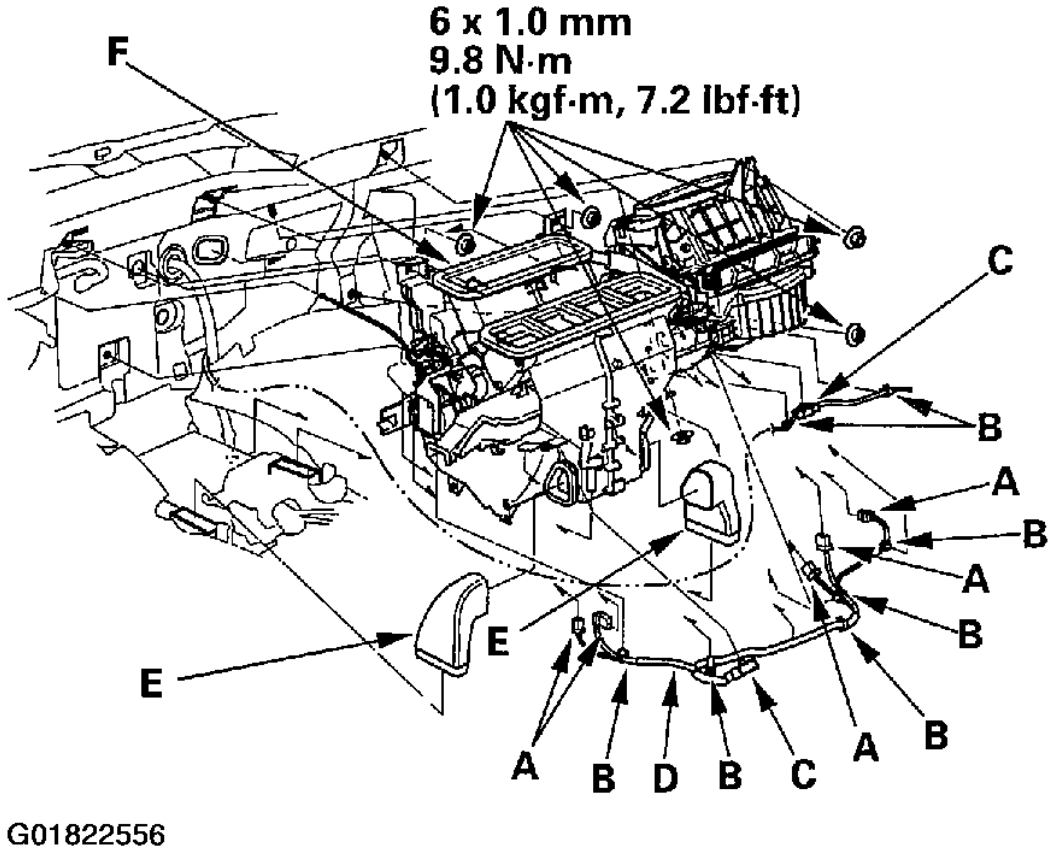


Fig. 123: Removing The Wire Harness, Heater Ducts & Blower-Heater Unit

11. Remove the self-tapping screws and the joint duct A, then remove the self-tapping screws and the joint duct B. Remove the self-tapping screws, then remove the passenger's heater outlet (C), and the heater core cover (D). Remove the self-tapping screws, the heater pipe brackets (E), the grommets (F) and carefully pull out the heater core (G) so you don't bend the inlet and outlet pipes.

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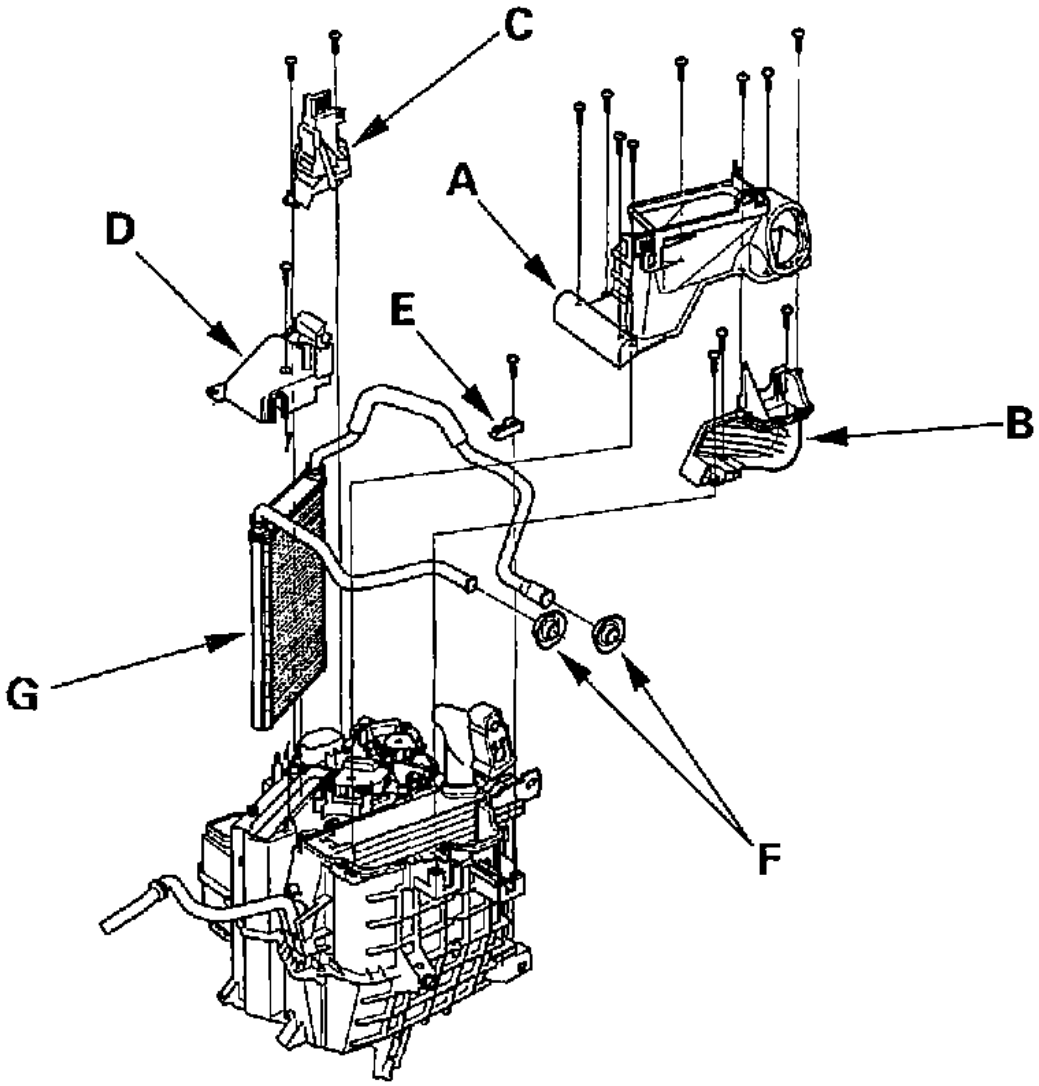


Fig. 124: Exploded View of Blower-Heater Unit Components

12. Install the heater core and the evaporator core in the reverse order of removal.
13. Install the heater unit in the reverse order of removal, and note these items:
    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see **COOLANT REPLACEMENT**).
    - Adjust the heater valve cable (see **HEATER VALVE CABLE ADJUSTMENT**).
    - Make sure that there is no coolant leakage.

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- Make sure that there is no air leakage.
- Refer to evaporator core replacement (see step 6 of **EVAPORATOR CORE REPLACEMENT**).
- Do the PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
- Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.

HEATER VALVE CABLE ADJUSTMENT

1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).

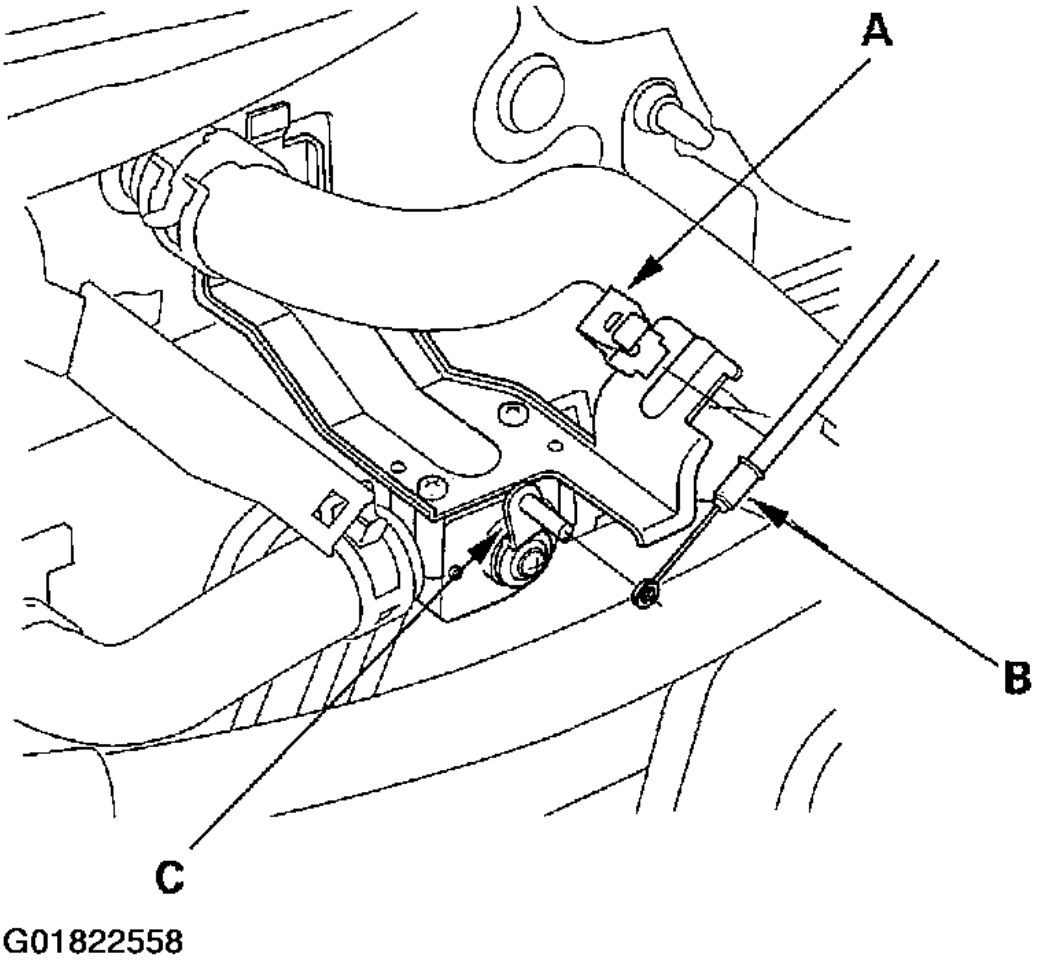


Fig. 125: Disconnecting The Heater Valve Cable From The Heater Valve Arm

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2. From under the dash, disconnect the heater valve cable housing from the cable (A), and disconnect the heater valve cable (B) from the air mix control linkage (C).

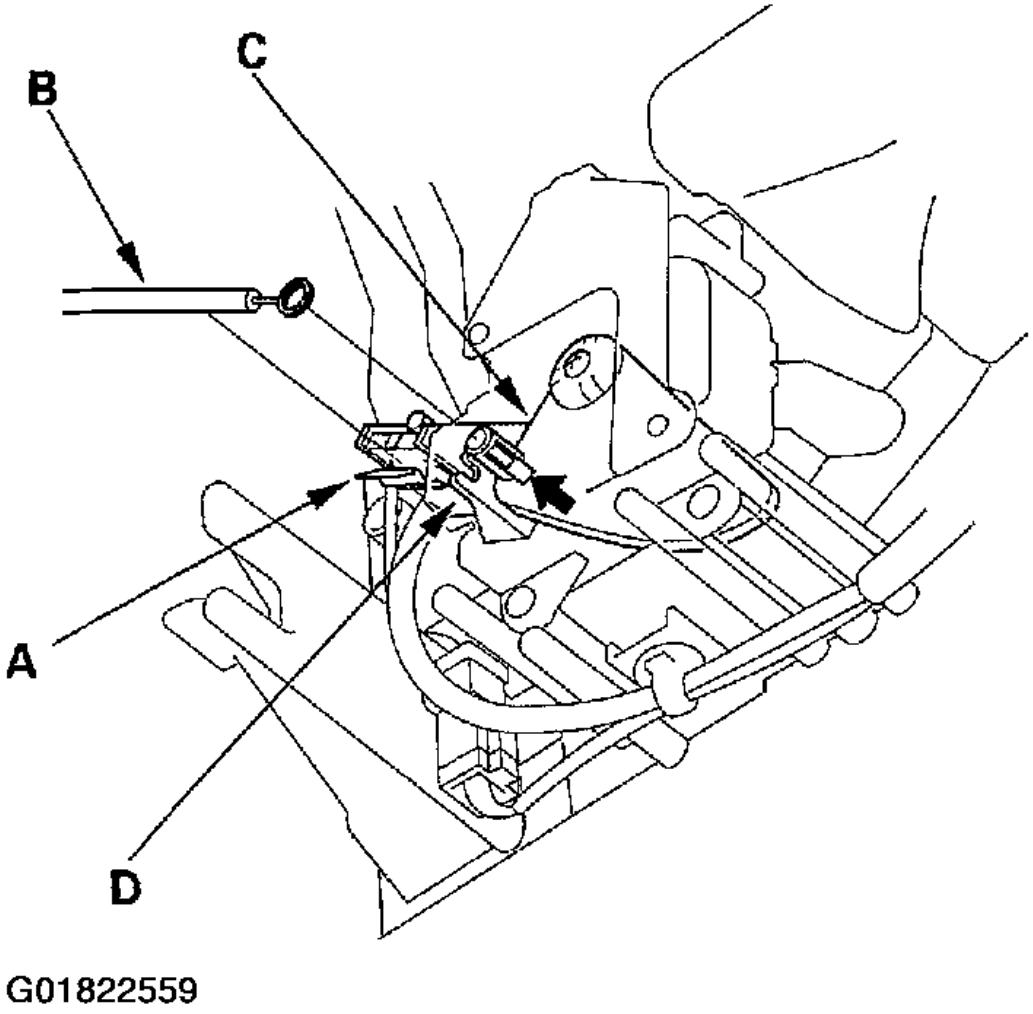


Fig. 126: Disconnecting The Heater Valve Cable Housing From The Cable & Disconnecting The Heater Valve Cable From The Air Mix Control Linkage

3. Set the temperature control dial to Max Cool with the ignition switch ON (II).
4. Attach the heater valve cable (B) to the air mix control linkage (C) as shown step 2. Hold the end of the heater valve cable housing against the stop (D), then snap the heater valve cable housing into the cable clamp (A).
5. From under the hood, turn the heater valve arm (C) to the fully closed position as shown, and hold it. Attach the heater valve cable (B) to the heater valve arm, and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (A).

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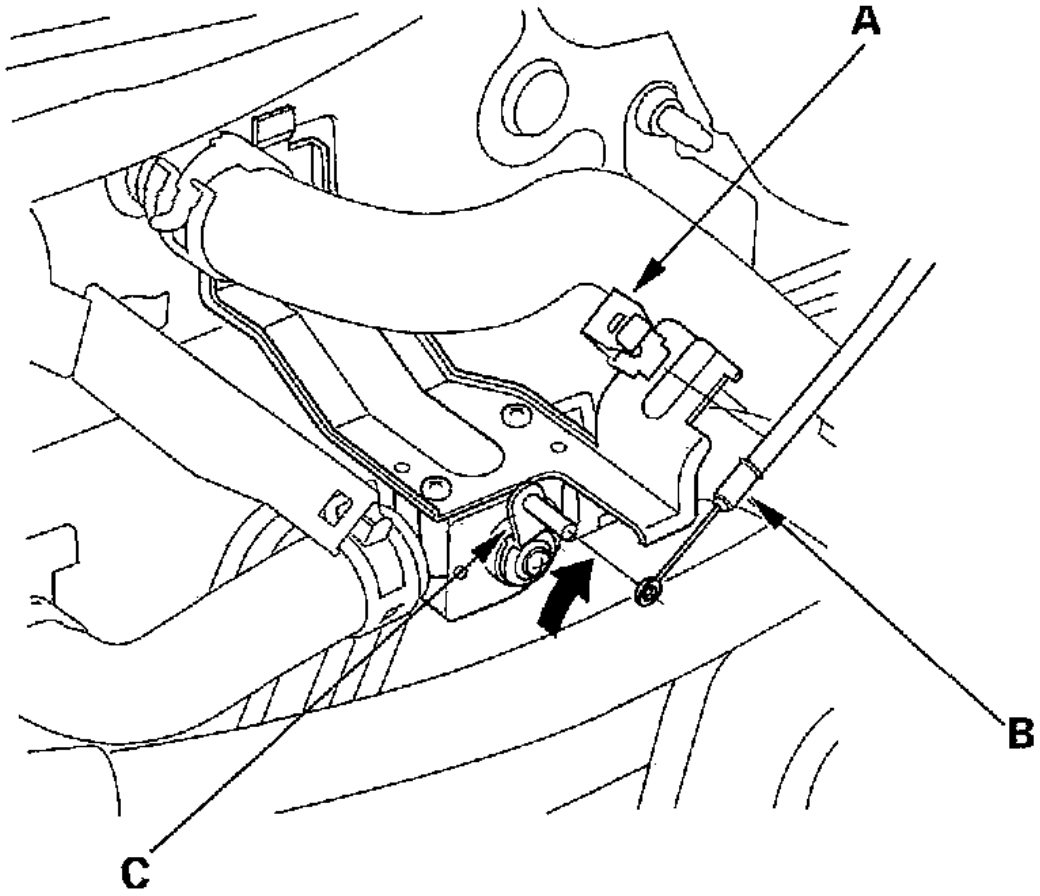


Fig. 127: Attaching The Heater Valve Cable

COMPRESSOR REPLACEMENT

1. If the compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
3. Disconnect the negative cable from the battery.
4. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
5. Remove the drive belt (see **DRIVE BELT**).
6. Remove the compressor clutch connector (A) from the condenser fan shroud (B). Disconnect the condenser fan connector (C), then remove the wire harness clip (D) from the condenser fan shroud.

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Remove the hose (E) from the reserve tank (F). Remove the bolts and the radiator fan shroud. Be careful not to damage the radiator fins when removing the condenser fan shroud.

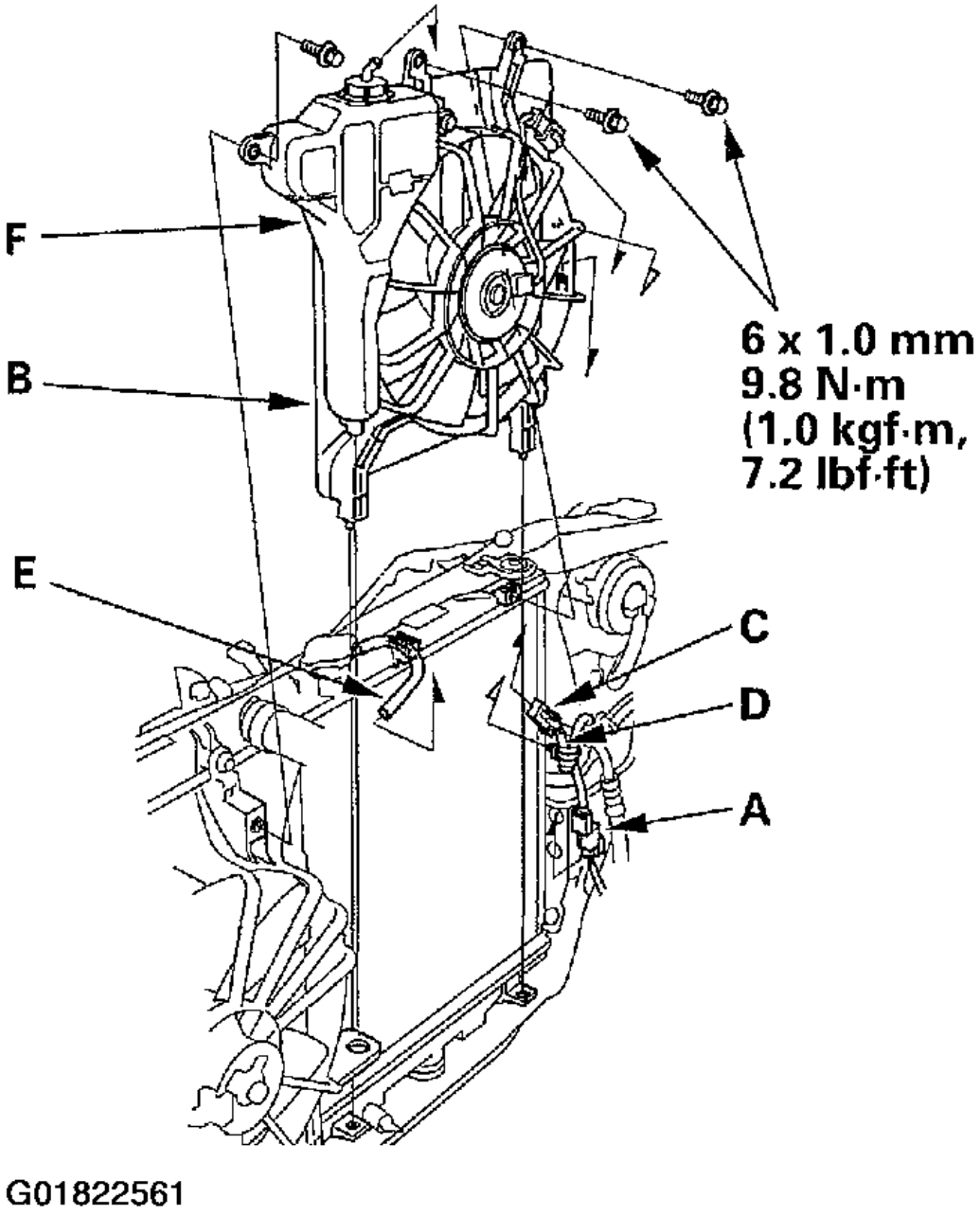


Fig. 128: Removing Radiator Fan Shroud

7. Disconnect the compressor clutch connector (A). Remove the nuts, then disconnect the suction line (B)

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and discharge line (C) from the compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.

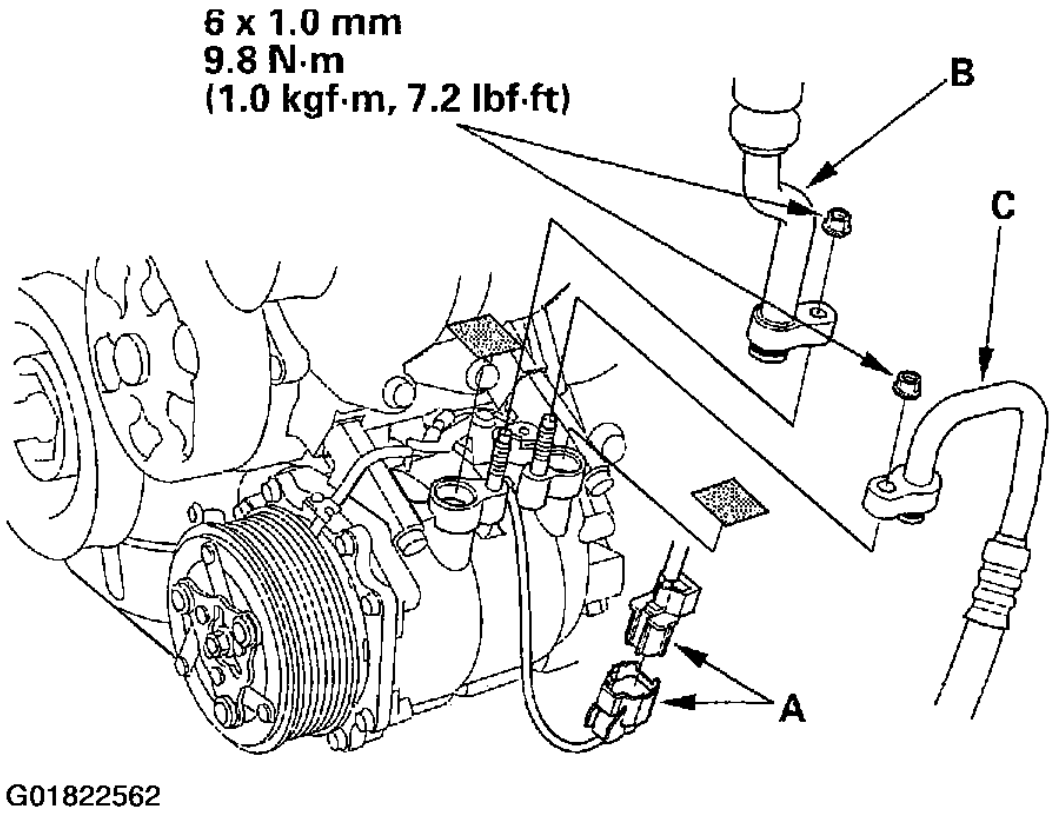


Fig. 129: Disconnecting The Suction Line & Discharge Line

8. Remove the splash shield.
9. Remove the mounting bolts and the compressor. Be careful not to damage the radiator fins when removing the compressor.

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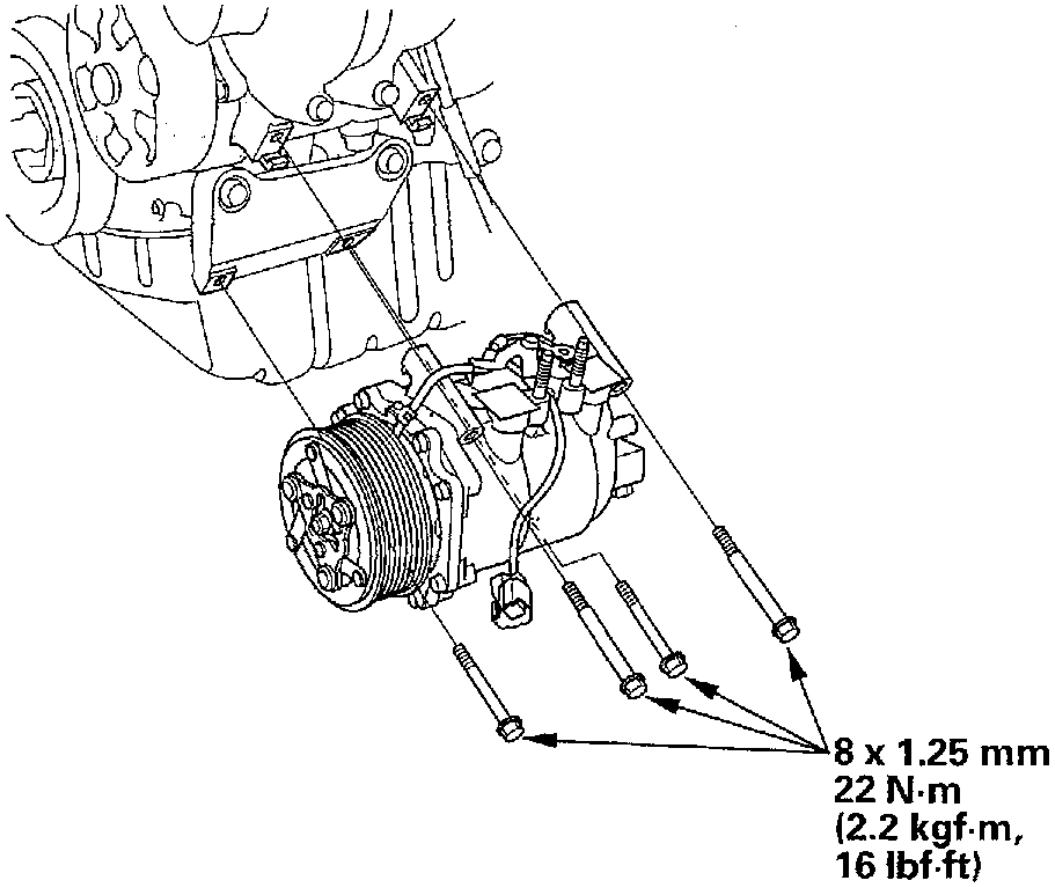


Fig. 130: Removing The Compressor

10. Install the compressor in the reverse order of removal, and note these items:
    - If you're installing a new compressor, you must calculate the amount of refrigerant oil to be removed from it (see **A/C REFRIGERANT OIL REPLACEMENT**).
    - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
    - Use refrigerant oil (KEIHIN SP-10) for HFC-134a KEIHIN piston type compressor only.
    - To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
    - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
    - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
    - Be careful not to damage the radiator fins when installing the compressor and the condenser fan

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shroud.

- Charge the system (see **SYSTEM CHARGING**).
- Do the PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
- Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.

COMPRESSOR CLUTCH CHECK

1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see **COMPRESSOR CLUTCH OVERHAUL**).
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley (A) by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see **COMPRESSOR CLUTCH OVERHAUL**).

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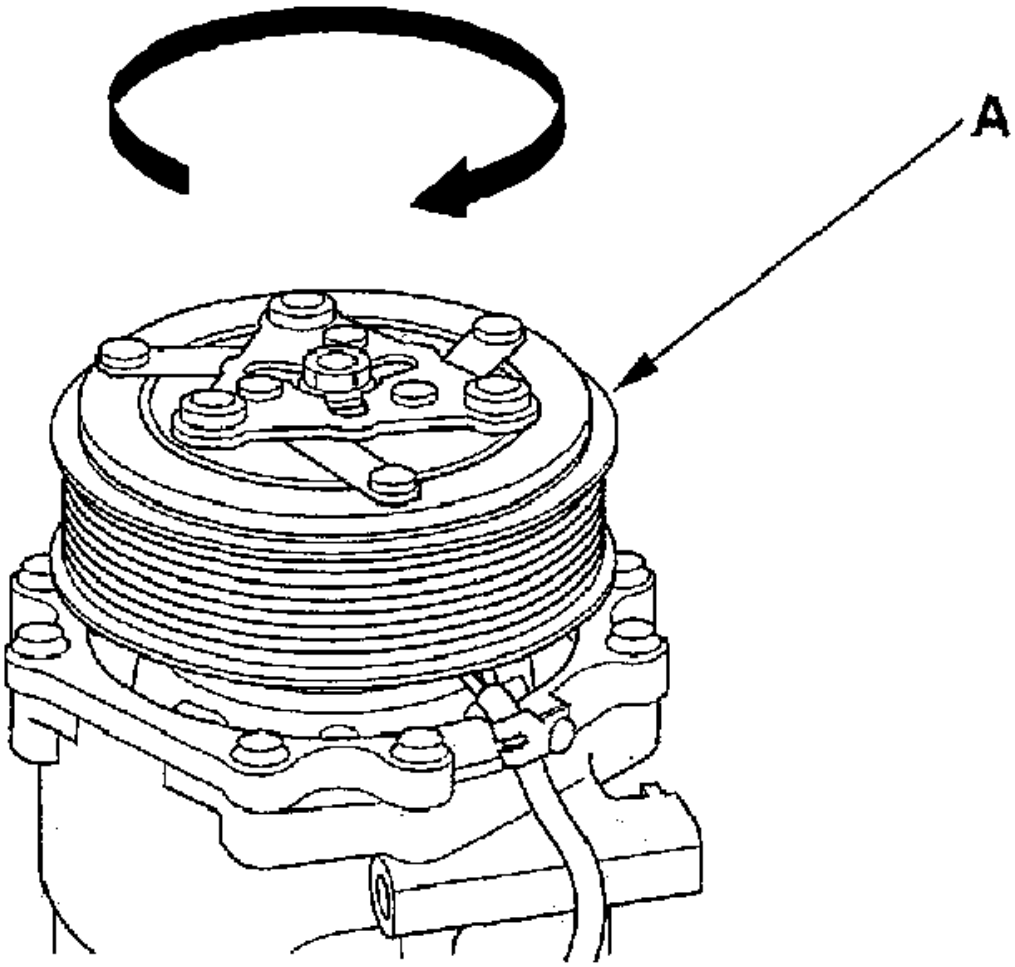


Fig. 131: Rotating The Rotor Pulley

3. Measure the clearance between the rotor pulley (A) and the armature plate (B) all the way around. If the clearance is not within specified limits, remove the armature plate (see **COMPRESSOR CLUTCH OVERHAUL**) and add or remove shims as needed to increase or decrease clearance.

   Clearance: 0.5 +/- 0.15 mm (0.020 +/- 0.006 in.)

NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.

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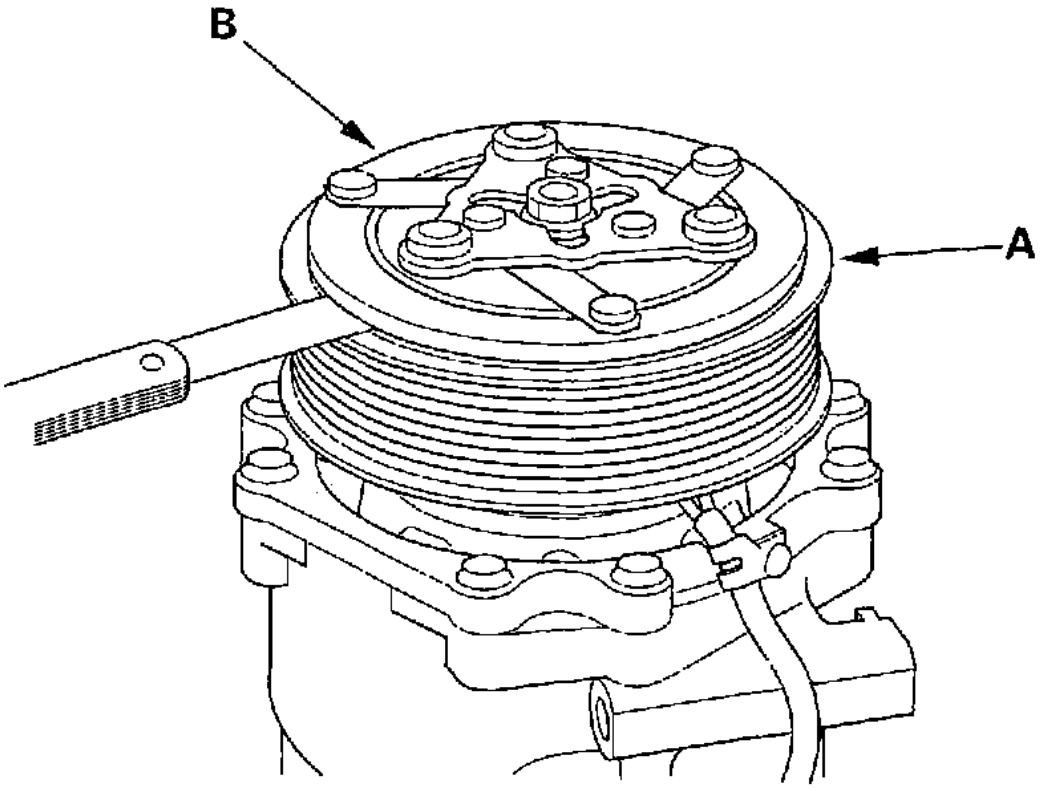


Fig. 132: Measuring The Clearance Between The Rotor Pulley & The Armature Plate

4. Release the field coil connector from the holder, then disconnect it. Check the thermal protector for continuity. If there is no continuity, replace the thermal protector (see **COMPRESSOR THERMAL PROTECTOR REPLACEMENT**).

NOTE: The thermal protector will have no continuity above 252° to 270°F (122° to 132°C). When the temperature drops below 241° to 219°F (116° to 104°C), the thermal protector will have continuity.

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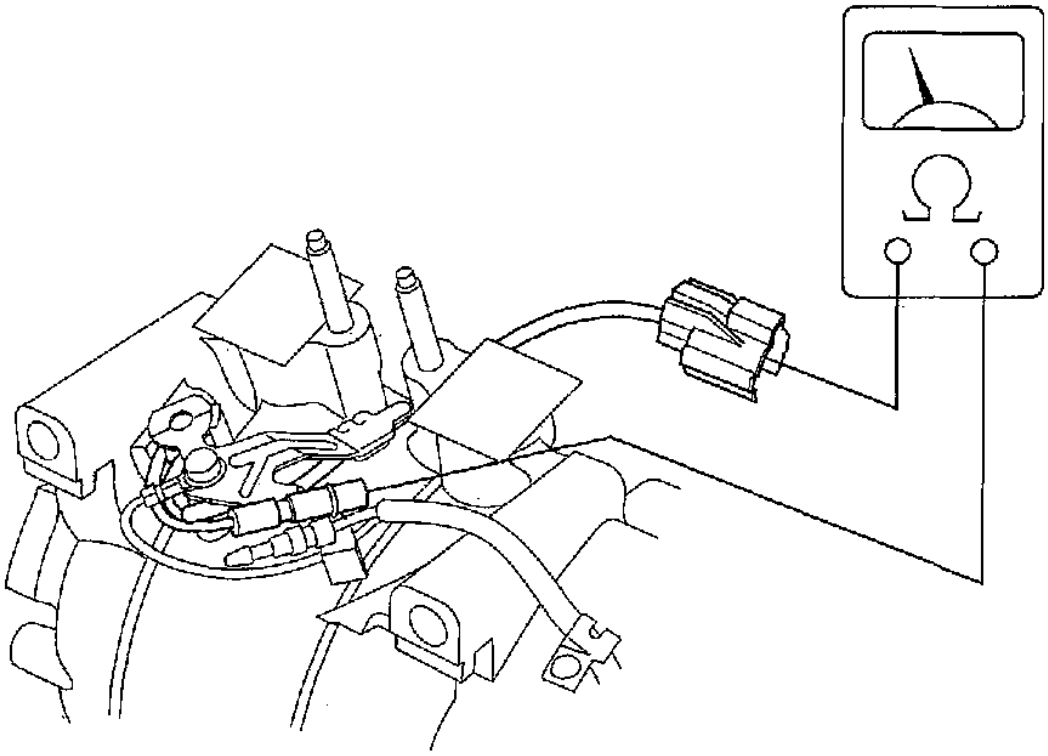


Fig. 133: Testing Thermal Protector

5. Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see **COMPRESSOR CLUTCH OVERHAUL**).

   Field Coil Resistance: 3.05-3.35 ohms at 68°F (20°C)

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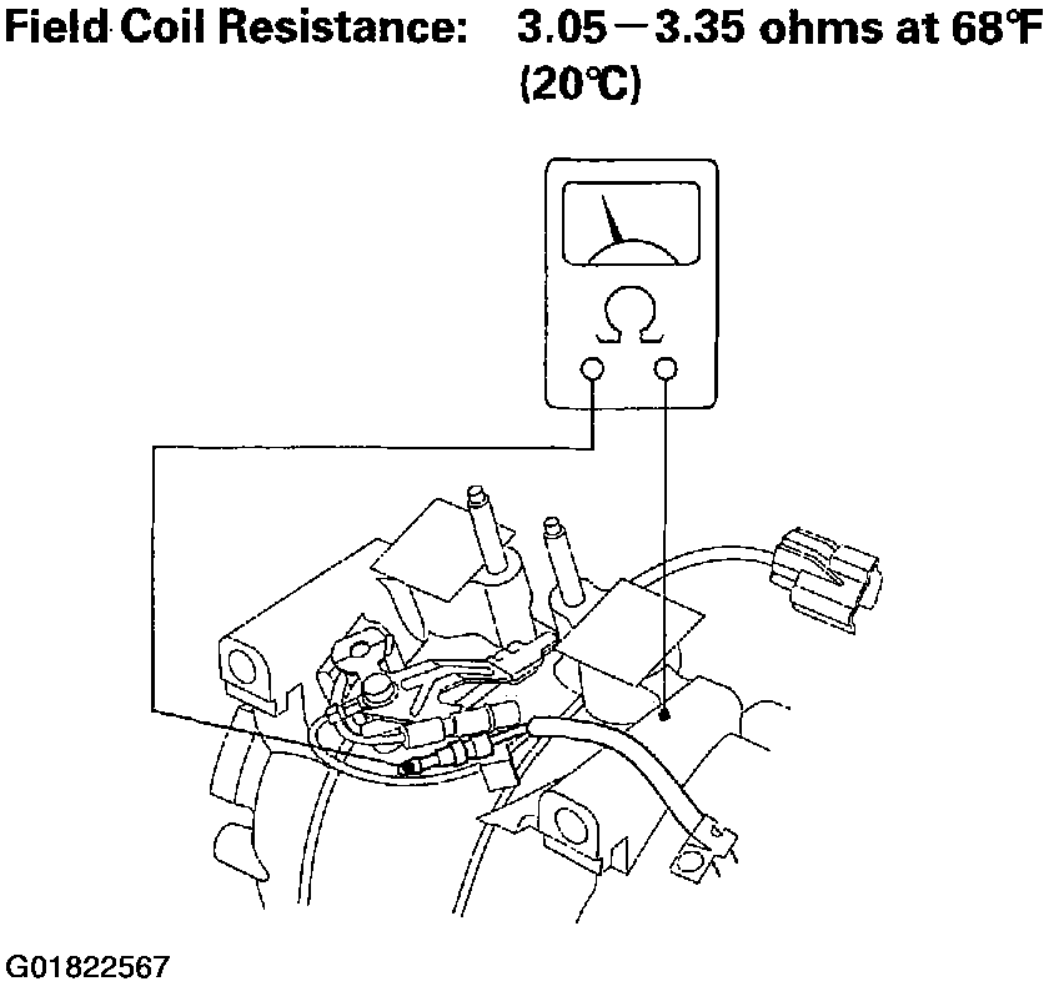


Fig. 134: Checking Resistance Of The Field Coil

COMPRESSOR CLUTCH OVERHAUL

Special Tools Required: A/C clutch holder; Robinair 10204 or Kent-Moore J37872, Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut (A) while holding the armature plate with the special tool (B).

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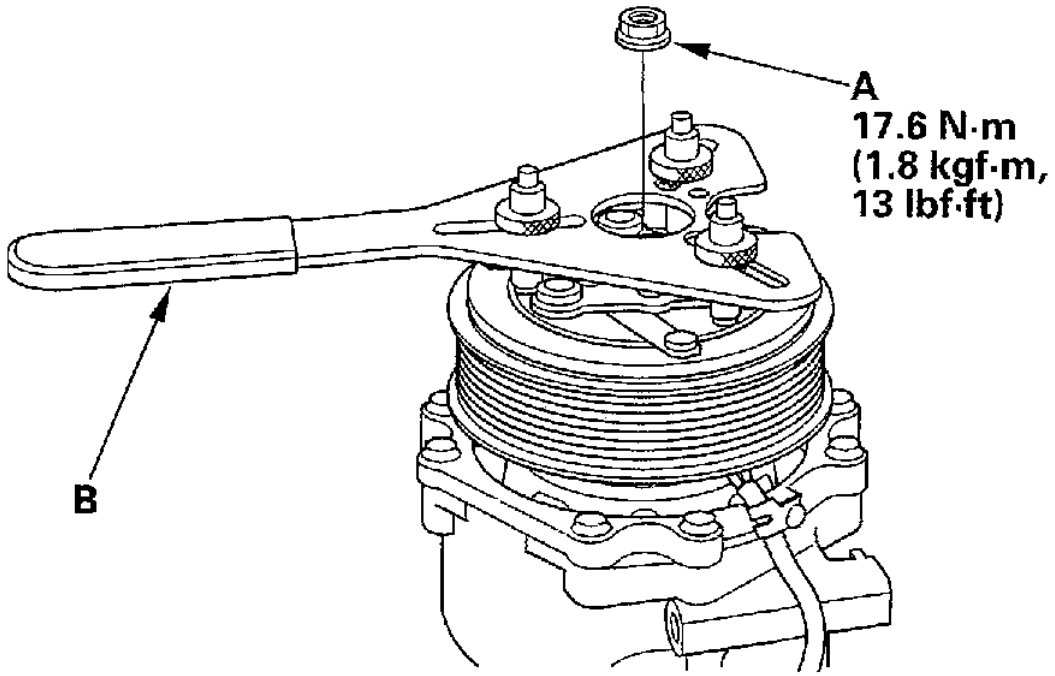


Fig. 135: Removing The Center Nut

2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see **COMPRESSOR CLUTCH CHECK**).

NOTE: The shims are available in four thickness: 0.1 mm, 0.2 mm, 0.4 mm and 0.5 mm.

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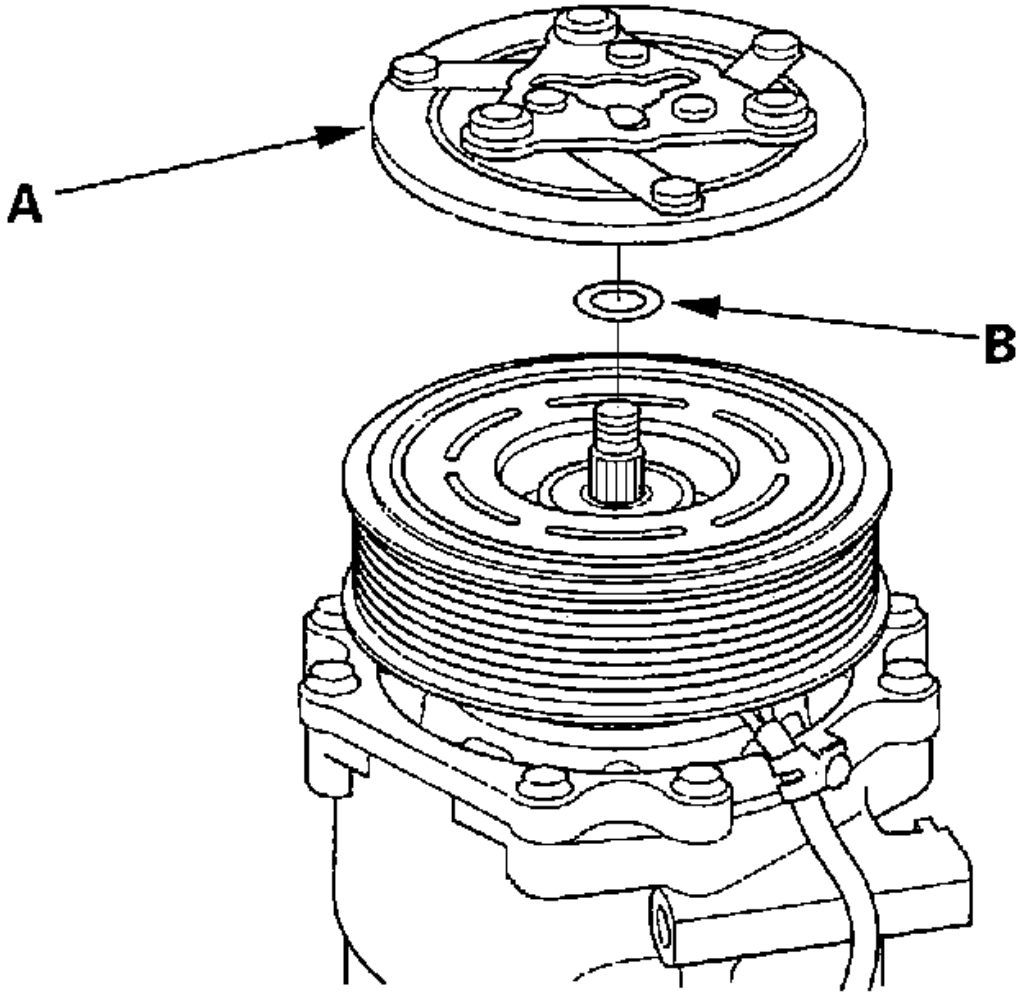


Fig. 136: Removing The Armature Plate & Shim(s)

3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley and compressor.
4. Remove the bolt and holder (A), then disconnect the field coil connector (B). Loosen the clamp screw (C) to free the field coil wire. Remove the snap ring (D) with snap ring pliers, then remove the field coil (E). Be careful not to damage the field coil and compressor.

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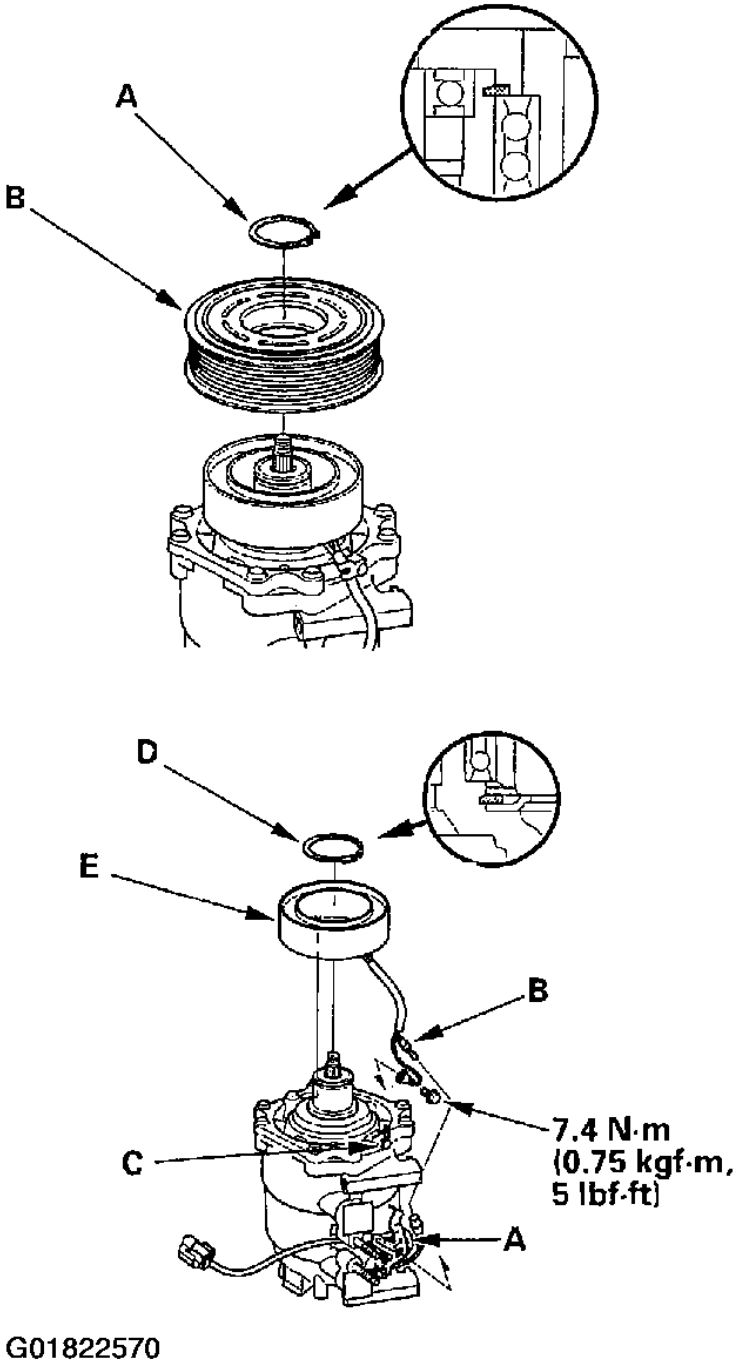


Fig. 137: Removing The Field Coil

5. Reassemble the clutch in the reverse order of disassembly, and note these items:
    - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the compressor.

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- Clean the rotor pulley and compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
- Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
- Make sure that the rotor pulley turns smoothly after it's reassembled.
- Route and clamp the wires properly or they can be damaged by the rotor pulley.

COMPRESSOR THERMAL PROTECTOR REPLACEMENT

1. Remove the bolt, the ground terminal (A), and the holder (B). Disconnect the field coil connector (C), then remove the thermal protector (D).

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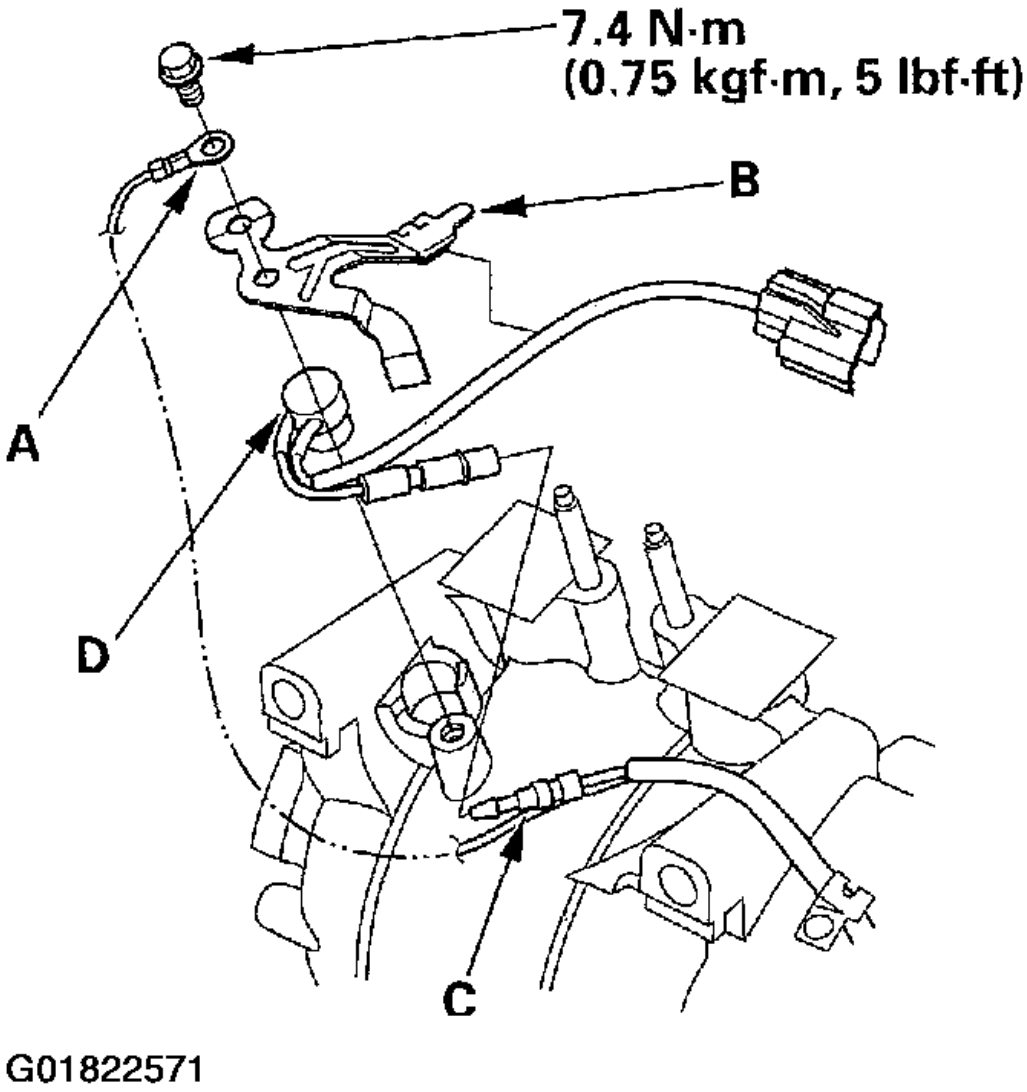


Fig. 138: Removing The Thermal Protector

2. Replace the thermal protector (A) with a new one, and apply silicone sealant (B) to the bottom of the thermal protector.

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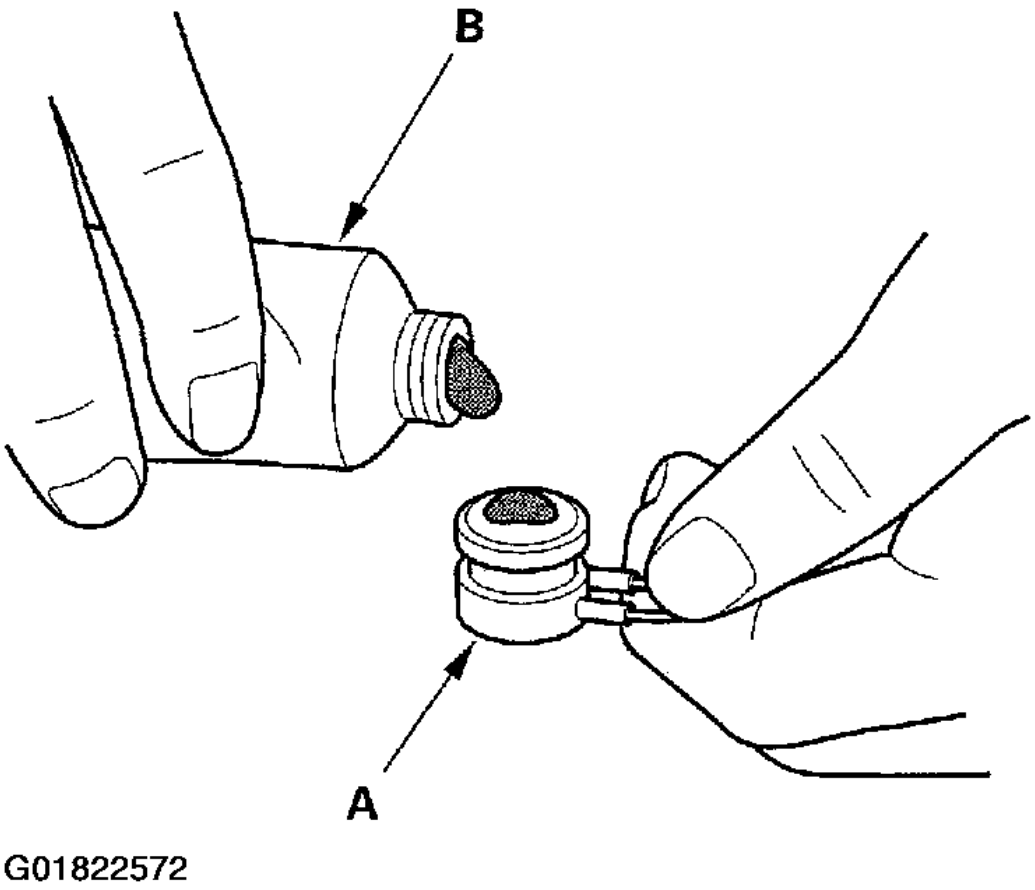


Fig. 139: Applying Silicone Sealant To The Bottom Of The Thermal Protector

3. Install in the reverse order of removal.

COMPRESSOR RELIEF VALVE REPLACEMENT

1. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
2. Remove the relief valve (A), and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the compressor oil from running out.

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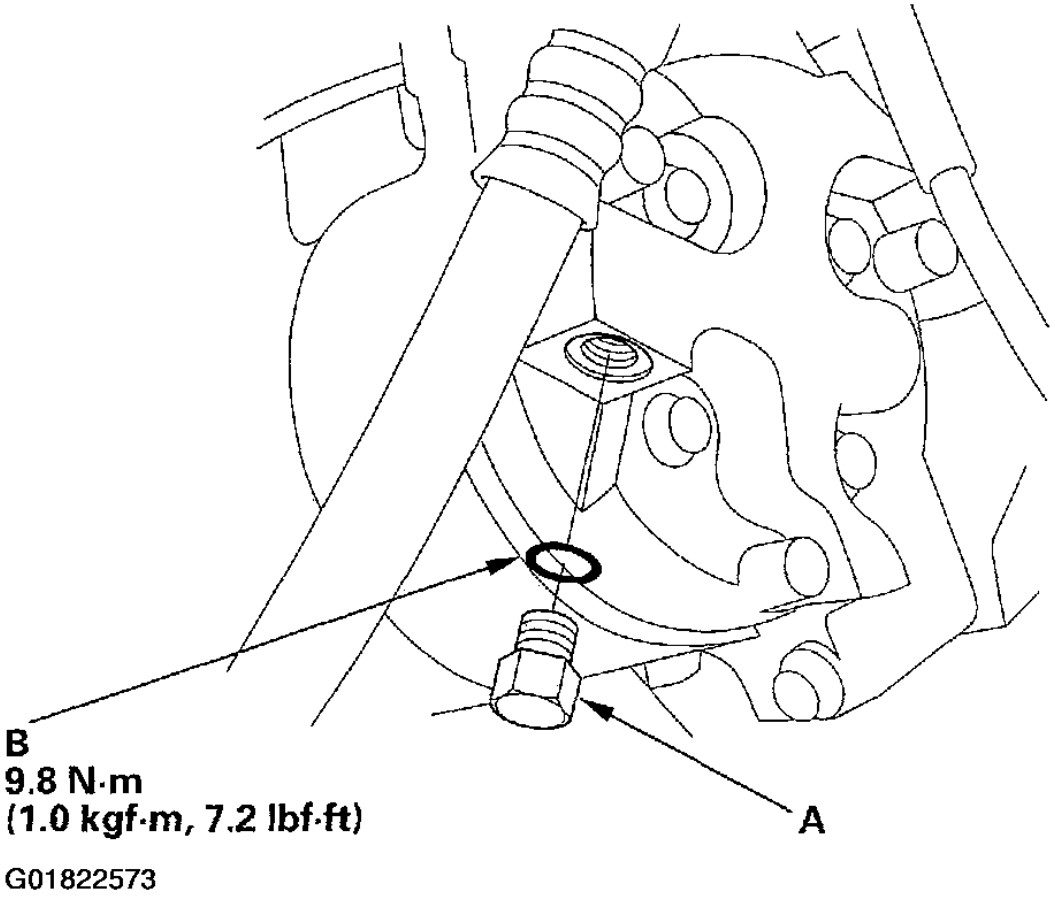


Fig. 140: Removing The Relief Valve & The O-Ring

3. Clean the mating surfaces.
4. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug, then install and tighten the relief valve.
6. Charge the system (see **SYSTEM CHARGING**).

CONDENSER REPLACEMENT

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's present buttons.
2. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
3. Remove the front bulkhead cover.
4. Remove the battery and the battery box.

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5. Remove the clips (A), then remove the air intake cover (B) and the air intake tube or duct (C).

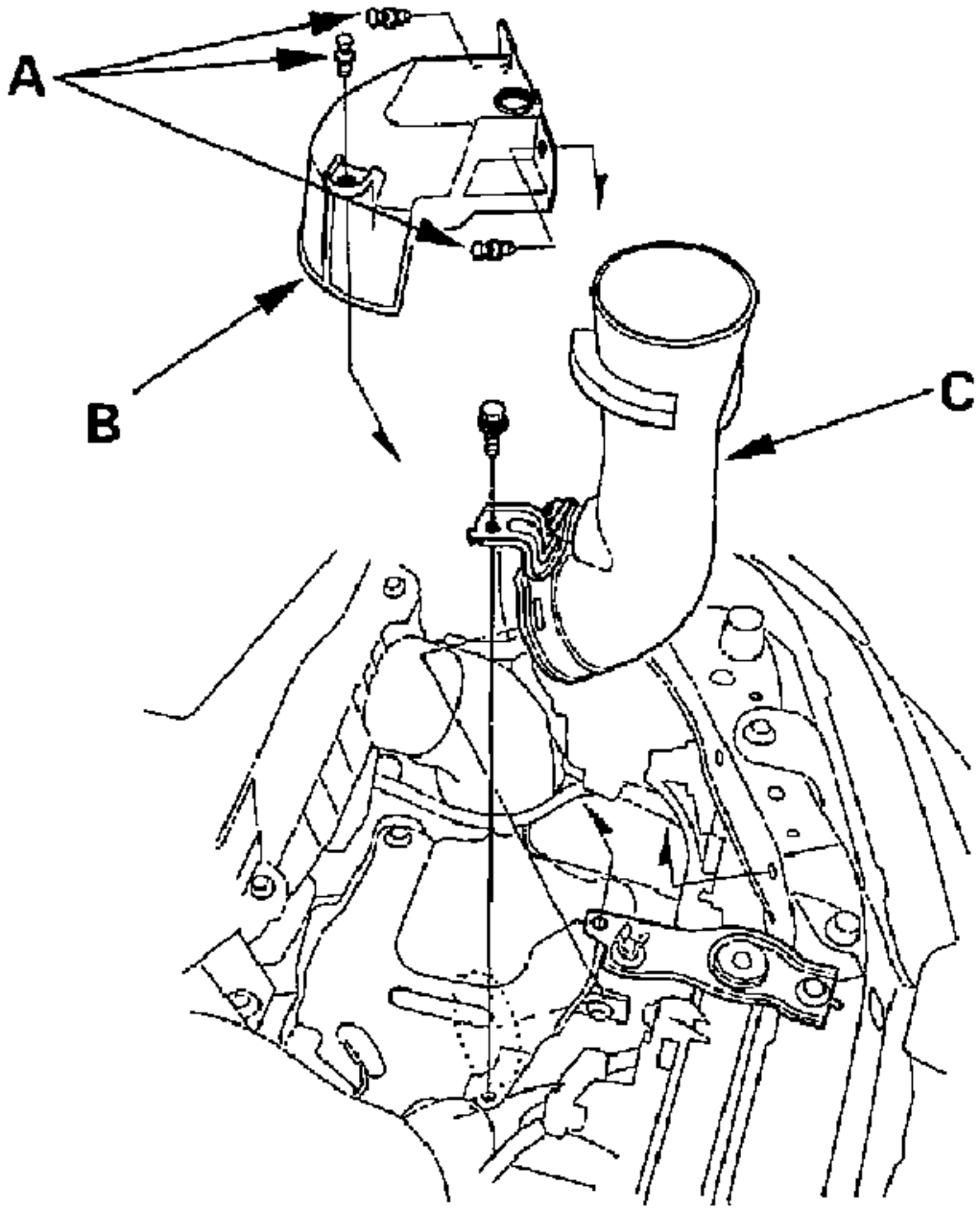
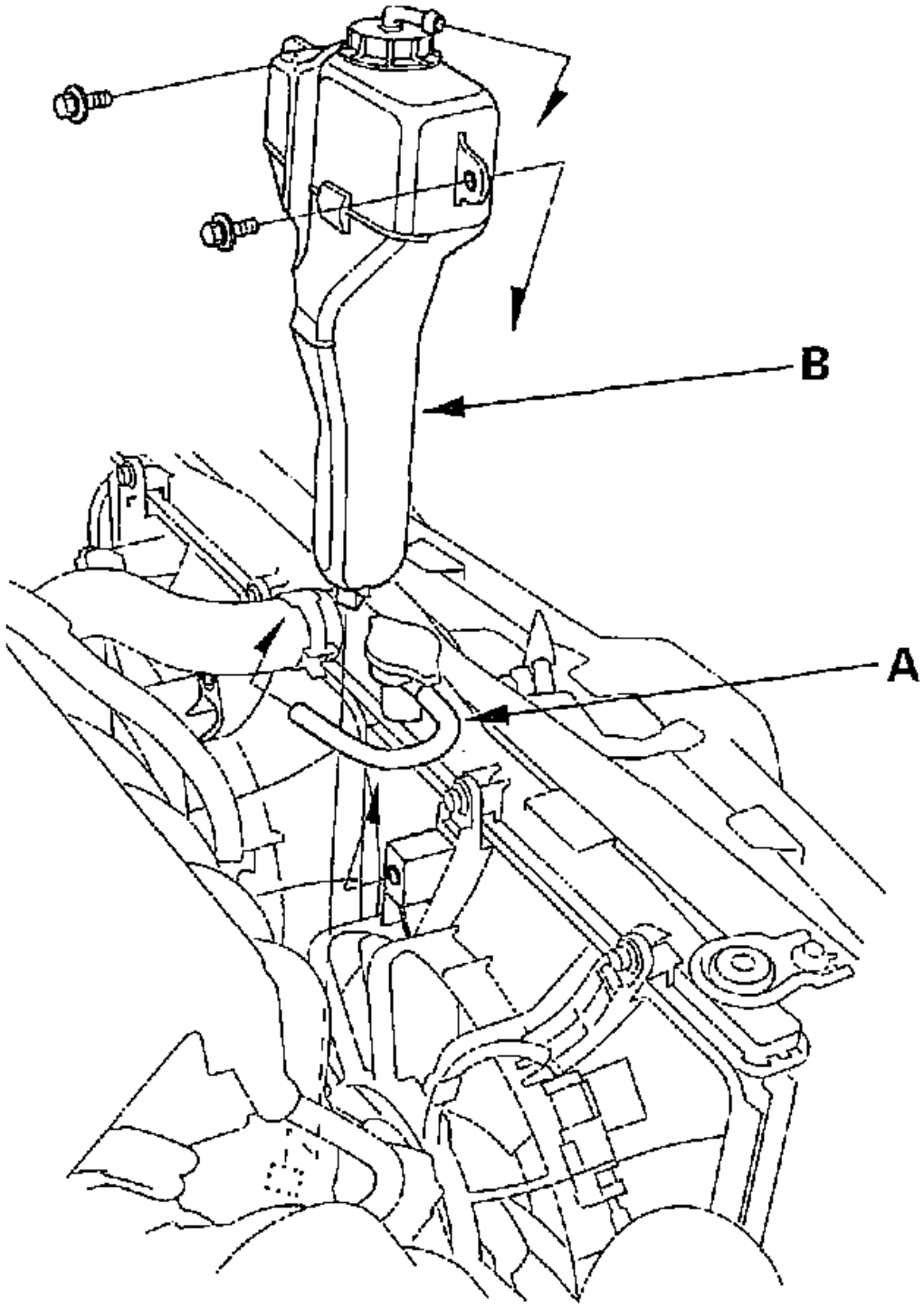


Fig. 141: Removing The Air Intake Cover & The Air Intake Tube Or Duct

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6. Remove the hose (A) from the reserve tank (B). Remove the bolts and the reserve tank from the condenser fan shroud.

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Fig. 142: Removing The Reserve Tank From The Condenser Fan Shroud

7. Remove the bolts and the radiator upper mount brackets.

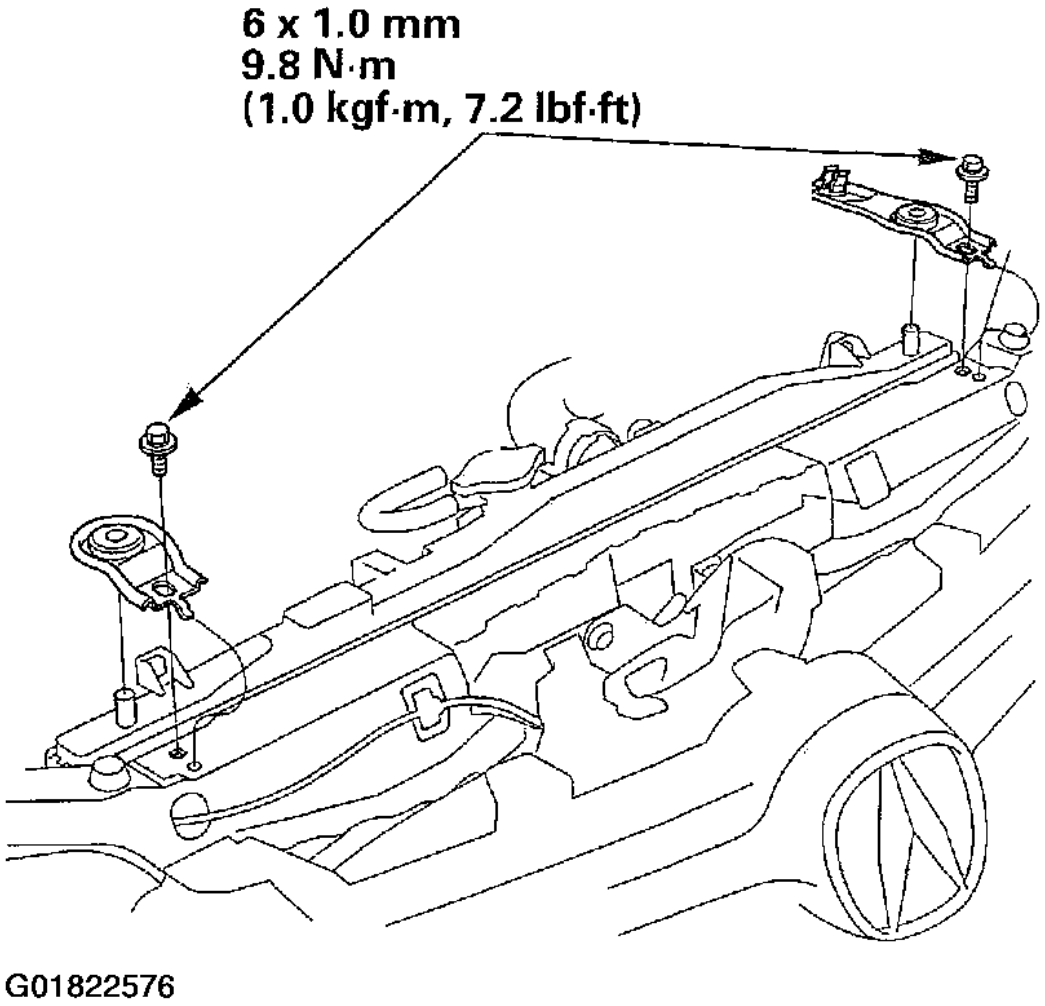


Fig. 143: Removing The Radiator Upper Mount Brackets

8. Remove the bolt, then disconnect the receiver line from the condenser.

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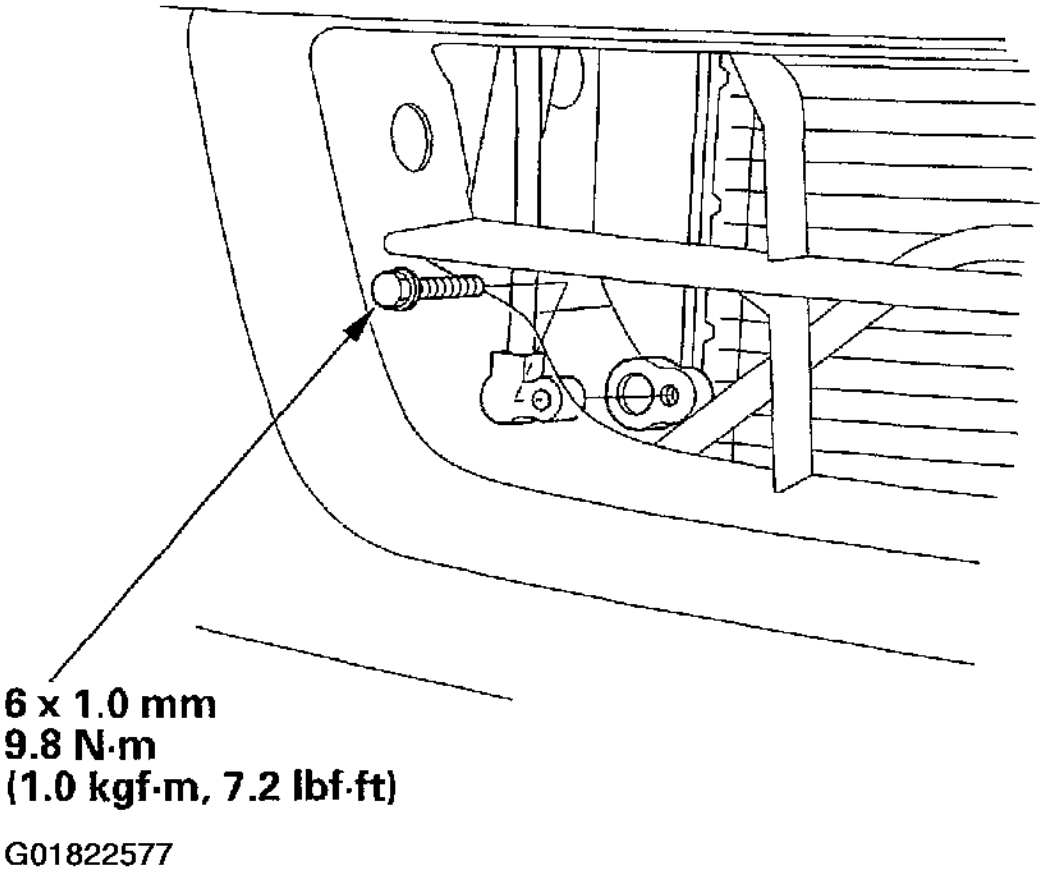


Fig. 144: Disconnecting The Receiver Line From The Condenser

9. Remove the bolts and the condenser upper mount brackets.

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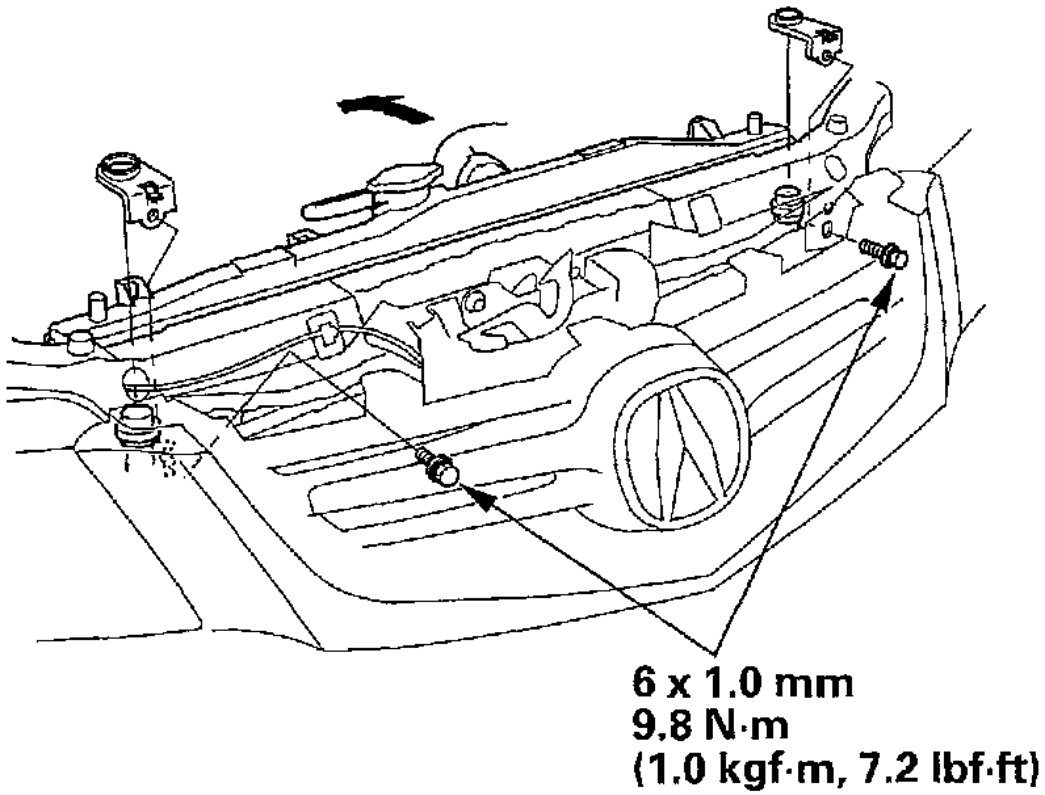


Fig. 145: Removing The Condenser Upper Mount Brackets

10. Remove the bolt, then disconnect the discharge line from the condenser.

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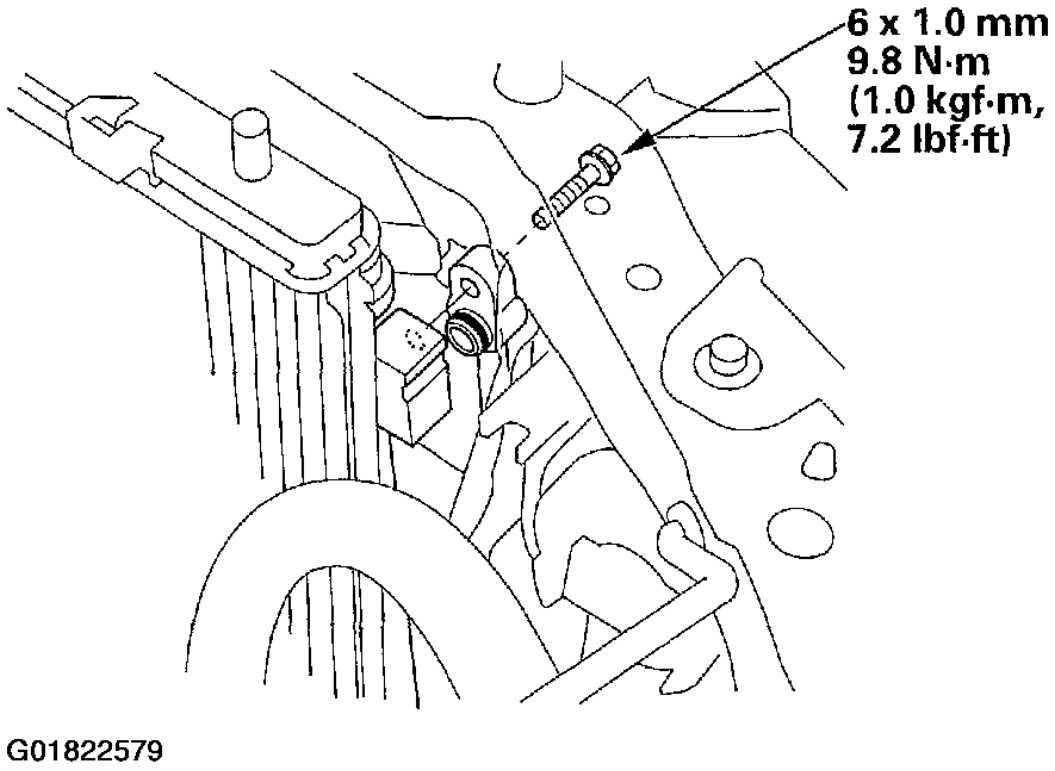


Fig. 146: Disconnecting The Discharge Line From The Condenser

11. Remove the condenser by lifting it up. Be careful not to damage the radiator and condenser fins when removing the condenser.

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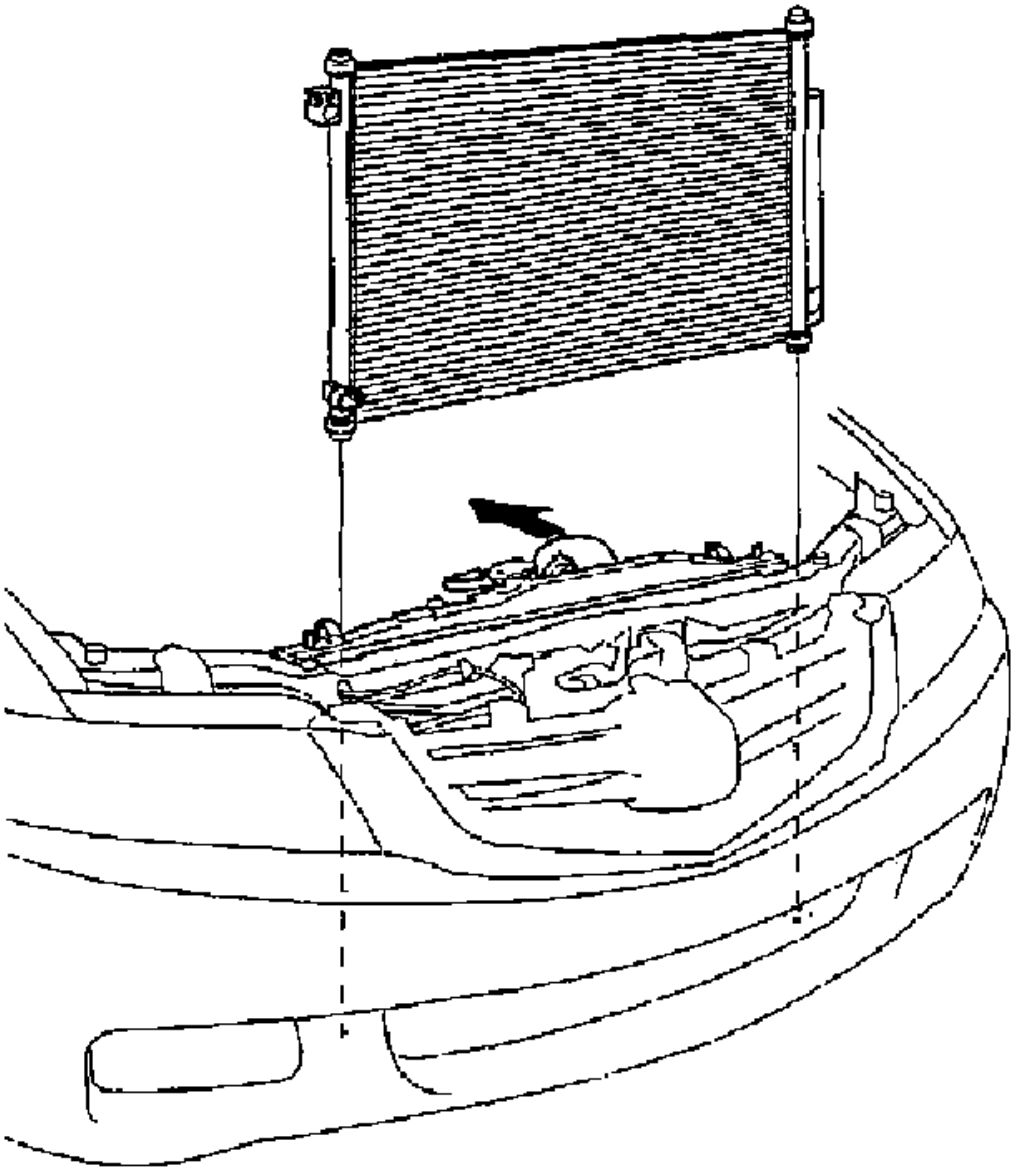


Fig. 147: Removing The Condenser

12. Install the condenser in the reverse order of removal, and note these items:
    - If you're installing a new condenser, add refrigerant oil (KEIHIN SP-10) (see **A/C REFRIGERANT OIL REPLACEMENT**).
    - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before

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installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.

- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Be careful not to damage the radiator or the condenser fins when installing the condenser.
- Charge the system (see **SYSTEM CHARGING**).
- Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
- Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.

RECEIVER/DRYER DESICCANT REPLACEMENT

1. Remove the condenser (see **CONDENSER REPLACEMENT**).
2. Remove the lower cushion (A), then remove the cap (B) from the bottom of the condenser. Remove the O-rings (C), the filter (D) and the desiccant (E).

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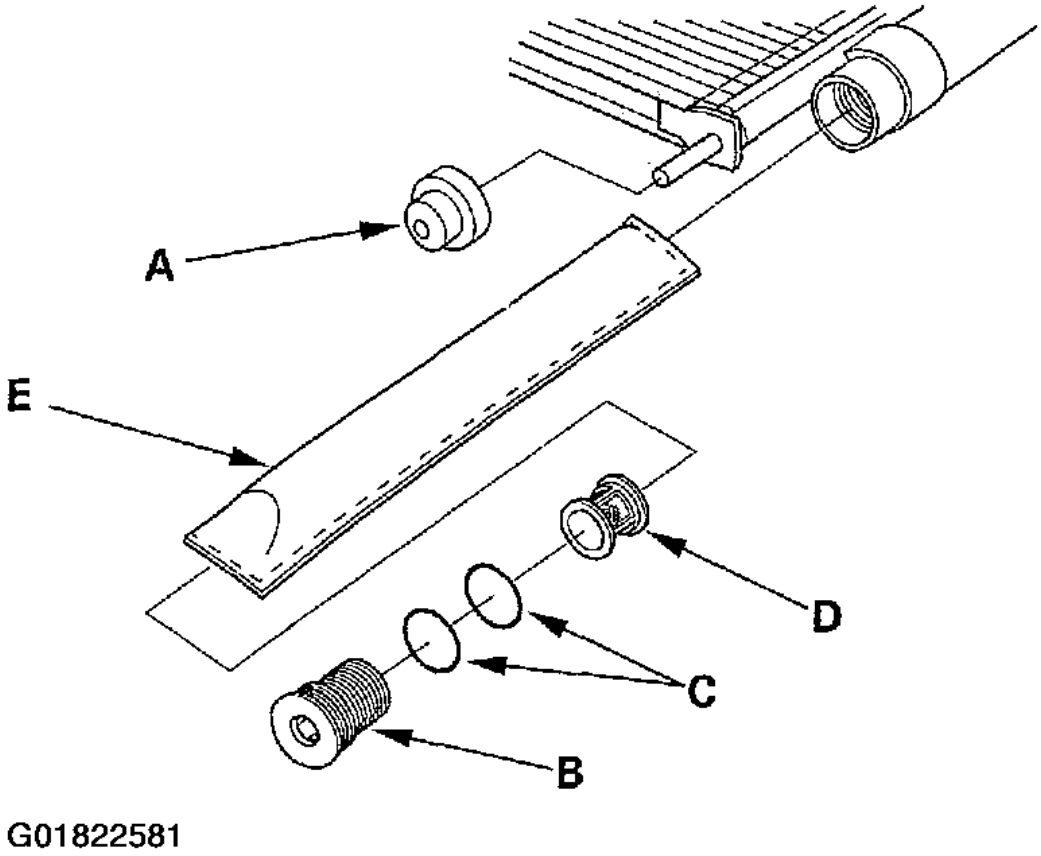


Fig. 148: Removing The O-Rings, The Filter & The Desiccant

3. Install the desiccant in the reverse order of removal, and note these items:
   - Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (KEIHIN SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.

REFRIGERANT RECOVERY

CAUTION:
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

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If accidental system discharge occurs, ventilate work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.

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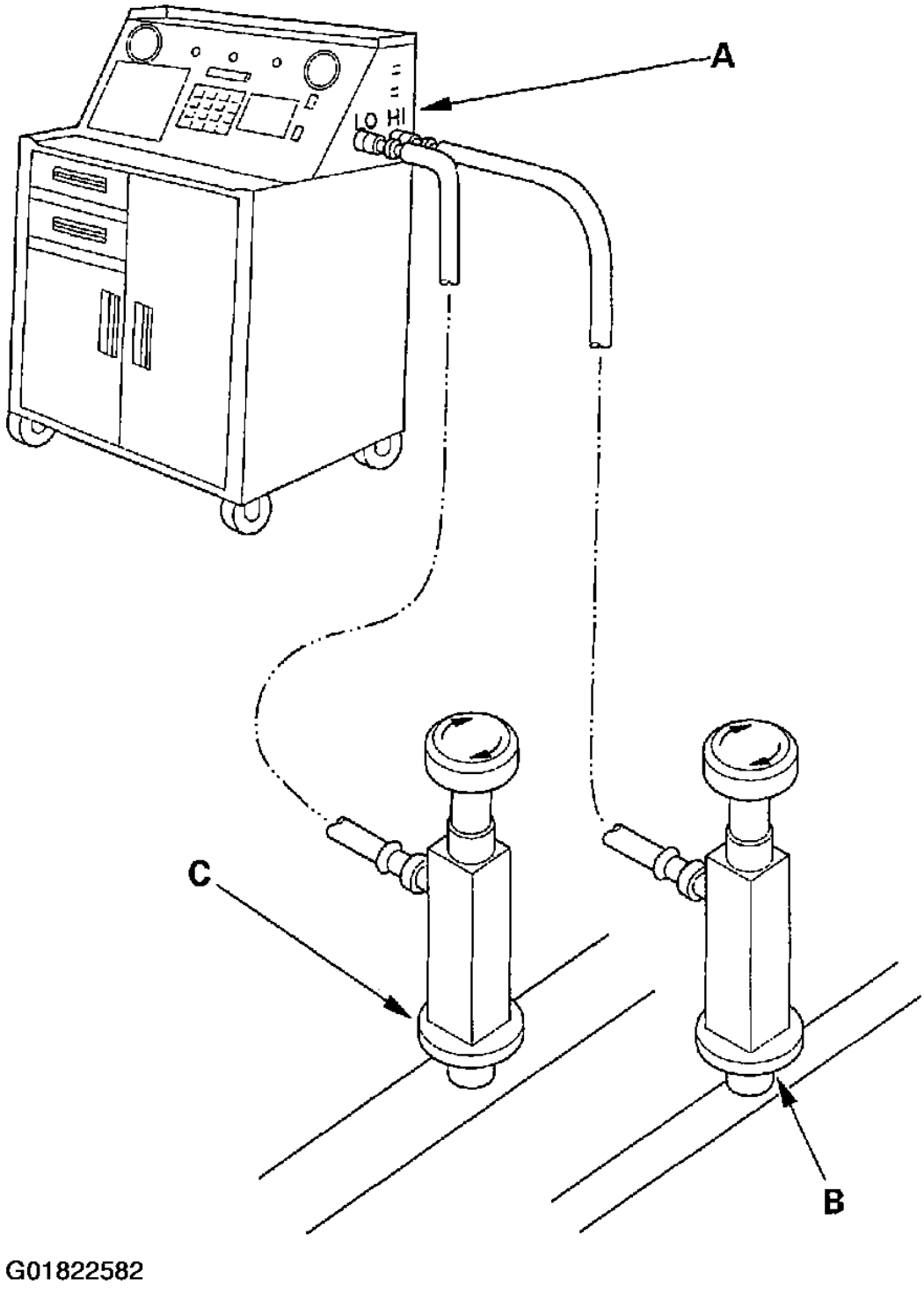


Fig. 149: Connecting A R-134A Refrigerant Recovery/Recycling/Charging Station

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2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.

SYSTEM EVACUATION

CAUTION:
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a R-134a refrigerant recovery/recycling/charging station. (If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.)
2. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Evacuate the system.

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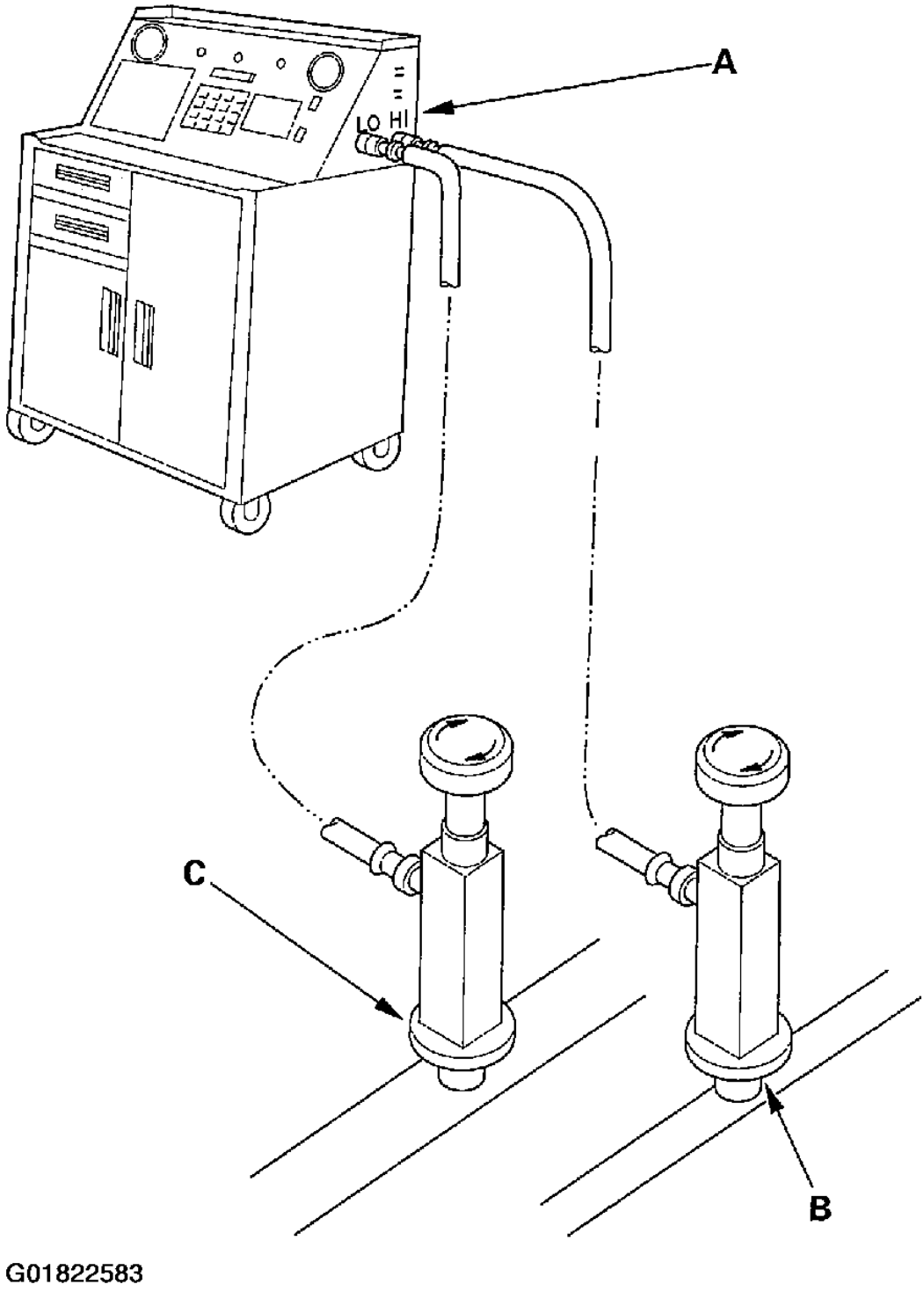


Fig. 150: Connecting A R-134A Refrigerant Recovery/Recycling/Charging Station

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3. If the low-pressure does not reach more than 93.3 kPa (700 mm Hg, 27.6 in. Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see step 3 of **REFRIGERANT LEAK TEST**).

SYSTEM CHARGING

CAUTION:
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.

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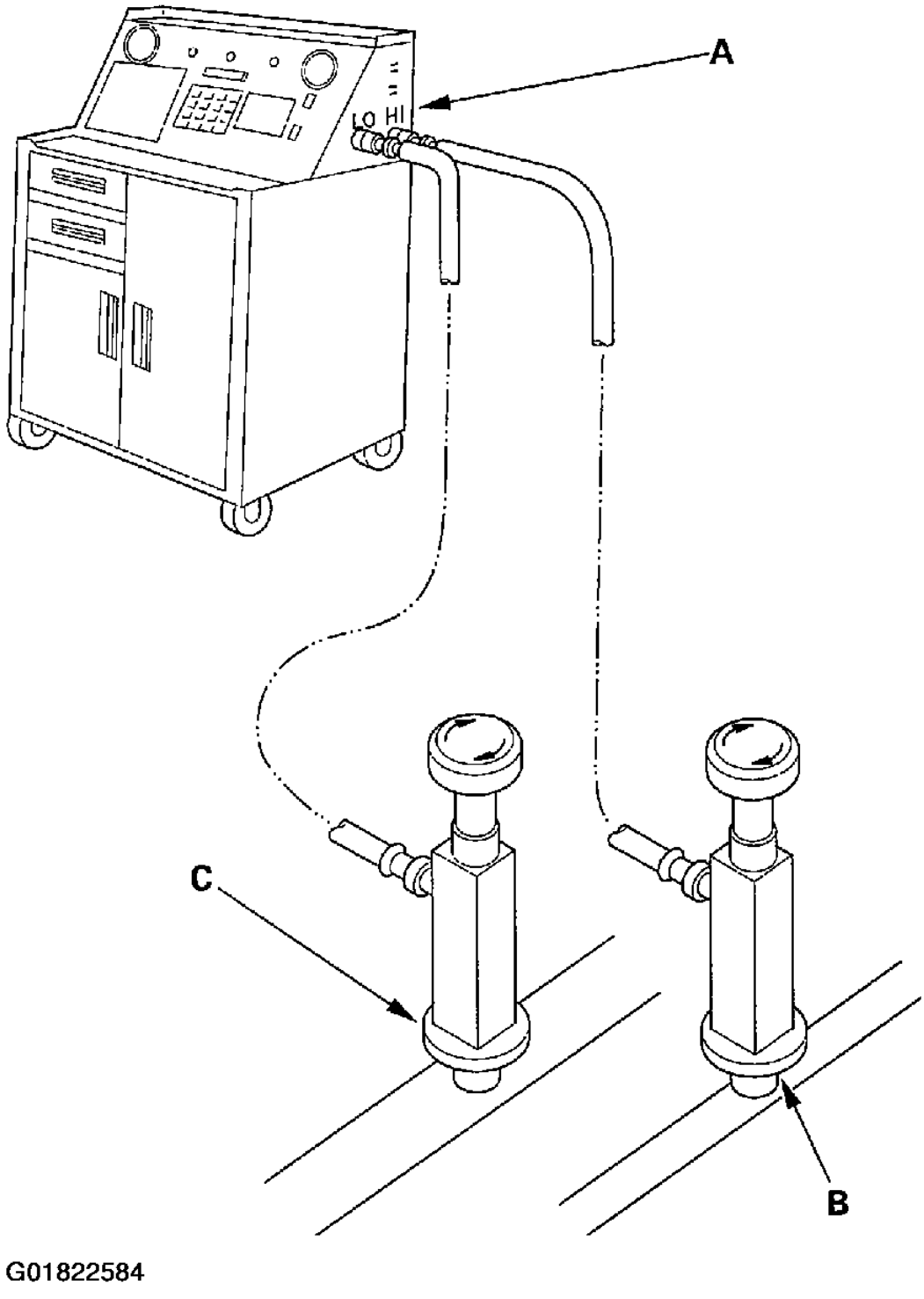


Fig. 151: Connecting A R-134A Refrigerant Recovery/Recycling/Charging Station

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2. Evacuate the system (see **SYSTEM EVACUATION**).
3. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only DENSO ND-OIL 8 refrigerant oil.
4. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the compressor will be damaged. Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant Capacity: 500 to 550 g (0.50 to 0.55 kg; 1.1 to 1.2 lbs; 17.6 to 19.4 oz.)
5. Check for refrigerant leaks (see **REFRIGERANT LEAK TEST**).
6. Check for system performance (see **PERFORMANCE TEST**).

REFRIGERANT LEAK TEST

Special Tool Required: Leak detector, Honda Tool and Equipment YGK-H-10PM commercially available

WARNING:

- **Compressed air mixed with R-134a forms a combustible vapor.**
- **The vapor can burn or explode causing serious injury.**
- **Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning system.**

CAUTION:

- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.

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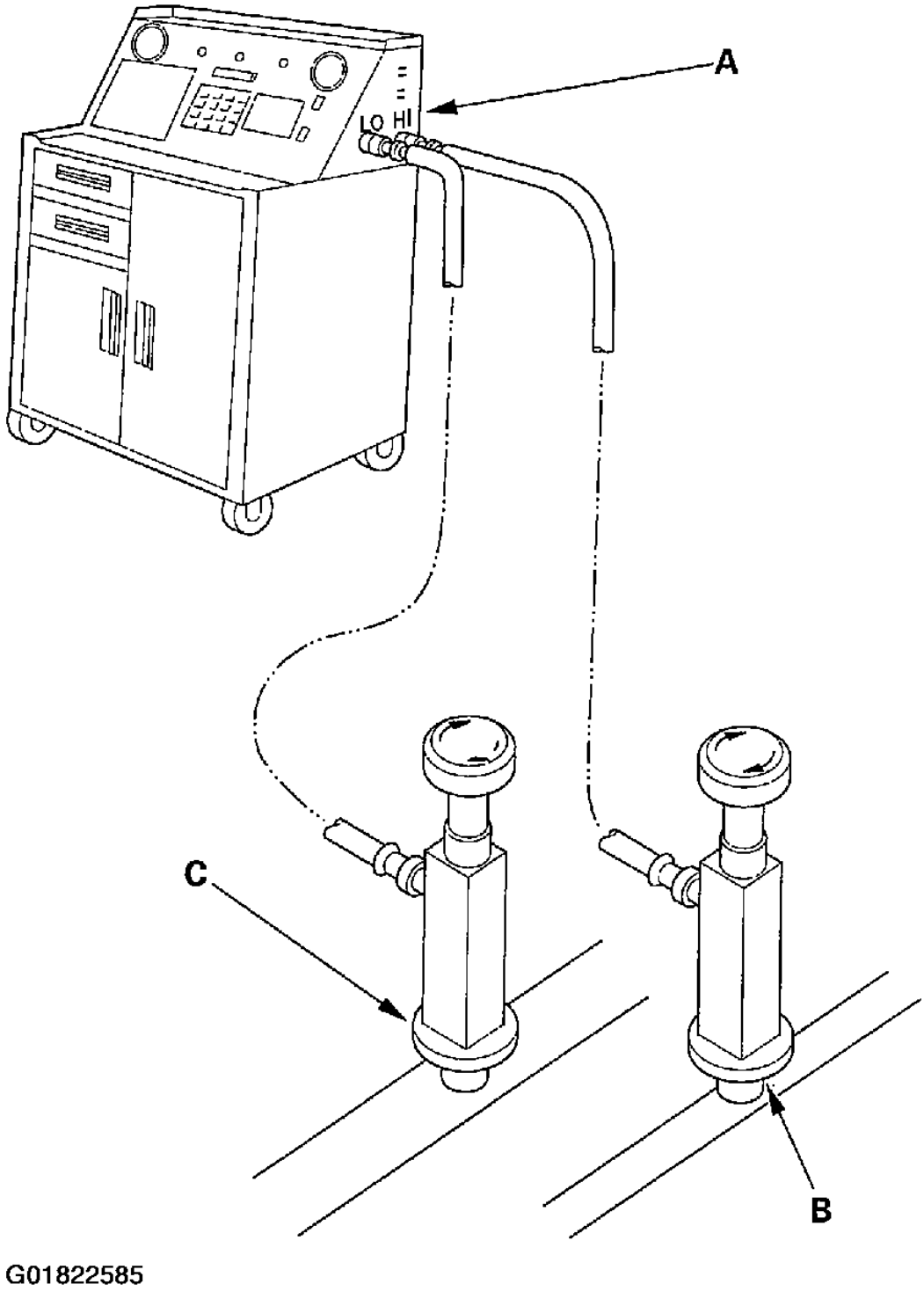


Fig. 152: Connecting A R-134A Refrigerant Recovery/Recycling/Charging Station

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2. Open high pressure valve to charge the system to the specified capacity, then close the supply valve, and disconnect the charging station fittings. Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant Capacity: 500 to 550 g (0.50 to 0.55 kg; 1.1 to 1.2 lbs; 17.6 to 19.4 oz.)
3. Check the system for leaks using a R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz.) per year or better.
4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), recover the system.
5. After checking and repairing leaks, the system must be evacuated.

A/C SYSTEM TEST

PERFORMANCE TEST

WARNING:

- **Compressed air mixed with R-134a forms a combustible vapor.**
- **The vapor can burn or explode causing serious injury.**
- **Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.**

CAUTION:

- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

The performance test will help determine if the air conditioner system is operating within specifications.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.
2. Determine the relative humidity and air temperature.
3. Open the glove box. Remove the damper from the glove box, then let the glove box hang down (see **GLOVE BOX REMOVAL/INSTALLATION**).
4. Insert a thermometer (A) in the center vent.

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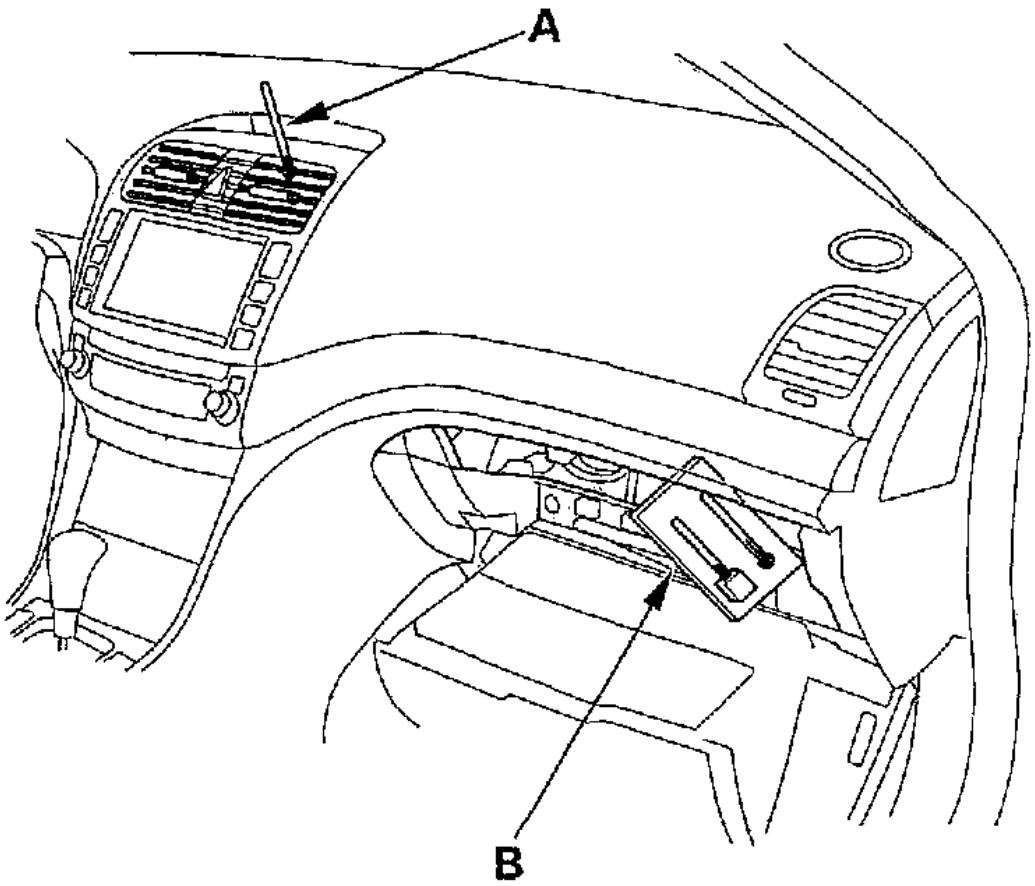


Fig. 153: Inserting A Thermometer In The Center Vent

5. Place a thermometer (B) near the blower unit.
6. Test conditions:
   - Avoid direct sunlight.
   - Open hood.
   - Open front doors.
   - Set the temperature control dial to Max Cool, the mode control switch to Vent and the recirculation control switch to Recirculate.
   - Turn the A/C switch on and the fan switch to Max.
   - Run the engine at 1,500 RPM.
   - No driver or passengers in vehicle.
7. After running the air conditioning for 10 minutes under the above test conditions, read the delivery

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temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the high and low system pressure from the A/C gauges.

8. To complete the charts:
   - Mark the delivery temperature along the vertical line.
   - Mark the intake temperature (ambient air temperature) along the bottom line.
   - Draw a line straight up from the air temperature to the humidity.
   - Mark a point 10% above and 10% below the humidity level.
   - From each point, draw a horizontal line across the delivery temperature.
   - The delivery temperature should fall between the two lines.
   - Complete the low-side pressure test and high-side pressure test in the same way.
   - Any measurements outside the line may indicate the need for further inspection.

   Example Intake temperature (dry): 86°F (30°C) Humidity level 70%

   (wet): 77.9°F (25.5°C)

   Intake pressure: 215 kPa (2.2 kgf/cm_2) (31.3 psi)

   Delivery temperature: 56.5°F (13.6°C)

   Delivery pressure: 1604 kPa (16.3 kgf/cm_2) (231.8 psi)

   Results: within normal range

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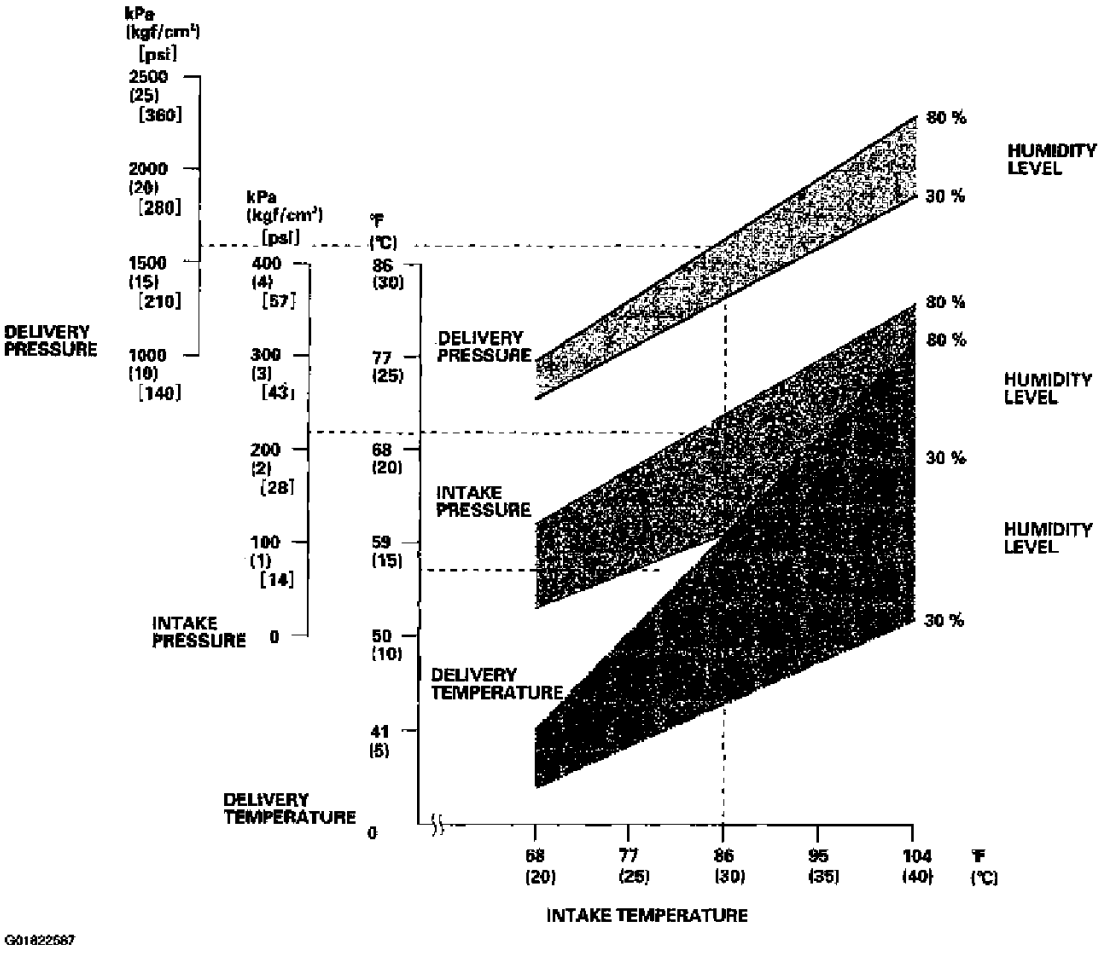


Fig. 154: A/C System Performance Test Chart

PRESSURE TEST

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Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops about 196 kPa (2.0 kgf/cm², 28 psi) quickly, and then falls gradually.	Air in system	Recover, evacuate (see page 21-84), and recharge with specified amount (see page 21-85).
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
	Reduced or no air flow through condenser	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
	Line to condenser is excessively hot.	Restricted flow of refrigerant in system	Restricted lines
Discharge pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot.	Insufficient refrigerant in system	• Check for leak. • Charge system.
	High and low pressures are balanced soon after stopping compressor. Low side is higher than normal.	• Faulty compressor discharge valve • Faulty compressor seal	Replace the compressor.
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum.	• Faulty expansion valve • Moisture in system	• Replace • Recover, evacuate, and recharge with specified amount.
Suction (low) pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot.	Insufficient refrigerant in system	• Repair the leaks. • Recover, evacuate, and recharge with specified amount. • Charge as required.
	Expansion valve is not frosted, and low-pressure line is not cold. Low-pressure gauge indicates vacuum.	• Frozen expansion valve (Moisture in system) • Faulty expansion valve	• Recover, evacuate, and recharge with specified amount. • Replace the expansion valve.
	Discharge temperature is low, and the air flow from vents is restricted.	Frozen evaporator	Run the fan with compressor off, then check evaporator temperature sensor.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace.
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator.	Expansion valve open too long	Repair or replace.
	Suction pressure is lowered when condenser is cooled by water.	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
	High and low-pressure are equalized as soon as the compressor is stopped, and both gauges fluctuate while running.	• Faulty gasket • Faulty high-pressure valve • Foreign particle stuck in high-pressure valve	Replace the compressor.
Suction and discharge pressures abnormally high	Reduced air flow through condenser.	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
	No bubbles in sight glass when condenser is cooled by water	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
Suction and discharge pressure abnormally low	Low-pressure hose and metal end areas are cooler than evaporator.	Clogged or kinked low-pressure hose parts	Repair or replace.
	Temperature around expansion valve is too low compared with that around receiver/dryer.	Clogged high-pressure line	Repair or replace.
Refrigerant leaks	Compressor clutch is dirty.	Compressor shaft seal leaking	Replace the compressor.
	Compressor bolt(s) are dirty.	Leaking around bolt(s)	Tighten bolt(s) or replace compressor.
	Compressor gasket is wet with oil.	Gasket leaking	Replace the compressor.

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Fig. 155: A/C System Pressure Test Chart

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2004 CLUTCHES

TSX

CLUTCH

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07JAF-PM7011A	Clutch Alignment Disc	1
②	07LAB-PV00100 or 07924-PD20003	Ring Gear Holder	1
③	07ZAF-PR8A100	Clutch Alignment Shaft	1
④	07936-3710100	Remover Handle	1

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Fig. 1: Special Tools (1 Of 2)

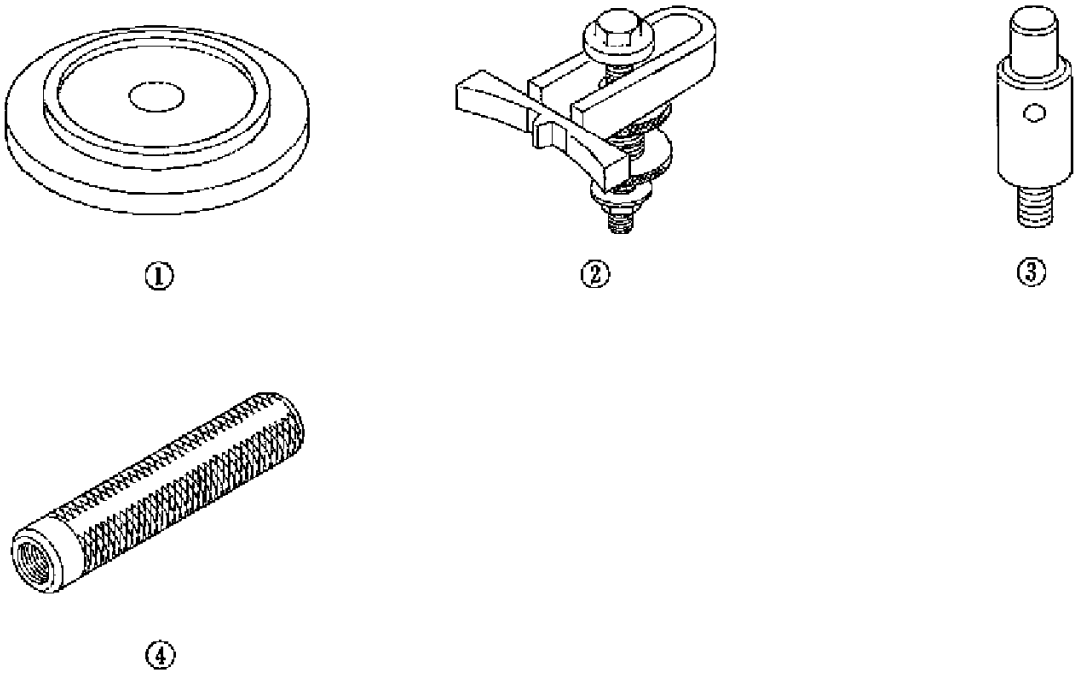


Fig. 2: Special Tools (2 Of 2)

COMPONENT LOCATION INDEX

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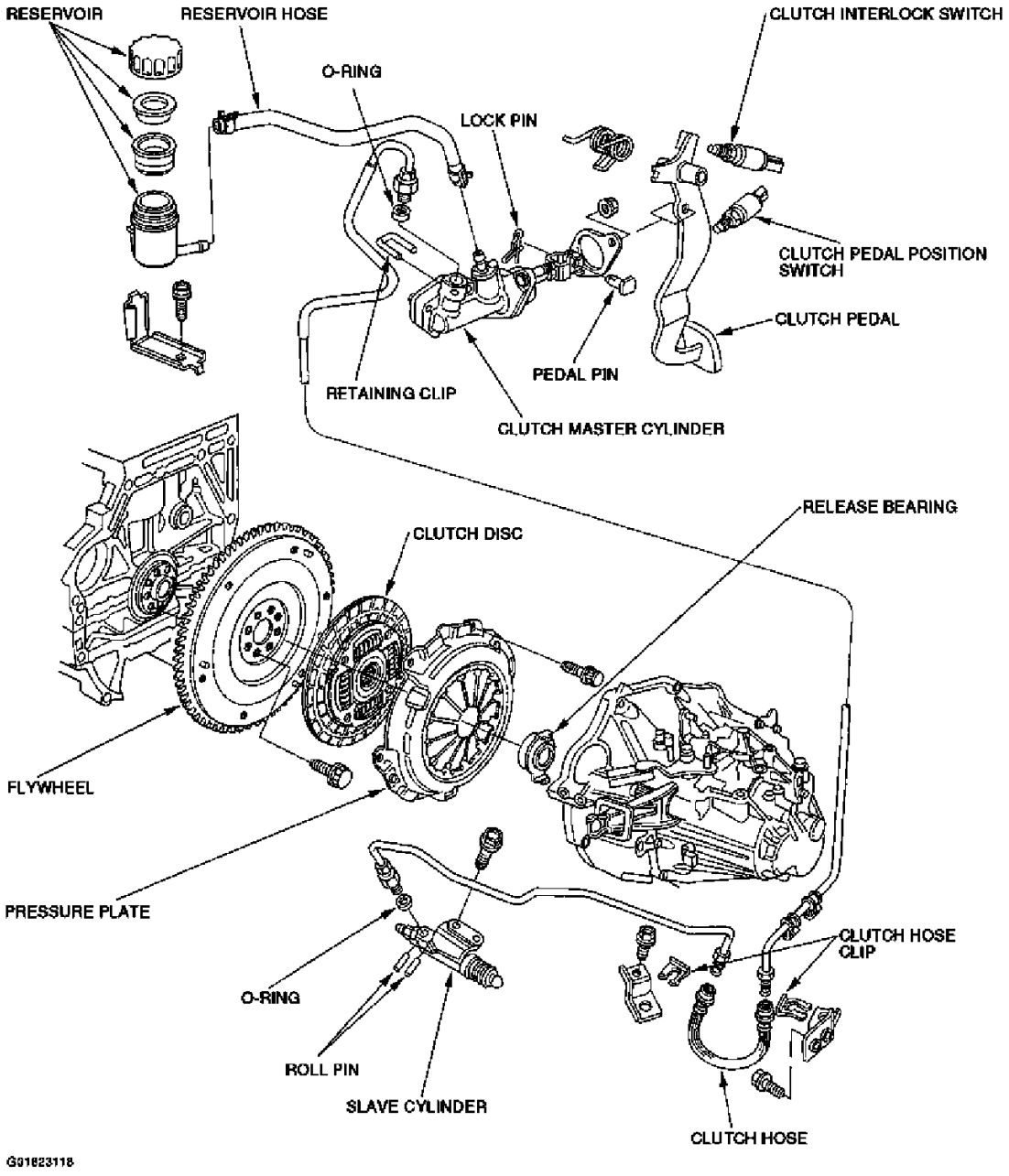


Fig. 3: Locating Clutch Components

CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH & CLUTCH INTERLOCK SWITCH ADJUSTMENT

NOTE:

- **Check the clutch pedal position switch (see CLUTCH PEDAL POSITION SWITCH TEST).**
- **Check the clutch interlock switch (see CLUTCH INTERLOCK SWITCH TEST).**

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- **Remove the driver's side floor mat before adjusting the clutch pedal.**
- **The clutch is self-adjusting to compensate for wear.**
- **If there is no clearance between the master cylinder piston and push rod, the release bearing will be held against the diaphragm spring, which can result in clutch slippage or other clutch problems.**

1. Loosen the clutch pedal position switch locknut (A), and back off the clutch pedal position switch (B) until it no longer touches the clutch pedal (C).

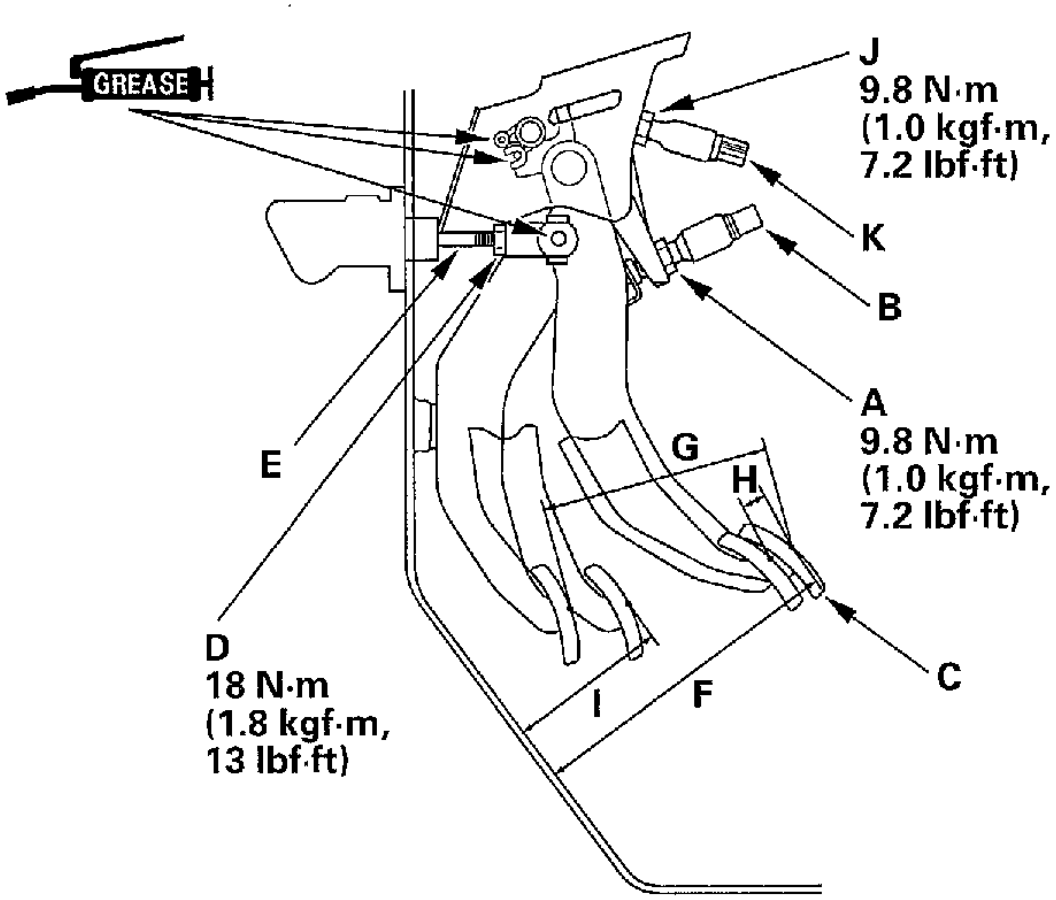


Fig. 4: Adjusting The Clutch Pedal

2. Loosen the clutch push-rod locknut (D), and turn the push rod (E) in or out to get the specified height (F), stroke (G), free play (H) and disengagement height (I) at the clutch pedal.

   Clutch Pedal Stroke: 130-140 mm (5.12-5.51 in.)

   Clutch Pedal Free Play: 10-18 mm (0.39-0.71 in.)

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Clutch Pedal Height: 191 mm (7.52 in.)

Clutch Pedal Disengagement Height: 95 mm (3.74 in.)

3. Tighten the clutch push-rod locknut (D).
4. With the clutch pedal released, turn the clutch pedal position switch (B) in until it contacts the clutch pedal (C).
5. Turn the clutch pedal position switch (B) in an additional 3/4 to 1 turn.
6. Tighten the clutch pedal position switch locknut (A).
7. Press the clutch pedal to the floor.
8. Release the clutch pedal 9-12 mm (0.35-0.47 in.) from the fully depressed position, and hold it there. Adjust the position of the clutch interlock switch (K) so that the engine will start with the clutch pedal in this position.
9. Tighten the clutch interlock switch locknut (J).

CLUTCH PEDAL REPLACEMENT

1. Disconnect the clutch pedal position switch connector (A) and clutch interlock switch connector (B).

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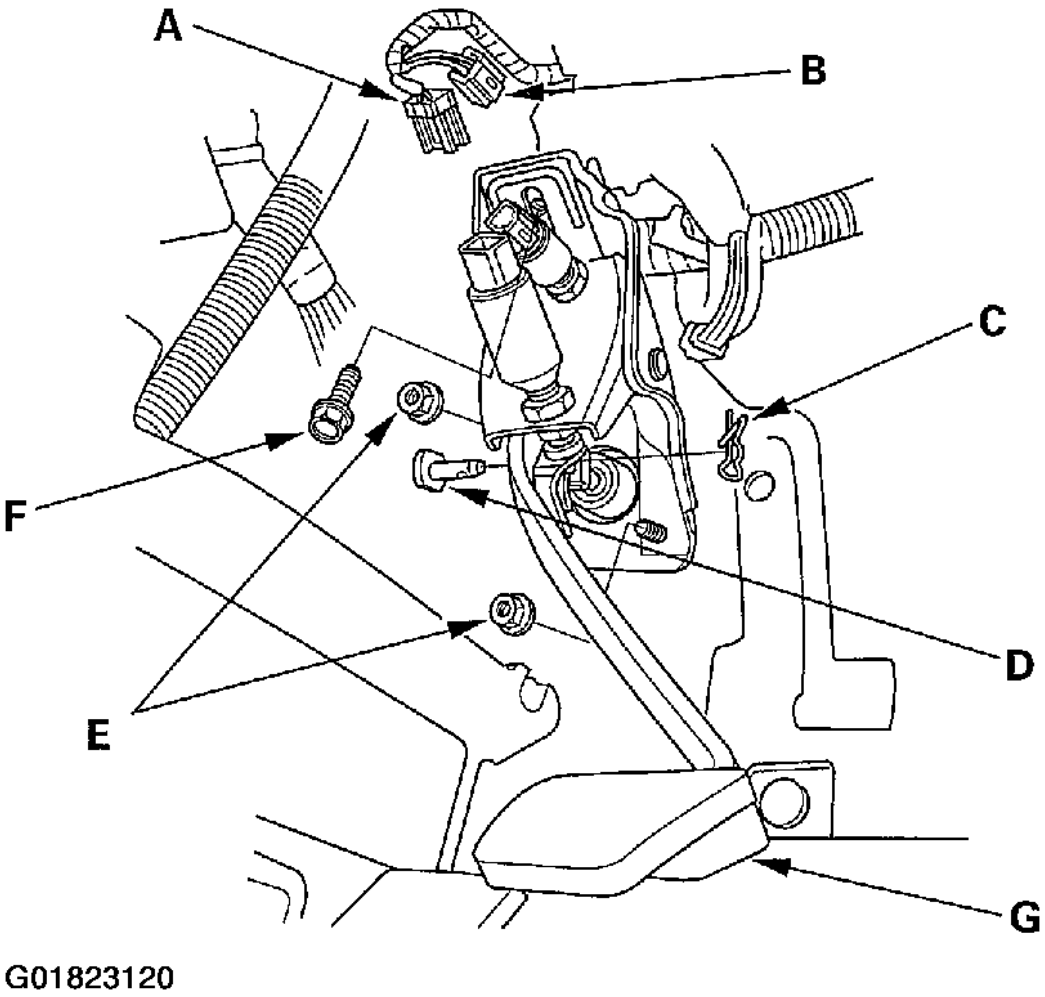


Fig. 5: Disconnecting The Connectors

2. Pry out the lock pin (C), and pull the pedal pin (D) out of the yoke.
3. Remove the master cylinder mounting nuts (E) and clutch pedal mounting bolt (F).
4. Remove the clutch pedal (A).
5. Install the clutch pedal (A).

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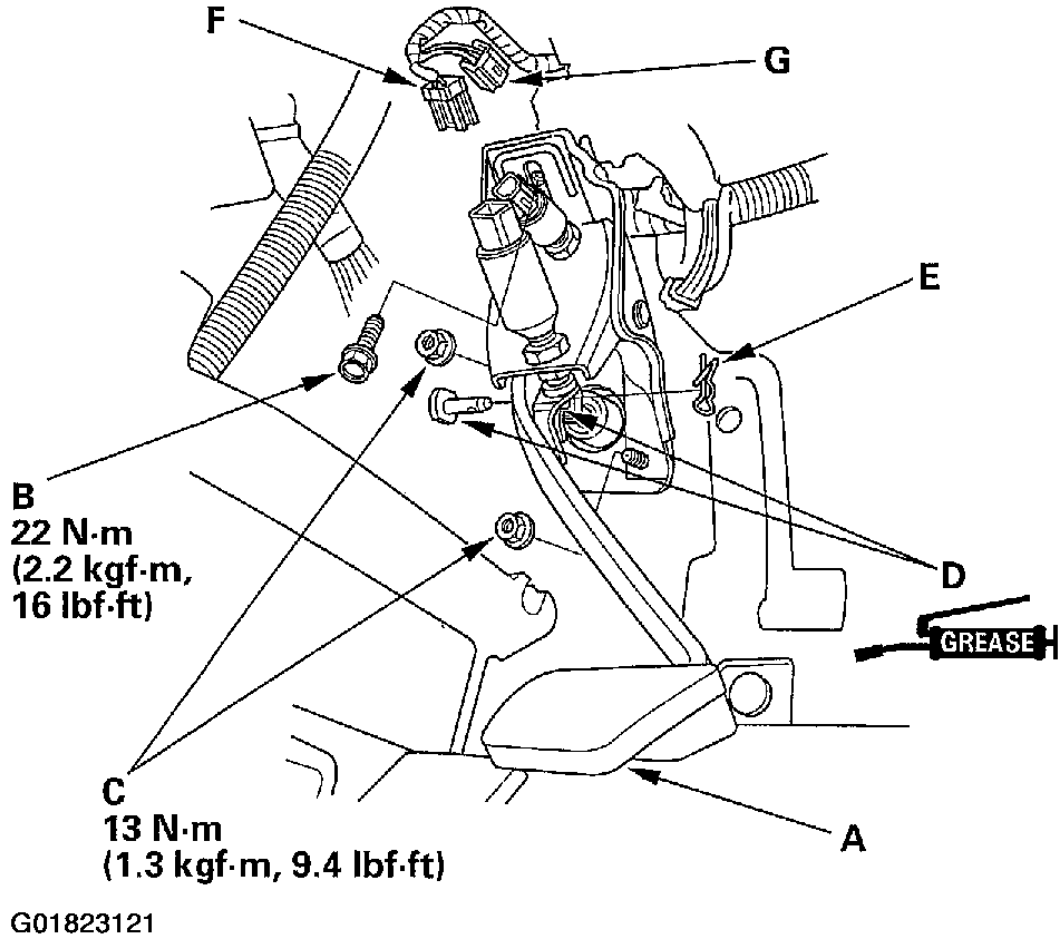


Fig. 6: Removing The Clutch Pedal

6. Install the clutch pedal mounting bolt (B) and master cylinder mounting nuts (C).
7. Apply grease to the pedal pin (D), and slide it into the yoke, then install a new lock pin (E).
8. Connect the clutch pedal position switch connector (F) and clutch interlock switch connector (G).
9. Adjust the clutch pedal, clutch pedal position switch, and clutch interlock switch (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH & CLUTCH INTERLOCK SWITCH ADJUSTMENT**).

CLUTCH MASTER CYLINDER REPLACEMENT

NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe.

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2. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons. Disconnect the negative (-) cable first, then the positive (+) cable from the battery. Remove the battery.
3. Remove the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
4. Remove the battery base (see step 6 of **ENGINE REMOVAL**).
5. Pry out the lock pin (A), and pull the pedal pin (B) out of the yoke. Remove the master cylinder mounting nuts (C).

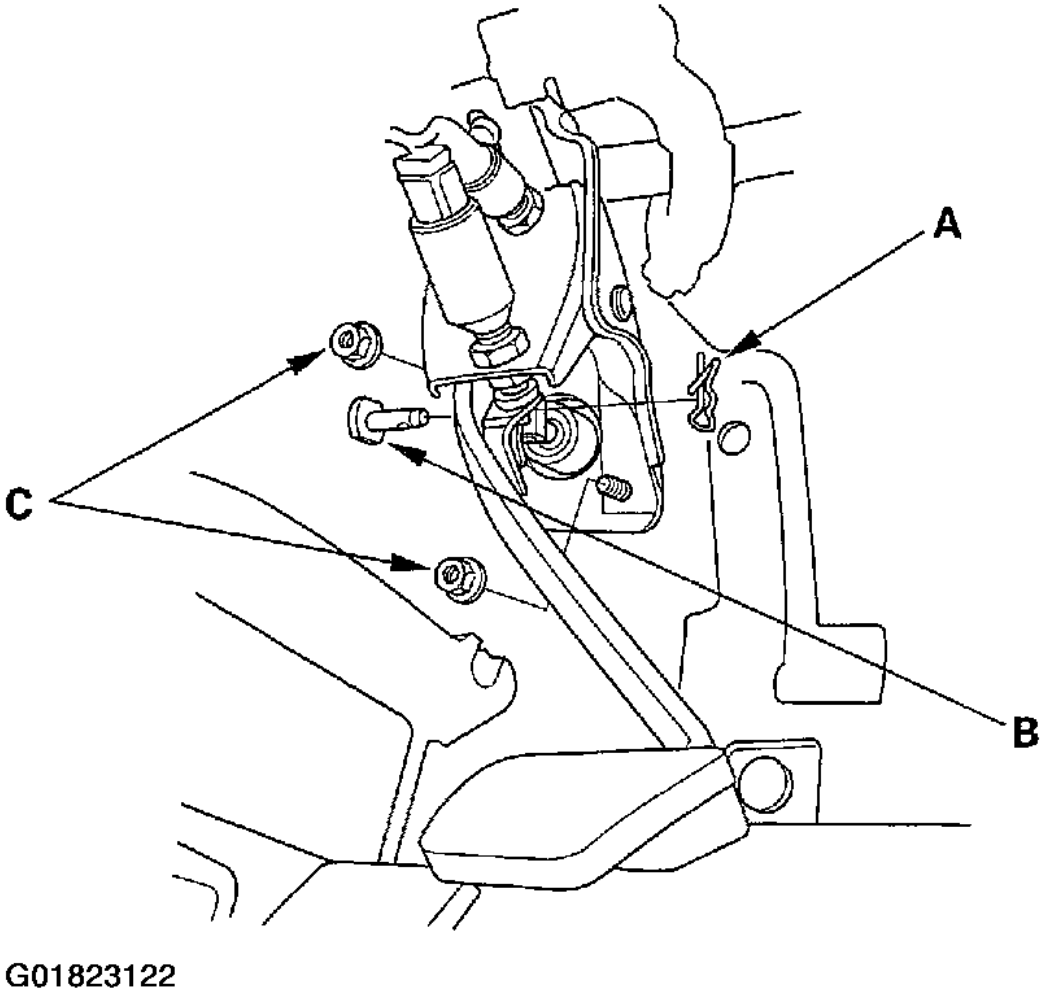


Fig. 7: Removing The Master Cylinder Mounting Nuts

6. Remove the reservoir mounting bolt (A).

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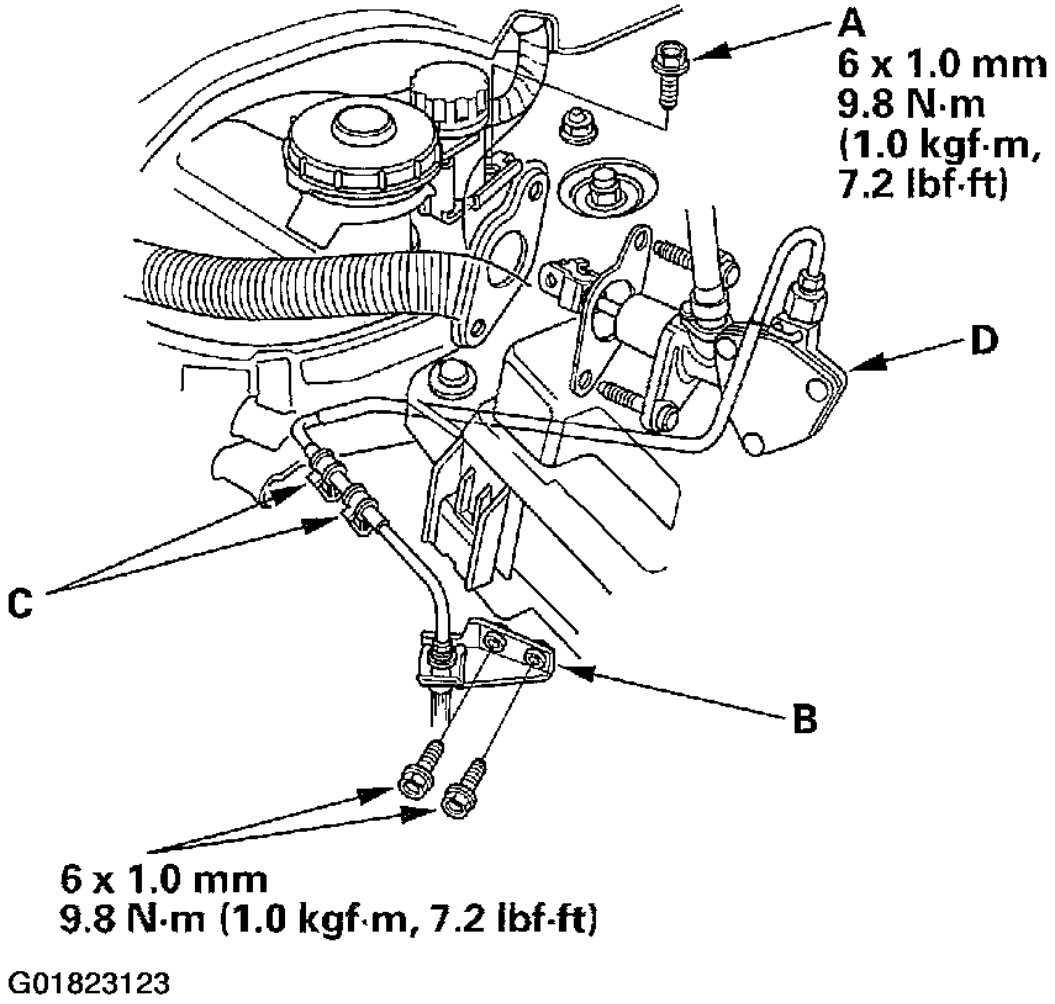


Fig. 8: Removing The Clutch Master Cylinder

7. Remove the clutch pipe bracket (B).
8. Remove the clutch pipe clips (C).
9. Remove the clutch master cylinder (D).
10. Disconnect the reservoir hose (A), then remove the retaining clip (B) and remove clutch pipe (C) from the clutch master cylinder (D). Plug the end of the reservoir hose and clutch pipe to prevent brake fluid from coming out.

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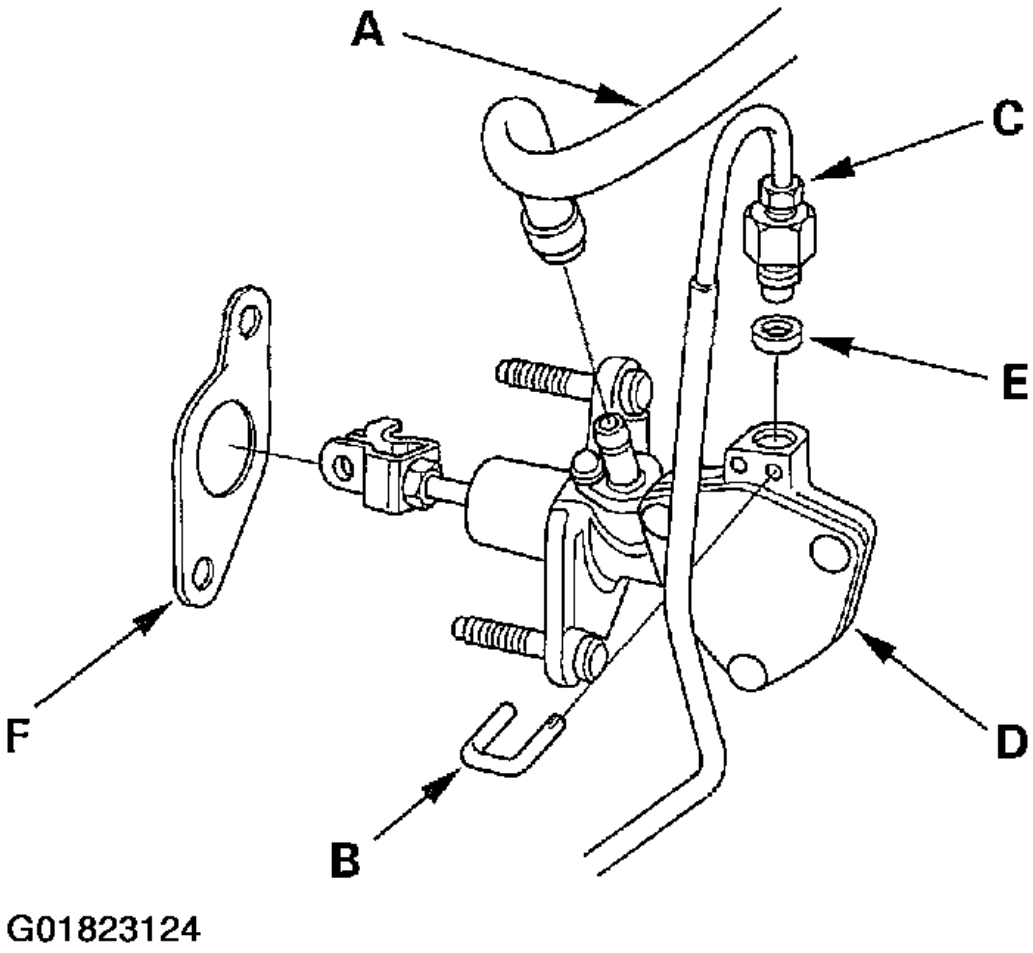


Fig. 9: Removing The Reservoir Hose & The Clutch Pipe

11. Remove the O-ring (E) and clutch master cylinder seal (F) from the clutch master cylinder.
12. Install the clutch master cylinder in the reverse order of removal, and note these items.
    - Apply brake assembly lube to the clutch pipe, and install a new O-ring.
    - Tighten the master cylinder mounting nuts to 13 N.m (1.3 kgf.m, 9.4 lbf.ft).
    - Install the battery base (see step 43 of **ENGINE INSTALLATION**).
    - Install the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
    - Install the battery. Connect the battery cables; positive (+) cable first, then the negative (-) cable.
    - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.
    - Perform the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).

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13. Make sure the hose clamps (A) are positioned on the master cylinder (B) and reservoir (C) as shown.

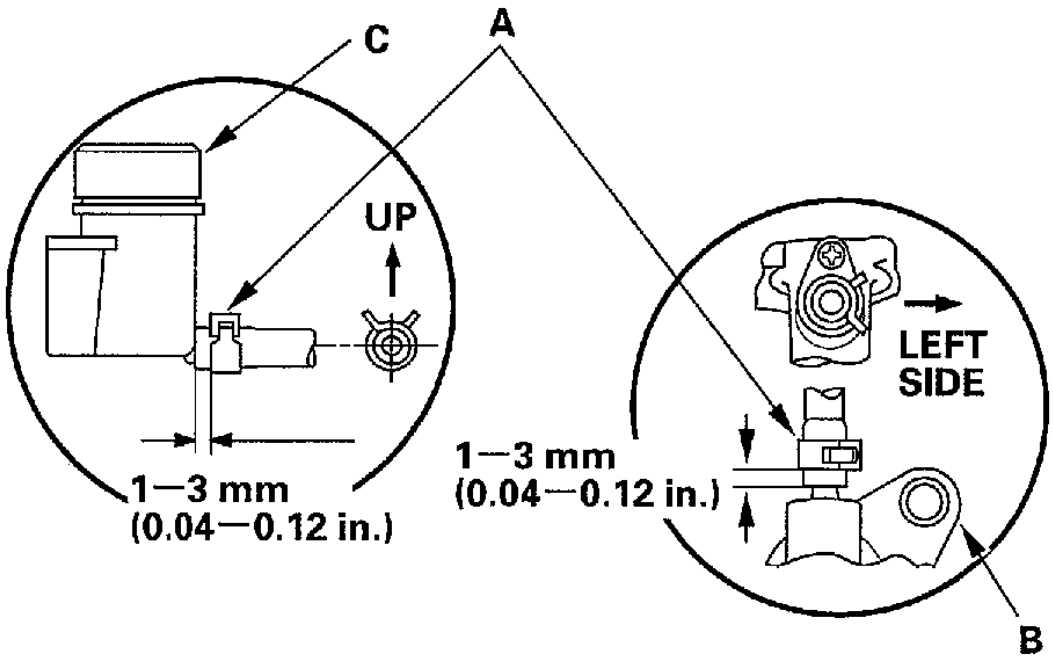


Fig. 10: Aligning Master Cylinder & Reservoir Hose Clamps

14. To prevent the retaining clip (A) from coming off, pry apart the tip of the retaining clip (B) with a screwdriver.

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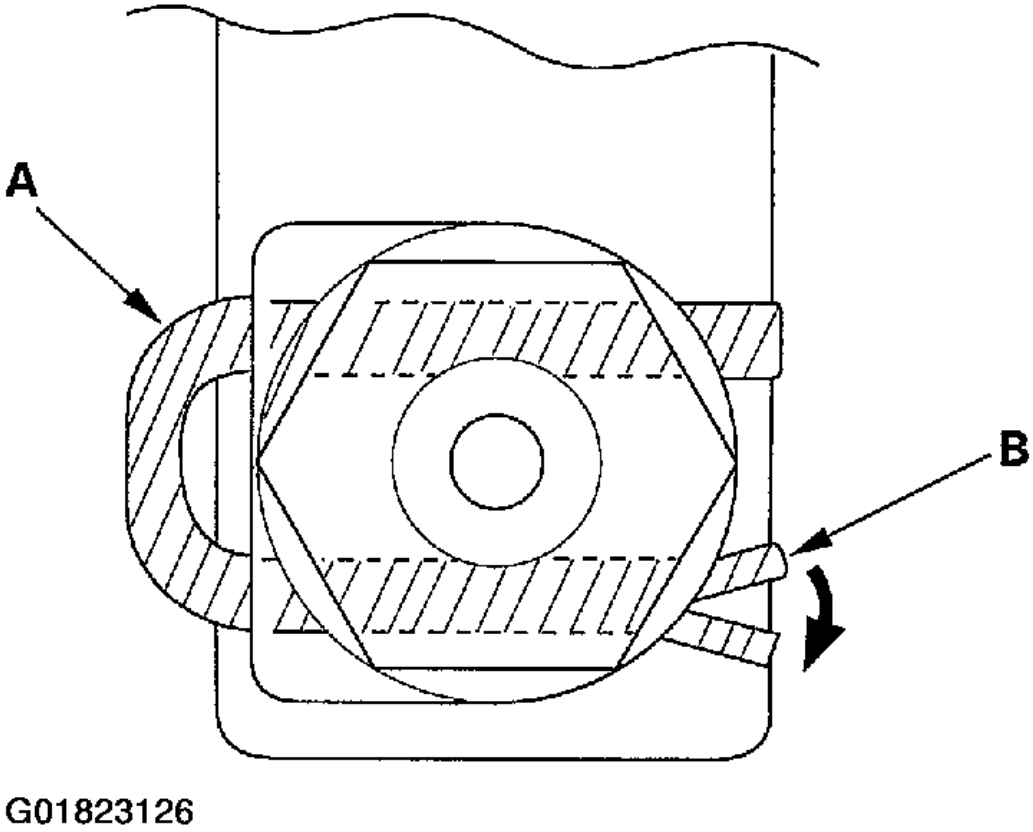


Fig. 11: Prying Apart The Tip Of The Retaining Clip

15. Bleed the clutch hydraulic system (see step 11 of **SLAVE CYLINDER REPLACEMENT**).

NOTE: Reservoir filling is covered in the bleeding procedure.

SLAVE CYLINDER REPLACEMENT

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's radio station presets.
2. Disconnect the negative (-) cable first, then the positive (+) cable from the battery. Remove the battery.
3. Remove the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).

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4. Remove the battery base (see step 6 of **ENGINE REMOVAL**).
5. Remove the clutch line bracket.

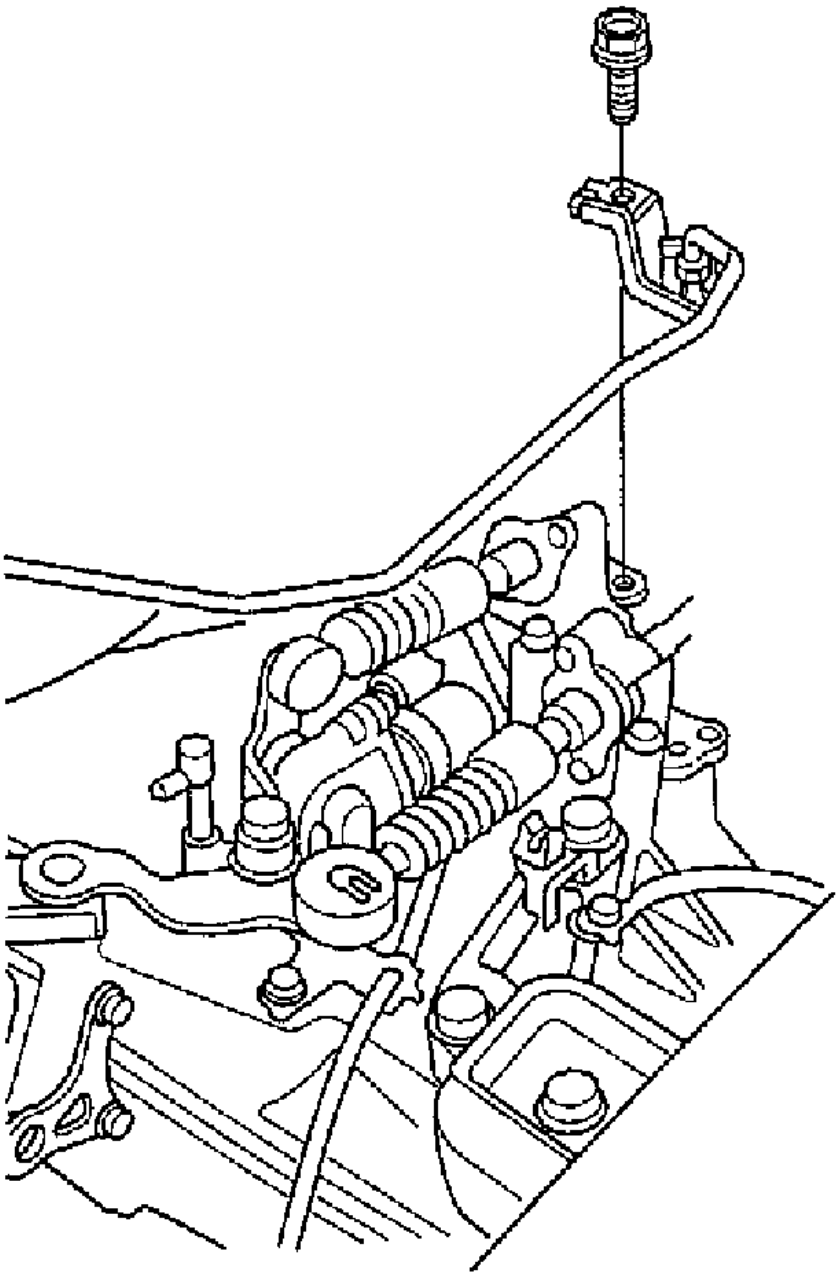


Fig. 12: Removing The Clutch Line Bracket

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6. Remove the mounting bolts (A) and the slave cylinder (B).

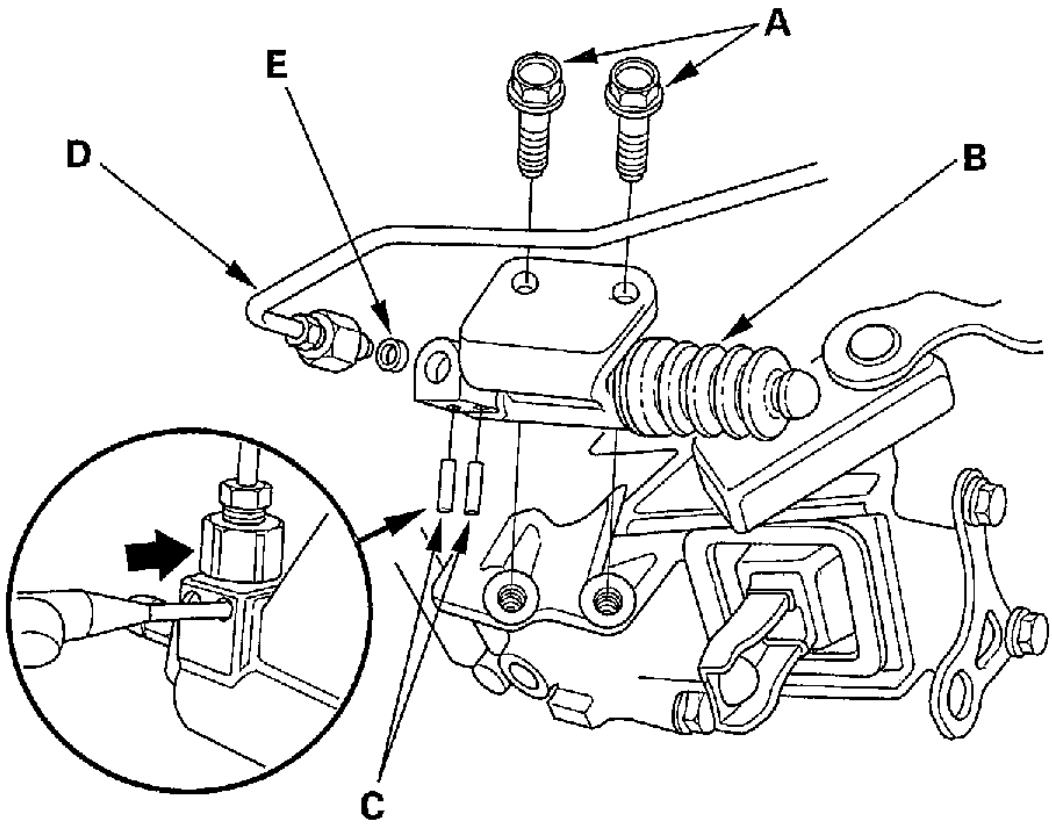


Fig. 13: Removing The Slave Cylinder

7. Remove the roll pins (C). Disconnect the clutch line (D), and remove the O-ring (E). Plug the end of the clutch line with a shop towel to prevent brake fluid from coming out.
8. Install the slave cylinder in the reverse order of removal. Install a new O-ring (A).

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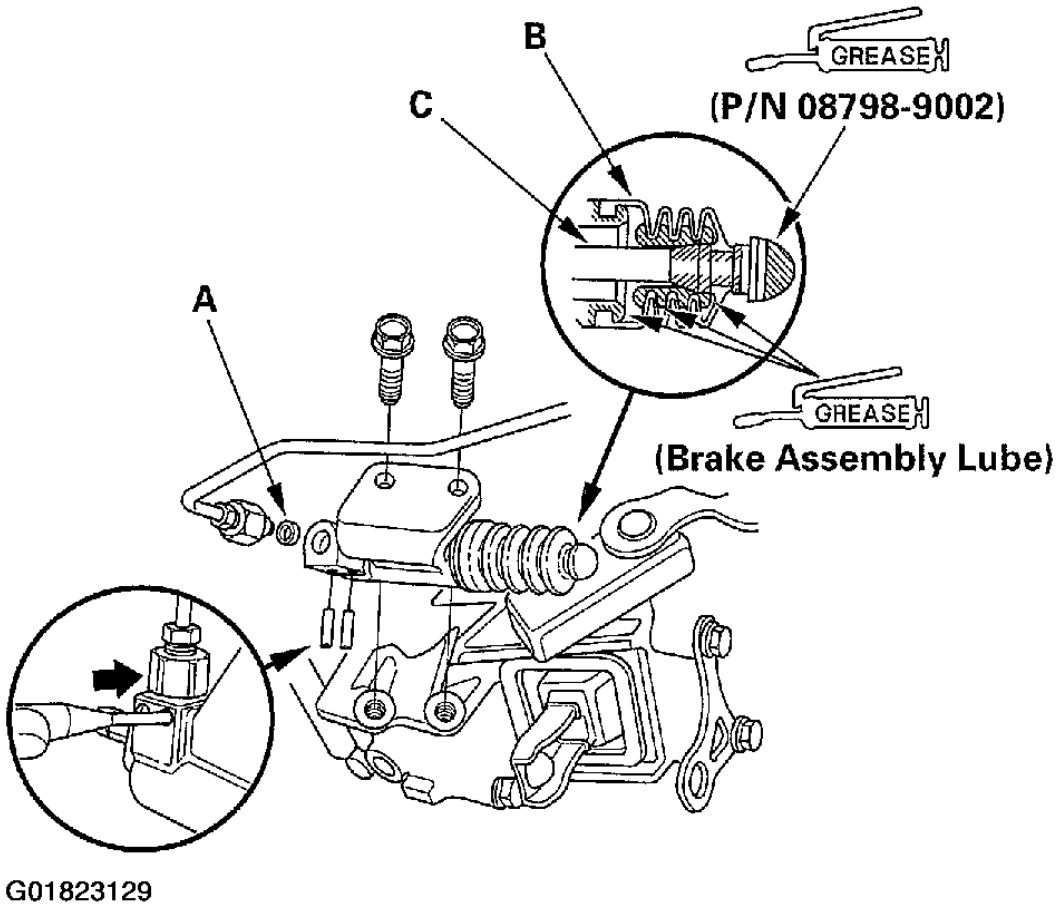


Fig. 14: Installing The Slave Cylinder

9. Pull the boot (B) back, and apply brake assembly lube to the boot and slave cylinder rod (C). Reinstall the boot.
10. Apply super high temp urea grease (P/N 08798-9002) to the push rod of the slave cylinder. Tighten the slave cylinder mounting bolts to 22 N.m (2.2 kgf.m, 16 lbf.ft)
11. Bleed the clutch hydraulic system.
    - Attach a hose to the bleeder screw (A), and suspend the hose in a container of brake fluid.
    - Make sure there is an adequate supply of fluid in the clutch master cylinder, then slowly pump the clutch pedal until no more bubbles appear at the bleeder hose.
    - It may be necessary to limit the movement of the release fork (B) with a block of wood to remove all the air from the system.
    - Tighten the bleeder screw to 8 N.m (0.8 kgf.m, 5.8 lbf.ft); do not overtighten it.
    - Refill the clutch master cylinder with fluid when done.
    - Always use only Honda DOT 3 brake fluid.

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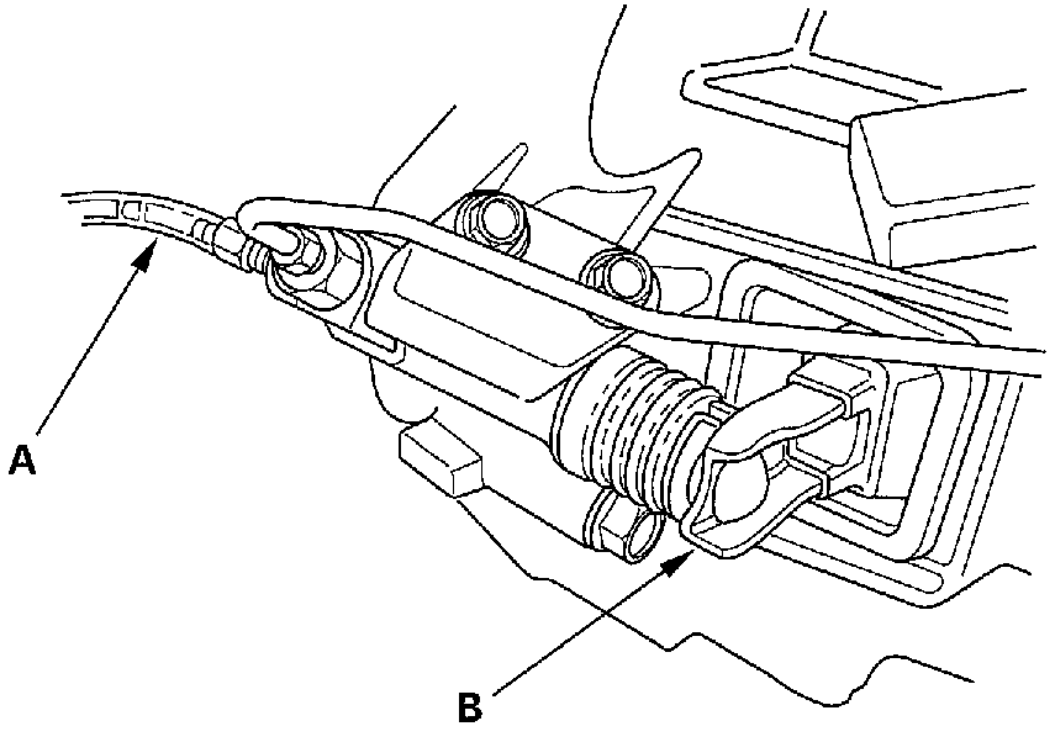


Fig. 15: Bleeding The Clutch Hydraulic System

12. Install the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
13. Install the battery base (see step 43 of **ENGINE INSTALLATION**).
14. Install the battery. Connect the battery cables; positive (+) cable first, then the negative (-) cable.
15. Enter the anti-theft codes for the radio and navigation system, then enter the customer's radio station presets.

CLUTCH REPLACEMENT

Special Tools Required:

- Clutch alignment disc 07JAF-PM7011A
- Ring gear holder 07LAB-PV00100 or 07924-PD20003
- Clutch alignment shaft 07ZAF-PR8A100
- Remover handle 07936-3710100

Pressure Plate & Clutch Disc Removal

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1. Check the diaphragm spring fingers height using the special tool and feeler gauge. If the height is more than the service limit, replace the pressure plate.

   Standard (New): 0.6 mm (0.02 in.) Max.

   Service Limit: 0.8 mm (0.03 in.)

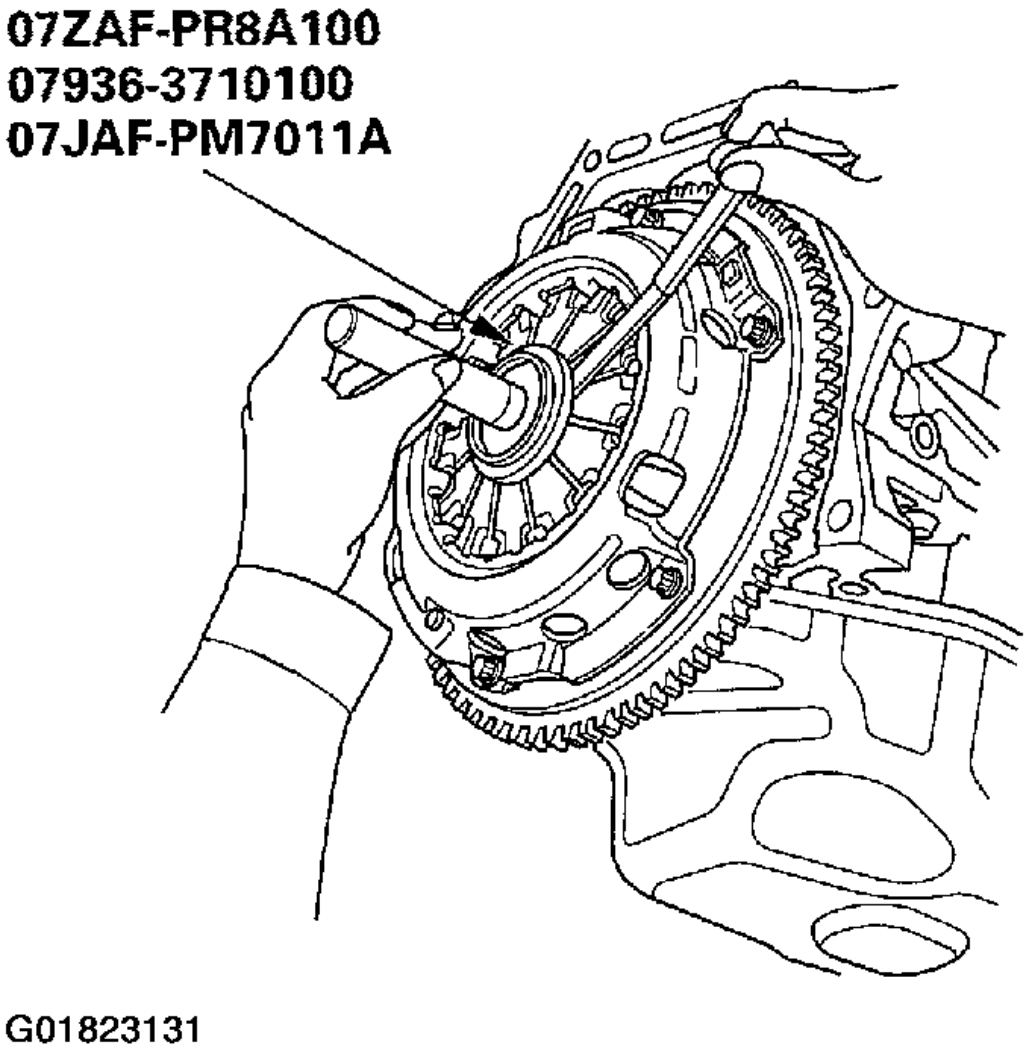


Fig. 16: Checking The Diaphragm Spring Fingers Height

2. Install the special tools.

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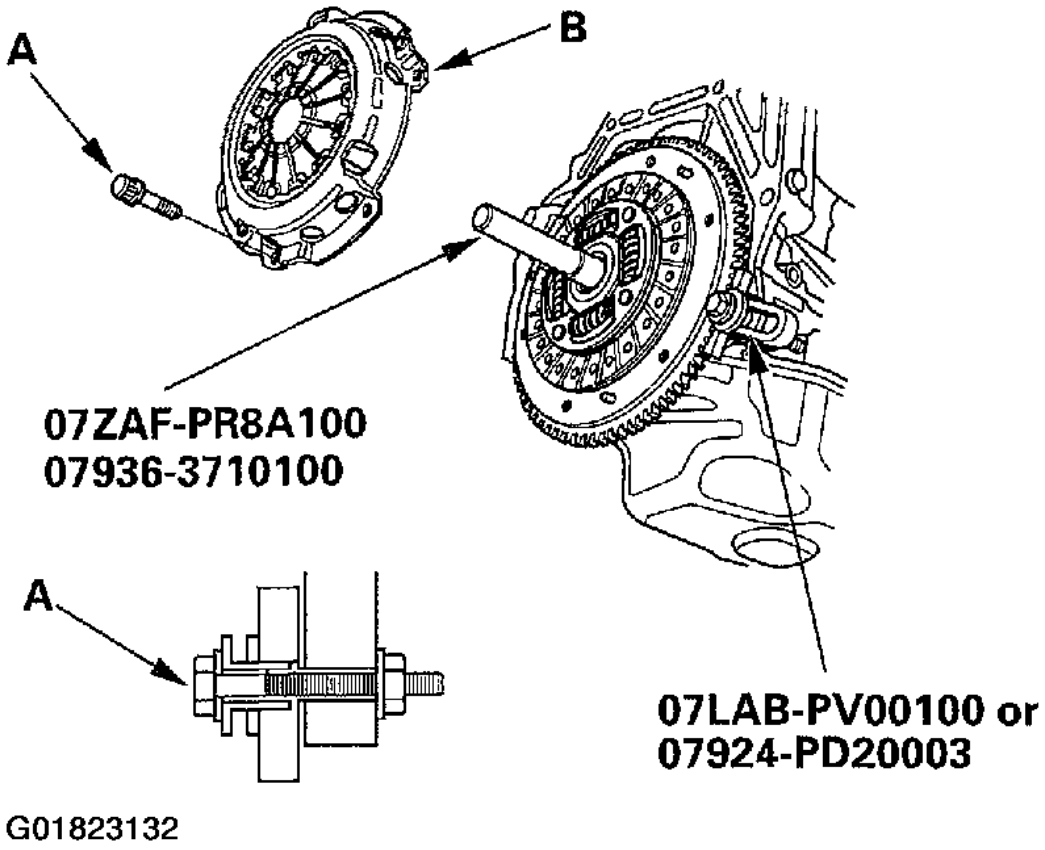


Fig. 17: Installing The Special Tools

3. To prevent warping, unscrew the pressure plate mounting bolts (A) in a crisscross pattern in several steps, then remove the pressure plate (B).
4. Inspect the fingers of the diaphragm spring (A) for wear at the release bearing contact area.

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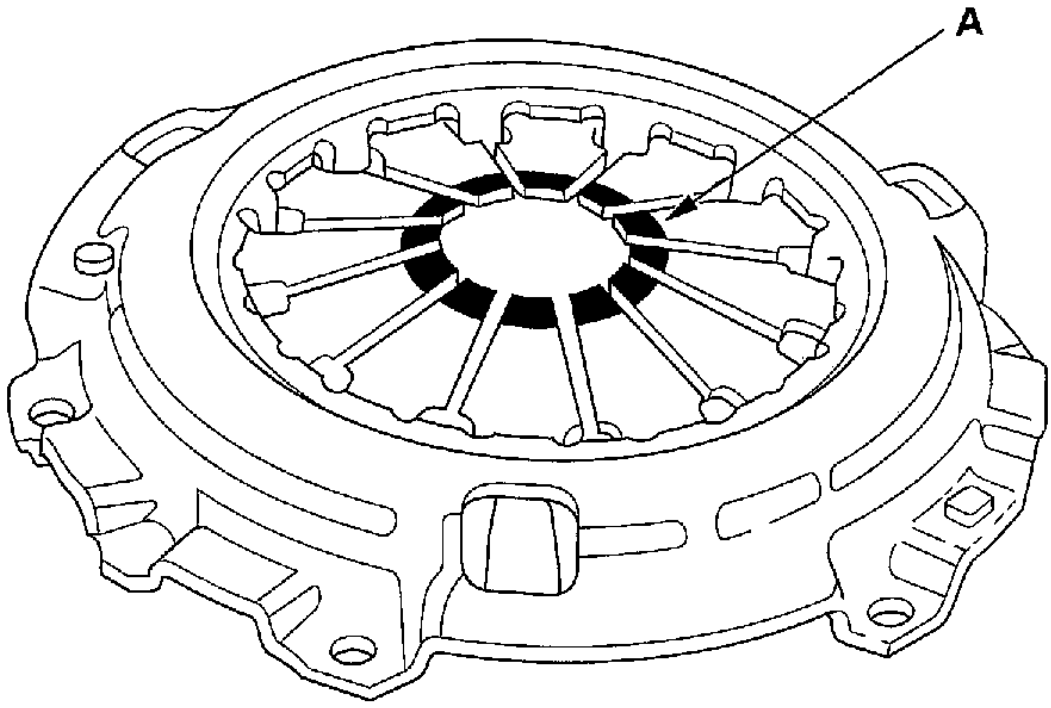


Fig. 18: Inspecting The Fingers Of The Diaphragm Spring

5. Inspect the pressure plate (A) surface for wear, cracks, and burning.

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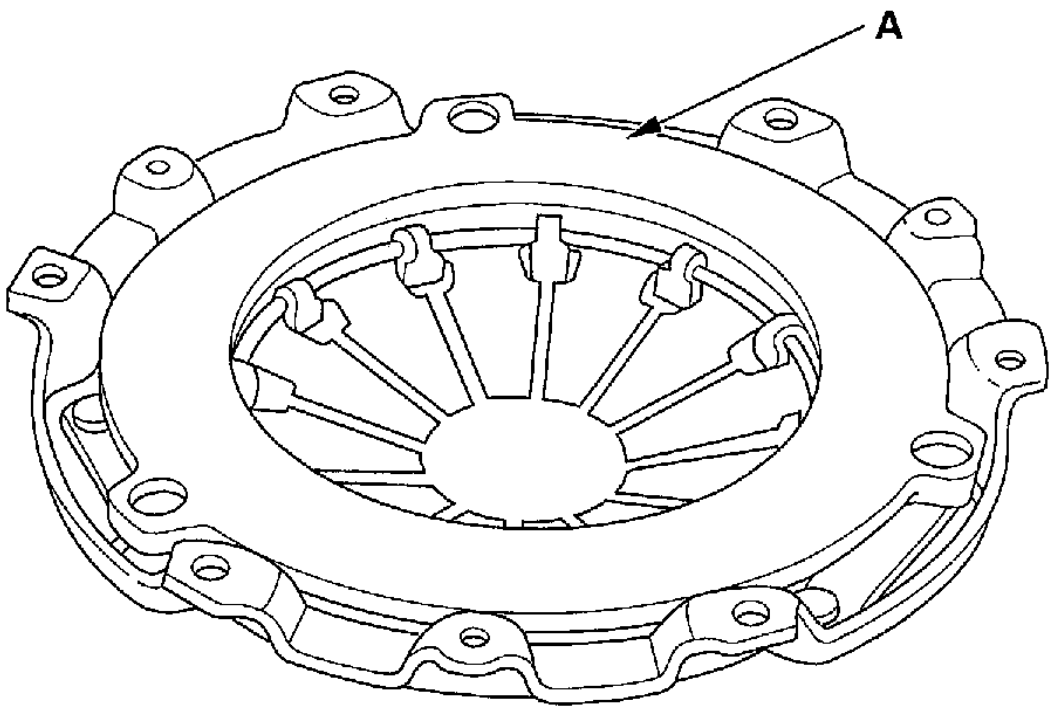


Fig. 19: Inspecting The Pressure Plate

6. Inspect for warpage using a straight edge (A) and a feeler gauge (B). Measure across the pressure plate (C). If the warpage is more than the service limit, replace the pressure plate.

   Standard (New): 0.03 mm (0.001 in.) Max.

   Service Limit: 0.15 mm (0.006 in.)

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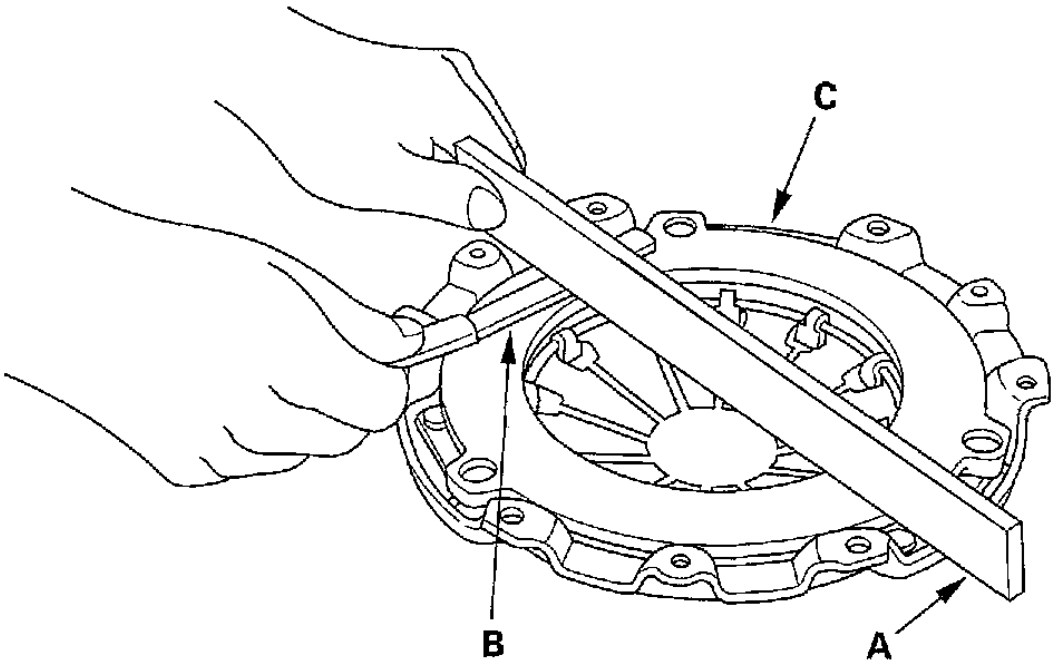
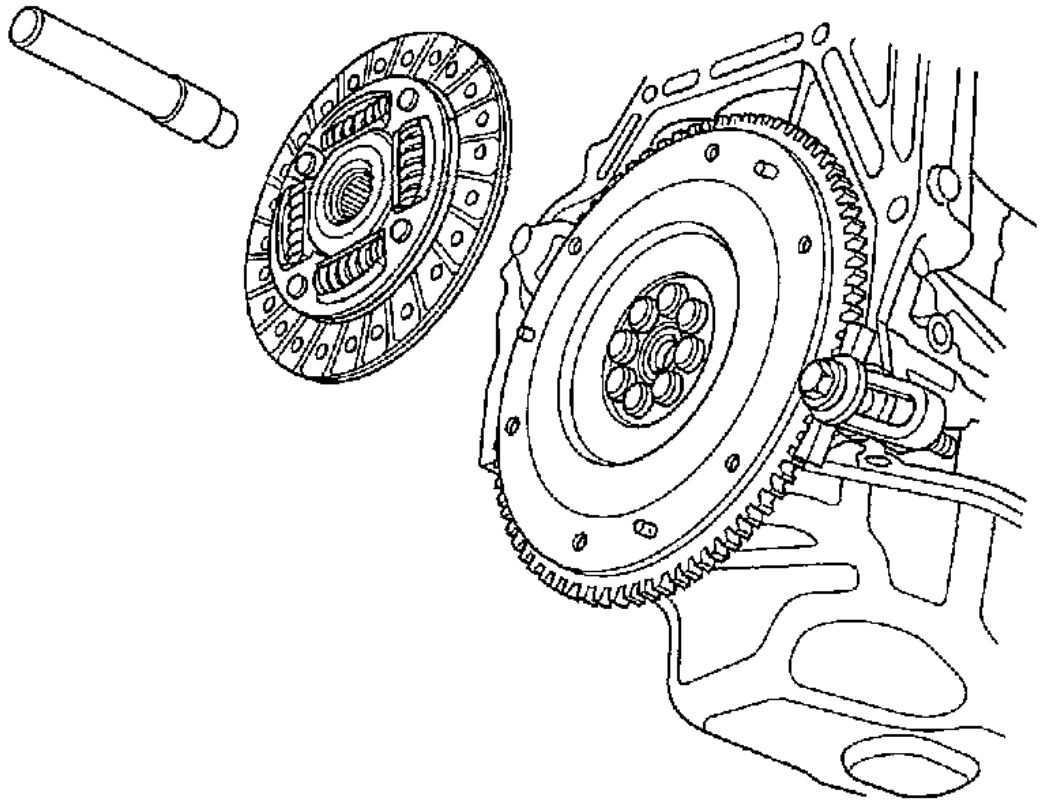


Fig. 20: Inspecting For Warpage Using A Straight Edge

7. Remove the clutch disc and special tools.

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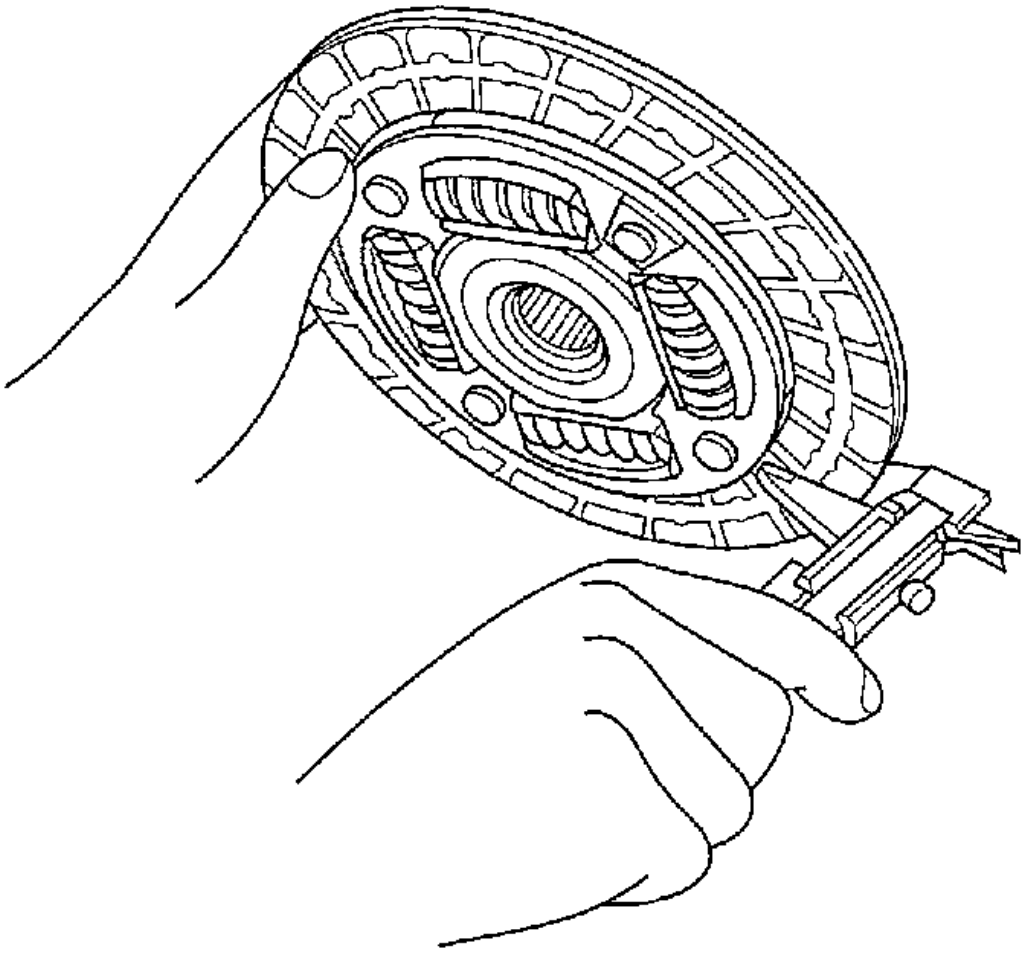
Fig. 21: Removing The Clutch Disc

8. Inspect the lining of the clutch disc for signs of slippage or oil. If the clutch disc is burned black or oil soaked, replace it, and find the source of the oil leak if oil soaked.
9. Measure the clutch disc thickness. If the thickness is less than the service limit, replace the clutch disc.

   Standard (New): 8.2-8.9 mm (0.32-0.35 in.)

   Service Limit: 6.0 mm (0.24 in.)

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Fig. 22: Inspecting The Lining Of The Clutch Disc

10. Measure the rivet depth from the clutch disc lining surface (A) to the rivets (B) on both sides. If the rivet depth is less than the service limit, replace the clutch disc.

    Standard (New): 1.2-1.7 mm (0.047-0.067 in.)

    Service Limit: 0.2 mm (0.008 in.)

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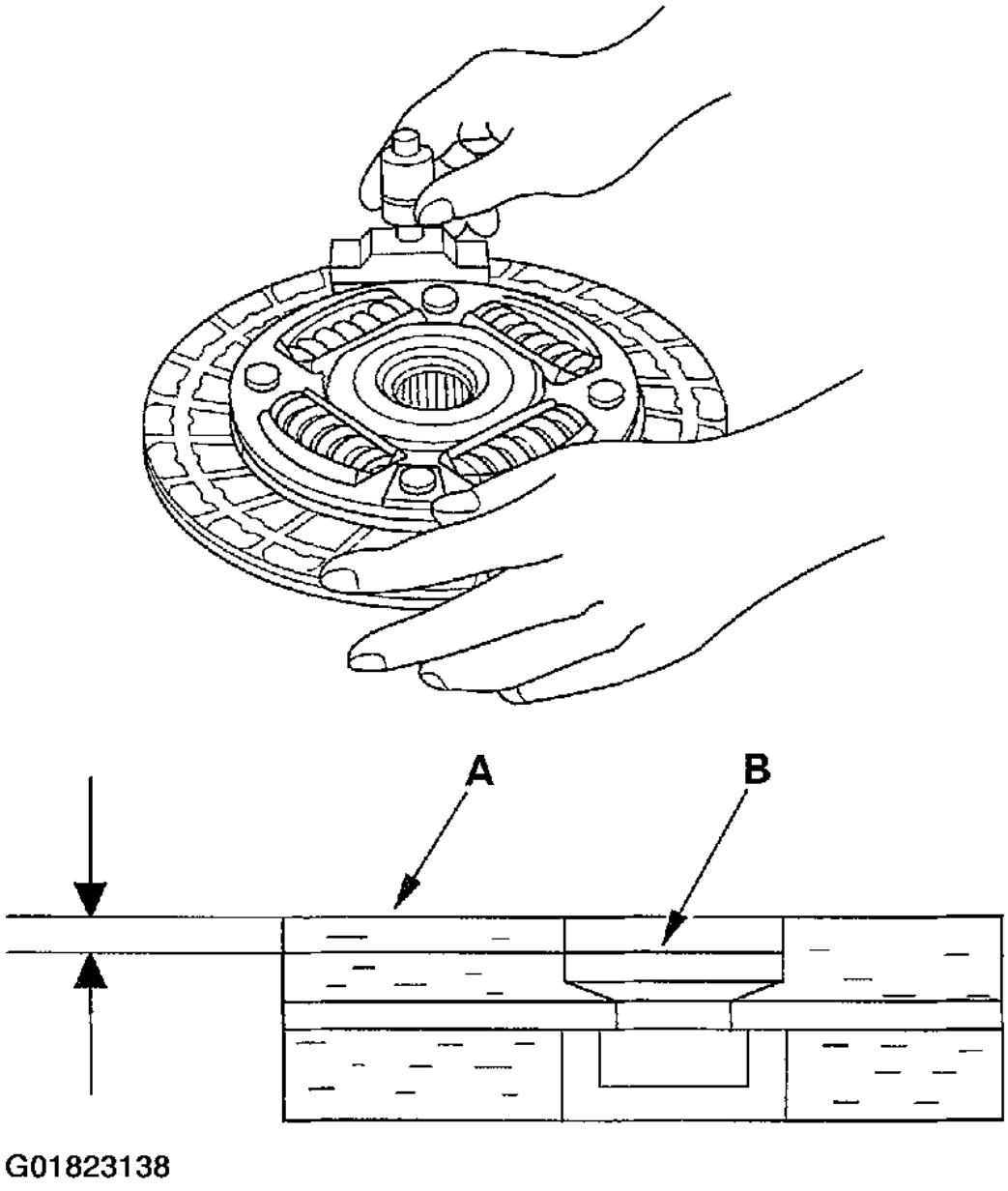


Fig. 23: Measuring The Rivet Depth From The Clutch Disc Lining Surface To The Rivets

Flywheel Inspection

1. Inspect the ring gear teeth for wear and damage.
2. Inspect the clutch disc mating surface on the flywheel for wear, cracks, and burning.
3. Measure the flywheel (A) runout using a dial indicator (B) through at least two full turns with the engine installed. Push against the flywheel each time you turn it to take up the crankshaft thrust washer

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clearance. If the runout is more than the service limit, replace the flywheel and recheck the runout. Resurfacing the flywheel is not recommended.

Standard (New): 0.05 mm (0.002 in.) Max.

Service Limit: 0.15 mm (0.006 in.)

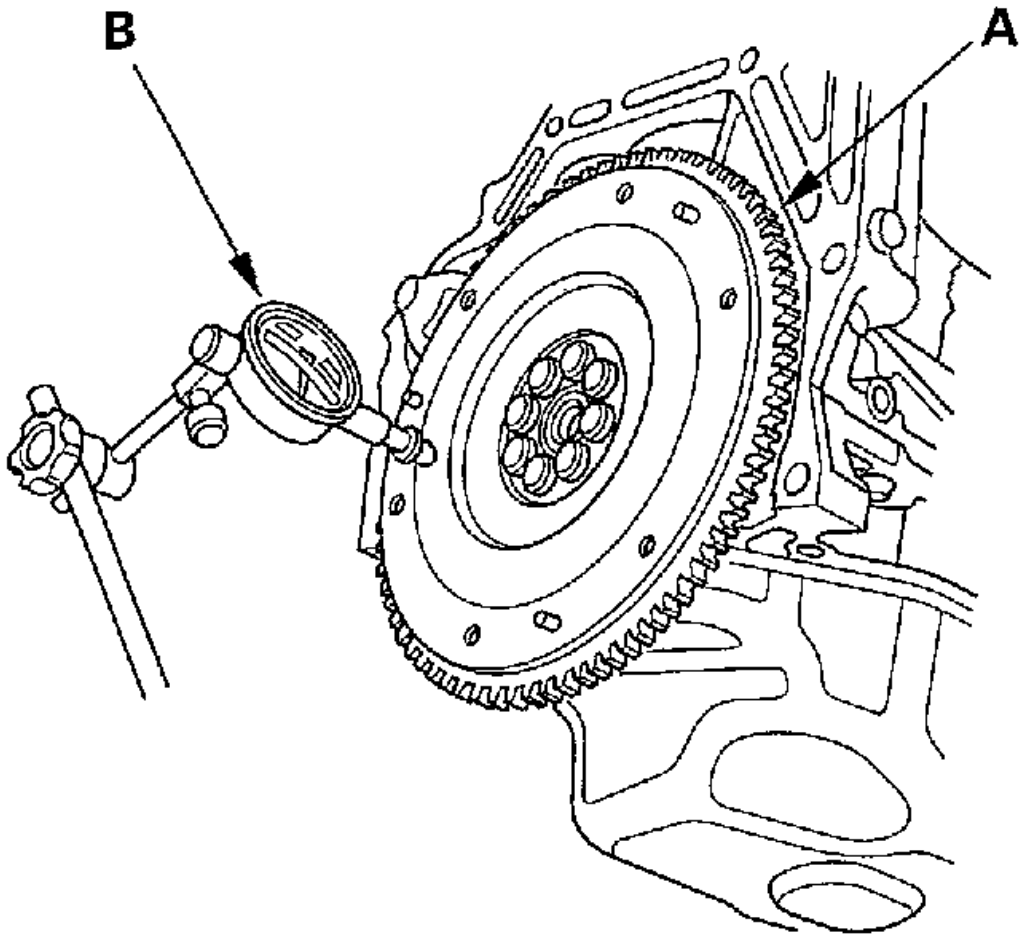


Fig. 24: Measuring The Flywheel Runout

Flywheel Replacement

1. Install the special tool.

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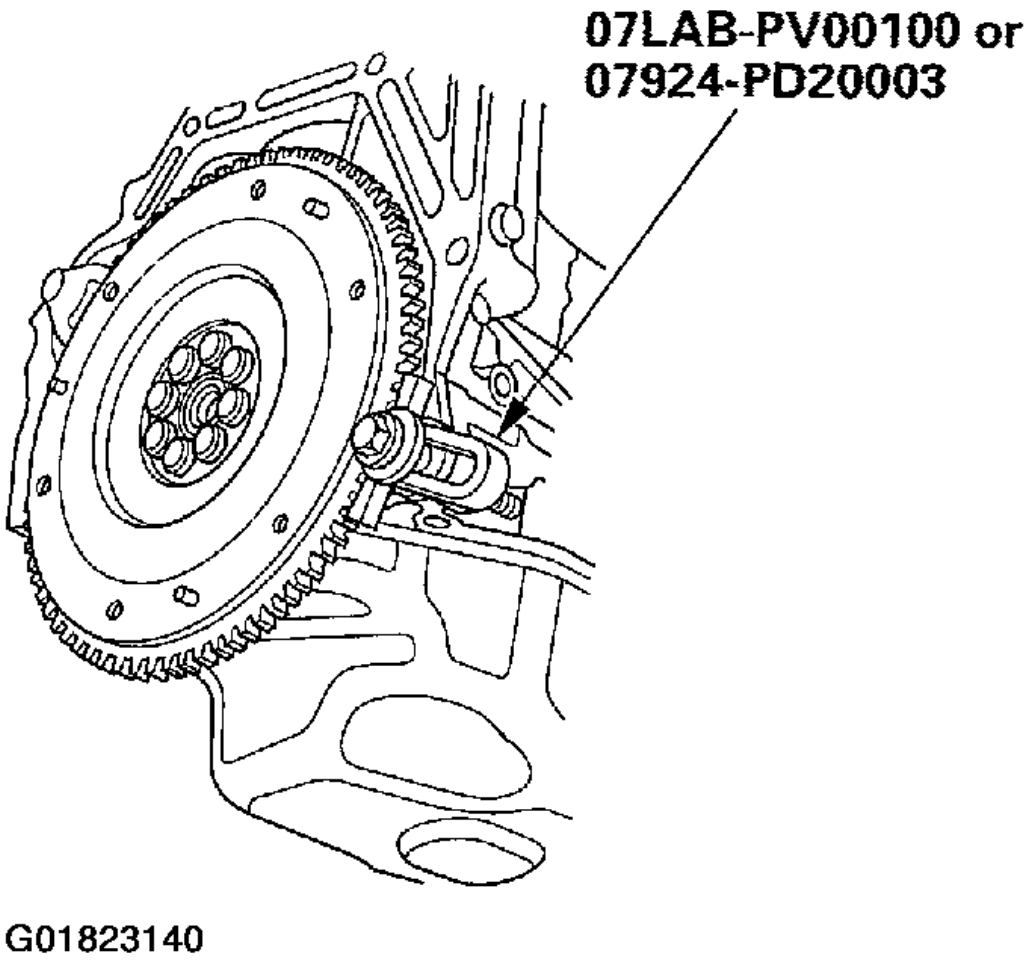


Fig. 25: Installing The Special Tool

2. Remove the flywheel mounting bolts in a crisscross pattern in several steps, then remove the flywheel.
3. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.
4. Install the special tool, then torque the flywheel mounting bolts in a crisscross pattern in several steps.

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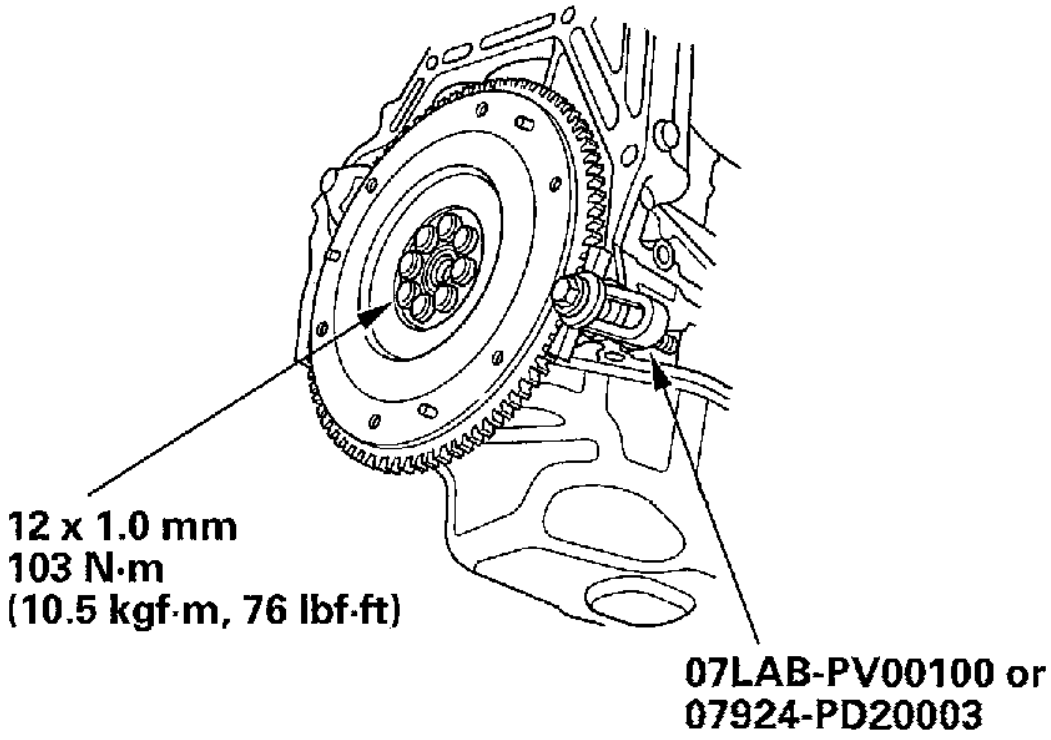


Fig. 26: Installing The Flywheel On The Crankshaft

Clutch Disc & Pressure Plate Installation

1. Temporarily install the clutch disc onto the splines of the transmission mainshaft. Make sure the clutch disc slides freely on the mainshaft.
2. Install the ring gear holder.

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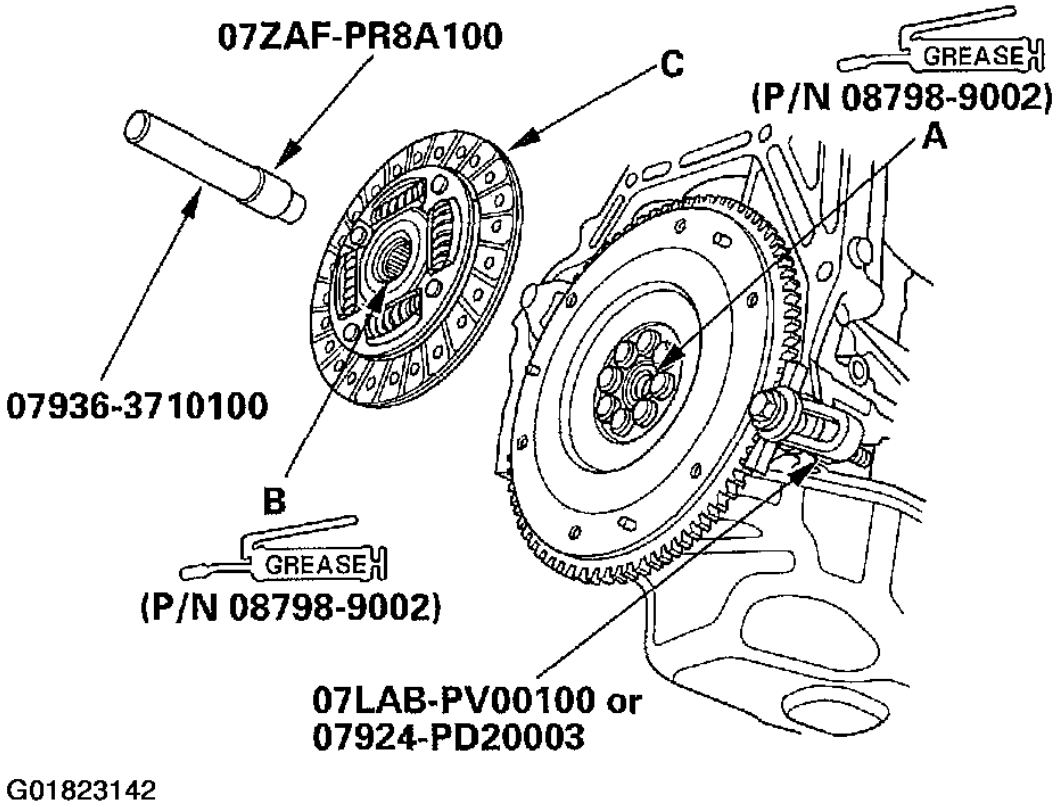


Fig. 27: Installing The Clutch Disc

3. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the crankshaft pilot bushing (A).
4. Apply super high temp urea grease (P/N 08798-9002) to the splines (B) of the clutch disc (C), then install the clutch disc using the special tools.
5. Install the pressure plate (A) and the mounting bolts (B) finger-tight.

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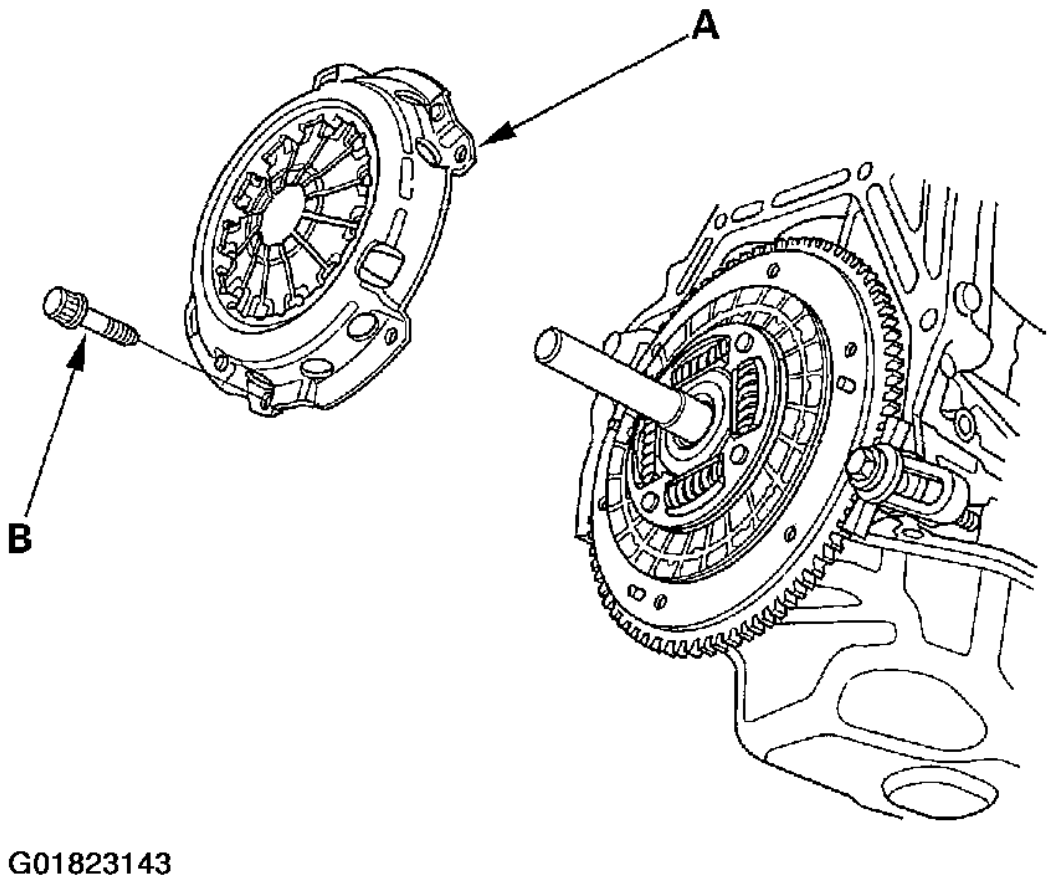
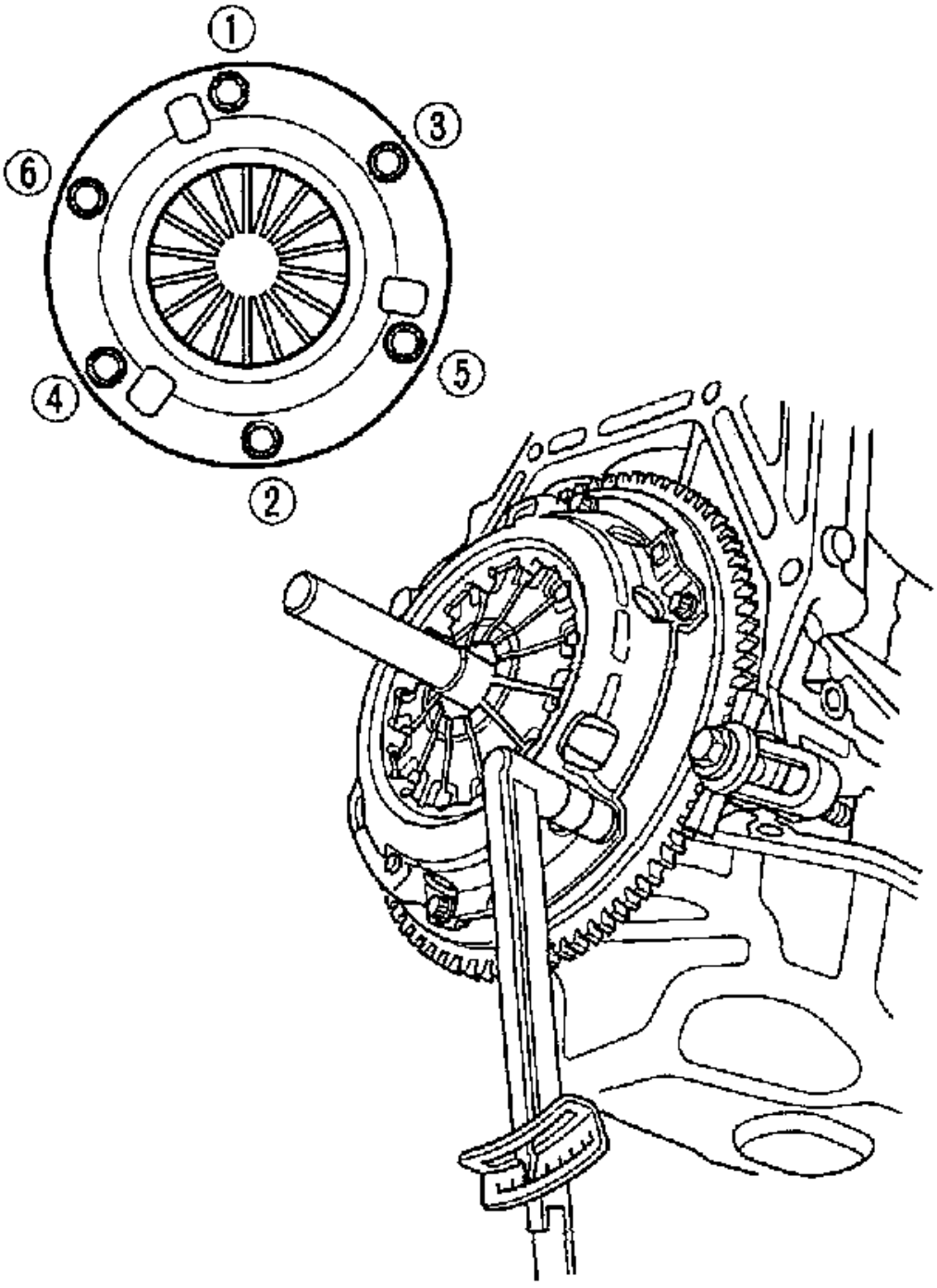


Fig. 28: Installing The Pressure Plate

6. Torque the mounting bolts in a crisscross pattern. Tighten the bolts in several steps to prevent warping the diaphragm spring.

   PRESSURE PLATE MOUNTING BOLT TORQUE: 25 N.m (2.6 kgf.m, 19 lbf.ft)

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Fig. 29: Torquing The Mounting Bolts In A Crisscross Pattern

7. Remove the special tools.
8. Make sure the diaphragm spring fingers are all the same height.

Release Bearing Replacement

1. Remove the release fork boot (A) from the clutch housing (B).

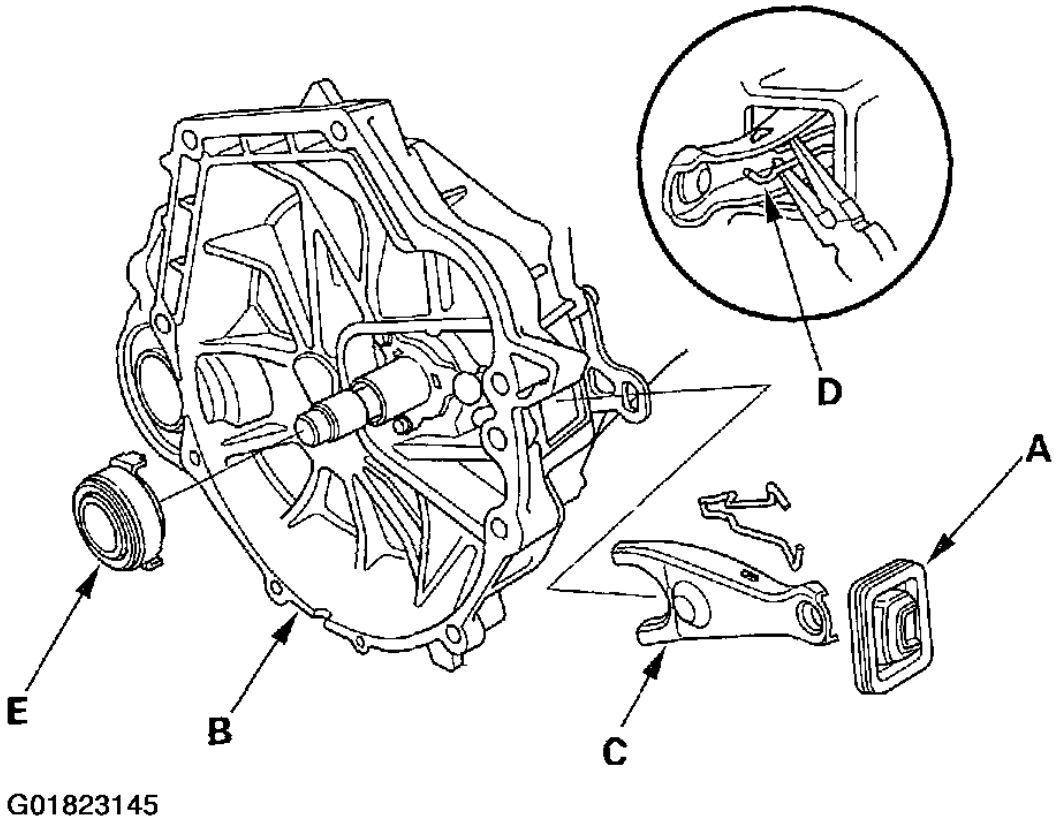


Fig. 30: Removing The Release Fork Boot From The Clutch Housing

2. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).
3. Check the play of the release bearing by spinning it with your hand. If there is excessive play, replace the release bearing.

NOTE: The release bearing is packed with grease. Do not wash it in solvent.

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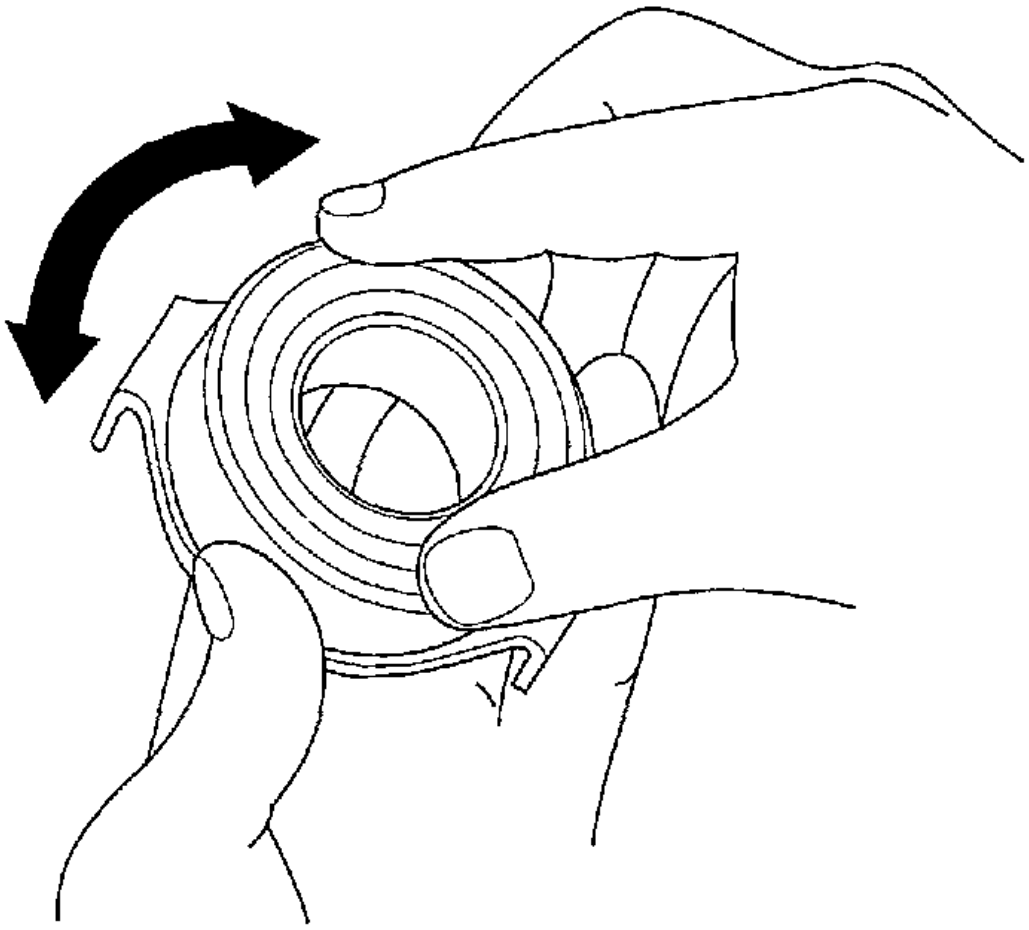


Fig. 31: Checking The Release Bearing

4. Apply super high temp urea grease (P/N 08798-9002) to the release fork (A), the release fork bolt (B), the release bearing (C), and the release bearing guide (D) in the shaded areas.

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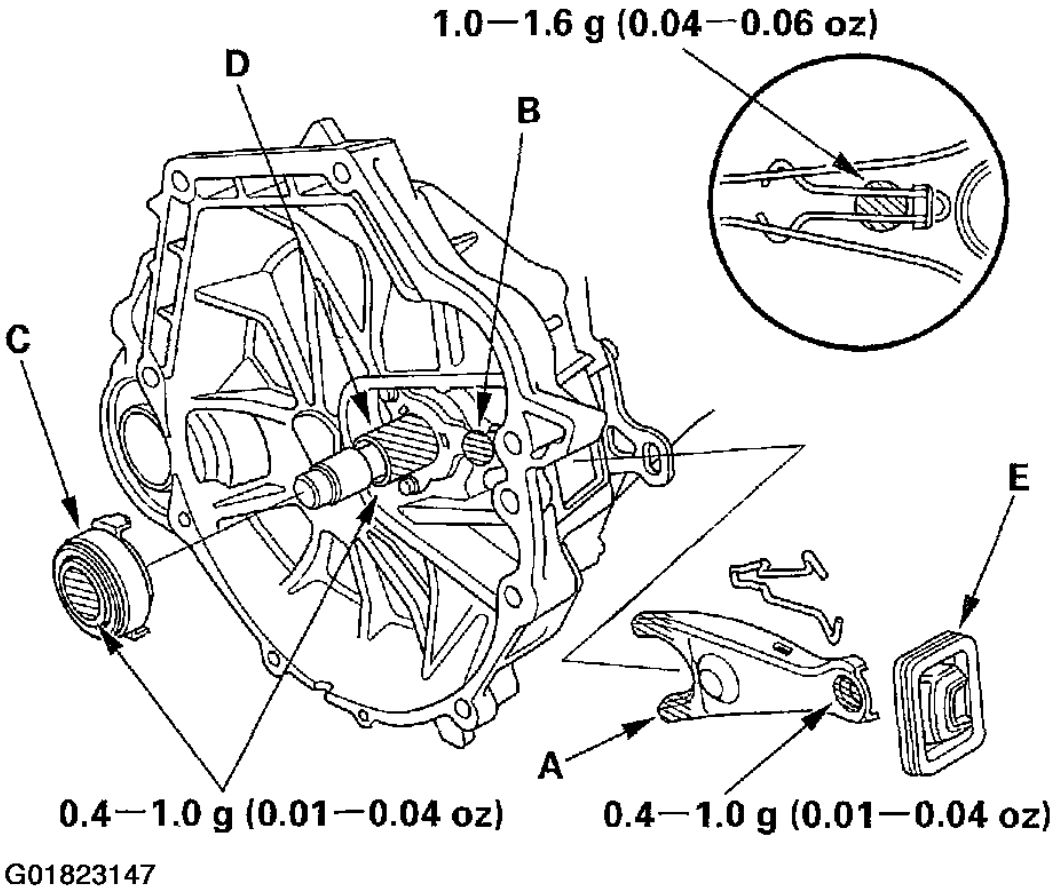


Fig. 32: Applying Super High Temp Urea Grease

5. With the release fork slid between the release bearing pawls, install the release bearing on the mainshaft while inserting the release fork through the hole in the clutch housing.
6. Align the detent of the release fork with the release fork bolt, then press the release fork over the release fork bolt squarely.
7. Install the release fork boot (E). Make sure the boot seals around the release fork and clutch housing.
8. Move the release fork (A) right and left to make sure that it fits properly against the release bearing (B) and that the release bearing slides smoothly.

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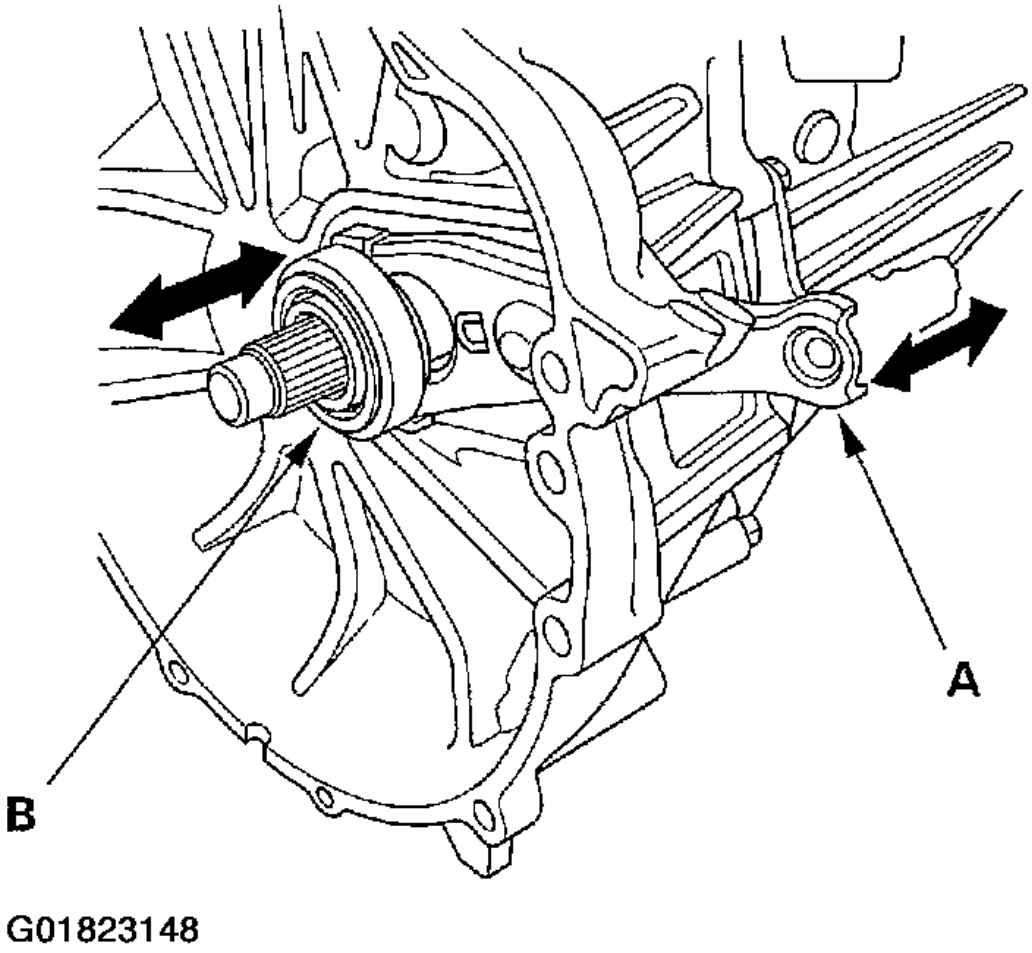


Fig. 33: Installing The Release Bearing & The Release Fork

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2004 AUTOMATIC TRANSMISSIONS

Diagnosis - MCTA 5-Speed

SPECIAL TOOLS

Ref No.	Tool Number	Description	Qty
①	07GAB-PF50101 or 07GAB-PF50100	Mainshaft Holder	1
②	07GAD-SD40101	Attachment, 78 x 90 mm	1
③	07GAE-PG40200 or 07GAE-PG4020A	Clutch Spring Compressor Bolt Assembly	1
④	07HAC-PK40102	Housing Puller	1
⑤	07HAJ-PK40201	Preload Inspection Tool	1
⑥	07JAD-PH80101	Oil Seal Driver Attachment	1
⑦	07KAF-PS30200	Bearing Separator	1
⑧	07LAD-PW50601	Attachment, 40 x 50 mm	1
⑨	07LAE-PX40100	Clutch Spring Compressor Attachment	2
⑩	07MAJ-PY4011A	A/T Pressure Hose, 2210 mm	4
⑪	07MAJ-PY40120	A/T Pressure Hose Adapter	4
⑫	07QAD-P0A0100	Attachment, 42 mm I.D.	1
⑬	07SAZ-001000A	Backprobe Set	2
⑭	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑮	07406-0020400 or 07406-0020401	A/T Oil Pressure Gauge Set w/Panel	1
⑯	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25 — 40 mm	1
⑰	07746-0010100	Attachment, 32 x 35 mm	1
⑱	07746-0010300	Attachment, 42 x 47 mm	1
⑲	07746-0010400	Attachment, 52 x 55 mm	1
⑳	07746-0010500	Attachment, 62 x 68 mm	1
㉑	07746-0010600	Attachment, 72 x 75 mm	1
㉒	07746-0010800	Attachment, 22 x 24 mm	1
㉓	07746-0030100	Driver 40 mm I.D.	1
㉔	07749-0010000	Driver	1
㉕	07947-SD90101	Oil Seal Driver Attachment	1
㉖	07947-ZV00100	Oil Seal Driver Attachment	1

④: If the top arm is too short, replace it with 07SAC-P0Z01001.
⑨: 07HAE-PL50101 may be used to substitute one of these tools.
⑲: Must be used with commercially available 3/8"-16 slide hammer.

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Fig. 1: Special Tools (1 Of 2)

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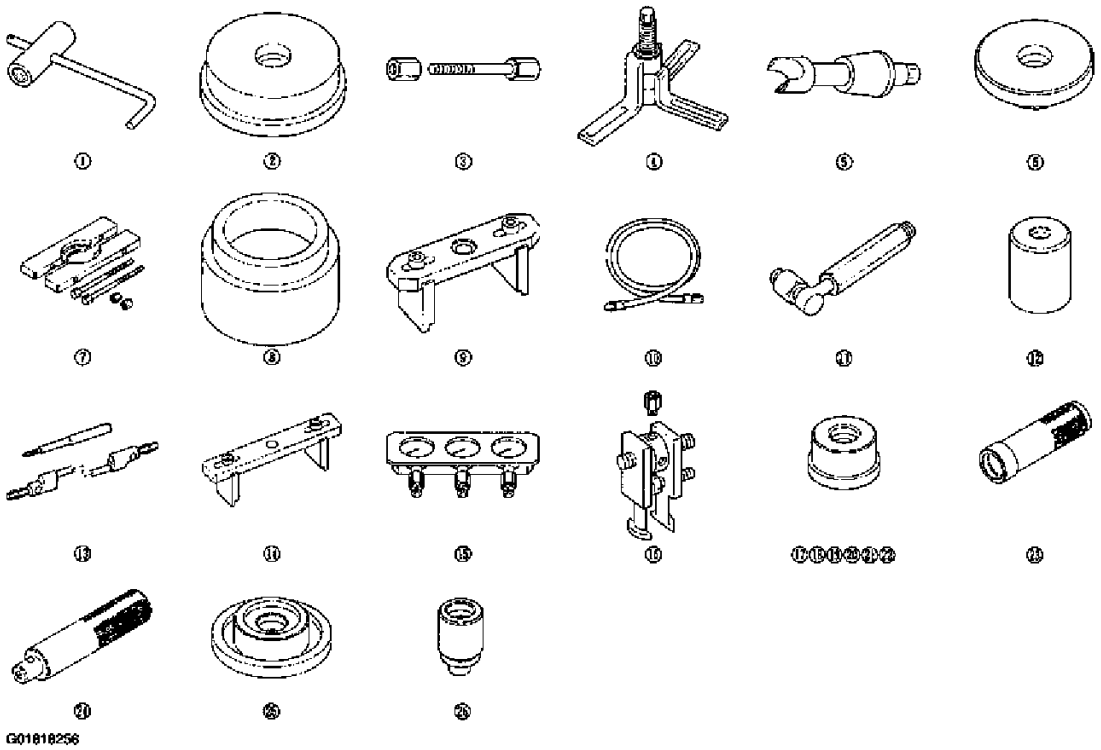


Fig. 2: Special Tools (2 Of 2)

GENERAL TROUBLESHOOTING INFORMATION

HOW TO CHECK FOR DTCS WITH THE HONDA DIAGNOSTIC SYSTEM

When the powertrain control module (PCM) senses an abnormality in the input or output systems, the **D** indicator (A) in the gauge assembly (B) will usually blink.

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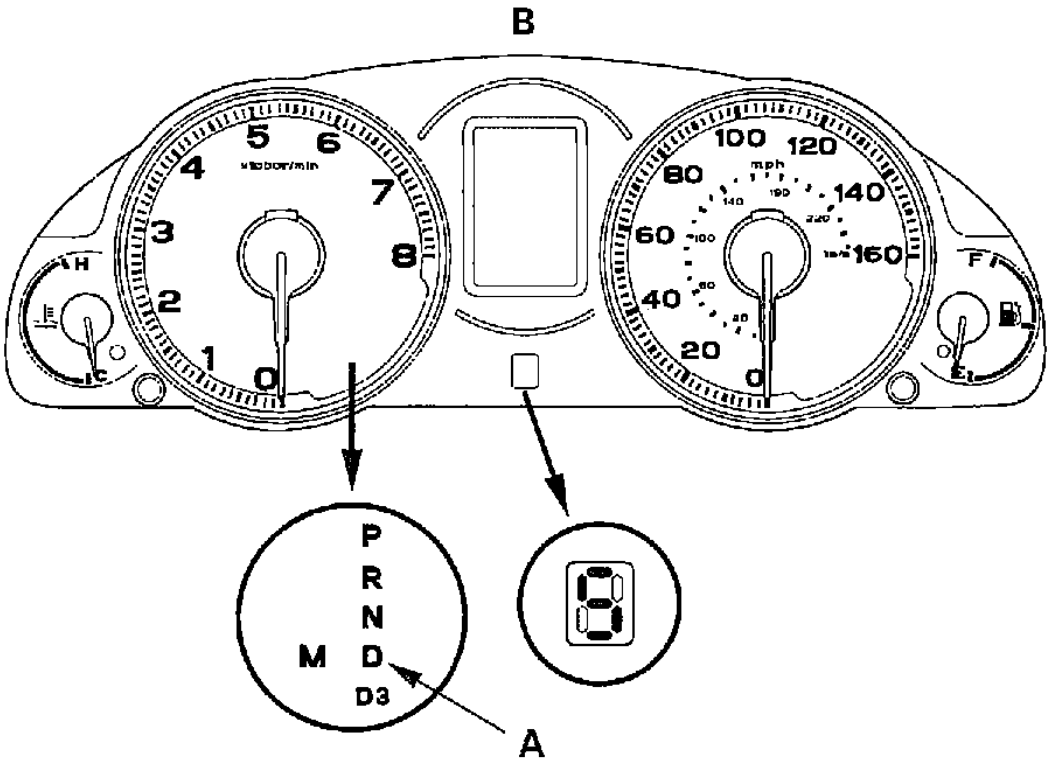


Fig. 3: Identifying "D" Indicator

When the data link connector (DLC) (A) (located under the left end of the dash) is connected to the Honda diagnostic system (HDS), it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II).

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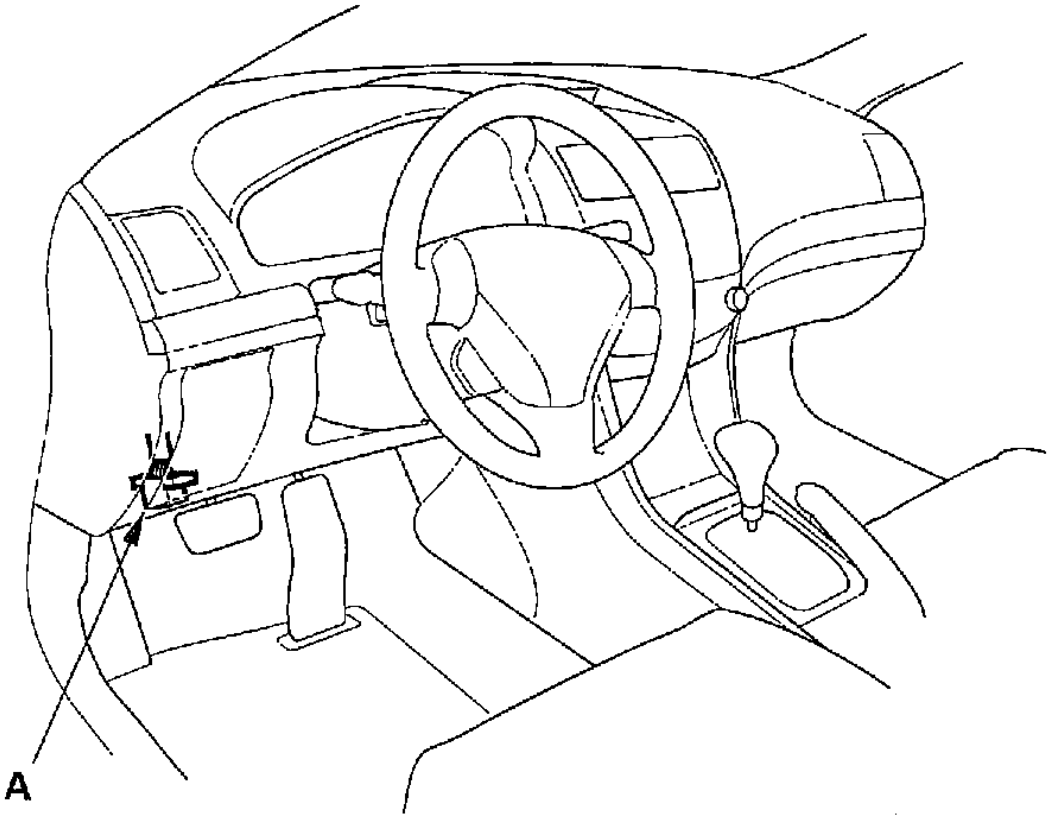


Fig. 4: Locating The Data Link Connector (DLC)

If the **D** indicator or malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch ON (II), select A/T system and observe the DTC in the DTCs MENU on the tester screen.
3. Record all fuel and emissions DTCs, A/T DTCs, and freeze data.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700, DTC P0700 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the DTC troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit; make sure all pins and terminals in the circuit are tight.

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HOW TO CHECK FOR DTCS WITH THE SCS MODE (RETRIEVING THE FLASH CODES)

When the PCM senses an abnormality in the input or output system, the**D** indicator (A) in the gauge assembly (B) will usually blink.

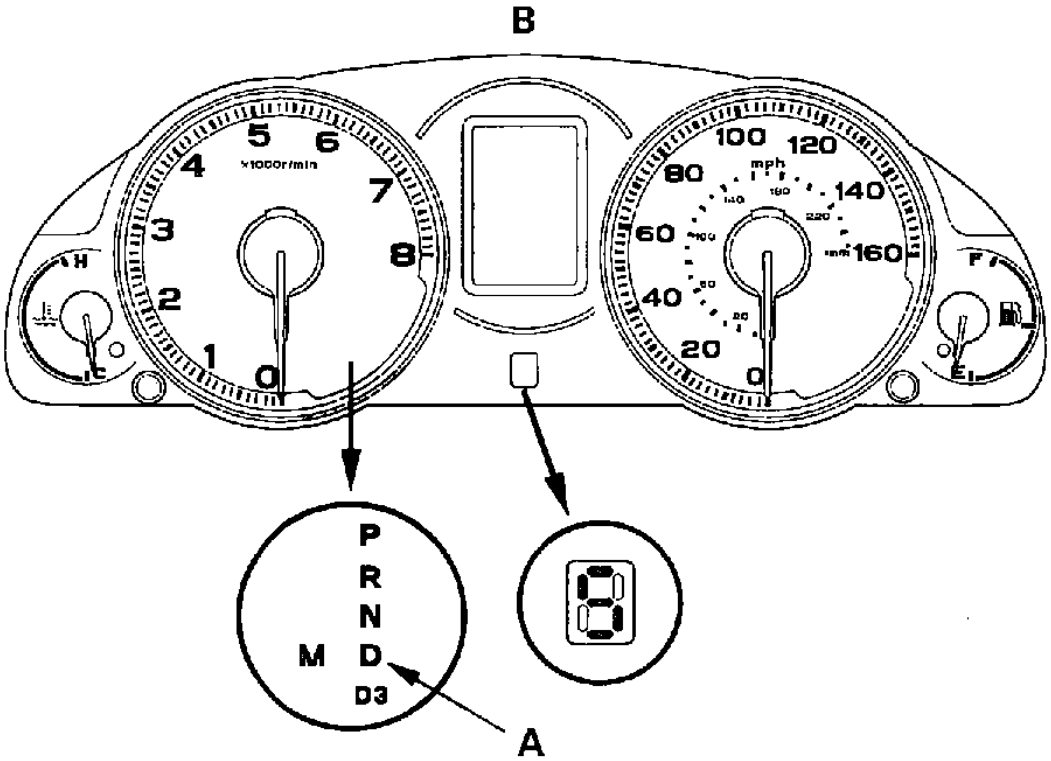
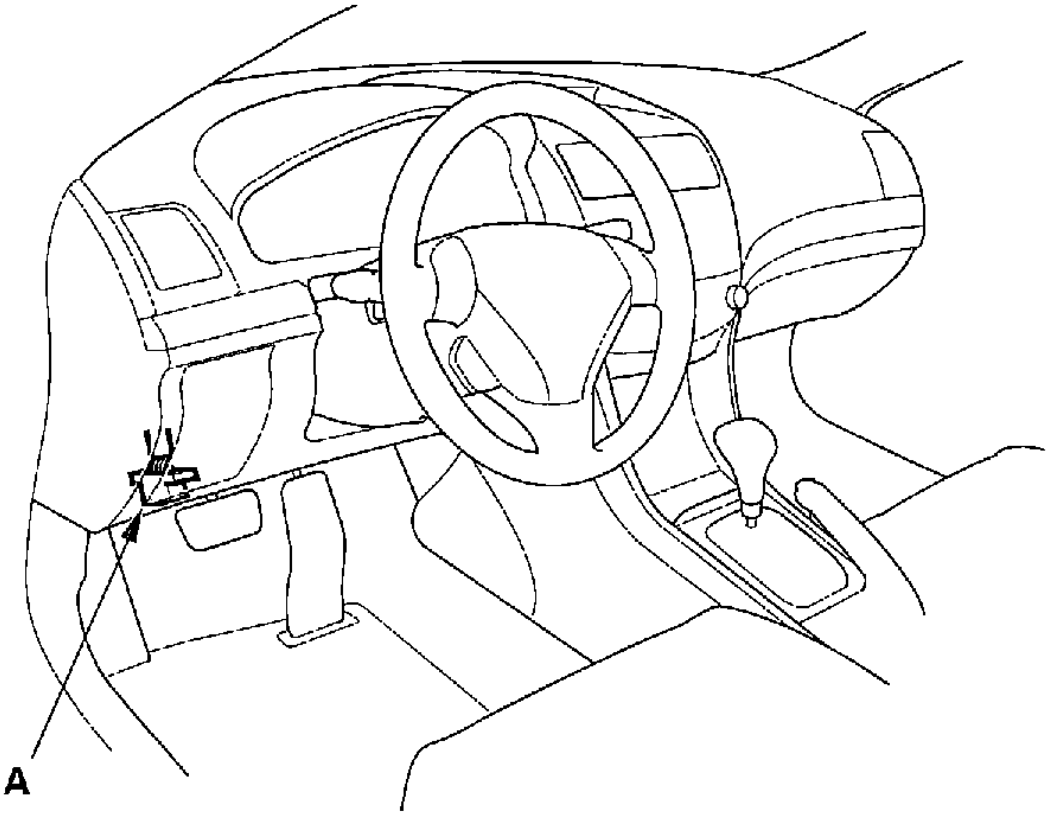


Fig. 5: Identifying "D" Indicator

When the **D** indicator has been reported on, connect the HDS to the DLC (A) (located under the left end of the dash). Turn the ignition switch ON (II), select SCS mode, then the **D** indicator will indicate the DTC.

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Fig. 6: Locating The Data Link Connector (DLC)

If the **D** indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch ON (II), select SCS mode, then observe the **D** indicator in the gauge assembly. Code 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

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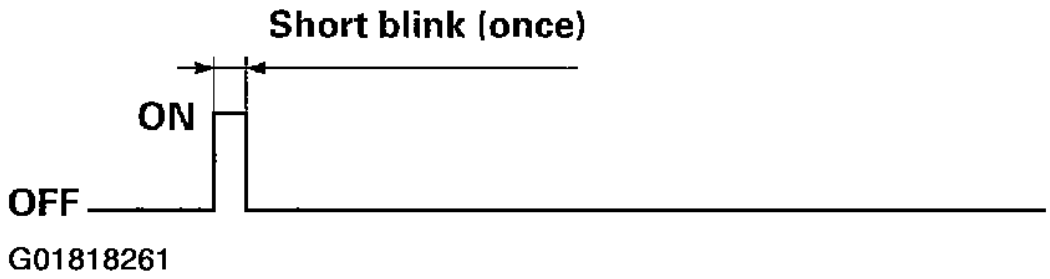


Fig. 7: Example: DTC 1-1

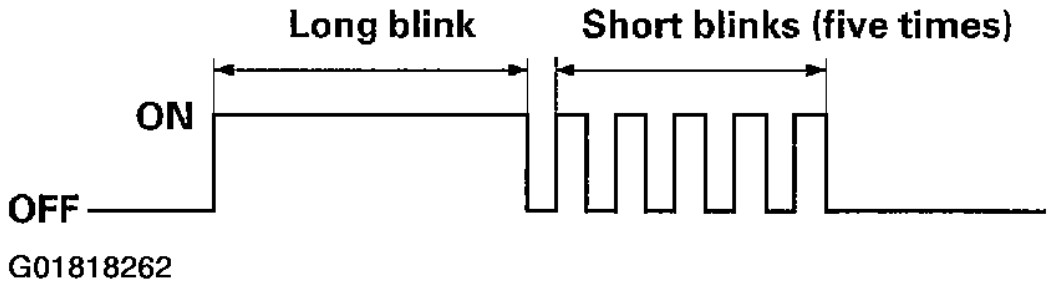


Fig. 8: Example: DTC 15-5

3. Record all fuel and emissions DTCs and A/T DTCs.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except DTC 70, DTC 70 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTC. If the A/T DTC returns, go to the DTC Troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

CLEAR A/T DTCS & PCM RESET PROCEDURES

1. Connect the HDS to the DLC.
2. Turn the ignition switch ON (II).
3. Clear the DTC(s) on the HDS screen.

HOW TO TROUBLESHOOT CIRCUITS AT THE PCM

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Special Tools Required: Backprobe set 07SAZ-001000A (two required)

1. Pull back the carpet, and remove the passenger's center lower cover (see **PASSENGER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Inspect the circuit on the PCM, according to the DTC troubleshooting, with the special tools and a digital multimeter.
3. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a multimeter (C).

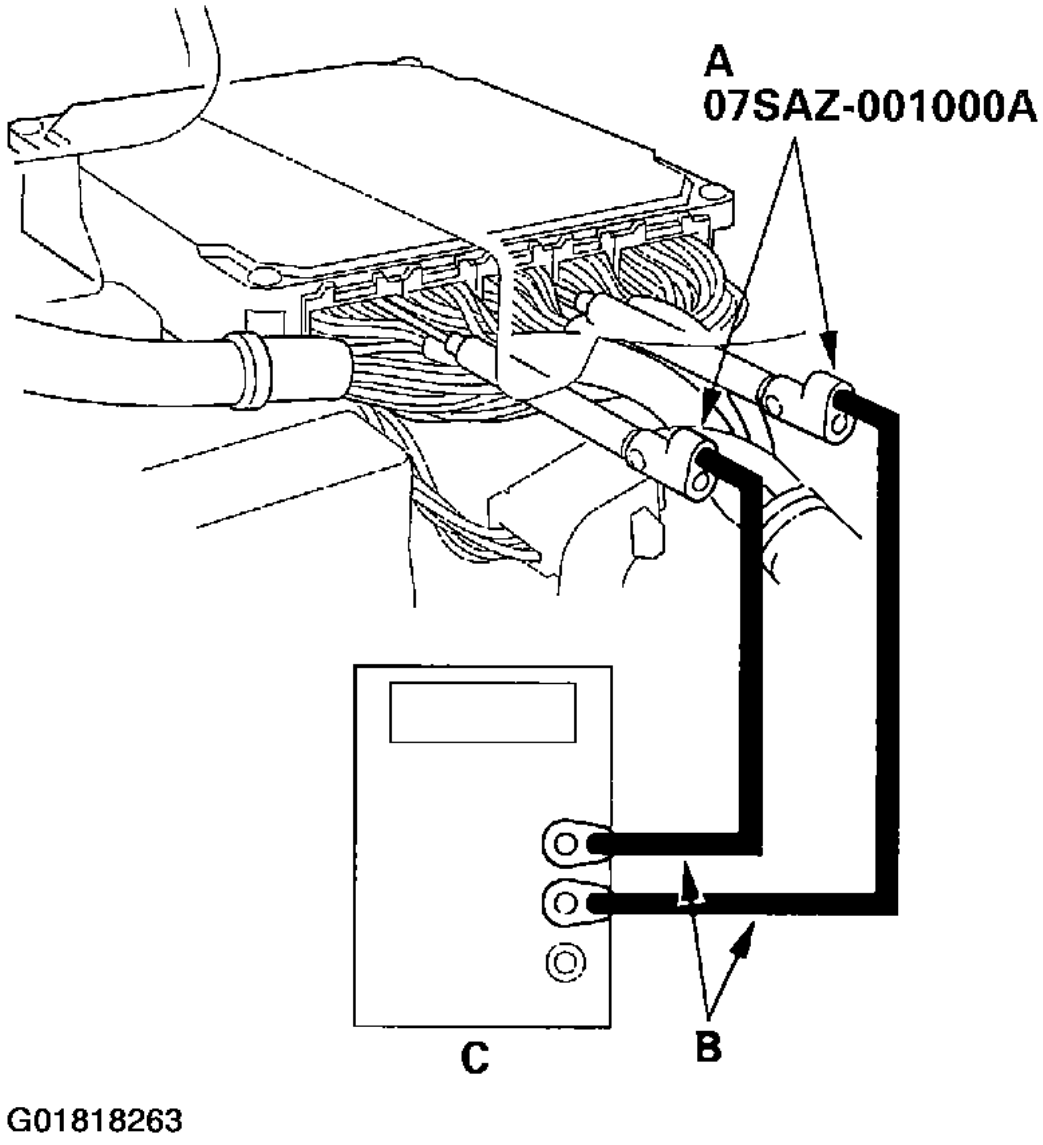


Fig. 9: Connecting The Backprobe Adapters To The Stacking Patch Cords & Connecting The

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Cords To A Multimeter

4. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.
5. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

PCM UPDATING & SUBSTITUTION FOR TESTING

Special Tools Required: Honda Interface Module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good PCM in a troubleshooting procedure. Update the PCM only if the PCM does not already have the latest software loaded.

Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF, the PCM can be damaged.

How to Update the PCM

NOTE:

- **To ensure the latest program is installed, update a PCM whenever the PCM is substituted or replaced.**
- **You cannot update a PCM with the program it already has. It will only accept a new program.**
- **Before you update the PCM, make sure the vehicle's battery is fully charged.**
- **To prevent PCM damage, do not operate any electrical system; audio system, brakes, air conditioning, power windows, moonroof, and door locks, during the update.**
- **If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the DLC. This will prevent PCM damage.**

1. Turn the ignition switch ON (II). Do not start the engine.
2. Connect the Honda interface module (HIM) to the DLC (A) located under the left end of the dash.

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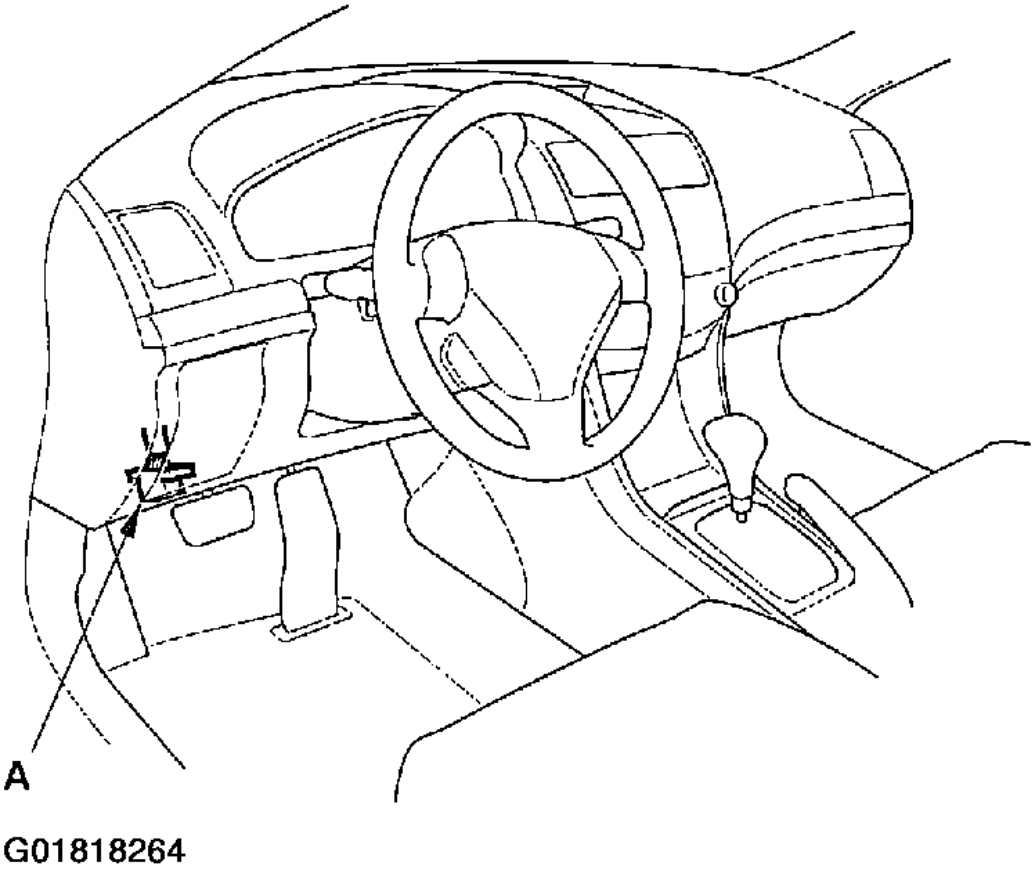


Fig. 10: Locating The Data Link Connector (DLC)

3. Update the PCM according to the procedures described on the HIM label. If the software in the PCM is the latest, replace the PCM.

How to Substitute the PCM

1. Connect the HDS to the DLC.
2. Turn the ignition switch OFF.
3. Jump the SCS line with the HDS.
4. Remove the PCM, and install a known-good PCM.
5. Rewrite the immobilizer code with the PCM replacement procedure in the HDS; this will allow you to start the engine.
6. After completing your test, reinstall the original PCM and rewrite the immobilizer code with the PCM replacement procedure in the HDS again.

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HOW TO REMOVE & INSTALL THE PCM

1. Pull back the carpet, and remove the driver's and passenger's center lower cover (see **PASSENGER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Connect the HDS to the DLC.
3. Turn the ignition switch OFF.
4. Jump the SCS line with the HDS.
5. Disconnect PCM connectors.
6. Remove the two bolts, and remove the PCM.
7. Install the PCM in the reverse order of the removal.

HOW TO END A TROUBLESHOOTING SESSION

NOTE: This procedure must be done after any troubleshooting.

1. Turn the ignition switch OFF.
2. Connect the HDS to the DLC.
3. Turn the ignition switch ON (II).
4. Clear the DTC(s) on the HDS screen.
5. Turn the ignition switch ON (II).
6. Start the engine in the **P** or **N** position, and warm it up to normal operating temperature (the radiator fan comes on). And continue to run the engine at idle with all accessories turned off for more than 5 minutes to learn the idle control system in the PCM (see **ECM/PCM IDLE LEARN PROCEDURE**).
7. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h) or in freeze data range.

DTC TROUBLESHOOTING INDEX

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

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DTC *(1)	D Indicator	MIL	Detection Item	Page
P0705 (5-2) *(2)	Blinks	ON	Transmission range switch (multiple shift-position input)	(see page 14-74)
P0706 (6-2) *(2)	OFF	ON	Transmission range switch (open)	(see page 14-82)
P0711 (28-5) *(2)	Blinks	OFF	ATF temperature sensor (range/performance)	(see page 14-85)
P0712 (28-3) *(2)	Blinks	OFF	ATF temperature sensor (short)	(see page 14-86)
P0713 (28-4) *(2)	Blinks	OFF	ATF temperature sensor (open)	(see page 14-87)
P0716 (15-5) *(2)	Blinks	ON	Mainshaft speed sensor (range/performance)	(see page 14-89)
P0717 (15-3) *(2)	Blinks	ON	Mainshaft speed sensor (no signal input)	(see page 14-93)
P0718 (15-6) *(2)	Blinks	ON	Mainshaft speed sensor (intermittent failure)	(see page 14-97)
P0721 (9-5) *(2)	Blinks	ON	Countershaft speed sensor (range/performance)	(see page 14-99)
P0722 (9-3) *(2)	Blinks	ON	Countershaft speed sensor (no signal input)	(see page 14-103)
P0723 (9-6) *(2)	Blinks	ON	Countershaft speed sensor (intermittent failure)	(see page 14-107)
P0731 (64-1)	Blinks	OFF	1st gear incorrect ratio	(see page 14-109)
P0732 (64-2)	Blinks	OFF	2nd gear incorrect ratio	(see page 14-110)
P0733 (64-3)	Blinks	OFF	3rd gear incorrect ratio	(see page 14-111)
P0734 (64-4)	Blinks	OFF	4th gear incorrect ratio	(see page 14-112)
P0735 (64-5)	Blinks	OFF	5th gear incorrect ratio	(see page 14-113)
P0741 (40-3)	Blinks	OFF	Torque converter clutch circuit performance or stuck OFF	(see page 14-114)
P0747 (76-4)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck ON	(see page 14-115)
P0752 (70-4)	Blinks	ON	Shift solenoid valve A stuck ON	(see page 14-116)
P0756 (71-3)	Blinks	ON	Shift solenoid valve B stuck OFF	(see page 14-117)
P0757 (71-4)	Blinks	ON	Shift solenoid valve B stuck ON	(see page 14-118)
P0761 (72-3)	Blinks	ON	Shift solenoid valve C stuck OFF	(see page 14-119)

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Fig. 11: DTC Troubleshooting Index (1 Of 3)

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DTC [1]	D Indicator	MIL	Detection Item	Page
P0771 (74-3)	Blinks	ON	Shift solenoid valve E stuck OFF	(see page 14-120)
P0776 (77-3)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck OFF	(see page 14-121)
P0777 (77-4)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck ON	(see page 14-122)
P0780 (45-1)	Blinks	ON	Shift control system	(see page 14-123)
P0796 (78-3)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck OFF	(see page 14-124)
P0797 (78-4)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck ON	(see page 14-125)
P0812 (62-2) * [2]	Blinks	OFF	Transmission range switch ATP RVS switch	(see page 14-126)
P0815 (24-5) * [2]	Blinks	ON	Transmission gear selection switch upshift switch (short or stuck ON)	(see page 14-128)
P0816 (24-6) * [2]	Blinks	ON	Transmission gear selection switch downshift switch (short or stuck ON)	(see page 14-130)
P0842 (25-3) * [2]	Blinks	ON	2nd clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-132)
P0843 (25-4) * [2]	Blinks	ON	2nd clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-134)
P0847 (26-3) * [2]	Blinks	OFF	3rd clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-136)
P0848 (26-4) * [2]	Blinks	OFF	3rd clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-138)
P0957 (24-3) * [2]	Blinks	ON	Transmission gear selection switch (short or stuck ON)	(see page 14-140)
P0958 (24-4) * [2]	Blinks	ON	Transmission gear selection switch (open or stuck OFF)	(see page 14-142)
P0962 (16-3) * [2]	Blinks	ON	A/T clutch pressure control solenoid valve A (open/ short)	(see page 14-144)
P0963 (16-4) * [2]	Blinks	ON	A/T clutch pressure control solenoid valve A	(see page 14-146)
P0966 (23-3) * [2]	Blinks	ON	A/T clutch pressure control solenoid valve B (open/ short)	(see page 14-148)
P0967 (23-4) * [2]	Blinks	ON	A/T clutch pressure control solenoid valve B	(see page 14-150)
P0970 (29-3) * [2]	Blinks	ON	A/T clutch pressure control solenoid valve C (open/ short)	(see page 14-152)
P0971 (29-4) * [2]	Blinks	ON	A/T clutch pressure control solenoid valve C	(see page 14-154)
P0973 (7-3) * [2]	Blinks	ON	Shift solenoid valve A (short)	(see page 14-156)

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Fig. 12: DTC Troubleshooting Index (2 Of 3)

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DTC * [1]	D Indicator	MIL	Detection Item	Page
P0974 (7-4) * [2]	Blinks	ON	Shift solenoid valve A (open)	(see page 14-158)
P0976 (8-3) * [2]	Blinks	ON	Shift solenoid valve B (short)	(see page 14-160)
P0977 (8-4) * [2]	Blinks	ON	Shift solenoid valve B (open)	(see page 14-162)
P0979 (22-3) * [2]	Blinks	ON	Shift solenoid valve C (short)	(see page 14-164)
P0980 (22-4) * [2]	Blinks	ON	Shift solenoid valve C (open)	(see page 14-166)
P0982 (60-3) * [2]	Blinks	ON	Shift solenoid valve D (short)	(see page 14-168)
P0983 (60-4) * [2]	Blinks	ON	Shift solenoid valve D (open)	(see page 14-170)
P0985 (61-3) * [2]	Blinks	ON	Shift solenoid valve E (short)	(see page 14-172)
P0986 (61-4) * [2]	Blinks	ON	Shift solenoid valve E (open)	(see page 14-174)
P1730 (45-2)	Blinks	ON	Shift control system • Shift solenoid valves A or D stuck OFF • Shift solenoid valve B stuck ON • Shift valves A, B, or D stuck	(see page 14-176)
P1731 (45-3)	Blinks	ON	Shift control system • Shift solenoid valve E stuck ON • Shift valve E stuck • A/T clutch pressure control solenoid valve A stuck OFF	(see page 14-178)
P1732 (45-4)	Blinks	ON	Shift control system • Shift solenoid valves B or C stuck ON • Shift valves B or C stuck	(see page 14-180)
P1733 (45-5)	Blinks	ON	Shift control system • Shift solenoid valve D stuck ON • Shift valve D stuck • A/T clutch pressure control solenoid valve C stuck OFF	(see page 14-182)
P1734 (45-6)	Blinks	ON	Shift control system • Shift solenoid valves B or C stuck OFF • Shift valves B or C stuck	(see page 14-184)

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Fig. 13: DTC Troubleshooting Index (3 Of 3)

SYMPTOM TROUBLESHOOTING INDEX

These symptoms DO NOT trigger diagnostic trouble codes (DTCs) or cause the **D** indicator to blink. If the malfunction indicator lamp (MIL) was reported ON or the **D** indicator has been blinking, check for DTCs. If the vehicle has one of the symptoms in the following chart, check the probable cause(s) for it, in the sequence listed, until you find the problem.

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Symptom	Probable cause(s)	Notes
When you turn the ignition switch ON (II), the D indicator comes on and stays on in all shift lever positions or never comes on at all	Communication line between multiplex integrated control unit and gauge control module defective	Check the multiplex integrated control system — communication line between the multiplex integrated control unit and gauge control module (see page 22-105).
D3 or M indicator does not come on while the shift lever is in that position	Communication line between multiplex integrated control unit and gauge control module defective	Check the multiplex integrated control system — communication line between the multiplex integrated control unit and gauge control module (see page 22-105).
Shift lever cannot be moved from P position while you're pushing on the brake pedal	A problem in the shift lock system (interlock system)	Check the interlock system — shift lock system/reverse lock system circuit (see page 14-249).
Shift lever cannot pass through R position from N position	A problem in the reverse lock system of interlock system	Check the interlock system — shift lock system/reverse lock system circuit (see page 14-249).
Ignition switch cannot be moved from ACC (I) position to LOCK (0) position (Key is pushed in, shift lever in P position)	A problem in the key interlock system (interlock system)	Check the interlock system — key interlock system circuit (see page 14-250).

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Fig. 14: Symptom Troubleshooting Index (1 Of 11)

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Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any gear	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Transmission-to-engine assembly error 10. Axle disengaged	• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, flush the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Inspect the differential pinion shaft for wear under the pinion gears. If the differential pinion shaft is worn, overhaul the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and flush the torque converter, cooler, and lines.
Vehicle moves in the R, but not in the D or D3 position, or the M position in 1st gear	1. 1st accumulator defective 2. 1st gears worn or damaged 3. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.

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Fig. 15: Symptom Troubleshooting Index (2 Of 11)

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Symptom	Probable cause(s)	Notes
Vehicle moves in the D, D3, R, but not in the M position in 2nd gear	1. 2nd accumulator defective 2. 2nd gears worn or damaged 3. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Vehicle moves in the D, D3, M, but not in the R position	1. Shift solenoid valve E defective 2. Shift fork shaft stuck 3. Shift valve E defective 4. 4th/reverse accumulator defective 5. 4th clutch defective 6. Reverse gears worn or damaged	• Check the D indicator, and check for loose connectors. Inspect the shift solenoid valve E for seizure, and O-rings for wear and damage. • Check for a missing shift fork bolt on the shift fork shaft. • Check the 4th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the reverse selector gear teeth chamfers, and inspect engagement teeth chamfers of the countershaft 4th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes a clicking, grinding, or whirring noise, also replace the mainshaft 4th gear, reverse idler gear, and countershaft 4th gear.
Poor acceleration; flares on starting off in D, D3, R, and M positions; Stall speed high in D and D3 positions, and in M position in 1st and 2nd gears	1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective	• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, flush the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused debris, and no cause for contamination is found, replace the torque converter.

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Fig. 16: Symptom Troubleshooting Index (3 Of 11)

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Symptom	Probable cause(s)	Notes
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed high when starting off in the M position in 2nd gear	2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed high in the R position	1. Shift cable broken or out of adjustment 2. 4th clutch defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the 4th clutch pressure in the D and R positions. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed low in the D and D3 positions, and in the M position in 1st and 2nd gears	1. Shift solenoid valve E defective 2. Torque converter one-way clutch defective 3. Engine output low 4. Torque converter clutch piston defective 5. Lock-up shift valve defective	• Check the D indicator, and check for loose connectors. Inspect the shift solenoid valve E for seizure, and O-ring for wear and damage. • Replace the torque converter.
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed low in the R position	1. Torque converter one-way clutch defective 2. Engine output low 3. Torque converter clutch piston defective 4. Lock-up shift valve defective	Replace the torque converter.

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Fig. 17: Symptom Troubleshooting Index (4 Of 11)

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Symptom	Probable cause(s)	Notes
Engine idle vibration	1. Low ATF level 2. Shift solenoid valve E defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective 8. Misadjusted engine and transmission mounts	• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, flush the ATF cooler lines. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeek. • Inspect the ATF strainer for clogging with particles of steel or aluminum. If the ATF strainer is clogged, replace it, and flush the torque converter, cooler, and lines. • Check the D indicator, and check for loose connectors. Inspect the shift solenoid valve E for seizure, and O-rings for wear and damage. • Check for a misinstalled/damaged drive plate. • Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts as outlined in the engine section of this service manual. • Replace the torque converter.
Vehicle moves in the N position	1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. 1st clutch defective 5. 2nd clutch defective 6. 3rd clutch defective 7. 4th clutch defective 8. 5th clutch defective 9. Clutch end-plate-to-top-disc clearance incorrect 10. Needle bearing seized, worn, or damaged 11. Thrust washer seized up, worn, or damaged	• Check the ATF level, and drain any excess. • Check if the ATF strainer is clogged. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris, and if no cause for contamination is found, replace the torque converter. • Check the 1st, 2nd, 3rd, 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 1st or 3rd clutch feed pipe is loose or damaged. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.

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Fig. 18: Symptom Troubleshooting Index (5 Of 11)

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Symptom	Probable cause(s)	Notes
Late shift from the N position to the D and D3 positions	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Joint in shift cable and transmission or body worn 7. Mainshaft speed sensor defective 8. Countershaft speed sensor defective 9. ATF temperature sensor defective 10. Foreign material in separator plate orifice 11. Servo control valve defective 12. 1st accumulator defective 13. 1st check ball stuck 14. Lock-up shift valve defective 15. 1st clutch defective	• Check the O indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the mainshaft speed sensor and countershaft speed sensor installation. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover.
Late shift from the N position to the R position	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Shift cable broken or out of adjustment 4. Joint in shift cable and transmission or body worn 5. Mainshaft speed sensor defective 6. Countershaft speed sensor defective 7. ATF temperature sensor defective 8. Shift fork shaft stuck 9. Foreign material in separator plate orifice 10. Shift valve E defective 11. 4th/reverse accumulator defective 12. Lock-up shift valve defective 13. 4th clutch defective	• Check the O indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the mainshaft speed sensor and countershaft speed sensor installation. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Check for a missing shift fork bolt on the shift fork shaft. • Check the 4th clutch pressure. • Inspect the servo valve and O-ring.

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Fig. 19: Symptom Troubleshooting Index (6 Of 11)

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Symptom	Probable cause(s)	Notes
No shift	1. Mainshaft speed sensor defective 2. Countershaft speed sensor defective	Check the D indicator, and check for loose connectors. Check the mainshaft and countershaft speed sensor installation.
Excessive shock or flares on all upshifts and downshifts	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Mainshaft speed sensor defective 4. Countershaft speed sensor defective 5. ATF temperature sensor defective 6. Foreign material in separator plate orifice	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the mainshaft speed sensor and countershaft speed sensor installation.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. 2nd clutch transmission fluid pressure switch defective 6. Foreign material in separator plate orifice 7. 1st accumulator defective 8. 2nd accumulator defective 9. 1st check ball stuck 10. 2nd check ball stuck 11. Lock-up shift valve defective 12. 1st clutch defective 13. 2nd clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 1st and 2nd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.

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Fig. 20: Symptom Troubleshooting Index (7 Of 11)

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Symptom	Probable cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. 3rd clutch transmission fluid pressure switch defective 4. Foreign material in separator plate orifice 5. 2nd accumulator defective 6. 3rd accumulator defective 7. 2nd check ball stuck 8. 2nd clutch defective 9. 3rd clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Check the 2nd and 3rd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.
Excessive shock or flares on 3-4 upshift or 4-3 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 3rd accumulator defective 5. 4th accumulator defective 6. 3rd clutch defective 7. 4th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 3rd and 4th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.

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Fig. 21: Symptom Troubleshooting Index (8 Of 11)

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Symptom	Probable cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 4th accumulator defective 5. 5th accumulator defective 6. 4th clutch defective 7. 5th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Check the 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.
Noise from transmission in all shift lever positions	1. ATF-pump worn or binding 2. Mainshaft bearing, countershaft bearing or secondary shaft bearing defective	• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Inspect if the ATF strainer is clogged with particles of steel or aluminum. If clogged, replace it, and flush the torque converter, cooler, and lines. • Inspect the mainshaft and countershaft for wear or damage.
Vehicle does not accelerate more than 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	• Check for a misinstalled/damaged drive plate. • Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts as outlined in the engine section of this service manual.

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Fig. 22: Symptom Troubleshooting Index (9 Of 11)

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Symptom	Probable cause(s)	Notes
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch for operation. • Check for a loose shift cable at the shift lever and the transmission control shaft.
Transmission does not shift into P position	1. Shift cable broken or out of adjustment 2. Joint in shift cable and transmission or body worn 3. Park mechanism defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the park pawl spring installation and the park lever spring installation. If installation is incorrect, install the spring correctly. Make sure that the park lever stop is not installed upside down. Check the distance between the park pawl shaft and park lever roller pin. If the distance is out of tolerance, adjust the distance with the park lever stop.
Lock-up clutch does not disengage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter.
Unstable lock-up clutch operation	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter.

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Fig. 23: Symptom Troubleshooting Index (10 Of 11)

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Symptom	Probable cause(s)	Notes
Lock-up clutch does not engage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Mainshaft speed sensor defective 4. Countershaft speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the mainshaft speed sensor and countershaft speed sensor installation.
A/T gear position indicator does not indicate shift lever positions	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch operation. • Check for a loose shift cable at the shift lever and the transmission control shaft.
Speedometer and odometer do not operate	Countershaft speed sensor defective	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch operation. • Check the countershaft speed sensor installation.
Transmission shifts up during low-rev engine speed condition; engine cannot rev up to high speed	VTEC rocker arms defective	Check the engine rocker arms as described in the engine section of this service manual.

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Fig. 24: Symptom Troubleshooting Index (11 Of 11)

SYSTEM DESCRIPTION

GENERAL OPERATION

The automatic transmission is a combination of a 3-element torque converter and triple-shaft electronically controlled unit which provides 5 speeds forward and 1 reverse. The entire unit is positioned in line with the engine.

TORQUE CONVERTER, GEARS & CLUTCHES

The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turn as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion when the engine is being started. The entire torque converter assembly serves as a flywheel while transmitting power to the transmission mainshaft, the transmission has three parallel shafts; the mainshaft, the countershaft and the secondary shaft. The mainshaft is

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in line with the engine crankshaft, and includes the 4th and 5th clutches, and gears for 5th, 4th, reverse, and idler. The mainshaft reverse gear is integral with the mainshaft 4th gear. The countershaft includes the gears for 1st, 2nd, 3rd, 4th, 5th, reverse, park, and the final drive. The final drive gear is integral with the countershaft. The countershaft 4th gear and the countershaft reverse gear can be locked to the countershaft providing the 4th or reverse gear, depending on which way the selector is moved. The secondary shaft includes the 1st, 2nd, and 3rd clutches, and gears for 1st, 2nd, 3rd, and idler. The idler shaft is located between the mainshaft and secondary shaft, and the idler gear transmits power between the mainshaft and the secondary shaft. The gears on the mainshaft and the secondary shaft are in constant mesh with those on the countershaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, then to the secondary shaft to the countershaft provide drive.

ELECTRONIC CONTROL

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located below the dashboard, under the front lower panel behind the center console.

HYDRAULIC CONTROL

The valve bodies include the main valve body, the regulator valve body, and the servo body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the torque converter check valve, lock-up shift valve, and the 1st and 3rd accumulators. The servo body contains the servo valve, the shift valve D, accumulators for 2nd, 4th, and 5th, and shift solenoid valves for A, B, C, D, and E. Fluid from the regulator passes through the manual valve to the various control valves. The 1st, 3rd, and 5th clutches receive fluid from their respective feed pipes, and the 2nd and the 4th clutches receive fluid from the internal hydraulic circuit.

SHIFT CONTROL MECHANISM

The PCM controls to shift gears the shift solenoid valves A, B, C, D, and E, and the A/T clutch pressure control solenoid valves A, B, and C, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port leading hydraulic pressure to the clutch. The A/T clutch pressure control solenoid valves A, B, and C regulate their respective pressure, and pressurize to the clutches to engage it and its corresponding gear. The pressures of the A/T clutch pressure control solenoid valves also apply to the shift valves to switch the port.

LOCK-UP MECHANISM

The lock-up mechanism operates in **D** position (2nd, 3rd, 4th, and 5th), in $\mathbf{D}_3$ position (2nd and 3rd), and **M** (sequential sportshift mode) position (3rd, 4th, and 5th). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When the shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve lock-up on and off. The A/T clutch pressure control solenoid valve A and the lock-up control valve control the volume of the lock-up conditions.

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GEAR SELECTION

The shift lever has five positions: **P** PARK, **R** REVERSE, **N** NEUTRAL, **D** DRIVE 1st through 5th gear range with automatic shift and sequential sportshift in **M** (sequential sportshift mode) position, and $\mathbf{D}_3$ DRIVE 1st through 3rd gear range with automatic shift.

Starting is possible only in the **P** and **N** positions because of a slide-type neutral-safety switch.

Position		Description
P PARK		Front wheels locked; park pawl engaged with park gear on countershaft. All clutches are released.
R REVERSE		Reverse; reverse selector engaged with countershaft reverse gear and 4th clutch engaged.
N NEUTRAL		All clutches are released.
D DRIVE (1st through 5th)	Automatic shift	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th, depending on vehicle speed and throttle position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears.
	M position Sequential sportshift mode	Manual gear shift driving; vehicle can starts off in 1st and 2nd gears, and does not upshift automatically. The lock-up mechanism operates in 3rd, 4th and 5th gears.
D3 DRIVE (1st through 3rd)		For rapid acceleration at highway speeds and general driving, up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and throttle position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 2nd and 3rd gears.

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Fig. 25: Identifying Gear Selections

AUTOMATIC TRANSAXLE (A/T) GEAR POSITION INDICATOR

The A/T gear position indicator in the instrument panel shows which shift lever position has been selected without having to look down at the shift lever. With the shift lever in the **M** (sequential sportshift mode) position, the shift indicator between the speedometer and tachometer in the instrument panel will display the gear selected.

CLUTCHES & GEARS

The 5-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and steel plates together, locking them so they don't slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

1st Clutch

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The 1st clutch engages/disengages 1st gear, and is located at the top of the secondary shaft. The 1st clutch is joined back-to-back to the 3rd clutch. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

2nd Clutch

The 2nd clutch engages/disengages 2nd gear, and is located at the end of the secondary shaft, opposite the end cover. The 2nd clutch is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

3rd Clutch

The 3rd clutch engages/disengages 3rd gear, and is located at the top of the secondary shaft. The 3rd clutch is joined back-to-back to the 1st clutch. The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

4th Clutch

The 4th clutch engages/disengages 4th gear, as well as reverse gear, and is located at the top of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

5th Clutch

The 5th clutch engages/disengages 5th gear, and is located at the top of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

Gear operation

Gears on the mainshaft:

- 4th gear engages/disengages with the mainshaft by the 4th clutch.
- 5th gear engages/disengages with the mainshaft by the 5th clutch.
- Reverse gear engages/disengages with the mainshaft by the 4th clutch.
- Idler gear is splined with the mainshaft, and rotates with the mainshaft.

Gears on the countershaft:

- Final drive gear is integral with the countershaft.
- 1st, 2nd, 3rd, 5th, and park gears are splined with the countershaft, and rotate with the countershaft.
- 4th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 4th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so that the 4th gear and reverse gear engage with the countershaft.

Gears on the secondary shaft:

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- 1st gear engages/disengages with the secondary shaft by the 1st clutch.
- 2nd gear engages/disengages with the secondary shaft by the 2nd clutch.
- 3rd gear engages/disengages with the secondary shaft by the 3rd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.

The idler gear on the idler shaft transmits power between the mainshaft and the secondary shaft.

The reverse idler gear transmits power from the mainshaft reverse gear to the countershaft reverse gear, and changes rotation direction of the countershaft to reverse.

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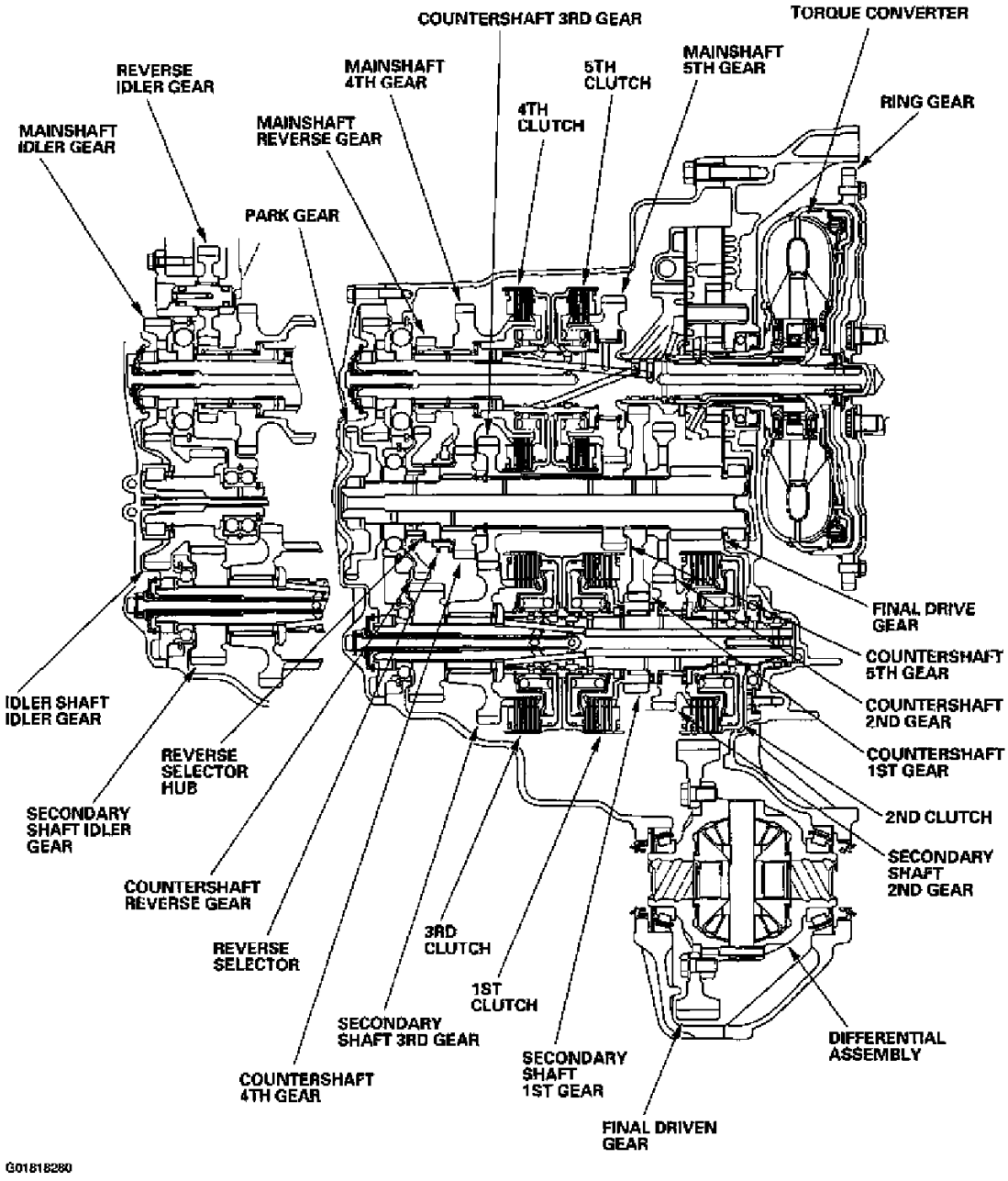


Fig. 26: Transmission Cutaway View

POWER FLOW

P Position

Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl, interlocking the park gear.

N Position

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Engine power transmitted from the torque converter drives the mainshaft idler gear, the idler shaft idler gear, and the secondary idler gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. In this position, the position of the reverse selector differs according to whether the shift lever shifted from **D** or **R** position:

- When shifted from **D** position, the reverse selector engages with the countershaft 4th gear and the reverse selector hub, and the 4th gear engages with the countershaft.
- When shifted from **R** position, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.

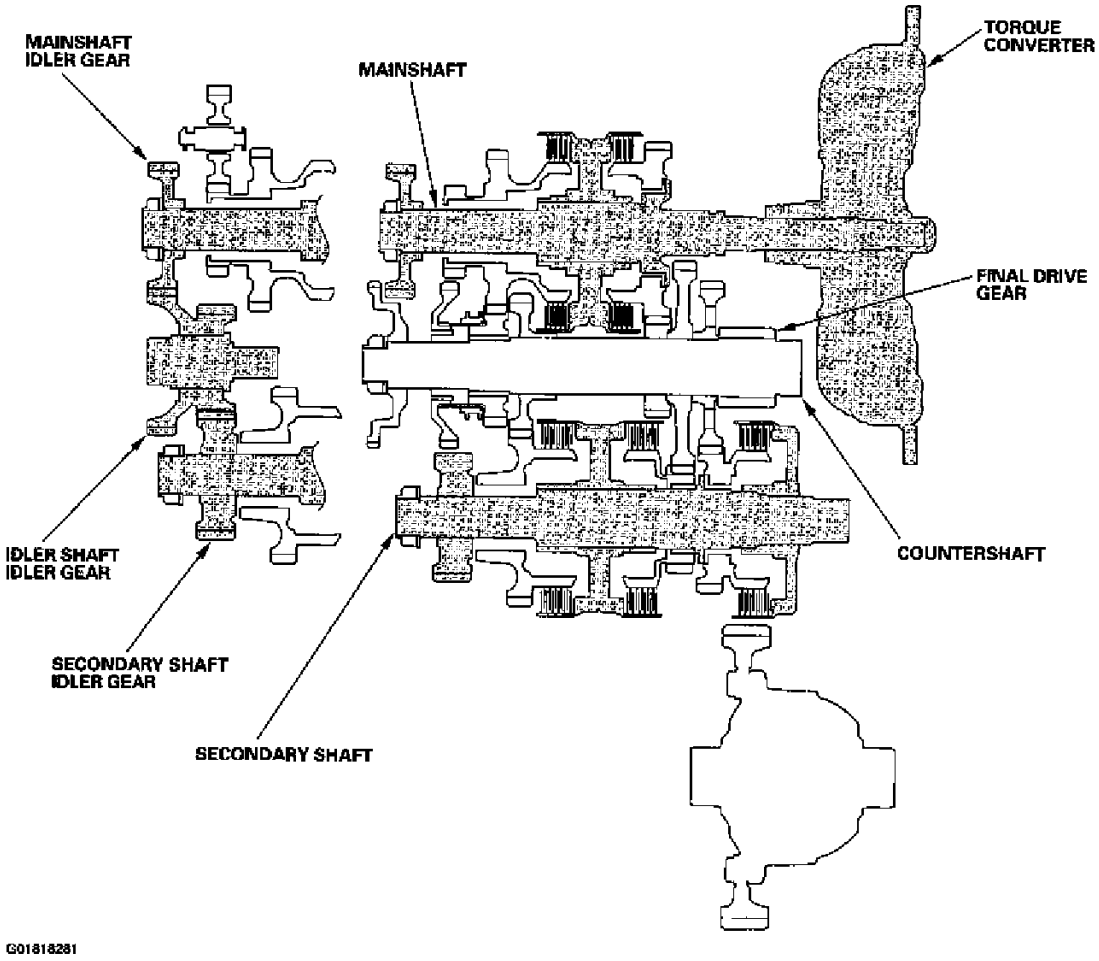


Fig. 27: N Position Power Flow

1st Gear

Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft.

The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler

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gear.

The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.

Power is transmitted to the final drive gear, which in turn drives the final driven gear.

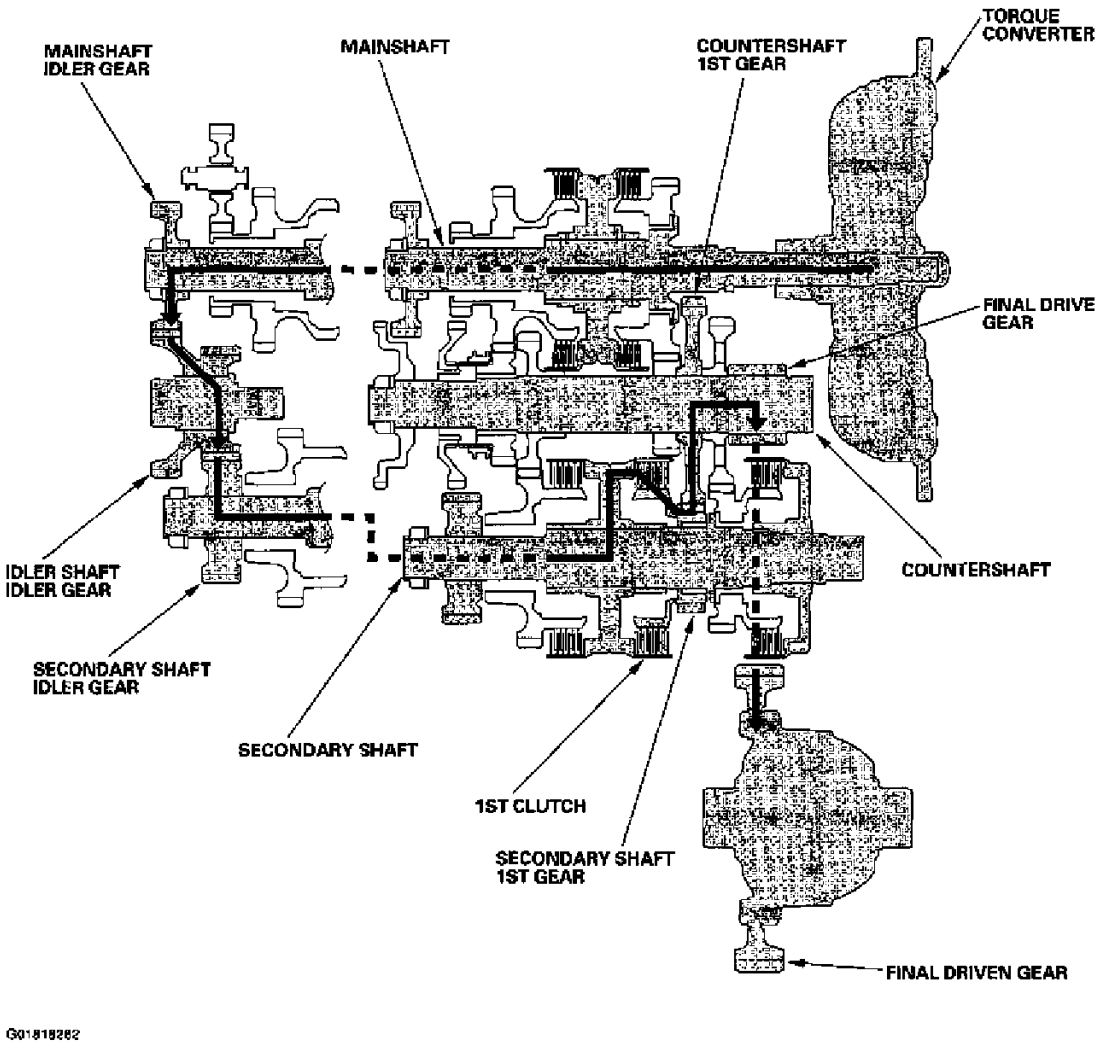


Fig. 28: 1st Gear Power Flow

2nd Gear

Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.

The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.

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The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.

Power is transmitted to the final drive gear, which in turn drives the final driven gear.

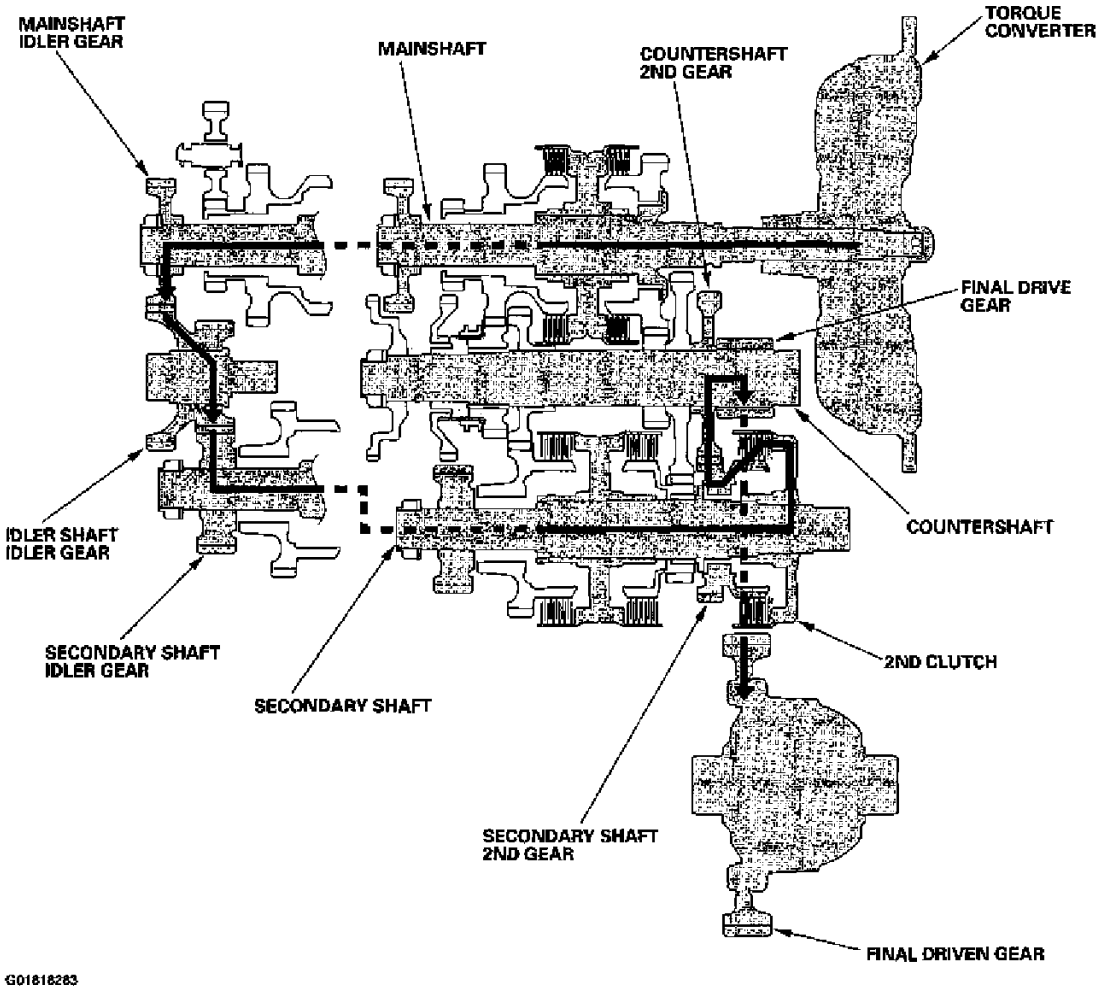


Fig. 29: 2nd Gear Power Flow

3rd Gear

Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the secondary shaft 3rd gear with the secondary shaft.

The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and secondary shaft idler gear.

The secondary shaft 3rd gear drives the countershaft 3rd gear and the countershaft.

Power is transmitted to the final drive gear, which in turn drives the final driven gear.

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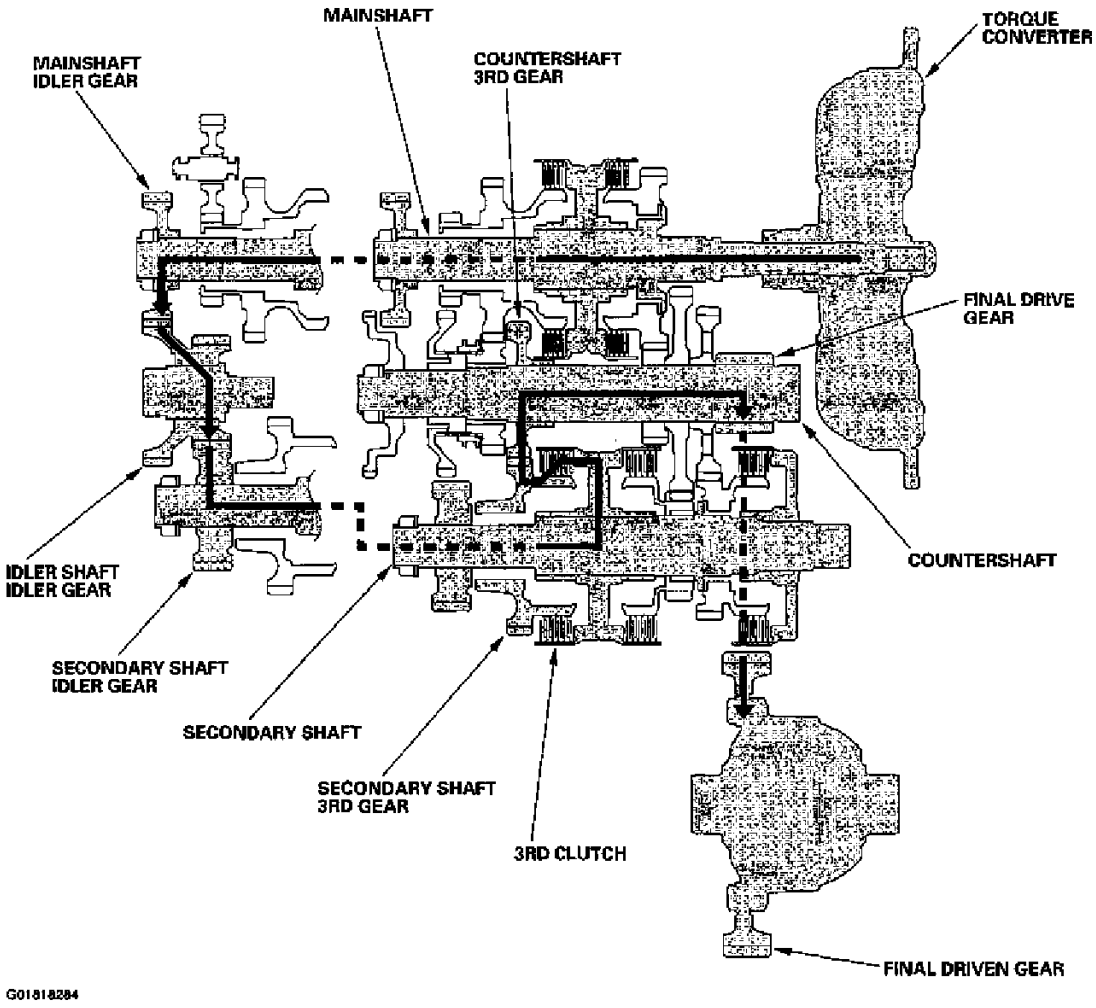


Fig. 30: 3rd Gear Power Flow

4th Gear

Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th gear and reverse selector hub while the shift lever is in the **D** , $\mathbf{D}_3$, and **M** positions (forward range).

Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.

The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.

Power is transmitted to the final drive gear, which in turn drives the final driven gear.

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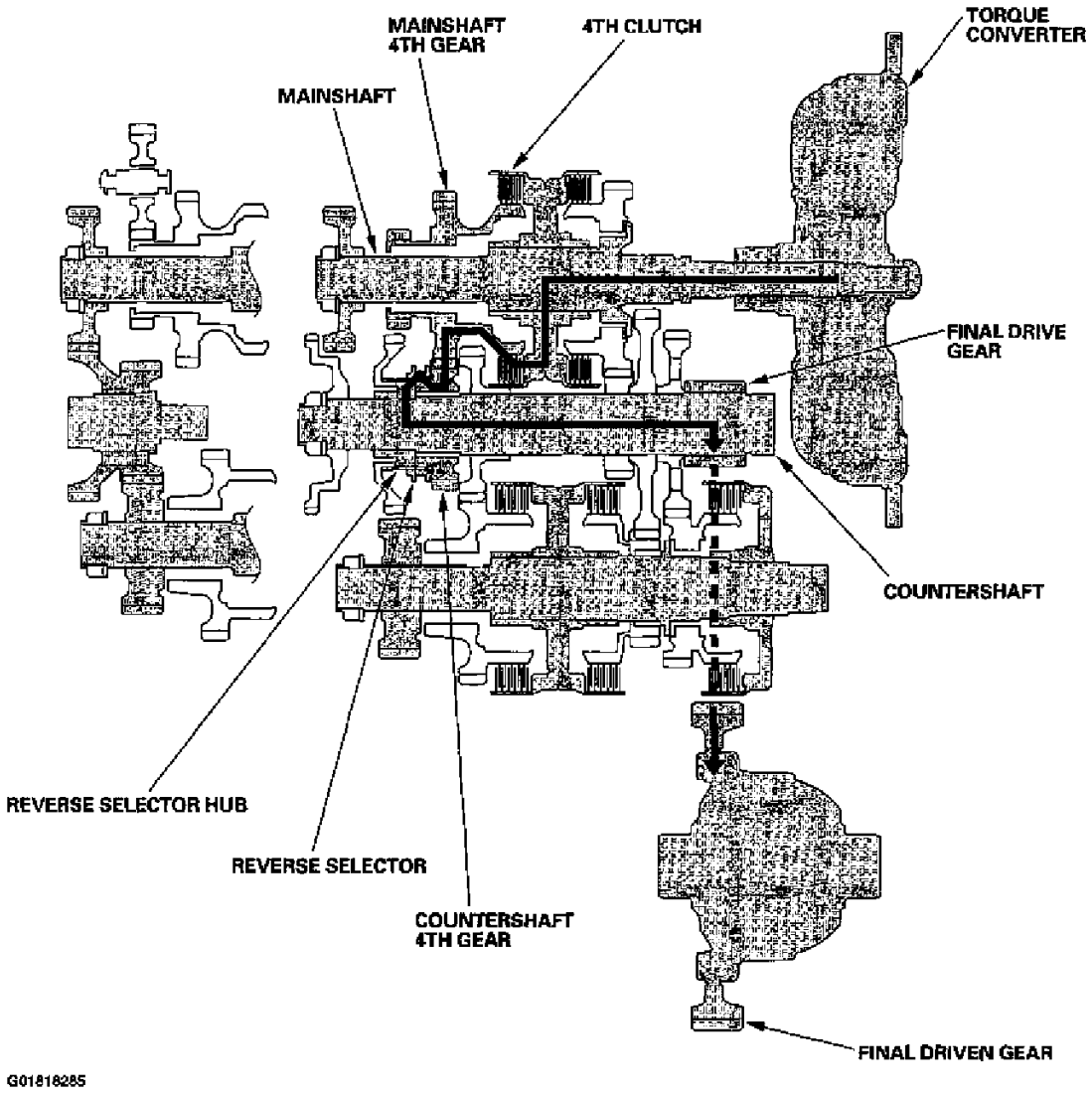


Fig. 31: 4th Gear Power Flow

5th Gear

Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.

The mainshaft 5th gear drives the countershaft 5th gear and the countershaft.

Power is transmitted to the final drive gear, which in turn drives the final driven gear.

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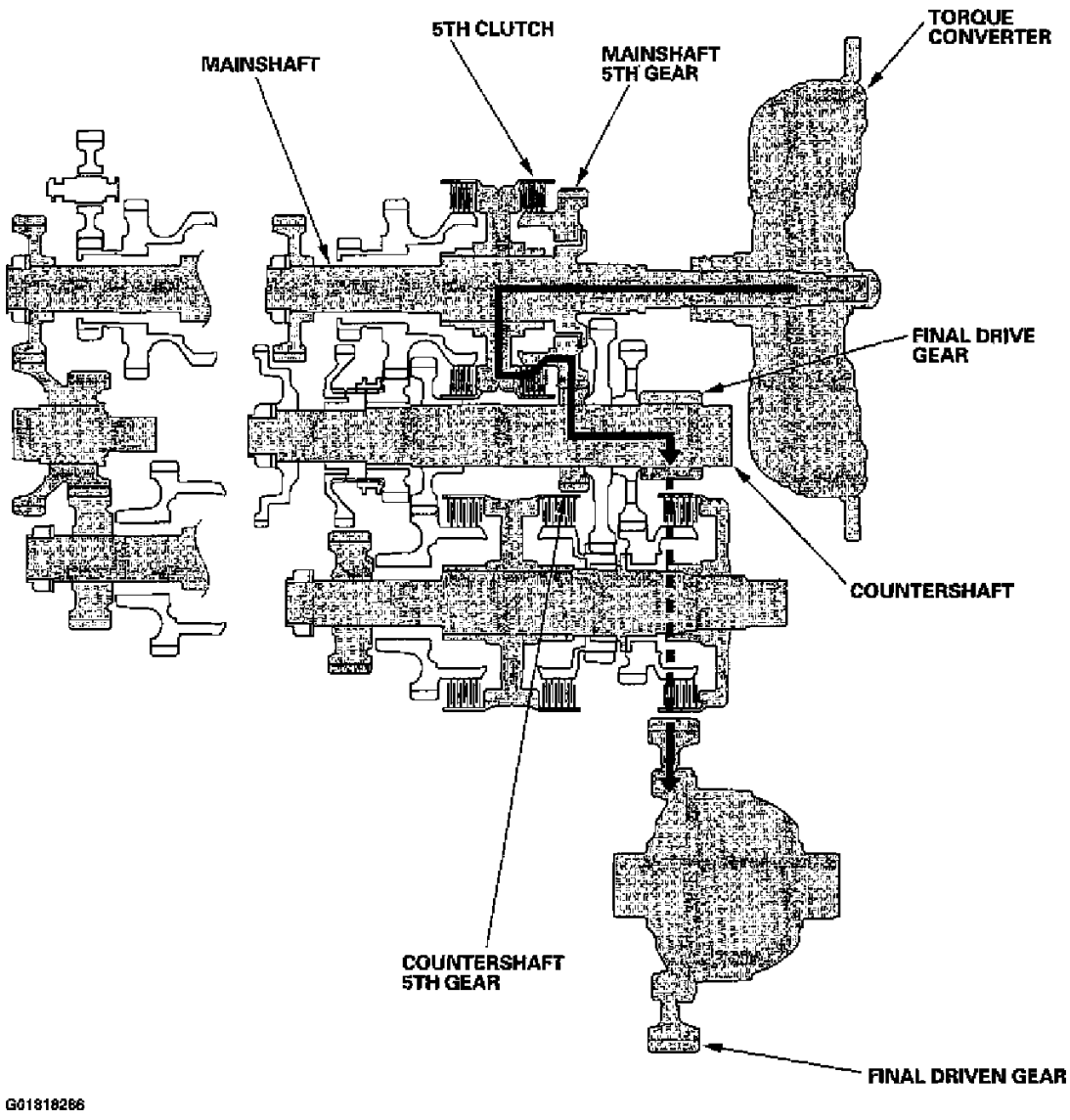


Fig. 32: 5th Gear Power Flow

R Position

Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear and reverse selector hub while the shift lever is in the **R** position.

Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft reverse gear with the mainshaft.

The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.

The rotation direction of the countershaft reverse gear is changed by the reverse idler gear.

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The countershaft reverse gear drives the countershaft via the reverse selector, which drives the reverse selector hub.

Power is transmitted to the final drive gear, which in turn drives the final driven gear.

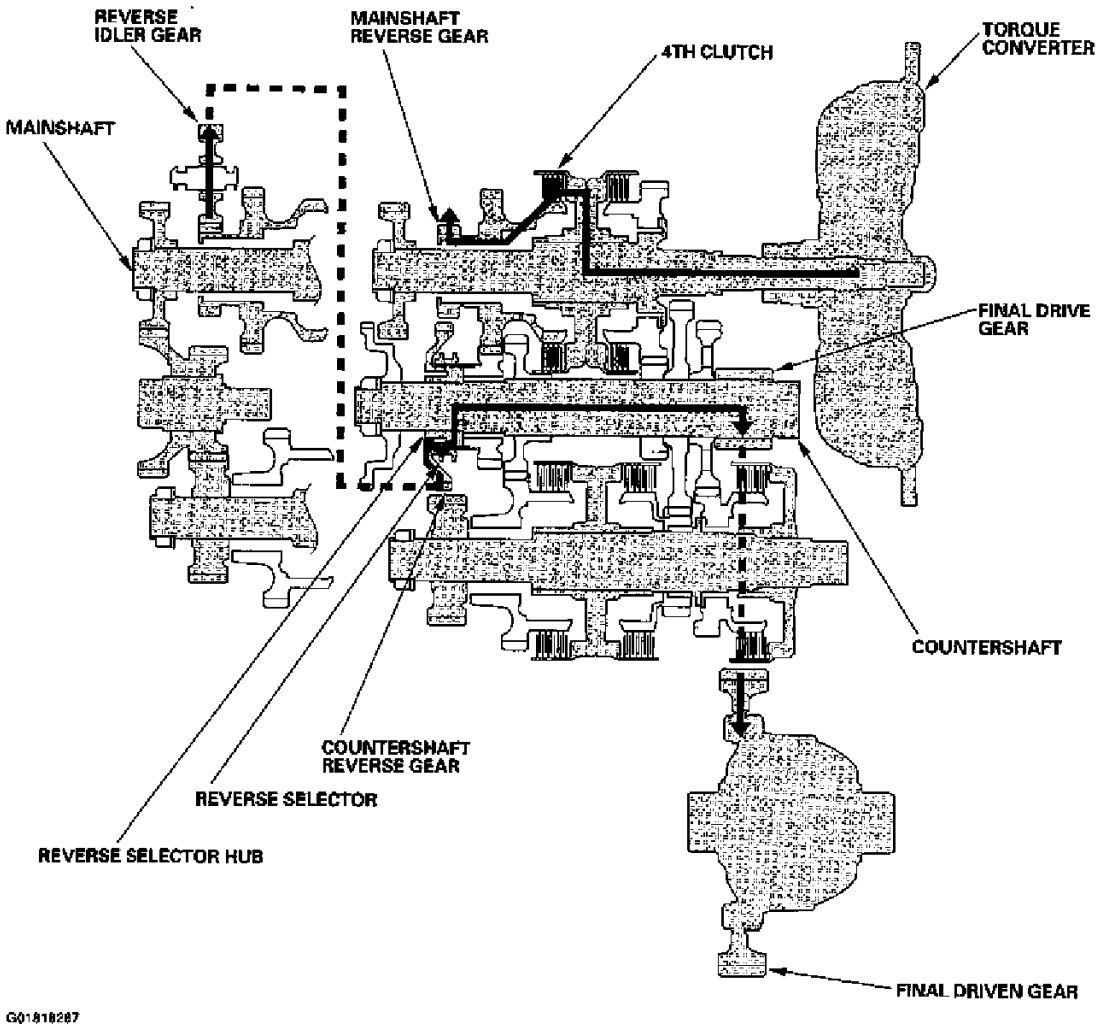


Fig. 33: R Position Power Flow

ELECTRONIC CONTROL SYSTEM

Functional Diagram

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM receives input signals from the sensors, switches, and other control units, perform processing data, and outputs signals for the engine control system and A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control is stored in the PCM.

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The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.

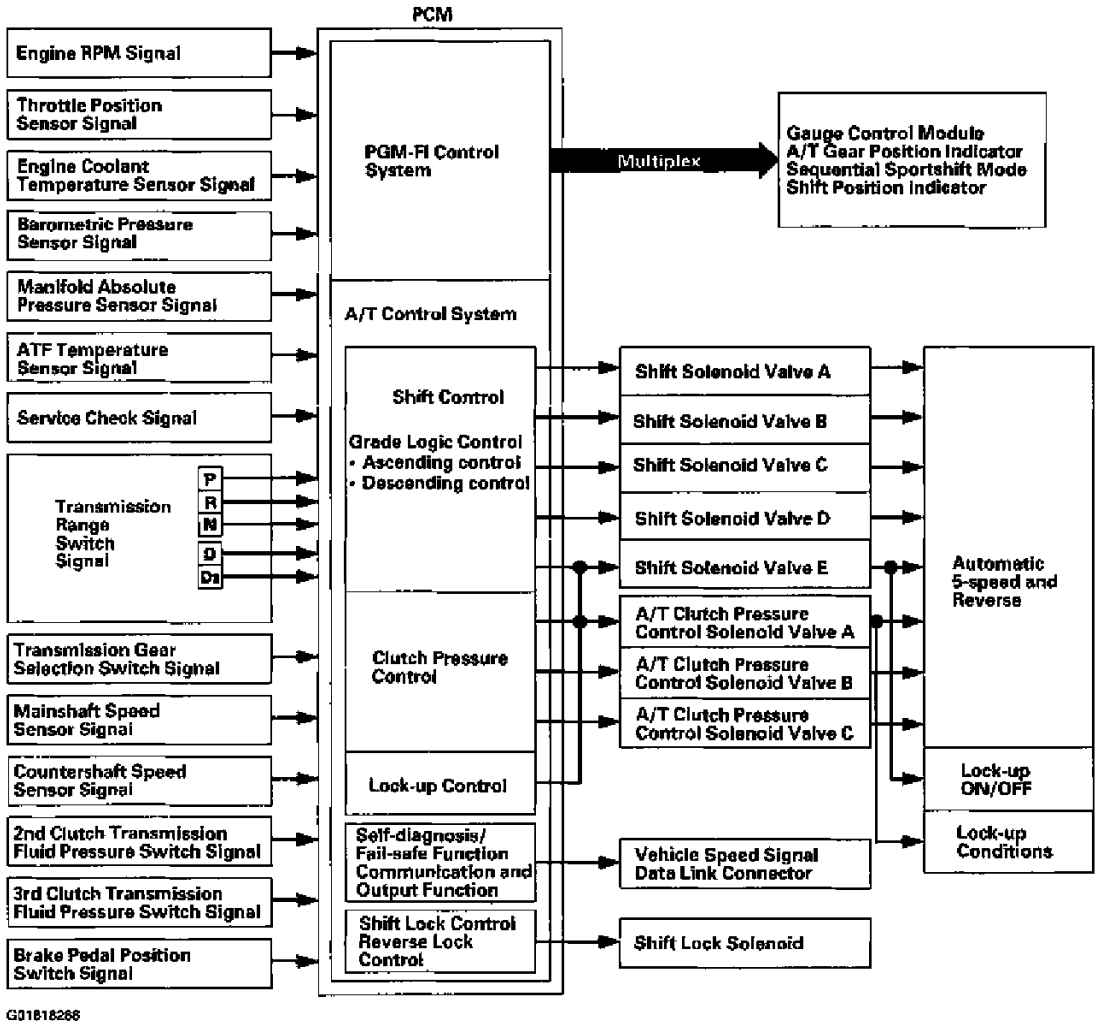


Fig. 34: Electronic Control System Schematic

Electronic Controls Location

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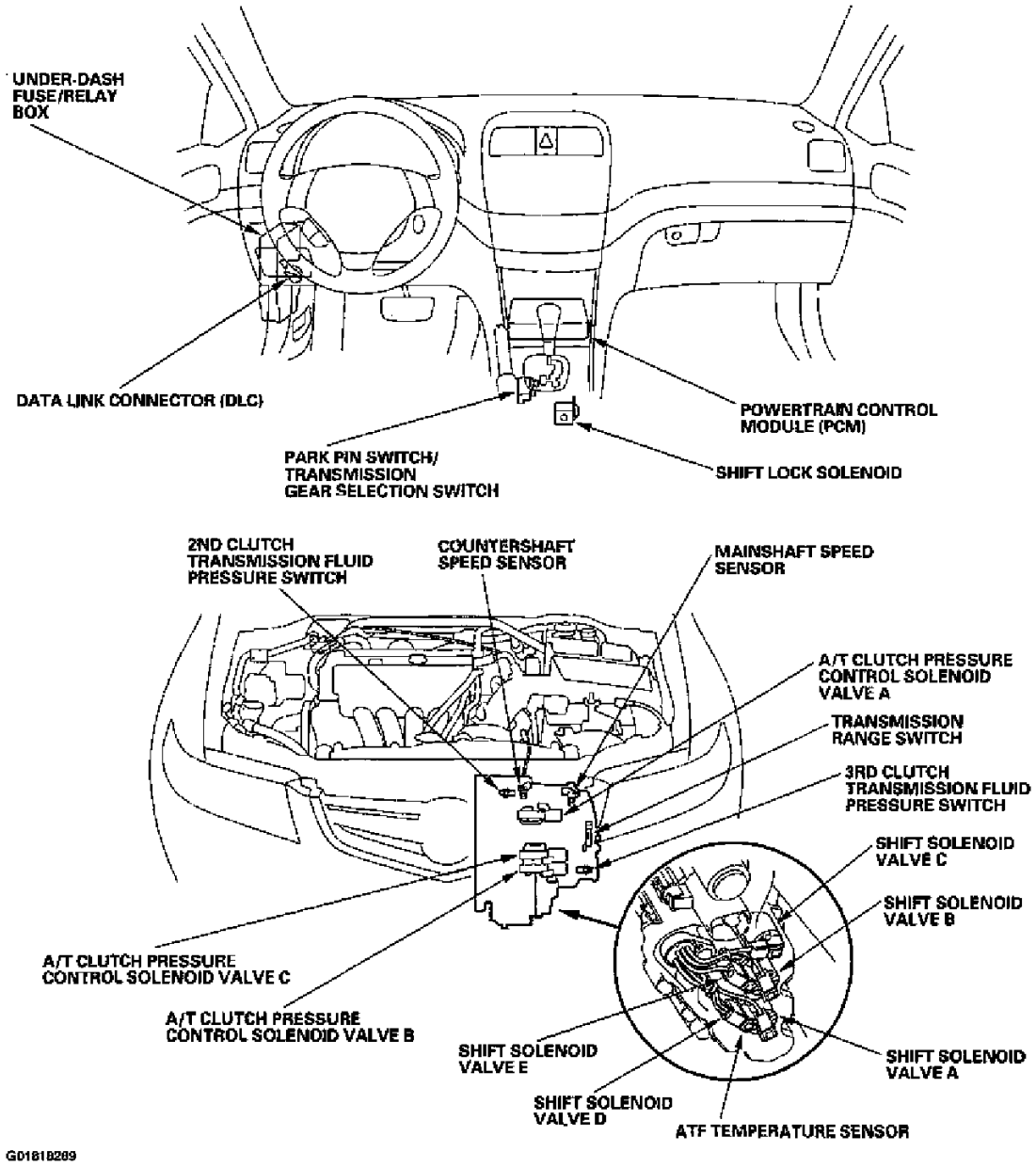


Fig. 35: Locating Electronic Controls

SHIFT CONTROL

The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates the shift solenoid valves A, B, C, D, and E to control shifting.

Also, a grade logic control system has been adopted to control shifting in **D** and $\mathbf{D}_3$ positions. The PCM compares actual driving conditions with memorized driving conditions, based on the input from the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position

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switch signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.

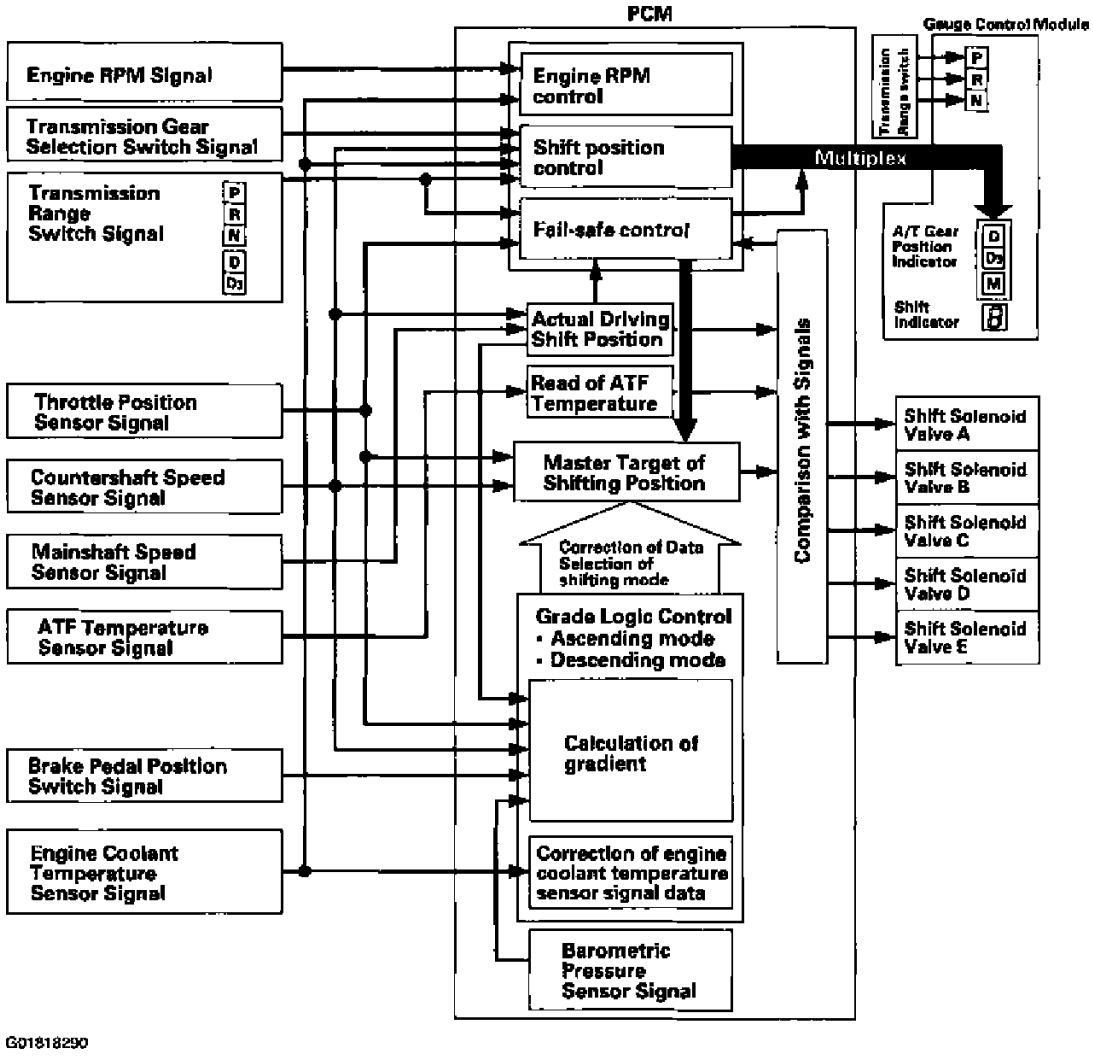


Fig. 36: Shift Control Schematic

The PCM turns the shift solenoid valves A, B, C, D, and E ON and OFF to control shifting transmission gear. The combination of driving signals to shift solenoid valves A, B, C, D, and E are shown in table below.

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Position	Gear position	Shift solenoid valves				
		A	B	C	D	E
D, D3, M	Shifting from N position	OFF	ON	ON	OFF	OFF
	Stays in 1st	ON	ON	ON	OFF	OFF
	Shifting gears between 1st and 2nd	OFF	ON	ON	OFF	OFF
	Stays in 2nd	OFF	ON	OFF	ON	OFF
	Shifting gears between 2nd and 3rd	OFF	ON	ON	ON	OFF
	Stays in 3rd	OFF	OFF	ON	OFF	OFF
D, M	Shifting gears between 3rd and 4th	OFF	OFF	OFF	OFF	OFF
	Stays in 4th	ON	OFF	OFF	OFF	OFF
	Shifting gears between 4th and 5th	ON	OFF	OFF	ON	OFF
	Stays in 5th	ON	OFF	ON	ON	OFF
R	Shifting from P and N position	OFF	ON	OFF	OFF	ON
	Stays in reverse	ON	ON	OFF	OFF	ON
	Reverse inhibit	ON	ON	OFF	OFF	OFF
P	Park	OFF	ON	OFF	OFF	ON
N	Neutral	OFF	ON	ON	OFF	OFF

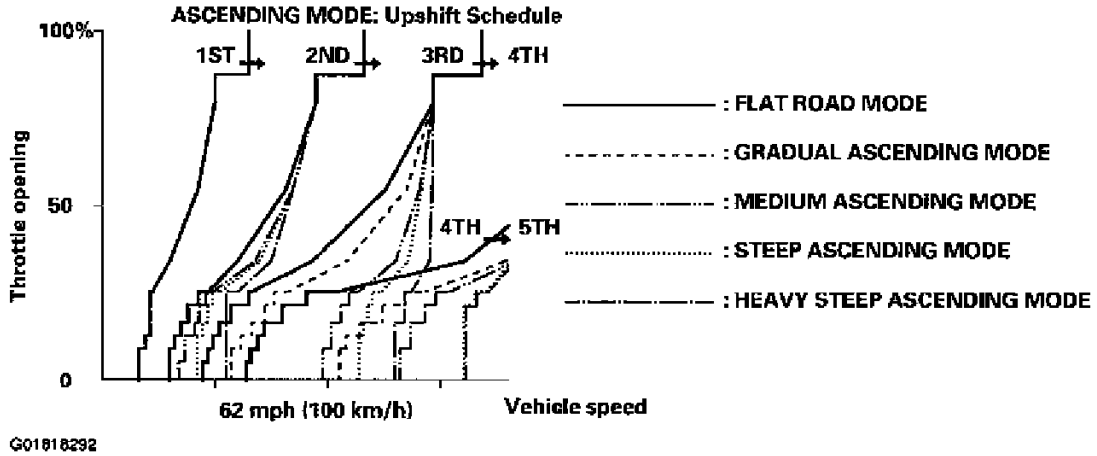
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Fig. 37: Transmission Gear/Shift Solenoid Valve Table

GRADE LOGIC CONTROL: ASCENDING CONTROL

When the PCM determines that the vehicle is climbing a hill in **D** and $\mathbf{D}_3$ positions, the system extends the engagement area of 2nd, 3rd, and 4th gears to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

Shift schedules stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable it to automatically select the most suitable gear according to the magnitude of a gradient.



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Fig. 38: Grade Logic Control: Ascending Control Table

GRADE LOGIC CONTROL: DESCENDING CONTROL

When the PCM determines that the vehicle is going down a hill in **D** and $\mathbf{D}_3$ positions, the shift-up speed from

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4th to 5th gear, from 3rd to 4th gear, and from 2nd to 3rd gear (when the throttle is closed) becomes faster than the set speed for flat road driving to widen the 4th gear, 3rd gear, and 2nd gear driving area. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas, and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th gear or 4th gear, and you are decelerating when you are applying the brakes on a steep hill, the transmission will downshift to lower gear. When you accelerate, the transmission will then return to a higher gear.

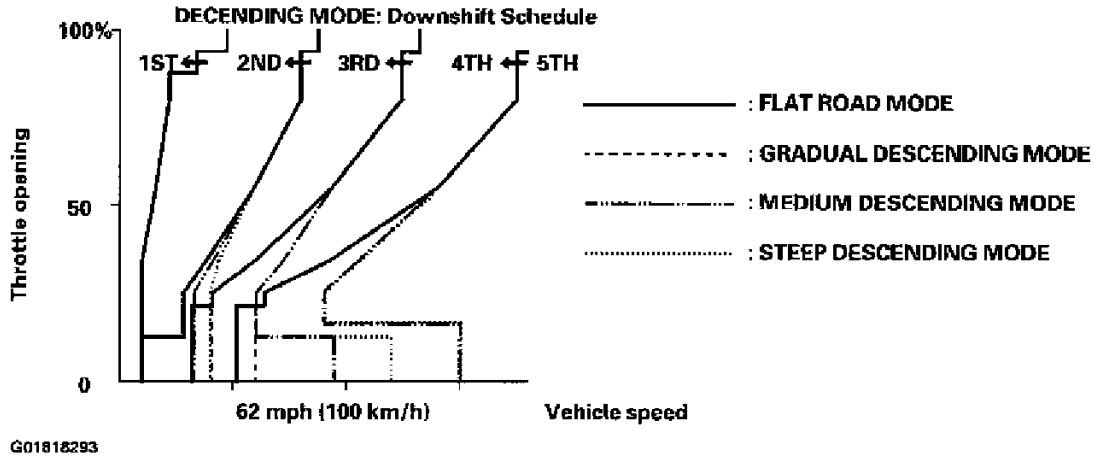


Fig. 39: Grade Logic Control: Descending Control Table

CLUTCH PRESSURE CONTROL

The PCM actuates the A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between lower and higher gears, the clutch pressure regulated by the A/T clutch pressure control solenoid valves A, B, and C engages and disengages the clutch smoothly.

The PCM receives input signals from the various sensors and switches, performs processing data, and outputs a current to the A/T clutch pressure control solenoid valves A, B, and C.

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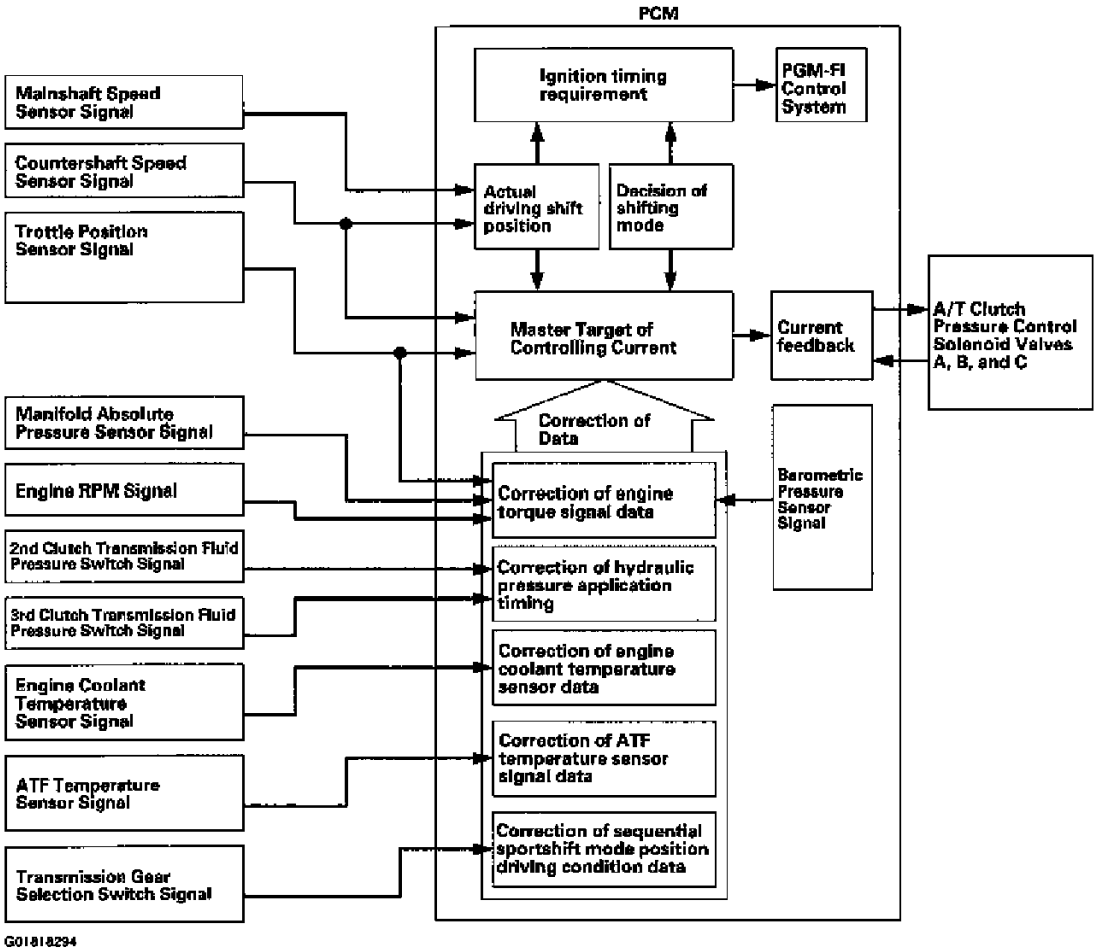


Fig. 40: Clutch Pressure Control Schematic

LOCK-UP CONTROL

The shift solenoid valve E controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF.

The PCM actuates the shift solenoid valve E and the A/T clutch pressure control solenoid valve A to control the torque converter clutch lock-up. When the shift solenoid valve E is turned ON, the condition of the lock-up starts.

The A/T clutch pressure control solenoid valve A regulates and applies the hydraulic pressure to the lock-up control valve to control the amount of the lock-up.

The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears in **D** position, 2nd and 3rd gears in $\mathbf{D}_3$ position, and 3rd, 4th, and 5th gears in **M** position.

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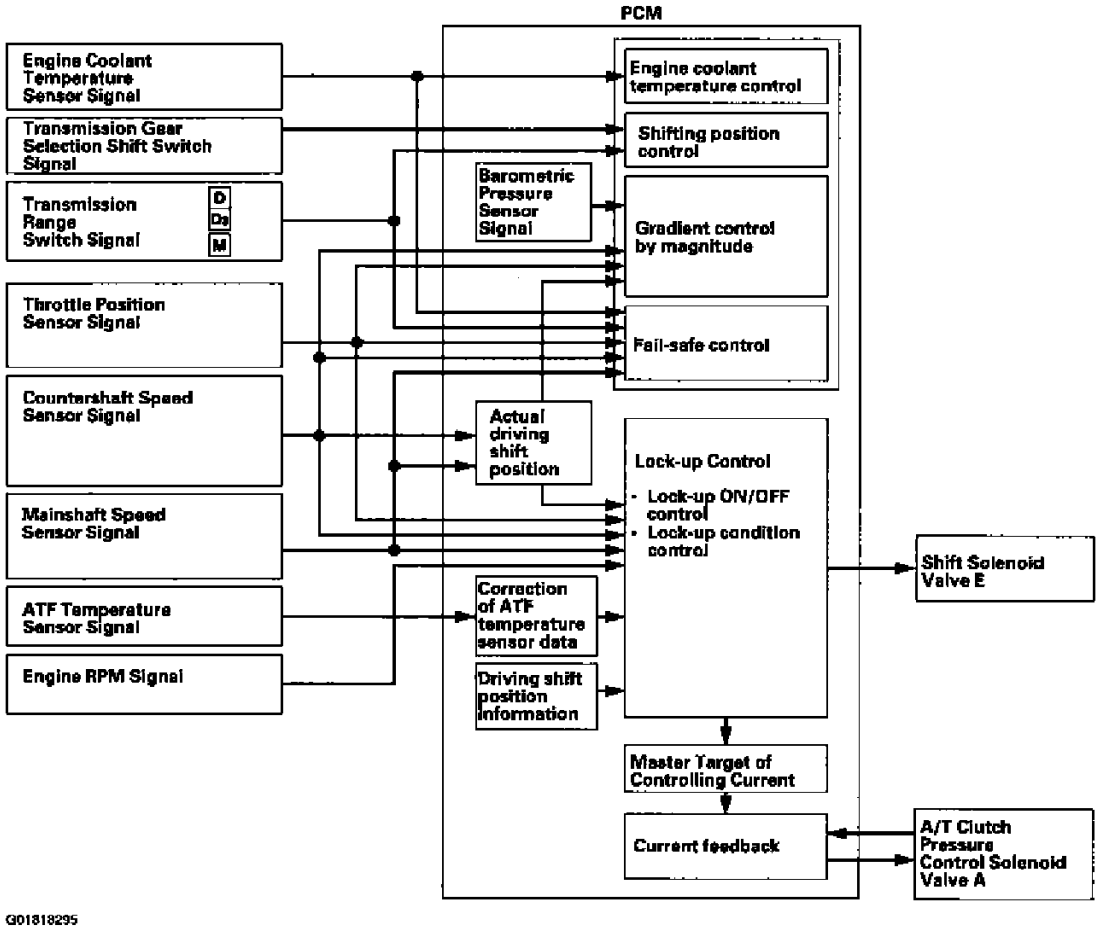


Fig. 41: Lock-up Control Schematic

PCM ELECTRICAL CONNECTIONS

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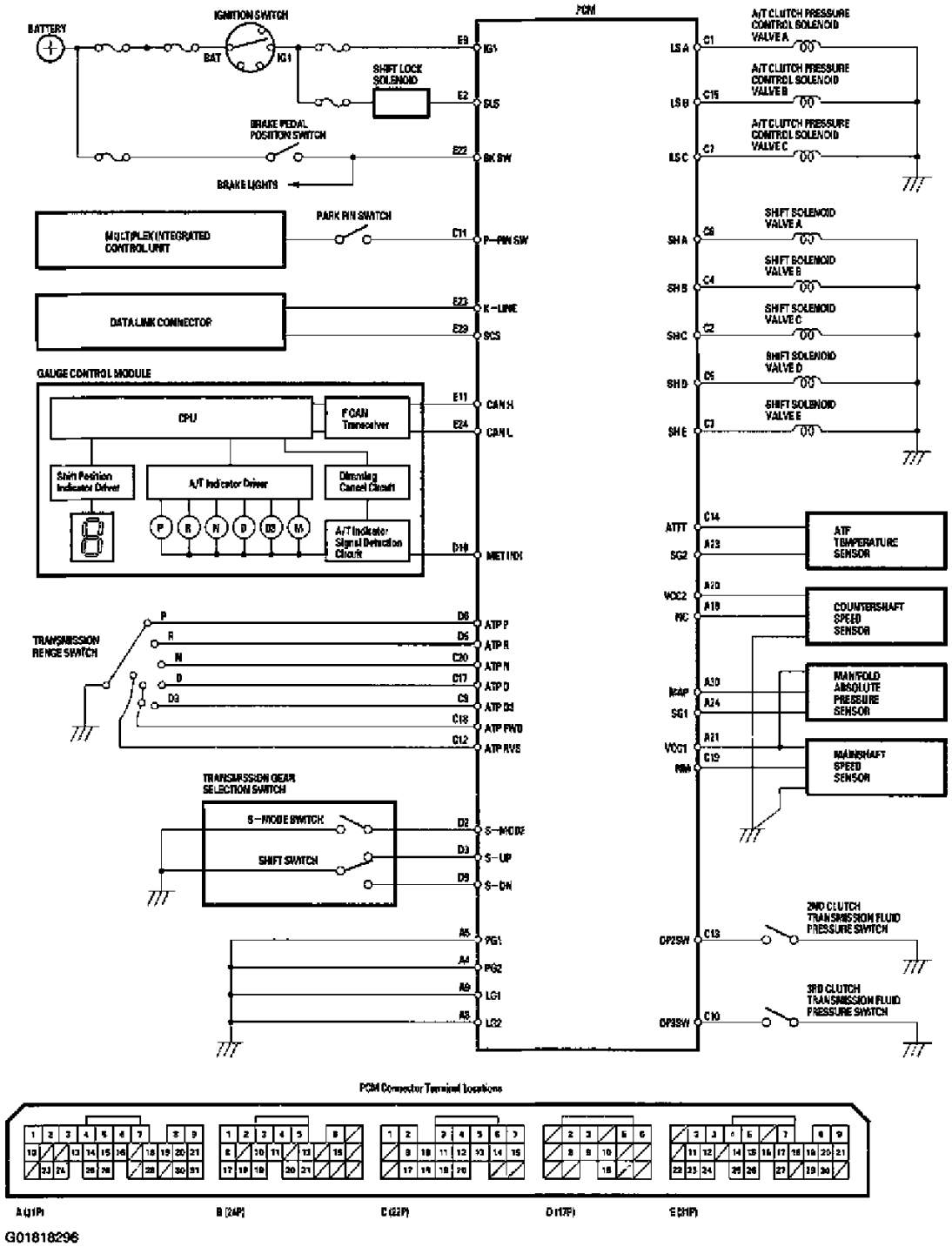


Fig. 42: PCM Connector Terminal Locations

PCM INPUTS & OUTPUTS

The PCM terminal voltage and measuring conditions are shown for the connector terminals that are related to

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the A/T control system. The other terminal voltage and measuring conditions are described in Fuel and Emission.

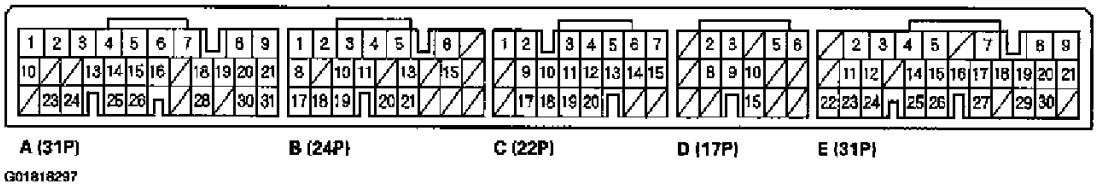


Fig. 43: Identifying PCM Connector Terminals

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
A2	YEL/BLK	IGP2	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A3	YEL/BLK	IGP1	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A4	BLK	PG2	Ground	Less than 1.0 V at all times
A5	BLK	PG1	Ground	Less than 1.0 V at all times
A8	BRN/YEL	LG2	Ground	Less than 1.0 V at all times
A9	BRN/YEL	LG1	Ground	Less than 1.0 V at all times
A18	BLK/BLU	NC	Countershaft speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V While driving: About 2.5 V
A20	YEL/BLU	VCC2	Power supply circuit for sensors	With ignition switch ON (II): About 5 V With ignition switch OFF: 0 V
A21	YEL/RED	VCC1	Power supply circuit for sensors	With ignition switch ON (II): About 5 V With ignition switch OFF: 0 V
A23	GRN/YEL	SG2	Sensor ground	Less than 1.0 V at all times
A24	GRN/WHT	SG1	Sensor ground	Less than 1.0 V at all times

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Fig. 44: PCM Connector A (31P) Inputs & Outputs

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Terminal Number	Wire Color	Signal	Description	Measuring Condition/Terminal Voltage
C1	RED/BLK	LS A	A/T clutch pressure control solenoid valve A control	With ignition switch ON (II): Pulsing signal
C2	GRN	SH C	Shift solenoid valve C control	Battery voltage in these positions: • N • 1st, 3rd, and 5th gears in D, D3, and M • Reverse inhibit in R 0 V in these positions: • P and R • 2nd and 4th gears in D, D3, and M
C3	YEL	SH E	Shift solenoid valve E control	Battery voltage in these positions: • P and R 0 V in these positions: • Reverse inhibit in R • N • 1st gear in D, D3, and M
C4	GRN/WHT	SH B	Shift solenoid valve B control	Battery voltage in these positions: • P, R, and N • 1st and 2nd gears in D, D3, and M 0 V in these positions: • Reverse inhibit in R • 3rd, 4th, and 5th gears in D, D3, and M
C5	GRN/RED	SH D	Shift solenoid valve D control	Battery voltage in these positions: • 2nd and 5th gears in D, D3, and M 0 V in these positions: • Reverse inhibit in R • P, R, and N • 1st, 3rd, and 4th gears in D, D3, and M
C6	BLU/BLK	SH A	Shift solenoid valve A control	Battery voltage in these positions: • R • 1st, 4th, and 5th gears in D, D3, and M 0 V in these positions: • Reverse inhibit in R • P and N • 2nd and 3rd gears in D, D3, and M
C7	BLU/YEL	LS C	A/T clutch pressure control solenoid valve C control	With ignition switch ON (II): Pulsing signal

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Fig. 45: PCM Connector C (22P) Inputs & Outputs

Terminal Number	Wire Color	Signal	Description	Measuring Condition/Terminal Voltage
C9	RED	ATP D3	Transmission range switch D3 position signal input	In the D3 position: 0 V In other than the D3 position: About 5 V
C10	BLU/WHT	OP3SW	3rd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): About 5 V With 3rd clutch pressure: 0 V
C11	BLU/YEL	P-PIN SW	Interlock control signal output	With ignition switch ON (II), in the P position: About 5 V With ignition switch ON (II), in other than P position: 0 V
C12	RED/WHT	ATP RVS	Transmission range switch RVS (R position) signal input	In R position: 0 V In other than the R position: About 5 V
C13	BLU/RED	OP2SW	2nd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): About 5 V With 2nd clutch pressure: 0 V
C14	RED/YEL	ATFT	ATF temperature sensor signal input	With ignition switch ON (II): 0.2 V – 4.8 V (Depending on ATF temperature) With ignition switch OFF: 0 V
C15	BRN/WHT	LS B	A/T clutch pressure control solenoid valve B control	With ignition switch ON (II): Pulsing signal
C17	YEL/GRN	ATP D	Transmission range switch D position signal input	In the D position: 0 V In other than the D position: About 5 V
C18	BLU/YEL	ATP FWD	Transmission range switch D and D3 position signals input	In the D and D3 positions: 0 V In other than the D and D3 positions: About 5 V
C19	WHT/RED	NM	Mainshaft speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V With engine at idling in N position: About 2.5 V
C20	RED/BLK	ATP N	Transmission range switch N position signal input	In the N position: 0 V In other than the N position: About 5 V

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Fig. 46: PCM Connector C (22P) Inputs & Outputs

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Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
D2	BRN	S-MODE	Transmission gear selection switch S mode switch signal input	In M position: 0 V In other than M position: About 5V
D3	WHT/BLU	S-UP	Transmission gear selection switch upshift switch signal input	In M position: • Shift lever pushed toward upshift position (marked with +): 0 V • Shift lever released in neutral position: About 5 V
D5	WHT	ATP R	Transmission range switch R position input	In the R position: 0 V In other than the R position: About 5 V
D6	BLU/BLK	ATP P	Transmission range switch P position input	In the P position: 0 V In other than the P position: About 5 V
D9	ORN	S-DN	Transmission gear selection switch downshift switch signal input	In M position: • Shift lever pushed toward downshift position (marked with −): 0V • Shift lever released in neutral position: About 5V
D10	LT GRN	METINH	A/T gear position indicator control signal output	With ignition switch ON (II): Battery voltage

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Fig. 47: PCM Connector D (17P) Inputs & Outputs

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
E2	YEL/BLK	SLS	Shift lock solenoid control (ground side)	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: 0 V
E9	BLK/YEL	IG1	Power supply circuit for solenoid valves	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
E11	WHT	CAN H	F-CAN communication with network	With ignition switch ON (II): Pulsing signal
E22	WHT/BLK	BKSW	Brake pedal position switch signal input	Brake pedal pressed: Battery voltage Brake pedal released: 0 V
E23	BLU	K-LINE	Communication line PCM-to-DLC	With ignition switch ON (II): Battery voltage
E24	RED	CAN L	F-CAN communication with network	With ignition switch ON (II): Pulsing signal
E29	BRN	SCS	Detects service check signal	With the SCS shorted with the HDS: About 0 V With the SCS open: About 5 V

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Fig. 48: PCM Connector E (31P) Inputs & Outputs

HYDRAULIC CONTROLS

Valve Bodies

The valve body includes the main valve body, the regulator valve body, and the servo body. The ATF pump is driven by splines on the left end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to the shift valves and to each of the clutches via the solenoid valves. The shift solenoid valves A, B, C, D, and E are bolted on the servo body. The A/T clutch pressure control solenoid valves A, B, and C are mounted on the outside of the transmission housing.

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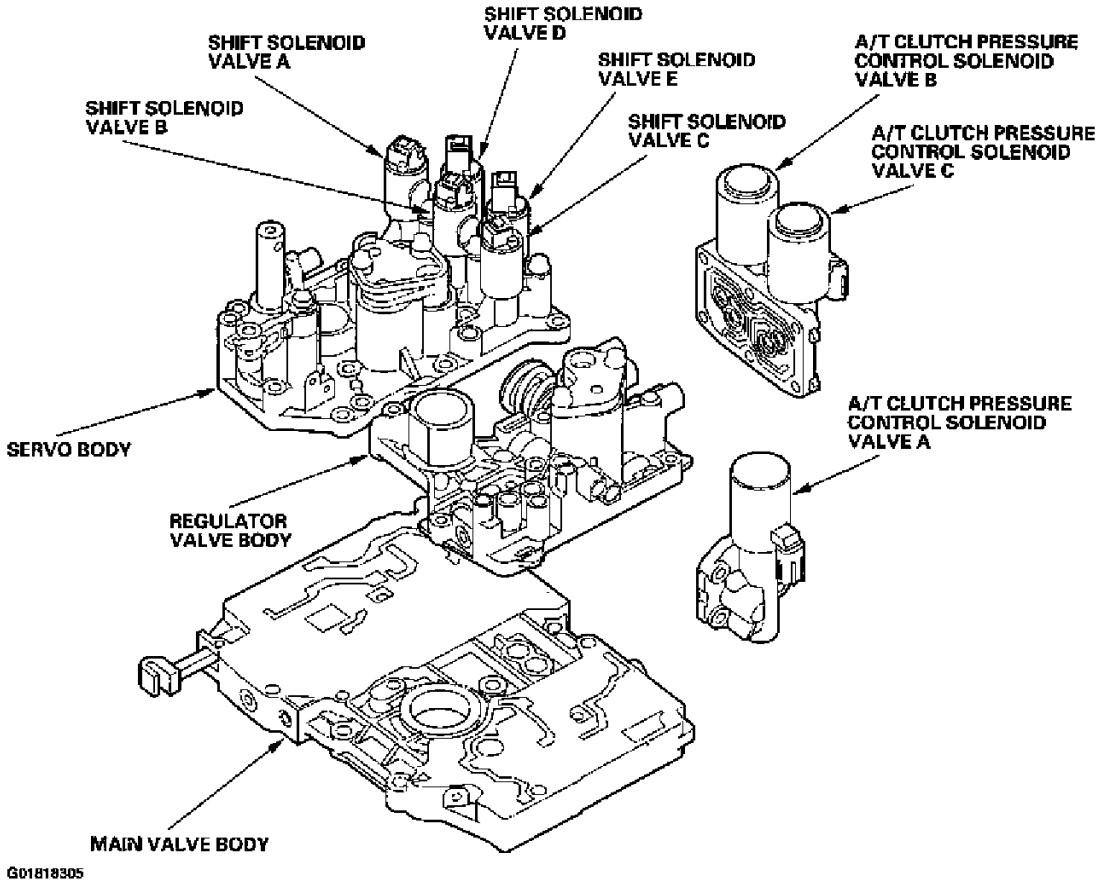


Fig. 49: Identifying Valve Body Components

Main Valve Body

The main valve body contains the manual valve, the shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off and to control hydraulic pressure going to the hydraulic control system.

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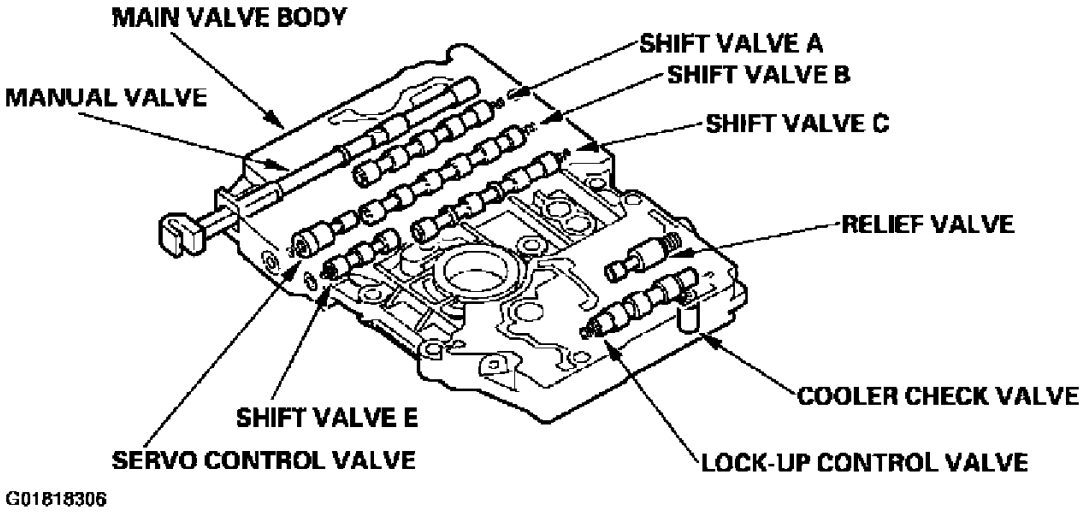


Fig. 50: Identifying Main Valve Body Components

Regulator Valve Body

The regulator valve body contains the regulator valve, the torque converter check valve, lock-up shift valve, and the 1st and 3rd accumulators.

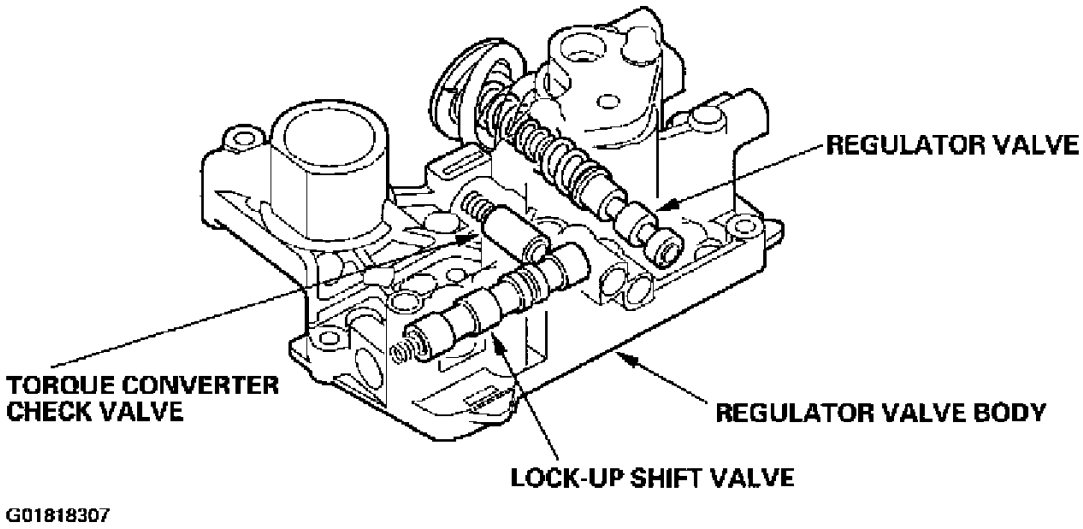


Fig. 51: Identifying Regulator Valve Body Components

Regulator Valve

The regulator Valve maintains a constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubrication system and torque converter. The fluid from the ATF

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pump flows through B and C. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the right side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve moves to the left side. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from C through torque converter also changes. This operation is continued, maintaining the line pressure.

NOTE: When used, "left" or "right" indicates direction on the illustration below.

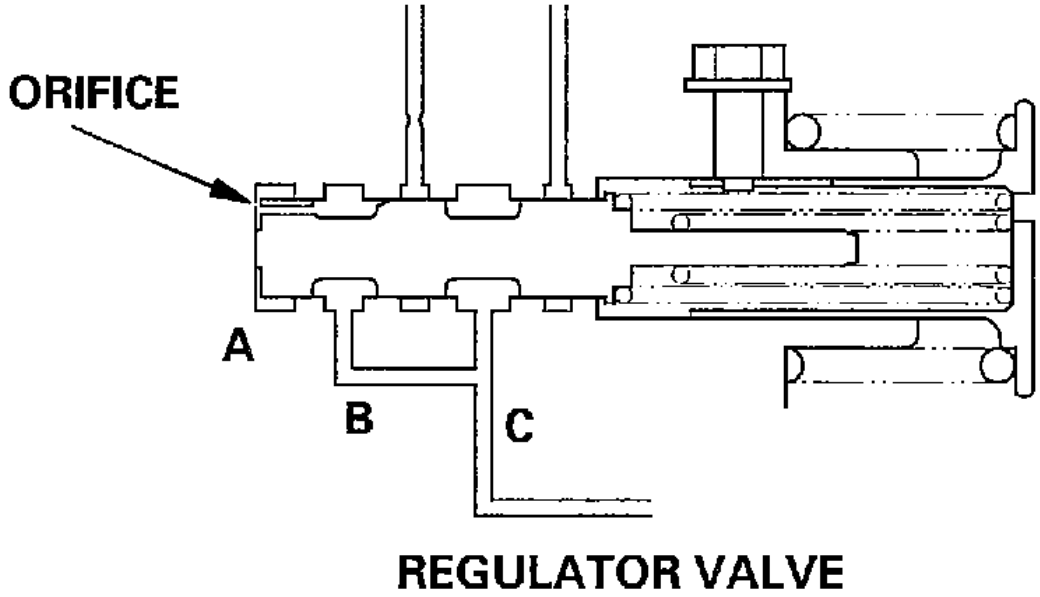


Fig. 52: Identifying Regulator Valve

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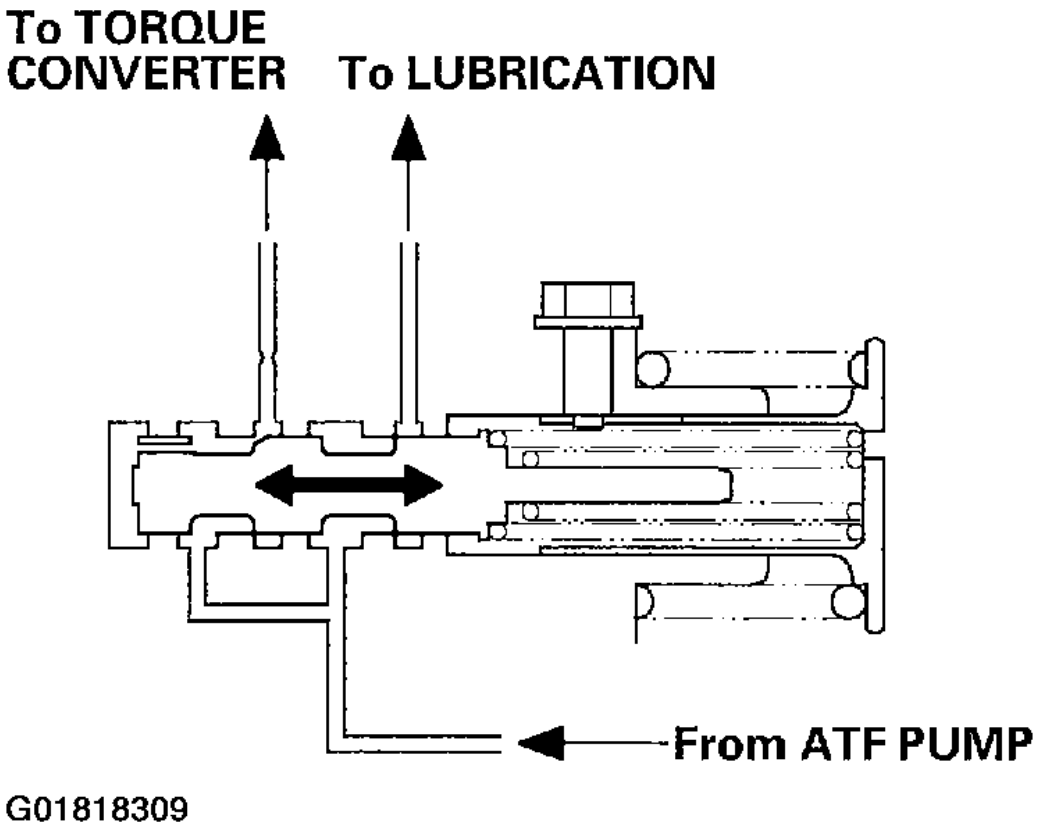


Fig. 53: Regulator Valve Operation

Increases in hydraulic pressure according to torque are performed by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (Torque Converter Range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.

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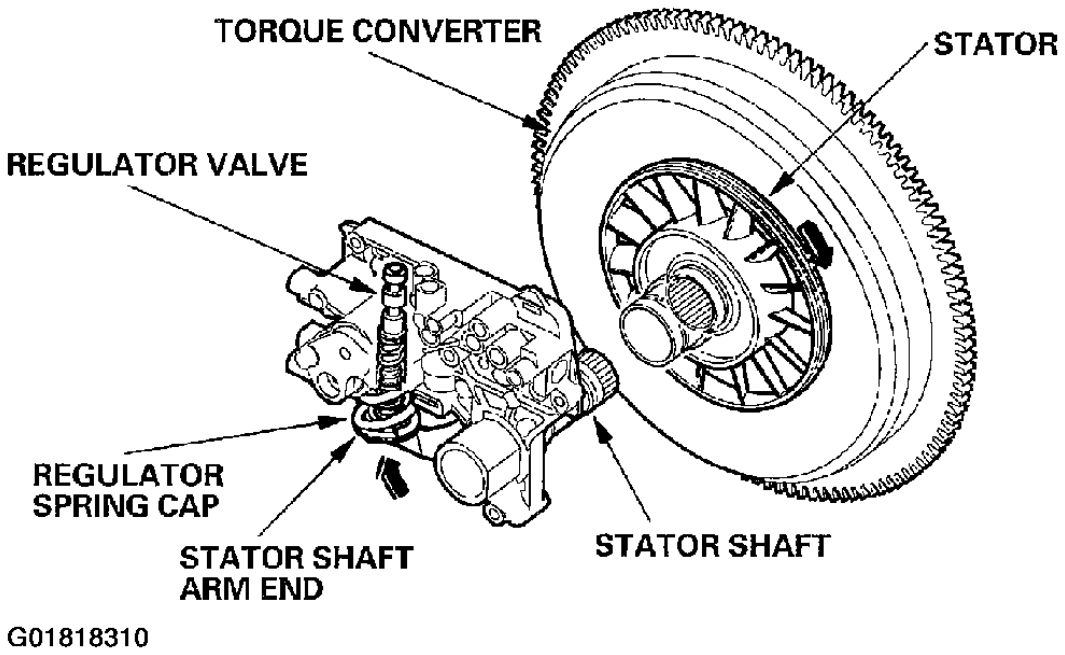


Fig. 54: Locating Regulator Valve

Servo Body

The servo body contains the servo valve, the shift valve D, accumulators for 2nd, 4th, and 5th, and shift solenoid valves for A, B, C, D, and E.

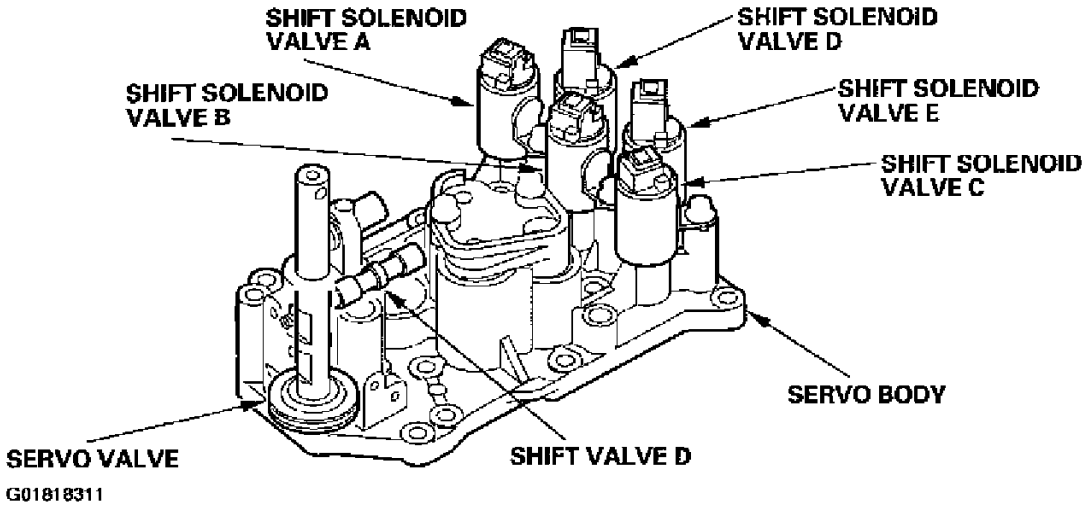


Fig. 55: Identifying Servo Body Components

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Accumulator

The accumulators are located in the regulator valve body and the servo body. The regulator valve body contains the 1st and 3rd accumulators, and the servo body contains the 2nd, 4th, and 5th accumulators.

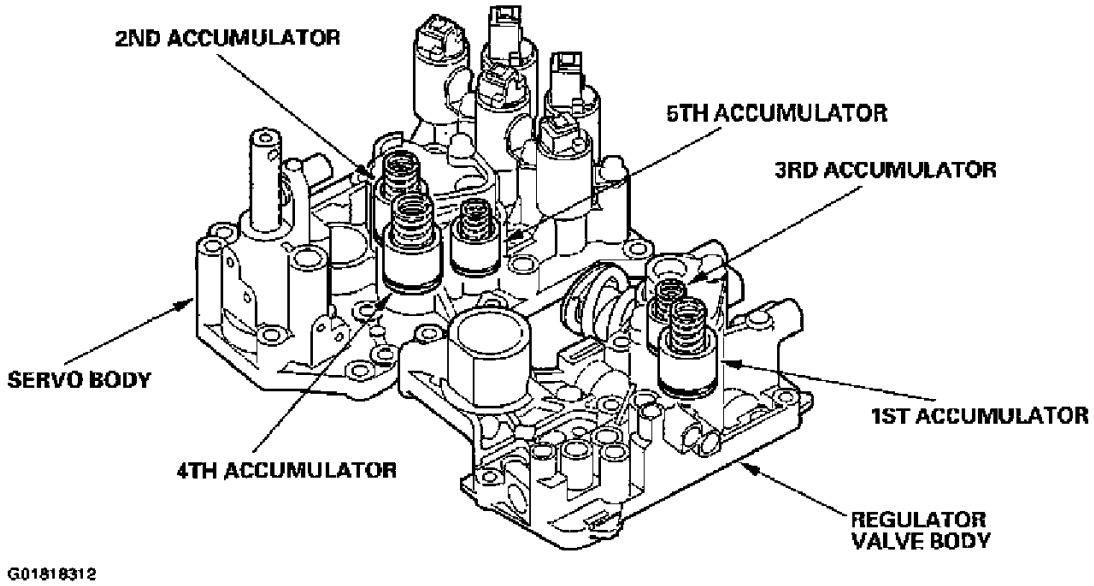


Fig. 56: Identifying Accumulators

HYDRAULIC FLOW

Distribution of Hydraulic Pressure

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that's regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve, and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves ON and OFF. The shift solenoid valve intercepts line pressure from the ATF pump via the manual valve when the shift solenoid valve is OFF. When the shift solenoid valve is turned ON, line pressure changes to shift solenoid valve pressure at the shift solenoid valve, then the solenoid valve pressure flows to the shift valve. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of the hydraulic circuit. The PCM also controls A/T clutch pressure control solenoid valves A, B, and C. The A/T clutch pressure control solenoid valves regulate hydraulic pressure, and apply the pressure to the clutches to engage smoothly. The clutches receive optimum clutch pressure which is regulated by the A/T clutch pressure control solenoid valves for comfortable driving and shifting under all conditions.

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PORT NO.	DESCRIPTION OF PRESSURE	PORT NO.	DESCRIPTION OF PRESSURE
1	LINE	SB	SHIFT SOLENOID VALVE B
3	LINE	SC	SHIFT SOLENOID VALVE C
3'	LINE	SD	SHIFT SOLENOID VALVE D
4	LINE	SE	SHIFT SOLENOID VALVE E
4'	LINE	10	1ST CLUTCH
4''	LINE	20	2ND CLUTCH
7	LINE	30	3RD CLUTCH
1A	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A	40	4TH CLUTCH
1B	LINE	50	5TH CLUTCH
3A	LINE	55	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
3B	LINE	55'	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
3C	LINE	56	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
5A	LINE	57	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
5B	LINE	90	TORQUE CONVERTER
5C	LINE	91	TORQUE CONVERTER
5D	LINE	92	TORQUE CONVERTER
5E	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B	93	ATF COOLER
5F	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A or B	94	TORQUE CONVERTER
5G	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B	95	LUBRICATION
5H	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	96	TORQUE CONVERTER
5J	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	97	TORQUE CONVERTER
5K	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	99	SUCTION
5L	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	X	DRAIN
5N	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	HX	HIGH POSITION DRAIN
SA	SHIFT SOLENOID VALVE A	AX	AIR DRAIN

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Fig. 57: Distribution Of Hydraulic Pressure At The Ports

N Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valves are as follows:

- Shift solenoid valve A: OFF Shift valve A stays on right side
- Shift solenoid valve B: ON Shift valve B moves to left side
- Shift solenoid valve C: ON Shift valve C moves to left side
- Shift solenoid valve D: OFF Shift valve D stays on left side
- Shift solenoid valve E: OFF Shift valve E stays on left side

Line pressure (1) flows to the shift solenoid valves and the A/T clutch pressure control solenoid valve A, and changes to A/T clutch pressure control solenoid valve A pressure (55) at the A/T clutch pressure control solenoid valve A. A/T clutch pressure control solenoid valve A pressure (55) becomes line pressure (1B) at the shift valve A, and stops at the manual valve. Under this condition, hydraulic pressure is not applied to the clutches.

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NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

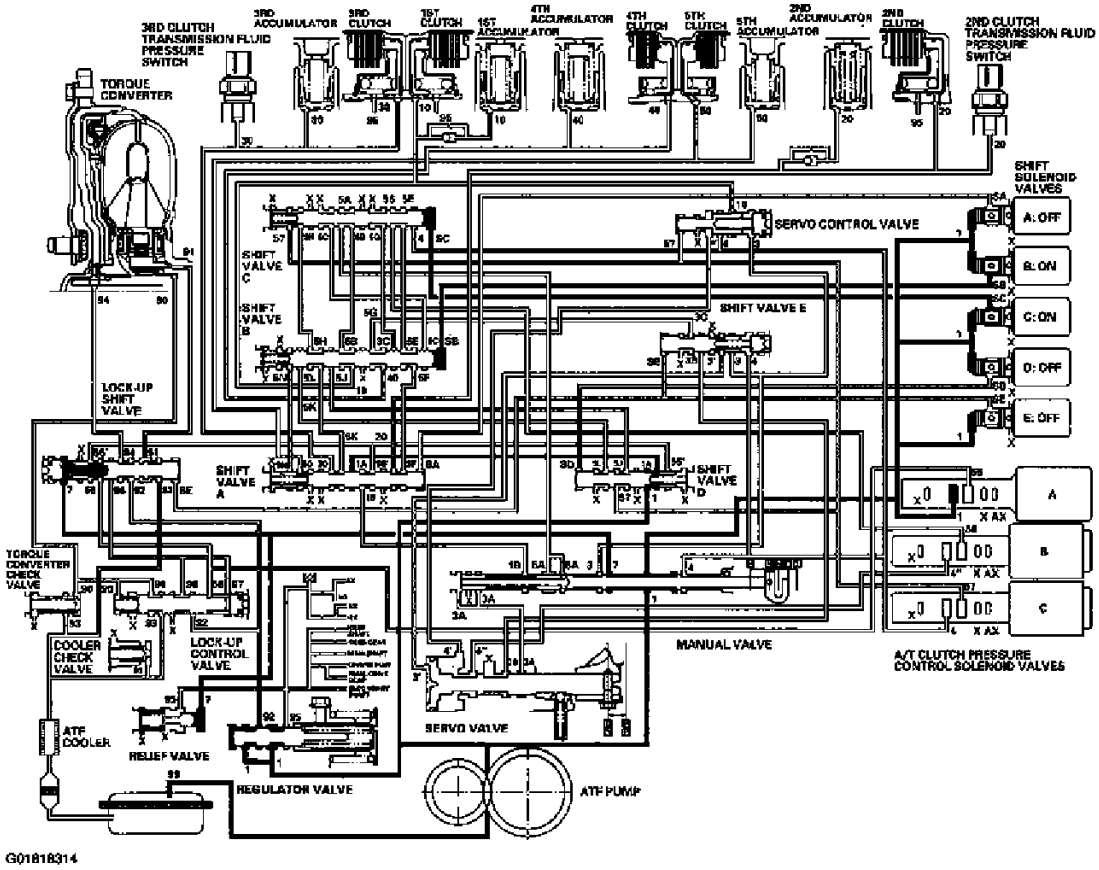


Fig. 58: N Position Hydraulic Flow

D Position: 1st gear shifting from N position

Shift solenoid valves remain the same as in the **N** position, when shifting to the **D** position from **N** . The manual valve is moved to the **D** position, and switches the port of line pressure (4) leading to the A/T clutch pressure control solenoid valve C. Hydraulic pressure to the 1st clutch from the A/T clutch pressure control solenoid valve A is available as shift solenoid valve A is OFF, B and C stay ON. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at the shift valve B, and flows to the 1st clutch. The 1st clutch is engaged gently when shifting to the **D** position from **N** .

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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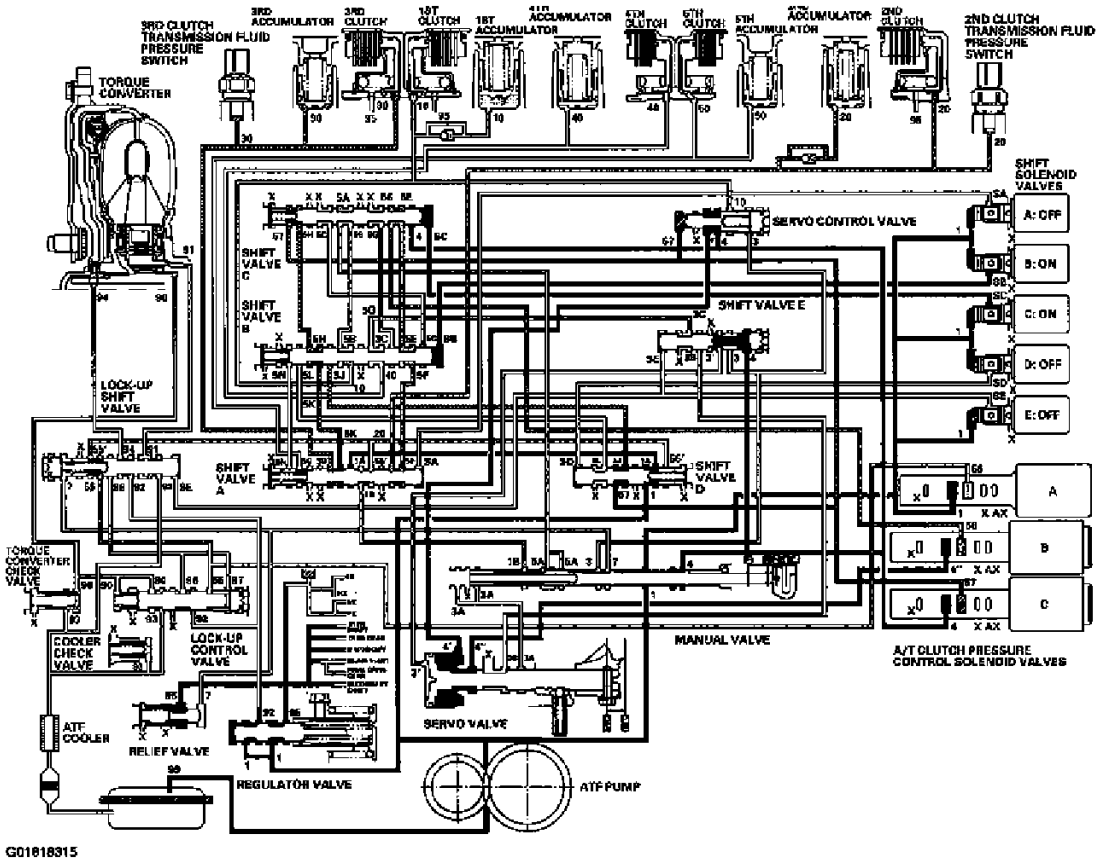


Fig. 59: D Position: 1st Gear Shifting From N Position Hydraulic Flow

D Position: Driving in 1st gear

The PCM turns shift solenoid valves A ON, and keeps B and C ON, and D and E OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to uncover the line pressure port leading to the 1st clutch, and to cover A/T clutch pressure control solenoid valve pressure port.

Fluid flows to the 1st clutch by way of:

Line pressure (1) --> Shift valve D--Line pressure (1A) --> Shift valve A--Line pressure (1B) Manual valve--Line pressure (5A) --> Shift valve C--Line pressure (5B) --> Shift valve B--1st clutch pressure (10) --> 1st clutch

The 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch, is engaged securely.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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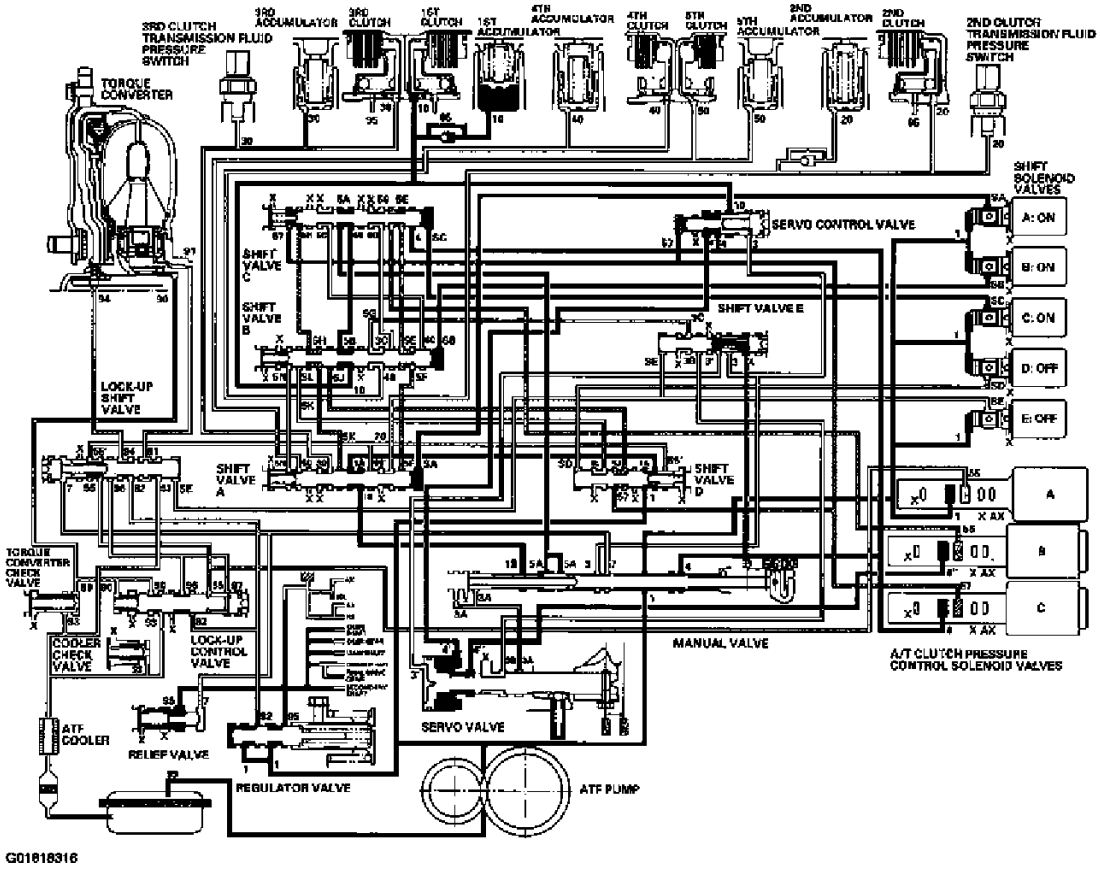


Fig. 60: D Position: Driving In 1st Gear Hydraulic Flow

D Position: Shifting between 1st gear & 2nd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve A OFF, and keeps B and C ON, and D and E OFF. Shift solenoid valve A pressure (SA) in the right side of the shift valve A is released. Shift valve A is moved to the right side to uncover the ports of A/T clutch pressure control solenoid valve pressure leading to the 1st and 2nd clutches. The PCM controls the A/T clutch pressure control solenoid valve to regulate hydraulic pressure. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at shift valve B, and A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at shift valve A. The 1st and 2nd clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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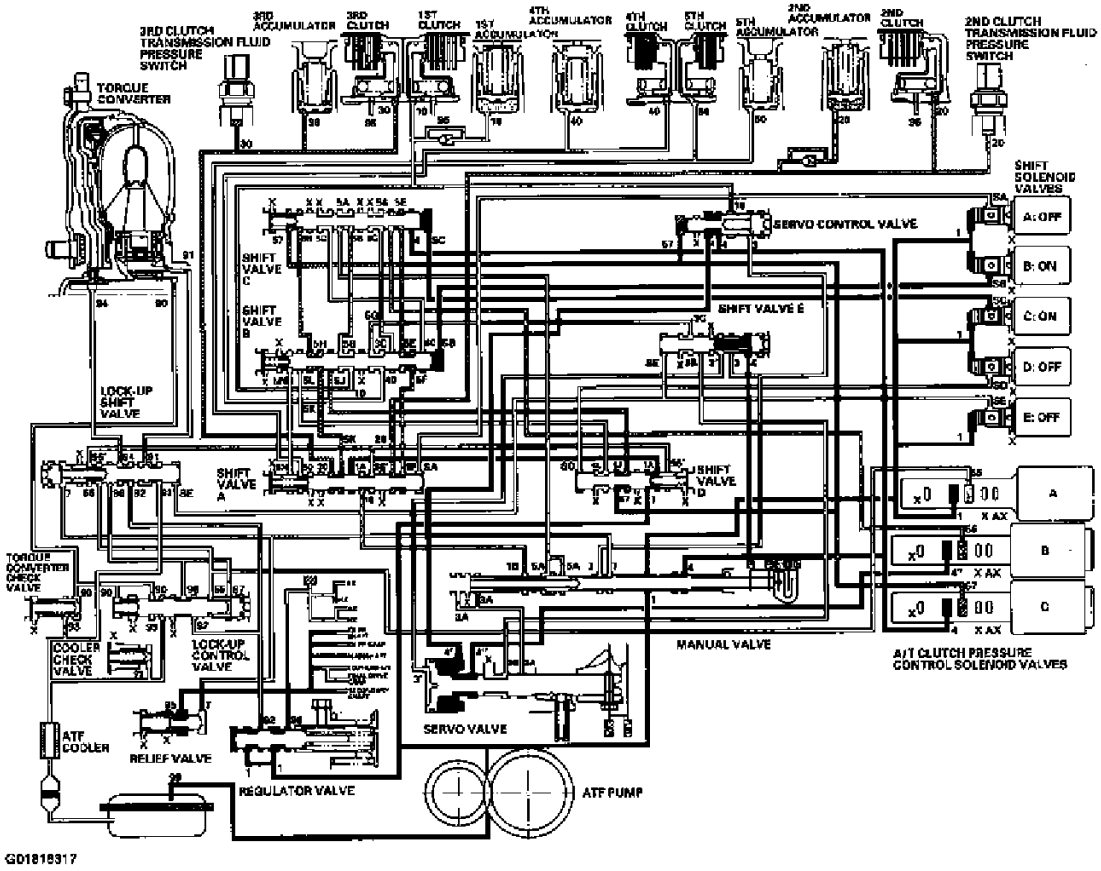


Fig. 61: D Position: Shifting Between 1st Gear & 2nd Gear Hydraulic Flow

D Position: Driving in 2nd gear

The PCM turns shift solenoid valves C OFF, D ON, and keeps A and E OFF, and B ON. Shift solenoid valve C pressure (SC) in the right side of the shift valve C is released. Shift valve C is moved to the right side to switch the ports. This movement covers A/T clutch pressure control solenoid valve pressure ports to stop at the shift valves C and A, and uncover the line pressure port leading to the 2nd clutch.

Fluid flows to 2nd clutch by way of:

Line pressure (1) --> Manual valve--Line pressure (4) --> Shift valve C--Line pressure (5E) --> Shift valve B--Line pressure (5F) --> Shift valve A--2nd clutch pressure (20) --> 2nd clutch

The 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged securely.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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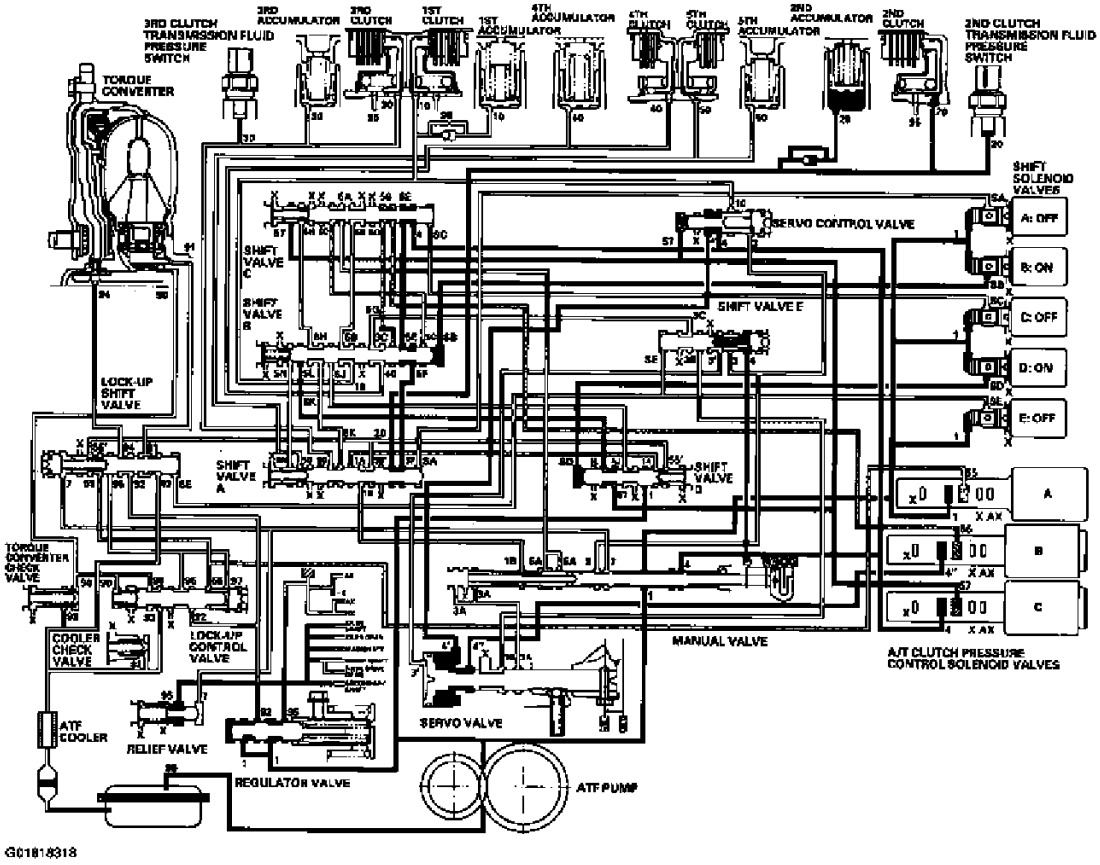


Fig. 62: D Position: Driving In 2nd Gear Hydraulic Flow

D Position: Shifting between 2nd gear & 3rd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve C ON, and keeps A and E OFF, and B and D ON. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C is moved to the left side to uncover the ports of A/T clutch pressure control solenoid valves leading to the 2nd and 3rd clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at the shift valve A, and A/T clutch pressure control solenoid valve C pressure (57) changes to 3rd clutch pressure (30) at the shift valve A. The 2nd and 3rd clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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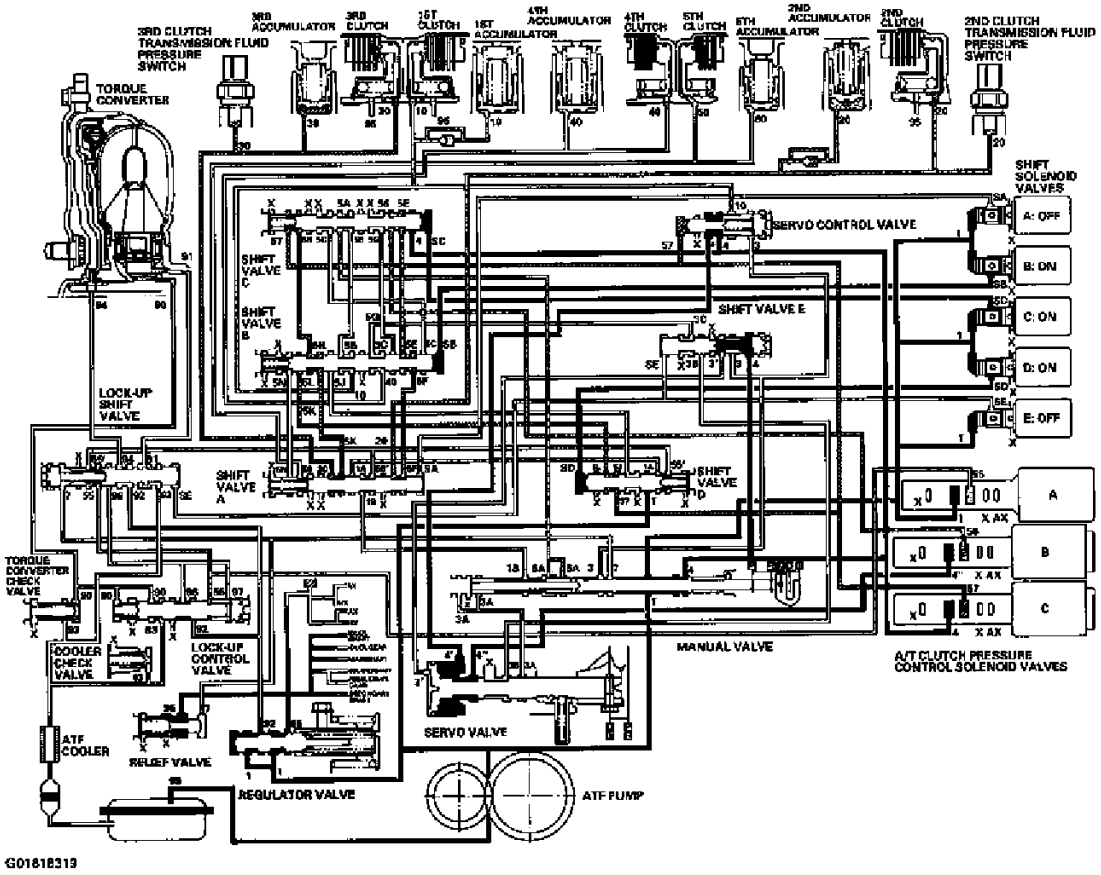


Fig. 63: D Position: Shifting Between 2nd Gear & 3rd Gear Hydraulic Flow

D Position: Driving in 3rd gear

The PCM turns shift solenoid valves A, B, D, and E OFF, and C ON. Shift solenoid valve B pressure (SB) in the right side of shift valve B is moved to the right side. Shift solenoid valve D pressure (SD) in the left side of the shift valve D is released, and the shift valve D is moved to the left side. This valve movement switches A/T clutch pressure control solenoid valve C pressure port leading to the 3rd clutch.

A/T clutch pressure control solenoid valve C pressure (57) changes to (5J) at the shift solenoid valve D and to (5K) at the shift valve B, and becomes 3rd clutch pressure (30) at the shift valve A. The 3rd clutch pressure (30) is applied to the 3rd clutch, and the 3rd clutch is engaged securely.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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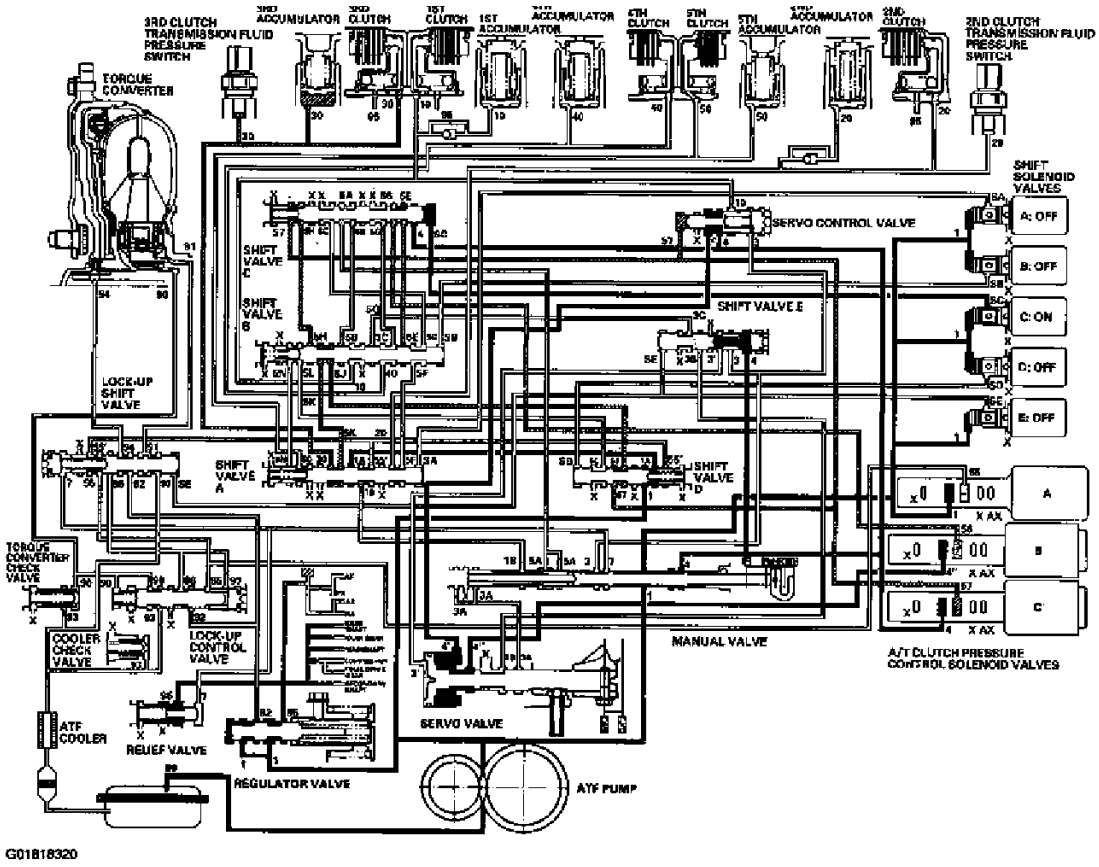


Fig. 64: D Position: Driving In 3rd Gear Hydraulic Flow

D Position: Shifting between 3rd gear & 4th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valves C OFF, and keeps A, B, D, and E OFF. Shift solenoid valve C pressure (SC) in the right side of the shift valve C is released. Shift valve C is moved to the right side to uncover the ports of A/T clutch pressure control solenoid valves B and C pressures leading to the 3rd and 4th clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure changes to 3rd clutch pressure (30) at the shift valve A, and A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at the shift valve B. The 3rd and 4th clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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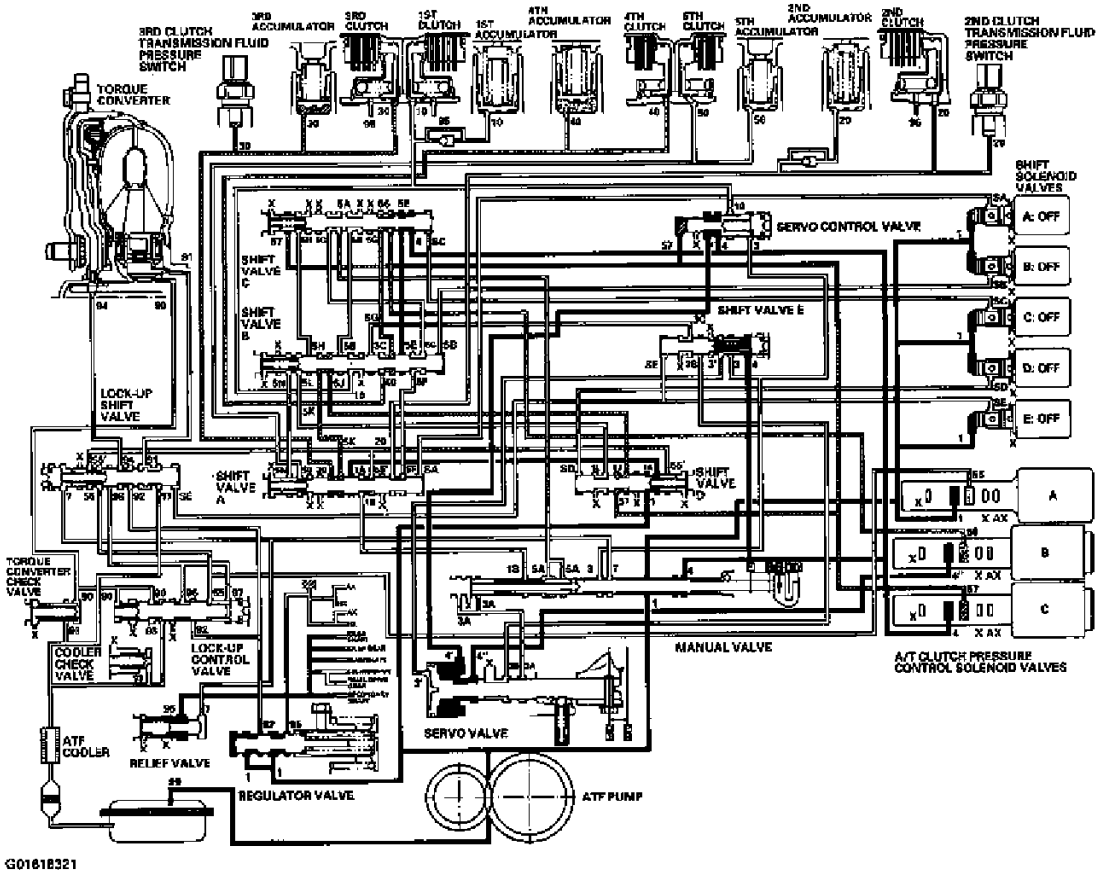


Fig. 65: D Position: Shifting Between 3rd Gear & 4th Gear Hydraulic Flow

D Position: Driving in 4th gear

The PCM turns shift solenoid valves A ON, and keeps B, C, D, and E OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to cover the ports of A/T clutch pressure control solenoid valves A and C leading to the 2nd and 3rd clutches.

A/T clutch pressure control solenoid valve B pressure (56) changes to (5G) at the shift solenoid valve C, and becomes 4th clutch pressure (40) at the shift valve B. The 4th clutch pressure (40) is held to high by A/T clutch pressure control solenoid valve B, and the 4th clutch is engaged securely.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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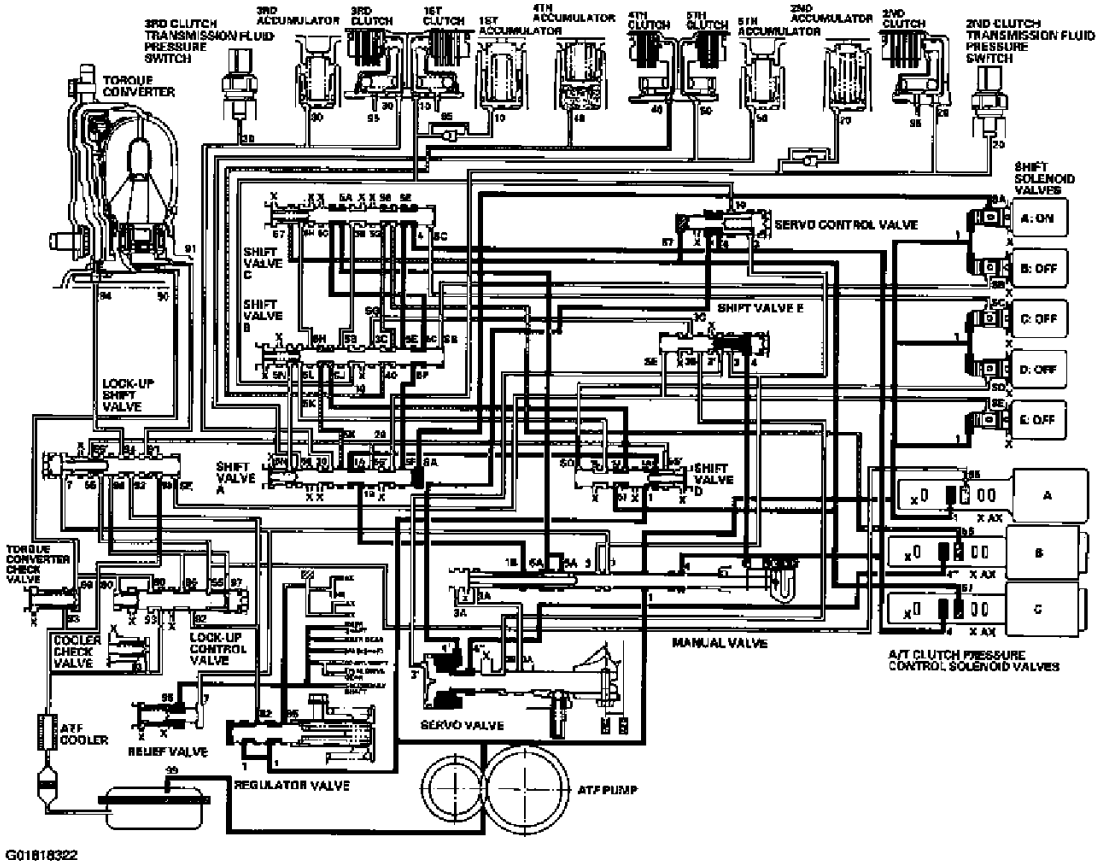


Fig. 66: D Position: Driving In 4th Hydraulic Flow

D Position: Shifting between 4th gear & 5th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valves D ON, and keeps A ON, and B, C, and E OFF. Shift solenoid valve D pressure (SD) in applied to the left side of the shift valve D. Shift valve D is moved to the right side to uncover A/T clutch pressure control solenoid valve C pressure to the 5th clutch. A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at shift valve B. A/T clutch pressure control solenoid valve C pressure (57) changes to (5L) at shift valve D and to (5N) at shift valve B, and becomes 5th clutch pressure (50) at shift valve A. The 4th and 5th clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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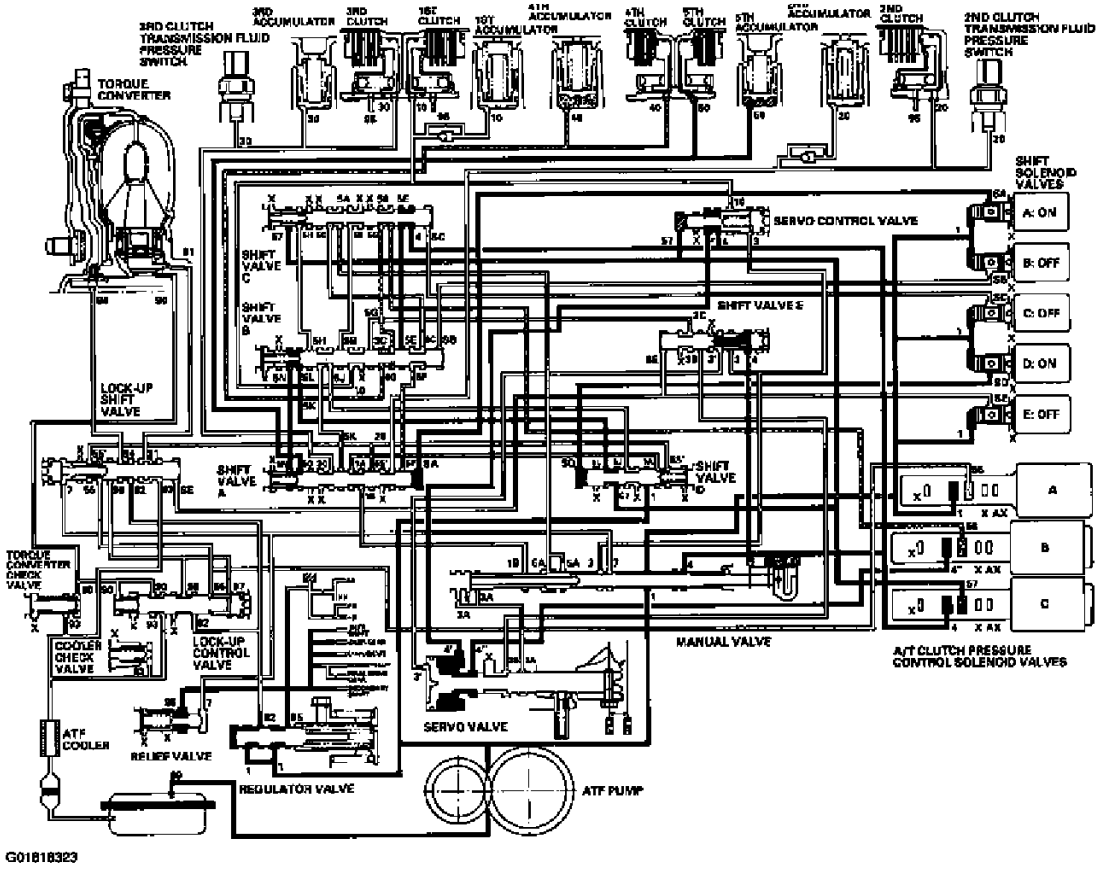


Fig. 67: D Position: Shifting Between 4th Gear & 5th Gear Hydraulic Flow

D Position: Driving in 5th gear

The PCM turns shift solenoid valves C ON, and keeps A and D ON, and B and E OFF. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C is moved to the left side to switch the port of A/T clutch pressure control solenoid valve B pressure to the 4th clutch.

The 5th clutch pressure (50) is held to high by the A/T clutch pressure control solenoid valve C, and the 5th clutch is engaged securely.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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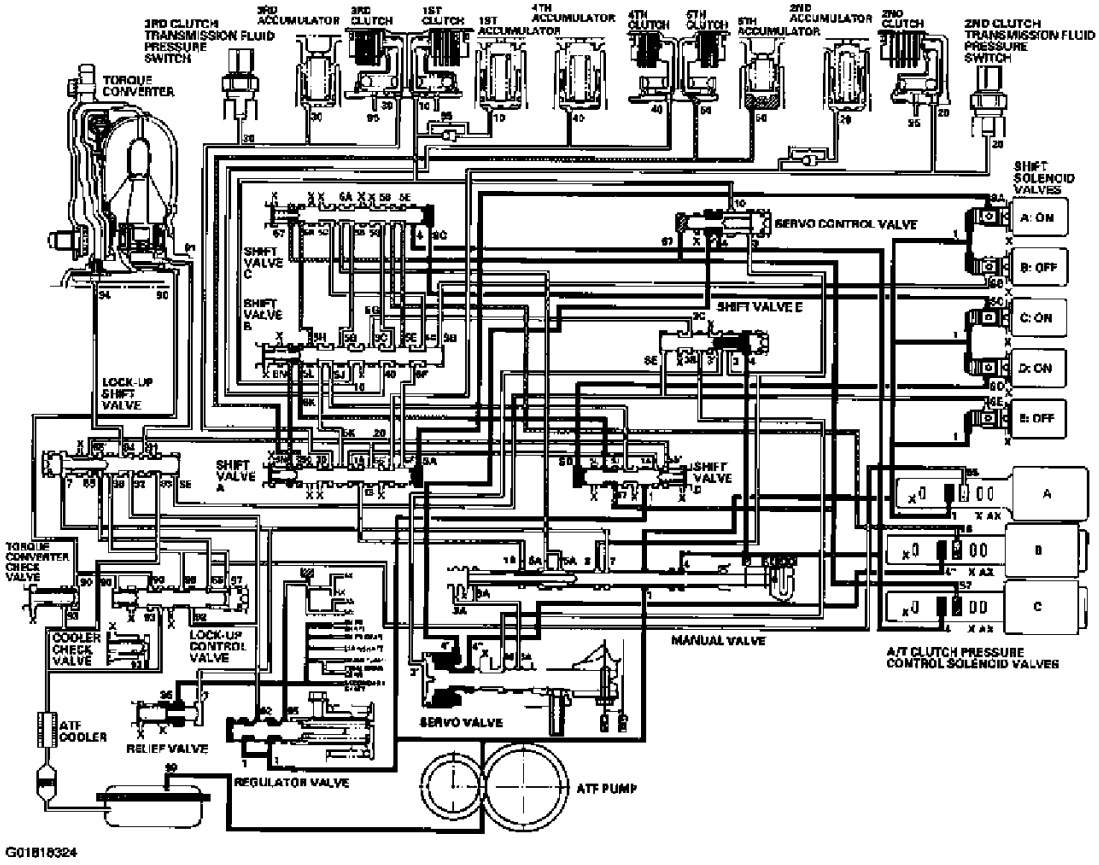


Fig. 68: D Position: Driving In 5th Gear Hydraulic Flow

R Position: Shifting to R position from P or N position

When shifting to the **R** position, the PCM turns shift solenoid valves B and E ON, and A, C, and D OFF. Shift solenoid valve B pressure (SB) is applied to the right side of the shift valve B, and the shift valve B is moved to the left side. Shift solenoid valve E pressure (SE) is applied to the left side of shift valve E, and shift valve E is moved to the right side. Line pressure (1) changes to (3) at the manual valve, and flows to the servo valve via the shift valve E. The servo valve is moved to reverse range position. Movement of the shift valves B and E, and servo valve creates 4th clutch line pressure between the 4th clutch and the A/T clutch pressure control solenoid valve A. The 4th clutch pressure (40) is applied to the 4th clutch, and the 4th clutch is engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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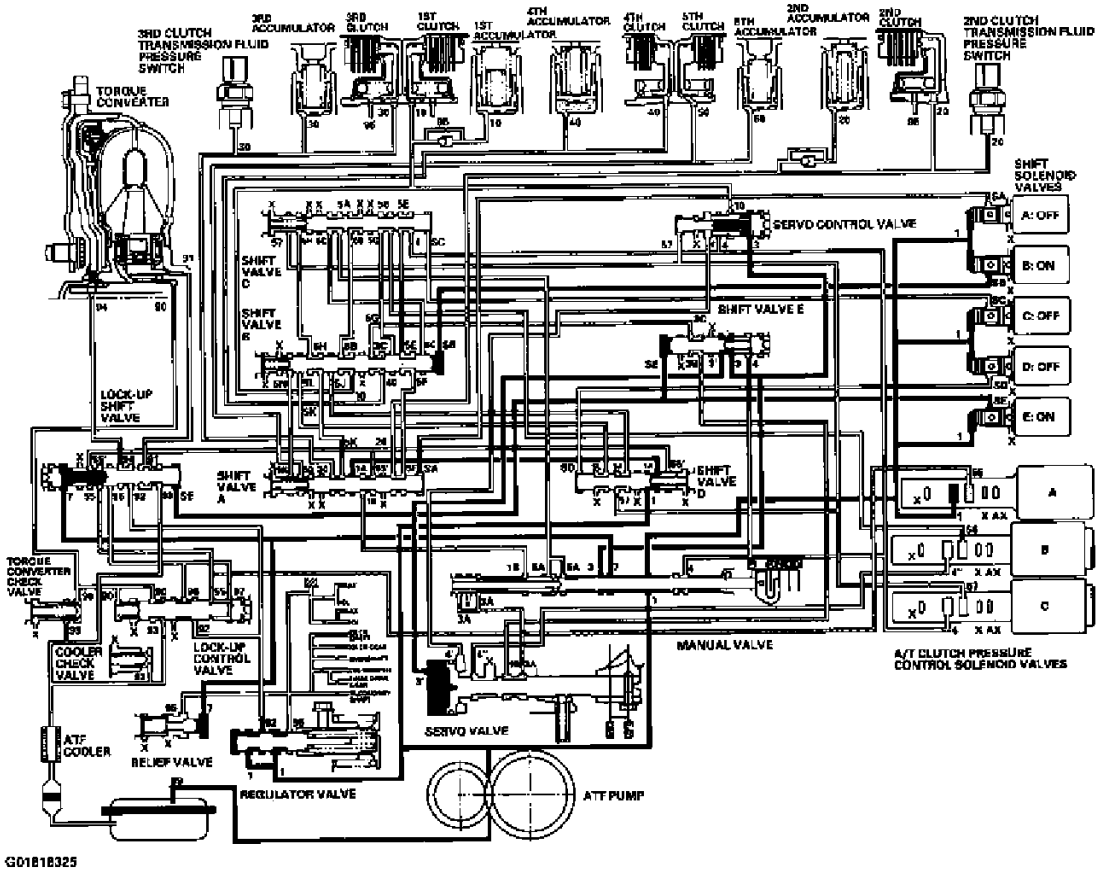


Fig. 69: R Position: Shifting To R Position From P Or N Position Hydraulic Flow

R Position: Driving in reverse gear

After starting off in reverse gear, the PCM turns shift solenoid valves A ON, and keeps B and E ON, and C and D OFF. Shift solenoid valve A port (SA) is applied to the right side of shift valve A to cover A/T clutch pressure control solenoid valve A pressure, and to uncover the port leading to the 4th clutch, creating full line pressure. The 4th clutch is engaged securely with line pressure.

Reverse Inhibitor Control

While the vehicle is moving forward, the PCM keeps shift solenoid valve E OFF. The shift valve E covers the port of line pressure (3') leading to the servo valve reverse position. The servo valve cannot be shifted to reverse position, and hydraulic pressure is not applied to 4th clutch from the servo valve for reverse; as a result, power is not transmitted to the reverse direction.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

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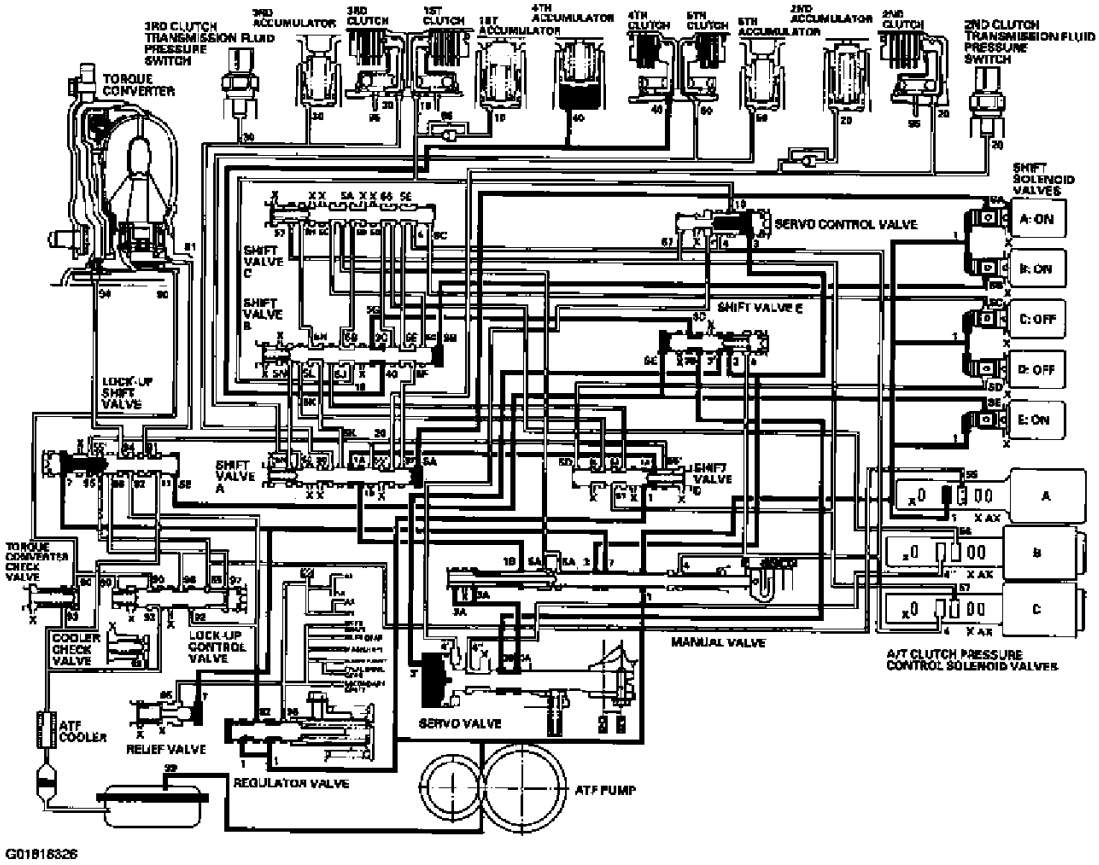


Fig. 70: Reverse Inhibitor Control Hydraulic Flow

P Position

Shift solenoid valves B and E are turned ON, and A, C, and D turned OFF by the PCM. Line pressure (1) flows to the shift solenoid valves and the A/T clutch pressure control solenoid valve A. Line pressure (3) changes to (3') at the shift valve E, and flows to the servo valve. The servo valve is moved to reverse/park position. Hydraulic pressure is not applied to the clutches.

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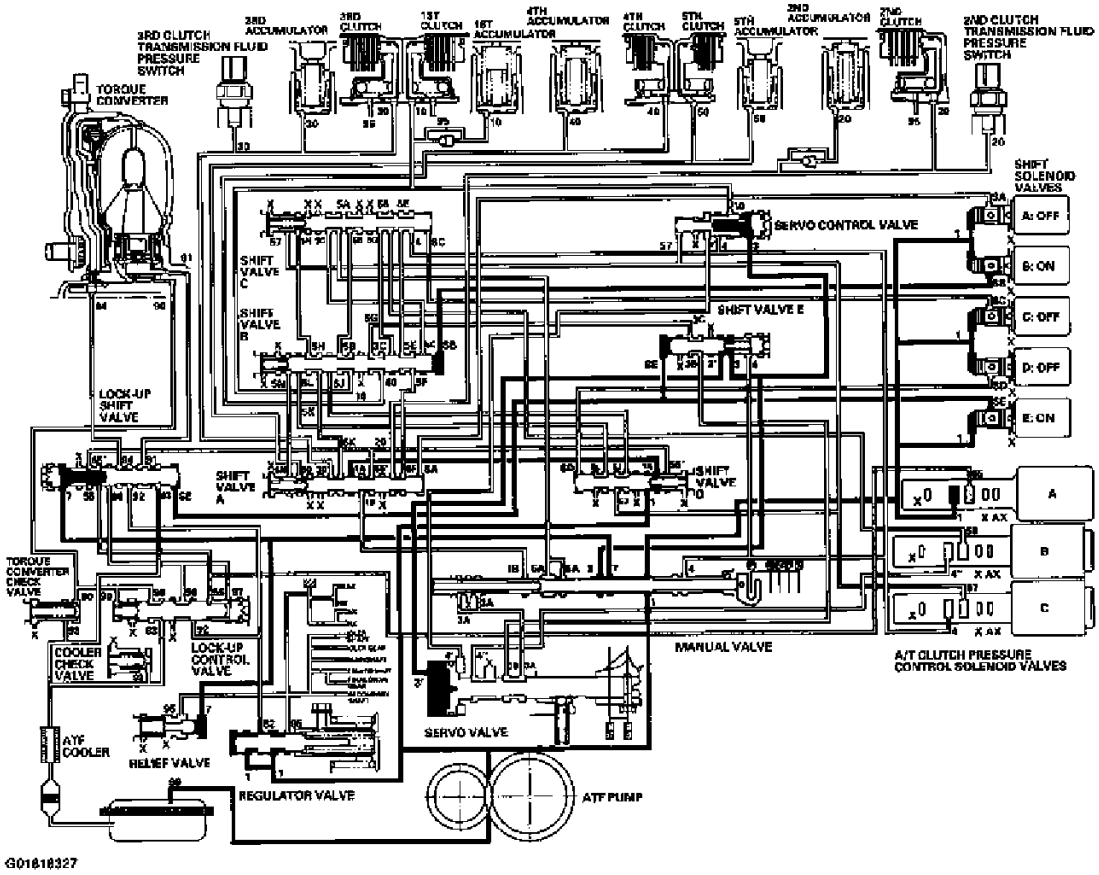


Fig. 71: P Position Hydraulic Flow

LOCK-UP SYSTEM

The lock-up mechanism of the torque converter clutch operates in **D** position (2nd, 3rd, 4th, and 5th), in $\mathbf{D}_3$ position (2nd and 3rd), and **M** (sequential sportshift mode) position (3rd, 4th, and 5th). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft.

Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve lock-up on and off. The A/T clutch pressure control solenoid valve A and the lock-up control valve control the amount of the lock-up conditions.

Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)

Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entering from the chamber between the pump and stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; the torque converter clutch lock-up is ON, and the mainshaft rotates at the same speed as the

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engine.

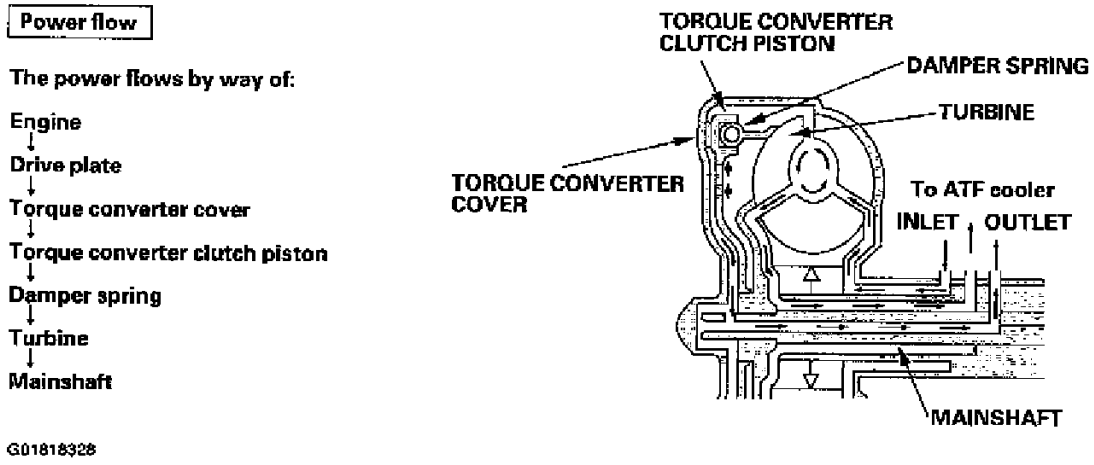


Fig. 72: Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch) Fluid Flow

Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)

Fluid entering from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out through the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter, and the torque converter lock-up clutch is released; torque converter clutch lock-up is OFF.

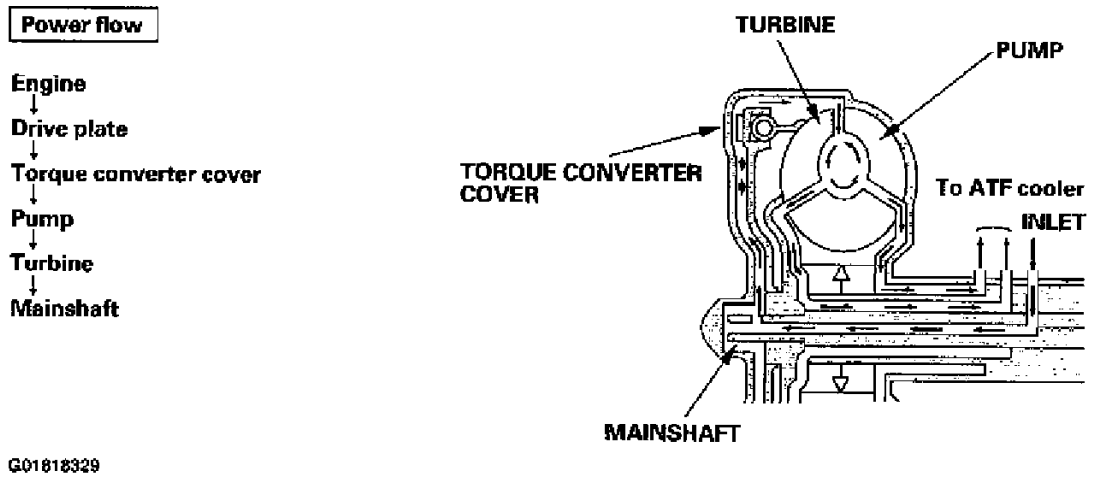


Fig. 73: Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch) Fluid Flow

No Lock-up

Shift solenoid valve E is turned OFF by the PCM, and shift solenoid valve E pressure (SE) is not applied to the

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lock-up shift valve. The lock-up shift valve stays to the right to uncover the torque converter pressure ports leading to the left side of the torque converter and releasing pressure from the right side of the torque converter. Torque converter pressure (92) changes to (94) at the lock-up shift valve, and enters into the left side of the torque converter to disengage the torque converter clutch. This keeps the torque converter clutch piston keeps away from the torque converter cover and the torque converter lock-up clutch is OFF.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

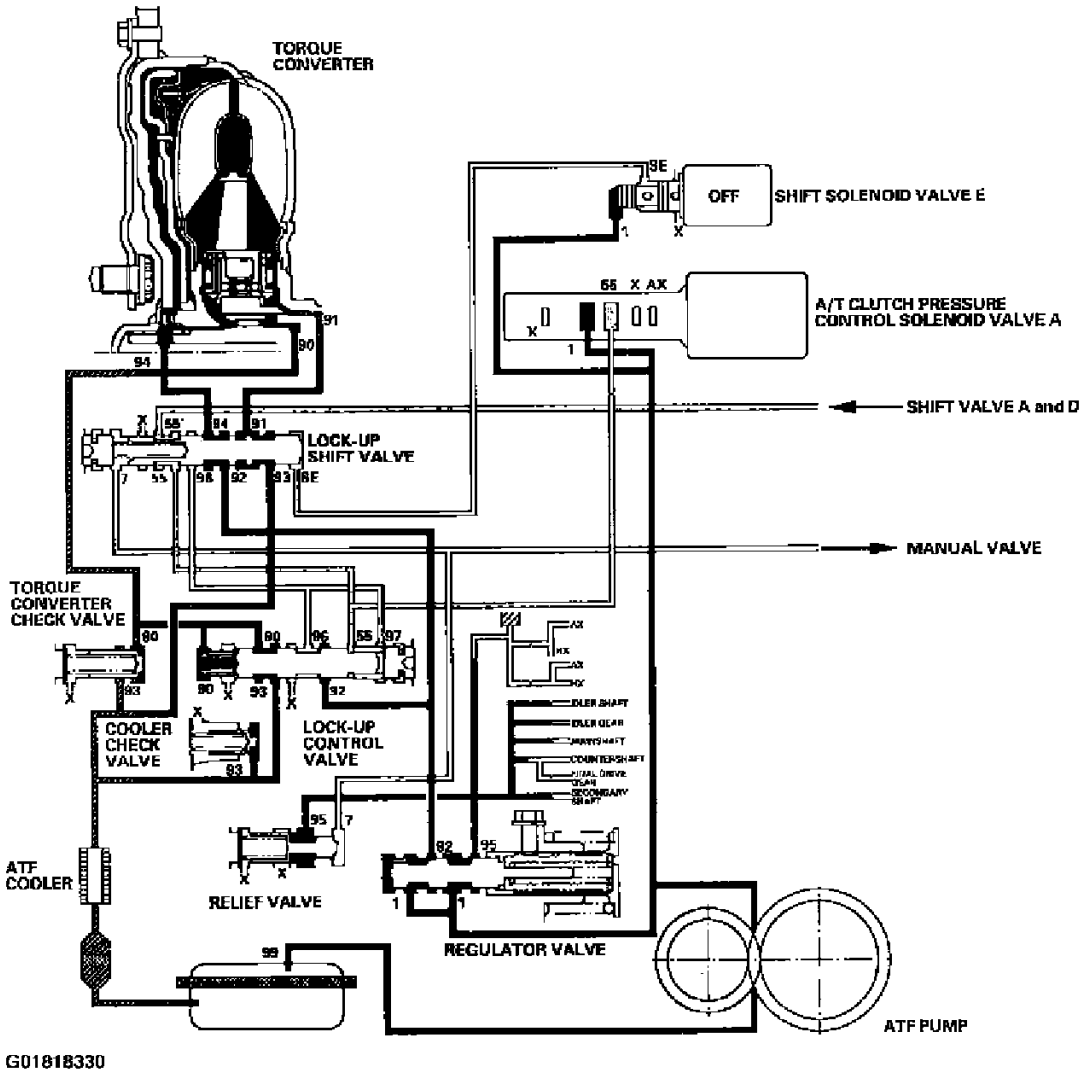


Fig. 74: No Lock-up Fluid Flow

Partial Lock-up

As the speed of the vehicle reaches the prescribed value, shift solenoid valve E is turned ON by the PCM, and shift solenoid valve E pressure (SE) is applied to the right side of the lock-up shift valve. The lock-up shift

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valve is moved to the left side to switch the torque converter pressure (91) port, which goes to the right side of the torque converter, and the port of torque converter pressure (94) is released from the left side of the torque converter. Torque converter pressure (91) flows to the right side of the torque converter to engage the torque converter clutch. The PCM also controls the A/T clutch pressure control solenoid valve A to regulate A/T clutch pressure control solenoid valve A pressure (55) is applied to the lock-up shift valve and lock-up control valve. The position of the lock-up control valve depends on A/T clutch pressure control solenoid valve A pressure (55) and torque converter pressure released from the torque converter. The lock-up control valve controls the amount of torque converter clutch lock-up until fluid between the clutch piston and torque converter cover is fully released; the torque converter clutch is in partial lock-up condition.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

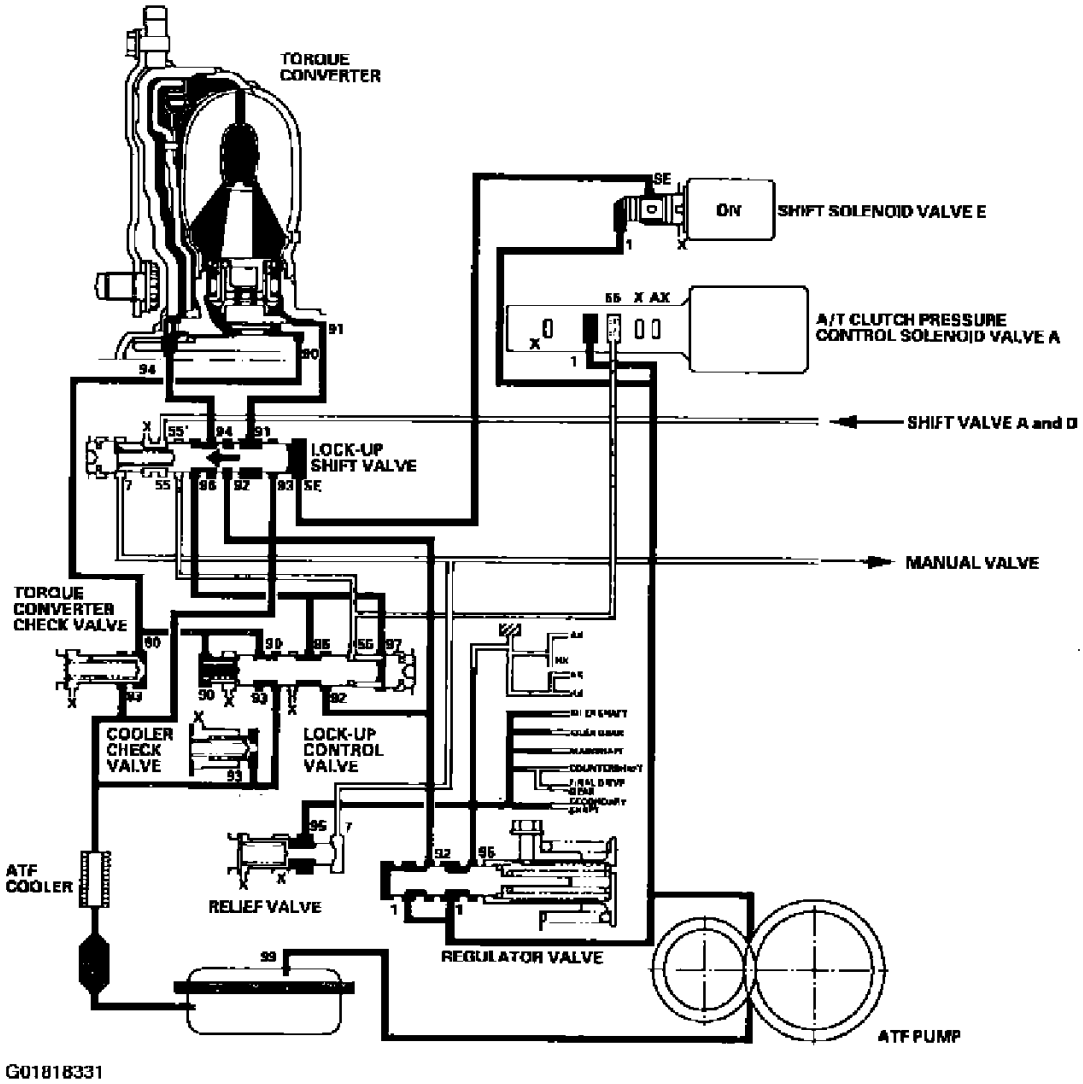


Fig. 75: Partial Lock-up Fluid Flow

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Full Lock-up

When the vehicle speed increases, the PCM sends a signal to A/T clutch pressure control solenoid valve A to increase A/T clutch pressure control solenoid valve A pressure (55), and the lock-up control valve is moved to the left by the increased pressure. Then increased converter pressure (94) from the left side of the torque converter is completely released at the lock-up control valve, and torque converter pressure (91) engages the torque converter clutch securely; the torque converter clutch is in full lock-up condition.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

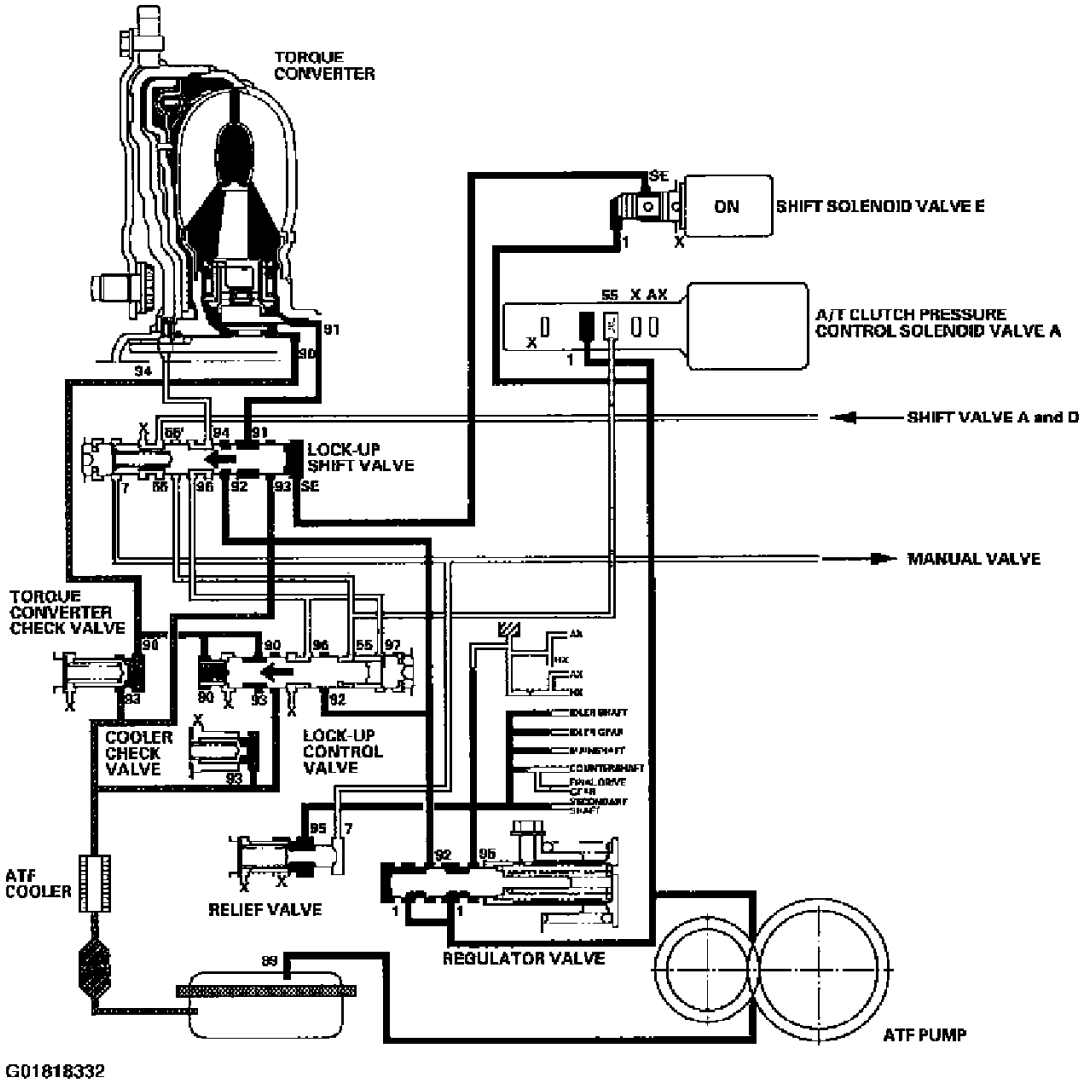


Fig. 76: Full Lock-up Fluid Flow

SHIFT LEVER MECHANISM

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The shift lever has five positions; the **P** , **R** , **N** , **D** , and $\mathbf{D}_3$ positions. The **D** position has two modes; automatic shift mode and sequential sportshift mode with the shift lever moved to the **M** position. The shift lever movement and position is indicated by the A/T gear position indicator panel. The shift lever can be shifted out of the **P** position and into the **R** position without pressing the shift lever. The shift lock/reverse lock mechanism is an additional shift lever lockout mechanism. The shift lever is engaged with the shift lever link in the **P** , **R** , **N** , **D** , and $\mathbf{D}_3$ positions. This unit shifts the transmission using the shift cable connected between the shift cable link and the transmission control shaft.

In the **M** position, the shift lever is disengaged from the shift lever link, and the shift lever can be used to shift gears manually between 1st through 5th, much like a manual transmission.

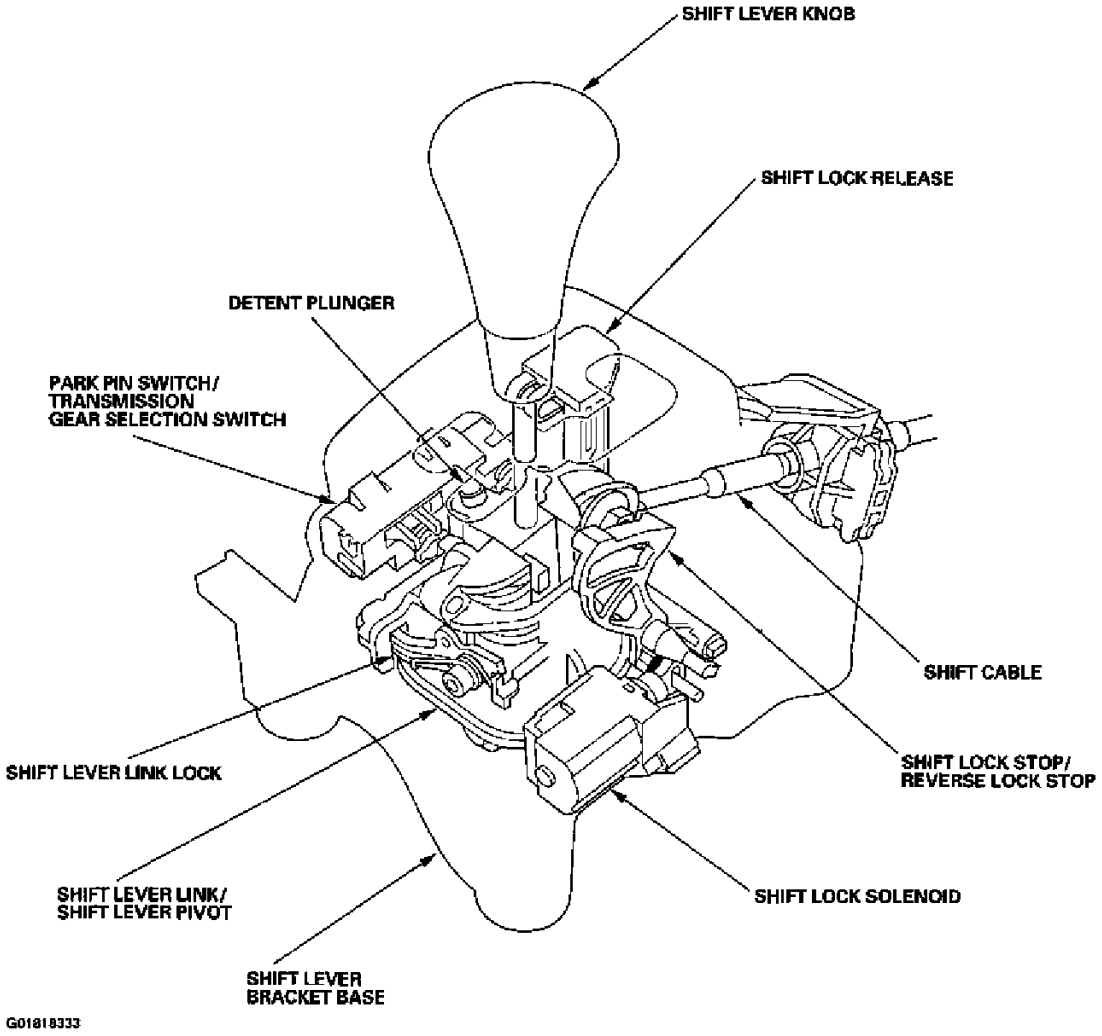


Fig. 77: Identifying Shift Lever Mechanism Components

SHIFT LEVER MECHANISM IN M POSITION

When the shift lever shifts to the **M** position, the shift lever is disengaged from the shift lever link/shift lever

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pivot, and the shift lever link lock pops up to engage with the shift lever bracket base; the shift lever link/shift lever pivot and shifting position in the transmission are held in the **D** position.

The shift lever link lock is spring loaded, it pops up in the **M** position, and does not engage the shift lever link/shift lever pivot in any position except **M** .

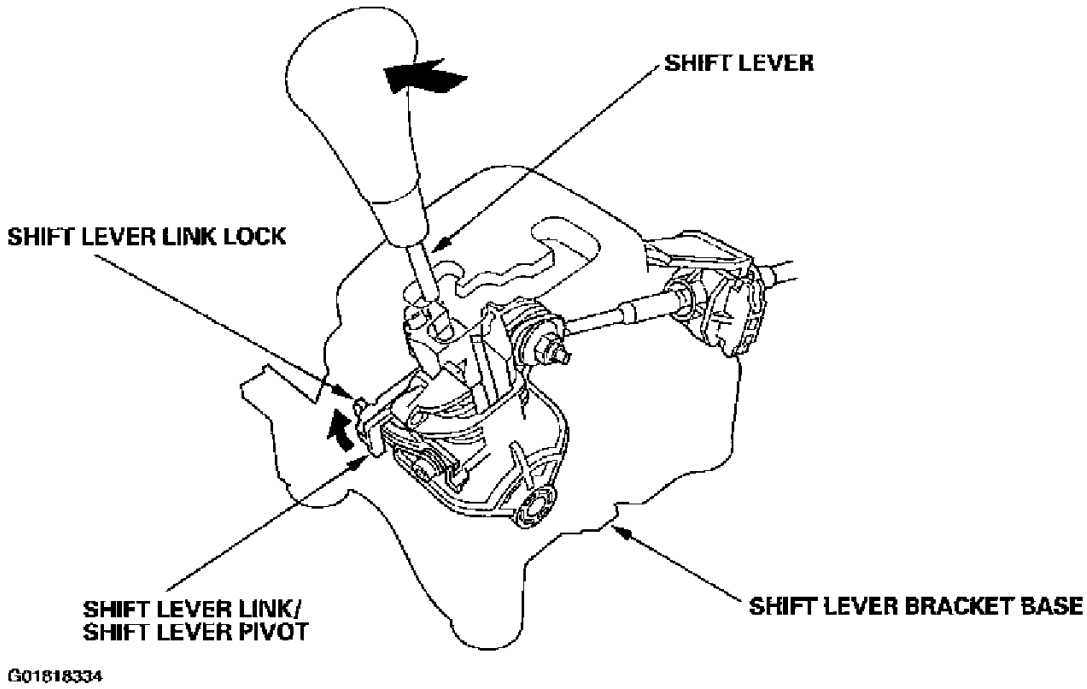


Fig. 78: Shift Lever Mechanism in M Position

The shift lever fits into the **M** position by using a detent plunger with a spring. When shifting to upshift and downshift positions, the detent plunger is depressed by the detent bracket inner wall, and detent plunger spring puts the shift lever back into the neutral position. The detent plunger also works in the **P** position.

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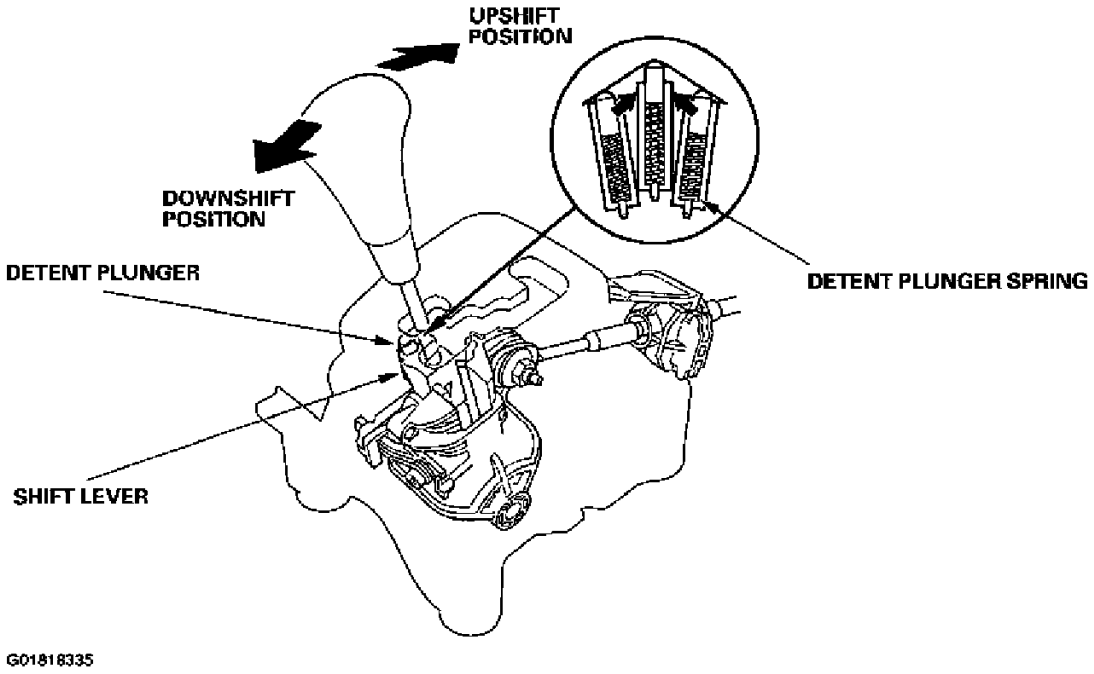


Fig. 79: Shifting To Upshift & Downshift Positions

SHIFT LOCK/REVERSE LOCK MECHANISM

The shift lock system reduces the risk of unintentional engine starting. Starting the engine is possible only in the **P** and **N** positions. The shift lock mechanism consists of the shift lock solenoid, shift lock stop/reverse lock stop, shift lock release, and related parts. The reverse lock mechanism shares the shift lock mechanism. The shift lock solenoid is electronically controlled by the shift lock/reverse lock control system signals. If the shift lock solenoid does not operate, the shift lock/reverse lock mechanism can be released by pressing the shift lock release.

In the **P** position while pressing the brake pedal and releasing the accelerator, the shift lock solenoid is turned ON, and the shift lock solenoid plunger is retracted, releasing the shift lock stop. This allows the shift lever to be moved.

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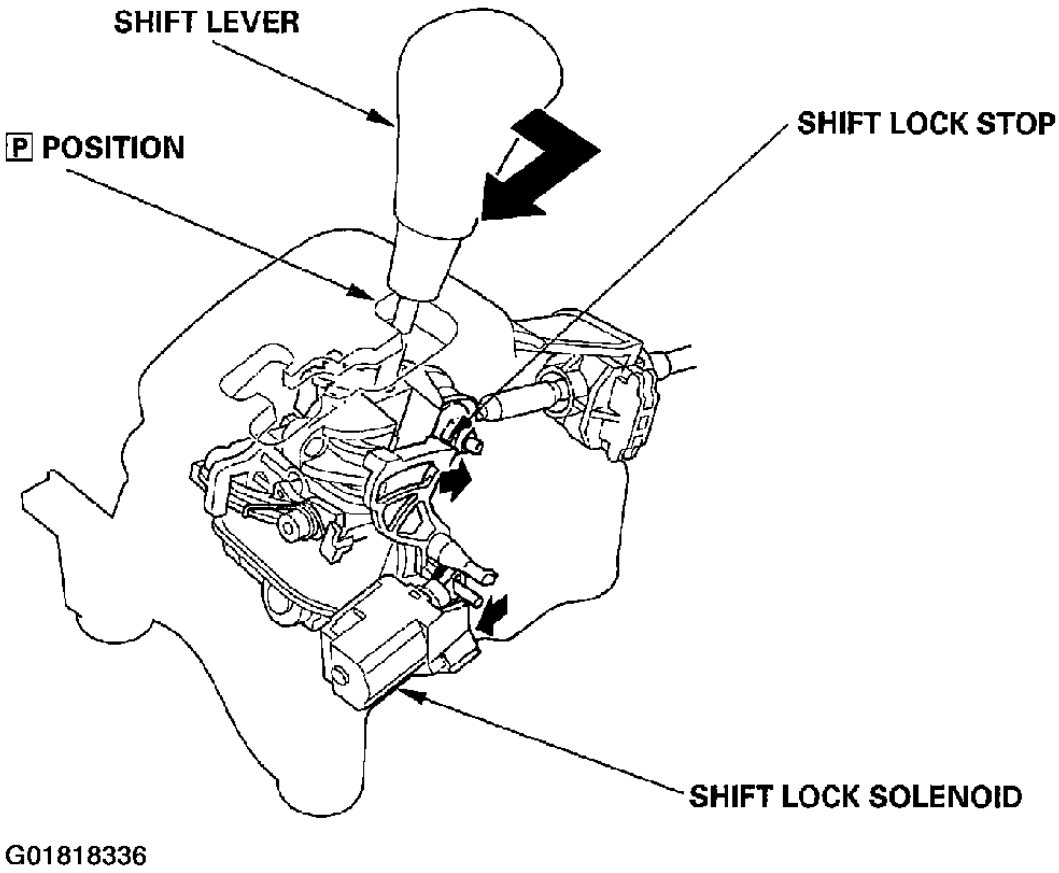


Fig. 80: Shift Lock/Reverse Lock Mechanism

When the brake pedal is released or the accelerator is pressed, the shift lock solenoid stays OFF, and the shift lock stop locks the shift lever in the **P** position.

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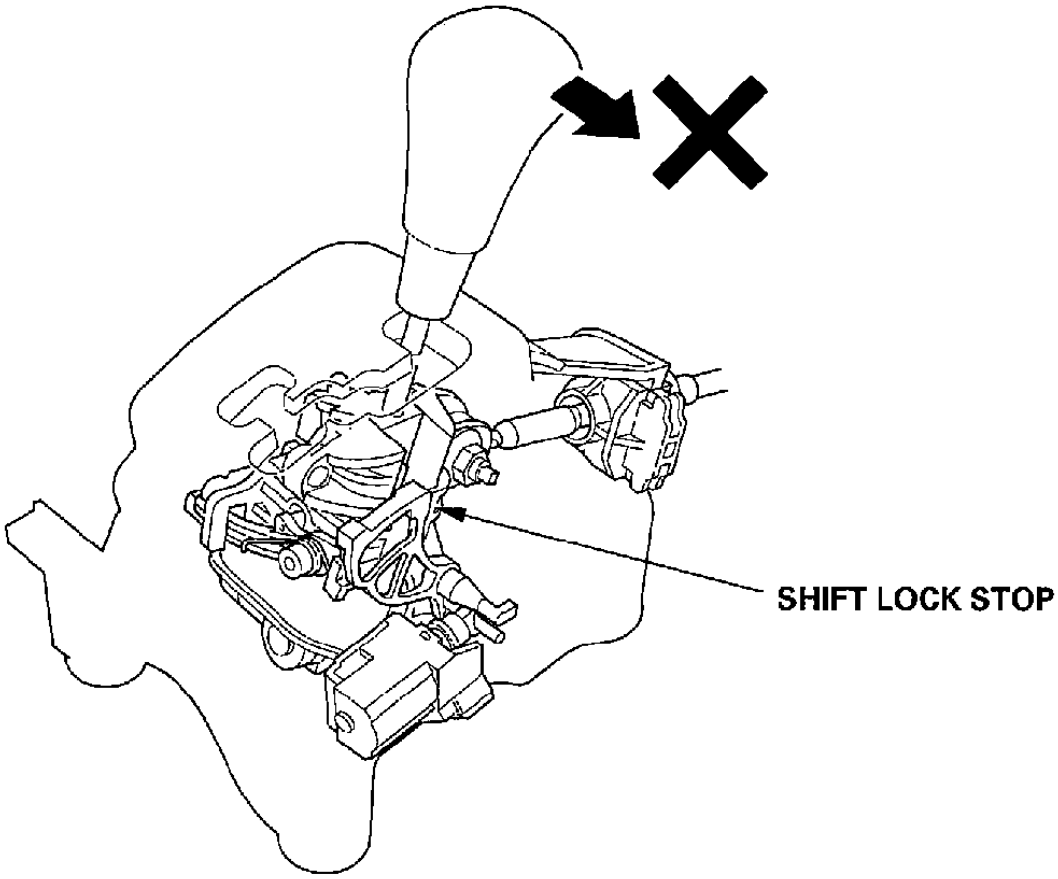


Fig. 81: Shift Lock Stop Locking The Shift Lever

When the shift lever is shifted to the **R** position from **N** , the shift lock solenoid is turned ON, and the shift lock solenoid plunger is retracted to release the reverse lock stop. This allows the shift lever to be moved to the **R** position.

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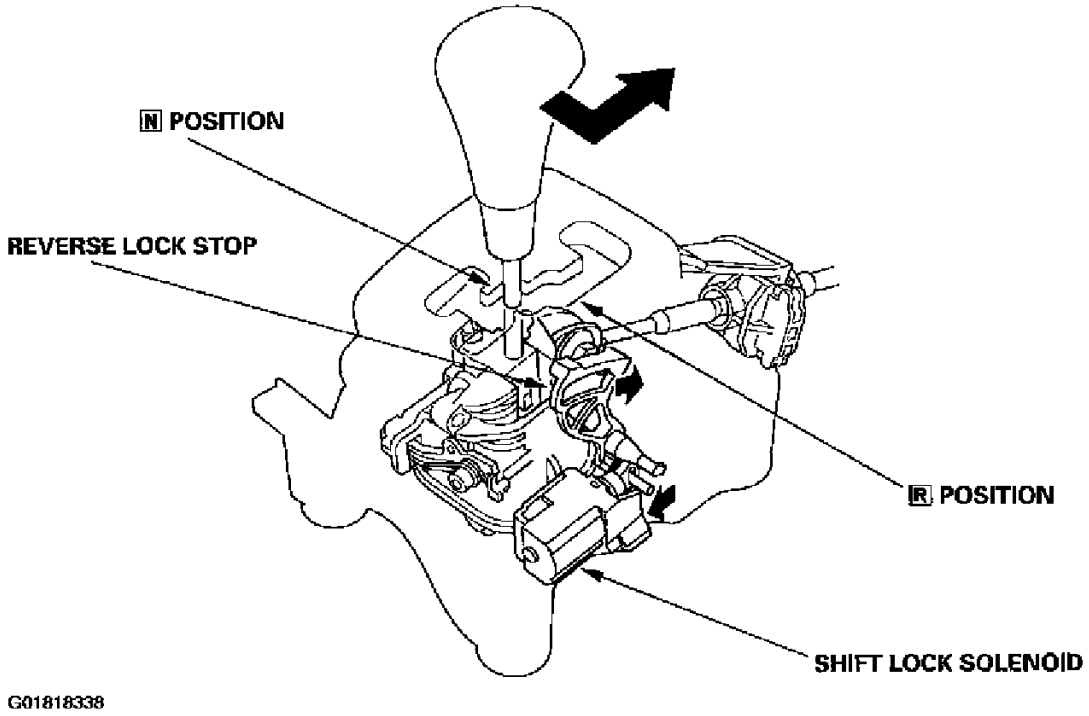


Fig. 82: Shift Lock Solenoid Plunger Retracted To Release The Reverse Lock Stop

If the conditions (acceleration at 6 mph (10 km/h) or less, and deceleration at 5 mph (8 km/h) or less in the **D** position) for turning ON the solenoid are not met, the shift lock solenoid stays OFF, and the reverse lock stop locks the shift lever in the **N** position.

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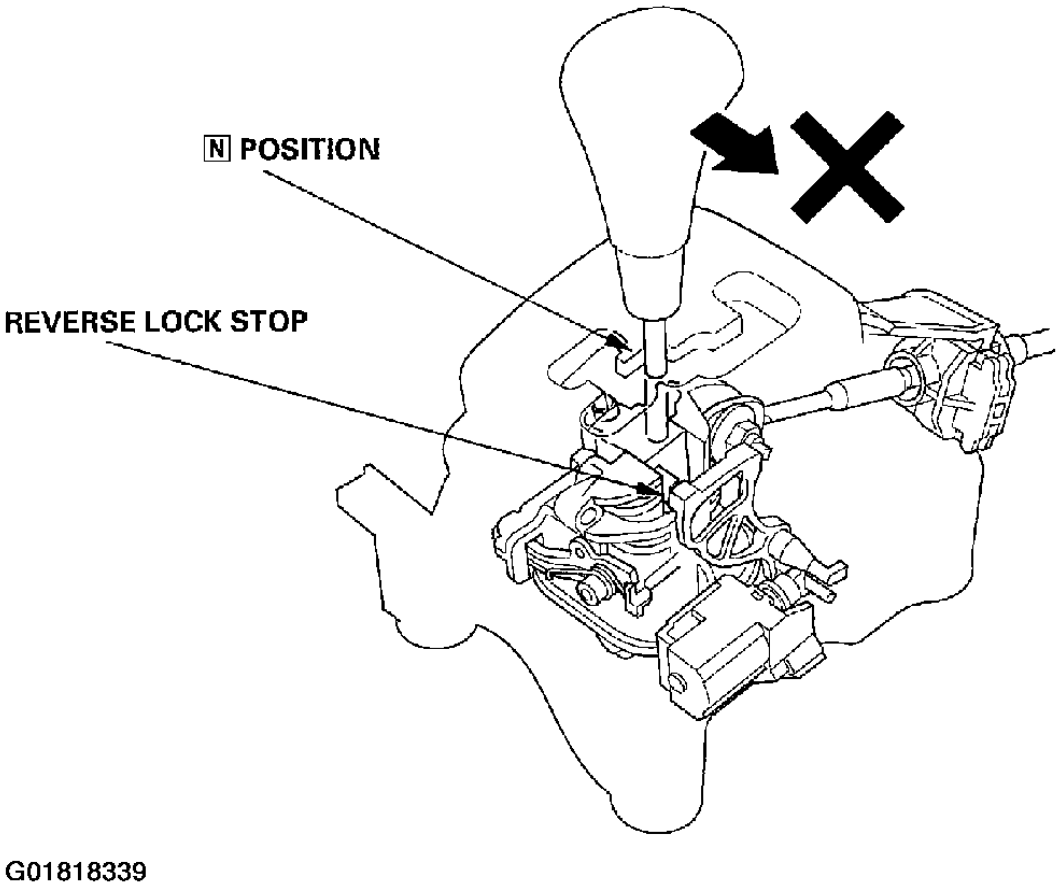


Fig. 83: Reverse Lock Stop Locking The Shift Lever

WIRING DIAGRAM

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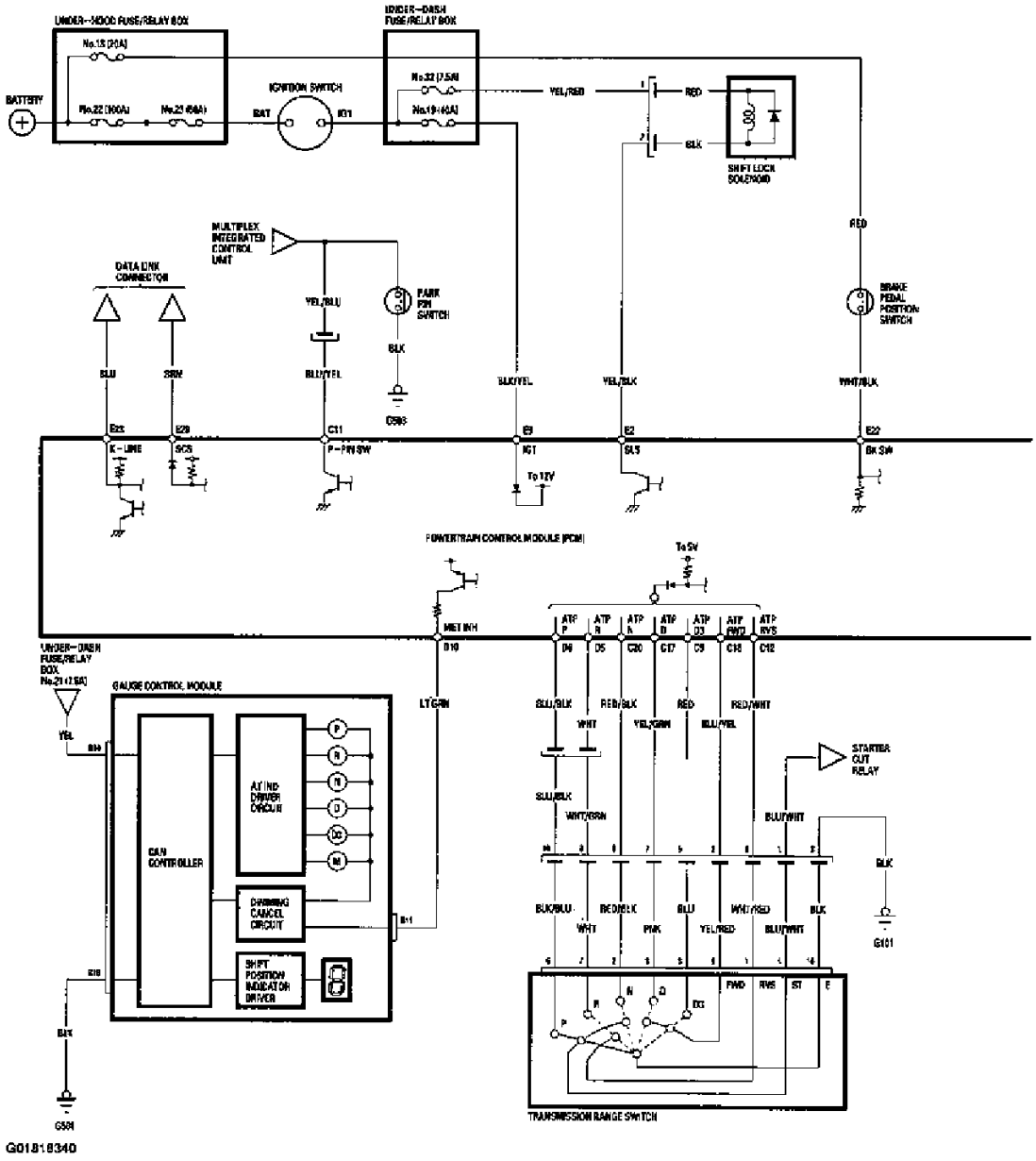


Fig. 84: Circuit Diagram - PCM A/T Control System Wiring Diagram (1 Of 3)

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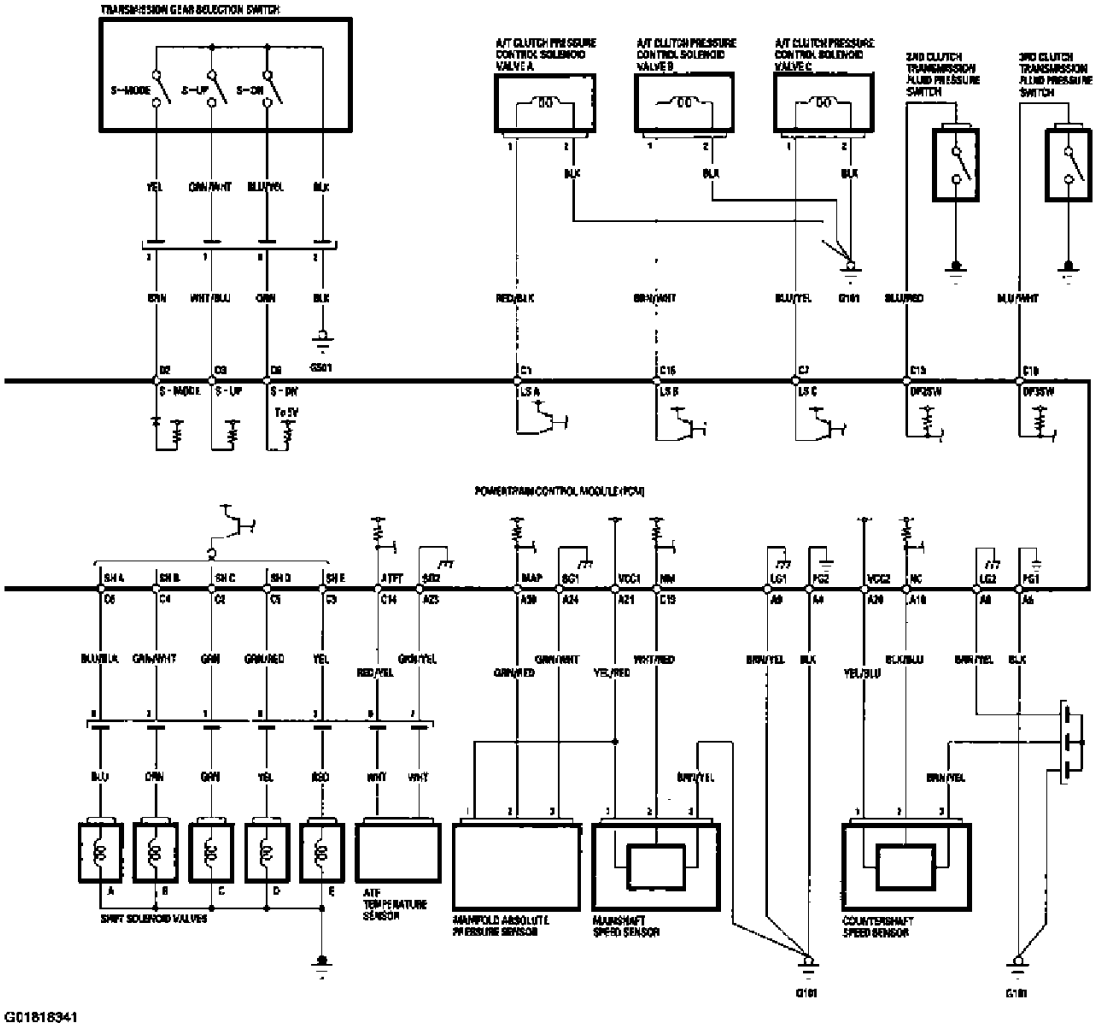


Fig. 85: Circuit Diagram - PCM A/T Control System Wiring Diagram (2 Of 3)

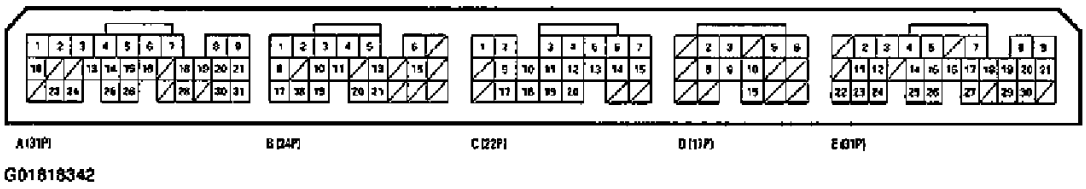


Fig. 86: Circuit Diagram - PCM A/T Control System Wiring Diagram (3 Of 3)

DTC TROUBLESHOOTING

DTC P0705: SHORT IN TRANSMISSION RANGE SWITCH CIRCUIT (MULTIPLE SHIFT-POSITION INPUT)

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine.
3. Move the shift lever to each position, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0705.

   Did the result indicate a fail?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time. Check for an intermittent short in the wires between the transmission range switch and PCM. If the tester indicates NOT COMPLETE, return to step 1 and recheck.
4. Test the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).

   Is the switch OK?

   YES: Go to step 5.

   NO: Replace the transmission range switch, then go to step 49 .
5. Turn the ignition switch ON (II).
6. Shift to all positions other than **P** .
7. Measure the voltage between PCM connector terminals D6 and A8 or A9.

   Is there about 5 V?

   YES: Go to step 14 .

   NO: Go to step 8.

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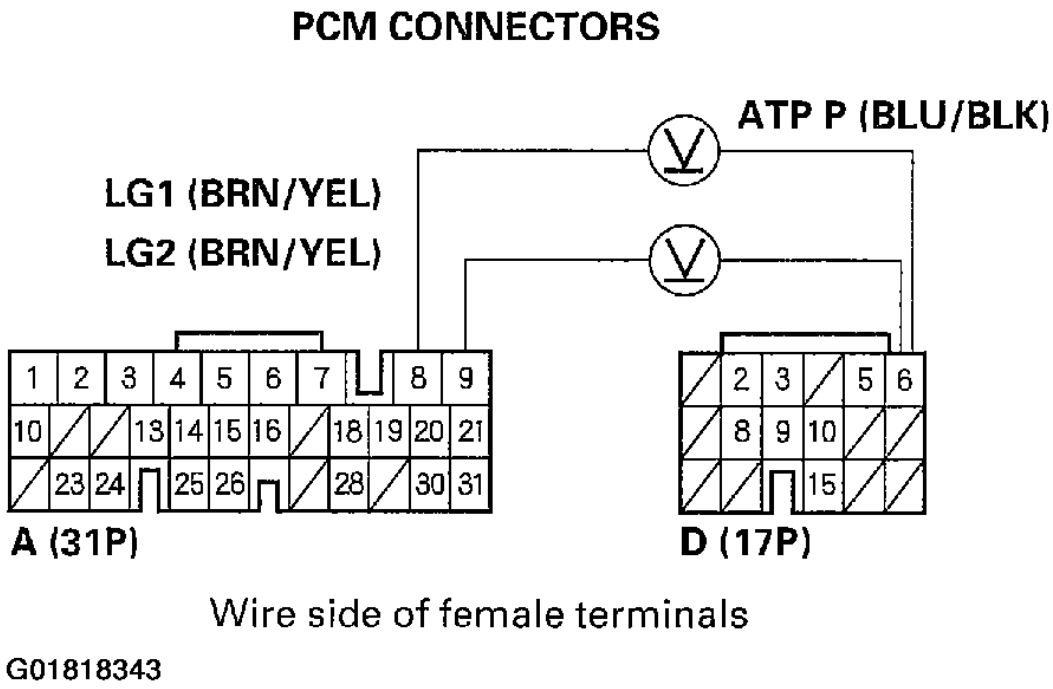


Fig. 87: Measuring The Voltage Between PCM Connector Terminals D6 & A8 Or A9

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector D (17P).
11. Check for continuity between PCM connector terminal D6 and body ground.

Is there continuity?

YES: Repair short in the wire between PCM connector terminal D6 and the transmission range switch, then go to step 49 .

NO: Go to step 12.

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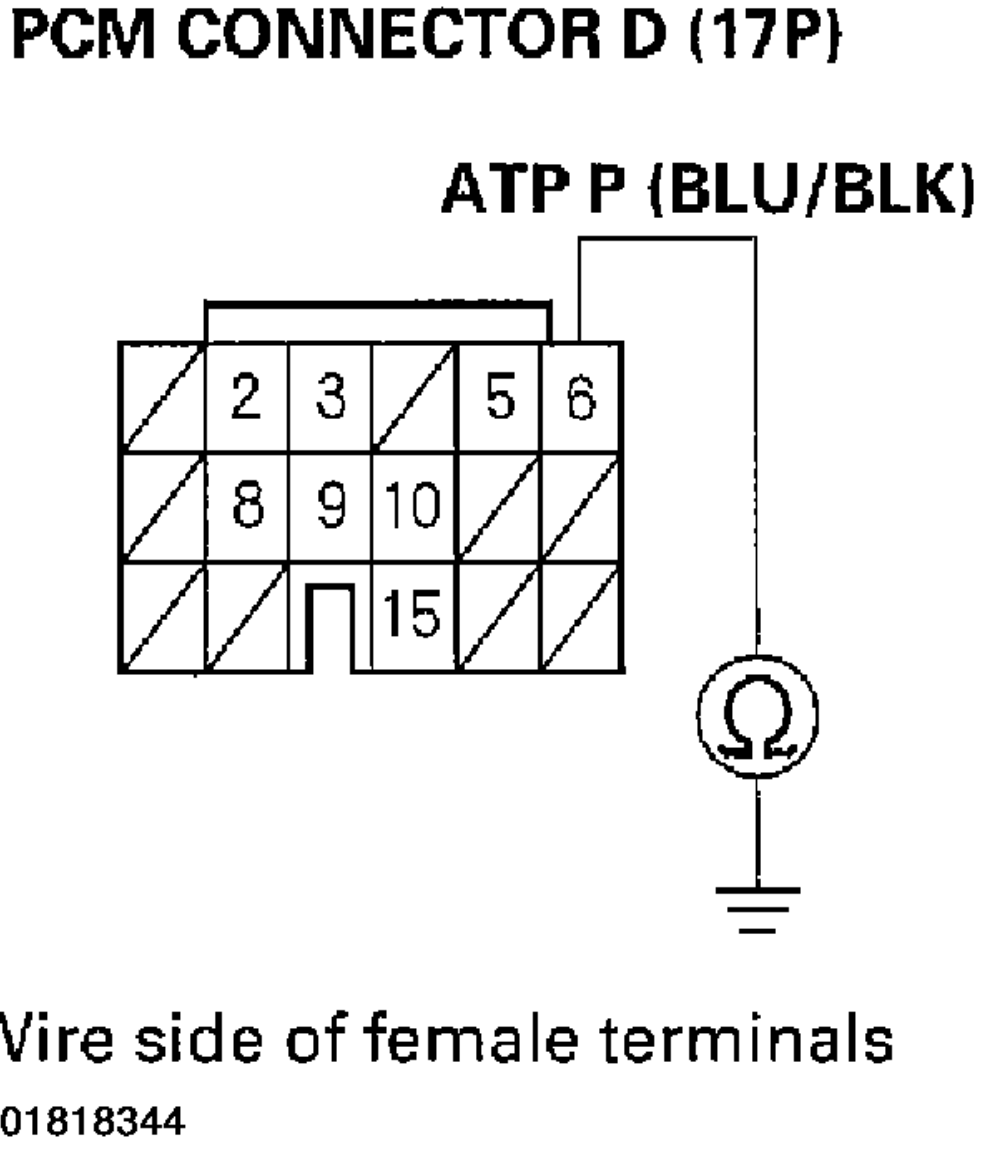


Fig. 88: Checking For Continuity Between PCM Connector Terminal D6 & Body Ground

12. Disconnect PCM connector A (31P).
13. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

    Is there continuity?

    YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the

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symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Repair open in the wire between PCM connector terminals A8, A9 and ground (G101), or repair poor ground (G101), then go to step 49 .

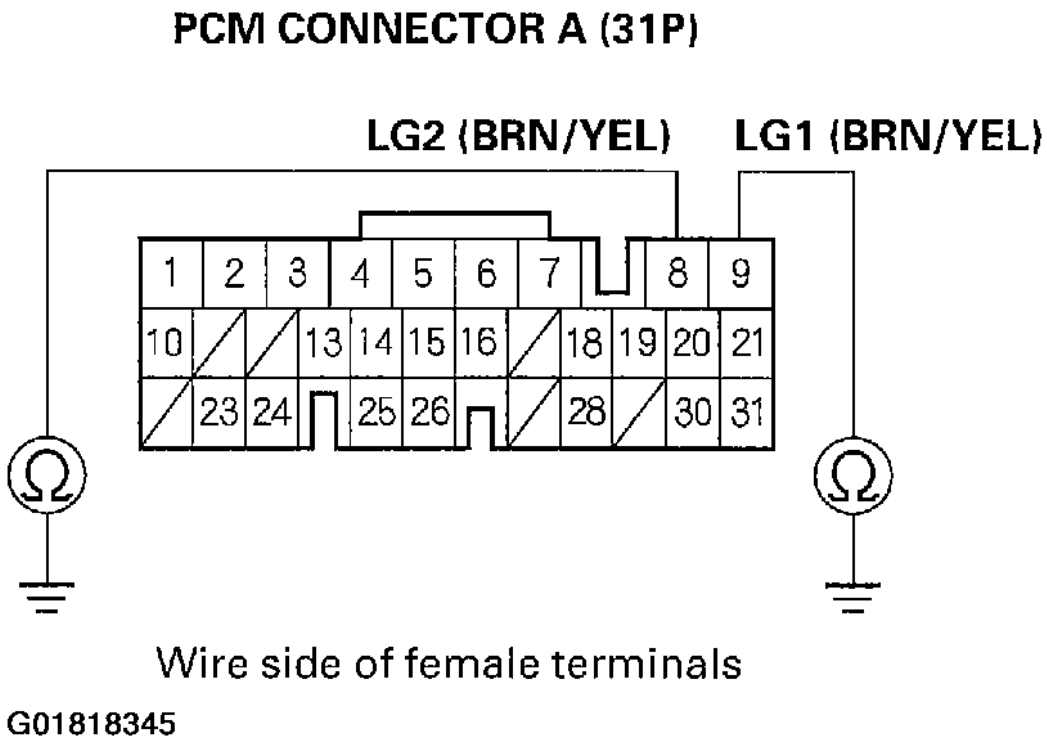


Fig. 89: Checking For Continuity Between PCM Connector Terminals A8 & Body Ground & Between A9 & Body Ground

14. Shift to all positions other than **R** .
15. Measure the voltage between PCM connector terminals D5 and A8 or A9.

    Is there about 5 V?

    YES: Go to step 20 .

    NO: Go to step 16.

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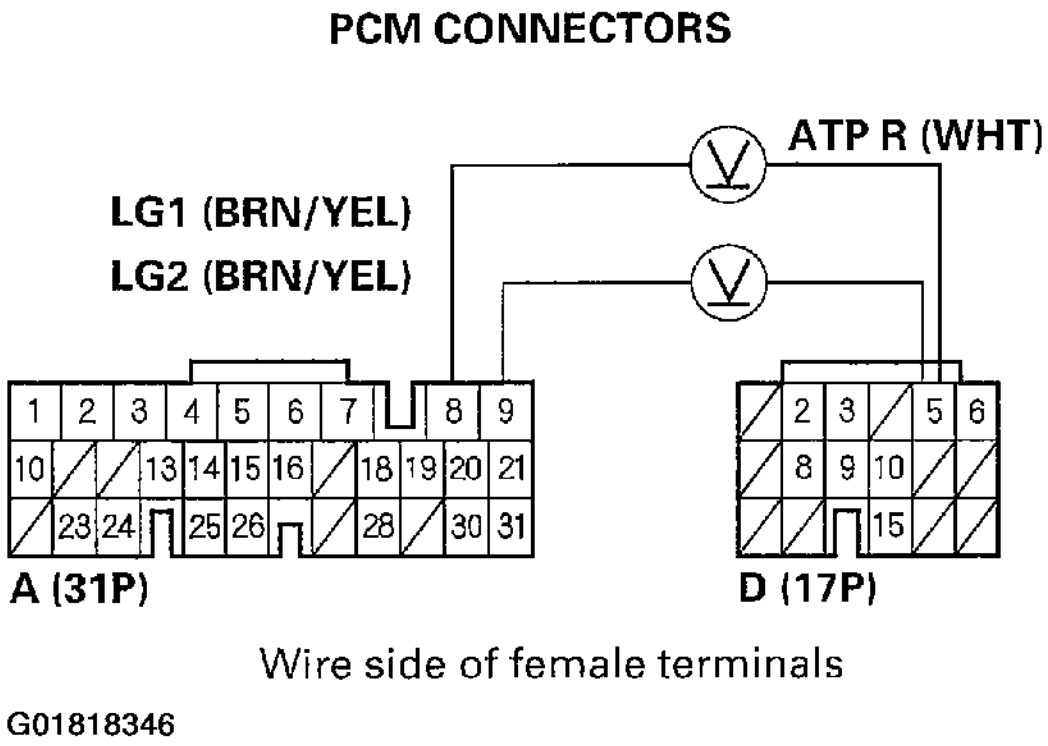


Fig. 90: Measuring The Voltage Between PCM Connector Terminals D5 & A8 Or A9

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector D (17P).
19. Check for continuity between PCM connector terminal D5 and body ground.

Is there continuity?

YES: Repair short in the wire between PCM connector terminal D5 and the transmission range switch, then go to step 49 .

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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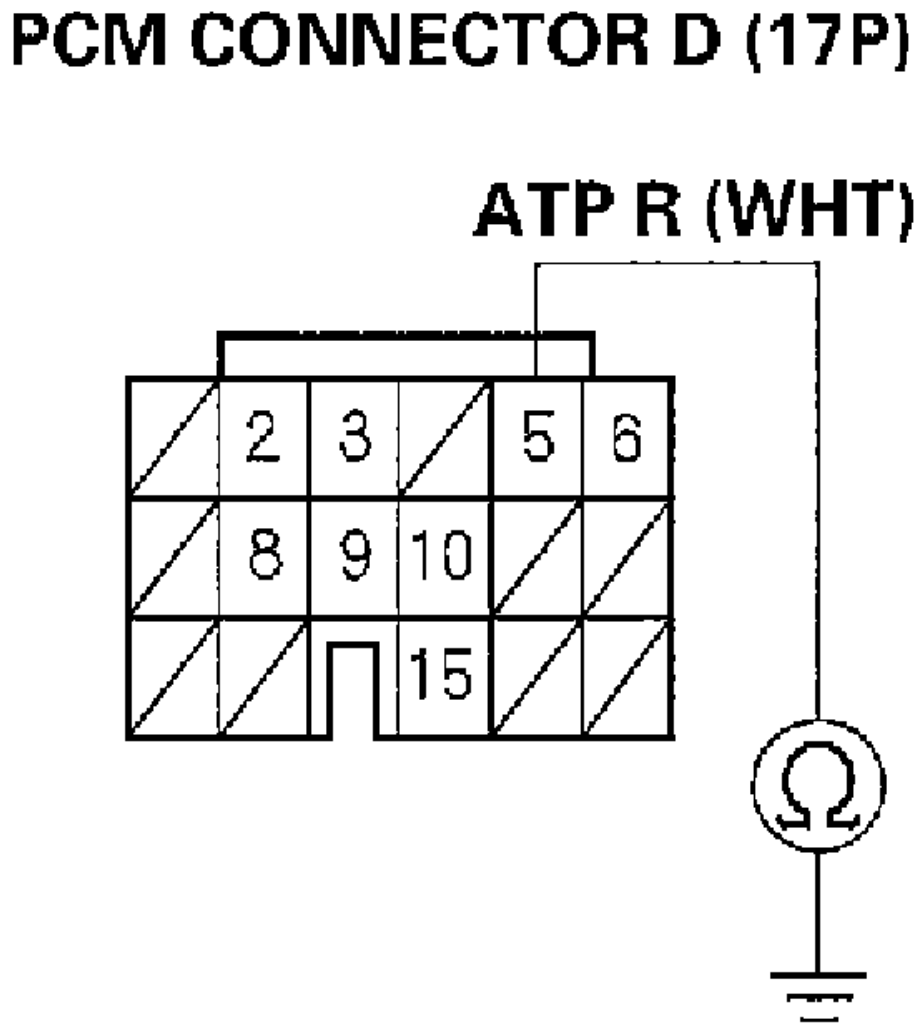


Fig. 91: Checking For Continuity Between PCM Connector Terminal D5 & Body Ground

20. Measure the voltage between PCM connector terminals C12 and A8 or A9.

Is there about 5 V?

YES: Go to step 25 .

NO: Go to step 21.

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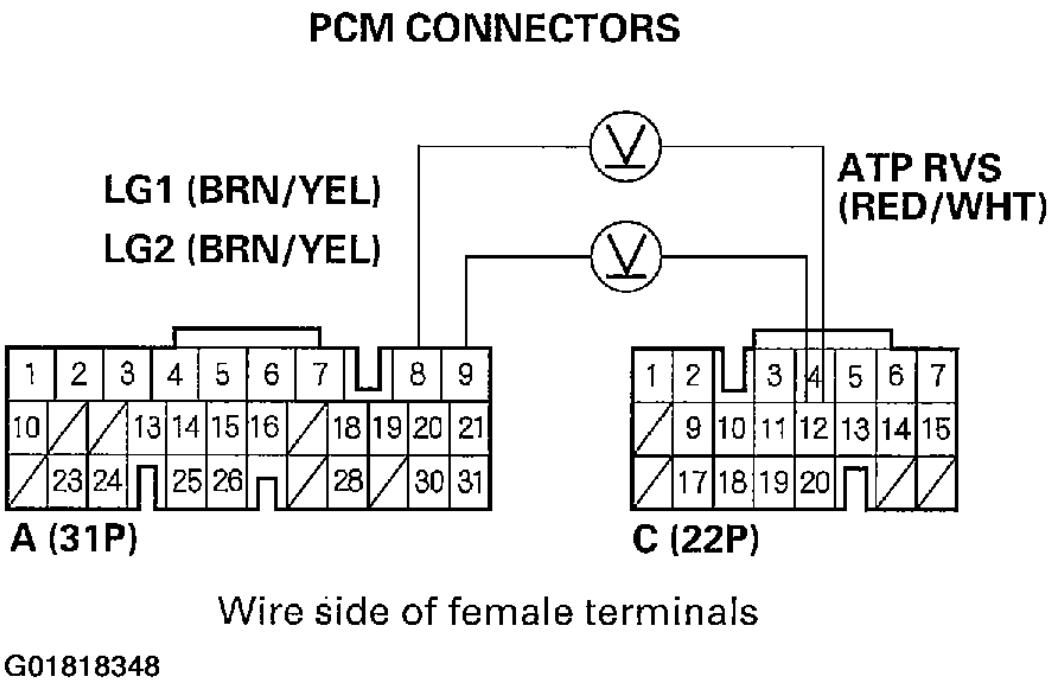


Fig. 92: Measuring The Voltage Between PCM Connector Terminals C12 & A8 Or A9

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector C (22P)
24. Check for continuity between PCM connector terminal C12 and body ground.

Is there continuity?

YES: Repair short in the wire between PCM connector terminal C12 and the transmission range switch, then go to step 49 .

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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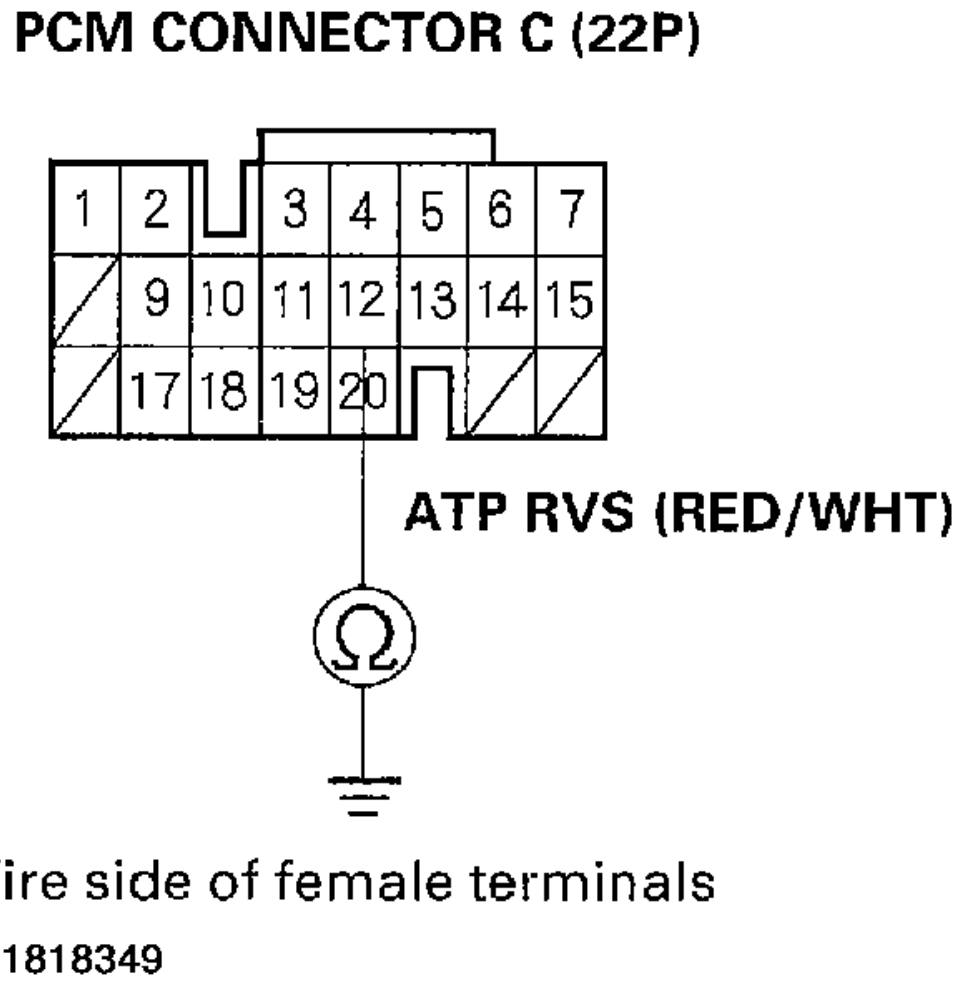


Fig. 93: Checking For Continuity Between PCM Connector Terminal C12 & Body Ground

25. Shift to all positions other than **N** .
26. Measure the voltage between PCM connector terminals C20 and A8 or A9.

Is there about 5 V?

YES: Go to step 31 .

NO: Go to step 27.

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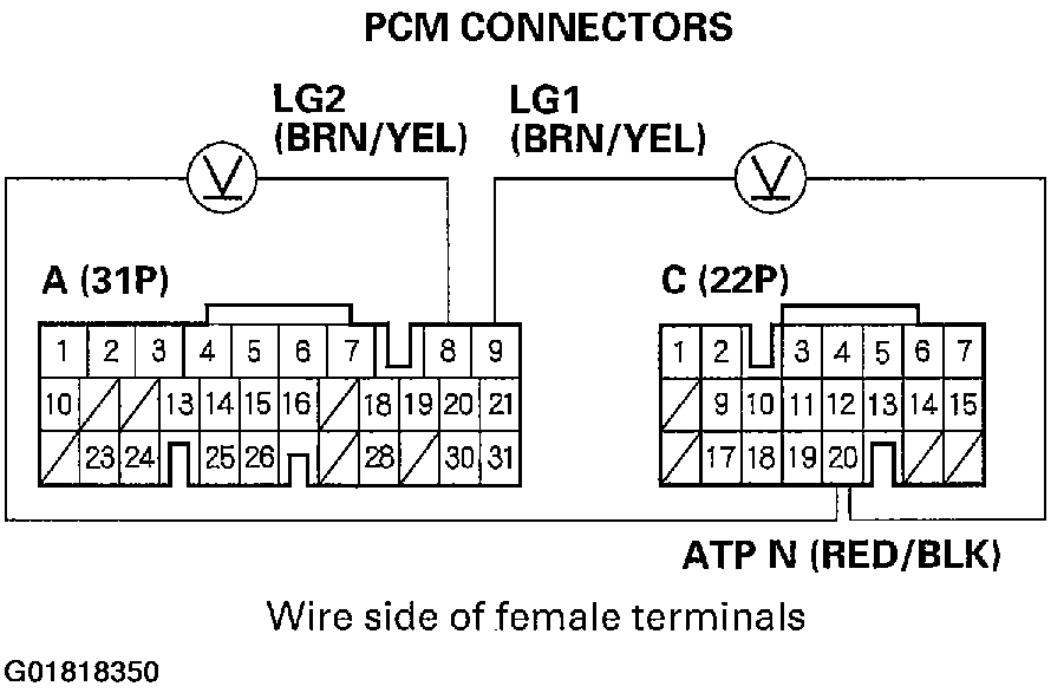


Fig. 94: Measuring The Voltage Between PCM Connector Terminals C20 & A8 Or A9

27. Turn the ignition switch OFF.
28. Jump the SCS line with the HDS.
29. Disconnect PCM connector C (22P).
30. Check for continuity between PCM connector terminal C20 and body ground.

Is there continuity?

YES: Repair short in the wire between PCM connector terminal C20 and the transmission range switch, then go to step 49 .

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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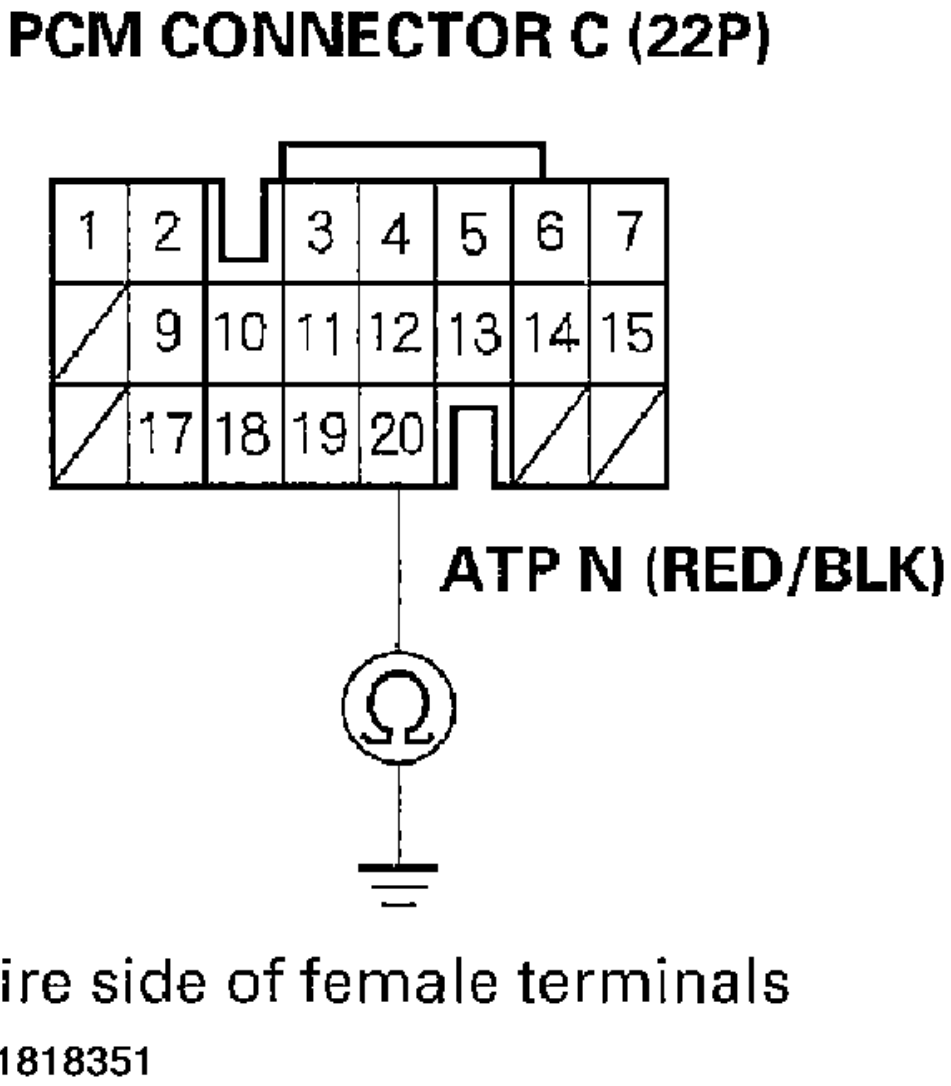


Fig. 95: Checking For Continuity Between PCM Connector Terminal C20 & Body Ground

31. Shift to all positions other than **D** .
32. Measure the voltage between PCM connector terminals C17 and A8 or A9.

    Is there about 5 V?

    YES: Go to step 37 .

    NO: Go to step 33.

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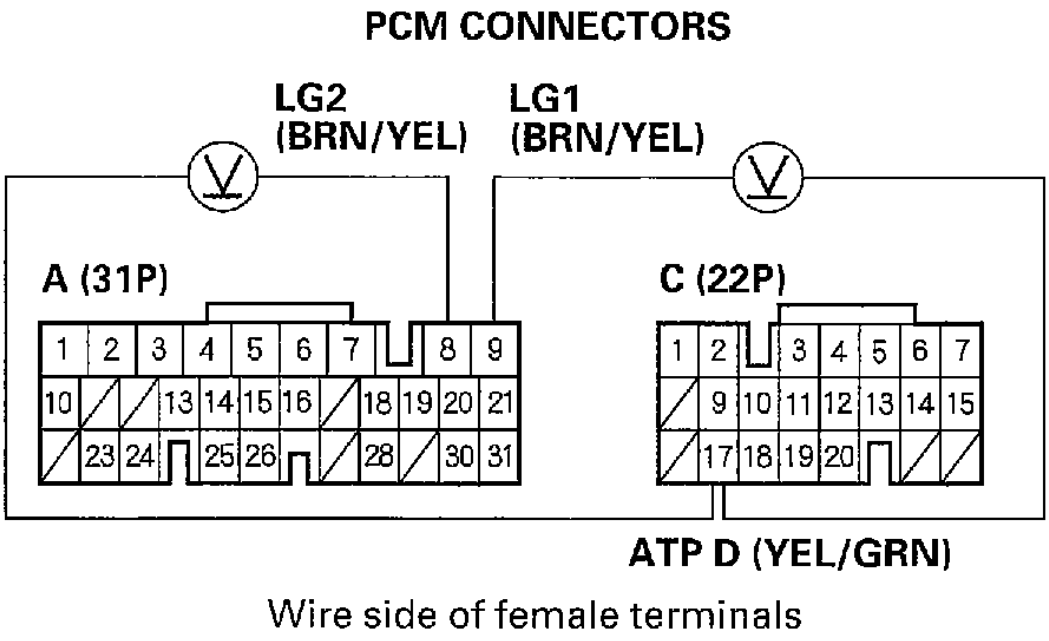


Fig. 96: Measuring The Voltage Between PCM Connector Terminals C17 & A8 Or A9

33. Turn the ignition switch OFF.
34. Jump the SCS line with the HDS.
35. Disconnect PCM connector C (22P).
36. Check for continuity between PCM connector terminal C17 and body ground.

Is there continuity?

YES: Repair short in the wire between PCM connector terminal C17 and the transmission range switch, then go to step 49 .

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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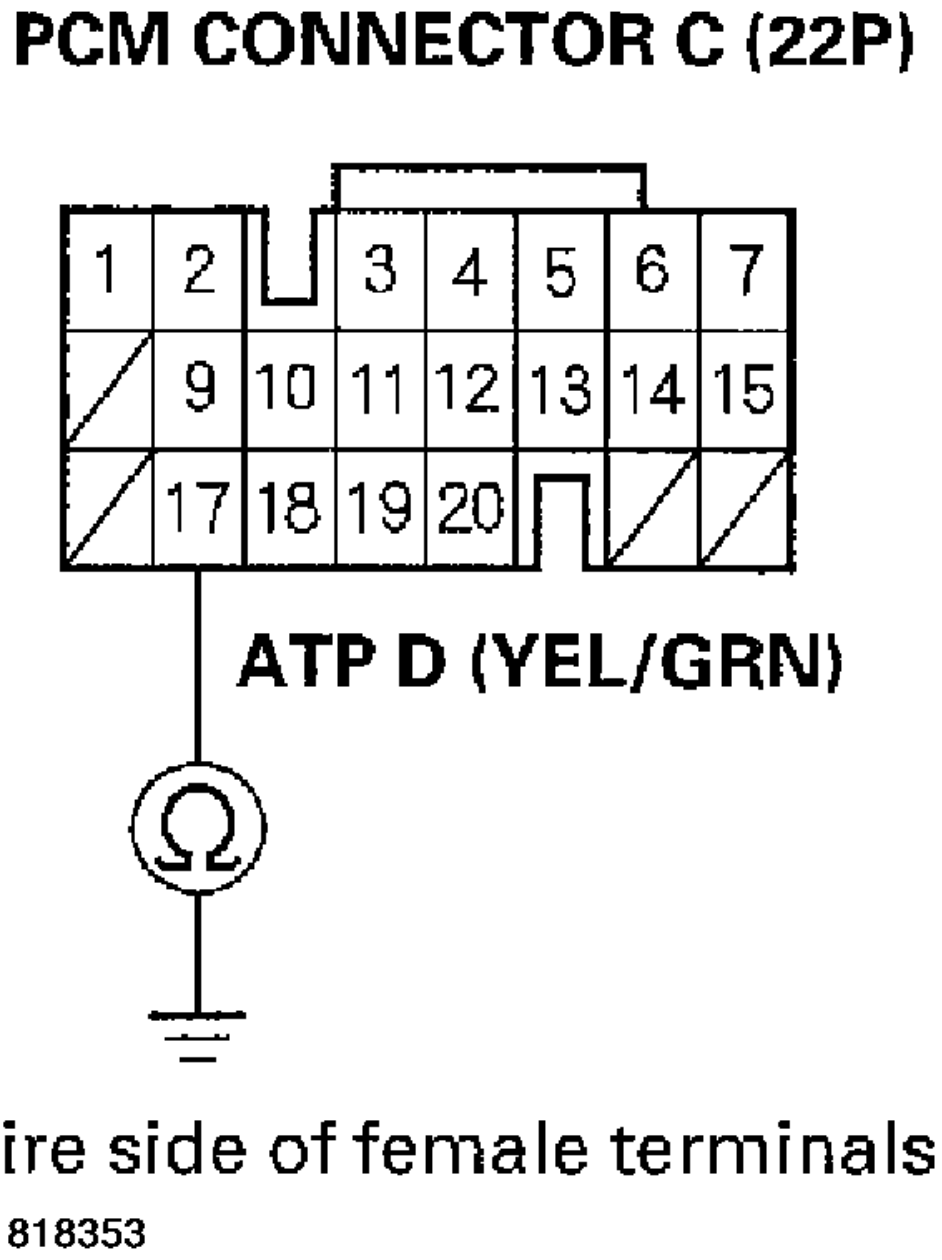


Fig. 97: Checking For Continuity Between PCM Connector Terminal C17 & Body Ground

37. Shift to all positions other than $\mathbf{D}_3$.
38. Measure the voltage between PCM connector terminals C9 and A8 or A9.

    Is there about 5 V?

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YES: Go to step 43 .

NO: Go to step 39.

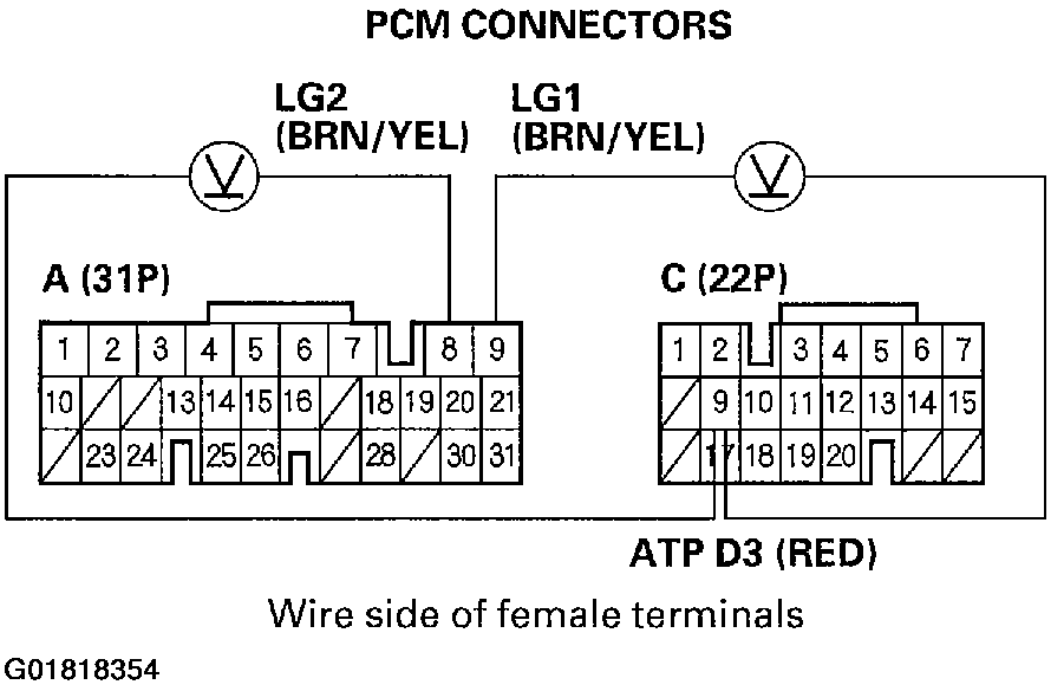


Fig. 98: Measuring The Voltage Between PCM Connector Terminals C9 & A8 Or A9

39. Turn the ignition switch OFF.
40. Jump the SCS line with the HDS.
41. Disconnect PCM connector C (22P).
42. Check for continuity between PCM connector terminal C9 and body ground.

Is there continuity?

YES: Repair short in the wire between PCM connector terminal C9 and the transmission range switch, then go to step 49 .

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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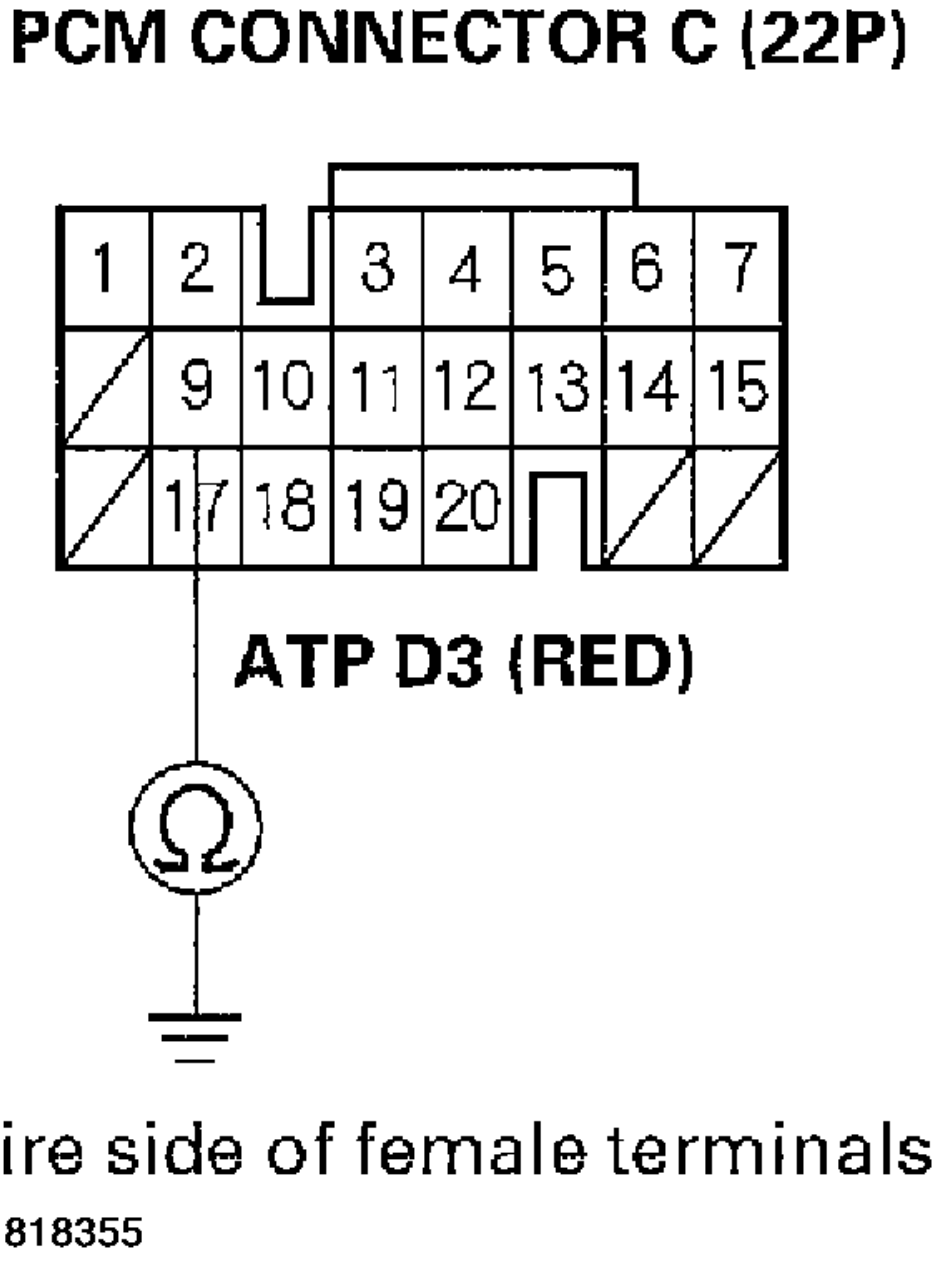


Fig. 99: Checking For Continuity Between PCM Connector Terminal C9 & Body Ground

43. Shift to all positions other than **D** and $\mathbf{D}_3$.
44. Measure the voltage between PCM connector terminals C18 and A8 or A9.

    Is there about 5 V?

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YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Go to step 45.

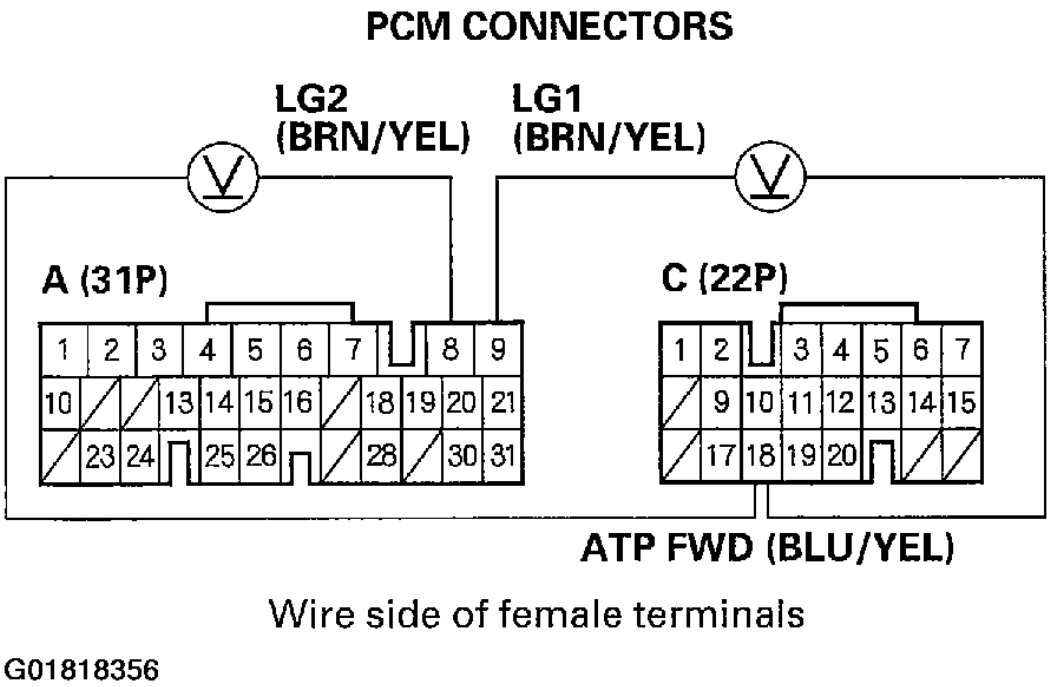


Fig. 100: Measuring The Voltage Between PCM Connector Terminals C18 & A8 Or A9

45. Turn the ignition switch OFF.
46. Jump the SCS line with the HDS.
47. Disconnect PCM connector C (22P).
48. Check for continuity between PCM connector terminal C18 and body ground.

Is there continuity?

YES: Repair short in the wire between PCM connector terminal C18 and the transmission range switch, then go to step 49.

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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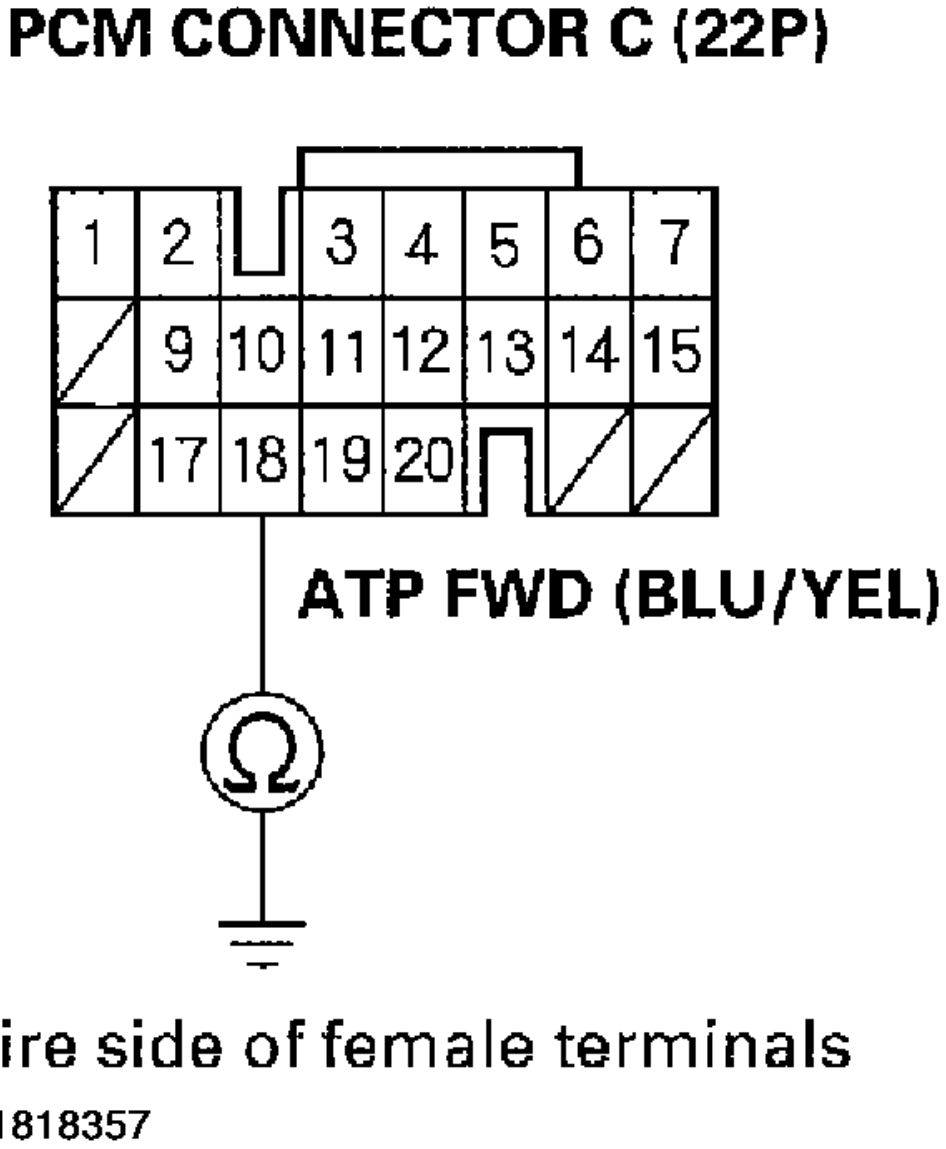


Fig. 101: Checking For Continuity Between PCM Connector Terminal C18 & Body Ground

49. Clear the DTC with the HDS.
50. Move the shift lever to each position, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0705.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

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DTC P0706: OPEN IN TRANSMISSION RANGE SWITCH CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
3. Start the engine, drive the vehicle in the **D** position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.
4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0706.

   Did the result indicate a fail?

   YES: Go to step 5.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and PCM. If the tester indicates NOT COMPLETE, return to step 1 and recheck.
5. Test the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).

   Is the switch OK?

   YES: Inspect the end of the selector control shaft (see step 6 of **TRANSMISSION RANGE SWITCH TEST**), and go to step 6.

   NO: Replace the transmission range switch, then go to step 24 .
6. Install the transmission range switch correctly, and adjust the shift cable (see **SHIFT CABLE**).
7. Clear the DTC with the HDS.
8. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
9. Start the engine, drive the vehicle in the **D** position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.
10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0706.

    Did the result indicate a fall?

    YES: Go to step 11.

    NO: The problem has been corrected. If the tester indicates NOT COMPLETE, return to step 7 and recheck.
11. Shift the shift lever into the **D** position, and verify the ATP FWD and ATP D inputs with the HDS in the A/T data list.

    Is the ATP FWD and ATP D ON?

    YES: Go to step 12.

    NO: Go to step 17 .

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12. Shift to the **D_3** position, and verify the ATP FWD and ATP D3 inputs with the HDS in the A/T date list.

    Is the ATP FWD and ATP D3 ON?

    YES: Go to step 13.

    NO: Go to step 17 .

13. Clear the DTC with the HDS, and turn the ignition switch OFF.
14. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
15. Start the engine, drive the vehicle in the **D** position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0706.

    Did the result indicate a fail?

    YES: Go to step 17.

    NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and PCM. If the tester indicates NOT COMPLETE, return to step 13 and recheck.

17. Turn the ignition switch OFF.
18. Disconnect the transmission range switch connector.
19. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

    Is there continuity?

    YES: Go to step 20.

    NO: Repair open in the wire between transmission range switch connector terminal No. 10 and ground (G101), or repair poor ground (G101), then go to step 24 .

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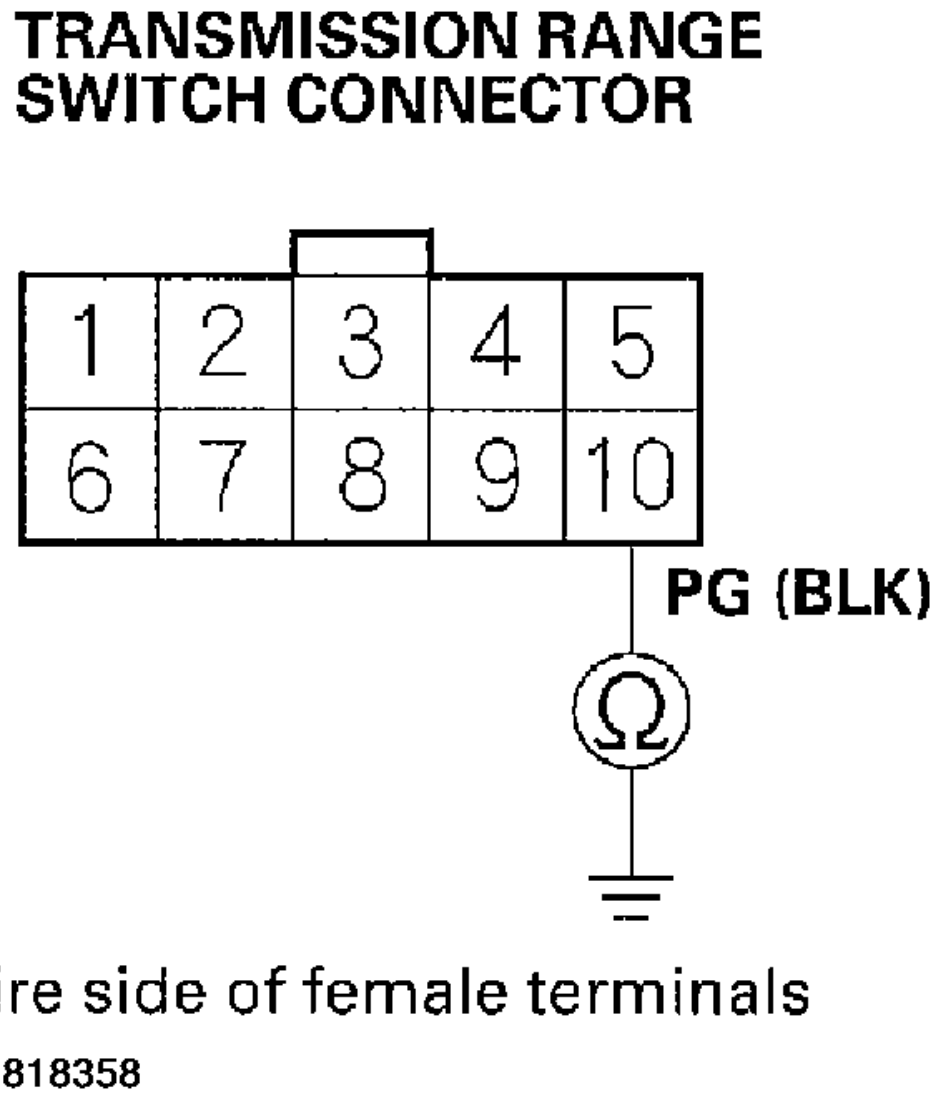


Fig. 102: Checking For Continuity Between Transmission Range Switch Connector Terminal No. 10 & Body Ground

20. Turn the ignition switch ON (II).
21. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.

Is there voltage?

YES: Go to step 22.

NO: Repair open in the wire between the transmission range switch and PCM connector terminal C18, then go to step 24 .

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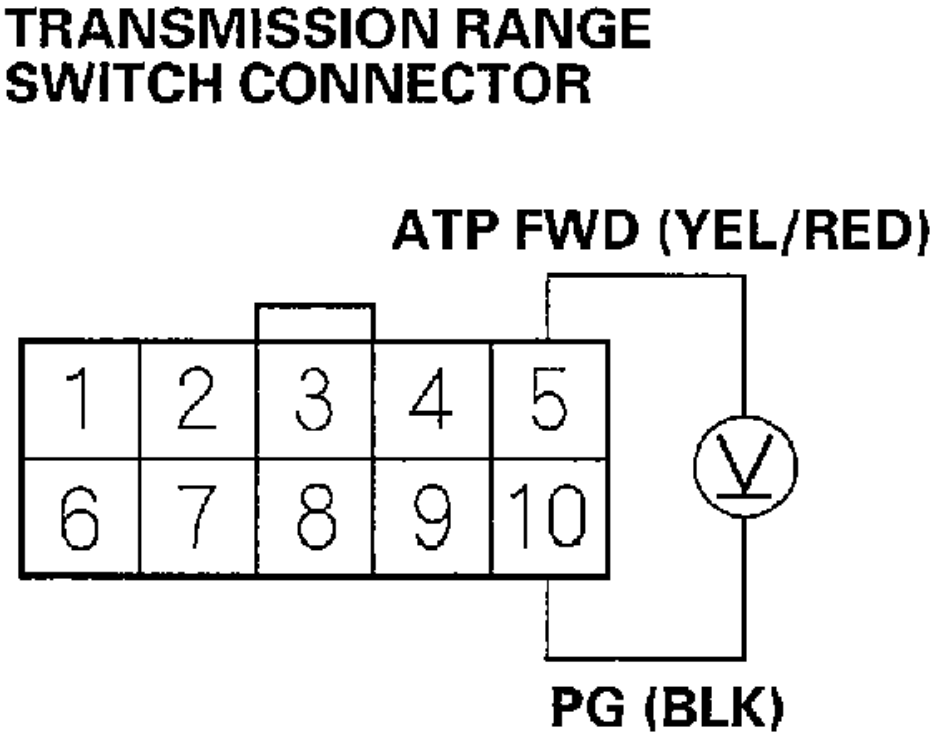


Fig. 103: Measuring The Voltage Between Transmission Range Switch Connector Terminals No. 5 & No. 10

22. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.

Is there voltage?

YES: Go to step 23.

NO: Repair open in the wire between the transmission range switch and PCM connector terminal C17, then go to step 24 .

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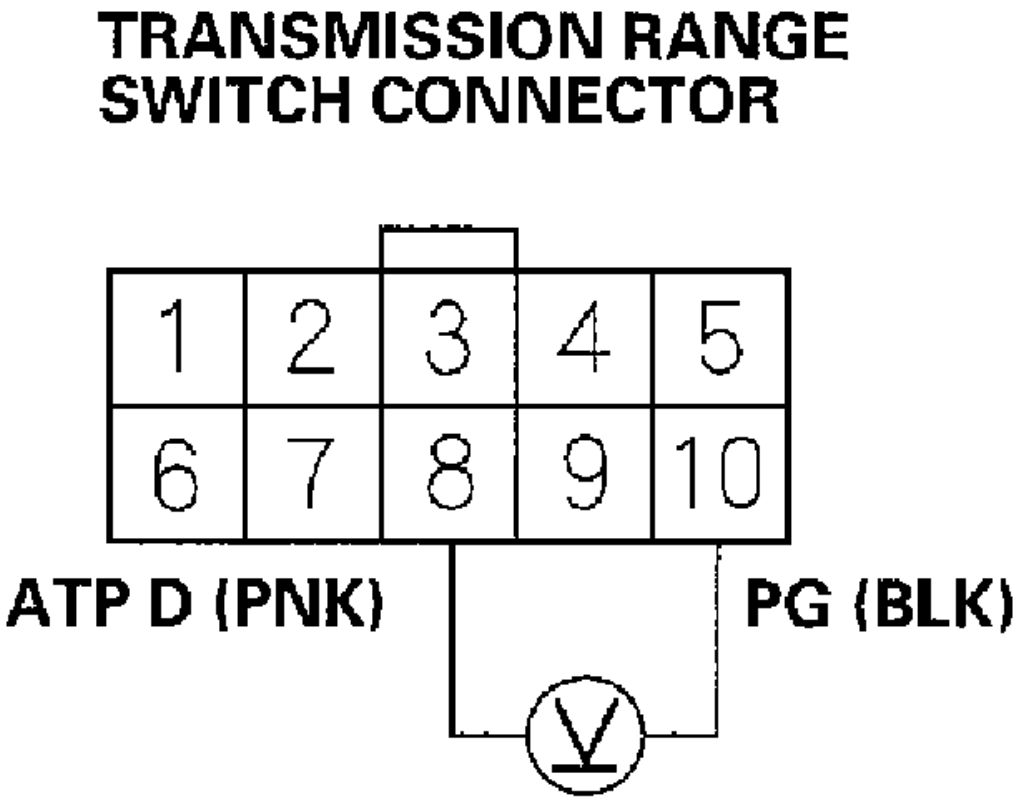


Fig. 104: Measuring The Voltage Between Transmission Range Switch Connector Terminals No. 8 & No. 10

23. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.

Is there voltage?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Repair open in the wire between the transmission range switch and PCM connector

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terminal C9, then go to step 24.

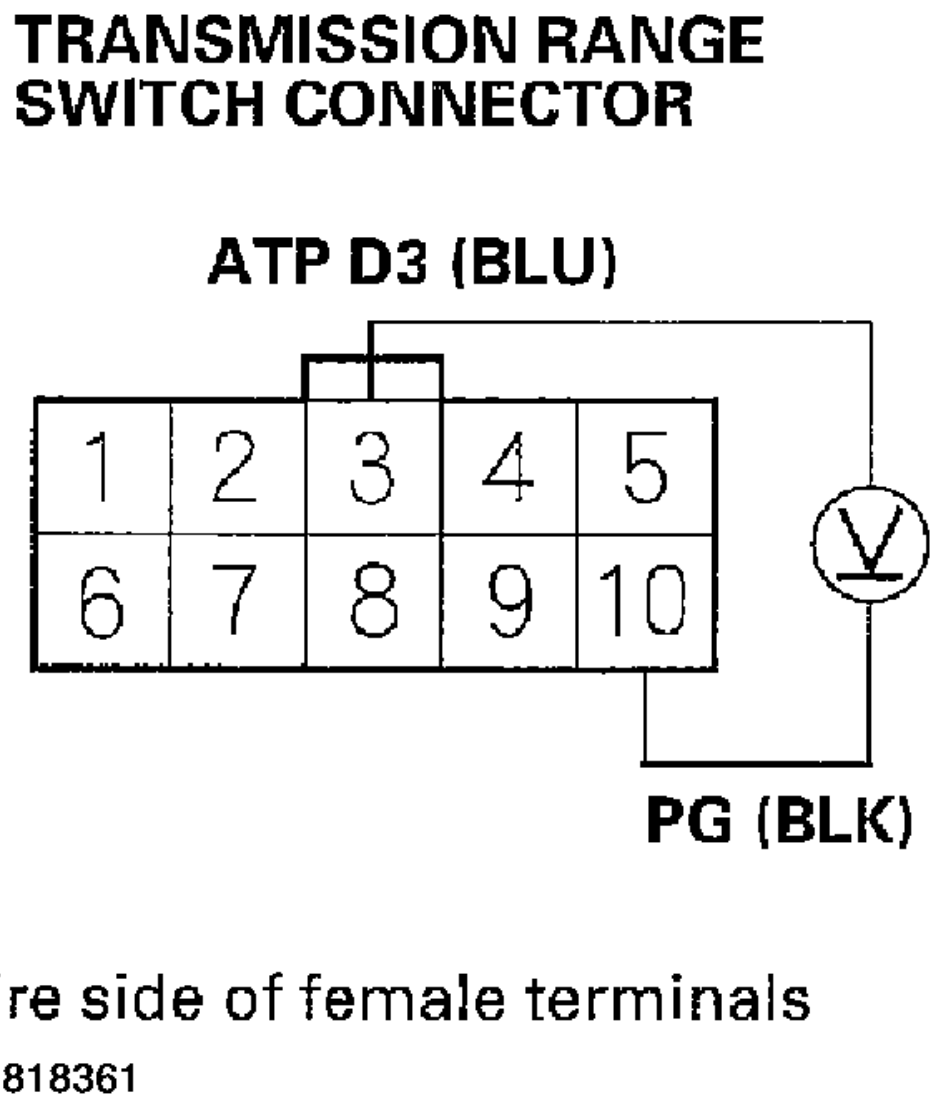


Fig. 105: Measuring The Voltage Between Transmission Range Switch Connector Terminals No. 3 & No. 10

24. Clear the DTC with the HDS, and turn the ignition switch OFF.
25. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
26. Start the engine, drive the vehicle in the **D** position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.

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27. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0706.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0711: PROBLEM IN ATF TEMPERATURE SENSOR CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Check the ATF temperature with the HDS.

Does the ATF temperature exceed the ambient-air temperature?

YES: Record the ATF temperature. Leave the engine off for more than 30 minutes, and go to step 2.

NO: Record the ATF temperature. Test the stall speed RPM (see **STALL SPEED TEST**) three times. Go to step 2 after stall speed testing.

2. Check the ATF temperature with the HDS.

Did the ATF temperature change?

YES: Leave the engine off for at least 30 more minutes, and go to step 3.

NO: Replace ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST & REPLACEMENT**), then go to step 5 .

3. Check the ECT SENSOR with the HDS.

Is the ECT SENSOR equal to the ambient-air temperature?

YES: Go to step 4.

NO: Leave the engine off until ECT sensor equals ambient-air temperature, then go to step 4.

4. Check the ATF temperature with the HDS.

Is the ATF temperature almost equal to ECT SENSOR?

YES: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and PCM.

NO: Replace ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST & REPLACEMENT**), then go to step 5.

5. Clear the DTC with the HDS.
6. Test-drive the vehicle for several minutes in the **D** position in all five gears.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0711.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

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DTC P0712: SHORT IN ATF TEMPERATURE SENSOR CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Check ATF temperature sensor voltage with the HDS in the A/T data list.

   Is ATF temperature sensor voltage 0.07 V or less?

   YES: Go to step 2.

   NO: Intermittent failure, the system is OK at this time. Check for intermittent short in the wires between the ATF temperature sensor and PCM.
2. Disconnect the shift solenoid harness connector at the shift solenoid valve cover.
3. Check ATF temperature sensor voltage with the HDS.

   Is ATF temperature sensor voltage 0.07 V or less?

   YES: Go to step 4.

   NO: Check for a short to ground in the shift solenoid harness wire in the transmission (see **ATF TEMPERATURE SENSOR TEST & REPLACEMENT**). If the wire is OK, replace ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST & REPLACEMENT**), then go to step 8 .
4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect PCM connector C (22P).
7. Check for continuity between the No. 6 terminal of the shift solenoid harness connector and body ground.

   Is there continuity?

   YES: Repair short to ground in the wire between PCM connector terminal C14 and the shift solenoid harness connector, then go to step 8.

   NO: Check for a short to ground in the shift solenoid harness wire in the transmission (see **ATF TEMPERATURE SENSOR TEST & REPLACEMENT**). If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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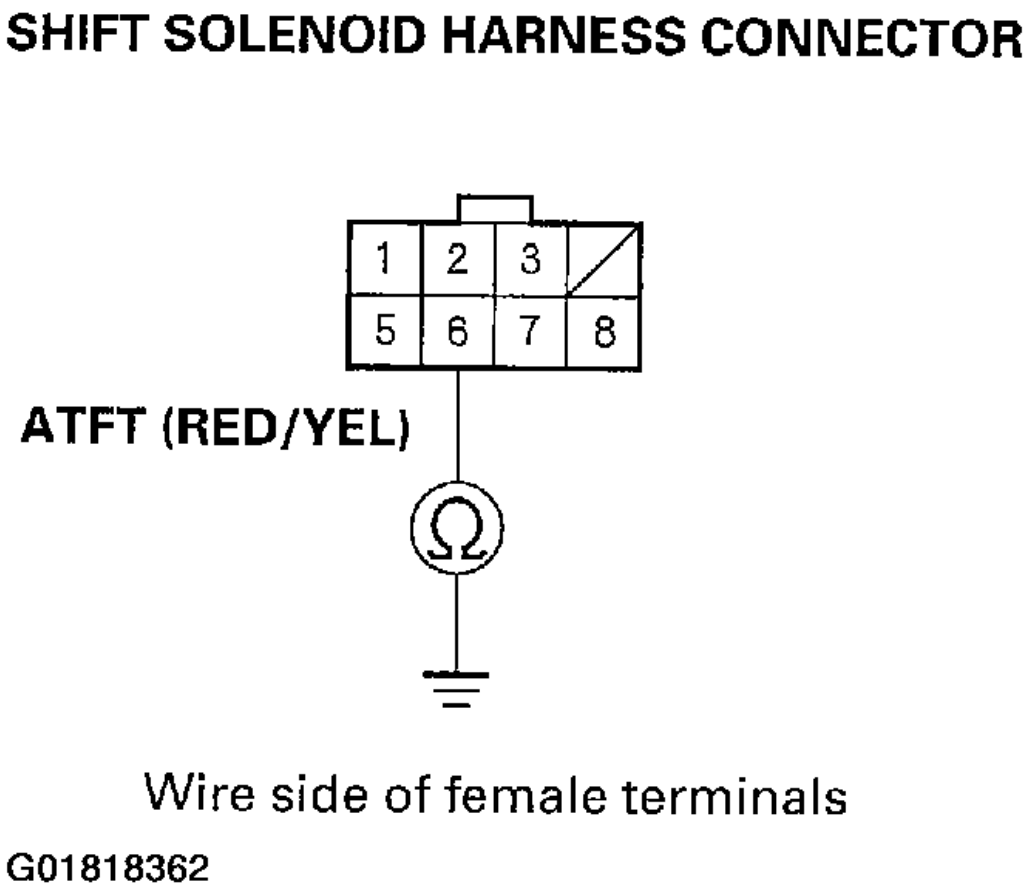


Fig. 106: Checking For Continuity Between The No. 6 Terminal Of The Shift Solenoid Harness Connector & Body Ground

8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the **D** position in all five gears.
10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0712.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0713: OPEN IN ATF TEMPERATURE SENSOR CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**

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- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Check ATF temperature sensor voltage with the HDS in the A/T data list.

   Does ATF temperature sensor voltage exceed 4.93 V?

   YES: Go to step 2.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and PCM.
2. Turn the ignition switch OFF.
3. Disconnect the shift solenoid harness connector.
4. Turn the ignition switch ON (II).
5. Measure the voltage between shift solenoid harness connector terminal No. 6 and body ground.

   Is there about 5 V?

   YES: Go to step 6.

   NO: Go to step 7 .

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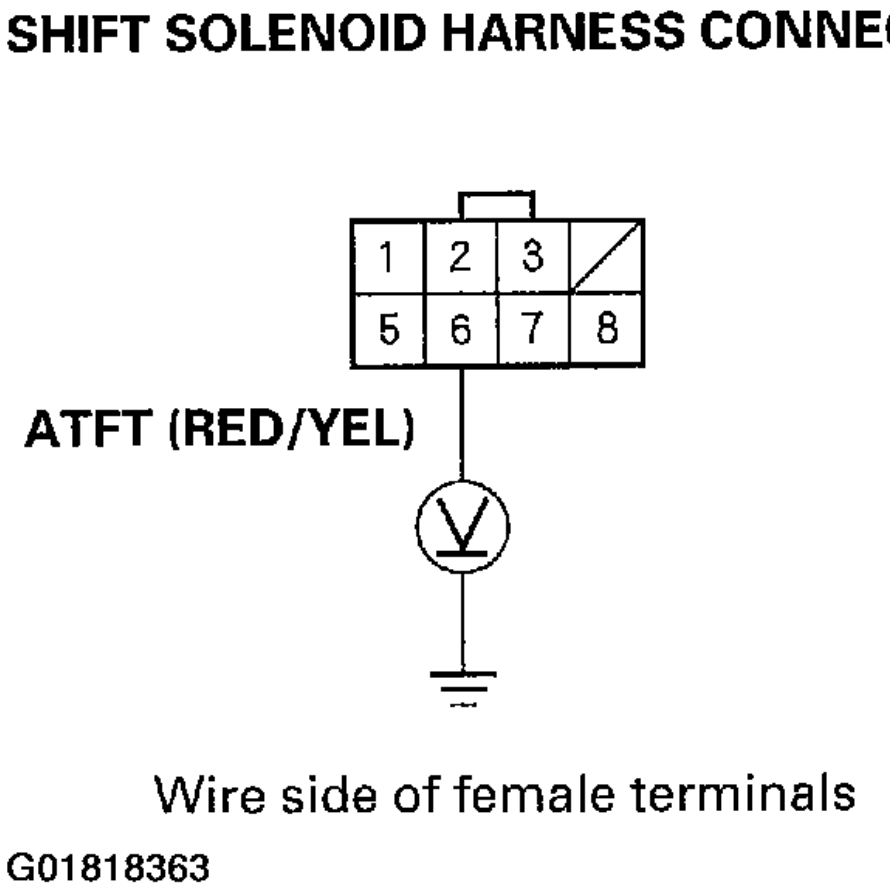


Fig. 107: Measuring The Voltage Between Shift Solenoid Harness Connector Terminal No. 6 & Body Ground

6. Measure the voltage between shift solenoid harness connector terminals No. 6 and No. 7.

   Is there about 5 V?

   YES: Check the ATF temperature sensor and shift solenoid harness in the transmission housing (see **ATF TEMPERATURE SENSOR TEST & REPLACEMENT**)

   NO: Repair open in the wire between PCM connector terminal A23 and the shift solenoid harness connector, then go to step 8 .

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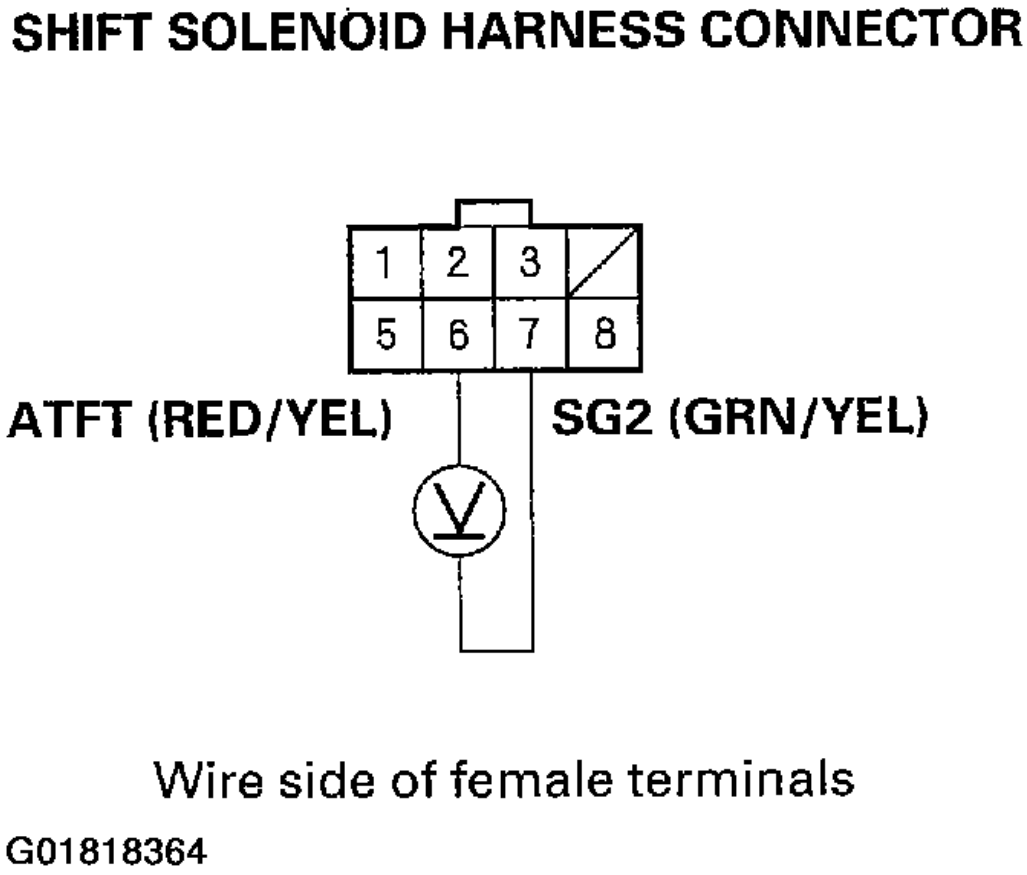


Fig. 108: Measuring The Voltage Between Shift Solenoid Harness Connector Terminals No. 6 & No. 7

7. Measure the voltage between PCM connector terminal C14 and body ground.

   Is there about 5 V?

   YES: Repair open in the wire between PCM connector terminal C14 and the shift solenoid harness connector, then go to step 8.

   NO: Check for loose or poor connections at PCM connector terminal C14. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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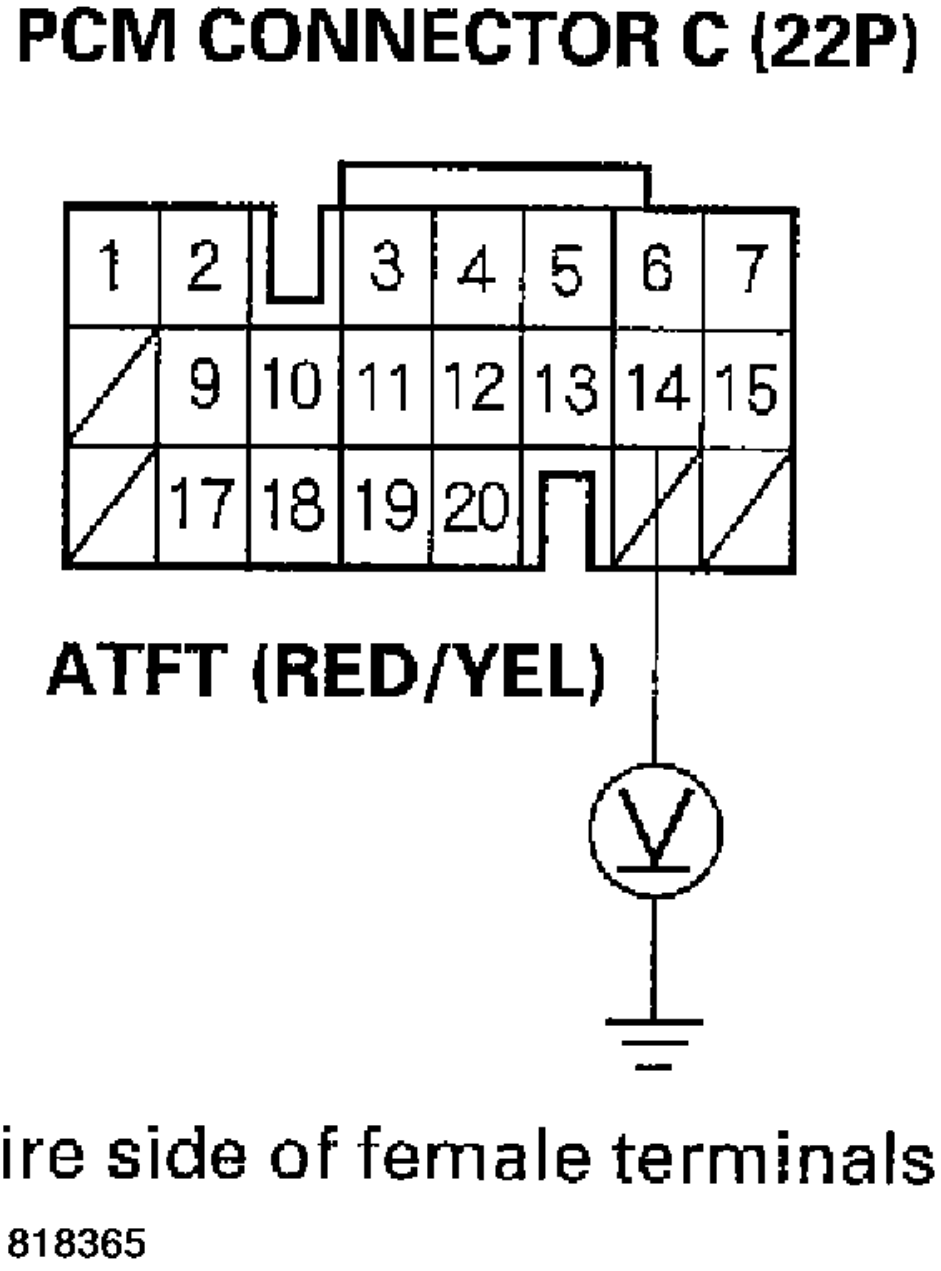


Fig. 109: Measuring The Voltage Between PCM Connector Terminal C14 & Body Ground

8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the **D** position in all five gears.
10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0713.

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Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0716: PROBLEM IN MAINSHAFT SPEED SENSOR CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Record all freez data, then clear the DTC with the HDS.
2. Check for proper mainshaft speed sensor installation (see **MAINSHAFT SPEED SENSOR REPLACEMENT**).
3. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
4. Start the engine, drive the vehicle in the **D** position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0716.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector A (31P) and mainshaft speed sensor connector.
9. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

   Is there continuity?

   YES: Go to step 10.

   NO: Repair open in the wires between PCM connector terminals A8, A9 and ground (G 101), or repair poor ground (G101), then go to step 30 .

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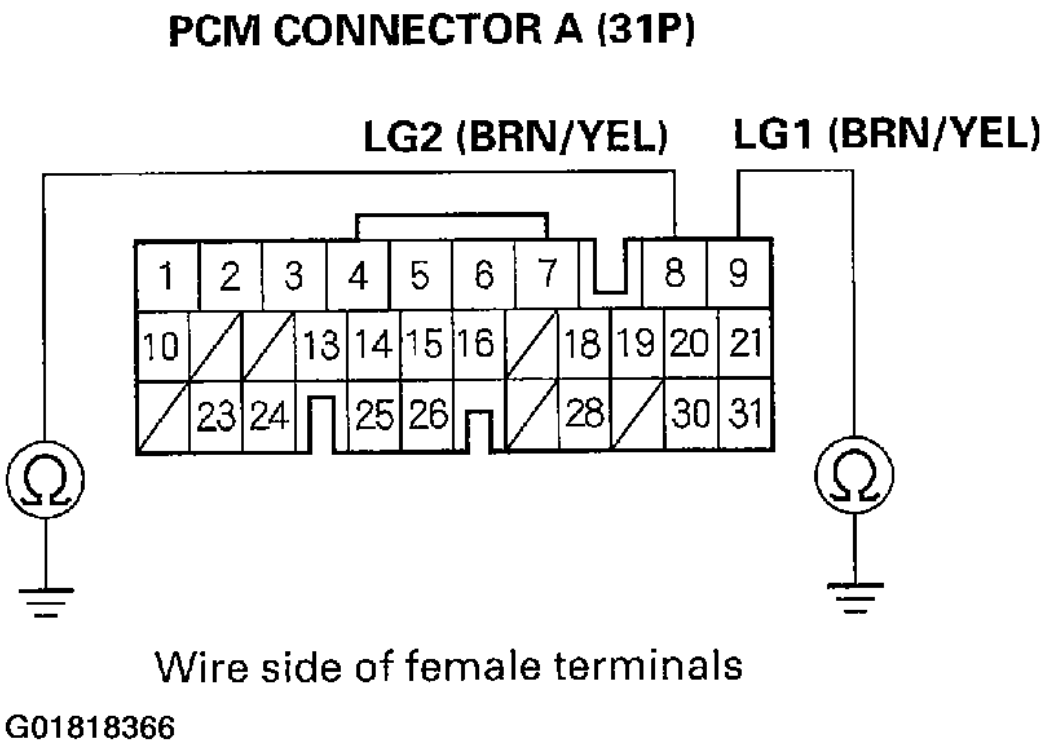


Fig. 110: Checking For Continuity Between PCM Connector Terminals A8 & Body Ground & Between A9 & Body Ground

10. Connect PCM connector A (31P).
11. Turn the ignition switch ON (II).
12. Measure the voltage between mainshaft speed sensor connector terminal No. 1 and body ground.

Is there about 5 V?

YES: Go to step 13.

NO: Go to step 24 .

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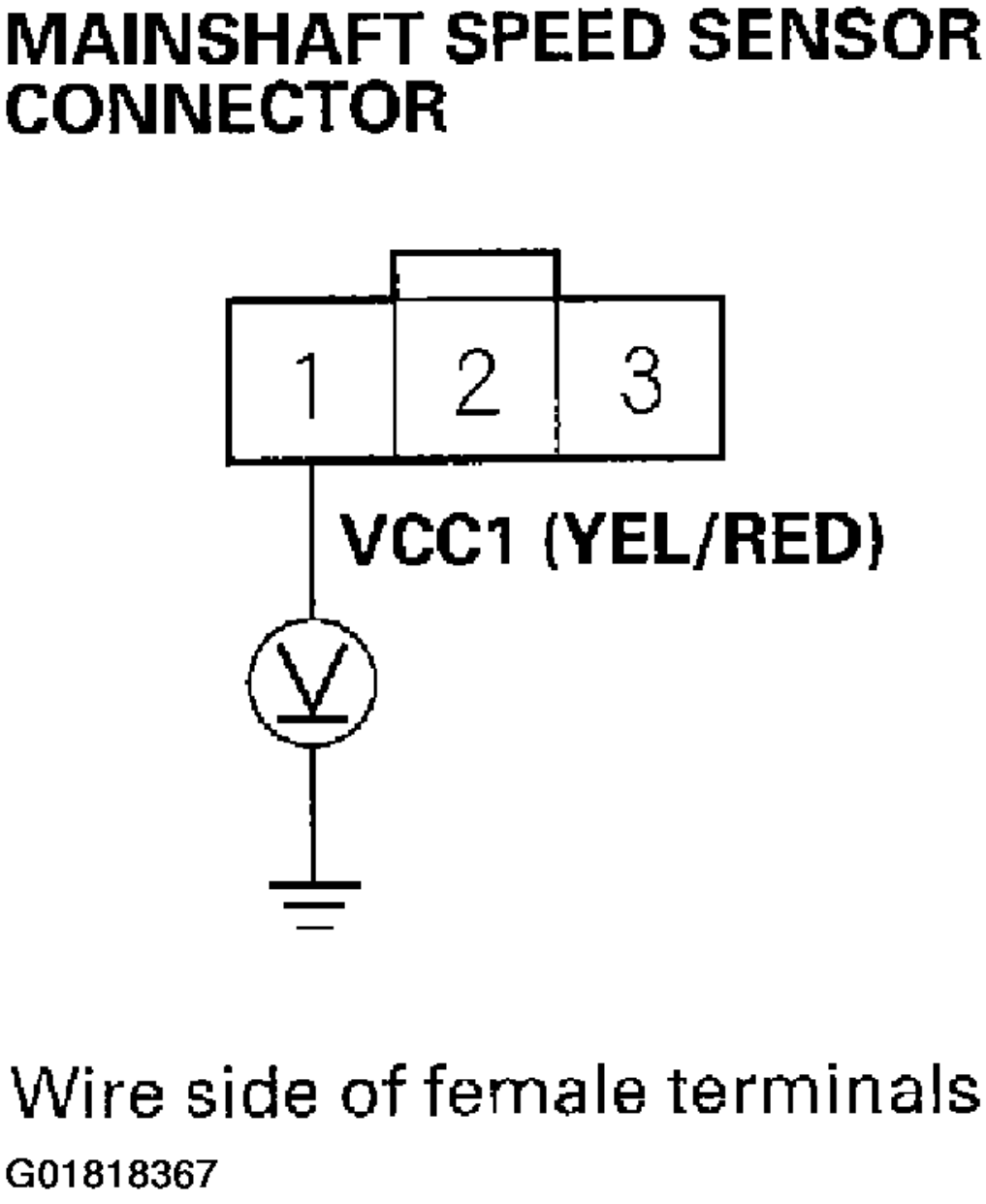


Fig. 111: Measuring The Voltage Between Mainshaft Speed Sensor Connector Terminal No. 1 & Body Ground

13. Turn the ignition switch OFF.
14. Disconnect PCM connector C (22P).
15. Check for continuity between mainshaft speed sensor connector terminal No. 2 and body ground.

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Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal C19 and mainshaft speed sensor, then go to step 30 .

NO: Go to step 16.

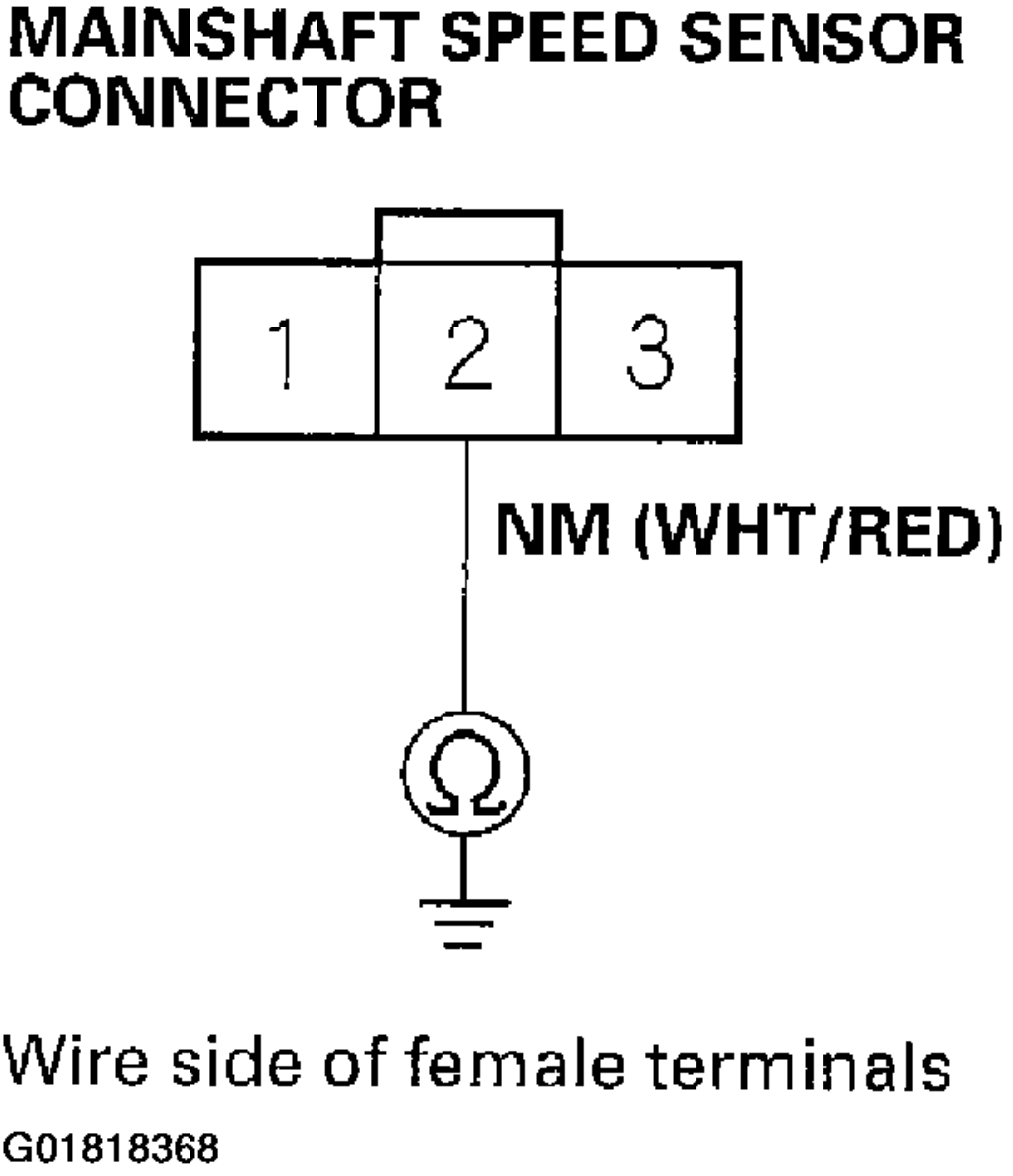


Fig. 112: Checking For Continuity Between Mainshaft Speed Sensor Connector Terminal No. 2 & Body Ground

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16. Check for continuity between mainshaft speed sensor connector terminal No. 3 and body ground.

Is there continuity?

YES: Go to step 17.

NO: Repair open in the wire between the mainshaft speed sensor connector and ground (G101), then go to step 30 .

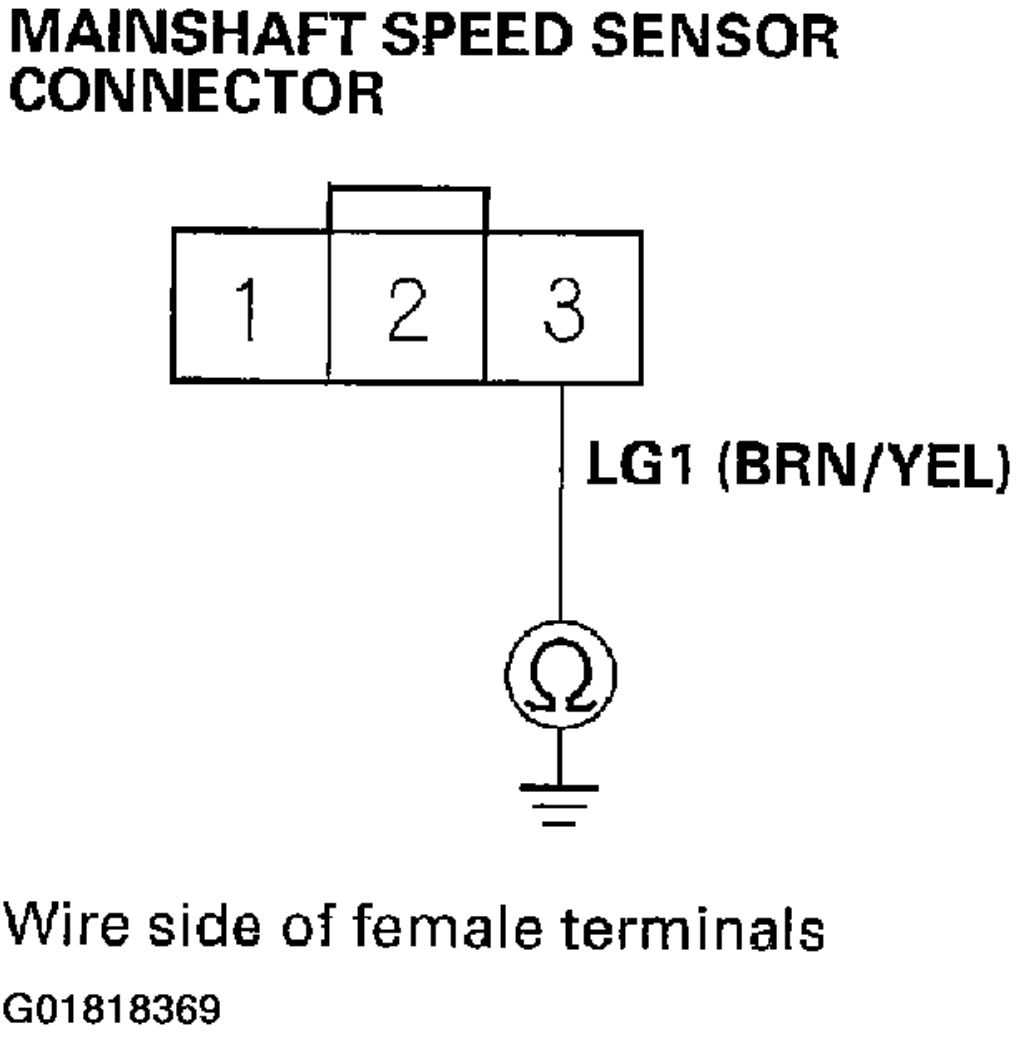


Fig. 113: Checking For Continuity Between Mainshaft Speed Sensor Connector Terminal No. 3 & Body Ground

17. Connect PCM connector C (22P).
18. Turn the ignition switch ON (II).

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19. Measure the voltage between mainshaft speed sensor connector terminals No. 2 and No. 3.

Is there about 5 V?

YES: Go to step 20.

NO: Go to step 29 .

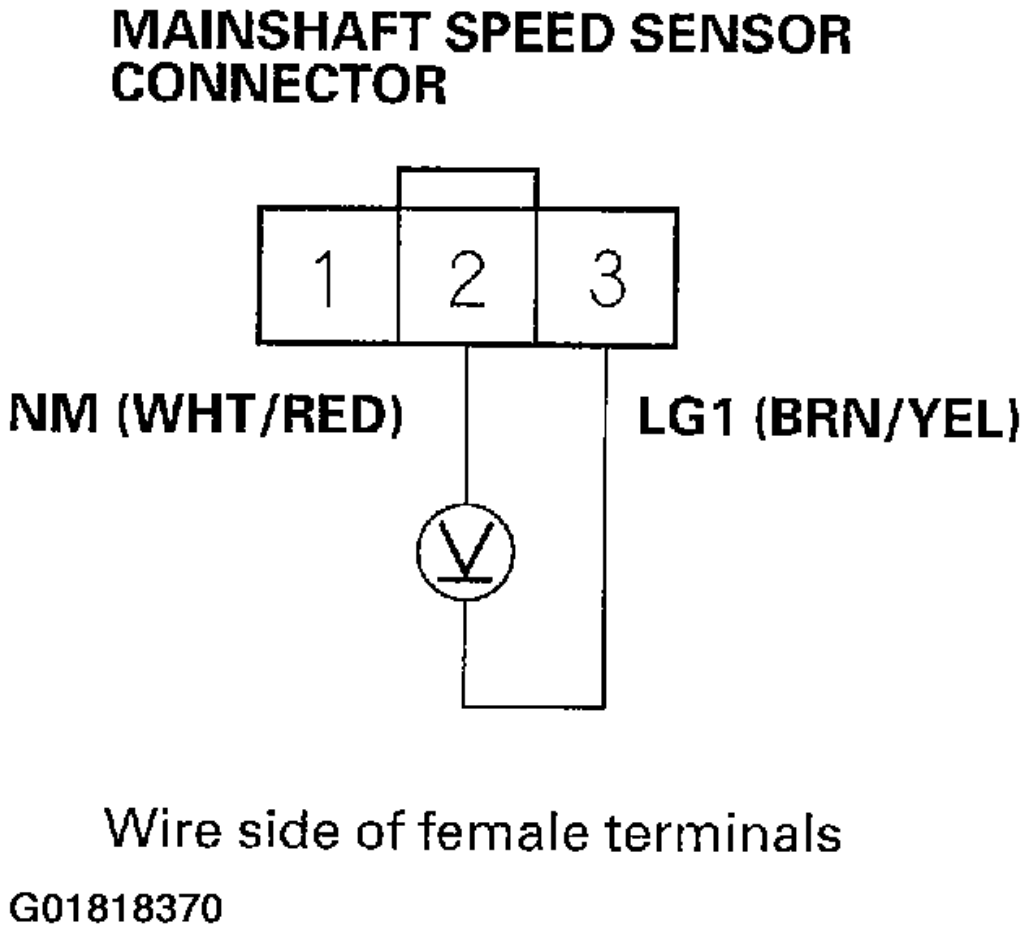


Fig. 114: Measuring The Voltage Between Mainshaft Speed Sensor Connector Terminals No. 2 & No. 3

20. Connect the mainshaft speed sensor connector.
21. Measure the voltage between PCM connector terminals C19 and A8 or A9.

Is the voltage 0 V or about 5 V?

YES: Go to step 22.

NO: Replace the mainshaft speed sensor (see **MAINSHAFT SPEED SENSOR**

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REPLACEMENT), then go to step 30 .

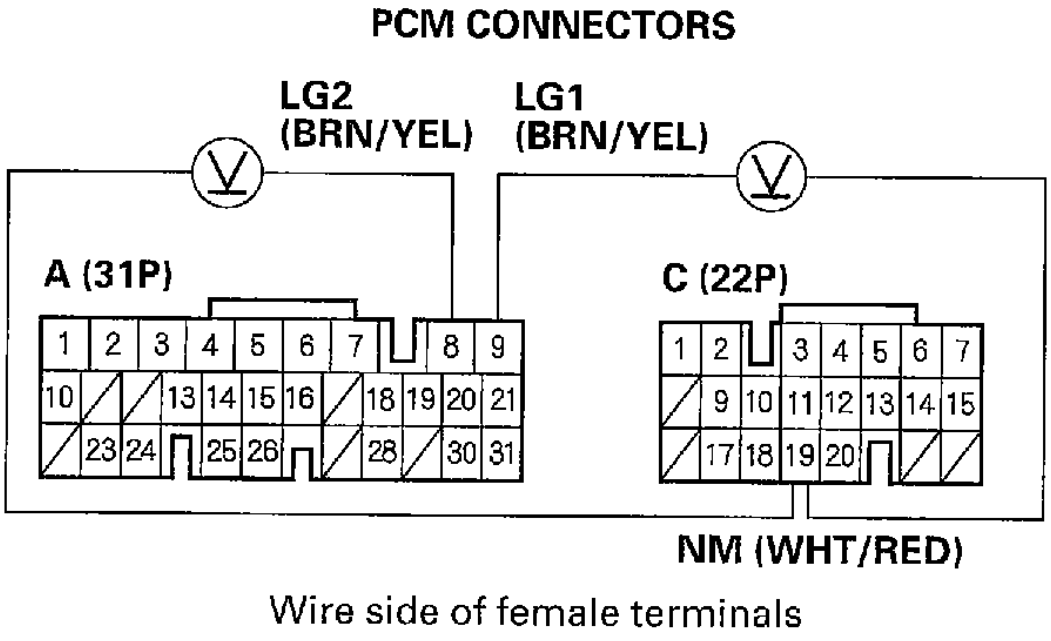


Fig. 115: Measuring The Voltage Between PCM Connector Terminals C19 & A8 Or A9

22. Shift to the **P** position. Start the engine, and let it idle.
23. With the engine idling, measure the voltage between PCM connector terminals C19 and A8 or A9.

Is there 1.5 V-3.5 V?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Replace the mainshaft speed sensor (see **MAINSHAFT SPEED SENSOR REPLACEMENT**), then go to step 30 .

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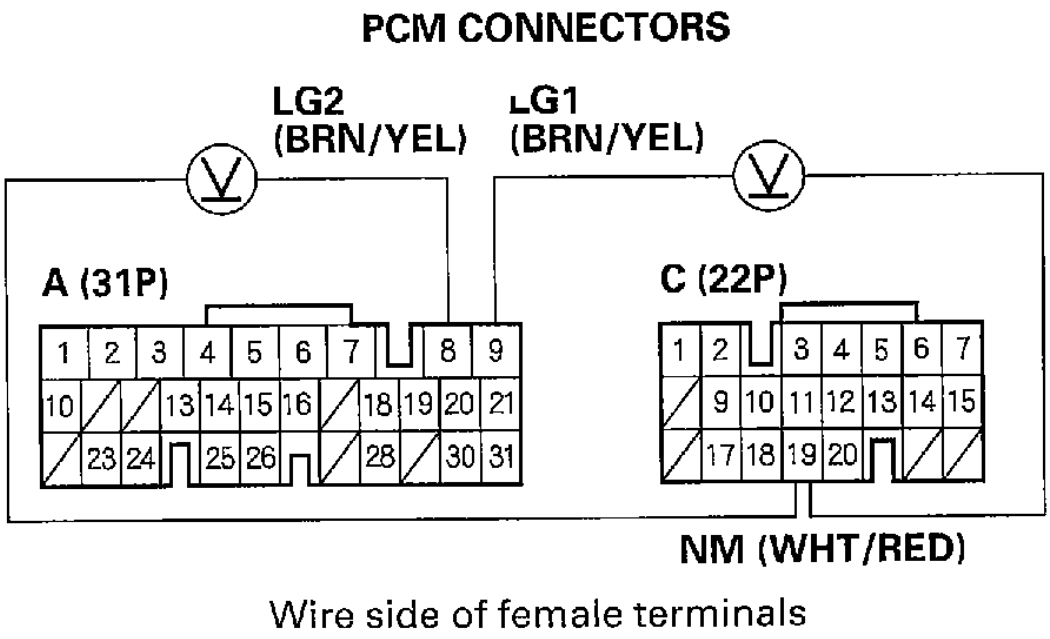


Fig. 116: Measuring The Voltage Between PCM Connector Terminals C19 & A8 Or A9

24. Measure the voltage between PCM connector terminals A21 and A8 or A9.

    Is there 4.75 V-5.25 V?

    YES: Repair open in the wire between PCM connector terminal A21 and the mainshaft speed sensor connector, then go to step 30 .

    NO: Go to step 25.

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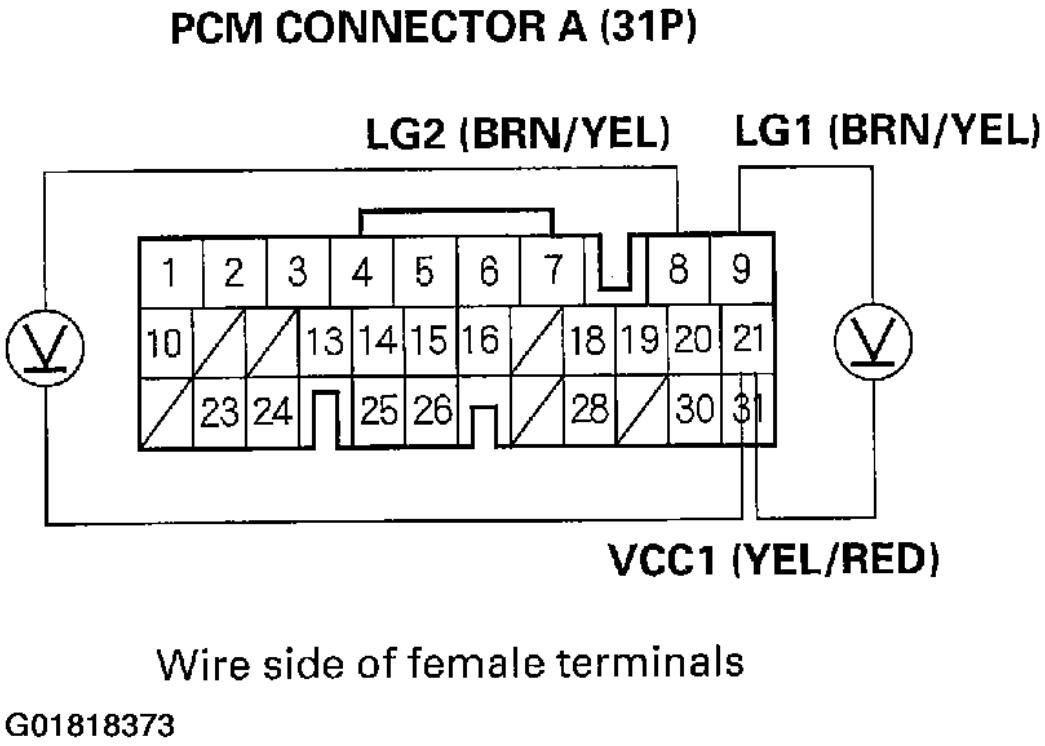


Fig. 117: Measuring The Voltage Between PCM Connector Terminals A21 & A8 Or A9

25. Turn the ignition switch OFF.
26. Jump the SCS line with the HDS.
27. Disconnect PCM connector A (31P).
28. Check for continuity between PCM connector terminal A21 and body ground.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal A21 and the mainshaft speed sensor connector, then go to step 30 .

NO: Check for loose or poor connections at PCM connector terminal A21. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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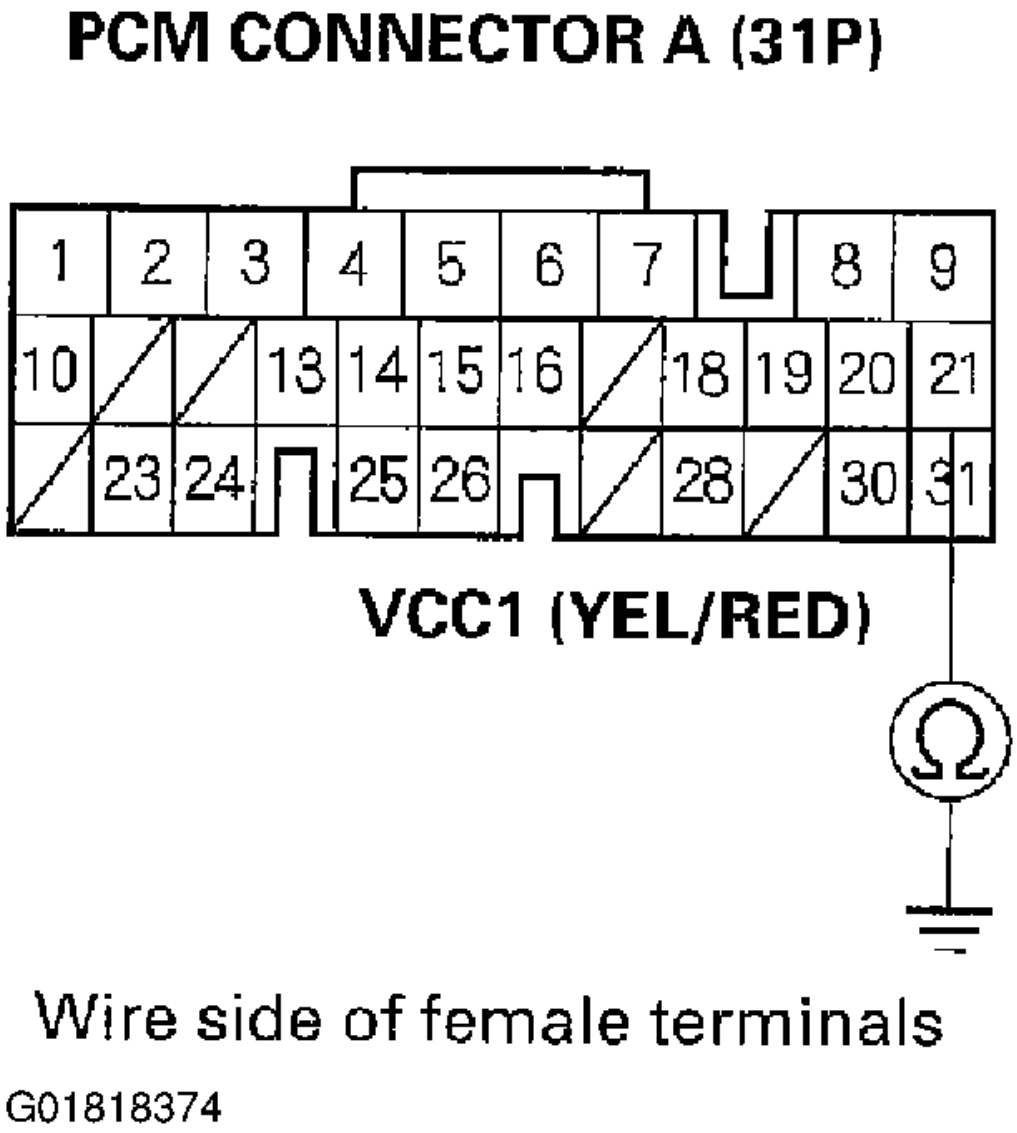


Fig. 118: Checking For Continuity Between PCM Connector Terminal A21 & Body Ground

29. Measure the voltage between PCM connector terminals C19 and A8 or A9.

Is there about 5 V?

YES: Repair open in the wire between PCM connector terminal C19 and the mainshaft speed sensor connector, then go to step 30.

NO: Check for loose or poor connections at PCM connector terminal C19. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the

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symptom/indication goes away with a known-good PCM, replace the original PCM.

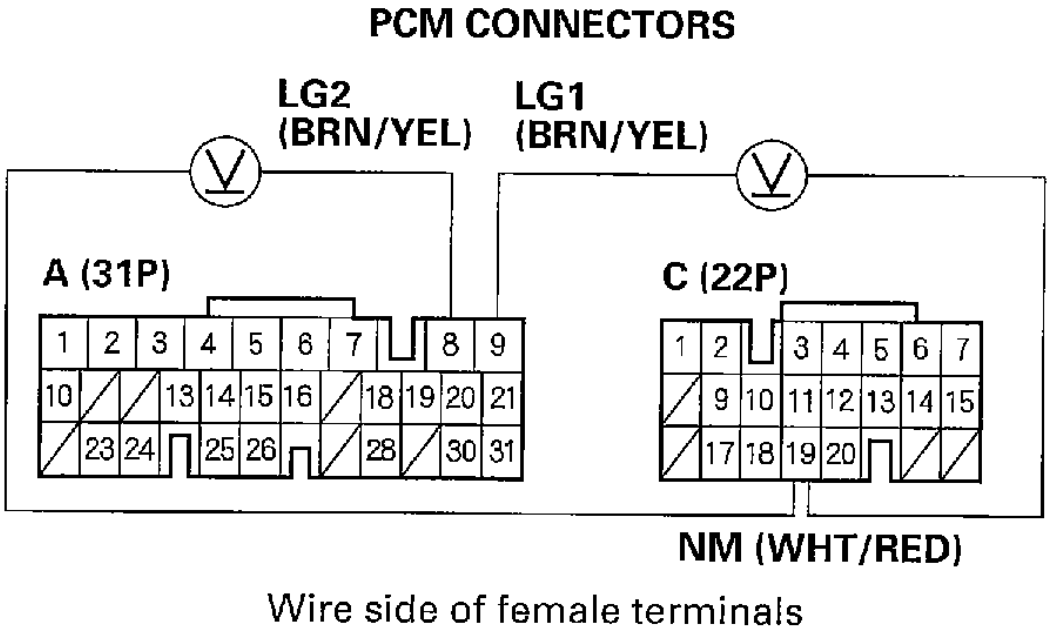


Fig. 119: Measuring The Voltage Between PCM Connector Terminals C19 & A8 Or A9

30. Clear the DTC with the HDS.
31. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
32. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0716.

Did the result pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0717: PROBLEM IN MAINSHAFT SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Record all freeze data, and clear the DTC with the HDS.
2. Check for proper mainshaft speed sensor installation (see **MAINSHAFT SPEED SENSOR**

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REPLACEMENT).

3. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
4. Start the engine, drive the vehicle in the **D** position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0717.

   Did the result fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector A (31P) and mainshaft speed sensor connector.
9. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

   Is there continuity?

   YES: Go to step 10.

   NO: Repair open in the wires between PCM connector terminals A8, A9 and ground (G101), or repair poor ground (G101), then go to step 30 .

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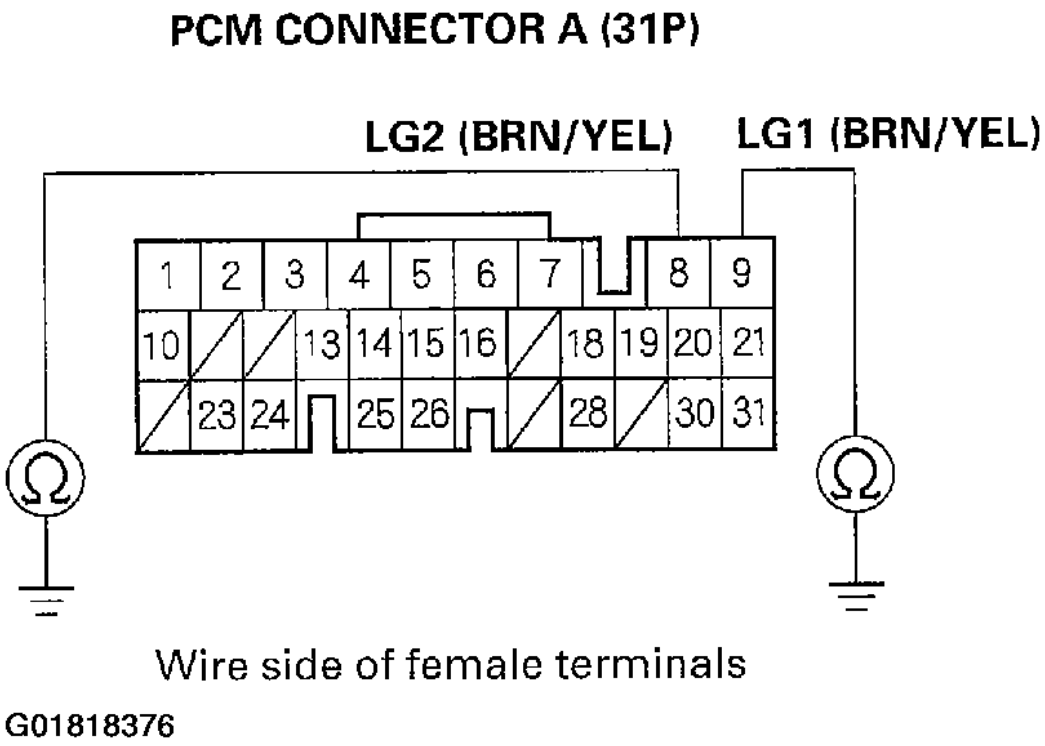


Fig. 120: Checking For Continuity Between PCM Connector Terminals A8 & Body Ground & Between A9 & Body Ground

10. Connect PCM connector A (31P).
11. Turn the ignition switch ON (II).
12. Measure the voltage between mainshaft speed sensor connector terminal No. 1 and body ground.

Is there about 5 V?

YES: Go to step 13.

NO: Go to step 24 .

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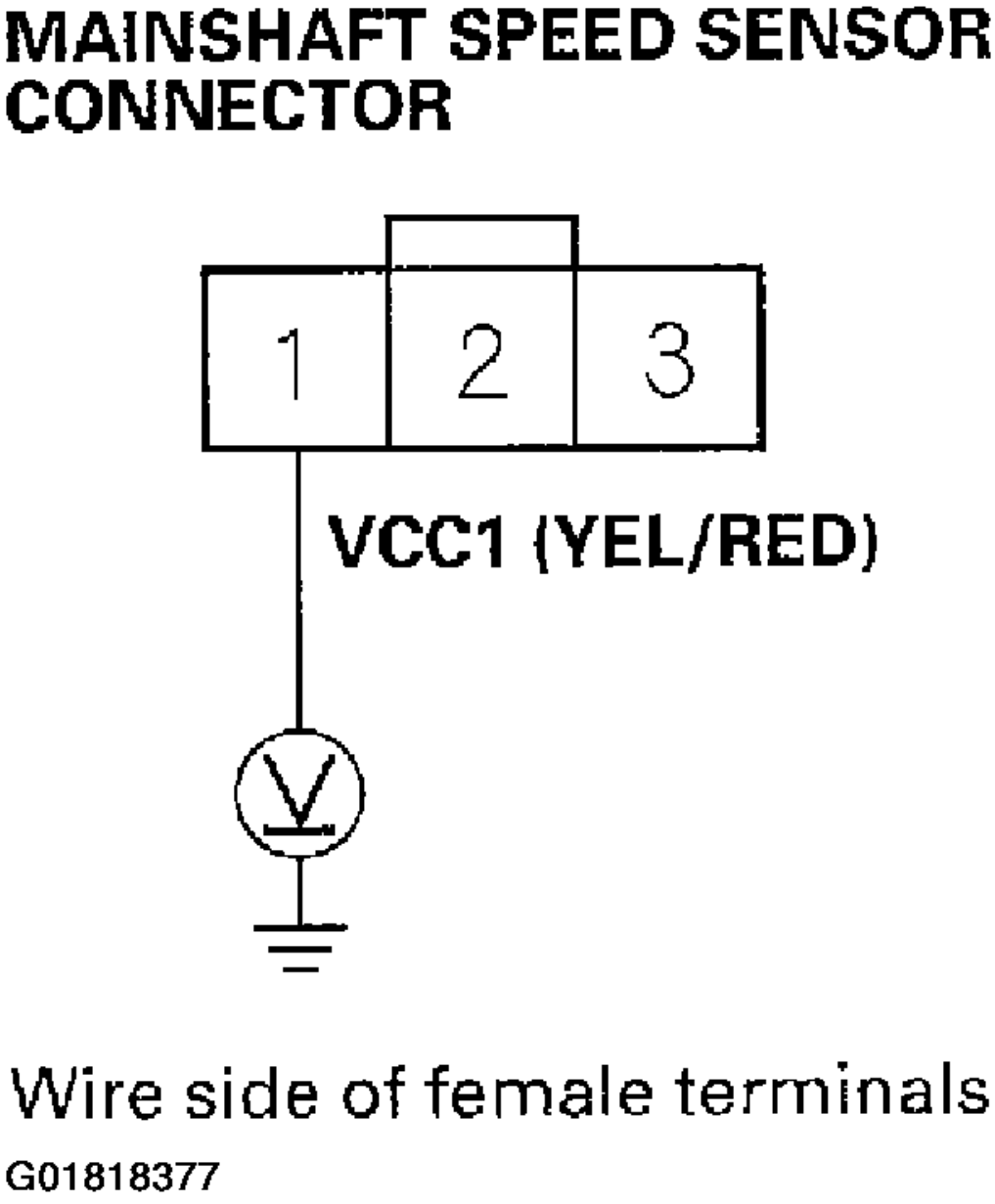


Fig. 121: Measuring The Voltage Between Mainshaft Speed Sensor Connector Terminal No. 1 & Body Ground

13. Turn the ignition switch OFF.
14. Disconnect PCM connector C (22P).
15. Check for continuity between mainshaft speed sensor connector terminal No. 2 and body ground.

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Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal C19 and mainshaft speed sensor, then go to step 30 .

NO: Go to step 16.

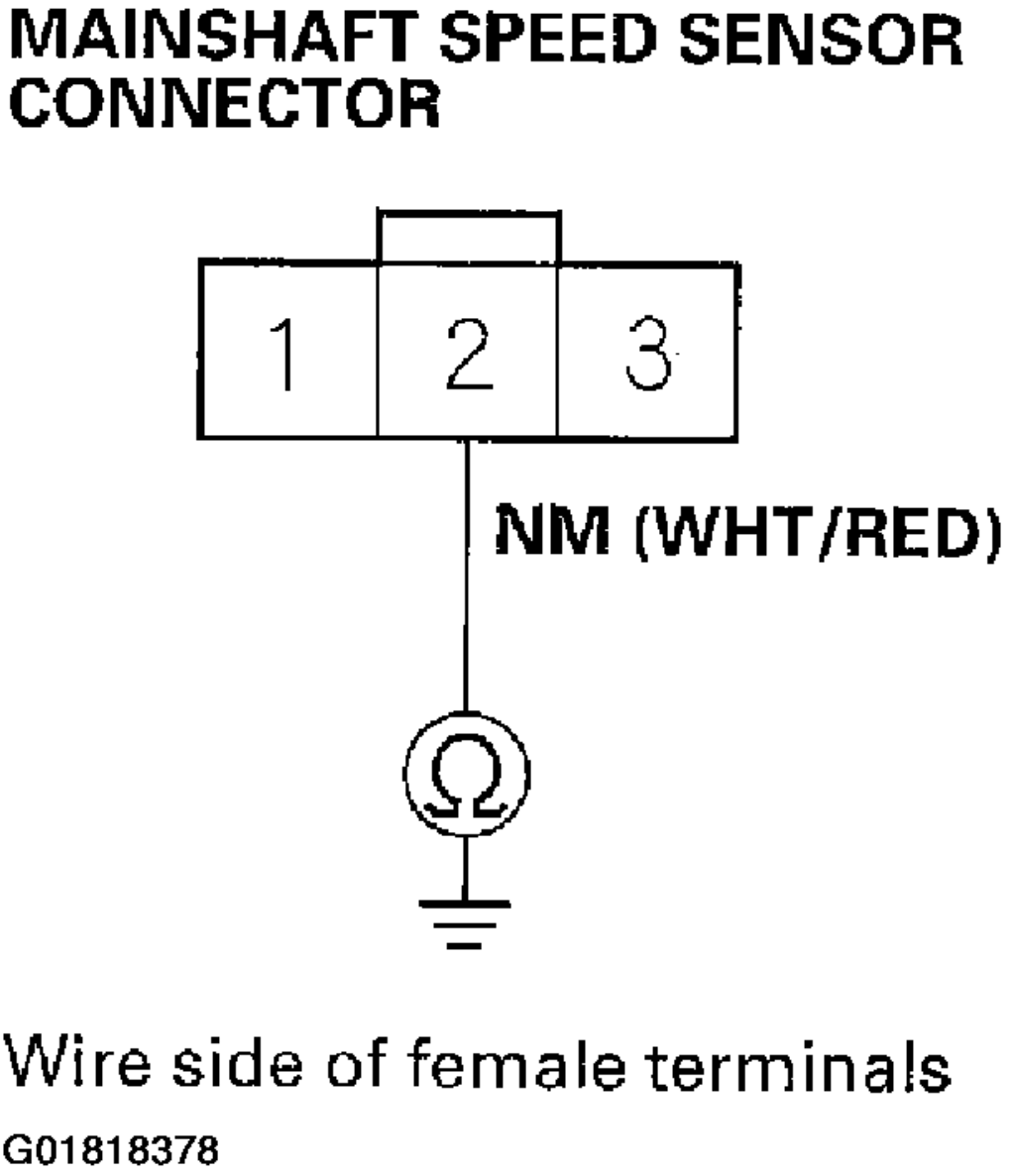


Fig. 122: Checking For Continuity Between Mainshaft Speed Sensor Connector Terminal No. 2 & Body Ground

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16. Check for continuity between mainshaft speed sensor connector terminal No. 3 and body ground.

Is there continuity?

YES: Go to step 17.

NO: Repair open in the wire between the mainshaft speed sensor connector and ground (G101), then go to step 30 .

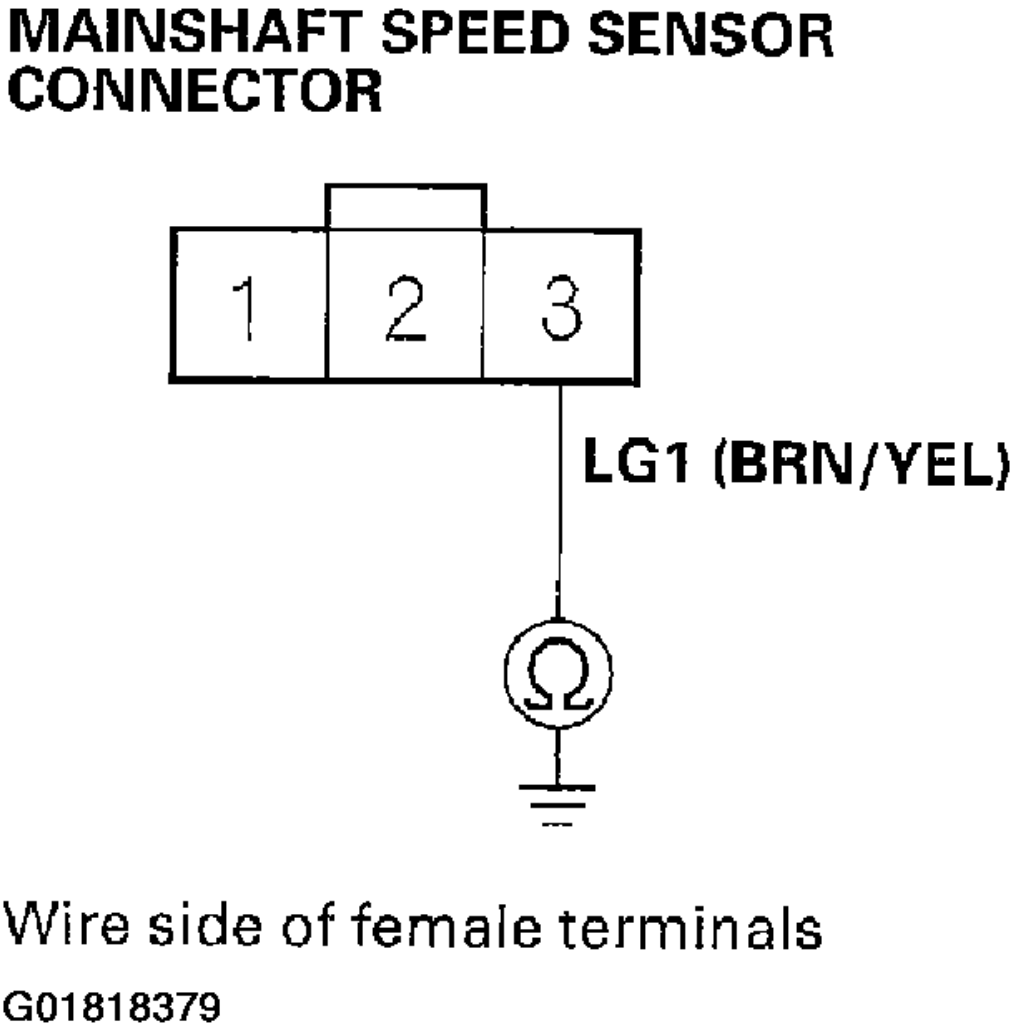


Fig. 123: Checking For Continuity Between Mainshaft Speed Sensor Connector Terminal No. 3 & Body Ground

17. Connect PCM connector C (22P).
18. Turn the ignition switch ON (II).

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19. Measure the voltage between mainshaft speed sensor connector terminals No. 2 and No. 3.

Is there about 5 V?

YES: Go to step 20.

NO: Go to step 29 .

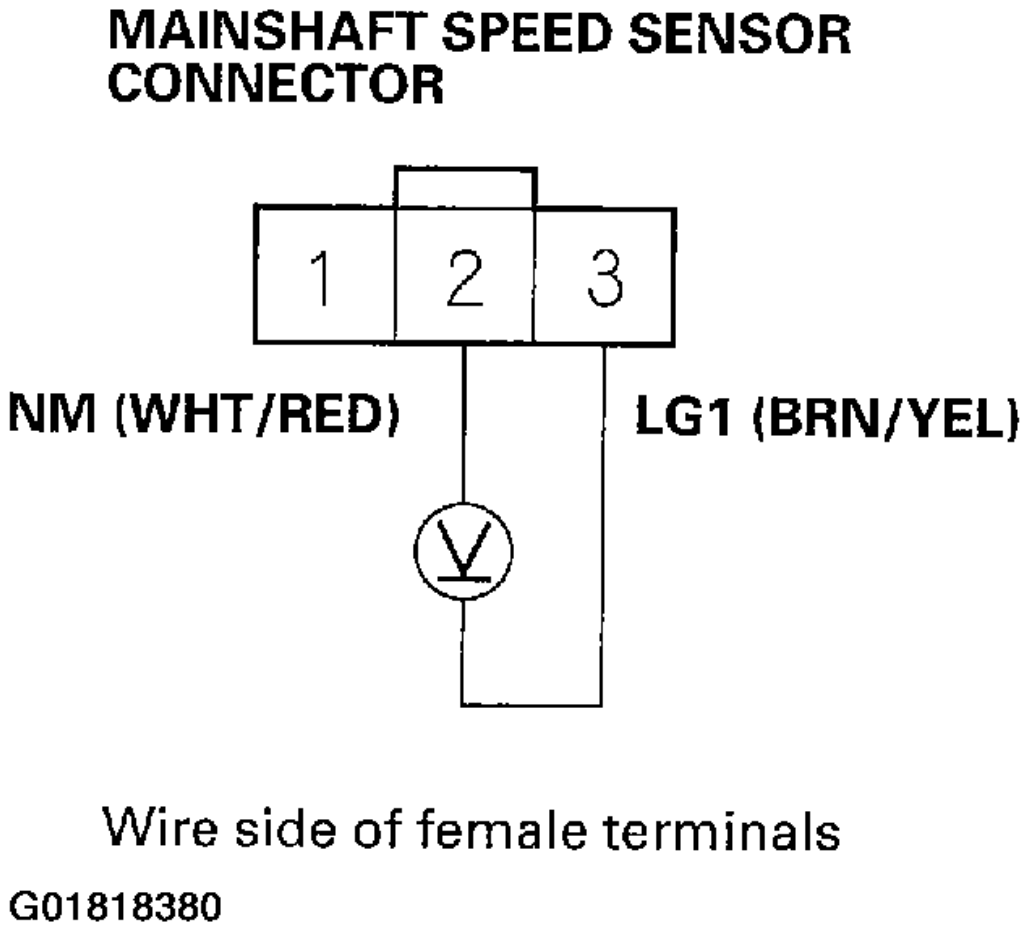


Fig. 124: Measuring The Voltage Between Mainshaft Speed Sensor Connector Terminals No. 2 & No. 3

20. Connect the mainshaft speed sensor connector.
21. Measure the voltage between PCM connector terminals C19 and A8 or A9.

Is there 0 V or about 5 V?

YES: Go to step 22.

NO: Replace the mainshaft speed sensor (see **MAINSHAFT SPEED SENSOR**

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REPLACEMENT), then go to step 30 .

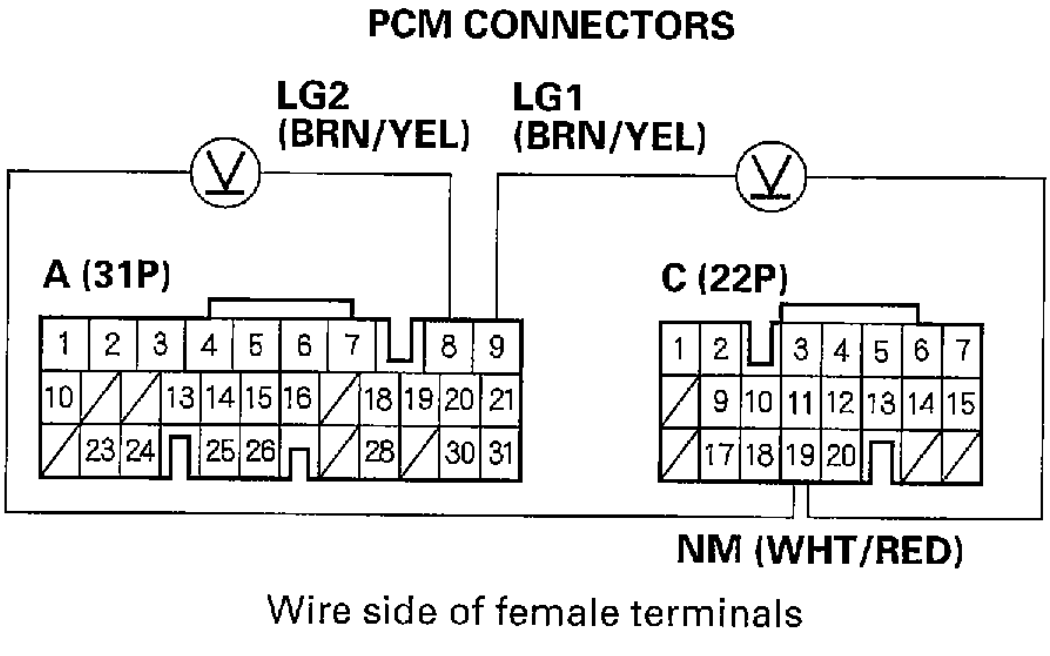


Fig. 125: Measuring The Voltage Between PCM Connector Terminals C19 & A8 Or A9

22. Shift to the **P** position. Start the engine, and let it idle.
23. With the engine idling, measure the voltage between PCM connector terminals C19 and A8 or A9.

Is there 1.5 V-3.5 V?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Replace the mainshaft speed sensor (see **MAINSHAFT SPEED SENSOR REPLACEMENT**), then go to step 30 .

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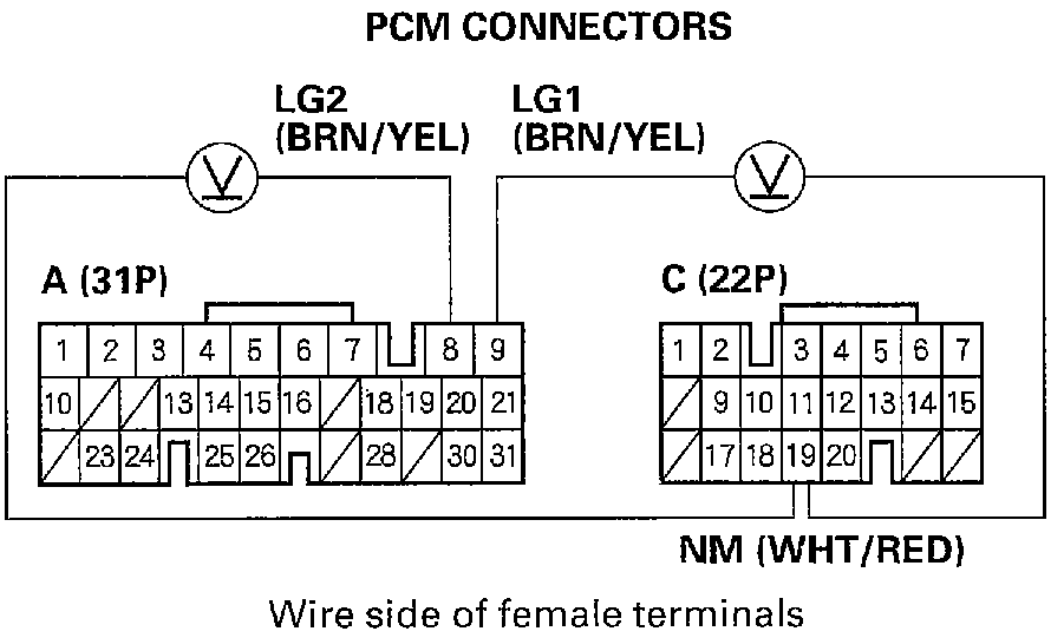


Fig. 126: Measuring The Voltage Between PCM Connector Terminals C19 & A8 Or A9

24. Measure the voltage between PCM connector terminals A21 and A8 or A9.

    Is there 4.75 V-5.25 V?

    YES: Repair open in the wire between PCM connector terminal A21 and the mainshaft speed sensor connector, then go to step 30 .

    NO: Go to step 25.

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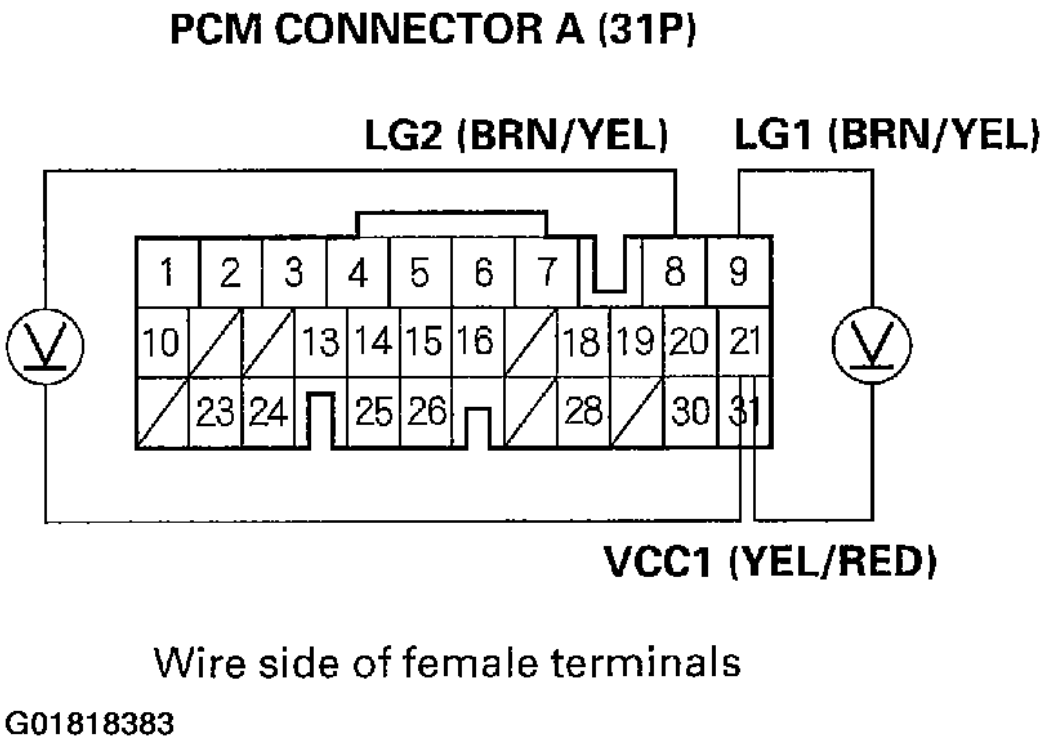


Fig. 127: Measuring The Voltage Between PCM Connector Terminals A21 & A8 Or A9

25. Turn the ignition switch OFF.
26. Jump the SCS line with the HDS.
27. Disconnect PCM connector A (31P).
28. Check for continuity between PCM connector terminal A21 and body ground.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal A21 and the mainshaft speed sensor connector, then go to step 30 .

NO: Check for loose or poor connections at PCM connector terminal A21. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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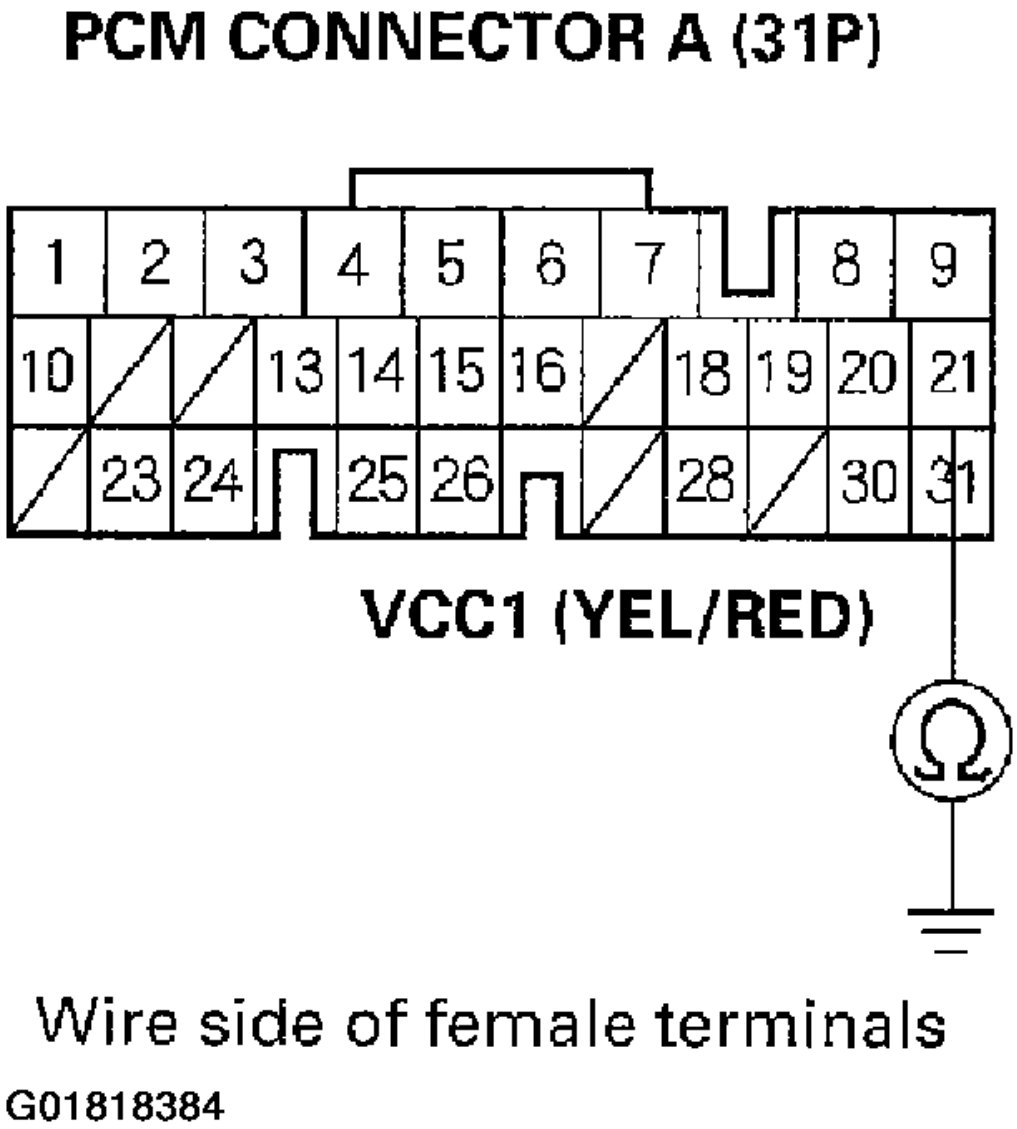


Fig. 128: Checking For Continuity Between PCM Connector Terminal A21 & Body Ground

29. Measure the voltage between PCM connector terminals C19 and A8 or A9.

    Is there about 5 V?

    YES: Repair open in the wire between PCM connector terminal C19 and the mainshaft speed sensor connector, then go to step 30.

    NO: Check for loose or poor connections at PCM connector terminal C19. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the

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symptom/indication goes away with a known-good PCM, replace the original PCM.

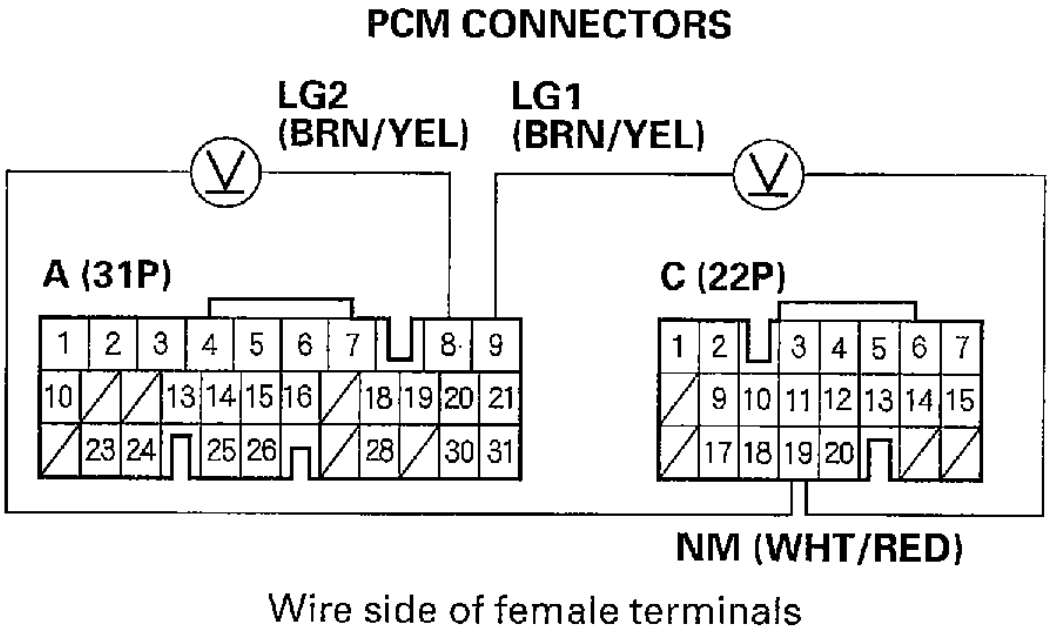


Fig. 129: Measuring The Voltage Between PCM Connector Terminals C19 & A8 Or A9

30. Clear the DTC with the HDS.
31. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
32. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0717.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0718: MAINSHAFT SPEED SENSOR INTERMITTENT FAILURE

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in the **D** position in all five gears.

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3. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0718.

   Did the result indicate a fall?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the mainshaft speed sensor and PCM. If the tester indicates NOT COMPLETE, return to step 2 and recheck.

4. Turn the ignition switch OFF.
5. Disconnect the mainshaft speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES: Go to step 6.

   NO: Repair the connector terminals, then go to step 6.

6. Connect the mainshaft speed sensor connector.
7. Test-drive the vehicle for several minutes, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0718.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: The problem has been corrected. If the tester indicates NOT COMPLETE, return to step 7 and recheck.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector C (22P).
11. Disconnect the mainshaft speed sensor connector.
12. Check for continuity between mainshaft speed sensor connector terminal No. 2 and body ground.

    Is there continuity?

    YES: Repair short to ground in the wire between PCM connector terminal C19 and the mainshaft speed sensor connector, then go to step 19 .

    NO: Go to step 13.

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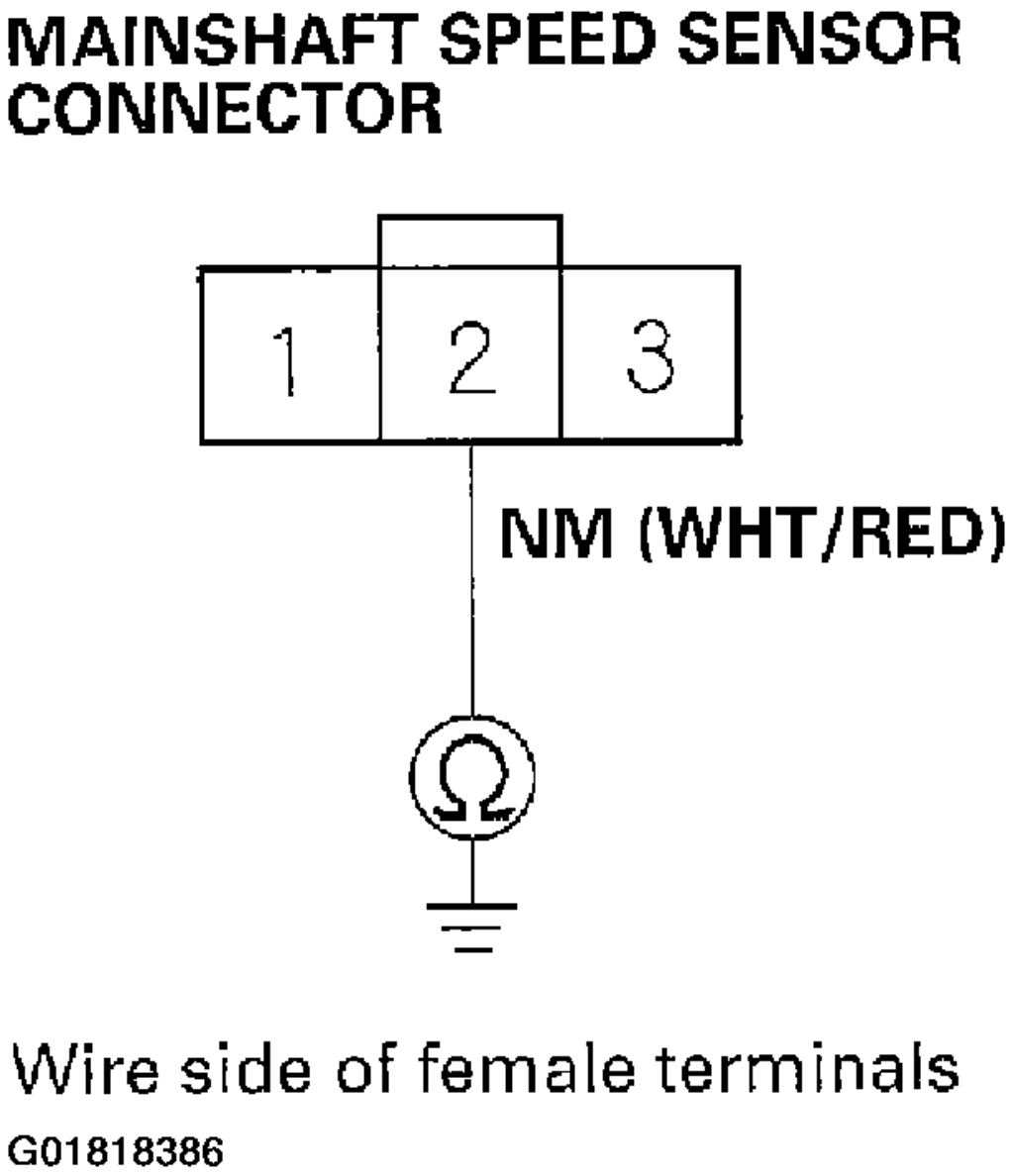


Fig. 130: Checking For Continuity Between Mainshaft Speed Sensor Connector Terminal No. 2 & Body Ground

13. Connect PCM connector C (22P).
14. Turn the ignition switch ON (II).
15. Measure the voltage between mainshaft speed sensor connector terminal No. 2 and body ground.

    Is there about 5 V?

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YES: Replace the mainshaft speed sensor (see **MAINSHAFT SPEED SENSOR REPLACEMENT**), then go to step 19 .

NO: Go to step 16.

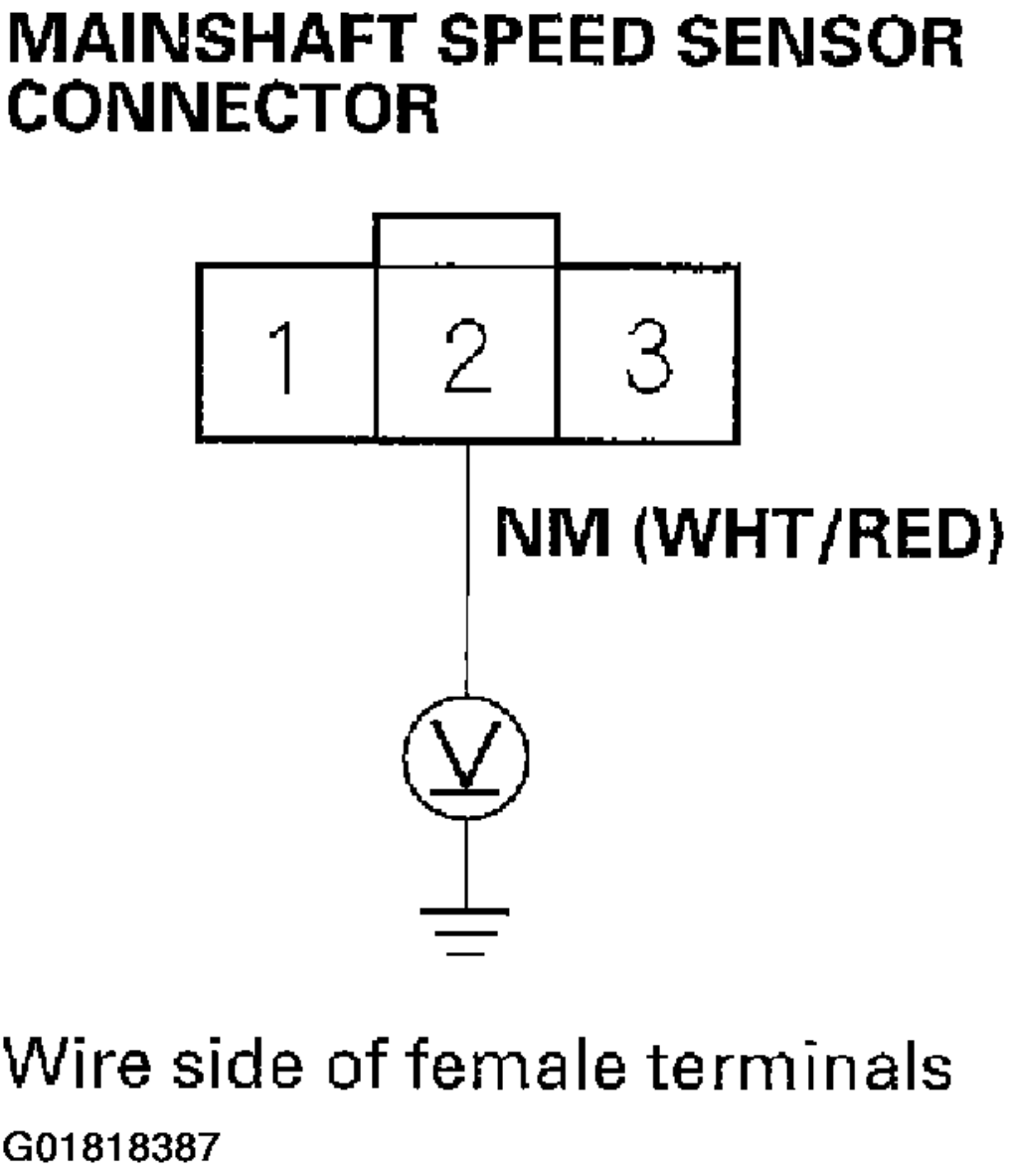


Fig. 131: Measuring The Voltage Between Mainshaft Speed Sensor Connector Terminal No. 2 & Body Ground

16. Turn the ignition switch OFF.

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17. Disconnect PCM connector C (22P).
18. Check for continuity between PCM connector terminal C19 and mainshaft speed sensor connector terminal No. 2.

Is there continuity?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Repair open in the wire between PCM connector terminal C19 and the mainshaft speed sensor, then go to step 19.

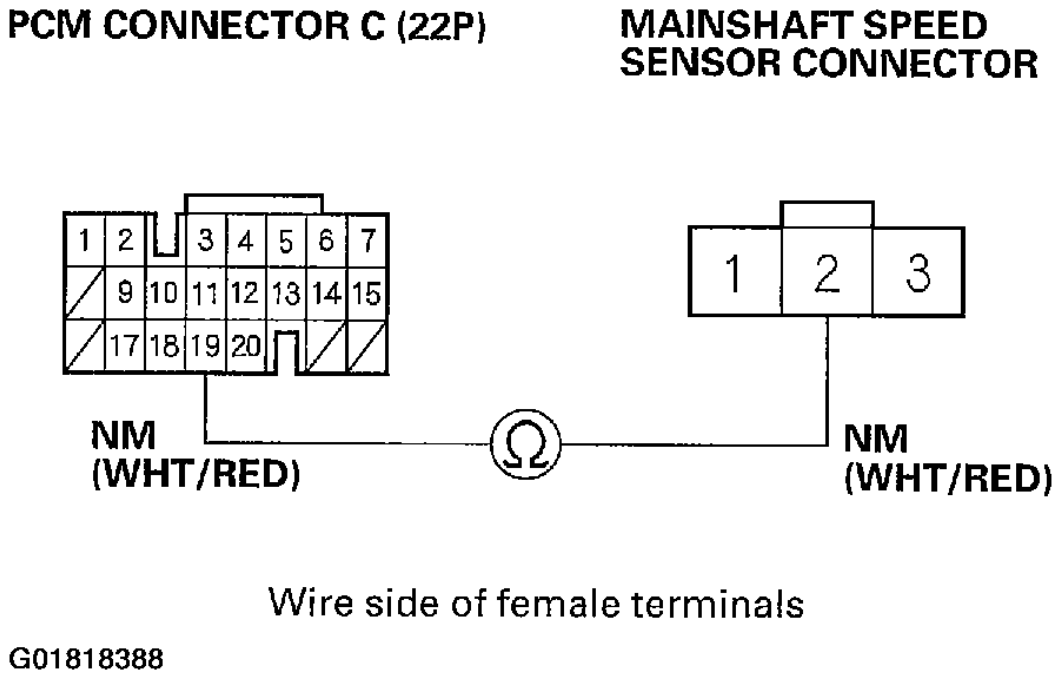


Fig. 132: Checking For Continuity Between PCM Connector Terminal C19 & Mainshaft Speed Sensor Connector Terminal No. 2

19. Clear the DTC with the HDS.
20. Test-drive the vehicle for several minutes in the **D** position in all five gears.
21. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0718.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0721: PROBLEM IN COUNTERSHAFT SPEED SENSOR CIRCUIT

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Record all freeze data, and clear the DTC with the HDS.
2. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
3. Start the engine, drive the vehicle in the **D** position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.
4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0721.

   Did the result indicate a fail?

   YES: Go to step 5.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the countershaft speed sensor and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (31P) and countershaft speed sensor connector.
8. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

   Is there continuity?

   YES: Go to step 9.

   NO: Repair open in the wire between PCM connector terminals A8, A9 and ground (G101), or repair poor ground (G101), then go to step 29 .

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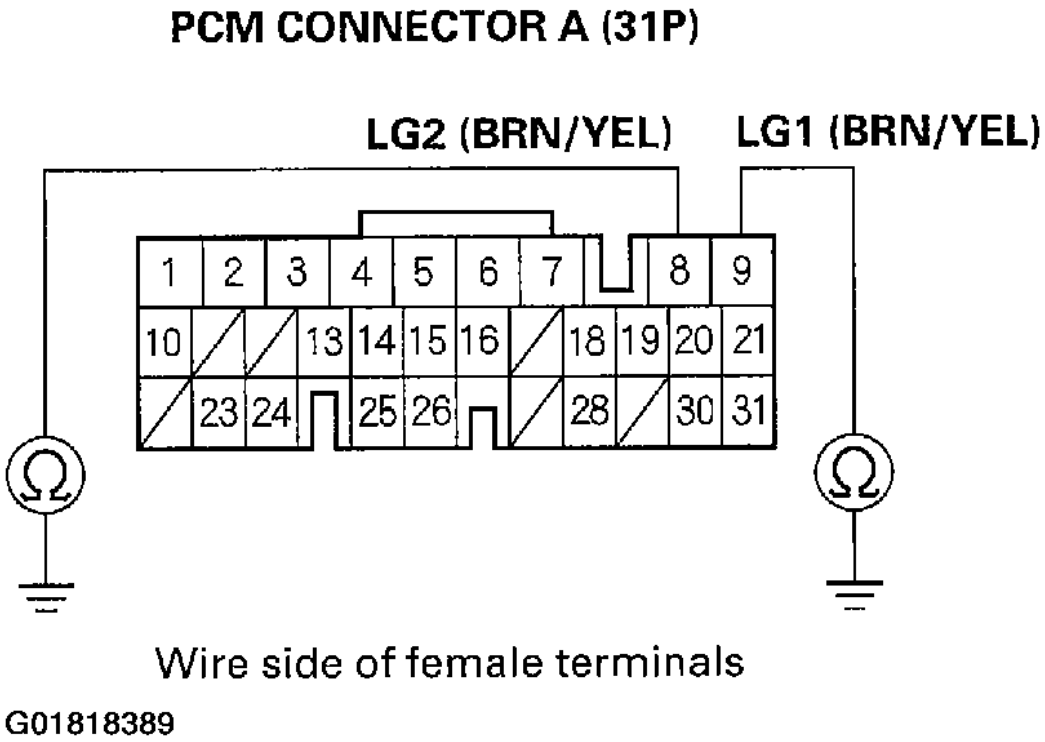


Fig. 133: Checking For Continuity Between PCM Connector Terminals A8 & Body Ground & Between A9 & Body Ground

9. Connect PCM connector A (31P).
10. Turn the ignition switch ON (II).
11. Measure the voltage between countershaft speed sensor connector terminal No. 1 and body ground.

Is there about 5 V?

YES: Go to step 12.

NO: Go to step 23 .

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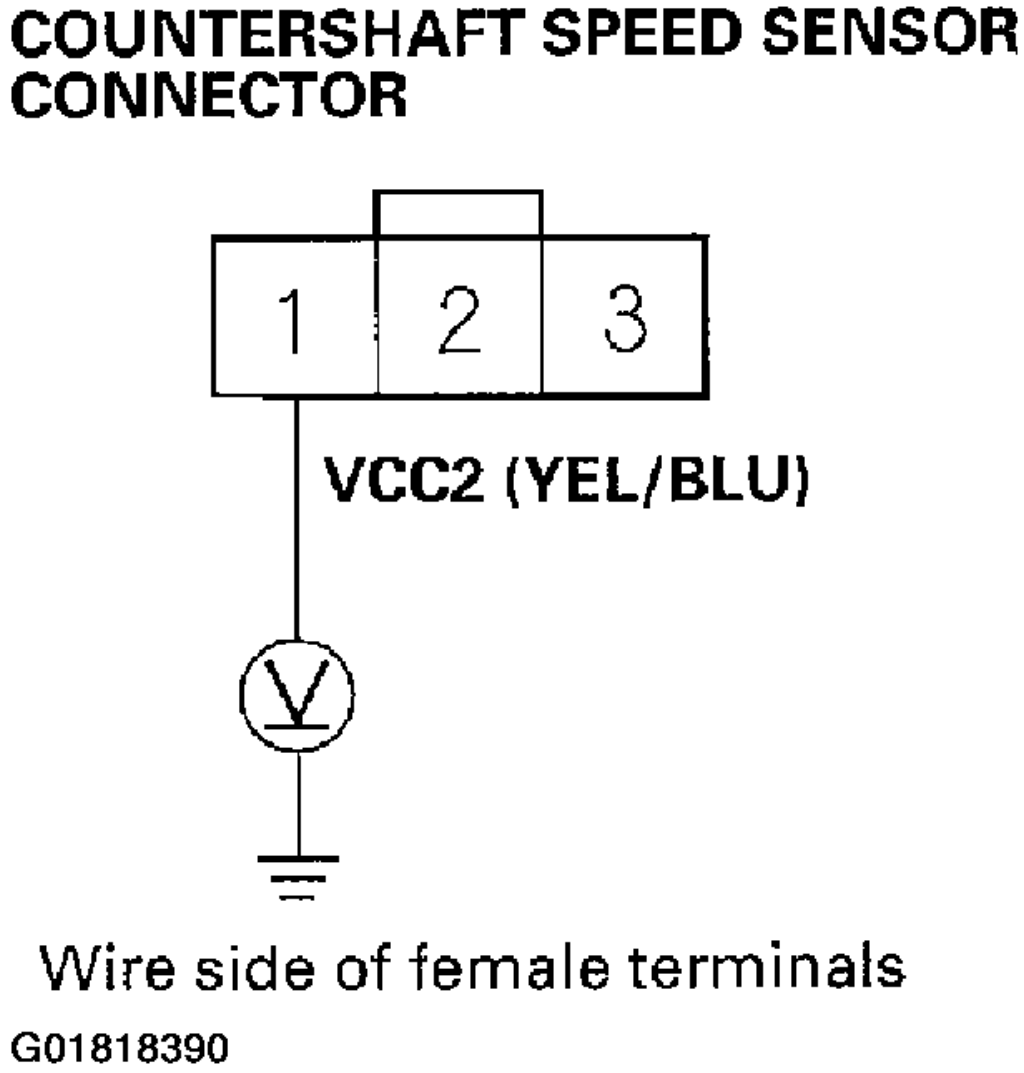


Fig. 134: Measuring The Voltage Between Countershaft Speed Sensor Connector Terminal No. 1 & Body Ground

12. Turn the ignition switch OFF.
13. Disconnect PCM connector A (31P).
14. Check for continuity between countershaft speed sensor connector terminal No. 2 and body ground.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal A18 and the countershaft speed sensor, then go to step 29 .

NO: Go to step 15.

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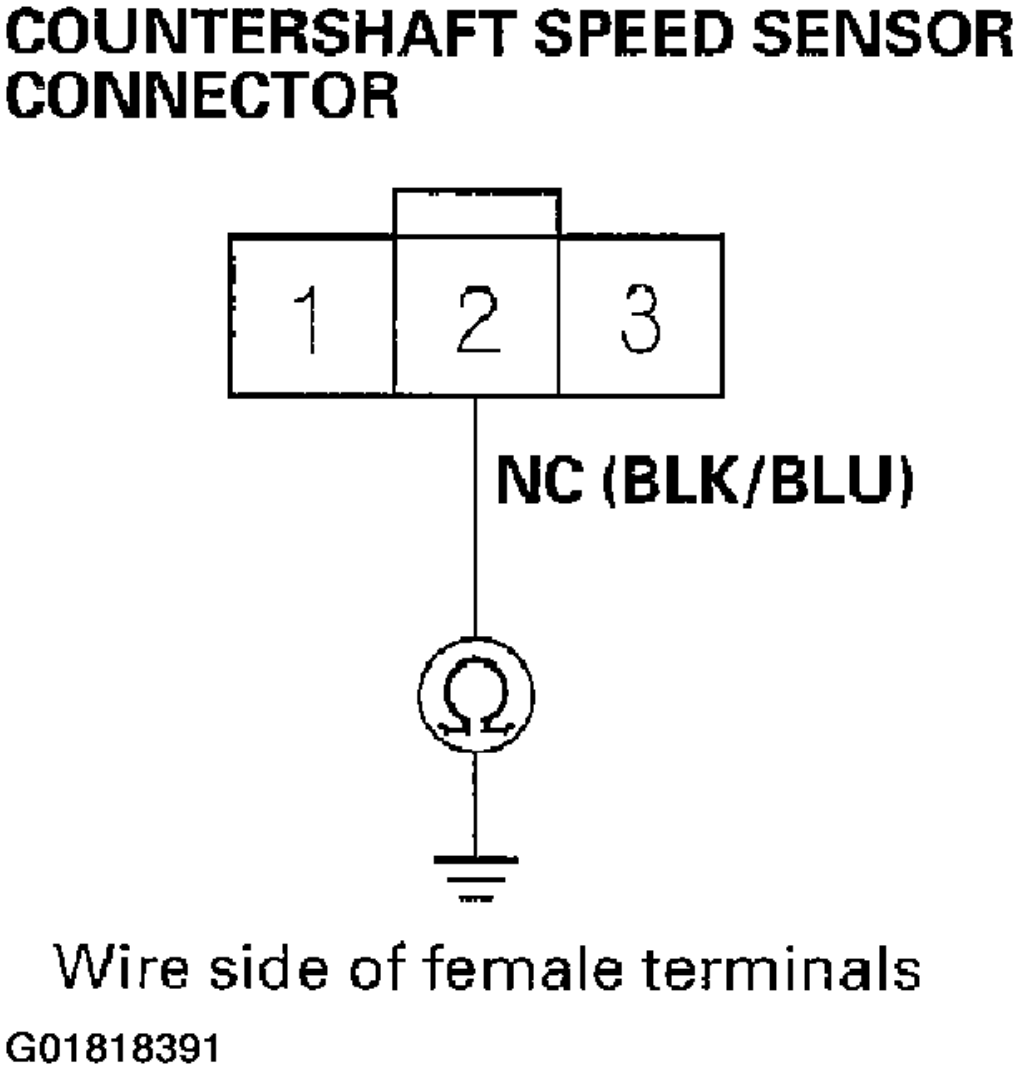


Fig. 135: Checking For Continuity Between Countershaft Speed Sensor Connector Terminal No. 2 & Body Ground

15. Check for continuity between countershaft speed sensor connector terminal No. 3 and body ground.

    Is there continuity?

    YES: Go to step 16.

    NO: Repair open in the wire between the countershaft speed sensor and ground (G101), or repair poor ground (G 101), then go to step 29 .

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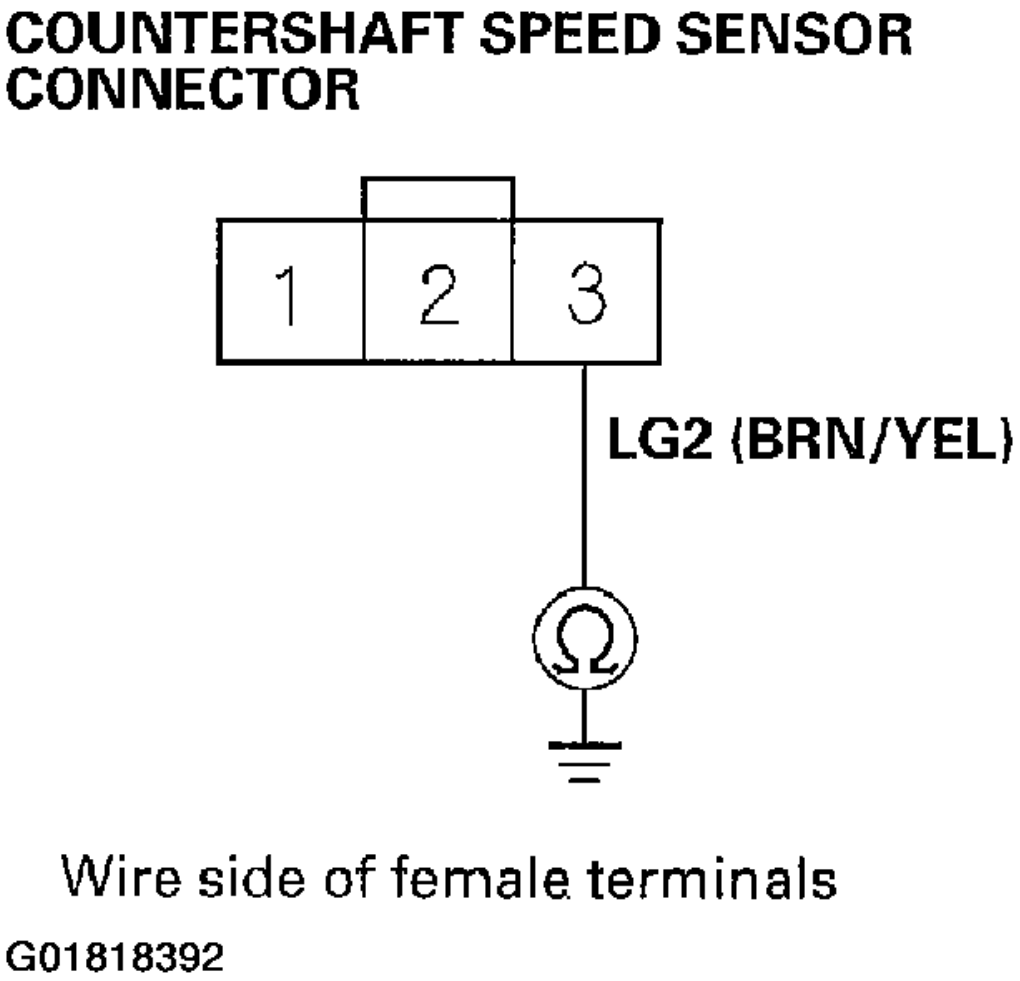


Fig. 136: Checking For Continuity Between Countershaft Speed Sensor Connector Terminal No. 3 & Body Ground

16. Connect PCM connector A (31P).
17. Turn the ignition switch ON (II).
18. Measure the voltage between countershaft speed sensor connector terminals No. 2 and No. 3.

    Is there about 5 V?

    YES: Go to step 19.

    NO: Go to step 28 .

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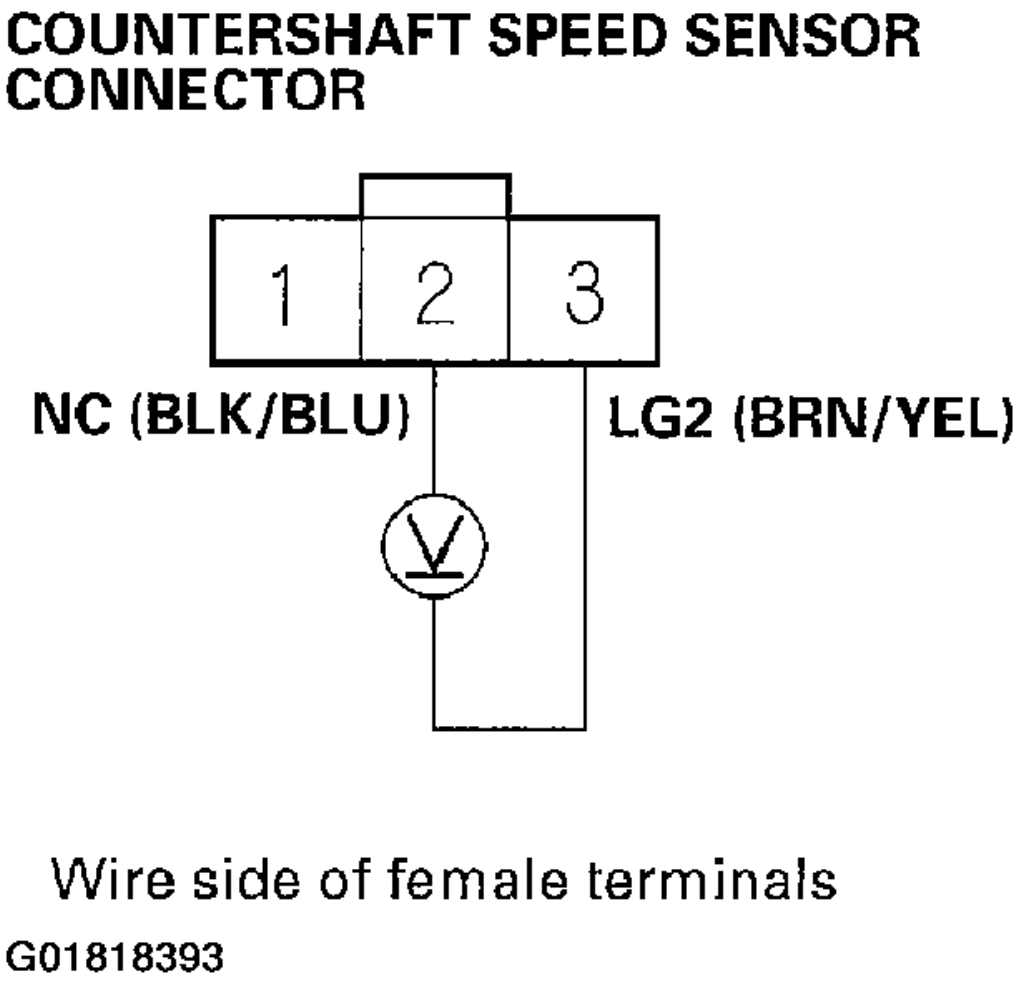


Fig. 137: Measuring The Voltage Between Countershaft Speed Sensor Connector Terminals No. 2 & No. 3

19. Connect countershaft speed sensor connector.
20. Measure the voltage between PCM connector terminals A18 and A8 or A9.

Is there 0 V or about 5 V?

YES: Go to step 21.

NO: Replace the countershaft speed sensor (see **COUNTERSHAFT SPEED SENSOR REPLACEMENT**), then go to step 29 .

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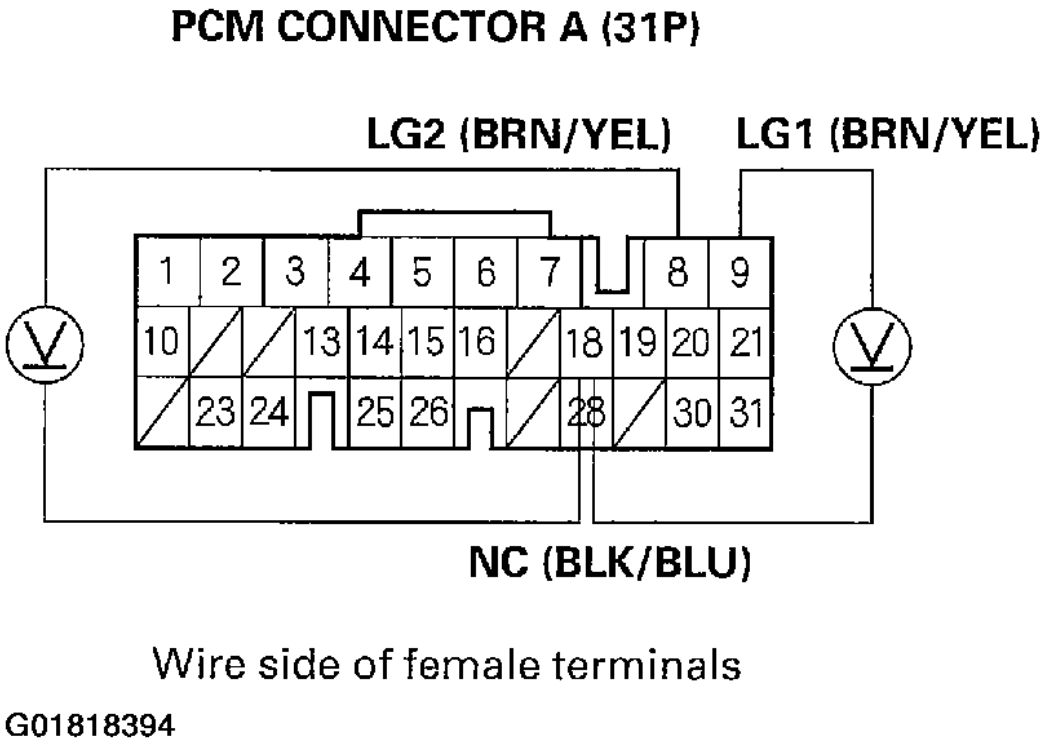


Fig. 138: Measuring The Voltage Between PCM Connector Terminals A18 & A8 Or A9

21. Shift to the **P** position. Start the engine, and let it idle.
22. Shift to the **D** position, and measure the voltage between PCM connector terminals A18 and A8 or A9.

Is there 1.5 V-3.5 V?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Replace the countershaft speed sensor (see **COUNTERSHAFT SPEED SENSOR REPLACEMENT**), then go to step 29 .

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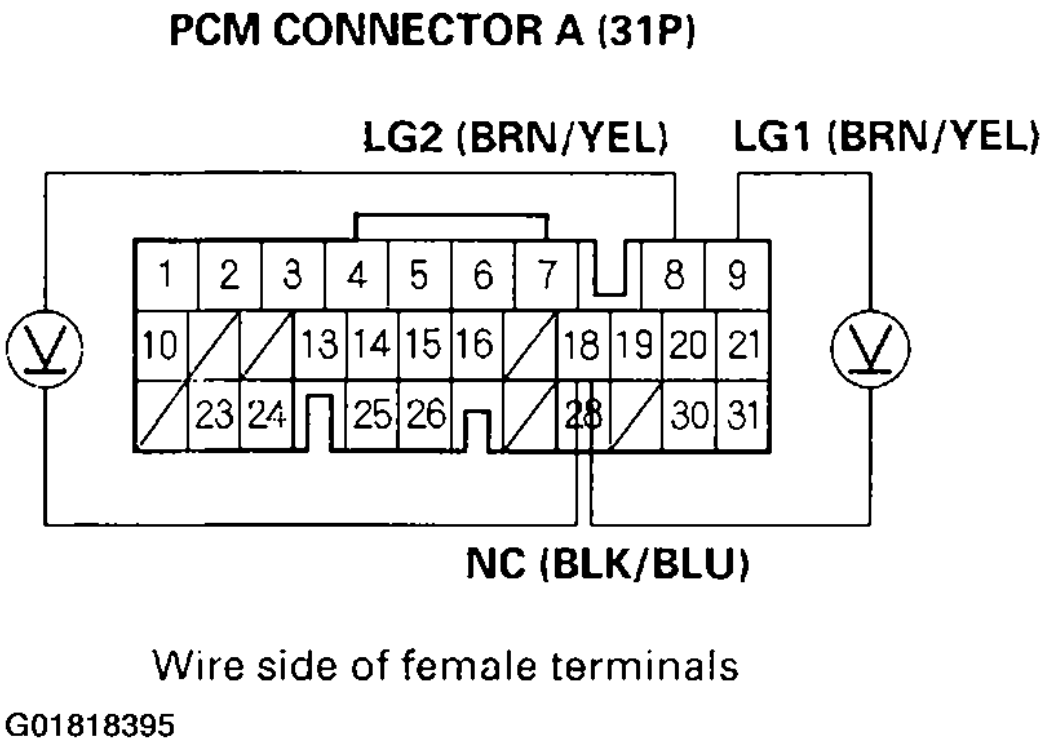


Fig. 139: Measuring The Voltage Between PCM Connector Terminals A18 & A8 Or A9

23. Measure the voltage between PCM connector terminals A20 and A8 or A9.

    Is there 4.75 V-5.25 V?

    YES: Repair open in the wire between PCM connector A20 and the countershaft speed sensor, then go to step 29 .

    NO: Go to step 24.

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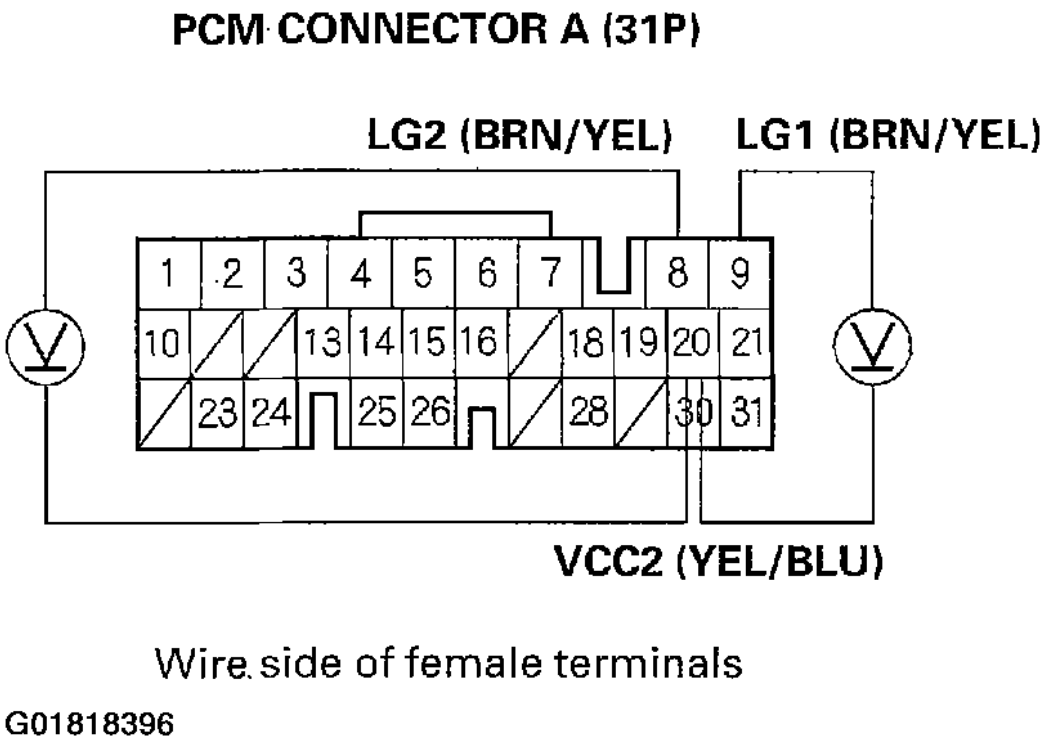


Fig. 140: Measuring The Voltage Between PCM Connector Terminals A20 & A8 Or A9

24. Turn the ignition switch OFF.
25. Jump the SCS line with the HDS.
26. Disconnect PCM connector A (31P).
27. Check for continuity between PCM connector terminal A20 and body ground.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal A20 and the countershaft speed sensor, then go to step 29 .

NO: Check for loose or poor connections at PCM connector terminal A20. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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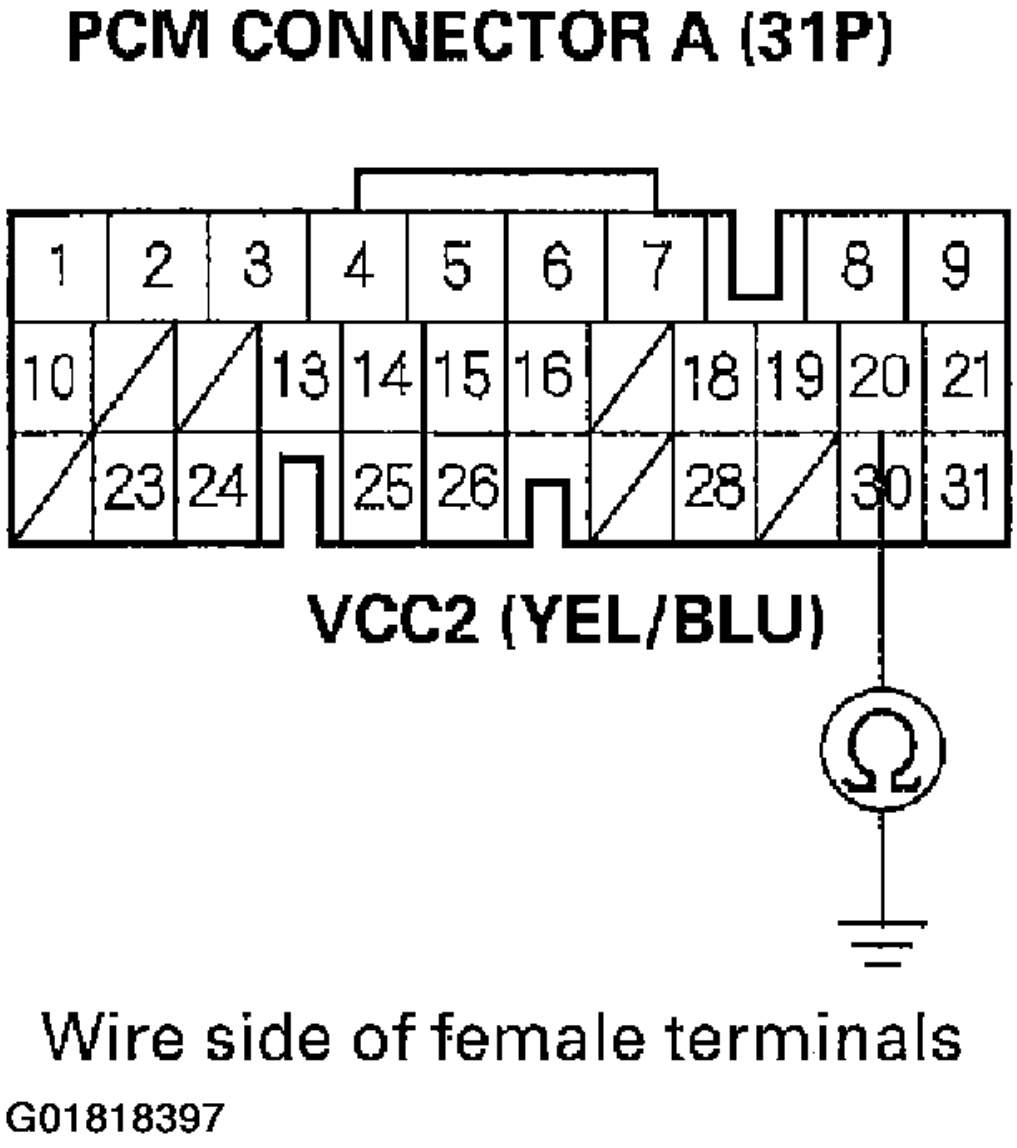


Fig. 141: Checking For Continuity Between PCM Connector Terminal A20 & Body Ground

28. Measure the voltage between PCM connector terminals A18 and A8 or A9.

Is there about 5 V?

YES: Repair open in the wire between PCM connector terminal A18 and the countershaft speed sensor, then go to step 29.

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the

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symptom/indication goes away with a known-good PCM, replace the original PCM.

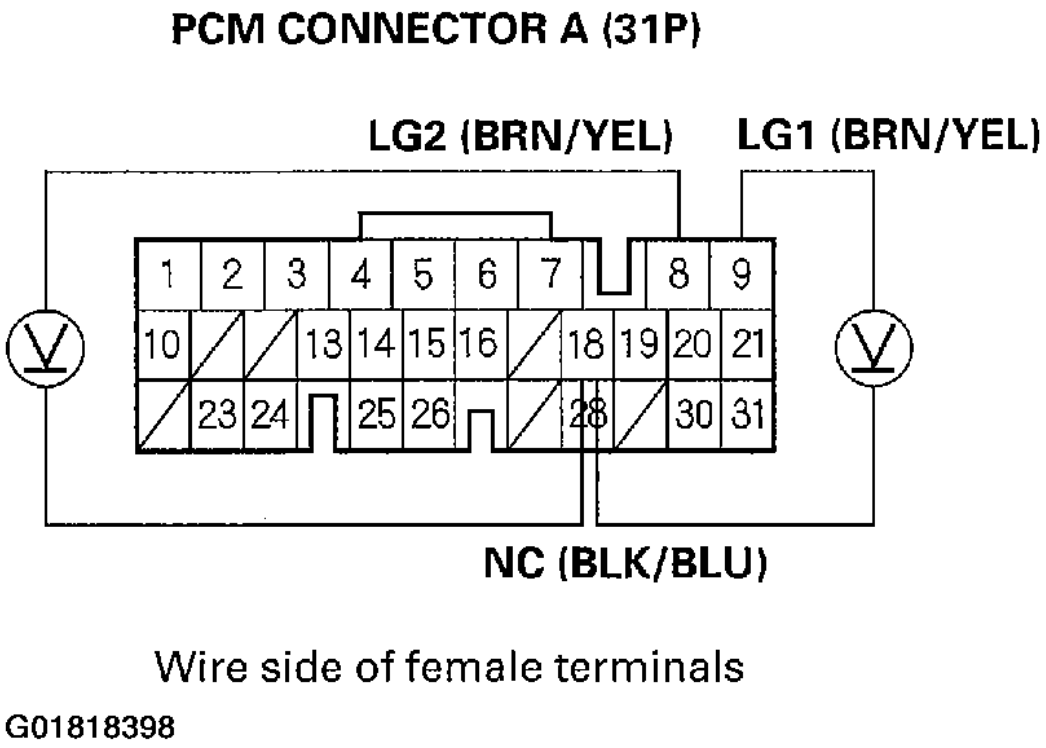


Fig. 142: Measuring The Voltage Between PCM Connector Terminals A18 & A8 Or A9

29. Clear the DTC with the HDS.
30. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
31. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0721.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0722: PROBLEM IN COUNTERSHAFT SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

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1. Clear the DTC with the HDS.
2. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
3. Start the engine, drive the vehicle in the **D** position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.
4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0722.

   Did the result indicate a fail?

   YES: Go to step 5.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the countershaft speed sensor and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (31P) and countershaft speed sensor connector.
8. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

   Is there continuity?

   YES: Go to step 9.

   NO: Repair open in the wires between PCM connector terminals A8, A9 and ground (G101), or repair poor ground (G 101), then go to step 30 .

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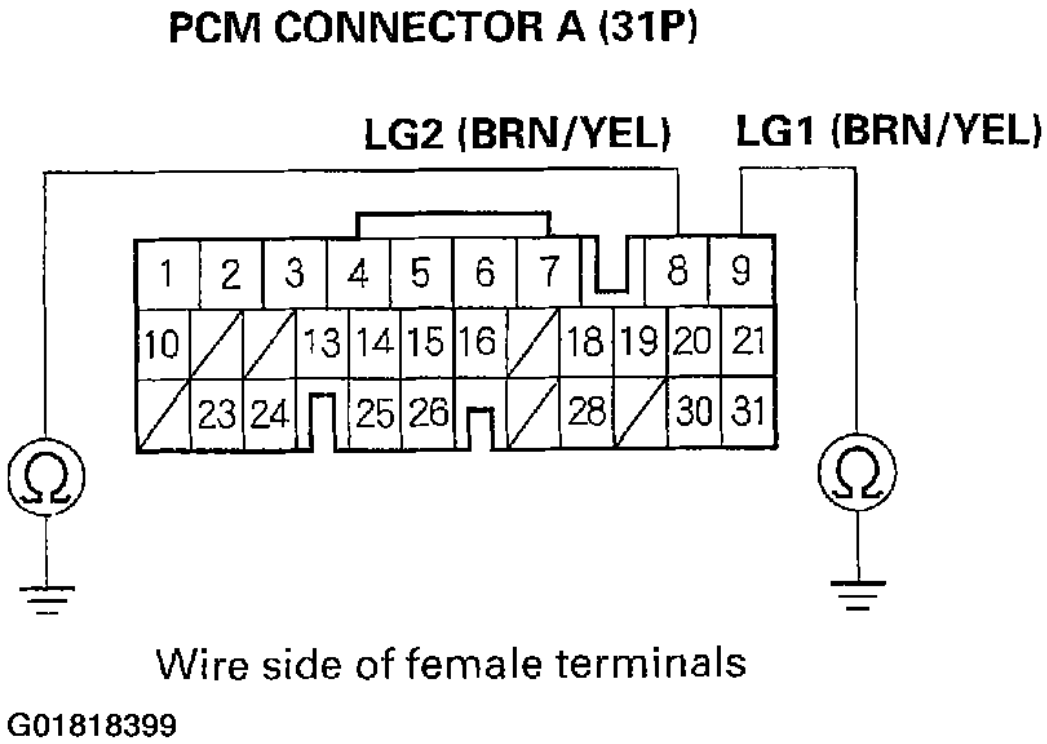


Fig. 143: Checking For Continuity Between PCM Connector Terminals A8 & Body Ground & Between A9 & Body Ground

9. Connect PCM connector A (31P).
10. Turn the ignition switch ON (II).
11. Measure the voltage between countershaft speed sensor connector terminal No. 1 and body ground.

Is there about 5 V?

YES: Go to step 12.

NO: Go to step 24 .

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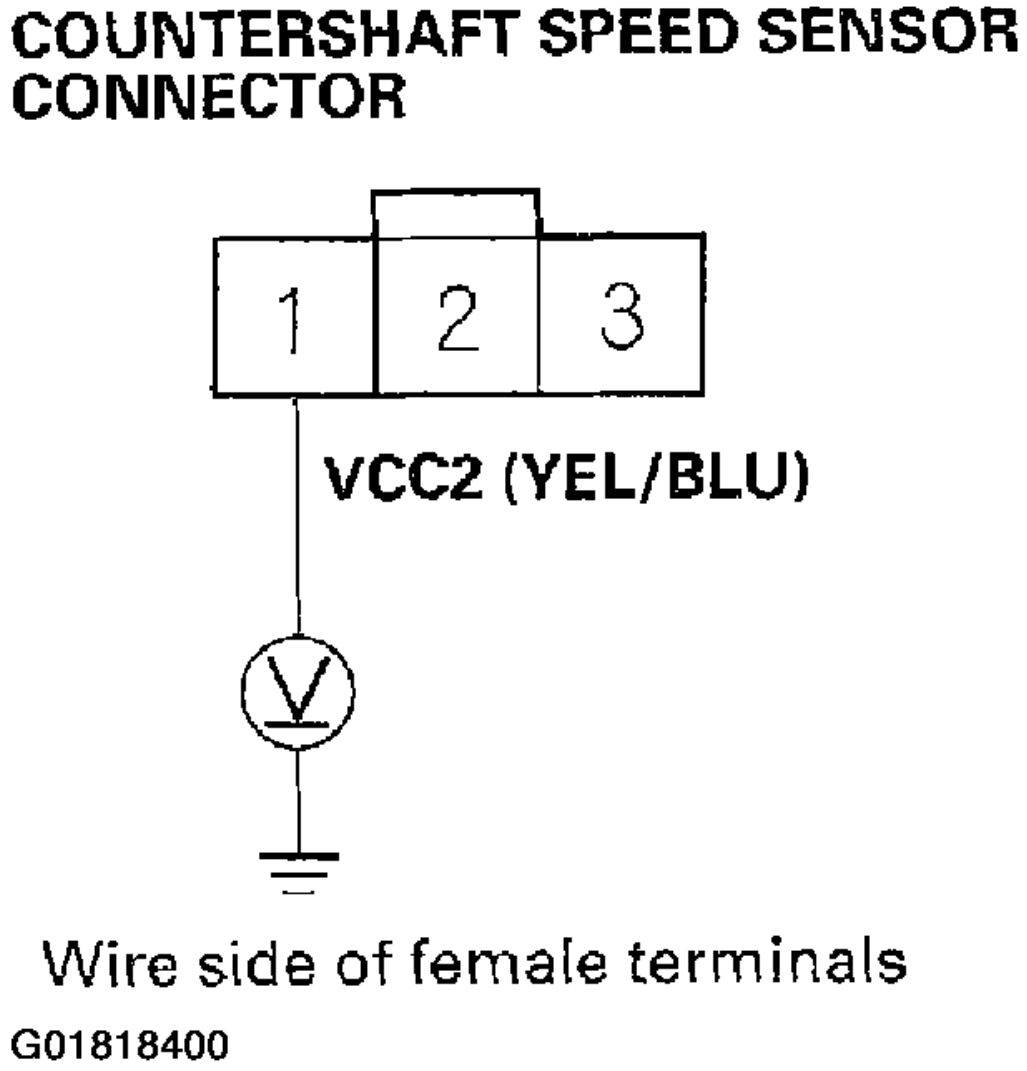


Fig. 144: Measuring The Voltage Between Countershaft Speed Sensor Connector Terminal No. 1 & Body Ground

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (31P).
15. Check for continuity between countershaft speed sensor connector terminal No. 2 and body ground.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal A18 and countershaft speed sensor, then go to step 30 .

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NO: Go to step 16.

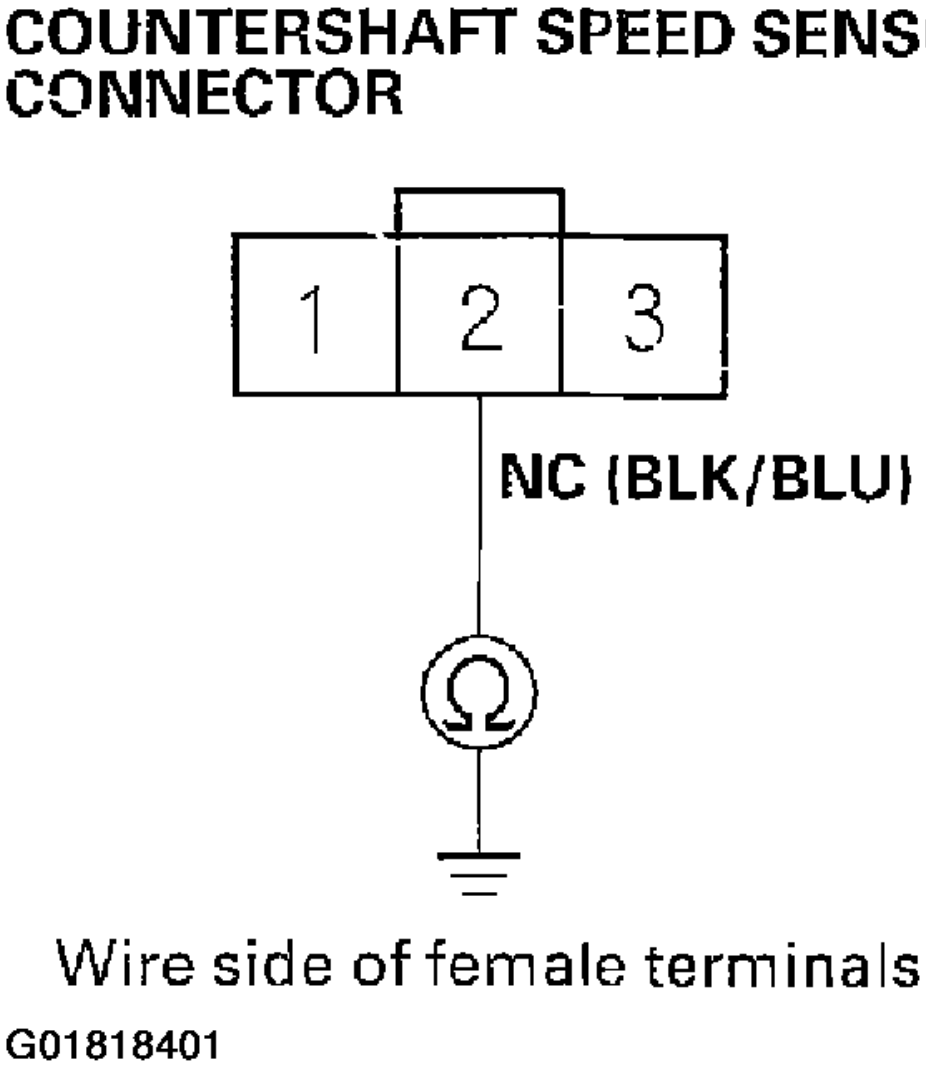


Fig. 145: Checking For Continuity Between Countershaft Speed Sensor Connector Terminal No. 2 & Body Ground

16. Check for continuity between countershaft speed sensor connector terminal No. 3 and body ground.

Is there continuity?

YES: Go to step 17.

NO: Repair open in the wire between the countershaft speed sensor connector and ground (G101), then go to step 30 .

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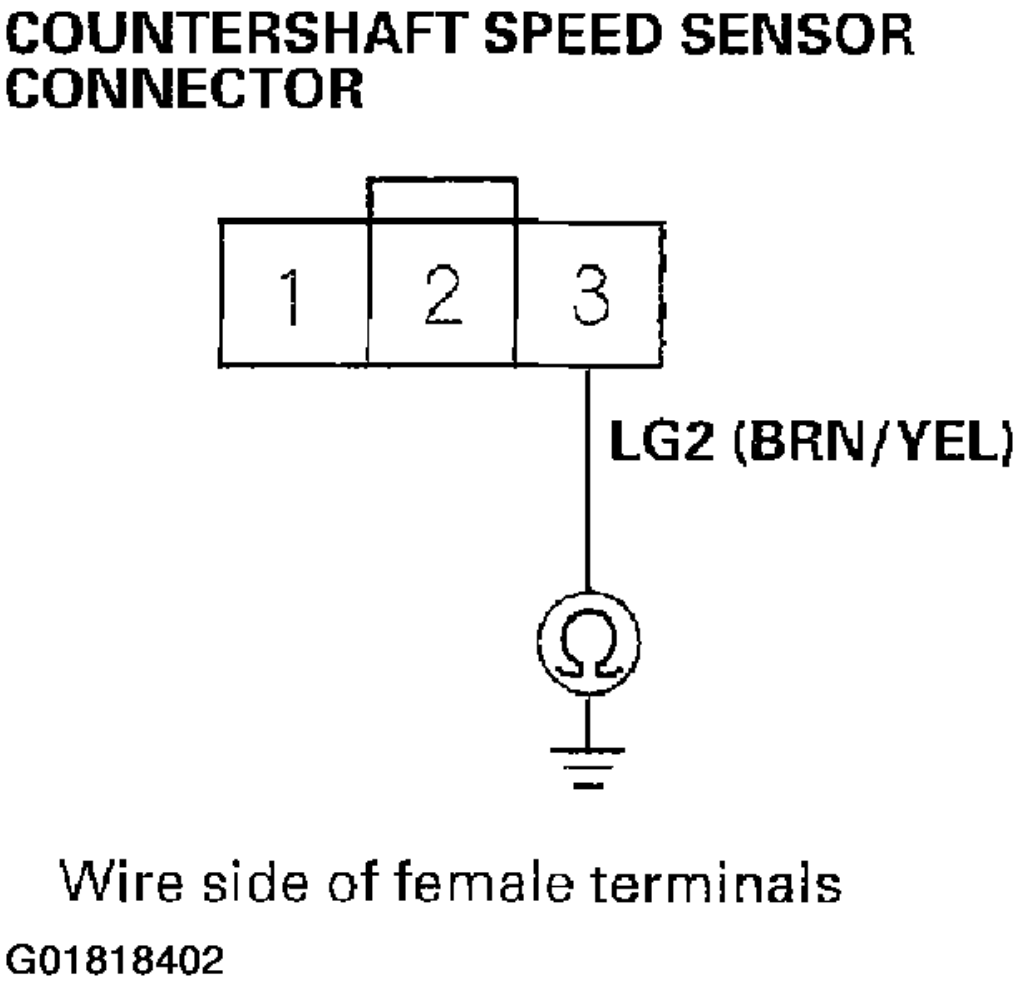


Fig. 146: Checking For Continuity Between Countershaft Speed Sensor Connector Terminal No. 3 & Body Ground

17. Reconnect PCM connector A (31P).
18. Turn the ignition switch ON (II).
19. Measure the voltage between countershaft speed sensor connector terminals No. 2 and No. 3.

Is there about 5 V?

YES: Go to step 20.

NO: Go to step 29 .

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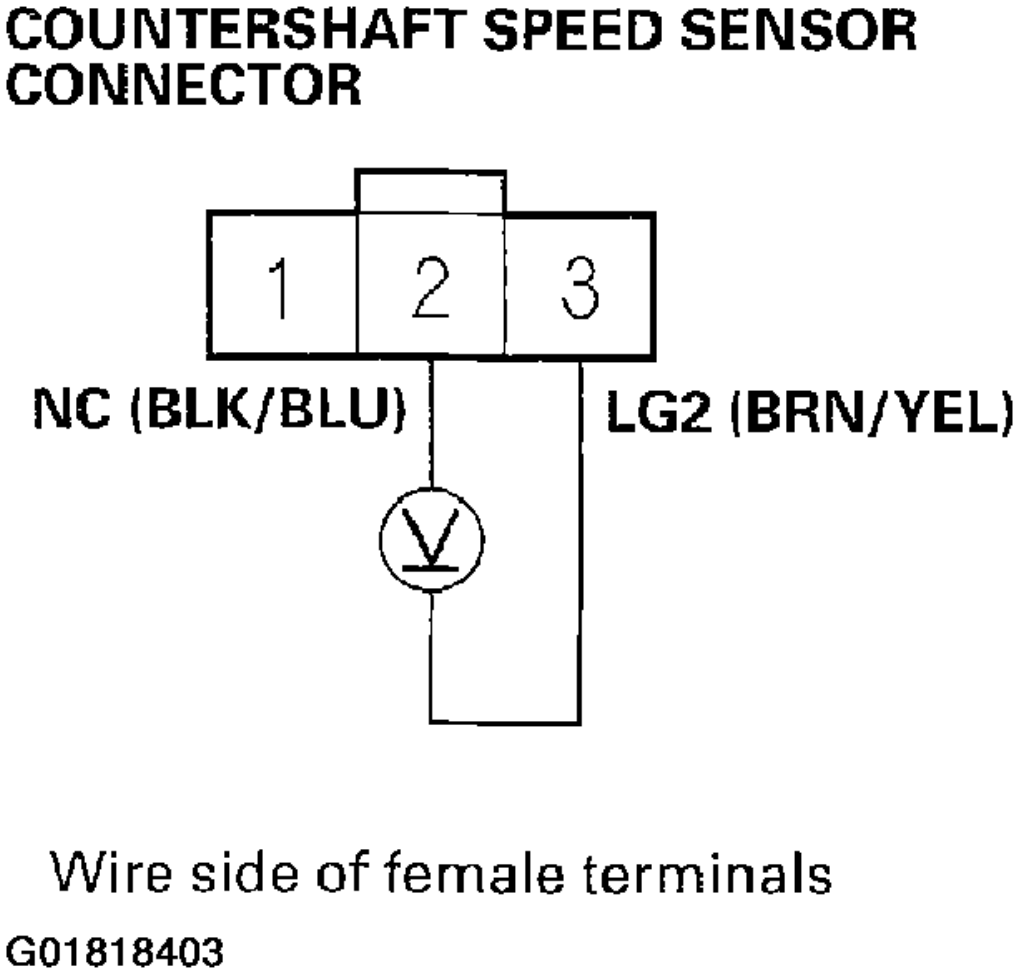


Fig. 147: Measuring The Voltage Between Countershaft Speed Sensor Connector Terminals No. 2 & No. 3

20. Connect the countershaft speed sensor connector.
21. Measure the voltage between PCM connector terminals A18 and A8 or A9.

Is the voltage 0 V or about 5 V?

YES: Go to step 22.

NO: Replace the countershaft speed sensor (see **COUNTERSHAFT SPEED SENSOR REPLACEMENT**), then go to step 30 .

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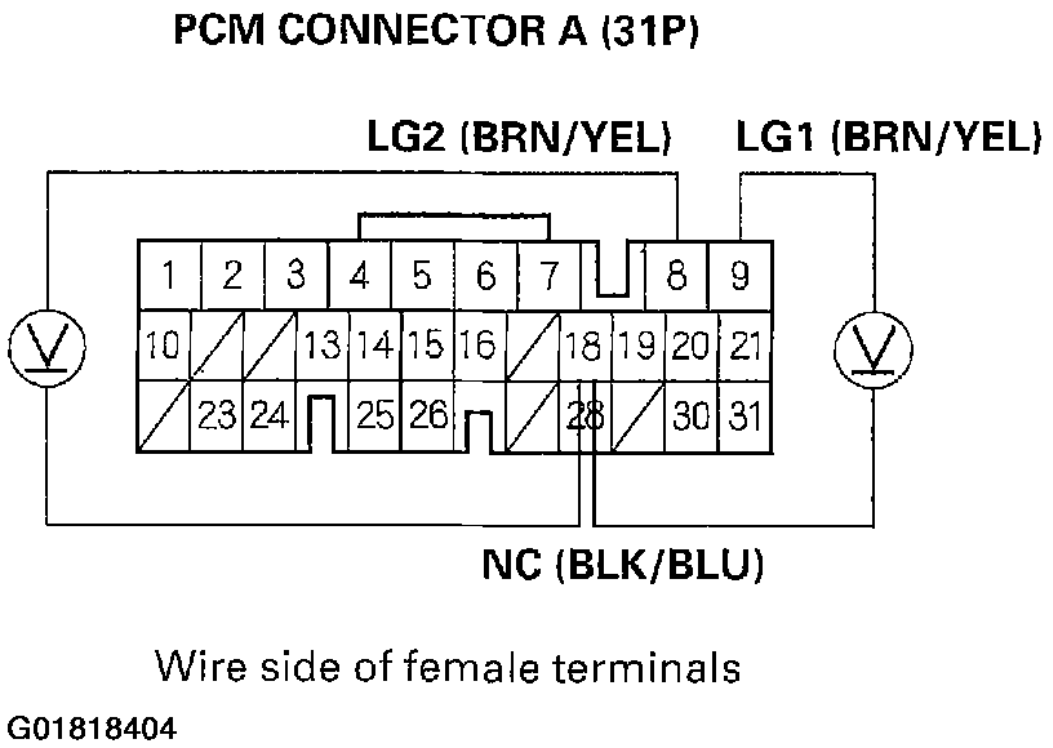


Fig. 148: Measuring The Voltage Between PCM Connector Terminals A18 & A8 Or A9

22. Shift to the **P** position. Start the engine, and let it idle.
23. Shift to the **D** position, and measure the voltage between PCM connector terminals A18 and A8 or A9.

    Is there 1.5 V-3.5 V?

    YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

    NO: Replace the countershaft speed sensor (see **COUNTERSHAFT SPEED SENSOR REPLACEMENT**), then go to step 30 .

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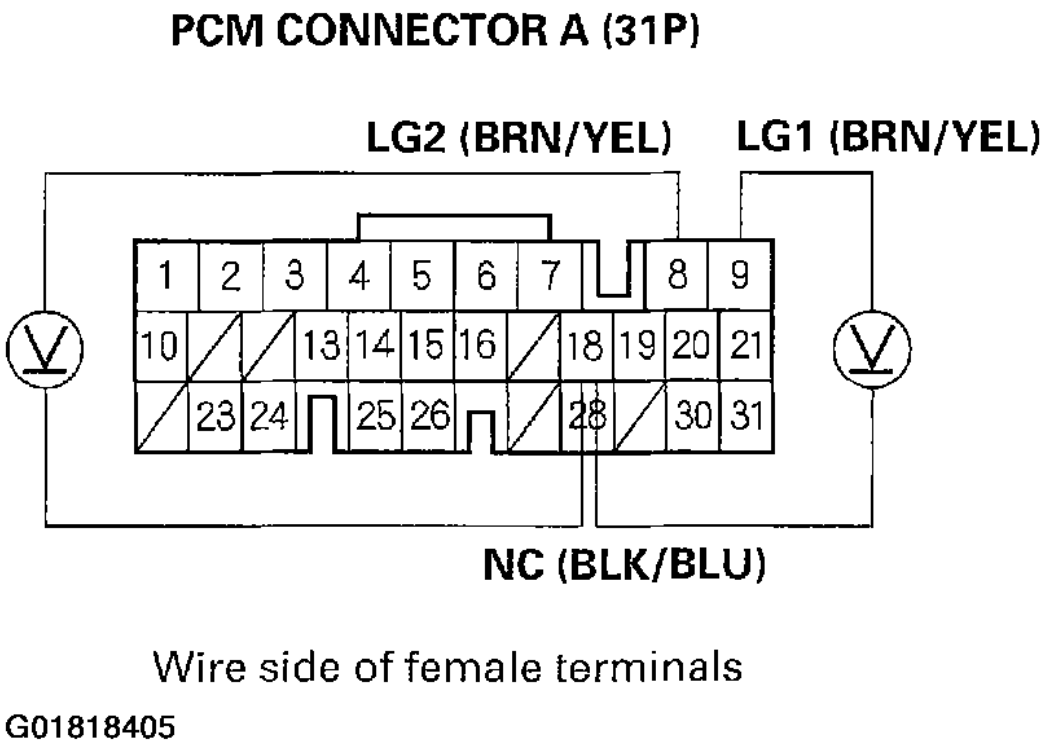


Fig. 149: Measuring The Voltage Between PCM Connector Terminals A18 & A8 Or A9

24. Measure the voltage between PCM connector terminals A20 and A8 or A9.

    Is there about 5 V?

    YES: Repair open in the wire between PCM connector terminal A20 and the countershaft speed sensor, then go to step 30 .

    NO: Go to step 25.

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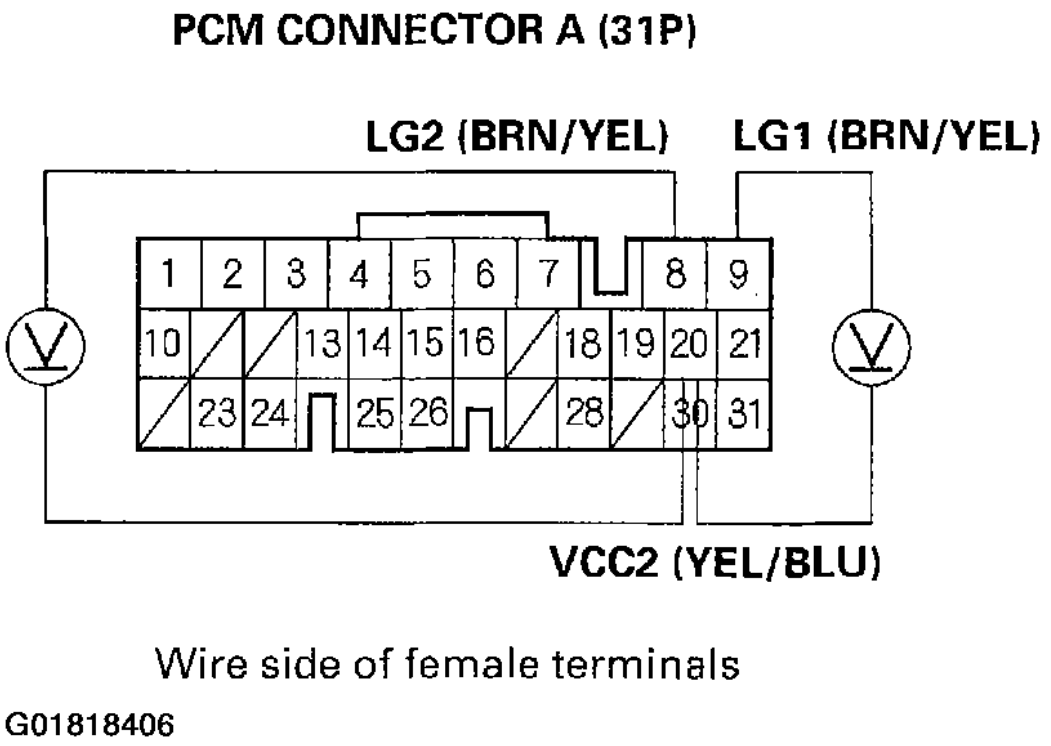


Fig. 150: Measuring The Voltage Between PCM Connector Terminals A20 & A8 Or A9

25. Turn the ignition switch OFF.
26. Jump the SCS line with the HDS.
27. Disconnect PCM connector A (31P).
28. Check for continuity between PCM connector terminal A20 and body ground.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal A20 and the countershaft speed sensor, then go to step 30 .

NO: Check for loose or poor connections at PCM connector terminal A20. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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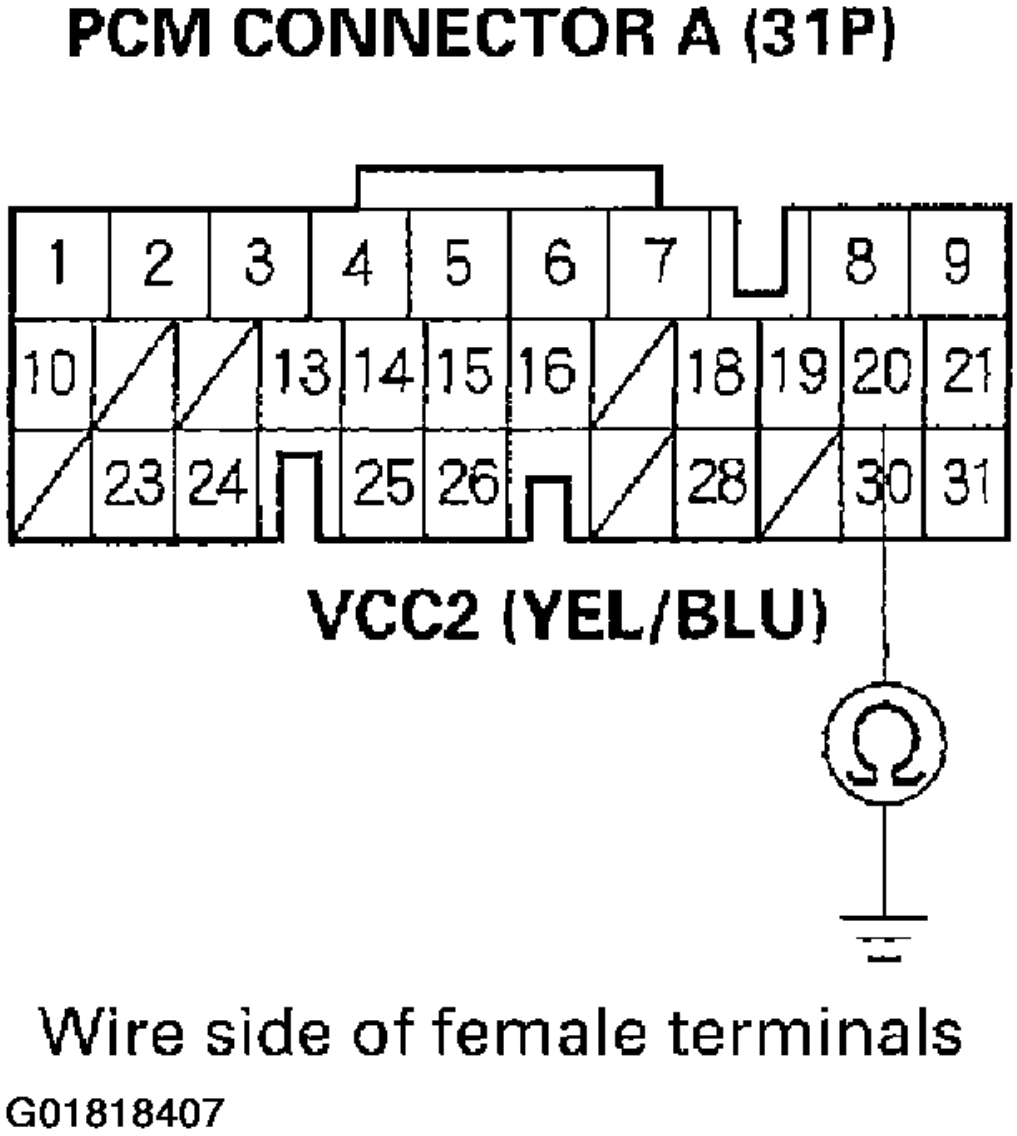


Fig. 151: Checking For Continuity Between PCM Connector Terminal A20 & Body Ground

29. Measure the voltage between PCM connector terminals A18 and A8 or A9.

Is there about 5 V?

YES: Repair open in the wire between PCM connector terminal A18 and the countershaft speed sensor, then go to step 30.

NO: Check for loose or poor connections at PCM connector terminal A18. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good

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PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

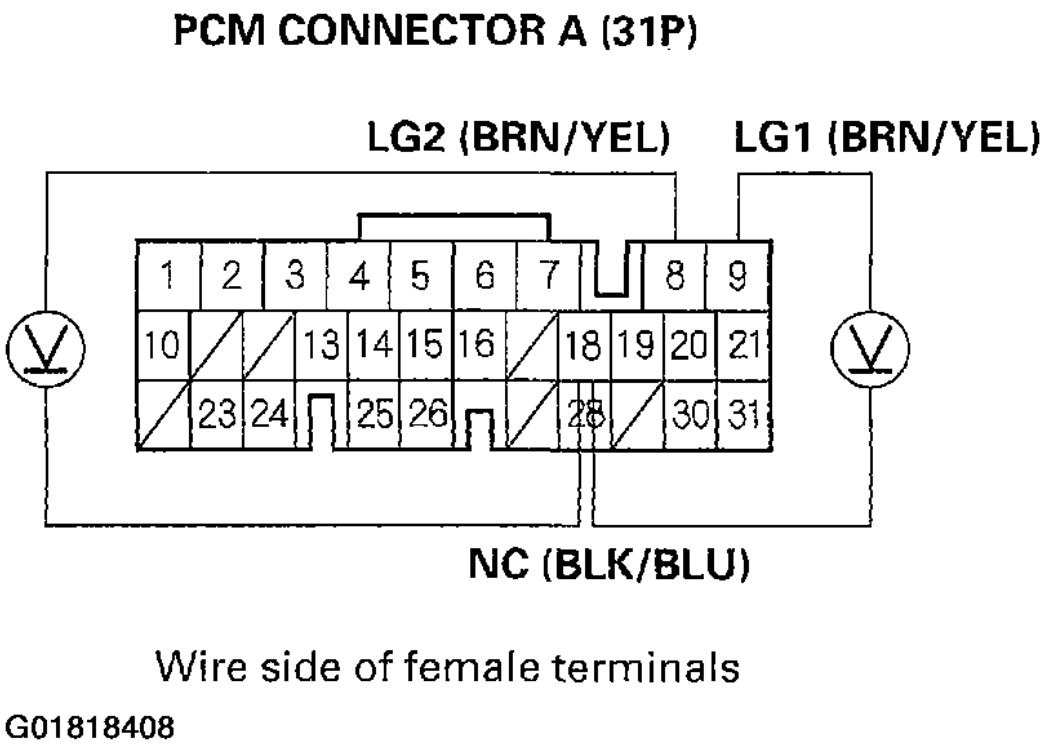


Fig. 152: Measuring The Voltage Between PCM Connector Terminals A18 & A8 Or A9

30. Clear the DTC with the HDS.
31. Test-drive the vehicle for several minutes in the **D** position in all five gears.
32. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0722.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0723: COUNTERSHAFT SPEED SENSOR INTERMITTENT FAILURE

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

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1. Record all freeze data, and clear the DTC with the HDS.
2. Test-drive the vehicle for 10 minutes under the same conditions as those indicated by the freeze data, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0723.

   Did the result indicate a fail?

   YES: Go to step 3.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the countershaft speed sensor and PCM. If the tester indicates NOT COMPLETE, return to step 2 and recheck.
3. Turn the ignition switch OFF.
4. Disconnect the countershaft speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES: Go to step 5.

   NO: Repair the connector terminals, then go to step 5.
5. Connect the countershaft speed sensor connector.
6. Test-drive the vehicle for several minutes, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0723.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: The problem has been corrected. If the tester indicates NOT COMPLETE, return to step 6 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (31P).
10. Disconnect the countershaft speed sensor connector.
11. Check for continuity between countershaft speed sensor connector terminal No. 2 and body ground.

    Is there continuity?

    YES: Repair short to ground in the wire between PCM connector terminal A18 and the countershaft speed sensor, then go to step 18 .

    NO: Go to step 12.

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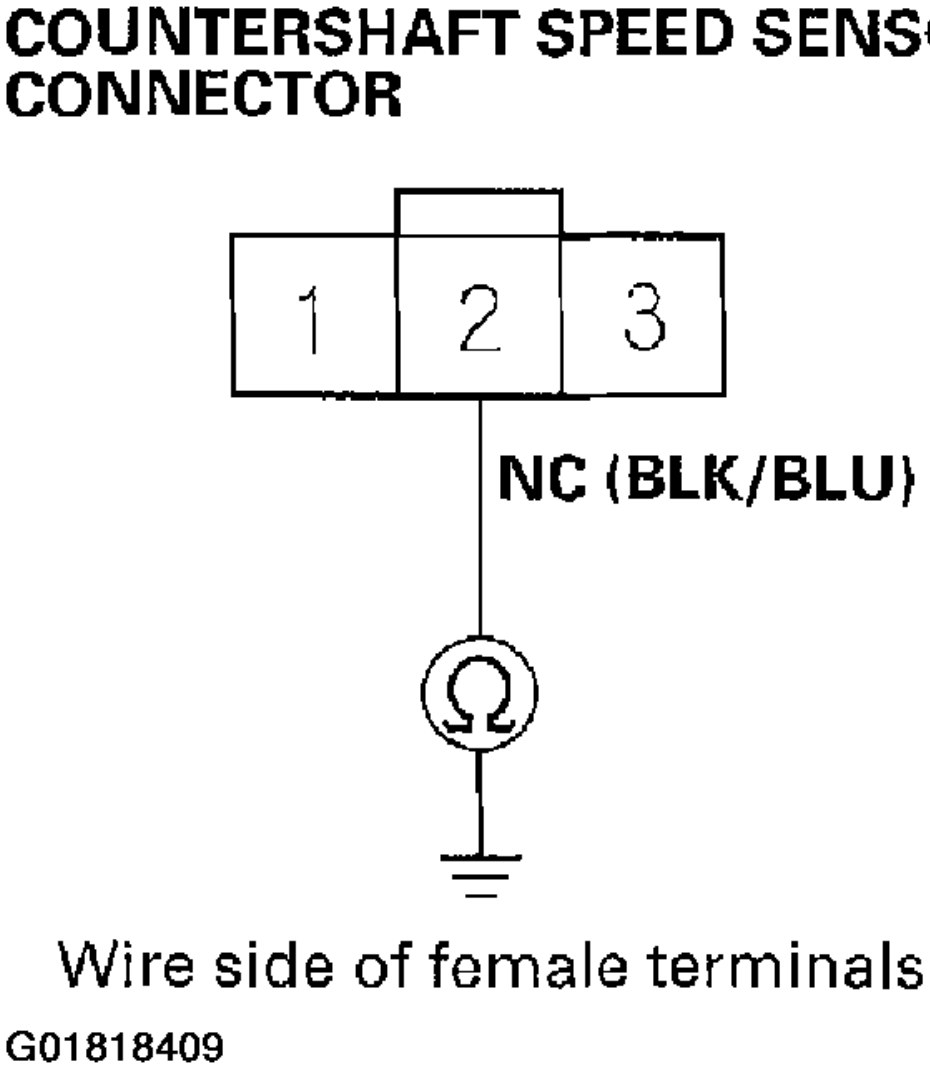


Fig. 153: Checking For Continuity Between Countershaft Speed Sensor Connector Terminal No. 2 & Body Ground

12. Connect PCM connector A (31P).
13. Turn the ignition switch ON (II).
14. Measure the voltage between countershaft speed sensor connector terminal No. 2 and body ground.

Is there about 5 V?

YES: Replace the countershaft speed sensor (see **COUNTERSHAFT SPEED SENSOR REPLACEMENT**), then go to step 18 .

NO: Go to step 15.

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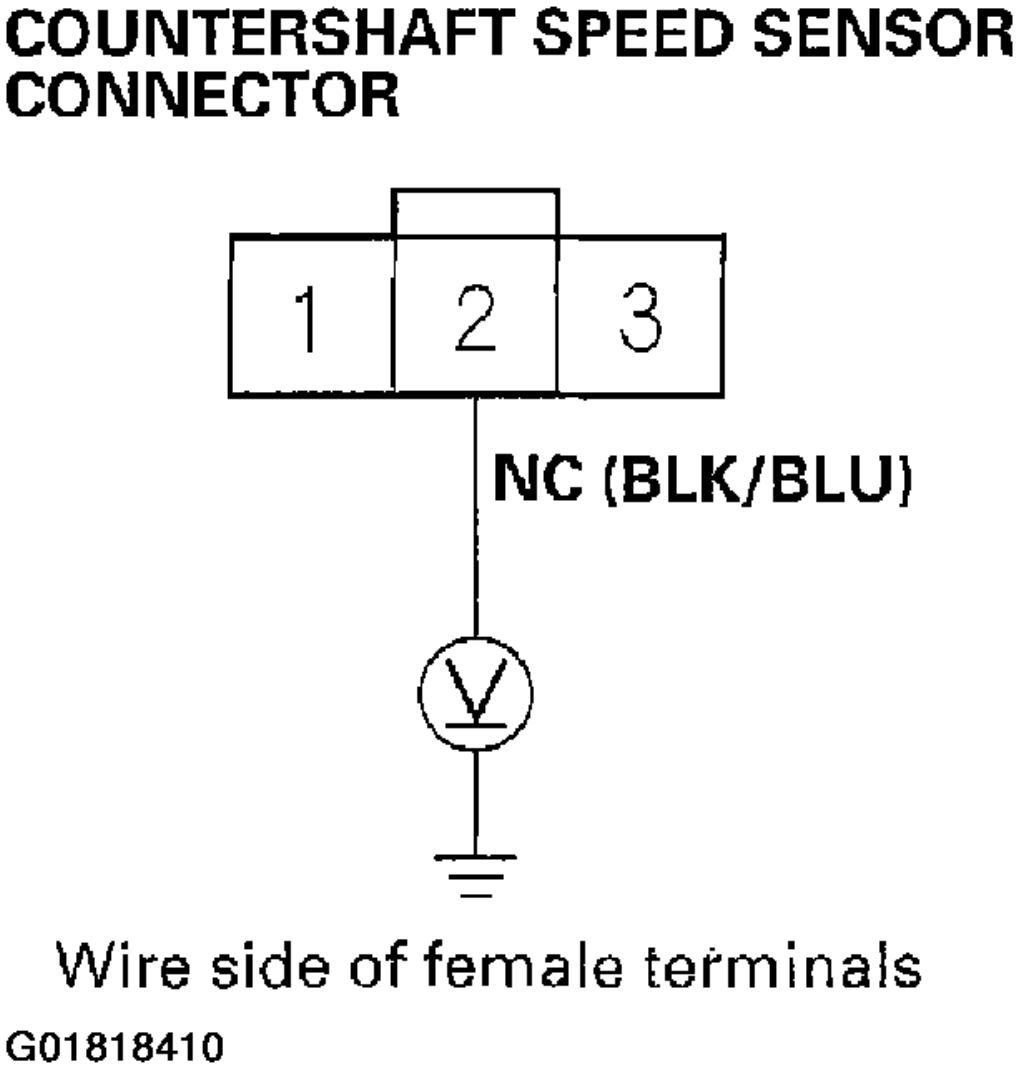


Fig. 154: Measuring The Voltage Between Countershaft Speed Sensor Connector Terminal No. 2 & Body Ground

15. Turn the ignition switch OFF.
16. Disconnect PCM connector A (31P).
17. Check for continuity between PCM connector terminal A18 and countershaft speed sensor connector terminal No. 2.

Is there continuity?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the

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symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Repair open in the wire between PCM connector terminal A18 and the countershaft speed sensor, then go to step 18.

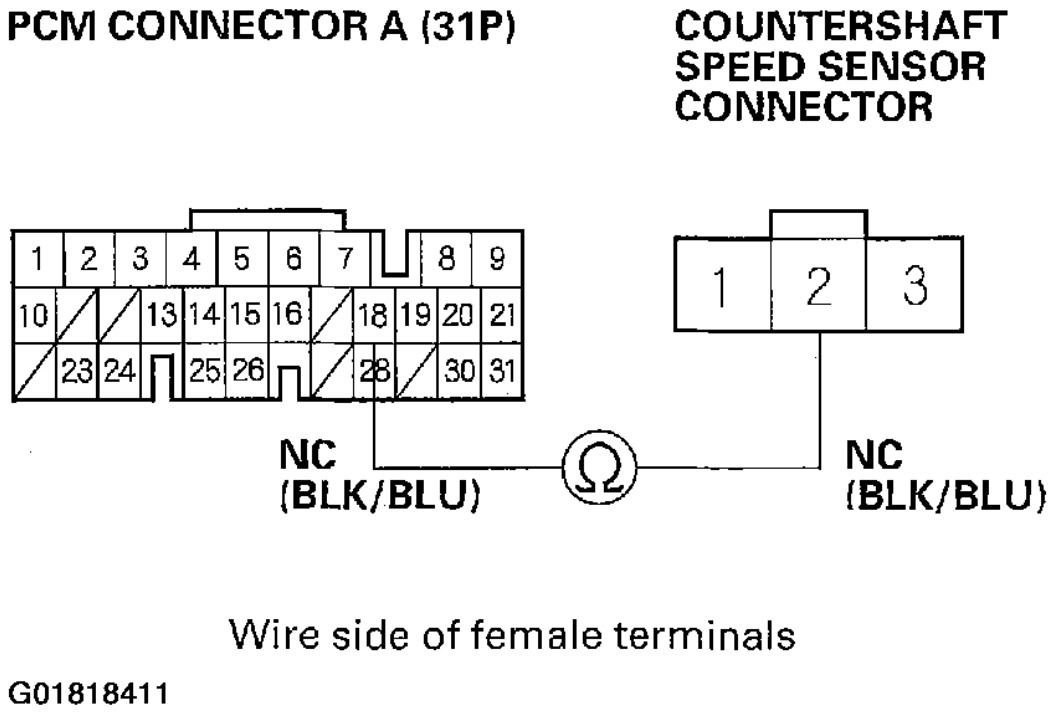


Fig. 155: Checking For Continuity Between PCM Connector Terminal A18 And Countershaft Speed Sensor Connector Terminal No. 2

18. Clear the DTC with the HDS.
19. Test-drive the vehicle for several minutes in the **D** position in all five gears.
20. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0723.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0731: PROBLEM IN 1ST CLUTCH & 1ST CLUTCH HYDRAULIC CIRCUIT

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

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2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck.

   NO: Go to step 4.
4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limits?

   YES: Go to step 5.

   NO: Repair the ATF pump and regulator valve, or replace the transmission.
5. Measure the 1st clutch pressure (see **PRESSURE TEST**).

   Is the 1st clutch pressure within service limits?

   YES: Go to step 6.

   NO: Shift valves B and Care stuck. Repair these valves and hydraulic circuit, or replace the transmission.
6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in the 1st gear in the **D** position at 10 mph (16 km/h) for 20 seconds.
8. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0731.

   Did the result indicate a fail?

   YES: Repair the 1st clutch, or replace the transmission.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 1 and recheck.

DTC P0732: PROBLEM IN 2ND CLUTCH & 2ND CLUTCH HYDRAULIC CIRCUIT

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck.

   NO: Go to step 4.
4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limits?

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YES: Go to step 5.

NO: Repair the ATF pump and regulator valve, or replace the transmission.

5. Measure the 2nd clutch pressure (see **PRESSURE TEST**).

   Is the 2nd clutch pressure within service limits?

   YES: Go to step 6.

   NO: Shift valves A and B are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in the 2nd gear in the **M** position at 10 mph (16 km/h) for 20 seconds.
8. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0732.

   Did the result indicate a fail?

   YES: Repair the 2nd clutch, or replace the transmission.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 1 and recheck.

DTC P0733: PROBLEM IN 3RD CLUTCH & 3RD CLUTCH HYDRAULIC CIRCUIT

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck.

   NO: Go to step 4.

4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limits?

   YES: Go to step 5.

   NO: Repair the ATF pump and regulator valve, or replace the transmission.

5. Measure the 3rd clutch pressure (see **PRESSURE TEST**).

   Is the 3rd clutch pressure within service limits?

   YES: Go to step 6.

   NO: Shift valves A and D are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data,

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or drive in the 3rd gear in the **M** position at speeds over 10 mph (16 km/h) for 20 seconds.

8. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0733.

Did the result indicate a fail?

YES: Repair the 3rd clutch, or replace the transmission.

NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 1 and recheck.

DTC P0734: PROBLEM IN 4TH CLUTCH & 4TH CLUTCH HYDRAULIC CIRCUIT

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

Has the ATF deteriorated?

YES: Replace ATF (see **DRAINING & REFILLING**), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck.

NO: Go to step 4.

4. Measure the line pressure (see **PRESSURE TEST**).

Is the line pressure within service limits?

YES: Go to step 5.

NO: Repair the ATF pump and regulator valve, or replace the transmission.

5. Measure the 4th clutch pressure (see **PRESSURE TEST**).

Is the 4th clutch pressure within service limits?

YES: Go to step 6.

NO: Shift valve B, shift valve C, servo control valve, and servo valve are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in the 4th gear in the **M** position at speeds over 10 mph (16 km/h) for 20 seconds.
8. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0734.

Did the result indicate a fail?

YES: Repair the 4th clutch, or replace the transmission.

NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 1 and recheck.

DTC P0735: PROBLEM IN 5TH CLUTCH & 5TH CLUTCH HYDRAULIC CIRCUIT

NOTE: Record all freeze data and review General Troubleshooting Information (see

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GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck.

   NO: Go to step 4.
4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limits?

   YES: Go to step 5.

   NO: Repair the ATF pump and regulator valve, or replace the transmission.
5. Measure the 5th clutch pressure (see **PRESSURE TEST**).

   Is the 5th clutch pressure within service limits?

   YES: Go to step 6.

   NO: Shift valves A, B, and/or Dare stuck. Repair these valves and hydraulic circuit, or replace the transmission.
6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in the 5th gear in the **D** position at speeds over 10 mph (16 km/h) for 20 seconds.
8. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0735.

   Did the result indicate a fail?

   YES: Repair the 5th clutch, or replace the transmission.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 1 and recheck.

DTC P0741: TORQUE CONVERTER CLUTCH HYDRAULIC CIRCUIT STUCK OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck.

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NO: Go to step 4.

4. Clear the DTC with the HDS.
5. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL E test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 6.

   NO: Replace shift solenoid valve E (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 10 .
6. Run the engine until the engine coolant temperature reaches 176°F (80°C).
7. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL A TEST in LINEAR SOL TEST MENU.

   Is the system OK?

   YES: Go to step 8.

   NO: Follow instructions indicated on the HDS by the test result. Go to step 10 if any part was replaced.
8. Test-drive the vehicle at 55 mph (88 km/h) for 2 minutes while monitoring the vehicle speed with the HDS.
9. Cheek the OBD STATUS in DTCs MENU for a pass/fail test of code P0741.

   Did the result indicate a fail?

   YES: Faulty the torque converter mechanism, torque converter clutch hydraulic circuit, lock-up shift valve, or lock-up control valve, or replace the transmission.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 8 and recheck.
10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0741.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0747: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A STUCK ON

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

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YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

NO: Go to step 8 .

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0747.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL A TEST in LINEAR SOL TEST MENU with the HDS.

   Is the system OK?

   YES: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 9 and recheck.

   NO: Follow instructions indicated on the HDS by the test result, but the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .
10. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST**).

    Does the A/T clutch pressure control solenoid valve A work properly?

    YES: Repair hydraulic system related with shift valve B and E, or replace the transmission, then go to step 11.

    NO: Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds. Slow down to a stop.
13. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0747.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0752: SHIFT SOLENOID VALVE A STUCK ON

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

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1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0752.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve A (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 13 .
10. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0752.

    Did the result indicate a fail?

    YES: Repair shift valve A, or replace the transmission, then go to step 13.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down and to a stop.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0752.

    Did the result indicate a pass?

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YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0756: SHIFT SOLENOID VALVE B STUCK OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slowdown to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0756.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve B (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 13 .
10. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0756.

    Did the result indicate a fail?

    YES: Repair shift valve B, or replace the transmission, then go to step 13.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck.

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13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0756.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0757: SHIFT SOLENOID VALVE B STUCK ON

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

    Has the ATF deteriorated?

    YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

    NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0757.

    Did the result indicate a fail?

    YES: Go to step 8.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the HDS.

    Is a clicking sound heard?

    YES: Go to step 10.

    NO: Replace shift solenoid valve B (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 13 .
10. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

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11. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0757.

    Did the result indicate a fail?

    YES: Repair shift valve B, or replace the transmission, then go to step 13.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0757.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0761: SHIFT SOLENOID VALVE C STUCK OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

    Has the ATF deteriorated?

    YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

    NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0761.

    Did the result indicate a fail?

    YES: Go to step 8.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.

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9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve C (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 13 .

10. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0761.

    Did the result indicate a fail?

    YES: Repair shift valve C, or replace the transmission, then go to step 13.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0761.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0771: SHIFT SOLENOID VALVE E STUCK OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF arid strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than

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20 seconds, then slow down to a stop.

7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0771.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL E test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve E (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 13 .

10. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0771.

    Did the result indicate a fail?

    YES: Repair shift valve E, or replace the transmission then go to step 13.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0771.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0776: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B STUCK OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

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Has the ATF deteriorated?

YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

NO: Go to step 8 .

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0776.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL B TEST in LINEAR SOL TEST MENU with the HDS.

   Is the system OK?

   YES: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 9 and recheck.

   NO: Follow instructions indicated on the HDS by the test result, but the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .
10. Inspect A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C TEST**).

    Does the A/T clutch pressure control solenoid valve B work properly?

    YES: Repair hydraulic system related with shift valve B, or replace the transmission, then go to step 11.

    NO: Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0776.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0777: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B STUCK ON

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NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF through a strainer (see **DRAINING & REFILLING**). Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0777.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL B TEST in LINEAR SOL TEST MENU with the HDS.

   Is the system OK?

   YES: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 9 and recheck.

   NO: Follow instructions indicated on the HDS by the test result, but the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .
10. Inspect A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C TEST**).

    Does the A/T clutch pressure control solenoid valve B work properly?

    YES: Repair hydraulic system related with shift valve B, or replace the transmission, then go to step 11.

    NO: Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0777.

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Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0780: SHIFT CONTROL SYSTEM

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Check for other DTCs indicated simultaneous with the code P0780.

NOTE: P0780 means there is one or more A/T DTCs about the shift control system.

Are there other DTCs?

YES: Go to step 2.

NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see PCM UPDATING & SUBSTITUTION FOR TESTING), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

2. Perform the troubleshooting flowchart for the indicated codes:
   - **P1730:** (see **DTC P1730: PROBLEM IN SHIFT CONTROL SYSTEM**).
   - **P1731:** (see **DTC P1731: PROBLEM IN SHIFT CONTROL SYSTEM**).
   - **P1732:** (see **DTC P1732: PROBLEM IN SHIFT CONTROL SYSTEM**).
   - **P1733:** (see **DTC P1733: PROBLEM IN SHIFT CONTROL SYSTEM**).
   - **P1734:** (see **DTC P1734: PROBLEM IN SHIFT CONTROL SYSTEM**).

DTC P0796: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C STUCK OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

Has the ATF deteriorated?

YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

NO: Go to step 8 .

4. Clear the DTC with the HDS.

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5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0796.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL C TEST in LINEAR SOL TEST MENU with the HDS.

   Is the system OK?

   YES: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 9 and recheck.

   NO: Follow instructions indicated on the HDS by the test result, but the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .
10. Inspect A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C TEST**).

    Does the A/T clutch pressure control solenoid valve C work properly?

    YES: Repair hydraulic system related with shift valve B and C, or replace the transmission, then go to step 11.

    NO: Replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0796.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0797: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C STUCK ON

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.

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3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0797.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL C TEST in LINEAR SOL TEST MENU with the HDS.

   Is the system OK?

   YES: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 9 and recheck.

   NO: Follow instructions indicated on the HDS by the test result, but the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .
10. Inspect A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C TEST**).

    Does the A/T clutch pressure control solenoid valve C work properly?

    YES: Repair hydraulic system related with shift valves B and C, or replace the transmission, then go to step 11.

    NO: Replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0797.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0812: OPEN IN TRANSMISSION RANGE SWITCH ATP RVS SWITCH CIRCUIT

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch ON (II).
2. Shift to the **R** position, and verify the A/T R SWITCH signal with the HDS in the A/T data list.

   Is the A/T R SWITCH ON?

   YES: Go to step 3.

   NO: Inspect the end of the selector control shaft (see step 6 of **TRANSMISSION RANGE SWITCH TEST**), adjust the shift cable (see **SHIFT CABLE**), then recheck. If problem still exists, go to step 4 .
3. Check the REVERSE SWITCH signal with the HDS.

   Is the REVERSE SWITCH ON?

   YES: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and PCM.

   NO: Go to step 4.
4. Turn the ignition switch OFF.
5. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

   Is there continuity?

   YES: Go to step 6.

   NO: Repair open in the wires between PCM connector terminals A8, A9, and ground (G101), and repair poor ground (G101), then go to step 12 .

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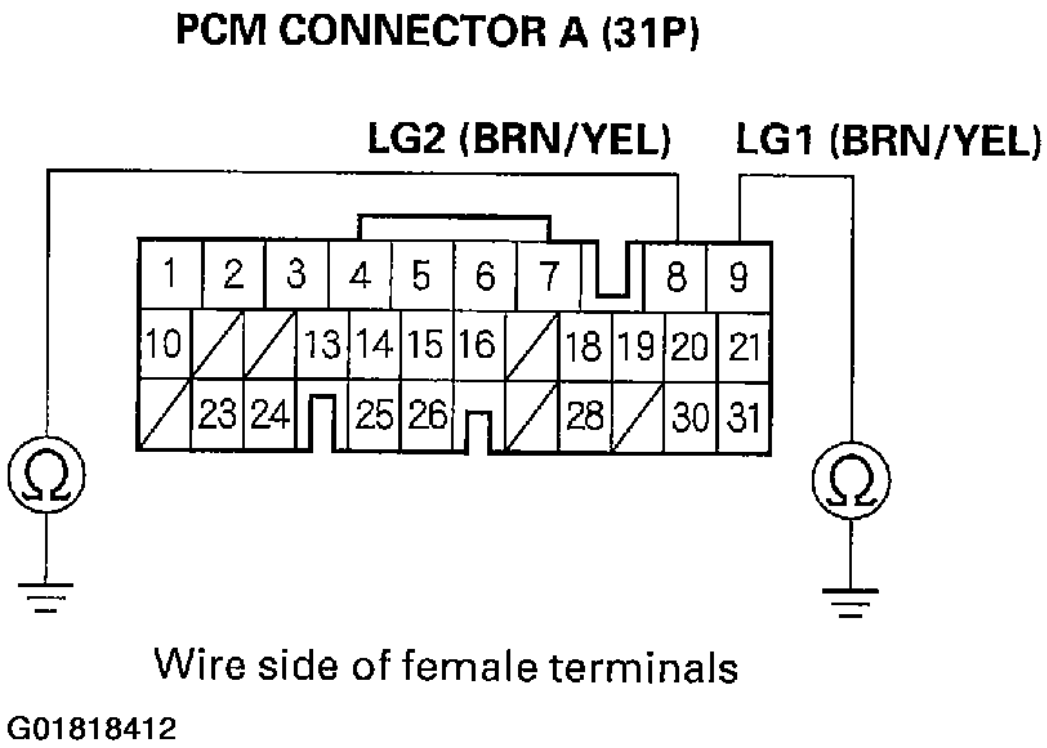


Fig. 156: Checking For Continuity Between PCM Connector Terminals A8 & Body Ground & Between A9 & Body Ground

6. Turn the ignition switch ON (II).
7. Shift to the **R** position.
8. Measure the voltage between PCM connector terminals C12 and A8 or A9.

Is there voltage?

YES: Go to step 9.

NO: Check for loose or poor connections at PCM connector terminal C12. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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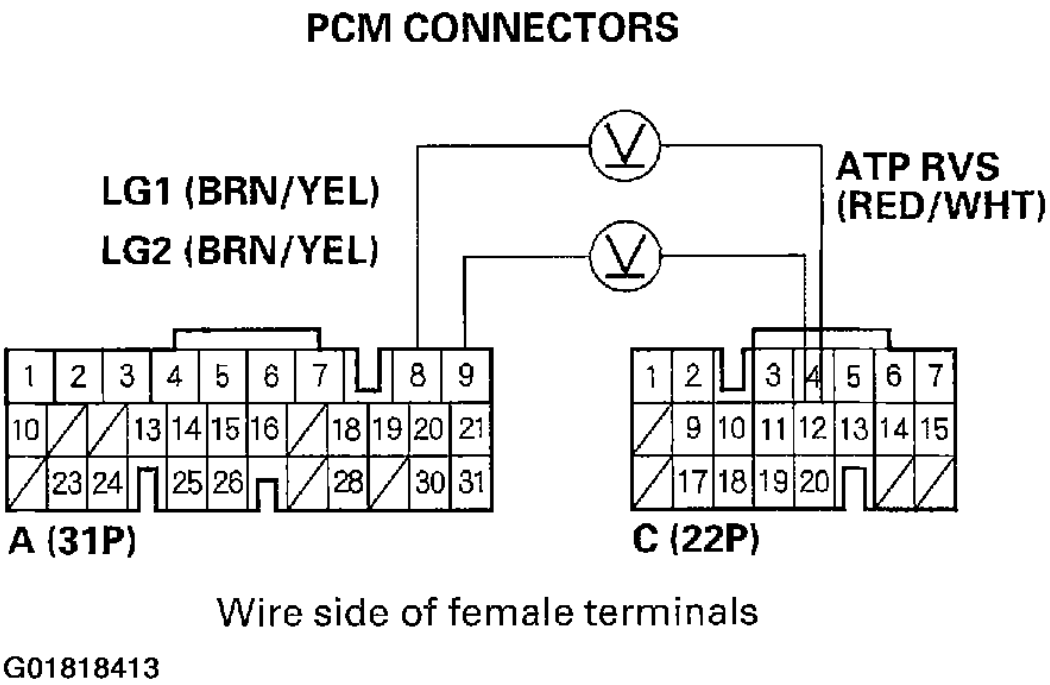


Fig. 157: Measuring The Voltage Between PCM Connector Terminals C12 & A8 Or A9

9. Turn the ignition switch OFF.
10. Disconnect the transmission range switch connector.
11. Check for continuity between the No. 1 and No. 10 terminals at the transmission range switch. The shift position must be **R** .

Is there continuity?

YES: Check for loose or poor connections at the transmission range switch connector terminal No. 1. If the connection is OK, repair open in the wire between PCM connector terminal C12 and the transmission range switch, then go to step 12.

NO: Replace the transmission range switch, then go to step 12.

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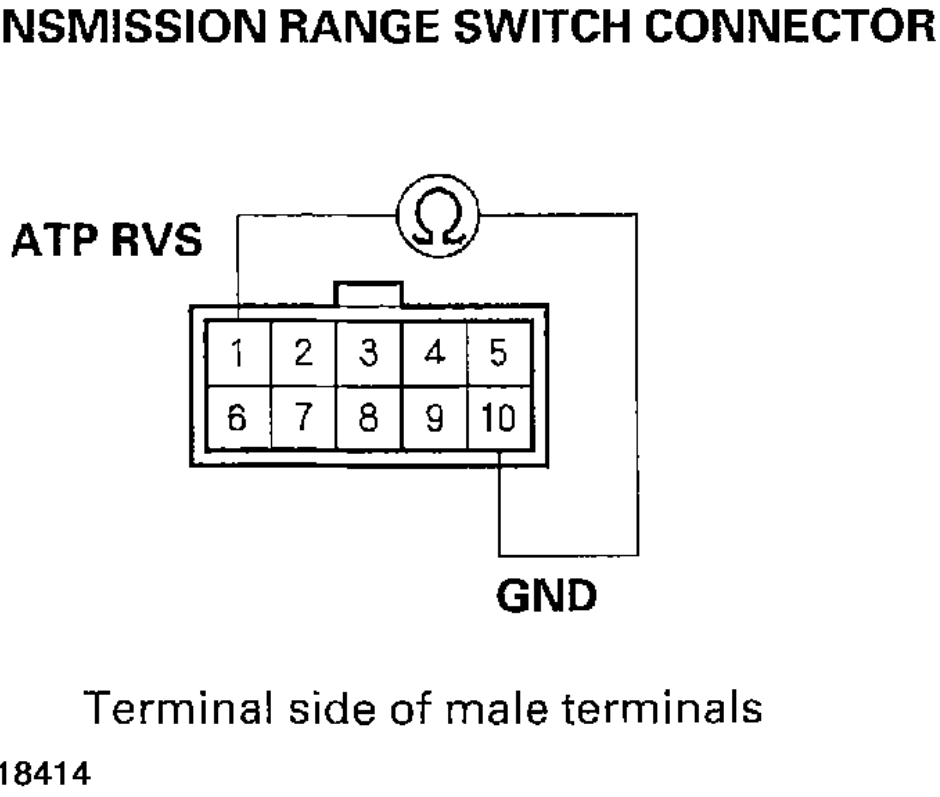


Fig. 158: Checking For Continuity Between The No. 1 & No. 10 Terminals At The Transmission Range Switch

12. Clear the DTC with the HDS.
13. Start the engine, and shift the shift lever slowly into the **P** , **R** , then **N** position.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0812.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0815: SHORT IN TRANSMISSION GEAR SELECTION SWITCH UPSHIFT SWITCH CIRCUIT, OR TRANSMISSION GEAR SELECTION SWITCH UPSHIFT SWITCH STUCK ON

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

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1. Turn the ignition switch ON (II).
2. Shift to the **P** position.
3. Verify the transmission gear selection switch upshift switch inputs with the HDS in the A/T data list.

   Is UPSHIFT SW ON?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time. Check the WHT/BLU wire for an intermittent short to ground between the transmission gear selection switch and PCM.
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch connector.
6. Turn the ignition switch ON (II).
7. Verify the transmission gear selection switch upshift switch inputs with the HDS in the A/T data list.

   Is UPSHIFT SW ON?

   YES: Go to step 8.

   NO: Replace the transmission gear selection switch (see **TRANSMISSION GEAR SELECTION SWITCH REPLACEMENT**), then go to step 12 .
8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector D (17P).
11. Check for continuity between transmission gear selection switch connector terminal No. 7 and body ground.

    Is there continuity?

    YES: Repair short to ground in the wire between PCM connector terminal D3 and the transmission gear selection switch connector, then go to step 12.

    NO: Check for loose or poor connections at PCM connector terminal D3. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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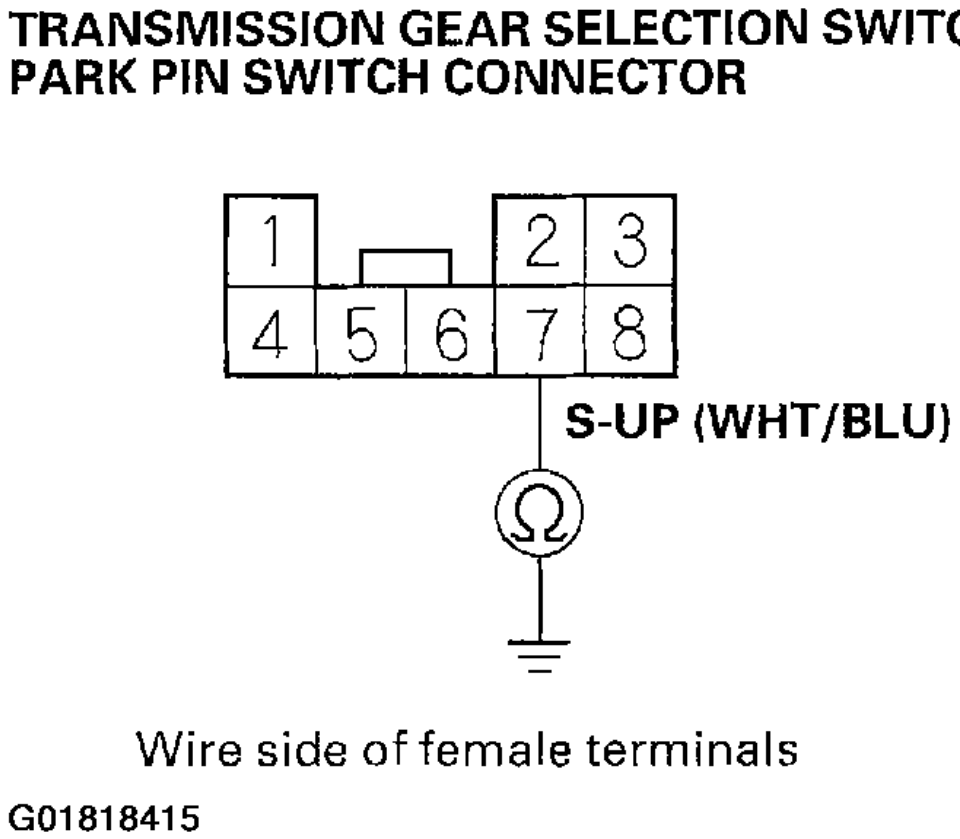


Fig. 159: Checking For Continuity Between Transmission Gear Selection Switch Connector Terminal No. 7 & Body Ground

12. Clear the DTC with the HDS.
13. Start the engine in the **P** position, wait for more than 10 seconds, then shift to the **M** position.
14. Push the shift lever toward shiftup position (+) slowly, and return to neutral position; repeat this test 10 times or more.
15. Pull the shift lever toward shiftdown position (-) slowly, and return to neutral position; repeat this test 10 times or more.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0815.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0816: SHORT IN TRANSMISSION GEAR SELECTION SWITCH DOWNSHIFT SWITCH CIRCUIT, OR TRANSMISSION GEAR SELECTION SWITCH DOWNSHIFT SWITCH STUCK ON

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATIONGENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch ON (II).
2. Shift to the **P** position.
3. Verify the transmission gear selection switch downshift switch inputs with the HDS in the A/T data list.

   Is DOWNSHIFT SW ON?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time. Check the ORN wire for an intermittent short to ground between the transmission gear selection switch and PCM.
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch connector.
6. Turn the ignition switch ON (II).
7. Verify the transmission gear selection switch downshift switch inputs with the HDS in the A/T data list.

   Is DOWNSHIFT SW ON?

   YES: Go to step 8.

   NO: Replace the transmission gear selection switch (see **Transmission Gear Selection Switch Replacement**), then go to step 12 .
8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector D (17P).
11. Check for continuity between transmission gear selection switch connector terminal No. 8 and body ground.

    Is there continuity?

    YES: Repair short to ground in the wire between PCM connector terminal D9 and the transmission gear selection switch connector, then go to step 12.

    NO: Check for loose or poor connections at PCM connector terminal D9. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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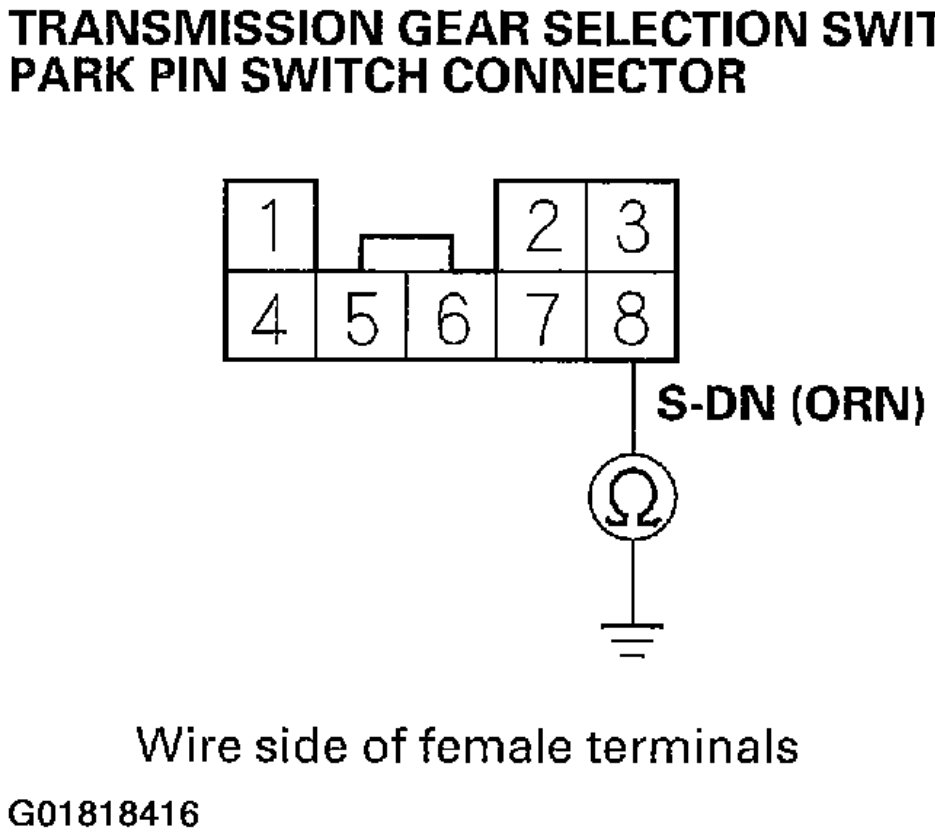


Fig. 160: Checking For Continuity Between Transmission Gear Selection Switch Connector Terminal No. 8 & Body Ground

12. Clear the DTC with the HDS.
13. Start the engine in the **P** position, wait for more than 10 seconds, then shift to the **M** position.
14. Push the shift lever toward shiftup position (+) slowly, and return to neutral position; repeat this test 10 times or more.
15. Pull the shift lever toward shiftdown position (-) slowly, and return to neutral position; repeat this test 10 times or more.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0816.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0842: SHORT IN 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK ON

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check the 2nd PRES SWITCH signal with the HDS in the A/T data list when not in 2nd gear.

   Is the 2nd PRES SWITCH OFF?

   YES: Go to step 3.

   NO: Go to step 5 .
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 2nd gear in the **D** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0842.

   Did the result indicate a fail?

   YES: Go to step 5.

   NO: Intermittent failure, the system is OK at this time. Check the BLU/RED wire for an intermittent short to ground between the 2nd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Disconnect the 2nd clutch transmission fluid pressure switch connector.
7. Turn the ignition switch ON (II).
8. Check the 2nd PRES SWITCH signal with the HDS in the A/T data list.

   Is the 2nd PRES SWITCH OFF?

   YES: Replace the 2nd clutch transmission fluid pressure switch (see **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), then go to step 13 .

   NO: Go to step 9.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (22P).
12. Check for continuity between PCM connector terminal C13 and body ground.

    Is there continuity?

    YES: Repair short to ground in the wire between PCM connector terminal C13 and the 2nd clutch transmission fluid pressure switch, then go to step 13.

    NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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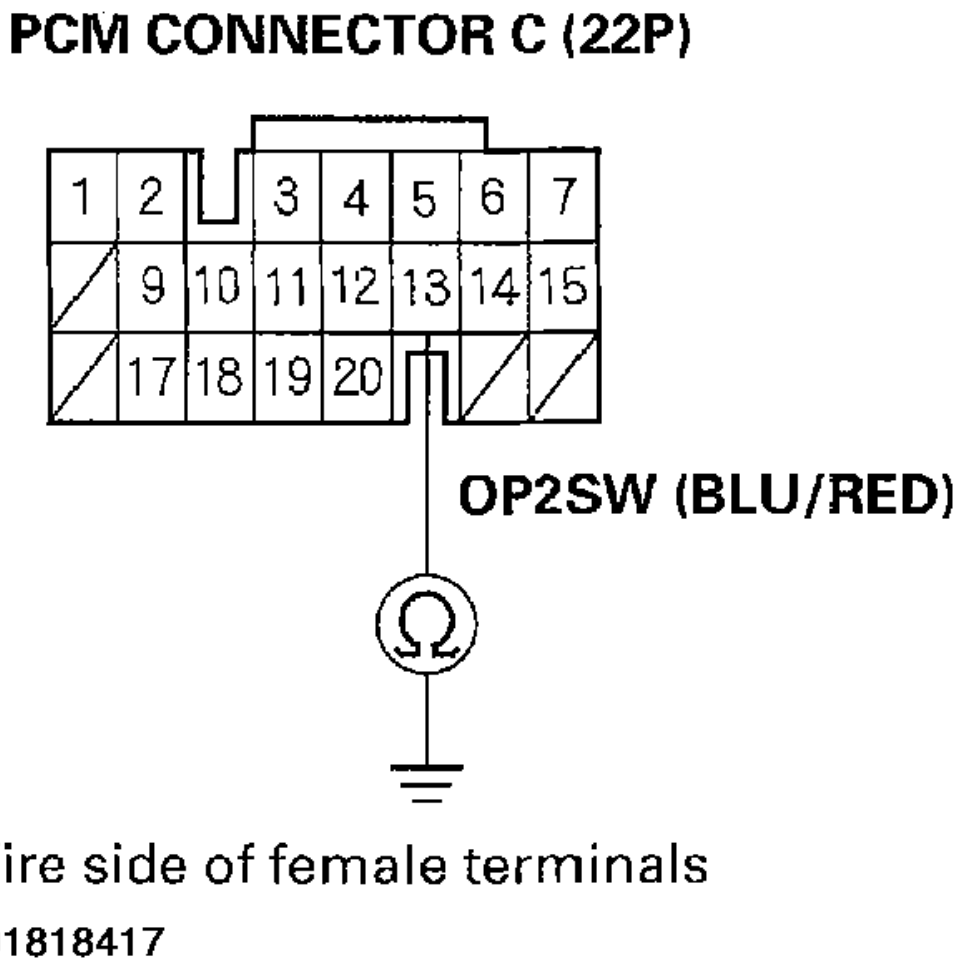


Fig. 161: Checking For Continuity Between PCM Connector Terminal C13 & Body Ground

13. Clear the DTC with the HDS.
14. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 2nd gear in the **M** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0842.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0843: OPEN IN 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK OFF

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Shift into the **M** position 2nd gear while pressing the brake pedal, and verify that the SHIFT MAP NUMBER indicates 2nd with the HDS in the A/T data list.
3. Check the 2nd PRES SWITCH signal with the HDS in the A/T data list.

   Is the 2nd PRES SWITCH ON?

   YES: Go to step 4.

   NO: Go to step 6 .
4. Drive the vehicle in 2nd gear in the **M** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0843.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 2nd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the 2nd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

   Is there about 5 V?

   YES: Replace the 2nd clutch transmission fluid pressure switch (see **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), then go to step 11 .

   NO: Go to step 10.

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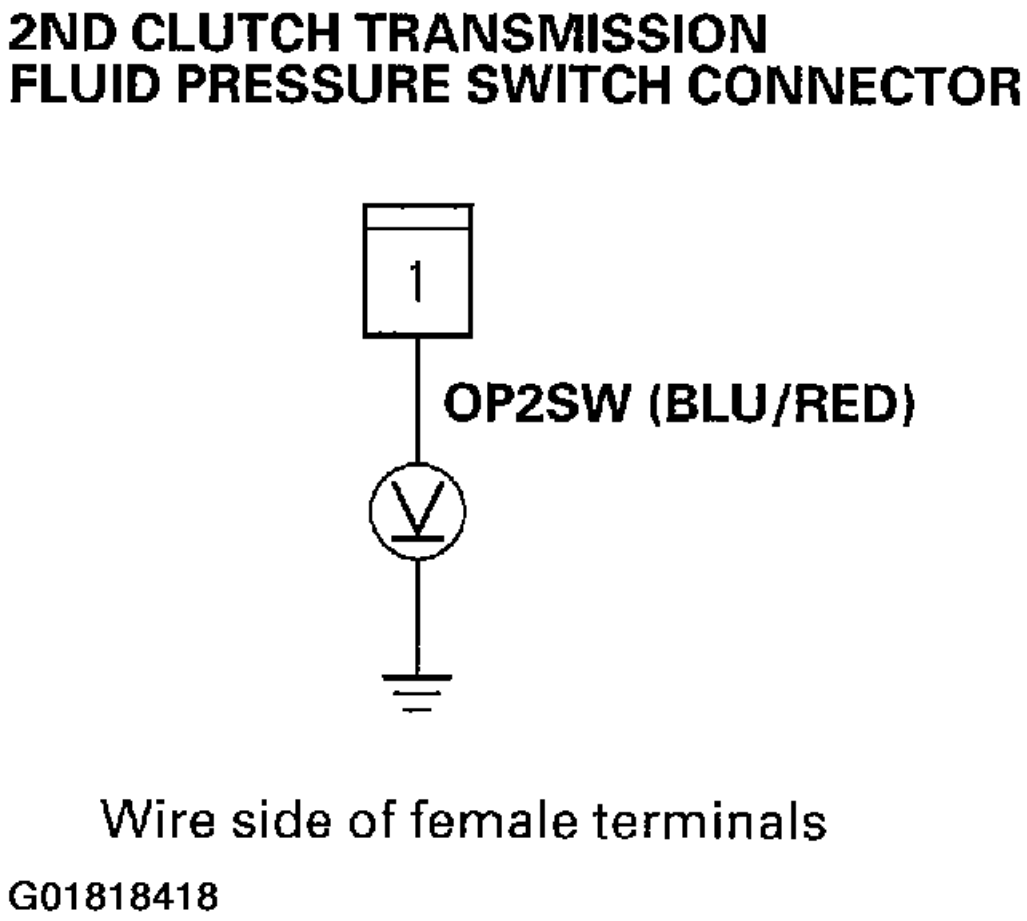


Fig. 162: Measuring The Voltage Between The 2nd Clutch Transmission Fluid Pressure Switch Connector Terminal & Body Ground

10. Measure the voltage between PCM connector terminal C13 and body ground.

    Is there about 5 V?

    YES: Repair open in the wire between PCM connector terminal C13 and the 2nd clutch transmission fluid pressure switch, go to step 11.

    NO: Check for loose or poor connections at PCM connector terminal C13. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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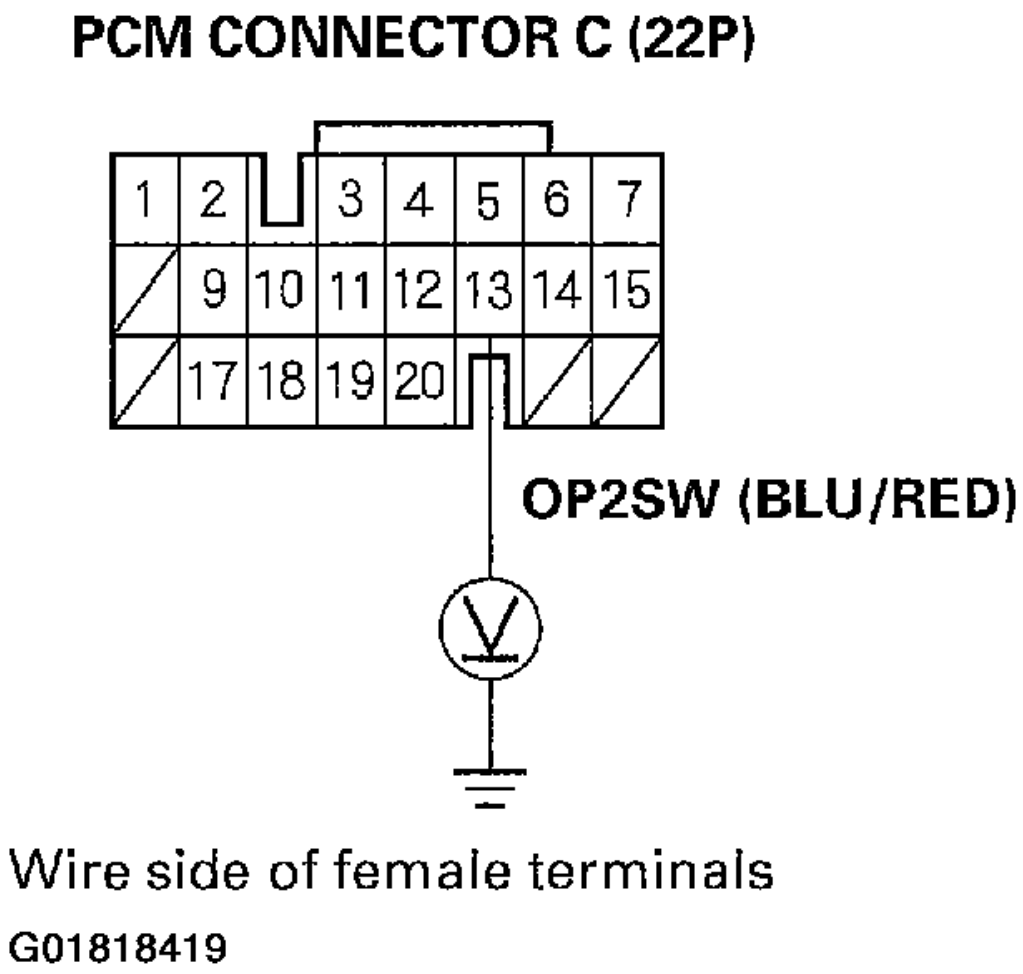


Fig. 163: Measuring The Voltage Between PCM Connector Terminal C13 & Body Ground

11. Clear the DTC with the HDS.
12. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 2nd gear in the **M** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0843.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0847: SHORT IN 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK ON

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list when not in 3rd gear.

   Is the 3rd PRES SWITCH ON?

   YES: Go to step 3.

   NO: Go to step 5 .
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 3rd gear in the **M** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0847.

   Did the result indicate a fail?

   YES: Go to step 5.

   NO: Intermittent failure, the system is OK at this time. Check the BLU/WHT wire for an intermittent short to ground between the 3rd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Disconnect the 3rd clutch transmission fluid pressure switch connector.
7. Turn the ignition switch ON (II).
8. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list.

   Is the 3rd PRES SWITCH OFF?

   YES: Replace the 3rd clutch transmission fluid pressure switch (see **3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), go to step 13 .

   NO: Go to step 9.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (22P).
12. Check for continuity between PCM connector terminal C10 and body ground.

    Is there continuity?

    YES: Repair short to ground in the wire between PCM connector terminal C10 and the 3rd clutch transmission fluid pressure switch, go to step 13.

    NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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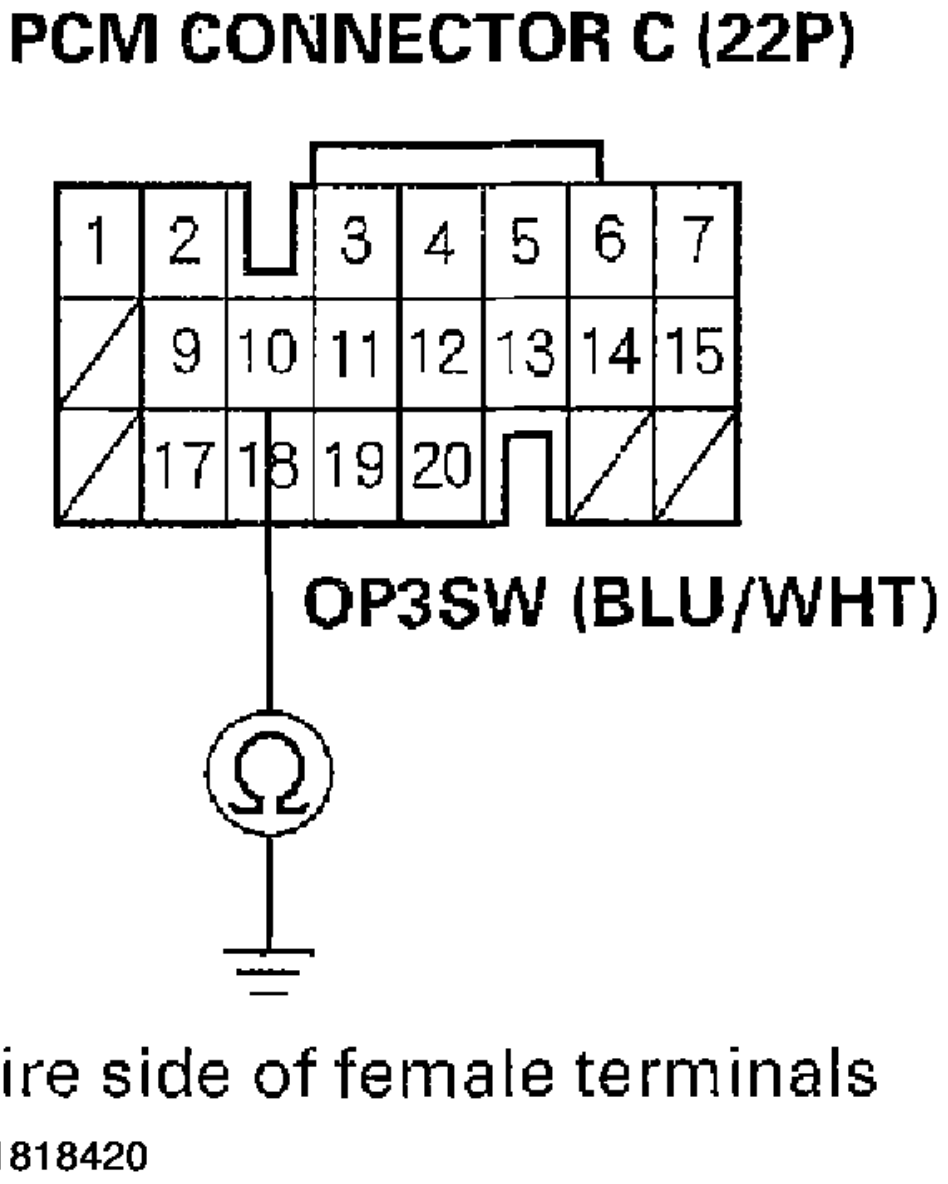


Fig. 164: Checking For Continuity Between PCM Connector Terminal C10 & Body Ground

13. Clear the DTC with the HDS.
14. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 3rd gear in the **M** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0847.

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Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0848: OPEN IN 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK OFF

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in the 3rd gear in the **M** position, and verify that the SHIFT MAP NUMBER indicates 3rd with the HDS in the A/T data list.
3. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list.

   Is the 3rd PRES SWITCH ON?

   YES: Go to step 4.

   NO: Go to step 6 .
4. Drive the vehicle in 3rd gear in the **M** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0848.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the 3rd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

   Is there about 5 V?

   YES: Replace the 3rd clutch transmission fluid pressure switch (see **3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), then go to step 11 .

   NO: Go to step 10.

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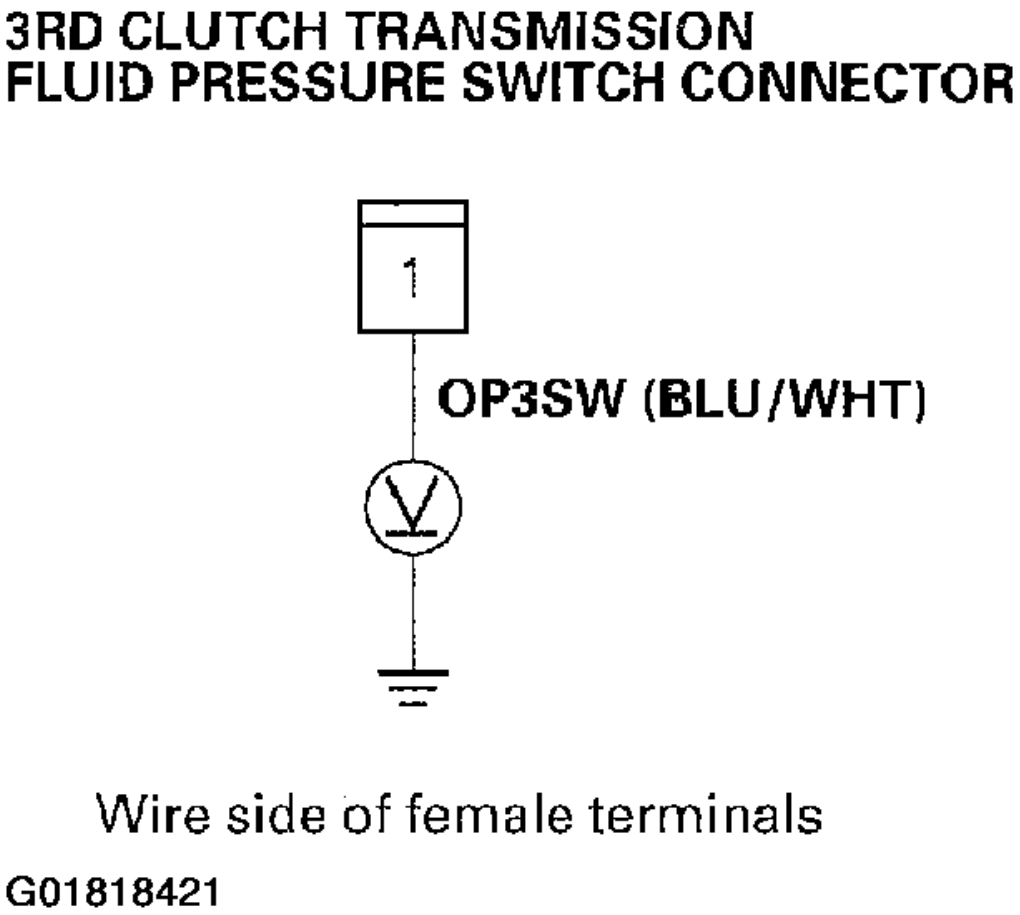


Fig. 165: Measuring The Voltage Between The 3rd Clutch Transmission Fluid Pressure Switch Connector Terminal & Body Ground

10. Measure the voltage between PCM connector terminal C10 and body ground.

    Is there about 5 V?

    YES: Repair open in the wire between PCM connector terminal C10 and the 3rd clutch transmission fluid pressure switch, then go to step 11.

    NO: Check for loose or poor connections at PCM connector terminal C10. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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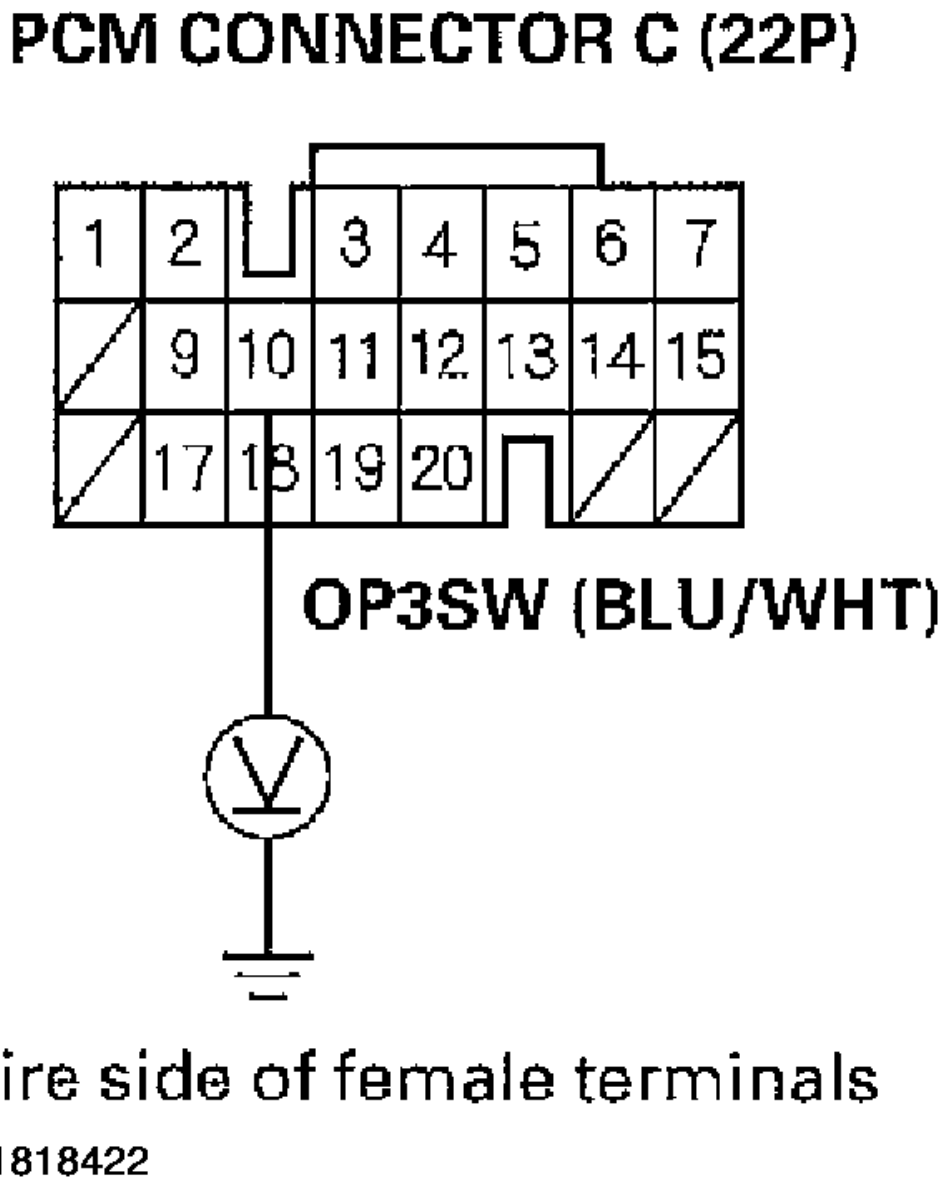


Fig. 166: Measuring The Voltage Between PCM Connector Terminal C10 & Body Ground

11. Clear the DTC with the HDS.
12. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 3rd gear in the **M** position for more than 5 seconds, then upshift to 4th gear, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0848.

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Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0957: SHORT IN TRANSMISSION GEAR SELECTION SWITCH CIRCUIT, OR TRANSMISSION GEAR SELECTION SWITCH STUCK ON

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch ON (II).
2. Shift to the **P** position.
3. Verify the transmission gear selection switch sequential sportshift mode switch inputs with the HDS in the A/T data list.

   Is sequential sportshift mode SW ON?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time. Check the BRN wire for an intermittent short to ground between the transmission gear selection switch and PCM.
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch connector.
6. Turn the ignition switch ON (II).
7. Verify the transmission gear selection switch sequential sportshift mode switch inputs with the HDS in the A/T data list.

   Is sequential sportshift mode SW ON?

   YES: Go to step 8.

   NO: Replace the transmission gear selection switch (see **Transmission Gear Selection Switch Replacement**), then go to step 12 .
8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector D (17P).
11. Check for continuity between transmission gear selection switch connector terminal No. 3 and body ground.

    Is there continuity?

    YES: Repair short to ground in the wire between PCM connector terminal D2 and the transmission gear selection switch connector, then go to step 12.

    NO: Check for loose or poor connections at PCM connector terminal D2. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the

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symptom/indication goes away with a known-good PCM, replace the original PCM.

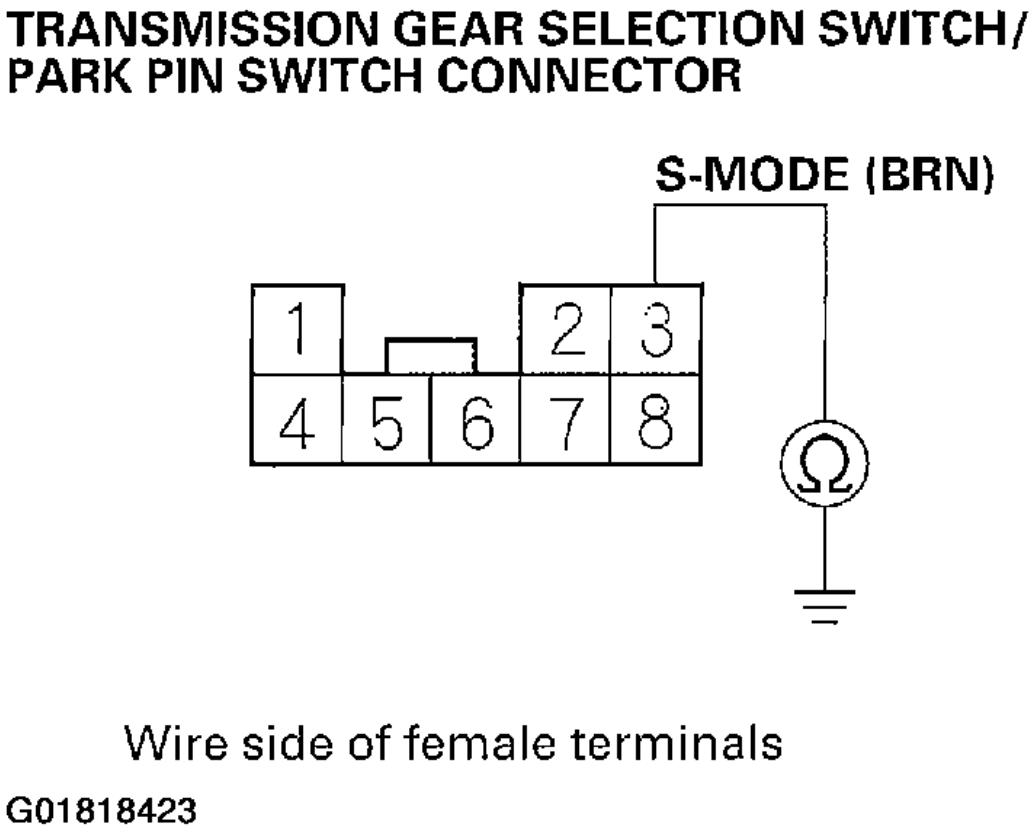


Fig. 167: Checking For Continuity Between Transmission Gear Selection Switch Connector Terminal No. 3 & Body Ground

12. Clear the DTC with the HDS.
13. Start the engine in the **P** position, wait for more than 10 seconds, then shift to the **M** position.
14. Push the shift lever toward shiftup position (+) slowly, and return to neutral position; repeat this test 10 times or more.
15. Pull the shift lever toward shiftdown position (-) slowly, and return to neutral position; repeat this test 10 times or more.
16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0957.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0958: OPEN IN TRANSMISSION GEAR SELECTION SWITCH CIRCUIT, OR

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TRANSMISSION GEAR SELECTION SWITCH STUCK OFF

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch ON (II).
2. Shift to the **M** position.
3. Verify the transmission gear selection switch sequential sportshift mode switch inputs with the HDS in the A/T data list.

   Is sequential sportshift mode SW OFF?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission gear selection switch and PCM.
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch connector.
6. Check for continuity between transmission gear selection switch connector terminals No. 2 and No. 3.

   Is there continuity when the shift lever is in M position, and no continuity when the shift lever is any other M position?

   YES: Go to step 7.

   NO: Replace the transmission gear selection switch (see **Transmission Gear Selection Switch Replacement**), then go to step 10 .

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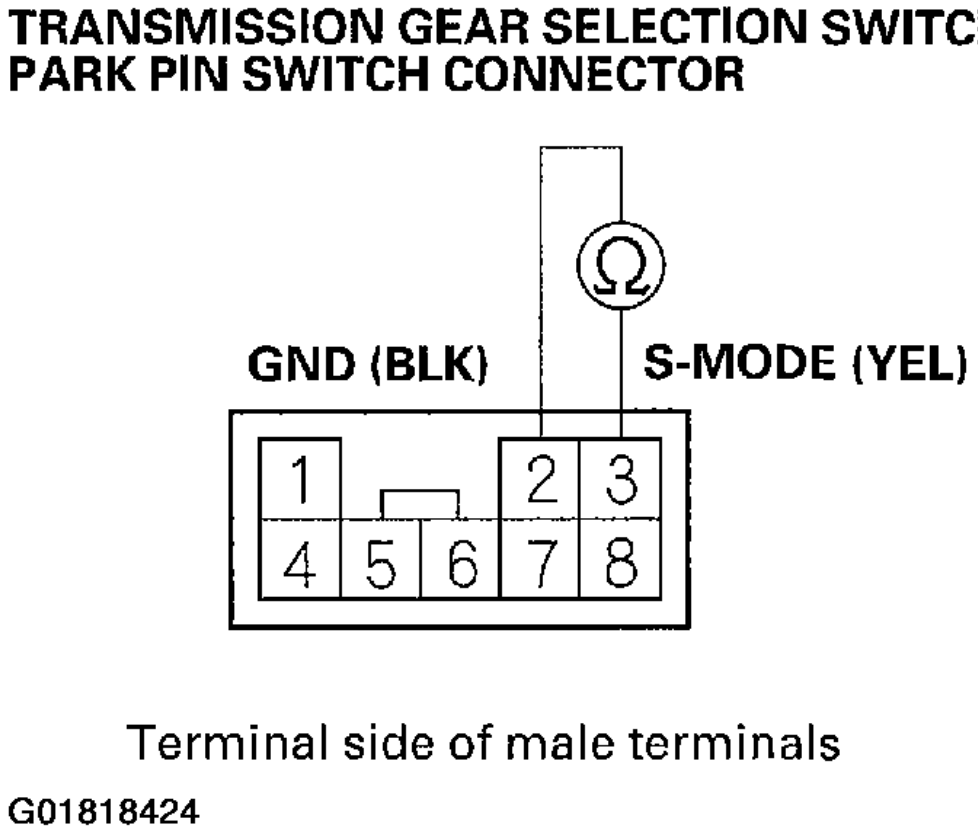


Fig. 168: Checking For Continuity Between Transmission Gear Selection Switch Connector Terminals No. 2 & No. 3

7. Turn the ignition switch ON (II).
8. Measure the voltage between transmission gear selection switch connector terminal No. 3 and body ground.

Is there about 5 V?

YES: Repair open in the wire between transmission gear selection switch connector terminal No. 2 and ground (G501), or repair poor ground (G501), then go to step 10 .

NO: Go to step 9.

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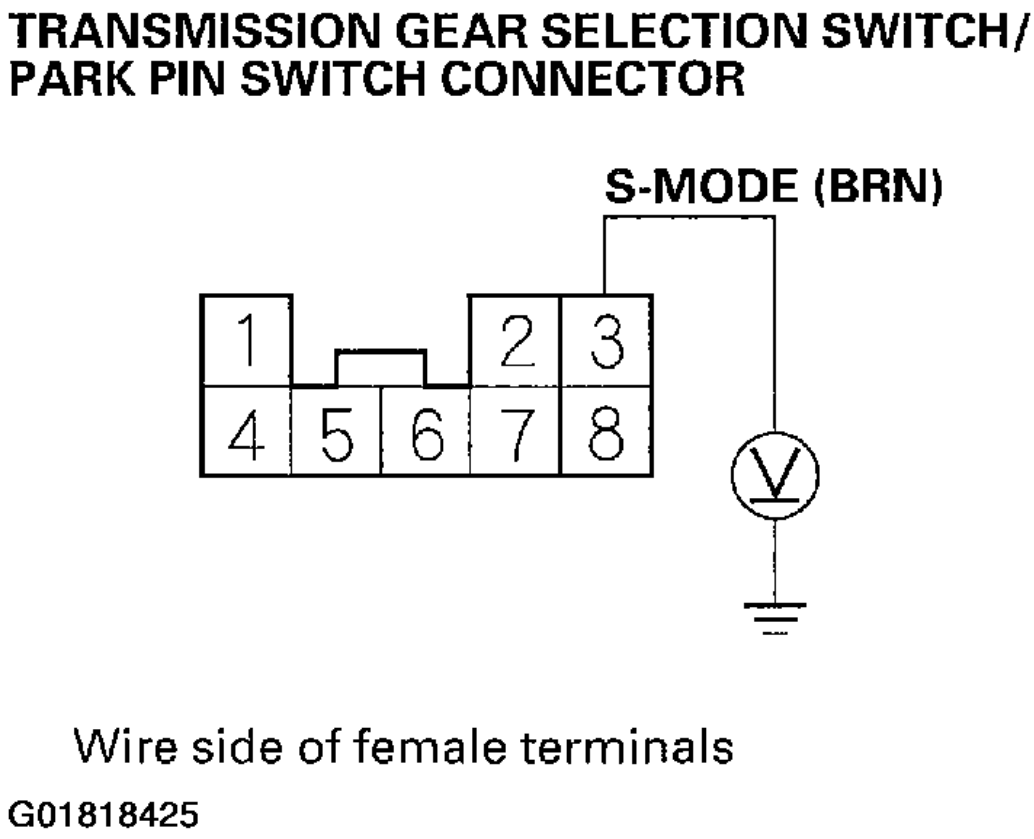


Fig. 169: Measuring The Voltage Between Transmission Gear Selection Switch Connector Terminal No. 3 & Body Ground

9. Measure the voltage between PCM connector terminal D2 and body ground.

   Is there about 5 V?

   YES: Repair open in the wire between PCM connector terminal D2 and the transmission gear selection switch connector, then go to step 10.

   NO: Check for loose or poor connections at PCM connector terminal D2. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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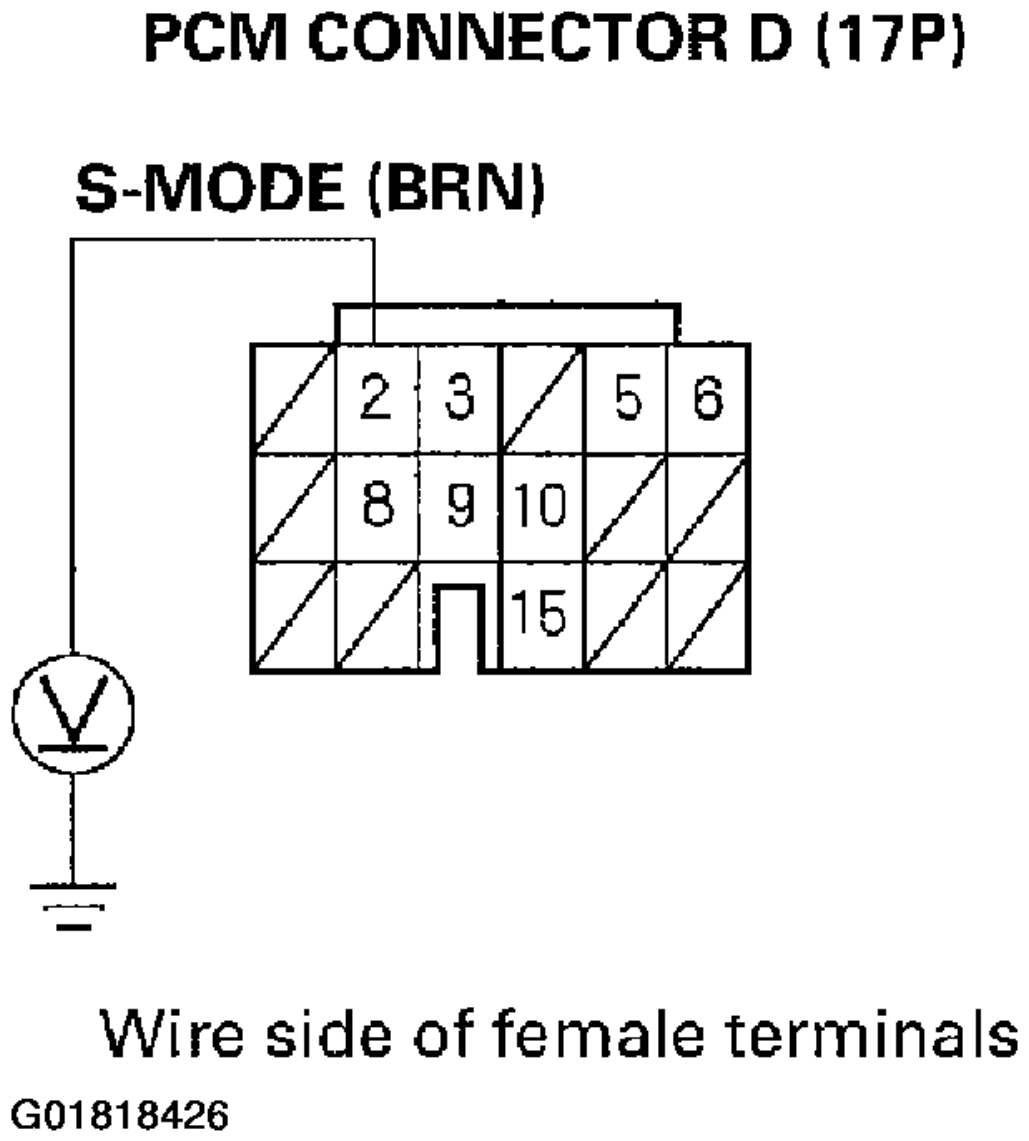


Fig. 170: Measuring The Voltage Between PCM Connector Terminal D2 & Body Ground

10. Clear the DTC with the HDS.
11. Start the engine in the **P** position, wait for more than 10 seconds, then shift to the **M** position.
12. Push the shift lever toward shiftup position (+) slowly, and return to neutral position; repeat this test 10 times or more.
13. Pull the shift lever toward shiftdown position (-) slowly, and return to neutral position; repeat this test 10 times or more.

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14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0958.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0962: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0962 recurs.

   Is DTC P0962 indicated?

   YES: Go to step 6 .

   NO: Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL A in P CTRL SOL CTRL MENU with the HDS.
4. Drive with the A/T clutch pressure control solenoid valve A at 1.0 A in SOL A CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0962.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve A and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve A connector.
8. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

   Is there 3-10 ohm?

   YES: Go to step 9.

   NO: Replace the A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 12 .

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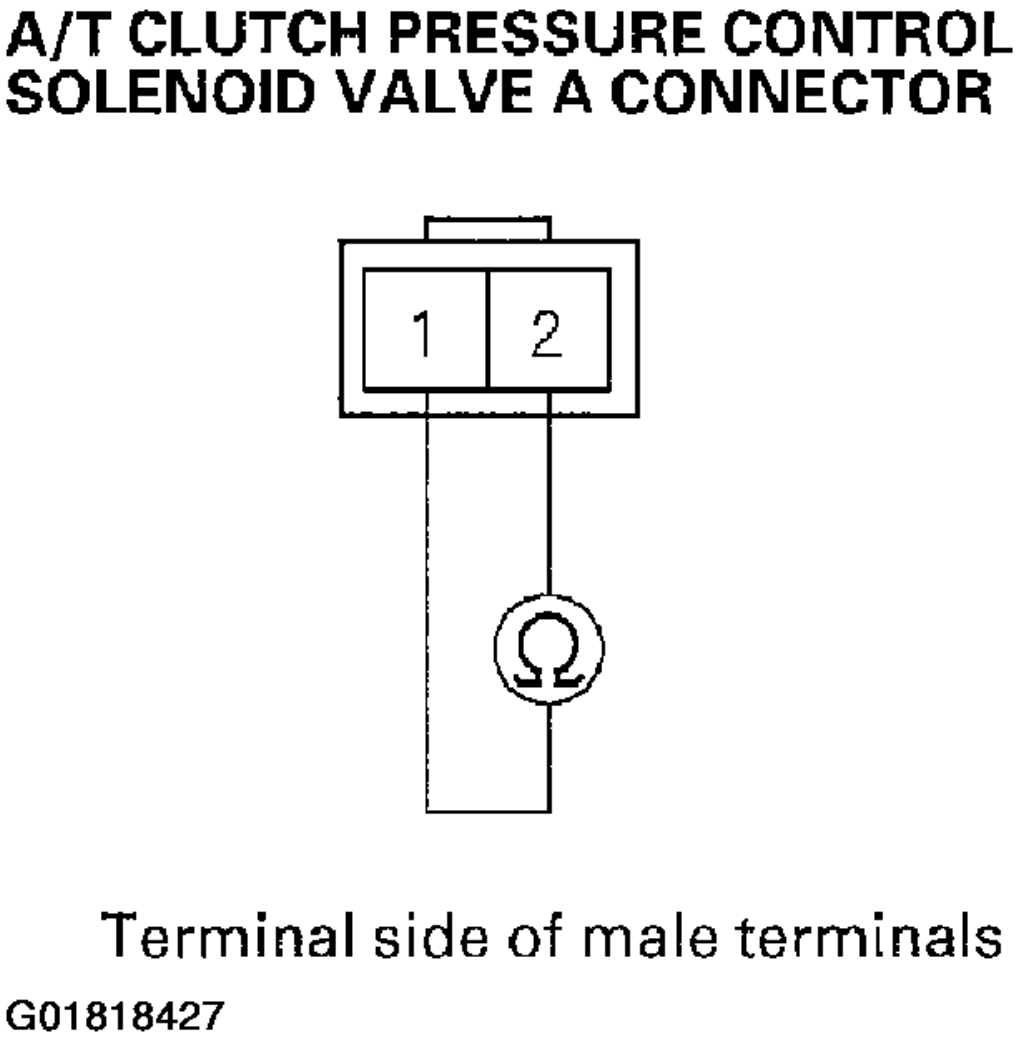


Fig. 171: Measuring A/T Clutch Pressure Control Solenoid Valve A Resistance At The Solenoid Connector

9. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

   Is there continuity?

   YES: Go to step 10.

   NO: Repair open in the wire between the A/T clutch pressure control solenoid valve A and ground (G101), or repair poor ground (G101), then go to step 12 .

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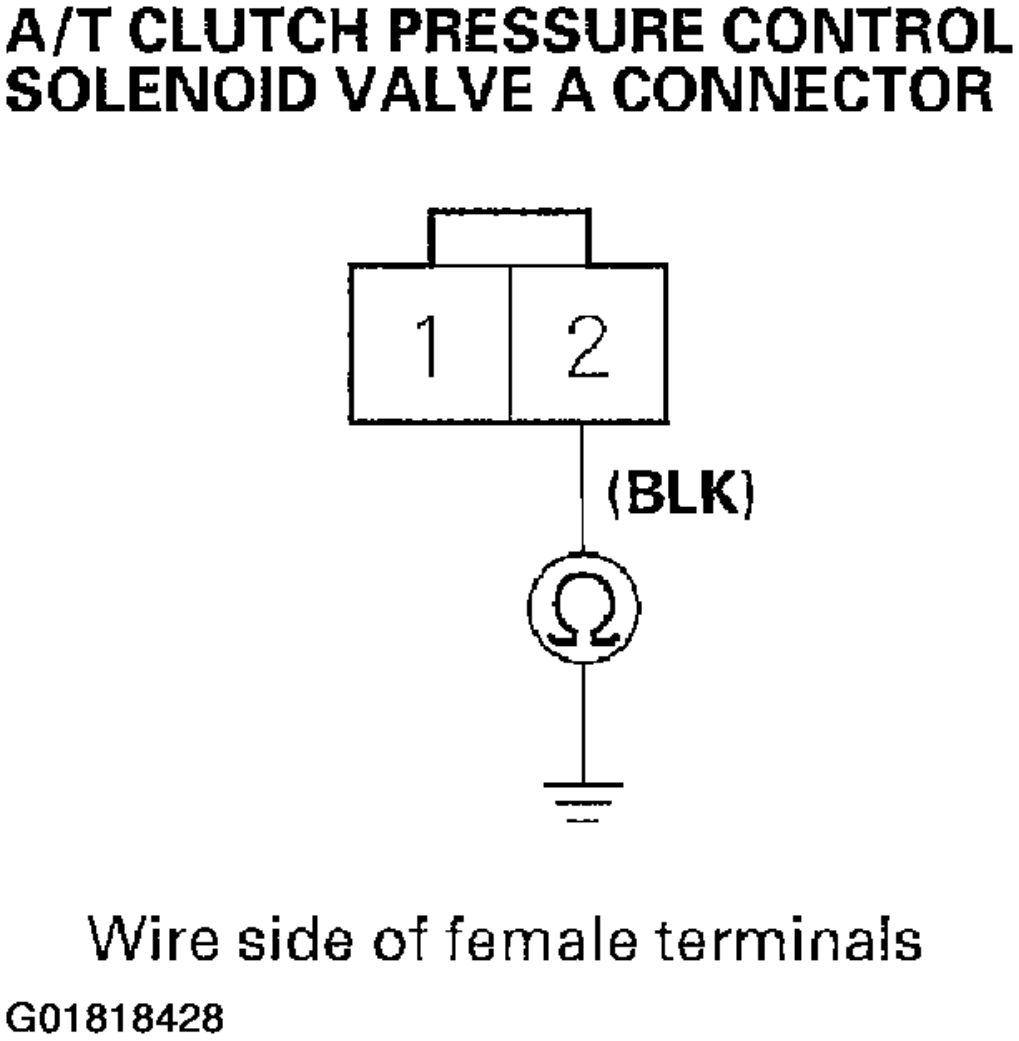


Fig. 172: Checking For Continuity Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminal No. 2 & Body Ground

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

Is there about 11 V as the ignition switch is turned to the ON (II) position?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Repair open or short in the wire between PCM connector terminal C1 and A/T clutch

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pressure control solenoid valve A, then go to step 12.

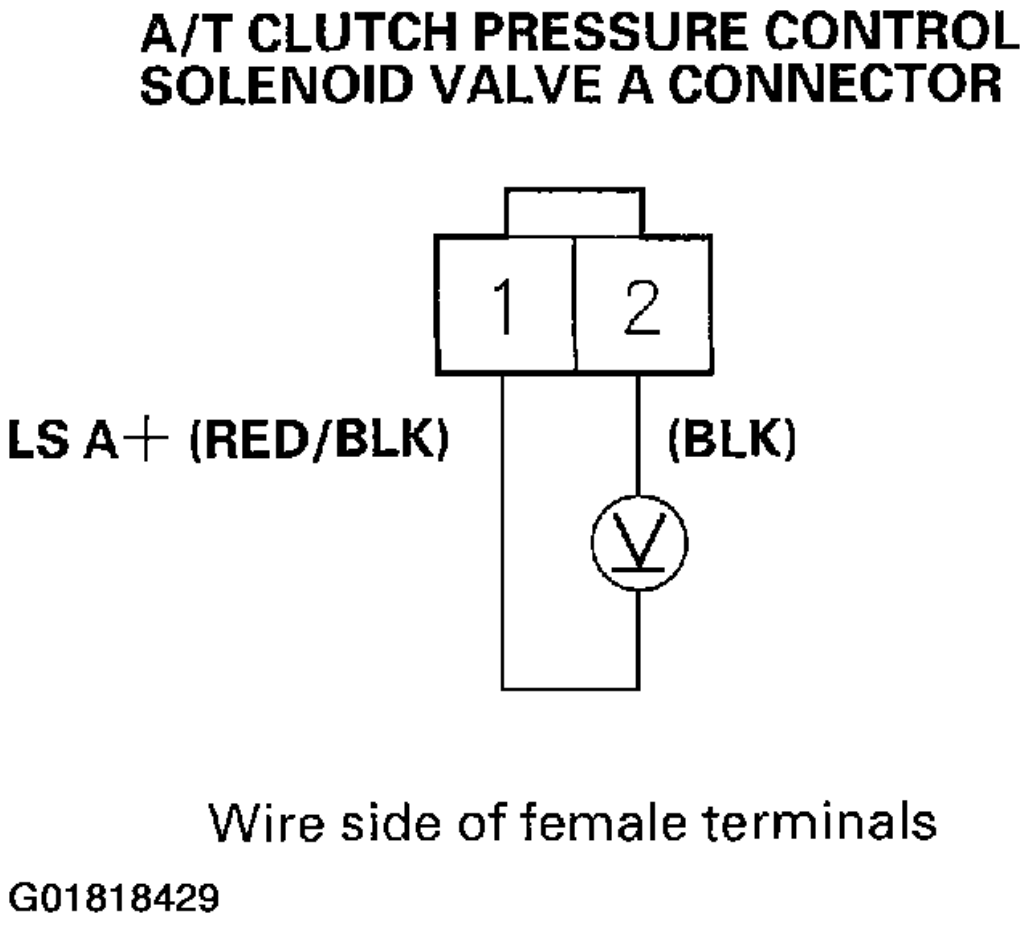


Fig. 173: Measuring The Voltage Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminals No. 1 & No. 2

12. Clear the DTC with the HDS.
13. Test-drive the vehicle for several minutes in the **D** position in all five gears.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0962.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0963: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATIONGENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0963 recurs.

   Is DTC P0963 indicated?

   YES: Go to step 6 .

   NO: Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL A in P CTRL SOL CTRL MENU with the HDS.
4. Drive with the A/T clutch pressure control solenoid valve A at 0.2 A in SOL A CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0963.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve A and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve A connector.
8. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

   Is there 3-10 ohm?

   YES: Go to step 9.

   NO: Replace the A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 12 .

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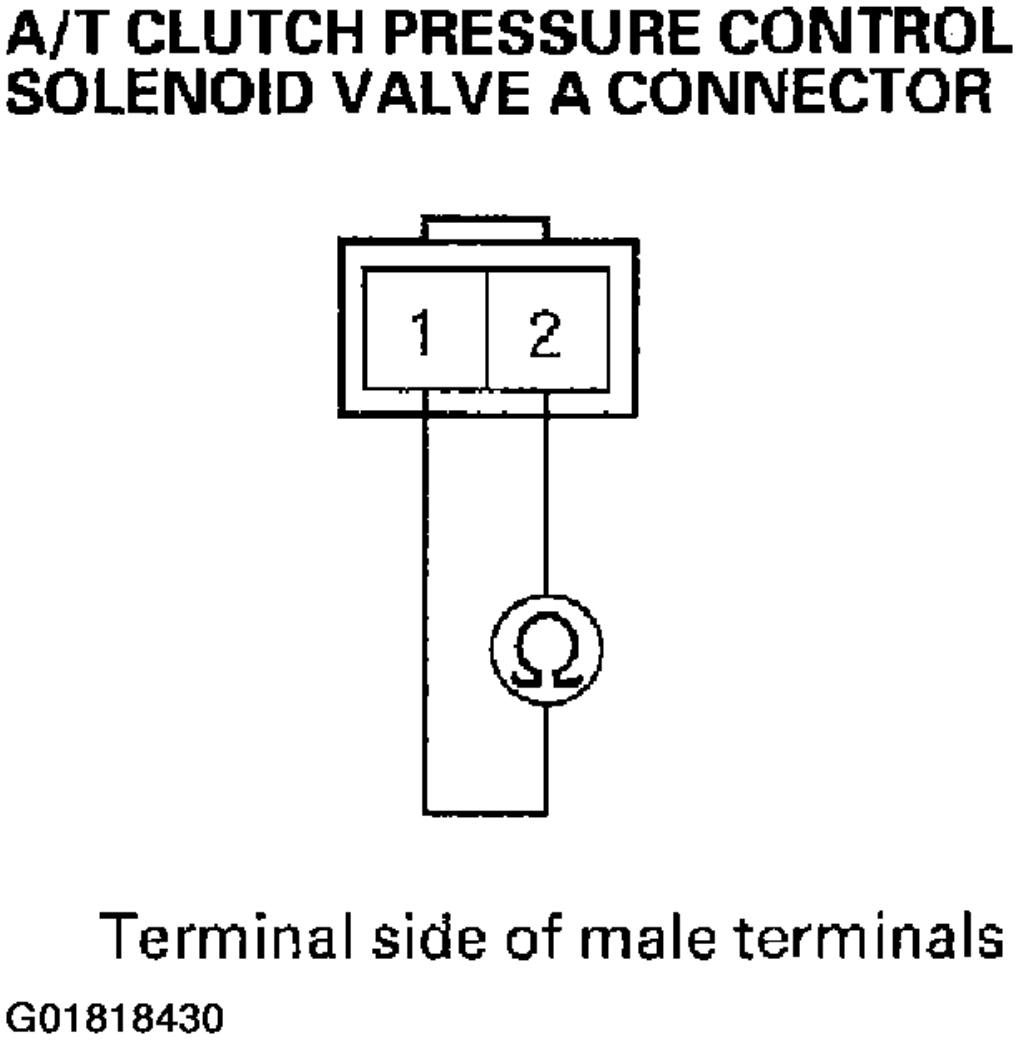


Fig. 174: Measuring A/T Clutch Pressure Control Solenoid Valve A Resistance At The Solenoid Connector

9. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

   Is there continuity?

   YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

   NO: Repair open in the wire between the A/T clutch pressure control solenoid valve A and ground (G101), or repair poor ground (G101), then go to step 12 .

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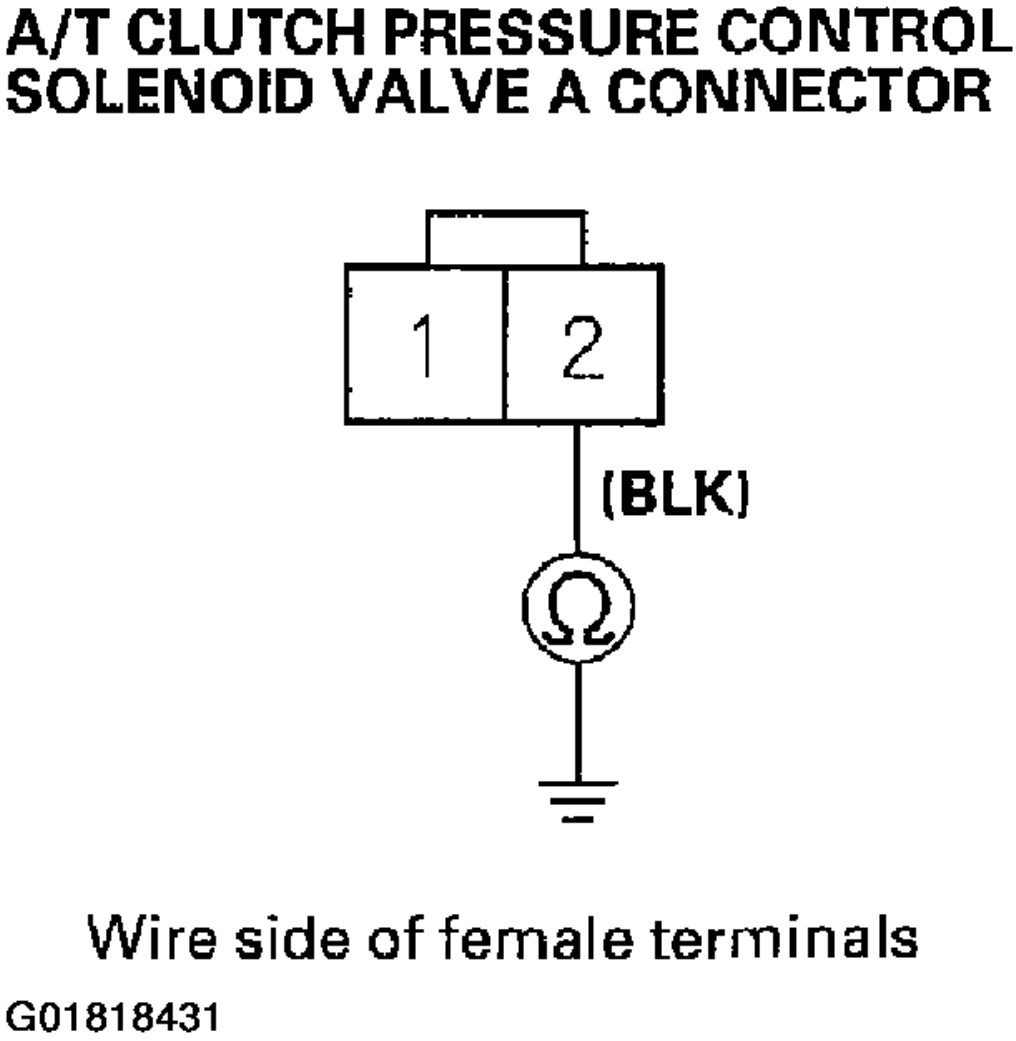


Fig. 175: Checking For Continuity Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminal No. 2 & Body Ground

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the **D** position in all five gears.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0963.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0966: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CIRCUIT

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0966 recurs.

   Is DTC P0966 indicated?

   YES: Go to step 6 .

   NO: Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL B in P CTRL SOL CTRL MENU with the HDS.
4. Drive with the A/T clutch pressure control solenoid valve B at 1.0 A in SOL B CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0966.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at the A/T clutch pressure control solenoid valve B and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve B connector.
8. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

   Is there 3-10 ohm?

   YES: Go to step 9.

   NO: Replace the A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 12 .

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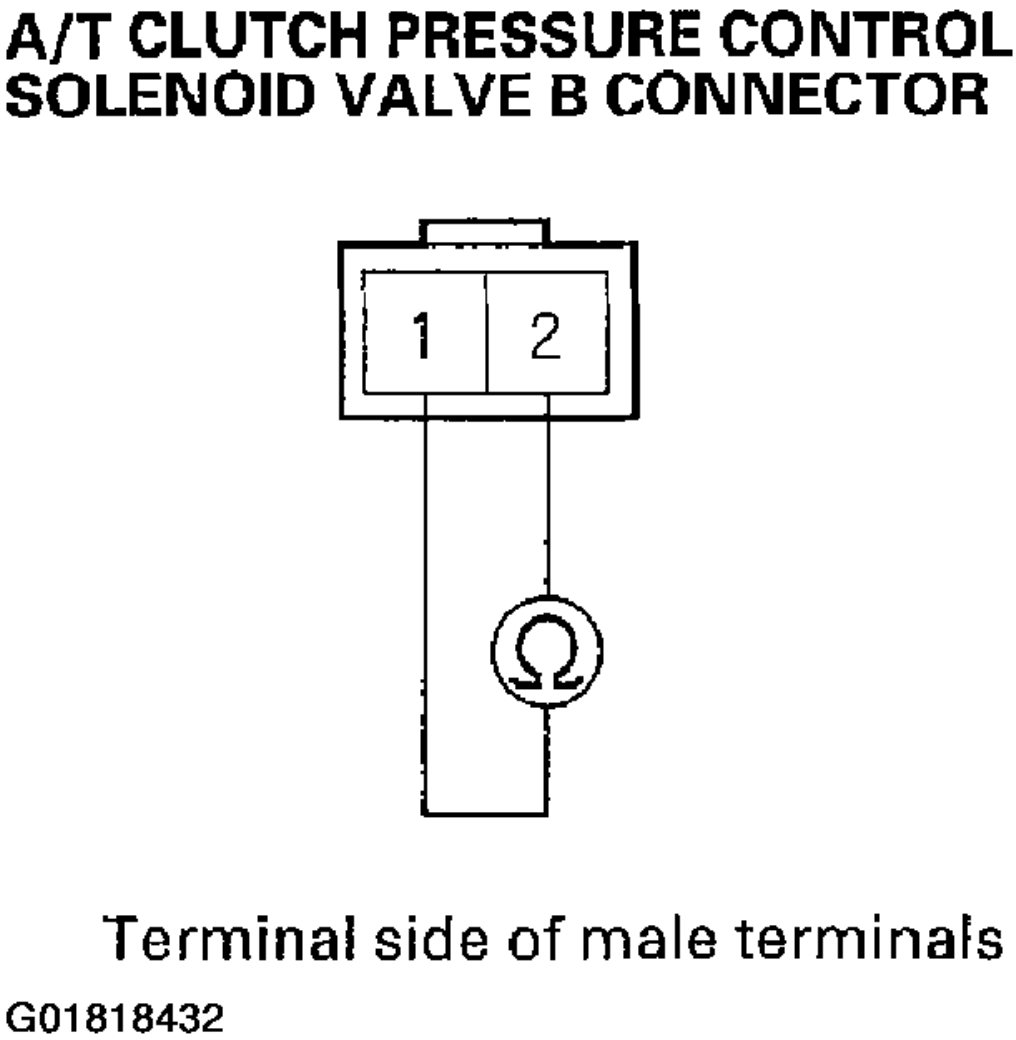


Fig. 176: Measuring A/T Clutch Pressure Control Solenoid Valve B Resistance At The Solenoid Connector

9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

   Is there continuity?

   YES: Go to step 10.

   NO: Repair open in the wire between the A/T clutch pressure control solenoid valve B and ground (G101), or repair poor ground (G101), then go to step 12 .

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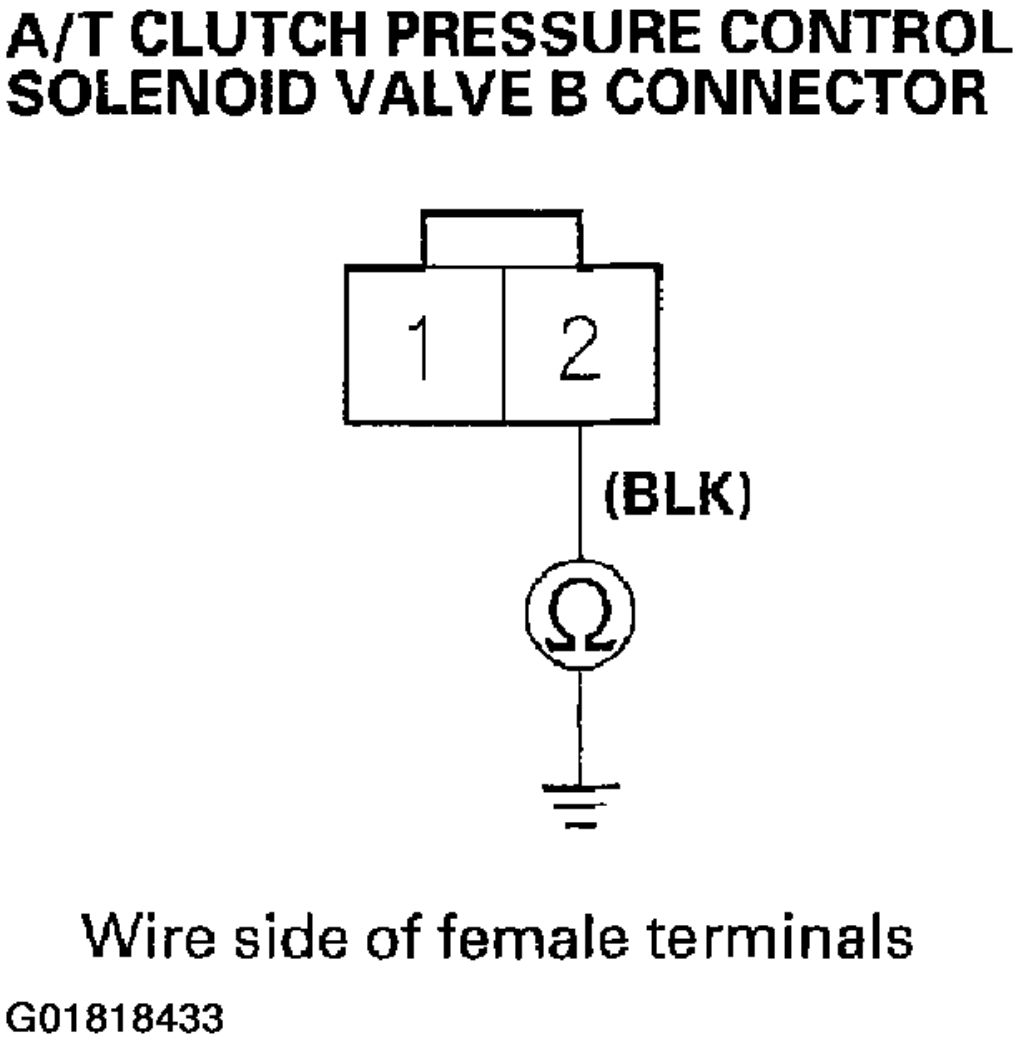


Fig. 177: Checking For Continuity Between A/T Clutch Pressure Control Solenoid Valve B Connector Terminal No. 2 & Body Ground

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

Is there about 11 V as the ignition switch is turned to the ON (II) position?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Repair open or short in the wire between PCM connector terminal C15 and A/T clutch

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pressure control solenoid valve B, then go to step 12.

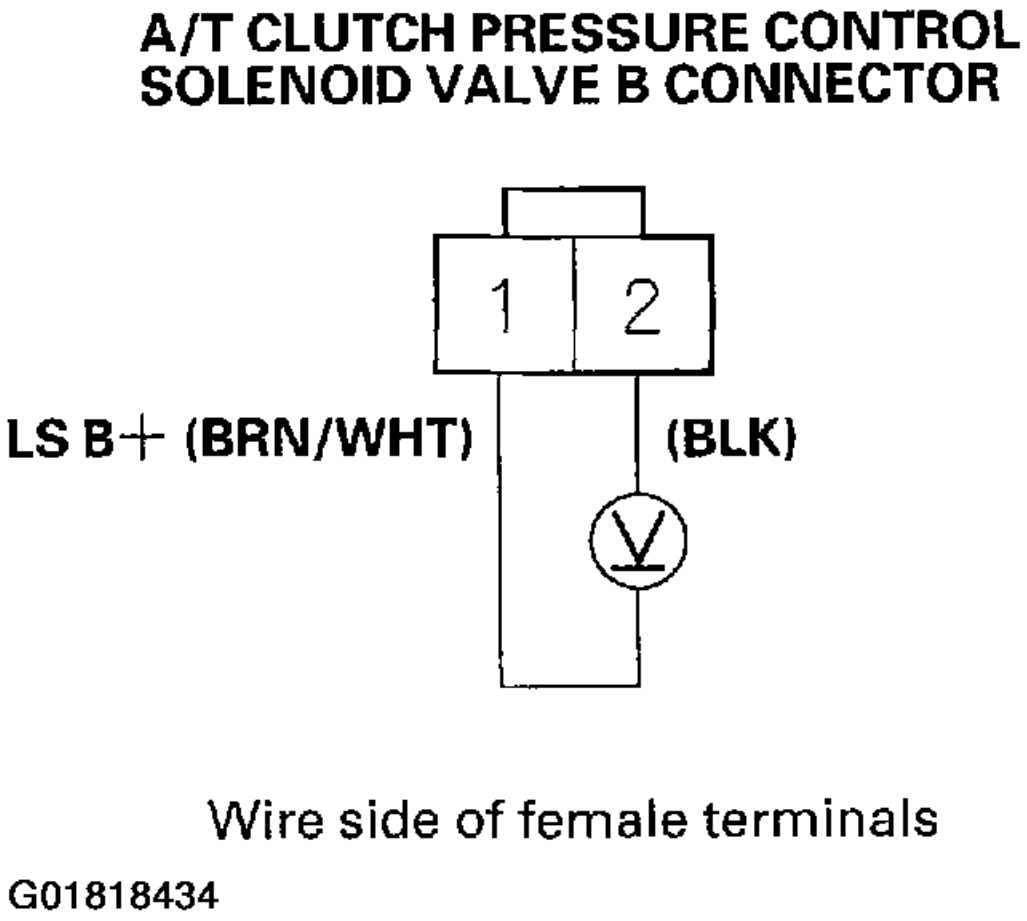


Fig. 178: Measuring The Voltage Between A/T Clutch Pressure Control Solenoid Valve B Connector Terminals No. 1 & No. 2

12. Clear the DTC with the HDS.
13. Test-drive the vehicle for several minutes in the **D** position in all five gears.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0966.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0967: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0967 recurs.

   Is DTC P0967 indicated?

   YES: Go to step 6 .

   NO: Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL B in P CTRL SOL CTRL MENU with the HDS.
4. Drive with the A/T clutch pressure control solenoid valve B at 0.2 A in SOL B CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0967.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve B and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve B connector.
8. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

   Is there 3-10 ohm?

   YES: Go to step 9.

   NO: Replace the A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 12 .

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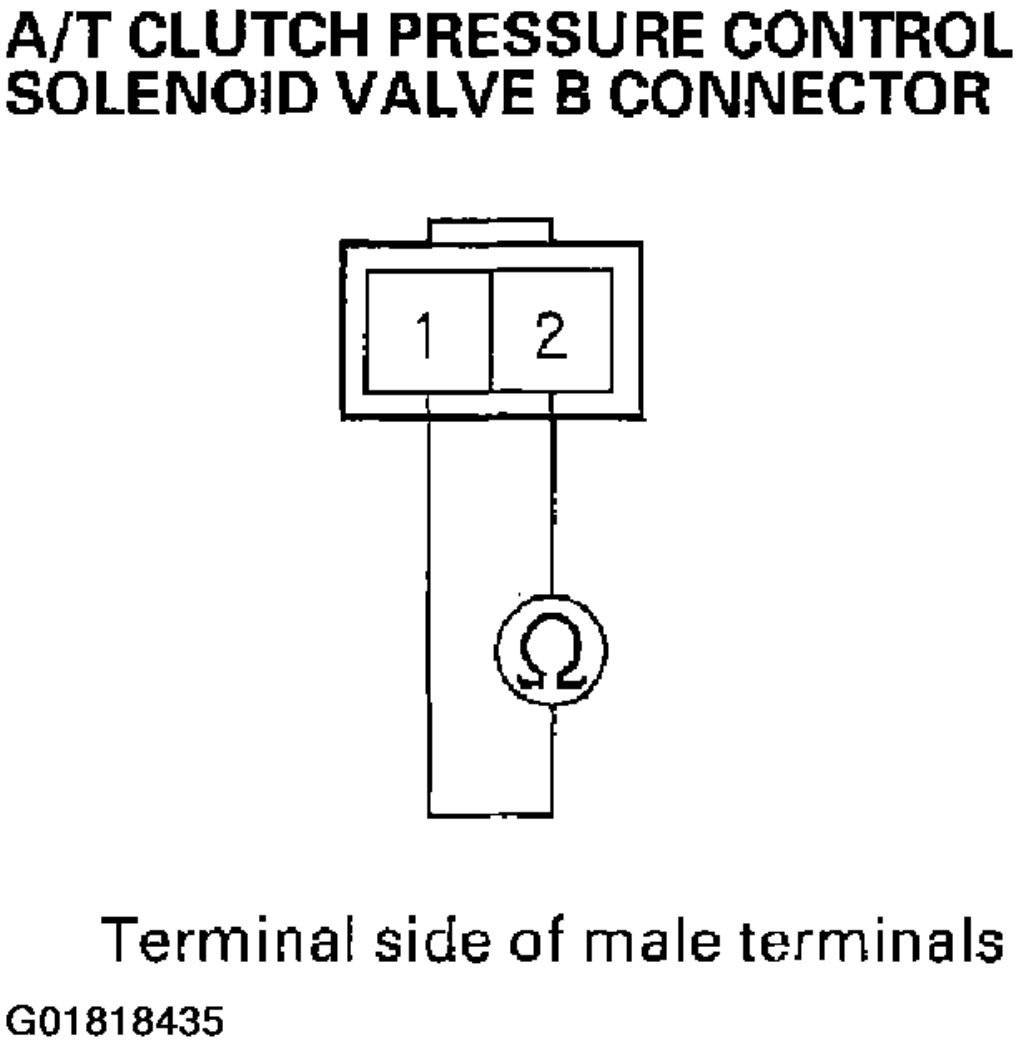


Fig. 179: Measuring A/T Clutch Pressure Control Solenoid Valve B Resistance At The Solenoid Connector

9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

   Is there continuity?

   YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

   NO: Repair open in the wire between the A/T clutch pressure control solenoid valve B and ground (G101), or repair poor ground (G101), then go to step 12 .

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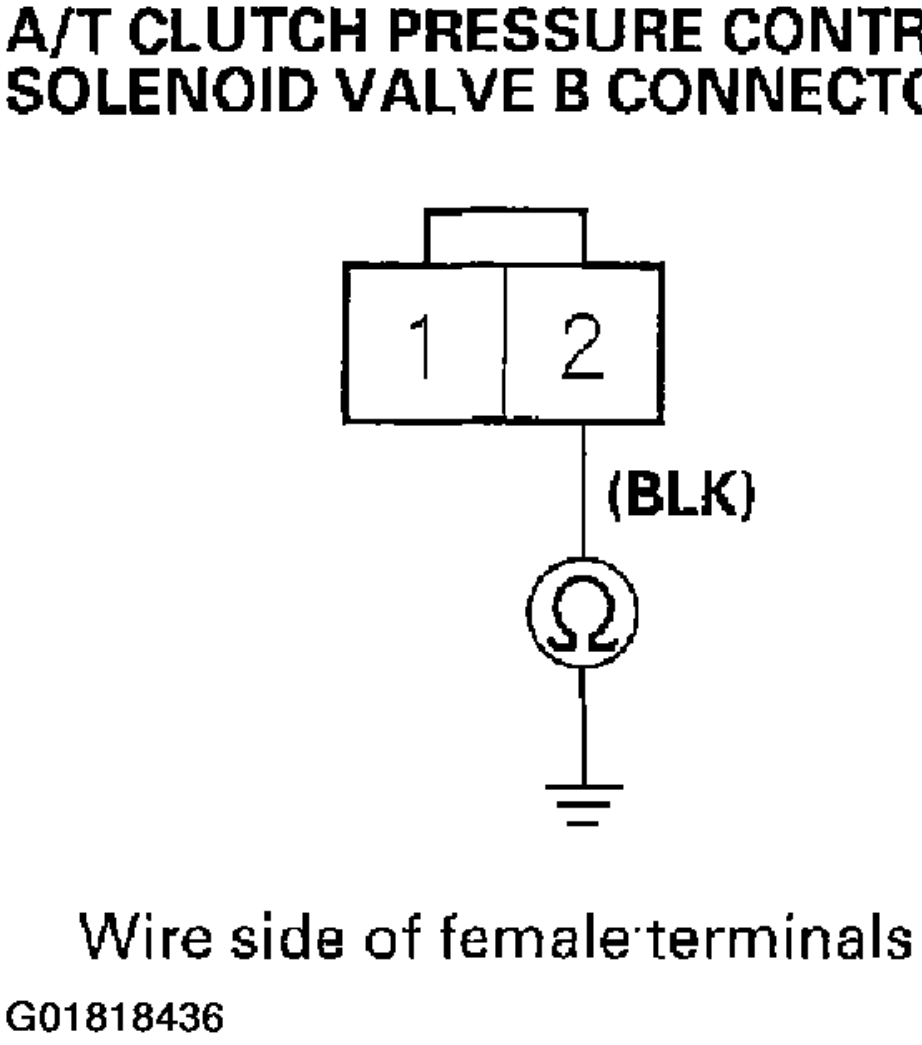


Fig. 180: Checking For Continuity Between A/T Clutch Pressure Control Solenoid Valve B Connector Terminal No. 2 & Body Ground

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the **D** position in all five gears.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0967.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0970: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CIRCUIT

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0970 recurs.

   Is DTC P0970 indicated?

   YES: Go to step 6 .

   NO: Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL C in P CTRL SOL CTRL MENU with the HDS.
4. Drive with the A/T clutch pressure control solenoid valve C at 1.0 A in SOL C CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0970.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve C and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve C connector.
8. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid connector.

   Is there 3-10 ohm?

   YES: Go to step 9.

   NO: Replace the A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 12 .

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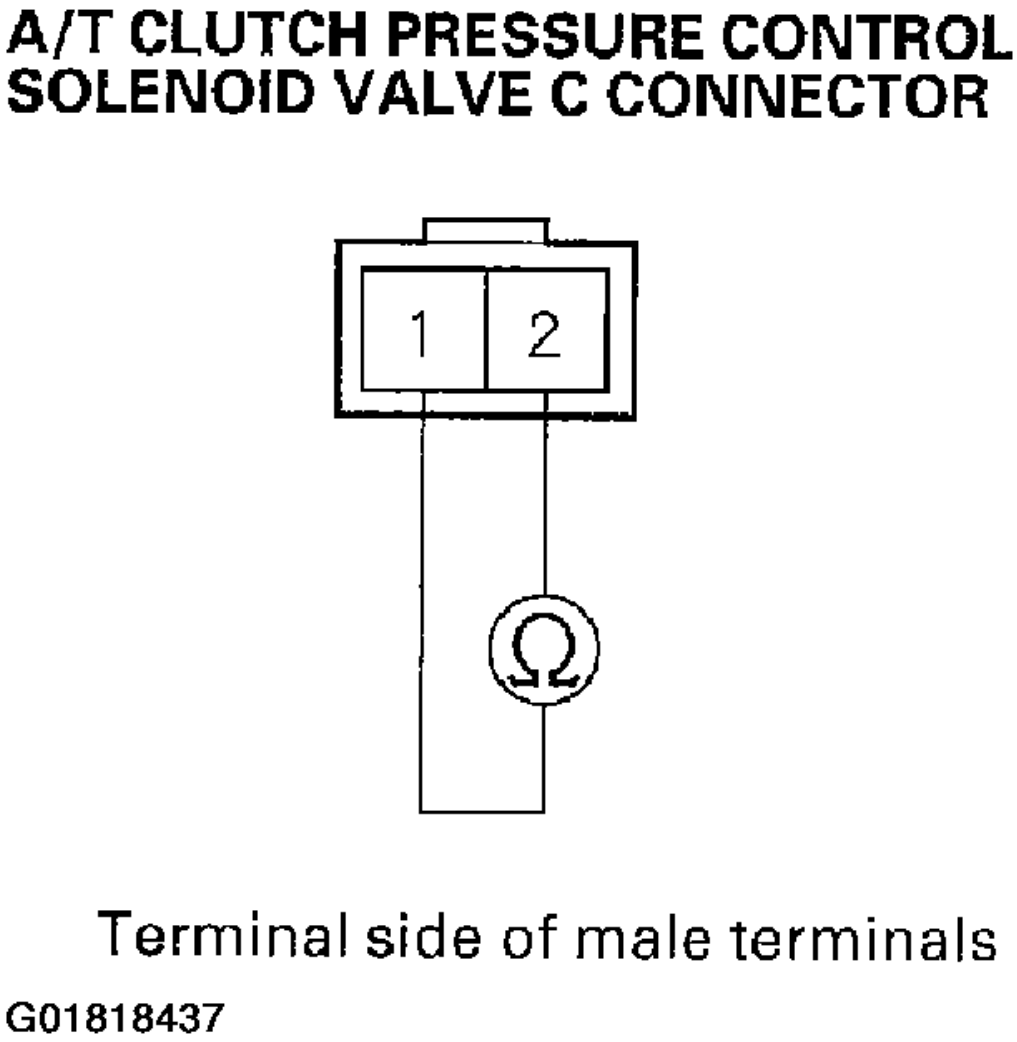


Fig. 181: Measuring A/T Clutch Pressure Control Solenoid Valve C Resistance At The Solenoid Connector

9. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

   Is there continuity?

   YES: Go to step 10.

   NO: Repair open in the wire between the A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101), then go to step 12 .

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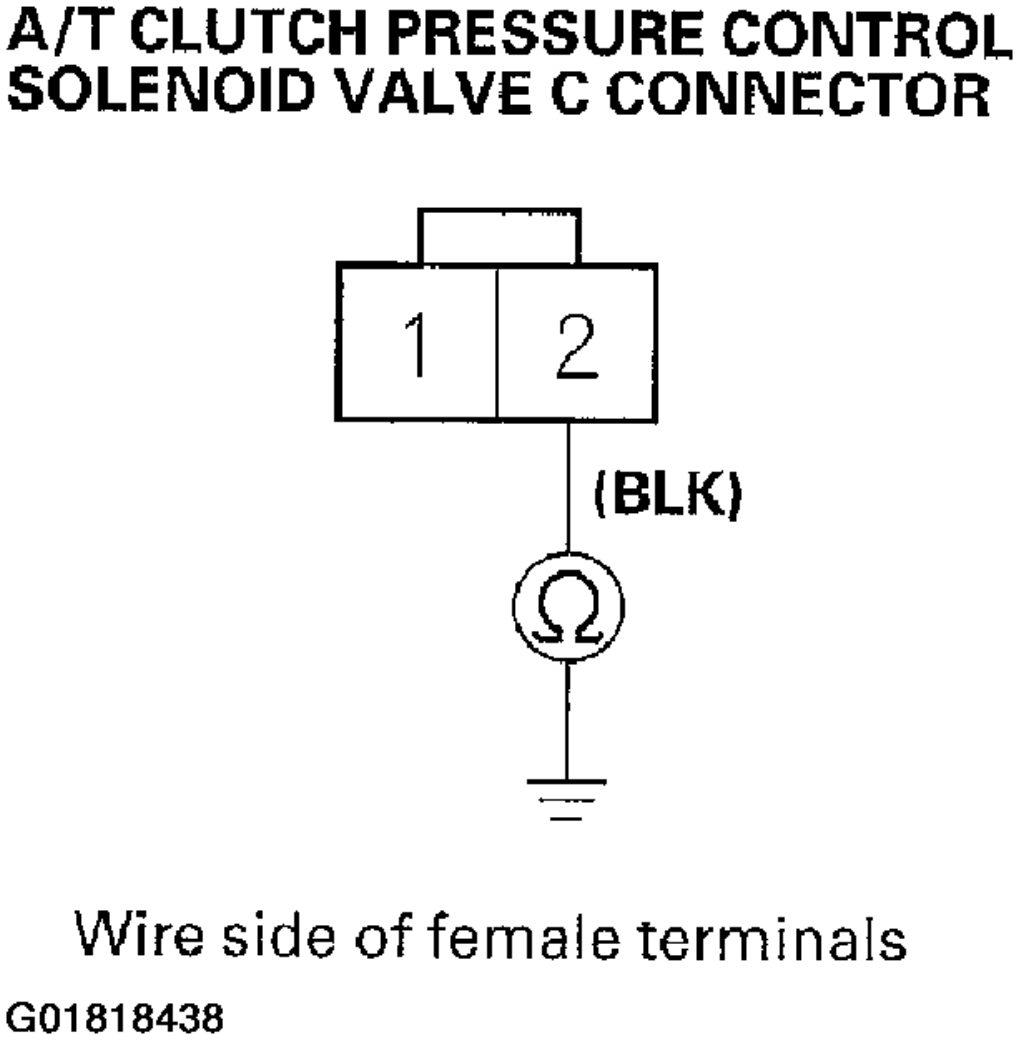


Fig. 182: Checking For Continuity Between A/T Clutch Pressure Control Solenoid Valve C Connector Terminal No. 2 & Body Ground

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

Is there about 11 V as the ignition switch is turned to the ON (II) position?

YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Repair open or short in the wire between PCM connector terminal C7 and A/T clutch

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pressure control solenoid valve C, then go to step 12.

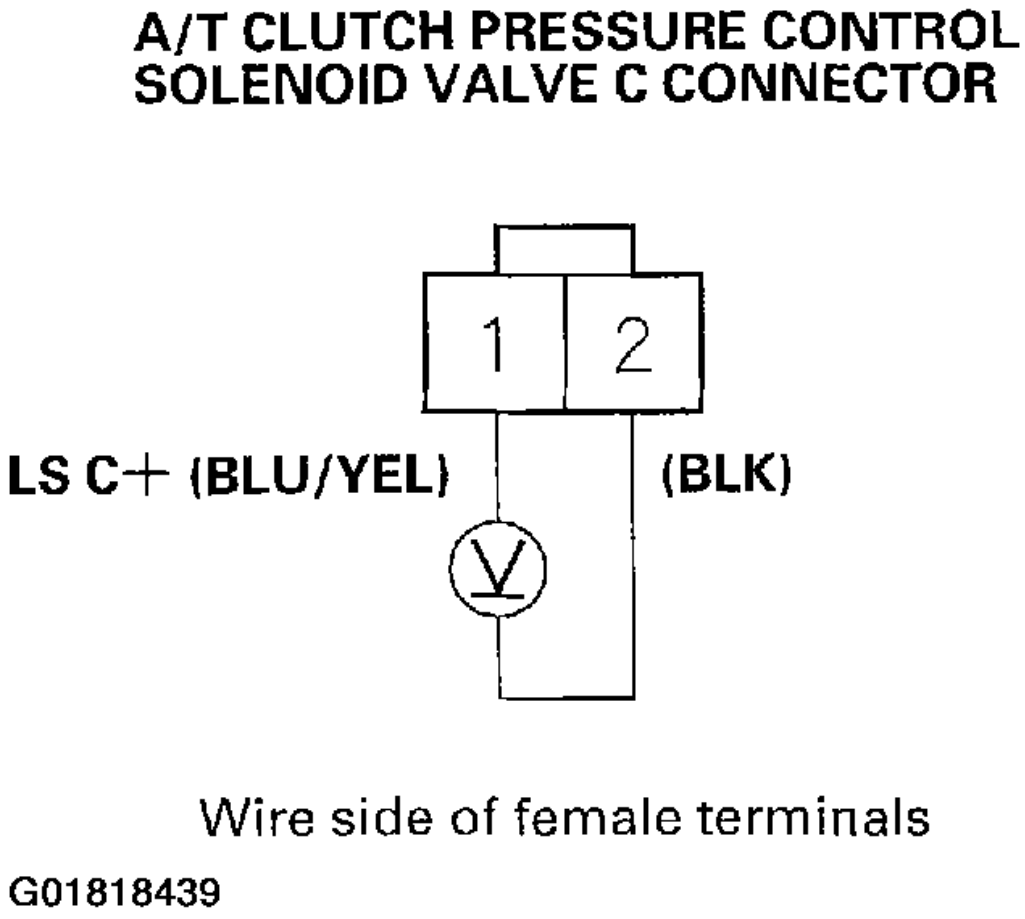


Fig. 183: Measuring The Voltage Between A/T Clutch Pressure Control Solenoid Valve C Connector Terminals No. 1 & No. 2

12. Clear the DTC with the HDS.
13. Test-drive the vehicle for several minutes in the **D** position in all five gears.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0970.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0971: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C

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NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0971 recurs.

   Is DTC P0971 indicated?

   YES: Go to step 6 .

   NO: Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL C in P CTRL SOL CTRL MENU with the HDS.
4. Drive with the A/T clutch pressure control solenoid valve C at 0.2 A in SOL C CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0971.

   Did the result indicate a fail?

   YES: Go to step 6.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve C and PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve C connector.
8. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid connector.

   Is there 3-10 ohm?

   YES: Go to step 9.

   NO: Replace the A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 10 .

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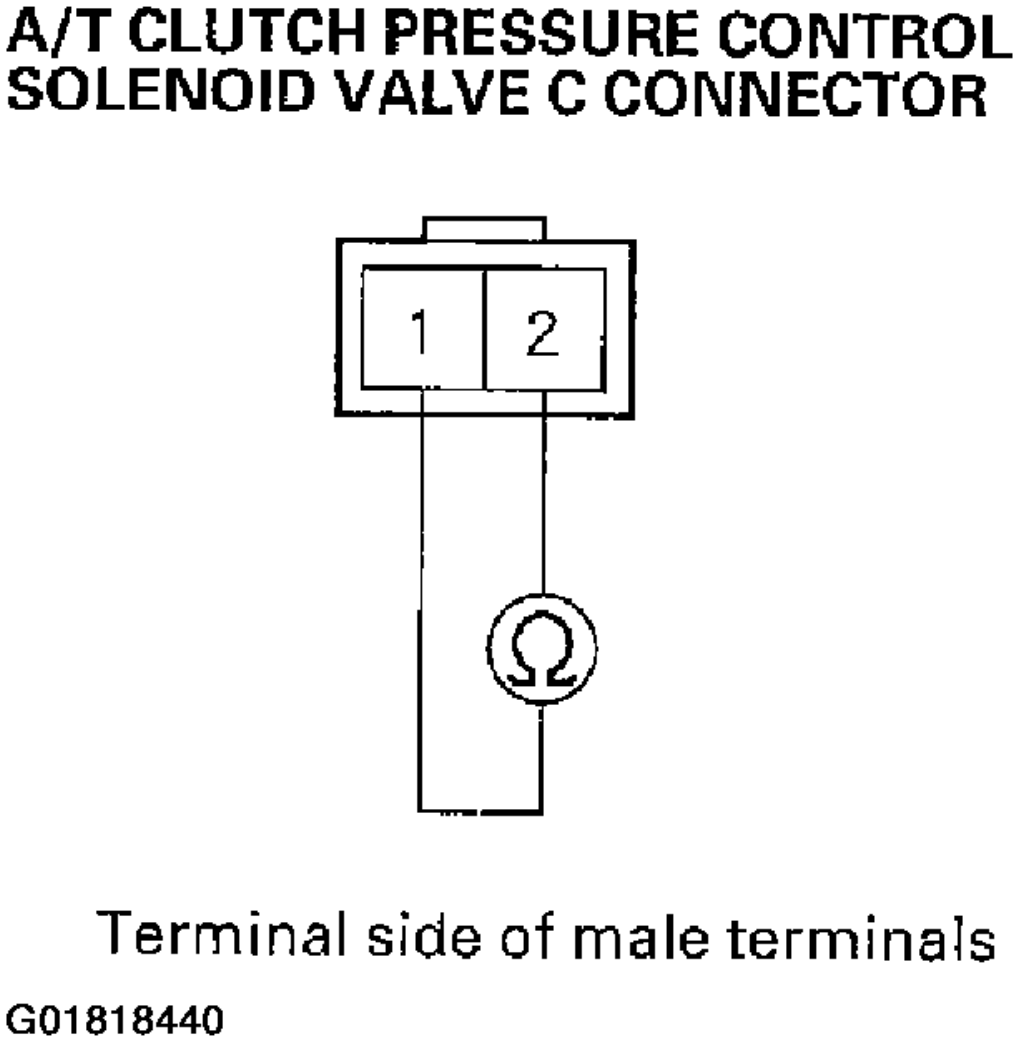


Fig. 184: Measuring A/T Clutch Pressure Control Solenoid Valve C Resistance At The Solenoid Connector

9. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

   Is there continuity?

   YES: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

   NO: Repair open in the wire between the A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101), then go to step 10.

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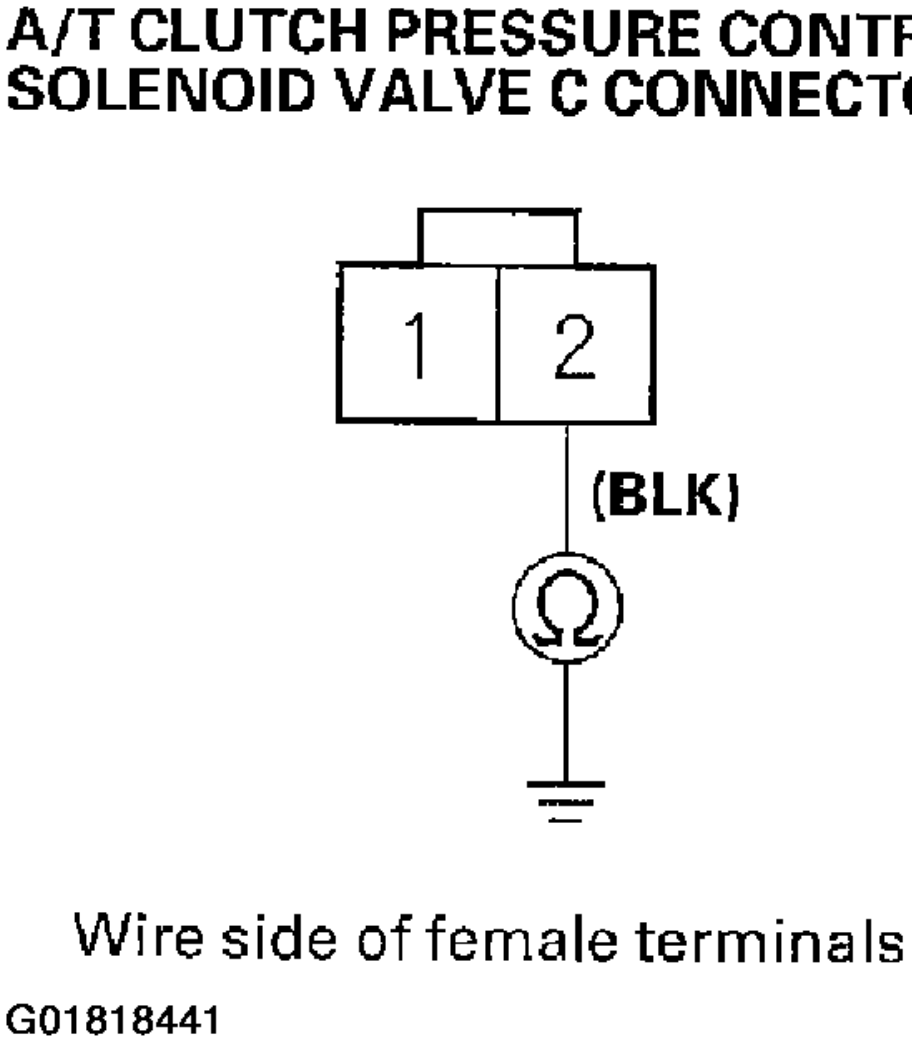


Fig. 185: Checking For Continuity Between A/T Clutch Pressure Control Solenoid Valve C Connector Terminal No. 2 & Body Ground

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the **D** position in all five gears.
12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0971.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 1 and recheck.

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DTC P0973: SHORT IN SHIFT SOLENOID VALVE A CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and shift to the **D** position.
3. Check that DTC P0973 recurs.

   Is DTC P0973 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.
4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine, and shift to the **D** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0973.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check the BLU/BLK wire for an intermittent short to ground between shift solenoid valve A and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C6 and A8 or A9.

    Is there less than 12 ohm?

    YES: Go to step 11.

    NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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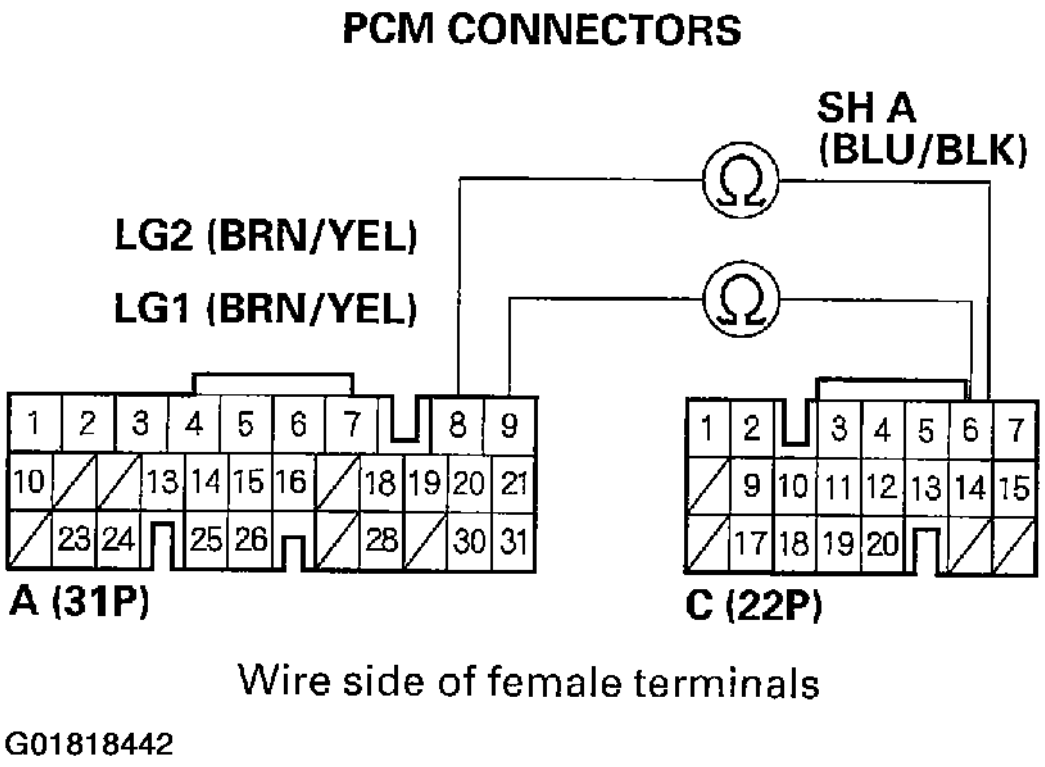


Fig. 186: Measuring The Resistance Between PCM Connector Terminals C6 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C6 and A8 or A9.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal C6 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve A, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve A and/or shift solenoid harness, then go to step 13.

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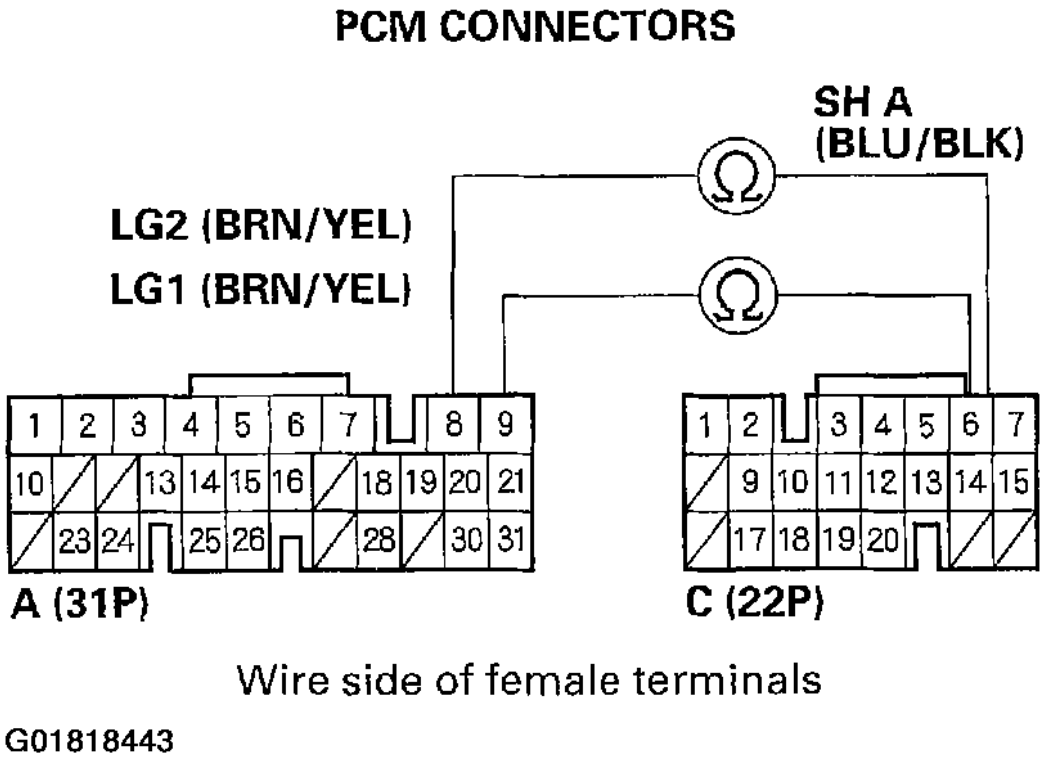


Fig. 187: Checking For Continuity Between PCM Connector Terminals C6 & A8 Or A9

13. Clear the DTC with the HDS.
14. Start the engine, and shift to the **D** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0973.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0974: OPEN IN SHIFT SOLENOID VALVE A CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the **P** position.

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3. Check that DTC P0974 recurs.

   Is DTC P0974 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.

4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine in the **P** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0974.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the shift solenoid valve A and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C6 and A8 or A9.

    Is there 12-25 ohm?

    YES: Check for loose or poor connections at PCM connector terminal C6. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

    NO: Go to step 11.

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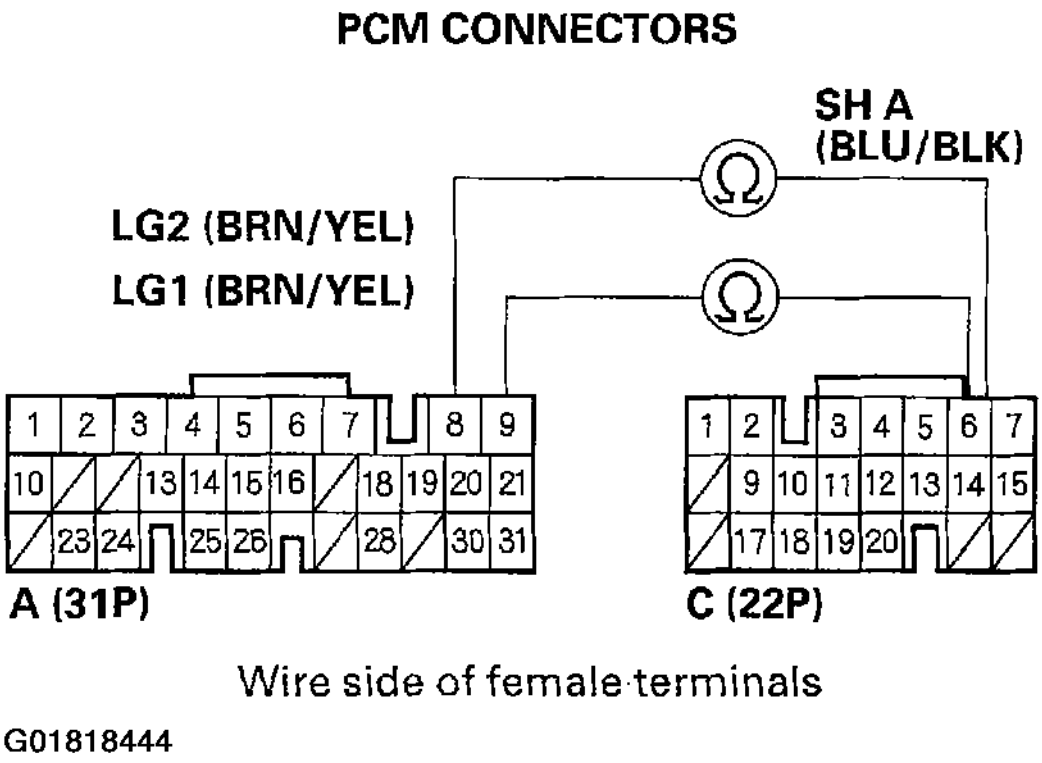


Fig. 188: Measuring The Resistance Between PCM Connector Terminals C6 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Measure the resistance between shift solenoid harness connector terminal No. 5 and body ground.

Is there 12-25 ohm?

YES: Repair open in the wire between PCM connector terminal C6 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve A, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve A and/or shift solenoid harness, then go to step 13.

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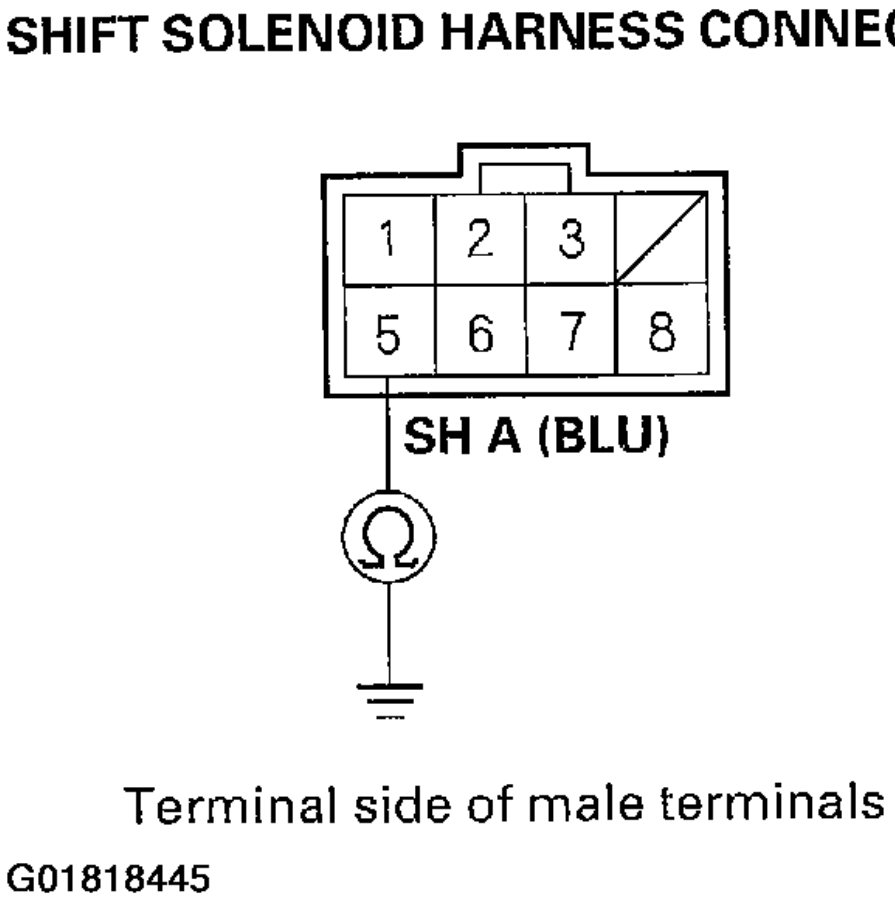


Fig. 189: Measuring The Resistance Between Shift Solenoid Harness Connector Terminal No. 5 & Body Ground

13. Clear the DTC with the HDS.
14. Start the engine in the **P** position
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0974.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0976: SHORT IN SHIFT SOLENOID VALVE B CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you**

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troubleshoot.

- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the **P** position.
3. Check that DTC P0976 recurs.

   Is DTC P0976 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.
4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine in the **P** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0976.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check the GRN/WHT wire for an intermittent short to ground between the shift solenoid valve B and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C4 and A8 or A9.

    Is there less than 12 ohm?

    YES: Go to step 11.

    NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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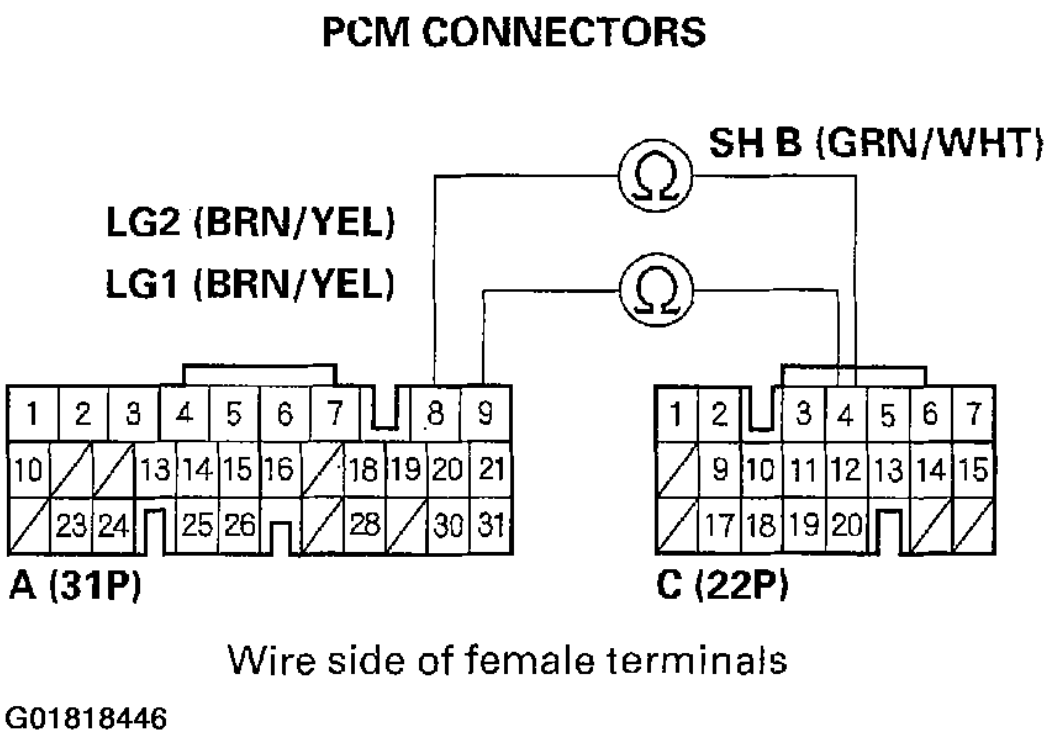


Fig. 190: Measuring The Resistance Between PCM Connector Terminals C4 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C4 and A8 or A9.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal C4 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve B, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve B and/or shift solenoid harness, then go to step 13.

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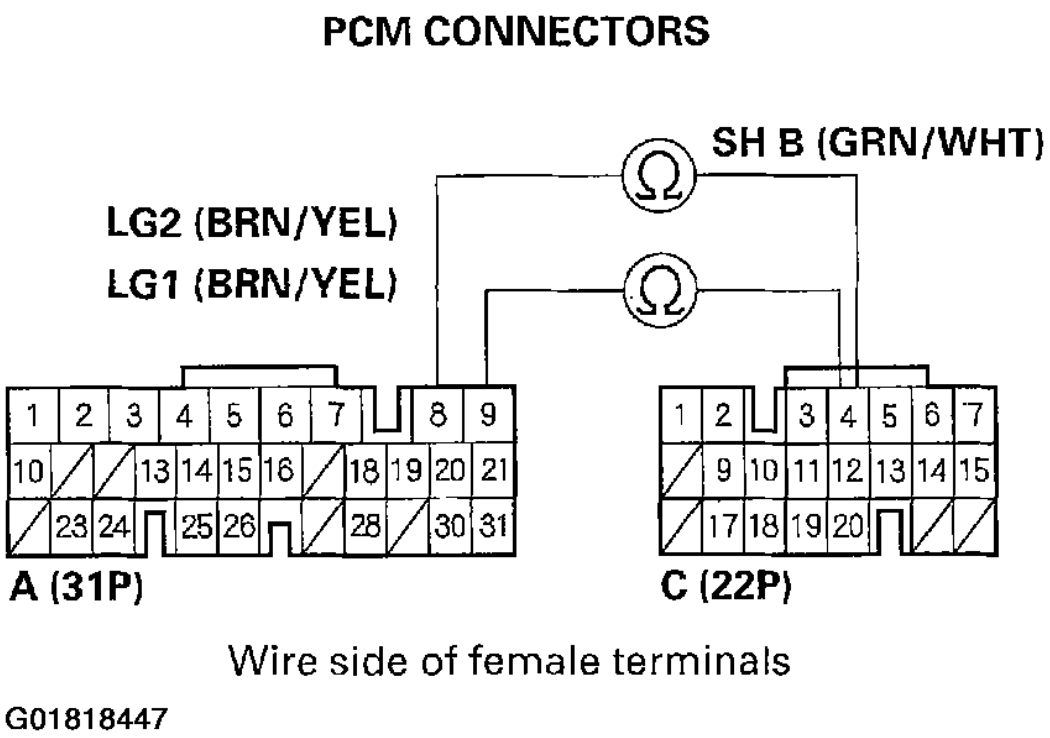


Fig. 191: Checking For Continuity Between PCM Connector Terminals C4 & A8 Or A9

13. Clear the DTC with the HDS.
14. Start the engine in the **P** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0976.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0977: OPEN IN SHIFT SOLENOID VALVE B CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in 1st, 2nd and 3rd gears in the $\mathbf{D}_3$ position.

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3. Check that DTC P0977 recurs.

   Is DTC P0977 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.

4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the HDS.
5. Test-drive the vehicle for several minutes in 1st, 2nd and 3rd gears in the $\mathbf{D}_3$ position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0977.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the shift solenoid valve B and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C4 and A8 or A9.

    Is there 12-25 ohm?

    YES: Check for loose or poor connections at PCM connector terminal C4. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

    NO: Go to step 11.

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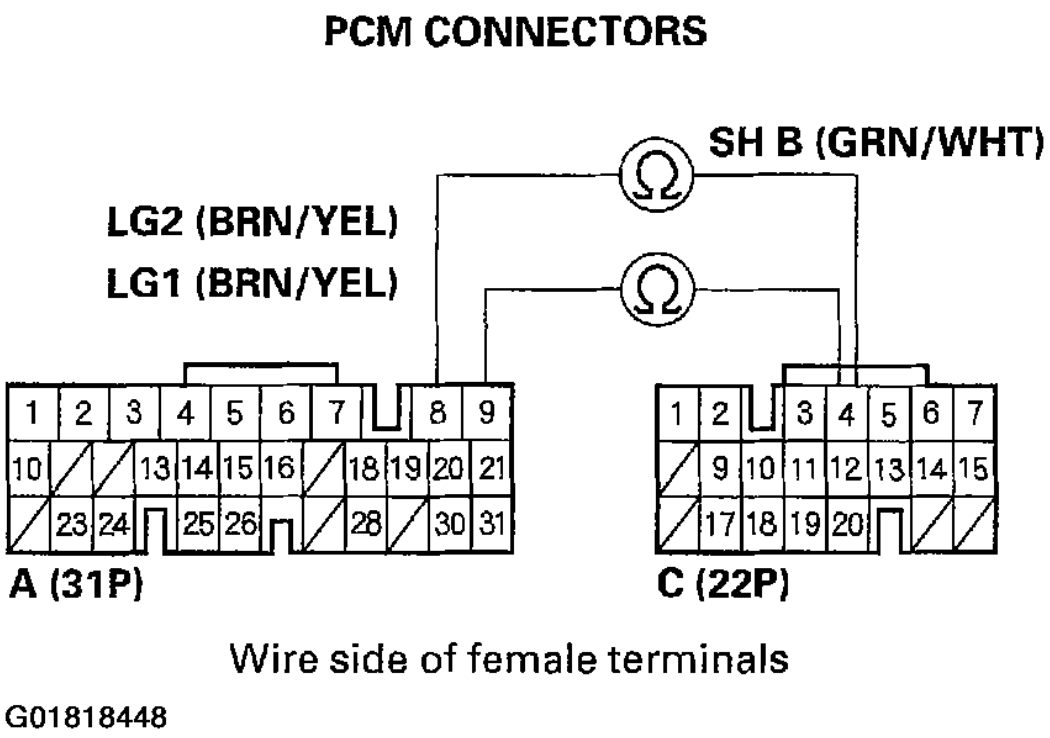


Fig. 192: Measuring The Resistance Between PCM Connector Terminals C4 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Measure the resistance between shift solenoid harness connector terminal No. 2 and body ground.

Is there 12-25 ohm?

YES: Repair open in the wire between PCM connector terminal C4 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve B, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve B and/or shift solenoid harness, then go to step 13.

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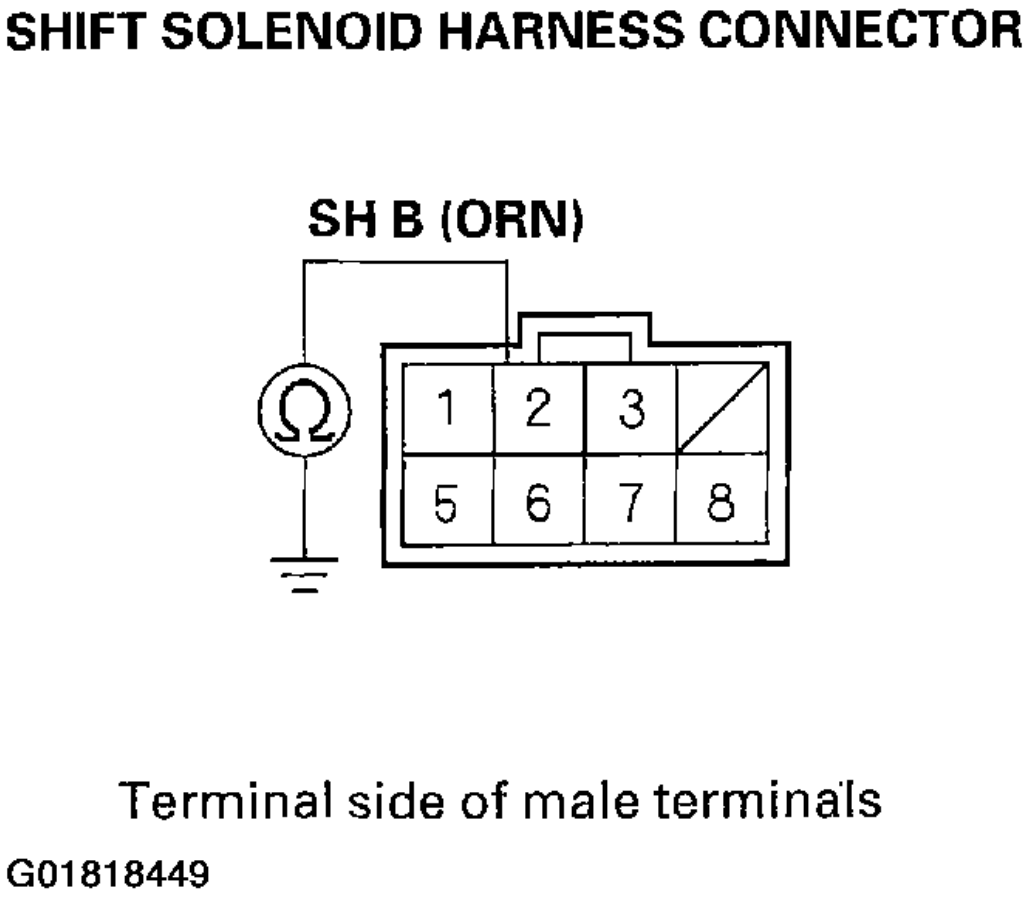


Fig. 193: Measuring The Resistance Between Shift Solenoid Harness Connector Terminal No. 2 & Body Ground

13. Clear the DTC with the HDS.
14. Test-drive the vehicle for several minutes in 1st, 2nd and 3rd gears in the **D_3** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0977.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P0979: SHORT IN SHIFT SOLENOID VALVE C CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you**

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troubleshoot.

- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and shift to the **D** position.
3. Check that DTC P0979 recurs.

   Is DTC P0979 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.
4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine, and shift to the **D** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0979.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check the GRN wire for an intermittent short to ground between the shift solenoid valve C and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C2 and A8 or A9.

    Is there less than 12 ohm?

    YES: Go to step 11.

    NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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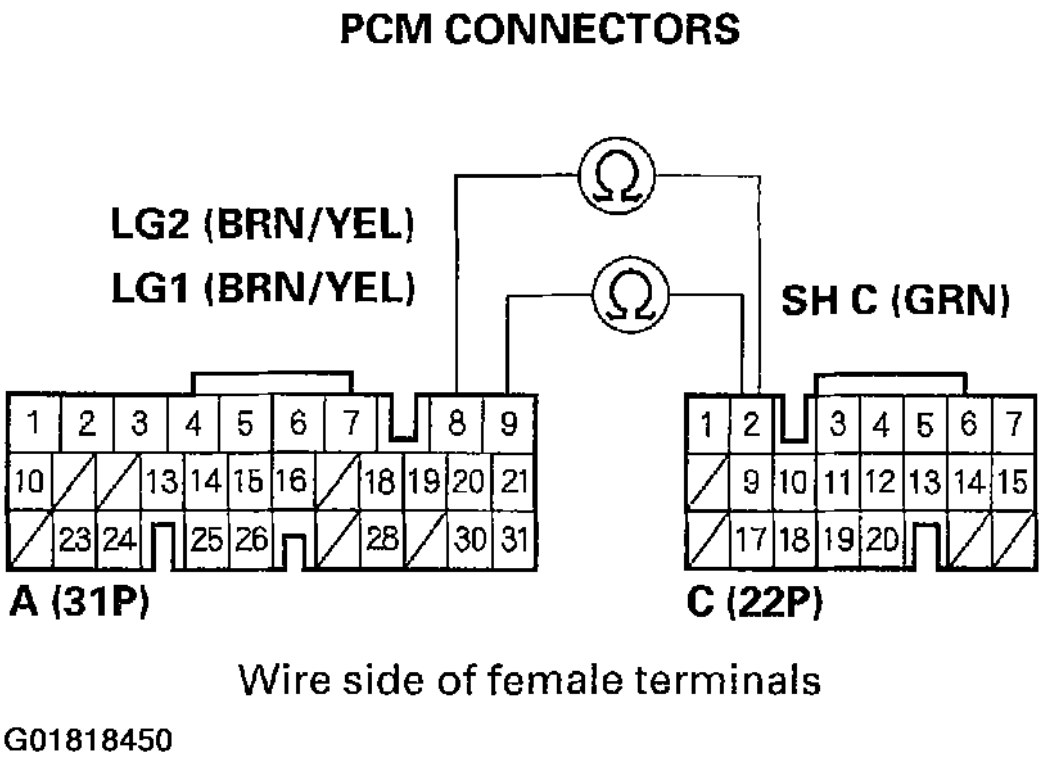


Fig. 194: Measuring The Resistance Between PCM Connector Terminals C2 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C2 and A8 or A9.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal C2 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve C, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve C and/or shift solenoid harness, then go to step 13.

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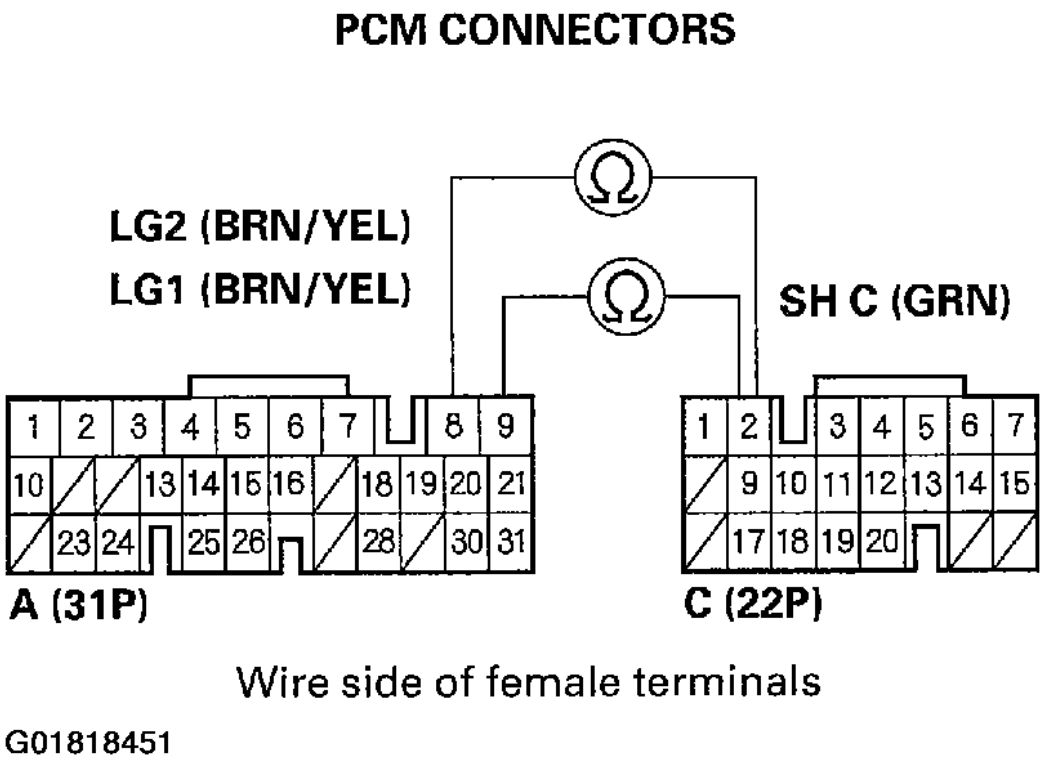


Fig. 195: Checking For Continuity Between PCM Connector Terminals C2 & A8 Or A9

13. Clear the DTC with the HDS.
14. Start the engine, and shift to the **D** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0979.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0980: OPEN IN SHIFT SOLENOID VALVE C CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the **P** position.

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3. Check that DTC P0980 recurs.

   Is DTC P0980 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.

4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine in the **P** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0980.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the shift solenoid valve C and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C2 and A8 or A9.

    Is there 12-25 ohm?

    YES: Check for loose or poor connections at PCM connector terminal C2. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

    NO: Go to step 11.

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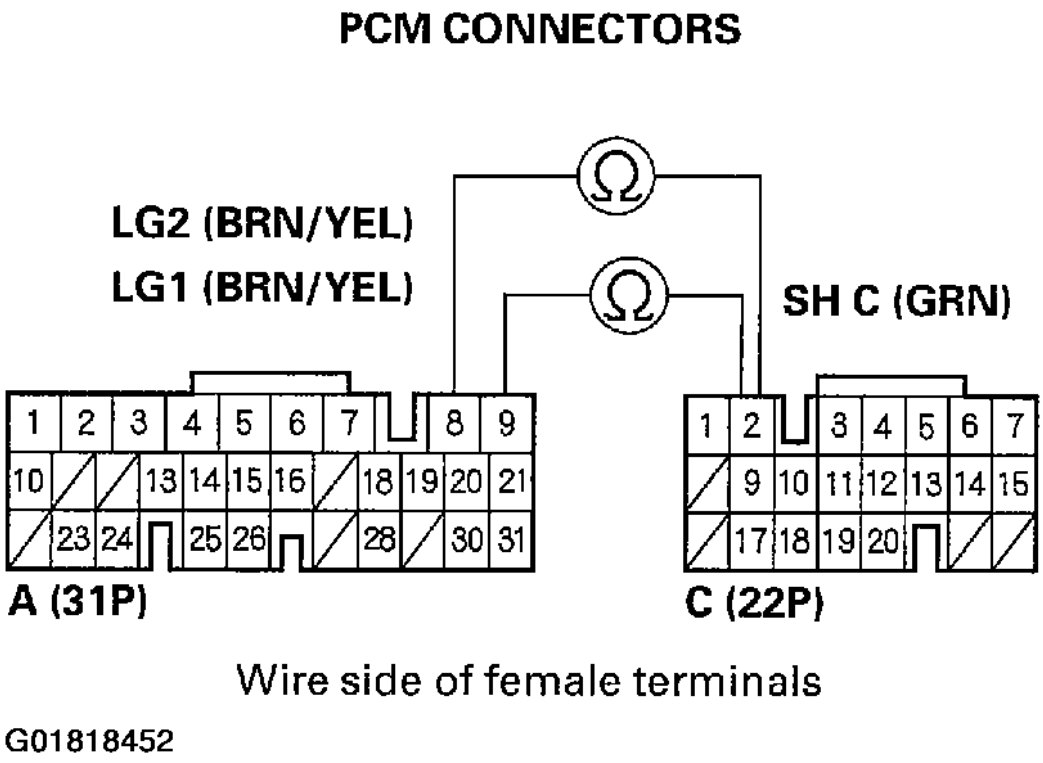


Fig. 196: Measuring The Resistance Between PCM Connector Terminals C2 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Measure the resistance between shift solenoid harness connector terminal No. 1 and body ground.

Is there 12-25 ohm?

YES: Repair open in the wire between PCM connector terminal C2 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve C, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve C and/or shift solenoid harness, then go to step 13.

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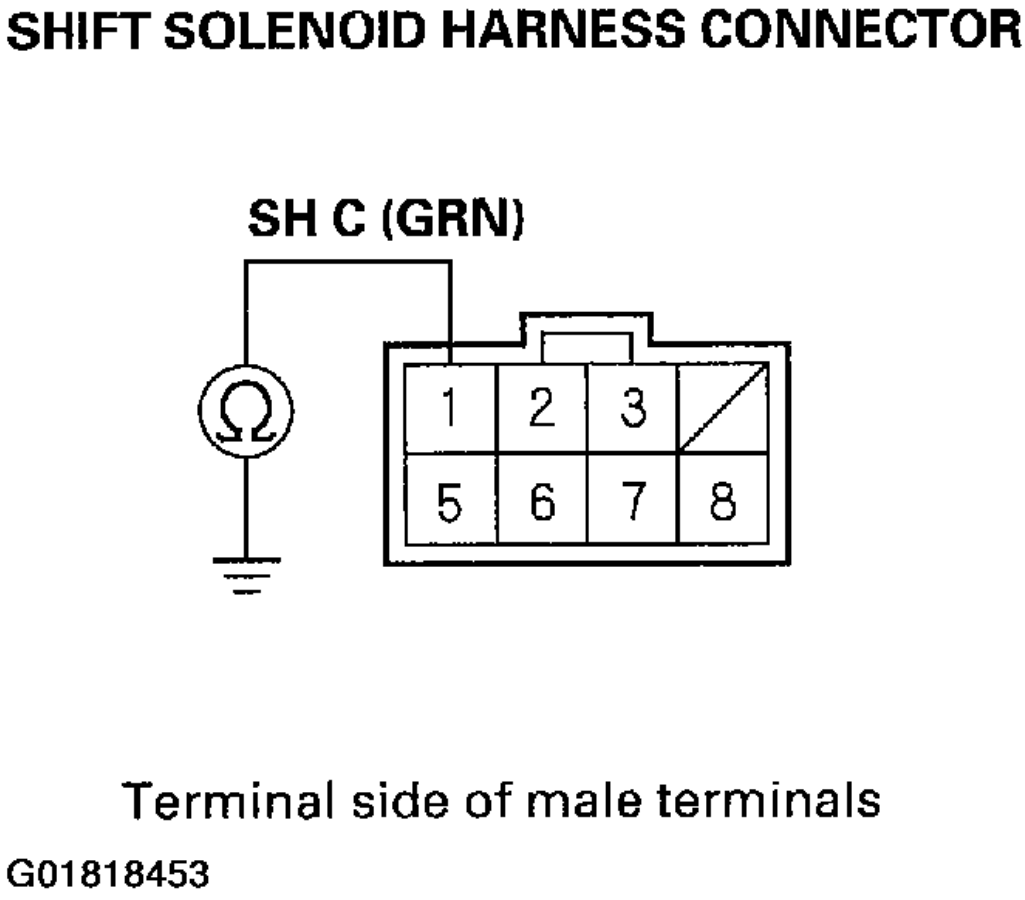


Fig. 197: Measuring The Resistance Between Shift Solenoid Harness Connector Terminal No. 1 & Body Ground

13. Clear the DTC with the HDS.
14. Start the engine in the **P** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0980.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0982: SHORT IN SHIFT SOLENOID VALVE D CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you**

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troubleshoot.

- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and shift the transmission in 2nd gear in the **M** position.
3. Check that DTC P0982 recurs.

   Is DTC P0982 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.
4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL D test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine, and shift the transmission in 2nd gear in the **M** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0982.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check the GRN/RED wire for an intermittent short to ground between the shift solenoid valve D and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C5 and A8 or A9.

    Is there less than 12 ohm?

    YES: Go to step 11.

    NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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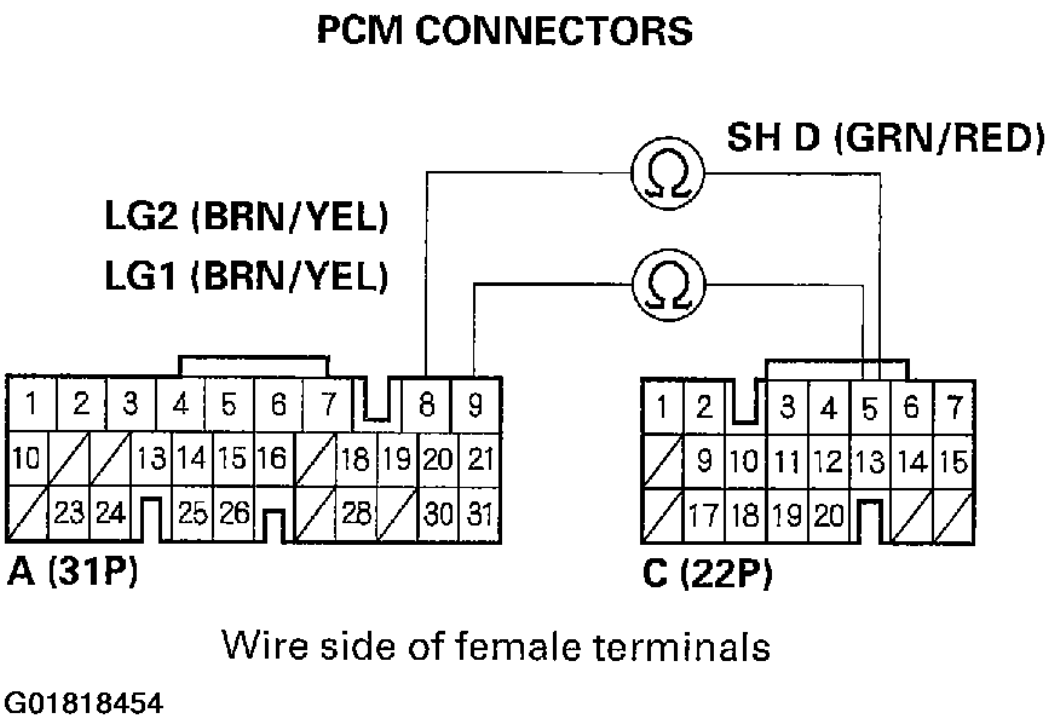


Fig. 198: Measuring The Resistance Between PCM Connector Terminals C5 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C5 and A8 or A9.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal C5 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve D, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve D and/or shift solenoid harness, then go step 13.

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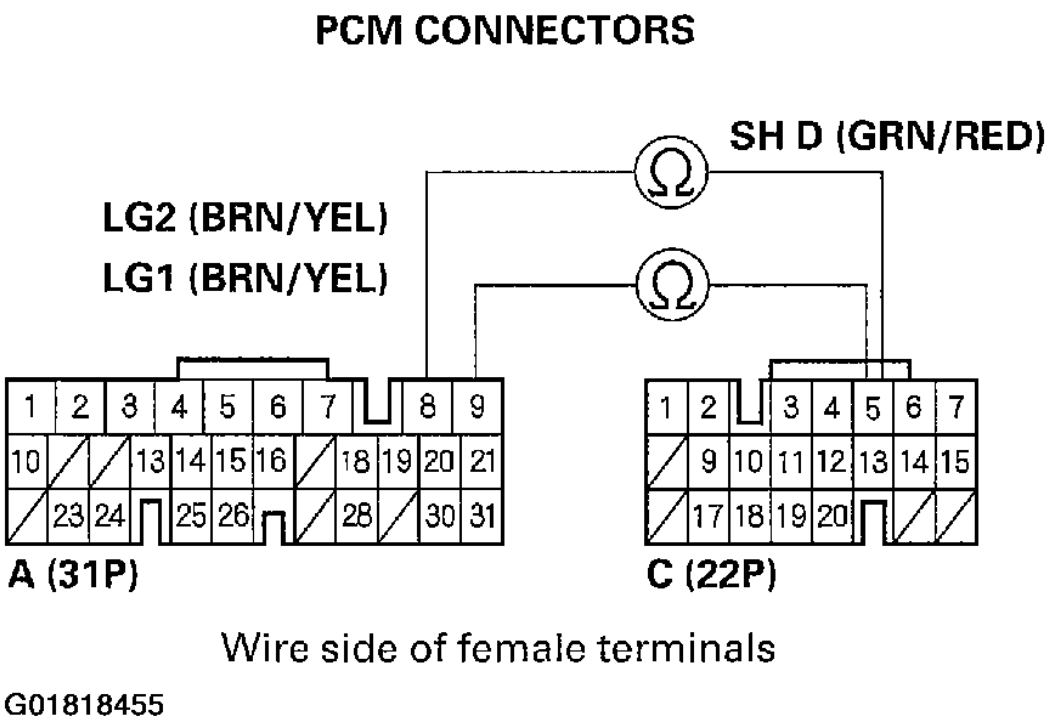


Fig. 199: Checking For Continuity Between PCM Connector Terminals C5 & A8 Or A9

13. Clear the DTC with the HDS.
14. Start the engine, and shift the transmission in 2nd gear in the **M** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0982.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0983: OPEN IN SHIFT SOLENOID VALVE D CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the **P** position.
3. Check that DTC P0983 recurs.

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Is DTC P0983 indicated?

YES: Go to step 7 .

NO: Go to step 4.

4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL D test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine in the **P** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0983.

Did the result indicate a fail?

YES: Go to step 7.

NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the shift solenoid valve D and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C5 and A8 or A9.

Is there 12-25 ohm?

YES: Check for loose or poor connections at PCM connector terminal C5. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

NO: Go to step 11.

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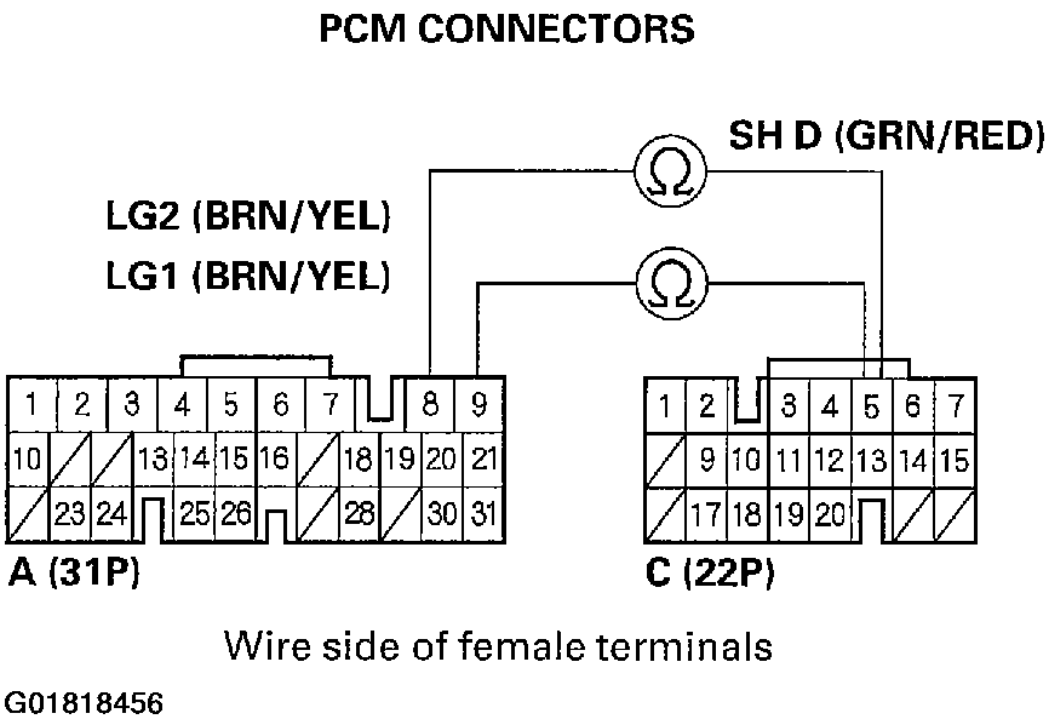


Fig. 200: Measuring The Resistance Between PCM Connector Terminals C5 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Measure the resistance between shift solenoid harness connector terminal No. 8 and body ground.

Is there 12-25 ohm?

YES: Repair open in the wire between PCM connector terminal C5 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve D, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve D and/or shift solenoid harness, then go to step 13.

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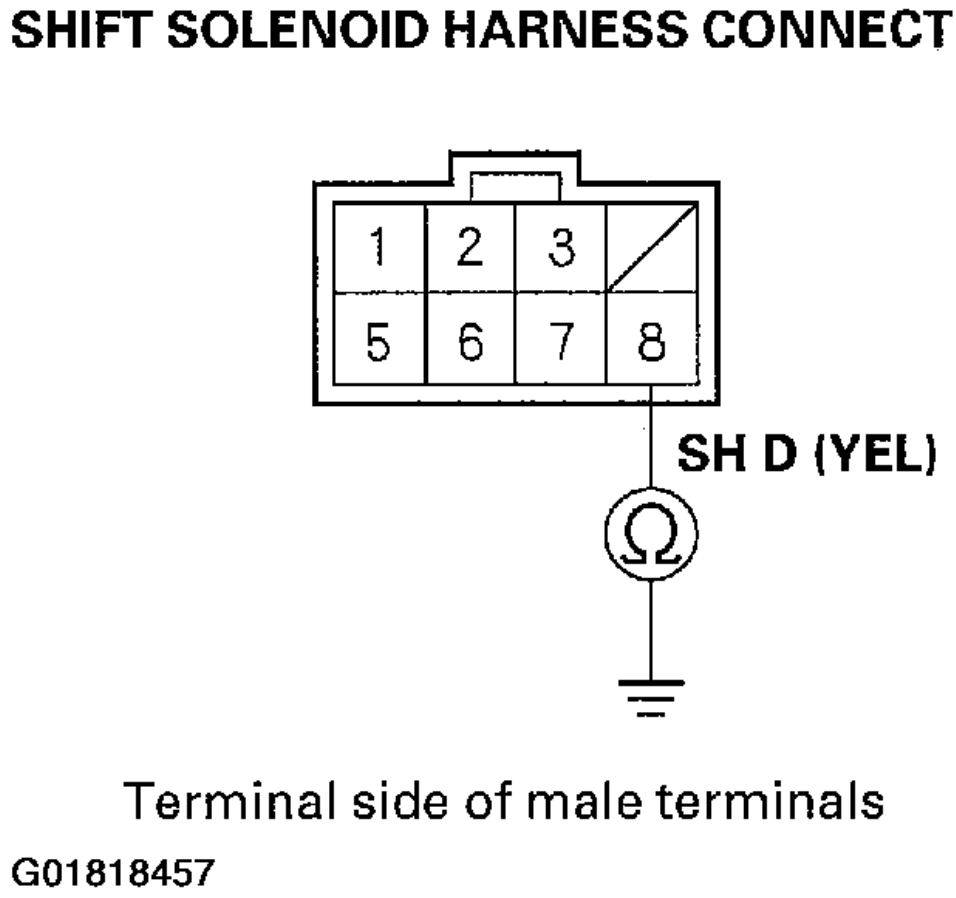


Fig. 201: Measuring The Resistance Between Shift Solenoid Harness Connector Terminal No. 8 & Body Ground

13. Clear the DTC with the HDS.
14. Start the engine in the **P** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0983.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0985: SHORT IN SHIFT SOLENOID VALVE E CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you**

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troubleshoot.

- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the **P** position.
3. Check that DTC P0985 recurs.

   Is DTC P0985 indicated?

   YES: Go to step 7 .

   NO: Go to step 4.
4. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL E test in SHIFT SOL TEST MENU with the HDS.
5. Start the engine in the **P** position.
6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0985.

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check the YEL wire for an intermittent short to ground between the shift solenoid valve E and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C3 and A8 or A9.

    Is there less than 12 ohm ?

    YES: Go to step 11.

    NO: Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING & SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

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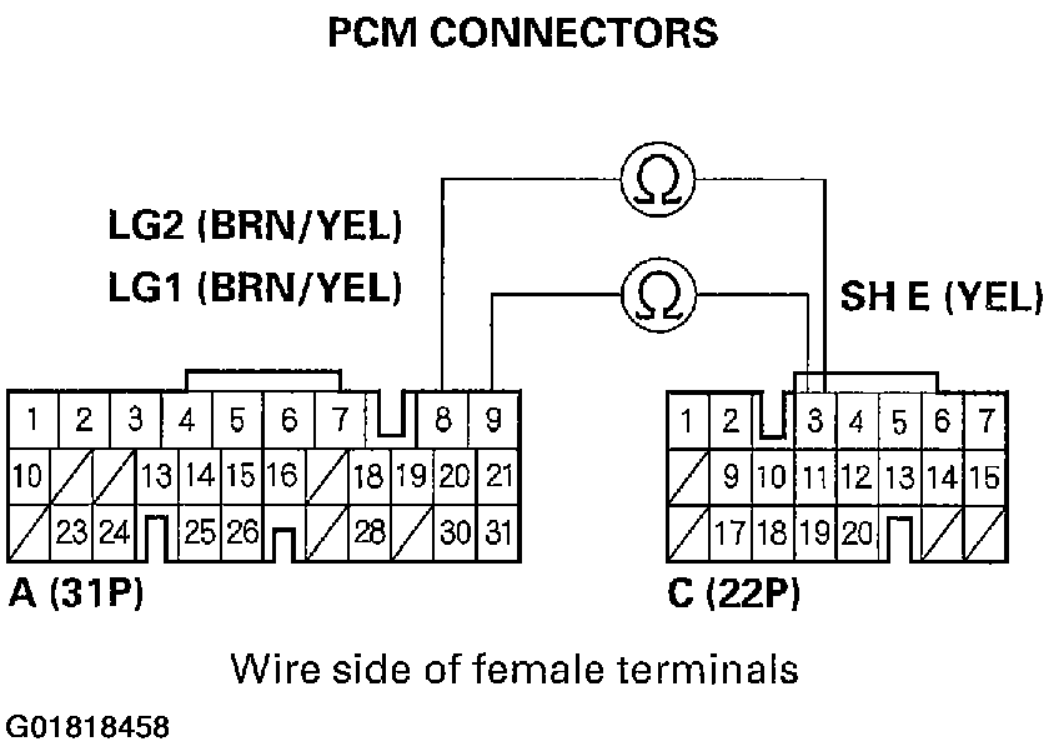


Fig. 202: Measuring The Resistance Between PCM Connector Terminals C3 & A8 Or A9

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C3 and A8 or A9.

Is there continuity?

YES: Repair short to ground in the wire between PCM connector terminal C3 and the shift solenoid harness connector, then go to step 13.

NO: Check shift solenoid valve E, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST**). Replace shift solenoid valve E and/or shift solenoid harness, then go to step 13.

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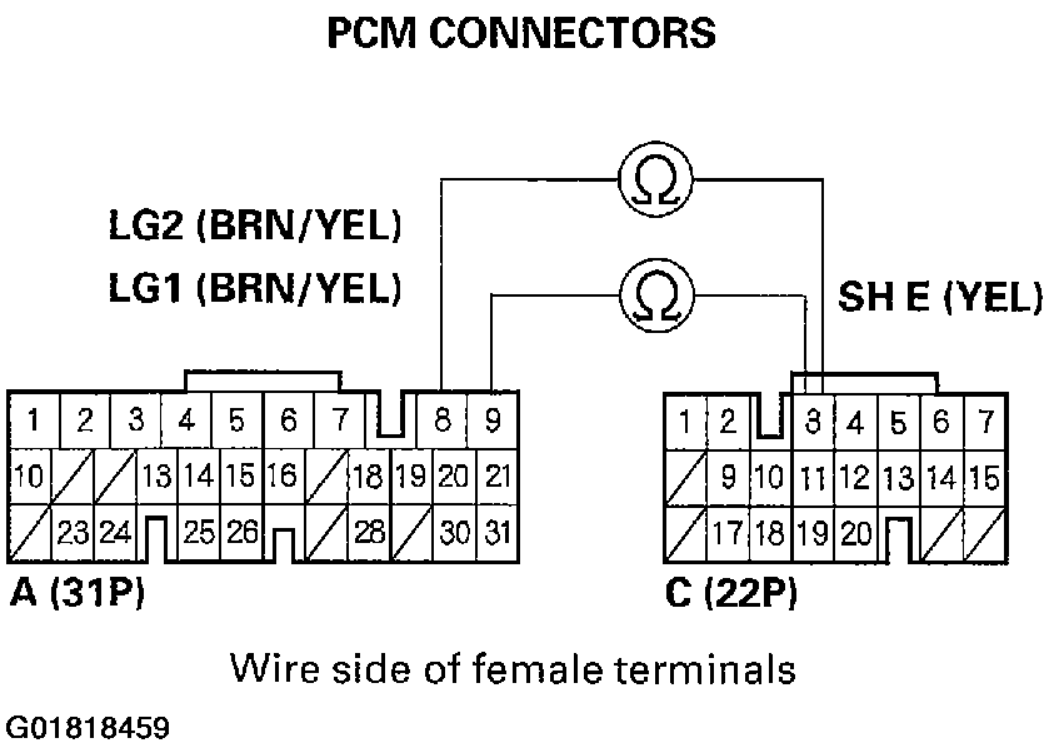


Fig. 203: Checking For Continuity Between PCM Connector Terminals C3 & A8 Or A9

13. Clear the DTC with the HDS.
14. Start the engine in the **P** position.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0985.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P0986: OPEN IN SHIFT SOLENOID VALVE E CIRCUIT

NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. **Clear the DTC with the HDS.**
2. **Start the engine, and shift the transmission in 2nd gear in the M position.**
3. **Check that DTC P0986 recurs.**

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Is DTC P0986 indicated?

YES: Go to step 7 .

NO: Go to step 4.

4. **Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL E test in SHIFT SOL TEST MENU with the HDS.**
5. **Start the engine, and shift the transmission in 2nd gear in the M position.**
6. **Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0986.**

   Did the result indicate a fail?

   YES: Go to step 7.

   NO: Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the shift solenoid valve E and PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck.
7. **Turn the ignition switch OFF.**
8. **Jump the SCS line with the HDS.**
9. **Disconnect PCM connectors A (31P) and C (22P).**
10. **Measure the resistance between PCM connector terminals C3 and A8 or A9.**

    Is there 12-25 ohm ?

    YES: Check for loose or poor connections at PCM connector terminal C3. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see PCM UPDATING & SUBSTITUTION FOR TESTING), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

    NO: Go to step 11.

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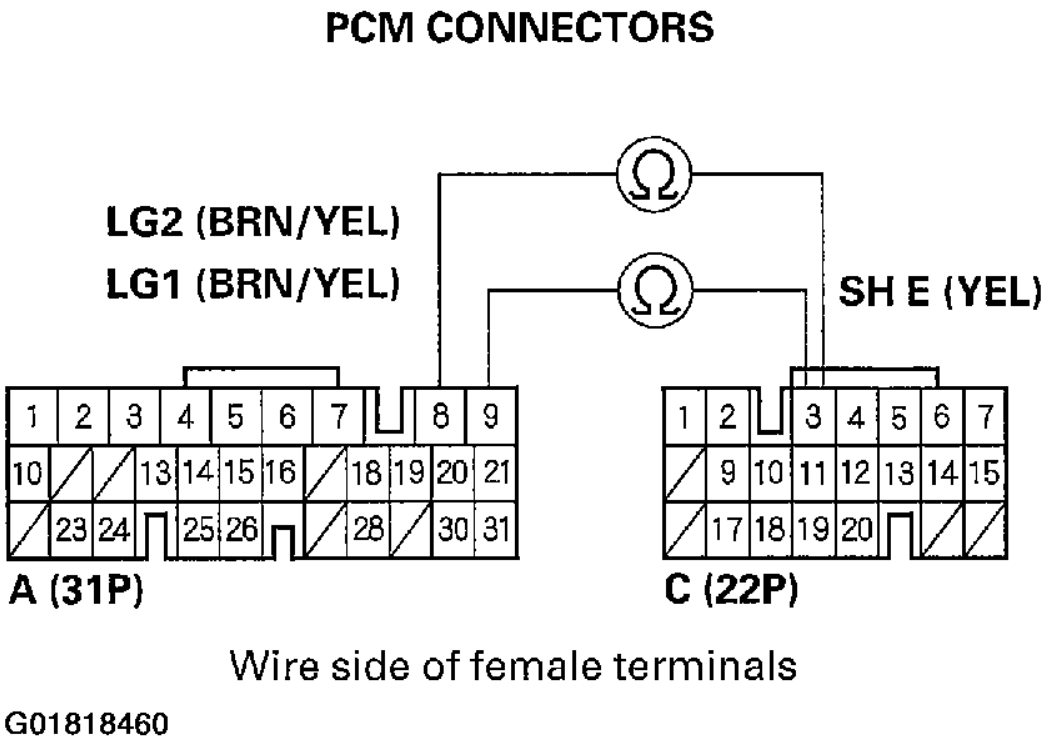


Fig. 204: Measuring The Resistance Between PCM Connector Terminals C3 & A8 Or A9

11. **Disconnect the shift solenoid harness connector at the transmission housing.**
12. **Check for continuity between shift solenoid harness connector terminal No. 3 and body ground.**

    Is there 12-25 ohm ?

    YES: Repair open in the wire between PCM connector terminal C3 and the shift solenoid harness connector, then go to step 13.

    NO: Check shift solenoid valve E, and check for an open in the shift solenoid harness in the transmission (see SHIFT SOLENOID VALVE TEST). Replace shift solenoid valve E and/or shift solenoid harness, then go to step 13.

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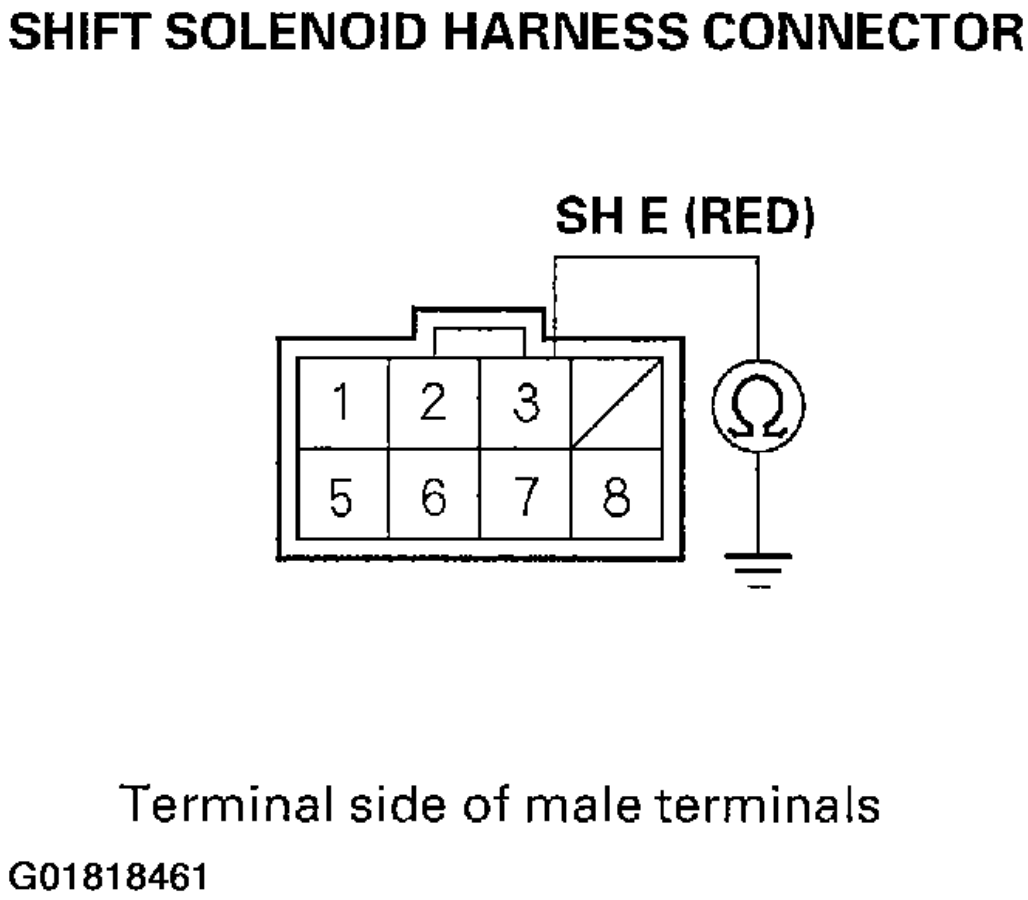


Fig. 205: Checking For Continuity Between Shift Solenoid Harness Connector Terminal No. 3 & Body Ground

13. **Clear the DTC with the HDS.**
14. **Start the engine, and shift the transmission in 2nd gear in the M position.**
15. **Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0986.**

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P1730: PROBLEM IN SHIFT CONTROL SYSTEM:

- Shift Solenoid Valves A or D Stuck OFF
- Shift Solenoid Valve B Stuck ON

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- Shift Valves A, B, or D Stuck

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1730.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve A (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 15 .
10. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the HDS.

    Is a clicking sound heard?

    YES: Go to step 11.

    NO: Replace shift solenoid valve B (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 15 .
11. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL D test in SHIFT SOL TEST MENU with the HDS.

    Is a clicking sound heard?

    YES: Go to step 12.

    NO: Replace shift solenoid valve D (see **SHIFT SOLENOID VALVE**

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REPLACEMENT), then go to step 15 .

12. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1730.

    Did the result indicate a fail?

    YES: Repair hydraulic system related with shift valves A, B and D, or replace the transmission, then go to step 15.

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 12 and recheck.
15. Clear the DTC with the HDS.
16. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
17. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
18. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1730.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P1731: PROBLEM IN SHIFT CONTROL SYSTEM:

- Shift Solenoid Valve E Stuck ON
- Shift Valve E Stuck
- A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF through a strainer (see **DRAINING & REFILLING**). Inspect the ATF and strainer for metal debris or burnt fluid.

    Has the ATF deteriorated?

    YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

    NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than

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20 seconds, then slow down to a stop.

7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1731.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL E test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve E (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 12 .

10. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL A TEST in LINEAR SOL TEST MENU with the HDS.

    Is the system OK?

    YES: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck.

    NO: Follow instructions indicated on the HDS by the test result, but the tester has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12 .

11. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST**).

    Does the A/T clutch pressure control solenoid valve A work properly?

    YES: Repair hydraulic system related with shift valve E, or replace the transmission, then go to step 12.

    NO: Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 12.

12. Clear the DTC with the HDS.
13. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1731.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P1732: PROBLEM IN SHIFT CONTROL SYSTEM:

- Shift Solenoid Valves B or C Stuck ON
- Shift Valves B or C Stuck

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NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1732.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve B (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 14 .
10. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the HDS.

    Is a clicking sound heard?

    YES: Go to step 11.

    NO: Replace shift solenoid valve C (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 14 .
11. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1732.

    Did the result indicate a fail?

    YES: Repair hydraulic system related with shift valves B and C, or replace the transmission,

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then go to step 14.

NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 14 and recheck.

14. Clear the DTC with the HDS.
15. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
17. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1732.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

DTC P1733: PROBLEM IN SHIFT CONTROL SYSTEM

- Shift Solenoid Valve D Stuck ON
- Shift Valve D Stuck
- A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

Has the ATF deteriorated?

YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

NO: Go to step 8 .

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1733.

Did the result indicate a fail?

YES: Go to step 8.

NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL D test in SHIFT SOL

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TEST MENU with the HDS.

Is a clicking sound heard?

YES: Go to step 10.

NO: Replace shift solenoid valve D (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 15 .

10. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL CTEST in LINEAR SOL TEST MENU with the HDS.

    Is the system OK?

    YES: Go to step 11.

    NO: Follow instructions indicated on the HDS by the test result, but the tester has not determined the cause of the failure, go to step 14. If any part was replaced, go to step 15 .

11. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1733.

    Did the result indicate a fail?

    YES: Repair hydraulic system related with shift valve D, or replace the transmission, then go to step 15 .

    NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 11 and recheck.

14. Inspect A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C TEST**).

    Does the A/T clutch pressure control solenoid valve C work properly?

    YES: Repair hydraulic system related with shift valve D, or replace the transmission, then go to step 15.

    NO: Replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT**), then go to step 15.

15. Clear the DTC with the HDS.
16. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
17. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
18. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1733.

    Did the result indicate a pass?

    YES: The problem has been corrected.

    NO: Return to step 1 and recheck.

DTC P1734: PROBLEM IN SHIFT CONTROL SYSTEM

- Shift Solenoid Valves B or C Stuck OFF

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- Shift Valves B or C Stuck

NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see **DRAINING & REFILLING**) through a strainer. Inspect the ATF and strainer for metal debris or burnt fluid.

   Has the ATF deteriorated?

   YES: Replace ATF (see **DRAINING & REFILLING**), and go to step 4.

   NO: Go to step 8 .
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1734.

   Did the result indicate a fail?

   YES: Go to step 8.

   NO: Intermittent failure, the system is OK at this time, if the tester indicates NOT COMPLETE, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the HDS.

   Is a clicking sound heard?

   YES: Go to step 10.

   NO: Replace shift solenoid valve B (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 14 .
10. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the HDS.

    Is a clicking sound heard?

    YES: Go to step 11.

    NO: Replace shift solenoid valve C (see **SHIFT SOLENOID VALVE REPLACEMENT**), then go to step 14 .
11. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1734.

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Did the result indicate a fail?

YES: Repair hydraulic system related with shift valves B and C, or replace the transmission, then go to step 14.

NO: Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 11 and recheck.

14. Clear the DTC with the HDS.
15. Test-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Retest-drive the vehicle in the **D** position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
17. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P1734.

Did the result indicate a pass?

YES: The problem has been corrected.

NO: Return to step 1 and recheck.

ROAD TEST

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Apply the parking brake, and block both rear wheels. Start the engine, then shift to the **D** position while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
3. Repeat step 2 in the $\mathbf{D}_3$ position.
4. Connect the HDS to the DLC (A), and go to the A/T data list.

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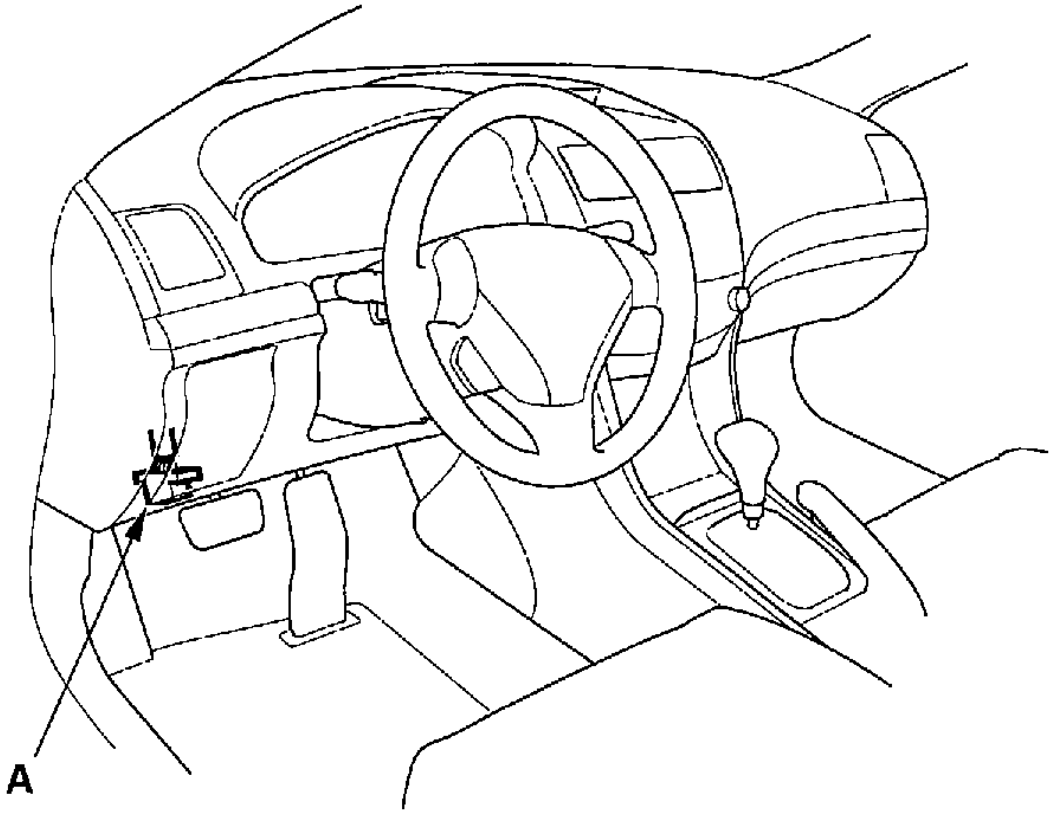


Fig. 206: Connecting The HDS To The DLC

5. Test-drive the vehicle on a flat road in the **D** position. Check for abnormal noise and clutch slippage. While driving, check that the shift points occur at the proper speeds by monitoring the throttle position sensor voltage with the HDS and comparing your shift point speeds and voltage to those in the table. (The throttle position sensor voltage represents the throttle opening.)

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Throttle position sensor voltage: 0.8 V	
1st→2nd	9 – 12 mph (15 – 19 km/h)
2nd→3rd	18 – 21 mph (28 – 33 km/h)
3rd→4th	27 – 32 mph (44 – 51 km/h)
4th→5th	39 – 44 mph (63 – 70 km/h)
Lock-up ON	48 – 55 mph (78 – 88 km/h)
Throttle position sensor voltage: 2.25 V	
1st→2nd	21 – 25 mph (34 – 40 km/h)
2nd→3rd	42 – 47 mph (67 – 75 km/h)
3rd→4th	65 – 71 mph (105 – 114 km/h)
4th→5th	110 – 116 mph (176 – 185 km/h)
Lock-up ON	106 – 117 mph (170 – 187 km/h)
Fully-opened throttle Throttle position sensor voltage: 4.5 V	
1st→2nd	38 – 44 mph (62 – 70 km/h)
2nd→3rd	70 – 79 mph (113 – 126 km/h)
3rd→4th	103 – 114 mph (165 – 182 km/h)
4th→5th	———
Lock-up ON	119 – 130 mph (191 – 208 km/h)

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Fig. 207: D Position Upshift Table

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Throttle position sensor voltage: 0.8 V	
Lock-up OFF	47 — 53 mph (76 — 86 km/h)
5th→4th	31 — 34 mph (50 — 55 km/h)
4th→3rd	17 — 21 mph (28 — 33 km/h)
3rd→1st	5 — 8 mph (8 — 13 km/h)
Throttle position sensor voltage: 2.25 V	
Lock-up OFF	78 — 86 mph (125 — 138 km/h)
Fully-opened throttle Throttle position sensor voltage: 4.5 V	
Lock-up OFF	116 — 127 mph (186 — 203 km/h)
5th→4th	120 — 130 mph (192 — 208 km/h)
4th→3rd	79 — 89 mph (127 — 143 km/h)
3rd→2nd	53 — 60 mph (85 — 96 km/h)
2nd→1st	27 — 32 mph (44 — 52 km/h)

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Fig. 208: D Position Downshift Table

6. Accelerate to about 35 mph (57 km/h) so the transmission is in 4th or 5th gear in **M** position, then shift to 2nd gear. The vehicle should immediately begin to slow down from engine braking.
7. Check for abnormal noise and clutch slippage in the **R** position. Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.
8. Test in **P** (Park) Position.

   Park the vehicle on a slope (about 16°), apply the brake, and shift into the **P** position. Release the brake; the vehicle should not move.

NOTE: Always use the brake to hold the vehicle, when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released.

STALL SPEED TEST

1. Engage the parking brake, and block all four wheels.
2. Connect the HDS to the DLC (A), and go to the A/T data list.

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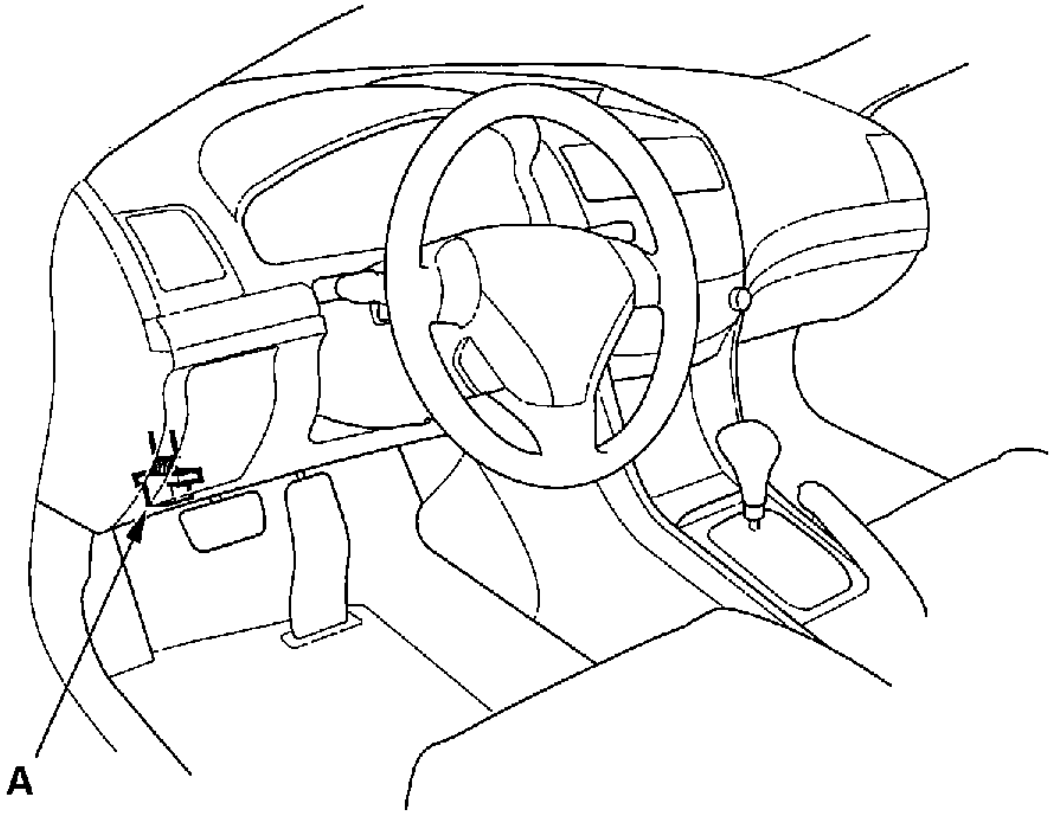


Fig. 209: Connecting The HDS To The DLC

3. Make sure the A/C switch is OFF.
4. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the **D** position.
5. Fully press the brake pedal and accelerator pedal for 6 to 8 seconds, and note the maximum engine speed. Do not move the shift lever while raising engine speed.
6. Allow 2 minutes for cooling, then repeat the test in the **R** position.

NOTE:

- **Do not test stall speed for more than 10 seconds at a time.**
- **Stall speed tests should be used for diagnostic purposes only.**
- **Stall speed should be the same in D and R positions.**
- **Do not test stall speed with the A/T pressure gauges installed.**

Stall Speed RPM:

Specification: 2,000 RPM

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Service Limit: 1,850-2,150 RPM

7. If the measurements are out of the service limit, problems and probable causes are listed in the table below:

Problem	Probable causes
Stall speed rpm high in the D and R positions	• Low fluid level • ATF pump output low • Clogged ATF strainer • Regulator valve stuck • Slipping clutch
Stall speed rpm high in the R position	Slippage 4th clutch
Stall speed rpm low in the D and R positions	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

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Fig. 210: Stall Speed Symptoms & Causes Table

PRESSURE TEST

Special Tools Required:

- A/T clutch pressure gauge set 07406-0020400 or 07406-0020401
- A/T pressure hose, 2210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

1. Before testing, be sure the transmission fluid is filled to the proper level.
2. Lift the vehicle up on a lift or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

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3. Allow the front wheels to rotate freely.
4. Warm up the engine (the radiator fan comes on), then stop it and connect the HDS to the DLC.
5. Connect the oil pressure gauges to the line pressure inspection hole (A) and 4th clutch pressure inspection hole (B). Do not allow dust or other foreign particles to enter the holes while connecting the gauges.

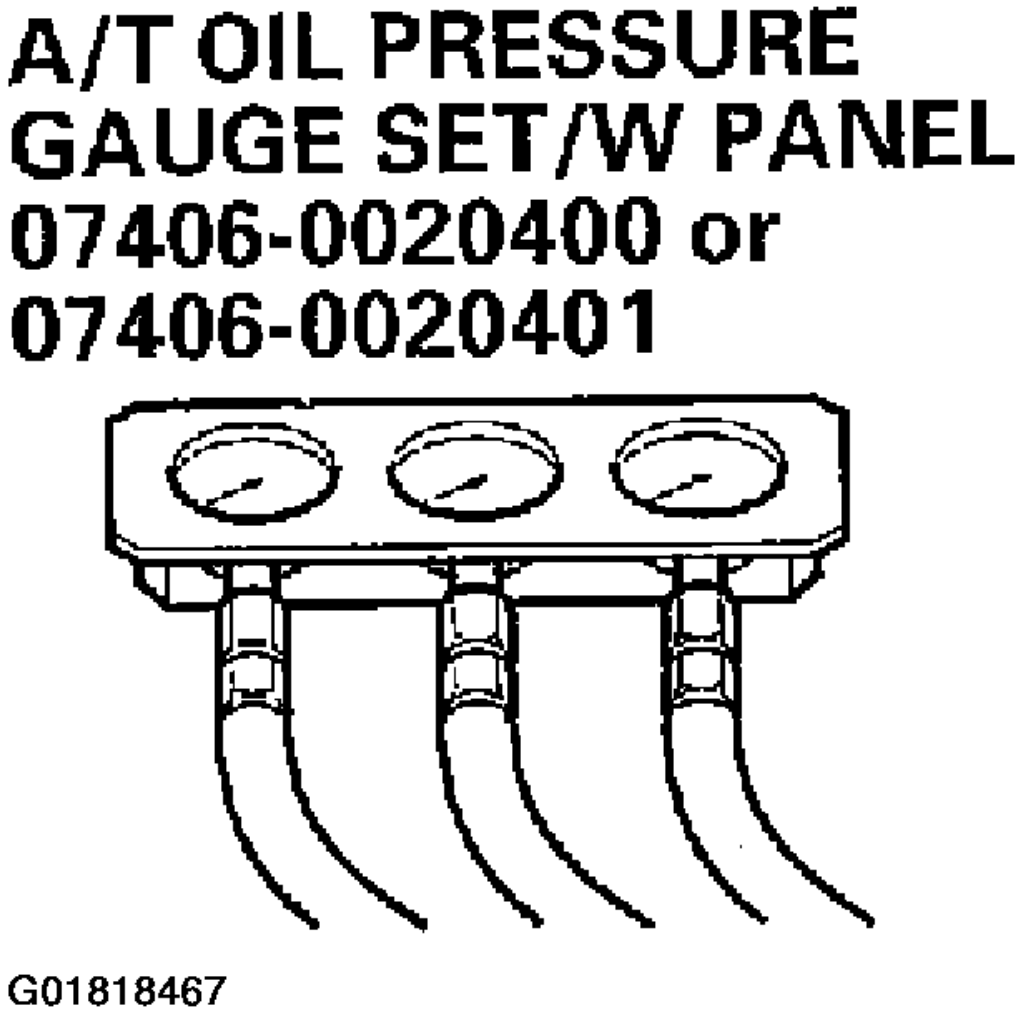


Fig. 211: Identifying Oil Pressure Gauge

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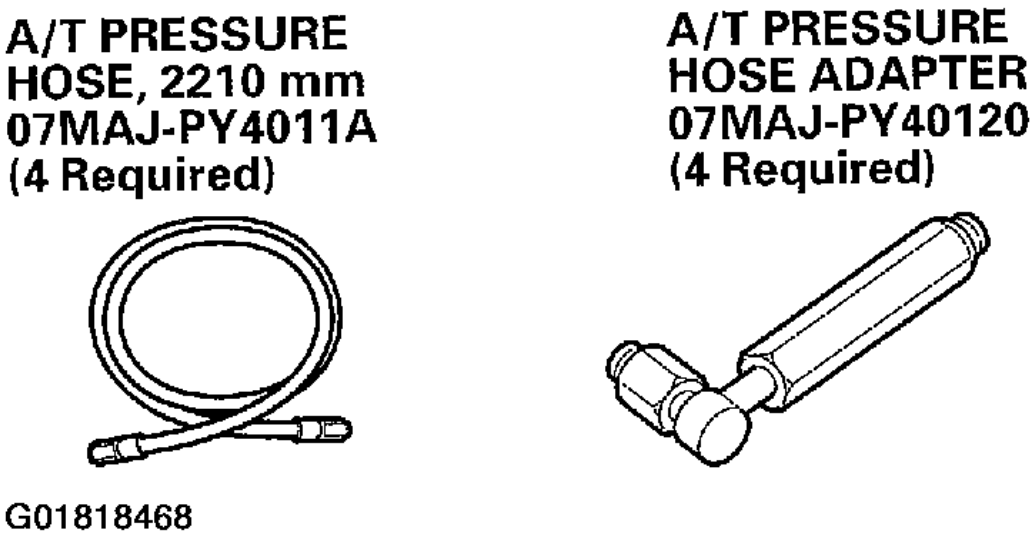


Fig. 212: Identifying Oil Pressure Gauge Hose & Adapter

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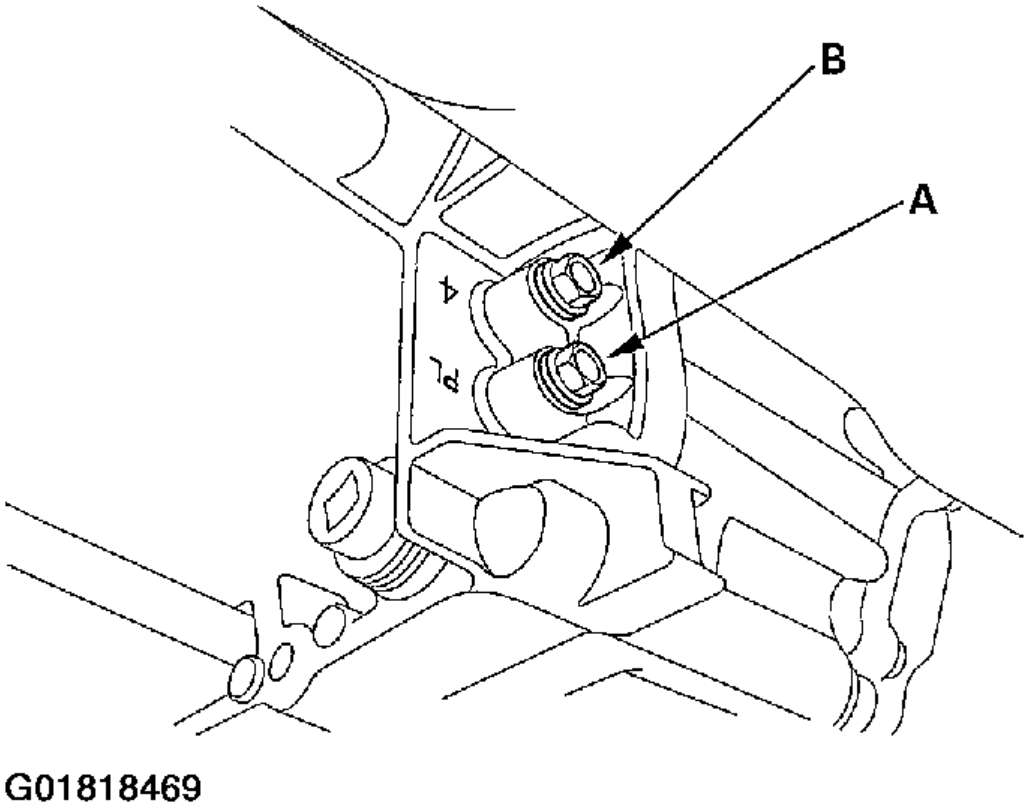


Fig. 213: Connecting The Oil Pressure Gauges To The Line Pressure Inspection Hole & 4th Clutch Pressure Inspection Hole

6. Remove the intake air duct and air cleaner housing, and connect the oil pressure gauges to the 2nd clutch pressure inspection hole (C). Then temporarily install the air cleaner housing and intake air duct.

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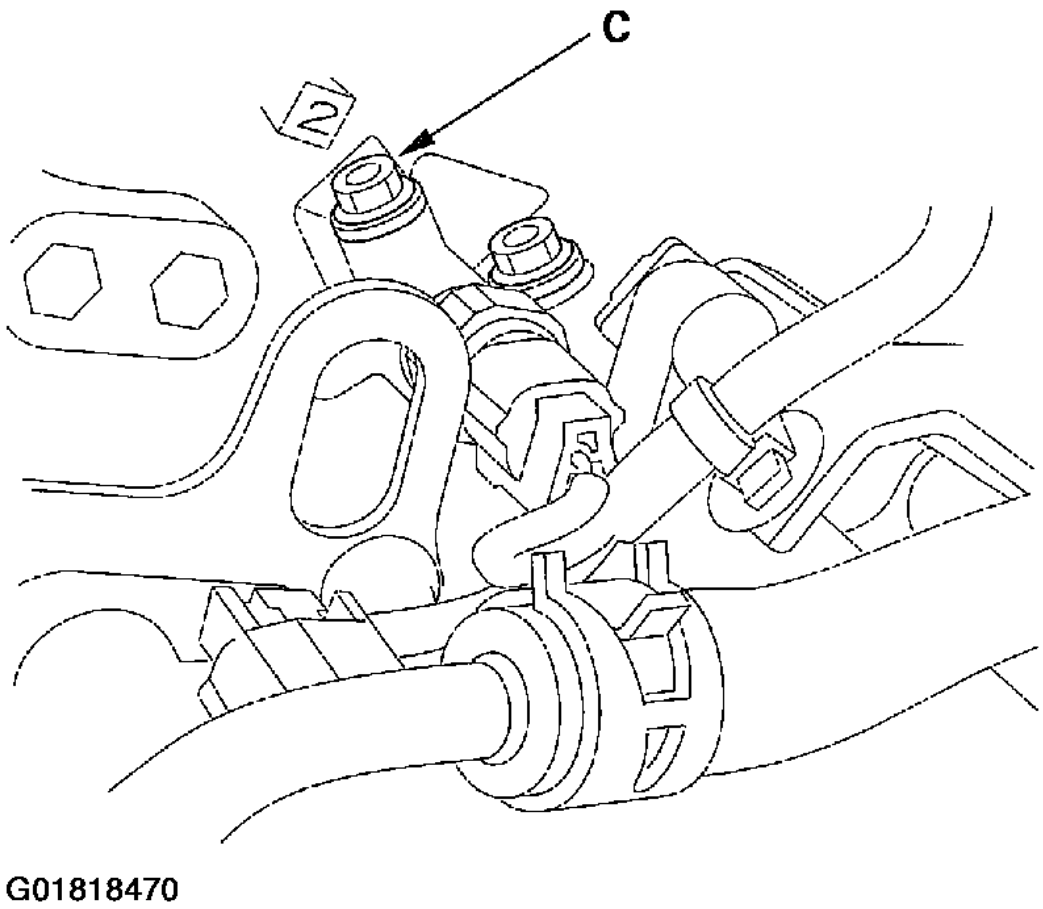


Fig. 214: Connecting The Oil Pressure Gauges To The 2nd Clutch Pressure Inspection Hole

7. Connect the oil pressure gauge to the 1st clutch pressure inspection hole (D), 3rd clutch pressure inspection hole (E), and 5th clutch pressure inspection hole (F).

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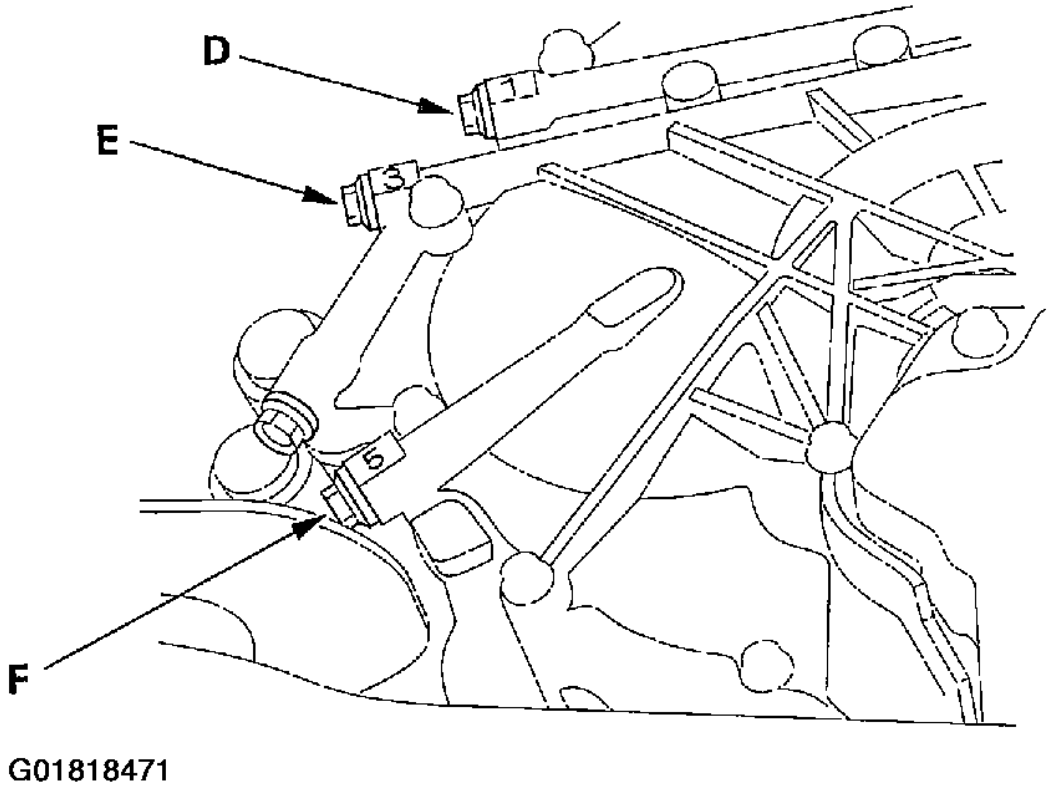


Fig. 215: Connecting The Oil Pressure Gauge To The 1st Clutch Pressure Inspection Hole, 3rd Clutch Pressure Inspection Hole & 5th Clutch Pressure Inspection Hole

8. Start the engine, and run it at 2,000 RPM in the **P** or **N** position.
9. Measure line pressure at the line pressure inspection hole (A).

NOTE: Higher pressure may be indicated if measurements are made in shift lever position other than N or P .

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Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	927 — 985.6 kPa (9.45 — 10.05 kgf/cm², 134 — 142.9 psi)	878 kPa (8.95 kgf/cm², 127 psi)

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Fig. 216: Line Pressure Table

10. Shift to the **M** position.
11. Shift to 1st gear, and measure 1st clutch pressure at the 1st clutch pressure inspection hole (D) while holding engine speed at 2,000 RPM.
12. Shift up to 2nd gear, and measure 2nd clutch pressure at the 2nd clutch pressure inspection hole (C) while holding engine speed at 2,000 RPM.
13. Shift up to 3rd gear, and measure 3rd clutch pressure at the 3rd clutch pressure inspection hole (E) while holding engine speed at 2,000 RPM.
14. Shift up to 4th gear, and measure 4th clutch pressure at the 4th clutch pressure inspection hole (B) while holding engine speed at 2,000 RPM.
15. Shift up to 5th gear, and measure 5th clutch pressure at the 5th clutch pressure inspection hole (F) while holding engine speed at 2,000 RPM.
16. Bring the engine back to an idle, then apply the brake to stop the wheels from rotating.
17. Shift to the **R** position. Raise the engine RPM to 2,000 RPM, and measure 4th clutch pressure at the 4th clutch pressure inspection hole (B).

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Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (D) 2nd clutch (C) 3rd clutch (D) 4th clutch (B) 5th clutch (F)	917 – 995.4 kPa (9.35 – 10.15 kgf/cm², 133 – 144.3 psi)	868 kPa (8.85 kgf/cm², 126 psi)

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Fig. 217: Clutch Pressure Table

18. If the measurements are out of service limit, problems and probable causes are listed in the table below:

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Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve • Low fluid level • Clogged ATF strainer
No or low 1st clutch pressure	• 1st clutch • O-rings
No or low 2nd clutch pressure	• 2nd clutch • O-rings
No or low 3rd clutch pressure	• 3rd clutch • O-rings
No or low 4th clutch pressure	• 4th clutch • O-rings
No or low 5th clutch pressure	• 5th clutch • O-rings
No or low 4th clutch pressure in the R position	• Servo valve • 4th clutch • O-rings

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Fig. 218: Pressure Symptoms & Causes Table

19. Install the sealing bolts with the new sealing washers, and tighten the bolts to the specified torque. Do not reuse old sealing washers.

    Torque: 18 N.m (1.8 kgf.m, 13 lbf.ft)

20. Install the air cleaner housing and intake air duct.

SHIFT SOLENOID VALVE TEST

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1. Connect the HDS to the DLC (A).

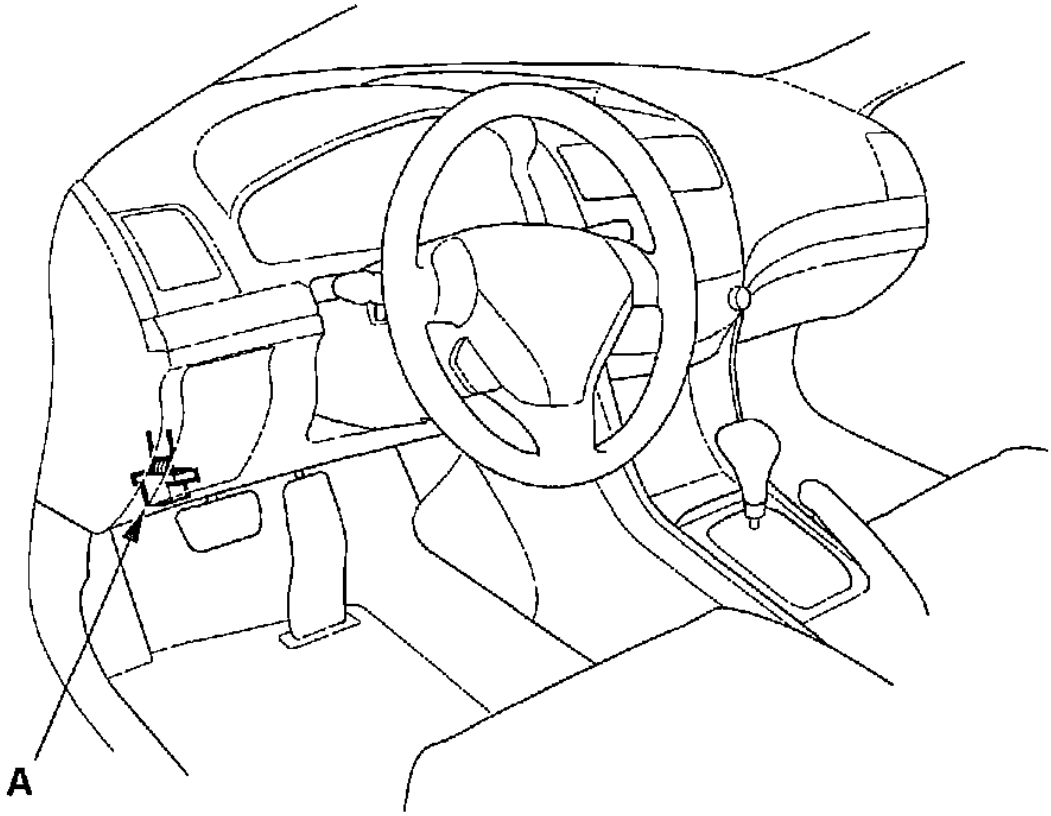


Fig. 219: Connecting The HDS To The DLC

2. Select SHIFT SOL TEST in MISC. TEST MENU on the HDS.
3. Carry out A/T SHIFT SOL A, B, C, D, and E tests in SHIFT SOL TEST MENU with the HDS. A clicking sound should be heard.
4. Shift solenoid valves test has finished if the test results are OK. If no sound is heard, remove the shift solenoid valves and test.
5. Remove the splash shield.
6. Remove the drain plug (A), and drain the automatic transmission fluid (ATF). Then reinstall the drain plug with a new sealing washer (B).

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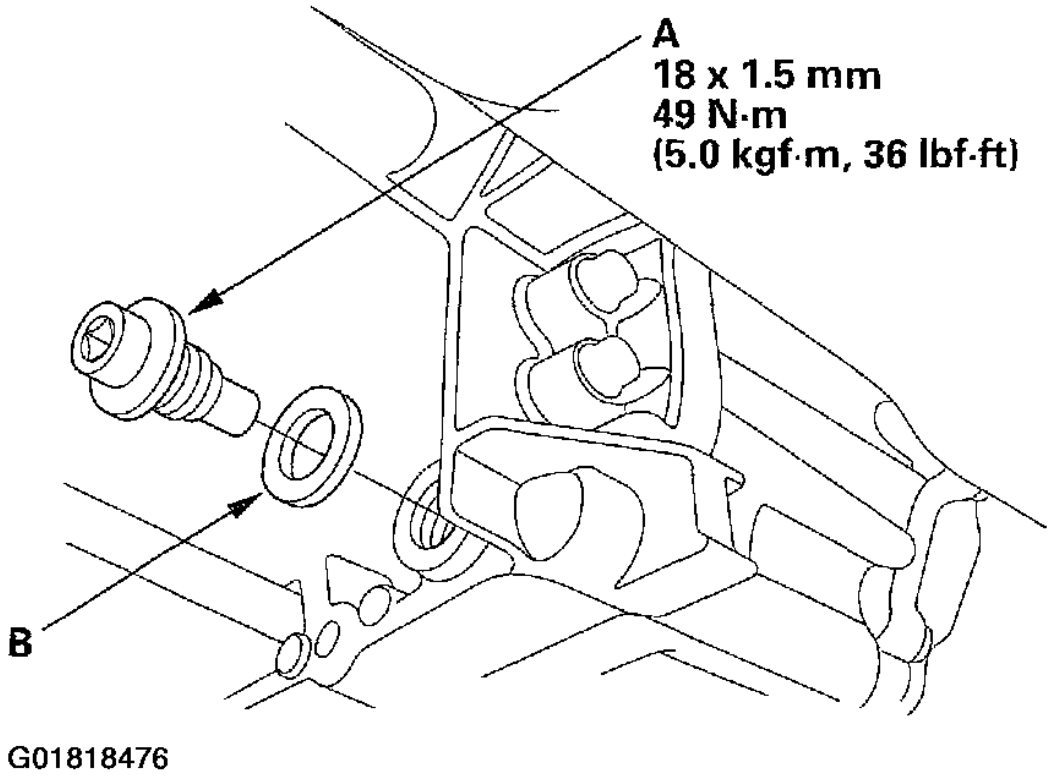


Fig. 220: Removing The Drain Plug

7. Disconnect the battery negative terminal, then disconnect the battery positive terminal.
8. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
9. Remove the intake air duct and air cleaner housing.
10. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
11. Remove the ground cable (A), transmission upper mount bracket (B), and bracket plate (C).

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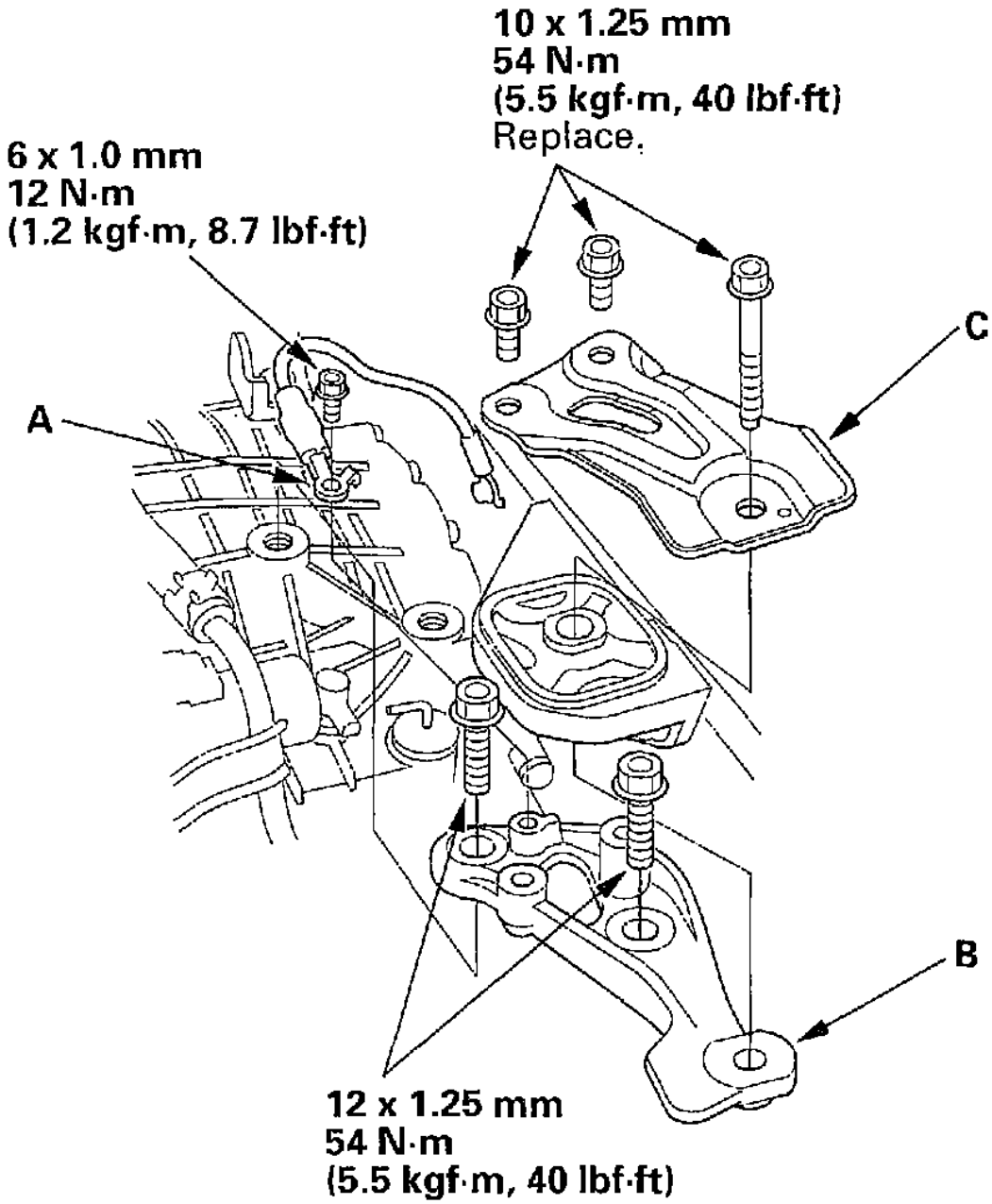


Fig. 221: Removing The Ground Cable, Transmission Upper Mount Bracket & Bracket Plate

12. Place a transmission jack under the transmission, and remove the transmission lower mount nuts.

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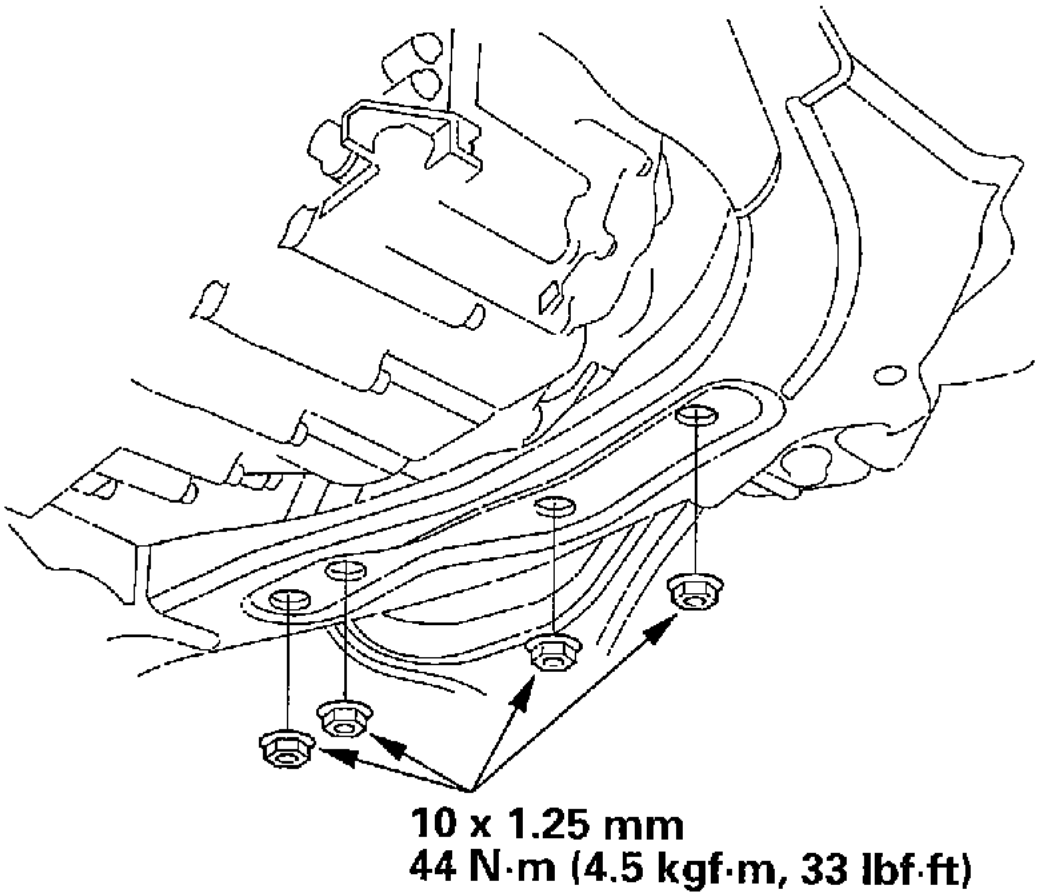


Fig. 222: Removing The Transmission Lower Mount Nuts

13. Lift the transmission up to create clearance between the transmission and front subframe with the jack.
14. Remove the ATF dipstick, and remove the bolts securing the ATF cooler inlet line brackets (A) and ATF dipstick guide pipe (B) from the transmission hanger (C).

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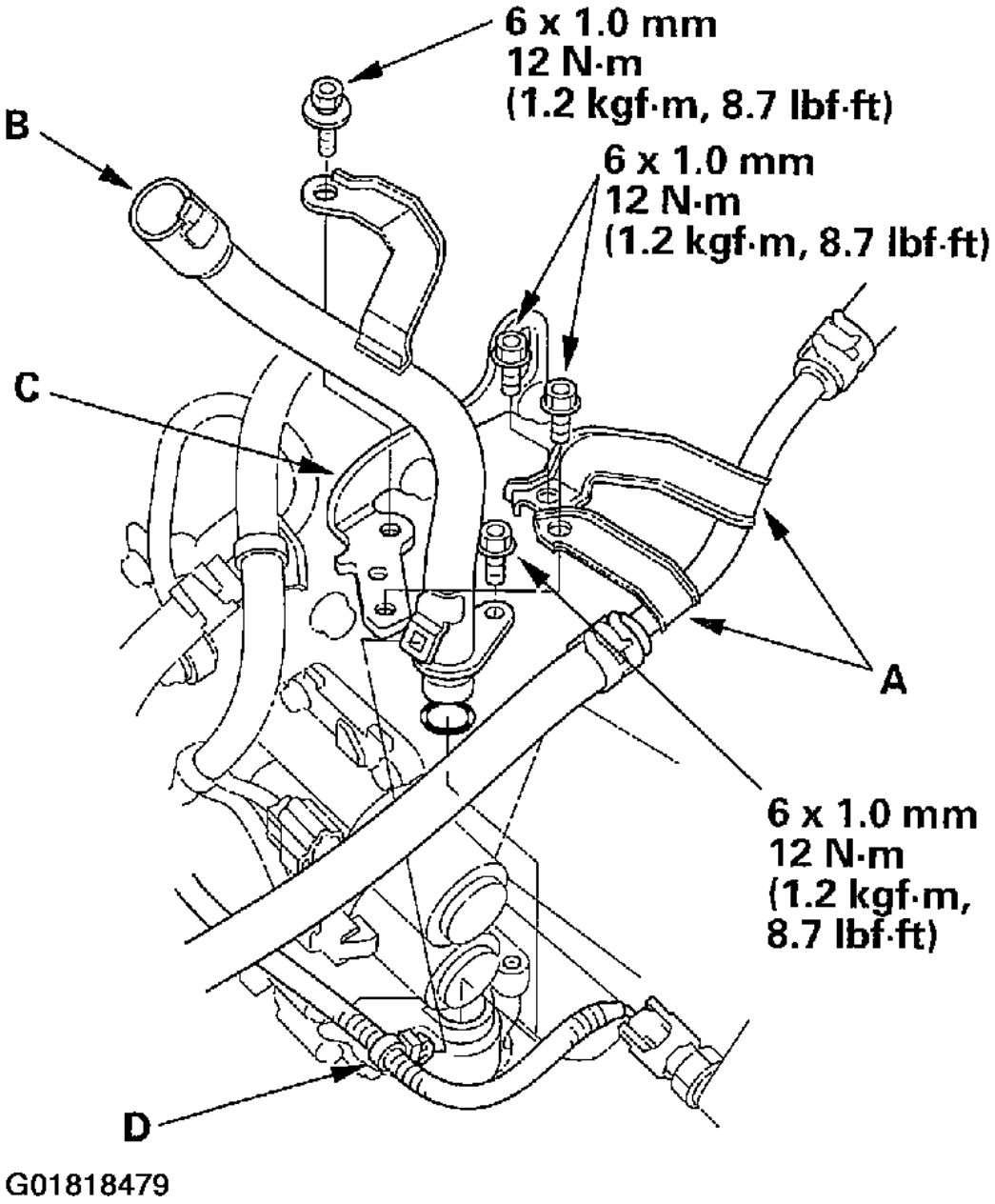


Fig. 223: Removing Components

15. Remove the harness clamp (D), than remove the ATF dipstick guide pipe.
16. Disconnect the shift solenoid harness connector.

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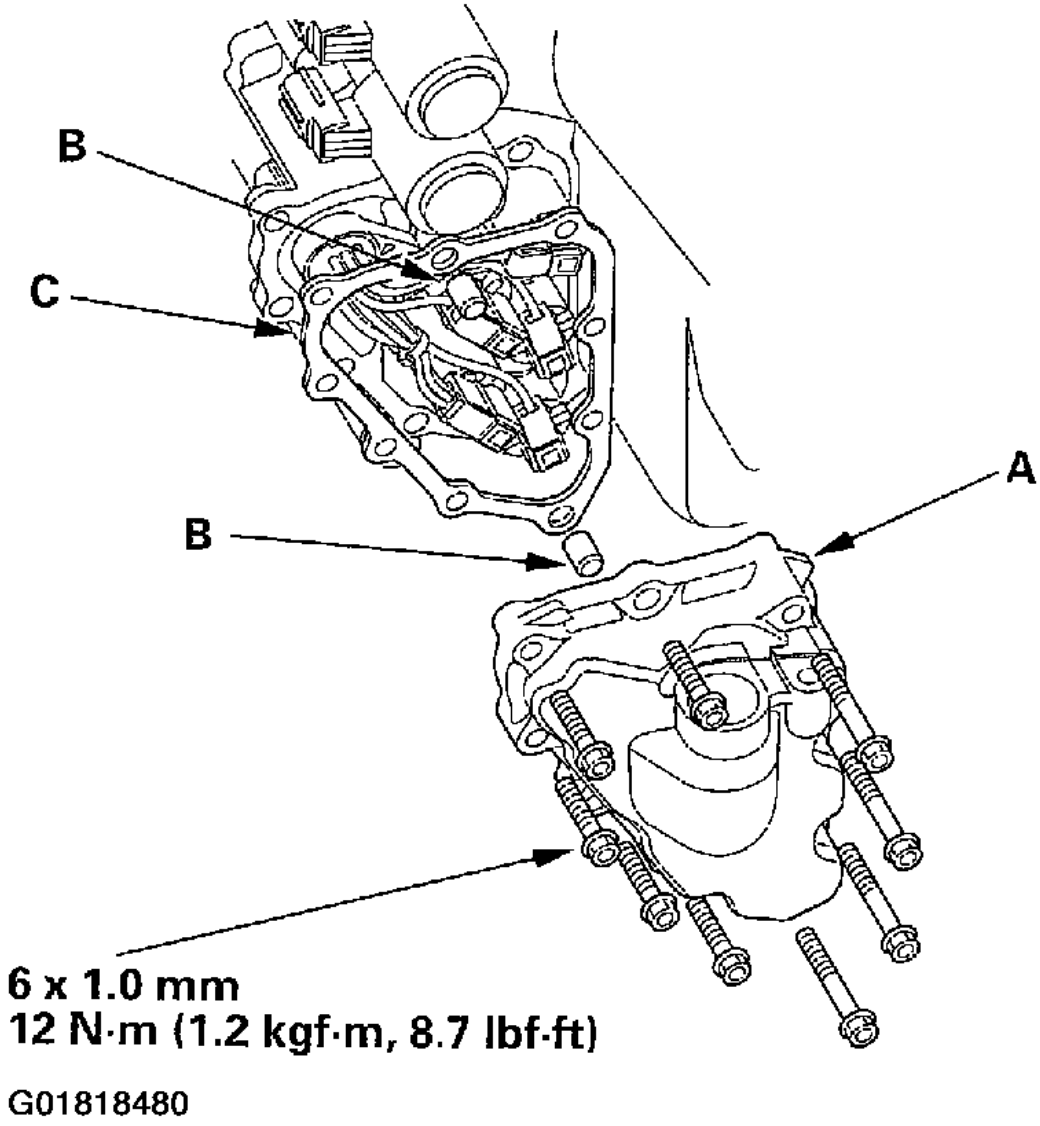


Fig. 224: Removing The Shift Solenoid Valve Cover, Dowel Pins & Gasket

17. Remove the shift solenoid valve cover (A), dowel pins (B), and gasket (C).
18. Remove the shift solenoid harness connector.

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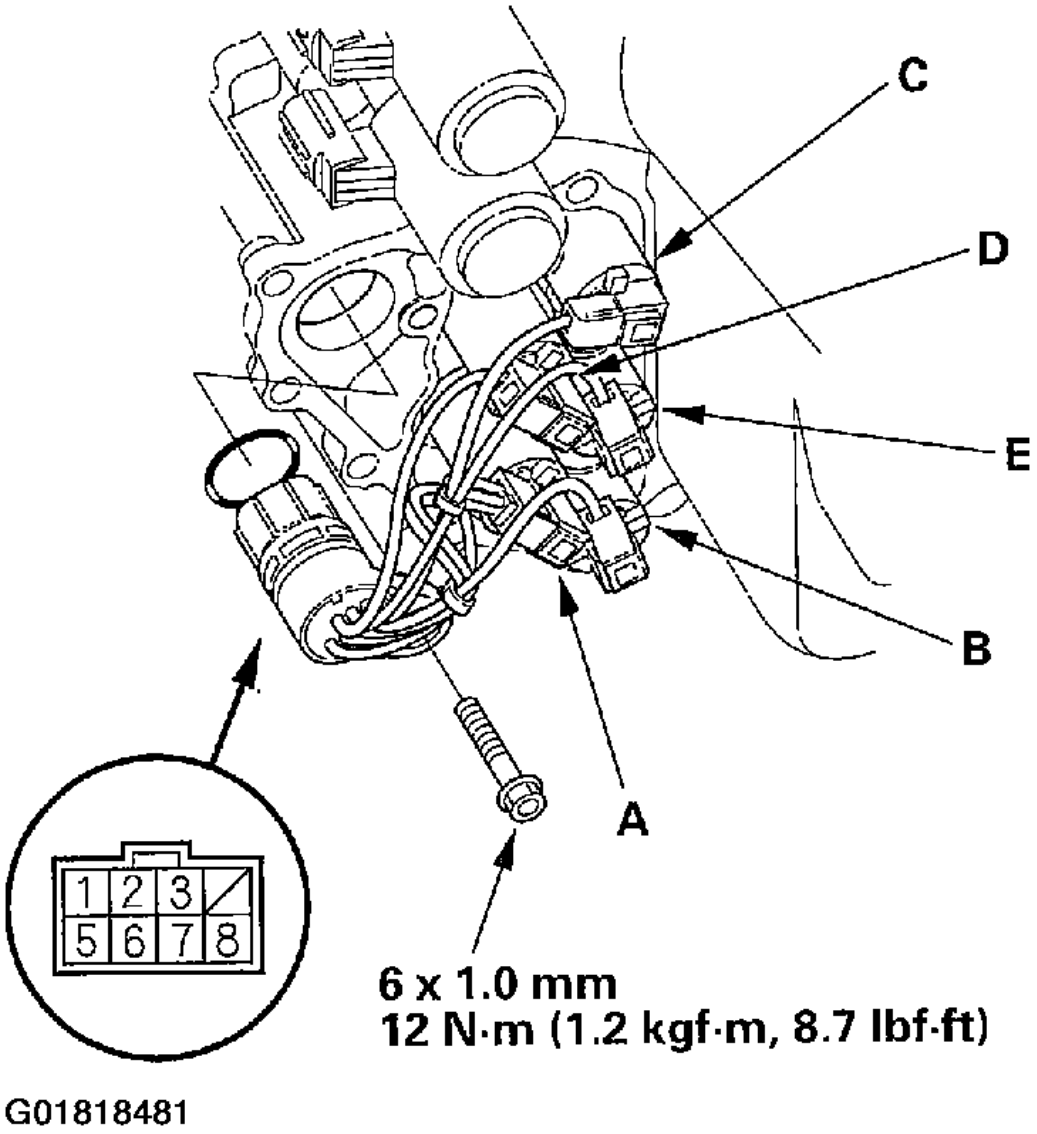


Fig. 225: Removing The Shift Solenoid Harness Connector & Identifying Valves

19. Measure shift solenoid valves resistance between shift solenoid harness connector terminals below and body ground:
    - **No. 1 (GRN):** Shift Solenoid Valve C
    - **No. 2 (ORN):** Shift Solenoid Valve B
    - **No. 3 (RED):** Shift Solenoid Valve E
    - **No. 5 (BLU):** Shift Solenoid Valve A
    - **No. 8 (YEL):** Shift Solenoid Valve D

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Standard Resistance: 12-25 ohm

20. If the resistance is out of standard, disconnect the shift solenoid valve connector, and measure its resistance at the solenoid valve terminal. Replace the shift solenoid valve if the resistance is out of standard.
21. Connect the battery negative terminal to body ground, and connect the battery positive terminal to the shift solenoid valve terminal individually. A clicking sound should be heard.
22. If no sound is heard, connect the battery positive terminal to the shift solenoid valve terminal, and check for a clicking sound. Replace the shift solenoid valve if no clicking sound is heard.
23. Replace the shift solenoid harness if the test results are OK.
24. Install a new O-ring on the shift solenoid harness connector, and install the connector in the transmission housing.
25. Install the shift solenoid valve cover, dowel pins and a new gasket.
26. Install the new O-ring on the ATF dipstick guide pipe, and install the ATF dipstick guide pipe, then install the harness clamp on the ATF dipstick guide pipe.
27. Secure the ATF cooler line brackets on the transmission hanger with the bolts.
28. Check the connector for rust, dirt, or oil, then connect the connector securely.
29. Install the transmission lower mount nuts.
30. Install the transmission upper mount bracket, bracket plate, and ground cable, then remove the transmission jack.
31. Refill the transmission with ATF (see **DRAINING & REFILLING**).
32. Install the battery base, then install the air cleaner housing and intake air duct.
33. Install the battery tray, battery, and battery cover, then secure the battery with its hold-down bracket. Connect the battery terminals.
34. Install the splash shield.

SHIFT SOLENOID VALVE REPLACEMENT

1. Remove the splash shield.
2. Remove the drain plug (A), and drain the automatic transmission fluid (ATF). Then reinstall the drain plug with a new sealing washer (B).

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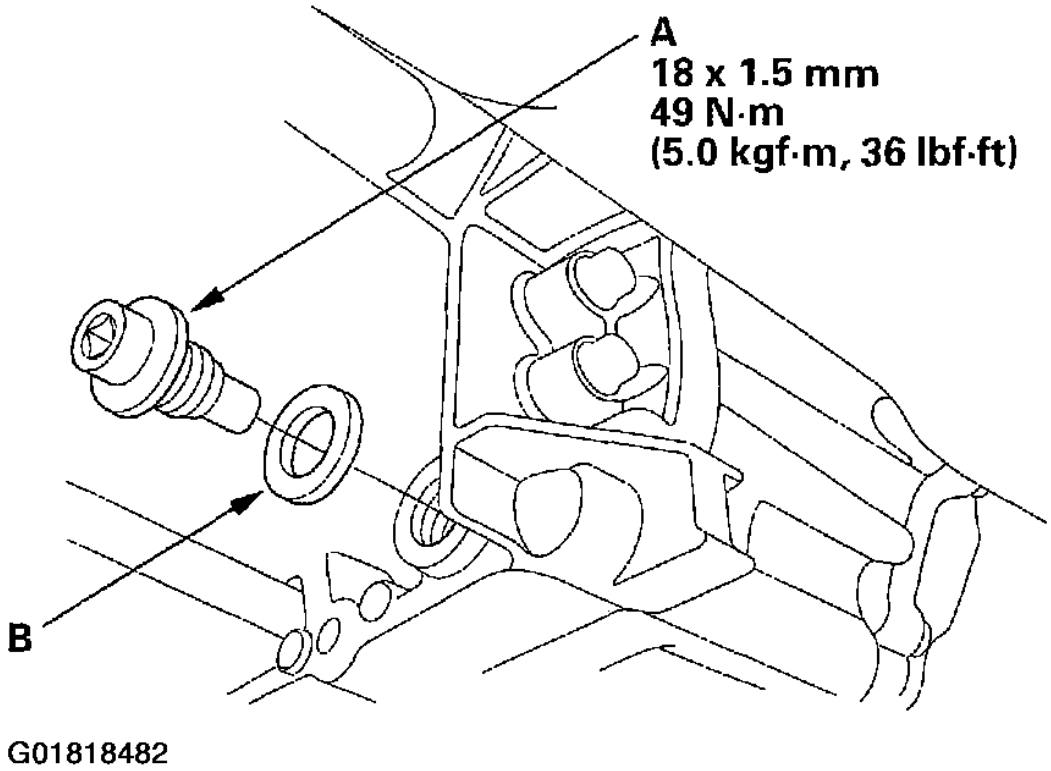


Fig. 226: Removing The Drain Plug

3. Disconnect the battery negative terminal, then disconnect the battery positive terminal.
4. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
5. Remove the intake air duct and air cleaner housing.
6. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
7. Remove the ground cable (A), transmission upper mount bracket (B), and bracket plate (C).

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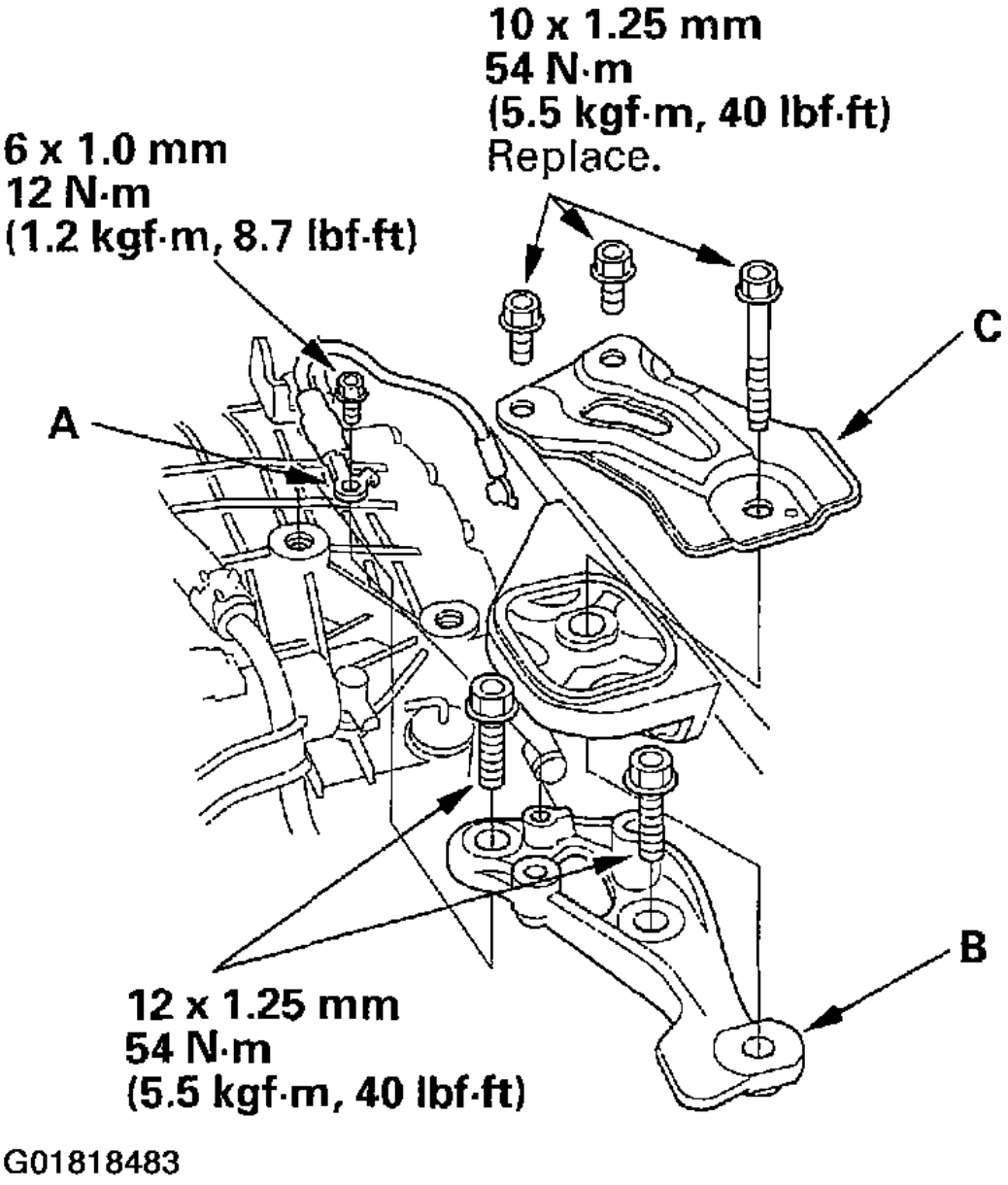


Fig. 227: Removing The Ground Cable, Transmission Upper Mount Bracket & Bracket Plate

8. Place the transmission jack under the transmission, and remove the transmission lower mount nuts.

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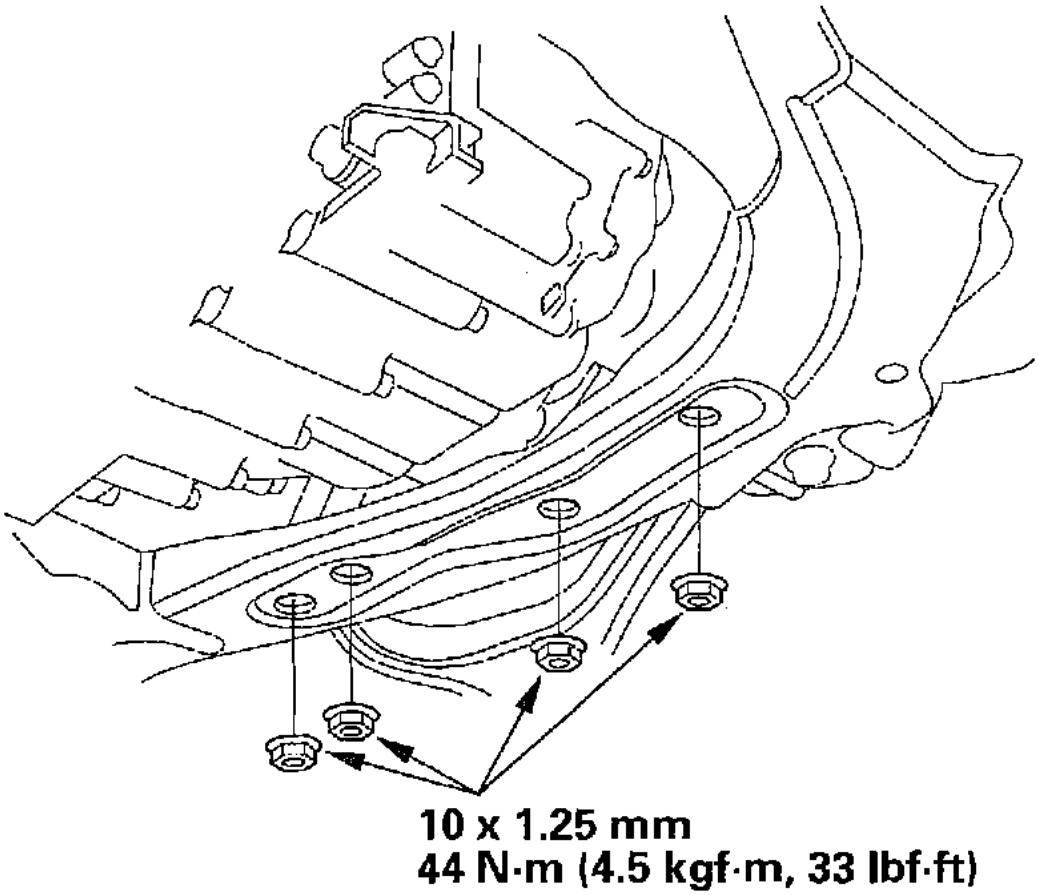


Fig. 228: Removing The Transmission Lower Mount Nuts

9. Lift the transmission up to create clearance between the transmission and front subframe with the jack.
10. Remove the ATF dipstick, and remove the bolts securing the ATF cooler inlet line brackets (A) and ATF dipstick guide pipe (B) from the transmission hanger (C).

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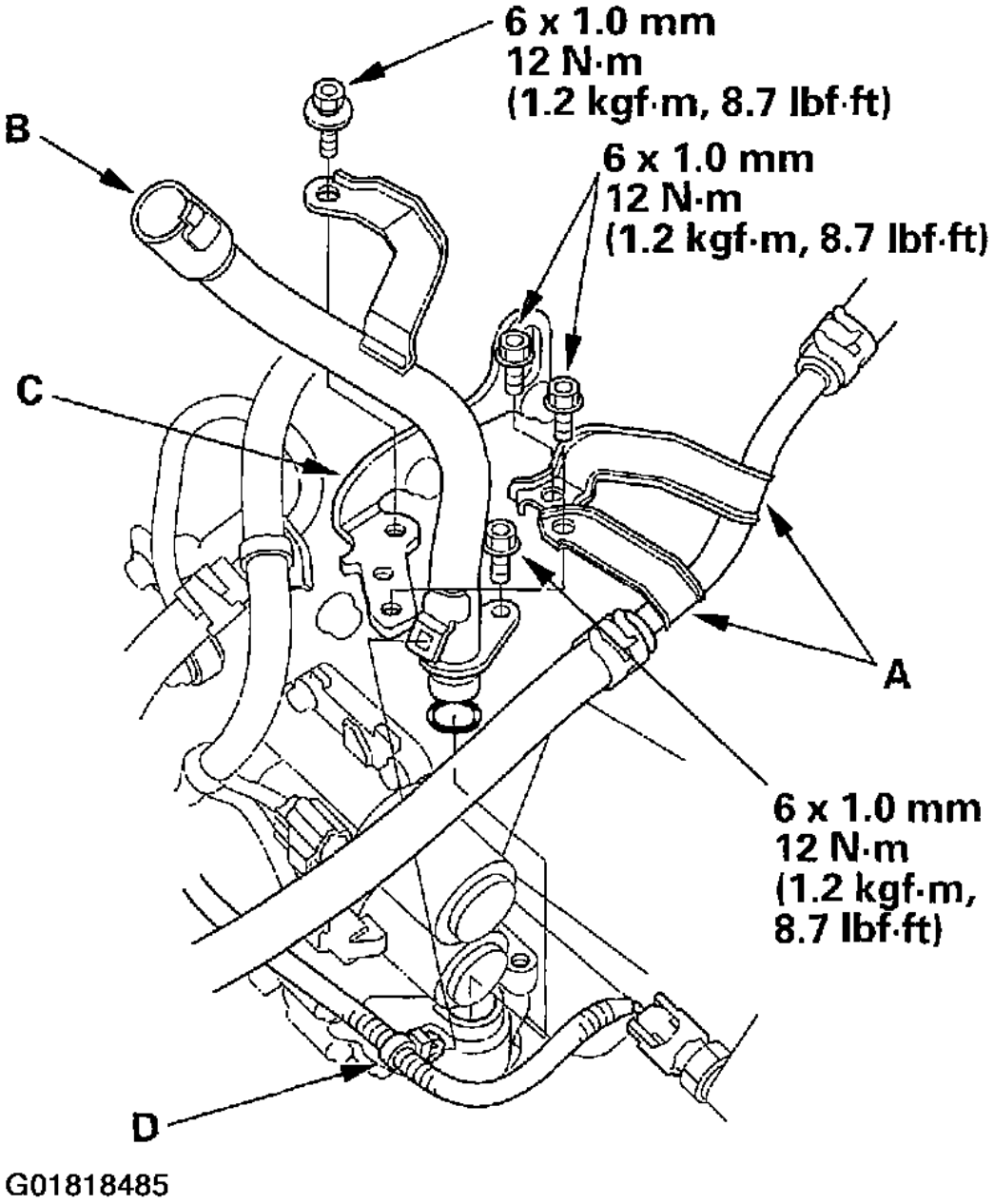


Fig. 229: Removing Components

11. Remove the harness clamp (D), then remove the ATF dipstick guide pipe.
12. Remove the shift solenoid valve cover (A), dowel pins (B), and gasket (C).

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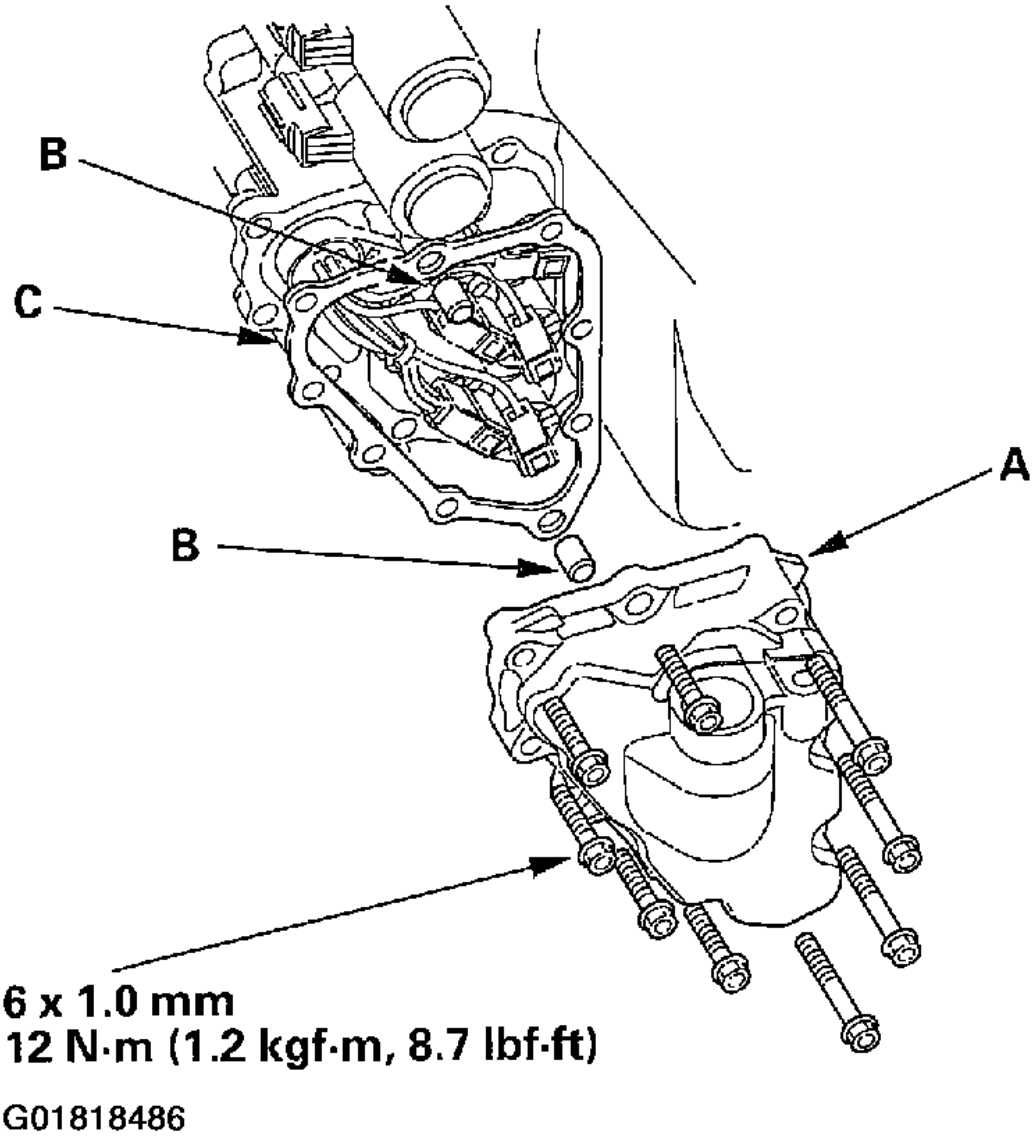


Fig. 230: Removing The Shift Solenoid Valve Cover, Dowel Pins & Gasket

13. Disconnect the shift solenoid valve connectors, remove the solenoid mounting bolts (H), then hold the solenoid valve body and remove the shift solenoid valves. Do not hold the connector to remove the shift solenoid valve.

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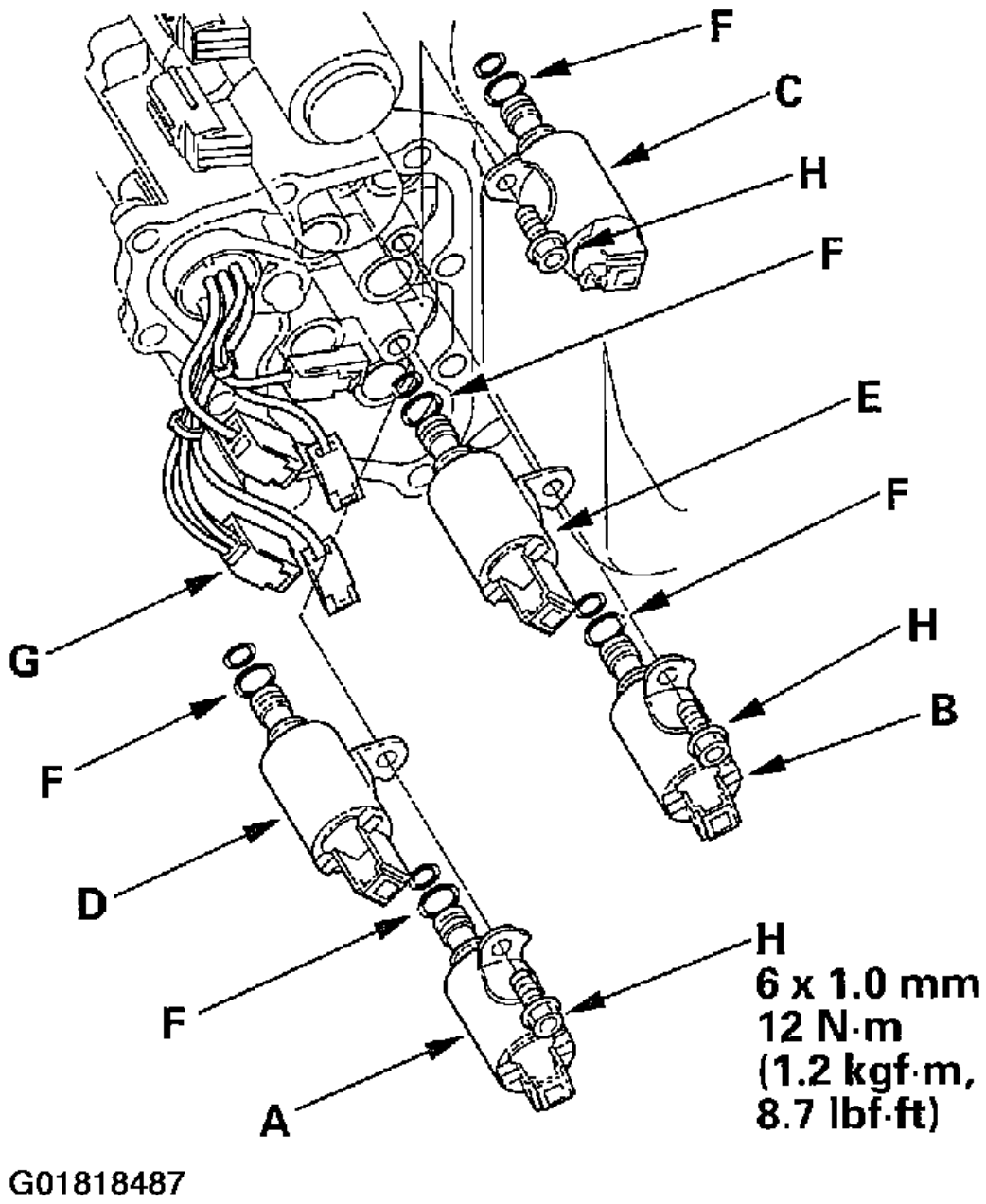


Fig. 231: Removing The Shift Solenoid Valves

14. Install the new O-rings (two O-rings per solenoid valve) (F) on the replacement solenoid valve.
15. Install the shift solenoid valves C, D, and E. While holding the shift solenoid valve body, be sure to install the solenoid valves until their mounting brackets contact the servo body.
16. Install the shift solenoid valves A and B. While holding the shift solenoid valve body, be sure to install

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the solenoid valves until their mounting brackets contact the bracket of the installed solenoid. Install the solenoid mounting bolts (H) and tighten them.

NOTE: Do not install the solenoid valves A and B before installing the shift solenoid valves D and E. If solenoid valves A and B are installed before solenoid valves D and E, it may damage the hydraulic control system.

17. Connect the shift solenoid valve D connector (G) with the ATF temperature sensor.
18. Connect the solenoid valve A connector (BLU wire), solenoid valve B connector (ORN wire), solenoid valve C connector (GRN wire), and solenoid valve E connector (RED wire).
19. Install the shift solenoid valve cover, dowel pins and a new gasket.
20. Install the new O-ring on the ATF dipstick guide pipe, and install the ATF dipstick guide pipe, then install the harness clamp on the ATF dipstick guide pipe.
21. Secure the ATF cooler line brackets on the transmission hanger with the bolts.
22. Install the transmission lower mount nuts.
23. Install the transmission upper mount bracket, bracket plate, and ground cable, then remove the transmission jack.
24. Refill the transmission with ATF (see **DRAINING & REFILLING**).
25. Install the battery base, then install the air cleaner housing and intake air duct.
26. Install the battery tray, battery, and battery cover, then secure the battery with its hold-down bracket. Connect the battery terminals.
27. Install the splash shield.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST

1. Connect the HDS to the DLC (A).

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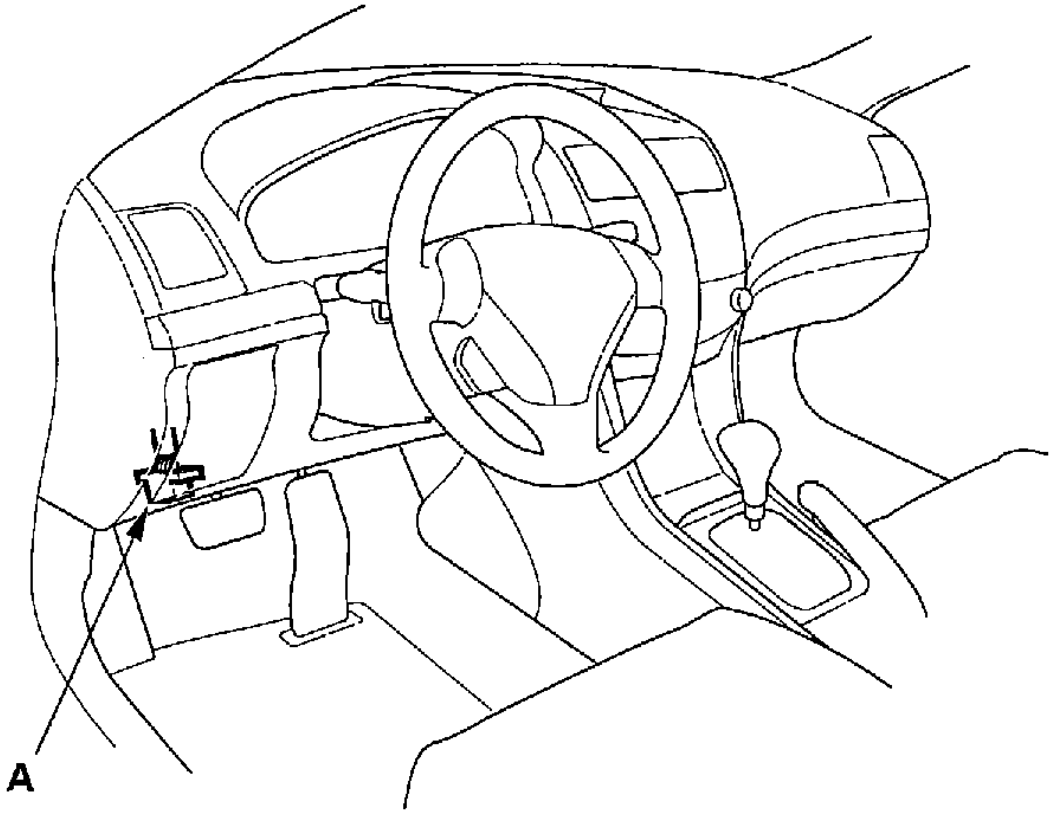


Fig. 232: Connecting The HDS To The DLC

2. Select LINEAR SOL TEST in MISC. TEST MENU on the HDS.
3. Carry out LINEAR SOL A TEST in LINEAR SOL TEST MENU with the HDS.
4. Follow instructions indicated on the HDS by the test result. If the HDS has not determined the cause of the failure, remove A/T clutch pressure control solenoid valve A and test.
5. Remove the intake air duct.
6. Disconnect the A/T clutch pressure control solenoid valve A connector.

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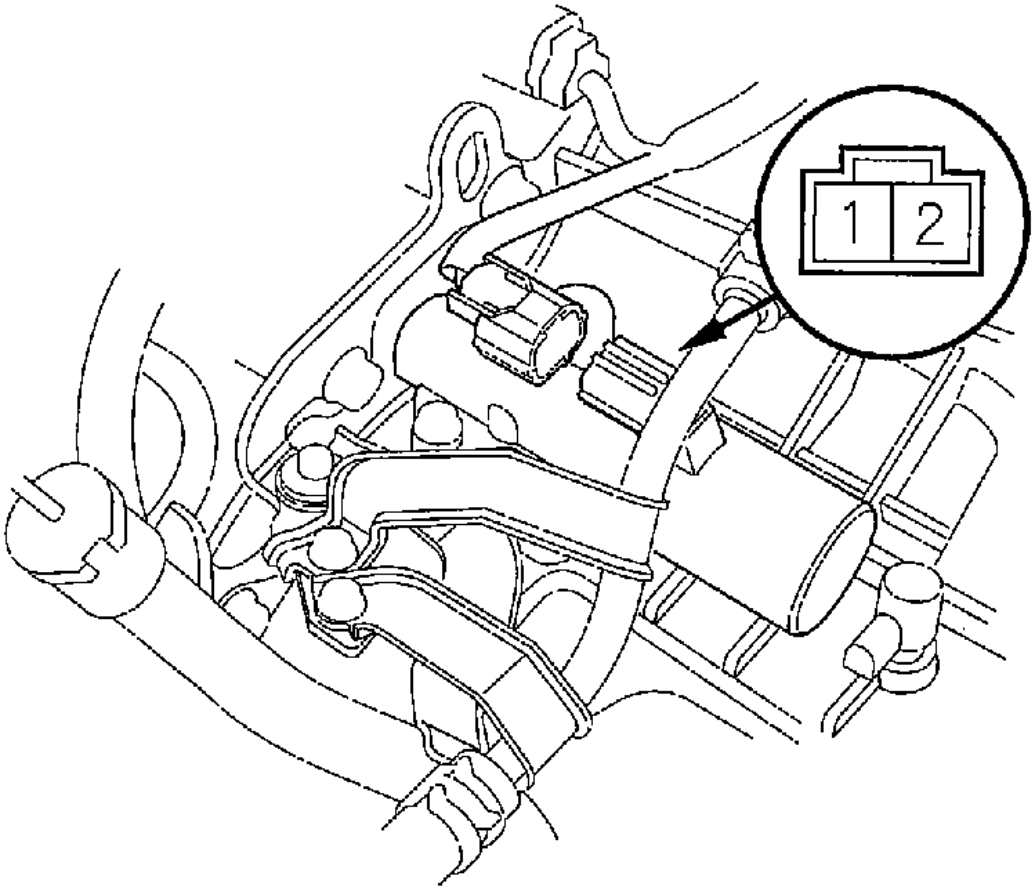


Fig. 233: Disconnecting The A/T Clutch Pressure Control Solenoid Valve A Connector

7. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid valve A connector.
   Standard: 3-10 ohm
8. If the resistance is out of standard, replace the A/T clutch pressure control solenoid valve A.
9. Connect the battery positive terminal to the No. 1 terminal of the A/T clutch pressure control solenoid valve A connector, and connect the battery negative terminal to the No. 2 terminal. A clicking sound should be heard.
10. If no sound is heard, remove the A/T clutch pressure control solenoid valve A.
11. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust or dirt.
12. Connect the No. 1 terminal of the A/T clutch pressure control solenoid valve A connector to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. Make sure the A/T clutch pressure control solenoid valve moves.

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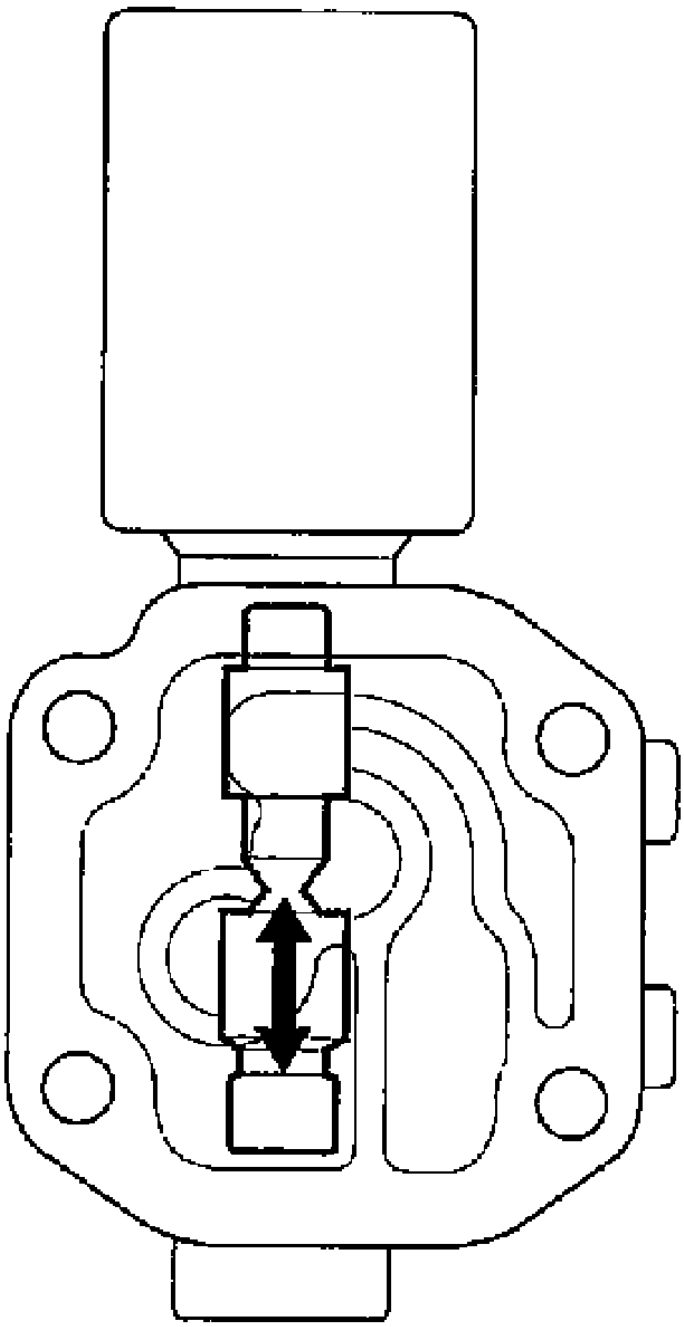


Fig. 234: Checking A/T Clutch Pressure Control Solenoid Valve Movement

13. Disconnect one of the battery terminals and check for valve movement.

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NOTE: You can see valve movement through the fluid passage in the mounting surface of the A/T clutch pressure control solenoid valve A body.

14. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace the A/T clutch pressure control solenoid valve A.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT

1. Remove the intake air duct.
2. Disconnect the A/T clutch pressure control solenoid valve A connector.
3. Remove the bolts securing the ATF cooler inlet line brackets (B) from the transmission hanger (C).

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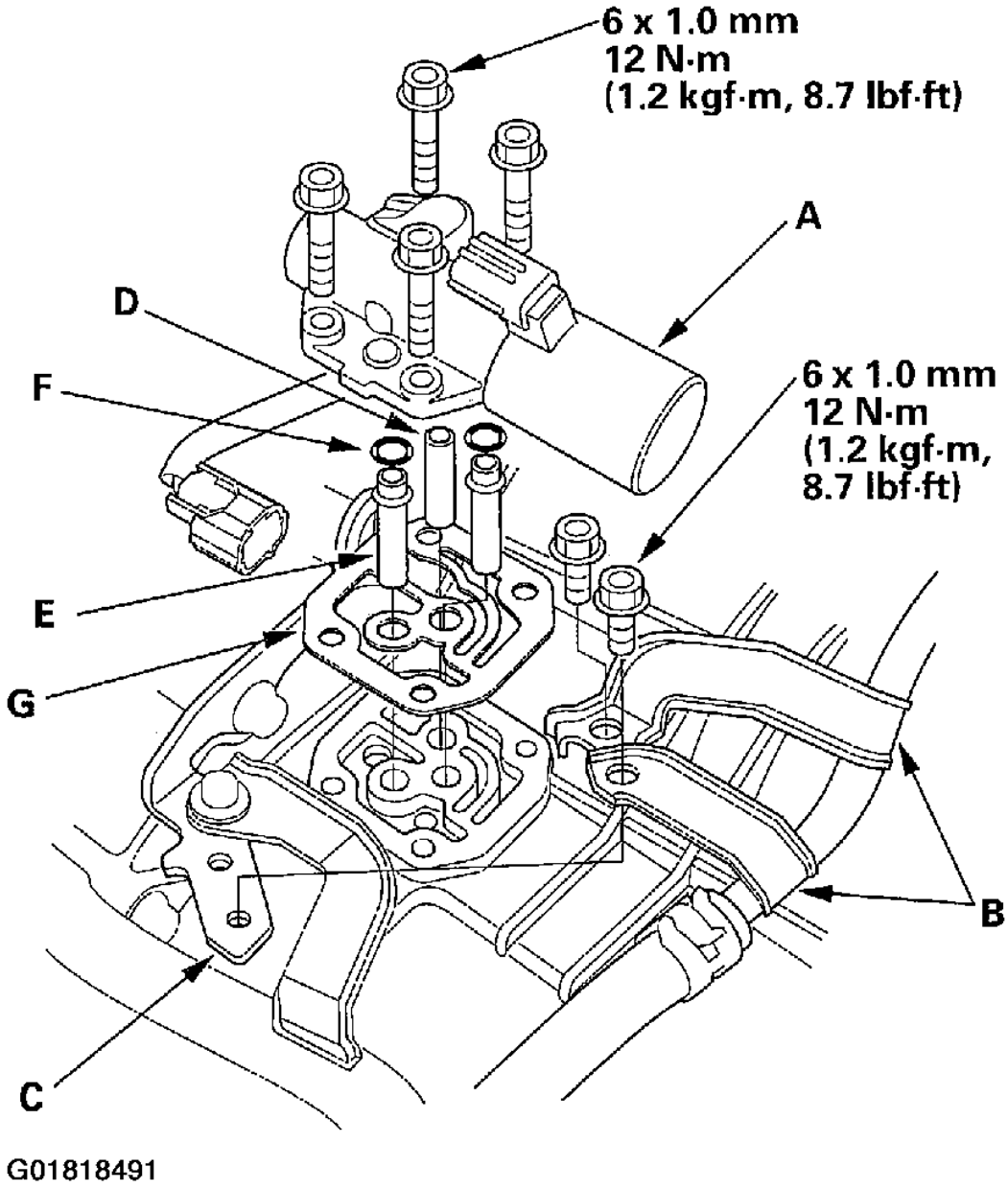


Fig. 235: Removing Components

4. Remove the mounting bolts and the A/T clutch pressure control solenoid valve A.
5. Remove the ATF pipe (D), ATF joint pipes (E), O-rings (F), and gasket (G).
6. Clean the mounting surface and fluid passages of the transmission housing.
7. Install the new gasket on the transmission housing, and install the ATF pipe and ATF joint pipes.
8. Install the new O-rings over the ATF joint pipes.

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9. Install the new A/T clutch pressure control solenoid valve A.
10. Secure the ATF cooler inlet line brackets with the bolts on the transmission hanger.
11. Check the A/T clutch pressure control solenoid valve A connector for rust, dirt, or oil, and clean if necessary, then connect the connector securely.
12. Install the intake air duct.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C TEST

1. Connect the HDS to the DLC (A).

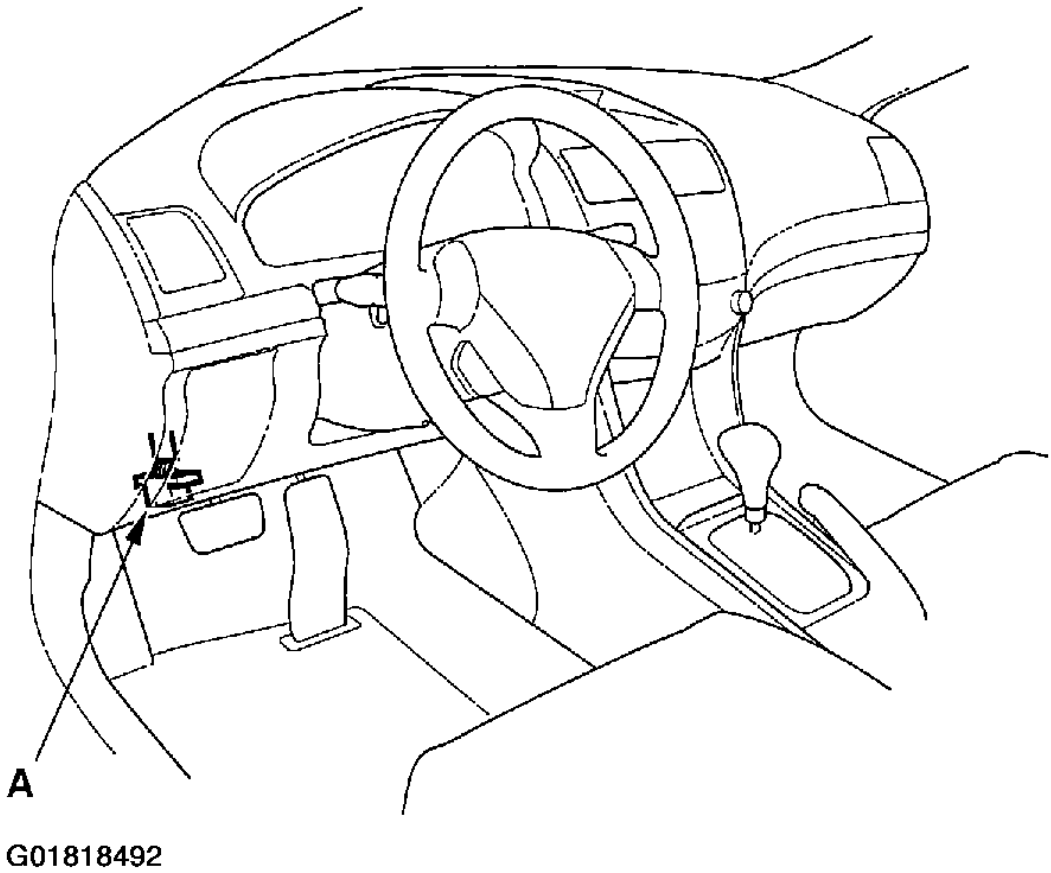


Fig. 236: Connecting The HDS To The DLC

2. Select LINEAR SOL TEST in MISC. TEST MENU on the HDS.
3. Carry out LINEAR SOL B TEST, SOL C TEST in LINEAR SOL TEST MENU with the HDS.
4. Follow instructions indicated on the HDS by the test result. If the HDS has not determined the cause of the failure, remove A/T clutch pressure control solenoid valve B, C and test.

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5. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.

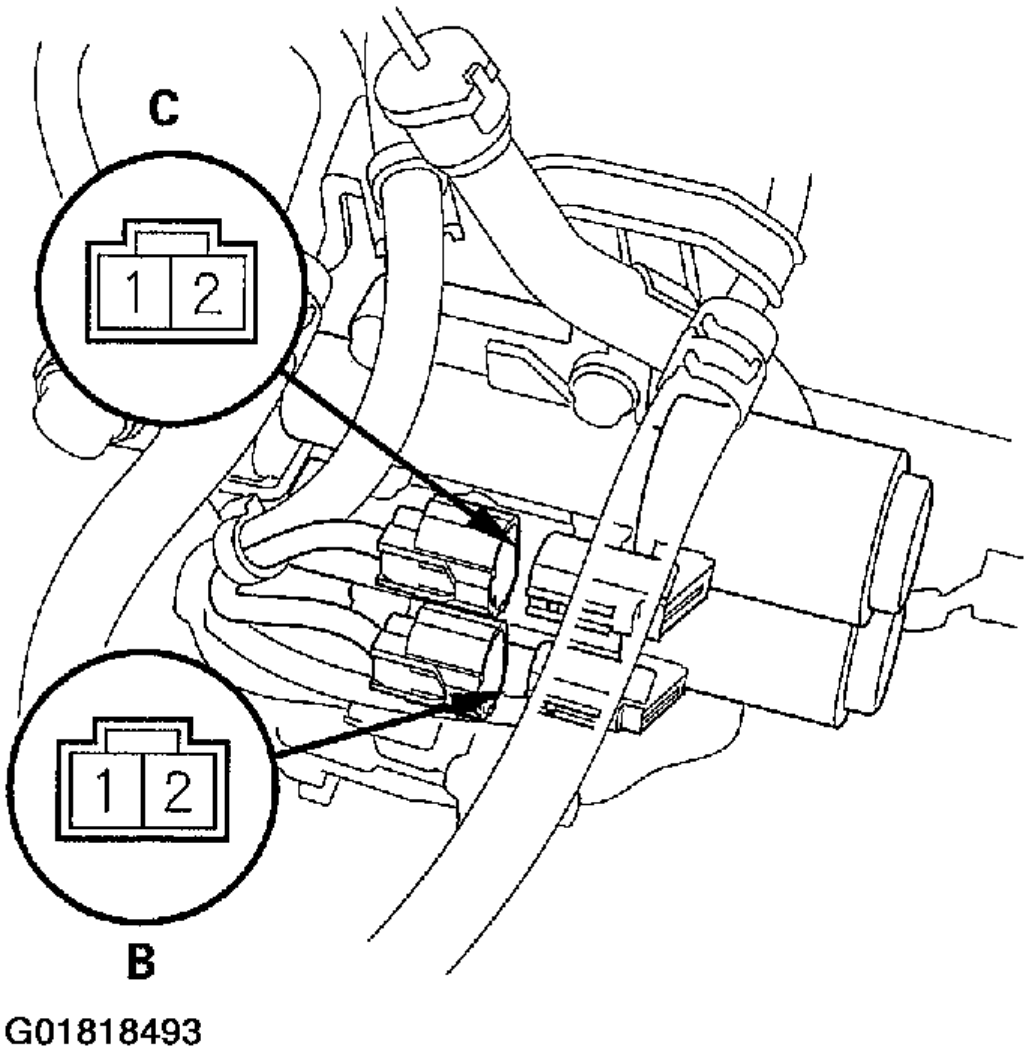


Fig. 237: Disconnecting The A/T Clutch Pressure Control Solenoid Valves B & C Connectors

6. Measure A/T clutch pressure control solenoid valve B resistance between the solenoid valve B terminals No. 1 and No. 2, and measure A/T clutch pressure control solenoid valve C resistance between the solenoid valve C terminals No. 1 and No. 2.

   Standard: 3-10 ohm
7. If the resistance of either A/T clutch pressure control solenoid valve is out of standard, replace the A/T clutch pressure control solenoid valves B and C.
8. Connect the battery positive terminal to the No. 1 terminal of the A/T clutch pressure control solenoid

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valves B and C connectors, and connect the battery negative terminal to the No. 2 terminal. A clicking sound should be heard.

9. If no sound is heard, remove the A/T clutch pressure control solenoid valves B and C.
10. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust or dirt.
11. Connect the No. 1 terminal of the A/T clutch pressure control solenoid valves B and C connectors to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. Make sure the A/T clutch pressure control solenoid valves B and C move.

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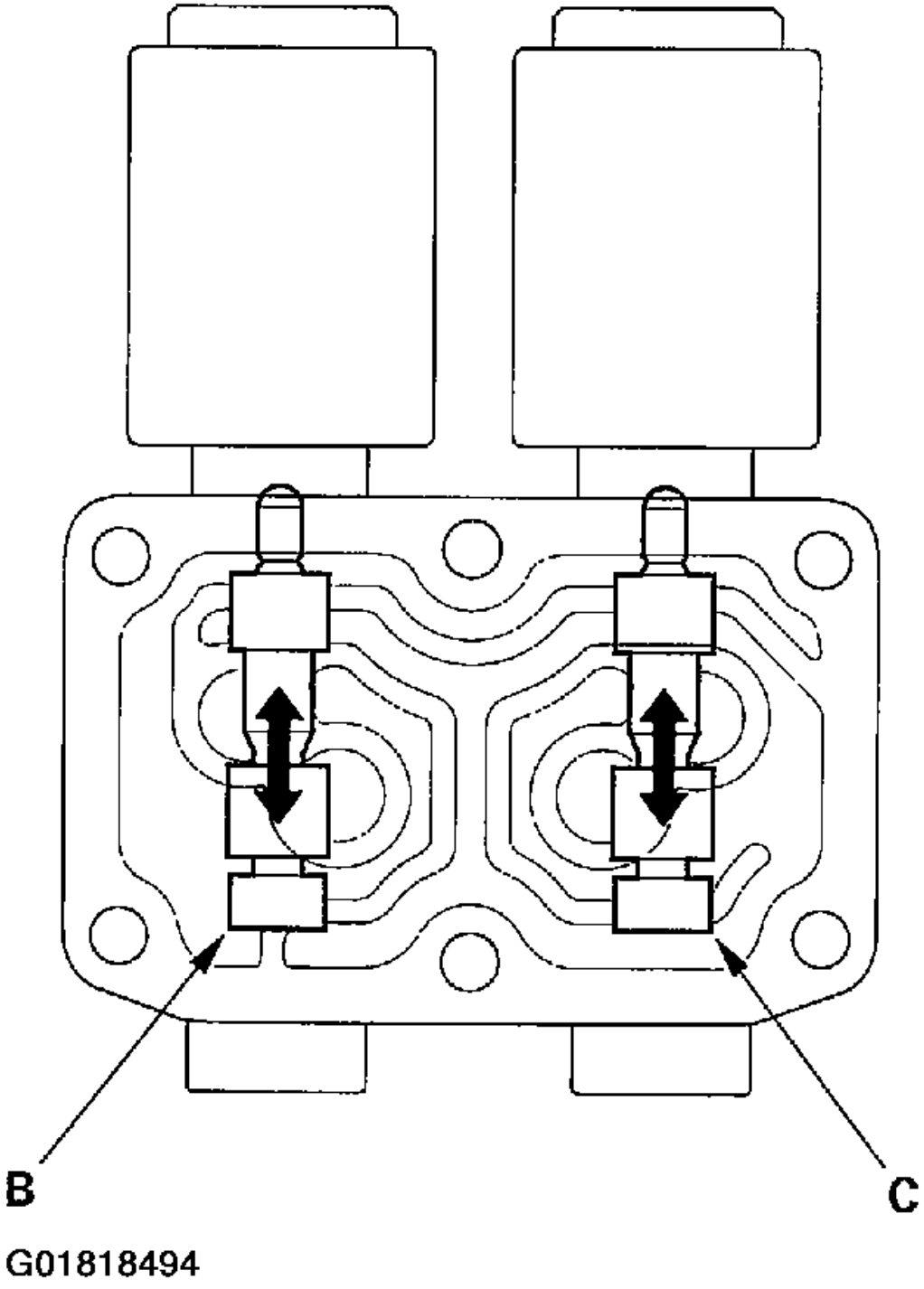


Fig. 238: Checking A/T Clutch Pressure Control Solenoid Valves B & C Movement

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12. Disconnect one of the battery terminals, and check valve movement.

NOTE: You can see valve movement through the fluid passage in the mounting surface of the A/T clutch pressure control solenoid valves B and C body.

13. If either valve binds or moves sluggishly, or if the solenoid valve does not operate, replace the A/T clutch pressure control solenoid valves B and C.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B & C REPLACEMENT

1. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.
2. Remove the A/T clutch pressure control solenoid valves B and C.

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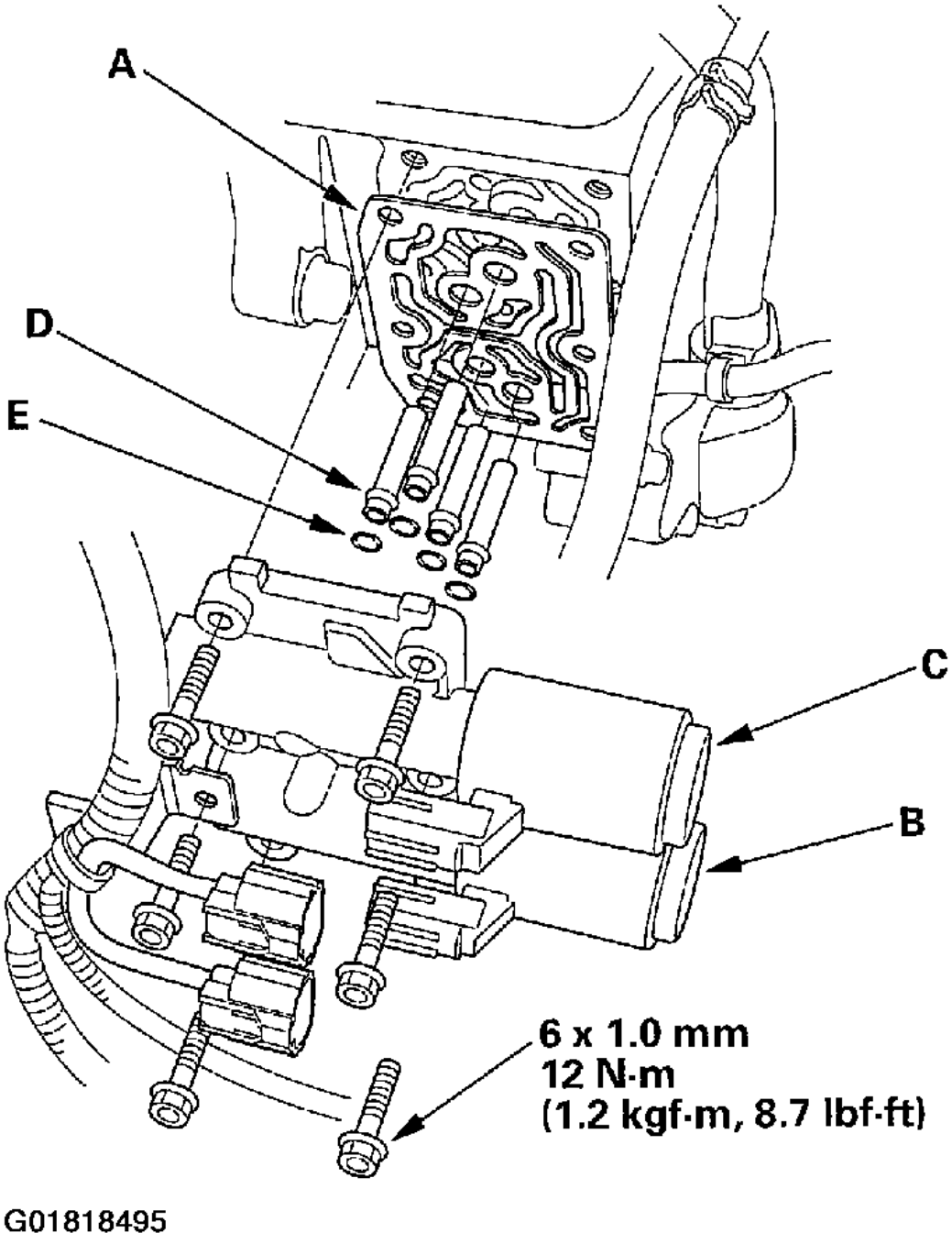


Fig. 239: Removing The A/T Clutch Pressure Control Solenoid Valves B & C

3. Remove the ATF joint pipes (D), O-rings (E), and gasket (A).
4. Clean the mounting surface and fluid passages of the transmission housing.

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5. Install the new gasket on the transmission housing, and install the ATF joint pipes.
6. Install new O-rings over the ATF joint pipes.
7. Install new A/T clutch pressure control solenoid valves B and C.
8. Check A/T clutch pressure control solenoid valves B and C connectors for rust, dirt, or oil, and clean if necessary, then connect the connectors securely.

MAINSHAFT SPEED SENSOR REPLACEMENT

1. Remove the intake air duct and air cleaner housing.
2. Disconnect the mainshaft speed sensor connector, and remove the mainshaft speed sensor.

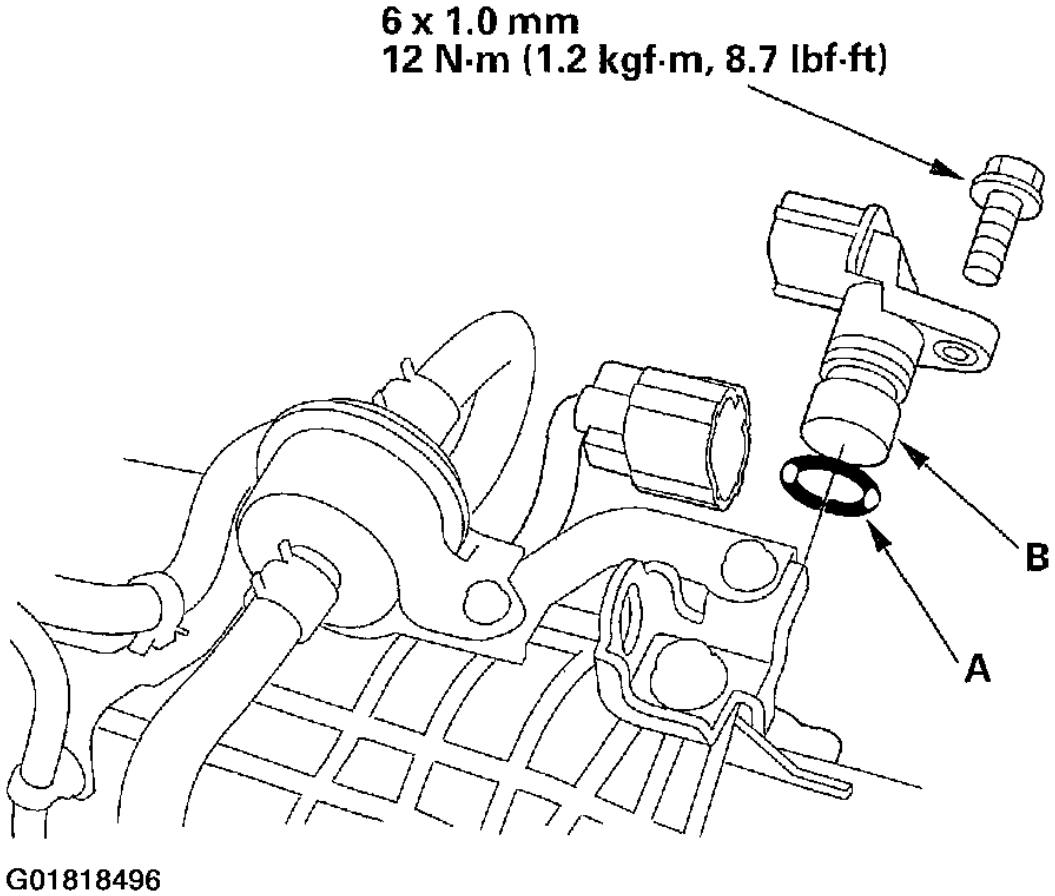


Fig. 240: Removing The Mainshaft Speed Sensor

3. Install the new O-ring (A) on the new mainshaft speed sensor (B), then install the mainshaft speed sensor in the transmission housing.
4. Check the connector for rust, dirt, or oil, and clean if necessary, then connect the connector securely.

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5. Install the intake air duct and air cleaner housing.

COUNTERSHAFT SPEED SENSOR REPLACEMENT

1. Disconnect the countershaft speed sensor connector, and remove the countershaft speed sensor.

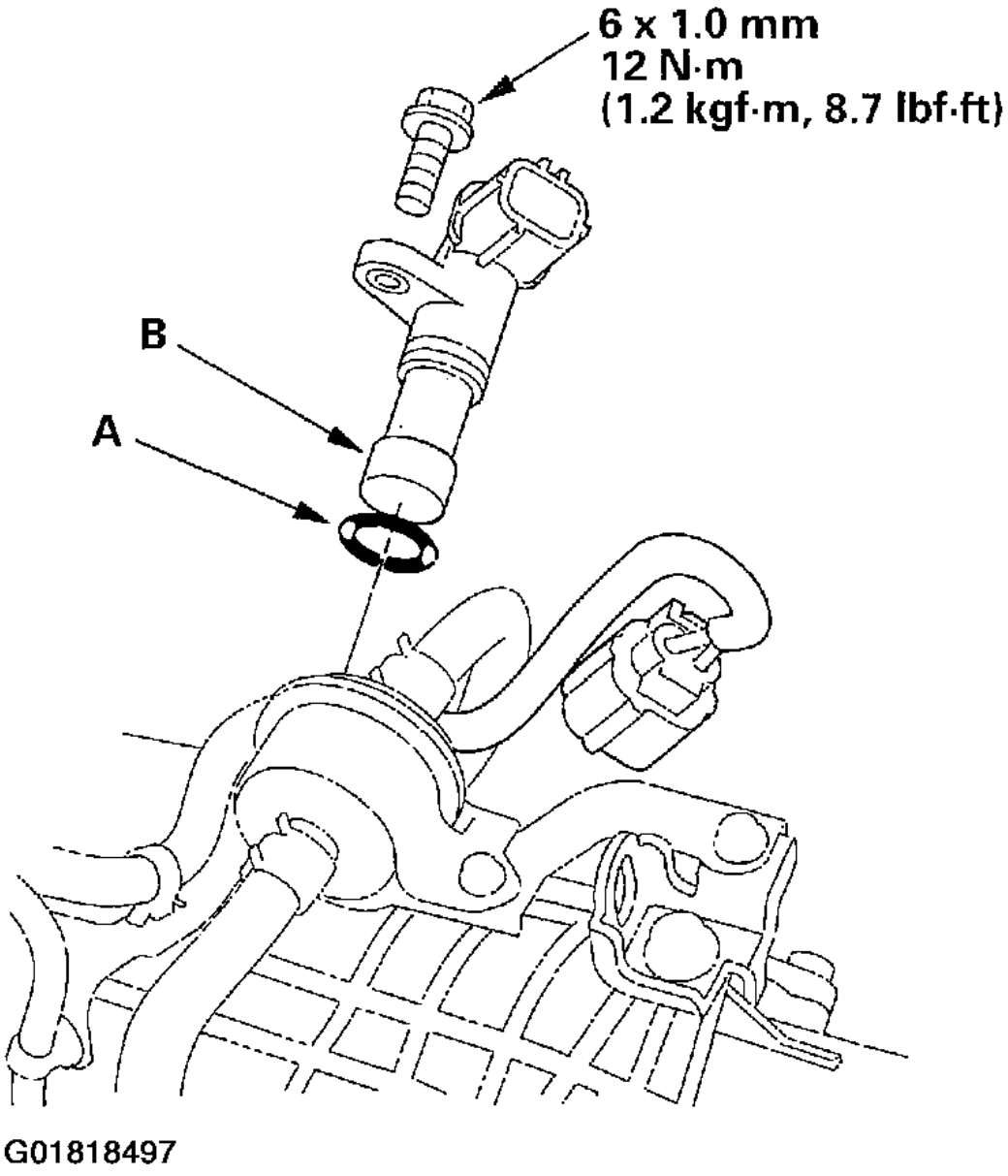


Fig. 241: Removing The Countershaft Speed Sensor

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2. Install the new O-ring (A) on the new countershaft speed sensor (B), then install the countershaft speed sensor in the transmission housing.
3. Check the connector for rust, dirt, or oil, and clean if necessary, then connect the connector securely.

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT

1. Remove the intake air duct.
2. Disconnect the connector from the 2nd clutch transmission fluid pressure switch (A), and remove the switch.

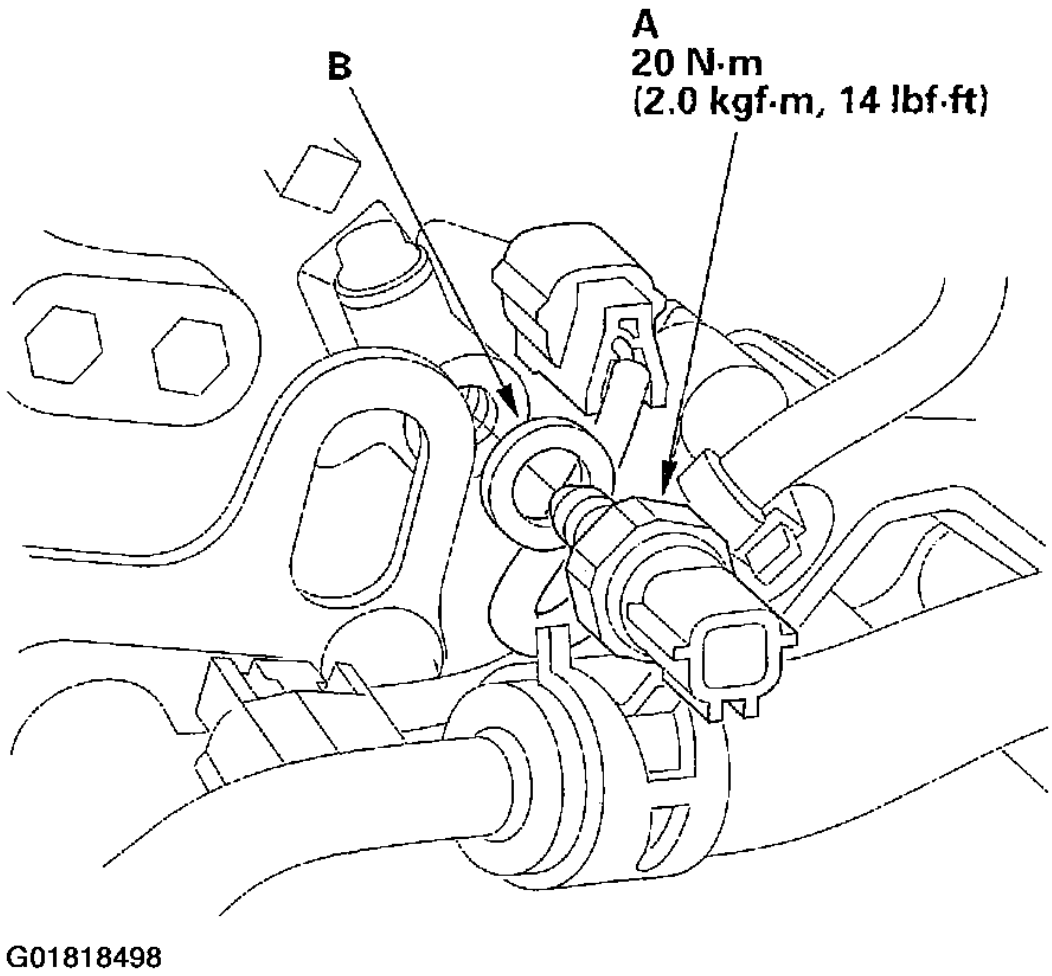


Fig. 242: Removing 2nd Clutch Transmission Fluid Pressure Switch

3. Make sure there is no water, oil, dust, or foreign particles inside the connector.
4. Install the new 2nd clutch transmission fluid pressure switch with a new sealing washer (B), and tighten

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the switch to the specified torque.

5. Connect the connector securely.
6. Install the intake air duct.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT

1. Disconnect the battery negative terminal, then disconnect the battery positive terminal.
2. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
3. Remove the intake air duct and air cleaner housing.
4. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
5. Disconnect the connector from the 3rd clutch transmission fluid pressure switch (A), then remove the switch.

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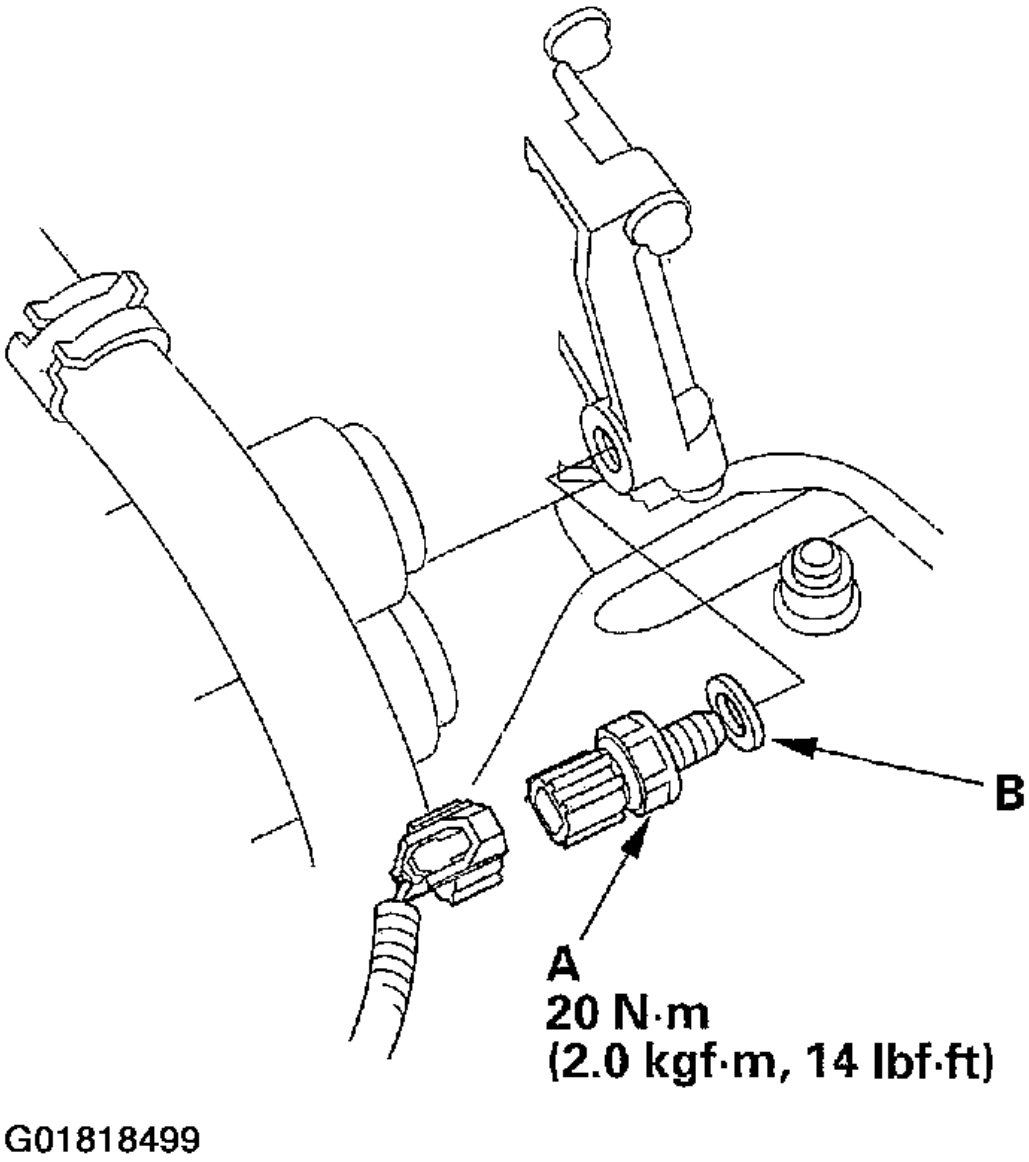


Fig. 243: Removing 3rd Clutch Transmission Fluid Pressure Switch

6. Make sure there is no water, oil, dust, or foreign particles inside the connector.
7. Install the 3rd clutch new transmission fluid pressure switch with a new sealing washer (B), and tighten the switch to the specified torque.
8. Connect the connector securely.
9. Install the battery base, then install the air cleaner housing and intake air duct.
10. Install the battery tray, battery, and battery cover, then secure the battery with its hold-down bracket.

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Connect the battery terminals.

ATF TEMPERATURE SENSOR TEST & REPLACEMENT

1. Remove the splash shield.
2. Remove the drain plug (A), and drain the automatic transmission fluid (ATF). Then reinstall the drain plug with a new sealing washer (B).

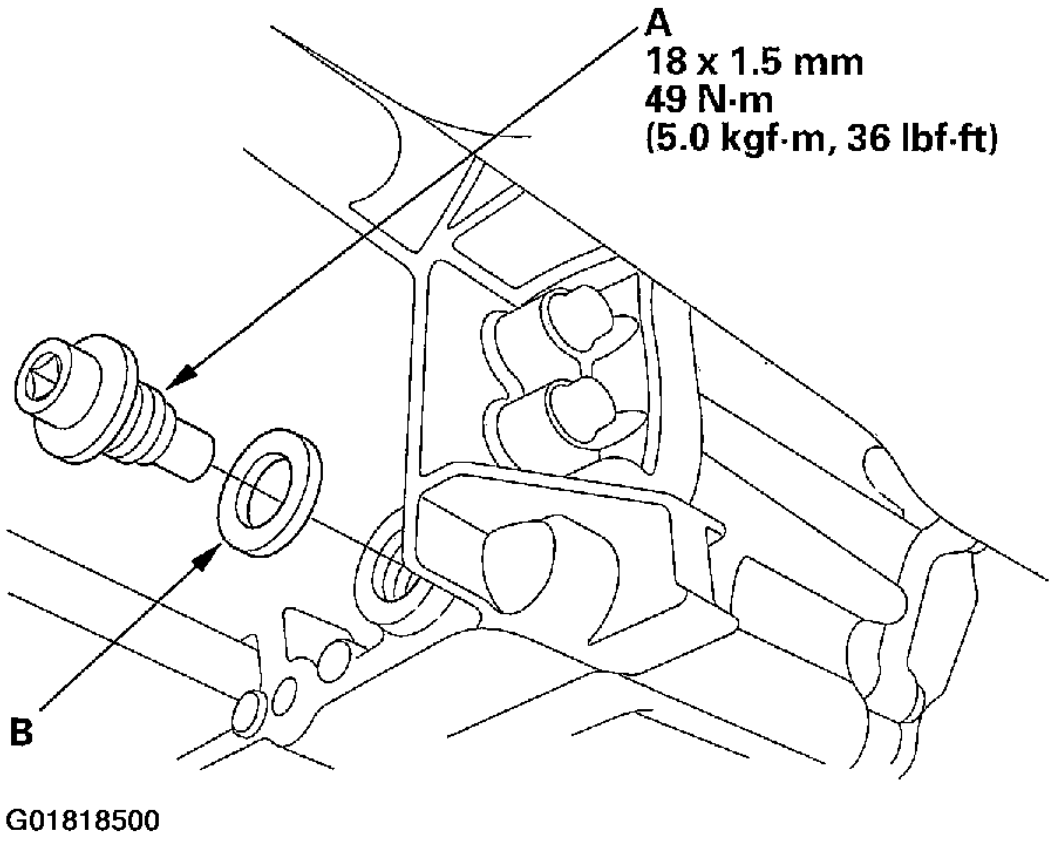


Fig. 244: Removing The Drain Plug

3. Disconnect the battery negative terminal, then disconnect the battery positive terminal.
4. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
5. Remove the intake air duct and air cleaner housing.
6. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
7. Remove the ground cable (A), transmission upper mount bracket (B), and bracket plate (C).

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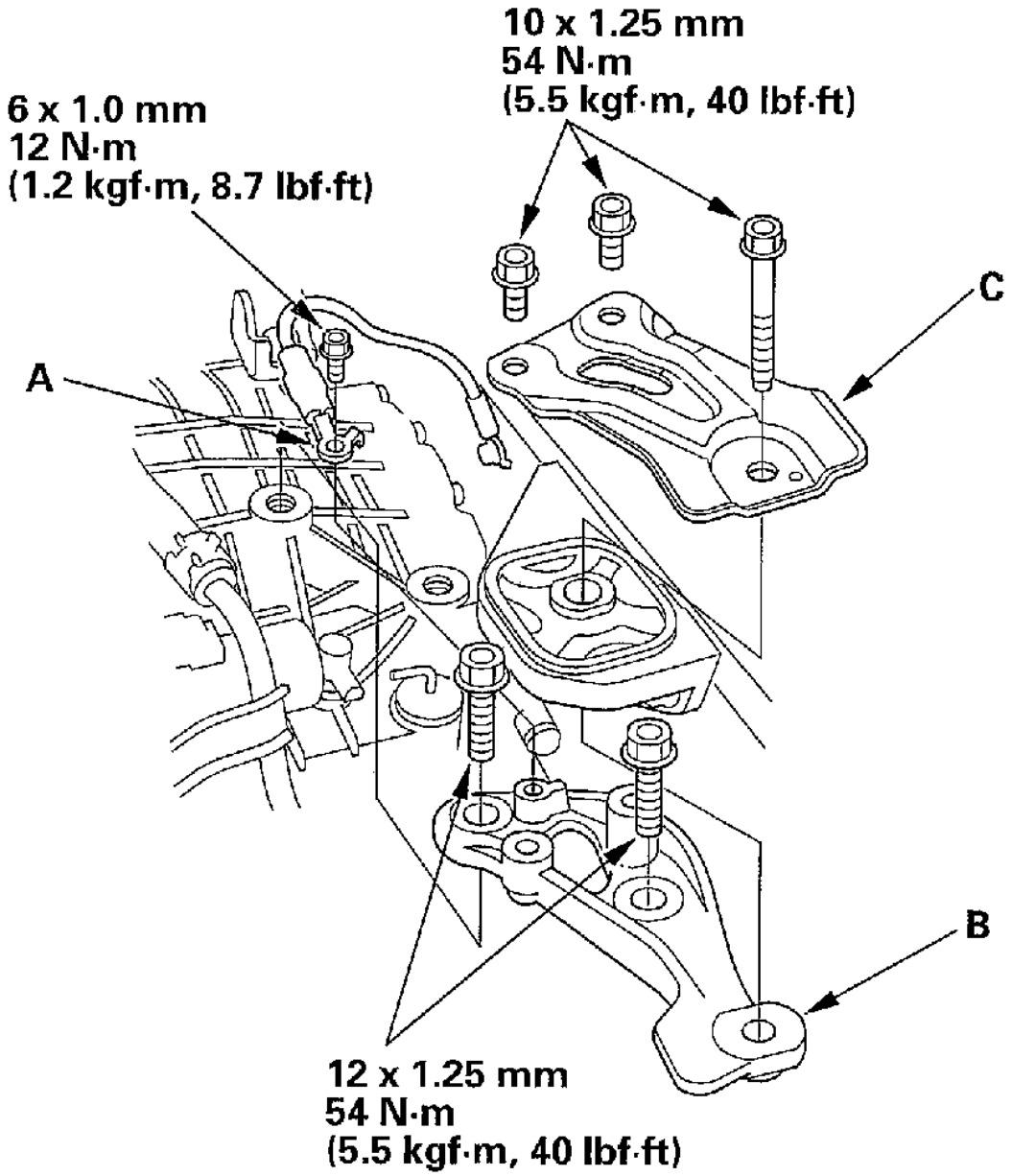


Fig. 245: Removing The Ground Cable, Transmission Upper Mount Bracket & Bracket Plate

8. Place the transmission jack under the transmission, and remove the transmission lower mount nuts.

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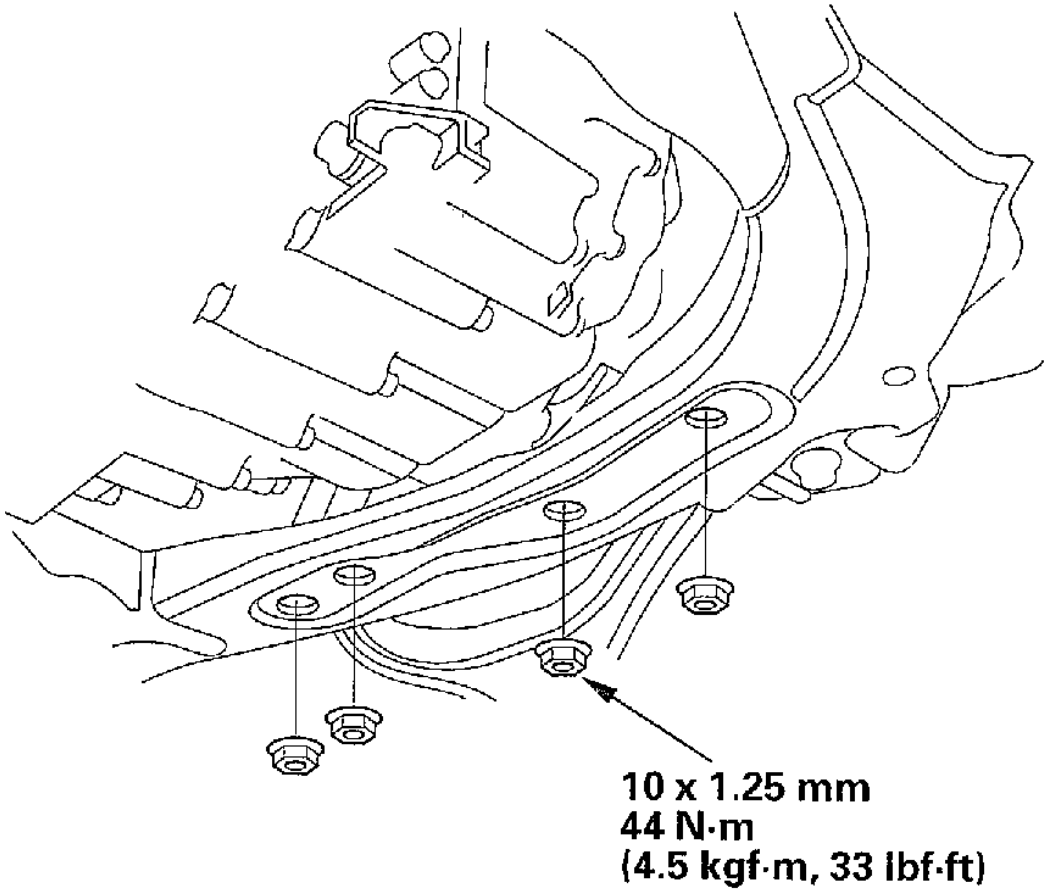


Fig. 246: Removing The Transmission Lower Mount Nuts

9. Lift the transmission up to create clearance between the transmission and front subframe with the jack.
10. Remove the ATF dipstick, and remove the bolts securing the ATF cooler inlet line brackets (A) and ATF dipstick guide pipe (B) from the transmission hanger (C).

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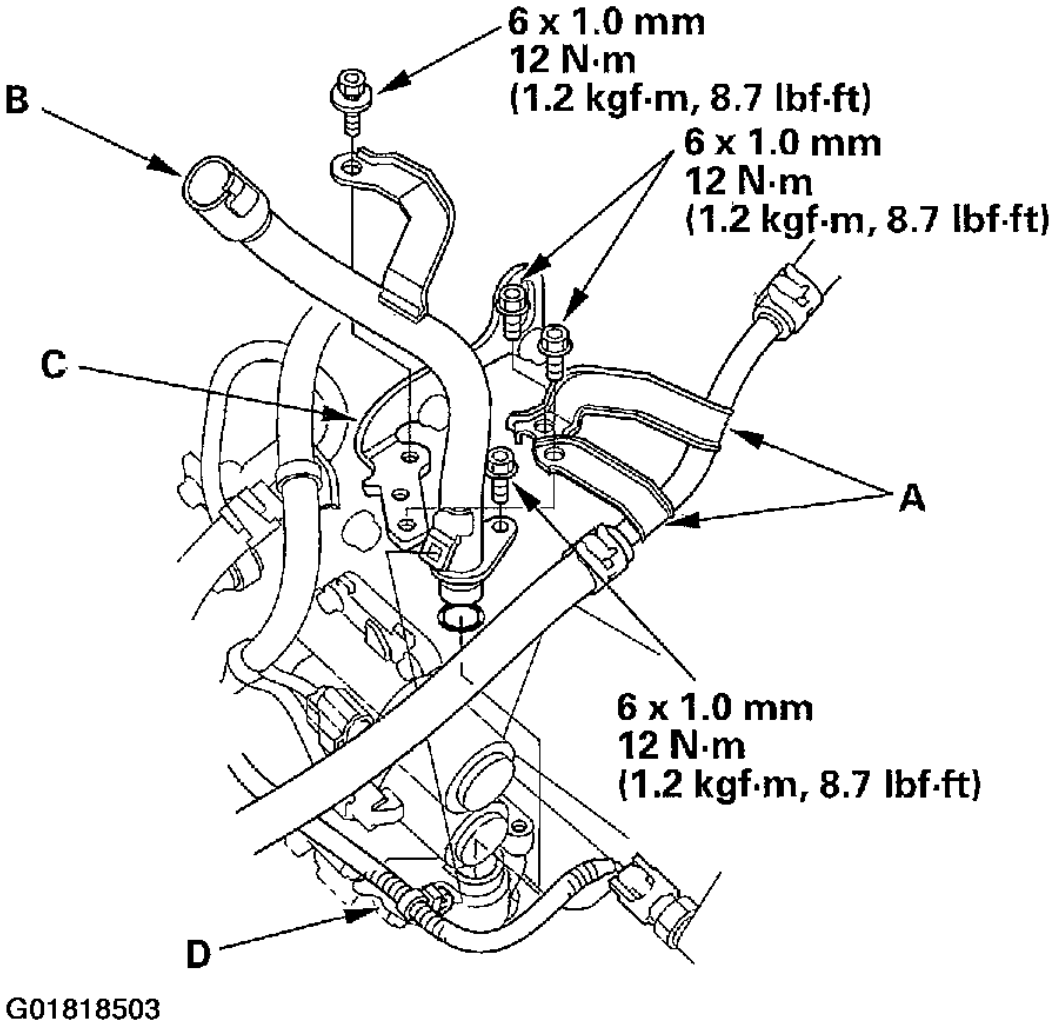


Fig. 247: Removing Components

11. Remove the harness clamp (D), then remove the ATF dipstick guide pipe.
12. Disconnect the shift solenoid harness connector.

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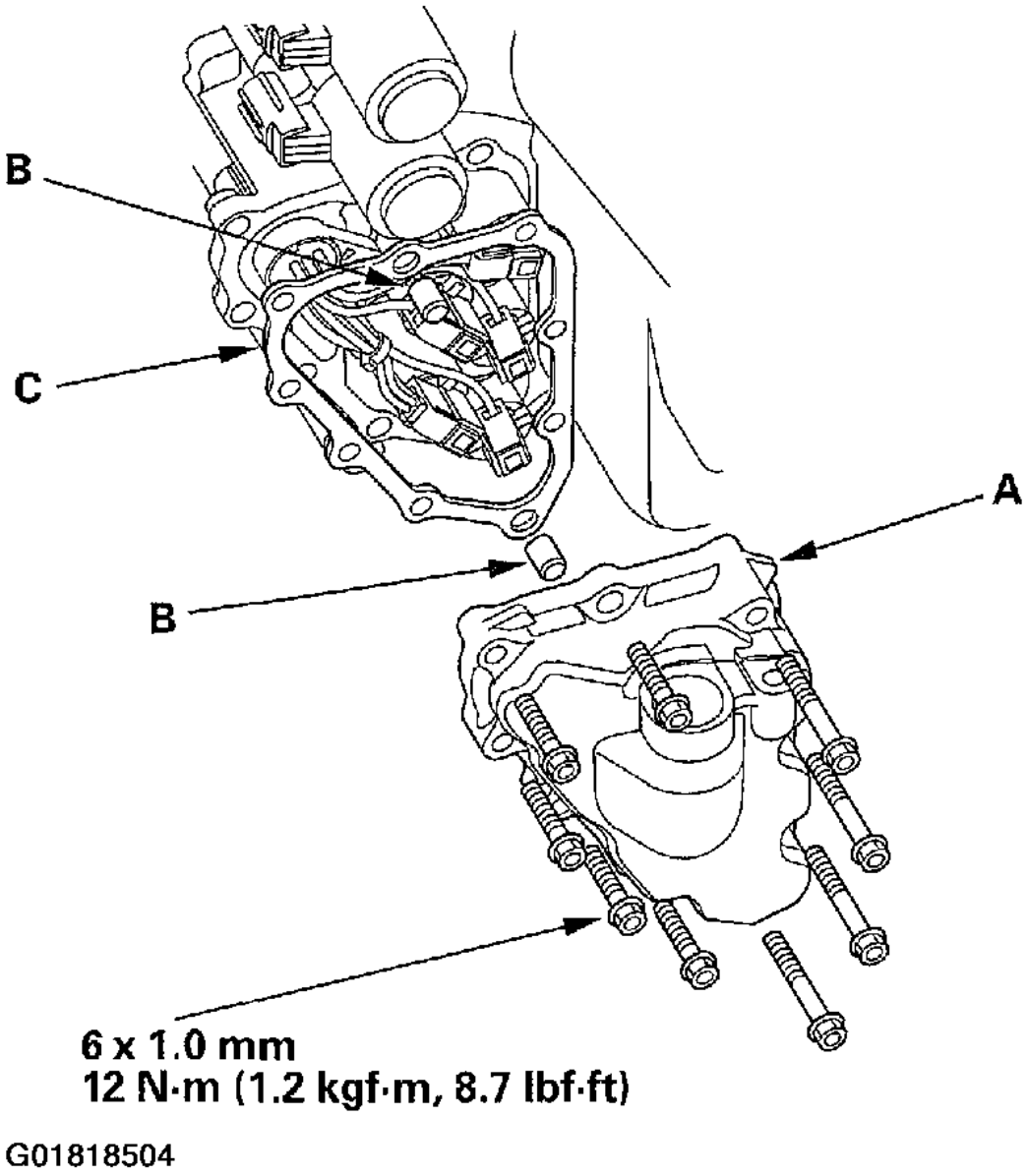


Fig. 248: Removing The Shift Solenoid Valve Cover, Dowel Pins & Gasket

13. Remove the shift solenoid valve cover (A), dowel pins (B), and gasket (C).
14. Remove the shift solenoid harness connector.

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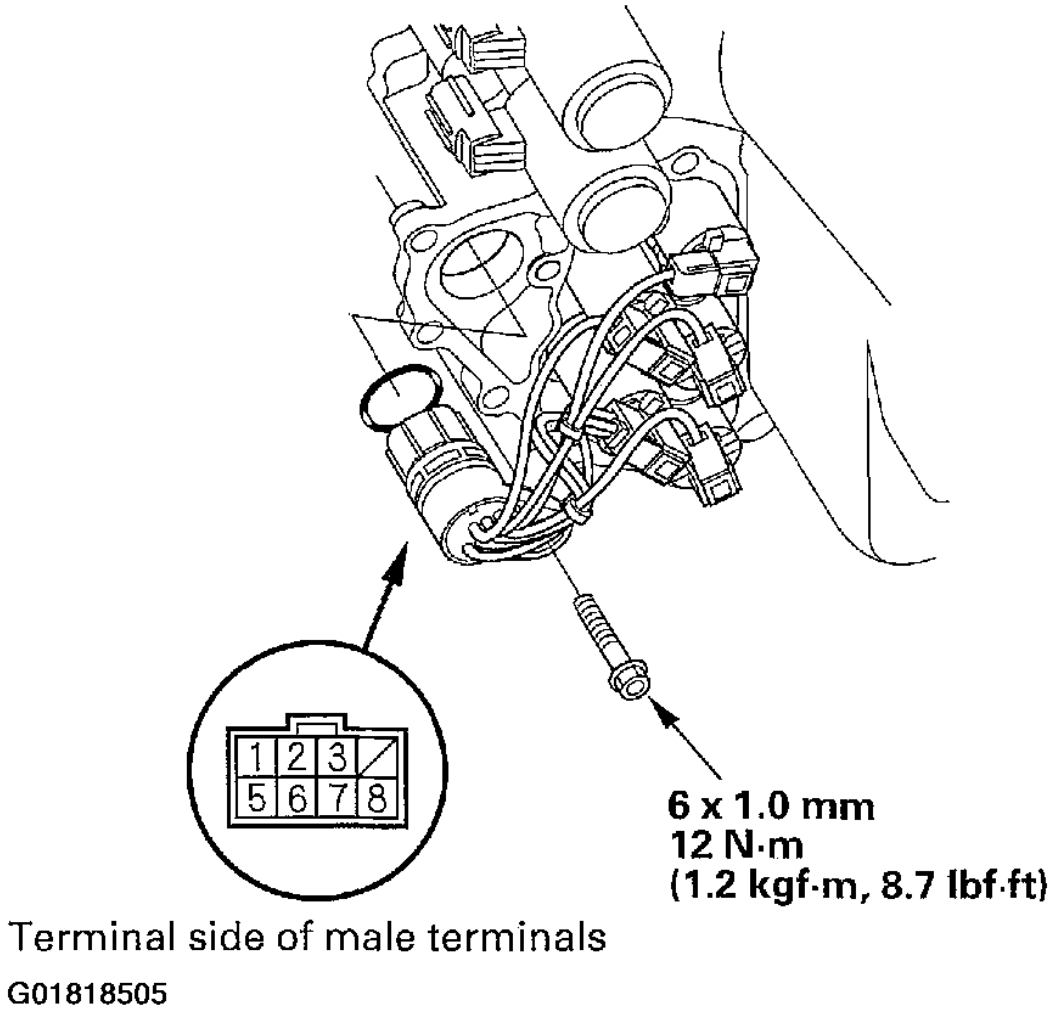


Fig. 249: Removing The Shift Solenoid Harness Connector & Identifying Terminals

15. Measure ATF temperature sensor resistance between shift solenoid harness connector terminals No. 6 and No. 7.

    Standard: 50-25k ohm

16. If the resistance is out of standard, replace the ATF temperature sensor and solenoid harness; go to step 17. The ATF temperature sensor is not available separately from the solenoid harness. If the measurement is within the standard, install the removed parts; go to step 20 .
17. Disconnect the connectors from the shift solenoid valves.
18. Connect the shift solenoid valve D connector with the ATF temperature sensor (F) on the shift solenoid harness.

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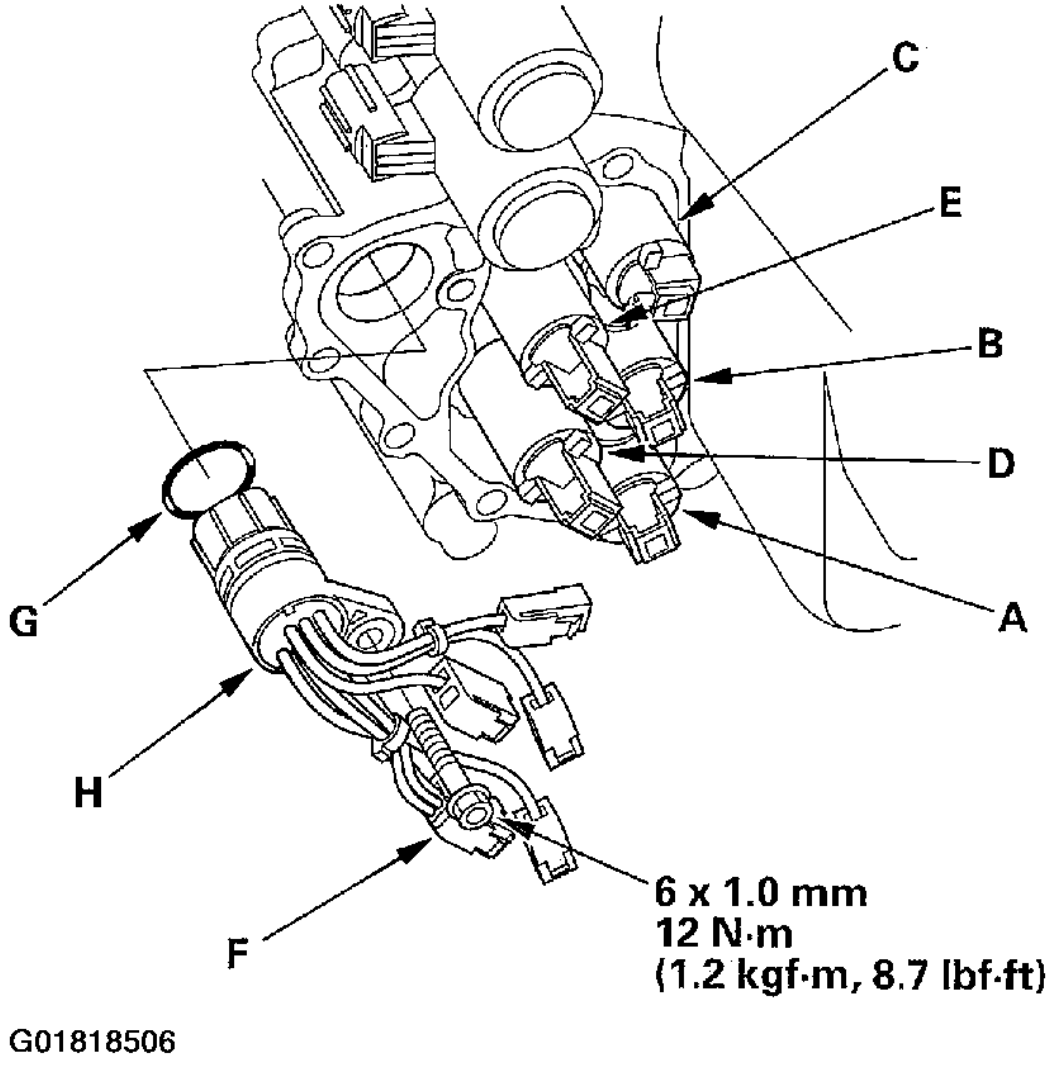


Fig. 250: Disconnecting The Connectors From The Shift Solenoid Valves

19. Connect the solenoid valve A connector (BLU wire), solenoid valve B connector (ORN wire), solenoid valve C connector (GRN wire), and solenoid valve E connector (RED wire).
20. Install the new O-ring (G) on the shift solenoid harness connector (H), and install the connector in the transmission housing.
21. Install the shift solenoid valve cover, dowel pins and a new gasket.
22. Install the new O-ring on the ATF dipstick guide pipe, and install the ATF dipstick guide pipe, then install the harness clamp on the ATF dipstick guide pipe.
23. Secure the ATF cooler line brackets on the transmission hanger with the bolts.
24. Check the connector for rust, dirt, or oil, and clean if necessary, then connect the connector securely.

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25. Install the transmission lower mount nuts.
26. Install the transmission upper mount bracket, bracket plate, and ground cable, then remove the transmission jack.
27. Refill the transmission with ATF (see step 4 on **DRAINING & REFILLING**).
28. Install the battery base, then install the air cleaner housing and intake air duct.
29. Install the battery tray, battery, and battery cover, then secure the battery with its hold-down bracket. Connect the battery terminals.
30. Install the splash shield.

TRANSMISSION GEAR SELECTION SWITCH TEST

1. Remove the center console cover (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Disconnect transmission gear selection switch/park pin switch connector.

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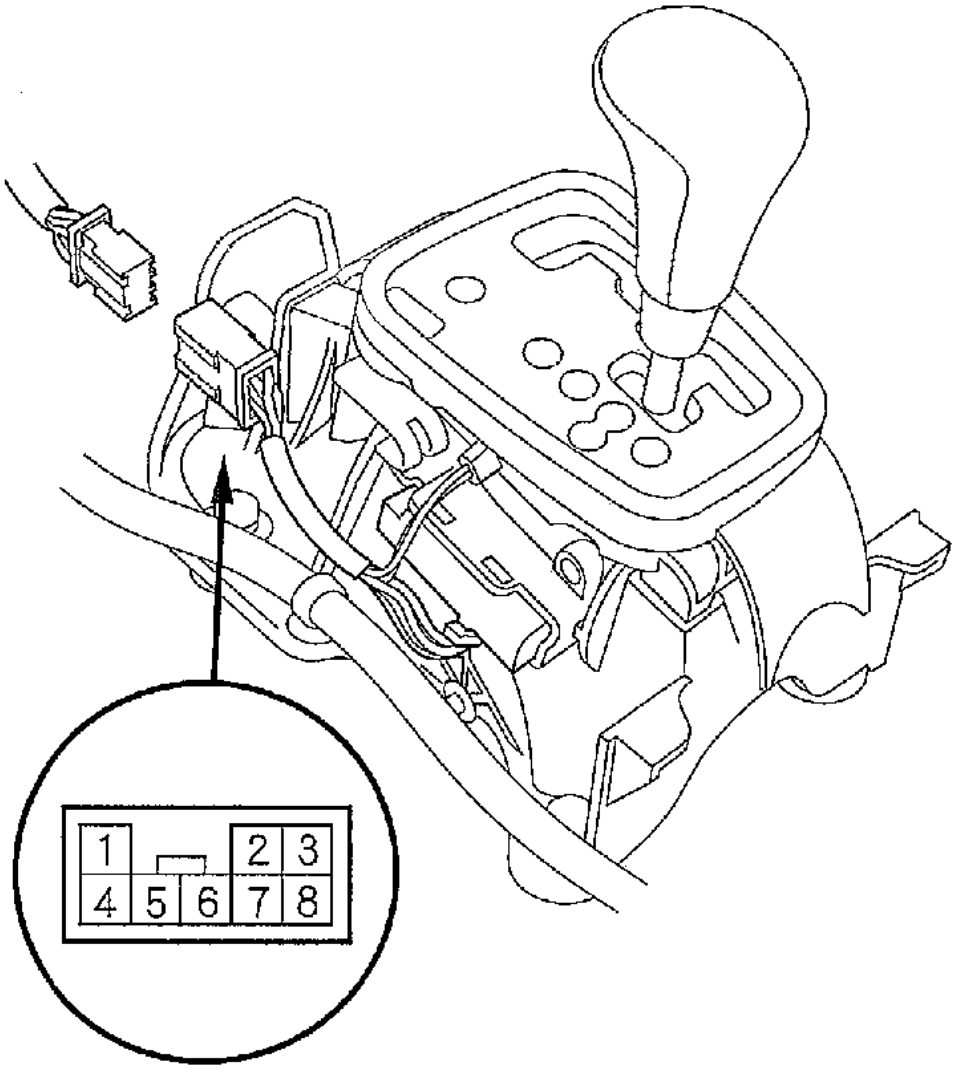


Fig. 251: Disconnecting Transmission Gear Selection Switch/Park Pin Switch Connector

3. Check for continuity between connector terminals No. 3 and No. 2. There should be continuity when shift lever in **M** position, and no continuity when shift lever in any position other than **M** .
4. Check for continuity between connector terminals No. 7 and No. 2. There should be continuity when shift lever pushed toward to upshift position (+), and no continuity with released shift lever to neutral position.
5. Check for continuity between connector terminals No. 8 and No. 2.
6. There should be continuity when shift lever pulled toward to downshift position (-), and no continuity

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with released shift lever to neutral position.

7. Replace the transmission gear selection switch/park pin switch assembly if the switch test was failed.

TRANSMISSION GEAR SELECTION SWITCH REPLACEMENT

1. Remove the shift lever assembly (see **SHIFT LEVER**).
2. Disconnect transmission gear selection switch/park pin switch connector (A), then remove the connector from the shift lever bracket base.

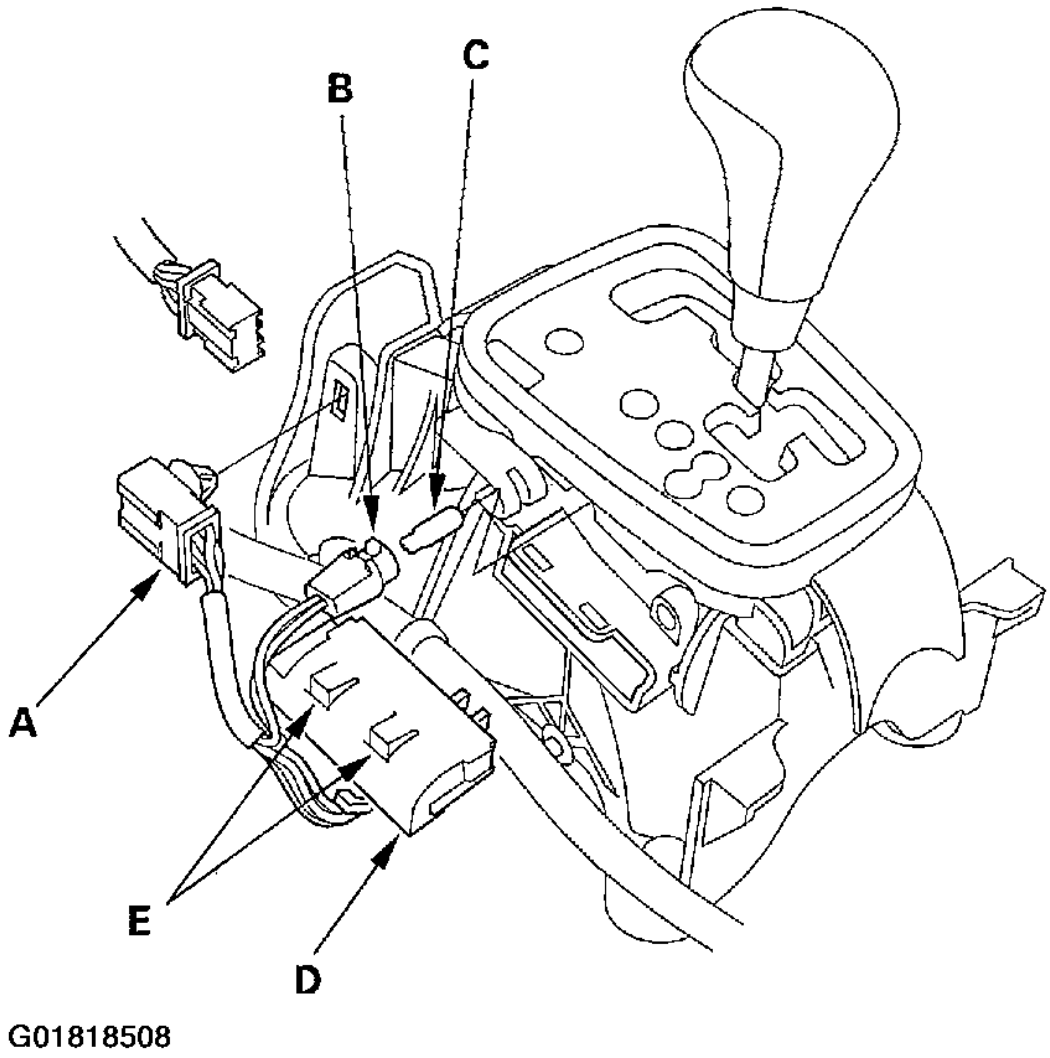


Fig. 252: Disconnecting Transmission Gear Selection Switch/Park Pin Switch Connector

3. Remove the A/T gear position indicator panel light bulb socket (B), then remove the bulb (C) from the

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socket.

4. Remove the transmission gear selection switch/park pin switch (D) by releasing the lock tabs (E).
5. Install the new switch assembly in the shift lever bracket base.
6. Install the bulb in the socket, then install the socket in the bracket base.
7. Install the switch connector on the bracket base, then connect the connector.
8. Install the shift lever assembly (see **SHIFT LEVER**).

A/T GEAR POSITION INDICATOR

COMPONENT LOCATION INDEX

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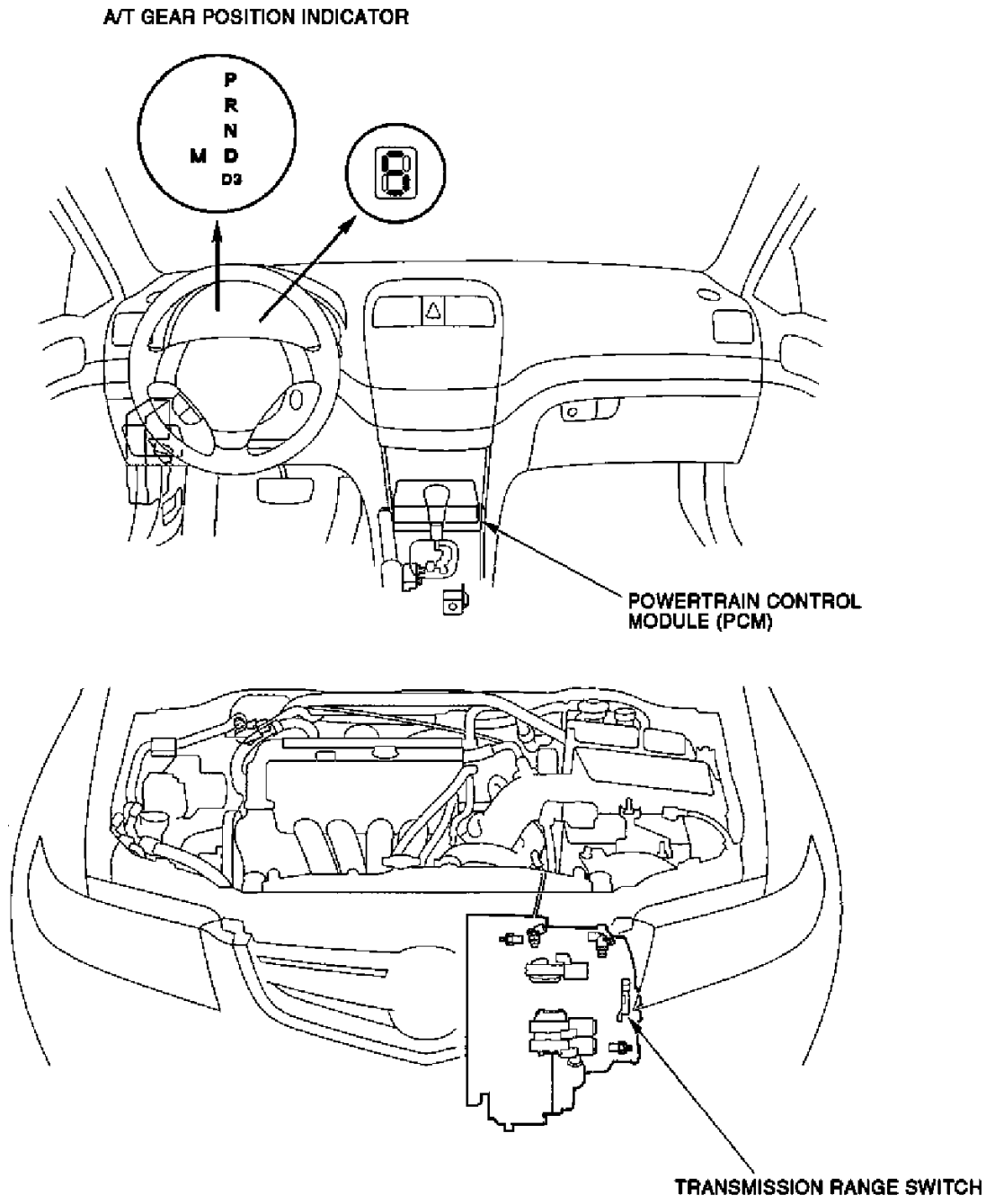


Fig. 253: Locating A/T Gear Position Indicator Components

CIRCUIT DIAGRAM

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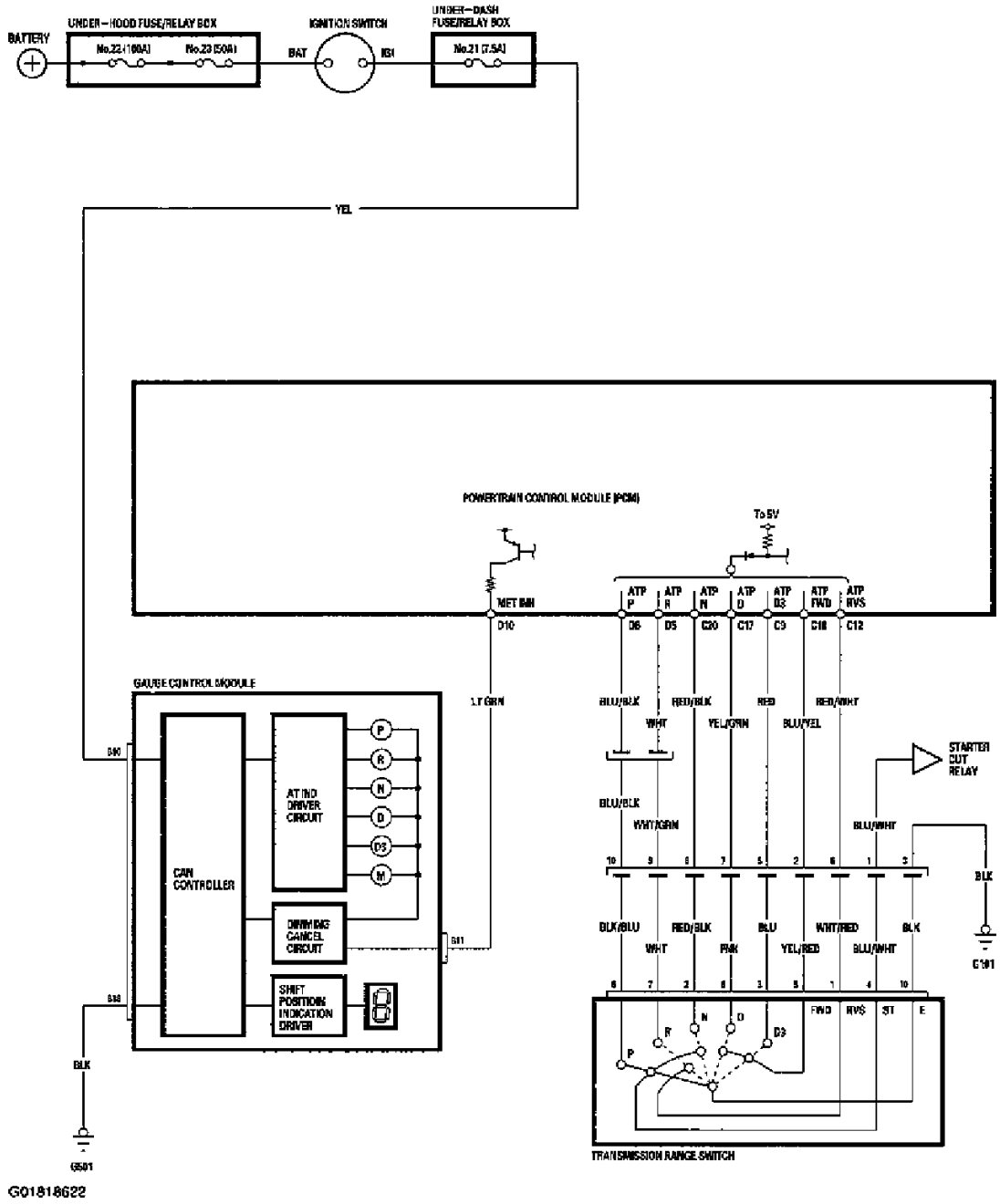


Fig. 254: A/T Gear Position Indicator Wiring Diagrams

A/T GEAR POSITION INDICATOR CIRCUIT TROUBLESHOOTING

Symptom: A/T gear position indicator does not indicate the shift lever position, the D indicator does not blink, and no transmission range switch DTCs are indicated.

1. Turn the ignition switch ON (II).

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2. Measure the voltage between gauge control module connector terminal B11 and body ground. The shift lever can be in any position.

Is there battery voltage?

YES: Faulty A/T gear position indicator in the gauge control module, replace the gauge control module.

NO: Go to step 3.

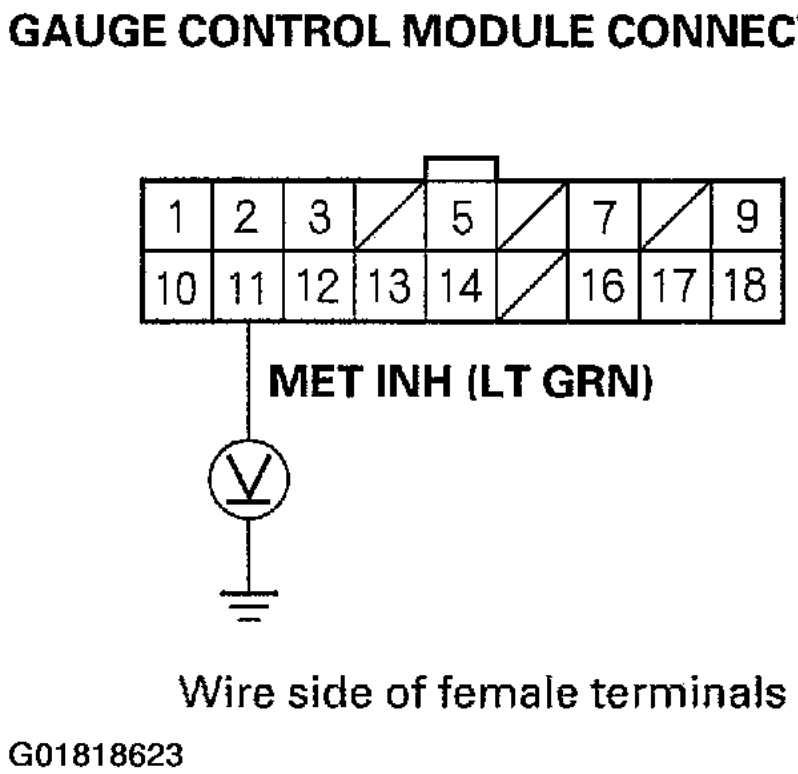


Fig. 255: Measuring The Voltage Between Gauge Control Module Connector Terminal B11 & Body Ground

3. Measure the voltage between PCM connector terminal D10 and body ground.

Is there battery voltage?

YES: Repair open or short in the wire between PCM connector terminal D10 and the gauge control module connector terminal B11.

NO: Check for loose terminal fit in the PCM connectors. Check the LT GRN wire for a short to ground between the gauge control module and PCM. If necessary, substitute a known-good PCM and recheck.

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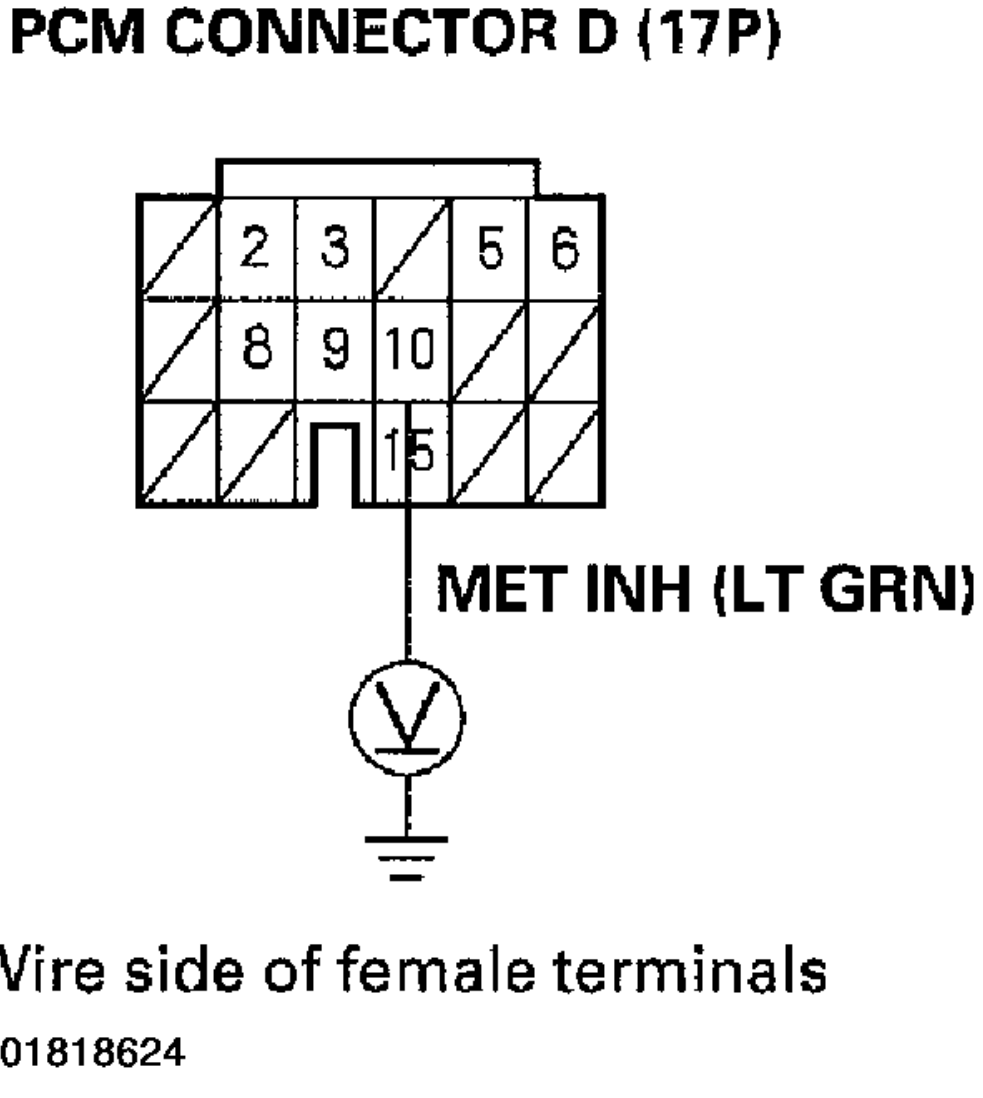


Fig. 256: Measuring The Voltage Between PCM Connector Terminal D10 & Body Ground

TRANSMISSION RANGE SWITCH TEST

1. Remove the transmission range switch harness connector (A) from the connector bracket (B), then disconnect the connector.

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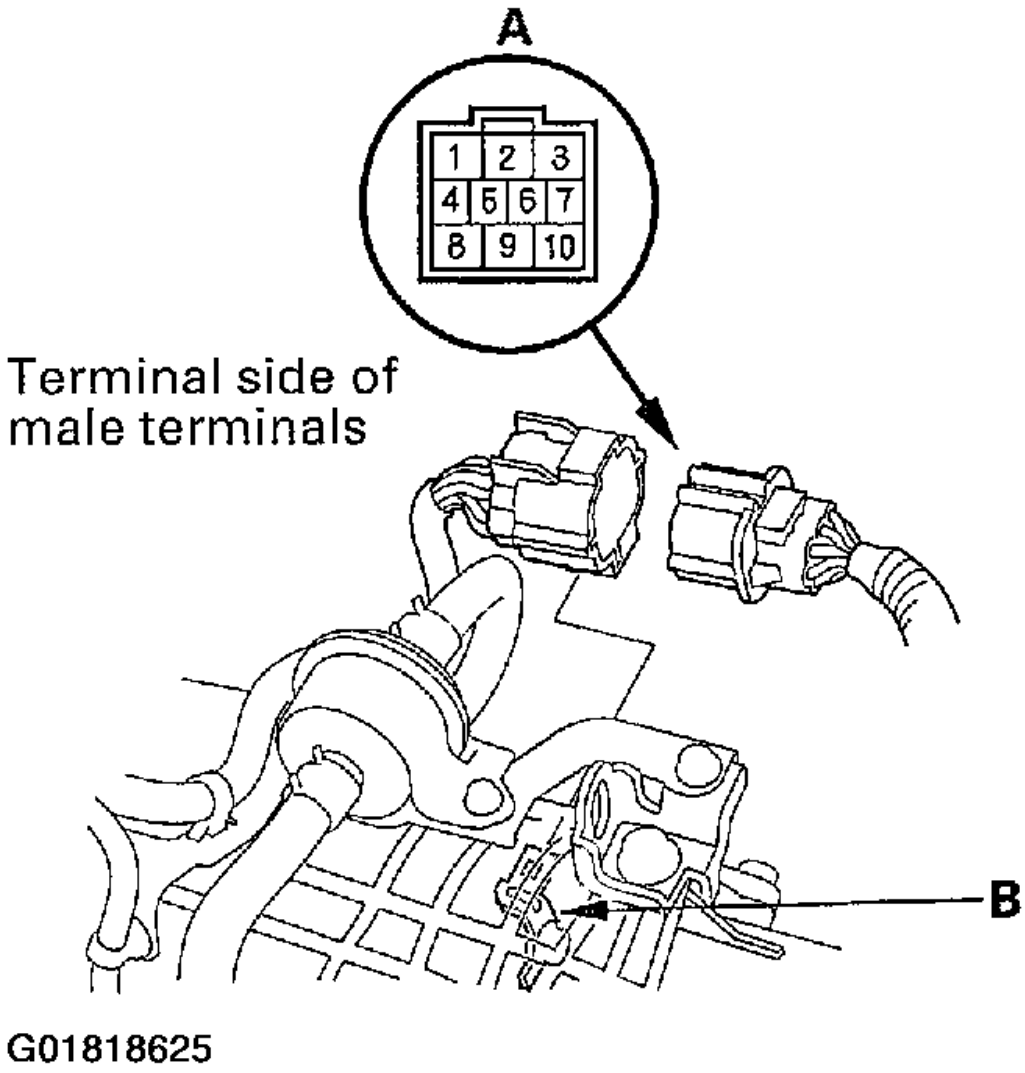


Fig. 257: Removing The Transmission Range Switch Harness Connector From The Connector Bracket

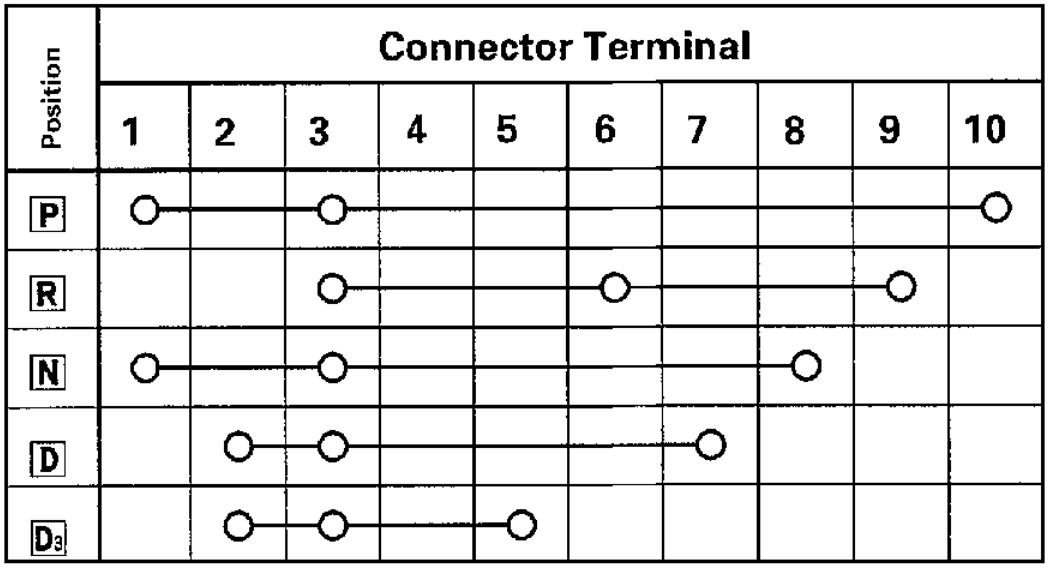
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Terminal	Signal	Terminal	Signal
1	ATP NP (ST)	6	ATP RVS
2	ATP FWD	7	D
3	Ground (E)	8	N
4	———	9	R
5	D_3	10	P

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Fig. 258: Transmission Range Switch Harness Connector Terminal Specifications

2. Check for continuity between terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.



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Fig. 259: Transmission Range Switch Harness Connector Continuity Test Table

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3. If there is no continuity between any terminals, remove the transmission range switch cover, and disconnect the connector at the switch.

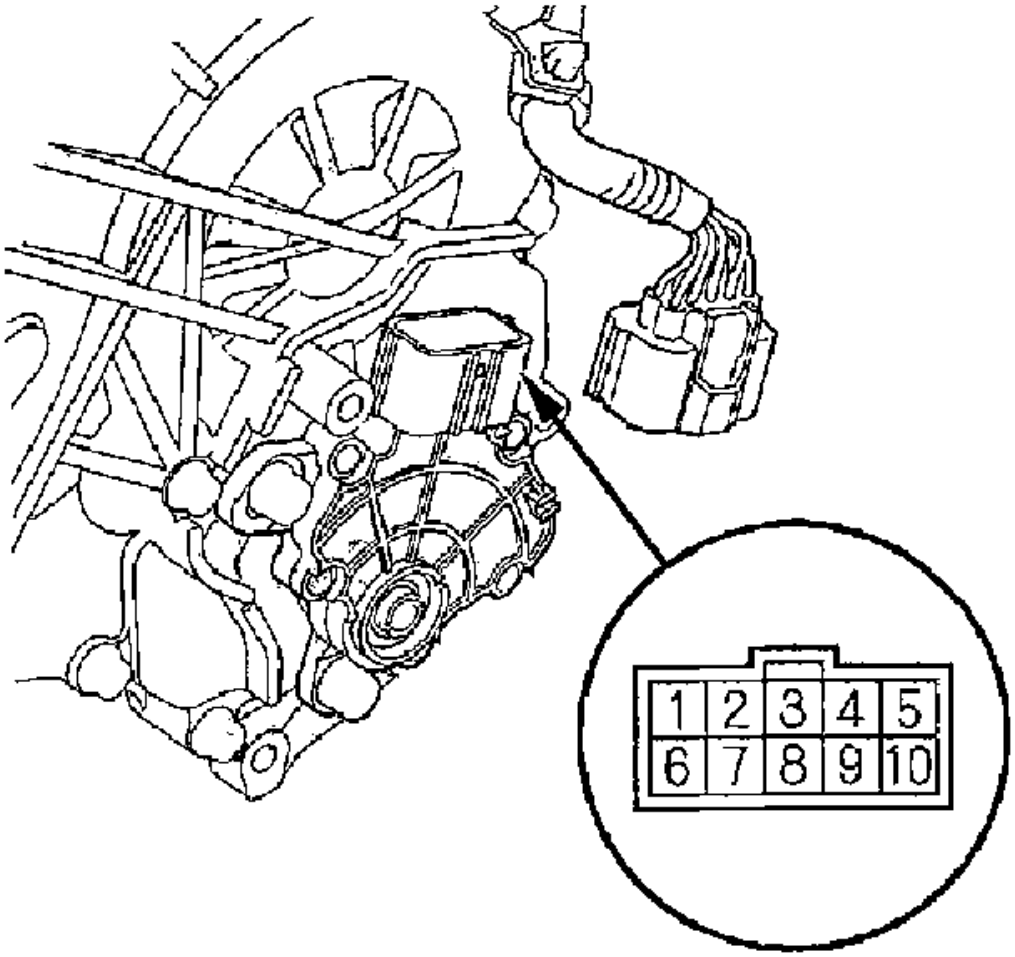


Fig. 260: Identifying Transmission Range Switch Terminals

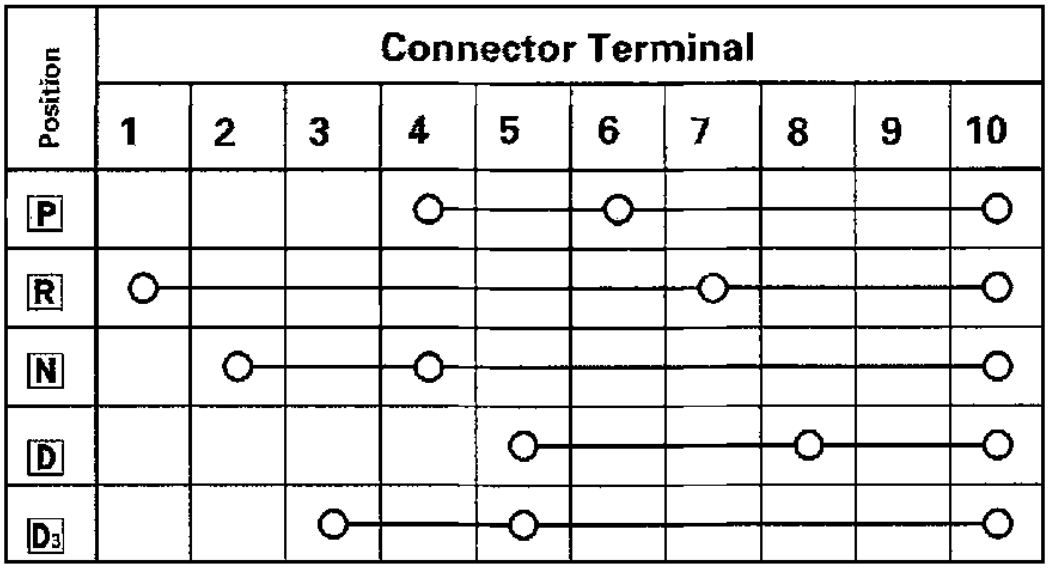
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Terminal	Signal	Terminal	Signal
1	ATP RVS	6	P
2	N	7	R
3	D3	8	D
4	ATP NP (ST)	9	———
5	ATP FWD	10	Ground (E)

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Fig. 261: Transmission Range Switch Terminal Specifications

4. Check for continuity between terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.



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Fig. 262: Transmission Range Switch Continuity Test Table

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5. If the transmission range switch continuity check is OK, replace the faulty transmission range switch harness.
6. If there is no continuity between any terminals, remove the transmission range switch, and check the end of the selector control shaft (A).

   Standard:

   Control Shaft Width (B): 6.1-6.2 mm (0.240-0.244 in.)

   Control Shaft End Gap (C): 1.8-2.0 mm (0.07-0.08 in.)

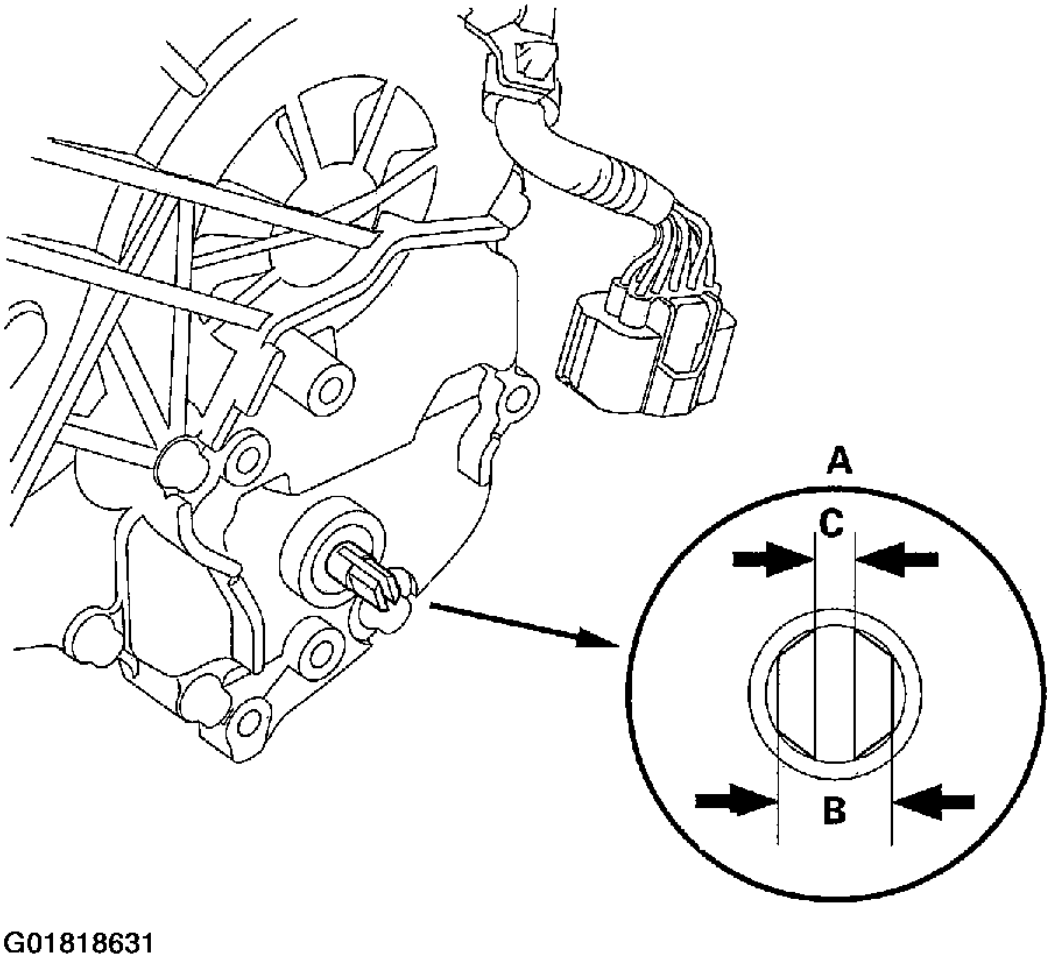


Fig. 263: Checking The End Of The Selector Control Shaft

7. The measurement of the control shaft end is within the standard, replace the transmission range switch. If the measurement is out of the standard, repair the control shaft end, and recheck the transmission range switch continuity.

TRANSMISSION RANGE SWITCH REPLACEMENT

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1. Raise the vehicle, and make sure it is securely supported.
2. Shift to the **N** position.
3. Remove the transmission range switch cover.

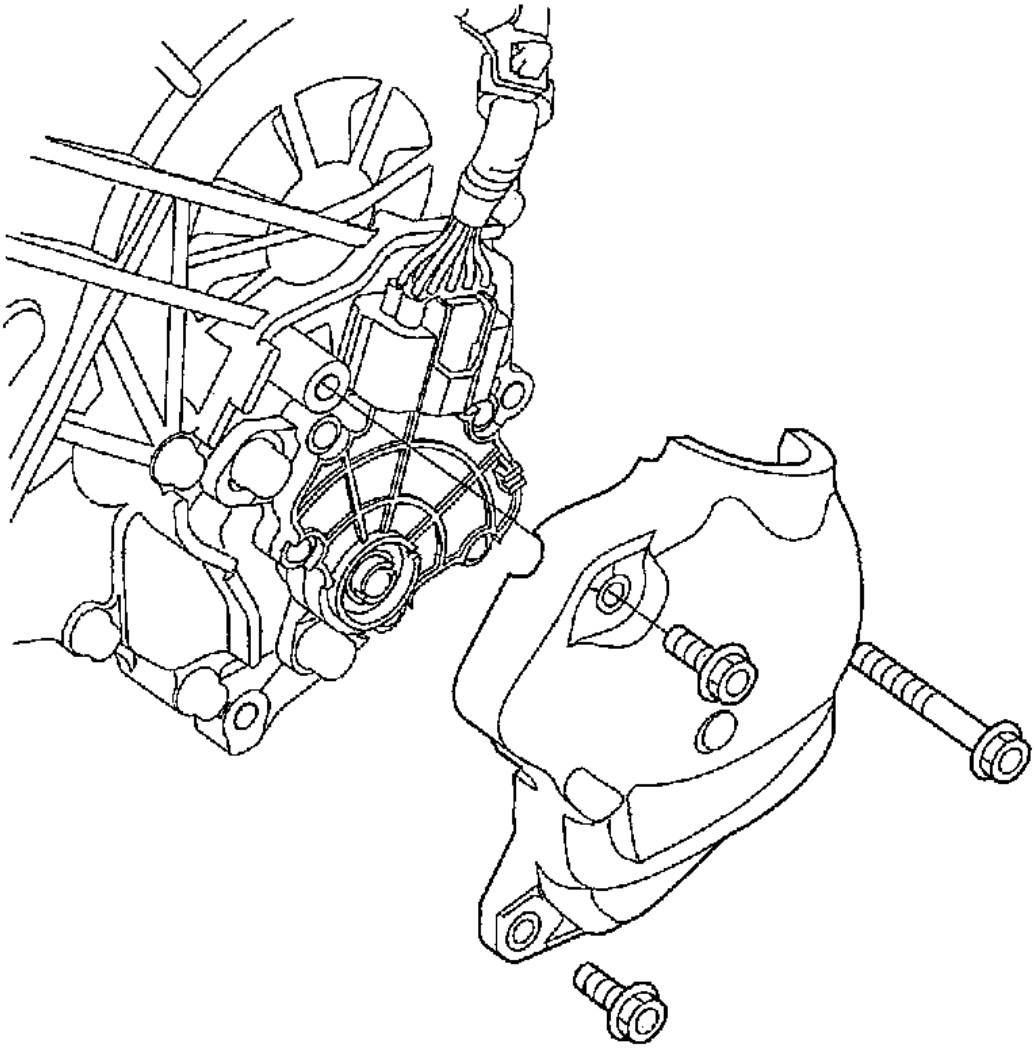


Fig. 264: Removing The Transmission Range Switch Cover

4. Disconnect the transmission range switch connector.

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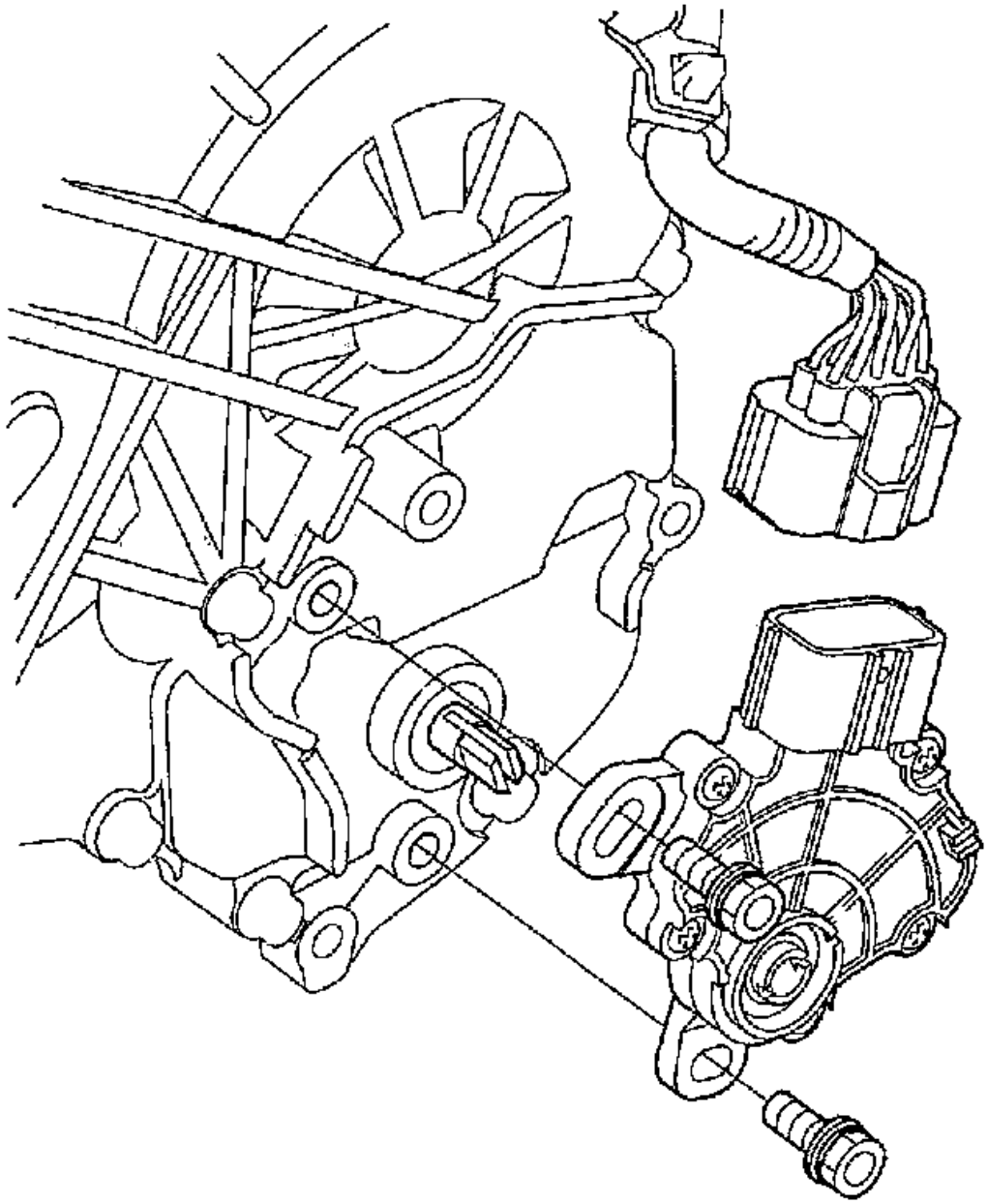


Fig. 265: Disconnecting The Transmission Range Switch Connector

5. Remove the transmission range switch, and install the new switch.
6. Make sure the control shaft is in the **N** position. If necessary, move the shift lever to the **N** position.

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NOTE: **Do not use the control shaft to adjust the shift position. If the control shaft tips are squeezed together it will cause a faulty signal or position due to play between the control shaft and the switch.**

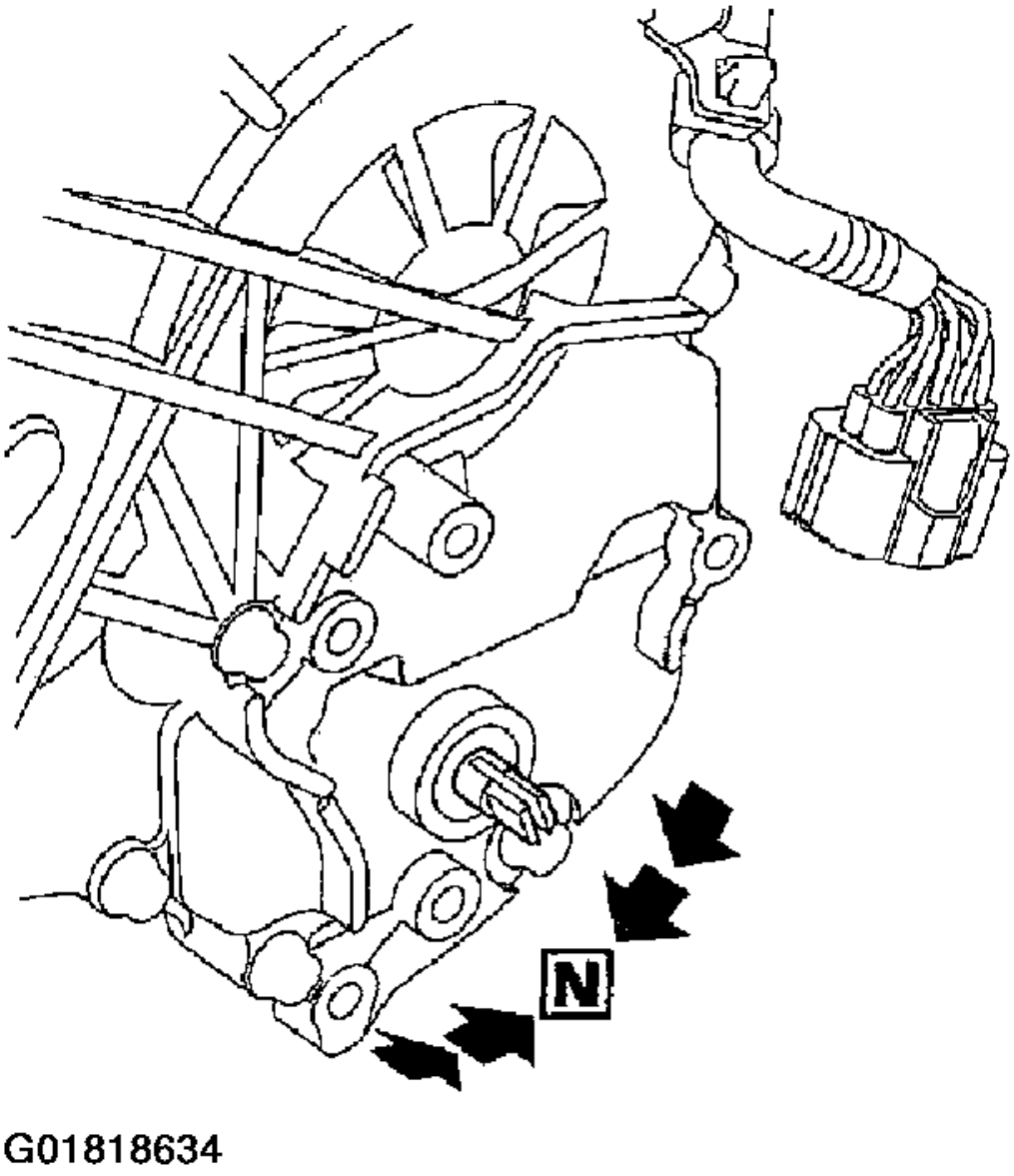


Fig. 266: Moving The Shift Lever To The N Position

7. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in

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the **N** position.

NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.

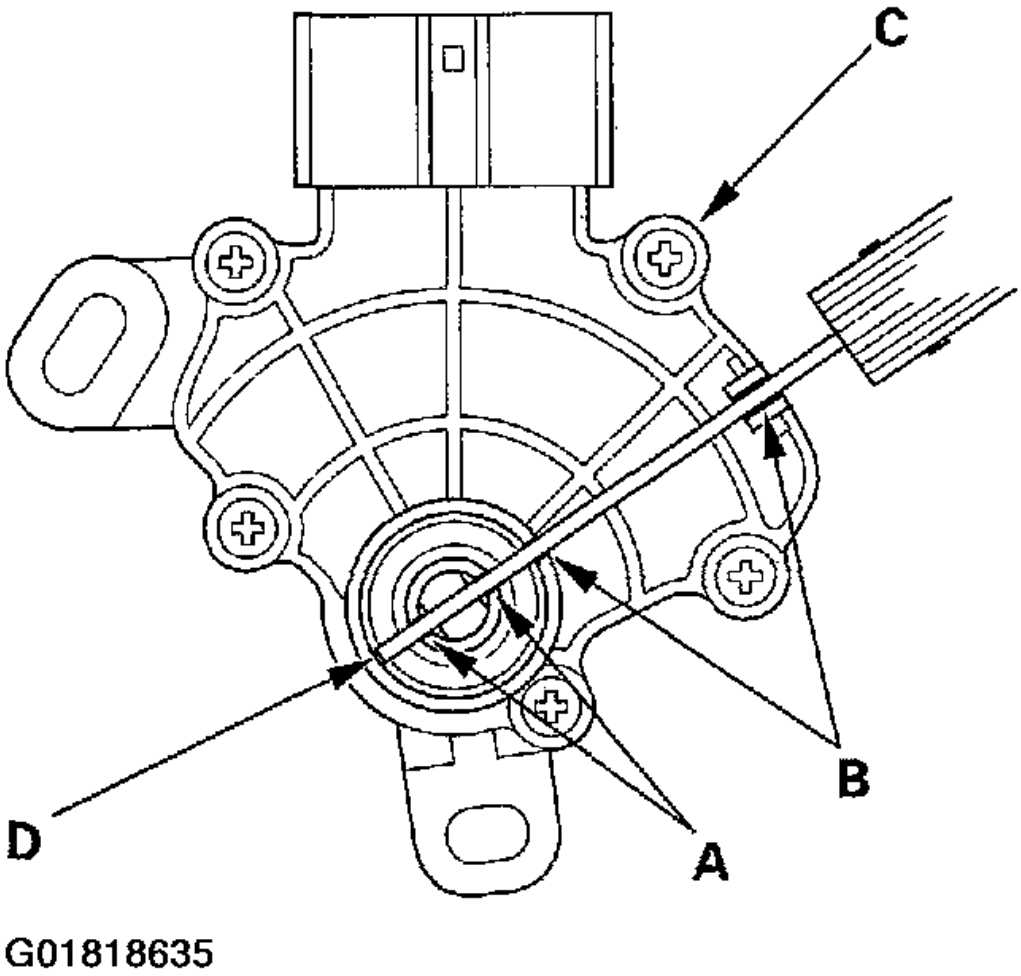


Fig. 267: Aligning The Cutouts On The Rotary-Frame With The Neutral Positioning Cutouts On The Transmission Range Switch

8. Install the transmission range switch (A) gently on the control shaft (B) with holding it in the **N** position with the 2.0 mm (0.08 in.) blade (C).

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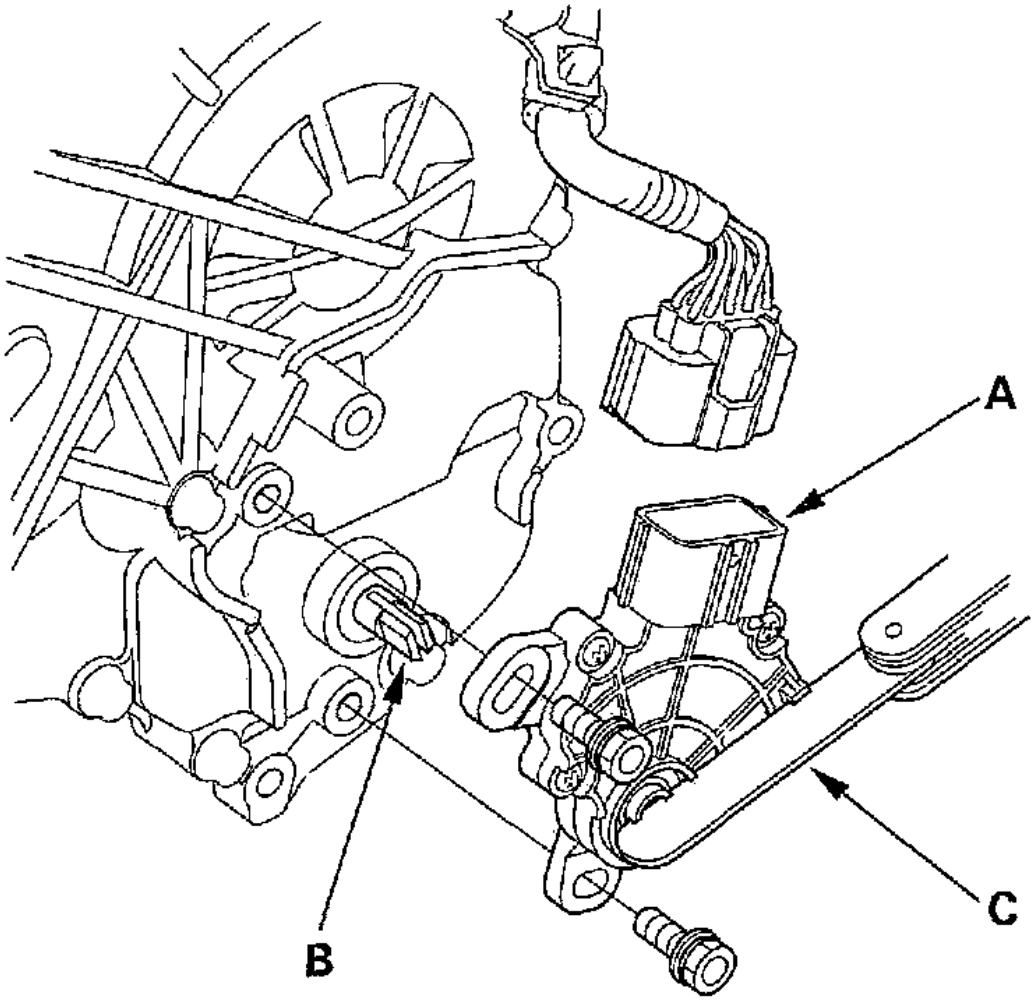


Fig. 268: Installing The Transmission Range Switch On The Control Shaft

9. Tighten the bolts on the transmission range switch while you continue to hold the **N** position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.

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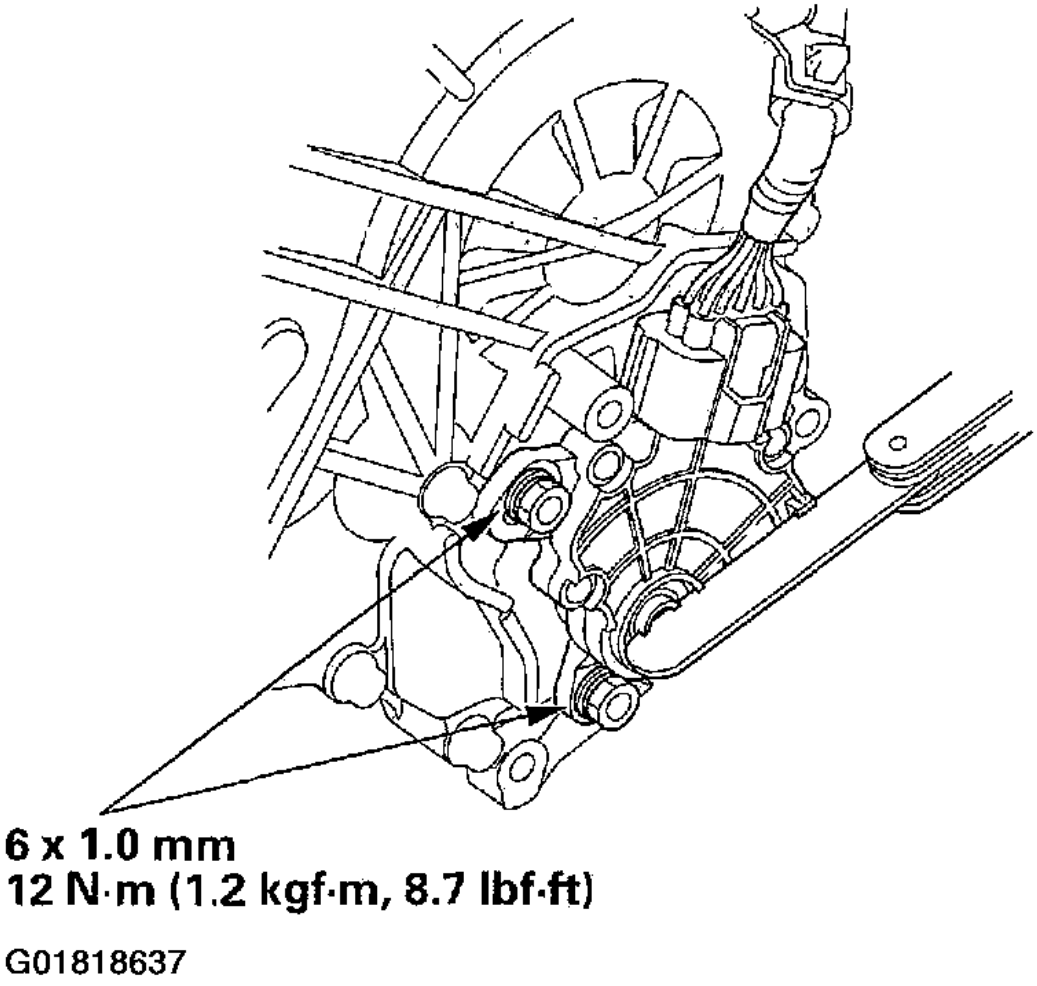


Fig. 269: Tightening The Bolts On The Transmission Range Switch

10. Connect the connector securely, then install the transmission range switch cover (A).

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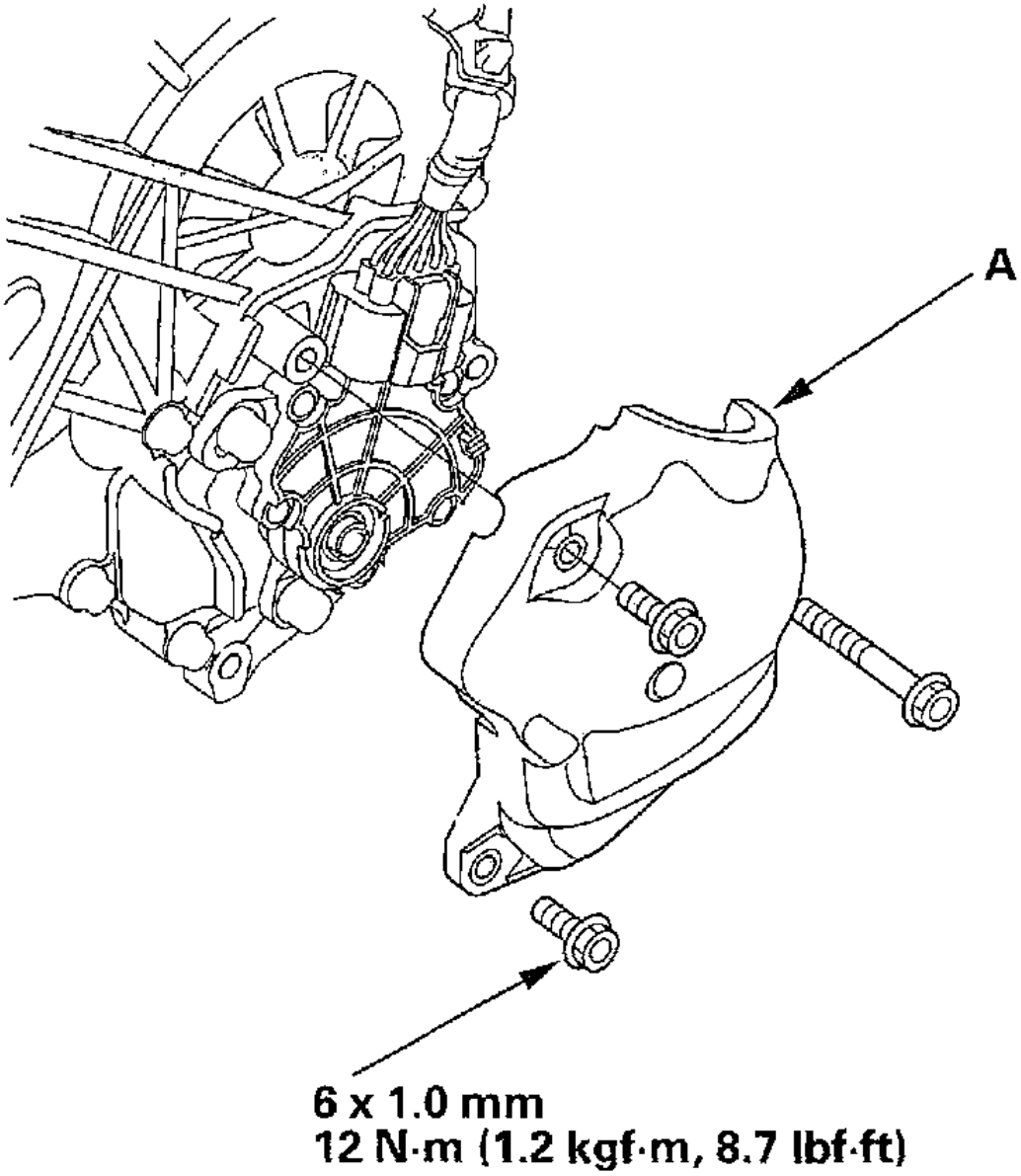


Fig. 270: Installing The Transmission Range Switch Cover

11. Turn the ignition switch ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.
12. Check that the engine will start in **P** and **N** positions, and will not start in any other shift lever position.
13. Check that the back-up lights come on when the shift lever is in **R** position.

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14. Allow the front wheels to rotate freely, then start the engine, and check the shift lever operation.

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2004 BRAKES

Disc - TSX

DESCRIPTION & OPERATION

WARNING: DO NOT use air pressure or a dry brush to clean brake assemblies. Avoid breathing brake dust. Use OSHA-approved vacuum cleaner for cleaning and collecting dust. Avoid contaminating brake pads and discs with brake fluid or grease.

CAUTION: Avoid spilling brake fluid on car, as it will damage paint. If brake fluid contacts paint, immediately flush with water.

The Acura TSX is equipped with front and rear disc brakes. See **Fig. 1** . A cable operates parking brake at rear wheels. A power assist helps reduce the effort needed on the brake pedal. All 4 brakes have audible brake wear indicators. When the brake pads need replacing, you will hear a distinctive metallic "screeching" sound when you apply the brakes. The hydraulic system that operates the brakes has 2 separate circuits. Each circuit works diagonally across the vehicle (the left-front brake is connected with the right-rear brake, etc.). If one circuit should develop a problem, you will still have braking at the opposite two wheels.

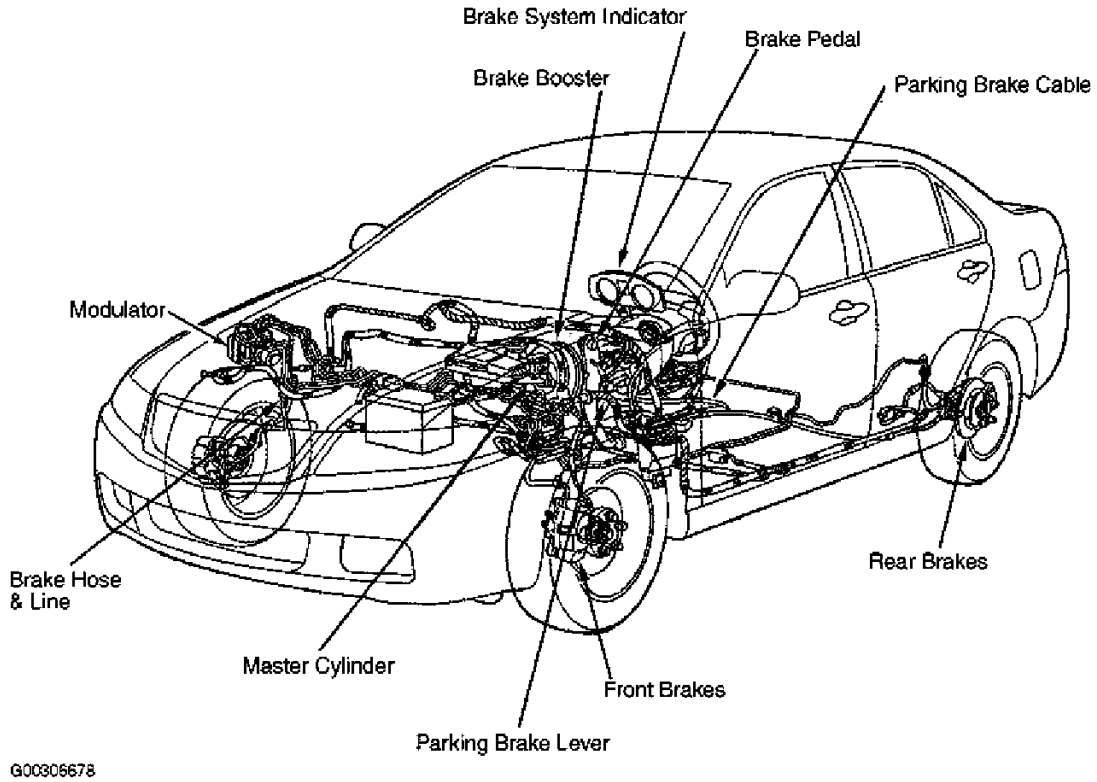


Fig. 1: Locating Brake Components

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Courtesy of AMERICAN HONDA MOTOR CO., INC.

BLEEDING BRAKE SYSTEM

CAUTION: Avoid spilling brake fluid on car, as it will damage paint. If brake fluid contacts paint, immediately flush with water. The brake fluid in the reservoir on the master cylinder must be at the MAX line at the start of the bleeding procedure and checked after bleeding each brake caliper. Add fluid as required. Do not reuse the drained fluid. Always use Genuine Honda DOT 3 brake fluid. Non-Honda brake fluid can cause corrosion and shorten the life of the system. Ensure no dirt or other foreign matter is allowed to contaminate the brake fluid.

CAUTION: DO NOT press brake pedal all the way to the floor. Press brake pedal half-way to avoid damage to master cylinder piston seal. Damage to piston seal can cause internal and/or external leaks.

1. Ensure the brake fluid level in the reservoir is at the MAX line "A". See **Fig. 2** .
2. Slide a piece of clear plastic hose over the first bleed screw, and submerge the other end in a container of new brake fluid. Have assistant slowly pump the brake pedal several times, then apply steady pressure.
3. Loosen the left front brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.
4. Repeat the procedure for each wheel in following sequence until air bubbles no longer appear in the fluid. See **Fig. 3** . See **BRAKELINE BLEEDING SEQUENCE** .
5. Refill the master cylinder reservoir to the MAX line. Road test vehicle and check brake performance.

BRAKELINE BLEEDING SEQUENCE

Application	Sequence
TSX	LF, RF, RR, LR

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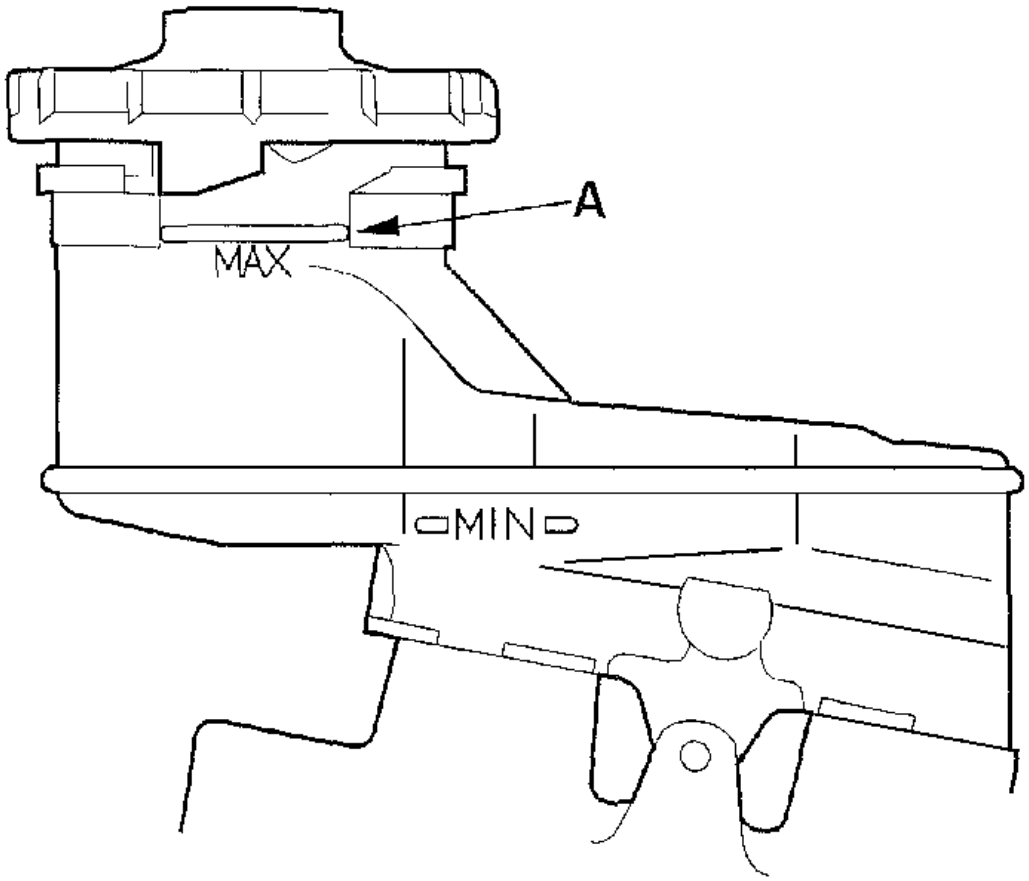


Fig. 2: Identifying Reservoir MAX Line
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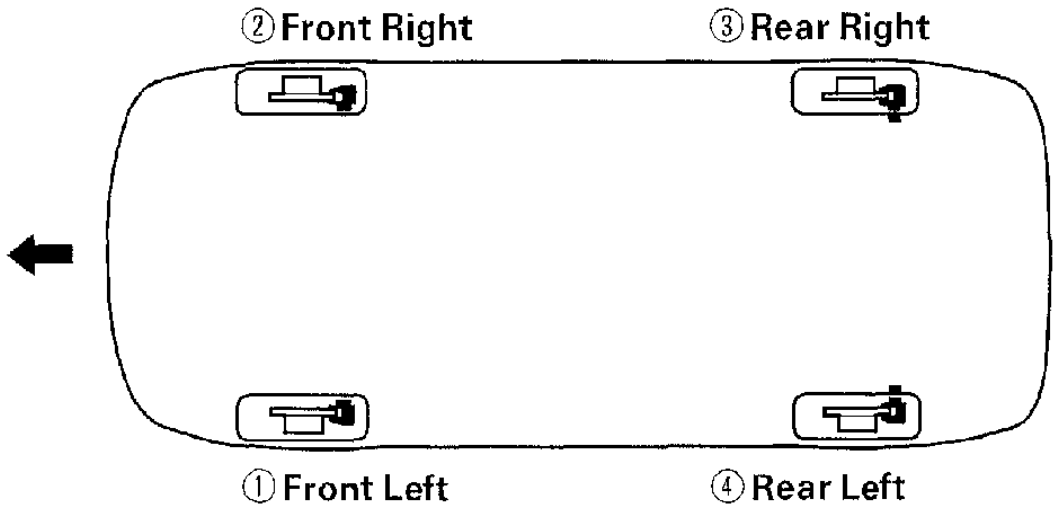


Fig. 3: Brake Bleeding Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ADJUSTMENTS

BRAKE BOOSTER PUSHROD CLEARANCE

NOTE: Brake booster pushrod clearance adjustment procedure is not available from manufacturer.

BRAKE PEDAL HEIGHT & FREE PLAY

NOTE: Brake pedal position switch may also be referred to as brakelight or stoplight switch.

Pedal Height

1. Turn the brake pedal position switch "A" counterclockwise, and pull it back until it is no longer touching the brake pedal. See **Fig. 4** .
2. Lift up the carpet. At the insulator cutout, measure the pedal height "B" from the middle of the left side of the pedal pad "C". Pedal height should be 5.8" (148 mm) on A/T models or 5.7" (144 mm) on M/T models.
3. On all models, loosen the push rod lock nut "A", and screw the pushrod in or out with pliers until the standard pedal height from the floor is reached. See **Fig. 5** . After adjustment, tighten lock nut to specification. See **TORQUE SPECIFICATIONS** . Do not adjust the pedal height with the pushrod pressed.

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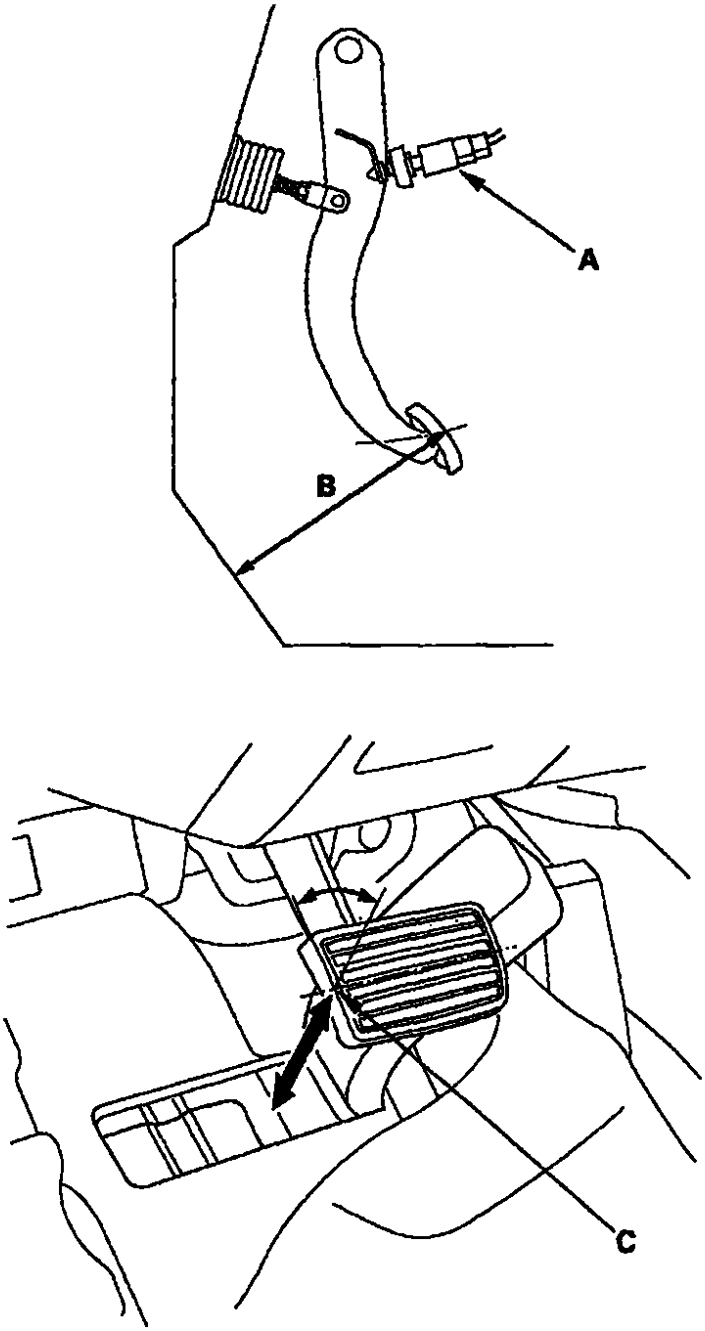


Fig. 4: Measuring Brake Pedal Height
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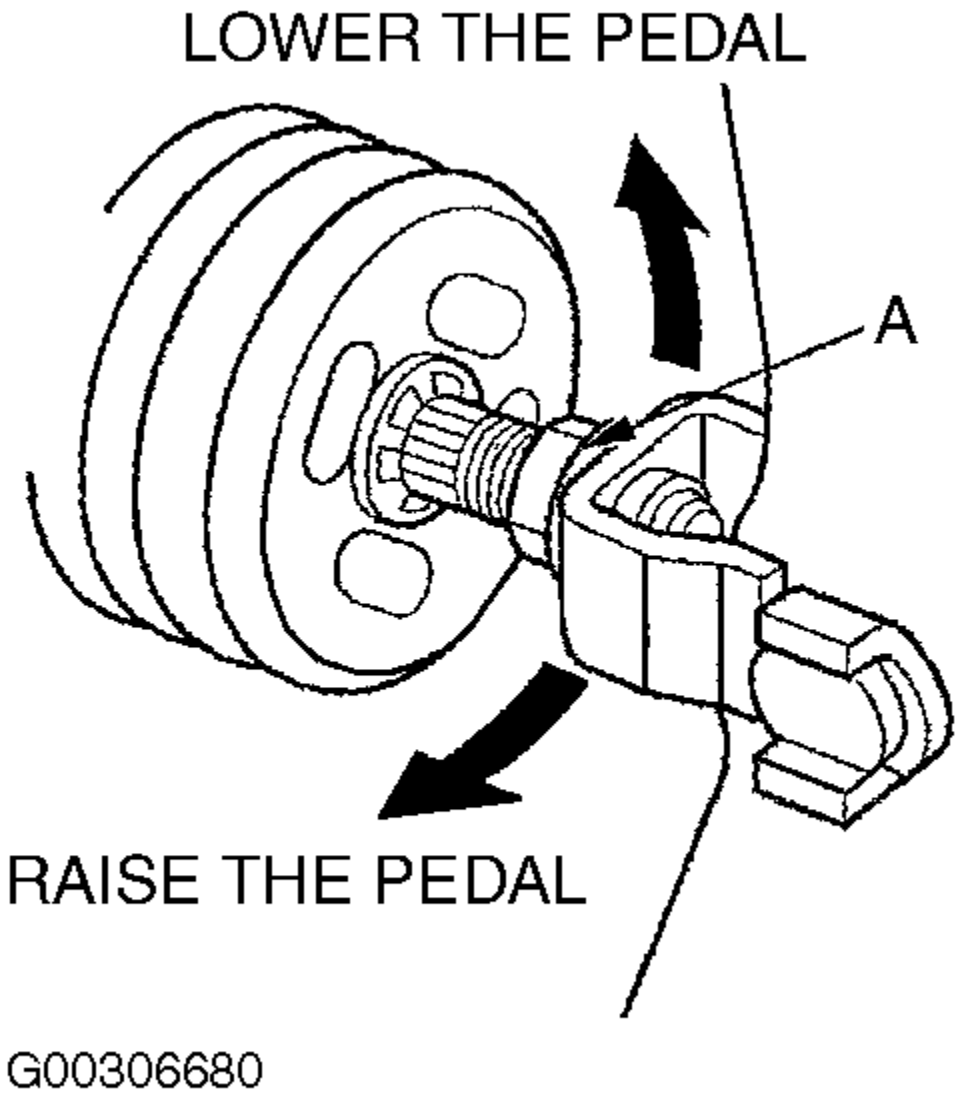


Fig. 5: Adjusting Brake Pedal Lock Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

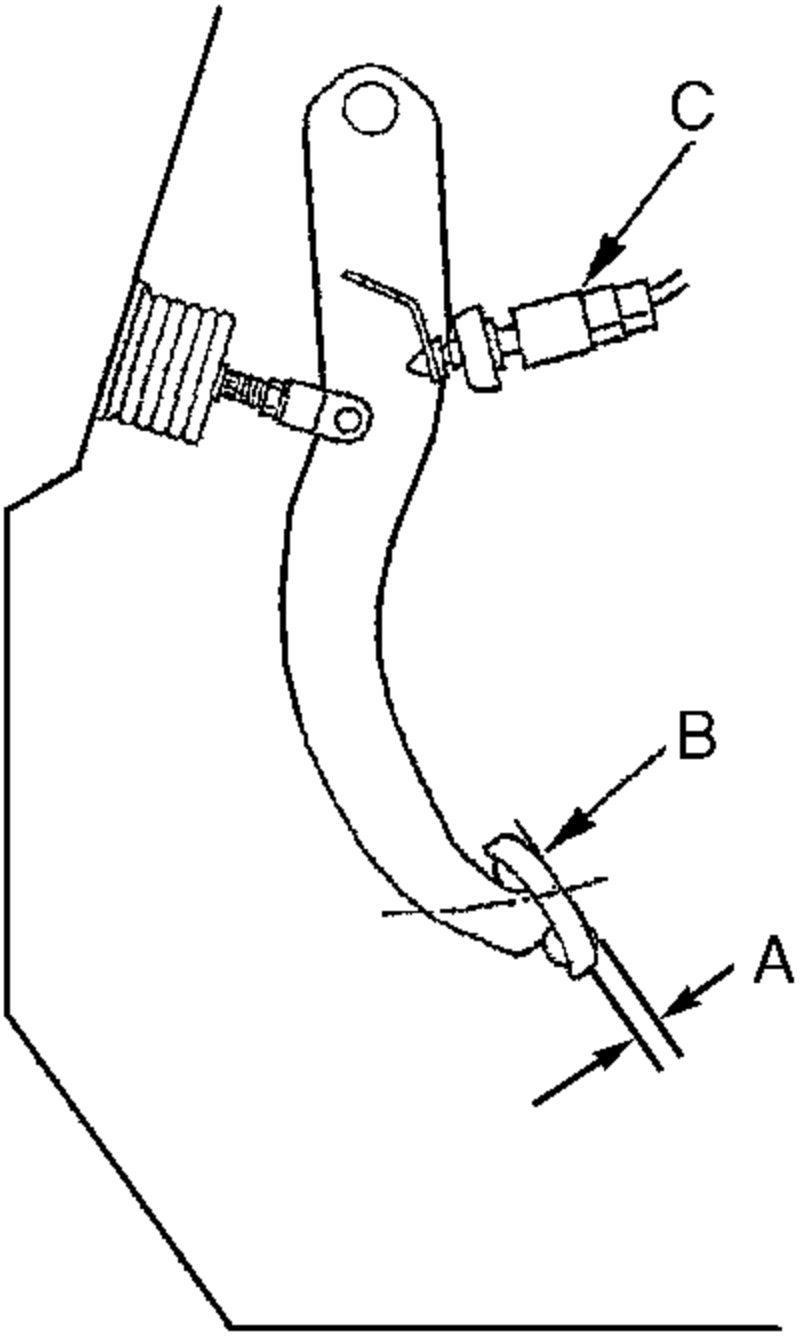
Pedal Free Play

1. With the engine off, inspect the play "A" on the pedal pad "B" by pushing the pedal by hand. See **Fig. 6** . Play "A" should be .04-.20" (1.0-5.0 mm).
2. If the play is out of specification, adjust the brake pedal position switch "C". If the pedal free play is insufficient, it may result in brake drag.

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3. Push in the brake pedal position switch until its plunger is fully pressed (threaded end "A" touching the pad "B" on the pedal arm). See **Fig. 7** . Turn the switch 45° clockwise to lock it. The gap between the brake pedal position switch and the pad is automatically adjusted to .016-.118" (.4 to 3.0 mm) by locking the switch. Ensure the brake lights go off when the pedal is released.

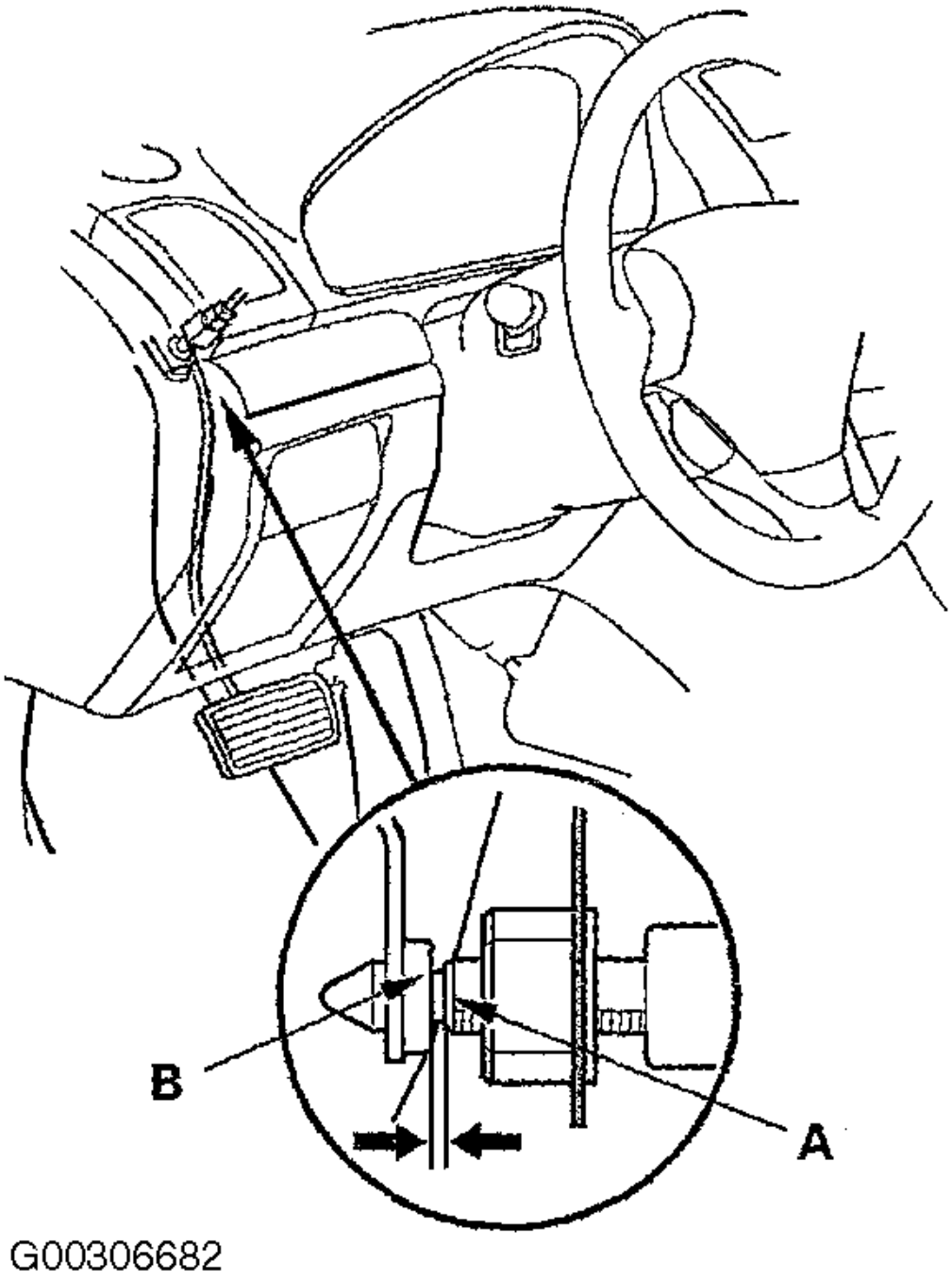
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Fig. 6: Measuring Brake Pedal Free Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 7: Adjusting Brake Pedal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PARKING BRAKE

1. Pull the parking brake lever with 44 lbs. (20 kg) of force to fully apply the parking brake. The parking brake lever should be locked within 6-9 clicks. Adjust the parking brake if the lever clicks are not within specification.
2. Release the parking brake lever fully. Loosen the parking brake adjusting nut, start the engine, and press the brake pedal several times to set the self adjusting brake before adjusting the parking brake.

NOTE: The parking brake arm will only contact the brake caliper pin when the parking brake adjusting nut is loosened.

3. Block the front wheels, then raise the rear of the vehicle, and ensure it is securely supported. Ensure the parking brake arm "A" on the rear brake caliper contacts the brake caliper pin "B". See **Fig. 8** .
4. Remove the center console. See **CENTER CONSOLE** under REMOVAL & INSTALLATION. Pull the parking brake lever up one click. Tighten the adjusting nut "A" until the parking brakes drag slightly when the rear wheels are turned. See **Fig. 9** . Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary. Ensure the parking brakes are fully applied when the parking brake lever is pulled up fully. Reinstall the console cover.

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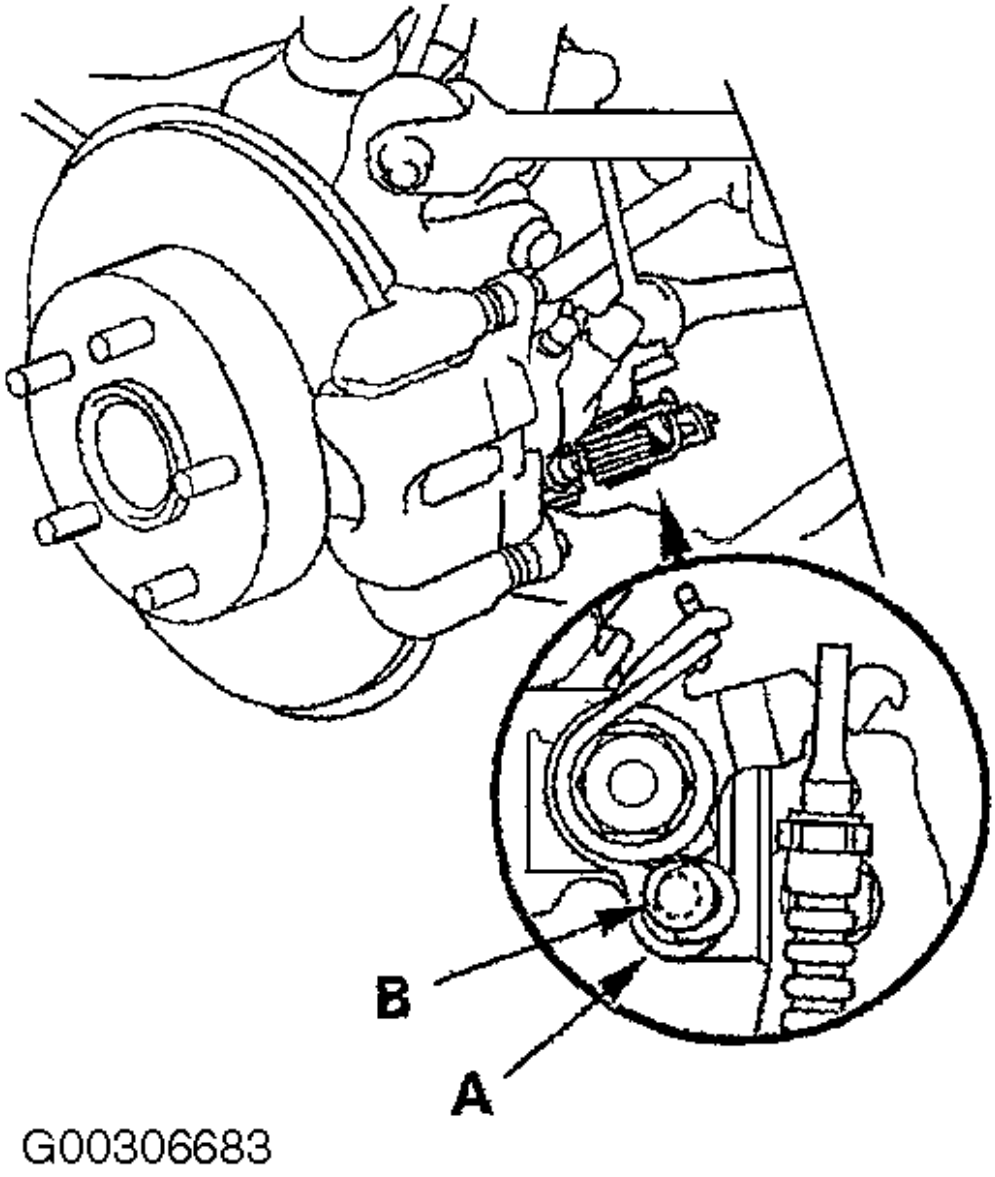


Fig. 8: Identifying Parking Brake Arm
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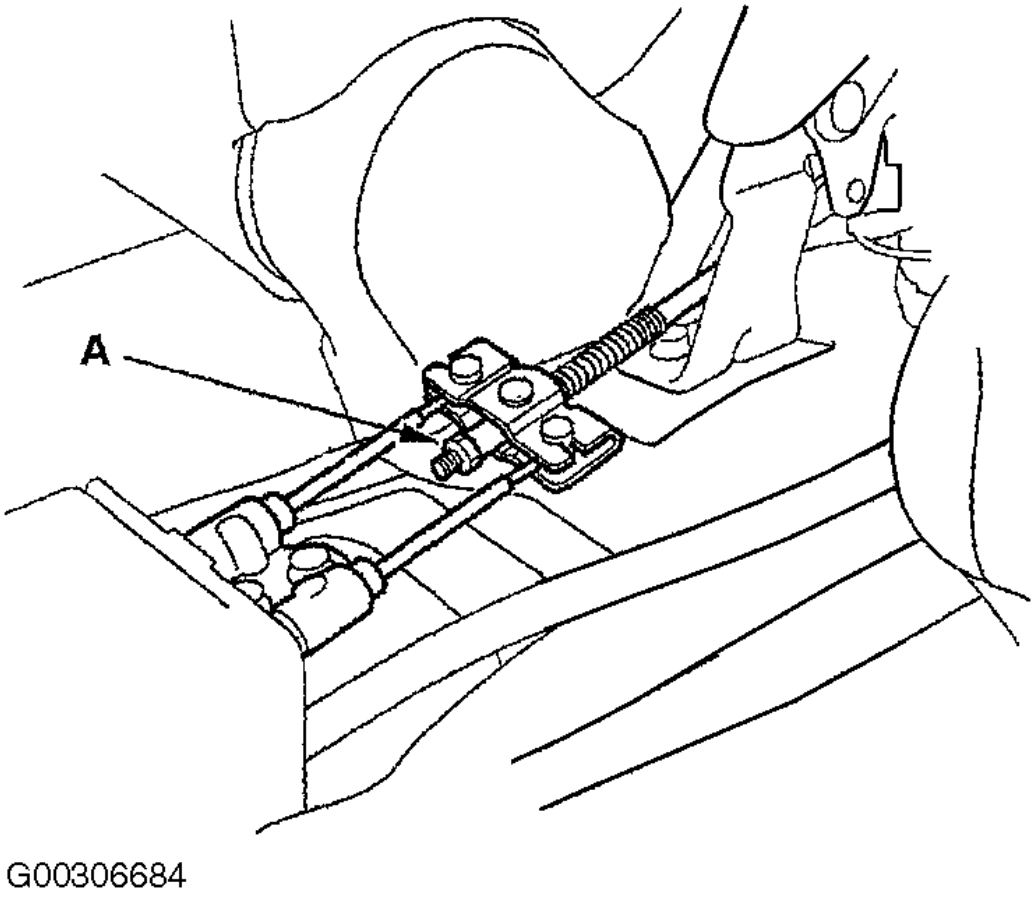


Fig. 9: Identifying Parking Brake Adjusting Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TROUBLE SHOOTING

BRAKE SYSTEM

NOTE: For brake system trouble shooting, see Fig. 1 and Fig. 10 .

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Component Inspections:

Component	Procedure	Also check for:
Master Cylinder	Look for damage or signs of fluid leakage at: • Reservoir or reservoir grommets • Line joints • Between master cylinder and booster	Bulging seal at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: • Line joints and banjo bolt connections • Hoses and lines, also inspect for twisting or damage	Bulging, twisted, or bent lines.
Caliper	Look for damage or signs of fluid leakage at: • Piston seal • Banjo bolt connections • Bleeder screw	Seized or sticking caliper pins.
VSA Modulator	Look for damage or signs of fluid leakage at: • Line joints • Modulator	

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Fig. 10: Brake System Inspection Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BRAKE HOSES & LINES

NOTE: Replace the brake hose clip whenever the brake hose is serviced.

Inspect the brake hoses, for damage, deterioration, leaks, interference, and twisting. Check the brake lines for damage, rusting, and leakage. Also check for bent brake lines. Check for leaks at hose and line joints or connections, and retighten if necessary. Check the master cylinder and ABS modulator unit for damage and leakage. See **Fig. 11** .

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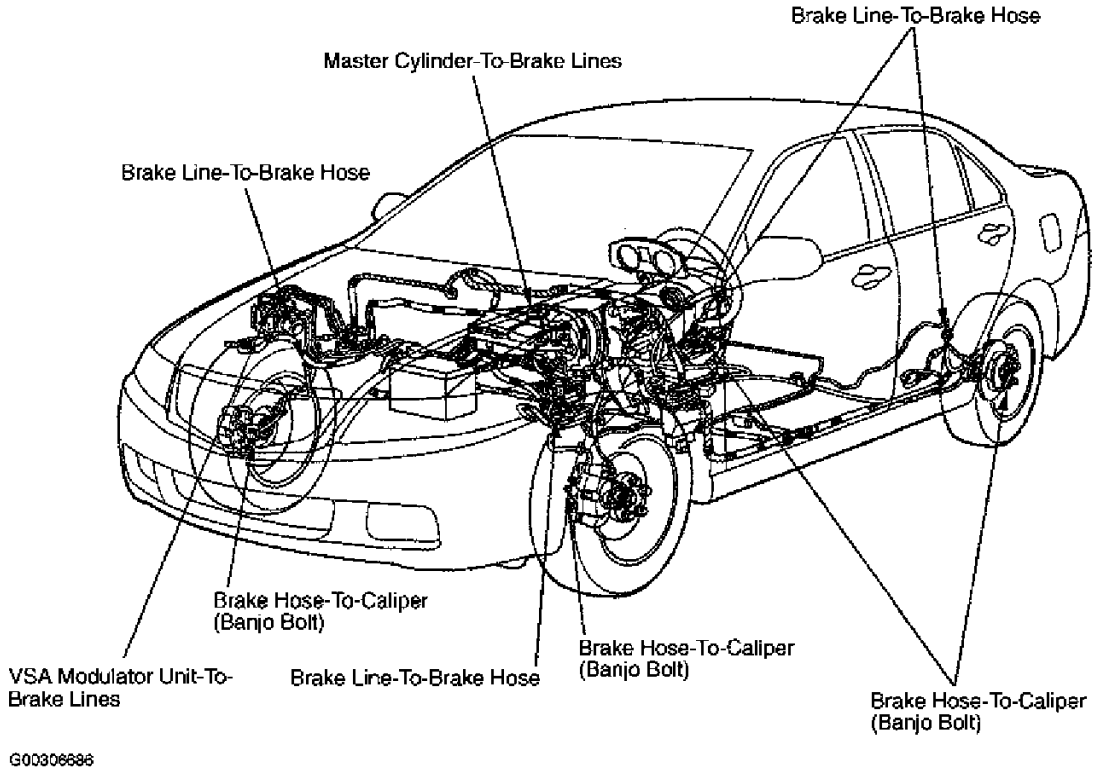


Fig. 11: Identifying Brake Hoses & Lines Inspection Points
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT TESTING

BRAKE BOOSTER

Functional Test

1. With the engine stopped, press the brake pedal several times to deplete the vacuum reservoir, then press the pedal hard, and hold it for 15 seconds. If the pedal sinks, either the master cylinder is bypassing internally, or the brake system (master cylinder, lines, modulator, or calipers) is leaking.
2. Start the engine with the pedal pressed. If the pedal sinks slightly, the vacuum booster is operating normally. If the pedal height does not vary, the booster or check valve is faulty.

NOTE: A/C compressor load changes the vacuum available to the booster.

3. With the engine running, press the brake pedal lightly, and shift transmission to "D" position. Apply just enough pressure to hold back A/T creep. If the brake pedal sinks more than .4" (10 mm), in 3 minutes, the master cylinder is faulty. A slight change in pedal height when the A/C compressor cycles on and off is normal.

Leak Test

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1. Press the brake pedal with the engine running, then stop the engine. If the pedal height does not vary while pressed for 30 seconds, the vacuum booster is okay. If the pedal rises, the booster is faulty.
2. Turn the engine off and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise. If the pedal position does not vary, check the booster check valve. See **BOOSTER CHECK VALVE TEST** .

Booster Check Valve Test

1. Disconnect the brake booster vacuum hose at the booster "A". See **Fig. 12** . The check valve "B" is built into the hose.
2. Start the engine, and let it idle. There should be vacuum available. If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve, and retest.
3. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster. Turn the engine off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the brake pedal is first pressed, it should be low. On consecutive applications, the brake pedal height should gradually rise. If the pedal position does not vary, replace the brake booster. If the pedal position varies, replace the brake booster vacuum hose/check valve assembly.

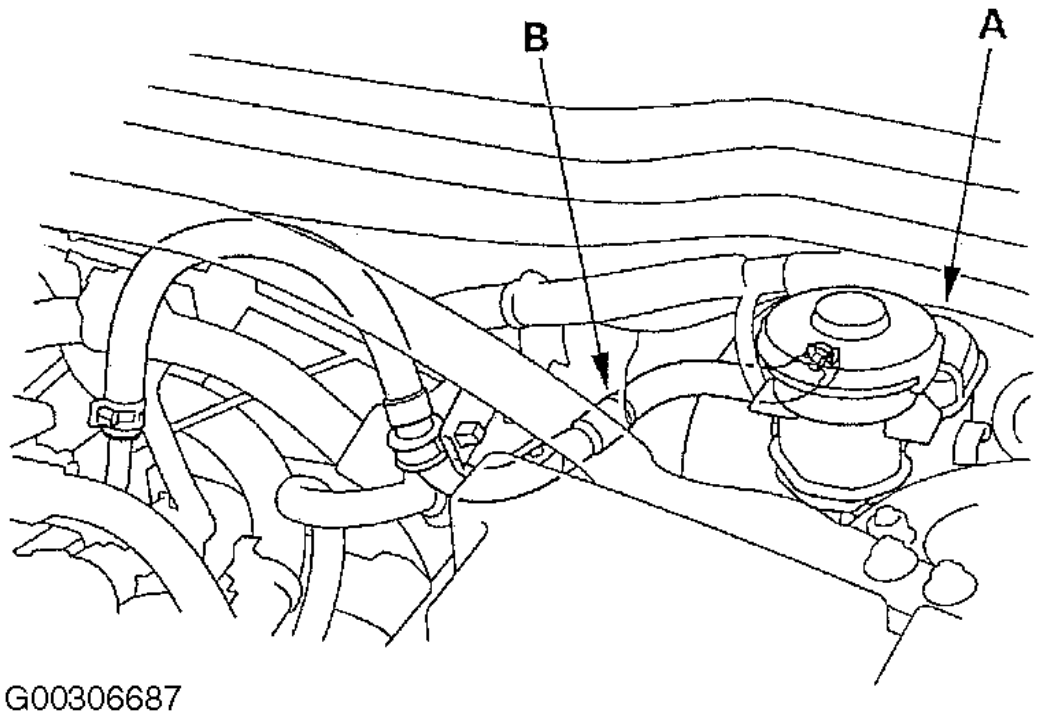


Fig. 12: Testing Booster Check Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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BRAKE FLUID LEVEL SWITCH

1. Check for continuity between the terminals "A" with the float in the down position and the up position. See **Fig. 13** . Remove the brake fluid completely from the reservoir. With the float down, there should be continuity. Fill the reservoir with brake fluid to MAX line "B". With the float up, there should be no continuity.

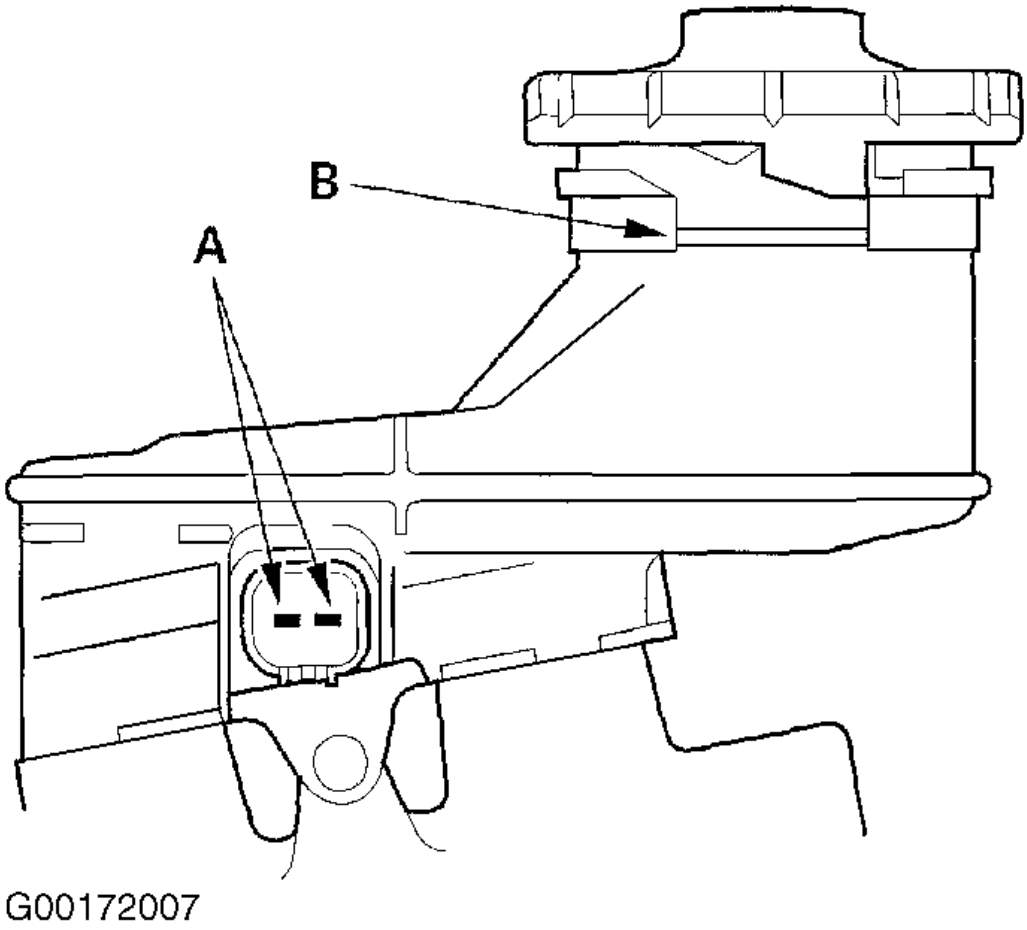


Fig. 13: Identifying Brake Fluid Level Switch Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PARKING BRAKE SWITCH

1. Remove center console. See **CENTER CONSOLE** under REMOVAL & INSTALLATION. Disconnect the connector "A" from the switch "B". See **Fig. 14** .
2. Check for continuity between the positive terminal "C" and body ground:

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- With the brake lever up, there should be continuity.
- With the brake lever down, there should be no continuity.

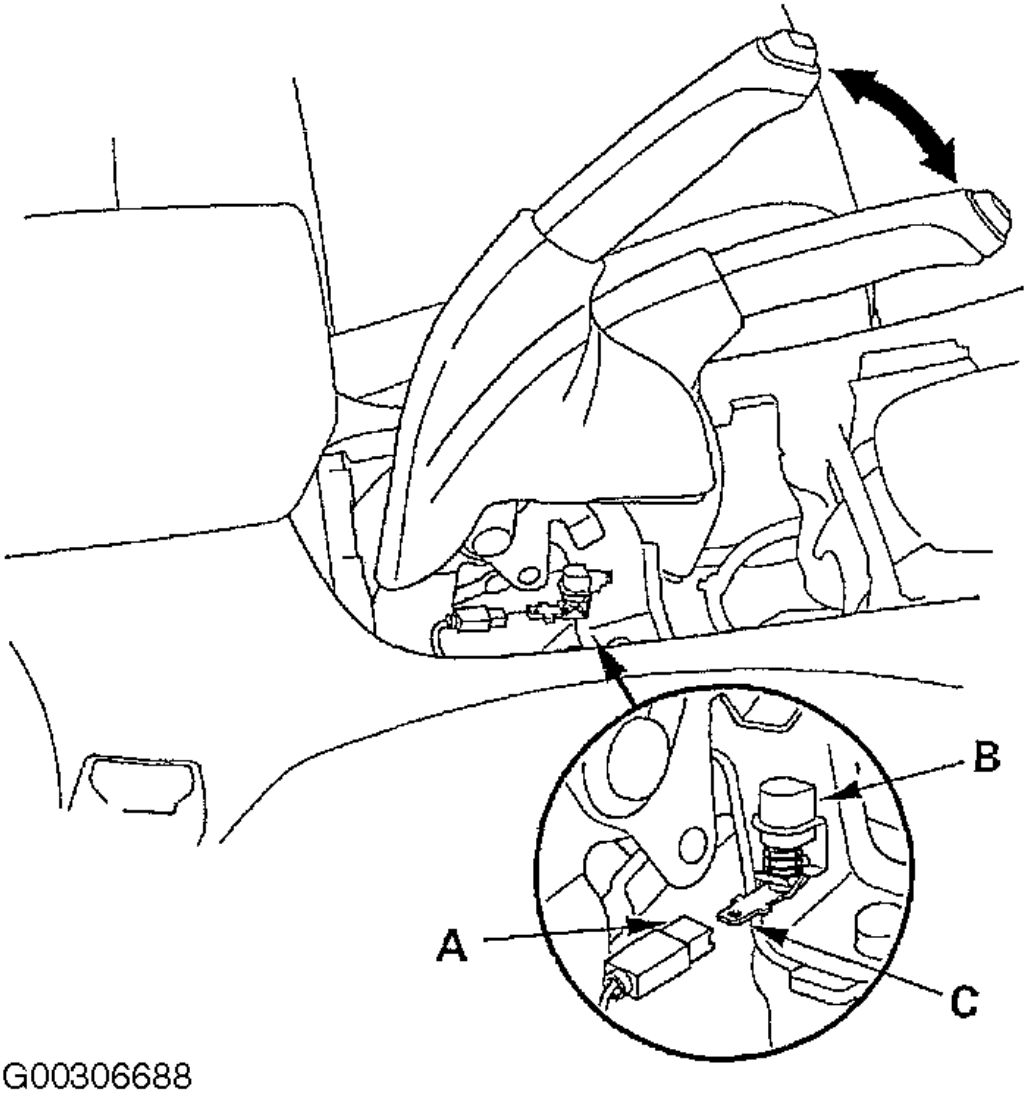


Fig. 14: Identifying Parking Brake Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer

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systems have completed a relearn cycle. See appropriate COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting battery.

NOTE: Obtain radio anti-theft code and write down radio presets before disconnecting battery. Reprogram anti-theft code and radio stations after repairs are complete.

BRAKE BOOSTER

Removal

1. Disconnect negative battery cable.
2. Remove the master cylinder. See **MASTER CYLINDER** .
3. Disconnect the vacuum hose "A" from the brake booster "B". See **Fig. 15** .
4. Remove the underhood fuse/relay box mounting bolt "A", then remove the underhood fuse/relay box. See **Fig. 16** .
5. Remove air cleaner assembly "A". See **Fig. 17** .
6. Remove brake lines from hose clamp "A". See **Fig. 18** .
7. Remove lock pin "A" and joint pin "B", then disconnect the yoke from the brake pedal. See **Fig. 19** . Remove the brake booster mounting flange nuts "C".
8. Remove the brake booster "A" from the engine compartment. See **Fig. 20** .

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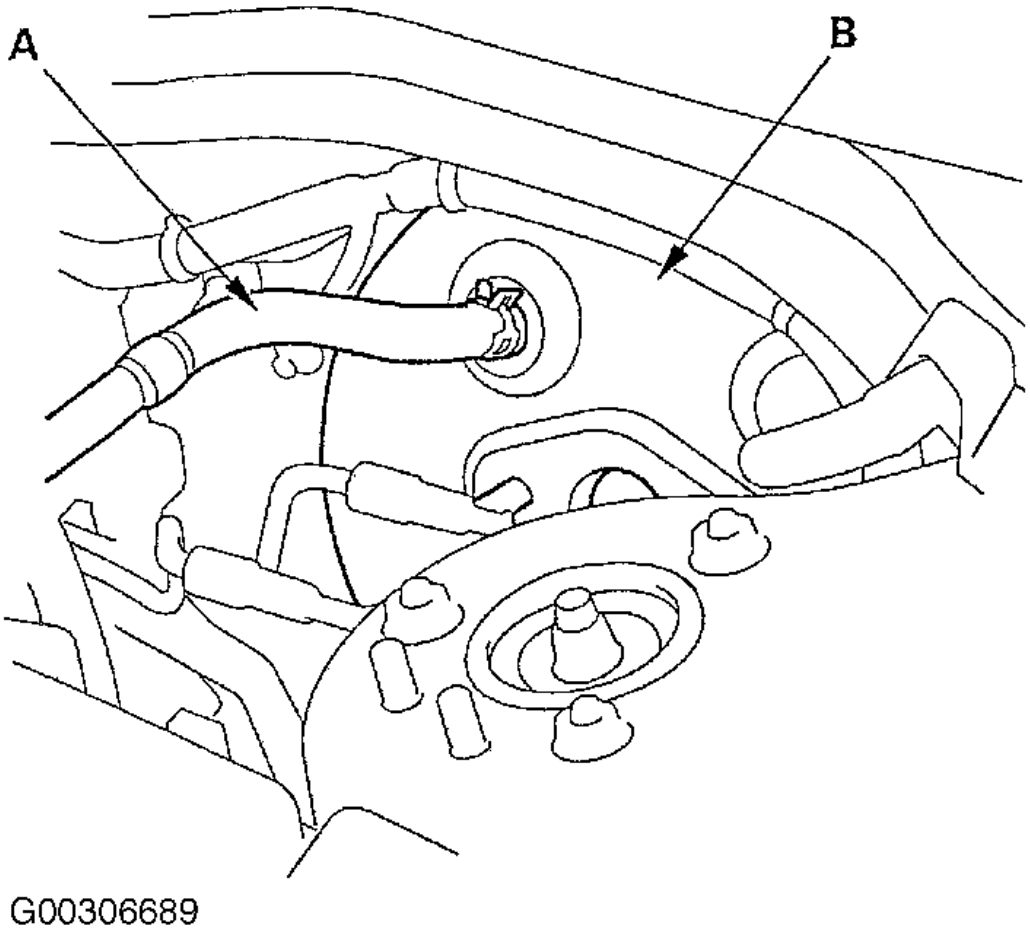


Fig. 15: Disconnecting Master Cylinder Brake Lines & Vacuum Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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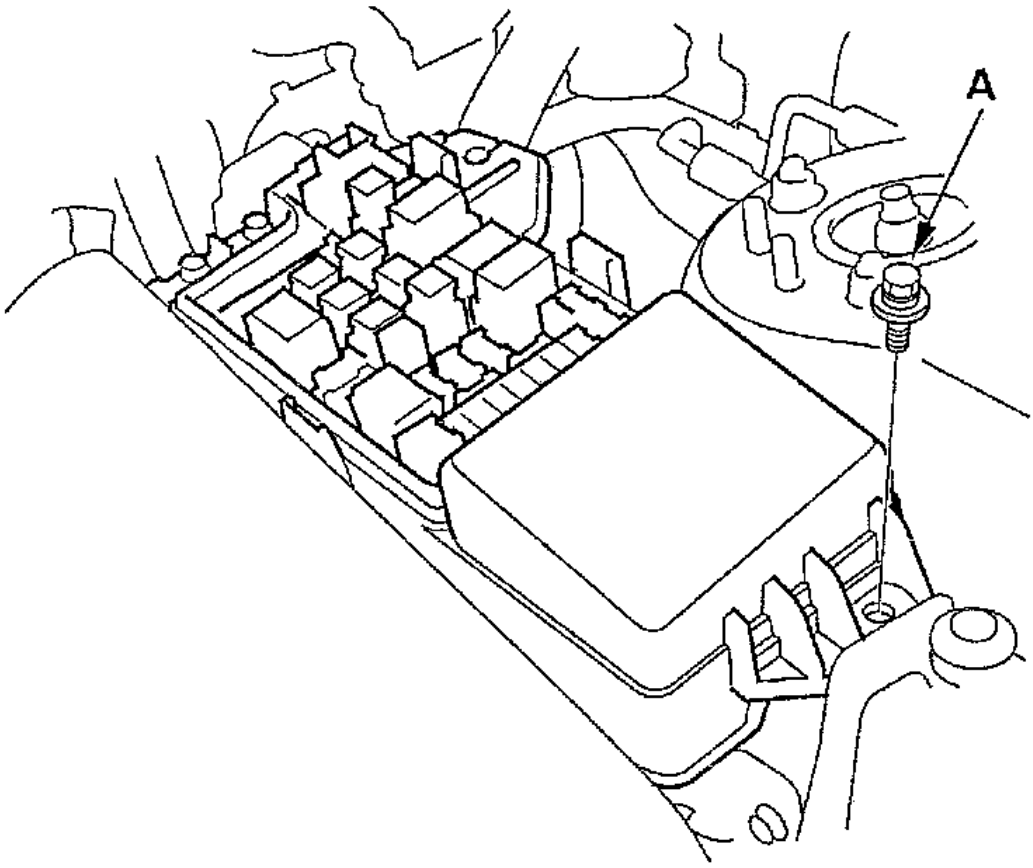


Fig. 16: Removing Underhood Fuse/Relay Box
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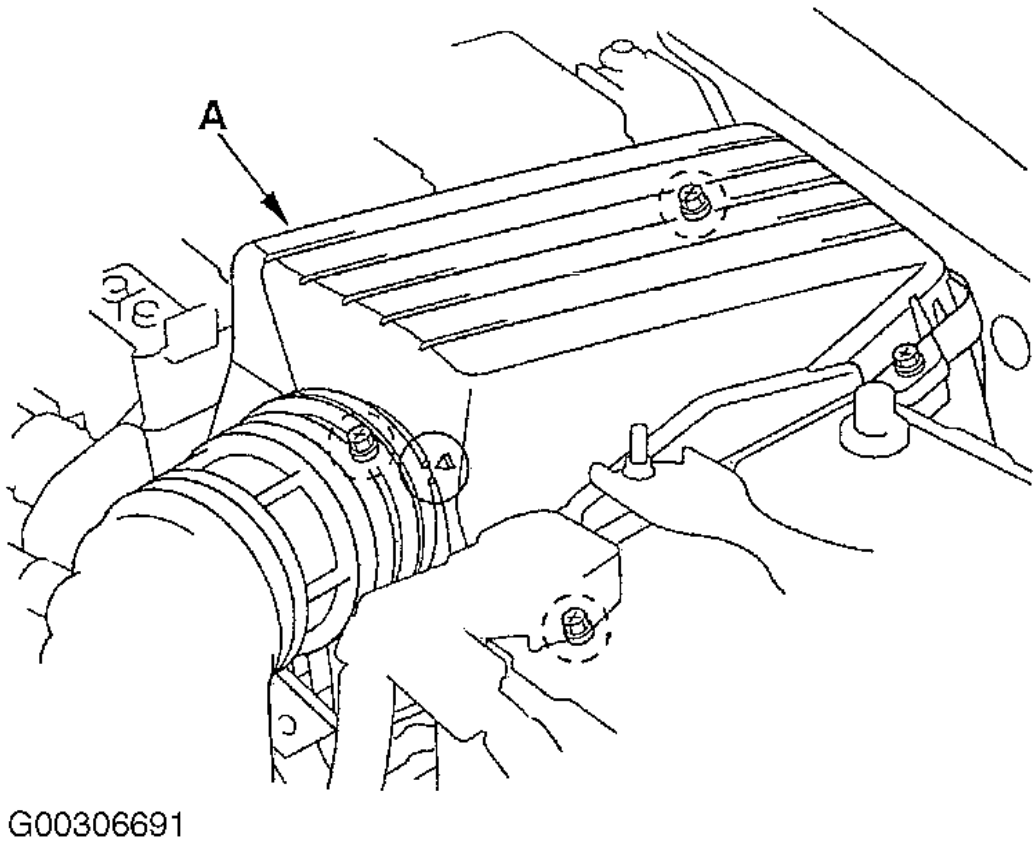


Fig. 17: Identifying Air Cleaner Assembly
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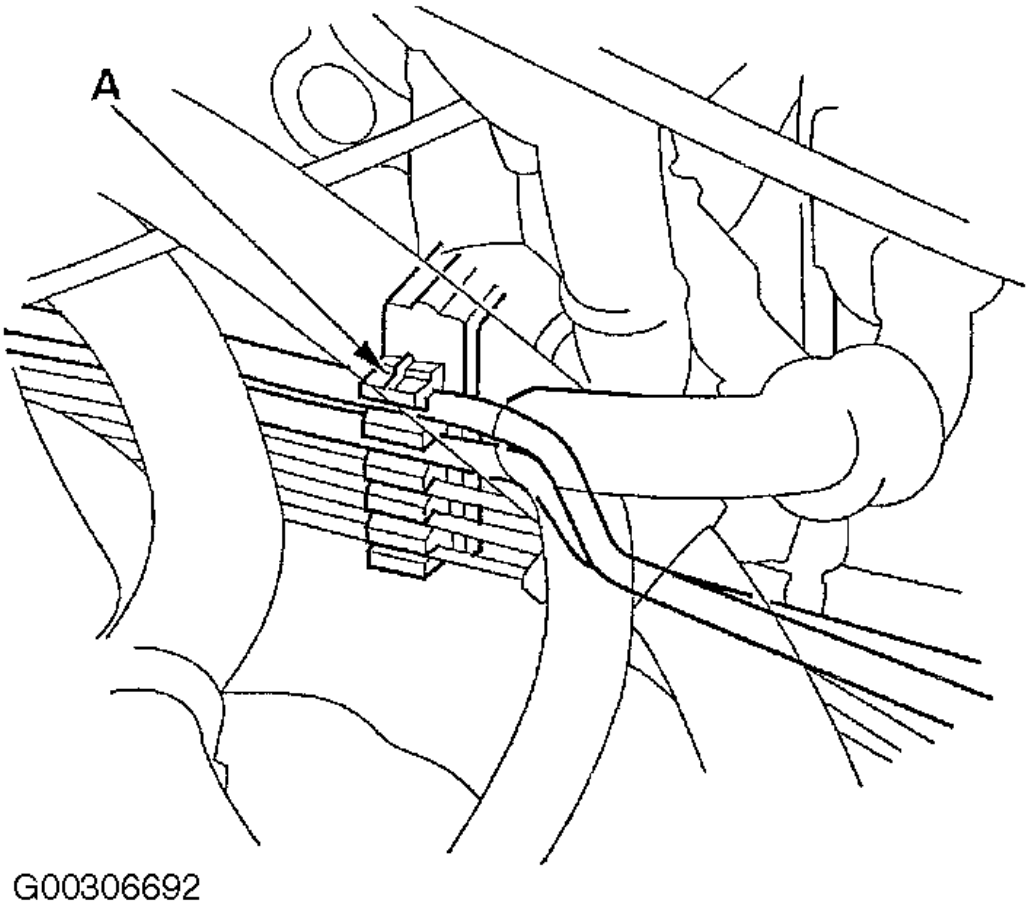


Fig. 18: Identifying Hose Clamp
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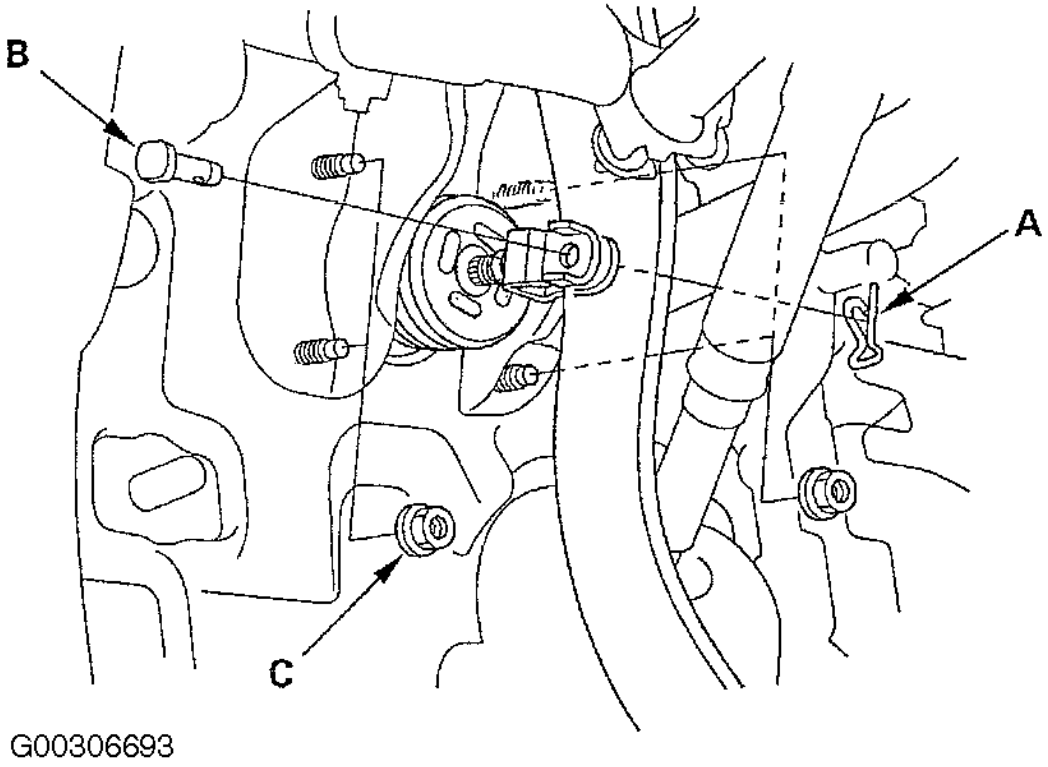


Fig. 19: Disconnecting Yoke From Brake Pedal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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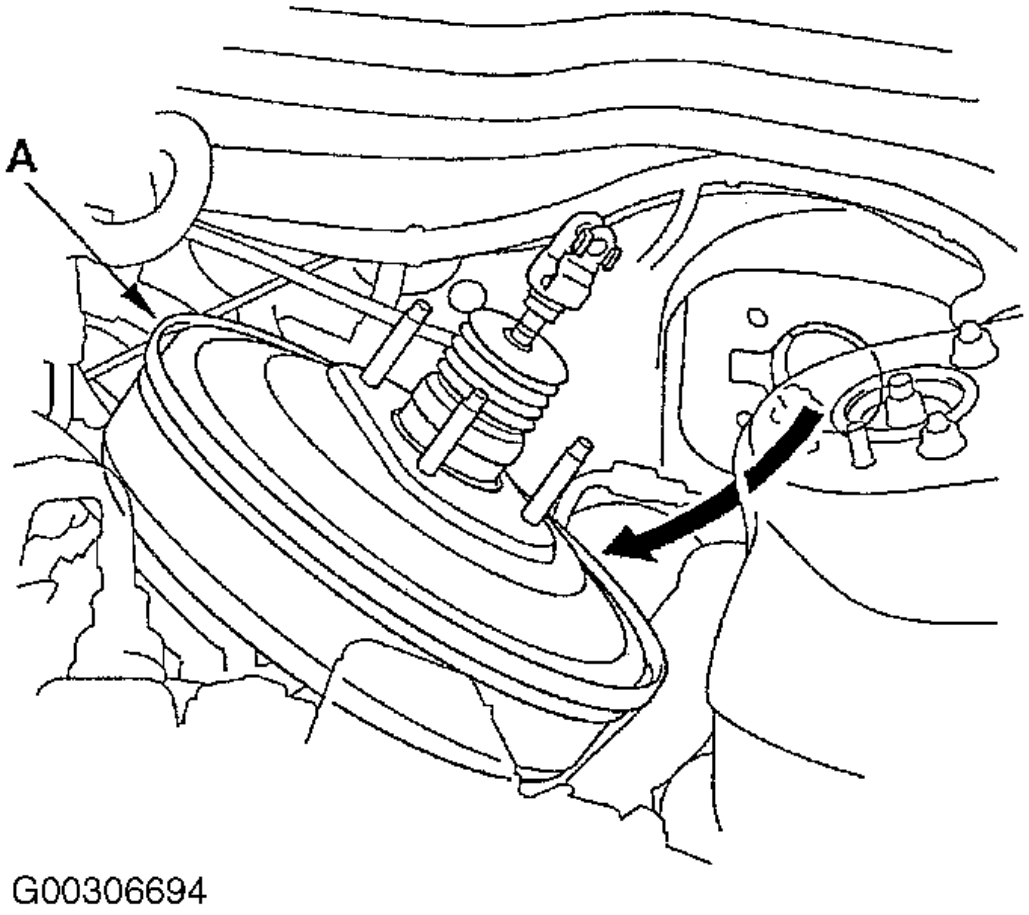


Fig. 20: Removing Brake Booster From Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. To install, reverse removal procedure. Use a new clip when installing. After installing the brake booster and master cylinder, fill the reservoir with new brake fluid. Bleed the brake system. See **BLEEDING BRAKE SYSTEM** .
2. Adjust the brake pedal height and free play. See **BRAKE PEDAL HEIGHT & FREE PLAY** under ADJUSTMENTS.
3. Perform ECM/PCM relearn cycle. See appropriate COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION.
4. Reset driver's power window AUTO function. Start the engine. Push down and hold driver's window switch until the window is fully open. Pull and hold the driver's window switch to close the window completely, then hold the switch for 1-3 seconds.

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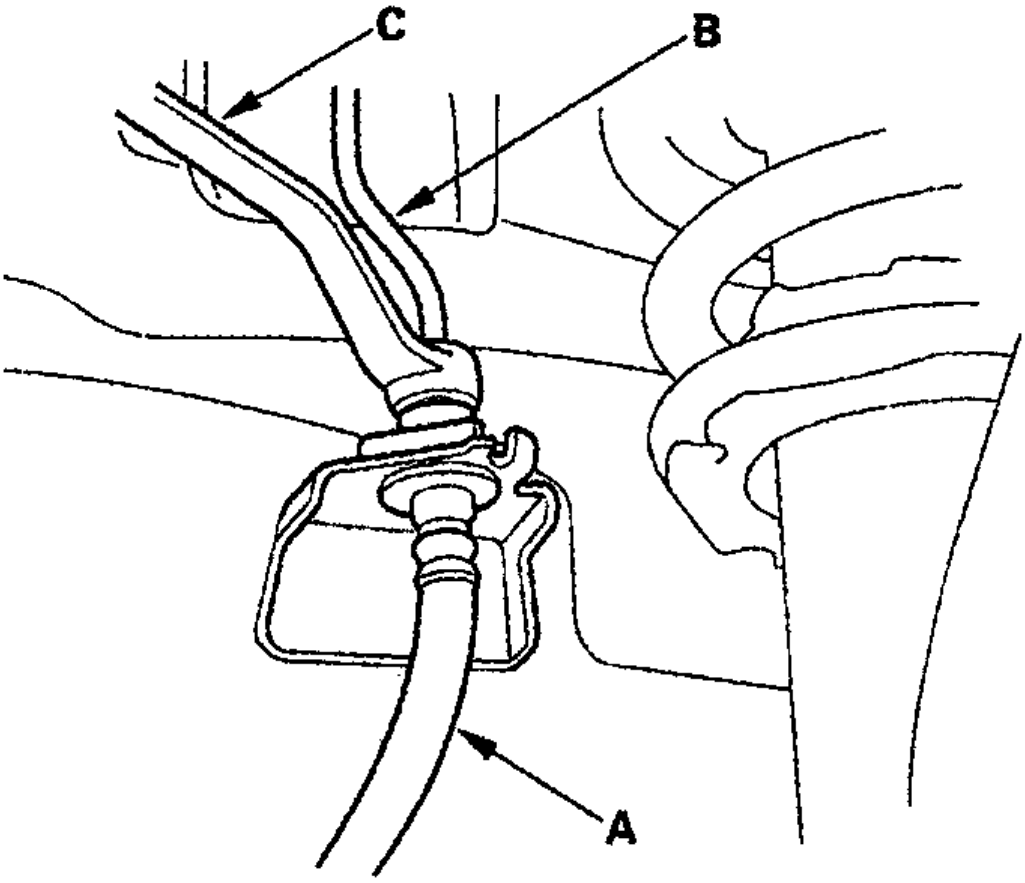
BRAKE HOSE

CAUTION: Avoid spilling brake fluid on car, as it will damage paint. If brake fluid contacts paint, immediately flush with water. To prevent dripping, cover disconnected line joints with rags or shop towels. Before reassembling, check that all parts are free of dust and other foreign particles. Replace parts with new ones whenever instructed to do so.

Removal

1. Replace the brake hose "A" if the hose is twisted, cracked, or leaks. See **Fig. 21** . Disconnect the brake hose from the brake line "B" using a 10 mm flare nut wrench "C".
2. Remove and discard the hose clip "A" from the brake hose "B". Remove the banjo bolt "C", and remove the brake hose from the caliper. Remove bolts "D", and remove the brake hose brackets from the damper. See **Fig. 22** .

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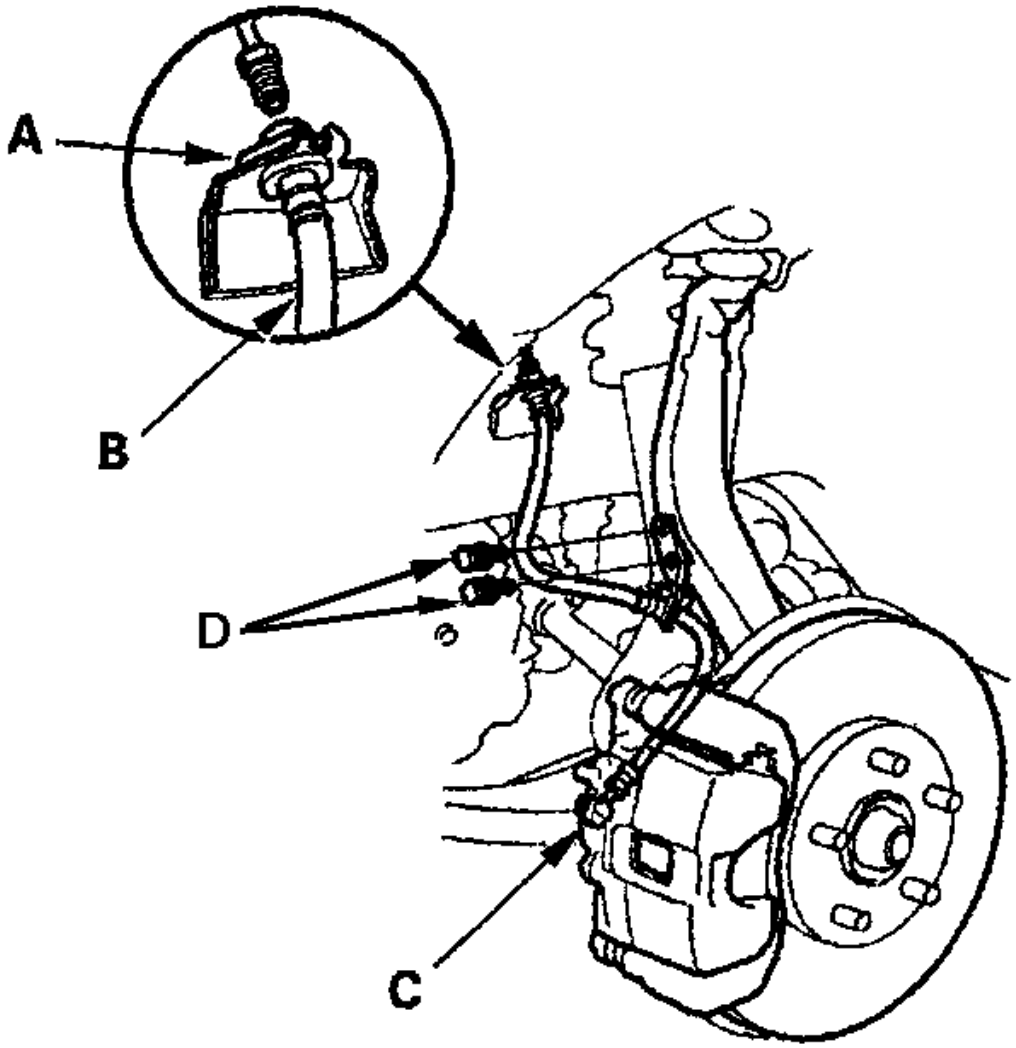


A - Brake Hose
B - Brake Line
C - Flare-Nut Wrench (10 mm)

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Fig. 21: Identifying Brake Hose & Brake Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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A - Brake Hose Clip
B - Brake Hose
C - Banjo Bolt
D - Flange Bolts

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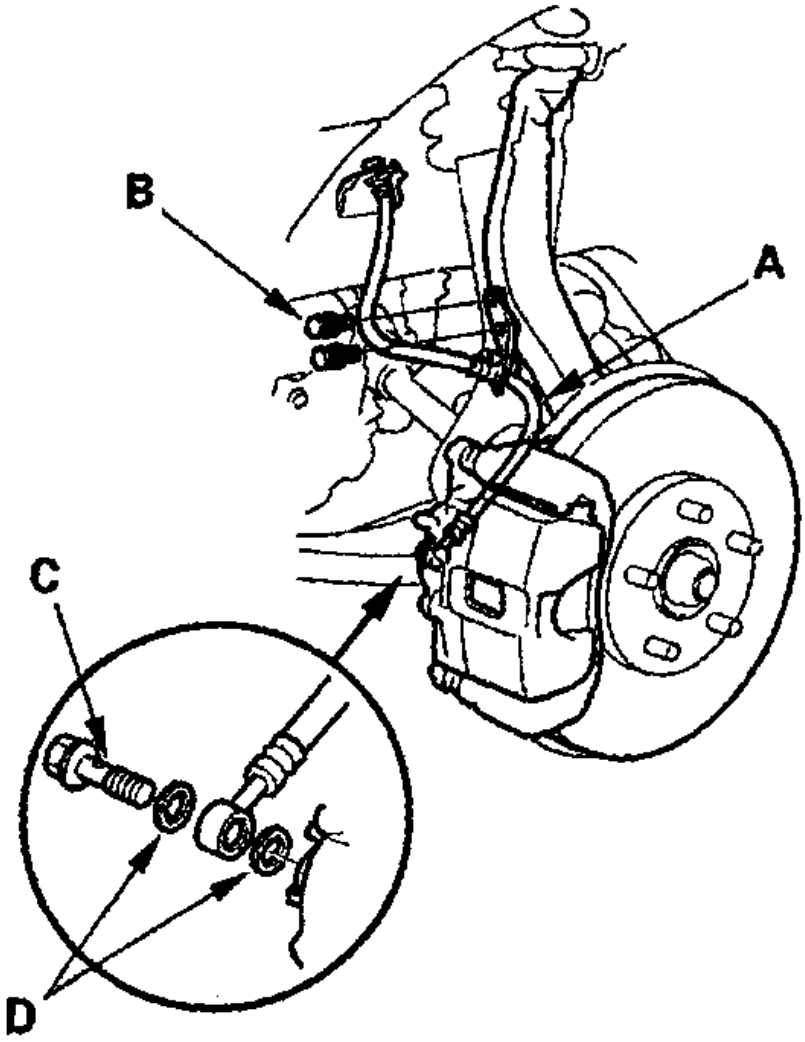
Fig. 22: Removing Brake Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Installation

1. Install the brake hose bracket "A" on the damper with the bolts "B" first, then connect the brake hose to the caliper with the banjo bolt "C" and new sealing washers "D". See **Fig. 23** .
2. Install the hose "A" onto the upper hose bracket "B" with a new hose clip "C, and connect brake line "D" to brake hose. See **Fig. 24** . After installing the brake hose, bleed the brake system. See **BLEEDING BRAKE SYSTEM** .
3. Check the brake hose and line joint for leaks, and tighten if necessary. Check the brake hoses for interference and twisting.

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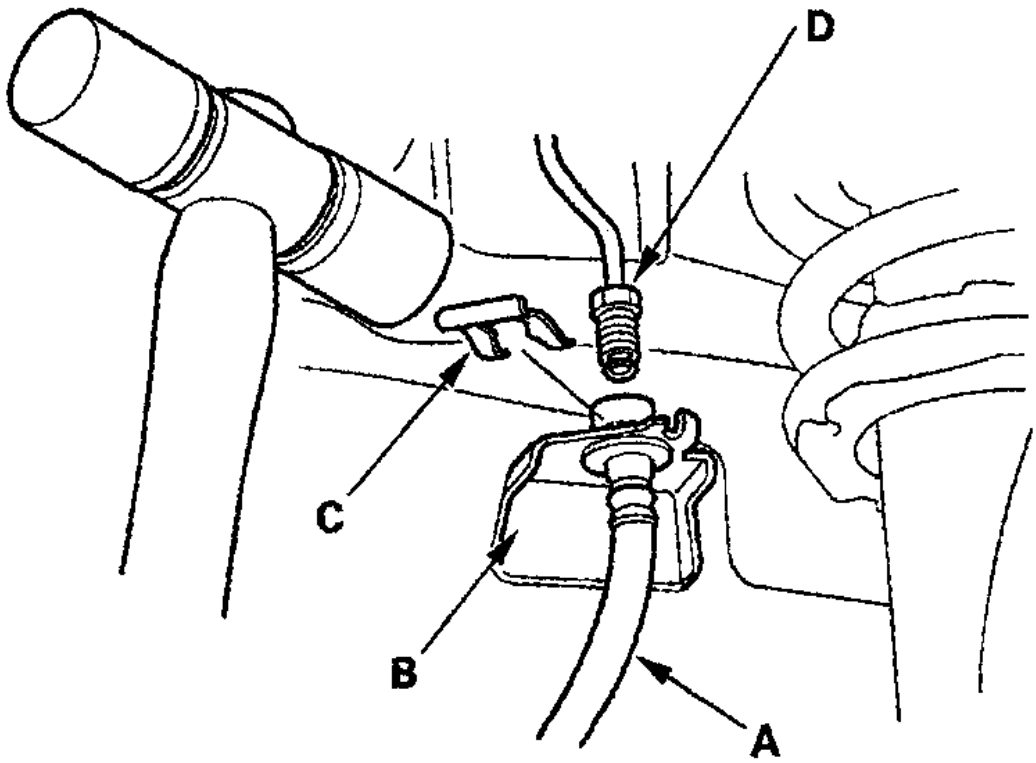


A - Brake Hose
B - Flange Bolts
C - Banjo Bolt
D - Sealing Washers

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Fig. 23: Installing Brake Hose To Caliper
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A - Brake Hose
B - Brake Hose Bracket
C - Brake Hose Clip
D - Brake Line

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Fig. 24: Installing Hose Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BRAKE PEDAL

Removal & Installation

Remove lock pins "A" and "B". See **Fig. 25** . Remove the brake pedal bracket mounting bolt "C" and nuts "D". Remove the brake pedal support member "E". Disconnect the brake pedal position switch connector "F". Remove the brake pedal with bracket "G". To install, reverse order removal procedure. Check brake pedal height and free play. See **BRAKE PEDAL HEIGHT & FREE PLAY** .

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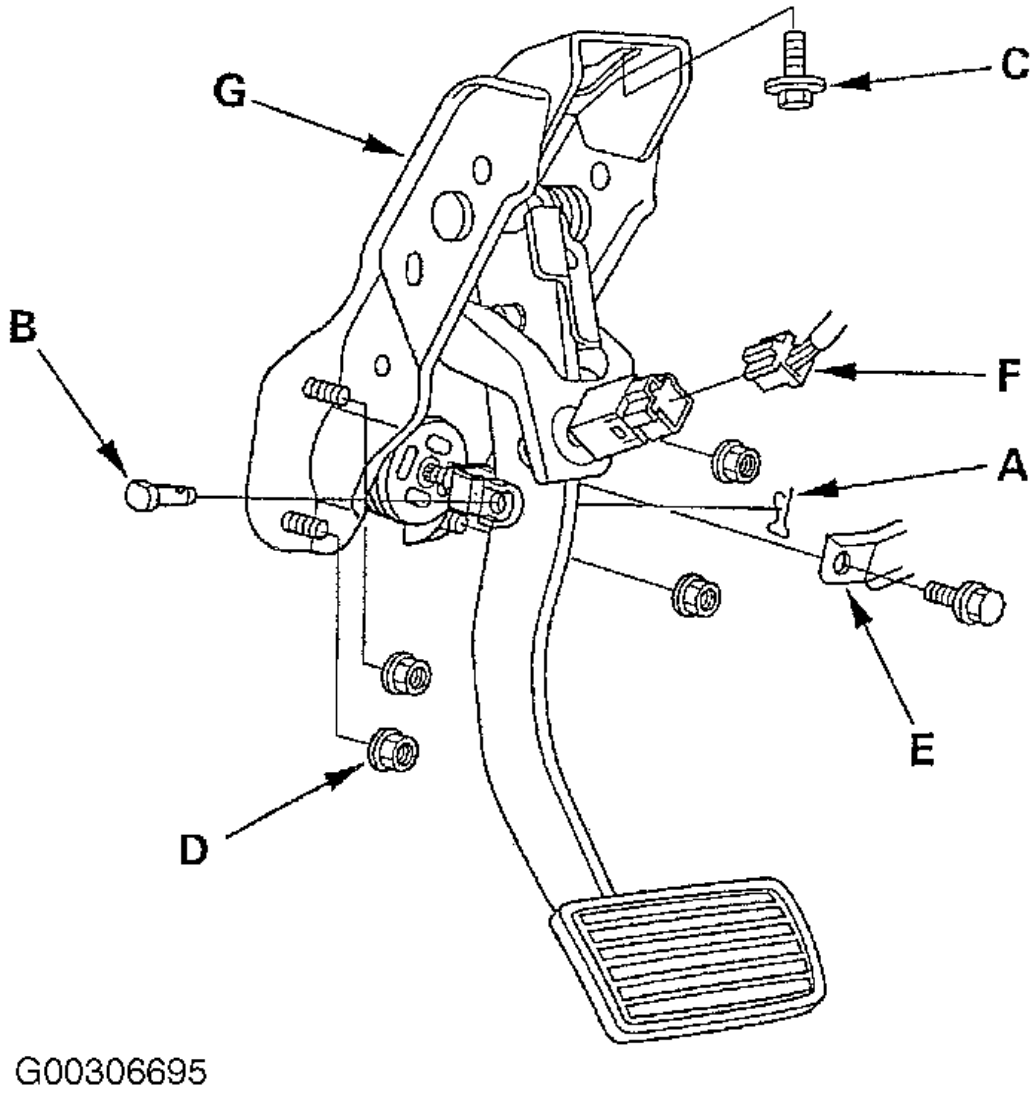
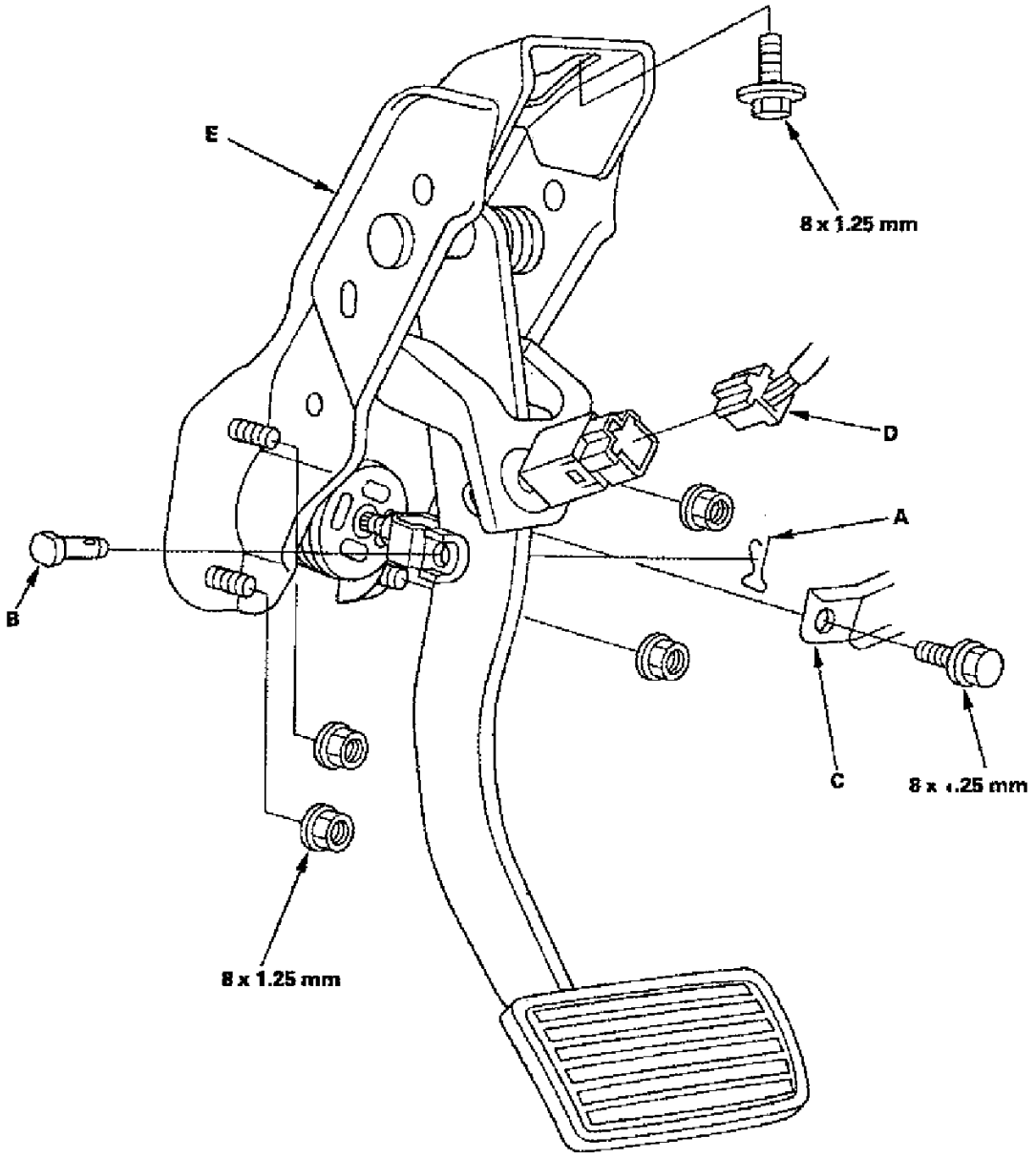


Fig. 25: Removing & Installing Brake Pedal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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A - Lock Pin
B - Pin
C - Brake Pedal Bracket Support Member
D - Brake Pedal Position Switch Connector
E - Bracket

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Fig. 26: Removing & Installing Brake Pedal
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CENTER CONSOLE

Removal & Installation

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1. On models with M/T, loosen lock nut "A" to remove the shift knob "B". See **Fig. 27** .

NOTE: When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage. Take care not to scratch the front seat, dashboard and related parts.

2. On all models, starting toward the front of the vehicle, detach the clips by pulling the center console panel "A" up. See **Fig. 28** . Disconnect seat heater switch connectors "B" (if equipped).
3. Remove the center upper pocket "A". See **Fig. 29** . Open the lid, then pull at the lower edge of the case portion of pocket back by hand to detach the clips. Do not pull the lid portion while removing the center upper pocket. When it is loose, close the lid and remove it. Disconnect the pocket light bulb socket "B" and detach the harness clips "C".
4. Remove the screws, disconnect the front accessory power socket connector "A", and detach the harness clip "B", then remove the center lower pocket "C". See **Fig. 30** .
5. Open the console box lid "A" then remove the console mat "B" and screws "C" and "D". See **Fig. 31** .
6. Remove the center console "A". See **Fig. 32** . Disconnect the rear accessory power socket connector "B", and detach the clip "C". Pull the rear portion of the console up to release the hook "E", then remove it. To install, reverse removal procedure.

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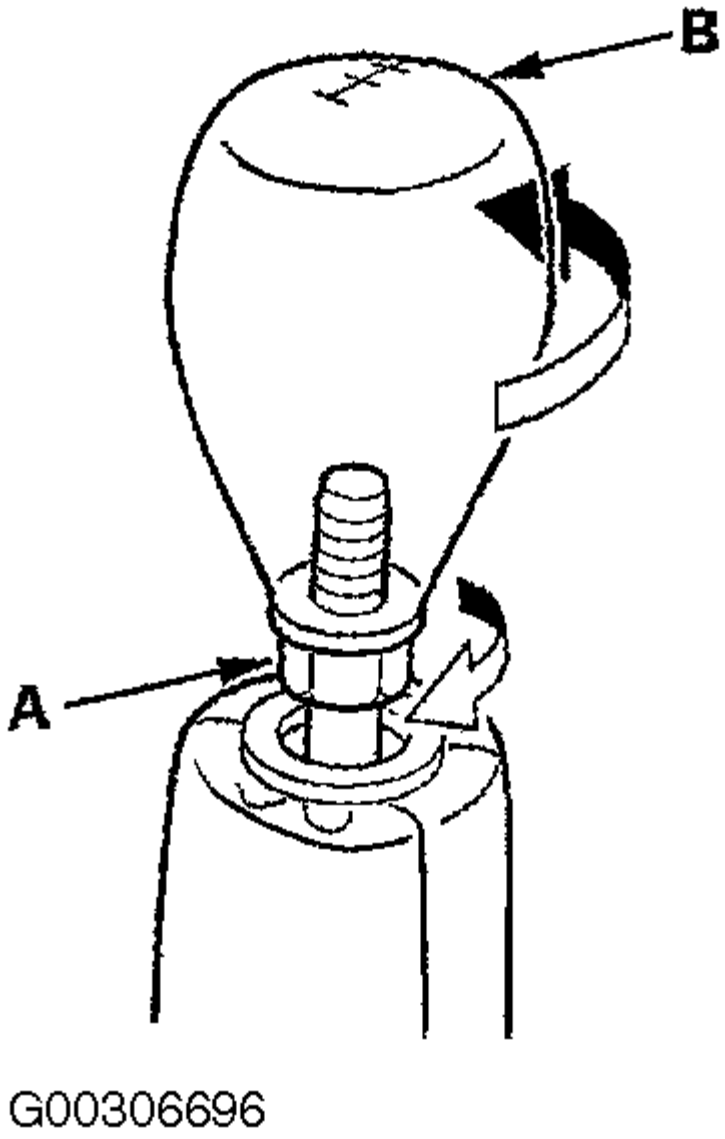


Fig. 27: Removing Shift Knob
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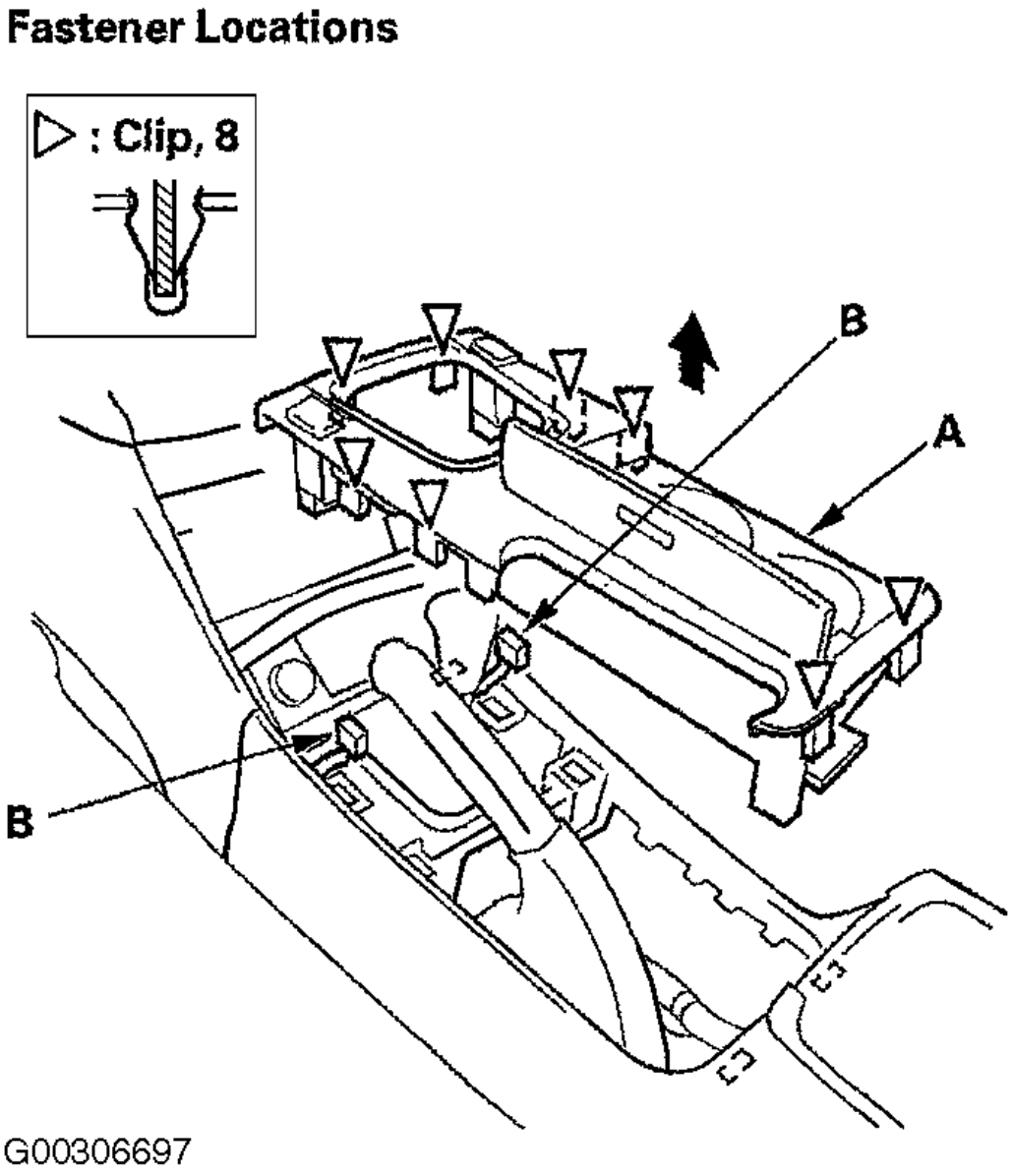


Fig. 28: Removing Center Console Panel
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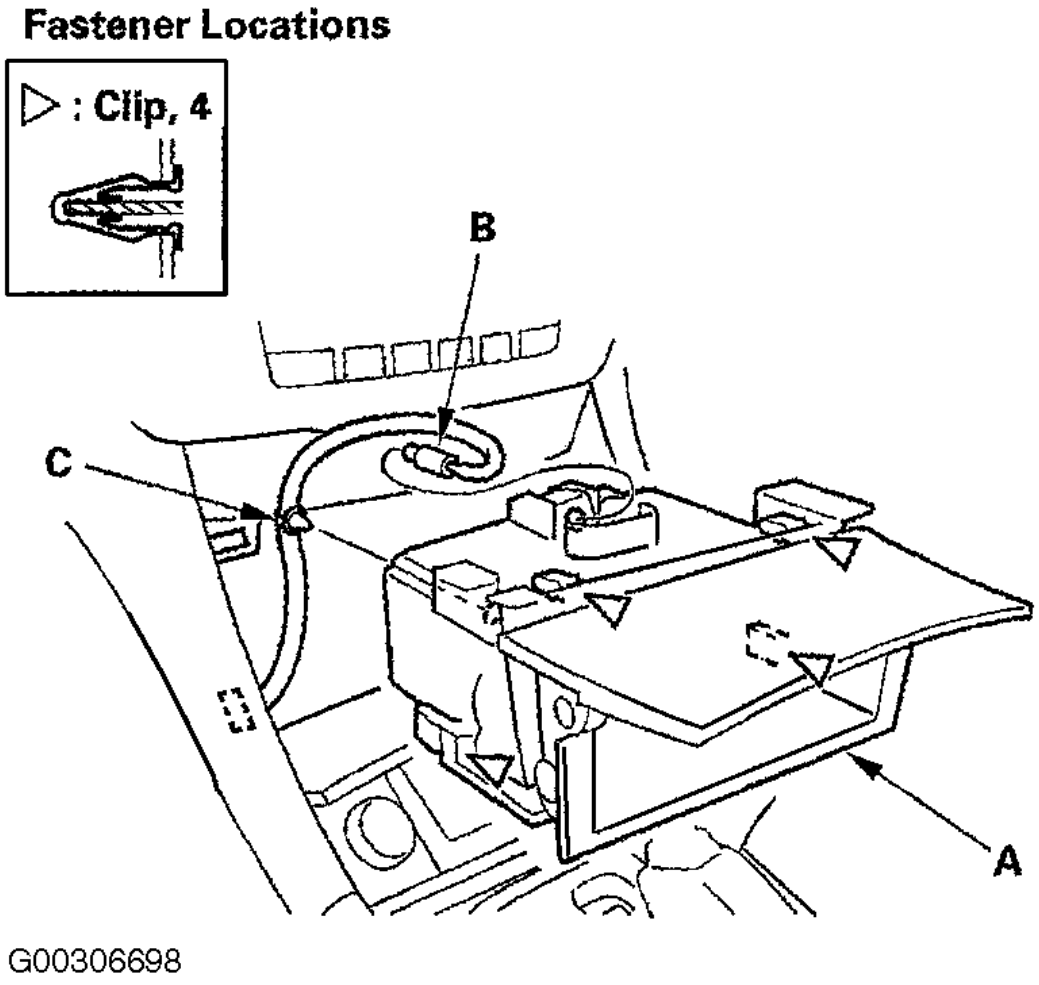


Fig. 29: Removing Center Upper Pocket
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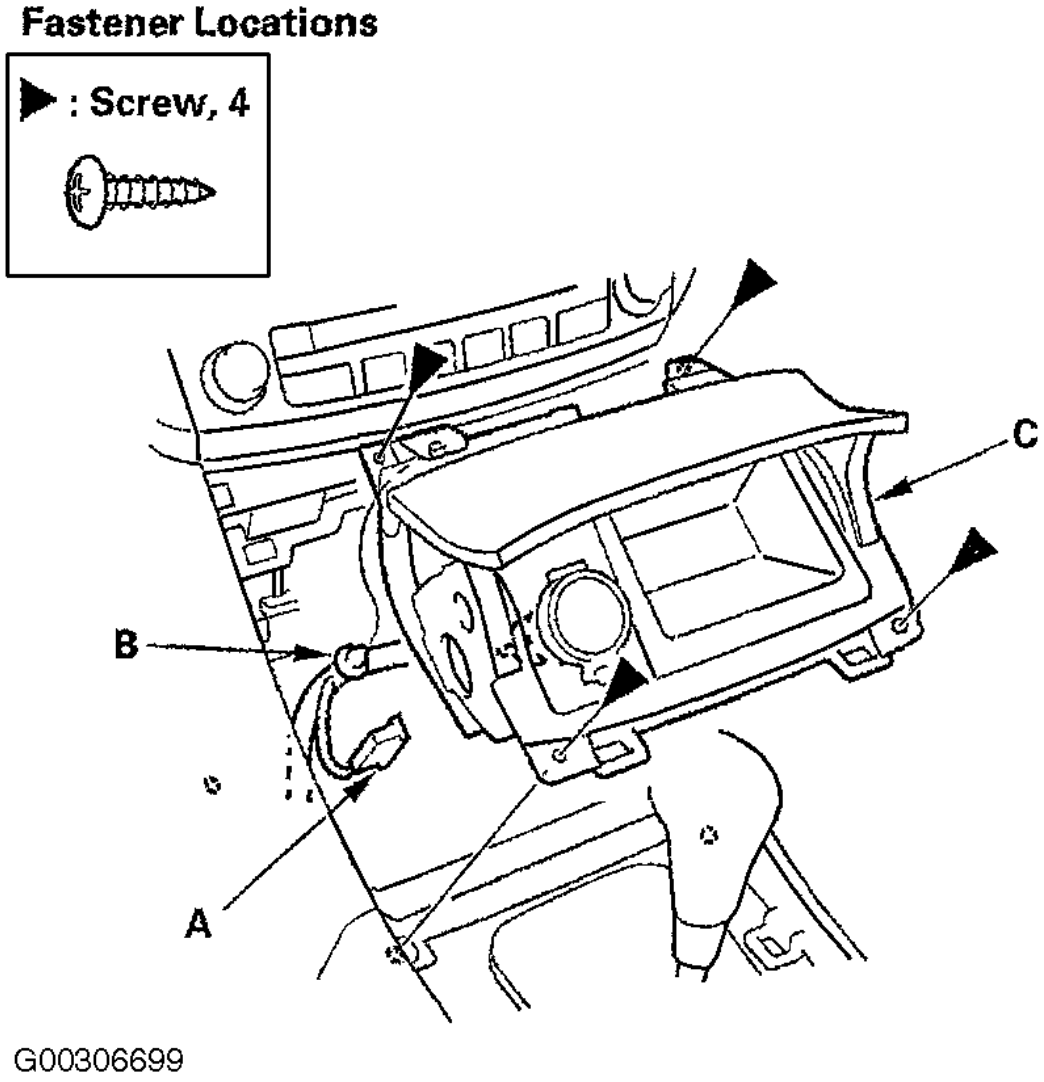


Fig. 30: Removing Center Lower Pocket
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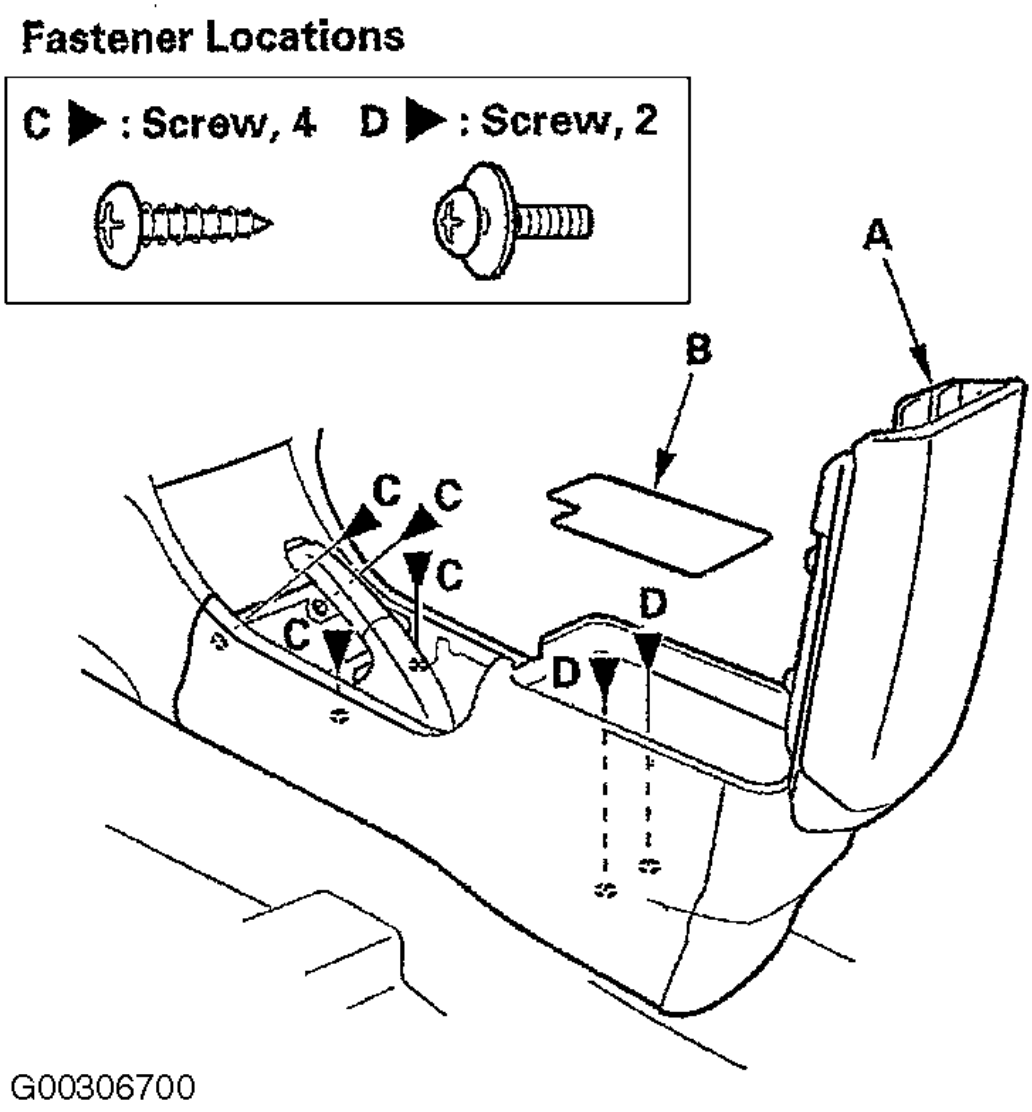


Fig. 31: Removing Center Console Box Lid
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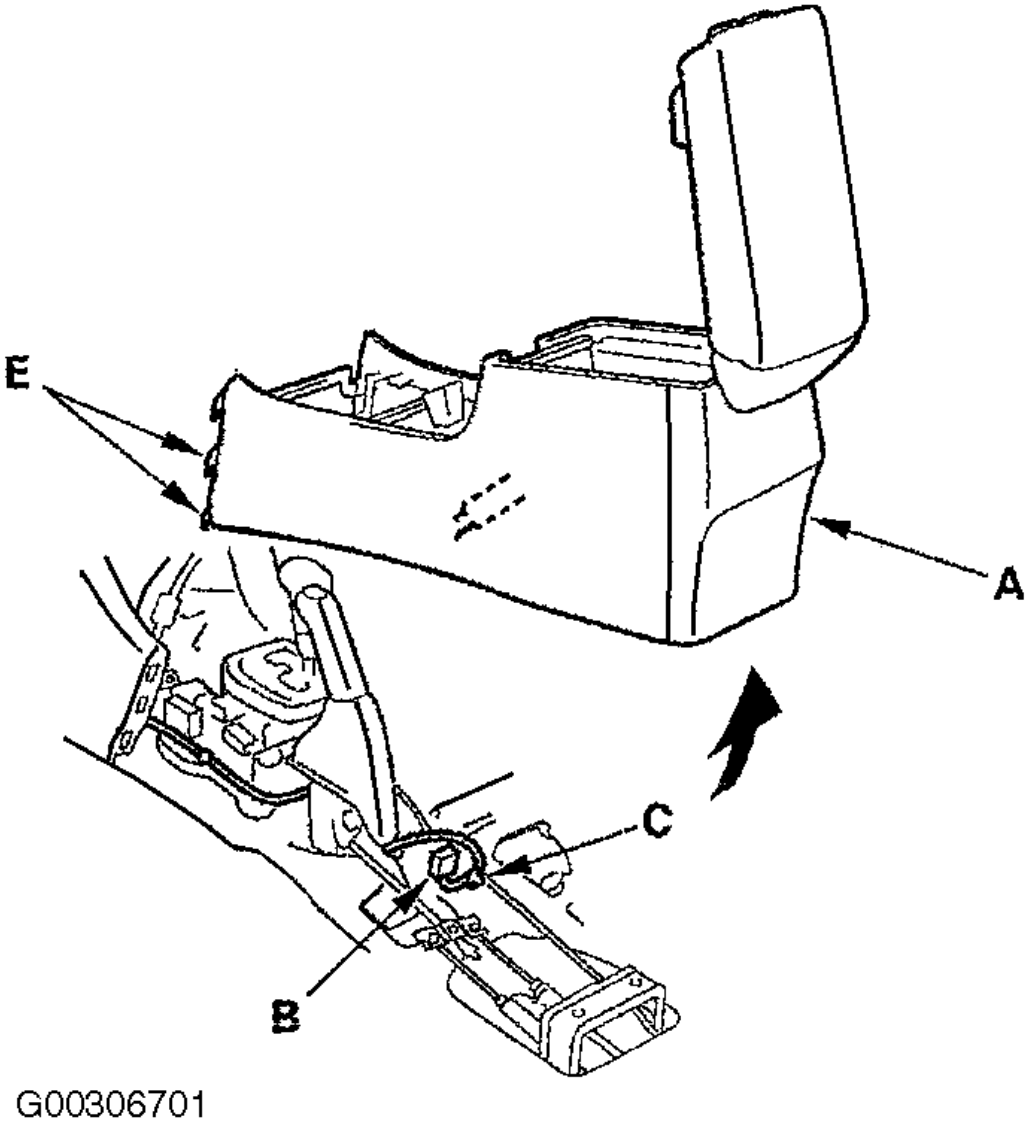


Fig. 32: Remover Center Console
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FRONT BRAKE PADS

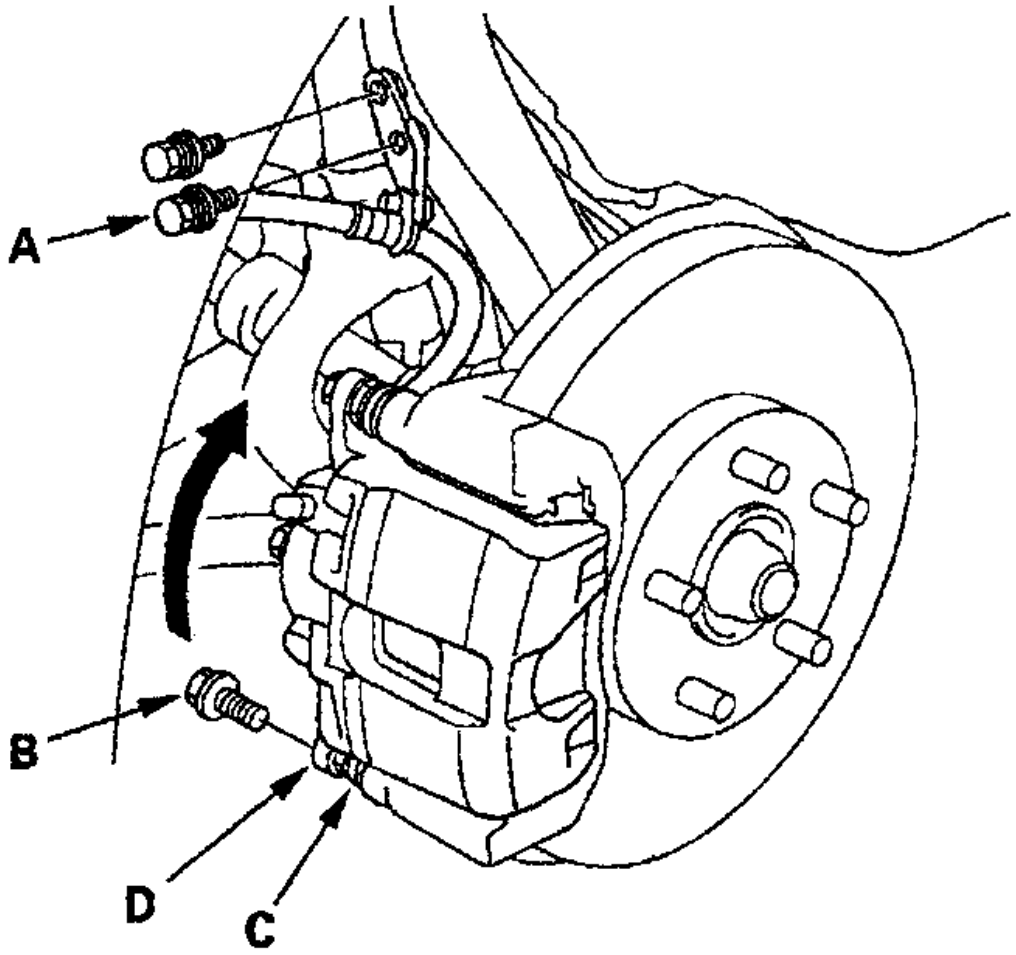
WARNING: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health. Avoid breathing dust particles. Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

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Removal

1. Raise and support front of vehicle. Remove front wheels.
2. Remove the brake hose mounting bolts "A". See **Fig. 33** . Remove the flange bolt "B" while holding the sub pin "C" with a wrench, being careful not to damage the pin boot, and pivot the caliper "D" up out of the way.
3. Check the hose and pin boots for damage and deterioration.
4. Remove the pad shims "A" and pads "B". See **Fig. 34** .
5. Remove the pad retainers "A". See **Fig. 35** .

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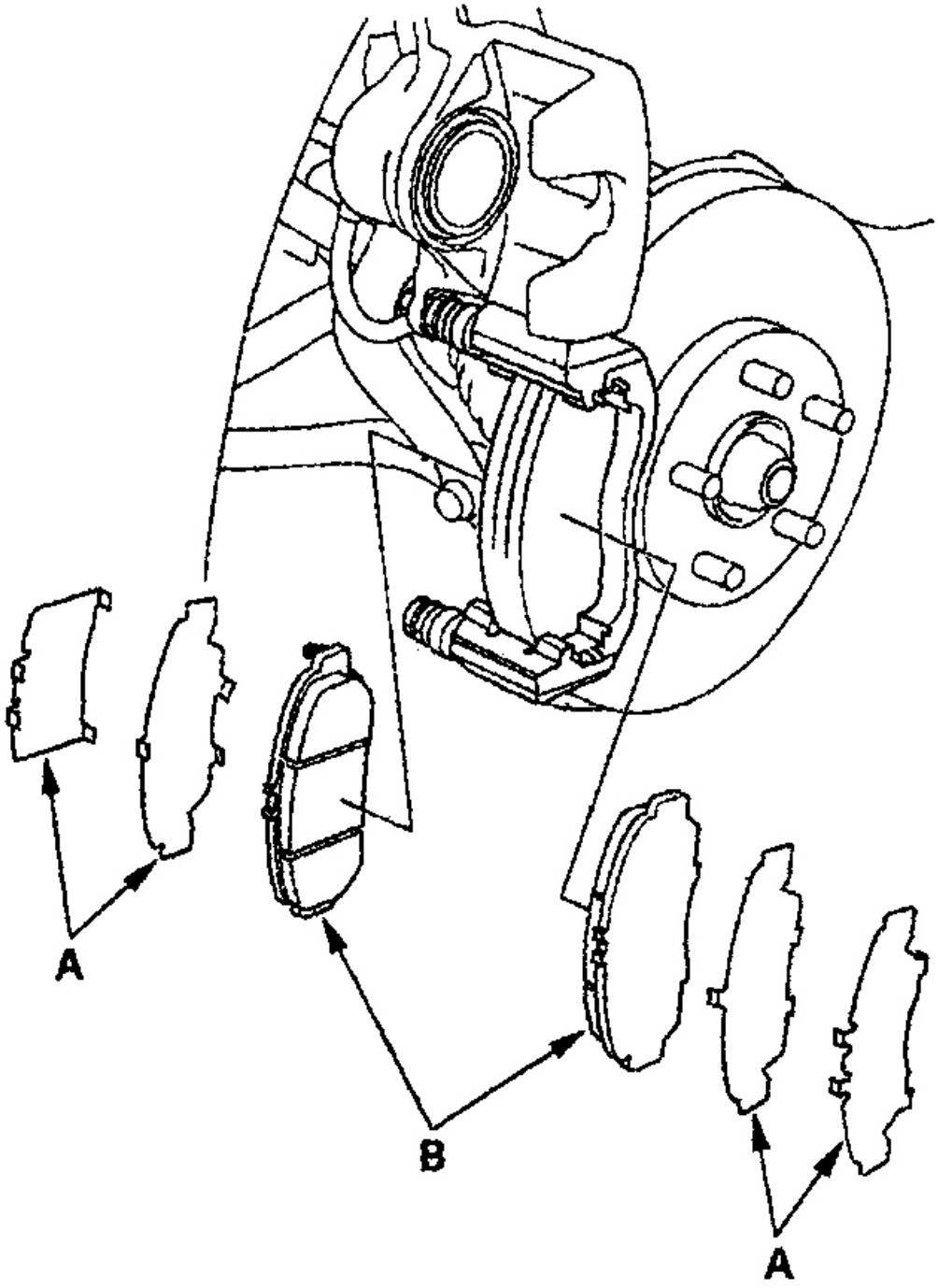


A - Mounting Bolts
B - Flange Bolt
C - Pin
D - Caliper

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Fig. 33: Pivoting Brake Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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A - Shims
B - Brake Pads

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Fig. 34: Removing Pads & Pad Shims (Front)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

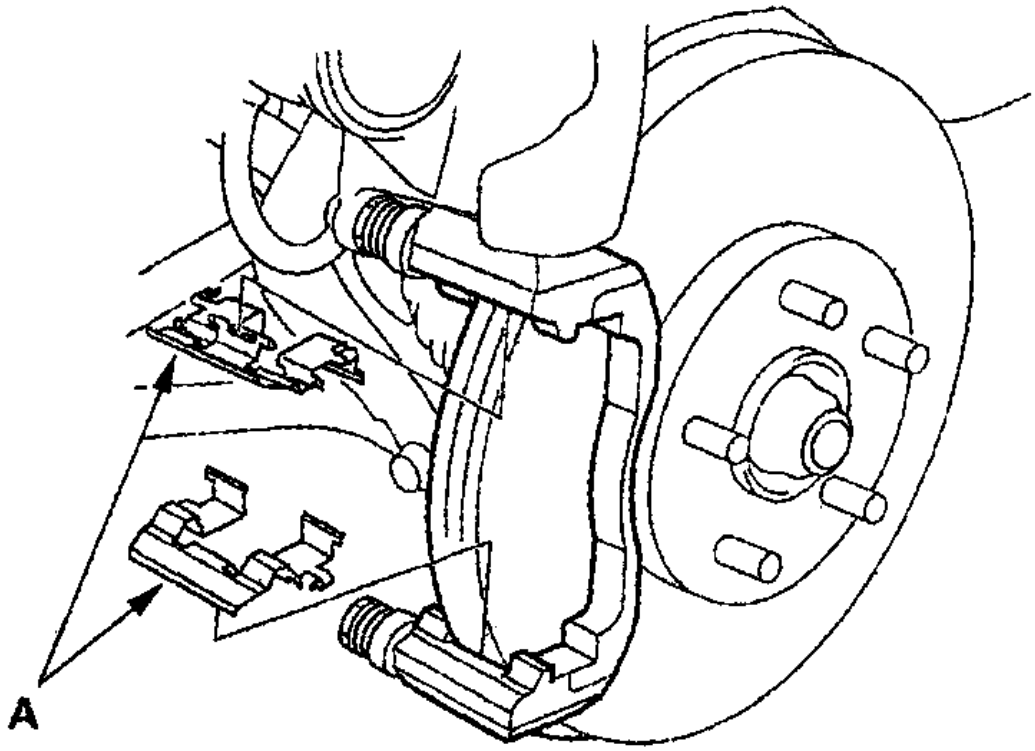


Fig. 35: Identifying Pad Retainers (Front)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Brake Pad Inspection

Check the thickness of the inner and outer pads. Do not include the thickness of the backing plate. If the brake thickness is less than the service limit, replace all the pads as a set. See **DISC BRAKE SPECIFICATIONS** .

Disc Runout Inspection

1. Inspect the disc surface for damage and cracks. Clean disc thoroughly, and remove all rust. Install suitable flat washers "A" and wheel lug nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub. See **DISC BRAKE SPECIFICATIONS** . See **Fig. 36** .

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NOTE: Runout limit applies to front and rear discs.

2. Set up the dial gauge against the brake disc and measure the runout at 0.4" (10 mm) from the outer edge of the disc. See **DISC BRAKE SPECIFICATIONS** . See **Fig. 36** .
3. If the disc runout is beyond the service limit, refinish the brake disc.

NOTE: If the brake disc is beyond the service limit for refinishing, replace it. A new disc should be refinished if its runout is greater than .004" (.10 mm).

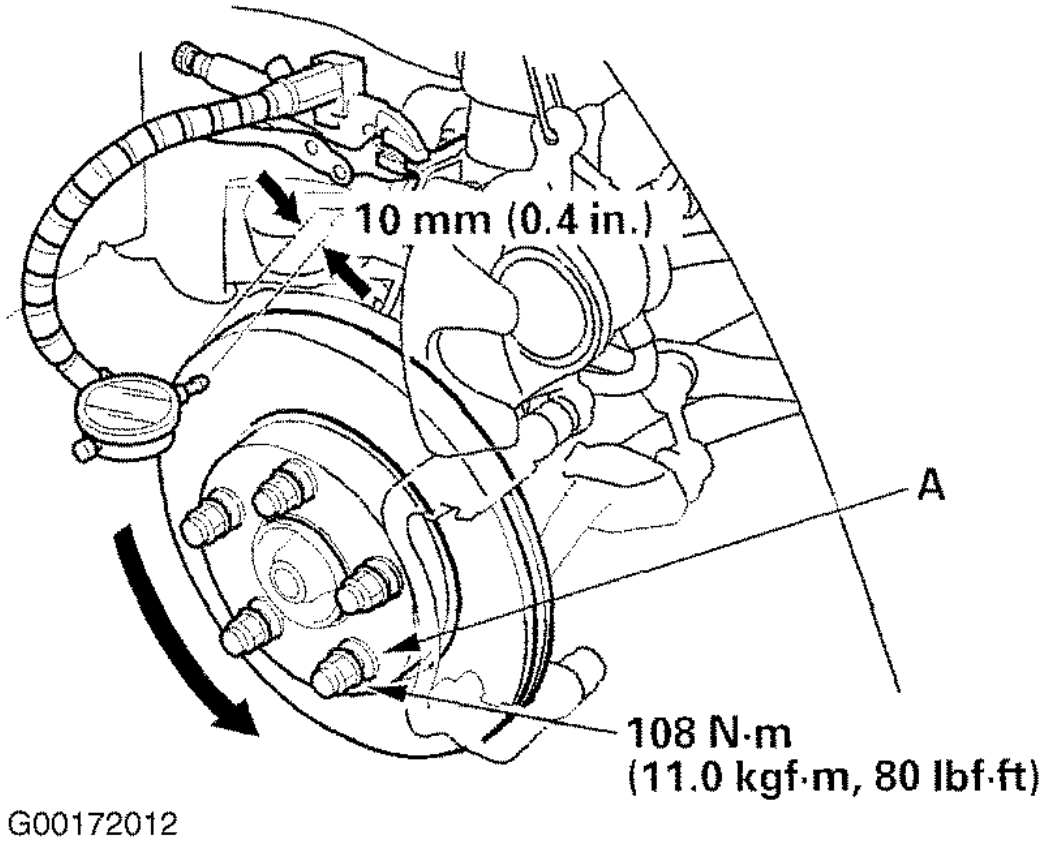


Fig. 36: Measuring Runout Of Front Brake Disc
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Disc Thickness & Parallelism Inspection

1. Using a micrometer, measure disc thickness at 8 points, approximately 45 degrees apart and .4" (10 mm) in from the outer edge of the disc. See **Fig. 37** . Replace the brake disc if the smallest measurement is less than the Minimum Thickness. See **DISC BRAKE SPECIFICATIONS** .

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NOTE: Parallelism is the difference between the thickness measurements.

2. If the disc is beyond the service limit for parallelism, refinish the brake disc. If the brake disc is beyond the service limit for refinishing, replace it. See **DISC BRAKE SPECIFICATIONS** .

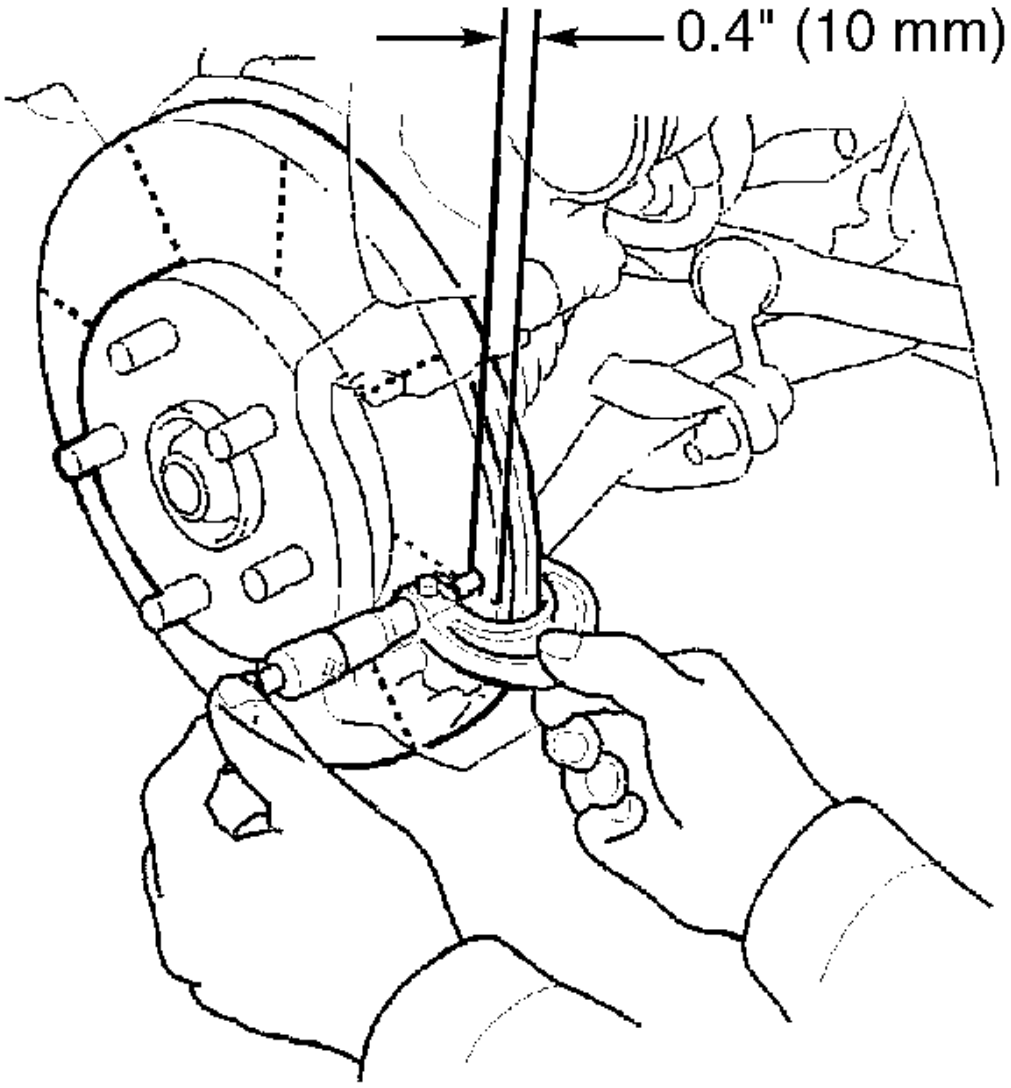


Fig. 37: Measuring Front & Rear Brake Disc Thickness & Parallelism
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Installation

WARNING: Contaminated brake discs and pads reduce stopping ability.

1. Clean and install the pad retainers. Apply Dow Corning Molykote M77 grease to pad side of the pad shims "A" and "B", both sides of pad shim "C", the back of pads "D", and to other areas indicated by arrows. See **Fig. 38** . Wipe excess grease off the shims and pads.

WARNING: If reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

2. Install the brake pads and pad shims correctly. Install the pads with the wear indicators "E" on the inside.
3. Push in the piston "A" so the caliper will fit over the pads. See **Fig. 39** . Ensure the piston boot is in position to prevent damaging it when pivoting the caliper down.

NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

4. Pivot caliper "B" down into position. Being careful not to damage the pin boots, install the flange bolt "C" and tighten it to the specified torque while holding sub pin "D" with a wrench. See **TORQUE SPECIFICATIONS** . Press the brake pedal several times to ensure the brake works, then test-drive.
5. After installation, check for leaks at the hose and line joints or connections, and retighten if necessary.

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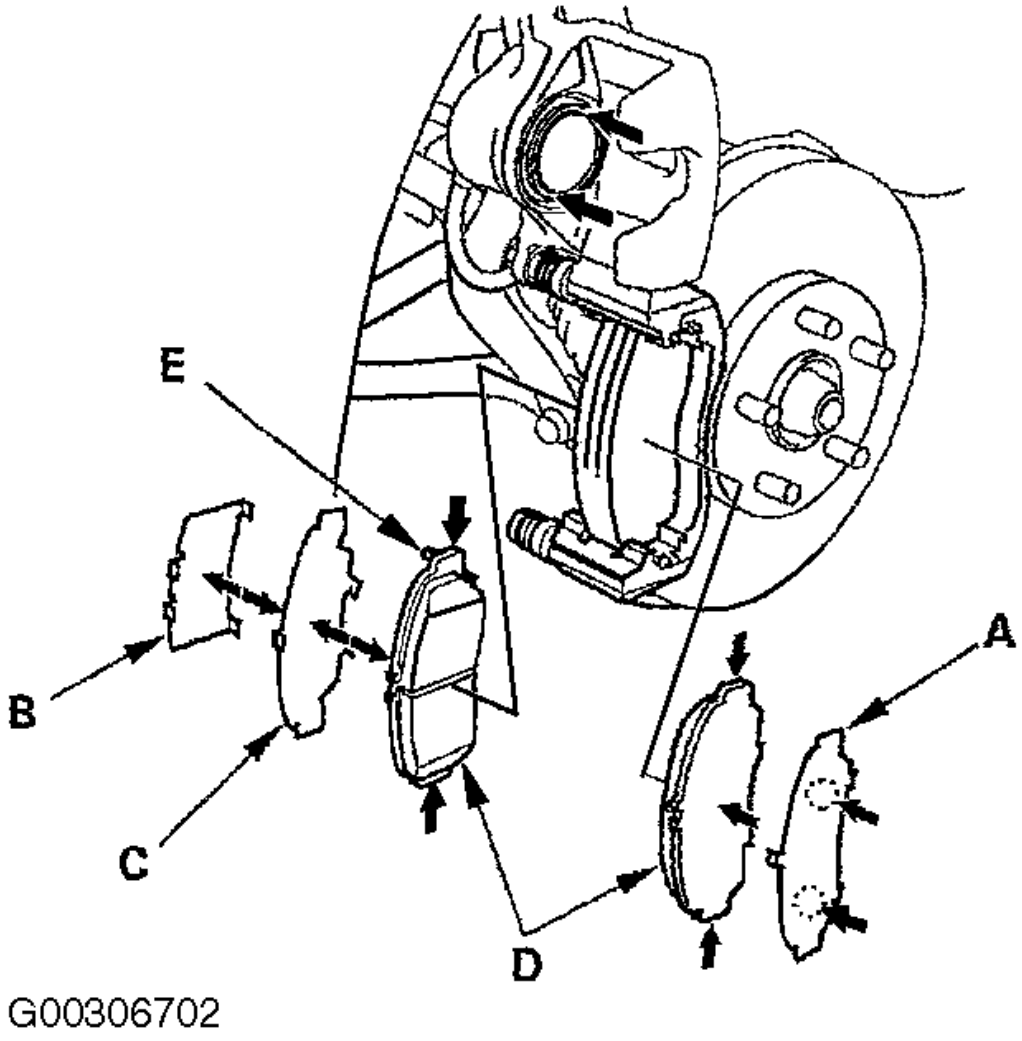


Fig. 38: Installing Brake Pads
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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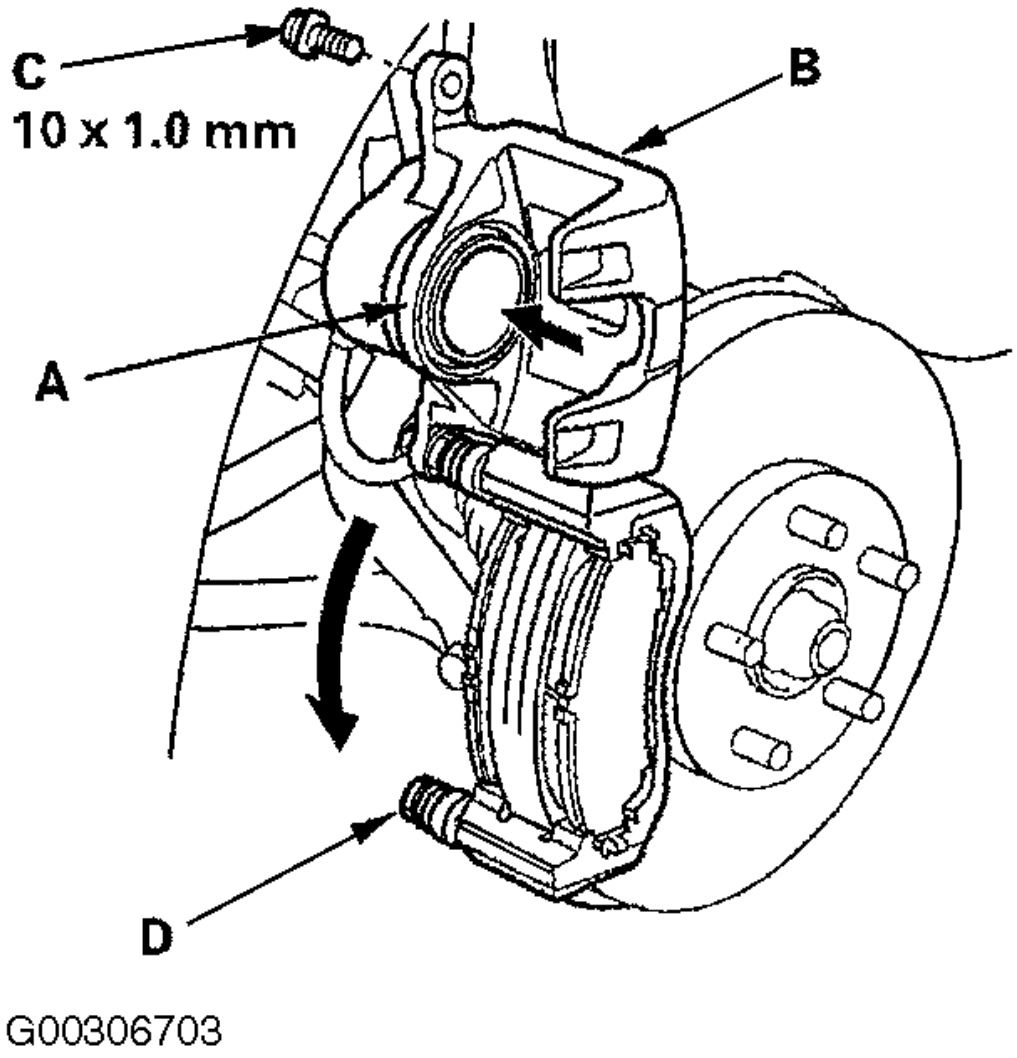


Fig. 39: Installing Brake Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MASTER CYLINDER

CAUTION: Avoid spilling brake fluid on car, as it will damage paint. If brake fluid contacts paint, immediately flush with water.

Removal

1. Remove the cable clamps "A" from the body. See **Fig. 40** .

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2. Remove the access panel "A", then remove the strut brace "B". See **Fig. 41** .
3. Remove the Accelerator Pedal Position (APP) sensor mounting bolt "C" from the strut brace "B".
4. Remove the reservoir cap and brake fluid from the master cylinder reservoir.
5. Remove primary and secondary brake lines from hose clamp "A". See **Fig. 42** .
6. Disconnect the brake fluid level switch connector "A". See **Fig. 43** .
7. Disconnect the brake lines "B" from the master cylinder "C". To prevent spills, cover the hose joints with rags or shop towels. Remove the master cylinder mounting nuts "D" and washers.
8. Remove the master cylinder from the brake booster "E". Be careful not to bend or damage the brake lines when removing the master cylinder. Remove the rod seal "F" from the master cylinder.

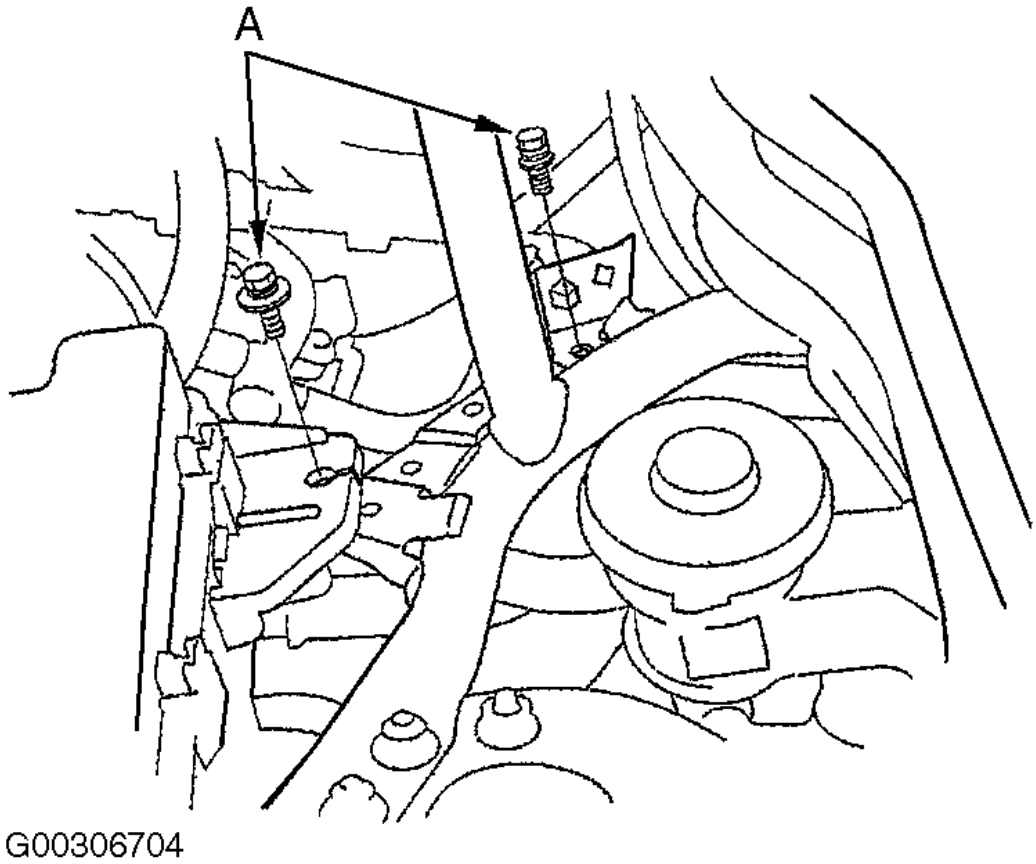


Fig. 40: Removing Cable Clamps
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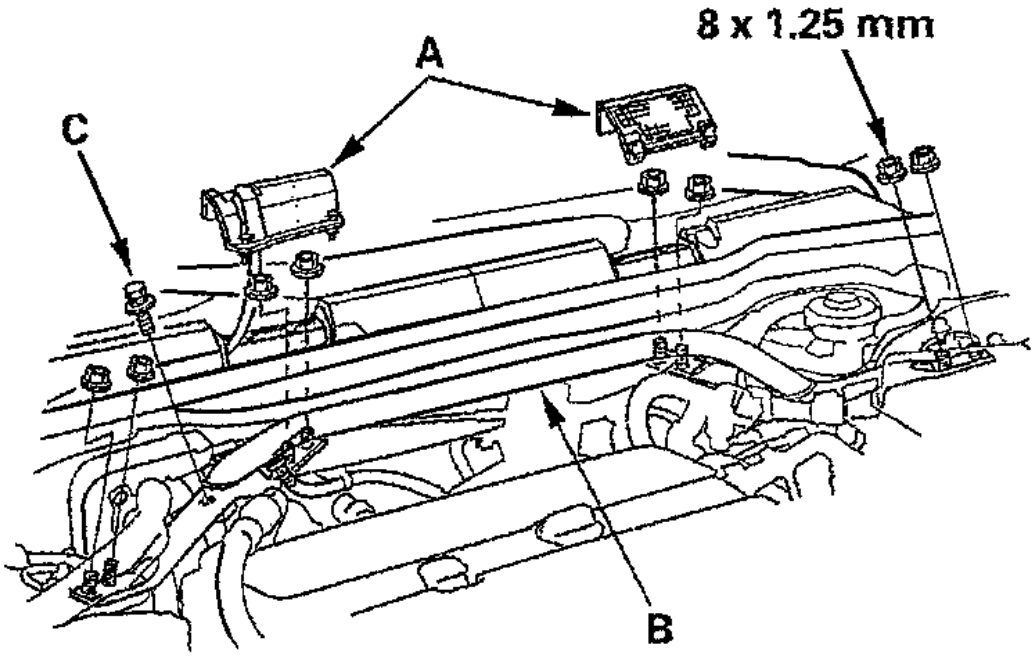


Fig. 41: Removing Access Panels
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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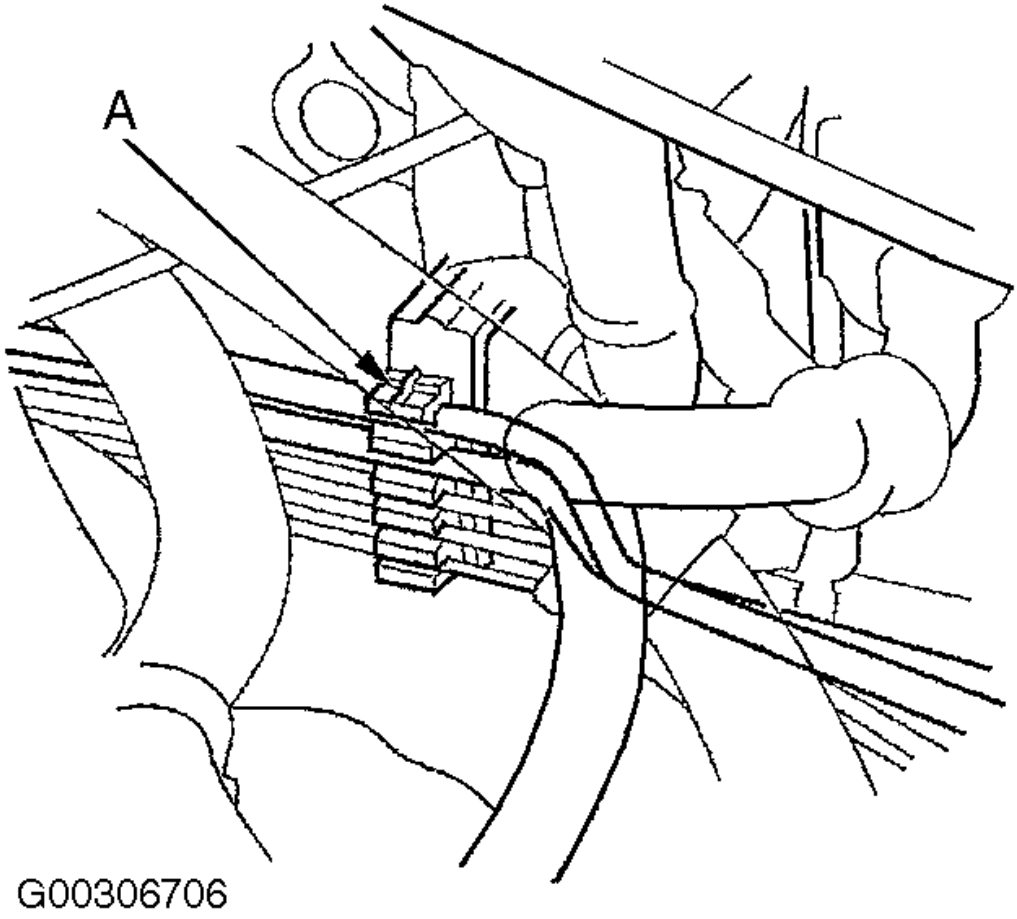


Fig. 42: Removing Primary & Secondary Brake Lines
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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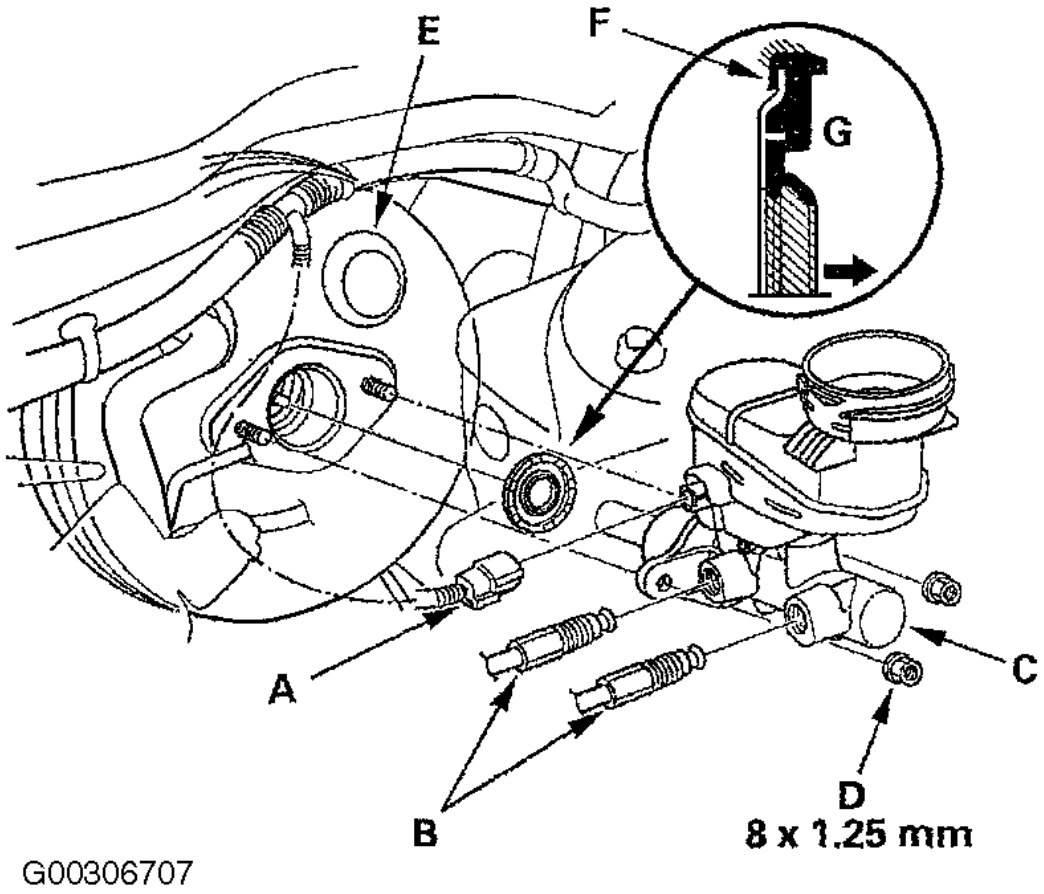


Fig. 43: Removing & Installing Master Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Inspection

Before reassembling, check that all parts are free of dust and other foreign particles. Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary. Do not allow dirt or foreign matter to contaminate the brake fluid.

Installation

To install, reverse removal procedure. Note the following items:

- Replace all the rubber parts with new ones whenever the master cylinder is removed.
- Use a new rod seal on reassembly. Coat the inner bore lip and outer circumference of the new rod seal with the recommended seal grease in the master cylinder set.
- Install the rod seal onto the master cylinder with its grooved side "G" toward the master cylinder. See **Fig.**

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43 .

- Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary. See **BRAKE PEDAL HEIGHT & FREE PLAY** under ADJUSTMENTS.

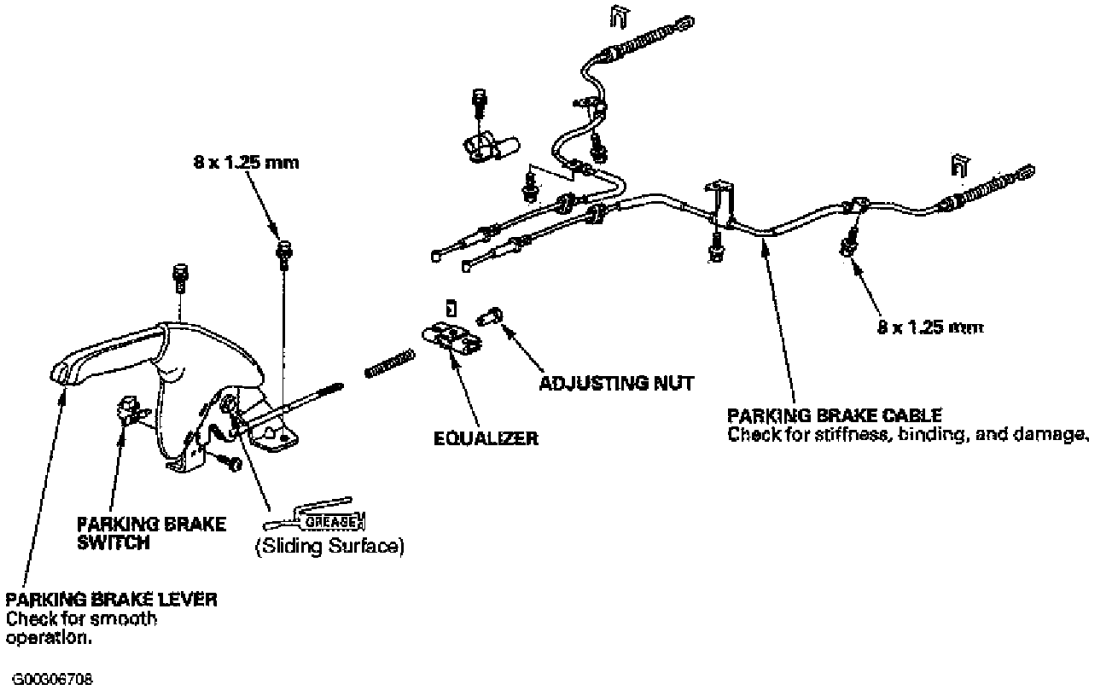
PARKING BRAKE CABLE

CAUTION: DO NOT bend or distort parking brake cables. This will lead to stiff operation and premature failure.

NOTE: Refer to Fig. 44 as needed during this procedure.

Removal & Installation

1. Release the parking brake lever fully. Remove the center console. See **CENTER CONSOLE** . Loosen the parking brake cable adjusting nut "A". See **Fig. 9** .
2. Remove the parking brake cable clip "A" from the brake cable "B". Disconnect the parking brake cable from the lever "C". See **Fig. 45** .
3. Remove the parking brake cable mounting hardware, then remove the cable.
4. To install the new cable, reverse removal procedure. Note the following items:
   - Be careful not to bend or distort the cable.
   - Ensure the parking brake cable clip is fully seated on the cable housing.
   - Adjust parking brake cable. See **PARKING BRAKE** under ADJUSTMENTS.



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Fig. 44: Exploded View Of Parking Brake Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

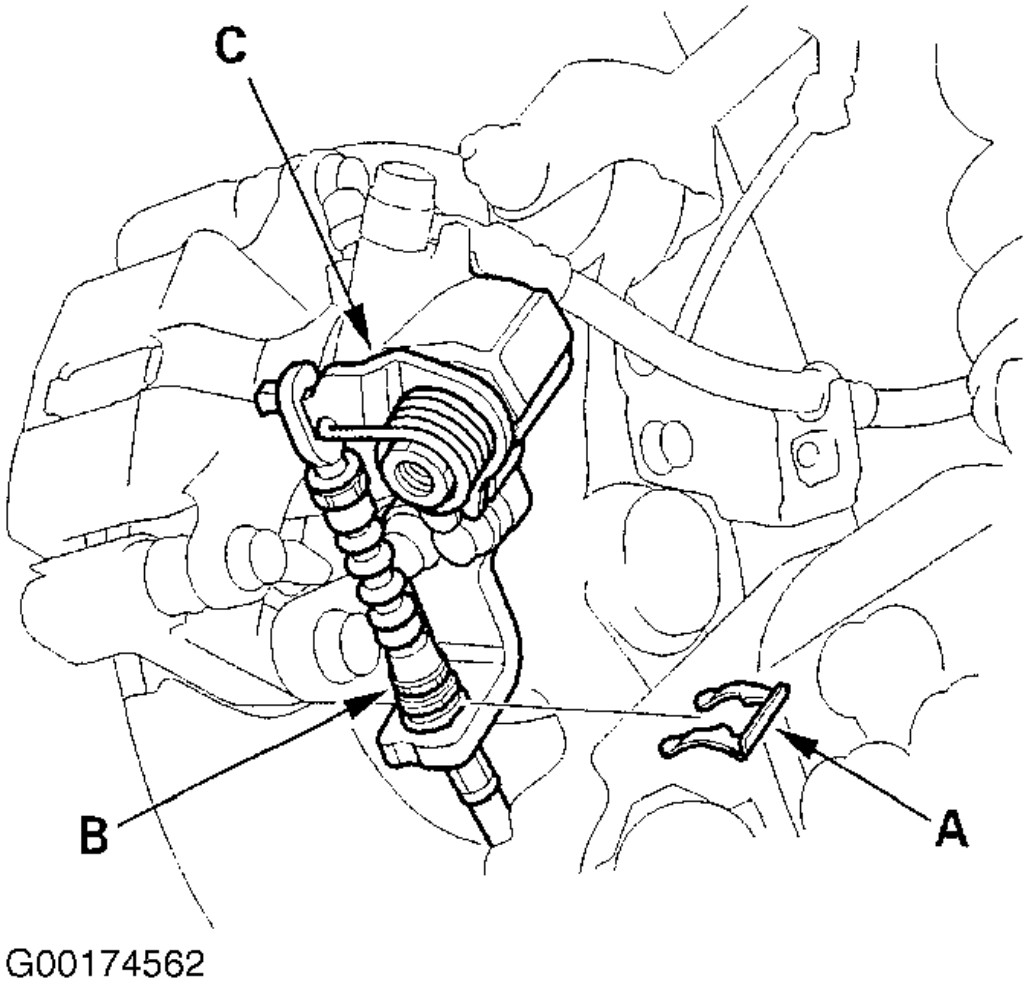


Fig. 45: Removing Parking Brake Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR BRAKE PADS

Removal

1. Raise and support rear of vehicle. Remove rear wheels. Remove flange bolts "A" while holding pin "B" with a wrench, being careful not to damage the pin boot, and remove the caliper bolts "C", and remove the caliper "D" from the caliper "C". See **Fig. 46** .
2. Remove the pad shim "A" and pads "B". See **Fig. 47** .

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3. Remove the pad retainers "A". See **Fig. 48** . Clean the caliper thoroughly, remove any rust, and check for grooves and cracks. Check the brake disc for damage and cracks.

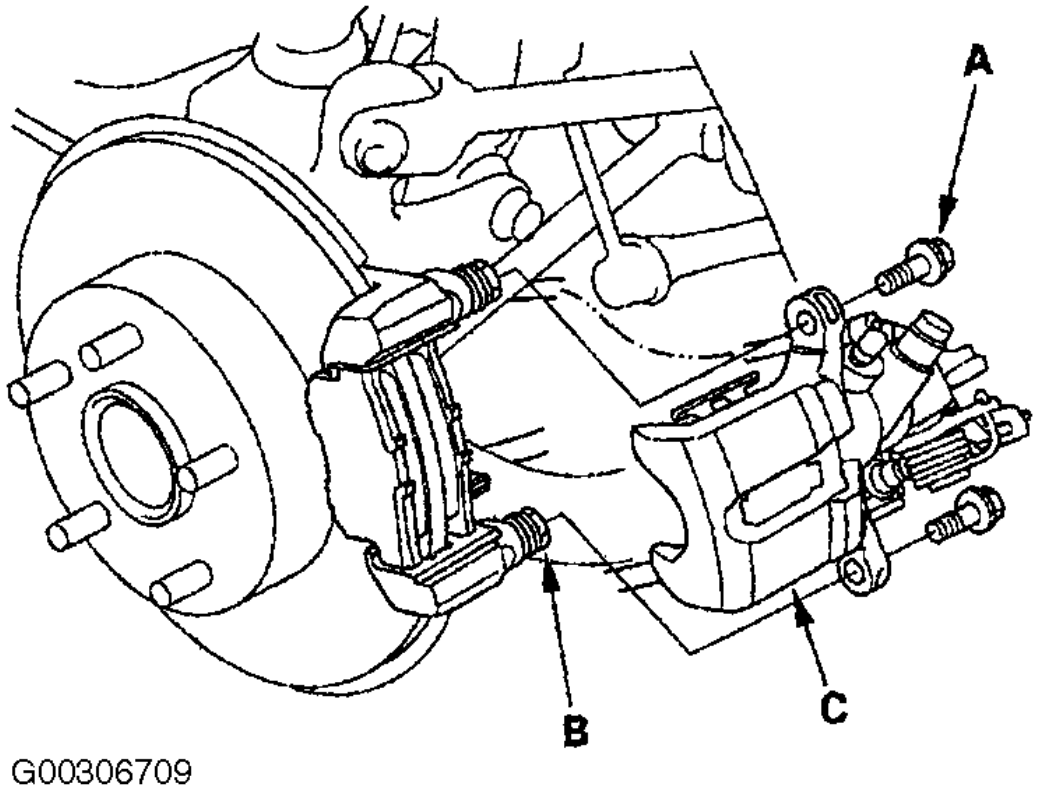
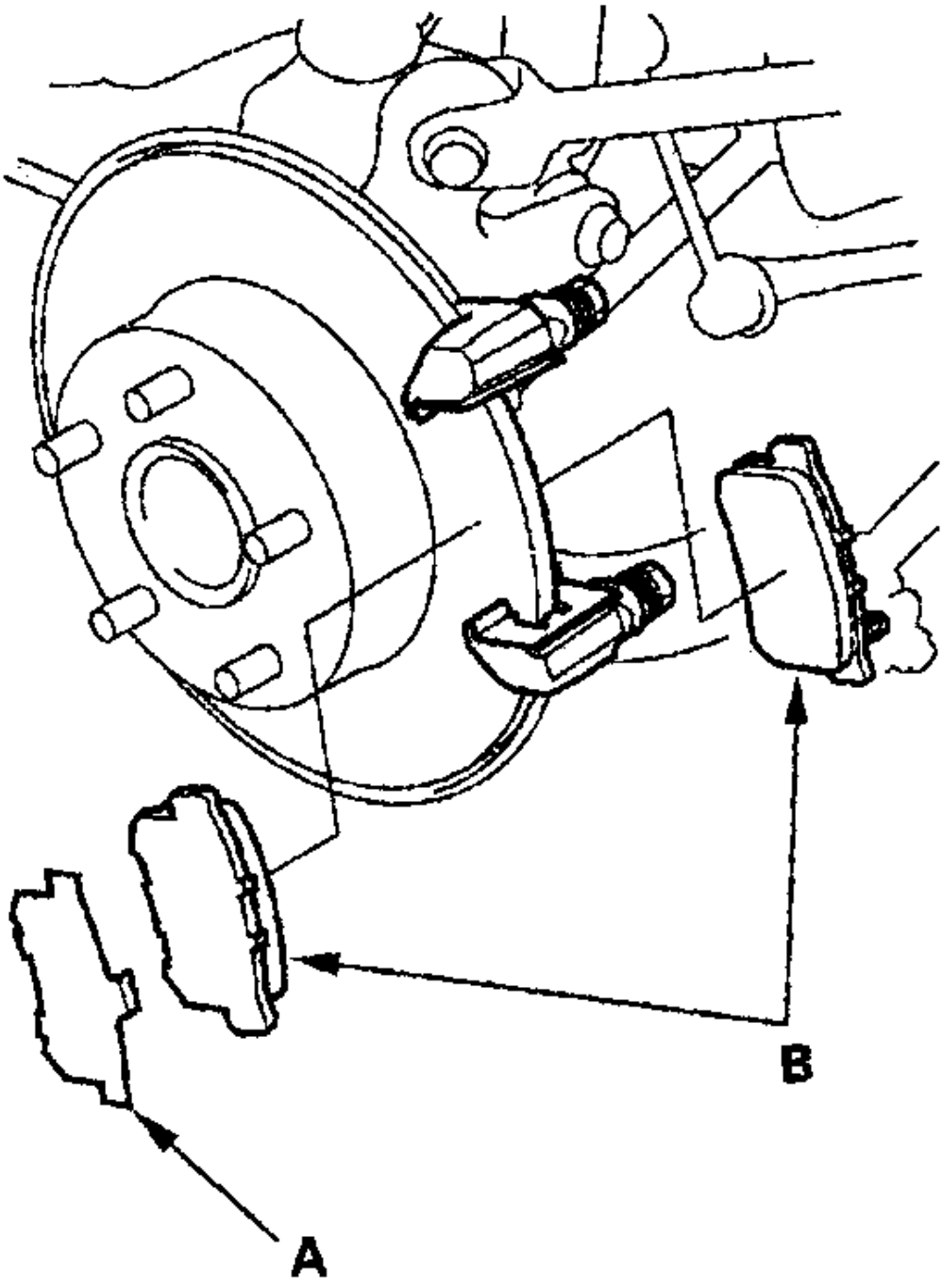


Fig. 46: Removing Rear Brake Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 47: Removing Pads & Shim (Rear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

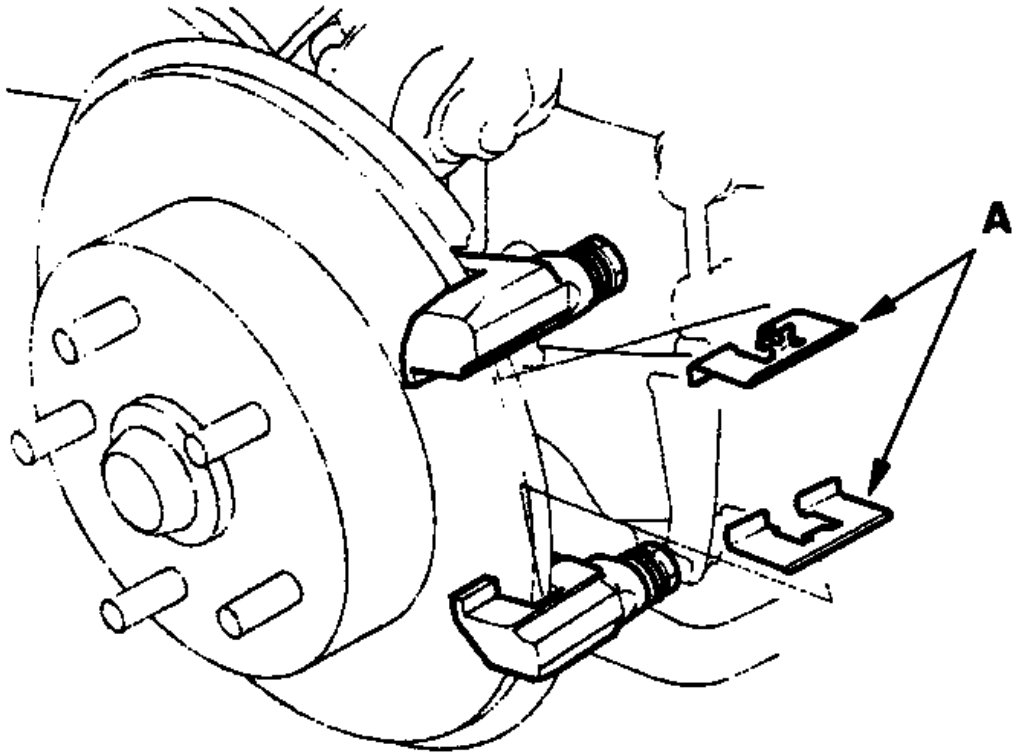


Fig. 48: Identifying Pad Retainers (Rear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Inspection

Check the thickness of the inner and outer pads "A". See **Fig. 49** . Do not include the thickness of the backing plate. See **DISC BRAKE SPECIFICATIONS** . If the brake pad thickness is less than the service limit, replace all the pads as a set.

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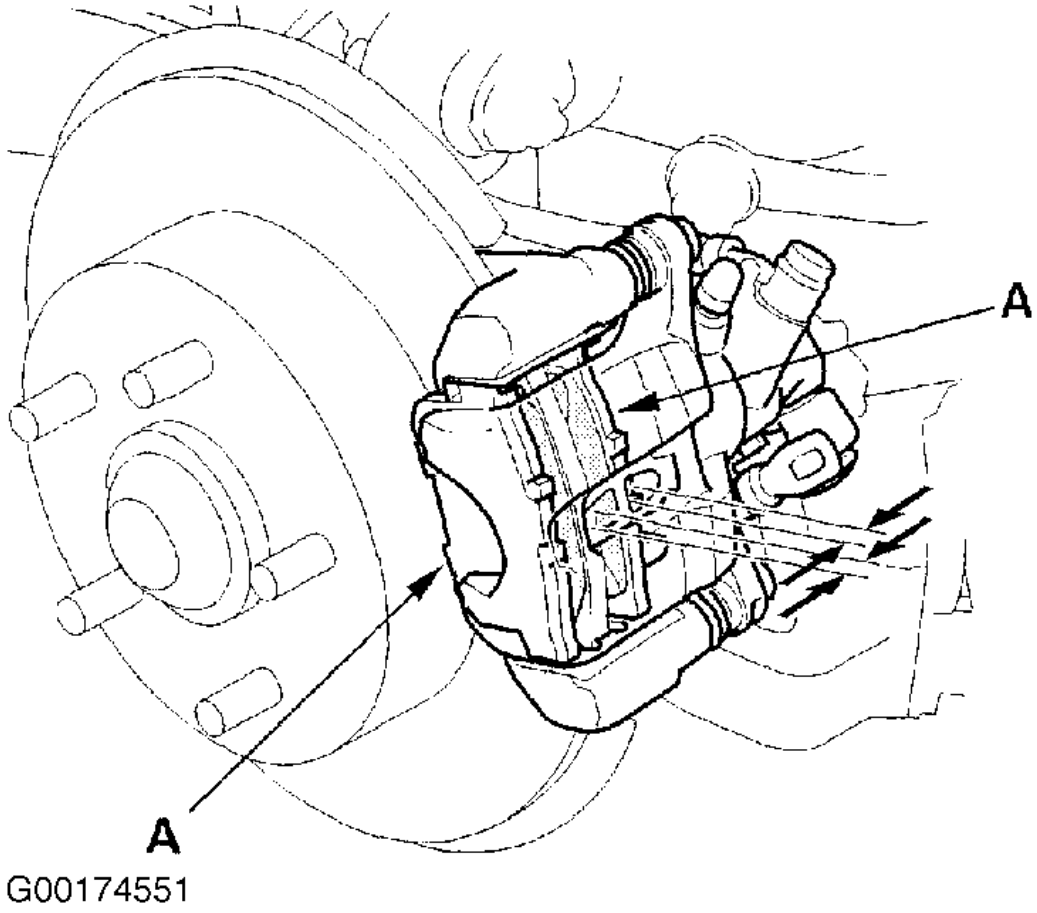


Fig. 49: Measuring Thickness Of Rear Brake Pads
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Disc Runout Inspection

1. Inspect the disc surface for damage and cracks. Clean disc thoroughly, and remove all rust. Install suitable flat washers "A" and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub. See **DISC BRAKE SPECIFICATIONS** . See **Fig. 50** .
2. Set up the dial gauge against the brake disc and measure the runout at .4" (10 mm) from the outer edge of the disc. See **DISC BRAKE SPECIFICATIONS** . See **Fig. 50** .
3. If the disc runout is beyond the service limit, refinish the brake disc.

NOTE: If the brake disc is beyond the service limit for refinishing, replace it. A new disc should be refinished if its runout is greater than .004" (.10 mm).

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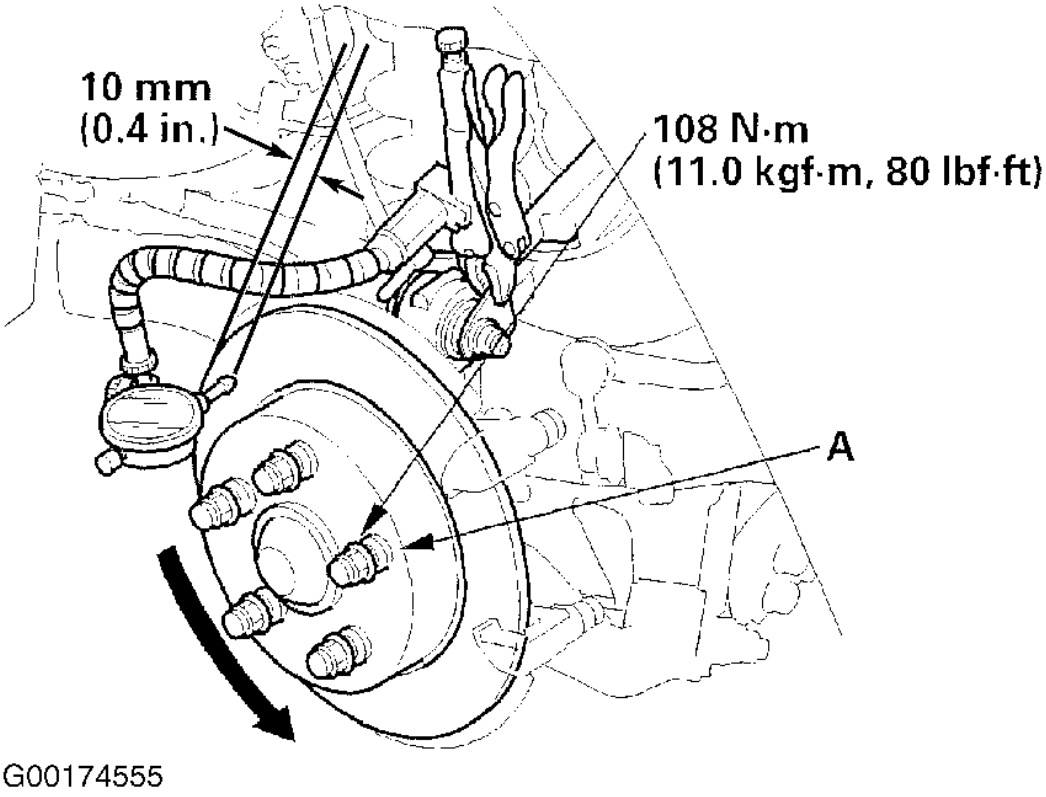


Fig. 50: Measuring Runout Of Rear Brake Disc
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Brake Disc Thickness & Parallelism Inspection

1. Using a micrometer, measure disc thickness at 8 points, approximately 45 degrees apart and .4" (10 mm) in from the outer edge of the disc. See **Fig. 37** . Replace the brake disc if the smallest measurement is less than the minimum thickness. See **DISC BRAKE SPECIFICATIONS** .

   NOTE: Parallelism is the difference between the thickness measurements.

2. If the disc is beyond the service limit for parallelism, refinish the brake disc. If the brake disc is beyond the service limit for refinishing, replace it. See **DISC BRAKE SPECIFICATIONS** .

Installation

WARNING: Contaminated brake discs and pads reduce stopping ability.

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1. Clean and install the pad retainers. Apply Dow Corning Molykote M77 grease to both sides of shim "A", the back of the pads "B", and the other areas indicated by arrows. See **Fig. 51** . Wipe excess grease off the shim and pads.

WARNING: If reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

2. Install the brake pads and pad shims correctly. Install the pads with the wear indicators "C" on the inside.
3. Rotate the caliper piston "A" clockwise into the cylinder, then align the cutout "B" in the piston with the tab "C" on the inner pad by turning the piston back. See **Fig. 52** . Lubricate the boot with rubber grease to avoid twisting the piston boot. If the piston boot is twisted, back it out so it is positioned properly.
4. Install the caliper. Install the flange bolts "D". Tighten flange bolts to specification while holding the pin, "E" with a wrench. See **TORQUE SPECIFICATIONS** . Be careful not to damage the pin boot.

NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

5. Press the brake pedal several times to ensure the brake works, then test drive. After installation, check for leaks at hose and line joints or connections, and retighten if necessary.

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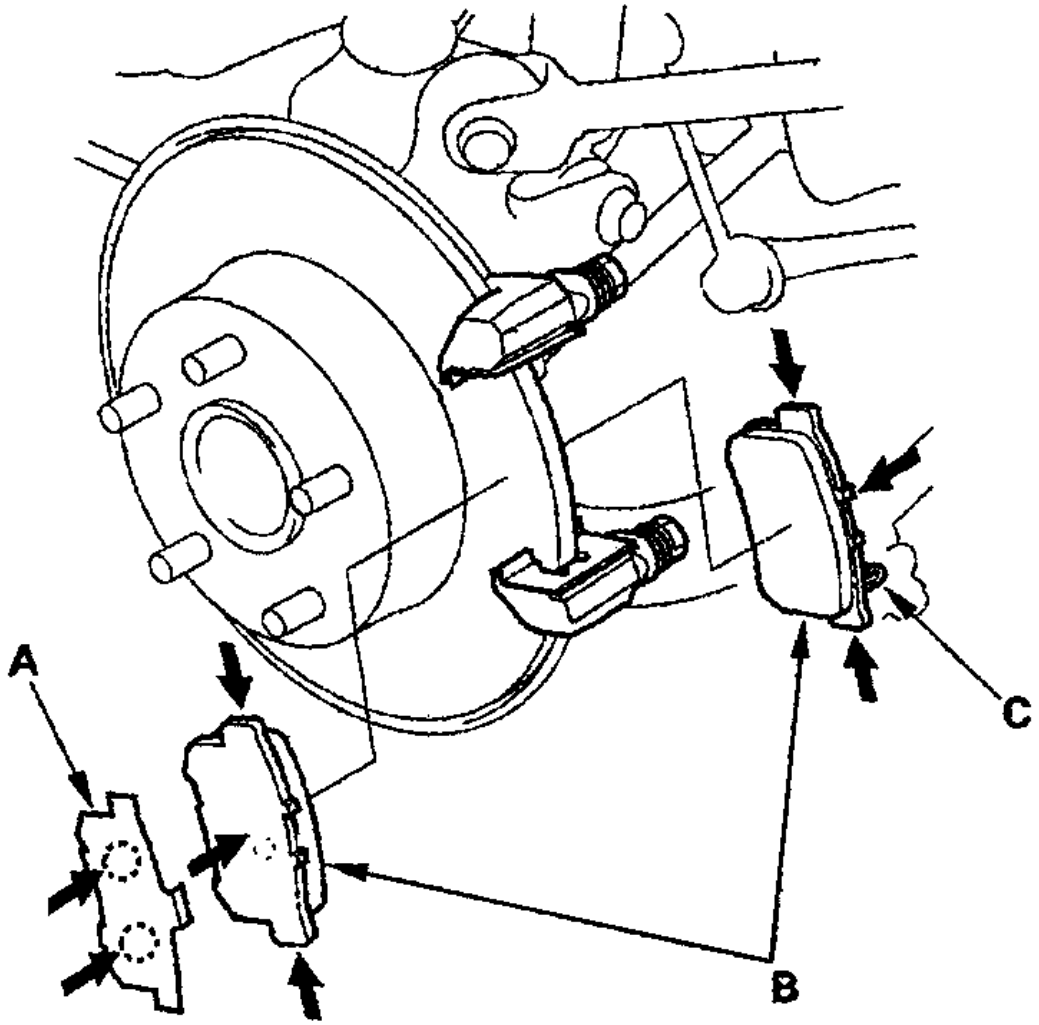


Fig. 51: Applying Grease To Shim & Back Of Pads
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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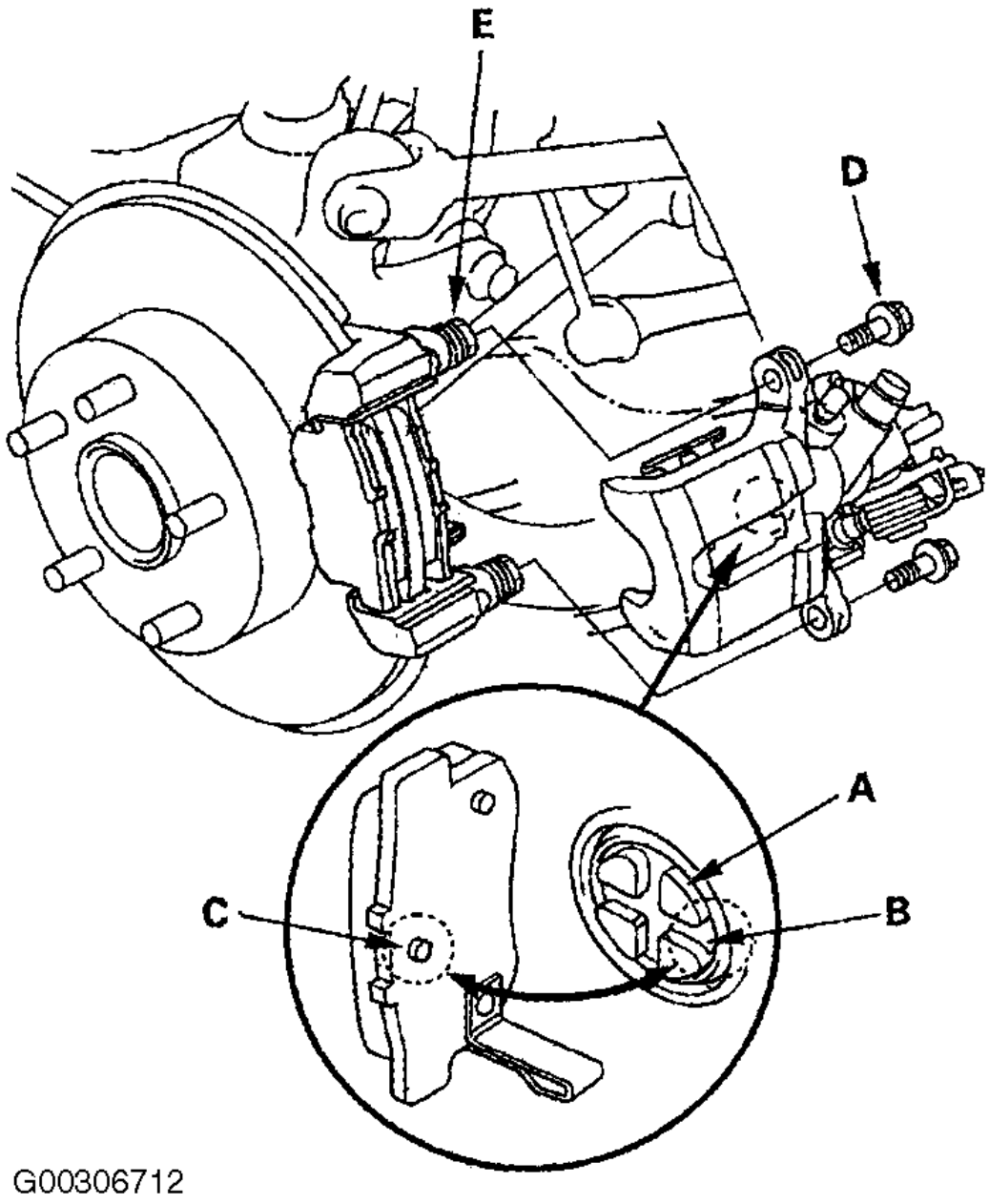


Fig. 52: Installing Rear Brake Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OVERHAUL

FRONT & REAR BRAKE CALIPER

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WARNING: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health. Avoid breathing dust particles. Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner. Remove, disassemble, inspect, reassemble, and install the caliper.

Disassembly & Reassembly

NOTE: See Fig. 53 and Fig. 54 for exploded view of front & rear brake caliper.

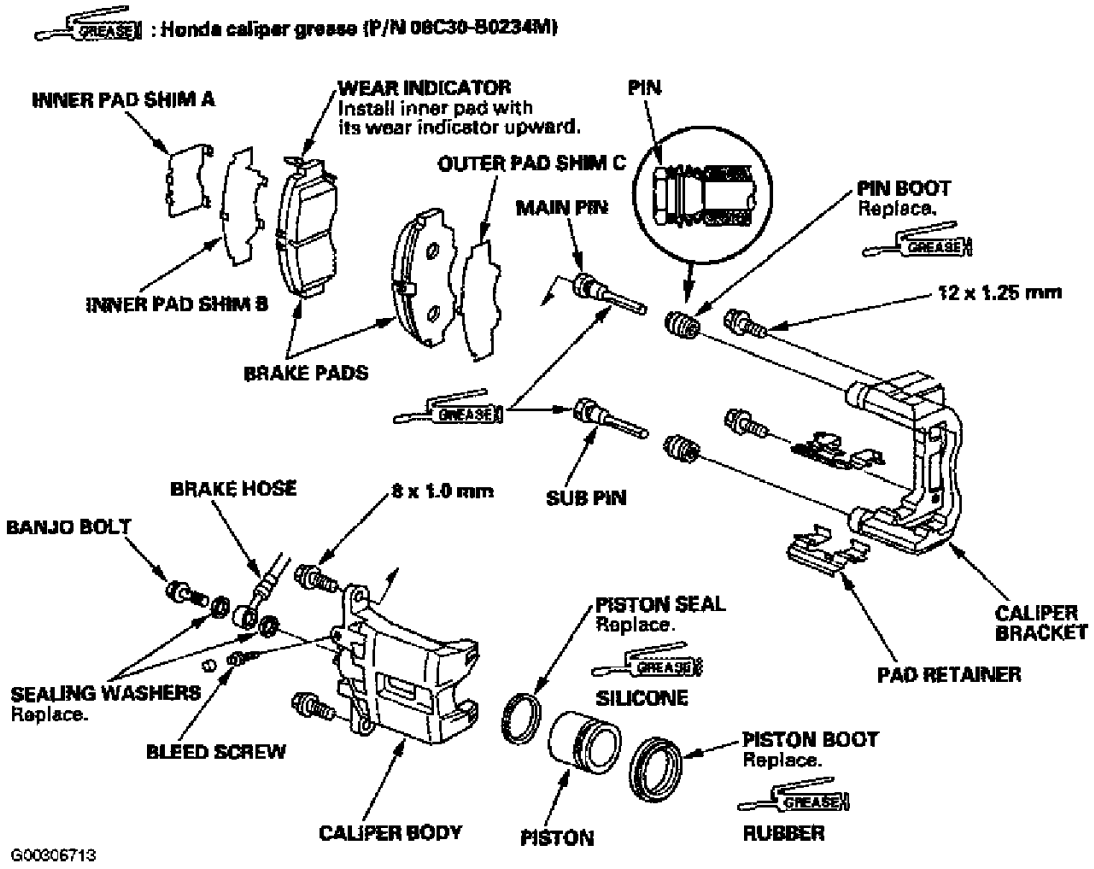


Fig. 53: Exploded View Of Front Brake Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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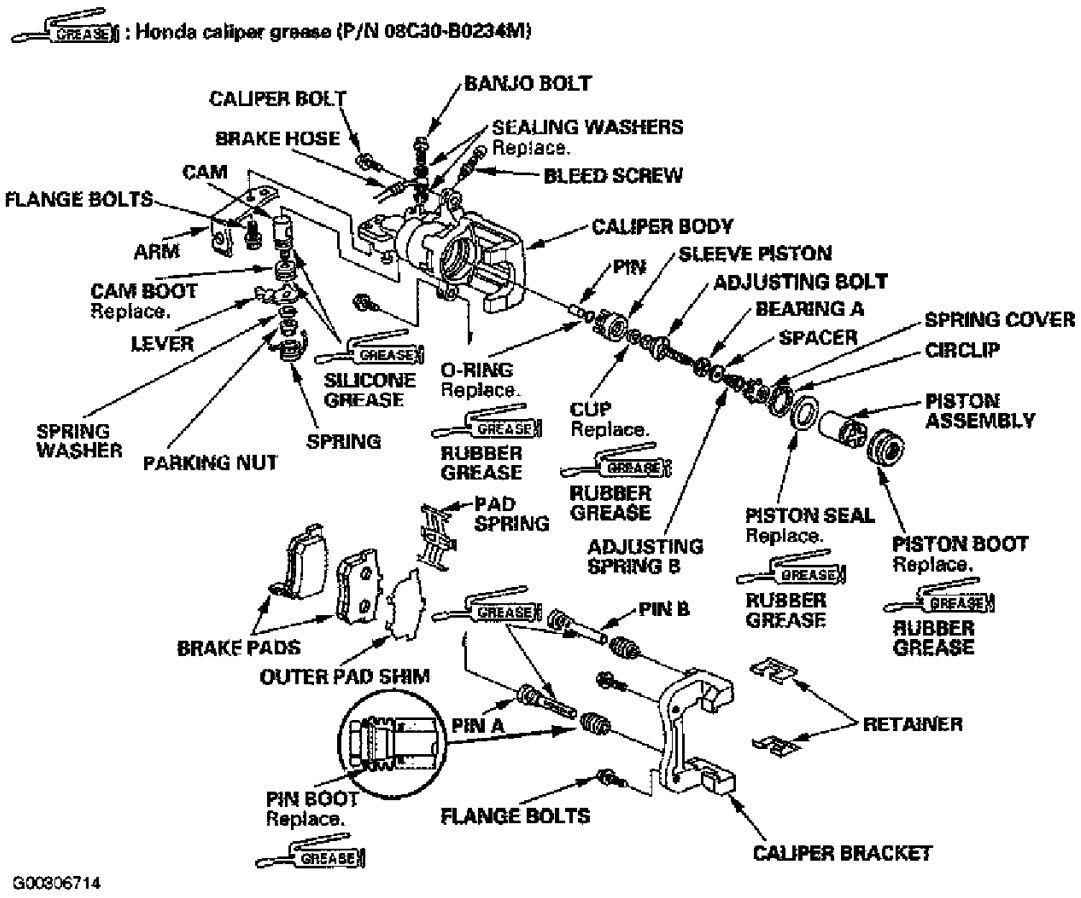


Fig. 54: Exploded View Of Rear Brake Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE SPECIFICATIONS

For disc brake torque specifications, see **TORQUE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

DISC BRAKE SPECIFICATIONS

For disc brake service specifications, see **SERVICE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

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2004 ENGINE PERFORMANCE

EVAP System - TSX

COMPONENT LOCATION INDEX

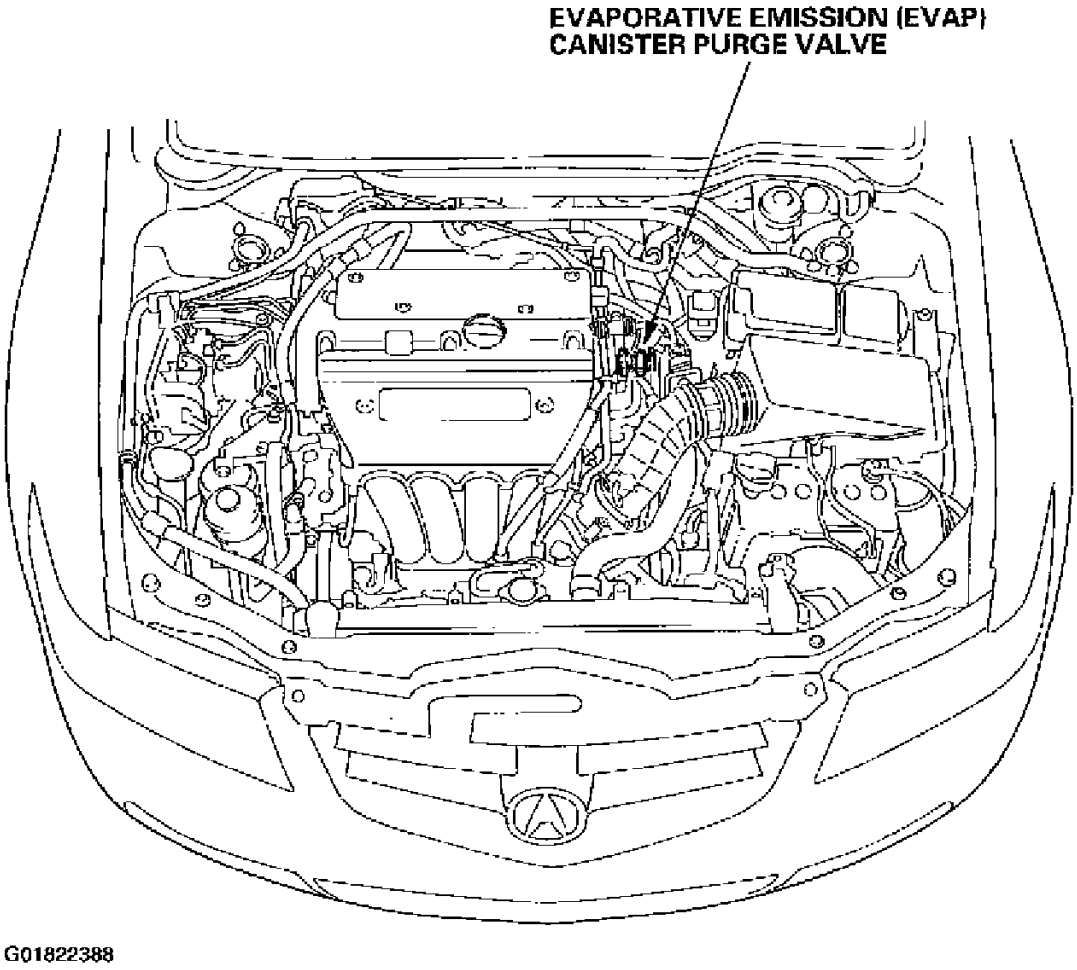


Fig. 1: Locating EVAP System Components (1 Of 2)

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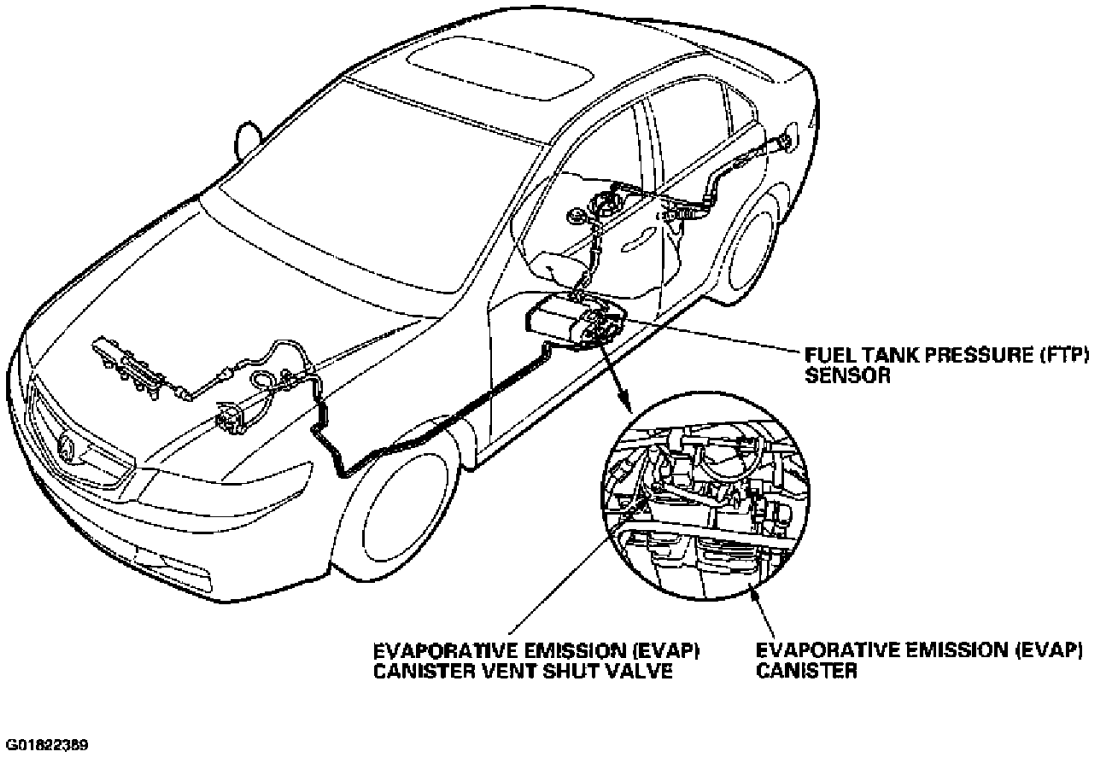


Fig. 2: Locating EVAP System Components (2 Of 2)

DTC TROUBLESHOOTING

DTC TROUBLESHOOTING INDEX

DTC	Description
DTC P0442	EVAP System Small Leak Detected
DTC P0456	EVAP System Very Small Leak Detected
DTC P0443	EVAP Canister Purge Valve Circuit Malfunction
DTC P0451	FTP Sensor Range/Performance Problem
DTC P0452	FTP Sensor Circuit Low Voltage
DTC P0453	FTP Sensor Circuit High Voltage
DTC P0457	EVAP System Leak Detected/Fuel Cap Loose or Missing
DTC P0496	EVAP System High Purge Flow
DTC P0497	EVAP System Low Purge Flow
DTC P0498	EVAP Canister Vent Shut Valve Circuit Low Voltage
DTC P0499	EVAP Canister Vent Shut Valve Circuit High Voltage
DTC P1454	FTP Sensor Range/Performance Problem
DTC P2422	EVAP Canister Vent Shut Valve Stuck Closed Malfunction

DTC P0442: EVAP SYSTEM SMALL LEAK DETECTED; DTC P0456: EVAP SYSTEM VERY

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SMALL LEAK DETECTED

NOTE: The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required: Vacuum Pump/Gauge, 0-30 in. Hg A973X-041-XXXXX

NOTE: Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank) just before starting these procedures.

1. Check the fuel fill cap (the cap must say "If not tightened 3 clicks check engine light may come on").

   Is the correct fuel fill cap installed and properly tightened?

   YES: Go to step 2.

   NO: Replace or tighten the cap, then go to step 22 .

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES: Replace the fuel fill cap or the fuel fill pipe, then go to step 22 .

   NO: Go to step 3.

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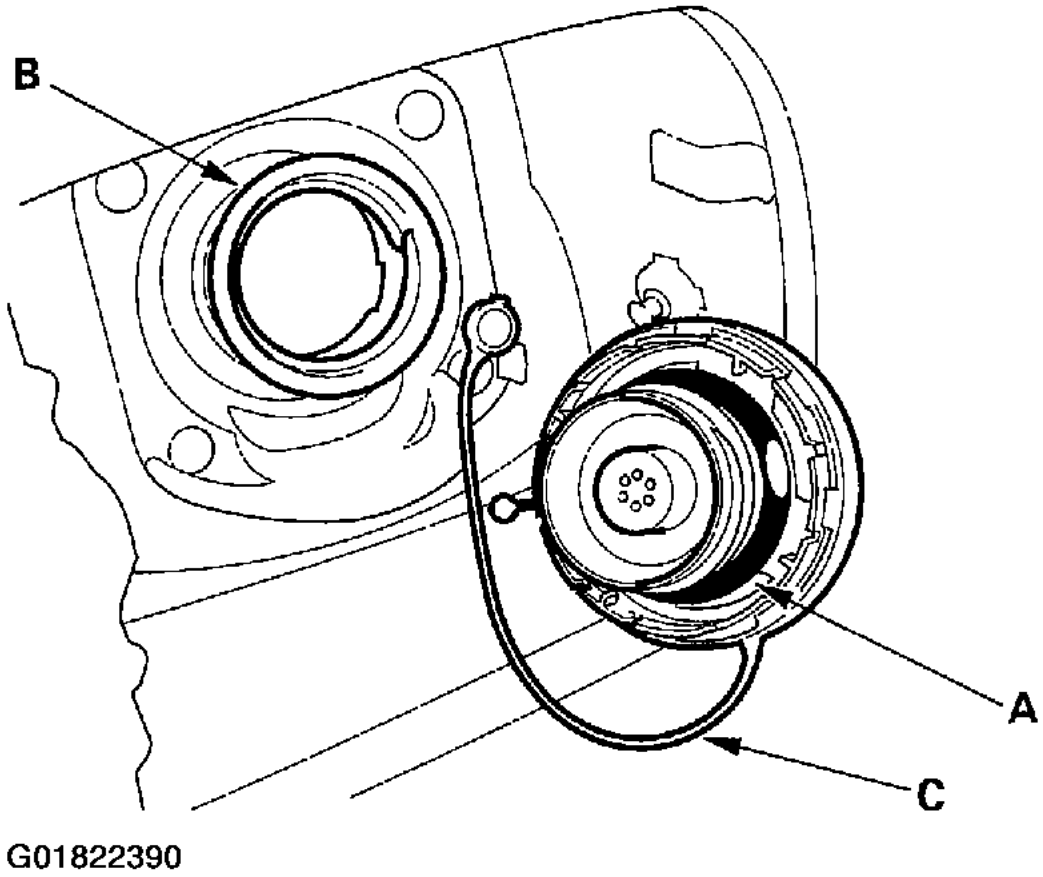


Fig. 3: Checking The Fuel Fill Cap Seal & The Fuel Fill Pipe Mating Surface

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

   NO: Go to step 6.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Check for a poor connection or damage at the fuel tank vapor recirculation tube (see **EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM**).

   Is the tube OK?

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YES: Go to step 9.

NO:

- Replace the fuel tank vapor recirculation tube, then go to step 22 .
- If necessary, replace the fuel tank (see **FUEL TANK REPLACEMENT**), then go to step22 .

9. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).

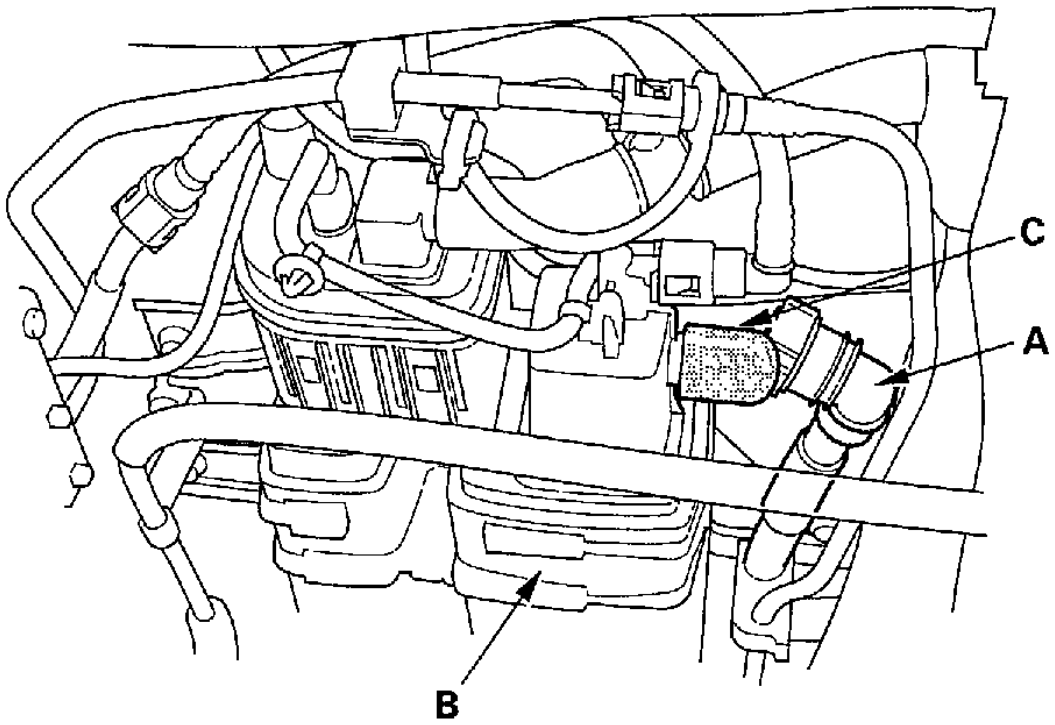


Fig. 4: Disconnecting The Fuel Tank Vapor Recirculation Tube From The EVAP Canister & Plugging The EVAP Canister Port

10. Disconnect the vacuum hose (purge line) from the EVAP canister purge valve (A), in the engine compartment and connect a vacuum pump to the hose.

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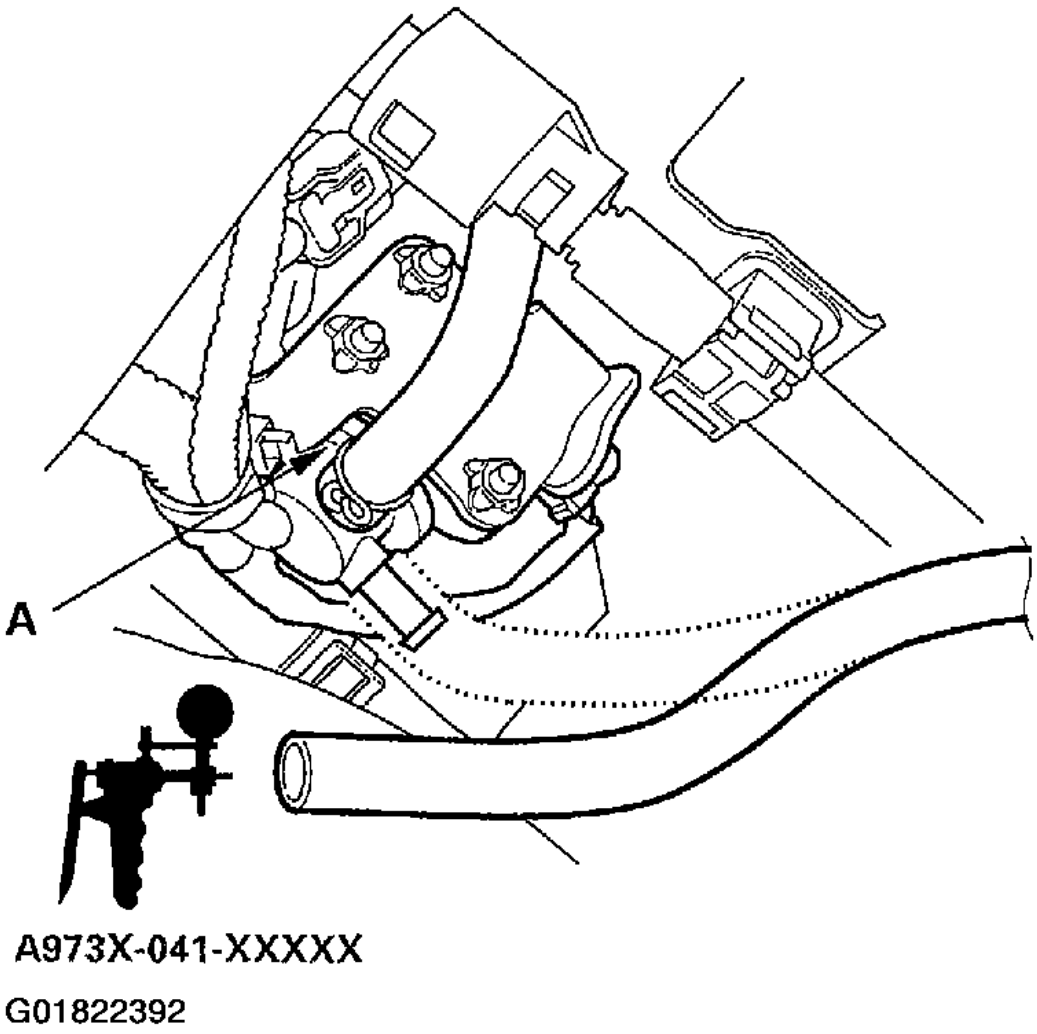


Fig. 5: Disconnecting The Vacuum Hose (Purge Line) From The EVAP Canister Purge Valve

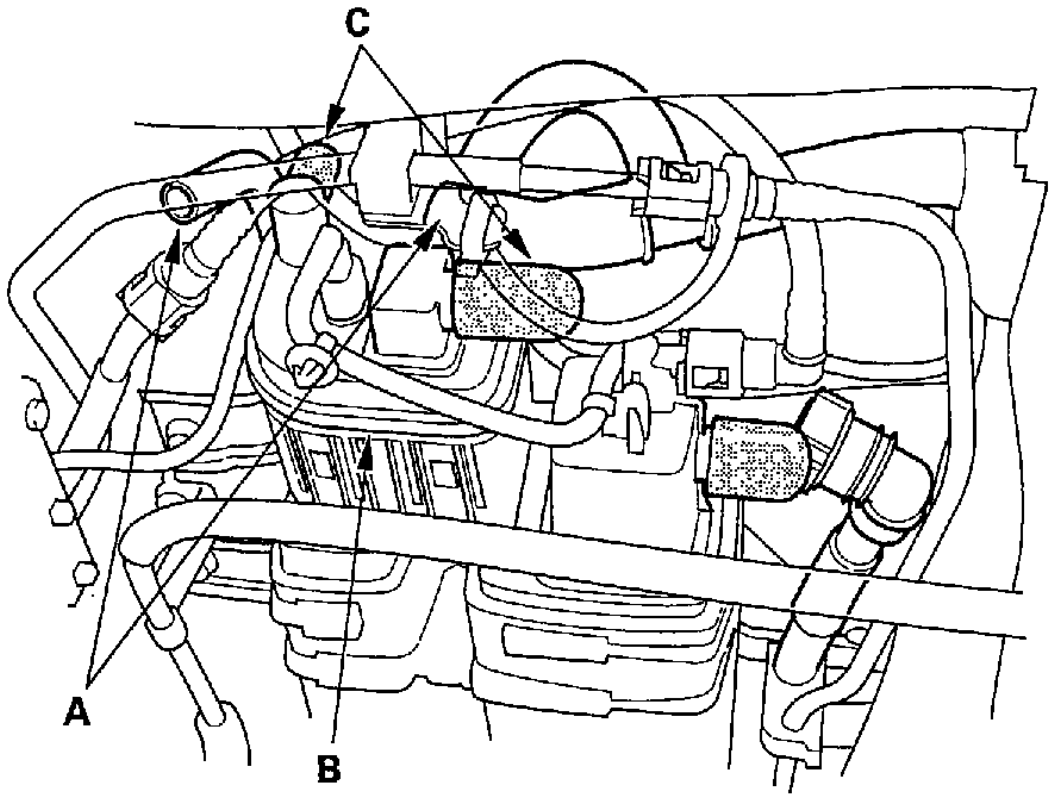
11. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
12. Apply vacuum to the hose until the FTP reads 1.90 V (-0.5 in. Hg, -14.6 mm Hg).
13. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage stay near 0.2 V (0.1 in. Hg, 0.5 mm Hg)?

    YES: Go to step 19 .

    NO: Go to step 14.
14. Do the EVAP CVS OFF in the INSPECTION MENU with the HDS.
15. Disconnect the fresh air hoses (A) from the EVAP canister vent shut valve (B), and plug the EVAP canister vent shut valve ports (C).

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Fig. 6: Disconnecting The Fresh Air Hoses From The EVAP Canister Vent Shut Valve & Plugging The EVAP Canister Vent Shut Valve Ports

16. Apply vacuum to the hose (disconnected in step 10) until the FTP reads 1.90 V (-0.5 in. Hg, -14.6 mm Hg).
17. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage stay near 0.2 V (0.1 in. Hg, 0.5 mm Hg)?

    YES: Replace the EVAP canister vent shut valve, then go to step 21 .

    NO: Go to step 18.
18. Check for a loose or damaged PCS line between the EVAP canister and the EVAP canister purge valve.

    Is the line OK?

    YES: Replace the following parts, then go to step 21 .

    - FTP sensor O-ring
    - EVAP canister vent shut valve case and O-ring
    - EVAP canister

    NO: Reconnect or repair the PCS hose, then go to step 21 .

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19. Do the EVAP CVS OFF in the INSPECTION MENU with the HDS.
20. Check these parts for looseness or damage.
    - Fuel fill pipe
    - Fuel vapor return pipe

    Are the parts OK?

    YES: Check the fuel pump base gasket (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), and check the fuel tank, then go to step 21.

    NO: Repair or replace any damaged parts, then go to step 21.
21. Reconnect all hoses.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES: Troubleshooting is complete.

    NO: Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 .

DTC P0443: EVAP CANISTER PURGE VALVE CIRCUIT MALFUNCTION

Special Tools Required: Vacuum Pump/Gauge, 0-30 in. Hg A973X-041-XXXXX

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P0443 indicated?

    YES: Go to step 5.

    NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM.
5. Turn the ignition switch OFF, and allow the engine to cool below 131°F (55°C).
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment and connect a vacuum pump/gauge to the hose.

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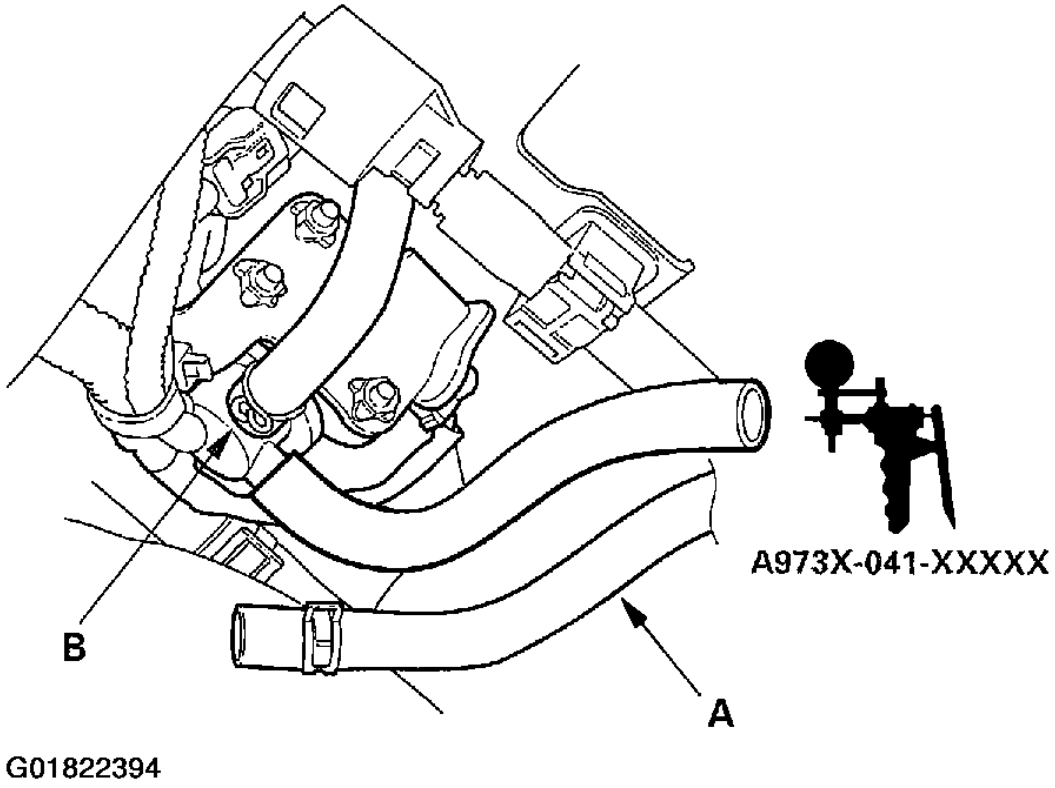


Fig. 7: Disconnecting The Vacuum Hose From The EVAP Canister Purge Valve

7. Start the engine and let it idle.

   Is there vacuum?

   YES: Go to step 8.

   NO: Go to step 14 .
8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector No. 2 and body ground.

    Is there continuity?

    YES: Go to step 11.

    NO: Go to step 24 .

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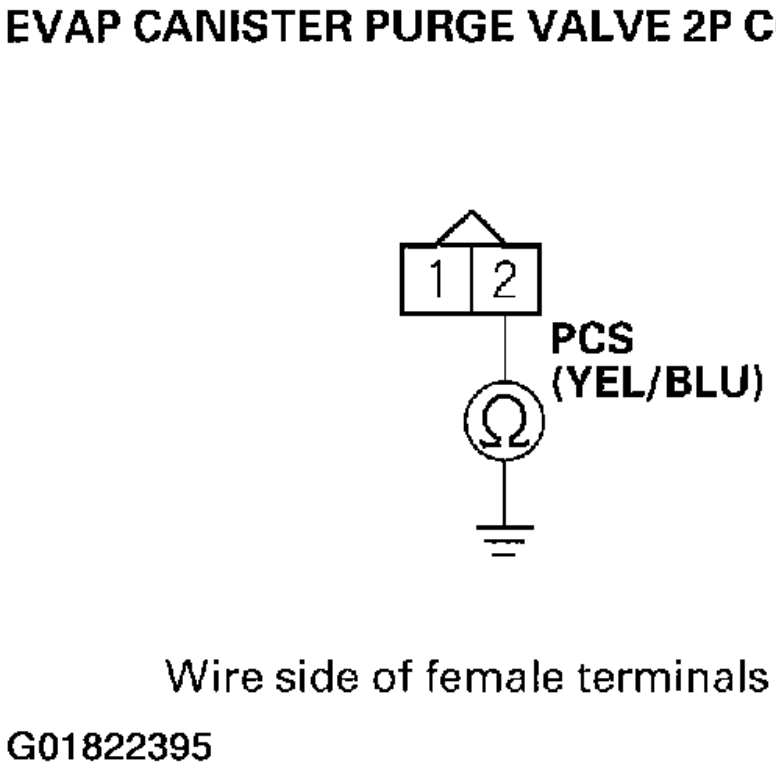


Fig. 8: Checking For Continuity Between EVAP Canister Purge Valve 2P Connector No. 2 & Body Ground

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector B (24P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

Is there continuity?

YES: Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B21), then go to step 25 .

NO: Go to step 31 .

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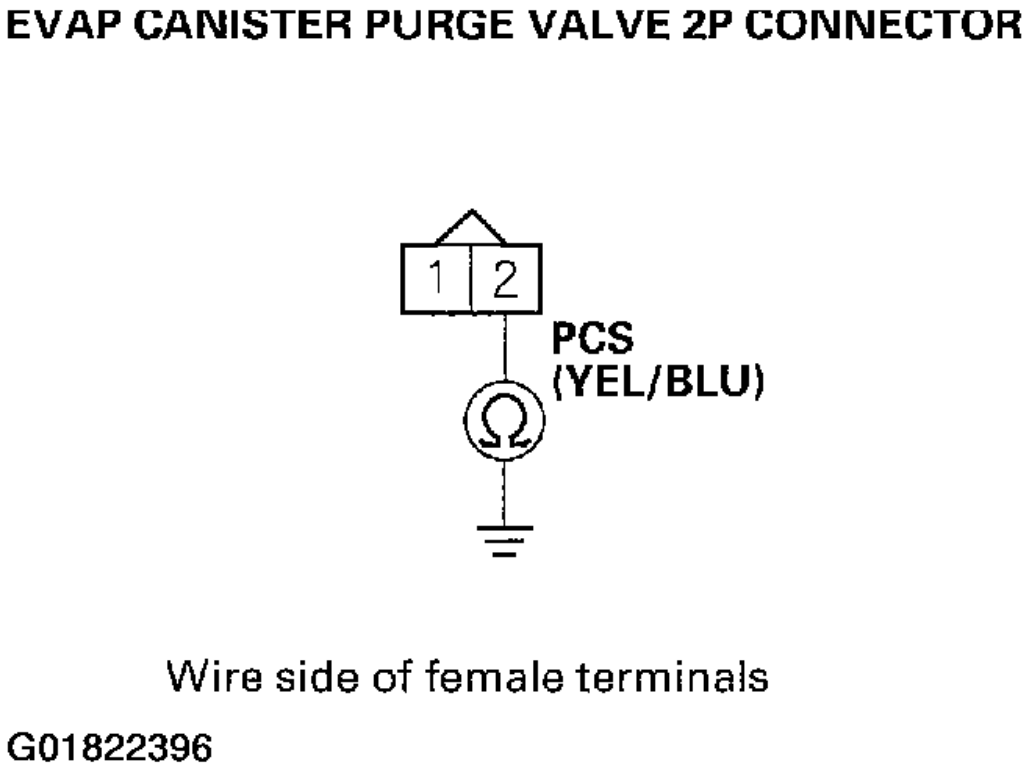


Fig. 9: Checking For Continuity Between EVAP Canister Purge Valve 2P Connector No. 2 & Body Ground

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).
17. Measure voltage between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

    Is there battery voltage?

    YES: Go to step 18.

    NO: Repair open in the wire between the EVAP canister purge valve and the No. 18 ACG (15A) fuse in the under-dash fuse/relay box, then go to step 26 .

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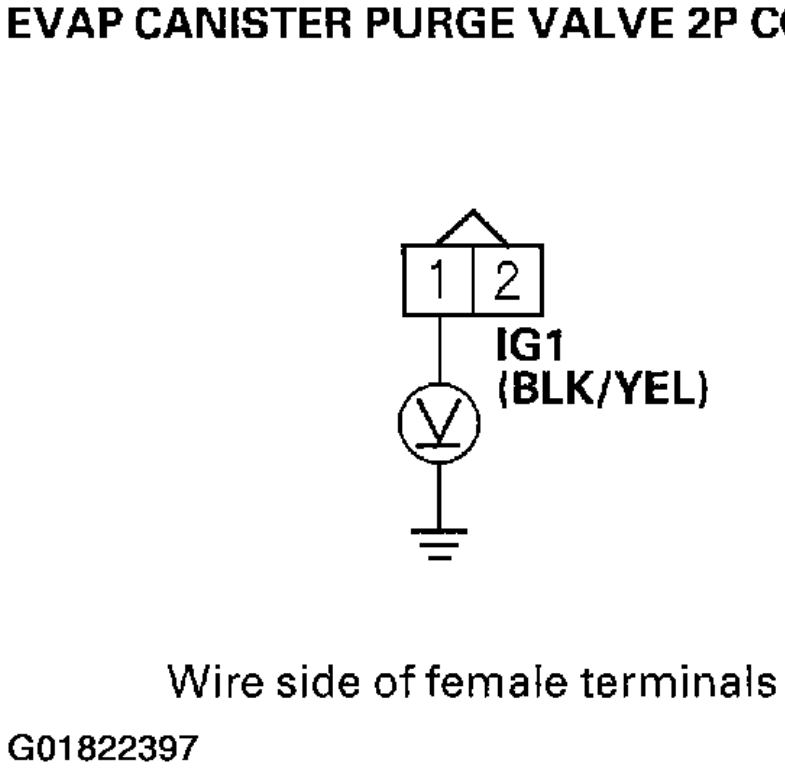


Fig. 10: Measuring Voltage Between EVAP Canister Purge Valve 2P Connector Terminal No. 1 & Body Ground

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector B (24P).
21. Connect EVAP canister purge valve 2P connector terminal No. 2 to body ground with a jumper wire.

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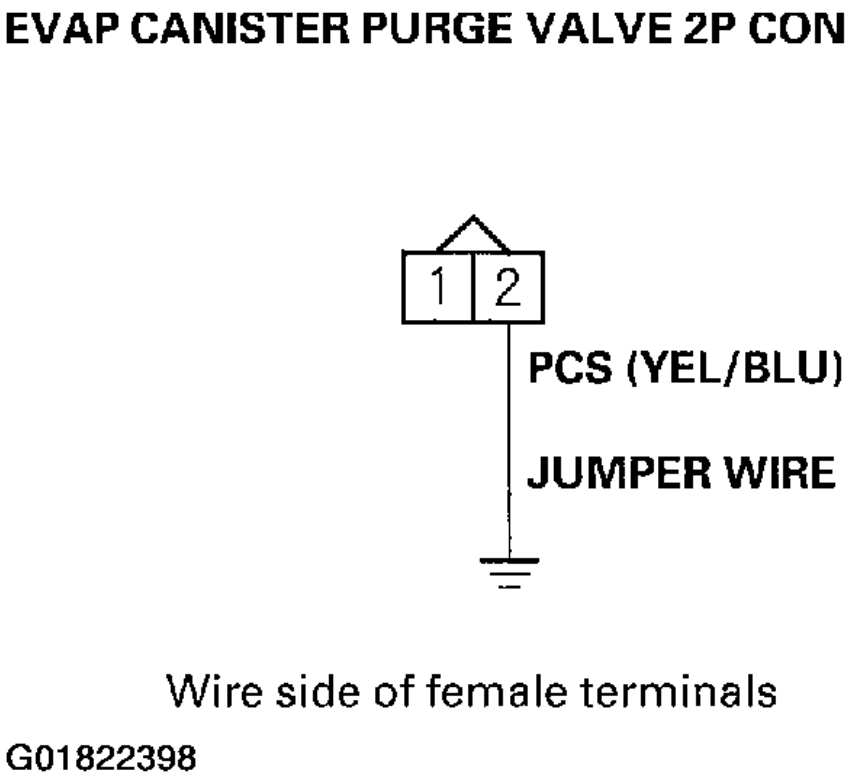


Fig. 11: Connecting EVAP Canister Purge Valve 2P Connector Terminal No. 2 To Body Ground With A Jumper Wire

22. Check for continuity between ECM/PCM connector terminal B21 and body ground.

    Is there continuity?

    YES: Go to step 23.

    NO: Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B21), then go to step 25 .

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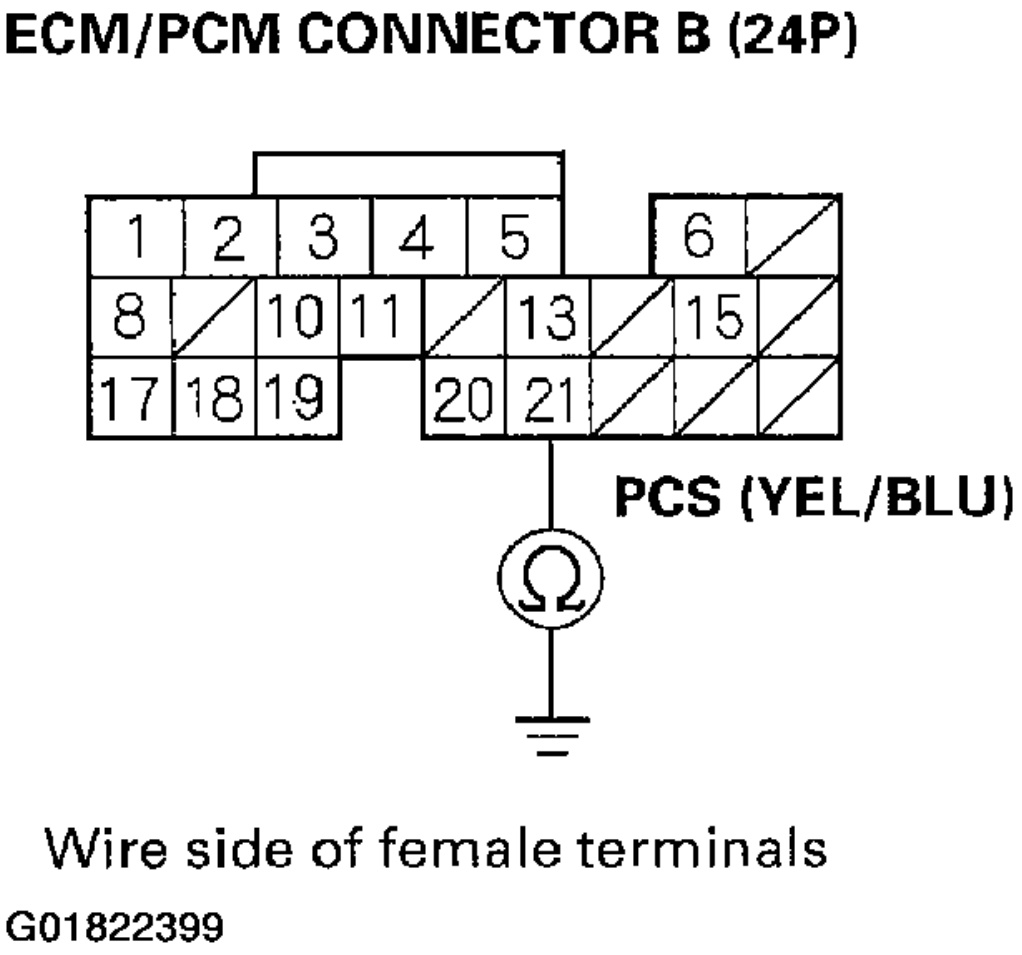


Fig. 12: Checking For Continuity Between ECM/PCM Connector Terminal B21 & Body Ground

23. Measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

Is there about 33 ohm at room temperature?

YES: Go to step 31 .

NO: Go to step 24.

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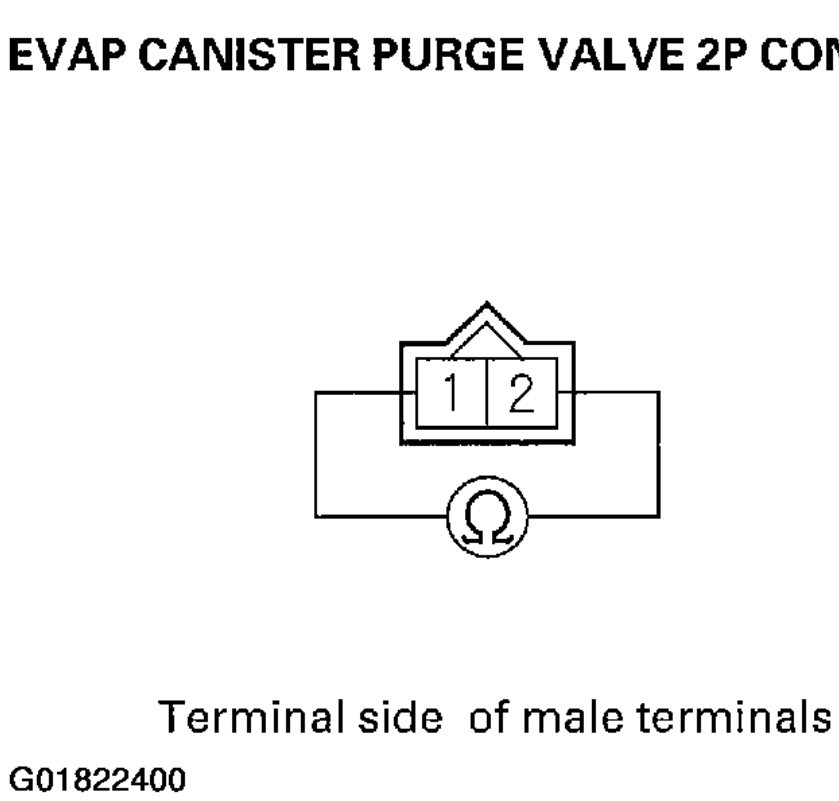


Fig. 13: Measuring Resistance Between EVAP Canister Purge Valve 2P Connector Terminals No. 1 & No. 2

24. Replace the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
25. Reconnect ECM/PCM connector B (24P).
26. Reconnect the EVAP canister purge valve 2P connector.
27. Turn the ignition switch ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.
31. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
32. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0451: FTP SENSOR RANGE/PERFORMANCE PROBLEM

NOTE: If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 5.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Start the engine, and let it idle for 1 minute.
11. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0451 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 12.
12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 10 and recheck.

DTC P0452: FTP SENSOR CIRCUIT LOW VOLTAGE

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1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about -7.3 kPa (-55 mm Hg, -2.16 in. Hg), 0.3 V, or less indicated?

   YES: Go to step 10 .

   NO: Go to step 7.
7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 10.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.
10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (54.7 mm Hg, 2.15 in. Hg), 4.90 V indicated?

    YES: Go to step 20 .

    NO: Go to step 14.
14. Measure voltage between FTP sensor 3P connector terminal No. 1 and body ground.

    Is there about 5 V?

    YES: Go to step 16 .

    NO: Go to step 15.

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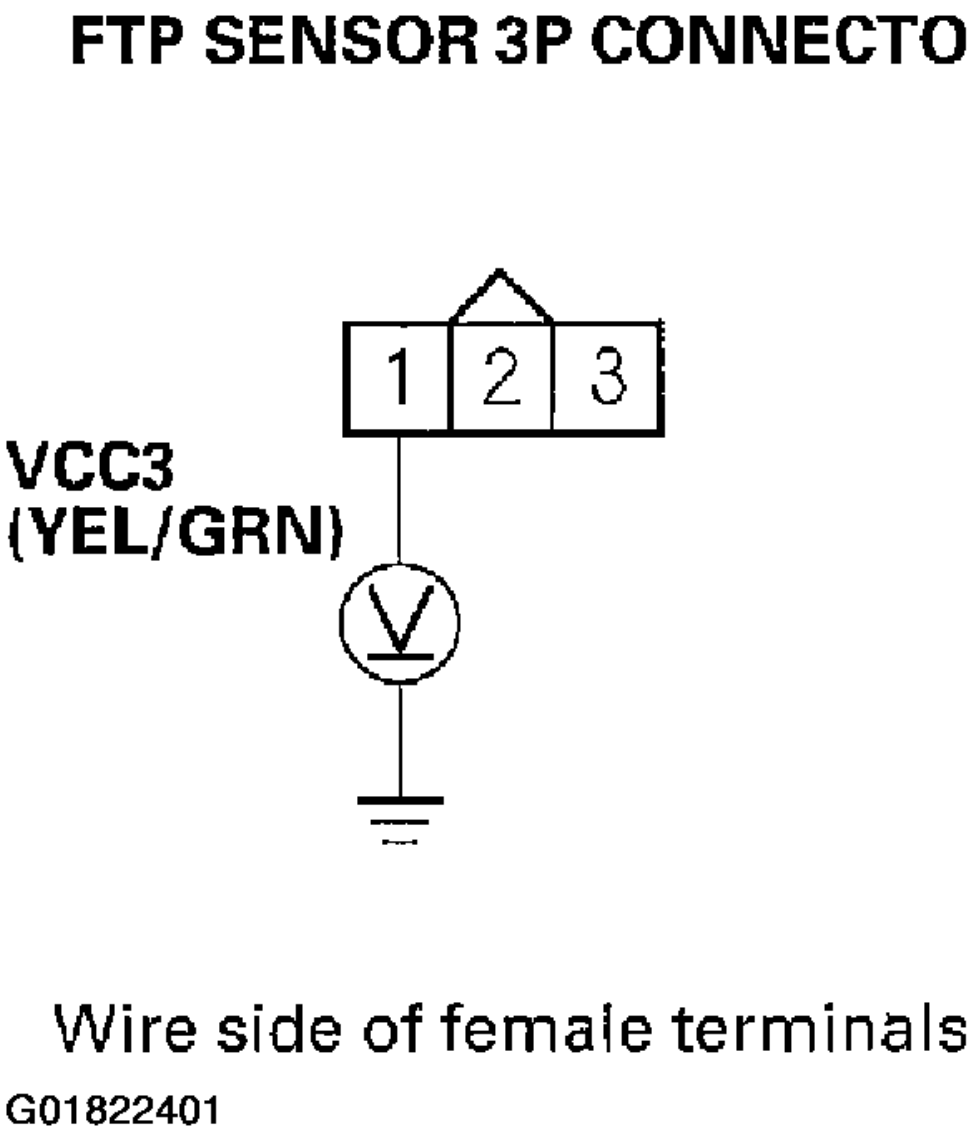


Fig. 14: Measuring Voltage Between FTP Sensor 3P Connector Terminal No. 1 & Body Ground

15. Measure voltage between ECM/PCM connector terminal E5 and body ground.

    Is there 5 V?

    YES: Repair open in the wire between the ECM/PCM (E5) and the FTP sensor, then go to step 23 .

    NO: Go to step 29 .

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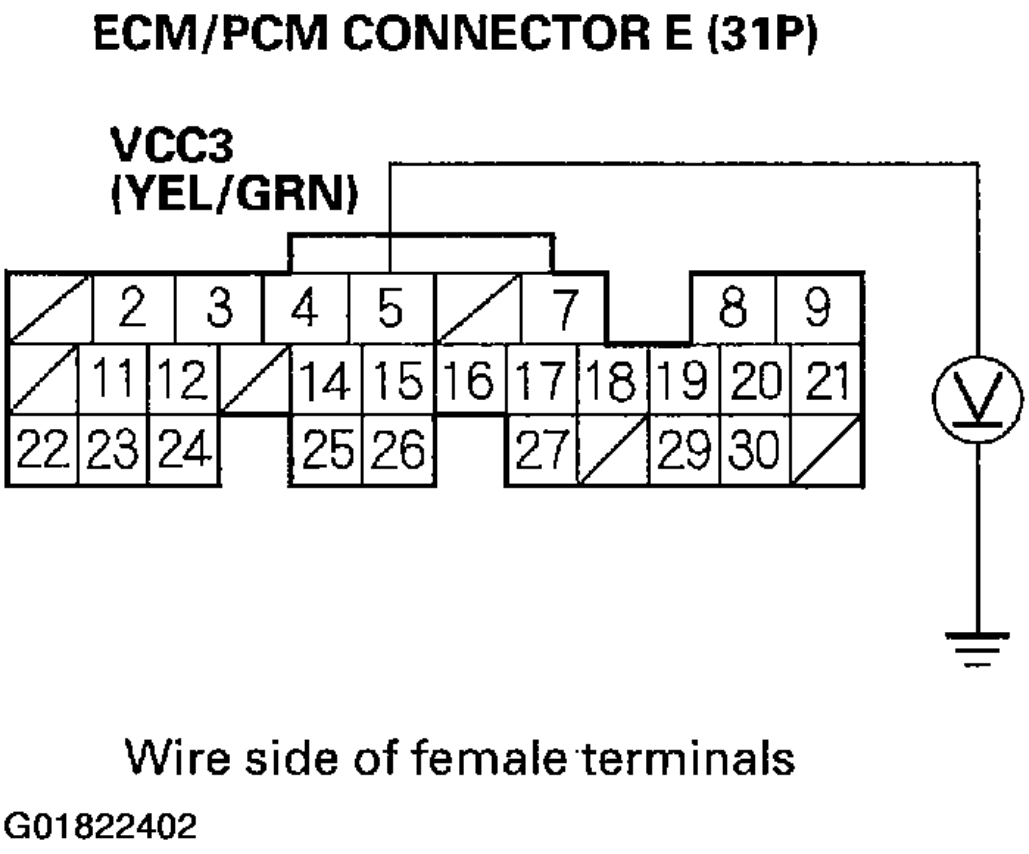


Fig. 15: Measuring Voltage Between ECM/PCM Connector Terminal E5 & Body Ground

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector E (31P).
19. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (E14) and the FTP sensor, then go to step 22 .

NO: Go to step 29 .

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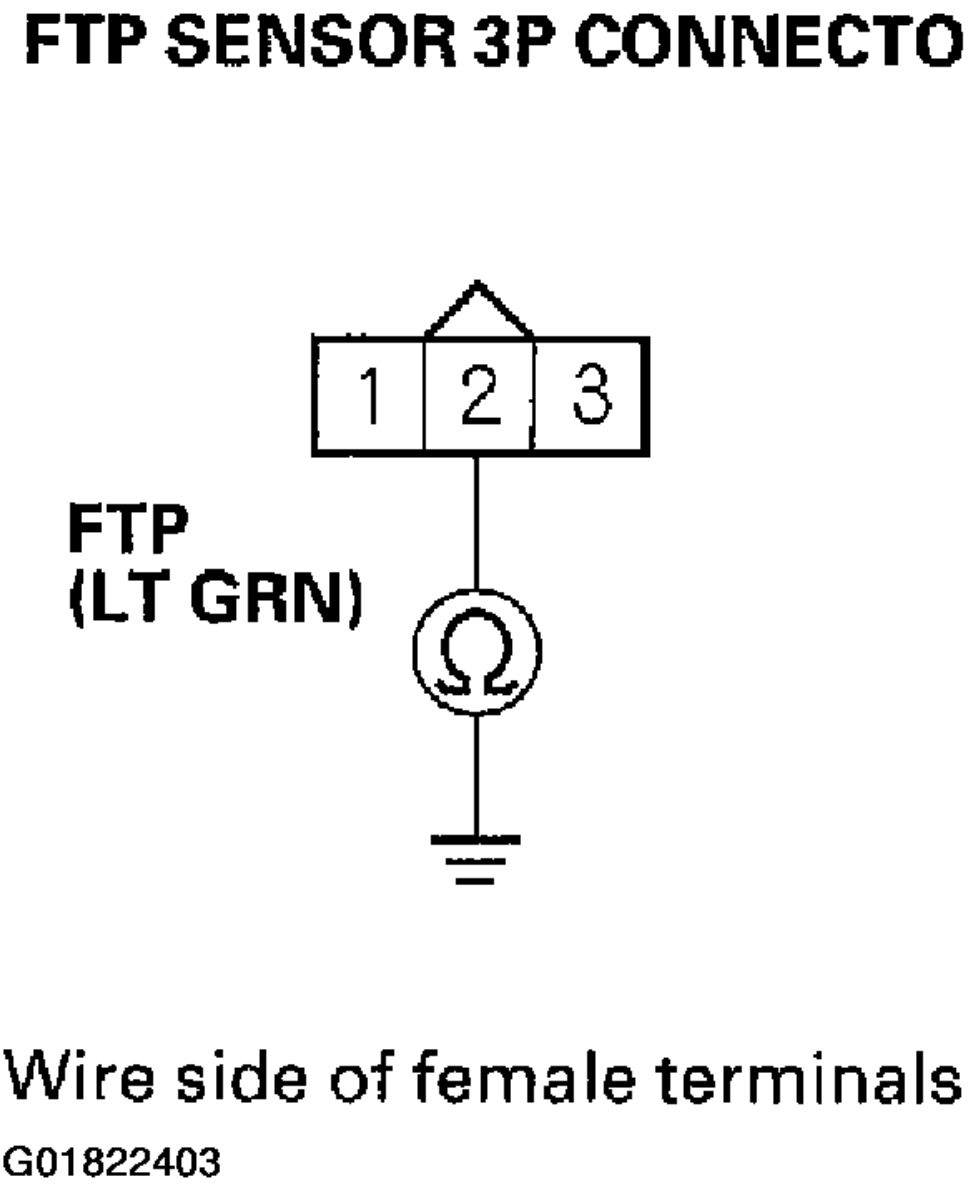


Fig. 16: Checking For Continuity Between FTP Sensor 3P Connector Terminal No. 2 & Body Ground

20. Turn the ignition switch OFF.
21. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
22. Reconnect the ECM/PCM connectors.
23. Reconnect the FTP sensor 3P connector.

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24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0452 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 28.
28. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 26 and recheck.
29. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
30. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0452 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0453: FTP SENSOR CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about 7.3 kPa (55 mm Hg, 2.16 in. Hg), 4.7 V, or more indicated?

   YES: Go to step 10 .

   NO: Go to step 7.
7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

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Does the screen indicate FAILED?

YES: Go to step 10.

NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and ECM/PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Measure voltage between FTP sensor 3P connector terminal No. 2 and body ground.

Is there about 5 V?

YES: Go to step 14.

NO: Go to step 15 .

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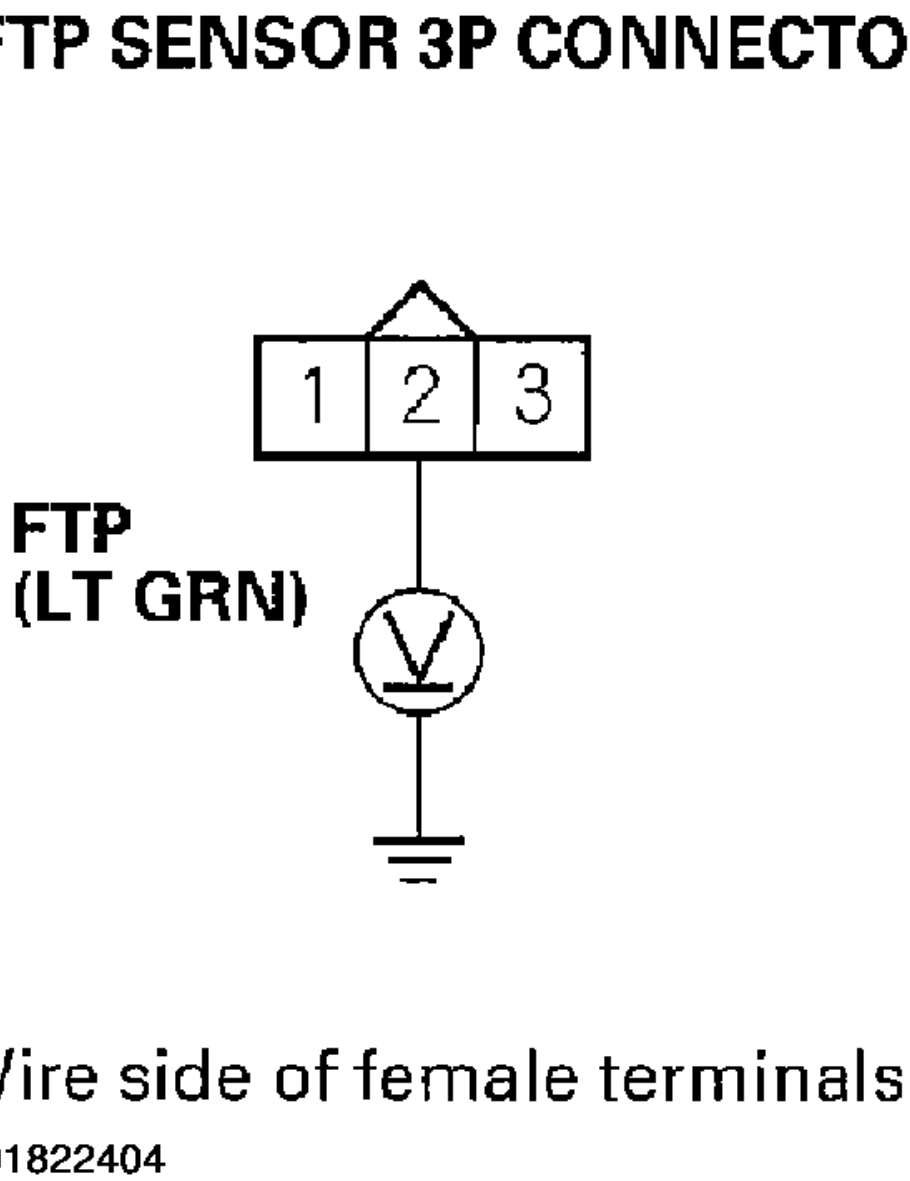


Fig. 17: Measuring Voltage Between FTP Sensor 3P Connector Terminal No. 2 & Body Ground

14. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

    Is there about 5 V?

    YES: Go to step 20 .

    NO: Repair open in the wire between the ECM/PCM (E4) and the FTP sensor, then go to

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step 23 .

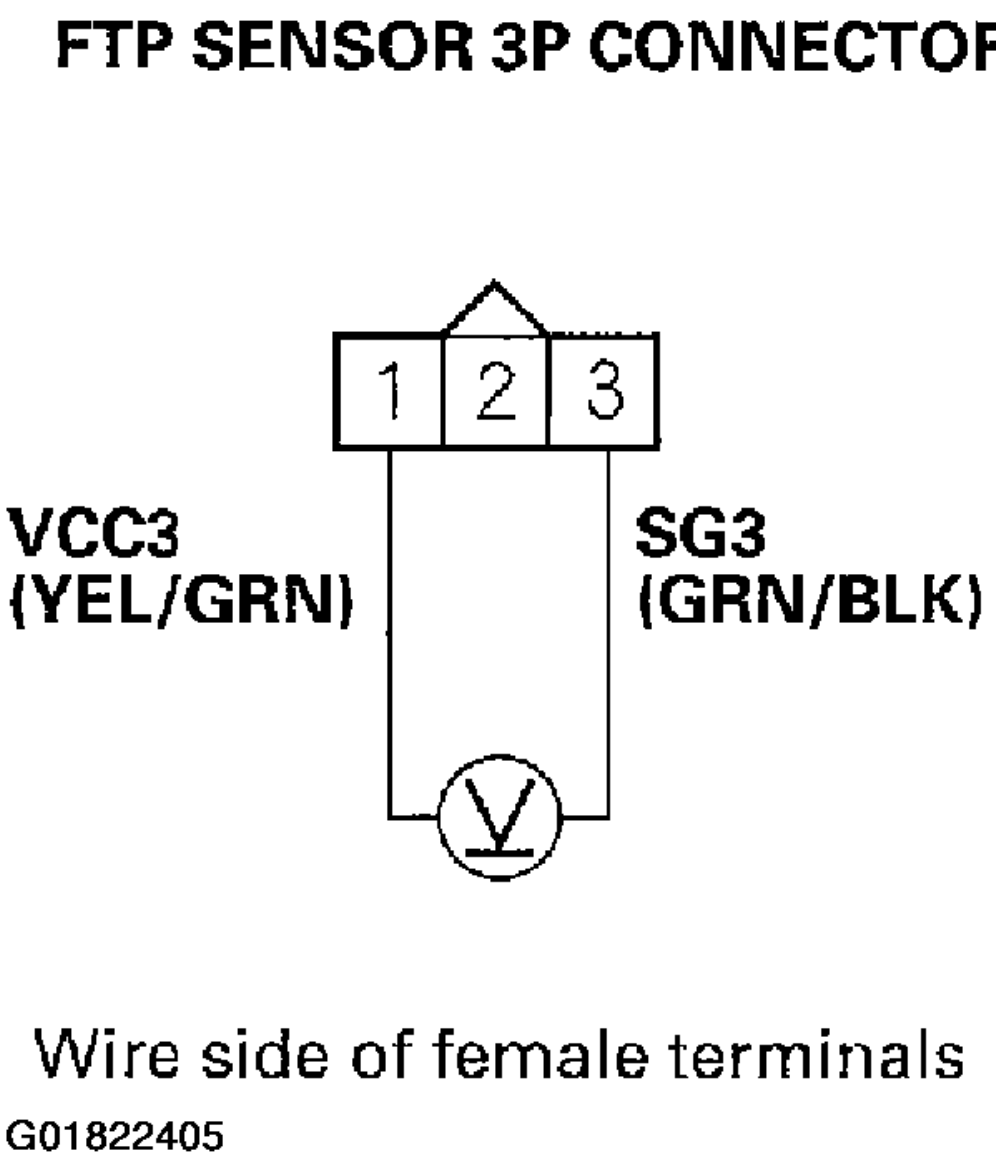


Fig. 18: Measuring Voltage Between FTP Sensor 3P Connector Terminals No. 1 & No. 3

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector E (31P).
18. Connect FTP sensor connector terminal No. 2 to body ground with a jumper wire.

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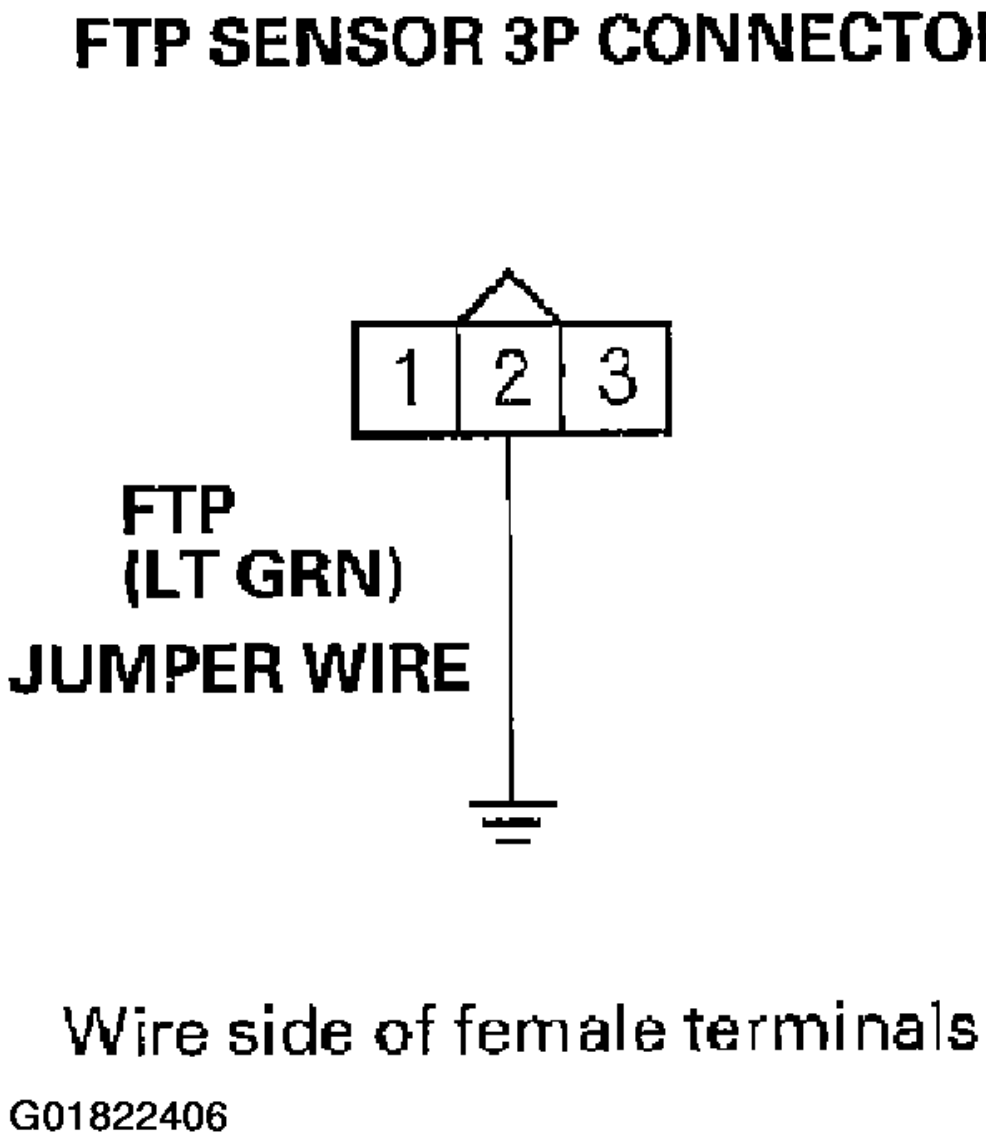


Fig. 19: Connecting FTP Sensor Connector Terminal No. 2 To Body Ground With A Jumper Wire

19. Check for continuity between ECM/PCM connector terminal E14 and body ground.

    Is there continuity?

    YES: Go to step 29 .

    NO: Repair open in the wire between the ECM/PCM (E14) and the FTP sensor, then go to step 22 .

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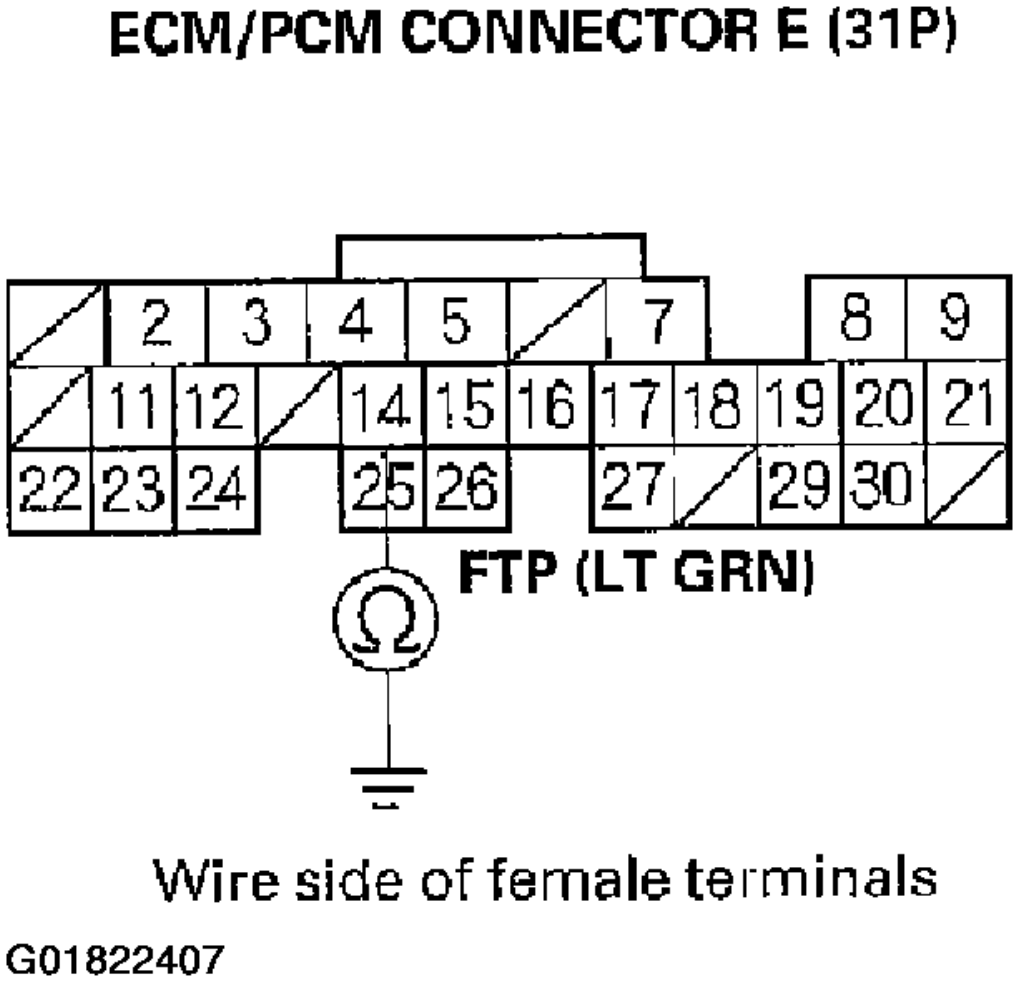


Fig. 20: Checking For Continuity Between ECM/PCM Connector Terminal E14 & Body Ground

20. Turn the ignition switch OFF.
21. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
22. Reconnect ECM/PCM connector E (31P).
23. Reconnect the FTP sensor 3P connector.
24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0453 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 28.

28. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 26 and recheck.

29. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
30. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0453 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0457: EVAP SYSTEM LEAK DETECTED/FUEL CAP LOOSE OR MISSING

1. Check the fuel fill cap (the cap must say "If not tightened 3 clicks check engine light may come on").

Is the correct fuel fill cap installed and properly tightened?

YES: Go to step 2.

NO: Replace or tighten the cap, then go to step 19 .

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES: Replace the fuel fill cap or the fuel fill pipe, then go to step 19 .

NO: Go to step 3.

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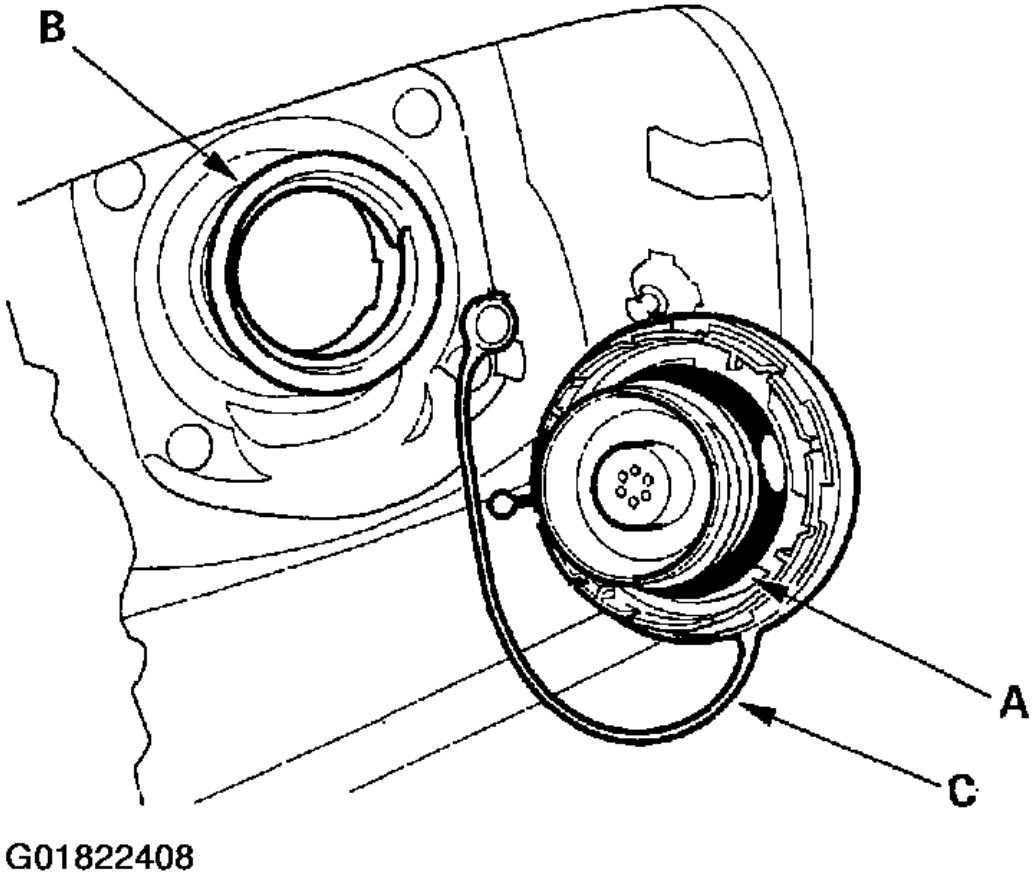


Fig. 21: Checking The Fuel Fill Cap Seal & The Fuel Fill Pipe Mating Surface

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM.

   NO: Go to step 6.
6. Turn the ignition switch OFF.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch ON (II).
10. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

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11. Check the EVAP canister vent shut valve (A) operation.

Does the valve operate?

YES: Check the routing of the EVAP canister vent tube, then go to step 18 .

NO: Go to step 12.

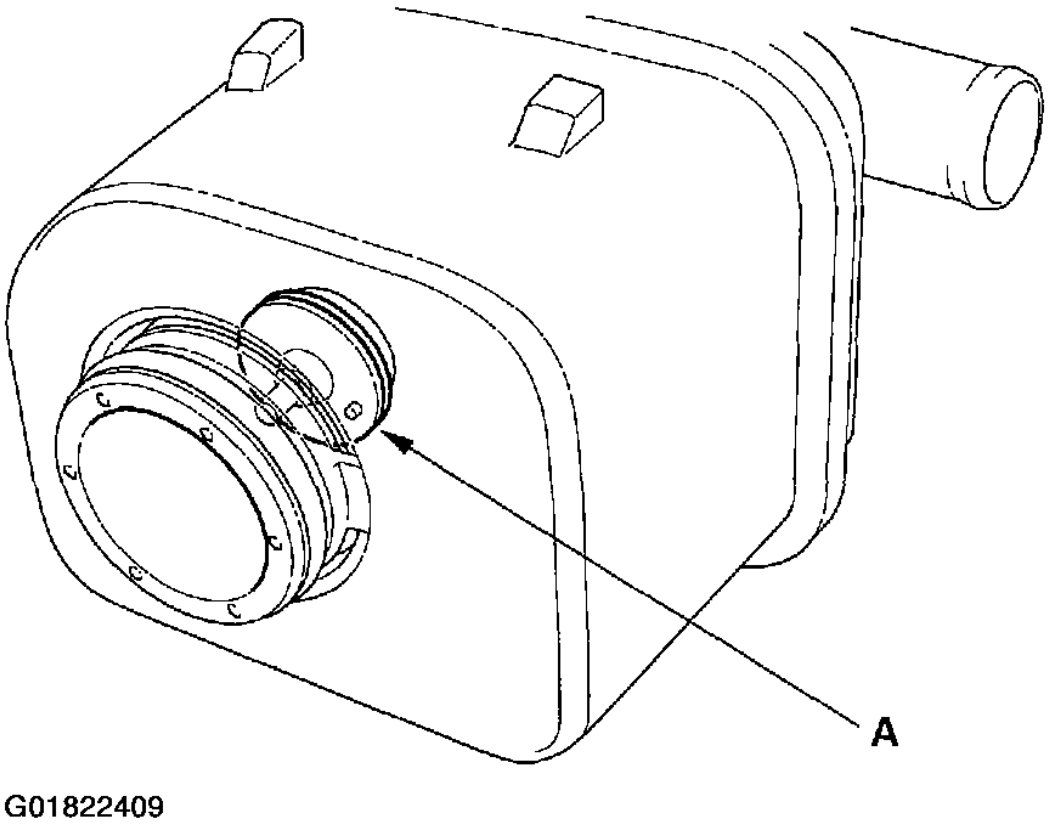


Fig. 22: Checking The EVAP Canister Vent Shut Valve Operation

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Troubleshooting is complete.

NO: Check for poor connections or loose terminals at the FTP sensor or the EVAP canister

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vent shut valve and the ECM/PCM, then go to step 16.

18. Reinstall the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Troubleshooting is complete.

NO: Check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM, then go to step 21.

DTC P0496: EVAP SYSTEM HIGH PURGE FLOW

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

NO: Go to step 4.

4. Turn the ignition switch OFF.
5. Replace the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
6. Turn the ignition switch ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Troubleshooting is complete.

NO: Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 .

DTC P0497: EVAP SYSTEM LOW PURGE FLOW

Special Tools Required:

- Vacuum pump/Gauge, 0-30 in. Hg A973X-041-XXXXX
- Vacuum/Pressure Gauge, 0-4 in. Hg 07 JAZ-001000B

1. Check the fuel fill cap (the cap must say "If not tightened 3 clicks check engine light may come on").

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Is the correct fuel fill cap installed and properly tightened?

YES: Go to step 2.

NO: Replace or tighten the cap, then go to step 22 .

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

NO: Go to step 5.

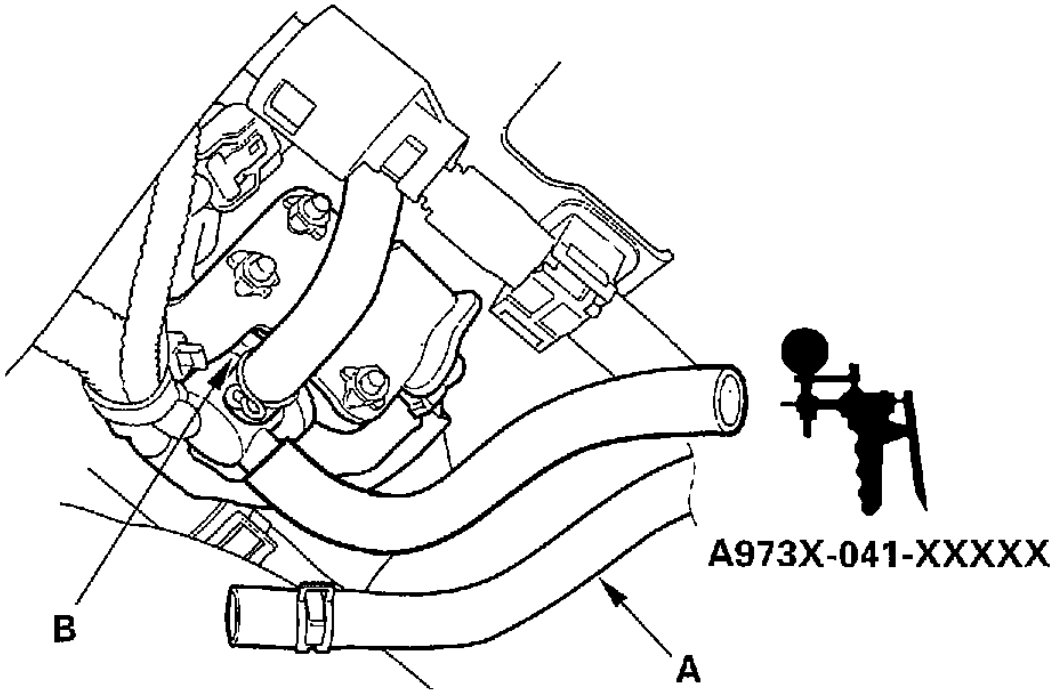
5. Check for a loose or damaged PCS/CPV line between the intake manifold and the EVAP canister purge valve.

Is the line OK?

YES: Go to step 6.

NO: Reconnect or repair the PCS/CPV line, then go to step 22 .

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump to the EVAP canister purge valve.



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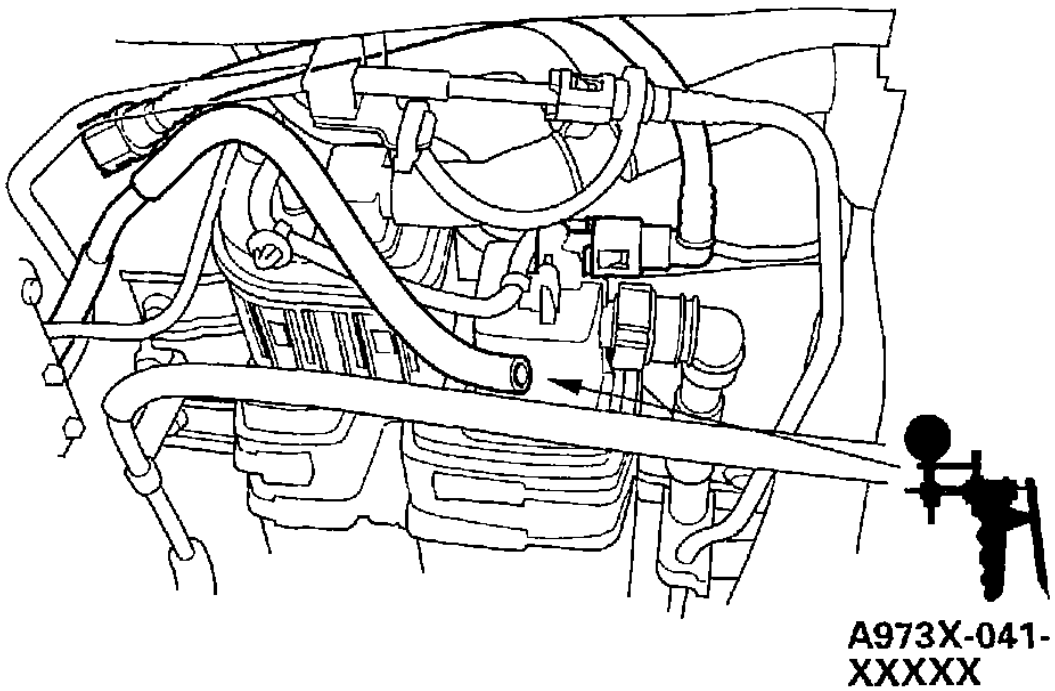
Fig. 23: Disconnecting The Vacuum Hose From The EVAP Canister Purge Valve

7. Do the EVAP PCS/CPV ON in the INSPECTION MENU with the HDS.
8. Slowly apply about 0.6 in. Hg (15 mm Hg) of vacuum the hose.

   Does it hold vacuum?

   YES: Check for blockage on the PCS/CPV line between the intake manifold and the EVAP canister purge valve. If the vacuum hose is OK, replace the EVAP canister purge valve, then go to step 22 .

   NO: Go to step 9.
9. Reconnect the vacuum hose to the EVAP canister purge valve.
10. Disconnect the vacuum hose from the PCS/CPV line (EVAP canister side), and connect a vacuum pump to the hose.



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Fig. 24: Disconnecting The Vacuum Hose From The PCS/CPV Line

11. Do the EVAP PCS/CPV ON in the INSPECTION MENU with the HDS.
12. Slowly apply about 0.6 in. Hg (15 mm Hg) of vacuum to the hose.

    Does it hold vacuum?

    YES: Check for a restricted PCS/CPV line between the EVAP canister purge valve and the EVAP canister, then go to step 22 .

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NO: Go to step 13.

13. Remove the FTP sensor with its connector connected (see **FTP SENSOR REPLACEMENT**).
14. Connect a T-fitting (A) from the vacuum gauge and the vacuum pump to the FTP sensor (B) as shown.

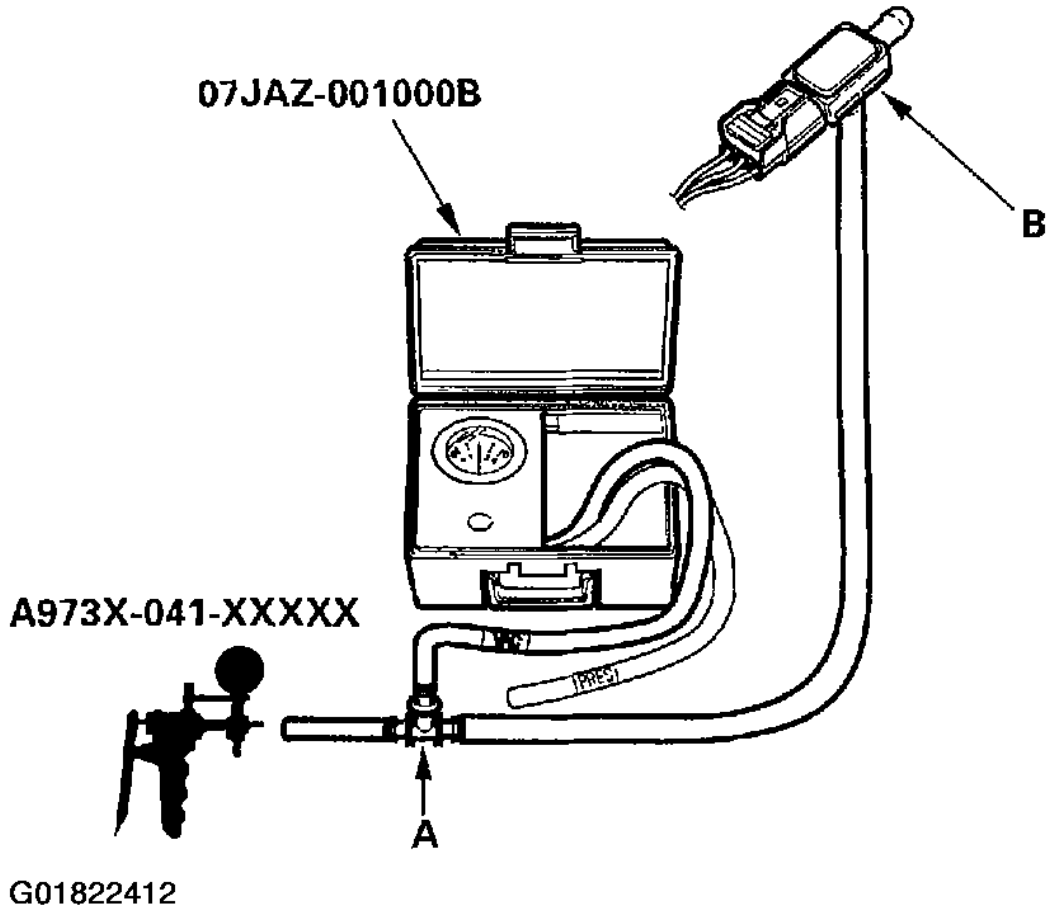


Fig. 25: Connecting A T-Fitting From The Vacuum Gauge & The Vacuum Pump To The FTP Sensor

15. Slowly apply about 0.4 in. Hg (10 mm Hg) of vacuum to the hose.
16. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is the difference more than 1.1 kPa (8 mm Hg, 0.31 in. Hg) before and after applying vacuum?

    YES: Go to step 17.

    NO: Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 22 .
17. Reconnect the vacuum hose to the PCS/CPV line (EVAP canister side) and reinstall the FTP sensor.
18. Disconnect the vacuum hose (A) from the PCS/CPV line (EVAP canister purge valve side), and connect a

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vacuum pump to the hose.

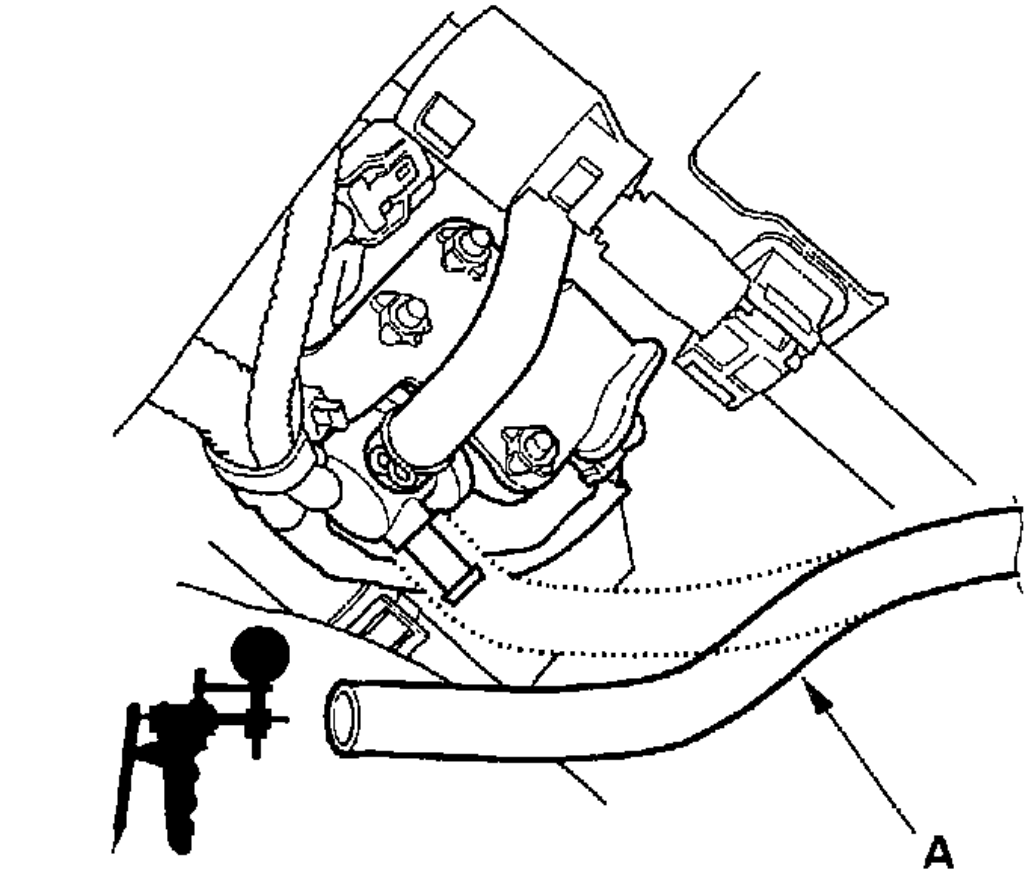


Fig. 26: Disconnecting The Vacuum Hose From The PCS/CPV Line

19. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
20. Slowly apply about 0.6 in. Hg (15 mm Hg) of vacuum to the hose.

    Does the hose hold vacuum?

    YES: Check for blockage at the EVAP canister port, then go to step 21.

    NO: Replace the EVAP canister vent shut valve, then go to step 21.
21. Install the FTP sensor (see **FTP SENSOR REPLACEMENT**).
22. Reconnect all hoses.
23. Turn the ignition switch ON (II).

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24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES: Troubleshooting is complete.

    NO: Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 .

DTC P0498: EVAP CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, then wait 5 seconds.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0498 indicated?

   YES: Go to step 6 .

   NO: Go to step 4.
4. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0498 indicated?

   YES: Go to step 6.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM.
6. Turn the ignition switch OFF.
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

   Is there about 25-30 ohm at room temperature?

   YES: Go to step 9.

   NO: Go to step 12 .

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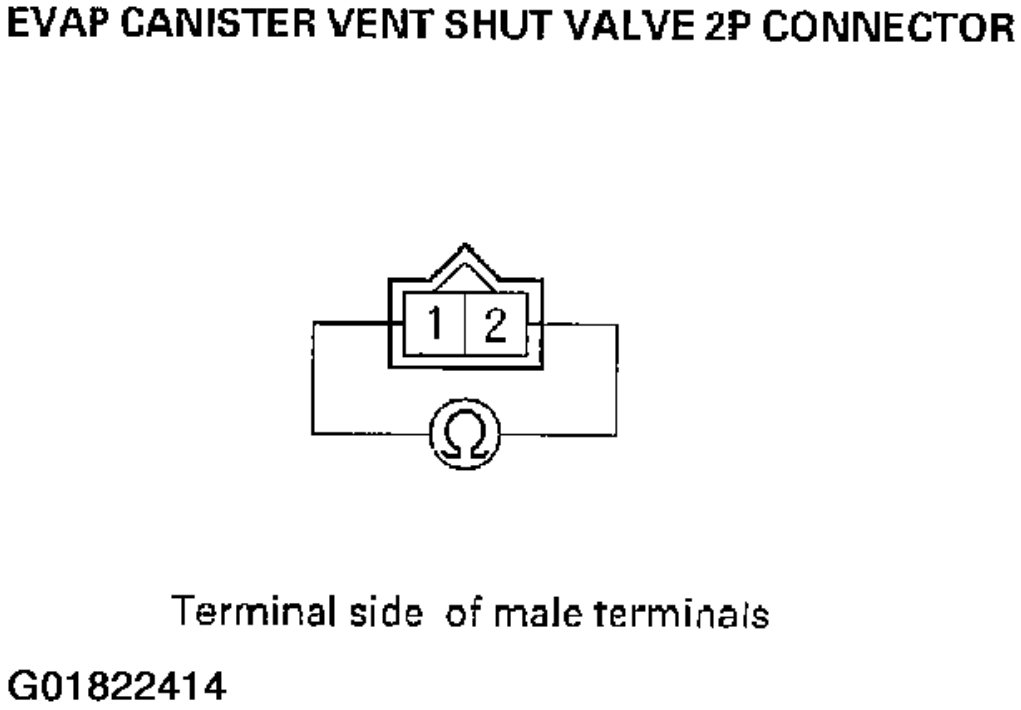


Fig. 27: Measuring Resistance Between EVAP Canister Vent Shut Valve 2P Connector Terminals No. 1 & No. 2

9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector E (31P).
11. Check for continuity between ECM/PCM connector terminal E19 and body ground.

Is there continuity?

YES: Repair short in the wire between the EVAP canister vent shut valve and the ECM/PCM (E19), then go to step 13 .

NO: Go to step 20 .

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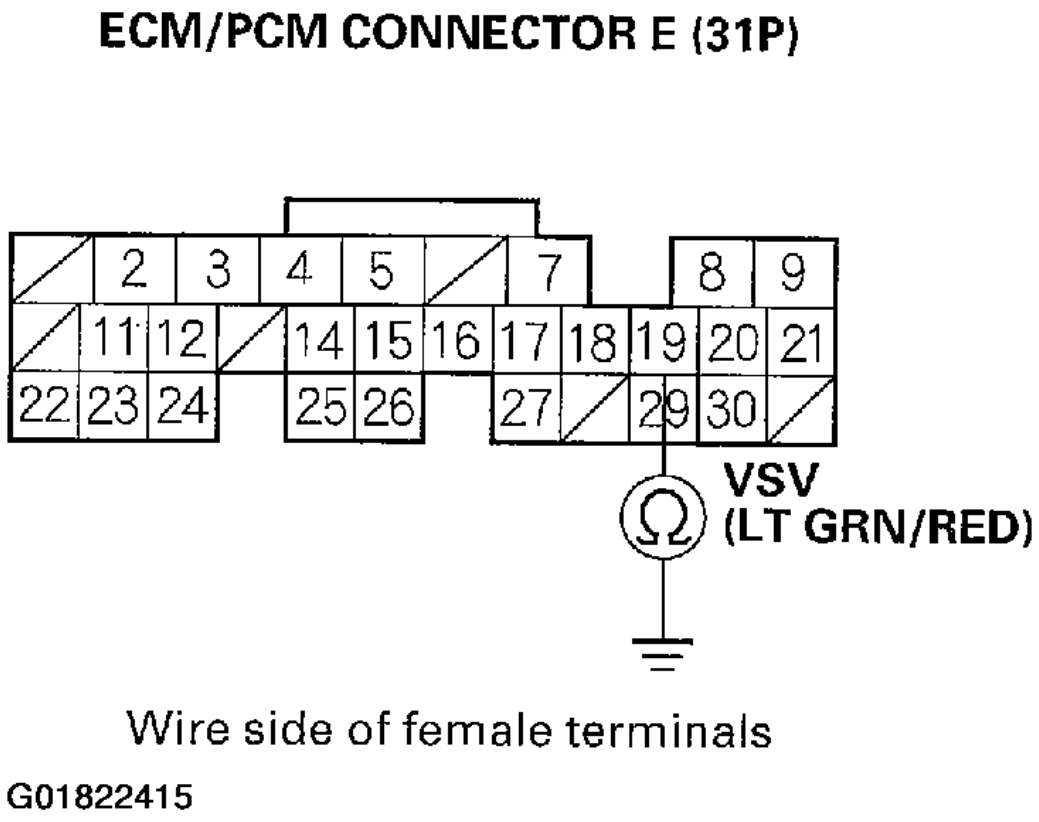


Fig. 28: Checking For Continuity Between ECM/PCM Connector Terminal E19 & Body Ground

12. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
13. Reconnect ECM/PCM connector E (31P).
14. Reconnect the EVAP canister vent shut valve 2P connector.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0498 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

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20. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
21. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0498 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0499: EVAP CANISTER VENT SHUT VALVE CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, then wait 5 seconds.
3. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0499 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM.
5. Turn the ignition switch OFF.
6. Disconnect the EVAP canister vent shut valve 2P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

   Is there battery voltage?

   YES: Go to step 9.

   NO: Repair open in the wire between the EVAP canister vent shut valve and the No. 18 ACG (15A) fuse in the under-dash fuse/relay box, then go to step 17 .

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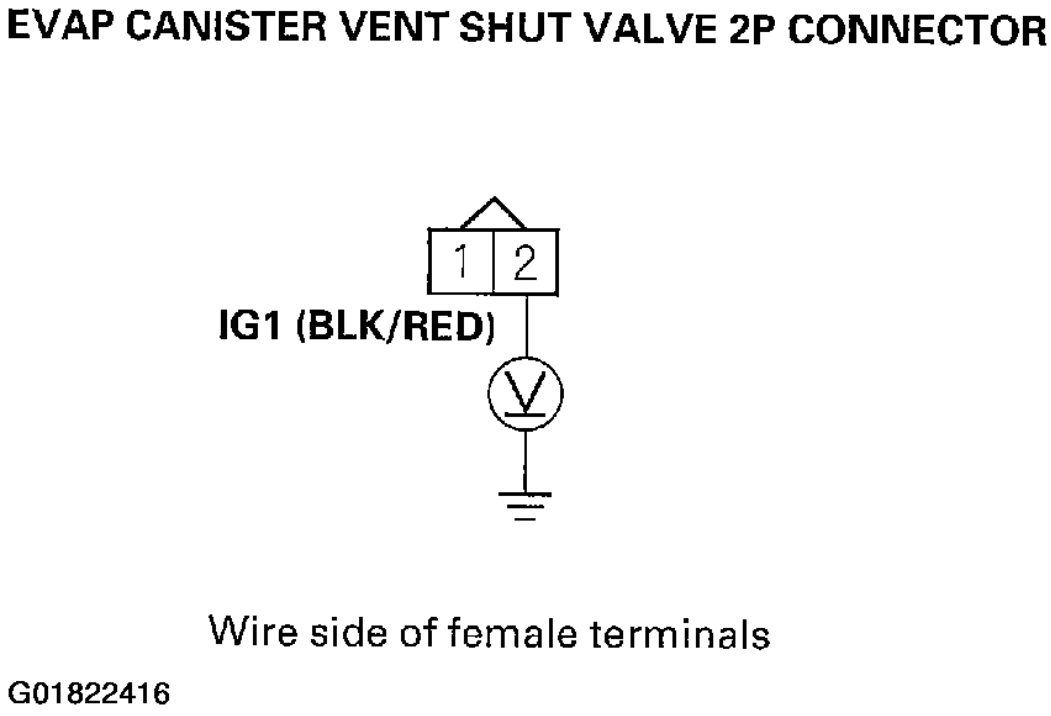


Fig. 29: Measuring Voltage Between EVAP Canister Vent Shut Valve 2P Connector Terminal No. 2 & Body Ground

9. Turn the ignition switch OFF.
10. Measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

Is there about 25-30 ohm at room temperature?

YES: Go to step 11.

NO: Go to step 15 .

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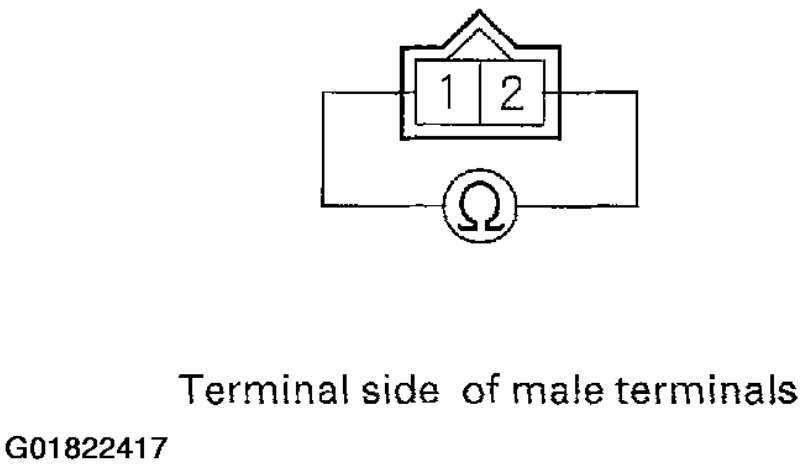


Fig. 30: Measuring Resistance Between EVAP Canister Vent Shut Valve 2P Connector Terminals No. 1 & No. 2

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector E (31P).
13. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

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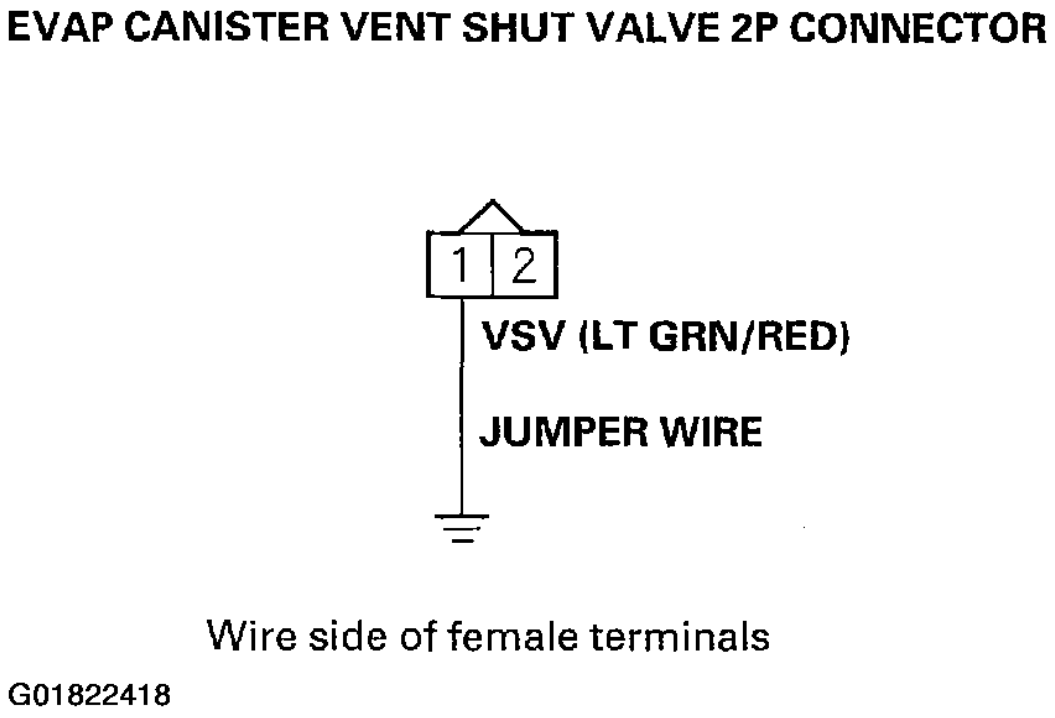


Fig. 31: Connecting EVAP Canister Vent Shut Valve 2P Connector Terminal No. 1 To Body Ground With A Jumper Wire

14. Check for continuity between ECM/PCM connector terminal E19 and body ground.

    Is there continuity?

    YES: Go to step 23 .

    NO: Repair open in the wire between the EVAP canister vent shut valve and the ECM/PCM (E19), then go to step 16 .

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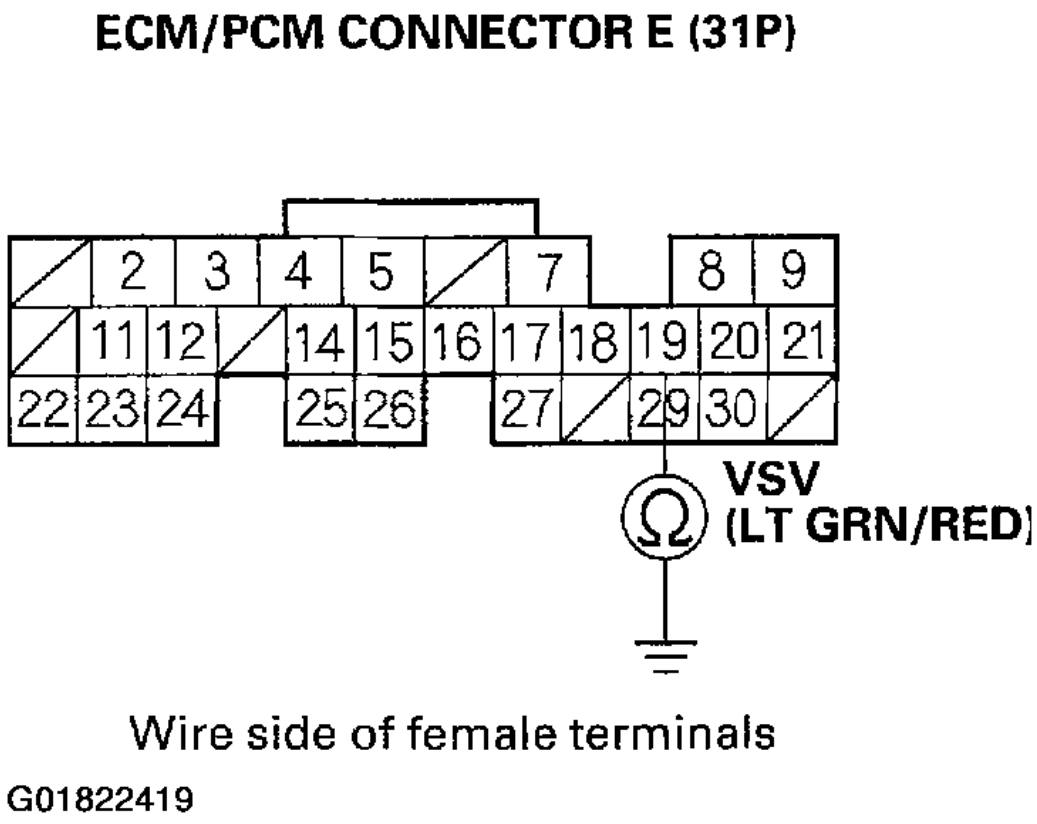


Fig. 32: Checking For Continuity Between ECM/PCM Connector Terminal E19 & Body Ground

15. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
16. Reconnect ECM/PCM connector E (31P).
17. Reconnect the EVAP canister vent shut valve 2P connector.
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0499 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

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23. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
24. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0499 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P1454: FTP SENSOR RANGE/PERFORMANCE PROBLEM

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap, and wait 1 minute.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between -0.67 kPa and 0.67 kpa (-5 and 5 mm Hg, -0.2 and 0.2 in. Hg), or 2.4-2.6 V?

    YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM.

    NO: Go to step 7.
7. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see **FTP SENSOR REPLACEMENT**).

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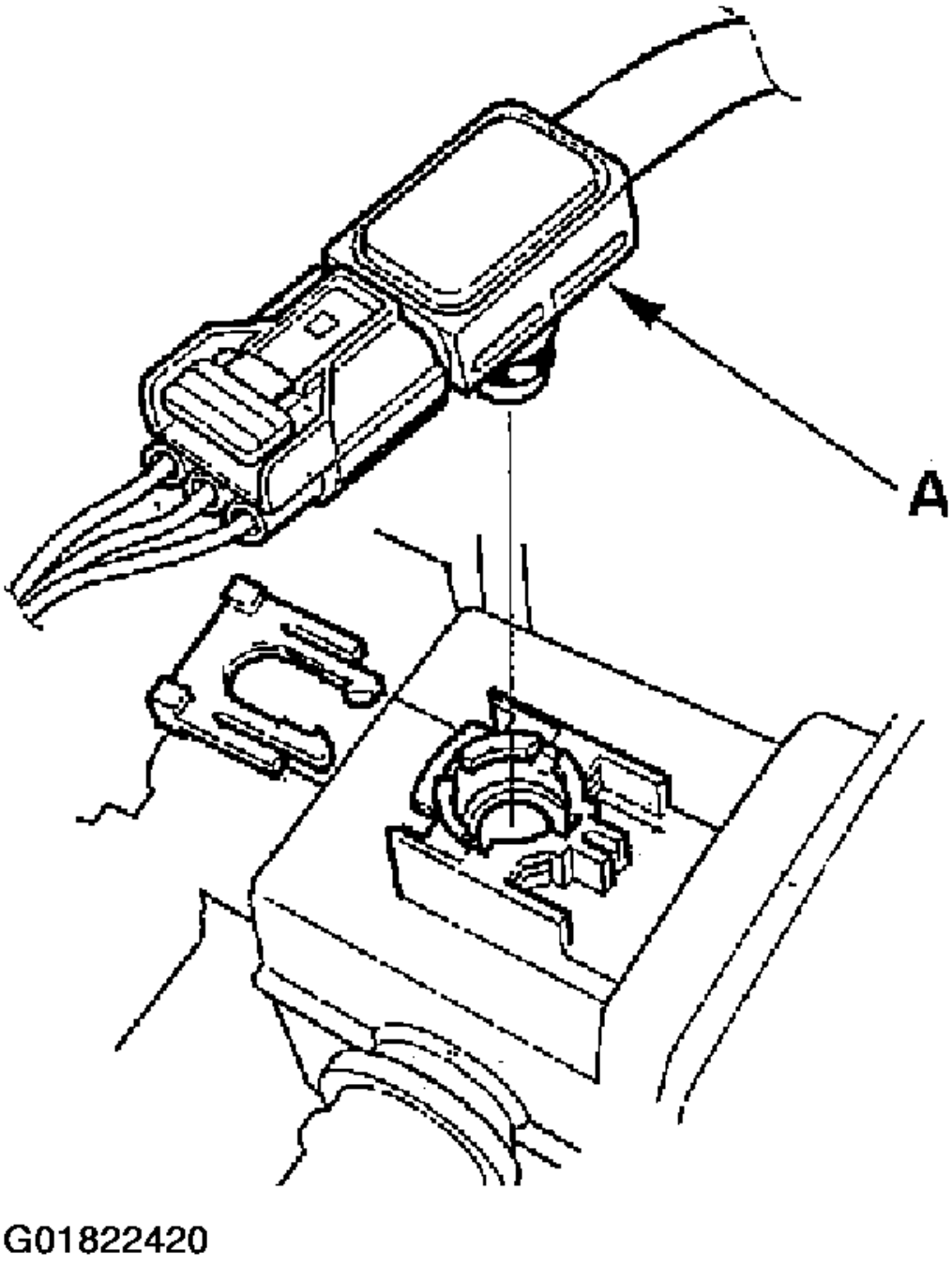


Fig. 33: Removing The FTP Sensor From The EVAP Canister

8. Check the FTP SENSOR in the DATA LIST with the HDS.

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Is it between -0.67 kPa and 0.67 kpa (-5 and 5 mm Hg, -0.2 and 0.2 in. Hg), or 2.4-2.6 V?

YES: Check for debris or clogging at the EVAP canister and the FTP sensor, then go to step 9.

NO: Check for debris or clogging at the FTP sensor air tube. If the tube is OK, replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 9.

9. Install the FTP sensor on the EVAP canister.
10. Turn the ignition switch ON (II).
11. Reset the ECM/PCM with the HDS.
12. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
13. Check for Temporary DTCs or DTC in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P1454 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 14.

14. Check the FTP SENSOR in the DATA LIST with the HDS.

Is it between -0.67 kPa and 0.67 kpa (-5 and 5 mm Hg, -0.2 and 0.2 in. Hg), or 2.4-2.6 V?

YES: Troubleshooting is complete.

NO: Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 .

DTC P2422: EVAP CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Open the fuel fill cap for 5 seconds, then tighten it.
4. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Monitor the OBD STATUS for DTC P2422 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES: Go to step 6.

NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for a poor connection or loose terminals at the EVAP canister vent shut valve and ECM/PCM. If the screen indicates NOT COMPLETED, go to step 2 and recheck.

6. Do the DTC CLEAR in the CLEAR MENU with the HDS.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch ON (II).
10. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

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11. Check EVAP canister vent shut valve (A) operation.

    Does the valve operate?

    YES: Check for a blockage in the EVAP canister, then install the EVAP canister vent shut valve, and go to step 14 .

    NO: Go to step 12.

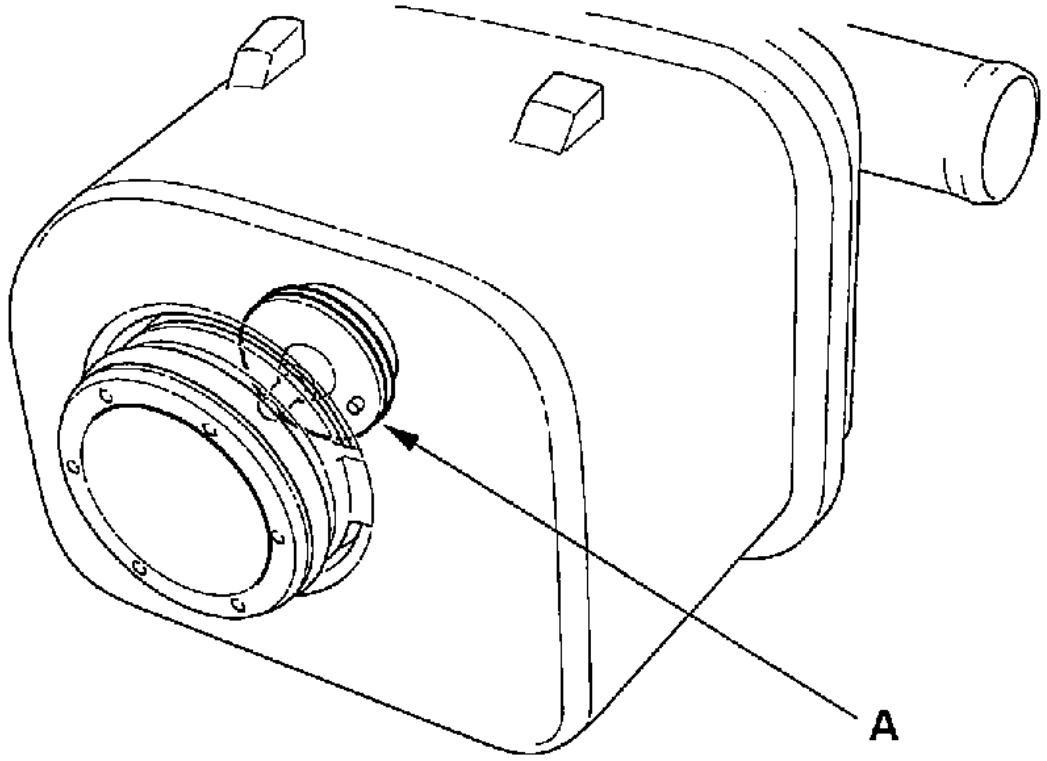


Fig. 34: Checking EVAP Canister Vent Shut Valve Operation

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Turn the ignition switch OFF.
18. Open the fuel fill cap for 5 seconds, then tighten it.

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19. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2422 is indicated, check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 21.
21. Monitor the OBD STATUS for DTC P2422 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 16 and recheck.

EVAP CANISTER REPLACEMENT

1. Remove the EVAP canister cover (A).

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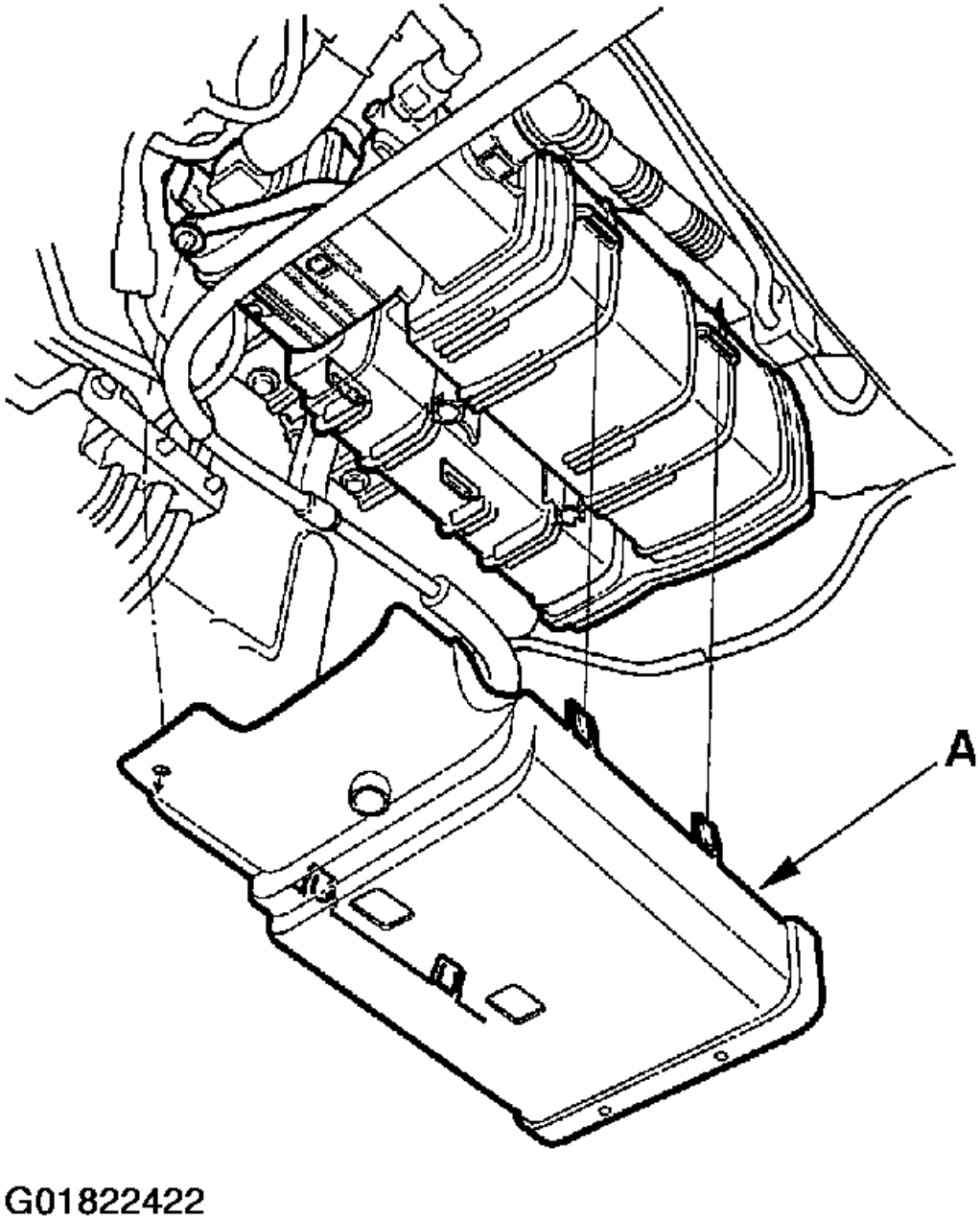


Fig. 35: Removing The EVAP Canister Cover

2. Remove the hoses (A), the FTP sensor 3P connector (B), and the EVAP canister vent shut valve 2P connector (C).

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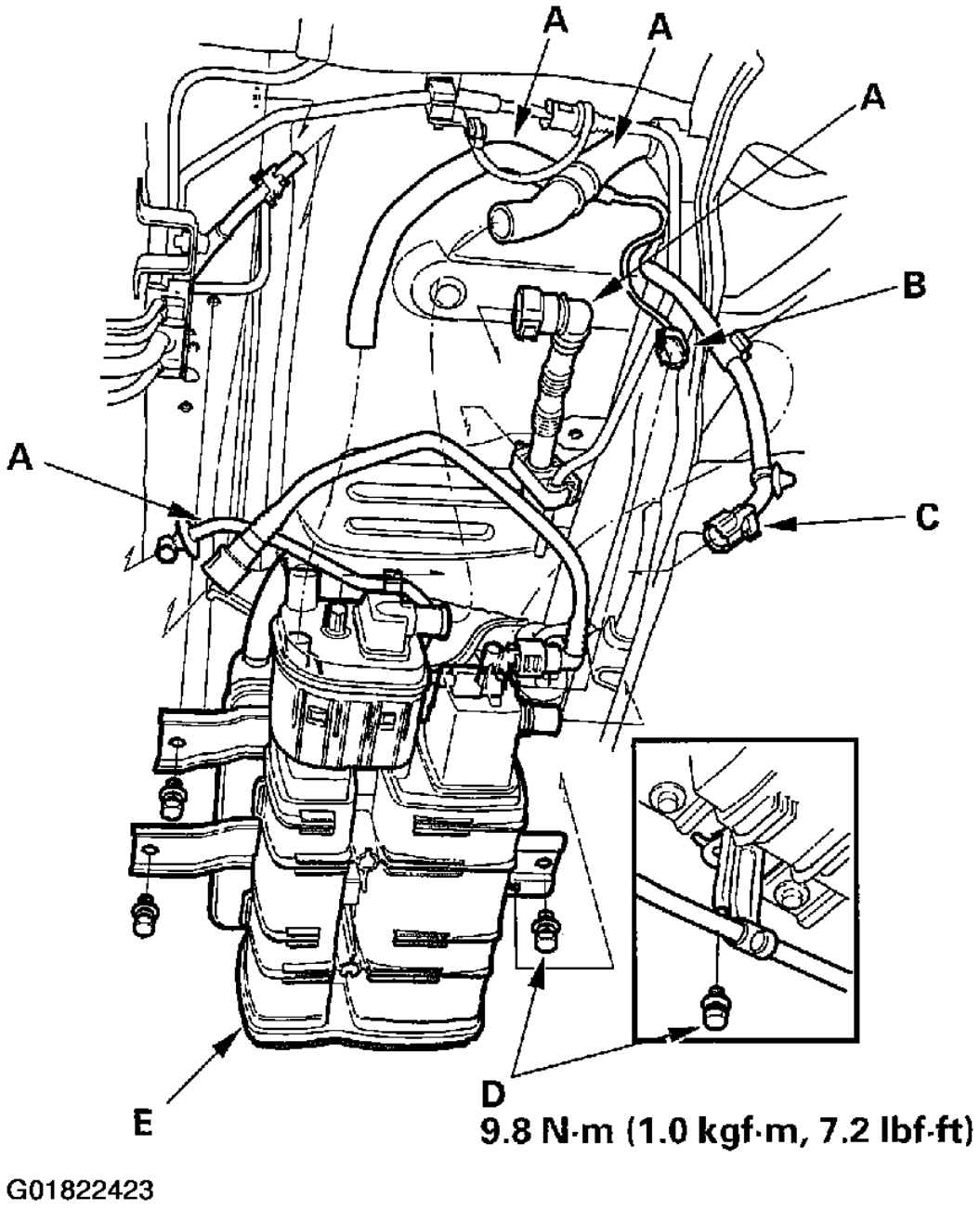


Fig. 36: Removing The Hoses, The FTP Sensor 3P Connector & The EVAP Canister Vent Shut Valve 2P Connector

3. Remove the bolts (D).
4. Remove the EVAP canister assembly (E).
5. Remove the EVAP canister bracket (A).

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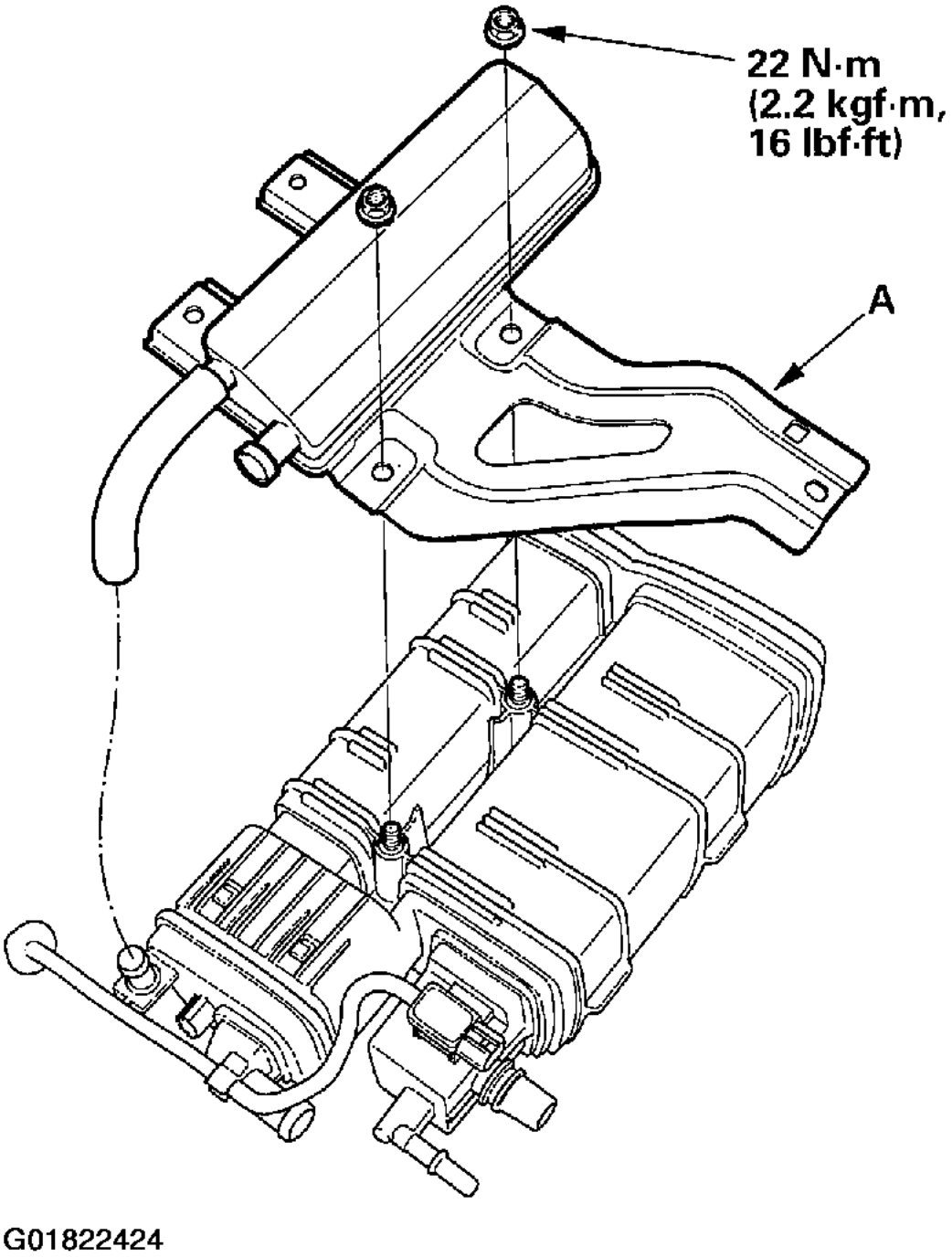


Fig. 37: Removing The EVAP Canister Assembly

6. Install the canister in the reverse order of removal.

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FTP SENSOR REPLACEMENT

1. Remove the EVAP canister (see **EVAP CANISTER REPLACEMENT**).
2. Remove the retaining clip (A).

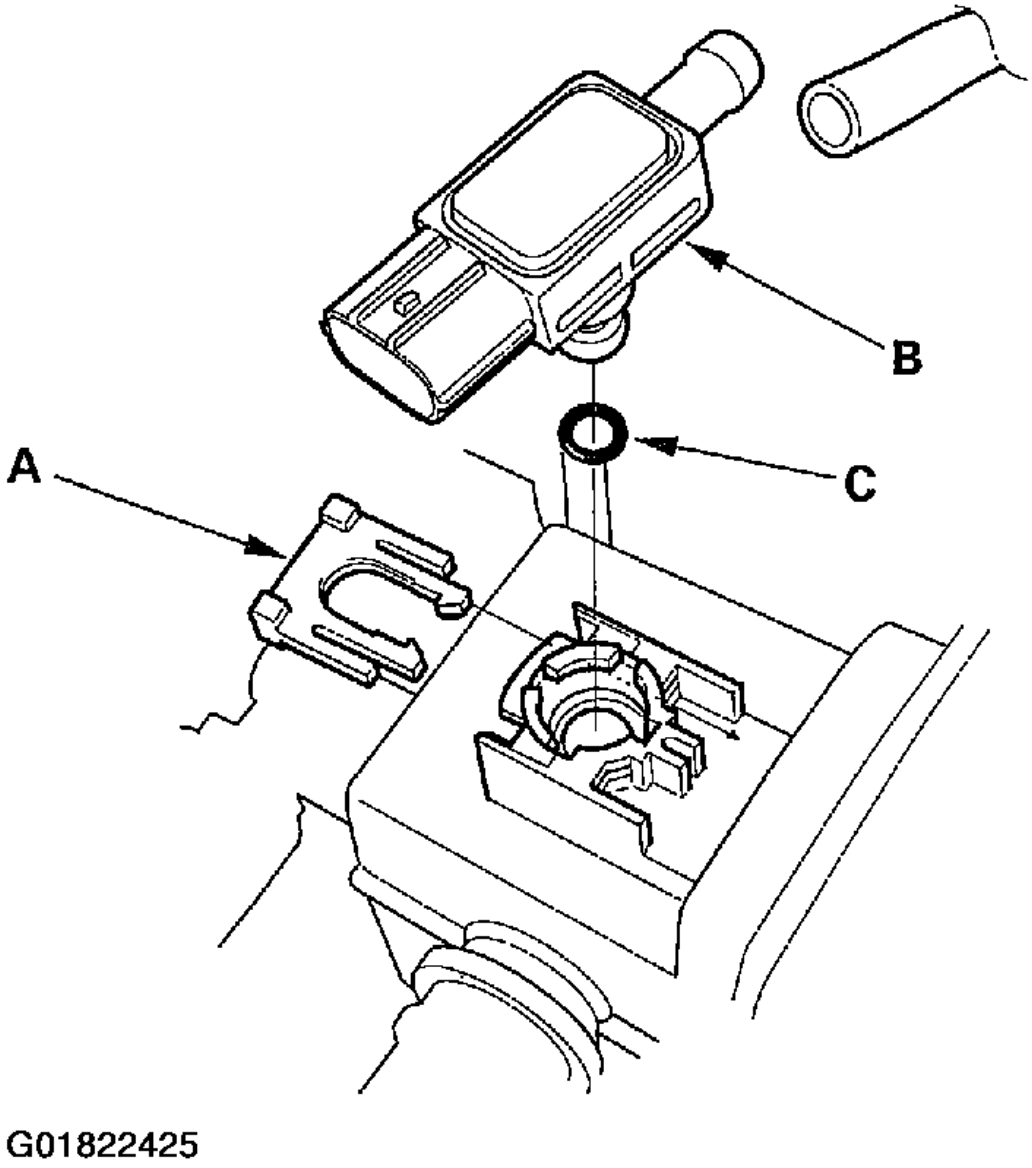


Fig. 38: Removing The FTP Sensor

3. Remove the FTP sensor (B).

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4. Install the sensor in the reverse order of removal with a new O-ring (C).

EVAP CANISTER PURGE VALVE REPLACEMENT

1. Disconnect the EVAP canister purge valve 2P connector (A).

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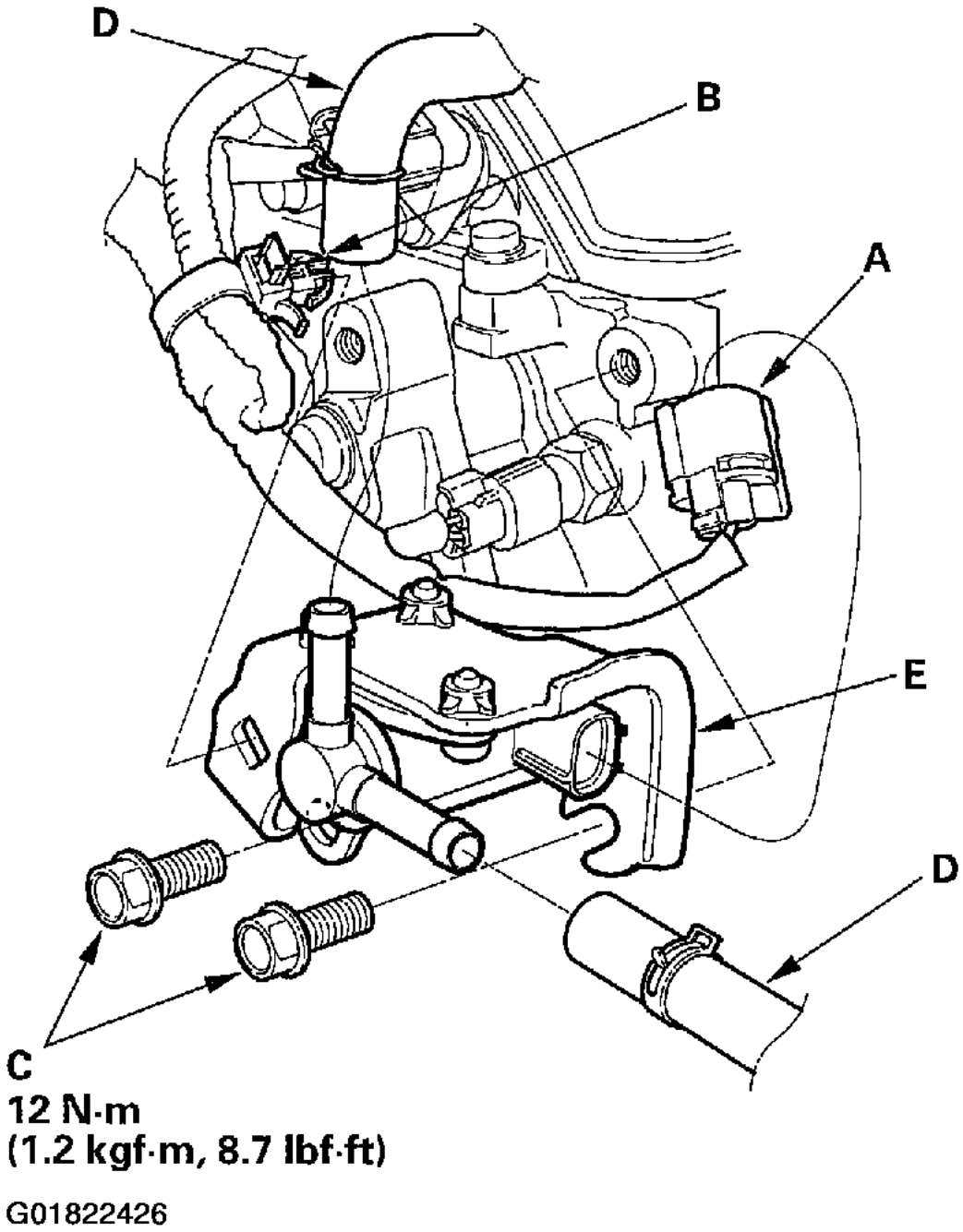


Fig. 39: Disconnecting The EVAP Canister Purge Valve 2P Connector

2. Remove the harness clip (B), the bolts (C) and the hoses (D), then remove the EVAP canister purge valve assembly (E).
3. Remove the screws (A).

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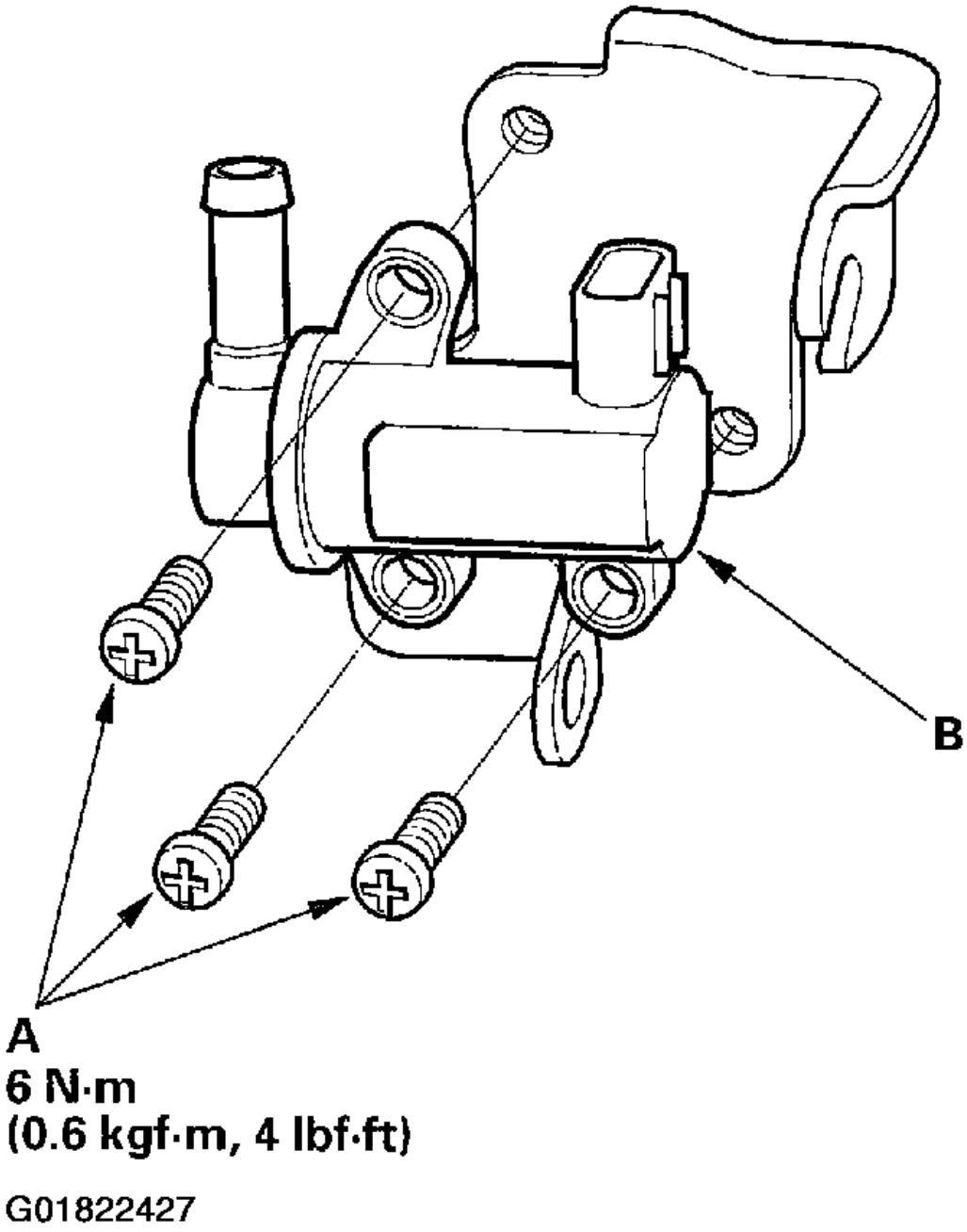


Fig. 40: Removing The EVAP Canister Purge Valve

4. Remove the EVAP canister purge valve (B) from the bracket.
5. Install the valve in the reverse order of removal.

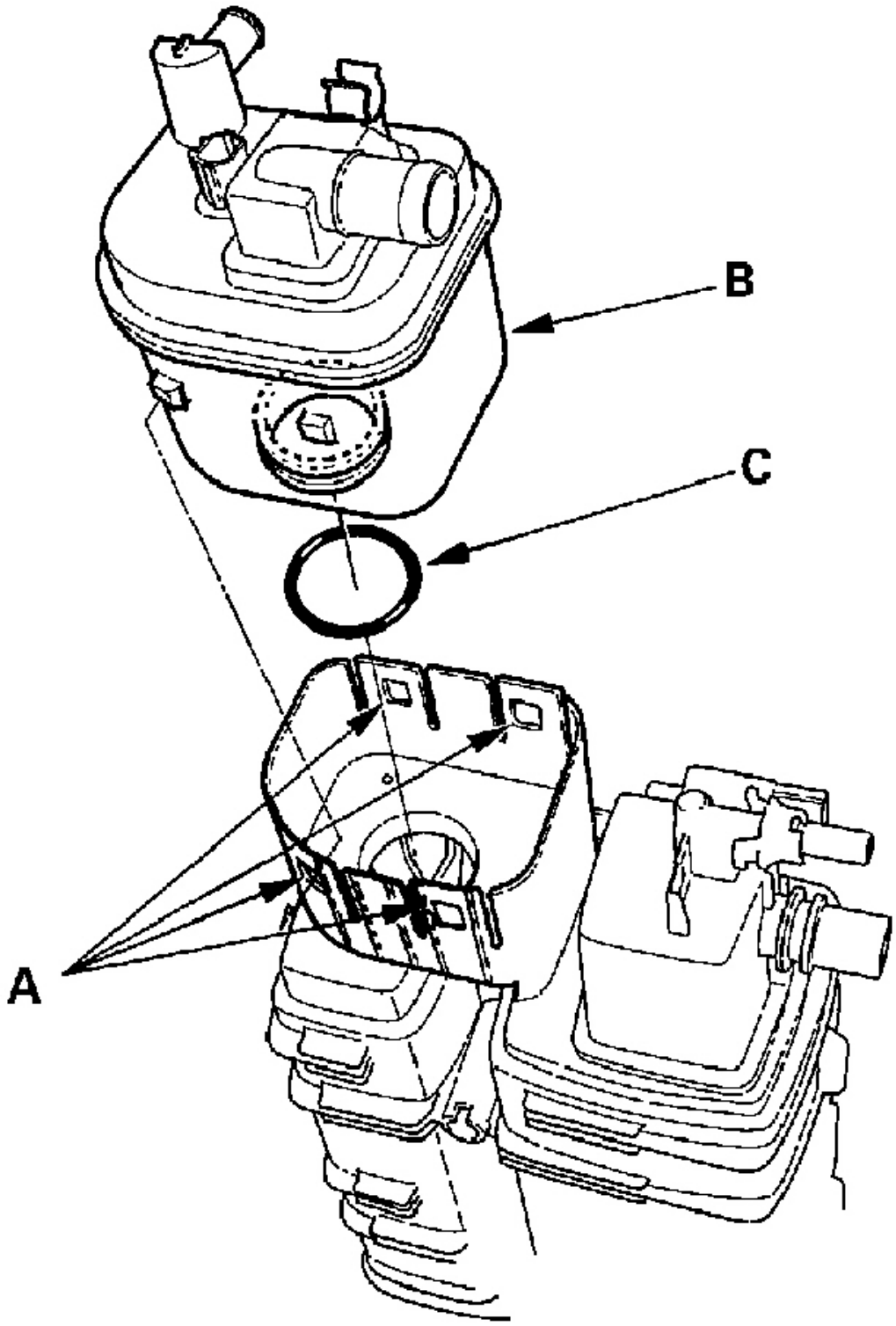
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EVAP CANISTER VENT SHUT VALVE REPLACEMENT

1. Remove the EVAP canister (see **EVAP CANISTER REPLACEMENT**).
2. Pry the lock tabs (A) outward and remove the EVAP canister vent shut valve (B).

NOTE: Be careful not to damage the lock tabs.

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Fig. 41: Prying The Lock Tabs Outward & Removing The EVAP Canister Vent Shut Valve

3. Install the valve in the reverse order of removal with a new O-ring (C).

NOTE: Do not coat the O-ring with oil, etc.

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2004 ENGINE COOLING

Electric Cooling Fans - TSX

DESCRIPTION

NOTE: For cooling system bleeding procedures, see BLEEDING COOLING SYSTEM in appropriate SPECIFICATIONS & DRIVE BELT ROUTING article.

Vehicle has 2 electric cooling fans (radiator and condenser).

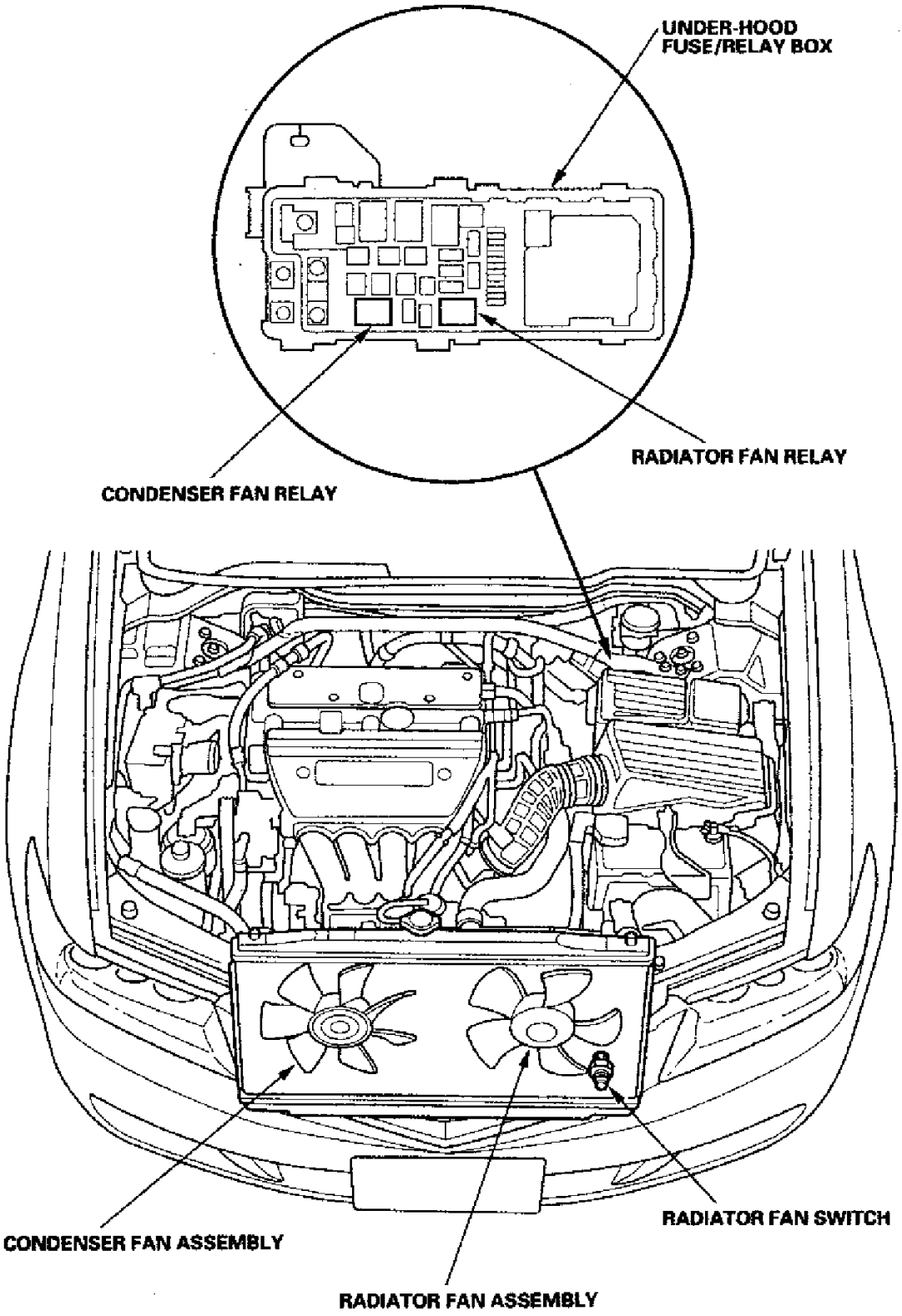
OPERATION

Relays are grounded by either the radiator fan switch or the PCM. Grounding relays energizes their coils and supplies battery voltage to radiator and condenser fan motors. Fans run until ground is removed from relay coils.

COMPONENT LOCATIONS

NOTE: For location of cooling fan system components, see Fig. 1 .

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Fig. 1: Locating Cooling Fan Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TROUBLE SHOOTING

SYMPTOM TROUBLE SHOOTING INDEX

Symptom	Perform Test
Engine overheats.	1. Inspect the water pump. 2. Check for a broken drive belt. 3. Check the drive belt auto-tensioner. 4. Check the thermostat. 5. Check for coolant leakage (from gaskets, hoses, O-rings, etc.). 6. Check for dirt, leaves, or insects on radiator and condenser. 7. Check for damaged or deformed fan shroud. 8. Check for plugged or deteriorated radiator hoses. 9. Check the radiator cap. 10. Inspect the fan motors or fan relays. 11. Check for plugged heater core or hose(s). 12. Check the coolant level. 13. Check for deteriorated coolant. 14. Check for a damaged cylinder head gasket.
Radiator fan does not run at all.	**RADIATOR FAN CIRCUIT TROUBLE SHOOTING** .
Radiator fan does not run for engine cooling, but it runs with A/C ON.	**RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (OPEN)** .
Radiator fan runs with ignition switch ON, A/C OFF, and engine temperature below 199°F (93°C).	**RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (SHORT)** .
Radiator fan does not run with the A/C ON, but it runs for engine cooling.	See TROUBLE SHOOTING in appropriate A/C-HEATER SYSTEMS article.

RADIATOR FAN CIRCUIT TROUBLE SHOOTING

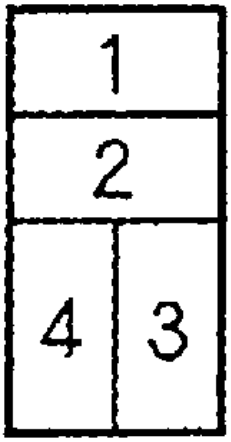
1. Check the No. 11 (20-amp) fuse in the under-hood fuse/relay box, and the No. 30 (7.5-amp) fuse in the under-dash fuse/relay box. If fuses are OK, go to next step. If fuses are not OK, replace the fuse(s) and recheck.
2. Remove the radiator fan relay from the under-hood fuse/relay box, and test it. See **FAN RELAYS** under COMPONENT TESTS. If the relay is OK, go to next step. If relay is not OK, replace radiator fan relay.
3. Measure the voltage between radiator fan relay 4-pin socket, terminal No. 2 and body ground. See **Fig. 2** .

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If there is battery voltage, go to next step. If battery voltage is not present, replace the under-hood fuse/relay box.

4. Connect radiator fan relay 4-pin socket, terminal No. 1 and No. 2 with a jumper wire. See **Fig. 2** . If the radiator fan runs, go to next step. If radiator fan does not run, go to step 6 .
5. Disconnect the jumper, and turn the ignition switch ON. Check for voltage between radiator fan relay 4-pin socket, terminal No. 3 and body ground. See **Fig. 2** . If there is battery voltage, go to step 8 . If battery voltage is not present, check for an open in the Black/Yellow wire between the under-hood fuse/relay box and under-dash fuse/relay box.
6. Disconnect the radiator fan motor 2-pin connector. Check for continuity between radiator fan relay 4-pin socket, terminal No. 1 and radiator fan motor 2-pin connector, terminal No. 2. See **Fig. 2** and **Fig. 3** . If there is continuity, go to next step. If there is no continuity, repair open in the wire between the under-hood fuse/relay box and radiator fan motor 2-pin connector, terminal No. 2.
7. Check for continuity between radiator fan motor 2-pin connector, terminal No. 1 and body ground. See **Fig. 3** . If there is continuity, replace the radiator fan motor. See **COOLING FANS** under REMOVAL & INSTALLATION. If there is no continuity, check for an open in the wire between radiator fan motor 2-pin connector, terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301.
8. Reinstall the radiator fan relay. Disconnect the radiator fan switch 2-pin connector. Connect radiator fan switch 2-pin connector, terminal No. 1 and No. 2 with a jumper wire. See **Fig. 4** . If the radiator fan runs, replace the radiator fan switch. See **RADIATOR FAN SWITCH** under REMOVAL & INSTALLATION. If radiator fan does not run, go to next step.
9. Remove the jumper wire, and measure the voltage between radiator fan switch 2-pin connector, terminal No. 2 and body ground. See **Fig. 4** . If there is battery voltage, check for an open in the wire between radiator fan switch 2-pin connector, terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301. If battery voltage is not present, repair-open in the wire between radiator fan switch 2-pin connector, terminal No. 2 and the under-hood fuse/relay box.

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Terminal side of female terminals

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Fig. 2: Identifying Radiator Fan Relay 4-pin Socket Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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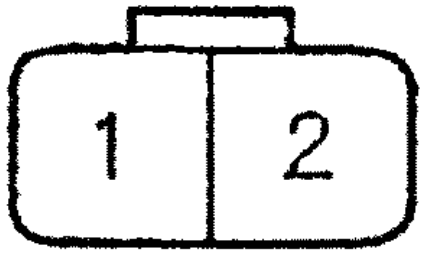


Fig. 3: Identifying Radiator Fan Motor 2-pin Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

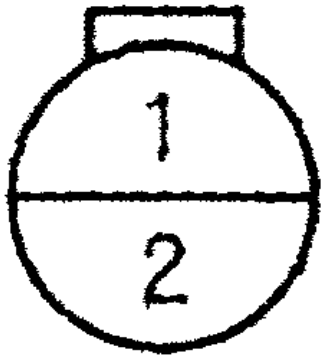


Fig. 4: Identifying Radiator Fan Switch 2-pin Connector Terminals

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Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (OPEN)

1. Disconnect the radiator fan switch 2-pin connector. Turn the ignition switch ON. Measure voltage between radiator fan switch 2-pin connector, terminal No. 2 and body ground. See **Fig. 4** . If there is battery voltage, go to next step. If battery voltage is not present, repair open in the wire between radiator fan switch 2-pin connector, terminal No. 2 and under-hood fuse/relay box.
2. Turn the ignition switch OFF, and check for continuity between radiator fan switch 2-pin connector, terminal No. 1 and body ground. See **Fig. 4** . If there is continuity, replace the radiator fan switch. See **RADIATOR FAN SWITCH** under REMOVAL & INSTALLATION. If there is no continuity, check for an open in the wire between radiator fan switch 2-pin connector, terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301.

RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (SHORT)

1. Remove the radiator fan relay from the under-hood fuse/relay box, and test it. See **FAN RELAYS** under COMPONENT TESTS. If the relay is OK, go to next step. If the relay is not OK, replace the radiator fan relay.
2. Remove the radiator fan switch, and test it. See **RADIATOR FAN SWITCH** under COMPONENT TESTS. If the radiator fan switch is OK, go to next step. If the radiator fan switch is not OK, replace the radiator fan switch. See **RADIATOR FAN SWITCH** under REMOVAL & INSTALLATION.
3. Disconnect the under-hood fuse relay box 20-pin connector. Check for continuity between radiator fan switch 2-pin connector, terminal No. 2 and. body ground. See **Fig. 4** . If there is continuity, repair short in the wire between radiator fan switch 2-pin connector, terminal No. 2 and under-hood fuse/relay box. If there is no continuity, replace the under-hood fuse/relay box.

COMPONENT TESTS

FAN MOTOR

Disconnect appropriate fan motor connector. Apply battery voltage and ground between fan motor terminals. If fan motor operates, check related components and wiring. If fan motor does not operate, reverse battery leads. If fan still does not operate, replace fan motor. See **COOLING FANS** under REMOVAL & INSTALLATION.

FAN RELAYS

1. Although physical appearance of relays may be different, basic relay operation is similar. Remove relay to be tested. Check continuity between relay terminals No. 1 and 3. See **WIRING DIAGRAMS** . Continuity should not exist.
2. Apply battery voltage between terminals No. 2 and 4. Continuity should exist between terminals No. 1 and 3. If continuity is not as specified, replace relay.

RADIATOR FAN SWITCH

1. Remove the radiator fan switch from the radiator. Suspend the radiator fan switch in a container of water.

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See **Fig. 5** .

2. Heat the water, and check the temperature with a thermometer. Do not let the thermometer touch the bottom of the hot container. Measure the continuity between terminal "A" and terminal "B" according to **RADIATOR FAN SWITCH CONTINUITY SPECIFICATIONS** .

RADIATOR FAN SWITCH CONTINUITY SPECIFICATIONS

Application	(1) Temperature - °F (°C)
Switch	196-203 (91-95)
(1) Switch opens when temperature drops to 5-15°F (3-8°C) less than continuity temperature.	

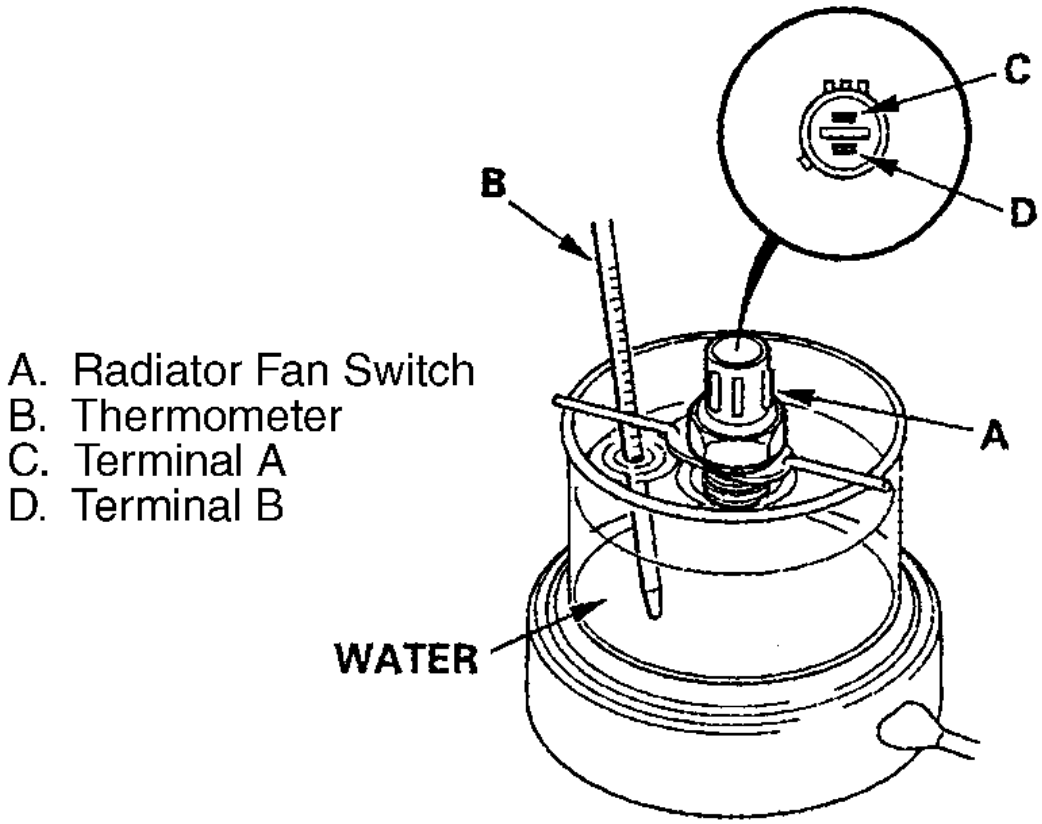


Fig. 5: Testing Radiator Fan Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REMOVAL & INSTALLATION

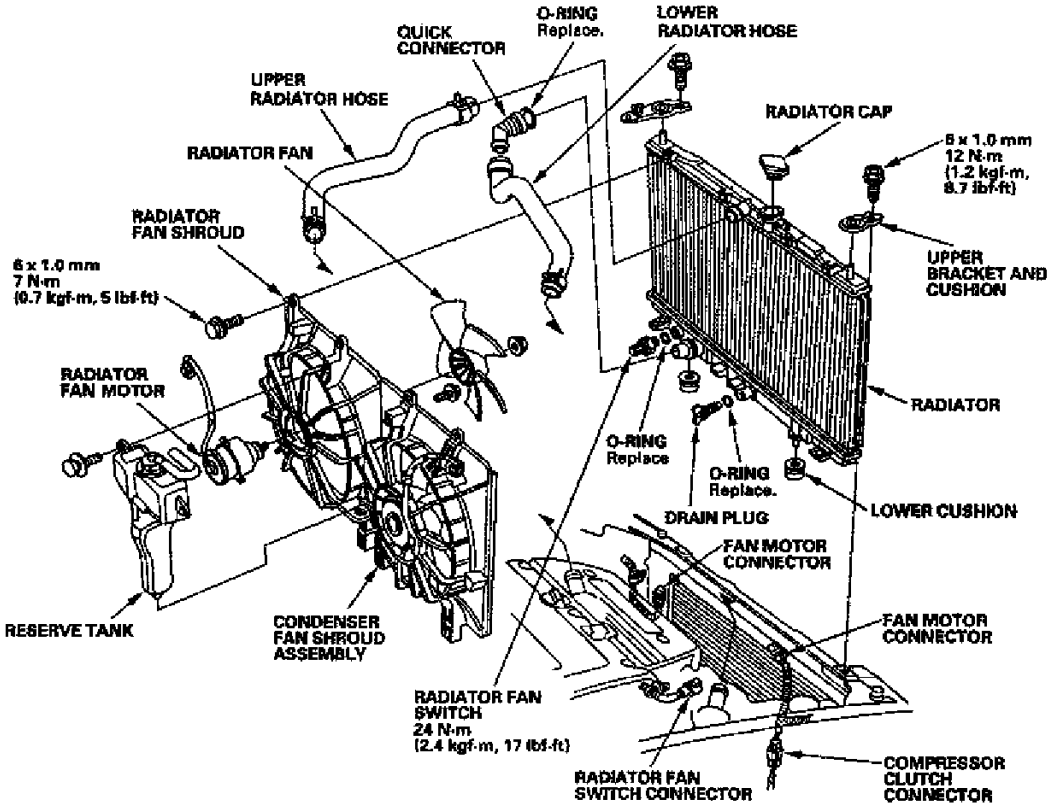
COOLING FANS

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Removal & Installation

For removal and installation, see **Fig. 6** .

1. Drain engine coolant.
2. Remove the lower radiator hose from the radiator.
3. Remove the automatic transmission fluid (ATF) cooler hoses (A/T).



4. Remove the upper radiator hose from the radiator.
5. Disconnect the fan motor connectors, radiator fan switch connector, and compressor clutch connector.
6. Remove the upper bracket cushions, then pull up the radiator.
7. Remove the fan shroud assemblies and other parts from the radiator.
8. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
9. Fill the radiator with engine coolant and bleed the air.

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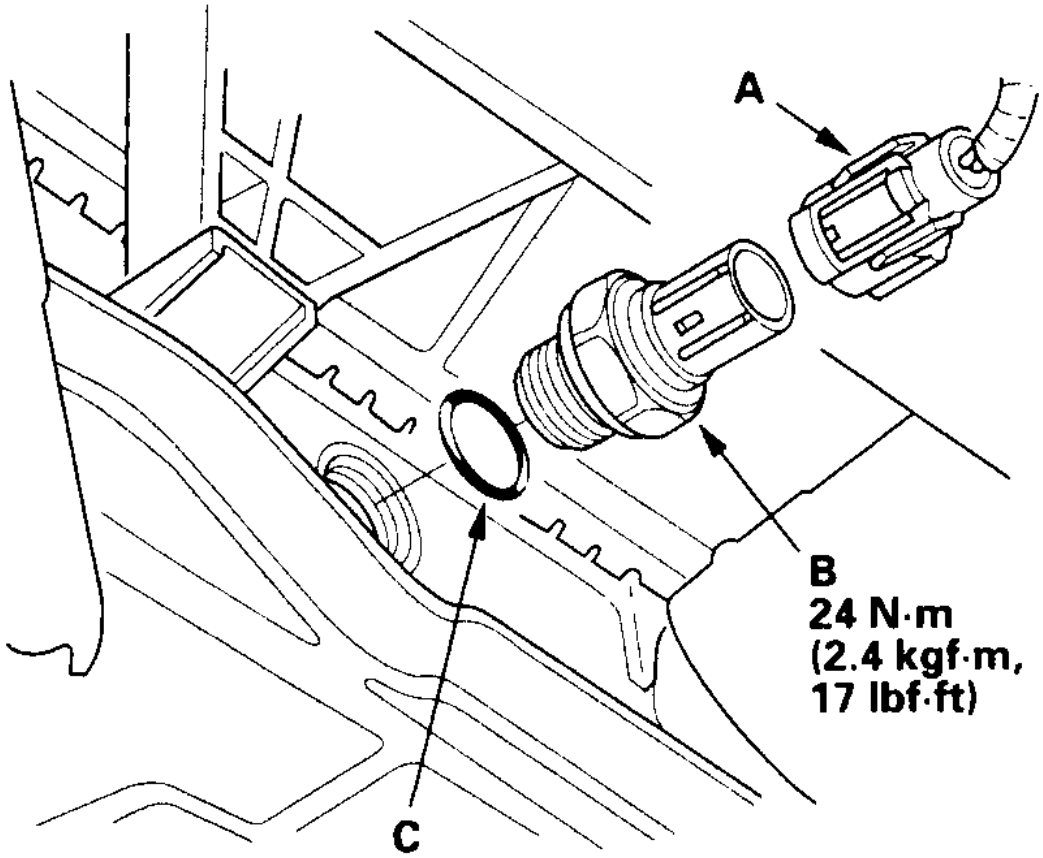
Fig. 6: Removing Cooling Fans
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR FAN SWITCH

Removal & Installation

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1. Drain the engine coolant.
2. Remove the splash shield.
3. Disconnect the radiator fan switch connector, then remove the radiator fan switch. See **Fig. 7** .
4. Install the radiator fan switch with a new "O" ring.
5. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open.



A. Radiator Fan Switch Connector
B. Radiator Fan Switch
C. O-Ring

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Fig. 7: Removing Radiator Fan Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WIRING DIAGRAMS

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For 2004 wiring diagram, see appropriate WIRING DIAGRAM under SYSTEM WIRING DIAGRAMS in ELECTRICAL.

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2004 ACURA

TSX

BUZZERS, RELAYS & TIMERS

BUZZERS, RELAYS & TIMERS LOCATION

Component	Location
Accessory Power Socket Relay	In under-dash fuse/relay box. See **Fig. 1** .
A/C Compressor Clutch Relay	In under-hood fuse/relay box. See **Fig. 2** .
A/F Sensor Relay	In under-dash fuse/relay box. See **Fig. 1** .
Blower Motor Relay	In under-hood fuse/relay box. See **Fig. 2** .
Condenser Fan Relay	In under-hood fuse/relay box. See **Fig. 2** .
DRL Relay (Canada)	In underhood multi-relay box. See **Fig. 3** .
Fog Light Relay	At left side of engine compartment. See **Fig. 118** .
Ignition Coil Relay	In under-dash fuse/relay box. See **Fig. 1** .
Moonroof Close Relay	At rear of roof. See **Fig. 120** .
Moonroof Open Relay	At rear of roof. See **Fig. 120** .
PGM-FI Main Relay 1	In under-dash fuse/relay box. See **Fig. 1** .
PGM-FI Main Relay 2	In under-dash fuse/relay box. See **Fig. 1** .
Power Window Relay	In under-dash fuse/relay box. See **Fig. 1** .
Radiator Fan Relay	In under-hood fuse/relay box. See **Fig. 2** .
Rear Window Defogger Relay	In under-hood fuse/relay box. See **Fig. 2** .
Seat Heater Relay	Behind left side of glove box. See **Fig. 62** .
Starter Cut Relay	In under-dash fuse/relay box. See **Fig. 1** .
Throttle Actuator Control Module Relay	Behind left side of glove box. See **Fig. 62** .
Turn Signal/Hazard Relay	In under-dash fuse/relay box. See **Fig. 1** .

CIRCUIT PROTECTION DEVICES

CIRCUIT PROTECTION DEVICES LOCATION

Component	Location
Under-Dash Fuse/Relay Box	Behind left kick panel. See **Fig. 46** .
Under-Hood Fuse/Relay Box	On left rear corner of engine compartment, forward of strut tower. See **Fig. 35** .
Under-Hood Multi-Relay Box	Attached to under-hood fuse/relay box.

CONTROL UNITS

CONTROL UNITS LOCATION

Component	Location

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ECM/PCM	Under middle of dash. See **Fig. 65** .
Hands-Free Telephone Control Unit (Acura Accessory)	Under center console. See **Fig. 119** .
Immobilizer Control Unit-Receiver	Under steering column cover. See **Fig. 41** .
Navigation Unit	In trunk, under right side of rear shelf. See **Fig. 96** .
OPDS Unit	In front passenger's seat back. See **Fig. 77** .
SRS Unit	Behind middle of dash. See **Fig. 54** .
Throttle Actuator Control Module	Under right side of dash. See **Fig. 70** .
VSA Modulator-Control Unit	At right side of engine compartment. See **Fig. 6** .

MOTORS

MOTORS LOCATION

Component	Location
A/C Condenser Fan Motor Connector	At left front of engine. See **Fig. 10** .
Blower Motor	Under right side of dash. See **Fig. 69** .
Driver's Air Mix Control Motor	Behind left side of dash. See **Fig. 51** .
Driver's Power Seat Front Up-Down Motor	Under driver's seat. See **Fig. 74** .
Driver's Power Seat Rear Up-Down Motor	Under driver's seat. See **Fig. 74** .
Driver's Power Seat Recline Motor Connector	Under driver's seat. See **Fig. 73** .
Driver's Power Seat Slide Motor	Under driver's seat. See **Fig. 74** .
Driver's Power Window Motor	In middle of driver's door. See **Fig. 85** .
Front Passenger's Air Mix Control Motor	Under right side of dash. See **Fig. 67** .
Front Passenger's Power Window Motor	In middle of front passenger's door.
Left Rear Power Window Motor	In middle of left rear door. See **Fig. 87** .
Mode Control Motor	Behind glove box. See **Fig. 61** .
Moonroof Motor	At rear center of roof. See **Fig. 88** .
Radiator Fan Motor Connector	At left front of engine compartment. See **Fig. 26** .
Recirculation Control Motor	Behind glove box, on blower unit. See **Fig. 61** .
Right Rear Power Window Motor	In middle of right rear door.
Starter	At lower left rear of engine. See **Fig. 19** .
Windshield Washer Motor	On bottom of windshield washer fluid reservoir. See **Fig. 102** .
Windshield Wiper Motor	Under left side of cowl cover. See **Fig. 37** .

SENDING UNITS & SENSORS

SENDING UNITS & SENSORS LOCATION

Component	Location
A/F Sensor Connector (A/T)	At rear of engine. See **Fig. 29** .

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A/F Sensor Connector (M/T)	At rear of engine. See **Fig. 31** .
APP Sensor	At right side of engine compartment. See **Fig. 4** .
CKP Sensor	At right front of engine. See **Fig. 108** .
CMP Sensor A	At rear of engine. See **Fig. 24** .
CMP Sensor B	At rear of engine. See **Fig. 24** .
Countershaft Speed Sensor (A/T)	On top of transmission. See **Fig. 29** .
Countershaft Speed Sensor (M/T)	On transmission housing. See **Fig. 33** .
Driver's Side Curtain Impact Sensor Connector	At left "C" pillar. See **Fig. 92** .
Driver's Side Impact Sensor	On floor, left of driver's seat. See **Fig. 78** .
ECT Sensor (2.3L)	On right rear of engine. See **Fig. 24** .
Evaporator Temperature Sensor Connector	Behind right side of dash. See **Fig. 51** .
Front Passenger's Side Impact Sensor	On floor, right of front passenger's seat. See **Fig. 78** .
FTP Sensor	Under left rear of vehicle. See **Fig. 117** .
Fuel Tank Unit	At middle front of trunk. See **Fig. 99** .
IAT Sensor	On top rear of intake manifold. See **Fig. 18** .
Knock Sensor	At left side of engine. See **Fig. 19** .
Left Front Impact Sensor	Behind left side of bumper. See **Fig. 107** .
Left Front Wheel Speed Sensor Connector	On left front suspension knuckle. See **Fig. 28** .
Left Rear Wheel Speed Sensor Connector	On left rear suspension knuckle. See **Fig. 116** .
Mainshaft Speed Sensor (A/T)	On transmission housing. See **Fig. 30** .
MAP Sensor	At left side of engine. See **Fig. 18** .
Outside Air Temperature Sensor	Behind center of front bumper. See **Fig. 105** .
Passenger's Side Curtain Impact Sensor Connector	At right "C" pillar. See **Fig. 92** .
Right Front Impact Sensor	Behind right side of front bumper. See **Fig. 103** .
Right Front Wheel Speed Sensor Connector	At right front side of engine compartment. See **Fig. 5** .
Right Rear Wheel Speed Sensor	On right rear suspension knuckle.
Secondary HO2S Connector	At right side of floor. See **Fig. 80** .
Steering Angle Sensor	In steering column. See **Fig. 39** .
TP Sensor/Throttle Actuator	On throttle body. See **Fig. 23** .
Yaw Rate Sensor	At left side of floor. See **Fig. 79** .

SOLENOIDS & SOLENOID VALVES

SOLENOIDS & SOLENOID VALVES LOCATION

Component	Location
A/C Compressor Connector	At front of engine. See **Fig. 110** .
A/T Clutch Pressure Control Solenoid Valve A (A/T)	On top rear of transmission. See **Fig. 21** .
A/T Clutch Pressure Control Solenoid Valve B	On left side of transmission. See **Fig. 113** .

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A/T Clutch Pressure Control Solenoid Valve C	On left side of transmission. See **Fig. 113** .
Engine Mount Control Solenoid Valve	On left front of engine. See **Fig. 14** .
EVAP Canister Purge Valve	At left side of engine. See **Fig. 25** .
EVAP Canister Vent Shut Valve	Under left rear of vehicle. See **Fig. 117** .
Injector No. 1	At top of engine. See **Fig. 15** .
Injector No. 2	At top of engine. See **Fig. 15** .
Injector No. 3	At top of engine. See **Fig. 15** .
Injector No. 4	At top of engine. See **Fig. 15** .
Reverse Lockout Solenoid (M/T)	On transmission housing. See **Fig. 31** .
Shift Lock Solenoid	Under floor console, on bottom right of gear selector lever. See **Fig. 57** .
Starter Solenoid	At lower left rear of engine. See **Fig. 19** .
VTC Oil Control Solenoid Valve	At right front of engine. See **Fig. 11** .
VTEC Solenoid Valve	At rear of engine compartment. See **Fig. 13** .

SWITCHES

SWITCHES LOCATION

Component	Location
A/C Pressure Switch	At right front of engine compartment. See **Fig. 9** .
Back-Up Light Switch (M/T)	On top left of transmission. See **Fig. 32** .
Brake Fluid Level Switch	On brake fluid reservoir. See **Fig. 36** .
Brake Pedal Position Switch	On brake pedal support. See **Fig. 50** .
Clutch Interlock Switch (M/T)	On clutch pedal support. See **Fig. 115** .
Clutch Pedal Position Switch (M/T)	Behind left side of dash.**Fig. 49** .
Driver's Door Key Cylinder Switch Connector	In driver's door. See **Fig. 86** .
Driver's Seat Belt Switch Connector	Under driver's seat. See **Fig. 73** .
Front Passenger's Seat Belt Switch	Under front passenger's seat. See **Fig. 76** .
Moonroof Limit Switch Connector	At center rear of roof. See **Fig. 88** .
Oil Pressure Switch	At right front of engine. See **Fig. 109** .
Parking Brake Switch	Mounted under parking brake lever. See **Fig. 58** .
PSP Switch	At right side of engine compartment. See **Fig. 5** .
Radiator Fan Switch	Under left side of engine compartment. See **Fig. 111** .
Security Hood Switch Connector	At front of engine compartment, on hood lock/latch assembly. See **Fig. 104** .
Transmission Range Switch (A/T)	On rear of transmission. See **Fig. 115** .
Trunk Latch Switch	At middle rear of trunk lid. See **Fig. 101** .
Trunk Lid Opener Switch Connector	At center rear of trunk lid. See **Fig. 101** .
VTEC Oil Pressure Switch	At rear of engine compartment. See **Fig. 13** .
2nd Clutch Pressure Switch (A/T)	On top front of transmission. See **Fig. 21** .

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3rd Clutch Pressure Switch (A/T)	On side of transmission. See **Fig. 114** .

MISCELLANEOUS

MISCELLANEOUS LOCATION

Component	Location
Alternator	At left front of engine. See **Fig. 12** .
Blower Power Transistor	On bottom of blower unit. See **Fig. 67** .
Coil Assembly (Rear Window Defogger)	At right "C" pillar. See **Fig. 89** .
DLC	At lower left of dash, above the kick panel. See **Fig. 44** .
Driver's Airbag First & Second Inflators Connector	Under steering wheel horn pad. See **Fig. 38** .
Driver's Seat Belt Tensioner Connector	At left "B" pillar. See **Fig. 81** .
Driver's Seat Heater Connector	Under driver's seat. See **Fig. 73** .
Driver's Side Airbag Inflator Connector	Under driver's seat. See **Fig. 75** .
Driver's Side Curtain Airbag Inflator Connector	At left "C" pillar. See **Fig. 91** .
Front Passenger's Airbag First & Second Inflators Connector	Behind glove box. See **Fig. 60** .
Front Passenger's Seat Belt Tensioner Connector	At right "B" pillar.
Front Passenger's Seat Heater	Under front passenger's seat. See **Fig. 76** .
Front Passenger's Side Airbag Inflator Connector	Under front passenger's seat. See **Fig. 76** .
Front Passenger's Side Curtain Airbag Inflator Connector	At right "C" pillar. See **Fig. 91** .
Front Passenger's Side Curtain Airbag Inflator Connector	At right "C" pillar. See **Fig. 92** .
High Horn	At front of engine compartment, behind front grille. See **Fig. 104** .
Ignition Coil No. 1	At top of engine. See **Fig. 17** .
Ignition Coil No. 2	At top of engine. See **Fig. 17** .
Ignition Coil No. 3	At top of engine. See **Fig. 17** .
Ignition Coil No. 4	At top of engine. See **Fig. 17** .
Junction Connector C102	At left side of engine compartment. See **Fig. 22** .
Junction Connector C405	Behind left side of dash. See **Fig. 43** .
Junction Connector C406	Behind left side of dash. See **Fig. 42** .
Junction Connector C407	Behind left side of dash. See **Fig. 42** .
Junction Connector C553	Behind glove box. See **Fig. 59** .
Junction Connector C554	Behind glove box. See **Fig. 59** .
Junction Connector C555	Behind glove box. See **Fig. 59** .
Junction Connector C556	Behind glove box. See **Fig. 59** .
Low Horn	At front of engine compartment, behind front grille. See **Fig. 106** .

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MES Connector	Behind left kick panel. See **Fig. 46** .
Navigation Service Check Connector	In trunk, under right side of rear shelf. See **Fig. 97** .
Noise Condenser Connector	At left "C" pillar. See **Fig. 93** .
Passenger's Seat Belt Tensioner Connector	At right "B" pillar. See **Fig. 81** .
Stereo Amplifier	Behind center of dash. See **Fig. 53** .
Window Antenna Coil	At left "C" pillar. See **Fig. 90** .
Window Antenna Coil Connector A	Under steering column cover. See **Fig. 40** .

CONNECTORS

CONNECTORS LOCATION

Component	Location
C101 (Gray, 6 Pin)	At left rear of engine. See **Fig. 20** .
C108 (Black, 8 Pin)	At left side of transmission housing. See **Fig. 112** .
C151 (Gray, 1 Pin)	At left side of engine compartment. See **Fig. 27** .
C152 (Gray, 10 Pin)	At top of transmission housing. See **Fig. 30** .
C201 (White, 13 Pin)	Under middle of dash. See **Fig. 66** .
C251 (White, 13 Pin)	Under right side of dash. See **Fig. 68** .
C310 (Optional) (Gray, 2 Pin)	Behind left side of dash. See **Fig. 48** .
C401 (Brown, 20 Pin)	Behind left side of dash. See **Fig. 47** .
C402 (Brown, 1 Pin)	Behind left side of dash. See **Fig. 47** .
C403 (Yellow, 4 Pin)	Behind left side of dash. See **Fig. 47** .
C404 (White, 13 Pin)	Behind left side of dash. See **Fig. 48** .
C411 (Brown, 1 Pin)	Behind middle of dash. See **Fig. 55** .
C415 (Optional) (Brown, 2 Pin)	At left side of engine compartment. See **Fig. 28** .
C501 (White, 24 Pin)	Behind left side of dash. See **Fig. 44** .
C502 (Gray, 4 Pin)	Behind left side of dash. See **Fig. 44** .
C551 (Gray, 14 Pin)	Behind right kick panel. See **Fig. 72** .
C552 (White, 21 Pin)	Behind right kick panel. See **Fig. 71** .
C599 (A/T) (Gray, 8 Pin)	Under center console. See **Fig. 56** .
C601 (Gray, 10 Pin)	Behind left side of dash. See **Fig. 45** .
C631 (White, 20 Pin)	In driver's door. See **Fig. 84** .
C632 (Blue/White, 17 Pin)	In driver's door. See **Fig. 84** .
C651 (Light Blue, 6 Pin)	Behind glove box. See **Fig. 64** .
C699 (White, 13 Pin)	In front of driver's door. See **Fig. 83** .
C701 (White, 18 Pin)	At left front of trunk. See **Fig. 95** .
C702 (White, 14 Pin)	At left front of trunk. See **Fig. 95** .
C703 (White, 10 Pin)	At left front of trunk. See **Fig. 95** .
C731 (White, 13 Pin)	Behind glove box. See **Fig. 63** .
C732 (Gray, 12 Pin)	Behind glove box. See **Fig. 63** .
C751 (White, 17 Pin)	At left "B" pillar. See **Fig. 82** .

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C781 (Gray, 17 Pin)	At right "B" pillar. See **Fig. 82** .
C789 (Acura Accessory) (Green, 2 Pin)	At left side of trunk lid. See **Fig. 100** .
C799 (White, 13 Pin)	In front of front passenger's door. See **Fig. 83** .
C801 (Gray, 4 Pin)	Under front passenger's seat. See **Fig. 76** .
C851 (White, 21 Pin)	Behind center of dash. See **Fig. 52** .
C901 (Gray, 10 Pin)	Under driver's seat. See **Fig. 75** .
C910 (Gray, 2 Pin)	Under driver's seat. See **Fig. 73** .

GROUNDS

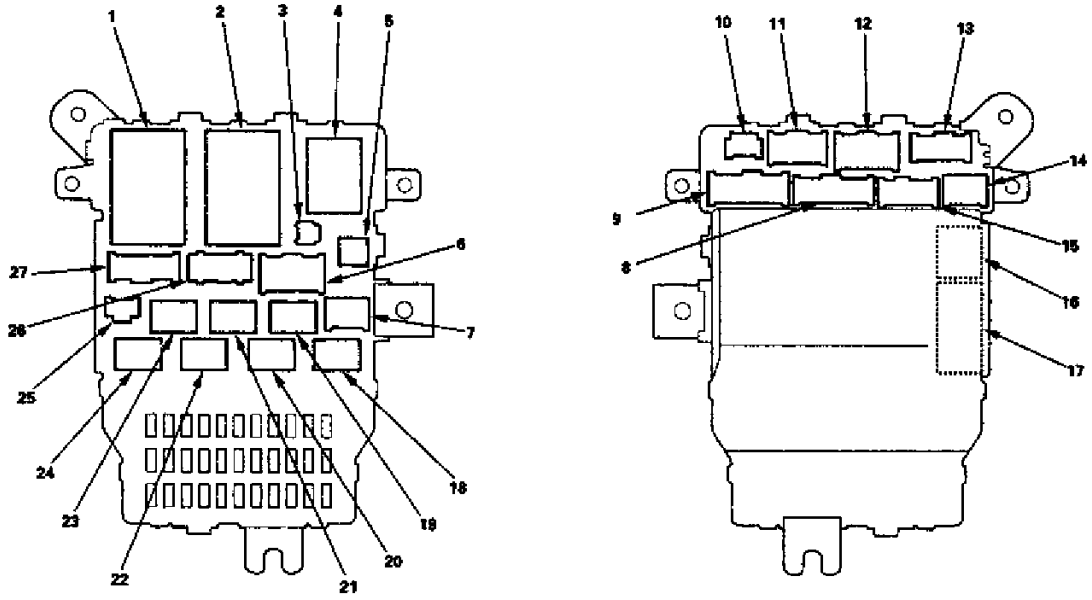
GROUNDS LOCATION

Component	Location
G1	At left side of engine compartment. See **Fig. 34** .
G2	At right side of engine compartment. See **Fig. 7** .
G3	At left side of engine compartment. See **Fig. 27** .
G101	At top left rear of engine. See **Fig. 16** .
G201	Behind right side of front bumper. See **Fig. 102** .
G202	Behind right side of front bumper. See **Fig. 103** .
G203	At right side of engine compartment. See **Fig. 8** .
G301	At left side of front bumper. See **Fig. 107** .
G302	Behind left side of front bumper. See **Fig. 107** .
G501	Behind left side of dash. See **Fig. 42** .
G502	Behind left side of dash. See **Fig. 42** .
G503	Behind glove box. See **Fig. 63** .
G504	Behind middle of dash. See **Fig. 52** .
G505 (A/T)	Under center console. See **Fig. 56** .
G506	Behind center of dash. See **Fig. 55** .
G601	At left side of floor. See **Fig. 79** .
G602	At right side of floor. See **Fig. 80** .
G603	At middle front of trunk. See **Fig. 98** .
G604	At right "C" pillar. See **Fig. 89** .
G701	At left side of trunk. See **Fig. 94** .

COMPONENT LOCATION GRAPHICS

NOTE: Figures may show multiple component locations. Refer to appropriate table for proper figure references.

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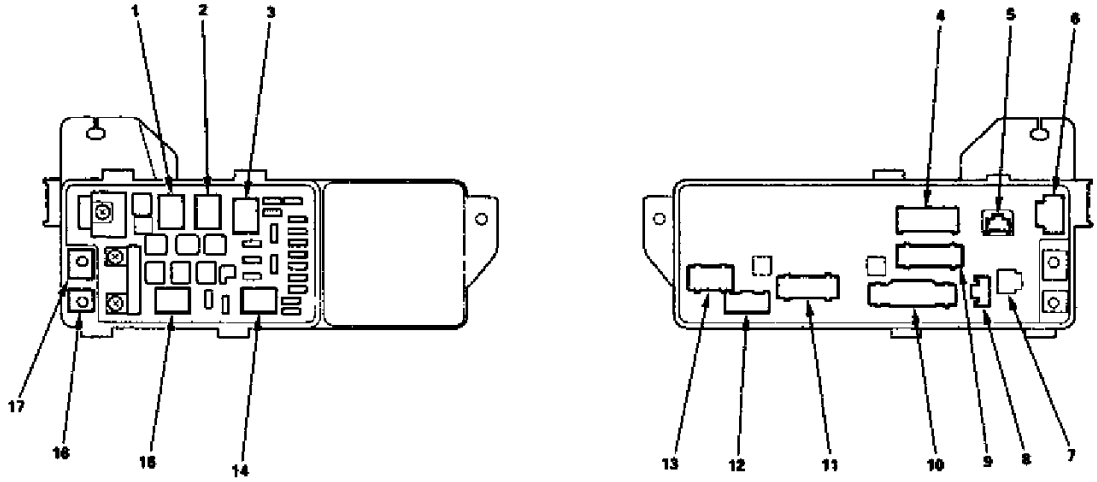


Ref	Socket
1	X
2	N
3	R (MES connector)
4	Turn signal/hazard relay
5	S
6	A
7	T
8	E
9	F
10	I
11	C
12	B
13	D
14	G
15	H
16	Q (MICU)
17	P (MICU)
18	Starter cut relay
19	Accessory power socket relay
20	A/F sensor relay
21	PGM-FI main relay 1
22	Power window relay
23	Ignition coil relay
24	PGM-FI main relay 2
25	M
26	K
27	J

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Fig. 1: Under-Dash Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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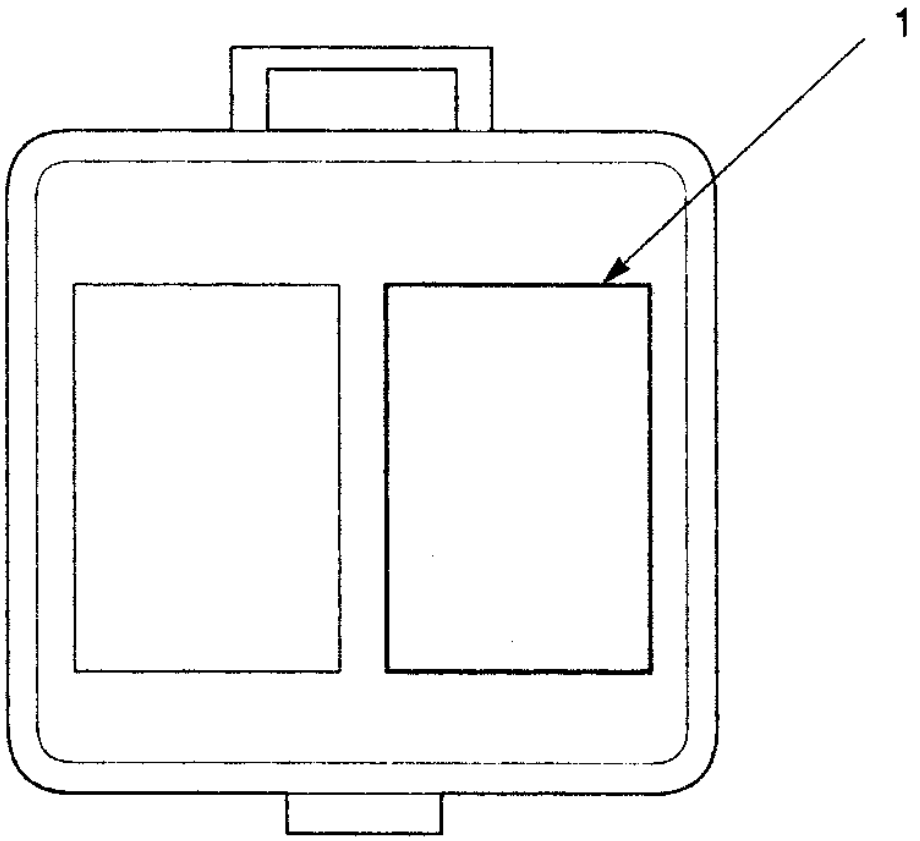


Ref	Socket
1	Blower motor relay
2	A/C compressor clutch relay
3	Rear window defogger relay
4	D
5	A (ELD unit)
6	G
7	B
8	C
9	E
10	F
11	H
12	J
13	I
14	Radiator fan relay
15	Condenser fan relay
16	T101
17	T102

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Fig. 2: Under-Hood Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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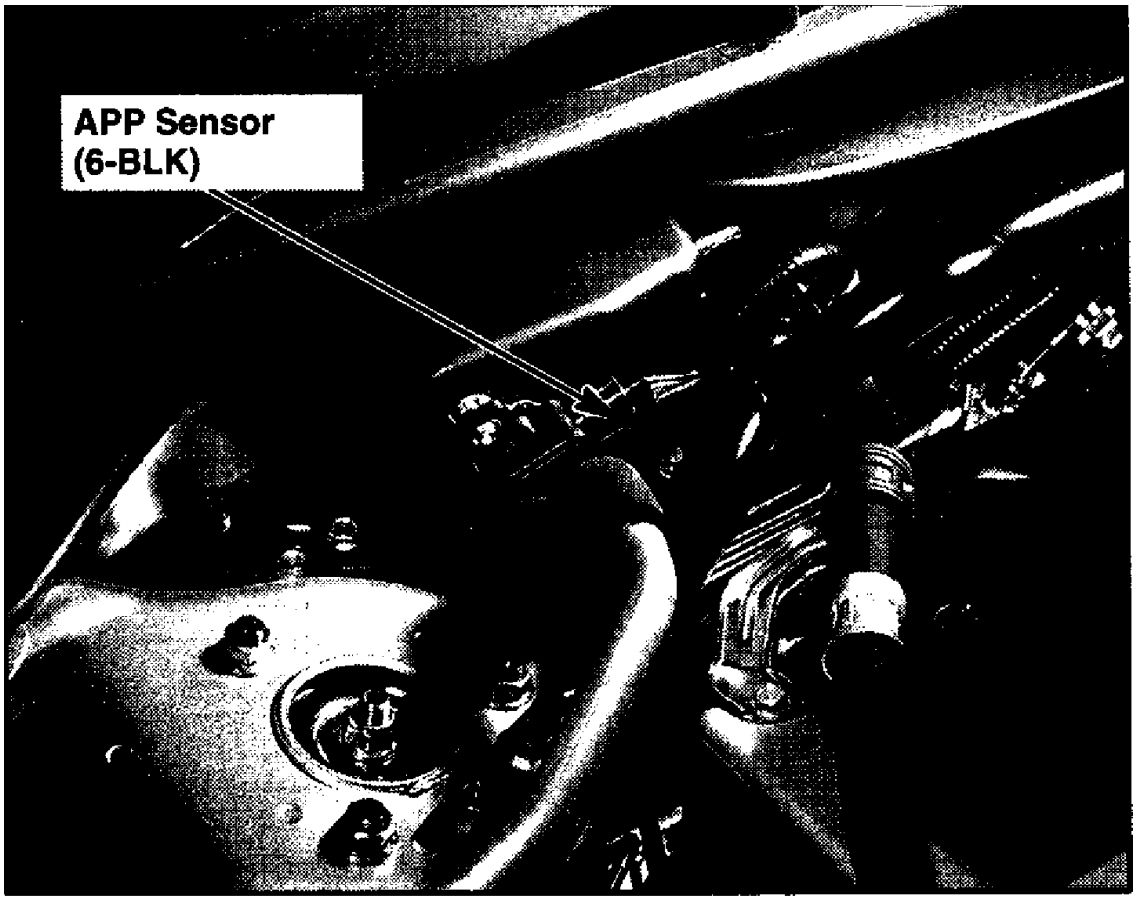


Ref	Socket
1	DRL relay (Canada)

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Fig. 3: Under-Hood Multi-Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

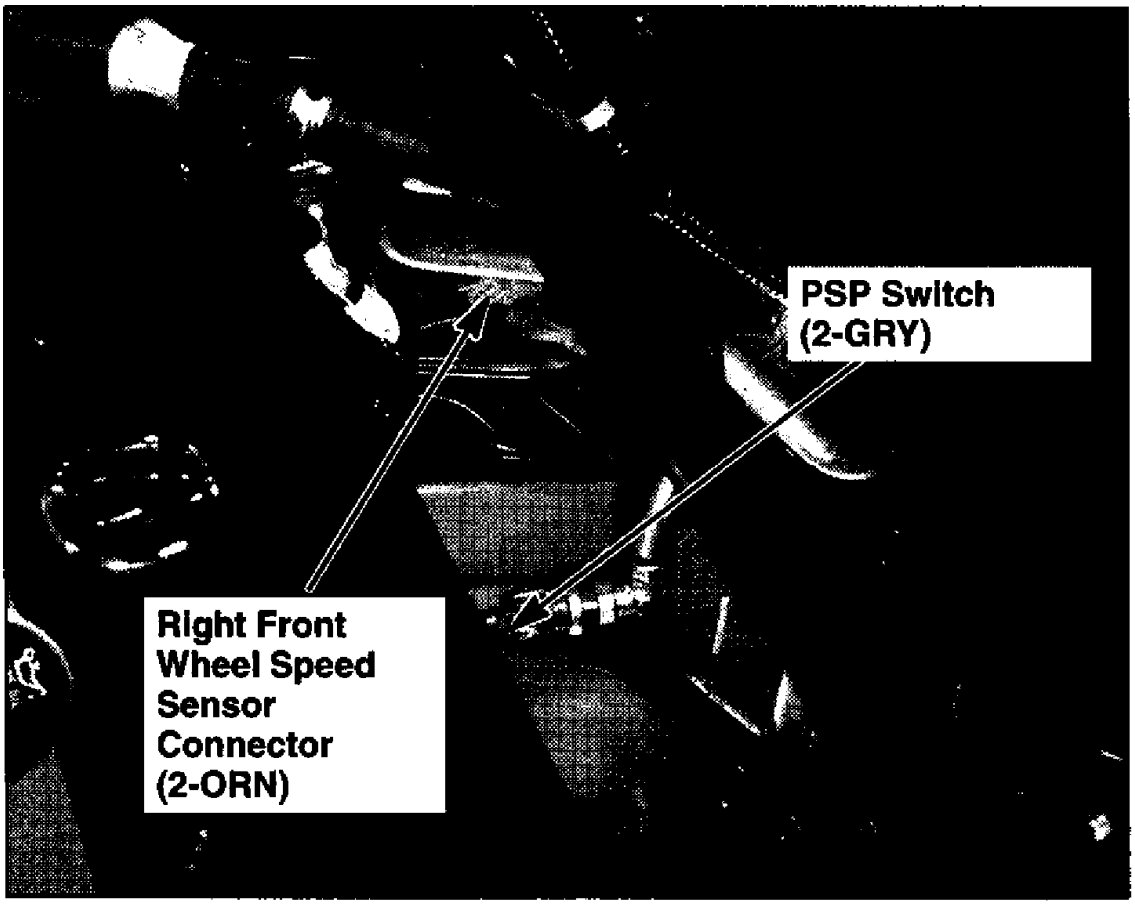
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Fig. 4: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

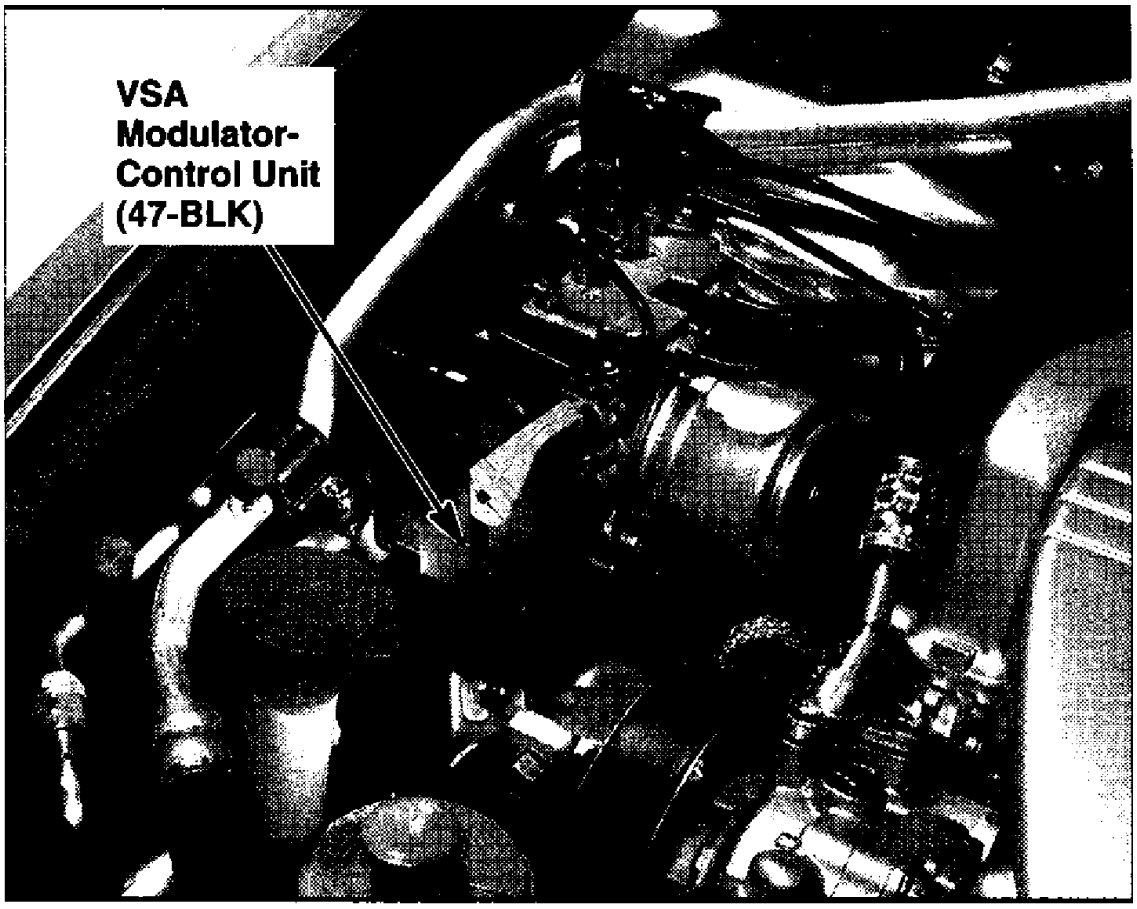
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Fig. 5: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

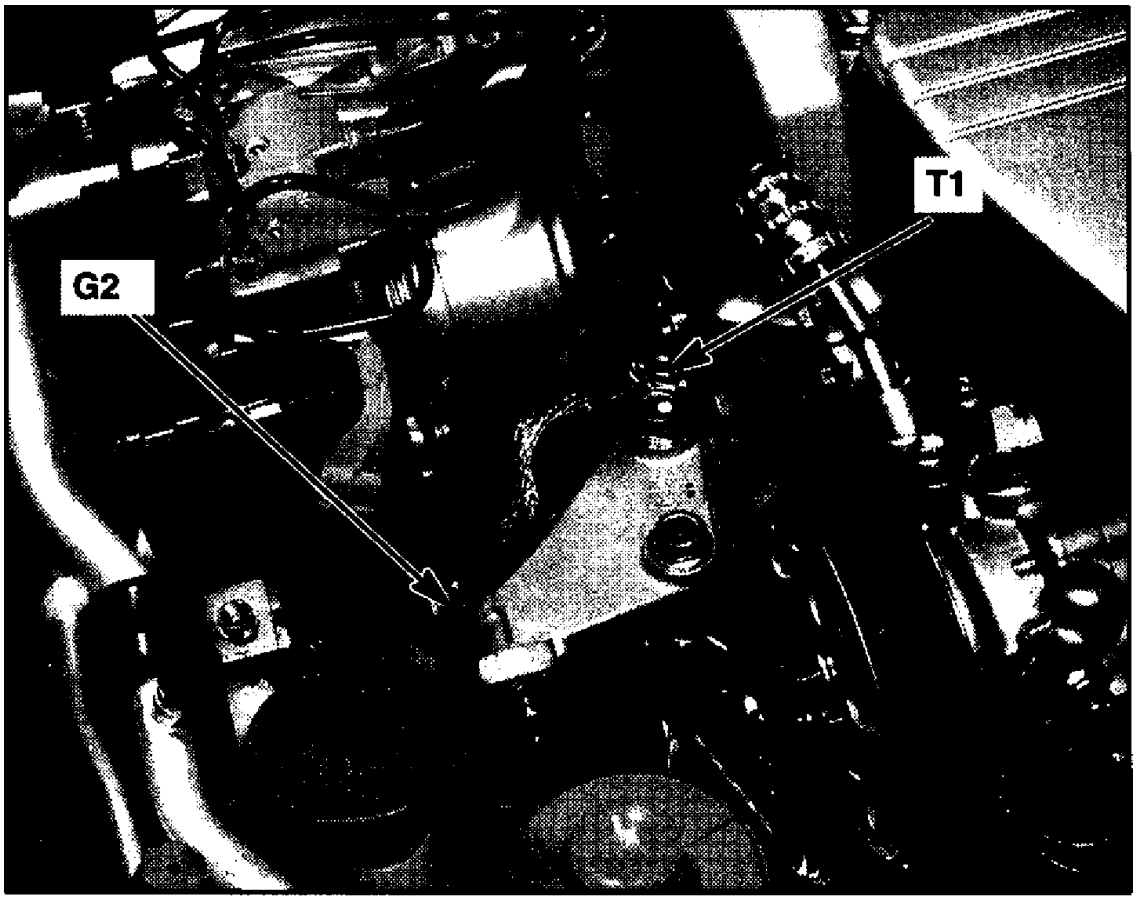
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Fig. 6: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

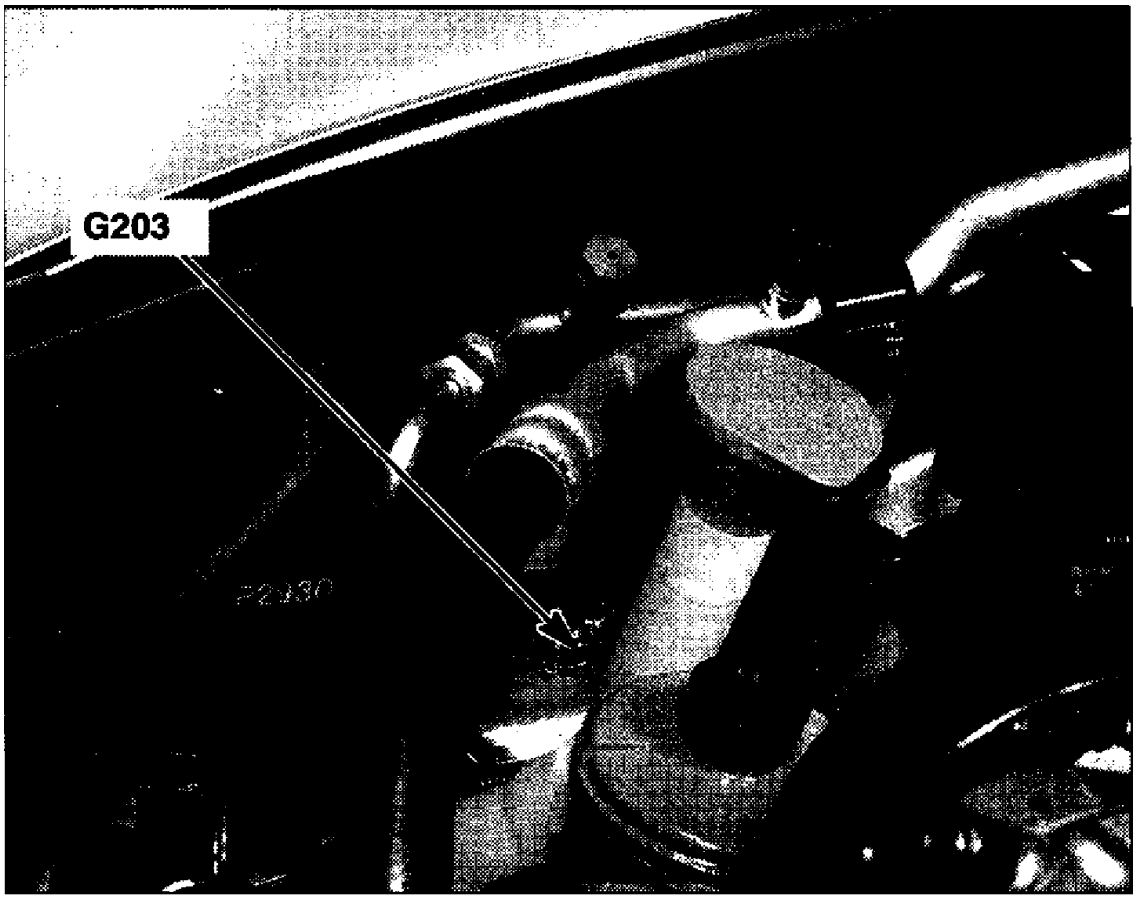
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Fig. 7: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

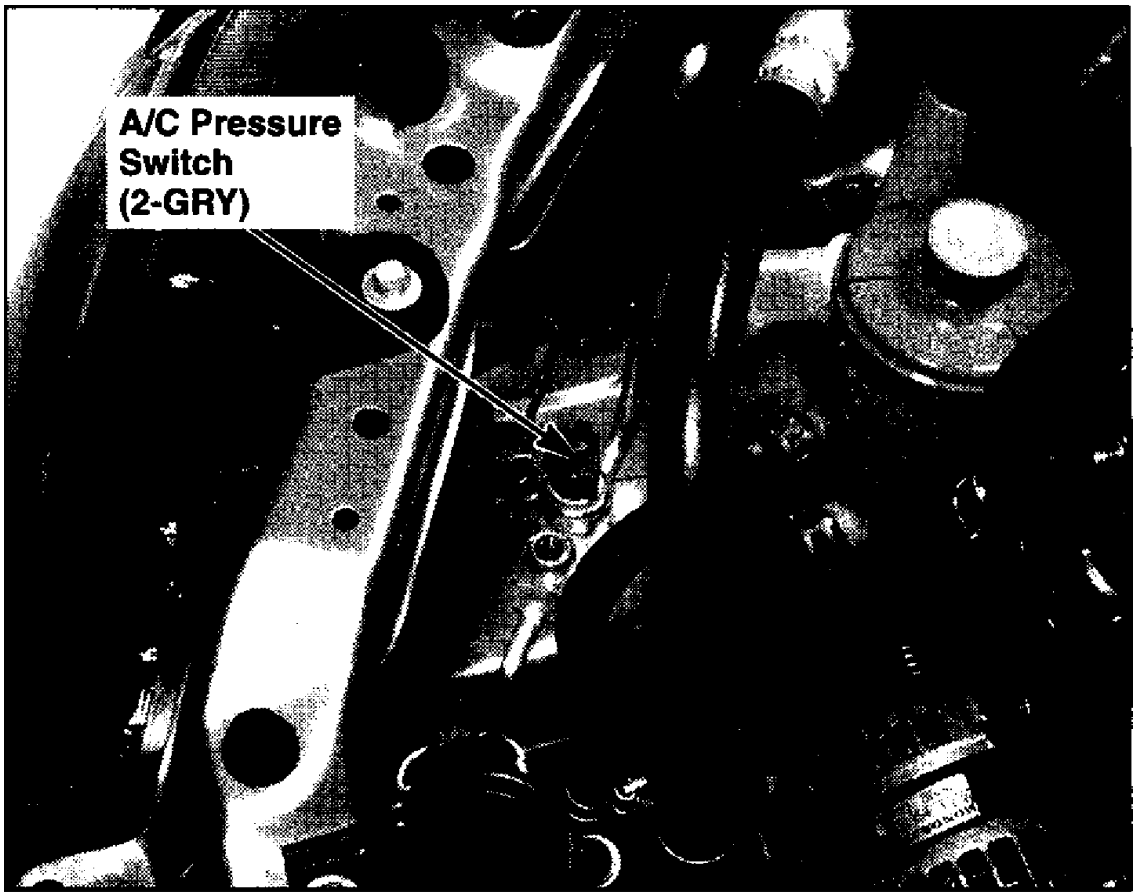
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Fig. 8: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

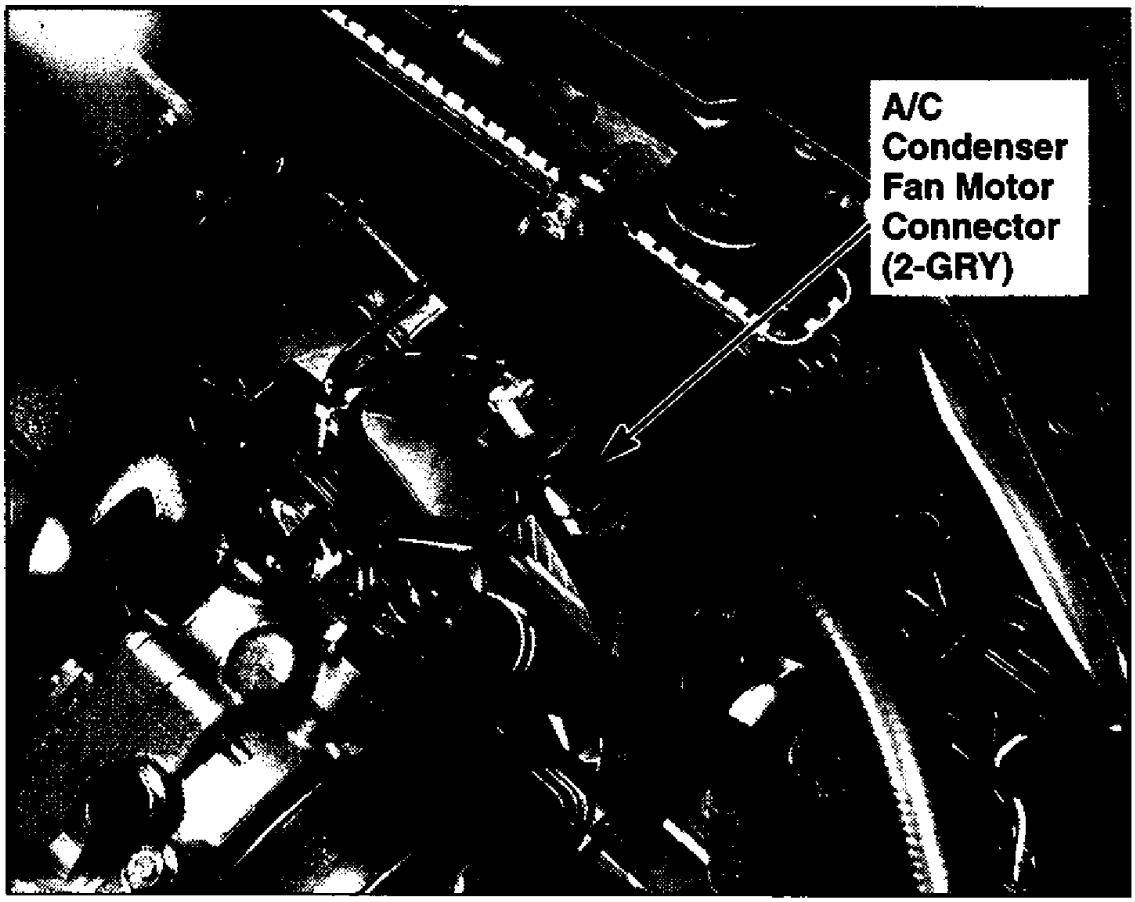
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Fig. 9: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

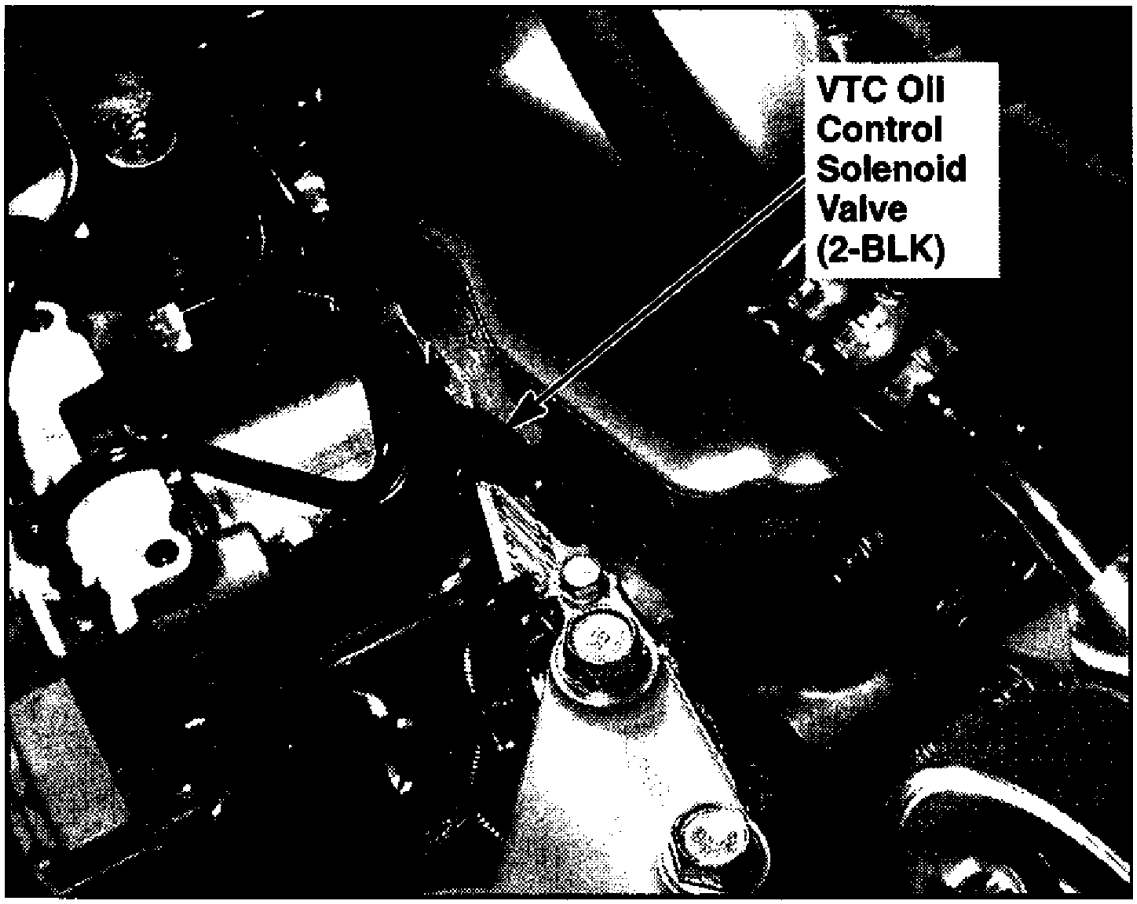
cardiagn.com



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Fig. 10: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

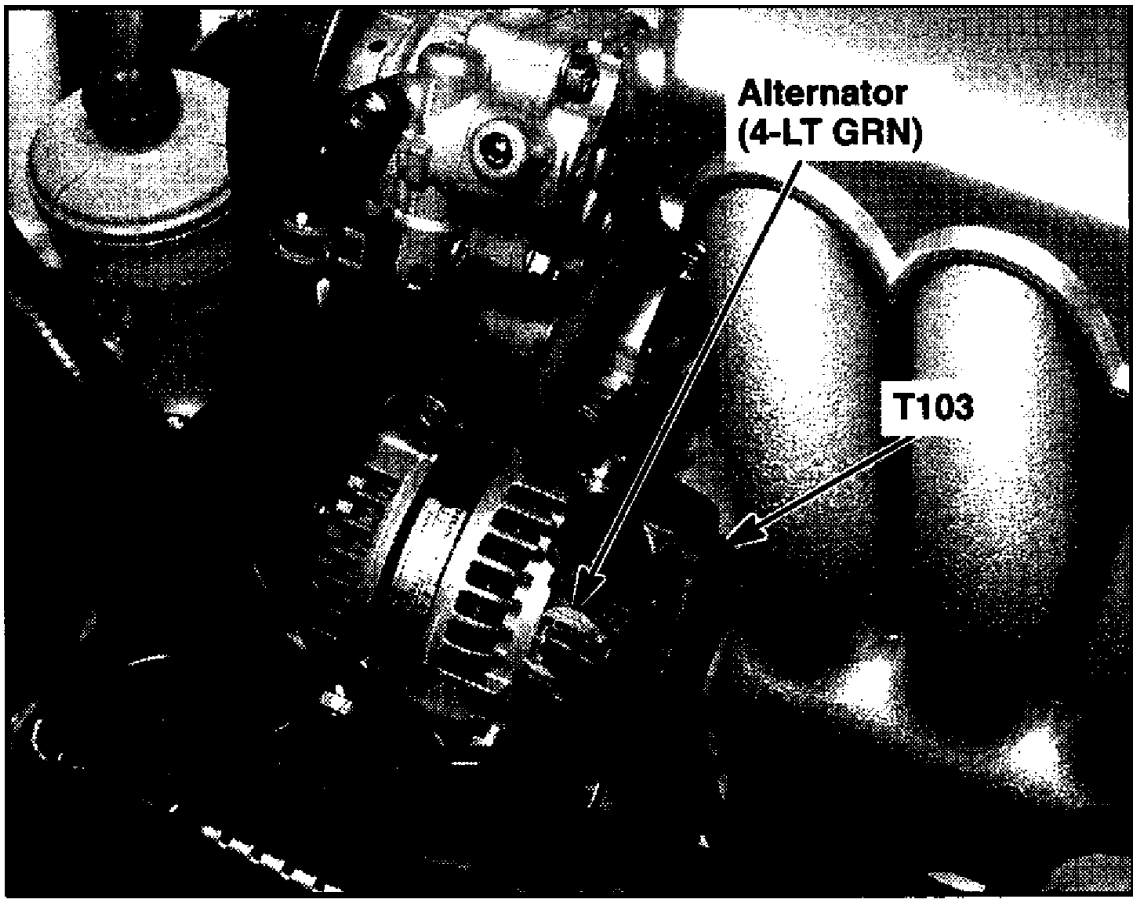
cardiagn.com



G00268085

Fig. 11: Right Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

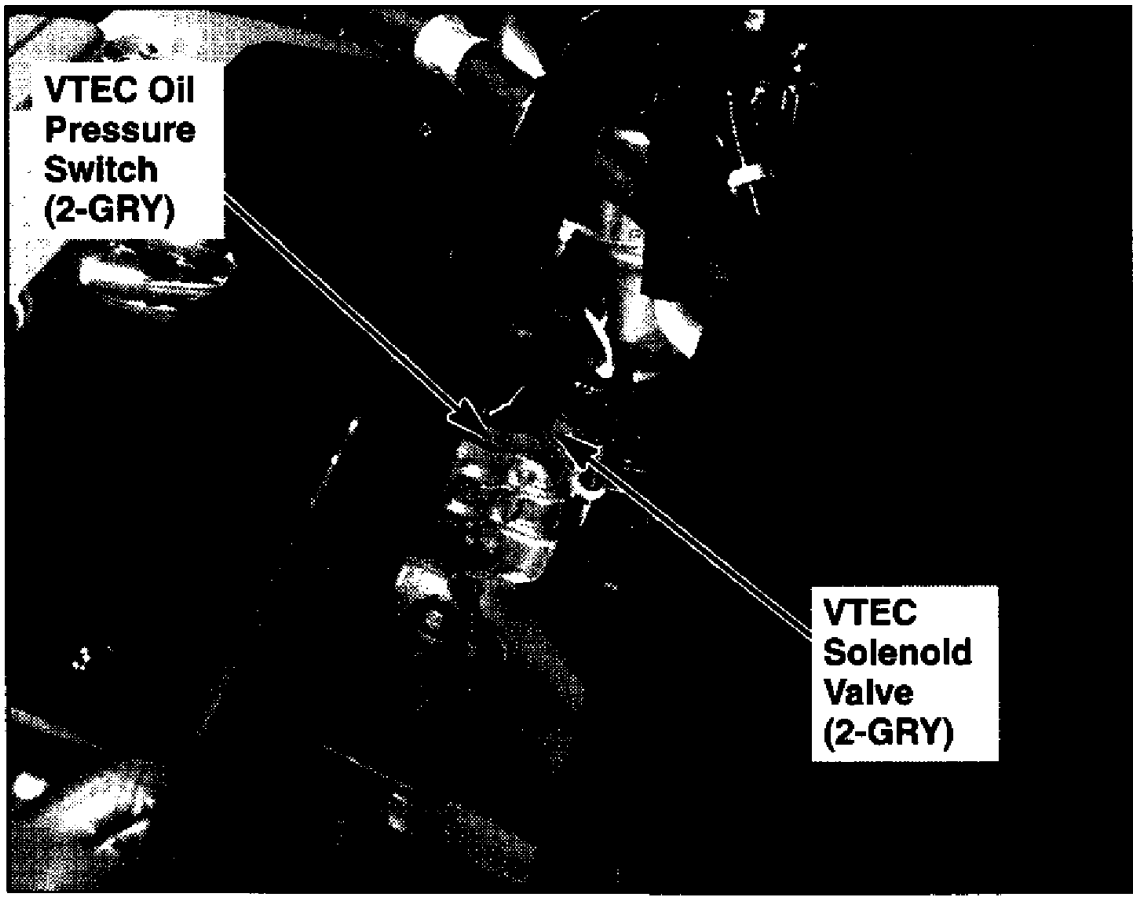
cardiagn.com



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Fig. 12: Left Front Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

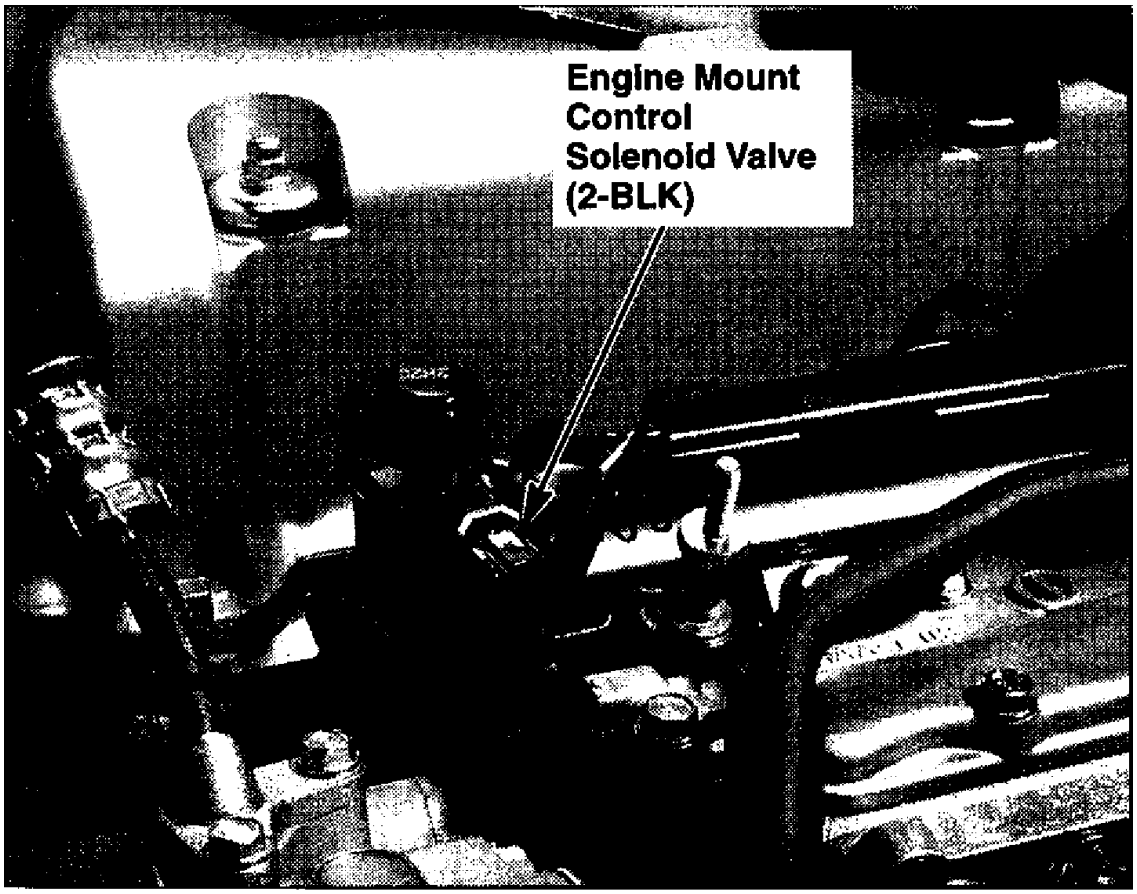
cardiagn.com



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Fig. 13: Rear Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

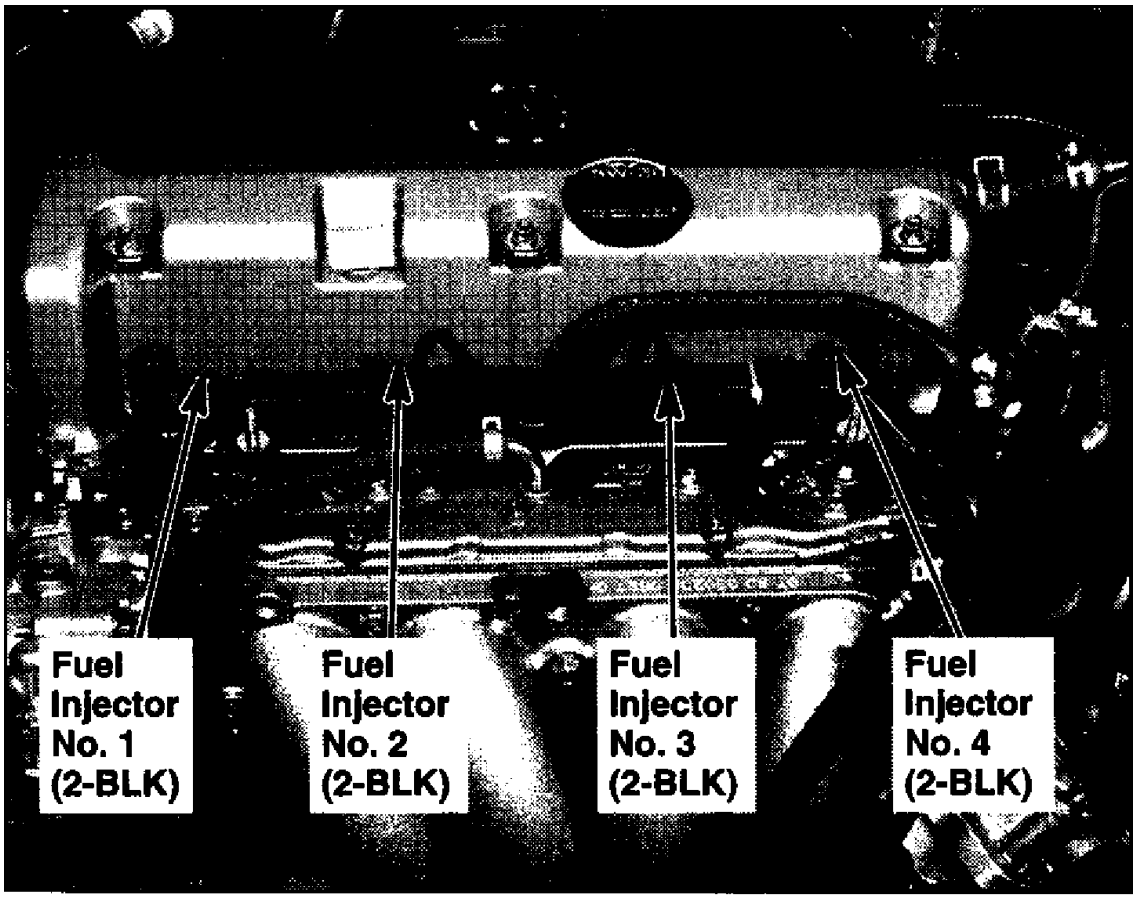
cardiagn.com



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Fig. 14: Left Front Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

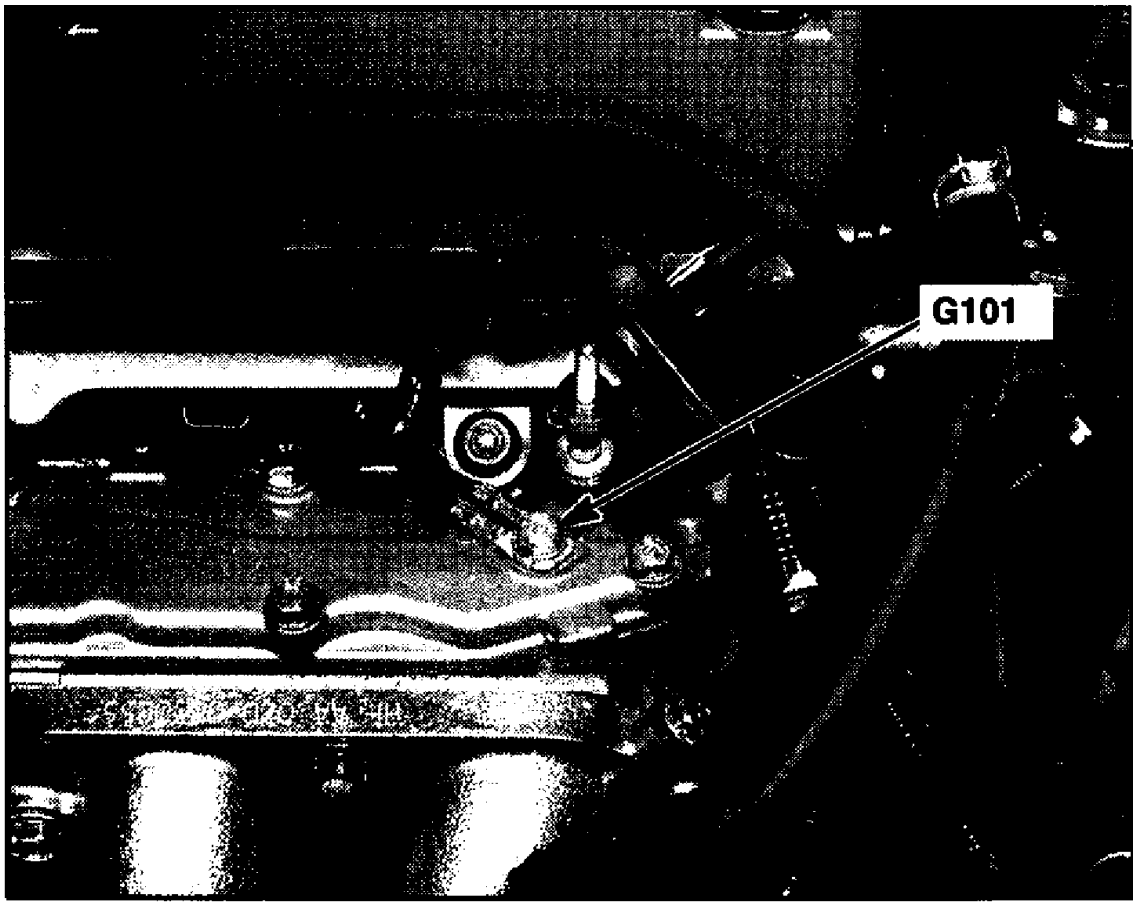
cardiagn.com



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Fig. 15: Middle Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

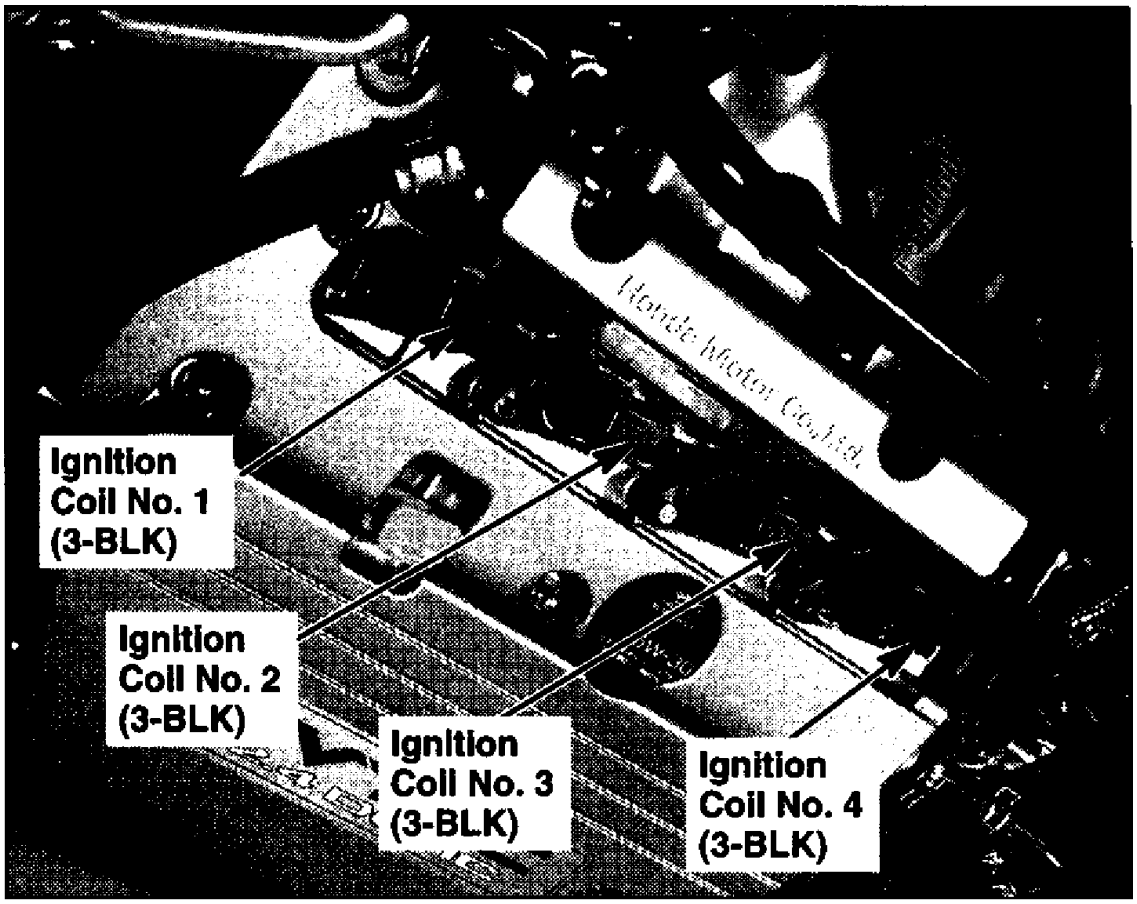
cardiagn.com



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Fig. 16: Left Rear Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

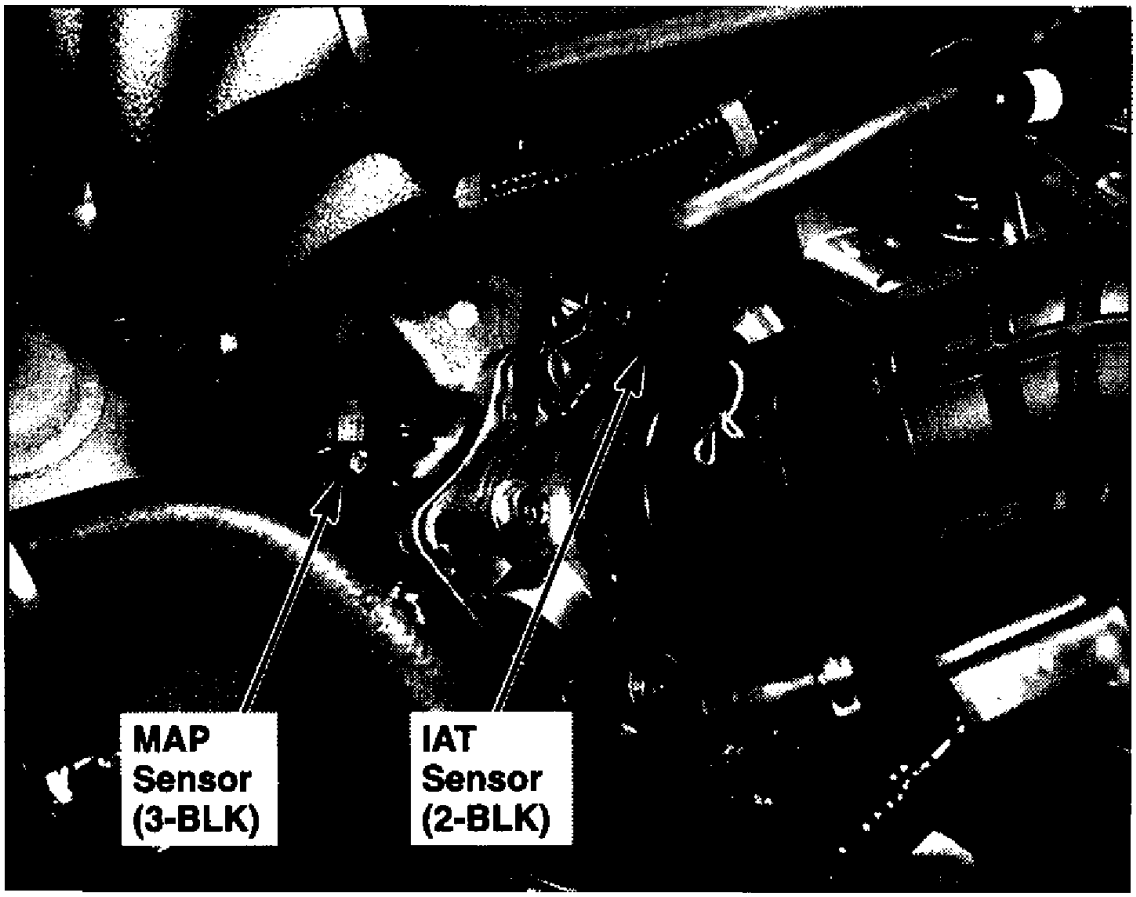
cardiagn.com



G00268091

Fig. 17: Middle Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

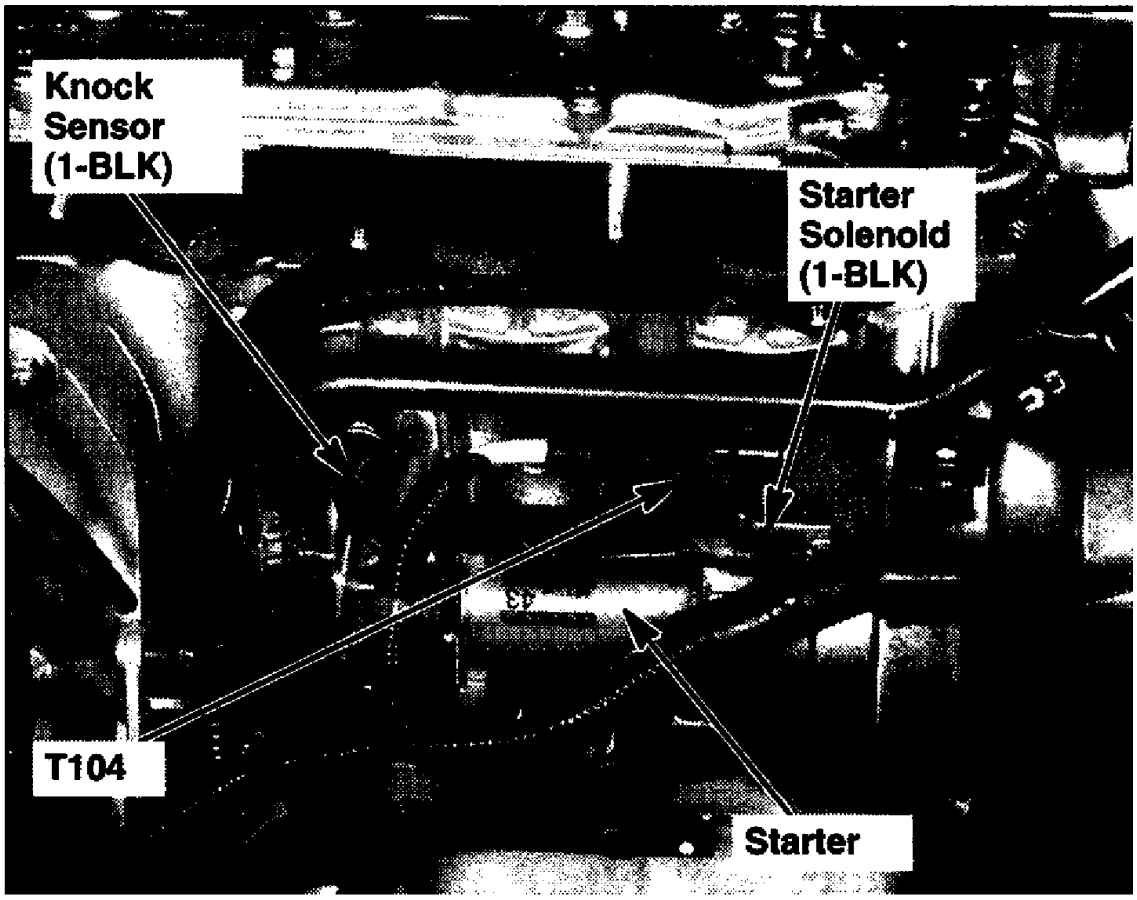
cardiagn.com



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Fig. 18: Left Rear Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

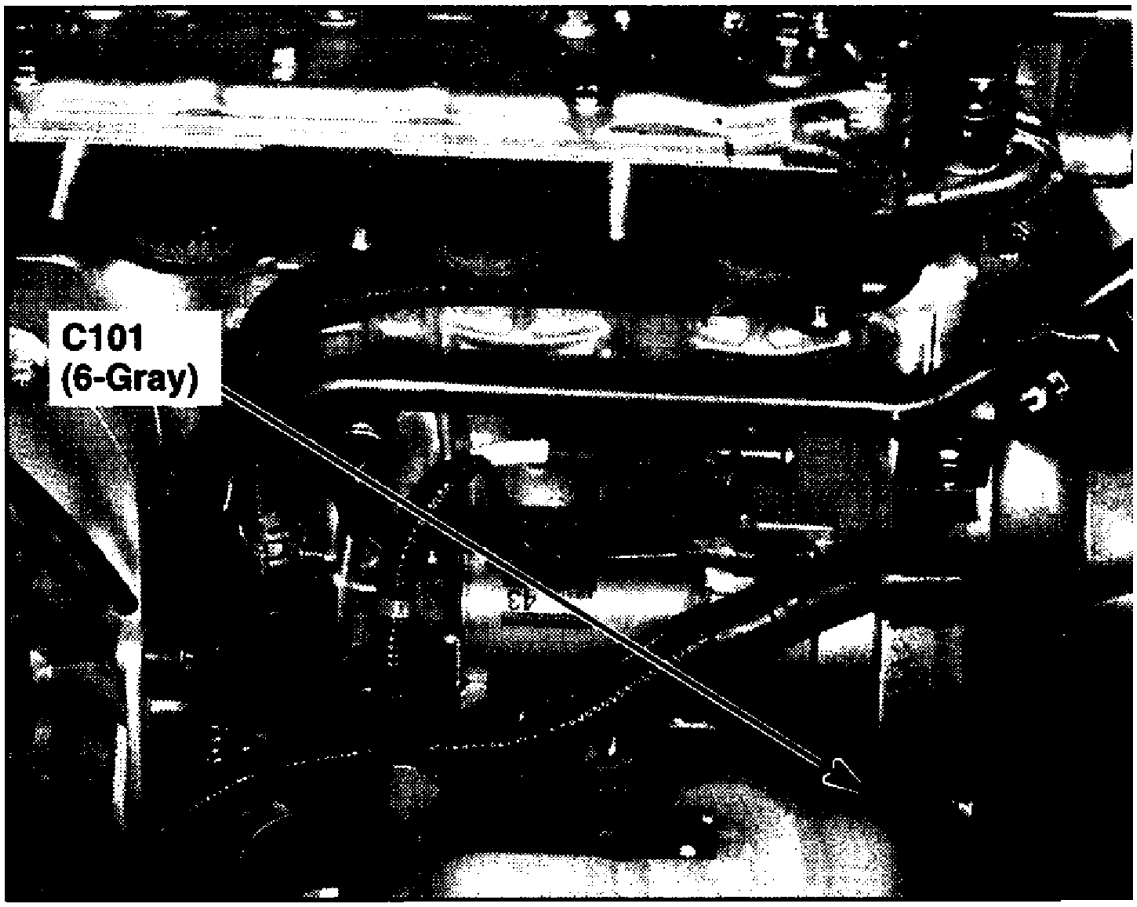
cardiagn.com



G00268093

Fig. 19: Left Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

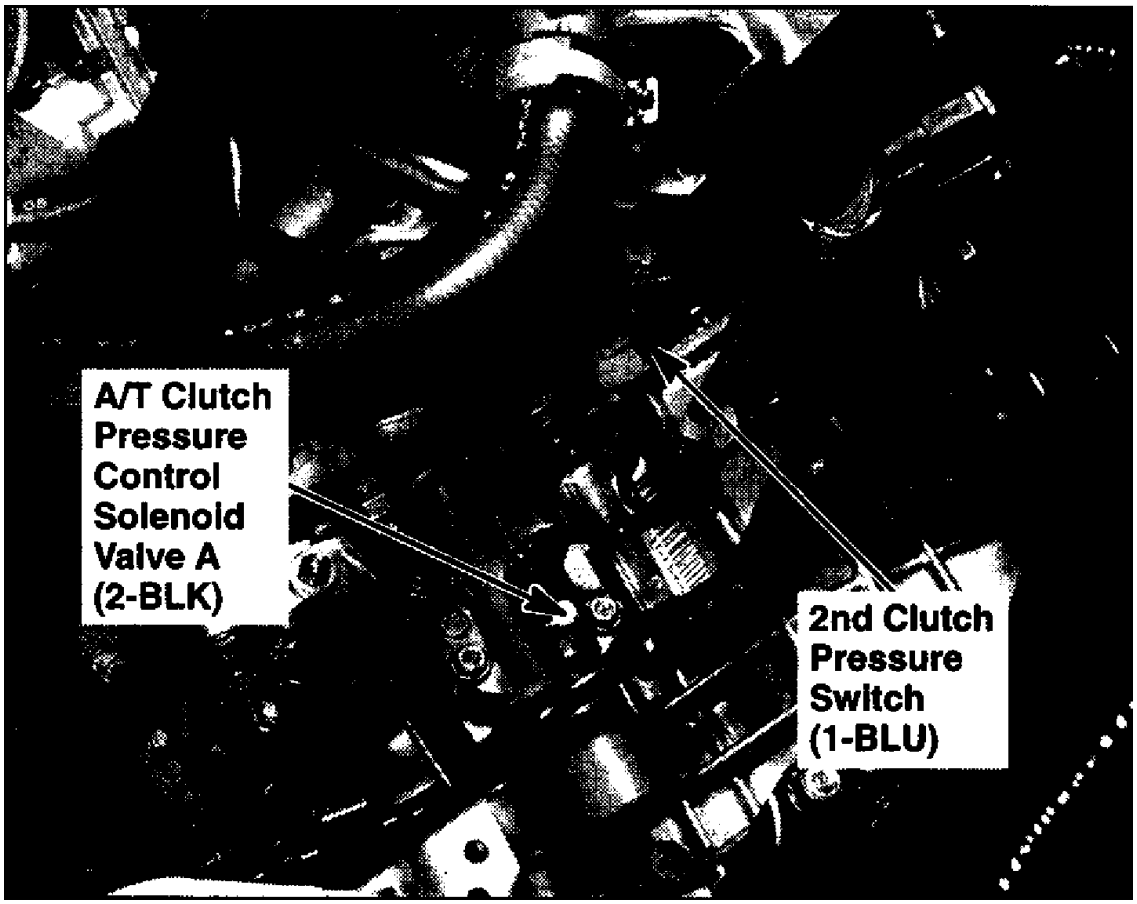
cardiagn.com



G00268094

Fig. 20: Left Rear Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

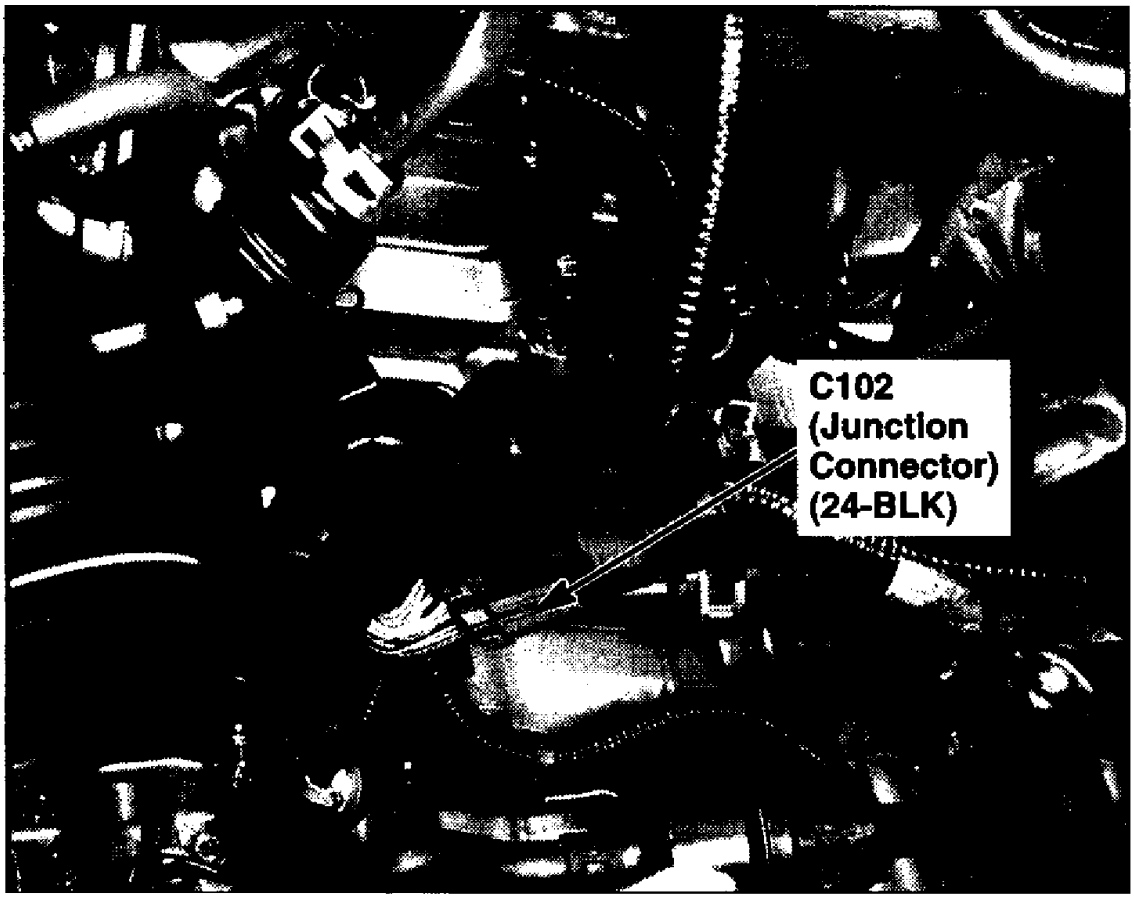
cardiagn.com



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Fig. 21: Automatic Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

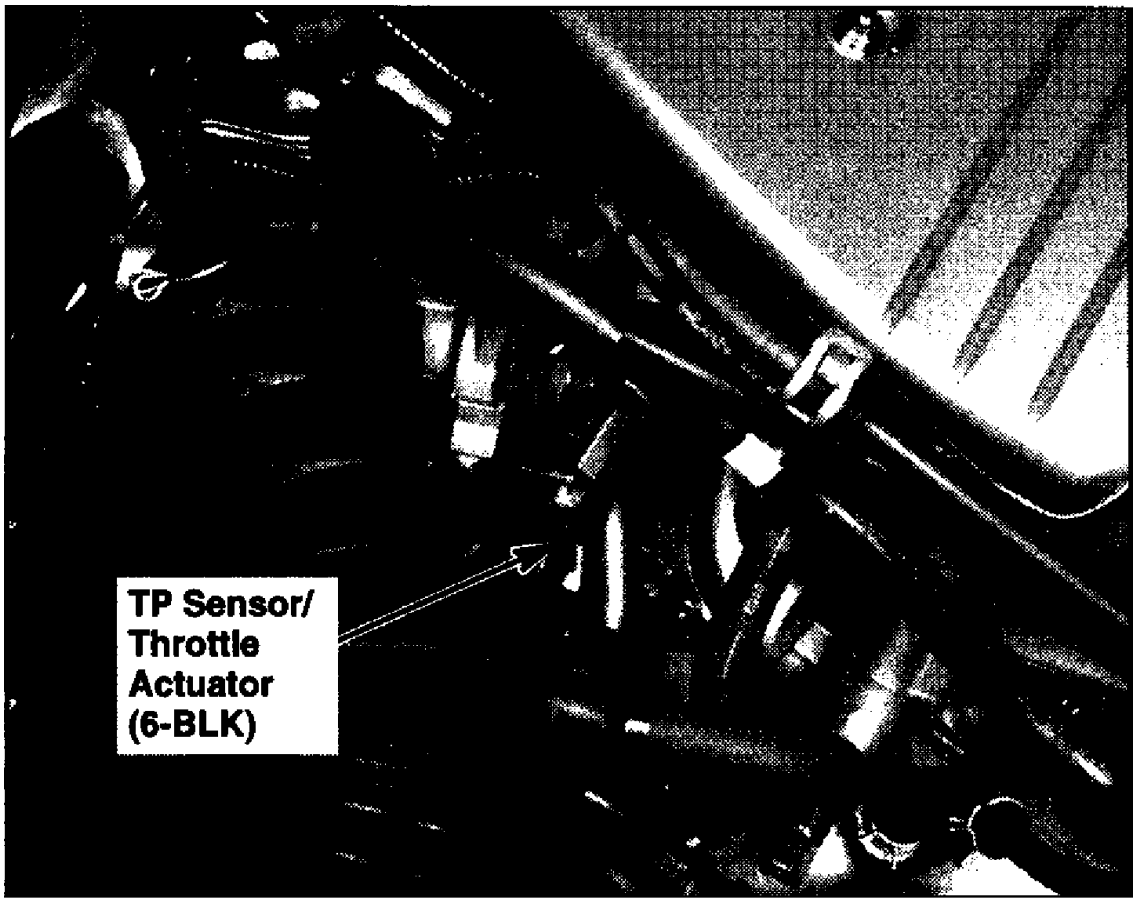
cardiagn.com



G00268096

Fig. 22: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

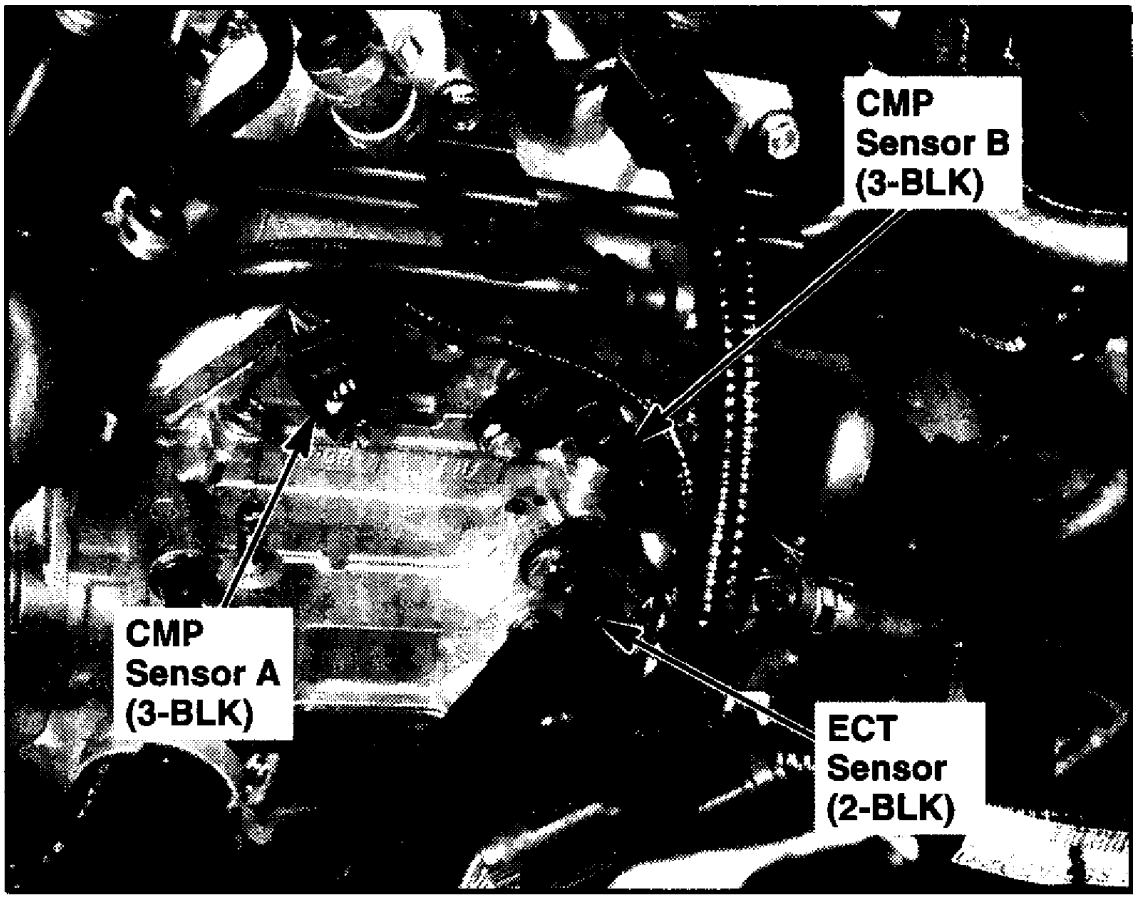
cardiagn.com



G00268097

Fig. 23: Left Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

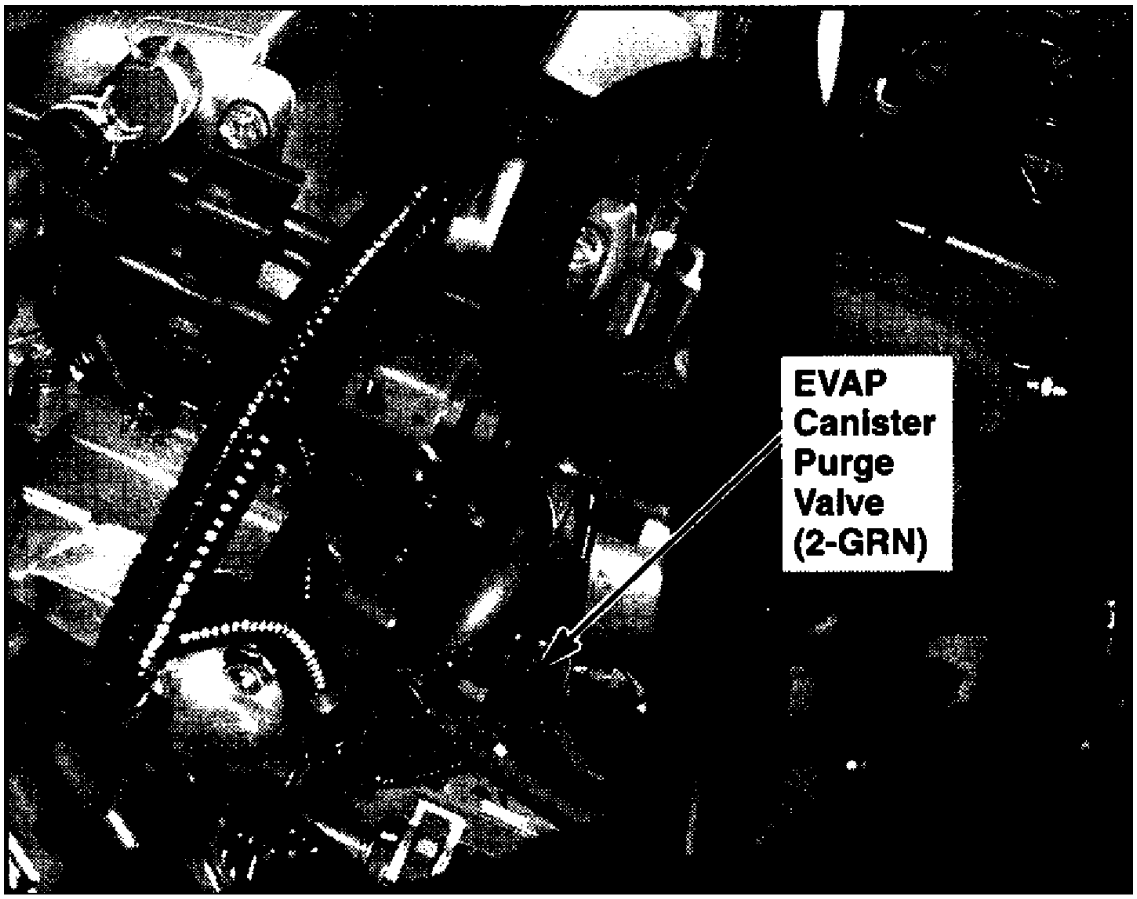
cardiagn.com



G00268098

Fig. 24: Rear Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

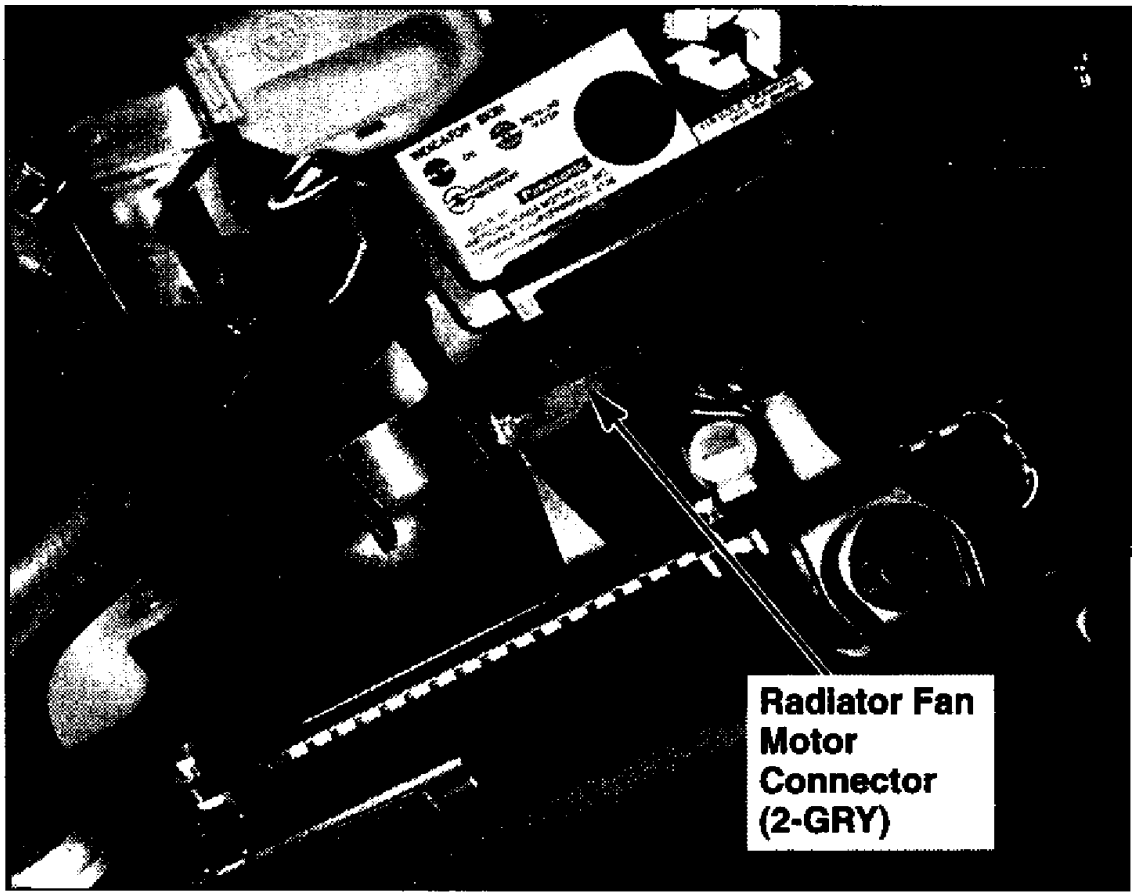
cardiagn.com



G00268099

Fig. 25: Left Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

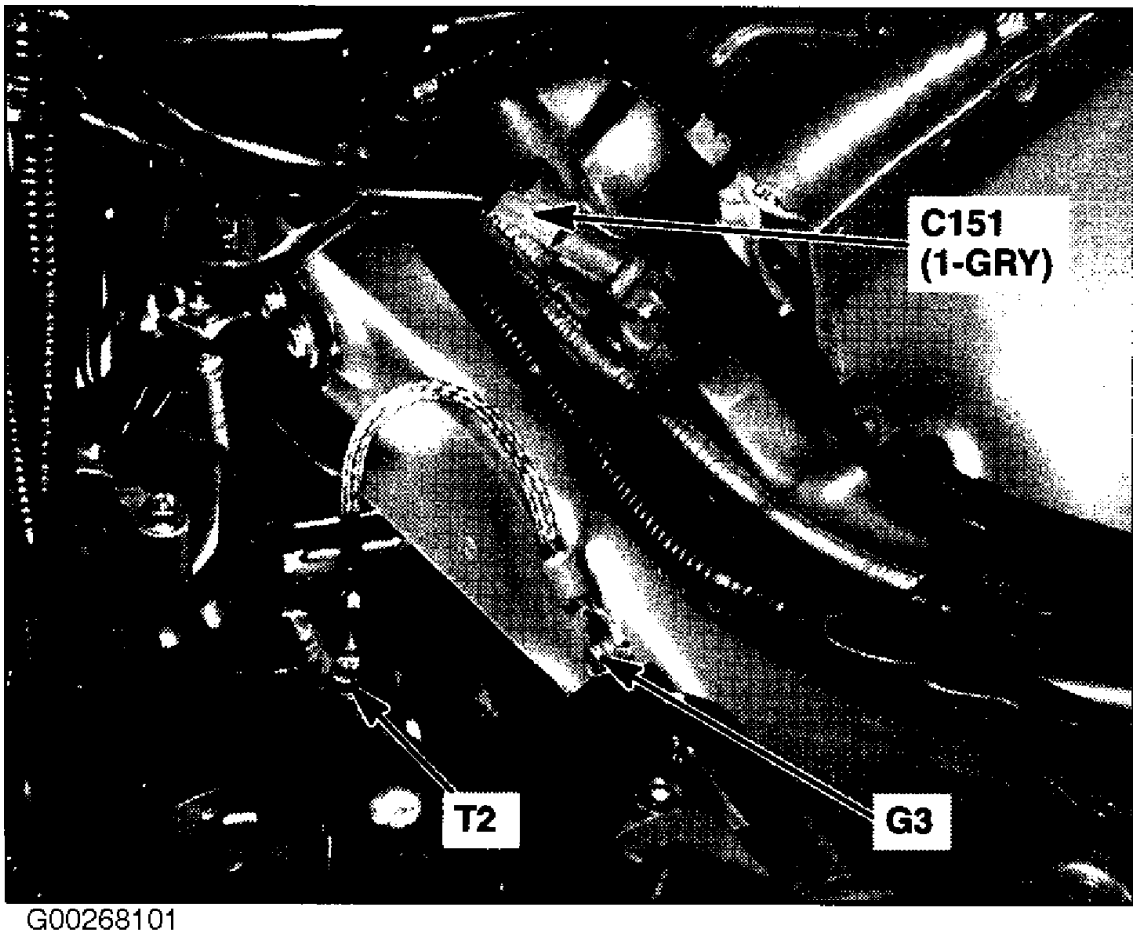
cardiagn.com



G00268100

Fig. 26: Left Front Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

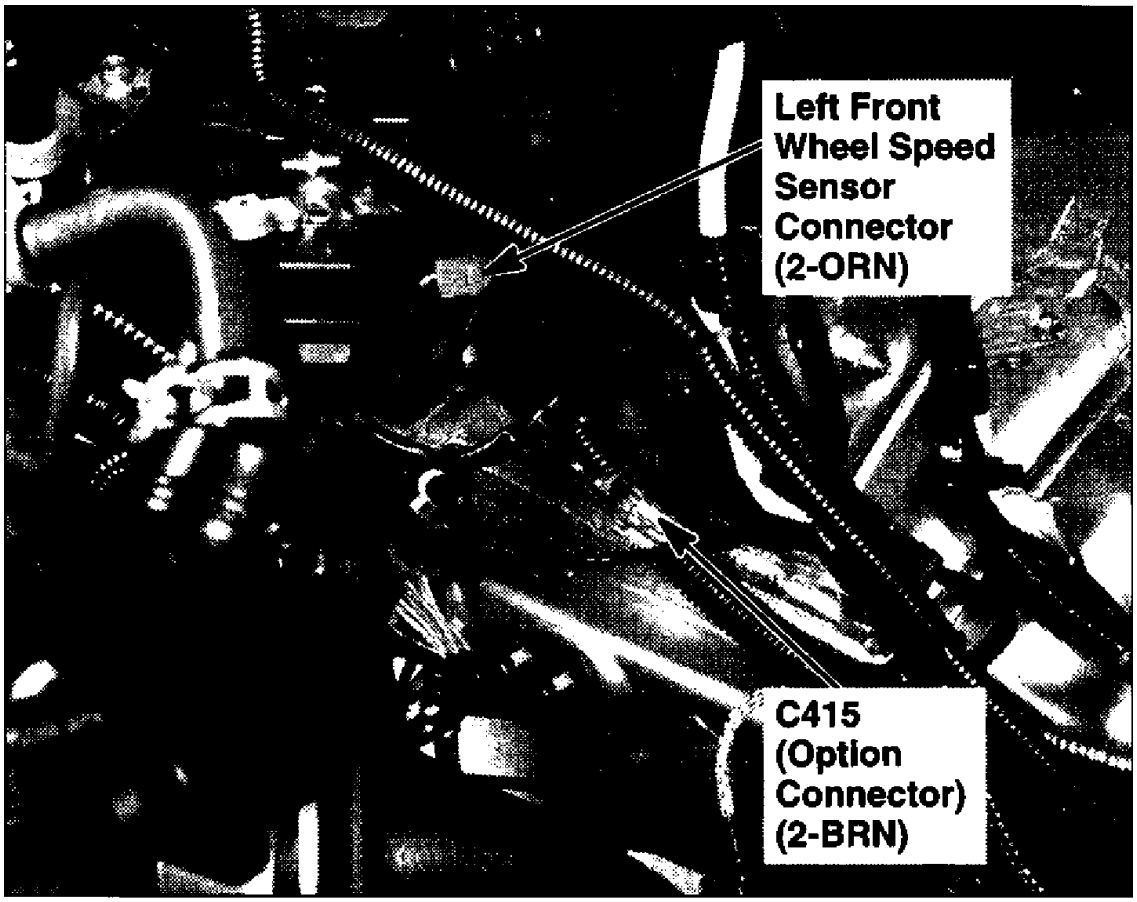
cardiagn.com



G00268101

Fig. 27: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

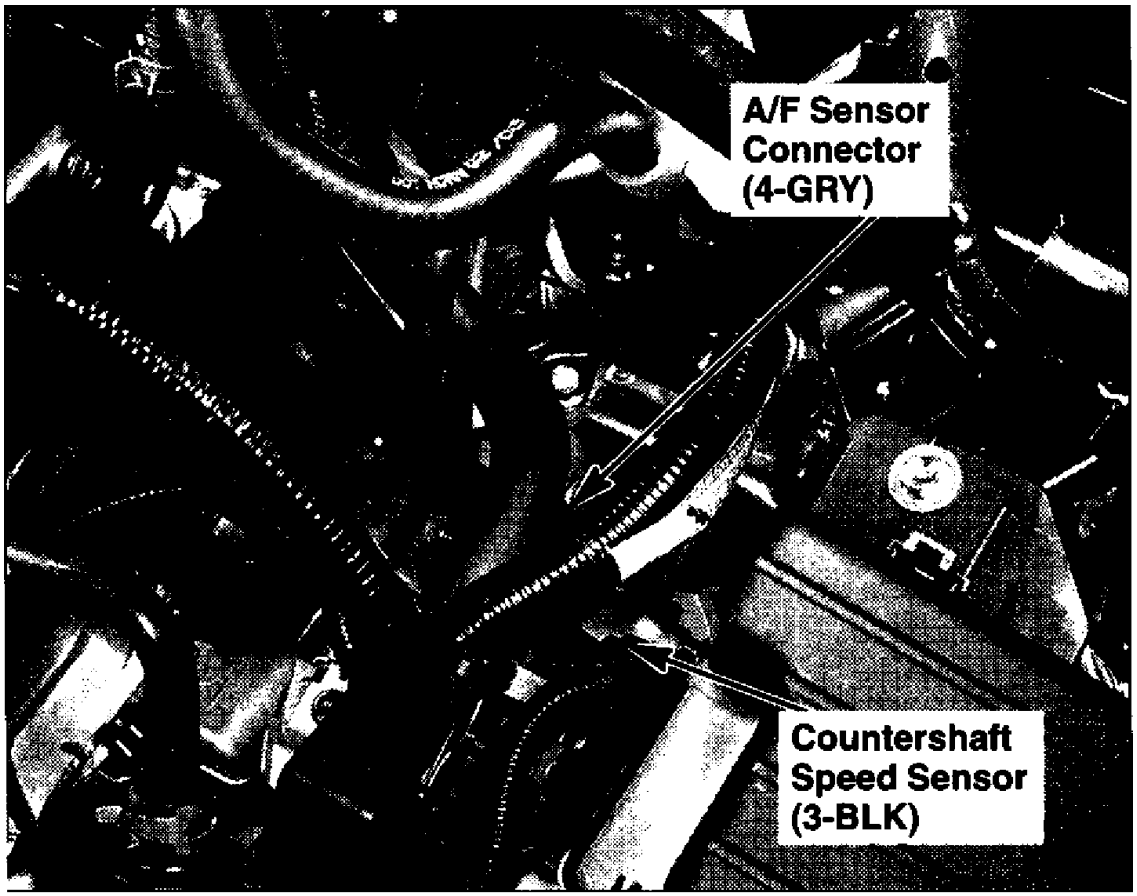
cardiagn.com



G00268102

Fig. 28: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

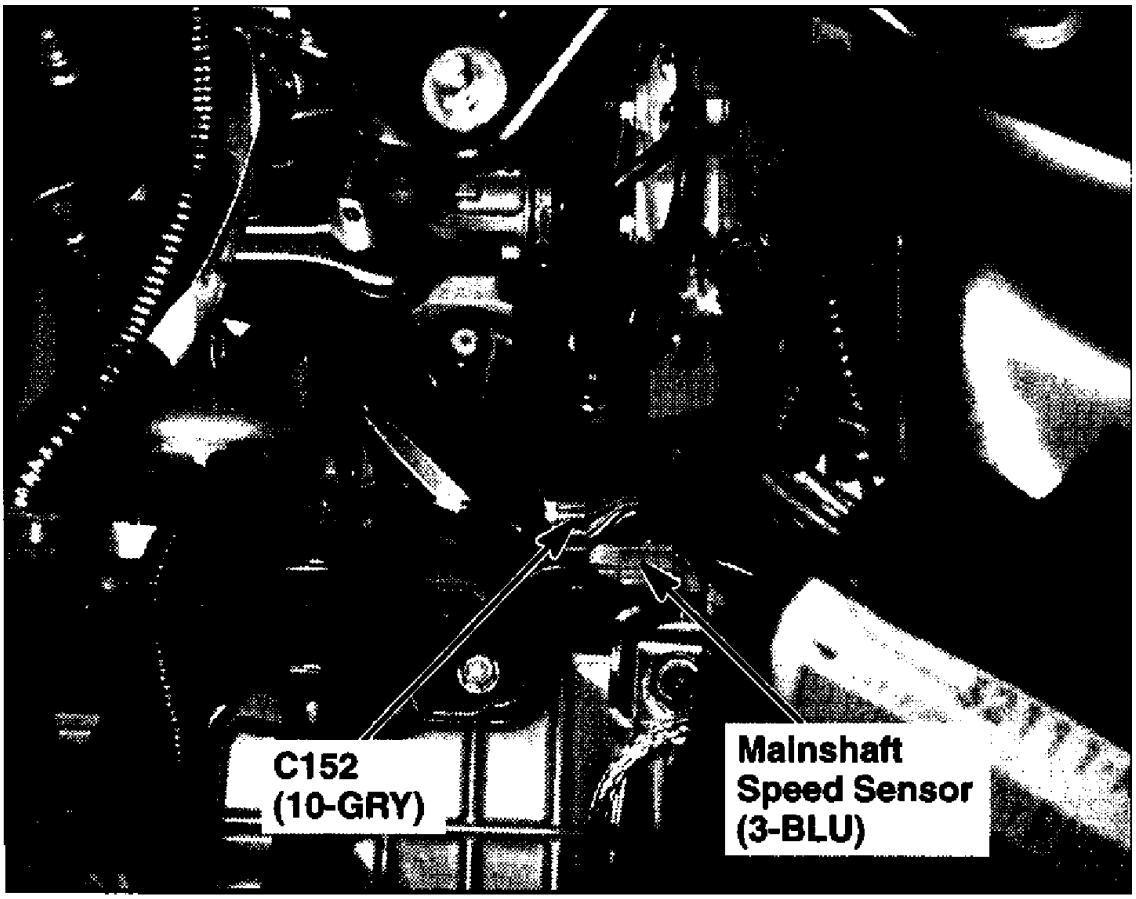
cardiagn.com



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Fig. 29: Automatic Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

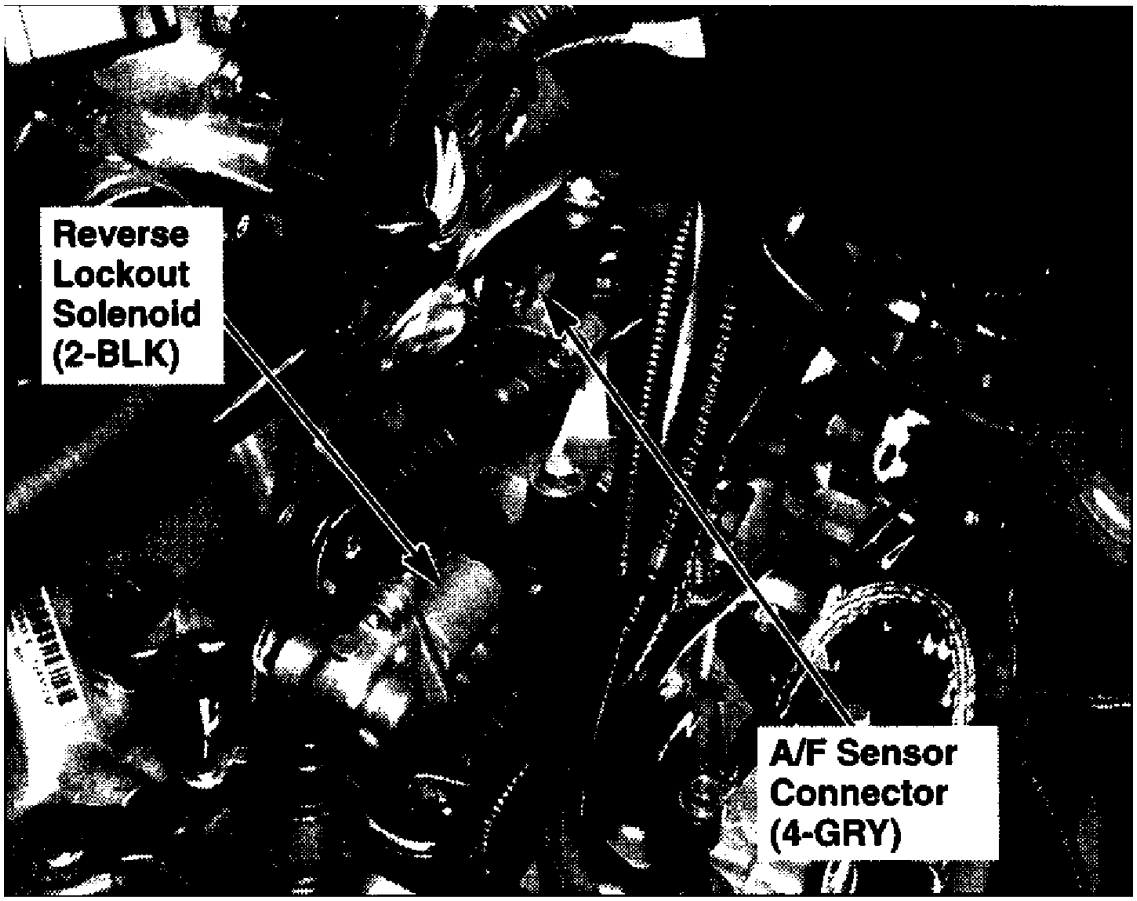
cardiagn.com



G00268104

Fig. 30: Automatic Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

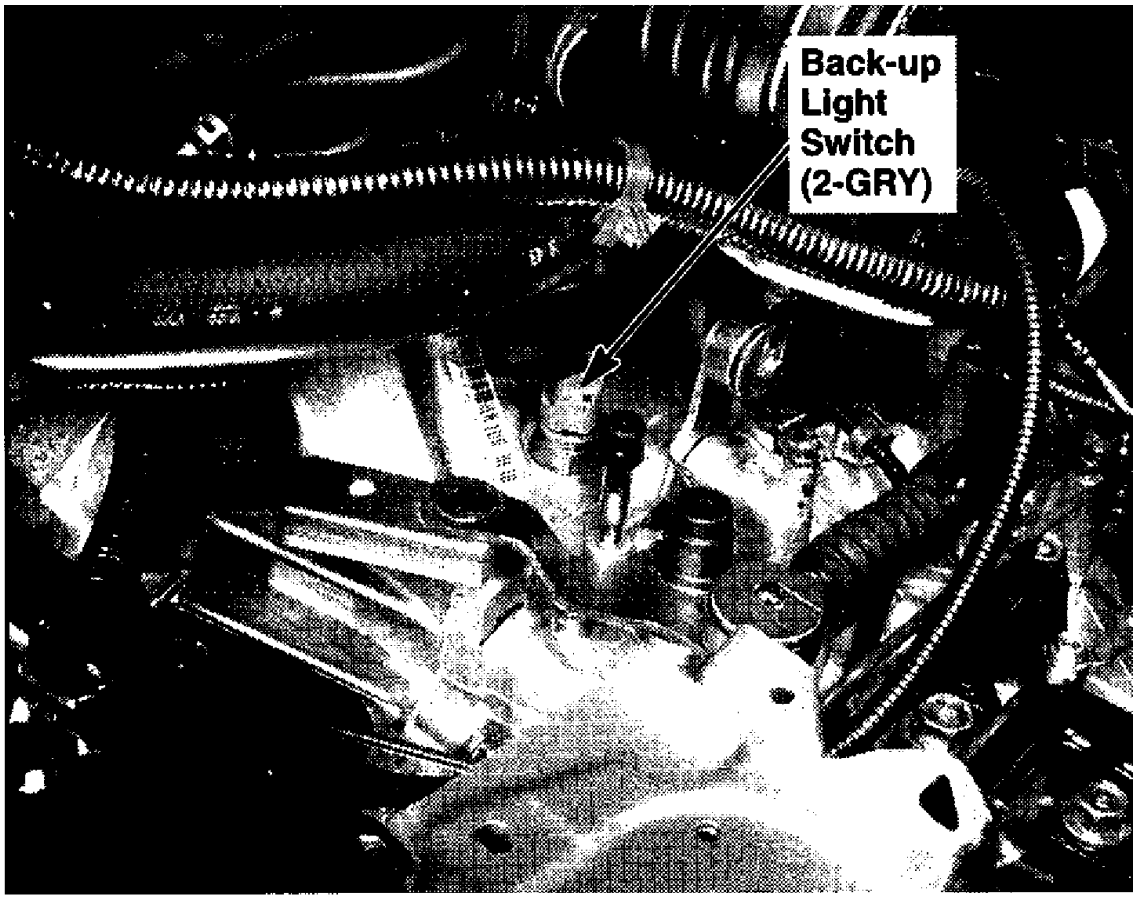
cardiagn.com



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Fig. 31: Manual Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

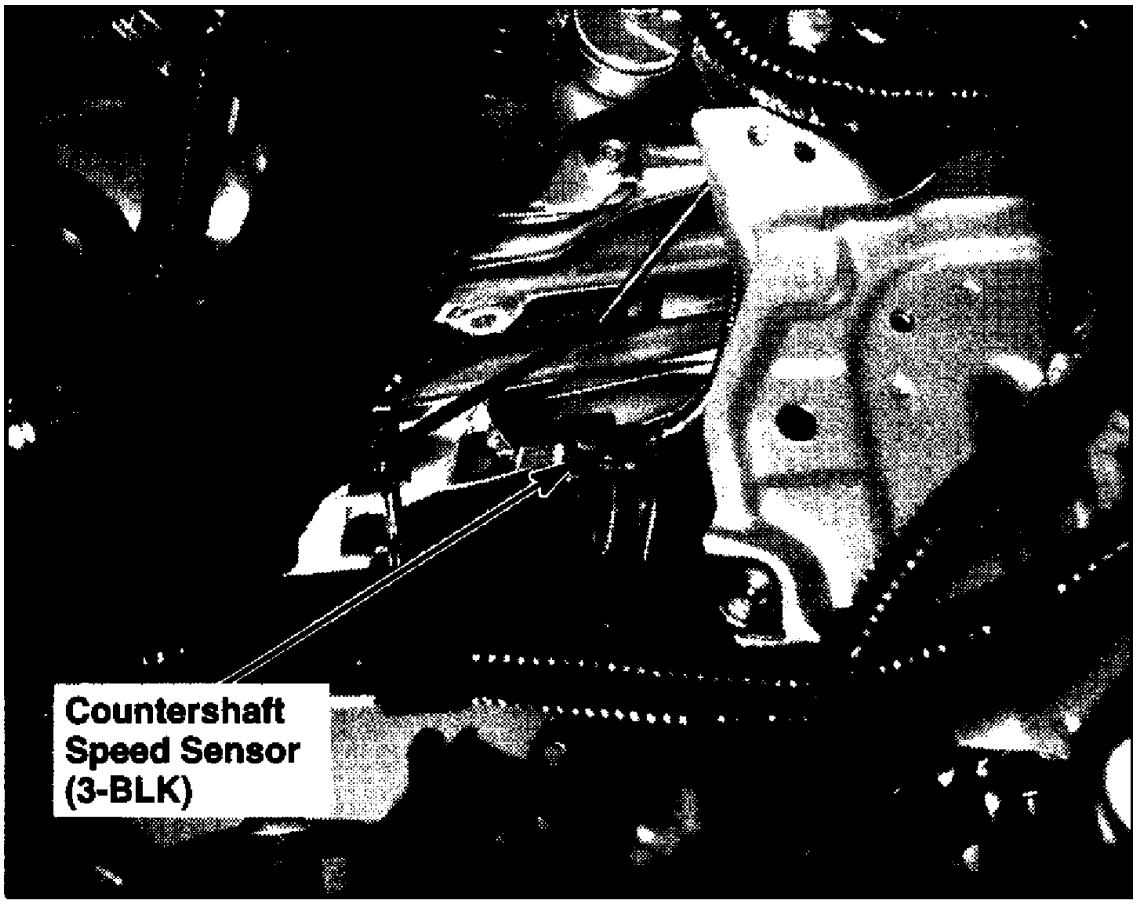
cardiagn.com



G00268106

Fig. 32: Manual Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

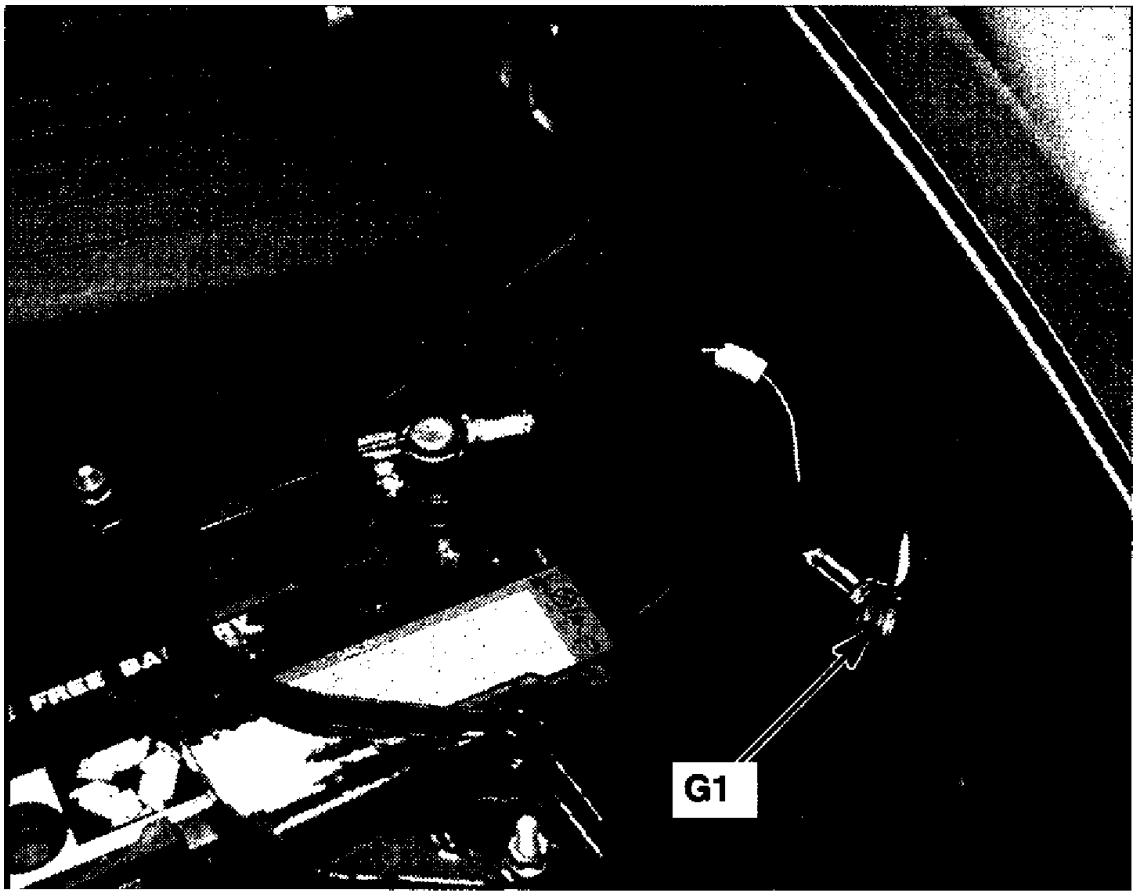
cardiagn.com



G00268107

Fig. 33: Manual Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

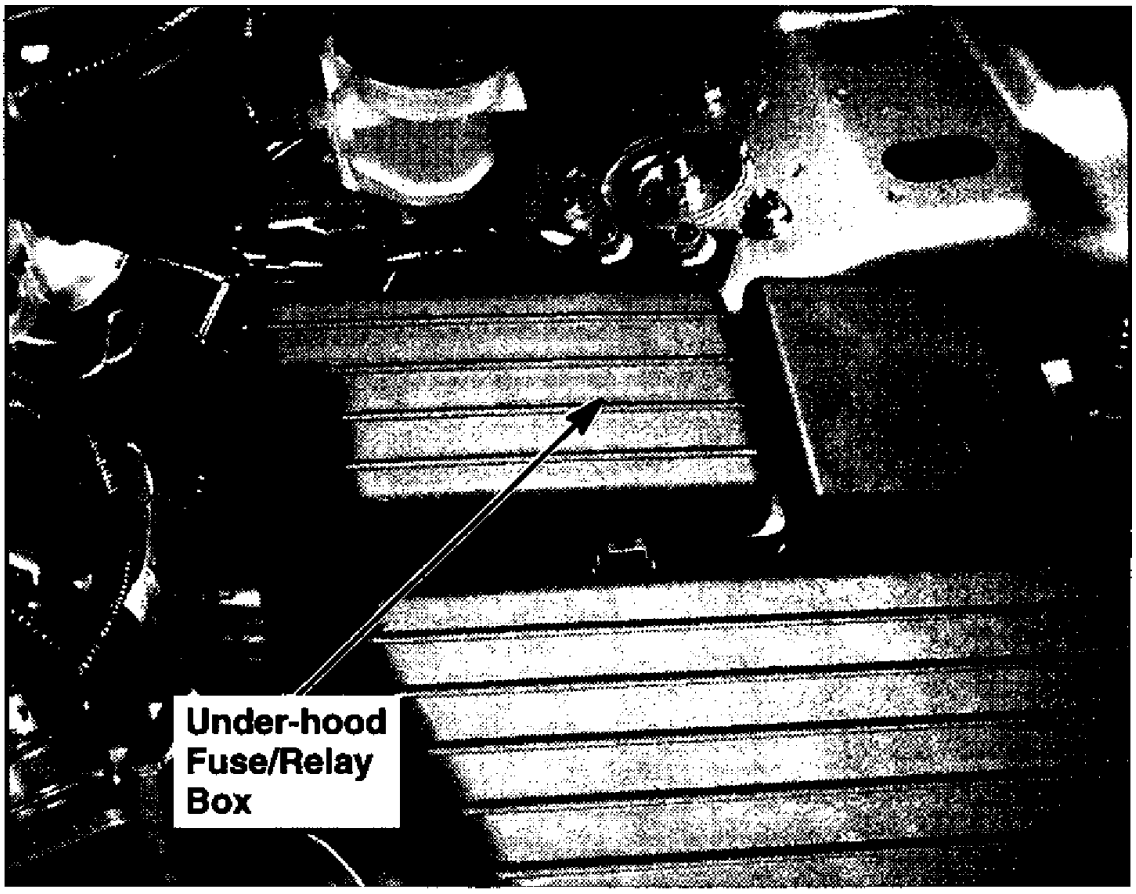
cardiagn.com



G00268108

Fig. 34: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

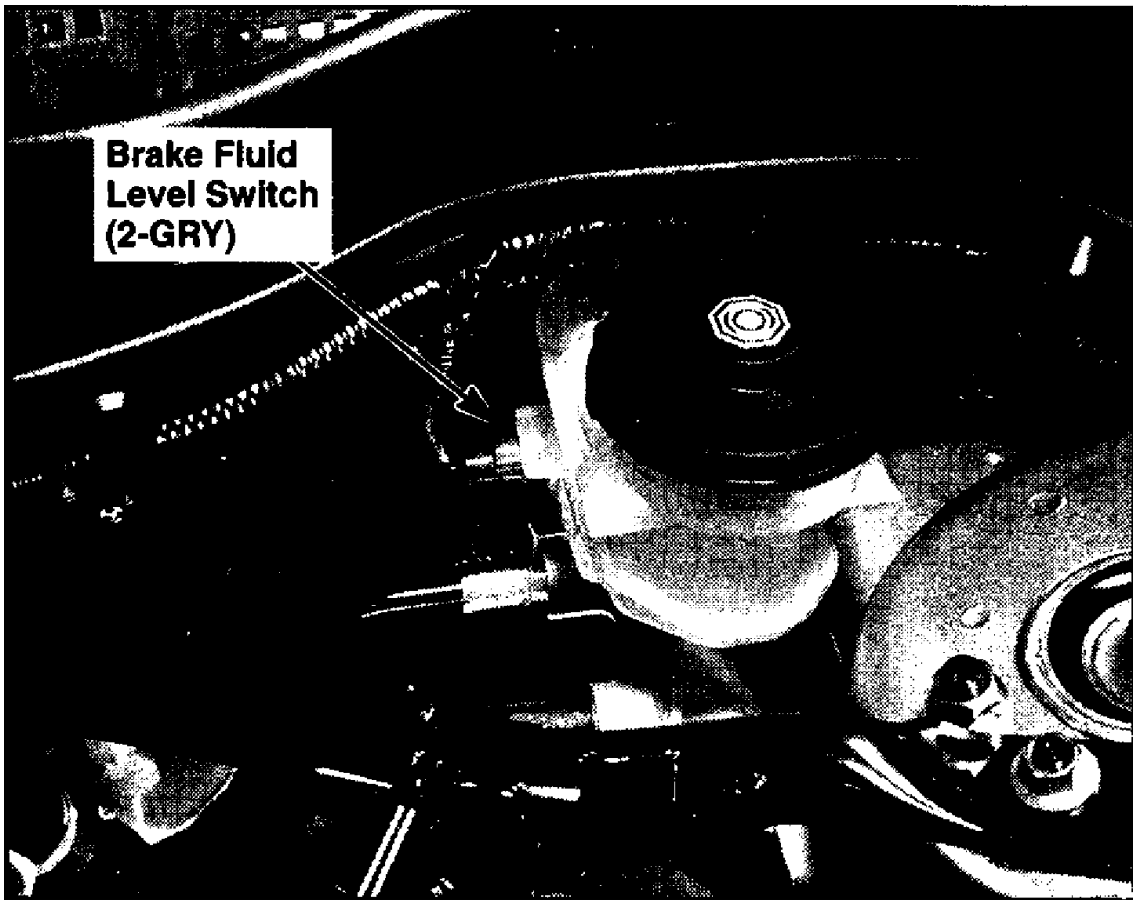
cardiagn.com



G00268109

Fig. 35: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

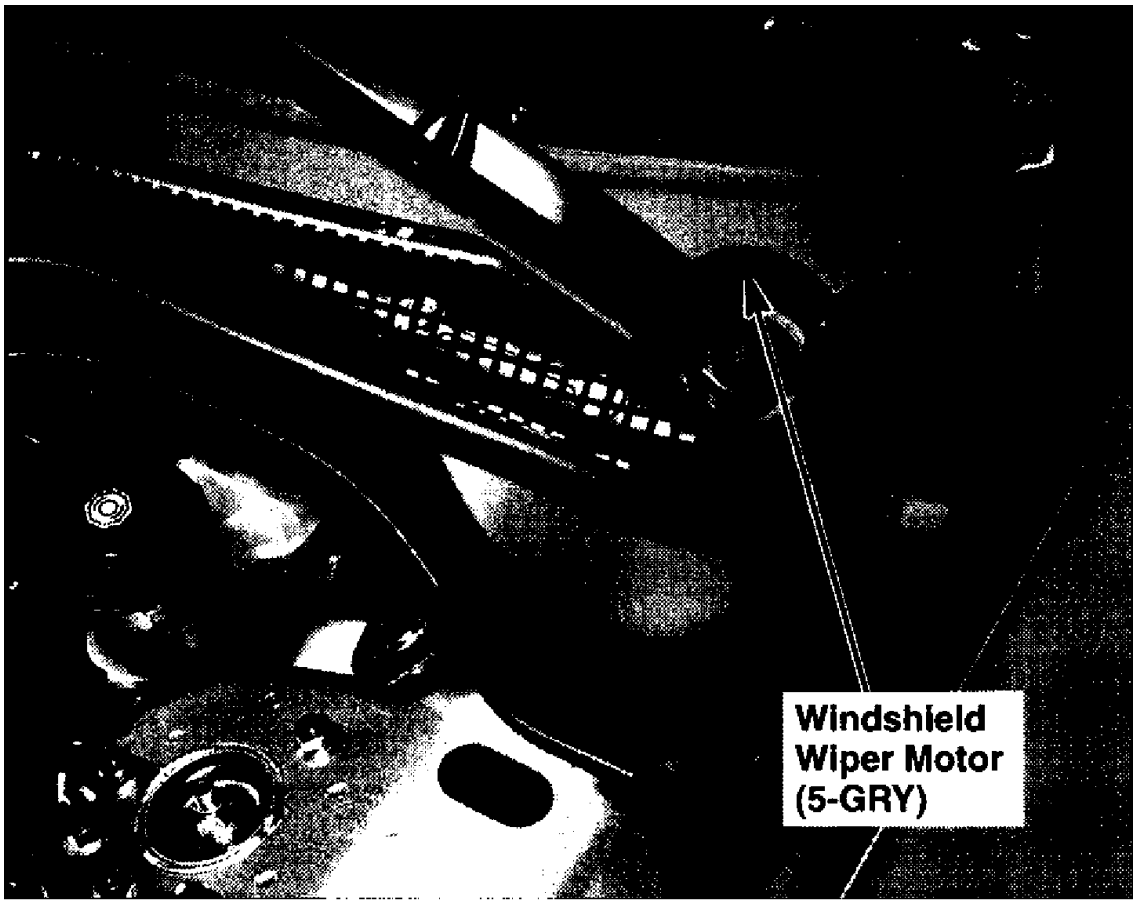
cardiagn.com



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Fig. 36: Left Rear Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

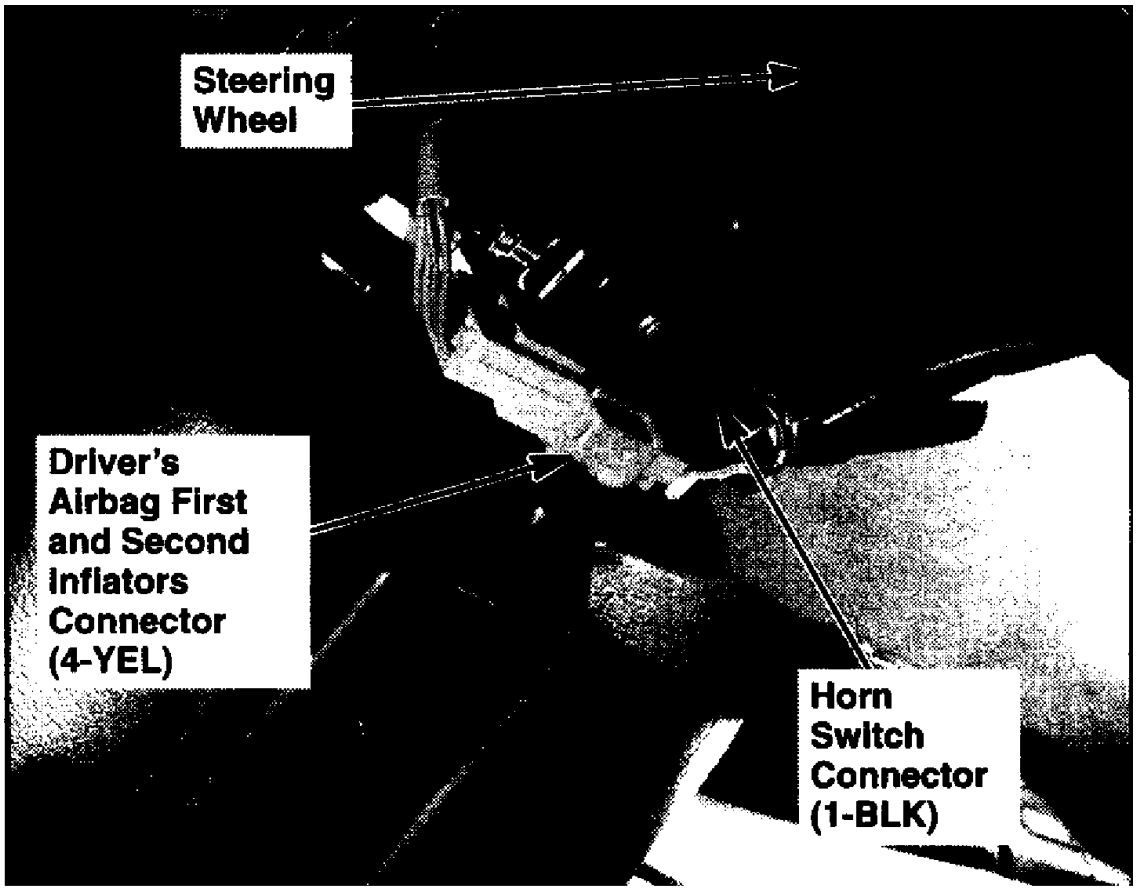
cardiagn.com



G00268111

Fig. 37: Under Left Side Of Cowl
Courtesy of AMERICAN HONDA MOTOR CO., INC.

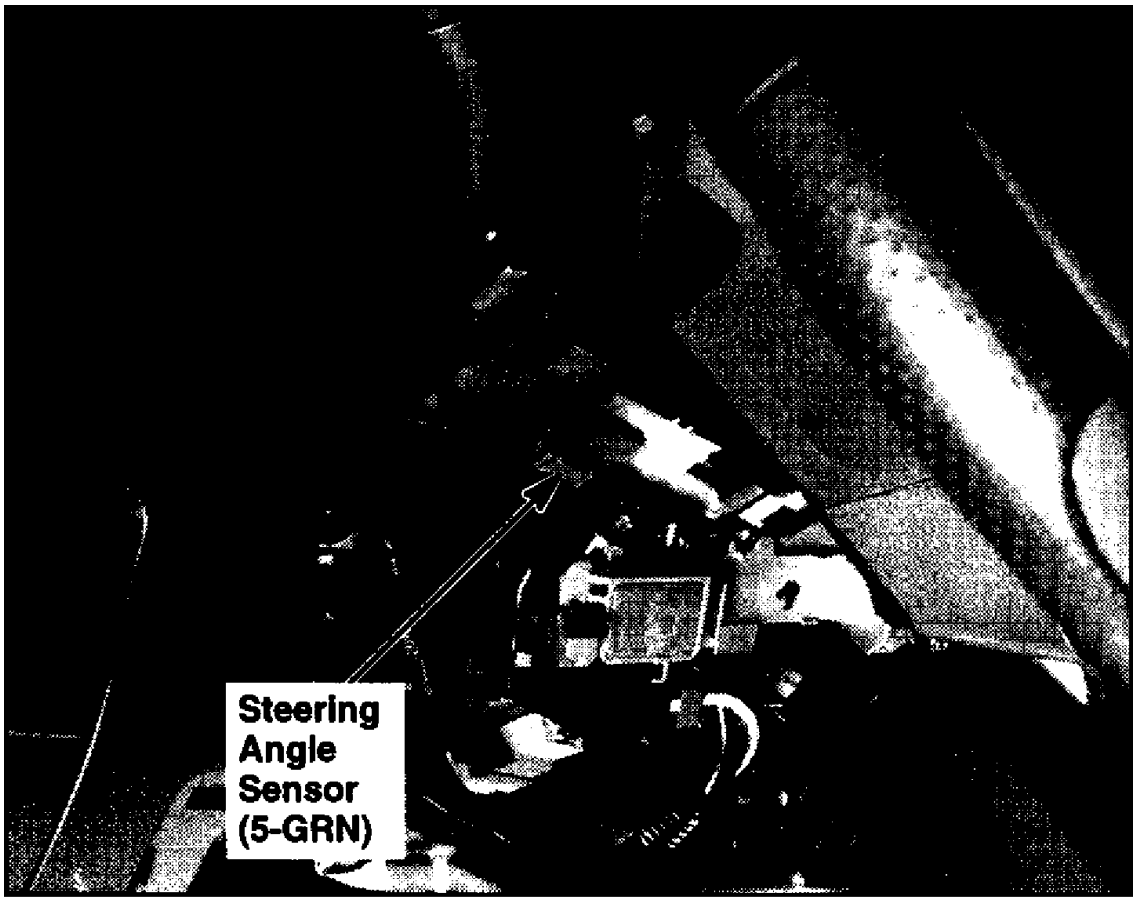
cardiagn.com



G00268112

Fig. 38: Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.

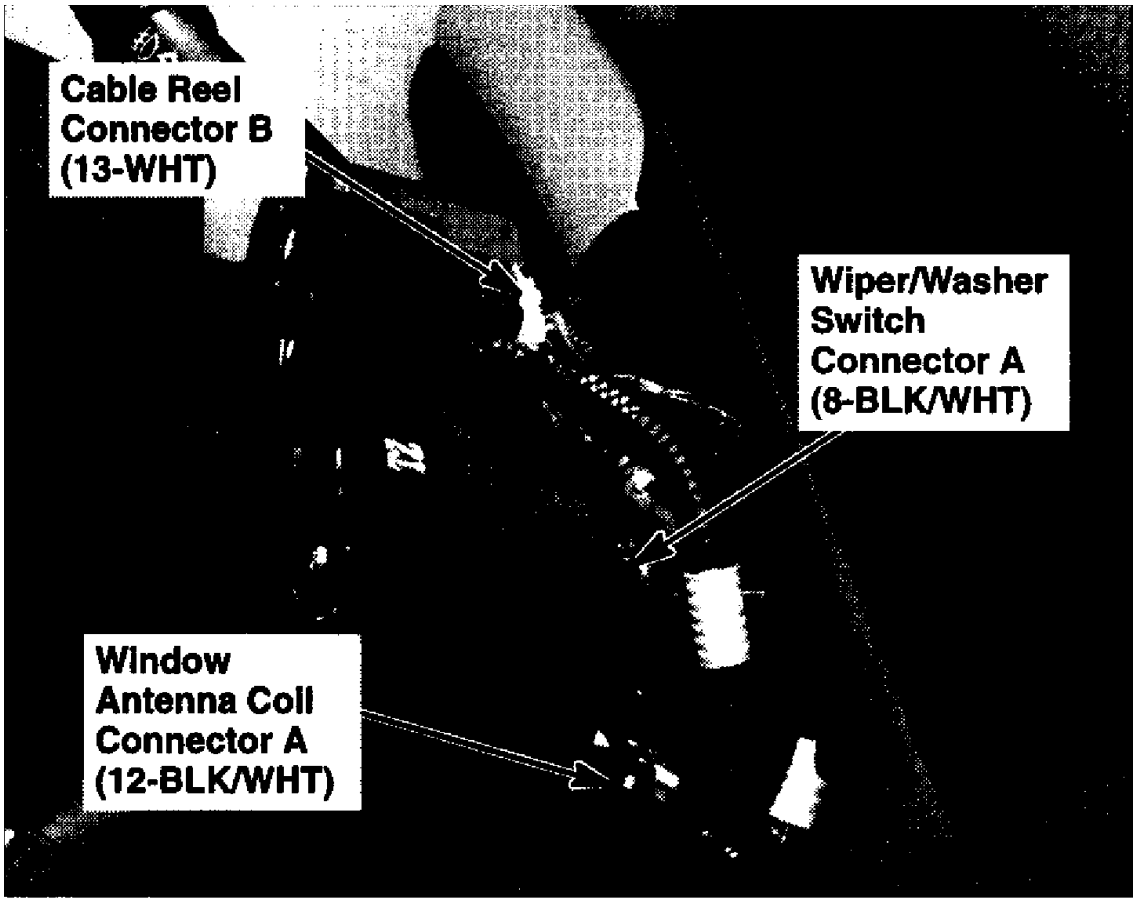
cardiagn.com



G00268113

Fig. 39: Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.

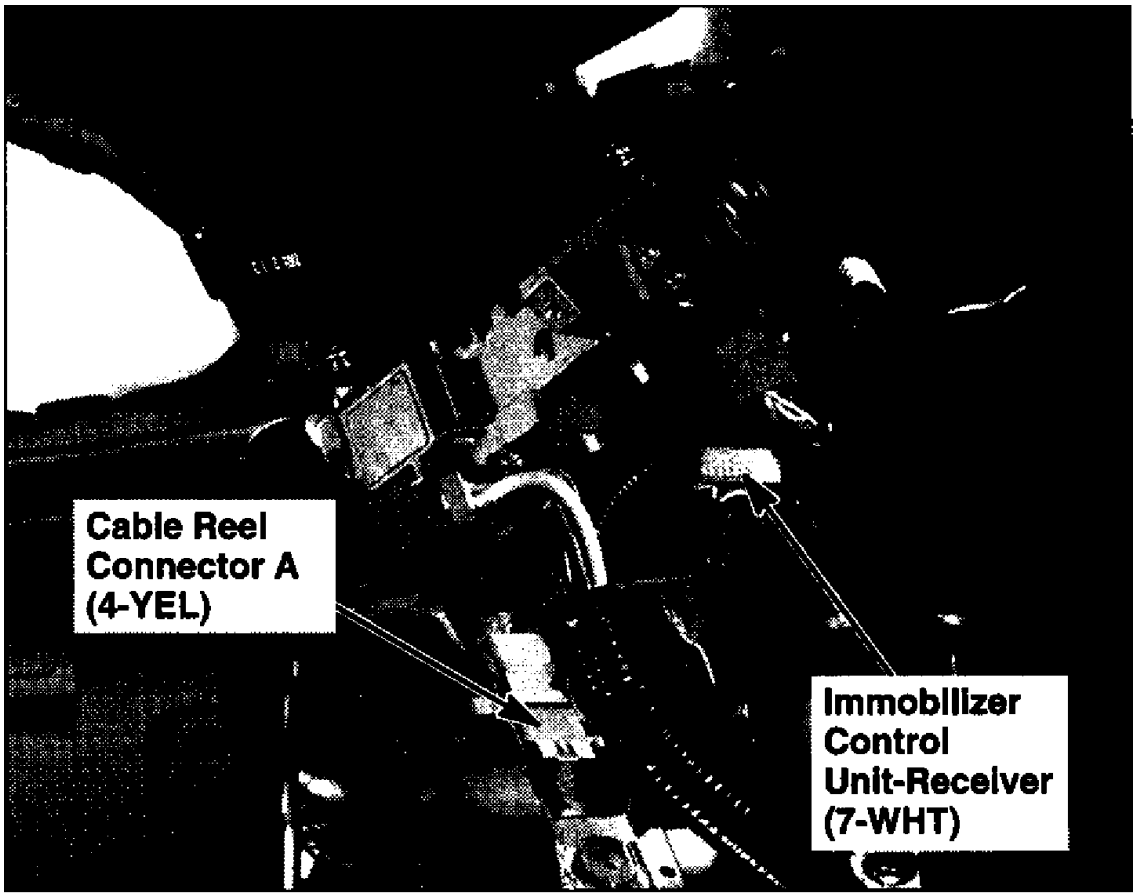
cardiagn.com



G00268114

Fig. 40: Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268115

Fig. 41: Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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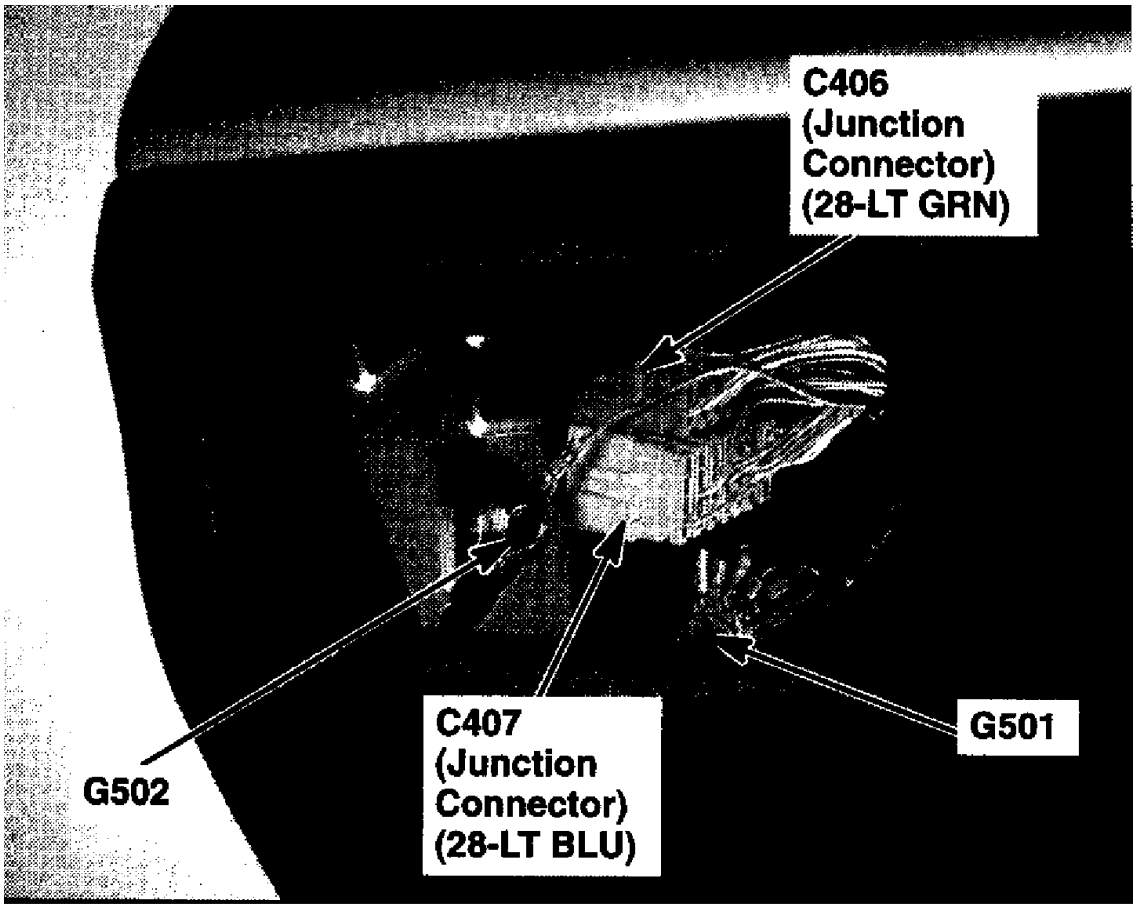
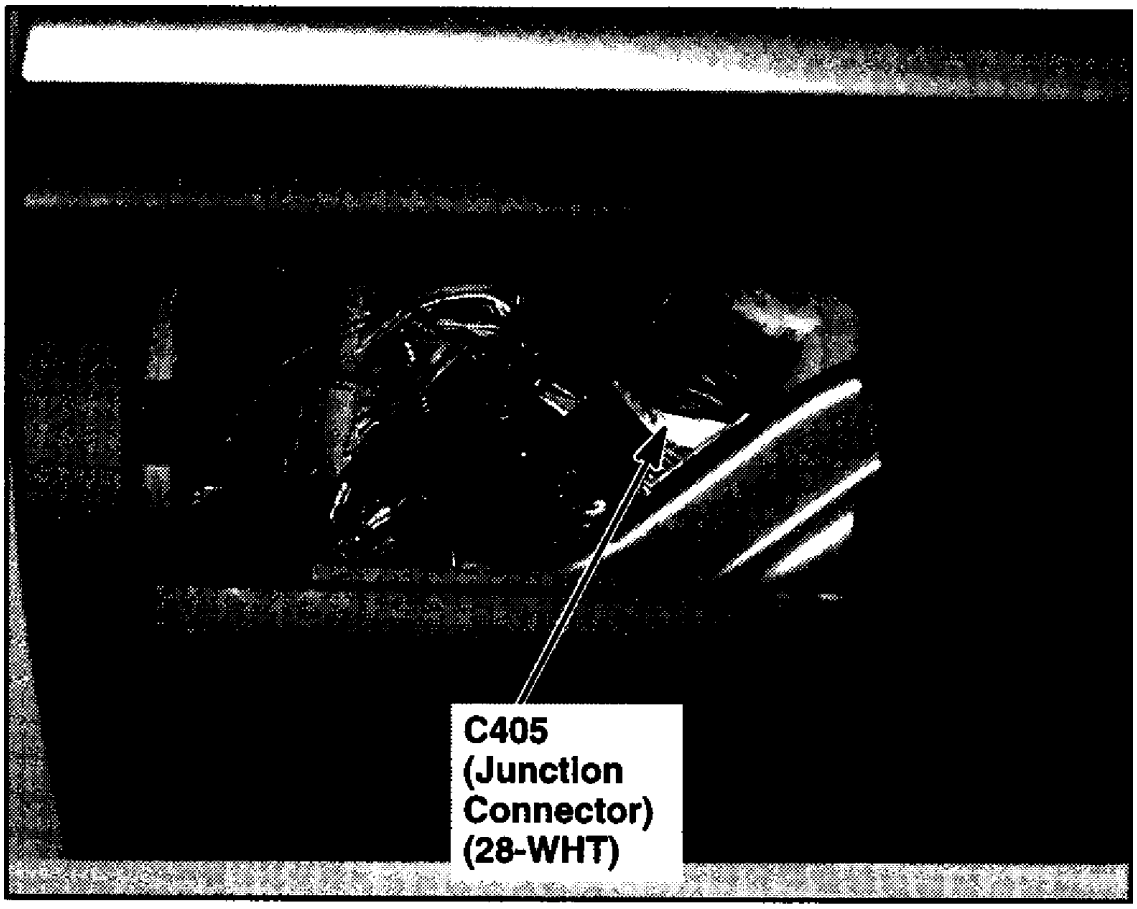


Fig. 42: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268117

Fig. 43: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

cardiagn.com

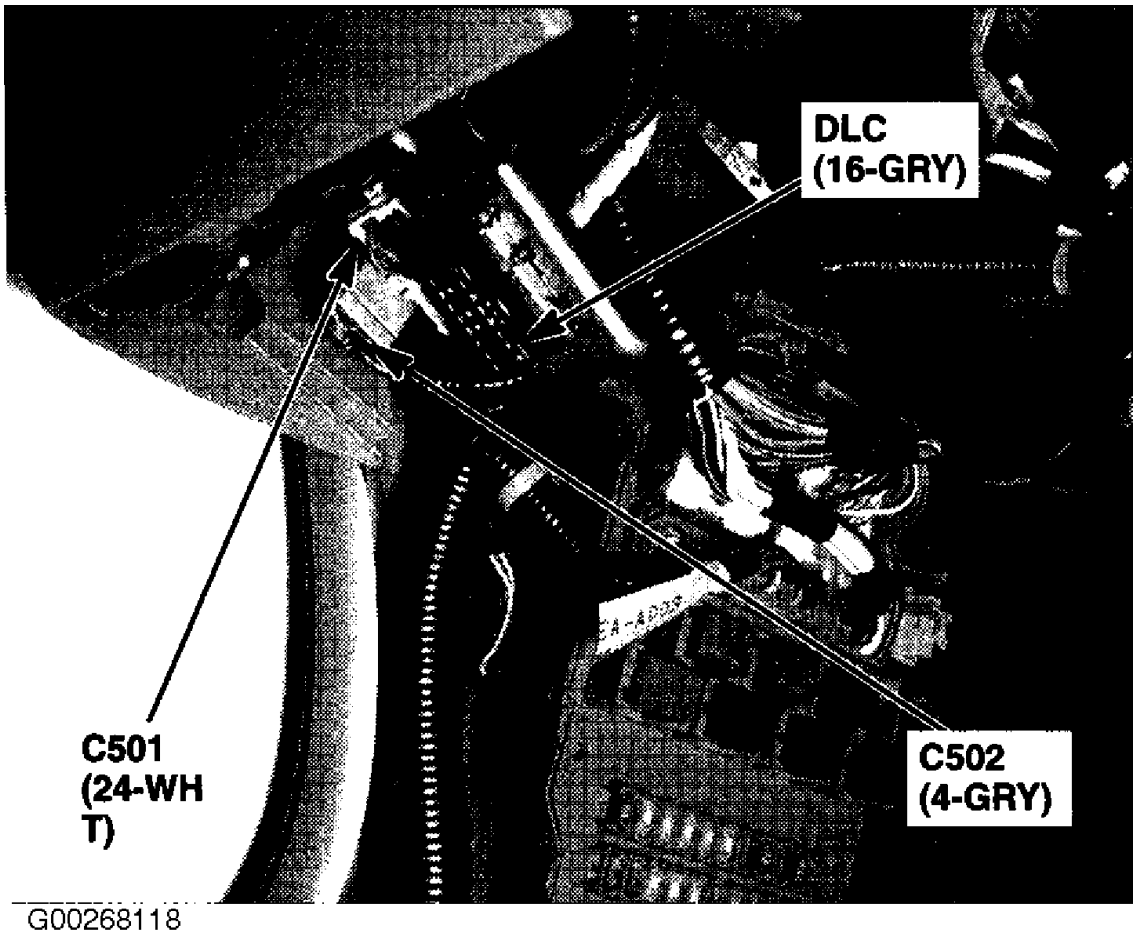
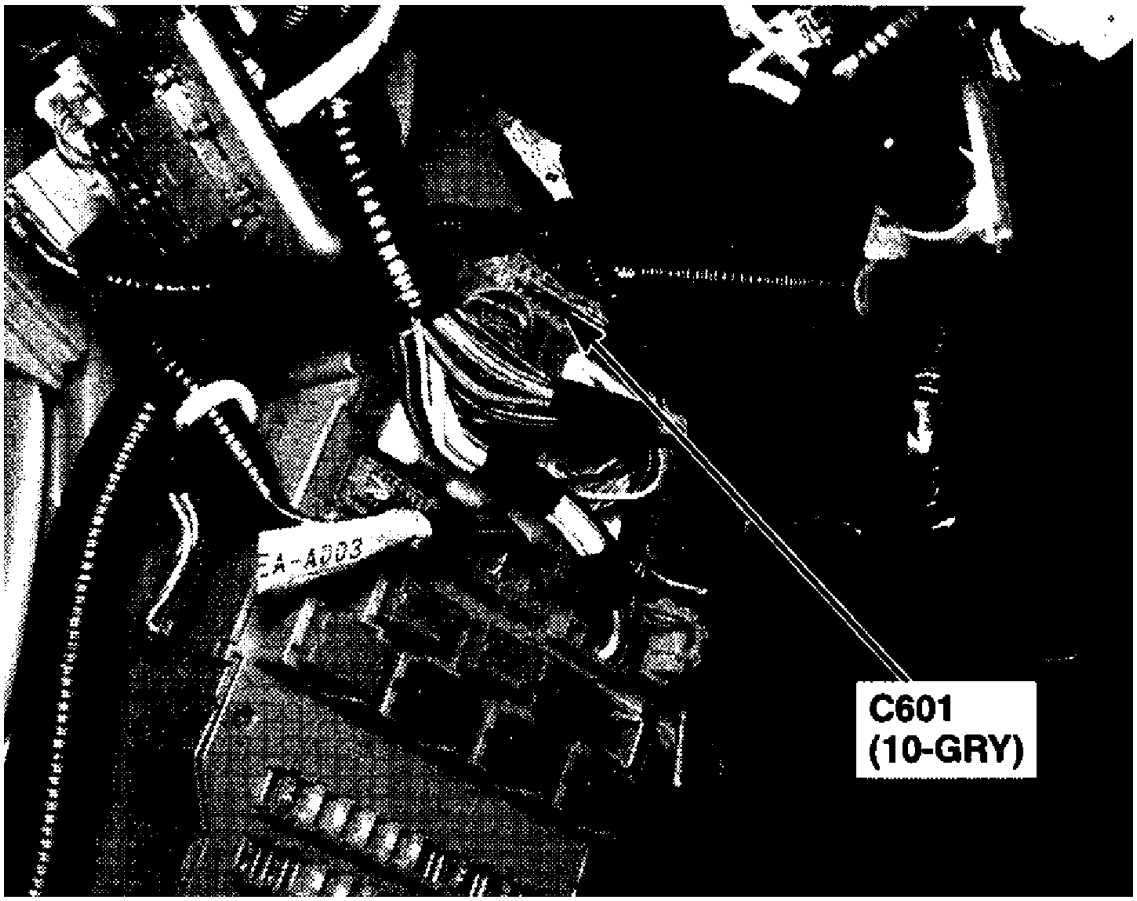


Fig. 44: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

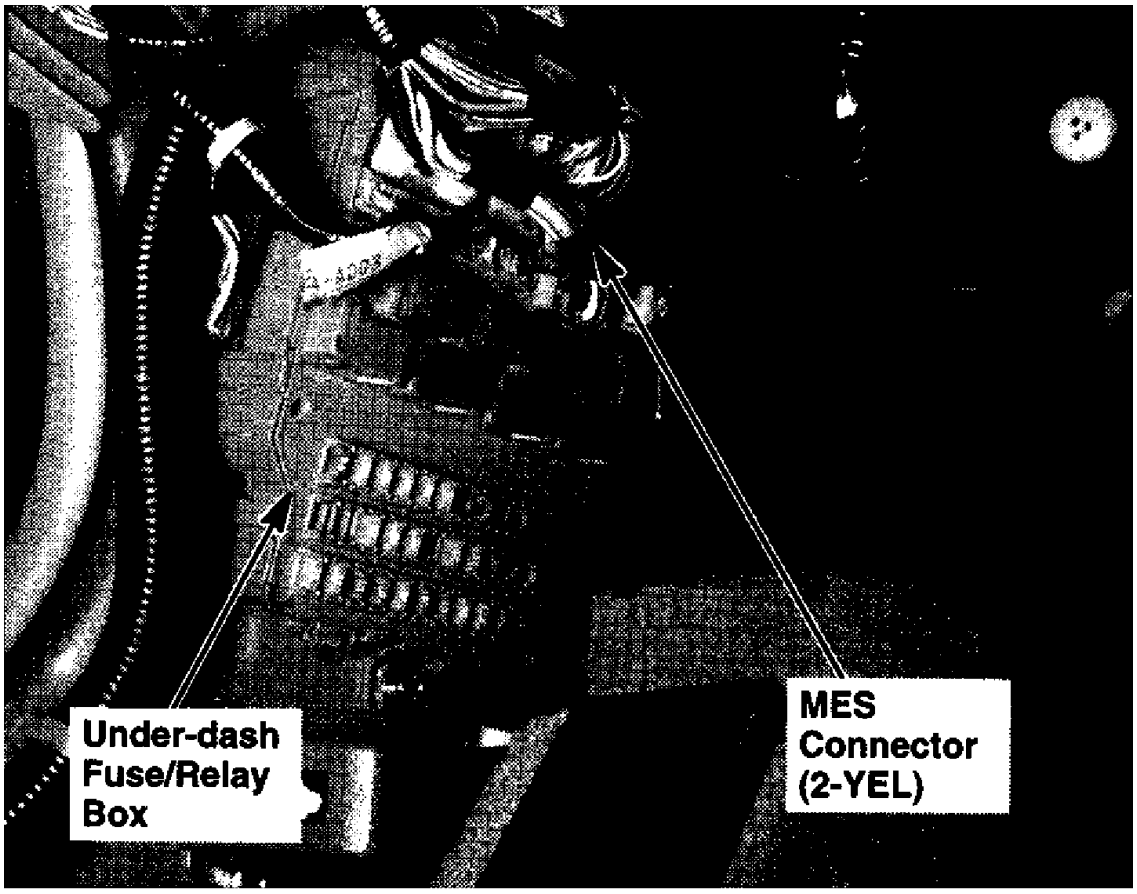
cardiagn.com



G00268119

Fig. 45: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

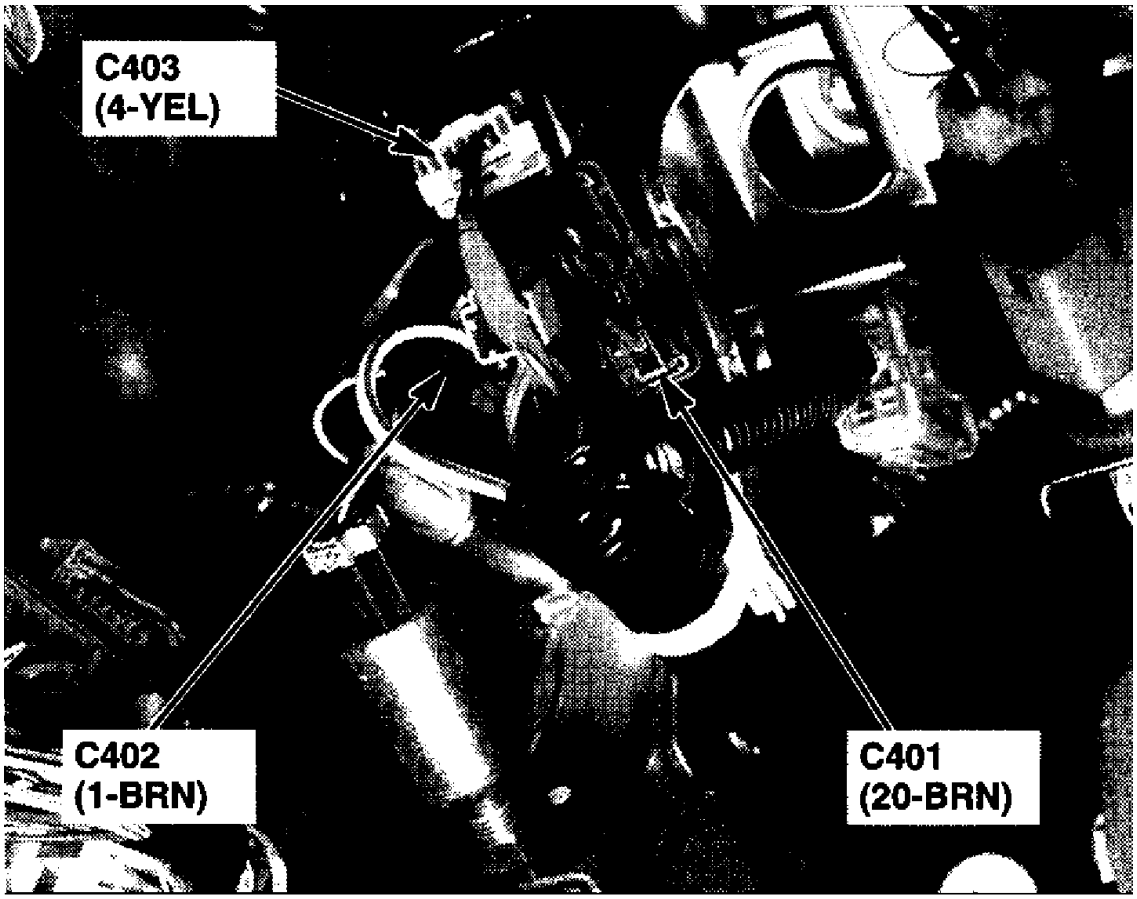
cardiagn.com



G00268120

Fig. 46: Behind Left Kick Panel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

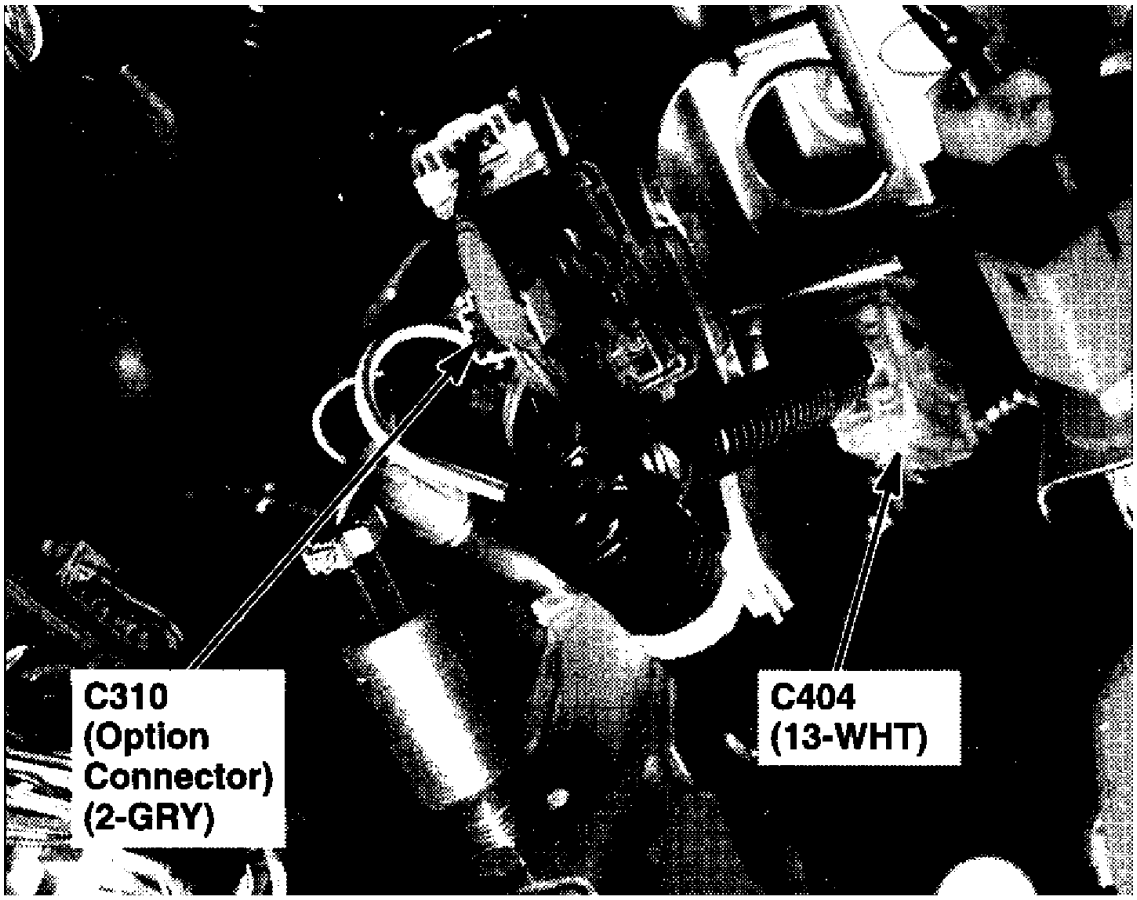
cardiagn.com



G00268121

Fig. 47: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

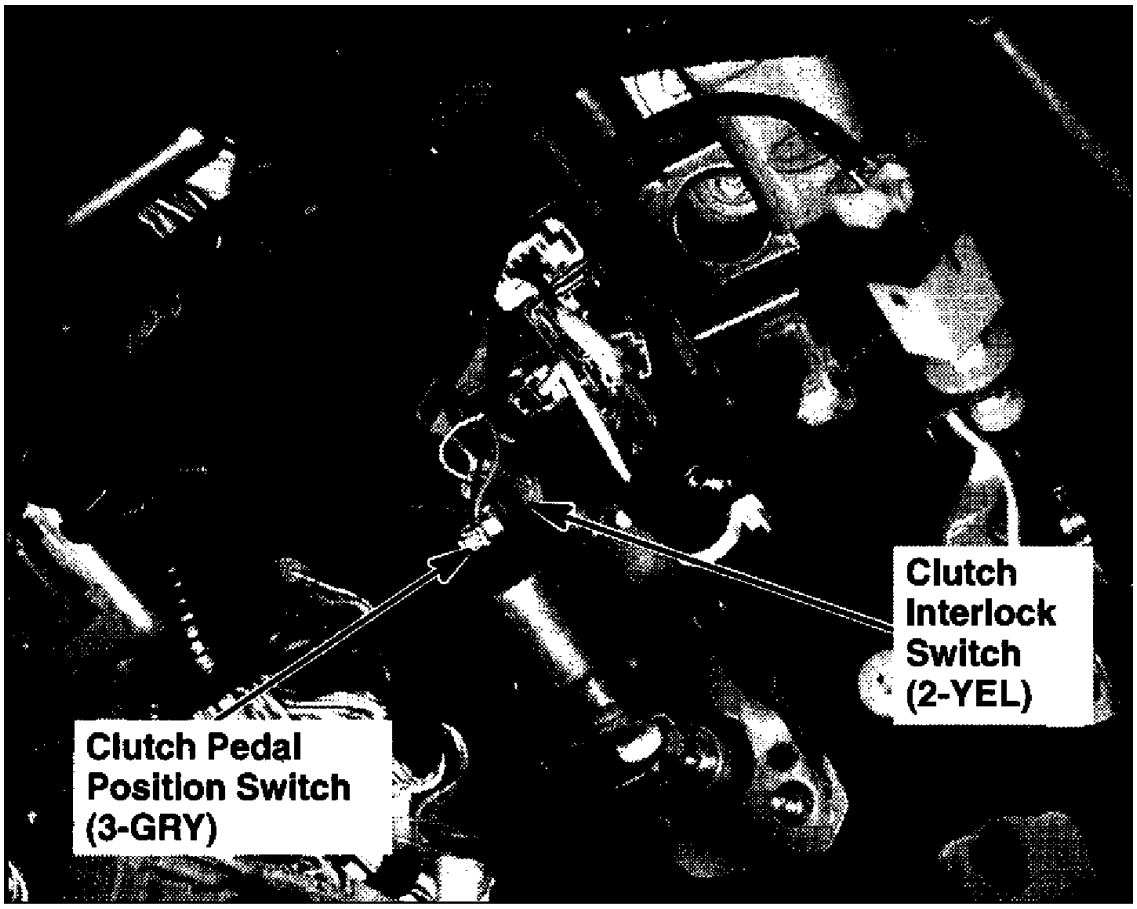
cardiagn.com



G00268122

Fig. 48: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

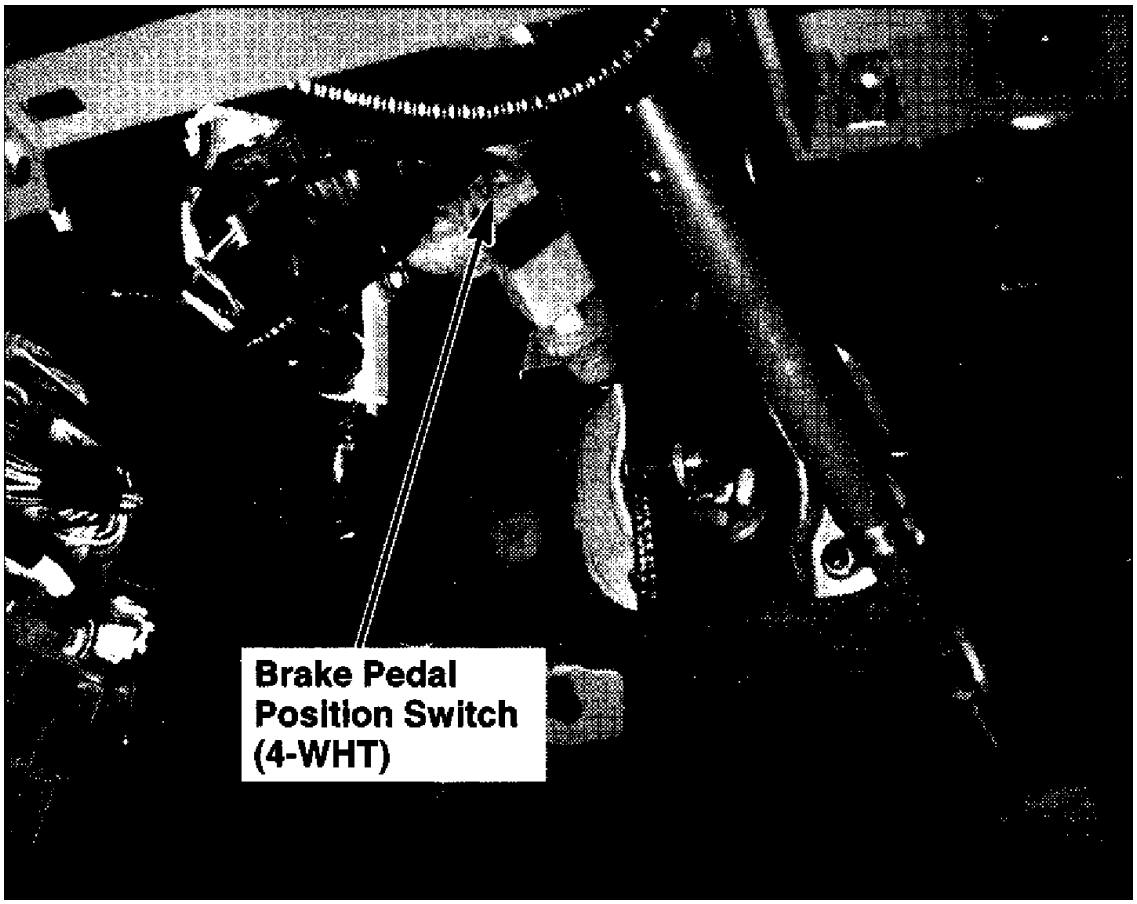
cardiagn.com



G00268123

Fig. 49: Behind Left Side Of Dash (M/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

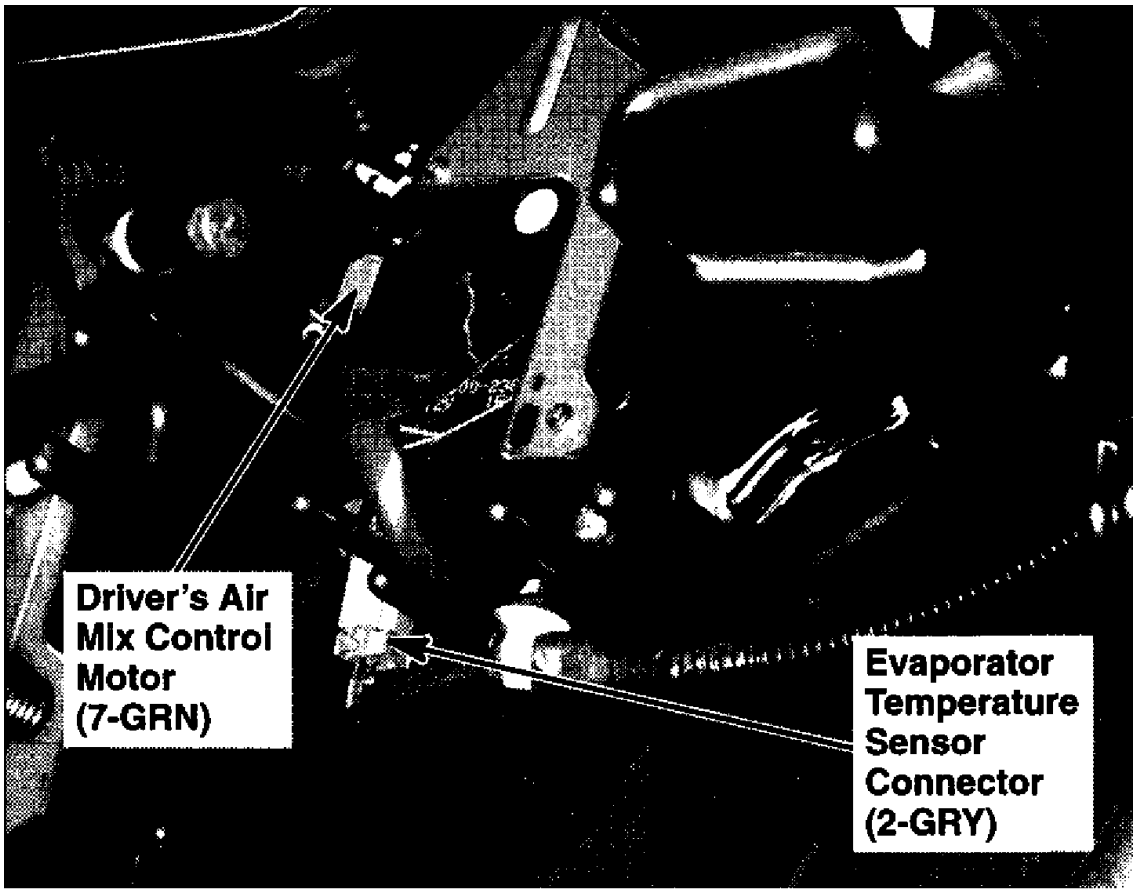
cardiagn.com



G00268124

Fig. 50: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

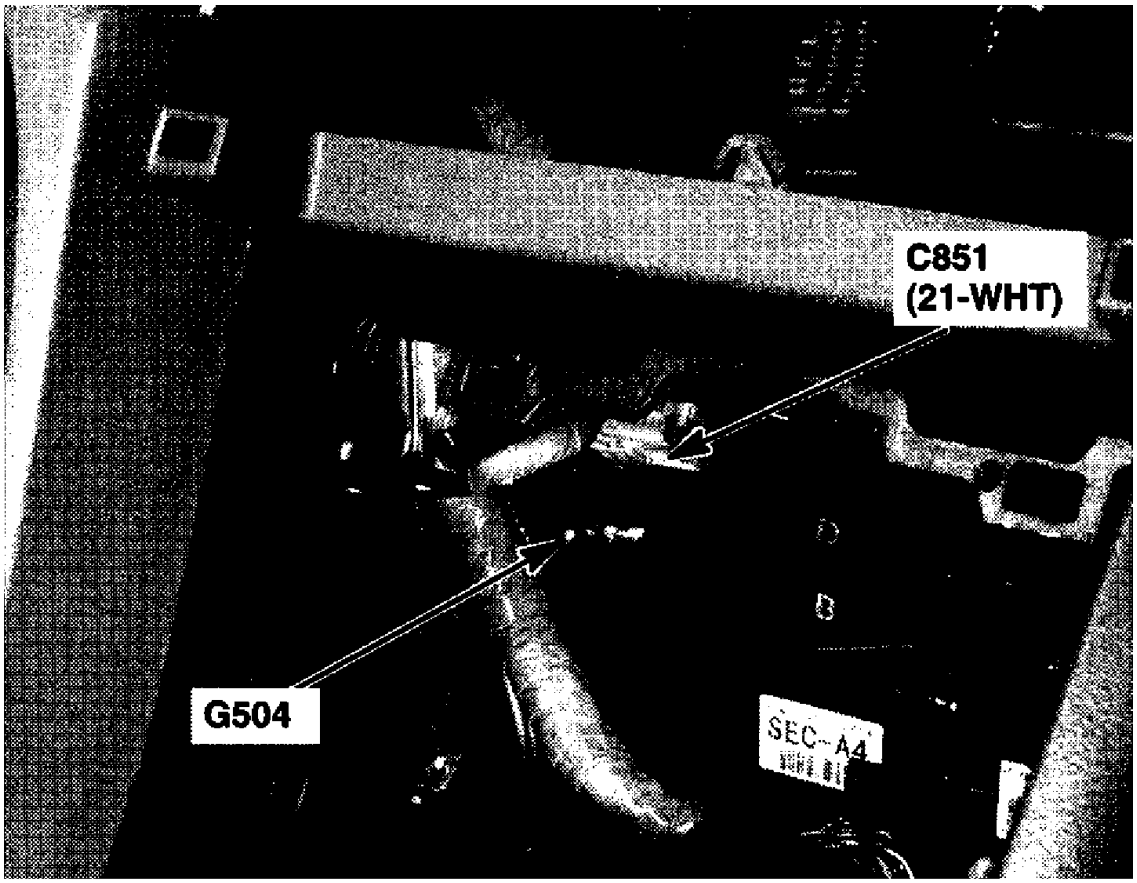
cardiagn.com



G00268125

Fig. 51: Behind Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

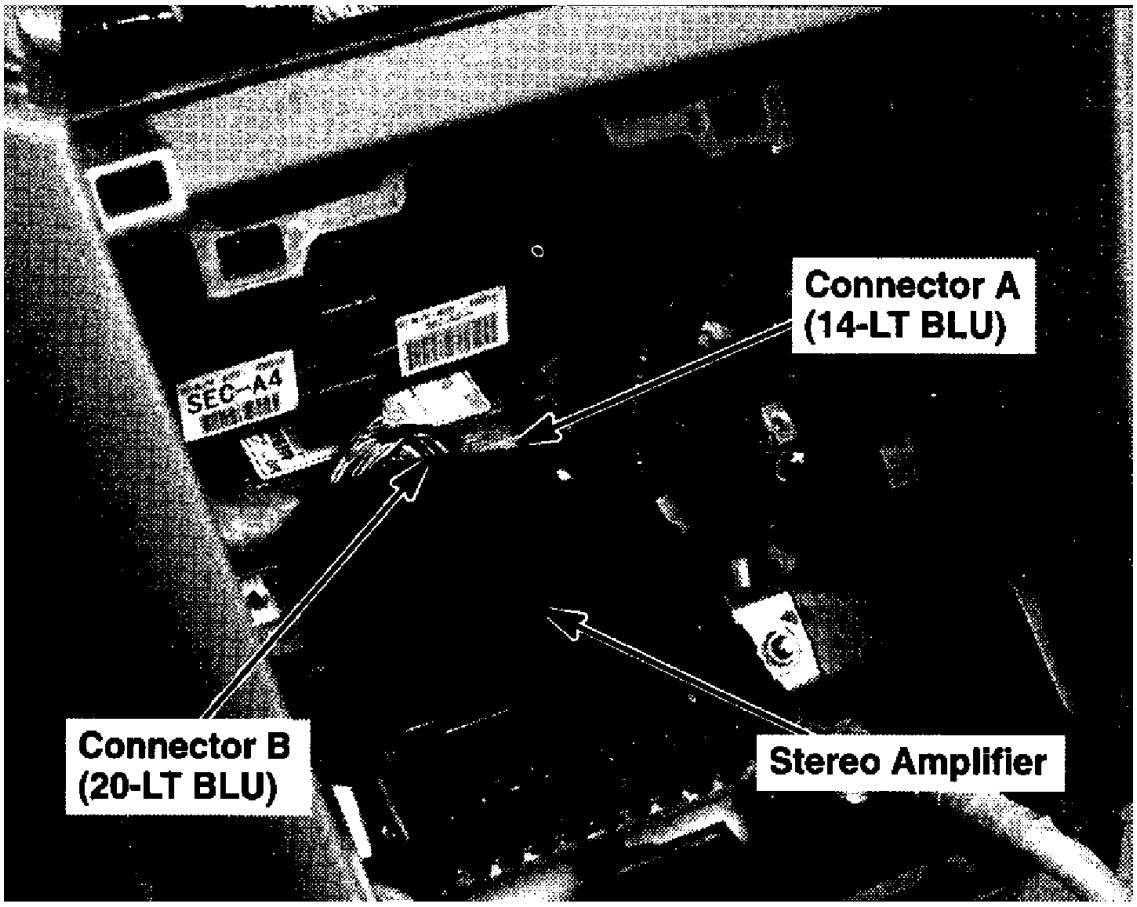
cardiagn.com



G00268126

Fig. 52: Behind Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

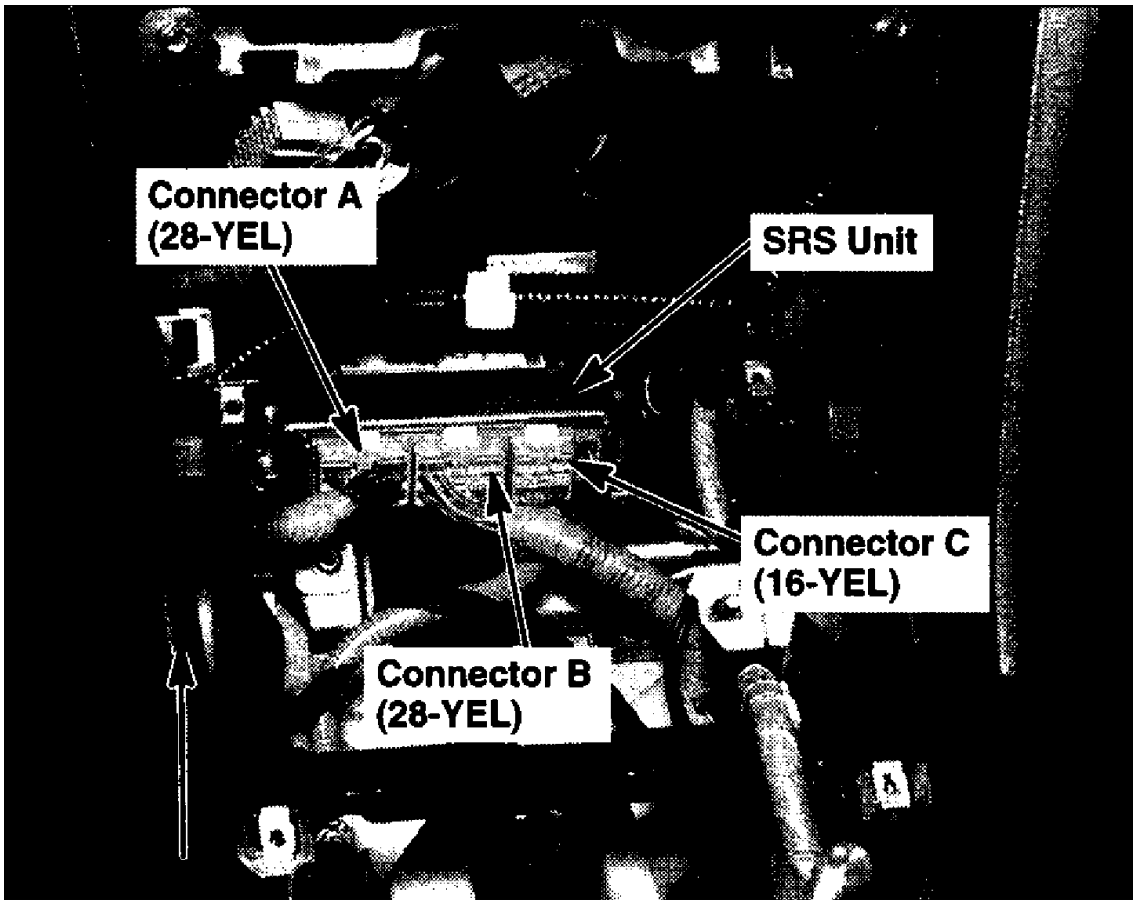
cardiagn.com



G00268127

Fig. 53: Behind Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

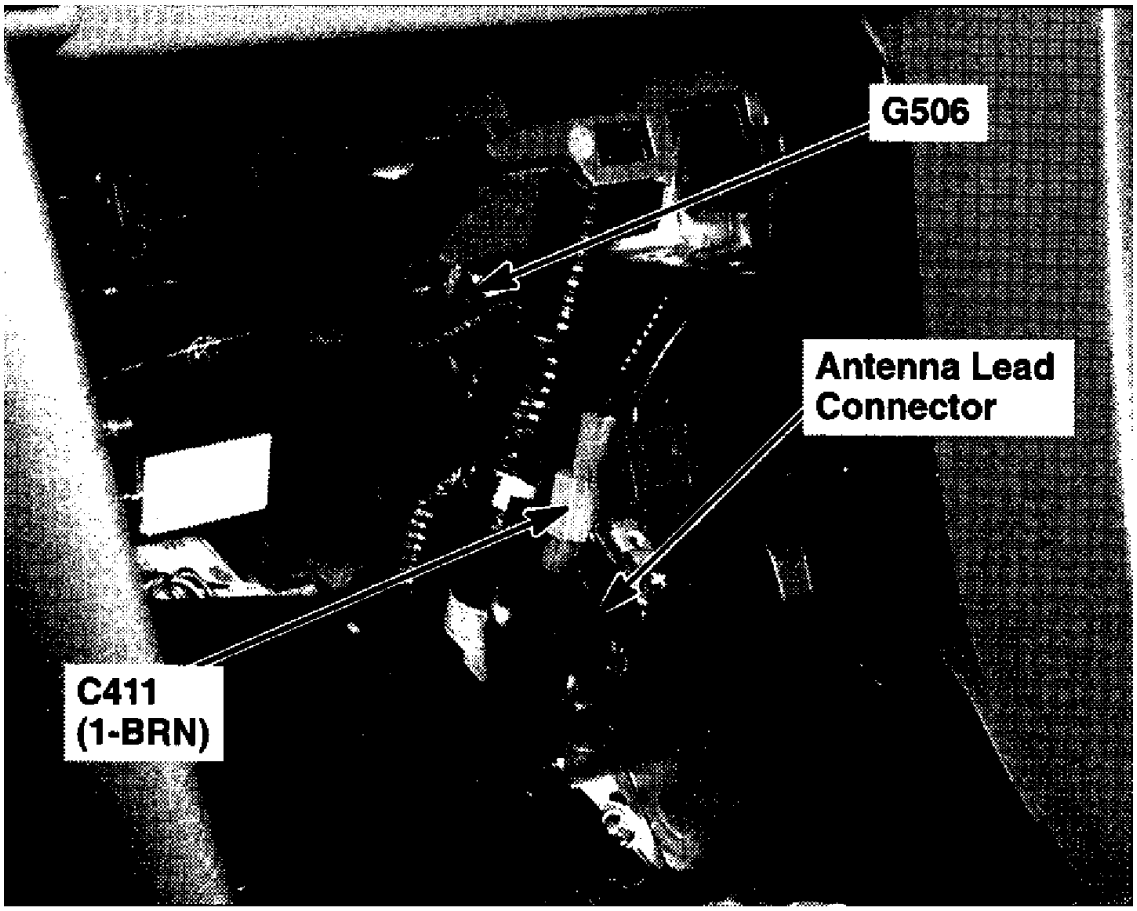
cardiagn.com



G00268128

Fig. 54: Behind Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

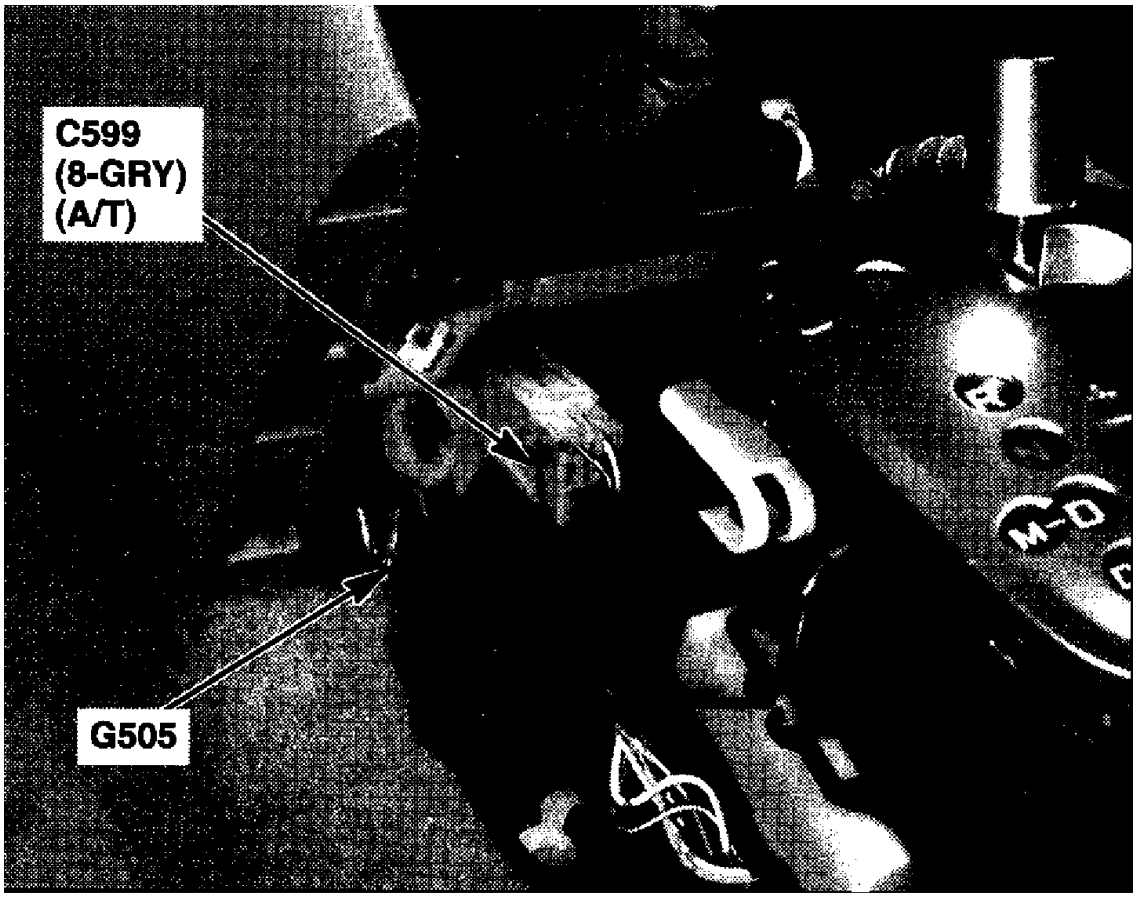
cardiagn.com



G00268129

Fig. 55: Behind Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

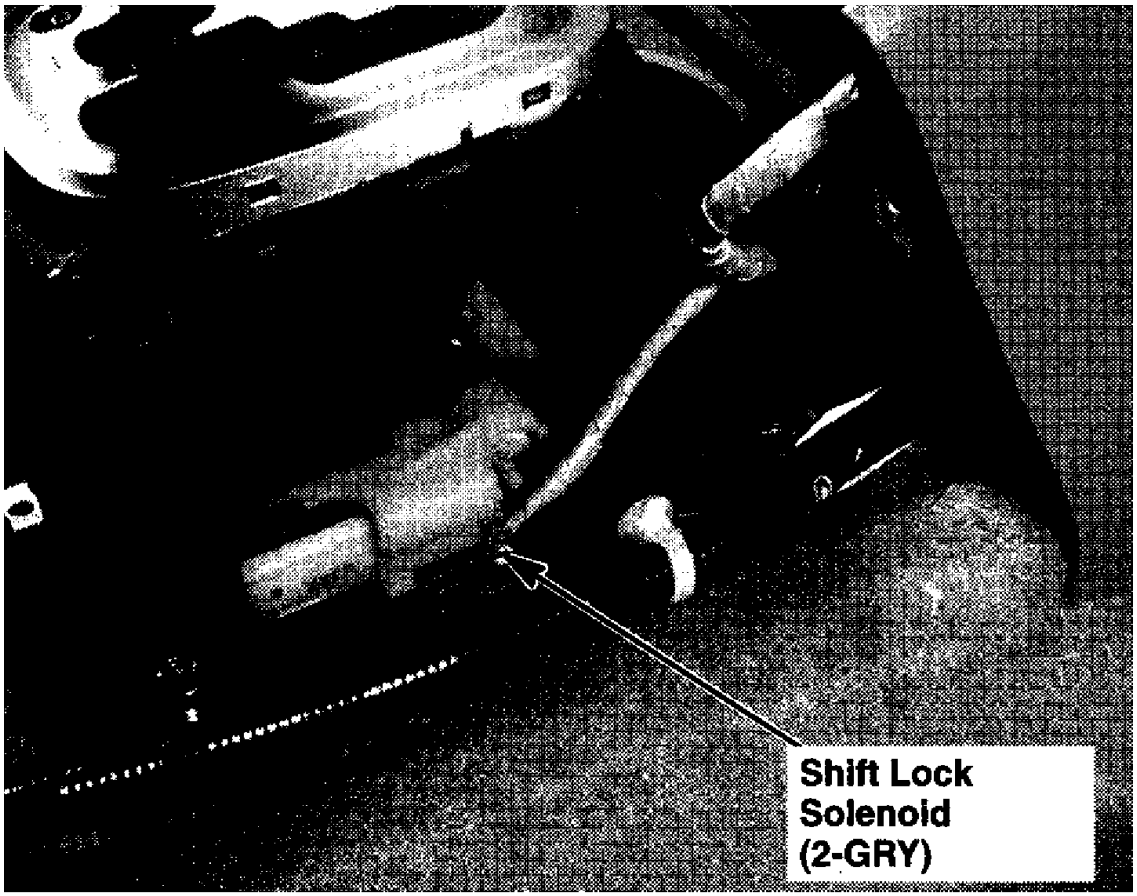
cardiagn.com



G00268130

Fig. 56: Under Center Console (A/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

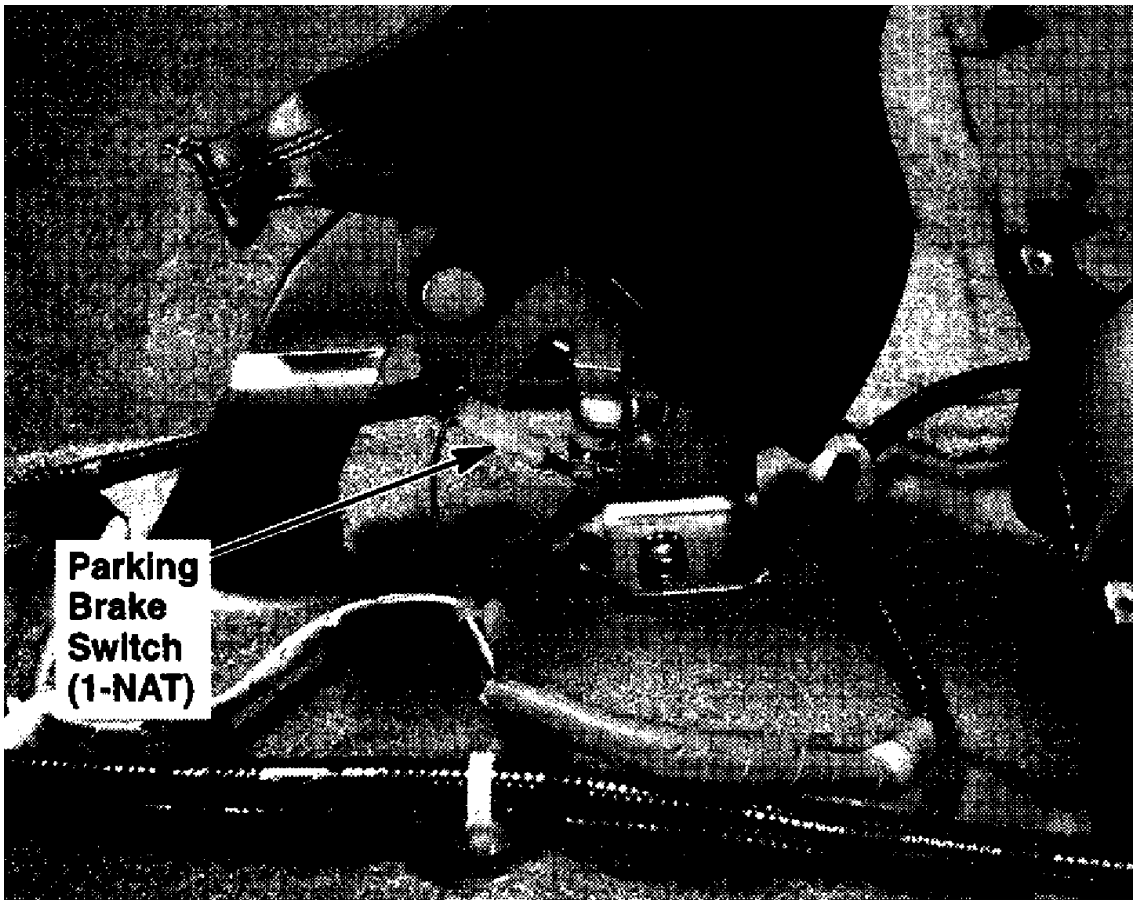
cardiagn.com



G00268131

Fig. 57: Under Center Console
Courtesy of AMERICAN HONDA MOTOR CO., INC.

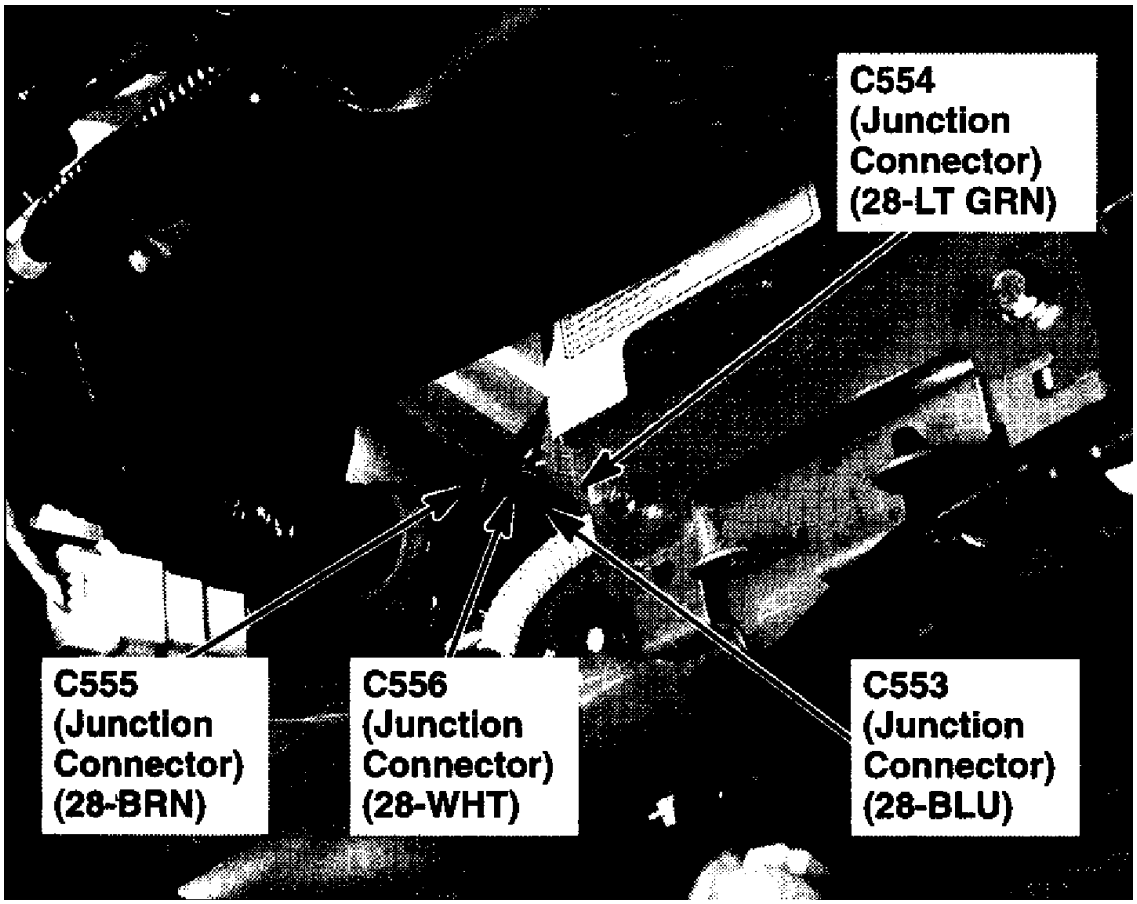
cardiagn.com



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Fig. 58: Under Center Floor Console
Courtesy of AMERICAN HONDA MOTOR CO., INC.

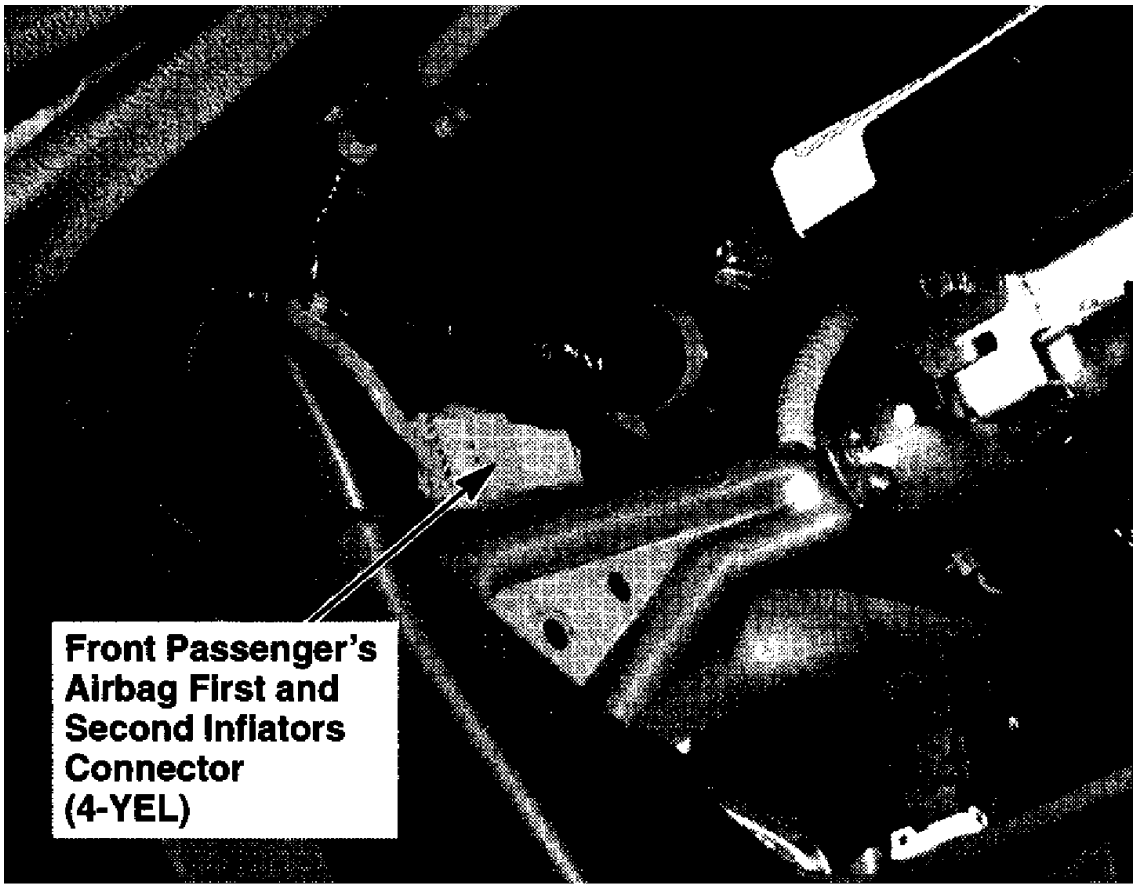
cardiagn.com



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Fig. 59: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

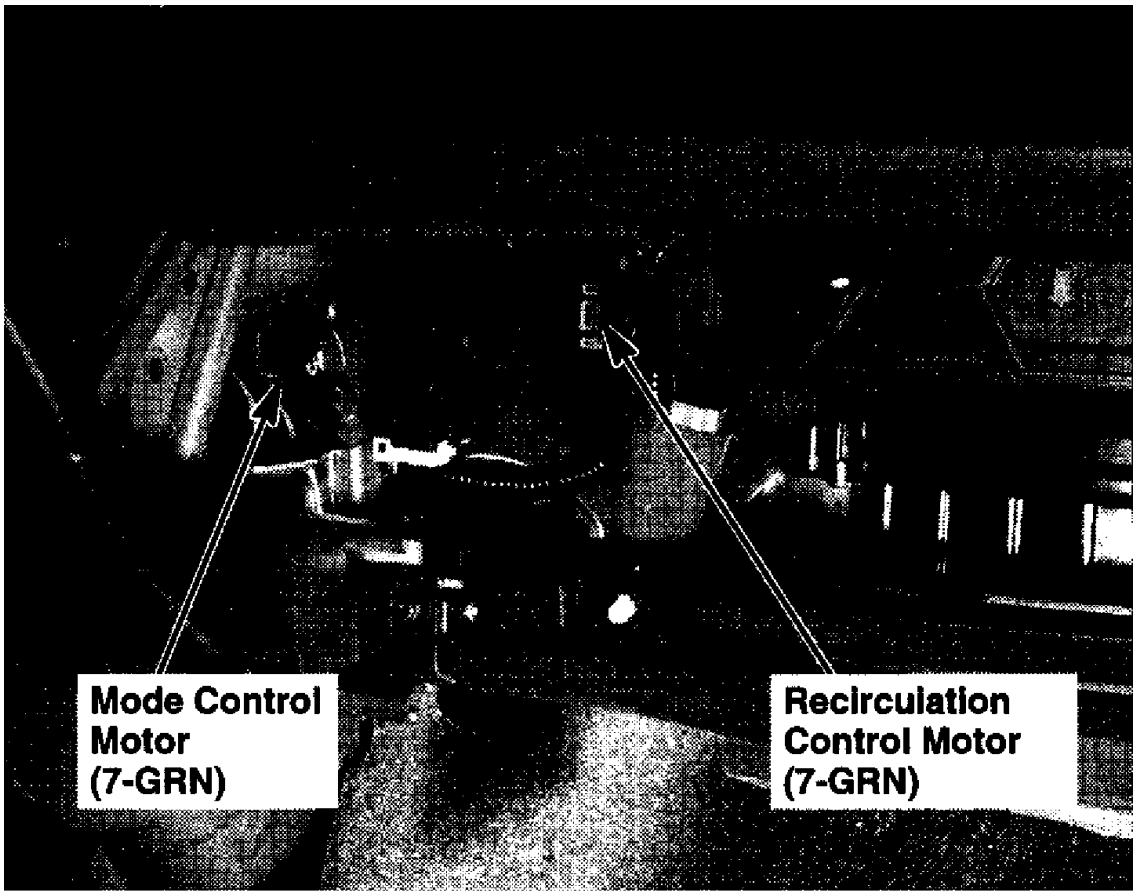
cardiagn.com



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Fig. 60: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

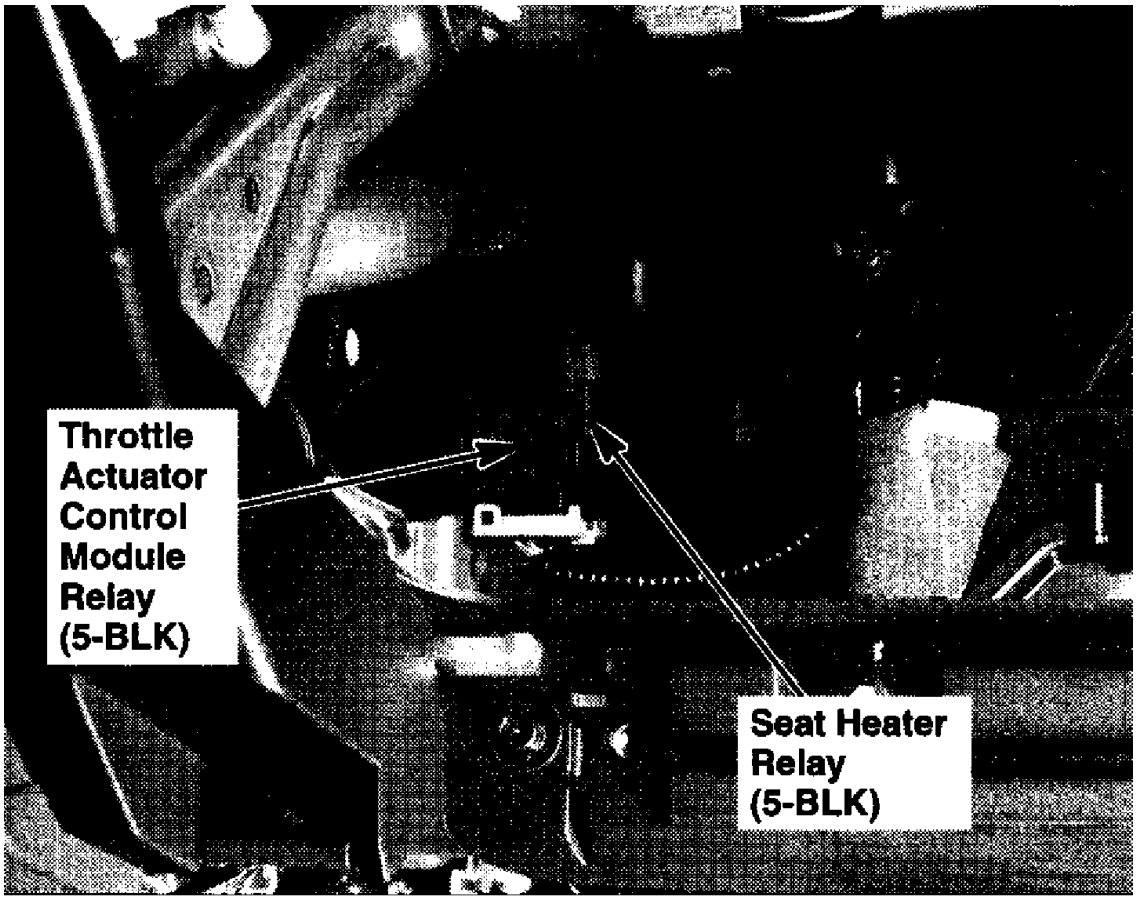
cardiagn.com



G00268135

Fig. 61: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

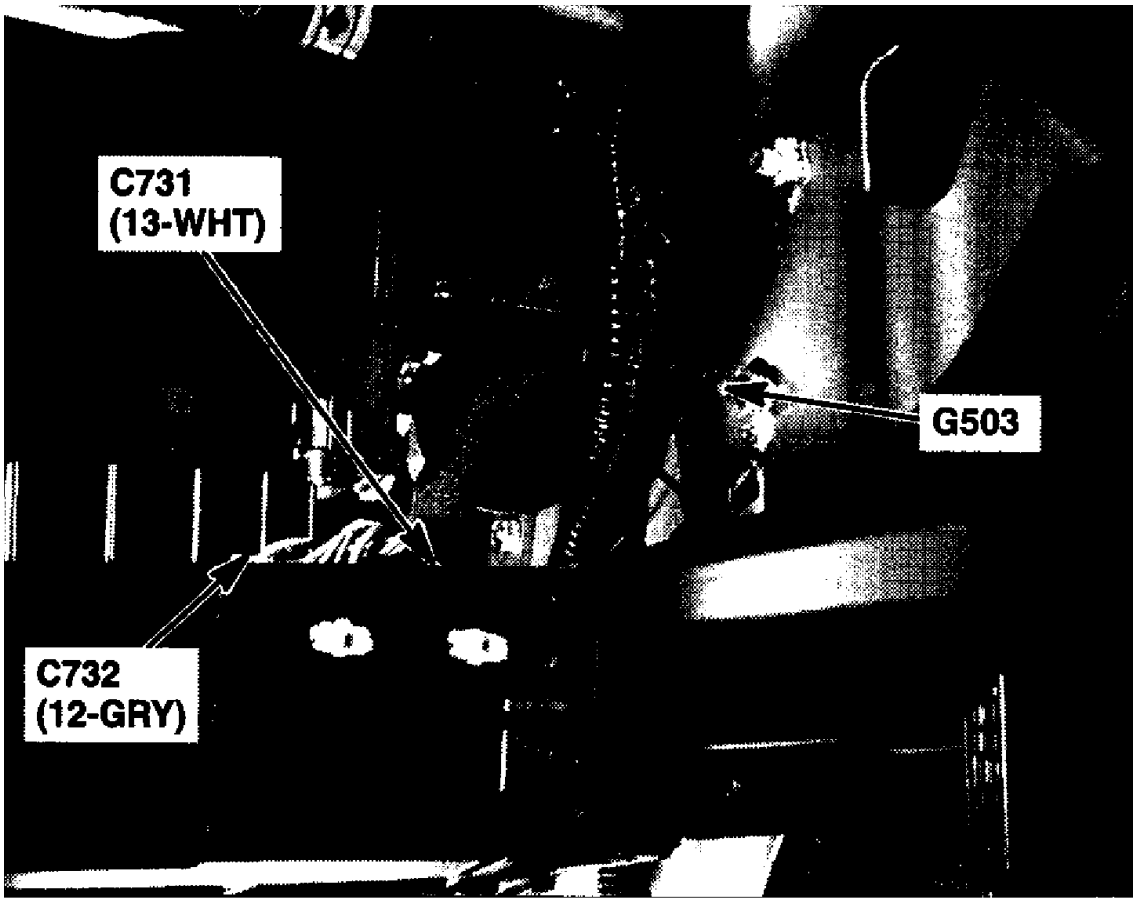
cardiagn.com



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Fig. 62: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

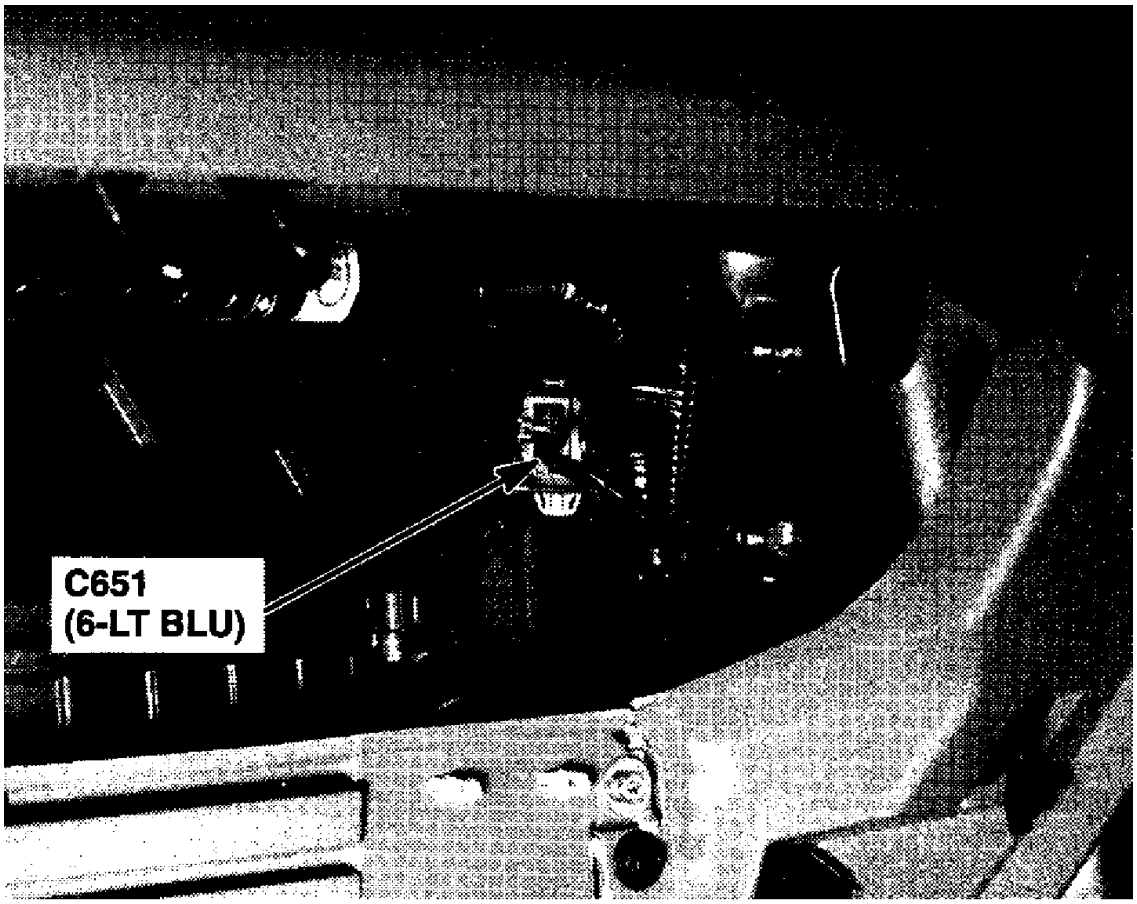
cardiagn.com



G00268137

Fig. 63: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

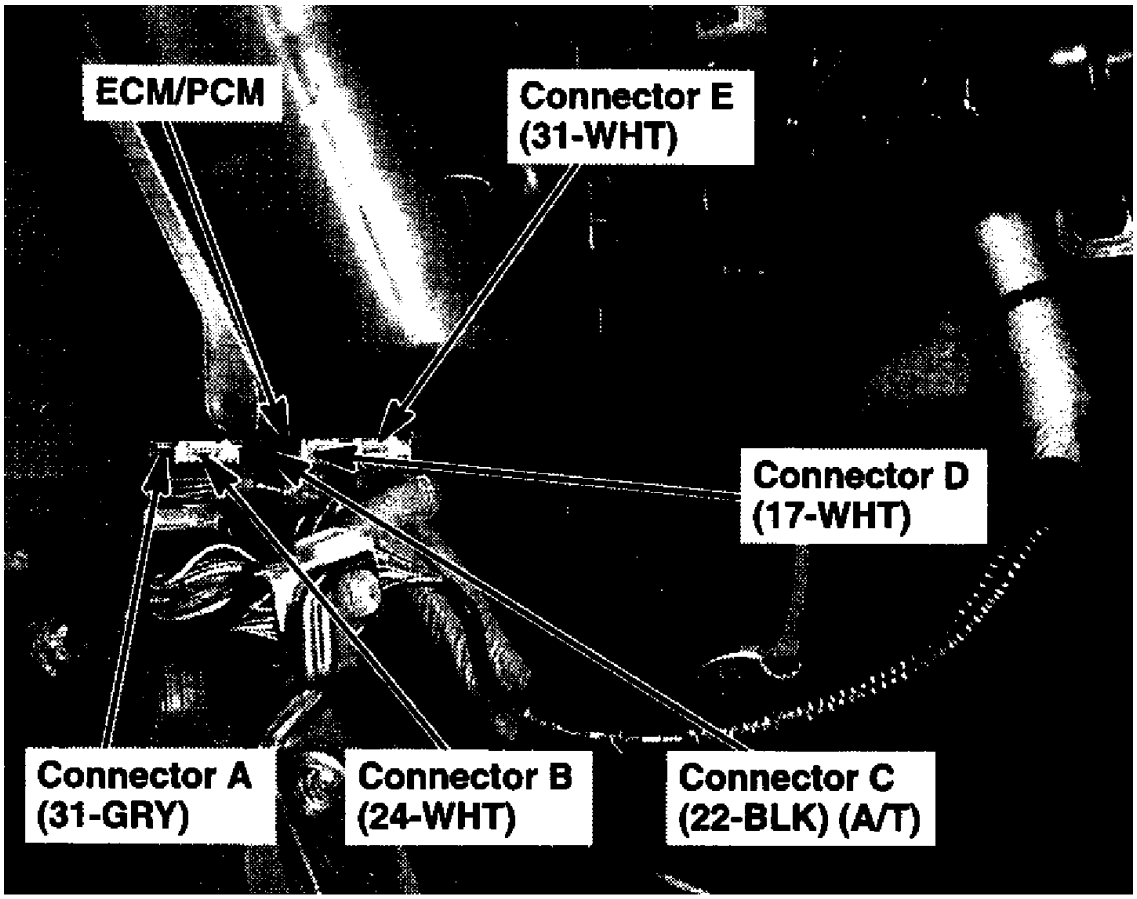
cardiagn.com



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Fig. 64: Behind Glove Box (W/Navigation)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268139

Fig. 65: Under Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

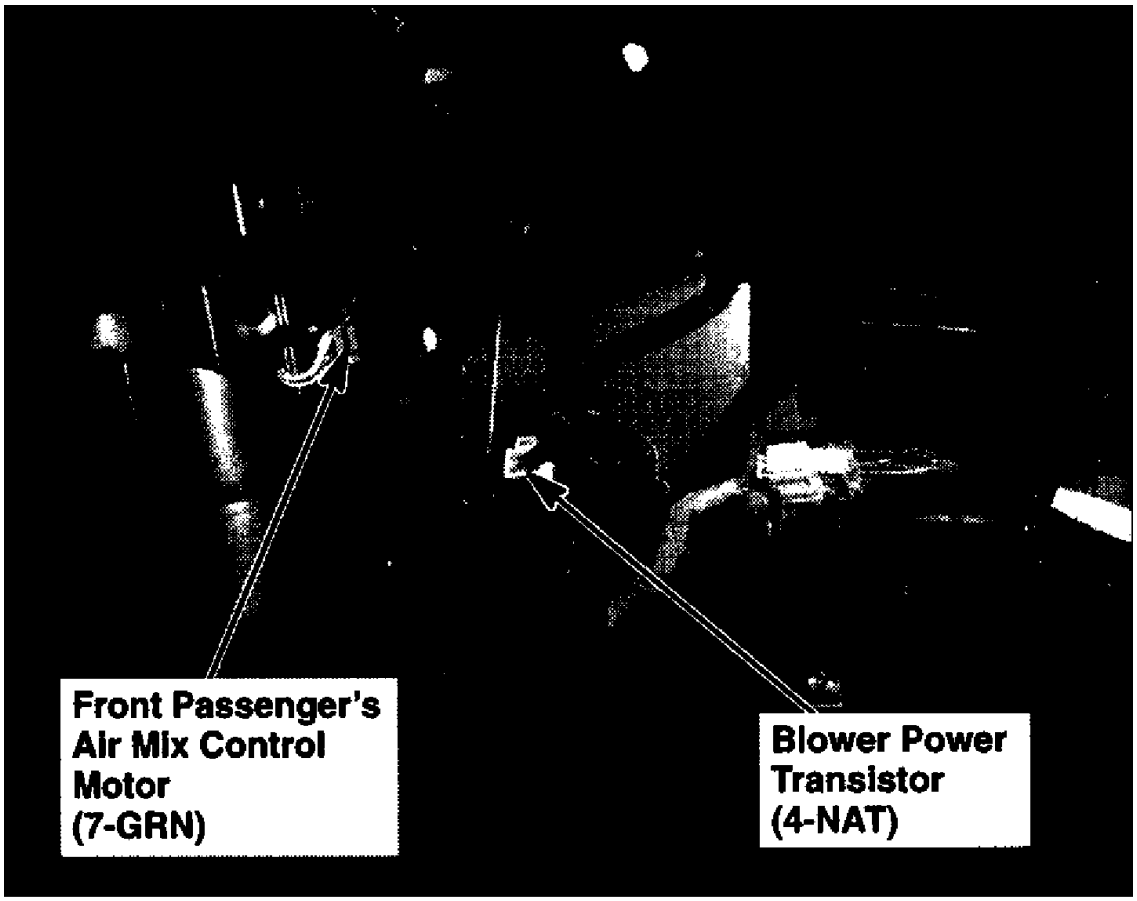
cardiagn.com



G00268140

Fig. 66: Under Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

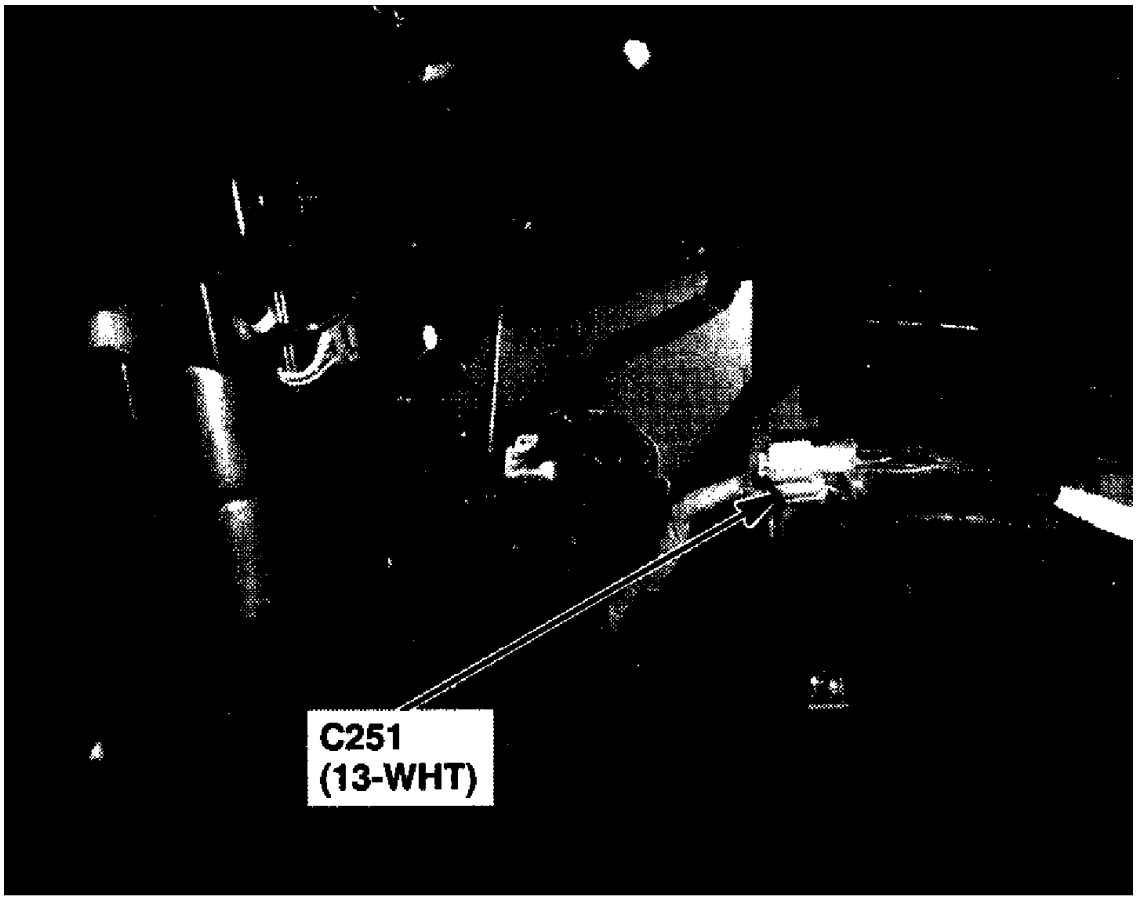
cardiagn.com



G00268141

Fig. 67: Under Right Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

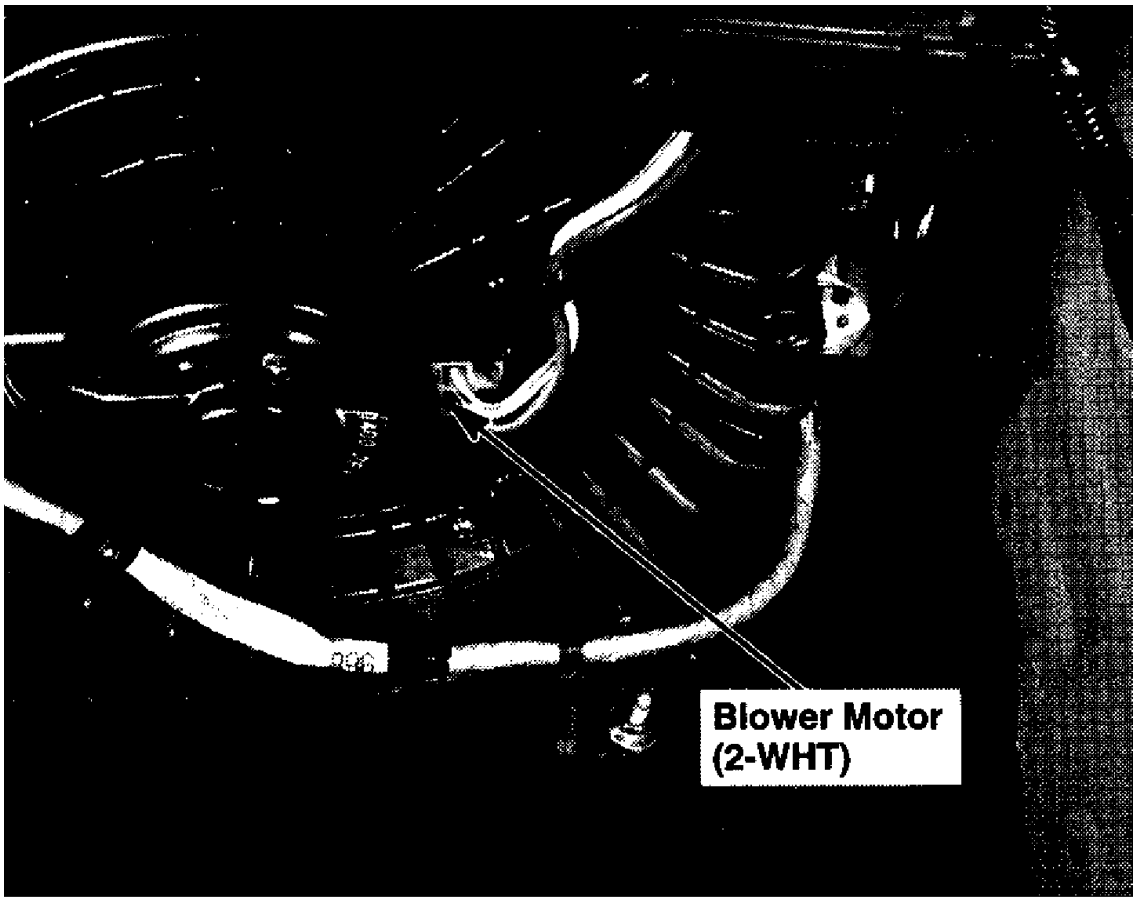
cardiagn.com



G00268142

Fig. 68: Under Right Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

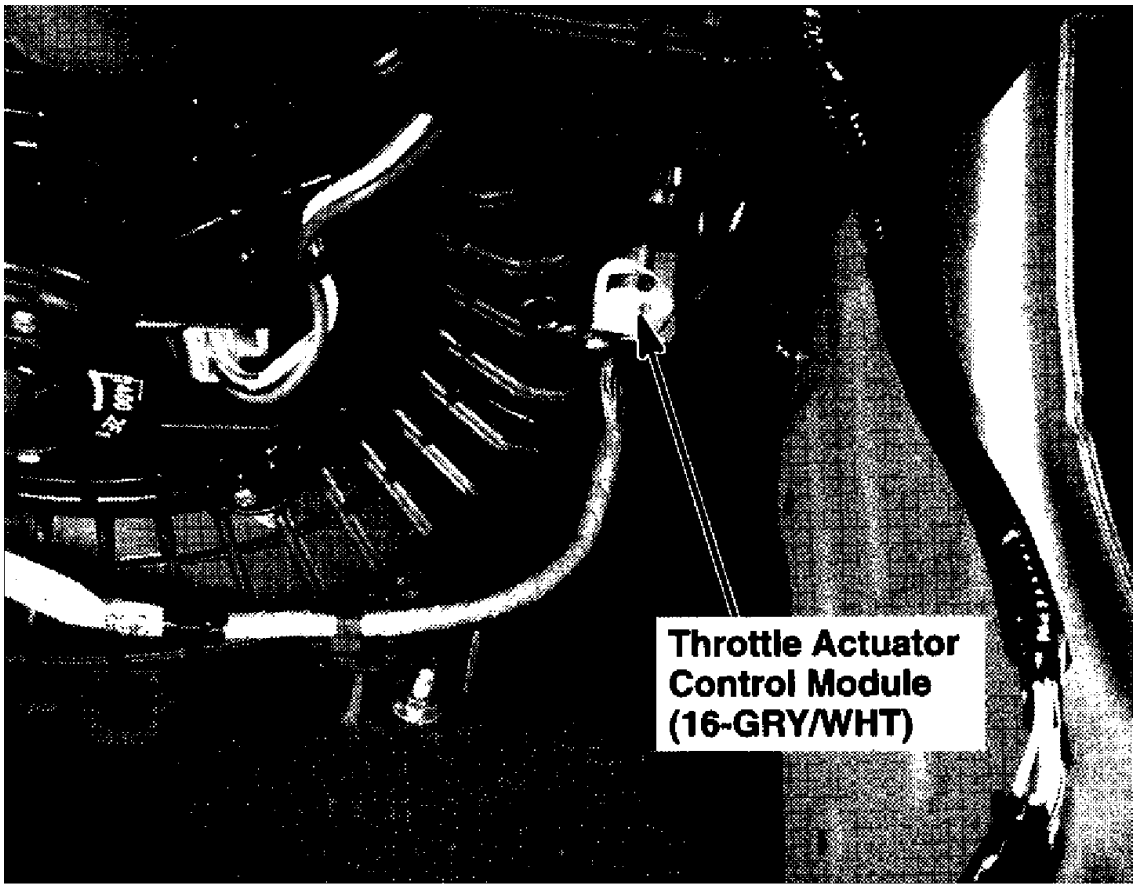
cardiagn.com



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Fig. 69: Under Right Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

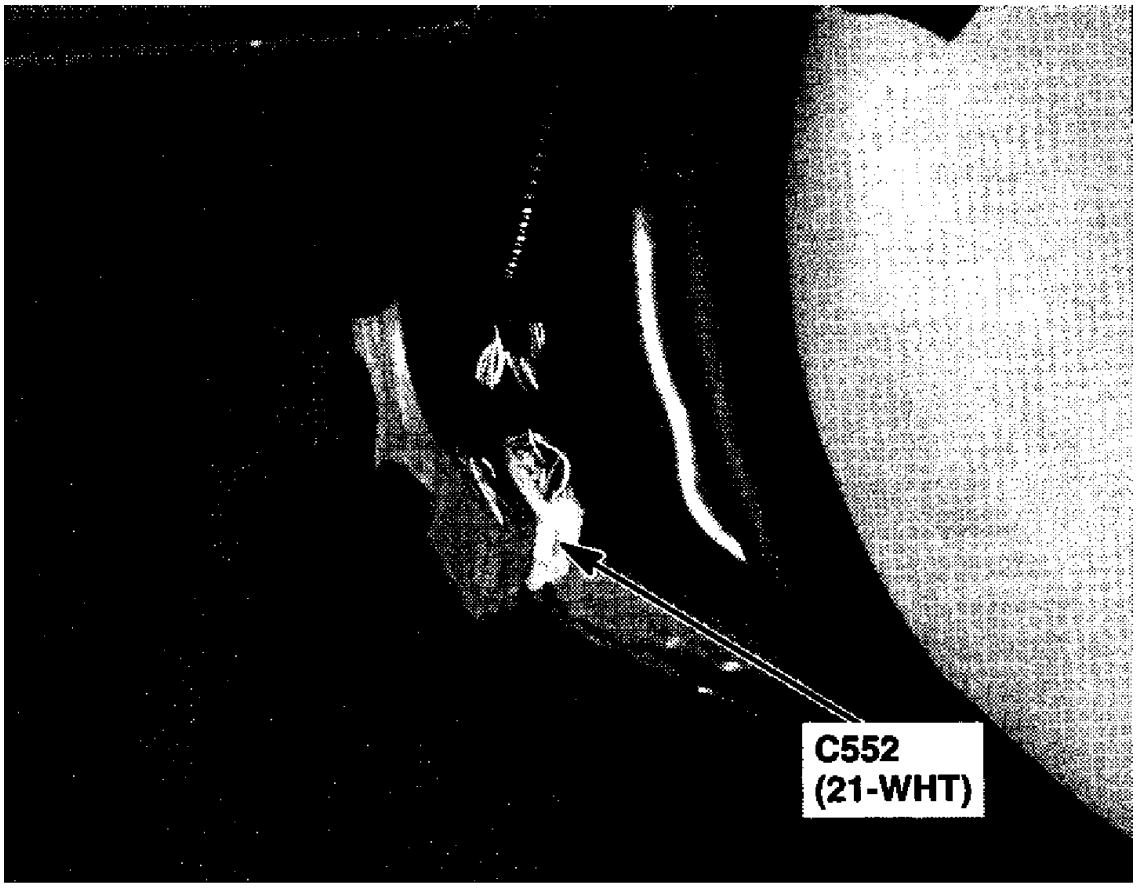
cardiagn.com



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Fig. 70: Under Right Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

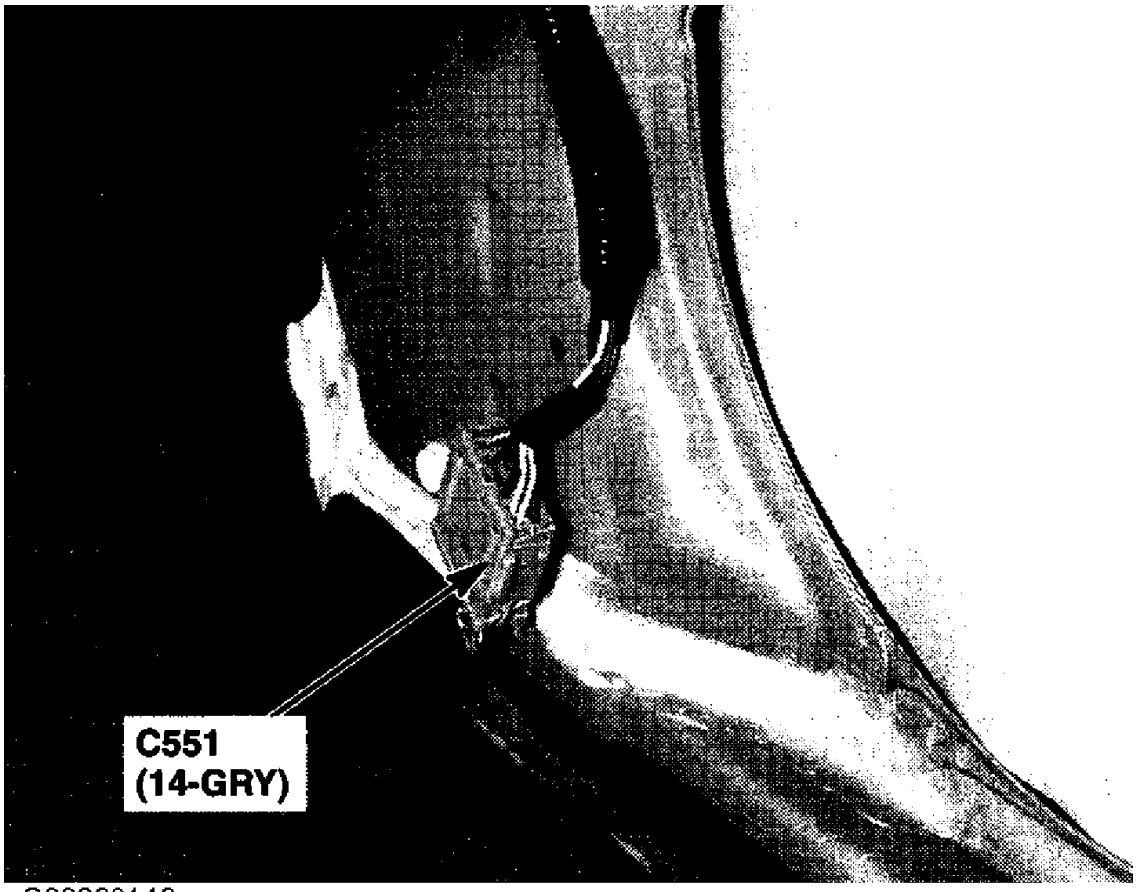
cardiagn.com



G00268145

Fig. 71: Behind Right Kick Panel (W/Navigation)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268146

Fig. 72: Behind Right Kick Panel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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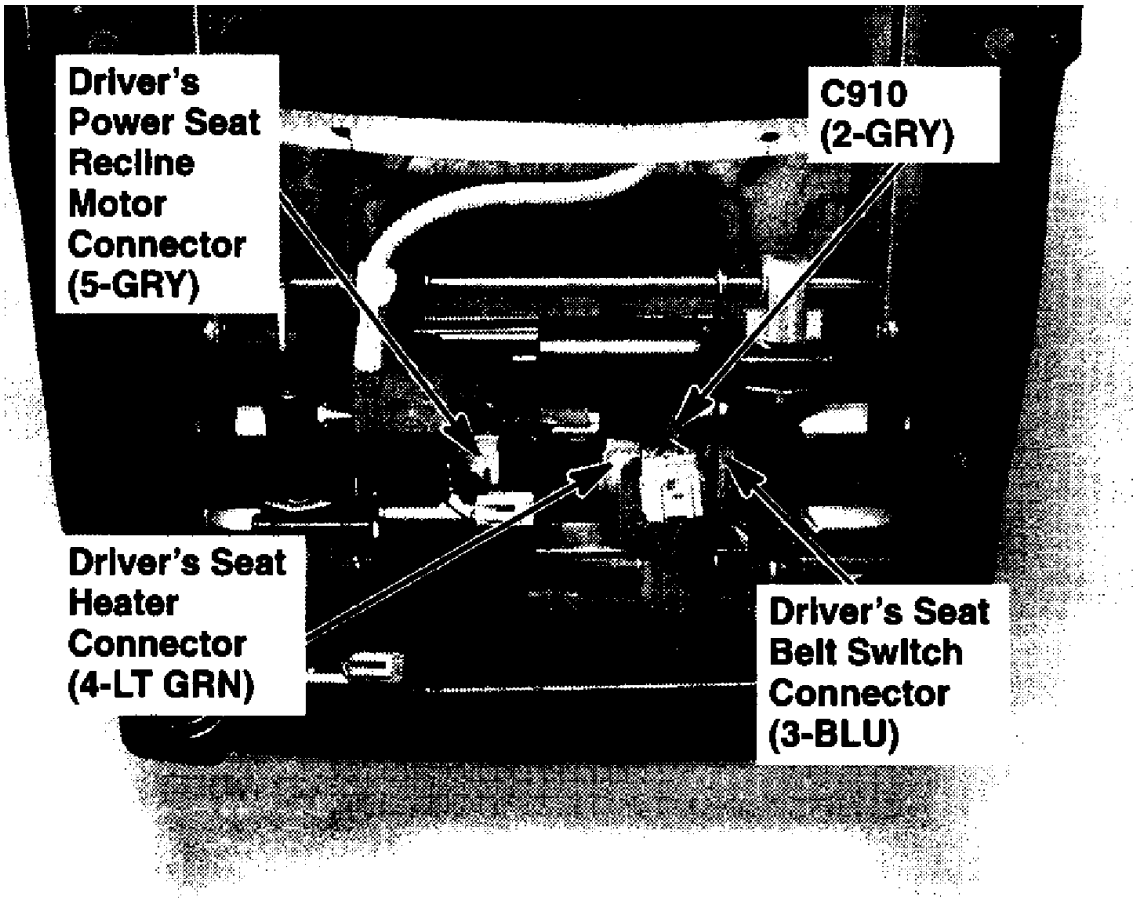


Fig. 73: Under Driver's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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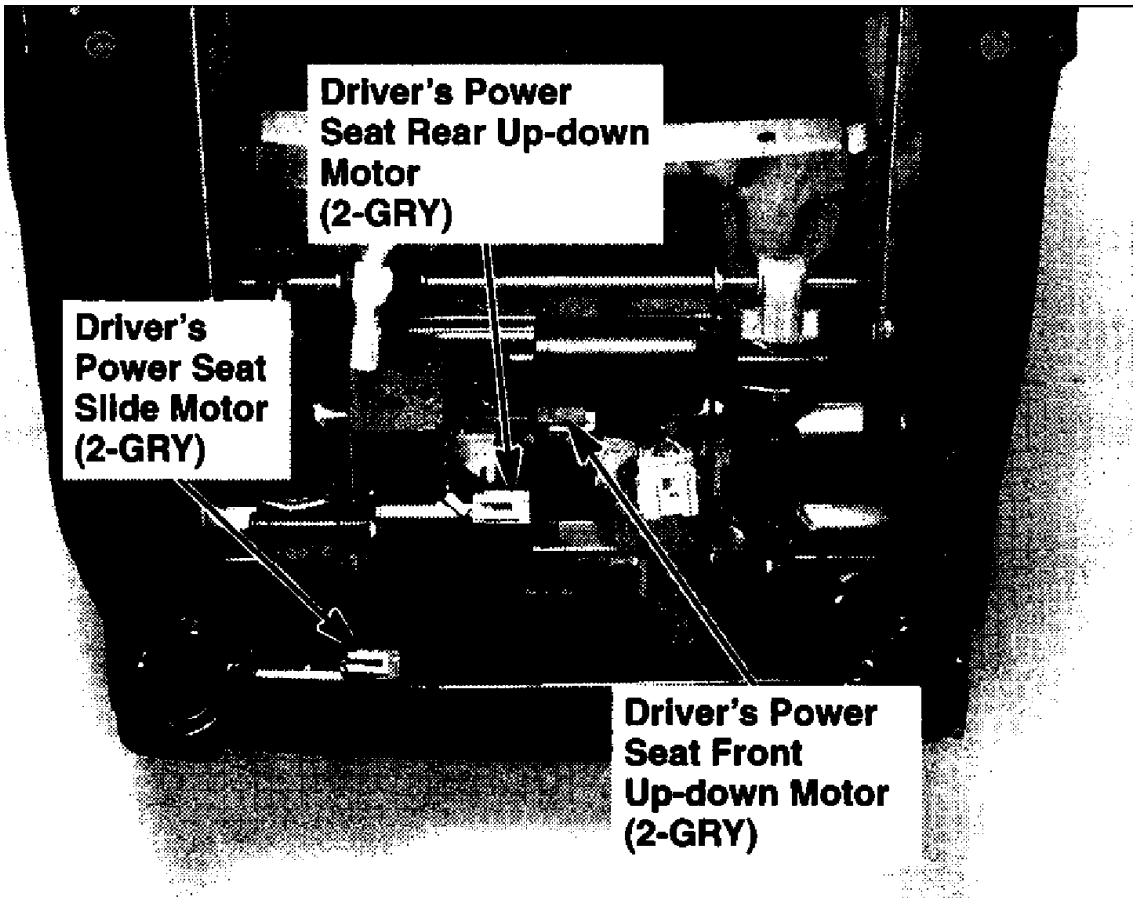
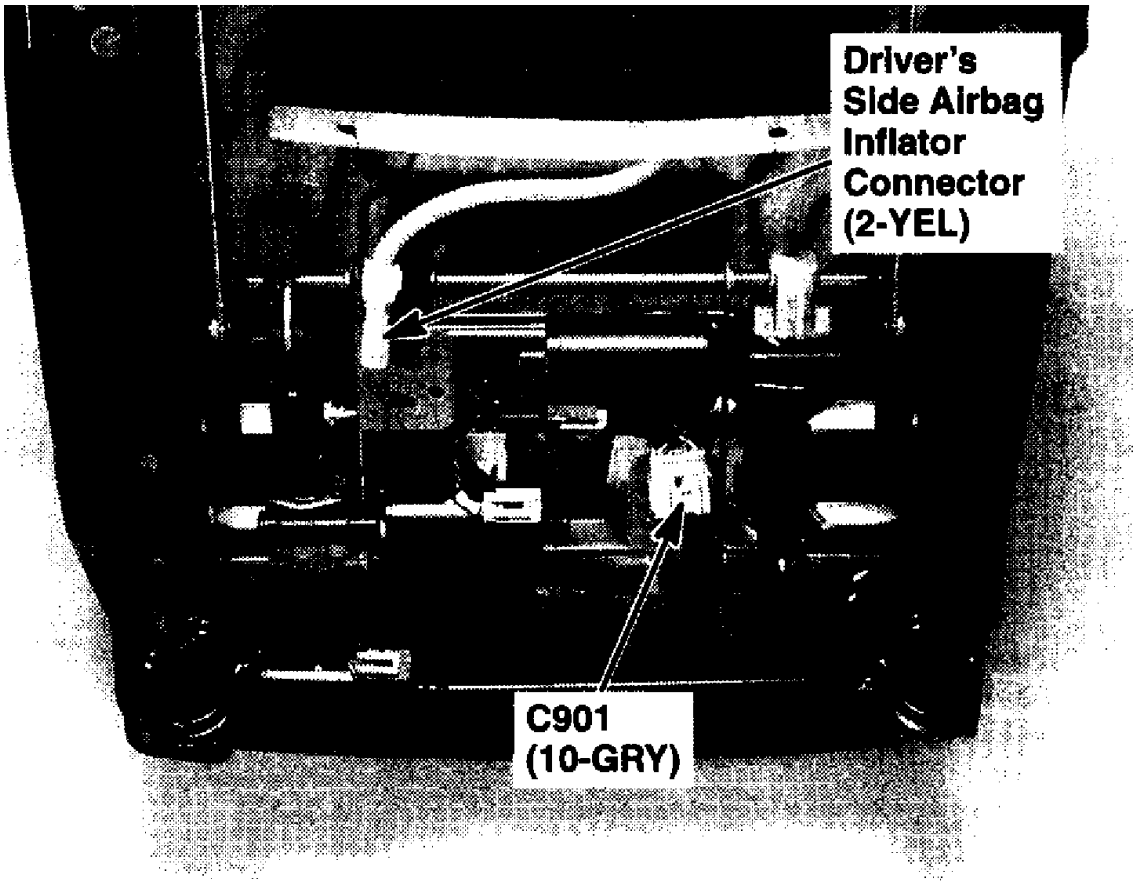


Fig. 74: Under Driver's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

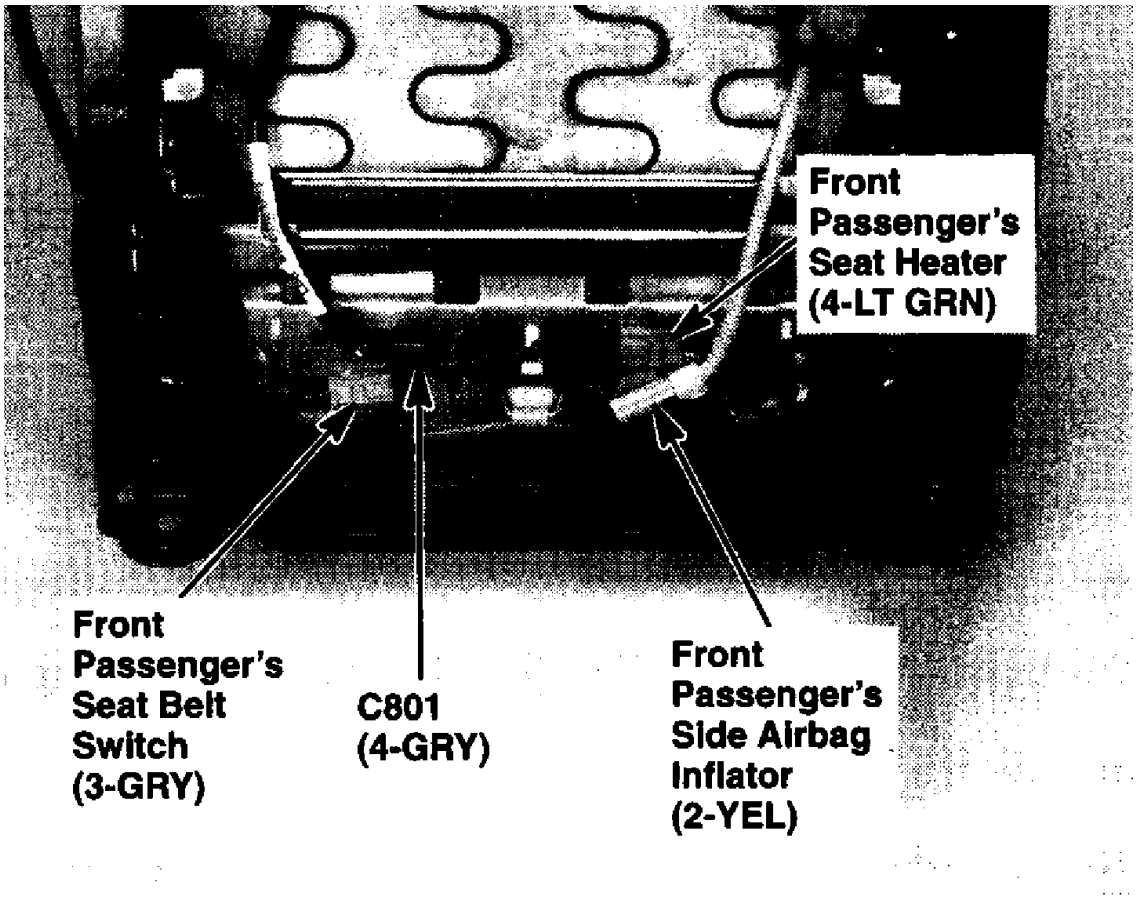
cardiagn.com



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Fig. 75: Under Driver's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

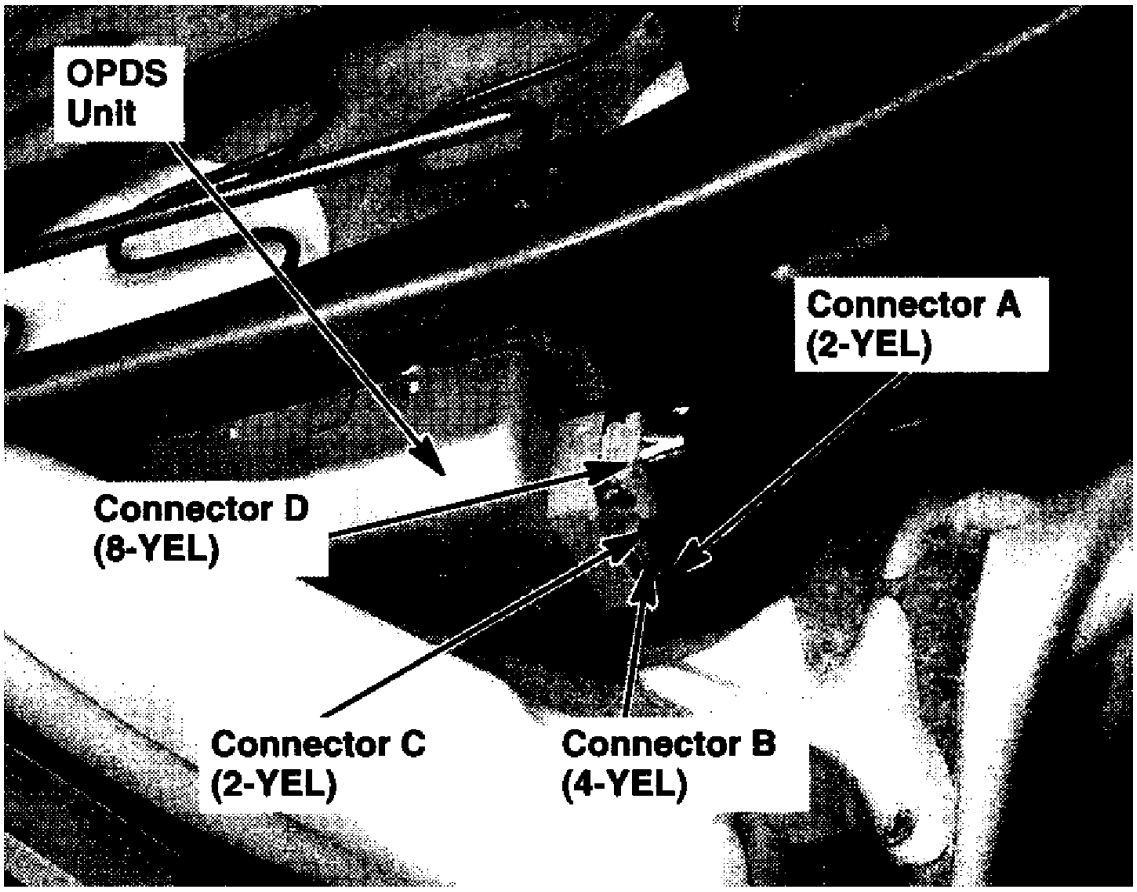
cardiagn.com



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Fig. 76: Under Front Passenger's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

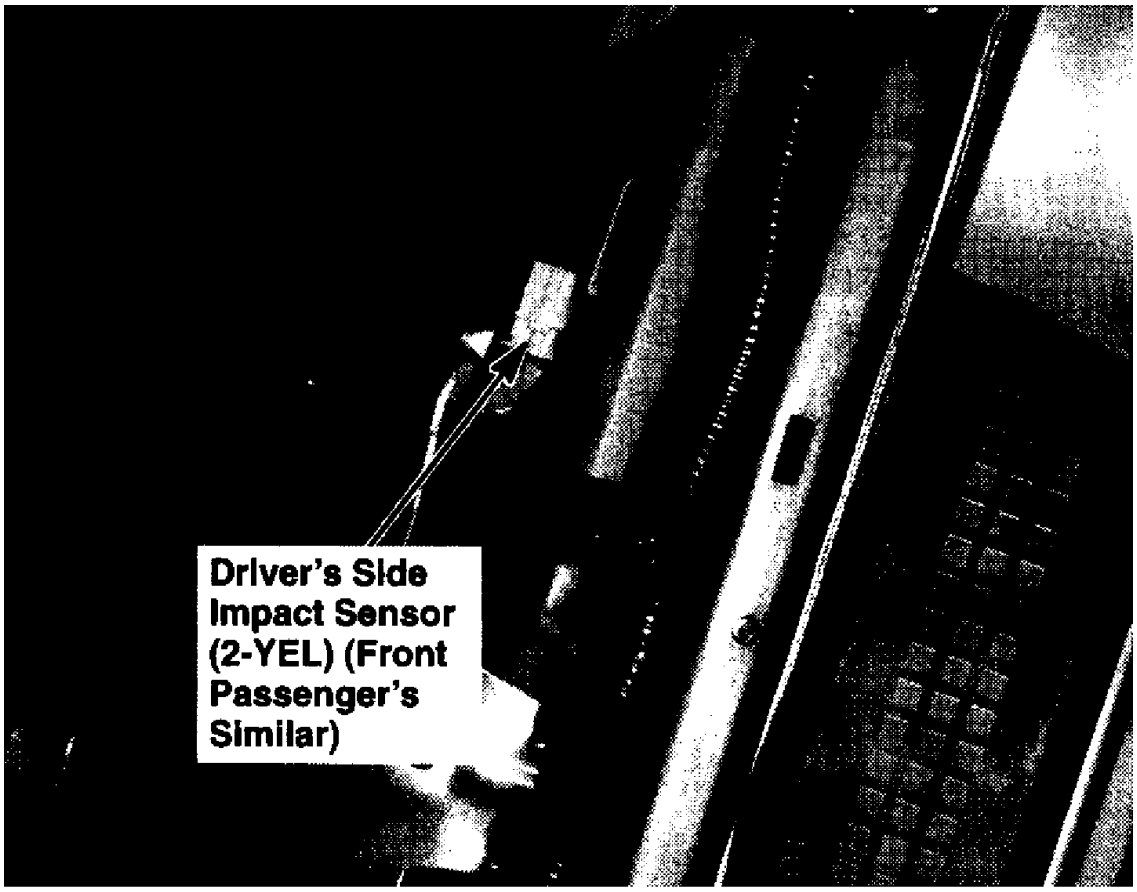
cardiagn.com



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Fig. 77: Under Front Passenger's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

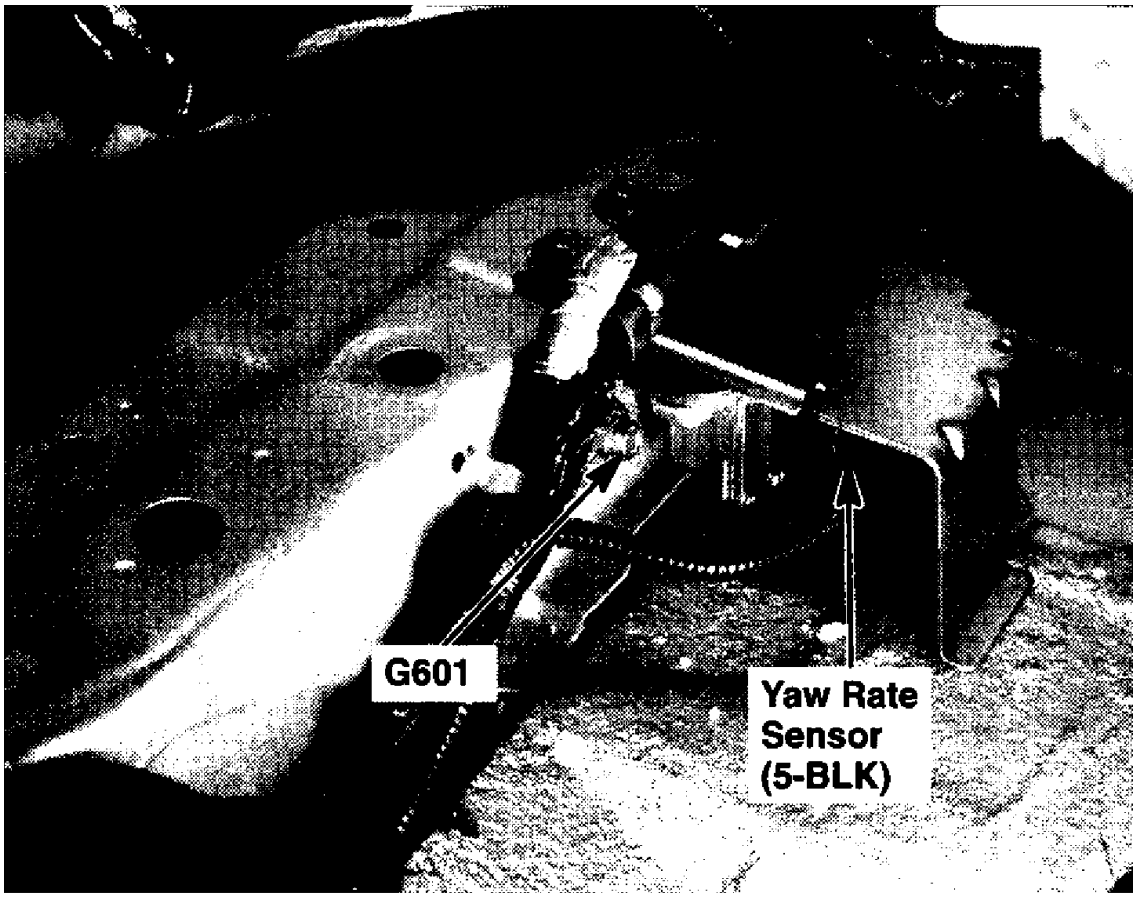
cardiagn.com



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Fig. 78: Left & Right Side Of Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

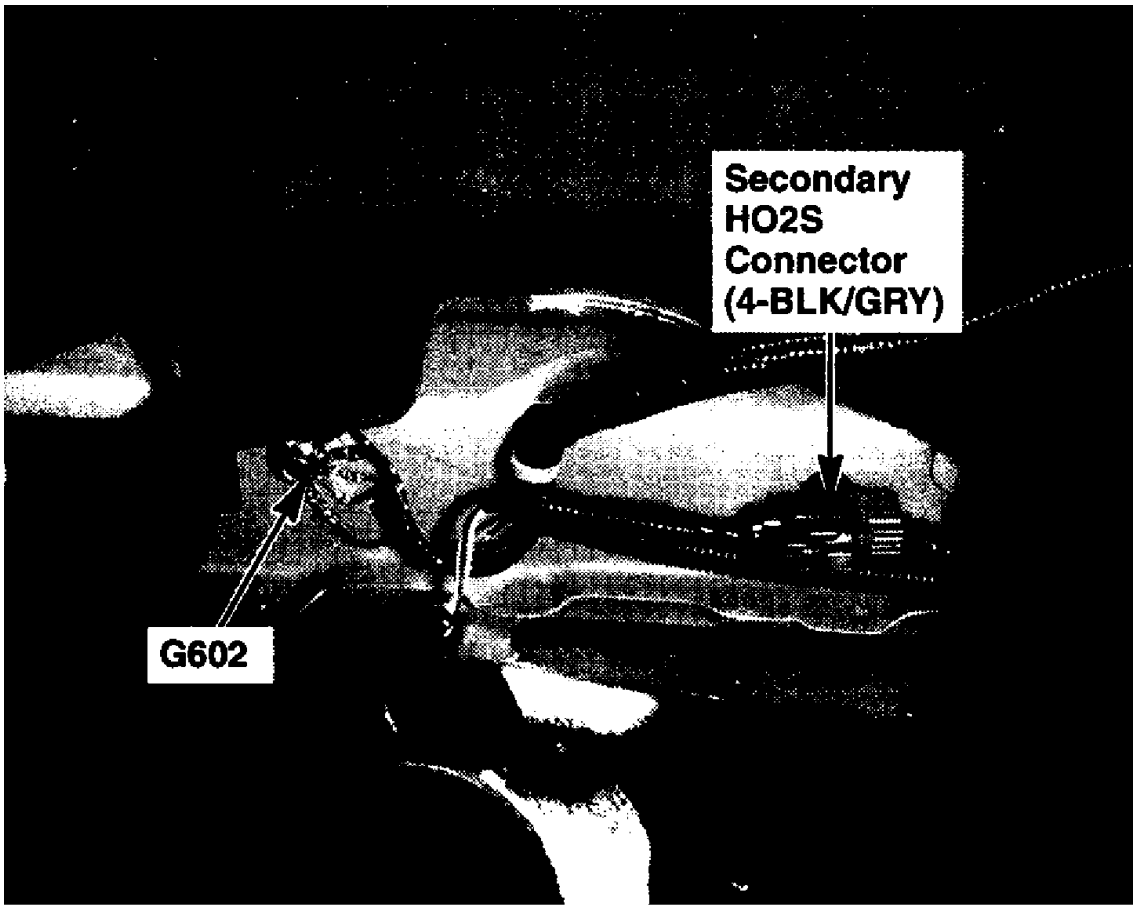
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Fig. 79: Left Side Of Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

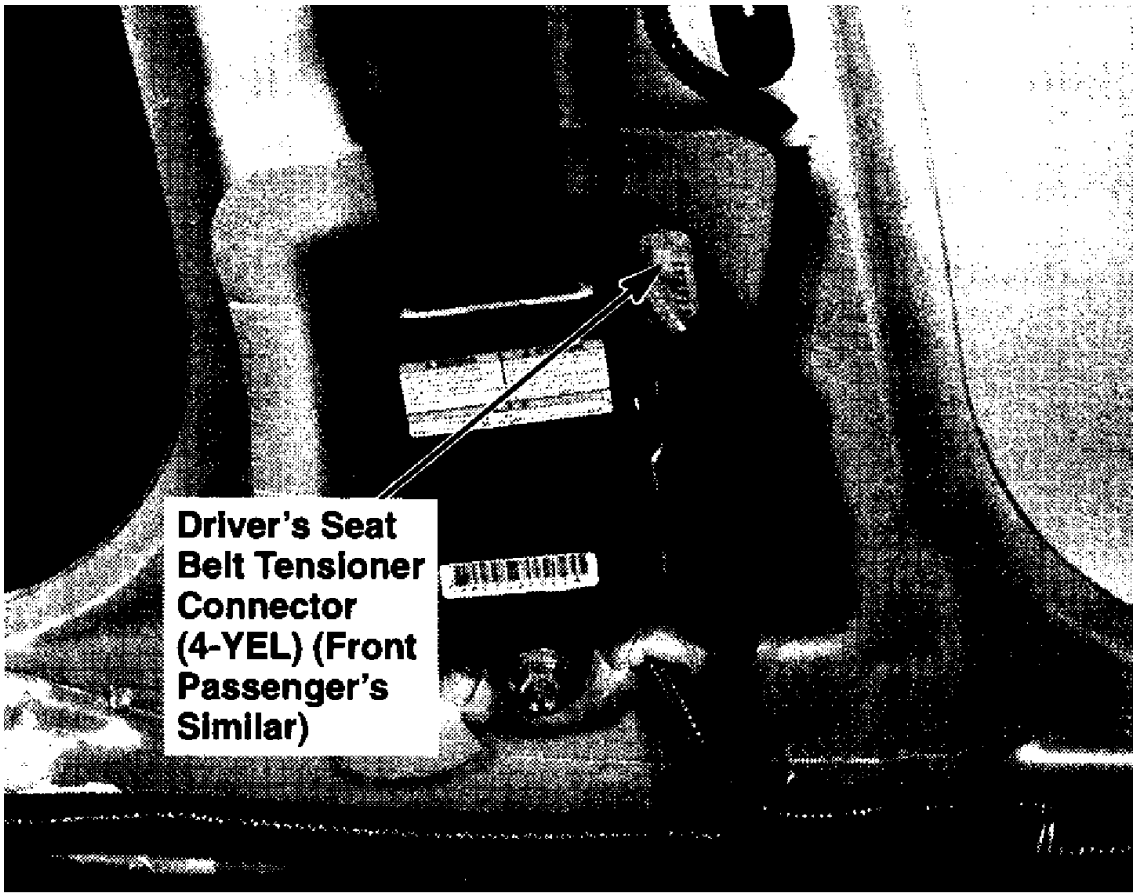
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Fig. 80: Right Side Of Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268155

Fig. 81: Left & Right "B" Pillars
Courtesy of AMERICAN HONDA MOTOR CO., INC.

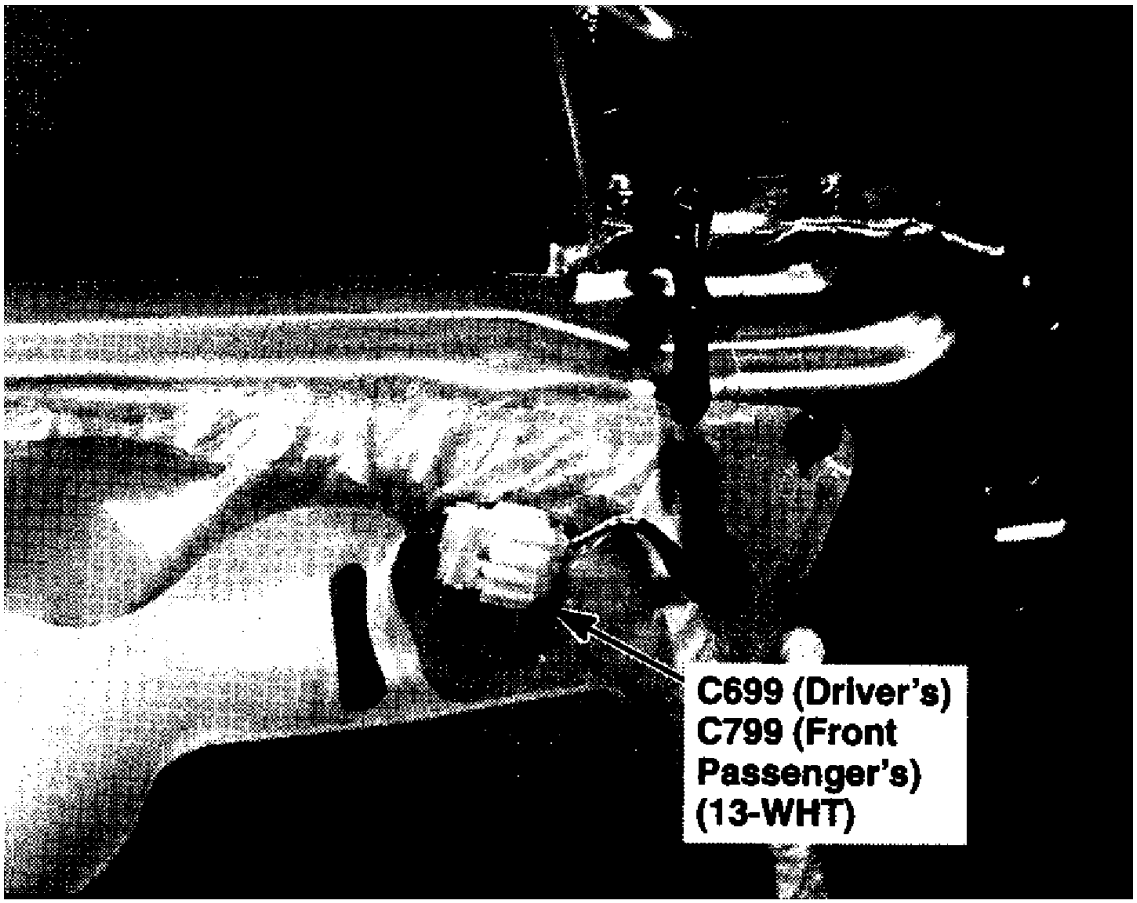
cardiagn.com



G00268156

Fig. 82: Left & Right "B" Pillars
Courtesy of AMERICAN HONDA MOTOR CO., INC.

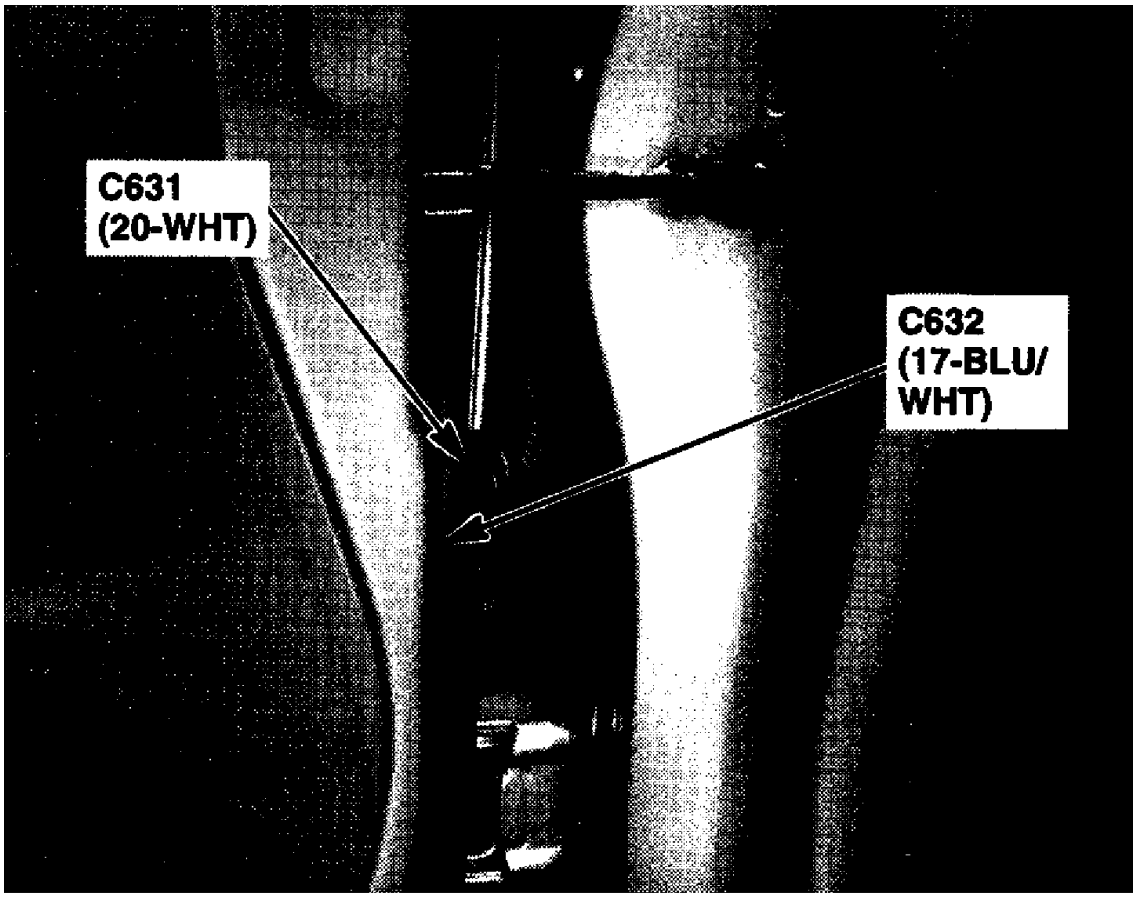
cardiagn.com



G00268157

Fig. 83: Left & Right Front Doors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

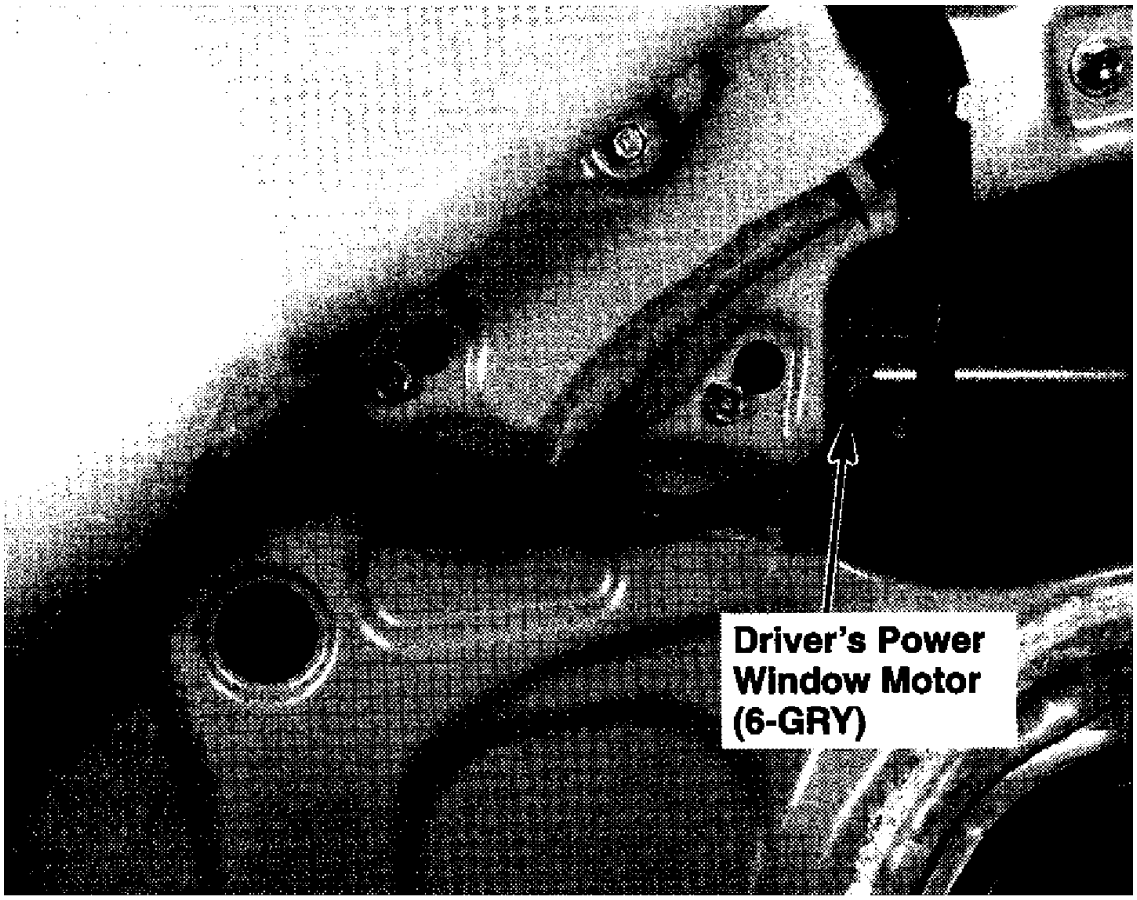
cardiagn.com



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Fig. 84: Driver's Door
Courtesy of AMERICAN HONDA MOTOR CO., INC.

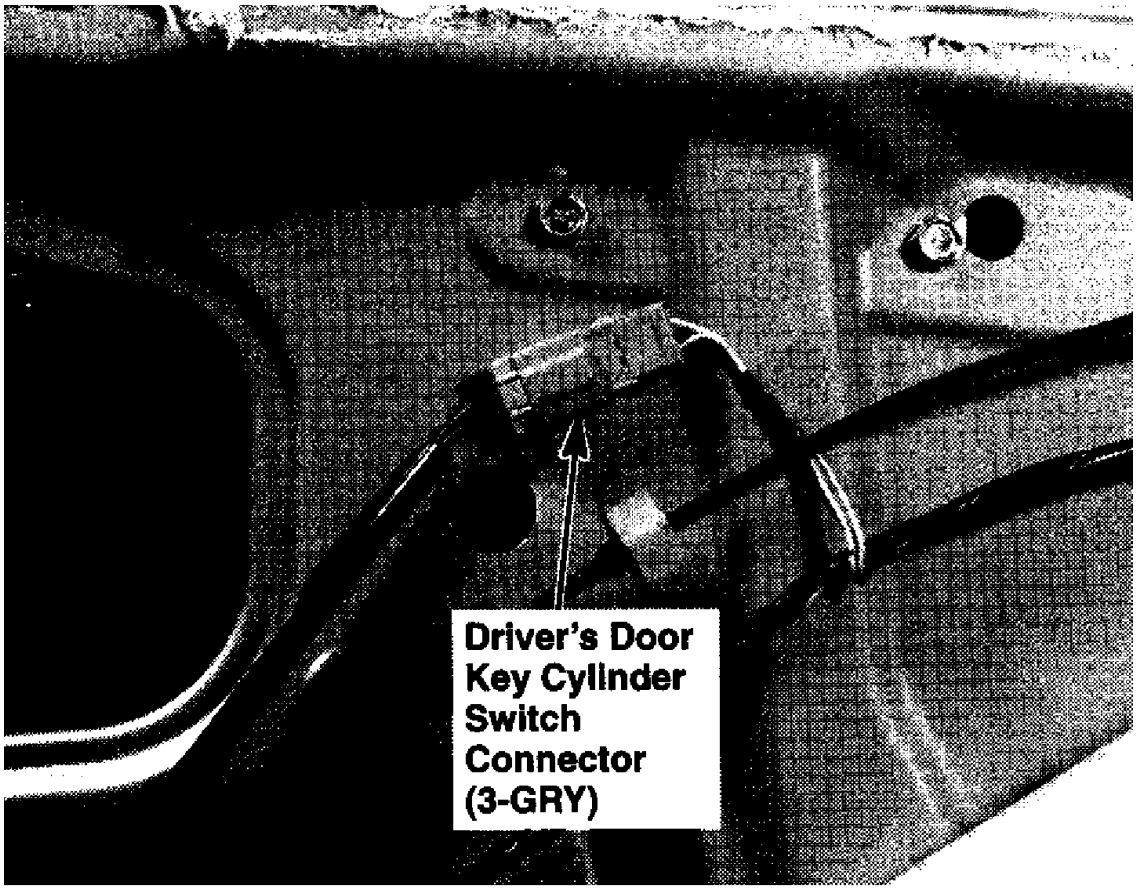
cardiagn.com



G00268159

Fig. 85: Left & Right Front Doors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

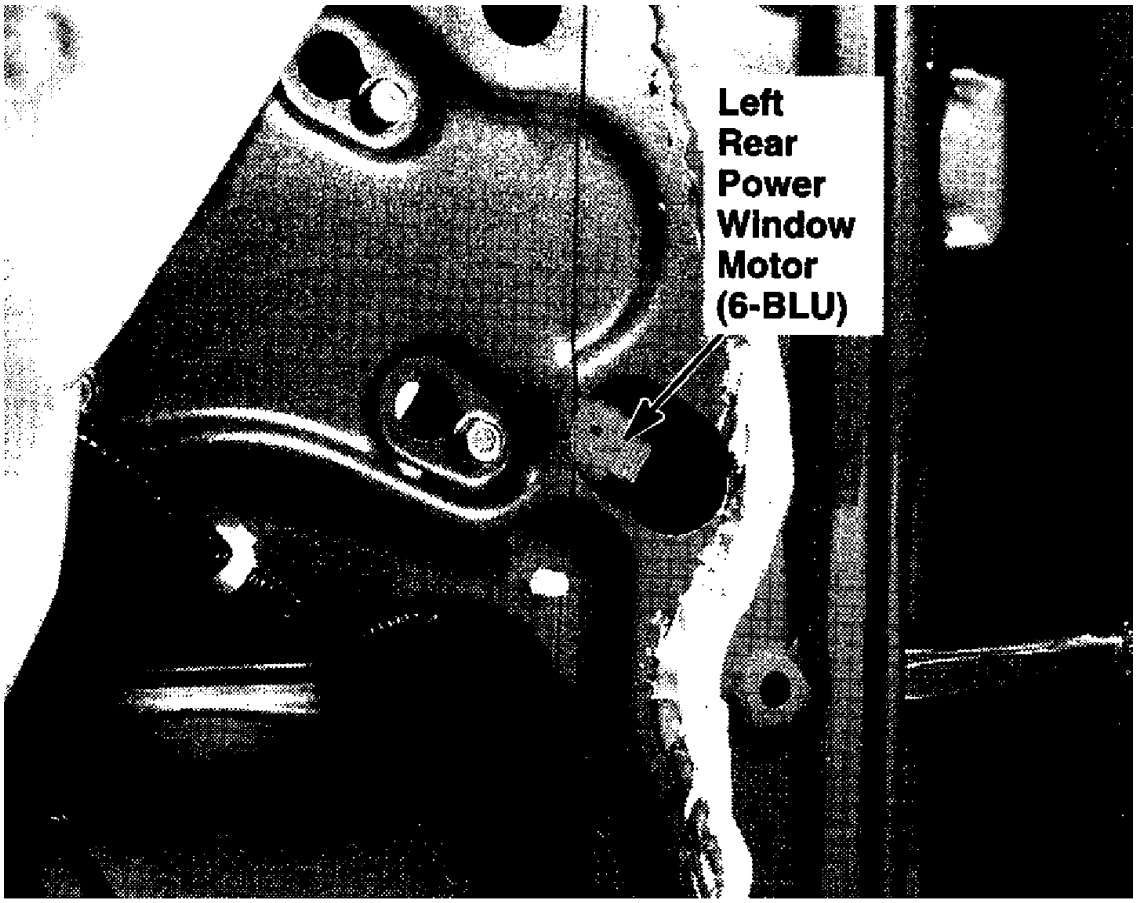
cardiagn.com



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Fig. 86: Driver's Door
Courtesy of AMERICAN HONDA MOTOR CO., INC.

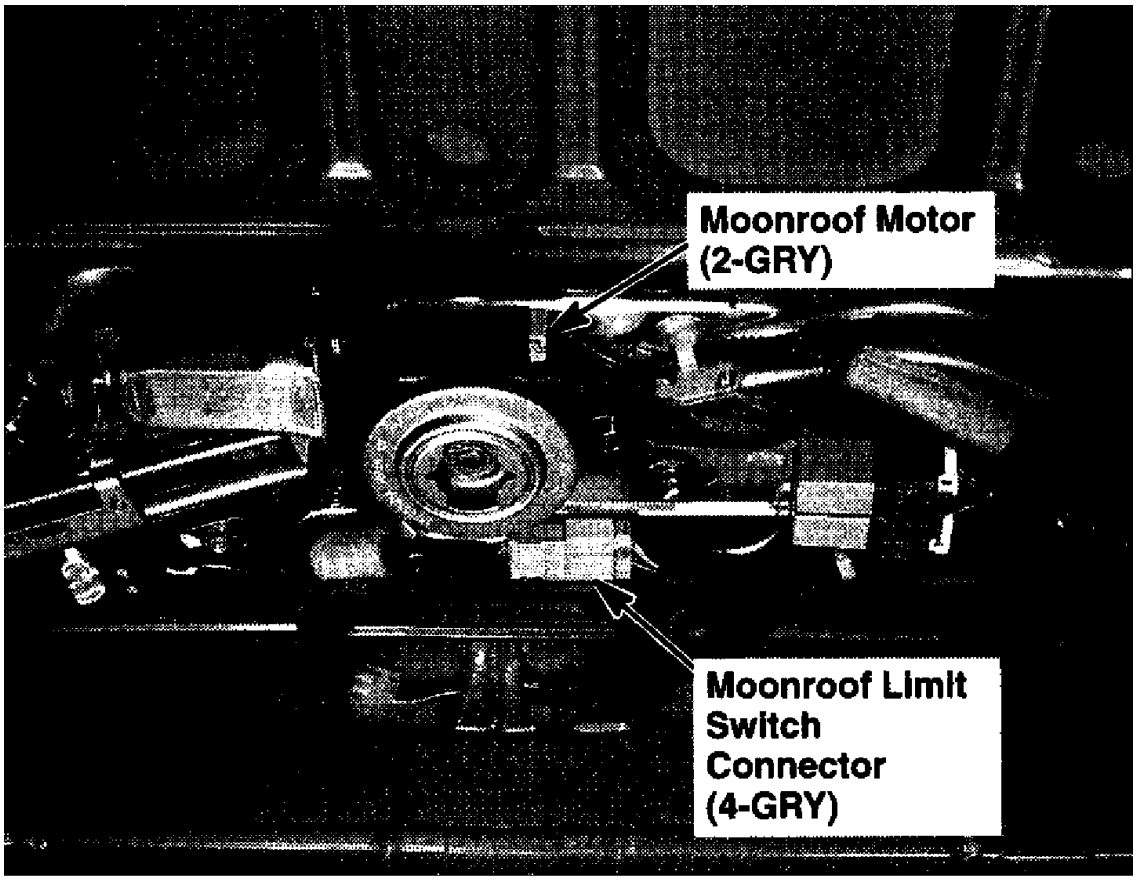
cardiagn.com



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Fig. 87: Left & Right Rear Doors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

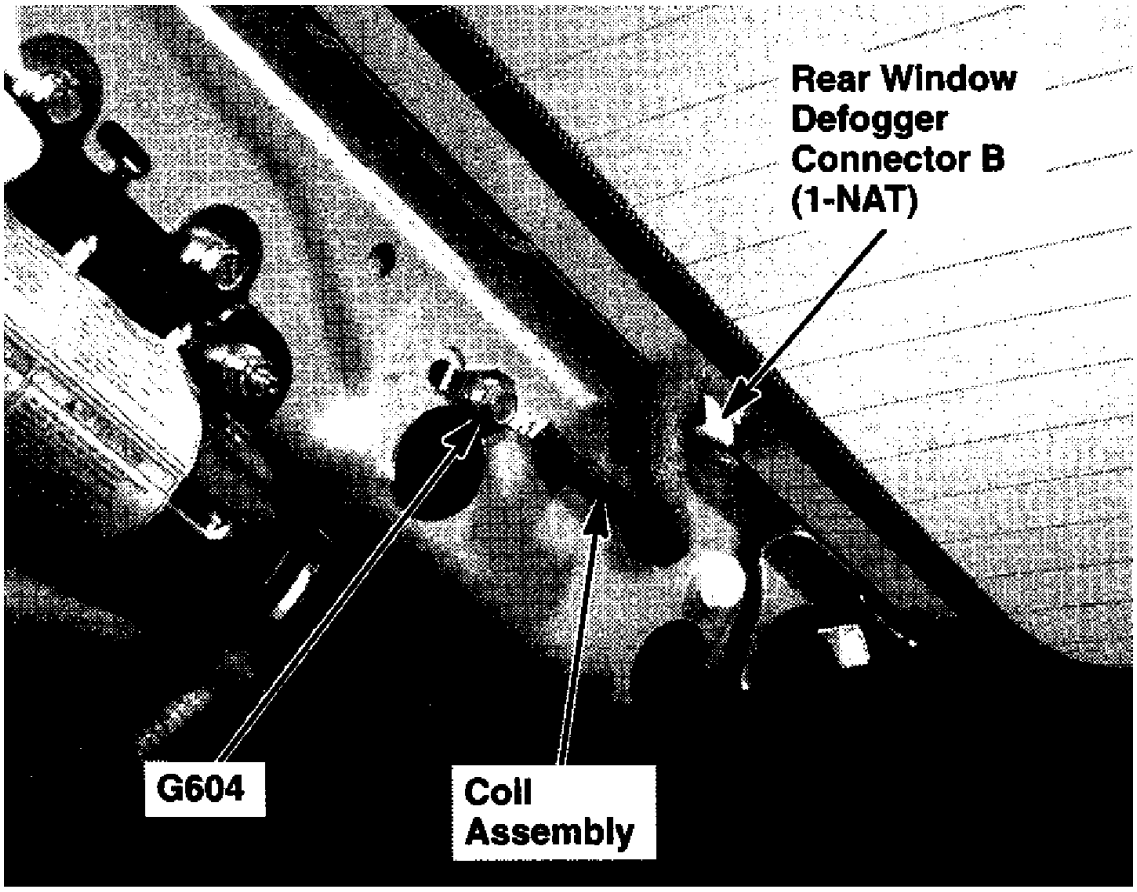
cardiagn.com



G00268163

Fig. 88: Rear Of Roof
Courtesy of AMERICAN HONDA MOTOR CO., INC.

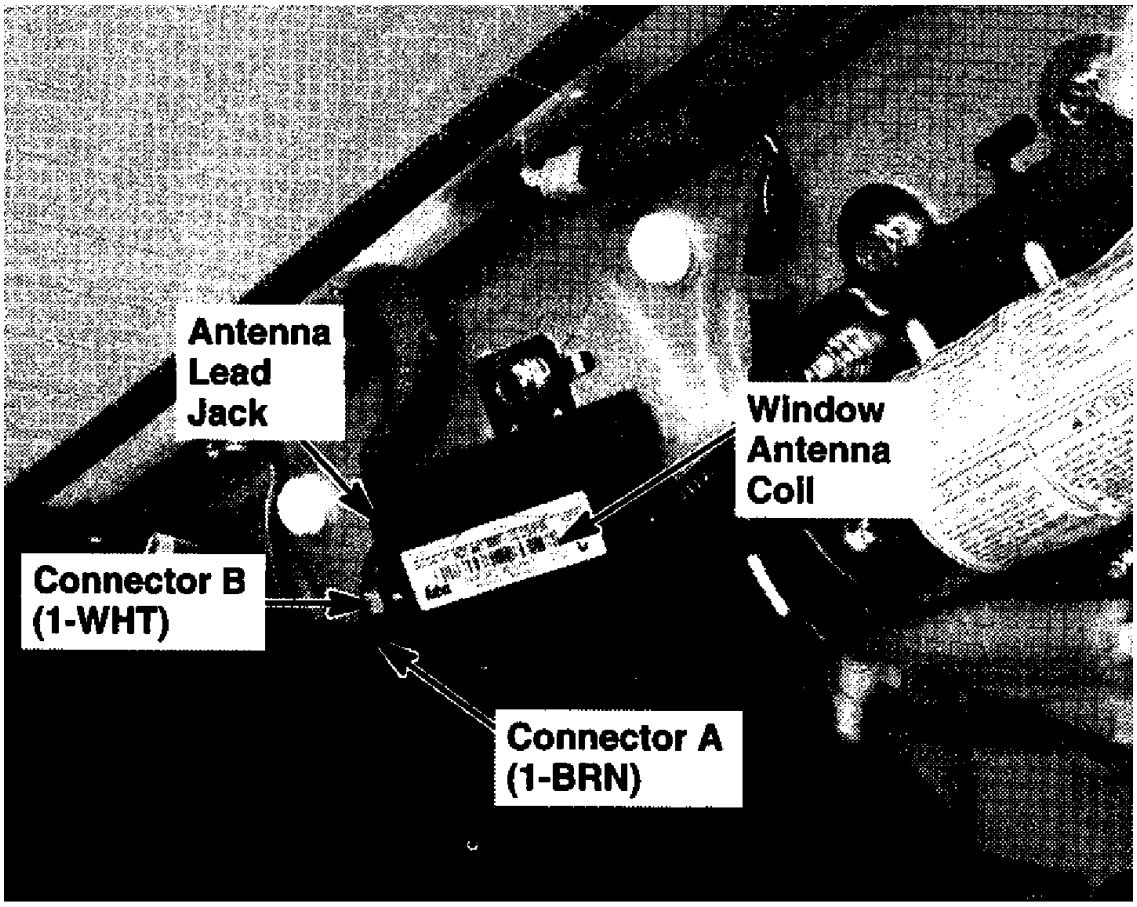
cardiagn.com



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Fig. 89: Right "C" Pillar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

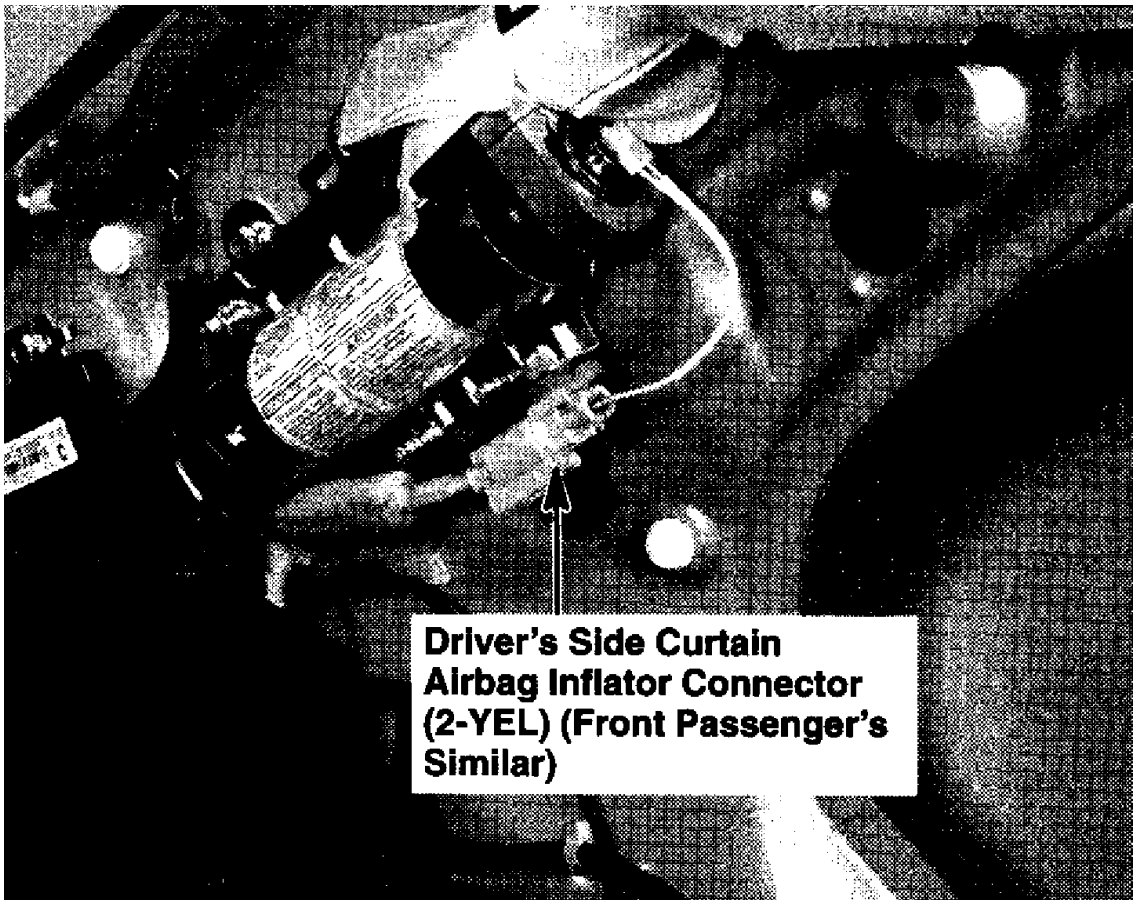
cardiagn.com



G00268166

Fig. 90: Left "C" Pillar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

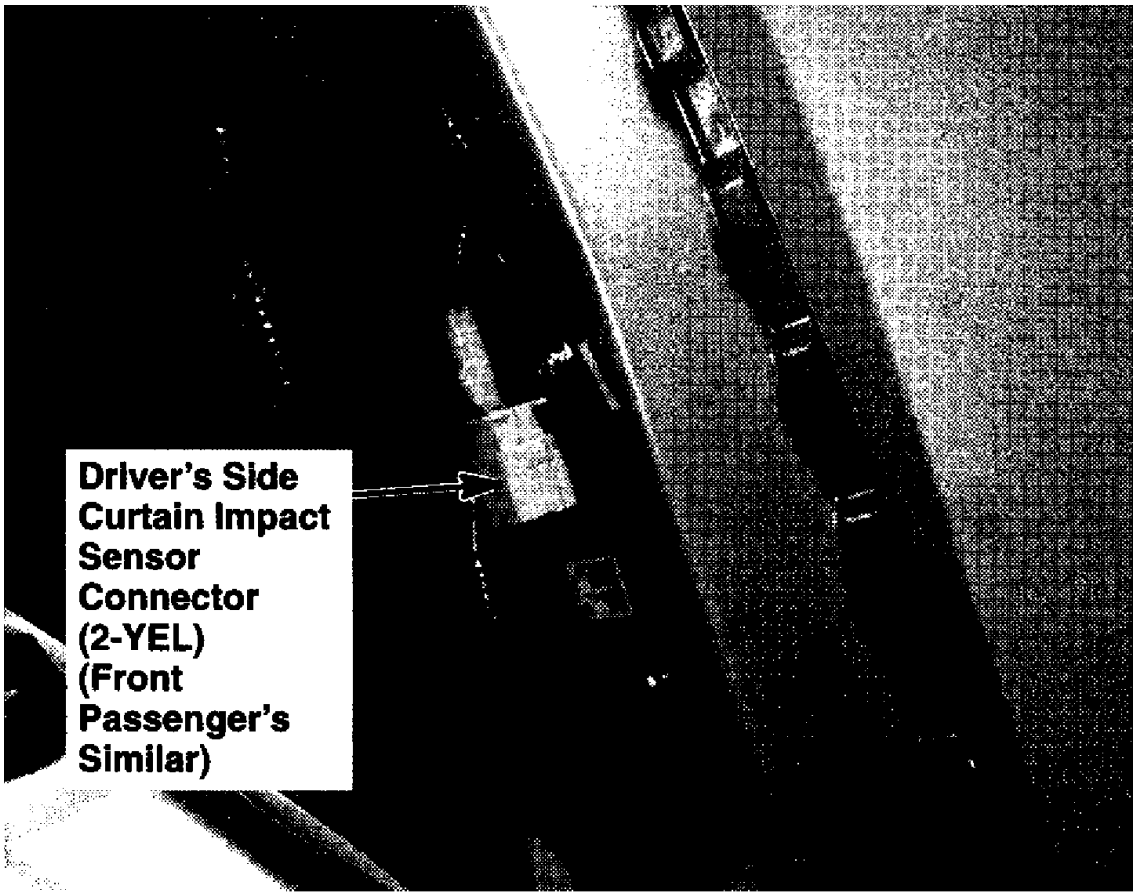
cardiagn.com



G00268167

Fig. 91: Left & Right "C" Pillar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

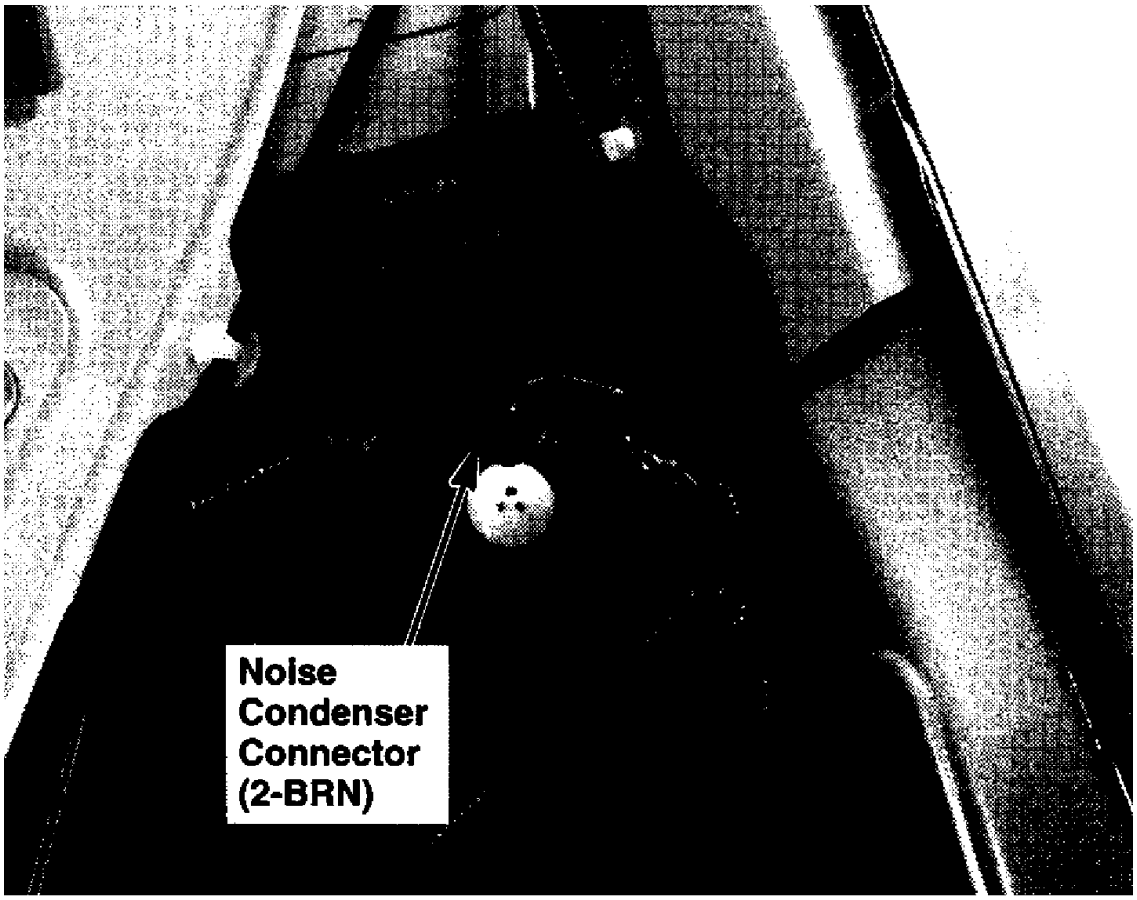
cardiagn.com



G00268168

Fig. 92: Left & Right "C" Pillar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

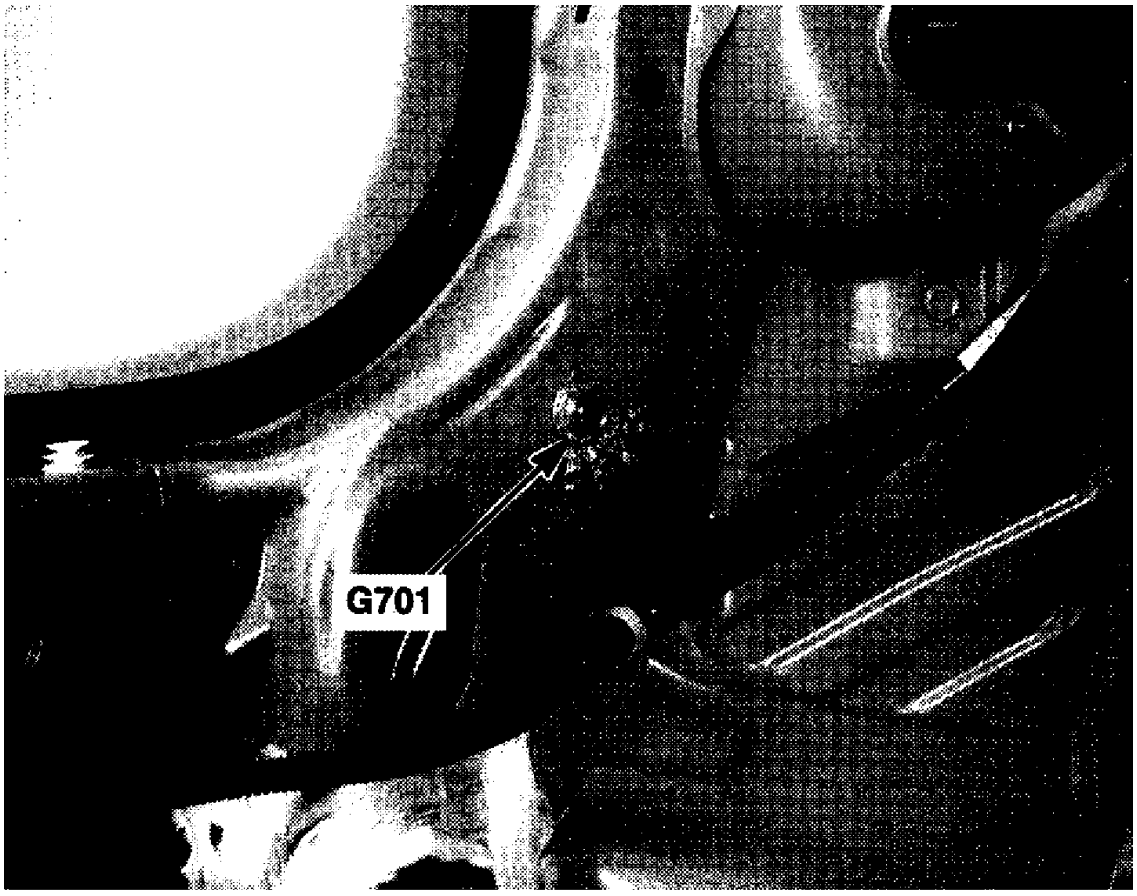
cardiagn.com



G00268169

Fig. 93: Left "C" Pillar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

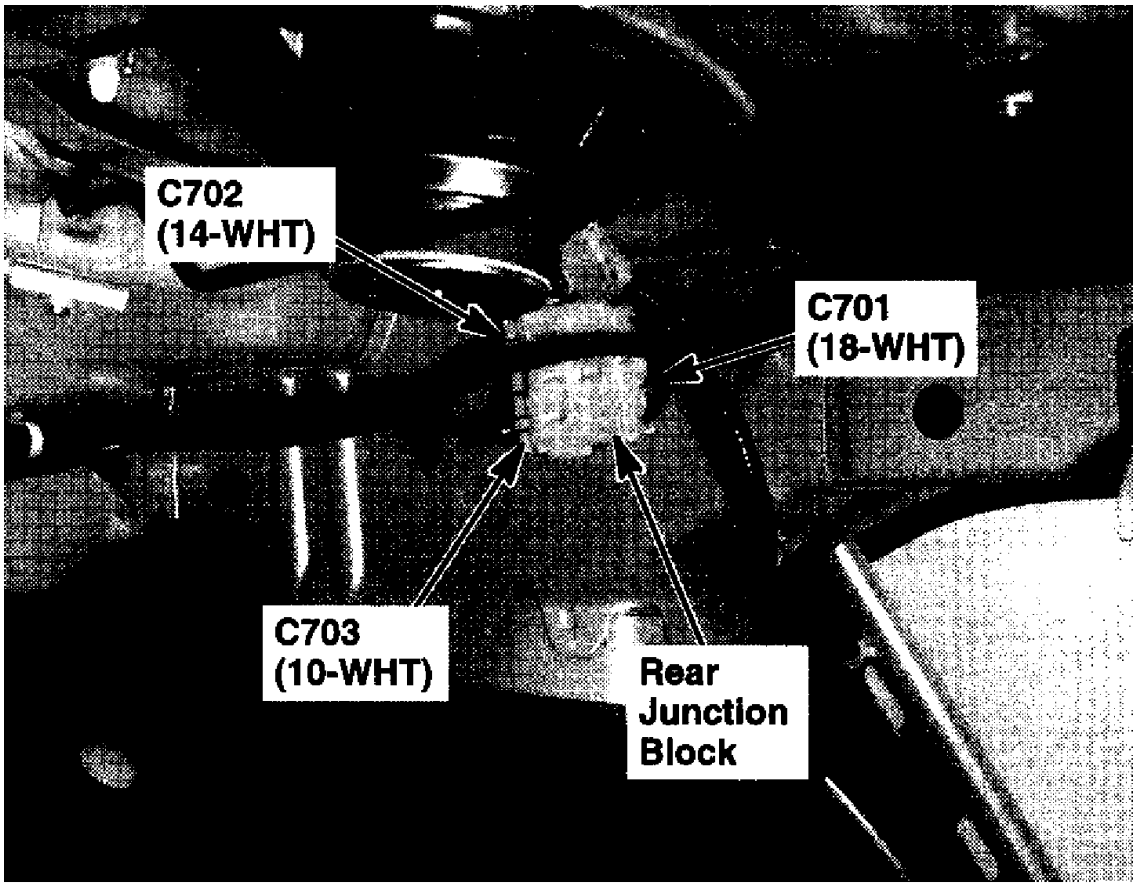
cardiagn.com



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Fig. 94: Left Side Of Trunk
Courtesy of AMERICAN HONDA MOTOR CO., INC.

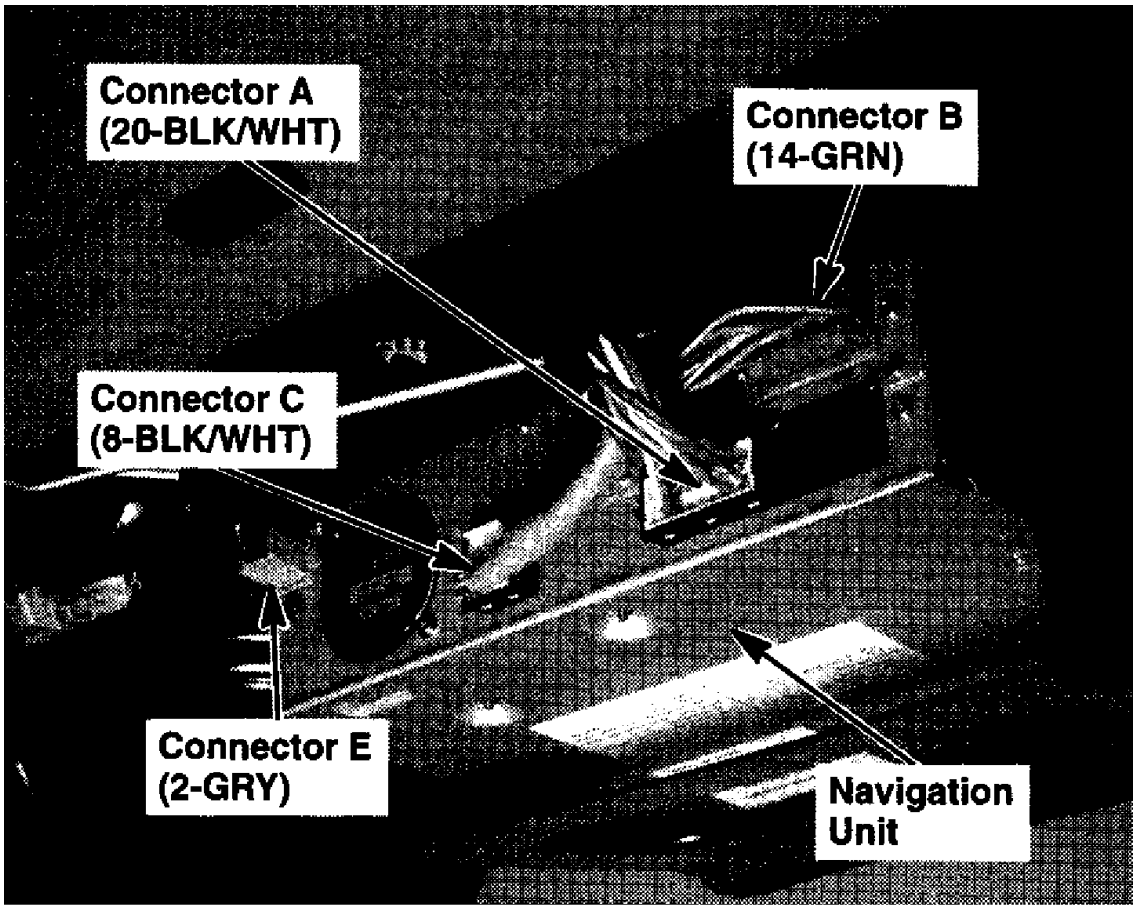
cardiagn.com



G00268171

Fig. 95: Left Front Of Trunk
Courtesy of AMERICAN HONDA MOTOR CO., INC.

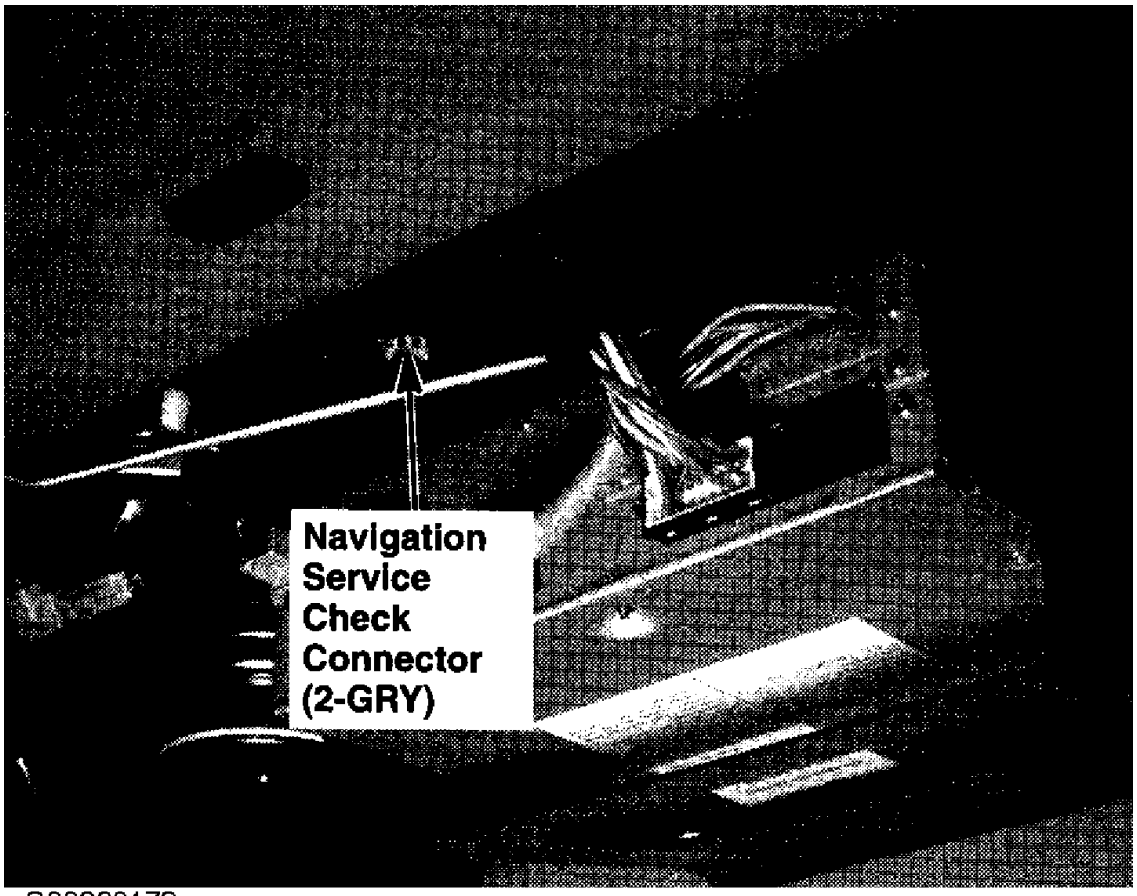
cardiagn.com



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Fig. 96: Right Side Of Rear Shelf (W/Navigation)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

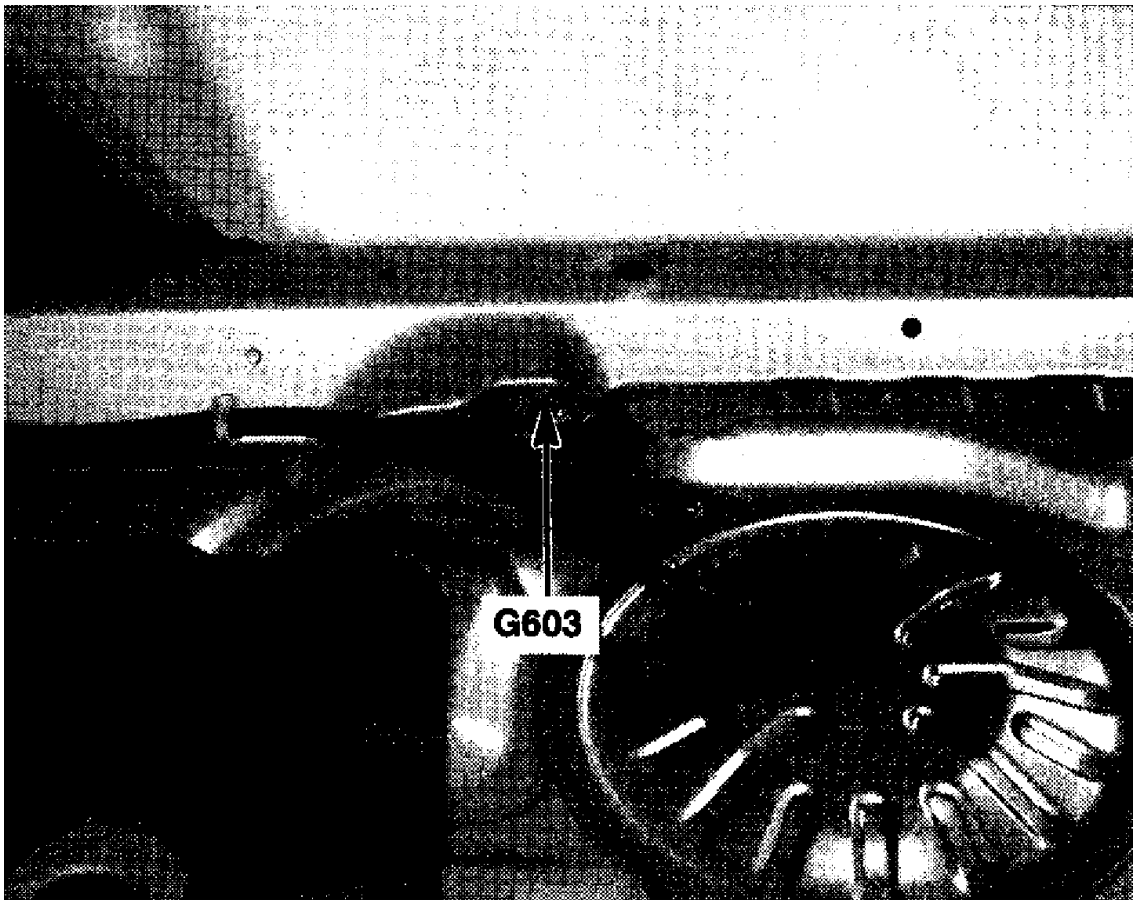
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Fig. 97: Right Side Of Rear Shelf (W/Navigation)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268174

Fig. 98: Middle Front Of Trunk
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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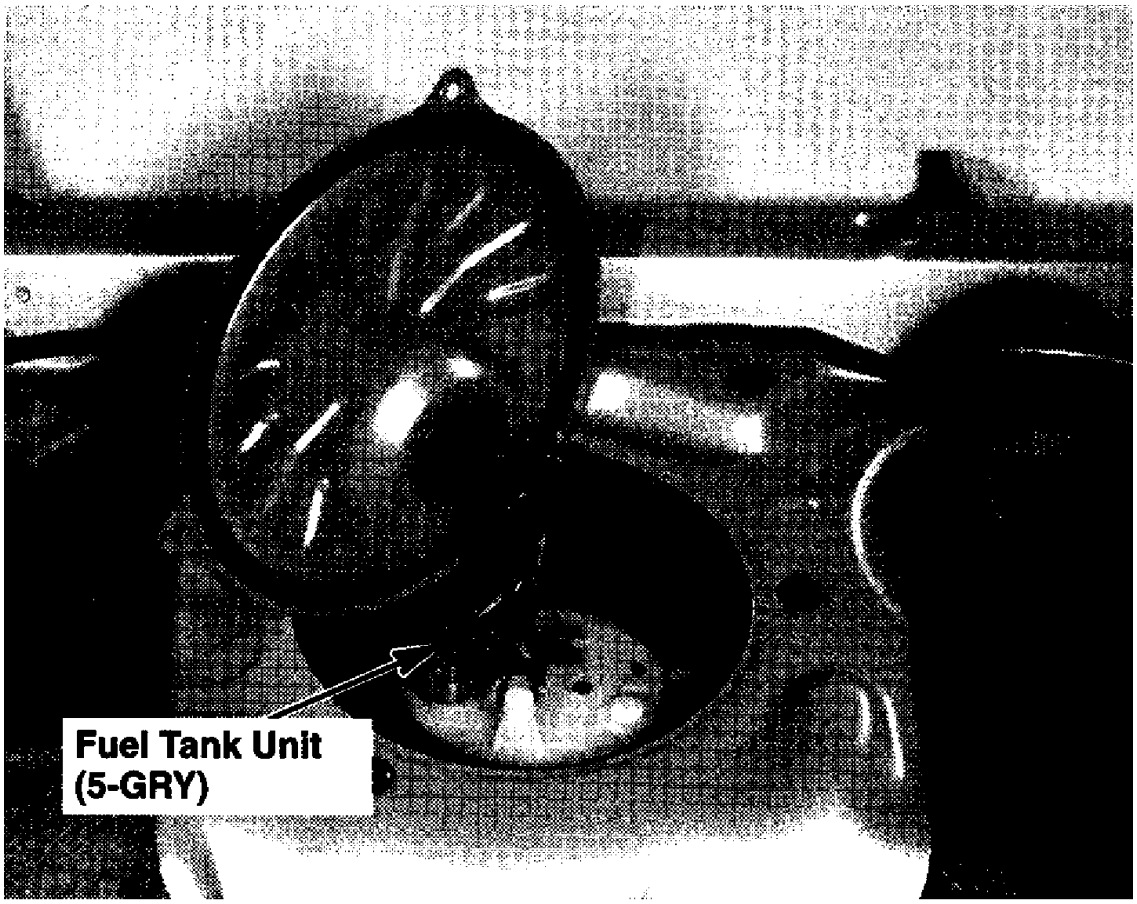


Fig. 99: Middle Front Of Trunk
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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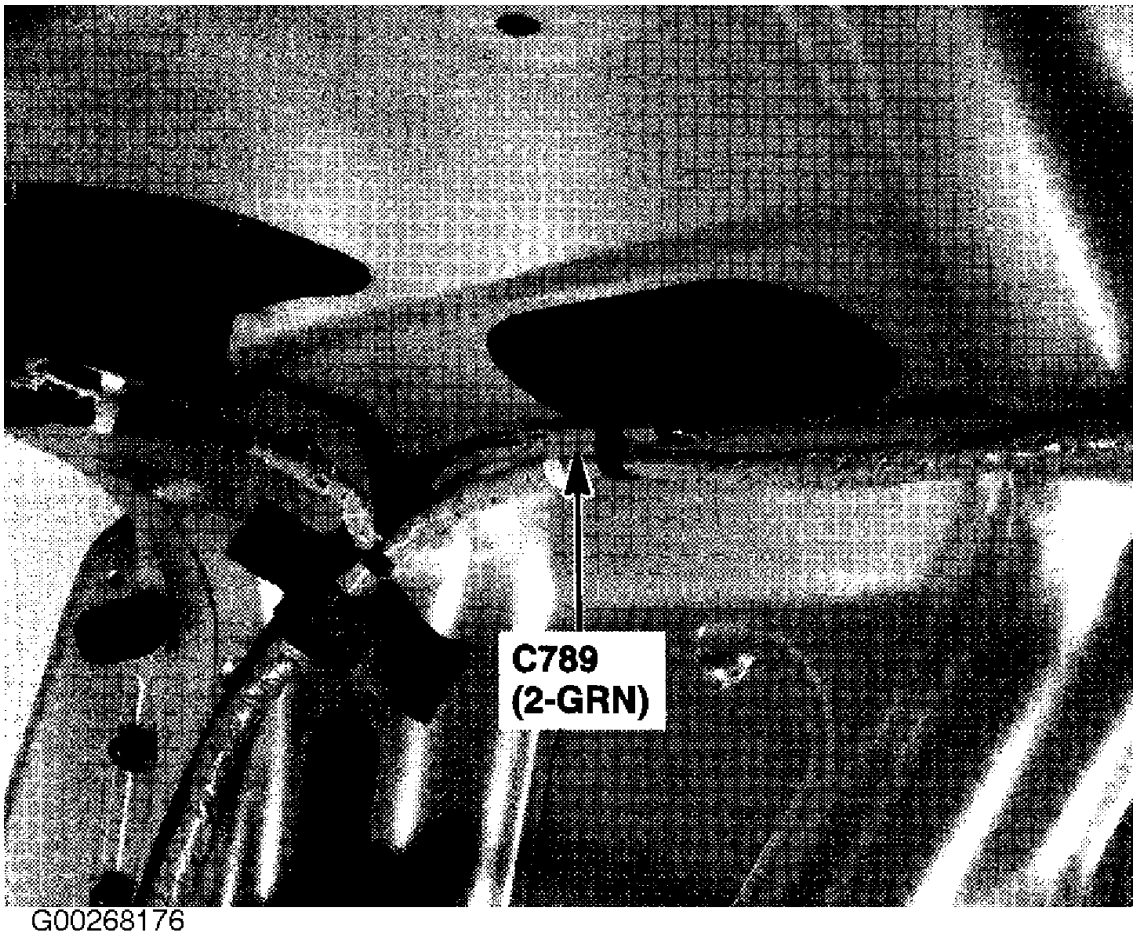
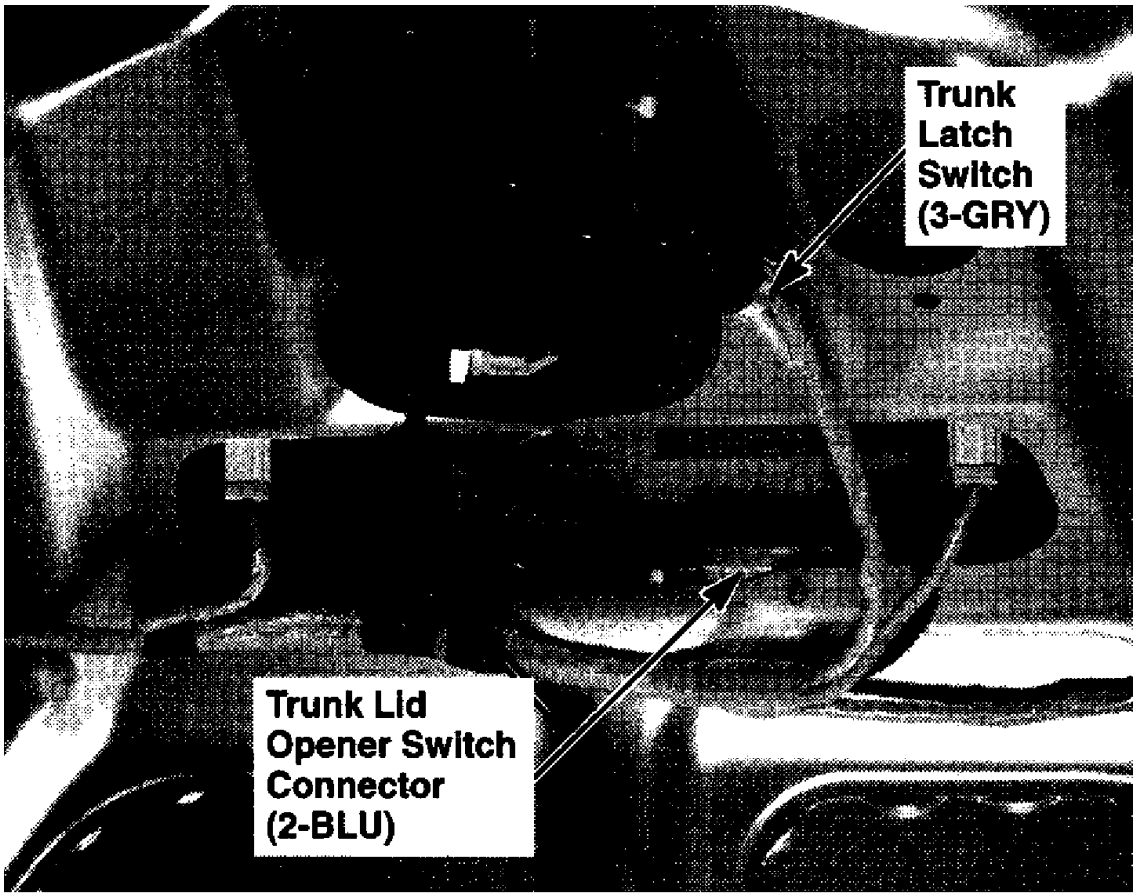


Fig. 100: Left Side Of Trunk Lid (Acura Accessory)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

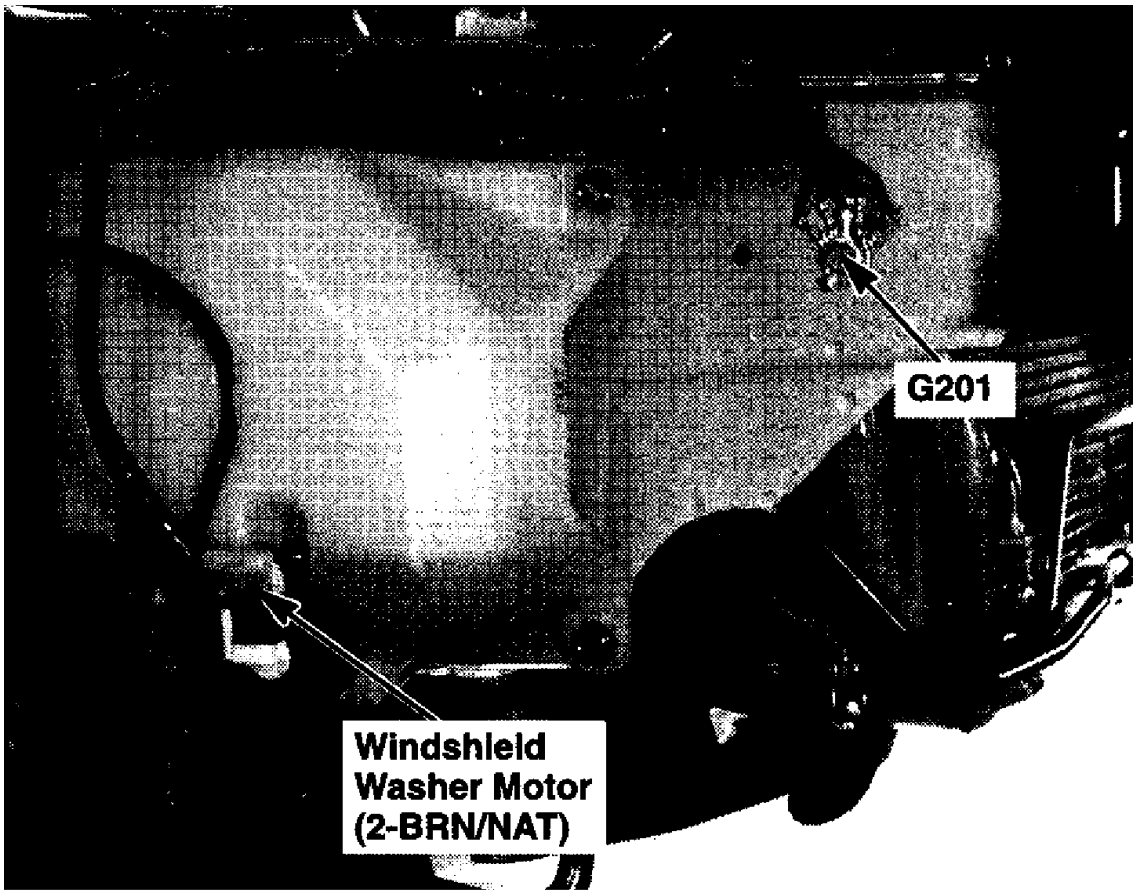
cardiagn.com



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Fig. 101: Middle Of Trunk Lid
Courtesy of AMERICAN HONDA MOTOR CO., INC.

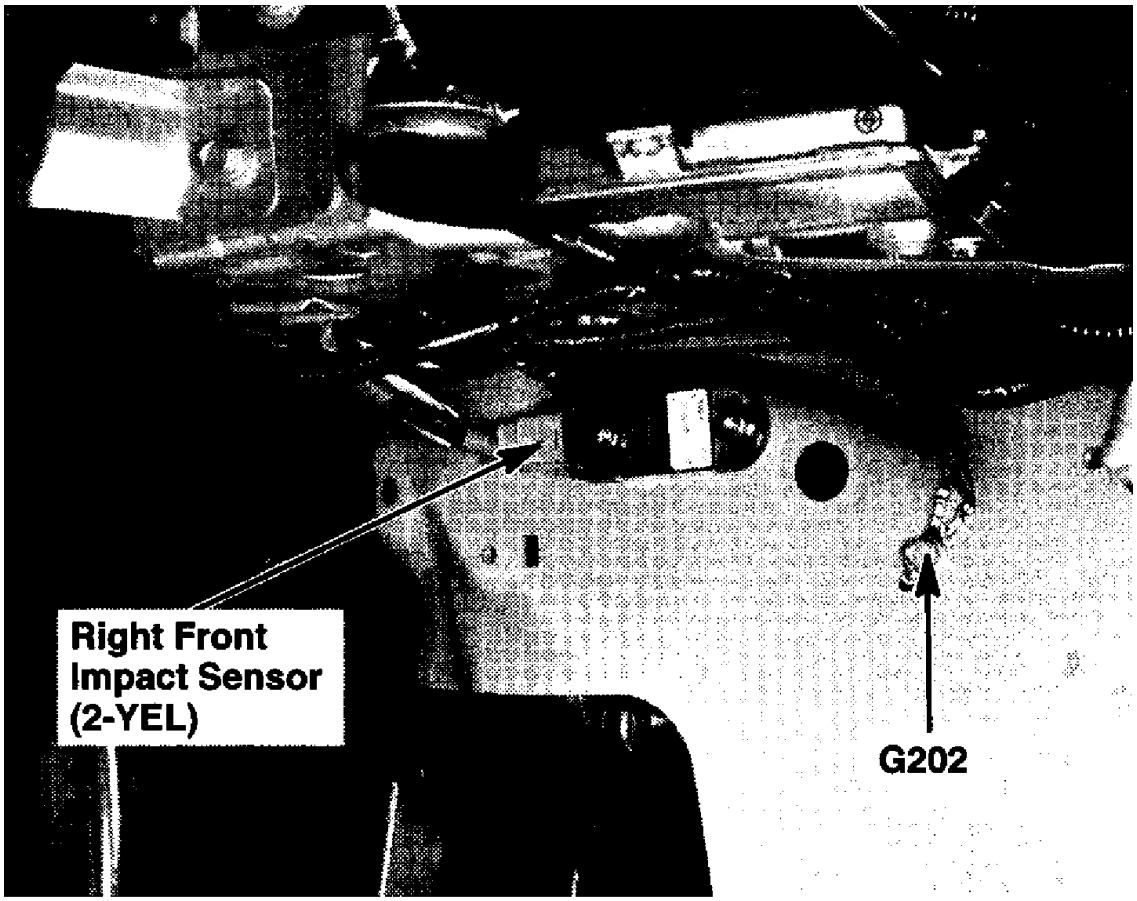
cardiagn.com



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Fig. 102: Behind Right Side Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

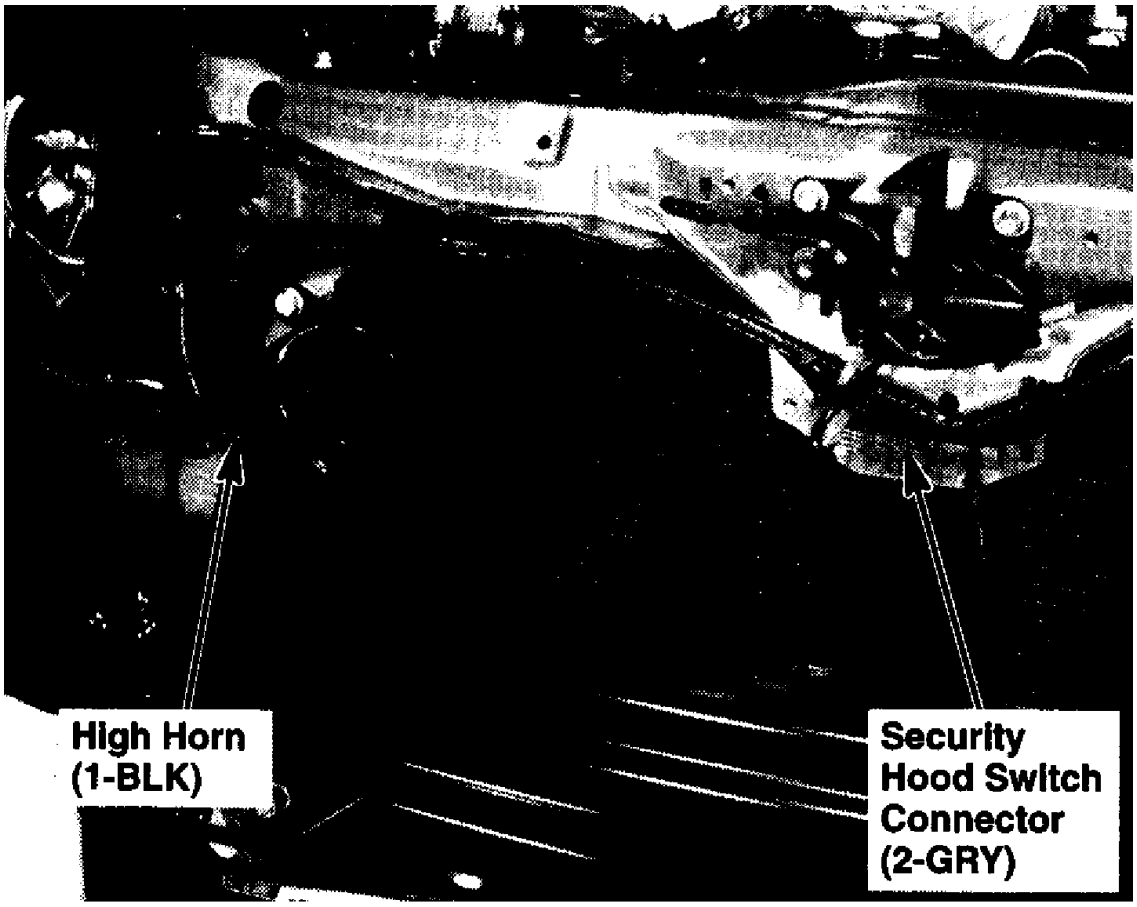
cardiagn.com



G00268179

Fig. 103: Behind Right Side Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

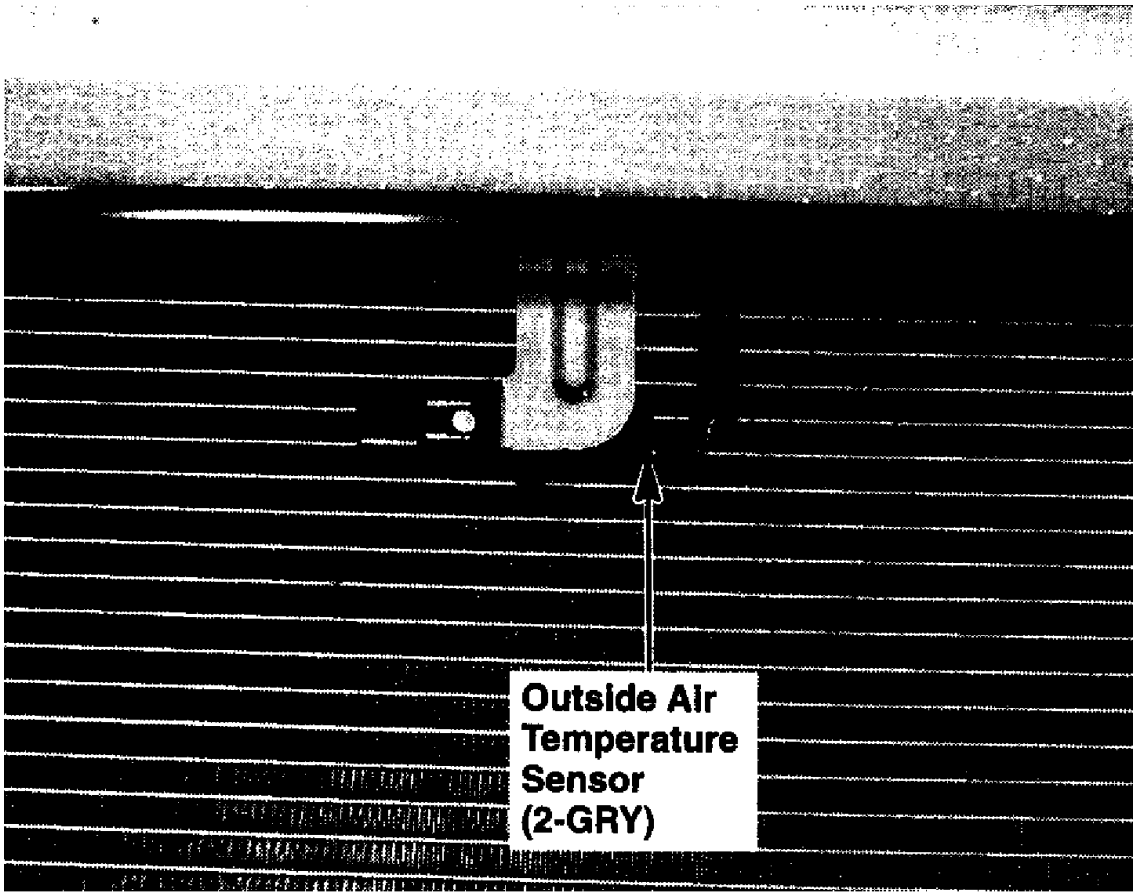
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G00268180

Fig. 104: Behind Middle Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268181

Fig. 105: Behind Middle Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

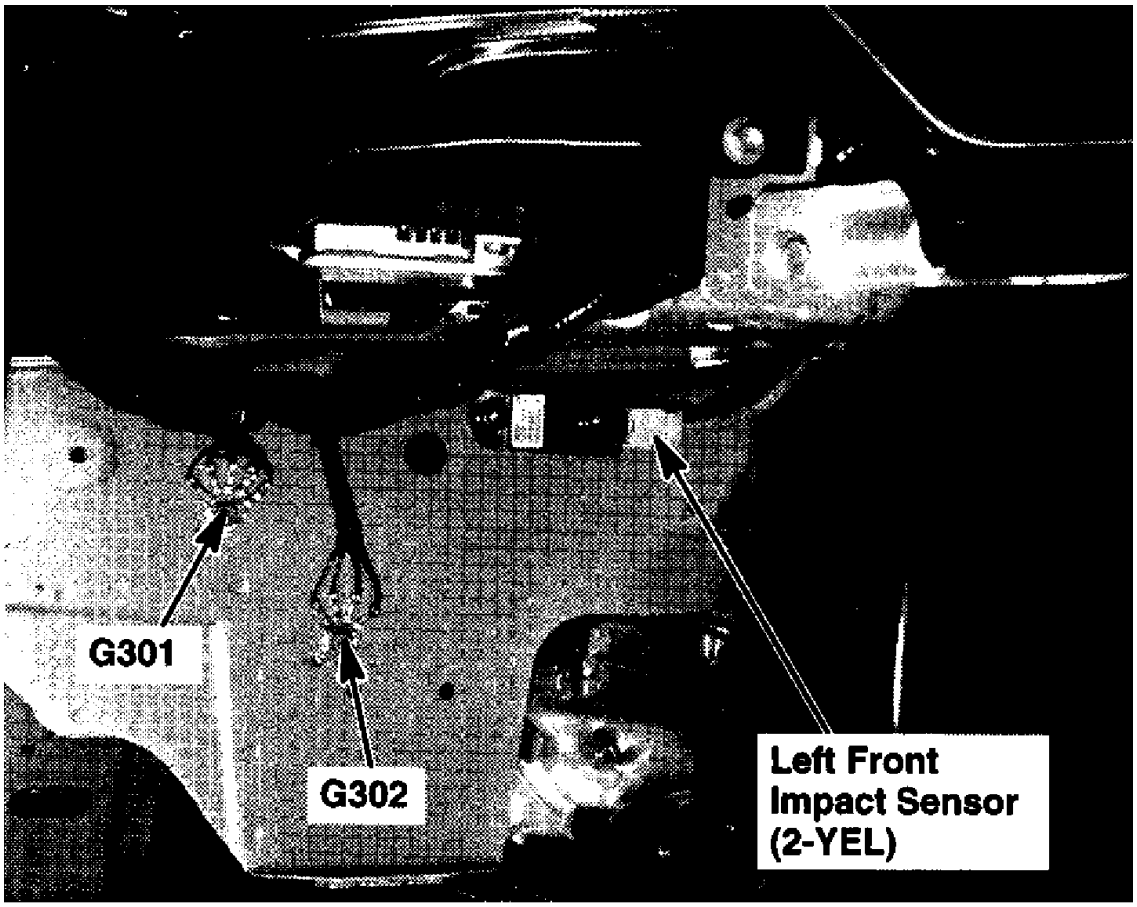
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Fig. 106: Behind Middle Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

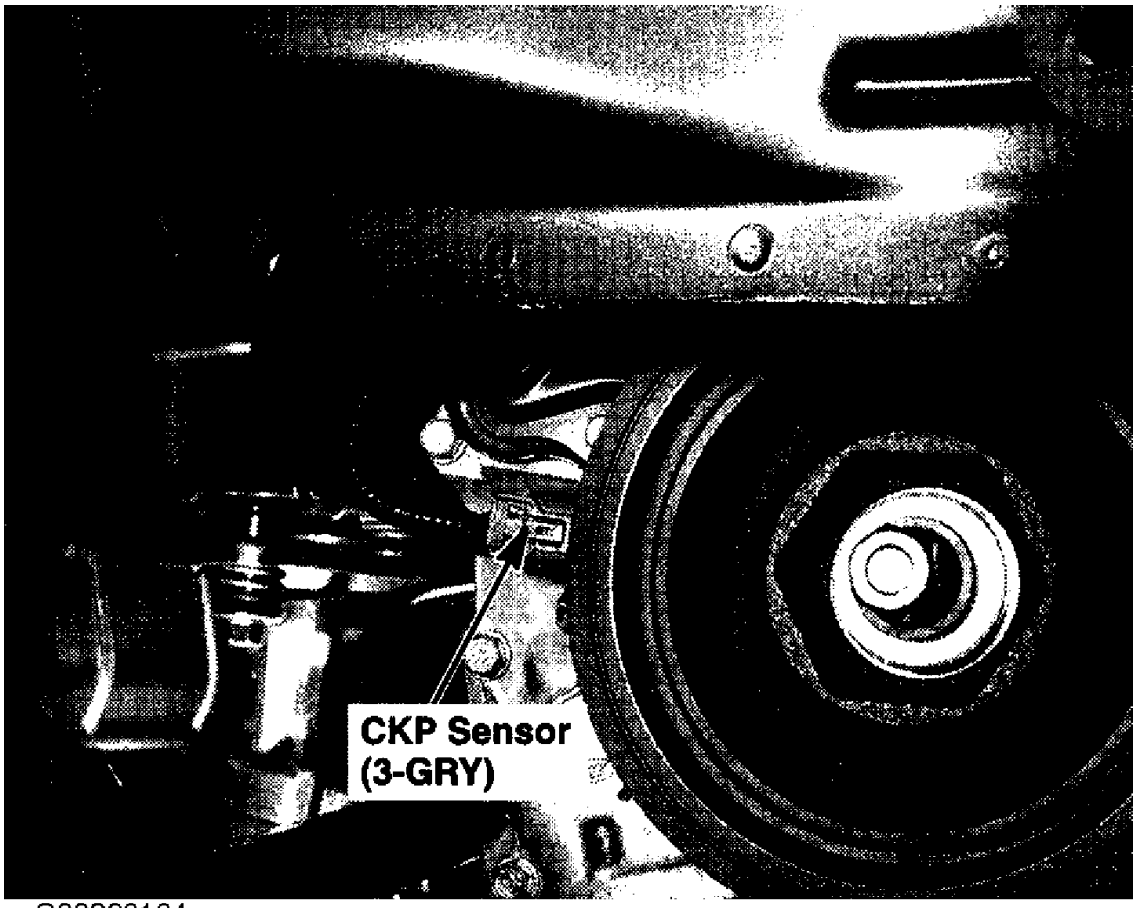
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Fig. 107: Behind Left Side Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

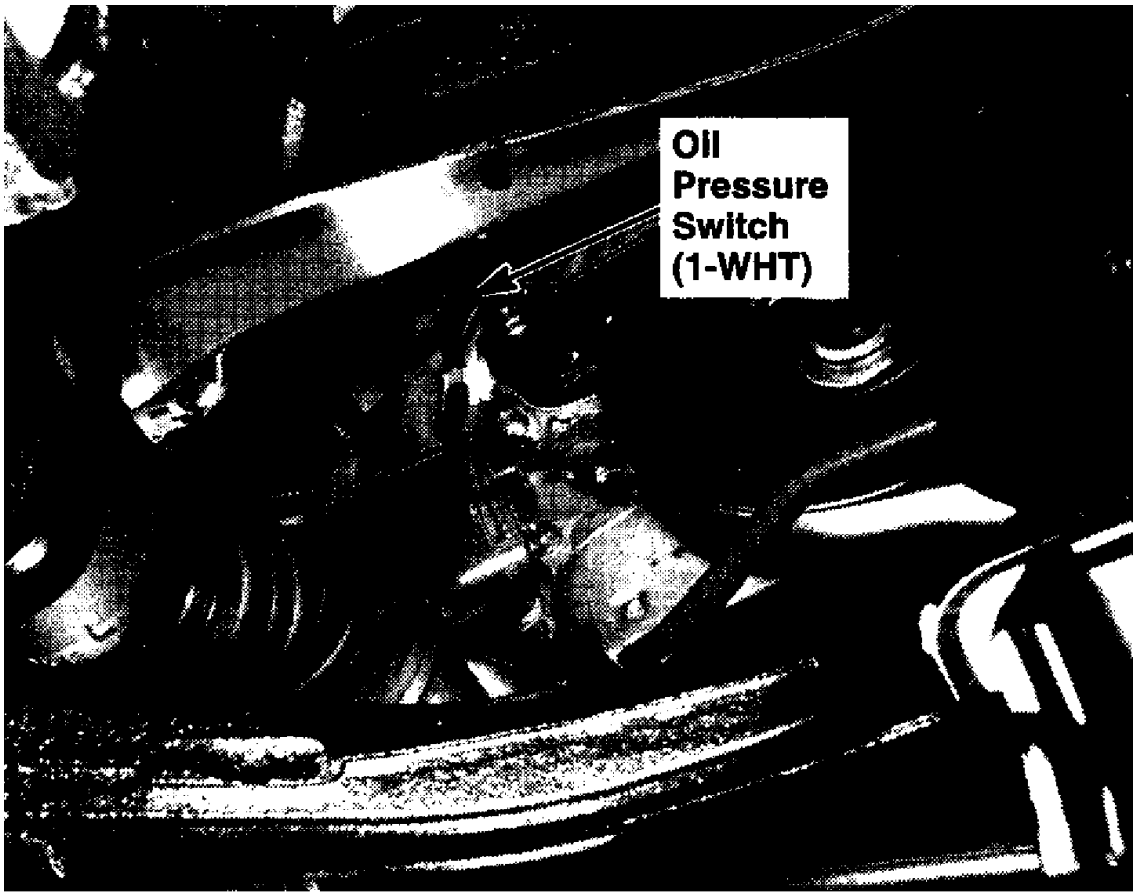
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Fig. 108: Under Right Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

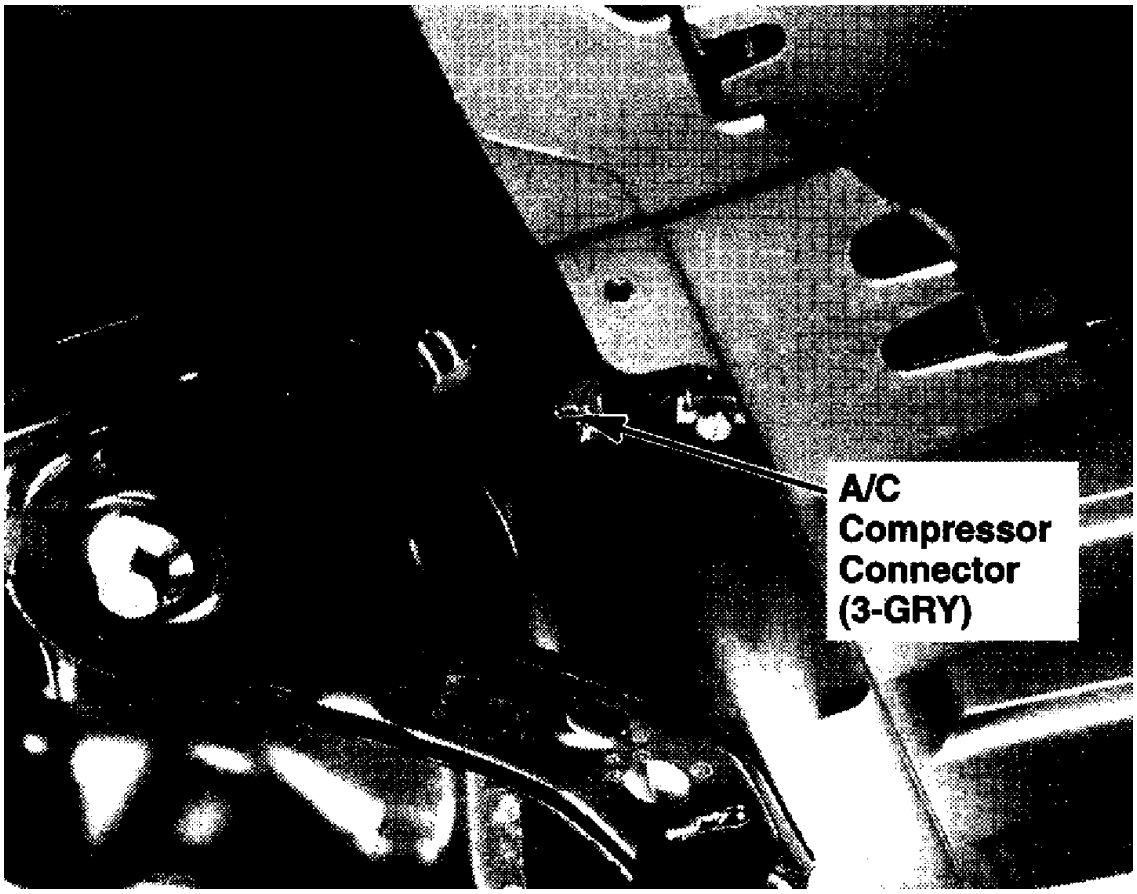
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Fig. 109: Under Right Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

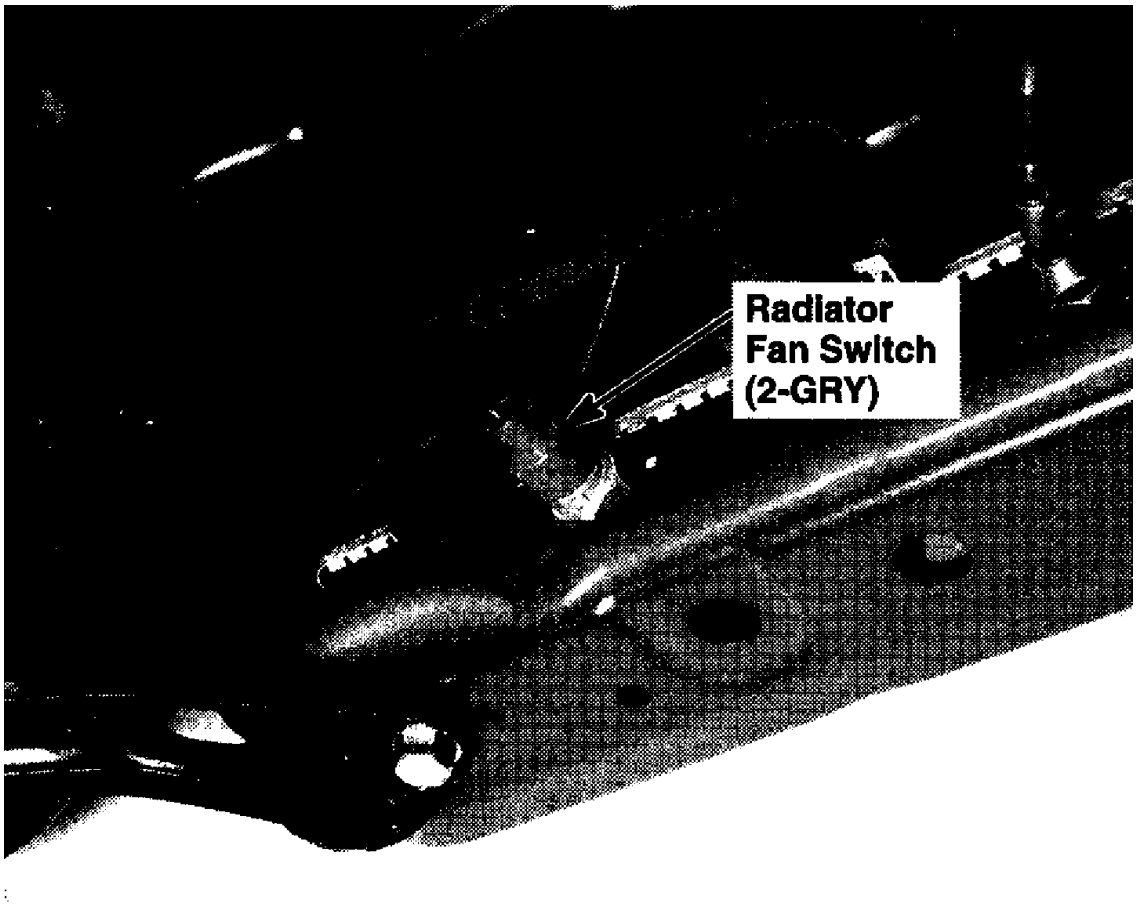
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Fig. 110: Under Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

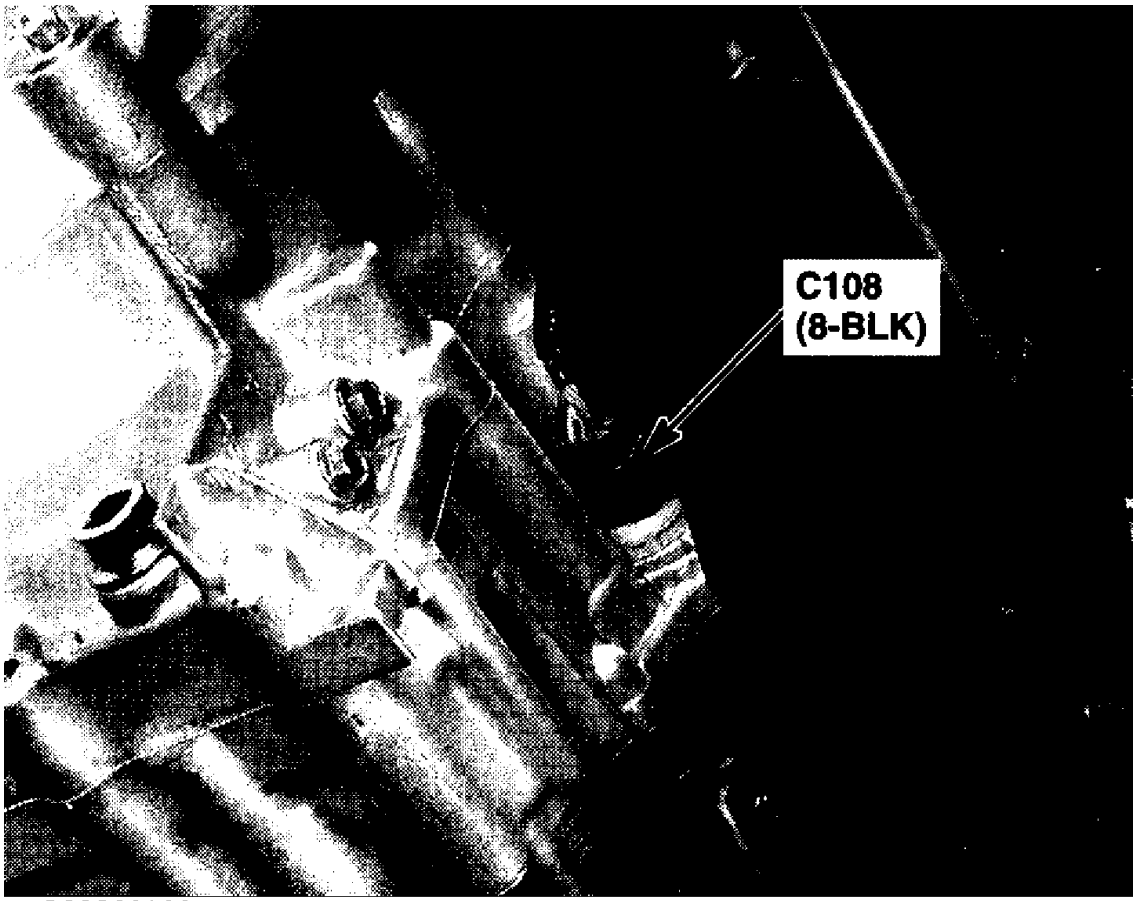
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Fig. 111: Under Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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G00268188

Fig. 112: Automatic Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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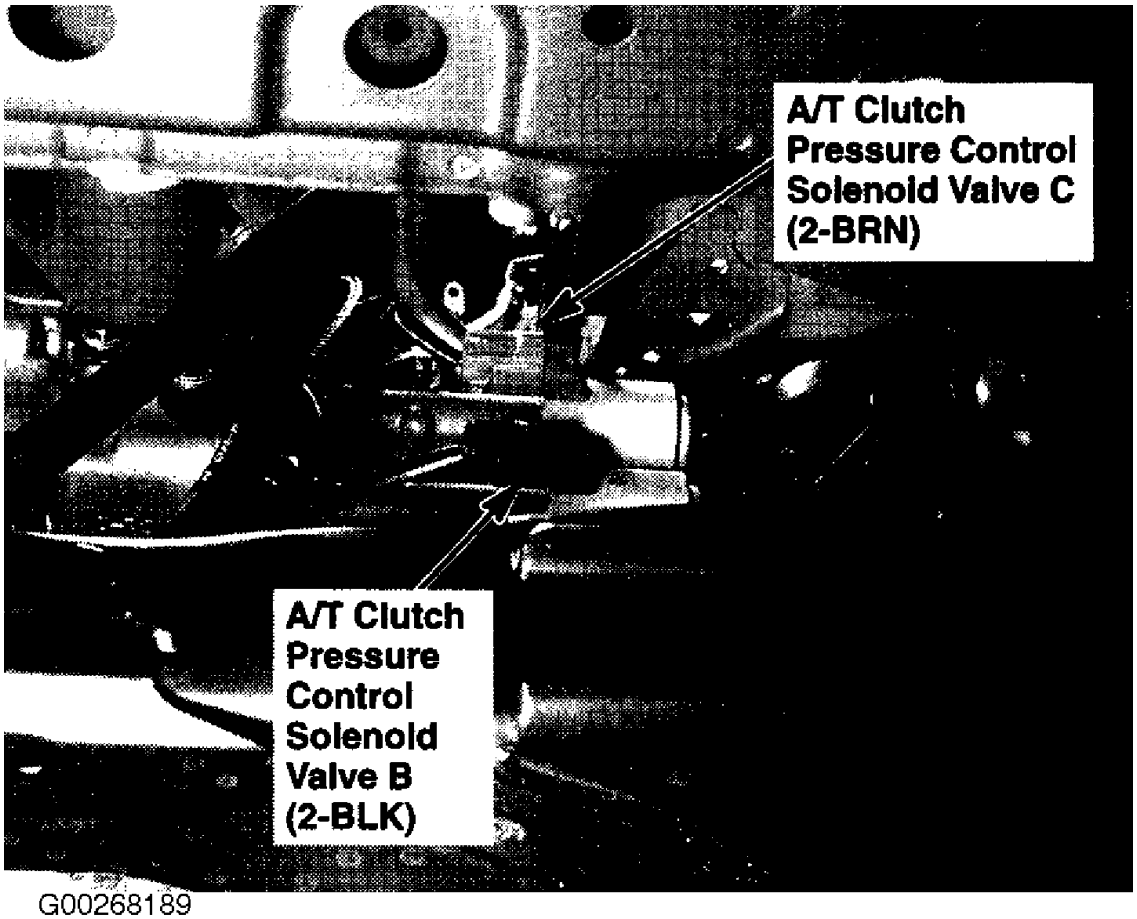
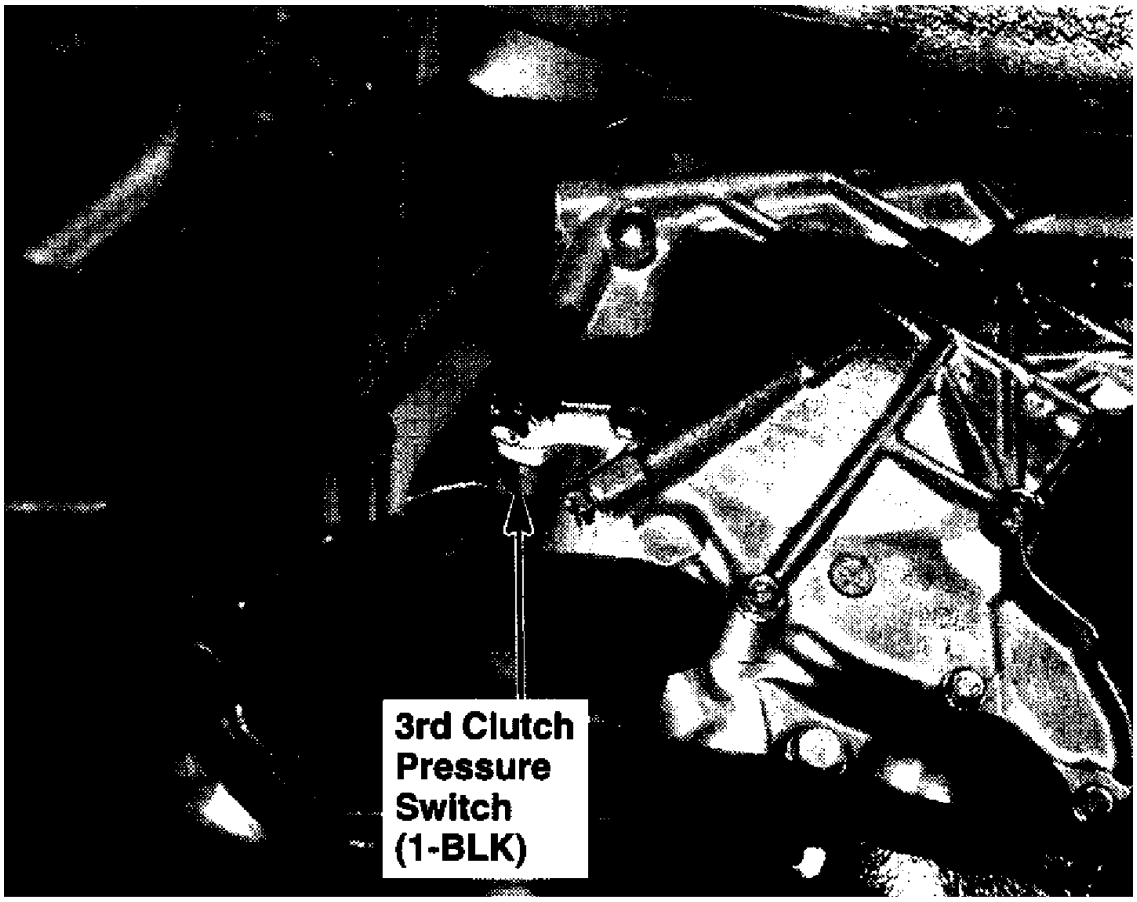


Fig. 113: Automatic Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

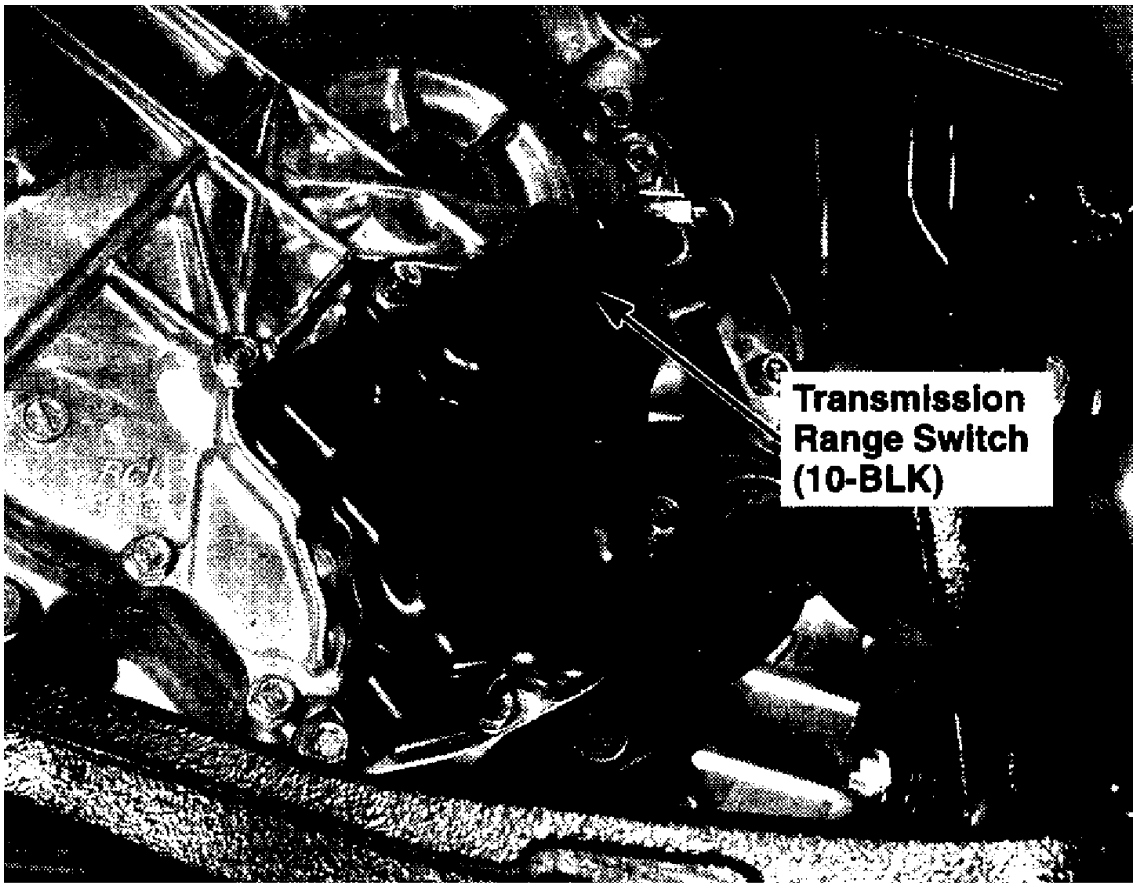
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Fig. 114: Automatic Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

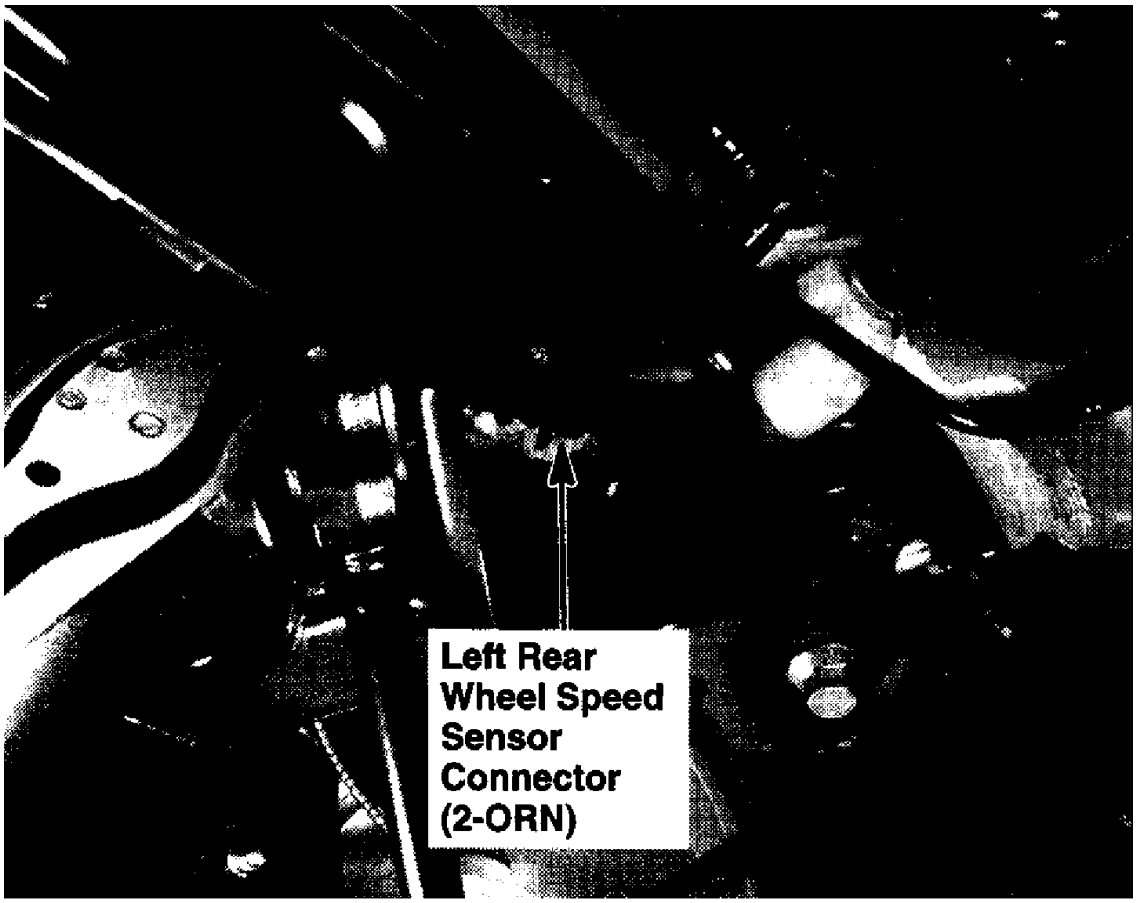
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Fig. 115: Automatic Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

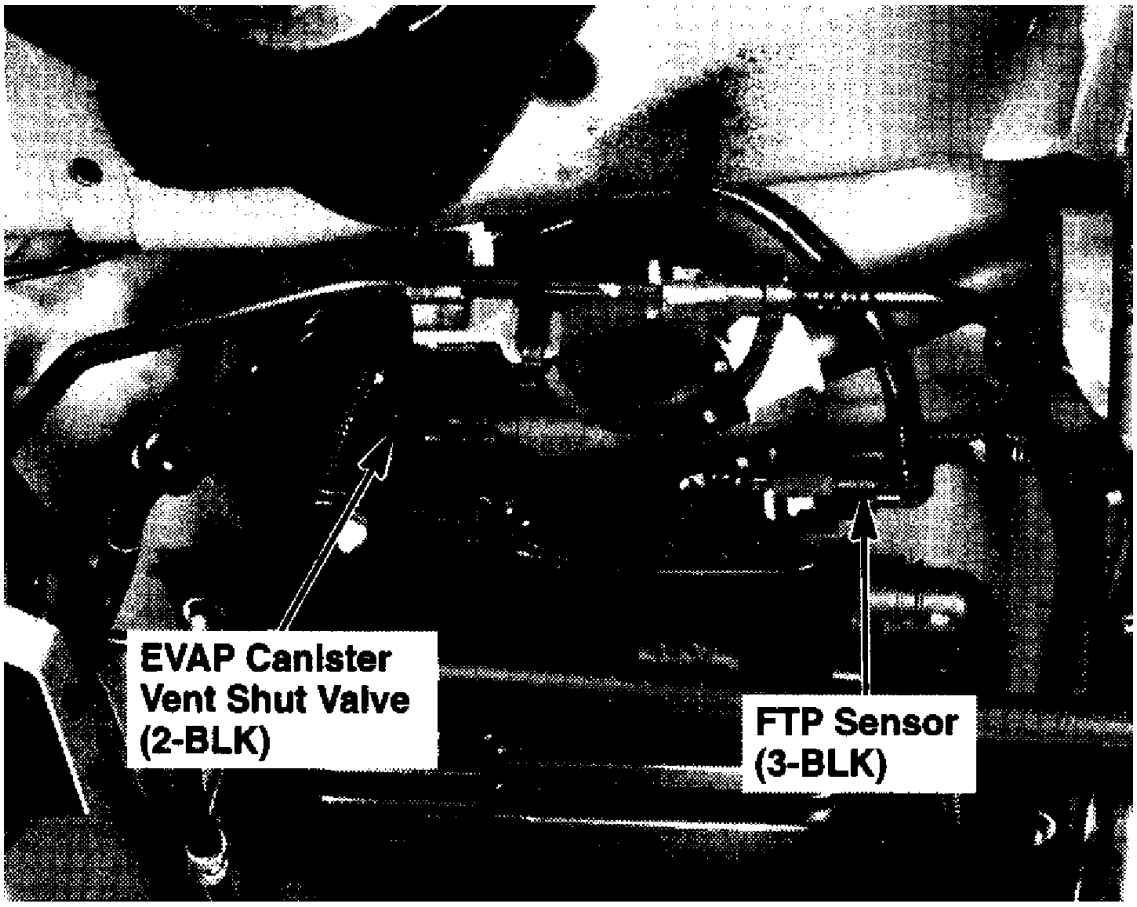
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Fig. 116: Under Left & Right Rear Of Vehicle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 117: Under Left Rear Of Vehicle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

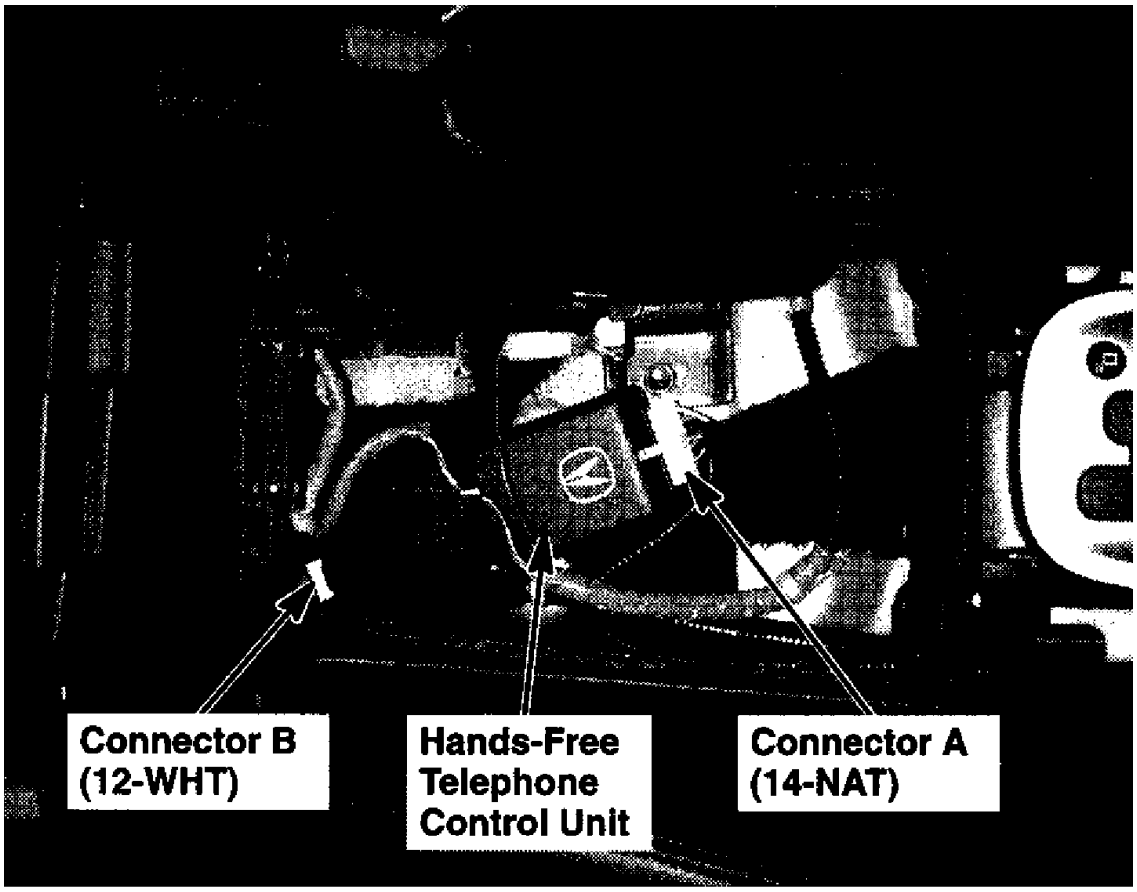
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Fig. 118: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

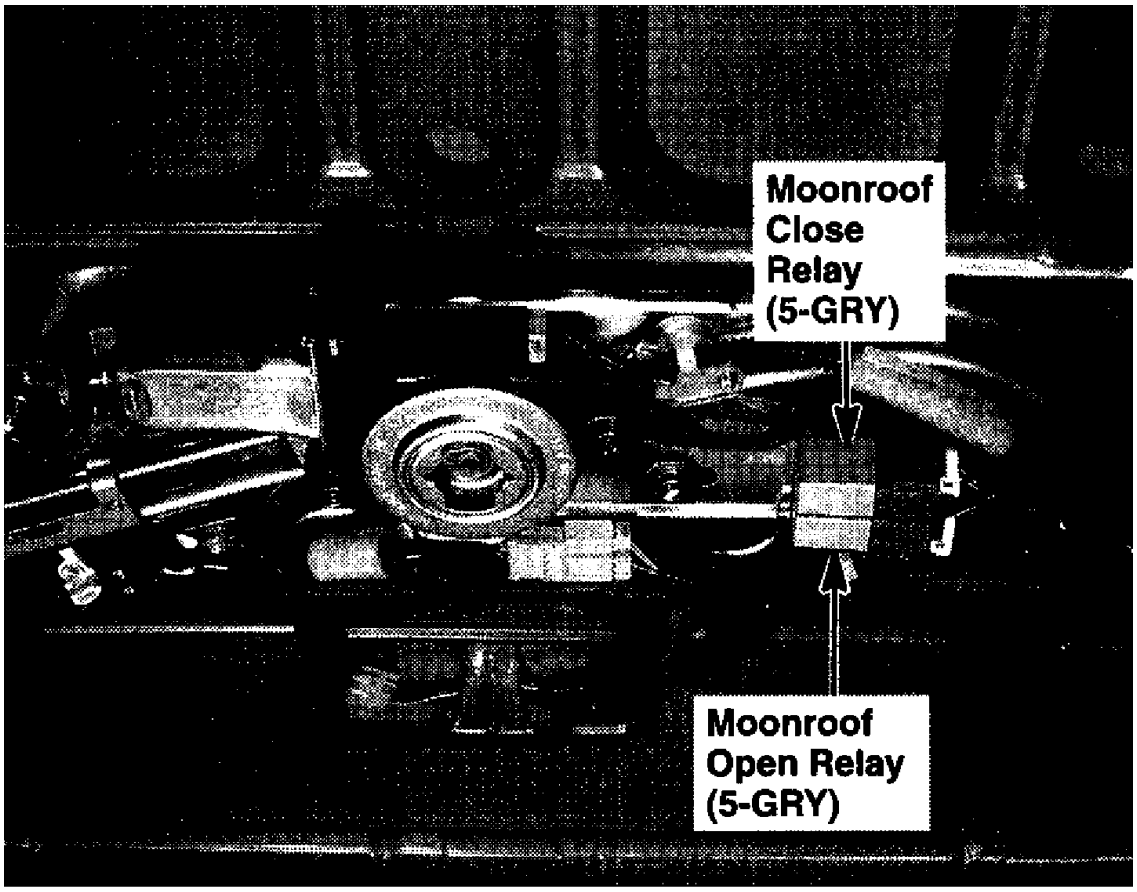
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Fig. 119: Under Center Console (Acura Accessory)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 120: Rear Of Roof
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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2004 ENGINE PERFORMANCE

Electronic Throttle Control System - TSX

COMPONENT LOCATION INDEX

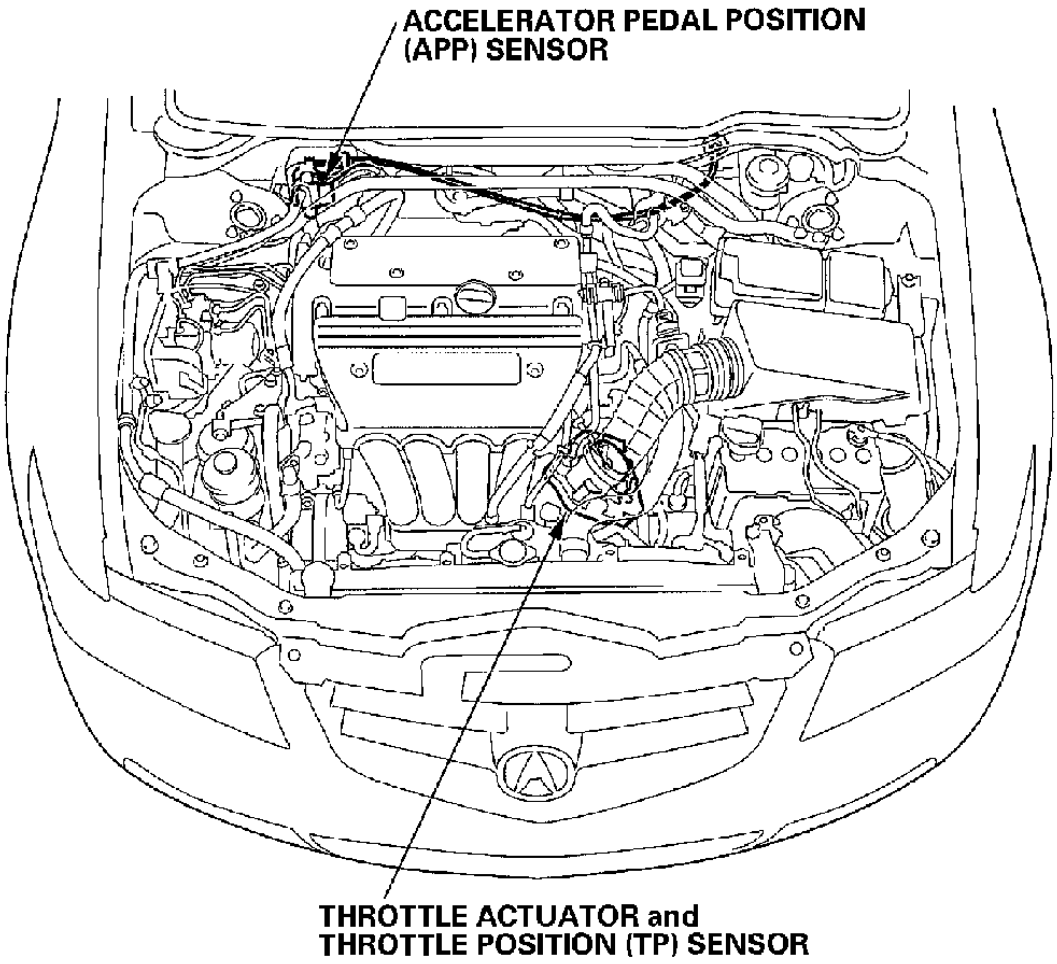


Fig. 1: Locating Electronic Throttle Control System Components (1 Of 2)

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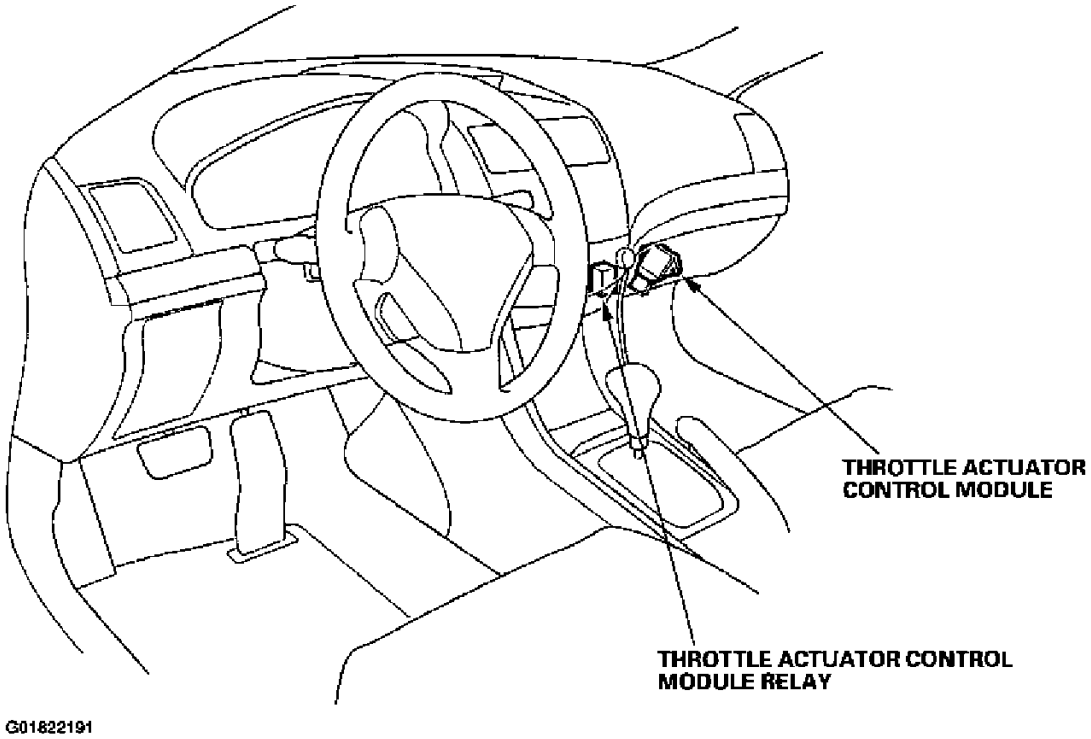


Fig. 2: Locating Electronic Throttle Control System Components (2 Of 2)

DTC TROUBLESHOOTING

DTC TROUBLESHOOTING INDEX

DTC	Description
DTC P0122	TP Sensor A Circuit Low Voltage
DTC P0123	TP Sensor A Circuit High Voltage
DTC P0222	TP Sensor B Circuit Low Voltage
DTC P0223	TP Sensor B Circuit High Voltage
DTC P2135	TP Sensor A/B Voltage Incorrect Correlation
DTC P2122	APP Sensor A Circuit Low Voltage
DTC P2123	APP Sensor A (Throttle Position Sensor D) Circuit High Voltage
DTC P2127	APP Sensor B Circuit Low Voltage
DTC P2128	APP Sensor B (Throttle Position Sensor E) Circuit High Voltage
DTC P2138	APP Sensor A/B Incorrect Voltage Correlation
DTC P1683	Throttle Valve Default Position Spring Performance Problem
DTC P1684	Throttle Valve Return Spring Performance Problem
DTC P2101	Throttle Actuator System Malfunction
DTC P2108	Throttle Actuator Control Module Problem
DTC P2118	Throttle Actuator Current Range/Performance Problem

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DTC P2176	Throttle Actuator Control System Idle Position Not Learned
DTC P2552	Throttle Actuator Control Module Relay Malfunction
DTC U0107	Lost Communication With Throttle Actuator Control Module

DTC P0122: TP SENSOR A CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Check for poor connections or loose terminals at the throttle body, the throttle actuator control module, and at the ECM/PCM, then go to step 17 . If the connections are OK, go to step 9.

   NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check TP SENSOR-A in the DATA LIST with the HDS.

   Is there about 0.3 V or less when the throttle is fully opened?

   YES - Go to step 5.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Disconnect the throttle actuator control module 16P connector.
8. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

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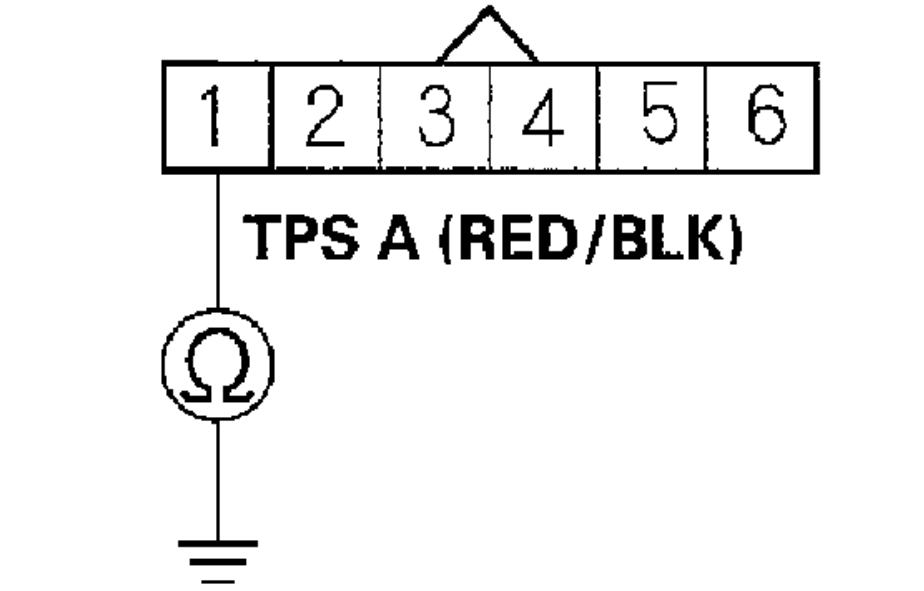


Fig. 3: Checking For Continuity Between Throttle Body 6P Connector Terminal No. 1 And Body Ground

Is there continuity?

YES - Repair short in the wire between the throttle body and the throttle actuator control module (TPS A line), then go to step 17 .

NO - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 17 and recheck. If DTC P0122 is not indicated, replace the original throttle actuator control module, then go to step 17 . If DTC P0122 is

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indicated, go to step 15 .

9. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

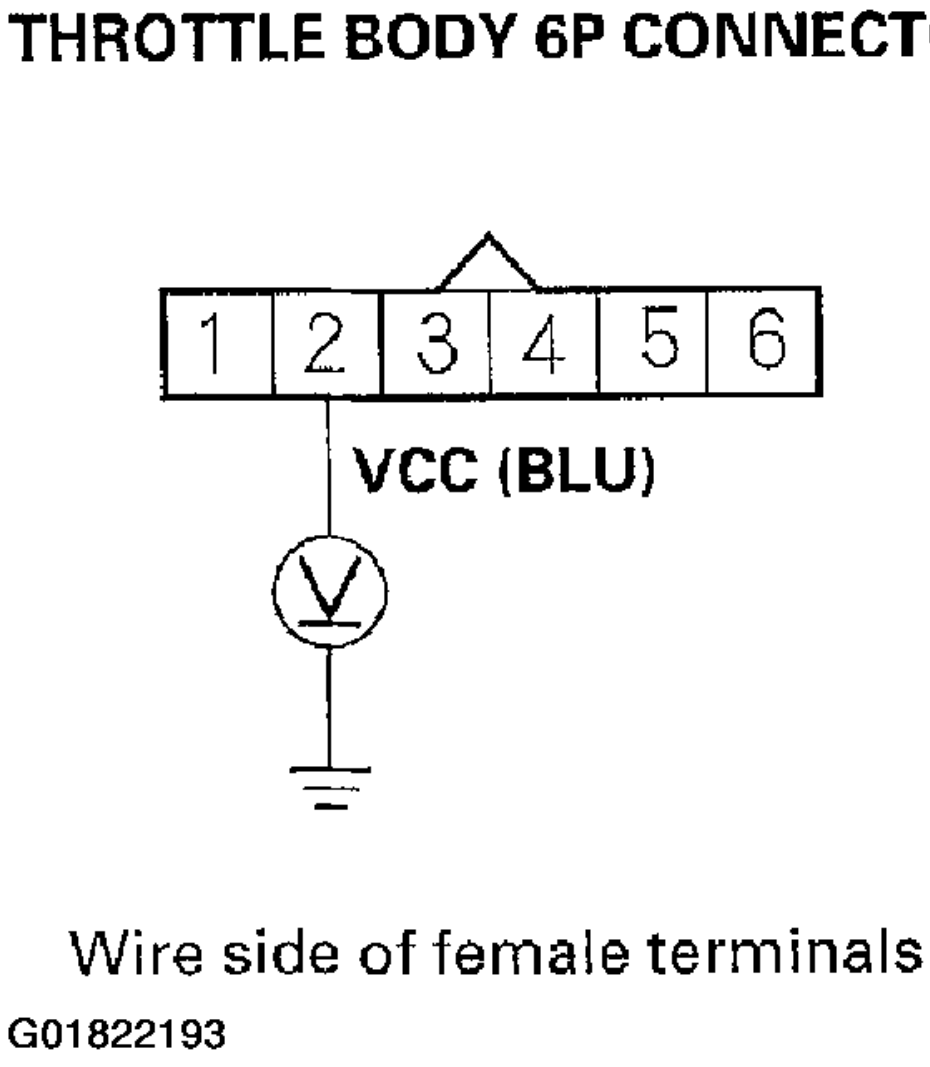


Fig. 4: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground

Is there about 5 V?

YES - Go to step 15.

NO - Go to step 10.

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10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 16P connector.
12. Disconnect the throttle body 6P connector.
13. Connect throttle body 6P connector terminal No. 2 to body ground with a jumper wire.

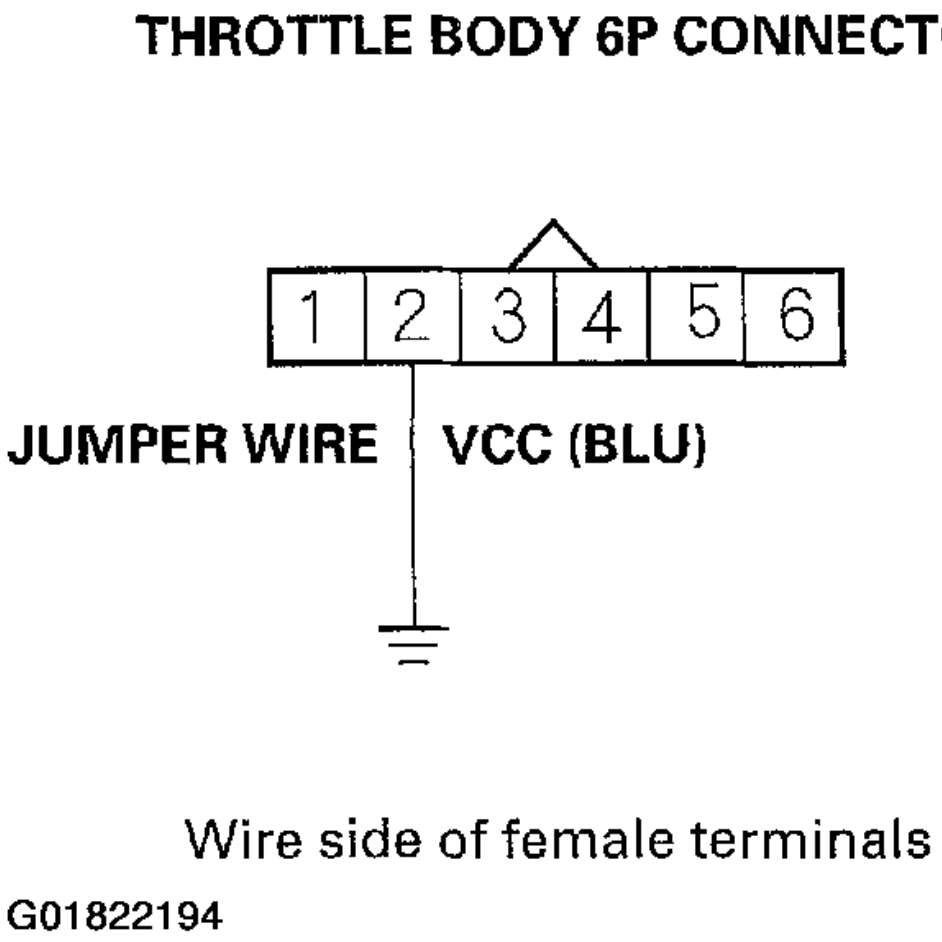


Fig. 5: Connecting Throttle Body 6P Connector Terminal No. 2 To Body Ground With A Jumper Wire

14. Check for continuity between throttle actuator control module 16P connector terminal No. 11 and body ground.

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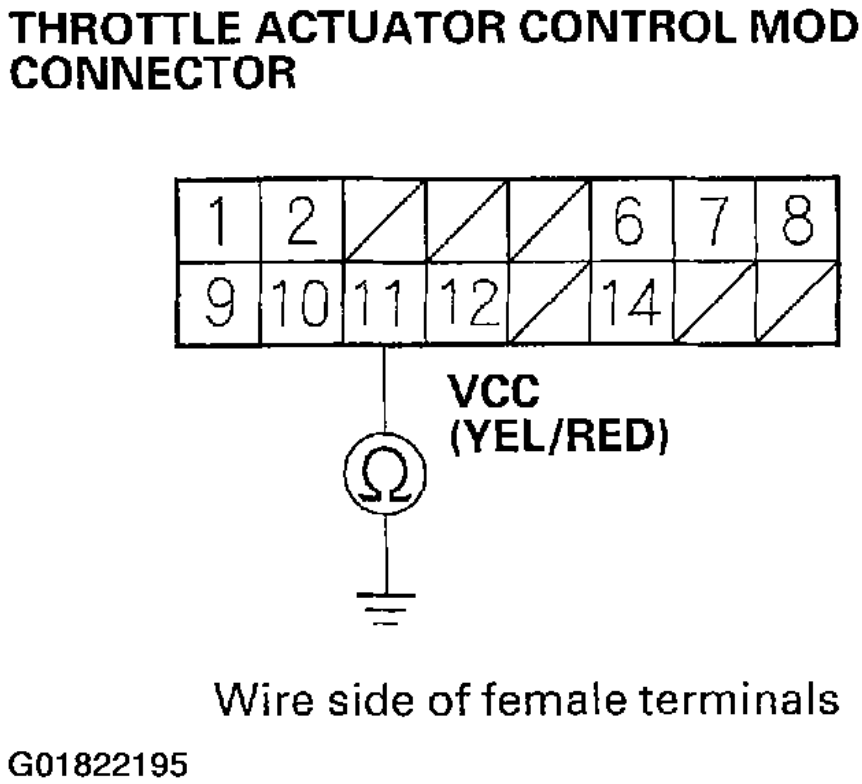


Fig. 6: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 11 And Body Ground

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 17 and recheck. If DTC P0122 is not indicated, replace the original throttle actuator control module, then go to step 17 . If DTC P0122 is indicated, go to step 15.

NO - Repair open in the wire between the throttle body and the throttle actuator control module (VCC line), then go to step 17.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
17. Turn the ignition switch ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES - If DTC P0122 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

DTC P0123: TP SENSOR A CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are DTC P0123 and P0223 indicated at the same time?

YES - Go to step 11 .

NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check TP SENSOR-A in the DATA LIST with the HDS.

Is there about 4.8 V or higher?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module.

5. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

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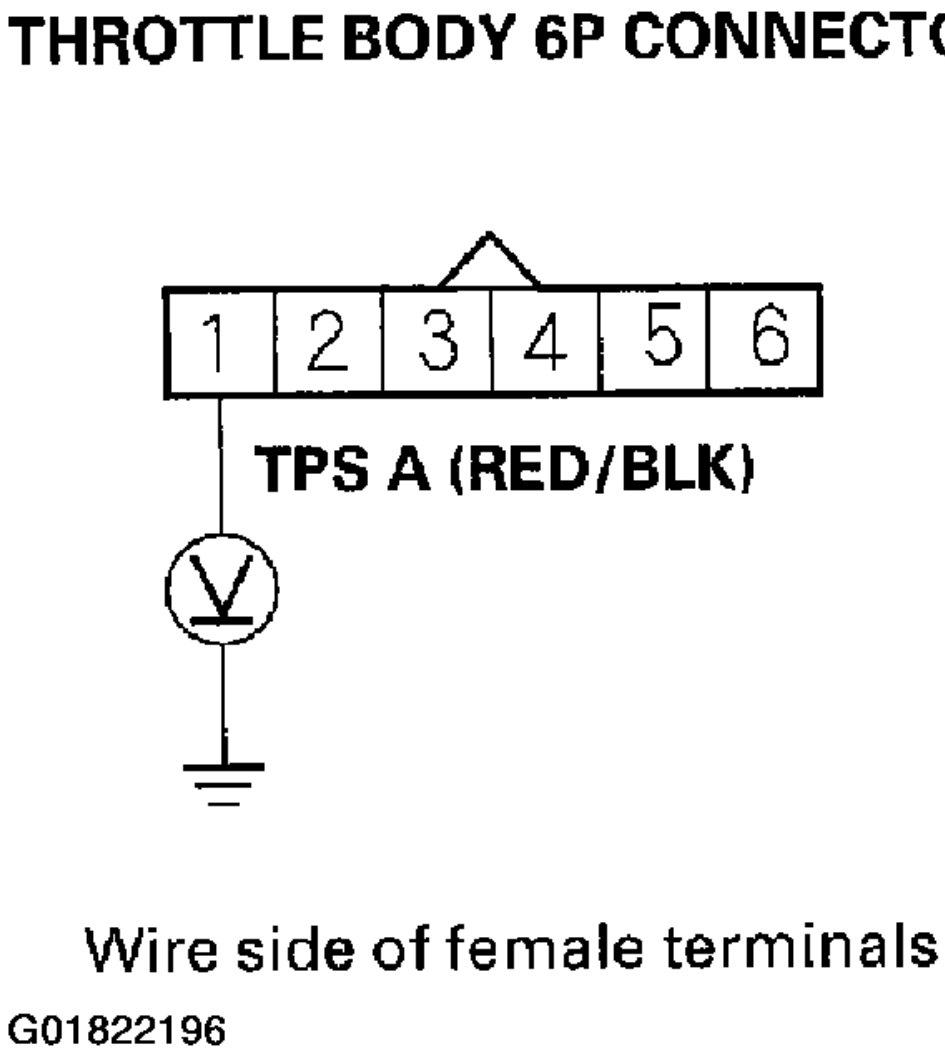


Fig. 7: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 1 And Body Ground

Is there about 5 V?

YES - Go to step 16 .

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the throttle actuator control module 16P connector.
8. Disconnect the throttle body 6P connector.

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9. Connect throttle body 6P connector terminal No. 1 to body ground with a jumper wire.

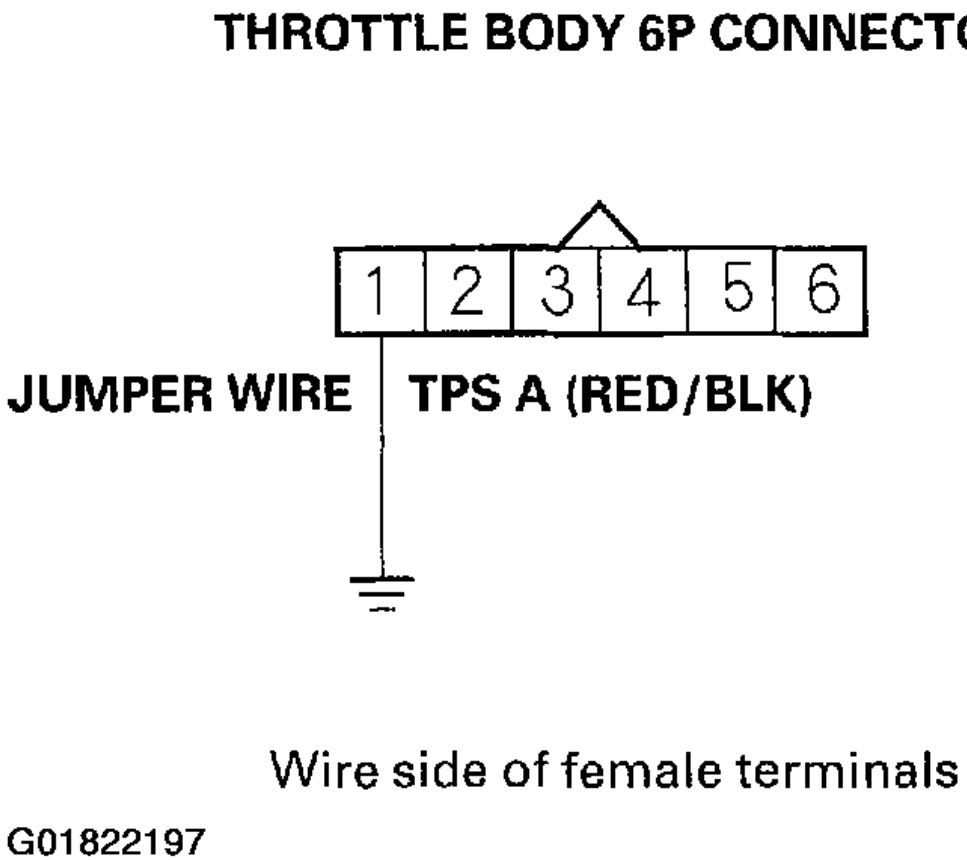


Fig. 8: Connecting Throttle Body 6P Connector Terminal No. 1 To Body Ground With A Jumper Wire

10. Check for continuity between throttle actuator control module 16P connector terminal No. 10 and body ground.

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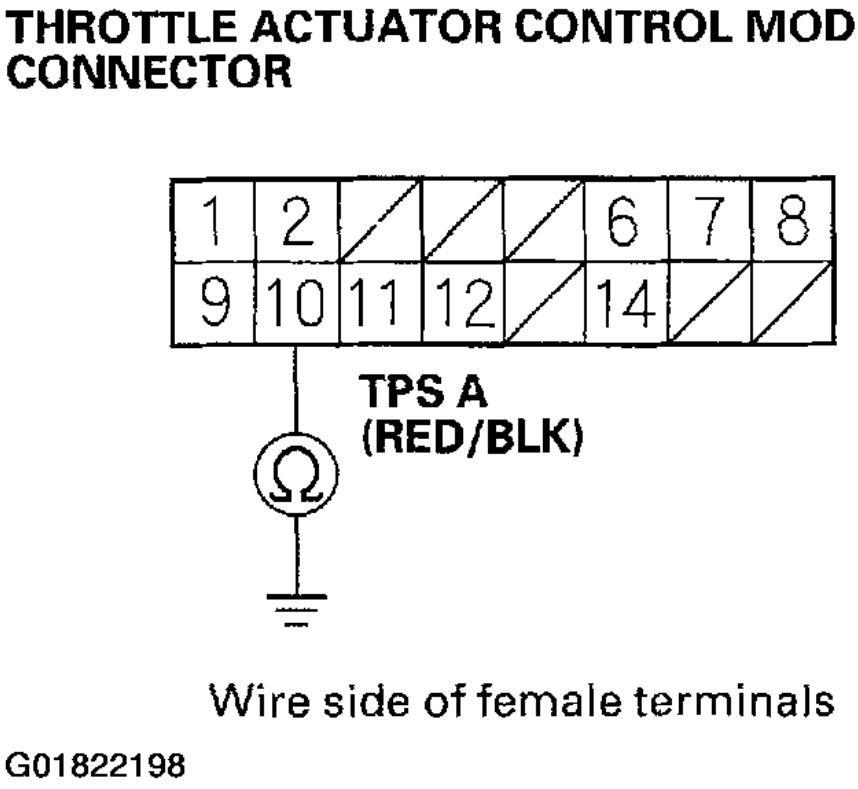


Fig. 9: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 10 And Body Ground

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 18 and recheck. If DTC P0123 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0123 is indicated, go to step 16.

NO - Repair open in the wire between the throttle body and the throttle actuator control module (TPS A line), then go to step 18.

11. Turn the ignition switch OFF.
12. Disconnect the throttle body 6P connector.
13. Disconnect the throttle actuator control module 16P connector.
14. Connect throttle body 6P connector terminal No. 4 to body ground with a jumper wire.

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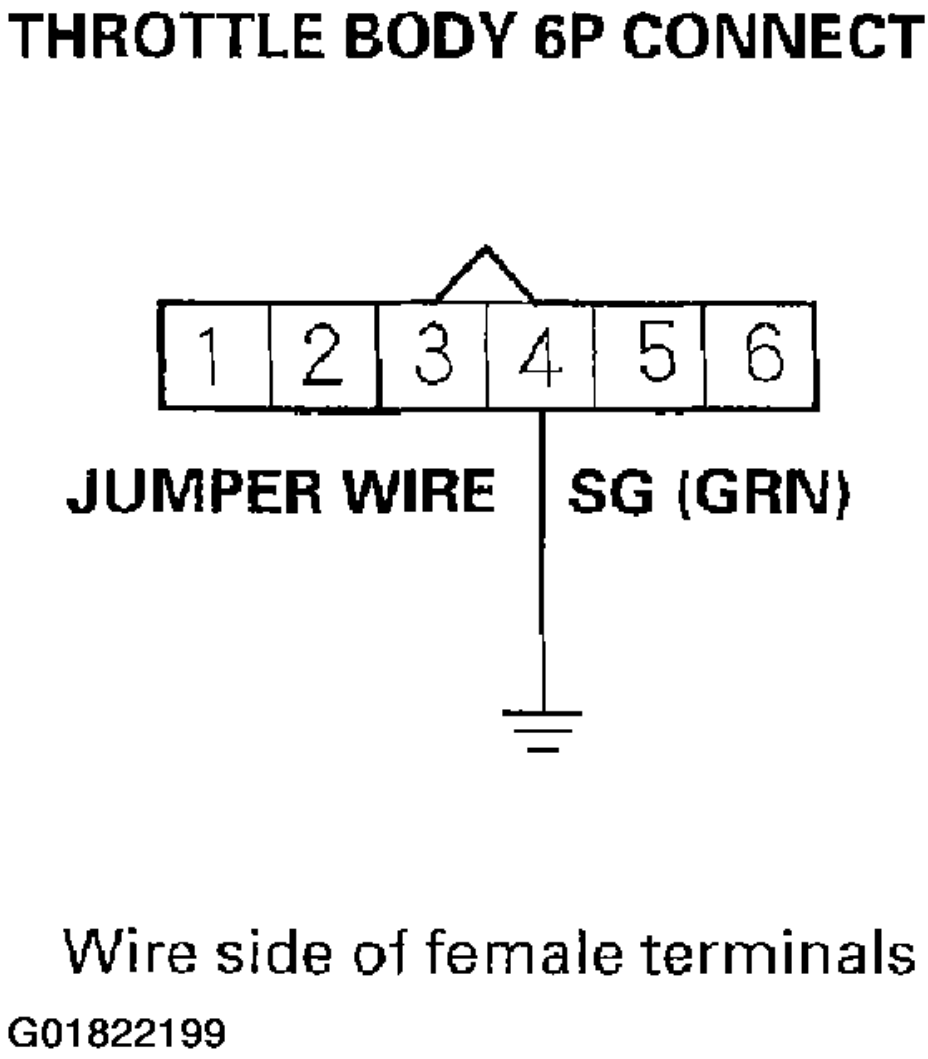


Fig. 10: Connecting Throttle Body 6P Connector Terminal No. 4 To Body Ground With A Jumper Wire

15. Check for continuity between throttle actuator control module 16P connector terminal No. 9 and body ground.

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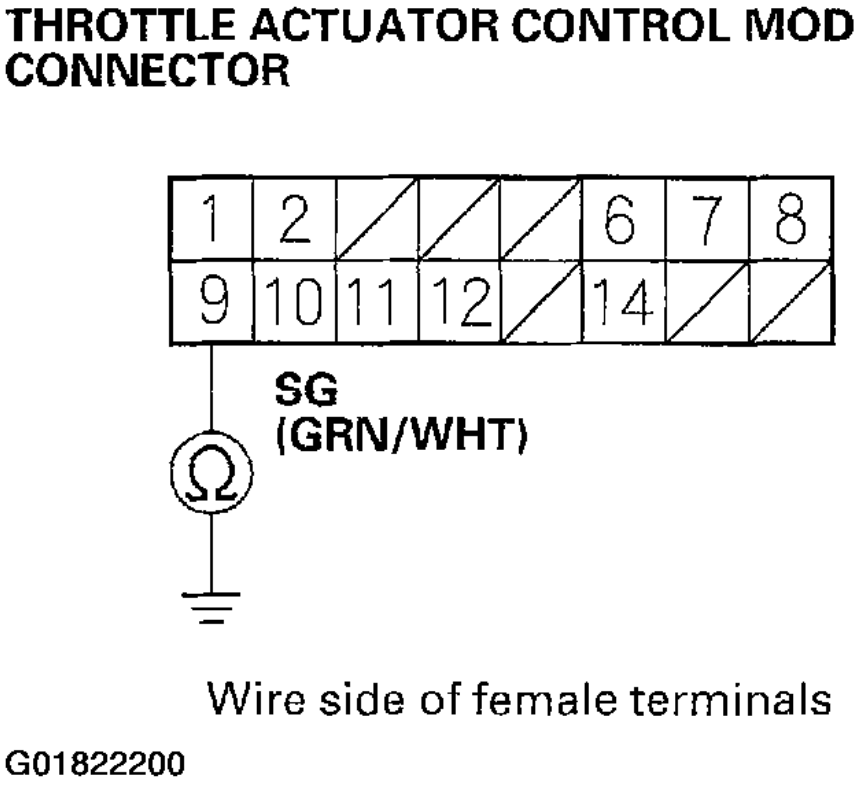


Fig. 11: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 9 And Body Ground

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 18 and recheck. If DTC P0123 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0123 is indicated, go to step 16.

NO - Repair open in the wire between the throttle body and the throttle actuator control module (SG line), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES - If DTC P0123 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

DTC P0222: TP SENSOR B CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are DTC P0122 and P0222 indicated at the same time?

YES - Check for poor connections or loose terminals at the throttle body, the throttle actuator control module, and at the ECM/PCM, then go to step 17. If the connections are OK, go to step 9.

NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check TP SENSOR-B in the DATA LIST with the HDS.

Is there about 0.3 V or less when the throttle is fully opened?

YES - Got to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Disconnect the throttle actuator control module 16P connector.
8. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

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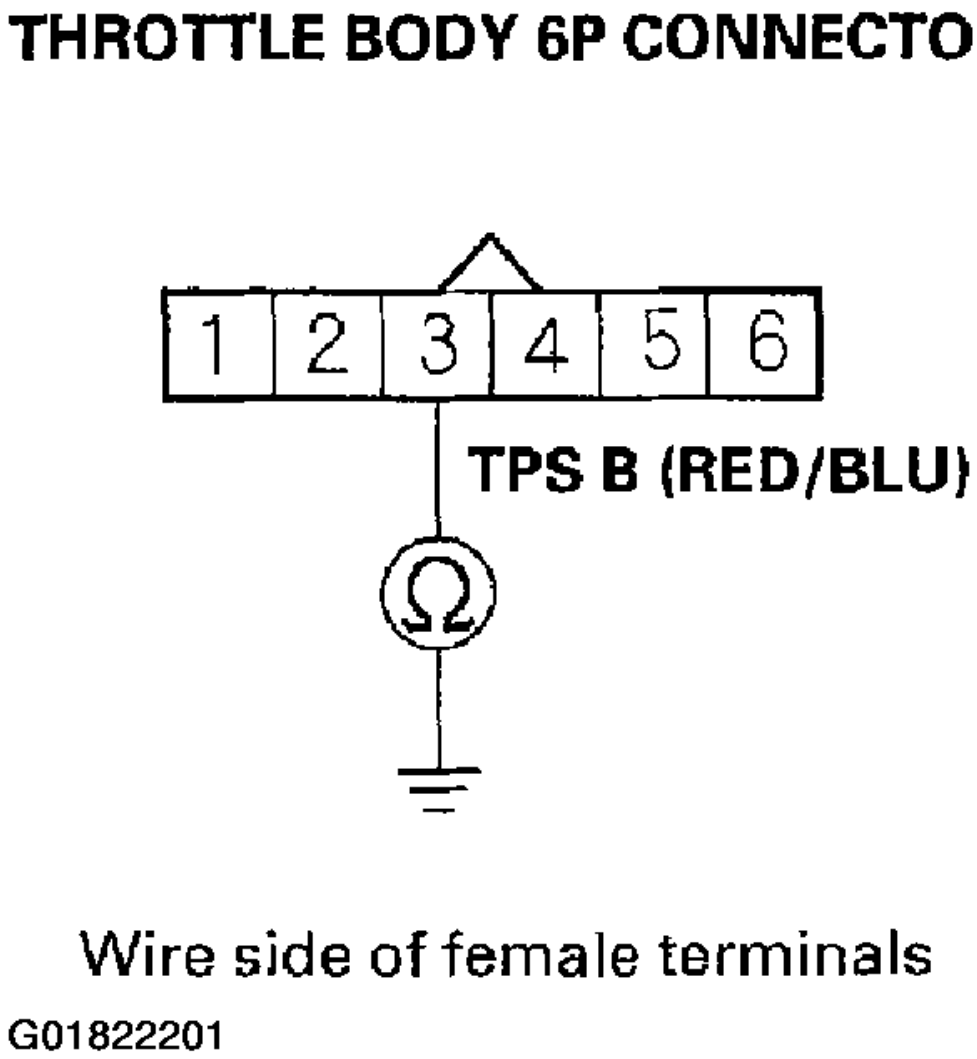


Fig. 12: Checking For Continuity Between Throttle Body 6P Connector Terminal No. 3 And Body Ground

Is there continuity?

YES - Repair short in the wire between the throttle body and the throttle actuator control module (TPS B line), then go to step 17.

NO - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 17 and recheck. If DTC P0222 is not indicated, replace the original throttle actuator control module, then go to step 17. If DTC P0222 is

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indicated, go to step 15.

9. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

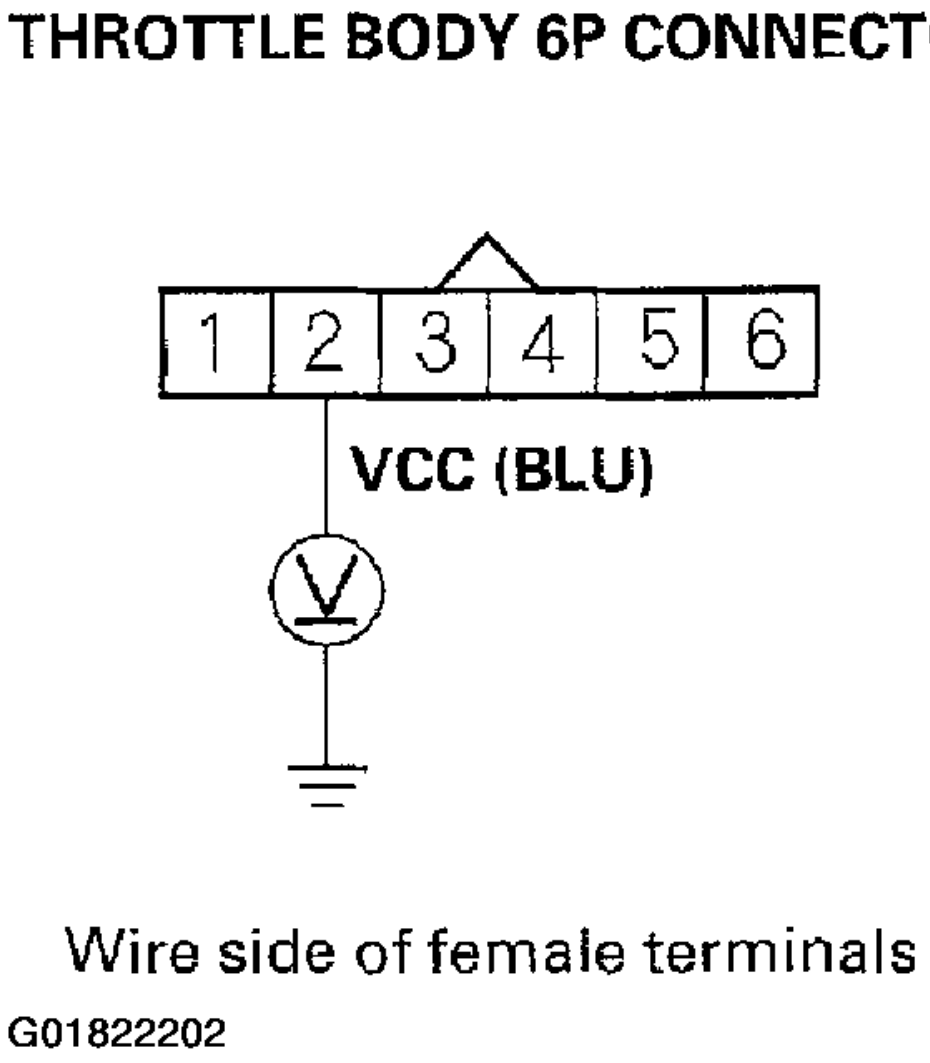


Fig. 13: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground

Is there about 5 V?

YES - Go to step 15.

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NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 16P connector.
12. Disconnect the throttle body 6P connector.
13. Connect throttle body 6P connector terminal No. 2 to body ground with a jumper wire.

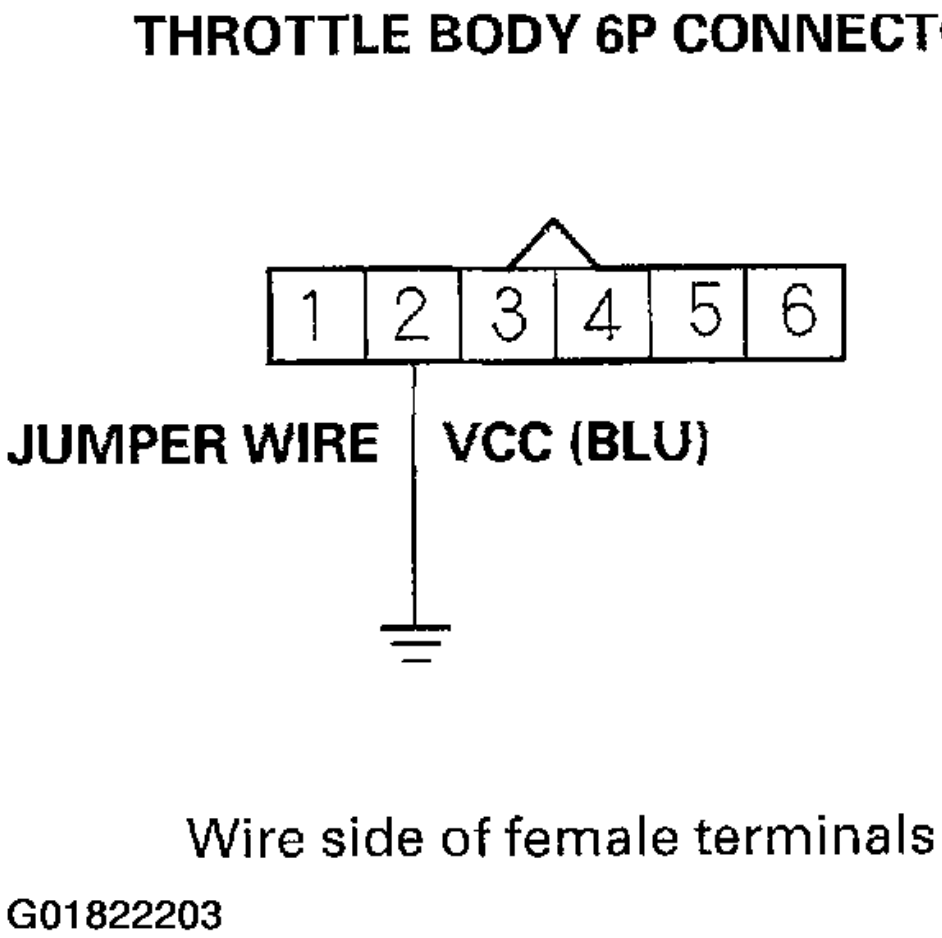


Fig. 14: Connecting Throttle Body 6P Connector Terminal No. 2 To Body Ground With A Jumper Wire

14. Check for continuity between throttle actuator control module 16P connector terminal No. 11 and body ground.

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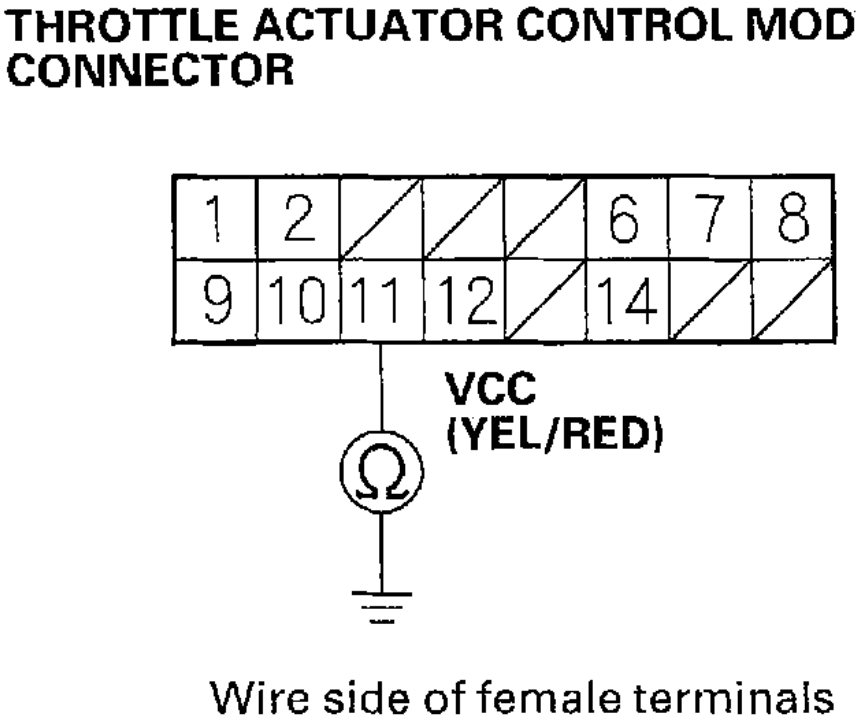


Fig. 15: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 11 And Body Ground

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 17 and recheck. If DTC P0222 is not indicated, replace the original throttle actuator control module, then go to step 17. If DTC P0222 is indicated, go to step 15.

NO - Repair open in the wire between the throttle body and the throttle actuator control module (VCC line), then go to step 17.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
17. Turn the ignition switch ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES - If DTC P0222 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

DTC P0223: TP SENSOR B CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are DTC P0123 and P0223 indicated at the same time?

YES - Go to step 11.

NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check TP SENSOR-B in the DATA LIST with the HDS.

Is there about 4.8 V or higher?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module.

5. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

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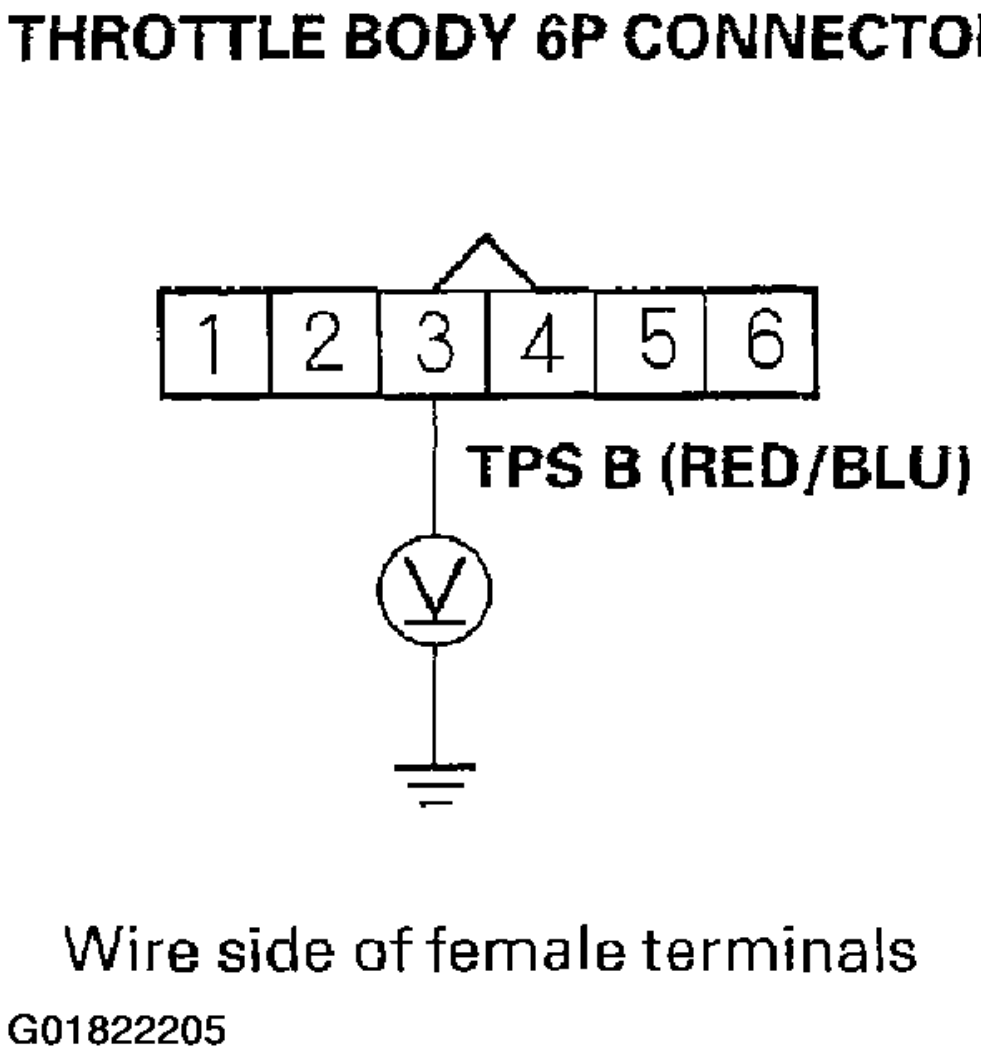


Fig. 16: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 3 And Body Ground

Is there about 5 V ?

YES - Go to step 16.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the throttle actuator control module 16P connector.

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8. Disconnect the throttle body 6P connector.
9. Connect throttle body 6P connector terminal No. 3 to body ground with a jumper wire.

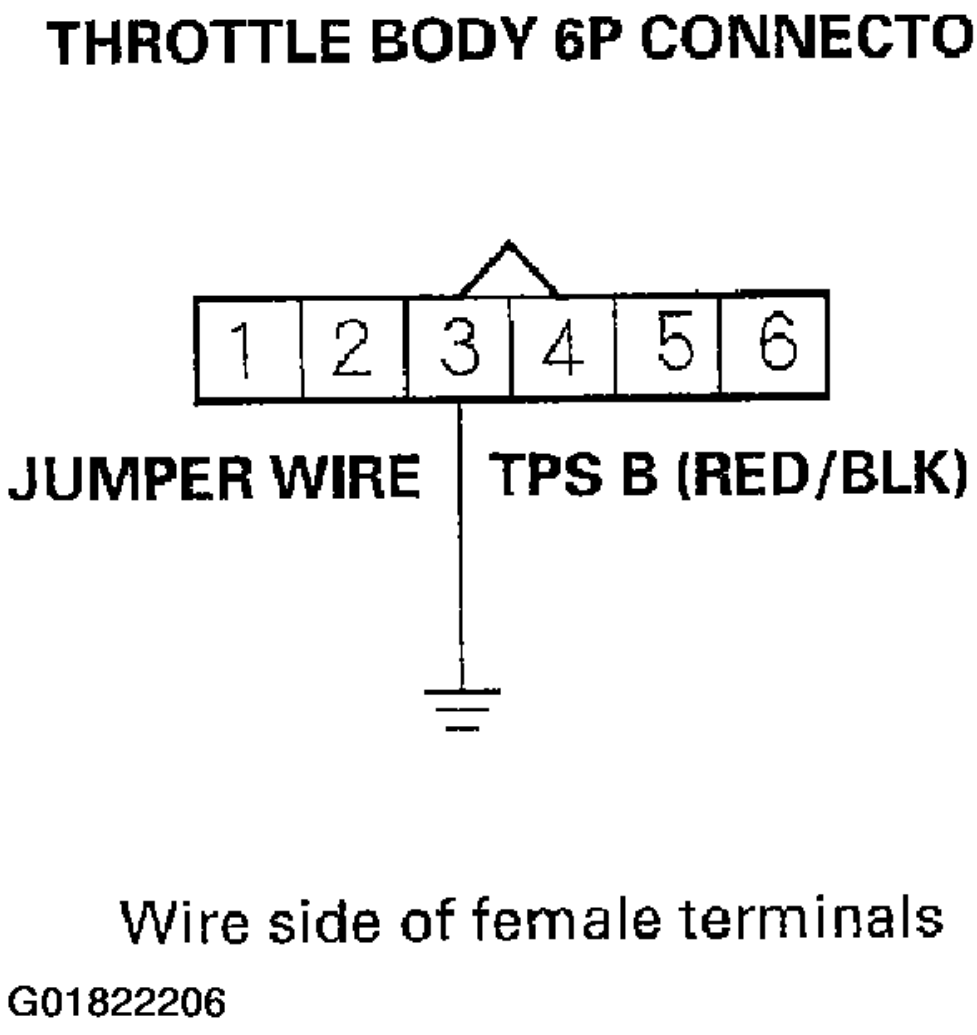


Fig. 17: Connecting Throttle Body 6P Connector Terminal No. 3 To Body Ground With A Jumper Wire

10. Check for continuity between throttle actuator control module 16P connector terminal No. 12 and body ground.

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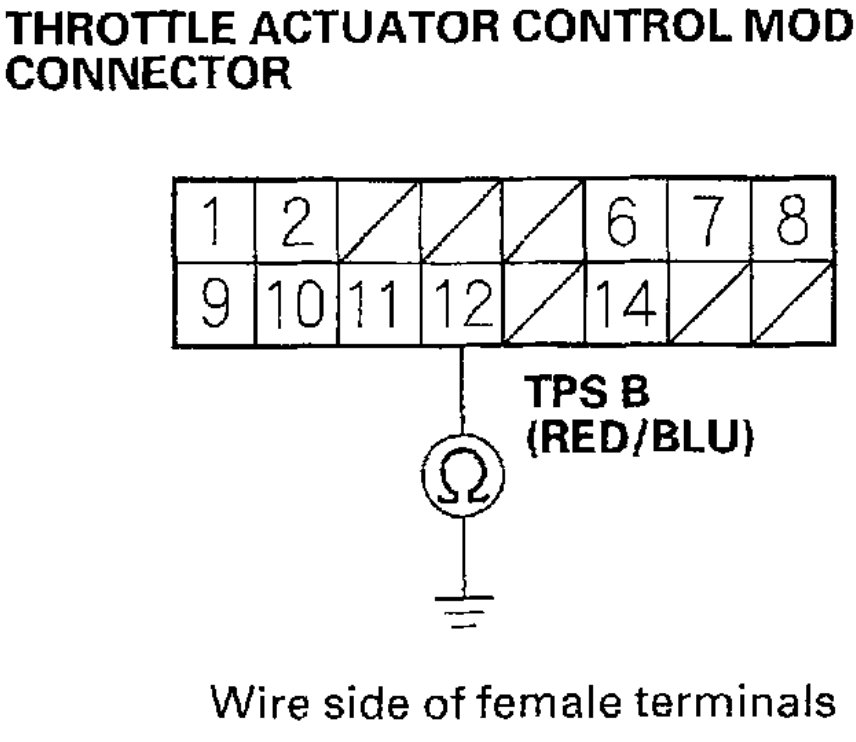


Fig. 18: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 12 And Body Ground

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 18 and recheck. If DTC P0223 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0223 is indicated, go to step 16.

NO - Repair open in the wire between the throttle body and the throttle actuator control module (TPS B line), then go to step 18.

11. Turn the ignition switch OFF.
12. Disconnect the throttle body 6P connector.
13. Disconnect the throttle actuator control module 16P connector.
14. Connect throttle body 6P connector terminal No. 4 to body ground with a jumper wire.

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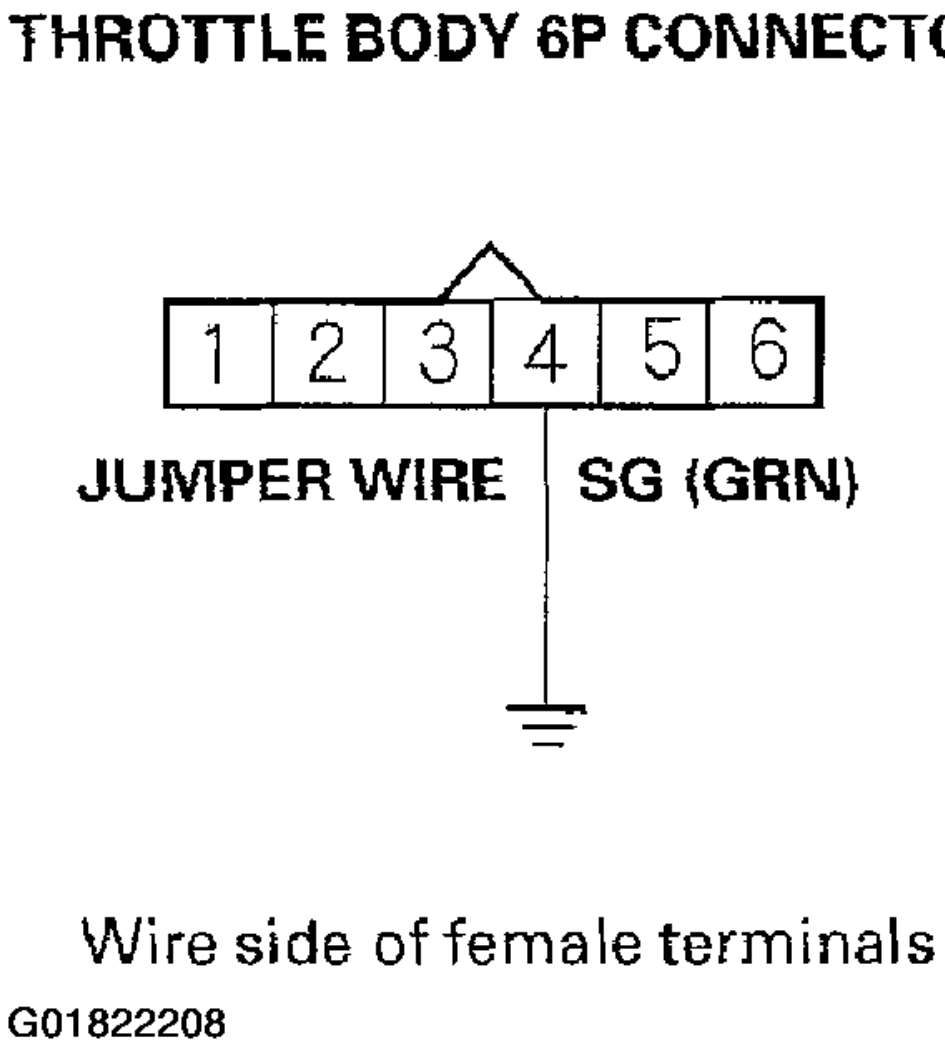


Fig. 19: Connecting Throttle Body 6P Connector Terminal No. 4 To Body Ground With A Jumper Wire

15. Check for continuity between throttle actuator control module 16P connector terminal No. 9 and body ground.

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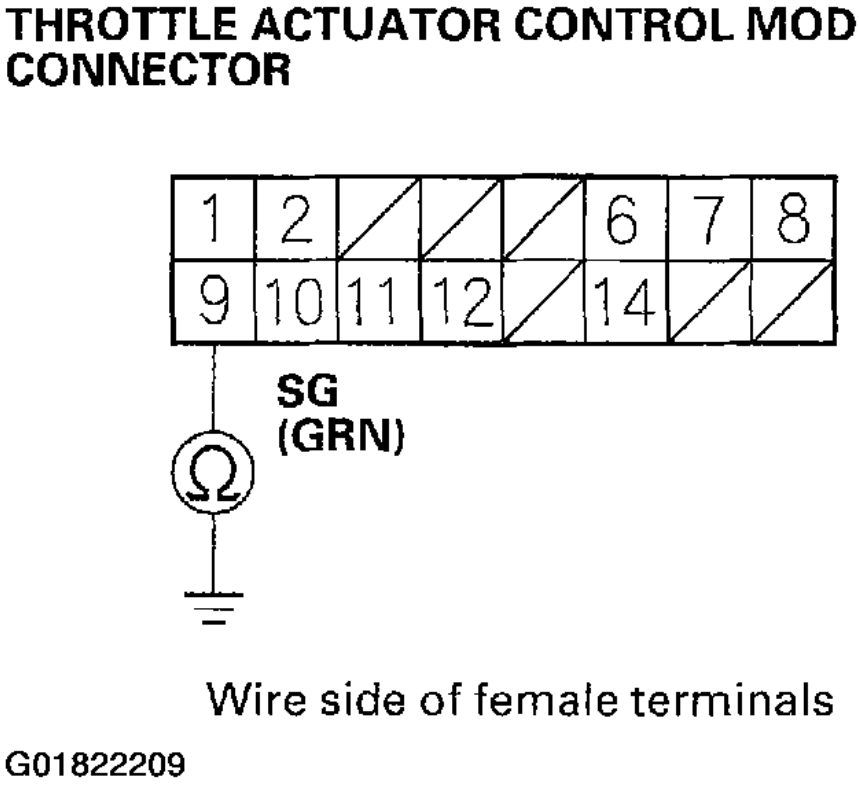


Fig. 20: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 9 And Body Ground

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 18 and recheck. If DTC P0223 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0223 is indicated, go to step 16.

NO - Repair open in the wire between the throttle body and the throttle actuator control module (SG line), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES - If DTC P0223 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

DTC P2135: TP SENSOR A/B VOLTAGE INCORRECT CORRELATION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P2135 indicated?

YES - Go to step 5.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module.

5. Turn the ignition switch OFF.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch ON (II).
8. Clear the DTC with the HDS.
9. Visually check the throttle valve operation.

Does the valve move to the fully closed position temporarily?

YES - Go to step 14.

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 16P connector.
12. Check for continuity between throttle actuator control module 16P connector terminals No. 10 and No. 12.

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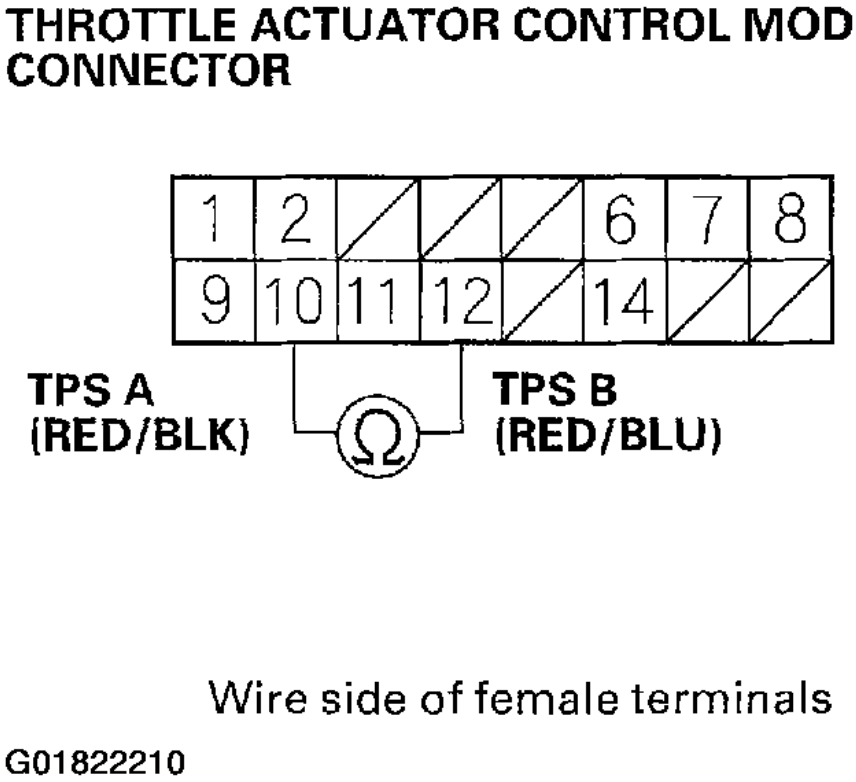


Fig. 21: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminals No. 10 And No. 12

Is there continuity?

YES - Go to step 12.

NO - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 16 and recheck. If DTC P2135 is not indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 16.

13. Disconnect the throttle body 6P connector.
14. Check for continuity between throttle actuator control module 16P connector terminals No. 10 and No. 12.

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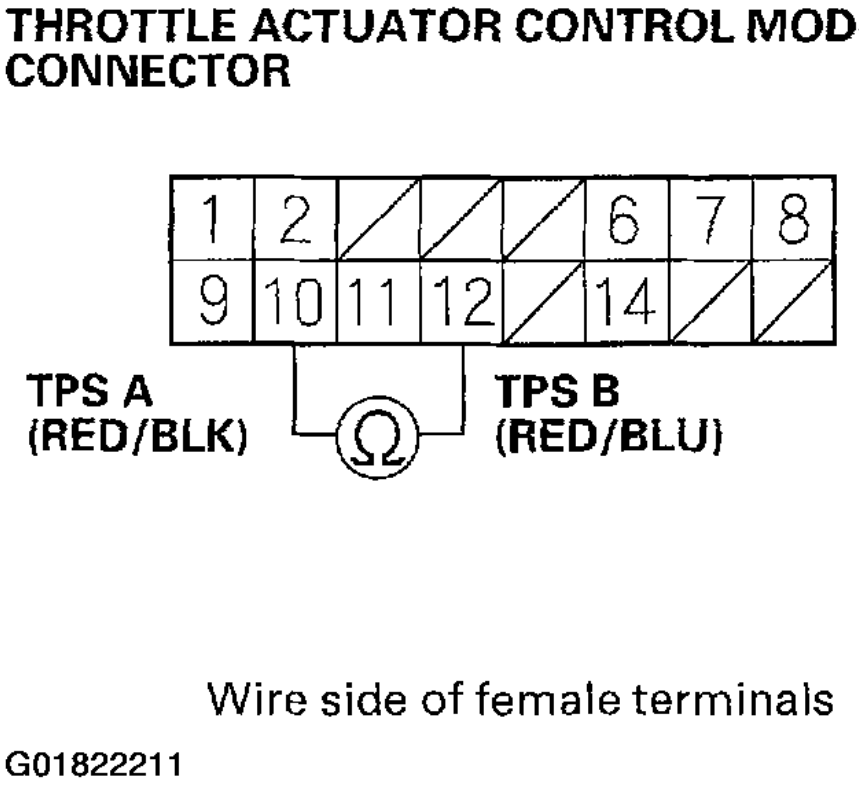


Fig. 22: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminals No. 10 And No. 12

Is there continuity?

YES - Repair short in the wire between the TPSA line and the TPSB line, then go to step 16.

NO - Go to step 14.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
17. Turn the ignition switch ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P2135 is indicated, check for poor connections or loose terminals at the throttle body and

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the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

DTC P2122: APP SENSOR A CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check APP SENSOR-A in the DATA LIST with the HDS.

   Is there about 0.1 V, or less with the accelerator pedal fully pressed?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor A and at the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

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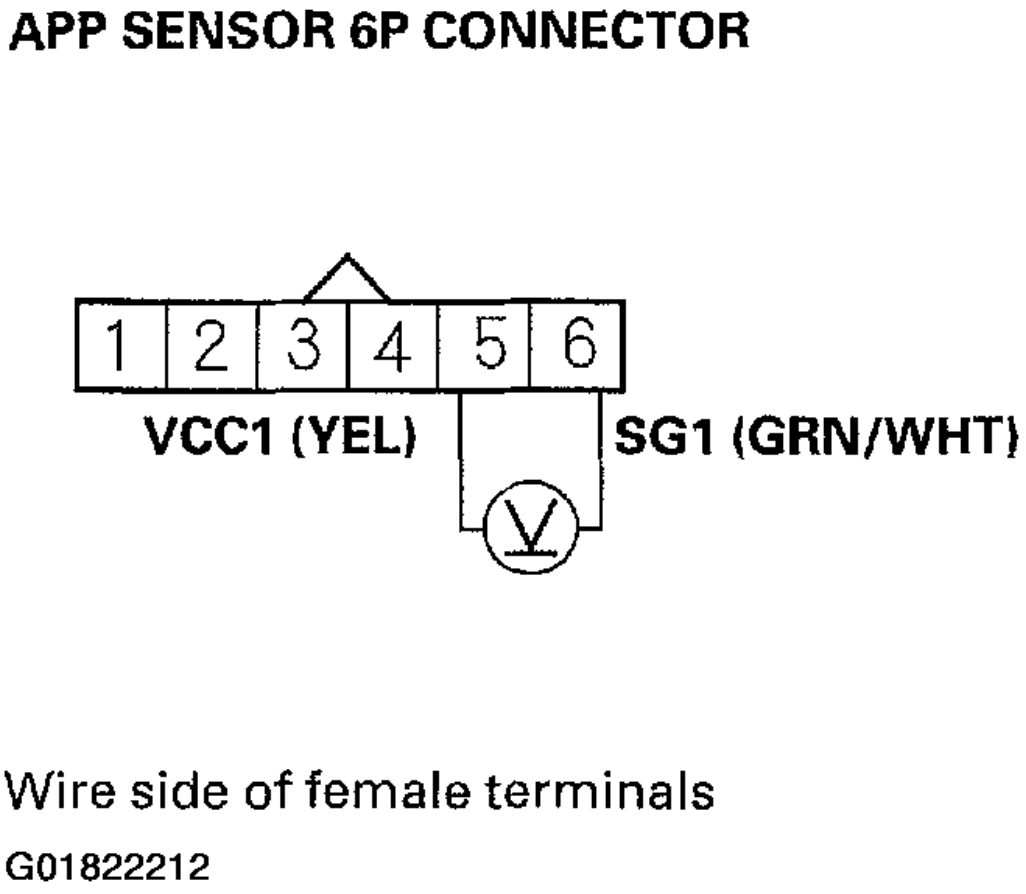


Fig. 23: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And No. 6

Is there about 5 V ?

YES - Go to step 7.

NO - Go to step 15.

7. Turn the ignition switch OFF.
8. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 4 and No. 6 with the throttle fully closed.

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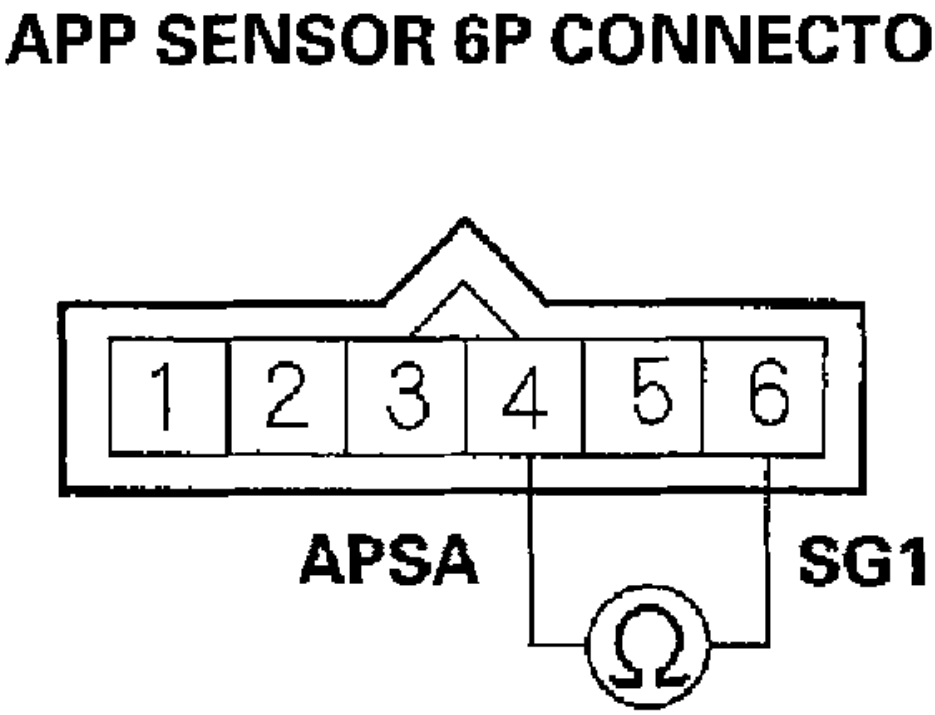


Fig. 24: Measuring Resistance Between APP Sensor 6P Connector Terminals No. 4 And No. 6

Is there about 0.35-0.45 kohm?

YES - Go to step 9.

NO - Go to step 16.

9. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 4 and No. 5 with

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the throttle fully closed.

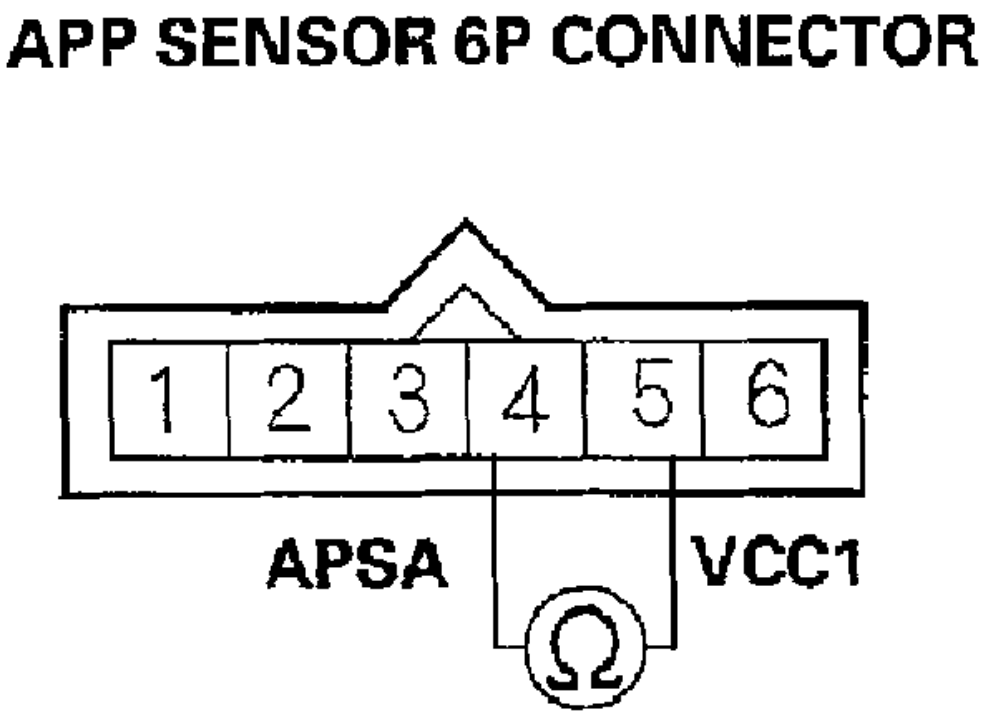


Fig. 25: Measuring Resistance Between APP Sensor 6P Connector Terminals No. 4 And No. 5

Is there about 2.7-3.3 kohm?

YES - Go to step 10.

NO - Go to step 16.

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10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (31P).
12. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

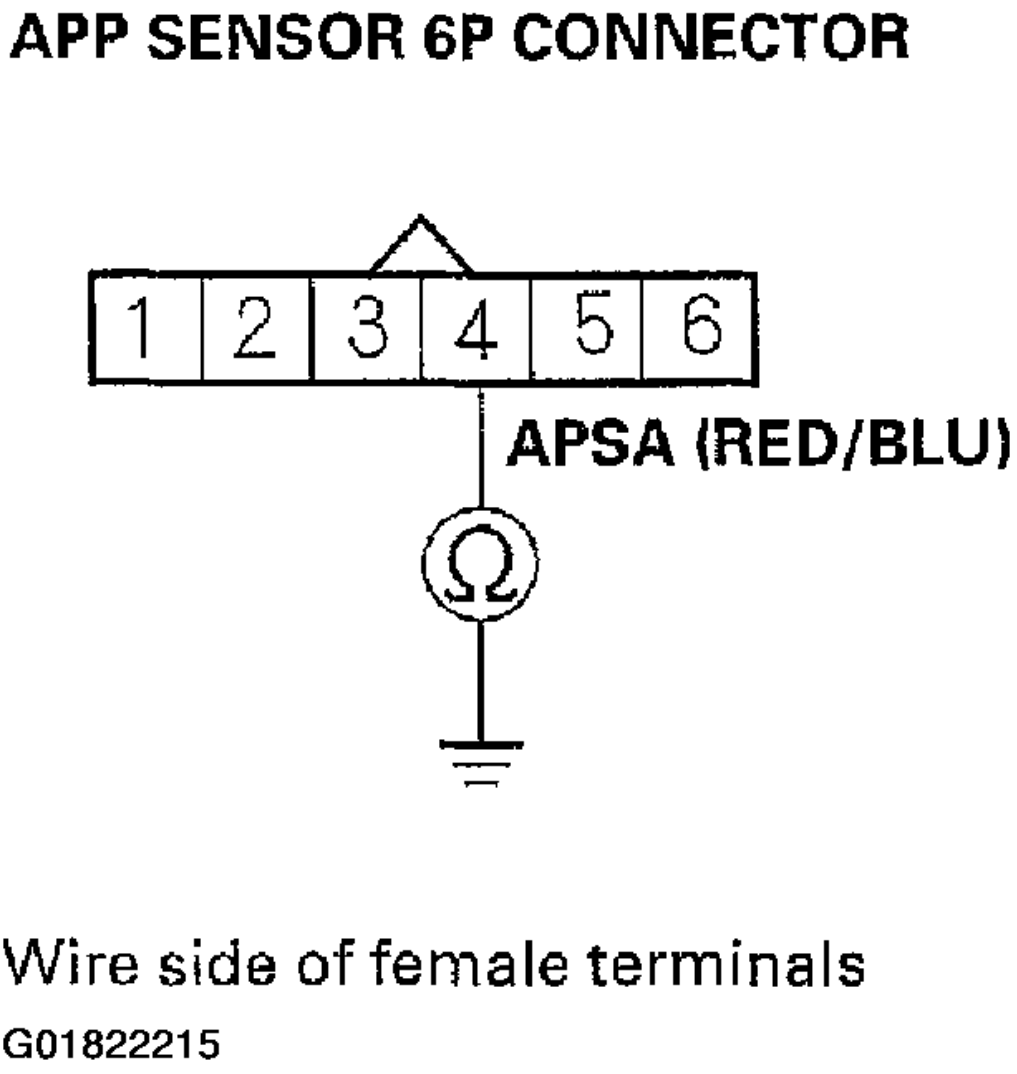


Fig. 26: Checking For Continuity Between APP Sensor 6P Connector Terminal No. 4 And Body Ground

Is there continuity?

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YES - Repair short in the wire between APP sensor A and ECM/PCM (A26), then go to step 17.

NO - Go to step 13.

13. Connect ECM/PCM connector terminal A26 to body ground with a jumper wire.

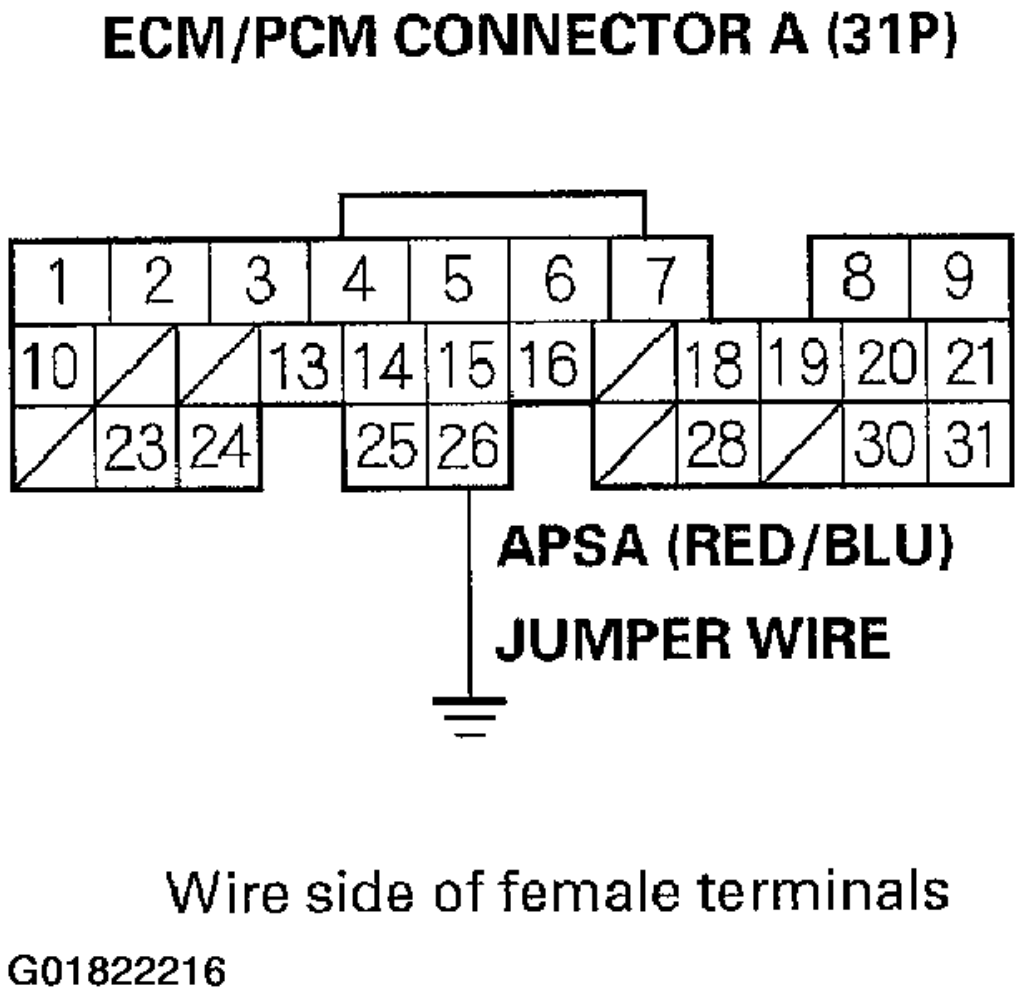


Fig. 27: Connecting ECM/PCM Connector Terminal A26 To Body Ground With A Jumper Wire

14. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

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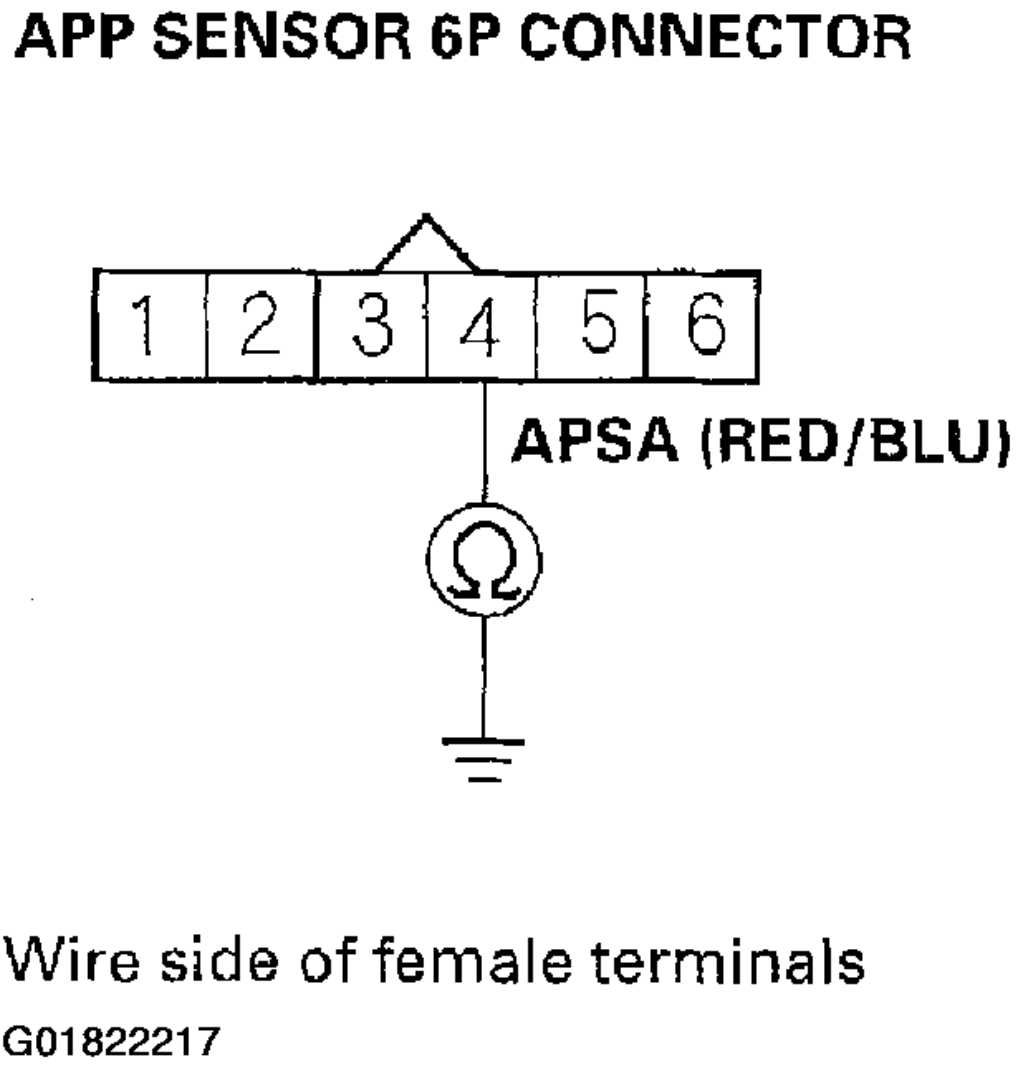


Fig. 28: Checking For Continuity Between APP Sensor 6P Connector Terminal No. 4 And Body Ground

Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between APP sensor A and the ECM/PCM (A26), then go to step 17.

15. Measure voltage between ECM/PCM connector terminals A21 and A24.

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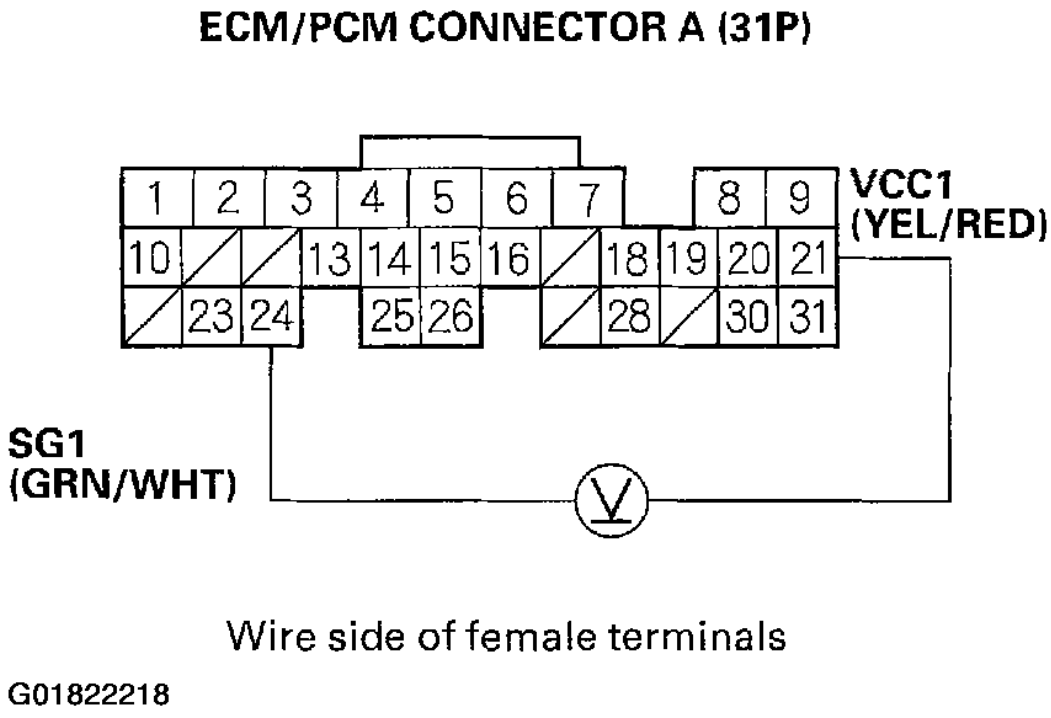


Fig. 29: Measuring Voltage Between ECM/PCM Connector Terminals A21 And A24

Is there about 5 V ?

YES - Repair open in the wire between the ECM/PCM (A21) and APP sensor A, then go to step 17.

NO - Go to step 22.

16. Replace the APP sensor (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**).
17. Reconnect ECM/PCM connector.
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P2122 is indicated, check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

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NO - Troubleshooting is complete.

22. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
23. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2122 is indicated, check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check APP SENSOR-A in the DATA LIST with the HDS.

   Is there about 4.9 V, or higher?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor A and at the ECM/PCM.

3. Turn the ignition swith OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

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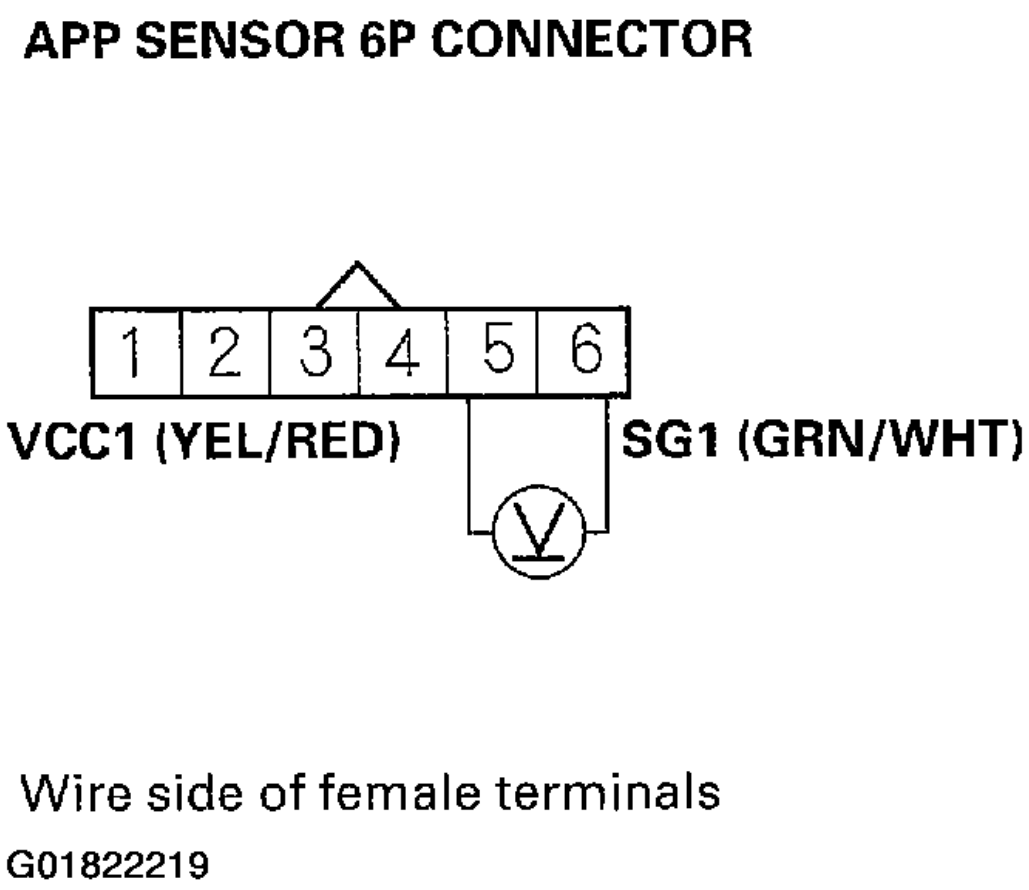


Fig. 30: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And No. 6

Is there about 5 V ?

YES - Go to step 8.

NO - Go to step 7.

7. Measure voltage between ECM/PCM connector terminals A21 and A24.

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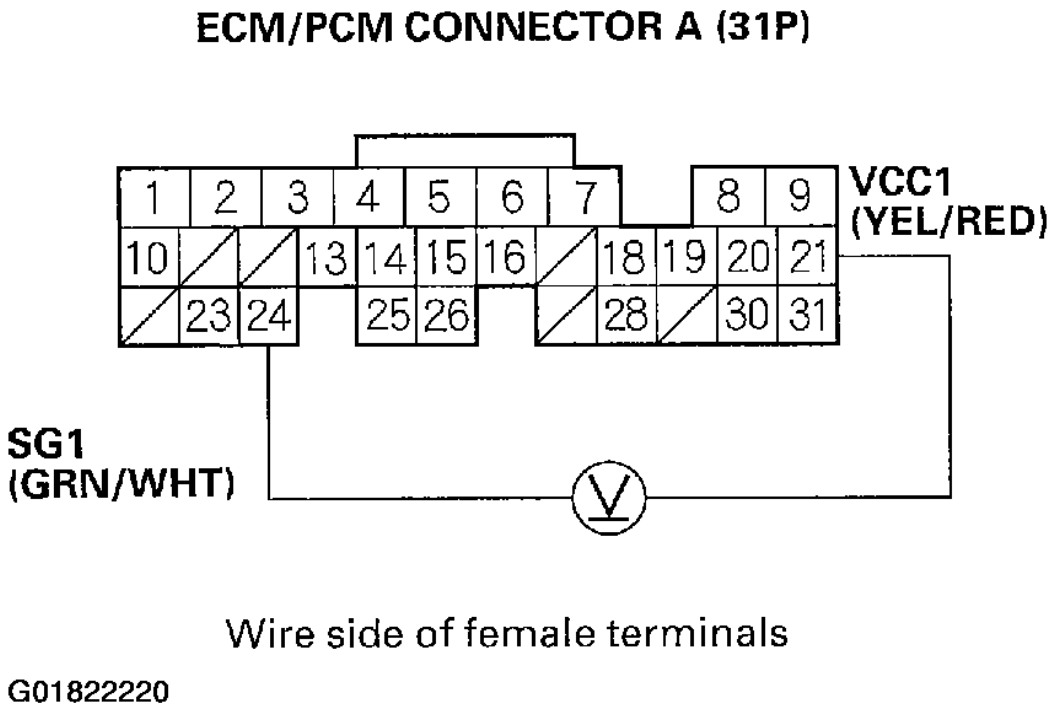


Fig. 31: Measuring Voltage Between ECM/PCM Connector Terminals A21 And A24

Is there about 5 V ?

YES - Repair open in the wire between the ECM/PCM (A24) and APP sensor A, then go to step 10.

NO - Go to step 14.

8. Turn the ignition switch OFF.
9. Replace the APP sensor (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**).
10. Turn the ignition switch ON (II).
11. Reset the ECM/PCM with the HDS.
12. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
13. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P2123 is indicated, check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

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NO - Troubleshooting is complete.

14. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2123 is indicated, check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2127: APP SENSOR B CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check APP SENSOR-B in the DATA LIST with the HDS.

   Is there about 0.1 V, or less with the accelerator pedal fully pressed?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor B and at the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 1 and No. 2.

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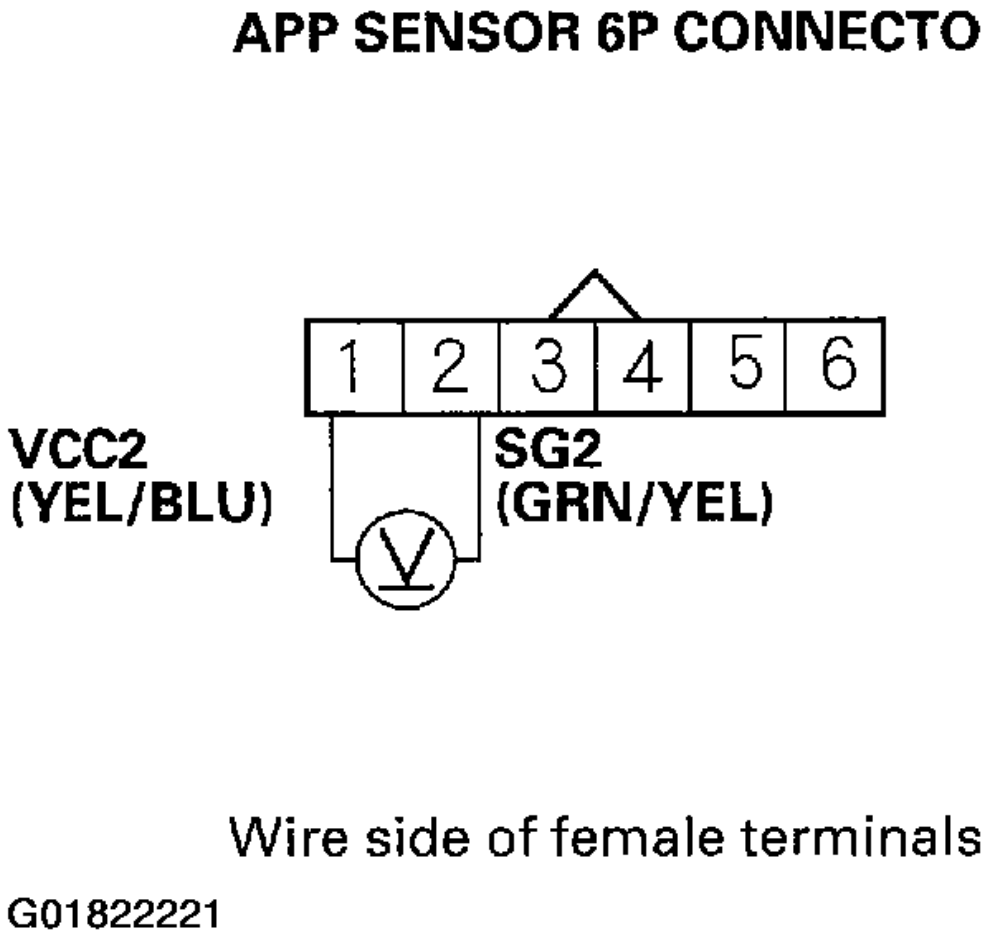


Fig. 32: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 1 And No. 2

Is there about 5 V ?

YES - Go to step 7.

NO - Go to step 15.

7. Turn the ignition switch OFF.
8. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 2 and No. 3 with the throttle fully closed.

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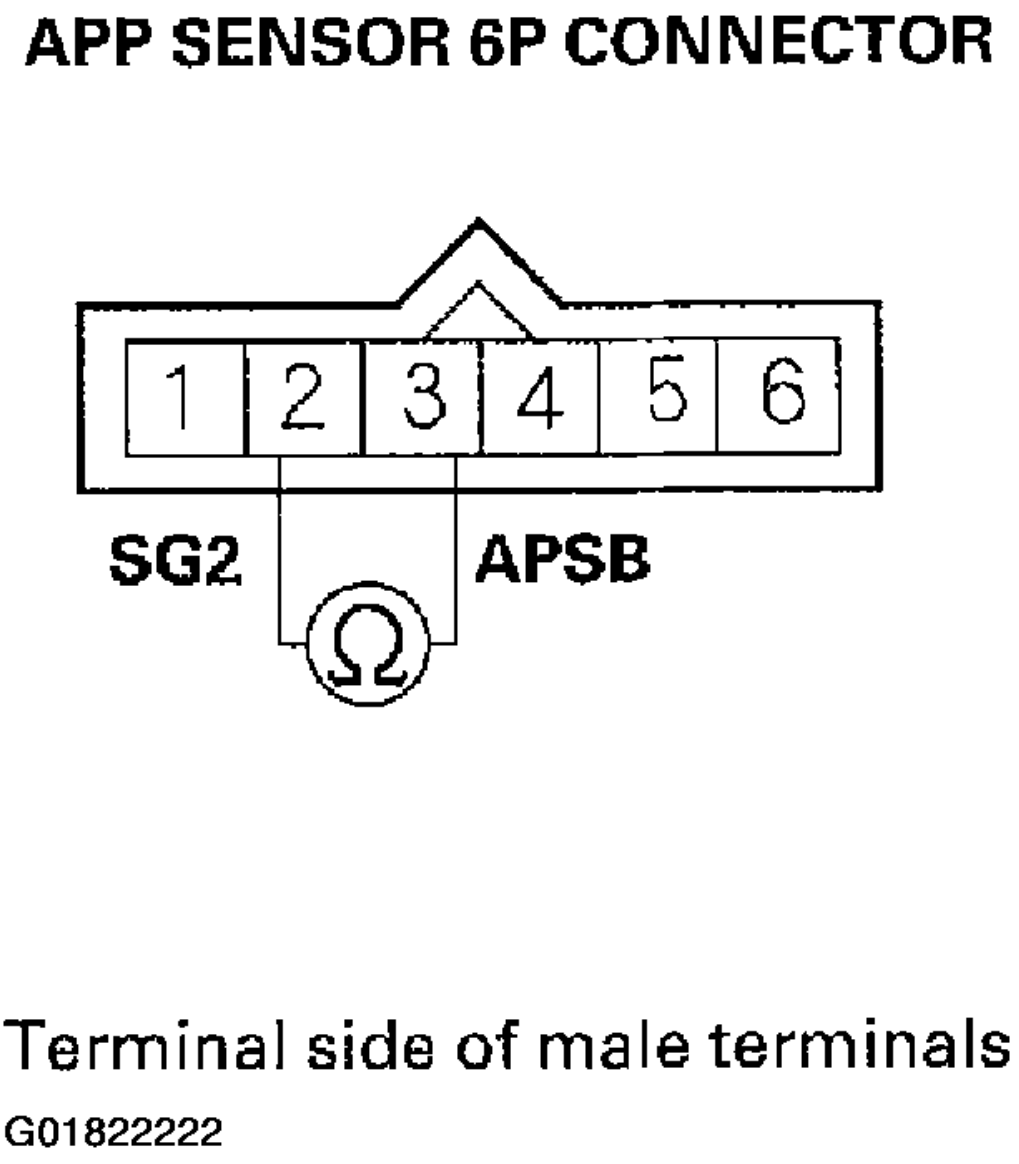


Fig. 33: Measuring Resistance Between APP Sensor 6P Connector Terminals No. 2 And No. 3

Is there about 0.35-0.45 kohm ?

YES - Go to step 9.

NO - Go to step 16.

9. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 1 and No. 3 with

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the throttle fully closed.

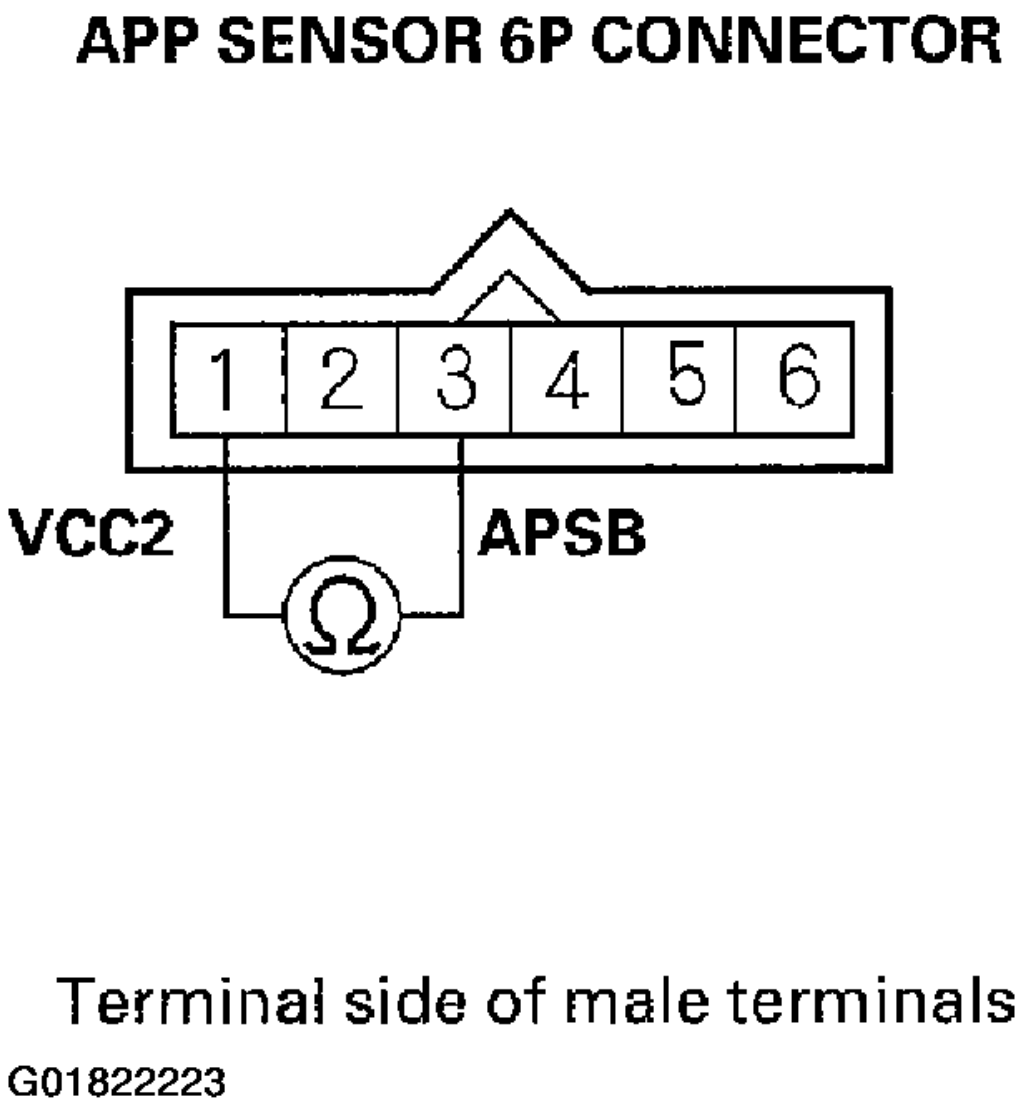


Fig. 34: Measuring Resistance Between APP Sensor 6P Connector Terminals No. 1 And No. 3

Is there about 2.7-3.3 kohm ?

YES - Go to step 10.

NO - Go to step 16.

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10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (31P).
12. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 3 and body ground.

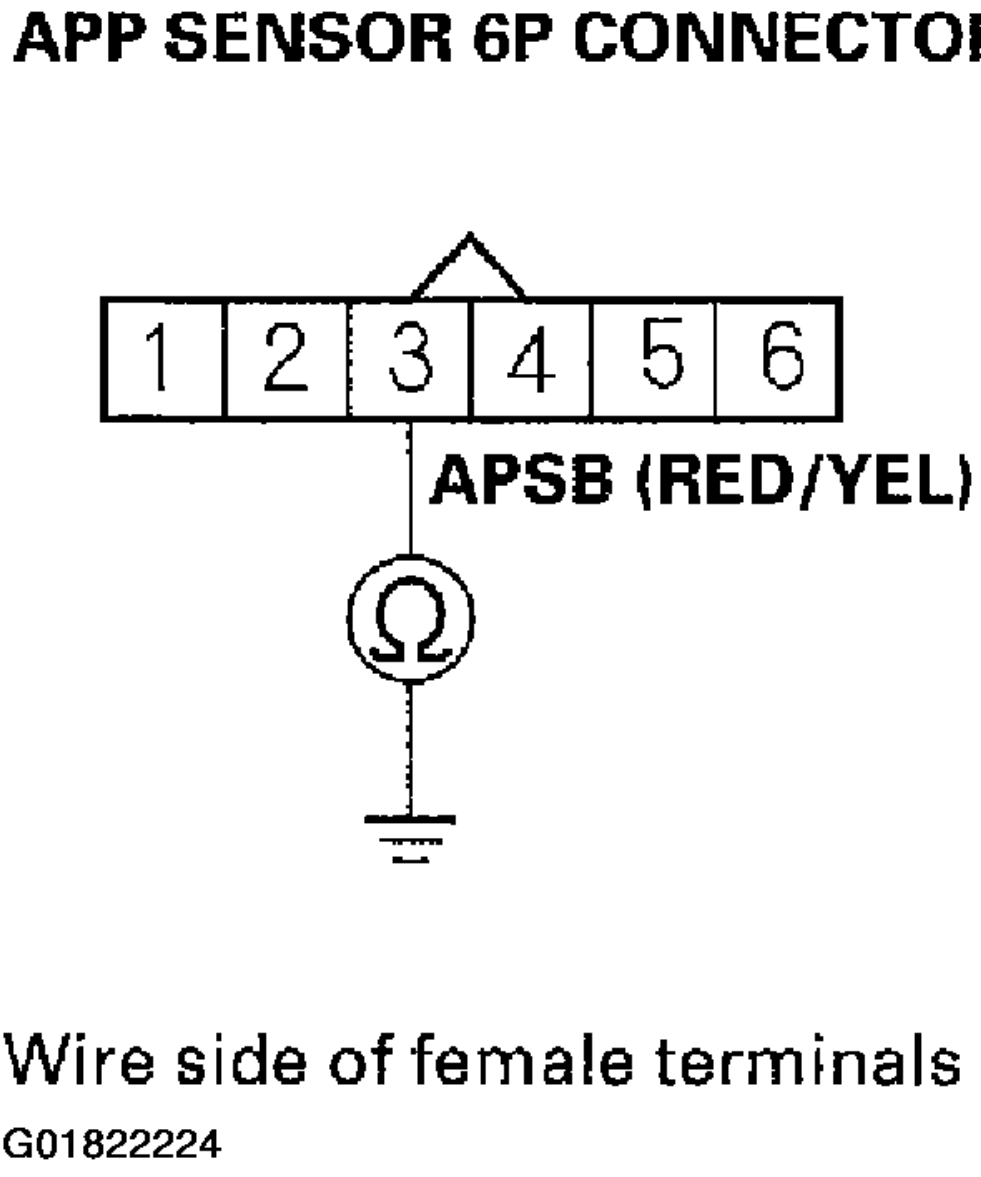


Fig. 35: Checking For Continuity Between APP Sensor 6P Connector Terminal No. 3 And Body Ground

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Is there continuity?

YES - Repair short in the wire between APP sensor B and the ECM/PCM (A25), then go to step 17.

NO - Go to step 13.

13. Connect ECM/PCM connector terminal A25 to body ground with a jumper wire.

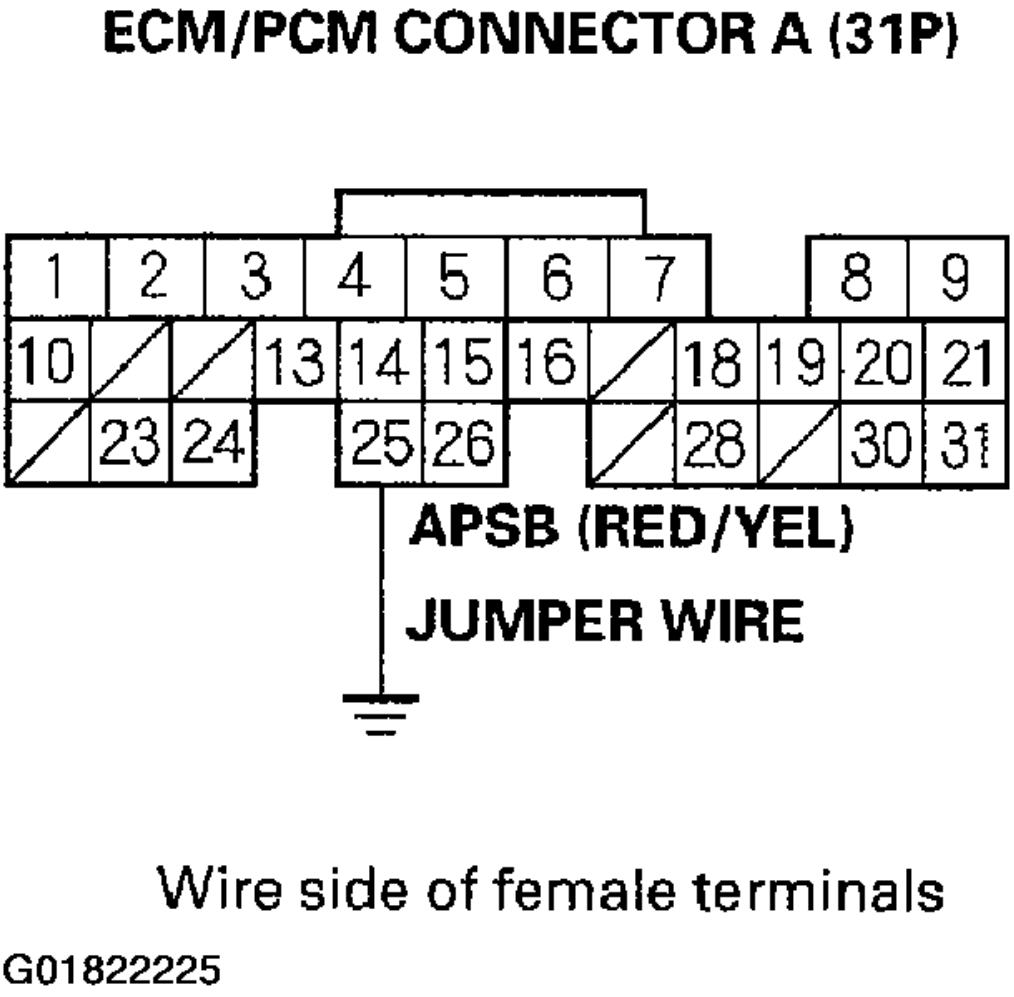


Fig. 36: Connecting ECM/PCM Connector Terminal A25 To Body Ground With A Jumper Wire

14. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 3 and body ground.

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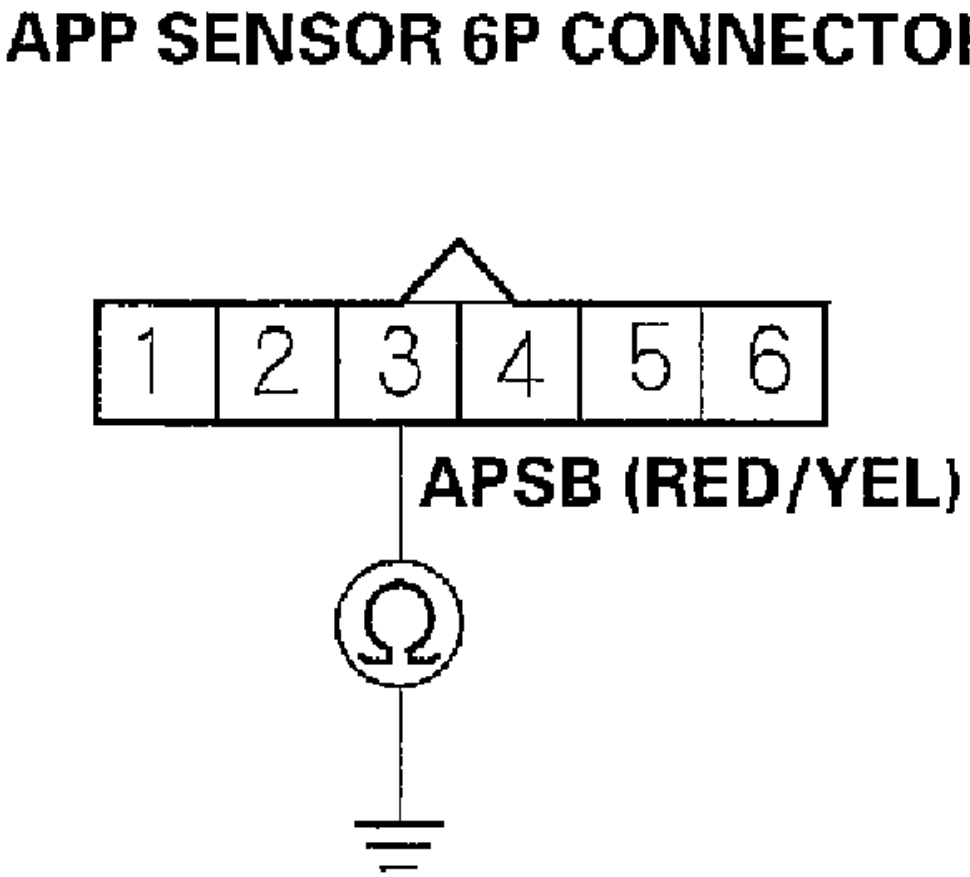


Fig. 37: Checking For Continuity Between APP Sensor 6P Connector Terminal No. 3 And Body Ground

Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between APP sensor B and ECM/PCM (A25), then go to step 17.

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15. Measure voltage between ECM/PCM connector terminals A20 and A23.

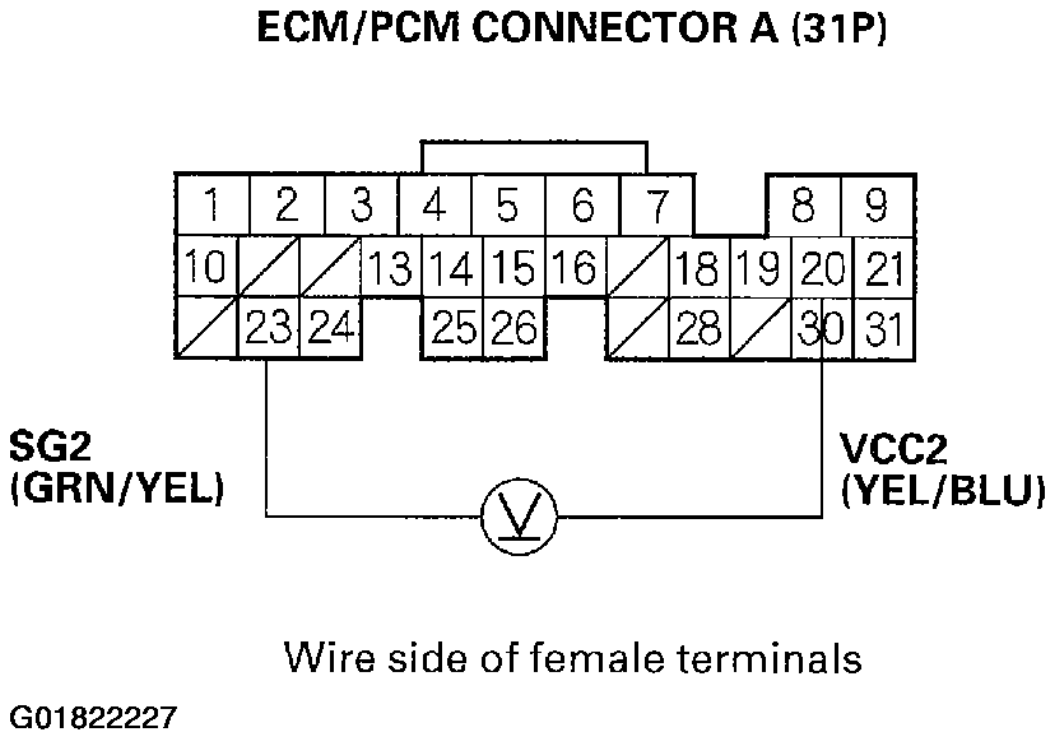


Fig. 38: Measuring Voltage Between ECM/PCM Connector Terminals A20 And A23

Is there about 5 V ?

YES - Repair open in the wire between the ECM/PCM (A20) and APP sensor B, then go to step 17.

NO - Go to step 22.

16. Replace the APP sensor (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**).
17. If disconnected, reconnect ECM/PCM connector A (31P).
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P2127 is indicated, check for poor connections or loose terminals at APP sensor B and the

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ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

22. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
23. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2127 is indicated, check for poor connections or loose terminals at APP sensor B and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2128: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check APP SENSOR-B in the DATA LIST with the HDS.

   Is there about 4.9 V, or higher?

   YES - Go to step 3.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor B and at the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 1 and No. 2.

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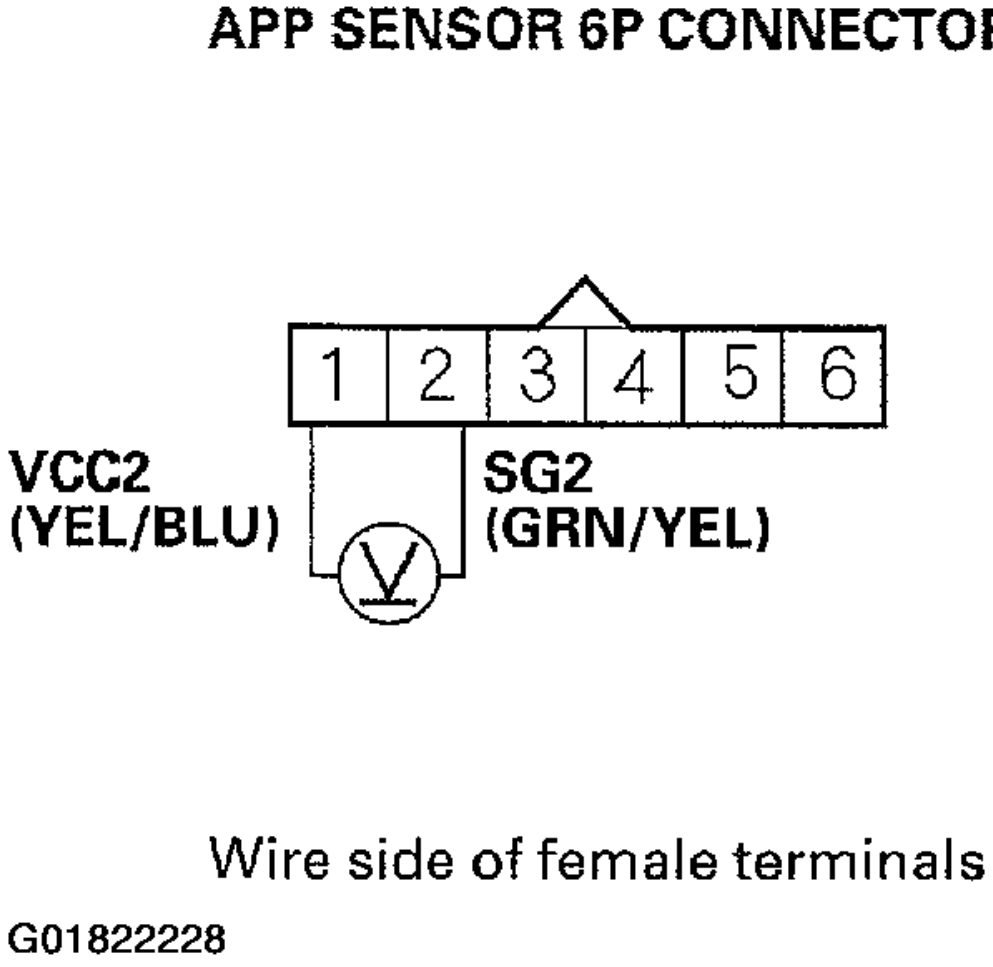


Fig. 39: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 1 And No. 2

Is there about 5 V ?

YES - Go to step 8.

NO - Go to step 7.

7. Measure voltage between ECM/PCM connector terminals A20 and A23.

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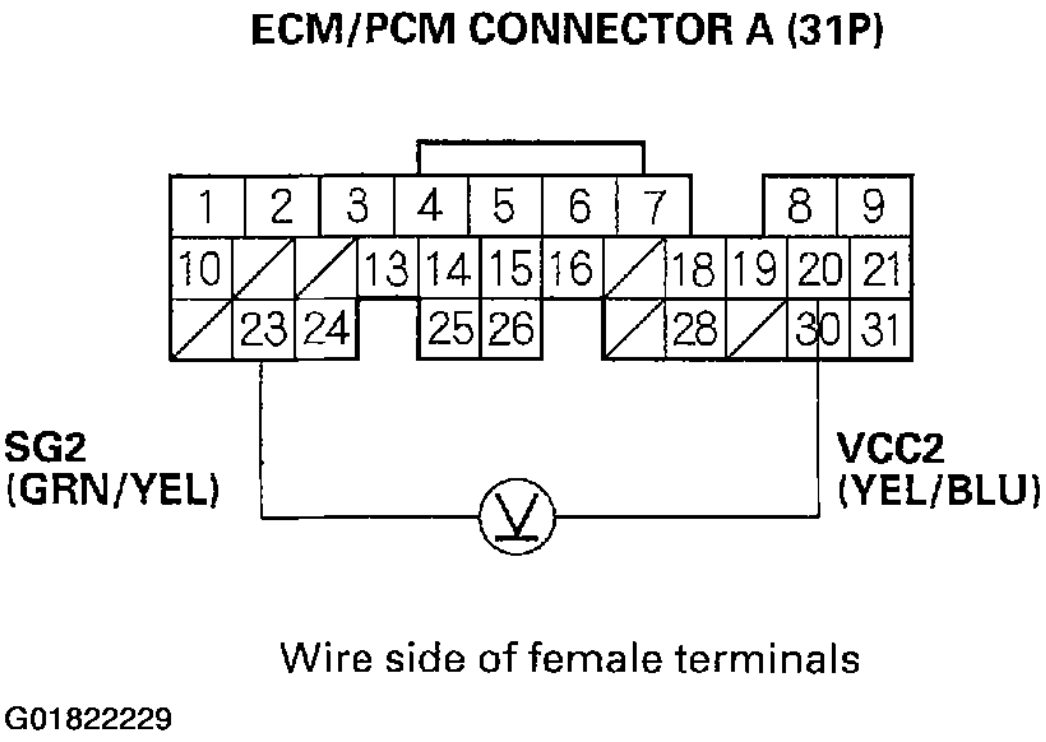


Fig. 40: Measuring Voltage Between ECM/PCM Connector Terminals A20 And A23

Is there about 5 V ?

YES - Repair open in the wire between the ECM/PCM (A23) and APP sensor B, then go to step 10.

NO - Go to step 14.

8. Turn the ignition switch OFF.
9. Replace the APP sensor (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**).
10. Turn the ignition switch ON (II).
11. Reset the ECM/PCM with the HDS.
12. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
13. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P2128 is indicated, check for poor connections or loose terminals at APP sensor B and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

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NO - Troubleshooting is complete.

14. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2128 is indicated, check for poor connections or loose terminals at APP sensor B and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2138: APP SENSOR A/B INCORRECT VOLTAGE CORRELATION

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P2138 indicated?

    YES - Go to step 5.

    NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensors and at the ECM/PCM.

5. Check APP SENSOR-A and APP SENSOR-B in the DATA LIST with the HDS.

    Are they the same voltage?

    YES - Go to step 6.

    NO - Go to step 11.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the APP sensor 6P connector.
9. Disconnect ECM/PCM connector A (31P).
10. Check for continuity between ECM/PCM connector terminals A25 and A26.

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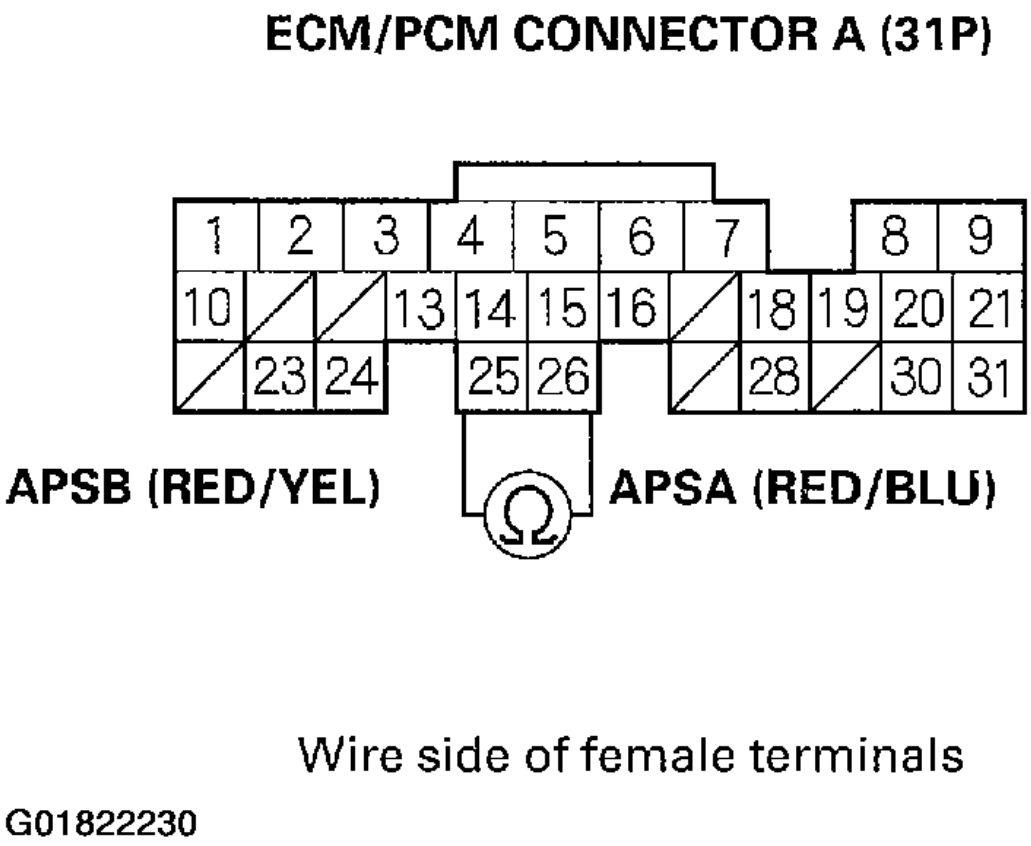


Fig. 41: Checking For Continuity Between ECM/PCM Connector Terminals A25 And A26

Is there continuity?

YES - Repair short in the wire between the ECM/PCM terminals (A25, A26), then go to step 13.

NO - Go to step 21.

11. Turn the ignition switch OFF.
12. Replace the APP sensor (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**).
13. Reconnect ECM/PCM connector A (31P).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON.

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19. Press the accelerator pedal to the floor.
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2138 is indicated, check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - Troubleshooting is complete.

21. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
22. Turn the ignition switch OFF.
23. Turn the ignition switch ON.
24. Press the accelerator pedal to the floor.
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2138 is indicated, check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve was activated.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P1683 indicated?

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YES - Go to step 7.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module.

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve closed as shown.

NOTE:

- **Do not operate the ignition switch during the check.**
- **Be careful not to pinch your finger during the check.**

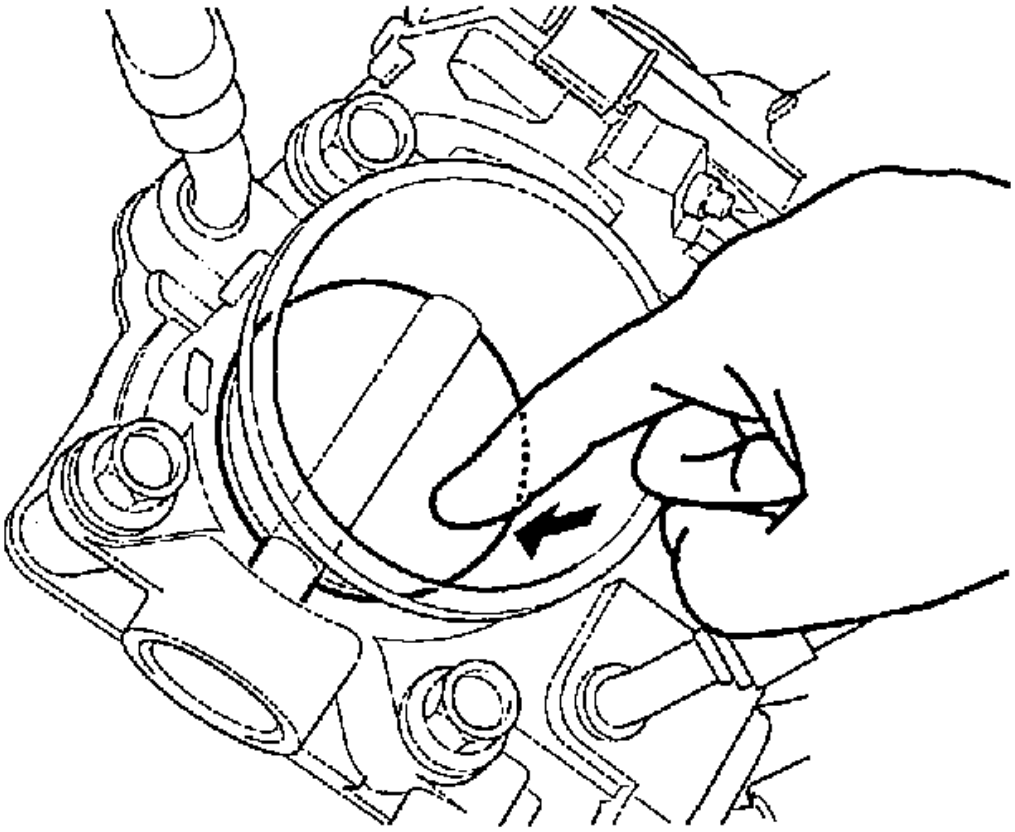


Fig. 42: Pushing The Throttle Valve Closed

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10. Release the throttle valve.

    Does the throttle valve return?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 13.

    NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
13. Turn the ignition switch ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Turn the ignition switch OFF, and wait 10 seconds.
17. Turn the ignition switch ON (II).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P1683 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - Troubleshooting is complete.

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). Otherwise, you will have serious injury to your fingers if the throttle valve was activated.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P1684 indicated?

   YES - Go to step 7.

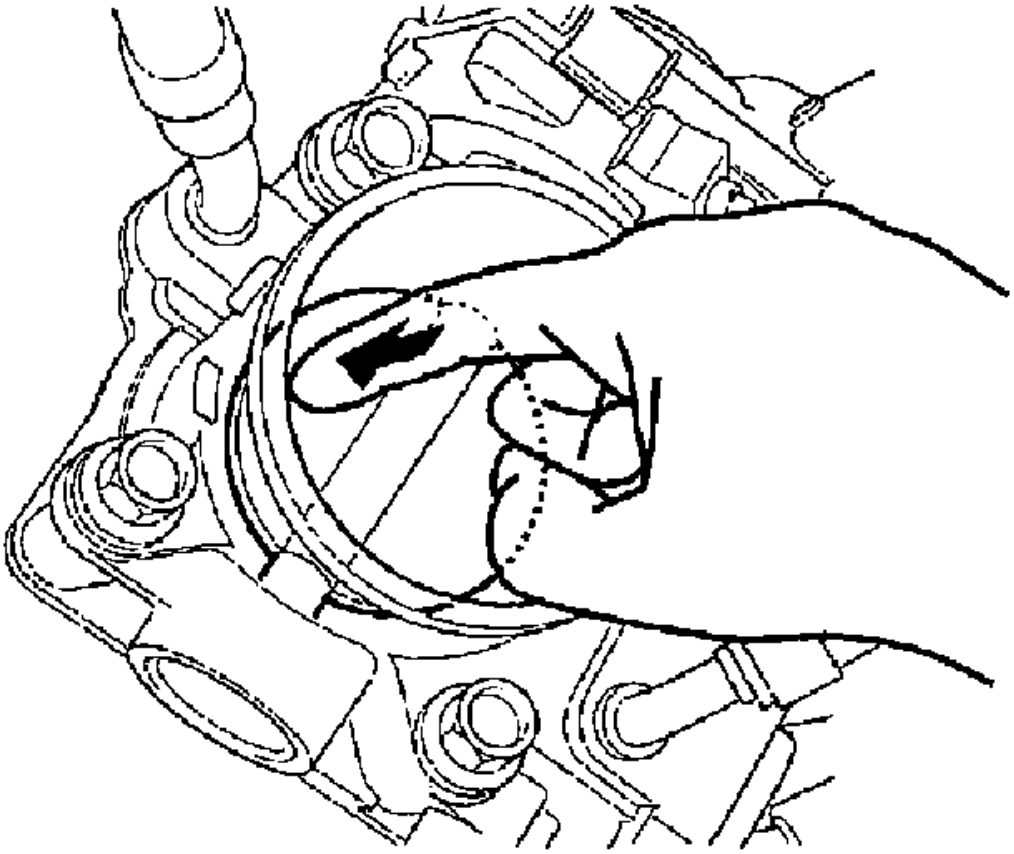
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NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module.

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve open as shown.

NOTE:

- **Do not operate the ignition switch during the check.**
- **Be careful not to pinch your finger during the check.**



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Fig. 43: Pushing The Throttle Valve Open

10. Release the throttle valve.

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Does the throttle valve return?

YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 13.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
13. Turn the ignition switch ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Turn the ignition switch OFF, and wait 10 seconds.
17. Turn the ignition switch ON (II).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P1684 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

DTC P2101: THROTTLE ACTUATOR SYSTEM MALFUNCTION

1. Record the following freeze data.
   - Engine speed
   - Vehicle speed
   - Accelerator position
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P2101 indicated?

YES - Go to step 7.

NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P2101 indicated?

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YES - Go to step 7.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and at the throttle actuator control module, then clean the throttle body (see **THROTTLE BODY CLEANING**).

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

NOTE: Be careful not to pinch your finger during the check.

Does the throttle valve operate smoothly?

YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 20 and recheck. If DTC P2101 is indicated, go to step 18.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Disconnect the throttle actuator control module 16P connector.
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

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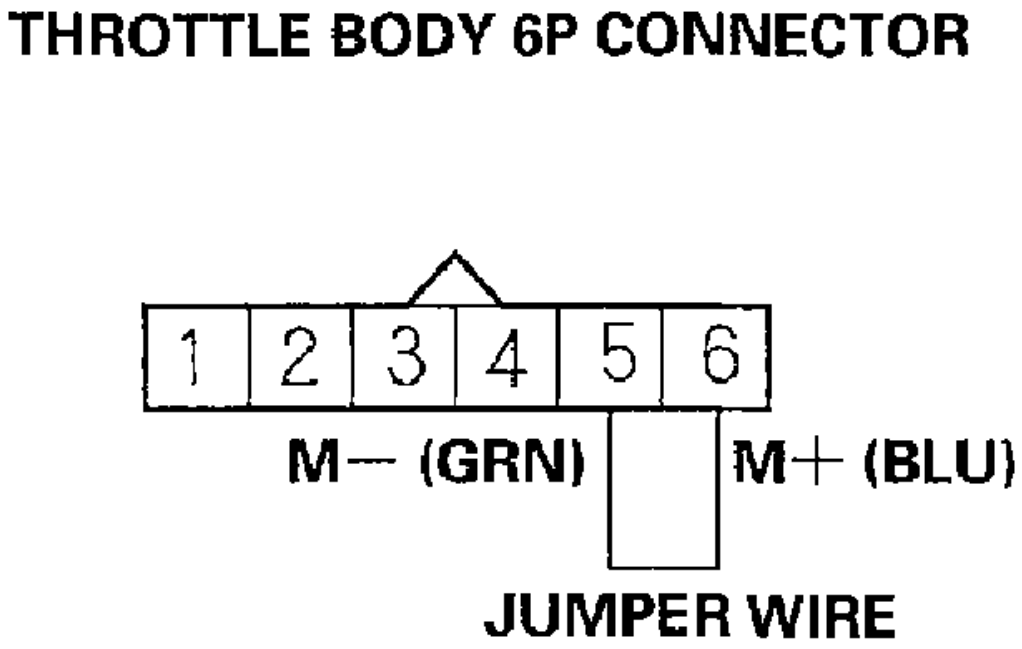


Fig. 44: Connecting Throttle Body 6P Connector Terminals No. 5 And No. 6 With A Jumper Wire

17. Check for continuity between throttle actuator control module 16P connector terminals No. 1 and No. 8.

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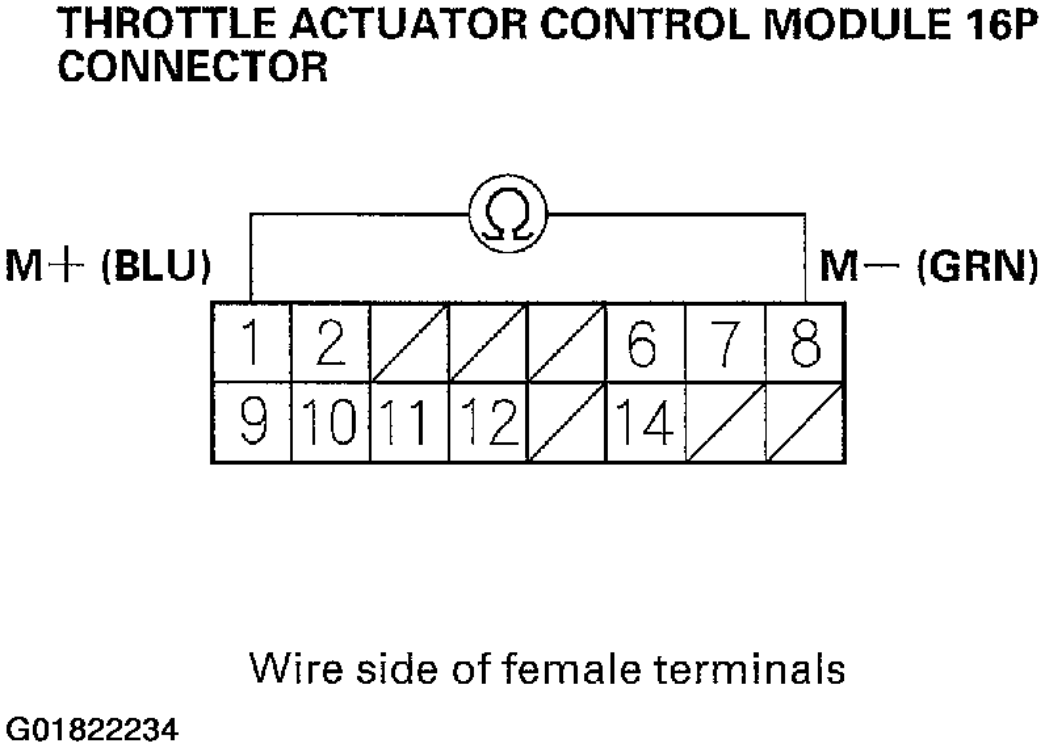


Fig. 45: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminals No. 1 And No. 8

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 20 and recheck. If DTC P2101 is not indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 20. If DTC P2101 is indicated, go to step 18.

NO - Repair open in the wires between the throttle body and the throttle actuator control module (motor drive lines), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Turn the ignition switch ON (II).
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
23. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

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24. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2101 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - Troubleshooting is complete.

DTC P2108: THROTTLE ACTUATOR CONTROL MODULE PROBLEM

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P2108 indicated ?

    YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), and recheck. If DTC P2108 is not indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**).

    NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body, the throttle actuator control module, and the ECM/PCM.

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM

1. Disconnect the throttle actuator control module 16P connector.
2. Measure resistance between throttle actuator control module 16P connector terminals No. 1 and No. 8.

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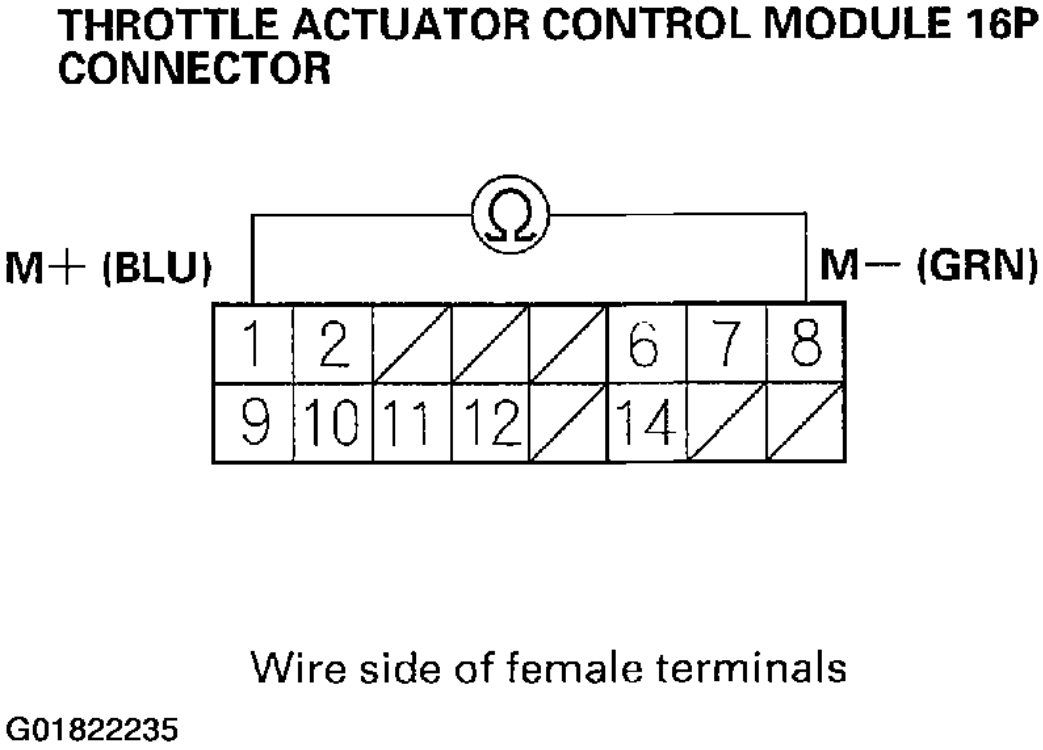


Fig. 46: Measuring Resistance Between Throttle Actuator Control Module 16P Connector Terminals No. 1 And No. 8

Is there about 1.0 ohm or less?

YES - Go to step 3.

NO - Substitute a know-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 7 and recheck. If DTC P2118 is not indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 7.

3. Disconnect the throttle body 6P connector.
4. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

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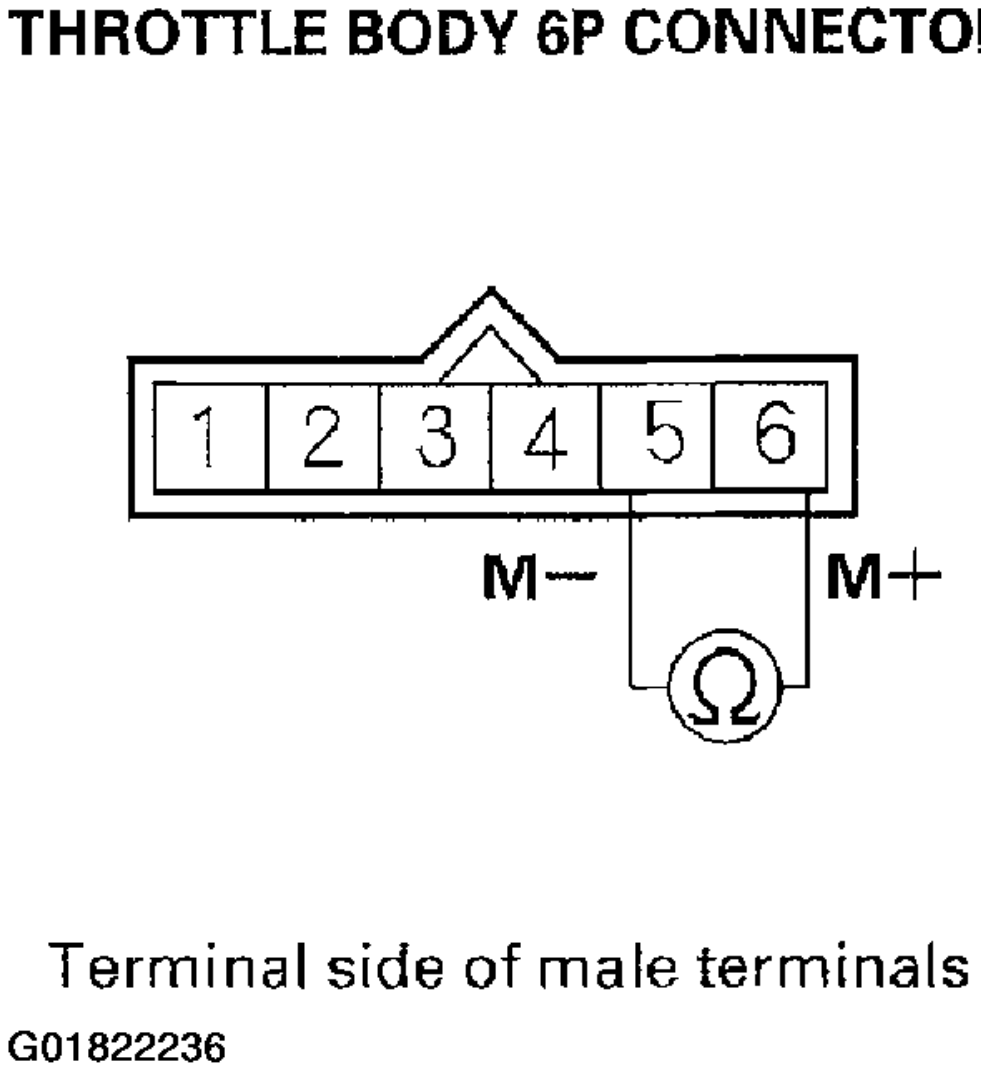


Fig. 47: Measuring Resistance Between Throttle Body 6P Connector Terminals No. 5 And No. 6

Is there about 1.0 ohm or less?

YES - Go to step 5.

NO - Repair short in the wires between the throttle body and throttle actuator control module (motor drive lines), then go to step 6.

5. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**)
6. Reconnect the throttle body 6P connector.

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7. Reconnect the throttle actuator control module 16P connector.
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2118 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - Troubleshooting is complete.

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED

NOTE: If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P2176 indicated?

    YES - Go to step 6.

    NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then clean the throttle body (see **THROTTLE BODY CLEANING**).

6. Turn the ignition switch OFF.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Do the ETCS TEST in the INSPECTION MENU with the HDS.
11. Visually check the throttle valve operations.

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NOTE: Be careful not to pinch your finger. Keep hands away from the throttle valve.

Does the throttle valve move to its fully closed position?

YES - Go to step 12.

NO - Go to step 13.

12. Check for sludge or carbon on the throttle valve.

Is there sludge or carbon on the throttle valve?

YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 21 and recheck.

NO - Go to step 19.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Disconnect the throttle actuator control module 16P connector.
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

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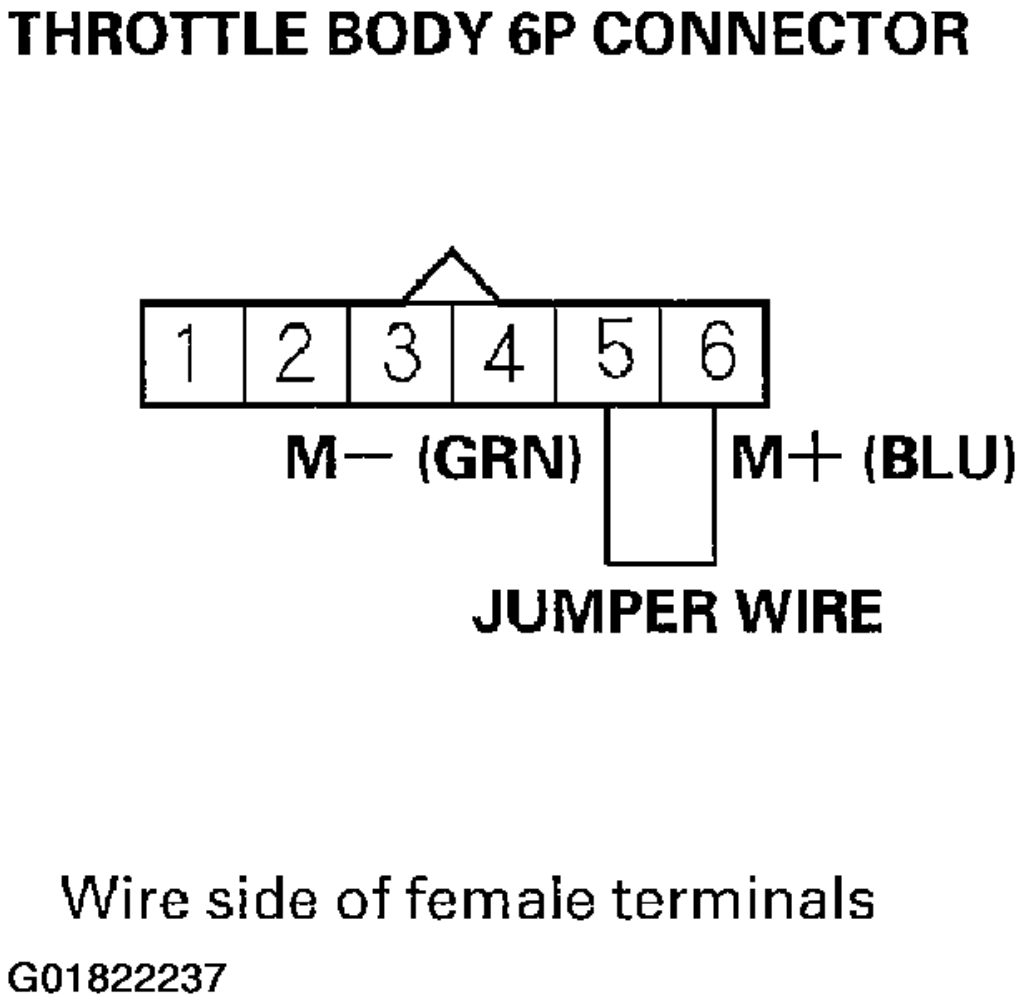


Fig. 48: Connecting Throttle Body 6P Connector Terminals No. 5 And No. 6 With A Jumper Wire

17. Check for continuity between throttle actuator control module 16P connector terminals No. 1 and No. 8.

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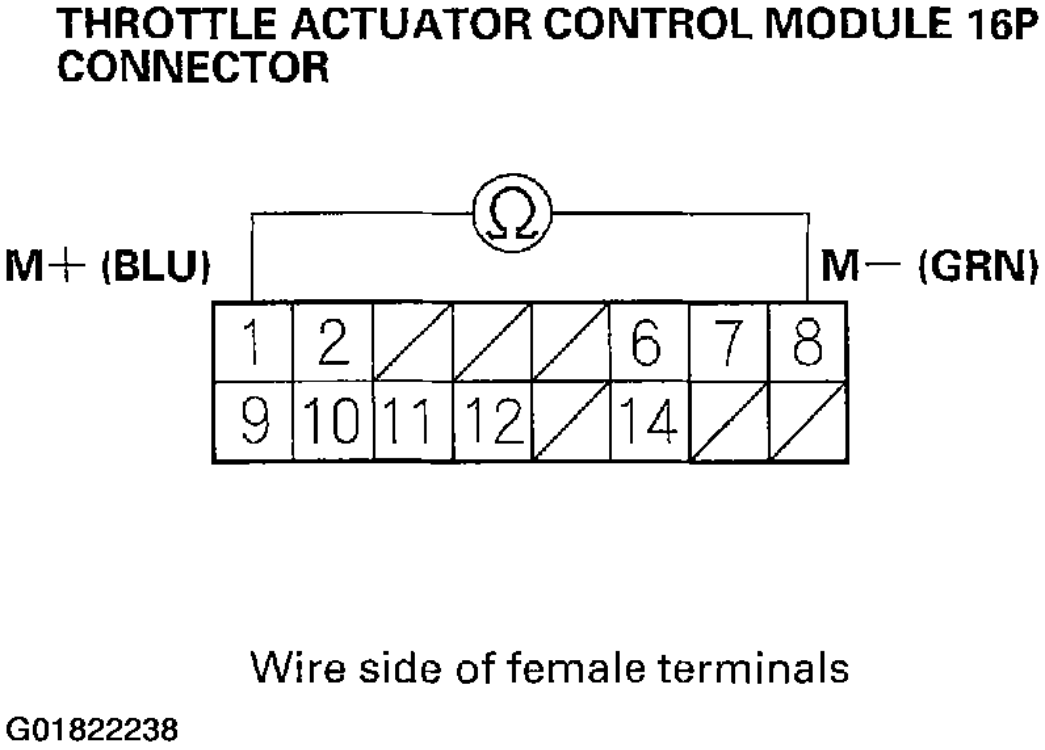


Fig. 49: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminals No. 1 And No. 8

Is there continuity?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 20 and recheck. If DTC P2176 is not indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 20.

NO - Repair open in the wires between the throttle body and the throttle actuator control module (motor drive lines), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Turn the ignition switch ON (II).
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
23. Turn the ignition switch OFF.
24. Turn the ignition switch ON (II), and wait 10 seconds.

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25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P2176 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - Troubleshooting is complete.

DTC P2552: THROTTLE ACTUATOR CONTROL MODULE RELAY MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.

   Is the RELAY Circuit OK?

   YES - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module, and at the ECM/PCM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Remove the throttle actuator control module relay (A).

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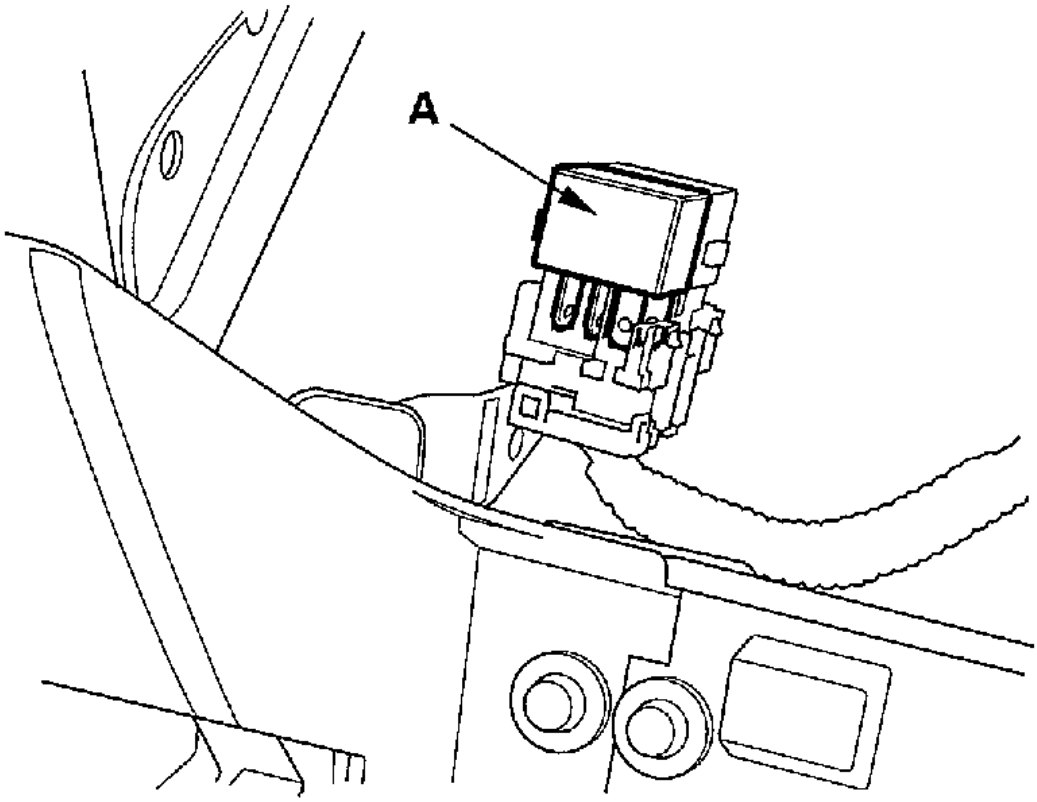


Fig. 50: Removing The Throttle Actuator Control Module Relay

7. Disconnect ECM/PCM connector D (17P).
8. Check for continuity between ECM/PCM connector terminal D15 and body ground.

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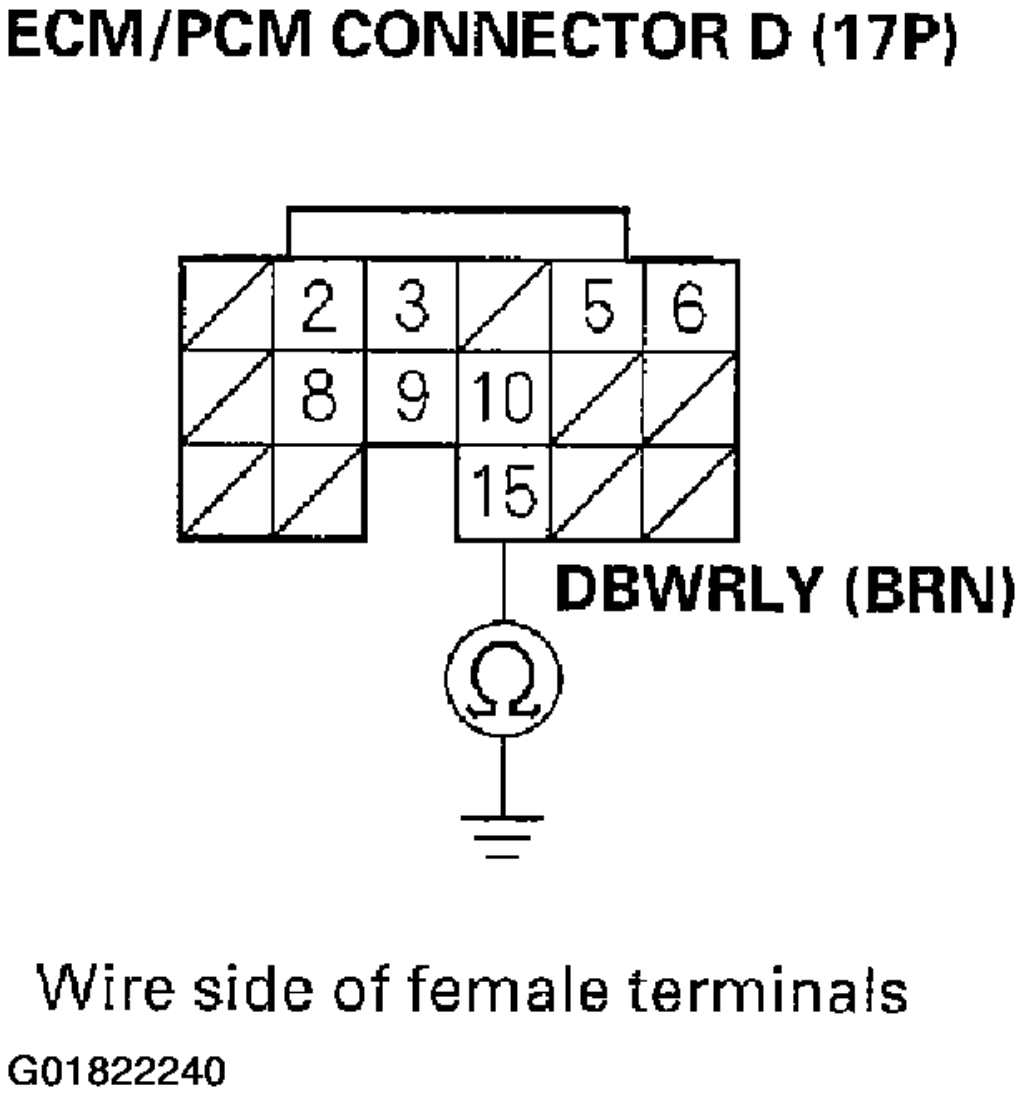


Fig. 51: Checking For Continuity Between ECM/PCM Connector Terminal D15 And Body Ground

Is there continuity?

YES - Repair short in the wire between the throttle actuator control module relay and ECM/PCM (D15), then go to step 10.

NO - Go to step 9.

9. Test the throttle actuator control module relay (see **RELAYS**).

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Is the relay OK?

YES - Go to step 17.

NO - Replace the throttle actuator control module relay, then go to step 10.

10. Reconnect ECM/PCM connector D (17P).
11. Turn the ignition switch ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
14. Turn the ignition switch OFF.
15. Turn the ignition switch ON (II), and wait 10 seconds.
16. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P2552 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module, and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - Troubleshooting is complete.

17. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P2552 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module, and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC U0107: LOST COMMUNICATION WITH THROTTLE ACTUATOR CONTROL MODULE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC U0107 indicated?

YES - Check for poor connections or loose terminals at the throttle body, the throttle actuator control, module and the ECM/PCM, then go to step 50 . If the connections are OK, go to step 6.

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NO - Go to step 4.

4. Start the engine.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC U0107 indicated?

   YES - Go to step 46 .

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body, the throttle actuator control module relay, the throttle actuator control module, and the ECM/PCM.

6. Clear the DTC with the HDS.
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Press the accelerator pedal to the floor.
10. Turn the ignition switch ON (II).
11. Check the throttle valve operation.

    Does it open after the throttle valve closes?

    YES - Go to step 12.

    NO - Go to step 13.

12. Check the throttle valve again.

    Does the throttle valve open fully?

    YES - Go to step 40 .

    NO - Go to step 34 .

13. Turn the ignition switch OFF.
14. Disconnect the throttle actuator control module 16P connector.
15. Check for continuity between throttle actuator control module 16P connector terminal No. 7 and body ground.

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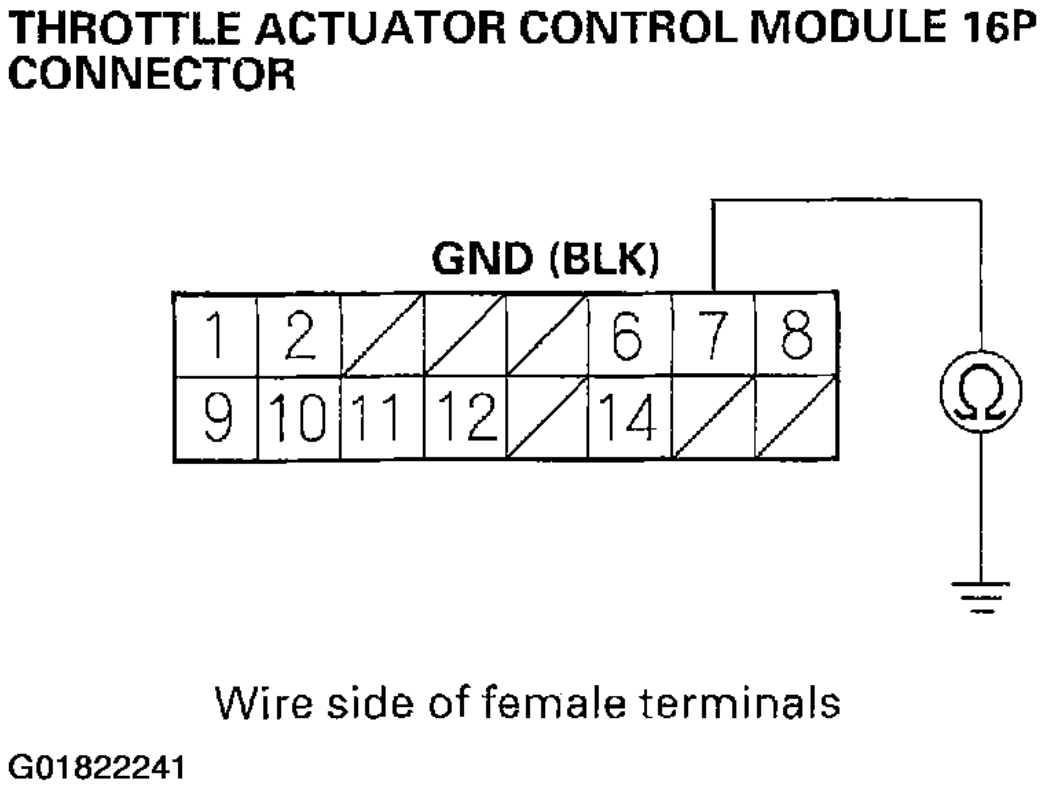


Fig. 52: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 7 And Body Ground

Is there continuity?

YES - Go to step 16.

NO - Repair open in the wire between the throttle body, the throttle actuator control module, and G101, then go to step 50 .

16. Remove the throttle actuator control module relay (A).

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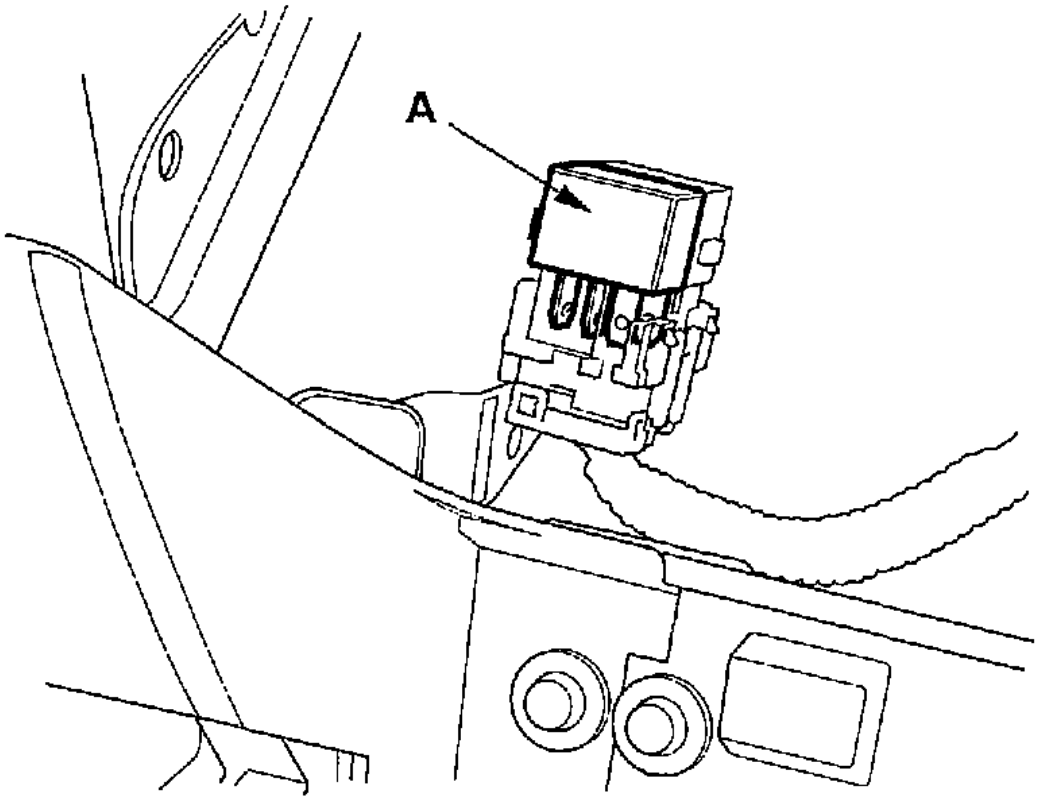


Fig. 53: Removing The Throttle Actuator Control Module Relay

17. Measure voltage between throttle actuator control module relay terminal No. 2 and body ground.

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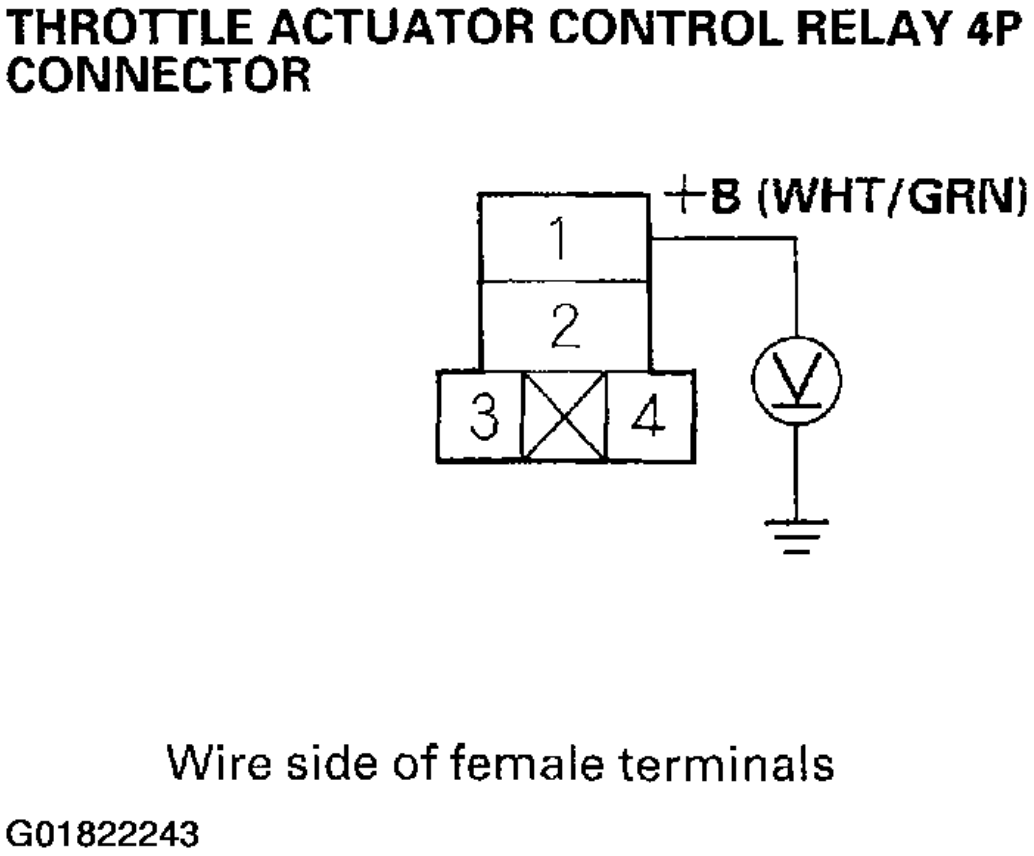


Fig. 54: Measuring Voltage Between Throttle Actuator Control Module Relay Terminal No. 2 And Body Ground

Is there battery voltage?

YES - Go to step 19.

NO - Go to step 18.

18. Check the No. 1 THROTTLE ACTUATOR CONTROL (15A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Repair open in the wire between the throttle actuator control module relay (+ B line) and the No. 1 THROTTLE ACTUATOR CONTROL (15A) fuse, then go to step 50 .

NO - Repair short in the wire between the throttle actuator control module relay (+ B line) and the No. 1 THROTTLE ACTUATOR CONTROL (15A) fuse, then go to step 50 .

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19. Install the throttle actuator control module relay.
20. Measure voltage between throttle actuator control module 16P connector terminal No. 2 and body ground.
21. Turn the ignition switch ON (II).

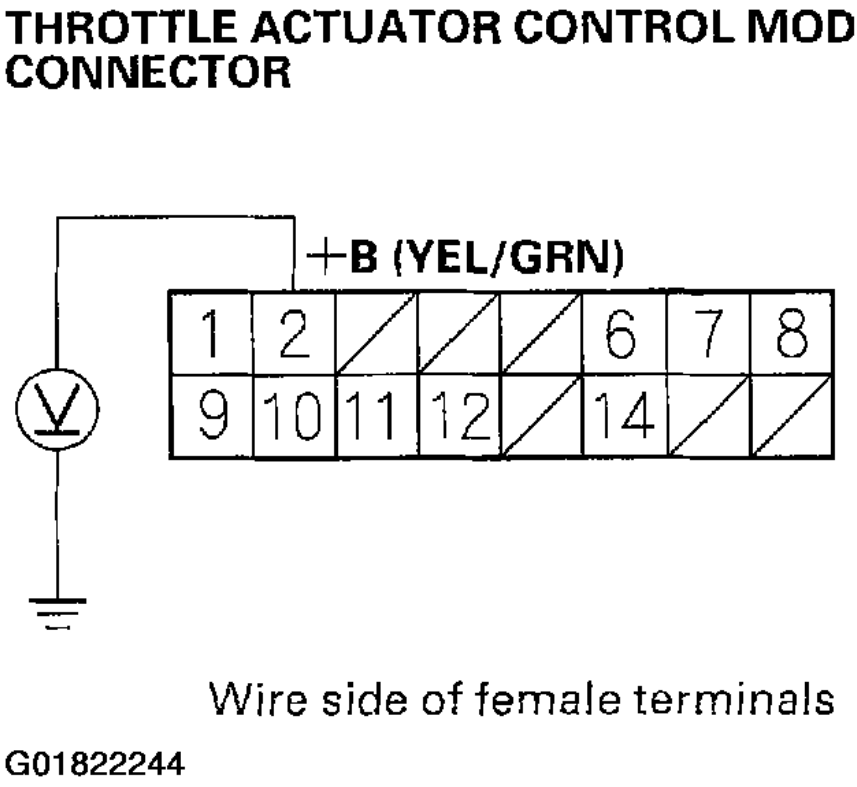


Fig. 55: Measuring Voltage Between Throttle Actuator Control Module 16P Connector Terminal No. 2 And Body Ground

Is there battery voltage for about 2 seconds?

YES - Substitute a known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 50 . and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 50 .

NO - Go to step 22.

22. Turn the ignition switch OFF.
23. Remove the throttle actuator control module relay (A).

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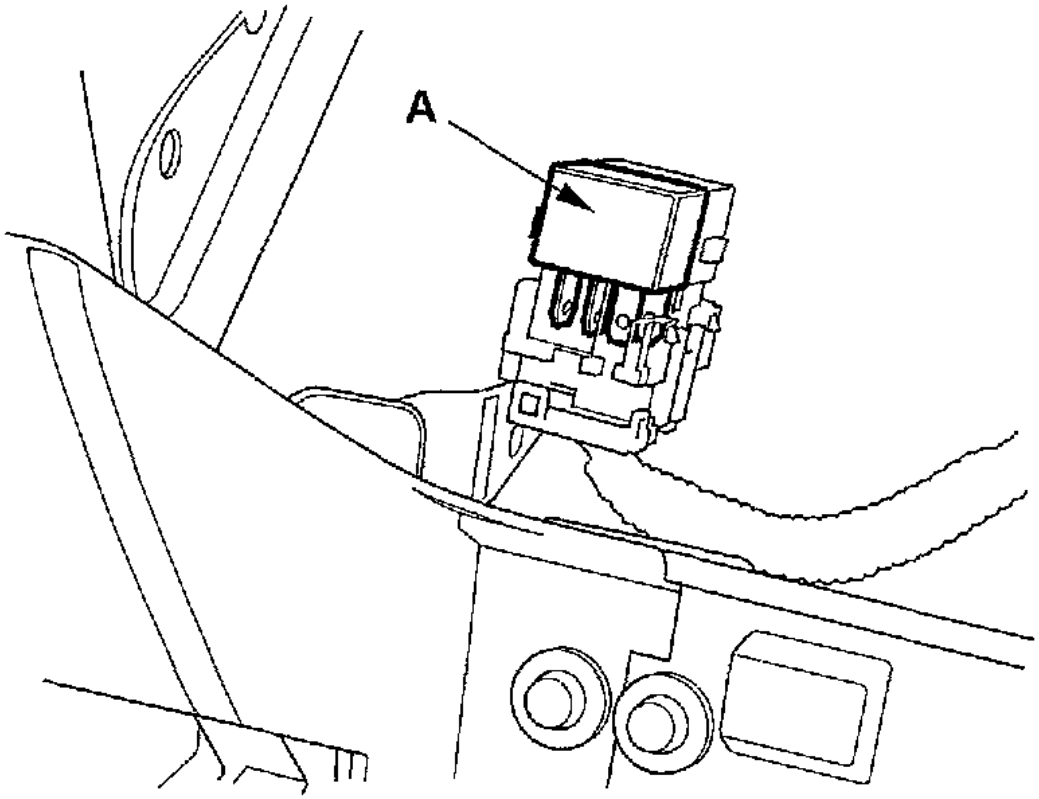


Fig. 56: Removing The Throttle Actuator Control Module Relay

24. Check the throttle actuator control module relay (see **RELAYS**).

    Is the throttle actuator control module relay OK?

    YES - Go to step 25.

    NO - Replace the throttle actuator control module relay, then go to step 50 .

25. Turn the ignition switch ON (II).
26. Measure voltage between throttle actuator control module relay terminal No. 4 and body ground.

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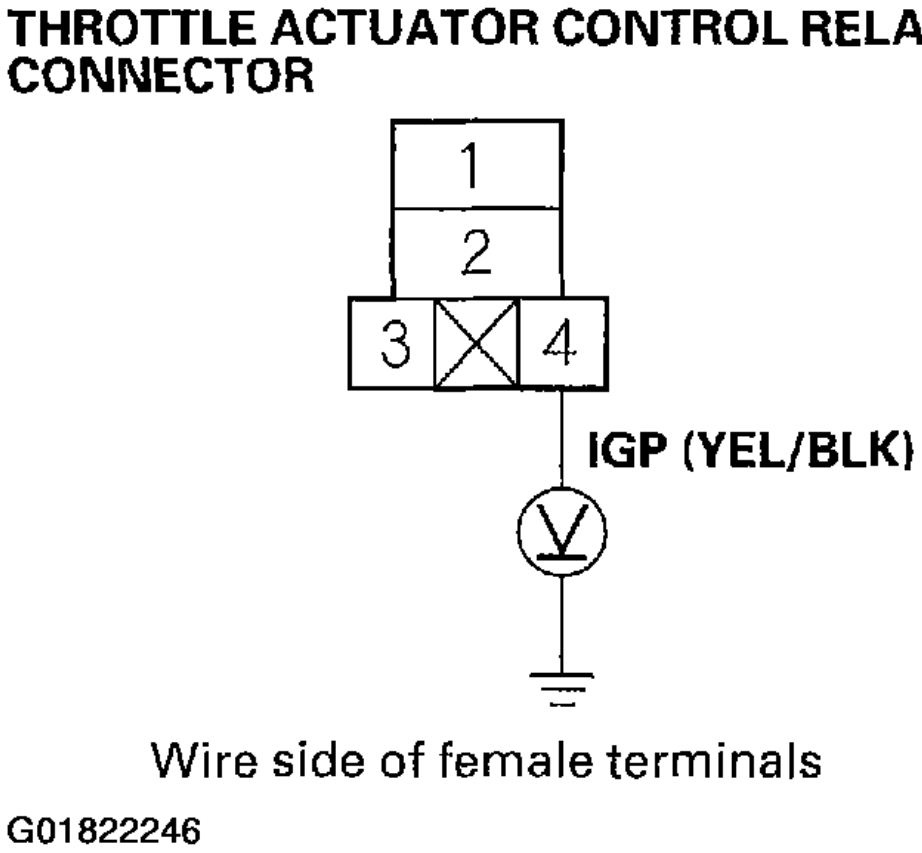


Fig. 57: Measuring Voltage Between Throttle Actuator Control Module Relay Terminal No. 4 And Body Ground

Is there battery voltage?

YES - Go to step 27.

NO - Repair open in the wire between the throttle actuator control module relay and PGM-FI main relay 1 (FI MAIN), then go to step 50 .

27. Turn the ignition switch OFF.
28. Jump the SCS line with the HDS.
29. Disconnect ECM/PCM connector D (17P).
30. Check for continuity between ECM/PCM connector terminal D15 and throttle actuator control module relay terminal No. 3.

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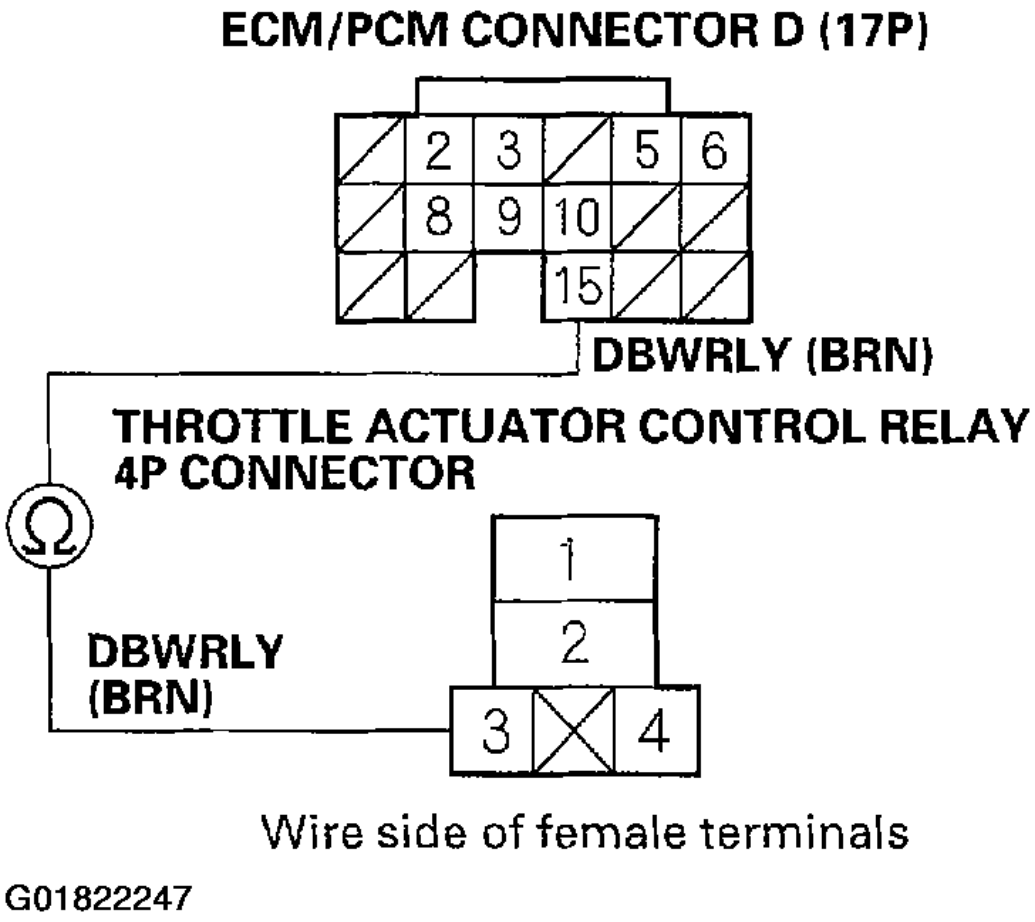


Fig. 58: Checking For Continuity Between ECM/PCM Connector Terminal D15 And Throttle Actuator Control Module Relay Terminal No. 3

Is there continuity?

YES - Go to step 31.

NO - Repair open in the wire between the ECM/PCM (D15) and the throttle actuator control module relay, then go to step 50 .

31. Check for continuity between throttle actuator control module 16P connector terminal No. 2 and body ground.

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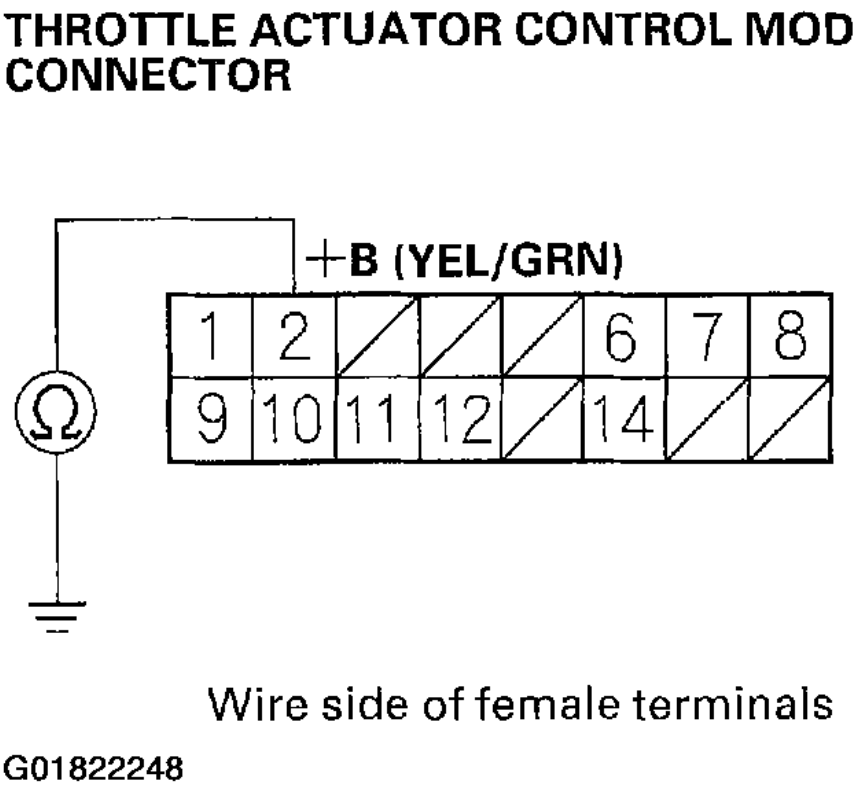


Fig. 59: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES - Repair short in the wire between the throttle actuator control module and the throttle actuator control module relay (+B line), then go to step 50.

NO - Go to step 32.

32. Connect throttle actuator control module relay terminal No. 2 to body ground with a jumper wire.

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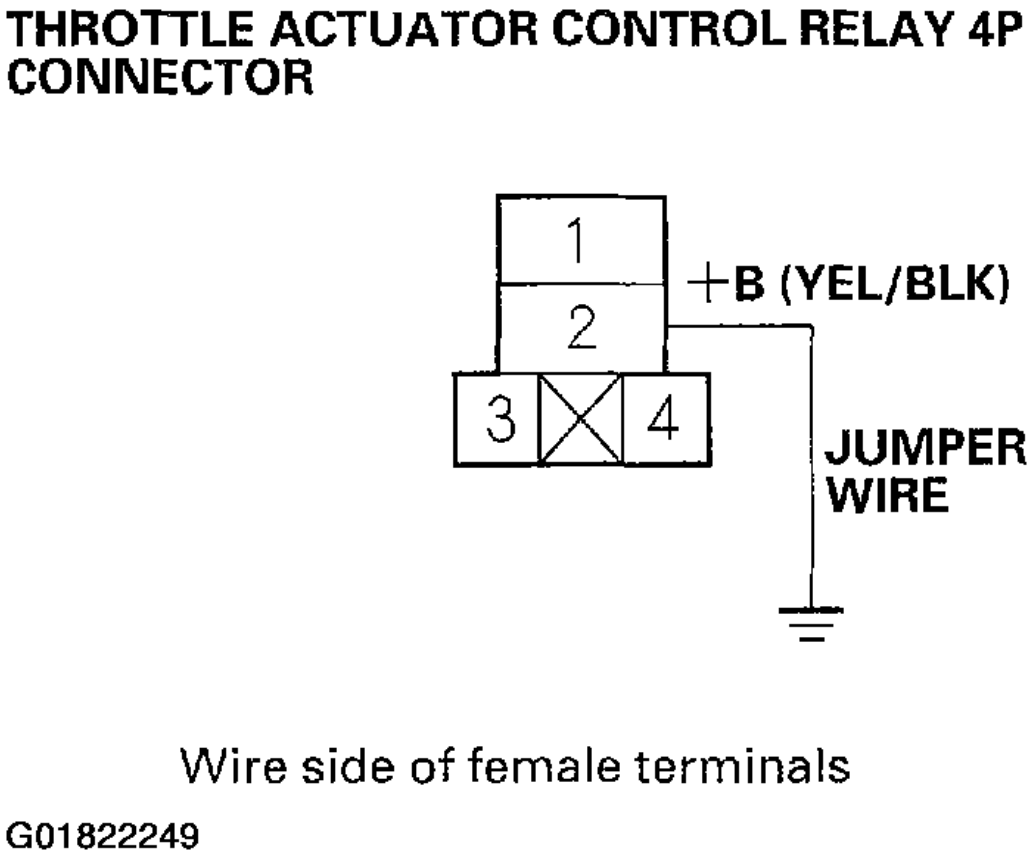


Fig. 60: Connecting Throttle Actuator Control Module Relay Terminal No. 2 To Body Ground With A Jumper Wire

33. Check for continuity between throttle actuator control module 16P connector terminal No. 2 and body ground.

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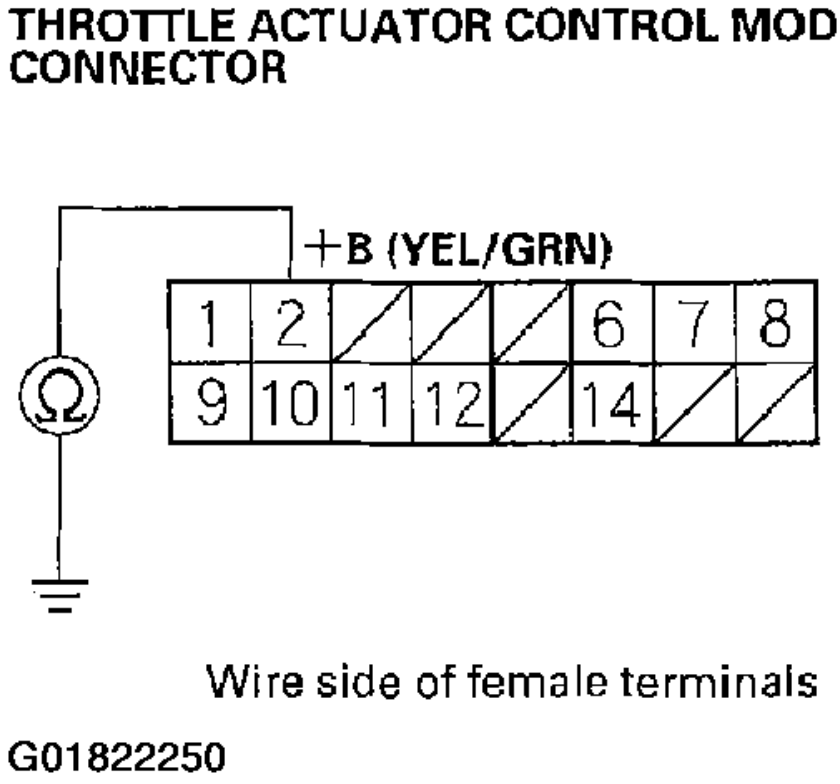


Fig. 61: Checking For Continuity Between Throttle Actuator Control Module 16P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES - Go to step 56.

NO - Repair open in the wire between the throttle actuator control module and the throttle actuator control module relay (+ B line), then go to step 50 .

34. Turn the ignition switch OFF.
35. Jump the SCS line with the HDS.
36. Disconnect the throttle actuator control module 16P connector.
37. Disconnect ECM/PCM connector B (24P).
38. Check for continuity between ECM/PCM connector terminal B19 and body ground.

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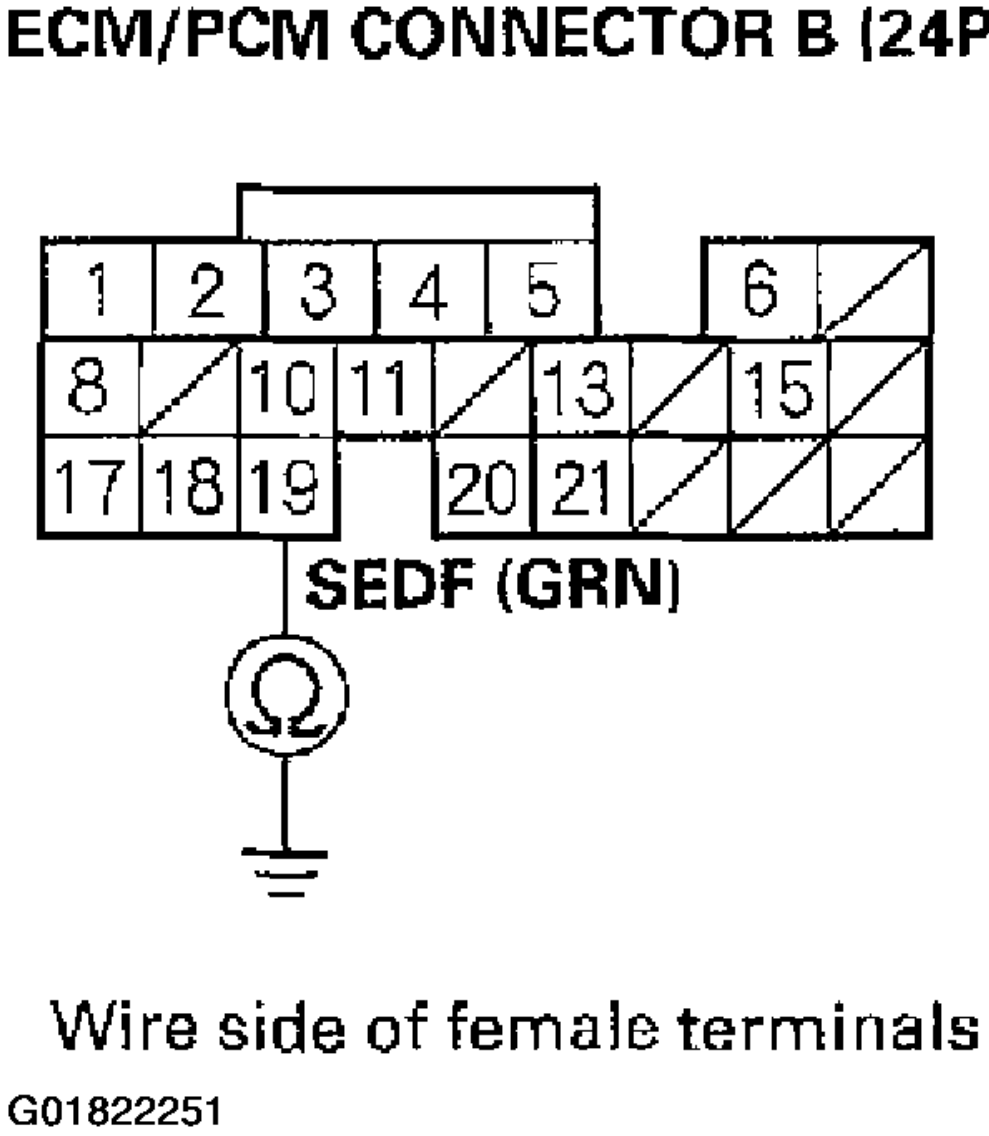


Fig. 62: Checking For Continuity Between ECM/PCM Connector Terminal B19 And Body Ground

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B19) and the throttle actuator control module, then go to step 50 .

NO - Go to step 39.

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39. Check for continuity between ECM/PCM connector terminal B19 and throttle actuator control module 16P connector terminals No. 6.

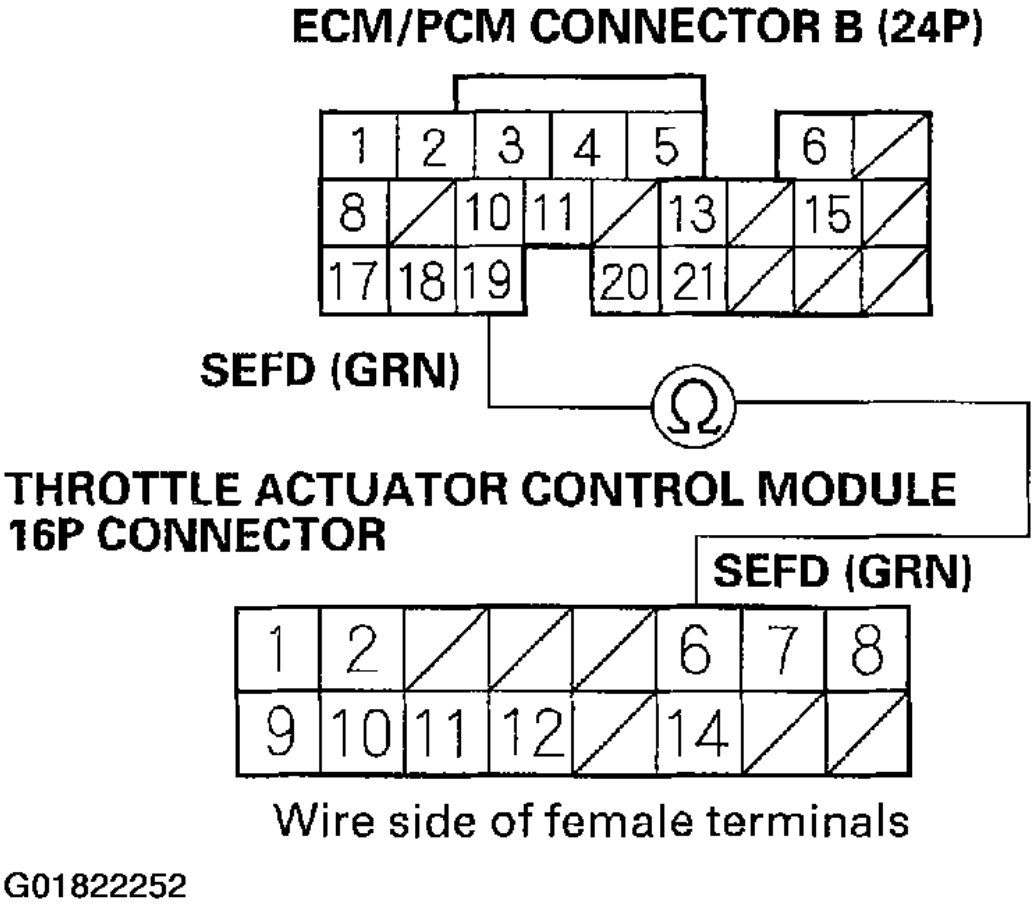


Fig. 63: Checking For Continuity Between ECM/PCM Connector Terminal B19 And Throttle Actuator Control Module 16P Connector Terminals No. 6

Is there continuity?

YES - Substitute known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 50 and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 50 . If DTC U0107 is indicated, go to step 56.

NO - Repair open in the wire between the ECM/PCM (B19) and the throttle actuator control module, then go to step 50 .

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40. Turn the ignition switch OFF.
41. Jump the SCS line with the HDS.
42. Disconnect the throttle actuator control module 16P connector.
43. Disconnect ECM/PCM connector B (24P).
44. Check for continuity between ECM/PCM connector terminal B20 and body ground.

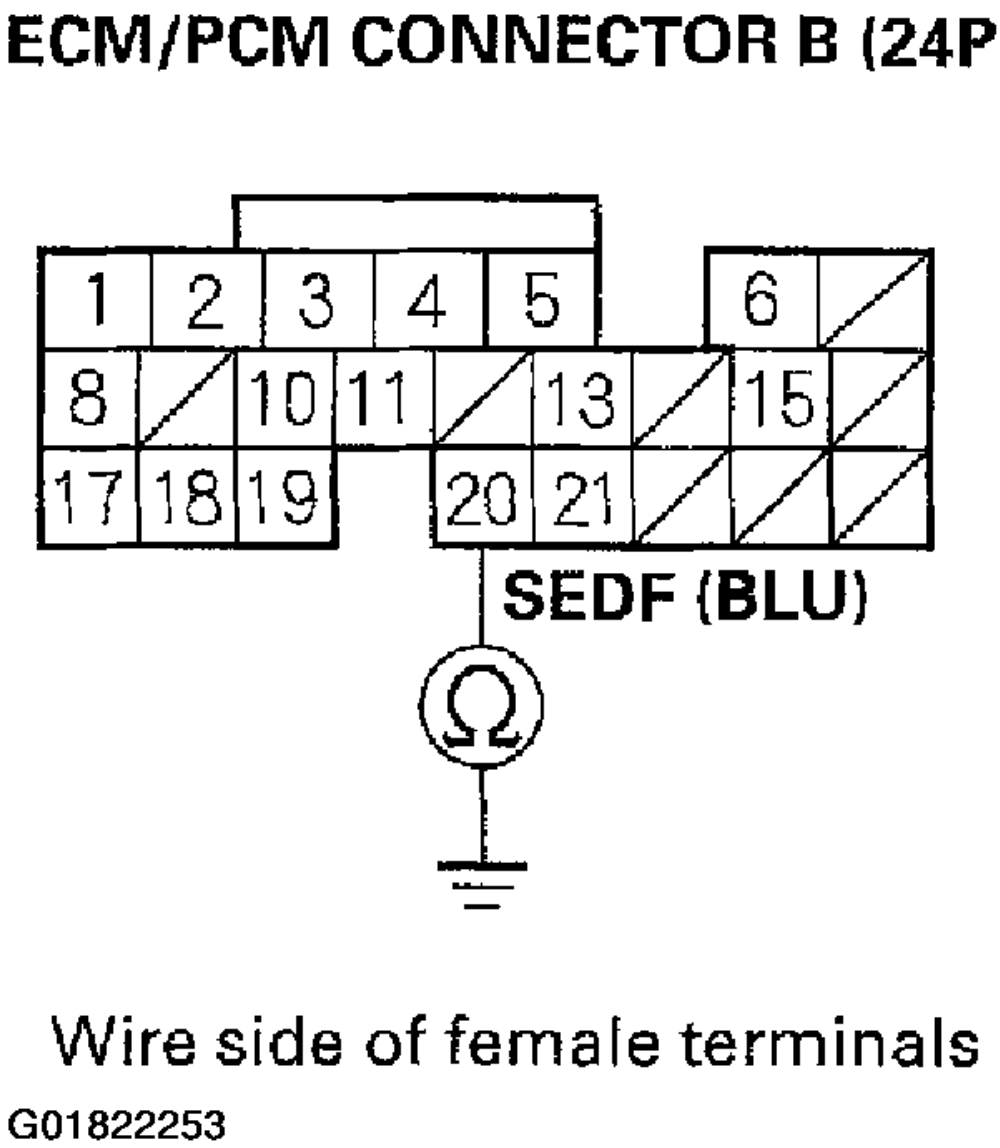


Fig. 64: Checking For Continuity Between ECM/PCM Connector Terminal B20 And Body Ground

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Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B20) and the throttle actuator control module, then go to step 50.

NO - Go to step 45.

45. Check for continuity between ECM/PCM connector terminal B20 and throttle actuator control module 16P connector terminal No. 14.

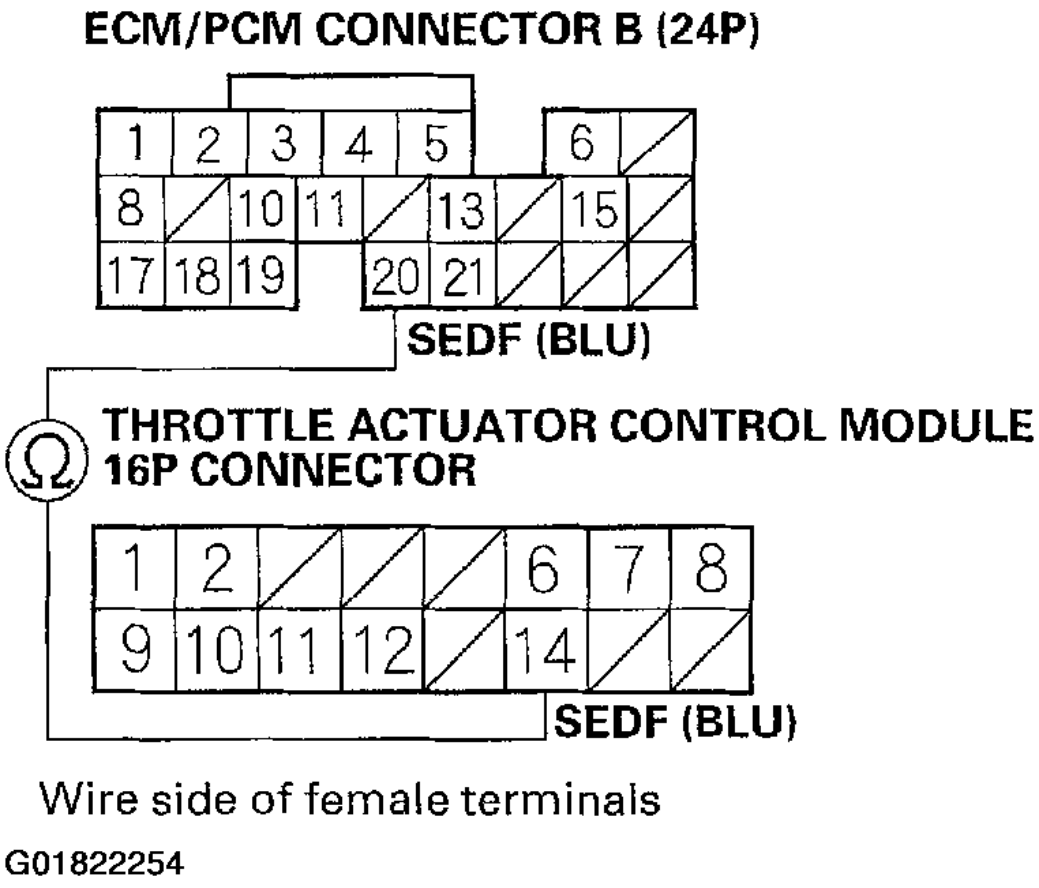


Fig. 65: Checking For Continuity Between ECM/PCM Connector Terminal B20 And Throttle Actuator Control Module 16P Connector Terminal No. 14

Is there continuity?

YES - Substitute known-good throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 50 and recheck. If DTC U0107 is not

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indicated, replace the original throttle actuator control module (see **THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT**), then go to step 50. If DTC U0107 is indicated, go to step 56.

NO - Repair open in the wire between the ECM/PCM (B20) and the throttle actuator control module, then go to step 50.

46. Turn the ignition switch OFF.
47. Jump the SCS line with the HDS.
48. Disconnect ECM/PCM connector A (31P).
49. Check for continuity between body ground and ECM/PCM connector terminals A8 and A9 individually.

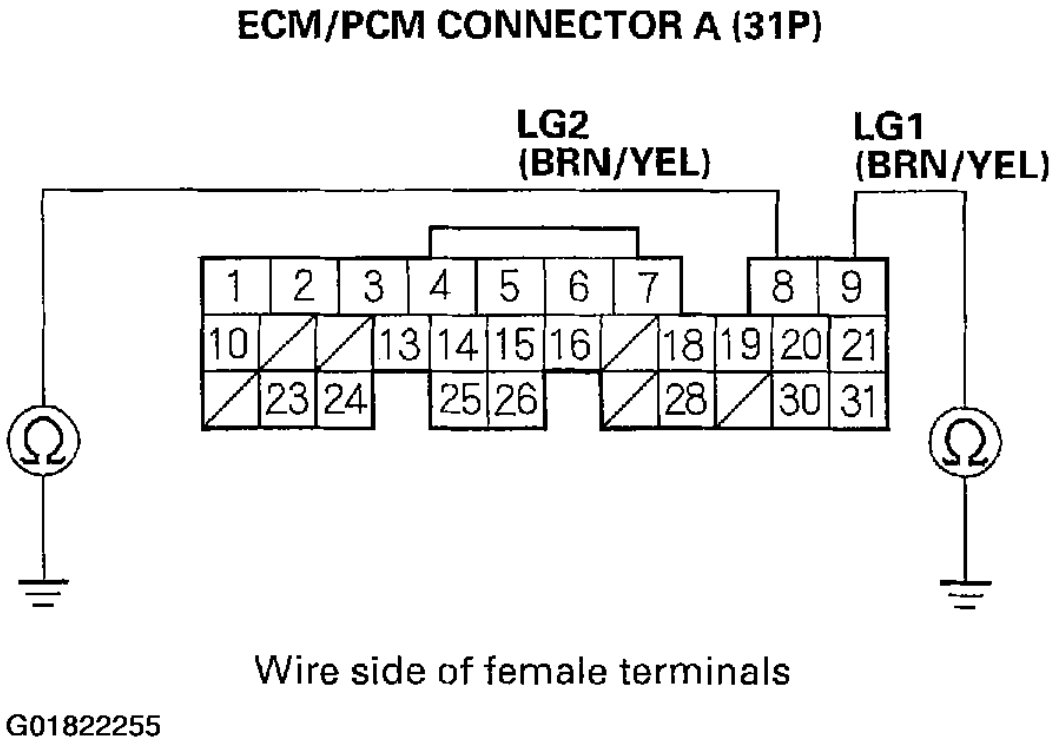


Fig. 66: Checking For Continuity Between Body Ground And ECM/PCM Connector Terminals A8 And A9

Is there continuity?

YES - Check for poor connections or loose terminals at the throttle body, the throttle actuator control module, relay, the throttle actuator control module, and the ECM/PCM, then go to step 1.

NO - Repair open in the wire between the ECM/PCM (A8, A9) and G101, then go to step 50.

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50. Turn the ignition switch OFF.
51. Reconnect all connectors.
52. Turn the ignition switch ON (II).
53. Reset the ECM/PCM with the HDS.
54. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
55. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC U0107 is indicated, check for poor connections or loose terminals at the throttle body, the throttle actuator control module, relay, the throttle actuator control module, and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - Troubleshooting is complete.

56. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
57. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC U0107 is indicated, check for poor connections or loose terminals at the throttle body, the throttle actuator control module, relay, the throttle actuator control module, and the ECM/PCM, than go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

APP SENSOR REPLACEMENT

1. Remove the throttle cable (see **THROTTLE CABLE REMOVAL/INSTALLATION**).
2. Disconnect the accelerator pedal position (APP) sensor 6P connector (A).

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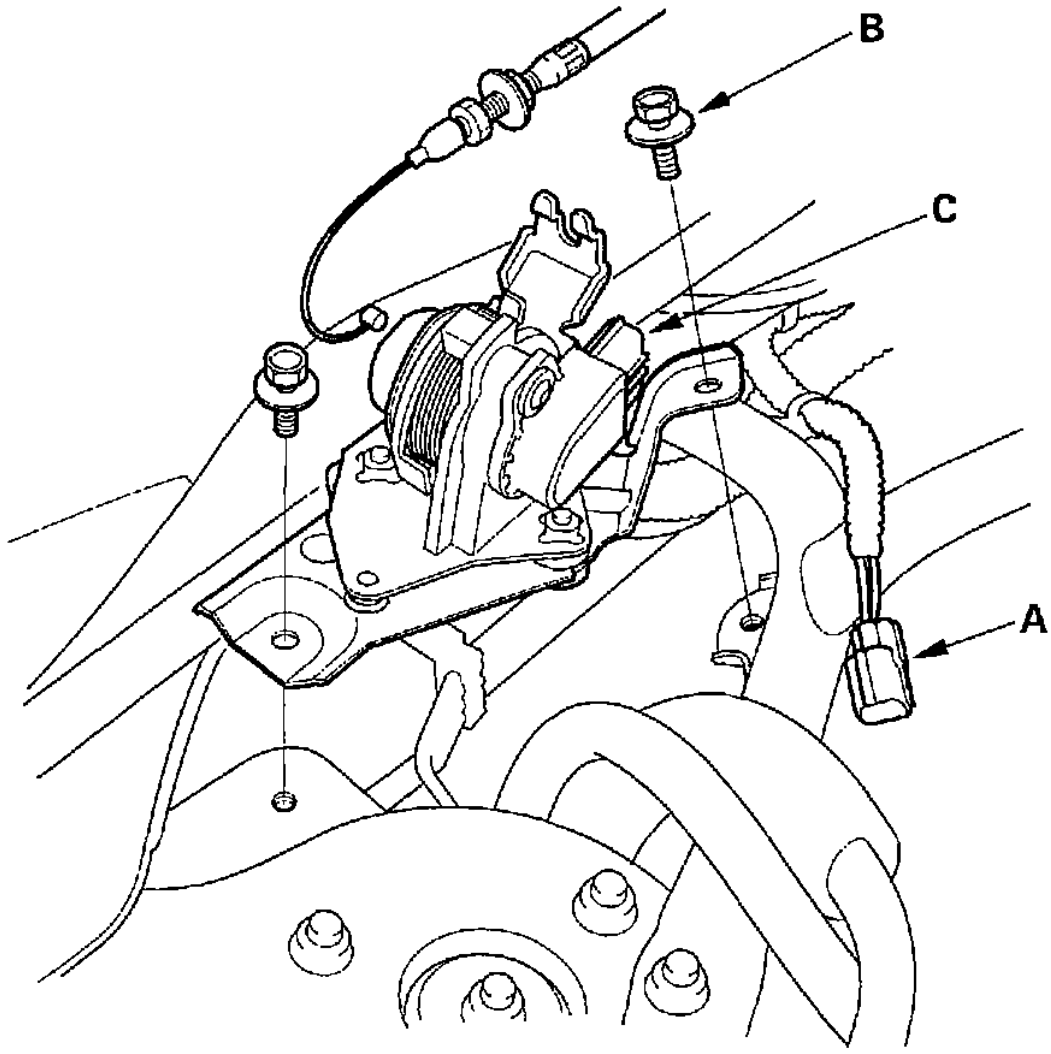


Fig. 67: Removing APP Sensor

3. Remove the bolts (B), and the APP sensor (C).
4. Install the sensor in the reverse order of removal.

THROTTLE ACTUATOR CONTROL MODULE REPLACEMENT

1. Remove the right kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
2. Push the tab (A) and disconnect the throttle actuator control module 16P connector (B).

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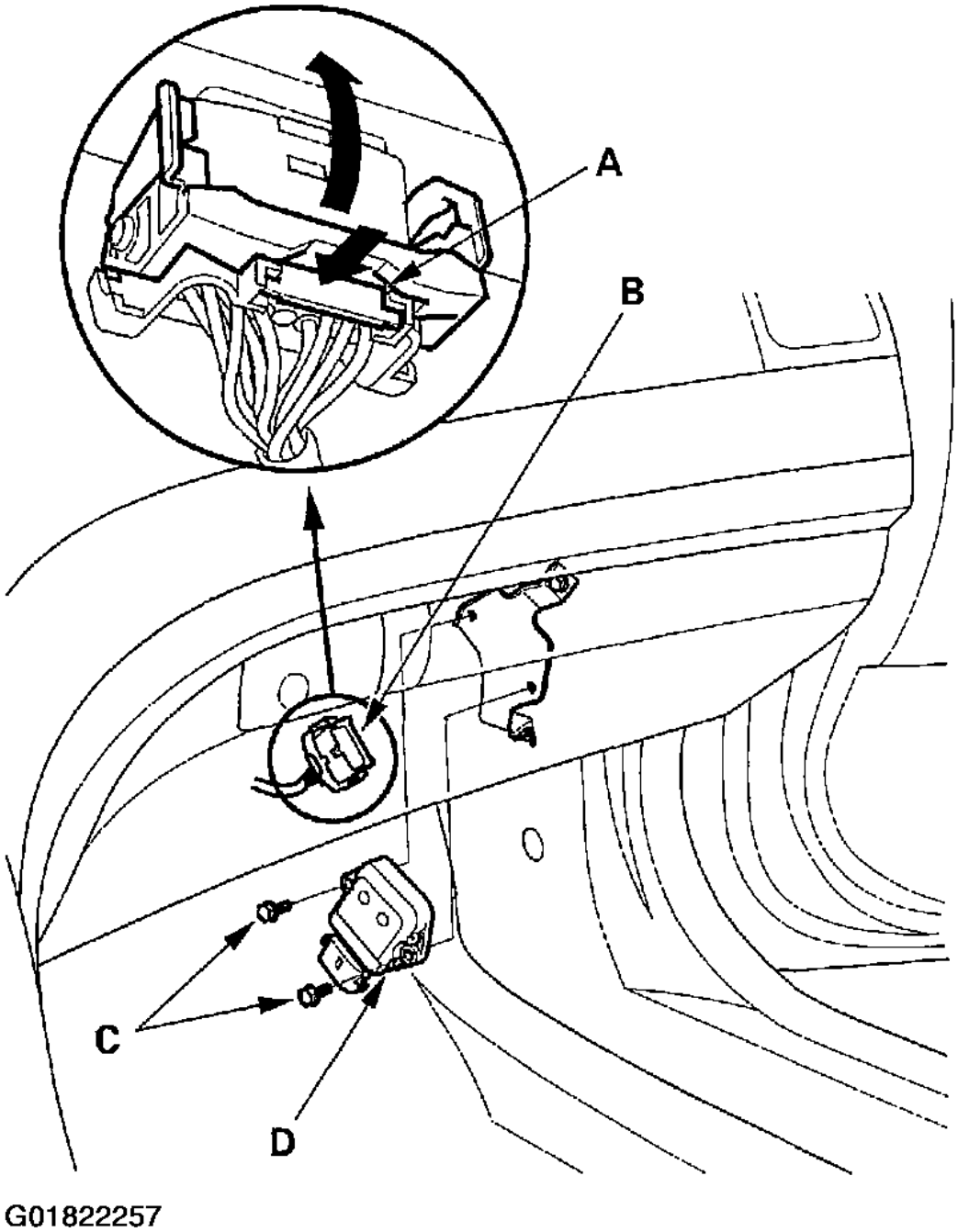


Fig. 68: Removing Throttle Actuator Control Module

3. Remove the bolts (C), and the throttle actuator control module (D).
4. Install the control module in the reverse order of removal.

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2004 ENGINE PERFORMANCE

Emission Applications - Acura MDX, RSX, TL, TSX & 3.5RL

EMISSION APPLICATIONS

MDX

MDX

Engine & Fuel System	(1) Emission Control Systems & Devices
3.5L V6 SFI	**PCV, EVAP, TWC, FR, EGR, SPK, (2) AFS, (2) HO2S, CEC, (3) MIL,** EGR-PS, EVAP-BPSV, EVAP-CPCV, EVAP-CVSV, EVAP-ORVR, EVAP-TWV, EVAP-VC, FTVCV, FTVRV, FTPS, SPK-CC

(1) For quick reference, major emission control systems and devices are listed in bold type; components and other related devices are listed in light type.

(2) AFS is used in both Bank 1 and Bank 2 Sensor 1 (S1) positions. HO2S is used in both Bank 1 and Bank 2 Sensor 2 (S2) positions.

(3) PCM controlled.

RSX

RSX

Engine & Fuel System	(1) Emission Control Systems & Devices
2.0L 4-Cyl. SFI	**PCV, EVAP, TWC, FR, SPK, (2) AFS, (2) HO2S, CEC, (3) MIL,** EVAP-BPSV, EVAP-CVSV, EVAP-CPV, EVAP-TWV, EVAP-VC, FTPS, FT-VCV, FT-VRV

(1) For quick reference, major emission control systems and devices are listed in bold type; components and other related devices are listed in light type.

(2) AFS is used in Sensor 1 (S1) position. HO2S is used in Sensor 2 (S2) position.

(3) PCM controlled.

TL

TL

Engine & Fuel System	(1) Emission Control Systems & Devices
3.2L V6 SFI	**PCV, EVAP, WU-TWC, TWC, FR, EGR, SPK, (2) AFS, (2) HO2S, CEC, (3) MIL,** EVAP-CVSV, EVAP-CPV, EVAP-VC, EGR-PS, FTPS, FT-VCV

(1) For quick reference, major emission control systems and devices are listed in bold type; components and other related devices are listed in light type.

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(2) AFS is used in both Bank 1 and Bank 2 Sensor 1 (S1) positions. HO2S is used in both Bank 1 and Bank 2 Sensor 2 (S2) positions.

(3) PCM controlled.

TSX

TSX

Engine & Fuel System	(1) Emission Control Systems & Devices
2.4L 4-Cyl. SFI	**PCV, EVAP, TWC, FR, SPK, AFS, HO2S, CEC, (2) MIL,** EVAP-CPV, EVAP-CVSV, EVAP-VC, FTPS, FT-VCV

(1) For quick reference, major emission control systems and devices are listed in bold type; components and other related devices are listed in light type.

(2) PCM controlled.

3.5RL

3.5RL

Engine & Fuel System	(1) Emission Control Systems & Devices
3.5L V6 SFI	**PCV, EVAP, TWC, FR, EGR, SPK, (2) HO2S, CEC, (3) MIL,** EGR-CSV, EGR-PS, EGR-VCV, EVAP-BPSV, EVAP-CVSV, EVAP-PCSV, EVAP-TWV, EVAP-VC, FT-VCV, FTPS, FT-VRV

(1) For quick reference, major emission control systems and devices are listed in bold type; components and other related devices are listed in light type.

(2) Equipped with 3 HO2S.

(3) PCM controlled.

ABBREVIATIONS

AFS

Air/Fuel Ratio Sensor

CEC

Computerized Engine Control

EGR

Exhaust Gas Recirculation

EGR-CSV

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EGR Control Solenoid Valve

EGR-PS

EGR Position Sensor

EGR-VSV

EGR Vent Solenoid Valve

EVAP

Fuel Evaporative System

EVAP-BPSV

EVAP By-Pass Solenoid Valve

EVAP-CPCV

EVAP Canister Purge Control Valve

EVAP-CPV

EVAP Canister Purge Valve

EVAP-CVSV

EVAP Canister Vent Shutoff Valve

EVAP-PCSV

EVAP Purge Cut-Off Solenoid Valve

EVAP-TWV

EVAP Two-Way Valve

EVAP-VC

EVAP Vapor Canister

FR

Fill Pipe Restrictor

FT-VCV

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Fuel Tank Vapor Control Valve

FT-VRV

Fuel Tank Vapor Recirculation Valve

FTPS

Fuel Tank Pressure Sensor

HO2S

Heated Oxygen Sensor

MIL

Malfunction Indicator Light

ORVR

On-Board Refueling Vapor Recovery

PCV

Positive Crankcase Ventilation

SFI

Sequential Multiport Fuel Injection

SPK

Spark Controls

SPK-CC

SPK Computer Controlled

TWC

Three-Way Catalytic Converter

WU-TWC

Warm Up Three-Way Catalytic Converter

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2004 ENGINES

Lubrication System - TSX

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1

G01821908

Fig. 1: Special Tools (1 Of 2)

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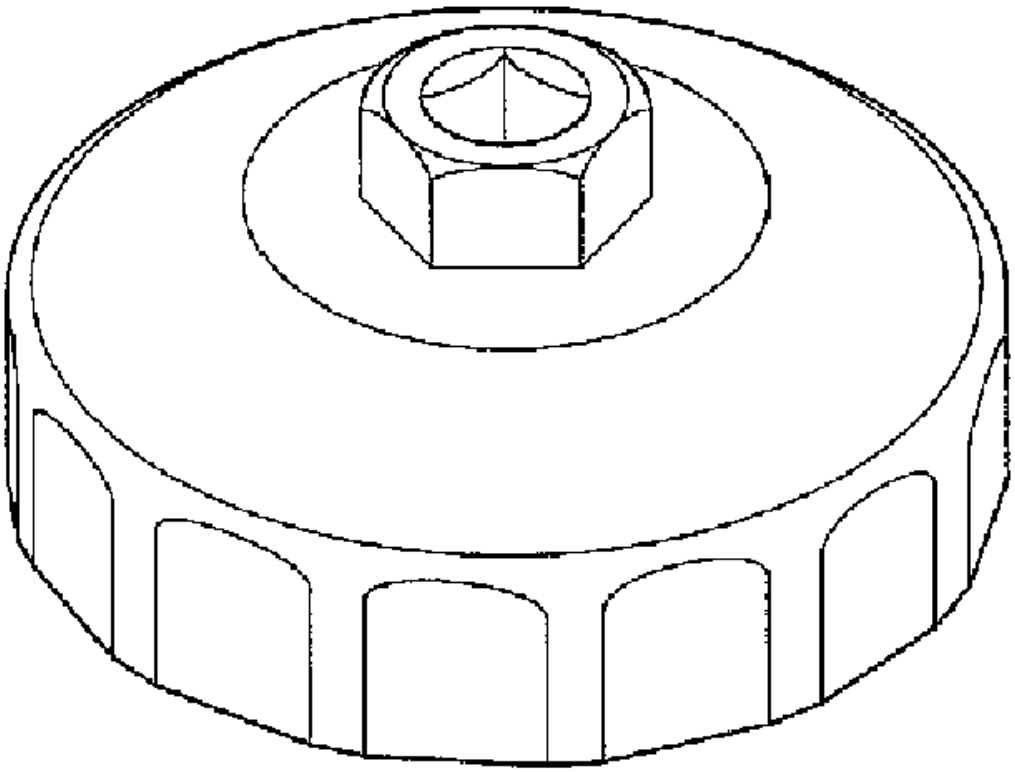


Fig. 2: Special Tools (2 Of 2)

COMPONENT LOCATION INDEX

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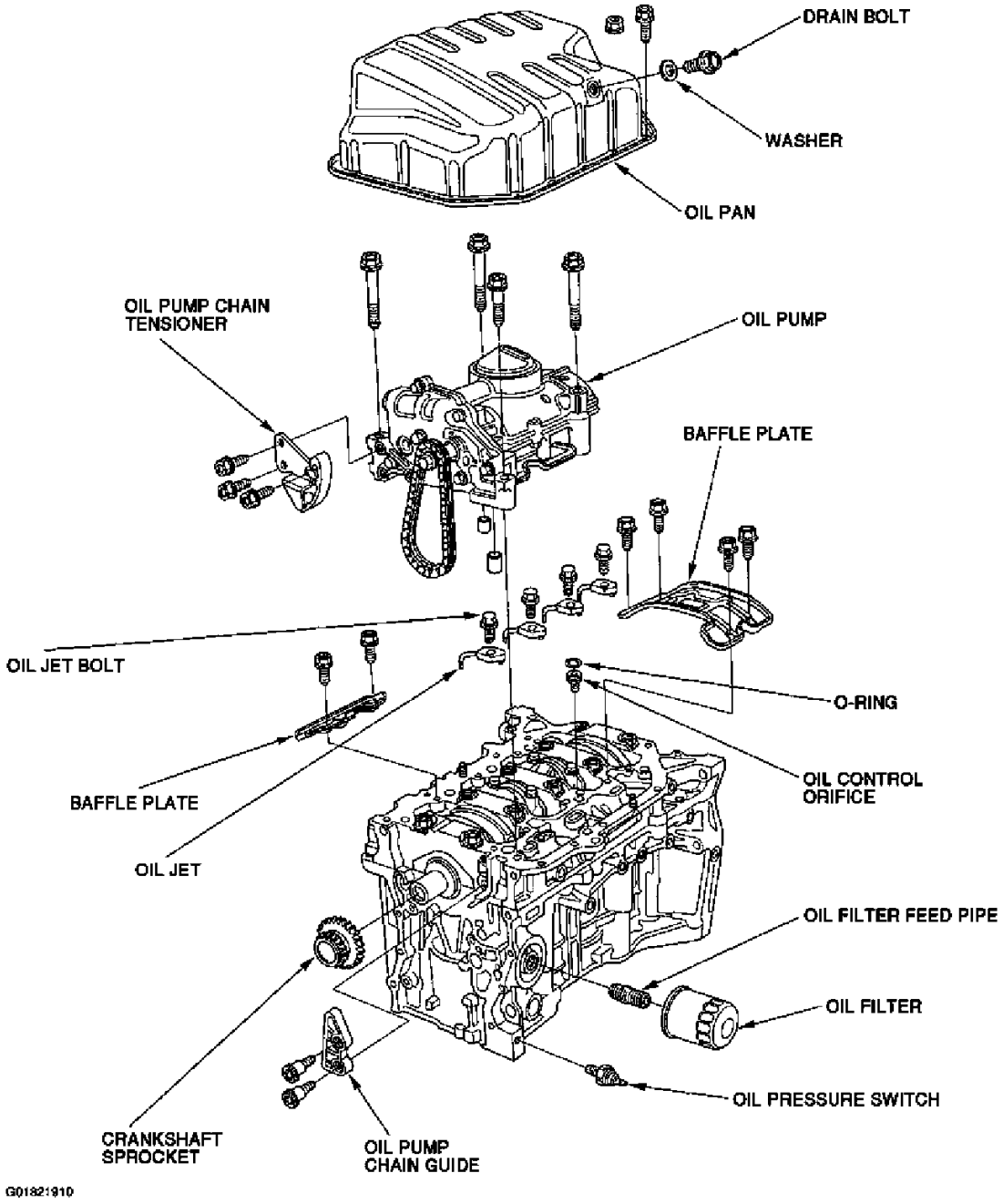


Fig. 3: Locating Engine Lubrication Components

SYMPTOM TROUBLESHOOTING INDEX

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Symptom	Diagnostic procedure	Also check for
Excessive engine oil consumption	1. Check for worn valve guide(s) or worn valve stem seal(s). 2. Check for damaged or worn piston ring(s). 3. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.). 4. Check for oil leaks. 5. Check the operation of the positive crankcase ventilation (PCV) system. 6. Check the engine oil for dirt or improper viscosity.	
Low engine oil pressure	1. Check the oil screen for clogging. 2. Test the oil pump. 3. Check the relief valve. 4. Test the oil pressure switch. 5. Check for excessive clearance in the engine (bearing-to-journal, etc.). 6. Check the engine oil for dirt or improper viscosity.	
High engine oil pressure	Check the relief valve.	

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Fig. 4: Engine Lubrication Symptom Troubleshooting Index

OIL PRESSURE SWITCH TEST

1. Remove the YEL/RED wire (A) from the engine oil pressure switch (B).

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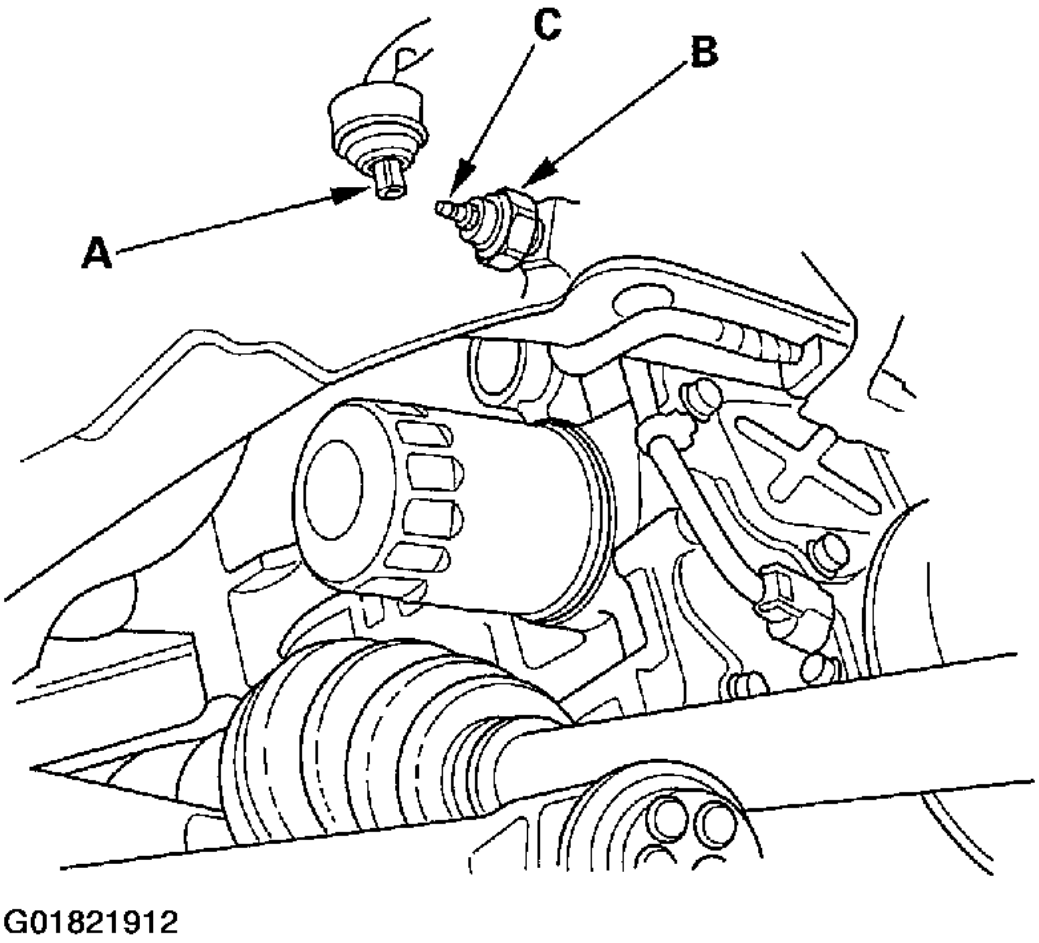


Fig. 5: Removing The Wire From The Engine Oil Pressure Switch

2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.
3. If the switch fails to operate, check the engine oil level. If the engine oil level is OK, check the engine oil pressure. If the oil pressure is OK, replace the oil pressure switch (see **OIL PRESSURE SWITCH REPLACEMENT**).

OIL PRESSURE TEST

If the oil pressure warning light stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the engine oil pressure switch, and install an oil pressure gauge (A).

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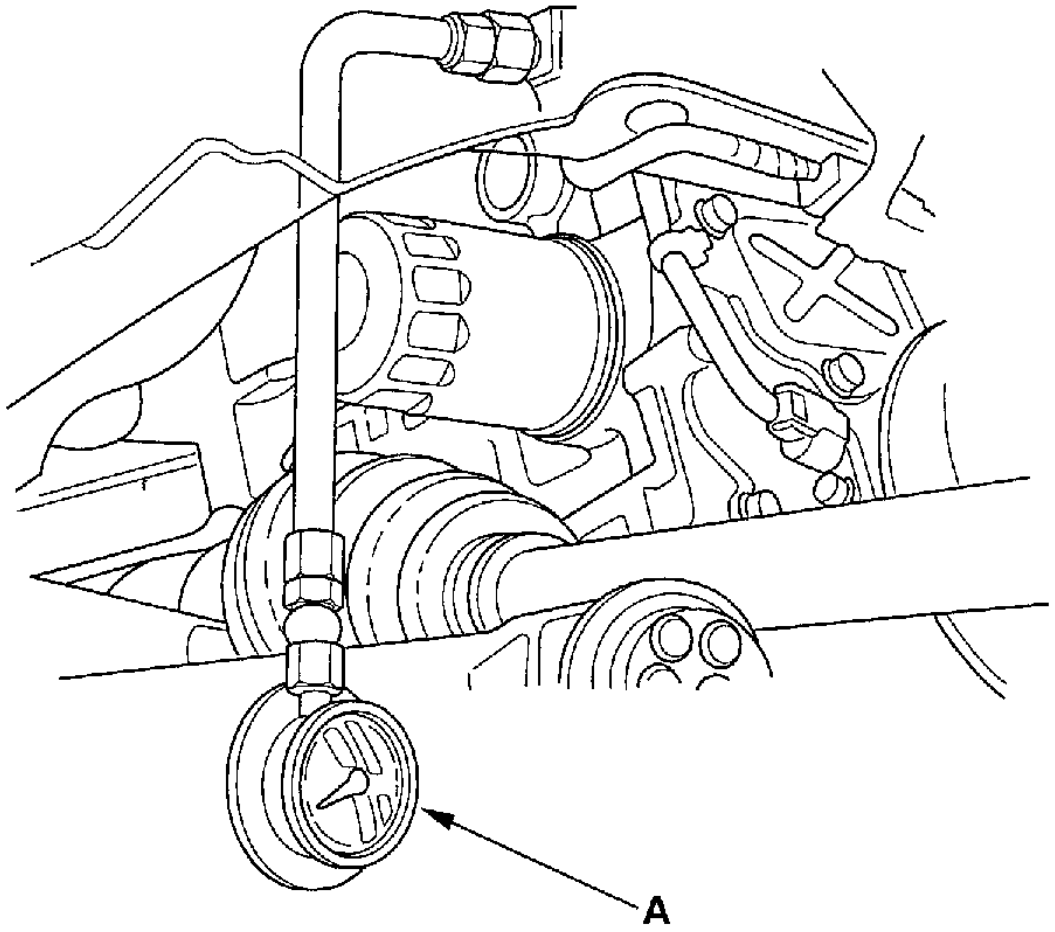


Fig. 6: Installing An Oil Pressure Gauge

2. Start the engine. Shut it off immediately if the gauge registers no oil pressure, and repair the problem before continuing.
3. Allow the engine to-reach operating temperature (fan comes on at least twice). The pressure should be:

   Engine Oil Temperature: 176°F (80°C)

   Engine Oil Pressure:

   At Idle: 70 kPa (0.7 kgf/cm^2 , 10 psi) minimum

   At 3,000 RPM: 300 kPa (3.1 kgf/cm^2 , 44 psi) minimum
4. If the oil pressure is NOT within specifications, inspect these items.
   - Check the oil screen for clogging.
   - Check the oil pump (see **OIL PUMP OVERHAUL**).

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ENGINE OIL REPLACEMENT

1. Warm up the engine.
2. Remove the maintenance lid (A).

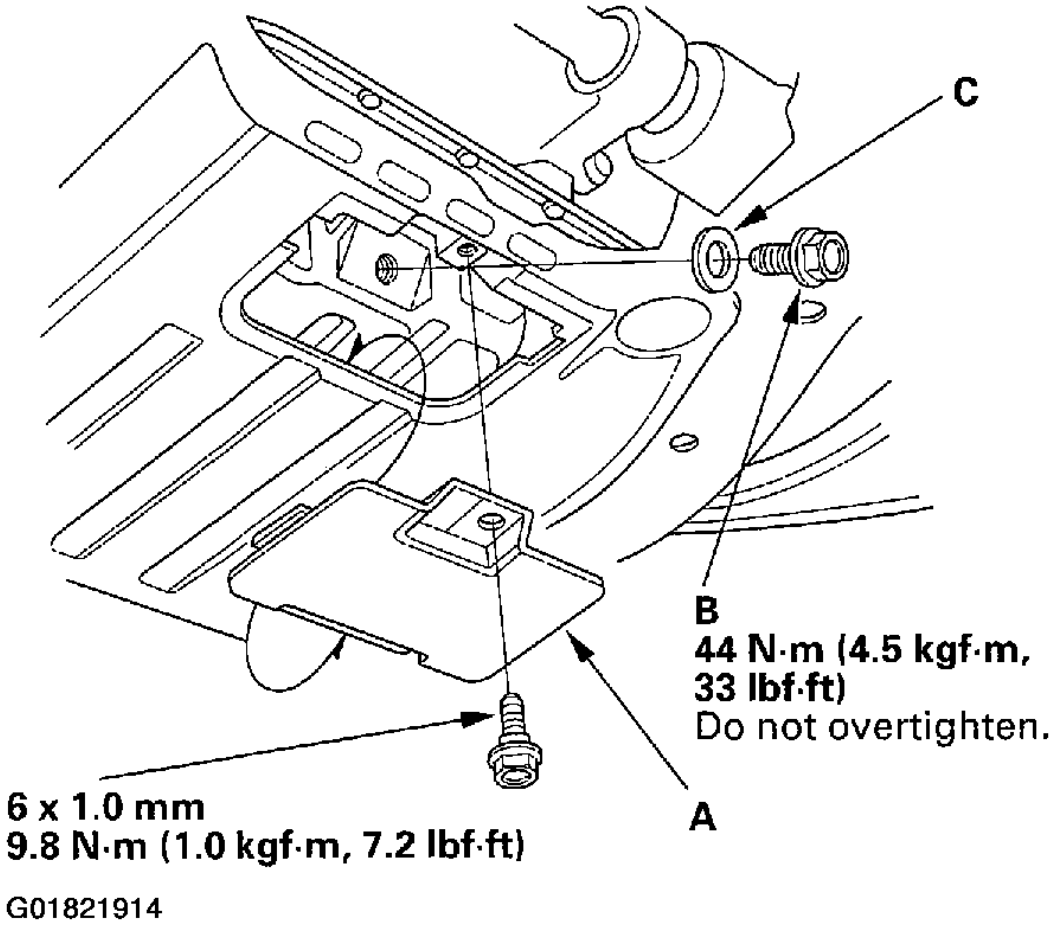


Fig. 7: Removing The Maintenance Lid & The Drain Bolt

3. Remove the drain bolt (B), and drain the engine oil.
4. Reinstall the drain bolt with a new washer (C).
5. Refill with the recommended oil (5W-30).

   Capacity:

   4.0 L (4.2 US qt) at oil change.
   4.2 L (4.4 US qt) at oil change including filter.
   5.3 L (5.6 US qt) after engine overhaul.
6. Run the engine for more than 3 minutes, then check for oil leakage.

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ENGINE OIL FILTER REPLACEMENT

Special Tools Required: Oil filter wrench 07HAA-PJ70100

1. Remove the oil filter with the special tool.
2. Inspect the threads (A) and the rubber seal (B) on the new-filter. Clean the seat on the engine block, then apply a light coat of oil to the filter rubber seal. Use only filters with a built-in bypass system.

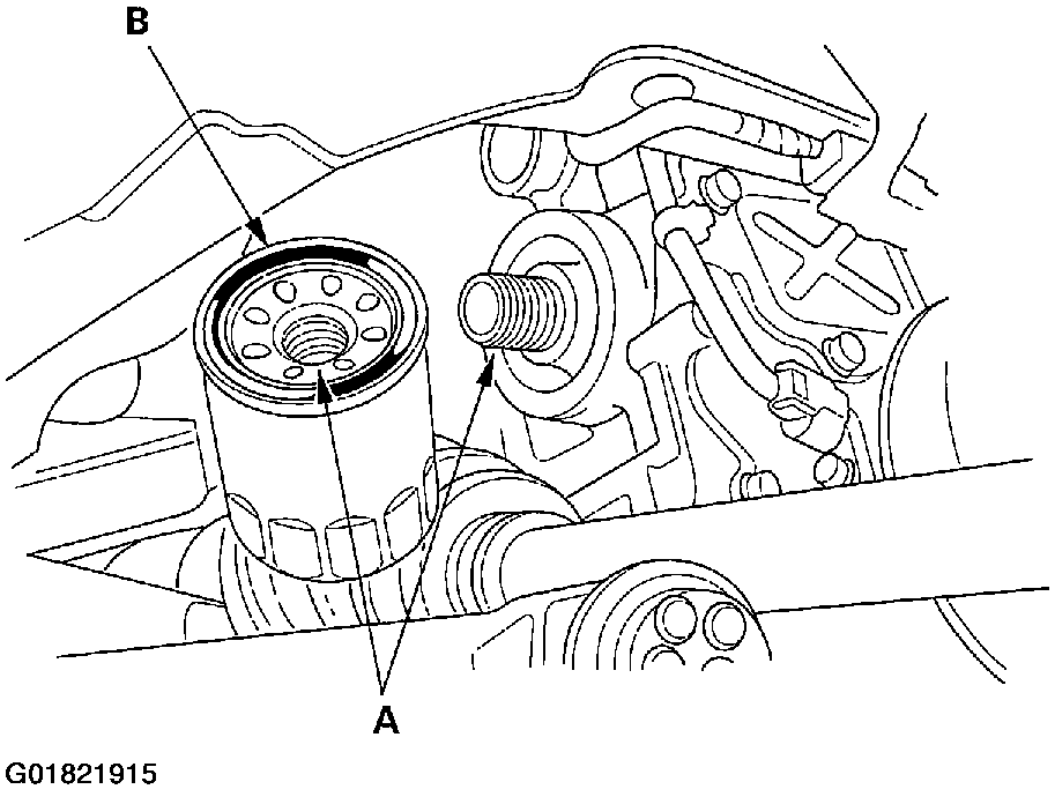


Fig. 8: Inspecting The Threads & The Rubber Seal On The New-Filter

3. Install the oil filter by hand.
4. After the rubber seal seats, tighten the oil filter clockwise with the special tool.

   Tighten: 3/4 turn clockwise

   Tightening Torque: 12 N.m (1.2 kgf.m, 8.7 Ibf.ft)

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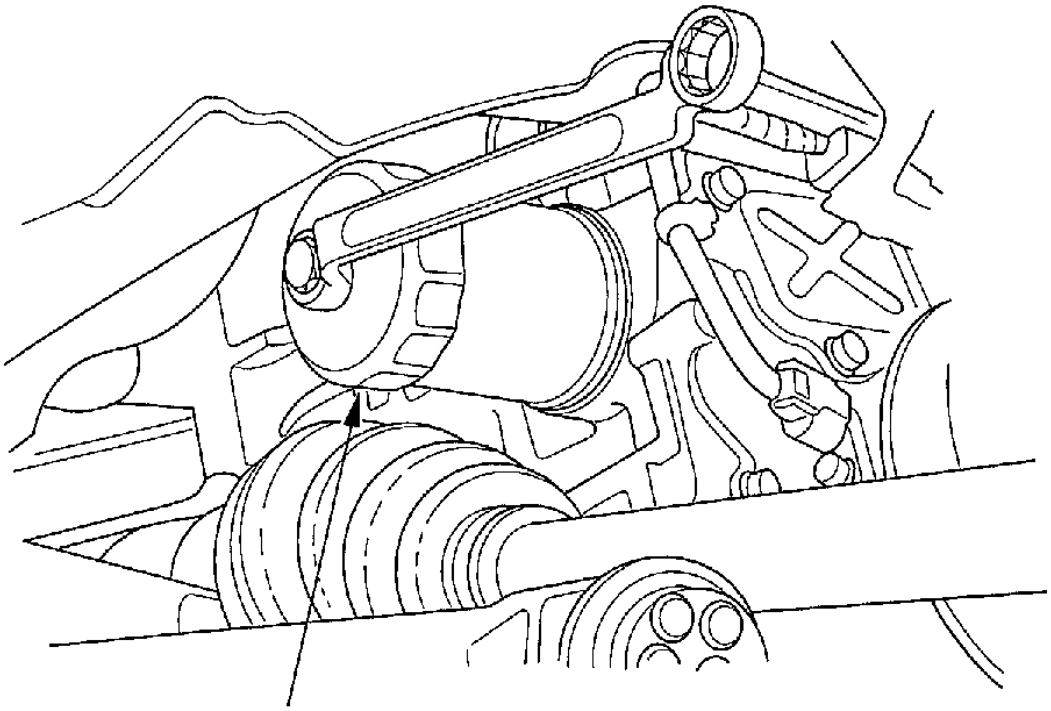


Fig. 9: Tightening The Oil Filter Clockwise With The Special Tool

5. If 4 numbers or marks (1 to 4 or *** to ***) are printed around the outside of the filter, use the following procedure to tighten the filter:
    - Spin the filter on until its seal lightly seats against the block, and note which number or mark is at the bottom.
    - Tighten the filter by turning it clockwise 3 numbers or marks from the one you noted. For example, if number 2 is at the bottom when the seal is seated, tighten the filter until the number 1 comes around the bottom.

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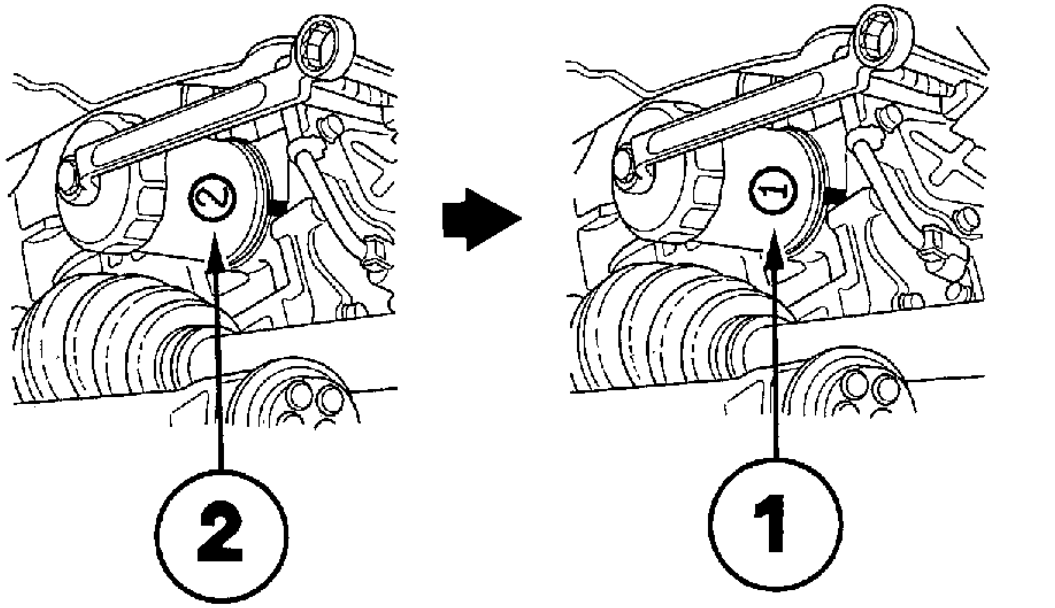


Fig. 10: Number Tightening Procedure (Example)

Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

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Fig. 11: Number Tightening Procedure Table

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6. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

OIL FILTER FEED PIPE REPLACEMENT

1. Remove the oil filter (see **ENGINE OIL FILTER REPLACEMENT**).
2. Remove the oil filter feed pipe.

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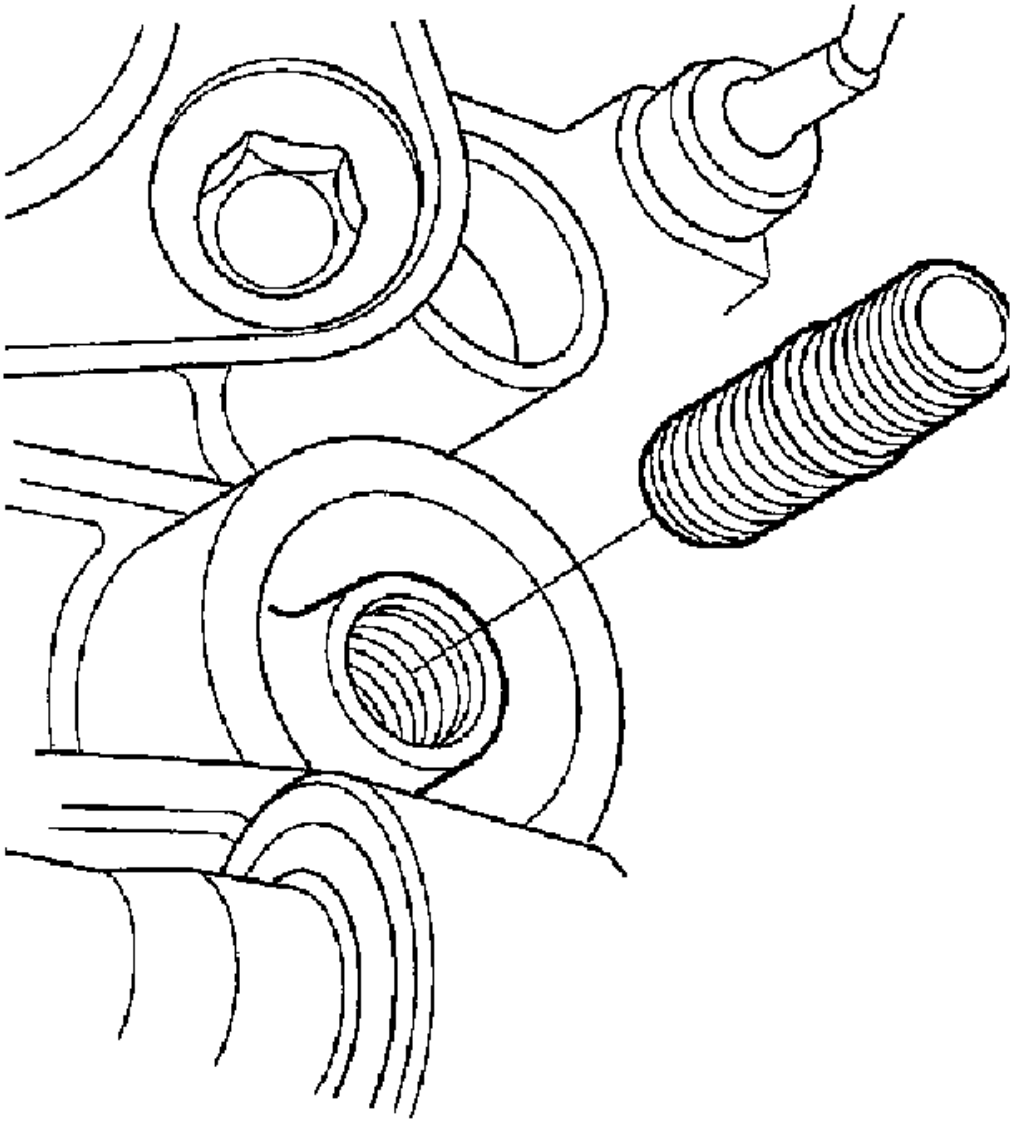


Fig. 12: Removing The Oil Filter Feed Pipe

3. Install the two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe. Hold the nut with a wrench, then tighten the other nut.

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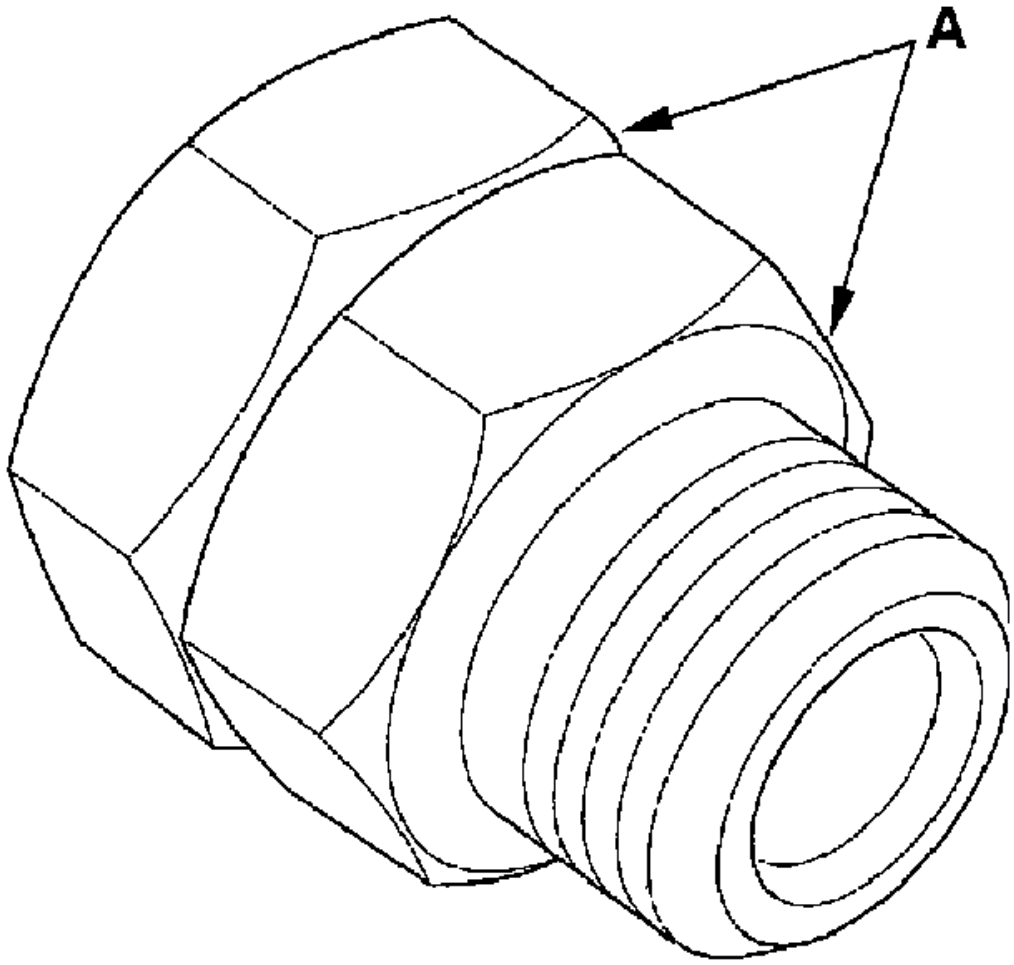


Fig. 13: Installing Two 20 X 1.5 mm Nuts Onto The New Oil Filter Feed Pipe

4. Tighten the oil filter feed pipe to the block to 49 N.m (5.0 kgf.m, 36 lbf.ft), then remove the nuts from the oil filter feed pipe.

OIL JET INSPECTION

1. Remove the oil jet, and inspect it as follows:
   - Make sure that a 1.1 mm (0.04 in.) diameter drill will go through the nozzle hole (A) (1.2 mm (0.05 in.) diameter).
   - Insert the other end of a 1.1 mm (0.04 in.) drill into the oil intake (1.2 mm (0.05 in.) diameter).

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Make sure the check ball (B) moves smoothly and has a stroke of approximately 4.0 mm (0.16 in.).

- Check the oil jet operation with an air nozzle. It should take at least 200 kPa (2.0 kgf/cm^2 , 28 psi) to unseat the check ball.

NOTE: Replace the oil jet assembly if the nozzle is damaged or bent

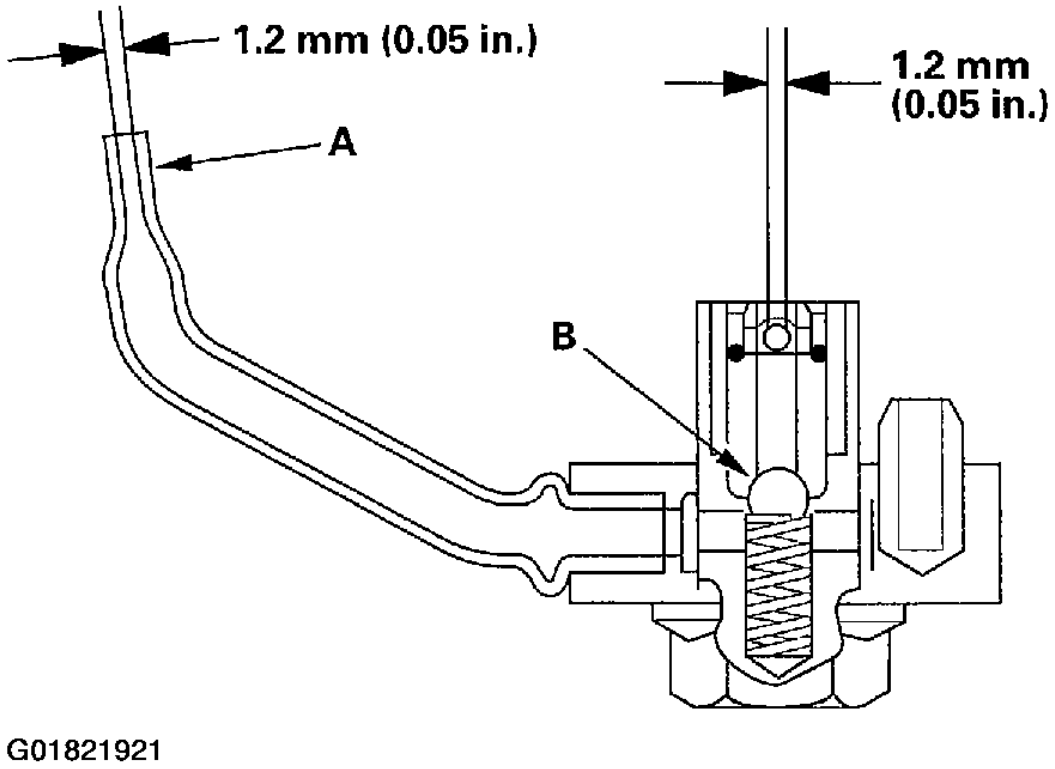


Fig. 14: Cutaway View Of Oil Jet

2. Carefully install the oil jet. The mounting torque is critical.
   Torque: 16 N.m (1.6 kgf.m, 12 lbf.ft)

OIL PUMP OVERHAUL

EXPLODED VIEW

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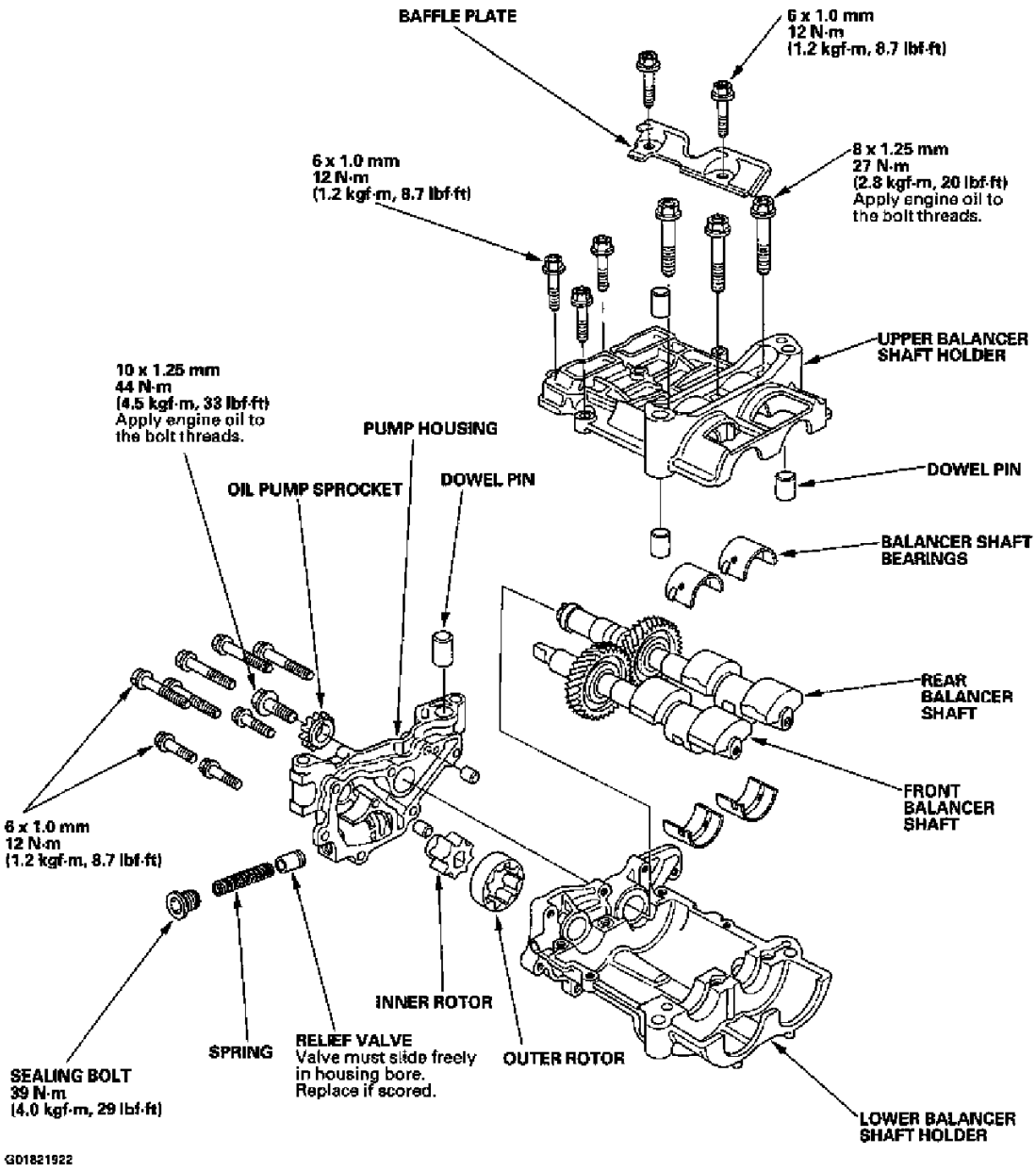
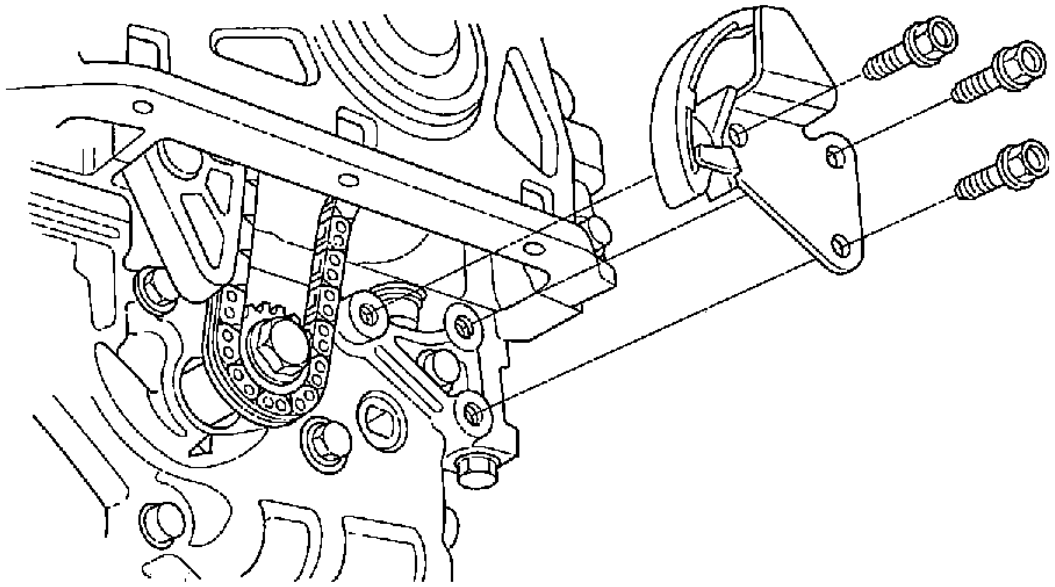


Fig. 15: Exploded View Of Oil Pump

OIL PUMP REMOVAL

1. Turn the crankshaft pulley so its top dead center (TDC) mark lines up with the pointer (see step 1 of **CAM CHAIN REMOVAL**).
2. Remove the oil pan (see **OIL PAN REMOVAL**).
3. Remove and discard the oil pump chain tensioner.

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Fig. 16: Removing The Oil Pump Chain Tensioner

4. To hold the rear balancer shaft, insert a 6 mm pin driver (A) into the maintenance hole in the lower balancer shaft holder and through the rear balancer shaft.

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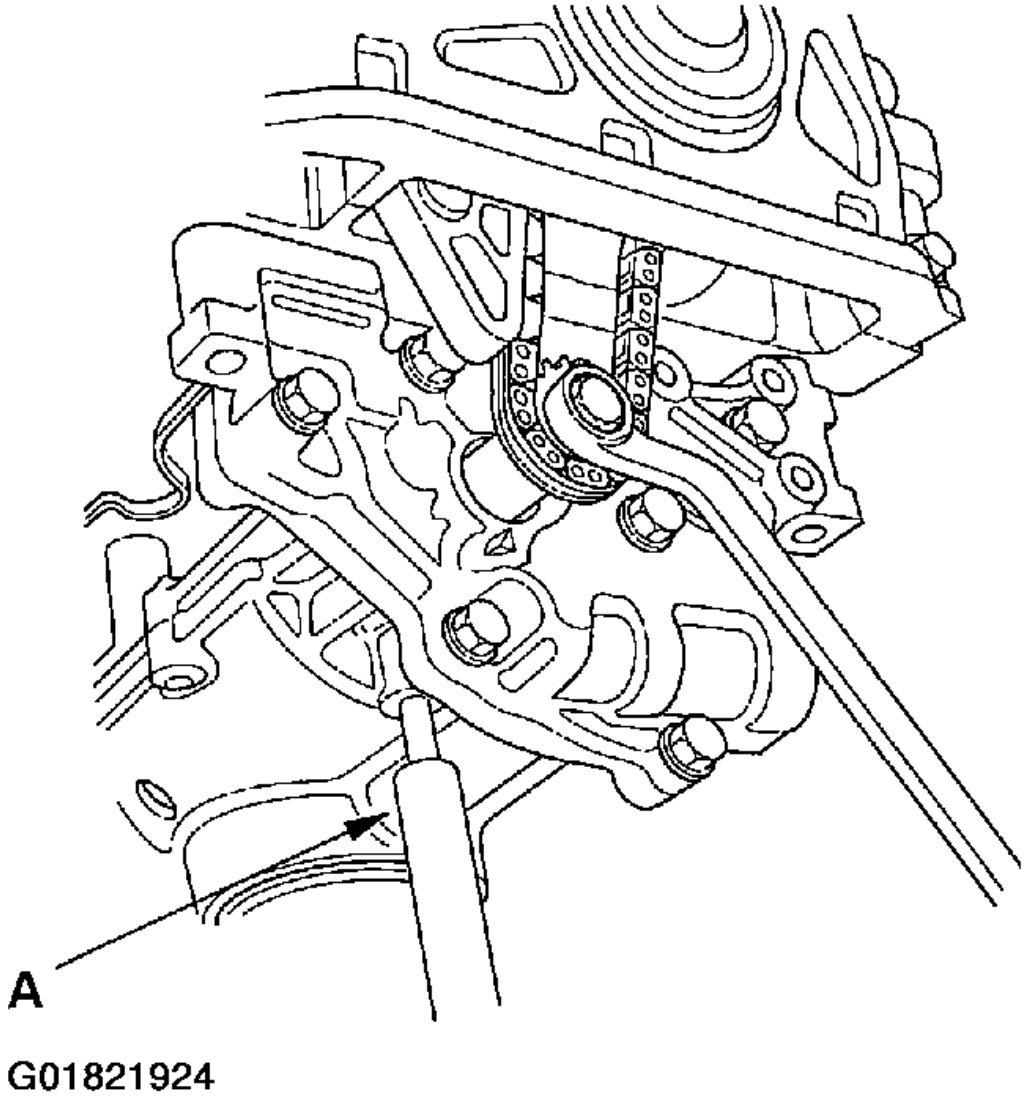


Fig. 17: Inserting A 6 mm Pin Driver Into The Maintenance Hole

5. Loosen the oil pump sprocket mounting bolt.
6. Remove the oil pump sprocket (A), then remove the oil pump (B).

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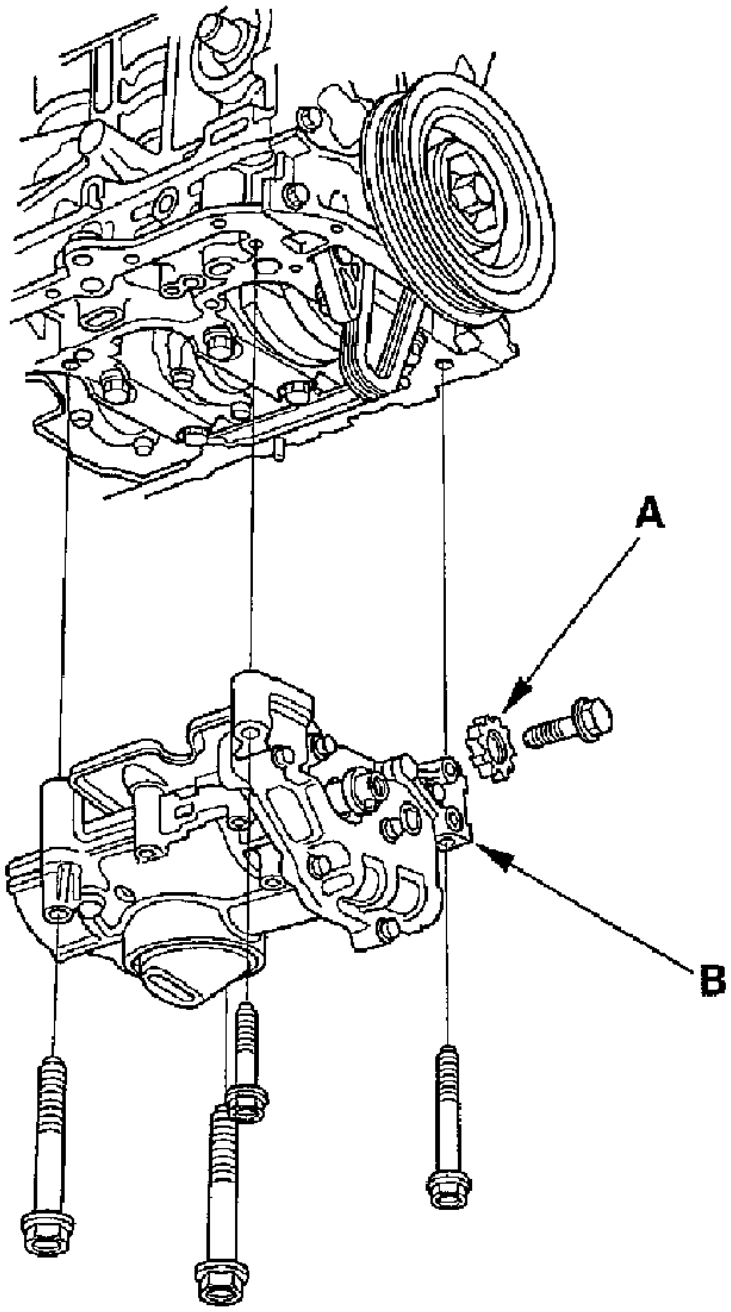


Fig. 18: Removing The Oil Pump Sprocket & The Oil Pump

OIL PUMP INSPECTION

1. Remove the pump housing

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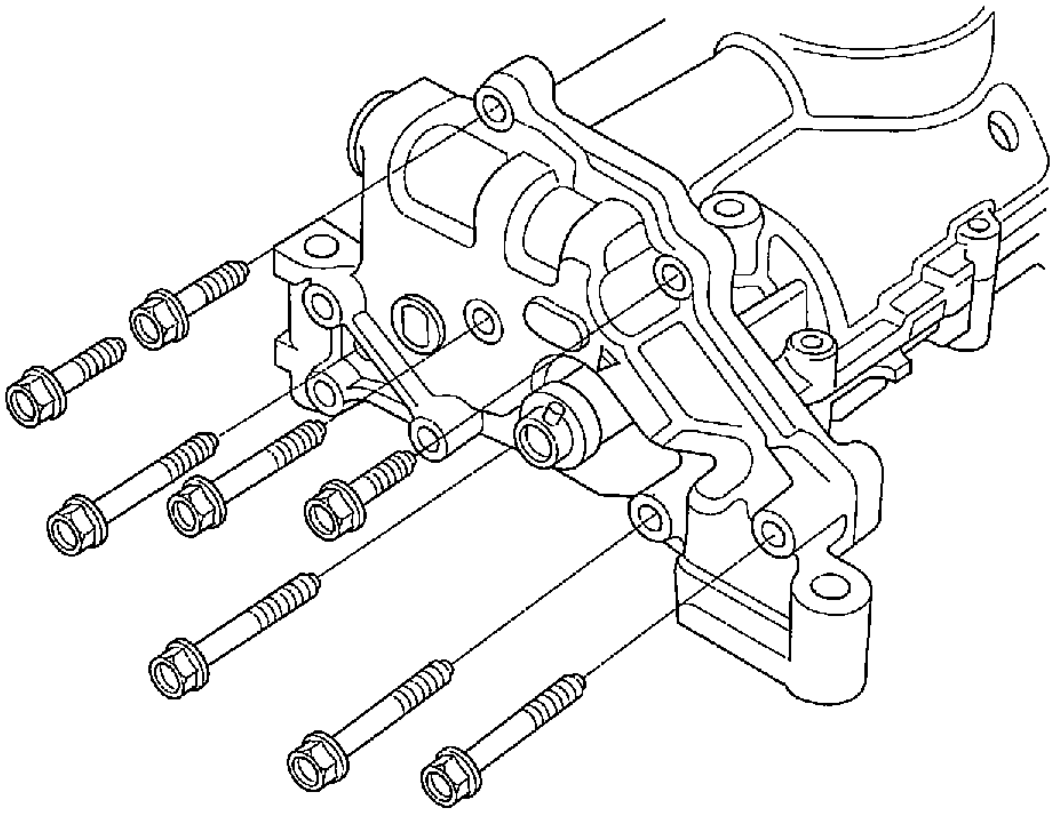


Fig. 19: Removing The Pump Housing

2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

Inner Rotor-To-Outer Rotor Radial Clearance:

Standard (New): 0.06-0.16 mm (0.002-0.006 in.)

Service Limit: 0.20 mm (0.008 in.).

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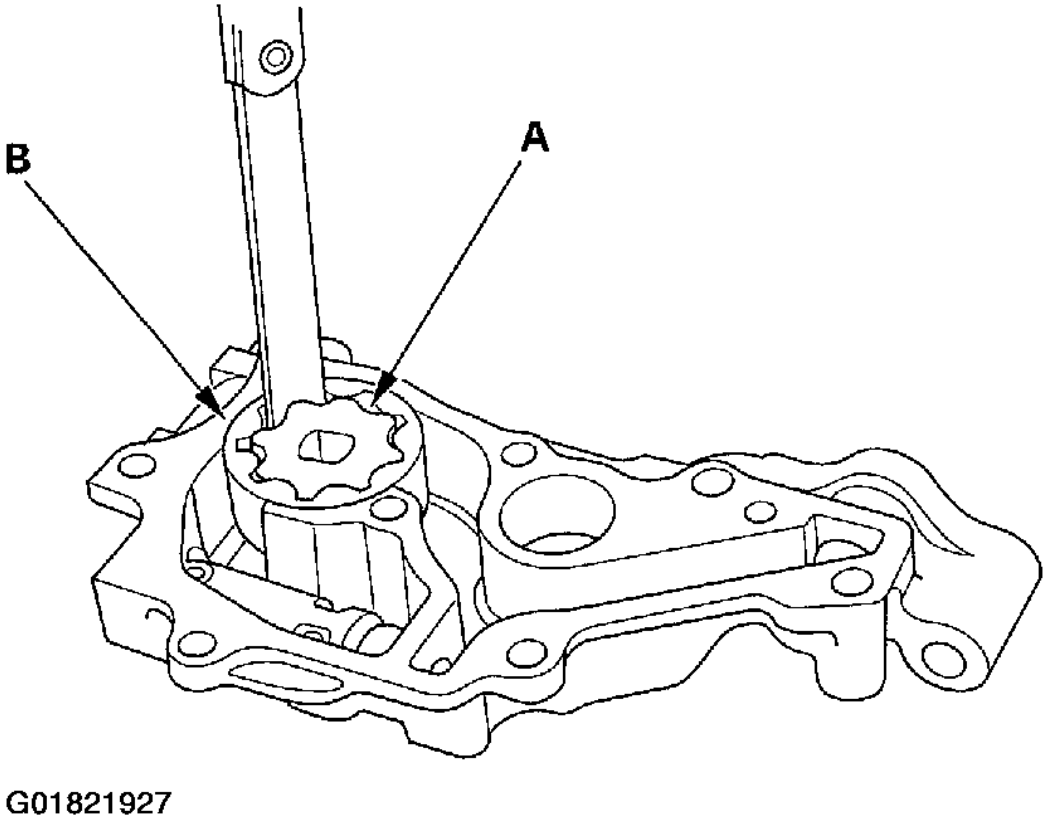


Fig. 20: Checking The Inner-To-Outer Rotor Radial Clearance Between The Inner Rotor And Outer Rotor

3. Check the housing-to-rotor axial clearance between the rotor (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump.

   Housing-To-Rotor Axial Clearance:

   Standard (New): 0.035-0.070 mm (0.0013-0.0028 in.)

   Service Limit: 0.12 mm (0.005 in.)

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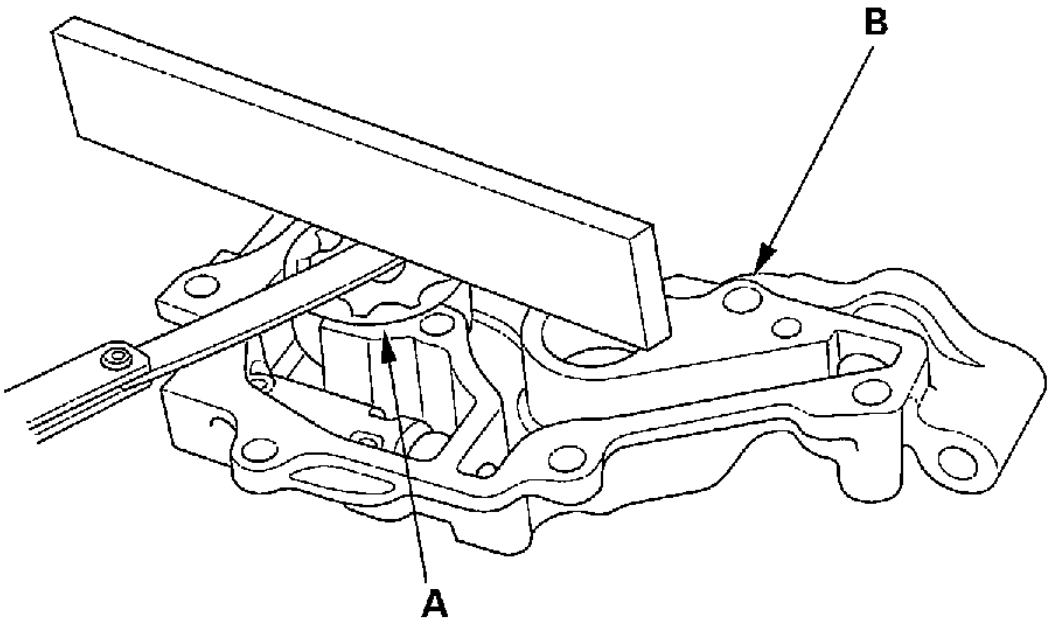


Fig. 21: Checking The Housing-To-Rotor Axial Clearance Between The Rotor & Pump Housing

4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

Housing-To-Outer Rotor Radial Clearance:

Standard (New): 0.15-0.21 mm (0.006-0.008 in.)

Service Limit: 0.23 mm (0.009 in.)

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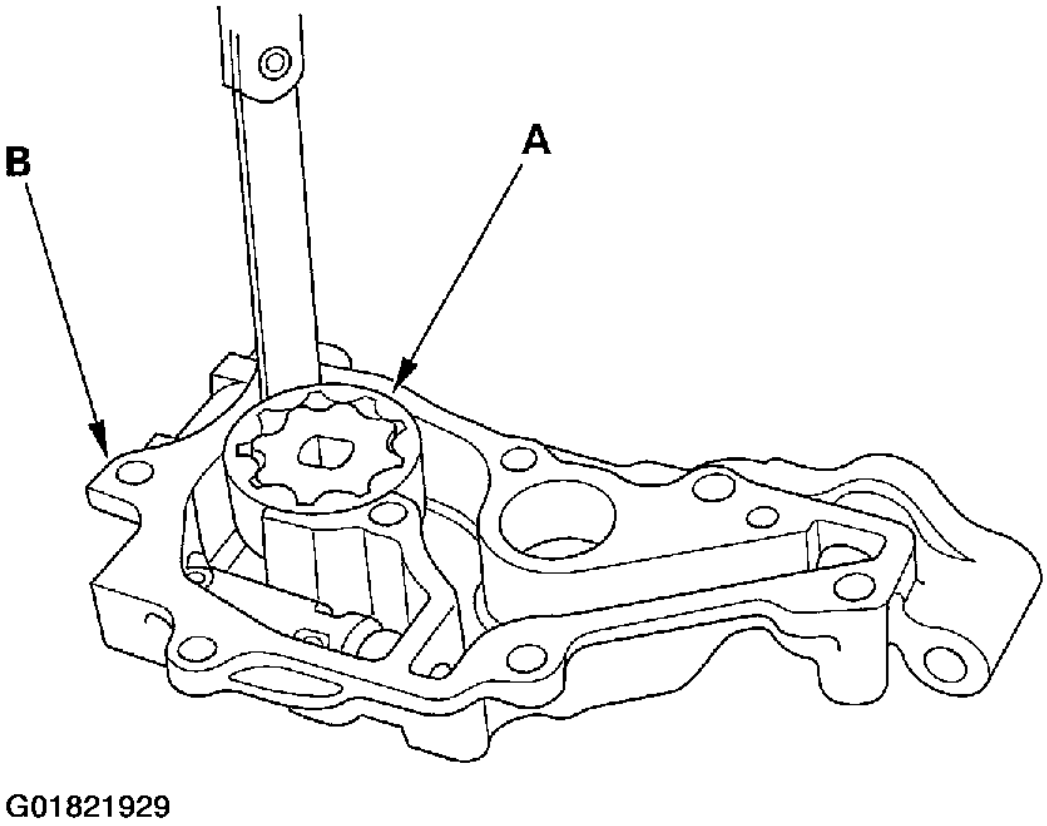


Fig. 22: Checking The Housing-To-Outer Rotor Radial Clearance Between The Outer Rotor & Pump Housing

5. Inspect both rotors and the pump housing for scoring or other damages. Replace the parts if necessary.

BALANCER SHAFT INSPECTION

1. Seat the balancer shaft by pushing it away from the oil pump sprocket end of the oil pump.
2. Zero the dial indicator against the end of the balancer shaft, then push the balancer shaft back and forth and read the end play.

Balancer Shaft End Play:

Front Balancer Shaft:

Standard (New): 0.063-0.108 mm (0.0025-0.0043 in.)

Service Limit: 0.14 mm (0.0055 in.)

Rear Balancer Shaft:

Standard (New): 0.063-0.108 mm (0.0025-0.0043 in.)

Service Limit: 0.14 mm (0.0055 in.)

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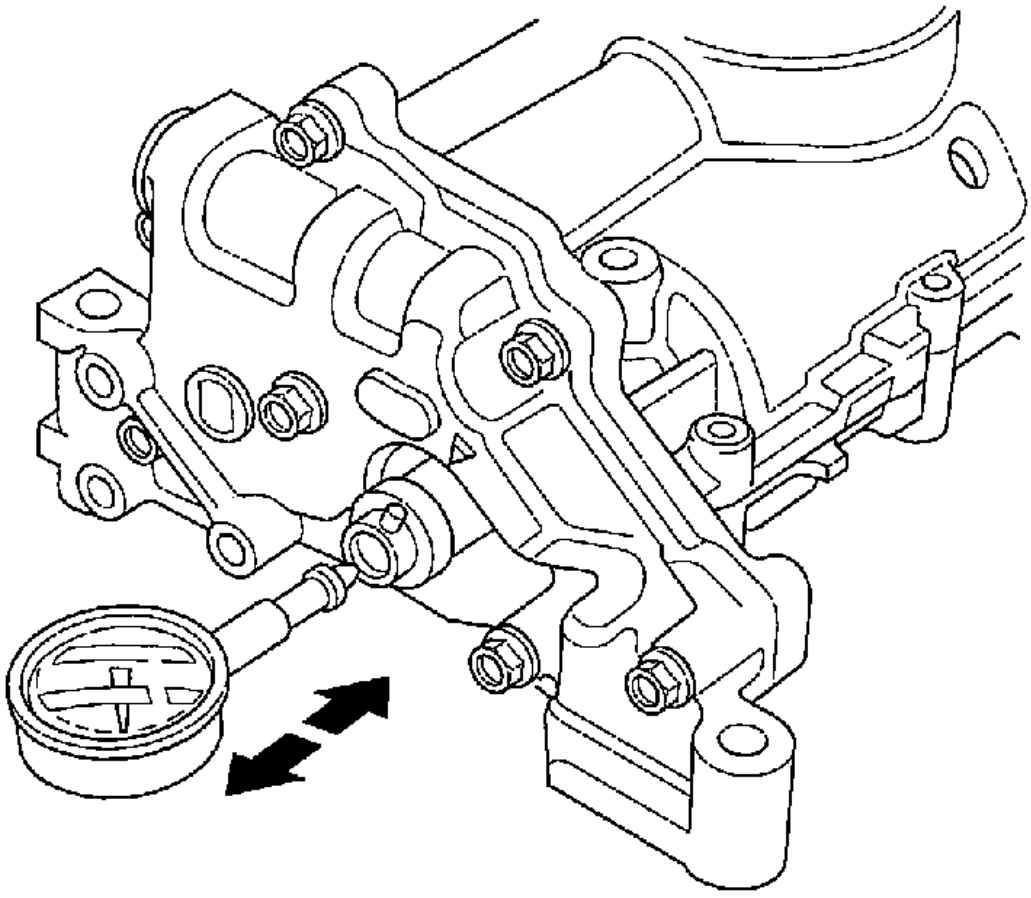


Fig. 23: Checking Balancer Shaft End Play

3. Remove the baffle plate (A) and upper balancer shaft holder (with bearings) (B), then remove the front balancer shaft (C) and rear balancer shaft (D).

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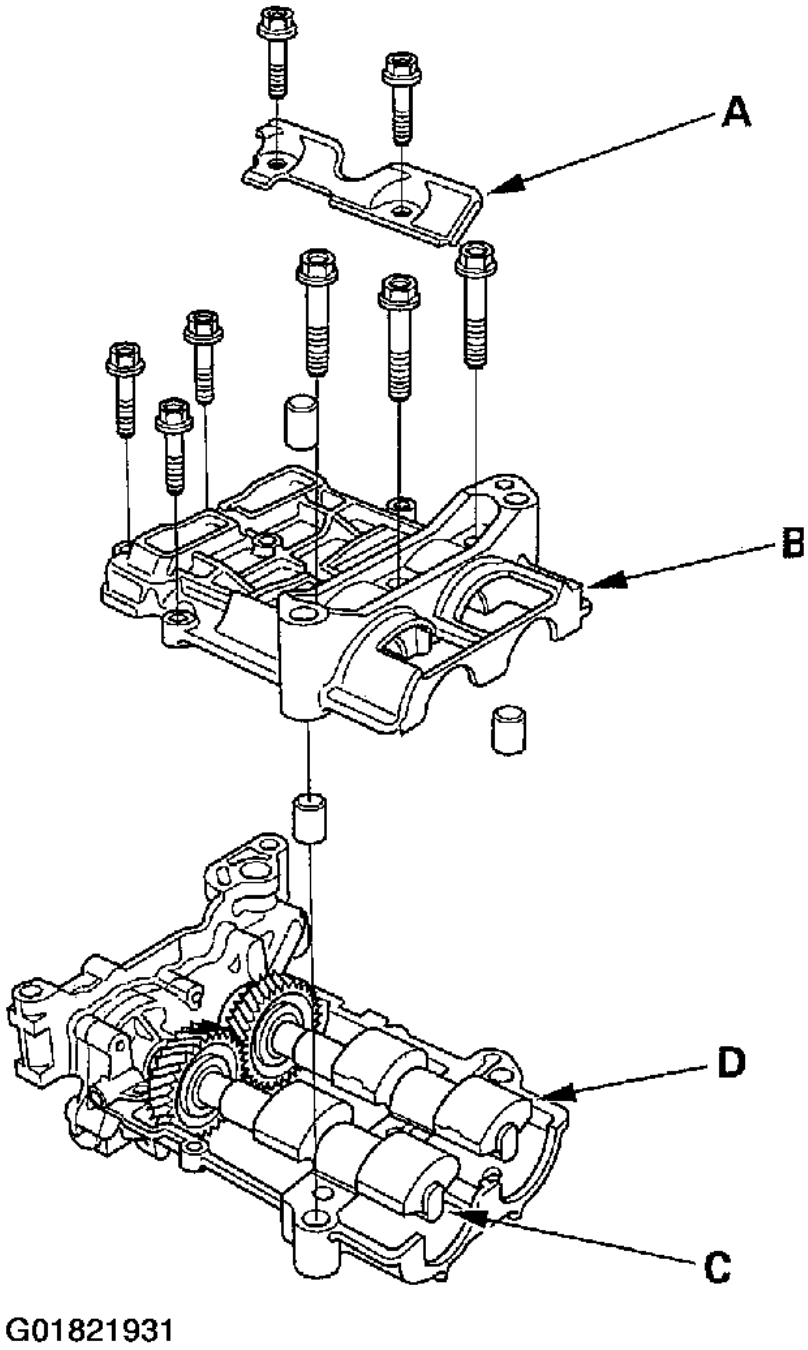


Fig. 24: Removing The Baffle Plate, Upper Balancer Shaft Holder (With Bearings), The Front Balancer Shaft & Rear Balancer Shaft

4. Measure the inner diameter of the No. 1 bearing for the front balancer shaft hole and the rear balancer shaft hole.

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Bearing Inner Diameter:

Front:

Standard (New): 20.000-20.020 mm (0.7874-0.7882 in.)

Service Limit: 20.03 mm (0.789 in.)

Rear:

Standard (New): 24.000-24.020 mm (0.9449-0.9457 in.)

Service Limit: 24.03 mm (0.946 in.)

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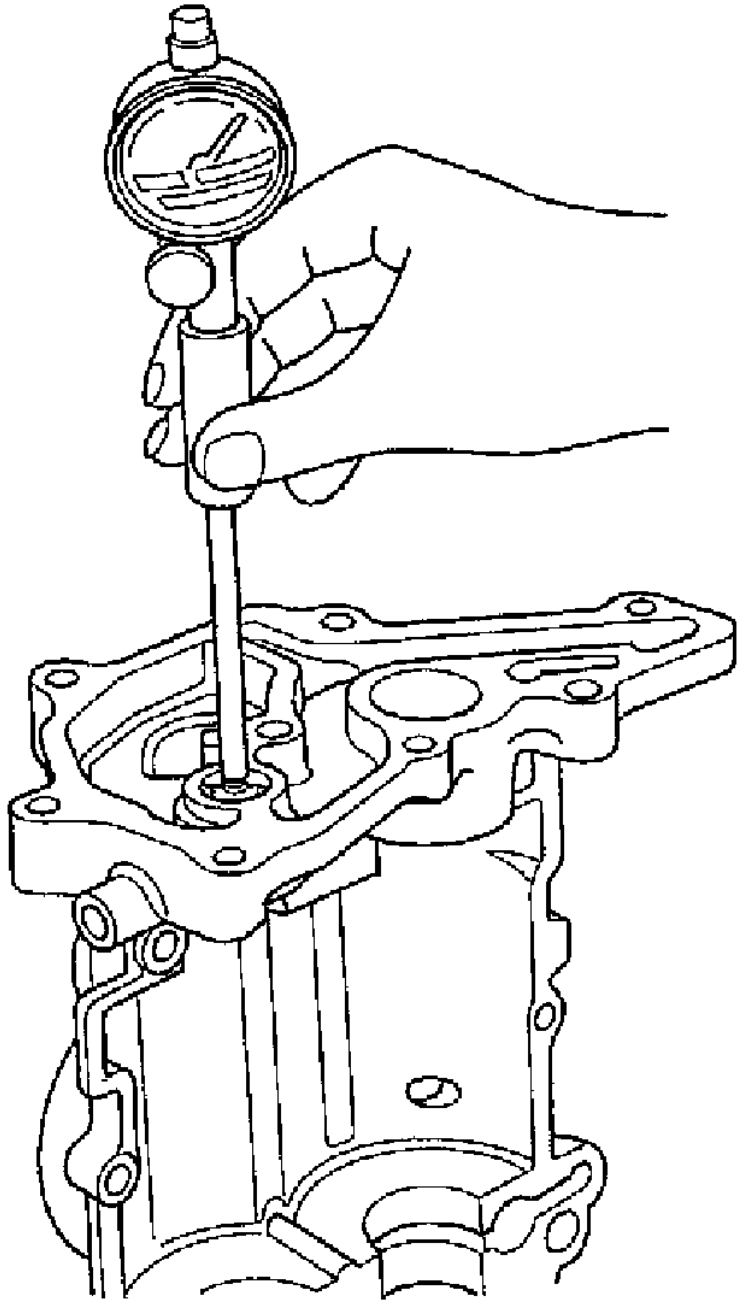


Fig. 25: Measuring The Inner Diameter Of The No. 1 Bearing (Front)

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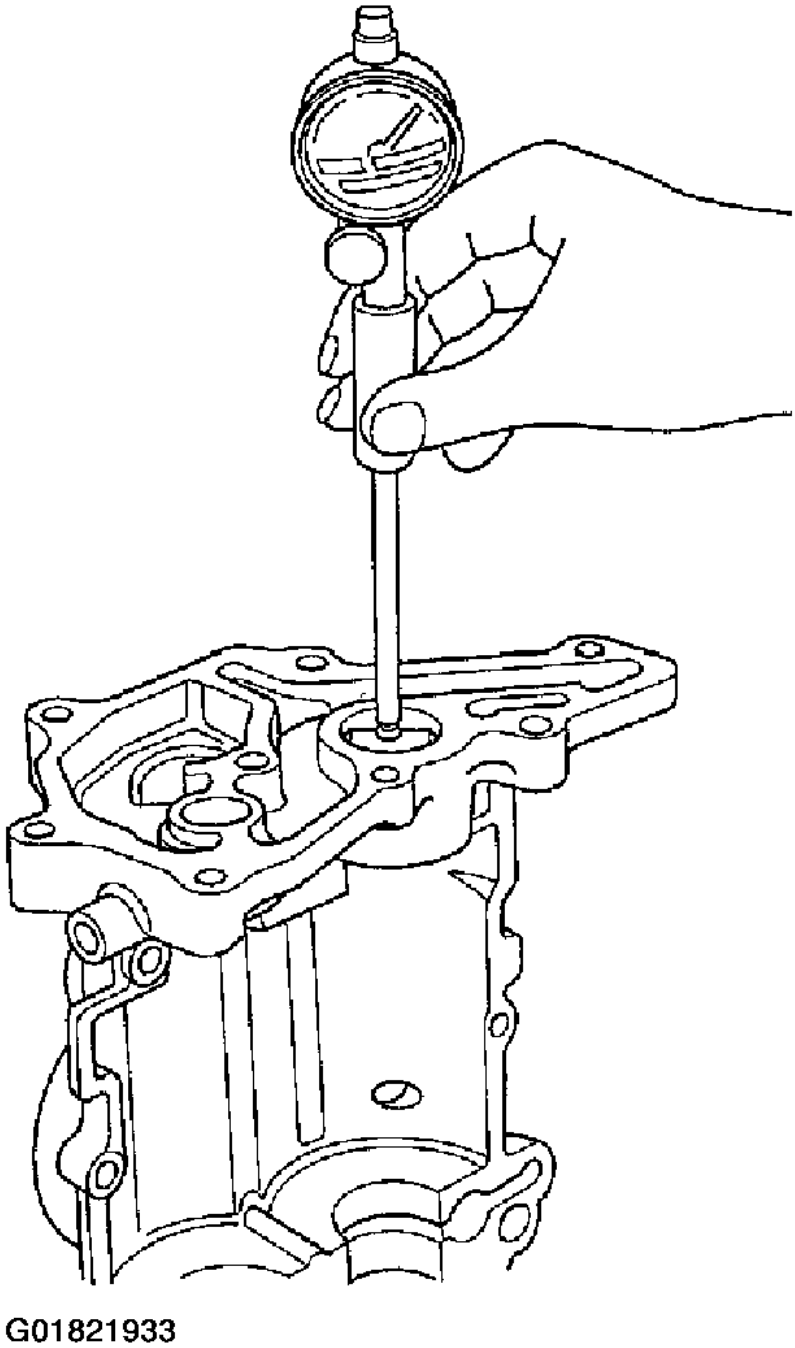


Fig. 26: Measuring The Inner Diameter Of The No. 1 Bearing (Rear)

5. Measure the diameters of the No. 1 journals on the front balancer shaft and rear balancer shaft.

Journal Diameter:

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Front:

Standard (New): 19.938-19.950 mm (0.7850-0.7854 in.)
Service Limit: 19.92 mm (0.784 in.)

Rear:

Standard (New): 23.938-23.950 mm (0.9424-0.9429 in.)
Service Limit: 23.92 mm (0.942 in.)

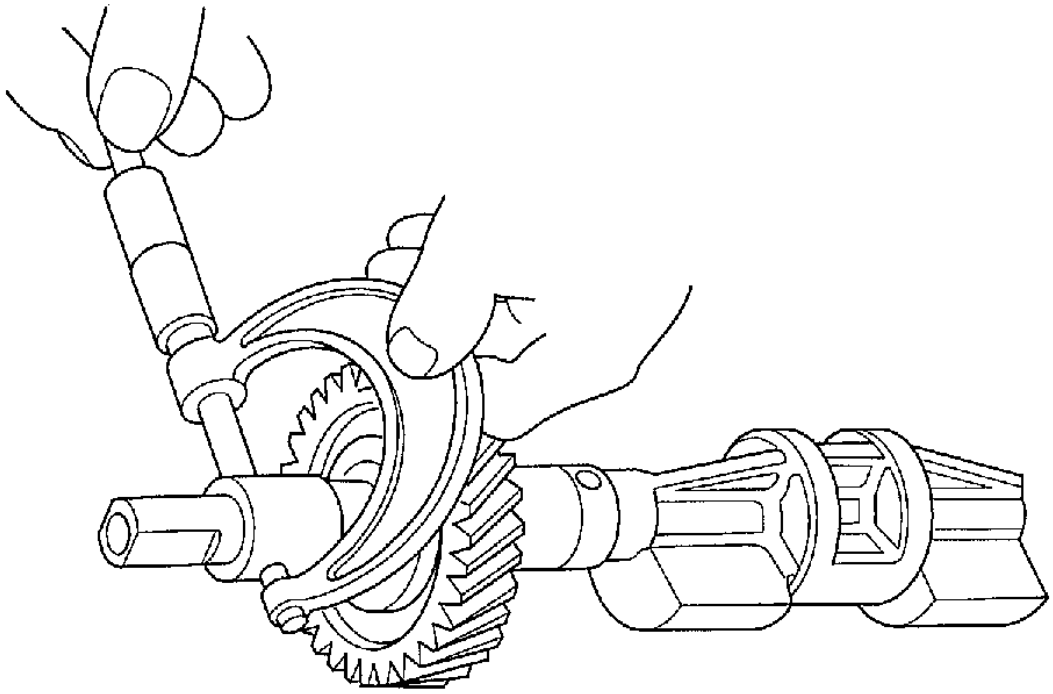
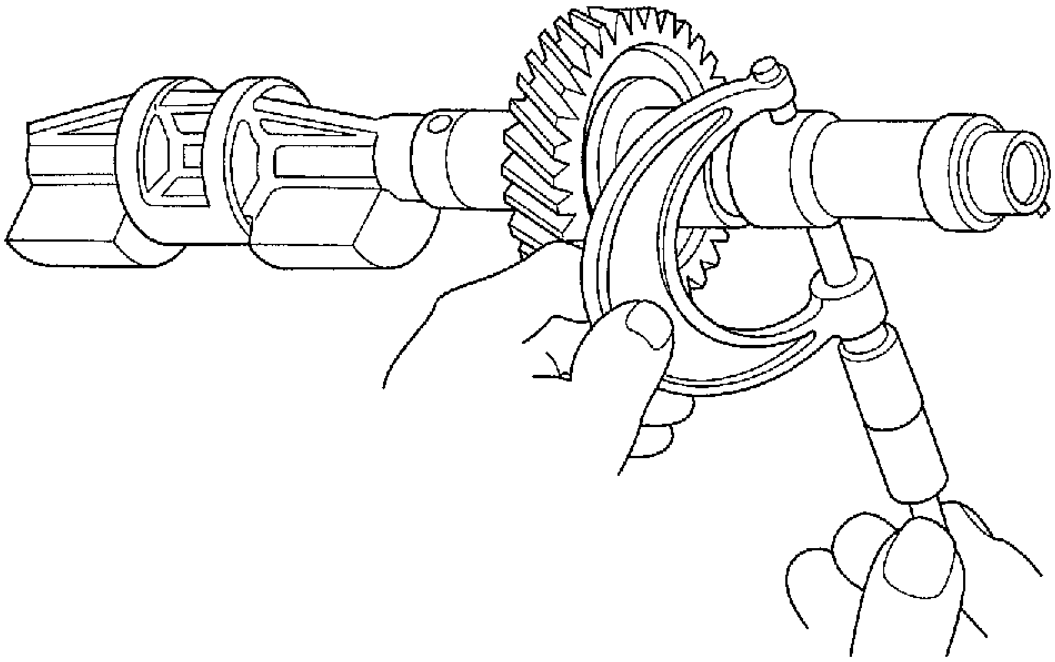


Fig. 27: Measuring The Diameter Of The No. 1 Journal (Front)

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Fig. 28: Measuring The Diameter Of The No. 1 Journal (Rear)

6. Clean both balancer shaft No. 2 journals and bearing halves with a clean shop towel.
7. Place one strip of plastigage across each No. 2 journal.
8. Reinstall the bearings and upper balancer shaft holder, then torque the bolts.

NOTE: Do not rotate the balancer shafts during inspection.

9. Remove the upper balancer shaft holder and bearings again, and measure the widest part with the plastigage. If the balancer shaft No. 2 journal oil clearance is out-of-tolerance, install new bearings, and recheck. If it is still out-of-tolerance, replace the balancer shafts.

No. 2 Journal Oil Clearance:

Standard (New): 0.060-0.120 mm (0.0024-0.0047 in.)

Service Limit: 0.15 mm (0.006 in.)

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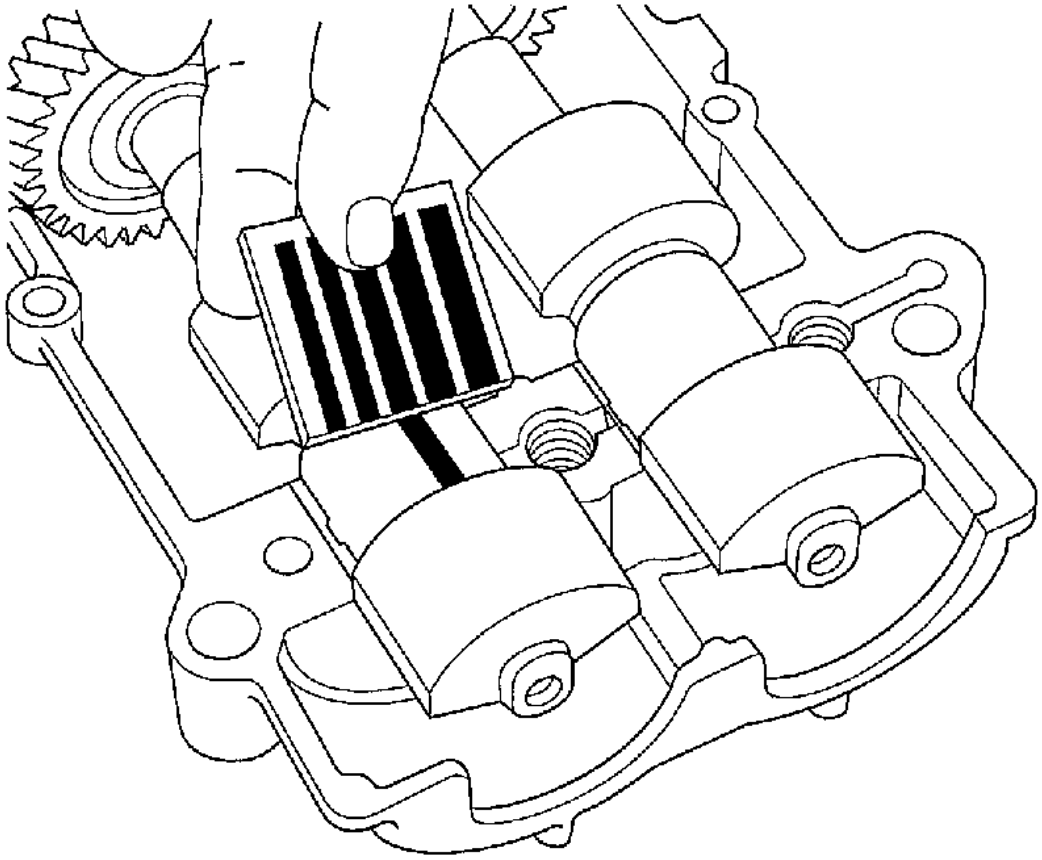


Fig. 29: Measuring The Widest Part With The Plastigage

10. Align the punch mark on the rear balancer shaft in the center of the two punch marks on the front balancer shaft, then install the balancer shafts on the lower balancer shaft holder.

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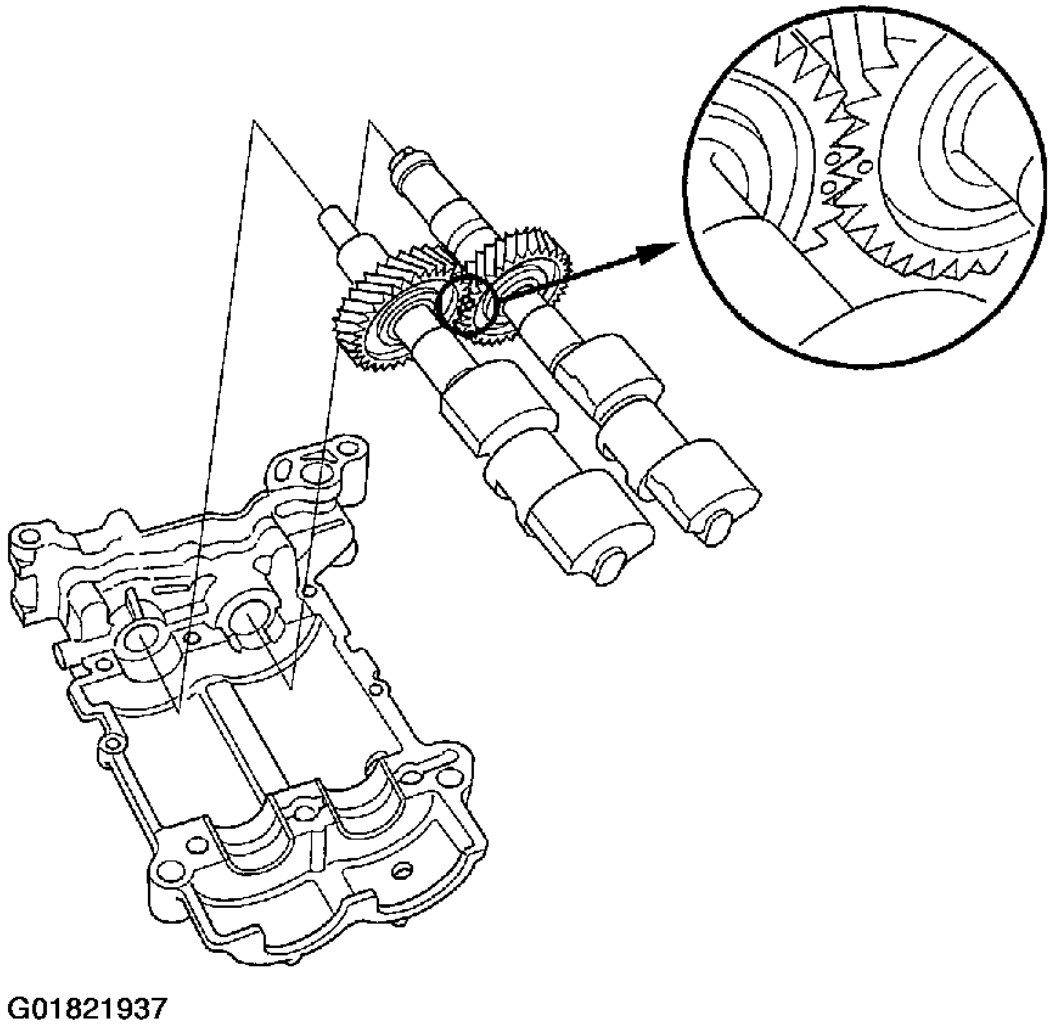


Fig. 30: Installing The Balancer Shafts On The Lower Balancer Shaft Holder

11. Apply engine oil to the threads of the 8 mm bolts (A).

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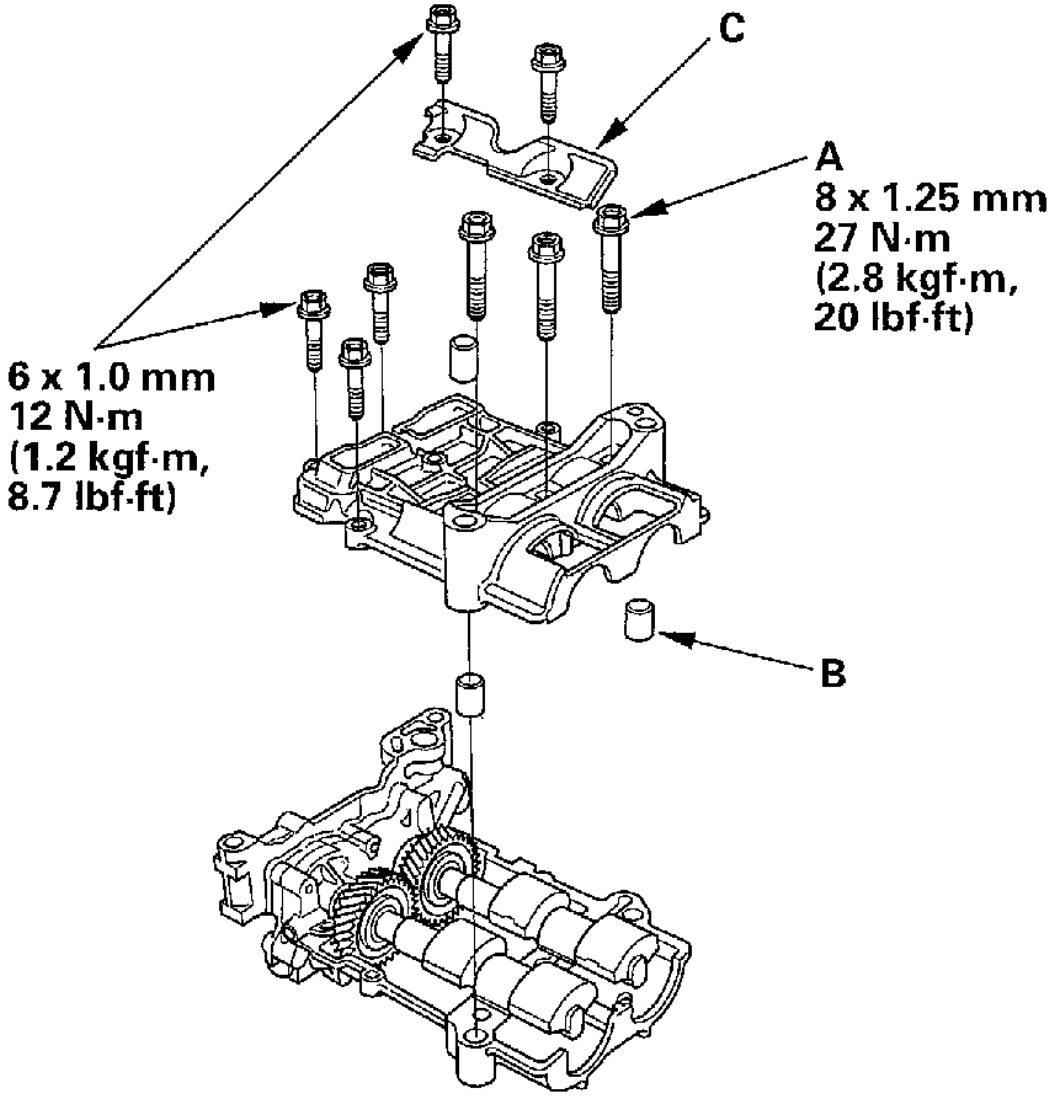


Fig. 31: Installing The Upper Balancer Shaft Holder & Baffle Plate

12. Install the upper balancer shaft holder (B) and baffle plate (C).
13. Install the pump housing.

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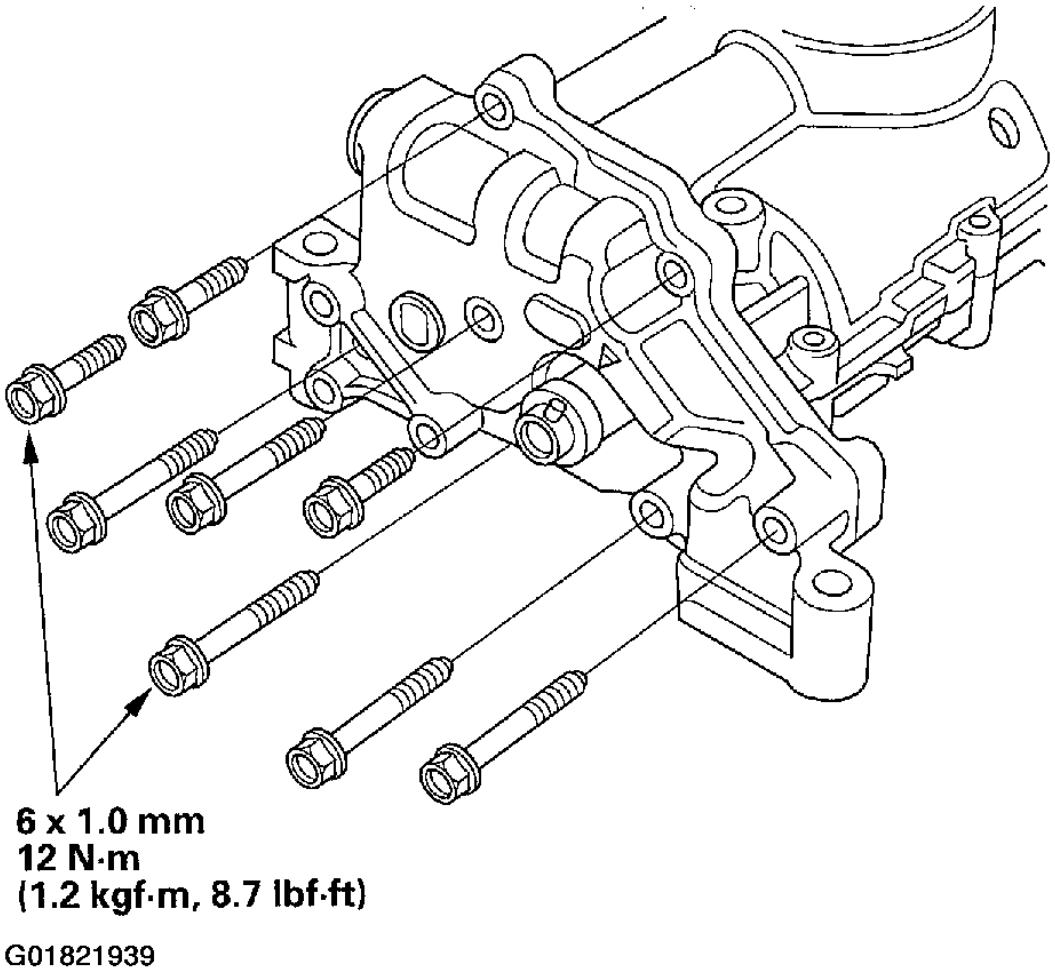


Fig. 32: Installing The Pump Housing

OIL PUMP INSTALLATION

1. Make sure the No. 1 piston is at TDC (see step 1 of **CAM CHAIN REMOVAL**).
2. Align the dowel pin (A) on the rear balancer shaft with the mark (B) on the oil pump.

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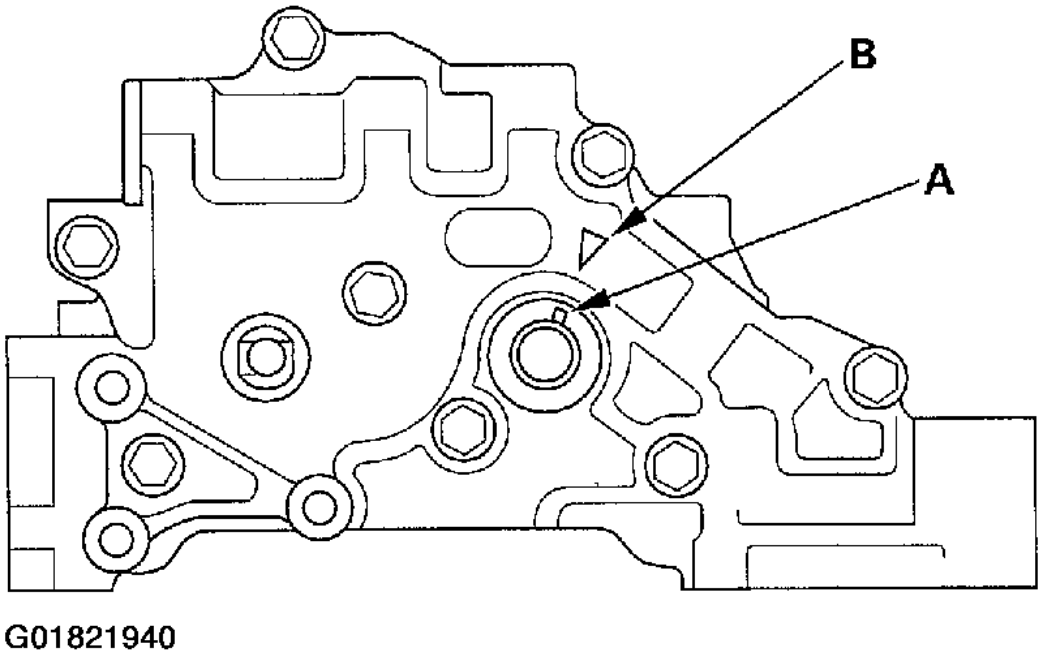


Fig. 33: Aligning The Dowel Pin On The Rear Balancer Shaft With The Mark On The Oil Pump

3. To hold the rear balancer shaft, insert a 6 mm pin driver (A) into the maintenance hole in the lower balancer shaft holder and through the rear balancer shaft.

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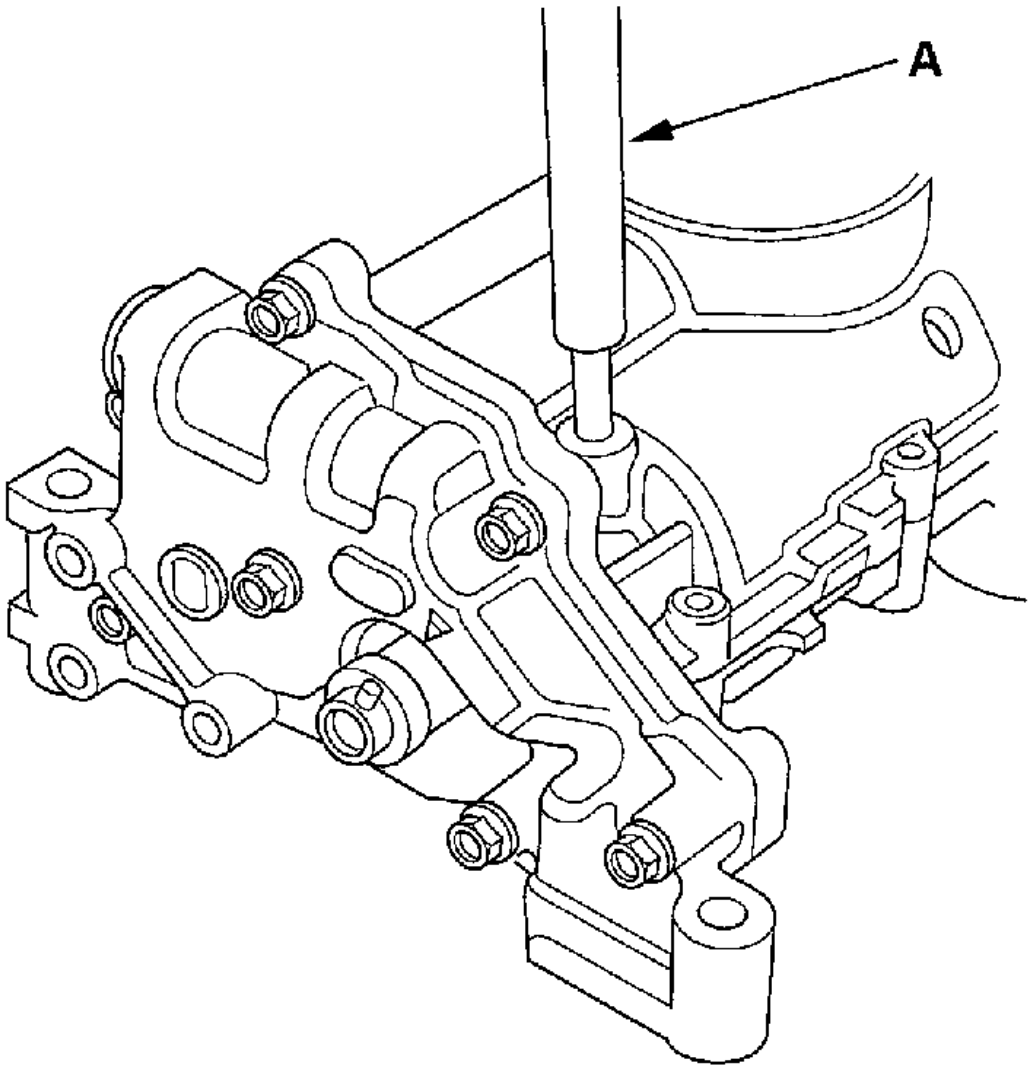


Fig. 34: Inserting A 6 mm Pin Driver Into The Maintenance Hole

4. Apply engine oil to the threads of the oil pump sprocket mounting bolt (A).

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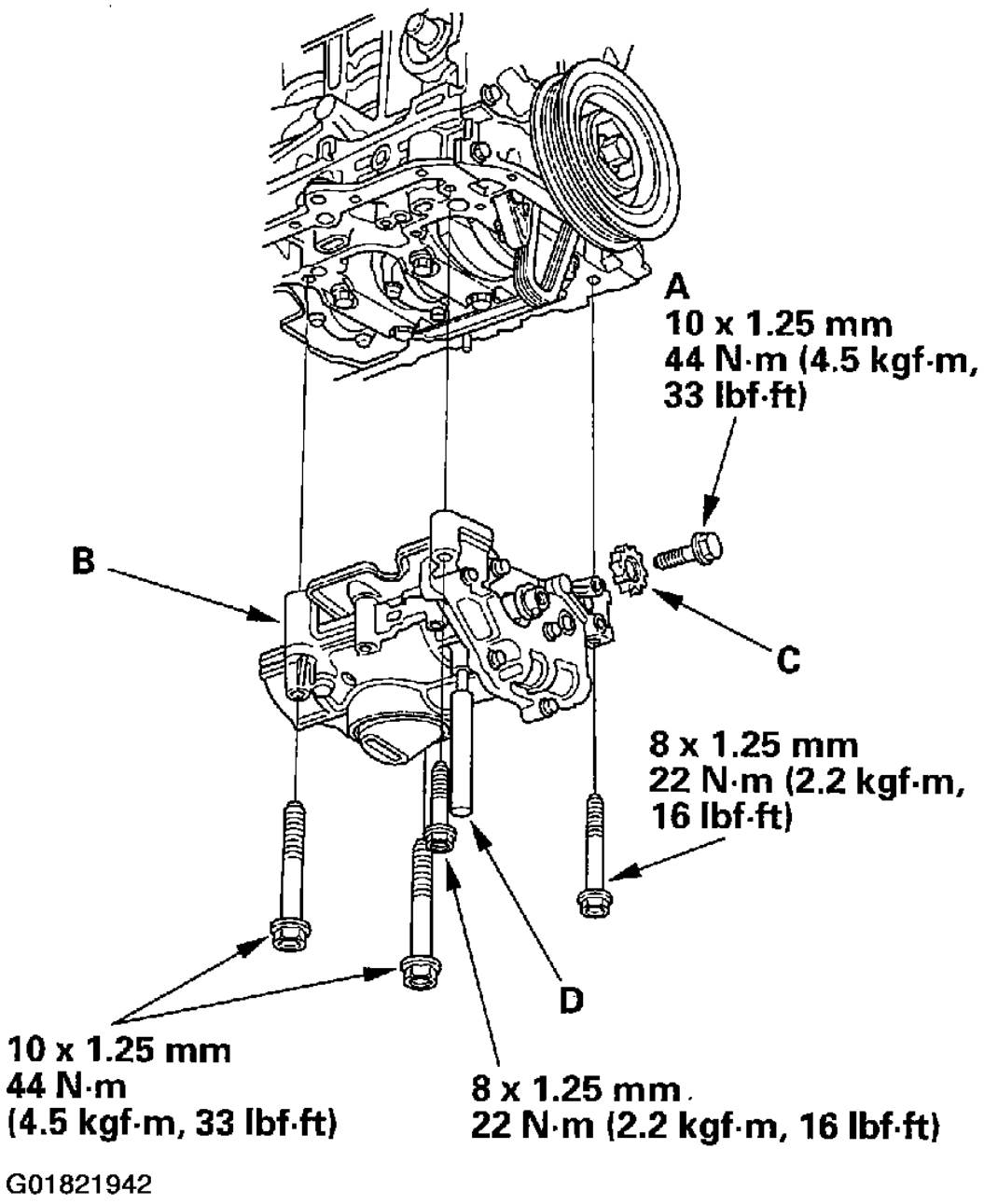


Fig. 35: Installing The Oil Pump, Then The Oil Pump Sprocket

5. Loosely install the oil pump (B), then install the oil pump sprocket (C).
6. Remove the pin driver (D).
7. Tighten the oil pump mounting bolts.
8. Squeeze the new oil pump chain tensioner (A), then install the set clip (B) on it as shown.

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NOTE: The set clip is supplied with the oil pump chain tensioner.

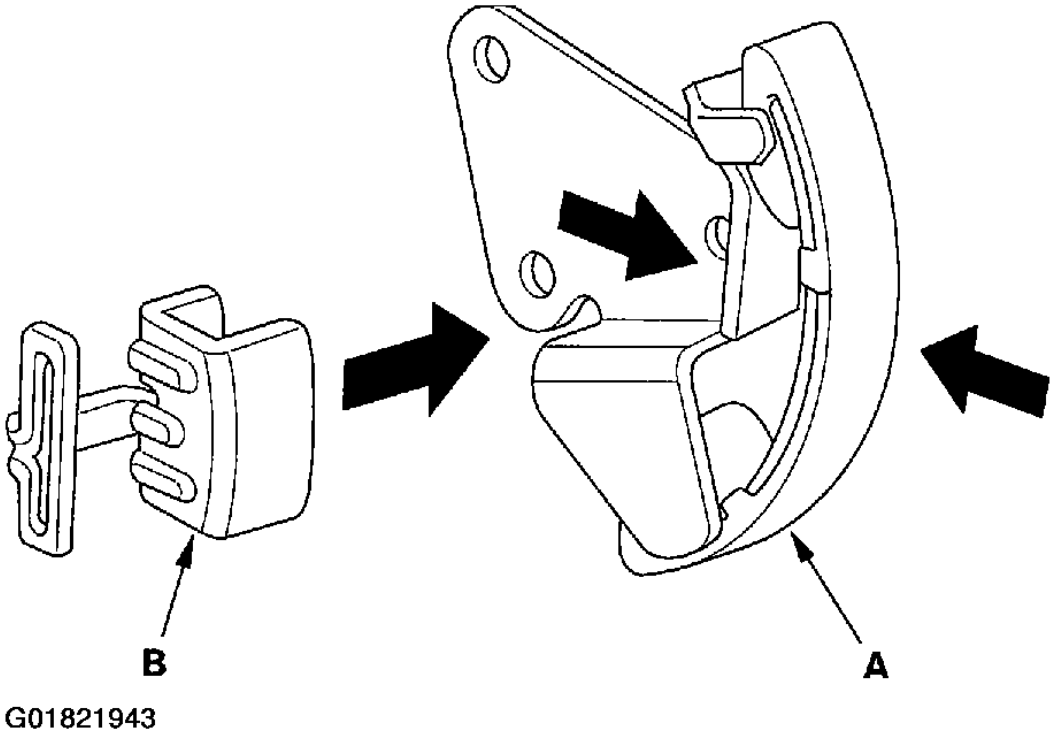


Fig. 36: Squeezing The New Oil Pump Chain Tensioner & Installing The Set Clip

9. Install the new oil pump chain tensioner.

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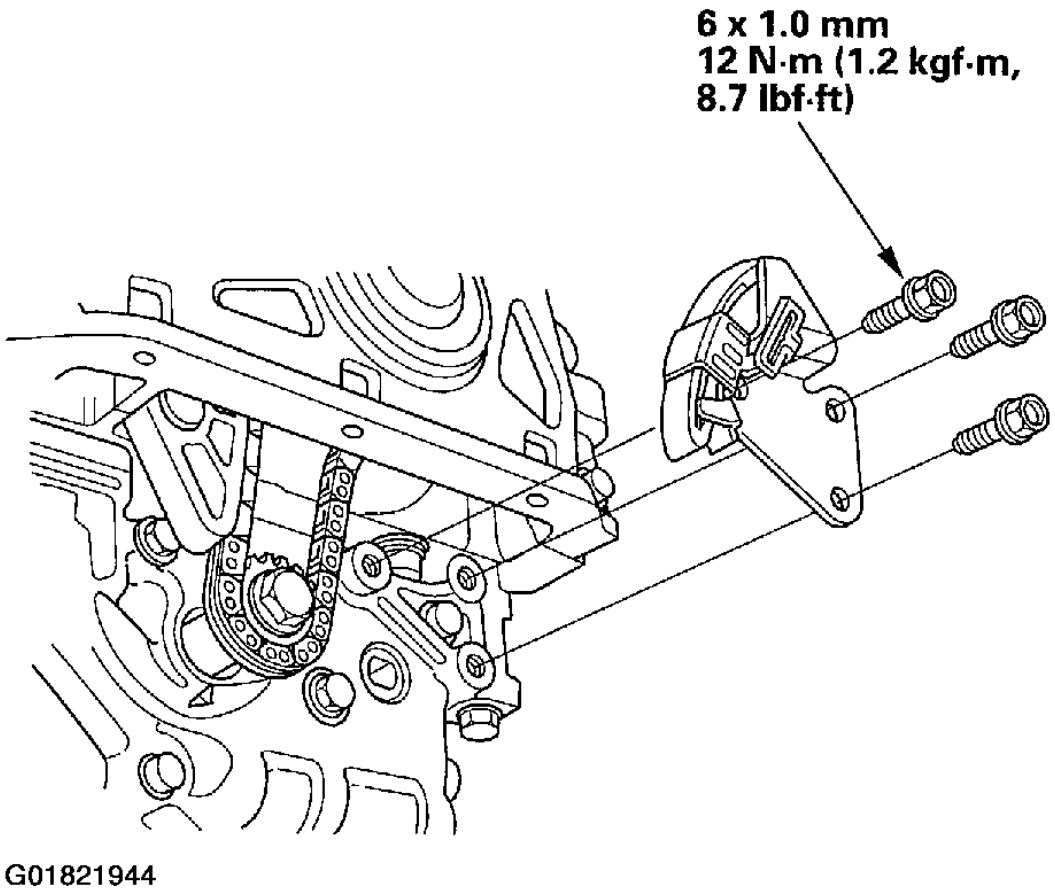


Fig. 37: Installing The New Oil Pump Chain Tensioner

10. Remove the set clip from the oil pump chain tensioner.

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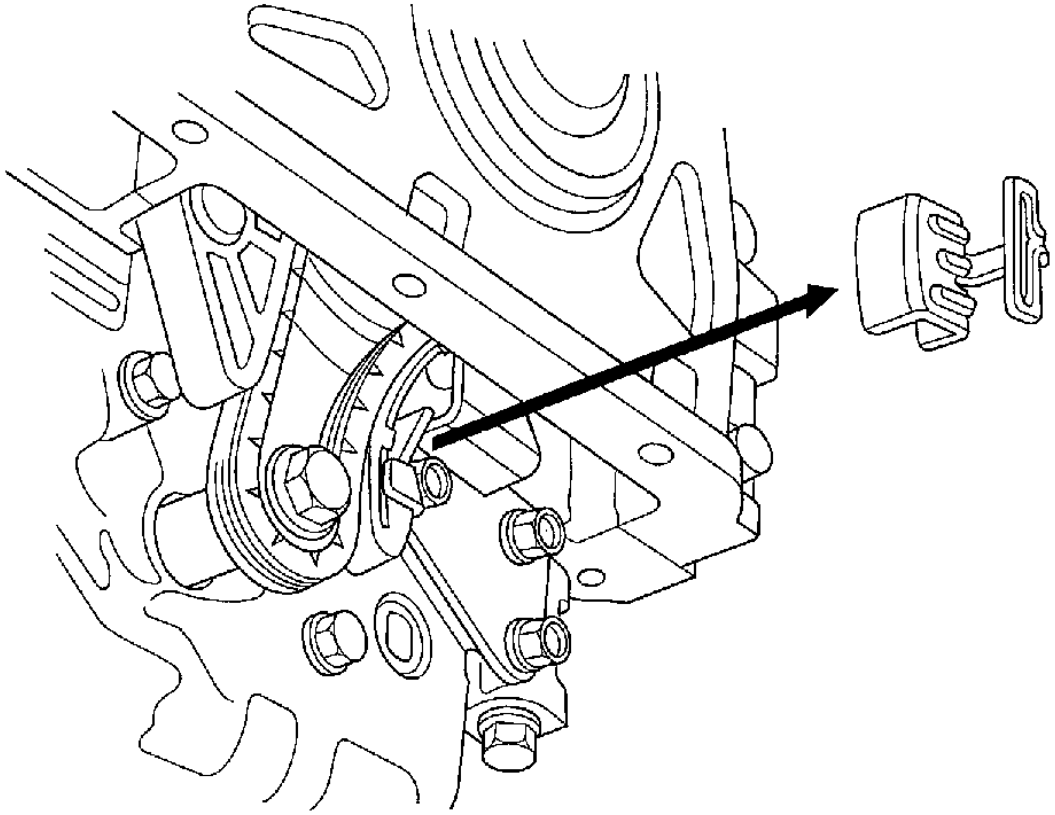


Fig. 38: Removing The Set Clip From The Oil Pump Chain Tensioner

11. Install the oil pan (see **OIL PAN INSTALLATION**).

OIL PRESSURE SWITCH REPLACEMENT

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.

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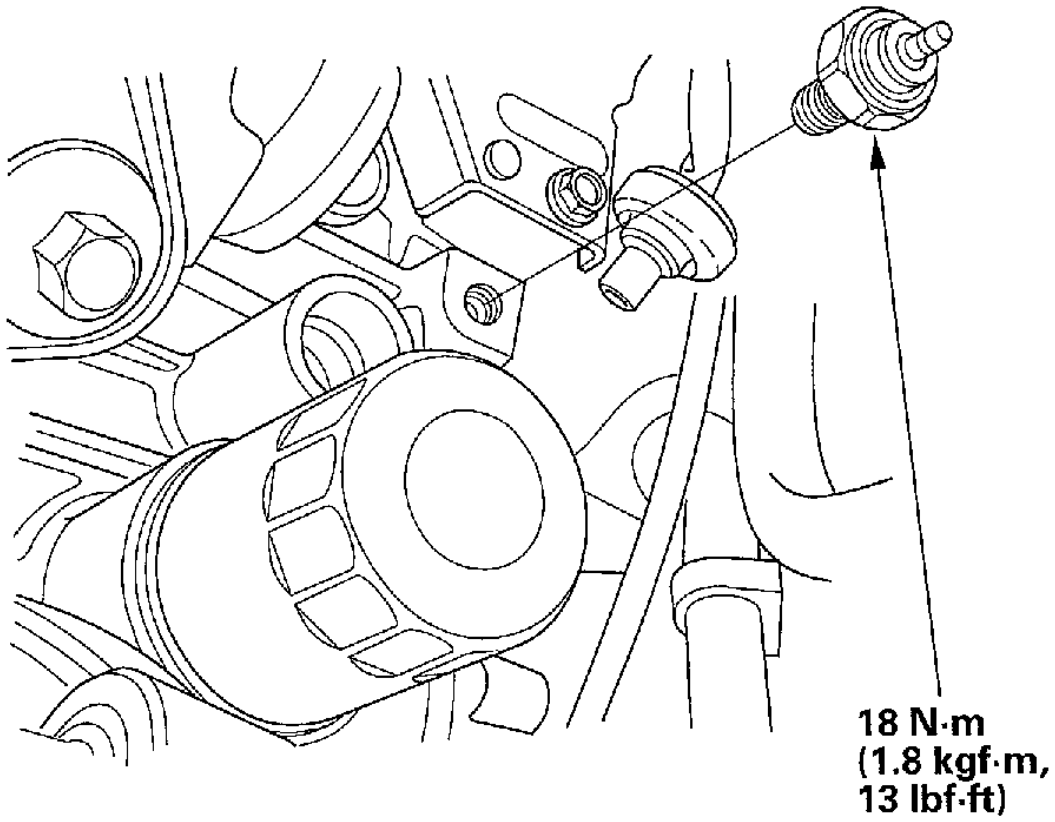


Fig. 39: Removing The Oil Pressure Switch

2. Apply a very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

NOTE: Using too much liquid gasket may cause liquid gasket to enter the oil passage or the end of the new oil pressure switch.

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2004 ENGINES

Engine Mount Control System - TSX

COMPONENT LOCATION INDEX

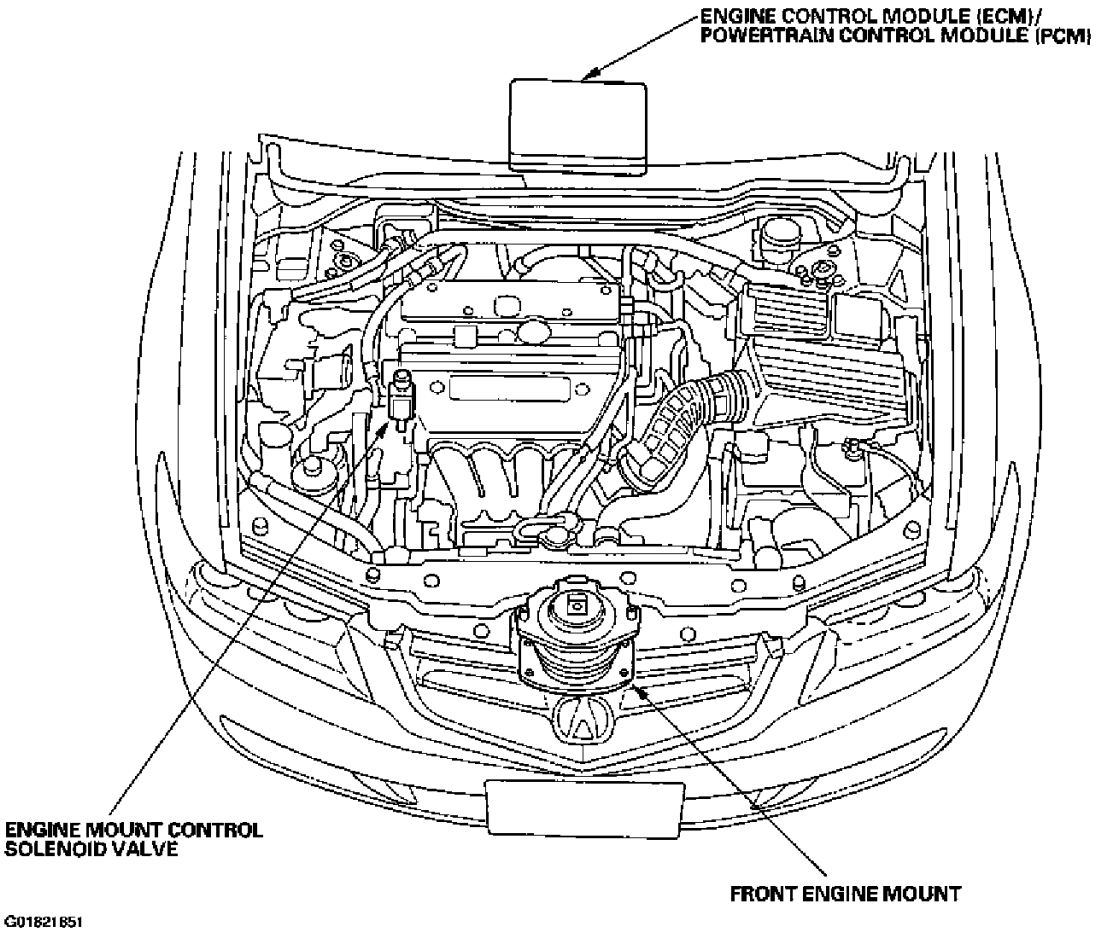


Fig. 1: Locating Engine Mount Control System Components

CIRCUIT DIAGRAM

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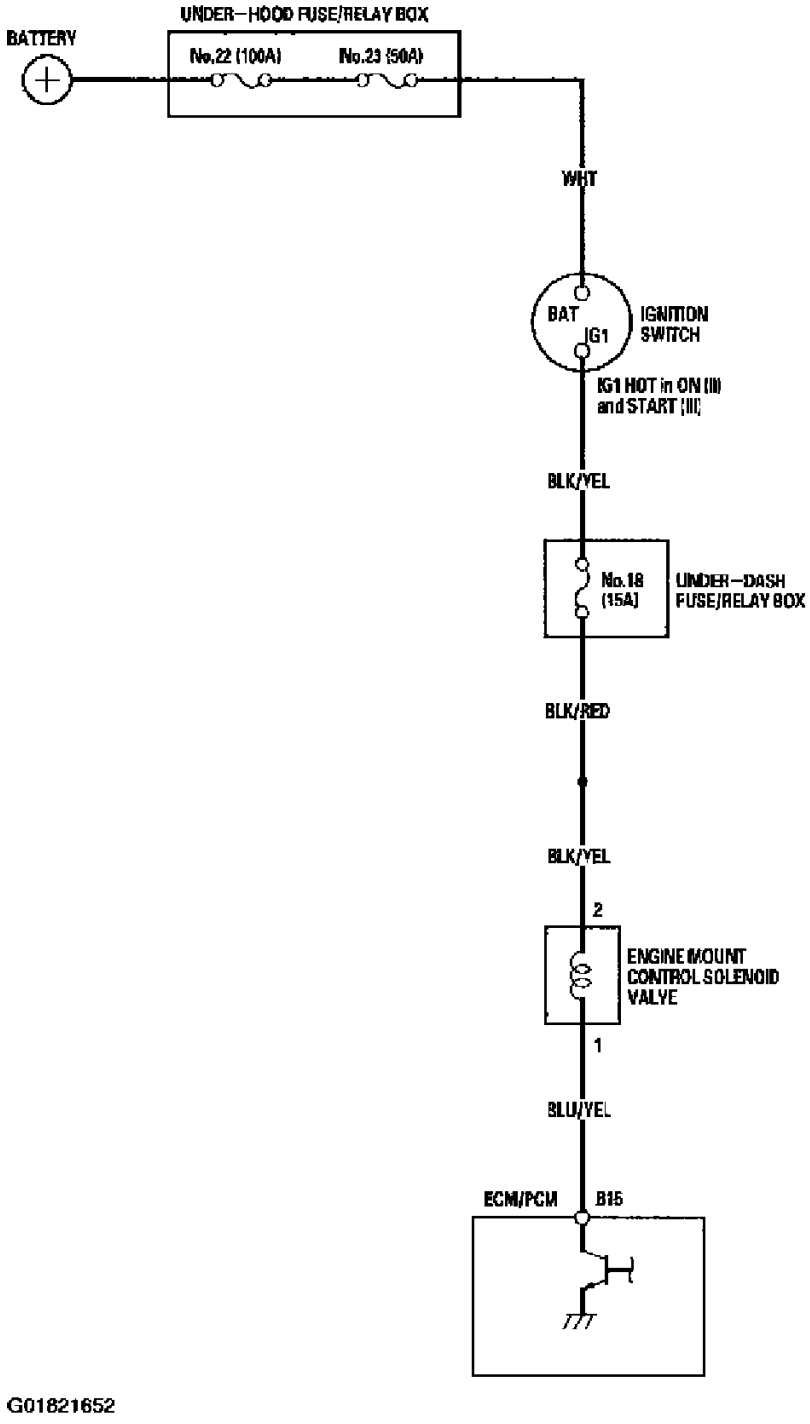


Fig. 2: Engine Mount Control System Wiring Diagram

TROUBLESHOOTING

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Special Tools Required: Vacuum pump/gauge, 0-30 in. Hg A973X-041-XXXXX

NOTE: Check the vacuum hoses and lines for damage and proper connections before troubleshooting.

Follow this procedure if the engine vibrates excessively when idling.

1. Check the idle speed (see **IDLE SPEED INSPECTION**).
2. Raise the engine speed from idling to 2,000 RPM.
3. Check the MOUNT CTRL SOL in the PGM-FI DATA LIST with the Honda diagnostic system (HDS).

   Is ON indicated at idling and OFF indicated at 2,000 RPM?

   YES: Go to step 4.

   NO: Update the engine control module (ECM)/powertrain control module (PCM) if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck. See **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING** . If the engine mount control system works properly, and the ECM/PCM was updated, the troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).
4. Shift to Park or Neutral position.
5. Disconnect the engine mount control solenoid valve 2P connector from the engine mount control solenoid valve.
6. Measure voltage between engine mount control solenoid valve 2P connector terminal No. 2 and body ground.

   Is there battery voltage?

   YES: Go to step 7.

   NO: Repair an open in the wire between engine mount control solenoid valve and No. 18 (15A) fuse in the under-dash fuse/relay box.

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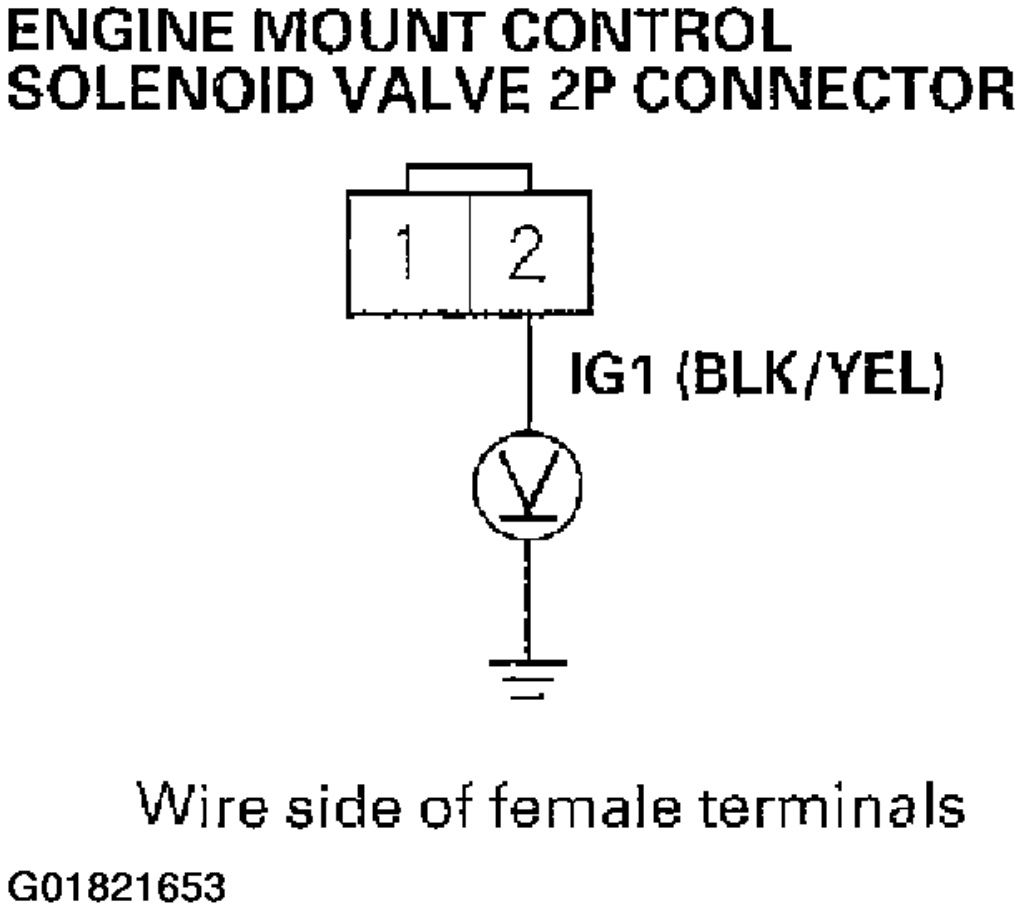


Fig. 3: Measuring Voltage Between Engine Mount Control Solenoid Valve 2P Connector Terminal No. 2 & Body Ground

7. Measure voltage between engine mount control solenoid valve 2P connector terminals No. 1 and No. 2.

   Is there battery voltage?

   YES: Go to step 8.

   NO: Repair an open in the wire between ECM/PCM (B15) and the engine mount control solenoid valve 2P connector. If the wire is OK, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, and recheck. See **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING** . If the engine mount control system works properly, and the ECM/PCM was updated, the troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

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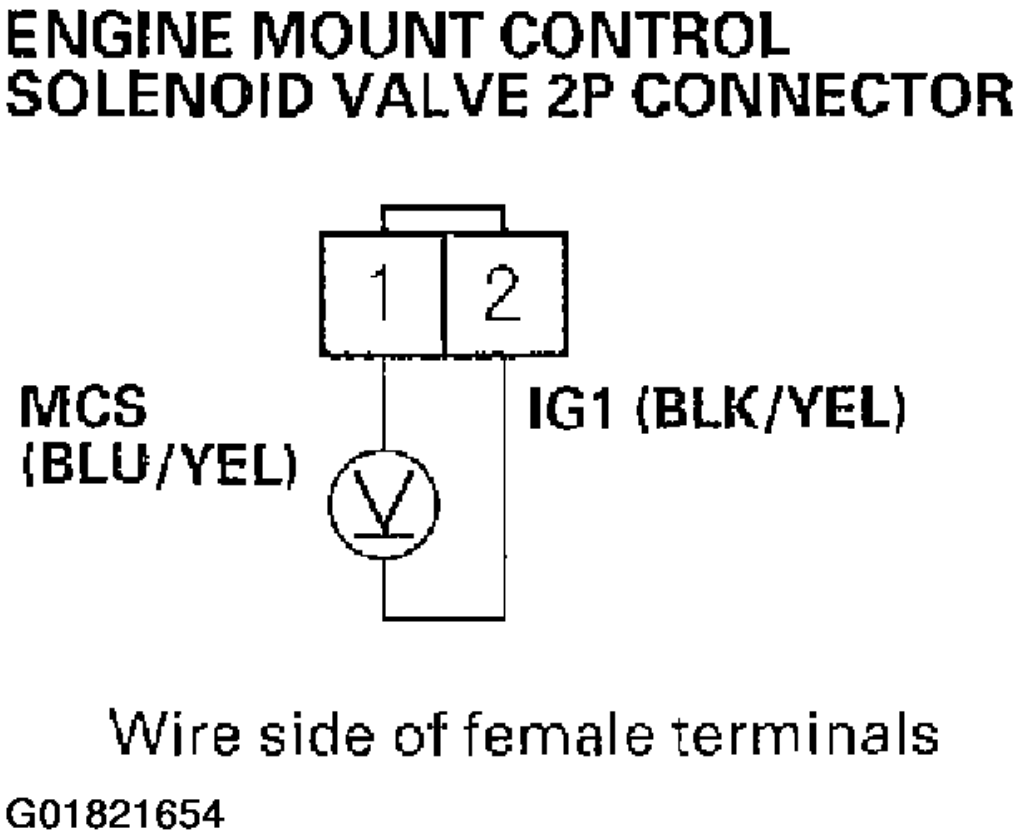


Fig. 4: Measuring Voltage Between Engine Mount Control Solenoid Valve 2P Connector Terminals No. 1 & No. 2

8. Raise the engine speed above 1,000 RPM.
9. Measure voltage between engine mount control solenoid valve 2P connector terminals No. 1 and No. 2.

Is there battery voltage?

YES: Repair a short to body ground in the wire between ECM/PCM (B15) and the engine mount control solenoid valve. If the wire is OK, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, and recheck. See **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING** . If the engine mount control system works properly, and the ECM/PCM was updated, the troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

NO: Go to step 10.

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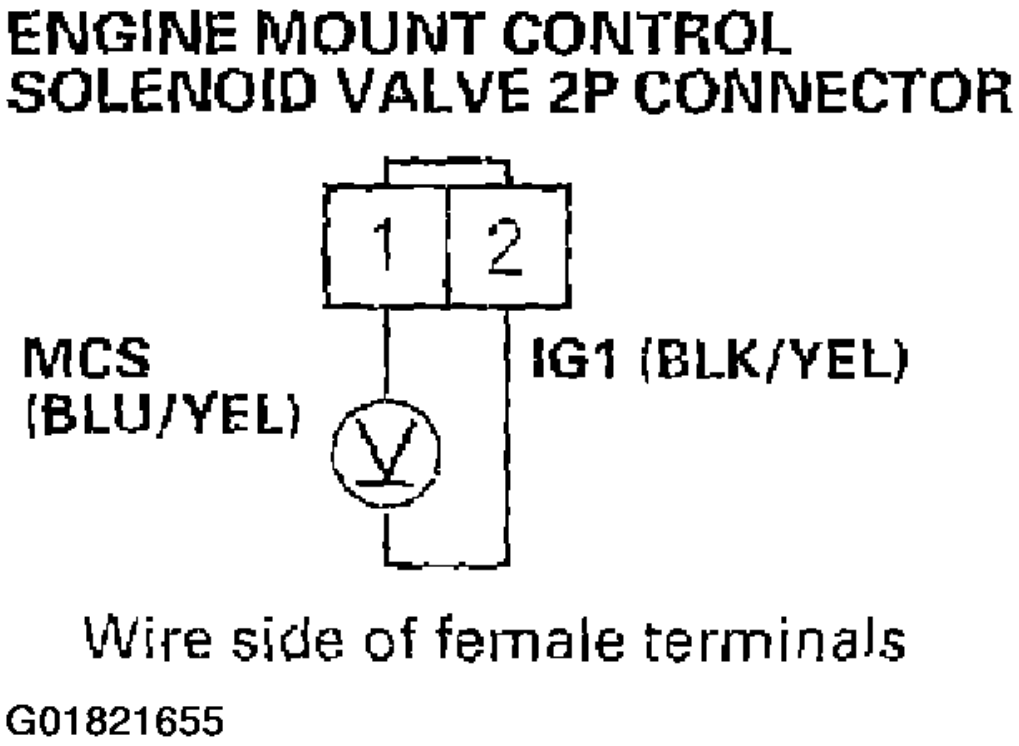


Fig. 5: Measuring Voltage Between Engine Mount Control Solenoid Valve 2P Connector Terminals No. 1 & No. 2

10. Disconnect the upper vacuum hose (A) from the engine mount control solenoid valve (B), and connect a vacuum pump/gauge to the hose. Apply about 20 in. Hg of vacuum, and wait 20 seconds.

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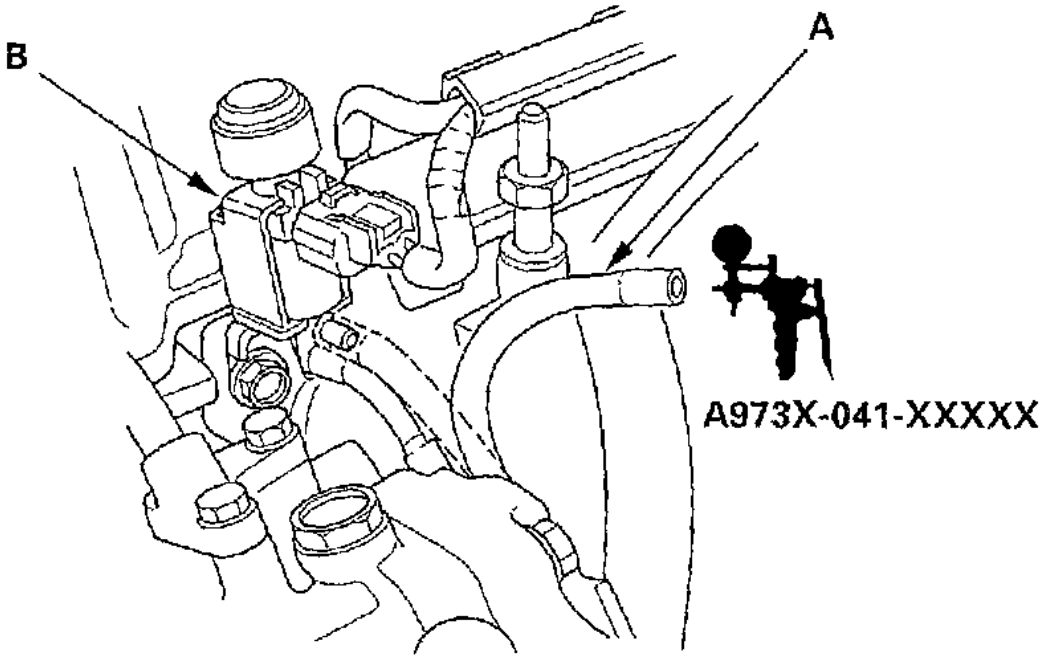


Fig. 6: Disconnecting The Upper Vacuum Hose From The Engine Mount Control Solenoid Valve & Connecting A Vacuum Pump/Gauge To The Hose

11. Release the vacuum, then apply vacuum again.

    Is there a noticeable change in idle smoothness with and without vacuum applied?

    YES: Go to step 12.

    NO: Replace the front engine mount.

12. Connect a vacuum pump/gauge to the engine mount control solenoid valve (A).

    Is there manifold vacuum at idle, and a decrease in manifold vacuum when you raise the engine speed above 1,000 RPM?

    YES: The system is OK.

    NO: Replace the engine mount control solenoid valve.

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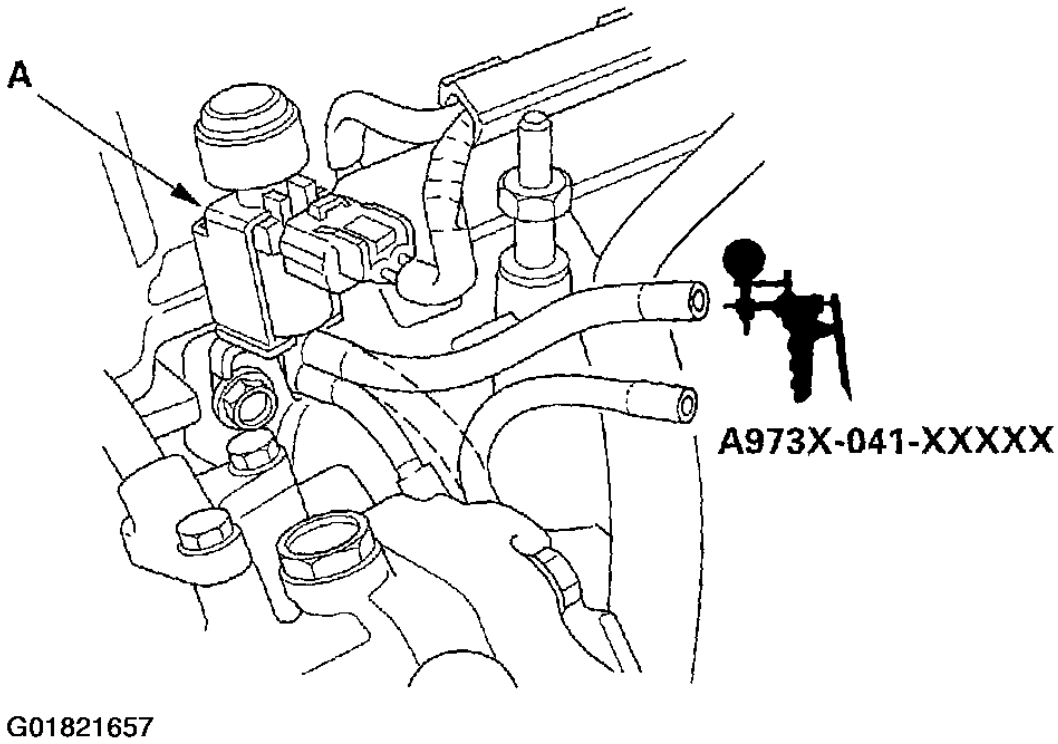


Fig. 7: Connecting A Vacuum Pump/Gauge To The Engine Mount Control Solenoid Valve

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2004 ENGINES

Exhaust System - TSX

EXHAUST PIPE & MUFFLER REPLACEMENT

NOTE: Use new gaskets and self-locking nuts when reassembling.

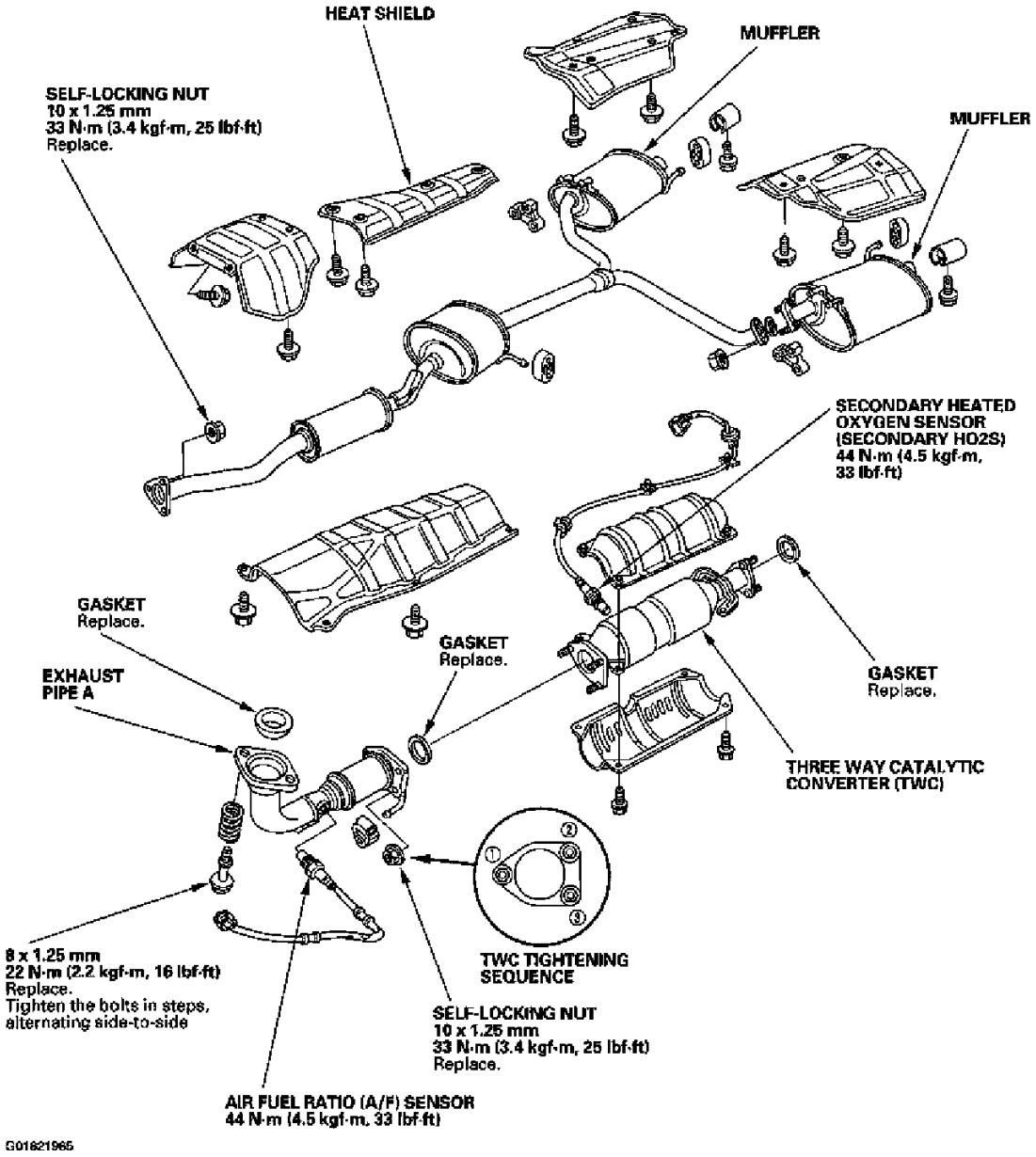


Fig. 1: Replacing Exhaust Pipe & Muffler

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2004 ACCESSORIES & EQUIPMENT

Exterior Lights - TSX

COMPONENT LOCATION INDEX

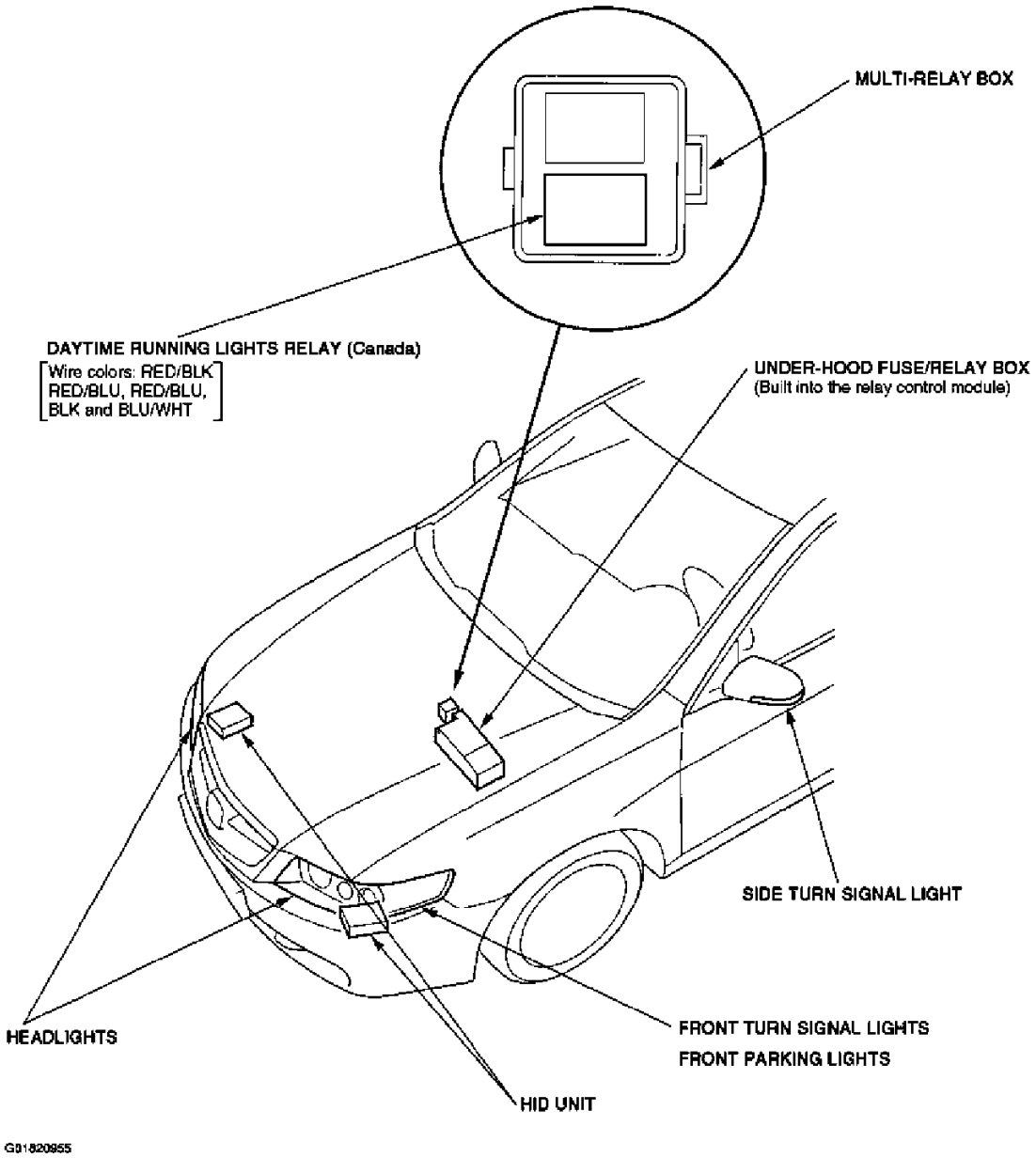


Fig. 1: Locating Exterior Lights Components (1 Of 3)

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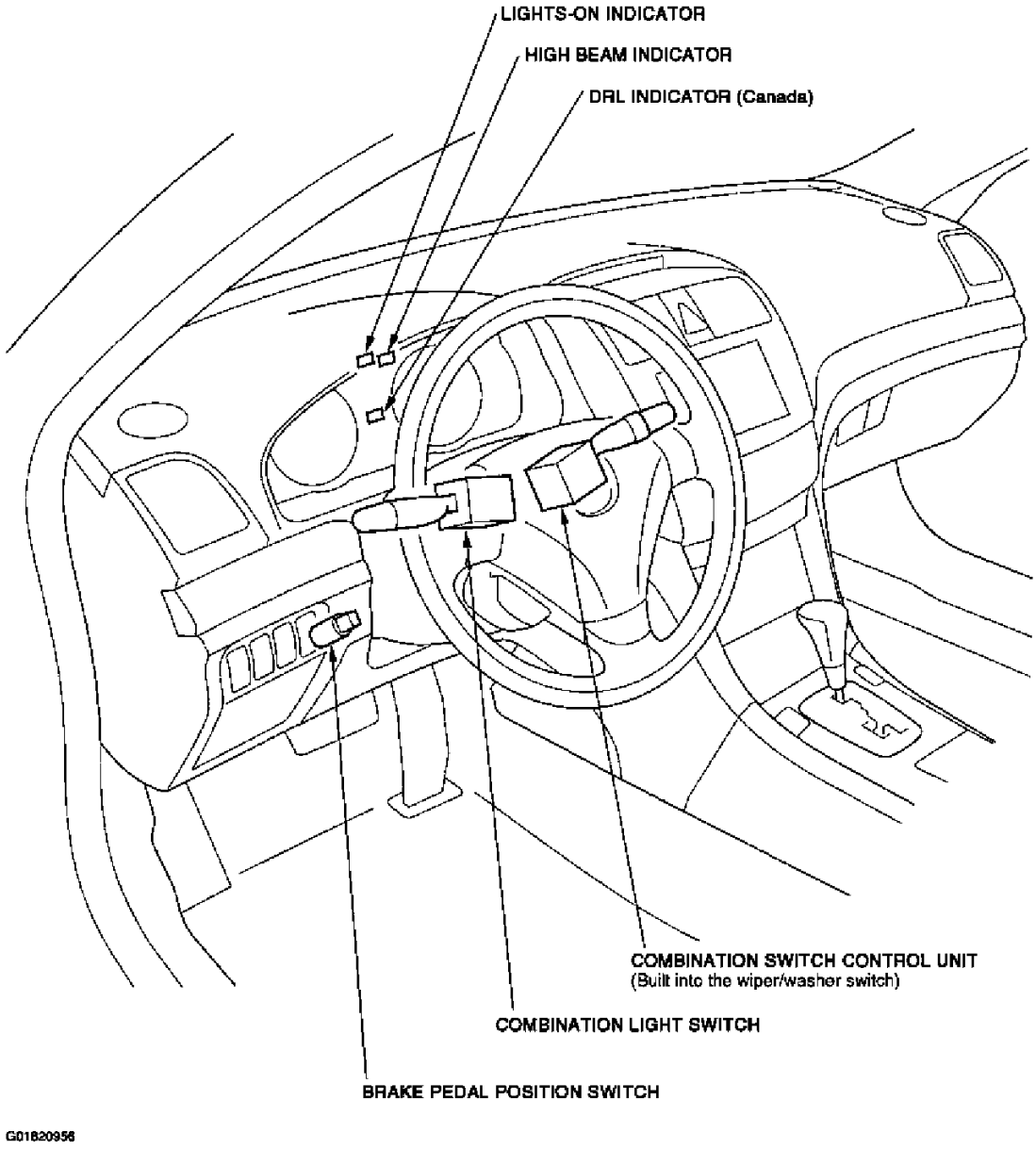


Fig. 2: Locating Exterior Lights Components (2 Of 3)

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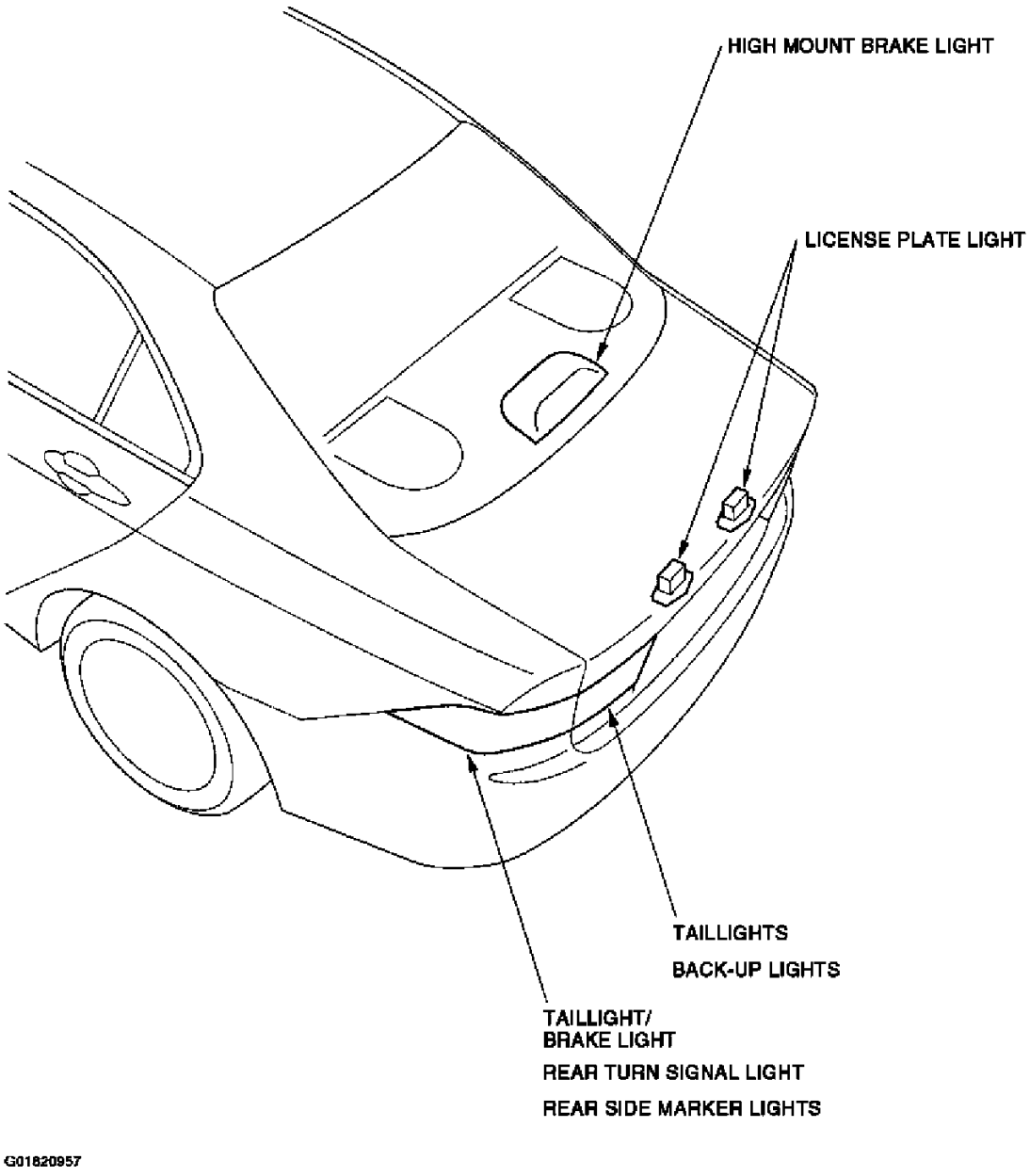


Fig. 3: Locating Exterior Lights Components (3 Of 3)

CIRCUIT DIAGRAM

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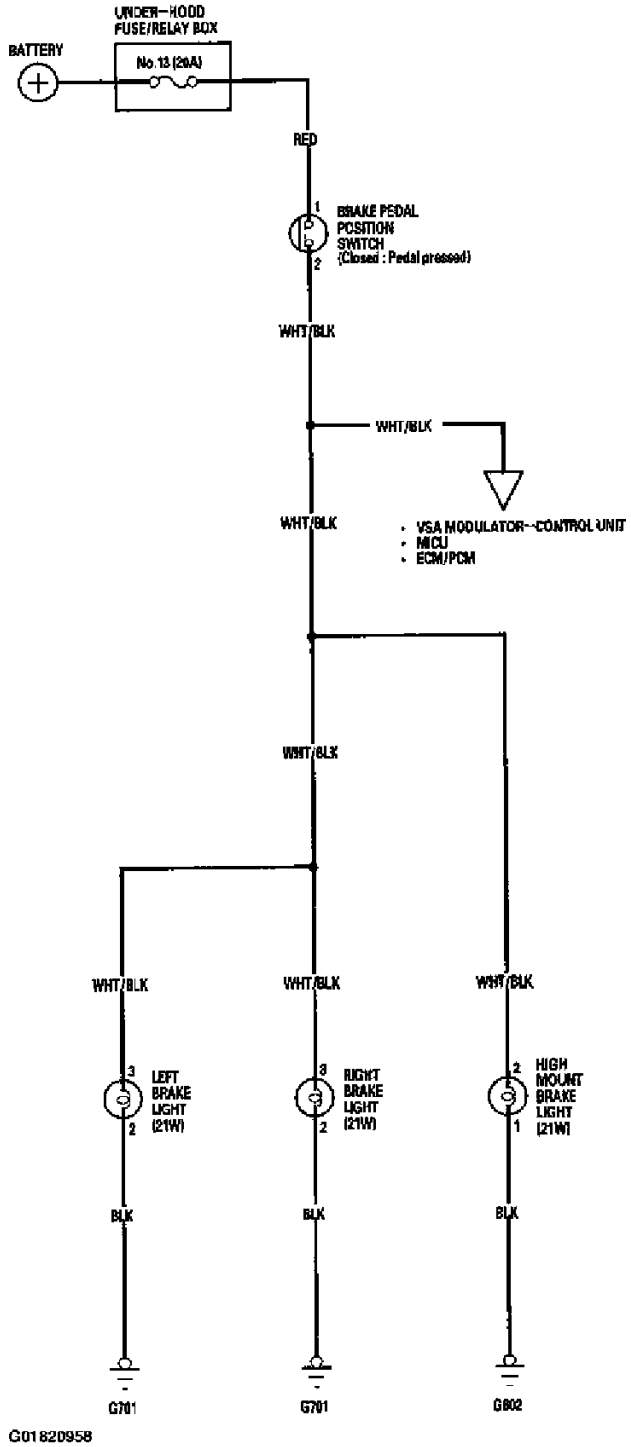


Fig. 4: Brake Lights Wiring Diagram

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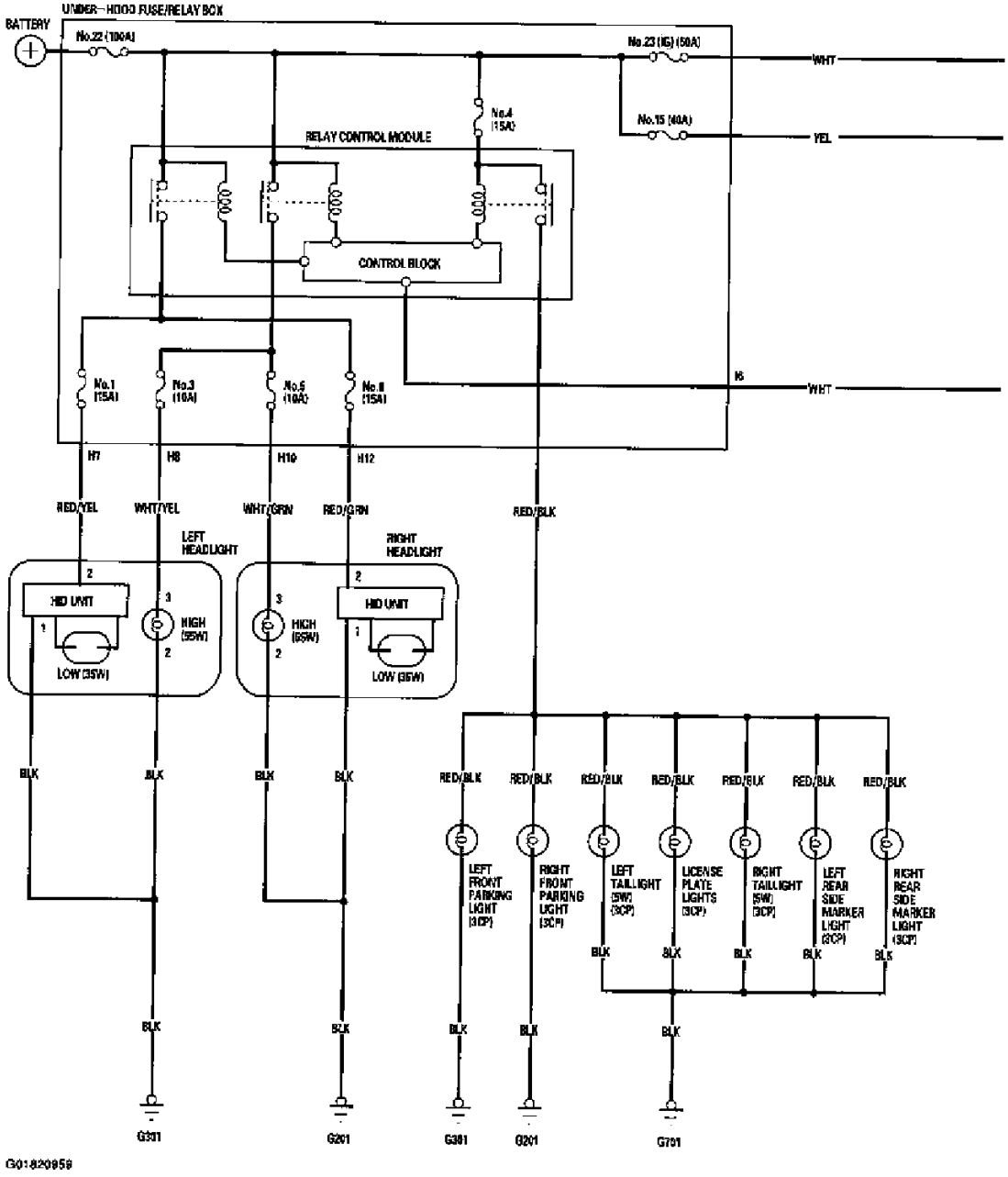


Fig. 5: Exterior Lights Wiring Diagram (1 Of 2 - USA)

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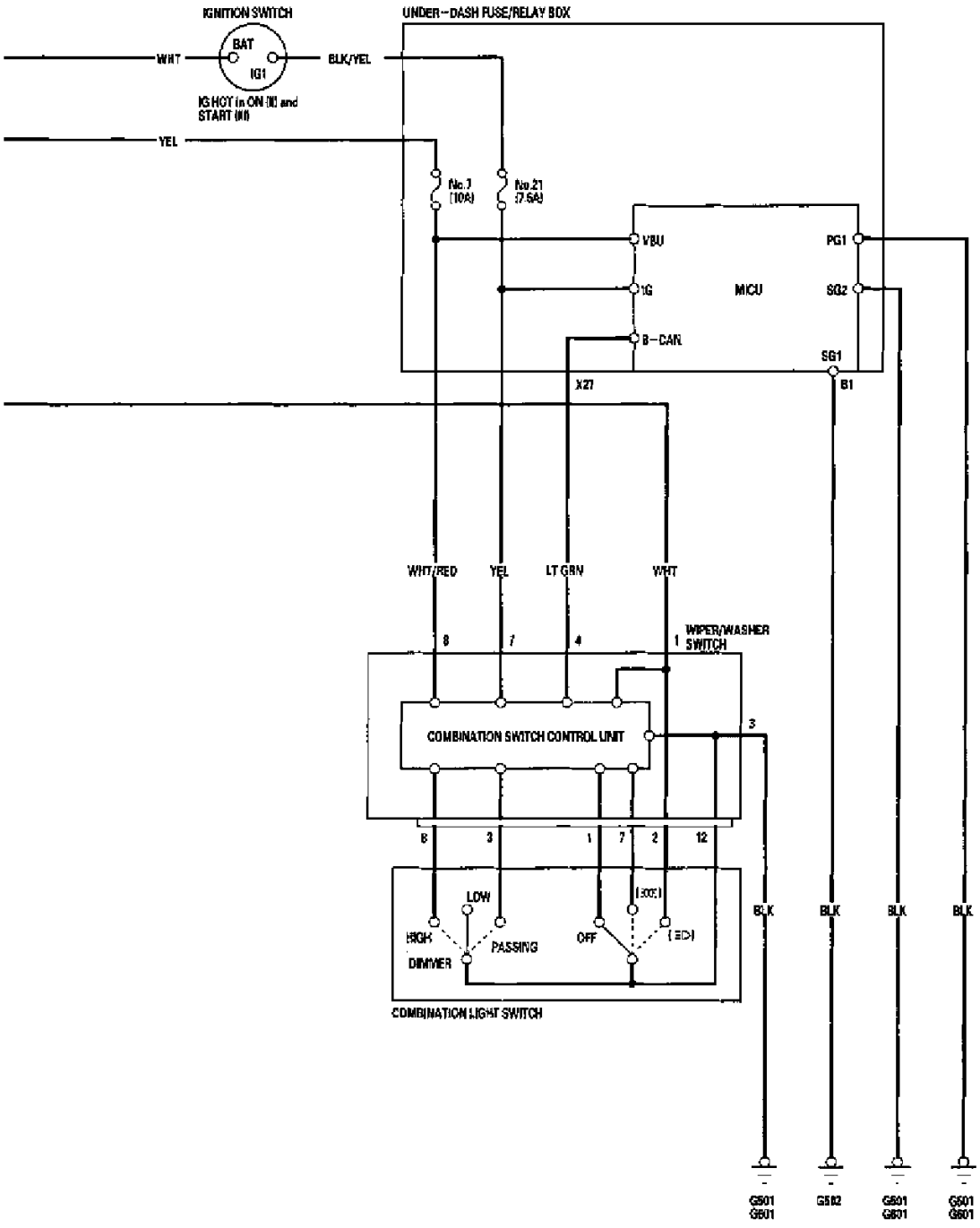


Fig. 6: Exterior Lights Wiring Diagram (2 Of 2 - USA)

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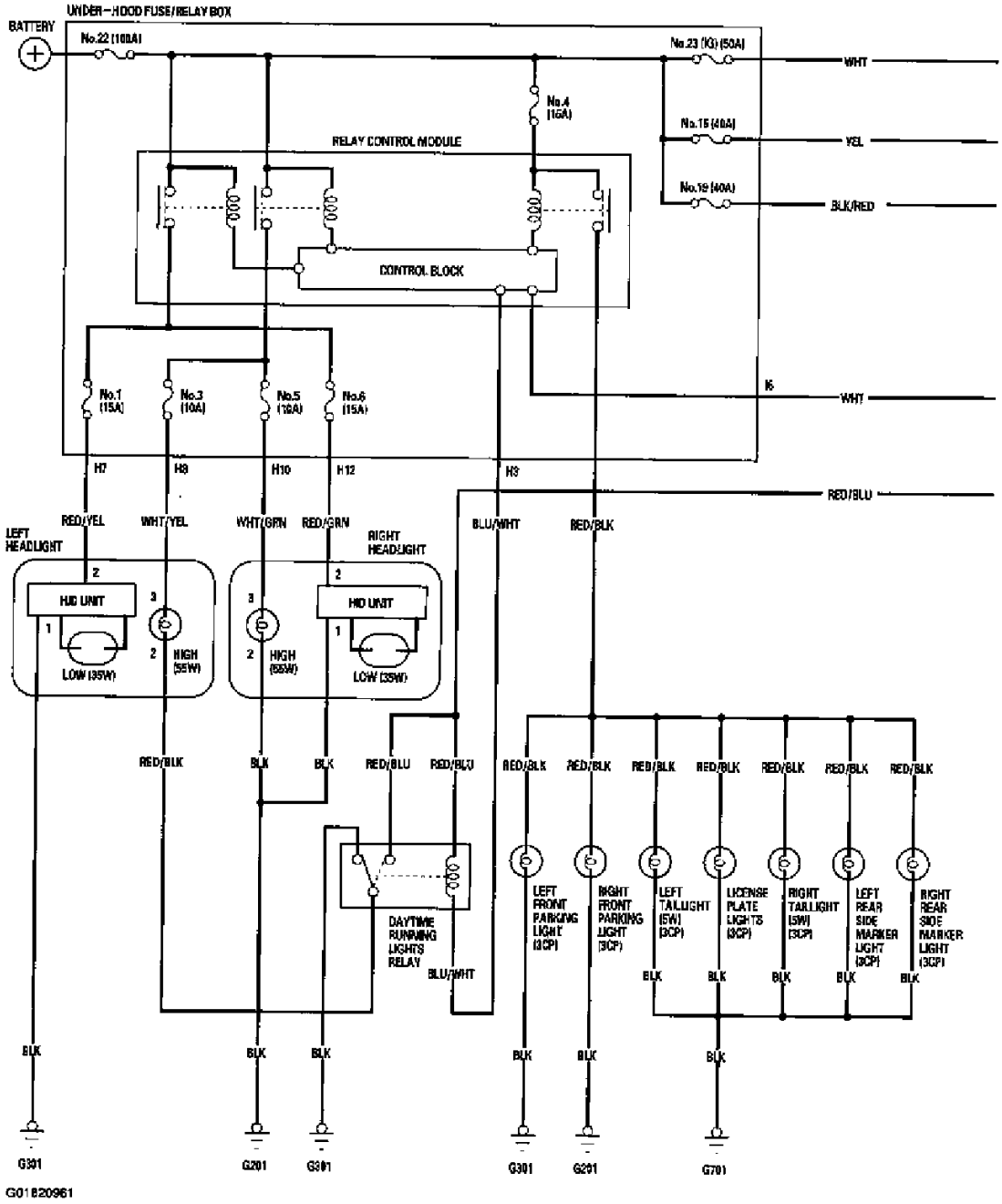


Fig. 7: Exterior Lights Wiring Diagram (1 Of 2 - Canada)

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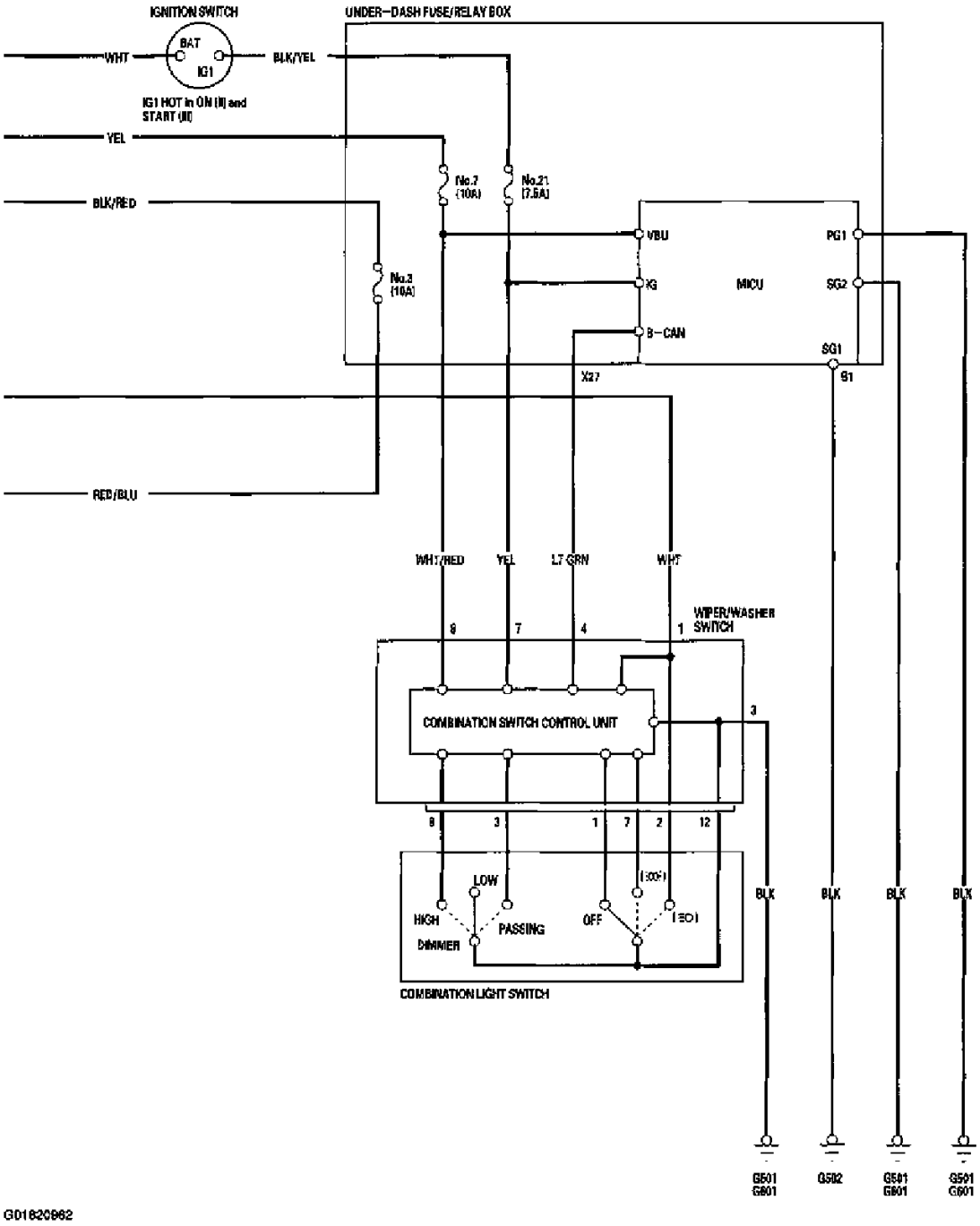


Fig. 8: Exterior Lights Wiring Diagram (2 Of 2 - Canada)

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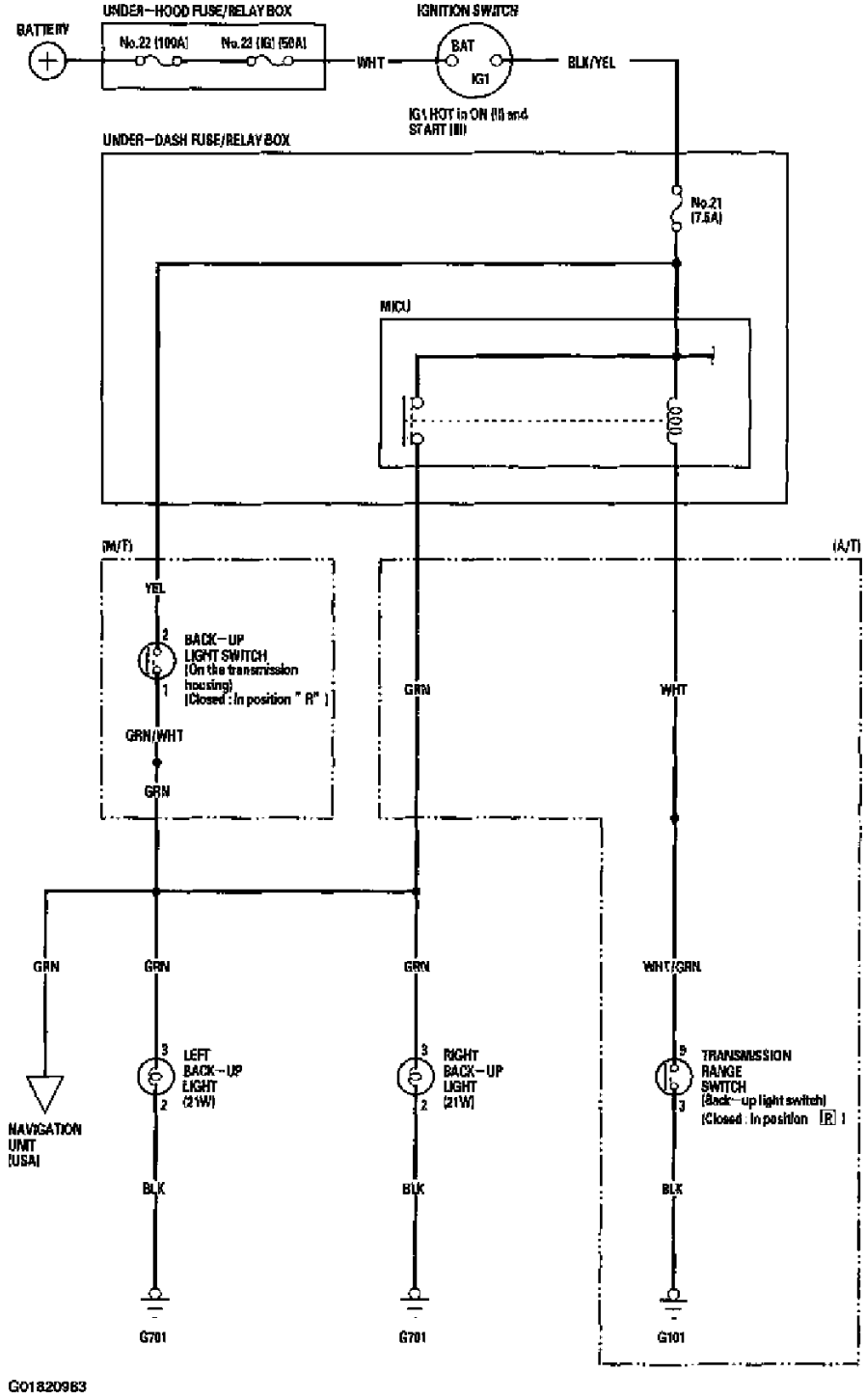


Fig. 9: Back-Up Lights Wiring Diagram

DTC TROUBLESHOOTING

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DTC B1075: HEADLIGHT SIGNAL ERROR

1. Clear the DTCs using the HDS.
2. Turn the headlights switch from the OFF position to the ON position.
3. Check for DTCs using the HDS.

   Is DTC B1075 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the headlight circuit is OK at this time. Check pin fits and connections.
4. With the headlight switch OFF, select LIGHTING SYSTEM from the HDS, and enter the DATA LIST.
5. Check the ON/OFF information of the Headlight Switch (BACK-UP) in the DATA LIST.

   Is the information indicator OFF?

   YES: Go to step 6.

   NO: Go to step 10 .
6. Turn the headlight switch ON.
7. Check the ON/OFF information of the Headlight Switch (BACK-UP) in the DATA LIST.

   Is the information indicator ON?

   YES: Troubleshoot DTC B1278.

   NO: Go to step 8.
8. Disconnect the relay control module 10P connector and the wiper/washer switch 8P connector.
9. Check for continuity between the No. 6 terminal of the relay control module 10P connector and the No. 1 terminal of the wiper/washer switch (combination switch control unit) 8P connector.

   Is there continuity?

   YES: Faulty combination switch control unit; replace the wiper/washer switch.

   NO: Repair an open in the WHT wire.

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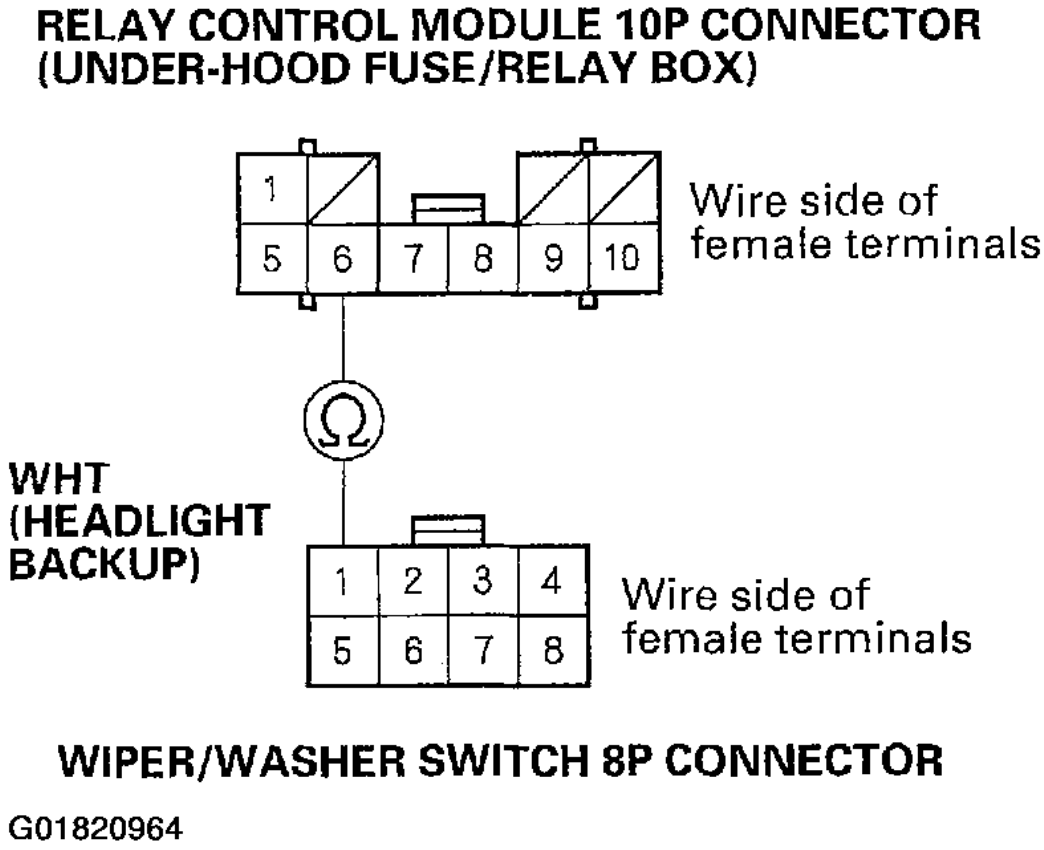


Fig. 10: Checking For Continuity Between The Relay Control Module 10P Connector & The Wiper/Washer Switch 8P Connector

10. Disconnect the relay control module 10P connector.
11. Check for continuity between the No. 6 terminal of the relay control module 10P connector I and body ground.

Is there continuity?

YES: Repair a short in the WHT wire.

NO: Faulty combination switch control unit; replace the wiper/washer switch.

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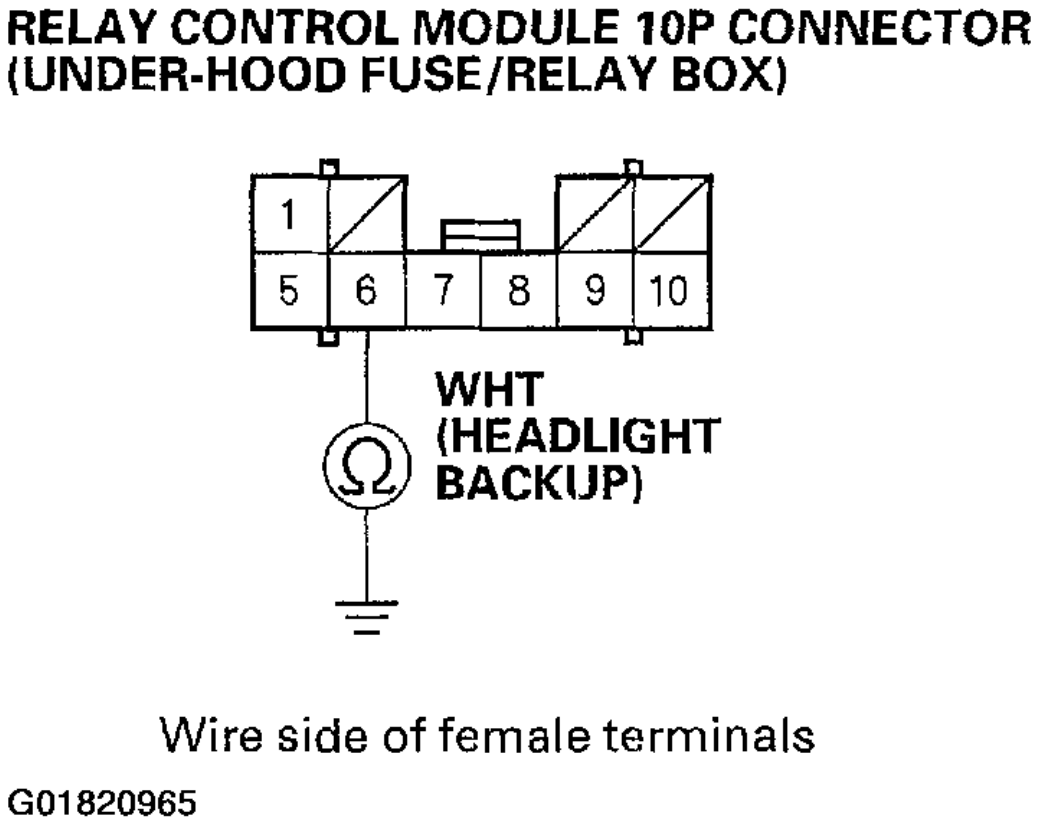


Fig. 11: Checking For Continuity Between The No. 6 Terminal Of The Relay Control Module 10P Connector I & Body Ground

DTC B1078: DAYTIME RUNNING LIGHTS SIGNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the parking brake lever.
4. Check for DTCs using the HDS.

   Is DTC B1078 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, the daytime running lights system is OK at this time. Check pin fits and connections.
5. Turn the headlight switch ON, then push the combination light switch forward for high beams.

   Do both headlights come on?

   YES: Go to step 6.

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NO: Go to step 9 .

6. Turn the headlight switch OFF.
7. Select LIGHTING SYSTEM from the HDS, and enter the DATA LIST.
8. Check the ON/OFF information of the DRL Relay Command (Canada) in the DATA LIST.

   Is the information indicator ON?

   YES: Replace the daytime running lights relay.

   NO: Go to the relay control module input test (see **RELAY CONTROL MODULE INPUT TEST**).
9. Check the No. 3 (10A) or No. 5 (10A) fuses in the under-hood fuse/relay box.

   Are both fuses OK?

   YES: Go to step 10.

   NO: Replace the blown fuse and recheck the system.
10. Check headlight bulbs.

    Are both bulbs OK?

    YES: Go to step 11.

    NO: Replace the blown bulb and recheck the system.
11. Check for continuity between the No. 3 terminal of the headlight (high beam) 3P connectors and the No. 8 (left headlight) or No. 10 (right headlight) terminals of the under-hood fuse/relay box 14P connector H.

    Is there continuity?

    YES: Go to step 12.

    NO: Repair an open in the WHT/YEL (left headlight) or WHT/GRN (right headlight) wire.

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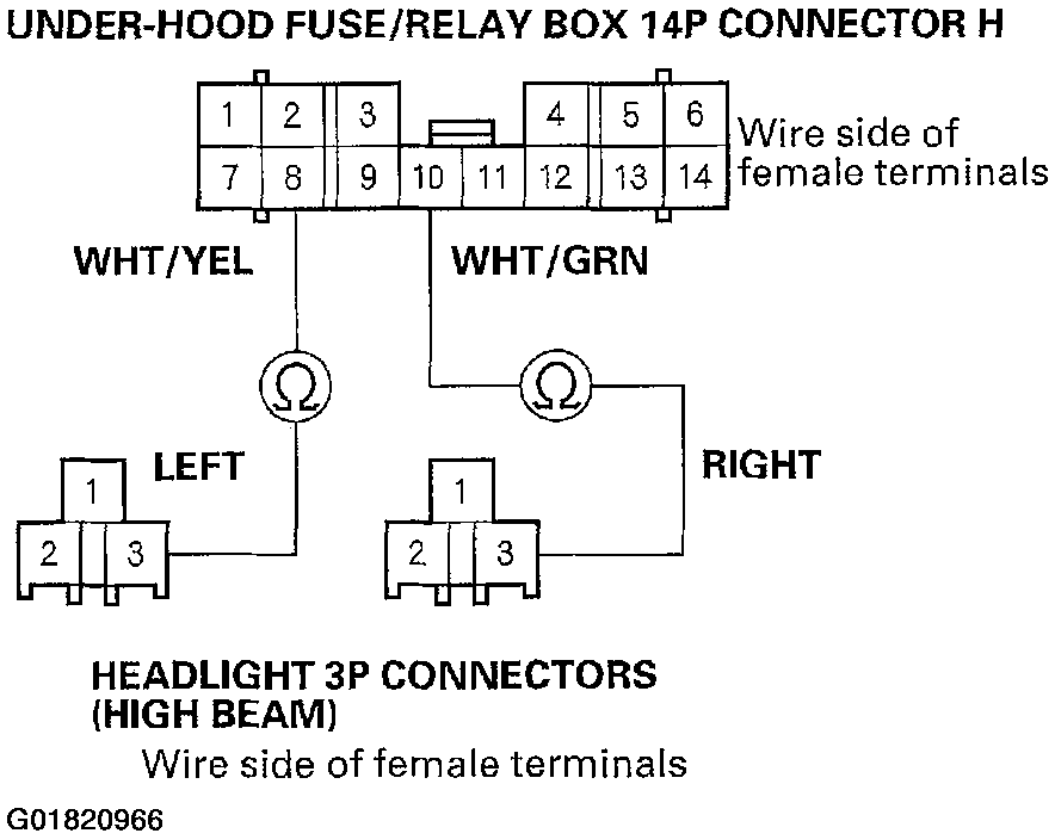


Fig. 12: Checking For Continuity Between The Headlight Connectors & The Under-Hood Fuse/Relay Box 14P Connector H

12. Check for continuity between the No. 2 terminal of the headlight (high beam) 3P connectors and body ground.

    Is there continuity?

    YES: Faulty relay control module; replace the under-hood fuse/relay box.

    NO: Check the daytime running lights relay (left headlight). If OK, repair an open in the BLK wire or poor ground (G201, G301).

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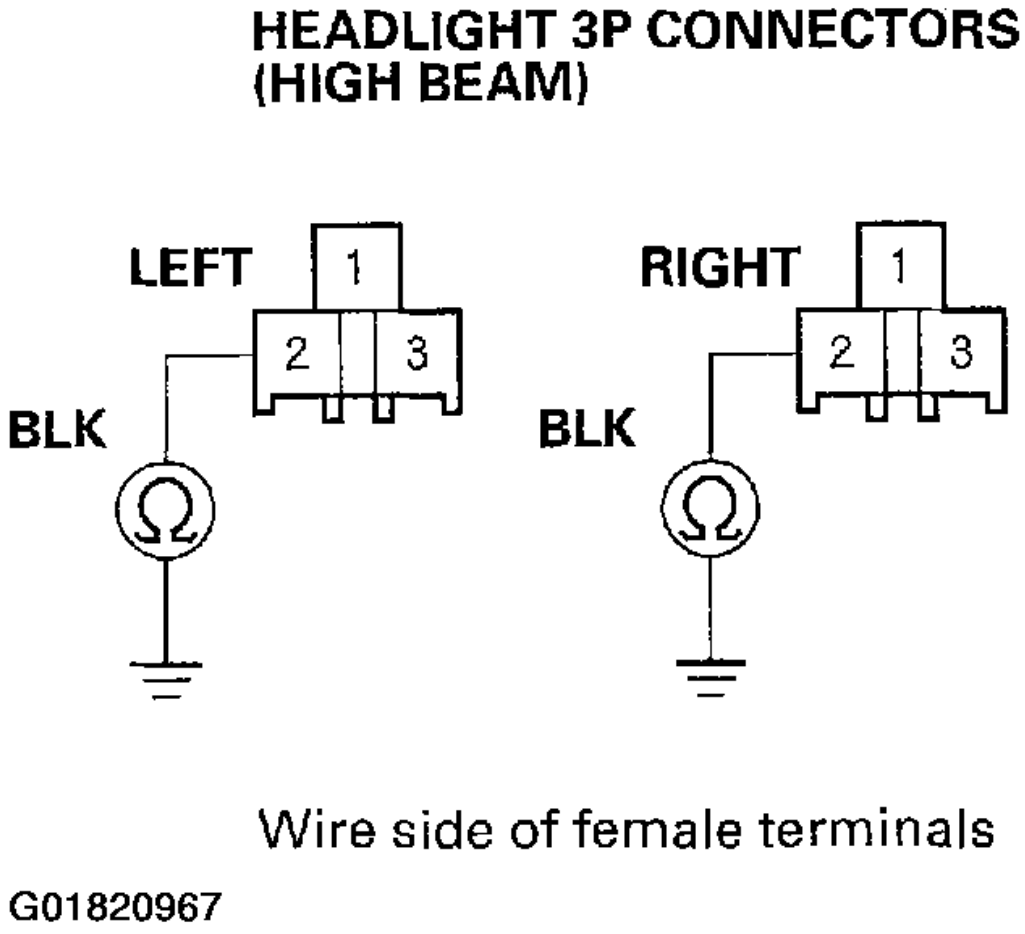


Fig. 13: Checking For Continuity Between The No. 2 Terminal Of The Headlight (High Beam) 3P Connectors & Body Ground

DTC B1275: HEADLIGHT SWITCH OFF POSITION CIRCUIT MALFUNCTION; DTC B1276: HEADLIGHT SWITCH PARKING (SMALL) POSITION CIRCUIT MALFUNCTION; DTC B1277: HEADLIGHT SWITCH AUTO POSITION CIRCUIT MALFUNCTION; DTC B1278: HEADLIGHT SWITCH ON POSITION CIRCUIT MALFUNCTION

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1275, B1276, B1277 or B1278 indicated?

YES: Go to step 4.

NO: Intermittent failure, the headlight system is OK at this time. Check pin fits and

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connections.

4. Reset the DTCs using the HDS.
5. Turn the ignition switch ON (II) and wait for 2 seconds.
6. Turn the parking (small) light switch ON and wait for 2 seconds.
7. Turn the headlight light switch (LOW) ON and wait for 2 seconds.
8. Change the dimmer switch position from low beam to high beam and wait for 2 seconds.
9. Check the DTCs using the HDS.

   Is DTC B1275, B1276, B1277 or B1278 indicated?

   YES: Go to step 10.

   NO: Intermittent failure, the combination switch and the control unit are OK at this time. Check pin fits and connections.
10. Disconnect the combination light switch 12P connector from the wiper/washer switch.
11. Perform the combination light switch test (see **COMBINATION LIGHT SWITCH TEST/REPLACEMENT**).

    Is the combination light switch check OK?

    YES: Faulty combination switch control unit, replace the wiper/washer switch.

    NO: Replace the combination light switch.

DTC B1279: HEADLIGHT SWITCH DIMMER POSITION CIRCUIT MALFUNCTION

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1279 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The turn signal switch circuit is OK at this time. Check pin fits and connections.
4. Reset the DTCs by CLEAR MENU (DTC CLEAR) of the HDS.
5. Turn the ignition switch ON (II), then turn the headlight switch ON.
6. Change the combination light switch from low beam to high beam and wait for 2 seconds.
7. Pull and hold the combination light switch lever and keep the passing switch position for more than 2 seconds.
8. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1279 indicated?

   YES: Go to step 9.

   NO: Intermittent failure, the combination switch and the combination switch control unit are OK at this time. Check pin fits and connections.
9. Disconnect the combination light switch 12P connector from the wiper/washer switch.
10. Perform the combination light switch test (see **COMBINATION LIGHT SWITCH TEST/REPLACEMENT**).

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Is the combination light switch OK?

YES: Faulty combination switch control unit, replace the wiper/washer switch.

NO: Replace the combination light switch.

DTC B1280: TURN SIGNAL SWITCH CIRCUIT MALFUNCTION

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1280 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The turn signal switch circuit is OK at this time. Check pin fits and connections.
4. Reset the DTCs by CLEAR MENU (DTC CLEAR) of the HDS.
5. Turn the ignition switch ON (II).
6. Turn the turn signal switch to the left position and wait for 2 seconds.
7. Turn the turn signal switch to the right position and wait for 2 seconds.
8. Check for DTCs using the HDS.

   Is DTC B1280 indicated?

   YES: Go to step 9.

   NO: Intermittent failure, the turn signal light switch and the combination switch control unit are OK at this time. Check pin fits and connections.
9. Disconnect the combination light switch 12P connector from the wiper/washer switch.
10. Check for short in the turn signal light switch terminals in each switch position (see **COMBINATION LIGHT SWITCH TEST/REPLACEMENT**).

    Is there a short?

    YES: Faulty, turn signal light switch, replace the combination light switch.

    NO: Faulty combination switch control unit, replace the wiper/washer switch.

HID LAMP SYSTEM TROUBLESHOOTING

CAUTION: Never turn on the combination light switch before fitting the HID bulbs to their bulb sockets and completing the reassembly of the headlight assembly.

1. Check the No. 1 (15A) and No. 6 (15A) fuses in the under-hood fuse/relay box.

   Are the fuses OK?

   YES: Go to step 2.

   NO: Replace the fuse(s), and recheck.
2. Substitute a known-good HID bulb and recheck.

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Does the headlight low beam come on?

YES: Replace the original HID bulb.

NO: Go to step 3.

3. Disconnect the 2P connector from the inverter unit.
4. Turn the combination light switch ON.
5. Measure voltage between the No. 2 terminal of the inverter unit 2P connector and body ground.

Is there battery voltage?

YES: Go to step 6.

NO: Repair open in the wire between the under-hood fuse/relay box and the inverter unit.

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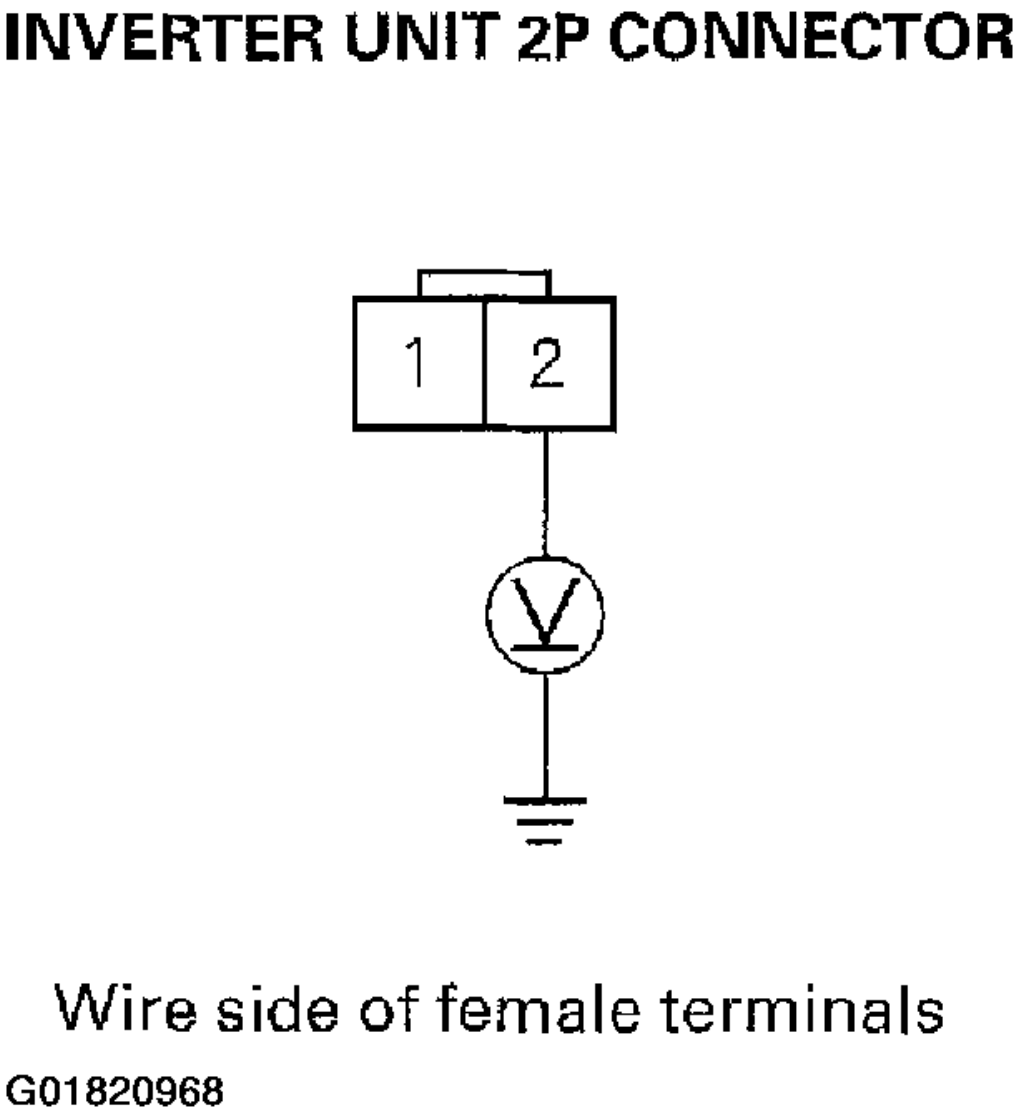


Fig. 14: Measuring Voltage Between The No. 2 Terminal Of The Inverter Unit 2P Connector & Body Ground

6. Turn the combination light switch OFF.
7. Check for continuity between the No. 1 terminal of the inverter unit 2P connector and body ground.

Is there continuity?

YES: Substitute a known-good inverter, and recheck. If the symptom/indication goes away, replace the original inverter unit.

NO: Repair open in the wire between the inverter unit and body ground. If the wire is OK,

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check for poor ground at G201 or G301.

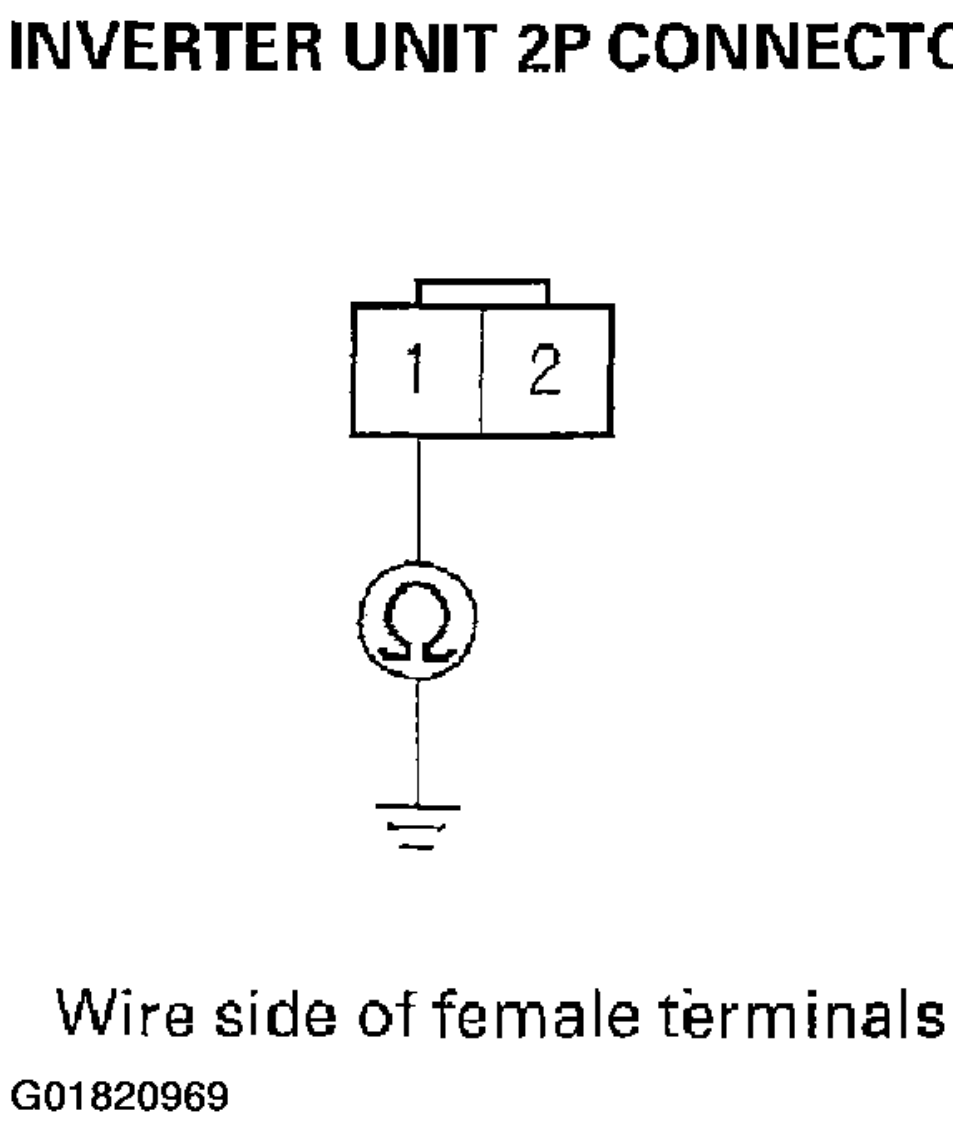


Fig. 15: Checking For Continuity Between The No. 1 Terminal Of The Inverter Unit 2P Connector & Body Ground

HID BULB REPLACEMENT

WARNING: A transient high tension (25,000 V) occurs at the bulb sockets of the high intensity discharge (HID) lamps when the combination light switch is

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turned ON, it may cause serious electrical shock or electrocution if you do not observe the cautions below.

CAUTION:

- **Never turn on the combination light switch before fitting the HID bulbs to their bulb sockets and completing the reassembly of the headlight assembly.**
- **Do not service the headlights assembly in wet conditions, such as rain or snow, near a sprinkler system, or when your hands are wet to prevent electrocution.**
- **Do not touch the surface of the HID bulbs with your bare hands and do not stain it with any oils and fats.**
- **Do not disassemble the inverter unit and the ignitor unit.**
- **Do not turn on the HID bulb by using a power source other than the battery mounted on your vehicle.**

1. Make sure you have the anti-theft code for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
2. Turn the combination light switch OFF.
3. Disconnect the battery negative cable, then disconnect the positive cable.
4. Remove the battery.
5. Remove the Torx bolt using a tamper-proof Torx T20 bit.

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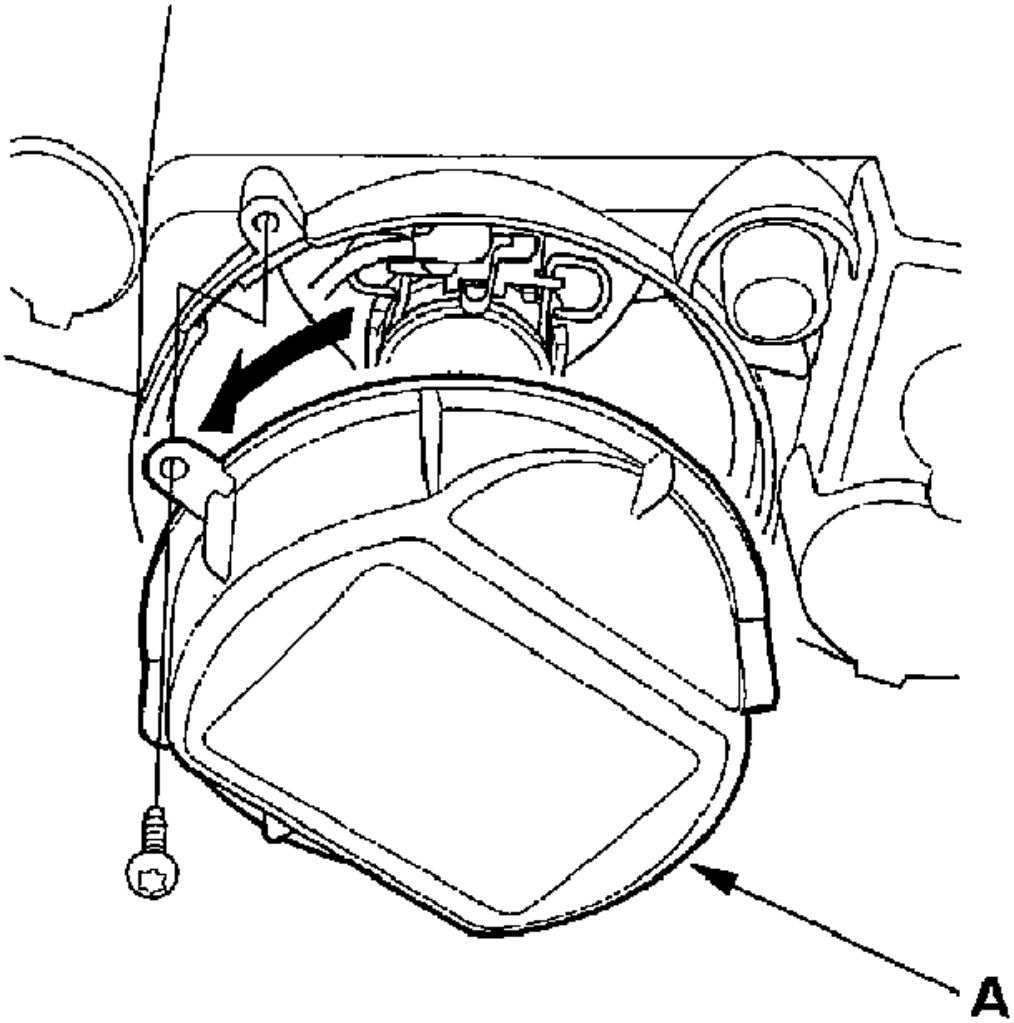
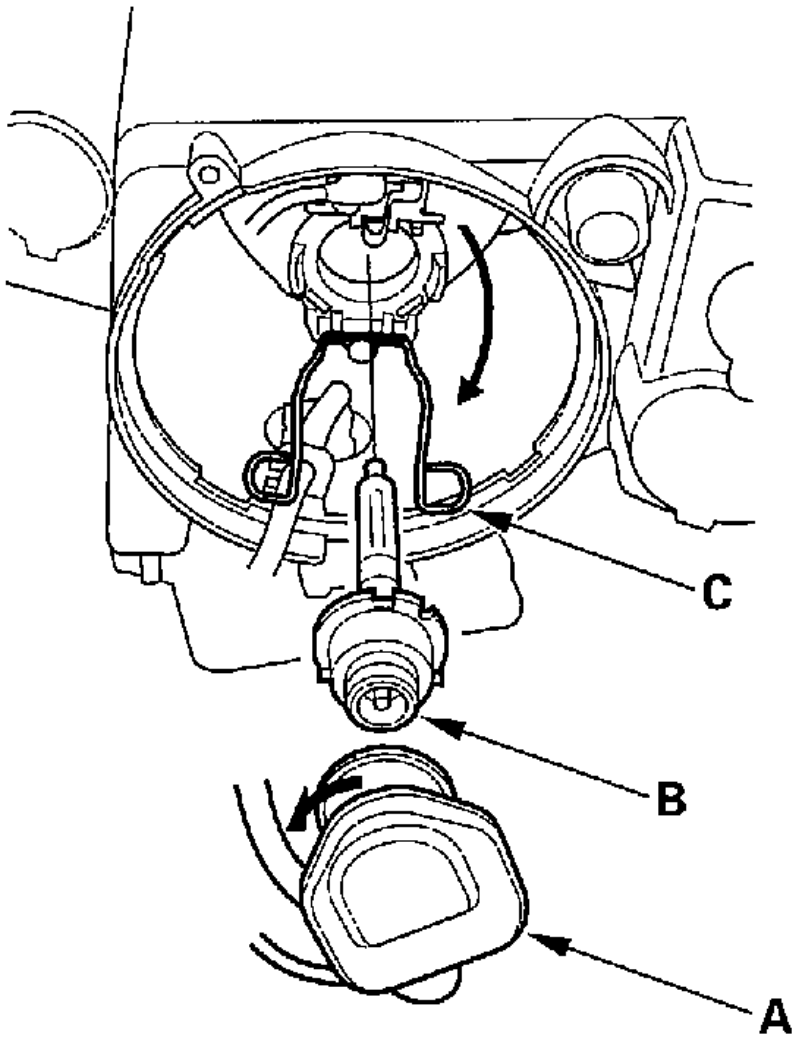


Fig. 16: Removing The Cover From The Headlight Assembly

6. Turn the cover (A) 45° counterclockwise to remove it from the headlight assembly.
7. Turn the socket (A) 45° counterclockwise to remove it from the bulb (B).
8. Pull the retaining spring (C) away from the bulb then remove the bulb.

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Headlight (low beam): 35 W



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Fig. 17: Removing The Bulb

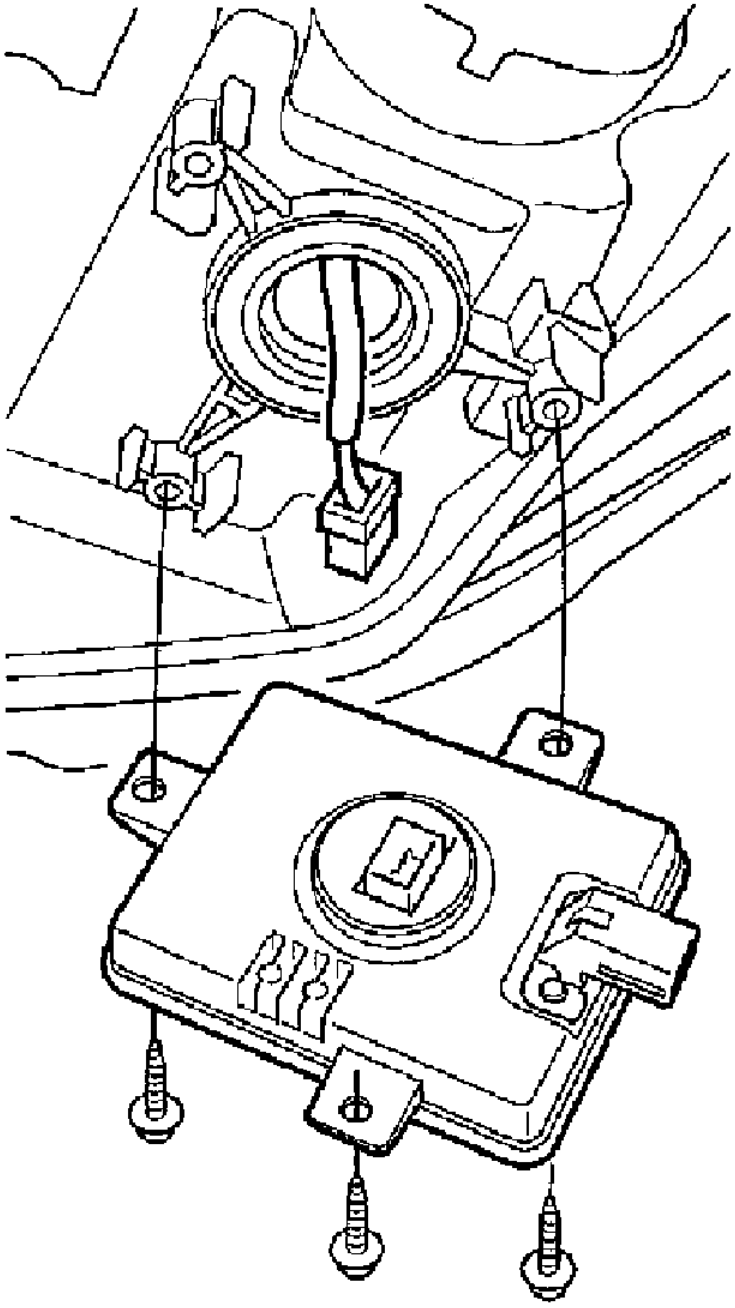
9. Install the new bulb in the reverse order of removal, Make sure the notches in the bulb align with the tabs in the headlight.
10. After reconnecting the battery, enter the anti-theft code for the radio and the navigation system, then enter the customer's radio station presets.

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HID UNIT REPLACEMENT

1. Make sure you have the anti-theft code for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
2. Turn the combination light switch OFF.
3. Disconnect the battery negative cable, then disconnect the positive cable.
4. Remove the headlight assembly (see **HEADLIGHT REPLACEMENT**).
5. Remove the bulb socket from the HID bulb (see **HID BULB REPLACEMENT**).
6. Remove the three mounting screws and the HID unit.

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Fig. 18: Removing The Three Mounting Screws & The HID Unit

7. Install in the reverse order of removal.
8. Enter the anti-theft code for the radio and the navigation system, then enter the customer's radio station

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presets.

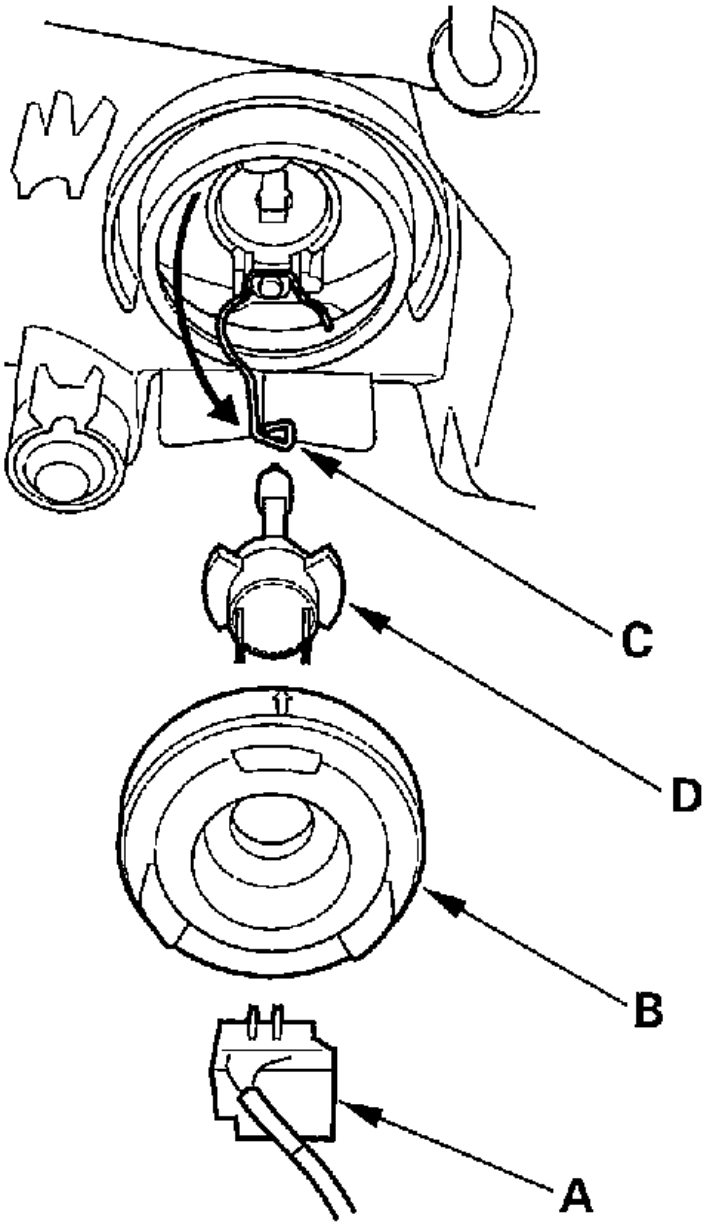
BULB REPLACEMENT

HEADLIGHT (HIGH BEAM)

1. Disconnect the 3P connector (A) from the headlight.

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Headlight (high beam): 55 W



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Fig. 19: Removing The High Beam Headlight Bulb

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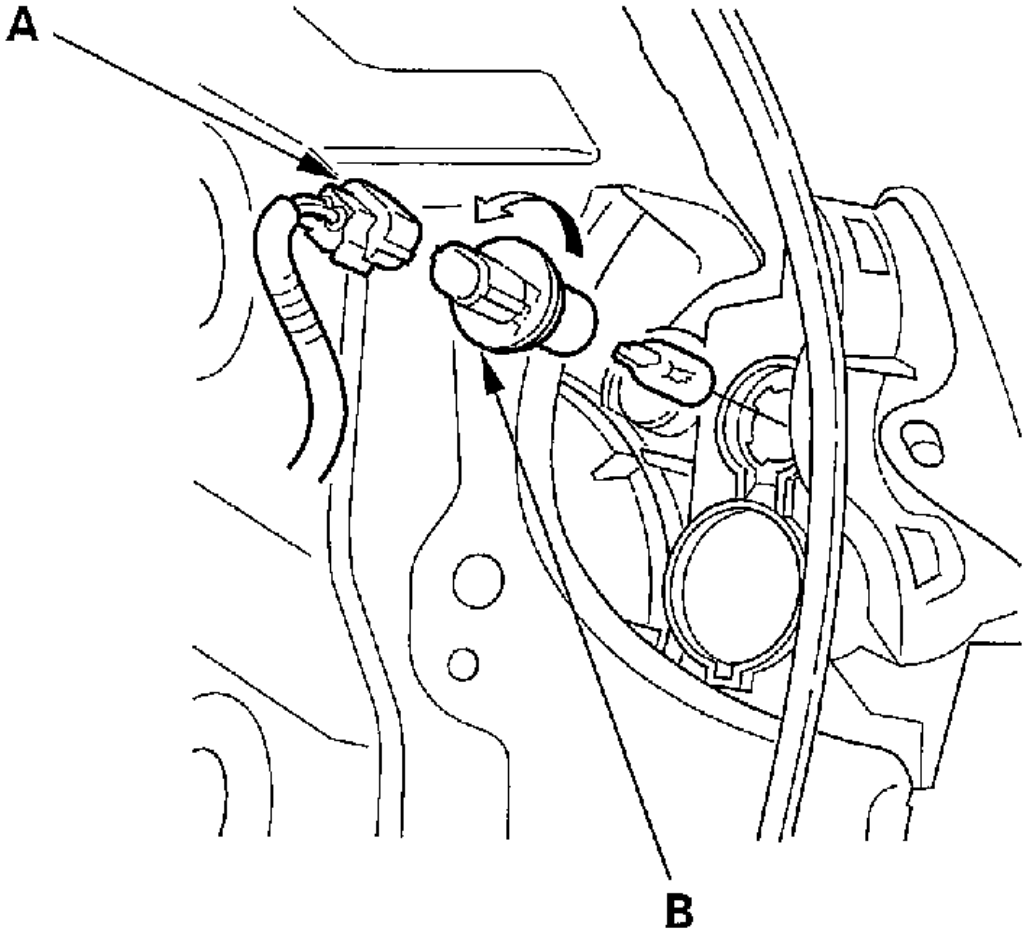
2. Remove the rubber cover (B).
3. Pull the retaining spring (C) away from the bulb (D), then remove the bulb.
4. Install a new bulb in the reverse order of removal. Make sure the notches in the bulb align with the tabs in the headlight.

FRONT PARKING LIGHT, FRONT TURN SIGNAL LIGHT

1. Disconnect the 2P connector (A) from the light.

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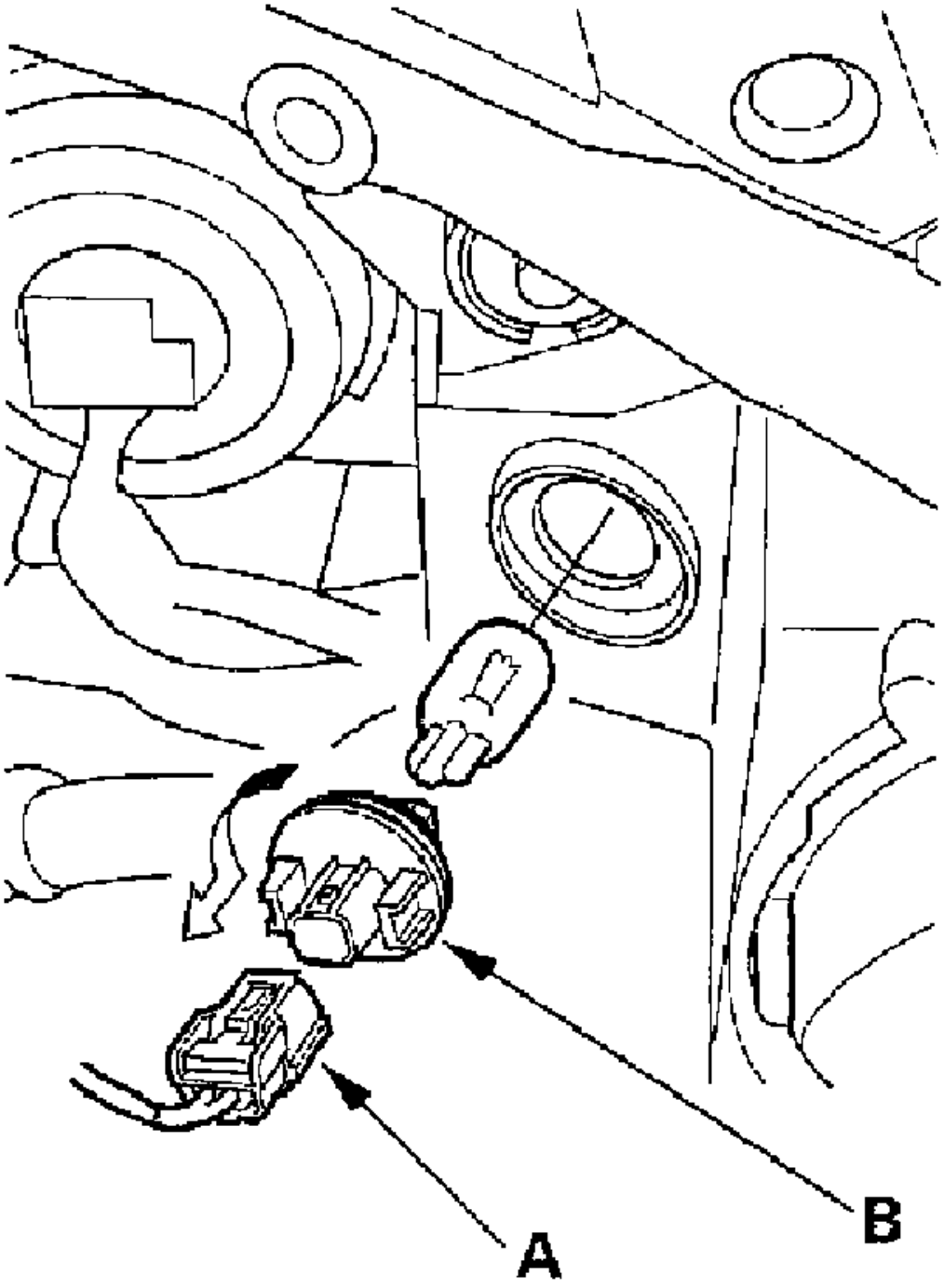
Front Parking Light: 3CP
Front Turn Signal Light: 21 W



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Fig. 20: Removing Light Bulb

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G01820975

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Fig. 21: Removing Light Bulb

2. Turn the bulb socket (B) 45° counterclockwise to remove it from the headlight housing.
3. Install a new bulb in the reverse order of removal.

HEADLIGHT ADJUSTMENT

CAUTION: Headlights become very hot during use; do not touch them or any attaching hardware immediately after they have been turned off.

Before adjusting the headlights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- Have the driver or someone who weights the same sit in the driver's seat.

1. Clean the outer lens so that you can see the center of the headlights.

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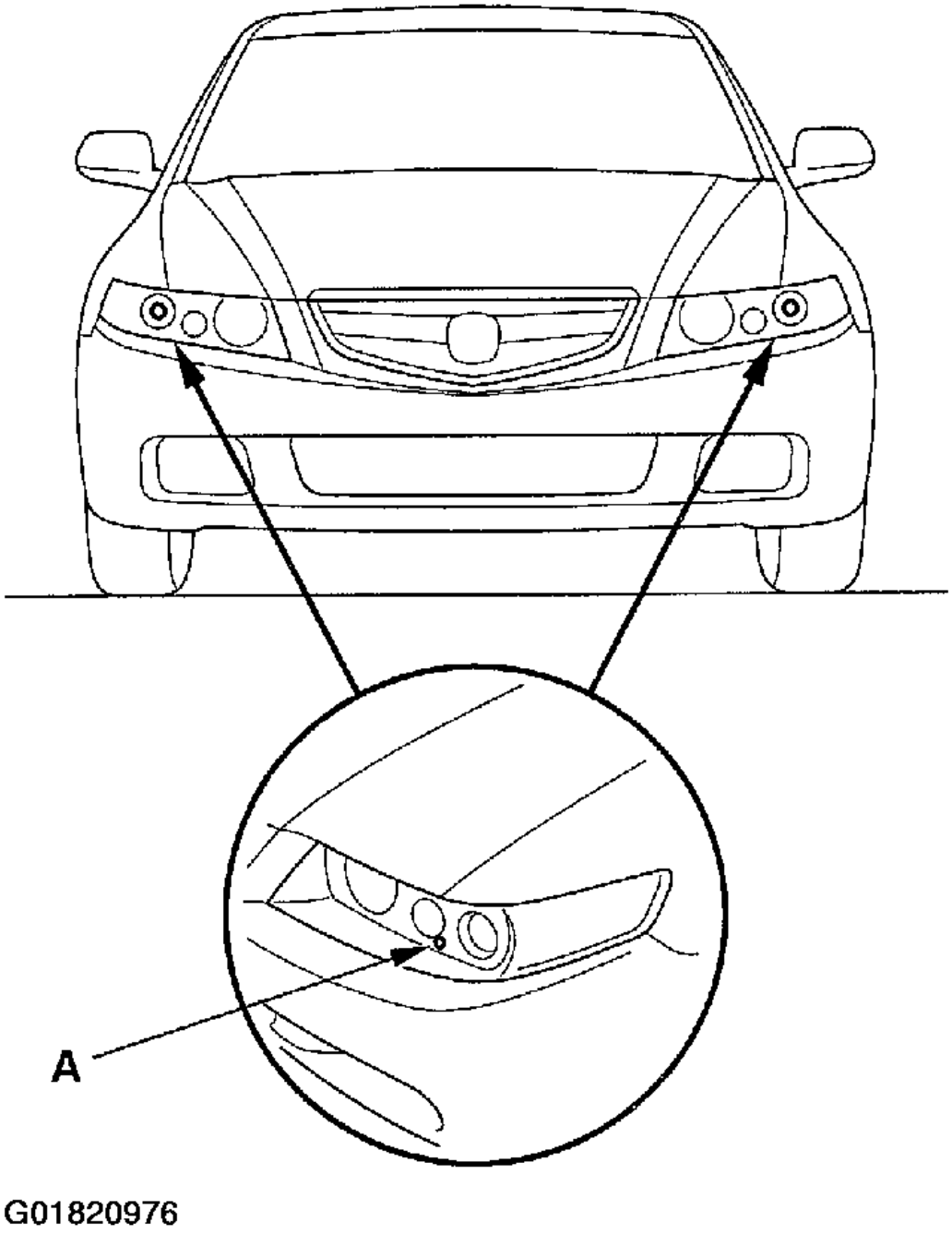


Fig. 22: Cleaning The Outer Lens

2. Park the vehicle 25 ft. (7.5 m) away from a wall or a screen (A).

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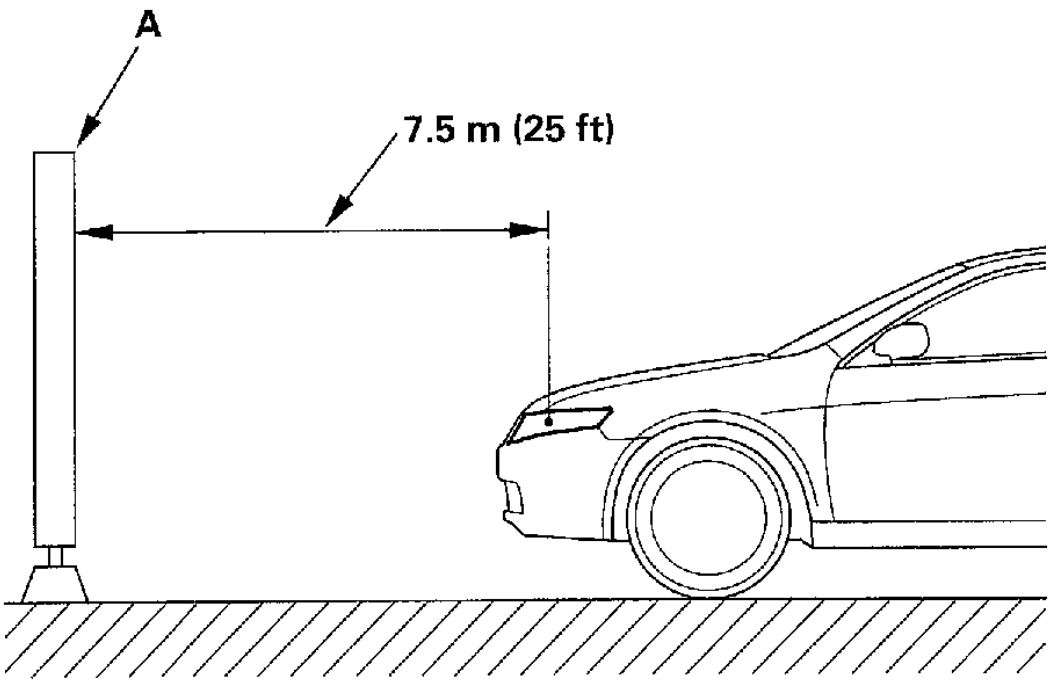


Fig. 23: Parking The Vehicle 25 Ft. (7.5 m) Away From A Wall Or A Screen

3. Turn the low beams on.
4. Determine if the headlights are aimed properly.

Vertical Adjustment:

Measure the height of the headlights (A). The lights should reflect 52 mm (2.1 in.) below headlight height (B).

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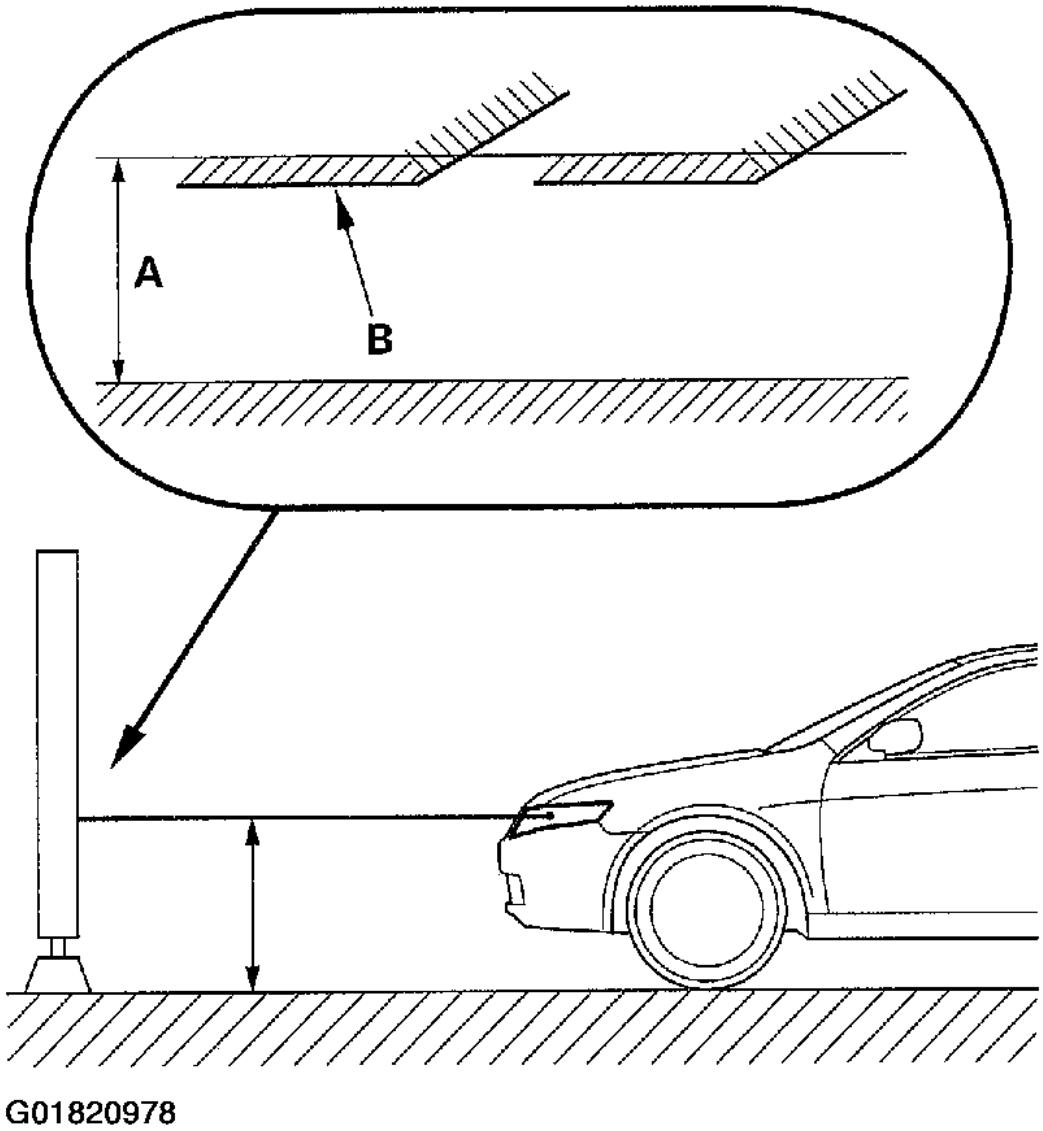
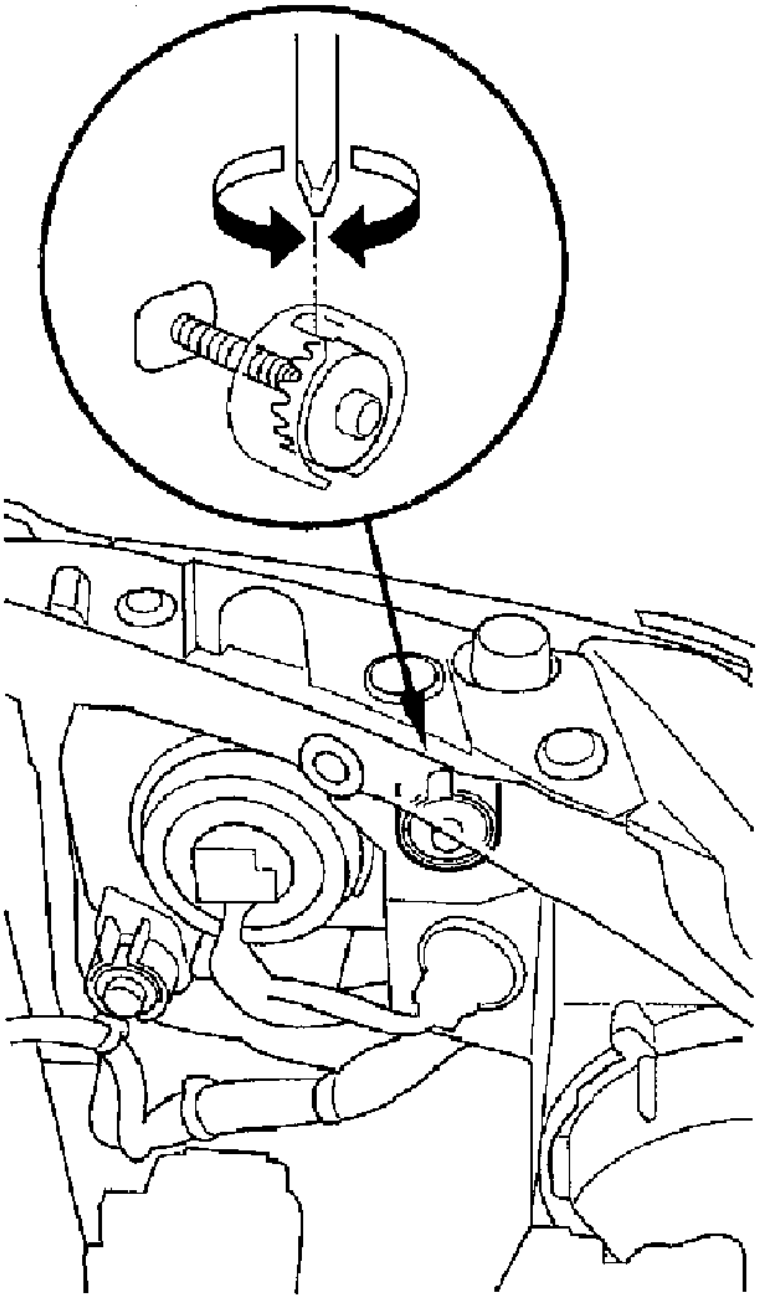


Fig. 24: Measuring The Height Of The Headlights

5. If necessary, open the hood and adjust the headlights to local requirements by turning the vertical adjuster.

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Fig. 25: Turning The Vertical Adjuster

HEADLIGHT REPLACEMENT

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1. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
2. Remove the connectors (A) from the headlight assembly (B).

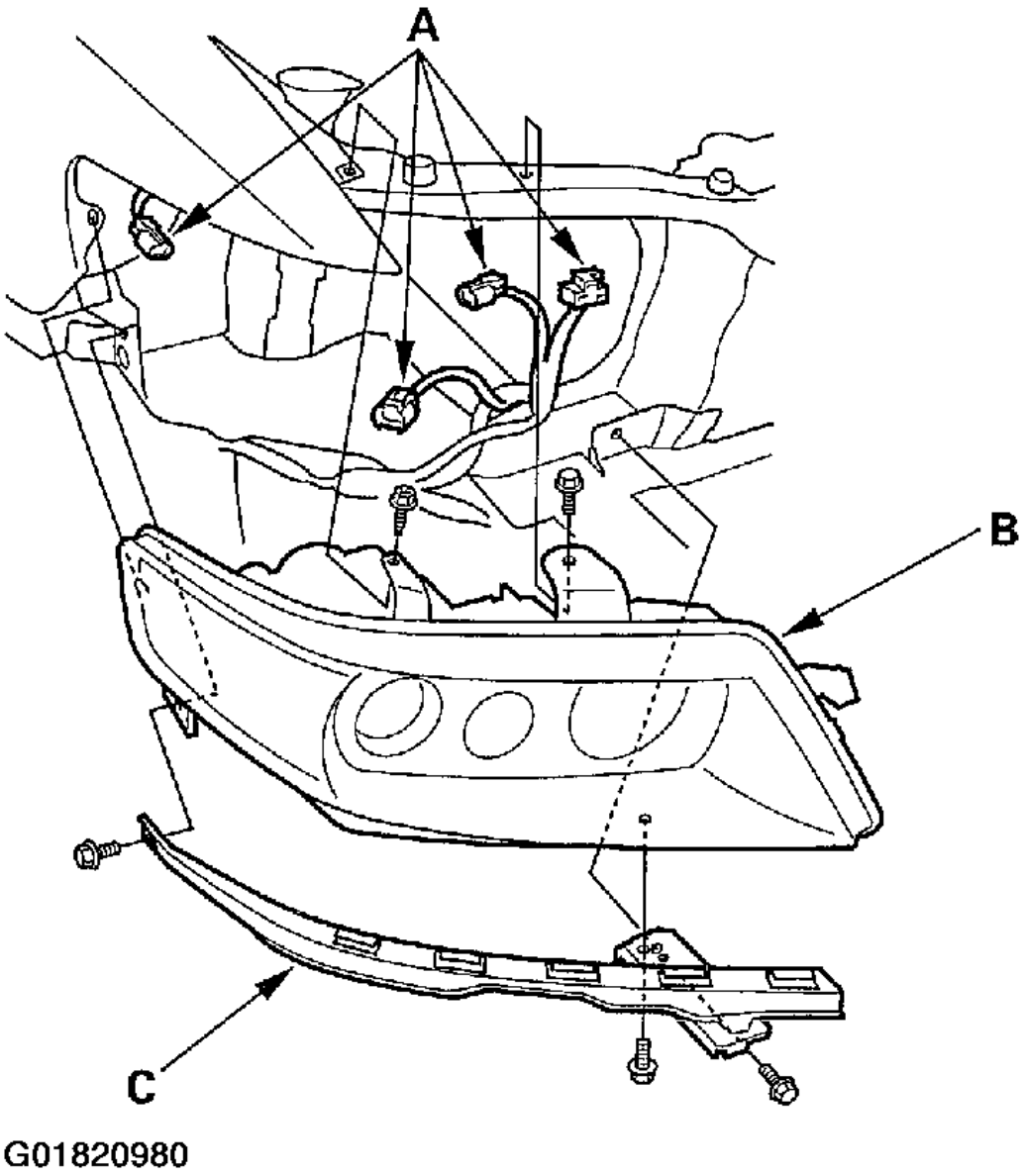


Fig. 26: Removing The Headlight Assembly

3. Remove the four mounting bolts and the harness clip, then remove the headlight.
4. Remove the bolt and the corner upper beam (C) from the headlight.
5. Install the headlight in the reverse order of removal.

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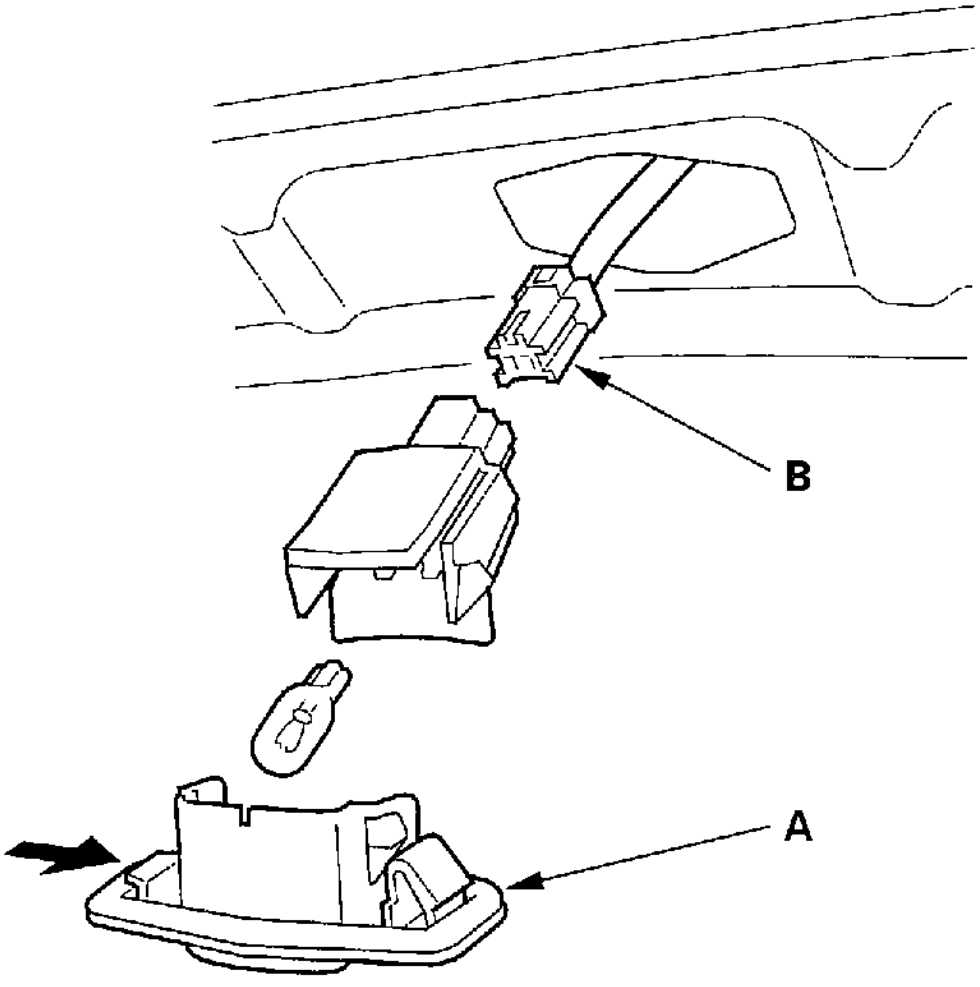
6. After replacement, adjust the headlights to local requirement.

LICENSE PLATE LIGHT REPLACEMENT

NOTE: Be careful not to damage the bumper.

1. Open the trunk lid.
2. Push the retaining spring (A), then remove the light.

License Plate Light: 3CP



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Fig. 27: Removing The License Plate Light

3. Disconnect the 2P connector (B) from the light.

TAILLIGHT REPLACEMENT

TAILLIGHT

1. Remove the rear bumper (see **REAR BUMPER REMOVAL/INSTALLATION**).
2. Open the trunk lid and remove the trunk side trim panel (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**).
3. Disconnect the connectors (A) from the taillight (B).

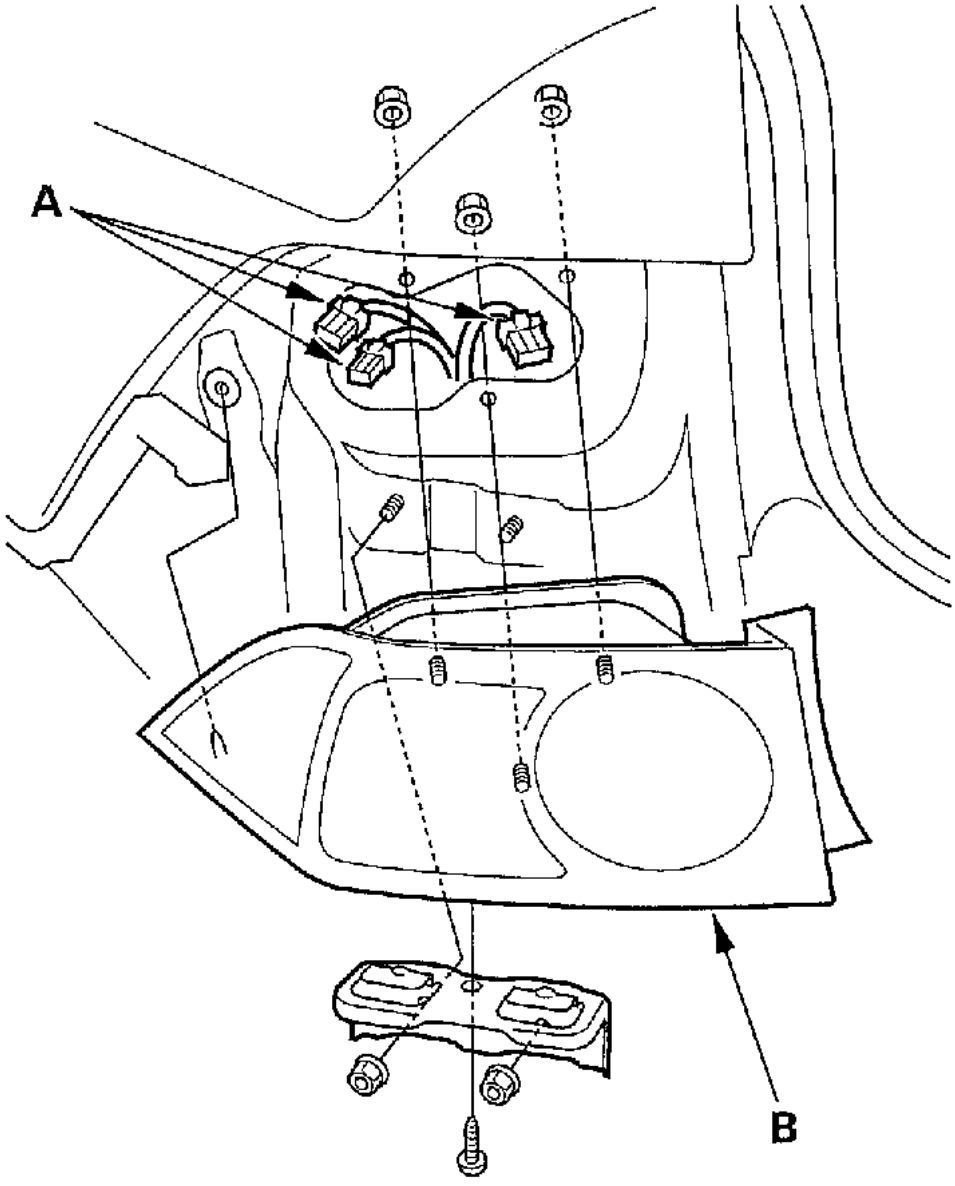
Brake/Taillight: 21/5 W

Turn Signal Light: 21 W

Side Marker Light: 3CP

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Brake/Taillight: **21/5 W**
Turn Signal Light: **21 W**
Side Marker Light: **3CP**



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Fig. 28: Removing Taillight

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4. Remove the mounting nuts and screws, then remove the taillight.
5. Turn the bulb socket 45° counterclockwise to remove the bulb.
6. Inspect the gasket; replace it if it is distorted or stays compressed.
7. Install the taillight and tighten the nuts to 5 N.m (0.5 kgf.m, 4 lbf.ft).
8. After installing the taillight, run water over it to make sure it does not leak.

INNER TAILLIGHT

1. Open the trunk lid and disconnect the connectors (A) from the trunk lid.

   Taillight: 3CP

   Back-up Light: 21 W

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Taillight: 3CP
Back-up Light: 21 W

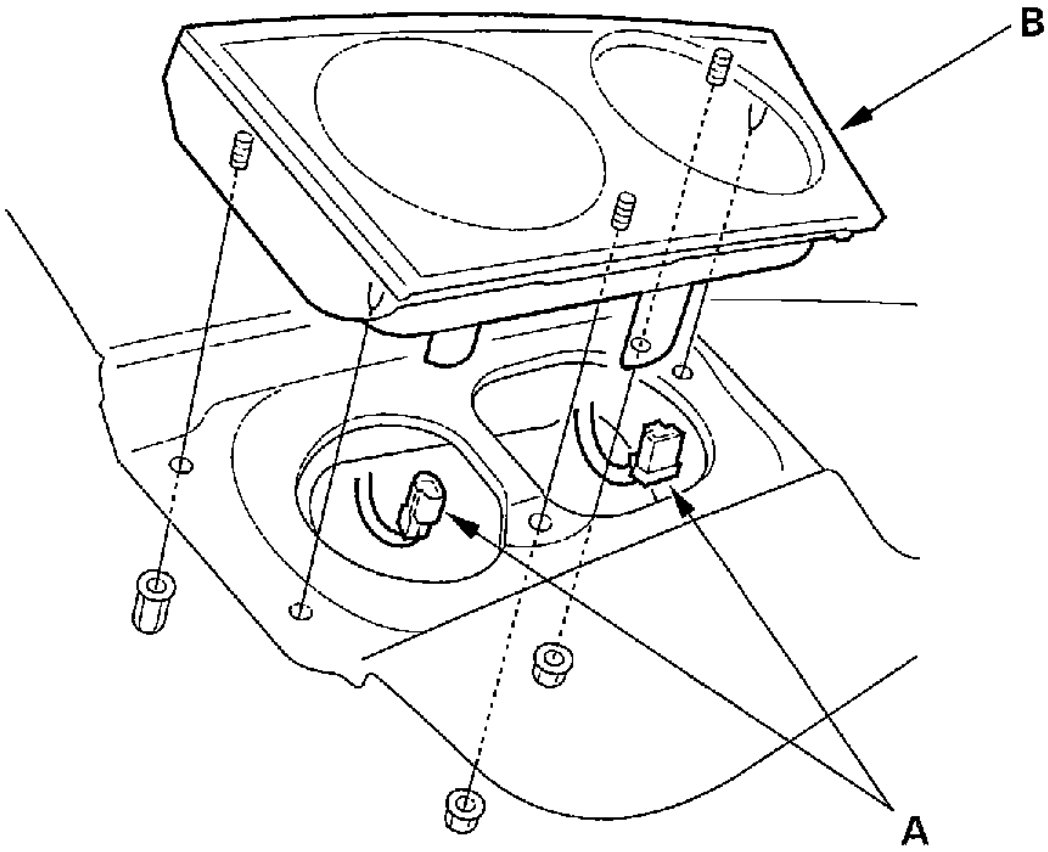


Fig. 29: Removing Inner Taillight

2. Remove the three nuts and the inner taillight (B).
3. Turn the bulb socket 45° counterclockwise to remove the bulb.
4. Inspect the gasket; replace it if it is distorted or stays compressed.
5. Install the taillight and tighten the nuts to 5 N.m (0.5 kgf.m, 4 lbf.ft).
6. After installing the taillight, run water over it to make sure it does not leak.

HIGH MOUNT BRAKE LIGHT REPLACEMENT

BULB REPLACEMENT

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1. Open the trunk lid and disconnect the 2P connector (A) from the bulb socket (B).

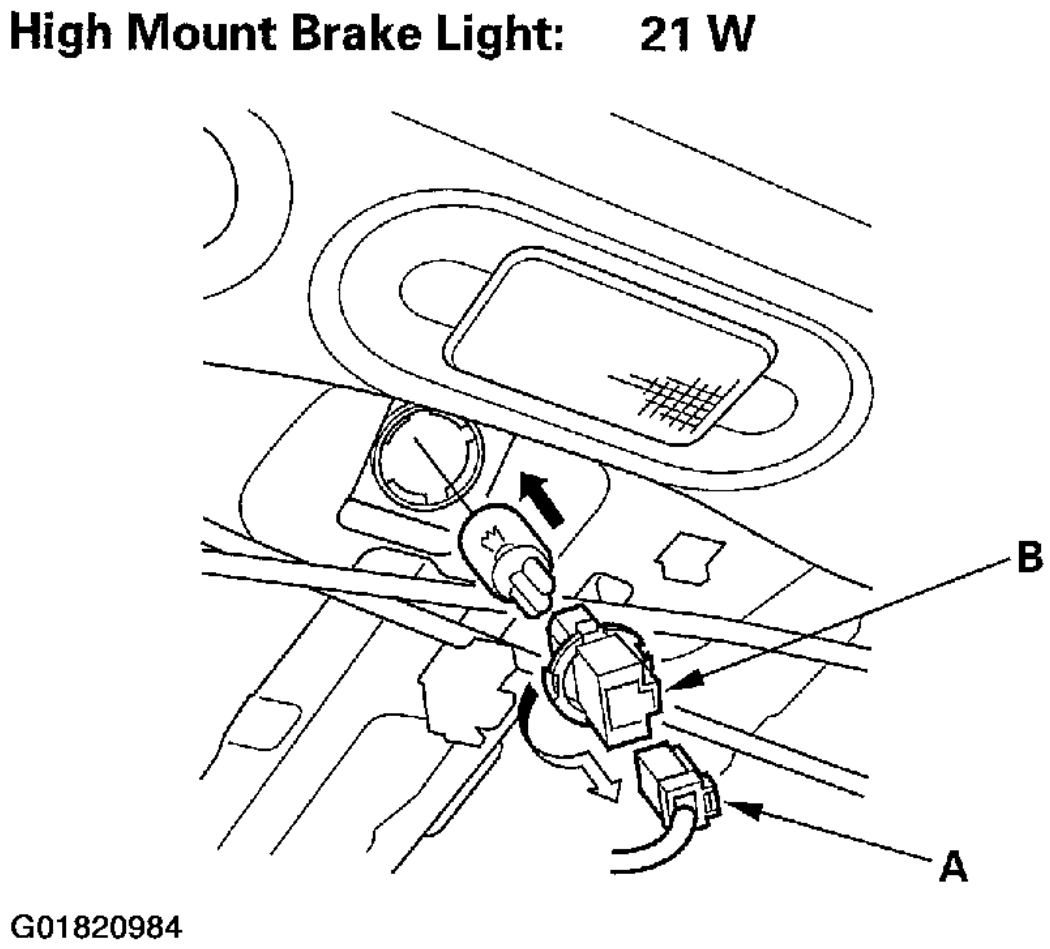


Fig. 30: Removing High Mount Brake Light Bulb

2. Turn the bulb socket (B) 45° counterclockwise to remove the bulb.

HOUSING REPLACEMENT

1. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).
2. Remove the high mount brake light housing (A) from the cover (B).

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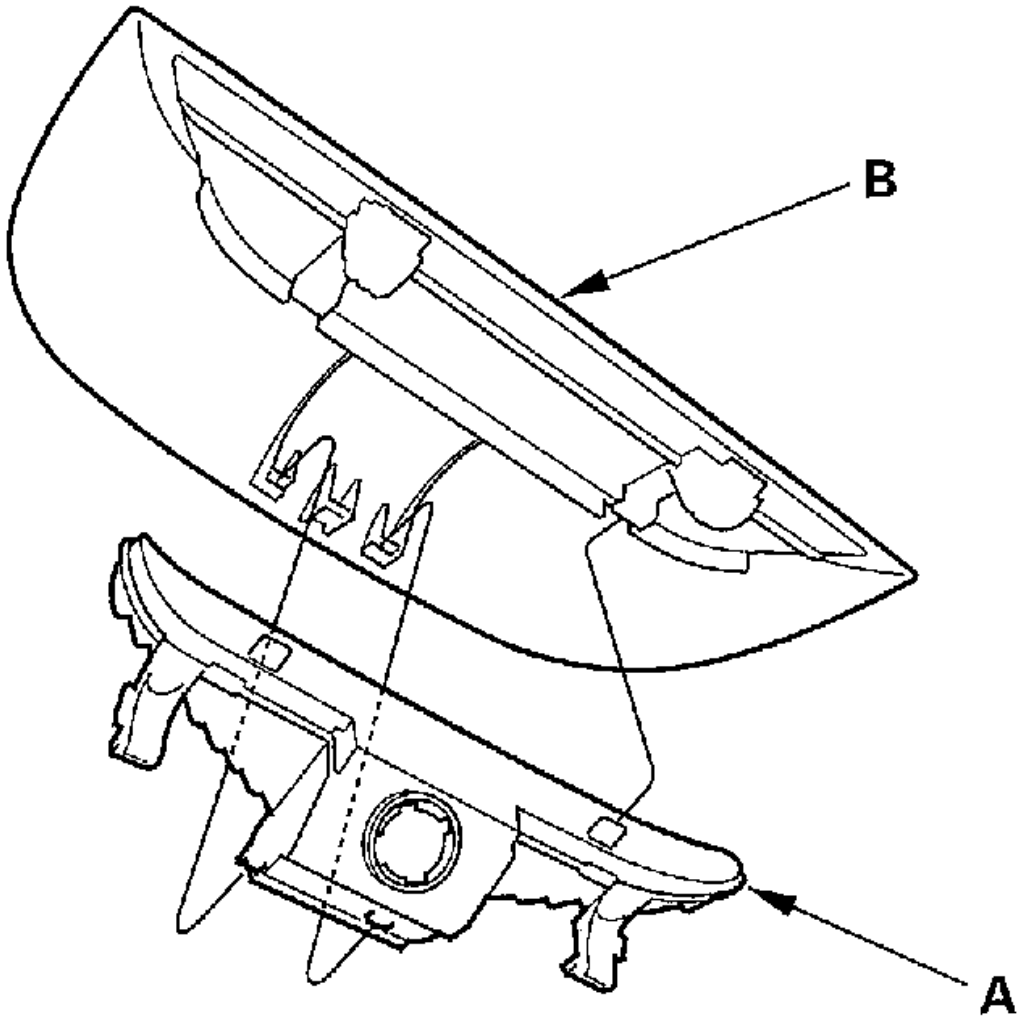


Fig. 31: Removing High Mount Brake Light Housing

BRAKE PEDAL POSITION SWITCH TEST

1. Disconnect the 4P connector (A) from the brake pedal position switch (B).

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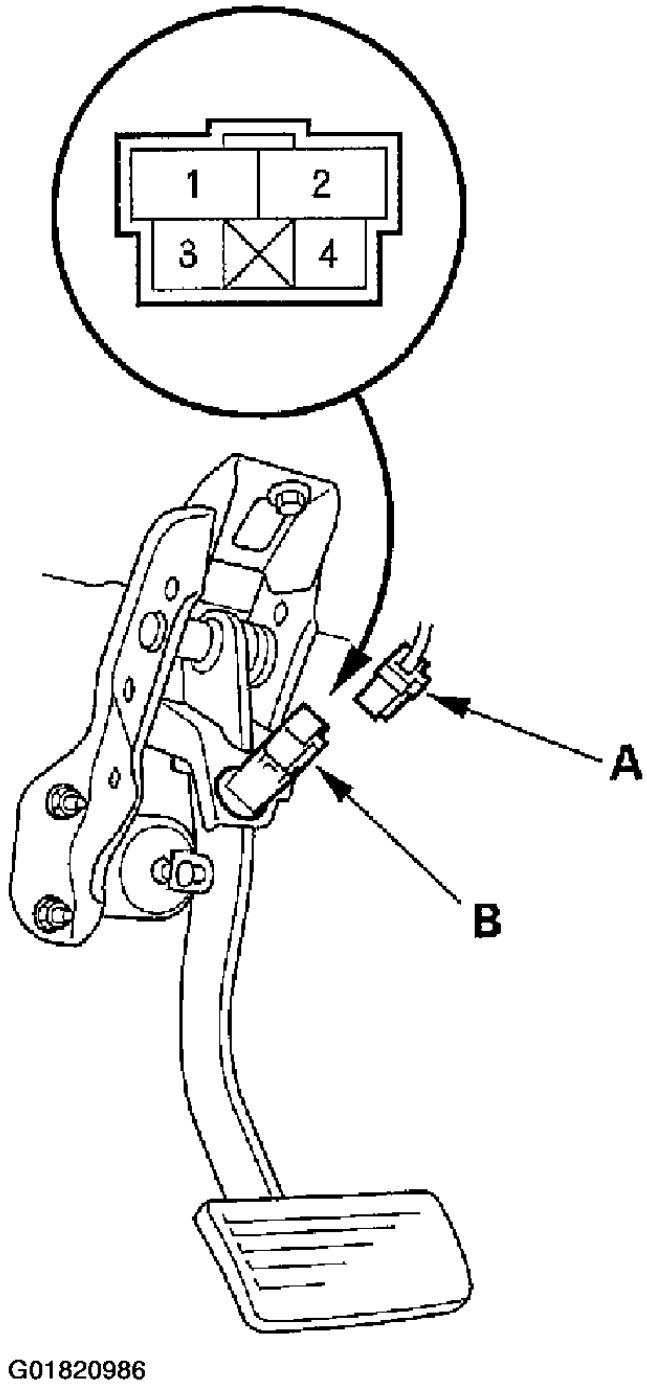


Fig. 32: Disconnecting The 4P Connector From The Brake Pedal Position Switch

2. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity when the brake pedal is pressed.

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- There should be no continuity when the brake pedal is released.

3. Check for continuity between the No. 3 and No. 4 terminals.
   - There should be no continuity when the brake pedal is pressed.
   - There should be continuity when the brake pedal is released.
4. If necessary, adjust or replace the switch, or adjust the pedal height (see **BRAKE PEDAL HEIGHT & FREE PLAY**).

SIDE TURN SIGNAL LIGHT REPLACEMENT

1. Remove the power mirror actuator (see **POWER MIRROR ACTUATOR REPLACEMENT**).
2. Disconnect 2P connector (A) from the side turn signal light (B).

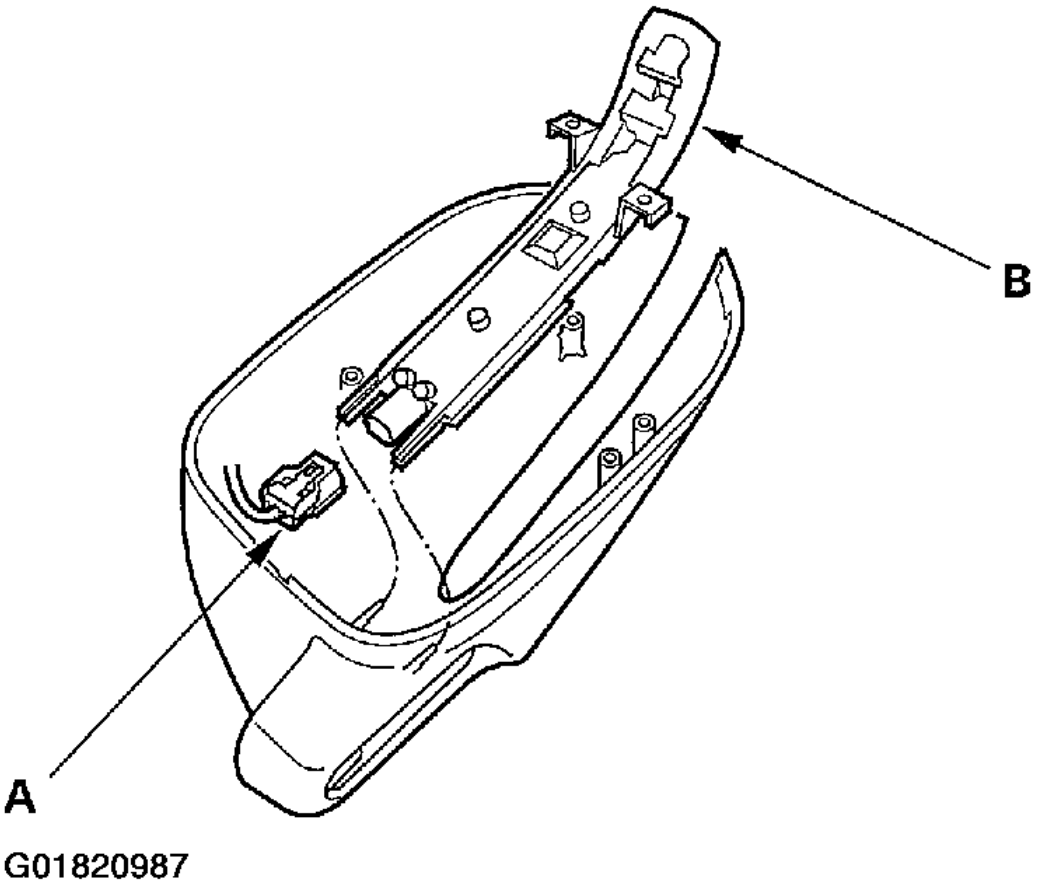


Fig. 33: Removing Side Turn Signal Light Bulb

3. Install in the reverse order of removal.

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COMBINATION LIGHT SWITCH TEST/REPLACEMENT

1. Remove the dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTAL**).
2. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Disconnect the 12P connector (A) from the wiper/washer switch (B).

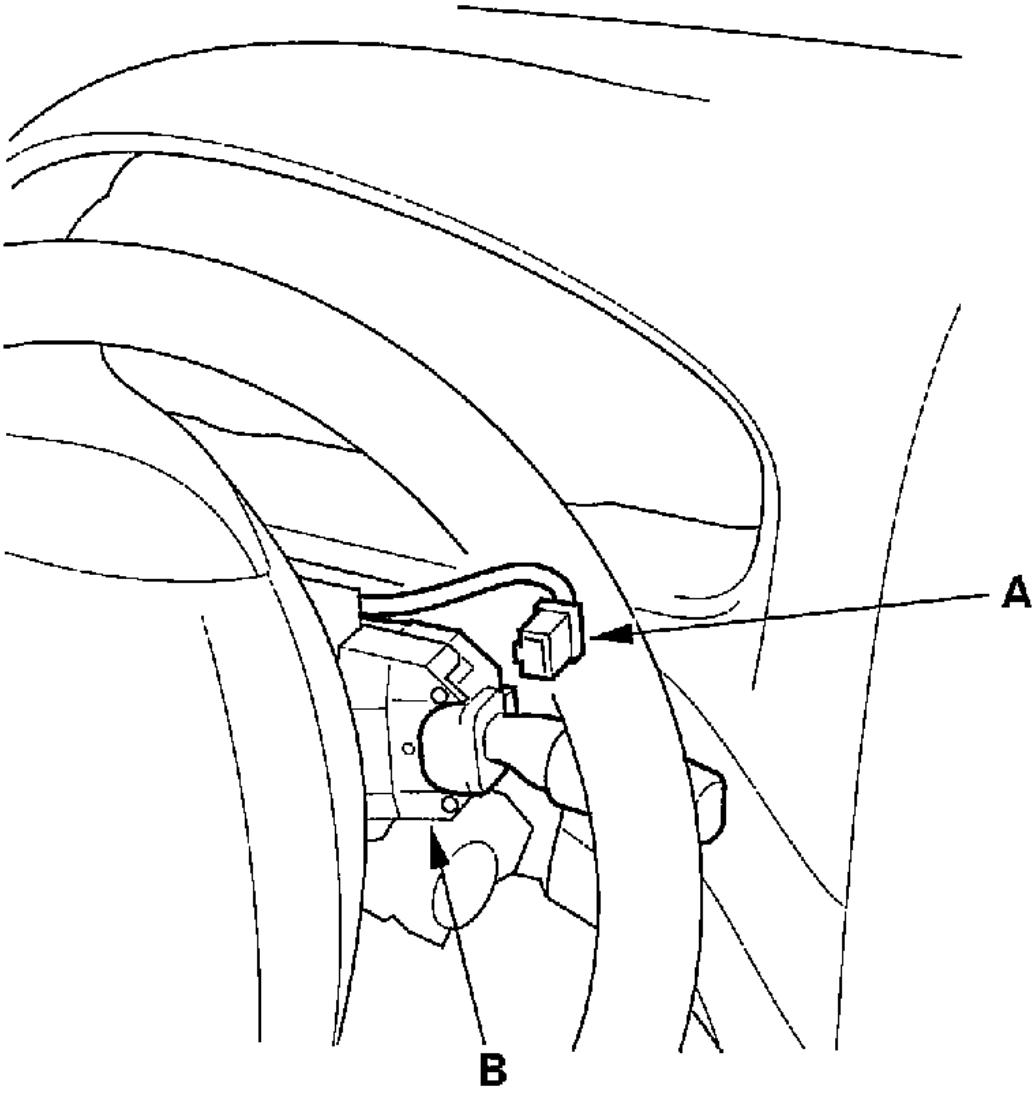


Fig. 34: Disconnecting The 12P Connector From The Wiper/Washer Switch

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4. Remove the two screws, then slide out the combination light switch (A).

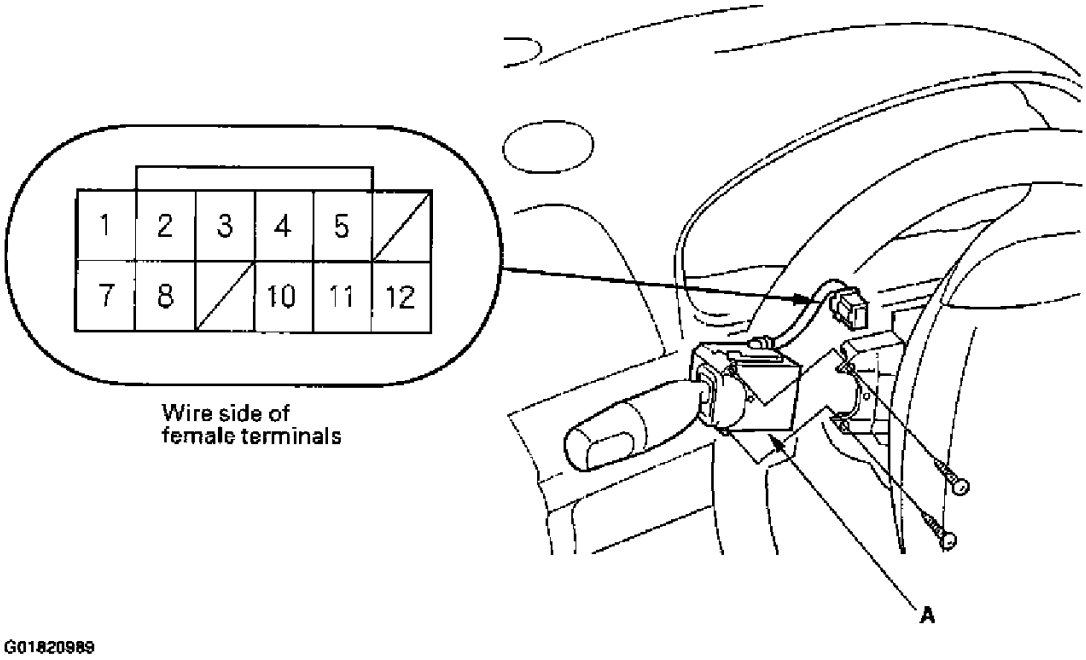


Fig. 35: Removing Combination Light Switch

5. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, check for continuity between the terminals in each switch position according to the tables. See **Fig. 36** and **Fig. 37** .
     - If the continuity is not as specified, replace the switch.

Position			Terminal 1	2	3	4	7	12
Headlight switch	OFF		○					○
	≡D						○	○
	≡D	LOW		○			○	○
	≡D	HIGH		○			○	○
						○		○
Passing switch	OFF							
	ON				○			○

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Fig. 36: Light Switch Test Table

Terminal / Position	4	10	12
LEFT	○		○
NEUTRAL			
RIGHT		○	○

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Fig. 37: Turn Signal Switch Test Table

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2004 ACCESSORIES & EQUIPMENT

Exterior Trim - TSX

BUMPERS

FRONT BUMPER REMOVAL/INSTALLATION

NOTE:

- **Have an assistant help you when removing and installing the front bumper.**
- **Take care not to scratch the front bumper and body.**
- **Put on gloves to protect your hands.**

1. Remove the front bumper as shown.
2. Install the bumper in the reverse order of removal, and note these items:
   - Make sure the front bumper engages the hooks of the side spacers and upper beams on both sides securely.
   - Replace any damaged clips.

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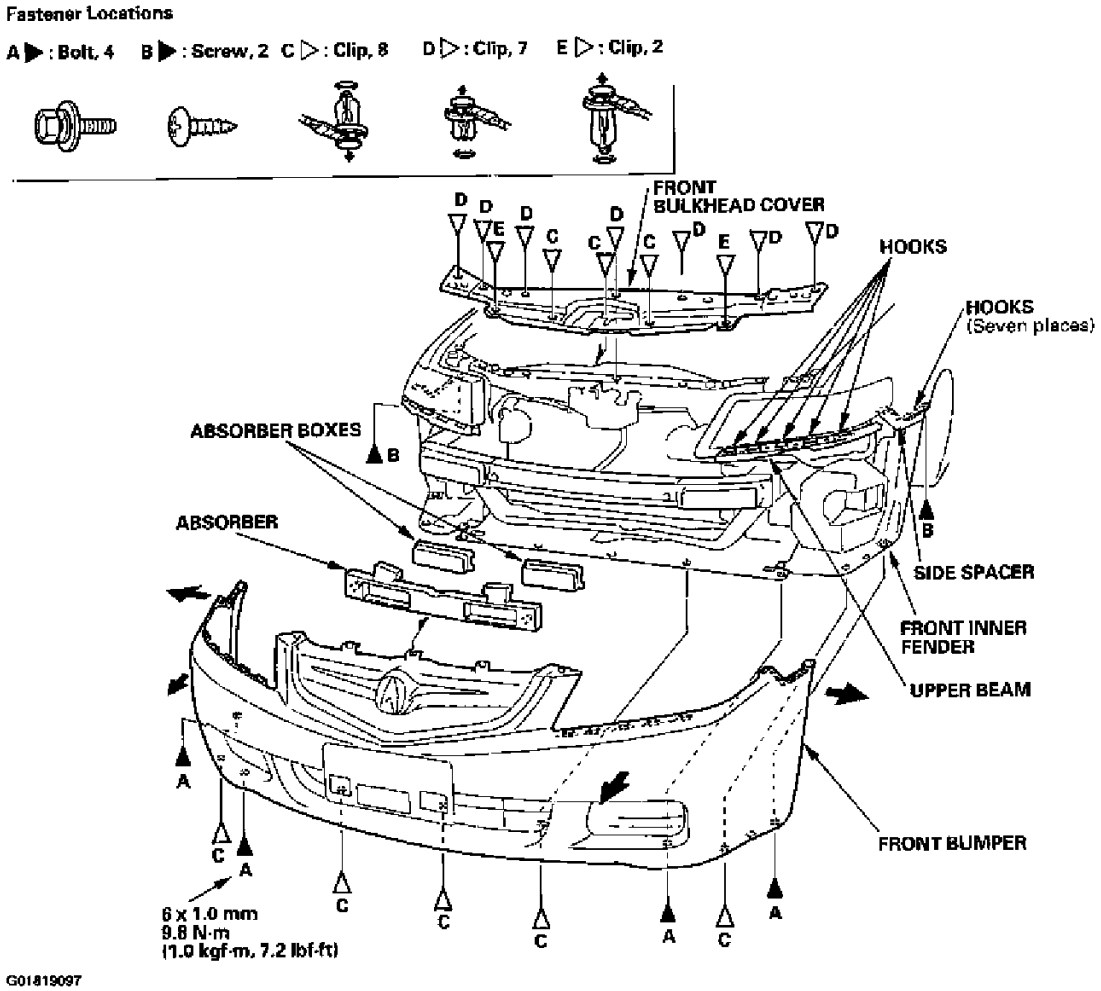


Fig. 1: Removing Front Bumper

FRONT AIR SPOILER REPLACEMENT

NOTE:

- **Take care not to scratch the front bumper.**
- **Put on gloves to protect your hands.**

1. Remove the bolts securing the front bumper (A).

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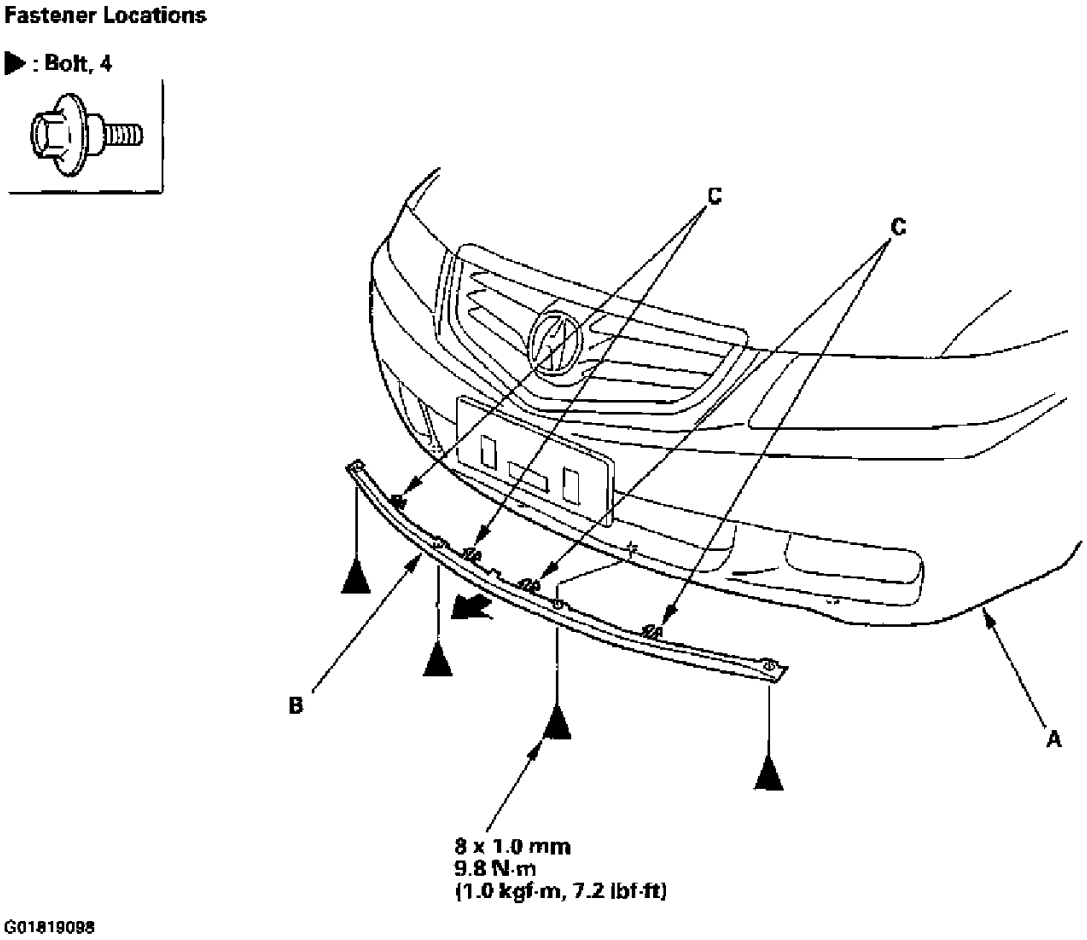


Fig. 2: Removing The Spoiler

2. Pull the front air spoiler (B) back to detaching the hooks (C) and removing the spoiler.
3. Install the spoiler in the reverse order of removal.

REAR BUMPER REMOVAL/INSTALLATION

NOTE:

- **Have an assistant help you when removing and installing the rear bumper.**
- **Take care not to scratch the rear bumper and body.**
- **Put on gloves to protect your hands.**

1. Remove the rear bumper as shown.
2. Install the bumper in the reverse order of removal, and note these items:
   - Make sure the rear bumper engages the hooks of the side spacers, side brackets and upper brackets on both sides securely.
   - Replace any damaged clips.

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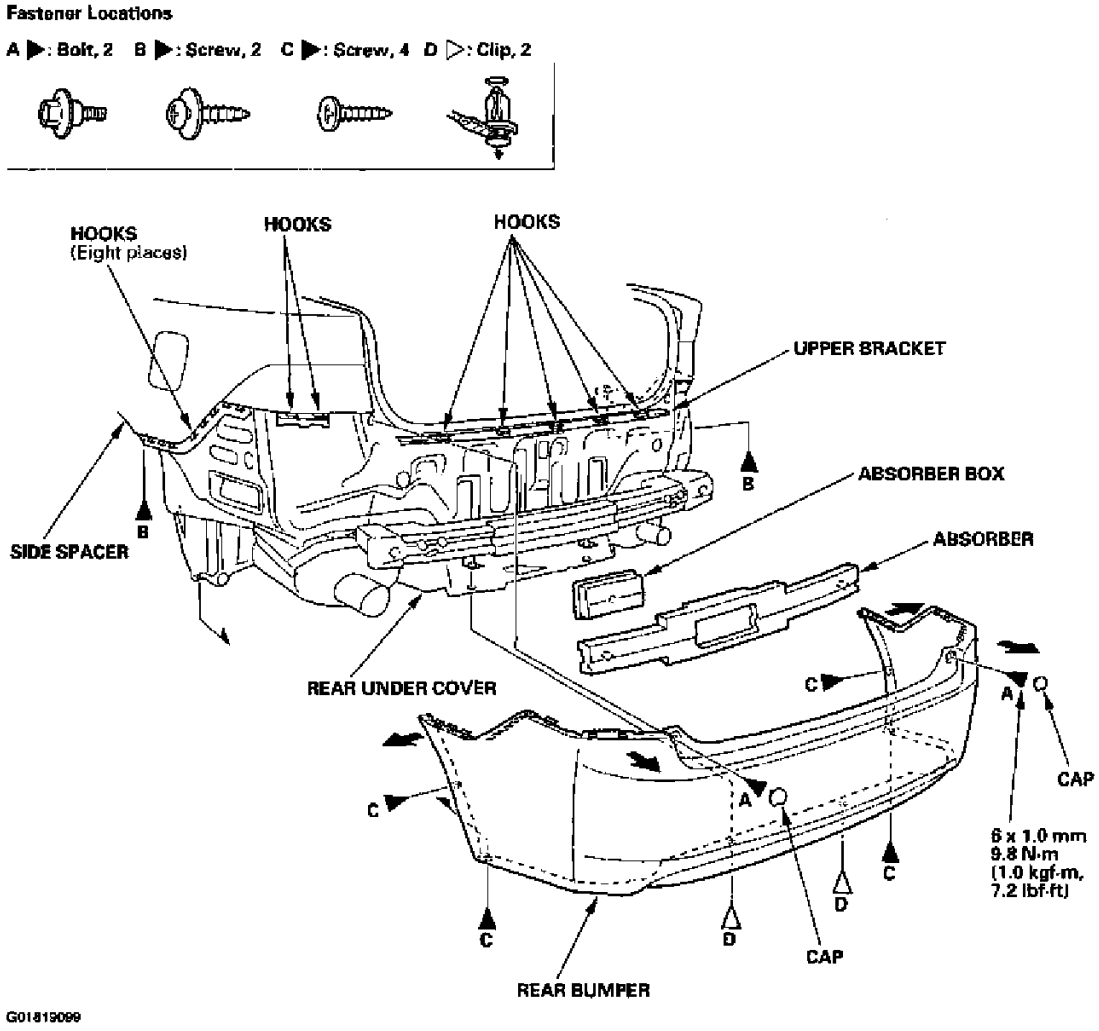


Fig. 3: Removing The Rear Bumper

HOOD

ADJUSTMENT

1. Remove the front fender trim (see **FRONT FENDER TRIM REPLACEMENT**).
2. Slightly loosen each hood hinge bolt.
3. Adjust the hood alignment in this sequence:
   a. Adjust the hood right and left, as well as forward and rearward, by using the elongated holes on the hood hinge (A).
   b. Turn the hood edge cushions (B), as necessary, to make the hood fit flush with the body at the front and side edges.

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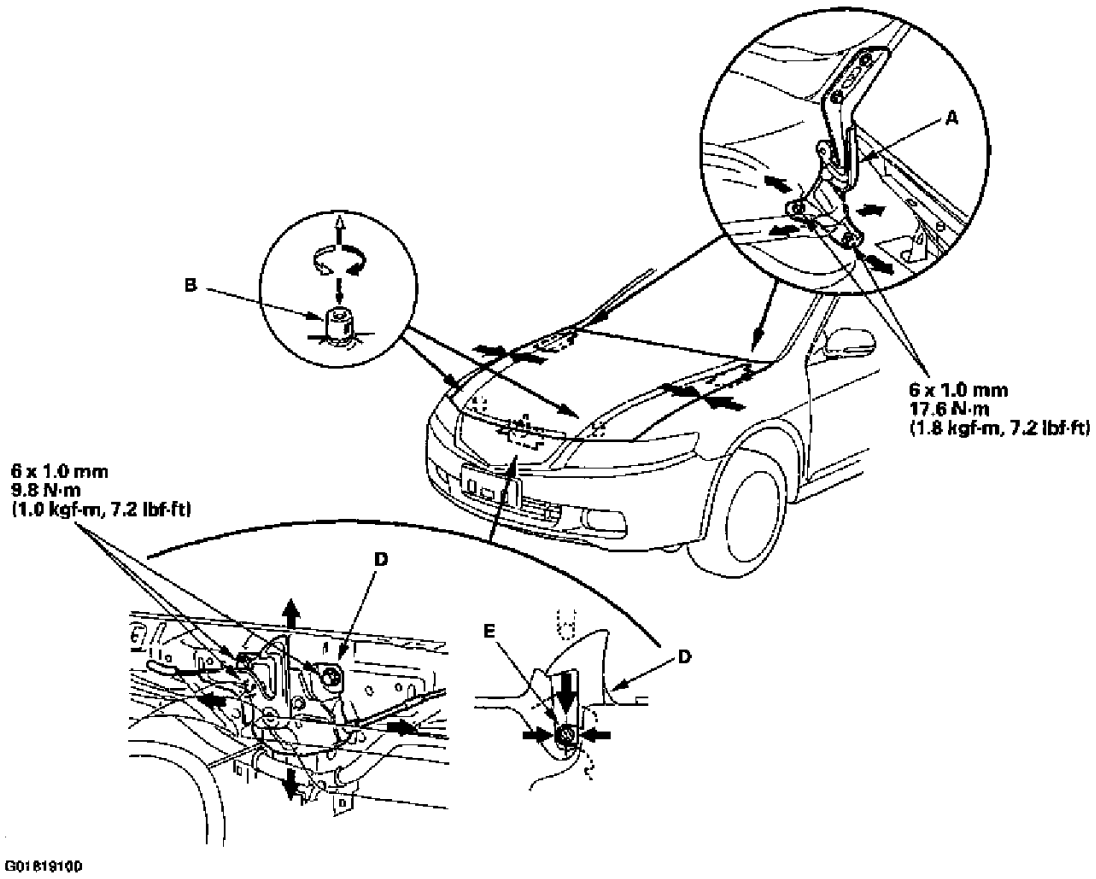


Fig. 4: Adjusting The Hood

4. Remove the front bulkhead cover (see step 1 of **HOOD MOLDING REPLACEMENT**), and remove the hood latch cover (see step 2 of **HOOD LATCH REPLACEMENT**). Adjust the hood latch (D) to obtain the proper height at the forward edge, and move the hood latch right or left until the striker (E) is centered in the hood latch.
5. Tighten the bolts to the specified torque.
6. Check that the hood opens properly and closes securely.
7. Apply touch-up paint to the hinge mounting bolts and around the hinges.
8. Apply multipurpose grease to each location of the hood latch and hood hinge as indicated by the arrows.

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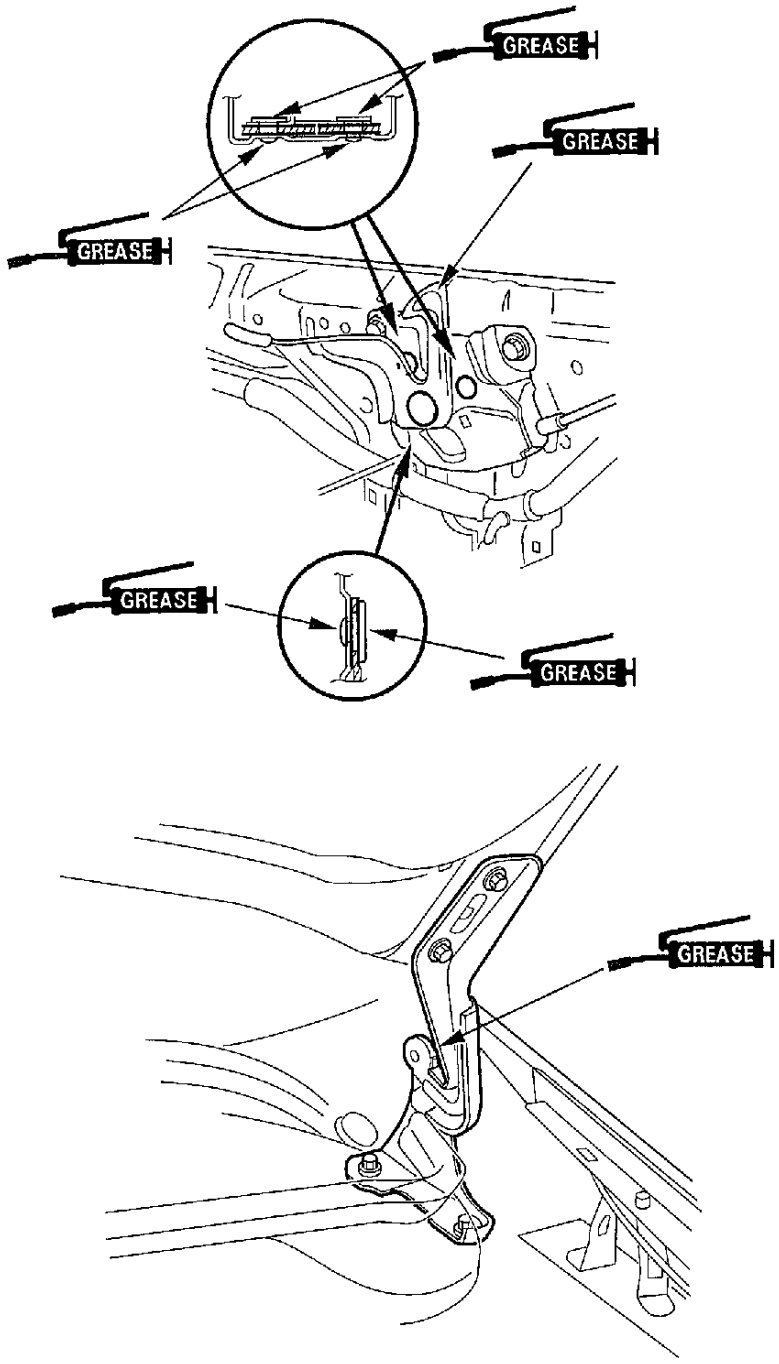


Fig. 5: Applying Multipurpose Grease

9. Reinstall all of the removal parts.

HOOD SEAL REPLACEMENT

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1. Using a clip remover, detach the clips, then remove the hood seal (A) and hood corner seals (B). Take care not to scratch the hood.

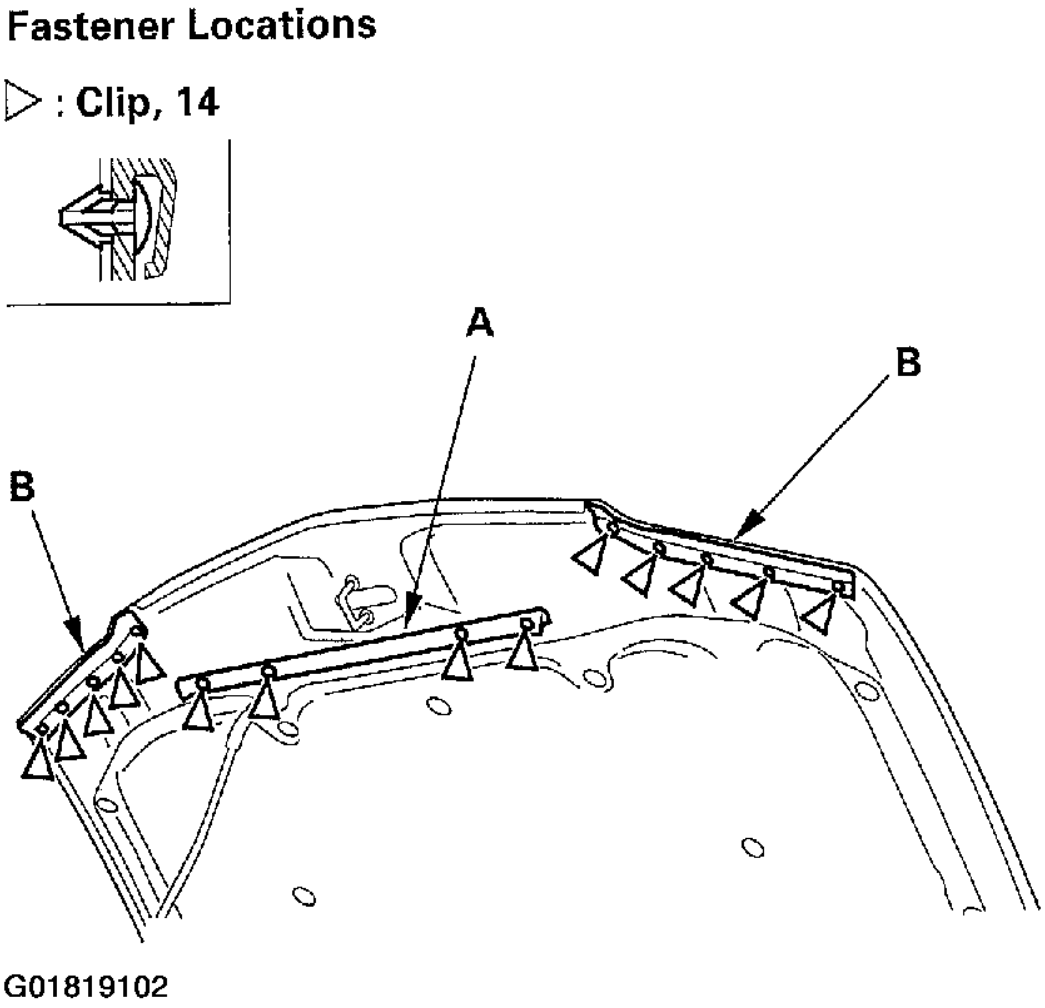


Fig. 6: Removing The Hood Seal & Hood Corner Seals

2. Install the seals in the reverse order of removal, and replace any damaged clips.

HOOD INSULATOR REPLACEMENT

1. Using a clip remover, detach the clips. Release the hooks (A), then remove the hood insulator (B). Take care not to scratch the hood.

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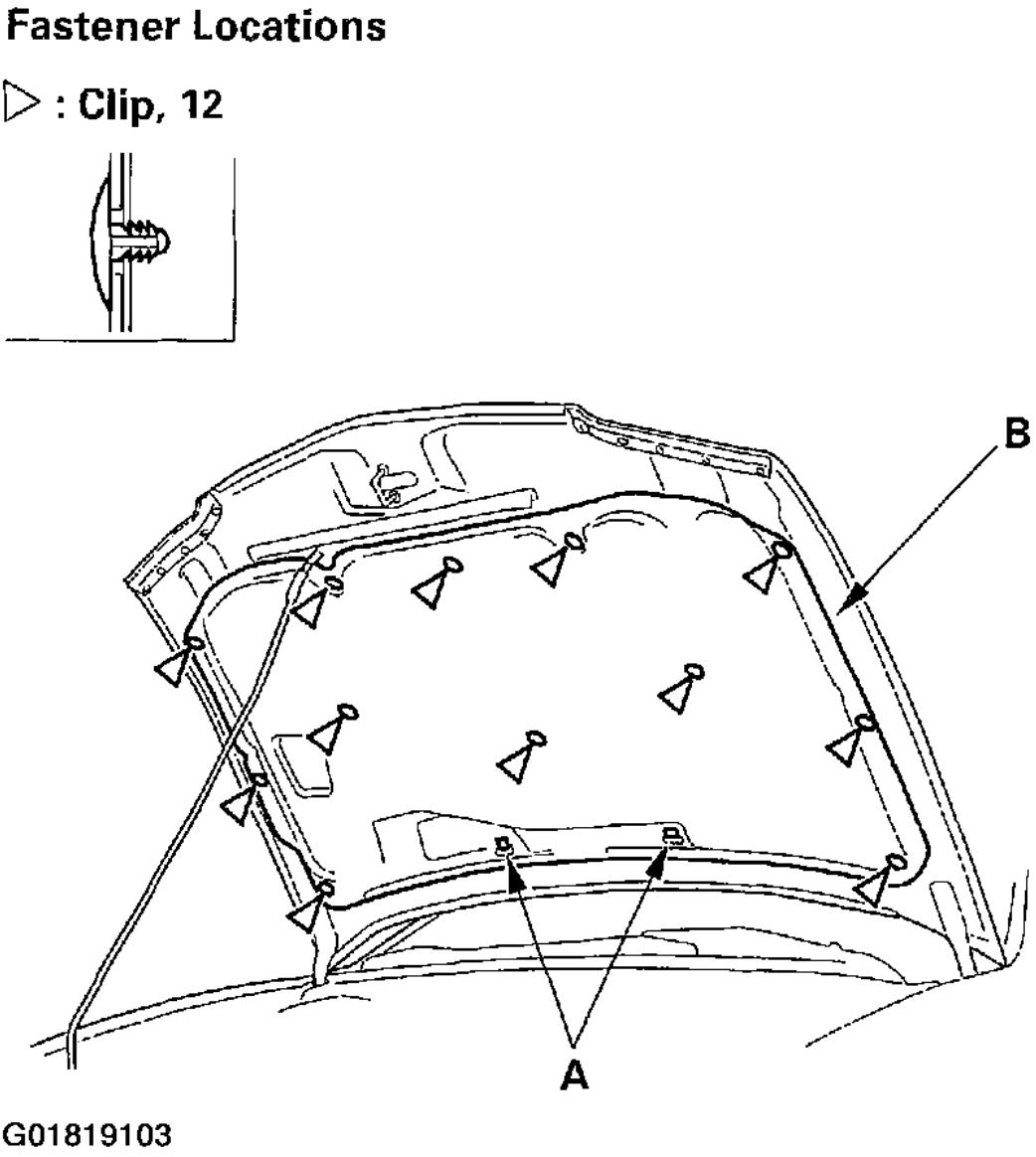


Fig. 7: Removing The Hood Insulator

2. Install the insulator in the reverse order of removal, and replace any damaged clips.

TRUNK LID

ADJUSTMENT

1. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).

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2. Slightly loosen each bolt.
3. Adjust the trunk lid alignment in the following sequence:
   a. Adjust the trunk lid hinges (A) right and left, as well as forward and rearward, by using the elongated holes. Take care not to hit the rear window when loosening the bolts (B).
   b. Turn the trunk lid edge cushions (C), in or out as necessary, to make the trunk lid fit flush with the body at the rear and side edges.
   c. Adjust the fit between the trunk lid and the trunk lid opening by moving the striker (D).

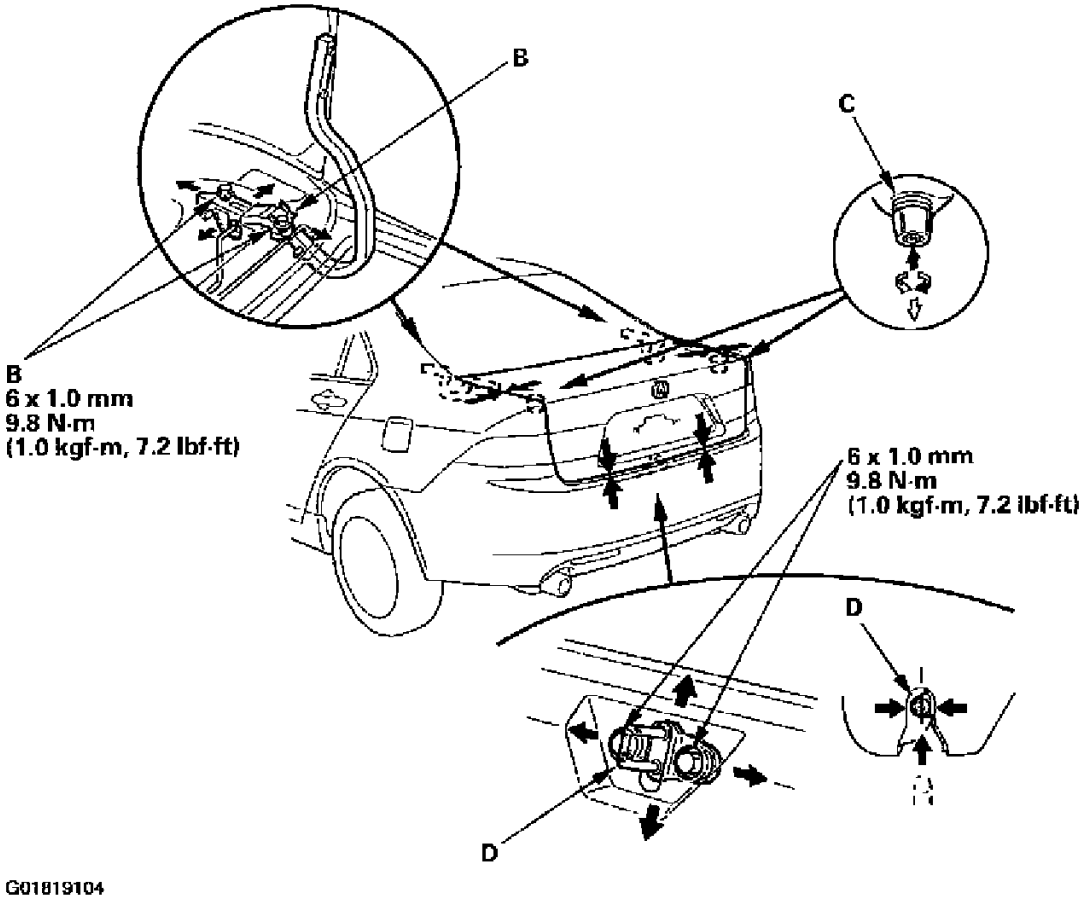


Fig. 8: Adjusting The Trunk Lid

4. Tighten the bolts to the specified torque.
5. Make sure the trunk lid opens properly and locks securely.
6. Reinstall all remaining removed parts.

TRUNK LID TORSION BAR REPLACEMENT

1. Remove the torsion bars (A) from the torsion bar center clip (B).

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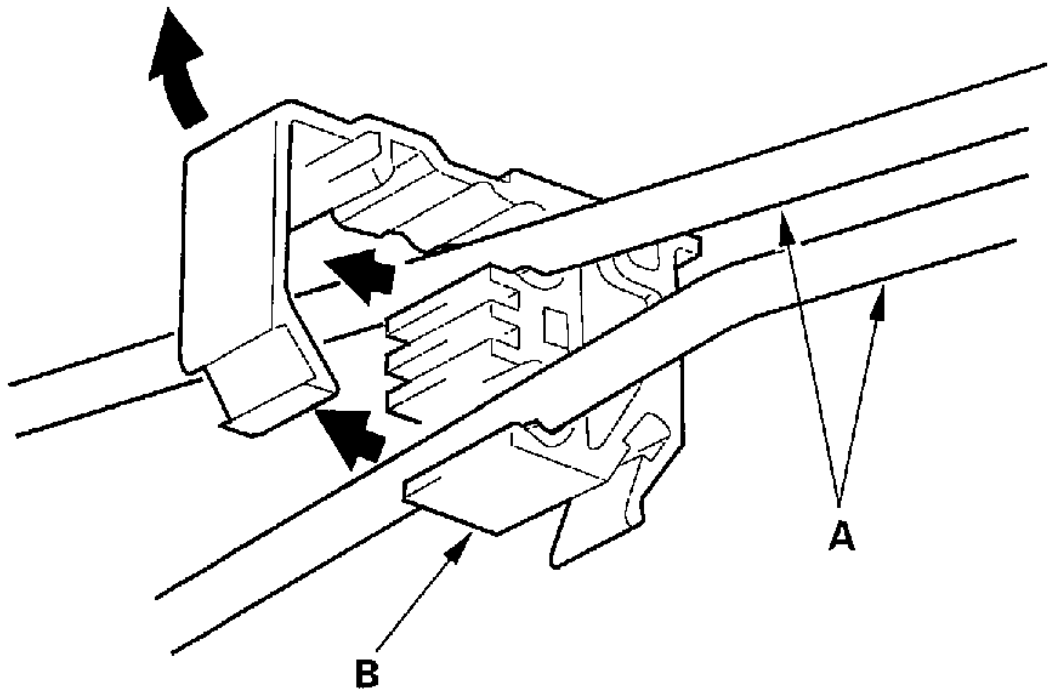


Fig. 9: Removing The Torsion Bars From The Torsion Bar Center Clip

2. Put on gloves to protect your hands. Remove the torsion bars with the torsion bar tool (A) from both trunk lid hinges. First remove the left torsion bar (B), then remove the right torsion bar (C).

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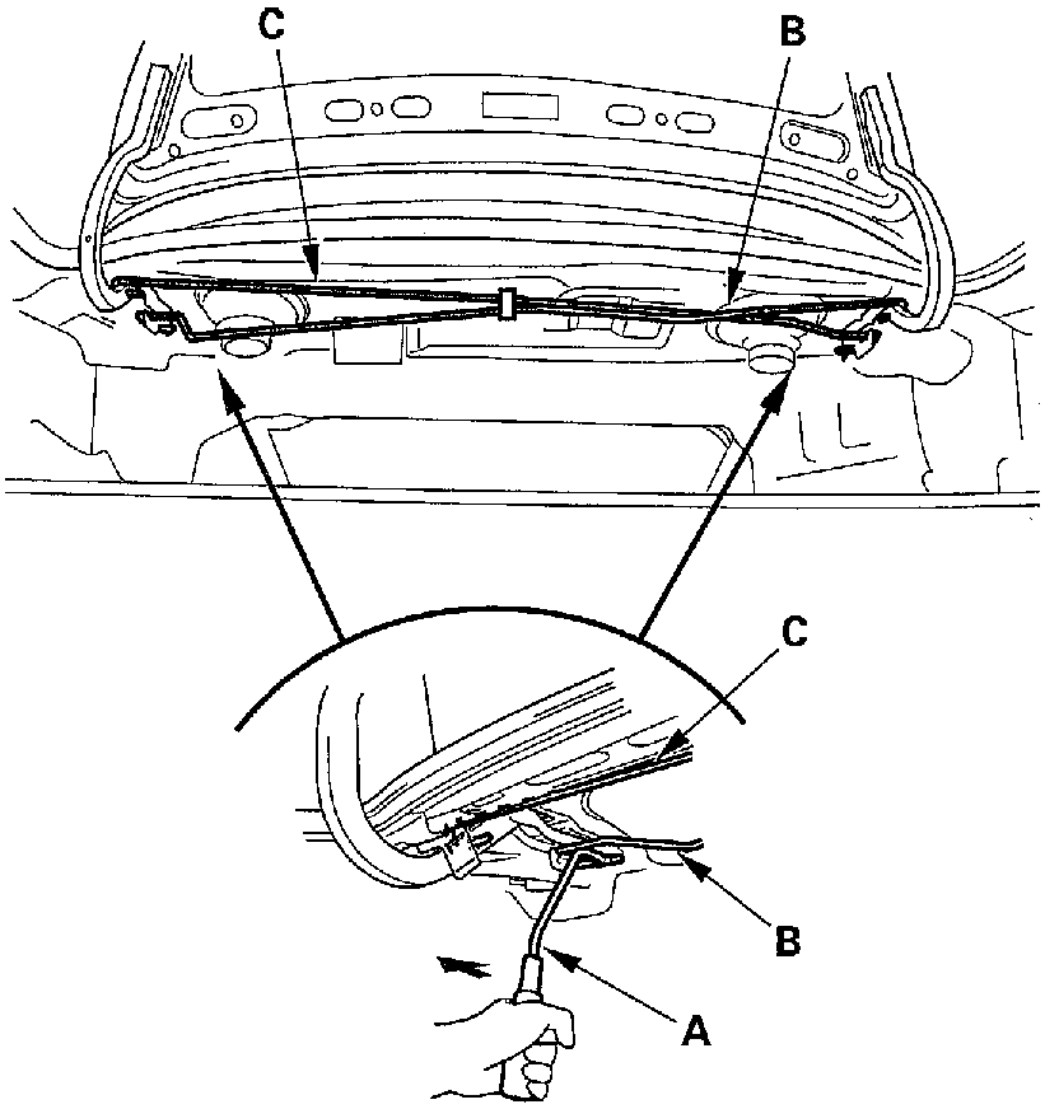


Fig. 10: Removing The Torsion Bars From Both Trunk Lid Hinges

3. Remove the torsion bar center clip from the body.

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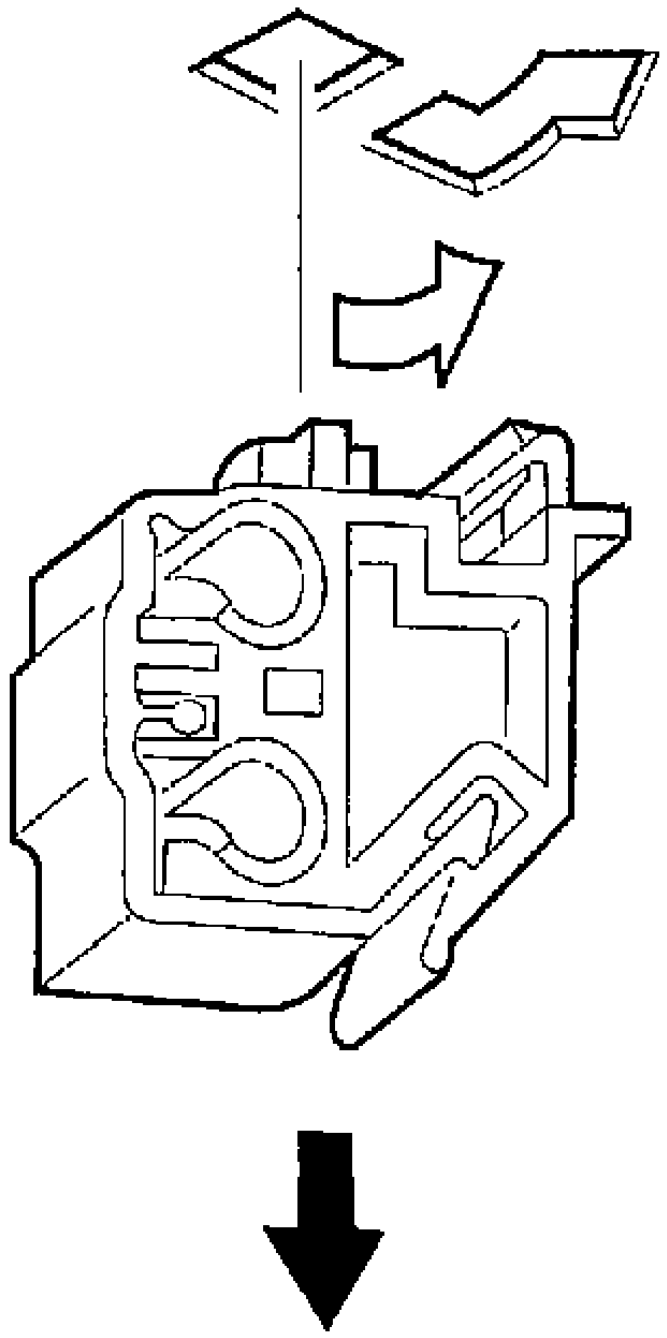


Fig. 11: Removing The Torsion Bar Center Clip From The Body

4. Install the torsion bars in the reverse order of removal, and note these items:
    - The shapes of the right torsion bar (A) and left torsion bar (B) are shown. Install the torsion bars

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properly.

- Adjust the torsion bars forward or rearward with the torsion bar assembly tool.
- Positions where each torsion bar was installed in the factory are following:
  - Left torsion bar: Normal position
  - Right torsion bar: Higher tension
- Make sure the trunk lid opens properly and locks securely.

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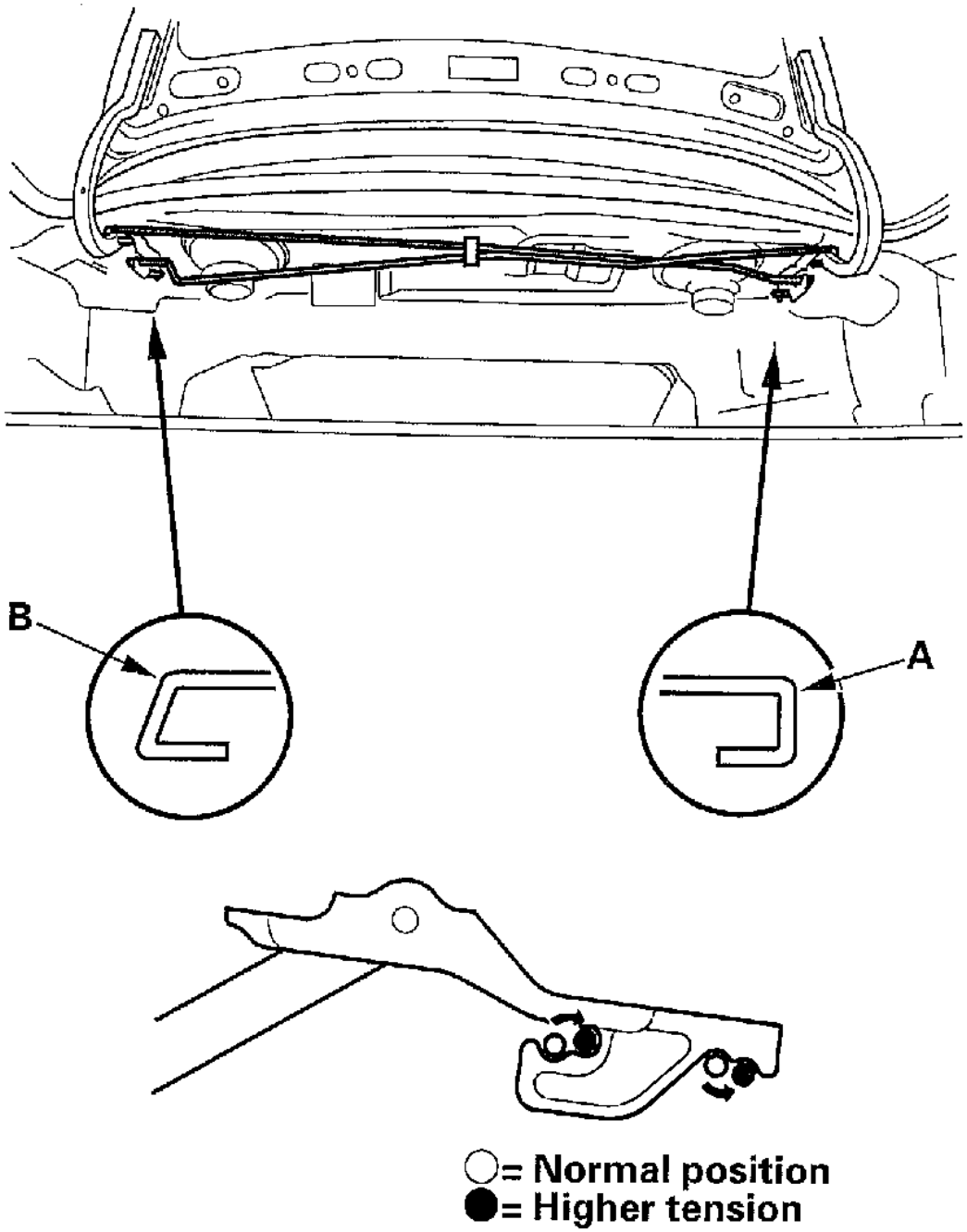


Fig. 12: Installing The Torsion Bars

TRUNK LID WEATHERSTRIP REPLACEMENT

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1. Remove the trunk lid weatherstrip (A) by pulling it off.

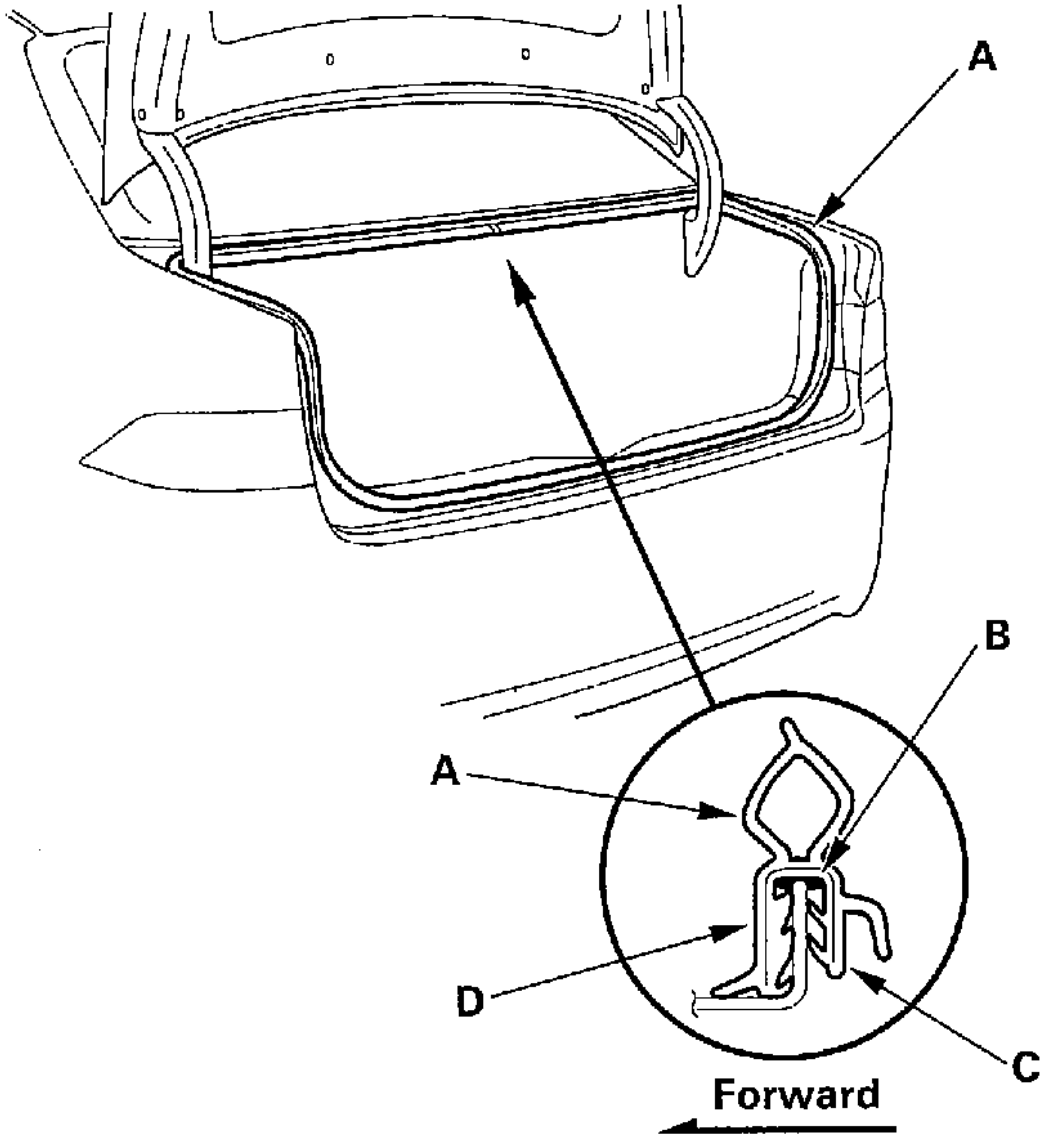


Fig. 13: Removing The Trunk Lid Weatherstrip

2. Apply clear sealant (B) into the channel of the trunk lid weatherstrip all the way around.
   Sealant: SUNRISE MEISEI B-33C, or equivalent
3. Locate the painted alignment mark (C or D) on the trunk lid weatherstrip. Align the painted mark in the center of the tailgate opening, and install the trunk lid weatherstrip all the way around in the direction

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shown. Make sure there are no wrinkles in the weatherstrip.

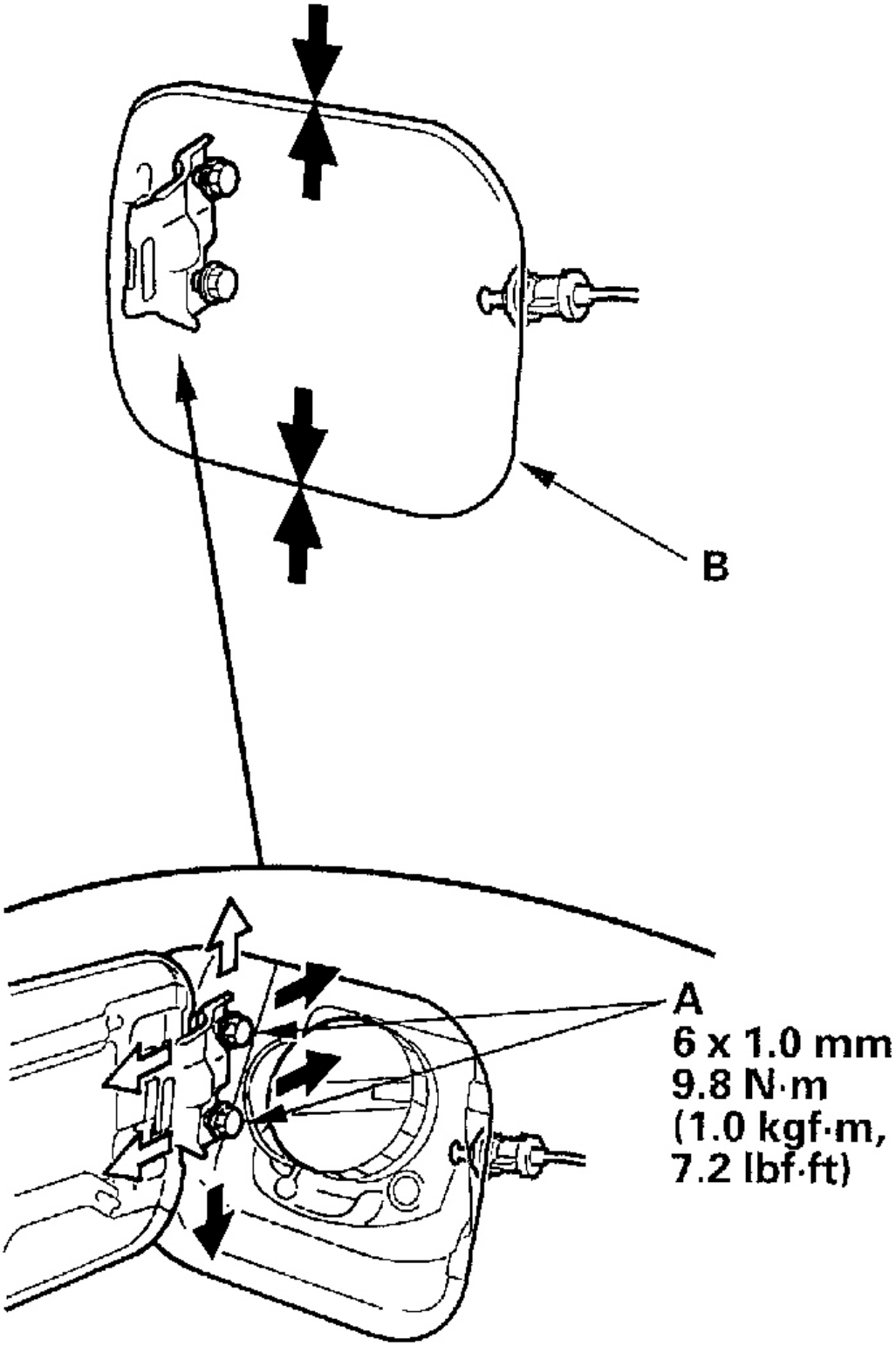
4. Check for water leaks.

FUEL FILL DOOR

ADJUSTMENT

1. Slightly loosen the hinge mounting bolts (A).

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Fig. 14: Adjusting The Fuel Fill Door

2. Adjust the fuel fill door (B) in or out until it's flush with the body, and up or down as necessary to equalize the gaps.
3. Tighten the hinge mounting bolts.
4. Check that the fuel fill door opens properly and locks securely, and check that the rear of the door is flush with the body.
5. Apply multipurpose grease to each location indicated by the arrows.

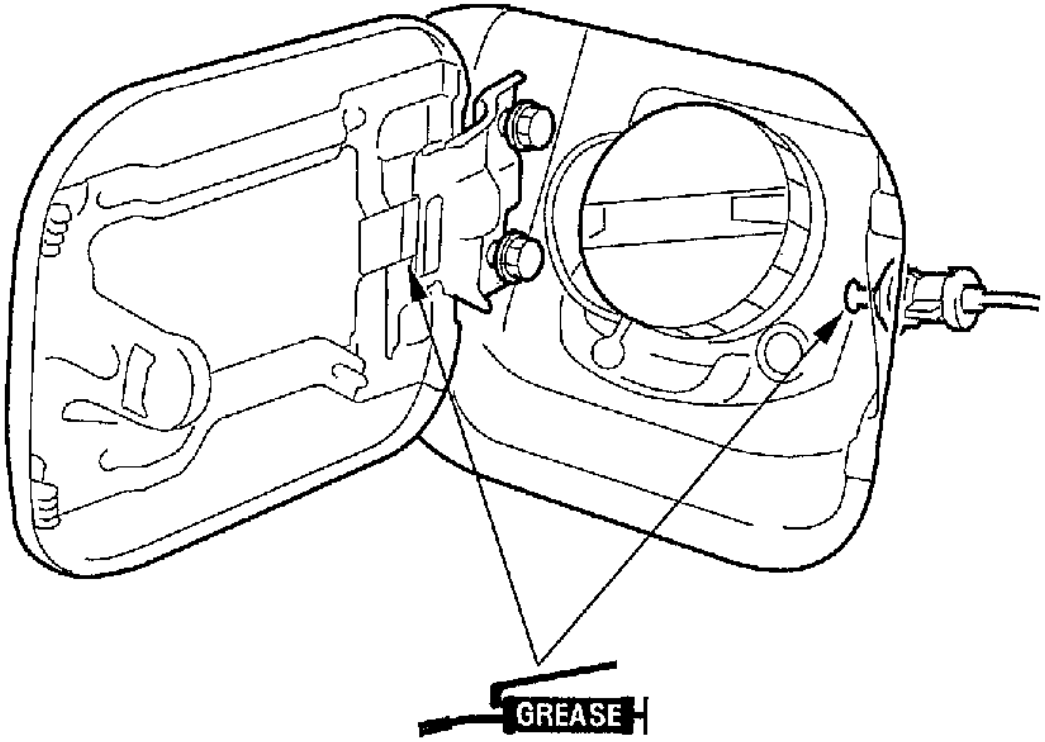


Fig. 15: Applying Multipurpose Grease

6. Apply touch-up paint to the hinge mounting bolts and around the hinges.

EXTERIOR TRIM

HOOD MOLDING REPLACEMENT

1. Remove the nuts (A), and detach the clip (B) by pushing it from the drain hole (C) in the hood, then remove the hood molding (D). Take care not to scratch the hood.

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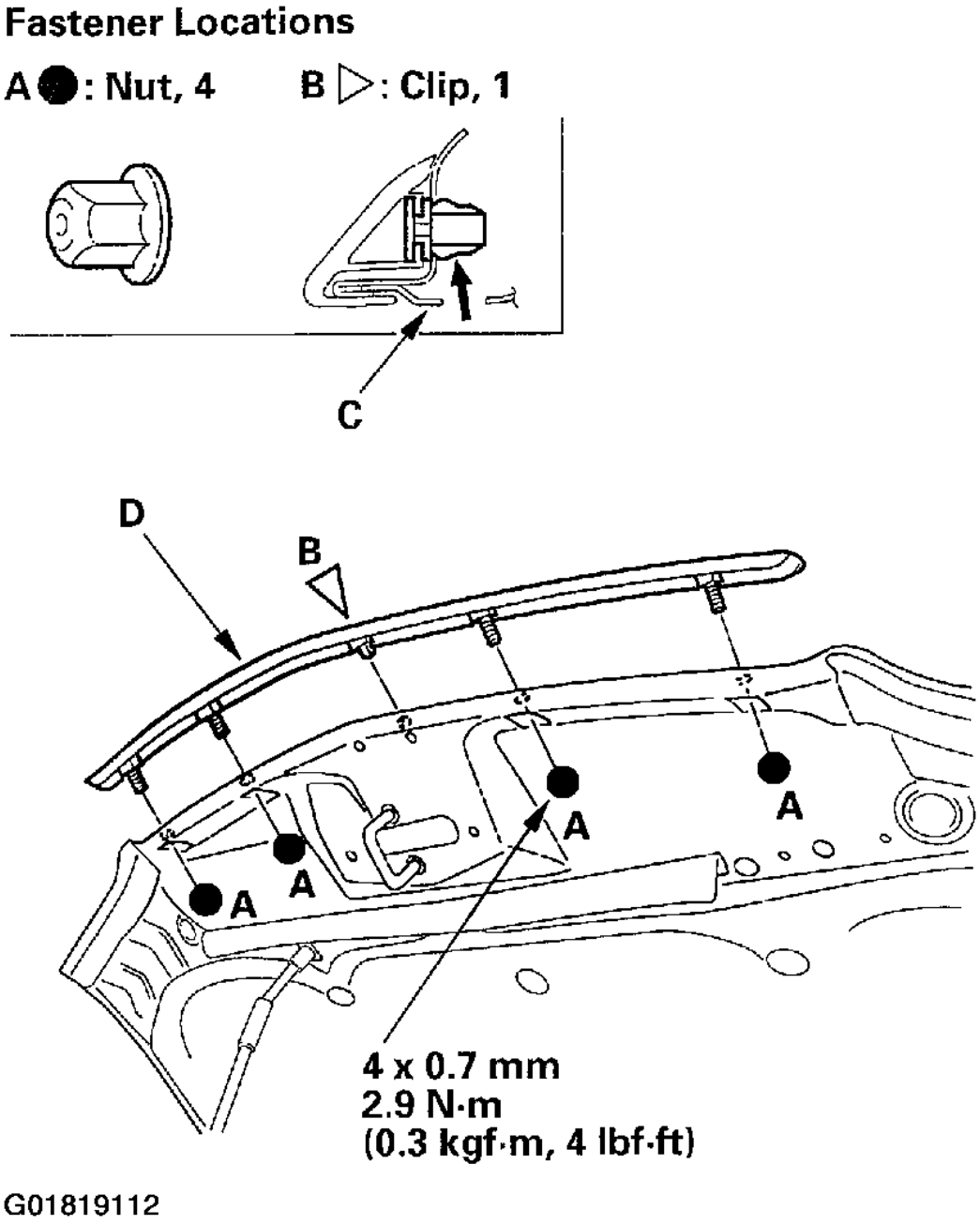


Fig. 16: Removing The Hood Molding

2. Install the molding in the reverse order of removal, and replace the clip if it's damaged.

FRONT GRILLE REPLACEMENT

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NOTE:

- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to scratch the front bulkhead cover and front grille.**

1. Remove the clips (A, B, C), then remove the front bulkhead cover (D).

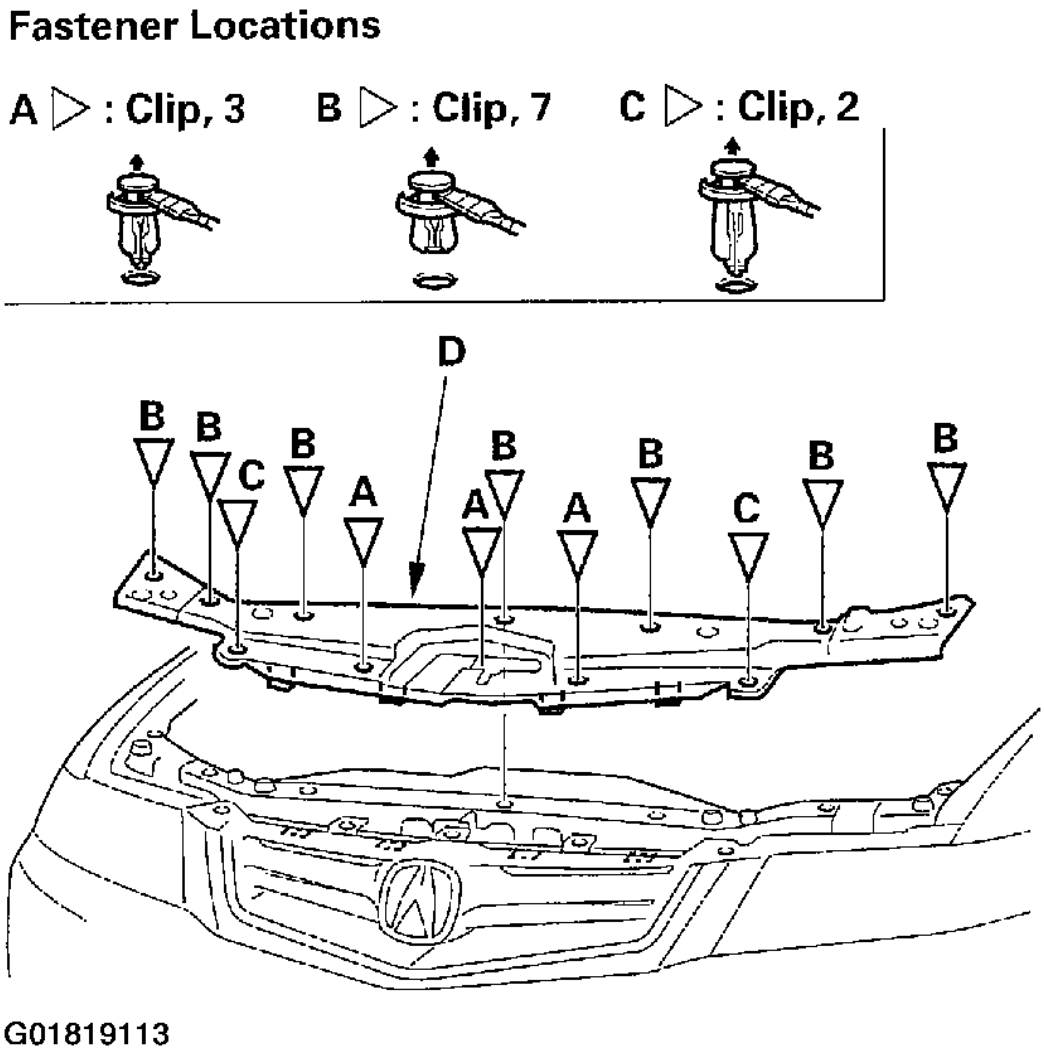


Fig. 17: Removing The Front Bulkhead Cover

2. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
3. Remove the clips, then remove the front grille (A). Take care not to drop the clips inside the front bumper.

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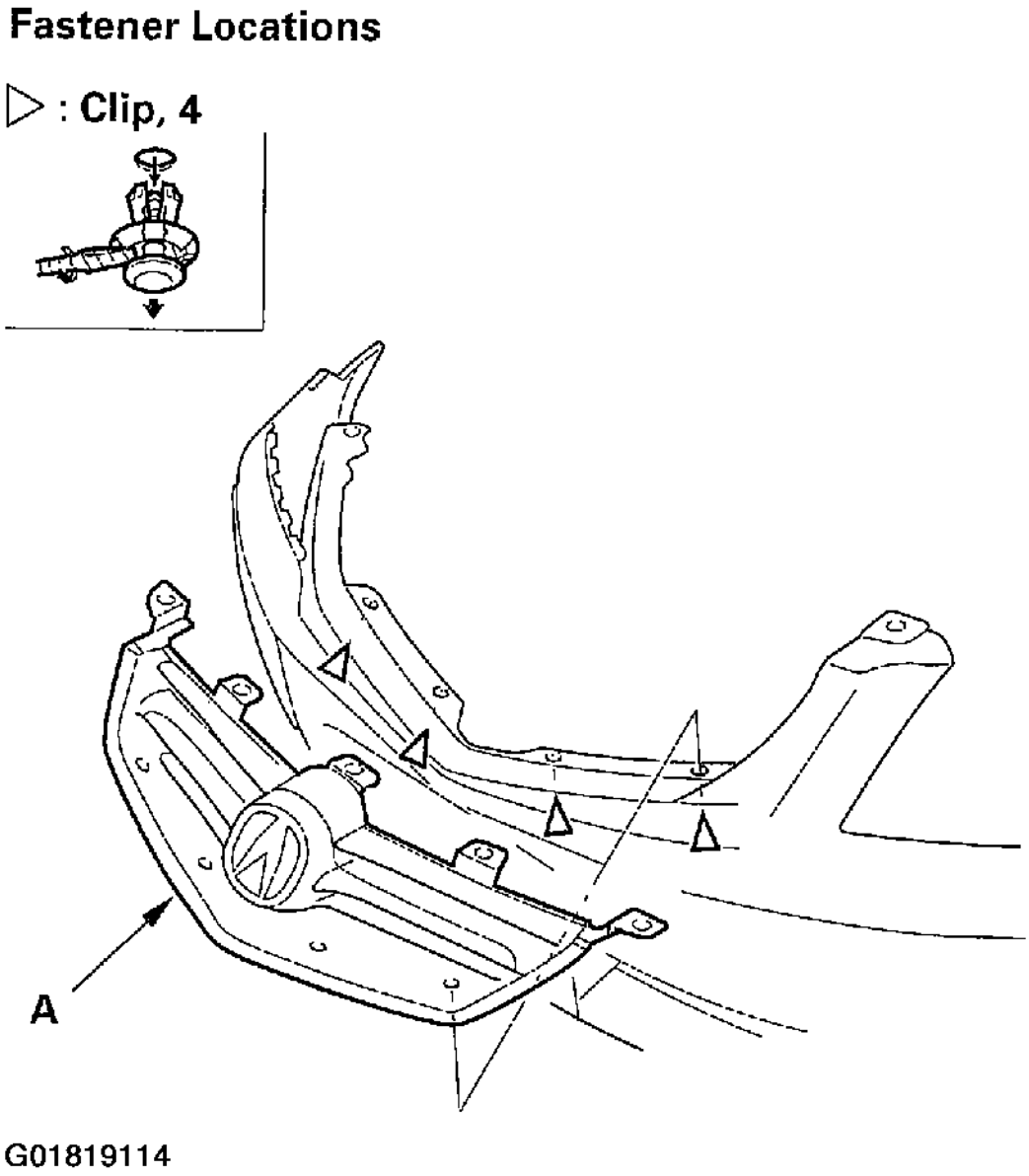


Fig. 18: Removing The Front Grille

4. Install the front grille in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Install the hook portions of the front grill into place securely.

FRONT FENDER TRIM REPLACEMENT

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NOTE: Take care not to scratch the body.

1. Remove the front fender trim (A).
   a. Using a clip remover, remove the clip (B) securing the front fender trim and cowl cover (C).
   b. Remove the clips (D) from the front bulkhead cover (E).
   c. Pull up the side edge of the front bulkhead cover, then pull up the front fender trim to release the clips (F), and release the hook (G) from the body.

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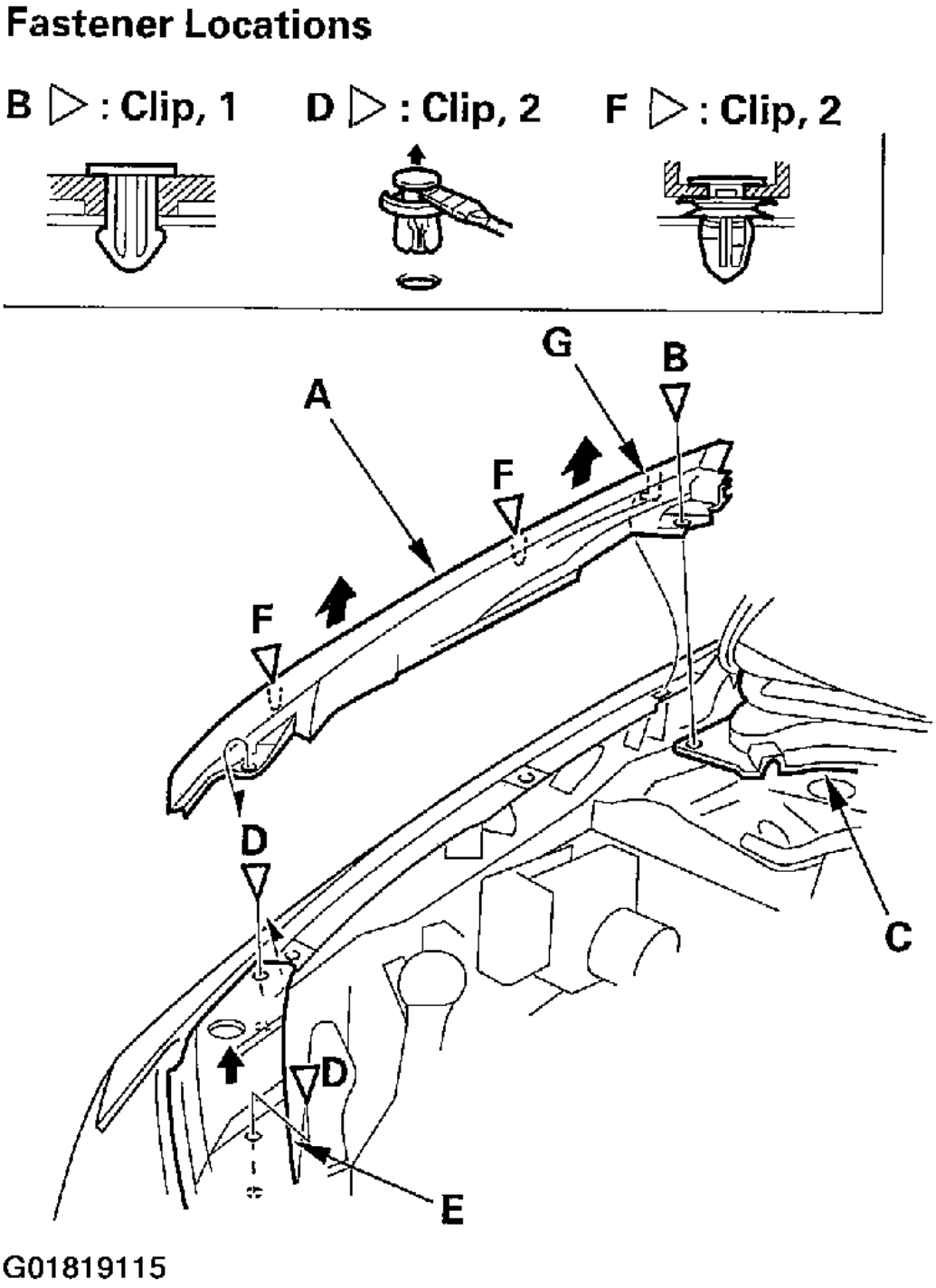


Fig. 19: Removing Front Fender Trim

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2. Install the trim in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Push the clip portions into place securely

COWL COVER REPLACEMENT

1. Remove these items:
   a. Windshield wiper arms (see **WIPER MOTOR REPLACEMENT**)
   b. Front fender trim, both sides (see **FRONT FENDER TRIM REPLACEMENT**)
2. Remove the hood rear seal (A) by pulling it out. Using a clip remover, detach the clip (B) from the cowl covers. Take care not to scratch the cowl covers.

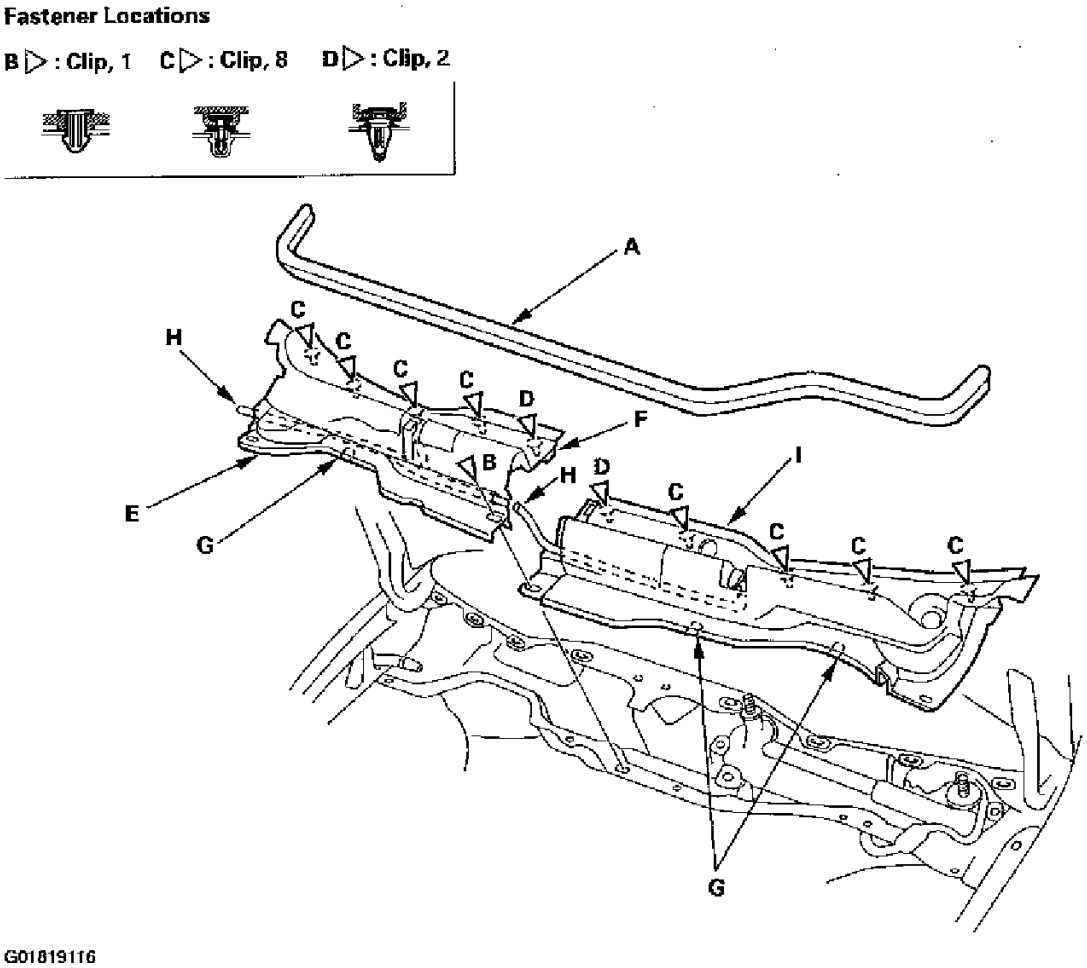


Fig. 20: Removing The Cowl Cover

3. Detach the clips (C, D) by carefully pulling the passenger's cowl cover (E) upward, and release the hook (F) on the passenger's cowl cover from the driver's, then remove the cover by releasing the hook (G).

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Take care not to scratch the body.

4. Disconnect the windshield washer tubes (H).
5. Detach the clips (C, D) by carefully pulling the driver's cowl cover (I) upward, then remove the cover by releasing the hooks (H). Take care not to scratch the body.
6. Install the covers in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the washer tubes are connected securely.
   - Push the clip portions into place securely.

ROOF MOLDING REPLACEMENT

NOTE:

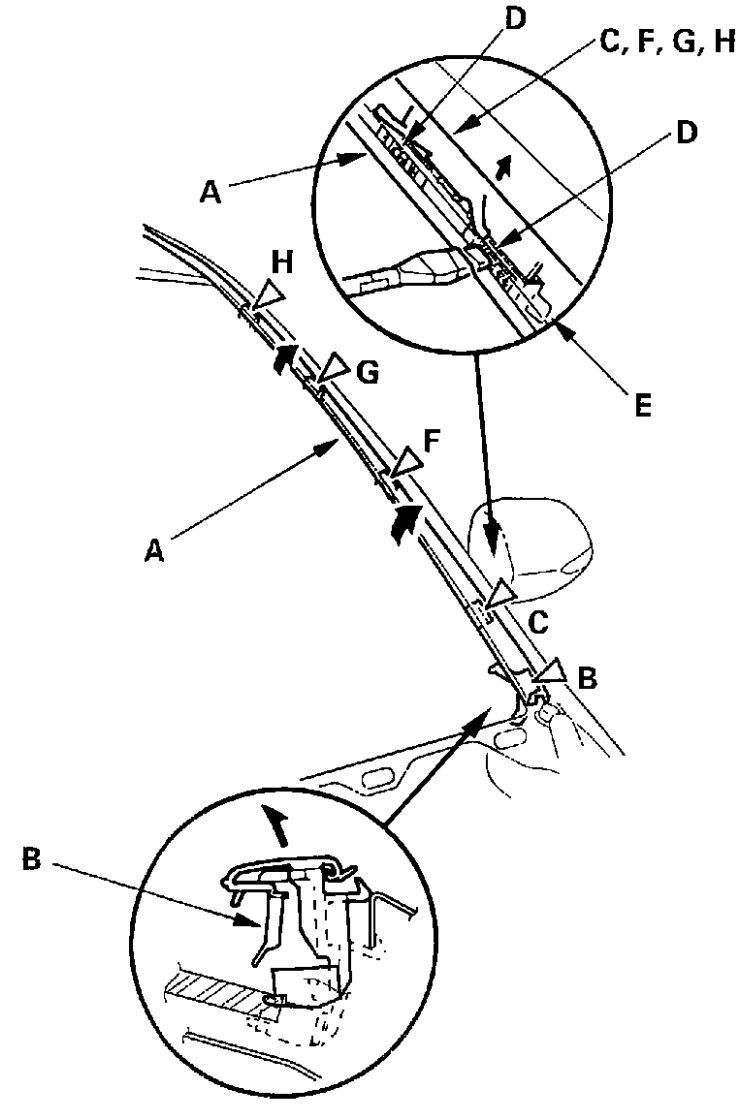
- **Put on gloves to protect your hands.**
- **Use a flat-tip screwdriver wrapped with protective tape.**

Molding Replacement

1. Remove the cowl cover (see **COWL COVER REPLACEMENT**).
2. Remove the windshield portion of the roof molding (A).
   a. Detach the bottom clip (B).
   b. Carefully insert a flat-tip screwdriver in under the molding next to the lower clip (C).
   c. Push the hooks (D) while pulling the molding up to release the clip from the retainer (E).
   d. Gradually work your way up to release each of the upper clip (F, G, H).

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B ▷ Left: Dark Gray, Right: Black
C ▷ Left: Natural, Right: Light Yellow
F ▷ Light Green
G ▷ Left: Dark Blue, Right: Light Blue
H ▷ Left: Dark Red, Right: Light Red



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Fig. 21: Removing The Windshield Portion Of The Roof Molding

3. Pull up the middle portion of the roof molding (A) to release it from the retainers (B).

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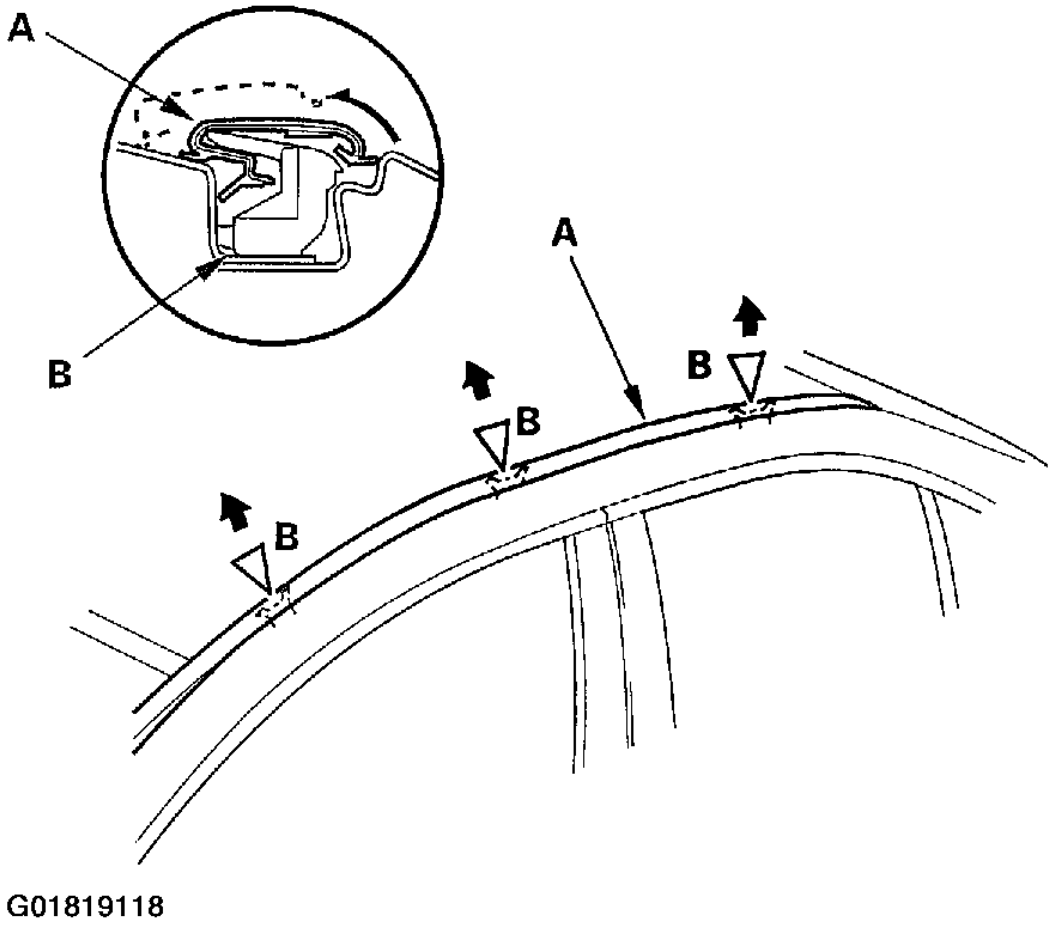


Fig. 22: Removing The Middle Portion Of The Roof Molding

4. Pull up and release the rear end of the roof molding (A) from the pin (B), then remove the roof molding.

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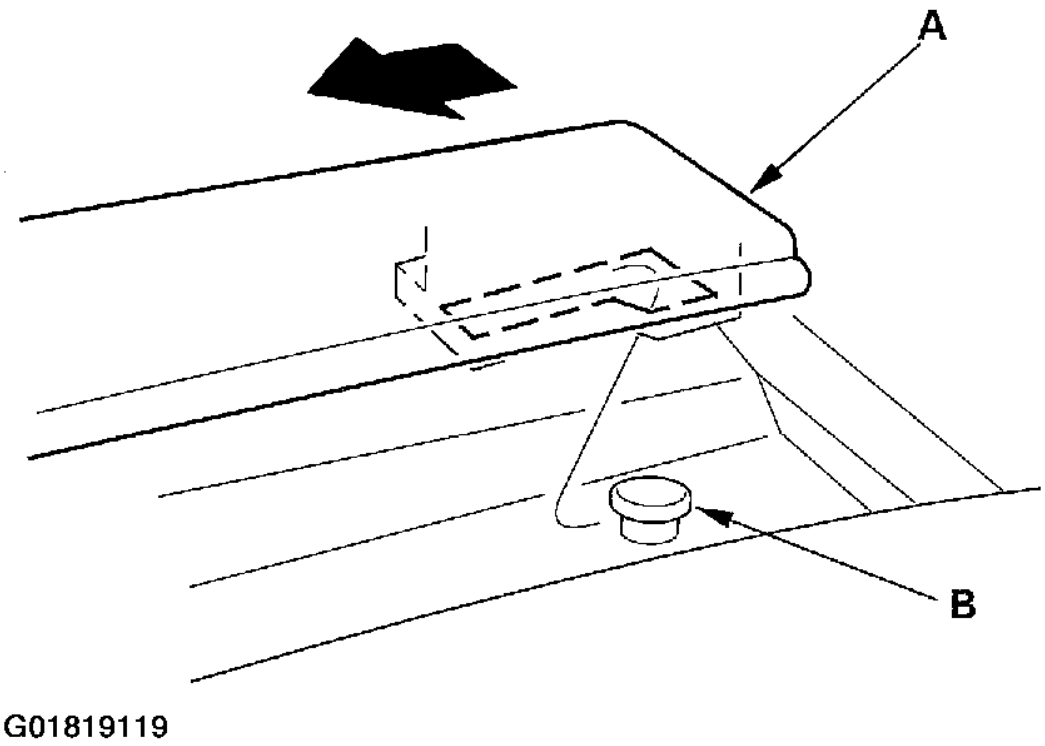


Fig. 23: Removing The Rear Portion Of The Roof Molding

5. Install the molding in the reverse order of removal, and note these items:
   - Make sure the roof molding is installed securely.
   - Replace any damaged clips.

Retainer Replacement

1. Gradually scrape off the adhesive tape (A) under the retainers (B) while heating it with the heat gun.

NOTE:

- **Do not heat the painted body surface around the retainers too much to prevent damage.**
- **To keep the exterior resin parts near the A-pillar from being overheated by the heat gun, wrap them with an aluminum foil.**

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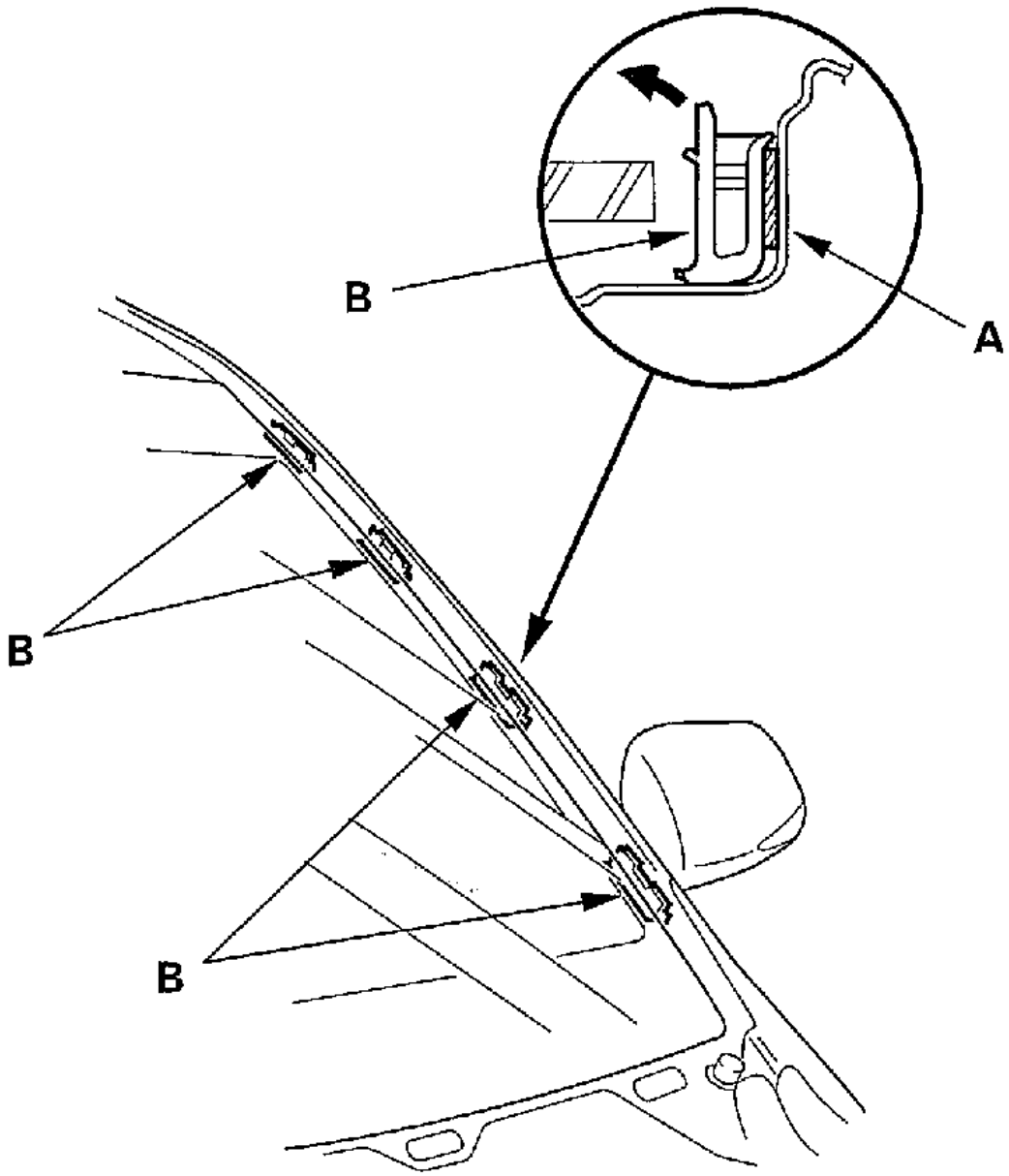


Fig. 24: Scraping Off The Adhesive Tape Under The Retainers

2. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
3. Install the upper retainers (A) and the lower retainers (B).
    a. Peel the adhesive backing away from the upper and lower retainers.

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b. Line up the retainers with the alignment marks (C) on the body, and glue the retainers with adhesive tape (3M 9259, or equivalent) (D).
c. Apply epoxy two part mixing adhesive (E) around the edge of the retainers as shown.

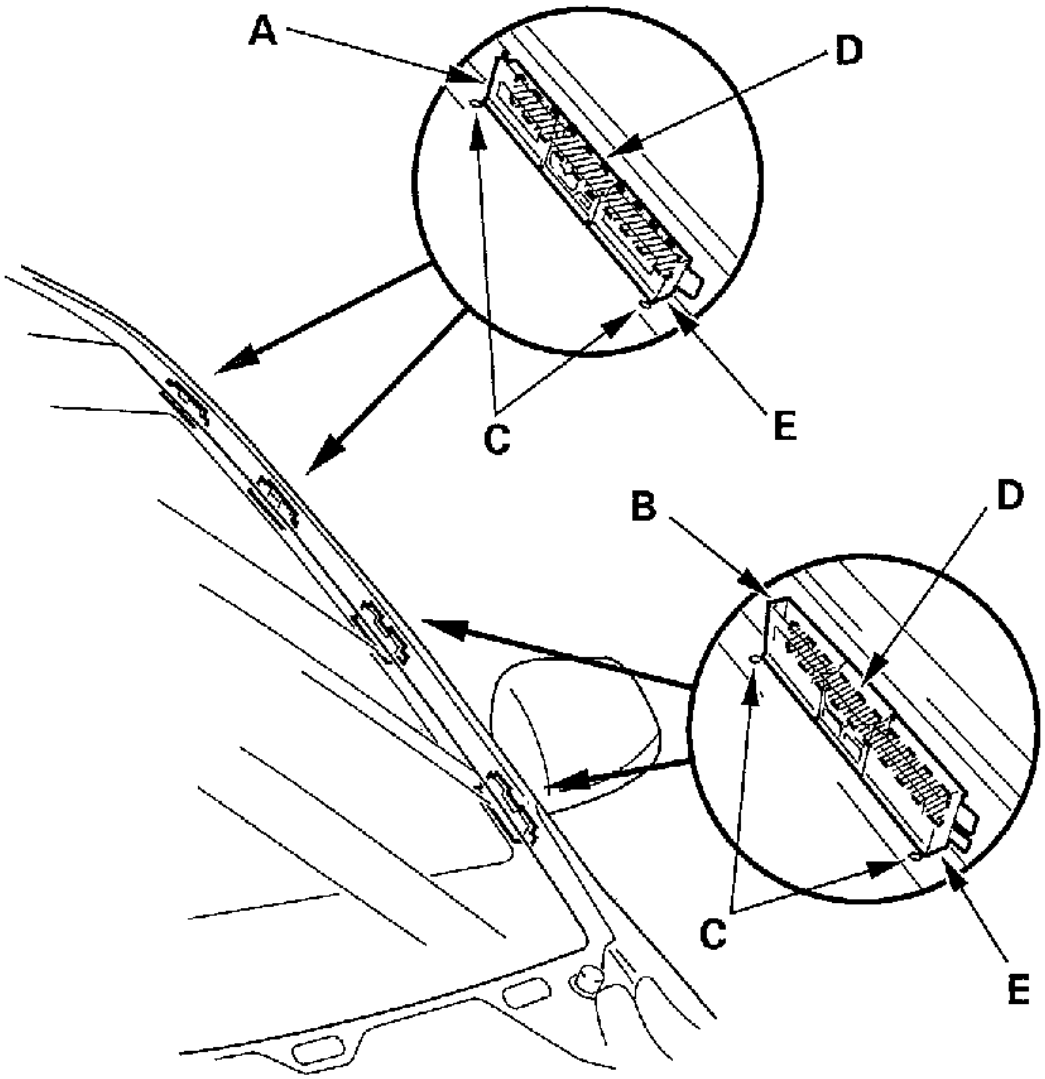


Fig. 25: Applying Epoxy Two Part Mixing Adhesive Around The Edge Of The Retainers

SIDE SILL PANEL REPLACEMENT

1. Remove the side sill panel (A).
    a. On the front of the rear wheel arch, remove the screws (B).

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b. Remove the bolt (C) securing the side sill panel and middle floor under cover (D), and remove the clips (E, F).
c. Slide the side sill panel rearward and remove it. The side clips (G, H) will stay in the body.
d. Remove the side clips (G) by turning the clip 45° from the body, and using a clip remover, remove the side clip (H).
e. On the back of the front wheel arch, remove three screws (I), and on a Canadian model, remove the front splash guard (J).
f. Turn the side sill inner trim (L) 45° to release the side clip (G), then remove the trim.

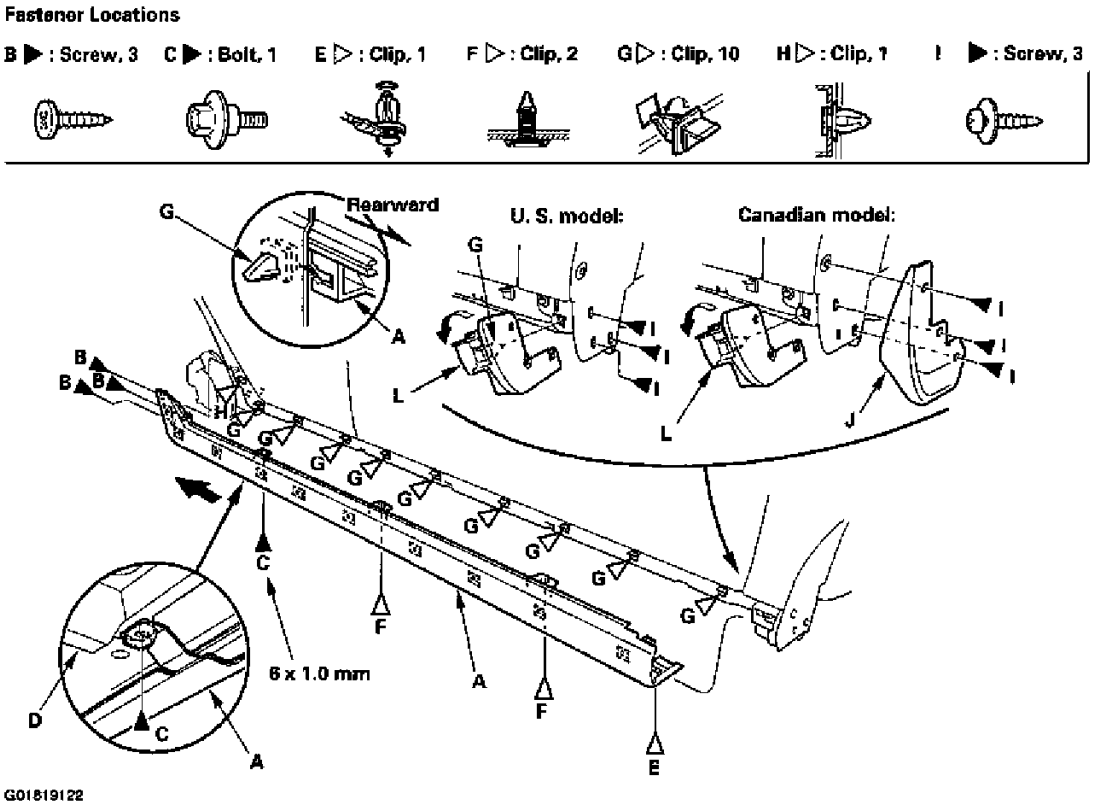


Fig. 26: Removing The Side Sill Panel

2. Replace any damaged clips.
3. Install the side clips (A, B) on the side sill panel (C).

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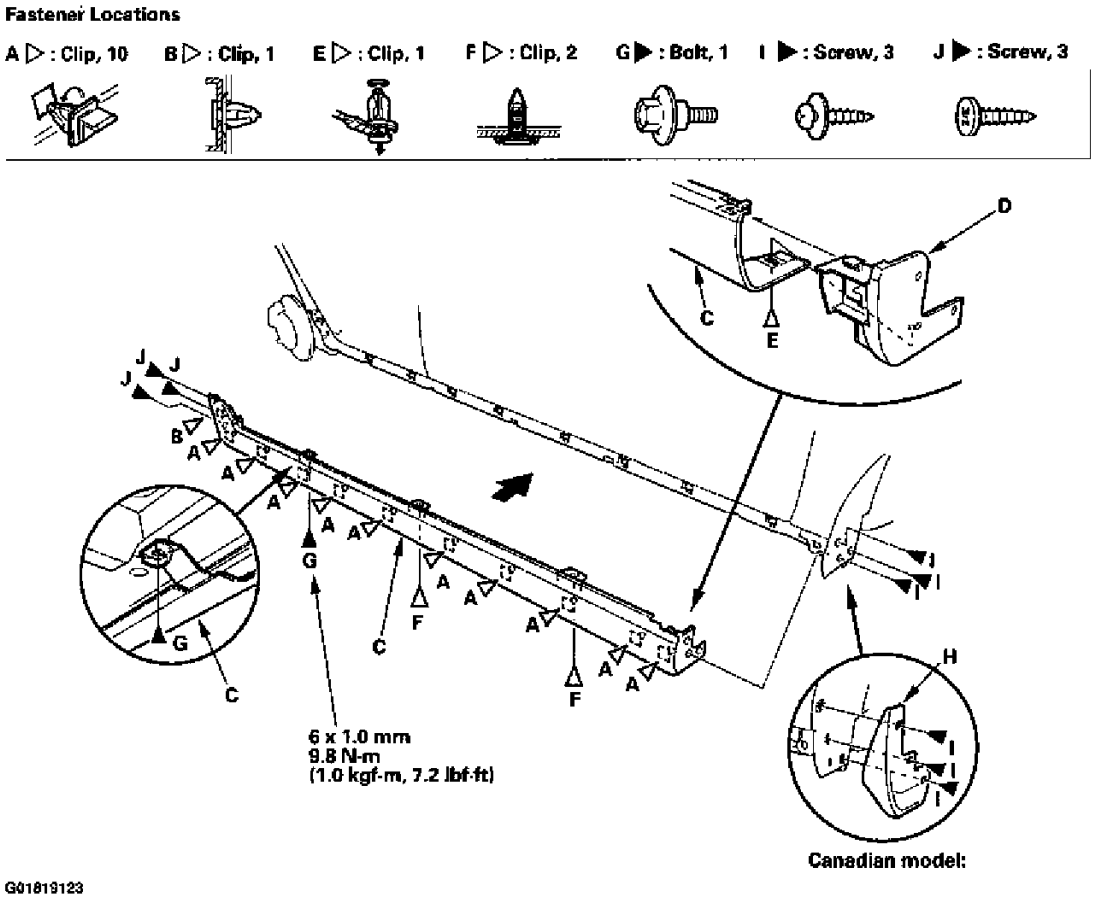


Fig. 27: Installing The Side Sill Panel

4. Install the side sill inner trim (D) on the side sill panel, and install the clip (E).
5. Hold the panel up, and fit all the side clips into the holes in the body, then push on the panel until the clips snap into place.
6. Install all the expansion clips (F) and bolt (G).
7. Install the front splash guard (H) (Canadian model), and all the screws (I, J).

REAR LICENSE TRIM REPLACEMENT

1. Remove the inner taillight, one side (see **TAILLIGHT REPLACEMENT**).
2. Detach the clips, and on both sides of the rear license trim (A), release the edge of the trim from the inner taillight (B), then remove the trim. Take care not to scratch the trunk lid.

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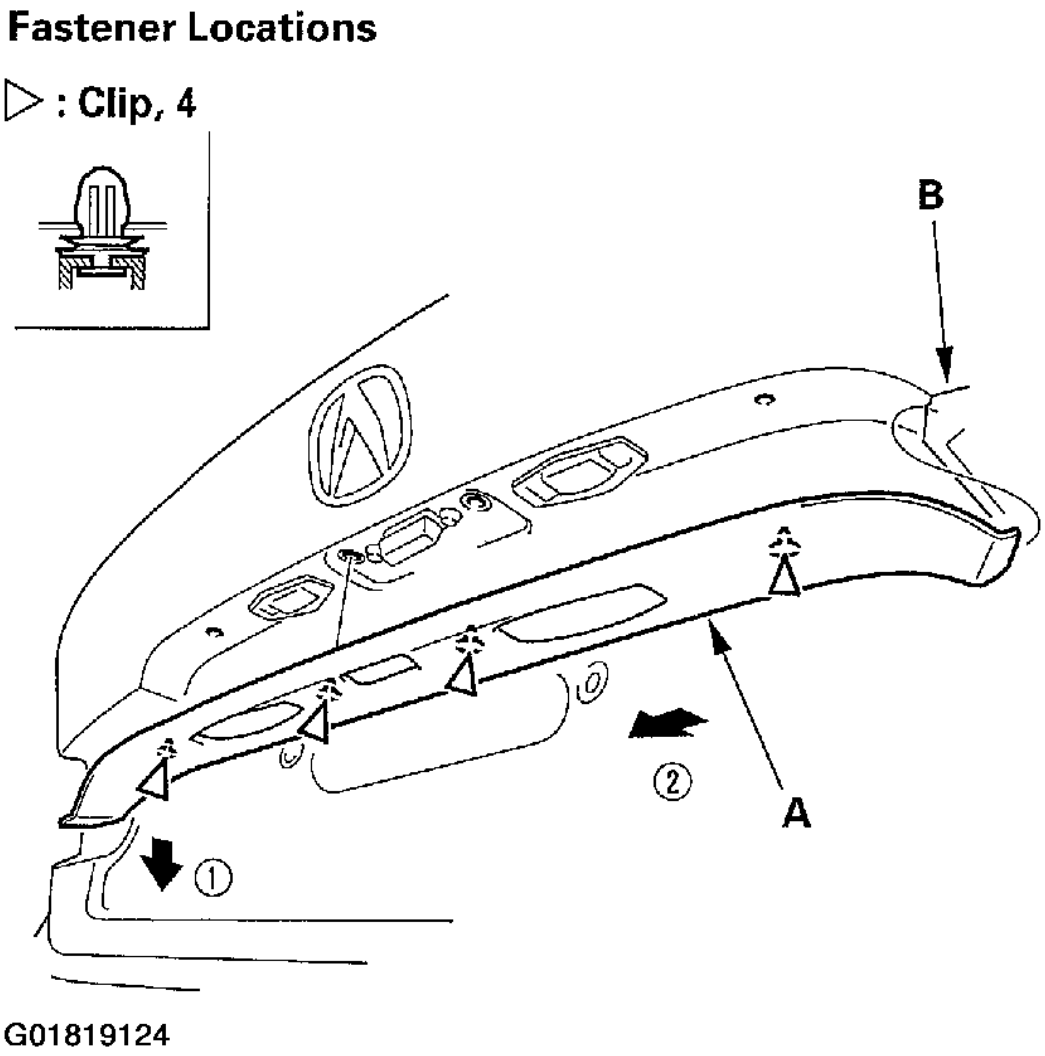


Fig. 28: Removing Rear License Trim

3. Install the trim in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Push the clip portions into place securely.

REAR UNDER COVER REPLACEMENT

1. Remove the clips (A) and bolts (B), then remove the rear under cover (C). Take care not to scratch the rear bumper (D).

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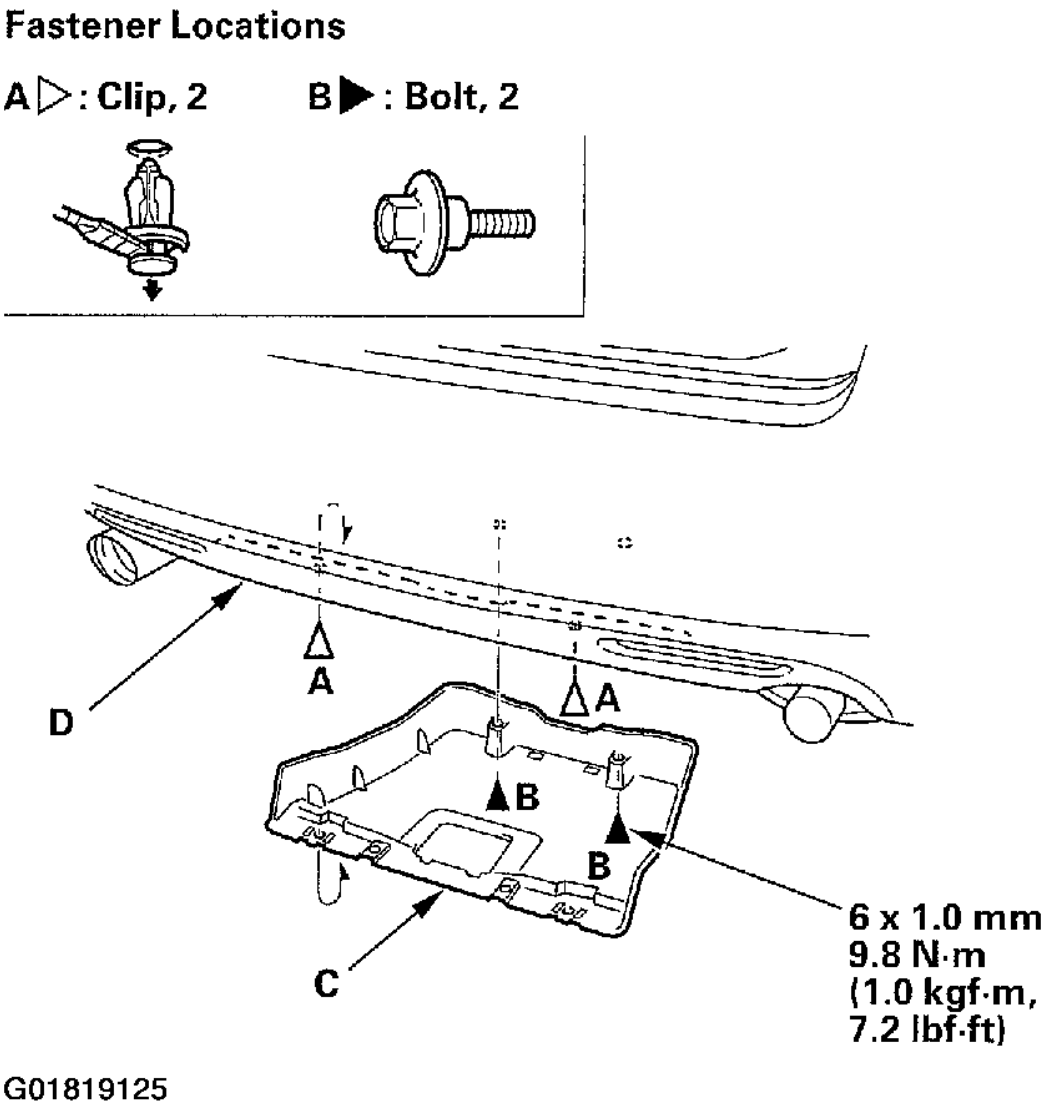


Fig. 29: Removing Rear Under Cover

2. Install the cover in the reverse order of removal, and replace any damaged clips.

EMBLEM/STICKER REPLACEMENT

NOTE: When removing the emblems/sticker, take care not to scratch the body.

1. Clean the body surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
2. Apply the emblem/sticker where shown. When installing the LEV sticker on the inside surface of the rear

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door quarter glass, align the sticker application tape with the edge of the glass mark as shown, then press the sticker into place, and remove the application tape.

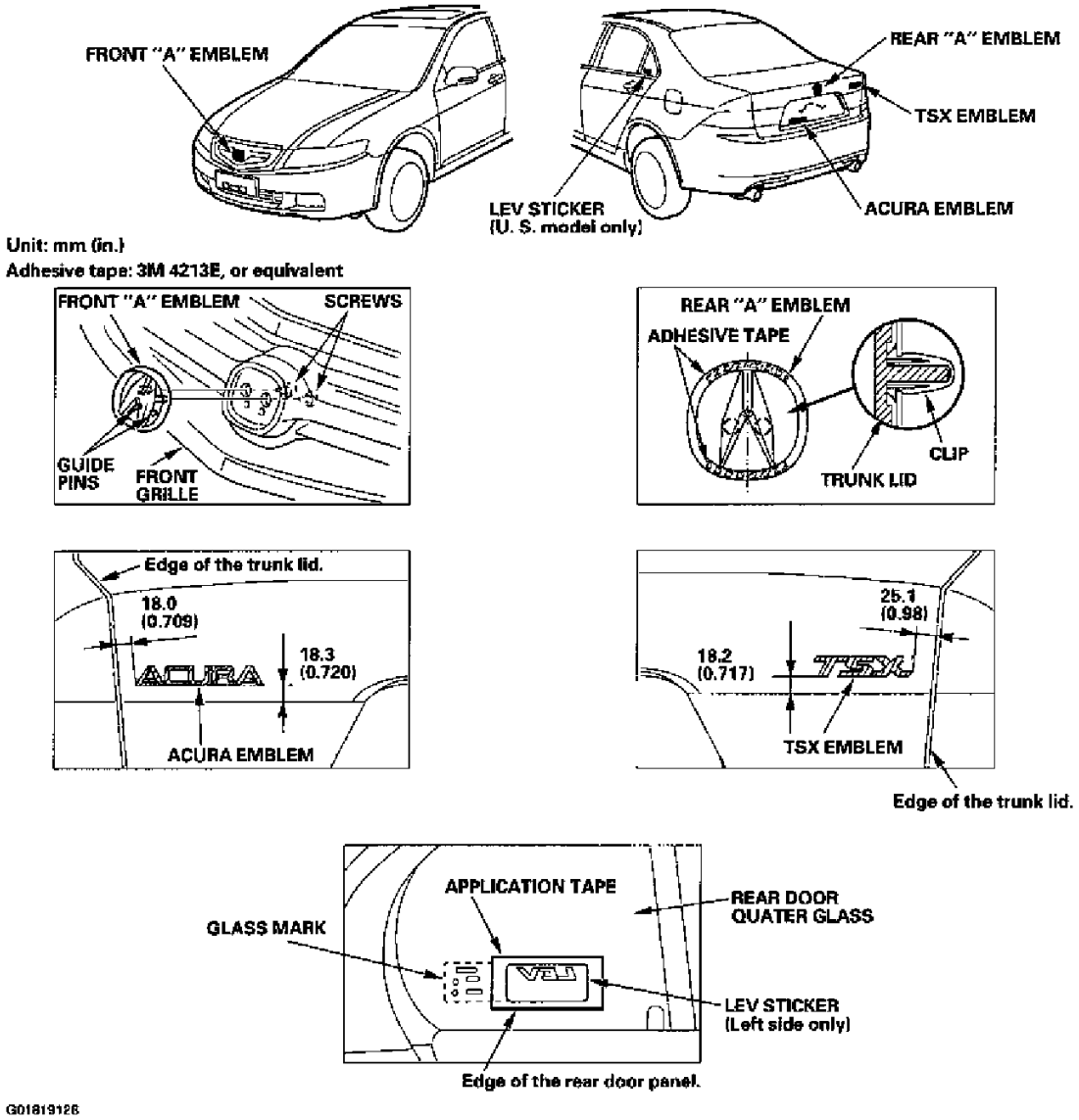


Fig. 30: Removing & Installing Emblem/Sticker

FENDERWELL

FRONT INNER FENDER REPLACEMENT

NOTE: Take care not to scratch the body.

1. Remove the front inner fender (A).

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a. On the back of the wheel arch, remove the screws (B) If equipped, remove the front splash guard (C) (Canadian model).
b. From under the front bumper (D), remove the bolt (E) securing the front bumper, splash shield (F), and front inner fender, and remove the clip (G) securing the front bumper and front inner fender.
c. From the wheel arch, remove the clips (H, I, J) securing the front inner fender (and splash shield) on the body.
d. Release the hook (K) of the splash shield, then remove the front inner fender.

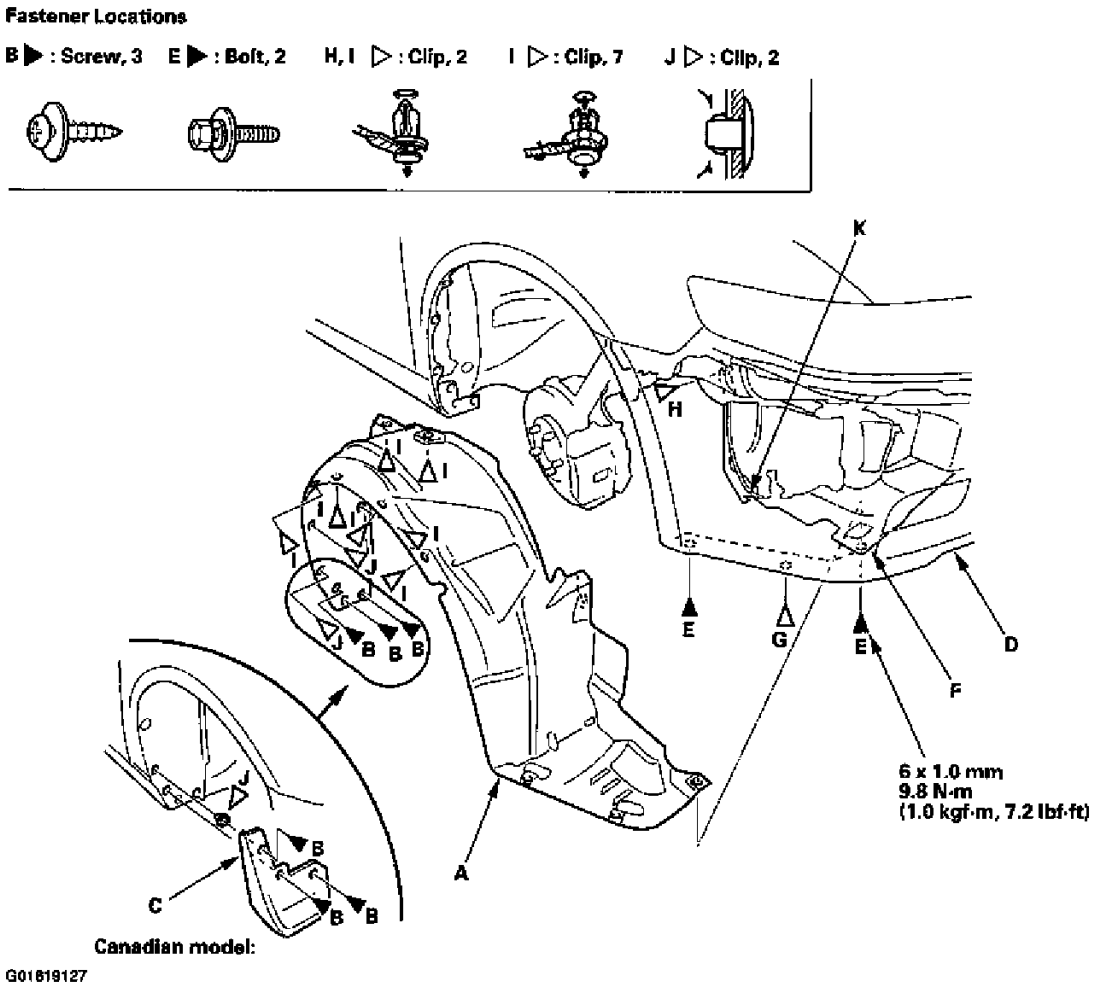


Fig. 31: Removing Front Inner Fender

2. Install the inner fender in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Push the clips into place securely.

SPLASH SHIELD REPLACEMENT

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NOTE: Take care not to scratch the body.

1. Remove the splash shield (A).
   a. From both wheel arch, remove the bolts (B), clips (C), and clip (D) securing the front inner fender (E) and splash shield (on the body).
   b. From under the front bumper (F), remove the clips (C), and bolts (G).
   c. Release the hooks (H) of the splash shield, then pull the splash shield out.

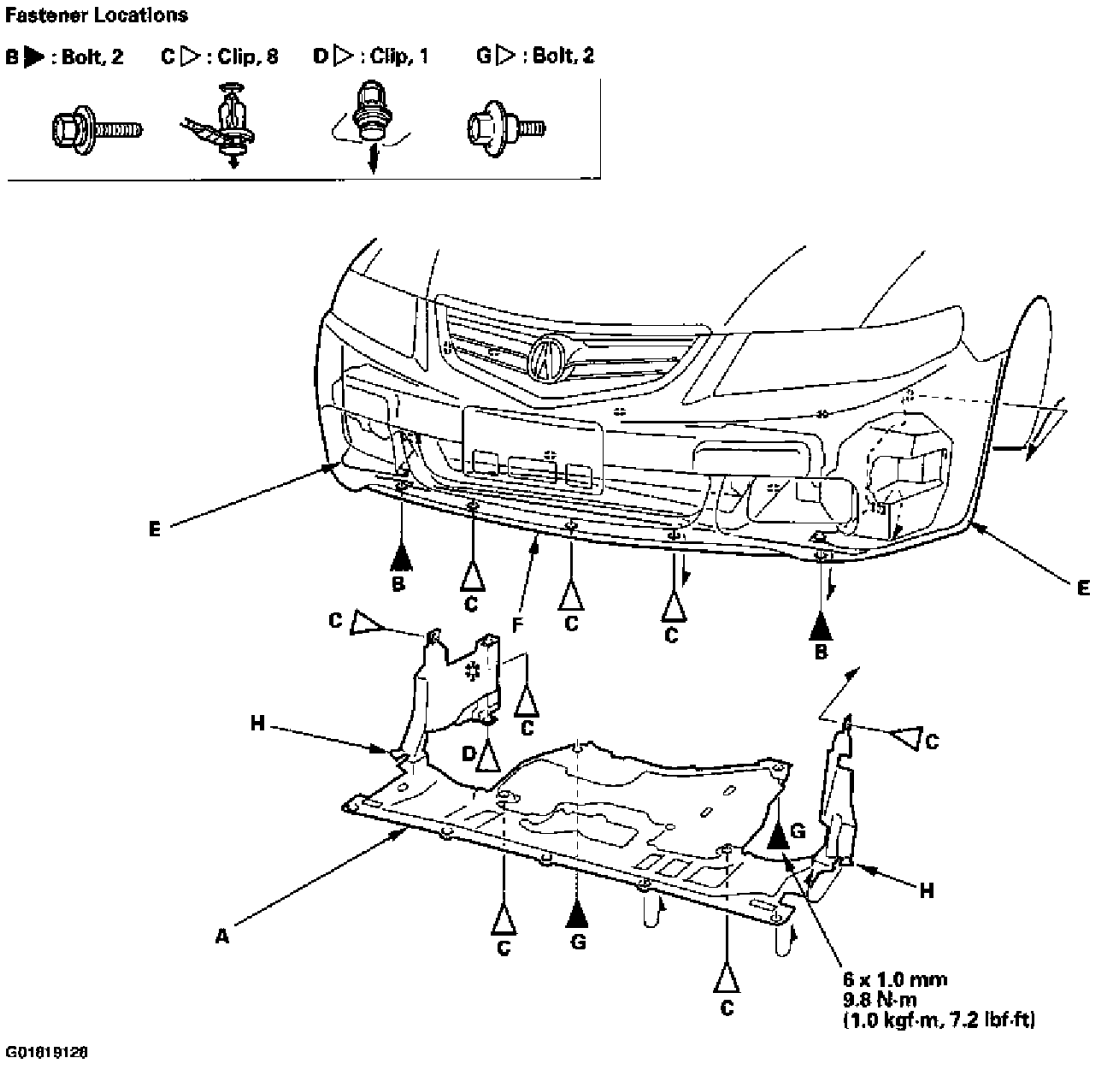


Fig. 32: Removing Splash Shield

2. Install the splash shield in the reverse order of removal, and note these items:
   - Replace any damaged clip.
   - Push the clips into place securely.

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FRONT FENDER FAIRING REPLACEMENT

1. Remove the front inner fender as necessary (see **FRONT INNER FENDER REPLACEMENT**).
2. Open the front door. Remove the upper clip, and from inside the door, remove the lower clip securing the front fender fairing (A) and front fender (B).

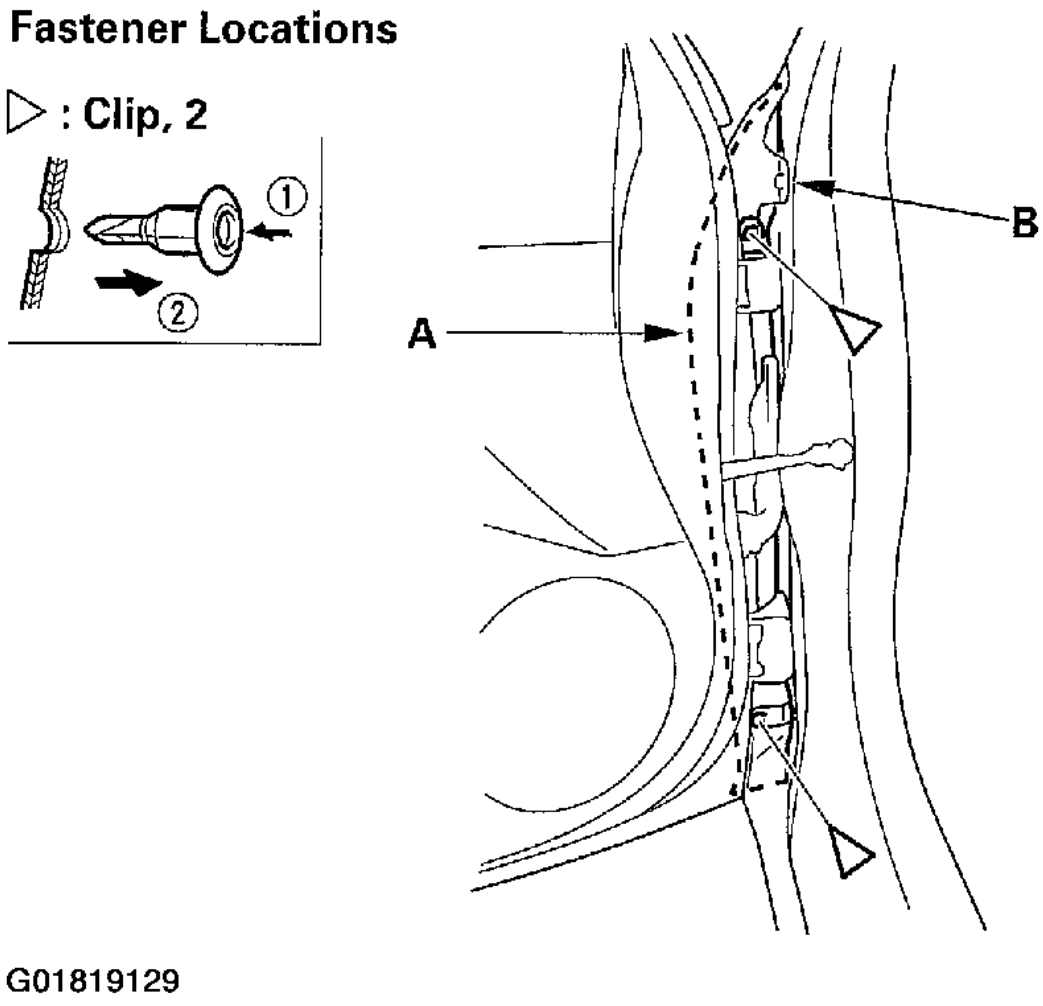


Fig. 33: Removing The Lower Clip Securing The Front Fender Fairing

3. From the wheel arch, release the clips.

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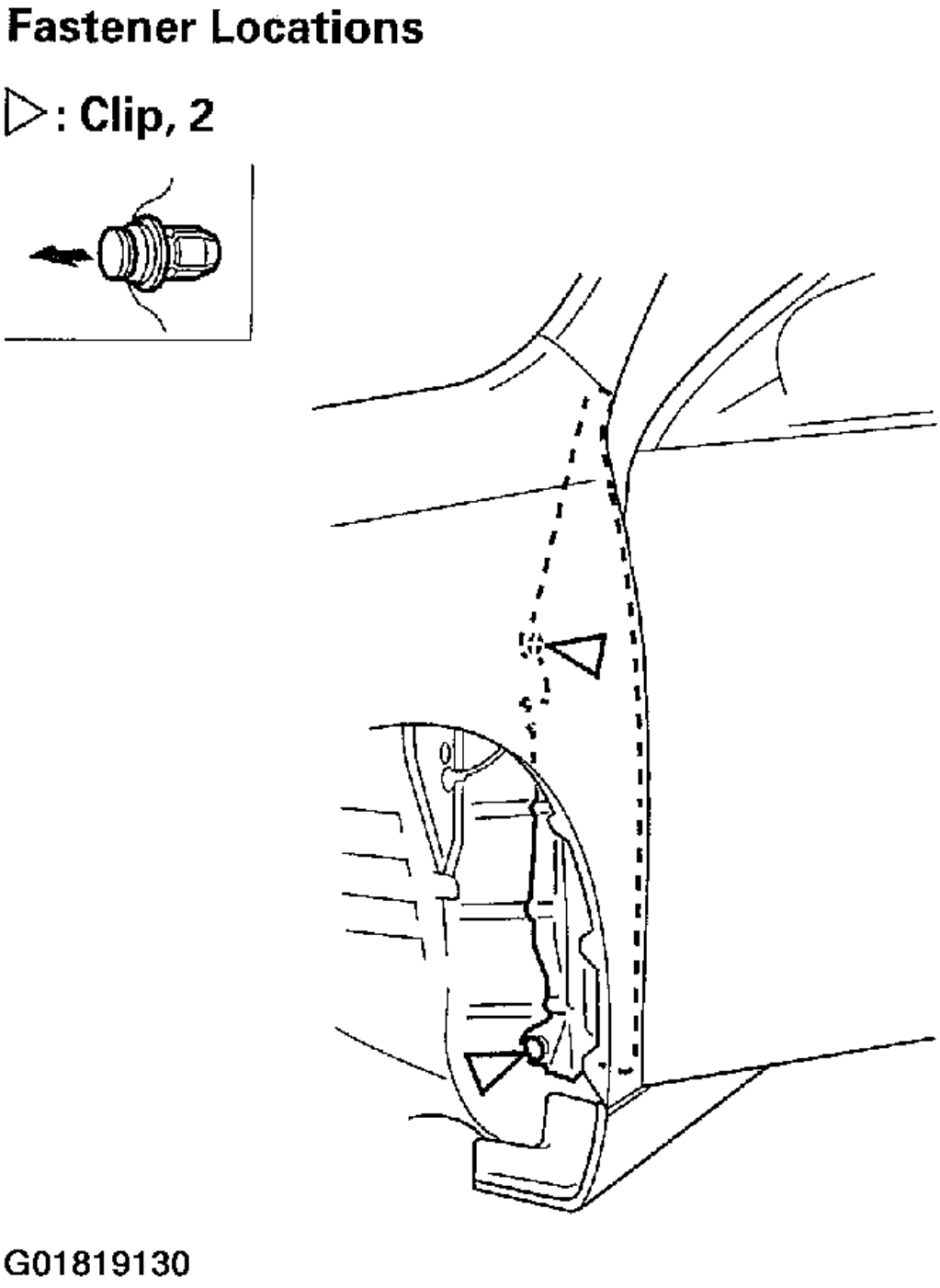


Fig. 34: Releasing The Clips

4. Remove the front fender fairing (A).

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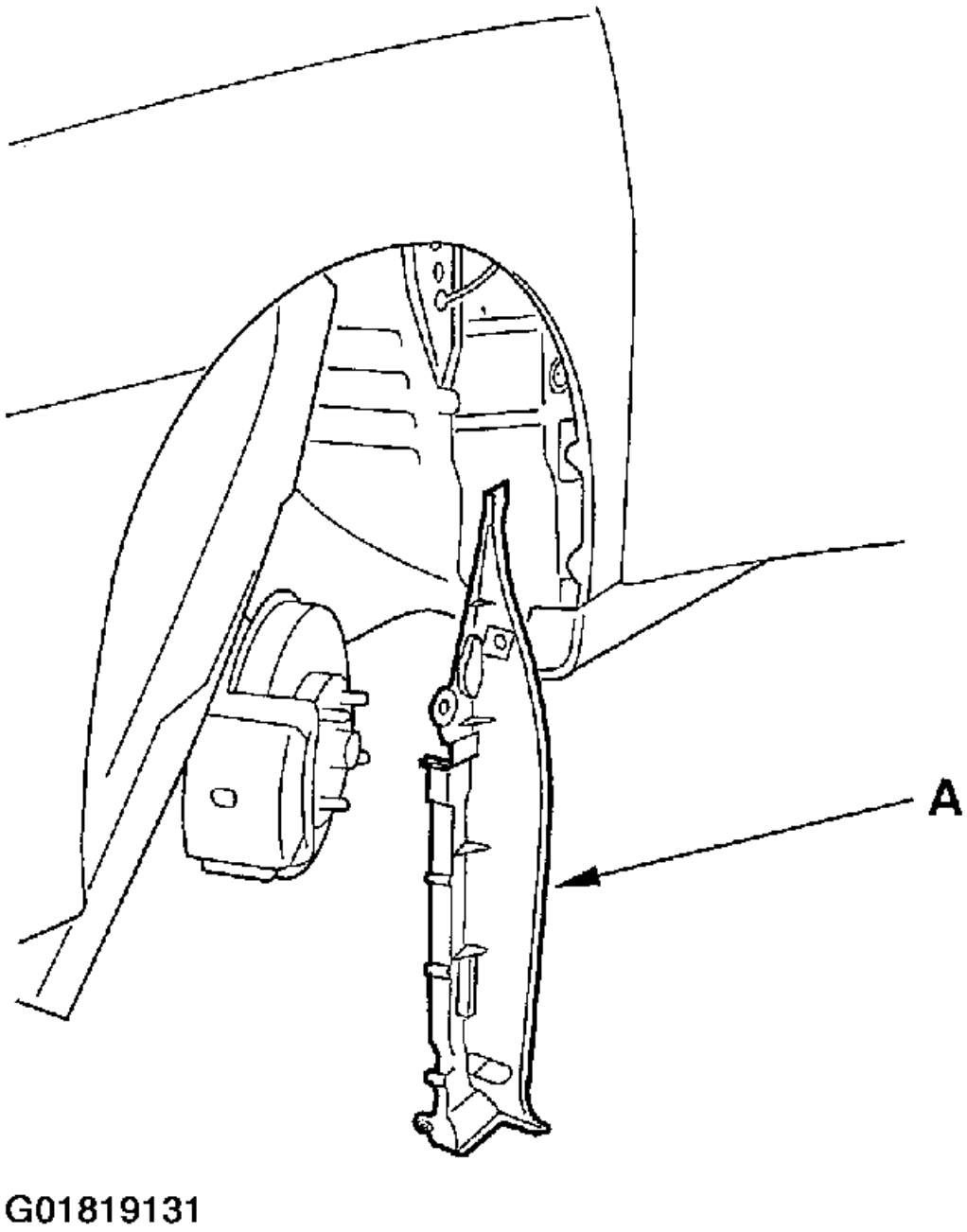


Fig. 35: Removing The Front Fender Fairing

5. Install the fender fairing in the reverse order of removal, and note these items:
   - Replace any damaged clips.

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- Before installing the clips in the door opening area, install the front fender fairing (A) to the front fender (B) properly as shown.
- Push the clips into place securely.

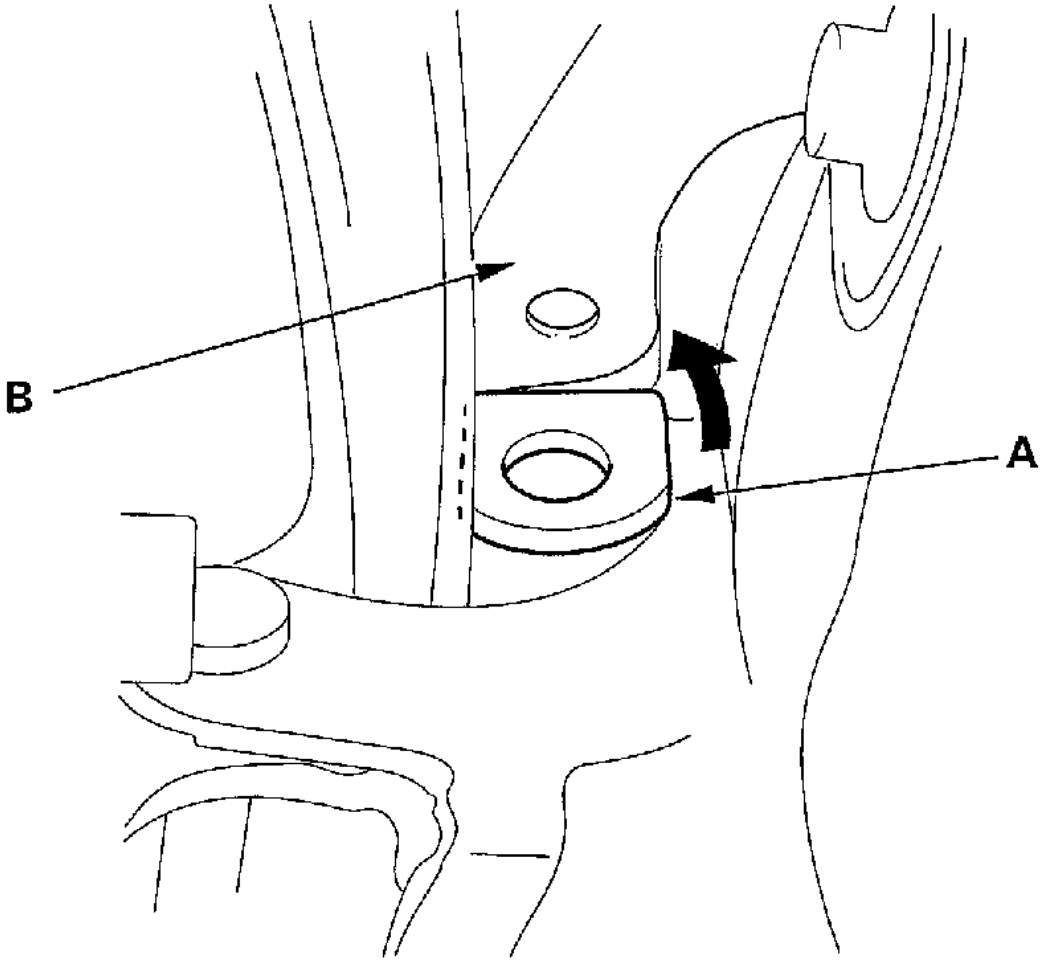


Fig. 36: Installing The Front Fender Fairing

REAR INNER FENDER REPLACEMENT

NOTE: Take care not to scratch the body.

1. Remove the rear inner fender (A).
   a. On the front of the wheel arch, remove the screws (B) securing the side sill panel (C) and rear inner

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fender, and the clip (D) securing the rear inner fender and middle floor under cover (E).

b. On the rear bumper (F), remove the screws (G).
c. From the wheel arch, remove the clips (H, I).
d. Pull the rear inner fender out.

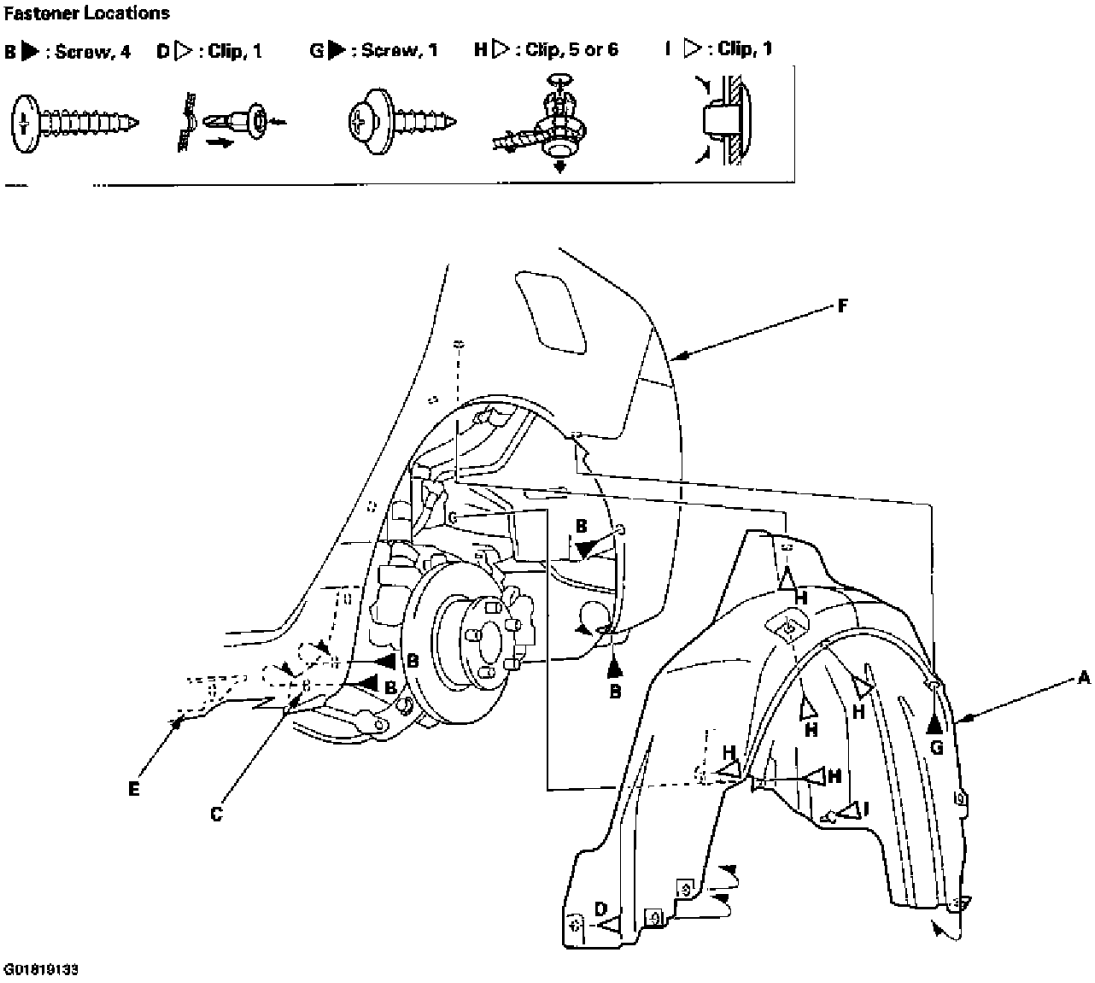


Fig. 37: Removing The Rear Inner Fender

2. Install the inner fender in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Push the clips into place securely.

REAR AIR OUTLET REPLACEMENT

1. Remove the rear bumper (see **REAR BUMPER REMOVAL/INSTALLATION**).
2. Detach the hooks (A), then remove the rear air outlet (B). Take care not to scratch the body.

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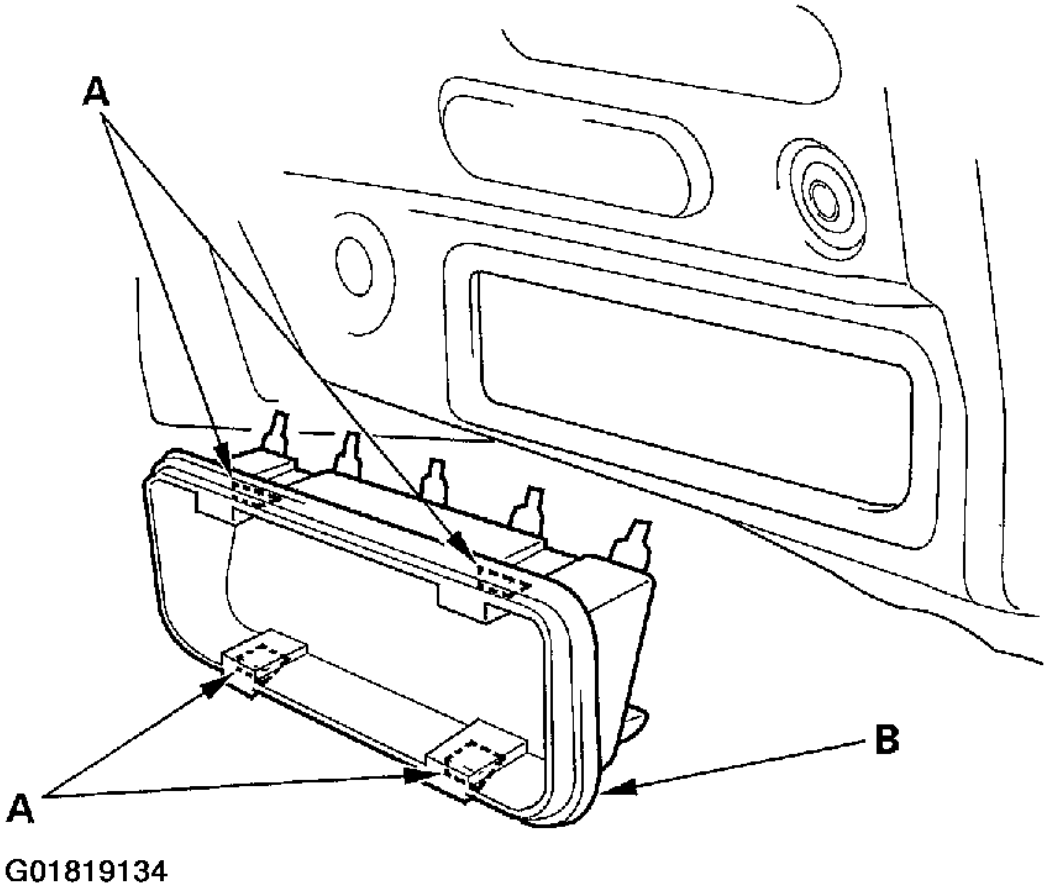


Fig. 38: Removing Rear Air Outlet

3. Install the air outlet by pushing on the hook portions until the hooks snap into place.

OPENERS

COMPONENT LOCATION INDEX

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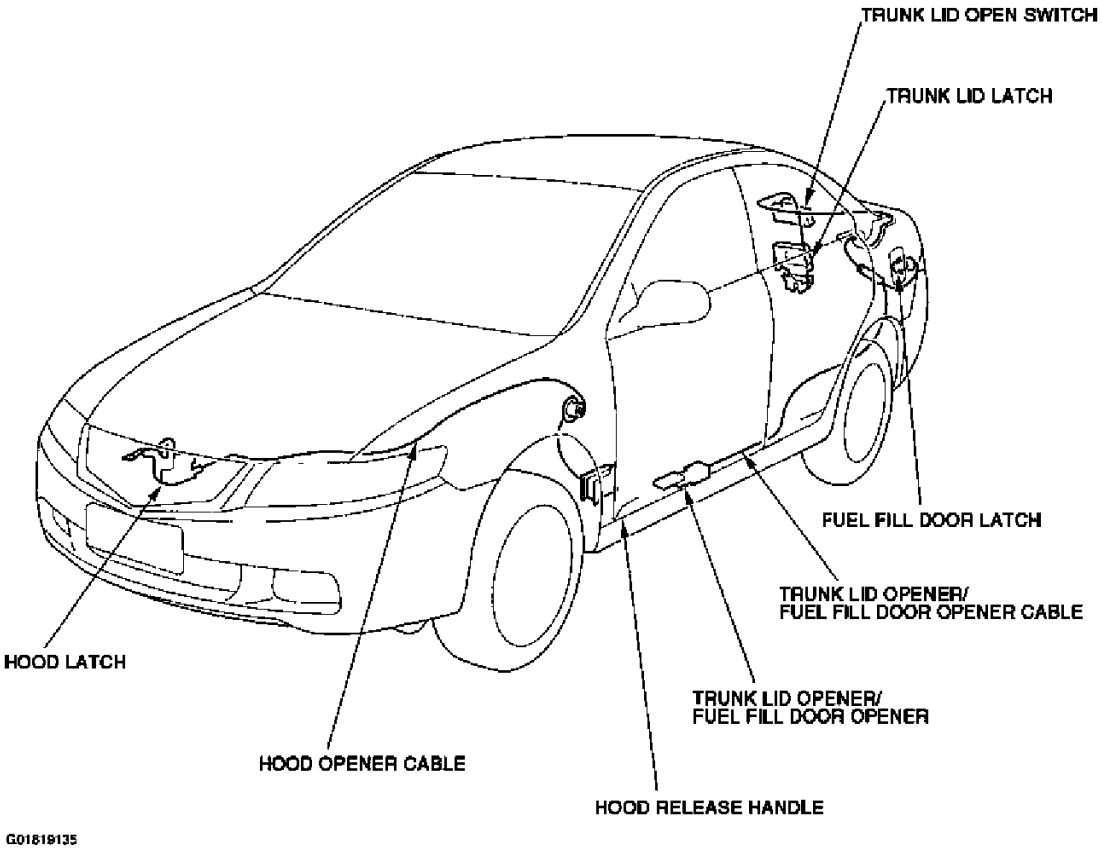


Fig. 39: Locating Openers Components

HOOD OPENER CABLE REPLACEMENT

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the body and related parts.**

1. Remove these items:
   a. Front fender trim (see **FRONT FENDER TRIM REPLACEMENT**)
   b. Front bulkhead cover (see step 1 of **HOOD MOLDING REPLACEMENT**)
   c. Front Inner fender (see **FRONT INNER FENDER REPLACEMENT**)
   d. Kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
2. Disconnect the hood opener cable (A) from the hood latch (B) (see **HOOD LATCH REPLACEMENT**).

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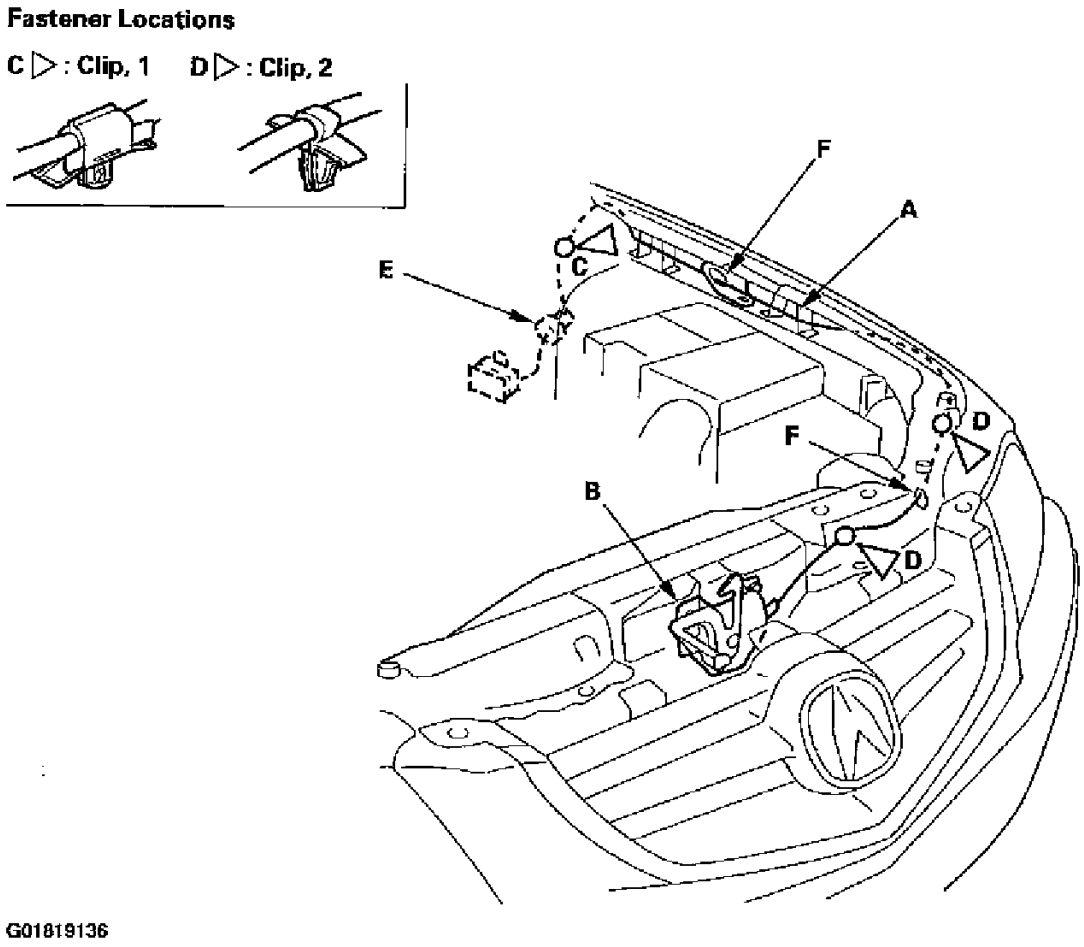


Fig. 40: Removing The Hood Opener Cable

3. Using a clip remover, detach the clips (C, D), and remove the grommet (E) from the body, then remove the hood opener cable from the vehicle. Take care not to bend the cable.
4. Install the cable in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Route the cable through the holes (F) in the body and front fender bulk head correctly.

TRUNK LID OPENER CABLE/FUEL FILL DOOR OPENER CABLE REPLACEMENT

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the body and related parts.**

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1. Remove these items form the left side of the vehicle:
   a. Front door sill trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   b. Rear door sill trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   c. B-pillar lower trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   d. Rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**)
   e. Trunk lid trim (see **TRIM REMOVAL/INSTALLATION - TRUNK LID**)
   f. Trunk rear trim panel (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**)
   g. Trunk side trim panel, left side (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**)
   h. Trunk lid hinge garnish (see **TRIM REMOVAL/INSTALLATION - TRUNK LID**)
2. Pull the carpet back as necessary.
3. Disconnect the trunk lid opener/fuel fill door opener cable (A) from the opener (B) (see **TRUNK LID OPENER/FUEL FILL DOOR OPENER REPLACEMENT**).

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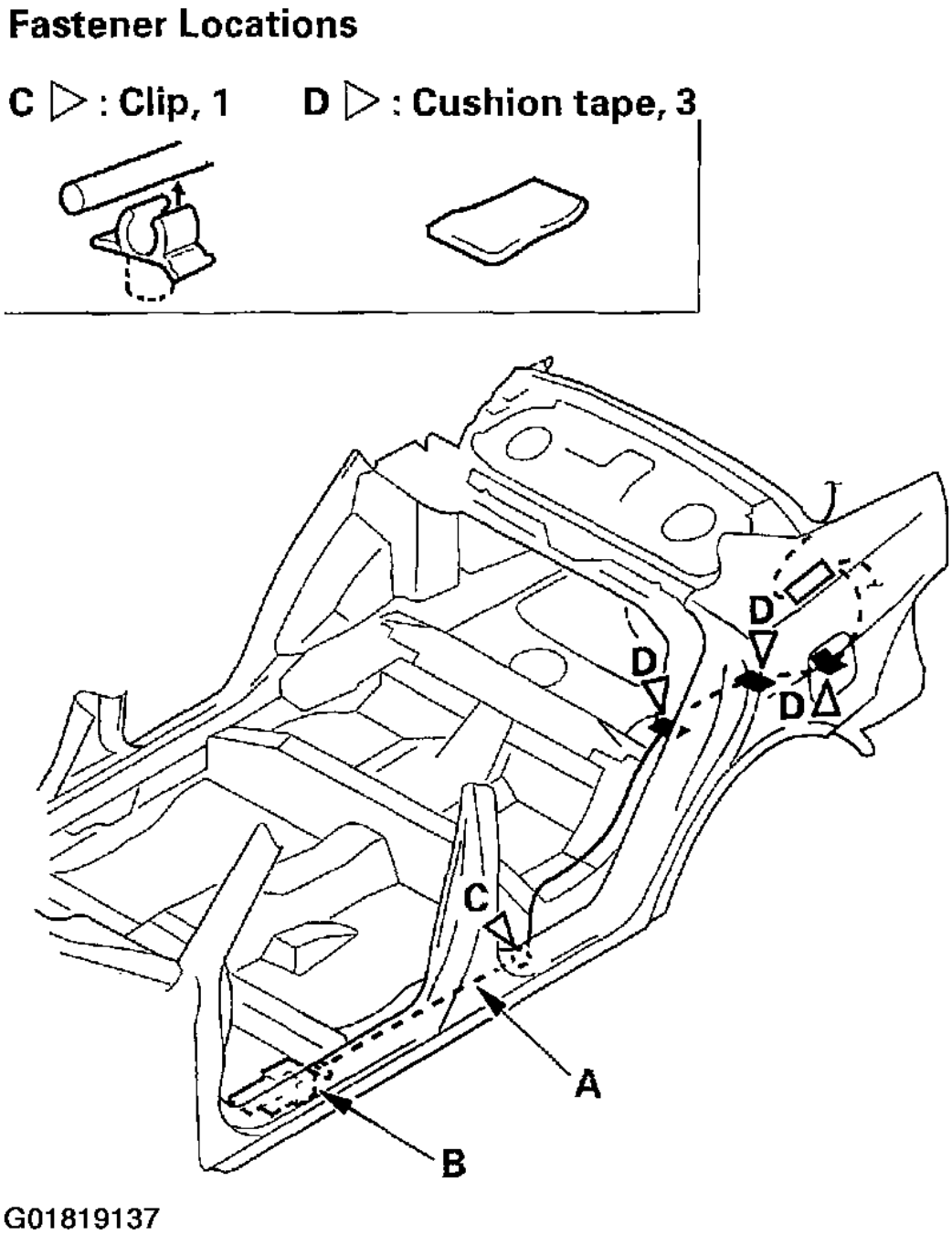


Fig. 41: Removing The Opener Cable

4. Release the opener cable from the clip (C). Remove the cushion tape (D).
5. Remove the fuel fill door latch (A) by turning it 90°, and detach the opener cable junction box (B) from

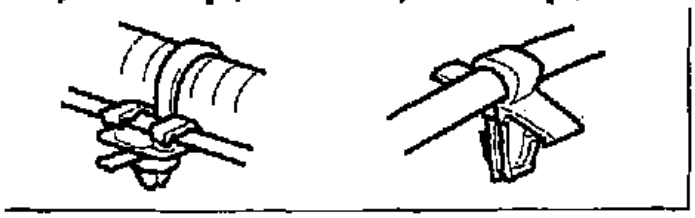
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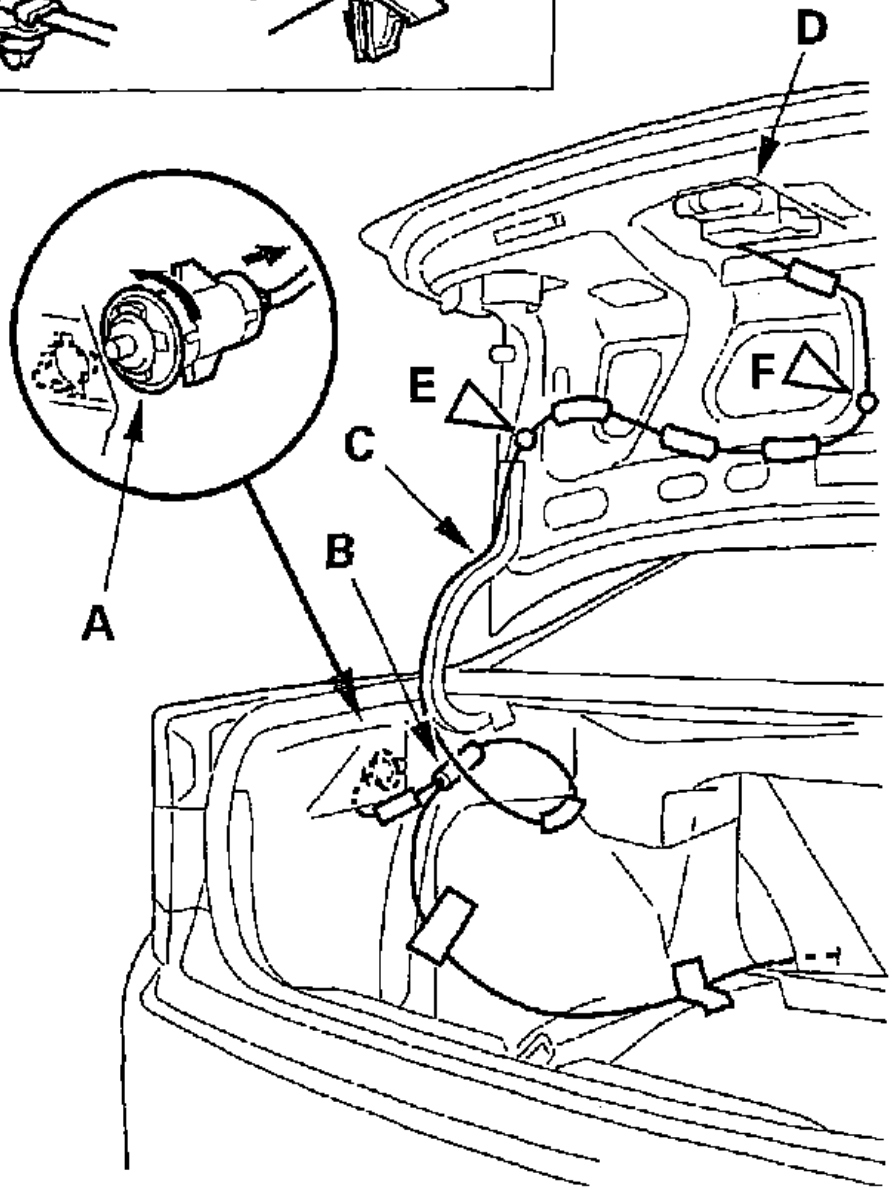
the body.

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Fastener Locations

E ▷ : Clip, 1 F ▷ : Clip, 1





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Fig. 42: Detaching The Opener Cable Junction Box

6. Disconnect the trunk lid opener cable (C) from the trunk lid latch (D) (see **Trunk Lid Latch Replacement**).
7. Using a clip remover. Release the trunk lid opener/fuel fill door opener cable from the clips (E, F).
8. Remove the trunk lid opener/fuel fill door opener cable from the vehicle. Take care not to bend the cable.
9. Install the opener cable in the reverse order of removal, and note these items:
    - Align the marks (A) on the opener cable (B) with the cable clips (C) and cushion tape (D) as shown.
    - Replace any damaged clips.

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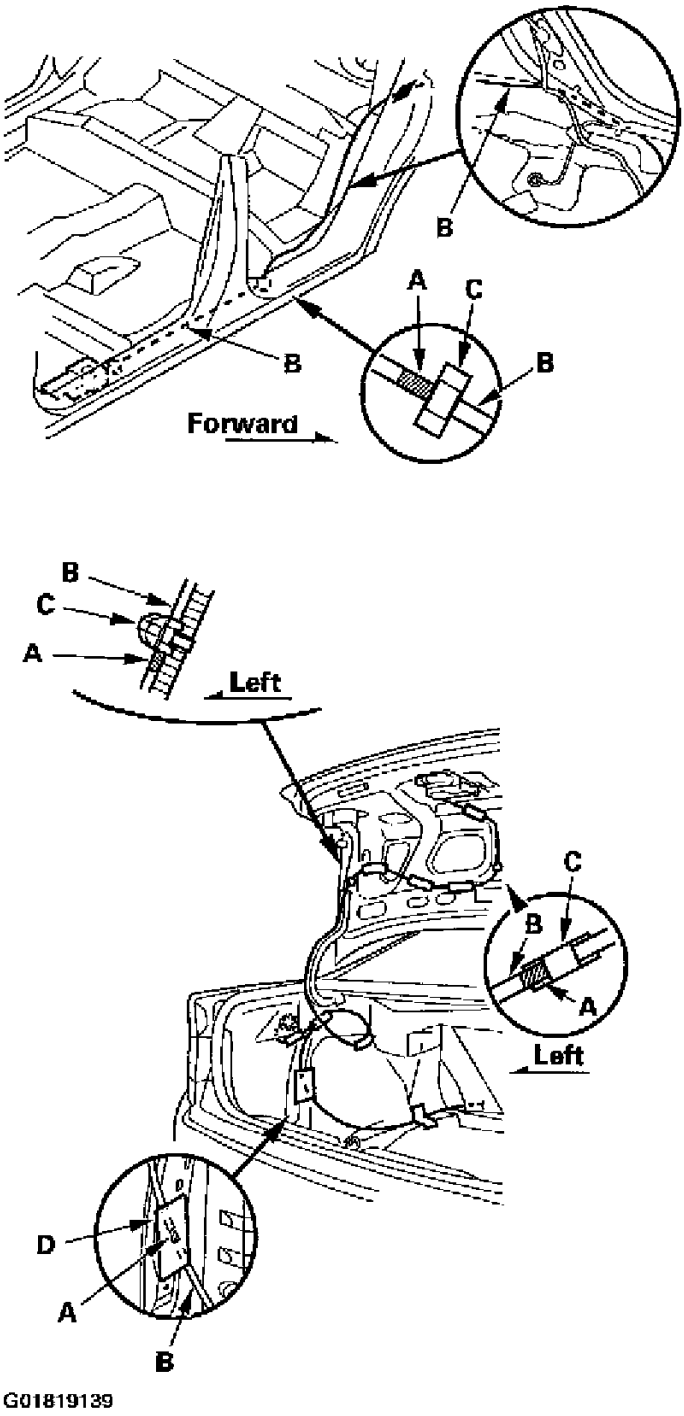


Fig. 43: Installing The Opener Cable

HOOD LATCH REPLACEMENT

1. Remove the front bulkhead cover (see step 1 of **HOOD MOLDING REPLACEMENT**).

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2. Remove the bolts, then remove the hood latch cover (A) from the hood latch (B).

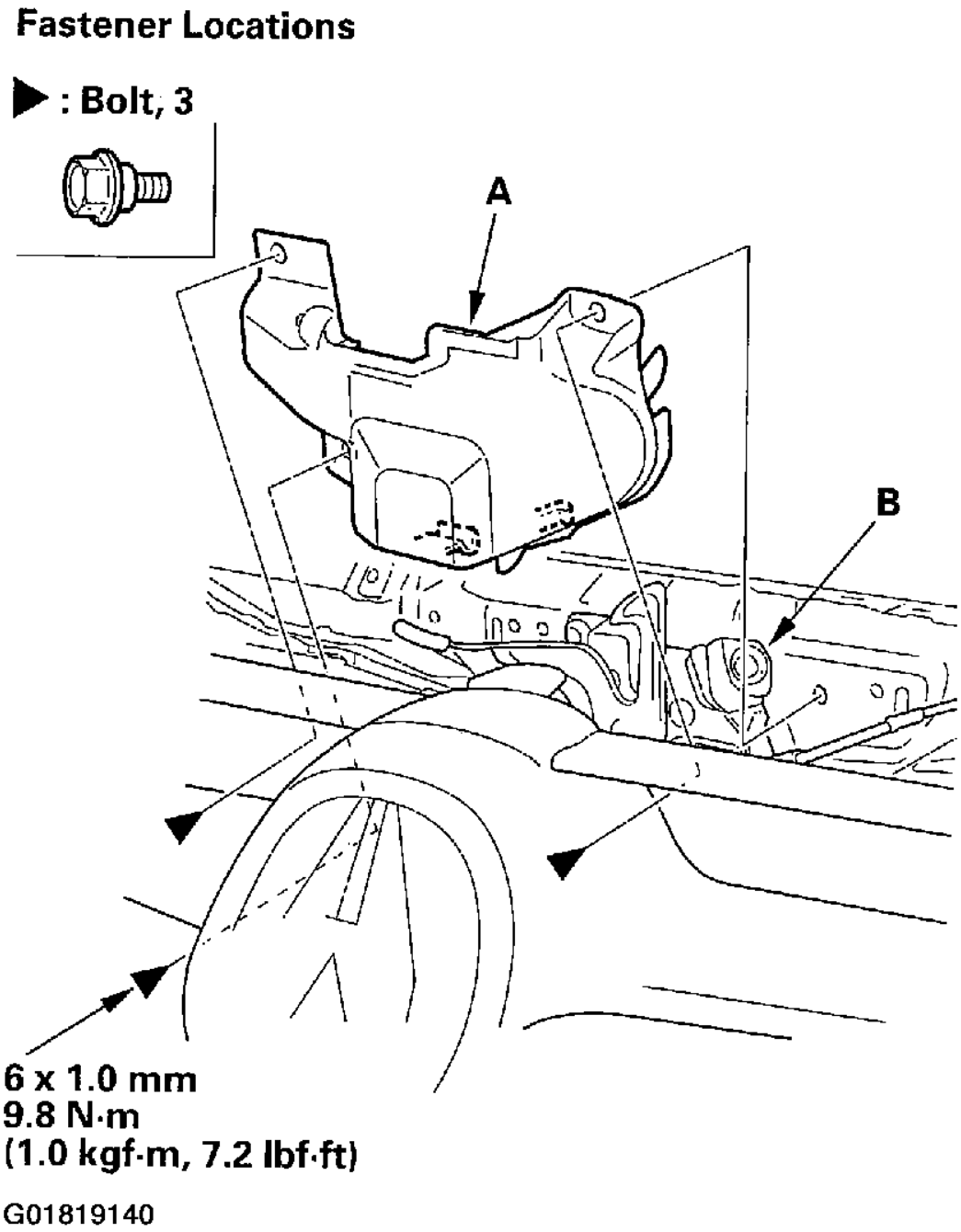


Fig. 44: Removing The Hood Latch Cover From The Hood Latch

3. Disconnect the hood latch switch connector (A).

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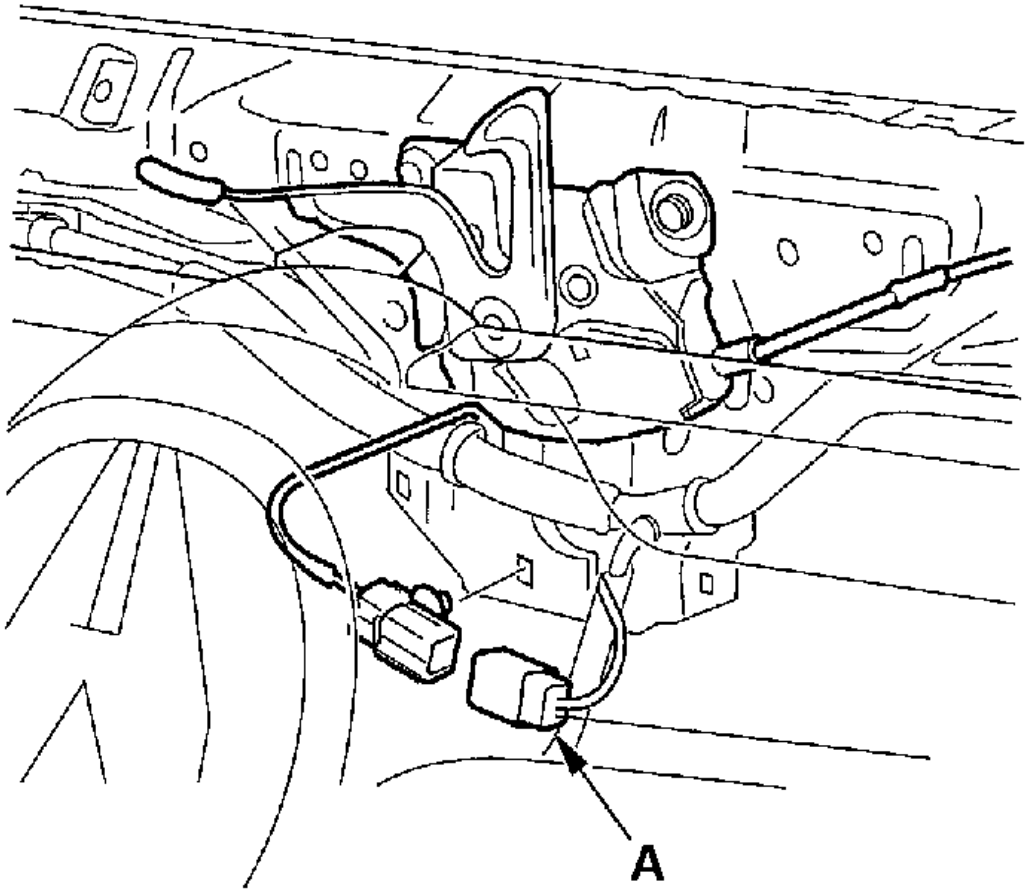


Fig. 45: Disconnecting The Hood Latch Switch Connector

4. Remove the bolts, then remove the hood latch (A) from the body.

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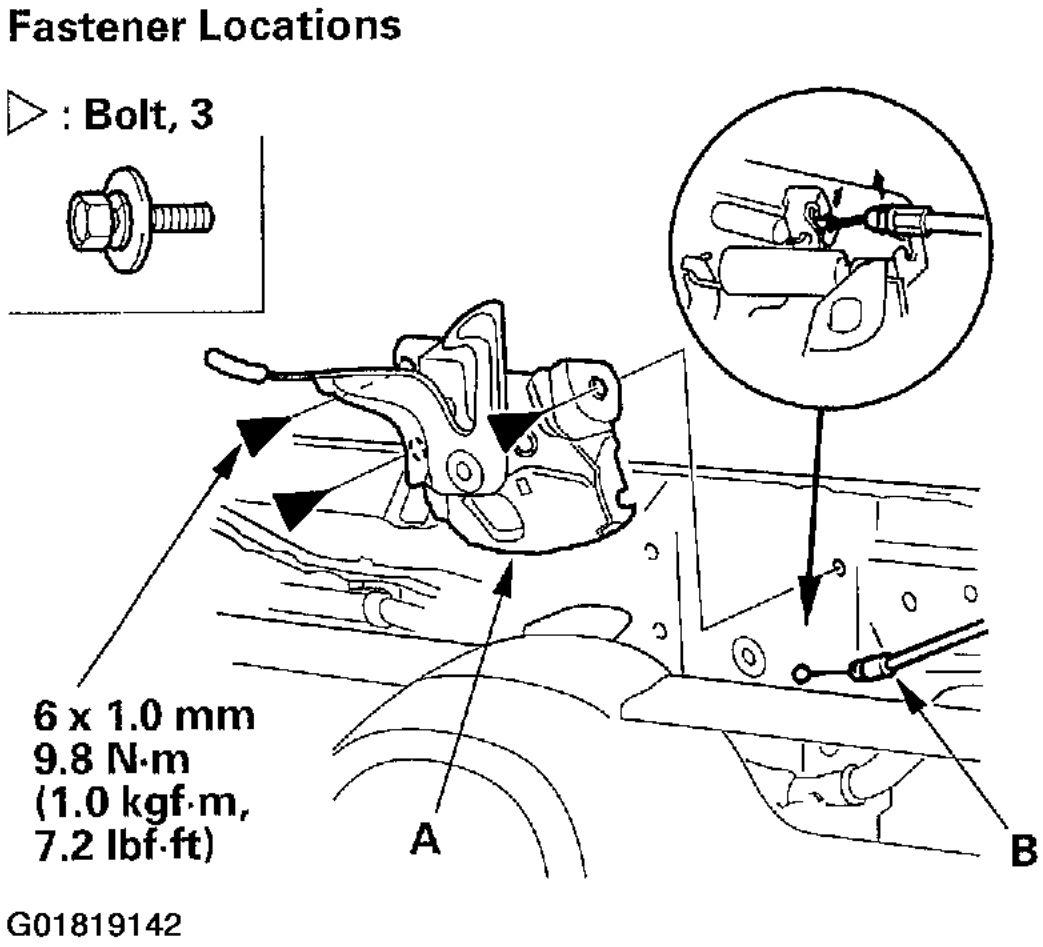


Fig. 46: Removing The Hood Latch

5. Disconnect the hood opener cable (B) from the hood latch. Take care not to bend the cable.
6. Install the latch in the reverse order of removal, and note these items:
   - Apply multipurpose grease to each location of the hood latch indicated by the arrows.
   - Make sure the hood opener cable is connected properly and hood latch switch connector is plugged in properly.
   - Adjust the hood latch alignment (see step 3 of **ADJUSTMENT**).
   - Make sure the hood opens properly and locks securely.

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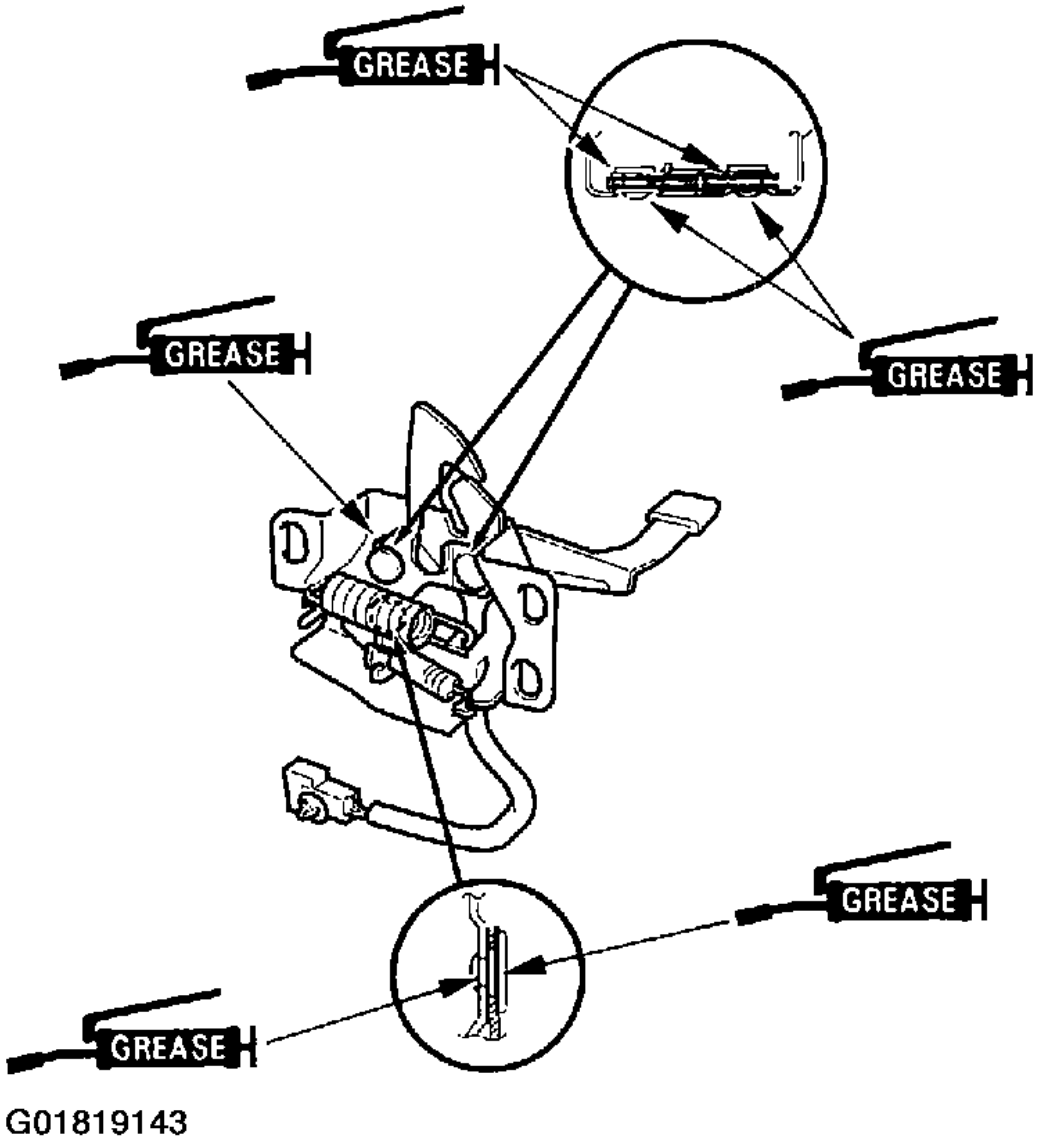


Fig. 47: Applying Multipurpose Grease

HOOD RELEASE HANDLE REPLACEMENT

1. Remove the kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
2. Remove the bolts, then remove the hood release handle (A).

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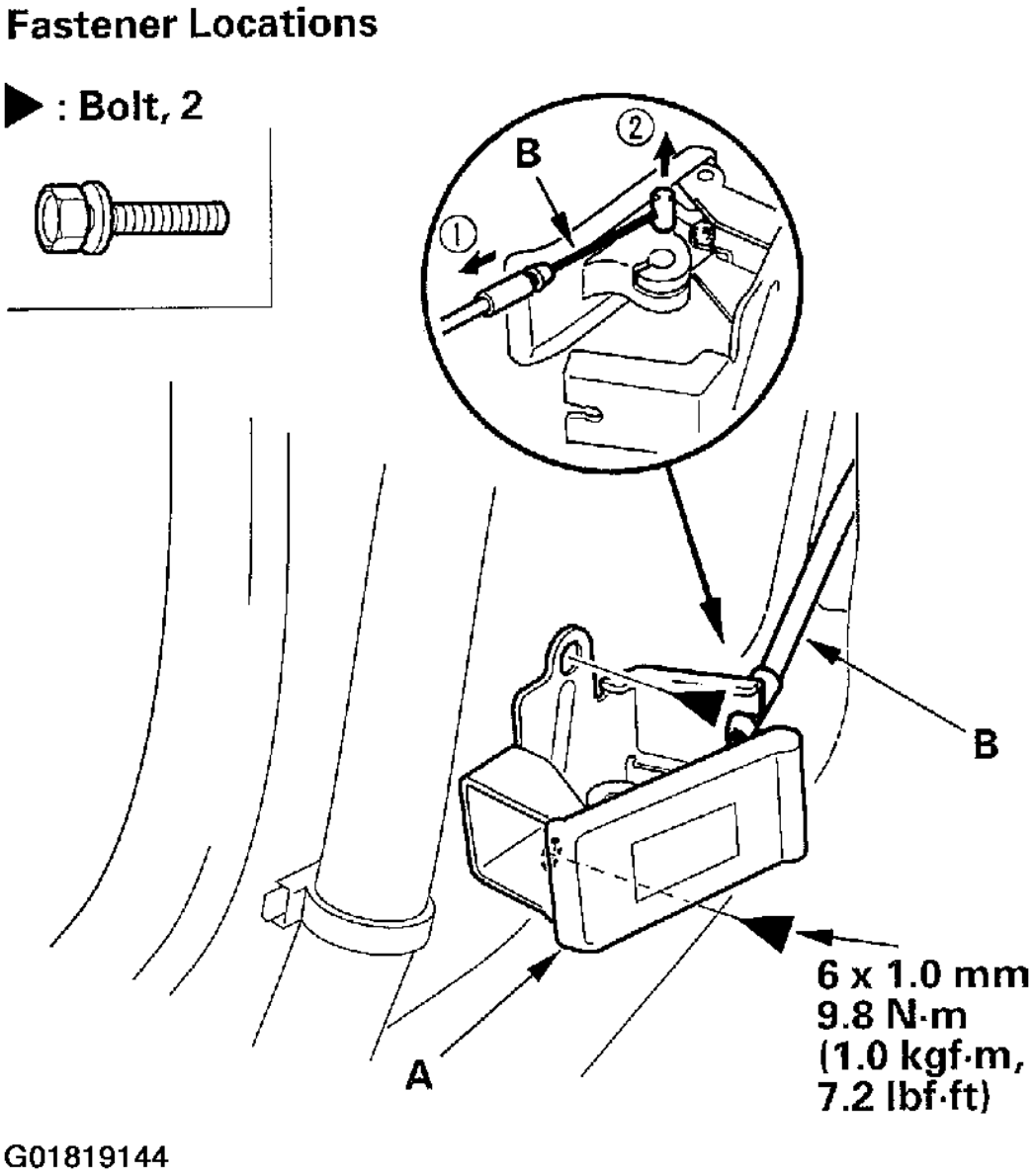


Fig. 48: Removing The Hood Release Handle

3. Disconnect the hood opener cable (B) from the hood release handle. Take care not to bend the cable.
4. Install the hood release handle in the reverse order of removal, and note there items:
   - Make sure the hood opener cable is connected properly.
   - Make sure the hood opens properly.

TRUNK LID OPENER/FUEL FILL DOOR OPENER REPLACEMENT

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1. Using a flat-tip screwdriver wrapped with protective tape, detach the hooks (A) by prying the front side cap (B), then remove it from the front door sill trim (C), and if equipped, remove the opener lock cylinder (D).

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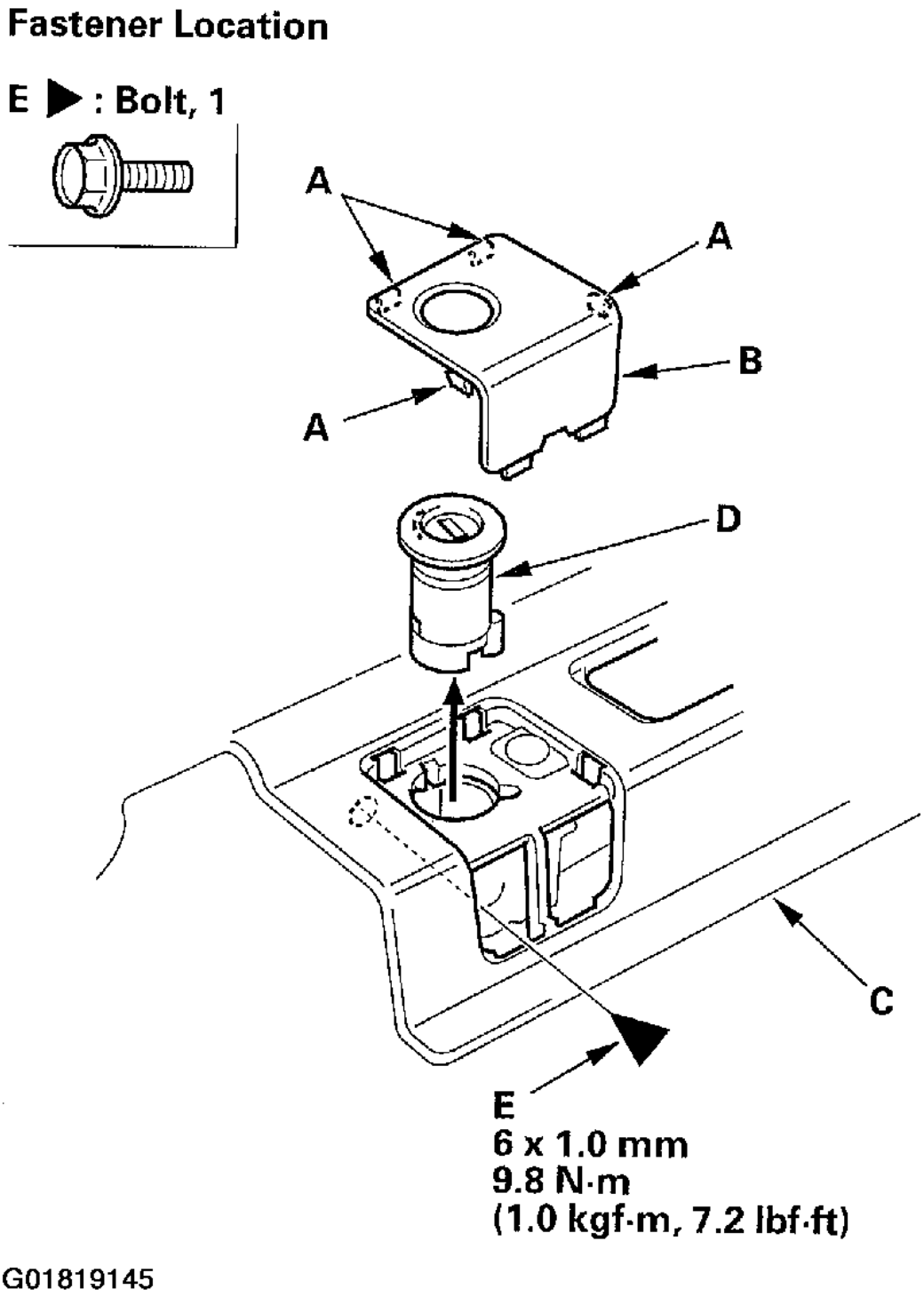


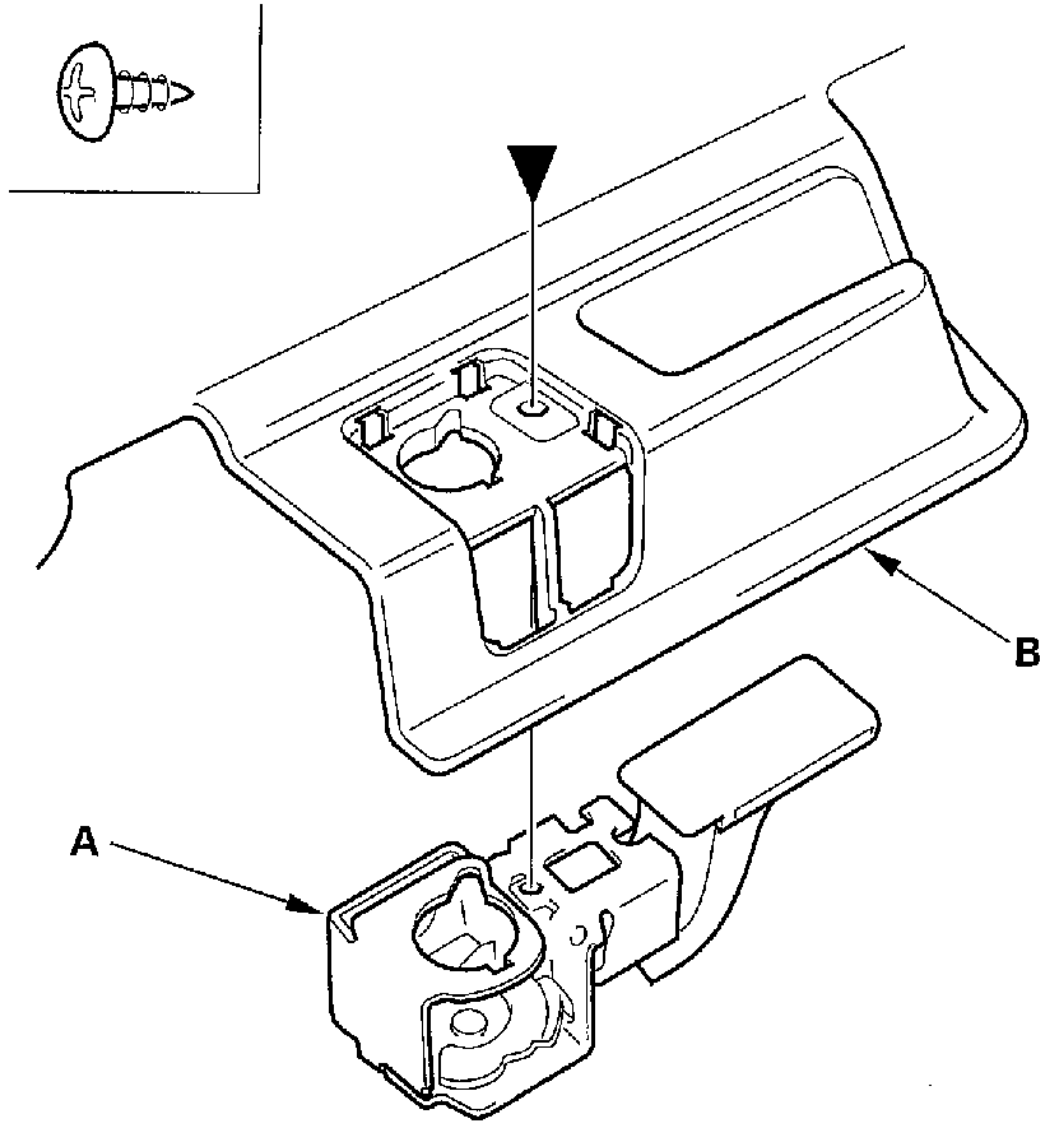
Fig. 49: Removing Front Side Cap From The Front Door Sill Trim

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2. Remove the bolt (E).
3. Remove the front door sill trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
4. Remove the screw, then remove the trunk lid opener/fuel fill door opener (A) from the front door sill trim (B).

Fastener Location

▶ : Screw, 1



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Fig. 50: Removing The Trunk Lid Opener/Fuel Fill Door Opener

5. Install the opener in the reverse order of removal, and note these items:
   - Make sure the opener cable is connected properly.
   - Make sure the trunk lid and fuel fill door open properly and locks securely.

TRUNK LID OPENER SWITCH REPLACEMENT

NOTE:
- **Take care not to scratch the hatch.**
- **Put on gloves to protect your hands.**

1. Remove these items:
   a. Trunk lid trim (see **TRIM REMOVAL/INSTALLATION - TRUNK LID**)
   b. Rear license trim (see **REAR LICENSE TRIM REPLACEMENT**)
2. Remove the bolts and disconnect the connector (A), then remove the trunk lid switch (B).

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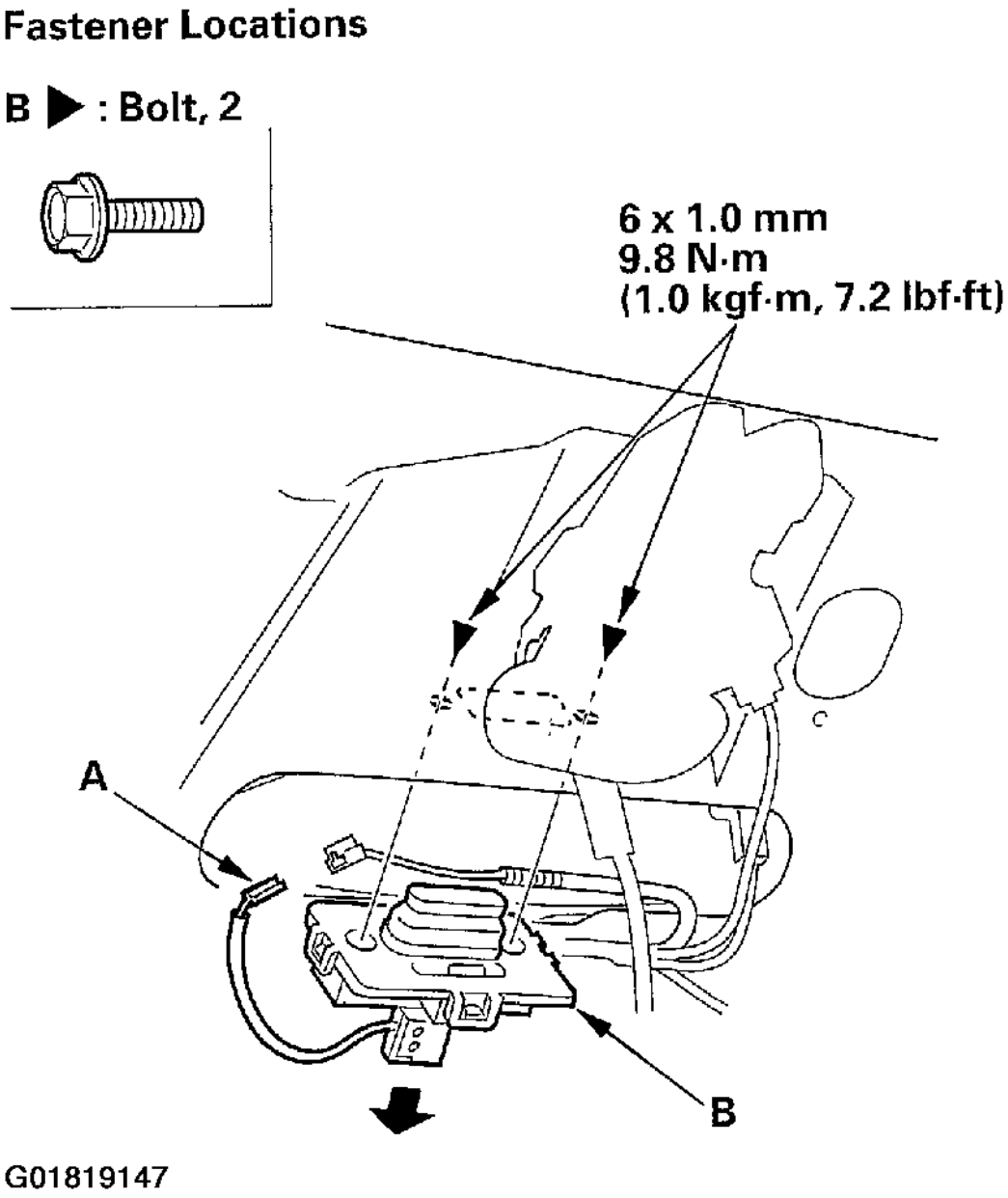


Fig. 51: Removing The Trunk Lid Switch

3. Install the switch in the reverse order of removal, and note these items:
   - Make sure the connector is plugged in properly.
   - Make sure the trunk lid opens properly.

TRUNK LID LATCH REPLACEMENT

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1. Disconnect the trunk lid opener cable (A) and trunk lid latch switch connector (B). Take care not to bend the opener cable.

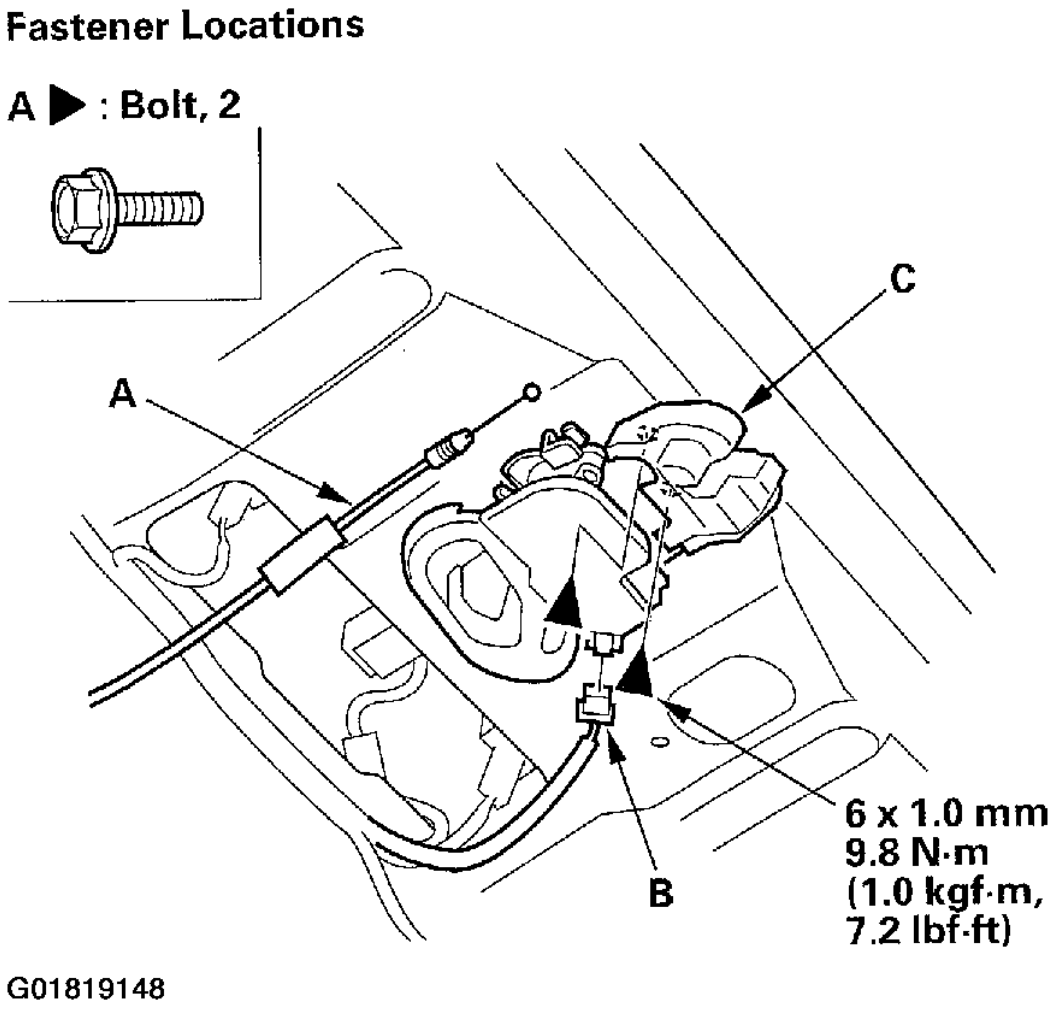


Fig. 52: Disconnecting The Trunk Lid Opener Cable And Trunk Lid Latch Switch Connector

2. Remove the bolts from the trunk lid latch (C), then remove the latch.
3. Install the latch in the reverse order of removal, and note these items.
   - Make sure the connector is plugged in properly and the opener cable is connected properly.
   - Make sure the trunk lid opens properly and locks securely.

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2004 DRIVE AXLES

Axle Shafts - Front - TSX

INSPECTION

AXLE SHAFT INSPECTION

NOTE: Letters in parenthesis correspond to letters in illustrations.

1. Check the inboard boot (A) and the outboard boot (B) on the axle shaft (C) for cracks, damage, leaking grease, and loose boot bands (D). If any damage is found, replace the boot and boot bands. See **Fig. 1** .
2. Turn the axle shaft by hand, and make sure the splines (E) and joint are not excessively loose.
3. Make sure the axle shaft is not twisted or cracked. If it is, replace it.

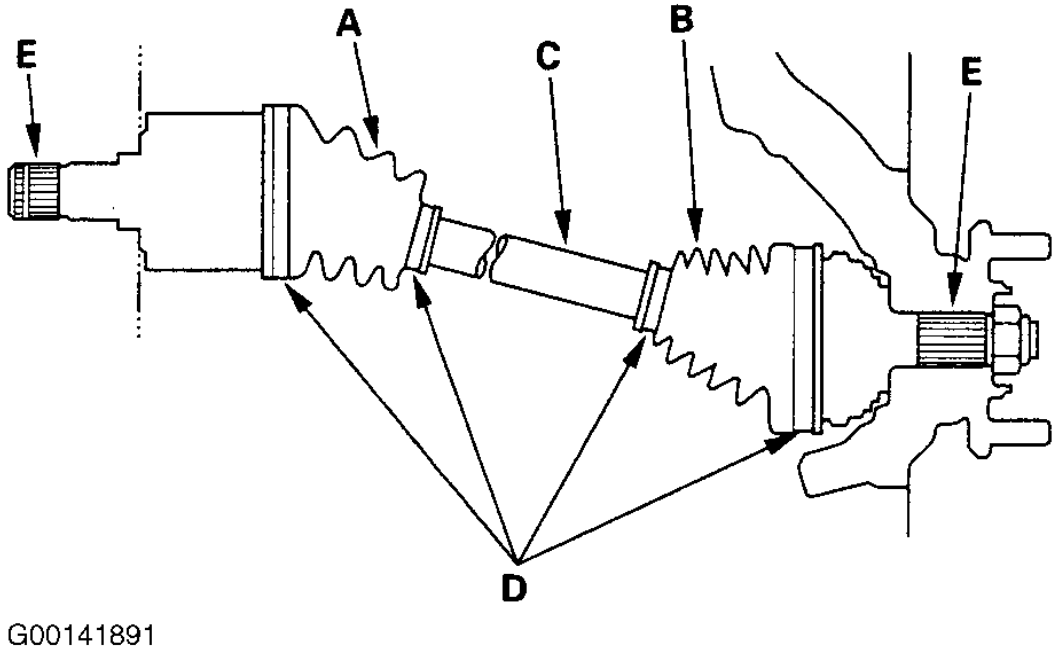


Fig. 1: Inspecting Boot & Boot Bands
Courtesy of ISUZU MOTOR CO.

TROUBLE SHOOTING

NOTE: See appropriate table in TROUBLE SHOOTING article in GENERAL INFORMATION.

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REMOVAL & INSTALLATION

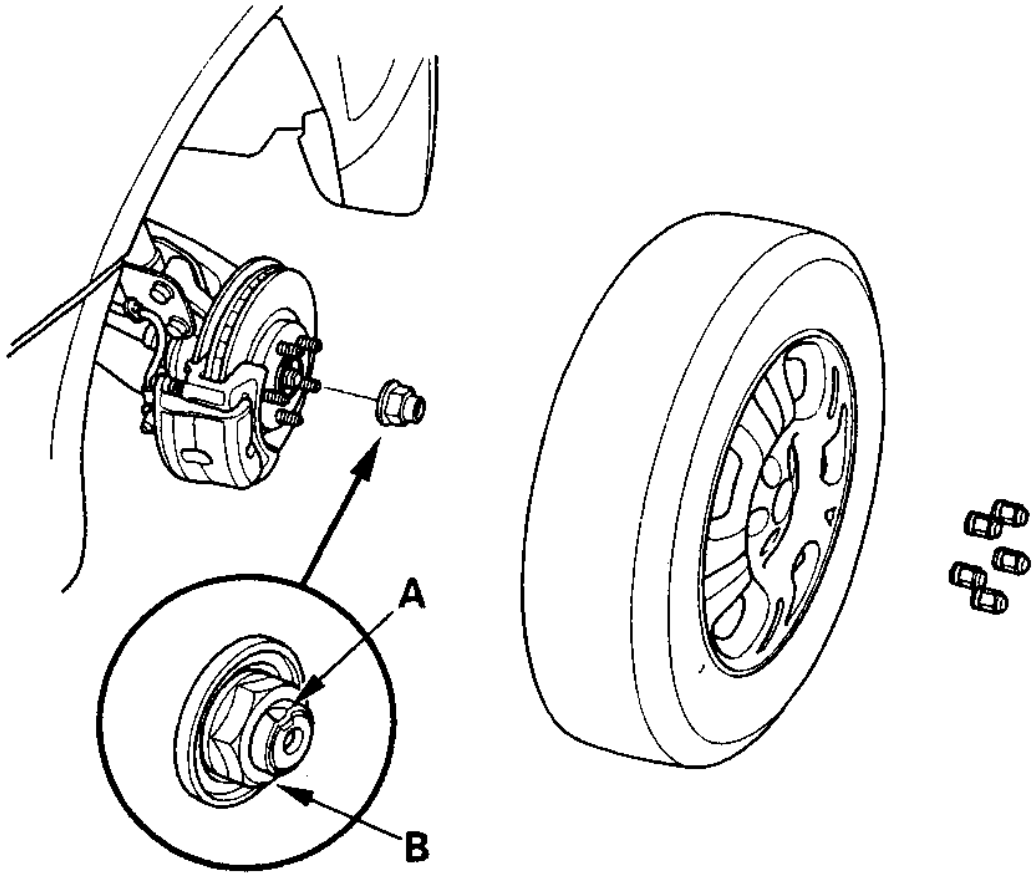
FRONT AXLE SHAFTS

NOTE: Letters in parenthesis correspond to letters in illustrations.

Removal

1. Raise the front of the vehicle, and support it with safety stands in the proper locations.
2. Remove the wheel nuts and front wheels.
3. Lift up the locking tab (A) on the spindle nut (B), then remove the nut. See **Fig. 2** .
4. Drain the transmission fluid. Reinstall the drain plug using a new washer:
   - Manual transmission. See appropriate SERVICING in MANUAL TRANSMISSIONS.
   - Automatic transmission. See appropriate SERVICING in AUTOMATIC TRANSMISSIONS.
5. Hold the stabilizer ball joint pin (A) with a hex wrench (B), and remove the flange nut (C). See **Fig. 3** . Separate the front stabilizer link (D) from the lower arm.
6. Remove the self-locking nut (A) and 12 mm flange bolts (B), and 10 mm flange bolt (C), then remove the damper fork (D). See **Fig. 4** .
7. Remove the cotter pin (A) from the lower arm ball joint castle nut (B), and remove the nut. See **Fig. 5** .
8. Separate the ball joint from the lower arm (C) with the ball joint remover.
9. Pull the knuckle outward, and remove the outboard joint from the front wheel hub using a plastic hammer. See **Fig. 6** .
10. Remove the axle shaft as an assembly. See **Fig. 7** . DO NOT pull on the axle shaft (B), because the inboard joint may come apart. Pull the axle shaft straight out to avoid damaging the oil seal.
    - Left: Pry the inboard joint (A) from the differential case with a prybar.
    - Right: Drive the inboard joint (A) off of the intermediate shaft with drift and hammer.

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Fig. 2: Removing & Installing Axle Nut
Courtesy of AMERICAN HONDA CO., INC.

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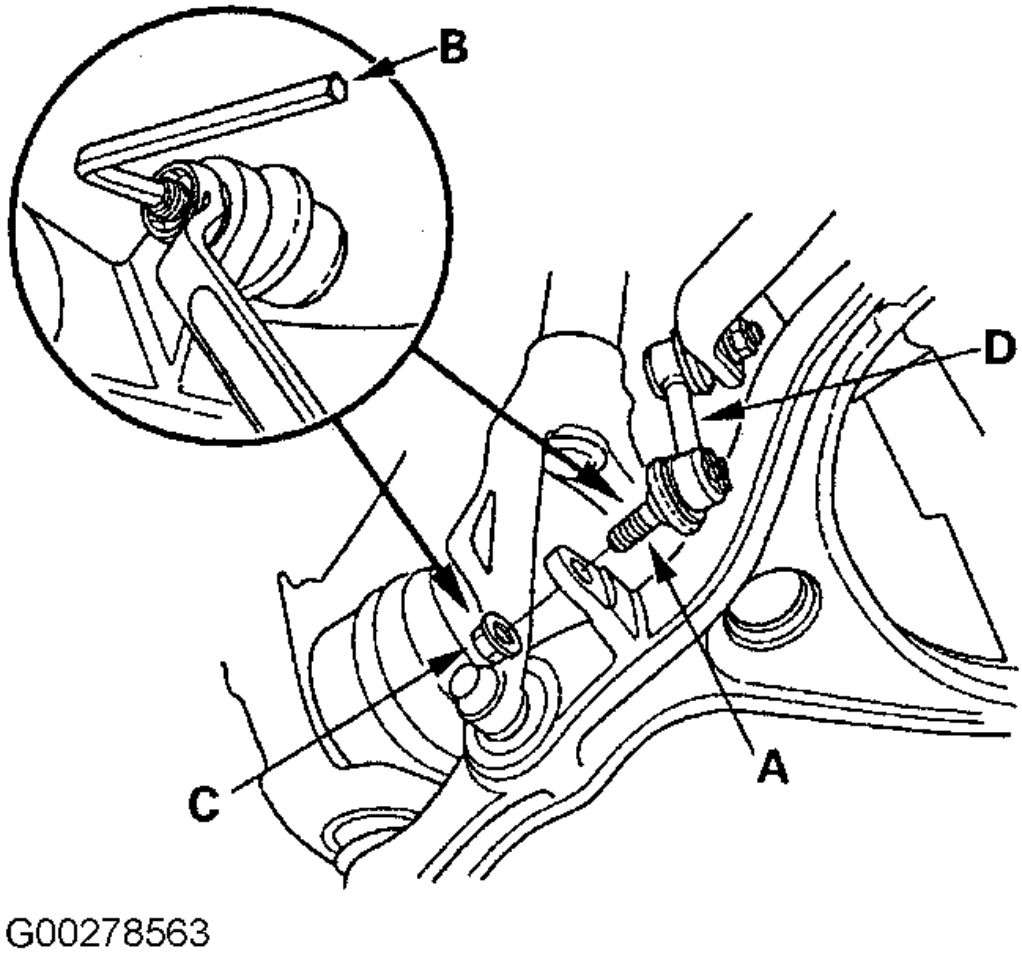


Fig. 3: Holding Stabilizer Ball Joint Pin With Hex Wrench
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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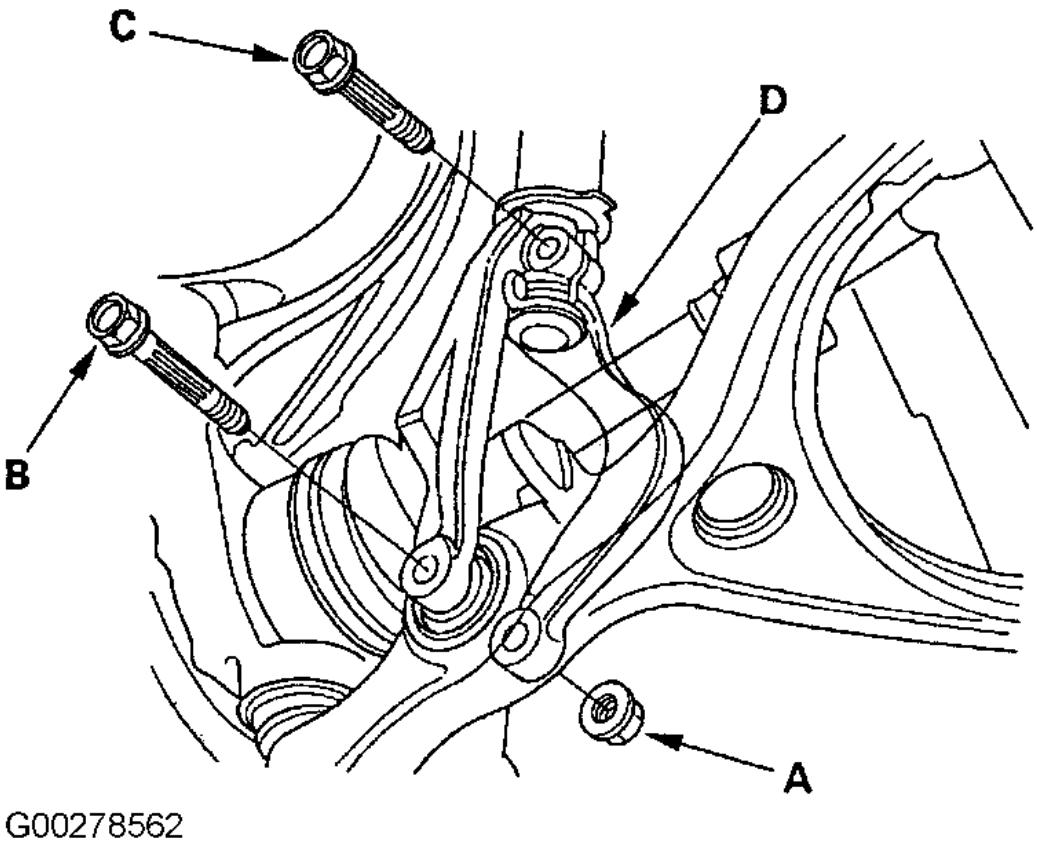


Fig. 4: Removing Self-Locking Nut & Flange Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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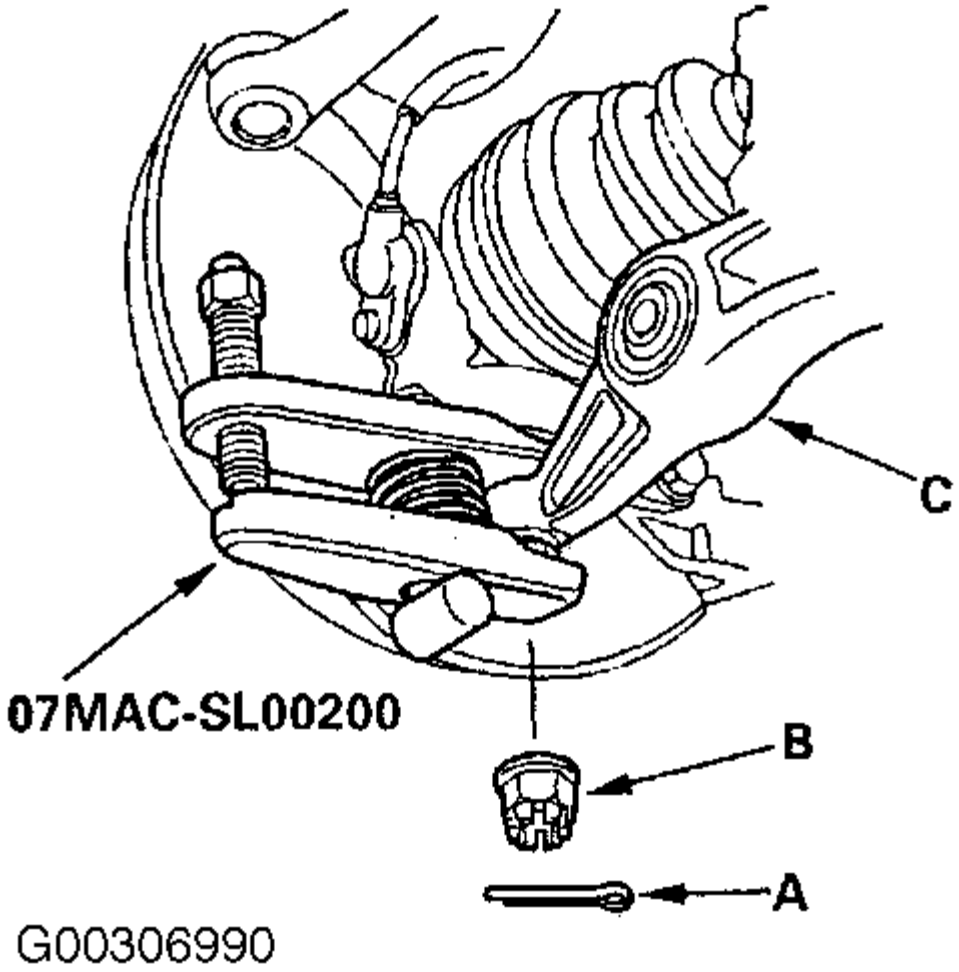
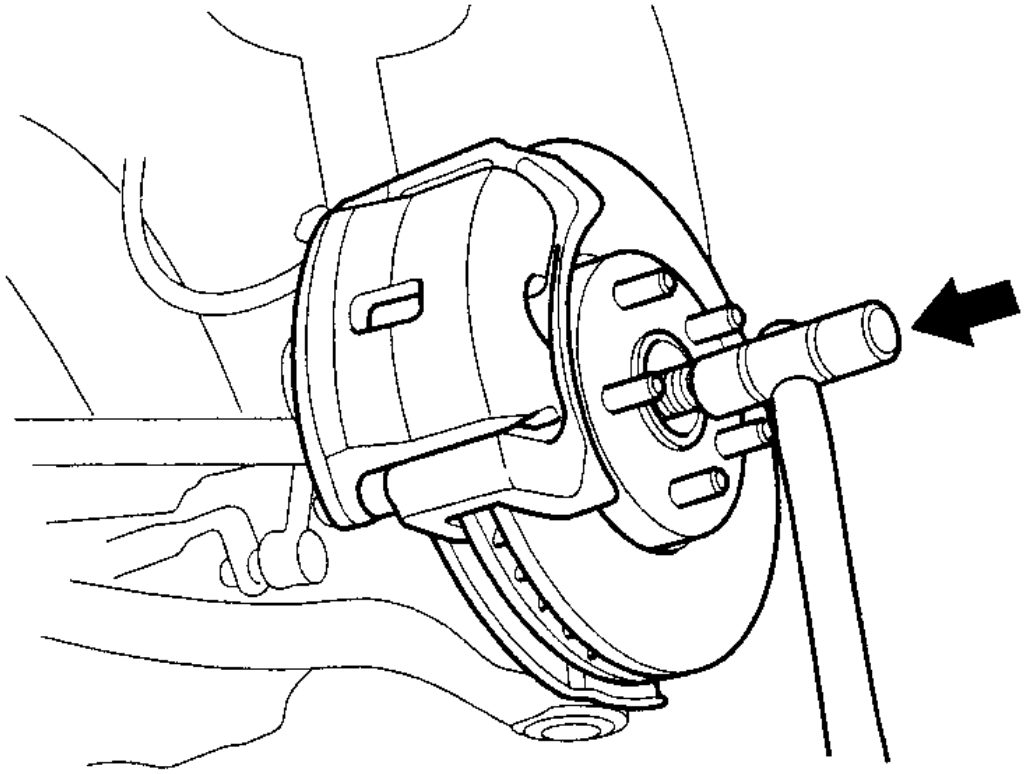


Fig. 5: Removing Cotter Pin From Lower Arm Ball Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 6: Removing Axle Shaft Outboard Joint From Wheel Hub
Courtesy of AMERICAN HONDA CO., INC.

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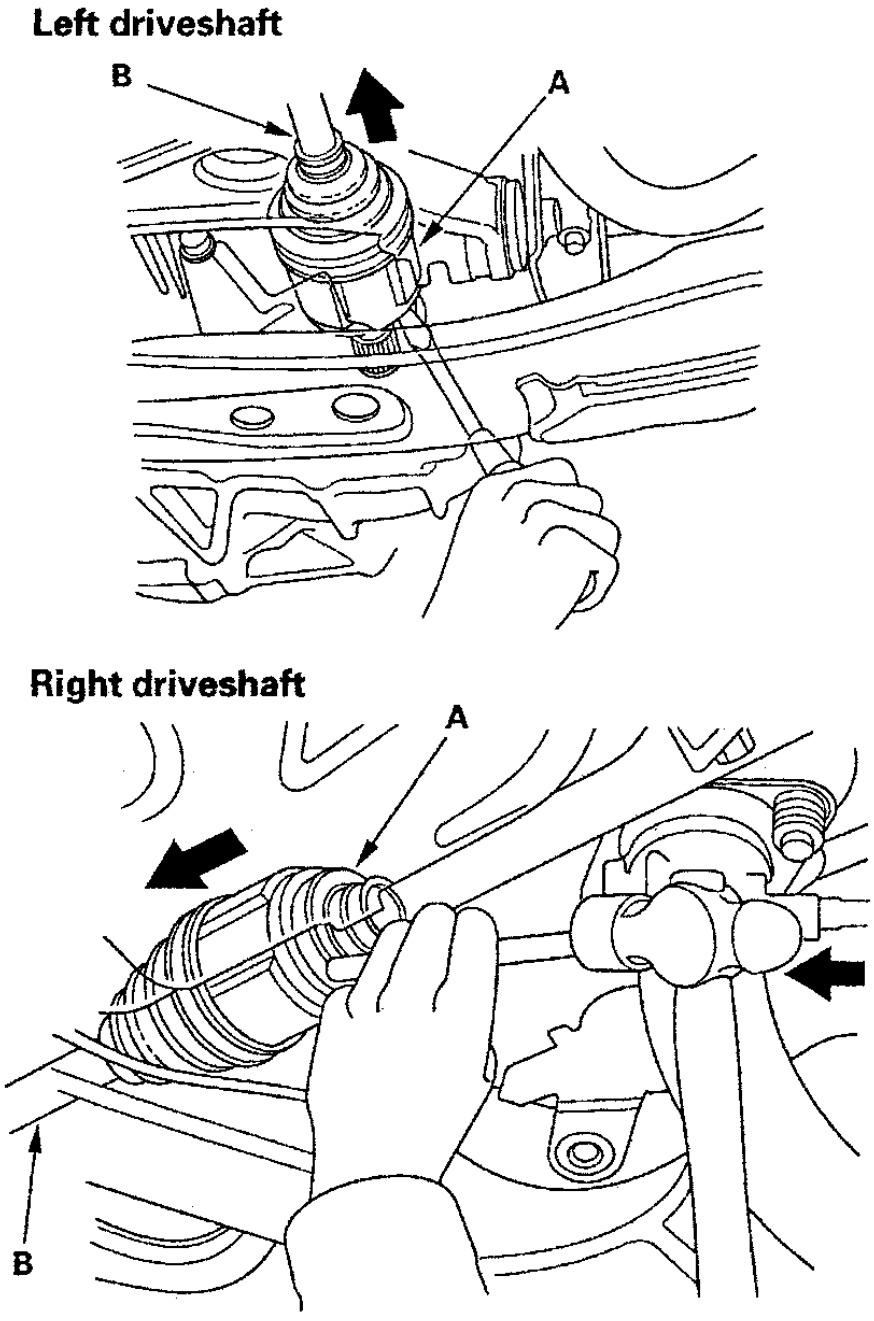


Fig. 7: Removing Intermediate Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

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1. Install a new set ring into the set ring groove of the axle shaft (left axle shaft). See **Fig. 8** .
2. Apply .02-.04 oz. (.5-1 g) of specified grease to the whole splined surface (A) of the right axle shaft. See **Fig. 9** . After applying grease, remove the grease from the splined grooves at intervals of 2-3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.
3. Clean the areas where the axle shaft contacts the differential thoroughly with solvent or carburetor cleaner, and dry with compressed air. Insert the inboard end (A) of the axle shaft into the differential (B) or intermediate shaft (C) until the set ring (D) locks in the groove (E). See **Fig. 10** .
4. Install the outboard joint (A) into the front hub (B). See **Fig. 11** .
5. Clean off any grease contamination from the ball joint tapered section and threads, then install the knuckle (A) onto the lower arm (B). Be careful not to damage the ball joint boot (C). Wipe off the grease before tightening the nut at the ball joint. Tighten the castle nut (D) to the lower torque specification, then tighten it only far enough to align the slot with the pin hole. Do not align the nut by loosening. See **Fig. 12** and **TORQUE SPECIFICATIONS** .
6. Install the new cotter pin (D) into the hole, and bend the center pin.
7. Install the damper fork (A) over the axle shaft and onto the lower arm. See **Fig. 13** . Install the damper in the damper fork so the aligning tab (B) is aligned with the slot in the damper fork. Loosely install the flange bolt (C).
8. Loosely install the flange bolt (D) and a new self-locking nut (E).
9. Connect the front stabilizer link (B) to the lower arm. See **Fig. 3** . Hold the stabilizer link ball point pin (A) with a hex wrench (C), and tighten the new flange nut (C).
10. Install a new spindle nut (A), then tighten the nut. See **Fig. 2** . After tightening, use a drift to stake the spindle nut shoulder (B) against the axle shaft.
11. Clean the mating surfaces of the brake disc and the front wheel, then install the front wheel with the wheel nuts.
12. Turn the front wheel by hand, and make sure there is no interference between the axle shaft and surrounding parts.
13. Tighten the flange bolt and the self-locking nut with the vehicle's weight on the damper.
14. Refill the transmission with transmission fluid:
    - Manual transmission. See appropriate SERVICING in MANUAL TRANSMISSIONS.
    - Automatic transmission. See appropriate SERVICING in AUTOMATIC TRANSMISSIONS.
15. Check the front wheel alignment, and adjust it if necessary. See appropriate WHEEL ALIGNMENT article in SUSPENSION.

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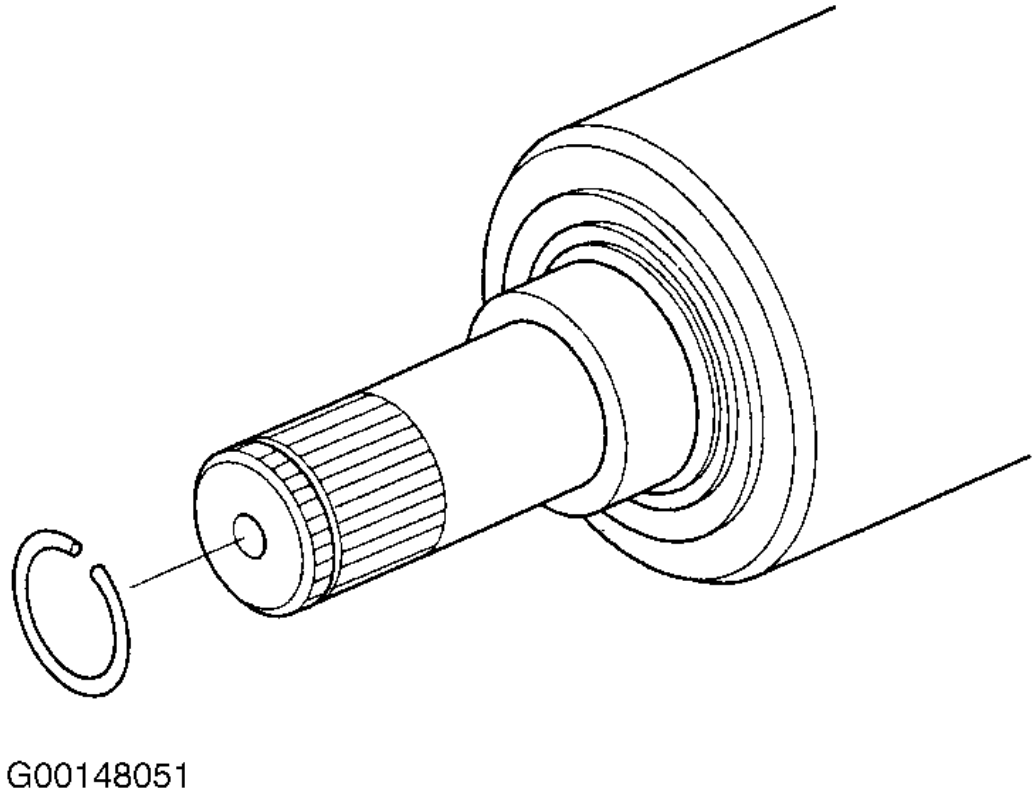


Fig. 8: Seating New Set Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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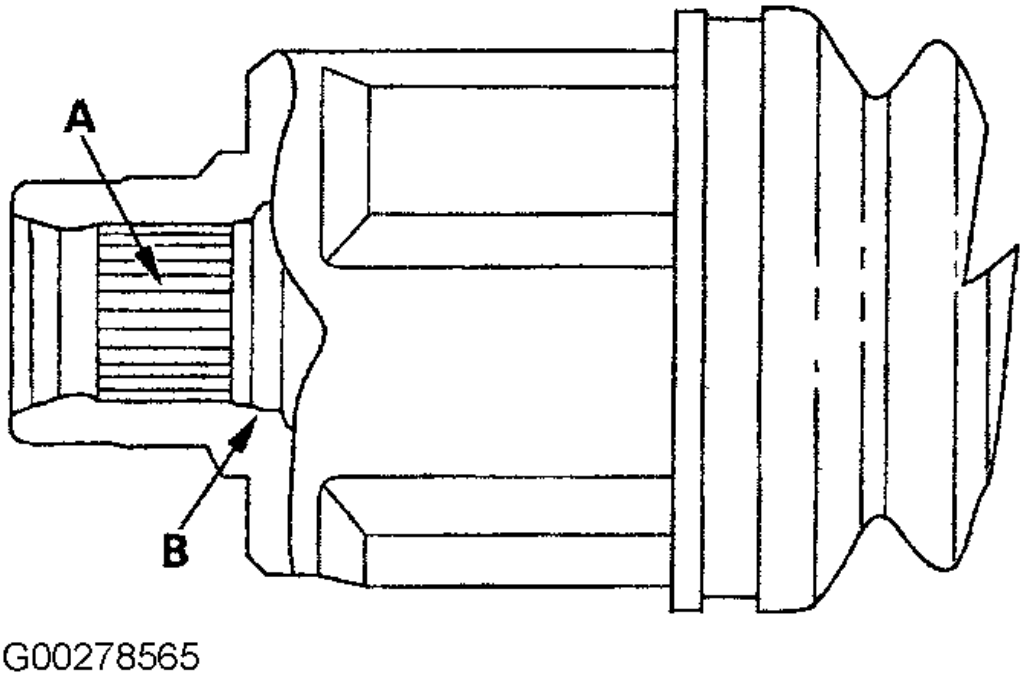


Fig. 9: Applying Grease To Whole Splined Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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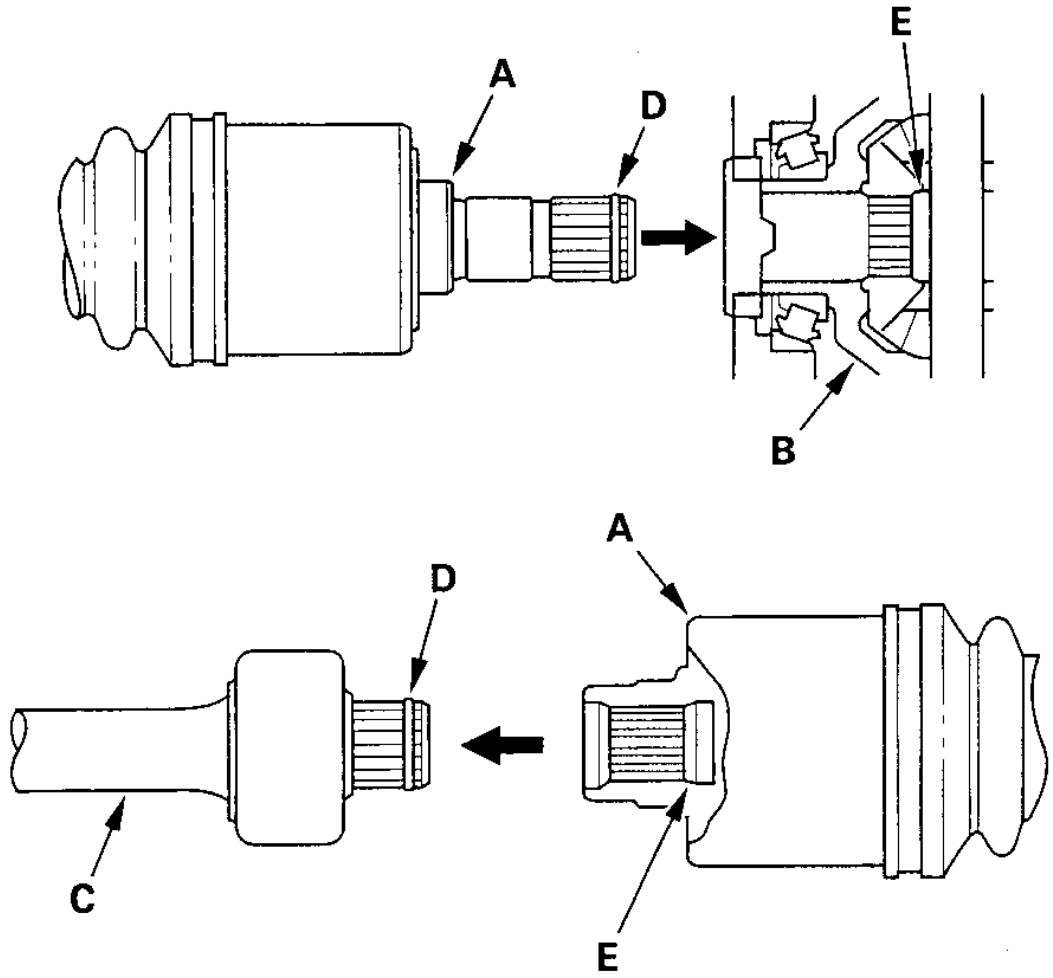


Fig. 10: Installing Axle Shaft Into Differential
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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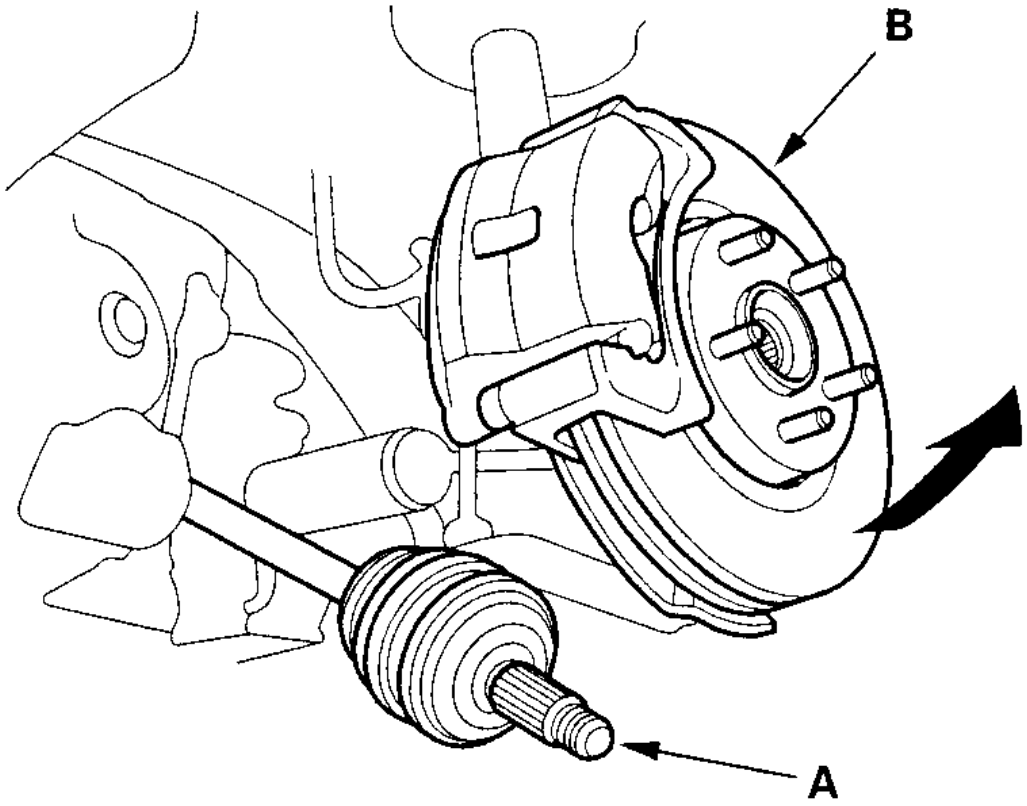


Fig. 11: Installing Outboard Joint Into Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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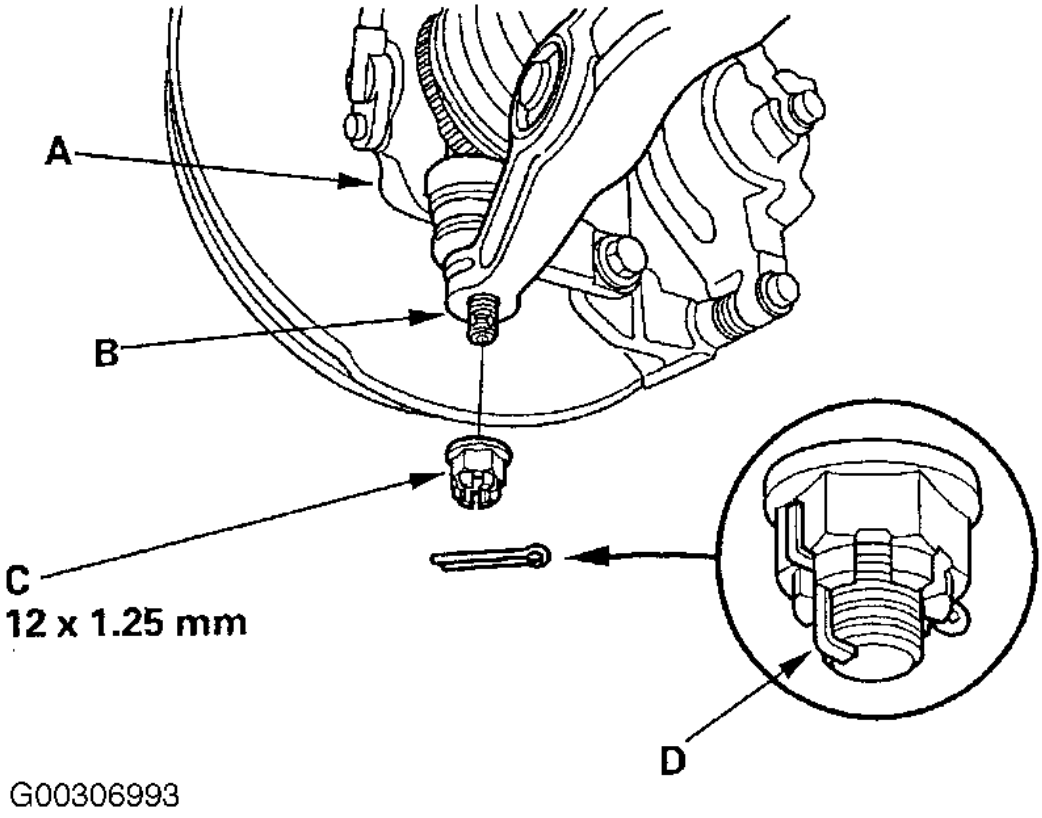


Fig. 12: Installing Knuckle To Lower Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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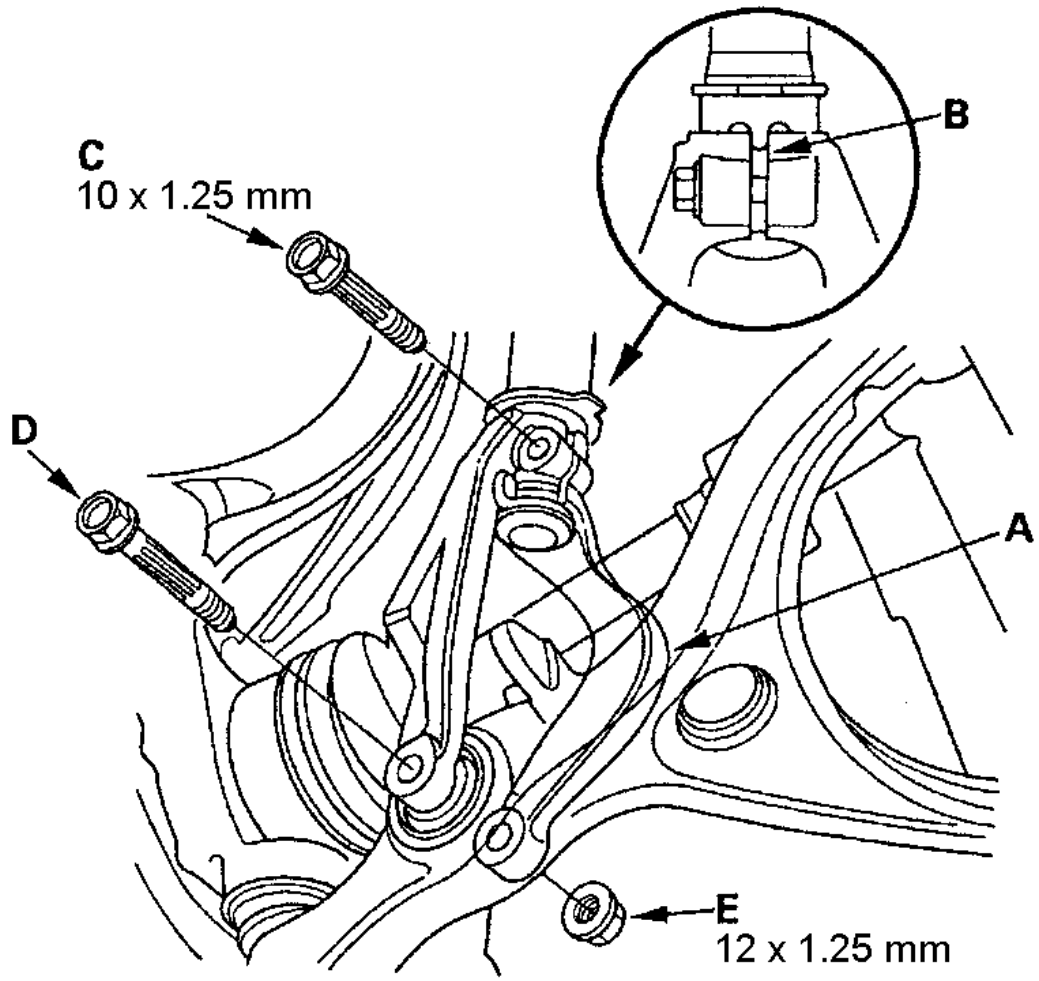


Fig. 13: Installing Damper Fork Over Axle Shaft & Onto Lower Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTERMEDIATE SHAFT

NOTE: Letters in parenthesis correspond to letters in illustrations.

Removal

1. Drain the transmission fluid.
    - Manual transmission. See appropriate SERVICING in MANUAL TRANSMISSIONS.

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- Automatic transmission. See appropriate SERVICING in AUTOMATIC TRANSMISSIONS.

2. Remove the right axle shaft. See **FRONT AXLE SHAFTS** .
3. Remove the flange bolt (A) and the two dowel bolts (B). See **Fig. 14** .
4. Remove the intermediate shaft (C) from the differential. Hold the intermediate shaft horizontal until it is clear of the differential to prevent damage to the differential oil seal. See **Fig. 15** .

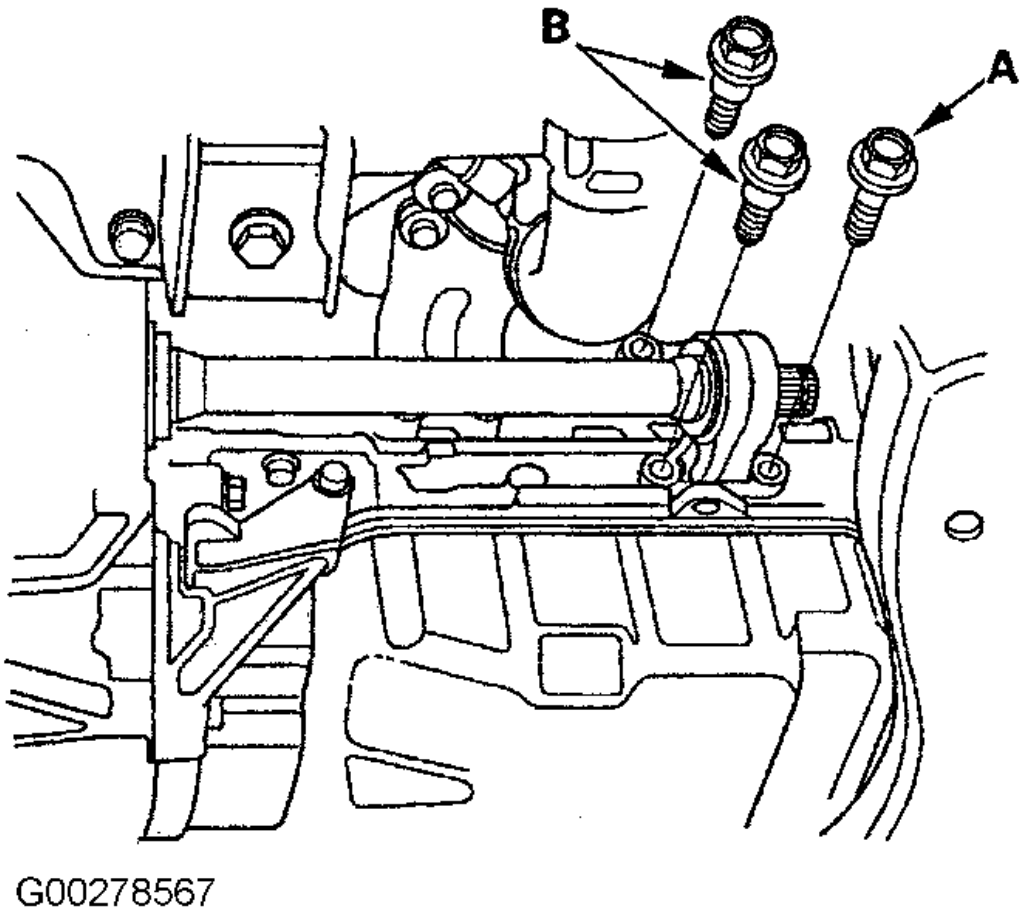


Fig. 14: Removing Flange Bolt & Dowel Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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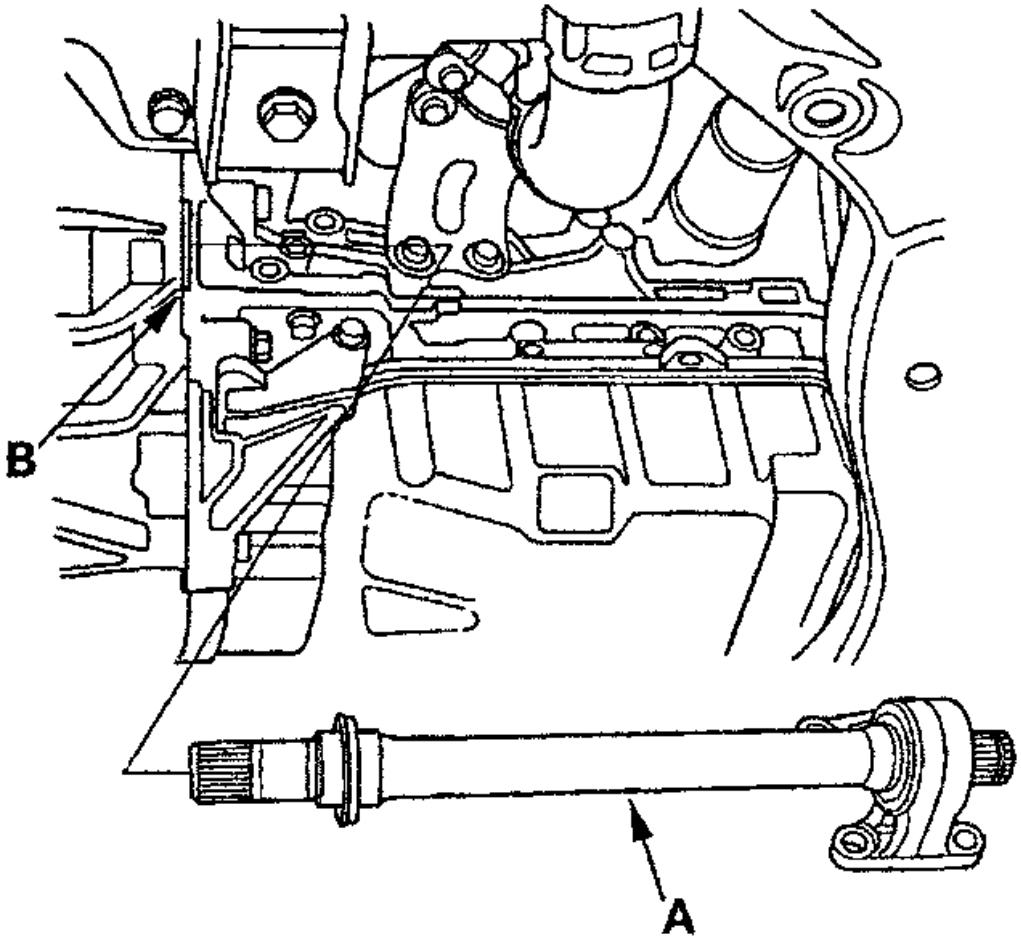


Fig. 15: Removing & Installing Intermediate Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Clean the areas where the intermediate shaft (C) contacts the transmission (differential) thoroughly with solvent or carburetor cleaner, and dry with compressed air. Insert the intermediate shaft assembly into the differential. Hold the intermediate shaft horizontal to prevent damage to the differential oil seal. See **Fig. 14** .
2. Install the flange bolt (A) and the two dowel bolts (B). See **Fig. 15** and **TORQUE SPECIFICATIONS** .
3. Install the right axle shaft. See **FRONT AXLE SHAFTS** .

OVERHAUL

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FRONT AXLE SHAFTS

Disassembly (Inboard Joint)

1. Remove the set ring from the inboard joint. See **Fig. 8** .
2. Remove the boot bands. Be careful not to damage the boot and dynamic damper. See **Fig. 16** .
   - If the boot band is a welded type (A), cut the boot band (B).
   - If the boot band is a double loop type (C), lift up the band bend (D), and push it into the clip (E).
   - If the boot band is a low profile type (F), pinch the boot band using appropriate boot band pincers (G).
3. Make a mark (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint. See **Fig. 17** .
4. Make a mark (A) on the rollers (B) and spider (C) to identify the locations of rollers on the spider, then remove the rollers. See **Fig. 18** .
5. Remove the circlip (D).
6. Mark the spider (C) and axle shaft (E) to identify the position of the spider on the shaft.
7. Remove the spider (C).
8. Wrap the splines on the axle shaft with vinyl tape (A) to prevent damage to the boot. See **Fig. 19** .
9. Remove the inboard boot. Be careful not to damage the boot.
10. Remove the vinyl tape.

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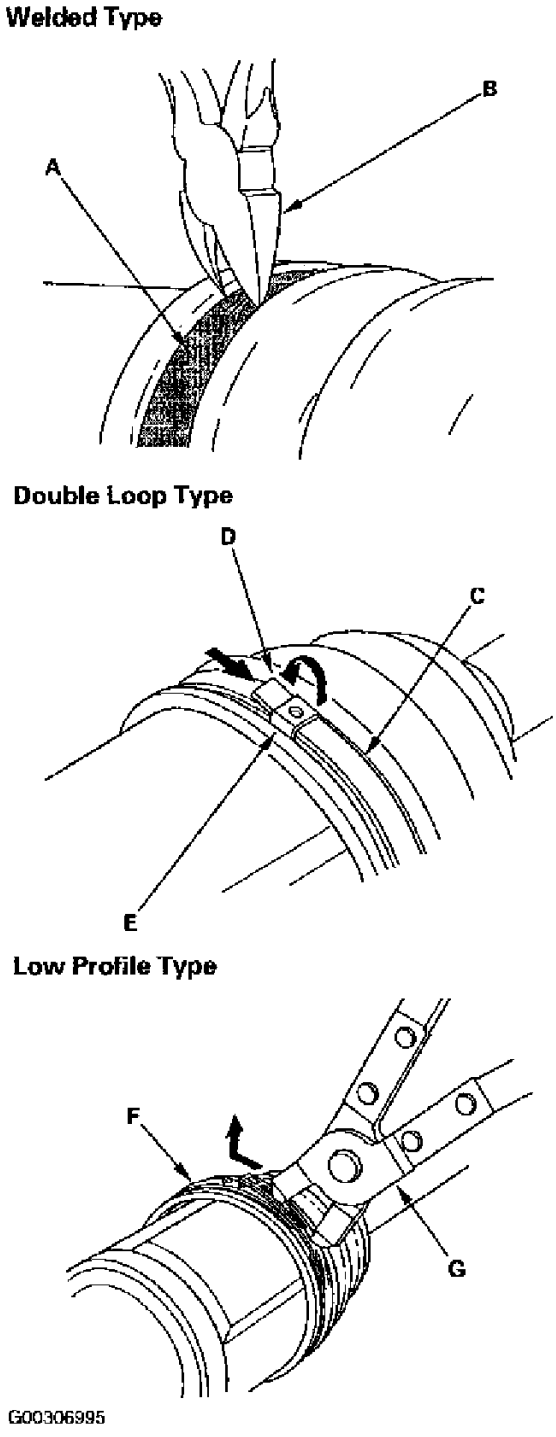
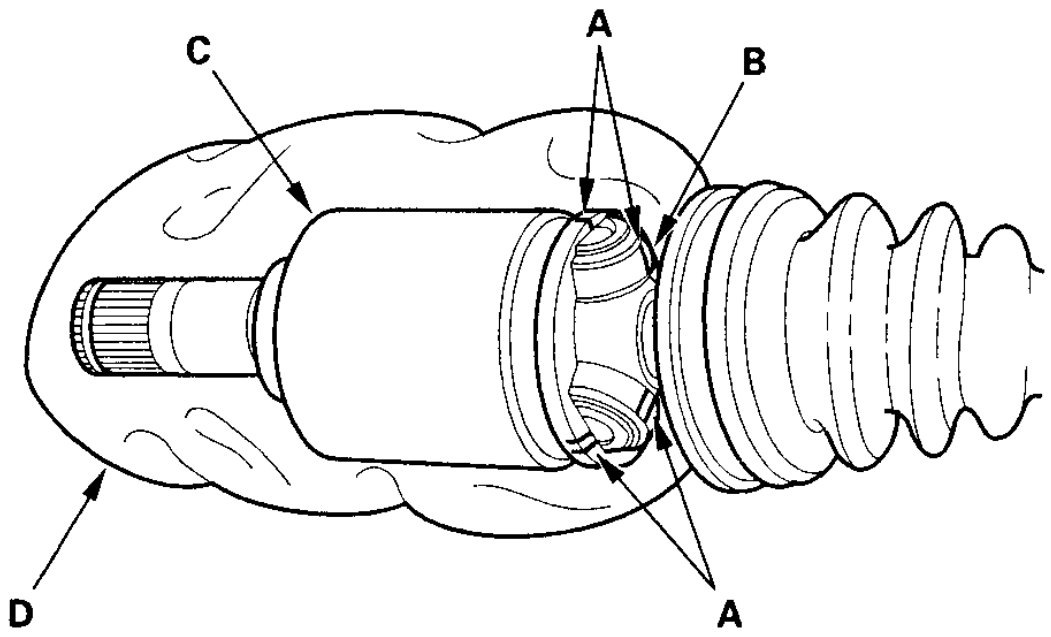


Fig. 16: Removing Locking Tab/Double Loop Type Boot Bands
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 17: Marking Roller & Inboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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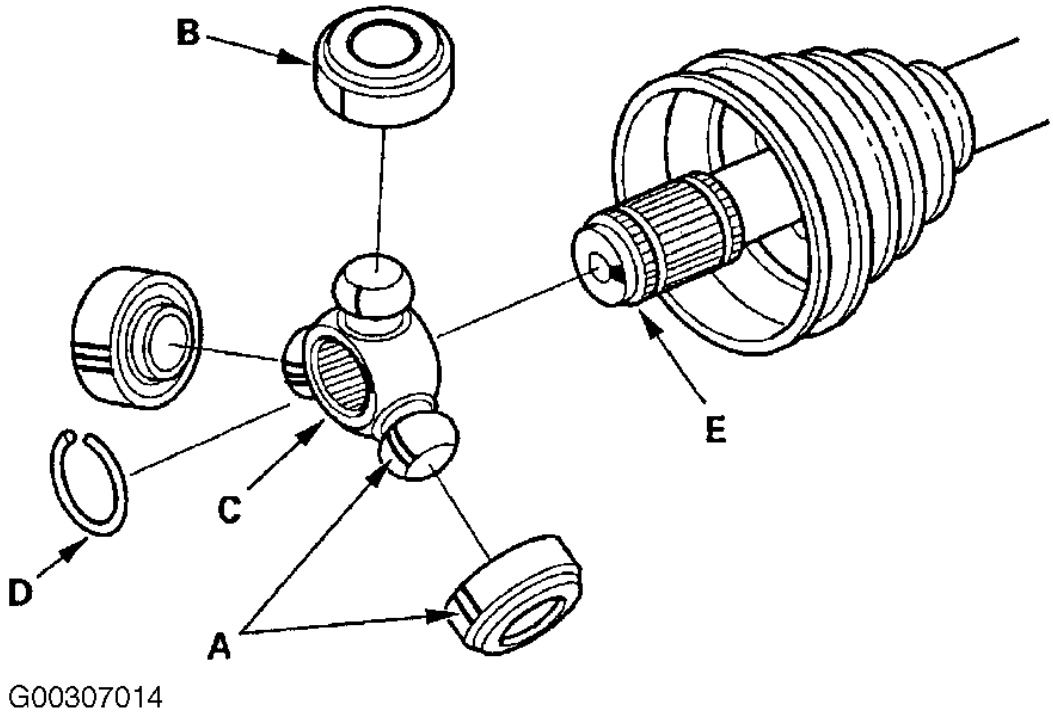


Fig. 18: Marking Spider & Axle Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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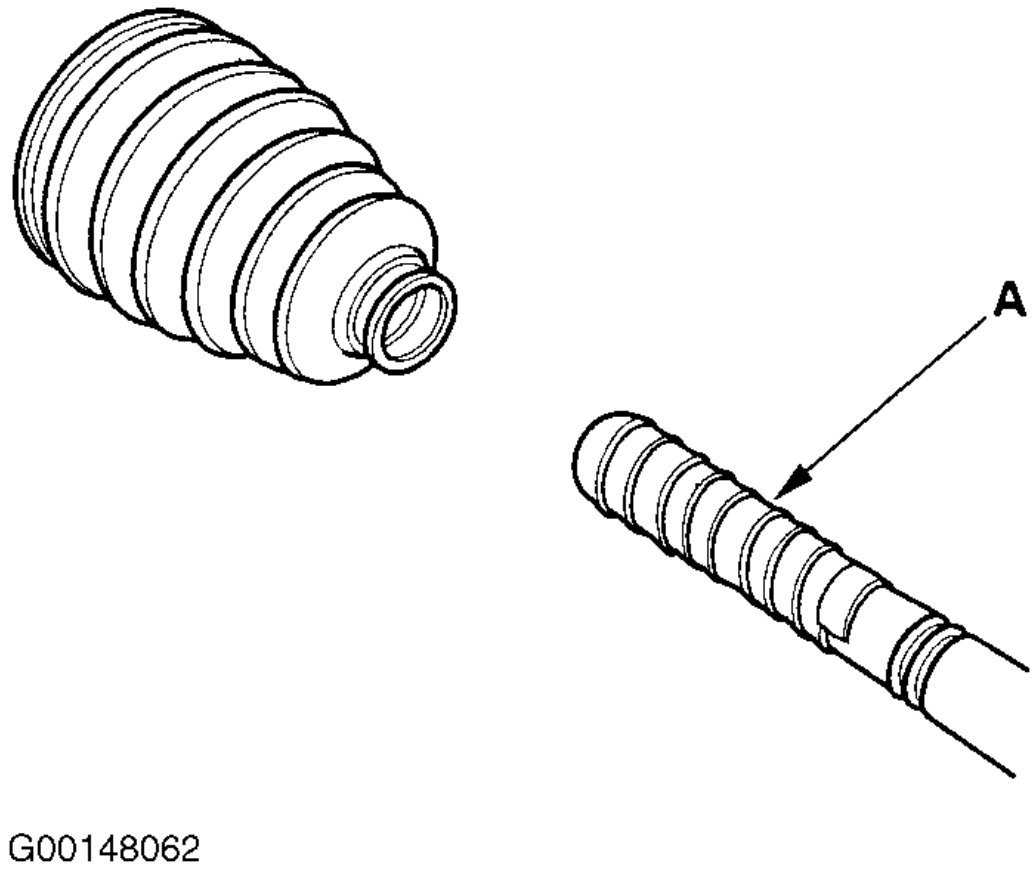


Fig. 19: Wrapping Joint Splines With Vinyl Tape
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Disassembly (Outboard Joint)

1. Remove the boot bands. Be careful not to damage the boot and dynamic damper. See **Fig. 20** . If the boot band is an ear clamp type (B), lift up the three tabs (A) with a screwdriver.
2. Slide the outboard boot (B) partially to the inboard joint side. Be careful not to damage the boot. See **Fig. 21** .
3. Wipe off the grease to expose the axle shaft and the outboard joint inner race.
4. Make a mark (A) on the axle shaft (B) at the same position of the outboard joint end (C). See **Fig. 22** .
5. Carefully clamp the axle shaft in a vise.
6. Remove the outboard joint (A) using the threaded adapter and a commercially available 5/8" slide hammer (B). See **Fig. 23** .
7. Remove the axle shaft from the vise.
8. Remove the stop ring from the axle shaft. See **Fig. 24** .

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9. Wrap the splines on the axle shaft with vinyl tape to prevent damage to the boot. See **Fig. 19** .
10. Remove the outboard boot. Be careful not to damage the boot.
11. Remove the vinyl tape.

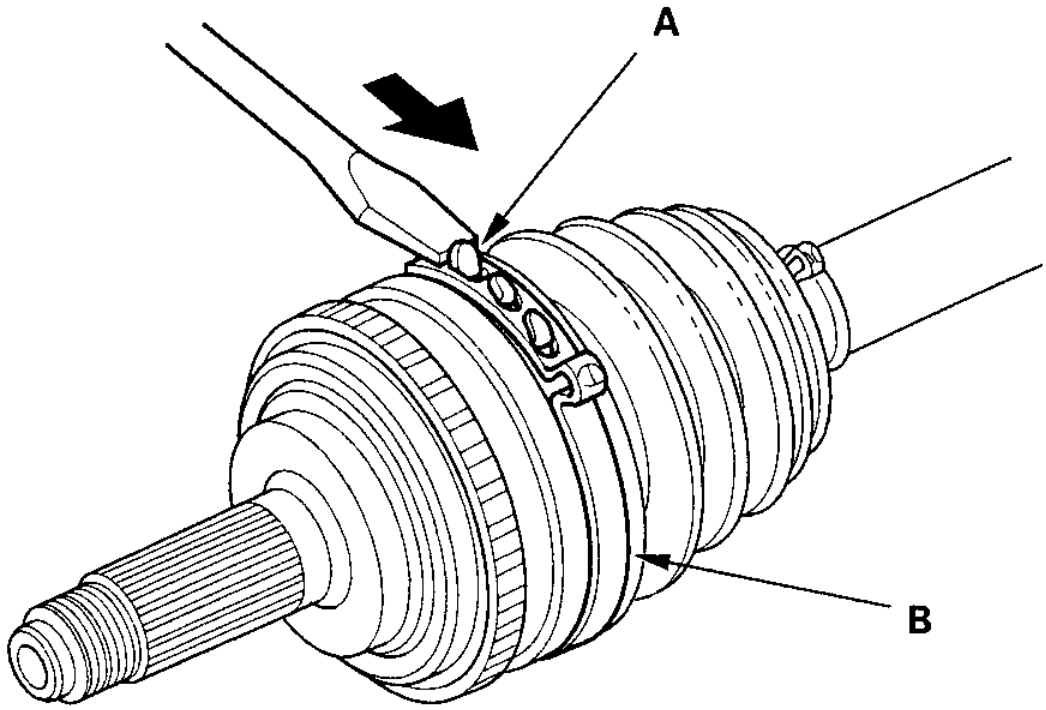
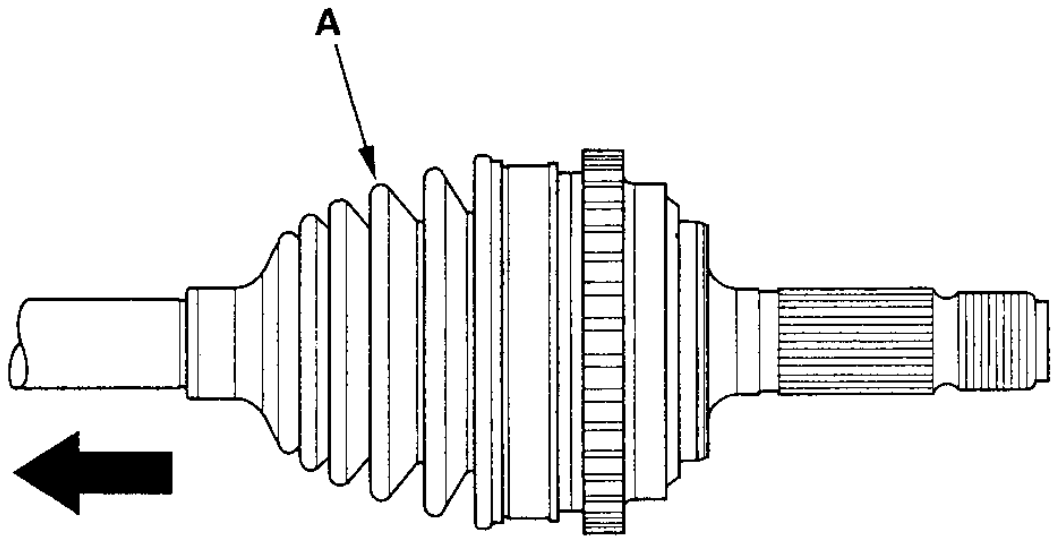


Fig. 20: Removing Outboard Joint Side Boot Bands
Courtesy of AMERICAN HONDA MOTOR CO., INC.

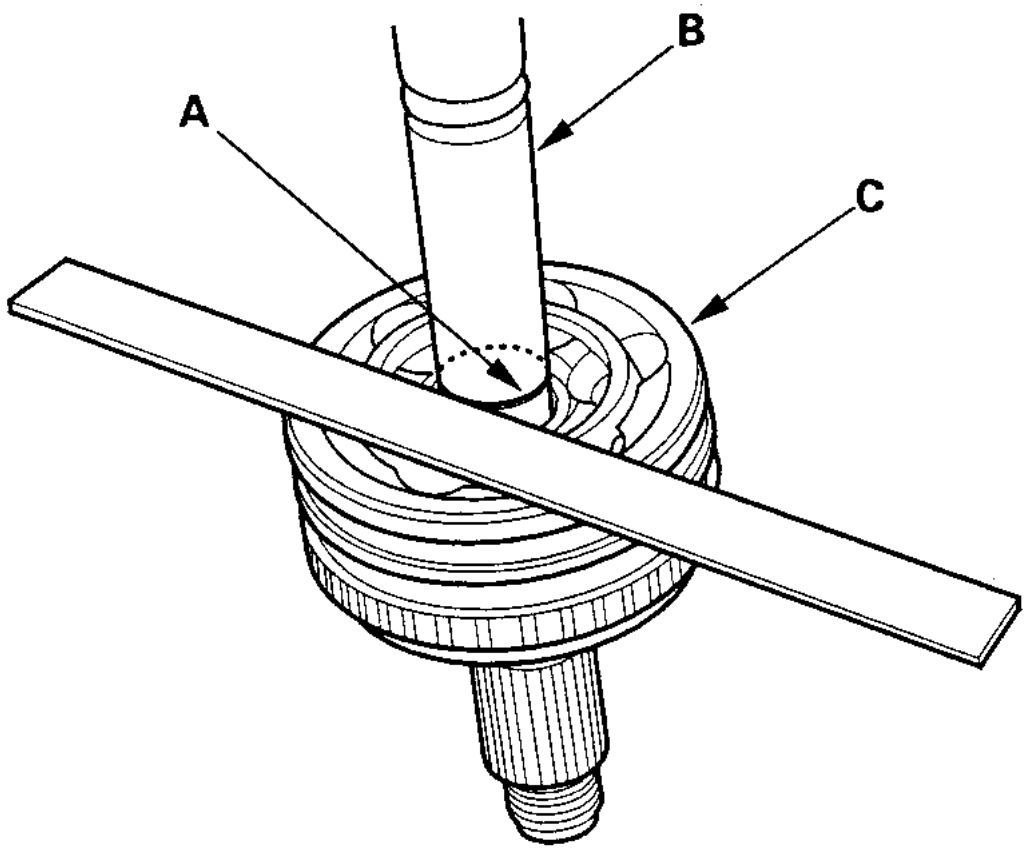
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Fig. 21: Removing Outboard Boot
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 22: Marking Axle Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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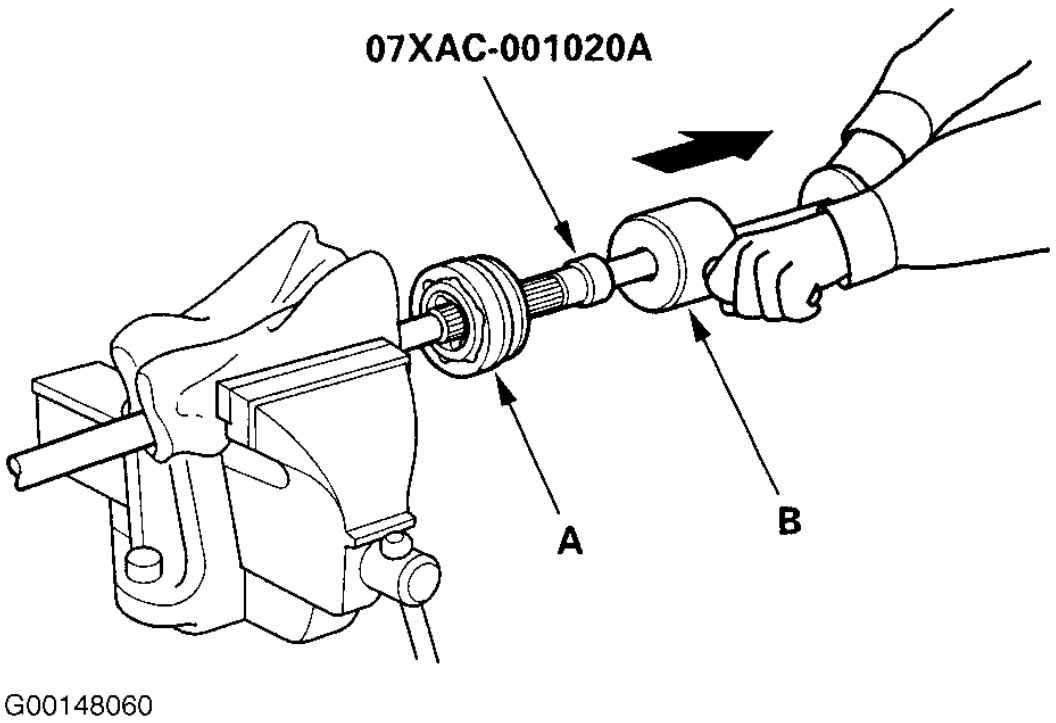
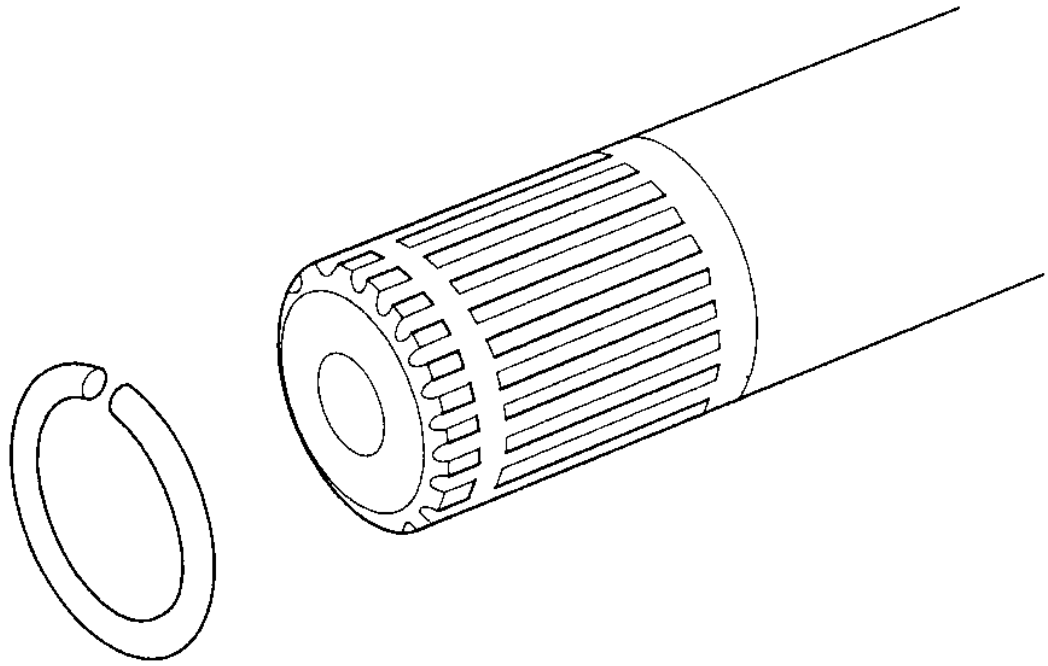


Fig. 23: Removing Outboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 24: Removing Stop Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reassembly (Inboard Joint)

NOTE: Refer to the exploded view as needed during this procedure. See Fig. 25 .

1. Wrap the splines with vinyl tape to prevent damage to the inboard boot. See **Fig. 19** .
2. Install the inboard boot on the axle shaft, then remove the vinyl tape. Be careful not to damage the inboard boot.
3. Install the spider (A) onto the axle shaft by aligning the marks (B) on the spider and the end of the axle shaft. See **Fig. 26** .
4. Install the circlip (C) into the axle shaft groove. Always rotate the circlip in its groove to make sure it is fully seated.
5. Fit the rollers (A) onto the spider (B) with their high shoulders facing outward, see **Fig. 27** and note these items:
   - Reinstall the rollers in their original positions on the spider by aligning the marks (C).
   - Hold the axle shaft pointed up to prevent the rollers from falling off.
6. Pack the inboard joint with the joint grease included in the axle shaft set. See **Fig. 28** .
7. Fit the inboard joint onto the axle shaft, and note these items:

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- Reinstall the inboard joint onto the axle shaft by aligning the marks (A) on the inboard joint and the rollers. See **Fig. 29** .
- Hold the axle shaft so the inboard joint points up to prevent it from falling off.

8. Adjust the inboard joint so the rollers are in the middle of the joint, then check the axle shaft length measurement. See **Fig. 30** .

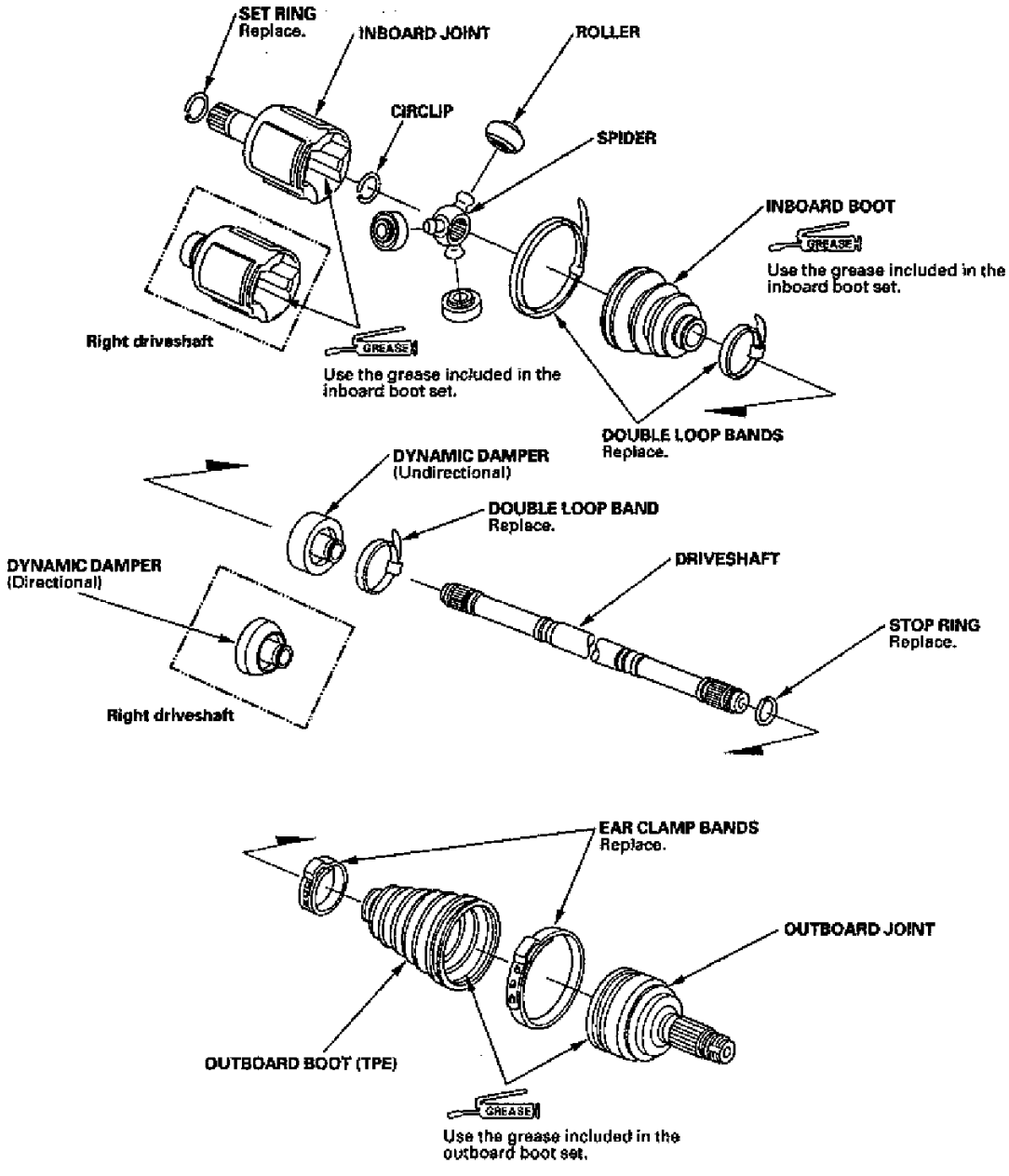


Fig. 25: Exploded View Of Front Axle Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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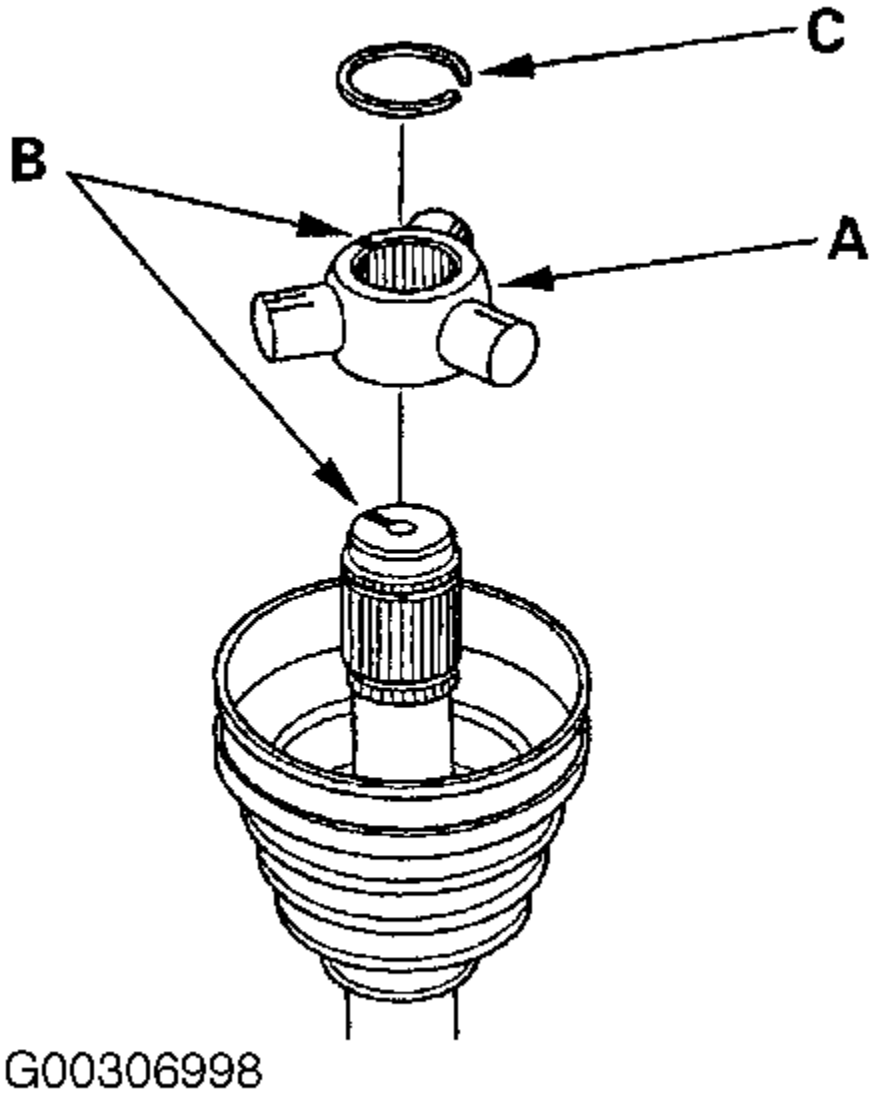


Fig. 26: Installing Spider On Axle Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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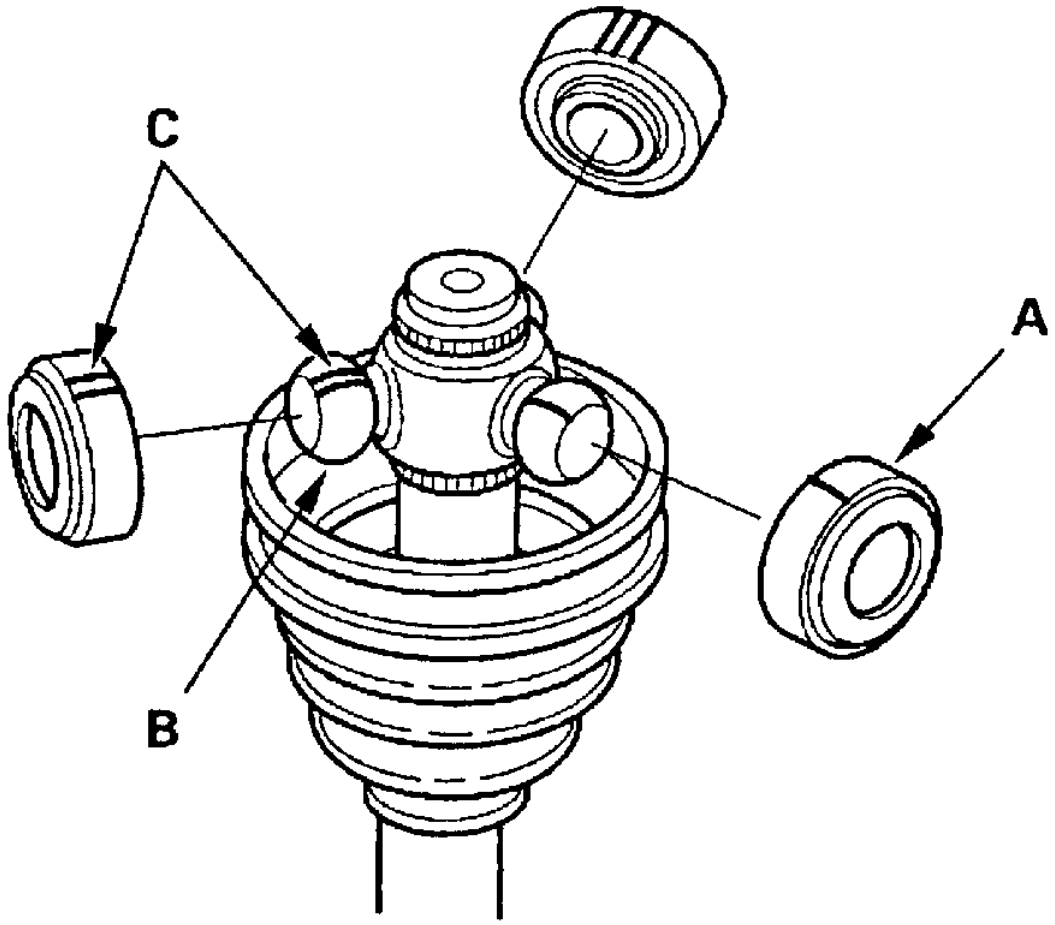


Fig. 27: Fitting Rollers Onto Spider
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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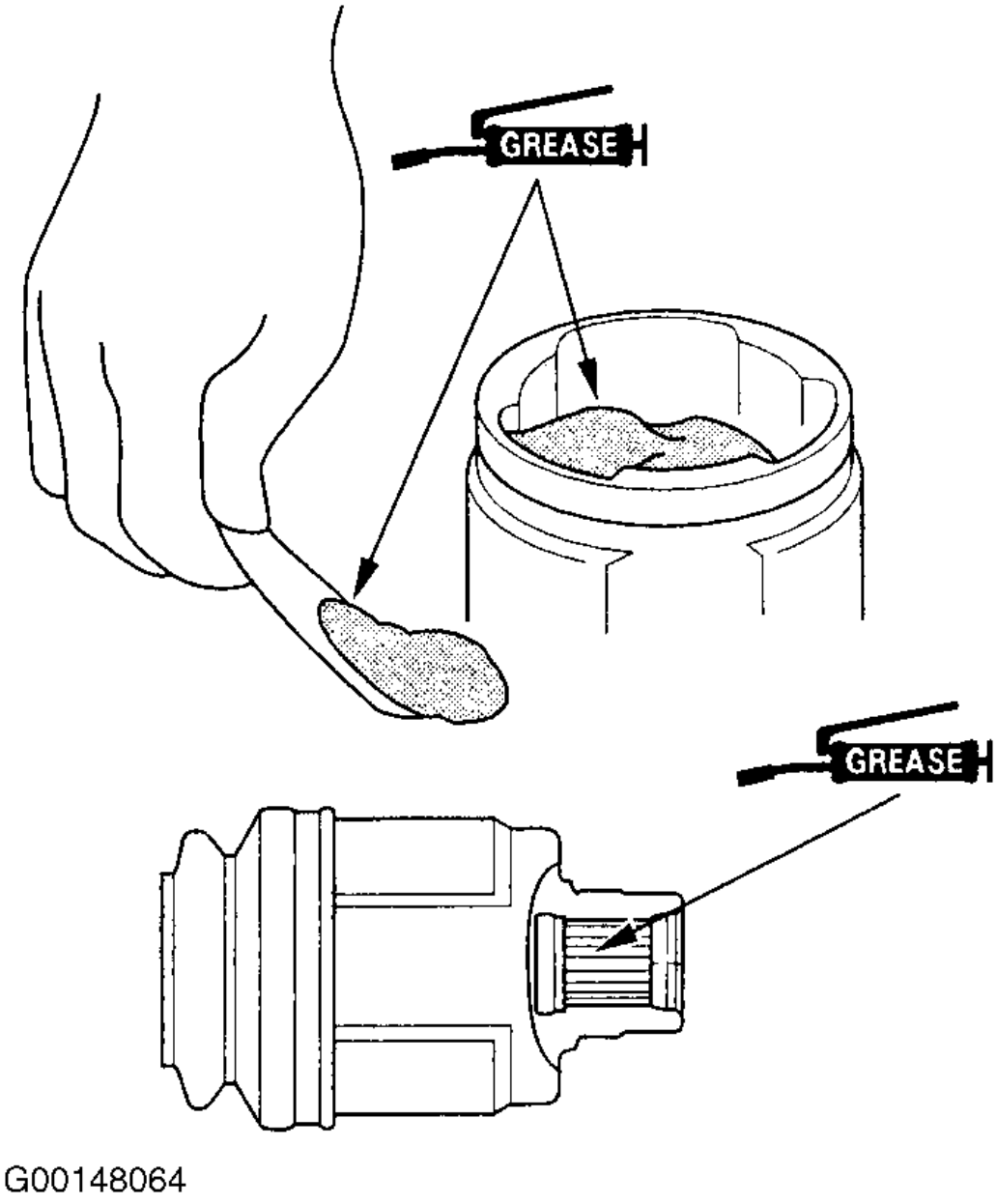


Fig. 28: Packing Inboard Joint With Joint Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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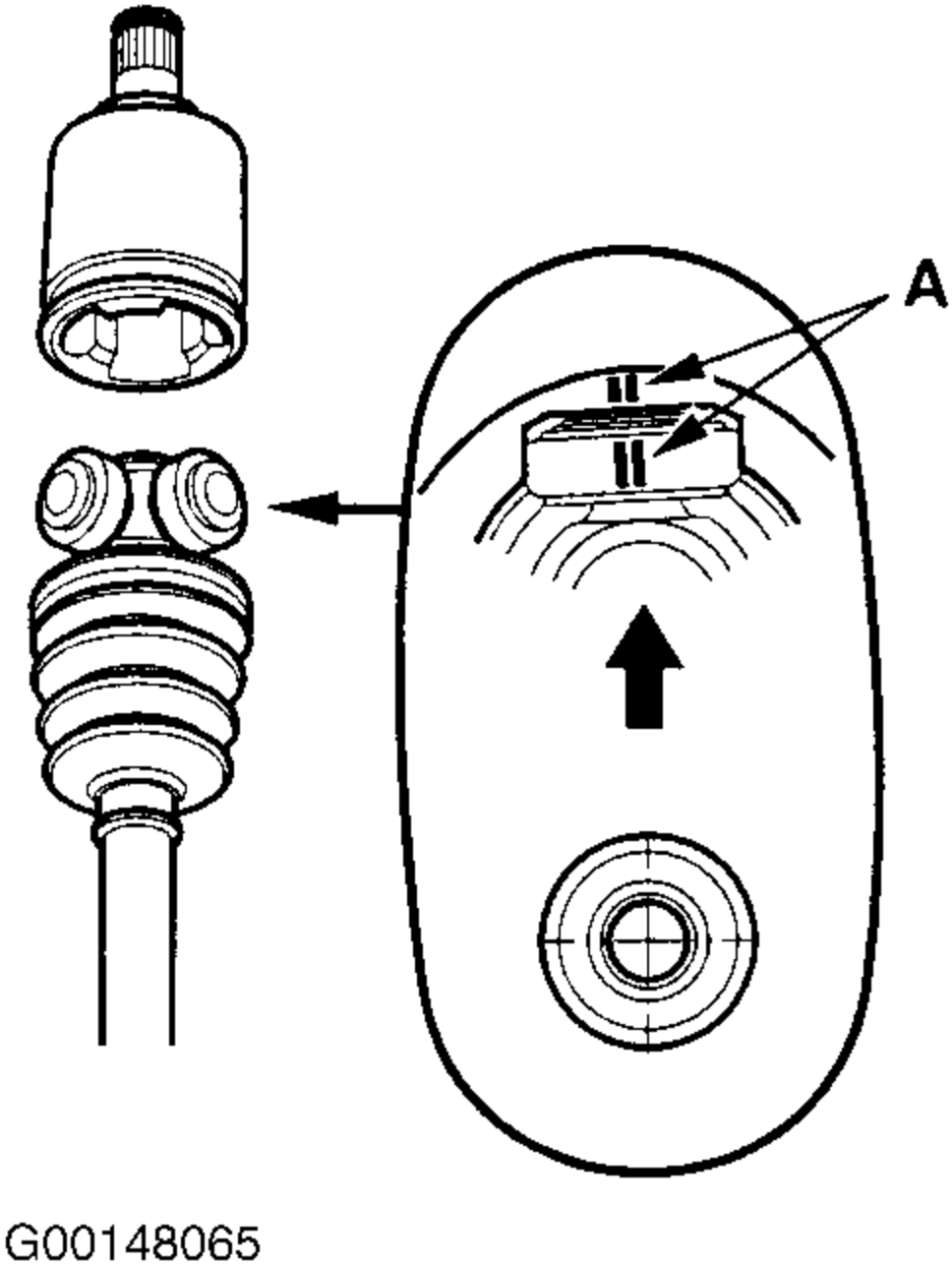


Fig. 29: Reinstalling Inboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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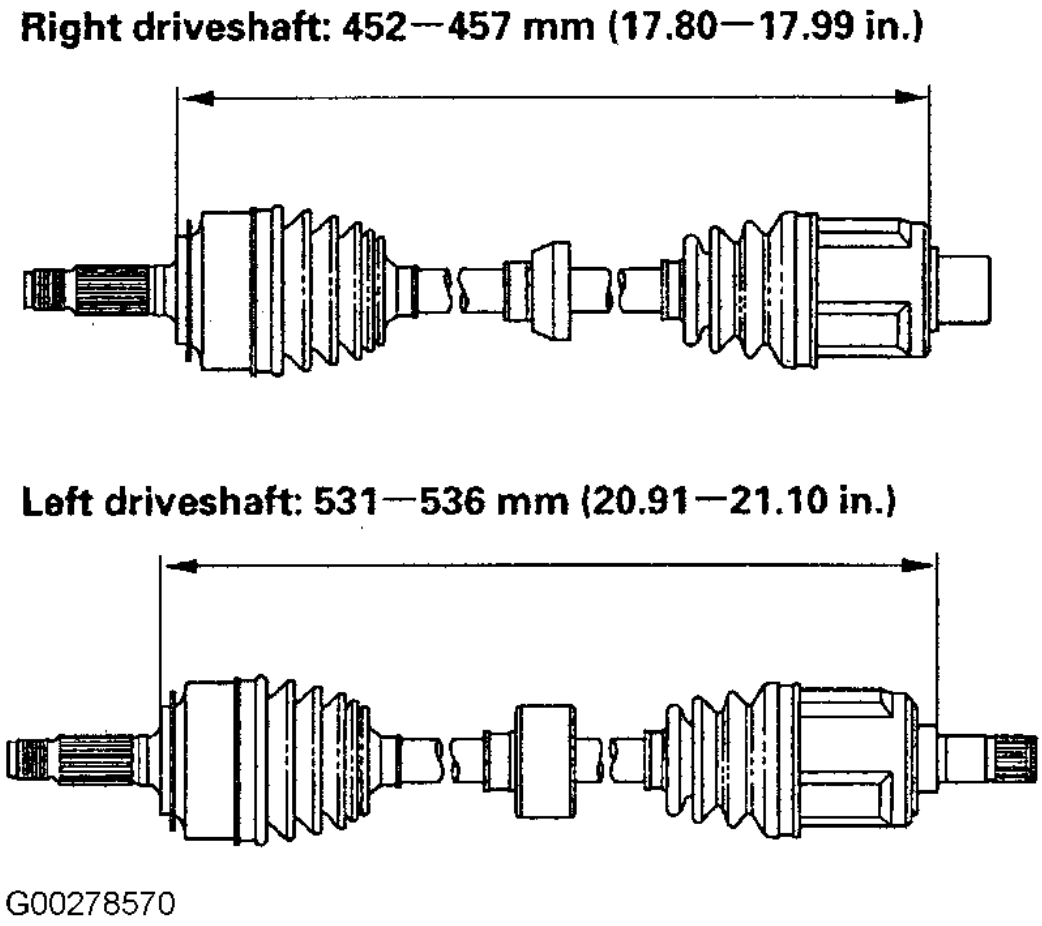


Fig. 30: Adjusting Inboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Fit the boot ends onto the axle shaft and the inboard joint, then install the new double loop band onto the boot. See **Fig. 31** .
10. Pull up the slack in the band by hand.
11. Mark a position (A) on the band .4-.6" (10-14 mm) from the clip (B). See **Fig. 32** .
12. Thread the free end of the band through the nose section of appropriate boot band tool (A), and into the slot on the winding mandrel (B). See **Fig. 33** .
13. Place a wrench on the winding mandrel of the boot band tool, and tighten the band until the marked spot (C) on the band meets the edge of the clip.
14. Lift up the boot band tool to bend the free end of the band 90° to the clip. Center-punch the clip, then fold over the remaining tail onto the clip. See **Fig. 34** .
15. Unwind the boot band tool, and cut off the excess free end of the band to leave a .2-.4" (5-10 mm.) tail protruding from the clip. See **Fig. 35** .

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NOTE: Make sure the band and clip do not interfere with anything, and the band does not move. Remove any grease remaining on the surrounding surfaces.

16. Bend the band end (A) by tapping it down with a hammer. See **Fig. 36** .
17. Install the boot band on the other end of the boot, and repeat steps 9 - 16 .
18. Install the new set ring. See **Fig. 8** .

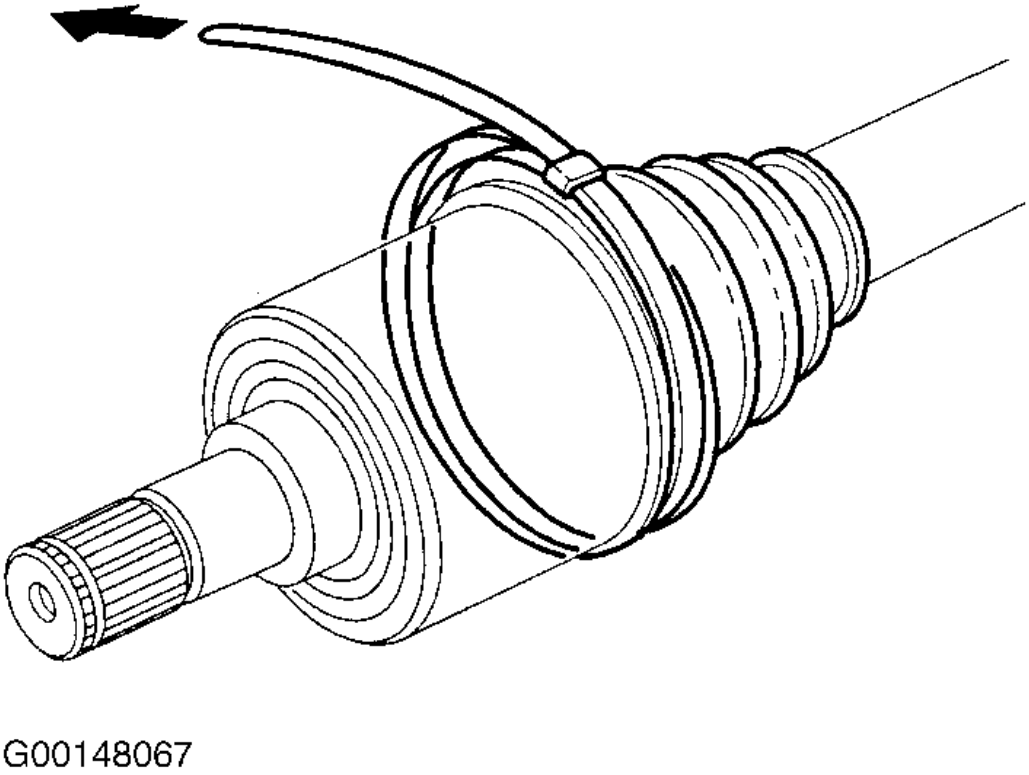


Fig. 31: Installing Boot Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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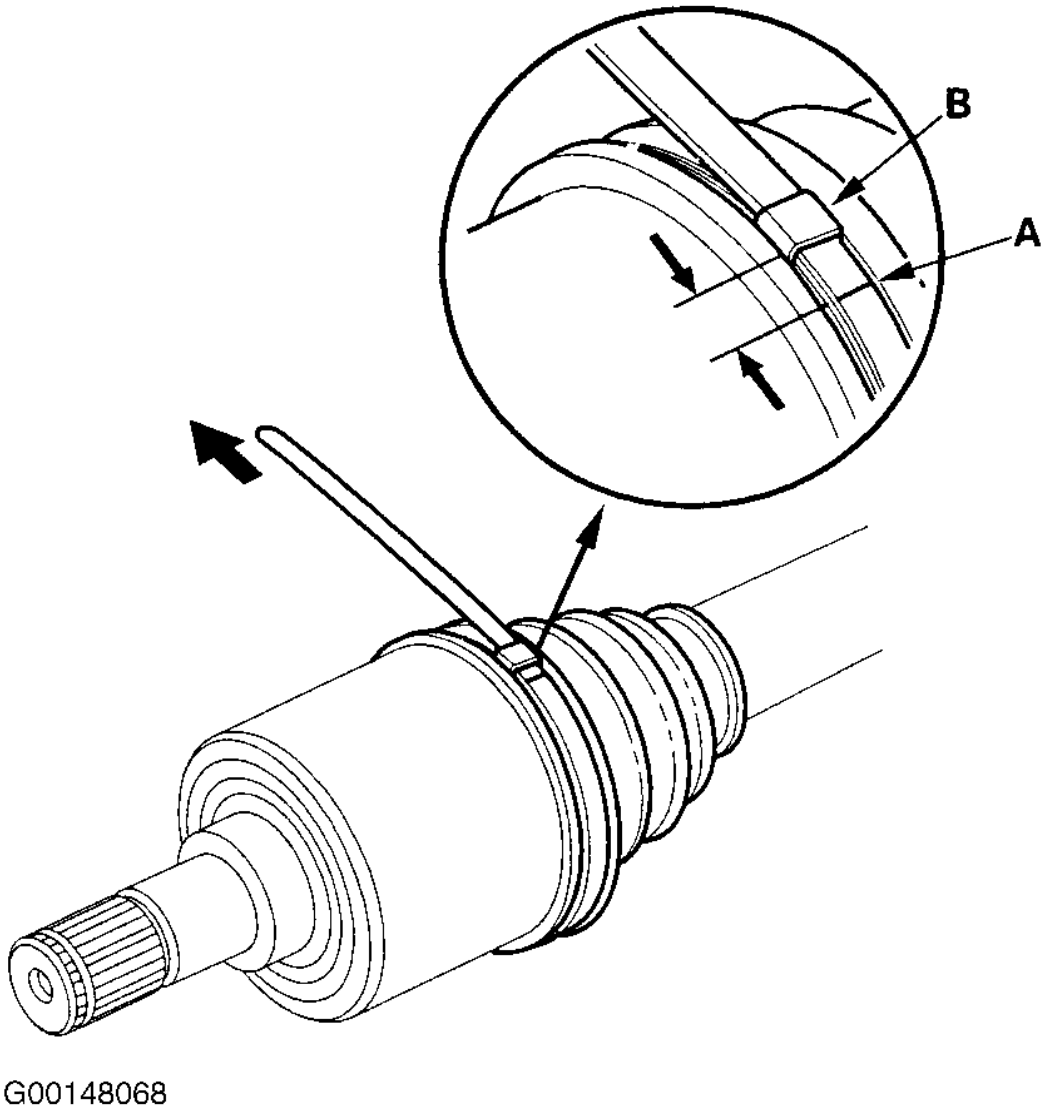


Fig. 32: Marking Boot Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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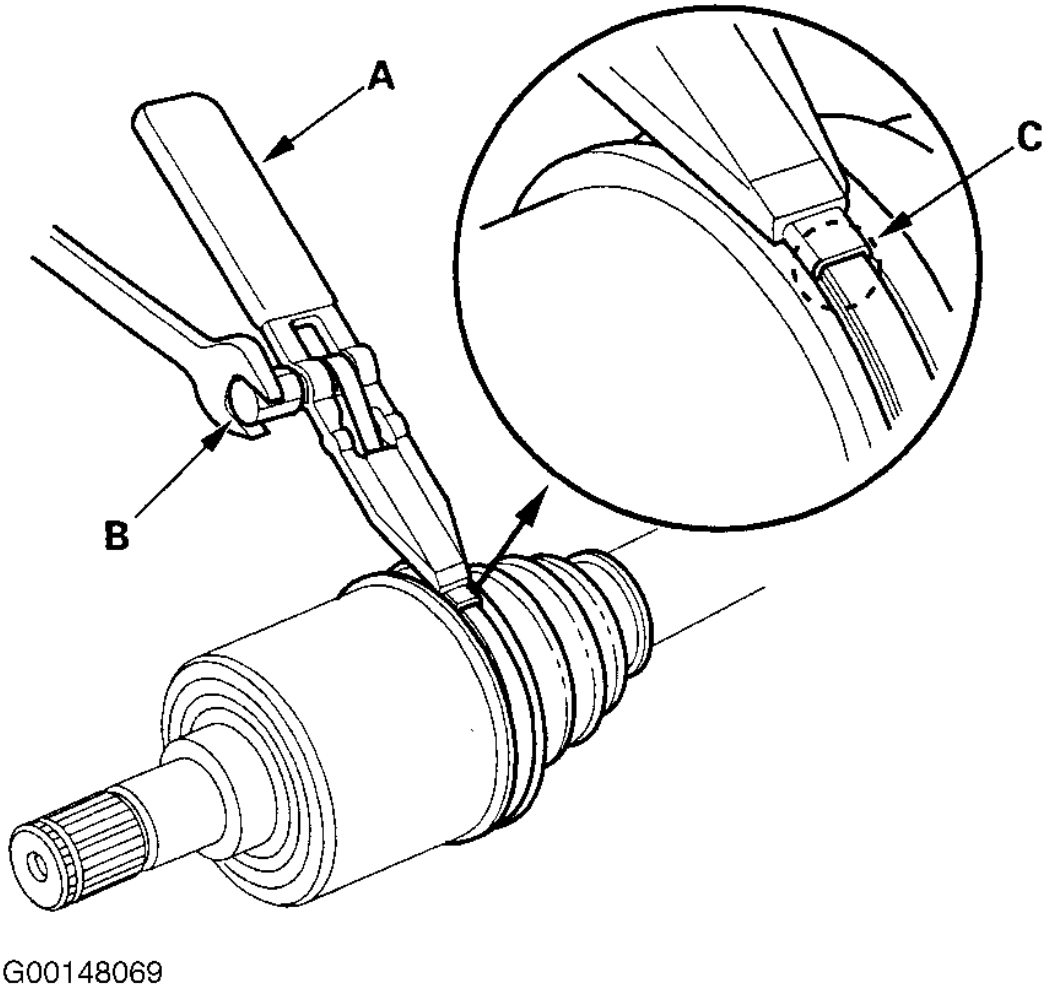


Fig. 33: Installing Boot Band (1 of 4)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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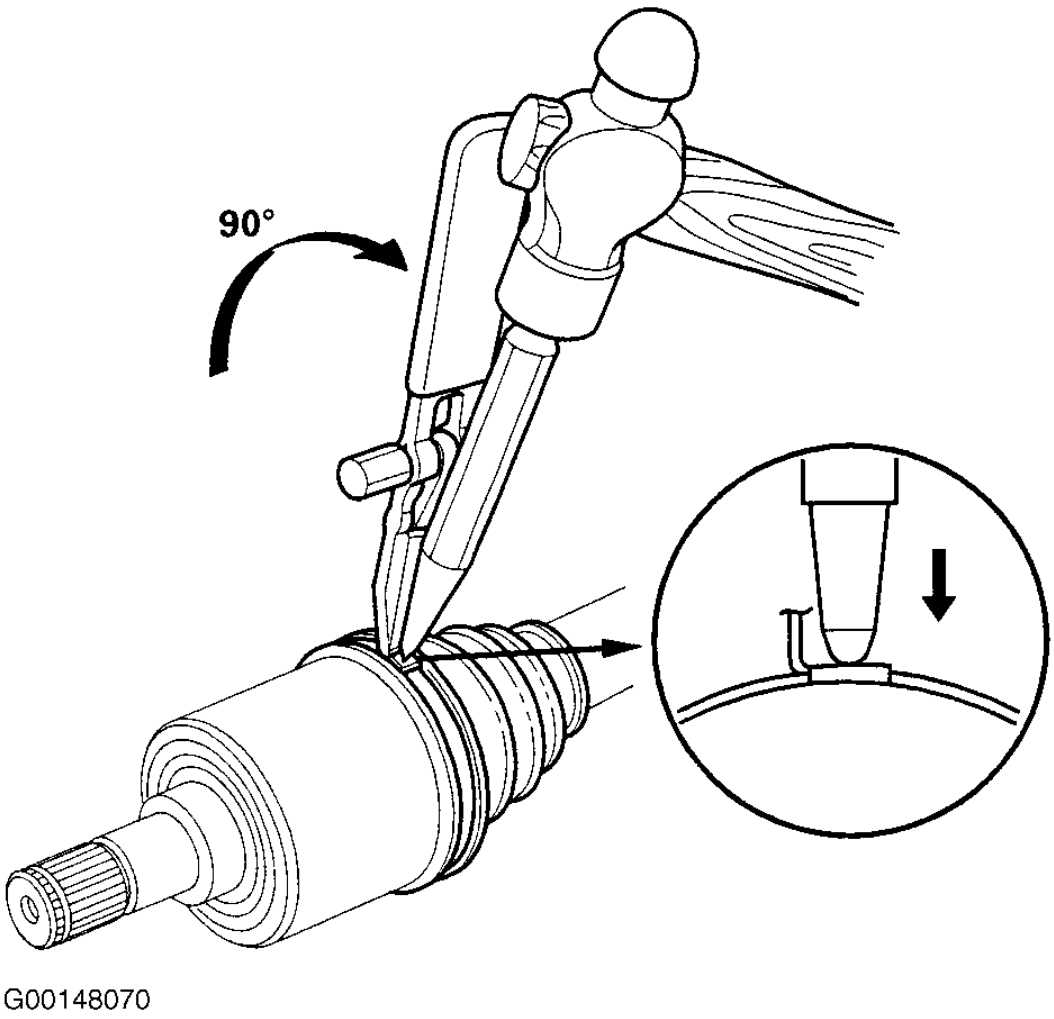


Fig. 34: Installing Boot Band (2 of 4)
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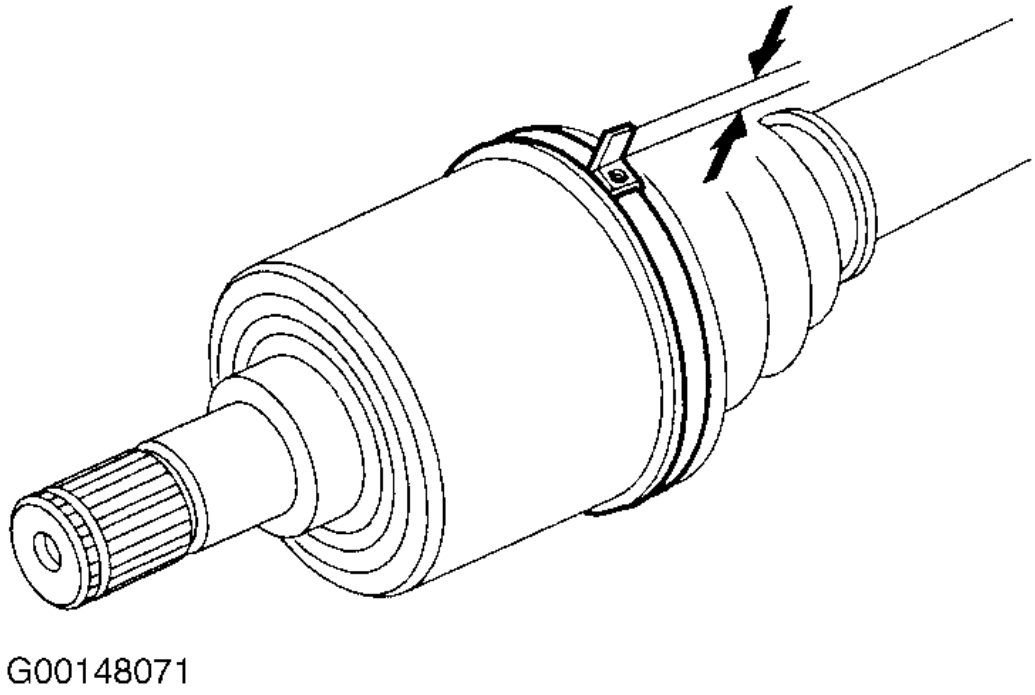


Fig. 35: Installing Boot Band (3 of 4)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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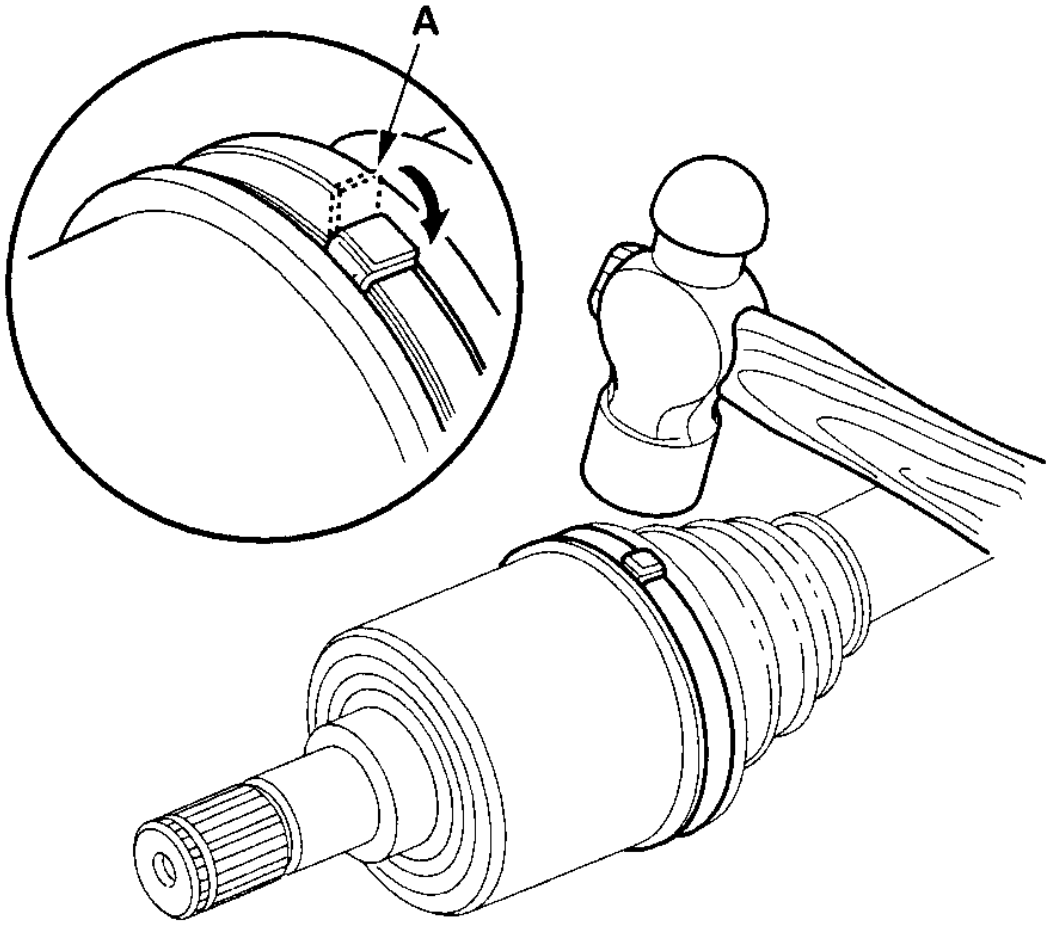


Fig. 36: Installing Boot Band (4 of 4)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

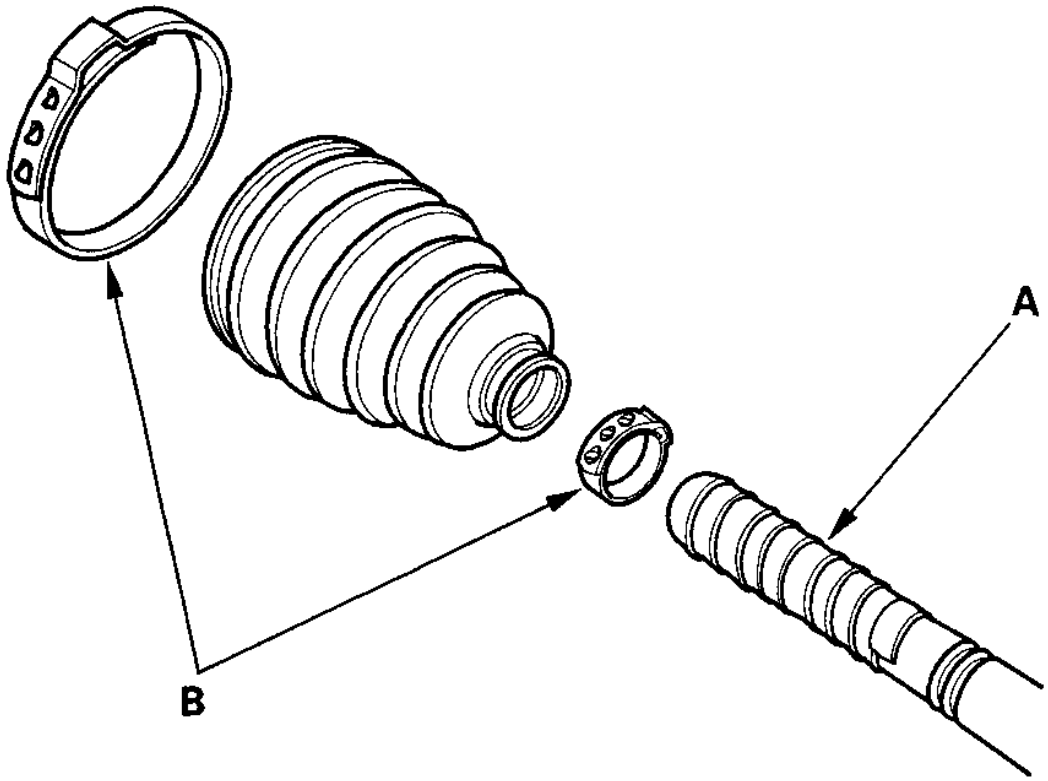
Reassembly (Outboard Joint)

NOTE: Refer to the exploded view as needed during this procedure. See Fig. 25 .

1. Wrap the splines with vinyl tape (A) to prevent damage to the outboard boot. See **Fig. 37** .
2. Install the new ear clamp bands (B) and outboard boot, then remove the vinyl tape. Be careful not to damage the boot. See **Fig. 37** .
3. Seat the new stop ring into the axle shaft groove (A). See **Fig. 24** .
4. Insert the axle shaft (A) into the outboard joint (B) until the circlip (C) is close on the joint. See **Fig. 38** .
5. To completely seat the outboard joint, pick up the axle shaft and joint, and drop them from about 4" (10 cm) onto a hard surface. Do not use a hammer as excessive force may damage the axle shaft. See **Fig. 39** .

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6. Check the alignment of the paint mark (A) with the outboard joint end (C). See **Fig. 22** .
7. Pack the outboard joint with 4.9-5.3 oz. (140-150 g) joint grease included in the new joint boot set. See **Fig. 40** .
8. Adjust the length of the axle shafts. See **Fig. 30** . Adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the groove of the axle shaft and joint.
9. Fit the boot (A) ends onto the axle shaft (B) and outboard joint (C). See **Fig. 41** .
10. Close the ear portion (A) of the band with boot band pincers (Kent-Moore J35910) or equivalent (B). See **Fig. 42** .
11. Check the clearance between the closed ear portion of the band. If the clearance is not within the standard, close the ear portion of the band further. See **Fig. 43** .
12. Repeat steps 10 and 11 for the band on the other end of the boot.



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Fig. 37: Installing New Ear Clamp Bands
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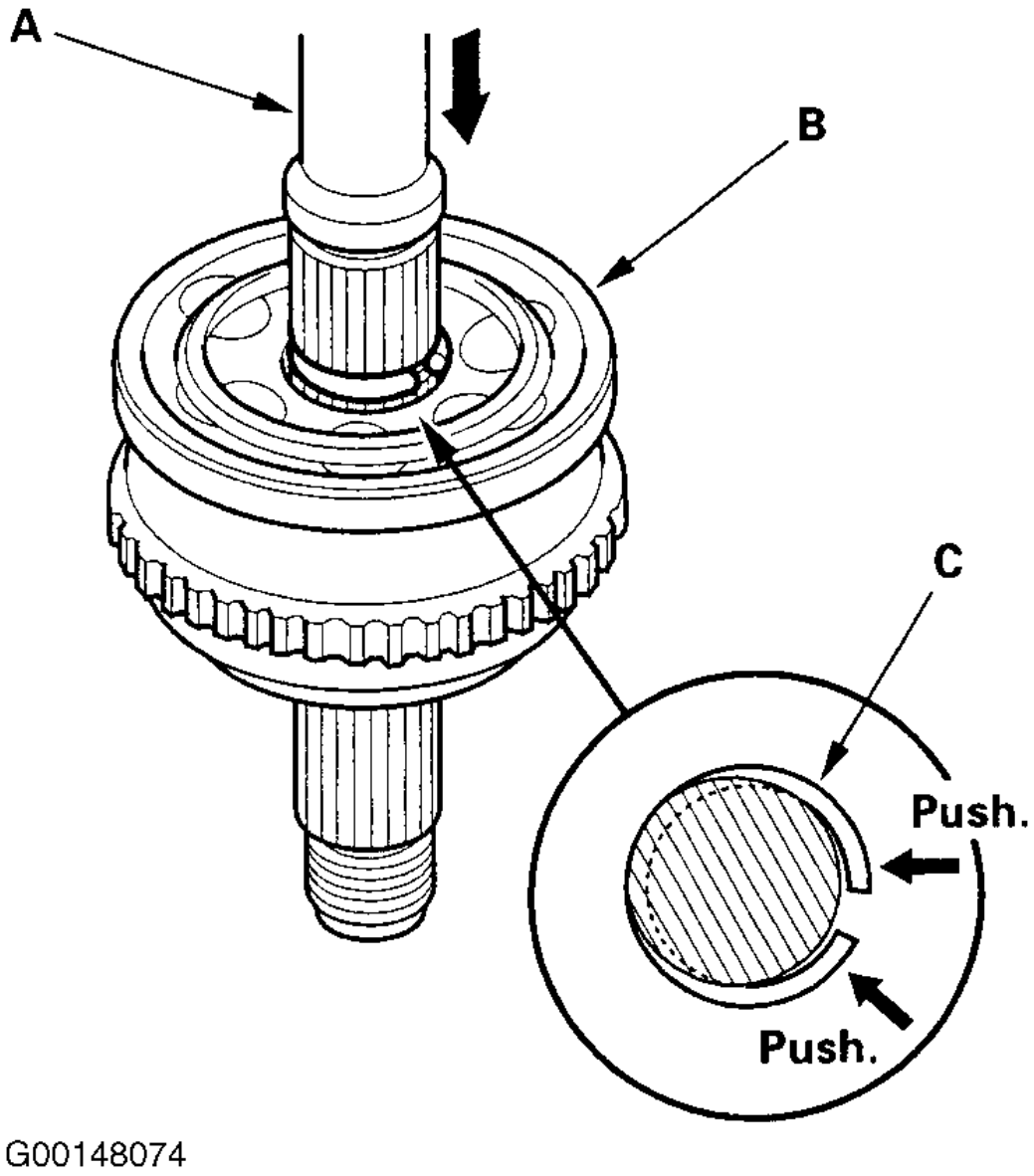


Fig. 38: Installing Circlip Onto Outboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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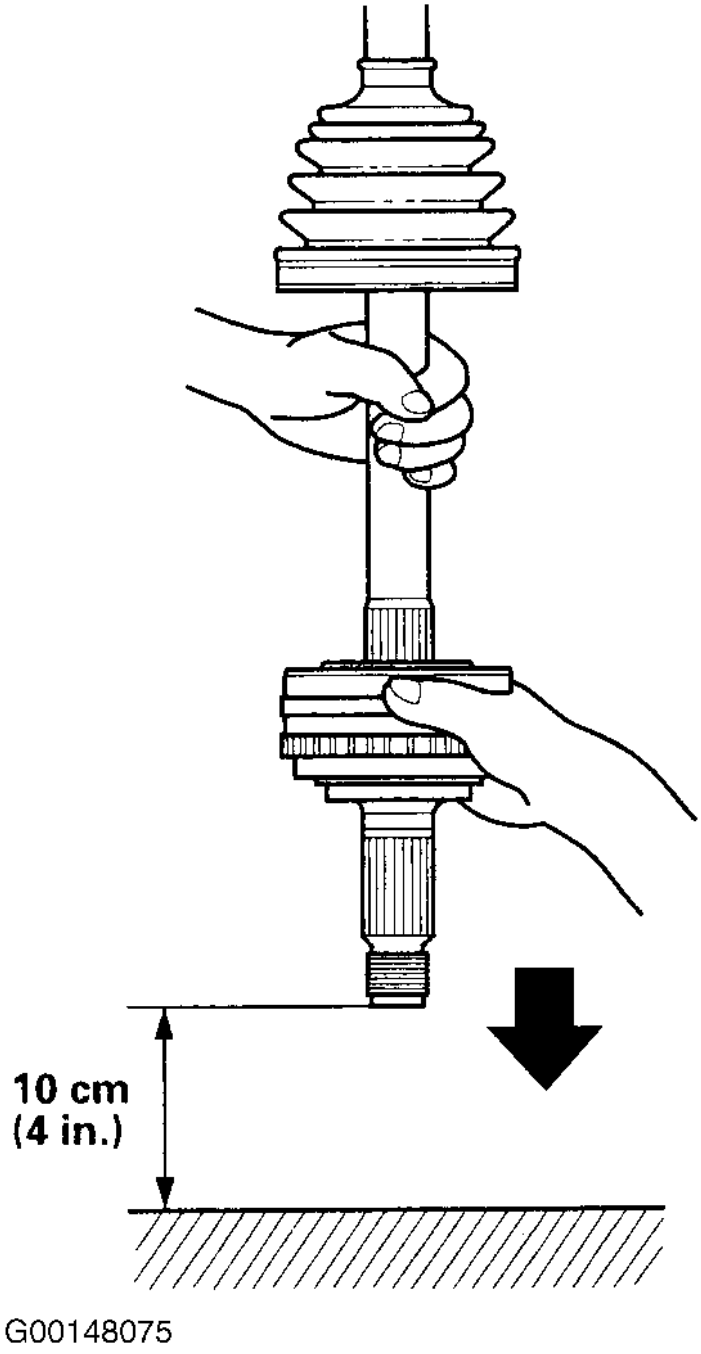


Fig. 39: Seating Outboard Joint
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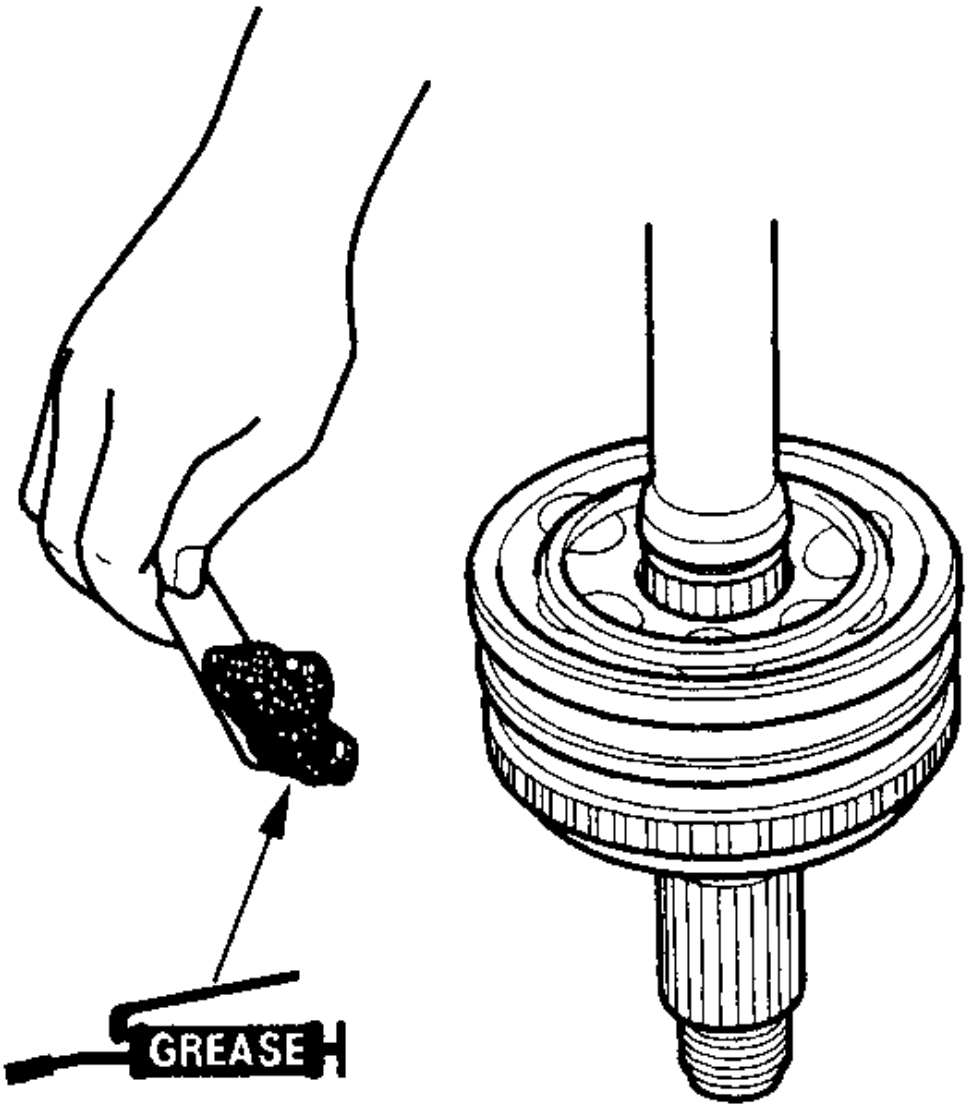


Fig. 40: Packing Outboard Joint With Grease
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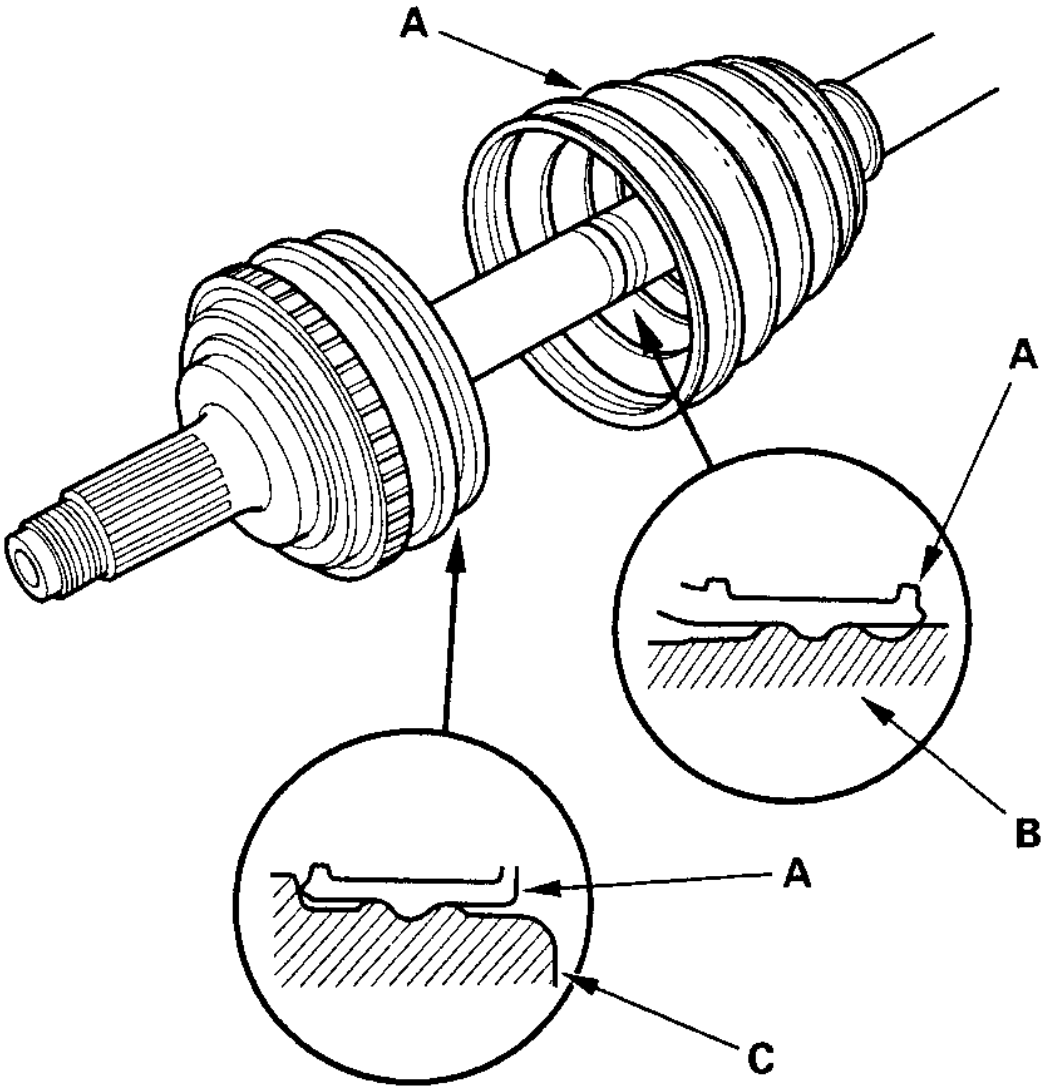


Fig. 41: Fitting Boot Ends Onto Axle Shaft
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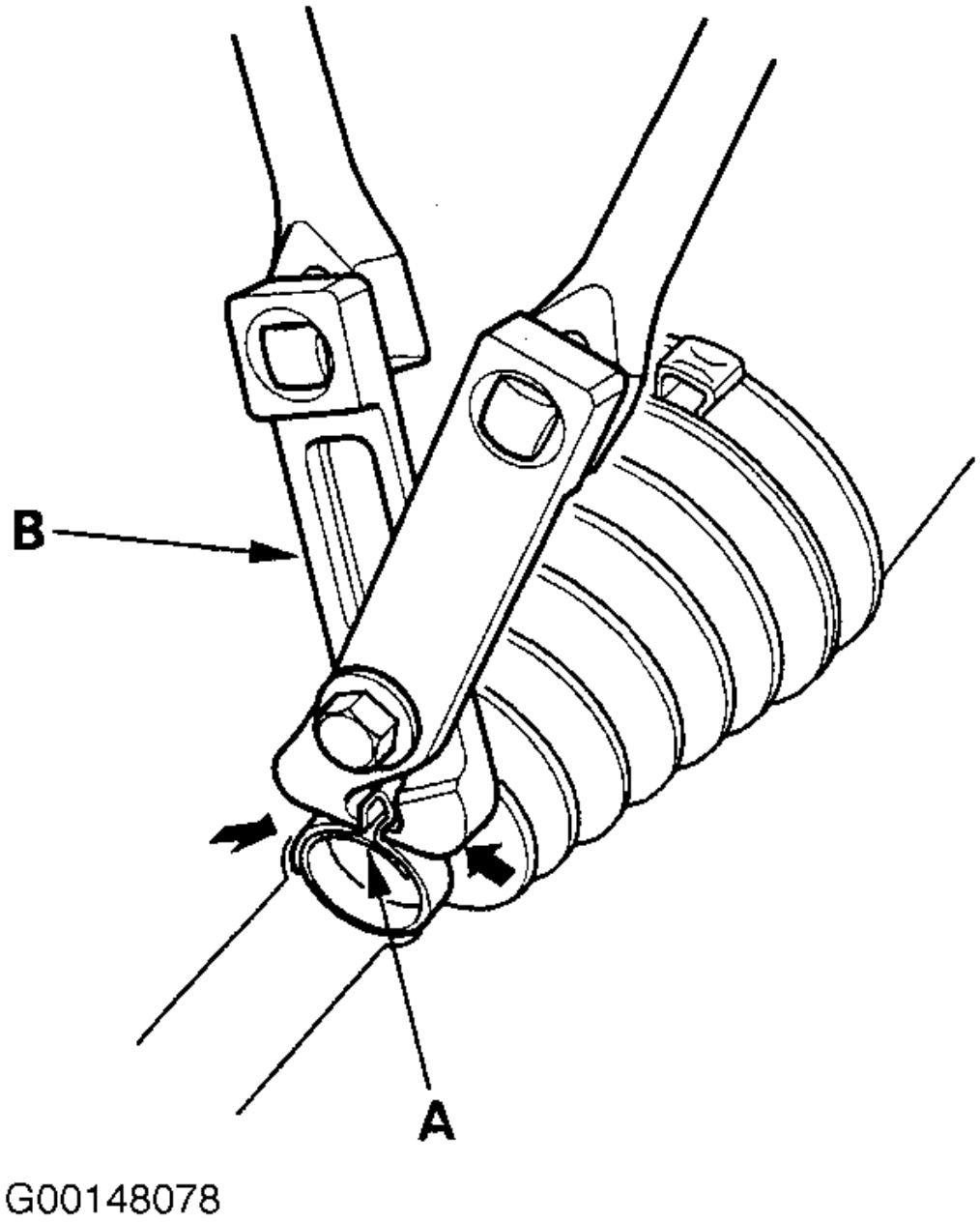


Fig. 42: Closing Ear Portion Of Boot Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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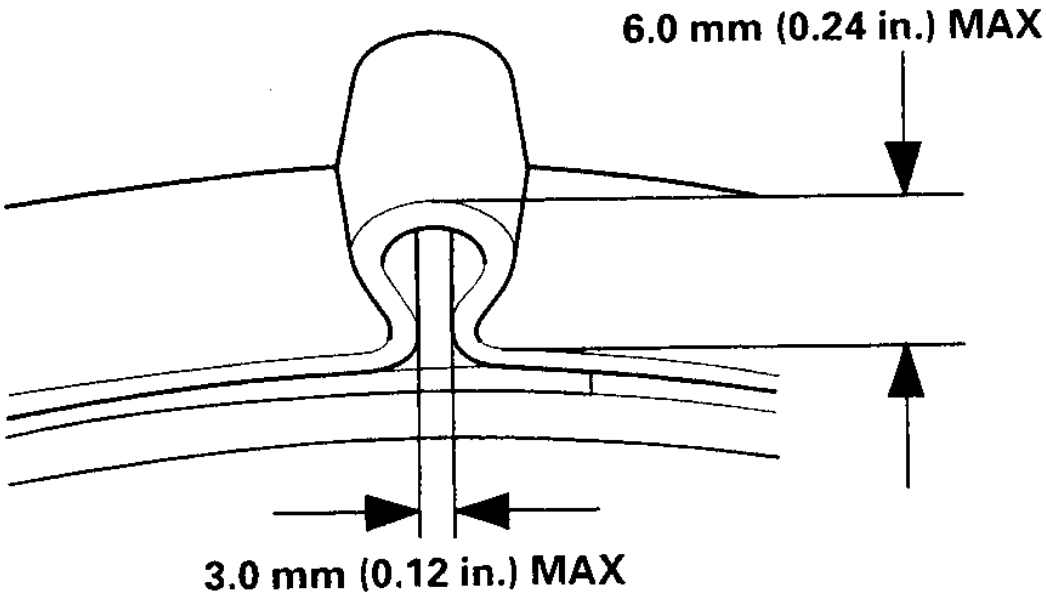


Fig. 43: Checking Clearance Between Ear Portion Of Boot Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTERMEDIATE SHAFT

Disassembly

1. Remove the set ring (A), outer seal (B) and the external snap ring (C). See **Fig. 44** .
2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using the special tools and a press. Be careful not to damage the metal rings (C) on the intermediate shaft during disassembly. See **Fig. 45** .
3. Remove the internal snap ring. See **Fig. 46** .
4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the oil seal driver, half shaft base and a press. See **Fig. 47** .

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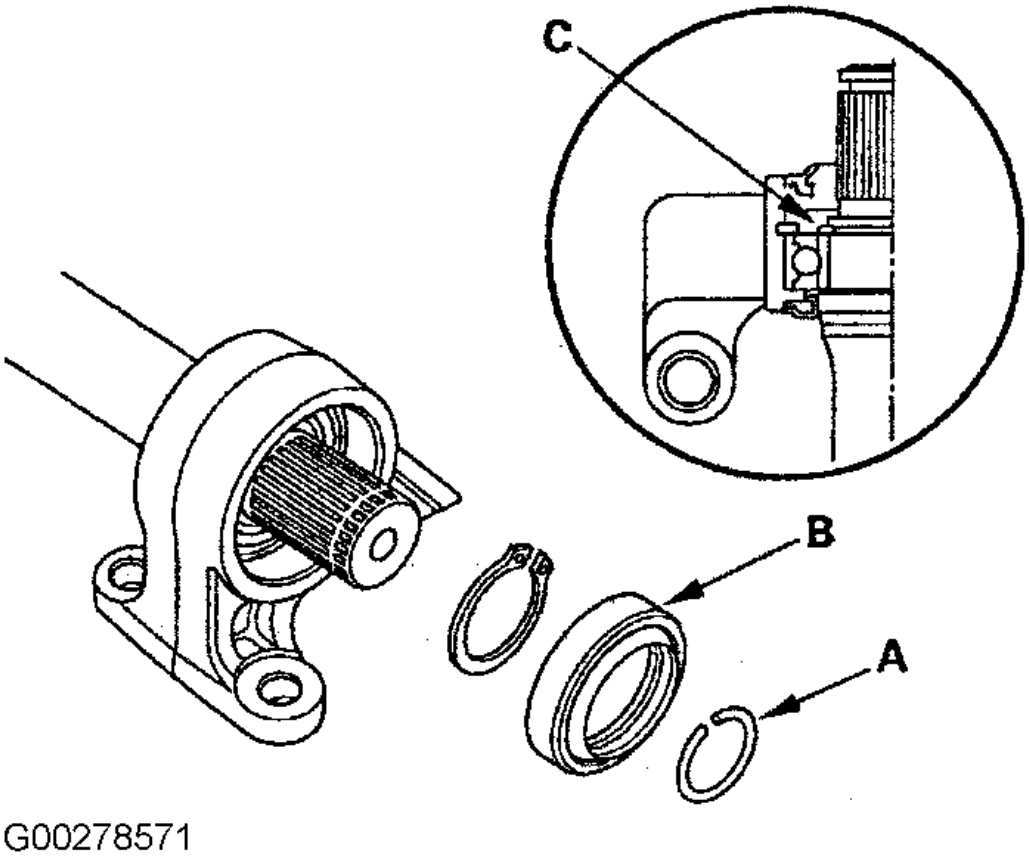


Fig. 44: Removing Set Ring, Outer Seal & External Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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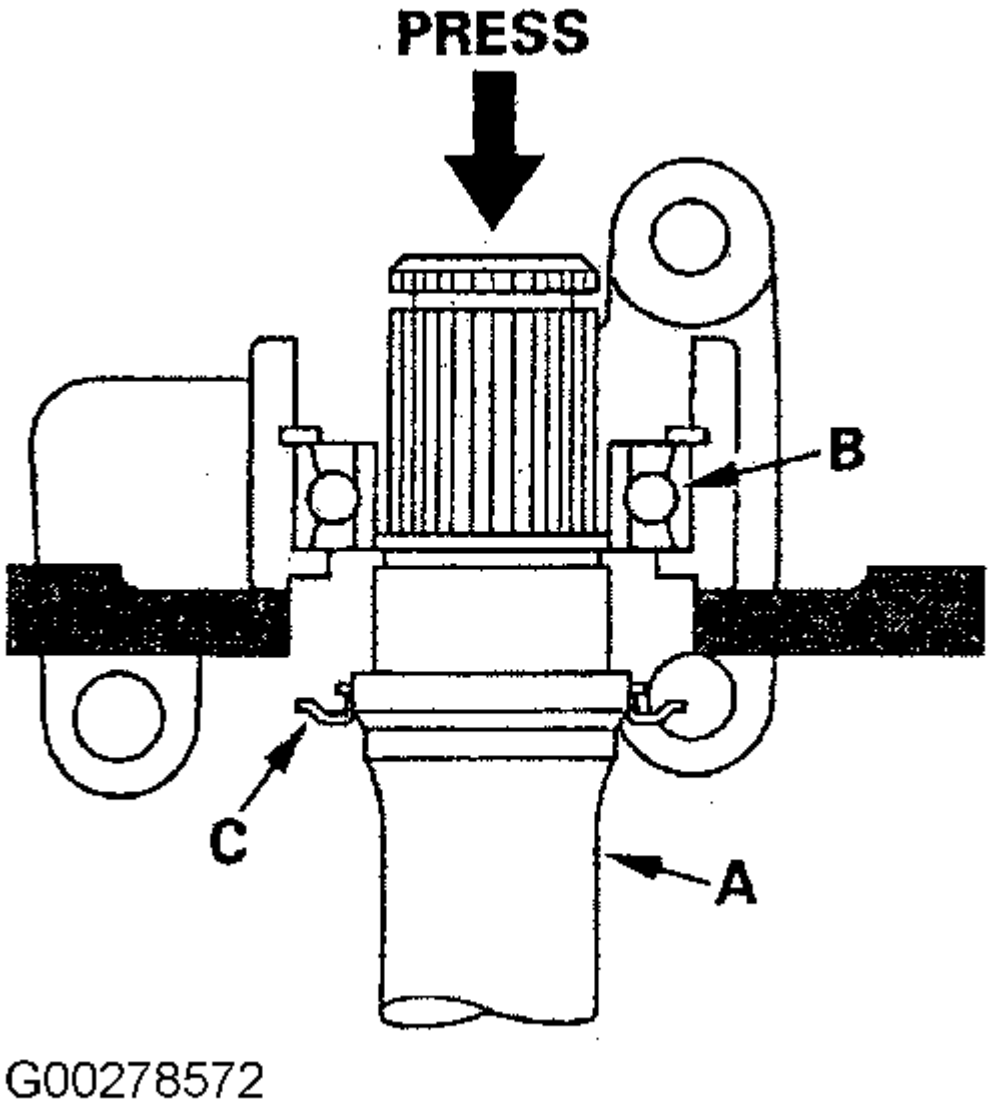


Fig. 45: Removing Intermediate Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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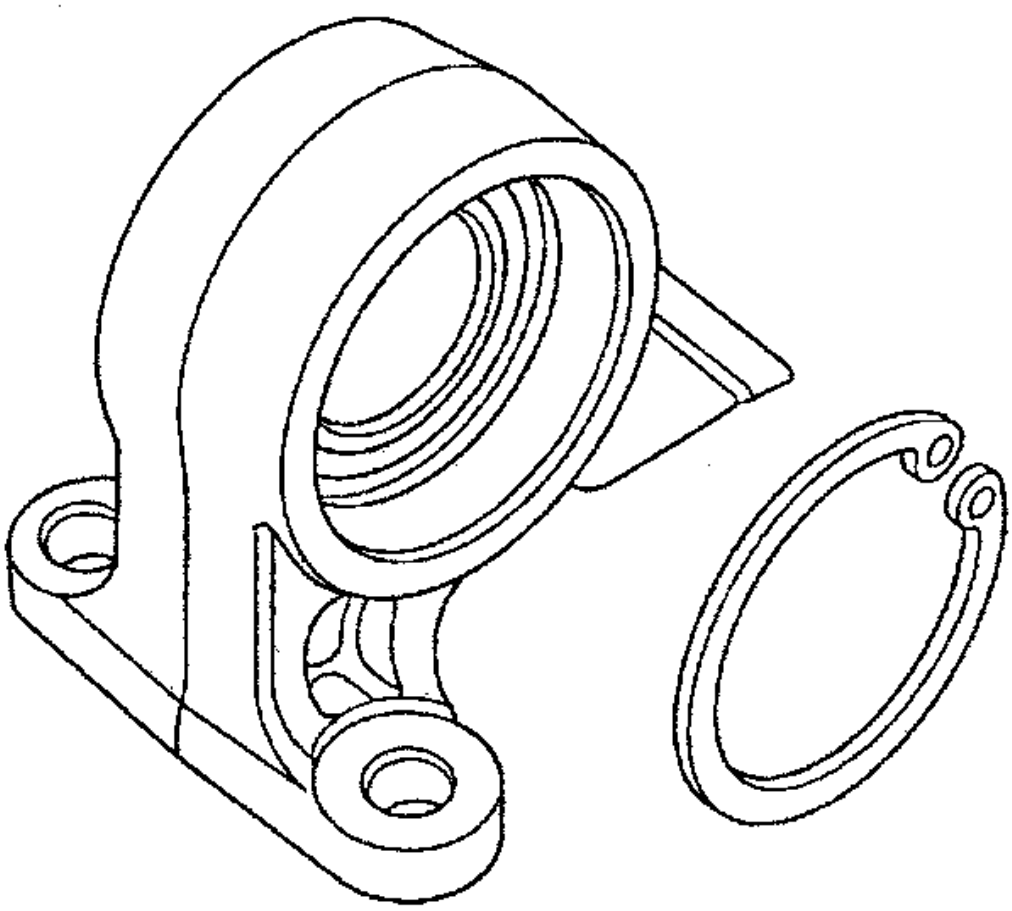


Fig. 46: Removing Internal Snap Ring
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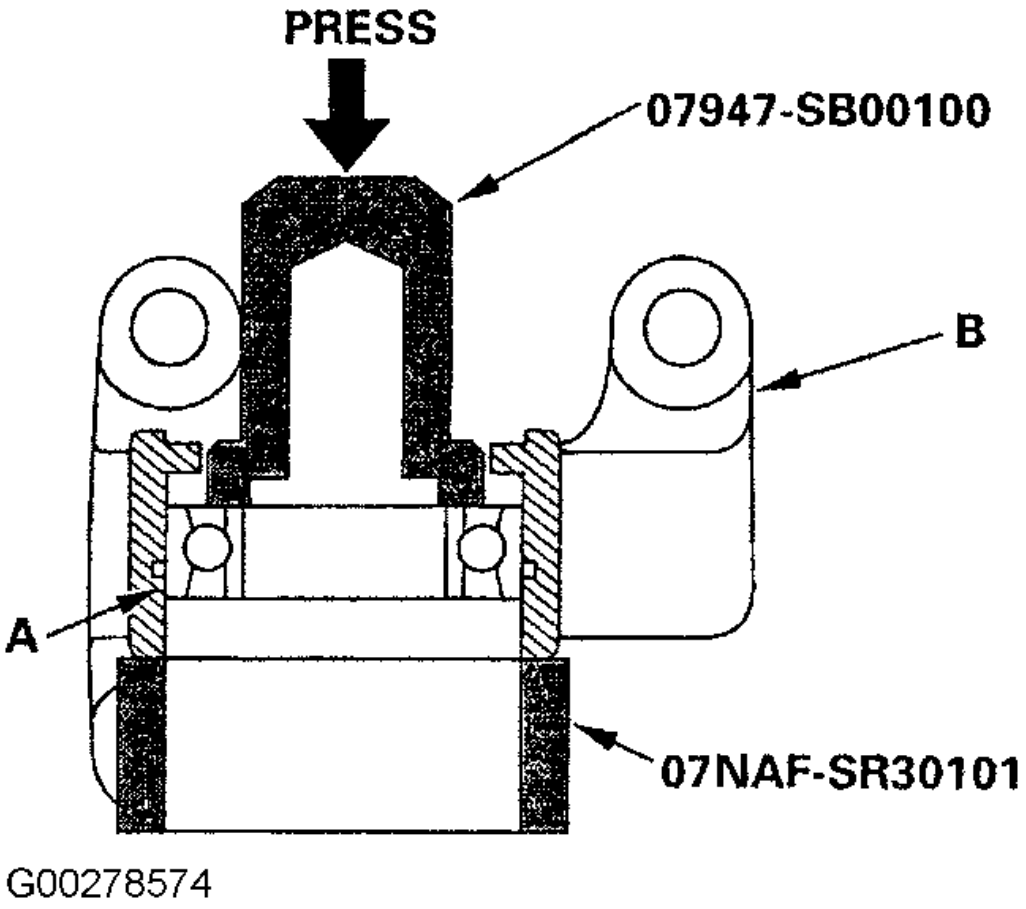


Fig. 47: Removing Internal Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reassembly

NOTE: Refer to the exploded view as needed during this procedure. See Fig. 48 .

1. Clean the disassembled parts with solvent, and dry them with compressed air. DO NOT wash the rubber parts with solvent.
2. Press the intermediate shaft bearing (A) into the bearing support (B) using the special tools and a press. See **Fig. 49** .
3. Install, then seat the internal snap ring into the groove of the bearing support. See **Fig. 46** .
4. Press the intermediate shaft (A) into the shaft bearing using attachment and a press. See **Fig. 50** .
5. Install, then seat the external snap ring (A) into the groove of the intermediate shaft. See **Fig. 44** .

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6. Install the outer seal (A) into the bearing support (B) using oil seal driver and a press. See **Fig. 52** .
7. Install the set ring (A). See **Fig. 44** .

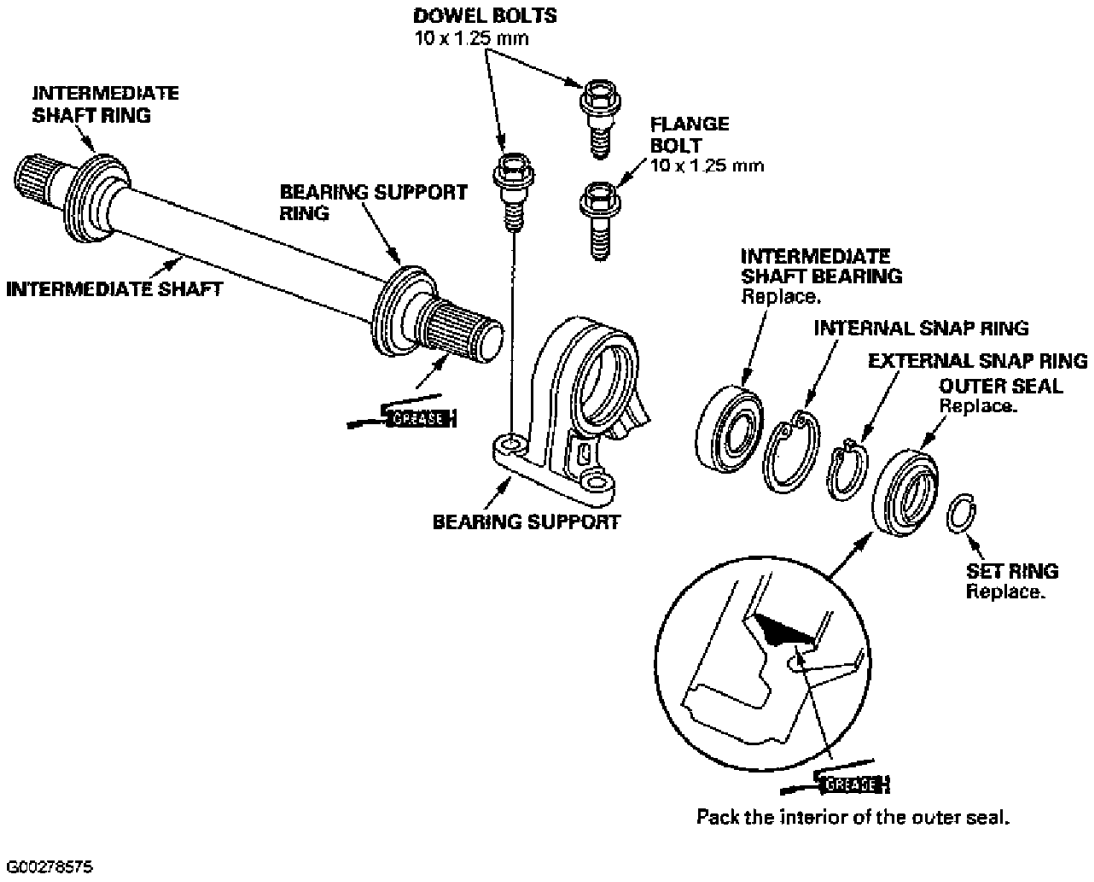


Fig. 48: Exploded View Of Intermediate Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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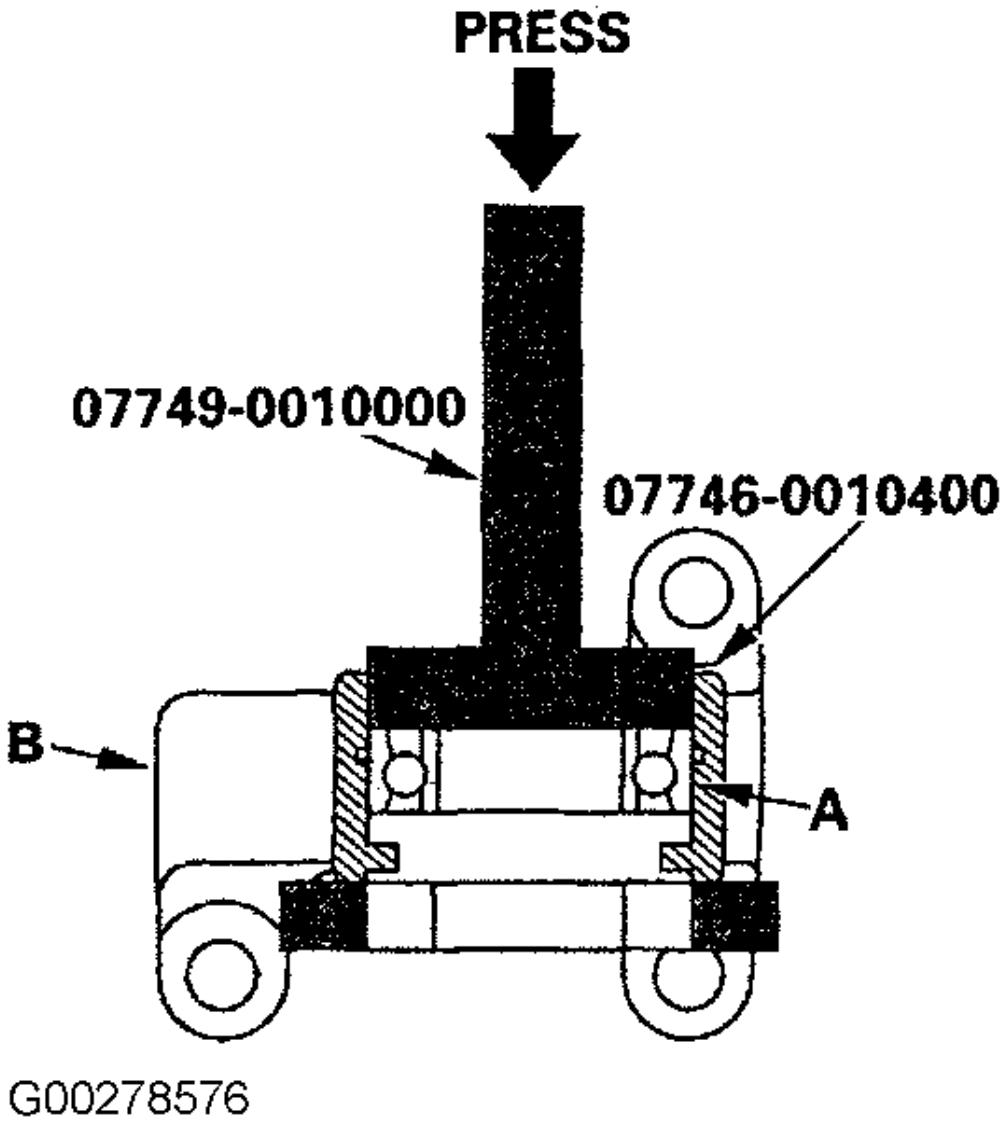


Fig. 49: Installing Intermediate Shaft Into Bearing Support
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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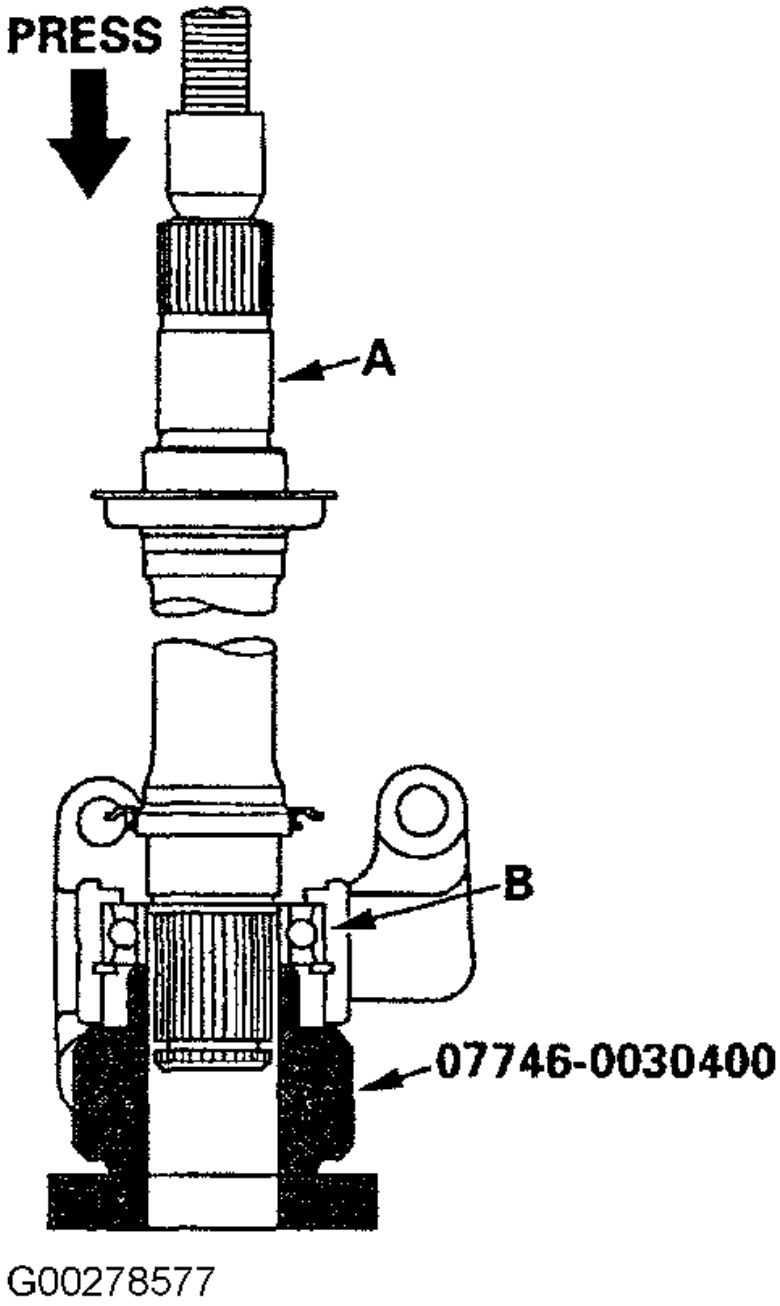
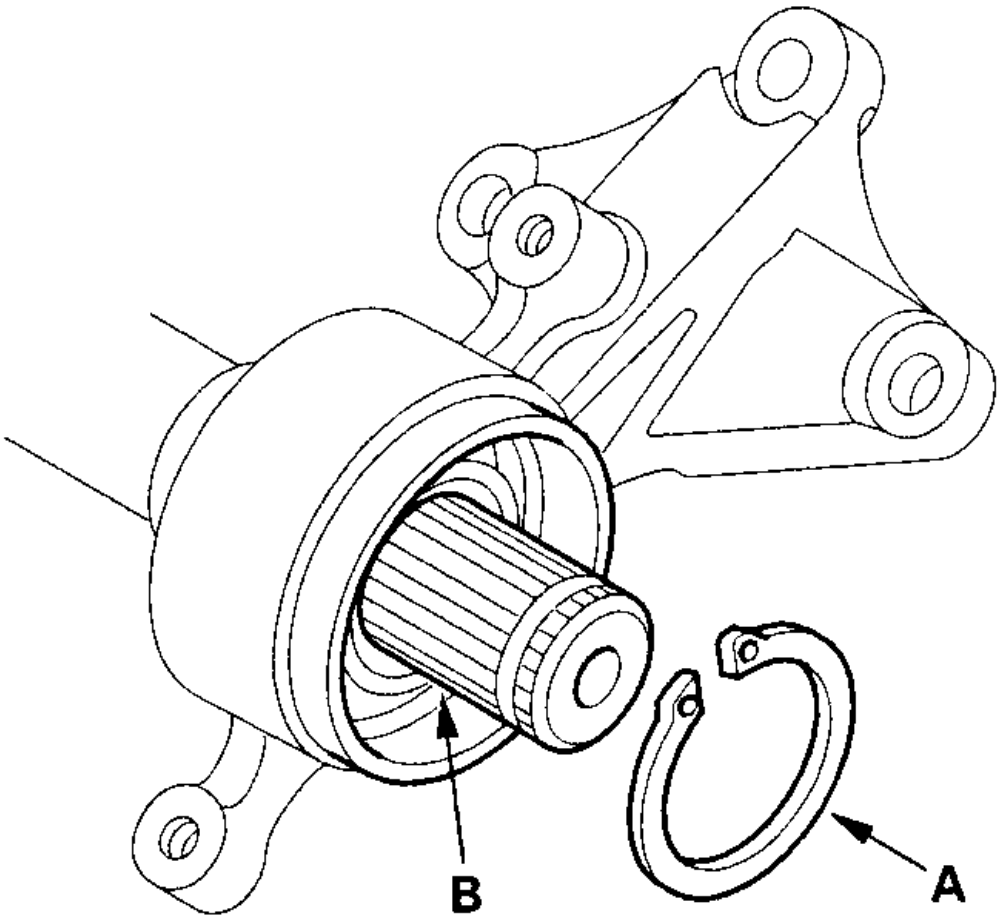


Fig. 50: Installing Intermediate Shaft Into Shaft Bearing
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Fig. 51: Installing External Snap Ring Into Grooves Of Intermediate Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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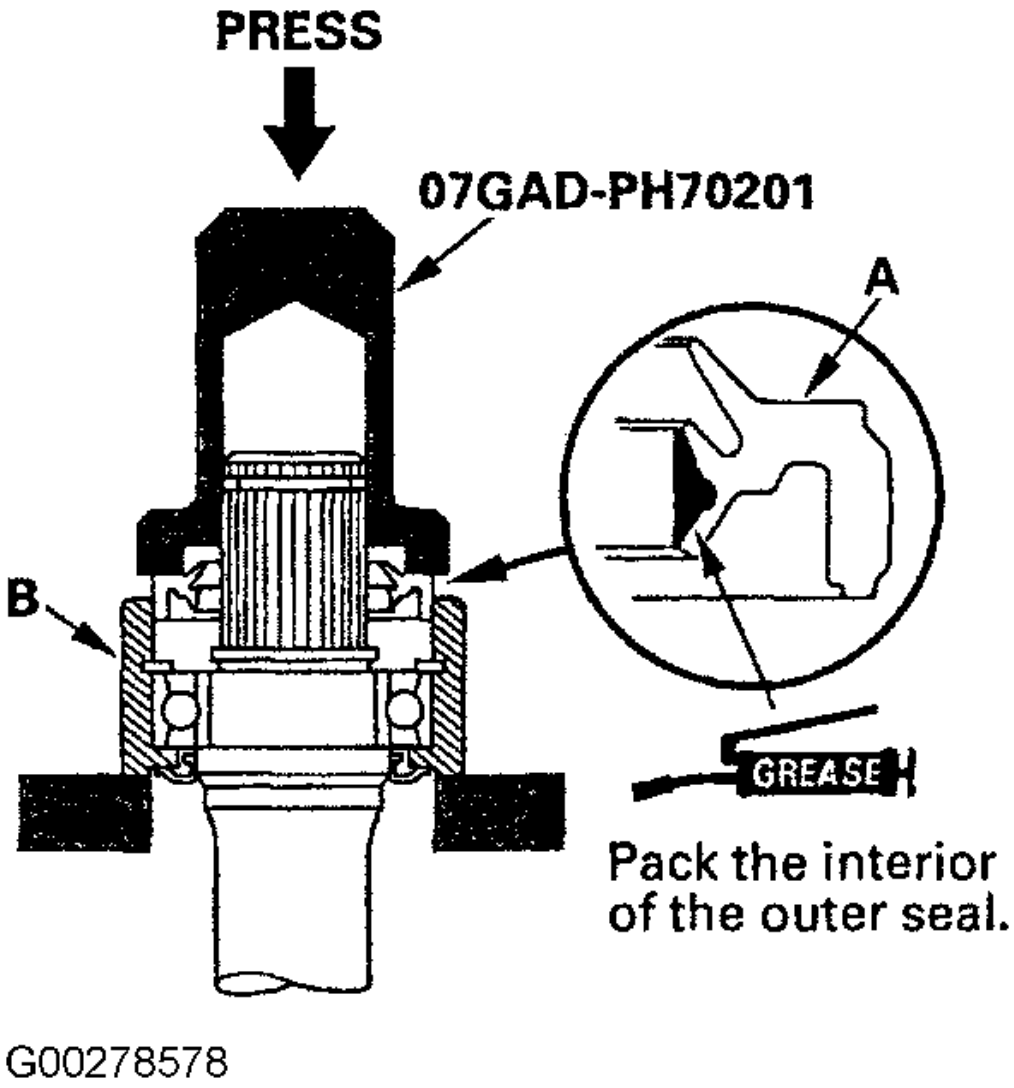


Fig. 52: Installing Outer Seal Into Bearing Support
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Intermediate Shaft Bolt	29 (39)
Lower Arm Ball Joint Castle Nut	58-65 (78-88)

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Self-Locking Nut	47 (64)
Spindle Nut (1)	181 (245)
Stabilizer Bar Nut	58 (78)
Wheel Nuts	80 (108)
(1) Manufacturer recommends replacing spindle nut if loosened or removed.	

SPECIAL TOOLS

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Ref. No.	Tool Number	Description	Qty
①	07AAF-SDAA100	Ball Joint Thread Protector	1
②	07GAD-PH70201	Oil Seal Driver	1
③	07MAC-SL00200	Ball Joint Remover, 28 mm	1
④	07NAF-SR30101	Half Shaft Base	1
⑤	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑥	07746-0010400	Attachment, 52 x 55 mm	1
⑦	07746-0030400	Attachment, 35 mm I.D.	1
⑧	07749-0010000	Driver	1
⑨	07947-SB00100	Oil Seal Driver	1

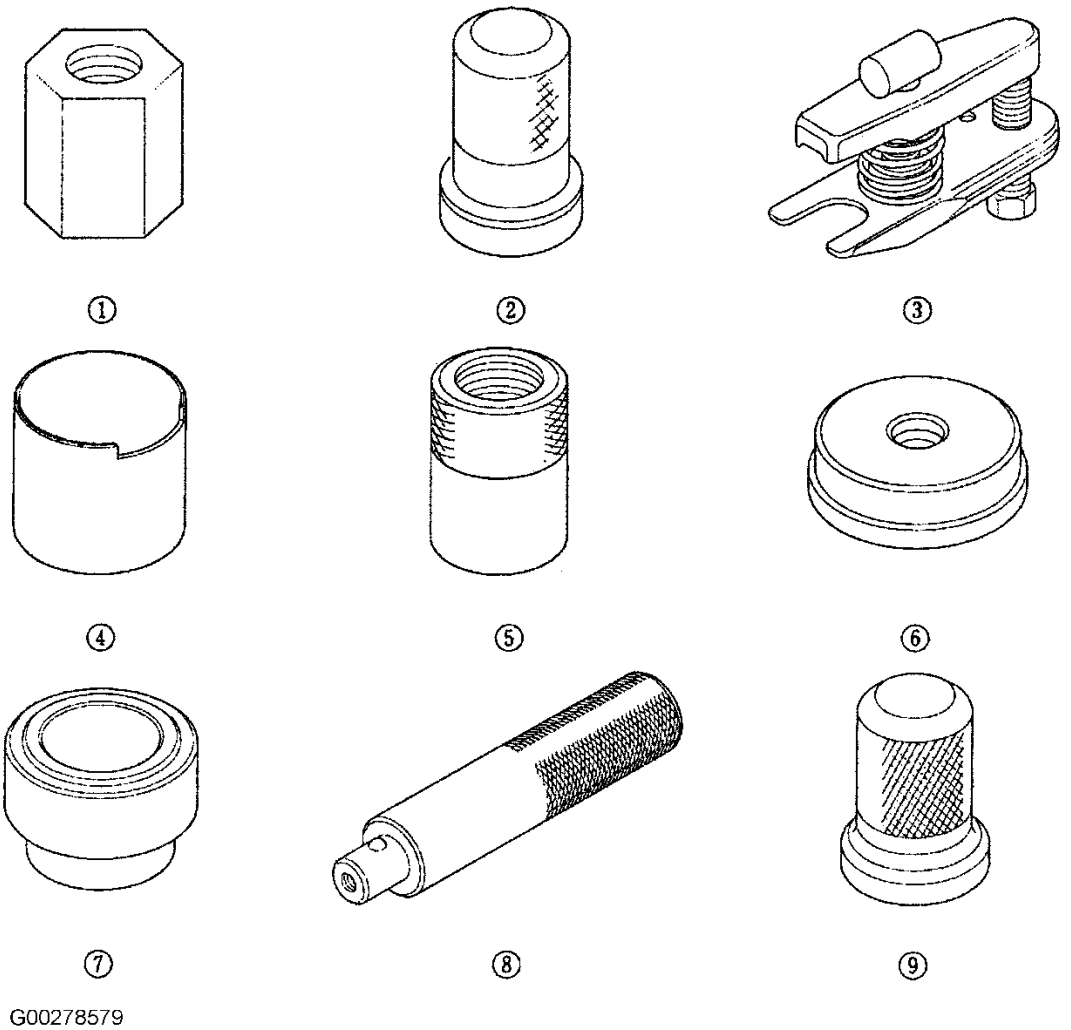


Fig. 53: Identifying Special Tools
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2004 ENGINES

Fuel Supply System - TSX

COMPONENT LOCATION INDEX

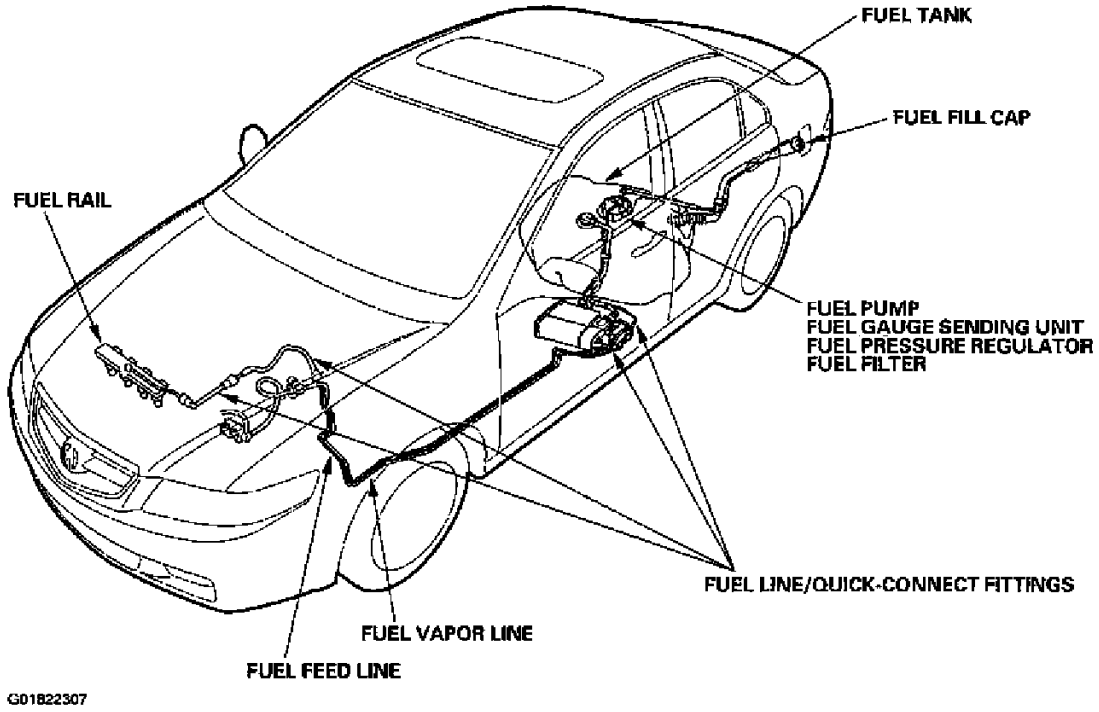


Fig. 1: Locating Fuel Supply System Components (1 Of 2)

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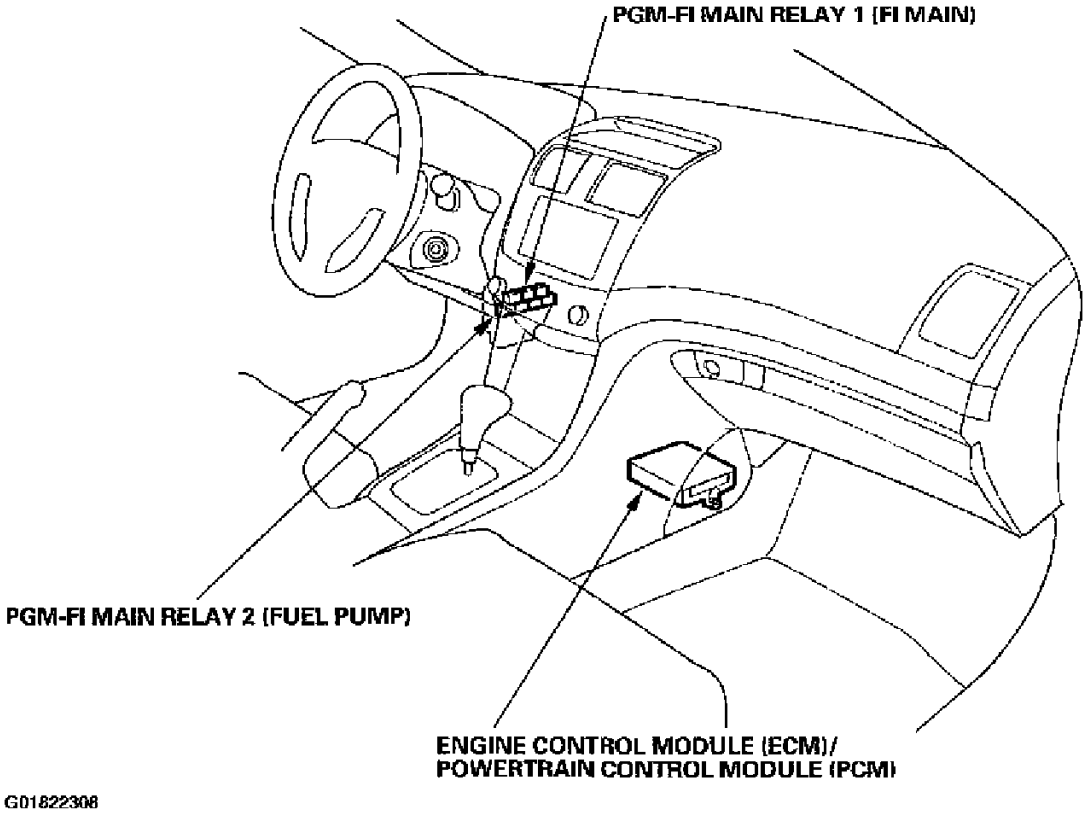


Fig. 2: Locating Fuel Supply System Components (2 Of 2)

FUEL PUMP CIRCUIT TROUBLESHOOTING

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch OFF.
2. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

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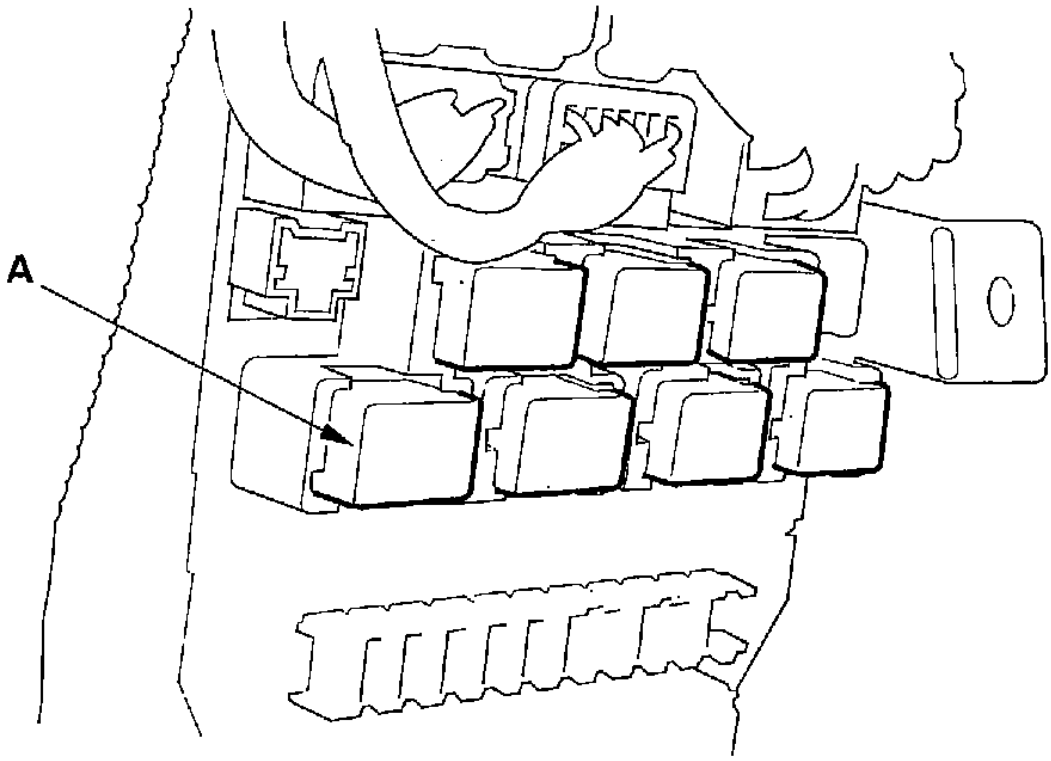


Fig. 3: Removing PGM-FI Main Relay 2 (FUEL PUMP)

3. Turn the ignition switch ON (II).
4. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 and body ground.

Is there battery voltage?

YES: Go to step 5.

NO:

- Replace PGM-FI main relay 1 (FI MAIN).
- Replace the under-dash fuse/relay box.

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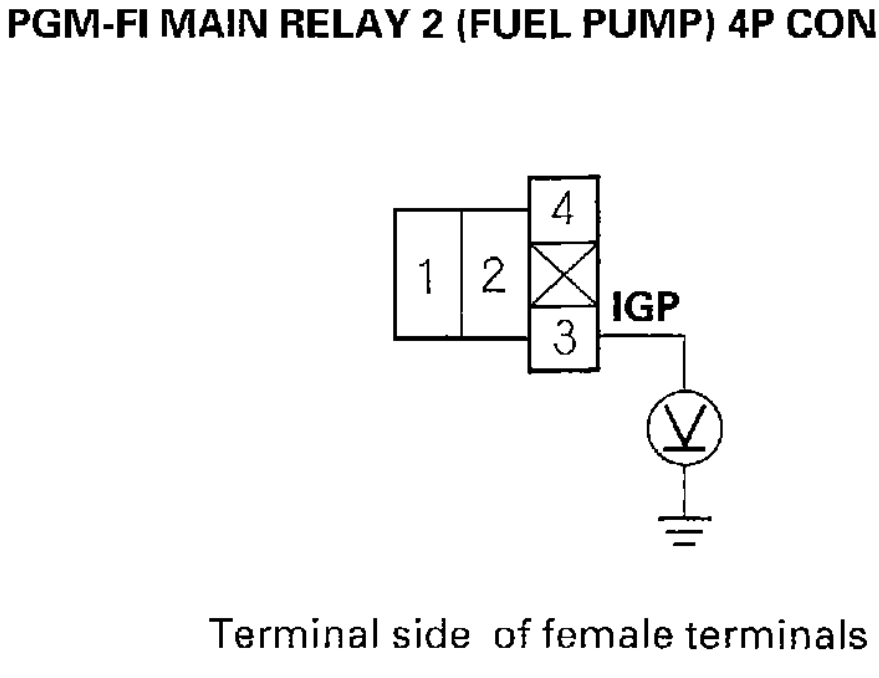


Fig. 4: Measuring Voltage Between PGM-FI Main Relay 2 (FUEL PUMP) 4P Connector Terminal No. 3 & Body Ground

5. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

   Is there battery voltage?

   YES: Go to step 6.

   NO:

   - Replace the No. 19 FUEL PUMP (15A) fuse in the under-hood fuse/relay box.
   - Replace the under-dash fuse/relay box.

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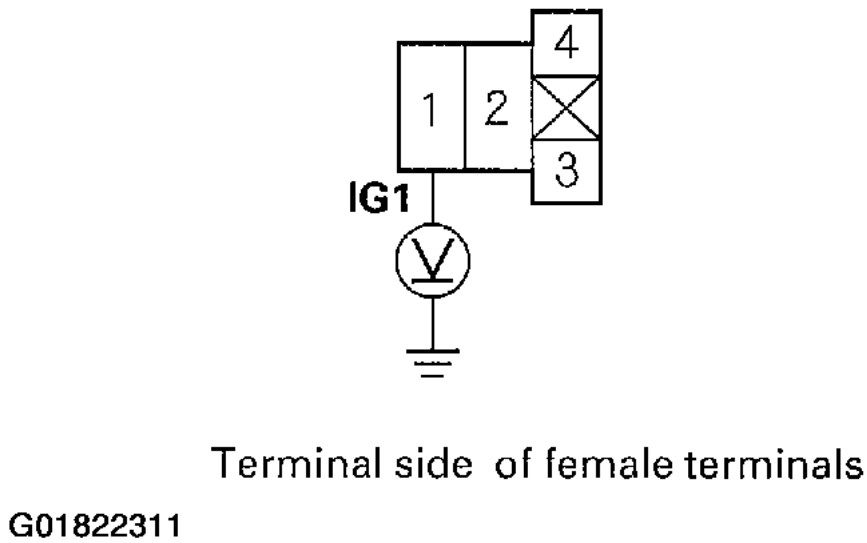


Fig. 5: Measuring Voltage Between PGM-FI Main Relay 2 (FUEL PUMP) 4P Connector Terminal No. 1 & Body Ground

6. Turn the ignition switch OFF.
7. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 to body ground with a jumper wire.

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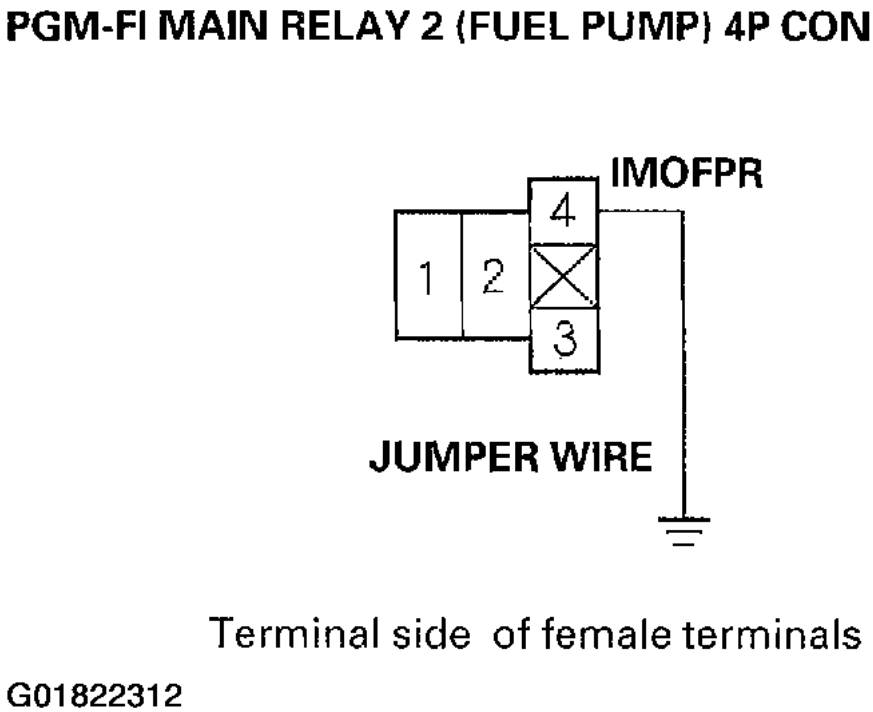


Fig. 6: Connecting PGM-FI Main Relay 2 (FUEL PUMP) 4P Connector Terminal No. 4 To Body Ground With A Jumper Wire

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector E (31P).
11. Check for continuity between body ground and ECM/PCM connector terminal E17.

Is there continuity?

YES: Go to step 12.

NO: Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the ECM/PCM (E17).

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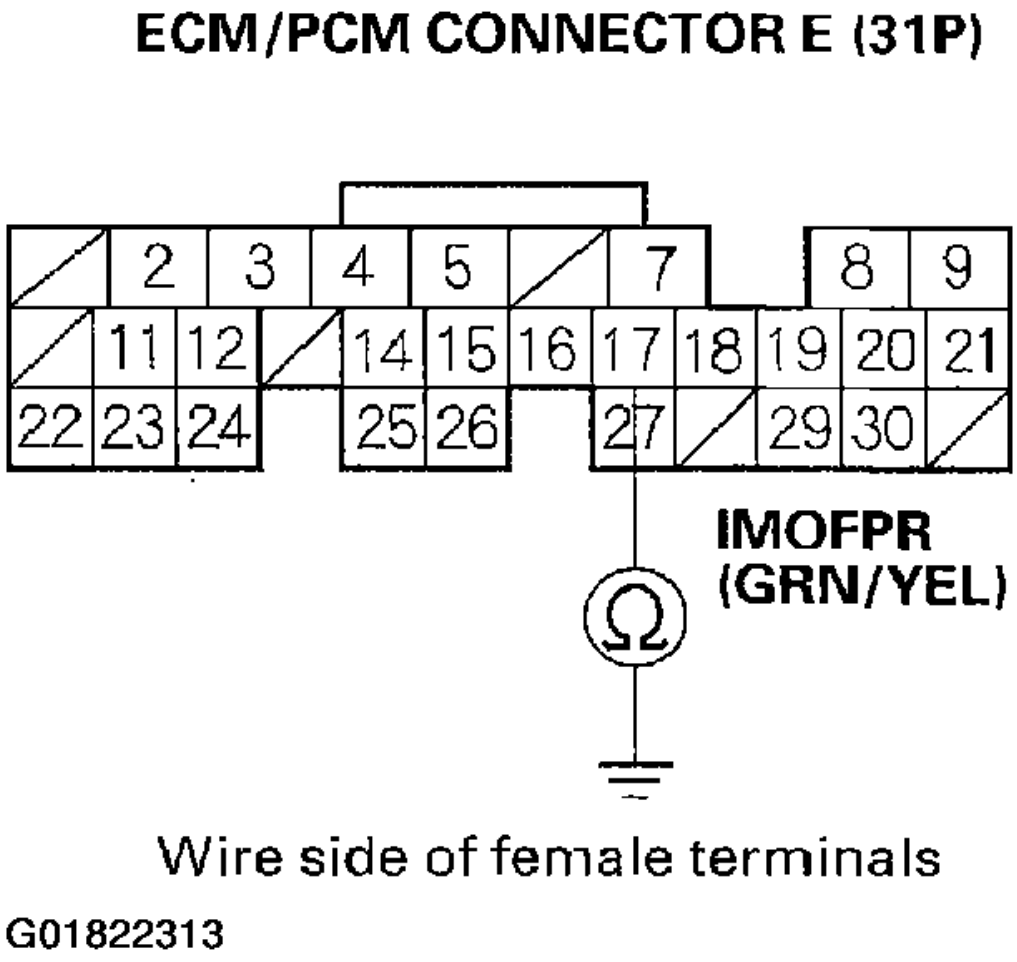


Fig. 7: Checking For Continuity Between Body Ground & ECM/PCM Connector Terminal E17

12. Reinstall PGM-FI main relay 2 (FUEL PUMP).
13. Connect the ECM/PCM connector terminal E7 to body ground with a jumper wire.

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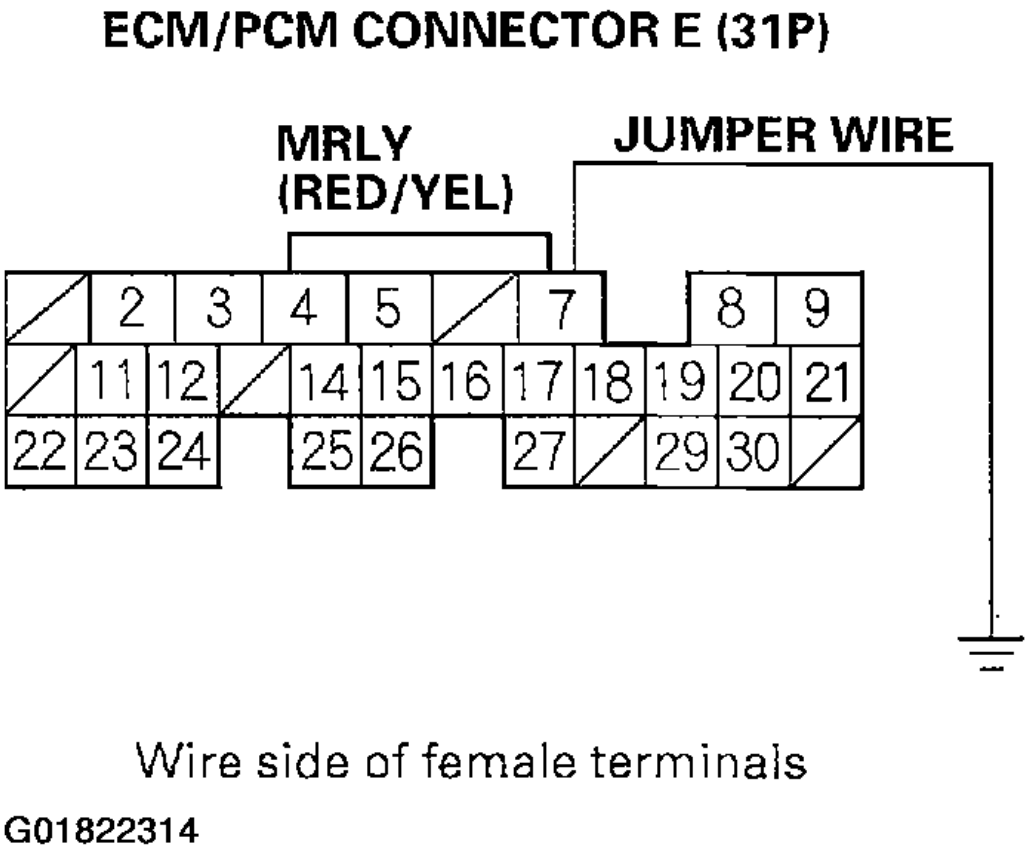


Fig. 8: Connecting The ECM/PCM Connector Terminal E7 To Body Ground With A Jumper Wire

14. Turn the ignition switch ON (II).
15. Measure voltage between ECM/PCM connector terminal E17 and body ground.

Is there battery voltage?

YES: Go to step 16.

NO: Replace PGM-FI main relay 2 (FUEL PUMP).

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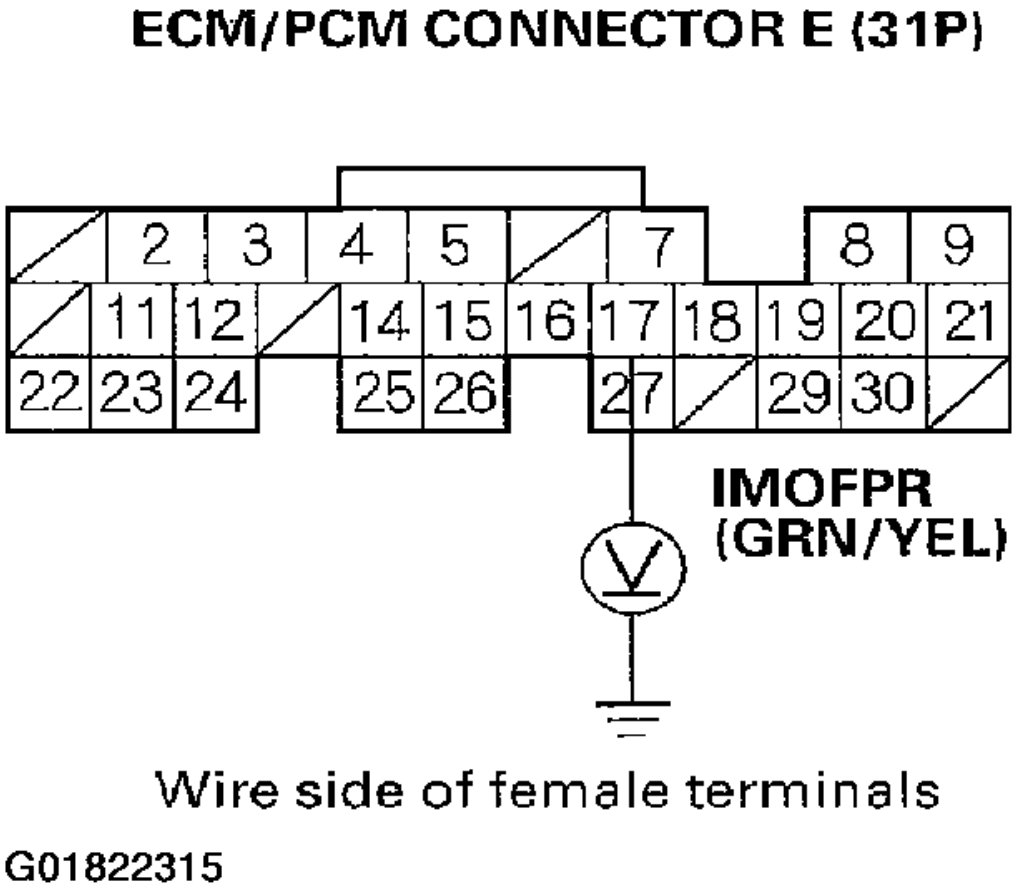


Fig. 9: Measuring Voltage Between ECM/PCM Connector Terminal E17 & Body Ground

16. Turn the ignition switch OFF.
17. Reconnect ECM/PCM connector E (31P).
18. Open the SCS line with the HDS.
19. Turn the ignition switch OFF.
20. Turn the ignition switch ON (II), and measure voltage between ECM/PCM connector terminal E17 and body ground within the first 2 seconds after the ignition switch was turned on.

    Is there battery voltage?

    YES: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**). If the symptom/indication goes away with a know-good ECM/PCM, replace the original ECM/PCM.

    NO: Go to step 21.

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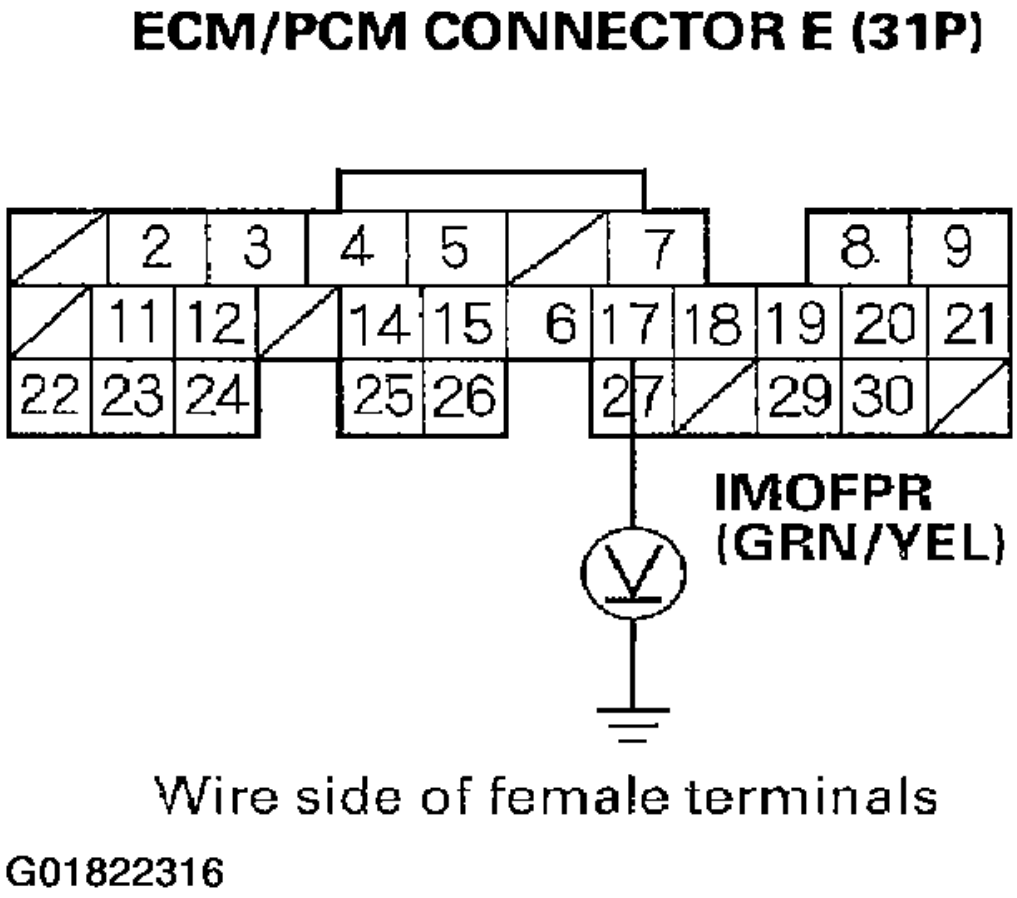


Fig. 10: Measuring Voltage Between ECM/PCM Connector Terminal E17 & Body Ground

21. Turn the ignition switch OFF.
22. Remove the trunk floor.
23. Remove the access panel from the floor.
24. Measure voltage between fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned on.

    Is there battery voltage?

    YES: Go to step 30 .

    NO: Go to step 25.

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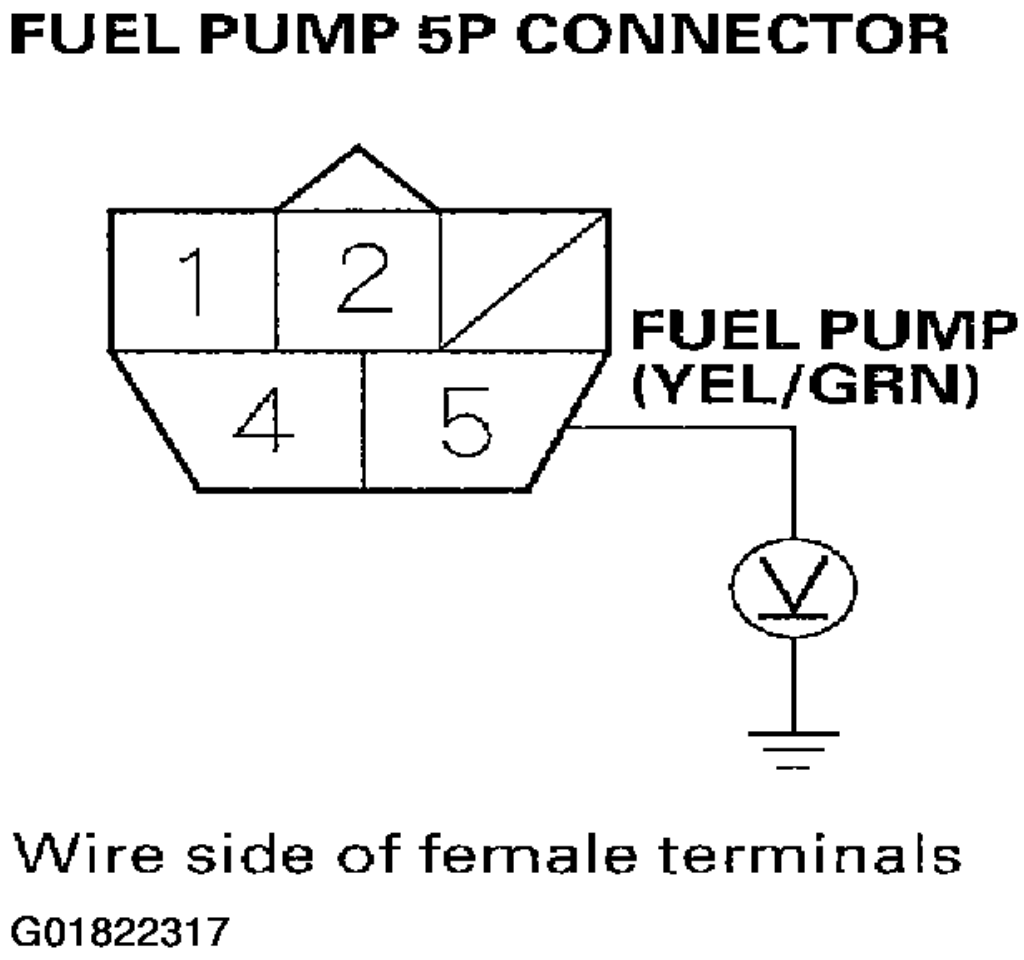


Fig. 11: Measuring Voltage Between Fuel Pump 5P Connector Terminal No. 5 & Body Ground

25. Turn the ignition switch OFF.
26. Remove PGM-FI main relay 2 (FUEL PUMP)
27. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

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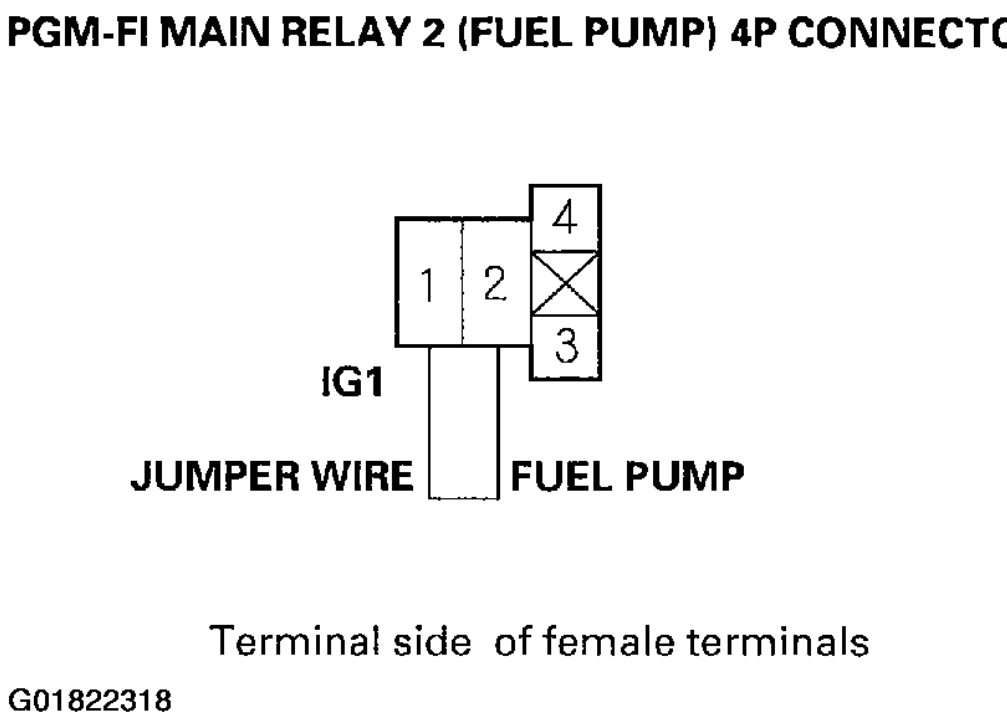


Fig. 12: Connecting PGM-FI Main Relay 2 (FUEL PUMP) 4P Connector Terminals No. 1 & No. 2 With A Jumper Wire

28. Turn the ignition switch ON (II).
29. Measure voltage between fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned on.

Is there battery voltage?

YES: Replace PGM-FI main relay 2 (FUEL PUMP).

NO: Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the fuel pump 5P connector.

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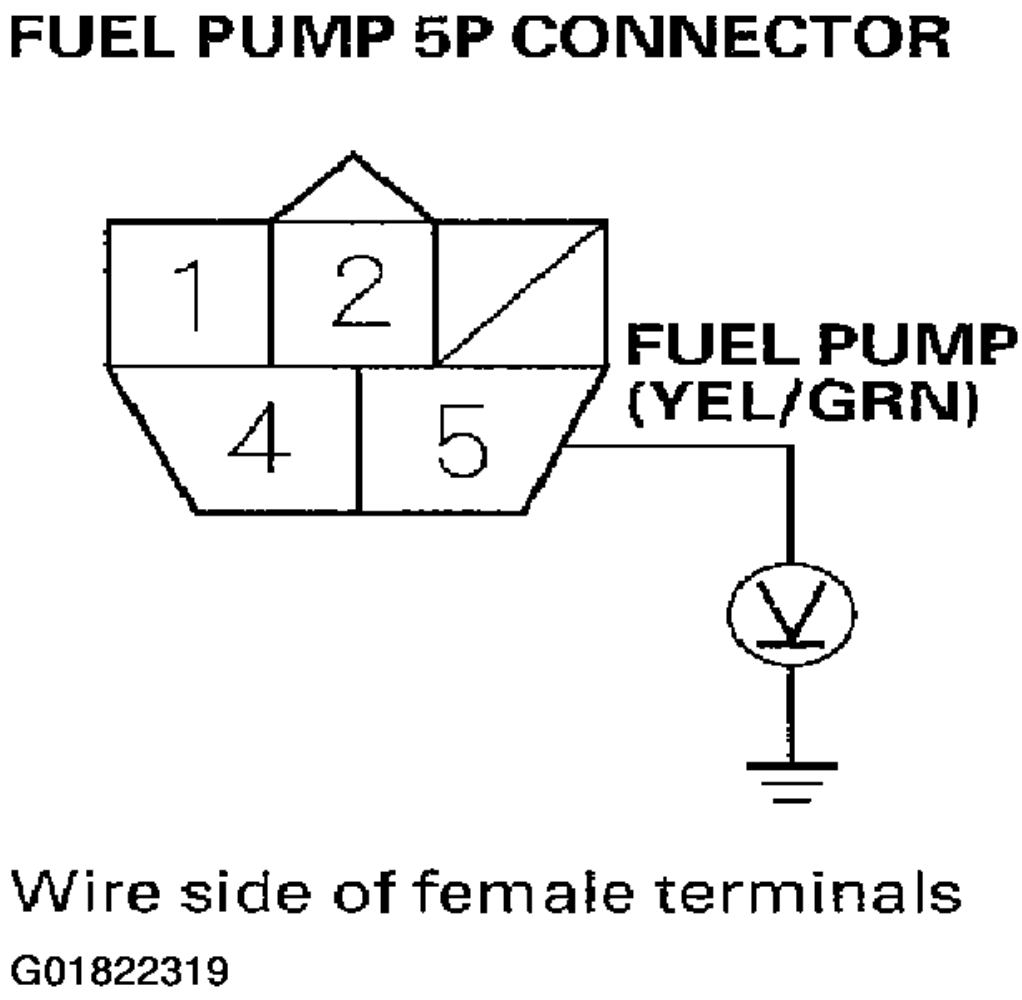


Fig. 13: Measuring Voltage Between Fuel Pump 5P Connector Terminal No. 5 & Body Ground

30. Turn the ignition switch OFF.
31. Check for continuity between fuel pump 5P connector terminal No. 4 and body ground.

Is there continuity?

YES: Replace the fuel pump.

NO: Repair open in the wire between the fuel pump 5P connector and G603.

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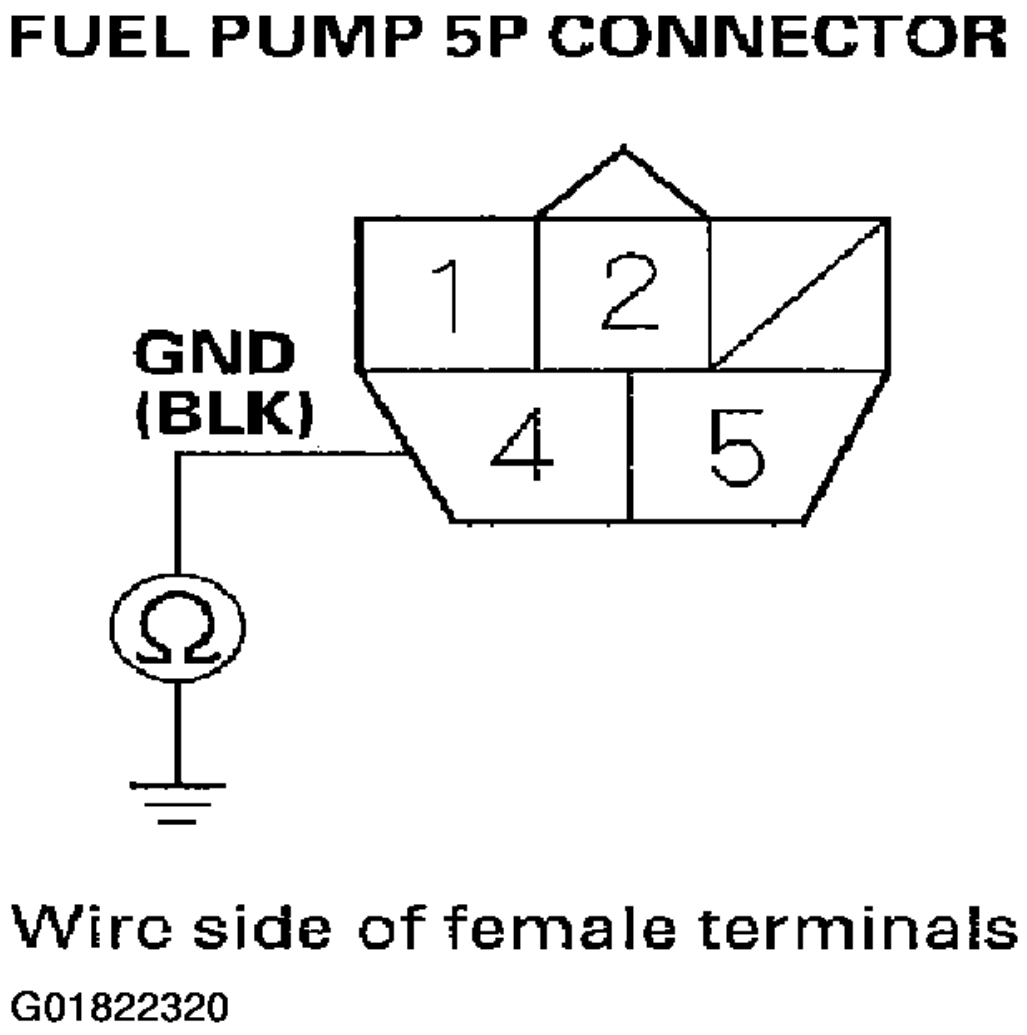


Fig. 14: Checking For Continuity Between Fuel Pump 5P Connector Terminal No. 4 & Body Ground

FUEL PRESSURE RELIEVING

Before disconnecting fuel lines or hoses, relieve pressure from the system by stopping the fuel pump and disconnecting the fuel tube/quick connect fitting in the engine compartment.

WITH THE HDS

1. Remove the fuel fill cap.
2. Turn the ignition switch ON (II).

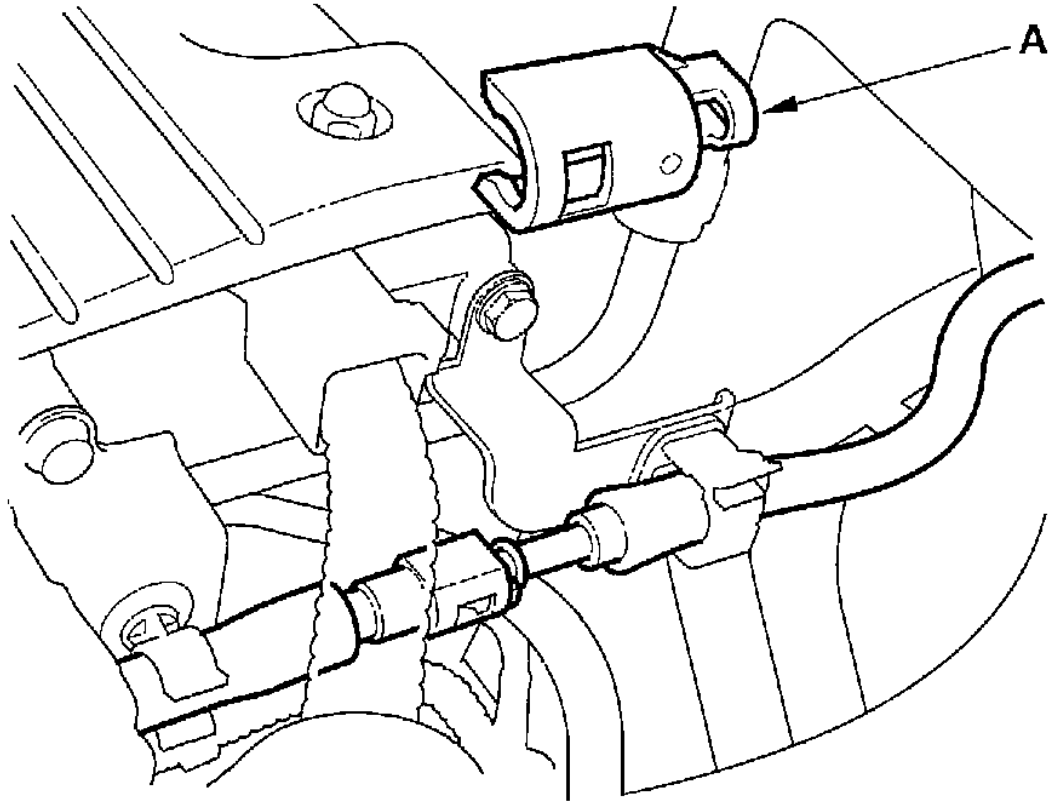
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3. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.
4. Turn the ignition switch OFF.

NOTE:

- **Do not allow the engine to idle above 1,000 RPM or the ECM/PCM will continue to operate the fuel pump.**
- **A DTC or a Temporary DTC may be set during this procedure. Check for DTCs, and clear them as needed (see GENERAL TROUBLESHOOTING INFORMATION).**

5. Turn the ignition switch OFF.
6. Make sure you have the anti-theft codes for the radio, then write down the frequencies for the radio's preset buttons.
7. Disconnect the negative cable from the battery.
8. Remove the quick-connect fitting cover (A).



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Fig. 15: Removing The Quick-Connect Fitting Cover

9. Check the fuel quick-connect fitting for dirt, and clean it if needed.
10. Place a rag or shop towel over the quick-connect fitting (A).

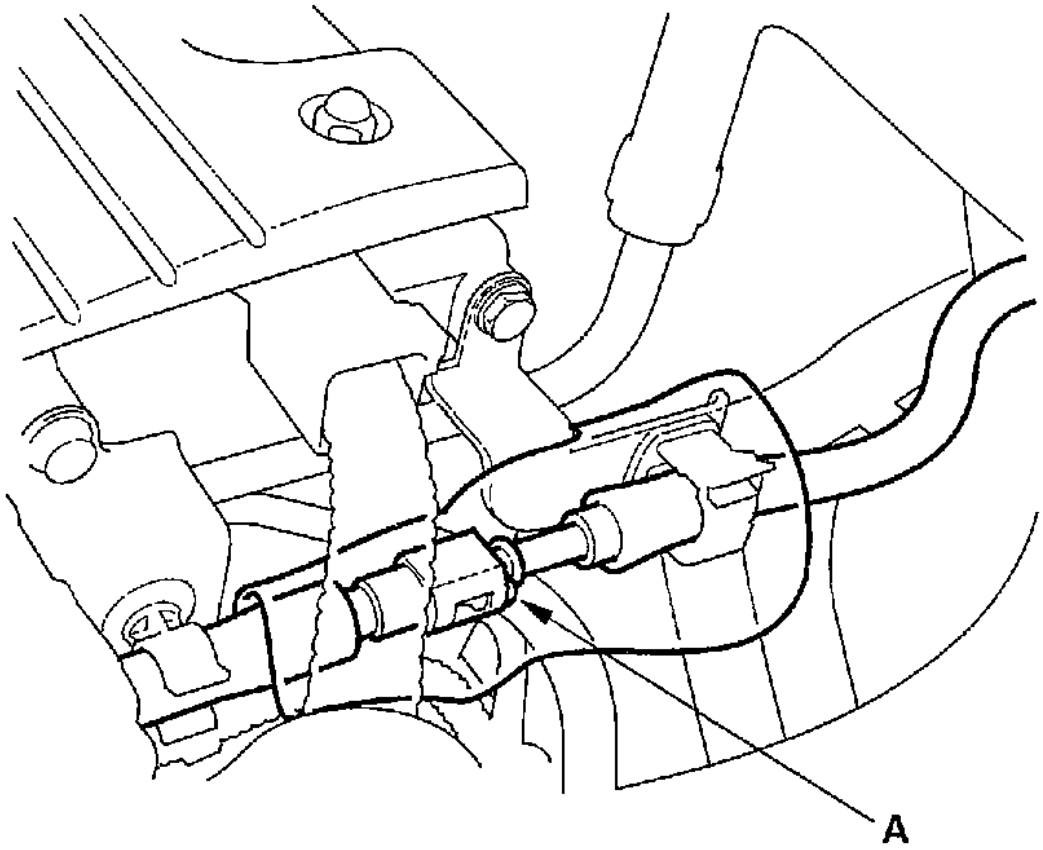


Fig. 16: Placing A Rag Or Shop Towel Over The Quick-Connect Fitting

11. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- **To prevent the remaining fuel in the fuel feed line or hose from flowing out, use a rag or shop towel.**
- **Be careful not to damage the line (E) or other parts.**
- **Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down,**

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and alternately pull and push the connector until it comes off easily.

- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

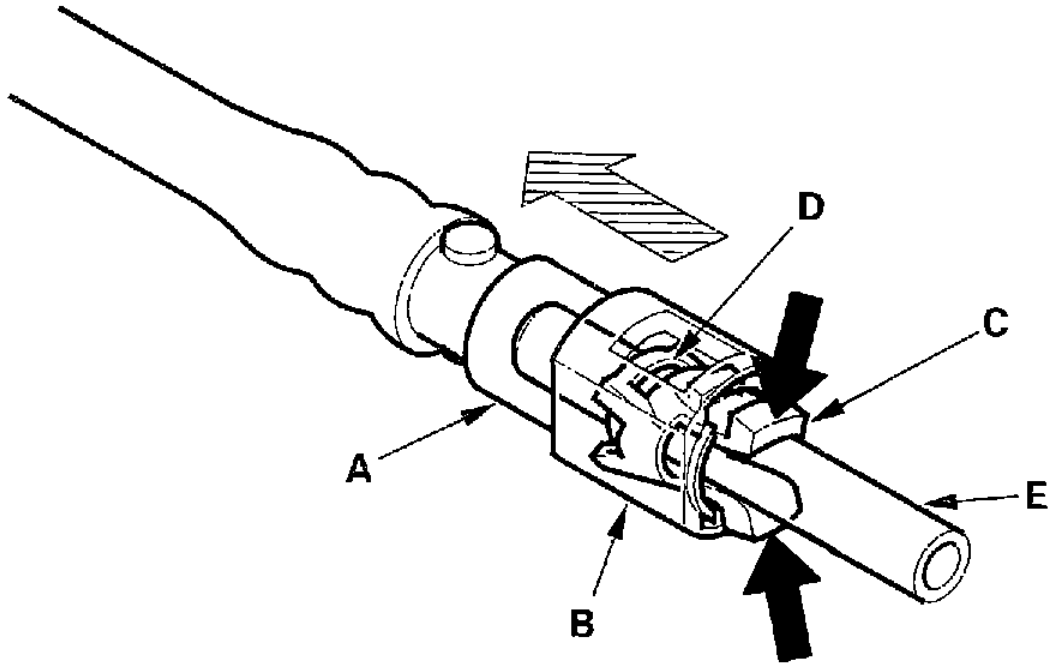


Fig. 17: Disconnecting The Quick-Connect Fitting

12. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 of **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).
13. Reconnect the negative cable to the battery and do the following items:
    - ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
    - Power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
    - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.
    - Reset the clock.

WITHOUT THE HDS

1. Make sure you have the anti-theft codes for the radio, and Navigation if equipped then write down the frequencies for the radio's preset buttons.
2. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**), then remove

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PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

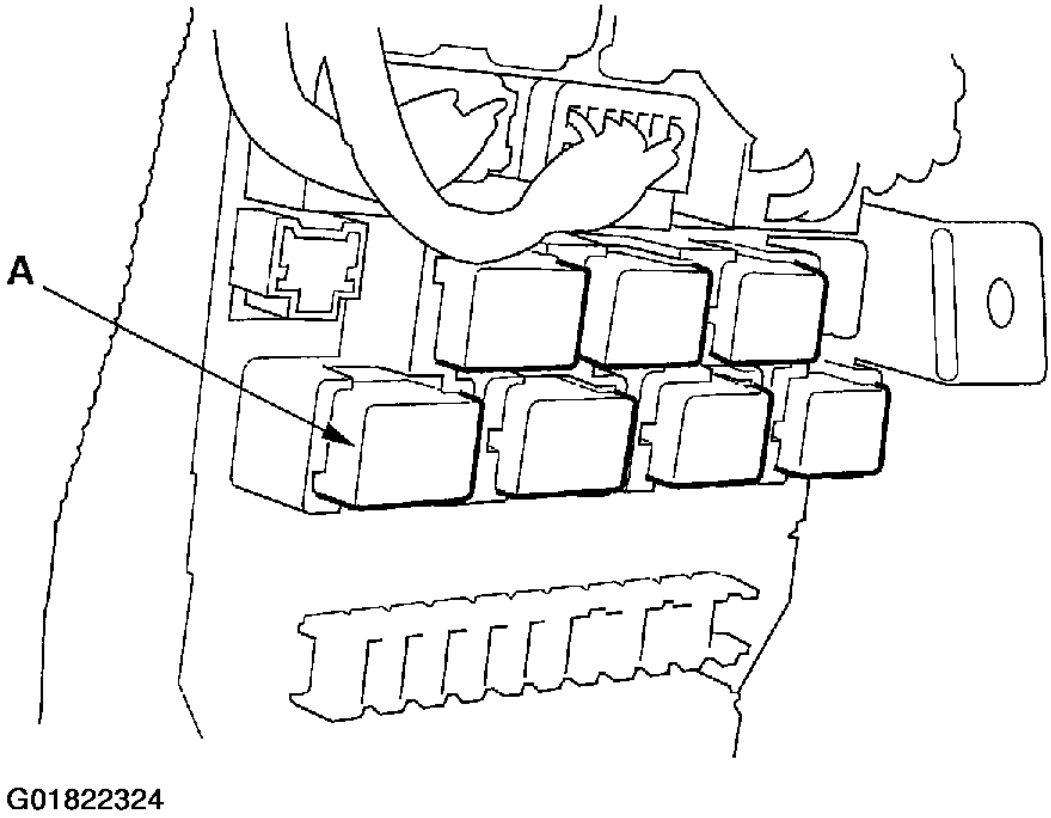


Fig. 18: Removing PGM-FI Main Relay 2 (FUEL PUMP)

3. Start the engine, and let it idle until it stalls.

NOTE: If any DTCs are stored, clear and ignore them.

4. Turn the ignition switch OFF.
5. Remove the fuel fill cap, and relieve the pressure in the fuel tank.
6. Disconnect the negative cable from the battery.
7. Remove the quick-connect fitting cover (A).

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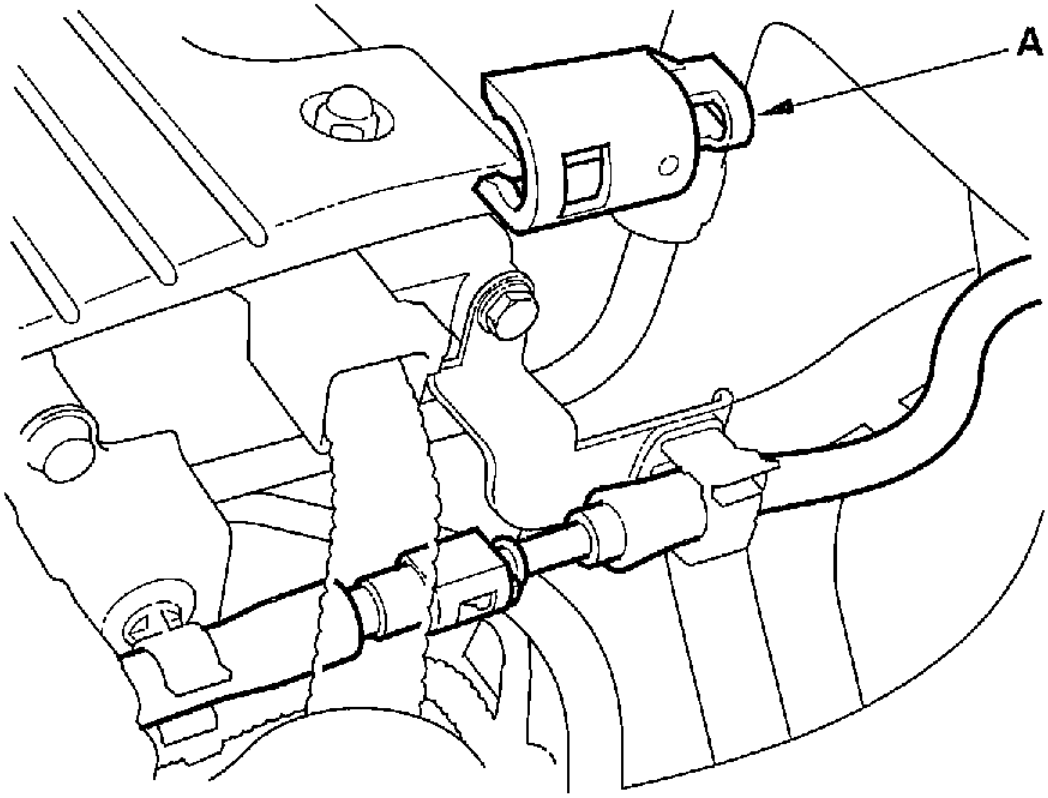
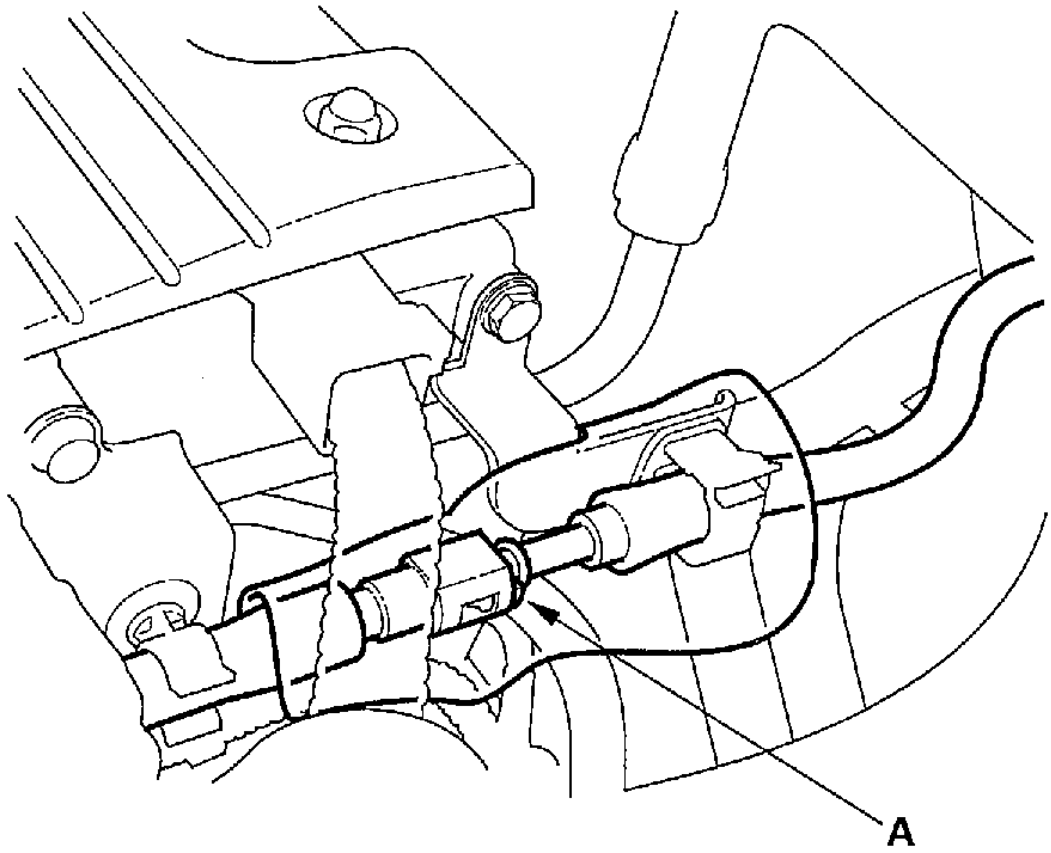


Fig. 19: Removing The Quick-Connect Fitting Cover

8. Check the fuel quick-connect fitting for dirt, and clean it if needed.
9. Place a rag or shop towel over the quick-connect fitting (A).

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Fig. 20: Placing A Rag Or Shop Towel Over The Quick-Connect Fitting

10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- **To prevent the remaining fuel in the fuel feed line or hose from flowing out, use a rag or shop towel.**
- **Be careful not to damage the line (E) or other parts.**
- **Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

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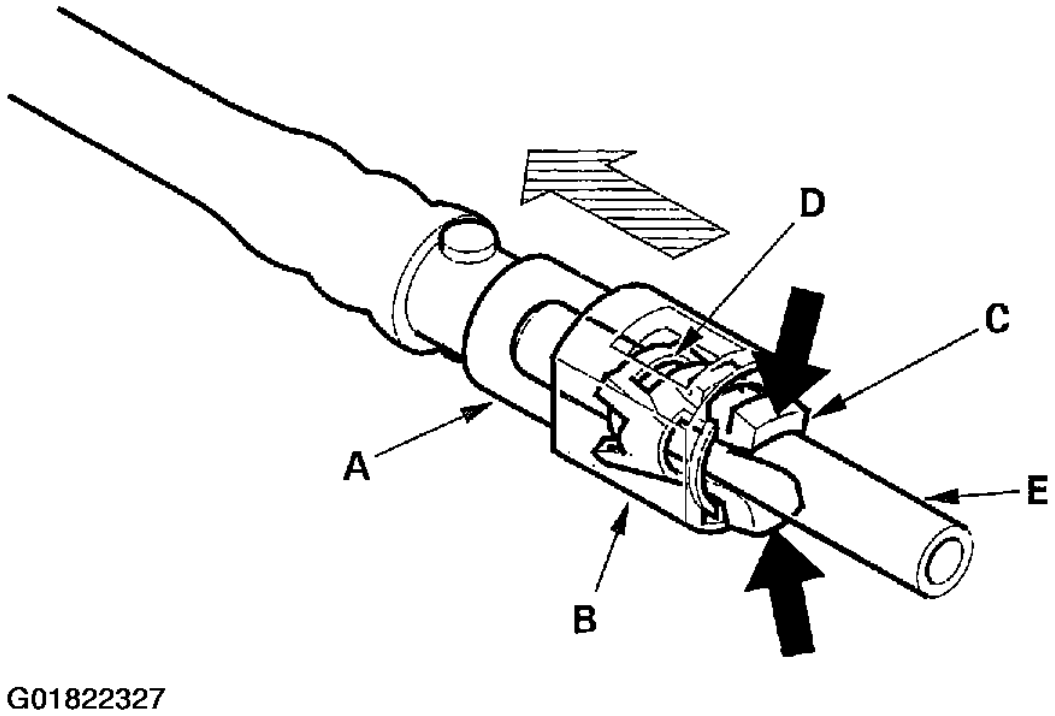


Fig. 21: Disconnecting The Quick-Connect Fitting

11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 of **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).
12. Reconnect the negative cable to the battery and do the following items:
    - ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
    - Power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
    - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.
    - Reset the clock.

FUEL PRESSURE TEST

Special Tools Required:

- Fuel pressure gauge 07406-004000A
- Fuel pressure gauge set 07ZAJ-S5A0100
- Fuel hose attachment 07ZAJ-S7C0100
- Fuel joint attachment 07ZAJ-S7C0200

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1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Disconnect the quick-connect fitting (A). Attach the fuel pressure gauge set and the fuel pressure gauge.

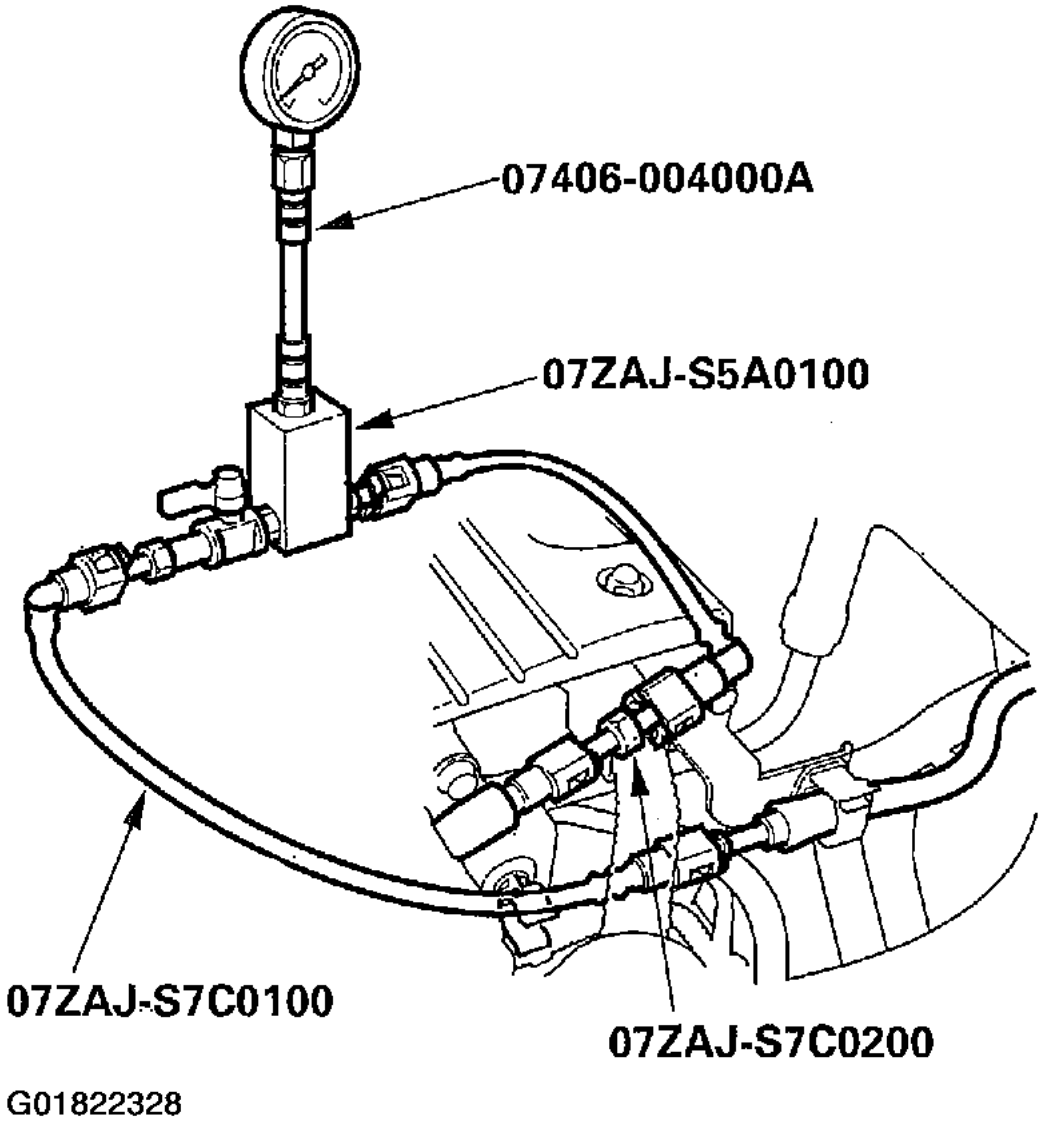


Fig. 22: Attaching The Fuel Pressure Gauge Set & The Fuel Pressure Gauge

3. Start the engine and let it idle.
   - If the engine starts, go to step 5 .
   - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.

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- If the pump runs, go to step 5.
- If the pump does not run, do the fuel pump circuit troubleshooting (see **FUEL PUMP CIRCUIT TROUBLESHOOTING**).

5. Read the fuel pressure gauge. The pressure should be 330-380 kPa (3.4-3.9 kgf/cm^2 , 48-55 psi).
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**) and the fuel filter (see **FUEL FILTER REPLACEMENT**), then recheck the fuel pressure.

FUEL TANK DRAINING

1. Remove the fuel pump assembly (see **Fuel Pump/Fuel Gauge Sending Unit Replacement**).
2. Using a hand pump, a hose, and a container suitable for gasoline, draw the fuel from the fuel tank.

FUEL LINE INSPECTION

Check the fuel system lines and hoses, for damage, leaks, and deterioration. Replace any damaged parts.

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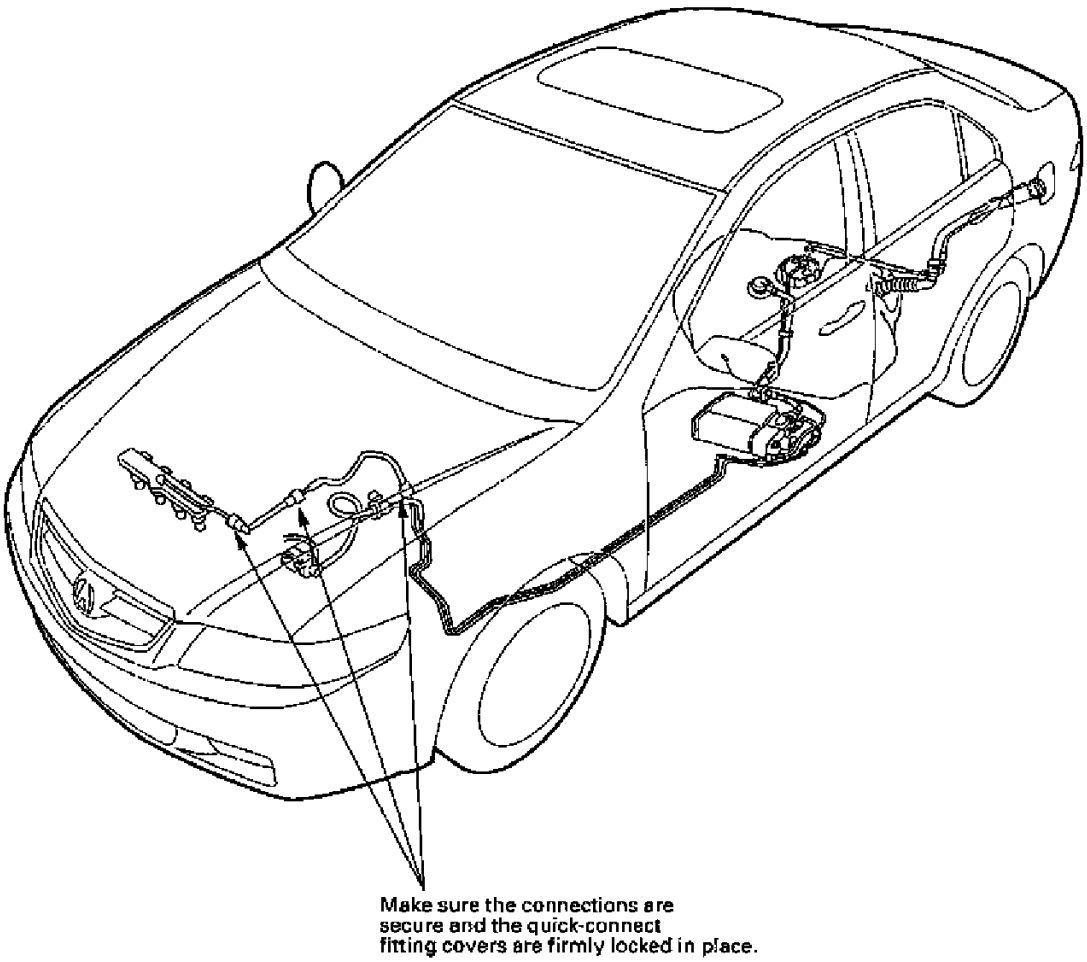


Fig. 23: Checking The Fuel System Lines & Hoses

Check all clamps and retighten if necessary.

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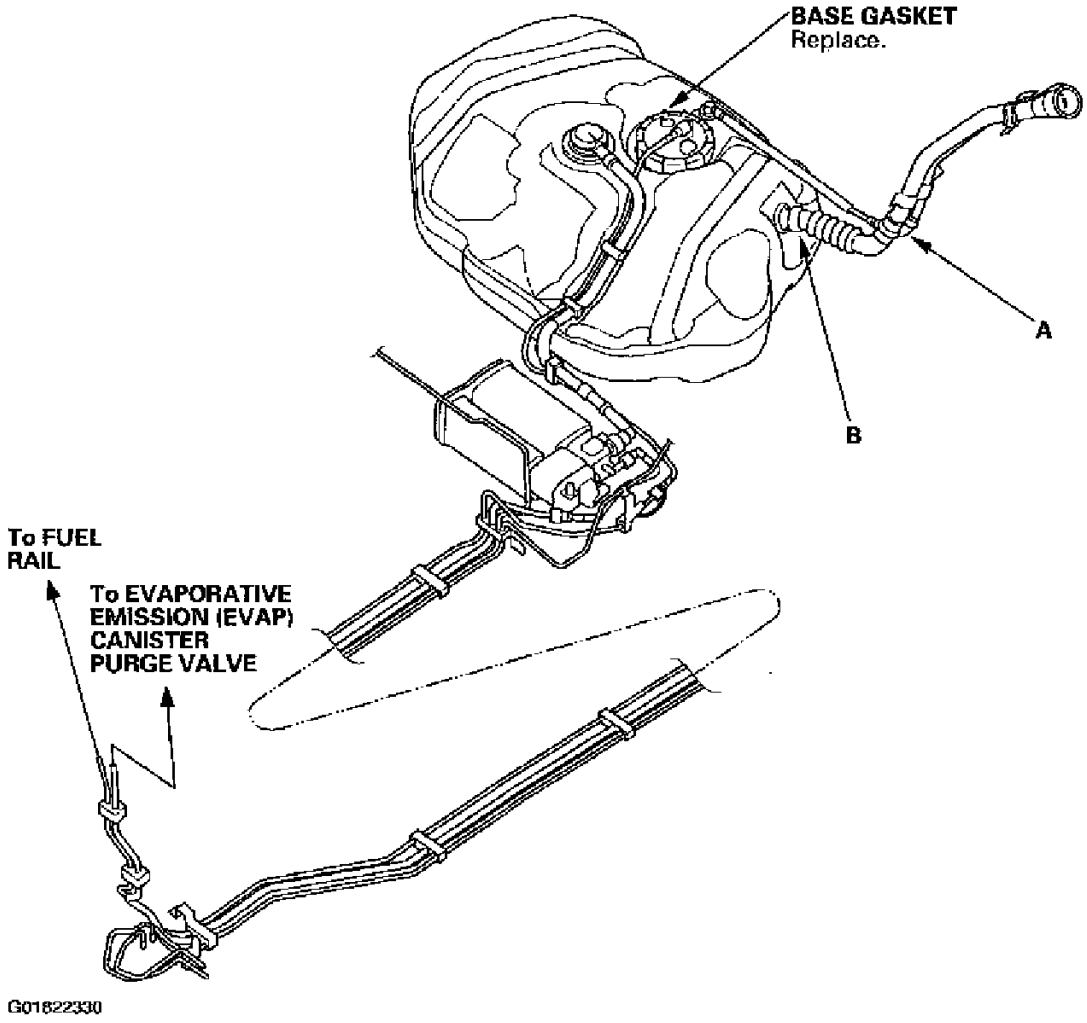


Fig. 24: EVAP System Hoses & Clamps

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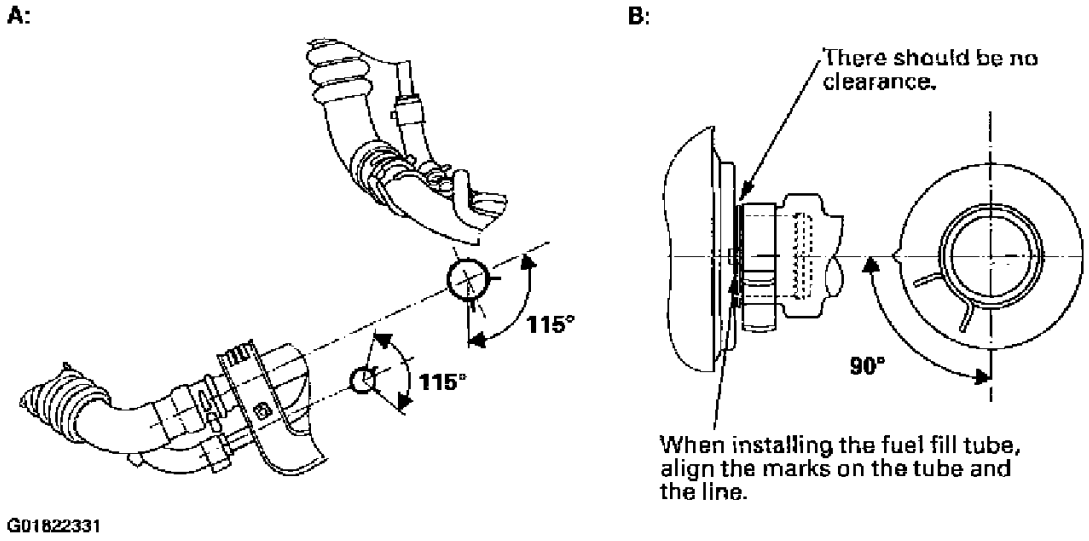


Fig. 25: Filler Neck Hoses & Clamps

FUEL LINE/QUICK-CONNECT FITTING PRECAUTION

The fuel line/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), fuel feed hose (B) to the fuel feed hose (C), the fuel feed hose (C) to the fuel line (D), the fuel line (E) to the fuel tank unit (F) and the fuel vapor line (G) to the EVAP canister (H). When removing or installing the fuel feed hose, fuel tank unit, or fuel tank, it is necessary to disconnect or connect the quick-connect fittings.

Pay attention to the following:

- The fuel feed hoses, fuel line, and quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, fuel line, and quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, fuel line, and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.

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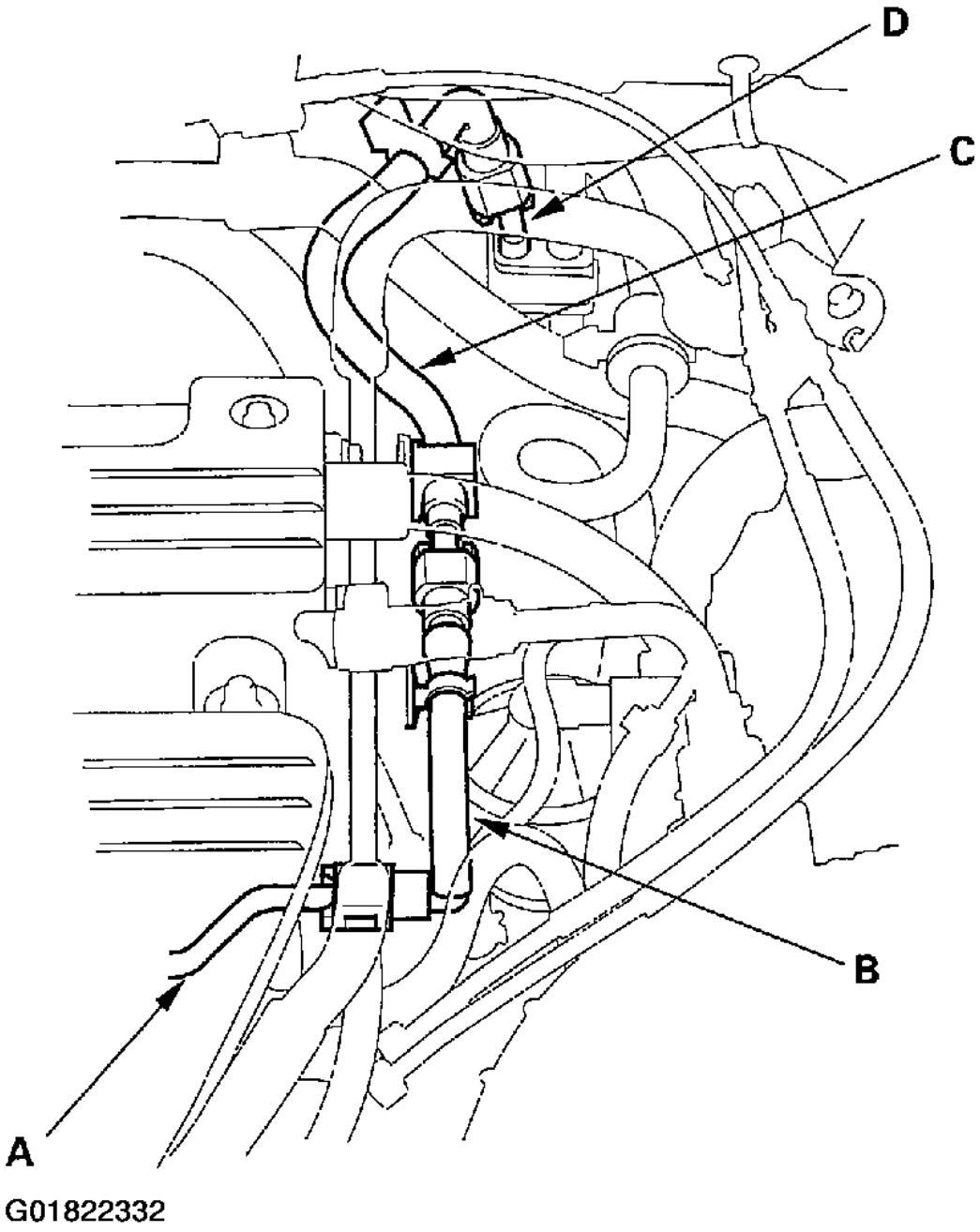
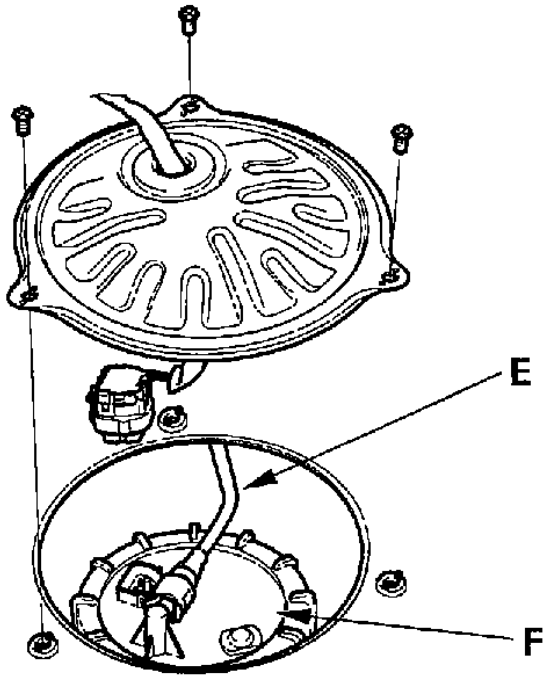
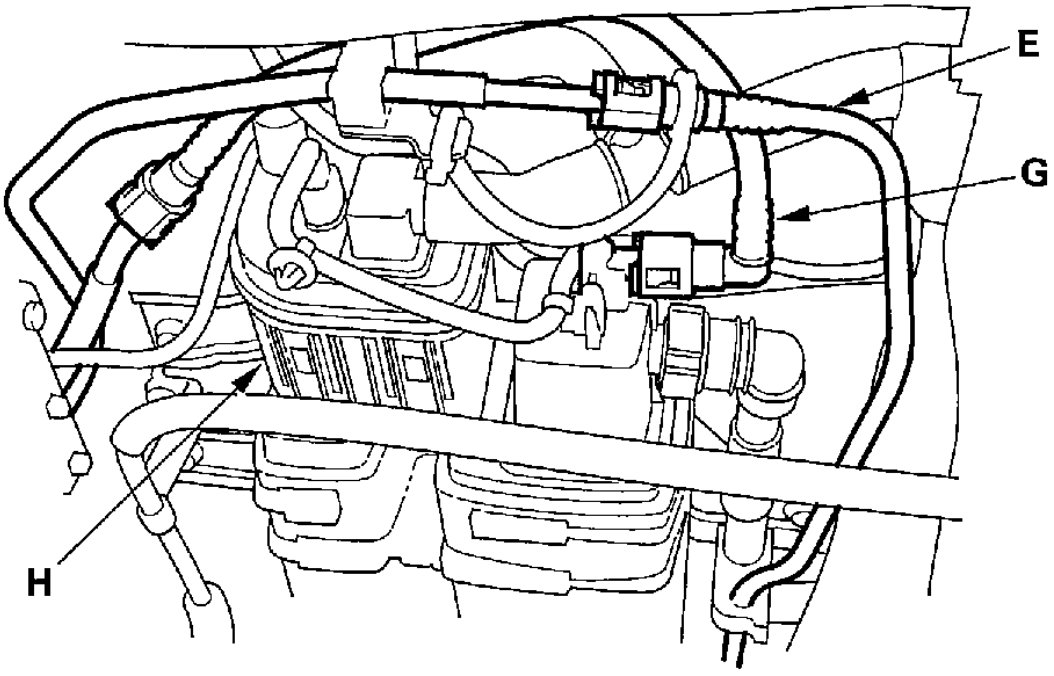


Fig. 26: Identifying Fuel Rail, Fuel Feed Hoses & The Fuel Line

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Fig. 27: Identifying Fuel Line, Fuel Tank Unit, Fuel Vapor Line & EVAP Canister

A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the line.
- it is damaged.

Retainer location	Manufacturer	Retainer color
Engine compartment fuel feed hoses	Sanoh	White
Fuel tank unit: Fuel feed line, fuel tank unit side	Tokai	Orange
Fuel tank unit: Fuel feed line, fuel line side	Tokai	Green
EVAP canister: fuel vapor line	Tokai	Orange

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Fig. 28: Quick-Connect Fitting Retainer Identification/Location Table

NOTE: When replacing a retainer, use the same size and manufacturer.

FUEL LINE/QUICK-CONNECT FITTING REMOVAL

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed (see **FUEL LINE/QUICK-CONNECT FITTING PRECAUTION**).

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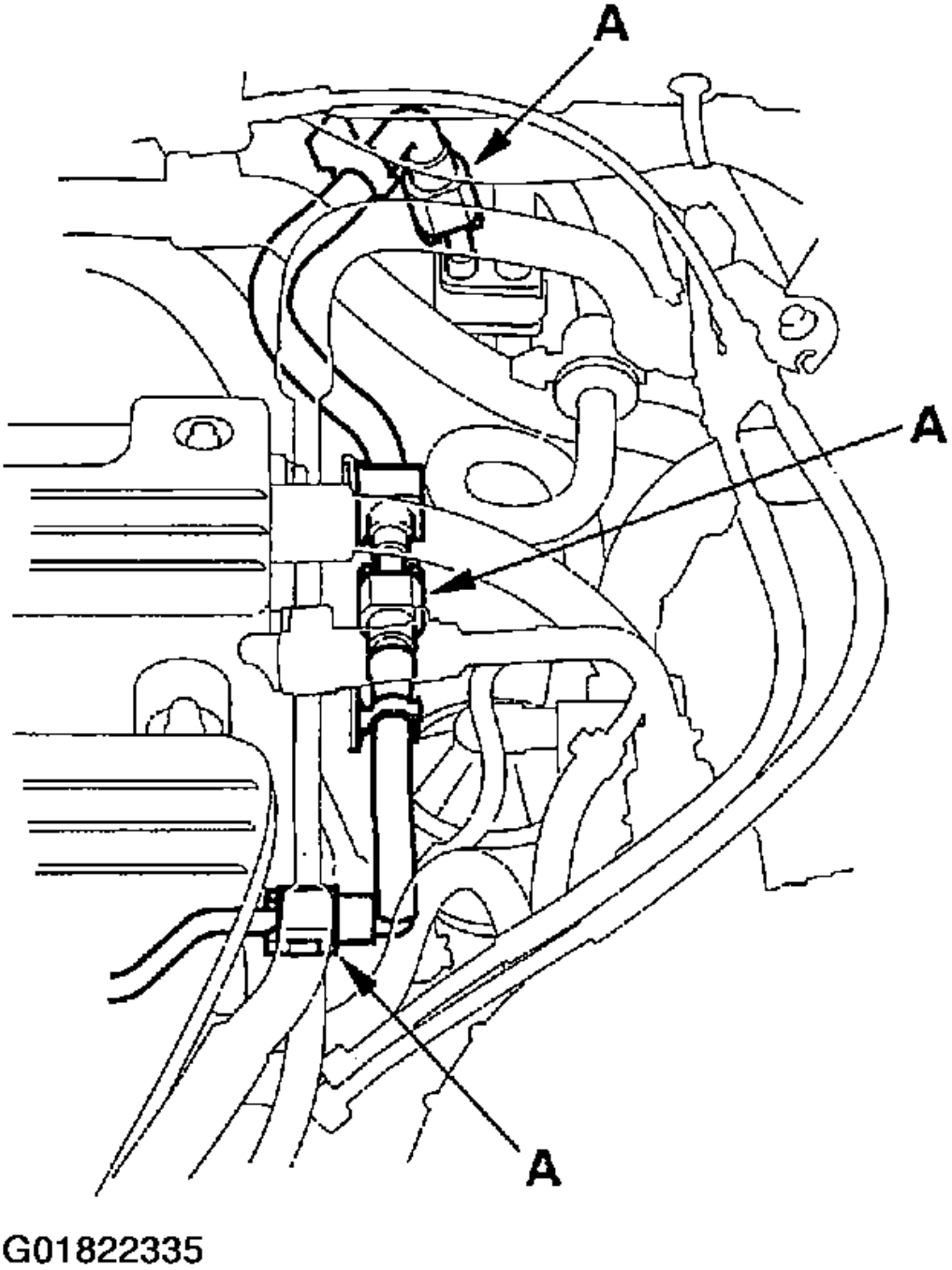


Fig. 29: Locating Fuel Quick-Connect Fittings (1 Of 3)

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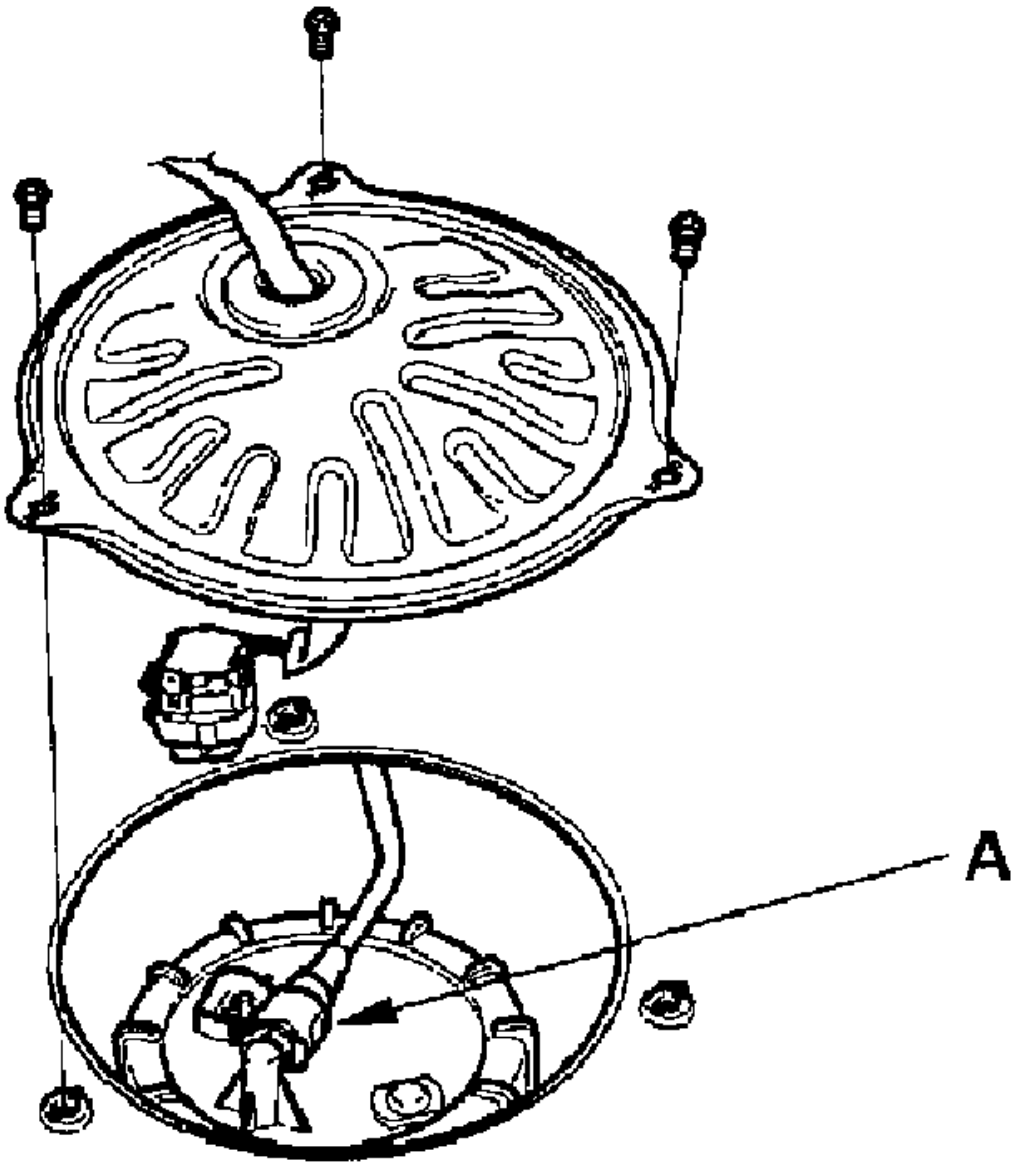


Fig. 30: Locating Fuel Quick-Connect Fittings (2 Of 3)

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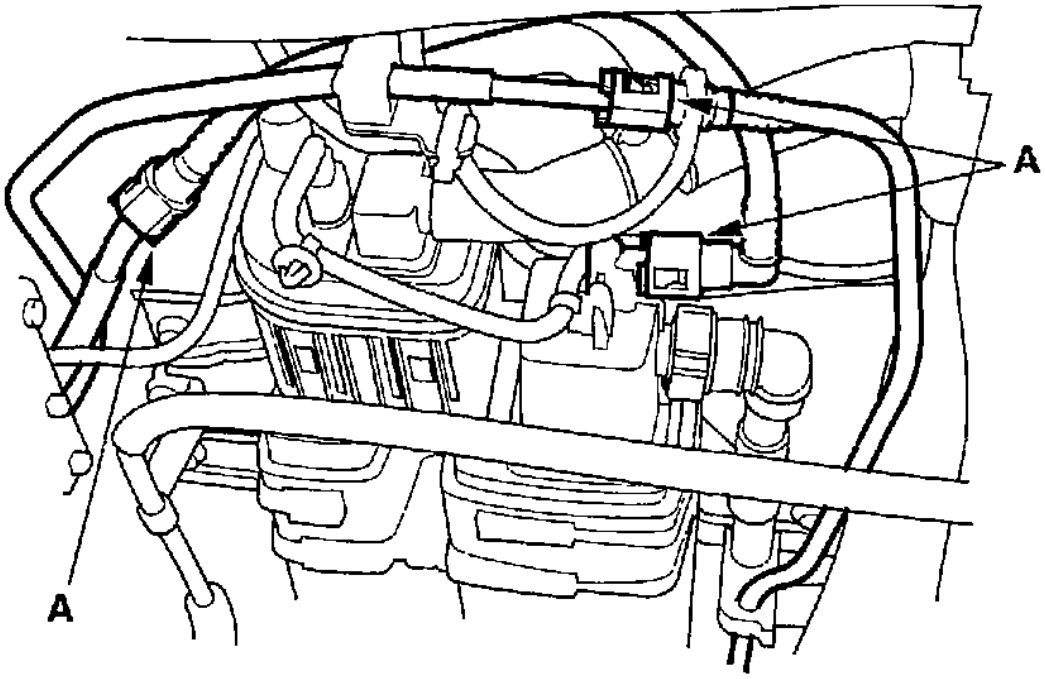


Fig. 31: Locating Fuel Quick-Connect Fittings (3 Of 3)

3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

NOTE:

- **Be careful not to damage the line (D) or other parts. Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

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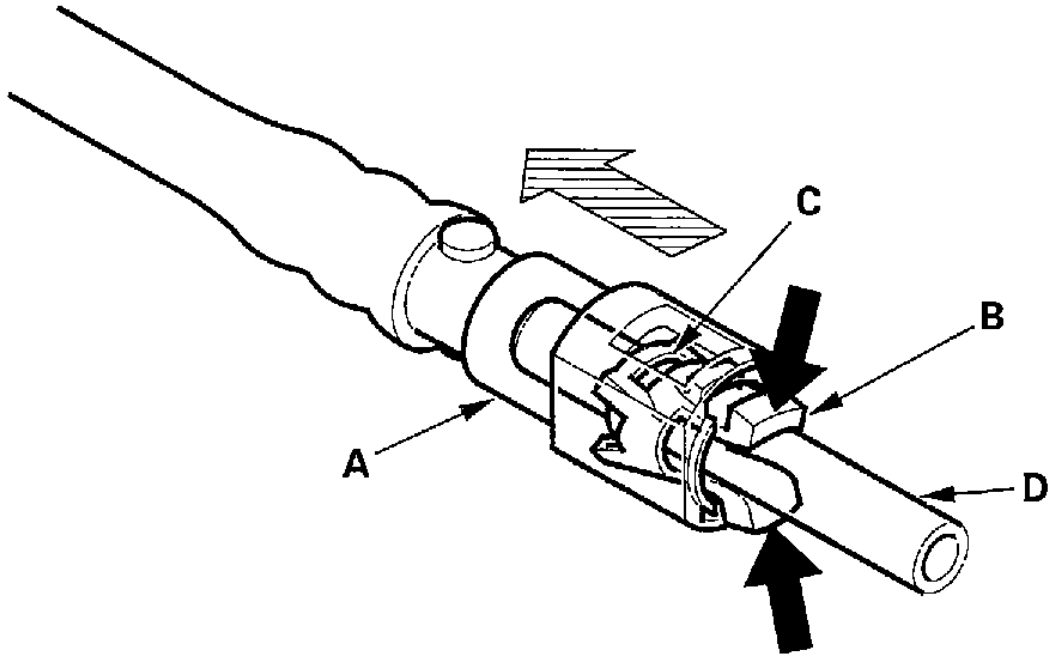


Fig. 32: Removing Fuel Quick-Connect Fittings

4. Check the contact area (A) of the line (B) for dirt or damage.
    - If it is dirty, clean it.
    - If it is rusty or damaged, replace the fuel pump, fuel filter, or fuel feed line.

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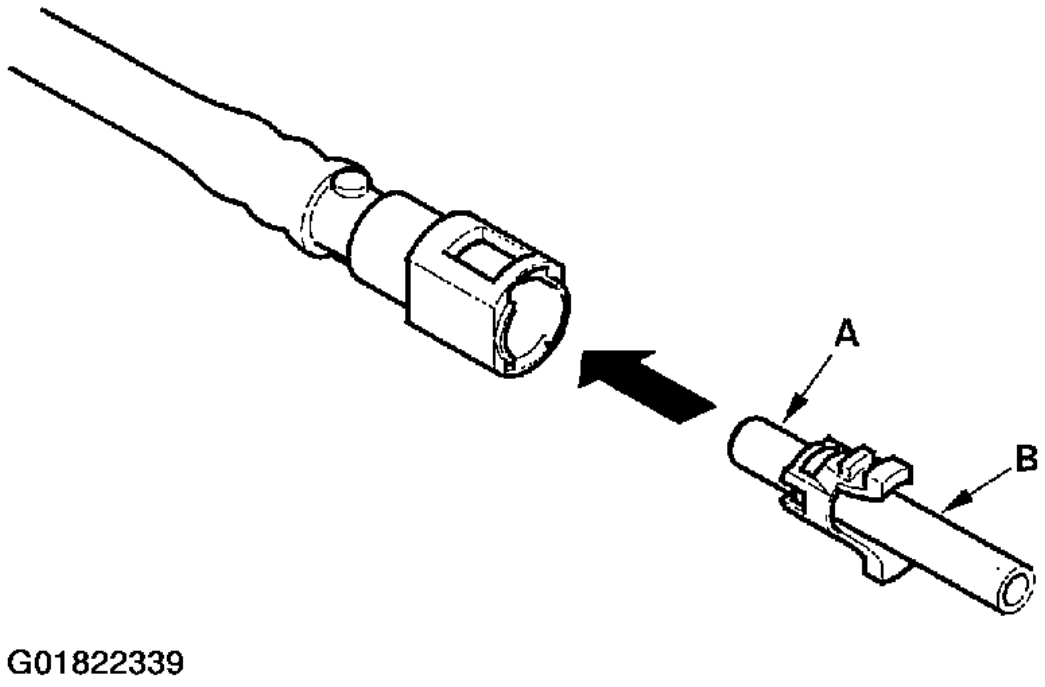


Fig. 33: Checking Fuel Quick-Connect Fittings

5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

NOTE: The retainer cannot be reused once it has been removed from the line. Replace the retainer when:

- **replacing the fuel rail.**
- **replacing the fuel feed line.**
- **replacing the fuel pump.**
- **replacing the fuel filter.**
- **replacing the fuel gauge sending unit.**
- **it has been removed from the line.**
- **it is damaged.**

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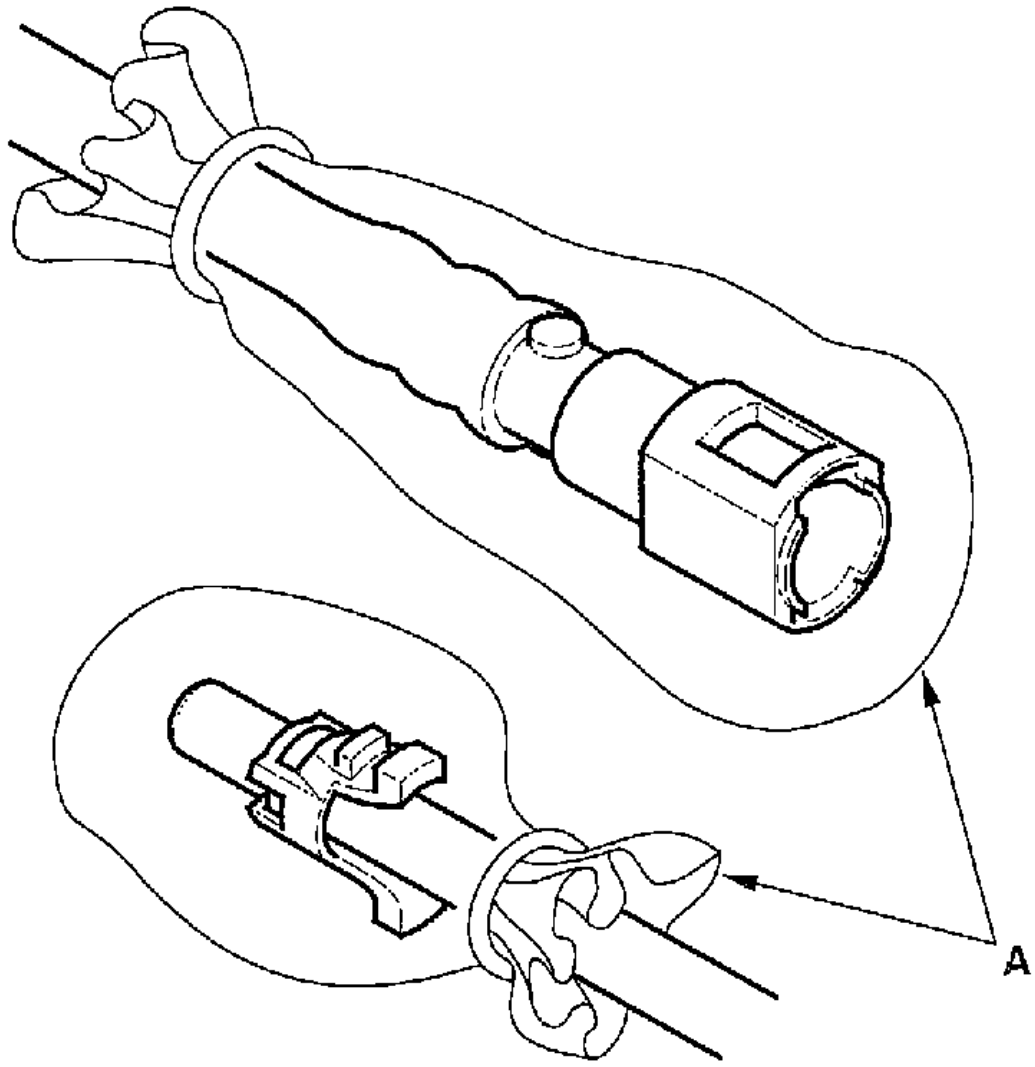


Fig. 34: Covering Fuel Quick-Connect Fittings With Plastic Bags

FUEL LINE/QUICK-CONNECT FITTING INSTALLATION

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

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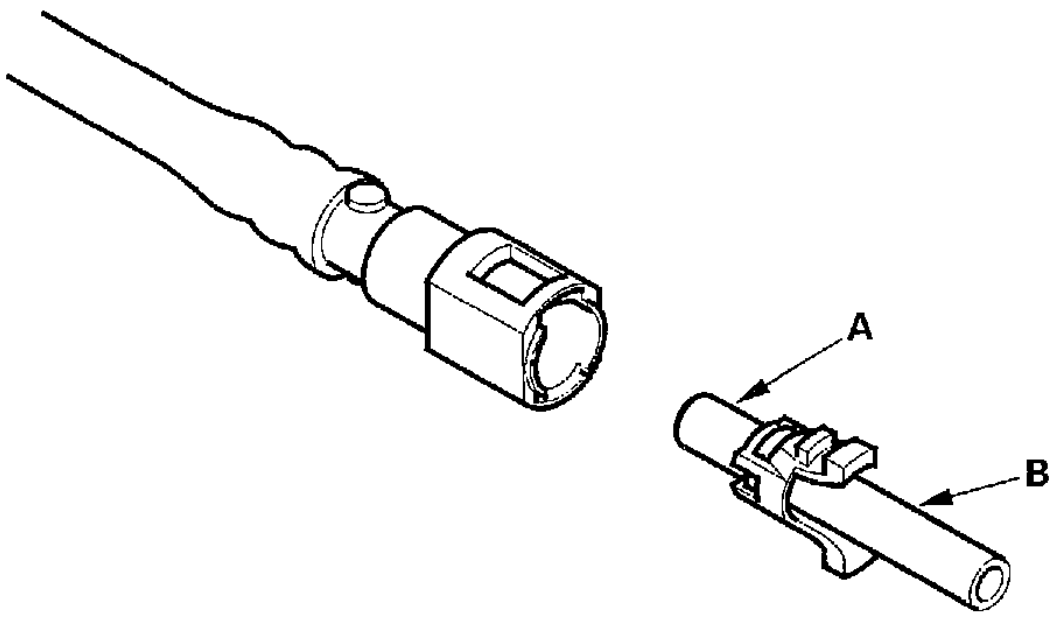


Fig. 35: Checking Fuel Line/Quick-Connect Fitting

2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit.
   - removing the retainer from the line.

NOTE: When replacing a retainer, use the same size and manufacturer.

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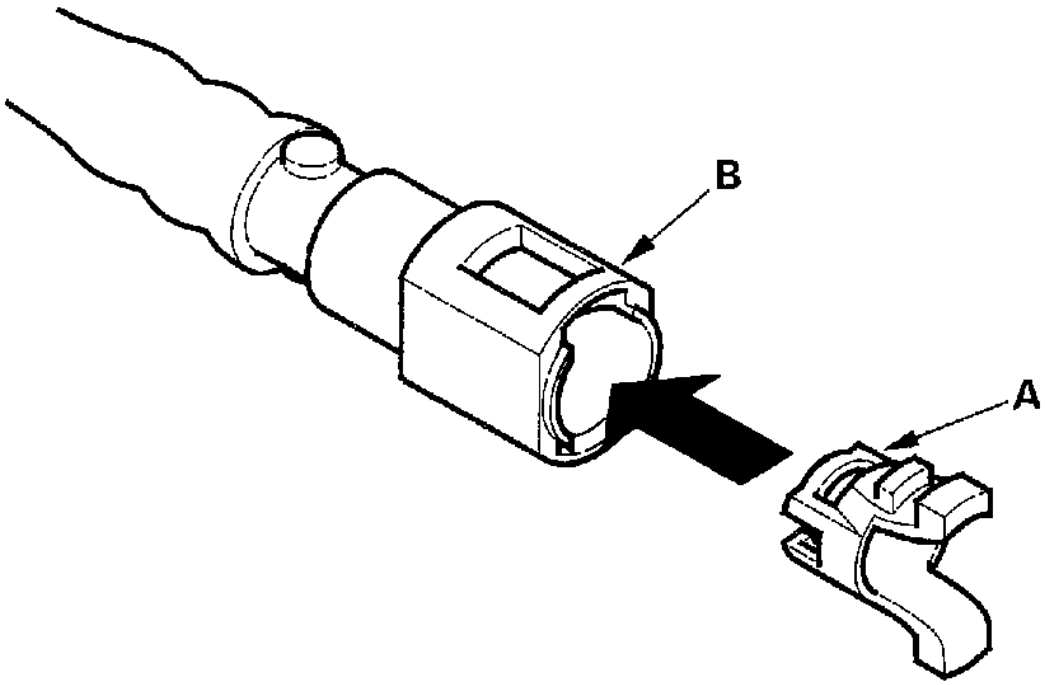


Fig. 36: Inserting A New Retainer Into The Connector

3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.

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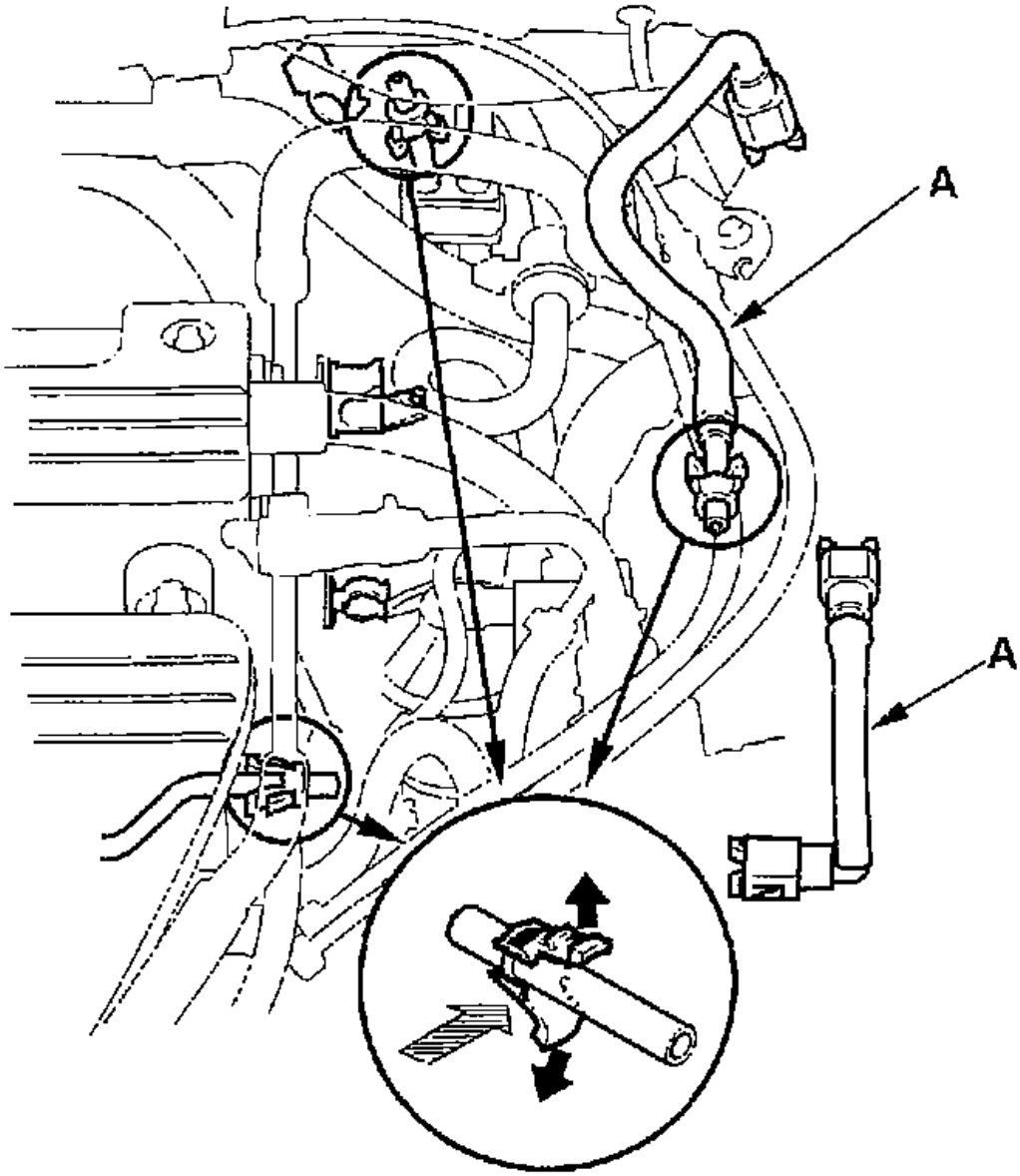


Fig. 37: Removing The Old Retainer From The Mating Line (1 Of 3)

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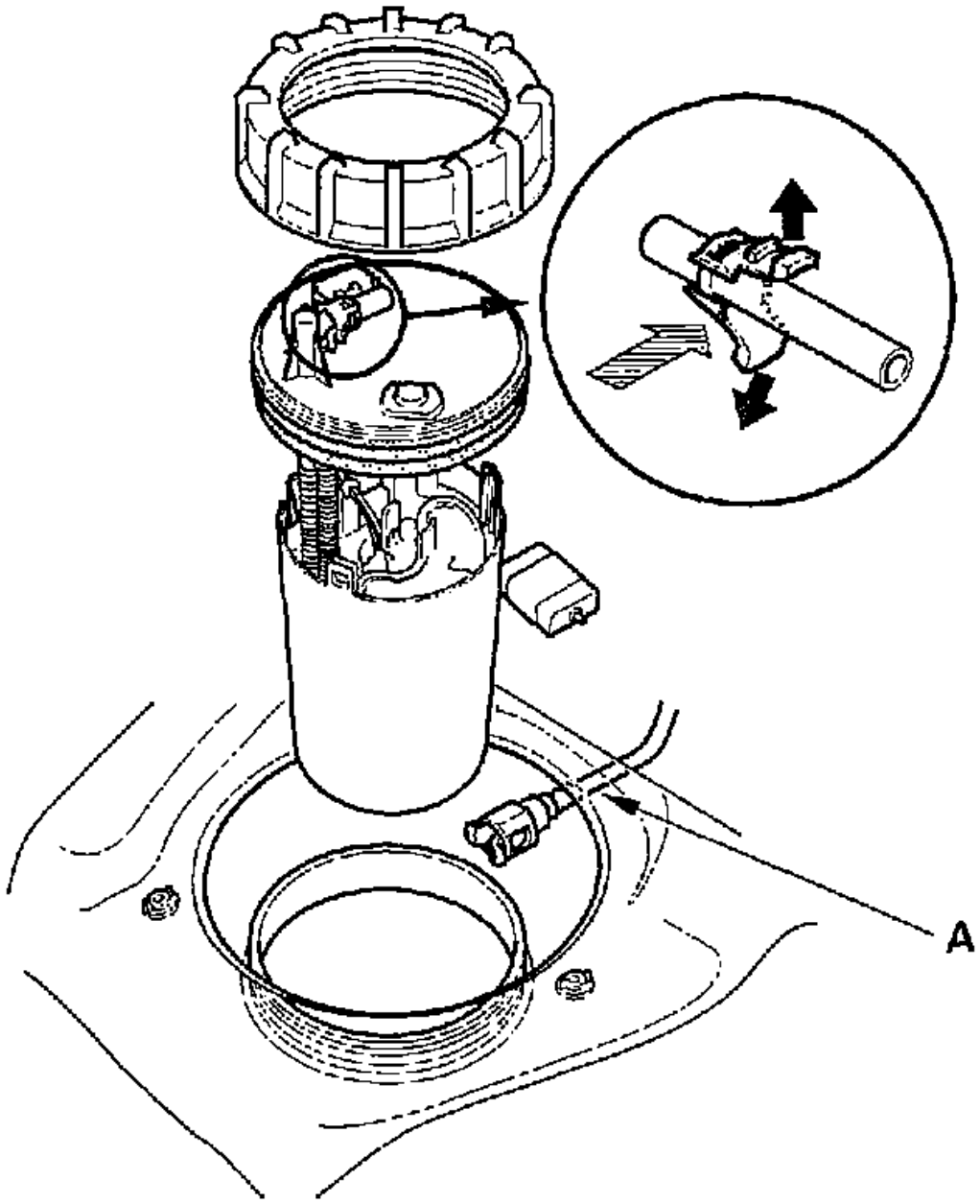


Fig. 38: Removing The Old Retainer From The Mating Line (2 Of 3)

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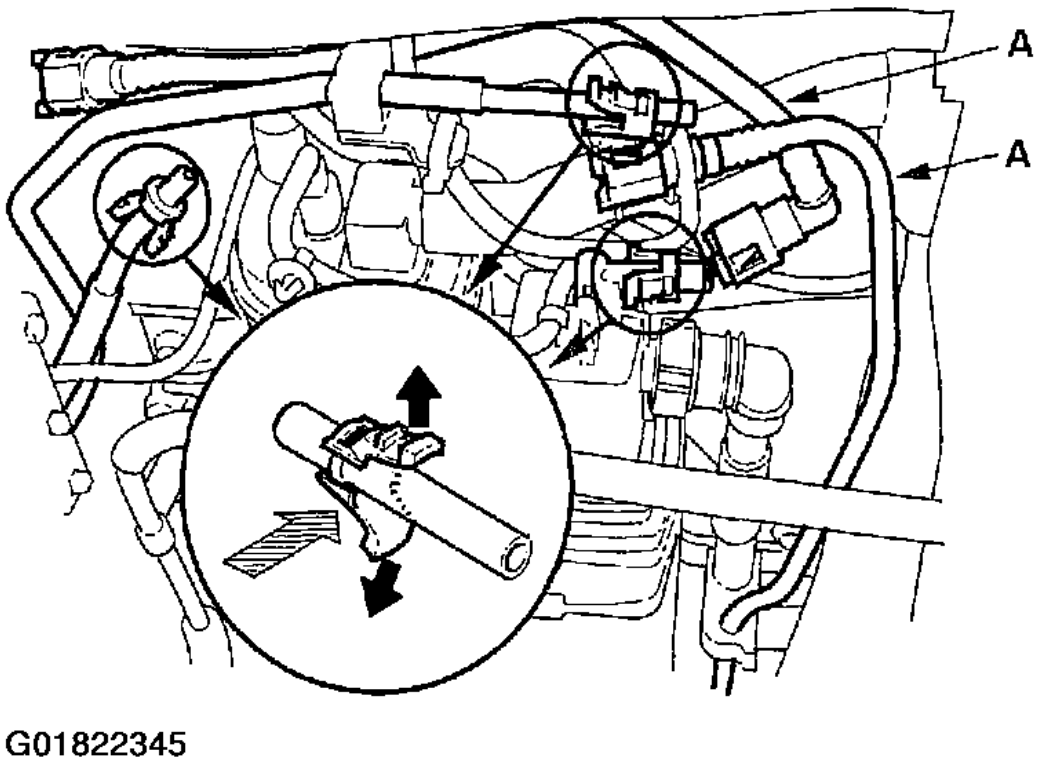


Fig. 39: Removing The Old Retainer From The Mating Line (3 Of 3)

4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer pawls lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

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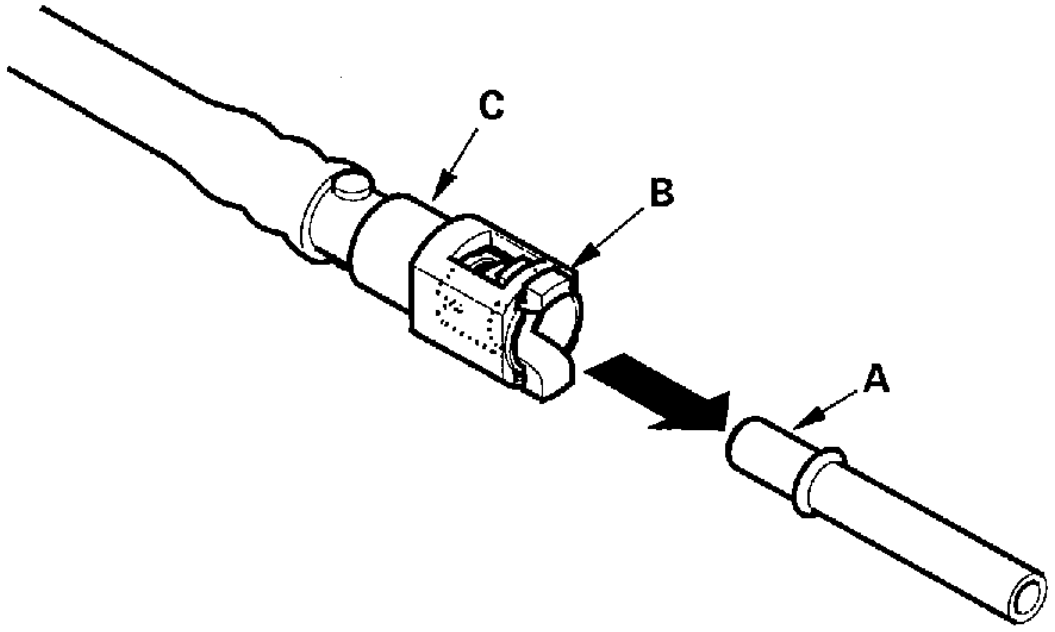


Fig. 40: Connecting Fuel Line/Quick-Connect Fitting (New Retainer)

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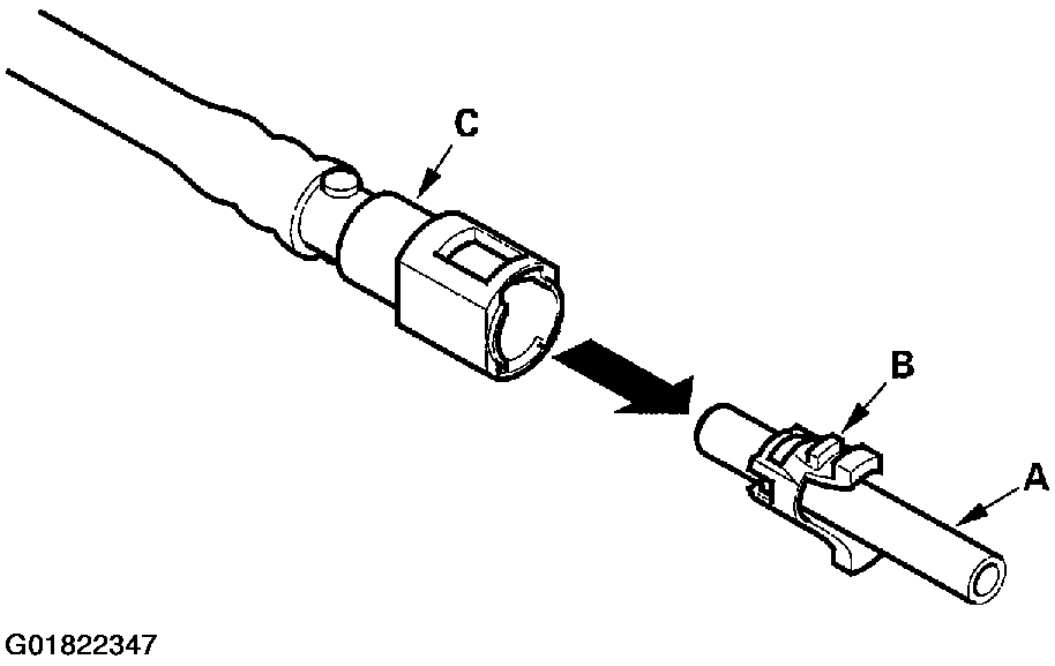


Fig. 41: Connecting Fuel Line/Quick-Connect Fitting (Existing Retainer)

5. Make sure the connection is secure and that the tabs are firmly locked into place; check visually and by pulling the connector.

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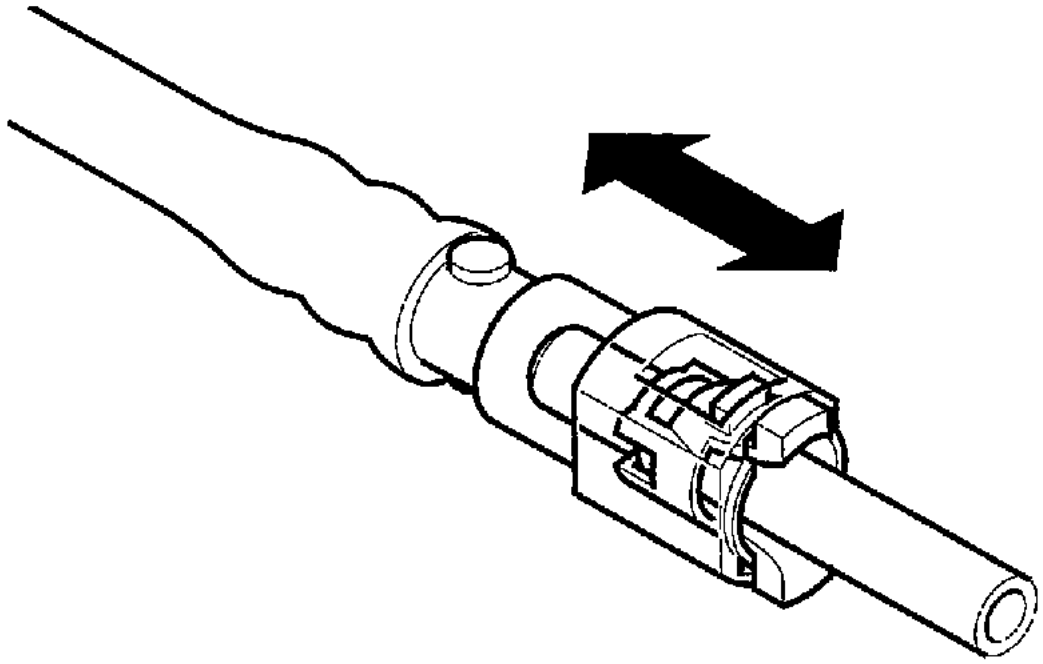


Fig. 42: Checking Connection

6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat two or three times, and check that there is no leakage in the fuel supply system.

FUEL PRESSURE REGULATOR REPLACEMENT

1. Remove the fuel pump (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).
2. Remove the clip (A).

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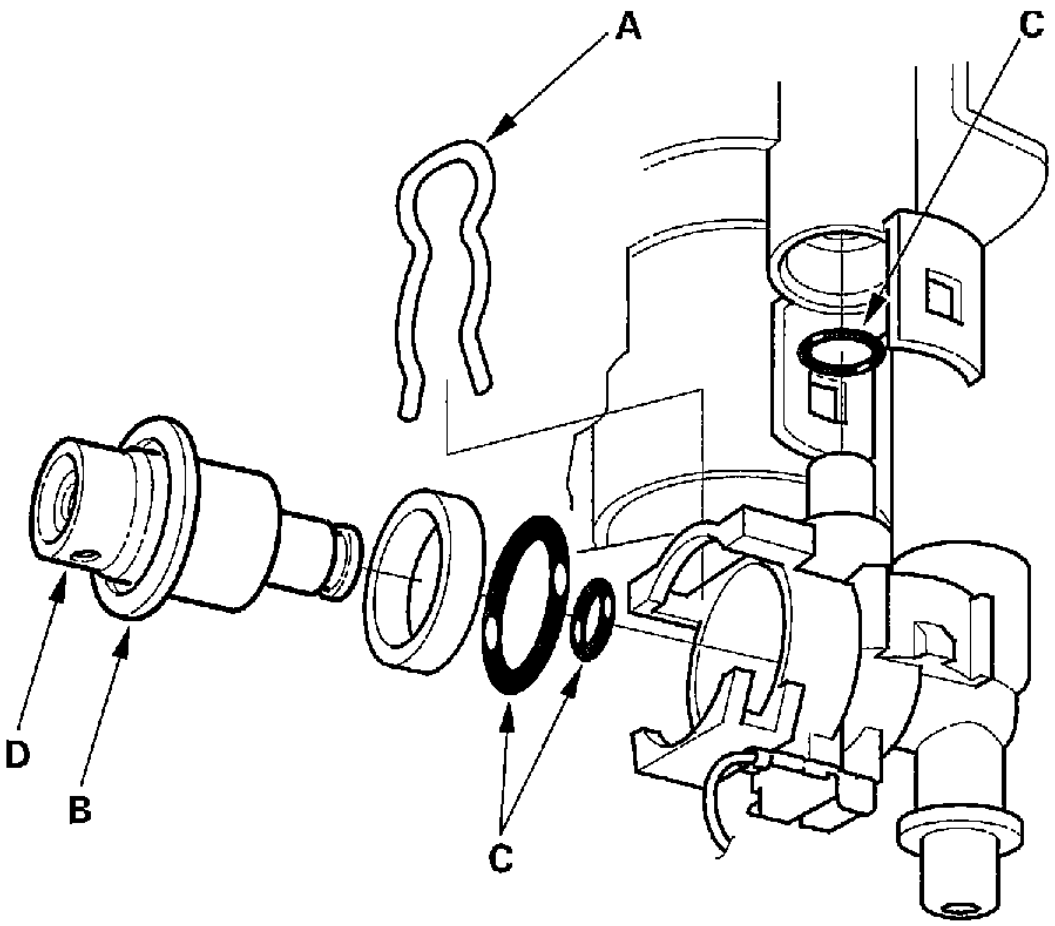


Fig. 43: Removing The Fuel Pressure Regulator

3. Remove the fuel pressure regulator (B).
4. Install the regulator in the reverse order of removal with new O-rings (C). Make sure the regulator is installed with the drain hole (D) facing down.

FUEL FILTER REPLACEMENT

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see **FUEL PRESSURE TEST**), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel pump (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).
2. Remove the fuel filter set (A).

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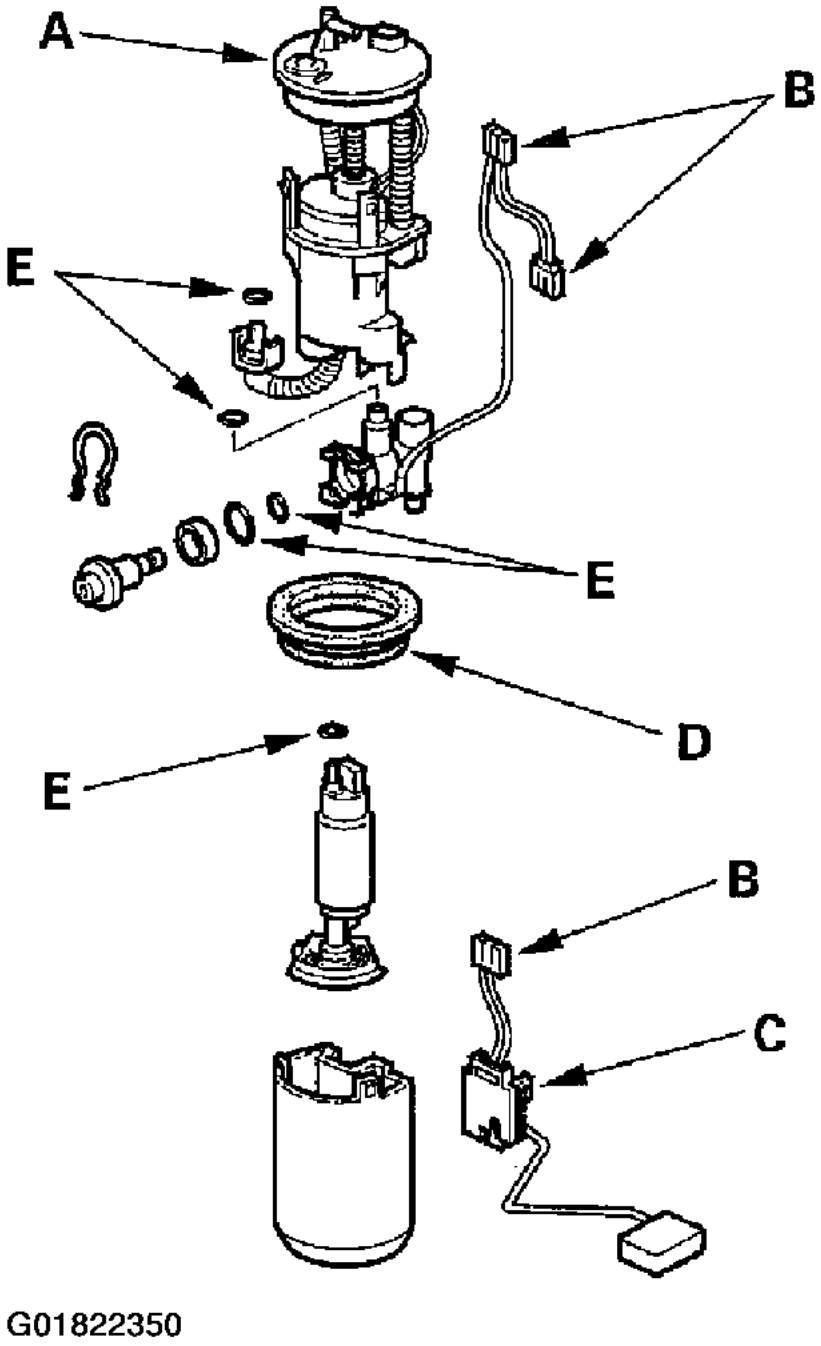


Fig. 44: Removing Fuel Filter

3. Check these items before installing the fuel tank unit:
    - When connecting the wire harness, make sure the connection is secure and the connectors (B) are

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firmly locked into place.

- When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

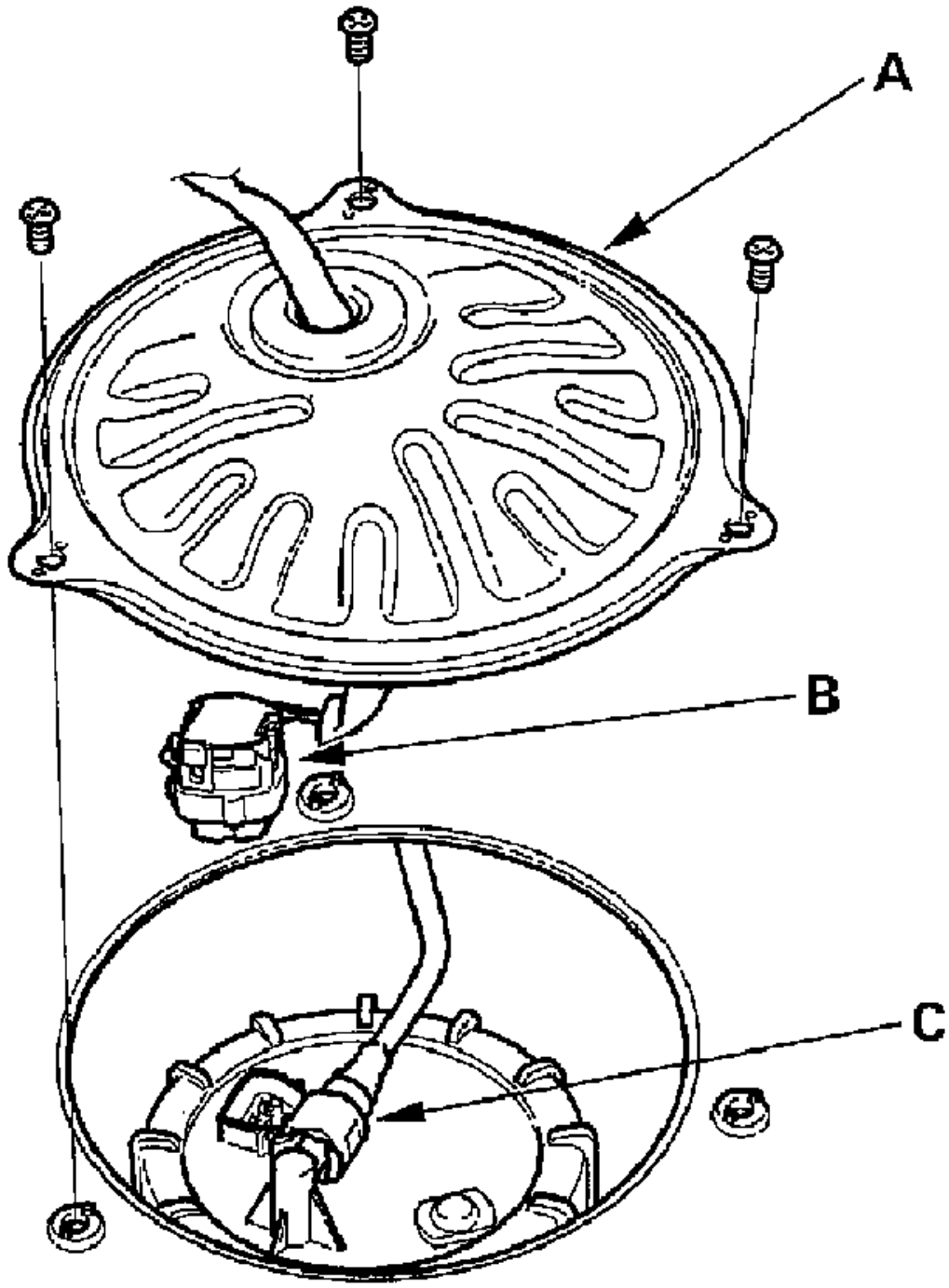
4. Install the parts in the reverse order of removal with a new base gasket (D) and new O-rings (E). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).

FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT

Special Tools Required: Fuel sender wrench 07XAA-001010A

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Remove the fuel fill cap.
3. Remove the trunk floor.
4. Remove the access panel (A) from the floor.

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Fig. 45: Removing Access Panel

5. Disconnect the fuel pump 5P connector (B).
6. Disconnect the quick-connect fitting (C) from the fuel tank unit.
7. Using the special tool, loosen the fuel pump/sender assembly locknut (A).

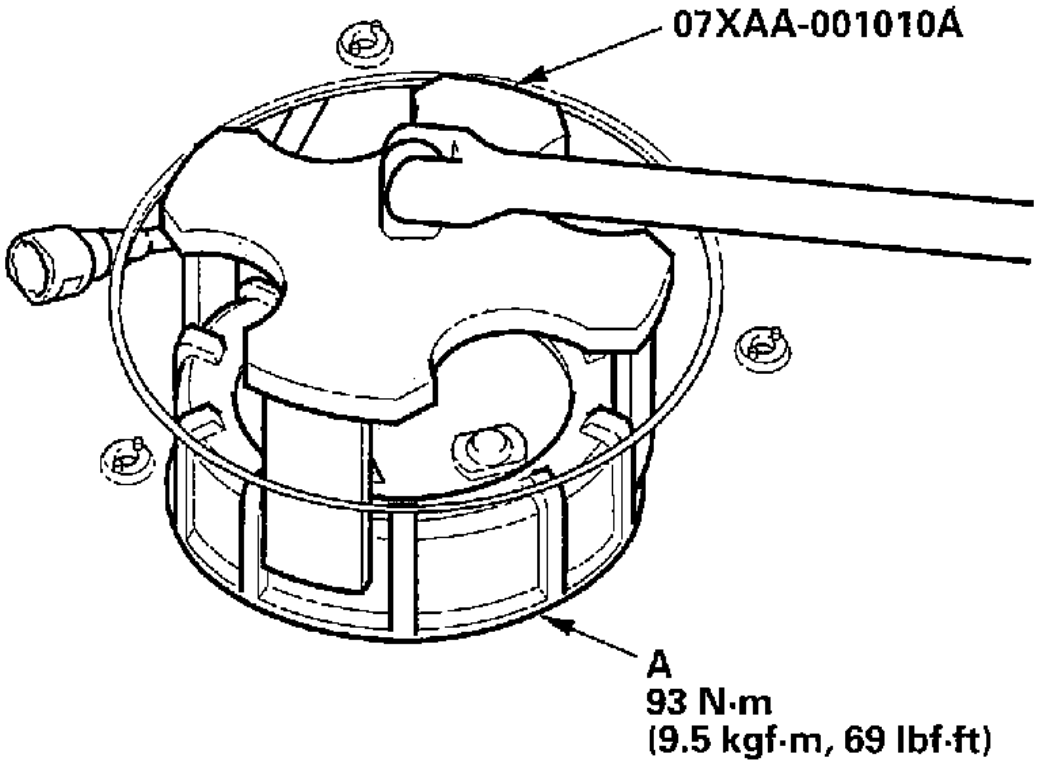


Fig. 46: Removing Locknut

8. Remove the locknut (A) and the fuel pump/sender assembly.

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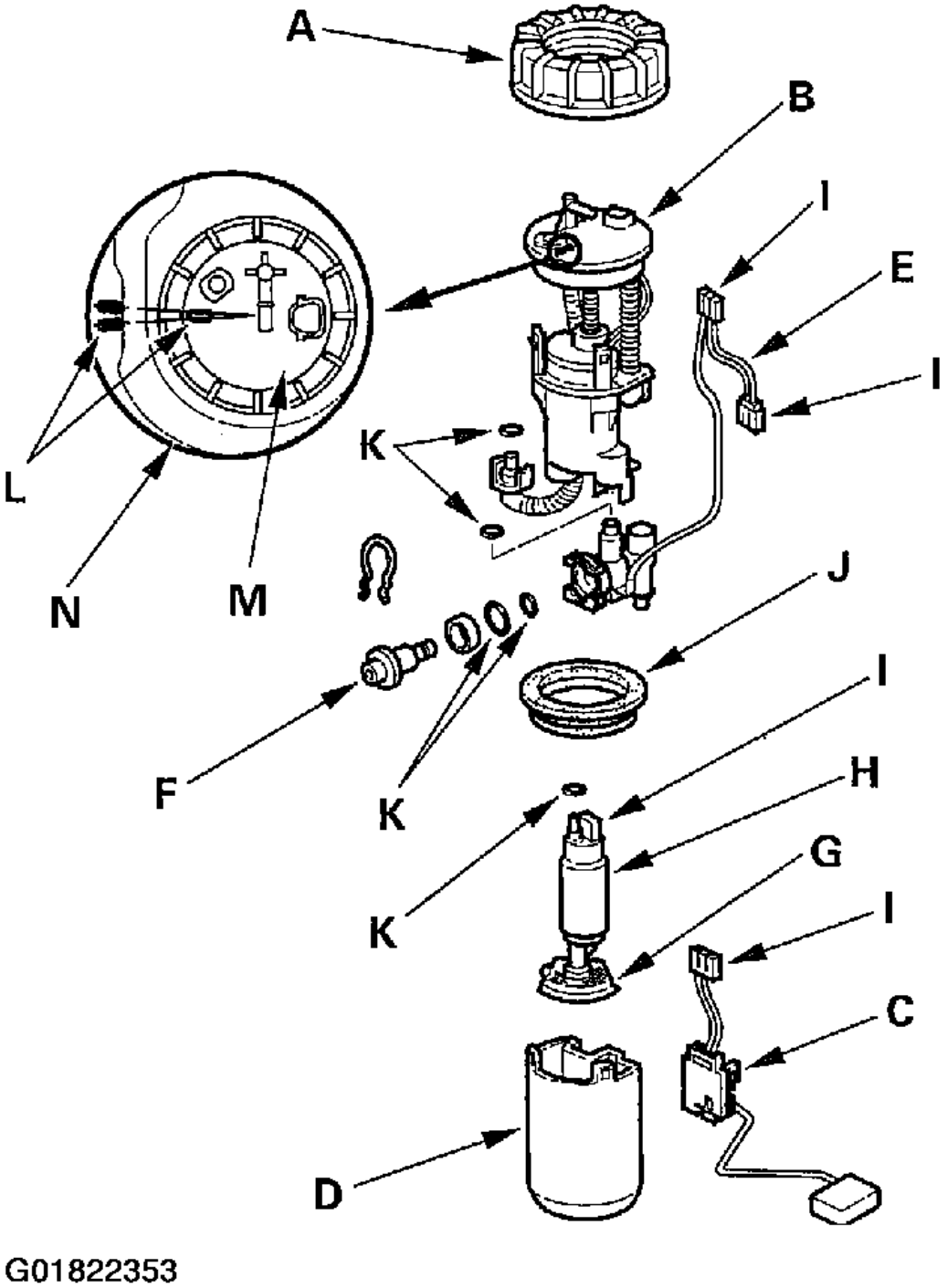


Fig. 47: Exploded View Of Fuel Pump/Fuel Gauge Sending Unit

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9. Remove the fuel filter (B), the fuel gauge sending unit (C), the case (D), the wire harness (E), and the fuel pressure regulator (F).
10. When connecting the fuel pump assembly, make sure the connection is secure and the suction filter (G) is firmly connected to the fuel pump (H).
11. Check these items before installing the fuel tank unit:
    - When connecting the wire harness, make sure the connection is secure and the connectors (I) are firmly locked into place.
    - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
12. Install the parts in the reverse order of removal with a new base gasket (J) and new O-rings (K). When installing the fuel tank unit, align the marks (L) on the unit (M) and the fuel tank (N).

FUEL TANK REPLACEMENT

REMOVAL

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Drain the fuel tank (see **FUEL TANK DRAINING**).
3. Loosen the rear wheel nuts slightly, then raise the vehicle, and make sure it is securely supported. Remove the rear wheels.
4. Release the parking brake.
5. Remove the fuel tank covers (A).

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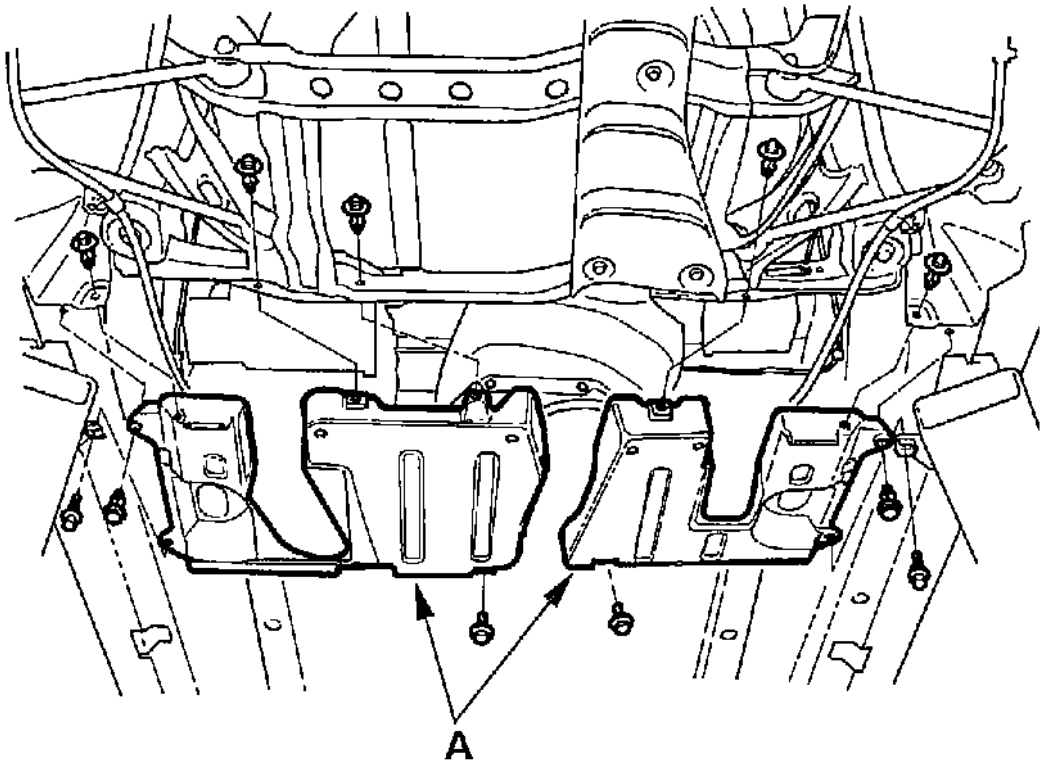


Fig. 48: Removing The Fuel Tank Covers

6. Remove the exhaust muffler (see **EXHAUST PIPE & MUFFLER REPLACEMENT**).
7. Disconnect the fuel fill neck tube (A) and breather hose (B).

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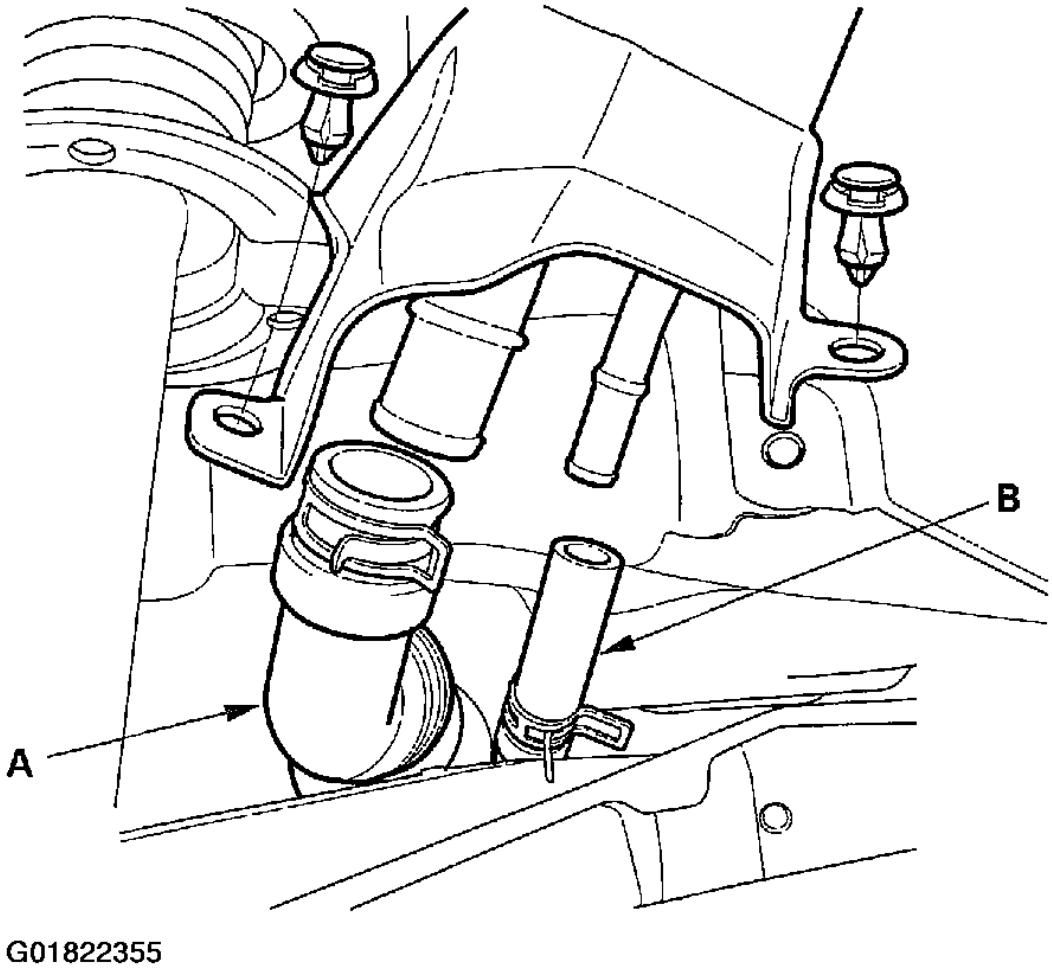


Fig. 49: Disconnecting The Fuel Fill Neck Tube & Breather Hose

8. Disconnect the vapor line (A) from the EVAP canister (B). Then disconnect the fuel line (C).

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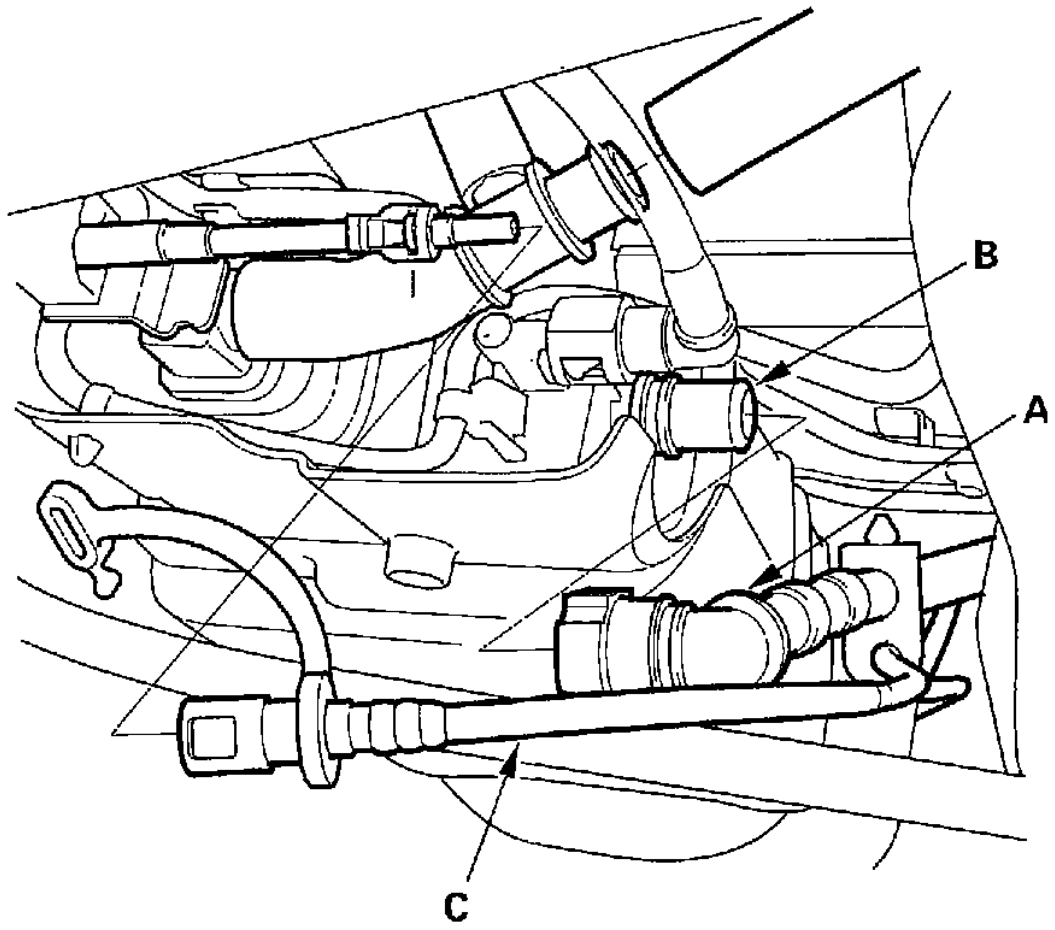


Fig. 50: Disconnecting The Vapor Line From The EVAP Canister & Disconnecting The Fuel Line

9. Disconnect the wheel sensor 2P connector (A).

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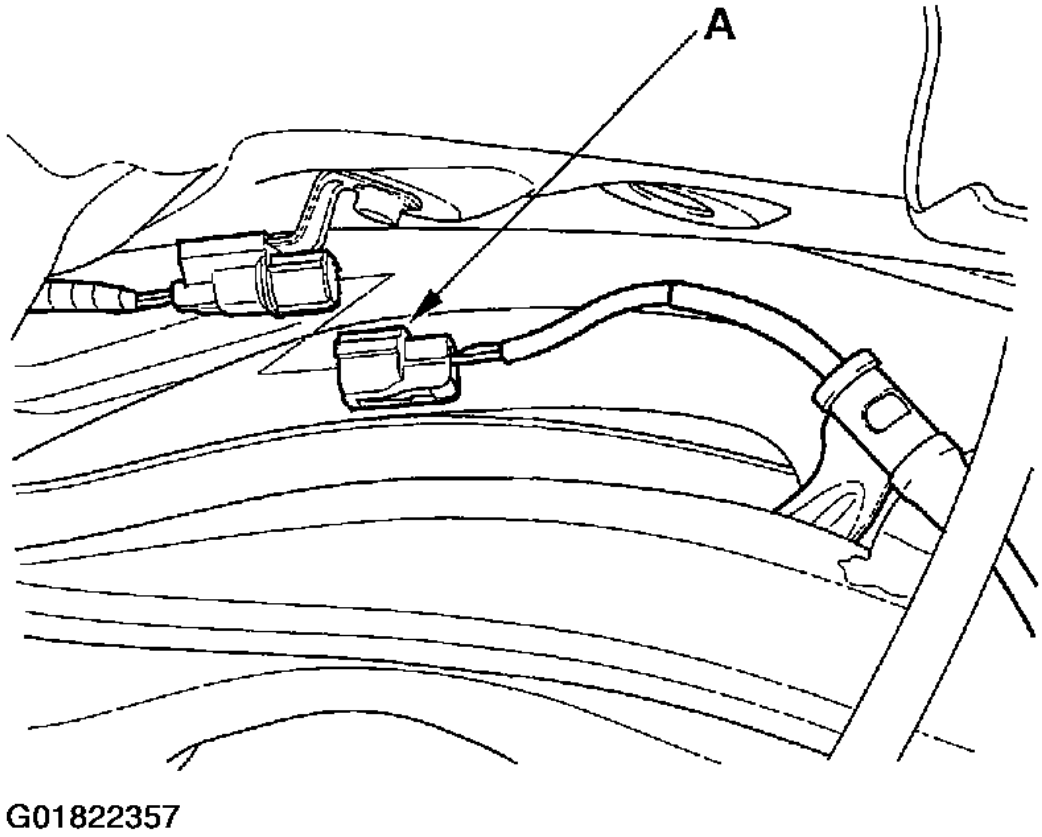


Fig. 51: Disconnecting The Wheel Sensor 2P Connector

10. Remove the clip (A), parking brake cable (B), two caliper bolts (C), and caliper body (D).

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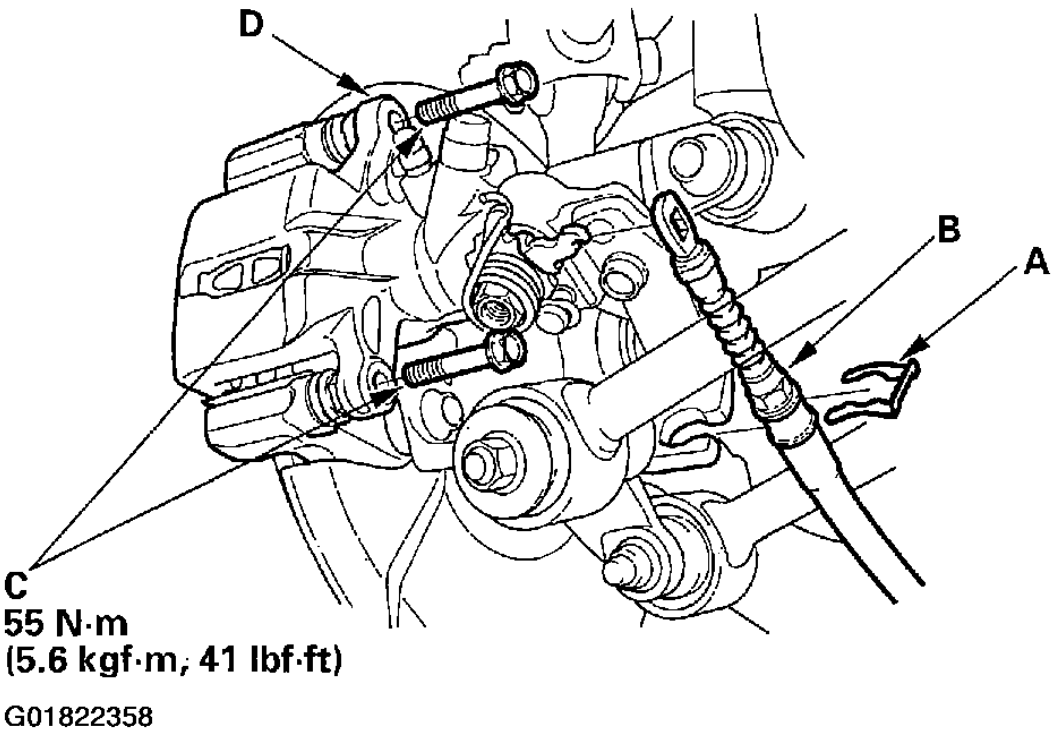


Fig. 52: Removing The Clip, Parking Brake Cable, Two Caliper Bolts & Caliper Body

11. Remove the brake hose bracket (E).

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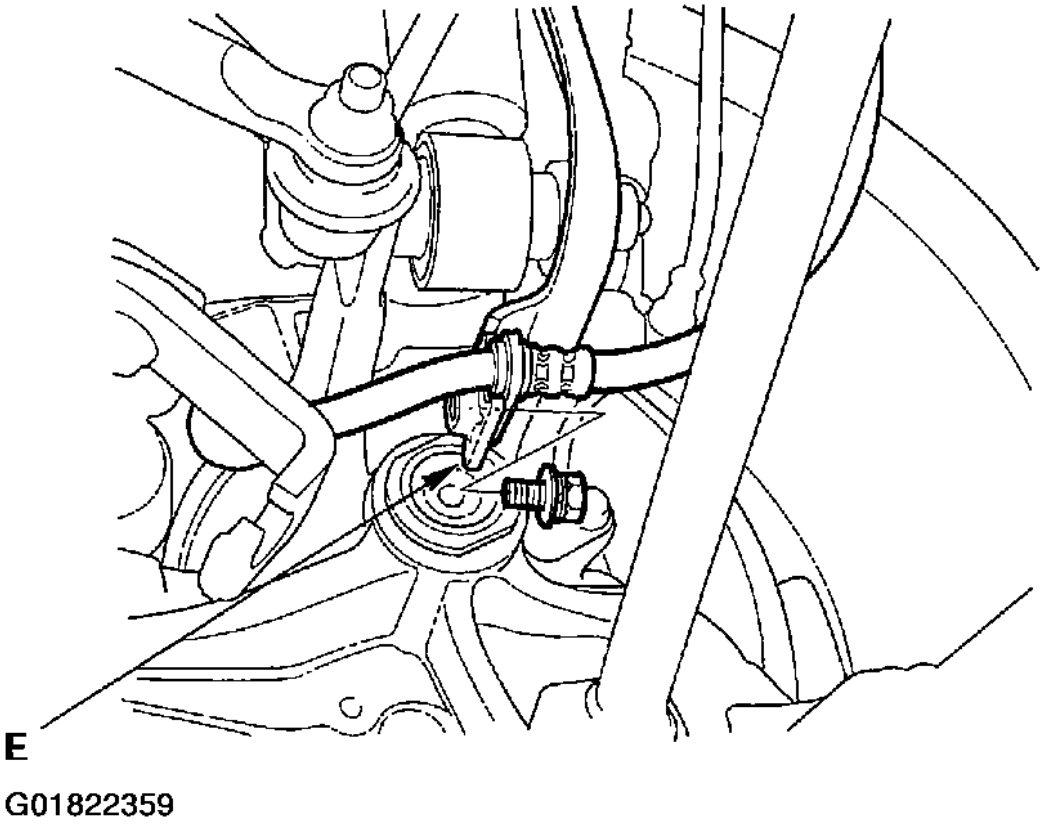


Fig. 53: Removing The Brake Hose Bracket

12. Hook the caliper body (A) on to the damper spring (B).

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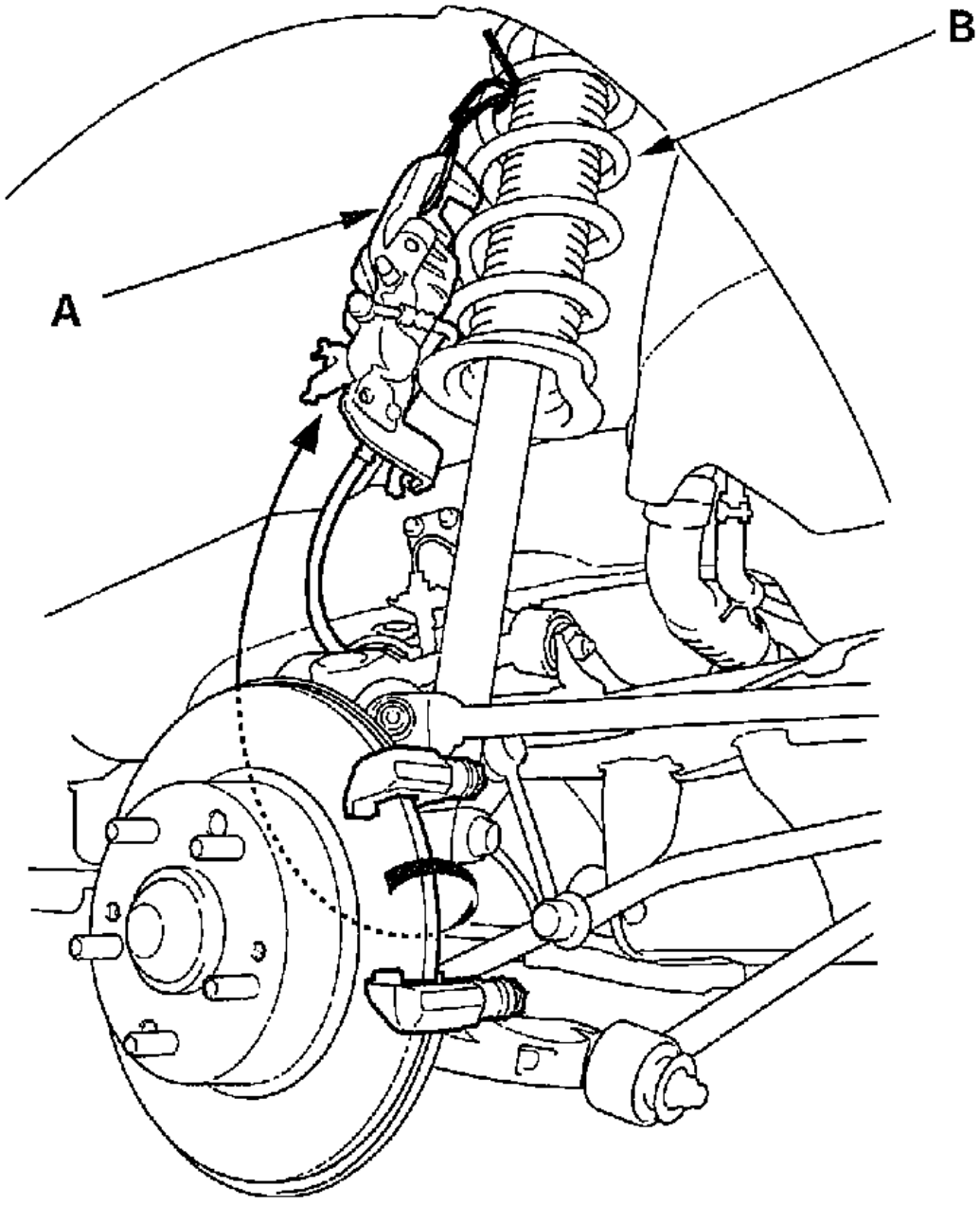


Fig. 54: Hooking The Caliper Body On To The Damper Spring

13. Remove the flange bolt (A).

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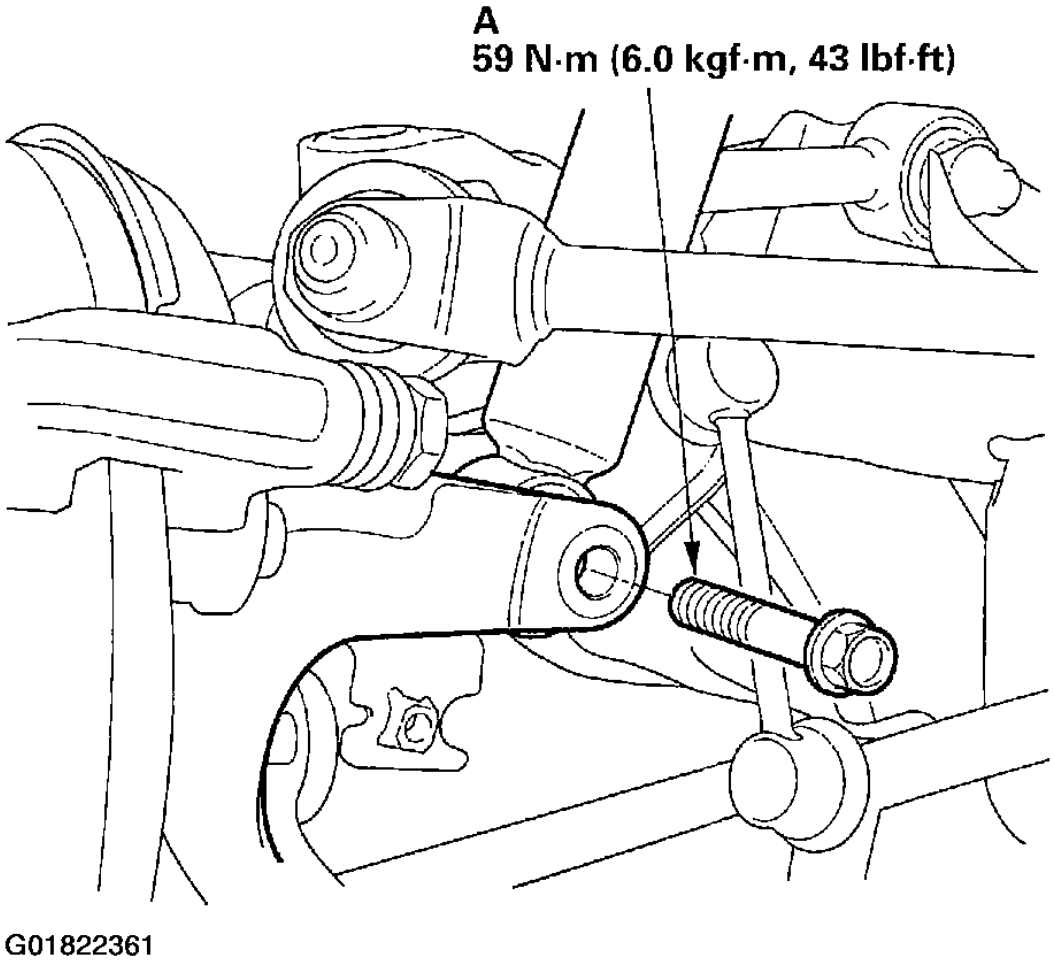


Fig. 55: Removing The Flange Bolt

14. Remove the parking brake cable bracket (A).

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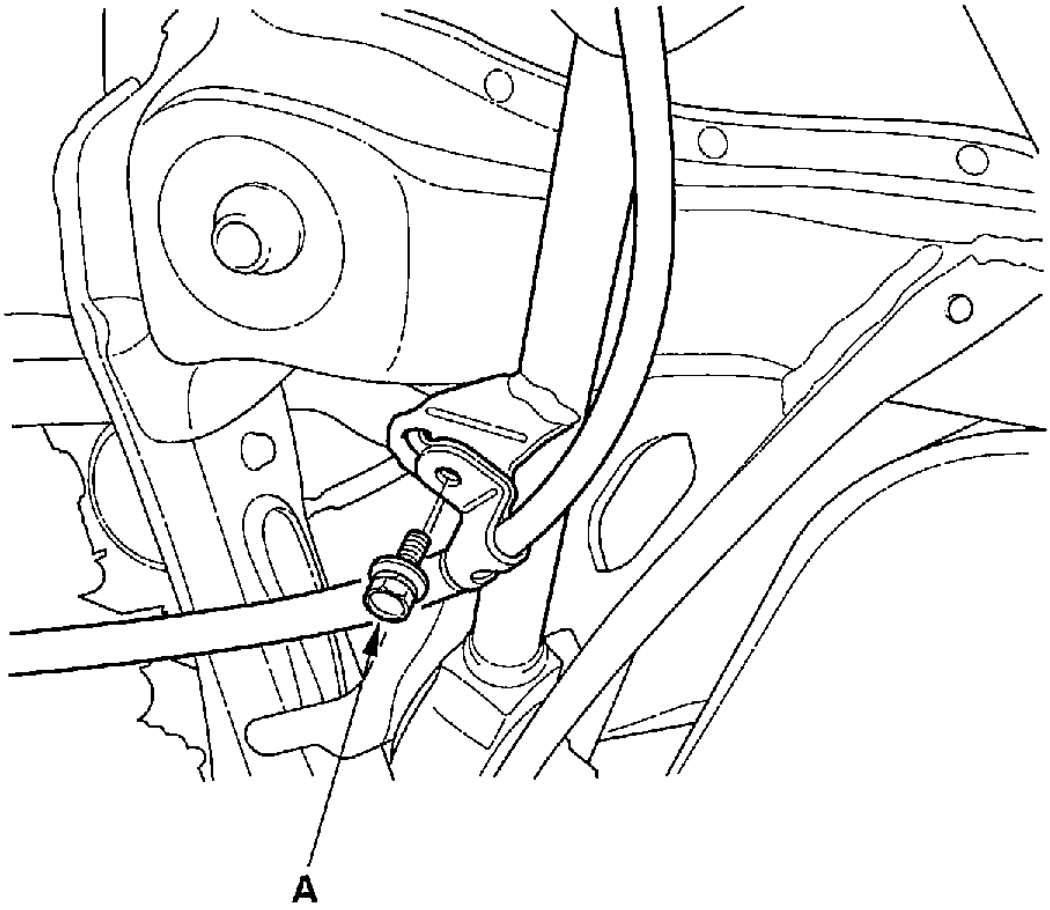


Fig. 56: Removing The Parking Brake Cable Bracket

15. Remove the heat shield (A). Place a jack or support under the suspension subframe. Remove the mounting bolts (B). Remove the rear suspension subframe.

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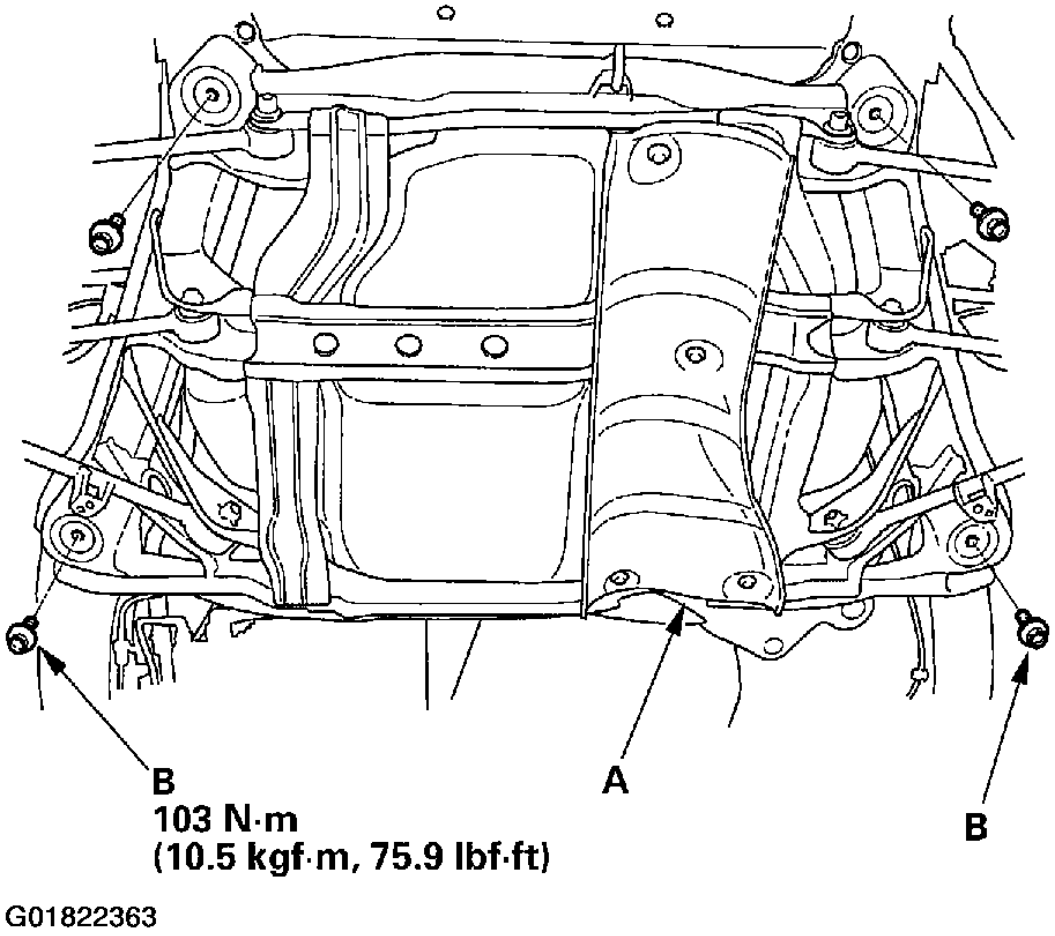


Fig. 57: Removing The Heat Shield

16. Remove the bolts (A) and the fuel tank straps (B).

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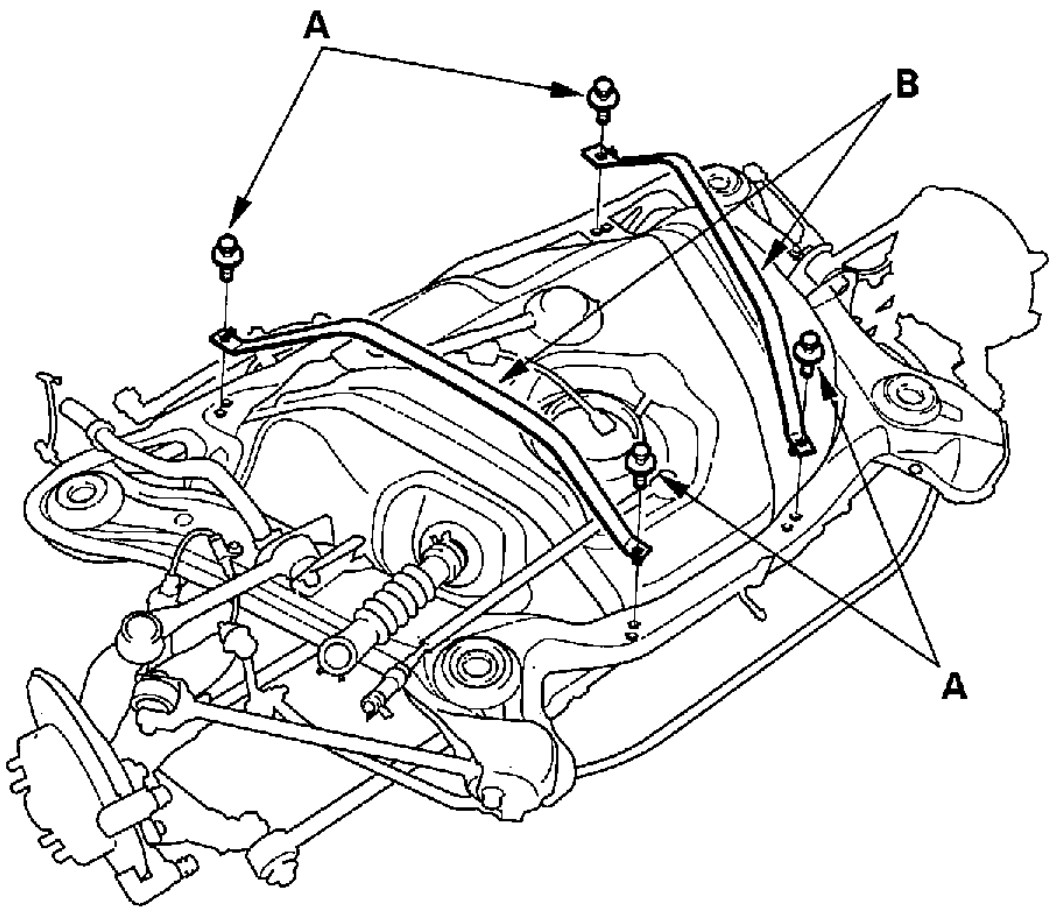


Fig. 58: Removing The Fuel Tank Straps

17. Lift the fuel tank out of the subframe.

INSTALLATION

1. Install the tank straps (A), and tighten the bolts (B).

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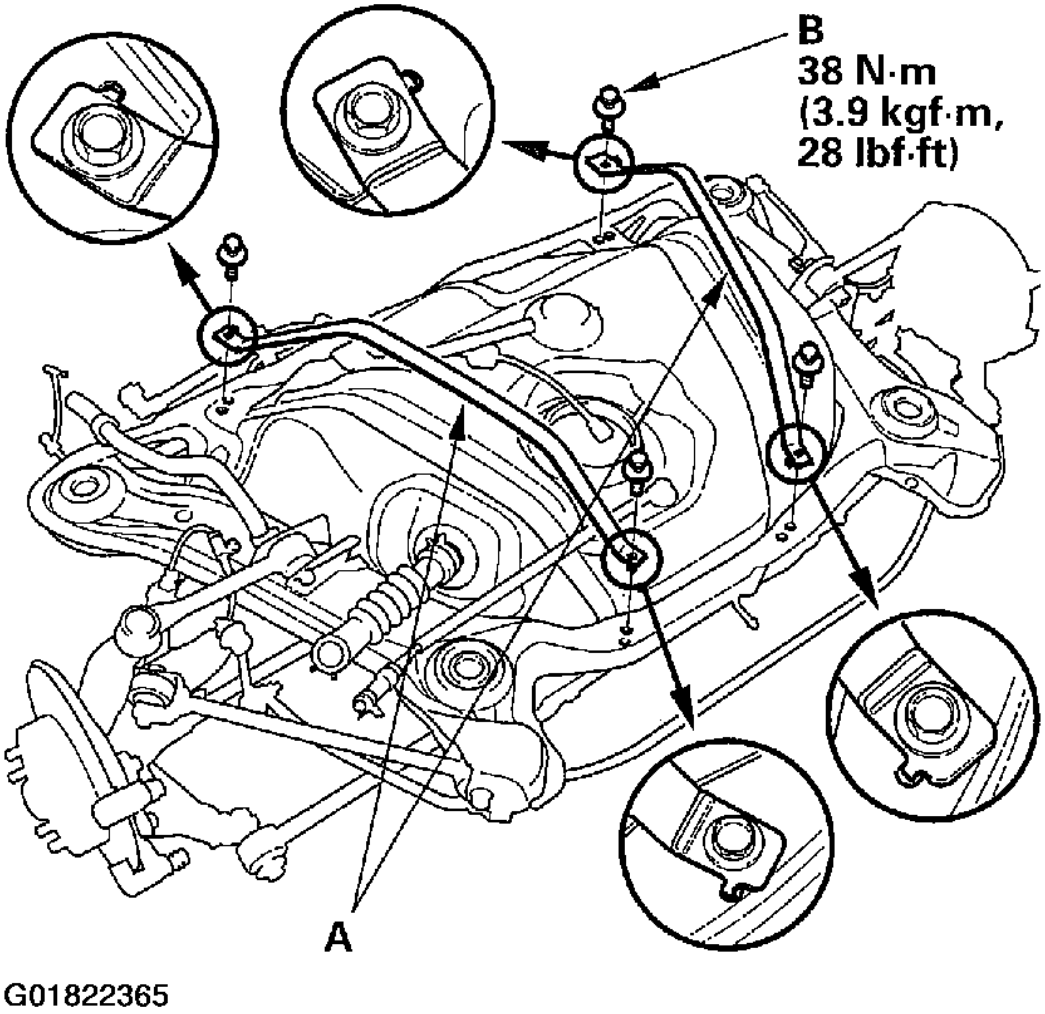


Fig. 59: Installing The Tank Straps

2. Place a jack or support under the rear suspension subframe. Install the rear suspension subframe, aligning the pins (A) with the holes in the subframe.

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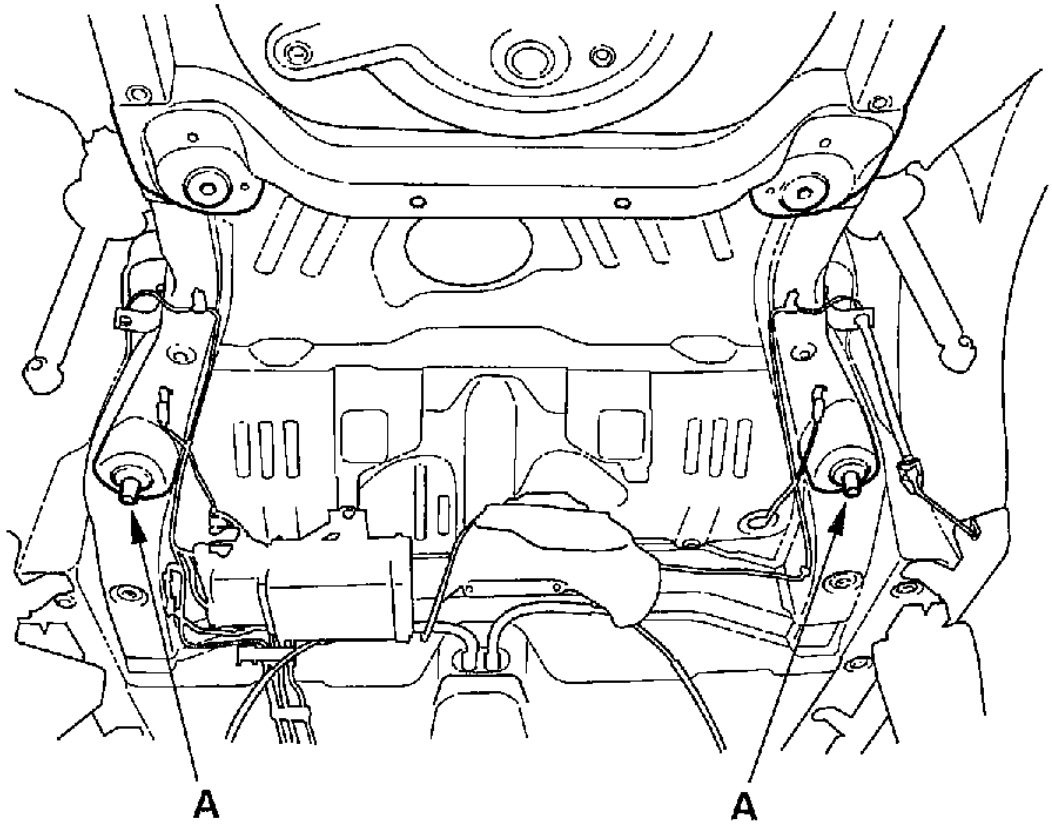


Fig. 60: Aligning The Pins With The Holes In The Subframe

3. Install the remaining parts in the reverse order of removal.
4. After installation, do a wheel alignment (see **WHEEL ALIGNMENT PROCEDURES**).

FUEL GAUGE SENDING UNIT TEST

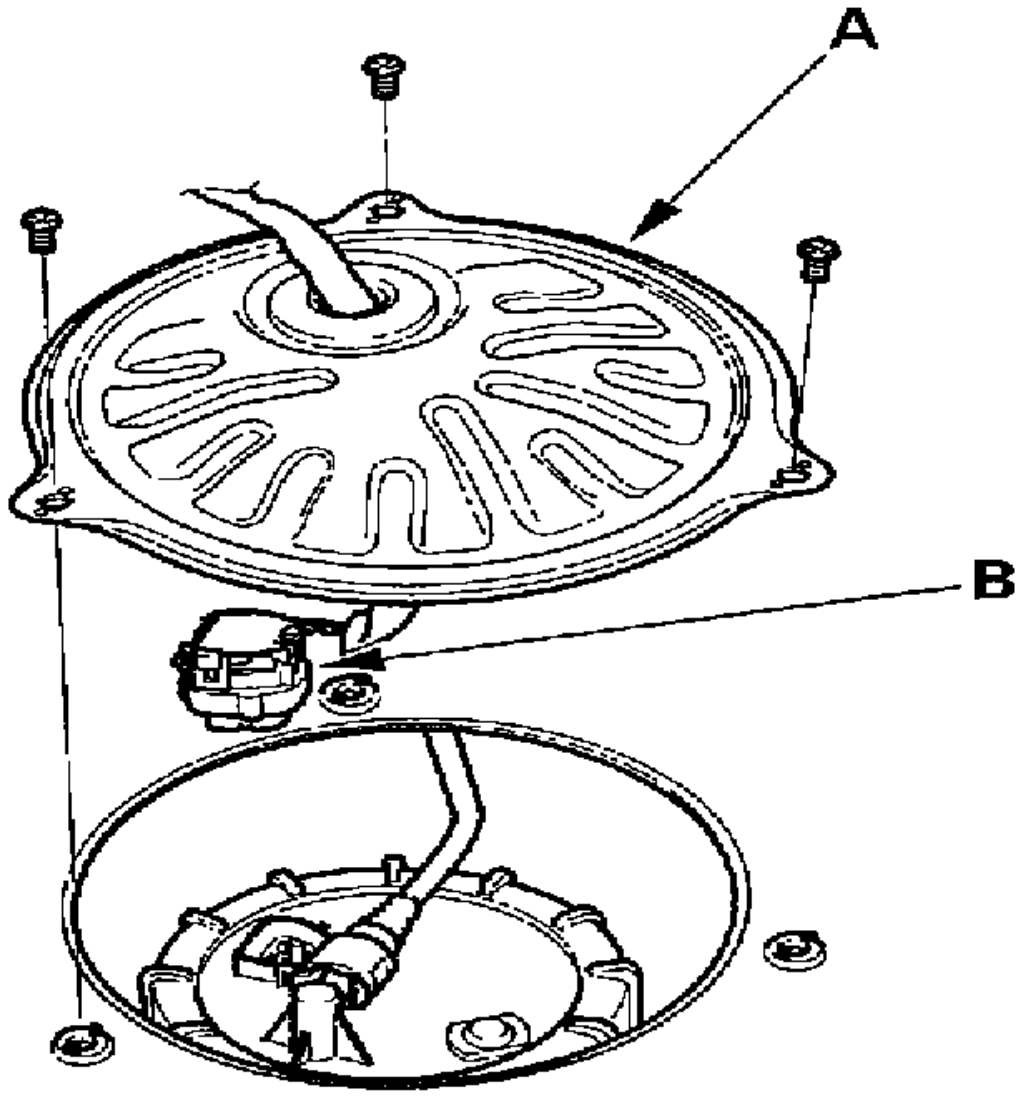
NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see CIRCUIT DIAGRAM).

1. Before starting the fuel gauge sending unit test, perform the multiplex integrated control system troubleshooting test mode A (see **TROUBLESHOOTING**).
   - If no problem is found, go to step 2.
   - If DTC B1175 is indicated, go to the indicated DTC troubleshooting.
2. Check the No. 21 METER (7.5A) fuse in the under-dash fuse/relay box before testing.
3. Do the gauge drive circuit check (see **SELF-DIAGNOSTIC PROCEDURE**).

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- If the fuel gauge needle sweeps from the minimum to maximum position and then returns to minimum, the gauge is OK. Go to step 3.
- If the fuel gauge needle does not sweep correctly, replace the gauge assembly and retest.

4. Turn the ignition switch OFF.
5. Remove the trunk floor.
6. Remove the access panel (A) from the floor.



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Fig. 61: Removing The Access Panel

7. Disconnect the fuel pump 5P connector (B).
8. Remove the fuel pump assembly from the fuel tank (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).
9. Measure resistance between the No. 1 and No. 2 terminals with the float at E (EMPTY), 1/2 (HALF FULL), and F (FULL) positions.

   If you do not get the following readings, replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).

Float Position	F 7.6 in (191.4 mm)	1/2 4.4 in (113.1 mm)	LOW 2.0 in (52.4 mm)	E 0.8 in (25.6 mm)
Resistance (Ω)	19 to 21	205.5 to 215.5	487.9 to 617.1	770 to 790

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Fig. 62: Fuel Gauge Sending Unit Test Resistance Table

NOTE: Remove the No. 15 BACK UP (40A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.

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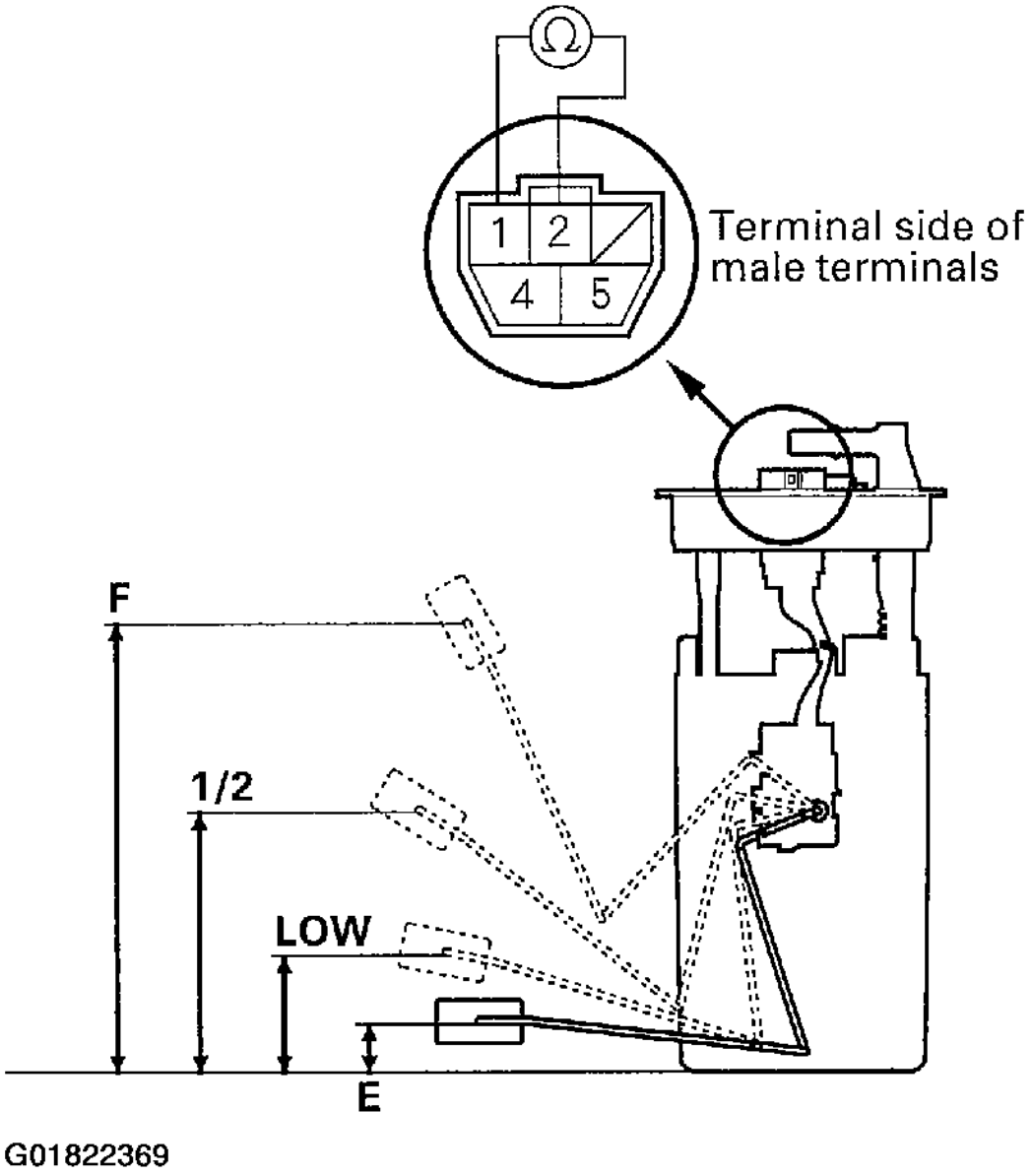


Fig. 63: Testing Fuel Gauge Sending Unit

LOW FUEL INDICATOR TEST

1. Do the gauge drive circuit check (see **SELF-DIAGNOSTIC PROCEDURE**).
   - If the low fuel indicator flashes, go to step 2.
   - If the low fuel indicator does not flash, replace the gauge control module assembly.
2. Perform the multiplex integrated control system troubleshooting test mode A (see

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TROUBLESHOOTING).

- If any DTCs are indicated, do the indicated DTC troubleshooting.
- If no DTCs are indicated, go to step 3.

3. Perform fuel gauge sending unit test (see **FUEL GAUGE SENDING UNIT TEST**).

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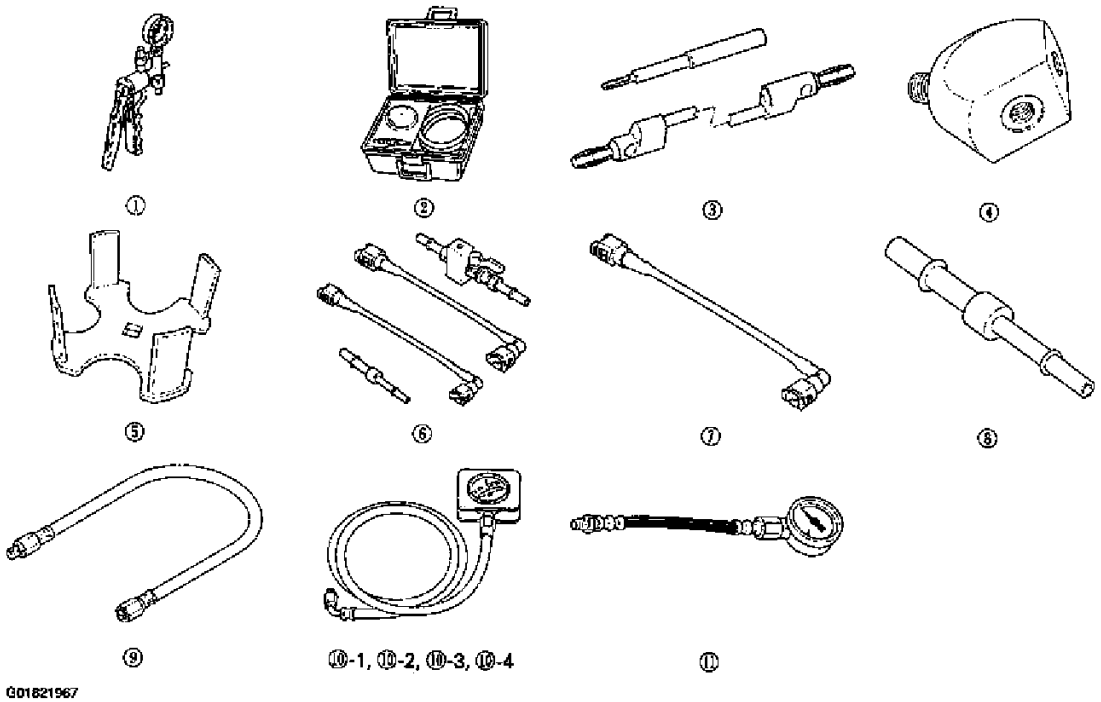
Fuel & Emissions Systems - TSX

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	A973X-041-XXXXX	Vacuum Pump/Gauge, 0—30 in.Hg	1
②	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
③	07SAZ-001000A	Backprobe Set	2
④	07NAJ-P07010A	Pressure Gauge Adapter	1
⑤	07XAA-001010A	Fuel Sender Wrench	1
⑥	07ZAJ-S5A0100	Fuel Pressure Gauge Set	1
⑦	07ZAJ-S7C0100	Fuel Hose Attachment	1
⑧	07ZAJ-S7C0200	Fuel Joint Attachment	1
⑨	07ZAJ-S5A0200	Hose, Oil Pressure	1
⑩-1	07406-0020201	A/T Pressure Hose	1
⑩-2	07406-0070300	A/T Low Pressure Gauge W/Panel	1
⑩-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑩-4	07MAJ-PY40120	A/T Pressure Hose, Adapter	1
⑪	07406-004000A	Fuel Pressure Gauge	1

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Fig. 1: Special Tools (1 Of 2)



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Fig. 2: Special Tools (2 Of 2)

GENERAL TROUBLESHOOTING INFORMATION

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INTERMITTENT FAILURES

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting.

OPENS & SHORTS

"Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs and PCMs) this can sometimes mean something works, but not the way it's supposed to.

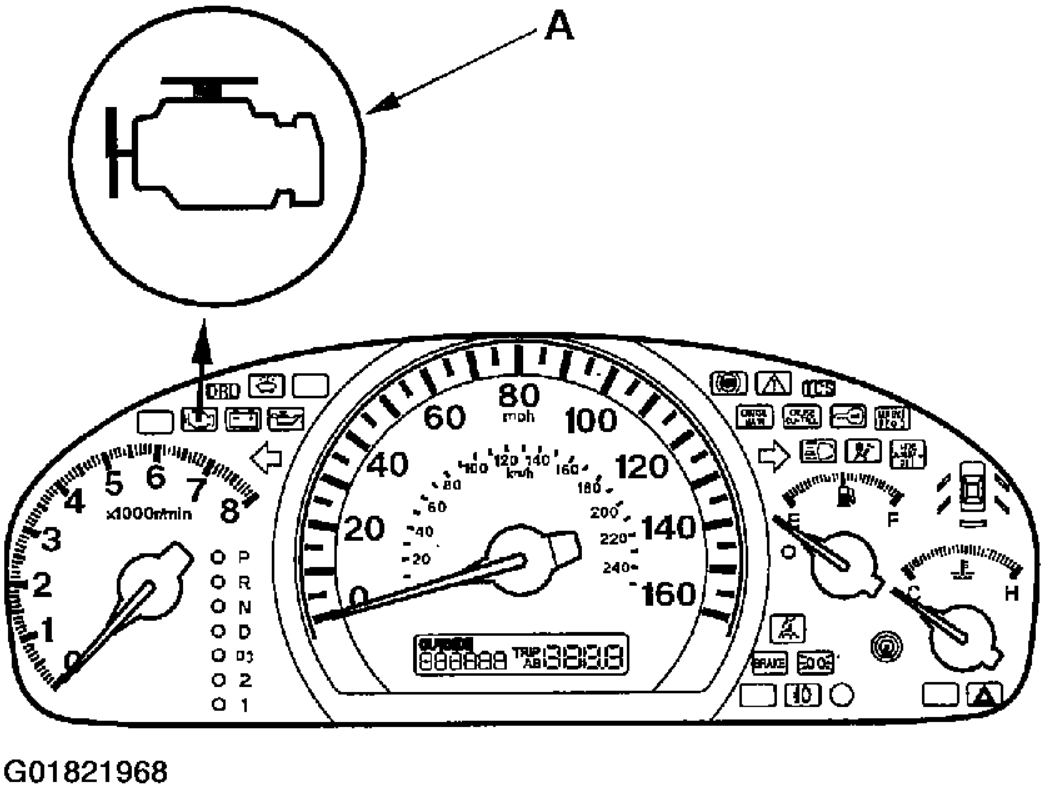
HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)

If the MIL (Malfunction Indicator Lamp) has come on

1. Start the engine and check the MIL (A).

NOTE: If the ignition switch is turned ON (II), and the engine is not started, the MIL will stay on for 15-20 seconds (see HOW TO SET READINESS CODES).

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Fig. 3: Identifying MIL (Malfunction Indicator Lamp)

2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

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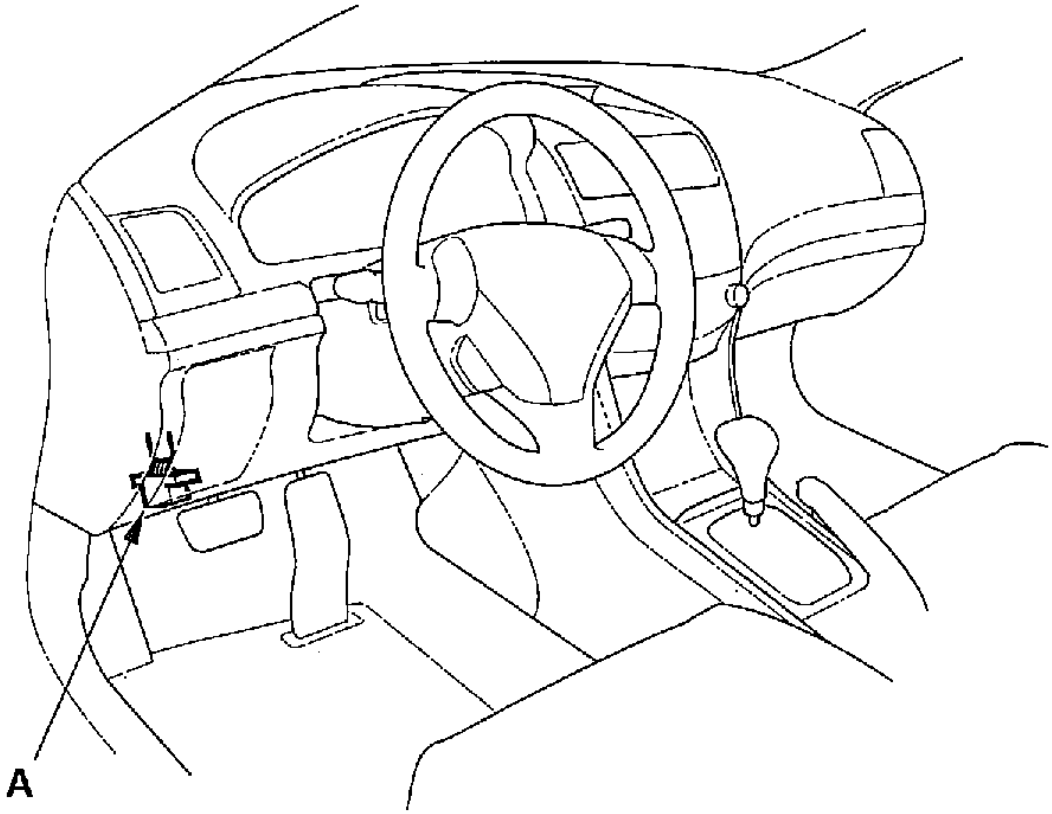


Fig. 4: Connecting The HDS To The Data Link Connector (DLC) Located Under The Driver's Side Of The Dashboard

3. Turn the ignition switch ON (II).
4. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data. Refer to the DTC Troubleshooting Index and begin the appropriate troubleshooting procedure.

NOTE:

- **Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.**
- **The HDS can read the DTC, freeze data, current data, and other engine control module (ECM)/powertrain control module (PCM) data.**
- **For specific operations, refer to the user's manual that came with the HDS.**

5. If no DTC are found, go to MIL troubleshooting (see **MIL CIRCUIT TROUBLESHOOTING**).

If the MIL did not stay on

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If the MIL did not stay on but there is a driveability problem, refer to the Symptom Troubleshooting Index in this section.

If you can't duplicate the DTC

Some of the troubleshooting requires you to reset the ECM/PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced ECM/PCM.

HDS CLEAR COMMAND

The ECM/PCM stores various specific data to correct the system even when there is no electrical power such as the battery negative terminal or No. 8 FI ECU (ECM/PCM) (15A) fuse are disconnected. Stored data based on failed parts should be cleared by using the "CLEAR COMMAND" of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet the purpose. They are DTC clear, ECM/PCM clear, and CKP pattern clear. DTC clear command erases all stored DTC codes, freeze data and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting in this service manual.

ECM/PCM clear command erases all stored DTC codes, freeze data, readiness codes, and all specific data to correct the system except CKP pattern. If the CKP pattern data in ECM/PCM was cleared, you must do the CKP pattern learn procedure. The CKP pattern clear command erases only CKP pattern data. This command is for the repair of a misfire or CKP sensor.

DTC CLEAR

1. Do the DTC CLEAR in the CLEAR MENU with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II). Wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

ECM/PCM RESET

This command clears stored specific data from each vehicle such as DTCs freeze data, and readiness codes. It does not clear CKP PATTERN data.

1. Do the ECM/PCM RESET in the CLEAR MENU with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II). Wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

CKP PATTERN CLEAR/CKP PATTERN LEARN PROCEDURE

Enable Criteria

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ECT at 176°F (80°C) or higher.

Procedure

1. Do the CKP PATTERN CLEAR in the CLEAR MENU with the HDS while the engine is stopped.
2. Turn the ignition OFF.
3. Turn the ignition ON (II), and wait for 30 seconds.
4. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from engine speed of 2,500 RPM to 1,000 RPM with the A/T in 2 position, or the M/T in 2nd or 3rd gear.
5. Stop the vehicle. Do not turn the ignition off.
6. Select the ALL DATA LIST in the DATA LIST MENU of the HDS.
7. Check the status of PULSER F/B LEARN. If it is set to NG, the enable criteria was probably not met; repeat the procedure from the beginning.

HOW TO END A TROUBLESHOOTING SESSION (REQUIRED AFTER ANY TROUBLESHOOTING)

1. Do the ECM/PCM RESET in the CLEAR MENU with the HDS.
2. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
3. Turn the ignition switch OFF.
4. Disconnect the HDS from the DLC.

NOTE: The ECM/PCM is part of the immobilizer system. If you replace the ECM/PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the HDS.

HOW TO REMOVE THE ECM/PCM FOR TESTING

If DTC troubleshooting requires voltage or resistance checks at the ECM/PCM connectors, remove the ECM/PCM and test it.

1. Jump the SCS line with the HDS.
2. Remove the center lower covers (A).

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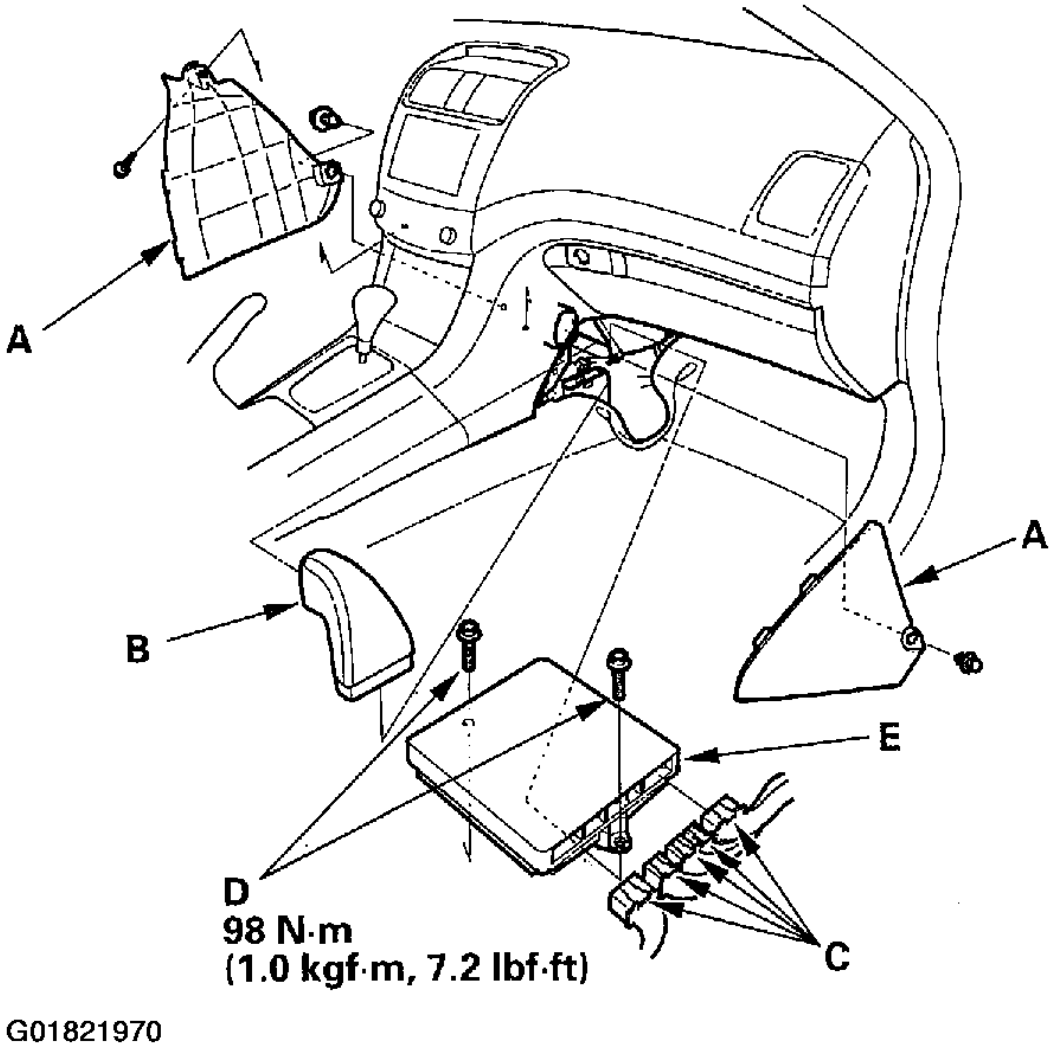


Fig. 5: Removing The ECM/PCM

3. Remove the duct (B).
4. Disconnect the ECM/PCM connectors (C).
5. Remove the bolts (D), then remove the ECM/PCM (E).
6. Install the ECM/PCM in the reverse order of removal.
7. Open the SCS line with the HDS.

HOW TO TROUBLESHOOT CIRCUITS AT THE ECM/PCM

Special Tools Required:

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- Digital Multimeter KS-AHM-32-003 (1) or a commercially available digital multimeter
- Backprobe Set 07SAZ-001000A (2)

1. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a digital multimeter.

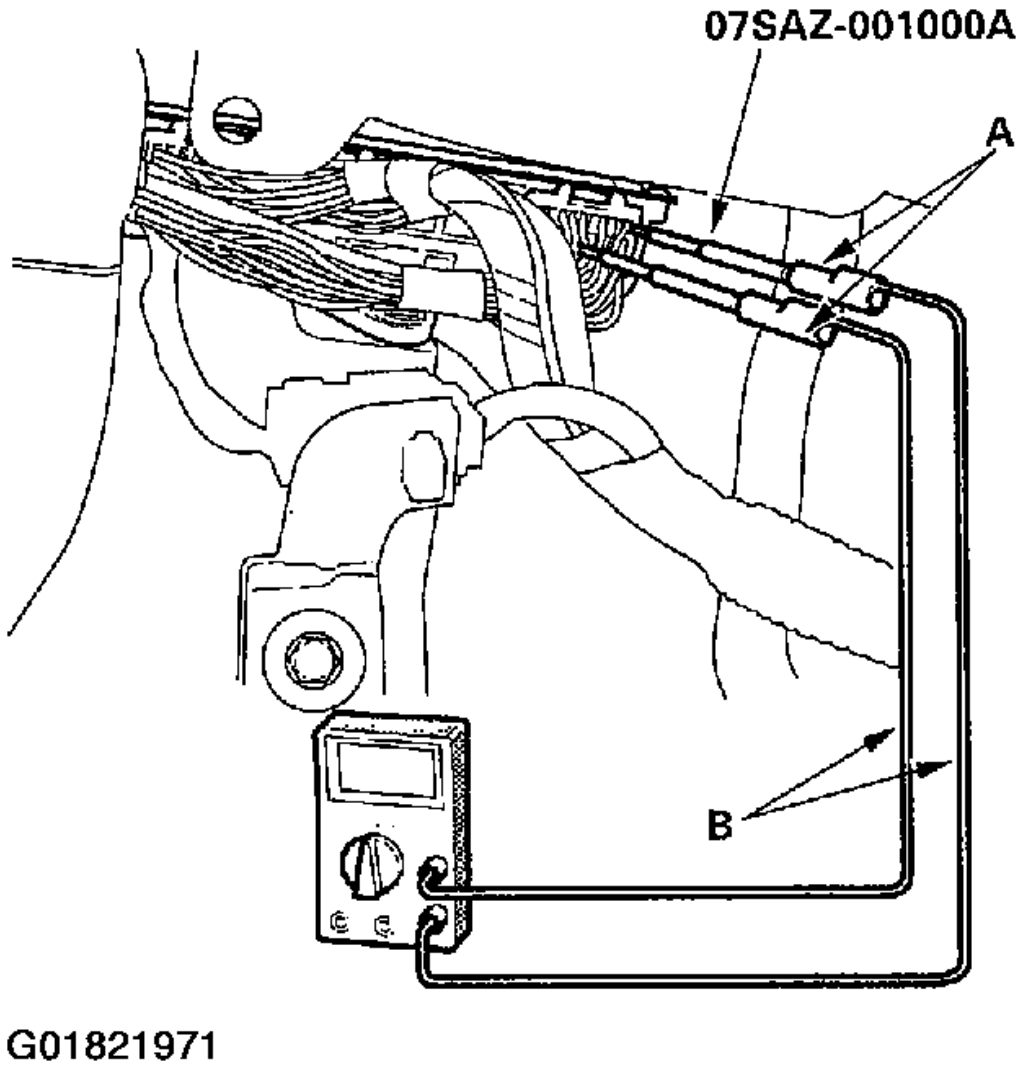


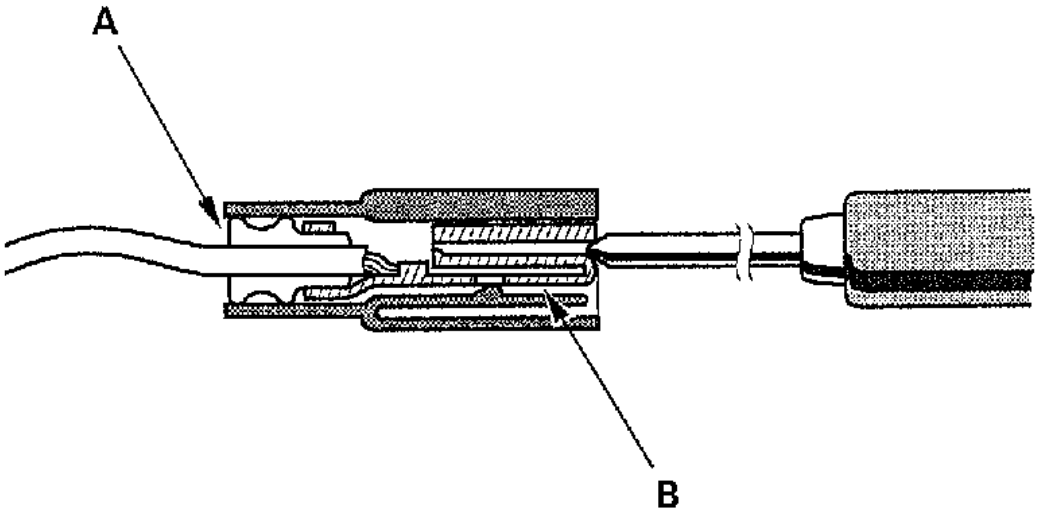
Fig. 6: Connecting The Backprobe Adapters To The Stacking Patch Cords & The Cords To A Digital Multimeter

2. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.

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3. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTE: Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



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Fig. 7: Do Not Force The Probe Into The Connector

ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING

Special Tools Required: Honda Interface Module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good ECM/PCM in a troubleshooting procedure. Update the ECM/PCM only if the ECM/PCM does not have the latest software loaded.

NOTE: Do not turn the ignition switch OFF while updating the ECM/PCM. If you turn the ignition switch OFF before completion, the ECM/PCM can be damaged.

HOW TO UPDATE THE ECM/PCM

NOTE:

- **To ensure the latest program is installed, do an ECM/PCM update whenever the ECM/PCM is substituted or replaced.**
- **You can not update an ECM/PCM with the program it already has. It will only accept a new program.**

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- **Before you update the ECM/PCM, make sure the vehicle's battery is fully charged.**
- **To prevent ECM/PCM damage, do not operate anything electrical (audio system, brakes, A/C, power windows, moonroof, door locks, etc.) during the update.**
- **If you need to diagnose the Honda Interface Module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent ECM/PCM damage.**

1. Turn the ignition switch ON (II). Do not start the engine.
2. Connect the HDS or the Honda Interface Module (HIM) to the data link connector (DLC) (A) located under the driver's side of the dashboard.

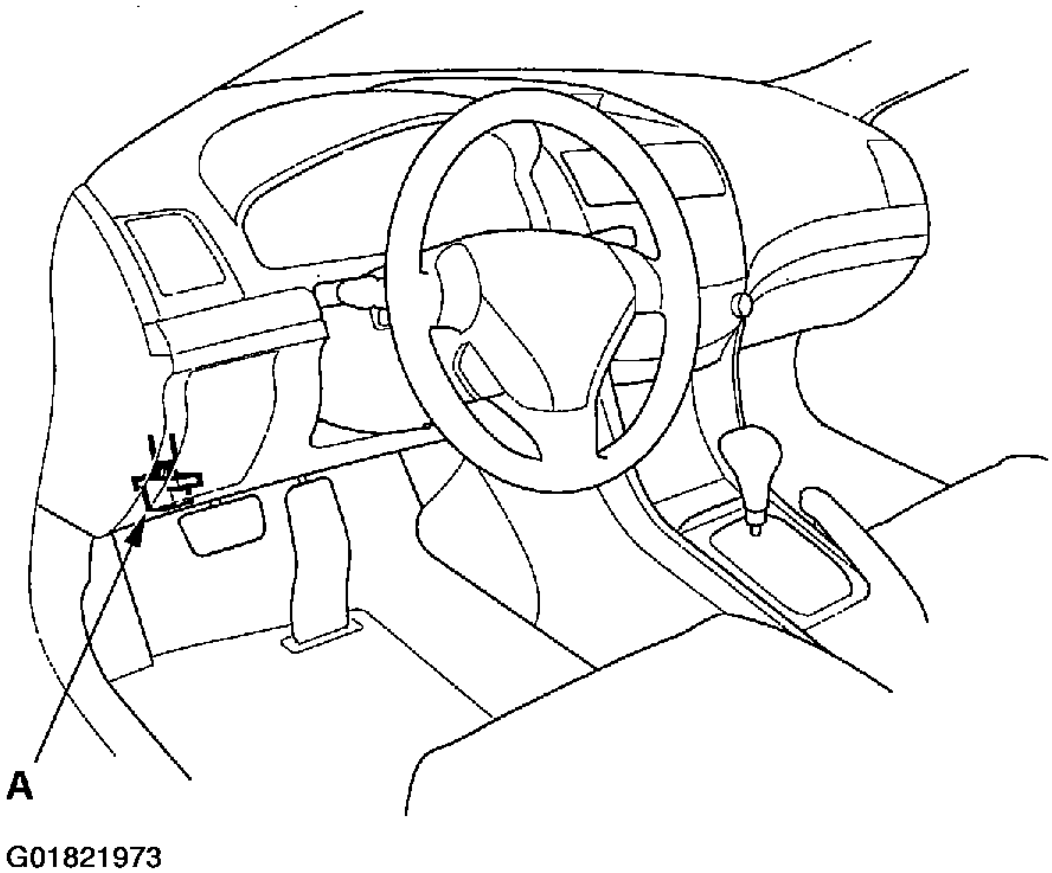


Fig. 8: Connecting The HDS Or HIM To The Data Link Connector (DLC) Located Under The Driver's Side Of The Dashboard

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3. Do the ECM/PCM update procedure as described on the HIM label and in the ECM/PCM update system.
4. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
5. Do the CKP pattern learn procedure, if you did the troubleshooting for DTC P0300, P0301, P0302, P0303, P0304, P0335 or P0339.

HOW TO SUBSTITUTE THE ECM/PCM

1. Remove the ECM/PCM form the vehicle.
2. Install a known-good ECM/PCM.
3. Rewrite the immobilizer code with the ECM/PCM replacement procedure in the HDS; it allows you to start the engine.
4. After completing your tests, install the original ECM/PCM and rewrite the immobilizer code with the ECM/PCM replacement procedure in the HDS.

OBD STATUS

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully finished. The results of diagnostic tests for the DTC are displayed as:

- **PASSED:** On board diagnosis is successfully finished.
- **FAILED:** On board diagnosis has finished but failed.
- **EXECUTING:** The vehicle is in enable criteria conditions for the DTC and the on board diagnosis is running.
- **NOT COMPLETED:** The on board diagnosis was running but is out of the enable conditions of the DTC.
- **OUT of COND:** The vehicle has stayed out of the enable conditions of the DTC.

DTC TROUBLESHOOTING INDEX

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DTC (MIL indication*1)	Temporary DTC (Temporary)	Detection Item	MIL
P0010 (56)	———	Variable Valve Timing Control (VTC) Oil Control Solenoid Valve Malfunction	ON
P0011 (56)	P0011	Variable Valve Timing Control (VTC) System Malfunction	ON
P0107 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON
P0108 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON
P0112 (10)	———	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON
P0113 (10)	———	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON
P0116 (86)	P0116	Engine Coolant Temperature (ECT) Sensor Range/Performance Problem	ON
P0117 (6)	———	Engine Coolant Temperature (ECT) Circuit Low Voltage	ON
P0118 (6)	———	Engine Coolant Temperature (ECT) Circuit High Voltage	ON
P0122 (7)	———	Throttle Position (TP) Sensor A Circuit Low Voltage	ON
P0123 (7)	———	Throttle Position (TP) Sensor A Circuit High Voltage	ON
P0125 (86)	P0125	Engine Coolant Temperature (ECT) Sensor Malfunction Slow Response	ON
P0128 (87)	P0128	Cooling System Malfunction	ON
P0133 (61)	P0133	Air Fuel Ratio (A/F) Sensor (Sensor 1) Response Malfunction	ON
P0134 (41)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	ON
P0135 (41)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	ON
P0137 (63)	P0137	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Low Voltage	ON
P0138 (63)	P0138	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit High Voltage	ON
P0139 (63)	P0139	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Slow Response	ON
P0141 (65)	———	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Heater Circuit Malfunction	ON
P0171 (45)	P0171	Fuel Supply System Too Lean	ON
P0172 (45)	P0172	Fuel Supply System Too Rich	ON
P0222 (7)	———	Throttle Position (TP) Sensor B Circuit Low Voltage	ON
P0223 (7)	———	Throttle Position (TP) Sensor B Circuit High Voltage	ON
P0300 some P0301 and P0302 of P0303 P0304	P0300 and some of P0301 P0302 P0303 P0304	Random Misfire Detected	ON
P0301 (71)	P0301	No. 1 Cylinder Misfire	ON
P0302 (72)	P0302	No. 2 Cylinder Misfire	ON
P0303 (73)	P0303	No. 3 Cylinder Misfire	ON
P0304 (74)	P0304	No. 4 Cylinder Misfire	ON
P0325 (23)	———	Knock Sensor Circuit Malfunction	ON
P0335 (4)	———	Crankshaft Position (CKP) Sensor No Signal	ON
P0339 (4)	———	Crankshaft Position (CKP) Sensor Circuit Intermittent Interruption	ON
P0340 (57)	———	Camshaft Position (CMP) Sensor A No Signal	ON
P0341 (57)	———	Camshaft Position (CMP) Sensor and Crankshaft Position (CKP) Sensor Incorrect Phase Detected	ON
P0344 (57)	———	Camshaft Position (CMP) Sensor A Intermittent Interruption	ON
P0365 (8)	———	Camshaft Position (CMP) Sensor B No Signal	ON
P0369 (8)	———	Camshaft Position (CMP) Sensor B Intermittent Interruption	ON
P0420 (67)	P0420	Catalyst System Efficiency Below Threshold	ON
P0442 (90)	P0442	Evaporative Emission System Small Leak Detected	ON
P0443 (92)	———	Evaporative Emission (EVAP) Control System Canister Purge Valve Circuit Malfunction	ON

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

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Fig. 9: DTC Troubleshooting Index (1 Of 3)

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DTC (MIL indication *1)	Temporary DTC (Temporary)	Detection Item	MIL
P0451 (91)	P0451	Evaporative Emission Control System Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON
P0452 (91)	P0452	Evaporative Emission Control System Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON
P0453 (91)	P0453	Evaporative Emission Control System Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON
P0456 (90)	P0456	Evaporative Emission System Very Small Leak Detected	ON
P0457 (90)	P0457	Evaporative Emission System Leak Detected/Fuel Cap Loose or Missing	ON
P0496 (92)	P0496	Evaporative Emission System High Purge Flow	ON
P0497 (90)	P0497	Evaporative Emission System Low Purge Flow	ON
P0498 (117)	—	Evaporative Emission System Vent Shut Valve Circuit Low Voltage	ON
P0499 (117)	—	Evaporative Emission System Vent Shut Valve Circuit High Voltage	ON
P0506 (14)	P0506	Idle Control System RPM Lower Than Expected	ON
P0507 (14)	P0507	Idle Air Control System RPM Higher Than Expected	ON
P0563 (34)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	ON
P0603 (131)	—	ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error	ON
P0606 (0)	—	ECM/PCM Processor Malfunction	ON
P0685 (135)	—	ECM/PCM Power Control Circuit Malfunction	ON
P0700 (70) *2	—	Automatic Transaxle System Malfunction	ON
P0700 (—) *2	—	Automatic Transaxle System Malfunction	OFF
P0720 (122) *3	—	Countershaft Speed Sensor Circuit Malfunction	ON
P1128 (5)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Lower Than Expected	ON
P1129 (5)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Higher Than Expected	ON
P1157 (48)	—	Air Fuel Ratio (A/F) Sensor (Sensor 1) Line High Voltage	ON
P1297 (20)	—	Electric Load Detector (ELD) Circuit Low Voltage	OFF
P1298 (20)	—	Electric Load Detector (ELD) Circuit High Voltage	OFF
P1454 (91)	P1454	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON
P1683 (40)	—	Throttle Valve Default Position Spring Performance Problem	ON
P1684 (40)	—	Throttle Valve Return Spring Performance Problem	ON
P2101 (40)	—	Throttle Actuator System Malfunction	ON
P2108 (40)	—	Throttle Actuator Control Module Problem	ON
P2118 (40)	—	Throttle Actuator Current Range/Performance Problem	ON
P2122 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage	ON
P2123 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage	ON
P2127 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit Low Voltage	ON
P2128 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit High Voltage	ON
P2135 (7)	—	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON
P2138 (37)	—	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position Sensor D/E) Incorrect Voltage Correlation	ON
P2176 (40)	—	Throttle Actuator Control System Idle Position Not Learned	ON

* *: The D indicator and MIL may come on simultaneously.
* *1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
* *2: A/T
* *3: M/T
* *4: With Navigation System

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Fig. 10: DTC Troubleshooting Index (2 Of 3)

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DTC (MIL indication *1)	Temporary DTC (Temporary)	Detection Item	MIL
P2195 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	ON
P2227 (13)	P2227	Barometric Pressure (BARO) Circuit Range/Performance Problem	ON
P2228 (13)	———	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON
P2229 (13)	———	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON
P2238 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS+Line Low Voltage	ON
P2252 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS−Line Low Voltage	ON
P2279 (109)	P2279	Intake Air System Leak Detected	ON
P2422 (117)	P2422	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON
P2552 (40)	———	Throttle Actuator Control Module Relay Malfunction	ON
P2646 (22)	———	VTEC Oil Pressure Switch Circuit Low Voltage	ON
P2647 (22)	———	VTEC Oil Pressure Switch Circuit High Voltage	ON
P2648 (21)	———	VTEC Solenoid Valve Circuit Low Voltage	ON
P2649 (21)	———	VTEC Solenoid Valve Circuit High Voltage	ON
P2A00 (61)	P2A00	Air Fuel Ratio (A/F) Sensor (Sensor 1) Range/Performance Problem	ON
U0073 (126)	———	FCAN Malfunction (Bus-Off)	OFF
U0107 (30)	———	Lost Communication With Throttle Actuator Control Module	ON
U0122 (126)*4	———	FCAN Malfunction (VSA-ECM/PCM)	ON
U0155 (126)	———	FCAN Malfunction (Gauge Control Module-ECM/PCM)	OFF

* : The D indicator and MIL may come on simultaneously.
* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
* 2: A/T
* 3: M/T
* 4: With Navigation System

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Fig. 11: DTC Troubleshooting Index (3 Of 3)

SYMPTOM TROUBLESHOOTING INDEX

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the scan tool. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

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Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery. 2. Test the starter. 3. Check the fuel pressure. 4. Troubleshoot the fuel pump circuit.	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken cam chain • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit.	
Engine will not start (immobilizer indicator stays on or flashes)	Troubleshoot the immobilizer system.	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery. 2. Check the fuel pressure. 3. Test the throttle body.	• Low compression • Intake air leaks • Contaminated fuel • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure. 2. Check the idle speed.	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure. 2. Check the idle speed. 3. Inspect/adjust the throttle cable.	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure. 2. Check the idle speed. 3. Inspect/adjust the throttle cable. 4. Test the throttle body.	Intake vacuum leaks
After warming up, idle speed is below specification with no load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit. 2. Test the throttle body.	
After warming up, idle speed is above specification with no load (MIL works OK, no DTCs set)	1. Inspect/adjust the throttle cable. 2. Troubleshoot the alternator FR signal circuit.	
Low power (MIL works OK, no DTCs set)	1. Check the fuel pressure. 2. Inspect/adjust the throttle cable.	• Low compression • Incorrect camshaft timing • Incorrect engine oil level
Engine stalls (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure. 2. Check the fuel pressure. 3. Check the idle speed. 4. Troubleshoot the brake pedal position switch signal circuit.	• Intake air leaks • Faulty harness and sensor connections

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Fig. 12: Symptom Troubleshooting Index (1 Of 2)

Symptom	Diagnostic procedure	Also check for
Difficult to refuel (MIL works OK, no DTCs set)	1. Check the fuel vent tube between the EVAP canister and the fuel tank. 2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank. 3. Replace the fuel tank.	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank.	Malfunctioning gas station filling nozzle.

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Fig. 13: Symptom Troubleshooting Index (2 Of 2)

SYSTEM DESCRIPTIONS

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ELECTRONIC CONTROL SYSTEM

The functions of the fuel and emission control systems are managed by the engine control module (ECM) on vehicles with manual transmissions or the powertrain control module (PCM) on vehicles with automatic transmissions.

FAIL-SAFE FUNCTION

When an abnormality occurs in the signal from a sensor, the ECM/PCM ignores that signal and assumes a preprogrammed value for the sensor that allows the engine to continue to run.

BACK-UP FUNCTION

When an abnormality occurs in the ECM/PCM, the injectors are controlled by a back-up circuit independent of the system to permit minimal driving.

SELF-DIAGNOSIS

When an abnormality occurs in the signal from a sensor, the ECM/PCM supplies ground for the malfunction indicator lamp (MIL) and stores the diagnostic trouble code (DTC) in erasable memory. When the ignition is first turned on, the ECM/PCM supplies ground to the MIL for 15 to 20 seconds to check the MIL bulb condition. If all readiness code are not set, the MIL will flash five times. If readiness codes are set to complete, the MIL will go out.

TWO DRIVING CYCLE DETECTION METHOD

To prevent false indications, the "two driving cycle detection method" is used for some self-diagnostic functions. When an abnormality occurs, the ECM/PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM/PCM turns on the MIL.

SELF SHUT DOWN MODE (SSD)

After the ignition switch is turned off, the ECM/PCM stays ON (up to 15 minutes). If the ECM/PCM connector is disconnected during this mode, the ECM/PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the key is turned off.

ECM/PCM ELECTRICAL CONNECTIONS

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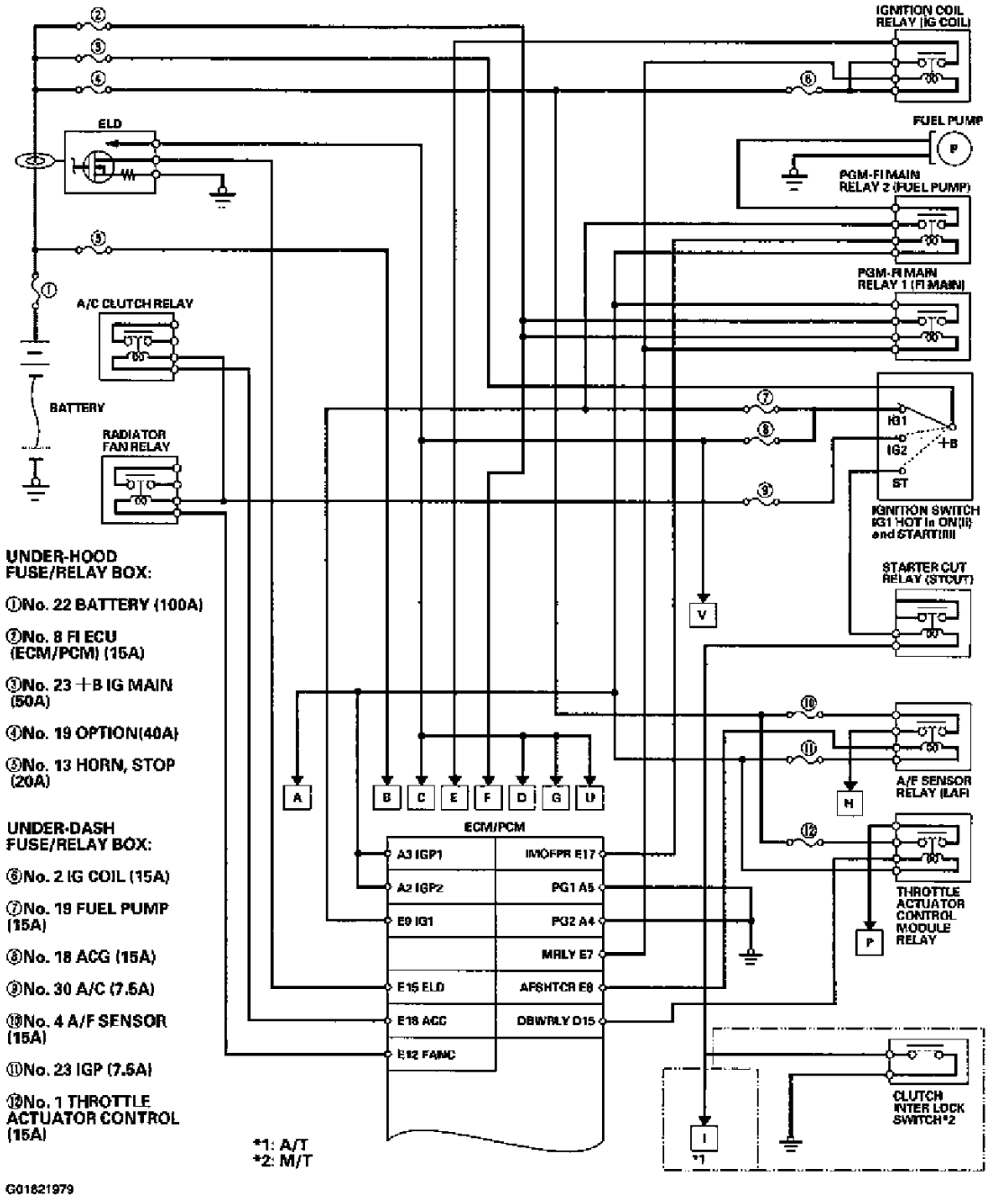


Fig. 14: ECM/PCM Wiring Diagram (1 Of 5)

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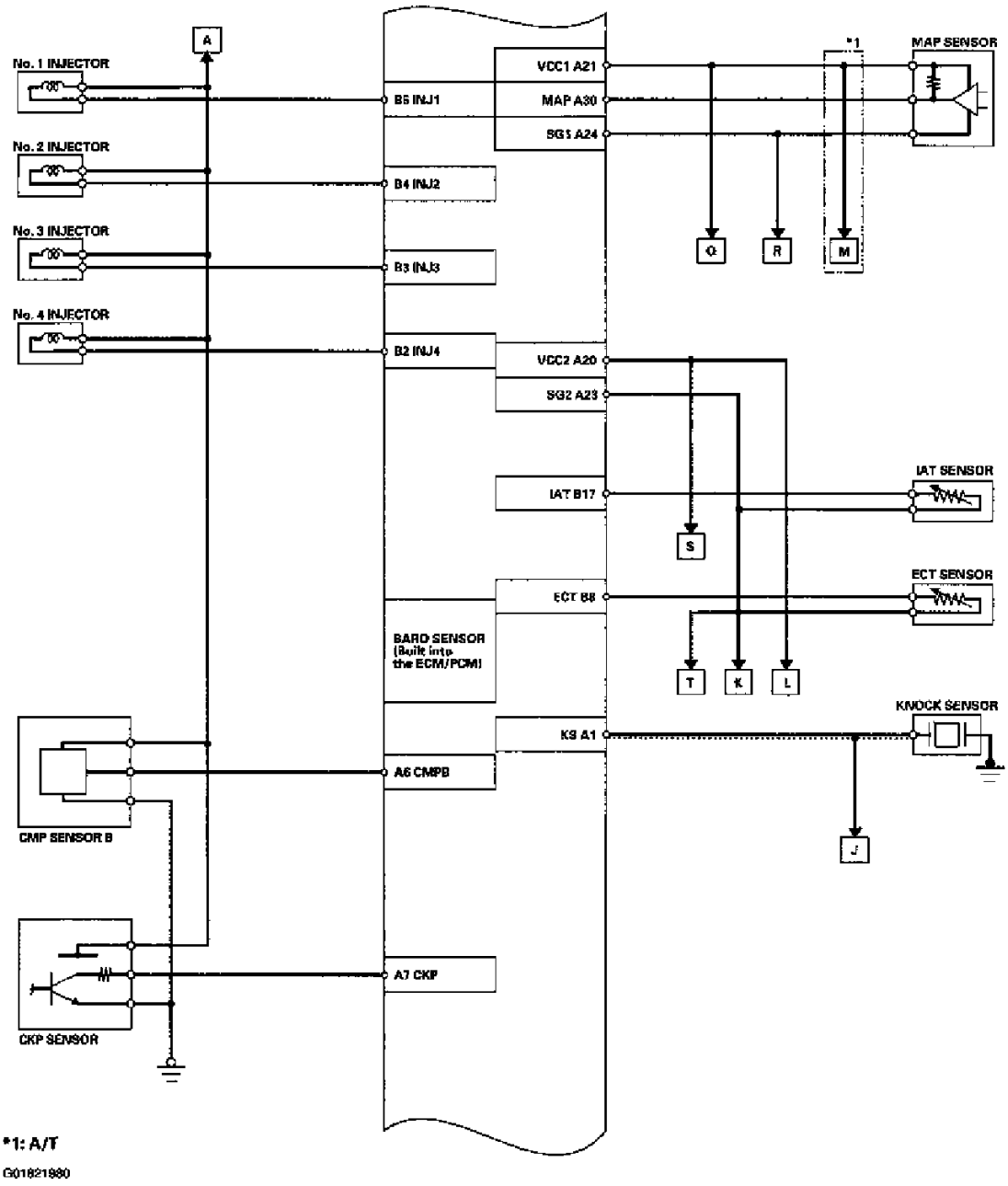


Fig. 15: ECM/PCM Wiring Diagram (2 Of 5)

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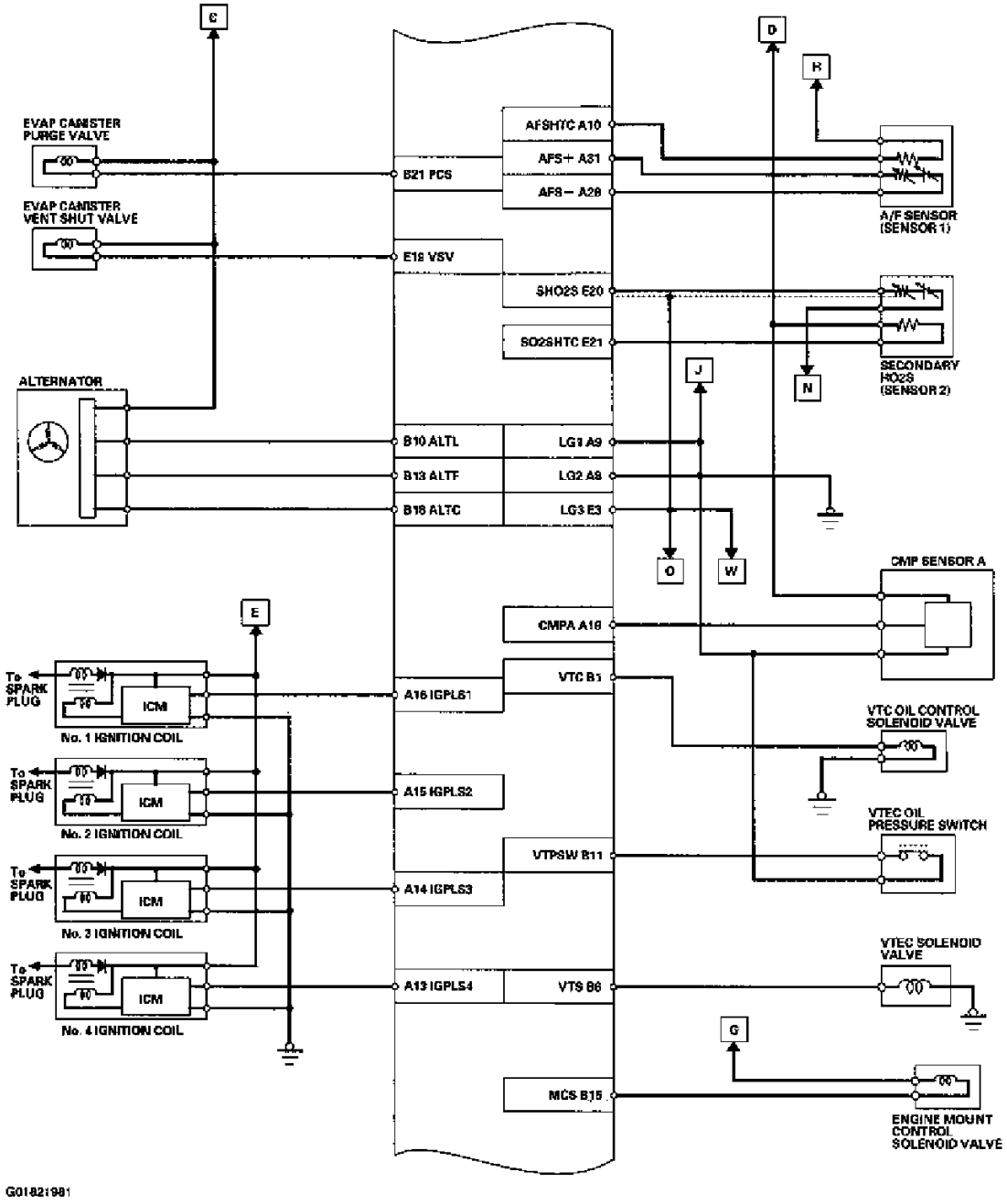


Fig. 16: ECM/PCM Wiring Diagram (3 Of 5)

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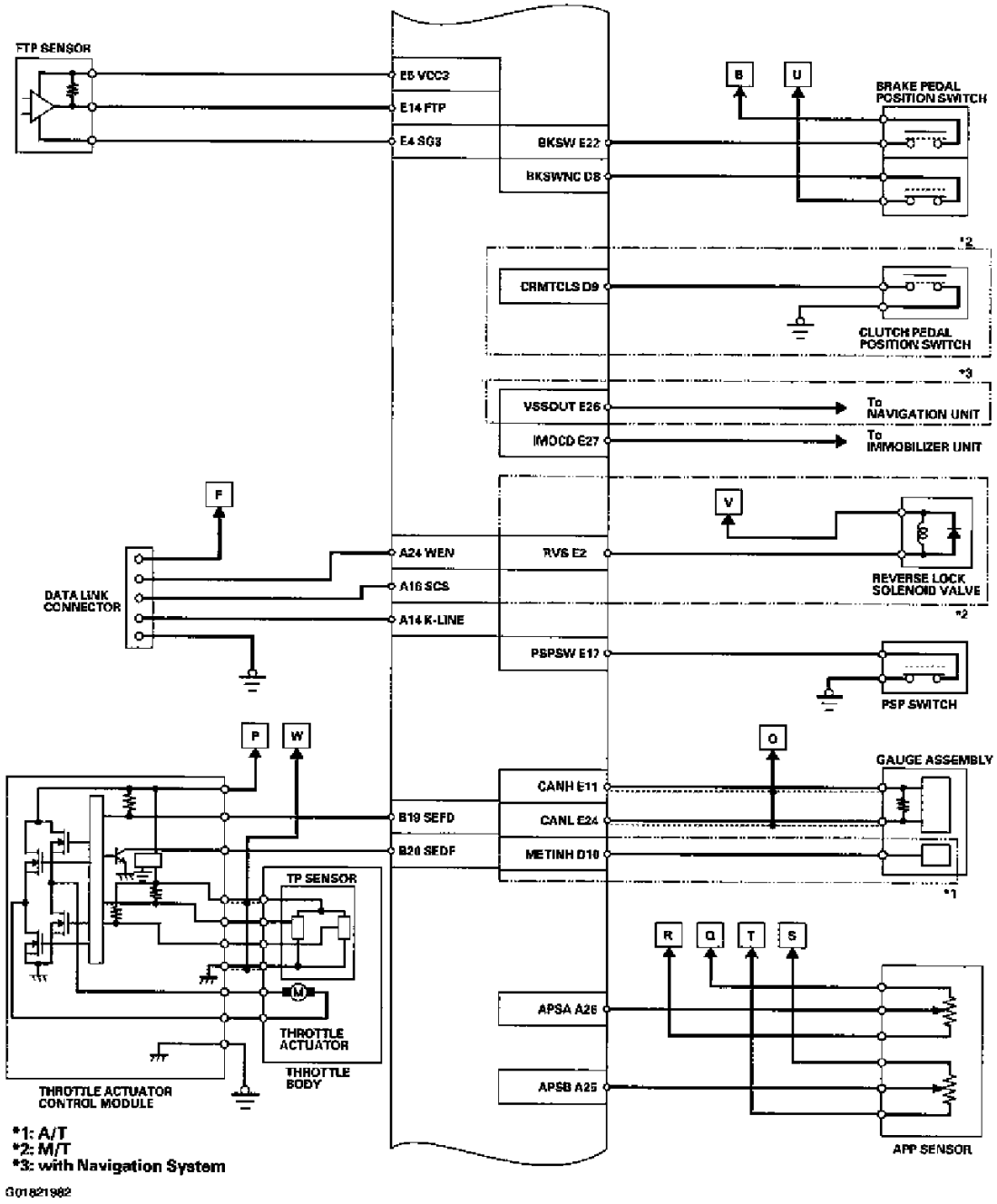


Fig. 17: ECM/PCM Wiring Diagram (4 Of 5)

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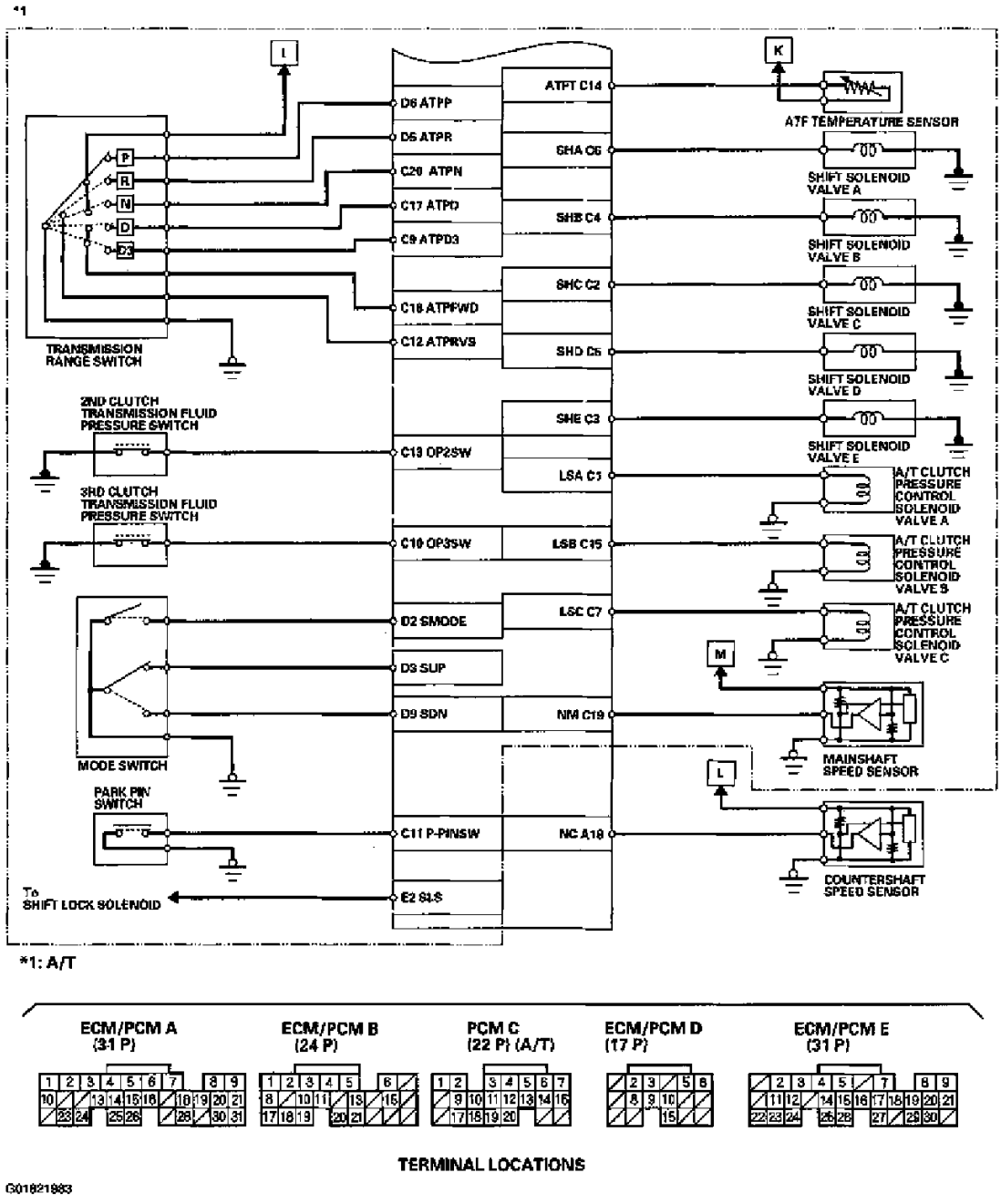


Fig. 18: ECM/PCM Wiring Diagram (5 Of 5)

ECM/PCM INPUTS & OUTPUTS AT CONNECTOR A (31P)

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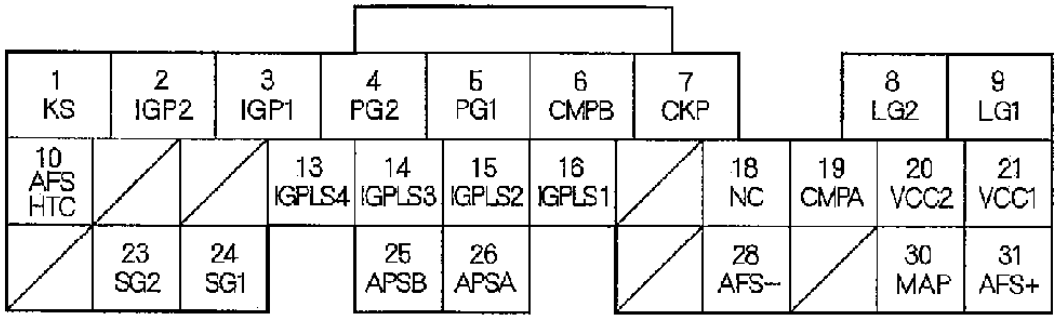


Fig. 19: Identifying ECM/PCM Connector A (31P) Terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
2	YEL/BLK	IGP2 (POWER SOURCE)	Power source for ECM/PCM circuit	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
3	YEL/BLK	IGP1 (POWER SOURCE)	Power source for ECM/PCM circuit	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
4	BLK	PG2 (POWER GROUND)	Ground circuit for ECM/ PCM	Less than 1.0 V at all times
5	BLK	PG1 (POWER GROUND)	Ground circuit for ECM/ PCM	Less than 1.0 V at all times
6	GRN	CMPB (CAMSHAFT POSITION SENSOR B)	Detects CMP sensor B signal	With engine running: pulses With the ignition switch ON (II): about 5 V
7	BLU	CKP (CRANKSHAFT POSITION SENSOR)	Detects CKP sensor signal	With engine running: pulses With the ignition switch ON (II): about 5 V
8	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for ECM/ PCM	Less than 1.0 V at all times
9	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for ECM/ PCM	Less than 1.0 V at all times
10	GRN	AFSHTC (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL)	Drives A/F sensor heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V
13	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
14	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
15	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
16	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	
18	BLK/BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects countershaft speed sensor signal	With ignition switch ON (II): about 0 V or about 5 V While driving: about 2.5 V
19	BLU/WHT	CMP A (CAMSHAFT POSITION SENSOR A)	Detects CMP sensor A signal	With engine running: pulses With ignition switch ON (II): about 5 V

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Fig. 20: ECM/PCM Connector A (31P) Pin Voltage Chart (1 Of 2)

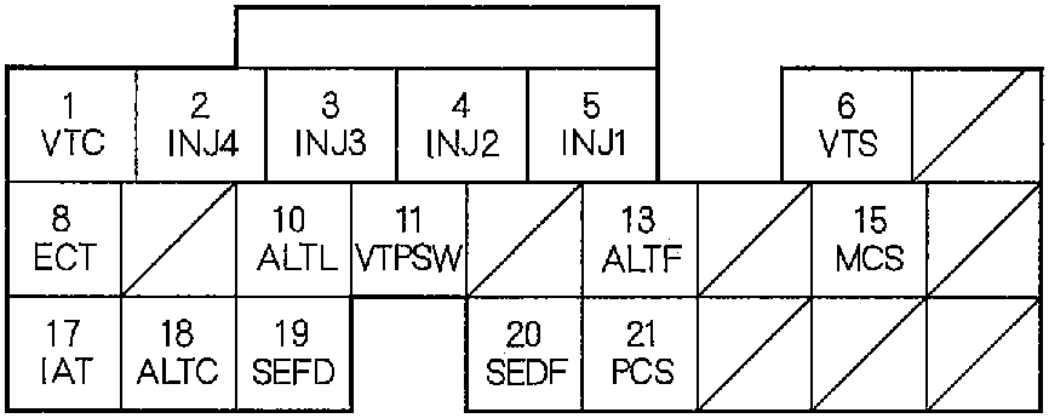
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Terminal number	Wire color	Terminal name	Description	Signal
20	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
21	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
23	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
24	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
25	RED/YEL	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.2 V
26	RED/BLU	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.5 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
28	RED/YEL	AFS − (AIR FUEL RATIO (A/F) SENSOR, SENSOR 1 − SIDE)	Detects A/F sensor (sensor 1) signal	
30	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3V At idle: about 1.0 V (depending on engine speed)
31	RED	AFS + (AIR FUEL RATIO (A/F) SENSOR, SENSOR 1 + SIDE)	Detects A/F sensor (sensor 1) signal	

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Fig. 21: ECM/PCM Connector A (31P) Pin Voltage Chart (2 Of 2)

ECM/PCM INPUTS & OUTPUTS AT CONNECTOR B (24P)



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Fig. 22: Identifying ECM/PCM Connector B (24P) Terminals

NOTE: Standard battery voltage is 12 V.

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Terminal number	Wire color	Terminal name	Description	Signal
1	BLU/WHT	VTC (VTC OIL CONTROL SOLENOID VALVE)	Drives VTC oil control solenoid valve	With ignition switch ON (II): 0 V
2	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
3	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
4	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	
6	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
8	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE SENSOR)	Detects ECT sensor signal	With ignition switch ON (II): about 0.5 – 4.8 V (depending on engine coolant temperature) With fully warmed up engine: about 0.5 – 0.7 V
10	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
11	BLU/BLK	VTPSW (VTEC OIL PRESSURE SWITCH)	Detects VTEC oil pressure switch signal	With engine at low speed: about 0 V With engine at high speed: battery voltage
13	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 0 V – 5 V (depending on electrical load)
16	BLU/YEL	MCS (ENGINE MOUNT CONTROL SOLENOID VALVE)	Drives engine mount control solenoid valve	At idle: about 0 V Above idle: battery voltage With ignition switch ON (II): battery voltage
17	RED/YEL	IAT (INTAKE AIR TEMPERATURE SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.5 V – 4.8 V (depending on intake air temperture)
18	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With engine running and fully warmed up: about 8 V
19	GRN	SEFO (THROTTLE ACTUATOR CONTROL SERIAL SIGNAL)	Sends throttle actuator control serial signal	
20	BLU	SEDF (THROTTLE ACTUATOR CONTROL SERIAL SIGNAL)	Detects throttle actuator control serial signal	
21	YEL/BLU	PCS (EVAPORATIVE EMISSION CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 131°F (55°C): battery voltage With engine running, engine coolant above 131°F (55°C): duty controlled

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Fig. 23: ECM/PCM Connector B (24P) Pin Voltage Chart

PCM INPUTS & OUTPUTS AT CONNECTOR C (22P)

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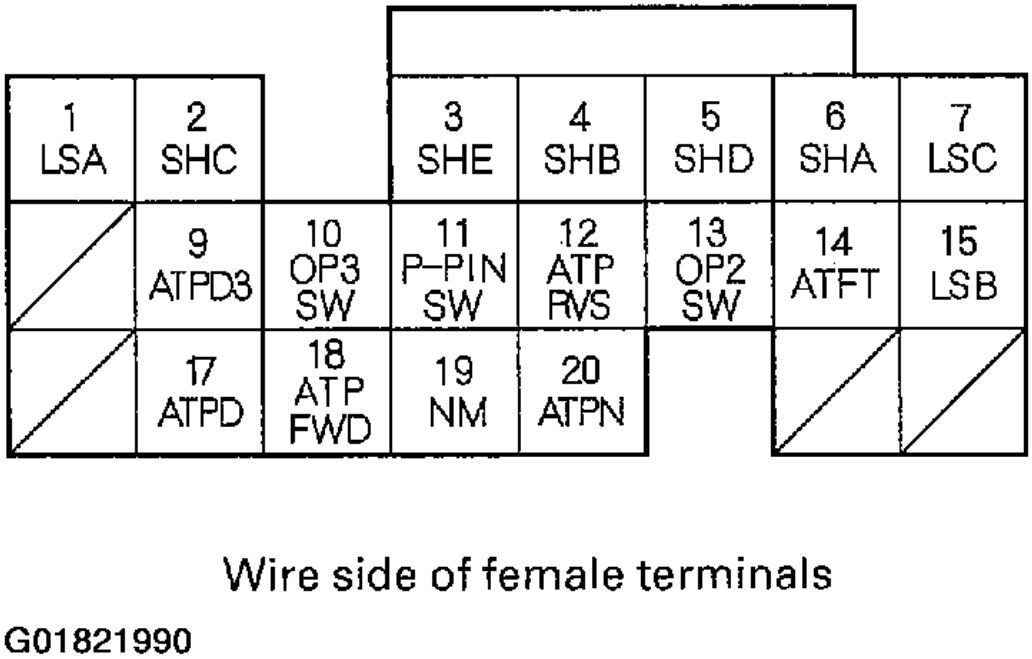


Fig. 24: Identifying ECM/PCM Connector C (22P) Terminals

NOTE: Standard battery voltage is 12 V.

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Terminal number	Wire color	Terminal name	Description	Signal
1*1	RED/BLK	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): duty controlled
2*1	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in Neutral and R position, or in D, D3 and M position (in 1st, 3rd and 5th gears): battery voltage With engine running in Park, R position, or D, D3 and M position (in 2nd, 4th gears): about 0 V
3*1	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in Park, R position: battery voltage With engine running in Neutral, R position, or in D, D3, and M position: about 0 V
4*1	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in Park, R, Neutral, or D, D3 and M position (in 1st, 2nd gears): battery voltage With engine running in R or D, D3 and M position (in 3rd, 4th, 5th gears): about 0 V
5*1	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in [2] or D, D3 and M position (in 2nd, 6rd gears): battery voltage With engine running in Park, R, Neutral, or D, D3 and M position (in 1st, 3rd, 4th, gears): about 0 V
6*1	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R , or D, D3 and M position (in 1st, 4th, 5th gears): battery voltage With engine running in Park, Neutral and R position, or D, D3 and M position (in 2nd, 3rd gears): about 0 V
7*1	BLU/YEL	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drivers A/T clutch pressure control solenoid valve C	With the ignition switch ON (II): duty controlled
9*1	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal input	In D3 position: about 0 V In any other position: about 5 V
10*1	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch signal output	With ignition switch ON (II): about 5 V With 3rd clutch pressure: 0 V
11*1	BLU/YEL	P-PINSW (PARK PIN SWITCH)	Detects park pin switch signal	With park pin switch ON (II): about 0 V With park pin switch OFF: about 5 V
12*1	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal input	In R position: about 0 V In any other position: about 5 V
13*1	BLU/RED	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): about 5 V With 2nd clutch pressure: 0 V
14*1	RED/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal input	With ignition switch ON (II): about 0.2 V—3 V (depending on ATF temperature)

*1: A/T

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Fig. 25: ECM/PCM Connector C (22P) Pin Voltage Chart (1 Of 2)

Terminal number	Wire color	Terminal name	Description	Signal
15*1	BRN/WHT	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): duty controlled
17*1	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal	In D position: about 0 V In any other position: about 5V
18*1	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D/D3 POSITION)	Detects transmission range switch D, D3 position signal	In D, D3 position: about 0 V In any other position: about 5 V
19*1	WHT/RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signal	With ignition switch ON (II): about 0 V or about 5 V With engine running in [N] position: about 2.5 V
20*1	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL POSITION)	Detects transmition range switch Neutral position signal	In Neutral position: about 0 V In any other position: about 5 V

*1: A/T

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Fig. 26: ECM/PCM Connector C (22P) Pin Voltage Chart (2 Of 2)

ECM/PCM INPUTS & OUTPUTS AT CONNECTOR D (17P)

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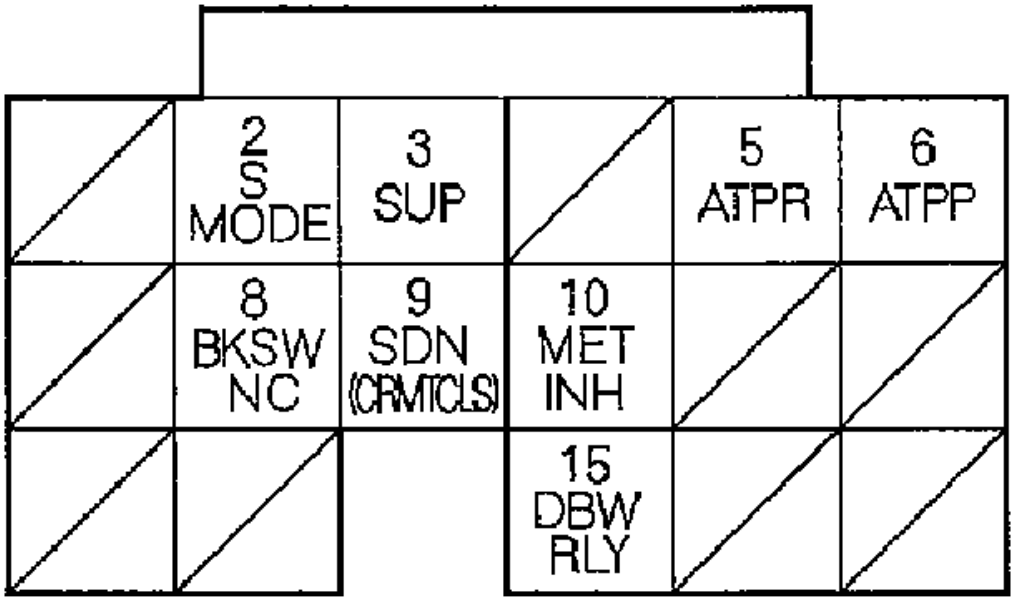


Fig. 27: Identifying ECM/PCM Connector D (17P) Terminals

NOTE: Standard battery voltage is 12 V.

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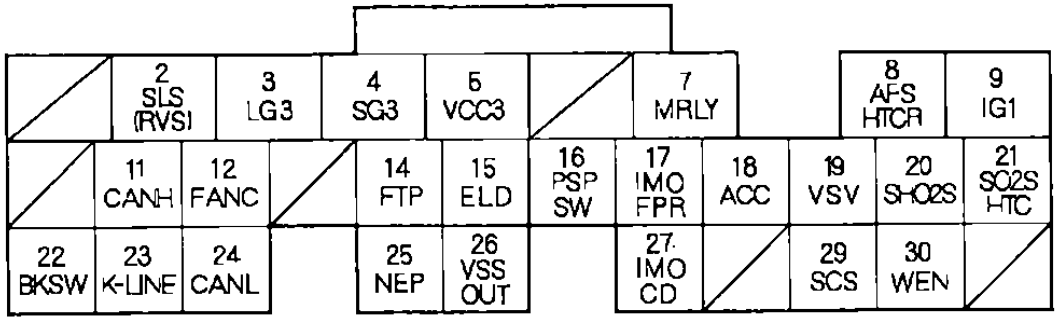
Terminal number	Wire color	Terminal name	Description	Signal
2*1	BRN	S MODE (SEQUENTIAL SPORT SHIFT MODE)	Detects sequential sportshift mode switch signal	In M position: 0 V In other than M position: about 5 V
3*1	WHT/BLU	SUP (UP SHIFT SWITCH)	Detects upshift switch signal	In M position and shift lever pushed toward upshift position: 0 V In M position and shift lever in neutral position: about 5 V
5*1	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: about 0 V In any other position: about 5 V
6*1	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH PARK POSITION)	Detects transmission range switch Park position signal	In Park position: about 0 V In any other position: about 5 V
8	BRN	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
9*1	ORN	SDN (DOWN SHIFT SWITCH)	Detects downshift switch signal	In M position and shift lever pushed toward downshift position: 0 V In M position and shift lever in neutral position: about 5 V
9*2	LT BLU	CRMTCLS (CRUISE CLUTCH PEDAL POSITION SIGNAL)	Detects cruise clutch pedal position switch signal	With ignition switch ON (II) and clutch pedal released: about 0 V With ignition switch ON (II) and clutch pedal pressed: battery voltage
10*1	LT GRN	METINH (METER DISPLAY INHIBIT SIGNAL)	Send inhibit signal	With ignition switch ON (II): battery voltage
15	BRN	DBWRLY (THROTTLE ACTUATOR CONTROL MODULE RELAY)	Drives throttle actuator control module relay	With ignition switch ON (II): 0 V

*1: A/T
*2: M/T

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Fig. 28: ECM/PCM Connector D (17P) Pin Voltage Chart

ECM/PCM INPUTS & OUTPUTS AT CONNECTOR E (31P)



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Fig. 29: Identifying ECM/PCM Connector E (31P) Terminals

NOTE: Standard battery voltage is 12 V.

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Terminal number	Wire color	Terminal name	Description	Signal
2*1	YEL/BLK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in the Park position, brake pedal pressed, and accelerator released: 0 V
2*2	GRY	RVS (REVERSE LOCK SOLENOID VALVE)	Drives reverse lock solenoid valve	With vehicle speed below 9.4 mph (15 km/h): battery voltage With vehicle speed above 12.5 mph (20 km/h): 0 V
3	BRN/YEL	LG3 (LOGIC GROUND)	Ground for ECM/PCM control circuit	Less than 1.0 V at all times
4	GRN/BLK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
5	YEL/GRN	VCC3 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
7	RED/YEL	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 (FI MAIN) Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
8	ORN	AFSHTCR (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL RELAY)	Drives A/F sensor heater relay	With ignition switch ON (II): 0 V
9	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
11	WHT	CAN H (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): pulses
12	GRN	FANC (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
14	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap open: about 2.5 V
15	BLU/BLK	ELD (ELECTRICAL LOAD DETECTOR)	Detects ELD signal	With ignition switch ON (II): about 0.1 V – 4.8 V (depending on electrical load)
16	BLU/YEL	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel straight ahead: 0 V At idle with steering wheel at full lock: battery voltage
17	GRN/YEL	IMO FPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
18	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
19	LT GRN/RED	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
20	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDAY HO2S), SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully closed at idle and fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
21	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDAY HO2S) HEATER CONTROL)	Drives secondary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled

* 1: A/T
* 2: M/T

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Fig. 30: ECM/PCM Connector E (31P) Pin Voltage Chart (1 Of 2)

Terminal number	Wire color	Terminal name	Description	Signal
22	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
23	BLU	K-LINE	Sends and receives scan tool signals	With ignition switch ON (II): pulses or battery voltage
24	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends the communication signal	With ignition switch ON (II): pulses
25	BLU	NEP(ENGINE SPEED PULSE)	Outputs engine speed pulse	Not functional on U.S. and Canada models
26	BLU/WHT	VSSOUT (VEHICLE SPEED SENSOR OUTPUT SIGNAL)	Sends vehicle speed sensor signal	Depending on vehicle speed: pulses With ignition switch ON (II): battery voltage
27	RED/BLU	IMOCD (IMMOBILIZER CODE)	Detects immobilizer signal	
29	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted using HDS: about 0 V With the service check signal open: about 5 V
30	RED/WHT	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V

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Fig. 31: ECM/PCM Connector E (31P) Pin Voltage Chart (2 Of 2)

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VACUUM HOSE ROUTING

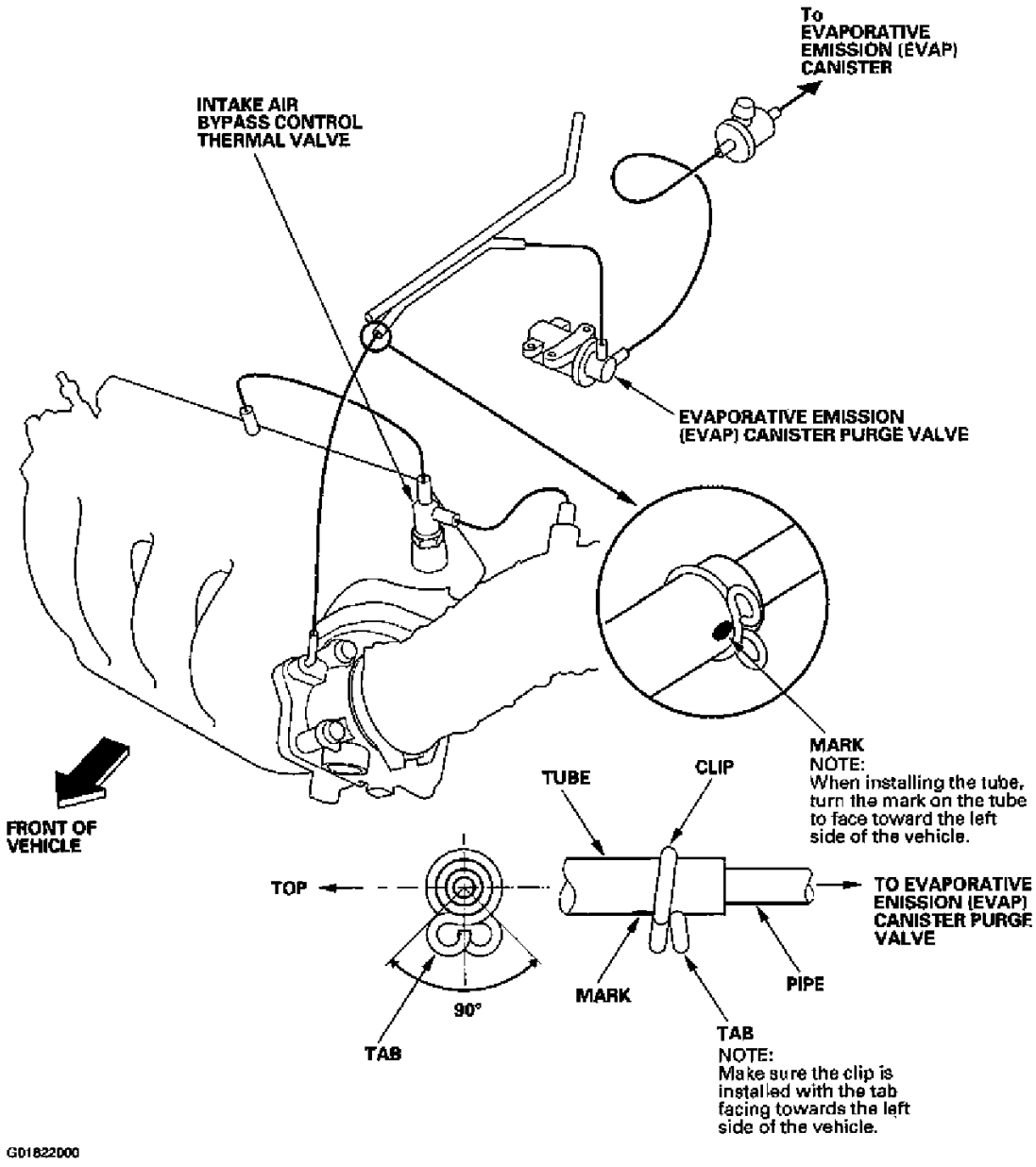
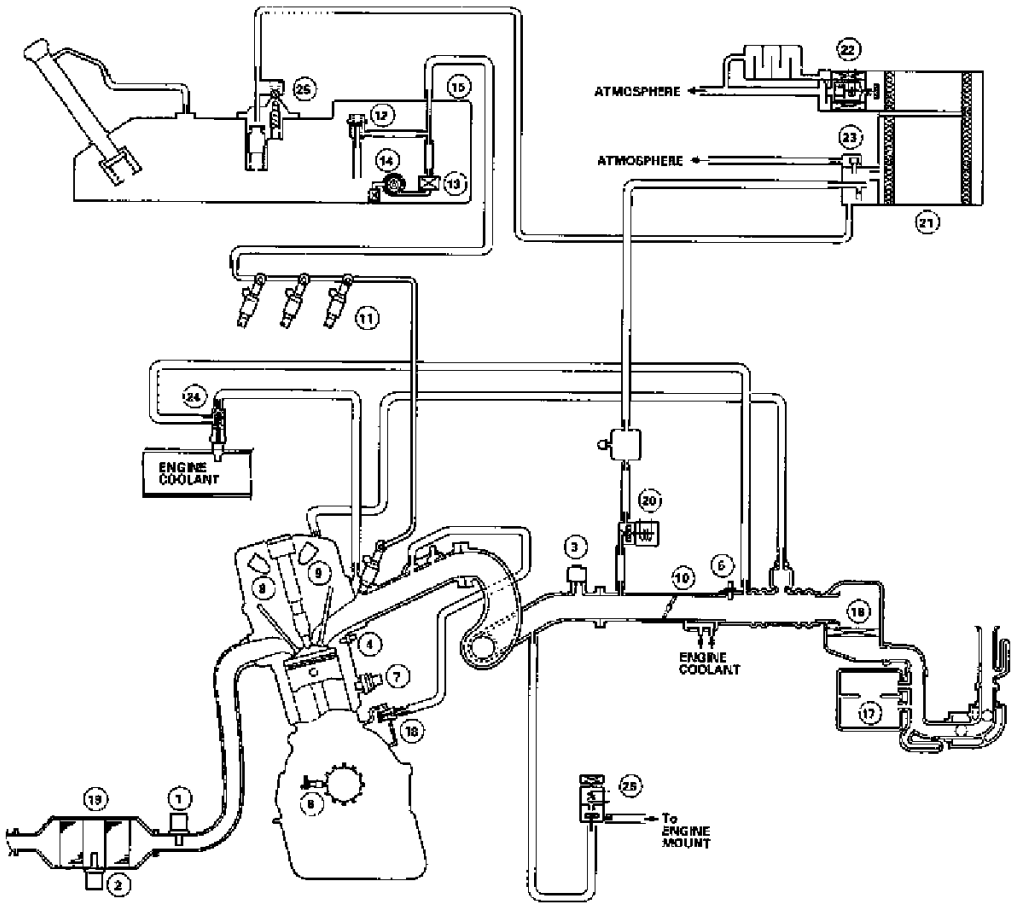


Fig. 32: Vacuum Hose Routing

VACUUM DISTRIBUTION

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① AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR
⑤ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑥ CRANKSHAFT POSITION (CKP) SENSOR
⑦ KNOCK SENSOR
⑧ CAMSHAFT POSITION (CMP) SENSOR B
⑨ CAMSHAFT POSITION (CMP) SENSOR A
⑩ THROTTLE BODY
⑪ INJECTOR
⑫ FUEL PRESSURE REGULATOR
⑬ FUEL FILTER
⑭ FUEL PUMP
⑮ FUEL TANK
⑯ AIR CLEANER
⑰ RESONATOR
⑱ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑲ THREE WAY CATALYTIC CONVERTER
⑳ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉑ EVAPORATIVE EMISSION (EVAP) CANISTER
㉒ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉓ FUEL TANK PRESSURE (FTP) SENSOR
㉔ INTAKE AIR BYPASS CONTROL THERMAL VALVE
㉕ FUEL TANK VAPOR CONTROL VALVE
㉖ ENGINE MOUNT CONTROL SOLENOID VALVE

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Fig. 33: Vacuum Distribution

PGM-FI SYSTEM

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

AIR CONDITIONING (A/C) COMPRESSOR CLUTCH RELAY

When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being

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energized, and enriches the mixture to assure smooth transition to the A/C mode.

AIR FUEL RATIO (A/F) SENSOR

The A/F Sensor operates over a wide air/fuel range. The A/F Sensor is installed upstream of the TWC, and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly.

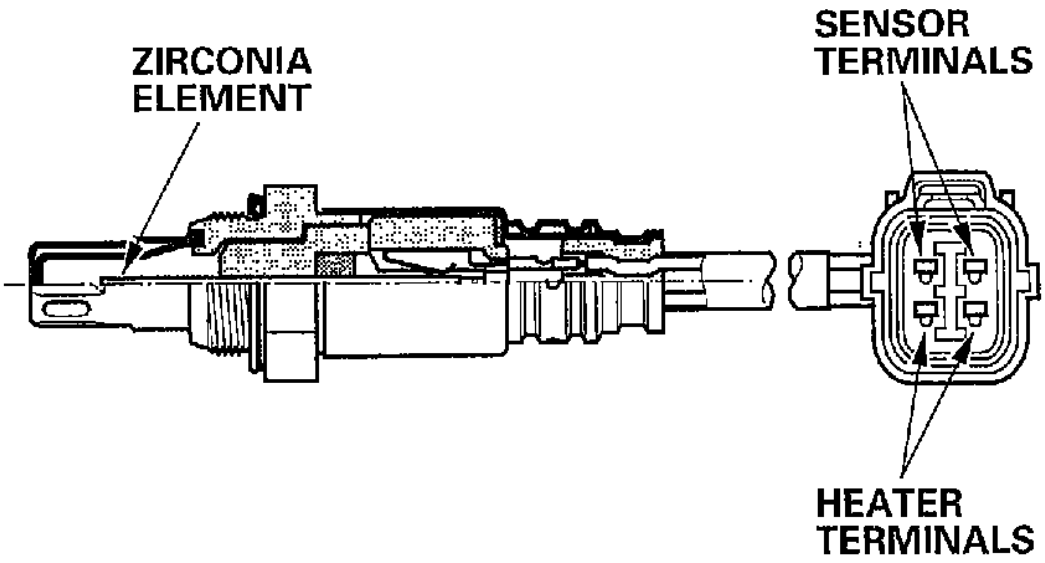


Fig. 34: Identifying Air Fuel Ratio (A/F) Sensor

BAROMETRIC PRESSURE (BARO) SENSOR

The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

CAMSHAFT POSITION (CMP) SENSOR B

CMP sensor B detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.

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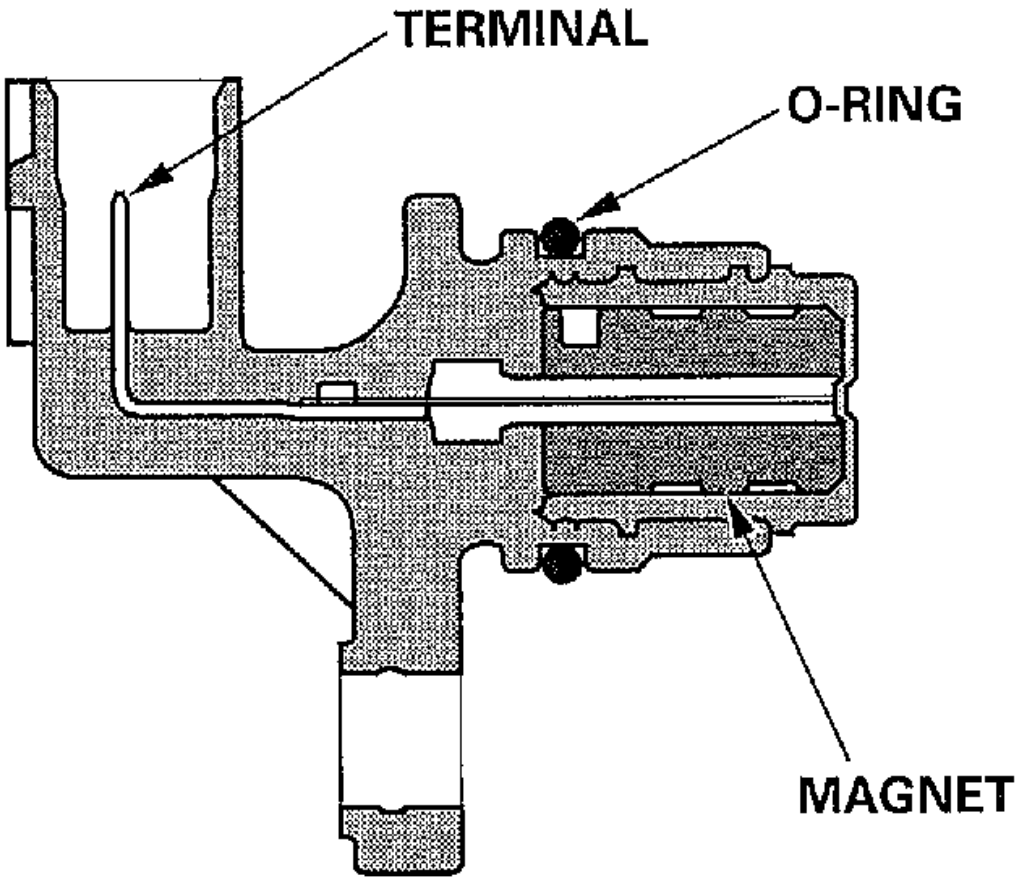


Fig. 35: Cutaway View Of Camshaft Position (CMP) Sensor B

COUNTERSHAFT SPEED SENSOR

This sensor detects countershaft speed.

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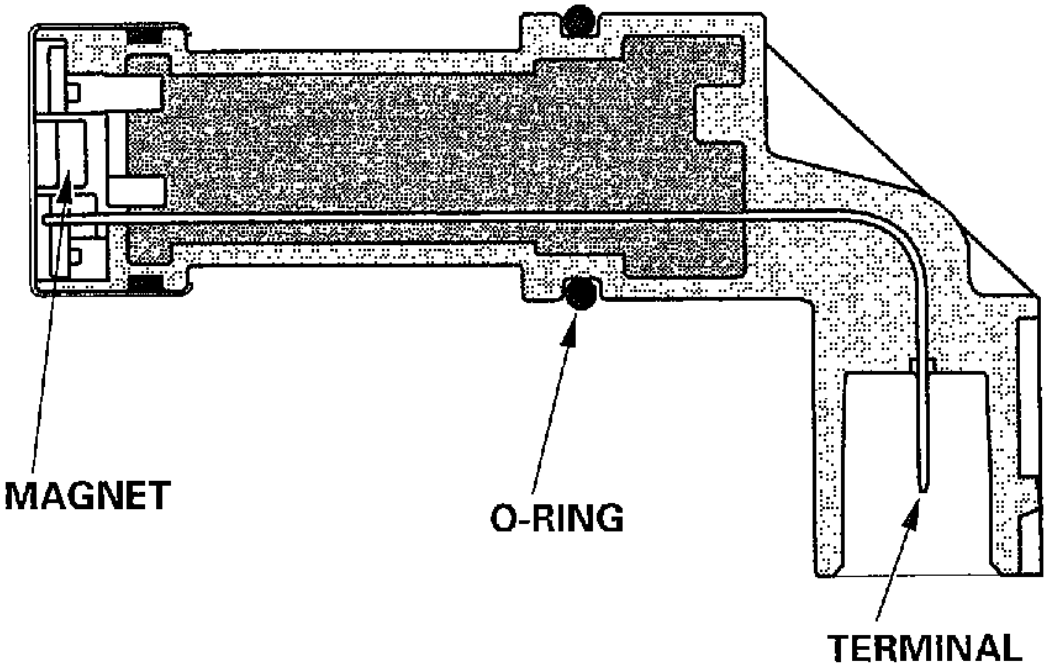


Fig. 36: Cutaway View Of Countershaft Speed Sensor

CRANKSHAFT POSITION (CKP) SENSOR

The CKP sensor detects crankshaft speed and is used by the ECM/PCM to determine ignition timing and timing for fuel injection of each cylinder as well as detecting engine misfire.

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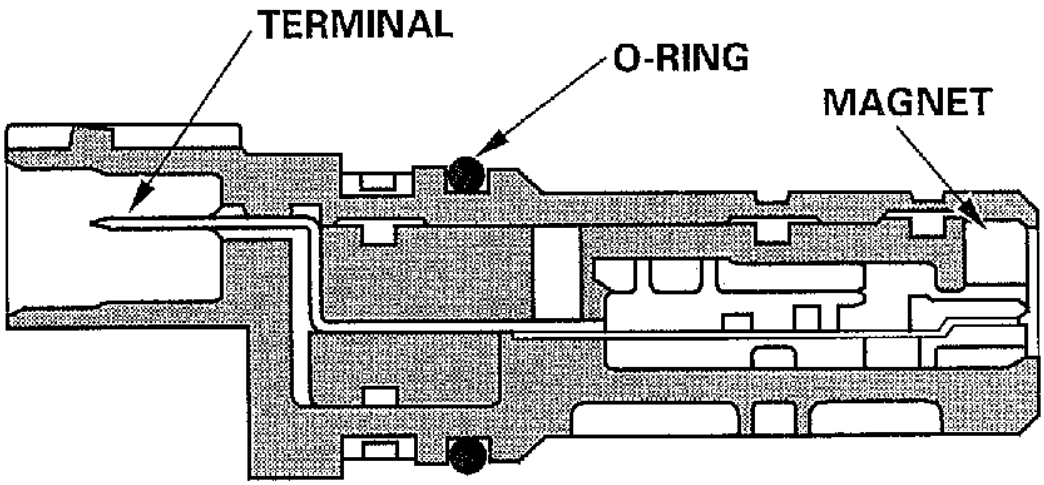


Fig. 37: Cutaway View Of Crankshaft Position (CKP) Sensor

ENGINE COOLANT TEMPERATURE (ECT) SENSOR

The ECT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the engine coolant temperature increases.

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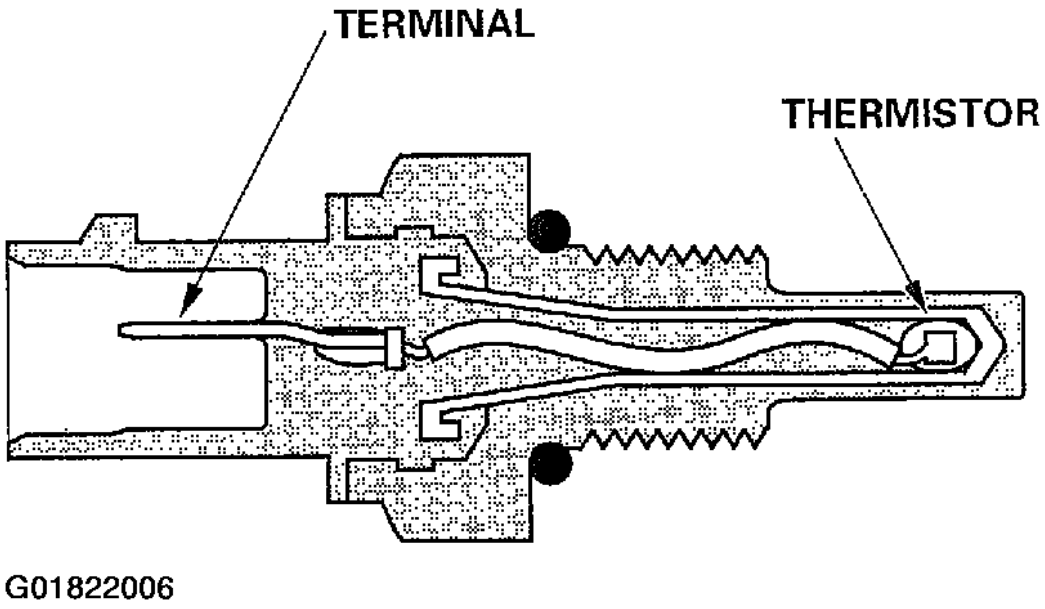


Fig. 38: Cutaway View Of Engine Coolant Temperature (ECT) Sensor

IGNITION TIMING CONTROL

The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature and intake air temperature.

INJECTOR TIMING & DURATION

The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system and sets a diagnostic trouble code (DTC).

INTAKE AIR TEMPERATURE (IAT) SENSOR

The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.

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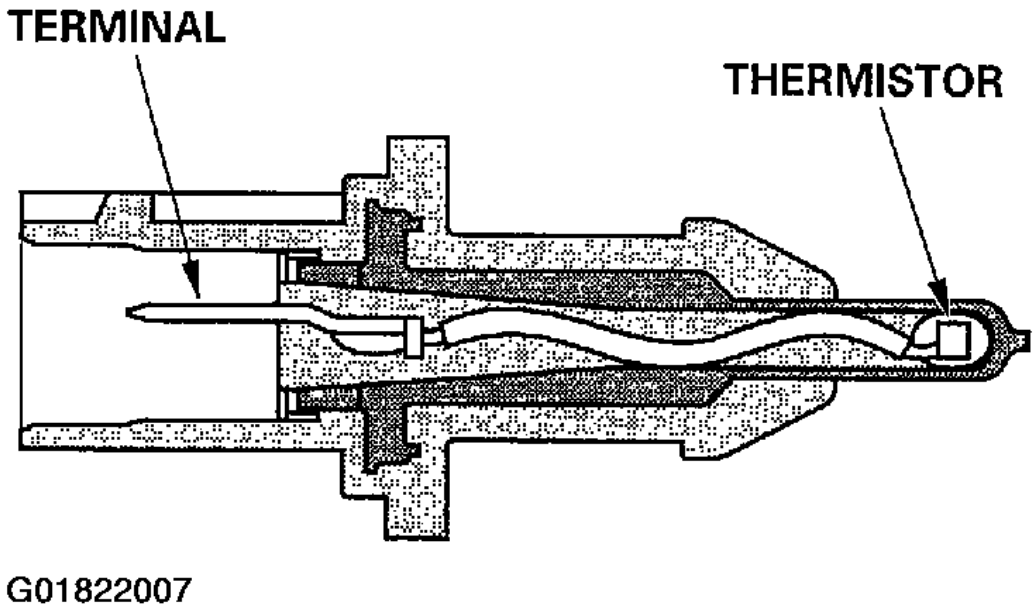


Fig. 39: Cutaway View Of Intake Air Temperature (IAT) Sensor

KNOCK SENSOR

The knock control system adjusts the ignition timing to minimize knock.

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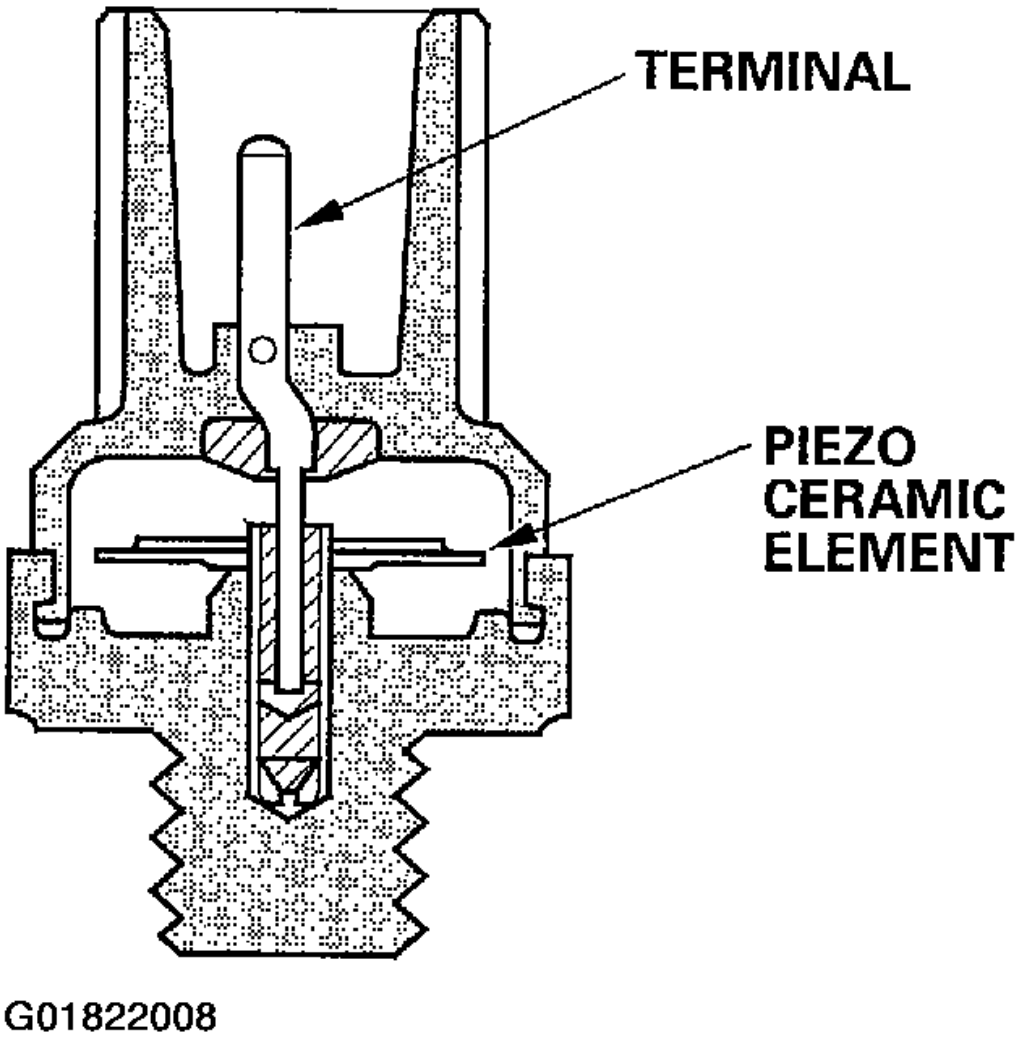


Fig. 40: Cutaway View Of Knock Sensor

MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15-20 seconds. If it then goes off, the readiness codes are complete. If it flashes five

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times, one or more readiness codes are not complete. To set each code, drive the vehicle or run the engine as described in the procedures in this section (see **HOW TO SET READINESS CODES**).

MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR

The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.

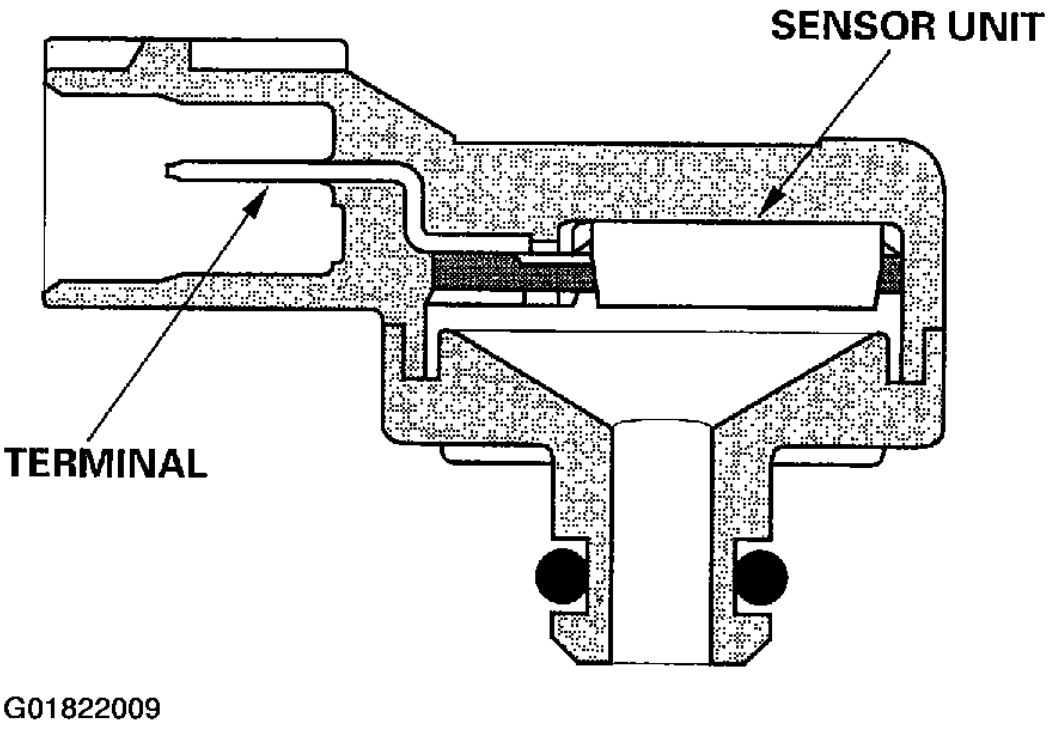


Fig. 41: Cutaway View Of Manifold Absolute Pressure (MAP) Sensor

SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC), and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilize its output, the sensor has an internal heater. The ECM/PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is located on the TWC.

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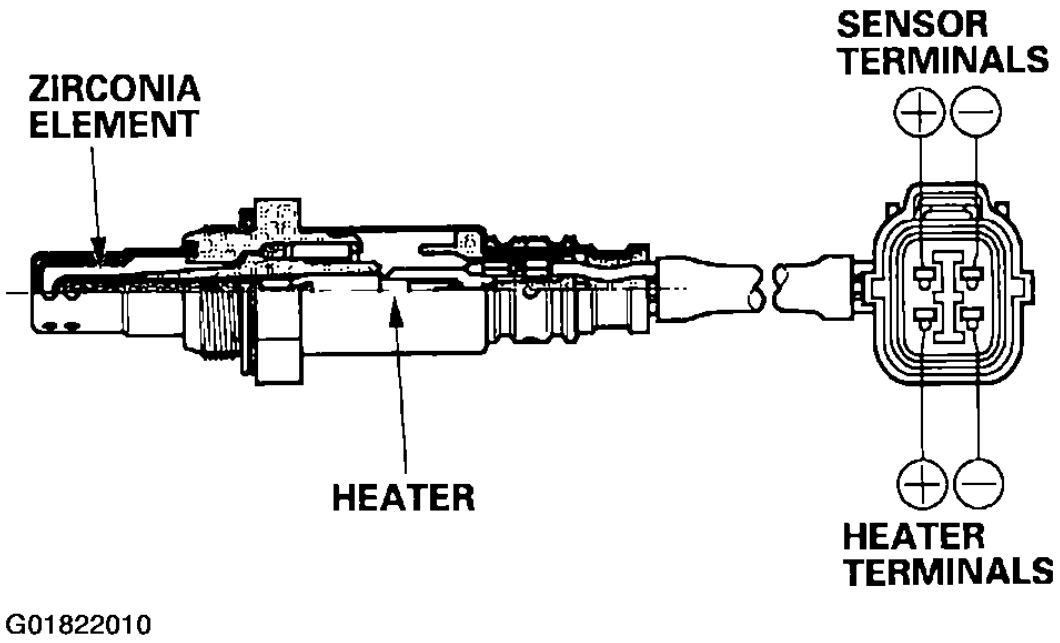


Fig. 42: Cutaway View Of Secondary Heated Oxygen Sensor (Secondary HO2S)

ELECTRONIC THROTTLE CONTROL SYSTEM

The throttle is electronically controlled by the electronic throttle control system. Refer to the System Diagram to see the functional layout of the system.

Idle Control: When the engine is idling, the ECM/PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration Control: When the accelerator pedal is pressed, the ECM/PCM opens the throttle valve depending on the accelerator pedal position (APP) sensor signal.

Cruise Control: The ECM/PCM controls the throttle actuator to maintain set speed when the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

ACCELERATOR PEDAL POSITION (APP) SENSOR

As the accelerator pedal position changes, the sensor varies the signal voltage to the ECM/PCM.

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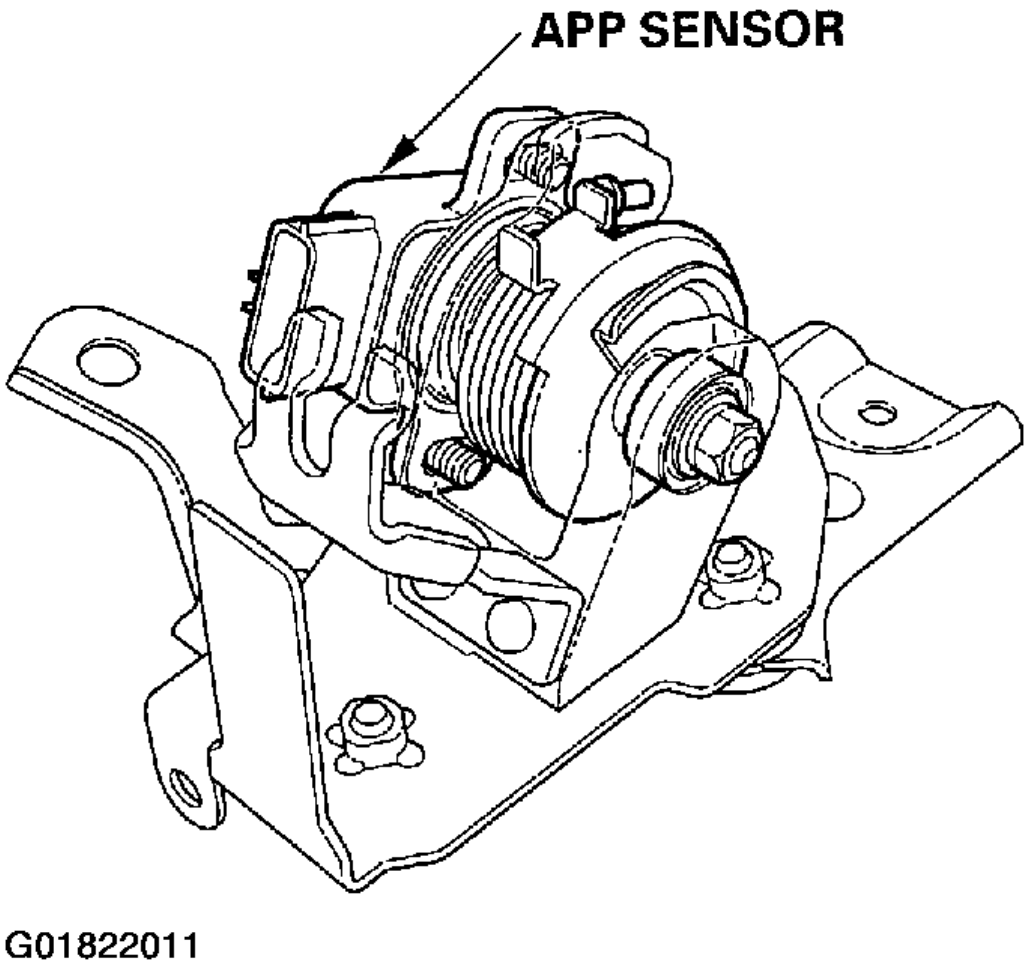


Fig. 43: Locating Accelerator Pedal Position (APP) Sensor

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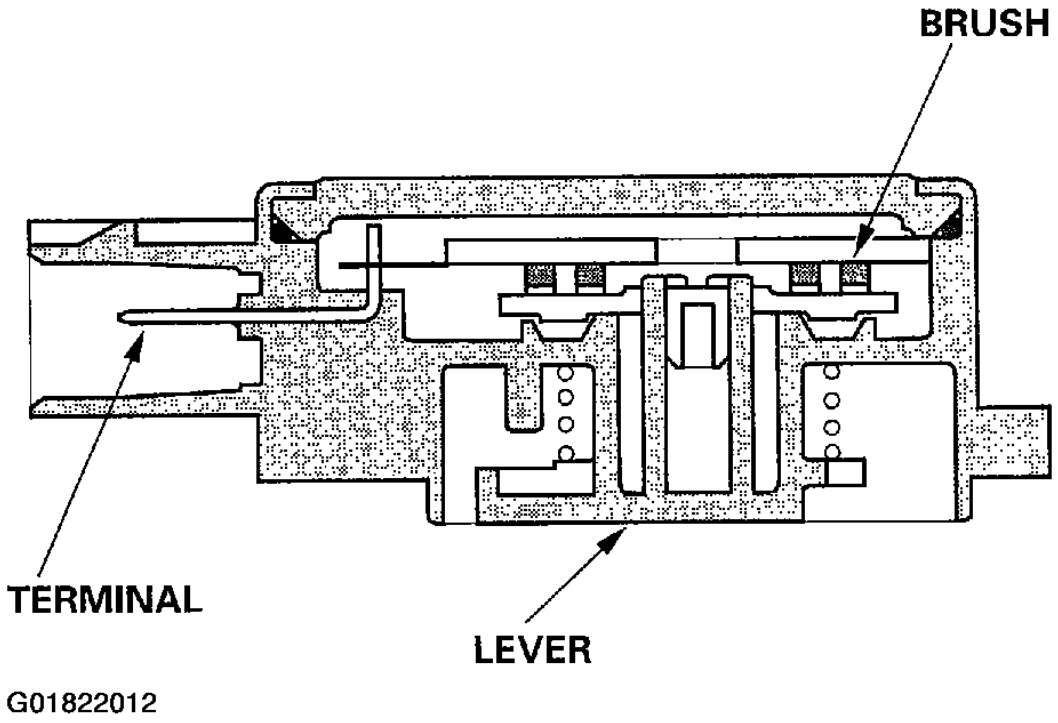


Fig. 44: Cutaway View Of Accelerator Pedal Position (APP) Sensor

THROTTLE BODY

The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.

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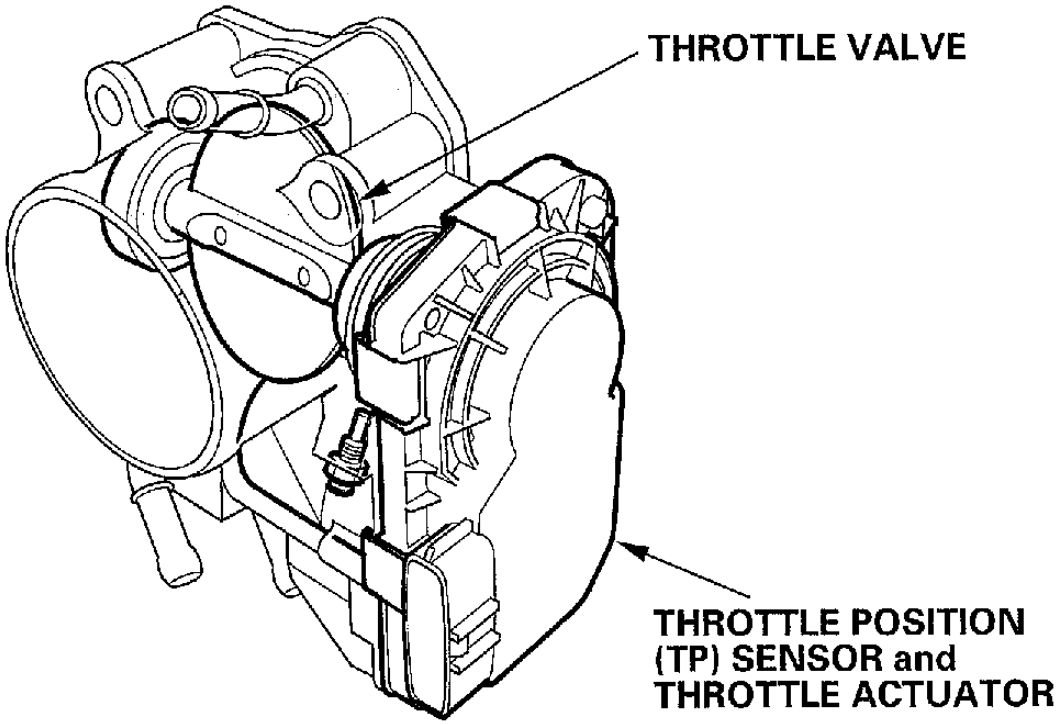


Fig. 45: Identifying Throttle Body Components

VTEC/VTC

The i-VTEC has a VTC (Variable Valve Timing Control) mechanism on the intake camshaft in addition to the usual VTEC. This mechanism improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.

The VTEC mechanism changes the valve lift and timing by using more than one cam profile.

The VTC changes the phase of the intake camshaft via oil pressure. It changes the intake valve timing continuously.

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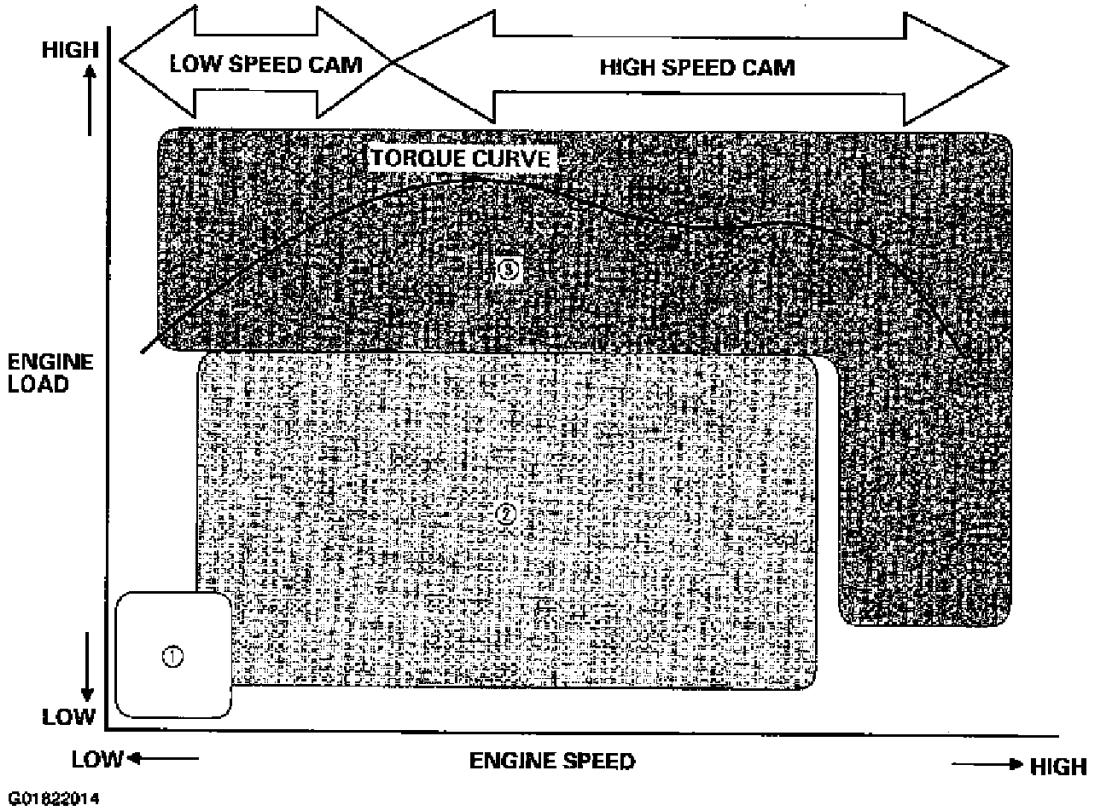


Fig. 46: VTEC/VTC Operation Chart

Driving Condition	VTC Control	Description
① Light-load	Base Position	For stable combustion the cam angle is retarded, and reduces the entry of exhaust gas into the cylinder.
② Medium/high-load	Advance Control	Cam phase angle is controlled to optimize valve timing, improving fuel efficiency and reducing emmission.
③ High speed	Advance-Base Position	To reduce the pumping loss, the intake valve is closed quickly. This helps the entry of fuel air mixture by the charging effect, and maximizes engine power.

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Fig. 47: VTEC/VTC Description

VTC system

The VTC system makes continuous intake valve timing changes based on operating conditions. Intake valve timing is optimized to allow the engine to produce maximum power.

Cam angle is advanced to obtain the EGR effect and reduce pumping loss. The intake valve is closed quickly to reduce the entry of the air/fuel mixture into the intake port and improve the charging effect.

The system reduces the cam advance at idle, stabilizes combustion, and reduces engine speed.

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If a malfunction occurs, the VTC system control is disabled and the valve timing is fixed at the fully retarded position.

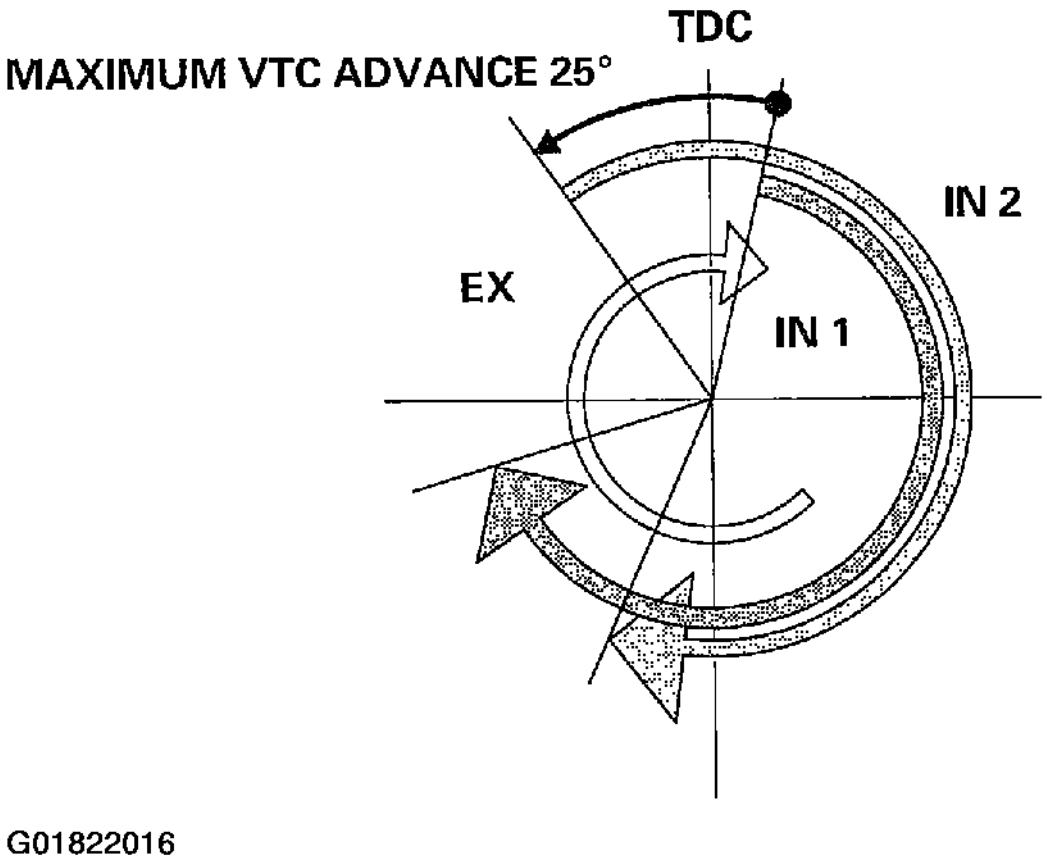


Fig. 48: VTC System Intake Valve Timing Chart

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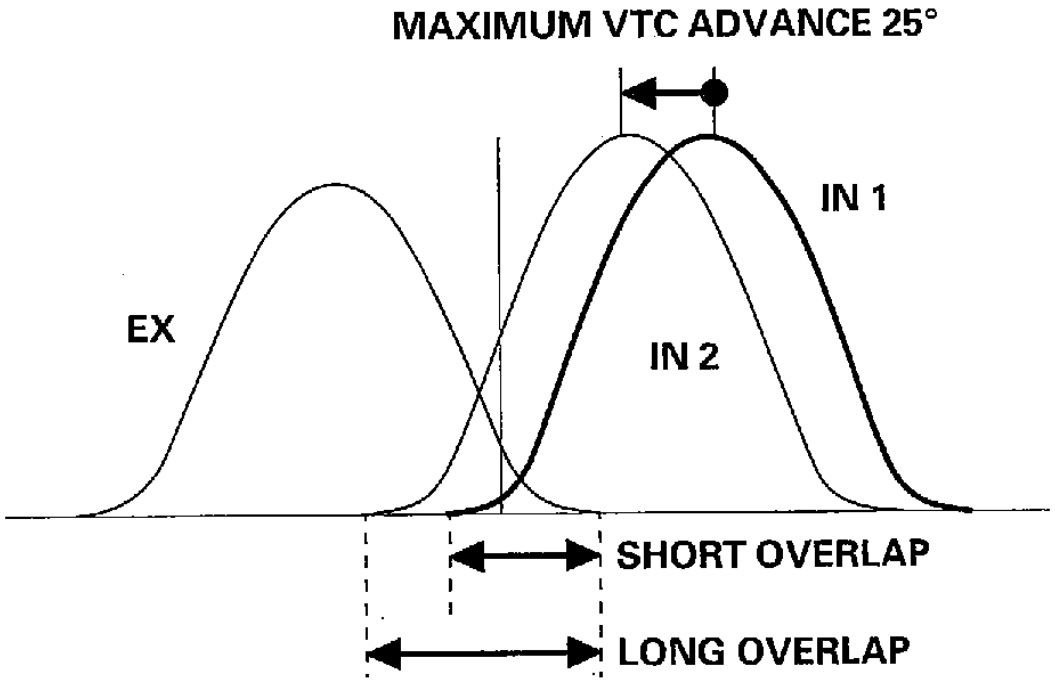


Fig. 49: VTC System Intake Valve Timing

VTEC system

The VTEC system changes the cam profile to correspond to the engine speed. It maximizes torque at low engine speed and output at high engine speed.

The low lift cam is used at low engine speeds, and the high lift cam is used at high engine speeds.

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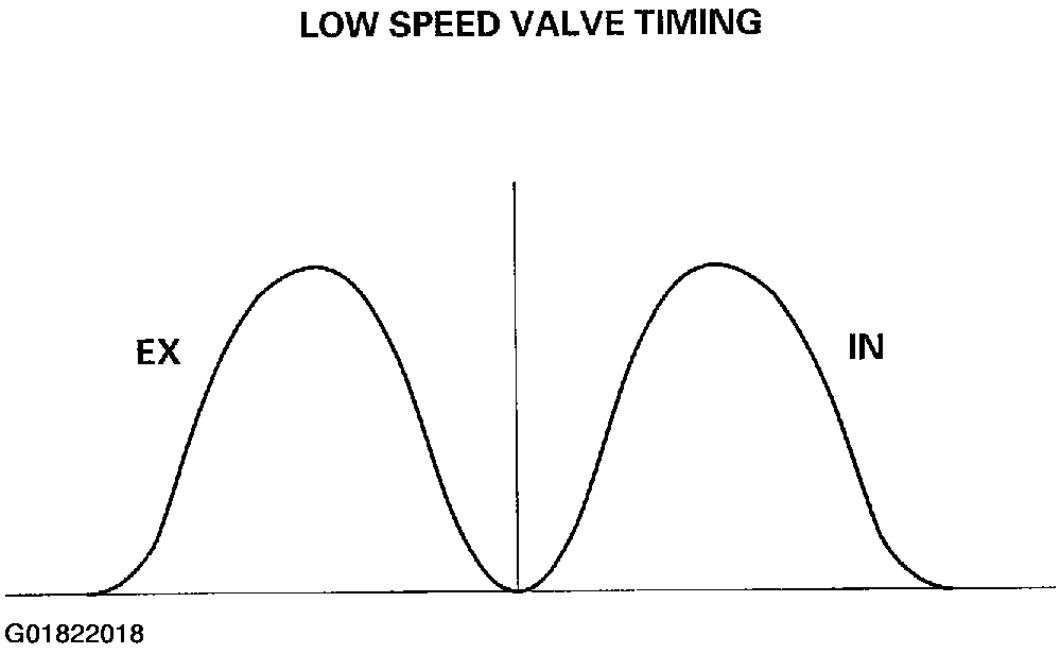
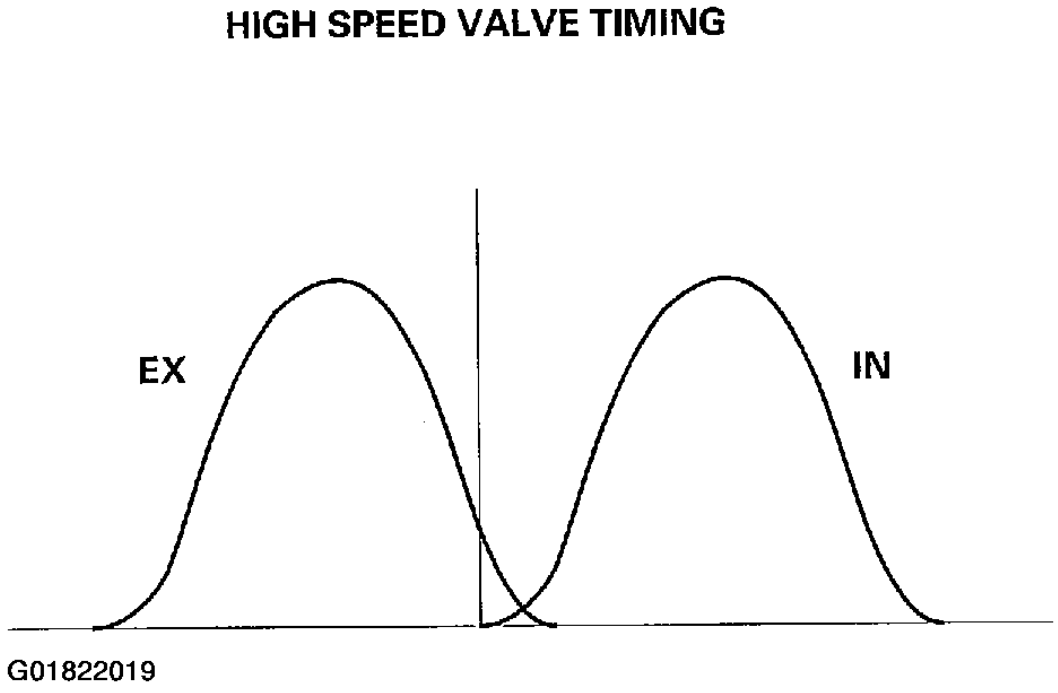


Fig. 50: Low Speed Valve Timing



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Fig. 51: High Speed Valve Timing

VTEC/VTC

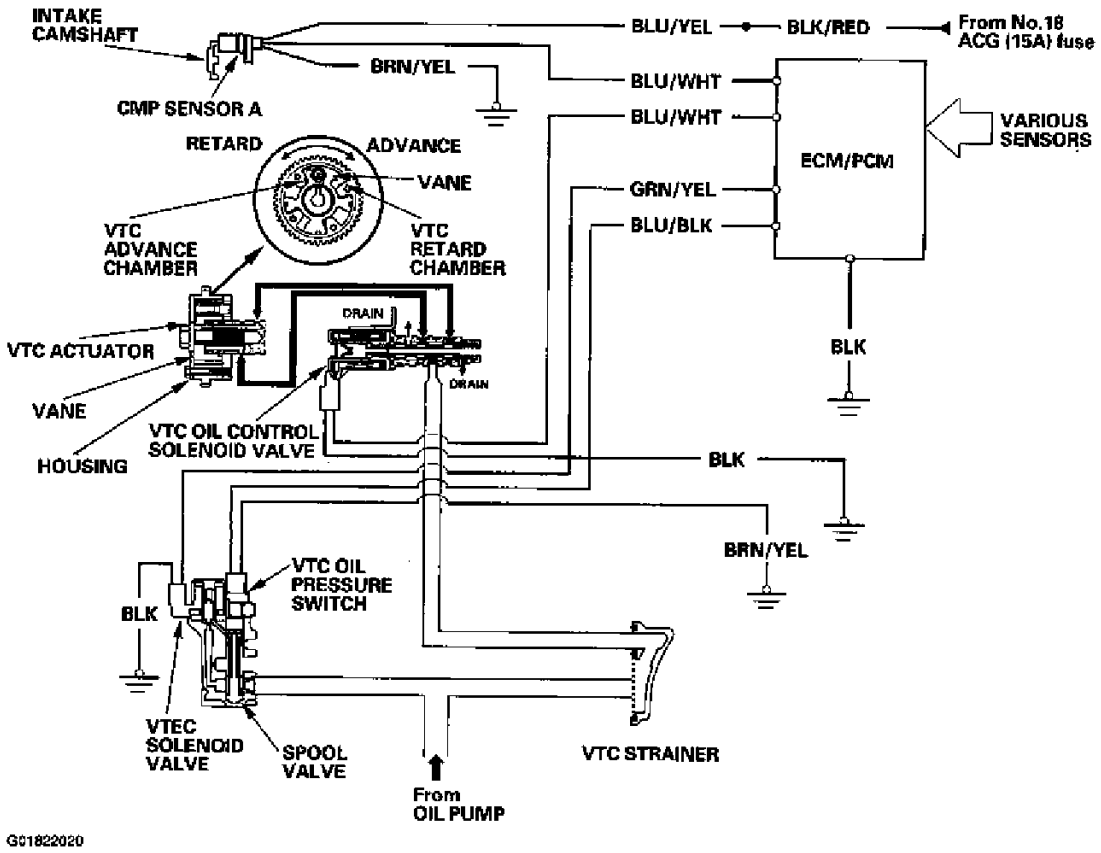


Fig. 52: VTEC/VTC System Wiring Diagram

CAMSHAFT POSITION (CMP) SENSOR A

This sensor detects camshaft angle position for the VTC system.

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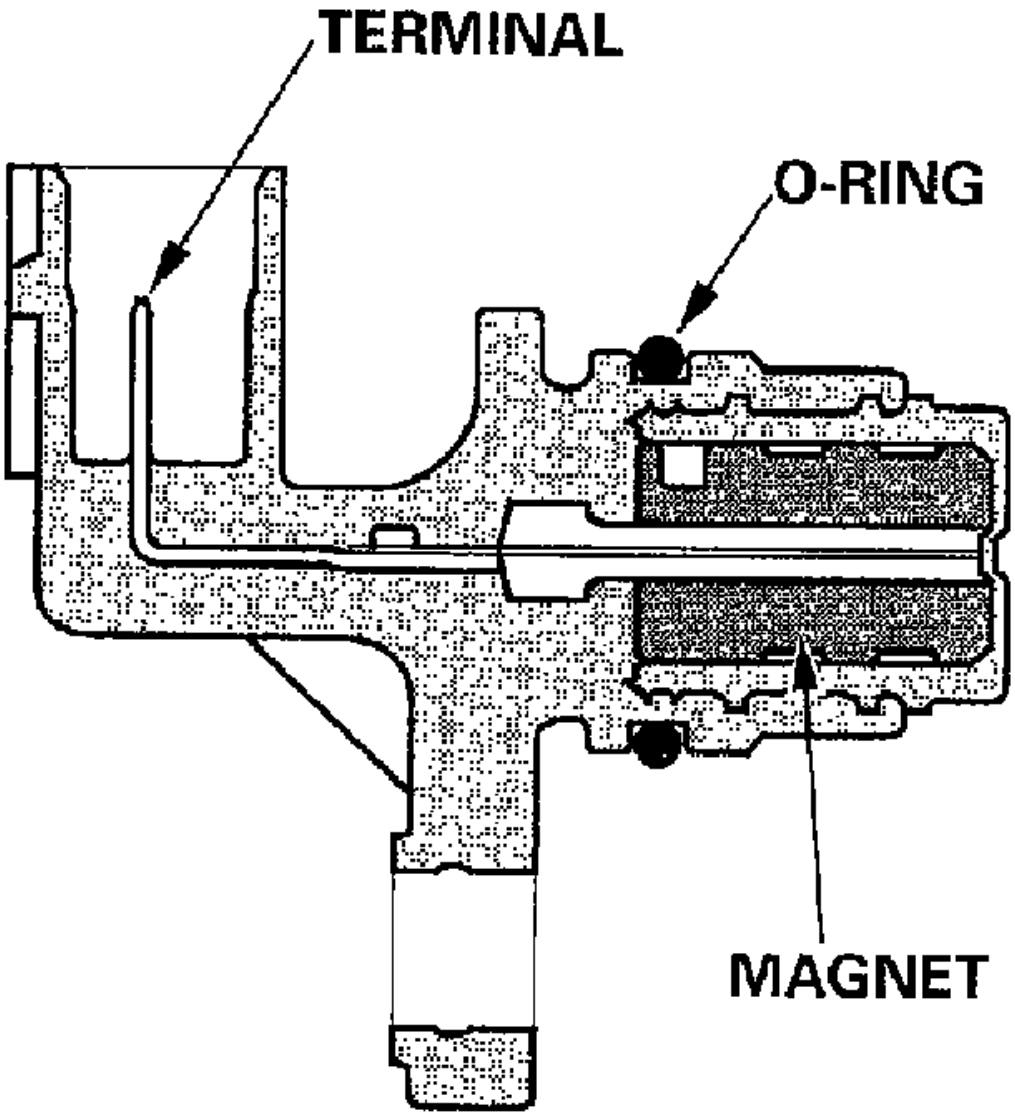


Fig. 53: Cutaway View Of Camshaft Position (CMP) Sensor A

IDLE CONTROL SYSTEM

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM controls current to the throttle actuator to maintain the correct idle speed.

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BRAKE PEDAL POSITION SWITCH

The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

POWER STEERING PRESSURE (PSP) SWITCH

The PSP switch signals the ECM/PCM when the power steering load is high.

FUEL SUPPLY SYSTEM

Fuel Cut-off Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 1,000 RPM. Fuel cut-off control also occurs when the engine speed exceeds 7,300 RPM, regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the ECM/PCM cuts the fuel at engine speeds over 5,000 RPM (M/T: 4,500 RPM). Engine speed of fuel cut is lower on a cold engine.

Fuel Pump Control

When the ignition is turned on, the ECM/PCM grounds the PGM-FI main relay which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the ECM/PCM grounds the PGM-FI main relay and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM/PCM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.

PGM-FI MAIN RELAY 1 & 2

The PGM-FI relay consists of two separate relays. PGM-FI main relay 1 (FI MAIN) is energized whenever the ignition switch is ON (II) to supply battery voltage to the ECM/PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is cranking or running.

INTAKE AIR SYSTEM

This system supplies air for engine needs.

Intake Air Bypass Control Thermal Valve

When the engine is cold, the intake air bypass control thermal valve sends air to the injector. The amount of air is regulated by engine coolant temperature. Once the engine is hot, the intake air bypass control thermal valve closes, stopping air to the injector.

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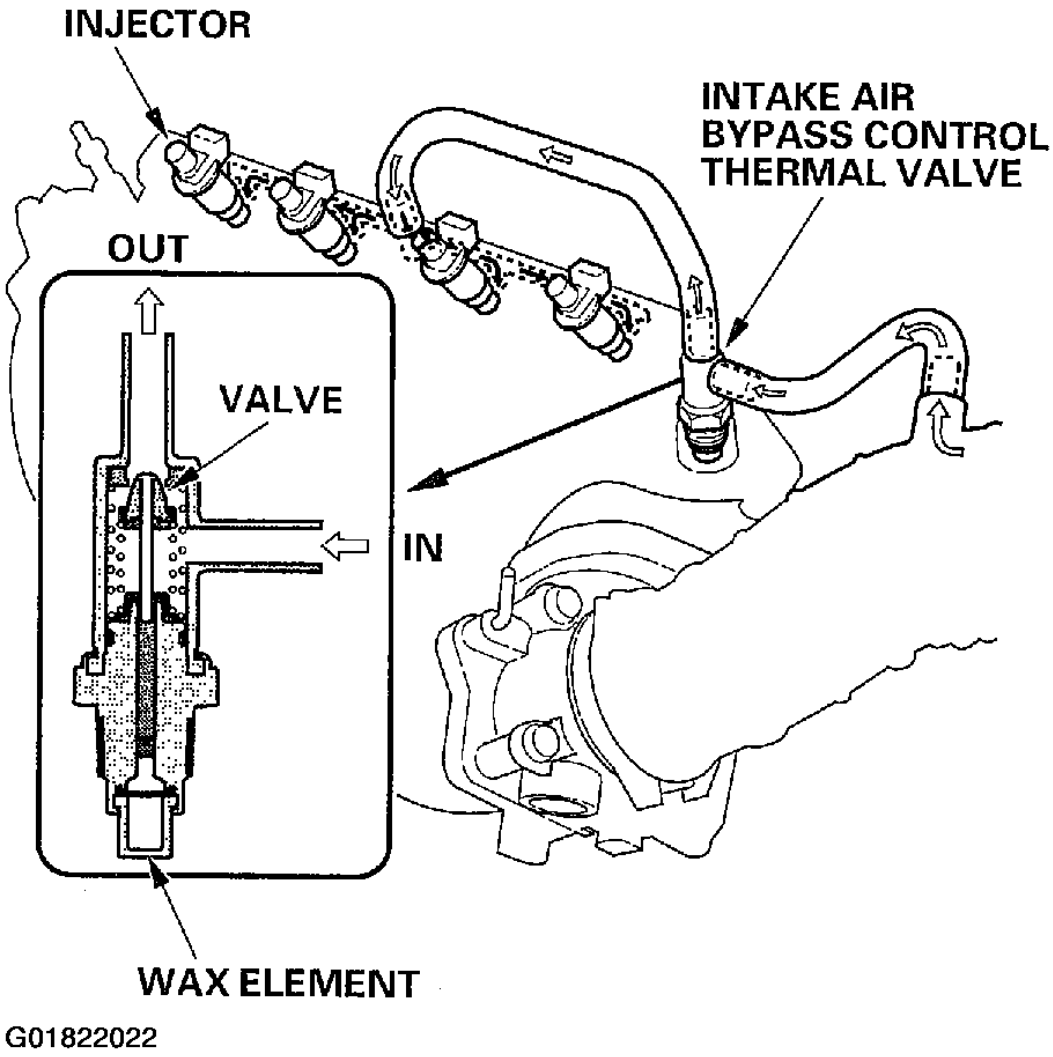


Fig. 54: Locating Intake Air Bypass Control Thermal Valve

Resonator

A resonator in the intake air duct provides additional silencing as air is drawn into the engine.

CATALYTIC CONVERTER SYSTEM

Three Way Catalytic Converter (TWC)

The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO2), nitrogen (N2), and water vapor.

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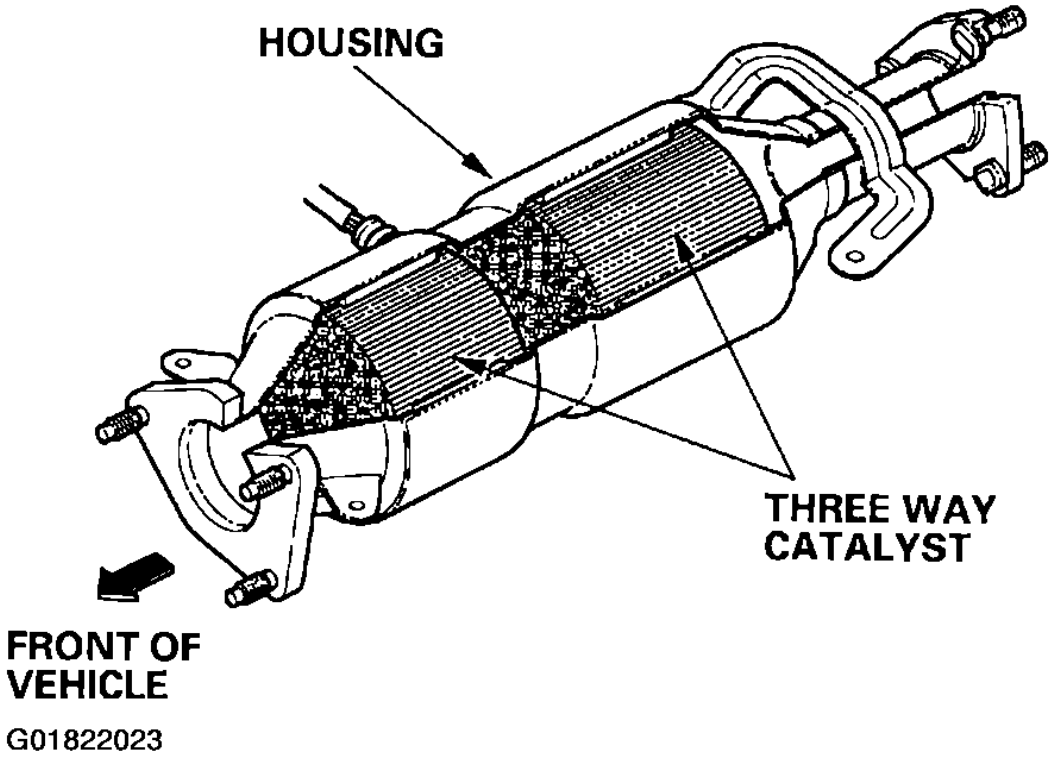


Fig. 55: Cutaway View Of Three Way Catalytic Converter (TWC)

POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.

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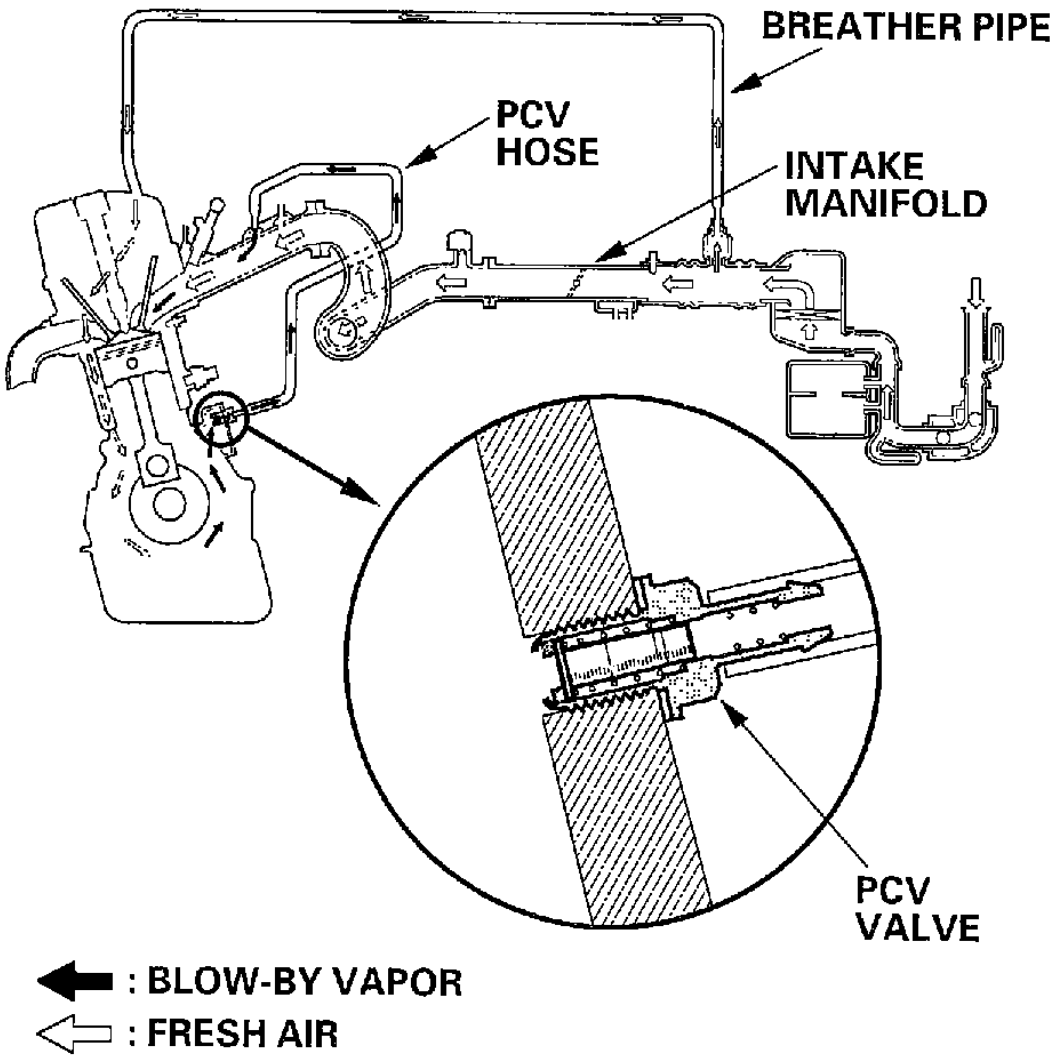


Fig. 56: Identifying Positive Crankcase Ventilation (PCV) System

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM

Refer to the System Diagram to see the functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged from the EVAP canister into the engine and burned.

EVAP Canister Purge Valve

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When the engine coolant temperature is below 131°F (55°C), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Fuel Tank Pressure (FTP) Sensor

The FTP sensor converts fuel tank absolute pressure into an electrical input to the ECM/PCM during the EVAP leak check.

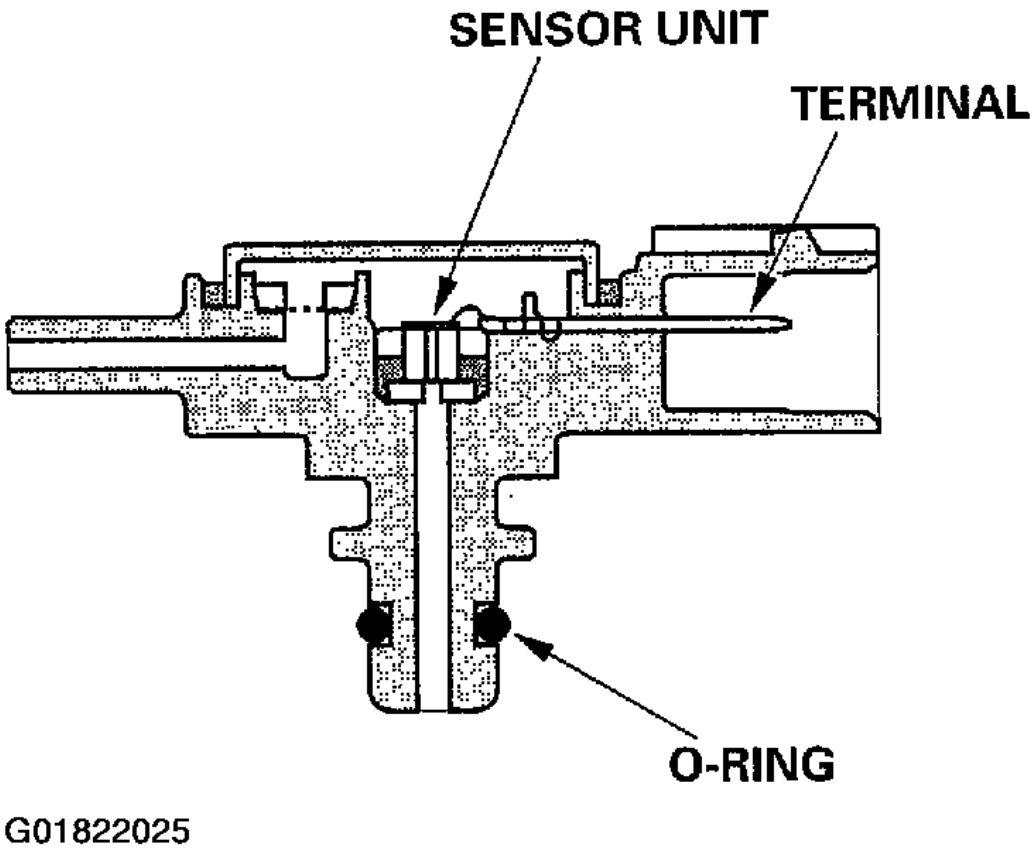


Fig. 57: Cutaway View Of Fuel Tank Pressure (FTP) Sensor

EVAP Canister Vent Shut Valve

The EVAP canister vent shut valve is on the EVAP canister. The EVAP canister vent shut valve controls the venting of the EVAP canister.

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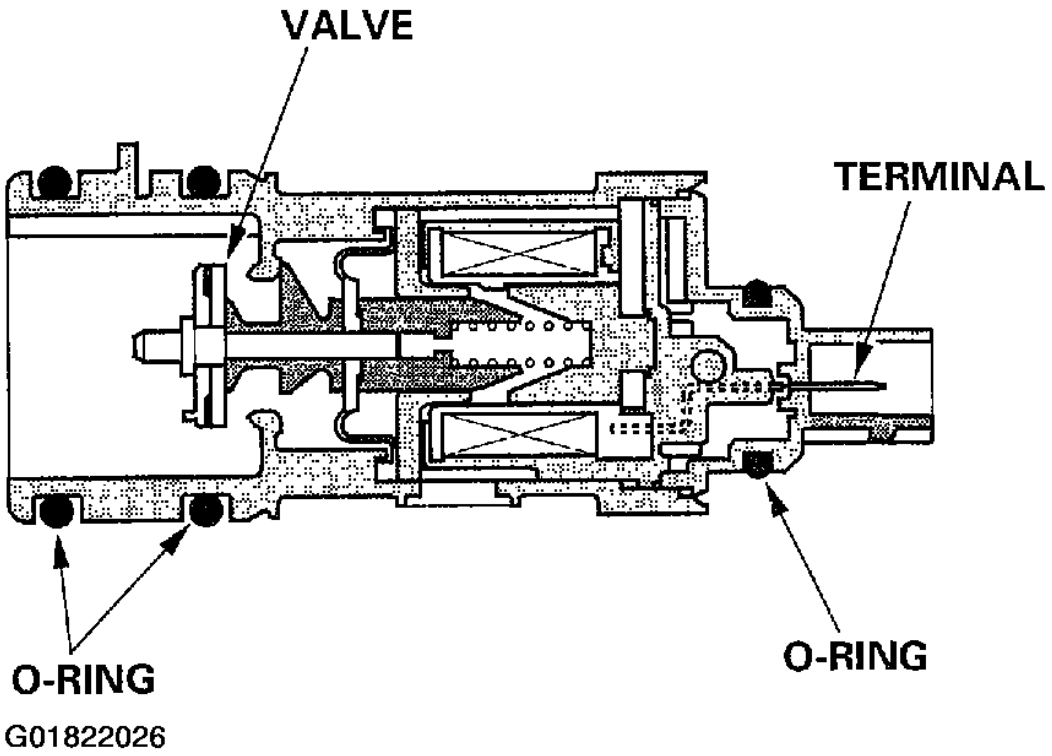


Fig. 58: Cutaway View Of EVAP Canister Vent Shut Valve

ELECTRONIC THROTTLE CONTROL SYSTEM DIAGRAM

The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor, accelerator pedal position (APP) sensor, throttle actuator control module, and the ECM/PCM. The throttle is electronically controlled by this system.

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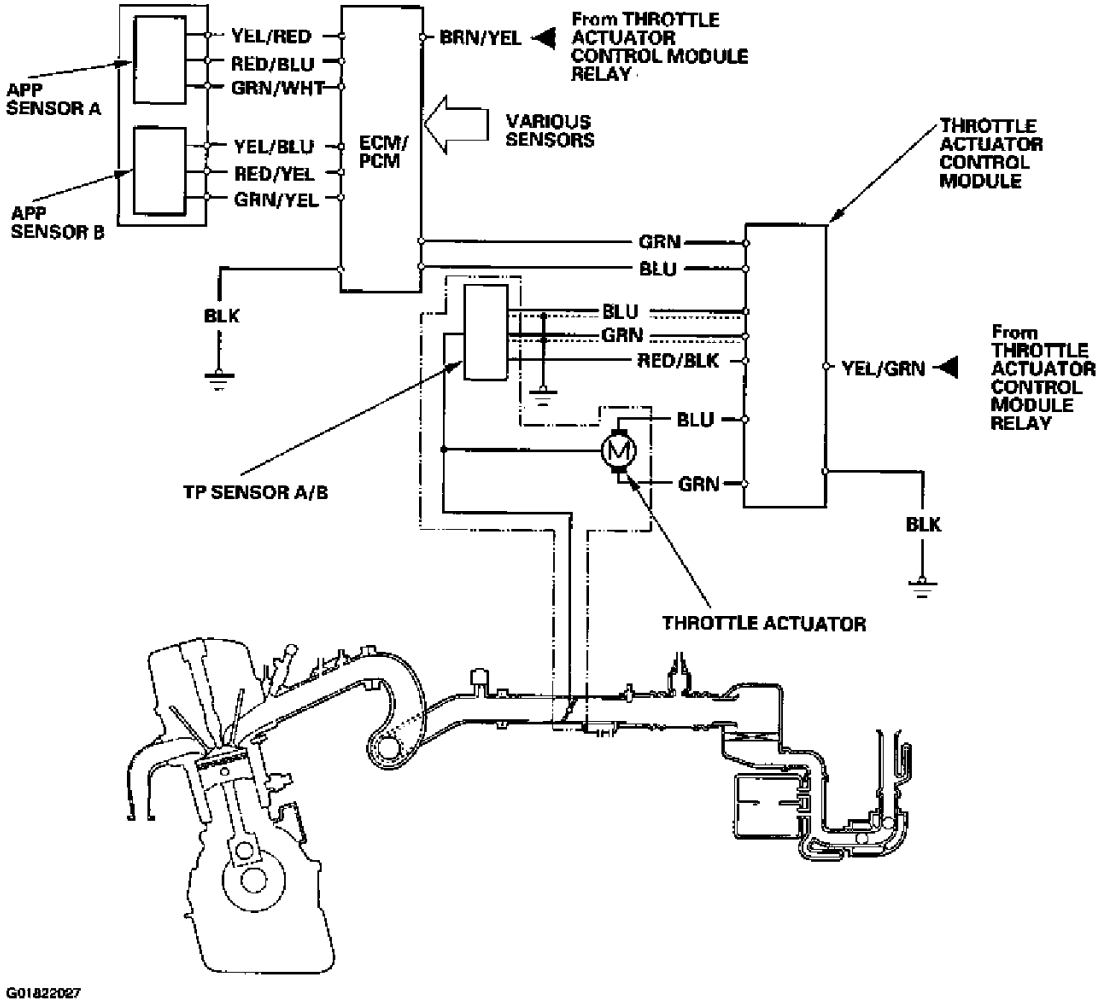


Fig. 59: Electronic Throttle Control System Diagram

EVAPORATIVE EMISSION (EVAP) CONTROL DIAGRAM

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister unit it can be purged from the canister into the engine and burned.

The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 131°F (55°C).

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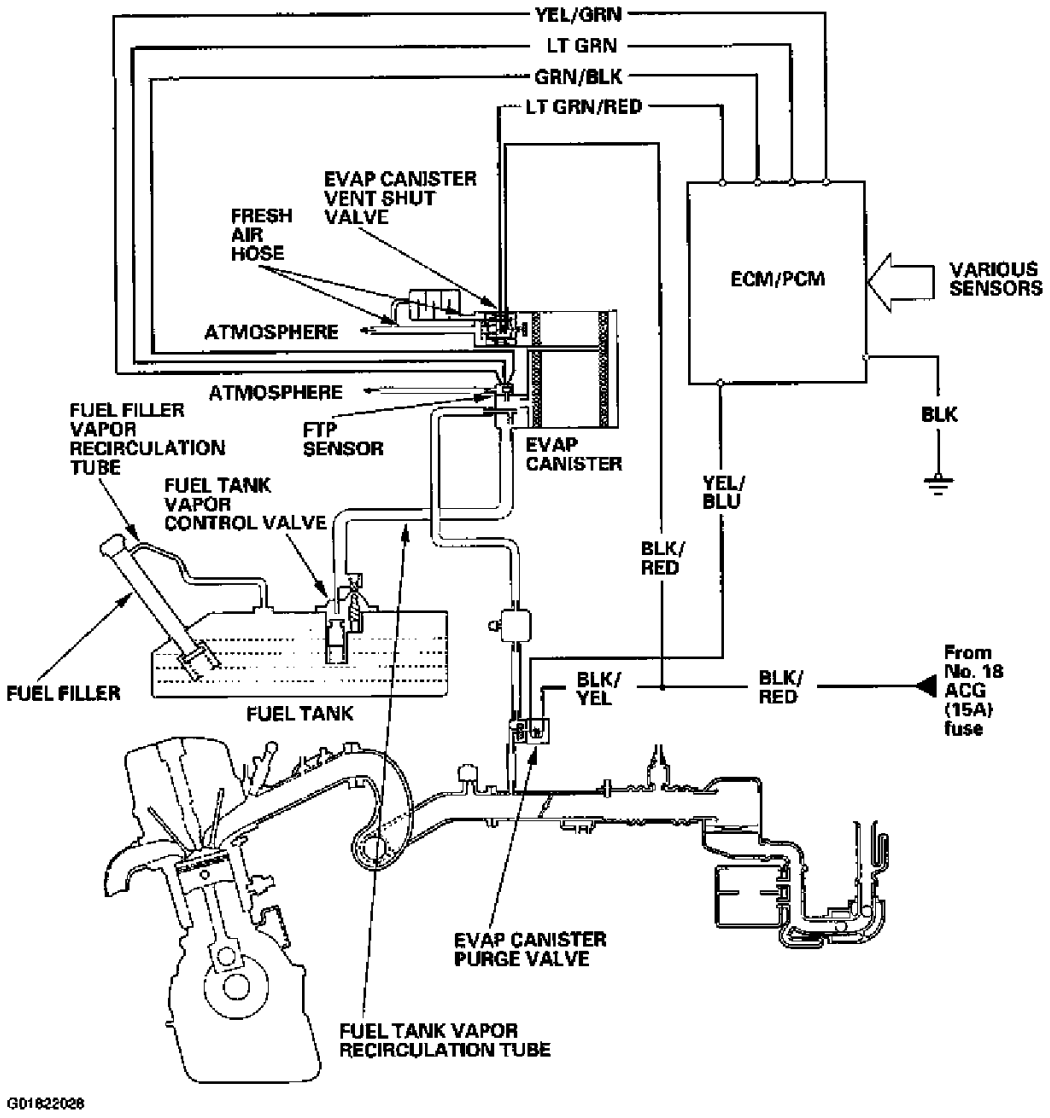


Fig. 60: Evaporative Emission (EVAP) System Schematic

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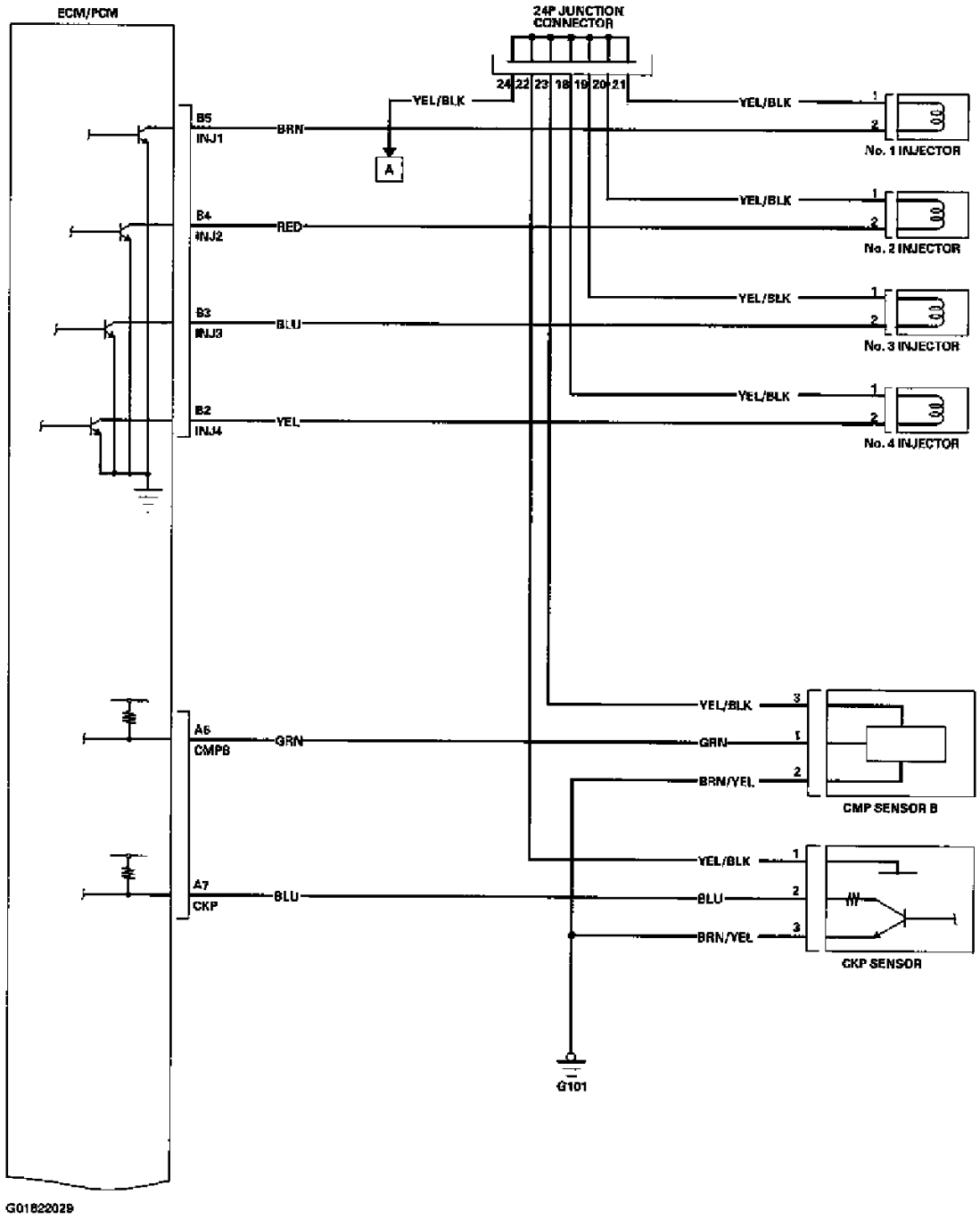


Fig. 61: Evaporative Emission (EVAP) System Wiring Diagram (1 Of 11)

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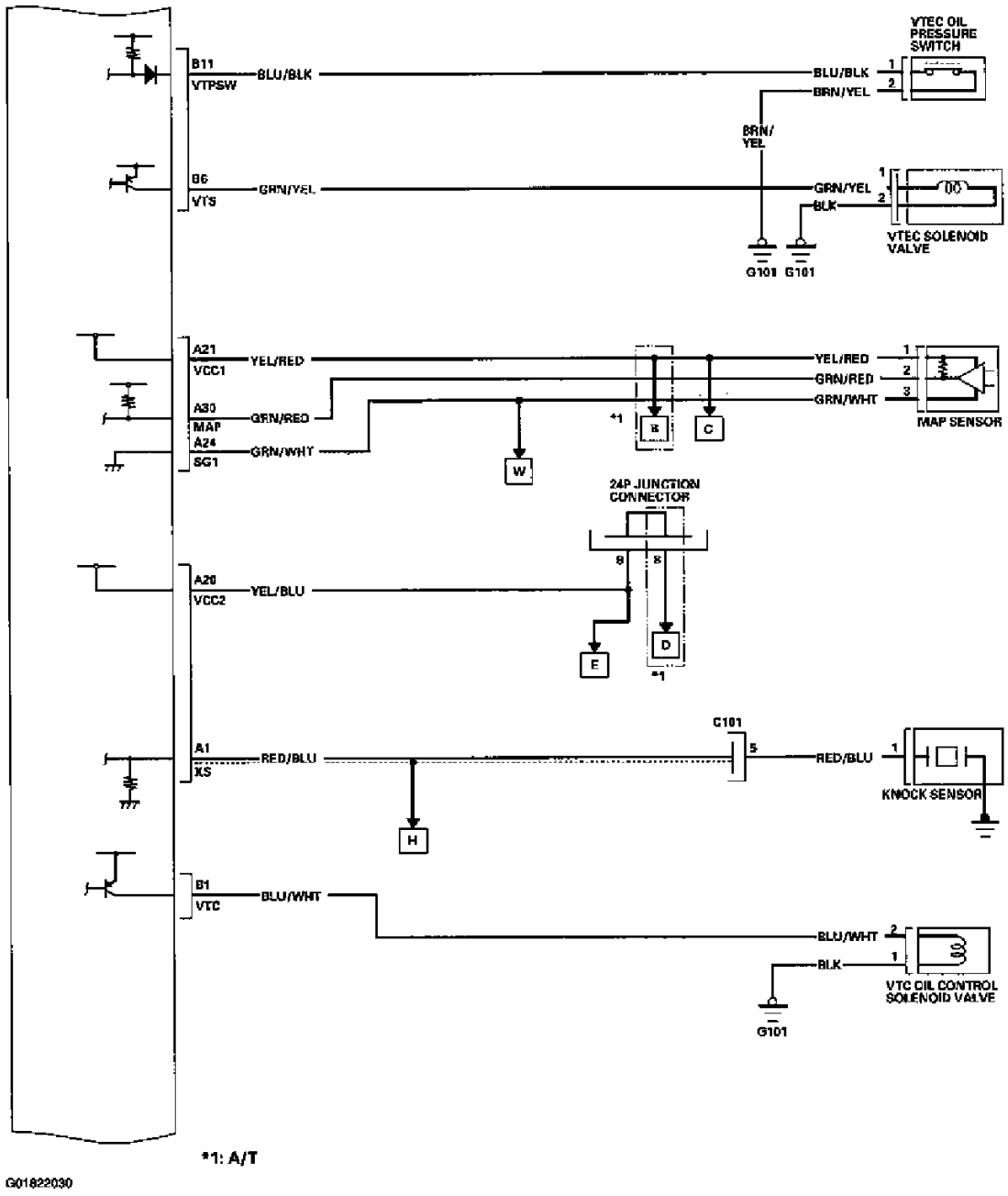


Fig. 62: Evaporative Emission (EVAP) System Wiring Diagram (2 Of 11)

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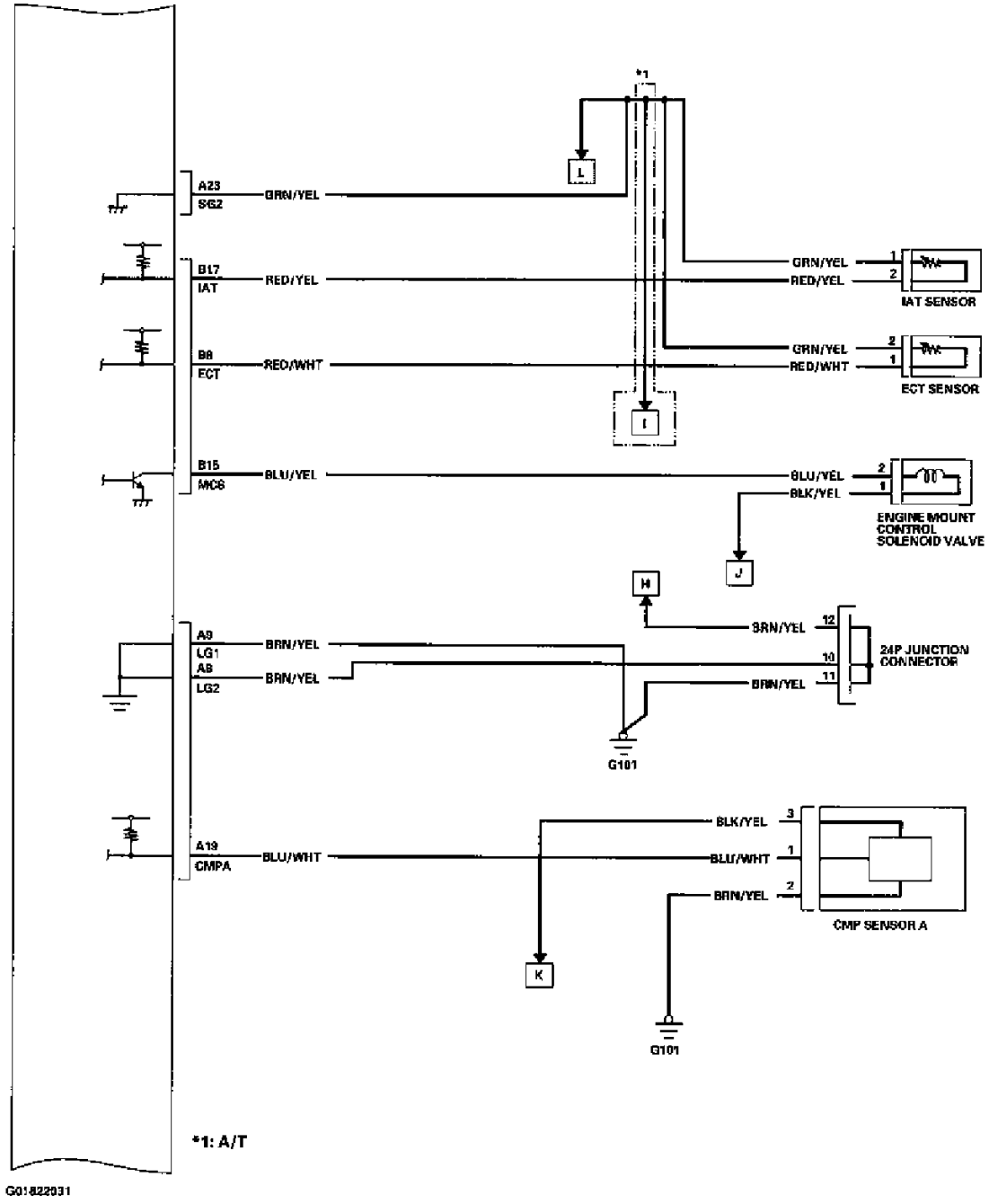


Fig. 63: Evaporative Emission (EVAP) System Wiring Diagram (3 Of 11)

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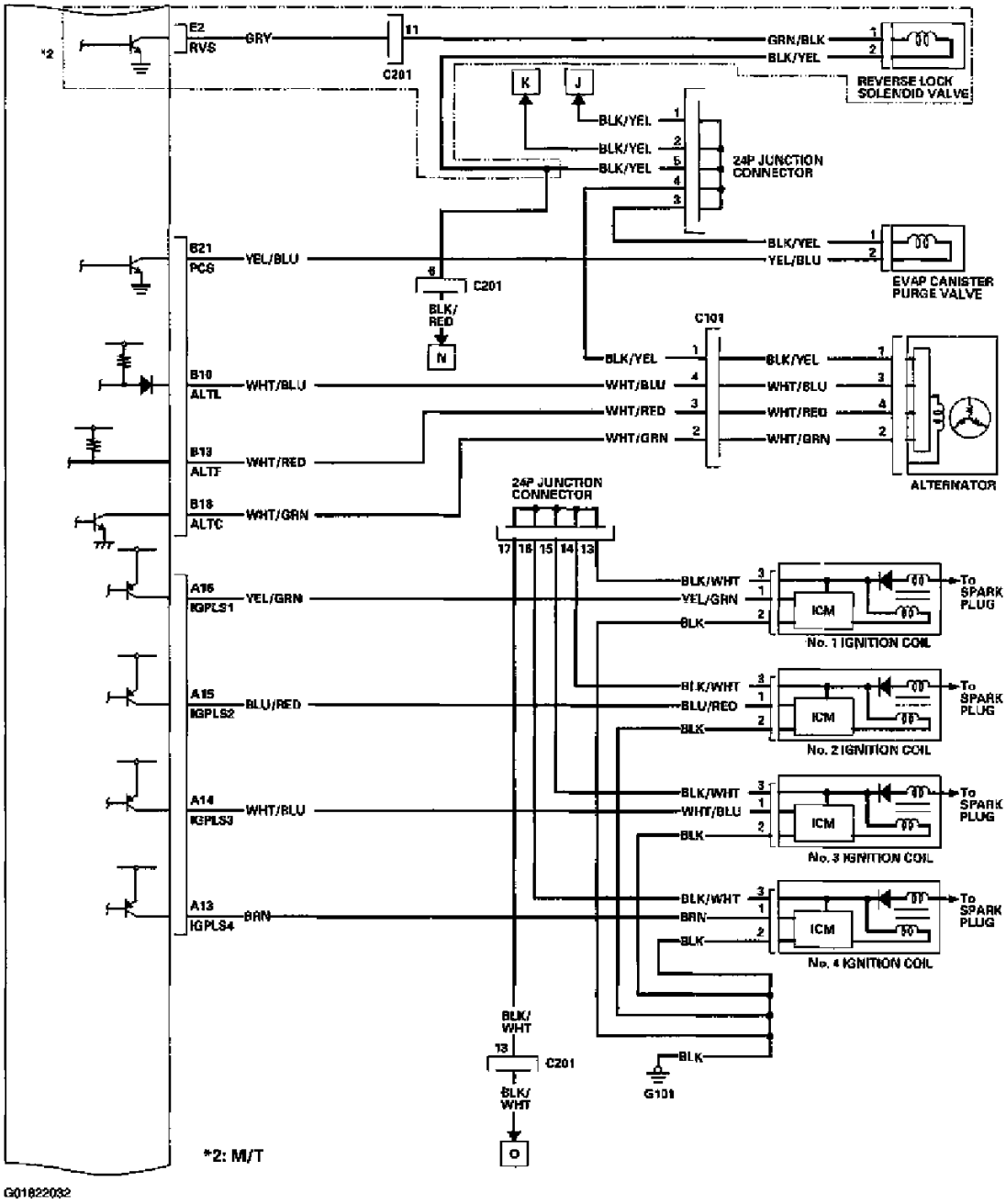


Fig. 64: Evaporative Emission (EVAP) System Wiring Diagram (4 Of 11)

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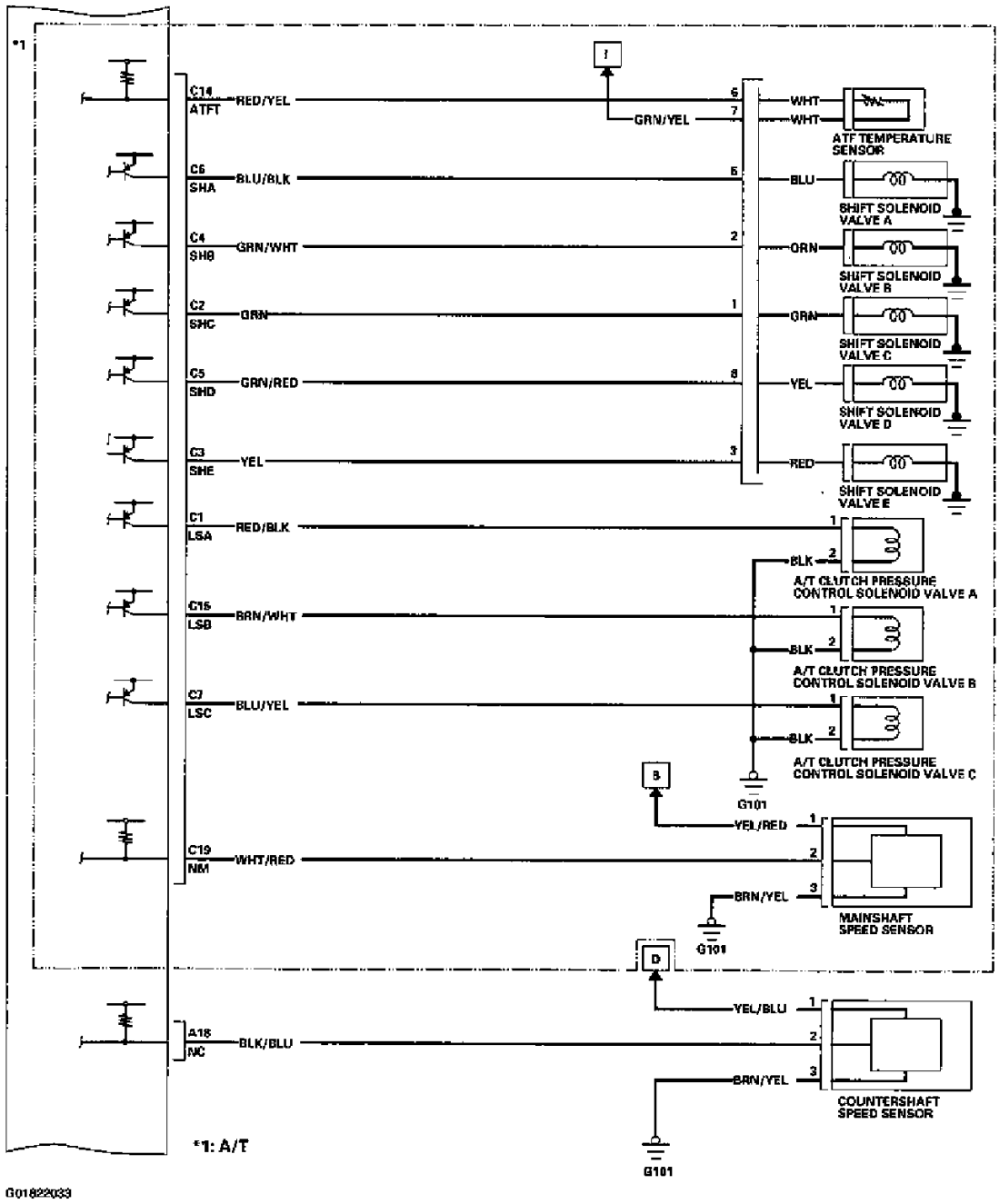


Fig. 65: Evaporative Emission (EVAP) System Wiring Diagram (5 Of 11)

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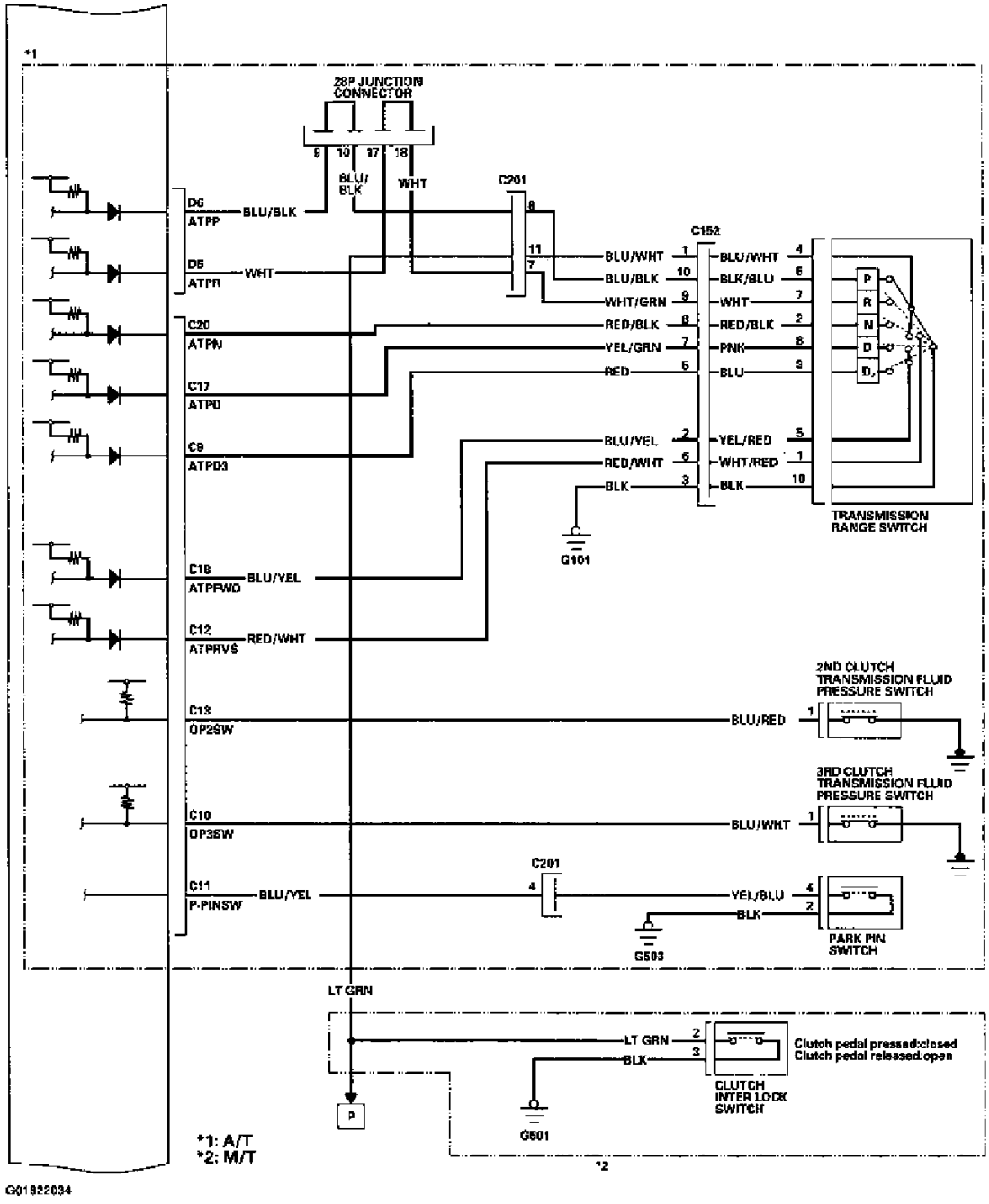


Fig. 66: Evaporative Emission (EVAP) System Wiring Diagram (6 Of 11)

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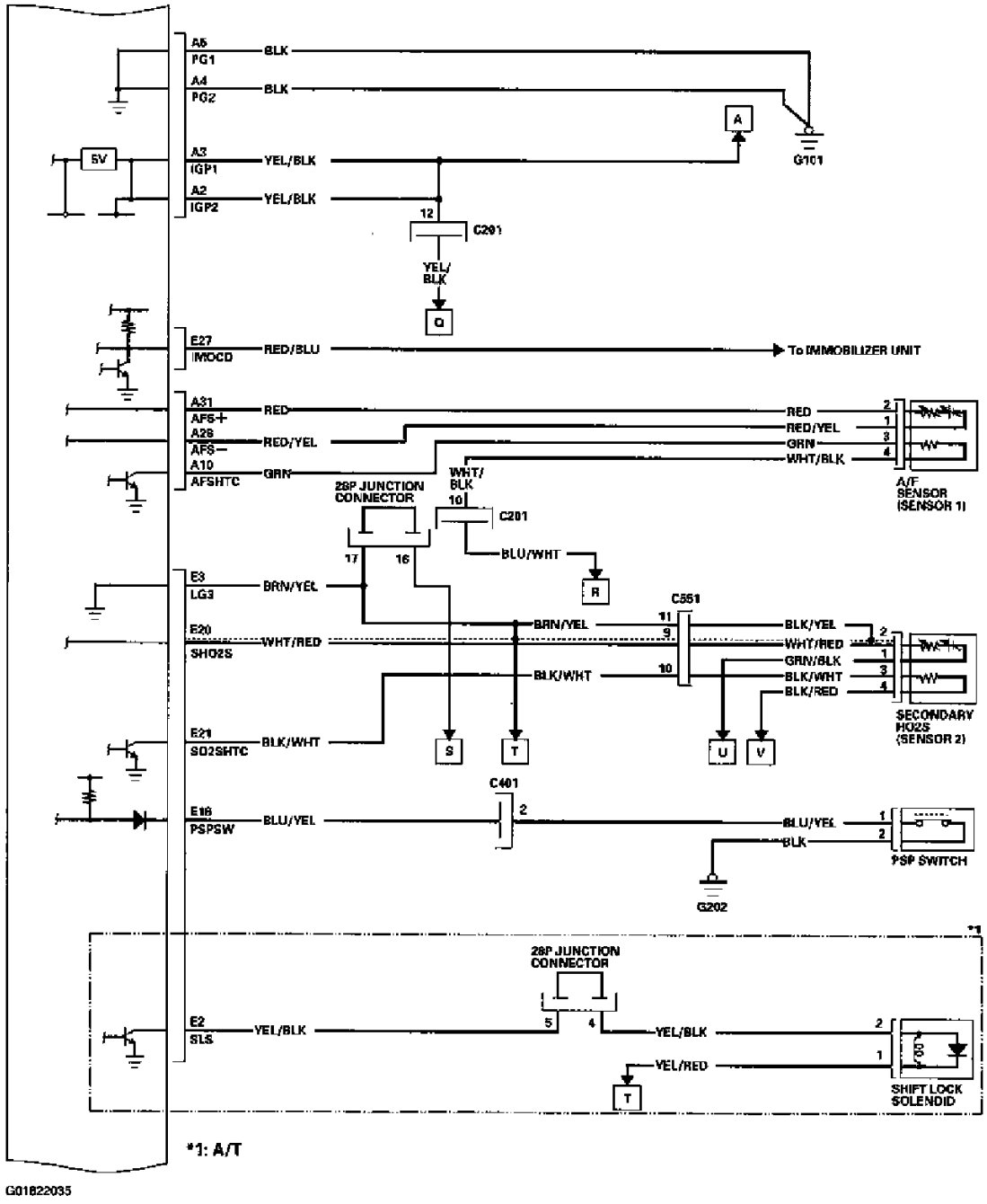


Fig. 67: Evaporative Emission (EVAP) System Wiring Diagram (7 Of 11)

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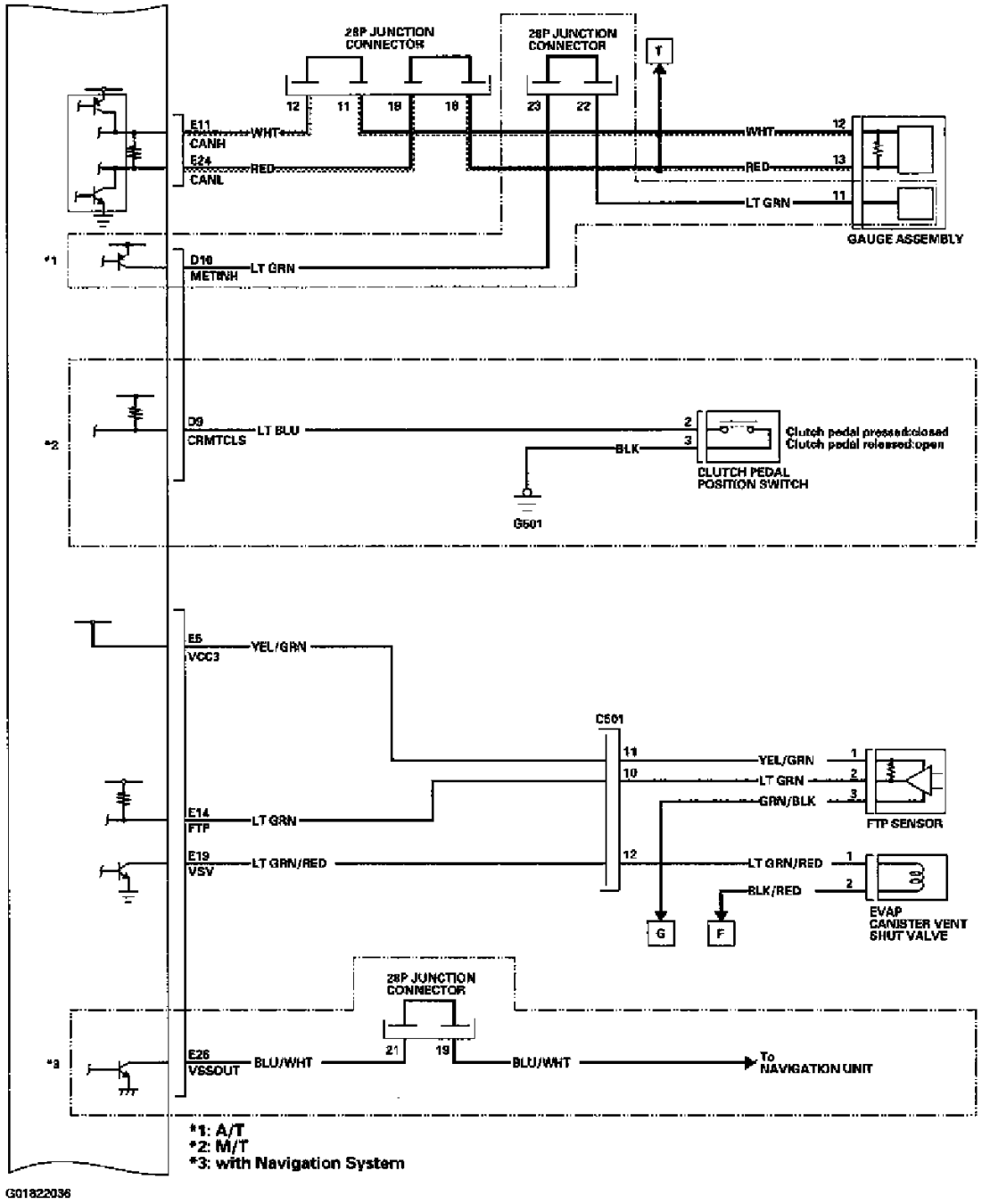


Fig. 68: Evaporative Emission (EVAP) System Wiring Diagram (8 Of 11)

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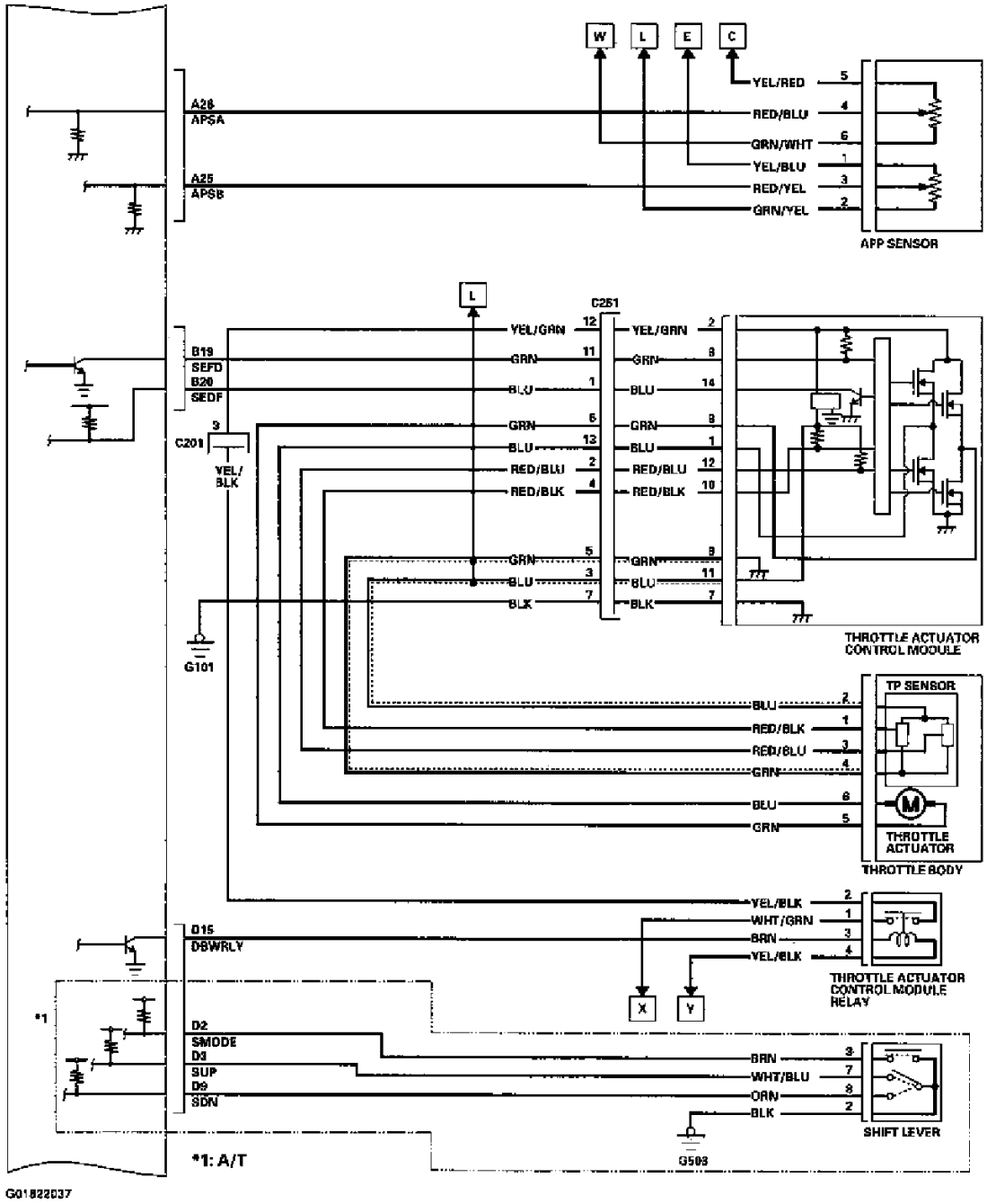


Fig. 69: Evaporative Emission (EVAP) System Wiring Diagram (9 Of 11)

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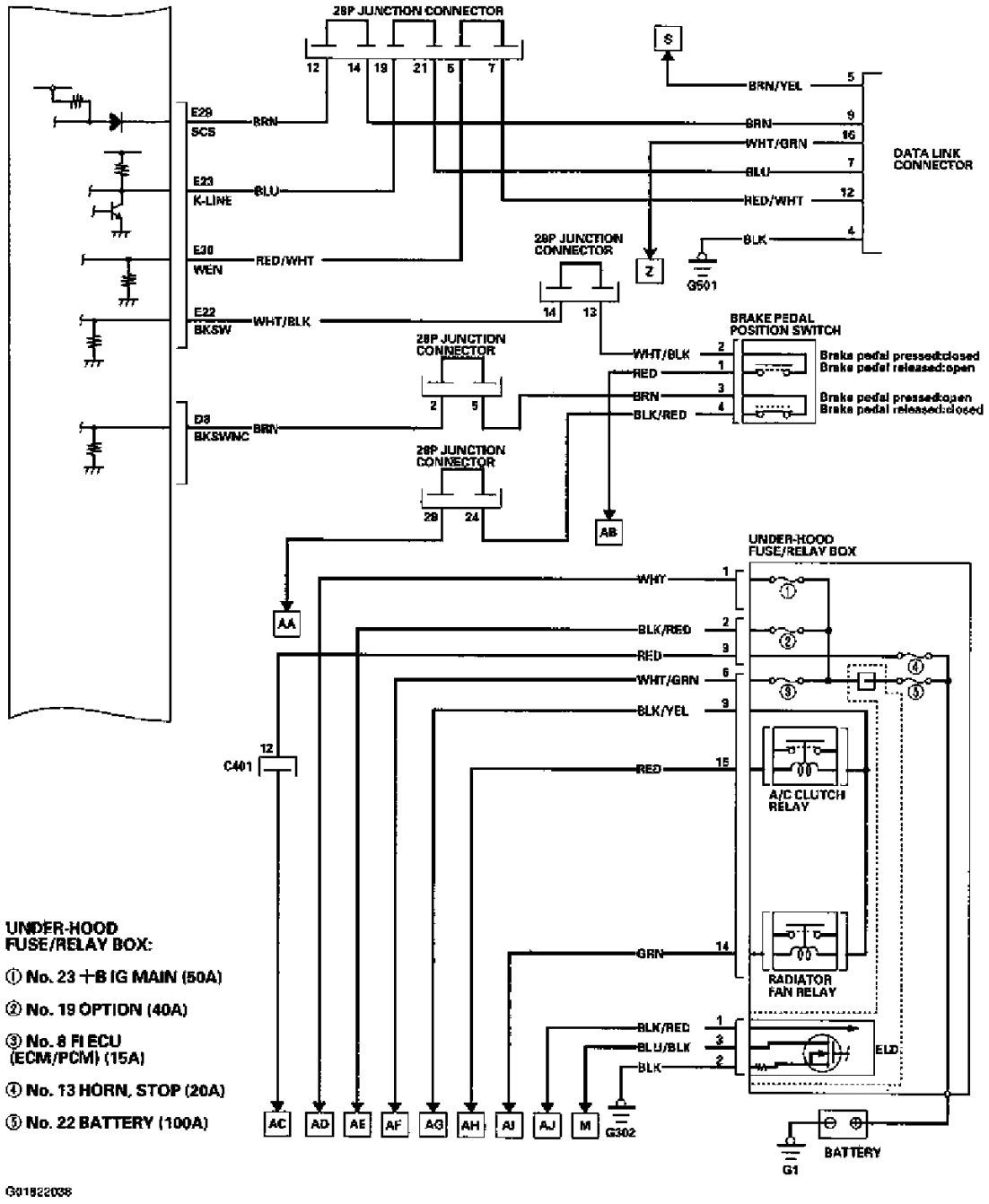


Fig. 70: Evaporative Emission (EVAP) System Wiring Diagram (10 Of 11)

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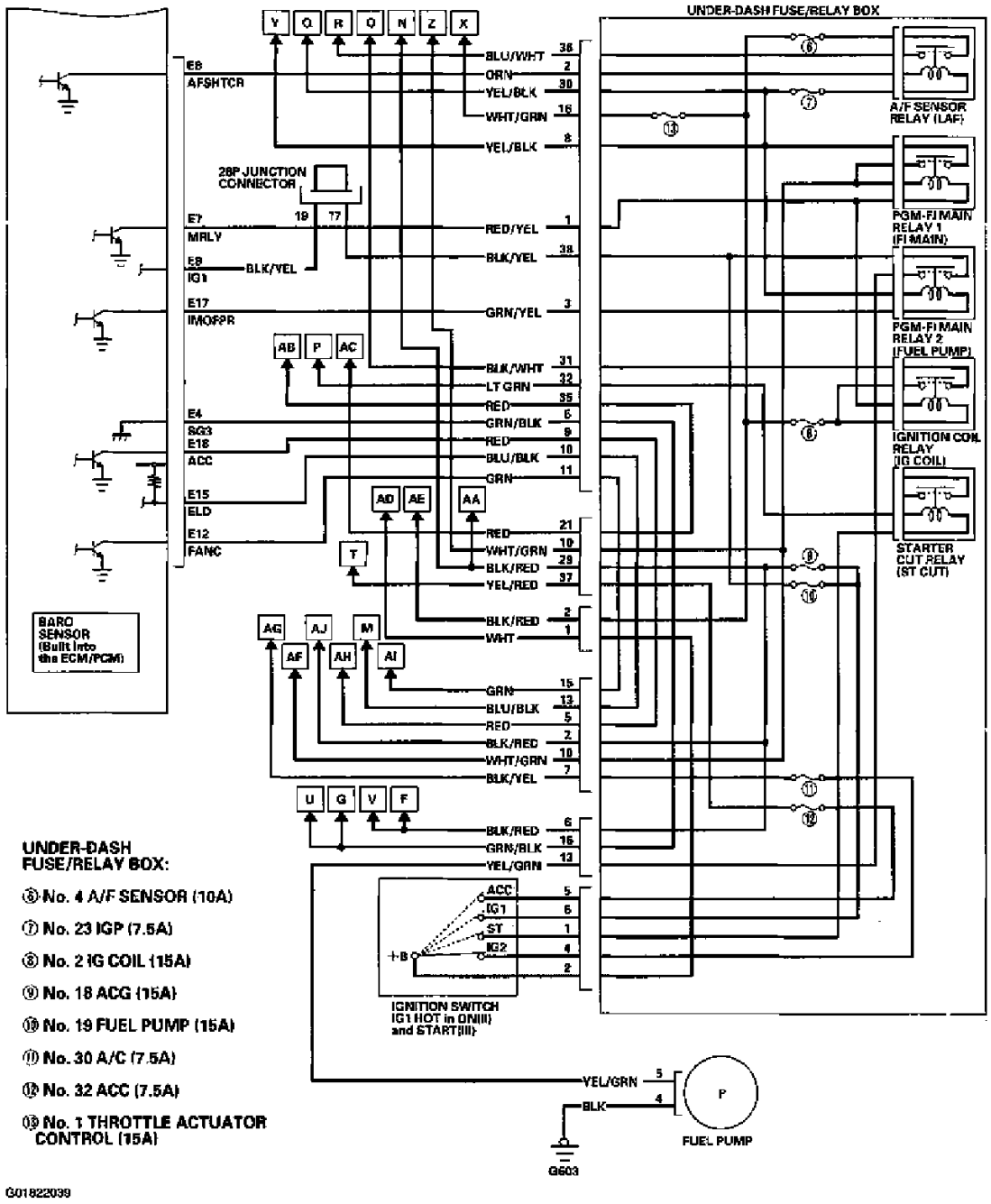


Fig. 71: Evaporative Emission (EVAP) System Wiring Diagram (11 Of 11)

HOW TO SET READINESS CODES

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM

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has been reset, these readiness codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15-20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see **OBD Status**). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

Catalytic Converter Monitor & Readiness Code

NOTE:

- **Do not turn the ignition switch off during the procedure.**
- **All readiness codes are cleared when the battery is disconnected or when the ECM/PCM is cleared with the HDS.**
- **Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.**
- **The readiness code will not switch to complete until all the enable criteria are met.**
- **If a fault in the secondary HO2S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.**

ENABLE CRITERIA

- ECT at 158° F (70° C) or higher.
- Intake air temperature (IAT) at 20° F (-7° C) or higher.
- Vehicle speed sensor (VSS) reads more than 25 mph (40 km/h).

PROCEDURE

1. Connect the HDS to the vehicle's data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (8 km), the readiness code should switch to completed.
4. If the readiness code is still not set to complete, check for a temporary DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

EVAPORATIVE EMISSIONS (EVAP) CONTROL SYSTEM MONITOR & READINESS CODE

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NOTE: All readiness codes are cleared when the battery is disconnected or when the ECM/PCM is cleared with the HDS.

ENABLE CRITERIA

- Battery voltage is higher than 10.5 V.
- Engine at idle.
- ECT sensor between 176°F (80°C) and 212° F (100° C).
- MAP sensor less than 46.6 kPa (350 mm Hg, 14 in. Hg).
- Vehicle speed 0 mph (0 km/h).
- IAT sensor between 32° F (0° C) and 212° F (100° C).

PROCEDURE

1. Connect the HDS to the vehicle's data link connector (DLC).
2. Start the engine.
3. Select EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
   - If the functions are normal, readiness is complete.
   - If the functions are not normal, go to the next step.
4. If the readiness code is still not set to complete, check for a temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

AIR FUEL RATIO (A/F) SENSOR MONITOR & READINESS CODE

NOTE:
- **Do not turn the ignition switch off during the procedure.**
- **All readiness codes are cleared when the battery is disconnected or when the ECM/PCM is cleared with the HDS.**

ENABLE CRITERIA

ECT at 140° F (60° C) or higher.

PROCEDURE

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 5 seconds. After about 3.5 miles (5.6 km), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the Air Fuel Ratio (A/F) Sensor in the DTCs MENU with the HDS.
   - If the screen shows complete, readiness is complete.
   - If the screen shows not complete, go to the next step.

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4. Check for a temporary DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST Menu. Check the ECT in the ALL DATA LIST with the HDS. If the ECT is lower than 140° F (60° C), run the engine until it is higher than 140° F (60° C), then repeat the procedure.

AIR FUEL RATIO (A/F) SENSOR HEATER MONITOR READINESS CODE

NOTE: All readiness codes are cleared when the battery is disconnected or when the ECM/PCM is cleared with the HDS.

PROCEDURE

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.
2. If the readiness code is still not set to complete, check for a temporary DTC. If there is no DTC, repeat the procedure.

MISFIRE MONITOR & READINESS CODE

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

FUEL SYSTEM MONITOR & READINESS CODE

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

COMPREHENSIVE COMPONENT MONITOR & READINESS CODE

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

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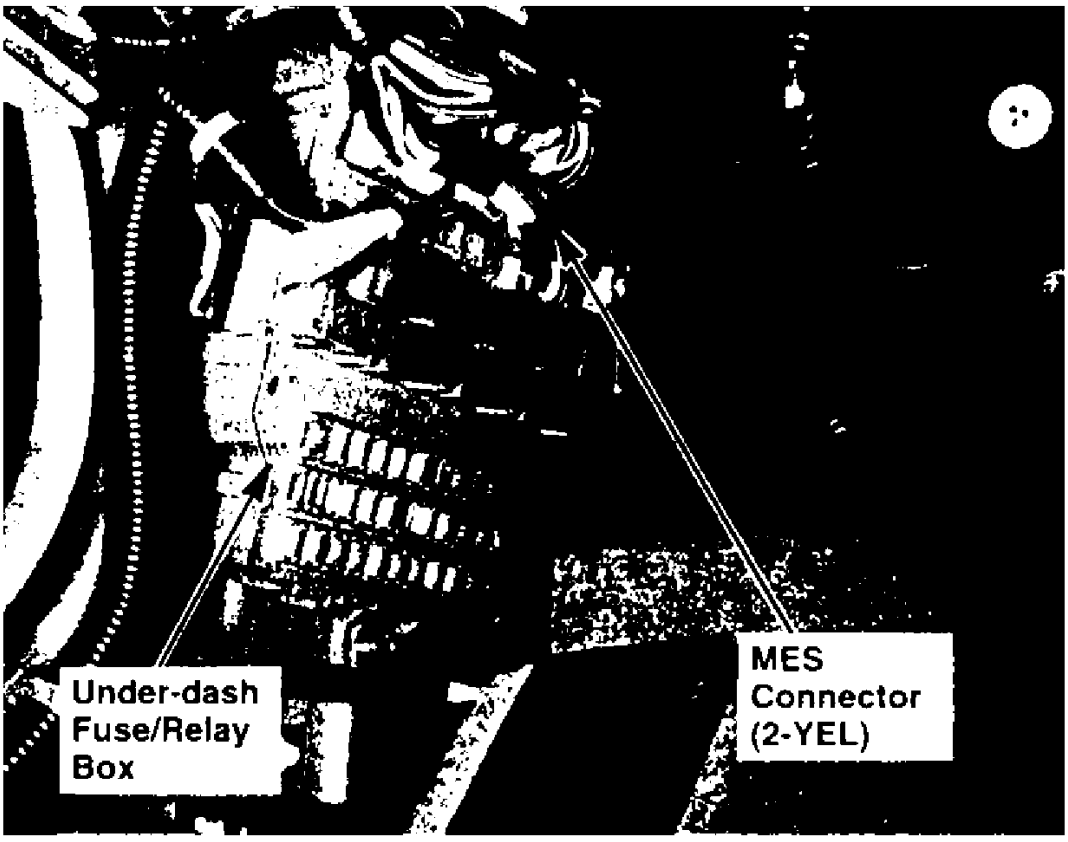
Fuses & Circuit Breakers - TSX

IDENTIFICATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See appropriate COMPUTER RELEARN PROCEDURES articles in GENERAL INFORMATION before disconnecting battery.

DRIVER'S UNDER-DASH FUSE/RELAY BOX

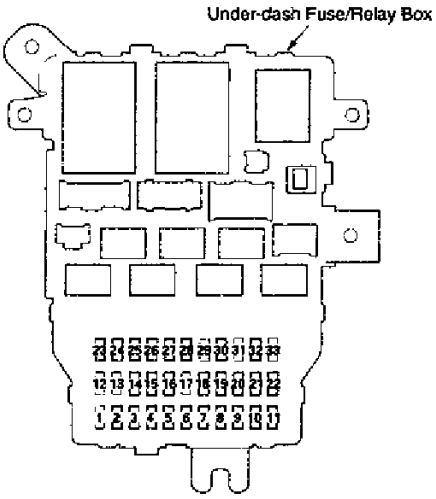
NOTE: Driver's under-dash fuse/relay box is located under driver's side of instrument panel. See Fig. 1 .



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Fig. 1: Locating Driver's Under-Dash Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fuse Number	Fuse Name	Amps	Component or Circuit Protected
1	DBW	15A	Throttle actuator control module relay
2	IG COIL	15A	Ignition coil relay
3	DAY LT	10A	DRL relay (Canada), MICU
4	LAF	10A	A/F sensor relay
5	AUDIO AMP	20A	Stereo amplifier
6	INTR LIGHT	10A	Ambient light, Audio Unit, Ceiling light, Driver's vanity mirror light, Driver's door courtesy light, Front passenger's vanity mirror light, Front passenger's door courtesy light, Individual map lights, Trunk light
7	BACK UP	10A	Gauge control module, Immobilizer control unit-receiver, MICU, Navigation display unit (Navigation), Navigation unit (Navigation), Wiper/washer switch
8	DOOR LOCK	20A	MICU
9	FR ACC SOCKET	15A	Accessory power socket relay
10	IG OPDS	7.5A	OPDS unit, SRS unit
11	IG WIPER	30A	Windshield wiper motor
12	—	—	Not used
13	—	—	Not used
14	DR P/SEAT (SLIDE)	20A	Driver's power seat adjustment switch
15	H/SEAT	20A	Seat heater relay
16	DR P/SEAT (REC)	20A	Driver's power seat adjustment switch
17	—	—	Not used
18	IG ACG	15A	Alternator, Brake pedal position switch, CMP Sensor A, ELD unit, Engine mount control solenoid valve, EVAP canister purge valve, EVAP canister vent shut valve, Reverse lockout solenoid (M/T), Secondary HO2S, VSA modulator-control unit

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Fig. 2: Identifying Driver's Under-Dash Fuse/Relay Box Components (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fuse Number	Fuse Name	Amps	Component or Circuit Protected
19	IG FUEL PUMP	15A	ECM/PCM, Immobilizer control unit-receiver, PGM-FI main relay 2
20	IG WASHER	7.5A	Windshield washer motor
21	IG METER	7.5A	Automatic dimming inside mirror, Back-up light switch (M/T), Gauge control module, MICU, Power window master switch, Relay module, Wiper/washer switch
22	IG SRS	10A	SRS unit
23	IGP	7.5A	A/F sensor relay
24	P/W RR L	20A	Left rear power window switch
25	P/W RR R	20A	Right rear power window switch
26	P/W AS	20A	Front passenger's power window switch
27	P/W DR	20A	Power window master switch
28	SUNROOF	20A	Moonroof close relay, Moonroof open relay
29	—	—	Not used
30	IG HAC	7.5A	A/C compressor clutch relay, A/C condenser fan relay, Blower motor relay, Climate control unit, Power mirror switch, Radiator fan relay, Rear window defogger relay, Recirculation control motor, Seat heater relay
31	—	—	Not used
32	ACC	7.5A	Accessory power socket relay, Audio unit, MICU, Navigation display unit (Navigation), Navigation unit (Navigation), Shift lock solenoid (A/T), Stereo Amplifier
33	HAC OP	7.5A	Option Connector

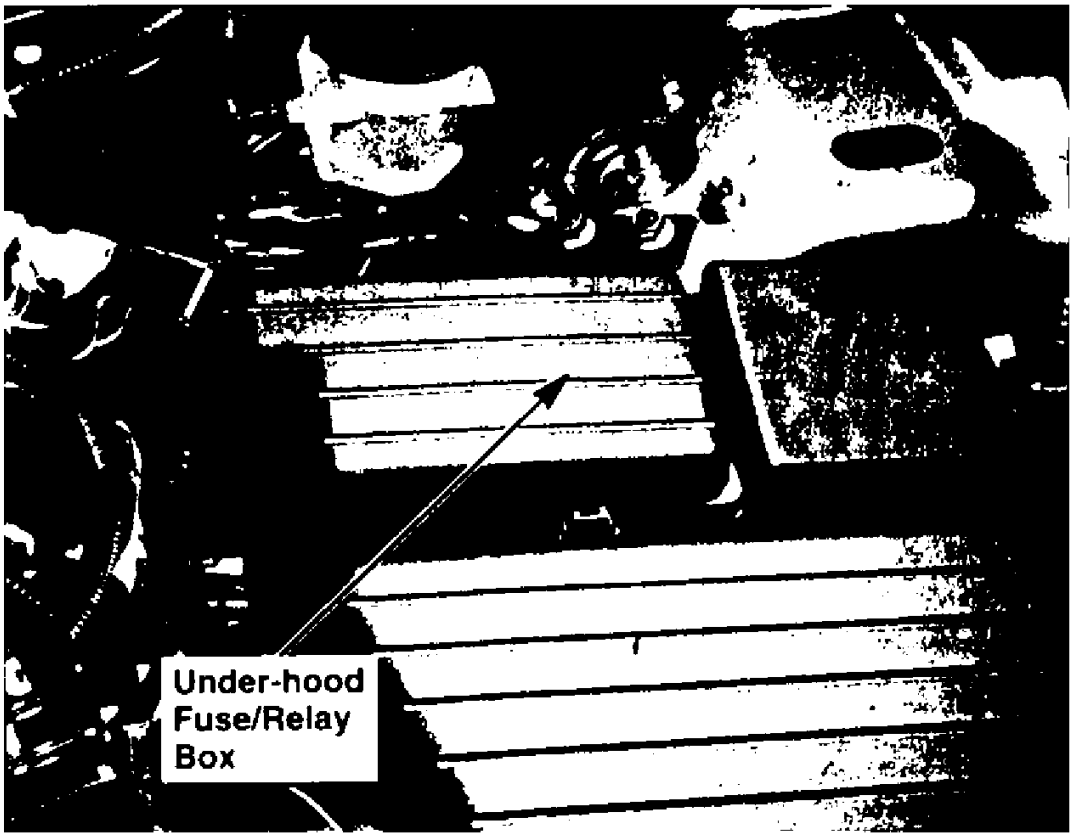
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Fig. 3: Identifying Driver's Under-Dash Fuse/Relay Box Components (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

UNDER-HOOD FUSE/RELAY BOX

NOTE: **Under-hood fuse/relay box is located in right side of engine compartment. See Fig. 4 .**

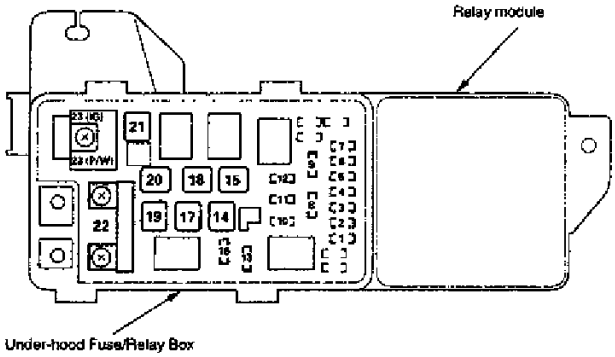
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Fig. 4: Locating Under-Hood Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fuse Number	Fuse Name	Amps	Component or Circuit Protected
1	L-H/L LO	15A	Left low beam headlight
2	RR DEFROSTER COIL	30A	Relay module
3	L-H/L HI	10A	Left high beam headlight
4	SMALL LIGHT	15A	Taillight relay
5	R-H/L HI	10A	Right high beam headlight
6	R-H/L LO	15A	Right low beam headlight
7	BACK UP	7.5A	Relay module
8	FI ECU	15A	PGM-FI main relay 1, DLC
9	CONDENSER FAN	20A	A/C compressor clutch relay, Condenser fan relay
10	FR FOG LIGHT	20A	Not used
11	COOLING FAN	20A	Radiator fan relay
12	—	—	Not used
13	HORN, STOP	20A	Brake pedal position switch, Horn relay, Ignition key switch/key light
14	RR DEFROSTER	40A	Rear window defogger relay
15	BACK UP, ACC	40A	Fuse 7 in under-hood fuse/relay box, Fuses 5, 6, 7, 8, and 9 in under-dash fuse/relay box
16	HAZARD	15A	Hazard warning switch, Turn signal/hazard relay
17	VSA MOTOR	30A	VSA modulator-control unit
18	VSA	40A	VSA modulator-control unit
19	OPTION	40A	Fuses 1, 2, 3, and 4 in under-dash fuse/relay box
20	OPTION	40A	Fuses 12, 13, 14, 15, 16, and 17 in under-dash fuse/relay box
21	HEATER MOTOR	40A	Blower motor relay
22	—	—	Not used
22	BATTERY	100A	Battery, Power distribution
23	B IG1 MAIN	50A	Fuse 33 in under-dash fuse/relay box, Ignition switch
23	POWER WINDOW	50A	Fuses 27 and 28 in under-dash fuse/relay box, Power window relay

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Fig. 5: Identifying Under-Hood Fuse/Relay Box Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fuse/Relay Boxes - TSX

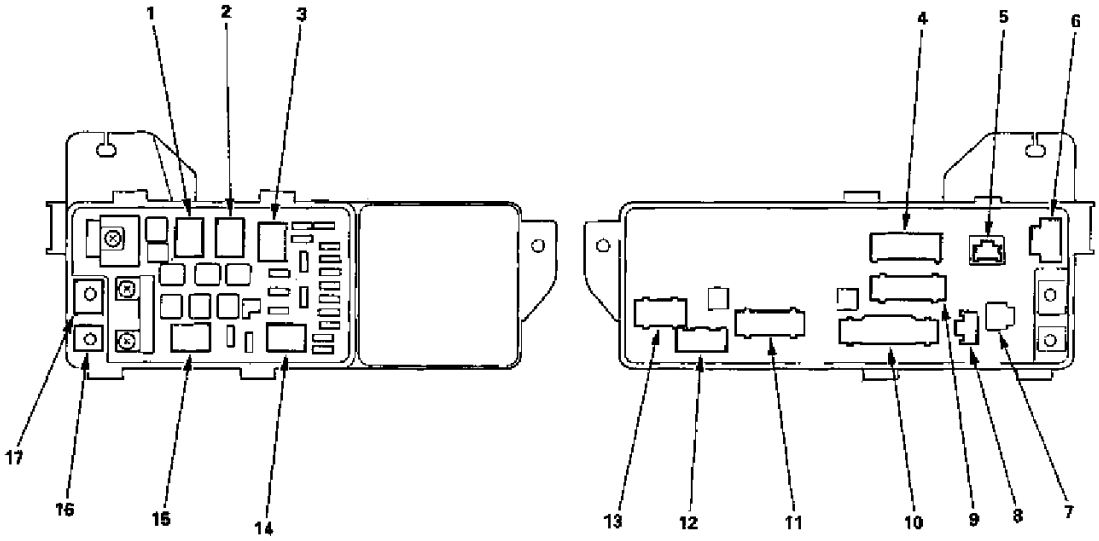
FUSE/RELAY BOXES

CONNECTOR TO FUSE/RELAY BOX INDEX

Socket	Ref	Terminal	Connects to
A/C compressor clutch relay	2	4	
A (ELD unit)	6	3	Engine compartment wire harness
B	7		Not used
Blower motor relay	1	4	
C	8	2	Engine compartment wire harness
Condenser fan relay	15	4	
D	4	9	Engine compartment wire harness
E	9	16	Engine compartment wire harness
F	10	20	Front engine compartment wire harness
G	6	2	Engine compartment wire harness
H	11	14	Front engine compartment wire harness
I	13	10	Engine compartment wire harness
J	12	5	Engine compartment wire harness
Radiator fan relay	14	4	
Rear window defogger relay	3	4	
T101	17		Starter subharness
T102	16		Starter subharness

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Fig. 1: Under-Hood Fuse/Relay Box Connector Index Table



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Fig. 2: Identifying Under-Hood Fuse/Relay Box Connectors

Socket	Ref	Terminal	Connects to
Daytime running lights relay (Canada)	1	5	Front engine compartment wire harness

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Fig. 3: Under-Hood Multi-Relay Box Connector Index Table (Canada)

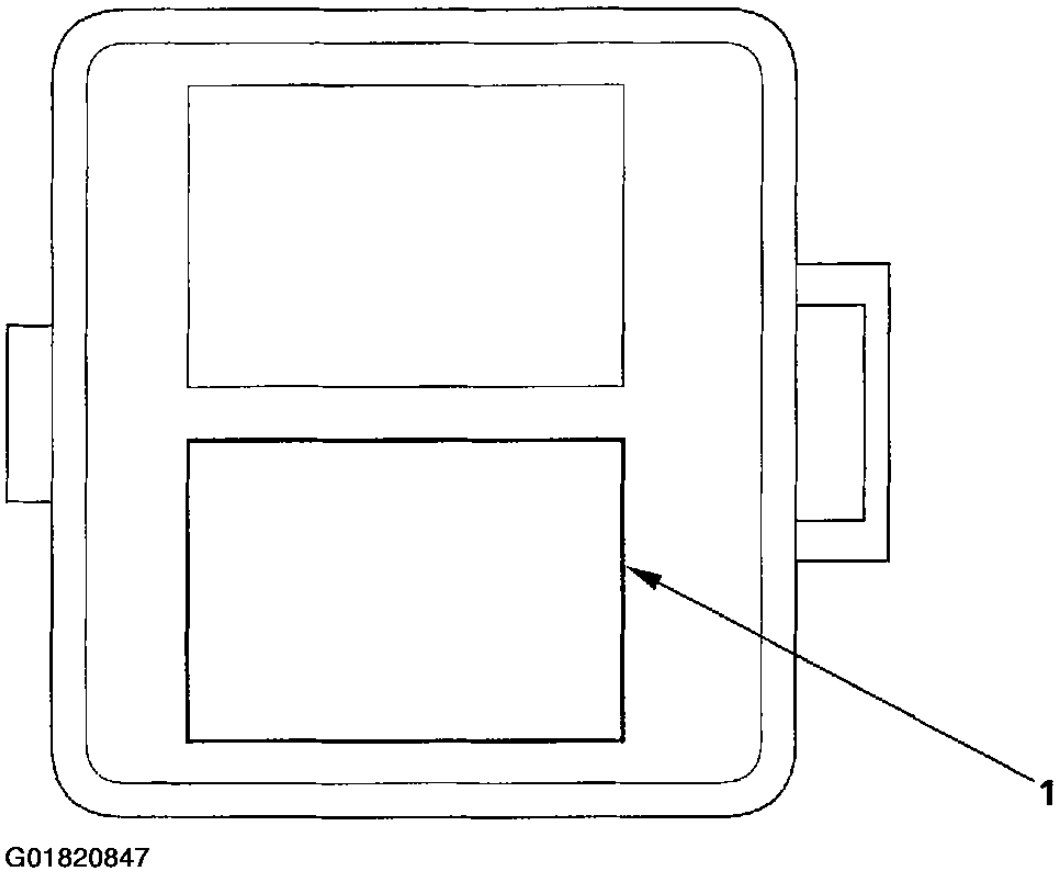


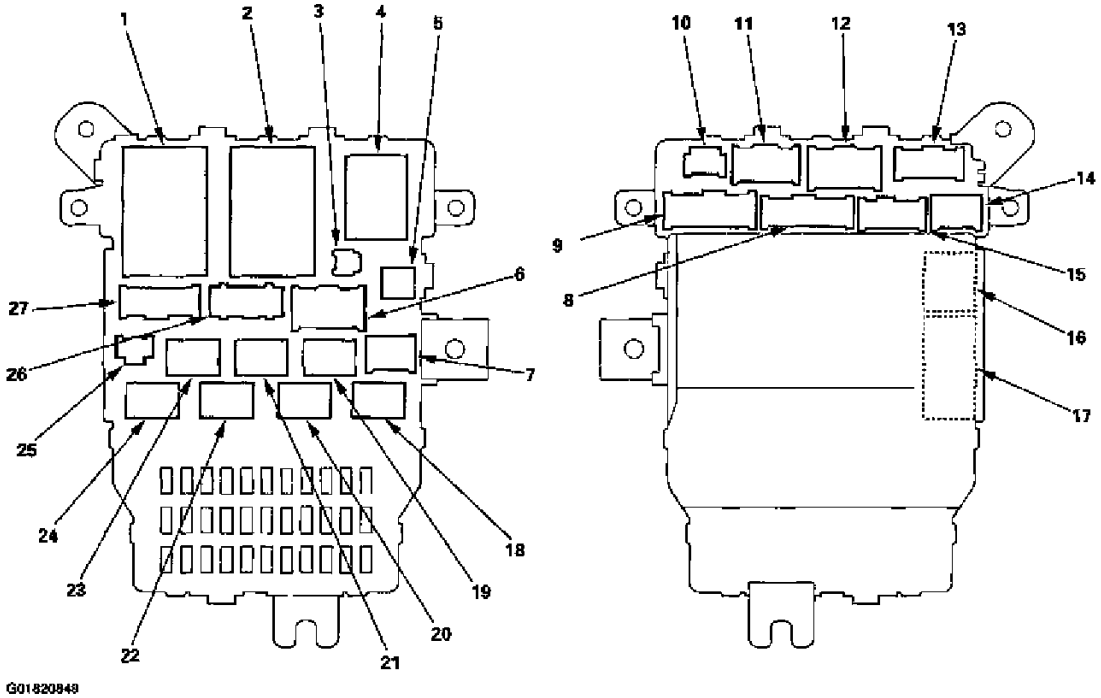
Fig. 4: Identifying Under-Hood Multi-Relay Box Connector (Canada)

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Socket	Ref	Terminal	Connects to
A	8	6	Dashboard wire harness
Accessory power socket relay	19	4	
A/F sensor relay	20	4	
B	12	6	Engine compartment wire harness
C	11	12	Engine compartment wire harness
D	13	17	Engine compartment wire harness
E	8	16	Floor wire harness
F	9	14	Floor wire harness
G	14	6	Not used
H	15	14	Floor wire harness
I	10	5	Roof wire harness
Ignition coil relay	23	4	
J	27	21	Driver's door subharness
K	26	12	Driver's door subharness
M	25	3	MICS (MPCS) service check connector
N	2	45	Dashboard wire harness
P	17	30	Dashboard wire harness
PGM-FI main relay 1	21	4	
PGM-FI main relay 2	24	4	
Power window relay	22	4	
Q	16	14	Dashboard wire harness
R	3	2	Dashboard wire harness
S	5	2	Dashboard wire harness
Starter cut relay	18	4	
T	7	6	Optional connector
Turn signal/hazard relay	4	6	
X	1	39	Dashboard wire harness

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Fig. 5: Under-Dash Fuse/Relay Box Connector Index Table



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Fig. 6: Identifying Under-Dash Fuse/Relay Box Connectors

POWER DISTRIBUTION

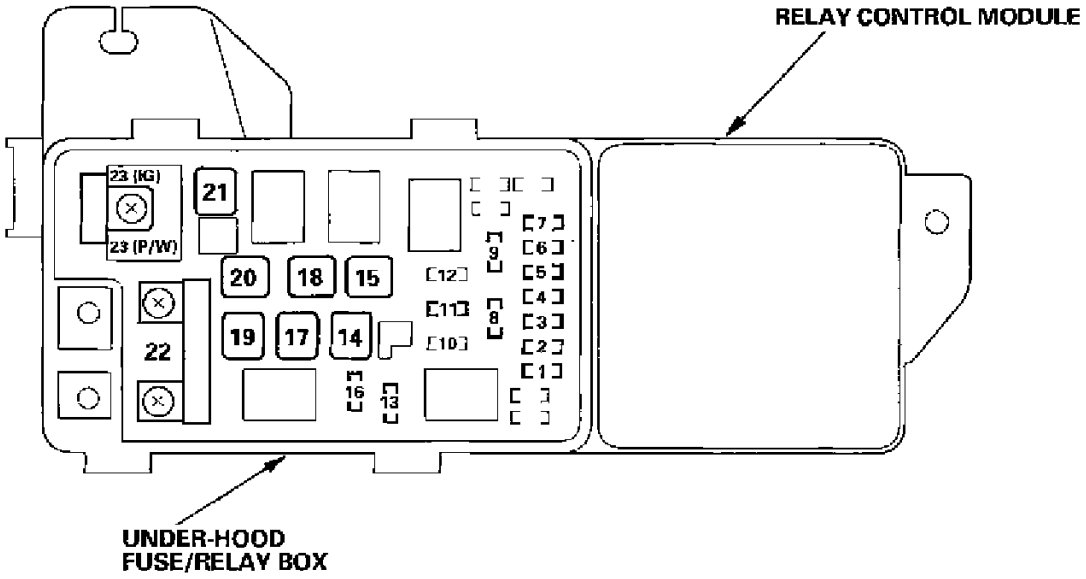
FUSE TO COMPONENTS INDEX

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Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	15A	RED/YEL	Left headlight (low beam)
2	30A	Internal connection	Relay control module (with climate control)
3	10A	WHT/YEL	Left headlight (high beam)
4	15A	RED/BLK	Audio-HVAC-display module light, A/T gear position console light, Center pocket light, Glove box light, Hazard warning light switch light, License plate lights, Moonroof switch light, Navigation unit, Relay control module, Rear side marker lights, Seat heater switch light, Taillights, VSA off switch light
5	10A	WHT/GRN	Right headlight (high beam)
6	15A	RED/GRN	Right headlight (low beam)
7	7.5A	Internal connection	Relay control module
8	15A	WHT/GRN	CKP sensor, CMP sensor B, ECM/PCM (2 wires), Injectors, PGM-FI main relay, Throttle actuator control module relay
9	20A	BLU/YEL	Condenser fan motor (via condenser fan relay)
		BLU/RED	A/C compressor clutch (via A/C compressor clutch relay)
10	——	——	Not used
11	20A	BLU/BLK	Radiator fan motor (via radiator fan relay)
12	——	——	Not used
13	20A	RED	Brake lights, ECM/PCM, High mount brake light, Ignition key light, Multiplex integrated control unit (MICU)
		Internal connection	Horns (via relay control module)
14	40A	BLK/YEL	Noise condenser, Rear window defogger (via rear window defogger relay)
15	40A	YEL	No. 5 through No. 9 fuses in the under-dash fuse/relay box
		Internal connection	No. 7 fuse in the under-hood fuse/relay box
16	15A	WHT/BLK	Turn signal/hazard relay
17	30A	WHT/RED	VSA modulator-control unit (MR + B)
18	40A	WHT	VSA modulator-control unit (+B FSR)
19	40A	BLK/RED	No. 1 through No. 4 fuses in the under-dash fuse/relay box
20	40A	BLU	No. 12 through No. 17 fuses in the under-dash fuse/relay box
21	40A	WHT/BLU	Blower motor (via blower motor relay)
22	100A	——	Battery, Power distribution
23	50A (IG)	WHT	Ignition switch (BAT)
	50A (P/W)	WHT/BLU	Power window relay, No. 24 through No. 28 fuses in the under-dash fuse/relay box

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Fig. 7: Under-Hood Fuse/Relay Box Index Table



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Fig. 8: Identifying Under-Hood Fuse/Relay Box Components

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Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	15A	WHT/GRN	Throttle actuator control module (via throttle actuator control module relay)
2	15A	Fuse/relay box socket	Ignition coil (IG) relay
		BLK/WHT	Ignition coils (via ignition coil relay)
3	10A	RED/BLU	Daytime running lights relay (Canada)
4	10A	BLU/WHT	Air fuel ratio sensor (sensor 1)
5	20A	WHT/BLU	Stereo amplifier
6	10A	WHT/BLU	Ambient light Ceiling light, Audio unit, Courtesy lights, Homelink, Map light, Trunk light, Vanity mirror lights
7	10A	WHT/RED	Combination switch control unit, Gauge control module, Immobilizer control unit-receiver, Navigation display unit, Navigation unit
		Fuse/relay box socket	Multiplex integrated control unit (MICU)
8	20A	Fuse/relay box socket	Multiplex integrated control unit (MICU)
9	15A	WHT/RED	Front accessory power socket, Rear accessory power socket
10	7.5A	WHT	OPDS unit, SRS unit
11	30A	GRN	Windshield wiper motor
12	—	—	Not used
13	—	—	Not used
14	20A	WHT/BLU	Driver's power seat slide motor and front up-down motor
15	20A	RED/BLK	Seat heaters and seat heater switches indicator light
16	20A	WHT/RED	Driver's power seat recline motor and rear up-down motor
17	—	—	Not used
18	15A	BLK/RED	Alternator, CMP sensor A, ECM/PCM (via brake pedal position switch), ELD unit, Engine mount control solenoid valve, EVAP canister purge valve, EVAP vent shut solenoid valve, Reverse lockout solenoid valve (M/T), Secondary heated oxygen sensor, VSA modulator-control unit
19	15A	BLK/YEL	ECM/PCM, Immobilizer control unit-receiver
		YEL/GRN	Fuel pump (via PGM-FI main relay 2)
20	7.5A	YEL/GRN	Windshield washer motor
21	7.5A	YEL	Automatic inside dimming mirror, Back-up lights, Combination switch control unit, Door multiplex control unit, Multiplex integrated control unit (MICU), Gauge control module, Relay control module
22	10A	WHT/RED	SRS unit
23	7.5A	ORN	ECM/PCM (via A/F sensor relay)
24	20A	YEL/RED	Left rear power window motor
25	20A	YEL/BLU	Right rear power window motor
26	20A	GRN/BLK	Front passenger's power window motor
27	20A	GRN/WHT	Driver's power window motor
28	20A	GRN	Moonroof motor, Moonroof open/close relays
29	—	—	Not used
30	7.5A	BLK/YEL	A/C compressor clutch relay, Blower motor relay, Climate control unit (audio-HVAC display module), Condenser fan relay, Power mirror defoggers (Canada), Power mirror actuator, Radiator fan relay, Recirculation control motor, Seat heater relay
31	—	—	Not used
32	7.5A	YEL/RED	Accessory power socket relay, Audio unit (audio-HVAC display module), Navigation display unit (audio-HVAC display module), Navigation unit, Shift lock solenoid (A/T), Stereo amplifier
		Fuse/relay box socket	Multiplex integrated control unit (MICU)
33	—	—	Not used

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Fig. 9: Under-Dash Fuse/Relay Box Index Table

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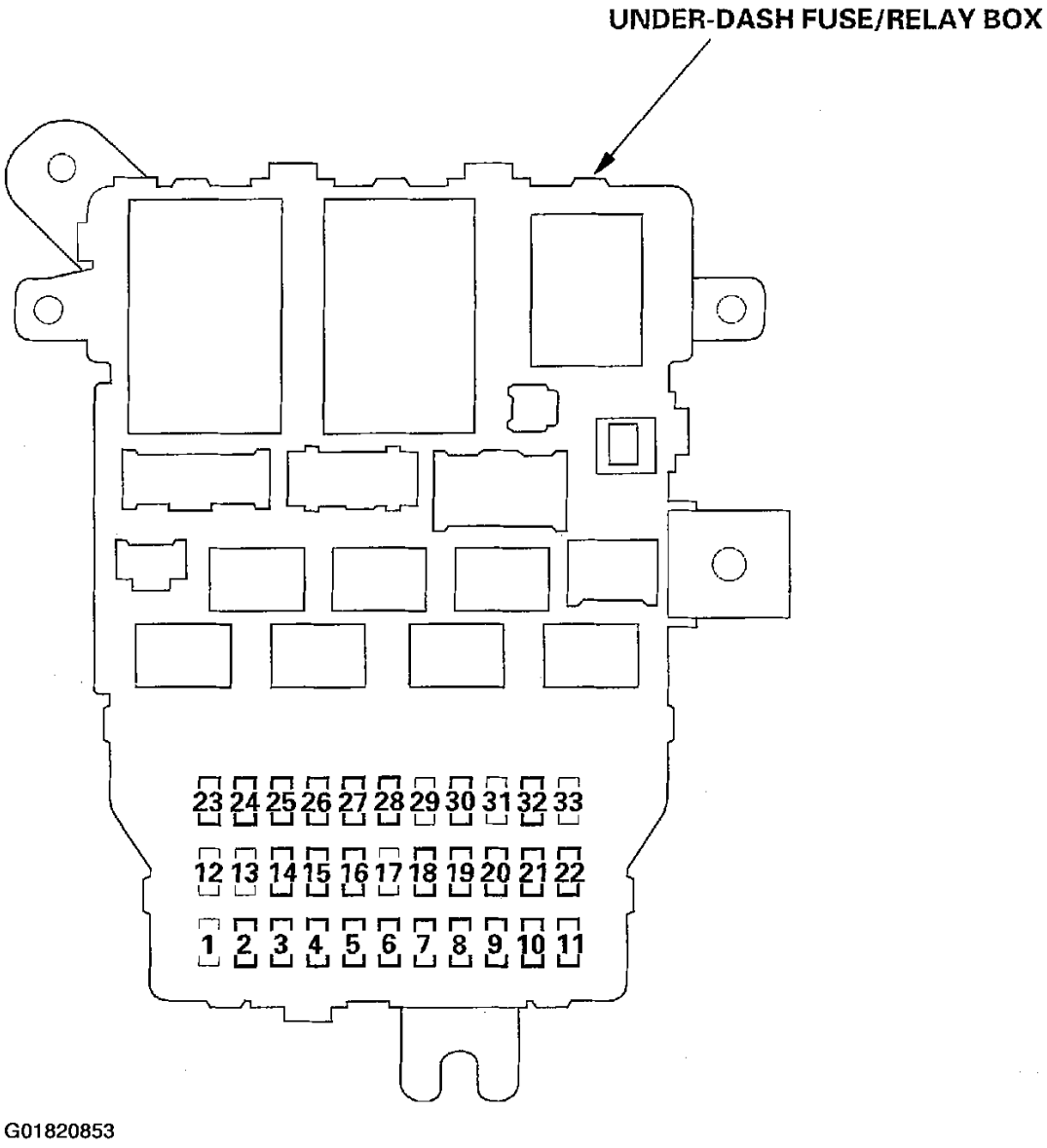


Fig. 10: Identifying Under-Dash Fuse/Relay Box Components

UNDER-HOOD FUSE/RELAY BOX

REMOVAL & INSTALLATION

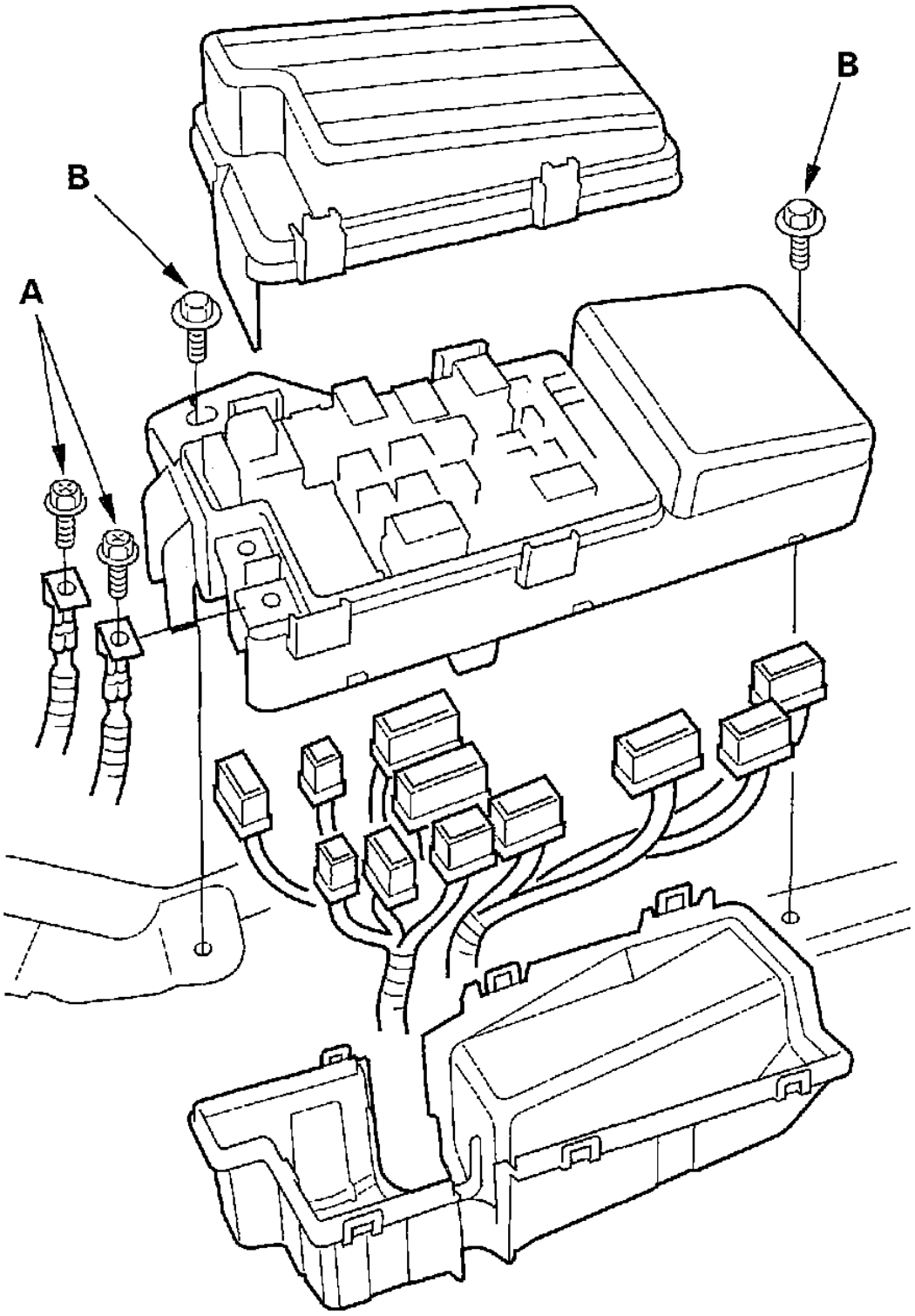
Removal

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least 3 minutes.

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3. Remove the under-hood multi-relay box (Canada) from the under-hood fuse/relay box.
4. Remove the screws (A) from the alternator and battery cable terminals.
5. Remove the two mounting bolts (B) from the under-hood fuse/relay box.
6. Remove the under cover from the under-hood fuse/relay box.
7. Disconnect the connectors from the under-hood fuse/relay box.

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Fig. 11: Removing The Under-Hood Fuse/Relay Box

Installation

1. Connect the connectors to the under-hood fuse/relay box, then install the under-hood fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Connect the both positive cable and negative cable to the battery.
4. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
5. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
6. Enter the anti-theft codes for the radio and navigation system, then enter the customer's radio station presets.
7. Confirm that all systems work properly.

DTC TROUBLESHOOTING

DTC TROUBLESHOOTING INDEX

DTC	Description
B1055	Relay Control Module Lost Communication With MICU
B1056	Relay Control Module Lost Communication With MICU
B1057	Relay Control Module Lost Communication With MICU (Door Switch Message)
B1058	Relay Control Module Lost Communication With Door Multiplex Control Unit (Door Lock Switch Message)
B1059	Relay Control Module Lost Communication With Door Multiplex Control Unit (Panic Message)
B1060	Relay Control Module Lost Communication With Gauge Control Module (VSP/NE Message)
B1061	Relay Control Module Lost Communication With Gauge Control Module (A/T Message)
B1062	Relay Control Module Lost Communication With Combination Switch Control Unit (Headlight Switch Message)
B1063	Relay Control Module Lost Communication With Combination Switch Control Unit (Wiper Switch Message)

DTC B1055, B1056, B1057, B1058, B1059, B1060, B1061, B1062 & B1063: Relay Control Module Lost Communication

1. Clear the DTCs using the Honda Diagnostic System (HDS).
2. Cycle the ignition switch OFF then ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1055, B1056, B1057, B1058, B1059, B1060, B1061, B1062 and/or B1063 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the F-CAN communication line is OK at this time.
4. Check for DTCs other than those listed above.

   Are any other DTCs present?

   YES: Go to step 5.

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NO: Perform Relay Control Module Input Test (see **RELAY CONTROL MODULE INPUT TEST**).

5. Find the chart that contains at least one retrieved DTC in column A and one retrieved DTC in column B. Perform the input test for the ECU listed in that chart. See **Fig. 12** through **Fig. 15** . If no DTC from column B is found then continue to Relay Control Module input test.

A	B		ECU
B1055	B1105	B1159	MICU (see page 22-110)
B1056	B1106	B1255	
B1057	B1157		

G01820856

Fig. 12: Chart 1

A	B	ECU
B1058	B1006	Door Multiplex Control Unit (see page 22-114)
B1059	B1010	
	B1160	

G01820857

Fig. 13: Chart 2

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A	B		ECU
B1060 B1061	B1008 B1205	B1206 B1207	Gauge Control Module (see page 22-113)

G01820858

Fig. 14: Chart 3

A	B		ECU
B1062 B1063	B1007 B1109 B1155	B1156	Combination Switch Control Unit (see page 22-116)

G01820859

Fig. 15: Chart 4

UNDER-DASH FUSE/RELAY BOX

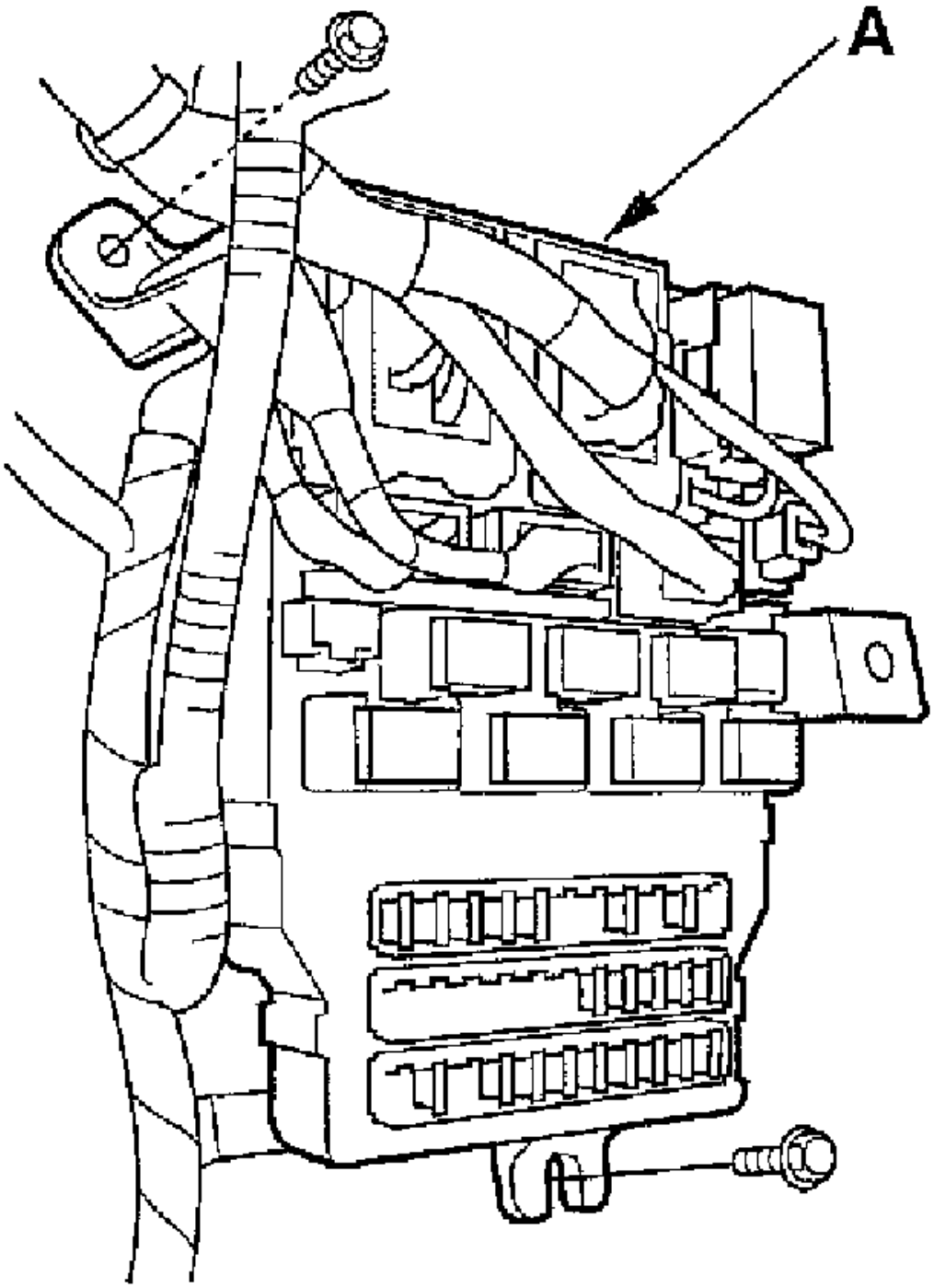
REMOVAL & INSTALLATION

SRS components are located in this area. Review the SRS component locations, precautions, and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

Removal

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least 3 minutes.
3. Remove the left front door sill trim and left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
4. Disconnect the connectors from the fuse side of the under-dash fuse/relay box (A).

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Fig. 16: Disconnecting The Connectors From The Fuse Side Of The Under-Dash Fuse/Relay Box

5. Remove the two mounting bolts and pull the fuse/relay box away from the body.
6. Disconnect the connectors and remove the under-dash fuse/relay box.

NOTE: Some SRS harness connectors are spring-loaded lock type (see AIR BAG RESTRAINT SYSTEMS).

Installation

1. Connect the connectors to the under-dash fuse/relay box, then install the under-dash fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Connect both the positive cable and negative cable to the battery.
4. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
5. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
6. Enter the anti-theft codes for the radio and navigation system, then enter the customer's radio station presents.
7. Confirm that all systems work properly.

RELAYS

POWER RELAY TEST

Use this chart to identify the type of relay, then do the test listed for it. See **Fig. 17** .

NOTE: For the turn signal/hazard relay input test, see TURN SIGNAL/HAZARD RELAY INPUT TEST).

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Relay	Test
A/C compressor clutch relay	Normally-open type
Accessory power socket relay	
Blower motor relay	
Condenser fan relay	
Ignition coil relay	
Air fuel ratio sensor relay	
PGM-FI main relay 1, 2	
Power window relay	
Radiator fan relay	
Rear window defogger relay	
Starter cut relay	
Seat heater relay	
Throttle actuator control relay	
Daytime running lights relay (Canada)	Five-terminal type
Moonroof close relay	
Moonroof open relay	

G01820861

Fig. 17: Relay Identification Table

Normally-open type

Check for continuity between the terminals:

- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 4 terminals.
- There should be no continuity between the No. 1 and No. 2 terminals when power is disconnected.

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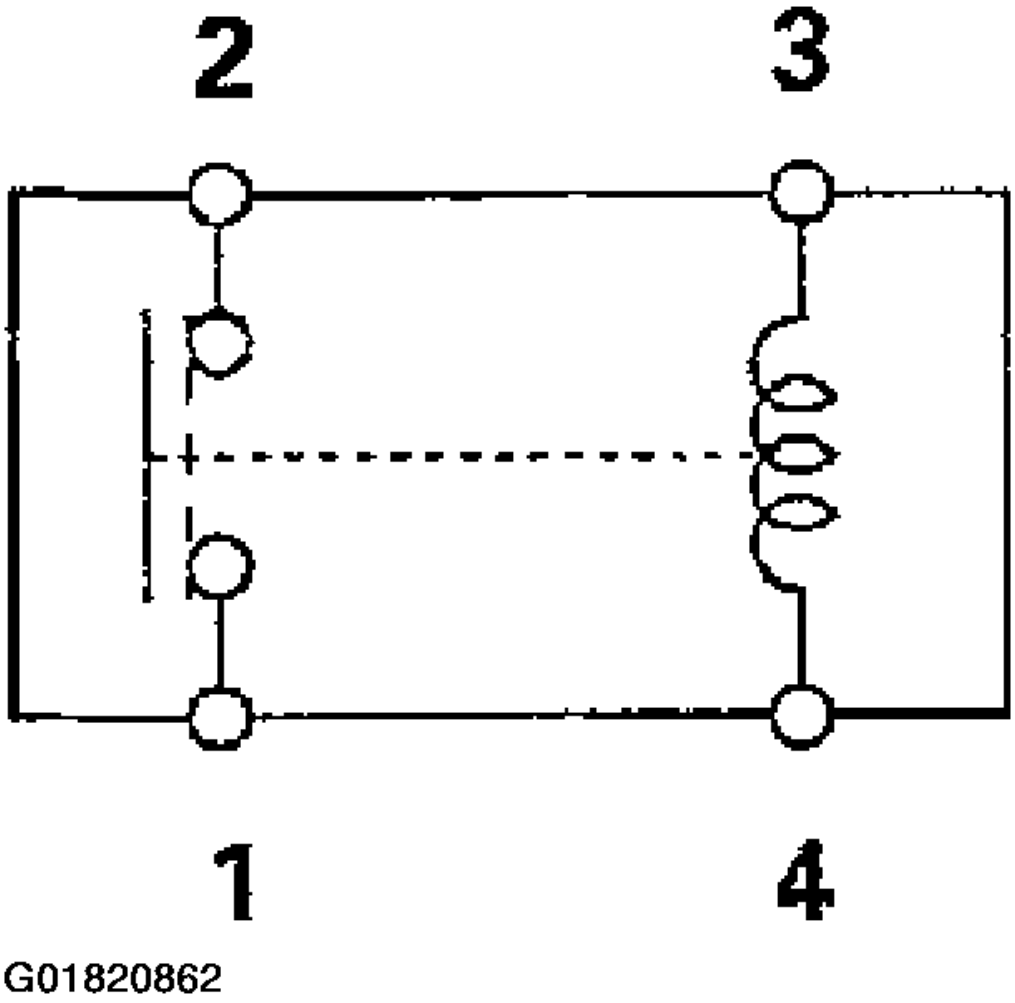


Fig. 18: Normally-Open Type Relay Schematic

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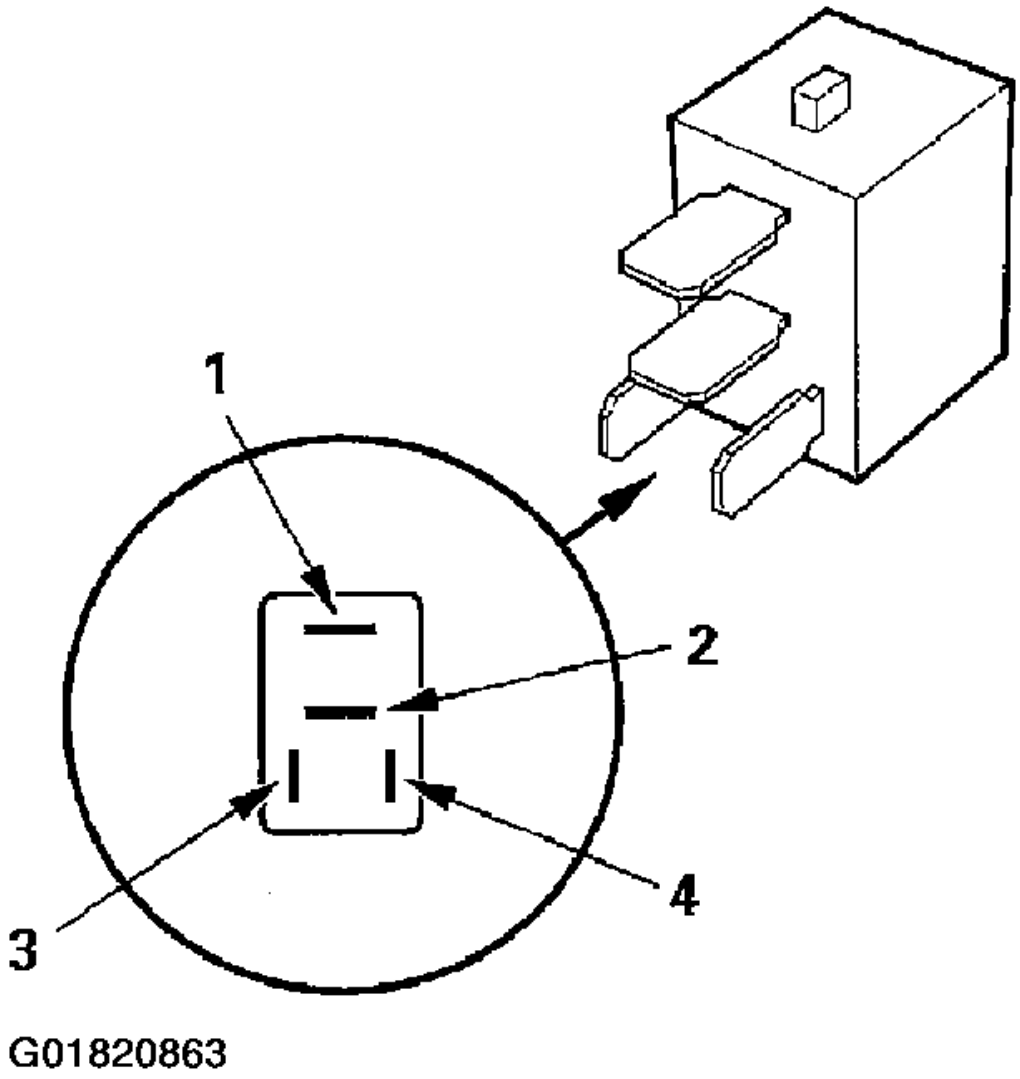


Fig. 19: Identifying Normally-Open Type Relay Terminals

Five-terminal type B

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 5 terminals.
- There should be continuity between the No. 1 and No. 4 terminals when power is disconnected.

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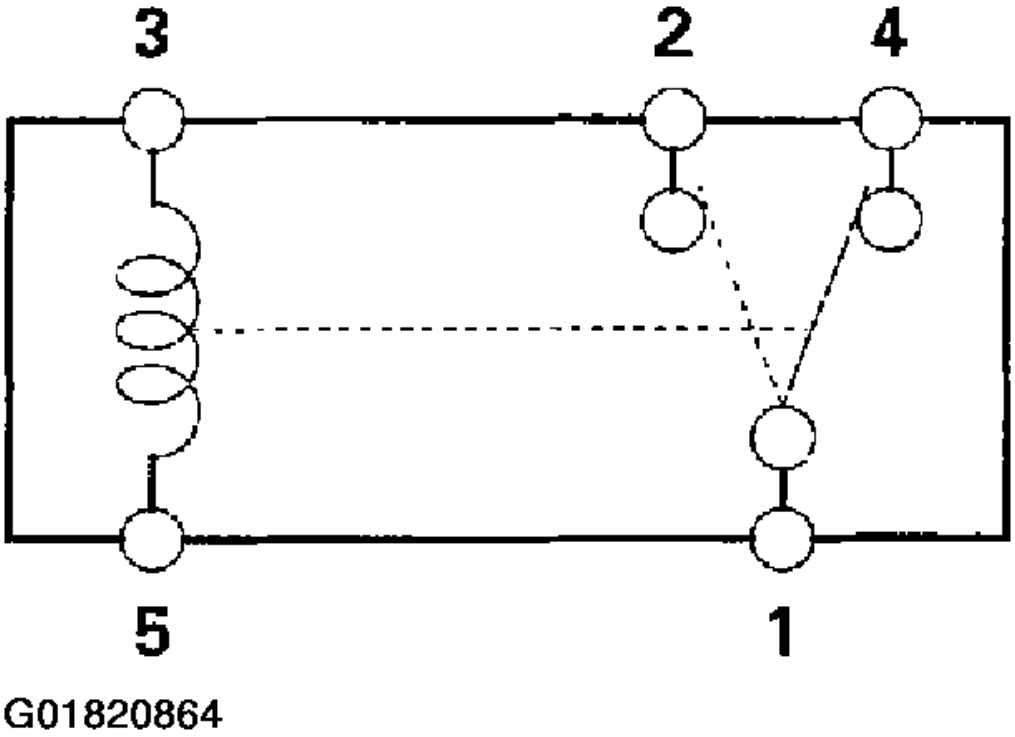


Fig. 20: Five-Terminal Type B Relay Schematic

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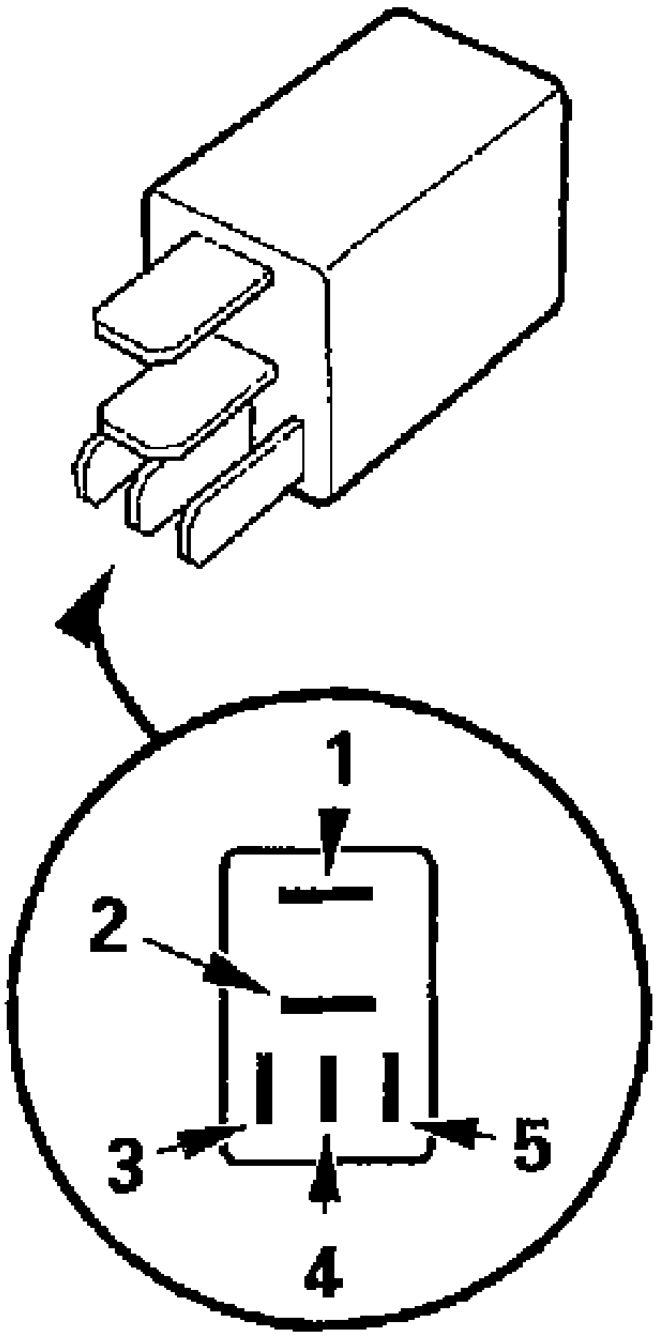


Fig. 21: Identifying Five-Terminal Type B Relay Terminals

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2004 ACCESSORIES & EQUIPMENT

Gauges & Indicators - TSX

GAUGES

COMPONENT LOCATION INDEX

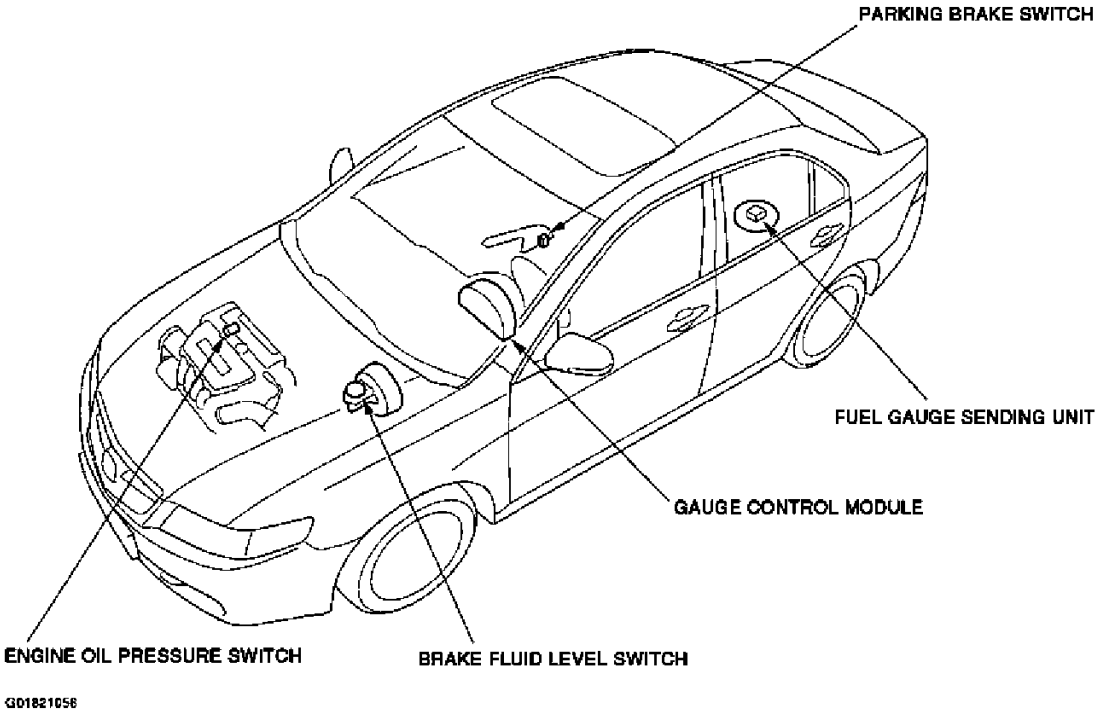


Fig. 1: Locating Gauges Components (1 Of 2)

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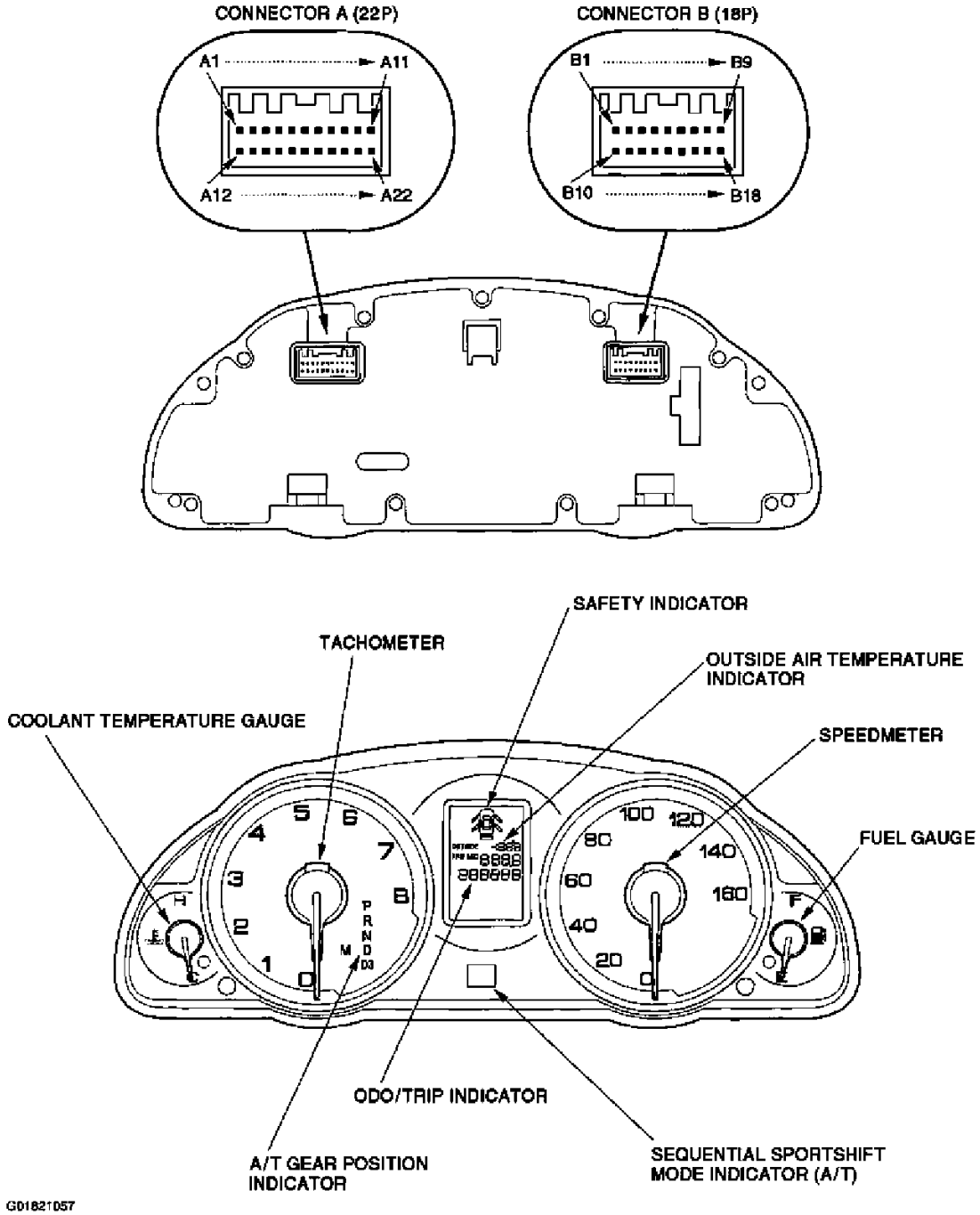


Fig. 2: Locating Gauges Components (2 Of 2)

SELF-DIAGNOSTIC PROCEDURE

Before troubleshooting the gauge system, refer to multiplex integrated control system B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

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The gauge control module has a self-diagnosis function.

- The beeper drive circuit check
- The indicator drive circuit check
- The switch input test
- The LCD segments check
- The gauges drive circuit check (Speedometer, Tachometer, Fuel gauge, Coolant temperature gauge)
- The communication line check (of the body-controller area network (B-CAN) communication line and the frame-controller area network (F-CAN) communication line between the gauges).

NOTE: Indicators are also controlled via the communication line.

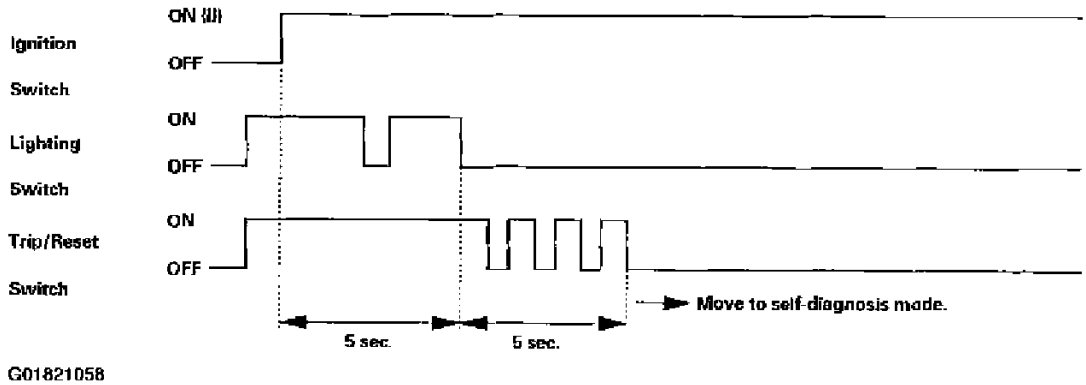
Entering the self-diagnosis function

Before doing the self-diagnosis function, check the No. 7 (10A) fuse and the No. 21 (7.5A) fuse in the under-dash fuse/relay box.

1. Push and hold the trip/reset button.
2. Turn the headlights ON.
3. Turn the ignition switch ON (II).
4. Within 5 sec., turn the headlights OFF, then ON and OFF again.
5. Within 5 sec., release the trip/reset button, and then push and release the button three times repeatedly.

NOTE:

- **While in the self-diagnosis mode, the dash lights brightness controller operates normally.**
- **While in the self-diagnosis mode, the trip/reset button is used to start the Beeper Drive Circuit Test and the Gauge Drive Circuit Check.**
- **If the vehicle speed exceeds 1.2 mph (2 km/h) or the ignition switch is turned OFF, the self-diagnosis mode ends.**



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Fig. 3: Self-Diagnosis Mode

The Beeper Drive Circuit Check

When entering the self-diagnosis mode, the beeper sounds five times.

The Indicator Drive Circuit Check

When entering the self-diagnosis mode, the following indicator lights blink:

- seat belt indicator
- charging system indicator
- low fuel indicator
- maintenance required indicator
- security indicator
- high beam indicator
- lights on indicator
- malfunction indicator lamp (MIL)
- A/T gear position indicator
- ABS indicator
- cruise main indicator
- safety indicators (doors and trunk)

Switch Input Check

After the intermittent beeper sounds at the initial stage of self-diagnosis, a beeper sounds continuously while any of the following switch inputs are switched from OFF to ON:

- cruise control main cruise set switch
- cruise cancel switch
- cruise resume switch
- VSA OFF switch
- parking brake switch

The LCD Segment Check

When entering the self-diagnosis mode, the odo/trip segments and outside air temperature segment blink five times.

The Gauge Drive Circuit Check

When entering the self-diagnosis mode, the speedometer, the tachometer, the fuel gauge, and the coolant temperature gauge needles sweep from the minimum position to maximum position, then return to the minimum position.

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NOTE: After the beeper stops sounding and the gauge needles return to the minimum position, pushing the trip/reset button starts the Beeper Drive Circuit Check (one beep) and the Gauge Drive Circuit Check again.

The check cannot be started again until the gauge needles return to the minimum position. If a needle fails to sweep or the beeper does not sound, replace the gauge control module.

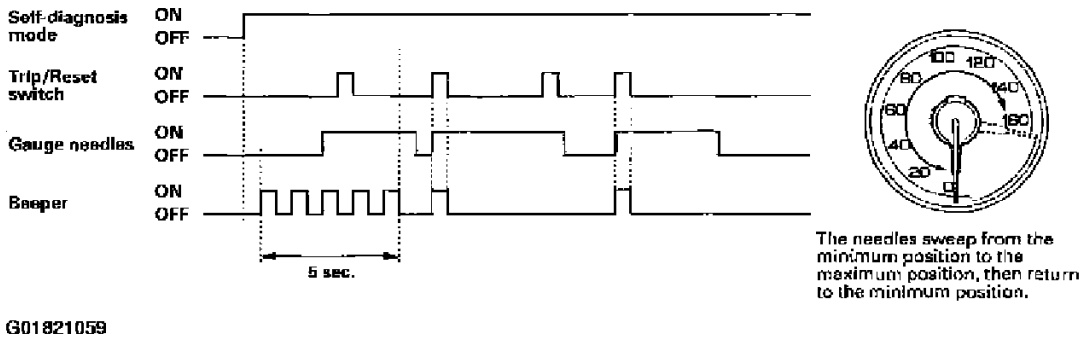


Fig. 4: The Gauge Drive Circuit Check

The Communication Line Check

While in the self-diagnosis mode, the Communication Line Check starts after the odo/trip LCD Segments Check. If all segments come on, the communication line is OK.

- If the word "Error 1" is indicated, there is a malfunction in the communication line between the gauge control module and the frame-controller area network (F-CAN). Check for DTCs in the ECM/PCM. If no DTCs are found, go to B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
- If the word "Error 2" is indicated, there is a malfunction in the communication line between the gauge control module and the body-controller area network (B-CAN). Go to B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
- If the word "Error 3" is indicated, there is a malfunction in the communication line between the gauge control module and the body-controller area network (B-CAN) and the frame-controller area network (F-CAN). Check for DTCs in the ECM/PCM. If no DTCs are found, go to B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

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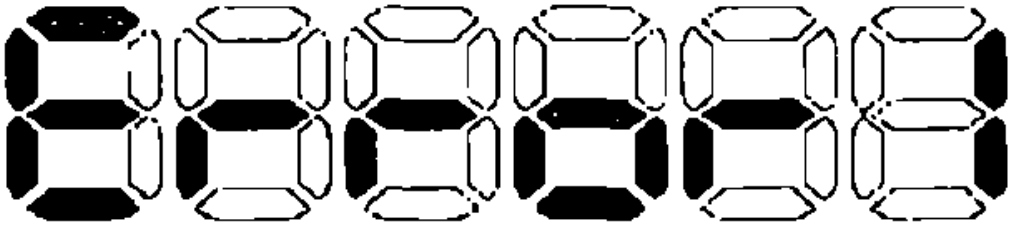
Normal:



G01821060

Fig. 5: Identifying Normal Message

Faulty (example Error 1):



G01821061

Fig. 6: Identifying Faulty Message

If any communication line errors are found, go to B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

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Ending the self-diagnosis function

Turn the ignition switch OFF.

NOTE: If the vehicle speed exceeds 1.2 mph (2 km/h), the self-diagnosis function ends.

CIRCUIT DIAGRAM

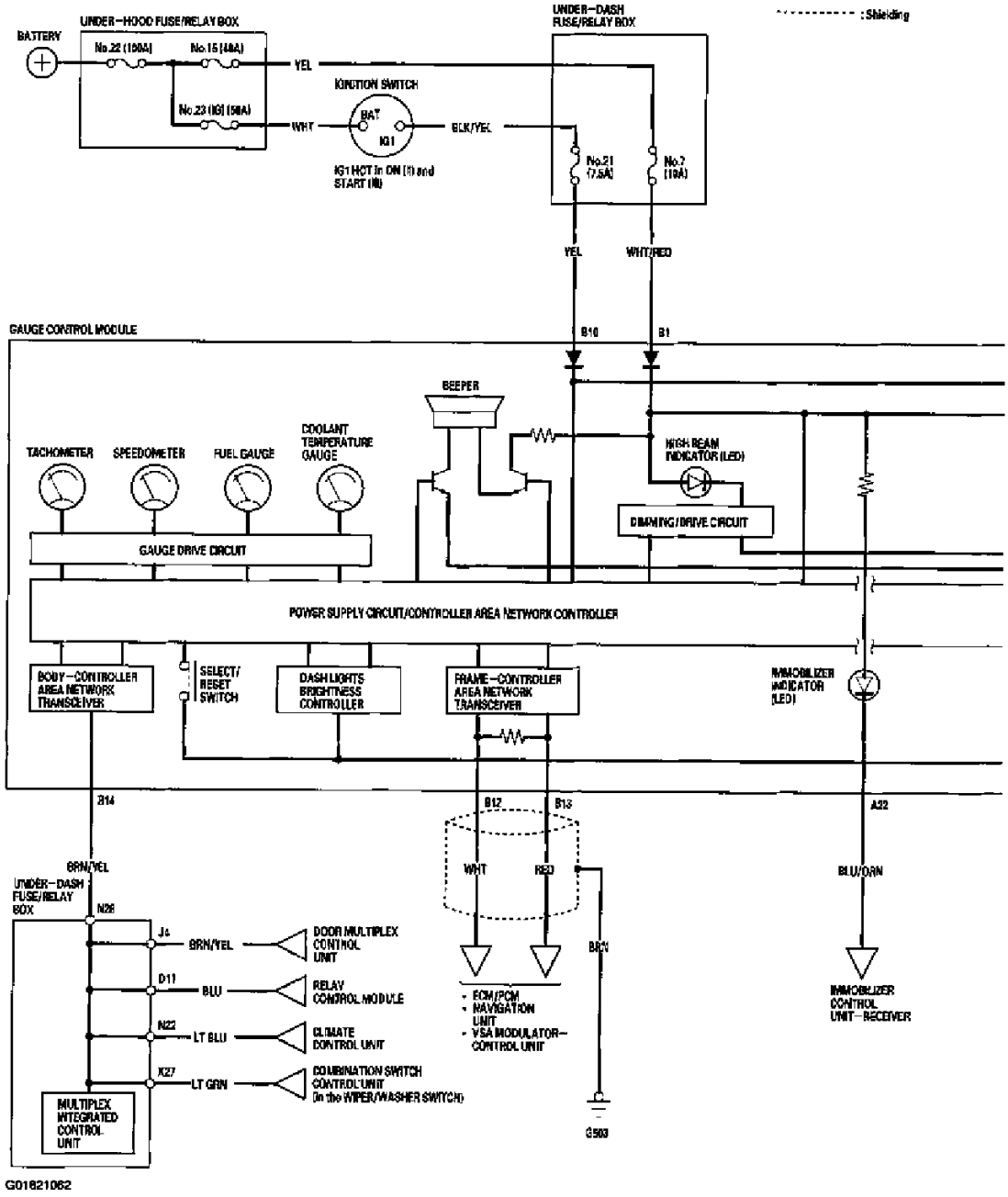


Fig. 7: Gauges Wiring Diagram (1 Of 7)

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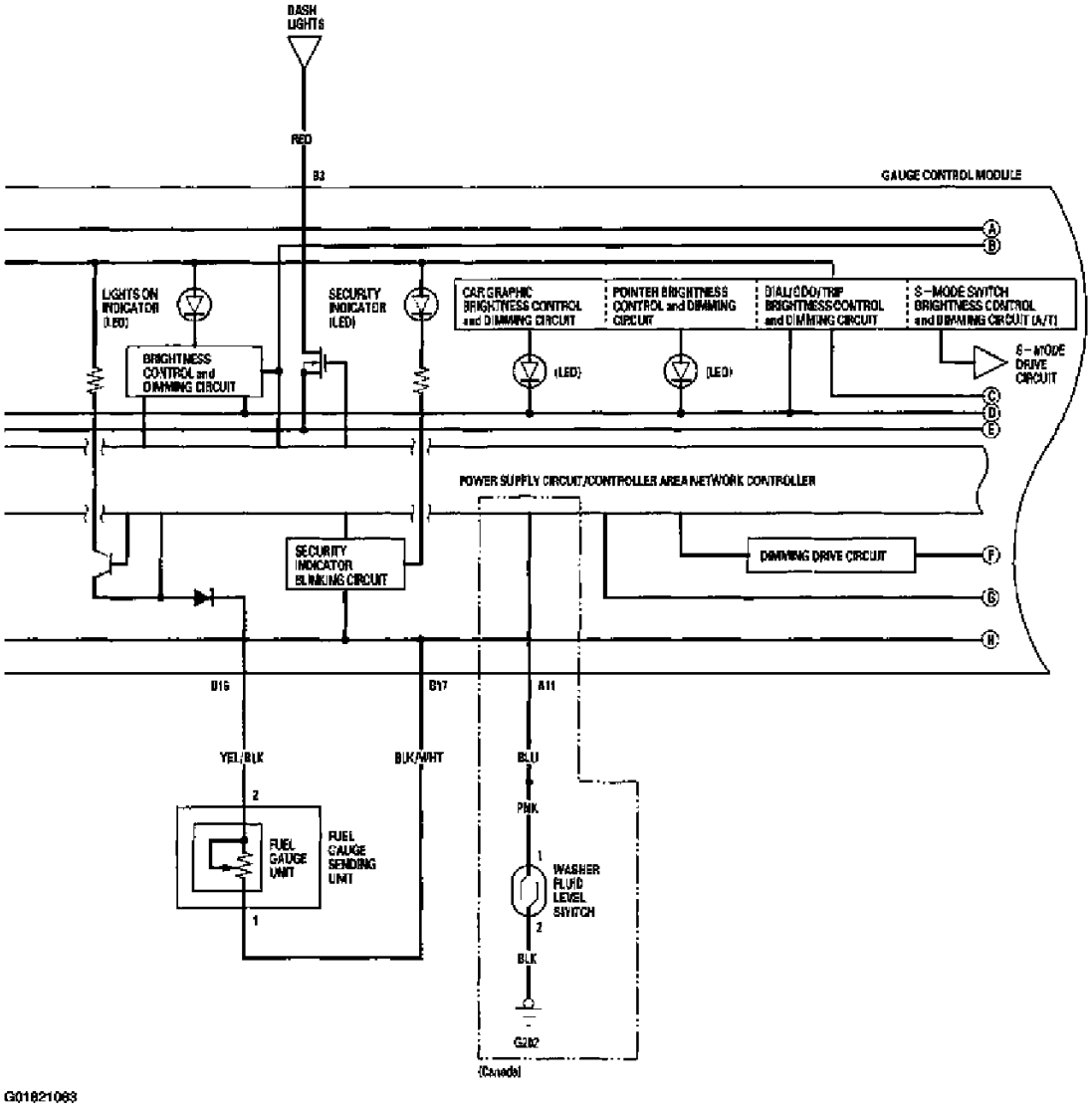


Fig. 8: Gauges Wiring Diagram (2 Of 7)

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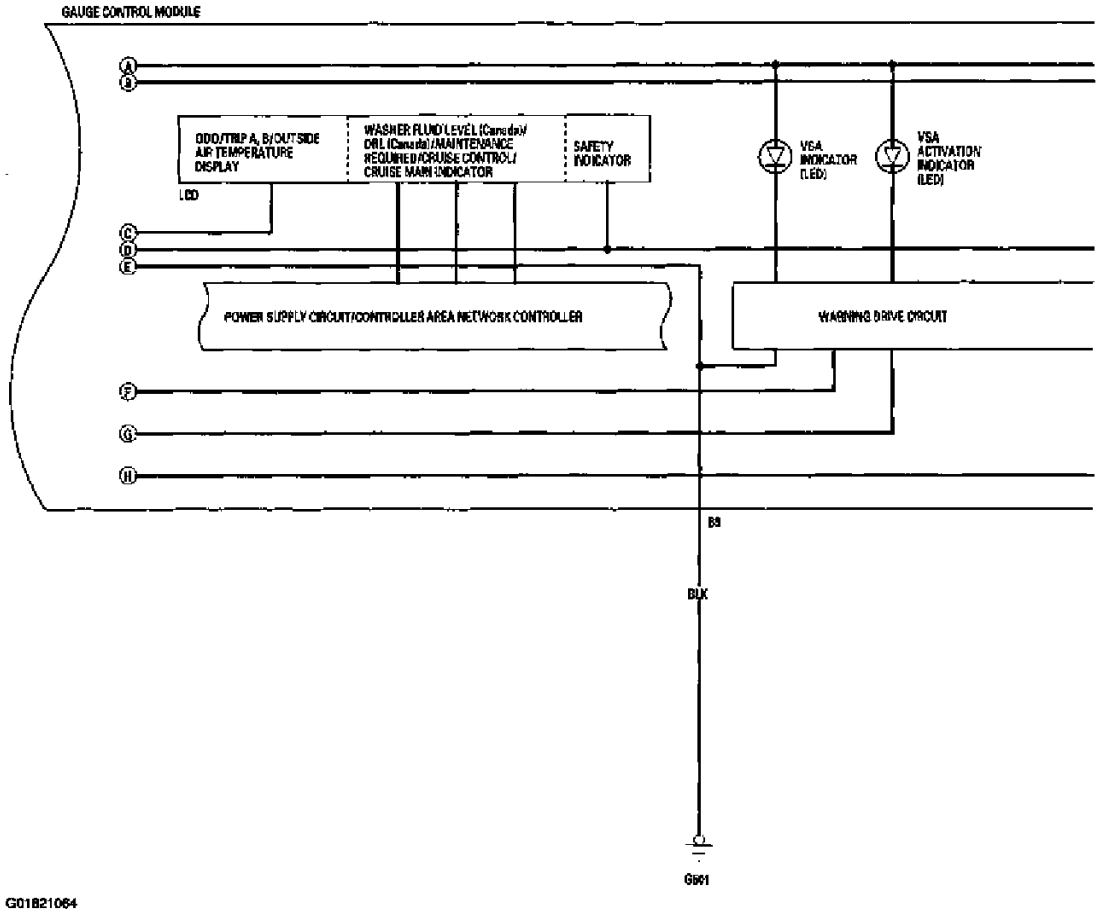
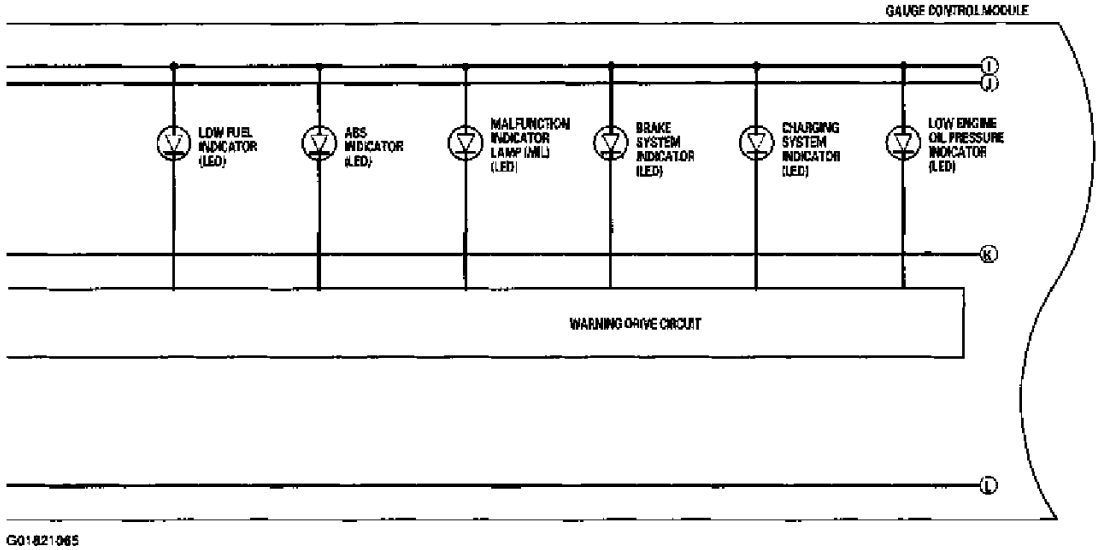


Fig. 9: Gauges Wiring Diagram (3 Of 7)



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Fig. 10: Gauges Wiring Diagram (4 Of 7)

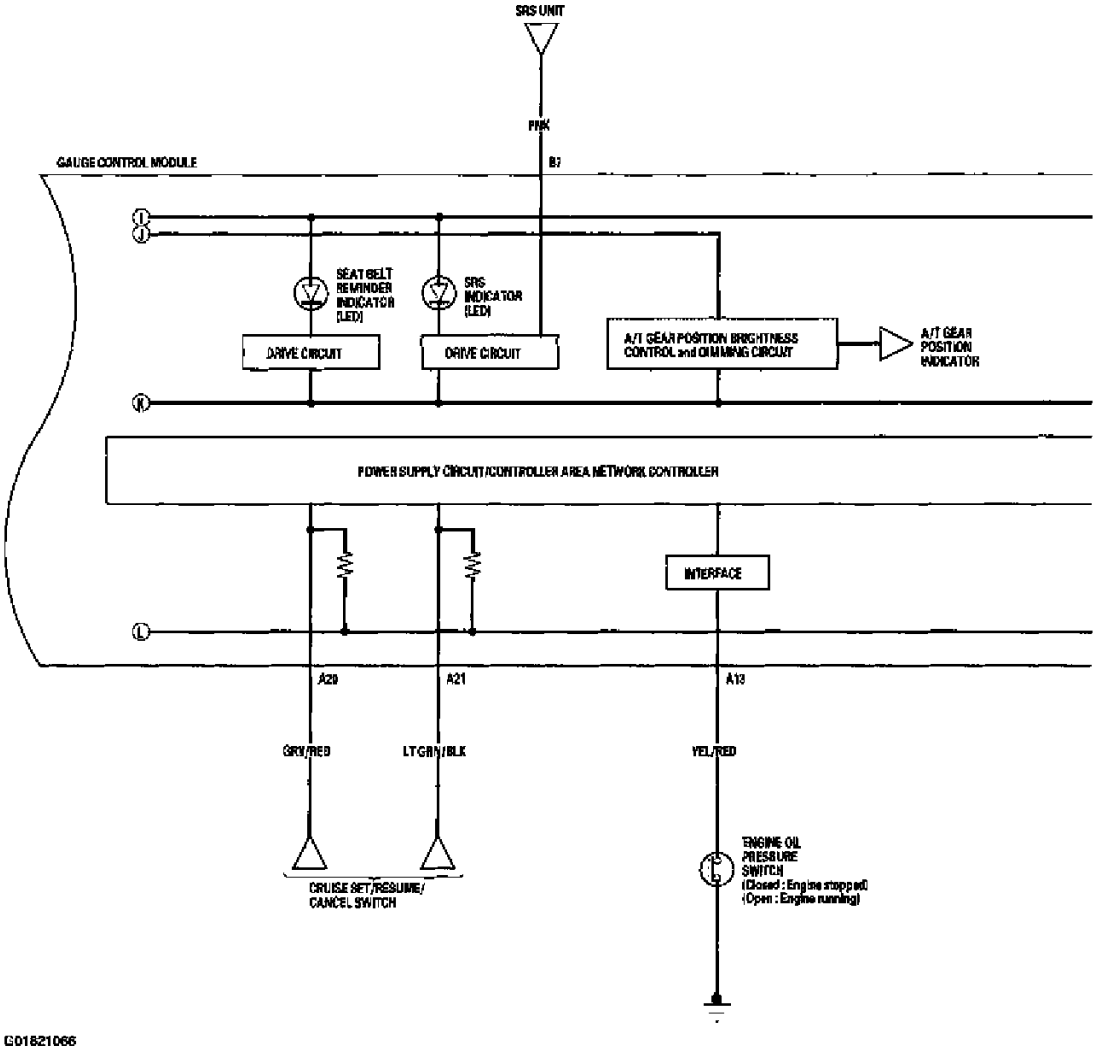


Fig. 11: Gauges Wiring Diagram (5 Of 7)

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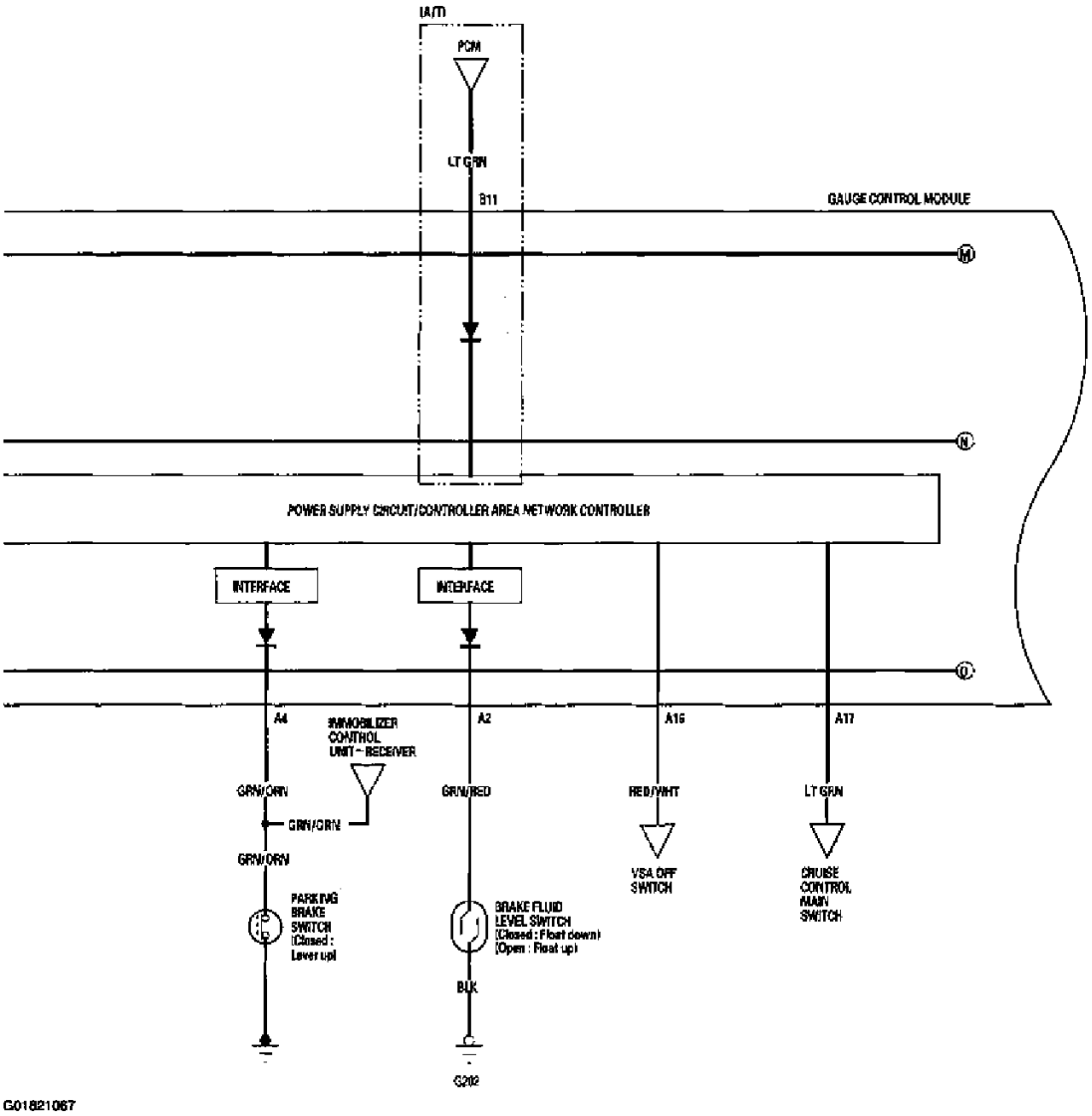


Fig. 12: Gauges Wiring Diagram (6 Of 7)

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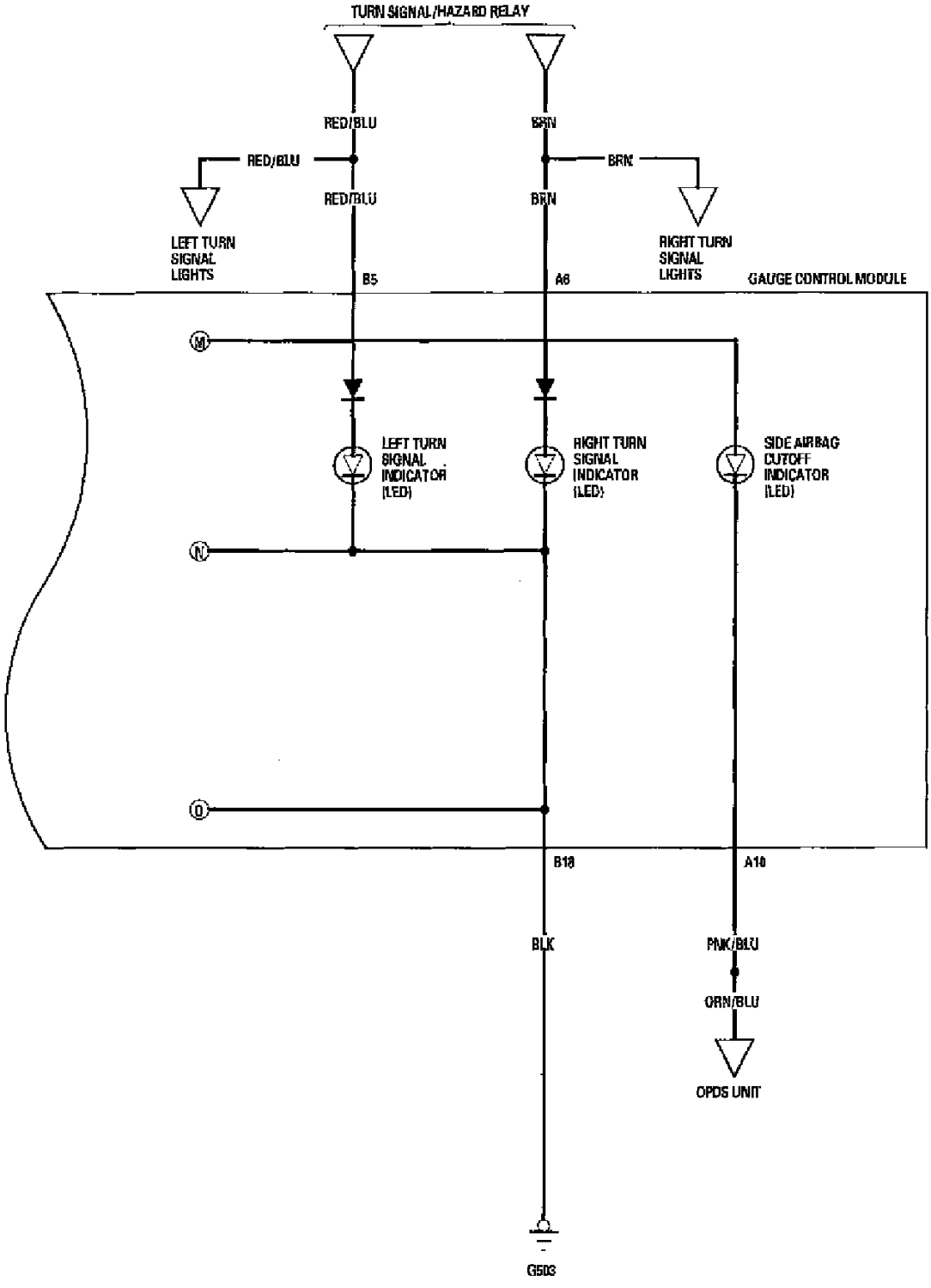


Fig. 13: Gauges Wiring Diagram (7 Of 7)

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GAUGE CONTROL MODULE REPLACEMENT

1. Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**), then remove the upper column cover (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Place a clean shop towel (A) under the gauge control module to prevent scratching the steering column or dash panel.

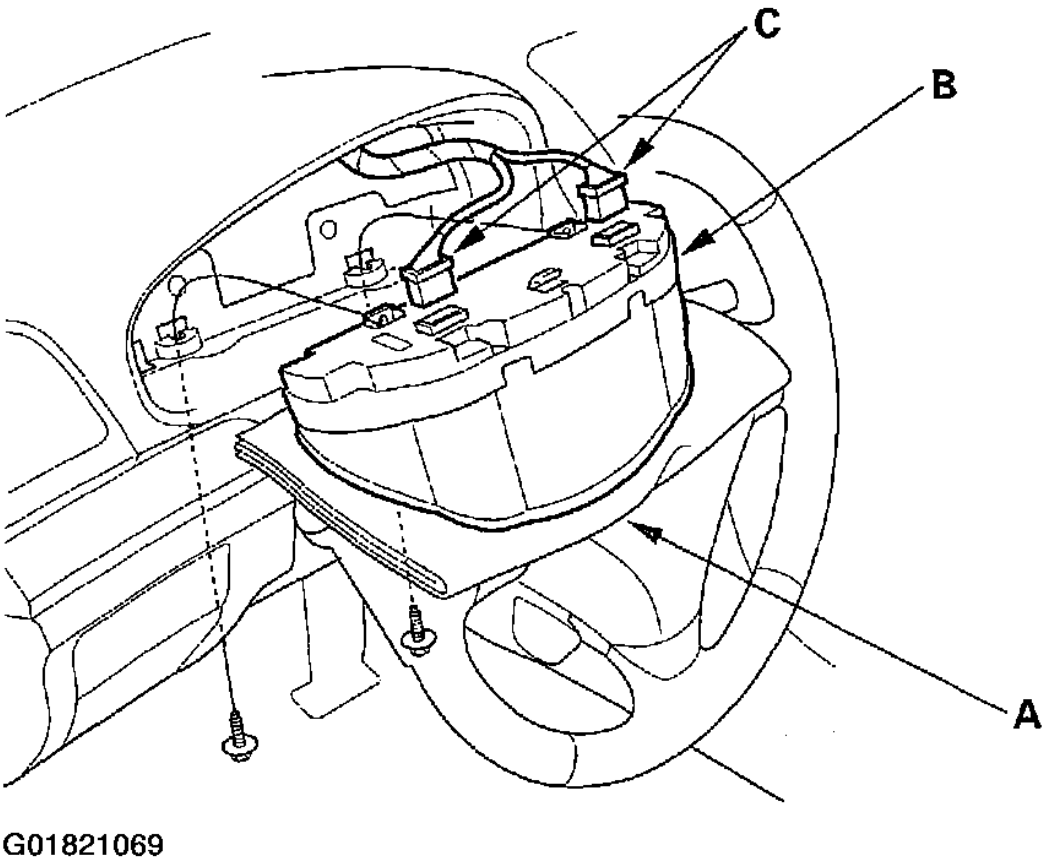


Fig. 14: Removing The Gauge Control Module

3. Remove the screws from the gauge control module (B).
4. Disconnect the 22P and 18P connectors (C), then remove the gauge control module.
5. Install the gauge control module in the reverse order of removal.

REWRITING THE ODO DATA ON A NEW GAUGE CONTROL MODULE

NOTE:

- **If the HDS retrieves the ODO data from the gauge control module, the ODO**

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value on the ODO/TRIP display will appear as "-", making the ODO function unusable, and the HDS will be unable to retrieve additional ODO values.

- **Rewriting is not possible on a gauge control module that does not communicate.**
- **Obtain a new gauge control module before starting the rewriting process.**

1. Before replacing the gauge control module, connect the HDS to the data link connector.
2. Select GAUGES AND INDICATORS from the HDS menu display.
3. Select "ODO REWRITE" from the ADJUSTMENTS menu display, and follow the instructions on the menu display to retrieve the ODO value.
4. Replace the gauge control module.
5. Follow the instructions on the menu display to write the new ODO value to the new gauge control module.

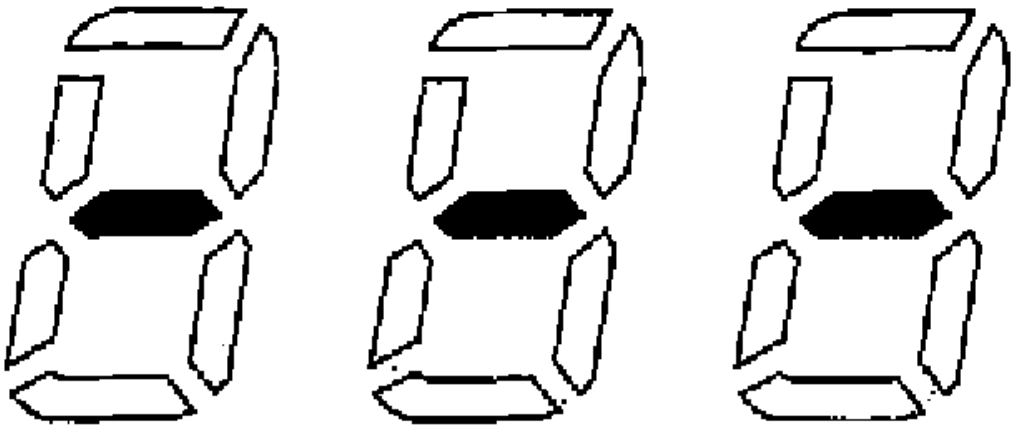
OUTSIDE AIR TEMPERATURE INDICATOR TEST

NOTE: To test the outside air temperature sensor (see OUTSIDE AIR TEMPERATURE SENSOR TEST).

Troubleshooting

If the indicator displays "- - -" for more than two seconds after selecting the outside air temperature display mode, Check the climate control system for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**), or an open in the LT BLU wire between the under-dash fuse/relay box and the climate control unit.

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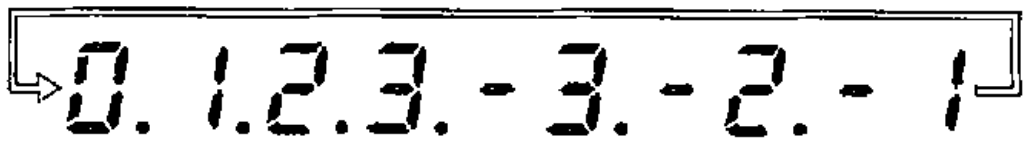
G01821070

Fig. 15: Indicator Displaying "- - -"

Calibration

The outside air temperature indicator's displayed temperature can be recalibrated +/-3° to meet the customer's expectations.

1. Turn the ignition switch ON (II).
2. Press and hold the reset select button for 10 seconds. While you continue to hold the button, the display will scroll through temperature settings from +3° to -3° as shown.



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Fig. 16: Calibration Display

3. When the desired correction value appears on the display, release the button, and the recalibrated outside

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air temperature will be displayed. Each time a desired correction value is entered, it replaces the previous value.

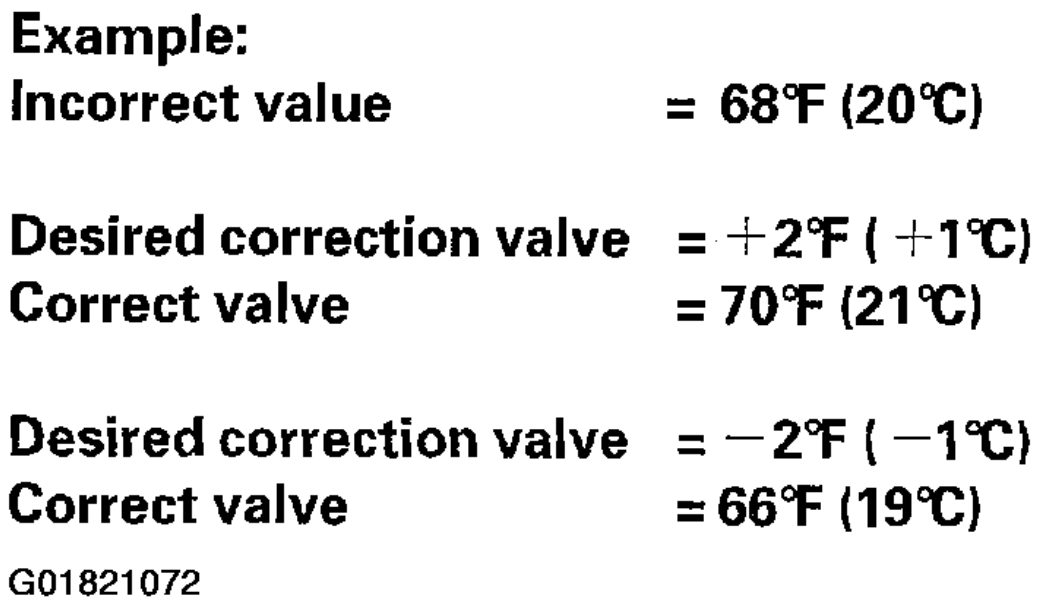
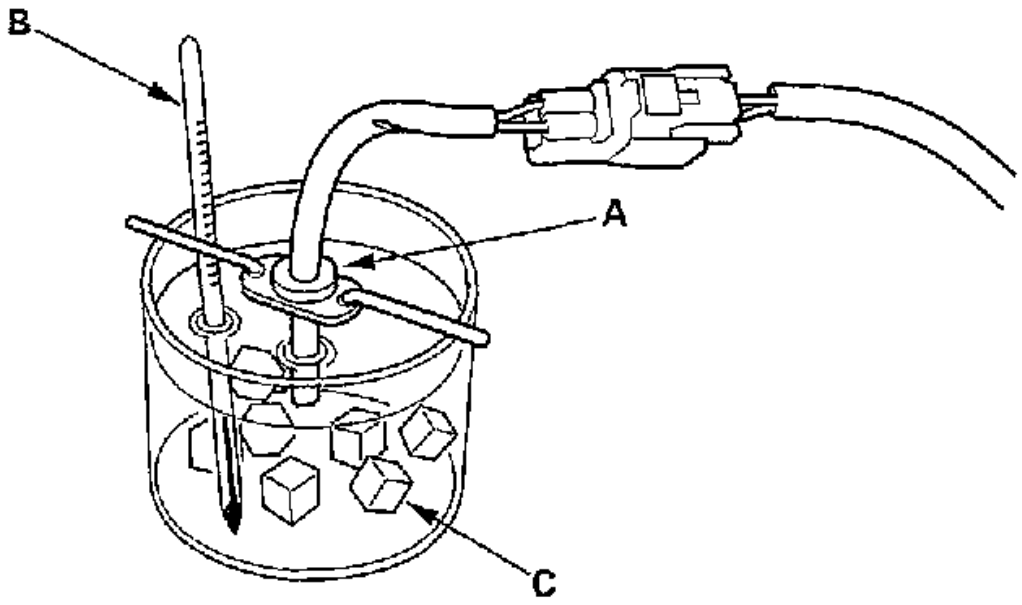


Fig. 17: Correction Table

NOTE: To recalibrate the display to the true temperature, remove the outside air temperature sensor (A), but leave it connected. Submerge the sensor and a thermometer (B) in a container of ice water (C). Select the calibration mode as described above, then recalibrate the display to the true temperature.

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Fig. 18: Submerging The Sensor & A Thermometer In A Container Of Ice Water

MAINTENANCE REQUIRED INDICATOR RESET PROCEDURE

Miles (km)	Maintenance Reminder Light
At 7,900 (12,640) to 8,100 (12,960)	Blinks for 10 seconds when the ignition switch is turned ON (II).
At 9,900 (15,840) to 10,100 (16,160)	Comes on and stays on while the ignition switch is ON (II).

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Fig. 19: Maintenance Required Indicator Blinking Pattern Table

How to Reset

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Press and hold the trip/reset button, turn the ignition switch ON (II), and continue to hold the button for more than 10 seconds.

DTC TROUBLESHOOTING

DTC B1152: Gauge Control Module EEPROM Error

1. Clear the DTCs using the HDS.
2. Start the engine.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1152 indicated?

   YES: Faulty gauge control module; replace the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).

   NO: Intermittent failure, the gauge control module is OK at this time. Check pin fits and connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

DTC B1155: Gauge Control Module Lost Communication (Headlight Switch Message) with the Combination Switch Control Unit

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1155 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The gauge control system is OK at this time. Check pin fits and connections.
4. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1007 or B1062 indicated?

   YES: Go to Combination Switch Control Unit Input Test (see **COMBINATION SWITCH CONTROL UNIT INPUT TEST**).

   NO: Go to Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

DTC B1156: Gauge Control Module Lost Communication (Wiper Switch Message) with the Combination Switch Control Unit

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1156 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The gauge control system is OK at this time. Check pin fits and

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connections.

4. Check for DTCs by selecting the DTCs MENU (DTCs) of the HDS.

Is DTC B1009 or B1063 indicated?

YES: Go to Combination Switch Control Unit Input Test (see **COMBINATION SWITCH CONTROL UNIT INPUT TEST**).

NO: Go to Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

DTC B1157: Gauge Control Module Lost Communication with Multiplex Integrated Control Unit (MICU)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1157 indicated?

YES: Go to step 4.

NO: Intermittent failure. The gauge control system is OK at this time. Check pin fits and connections.

4. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1055, B1106 and B1255 indicated?

YES: Go to Multiplex Integrated Control Unit Input Test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).

NO: Go to Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

DTC B1158: Gauge Control Module Lost Communication with Relay Module

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1158 indicated?

YES: Go to step 4.

NO: Intermittent failure. The gauge control system is OK at this time. Check pin fits and connections.

4. Check for DTCs by the DTCs MENU (DTCs) of the HDS.

Is DTC B1005 indicated?

YES: Go to Relay Control Module Input Test (see **RELAY CONTROL MODULE INPUT TEST**).

NO: Go to Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

DTC B1159: Gauge Control Module Lost Communication (Door Switch Message) with the Multiplex Integrated Control Unit (MICU)

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1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1159 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The gauge control system is OK at this time. Check pin fits and connections.
4. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1057 indicated?

   YES: Go to Multiplex Integrated Control Unit Input Test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).

   NO: Go to Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

DTC B1160: Gauge Control Module Lost Communication (Door Lock Switch Message) with the Door Multiplex Control Unit

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1160 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The gauge control system is OK at this time. Check pin fits and connections.
4. Check for DTCs by the DTCs MENU (DTCs) of the HDS.

   Is DTC B1006 or B1058 indicated?

   YES: Go to Door Multiplex Control Unit Input Test (see **DOOR MULTIPLEX CONTROL UNIT INPUT TEST**).

   NO: Go to Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

DTC B1175: Fuel Gauge Sending Unit Signals Input Error

1. Do the fuel gauge sending unit test (see **FUEL GAUGE SENDING UNIT TEST**).

   Is the fuel gauge sending unit OK?

   YES: Go to step 2.

   NO: Replace the fuel gauge sending unit.
2. Disconnect the fuel pump/fuel gauge sending unit 5P connector and the gauge control module connector B (18P).
3. Check for continuity between the No. 16 and No. 17 terminals of gauge control module connector B (18P) and No. 1 and No. 2 terminals of the fuel pump/fuel gauge sending unit 5P connector.

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Is there continuity?

YES: Go to step 4.

NO: Repair an open in the BLK/WHT or YEL/BLK wire between the gauge control module and fuel gauge sending unit.

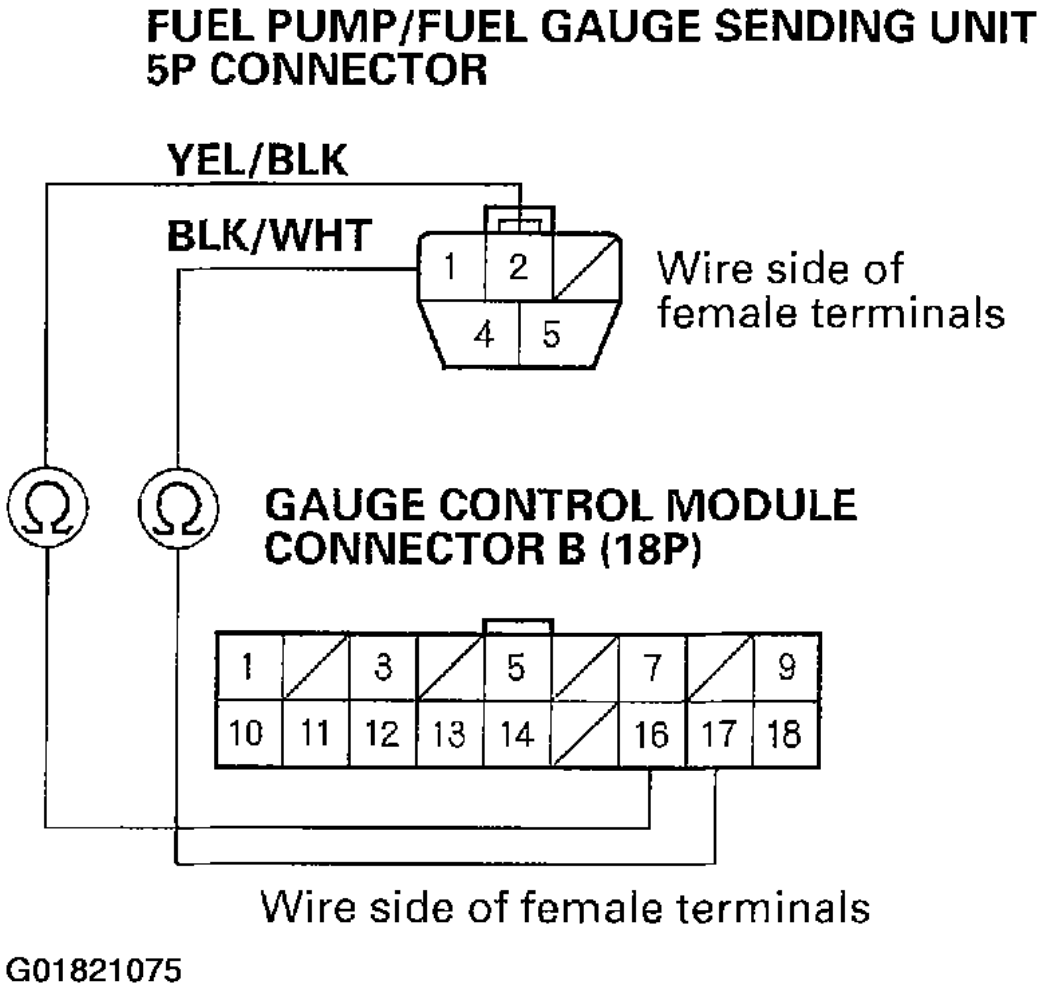


Fig. 20: Checking For Continuity Between The Gauge Control Module Connector B (18P) & The Fuel Pump/Fuel Gauge Sending Unit 5P Connector

4. Check for continuity between the No. 16 and No. 17 terminals of gauge control module connector B (18P) and body ground.

Is there continuity?

YES: Repair a short to ground in the BLK/WHT or YEL/BLK wire.

NO: Replace the gauge control module (see **GAUGE CONTROL MODULE**

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REPLACEMENT).

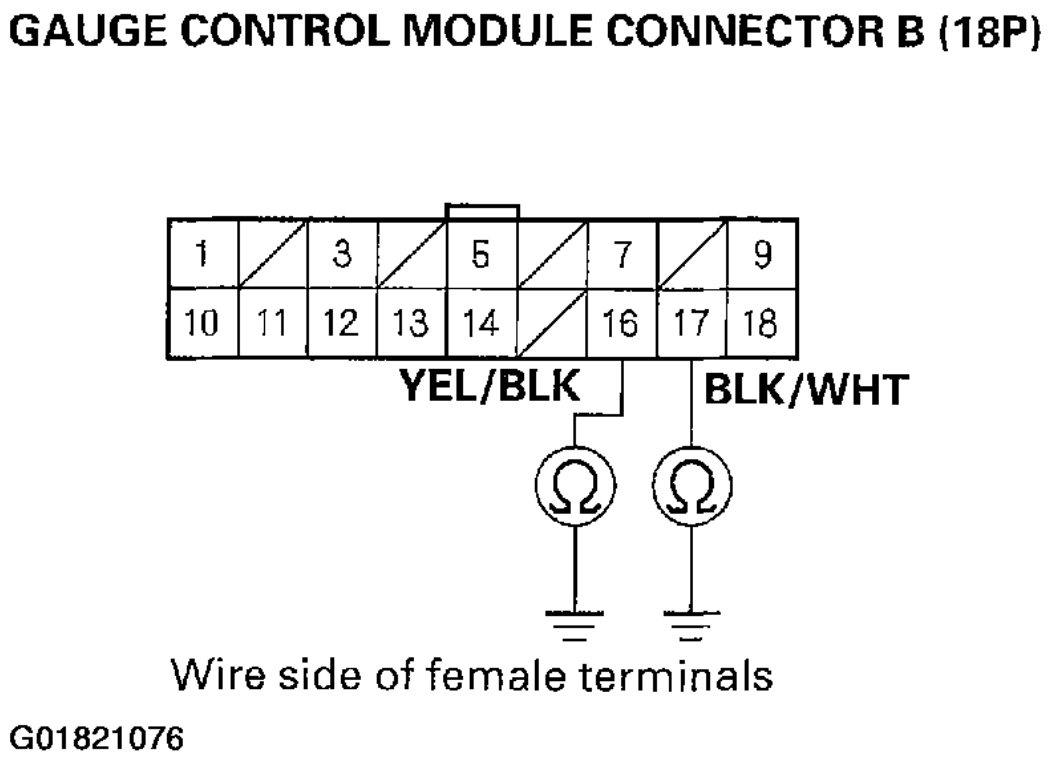


Fig. 21: Checking For Continuity Between The No. 16 & No. 17 Terminals Of Gauge Control Module Connector B (18P) & Body Ground

DTC B1177: Abnormal Battery Voltage (7.5 V)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

   Is DTC B1177 indicated?

   YES: Go to step 5 .

   NO: Go to step 4.
4. Crank the engine.

   Is DTC B1177 indicated?

   YES: Go to step 5.

   NO: Intermittent failure. The gauge control module and power supply voltage (IG 1) that is supplied to the gauge control module are OK at this time.
5. Check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

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Is the battery condition normal and the charging system OK?

YES: Go to step 6.

NO: Abnormal battery condition which needs a recharge or replacement, or a charging system repair.

6. With gauge control module connector B (18P) still connected, check for voltage between the No. 10 terminal and body ground.

Is there 7.5 V or more?

YES: Go to step 7.

NO: Repair an open or high resistance in the YEL wire between the gauge control module and under-dash fuse/relay box.

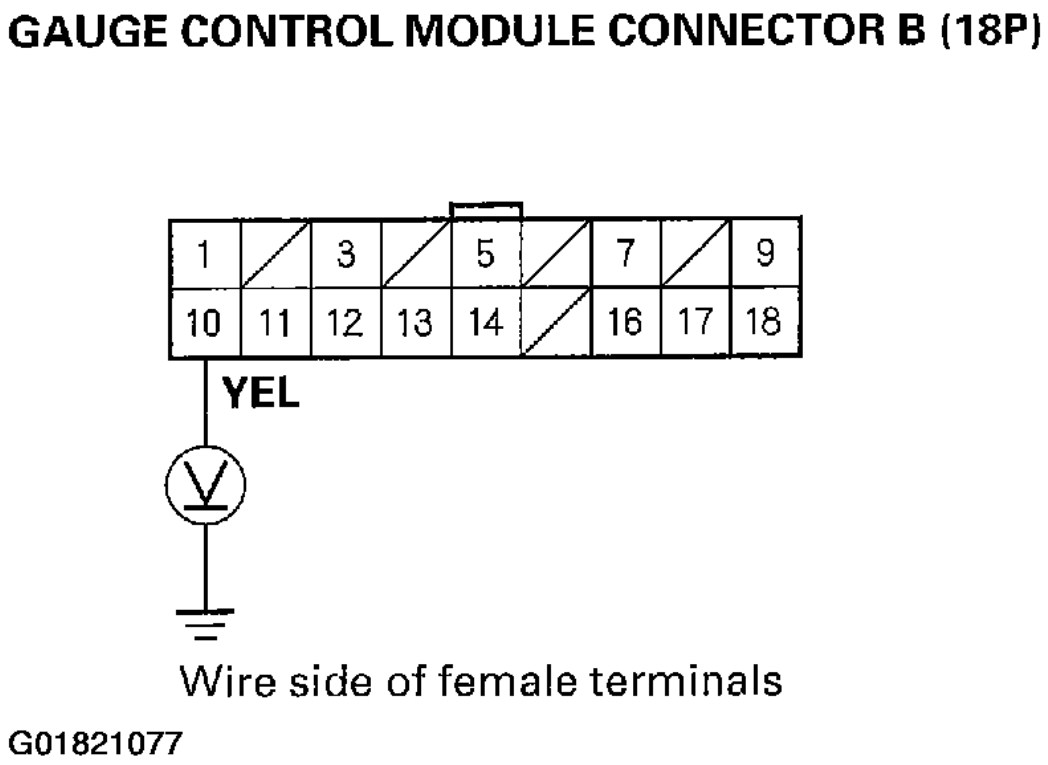


Fig. 22: Checking For Voltage Between The No. 10 Terminal & Body Ground

7. Check for voltage between the No. 10 and No. 9 terminals.

Is there 7.5 V or more?

YES: Faulty gauge control module; replace the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).

NO: Repair an open or high resistance in the BLK wire between the gauge control module and ground.

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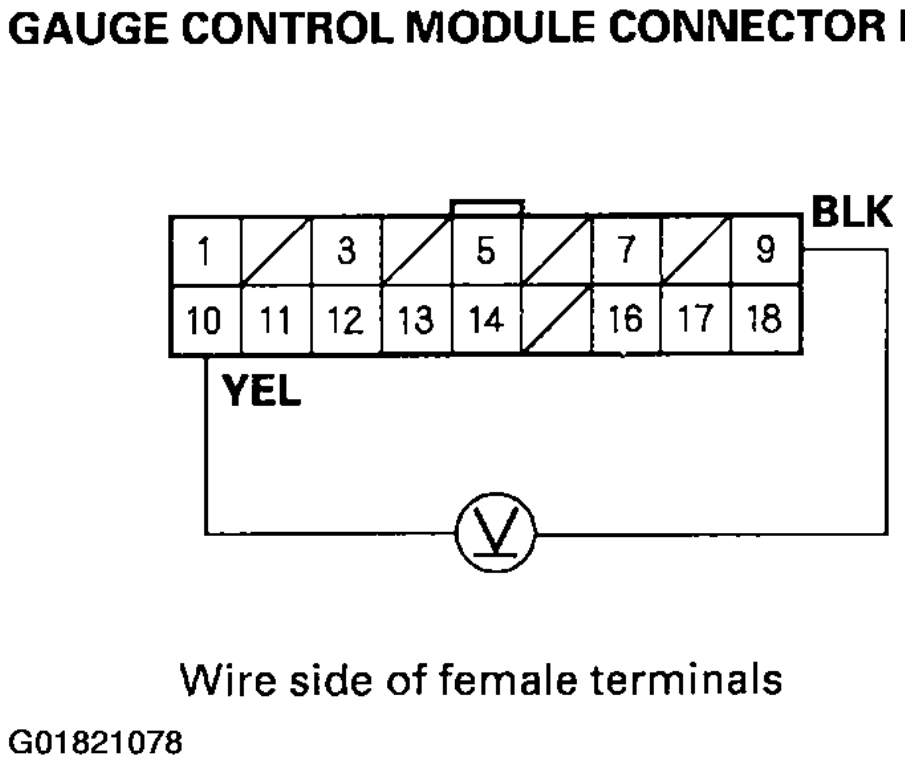


Fig. 23: Checking For Voltage Between The No. 10 & No. 9 Terminals

SAFETY INDICATOR SYSTEM

COMPONENT LOCATION INDEX

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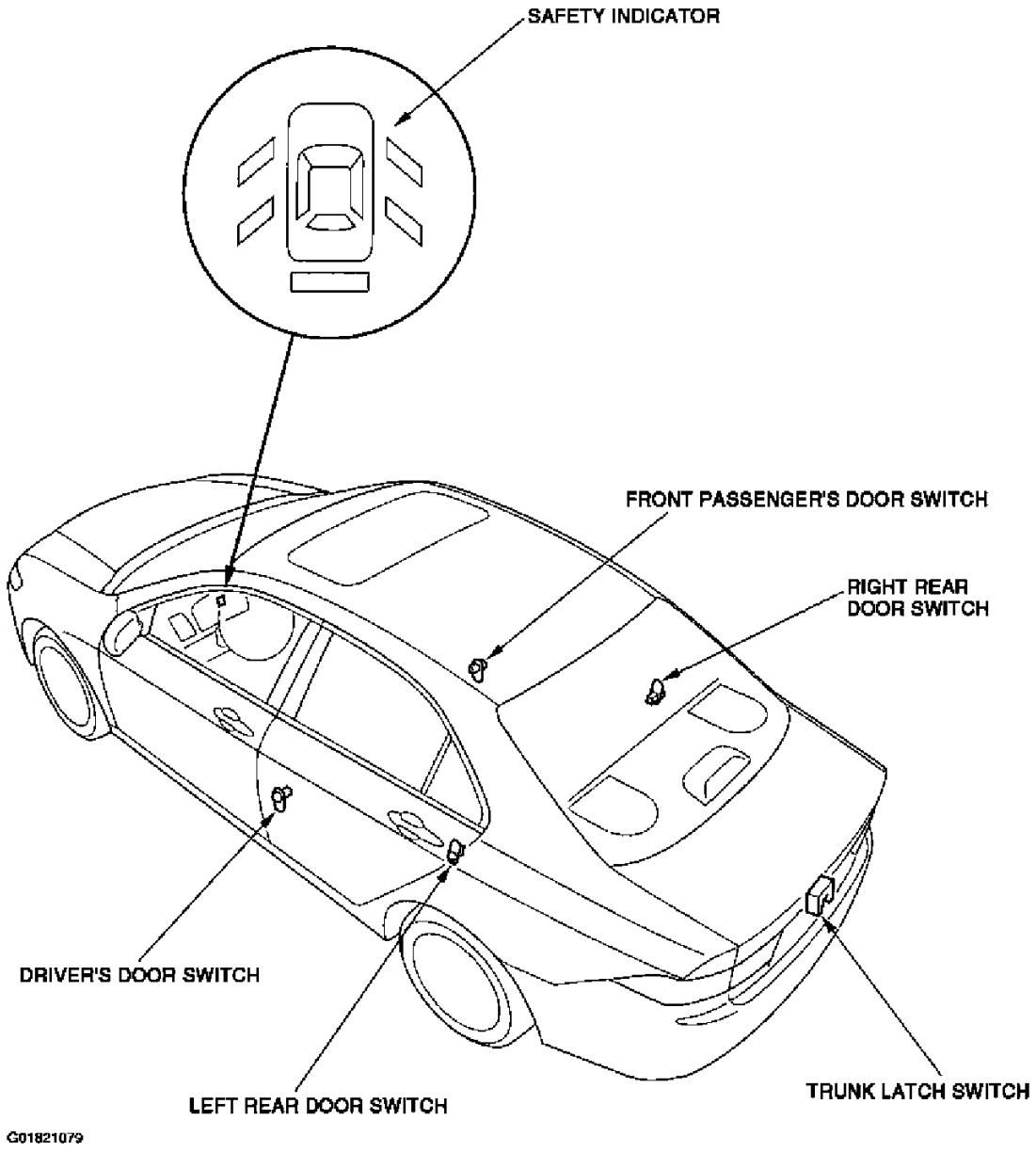


Fig. 24: Locating Safety Indicator System Components

CIRCUIT DIAGRAM

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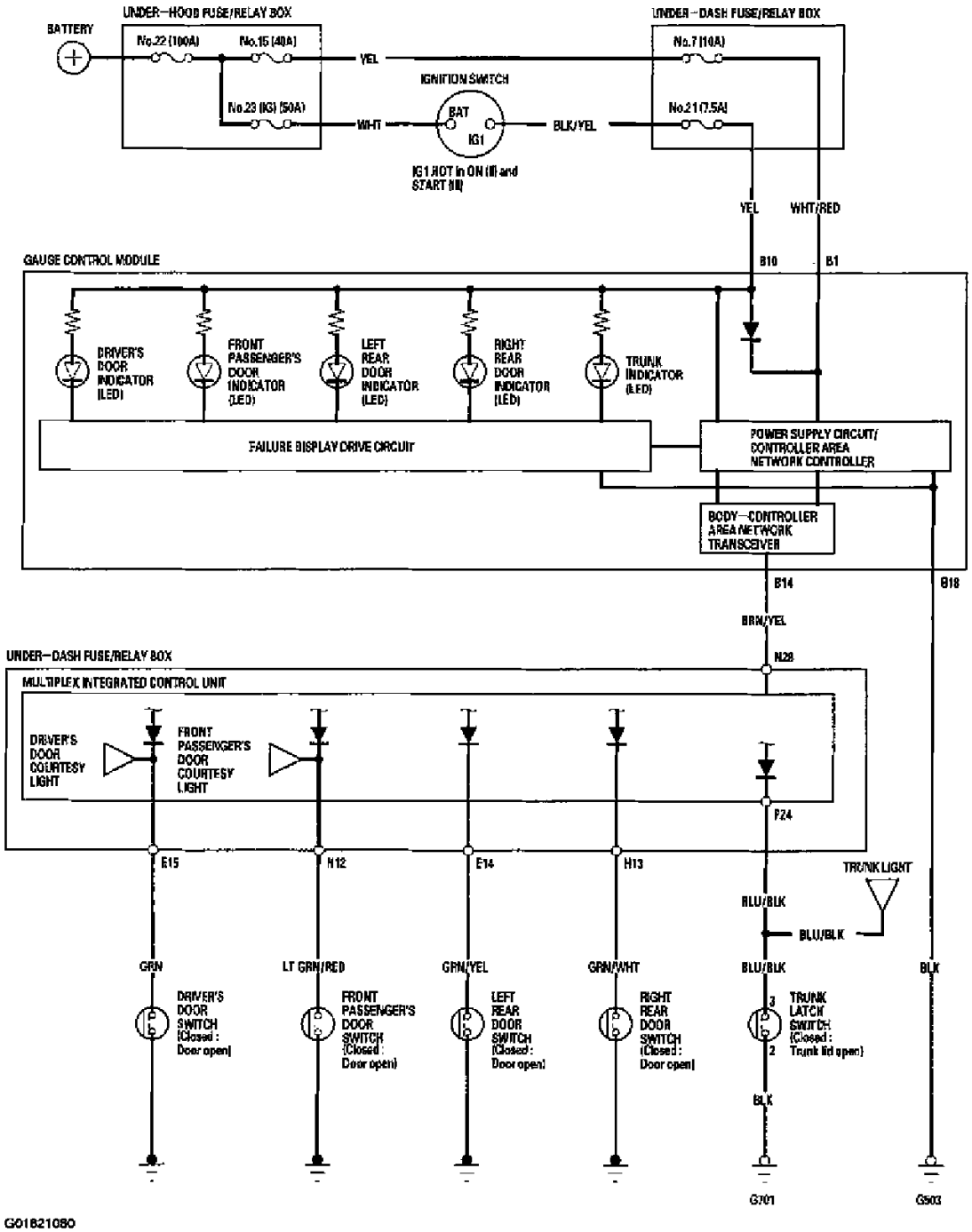


Fig. 25: Safety Indicator System Wiring Diagram

SAFETY INDICATOR INPUT TEST

1. Before testing the safety indicator functions, troubleshoot the multiplex integrated control system using the B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

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Multiplex Integrated Control Unit

2. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
3. Disconnect the under-dash fuse/relay box connectors E, H and P.

NOTE: All connectors are wire side of female terminals.

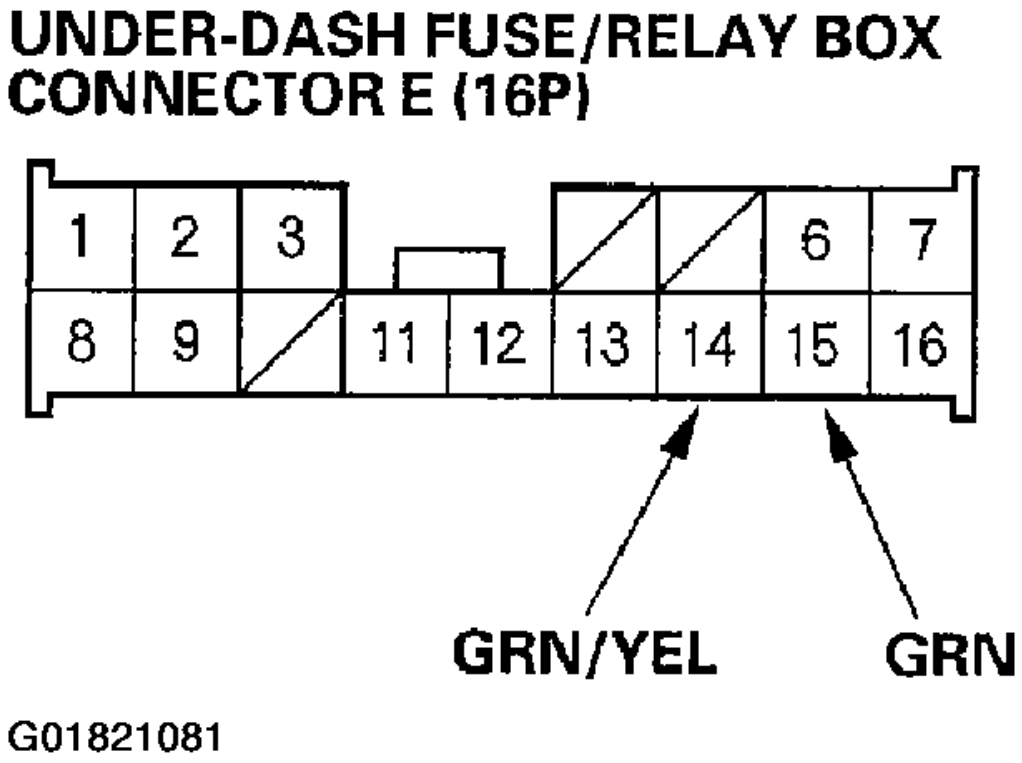


Fig. 26: Identifying Under-Dash Fuse/Relay Box Connector E (16P) Terminals

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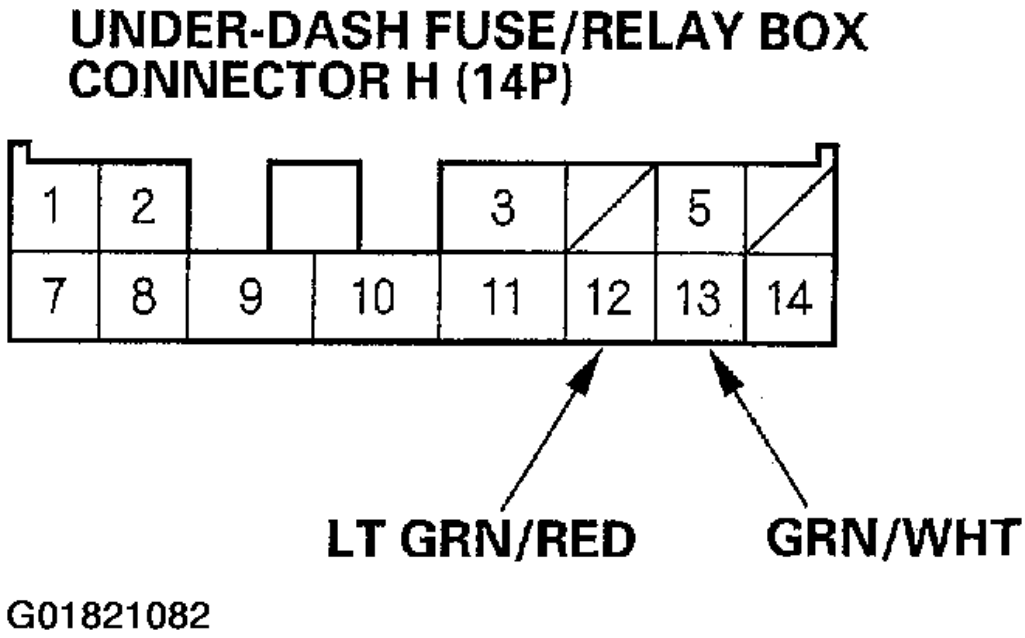


Fig. 27: Identifying Under-Dash Fuse/Relay Box Connector H (14P) Terminals

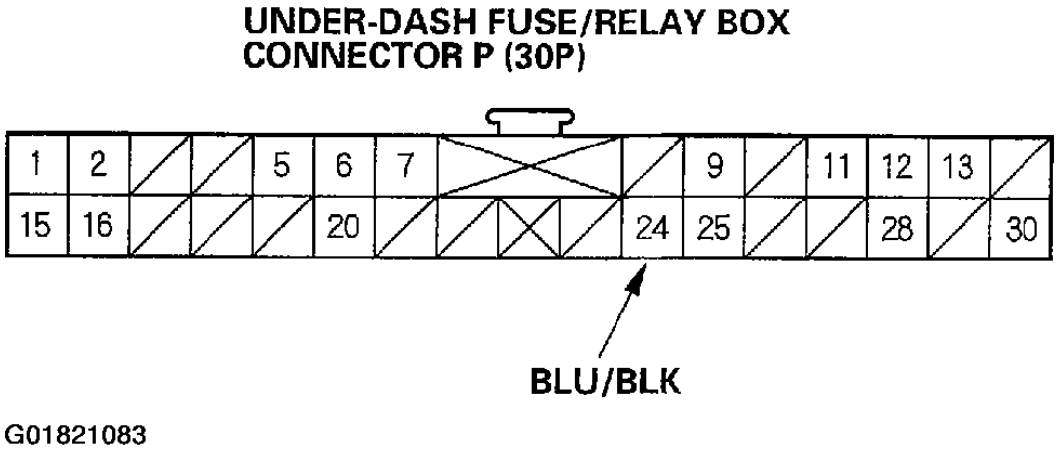


Fig. 28: Identifying Under-Dash Fuse/Relay Box Connector P (30P) Terminals

4. Inspect the connector and socket terminals to be sure they are all making good contact.
    - If the terminals are bent, loose or corroded, repair them as necessary, are recheck the system.

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- If the terminals look OK, go to step 5.

5. Reconnect the connectors to the under-dash fuse/relay box, and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box. See **Fig. 29** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E15	GRN	Driver's door open	Check for voltage to ground: There should be 1V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5V or more.	• Faulty driver's door switch • Short to ground
H12	LT GRN/ RED	Front passenger's door open	Check for voltage to ground: There should be 1V or less.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5V or more.	• Faulty front passenger's door switch • Short to ground
E14	GRN/YEL	Left rear door open	Check for voltage to ground: There should be 1V or less.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5V or more.	• Faulty left rear door switch • Short to ground
H13	GRN/WHT	Right rear door open	Check for voltage to ground: There should be 1V or less.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5V or more.	• Faulty right rear door switch • Short to ground
P24	BLU/BLK	Trunk lid open	Check for voltage to ground: There should be 1V or less.	• Poor ground (G701) • Faulty trunk latch switch • An open in the wire
		Trunk lid closed	Check for voltage to ground: There should be 5V or more.	• Faulty trunk latch switch • Short to ground

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Fig. 29: Safety Indicator Input Test

6. Perform the Gauge Self-diagnostic Procedure (see **SELF-DIAGNOSTIC PROCEDURE**).
   - If the indicators flash, go to step 7.
   - If the indicators do not flash, replace the gauge control module.
7. Substitute a known-good under-dash fuse/relay box and recheck the system.
   - If the symptom is gone, the multiplex integrated control unit (MICU) is faulty; replace the under-dash fuse/relay box.
   - If the symptom is still present, the gauge control module must be faulty; replace the gauge control module.

LIGHTS-ON, KEY-IN, SEAT BELT REMINDER, KEY LIGHT TIMER & ENGINE OIL PRESSURE INDICATOR SYSTEMS

CIRCUIT DIAGRAM

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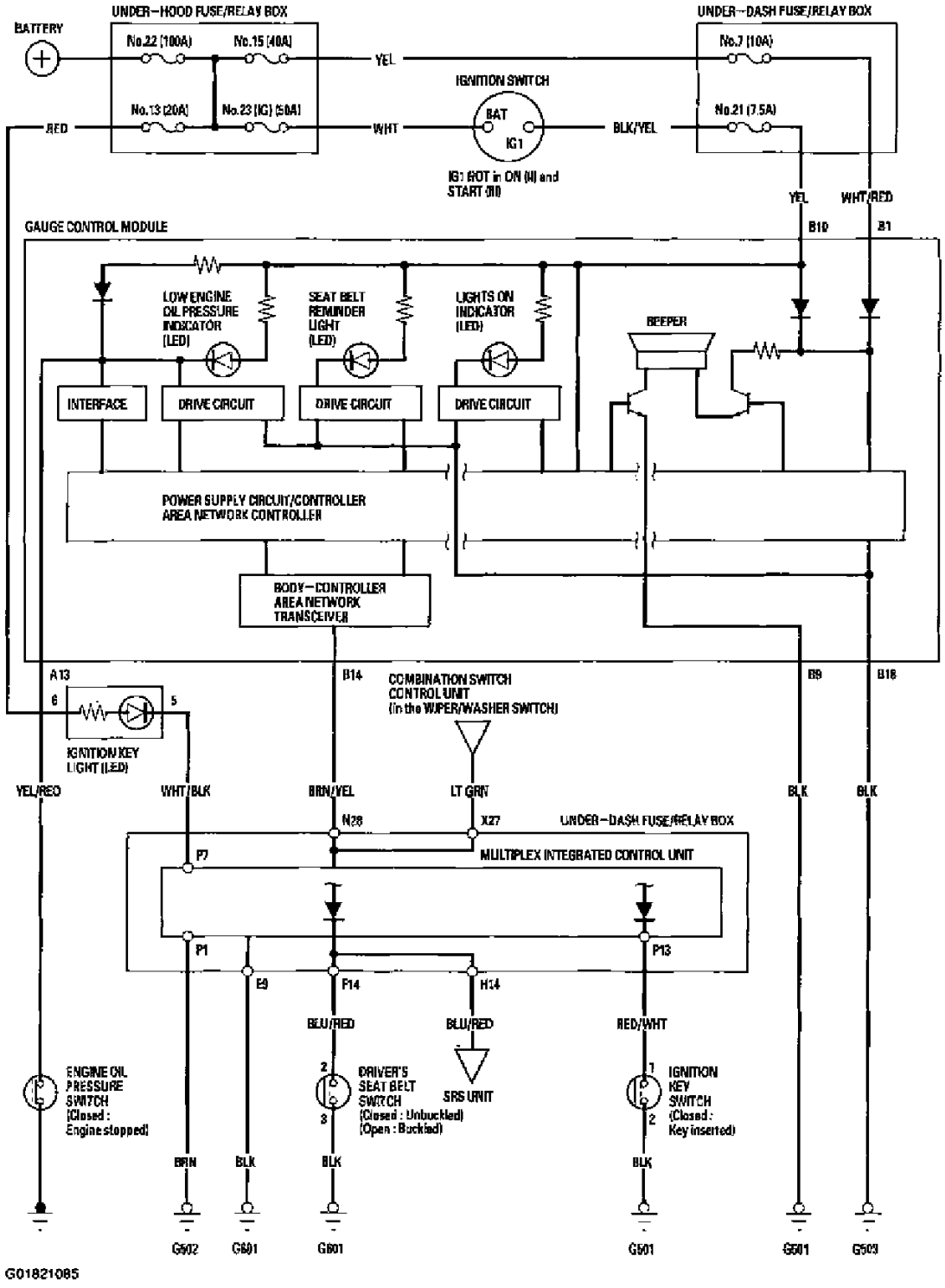


Fig. 30: Indicator Systems Wiring Diagram

CONTROL UNIT INPUT TEST

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1. Before testing, troubleshoot the multiplex integrated control system using B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

   Multiplex Integrated Control Unit

2. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
3. Disconnect the under-dash fuse/relay box connectors F, H and P.

NOTE: All connectors are wire side of female terminals.

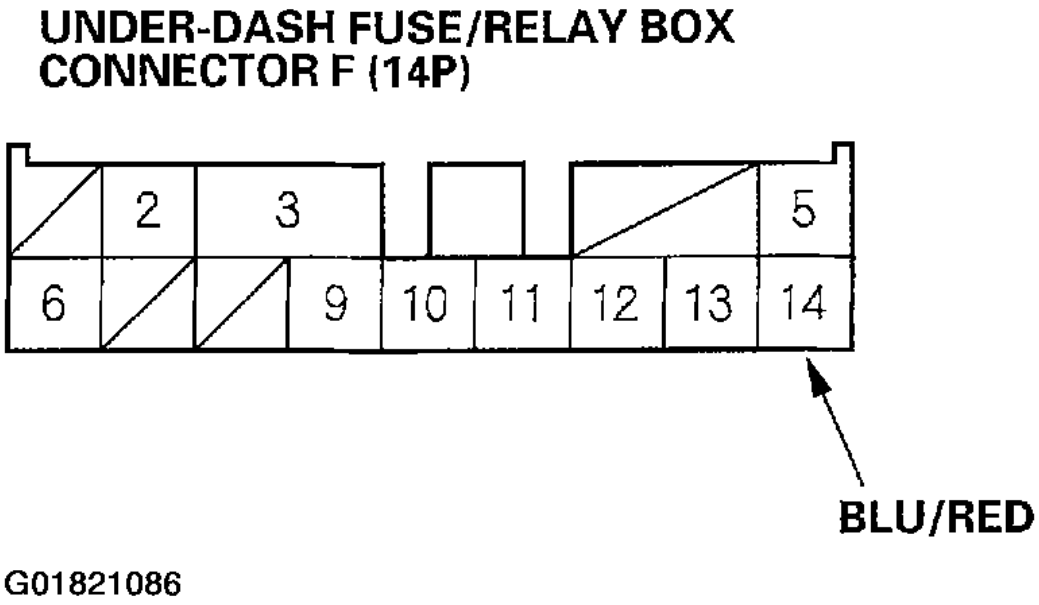


Fig. 31: Identifying Under-Dash Fuse/Relay Box Connector F (14P) Terminals

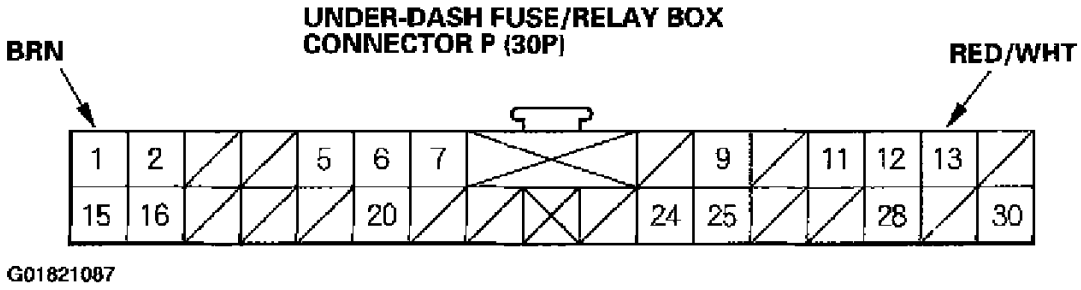


Fig. 32: Identifying Under-Dash Fuse/Relay Box Connector P (30P) Terminals

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4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 5.
5. Reconnect the connectors, and make these input tests at the connector. See **Fig. 33** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
F14 - H14	BLU/RED	Ignition switch ON (II), driver's seat belt is unbuckled.	Check for voltage to ground: There should be 1V or less.	• Faulty driver's seat belt switch • Poor ground (G601) • An open in the wire
		Ignition switch ON (II), driver's seat belt is buckled.	Check for voltage to ground: There should be 5V or more.	• Faulty driver's seat belt switch • Short to ground
P13	RED/WHT	Ignition key in the ignition switch.	Check for voltage to ground: There should be 1V or less.	• Faulty ignition switch • Poor ground (G501) • An open in the wire
		Ignition key out of the ignition switch.	Check for voltage to ground: There should be 5V or more.	• Faulty ignition switch Short to ground

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Fig. 33: Control Unit Input Test (Connected)

6. Remove the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).
7. Disconnect the gauge control module connectors A and B.

NOTE: All connectors are wire side of female terminals.

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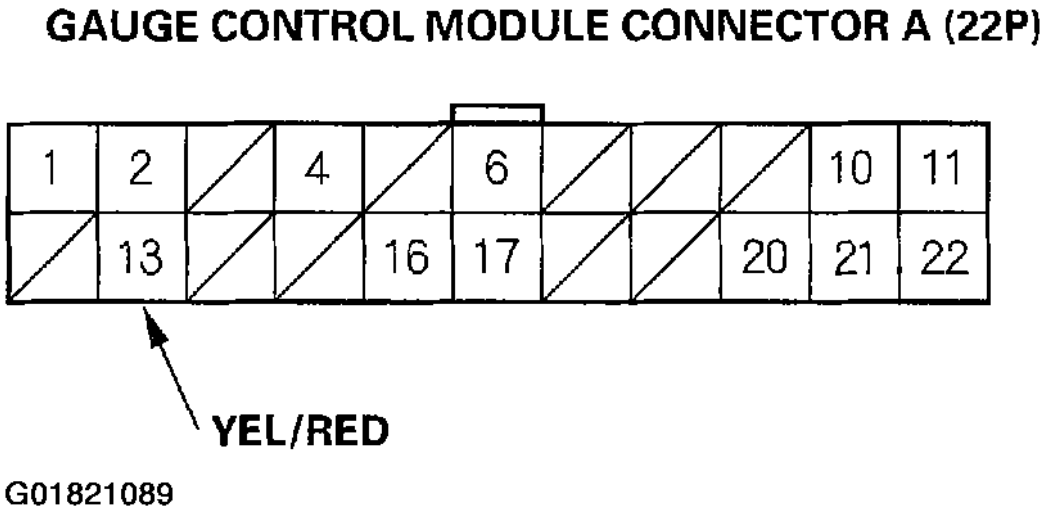


Fig. 34: Identifying Gauge Control Module Connector A (22P) Terminals

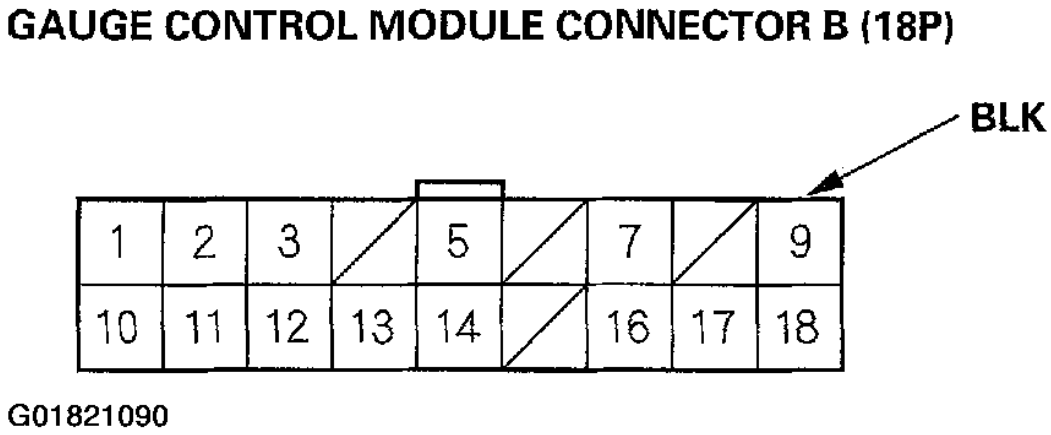


Fig. 35: Identifying Gauge Control Module Connector B (18P) Terminals

8. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 9.
9. With the connectors still disconnected, make these input tests at the connector. See **Fig. 36** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If the input tests prove OK, go to step 10.

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Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A13	YEL/RED	Engine OFF	Check for continuity to ground: There shold be continuity.	• Faulty engine oil pressure switch • An open in the wire
		Engine running	Check for continuity to ground: There shold be no continuity.	• Mechanical problem in the engine • Faulty engine oil pressure switch • An open in the wire
B9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire

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Fig. 36: Control Unit Input Test (Disconnected)

10. Perform the Gauge Self-diagnosis Procedure (see **SELF-DIAGNOSTIC PROCEDURE**).
    - If the beeper sounds and the seat belt reminder light flashes, go to step 11.
    - If the beeper does not sound or the seat belt reminder light does not flash, replace the gauge control module.
11. Substitute a known-good under-dash fuse/relay box and recheck the system.
    - If the symptom is gone, the multiplex integrated control unit (MICU) is faulty; replace the under-dash fuse/relay box.
    - If the symptom is still present, the gauge control module is faulty; replace the gauge control module.

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2004 ACCESSORIES & EQUIPMENT

Multiplex Integrated Control System - TSX

COMPONENT LOCATION INDEX

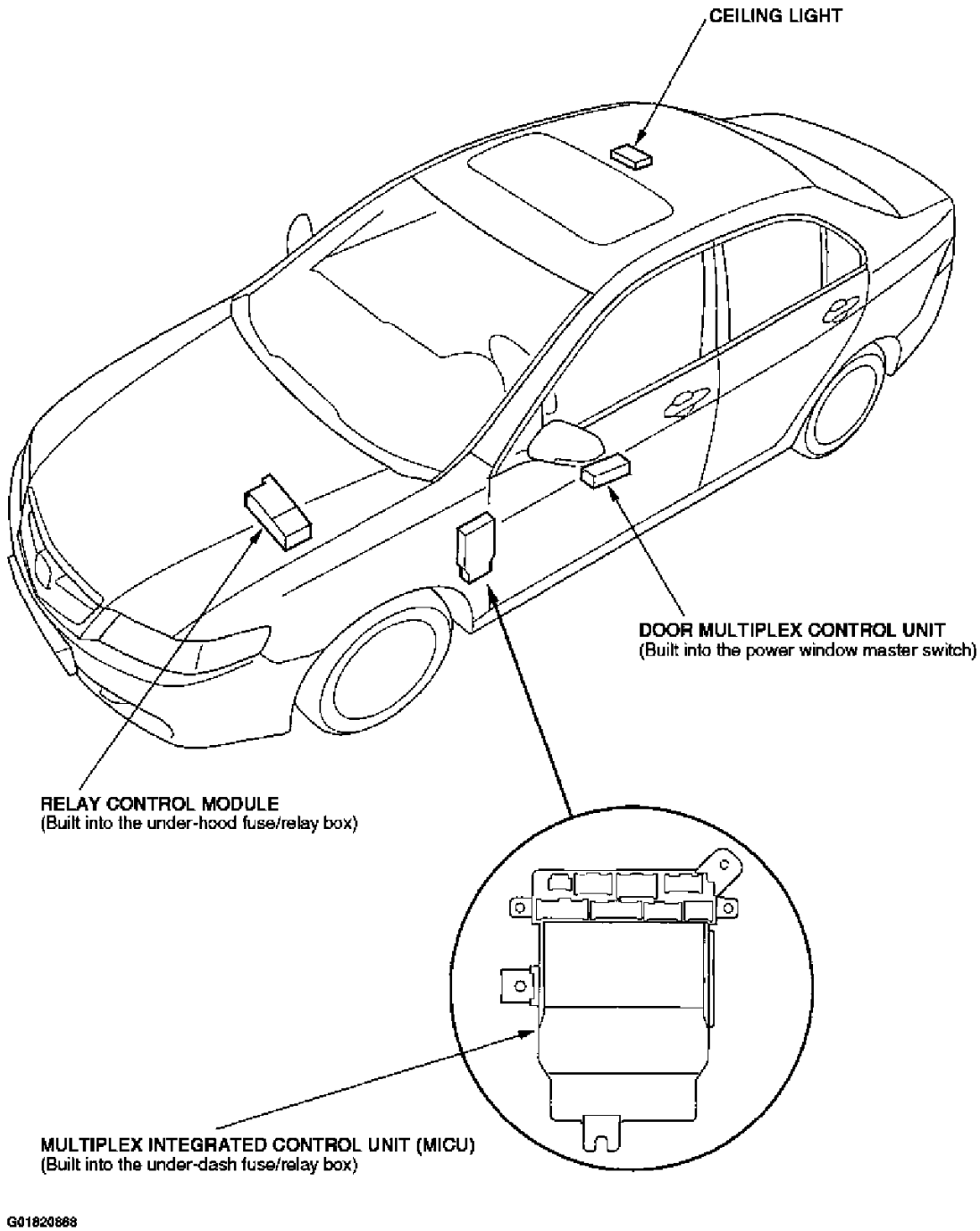


Fig. 1: Locating Multiplex Integrated Control System Components (1 Of 2)

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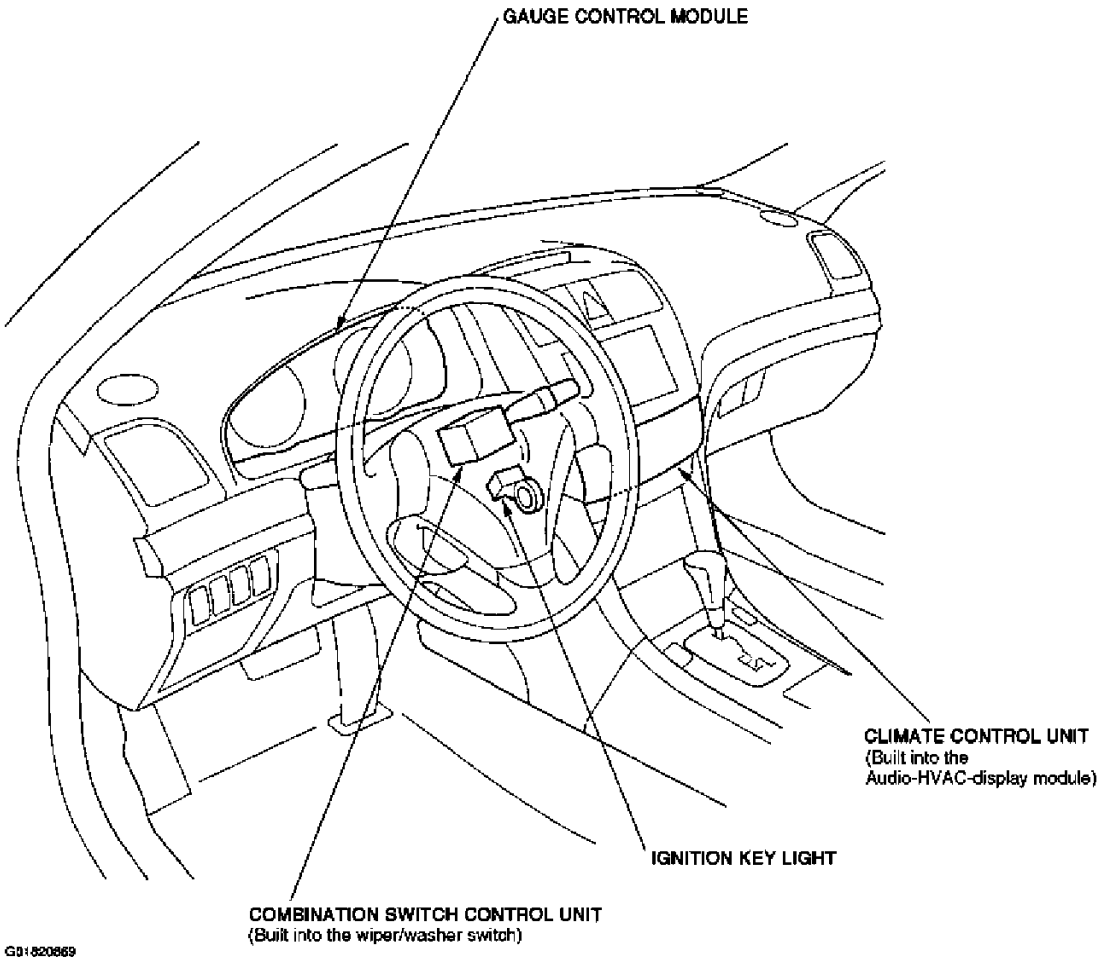


Fig. 2: Locating Multiplex Integrated Control System Components (2 Of 2)

SYSTEM DESCRIPTIONS

BODY CONTROLLER AREA NETWORK (B-CAN) & FAST CONTROLLER AREA NETWORK (F-CAN):

Fast Controller Area Network (F-CAN) and Body Controller Area Network (B-CAN) share information between multiple Electronic Control Units (ECUs). B-CAN communication moves at a slower speed for convenience related items, and for other functions. F-Can information moves at a faster speed for "real time" functions such as fuel and emissions data. To allow both systems to share information, the Gauge Control Module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.

The ECUs on the B-CAN and F-CAN transmit and receive information in the form of structured messages that may be received by several different ECUs on the network at one time. These message are transmitted and received across a communication circuit that consists of a single wire that is shared by all the ECUs on the circuit. Since messages on the F-CAN network are typically of higher importance, a second wire is used for communication circuit integrity monitoring. A backup circuit is also added to the headlight and wiper circuits

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on the B-CAN network in the event of a network wire or ECU failure that would effect the operation of the system.

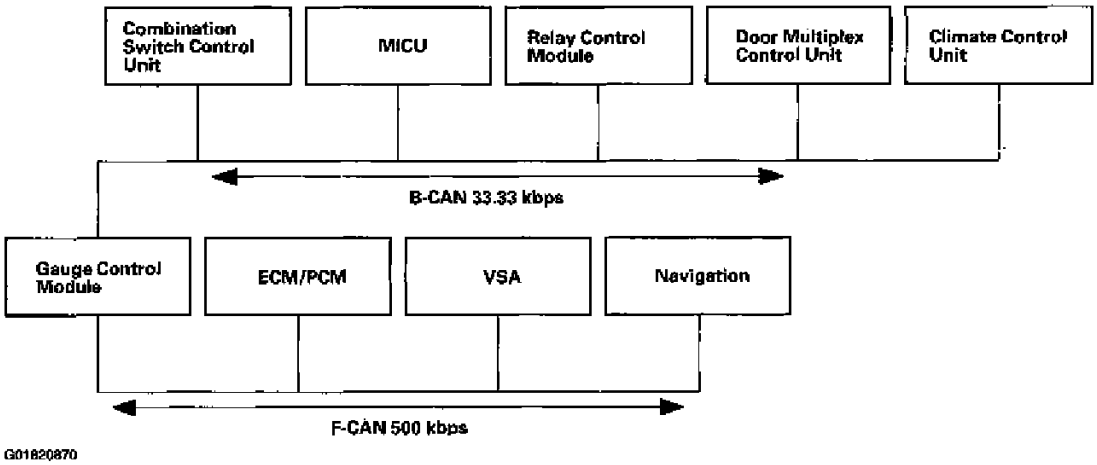


Fig. 3: Network Schematic

Messages are transmitted by an ECU (that monitors an input) over the communication circuit. ECUs that use the message (information related to that input) are the receivers. For example, the Combination Switch Control Unit monitors the wiper switch. When the wiper switch is placed in the low speed position, the Combination Switch Control Unit transmits that message on the communication circuit. The Relay Control Module receives the message and turns on the wipers by providing a ground for the relay.

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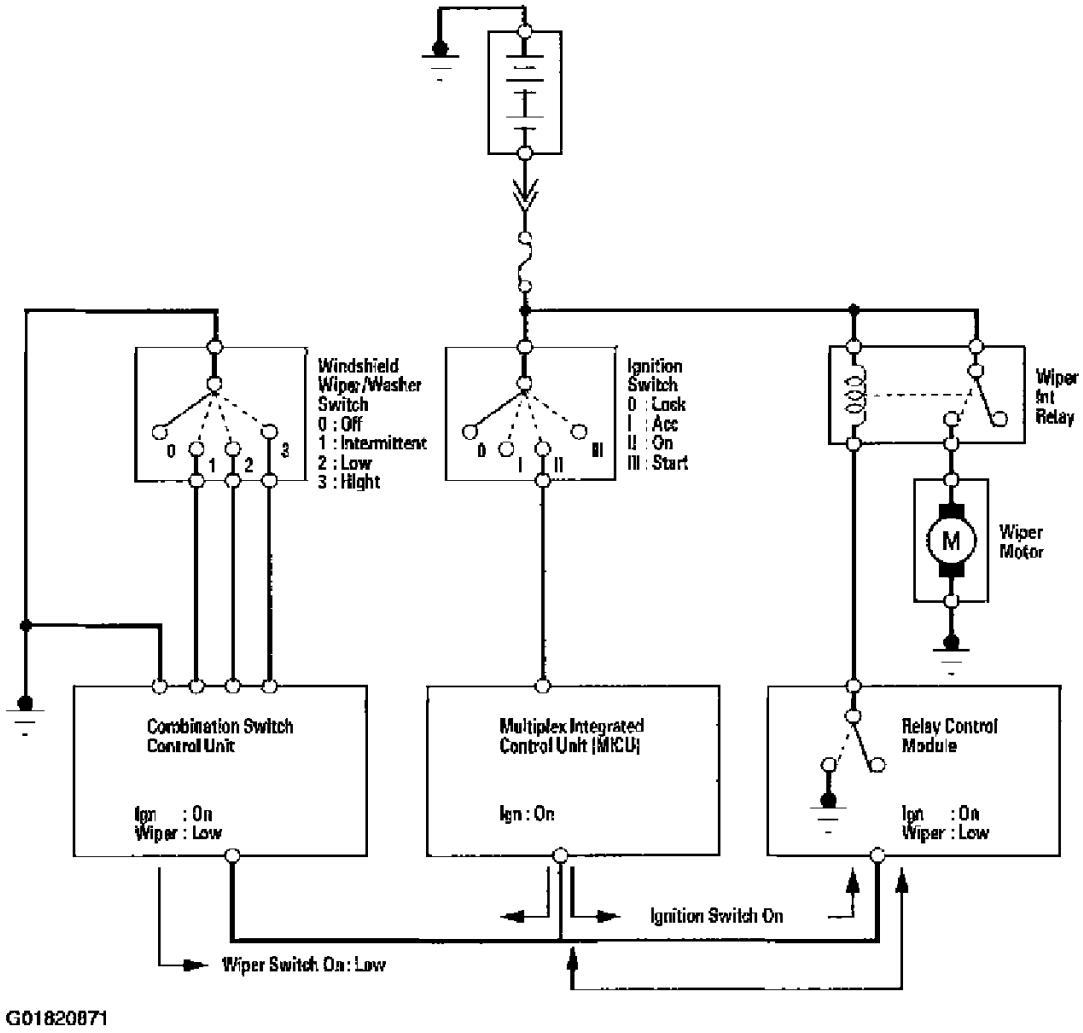


Fig. 4: Combination Switch Control Unit Monitoring The Wiper Switch

"CONNECTED" ECUS

Several ECUs are connected to each of the two networks. The Gauge Control Module is part of both networks since it is the "Gateway" between them. Below is a list of ECUs and the network they are connected to.

B-CAN ECUS

- Gauge Control Module
- Relay Control Module
- Multiplex Integrated Control Unit (MICU)
- Door Multiplex Control Unit
- Combination Switch Control Unit

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- Climate Control Unit

F-CAN ECUS

- Gauge Control Module
- ECM/PCM
- Navigation Control Unit
- VSA (Vehicle Stability Assist)

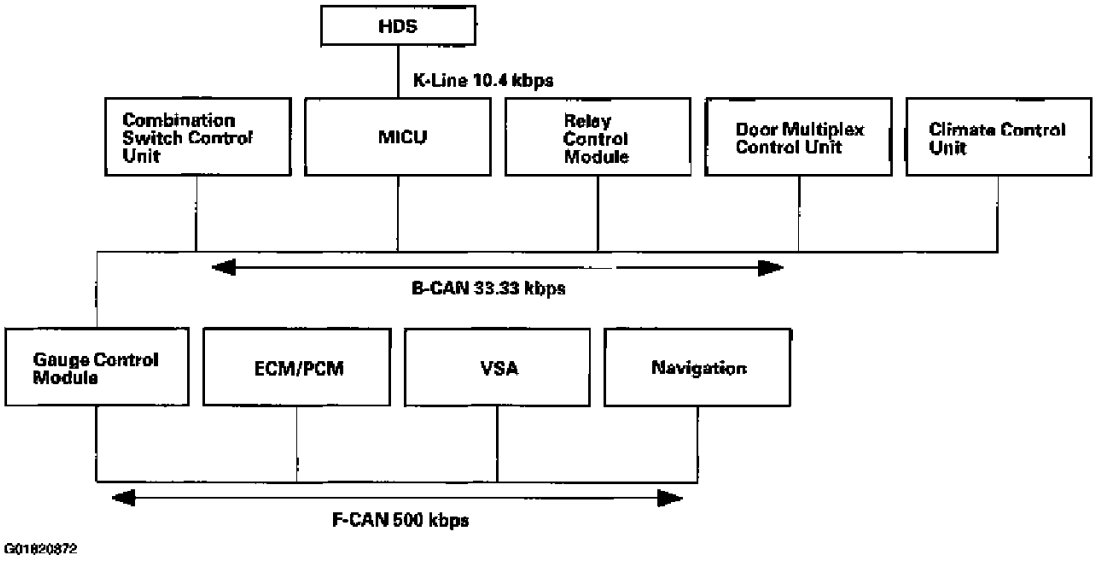


Fig. 5: Network Schematic

NETWORK "LOSS OF COMMUNICATION" ERROR CHECKING

The B-CAN and F-CAN systems send messages to each other to check the integrity of the network communication circuit. They do this by sending a specific digital message out after an event. For example, turning the ignition switch to ON. After the switch to ON, all the ECUs on the communication circuit expect to receive a message from other specific units within a specified amount of time. If the message is not received, the ECU will transmit a DTC reporting that the control units did not communicate.

EXAMPLE OF COMMUNICATION CIRCUIT TEST

Normal Circuit

1. Ignition switch turned ON.
2. The door multiplex control unit transmits a door switch signal.
3. The multiplex integrated control unit (MICU), relay control module and gauge control module receive the door lock switch signal.
4. Communication circuit test is passed.

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Since the door lock switch message was received by all the ECUs expecting to receive a signal, the communication circuit between those units is OK. There are multiple signal sent and received by each ECU during this time to insure that the communication circuit is intact.

Failed Circuit

1. Ignition switch is turned ON.
2. The door multiplex control unit transmits a door switch signal.
3. The multiplex integrated control unit (MICU), relay control module and gauge control module expect to receive the door lock switch signal, but since there is a break in the communication circuits, it is not received.
4. Each ECU that expects to receive the door lock switch signal from the door multiplex control unit will transmit DTCs for the signal that it did not receive.

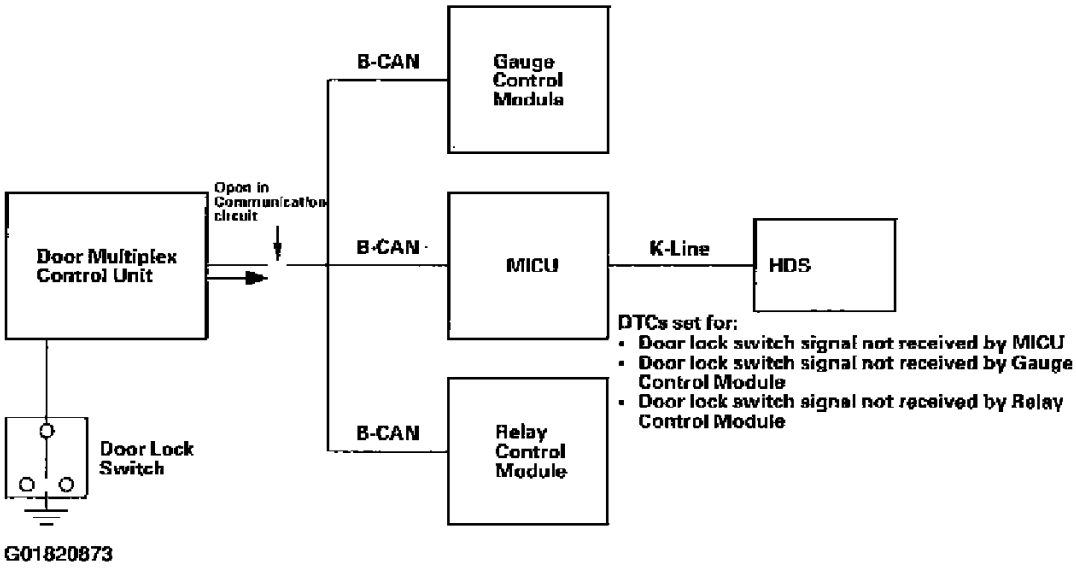


Fig. 6: Example Of Failed Circuit

Since there is a break in the communication circuit, the door lock switch signal could not be received by the gauge control module, multiplex integrated control unit (MICU) or the relay control module. Each of these units will set "loss of communication" error codes for the signal(s) they did not receive. There may be multiple communication DTCs if the unit that has become disconnected from the network would normally transmit multiple messages during the communication line test. For example, the door multiplex control unit sends keyless panic signal and door lock switch signal during the communication circuit test.

DIAGNOSTIC TROUBLE CODES

There are three DTC types used by the CAN networks.

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Internal error DTCs	The ECUs run internal checks. If one finds that there is an internal ECU problem, it will set an internal error DTC. Confirm that the battery and charging system are OK. If so, this indicates that the ECU needs to be replaced.
Loss of communication DTCs	Loss of communication DTCs (and Bus-off DTCs) are set when there is a problem with the communication between ECUs. This could be in the connections, the wiring, or the ECU (as called out in the DTC Troubleshooting index).
Signal error DTCs	The ECUs can run diagnostics on some input circuits to determine if that circuits is functioning properly(no opens or shorts). If a circuit fails the diagnostic test, a DTC will set (NOTE: Not all input circuits are tested for errors).

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Fig. 7: CAN Networks Diagnostic Trouble Code Type Table

TROUBLESHOOTING THE CAN CIRCUIT RELATED PROBLEMS

Using the HDS (Preferred method)

1. Go to B-CAN System Diagnosis Test Mode A to check for "Connected units" and DTCs (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. If no DTCs are retrieved, go to B-CAN System Diagnosis Test Mode C or D.

Without the HDS (Should be used only if HDS is unavailable)

1. Check for communication circuit problems using B-CAN System Diagnosis Test Mode 1 (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Check for DTCs while in Mode 1 (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
3. Sort, and then troubleshoot the DTCs in the order below. Refer to the DTC troubleshooting Index for DTC descriptions.
   - **1st:** Internal error and voltage failure DTCs
   - **2nd:** Loss of communication DTCs
   - **3rd:** Signal error DTCs
4. If no DTCs are retrieved, use B-CAN System Diagnosis Test Mode 2 to check all inputs related to failure (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

Loss of Communication DTC cross-reference chart

When an ECU is unable to communicate with the other ECUs on the circuit, the other units will set loss of communication DTCs. Use this chart to find the control unit that is not communicating.

1. Find the Transmitting Unit that is in the same row as all of the loss of communication DTCs retrieved.
2. Perform the input test for the transmitting unit.

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Transmitting Unit	Message	Receiving Unit/Loss of Communication DTC					
		MICU	Relay Control Module	Door Multiplex Control unit	Gauge Control Module	Combination Switch Control Unit	Climate Control Unit
MICU	Alarm		B1056				
	MICU		B1055	RX	B1157	B1255	
	Door Switch		B1057	RX	B1159		
Relay Control Module	Relay Control Module	B1005			B1158		
Door Multiplex Control unit	Panic	B1010	B1059				
	Door Lock Switch	B1006	B1058		B1160		
Gauge Control Module	VSP/NE		B1060				B1205
	A/T	B1008	B1061				
	ENGTEMP						B1206
	ILLUMI						B1207
Combination Switch Control Unit	Headlight Switch	B1007	B1062		B1155		
	Wiper Switch	B1009	B1063		B1156		

RX: Receiving unit does not set a loss of communication DTC.

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Fig. 8: Loss Of Communication DTC Cross-Reference Chart

B-CAN SYSTEM SWITCH DEVICE INDEX

Combination Switch Control Unit	
Input signal	**Output signal/device**
Dimmer switch, Lighting switch, Passing switch, Turn signal switch, Wiper/washer switch, Intermittent dwell time controller	None

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Fig. 9: Combination Switch Control Unit Table

Relay Control Module	
Input signal	**Output signal/Device**
A/C pressure switch, Climate control switch, Daytime running lights control (Canada), Hood switch, Horn switch, Windshield wiper motor.	Daytime running lights control (Canada), Headlight, Parking light, Horn, Windshield washer motor, Windshield wiper motor.

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Fig. 10: Relay Control Module Table

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Door Multiplex Control Unit	
Input signal	**Output signal**
Driver's door key cylinder switch (lock/unlock), Driver's door lock knob switch (lock/unlock), Driver's door lock switch, Driver's power window switches (up, down, auto up, auto down), Passenger's power window switches (up, down), Driver's power window motor pulser.	Driver's power window motor, Passenger's power window switches, Power window relay control.

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Fig. 11: Door Multiplex Control Unit Table

Multiplex Integrated Control Unit	
Input signal	**Output signal/Device**
Audio-HVAC display module security ground, Brake pedal position switch, Door switches, Ignition key cylinder switch, Park pin switch (A/T), Passenger's door lock knob switches (unlock), Passenger's door lock switch, Power window motor, Seat belt switch (unbuckled), Transmission range switch (P, R position), Trunk latch switch.	Door lock actuators, Hazard warning lights, Interior lights, Ignition key light, Key interlock solenoid, Turn signal lights, Moonroof relay, Trunk lid opener solenoid, Door courtesy lights.

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Fig. 12: Multiplex Integrated Control Unit Table

Gauge Control Module	
Input signal	**Output signal/Device**
Dash lights brightness controller, Daytime running lights signal (Canada), Engine oil pressure switch signal, Washer fluid level switch signal (Canada) Parking brake switch, Brake fluid level switch, fuel level sensor, Select /Reset switch, Cruise control combination switch (set, cancel, resume, master).	Dash lights, Fuel gauge, Gauge lights, Indicator, LEDs, Speedometer, Tachometer, ECT gauge, Warning buzzer, Odometer/Outside temperature display

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Fig. 13: Gauge Control Module Table

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Climate Control Unit	
Input signal	**Output signal/Device**
Evaporator temperature sensor, In-car temperature sensor, Outside air temperature sensor, Sunlight sensor Air mix motor position (Driver's and Passenger's), Mode motor position, Blower motor control feedback.	Air mix control motors (Driver's/Passenger's), Blower motor transistor, Mode control motor, Rear defogger relay, A/C Request, Recirculation motor.

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Fig. 14: Climate Control Unit Table

TROUBLESHOOTING

B-CAN SYSTEM DIAGNOSIS TEST MODE A

NOTE:

- **Perform this diagnosis first if the symptom is related to the B-CAN system.**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Make sure the system is related to B-CAN:
   - Gauge control module
   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Safety indicators
   - Rear window defogger
   - Horns (security and panic)
   - Chimes (key, seatbelt and lights ON)
   - Power windows
   - Moonroof timer
   - Wiper/washer
   - Security
   - Keyless entry
   - Power door locks
   - Climate control
   - Key interlock
   - Dash light brightness

   Is the symptom related to the B-CAN system?

   YES: Go to step 2.

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NO: Go to the system troubleshooting for the system with the symptom.

2. Connect the Honda Diagnostic System (HDS).
3. From BODY ELECTRICAL MENU, select connected units UNIT INFORMATION, and then select CONNECTED UNIT.
   - MICU
   - Door multiplex control unit
   - Gauge control module
   - Combination switch control unit
   - Relay control module
   - Climate control unit

NOTE:
- **If the unit is communicating with the scan tool, DETECT will be displayed.**
- **If the unit is not communicating, "NOT AVAILABLE" will be displayed.**

Are all control units communicating with the HDS?

YES: Go to step 4.

NO: If any of them are not communicating, go to B-CAN System Diagnosis Test Mode B. If all units are not communicating, go to DTC B1000 troubleshooting (see **DTC B1000: COMMUNICATION BUS LINE ERROR**).

4. Select the system that has the problem from the BODY ELECTRICAL MENU, then select DTCs.

Are any DTCs indicated?

YES: Go to step 5.

NO: If the problem is related to one the following items, go to B-CAN System Diagnosis Test Mode C:

- Exterior lights
- Turn signals
- Entry light control
- Interior lights
- Rear window defogger (climate control)
- Horns (security and panic)
- Power windows
- Moonroof timer
- Wiper/washer
- Power door locks

NOTE: **In the problem is related to one of the following items, go to the troubleshooting for that individual system:**

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- Gauge control module
- Safety indicators
- Chimes (key, seat belt and lights ON)
- Security
- Keyless entry
- Climate control
- Key interlock
- Dash light brightness
- Audio System
- Navigation

5. Record all DTCs and sort them by DTC type using the DTC troubleshooting Index.
6. Troubleshoot the DTC(s) in the following order:
   - Battery voltage DTCs.
   - Internal error DTCs.
   - Loss of communicator DTCs. Begin troubleshooting with the lowest number first (Example: if DTC B1006 and B1058 are retrieved, begin by troubleshooting B1006).
   - Signal error DTCs.

B-CAN SYSTEM DIAGNOSIS TEST MODE B

NOTE:

- **Perform this diagnosis if any of the control units are not communicating (NONE displayed in the HDS.) as found by the B-CAN system Diagnosis Test Mode A.**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Using the Honda Diagnostic System (HDS), select the system that has the symptom from the BODY ELECTRICAL MENU.
2. Select DTCs, and then check for loss of communication DTCs (use the DTC Troubleshooting Index to find the DTC type).

   Are loss of communication DTCs indicated?

   YES: Go to step 3.

   NO: Replace the MICU.
3. Perform the input test for the unit not communicating with the HDS.
   - **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**
   - **GAUGE CONTROL MODULE INPUT TEST**
   - **DOOR MULTIPLEX CONTROL UNIT INPUT TEST**
   - **COMBINATION SWITCH CONTROL UNIT INPUT TEST**
   - **RELAY CONTROL MODULE INPUT TEST**

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- **DTC B1205: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (VSP/NE MESSAGES); DTC B1206: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (ECT MESSAGES); DTC B1207: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (ILLUMI MESSAGES)**

B-CAN SYSTEM DIAGNOSIS TEST MODE C

NOTE:

- **Perform this diagnosis if a component that is controlled by the B-CAN system does not stop or does not turn off.**
- **If the component does not turn ON, go to B-CAN System Diagnosis Test Mode D.**
- **See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see B-CAN SYSTEM SWITCH DEVICE INDEX).**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Check for DTCs by selecting the TEST MODE MENU from the Honda Diagnostic System (HDS).

   Are any DTCs indicated?

   YES: Go to B-CAN System Diagnosis Test Mode A.

   NO: Go to step 2.
2. Turn OFF the switch that controls the malfunctioning component.
3. Select DATA LIST from the TEST MODE MENU, and check the input of the switch that controls the component.

   Does the tester indicate the switch is OFF?

   YES: Go to step 4.

   NO: Go to step 6 .
4. In the DATA LIST of, check the output signal of the malfunctioning component.

   Is the output signal OFF?

   YES: Go to step 5.

   NO: Replace the control unit that controls the device that will not turn OFF (see **B-CAN SYSTEM SWITCH DEVICE INDEX**).
5. Check the relay if applicable, then check for a short in the wire between the relay and the component, relay and control unit or the component and control unit.

   Are the relay and the wire harness OK?

   YES: Replace the control unit that controls the component that will not turn OFF.

   NO: Replace the relay or repair the wire harness.
6. Check the switch, then check for a short in the wire between the switch and the control unit that monitors the switch.

   Is the switch and wire harness OK?

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YES: Replace the control unit that monitors the switch.

NO: Replace the switch or repair the wire harness.

B-CAN SYSTEM DIAGNOSIS TEST MODE D

NOTE:

- **Perform this diagnosis a component that is controlled by the B-CAN system does not run or does not come on.**
- **If the component does not turn off or does not stop, go to B-CAN System Diagnosis Test Mode C.**
- **See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see B-CAN SYSTEM SWITCH DEVICE INDEX).**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Check the fuse of the malfunctioning output device.

   Is the fuse OK?

   YES: Go to step 2.

   NO: Replace the fuse and recheck.
2. Check for DTCs by selecting the TEST MODE MENU from the Honda Diagnostic System (HDS).

   Are any DTCs indicated?

   YES: Go to B-CAN System Diagnosis Test Mode A.

   NO: Go to step 3.
3. Turn ON the switch that controls the malfunctioning component.
4. Select DATA LIST from the TEST MODE MENU, and check output signal for the malfunctioning component.

   Is there an output signal?

   YES: Go to step 5.

   NO: Go to step 9 .
5. Check the relay and ground, then check for an open or a short in the circuit for the malfunctioning component.

   Are the relay and circuit OK?

   YES: Go to step 6.

   NO: Replace the relay or repair the wire circuit.
6. Perform the function test for the malfunctioning component.

   Does the output device pass the function test?

   YES: Go to step 7.

   NO: Replace the component.
7. With the malfunctioning output component, connect a voltmeter between the malfunctioning component and body ground on the wire that the control unit uses to control the component circuit.

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8. Select MISC. TEST from the TEST MODE MENU, and do the forced operation test of the malfunctioning component.

   Is there a change in voltage (12 V to 0 V or 0 V to 12 V)?

   YES: Replace the component.

   NO: Replace the control unit that controls the malfunctioning component.

9. Select DATA LIST from the TEST MODE MENU, and make sure the switch signal input for the malfunctioning system indicates a change when operated.

   Does the switch input indicate ON when the switch is ON?

   YES: Replace the control unit that controls the malfunctioning component.

   NO: Go to step 10.

10. Check the switch and its ground (if applicable), then check for an open or a short in the wire between the switch and the control unit that monitors it.

    Is the switch and the wire harness OK?

    YES: Replace the control unit that monitors the switch.

    NO: Replace the switch or repair the wire harness.

B-CAN SYSTEM DIAGNOSIS TEST MODE 1 (TROUBLESHOOTING WITHOUT THE HDS)

1. Check the No. 7 (10A) fuse and No. 21 (7.5A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES: Go to step 2.

   NO: Find and repair the cause of the blown fuse.

2. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
3. Turn the ignition switch ON (II).
4. Connect the MPCS Service connector (A) to the MCIC socket (B) in the under-dash fuse/relay box.

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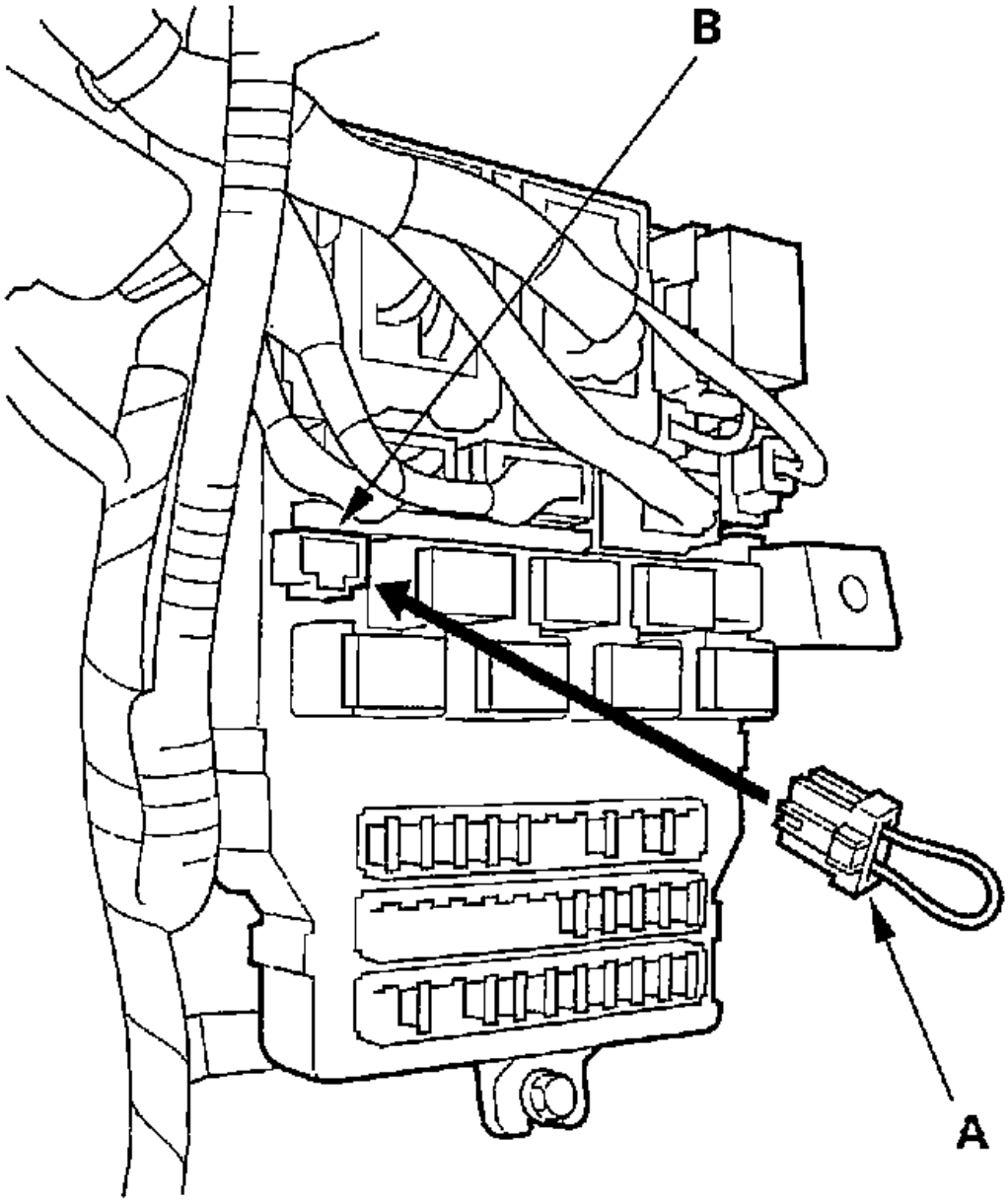


Fig. 15: Connecting The MPCS Service Connector To The MCIC Socket In The Under-Dash Fuse/Relay Box

5. Wait 5 seconds, then watch the ceiling light.
6. If there is a DTC, the ceiling light and ignition switch light will blink, pause, then repeat the DTC as long

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as the ignition switch ON (II).

Is there a repeating DTC?

YES: Count the blinks, then go to step 7.

NO: Go to step 8 .

7. About 1 second after you go into self-diagnosis Mode 1, the ceiling light will indicate the DTC, and repeat it every 3 seconds. If there is more than one DTC, the system will indicate them in ascending order, beginning from the DTC with the lowest numerical value. Troubleshoot the DTCs as indicated below:
   - **DTC 2, 3, 4 And 5 Simultaneously:** Check for an open in the BLU wire between multiplex integrated control unit D11 and relay module J7, BRN/RED wire between multiplex integrated control unit J4 and door multiplex control unit No. 16, LT GRN wire between multiplex integrated control unit X27 and combination switch control unit No. 4, BRN/YEL wire between multiplex integrated control unit N28 and gauge B25. If the wire is OK, substitute a known-good under-dash fuse/relay box (multiplex integrated control unit), under-hood fuse/relay box, power window master switch, wiper/washer switch and gauge one at a time, in that order, and recheck for the DTCs after each substitution.
   - **DTC 1 Only:** Go to MICU input test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).
   - **DTC 2 Only (No Other DTCs Present):** Go to the relay module input test. If all inputs are OK, substitute a known-good relay module and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
   - **DTC 3 Only (No Other DTCs Present):** Go to the door multiplex control unit input test. If all inputs are OK, substitute a known-good door multiplex control unit and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
   - **DTC 4 Only (No Other DTCs Present):** Go to the combination switch control unit input test. If all inputs are OK, substitute a known-good wiper/washer switch and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
   - **DTC 5 Only (No Other DTCs Present):** Go to the gauge control module input test. If all inputs are OK, substitute a known-good gauge control module and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.

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DTC	Cause
1	The MICU cannot receive signals from the bus communication line.
2	The MICU cannot receive signals from the relay module communication line.
3	The MICU cannot receive signals from the power window communication line.
4	The MICU cannot receive signal from the combination switch communication line.
5	The MICU cannot receive signals from the gauge control module.

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Fig. 16: DTC Table

8. Check for B-CAN DTCs indicated by the gauge control module while still in Test Mode 1.
   Are any DTCs indicated?
   YES: Go to step 9.
   NO: Go to step 11 .
9. Record all DTCs and sort them by type using the DTC Troubleshooting Index.
10. Troubleshoot the DTCs in the following order:
    - Battery voltage DTCs
    - Internal error DTCs
    - Loss of communication DTCs (begin with the lowest number first; for example, if B1006 and B1059 are retrieved, troubleshoot B1006 first)
    - Signal error DTCs
11. Remove the MPCS service connector from the under-dash fuse/relay box socket for 5-10 seconds, then re-insert it.

NOTE: If the MPCS connector is disconnected for too short or too long of a time, or the ignition switch is turned OFF, the system will return to Test Mode 2.

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12. In the table below is a list of circuits that can be checked in Test Mode 2. Operate the switch that is most closely related to the problem. If the circuit is OK, the ceiling light will blink once. If the circuit is faulty, there will be no indication.

Does the ceiling light indicate proper switch operation?

YES: Go to function and input test for the system related to the failure.

NO: Repair the open, short, or replace the faulty switch.

Item
Driver's door switch (OPEN)
Front passenger's door switch (OPEN)
Left rear door switch (OPEN)
Right rear door switch (OPEN)
Trunk latch switch (OPEN)
Front passenger's door lock knob switch (UNLOCK)*
Left rear door lock knob switch (UNLOCK)
Right rear door lock knob switch (UNLOCK)*
Audio-HVAC display module security ground (disconnected)
Driver's seat belt switch (unbuckled)
Brake pedal position switch (ON; brake pedal pressed)
Passenger's door lock switch (LOCK/UNLOCK)

* The front passenger's and right rear door lock knob switches must be in the locked position when beginning the test.

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Fig. 17: MICU Table

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Item
Windsheld wiper switch (AUTO STOP/PARK)
Hood switch (open)
A/C pressure switch (/thermal protector (A/C ON)

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Fig. 18: Relay Control Module Table

Item
Turn signal switch (LEFT)
Turn signal switch (RIGHT)
Combination light switch (ON; each position)
Dimmer switch (ON)
Passing switch (ON)
Windsheld wiper switch (ON)
Intermittent wiper dwell timer
Windshield washer switch (ON)

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Fig. 19: Combination Switch Control Unit Table

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Item
Power window master switch (Driver's Window UP)
Power window master switch (Driver's Window DOWN)
Power window master switch (Driver's Window AUTO UP)
Power window master switch (Driver's Window AUTO DOWN)
Power window master switch (Front Passenger's Window UP)
Power window master switch (Front Passenger's Window DOWN)
Power window master switch (Left Rear Window UP)
Power window master switch (Left Rear Window DOWN)
Power window master switch (Right Rear Window UP)
Power window master switch (Right Rear Window DOWN)
Driver's door key cylinder switch (LOCK)
Driver's door key cylinder switch (UNLOCK)
Driver's door lock switch (LOCK)
Driver's door lock switch (UNLOCK)
Driver's door lock knob switch (LOCK)
Driver's door lock knob switch (UNLOCK)

* A second key is necessary to check the key cylinder inputs.
Be sure to rotate the key cylinder switch two times to each position (lock and lock, unlock and unlock) to ensure the door lock knob switch is in the appropriate position.

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Fig. 20: Power Window Master Switch (Door Multiplex Control Unit) Table

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Item
Parking brake switch (ON; parking brake applied)
Cruise control SET/RESUME/CANCEL switch (ON; switch pressed)
Transmission range switch (P, R, N, D)
Washer fluid level switch (Canada)
Brake fluid level switch (fluid removed)

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Fig. 21: Gauge Control Module Table

HOW TO DISPLAY DTC ON THE GAUGE CONTROL MODULE

While in Test Mode 1, the DTCs which have been detected and stored individually by various B-CAN (Body-Controller Area Network) units, will be shown one by one on the ODO display when the communication between the Multiplex Integrated Control Unit (MICU) and the gauge control module is normal. To scroll through the DTCs, press the RESET knob on the gauge control module.

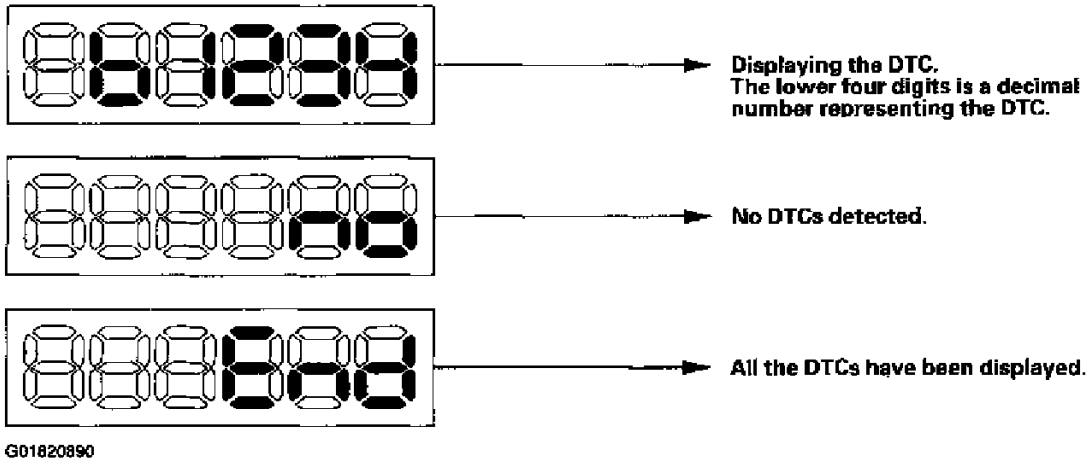


Fig. 22: Displaying DTCs On The Gauge Control Module

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MICU	10
Relay Control Module	11
Door Multiplex Control Unit	30
Gauge Control Module	50
Climate Control Module	51
Combination Switch Control Unit	70

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Fig. 23: Control Unit DTC Table

HOW TO CLEAR THE DTC

1. While in Test Mode 1, press and hold down the RESET knob for more than 10 seconds.
2. The unit that has stored the code can be identified by the number shown on the trip display.

DTC TROUBLESHOOTING INDEX

DTC	Description	ECU	DTC type	Page
B1000	Communication circuit error (BUS Off)	MICU	Loss of Communication	(see page 22-102)
B1001	MICU Internal Error	MICU	Internal Error	(see page 22-103)
B1002	MICU Internal Error	MICU	Internal Error	(see page 22-103)
B1005	MICU lost communication with Relay Control Module	MICU	Loss of Communication	(see page 22-104)
B1006	MICU lost communication with Door Multiplex Control Unit (door lock switch message)	MICU	Loss of Communication	(see page 22-104)
B1007	MICU lost communication with Combination Switch Control Unit (headlight switch message)	MICU	Loss of Communication	(see page 22-105)
B1008	MICU lost communication with Gauge Control Module (A/T message)	MICU	Loss of Communication	(see page 22-105)
B1009	MICU lost communication with Combination Switch Control Module (wiper switch message)	MICU	Loss of Communication	(see page 22-106)
B1010	MICU lost communication with Door Multiplex Control Unit (panic message)	MICU	Loss of Communication	(see page 22-106)
B1026	Passenger's door lock switch malfunction	MICU	Signal Error	(see page 22-134)
B1050	Communication circuit error (BUS Off)	Relay Control Module	Loss of Communication	(see page 22-102)

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Fig. 24: DTC Troubleshooting Index (1 Of 6)

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DTC	Description	ECU	DTC type	Page
B1055	Relay Control Module lost communication with MICU	Relay Control Module	Loss of Communication	(see page 22-62)
B1056	Relay Control Module lost communication with MICU (alarm message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1057	Relay Control Module lost communication with MICU (door switch message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1058	Relay Control Module lost communication with Door Multiplex Control Unit (door lock switch message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1059	Relay Control Module lost communication with Door Multiplex Control Unit (panic message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1060	Relay Control Module lost communication with Gauge Control Module (VSP/NE message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1061	Relay Control Module lost communication with Gauge Control Module (A/T message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1062	Relay Control Module lost communication with Combination Switch Control Module (headlight switch message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1063	Relay Control Module lost communication with Combination Switch Control Module (wiper switch message)	Relay Control Module	Loss of Communication	(see page 22-62)

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Fig. 25: DTC Troubleshooting Index (2 Of 6)

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DTC	Description	ECU	DTC type	Page
B1075	Headlight switch malfunction	Relay Control Module	Signal Error	(see page 22-155)
B1076	Windshield wiper signal error	Relay Control Module	Signal Error	(see page 22-206)
B1077	Wiper switch (As) malfunction	Relay Control Module	Signal Error	(see page 22-207)
B1078	Daytime running lights malfunction	Relay Control Module	Signal Error	(see page 22-156)
B1080	Power supply circuit (IG1 line) input error for Relay Control Module and MICU	Relay Control Module	Signal Error	(see page 22-108)
B1100	Communication circuit error (BUS Off)	Door Multiplex Control Unit	Loss of Communication	(see page 22-102)
B1102	Door Multiplex Control Unit Internal Error	Door Multiplex Control Unit	Internal Error	(see page 22-107)
B1125	Driver's power window motor A pulse malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-202)
B1126	Driver's power window motor B pulse malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-202)
B1127	Driver's door lock key cylinder switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-135)
B1128	Driver's door lock switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-136)
B1129	Driver's door knob switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-137)
B1140	Driver's power window position detect circuit malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-202)
B1150	Communication circuit error (BUS Off)	Gauge Control Module	Loss of Communication	(see page 22-102)
B1152	Gauge Control Module Internal Error	Gauge Control Module	Internal Error	(see page 22-230)
B1155	Gauge Control Module lost communication with Combination Switch Control Module (headlight switch message)	Gauge Control Module	Loss of Communication	(see page 22-231)
B1156	Gauge Control Module lost communication with Combination Switch Control Module (wiper switch message)	Gauge Control Module	Loss of Communication	(see page 22-231)

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Fig. 26: DTC Troubleshooting Index (3 Of 6)

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DTC	Description	ECU	DTC type	Page
B1157	Gauge Control Module lost communication with MICU	Gauge Control Module	Loss of Communication	(see page 22-232)
B1158	Gauge Control Module lost communication with Relay Control Module	Gauge Control Module	Loss of Communication	(see page 22-232)
B1159	Gauge Control Module lost communication with MICU (door switch message)	Gauge Control Module	Loss of Communication	(see page 22-233)
B1160	Gauge Control Module lost communication with Door Multiplex Control Unit (door lock switch message)	Gauge Control Module	Loss of Communication	(see page 22-233)
B1168	Gauge Control Module lost communication with ECM/PCM (engine messages)	Gauge Control Module	Loss of Communication	(see page 22-107)
B1169	Gauge Control Module lost communication with PCM (A/T messages)	Gauge Control Module	Loss of Communication	(see page 22-107)
B1175	Fuel gauge sending unit signal malfunction	Gauge Control Module	Signal Error	(see page 22-234)
B1177	Abnormal battery voltage (7.5 V)	Gauge Control Module	Signal Error	(see page 22-235)
B1178	F-CAN communication circuit error	Gauge Control Module	Loss of Communication	(see page 22-107)
B1200	Communication circuit error (BUS Off)	Climate Control Unit	Loss of Communication	(see page 22-102)
B1202	Climate Control Unit Internal Error	Climate Control Unit	Internal Error	(see page 21-47)
B1205	Climate Control Unit lost communication with Gauge Control Module (VSP/NE message)	Climate Control Unit	Loss of Communication	(see page 21-48)
B1206	Climate Control Unit lost communication with Gauge Control Module (ENGTEMP message)	Climate Control Unit	Loss of Communication	(see page 21-48)
B1207	Climate Control Unit lost communication with Gauge Control Module (ILLUMI message)	Climate Control Unit	Loss of Communication	(see page 21-48)
B1225	Open in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-26)
B1226	Short in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-27)
B1227	Open in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-28)

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Fig. 27: DTC Troubleshooting Index (4 Of 6)

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DTC	Description	ECU	DTC type	Page
B1228	Short in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-29)
B1229	Open in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-30)
B1230	Short in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-32)
B1231	Open in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-33)
B1232	Short in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-34)
B1233	Open in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-35)
B1234	Short in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-36)
B1235	Problem in the driver's air mix control linkage, door, or motor	Climate Control Unit	Signal Error	(see page 21-38)
B1236	Open in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-45)
B1237	Short in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-46)
B1238	Problem in the passenger's air mix control linkage, door, or motor	Climate Control Unit	Signal Error	(see page 21-47)
B1239	Open or short in the mode control motor circuit	Climate Control Unit	Signal Error	(see page 21-38)
B1240	Problem in the mode control linkage, doors, or motor	Climate Control Unit	Signal Error	(see page 21-40)
B1241	Problem in the blower motor circuit	Climate Control Unit	Signal Error	(see page 21-41)
B1250	Communication circuit error (BUS Off)	Combination Switch Control Unit	Loss of Communication	(see page 22-102)
B1251	Combination Switch Control Unit internal error	Combination Switch Control Unit	Internal Error	(see page 22-109)
B1255	Combination Switch Control Unit lost communication with MICU	Combination Switch Control Unit	Loss of Communication	(see page 22-109)

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Fig. 28: DTC Troubleshooting Index (5 Of 6)

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DTC	Description	ECU	DTC type	Page
B1275	Headlight switch OFF position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1276	Headlight switch SMALL position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1277	Headlight switch AUTO position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1278	Headlight switch ON position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1279	Dimmer switch circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-159)
B1280	Turn signal switch circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-160)
B1281	Windshield wiper switch MIST position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)
B1282	Windshield wiper switch INT (AUTO) position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)
B1283	Windshield wiper switch LOW position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)
B1284	Windshield wiper switch HIGH position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)

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Fig. 29: DTC Troubleshooting Index (6 Of 6)

DESCRIPTION

HDS INPUTS & COMMANDS

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System Menu	Data List	Data List Indication
Wiper	Brake Pedal Position	Brake pedal pushed: ON Brake pedal released: OFF
	Windshield Wiper Park Switch (AUTO STOP/PARK)	Wipers in park position: ON Wipers in other position: OFF
	Windshield Wiper Switch (BACK-UP)	Wiper switch in HI position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (INTERMITTENT)	Wiper switch in INT position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (LOW)	Wiper switch in LOW position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (HIGH)	Wiper switch in HI position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (MIST)	Wiper switch in MIST position: ON Wiper switch in other position: OFF
	Windshield Washer Switch	Washer switch on: ON Washer switch off: OFF
	Windshield Wiper Motor HI Command	Wiper high speed command on: ON Wiper high speed command off: OFF
	Windshield Wiper Motor Lo Command	Wiper low speed command on: ON Wiper high low command off: OFF
	Windshield Washer Motor Command	Washer command on: ON Washer command off: OFF
	Intermittent Wiper Dwell Timer	Switch at short setting: 0.0 Switch at long setting: 25
Power window	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	P/W Main Switch	On: ON Off: OFF
	P/W Master Switch (Driver's window AUTO)	Auto position: ON Neutral position: OFF
	P/W Master Switch (Driver's window UP)	Up position: ON Neutral position: OFF
	P/W Master Switch (Driver's window DOWN)	Down position: ON Neutral position: OFF
	P/W Master SW. (Front Psngr's Wndw UP)	Up position: ON Neutral position: OFF
	P/W Master SW. (Front Psngr's Wndw DOWN)	Down position: ON Neutral position: OFF
	P/W Master Switch (Left Rear window UP)	UP position: ON Neutral position: OFF
	P/W Master Switch (Left Rear window DOWN)	Down position: ON Neutral position: OFF
	P/W Master Switch (Right Rear Wndw UP)	UP position: ON Neutral position: OFF
	P/W Master SW. (Right Rear Wndw DOWN)	Down position: ON Neutral position: OFF
	Driver's P/W Motor Pulse A	Window in motion: EXIST Window stopped: N/A
	Driver's P/W Motor Pulse B	Window in motion: EXIST Window stopped: N/A
	Driver's P/W Motor Command	OFF/UP/DOWN
	Front Passenger's P/W Motor Command	OFF/UP/DOWN
	Left Rear P/W Motor Command	OFF/UP/DOWN
	Right Rear P/W Motor Command	OFF/UP/DOWN
	P/W Relay Command	On command: ON Off command: OFF
	Moonroof Timer Command	Enabled: ON Disabled: OFF

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Fig. 30: HDS Inputs & Commands Table (1 Of 8)

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System Menu	Data List	Data List Indication
Lighting	Driver's Door Switch	Door open: ON Door closed: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other positions: OFF
	Horn Command	Horn on command: ON Horn off command: OFF
	Headlight Switch (OFF)	In off position: ON In other positions: OFF
	Headlight Switch (Parking)	In park light position: ON In other positions: OFF
	Headlight Switch (HEADLIGHT)	In headlight position: ON In other position: OFF
	Headlight Switch (BACK-UP)	In headlight position: ON In headlight position: OFF
	Headlight Switch (DIMMER)	In hi-beam position: ON In low-beam position: OFF
	Headlight Switch (PASSING)	Passing switch on: ON Passing switch off: OFF
	Turn Signal Switch (LEFT)	In left position: ON Neutral position: OFF
	Turn Signal Switch (RIGHT)	In right position: ON Neutral position: OFF
	DRL Signal (Canada)	
	Ignition Key Cylinder Light Command	Light on command: ON Light off command: OFF
	Interior Light Command	Light on command: ON Light off command: OFF
	Foot Light Command	Light on command: ON Light off command: OFF
	Left Turn Signal Command	Light on command: ON Light off command: OFF
	Right Turn Signal Command	Light on command: ON Light off command: OFF
	Hazard Signal Command	Hazard on command: ON Hazard off command: OFF
	DRL Relay command (Canada)	Relay on command: ON Relay off command: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF
	Fog Light Command	Light on command: ON Light off command: OFF
	Rear Defroster Command	Defroster on command: ON Defroster off command: OFF
	DRL Command (Canada)	DRL on command: ON DRL off command: OFF

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Fig. 31: HDS Inputs & Commands Table (2 Of 8)

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System Menu	Data List	Data List Indication
Gauge	Driver's Door Switch	Door open: ON Door Closed:OFF
	Front Passenger's Door Switch	Door open: ON Door Closed:OFF
	Left Rear Door Switch	Door open: ON Door Closed:OFF
	Right Rear Door Switch	Door open: ON Door Closed:OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk Closed:OFF
	Trunk Lid Release Command	Release command: ON Other: OFF
	Headlight Switch (OFF)	In off position: ON In other positions: OFF
	Headlight Switch (Parking)	In park light position: ON In other positions: OFF
	Headlight Switch (HEADLIGHT)	In headlight position: ON In other positions: OFF
	Headlight Switch (DIMMER)	In hi-beam position: ON In low-beam position: OFF
	Headlight Switch (PASSING)	Passing switch on: ON Passing switch off: OFF
	Turn Signal Switch (LEFT)	In left position: ON Neutral position: OFF
	Turn Signal Switch (RIGHT)	In right position: ON Neutral position: OFF
	DRL Signal (Canada)	
	Left Turn Signal Command	Light on command: ON Light off command: OFF
	Right Turn Signal Command	Light on command: ON Light off command: OFF
	Hazard Signal Command	Hazard on command: ON Hazard off command: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF
	Fog Light Command	Light on command: ON Light off command: OFF
	Brake Pedal Position Switch	Brake pedal pushed: ON Brake pedal released: OFF

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Fig. 32: HDS Inputs & Commands Table (3 Of 8)

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System Menu	Data List	Data List Indication
Gauge	Ignition Key Cylinder Switch	Key in ignition: ON Key out of ignition: OFF
	Driver's Seat Belt Buckle Switch	Unbuckled: ON Buckled: OFF
	A/T Gear Position Switch (R)	Shifter in reverse position: ON Shifter in other position: OFF
	Cruise Control Main Switch Input	Cruise main switch on: ON Cruise main switch off: OFF
	Engine Oil Pressure Switch	Engine off (low pressure): ON Engine running: OFF
	Washer Fluid Level Switch (Canada)	Fluid level low: ON Fluid level normal: OFF
	Gauge Select/Reset Switch	Reset button pushed: ON Reset button released: OFF
	Parking Brake Switch	Park brake lever pulled: ON Park brake lever released: OFF
	Brake Fluid Level Switch	Fluid level low: ON Fluid level normal: OFF
	Fuel Sending Unit Input 1	Fuel tank empty: 4V Fuel tank half full: 2.5V Fuel tank full: 1V
	Fuel Sending Unit Input 2	Fuel tank empty: 5° Fuel tank half full: 50° Fuel tank full: 100°
	ABS Indicator	Indicator command on: ON Indicator command off: OFF
	EBD (Brake Light) Indicator	Indicator command on: ON Indicator command off: OFF
	MIL Indicator	Indicator command on: ON Indicator command off: OFF
	Washer Fluid Level Indicator (Canada)	Indicator command on: ON Indicator command off: OFF
	DRL Indicator (Canada)	Indicator command on: ON Indicator command off: OFF
	Low Oil Pressure Indicator	Indicator command on: ON Indicator command off: OFF
	Charge System Indicator	Indicator command on: ON Indicator command off: OFF
	Cruise Main Switch ON Indicator	Indicator command on: ON Indicator command off: OFF
	Maintenance Required Indicator	Indicator command on: ON Indicator command off: OFF
	High Beam Indicator	Indicator command on: ON Indicator command off: OFF
	Parking Light ON Indicator	Indicator command on: ON Indicator command off: OFF
	Low Fuel Warning Indicator	Indicator command on: ON Indicator command off: OFF
	Security Indicator	Indicator command on: ON Indicator command off: OFF
	Fuel gauge Needle Command	Fuel tank empty: 4V Fuel tank half full: 2.5V Fuel tank full: 1V

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Fig. 33: HDS Inputs & Commands Table (4 Of 8)

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System Menu	Data List	Data List Indication
Door lock	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Sw. (LOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Sw. (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob up: OFF
	Driver's Door Key Cylinder Switch (LOCK)	Key turned to lock: ON Neutral position: OFF
	Driver's Door Key Cylinder Switch (UNLOCK)	Key turned to unlock: ON Neutral position: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
Climate control	Air Pressure Switch/Thermal Protector	A/C on: ON

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Fig. 34: HDS Inputs & Commands Table (5 Of 8)

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System Menu	Data List	Data List Indication
Keyless	Driver's Door Switch	Door open: ON Door Closed: OFF
	Front Passenger's Door Switch	Door open: ON Door Closed: OFF
	Left Rear Door Switch	Door open: ON Door Closed: OFF
	Right Rear Door Switch	Door open: ON Door Closed: OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk closed: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (LOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Driver's Door Key Cylinder Switch (LOCK)	Key turned to lock: ON Neutral position: OFF
	Driver's Door Key Cylinder Switch (UNLOCK)	Key turned to lock: ON Neutral position: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other positions: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
	Trunk Lid/Tailgate Release Command	Release command: ON Other: OFF

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Fig. 35: HDS Inputs & Commands Table (6 Of 8)

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System Menu	Data List	Data List Indication
Security	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk closed: OFF
	Hood Switch	Hood open: ON Hood closed: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (LOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Lock Knob Sw. (LOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Lock Knob Sw. (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other position: OFF
	Horn Command	Horn on command: ON Horn off command: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
	Trunk Lid/Tailgate Release Command	Release command: ON Other: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF

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Fig. 36: HDS Inputs & Commands Table (7 Of 8)

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System	Description	Data List
Gauge	Speedometer displays value inputted	Speedometer
	Tachometer displays value inputted	Tachometer
	Fuel gauge displays value inputted	Fuel Level Gauge
	Temperature gauge displays value inputted	Engine Temperature Gauge
	Turns ABS indicator on/off	ABS Indicator
	Turns BRAKE indicator on/off	EBD Indicator
	Turns MIL on/off	MIL Status
	Turns washer level indicator on/off	Windshield Washe Fluid Level Indicator (Canada)
	Turns DRL indicator on/off	Daytime Running Lights Indicator (Canada)
	Turns Low oil pressure indicator on/off	Engine Oil Pressure Indicator
	Turns charging system indicator on/off	Charging System Indicator
	Turns cruise main switch indicator on/off	Cruise Control Main Switch Indicator
	TURNS maintenance required indicator on/off	Maintenance Required Indicator
	Turns high beam indicator on/off	High Beam Indicator
	Turns light on indicator on/off	Lights On Indicator
	Turns low fuel indicator on/off	Low Fuel Indicator
	Turns security indicator on/off	Security Indicator
	Displays inputted value	Trip Meter
	Turns A/T P position indicator on/off	A/T Gear Position Indicator (P)
	Turns A/T R position indicator on/off	A/T Gear Position Indicator (R)
	Turns A/T N position indicator on/off	A/T Gear Position Indicator (N)
	Turns A/T D position indicator on/off	A/T Gear Position Indicator (D)
	Turns A/T D3 position indicator on/off	A/T Gear Position Indicator (D3)
	Turns A/T 2 position indicator on/off	A/T Gear Position Indicator (2)
	Turns A/T 1 position indicator on/off	A/T Gear Position Indicator (1)
	Turns VSA indicator on/off	VSA Indicator
	Turns VSA activation Indicator on/off	VSA Activation Indicator
	Controls gauge illumination brightness to inputted value	Illumination Brightness Control
	Turns key chime on/off	Key Chime
	Turns headlight chime on/off	Headlight Chime
	Turns seatbelt chime on/off	Seatbelt Reminder Chime
Lighting	Turns ignition key cylinder light on/off	Ignition Key Cylinder Light Command
	Turns interior light(s) on/off	Interior Light Command
	Turns foot light on/off	Foot Light Command
	Turns left signal light on/off	Left Turn Signal Command
	Turns right turn signal light on/off	Right Signal Command
	Turns hazard lights on/off	Hazard Signal Command
	Turns DRL relay on/off	Daytime Running Lights Relay Command (Canada)
	Turns headlights on/off	Headlight Command
	Turns high beams on/off	Headlight High Beam Command
	Turns parking lights on/off	Parking Lights Command
	Controls DRL functions on command	Daytime Running Lights Signal (Canada)
Door lock	Controls lock and unlock functions on command	Door LOCK Command
Keyless	Turns trunk release actuator on/off	Trunk Lid/Tailgate Release Command
Climate control	Turns rear defoster on/off	Rear Defroster
Power window	Runs driver's window up	Driver's Window Up
	Runs driver's window down	Driver's Window Down
	Runs passenger's window up	Front Passenger's Window Up
	Runs passenger's window down	Front Passenger's Window Down
	Runs left rear window up	Left Rear Window Up
	Runs left rear window down	Left Rear Window Down
	Runs right rear window up	Right Rear Window Up
	Runs right rear window down	Right Rear window Down
	Turns power window relay on/off	Power Window Relay Command
Wiper	Turns wiper low speed on/off	Windshield Wiper Motor Low Command
	Turns wiper high speed on/off	Windshield Wiper Motor High Command
	Turns washer on/off	Windshield Washer Command
	Turns wiper intermittent function on/off	Intermittent Wiper Dwell Timer
Security	Turns horns on/off	Horn Command
Climate control	Initiates climate control self test function	Climate Control Self Test (INSPECTION MENU)

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Fig. 37: HDS Inputs & Commands Table (8 Of 8)

CIRCUIT DIAGRAM

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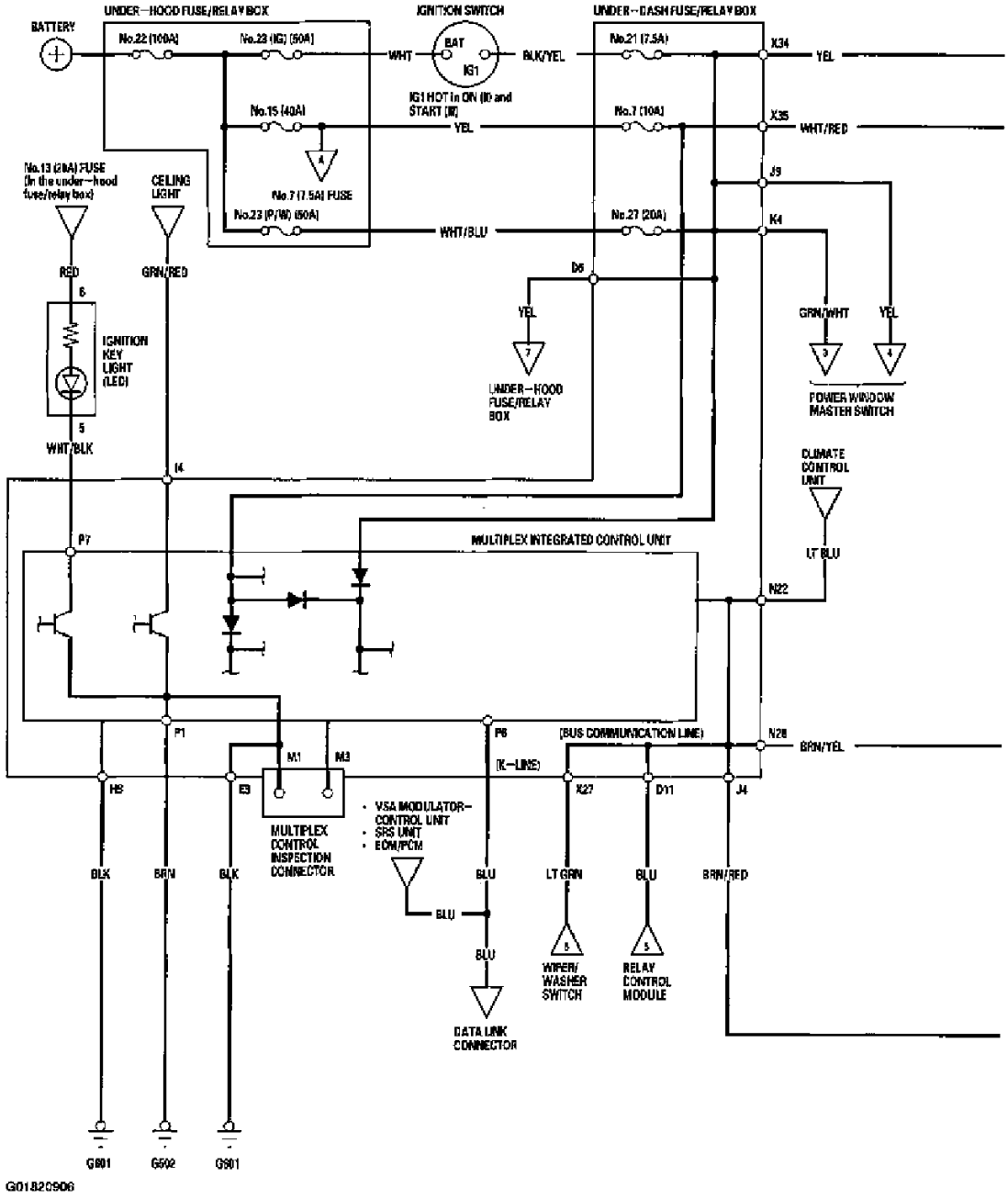


Fig. 38: Multiplex Integrated Control System Wiring Diagram (1 Of 2)

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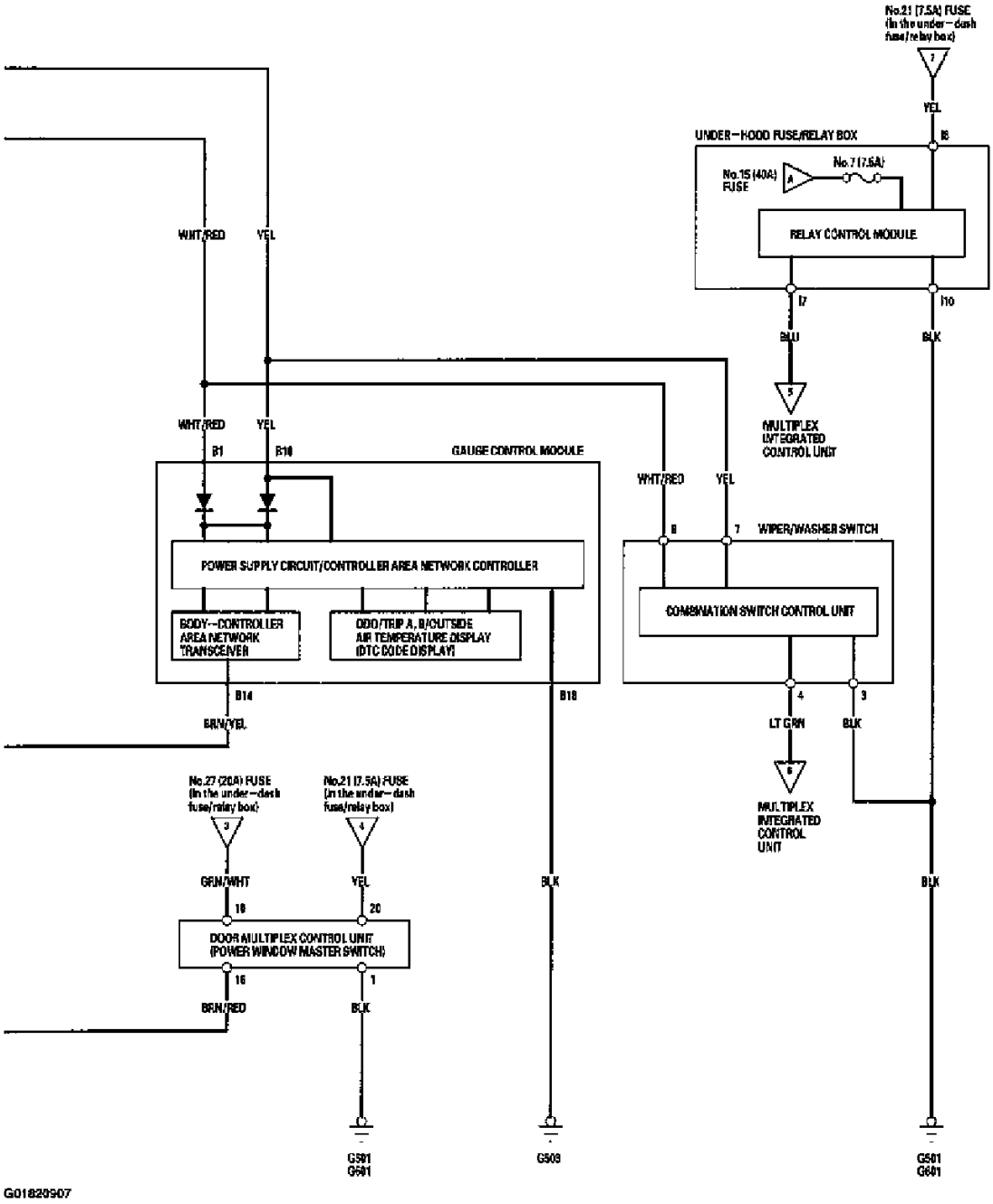


Fig. 39: Multiplex Integrated Control System Wiring Diagram (2 Of 2)

DTC TROUBLESHOOTING

DTC B1000: COMMUNICATION BUS LINE ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.

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3. Check for DTCs using the HDS.

   Is DTC B1000 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The communication bus line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs using the HDS.

   Are DTC B1005, B1006, B1007, B1008, B1009 and B1010 indicated?

   YES: Go to step 5.

   NO: Replace the MICU.

5. Disconnect each control unit one at a time. Clear the DTC, then recheck for DTCs after each unit is disconnected.
   - Gauge control module
   - Relay control module
   - Driver's multiplex control unit
   - Climate control unit
   - Combination switch control unit

   Is DTC B1000 indicated with each unit disconnected?

   YES: Check for a short to power or ground in the communication circuit by disconnecting the harness at each control unit and testing for continuity to ground or short to power. Repair or replace the harness as necessary.

   NO: Replace the control unit that was disconnected, and did not set DTC B1000.

DTC B1050, B1100, B1150, B1200, B1250: COMMUNICATION BUS LINE ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Are DTC(s) B1050, B1100, B1150, B1200 or B1250 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time.

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B1050	Relay Control Module
B1100	Door Multiplex Control Unit
B1150	Gauge Control Module
B1200	Audio-HVAC-Display Module
B1250	Combination Switch Control Unit

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Fig. 40: DTC Table

4. Check for DTCs using the HDS.

   Is DTC(s) B1000 indicated?

   YES: Troubleshoot DTC B1000.

   NO: If DTC B1050 is indicated, replace the relay control module. If DTC B1100 is indicated, replace the door multiplex control unit. If DTC B1150 is indicated, replace the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**). If DTC B1200 is indicated, replace the climate control unit. If DTC B1250 is indicated, replace the combination switch control unit.

DTC B1001, B1002: MULTIPLEX INTEGRATED CONTROL UNIT (MICU) INTERNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the door lock (LOCK/UNLOCK).
4. Check for DTCs using the HDS.

   Is DTC B1001 or B1002 indicated?

   YES: Faulty MICU; replace the under-dash fuse/relay box.

   NO: Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

DTC B1005: MICU LOST COMMUNICATION WITH RELAY CONTROL MODULE

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1005 indicated?

   YES: Go to step 4.

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NO: Intermittent failure, the relay module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs in the gauge control module using the HDS.

Is DTC B1158 indicated?

YES: Go to Relay Control Module Input Test (see **RELAY CONTROL MODULE INPUT TEST**).

NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the relay control module. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1006: MICU LOST COMMUNICATION WITH DOOR MULTIPLEX CONTROL UNIT DOOR LOCK SWITCH MESSAGE

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1006 indicated?

YES: Go to step 2.

NO: Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs in the gauge control module and relay module using the HDS.

Is DTC B1160 and B1058 indicated?

YES: Go to Door Multiplex Control Unit Input Test (see **DOOR MULTIPLEX CONTROL UNIT INPUT TEST**).

NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1007: MICU LOST COMMUNICATION WITH THE COMBINATION SWITCH CONTROL UNIT (HEADLIGHT SWITCH MESSAGE)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1007 indicated?

YES: Go to step 4.

NO: Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs of the gauge control module and relay control module using the HDS.

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Is DTC B1155 and B1062 indicated?

YES: Go to the Combination Switch Control Unit Input Test (see **COMBINATION SWITCH CONTROL UNIT INPUT TEST**).

NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the combination switch control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1008: MICU LOST COMMUNICATION (A/T MESSAGE) WITH THE GAUGE CONTROL MODULE

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1008 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs in the relay control module using the HDS.

   Is DTC B1161 indicated?

   YES: Go to the Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

   NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the gauge control module. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1009: MICU LOST COMMUNICATION WITH THE COMBINATION SWITCH CONTROL UNIT (WIPER/WASHER SWITCH MESSAGE)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1009 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the combination switch control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs of the gauge control module and relay control module using the HDS.

   Is DTC B1156 and B1063 indicated?

   YES: Go to the Combination Switch Control Unit Input Test (see **COMBINATION SWITCH CONTROL UNIT INPUT TEST**).

   NO: Check for an open, or a short to power or ground in the communication circuit between

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the MICU and the combination switch control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1010: MICU LOST COMMUNICATION (PANIC MESSAGE) WITH THE DOOR MULTIPLEX CONTROL UNIT

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1010 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs of the relay control module using the HDS.

   Is DTC B1059 indicated?

   YES: Go to the Door Multiplex Control Unit Input Test (see **DOOR MULTIPLEX CONTROL UNIT INPUT TEST**).

   NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1102: DOOR MULTIPLEX CONTROL UNIT INTERNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the power window (UP/DOWN).
4. Check for DTCs using the HDS.

   Is DTC B1102 indicated?

   YES: Faulty door multiplex control unit; replace the power window master switch.

   NO: Intermittent failure, the door multiplex control unit is OK at this time. Check for loose for or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

DTC B1178: F-CAN COMMUNICATION LINE ERROR; DTC B1168: GAUGE CONTROL MODULE LOST COMMUNICATION WITH ECM/PCM (ENGINE MESSAGES); DTC B1169: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE PCM (A/T MESSAGES)

1. Clear the DTCs using the HDS.
2. Turn the ignition switch OFF then back to the ON (II).
3. Start and run the engine for at least 5 seconds then turn the engine off.
4. Check for DTCs using the HDS.

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Is DTC B1178, B1168 and/or B1169 indicated?

YES: Go to step 5.

NO: Intermittent failure, the F-CAN communication line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

5. Check for DTCs in the ECM/PCM.

   Are any DTCs indicated?

   YES: Troubleshoot the ECM/PCM DTCs.

   NO: Go to step 6.

6. Perform the Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

   Are all inputs OK?

   YES: Go to step 7.

   NO: Repair the faulty input then recheck for DTCs.

7. Substitute a known-good gauge control module.
8. Clear the DTCs using the HDS.
9. Turn the ignition switch OFF then back to the ON (II).
10. Start and run the engine for at least 5 seconds then turn the engine off.
11. Check for DTCs using the HDS.

    Is DTC B1178, B1168 and/or B1169 indicated?

    YES: Replace the ECM/PCM.

    NO: The original gauge control module is faulty; replace the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).

DTC B1080: POWER SUPPLY CIRCUIT (IG1 LINE) INPUT ERROR FOR RELAY CONTROL MODULE & MICU

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Turn the ignition switch ON (II) and wait for 2 seconds or more.

   Is DTC B1080 indicated again?

   YES: Go to step 4.

   NO: Intermittent failure, the relay control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check the MICU IG1 power supply No. 21 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES: Go to MICU Input Test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).

   NO: Replace the fuse and recheck for DTCs.

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DTC B1251: COMBINATION SWITCH CONTROL UNIT INTERNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1251 indicated?

   YES: Faulty combination switch control unit; replace the wiper/washer switch.

   NO: Intermittent failure, the CPU in the combination switch control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

DTC B1255: COMBINATION SWITCH CONTROL UNIT LOST COMMUNICATION WITH MICU

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1255 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs in the combination switch control using the HDS.

   Is DTC B1055 and B1157 indicated?

   YES: Go to MICU input test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).

   NO: Replace the combination switch control unit.

MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST

1. Remove the left side kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
2. Disconnect the under-dash fuse/relay box connectors D, E, H, I, J, K, N, P and X.

NOTE: All connectors shown in Fig. 41 are wire side of female terminals.

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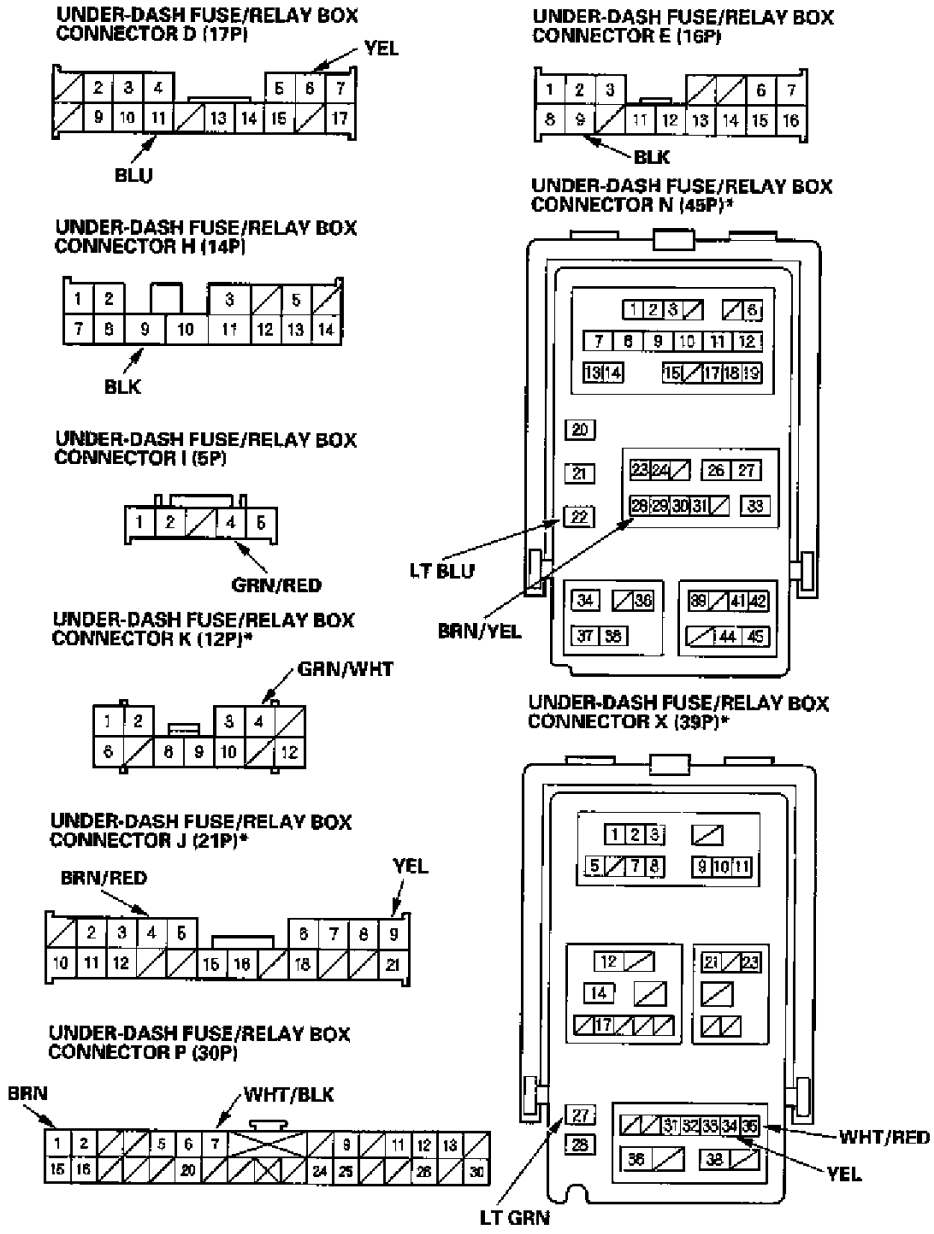


Fig. 41: Identifying Multiplex Integrated Control Unit Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the connectors still disconnected from the under-hood fuse/relay box, make these input tests at the connector(s). See **Fig. 42** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.

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- If all the input tests prove okay, go to step 5.

Cavity	Wire	Test condition	Test; Desired result	Possible cause if result is not obtained
H9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G601) • An open in the wire
P1	BRN	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G502) • An open in the wire
E9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G601) • An open in the wire
N22	LT BLU	Under all conditions	Check for continuity between terminal N22 and the climate control unit B (16P) connector terminal No. 14: There should be continuity.	• An open in the wire
		Climate control unit B (16P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
J4	BRN/RED	Under all conditions	Check for continuity between terminal J4 and power window master switch 23P connector terminal No. 16: There should be continuity.	• An open in the wire
		Power window master switch 23P connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
D11	BLU	Under all conditions	Check for continuity between terminal D11 and relay module J (10P) connector terminal No. 7: There should be continuity.	• An open in the wire
		Relay control module I (10P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
X27	LT GRN	Under all conditions	Check for continuity between terminal X27 and wiper/washer switch 8P connector terminal No. 4: There should be continuity.	• An open in the wire
		Wiper/washer switch 8P connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
N28	BRN/YEL	Under all conditions	Check for continuity between terminal N28 and gauge assembly (30P) connector terminal No. 25: There should be continuity.	• An open in the wire
		Gauge control module B (18P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 42: Multiplex Integrated Control Unit Input Test Table

5. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the appropriate connectors on the under-dash fuse/relay box. See **Fig. 43** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex integrated control unit must be faulty, replace the under-dash fuse/relay box assembly.

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Cavity	Wire	Test condition	Test; Desired result	Possible cause if result is not obtained
P7	WHT/BLK	Under all conditions	Attach to ground: The ignition key light should come on.	• Blown No. 13 (20A) fuse in the under-hood fuse/relay box • Blown LED • An open in the wire
I4	GRN/RED	Ceiling light switch in the middle position, all doors closed	Attach to ground: The ceiling light should come on.	• Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Faulty ceiling light • An open in the wire
D6 . J9 . X34	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
K4	WHT/GRN	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 27 (20A) fuse in the under-dash fuse/relay box • An open in the wire
X35	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (10A) fuse in the under-dash fuse/relay box • An open in the wire

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Fig. 43: Identifying Under-Dash Fuse/Relay Box Input Tests

GAUGE CONTROL MODULE INPUT TEST

1. Remove the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).
2. Disconnect the 18P connector from the gauge control module.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
    - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
    - If the terminals look OK, go to step 4.

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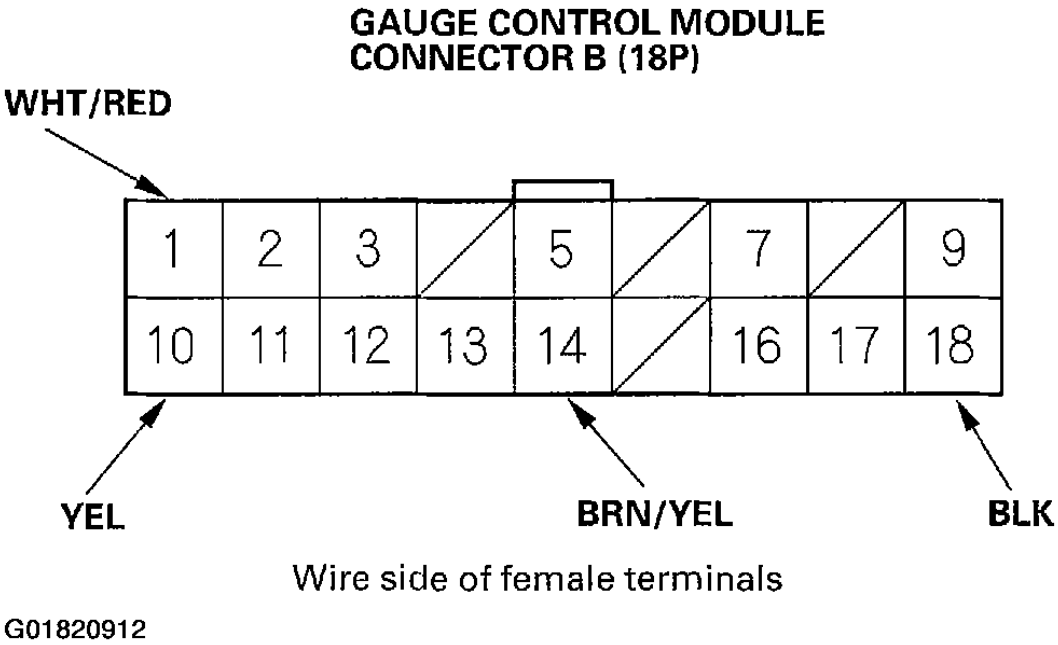


Fig. 44: Identifying Gauge Control Module Connector Terminals

4. With the connector still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, replace the gauge control module.

Cavity	Wire	Test Condition	Test: Desired result	Possible cause if result is not obtained
B10	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
B1	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage	• Blown No. 7 (10A) fuse in the under-dash fuse/relay box • An open in the wire
B18	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G503) • An open in the wire
B14	BRN/YEL	Under all conditions	Check for coninuity between the No. 14 terminal and under-dash fuse/relay box N (45P) connector No. 28 terminal: There should be coninuity	• An open in the wire
		Under-dash fuse/relay box connector N (45P) disconnected	Check coninuity to ground: There should be no continuity	• Short to ground on the wire

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Fig. 45: Gauge Control Module Input Test Table

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DOOR MULTIPLEX CONTROL UNIT INPUT TEST

1. Remove the driver's door switch panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 23P connector from the power window master switch.

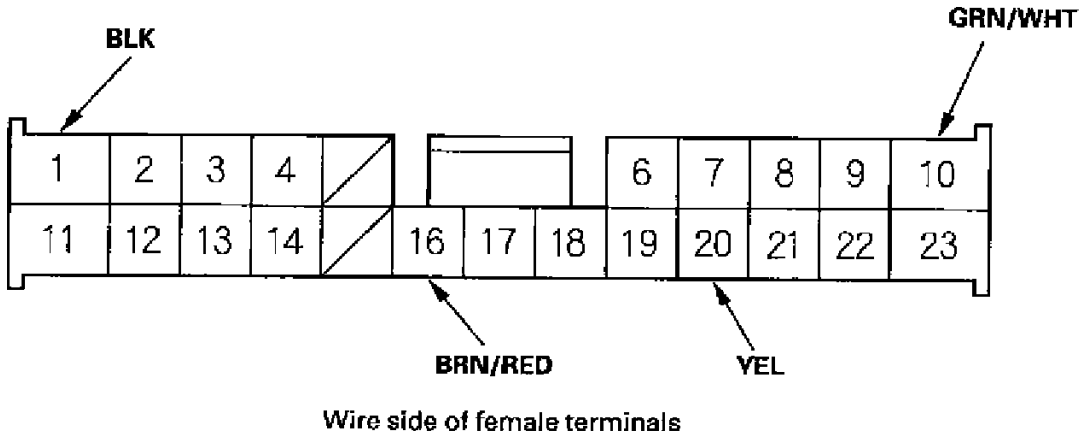


Fig. 46: Identifying Door Multiplex Control Unit Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the door multiplex control unit still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the door multiplex control unit must be faulty, replace the power window master switch.

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Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G601) • An open in the wire
10	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 27 (20A) fuse in the under-dash fuse/relay box • An open in the wire
20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
16	BRN/RED	Under all conditions	Check for continuity between terminal 16 and the under-dash fuse/relay box connector J (21P) connector terminal No. 4: There should be continuity.	• An open in the wire
		Under-dash fuse/relay box connector J (21P) disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 47: Door Multiplex Control Unit Input Test

COMBINATION SWITCH CONTROL UNIT INPUT TEST

1. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Disconnect the 8P connector (A) from the wiper/washer switch (B).

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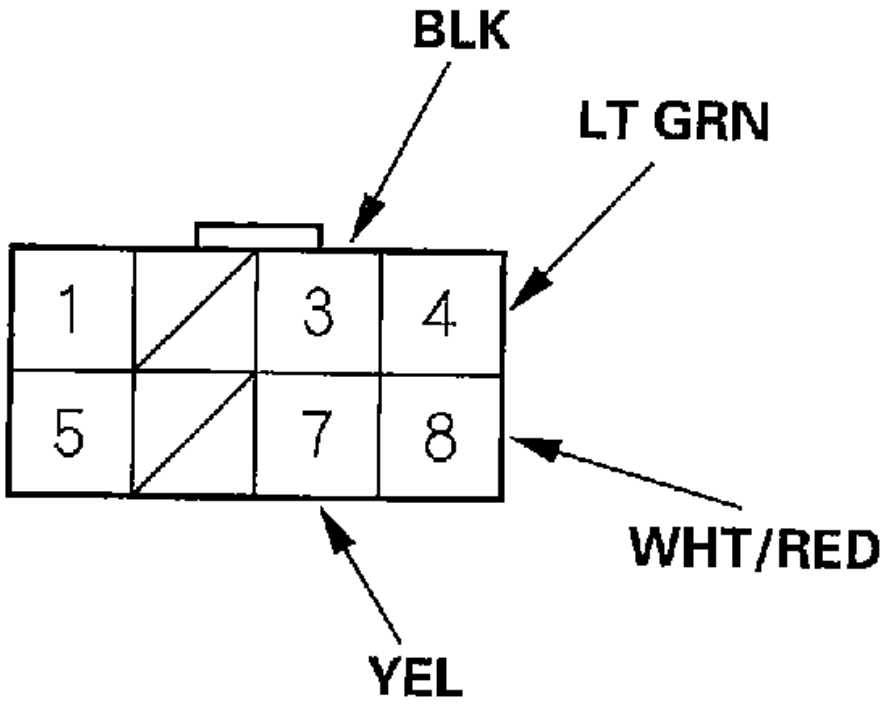


Fig. 48: Identifying Combination Switch Control Unit Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the control unit still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the combination switch control unit must be faulty, replace the wiper/washer switch.

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Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G601) • An open in the wire
8	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (10A) fuse in the under-dash fuse/relay box • An open in the wire
7	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
4	LT GRN	Under all conditions	Check for continuity between terminal 4 and the under-dash fuse/relay box connector X (39P) connector terminal No. 27: There should be continuity.	• An open in the wire
		Under-dash fuse/relay box connector X (39P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 49: Combination Switch Control Unit Input Test

RELAY CONTROL MODULE INPUT TEST

1. Remove the under-hood fuse/relay box under cover.
2. Disconnect the 10P connector (A) from the under -hood fuse/relay box (B).

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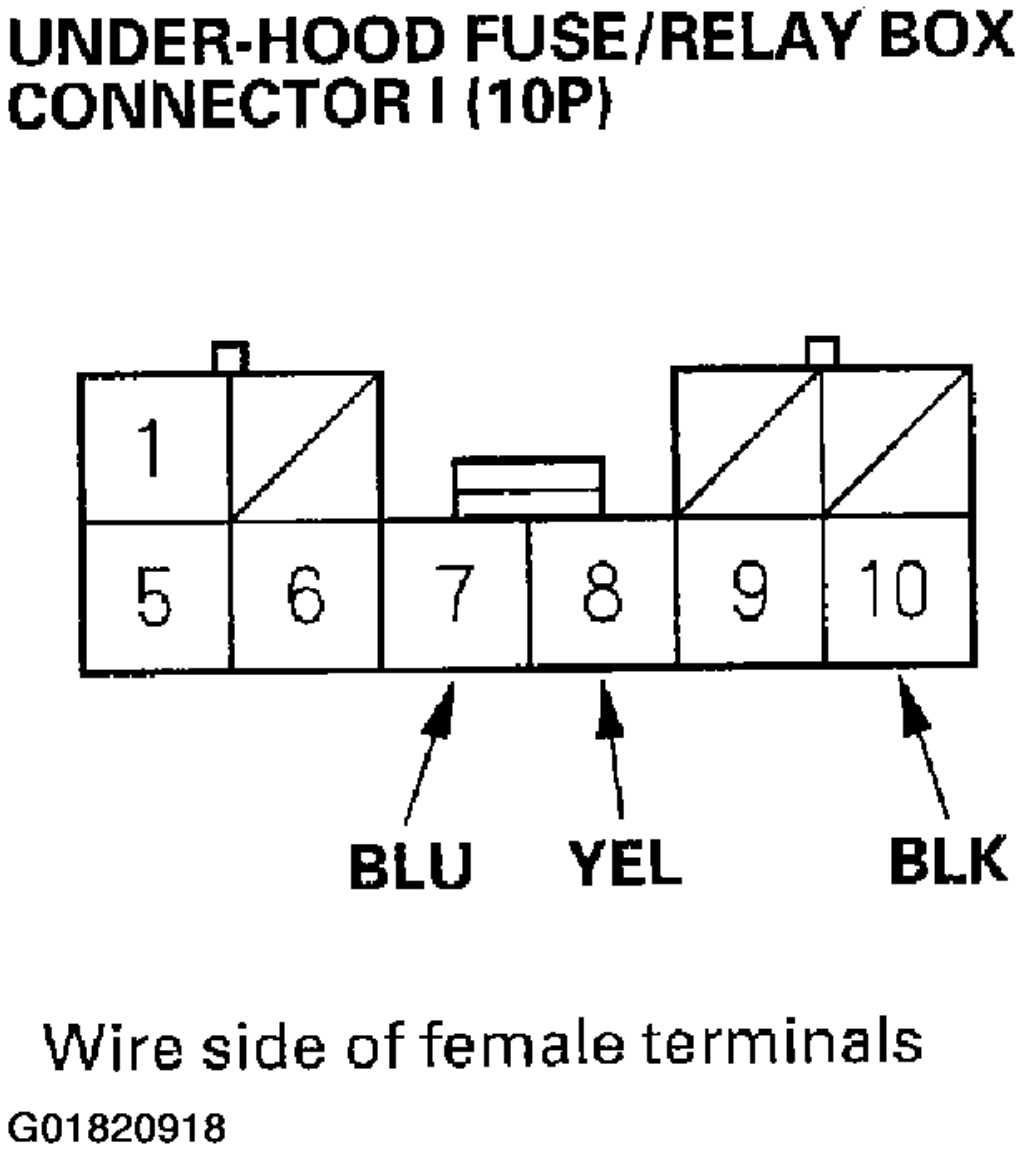


Fig. 50: Identifying Relay Control Module Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the connector still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.

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- If all the input tests prove OK, the relay control module must be faulty, replace the under-hood fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
10	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G601) • An open in the wire
8	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
7	BLU	Under all conditions	Check for continuity between terminal 7 and the under-dash fuse/relay box connector D (17P) connector terminal No. 11: There should be continuity.	• An open in the wire
		Under-dash fuse/relay box connector D (17P) disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 51: Relay Control Module Input Test

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2004 ACCESSORIES & EQUIPMENT

Horns - TSX

COMPONENT LOCATION INDEX

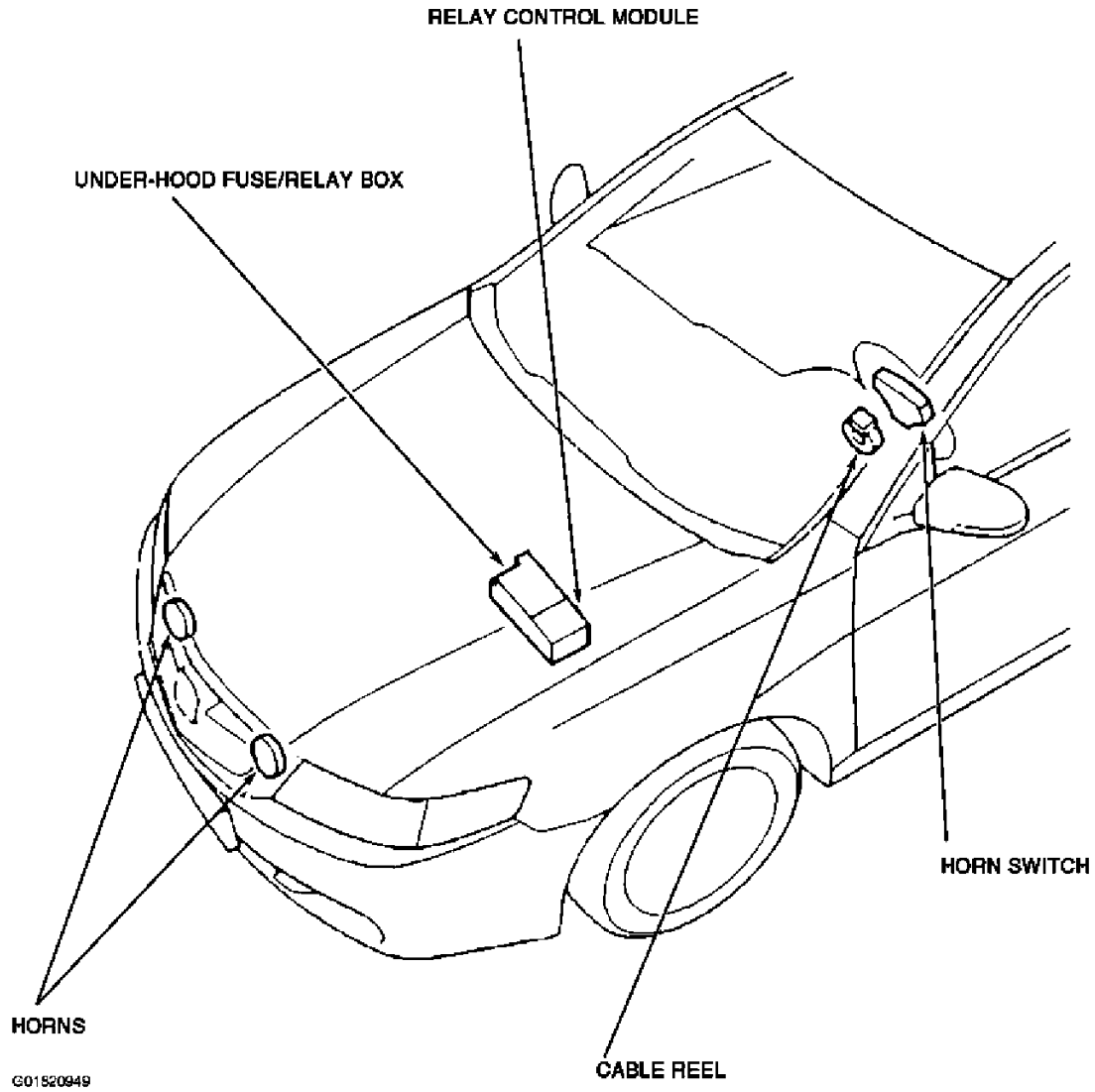


Fig. 1: Locating Horn Components

CIRCUIT DIAGRAM

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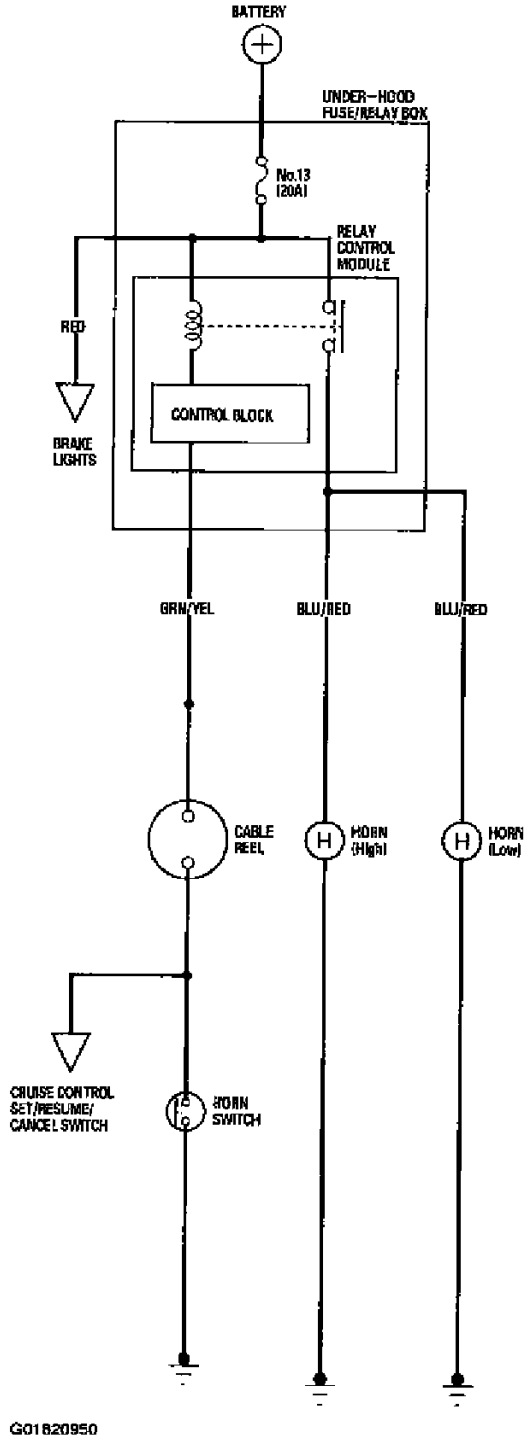


Fig. 2: Horn System Wiring Diagram

HORN TEST/REPLACEMENT

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1. Remove the front bulkhead cover .
2. Disconnect the 1P connector (A) from each horn (B).

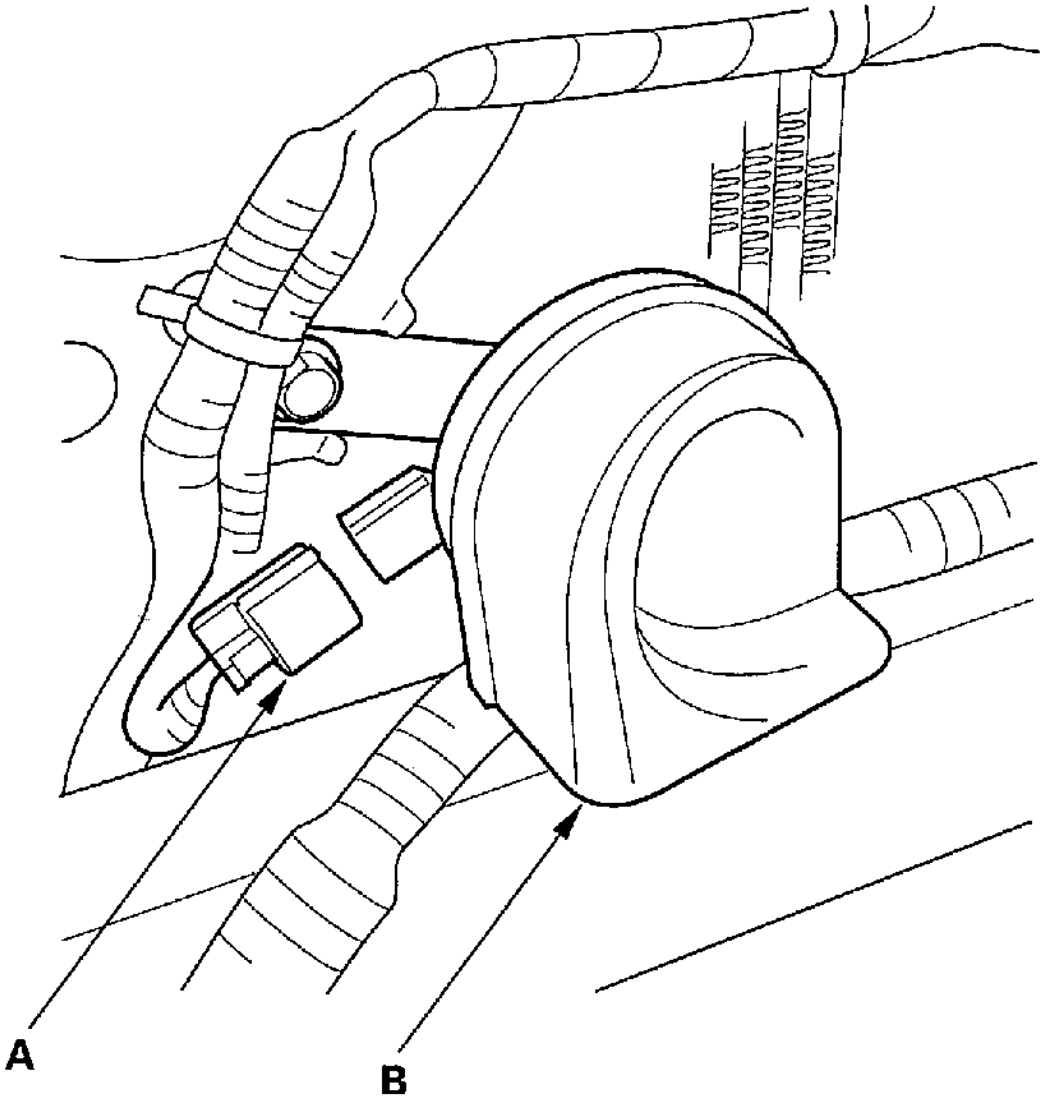


Fig. 3: Disconnecting The 1P Connector From Each Horn

3. Test the horn by connecting battery power to the terminal (A) and grounding the bracket (B). The horn should sound.

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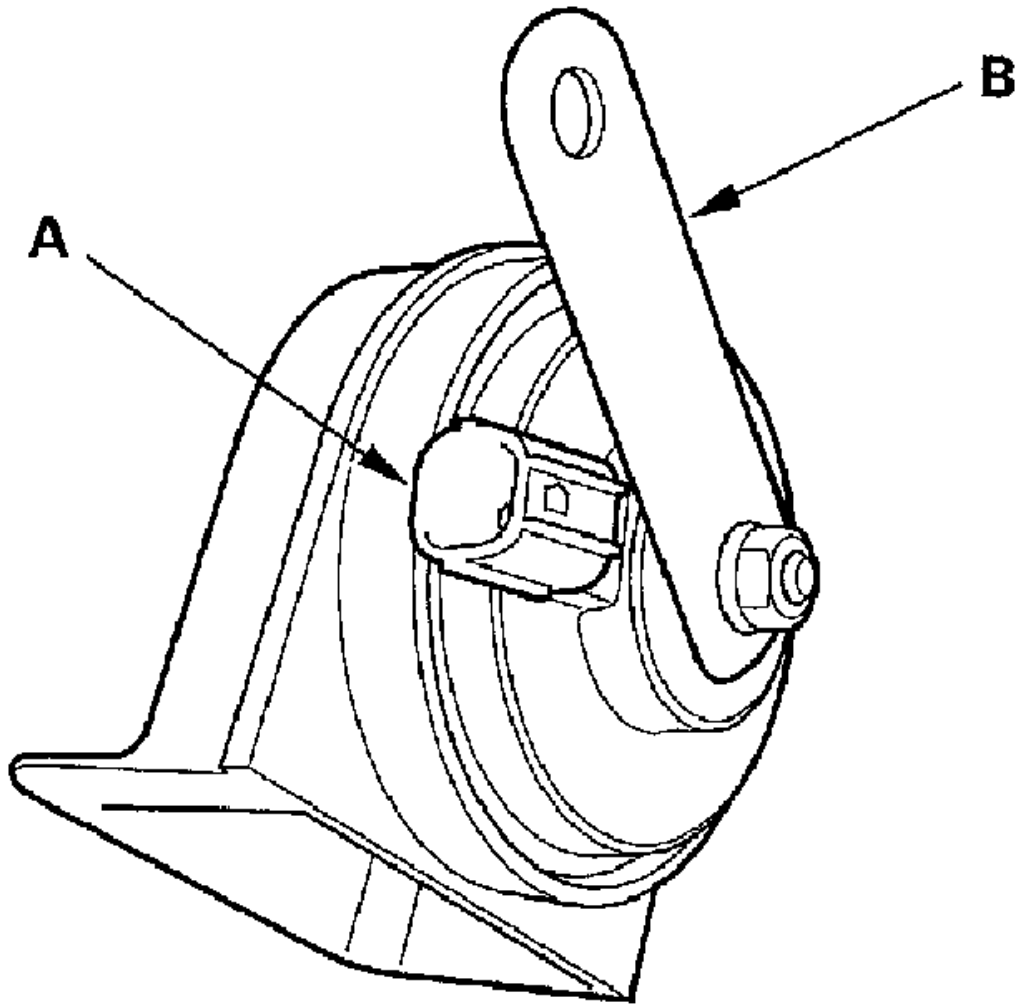


Fig. 4: Connecting Battery Power To The Terminal And Grounding The Bracket

4. If it fails to sound, replace it.

HORN SWITCH TEST

1. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Disconnect the cable reel 13P connector (A) from the dashboard wire harness.

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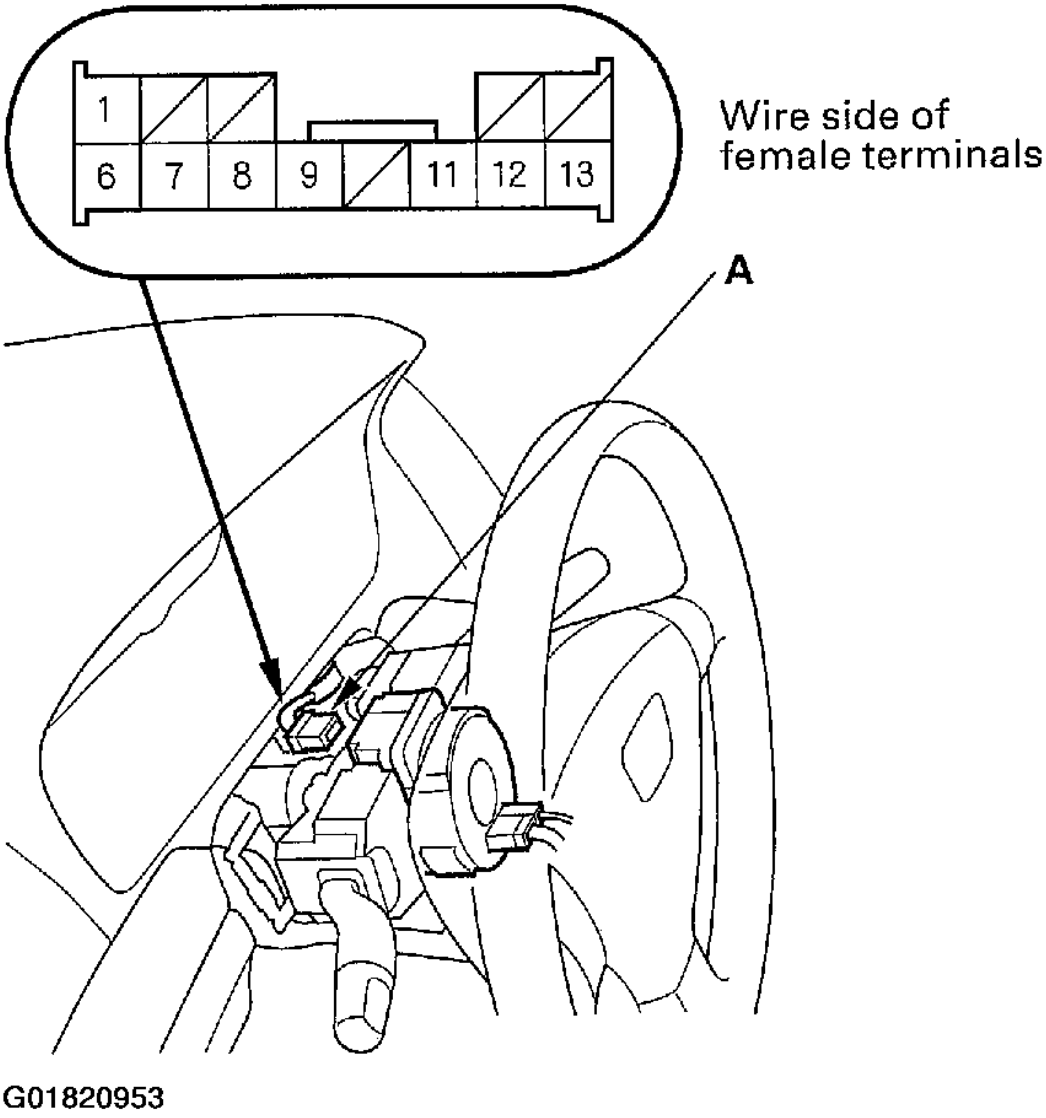


Fig. 5: Disconnecting The Cable Reel 13P Connector From The Dashboard Wire Harness

3. Using a jumper wire, connect the No. 1 terminal of the dashboard wire harness 13P connector to body ground.
   - If the horns sound, go to step 4.
   - If the horns don't sound, check these items:
     - No. 13 (20A) fuse in the under-hood fuse/relay box.
     - Relay module in the under-hood fuse/relay box.
     - Horns (see **HORN TEST/REPLACEMENT**).
     - An open in the wire.

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4. Reconnect the cable reel 13P connector (A) to the dashboard wire harness.

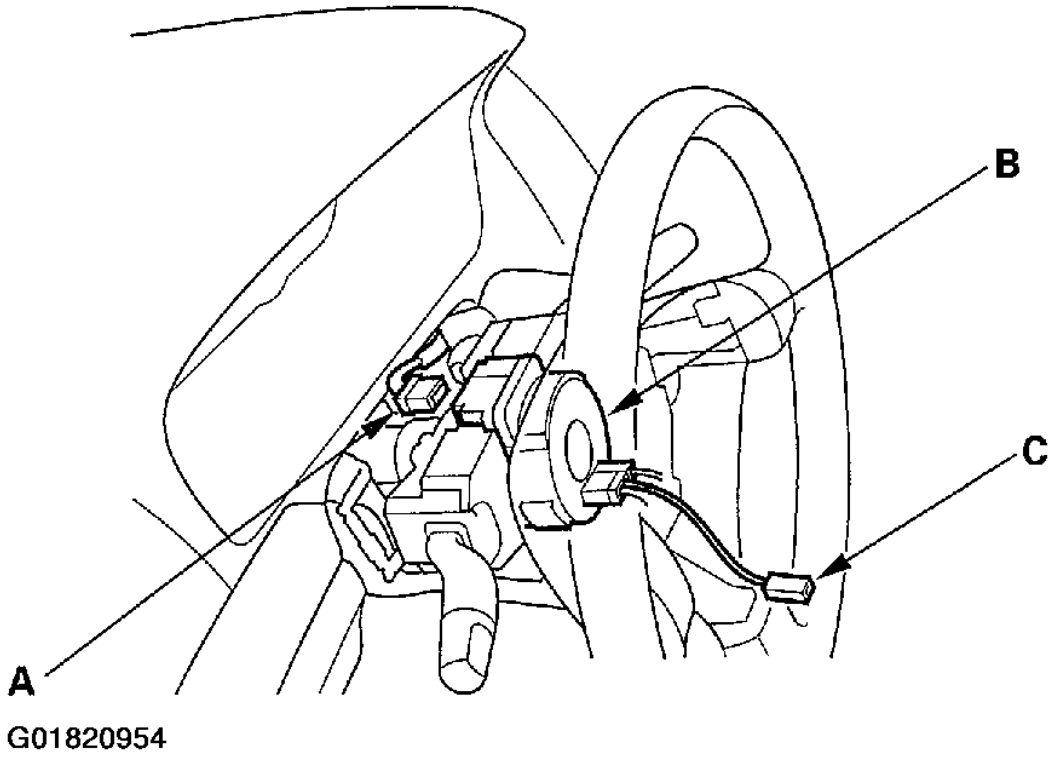


Fig. 6: Reconnecting The Cable Reel 13P Connector To The Dashboard Wire Harness

5. Remove the driver's airbag assembly (see **AIR BAG RESTRAINT SYSTEMS**), and disconnect the horn switch 1P positive terminal from the cable reel (B).
6. Using a jumper wire, connect the cable reel side 1P connector (C) to body ground.
   - If the horns sound, replace the driver's airbag assembly.
   - If the horns don't sound, replace the cable reel.

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2004 ENGINE PERFORMANCE

Idle Control System - TSX

COMPONENT LOCATION INDEX

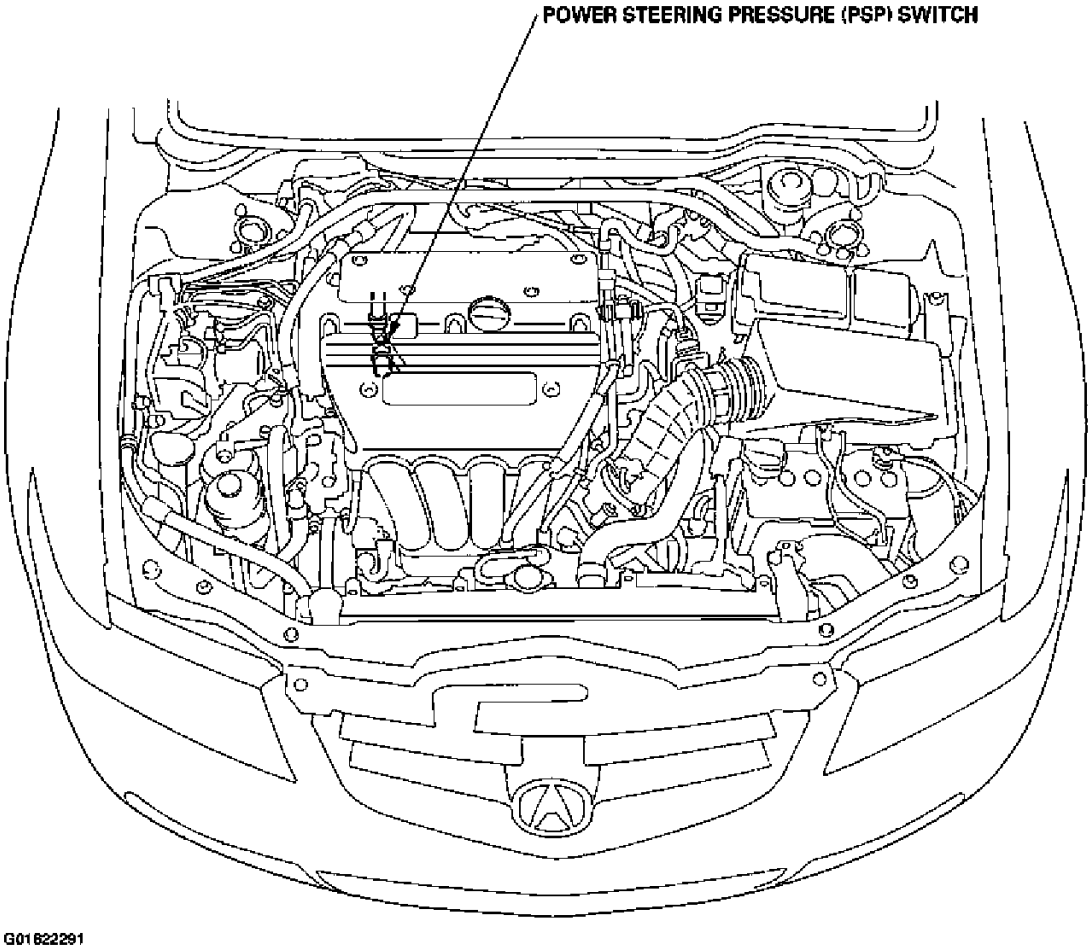


Fig. 1: Locating Idle Control System Components

DTC TROUBLESHOOTING

DTC TROUBLESHOOTING INDEX

DTC	Description
DTC P0506	Idle Control System RPM Lower Than Expected
DTC P0507	Idle Control System RPM Higher Than Expected

DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED

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1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the following data in the DATA LIST with the HDS.
   - Engine coolant temperature more than 70°C (156°F)
   - Intake air temperature more than 0°C (32°F)
   - Vehicle speed is 0 mph (0 km/h)
   - ST FUEL TRIM between 0.73 and 1.47
   - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES -Go to step 6.

   NO -If the screen indicates PASSED, go to step 15 . If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates Out of CONDITION, go to step 4 and recheck.

6. Remove the intake air duct from the throttle body.
7. Check for dirt, carbon, or damage in the throttle bore.

   Is there dirt, carbon, or damage in the throttle bore?

   YES -If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**), and also check for damage at the air cleaner element (see **AIR CLEANER ELEMENT REPLACEMENT**), then go to step 9. If there is damage in the throttle bore, go to step 8.

   NO -Check the A/C system or power steering system, then go to step 17 .

8. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Start the engine, Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Check the following data in the DATA LIST with the HDS.
    - Engine coolant temperature more than 70°C (156°F)
    - Intake air temperature more than 0°C (32°F)
    - Vehicle speed is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.73 and 1.47
    - FSS is CLOSED
13. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES -If DTC P0506 is indicated, go to step 1 and recheck. If any other temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO -Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES -Troubleshooting is complete.

NO -If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates Out of CONDITION, go to step 12 and recheck.

15. Remove the intake air duct from the throttle body.
16. Check for dirt, carbon, or damage in the throttle bore.

Is there dirt, carbon, or damage in the throttle bore?

YES -If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**), and also check for damage at the air cleaner element (see **AIR CLEANER ELEMENT REPLACEMENT**), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO -Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, rear window defogger and/or/A/C, changing the gear position, etc.)
18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES -Intermittent failure, system is OK at this time.

NO -If the screen indicates FAILED, check the A/C system and/or power steering system, then go to step 1 and recheck. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates Out of CONDITION, go to step 17 and recheck.

DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

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4. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES -Check for vacuum leaks at the following parts, then go to step 5.

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Brake booster hose

   NO -If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates Out of CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.) then, go to step 3.

5. Turn the ignition switch ON (II).
6. Reset the ECM/PCM with the HDS.
7. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
8. Start the engine. Hold the engine speed at 3,000 RPM with no load (in neutral) until the radiator fan comes on, then let it idle.
9. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES -If DTC P0507 is indicated, check for poor connections or loose terminals at the throttle body, throttle actuator control module, and the ECM/PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

   NO -Go to step 10.

10. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES -Troubleshooting is complete.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body, throttle actuator control module, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates Out of CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.) then, go to step 8.

A/C SIGNAL CIRCUIT TROUBLESHOOTING

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1. Start the engine.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

   Is it ON?

   YES -Go to step 5.

   NO -Go to the A/C pressure switch circuit test (see **A/C PRESSURE SWITCH AND THERMAL PROTECTOR CIRCUIT TEST**).

5. Check the A/C system.

   Does the A/C system operate?

   YES -The air conditioning system circuit is OK.

   NO -Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

   Is there a clicking noise from the A/C compressor clutch?

   YES -Do the A/C system troubleshooting.

   NO -Go to step 9.

9. Momentarily connect under-hood fuse/relay box 16P connector terminal No. 15 to body ground with a jumper wire several times.

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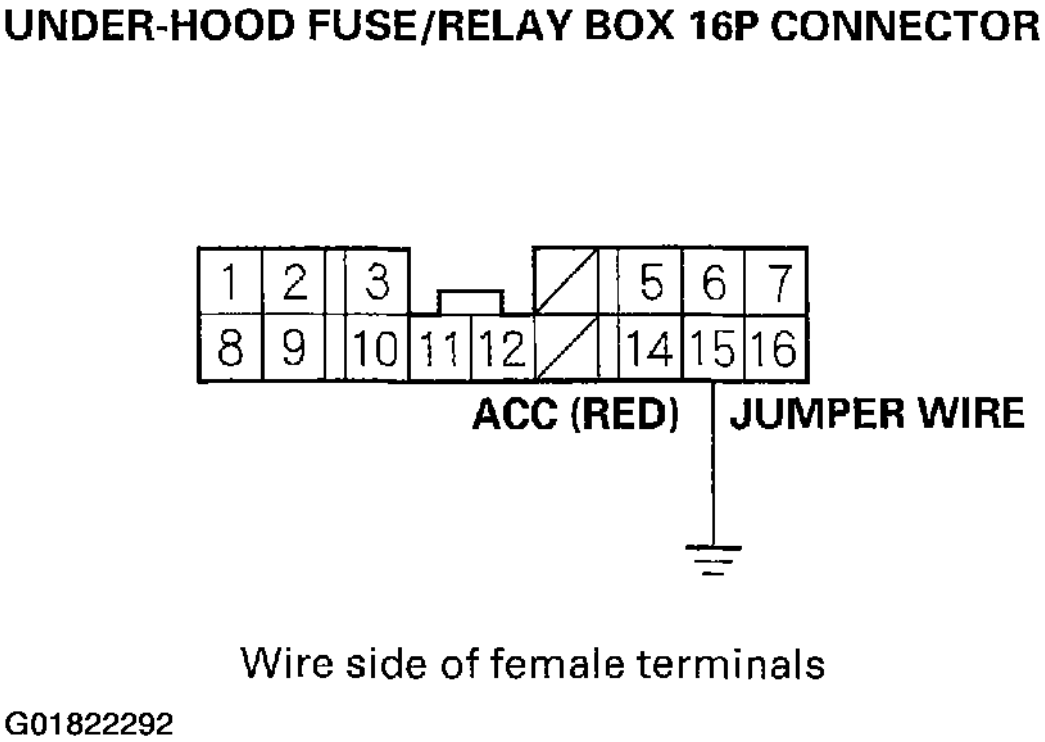


Fig. 2: Momentarily Connecting Under-Hood Fuse/Relay Box 16P Connector Terminal No. 15 To Body Ground With A Jumper Wire

Is there clicking noise from the A/C compressor clutch?

YES -Repair open in the wire between the ECM/PCM (E18) and the A/C clutch relay.

NO -Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

ALTERNATOR FR SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is on.

Does the percentage vary?

YES -The alternator signal circuit is OK.

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NO -Go to step 4.

4. Turn the headlight switch and ignition switch OFF.
5. Disconnect the alternator 4P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between ECM/PCM connector terminals A9 and B13.

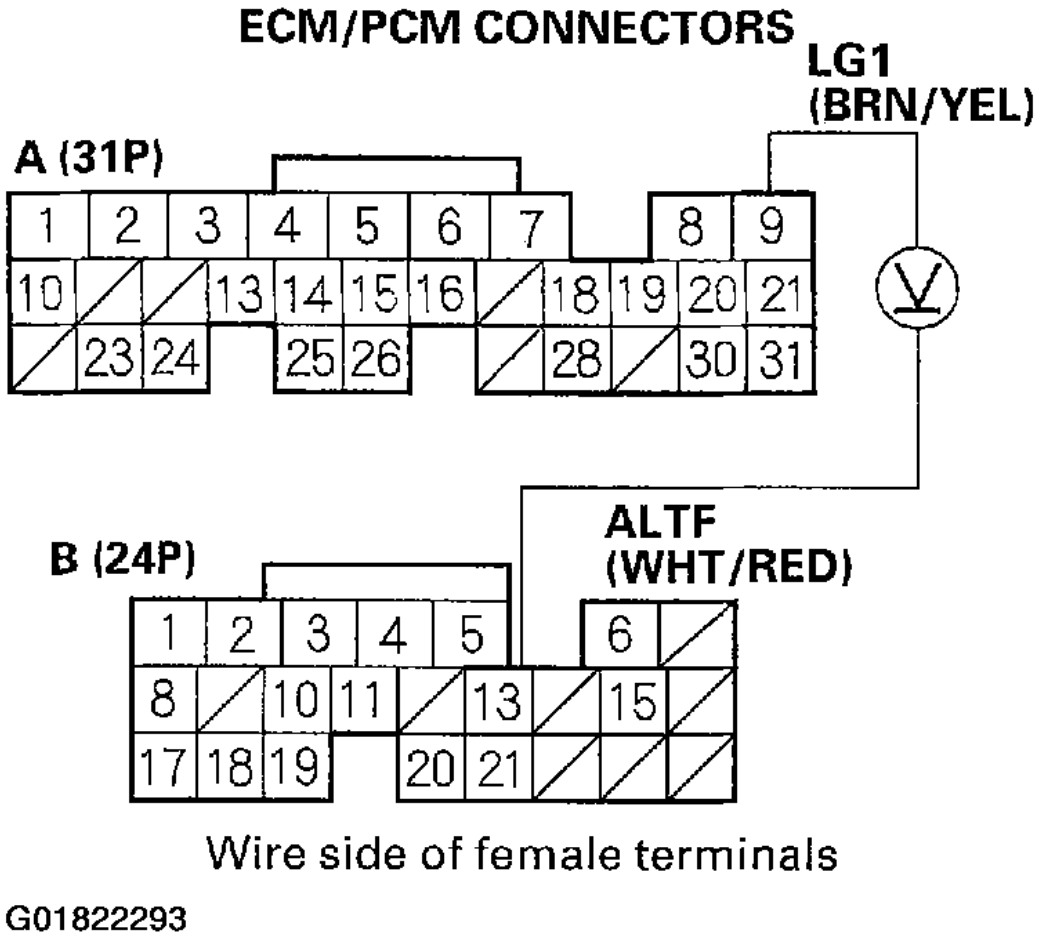


Fig. 3: Measuring Voltage Between ECM/PCM Connector Terminals A9 And B13

Is there about 5 V?

YES -Go to step 8.

NO -Go to step 13.

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8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (24P).
11. Connect alternator 4P connector terminal No. 4 to body ground with a jumper wire.

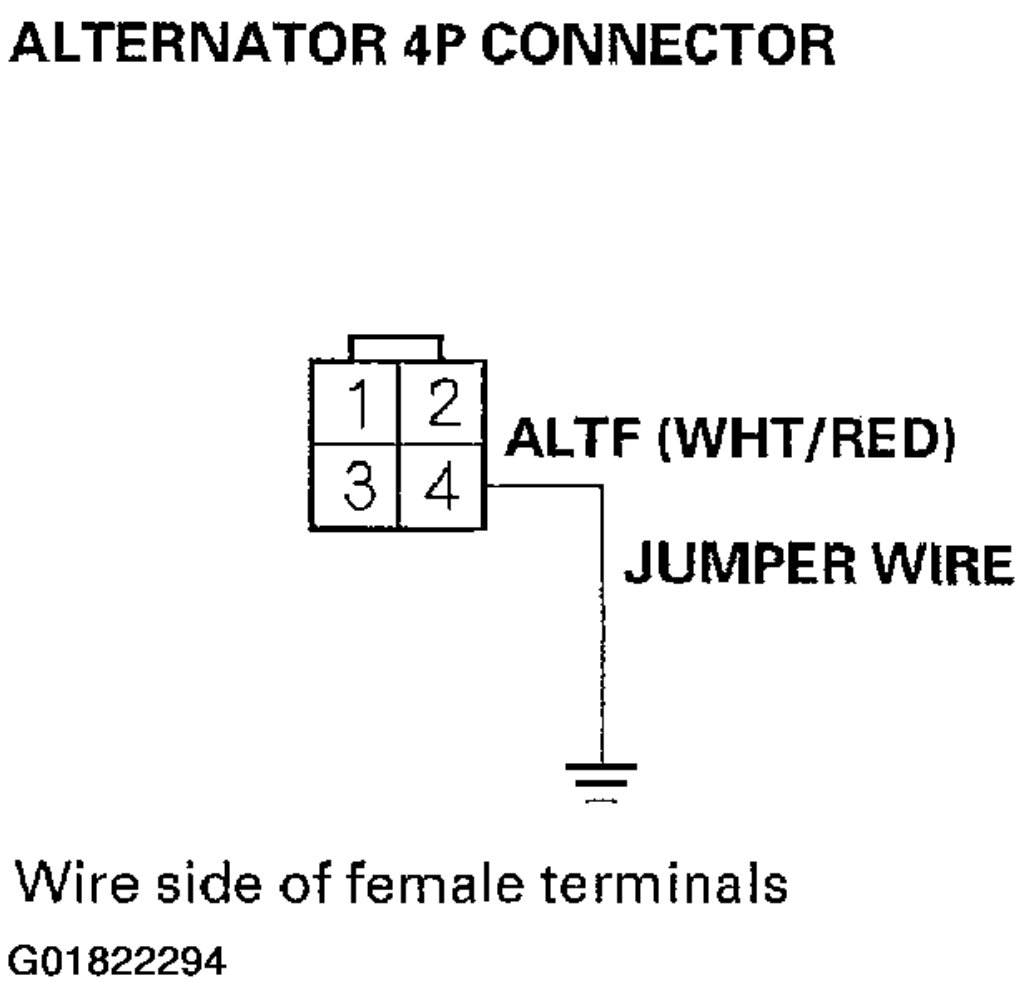


Fig. 4: Connecting Alternator 4P Connector Terminal No. 4 To Body Ground With A Jumper Wire

12. Check for continuity between body ground and ECM/PCM connector terminal B13.

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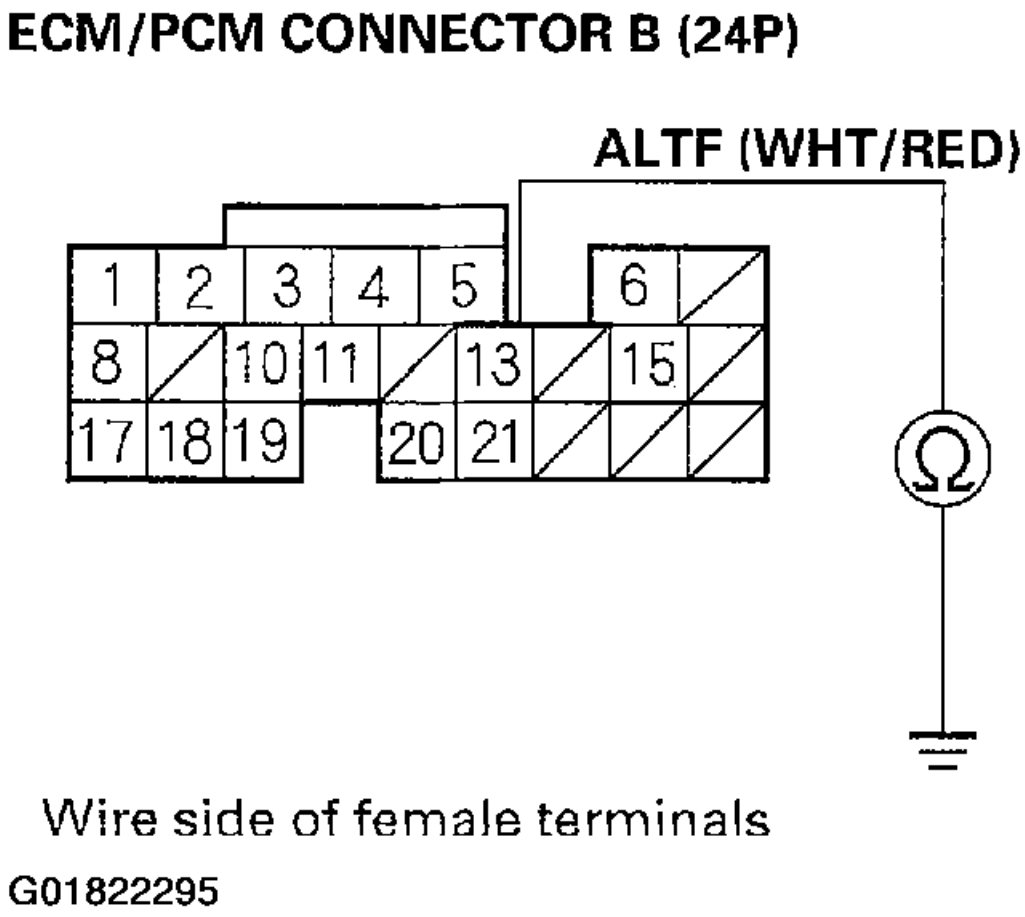


Fig. 5: Checking For Continuity Between Body Ground And ECM/PCM Connector Terminal B13

Is there continuity?

YES -Test the alternator (see **GENERATORS & REGULATORS**).

NO -Repair open in the wire between the ECM/PCM (B13) and the alternator.

13. Turn the ignition switch OFF.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector B (24P).
16. Check for continuity between body ground and ECM/PCM connector terminal B13.

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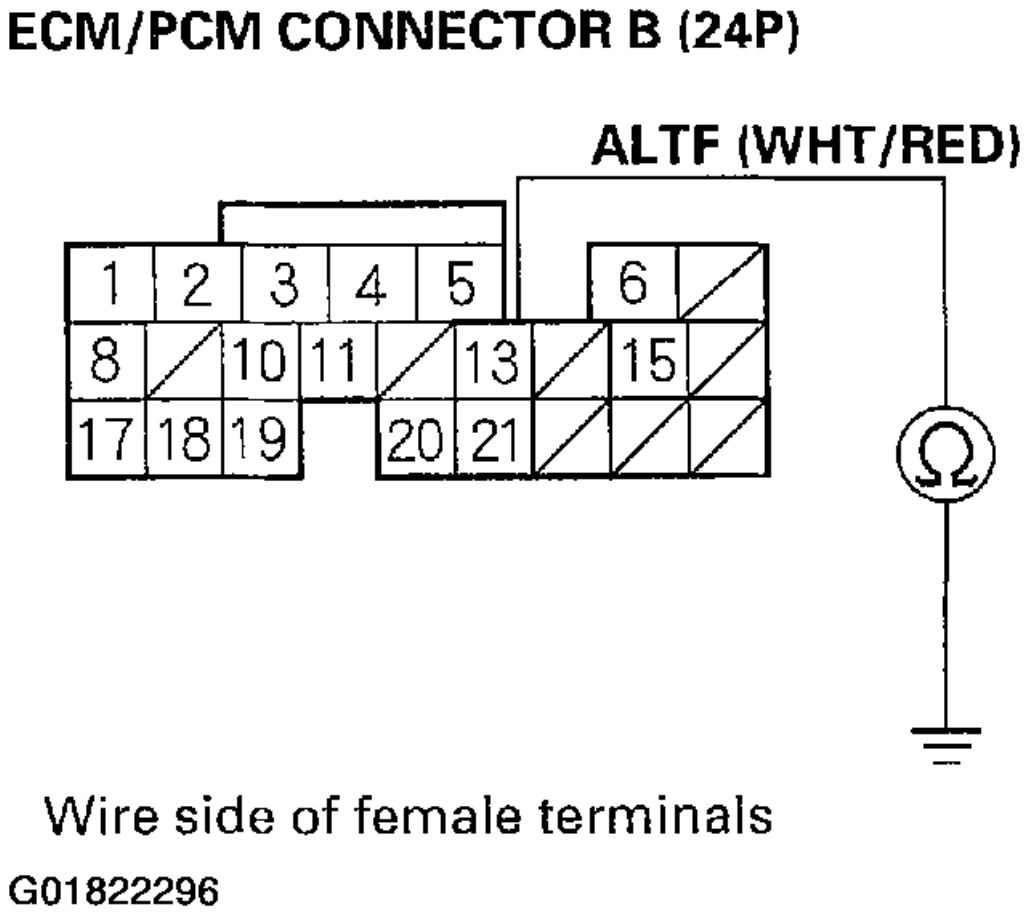


Fig. 6: Checking For Continuity Between Body Ground And ECM/PCM Connector Terminal B13

Is there continuity?

YES -Repair short in the wire between the ECM/PCM (B13) and the alternator.

NO -Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

PSP SWITCH SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine, and let it idle.
2. Align the steering wheel straight ahead.
3. Check the PSP SWITCH in the DATA LIST with the HDS.

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Does it indicate OFF?

YES -Go to step 4.

NO -Go to step 12.

4. Turn the steering wheel to the full lock position.
5. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES -The PSP switch signal circuit is OK.

NO -Go to step 6.

6. Disconnect the PSP switch 2P connector.
7. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES -Replace the PSP switch.

NO -Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector E (31P).
11. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

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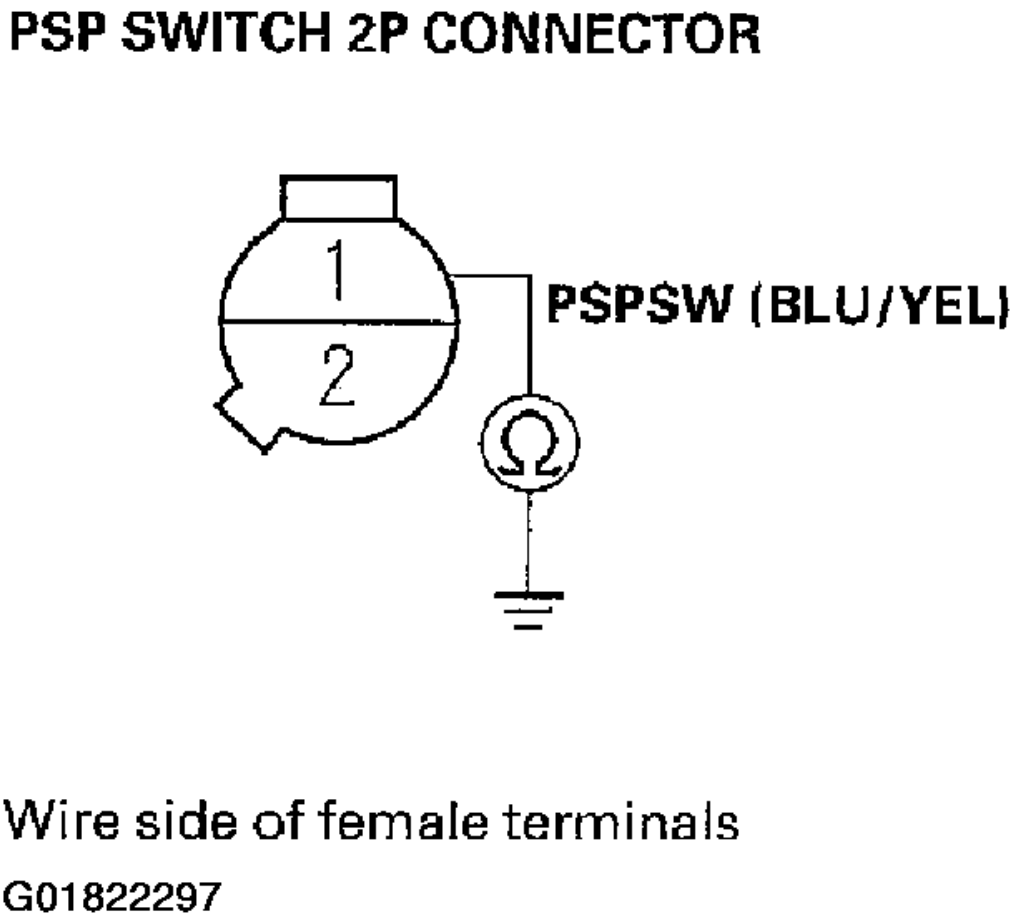


Fig. 7: Checking For Continuity Between PSP Switch 2P Connector Terminal No. 1 And Body Ground

Is there continuity?

YES -Repair short in the wire between the ECM/PCM (E16) and the PSP switch.

NO -Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

12. Turn the ignition switch OFF.
13. Disconnect the PSP switch 2P connector.
14. Connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire, then start the engine.

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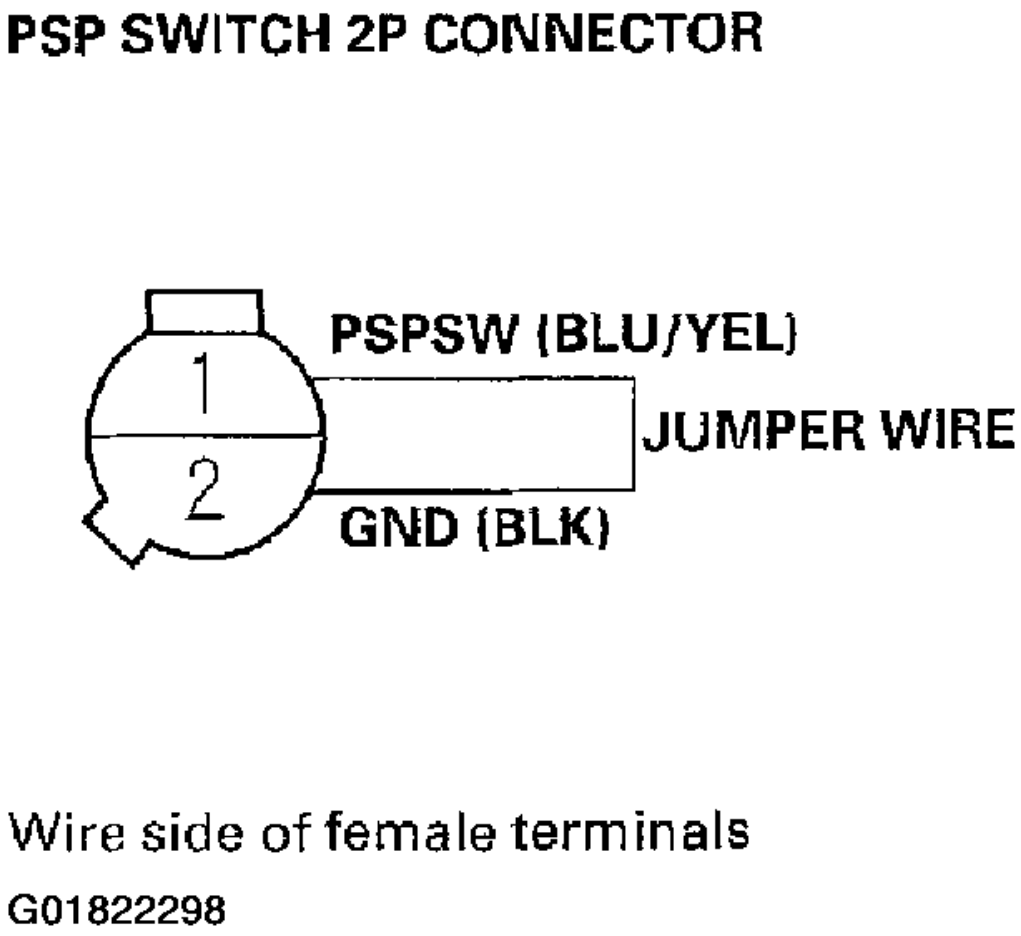


Fig. 8: Connecting PSP Switch 2P Connector Terminals No. 1 And No. 2 With A Jumper Wire

15. Check the PSPSW in the DATA LIST with the HDS.

    Does it change to OFF?

    YES -Replace the PSP switch.

    NO -Go to step 16.

16. Turn the ignition switch OFF.
17. Remove the jumper wire from the PSP switch 2P connector.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector E (31P).

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20. Connect PSP switch 2P connector terminal No. 1 to body ground with a jumper wire.

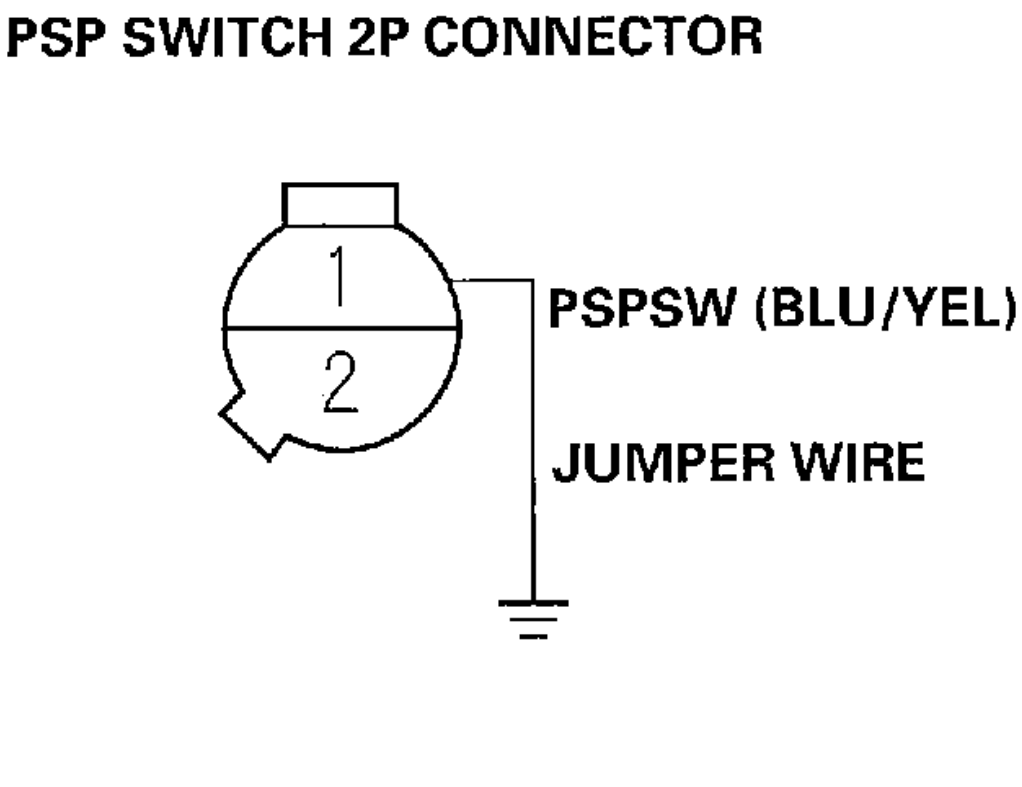


Fig. 9: Connecting PSP Switch 2P Connector Terminal No. 1 To Body Ground With A Jumper Wire

21. Check for continuity between body ground and ECM/PCM connector terminal E16.

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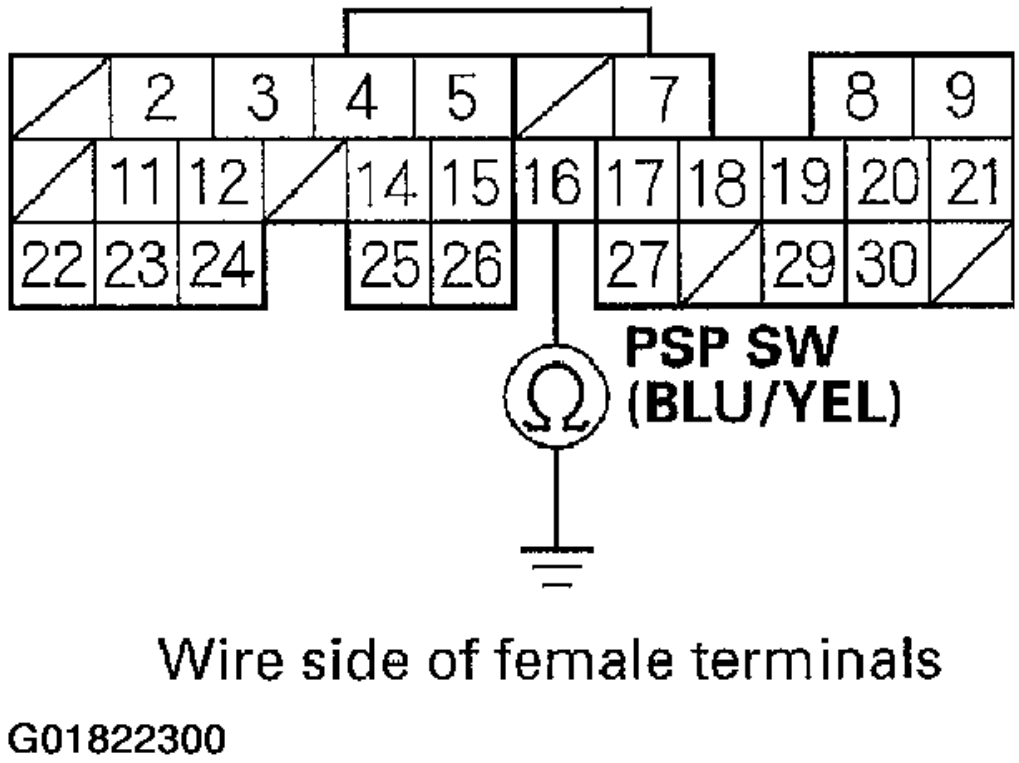


Fig. 10: Checking For Continuity Between Body Ground And ECM/PCM Connector Terminal E16

Is there continuity?

YES -Go to step 22.

NO -Repair open in the wire between the PSP switch and ECM/PCM (E16).

22. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

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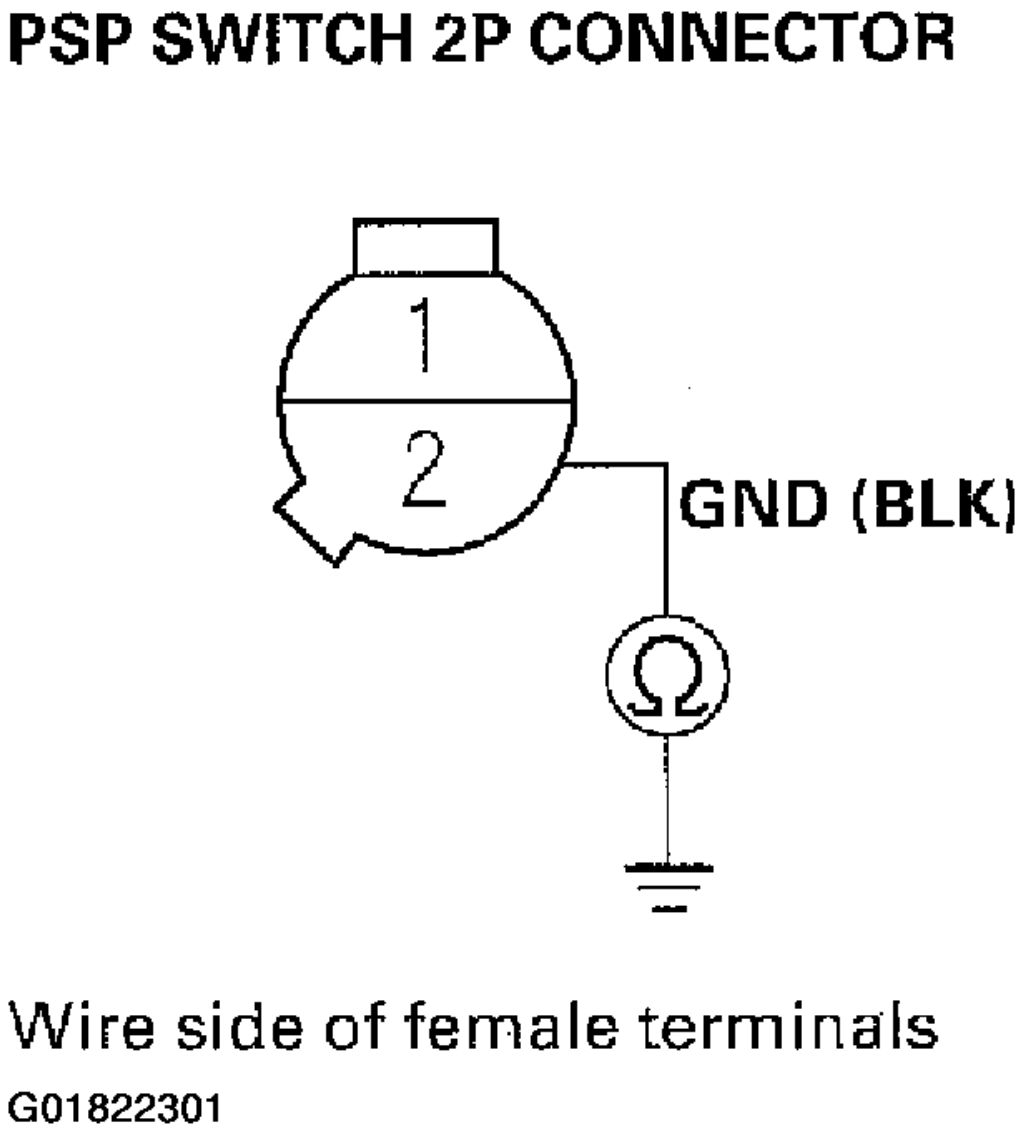


Fig. 11: Checking For Continuity Between PSP Switch 2P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES -Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

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NO -Repair open in the wire between the PSP switch and G201.

BRAKE PEDAL POSITION SWITCH SIGNAL CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it indicate OFF?

   YES -Go to step 3.

   NO -Inspect the brake pedal position switch (see **BRAKE PEDAL HEIGHT & FREE PLAY**).

3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it change to ON?

   YES -The brake pedal position switch signal circuit (BKSW line) is OK.

   NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect ECM/PCM connector E (31P).
8. Check for continuity between ECM/PCM connector terminal E22 and body ground.

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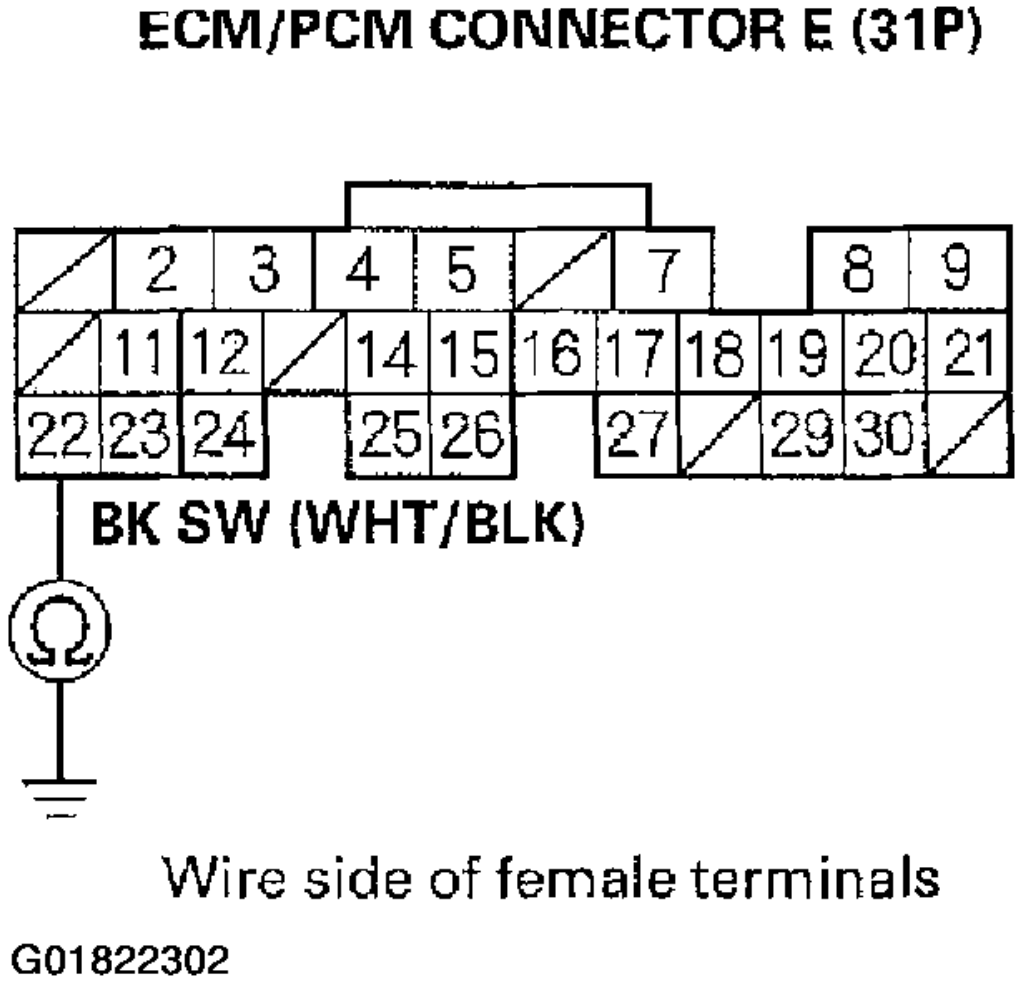


Fig. 12: Checking For Continuity Between ECM/PCM Connector Terminal E22 And Body Ground

Is there continuity?

YES -Repair short in the wire between the ECM/PCM (E22) and the No. 13 HORN, STOP (20A) fuse. Replace the No. 13 HORN, STOP (20A) fuse.

NO -Go to step 9.

9. Check for continuity between ECM/PCM connector terminal E22 and brake pedal position switch 4P connector terminal No. 2.

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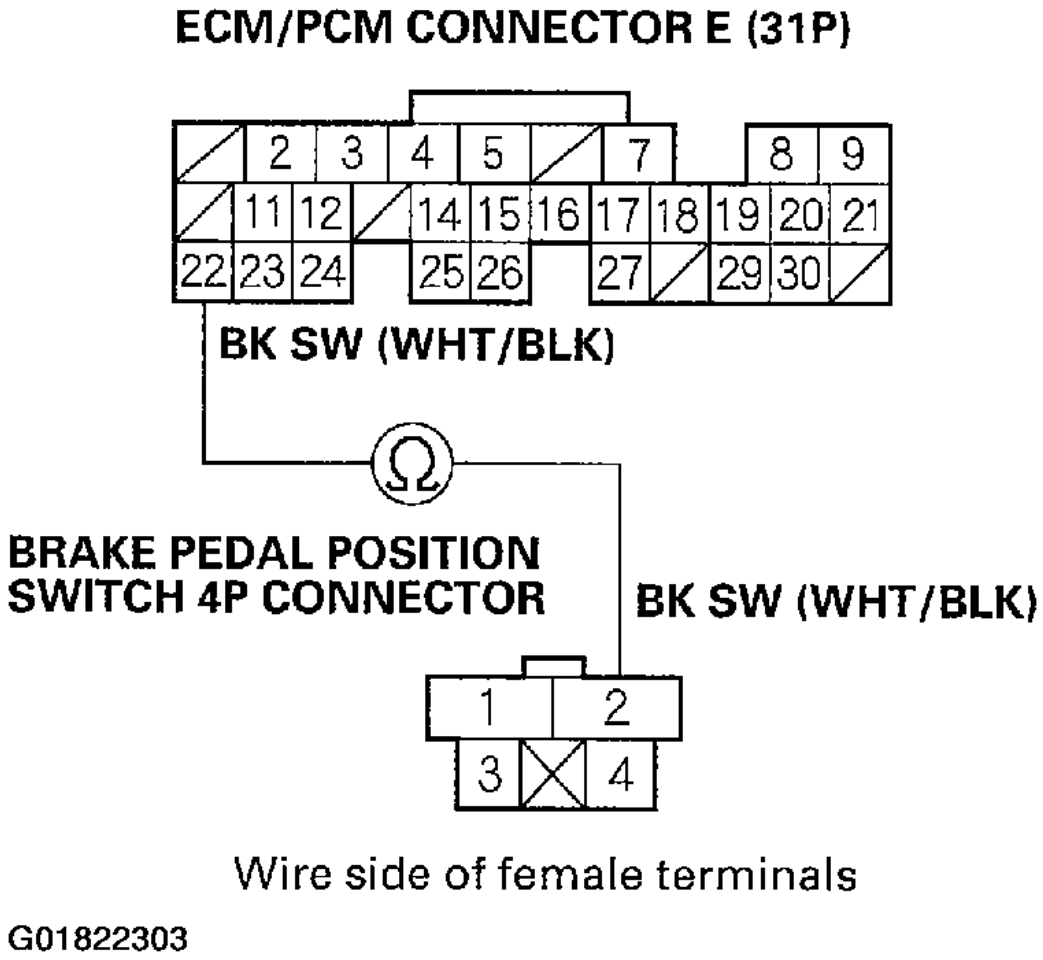


Fig. 13: Checking For Continuity Between ECM/PCM Connector Terminal E22 And Brake Pedal Position Switch 4P Connector Terminal No. 2

Is there continuity?

YES -Repair open in the wire between the brake pedal position switch and the No. 13 HORN, STOP (20A) fuse. Inspect the brake position switch (see **BRAKE PEDAL HEIGHT & FREE PLAY**).

NO -Repair open in the wire between the ECM/PCM (E22) and the brake pedal position switch.

IDLE SPEED INSPECTION

NOTE:

- **Before checking the idle speed, check these items:**
  - **The malfunction indicator lamp (MIL) has not been reported on.**

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- **Ignition timing**
- **Spark plugs**
- **Air cleaner**
- **PCV system**

- **Pull the parking brake lever up.**

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

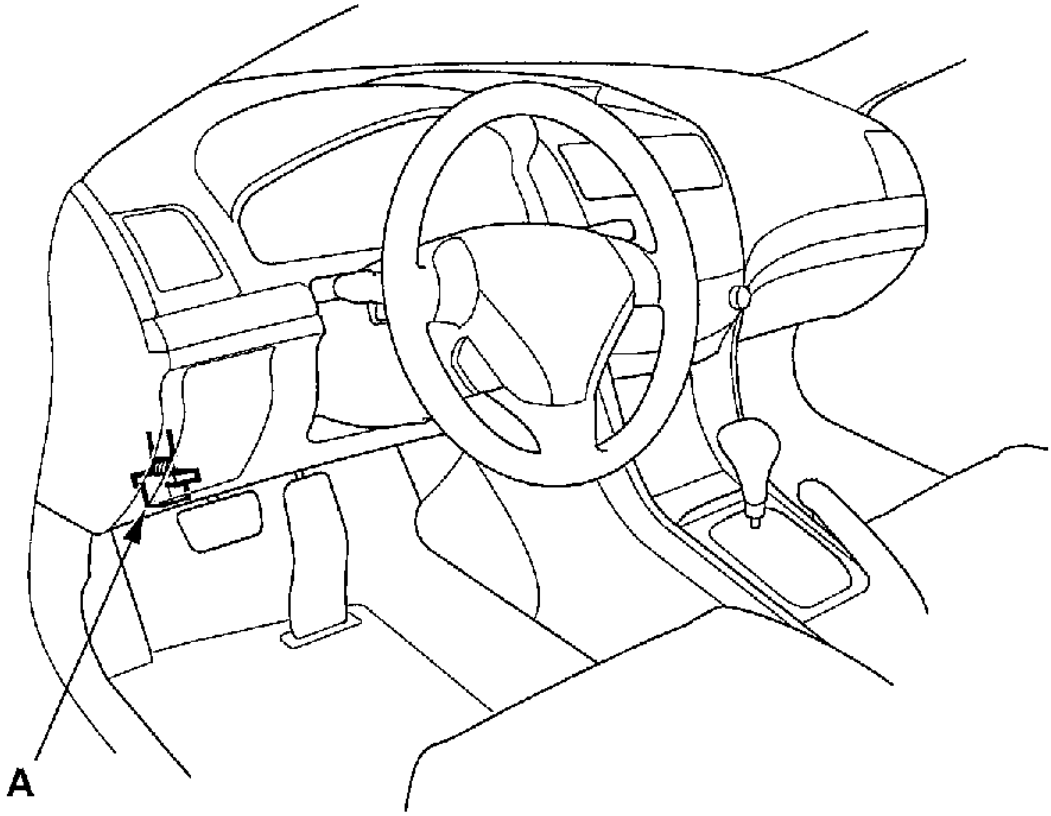


Fig. 14: Connecting The HDS To The Data Link Connector (DLC) Located Under The Driver's Side Of The Dashboard

3. Start the engine. Hold the engine at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the idle speed with no-load conditions: headlights, blower fan, radiator fan, and air conditioner off.

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Idle speed should be:

M/T	750±50 rpm
A/T	800±50 rpm (in Park or neutral)

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Fig. 15: Idle Speed Specifications Table (No-Load)

5. Let the engine idle for 1 minute with the heater fan switch on HI and air conditioner on, then check the idle speed.

Idle speed should be:

M/T	750±50 rpm
A/T	800±50 rpm (in Park or neutral)

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Fig. 16: Idle Speed Specifications Table (With Load)

NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see ECM/PCM IDLE LEARN PROCEDURE). If the idle is still out of specification, go to the Symptom Troubleshooting Index.

6. Reconnect the EVAP canister purge valve connector.

ECM/PCM IDLE LEARN PROCEDURE

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- The ECM/PCM is replaced.
- The ECM/PCM is reset.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn

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procedure.

- The throttle body is replaced.

PROCEDURE:

1. Make sure all electrical items (A/C, audio, rear window defogger, lights, etc.,) are off.
2. Do the ECM/PCM RESET in the CLEAR MENU with the HDS.
3. Turn the ignition switch ON (II), and wait for 2 seconds.
4. Start the engine, and hold it at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194°F (90°C).
5. Let the engine idle for about 5 minutes with the throttle fully closed.

NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

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2004 ACCESSORIES & EQUIPMENT

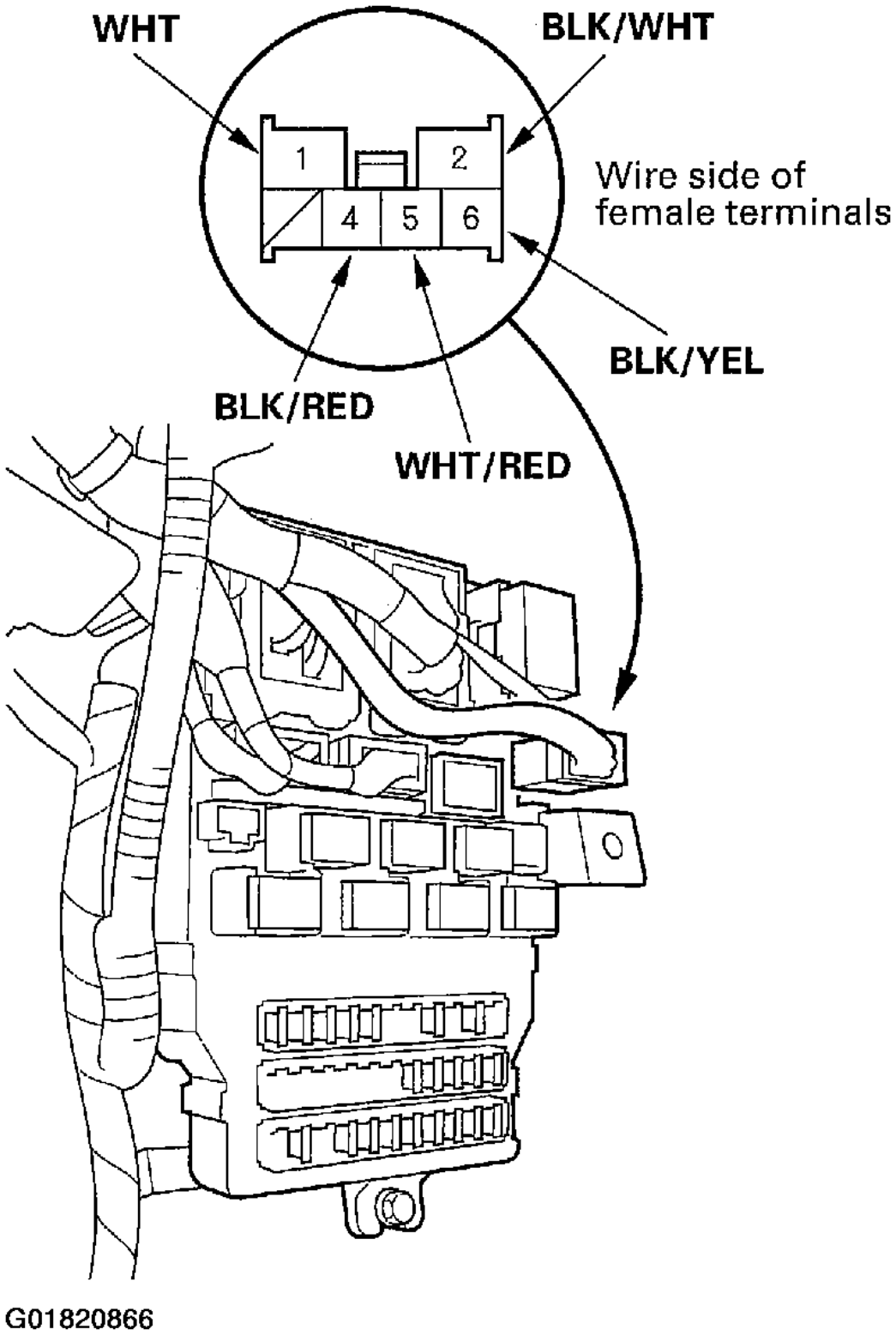
Ignition Switch - TSX

TEST

SRS components are located in this area. Review the SRS component locations and precautions and procedures in the SRS section before performing repairs or servicing. See **AIR BAG RESTRAINT SYSTEMS** .

1. Make sure you have the anti-theft code for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative cable.
3. Remove the left front door sill trim and left kick panel (see **INTERIOR TRIM**).
4. Disconnect the 6P connector from the driver's under-dash fuse/relay box.

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Fig. 1: Disconnecting The 6P Connector From The Driver's Under-Dash Fuse/Relay Box

5. Check for continuity between the terminals in each switch position according to the table. See **Fig. 2** .

Terminal / Position	WHT/ RED (ACC)	WHT (BAT)	BLK/ YEL (IG1)	BLK/ RED (IG2)	BLK/ WHT (ST)
O (LOCK)					
I (ACC)	○	○			
II (ON)	○	○	○	○	
III (START)		○	○		○

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Fig. 2: Ignition Switch Continuity Test Table

6. If the continuity checks do not agree with the table, replace the steering lock.
7. After reconnecting the battery, enter the anti-theft code for the radio and the navigation system, then enter the customer's radio station presets.
8. Do the engine idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**) and the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).

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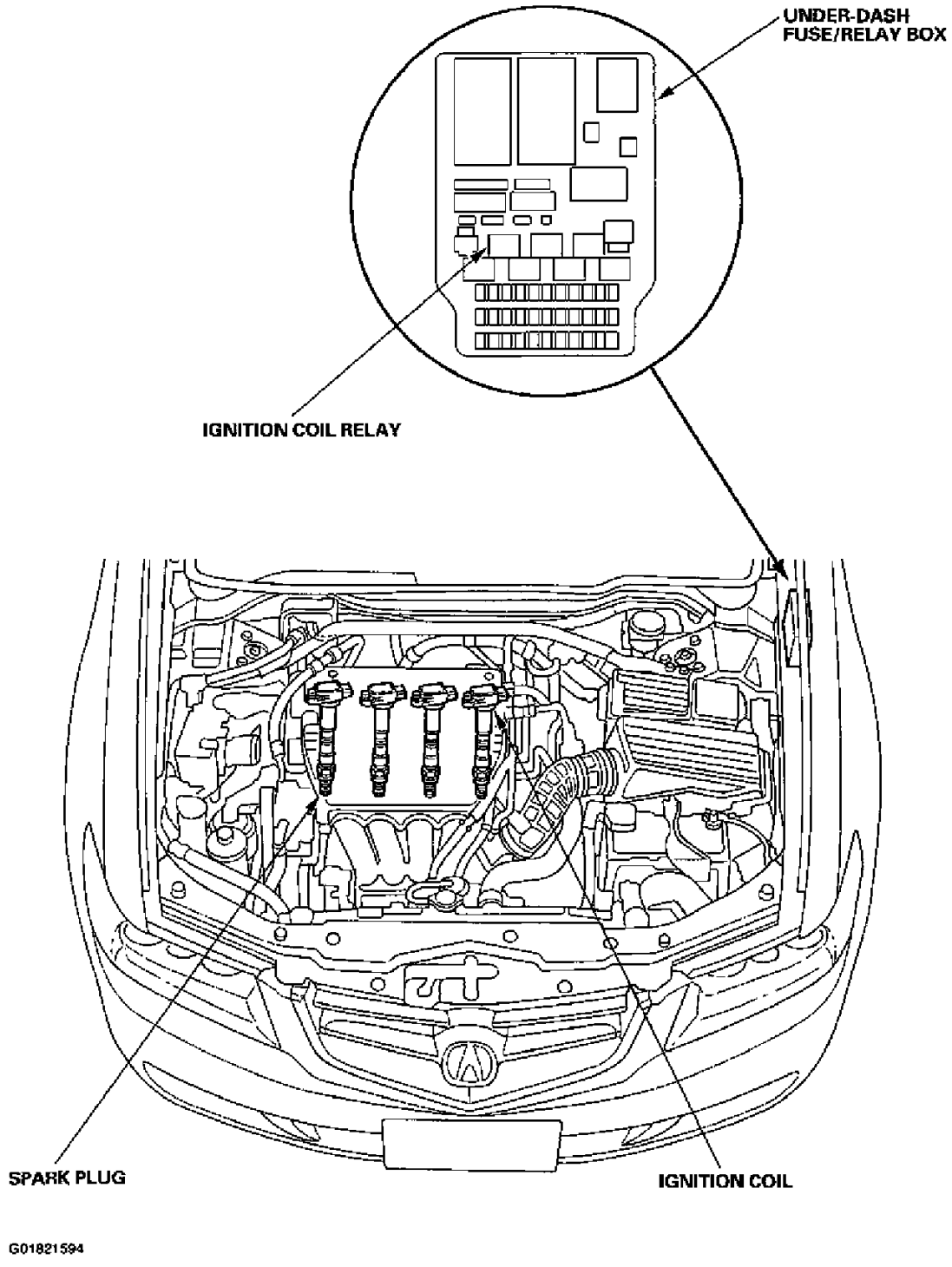


Fig. 1: Locating Ignition System Components

CIRCUIT DIAGRAM

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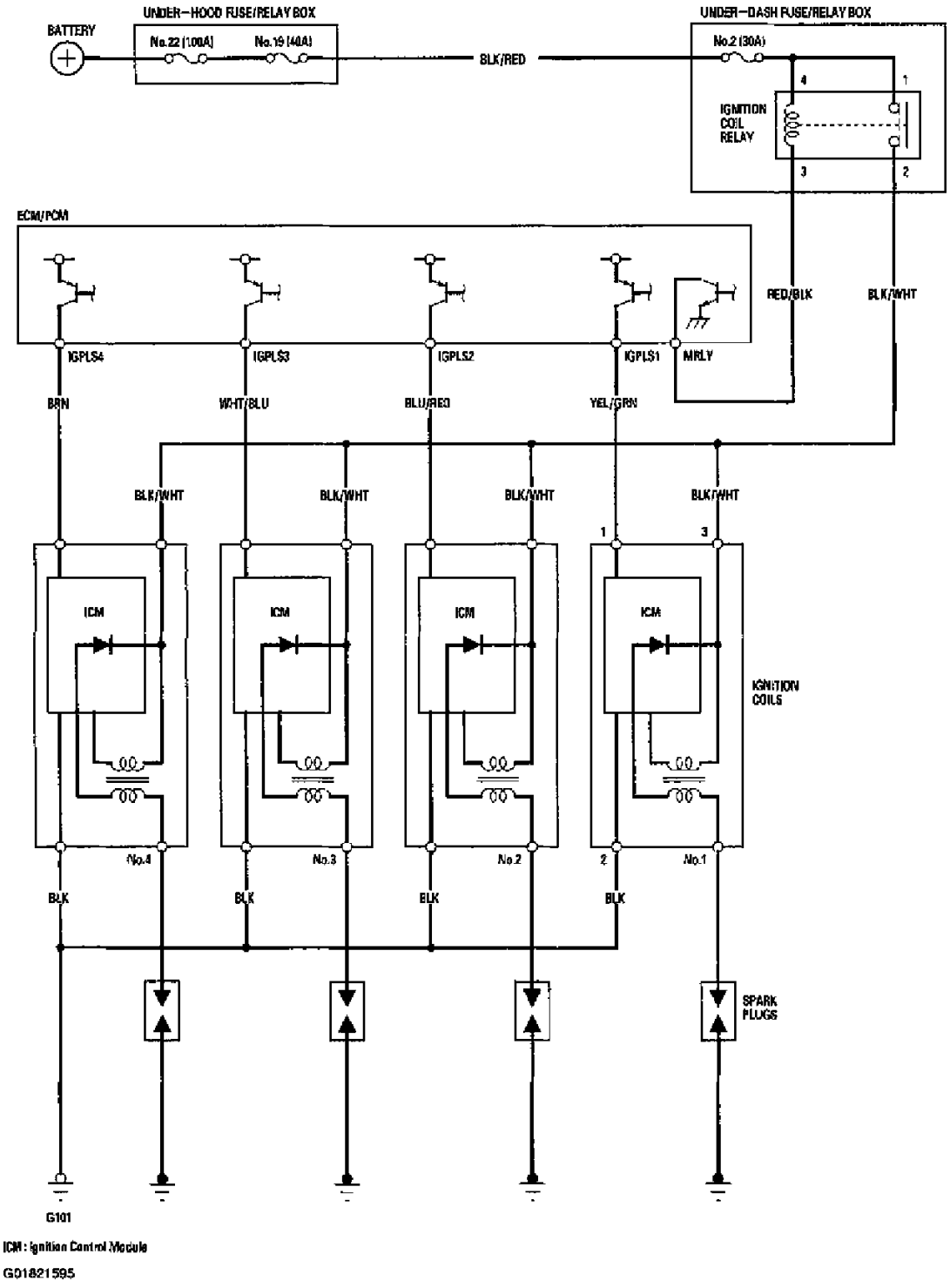


Fig. 2: Ignition System Wiring Diagram

IGNITION TIMING INSPECTION

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1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 of **GENERAL TROUBLESHOOTING INFORMATION**), and check for DTC's. If a DTC is present, diagnose and repair the cause before inspecting the ignition timing.
2. Start the engine. Hold the engine at 3,000 RPM with no load (in Neutral) until the radiator fan comes on, then let it idle.
3. Check the idle speed (see **IDLE SPEED INSPECTION**).
4. Follow the tester's prompts to get the tester in the "SCS" mode (see the operator's manual).
5. Free the service loop from the wire harness, then connect the timing light to the service loop.

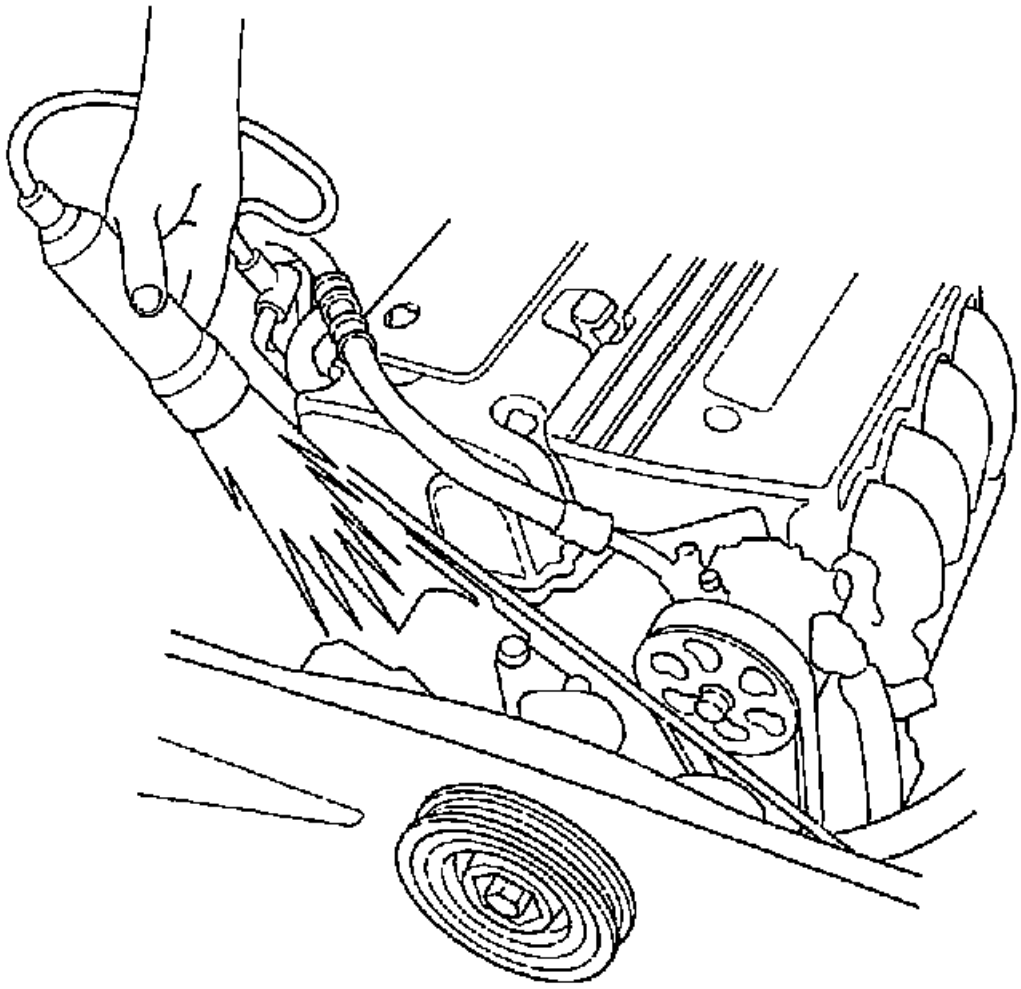


Fig. 3: Aiming The Timing Light Toward The Pointer On The Cam Chain Case

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6. Aim the light toward the pointer (A) on the cam chain case. Check the ignition timing under no load condition: headlights, blower fan, rear window defogger, and air conditioner are not operating.

   Ignition Timing:

   M/T: 8° +/- 2° BTDC (RED mark (B)) at idle in Neutral

   A/T: 8° +/- 2° BTDC (RED mark (B)) at idle in Park or Neutral

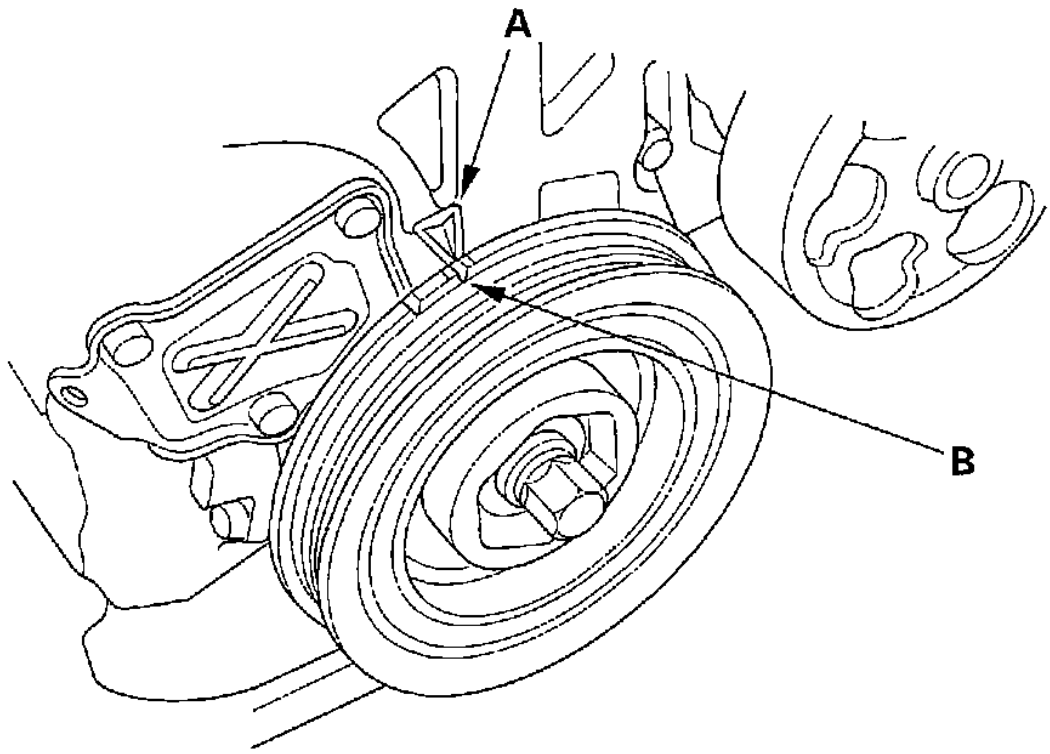


Fig. 4: Identifying Timing Marks

7. If the ignition timing differs from the specification, check cam timing. If cam timing is OK, update the engine control module (ECM)/powertrain control module (PCM) if it does not have the latest software, or substitute a known-good ECM/PCM (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**), then recheck. If the system work properly, and the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).
8. Disconnect the HDS and the timing light.
9. Secure the service loop to the wire harness with wire ties.

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IGNITION COIL REMOVAL/INSTALLATION

1. Remove the ignition coil cover (A), disconnect the ignition coil connectors (B), then remove the ignition coils (C).

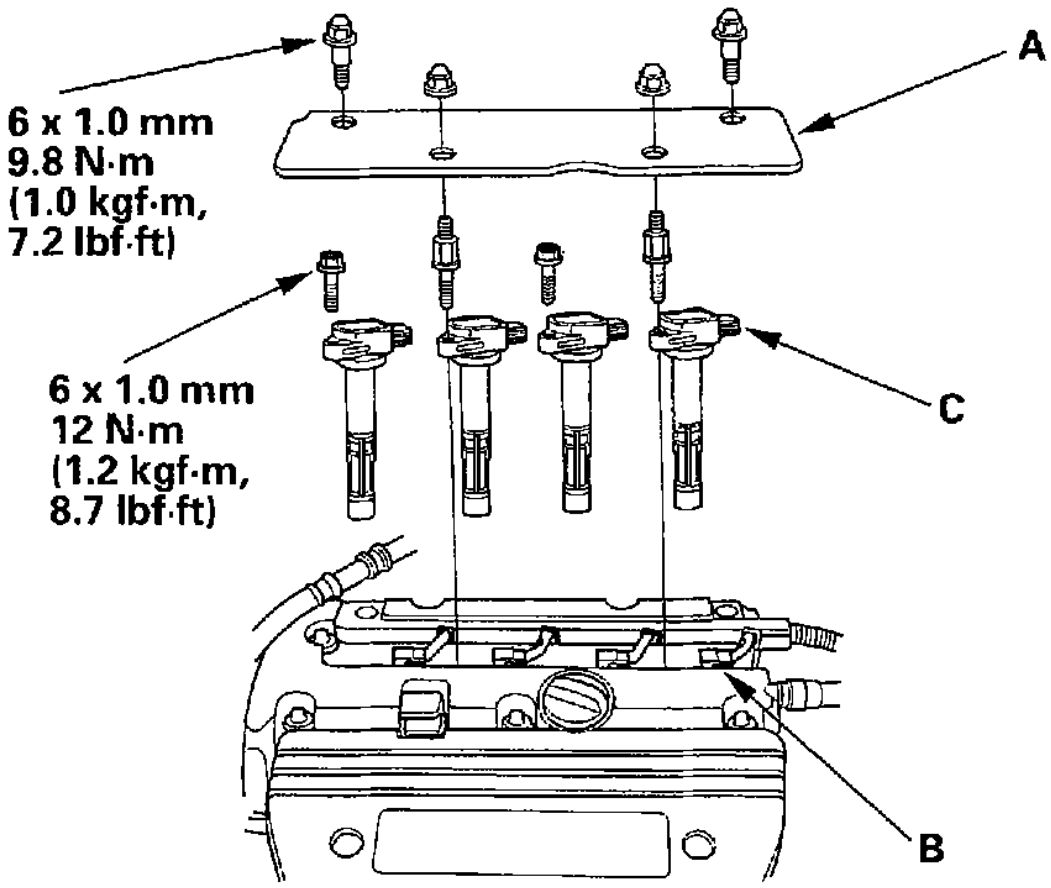


Fig. 5: Removing The Ignition Coil Cover, Disconnecting The Ignition Coil Connectors, & Removing The Ignition Coils

2. Install the ignition coils in the reverse order of removal.

IGNITION COIL RELAY CIRCUIT TROUBLESHOOTING

1. Check the No. 2 (30A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES: Go to step 2.

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NO: Replace the fuse.

2. Remove the ignition coil relay from the under-dash fuse/relay box and test it (see **POWER RELAY TEST**).

   Is the relay OK?

   YES: Go to step 3.

   NO: Replace the ignition coil relay.

3. Measure the voltage between ignition coil relay 4P socket terminal No. 1 and body ground, then terminal No. 4 and body ground.

   Is there battery voltage?

   YES: Go to step 4.

   NO: Replace the under-dash fuse/relay box.

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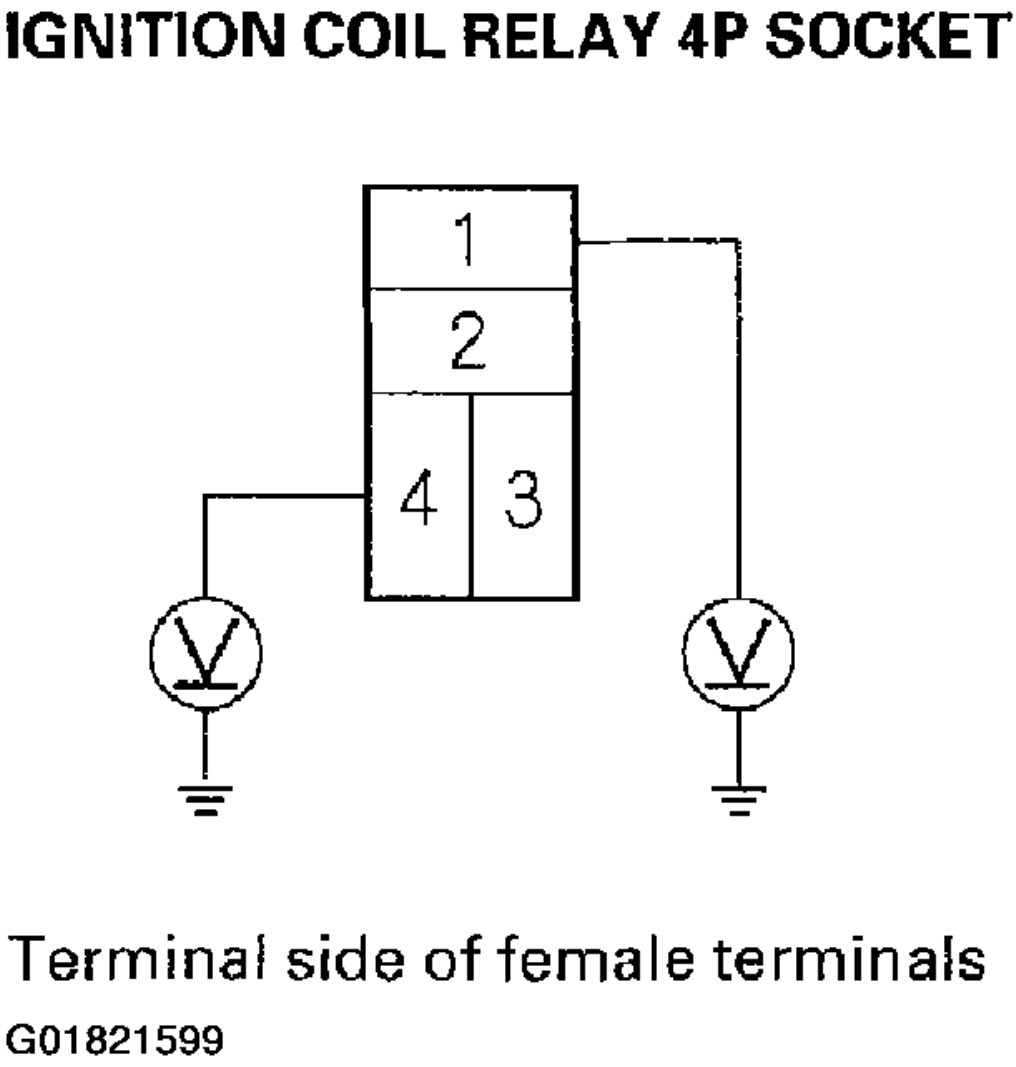


Fig. 6: Measuring Voltage Between Ignition Coil Relay 4P Socket Terminals And Body Ground

4. Check for continuity between ignition coil relay 4P socket terminal No. 2 and the No. 1 ignition coil 3P connector terminal No. 3.

   Is there continuity?

   YES: Go to step 5.

   NO: Repair an open in the wire between ignition coil relay 4P socket terminal No. 2 and ignition coil 3P connector terminal No. 3.

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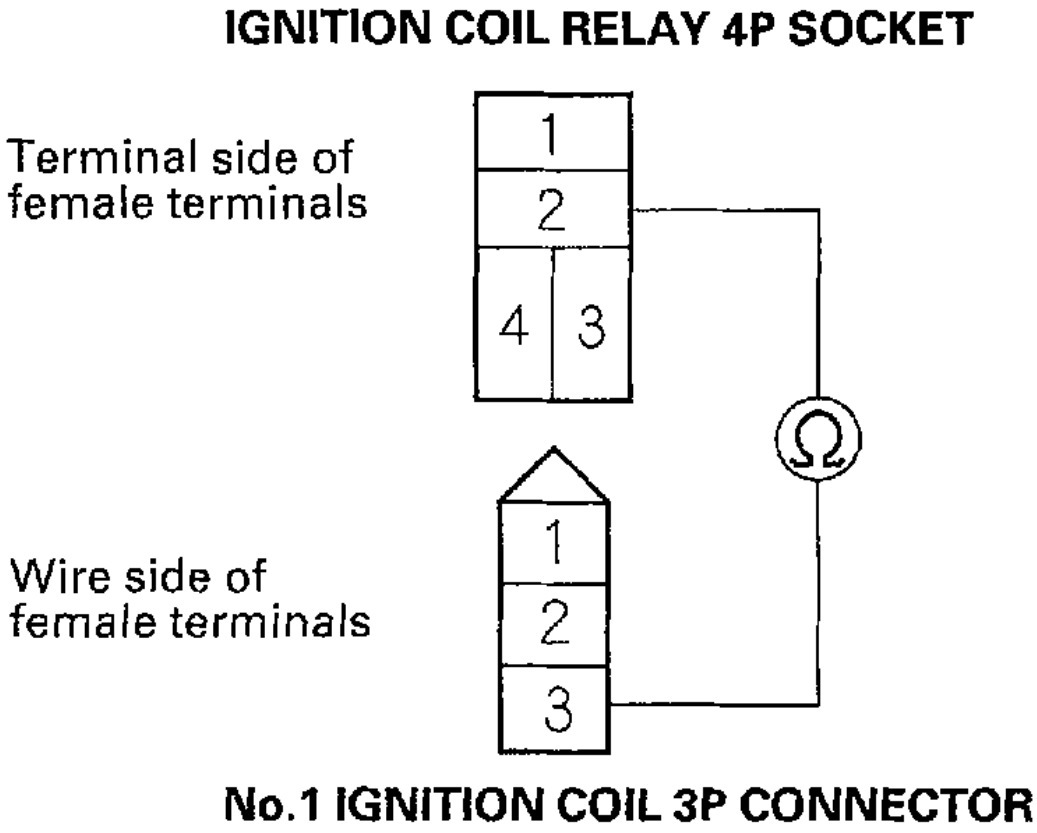


Fig. 7: Checking For Continuity Between Ignition Coil Relay 4P Socket Terminal No. 2 And The No. 1 Ignition Coil 3P Connector Terminal No. 3

5. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

   Is there continuity?

   YES: Repair a short in the wire between ignition coil relay 4P socket terminal No. 3 and ECM/PCM.

   NO: Repair an open in the wire between ignition coil relay 4P socket terminal No. 3 and ECM/PCM.

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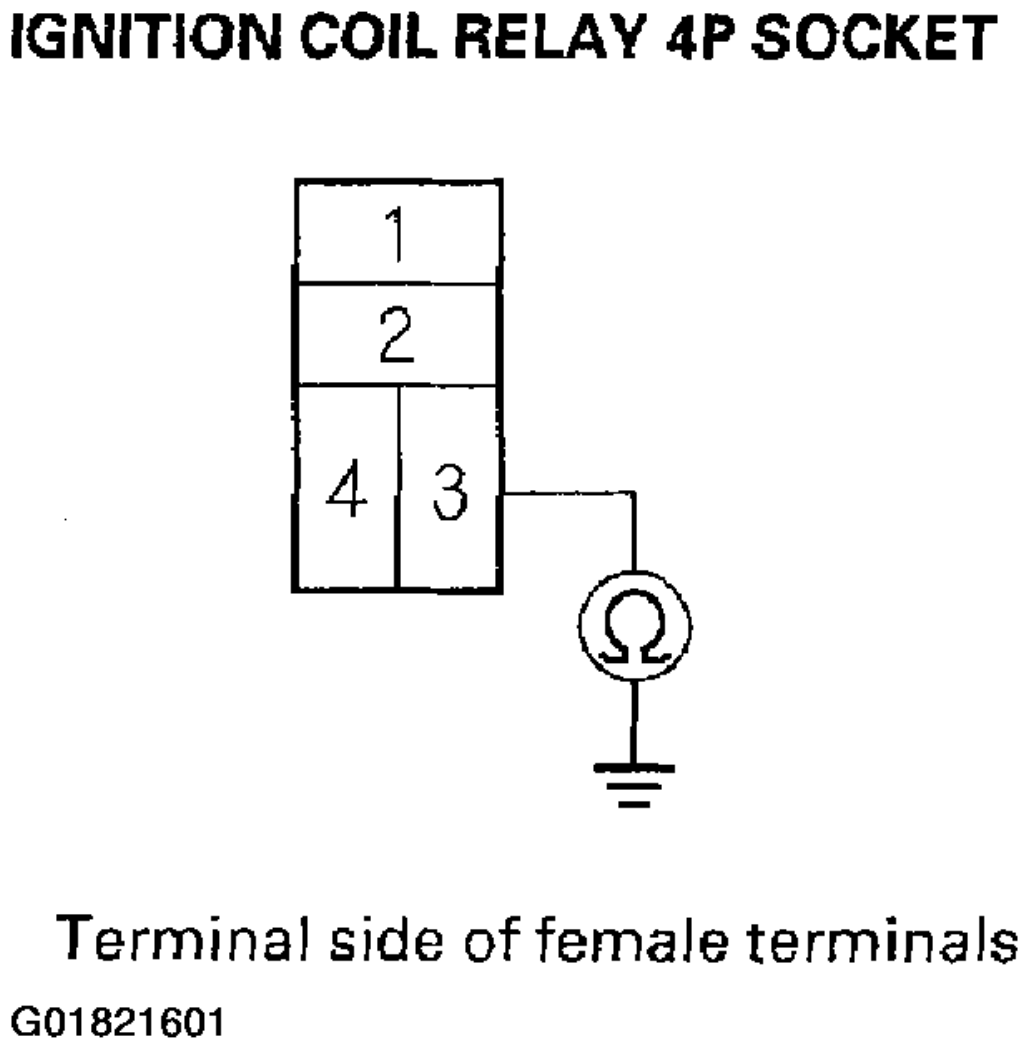


Fig. 8: Checking For Continuity Between Ignition Coil Relay 4P Socket Terminal No. 3 And Body Ground

SPARK PLUG INSPECTION

1. Inspect the electrodes and ceramic insulator.

   Burned or worn electrodes may be caused by:

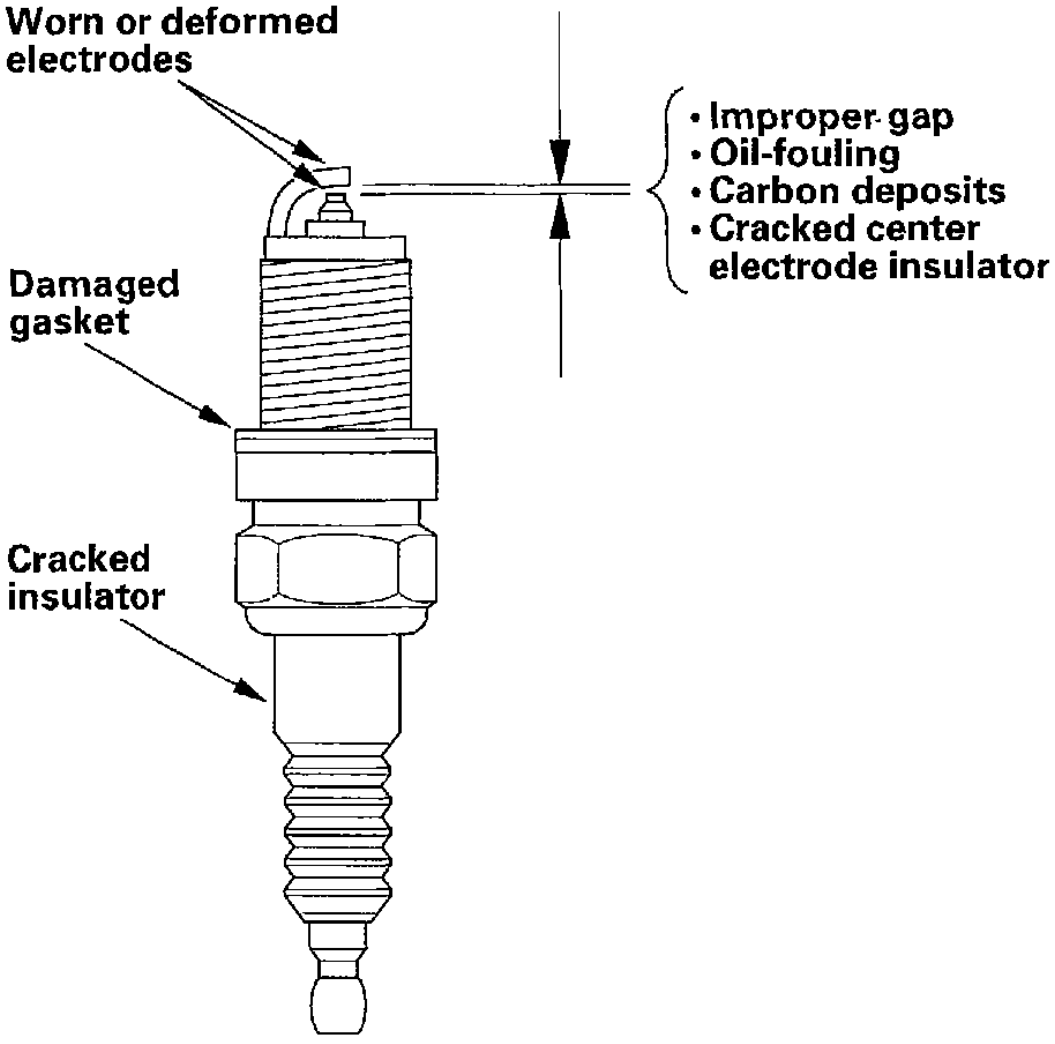
   - Advanced ignition timing
   - Loose spark plug
   - Plug heat range too hot

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- Insufficient cooling

Fouled plug may be caused by:

- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too cold
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coils



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Fig. 9: Inspecting Spark Plug

2. Do not adjust the gap (A) of iridium tip plugs; replace the spark plug if the gap is out of specification.

   Electrode Gap:

   Standard (New): 1.0-1.1 mm (0.039-0.043 in.)

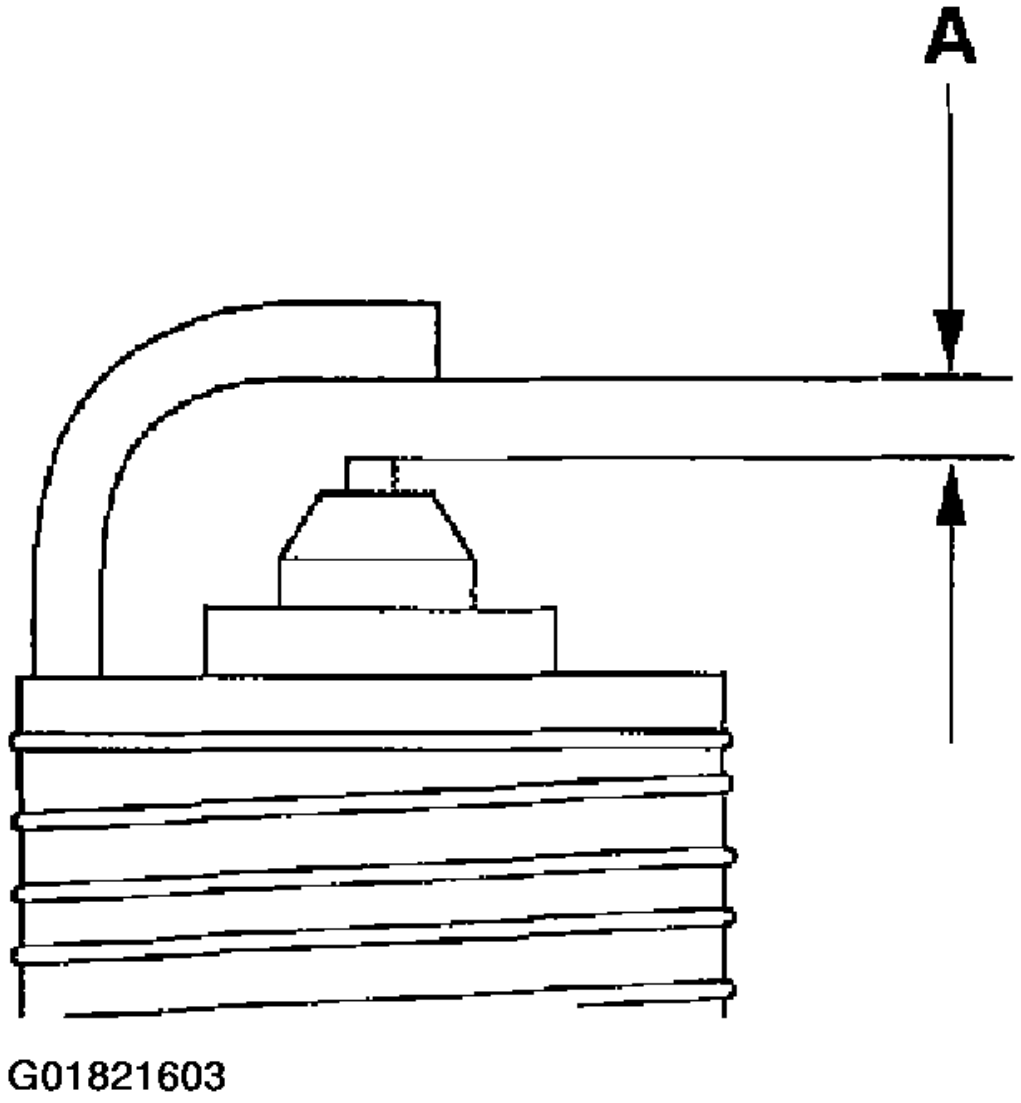


Fig. 10: Checking Gap

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3. Replace the plug at the specified interval or if the center electrode is rounded (A). Use only the spark plugs listed below.

   Spark Plugs:

   NGK: IZFR6K11

   DENSO: SKJ20DR-M11

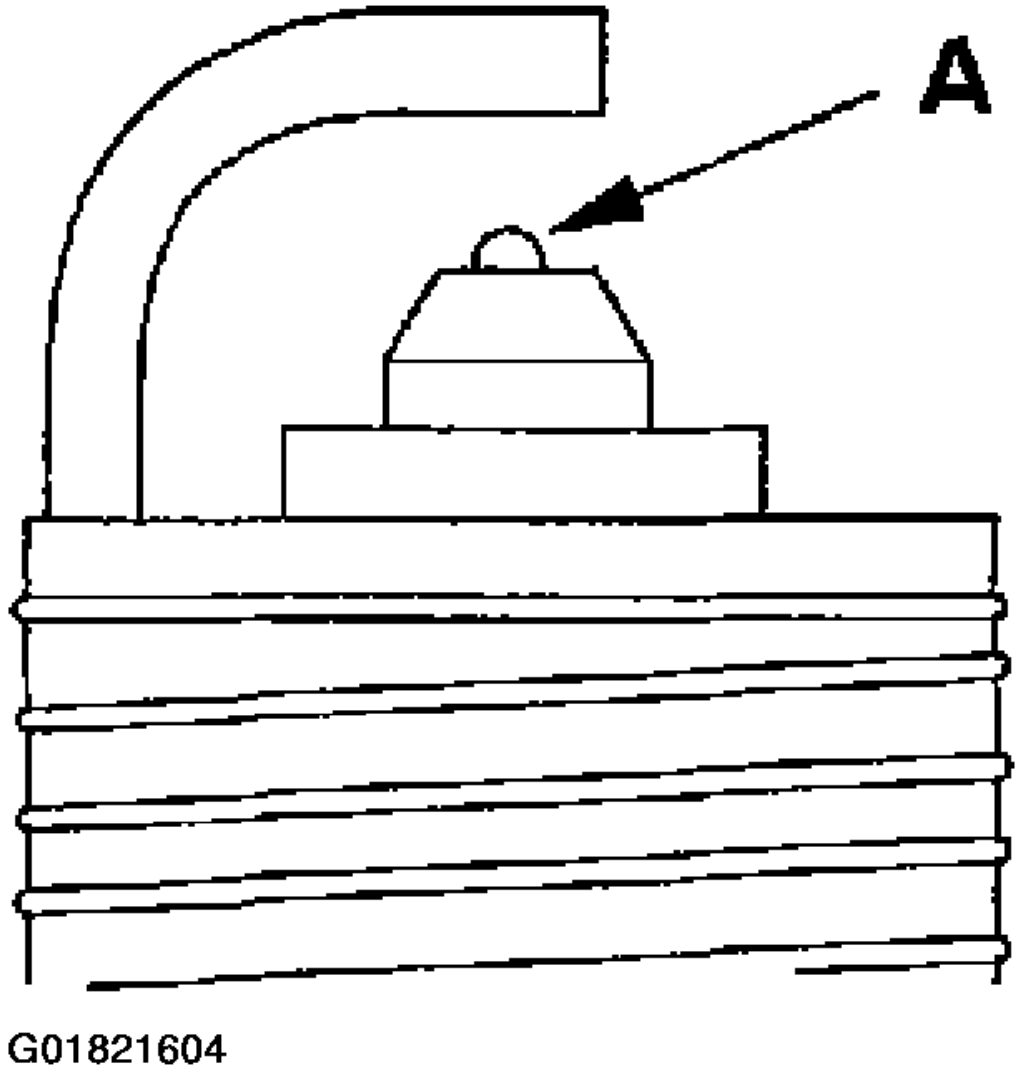


Fig. 11: Identifying Rounded Center Electrode

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4. Apply a small quantity of anti-seize compound to the plug threads, and screw the plugs into the cylinder head finger-tight. Then torque them to 18 N.m (1.8 kgf.m, 13 lbf.ft).

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2004 ACCESSORIES & EQUIPMENT

Immobilizer System - TSX

COMPONENT LOCATION INDEX

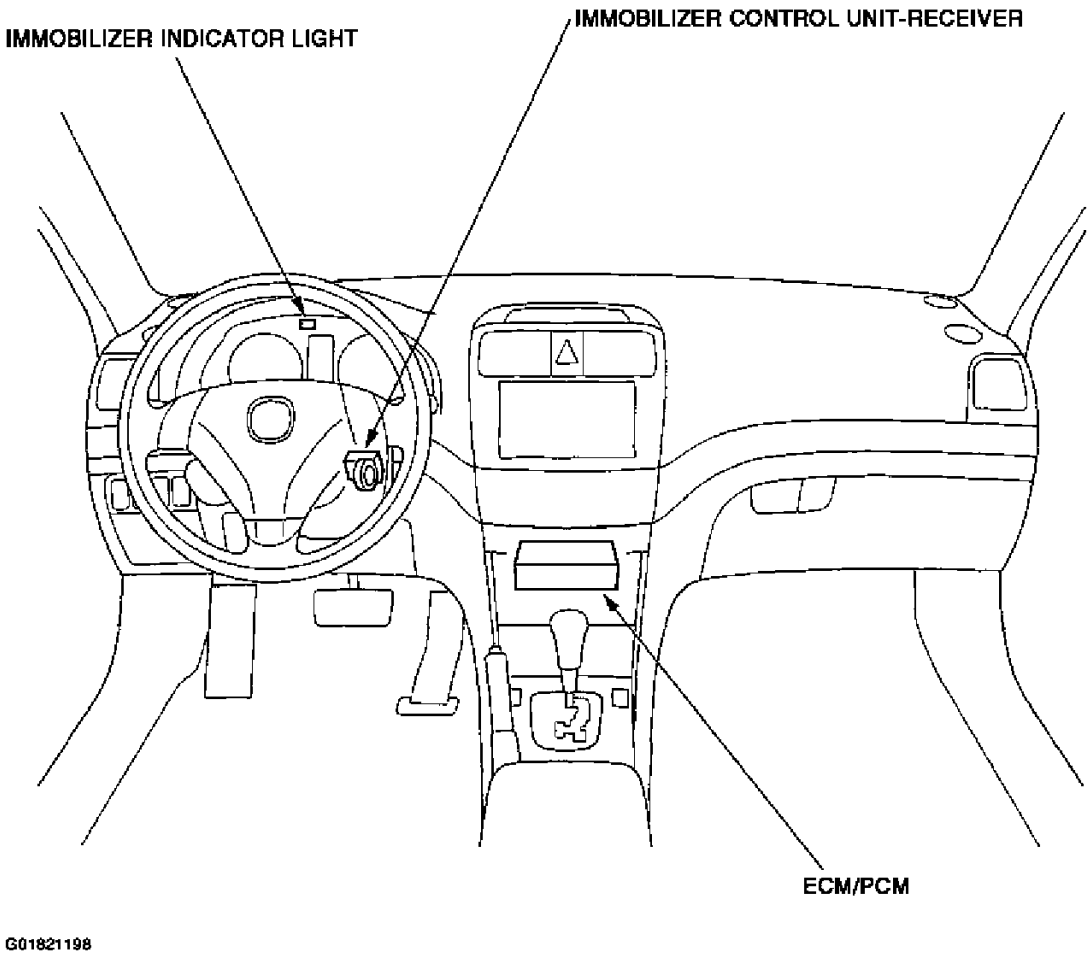


Fig. 1: Locating Immobilizer System Components (1 Of 2)

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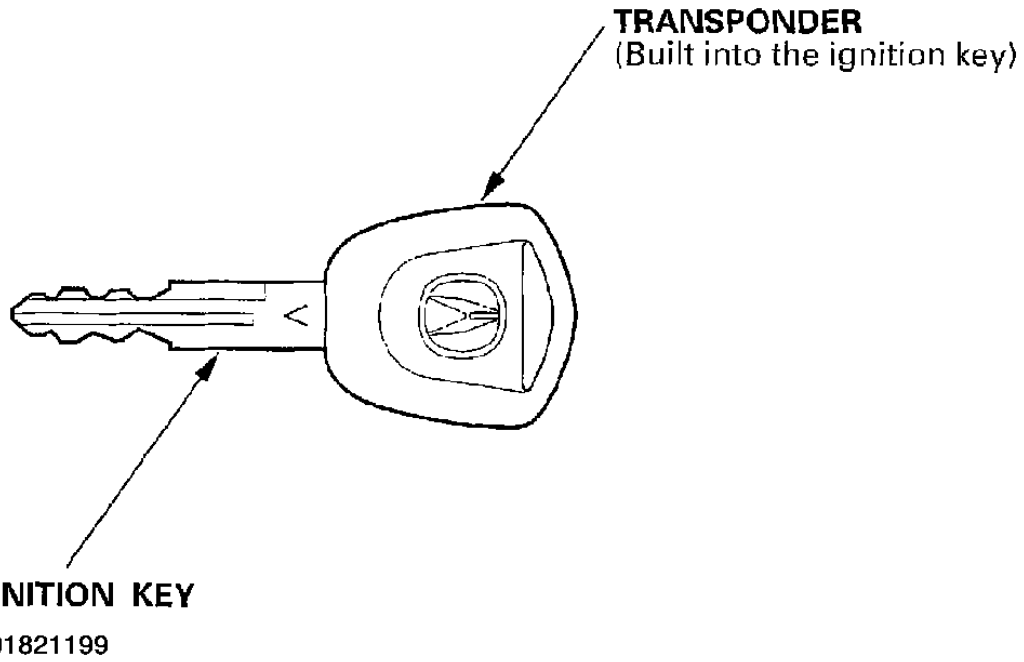


Fig. 2: Locating Immobilizer System Components (2 Of 2)

SYSTEM DESCRIPTION

The vehicle is equipped with an immobilizer system that will disable the vehicle unless the proper ignition key is used. This system consists of a transponder located in the ignition key, an immobilizer control unit-receiver, an indicator, and the ECM/PCM.

When the key is inserted in the ignition switch and turned to the on (II) position, the immobilizer control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer control unit-receiver which then sends a coded signal to the ECM/PCM.

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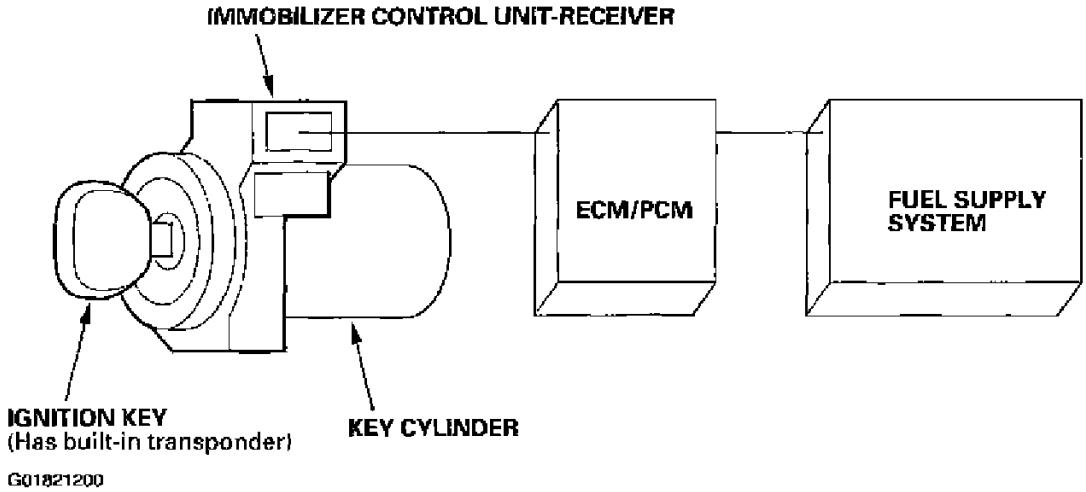


Fig. 3: Immobilizer System Schematic

- If the proper key has been used, the immobilizer indicator will come on for about 2 seconds, then go off.
- If the wrong key has been used or the code was not received or recognized by the unit, the indicator will come on for about 2 seconds, then it will blink until the ignition switch is turned OFF.
- If the ignition switch is turned OFF, the indicator will blink for about 5 seconds to signal that the unit has reset correctly, then the indicator will go off.
- If the customer has lost their key, and cannot start the engine, contact Acura Customer Relations.

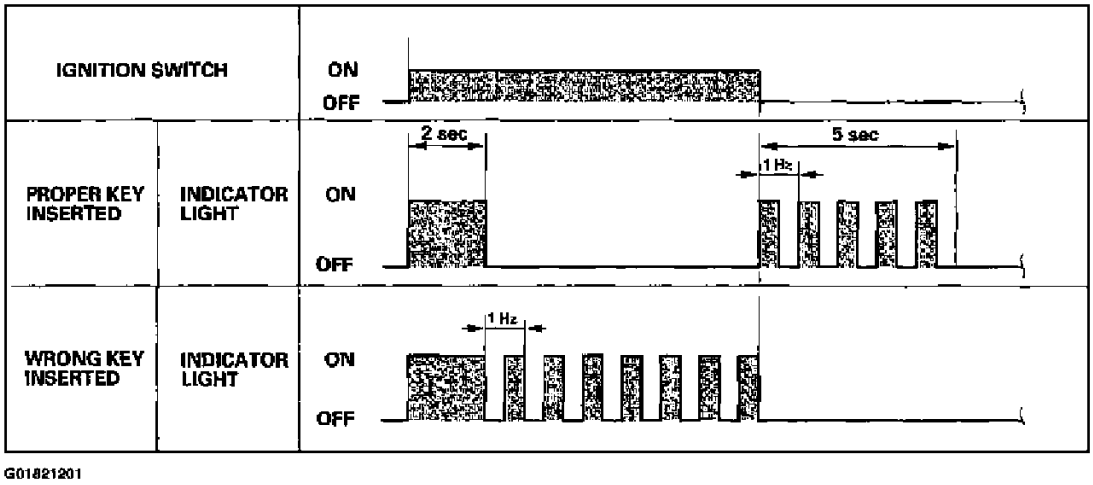


Fig. 4: Immobilizer Indicator Light Blinking Pattern

CIRCUIT DIAGRAM

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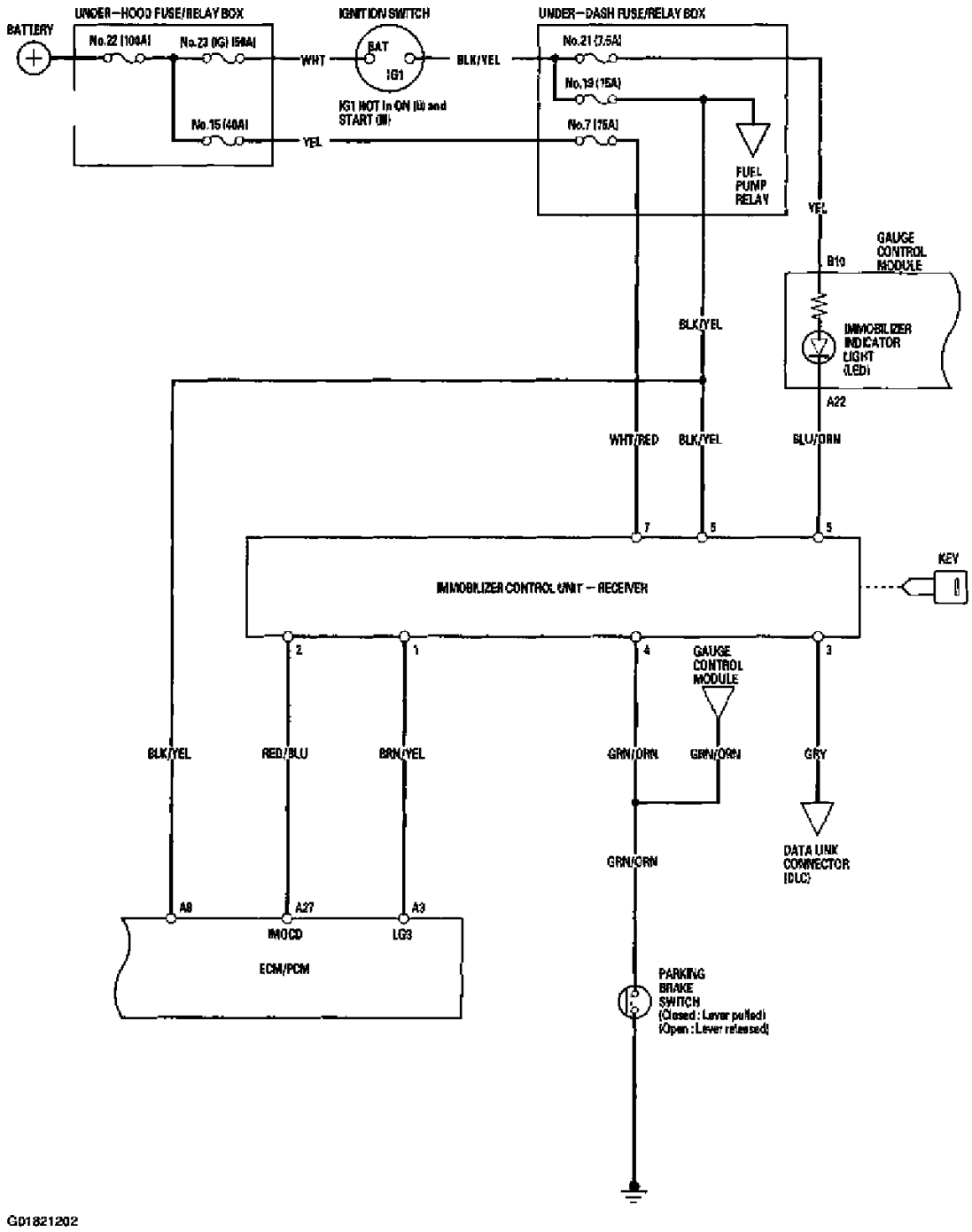


Fig. 5: Immobilizer System Wiring Diagram

TROUBLESHOOTING

Follow this procedure if the vehicle does not start after rewriting the ECM/PCM with the HDS.

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NOTE THESE ITEMS BEFORE TROUBLESHOOTING:

- Due to the action of the immobilizer system, the engine takes slightly more time to start than vehicle's without an immobilizer system.
- When the system is normal, and the proper key is inserted, the indicator comes on for 2 seconds, then it will go off.
- If the indicator starts to blink after 2 seconds, or if the engine does not start, repeat the starting procedure. If the engine still does not start, continue with this procedure.
- Check the ECM/PCM DTC's (see **GENERAL TROUBLESHOOTING INFORMATION**).

1. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).

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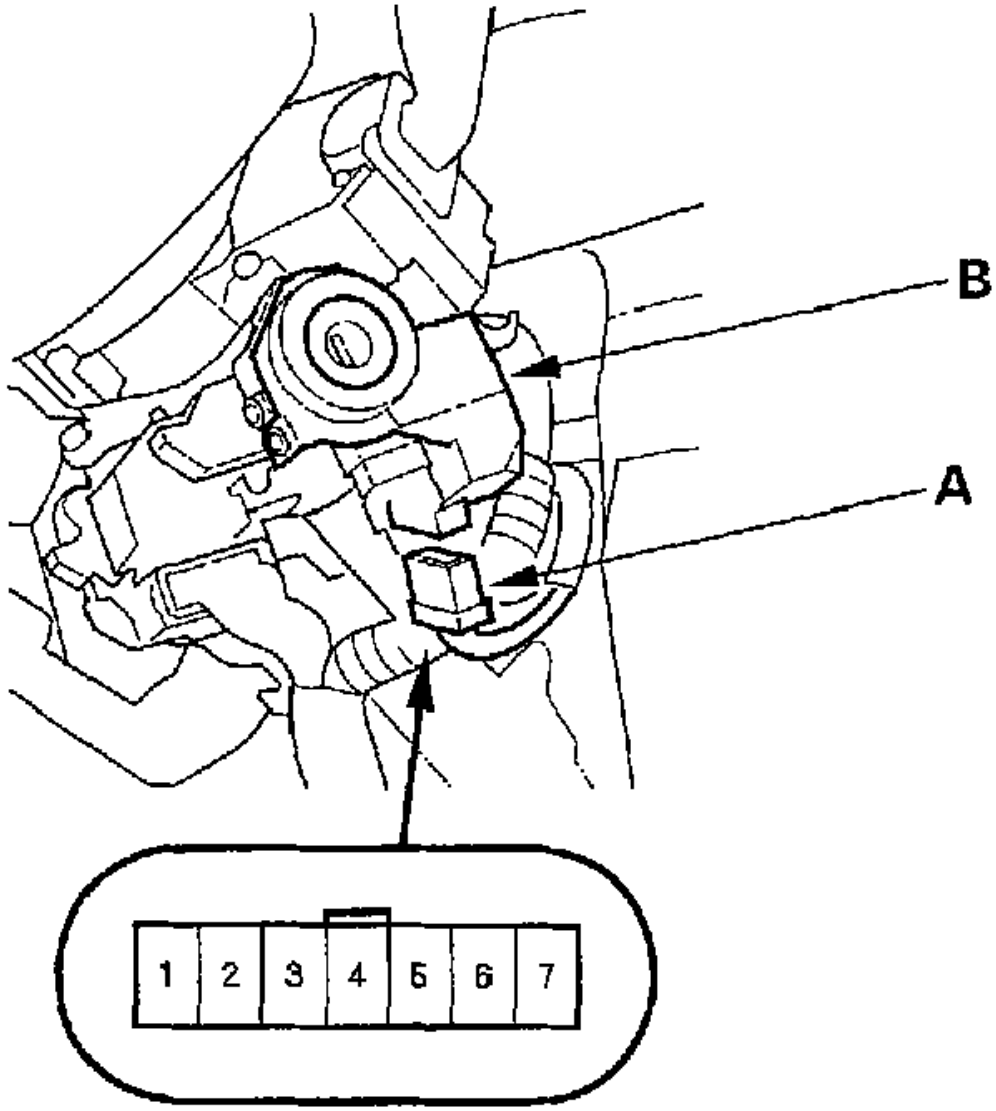


Fig. 6: Disconnecting The 7P Connector From The Immobilizer Control Unit-Receiver

3. Turn the ignition switch ON (II) with the proper key.
4. Check to see if the immobilizer indicator comes on.

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Does the indicator come on (blinking or solid)?

YES: Go to step 5.

NO: Go to step 8 .

5. Check for voltage between the immobilizer control unit-receiver 7P connector No. 7 terminal and body ground.

   Is there battery voltage?

   YES: Go to step 6.

   NO: Check for these problems:

   - A blown No. 15 (40A) fuse in the under-hood fuse/relay box.
   - A blown No. 7 (10A) fuse in the under-dash fuse/relay box.
   - An open in the WHT/RED wire.

6. Check for voltage between the immobilizer control-unit receiver 7P connector No. 4 terminal and body ground with the parking brake lever applied, then released.

   Is there 1 V or less, then 5 V or more?

   YES: Go to step 7.

   NO: Check for these problems:

   - Short to ground.
   - Faulty parking brake switch or a poor body ground of the parking brake switch.
   - Repair an open in the GRN/ORN wire.

7. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 terminal and ECM/PCM 31P connector A27 terminal.

   Is there continuity?

   YES: Go to step 8.

   NO: Repair an open in the RED/BLU wire.

8. Connect the immobilizer control unit-receiver 7P connector No. 5 terminal to body ground with a jumper wire, then turn the ignition switch ON (II).

   Does the immobilizer indicator come on?

   YES: Go to step 9.

   NO: Check for these problems:

   - An open in the BLU/ORN wire between the gauge assembly and immobilizer control unit-receiver.
   - A faulty immobilizer indicator.
   - A blown No. 21 (7.5A) fuse in the under-dash fuse/relay box.

9. Check for voltage between the immobilizer control unit-receiver 7P connector No. 6 terminal and body ground with the ignition switch ON (II).

   Is there battery voltage?

   YES: Go to step 10.

   NO: Check for these problems:

   - A blown No. 19 (40A) fuse in the under-dash fuse/relay box.

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- An open in the BLK/YEL wire.

10. Check for continuity between the immobilizer control unit-receiver 7P connector No. 1 terminal and body ground.

Is there continuity?

YES: Replace the immobilizer control unit-receiver. After replacing the immobilizer control unit-receiver, rewrite the unit with the HDS.

NO: Repair the open in the BRN/YEL wire.

IMMOBILIZER CONTROL UNIT-RECEIVER REPLACEMENT

1. Remove the dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).

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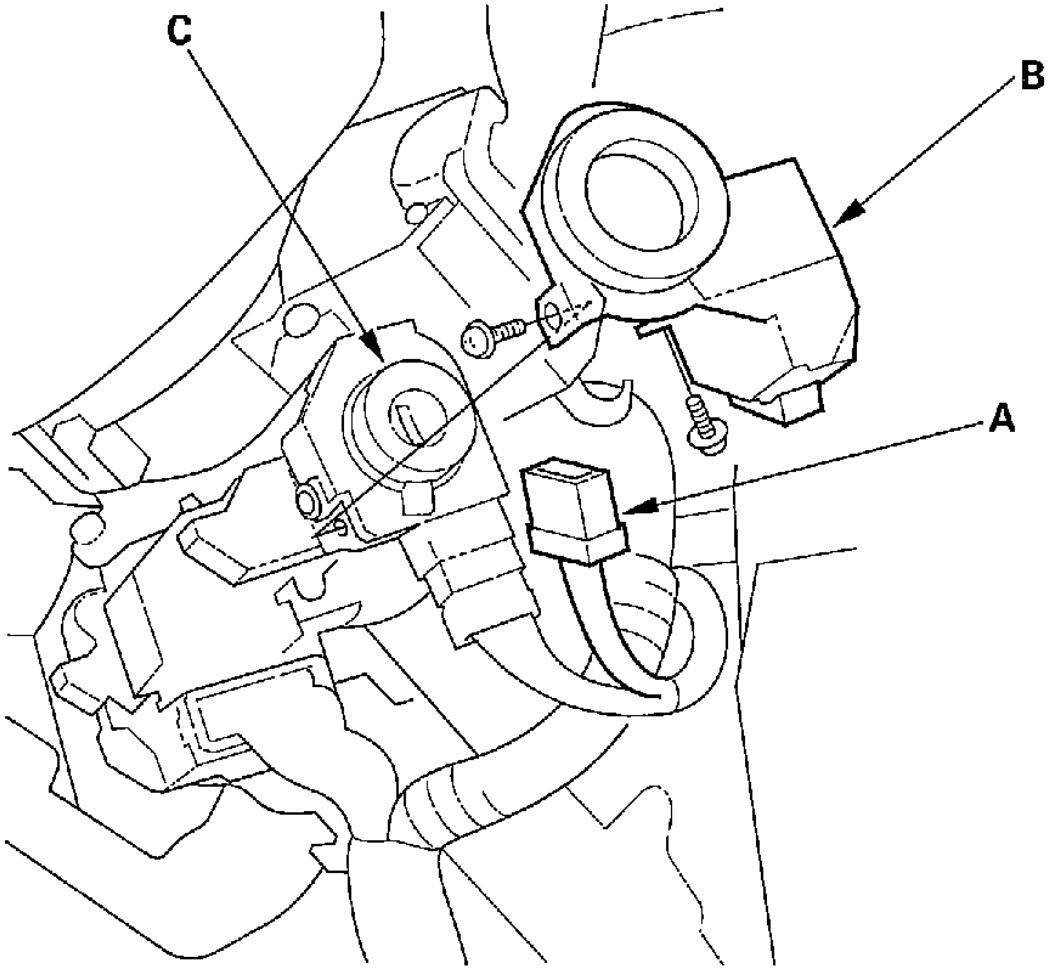


Fig. 7: Disconnecting The 7P Connector From The Immobilizer Control Unit-Receiver

4. Remove the two screws and the immobilizer control unit-receiver from the ignition key cylinder (C).
5. Install the immobilizer control unit-receiver in the reverse order of removal.
6. After replacement, check the immobilizer system.

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2004 ENGINE PERFORMANCE

Intake Air System - TSX

COMPONENT LOCATION INDEX

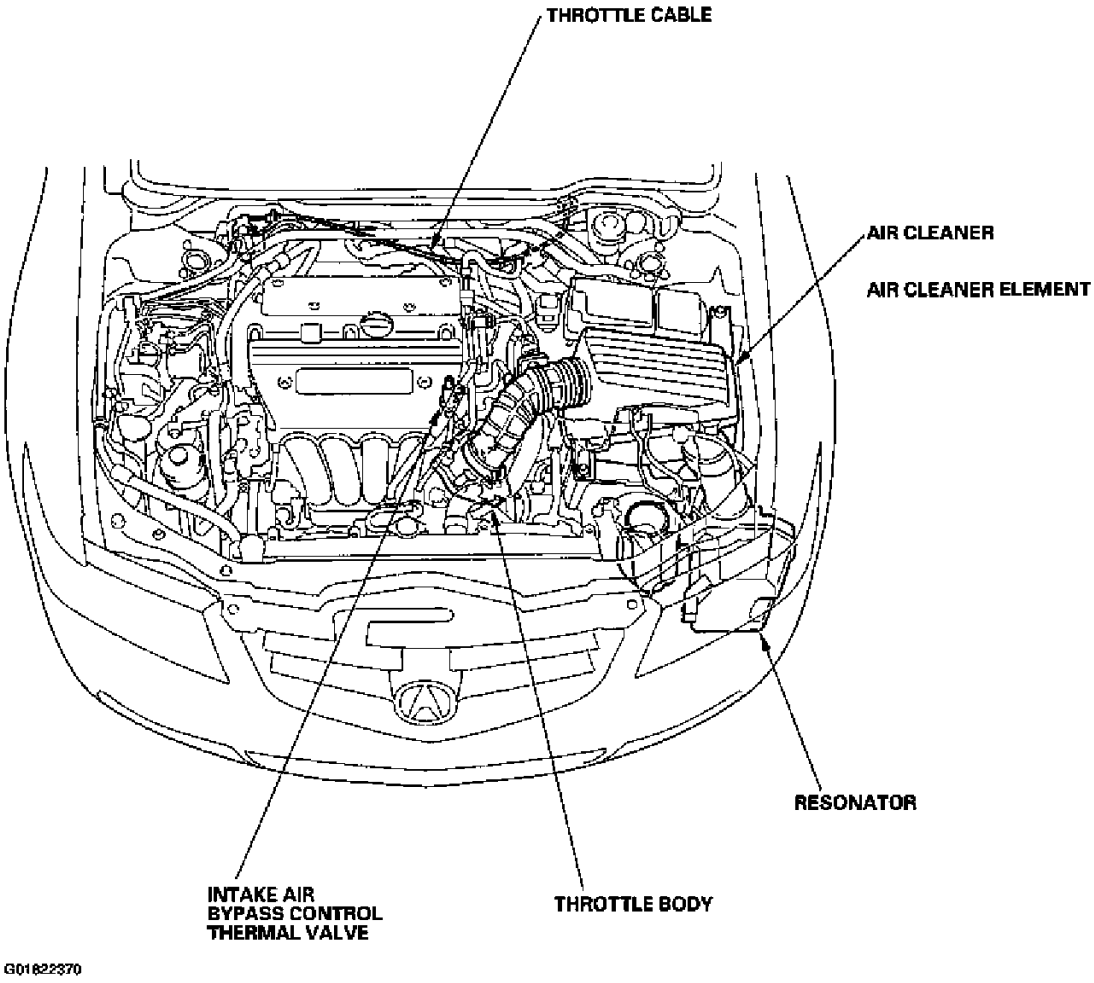


Fig. 1: Locating Intake Air System Components

THROTTLE BODY TEST

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

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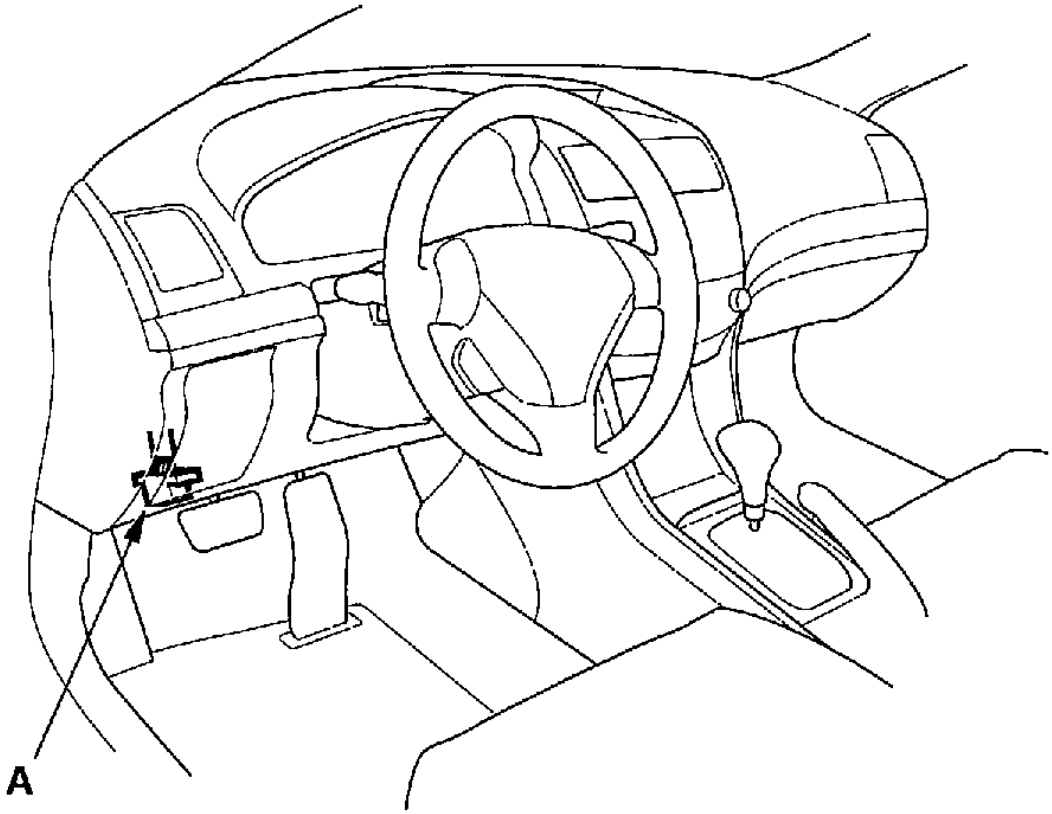


Fig. 2: Connecting The HDS To The Data Link Connector (DLC) Located Under The Driver's Side Of The Dashboard

2. Start the engine. Hold the engine at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
3. Check the TP SENSOR A in the DATA LIST with the HDS. The reading should be above 2.73%. If it is not, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE BODY CLEANING

CAUTION:

- **Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle body is activated.**

1. Check for damage to the air cleaner.
2. Remove the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

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3. Wipe off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in carburetor cleaner.

NOTE:

- **Remove the throttle body, while cleaning it.**
- **Be careful not to pinch your fingers.**
- **To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).**
- **Do not spray carburetor cleaner directly on the throttle body.**
- **Use Honda genuine carburetor cleaner.**

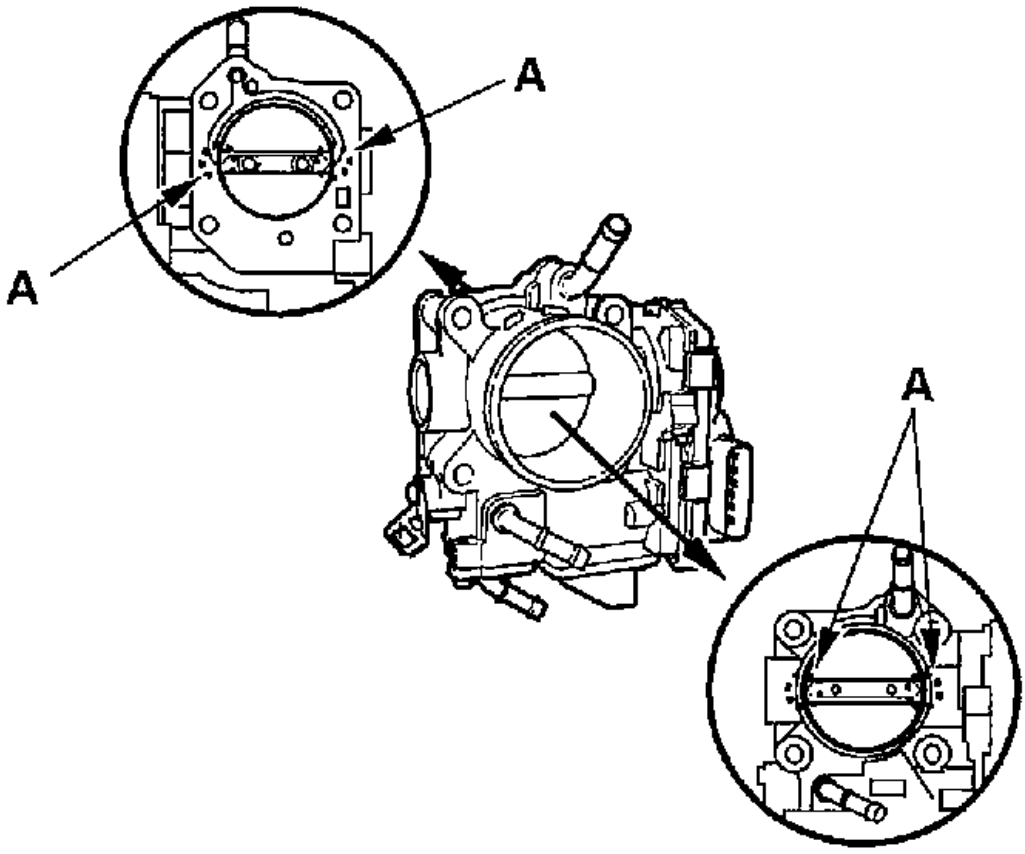


Fig. 3: Do Not Clean The Bearing Area Of The Throttle Shaft

4. Install the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

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5. Reset the ECM/PCM with the HDS.
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

INTAKE AIR BYPASS CONTROL THERMAL VALVE TEST

1. Start the engine, and let it idle.

NOTE: The engine coolant temperature must be below 131°F (55°C).

2. Remove the vacuum hose (A) from the intake air duct, and connect a vacuum pump/gauge (B) to the hose.

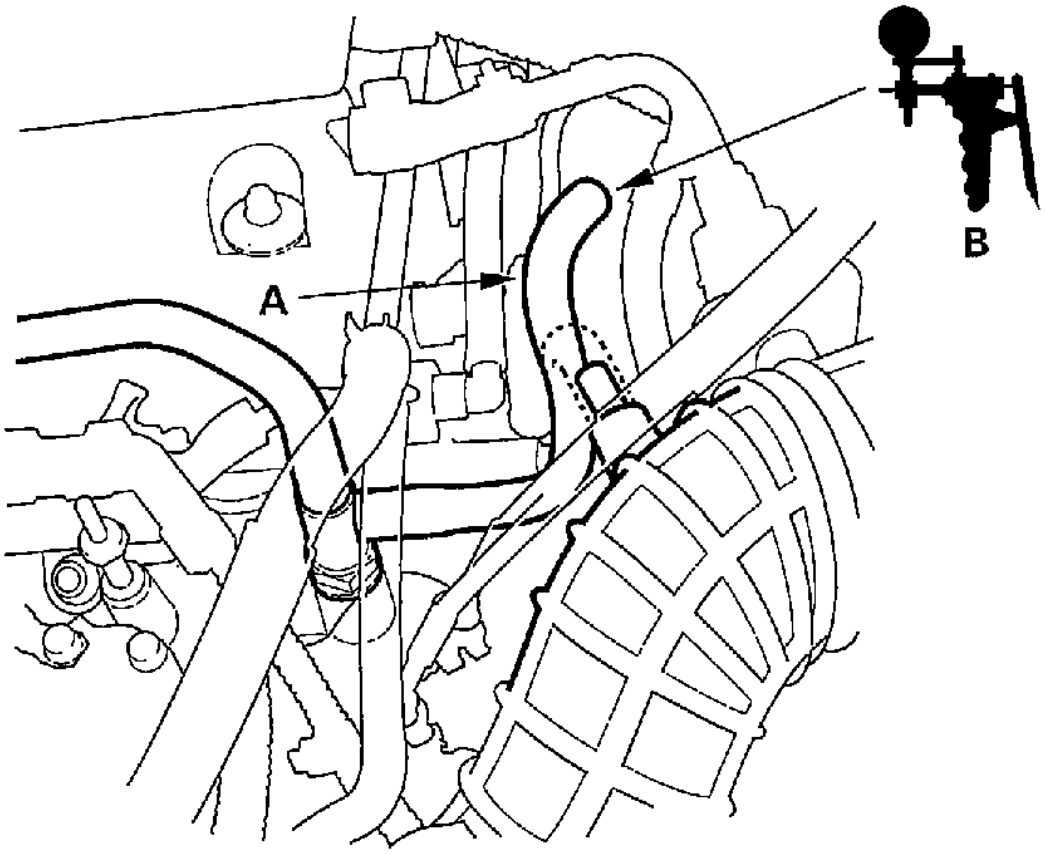


Fig. 4: Testing Intake Air Bypass Control Thermal Valve

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3. Raise and lower the engine speed; the vacuum gauge reading should change as the engine speed changes. If the vacuum reading does not change, check for these problems:
    - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
    - A cracked or damaged intake air bypass control thermal valve.
4. Hold the engine at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Raise and lower the engine speed; the vacuum gauge reading should be zero. If there is a vacuum reading, check for these problems:
    - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
    - A cracked or damaged intake air bypass control thermal valve.

INTAKE AIR BYPASS CONTROL THERMAL VALVE REPLACEMENT

1. Remove the intake manifold cover (see step 3 of **REMOVAL**).
2. Remove the air intake boot.
3. Remove the throttle cable bracket.
4. Disconnect the hoses (A).

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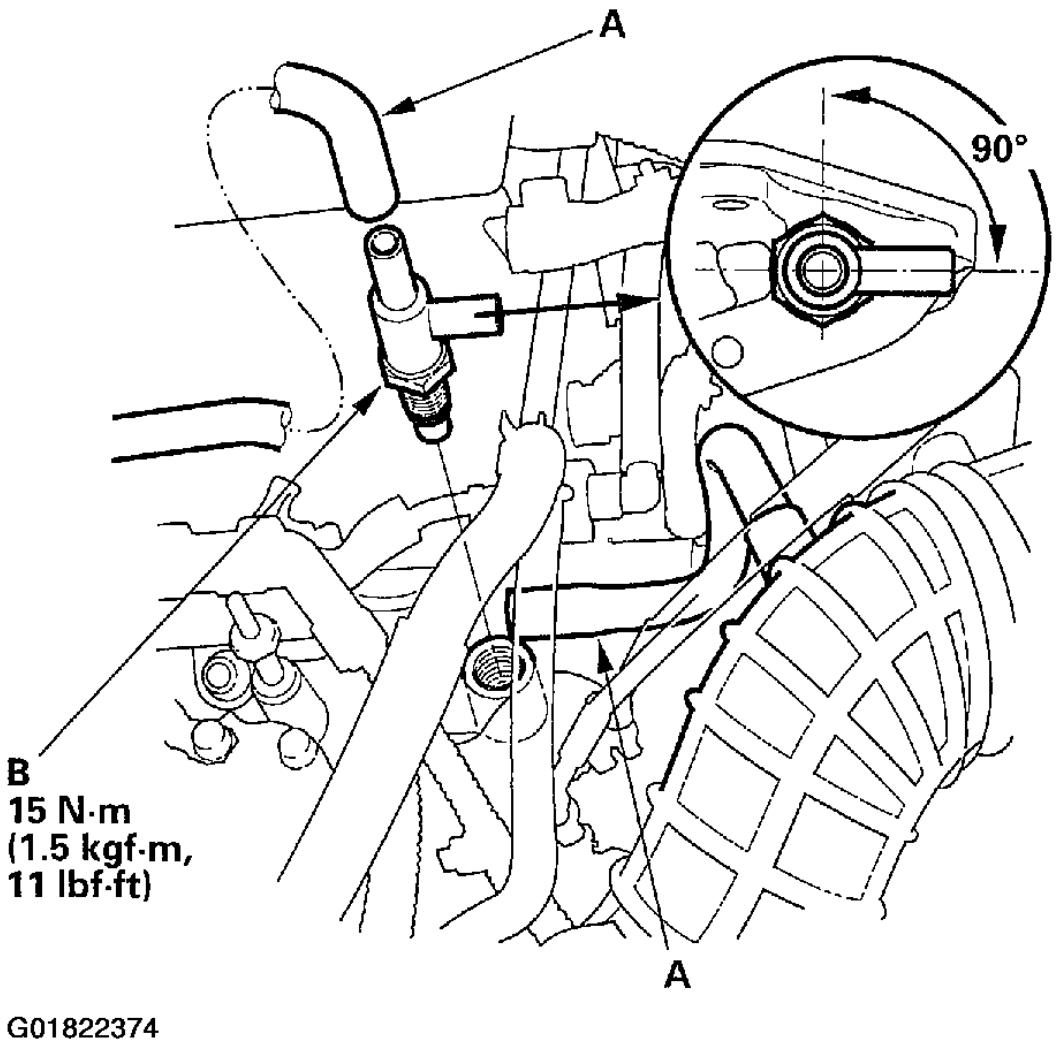


Fig. 5: Removing The Intake Air Bypass Control Thermal Valve

5. Remove the intake air bypass control thermal valve (B).
6. Install the valve in the reverse order of removal.

NOTE: Position the valve angle as shown.

AIR CLEANER REMOVAL/INSTALLATION

1. Remove the bolts (A) and clamp (B).

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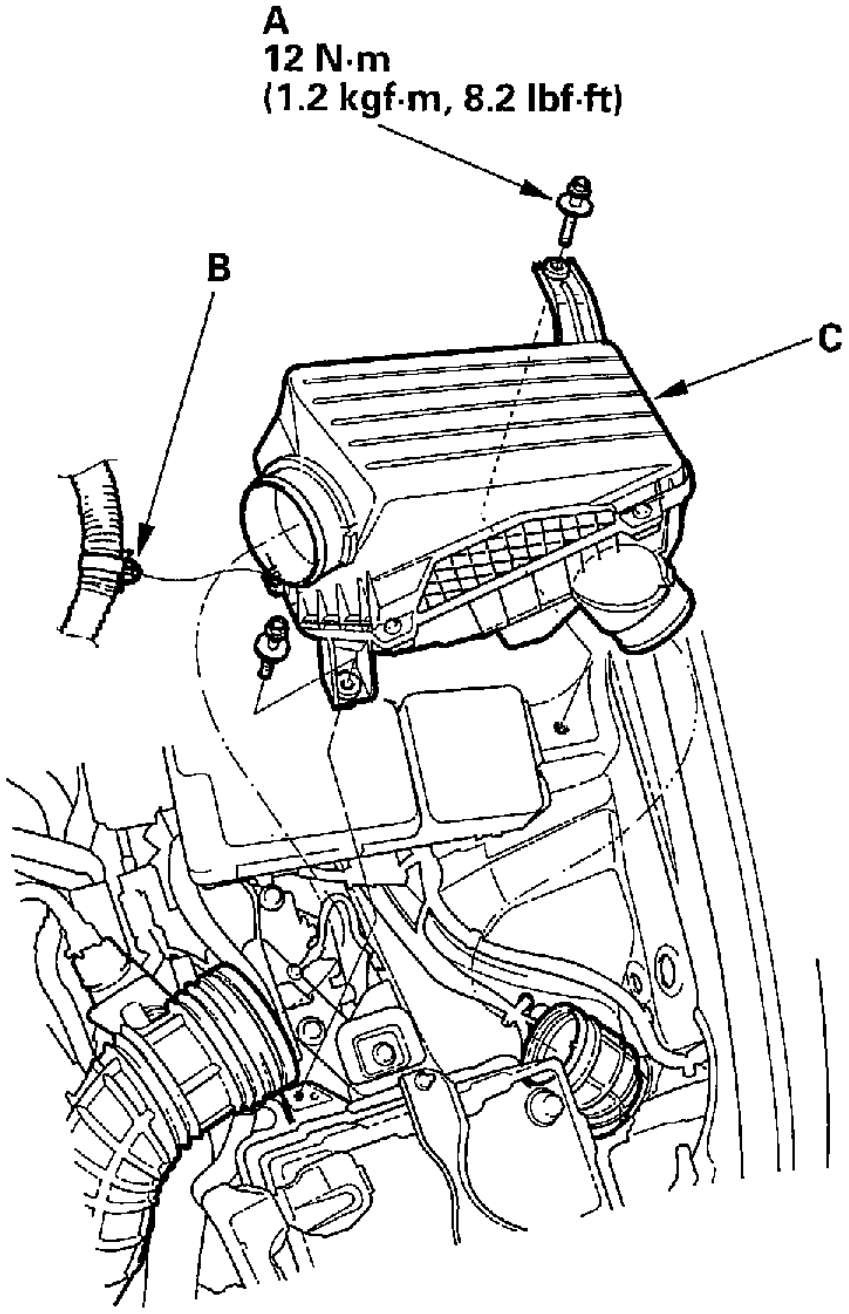


Fig. 6: Removing The Air Cleaner

2. Remove the air cleaner (C).
3. Install the parts in the reverse order of removal.

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AIR CLEANER ELEMENT REPLACEMENT

1. Remove the air cleaner bolts (A) and the air cleaner housing cover (B).

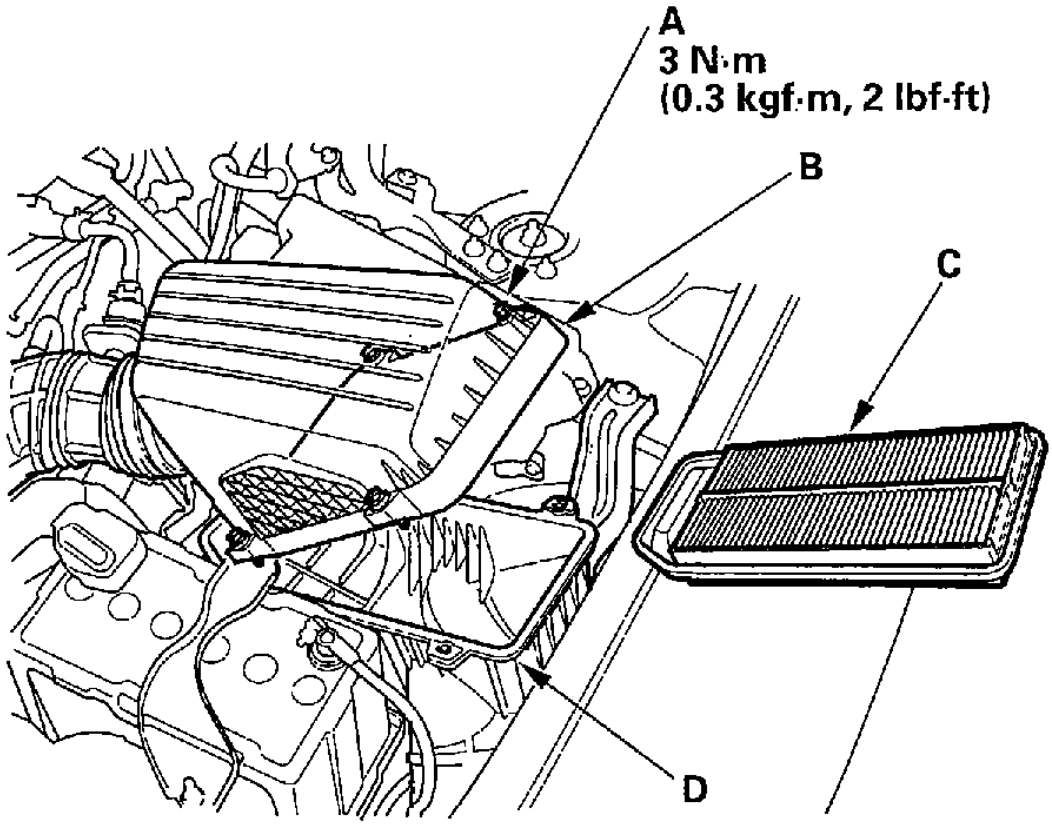


Fig. 7: Removing The Air Cleaner Element

2. Remove the air cleaner element (C) from the air cleaner housing (D).

NOTE: Do not use compressed air to clean the air cleaner element.

3. Install the parts in the reverse order of removal.

RESONATOR REMOVAL/INSTALLATION

1. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
2. Remove the bolts (A), and the intake air duct (B).

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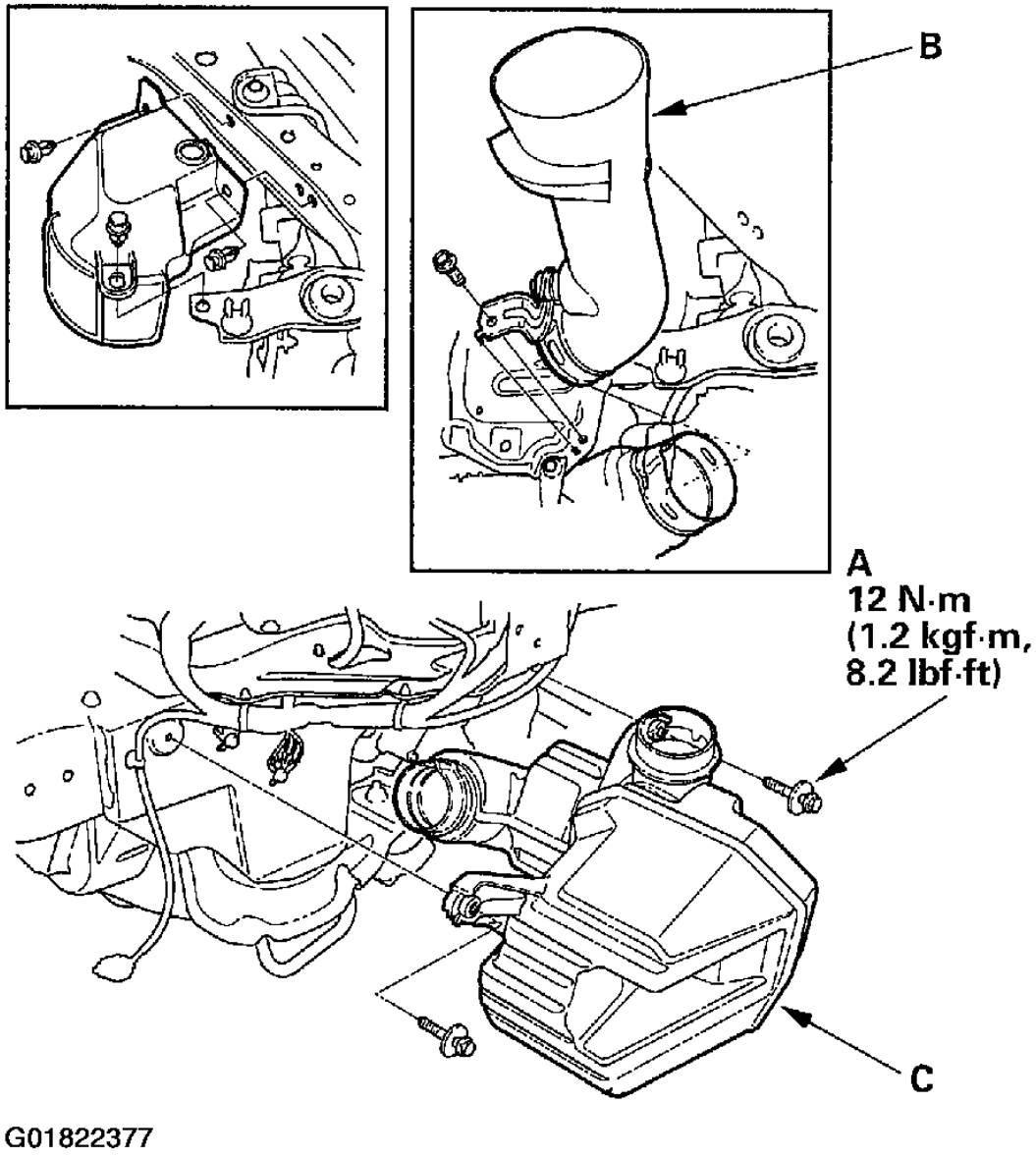


Fig. 8: Removing The Resonator

3. Remove the resonator (C).
4. Install the parts in the reverse order of removal.

THROTTLE CABLE ADJUSTMENT

1. Remove the throttle cable cover (A).

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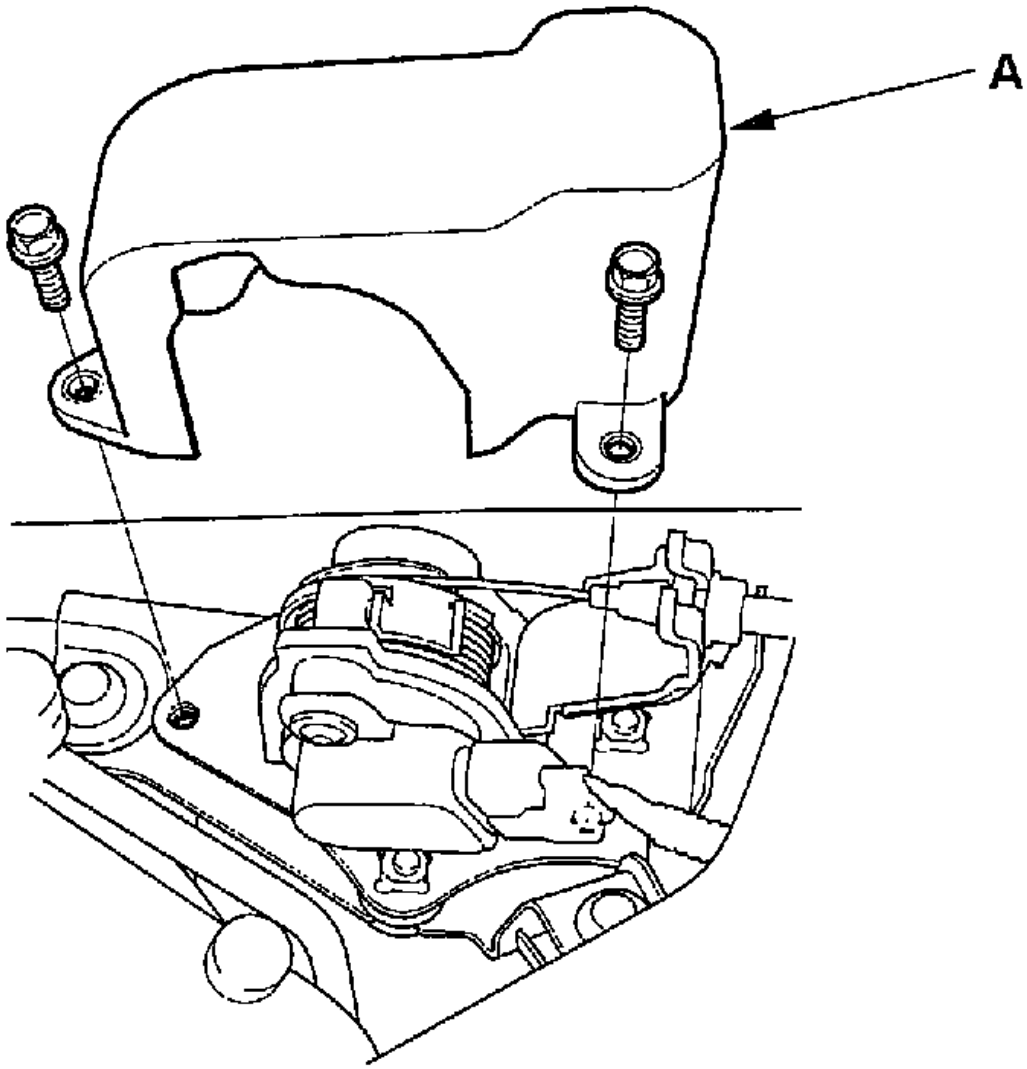


Fig. 9: Removing The Throttle Cable Cover

2. Check cable free play at the throttle linkage. Cable free play (A) should be 15-18 mm (9/16-11/16 in.).

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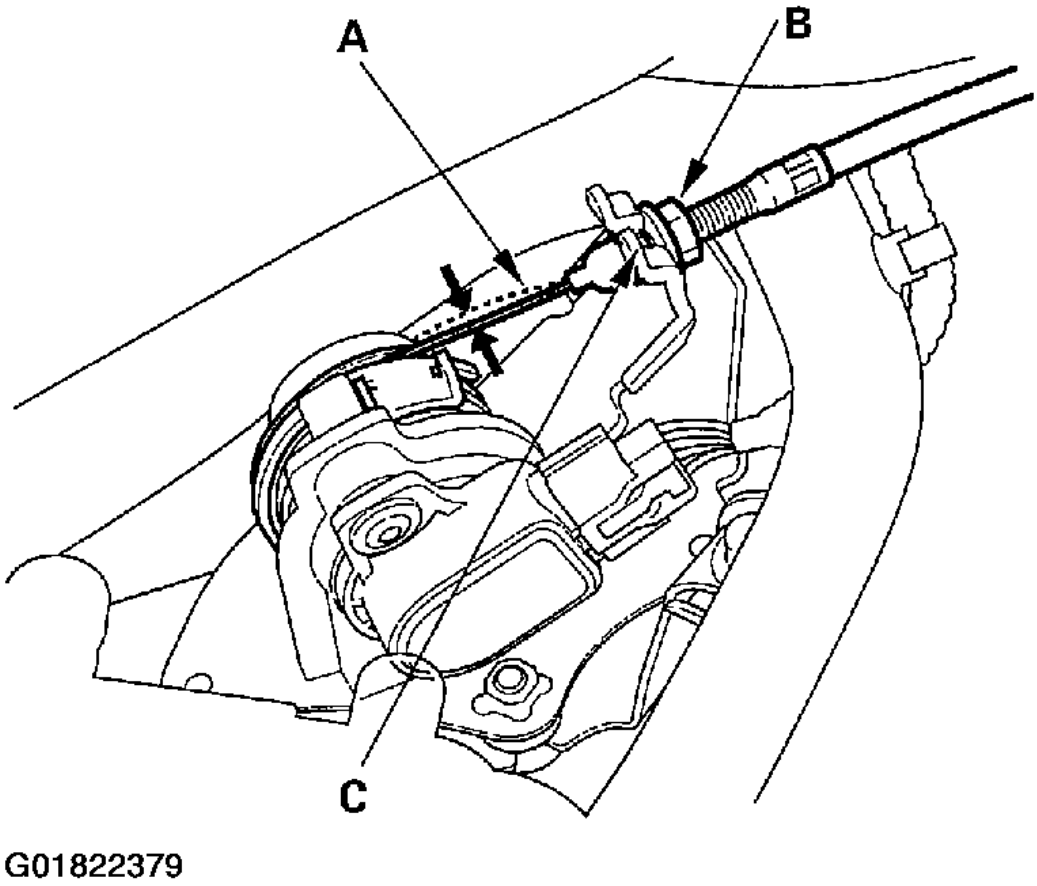


Fig. 10: Checking Cable Free Play

3. If the free play is not within spec (15-18 mm, 9/16-11/16 in.), loosen the locknut (B), turn the adjusting nut (C) until the deflection is as specified, then retighten the locknut.
4. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

THROTTLE CABLE REMOVAL/INSTALLATION

1. Remove the throttle cable cover (see **THROTTLE CABLE ADJUSTMENT**).
2. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).

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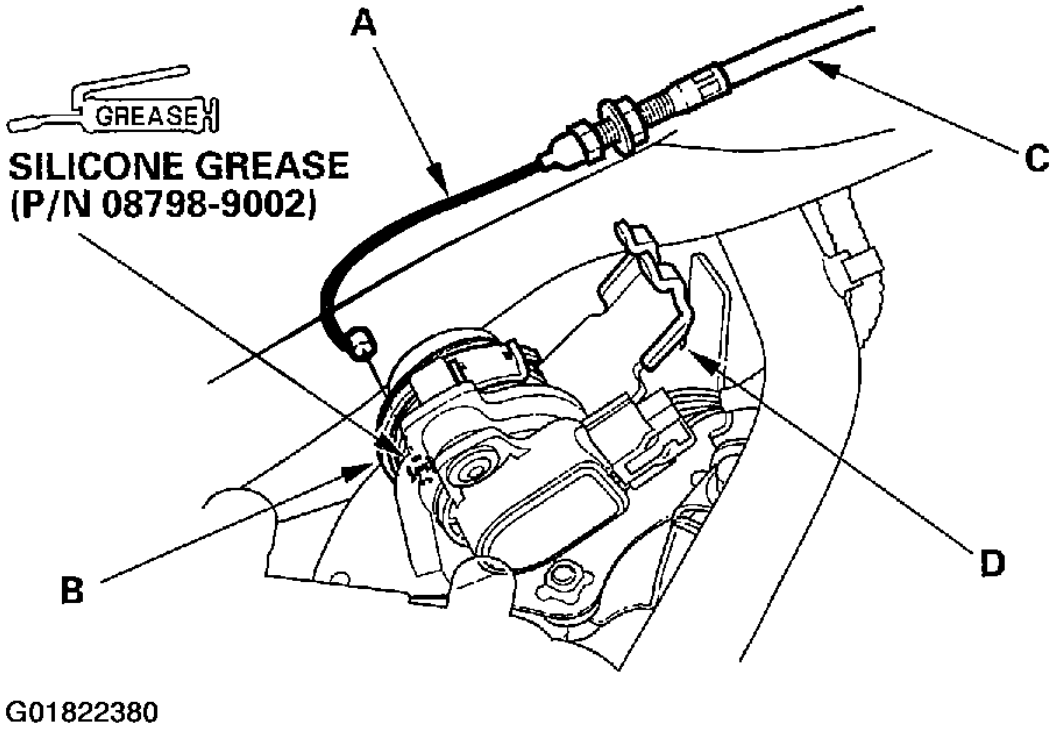


Fig. 11: Removing The Throttle Cable From The Throttle Link

3. Remove the cable housing (C) from the cable bracket (D).
4. Remove the throttle cable (B) from the accelerator (A).

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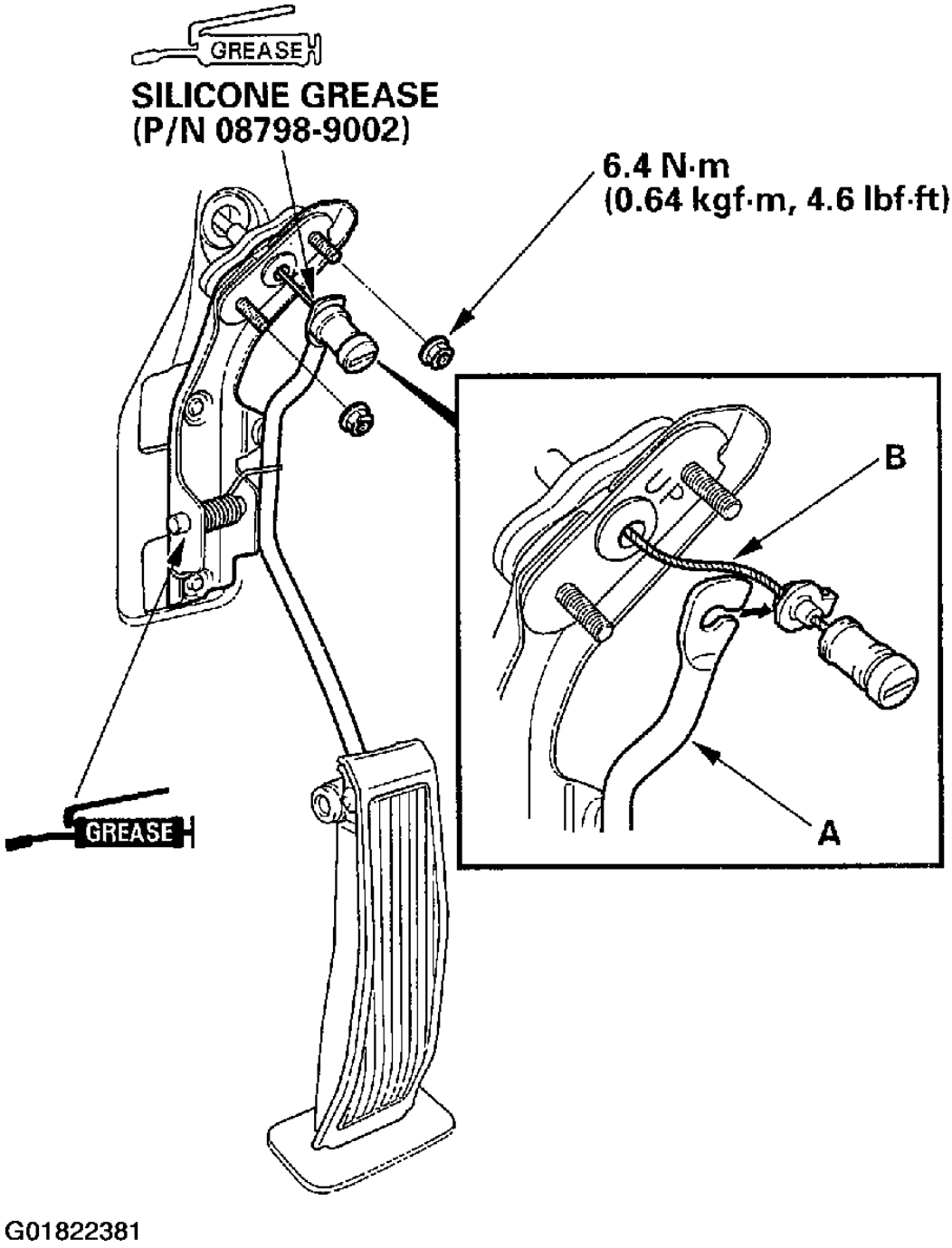


Fig. 12: Removing The Throttle Cable From The Accelerator

5. Install the cable in the reverse order of removal.
6. Start the engine. Hold the engine at 3,000 RPM with no load (in park or neutral) until the radiator fan

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comes on, then let it idle.

7. Hold the cable, removing all slack from it.
8. Set the cable on the bracket (A).

   Turn the adjusting nut (B) so that its free play is 0 mm.

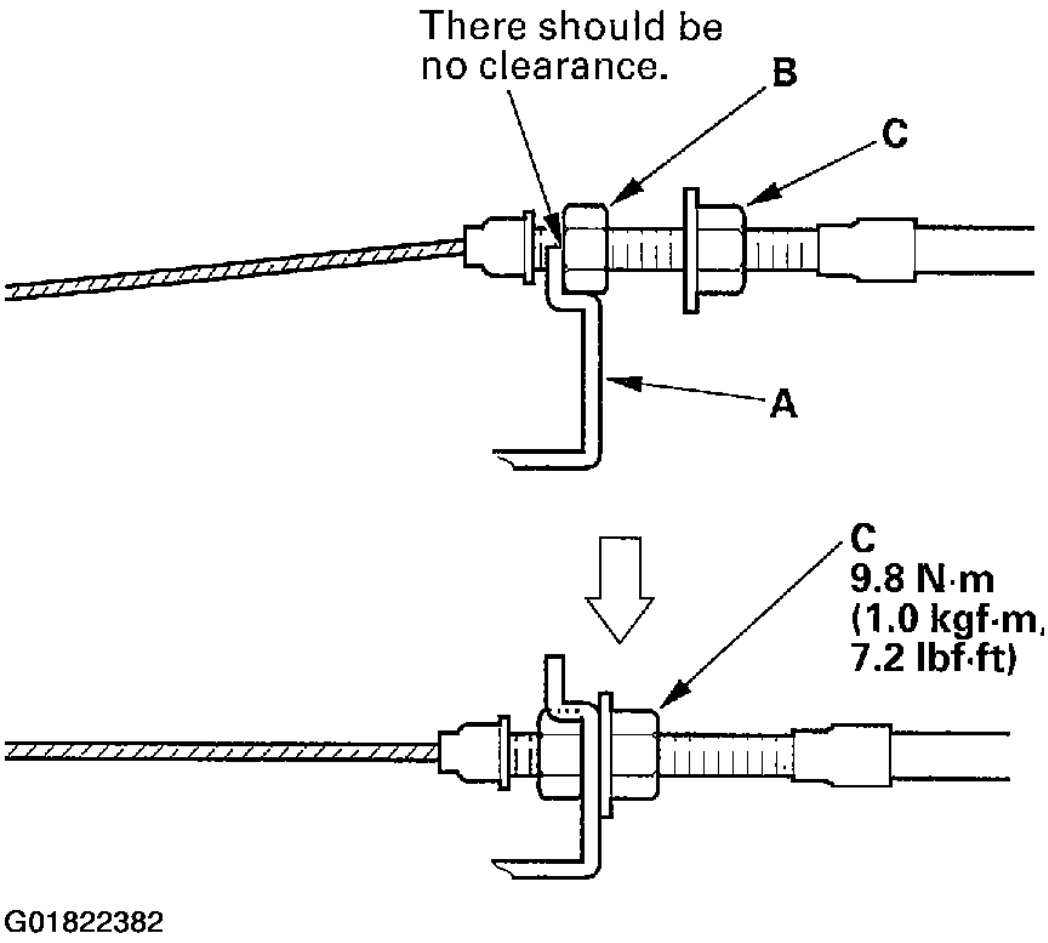


Fig. 13: Adjusting Throttle Cable

9. Position the adjusting nut on the other side of the bracket (A), then tighten the locknut (C).
10. With the cable properly adjusted, check the throttle link to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle link to be sure it returns whenever you release the accelerator pedal.

THROTTLE BODY REMOVAL/INSTALLATION

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CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve is activated.

1. Disconnect the IAT sensor connector (A).

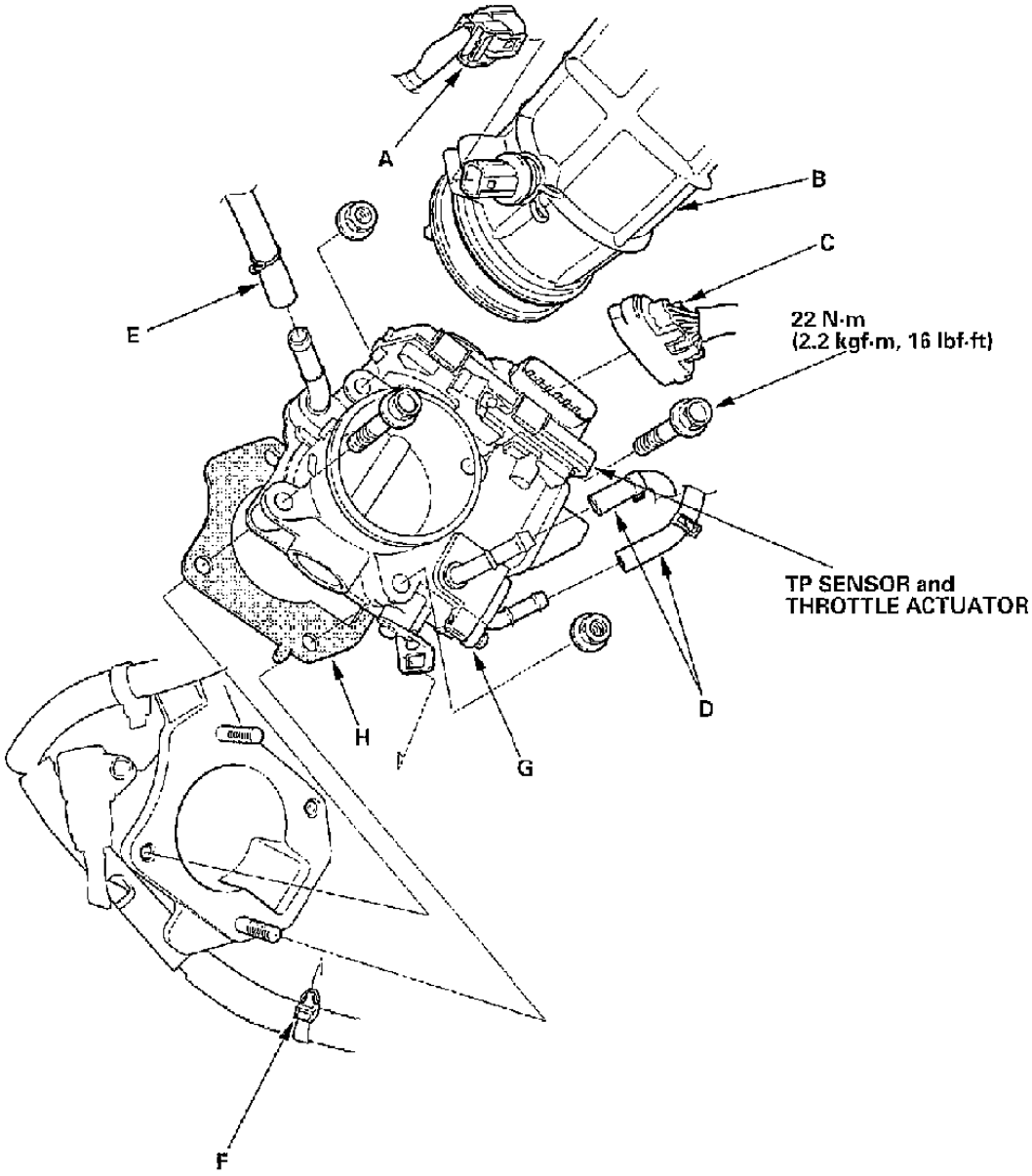


Fig. 14: Removing Throttle Body

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2. Remove the intake air duct (B).
3. Disconnect the throttle body connector (C).
4. Disconnect the water bypass hoses (D), and plug the water bypass hoses.
5. Disconnect the vacuum hose (E).
6. Remove the harness clip (F) and the throttle body (G).
7. Install the parts in the reverse order of removal with a new gasket (H), then check these items:
   - Do the ECM/PCM idle learn procedure after the throttle body has been replaced (see **ECM/PCM IDLE LEARN PROCEDURE**).
   - Refill the radiator with engine coolant (see **COOLANT REPLACEMENT**), and bleed air from the cooling system with the heater valve open.

THROTTLE BODY DISASSEMBLY/REASSEMBLY

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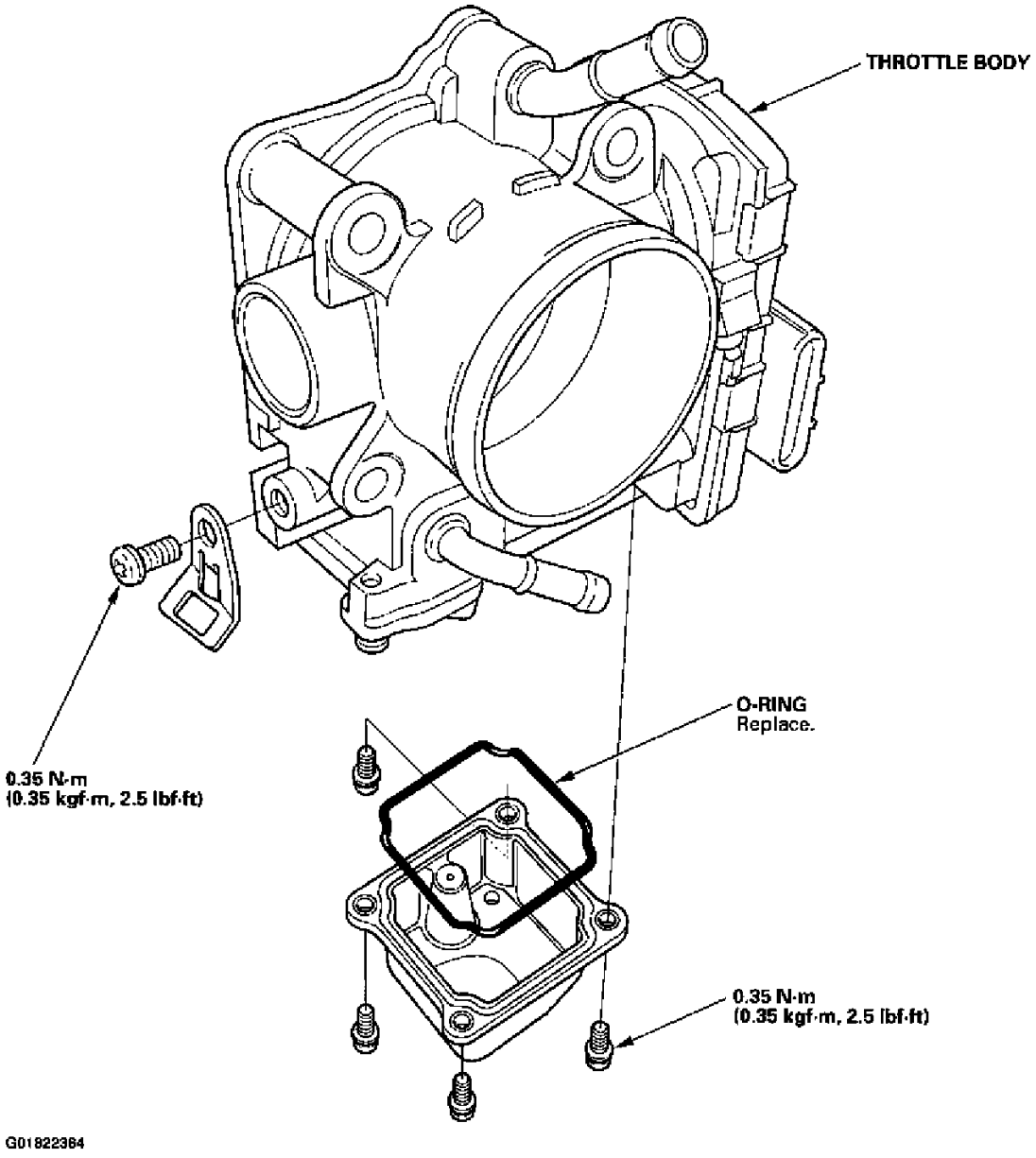


Fig. 15: Exploded View Of Throttle Body Components

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2004 ACCESSORIES & EQUIPMENT

Interior Trim - TSX

DOORS

COMPONENT LOCATION INDEX

Front Door

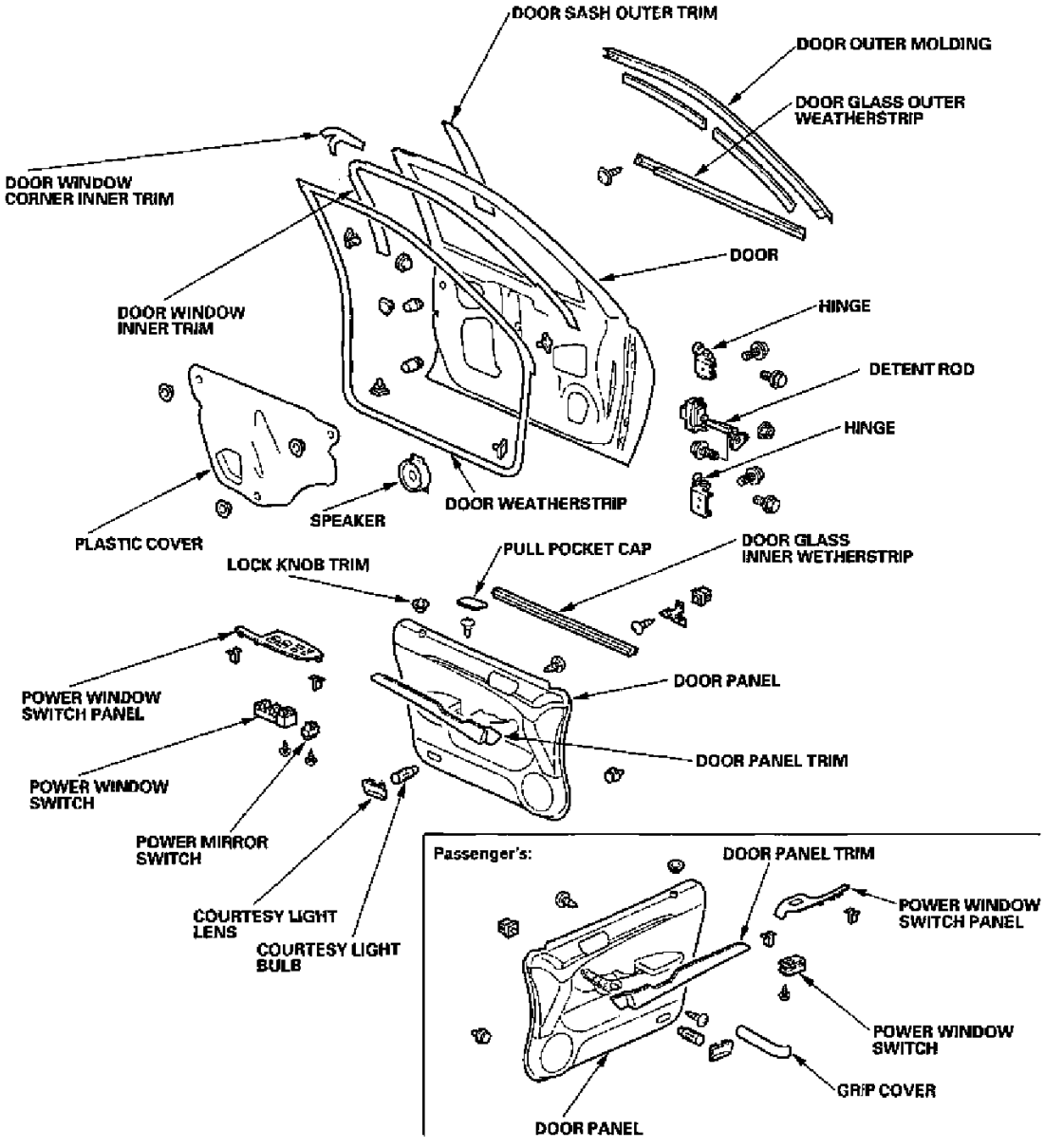


Fig. 1: Locating Front Door Components (1 Of 2)

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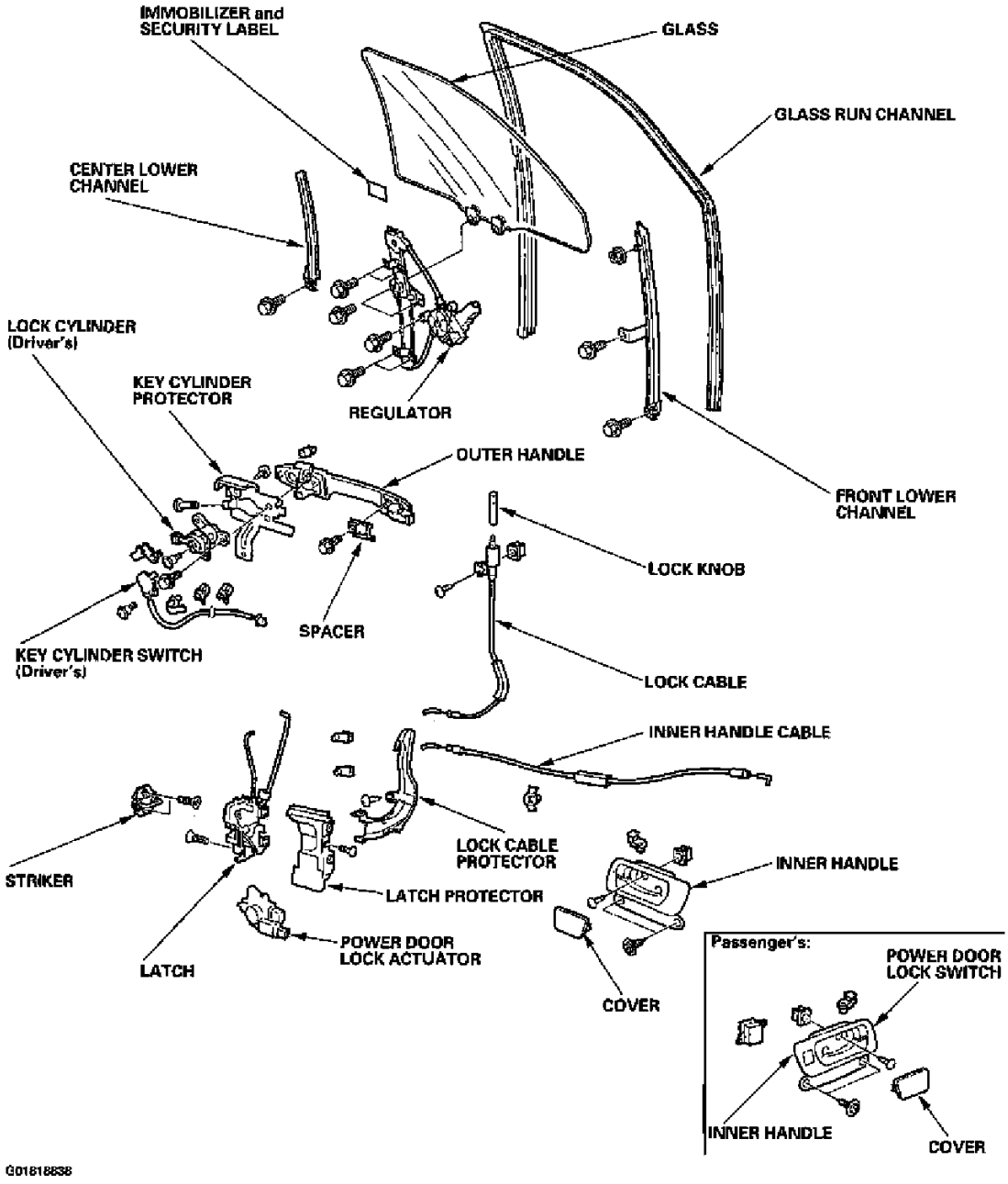


Fig. 2: Locating Front Door Components (2 Of 2)

Rear Door

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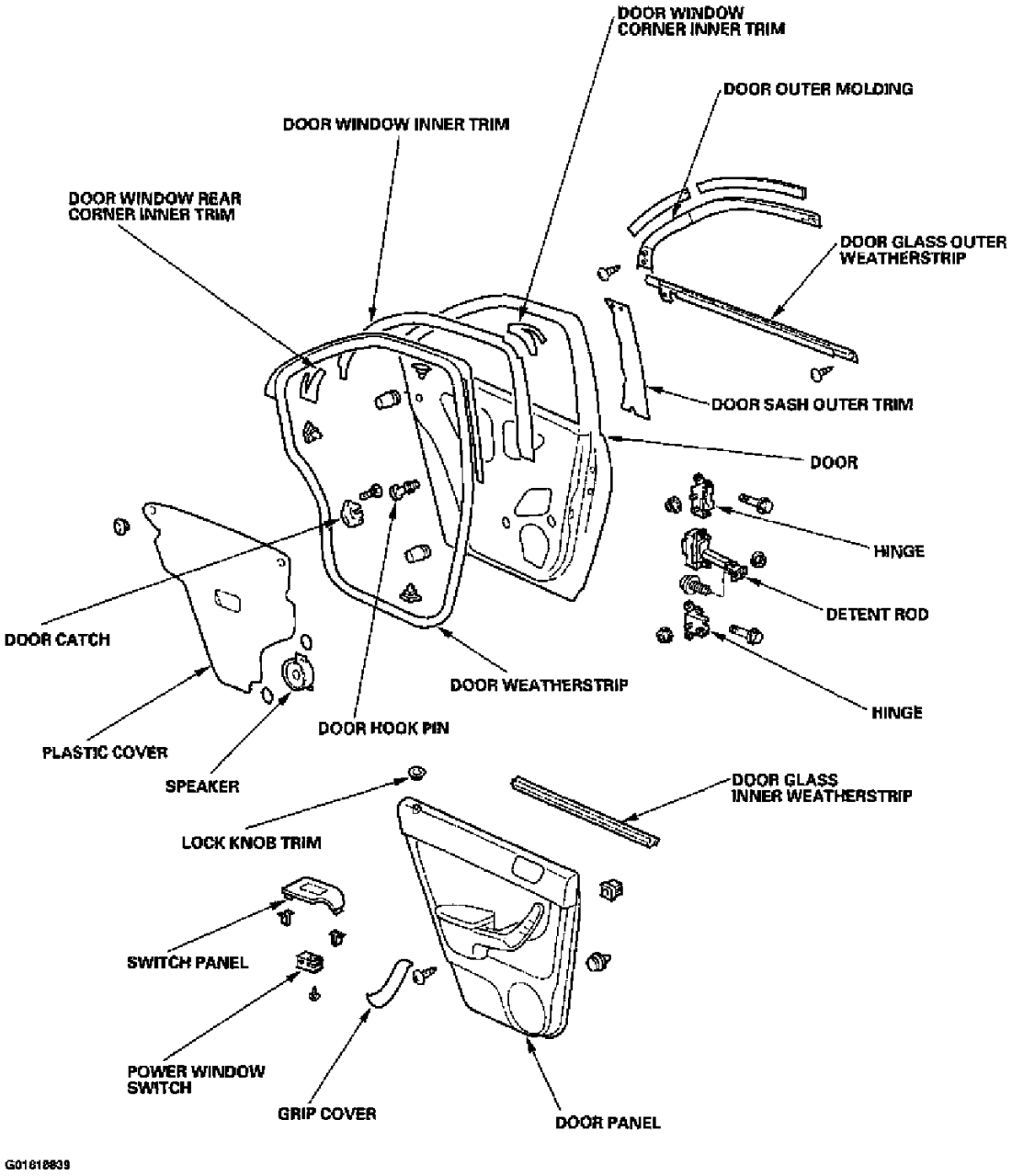


Fig. 3: Locating Rear Door Components (1 Of 2)

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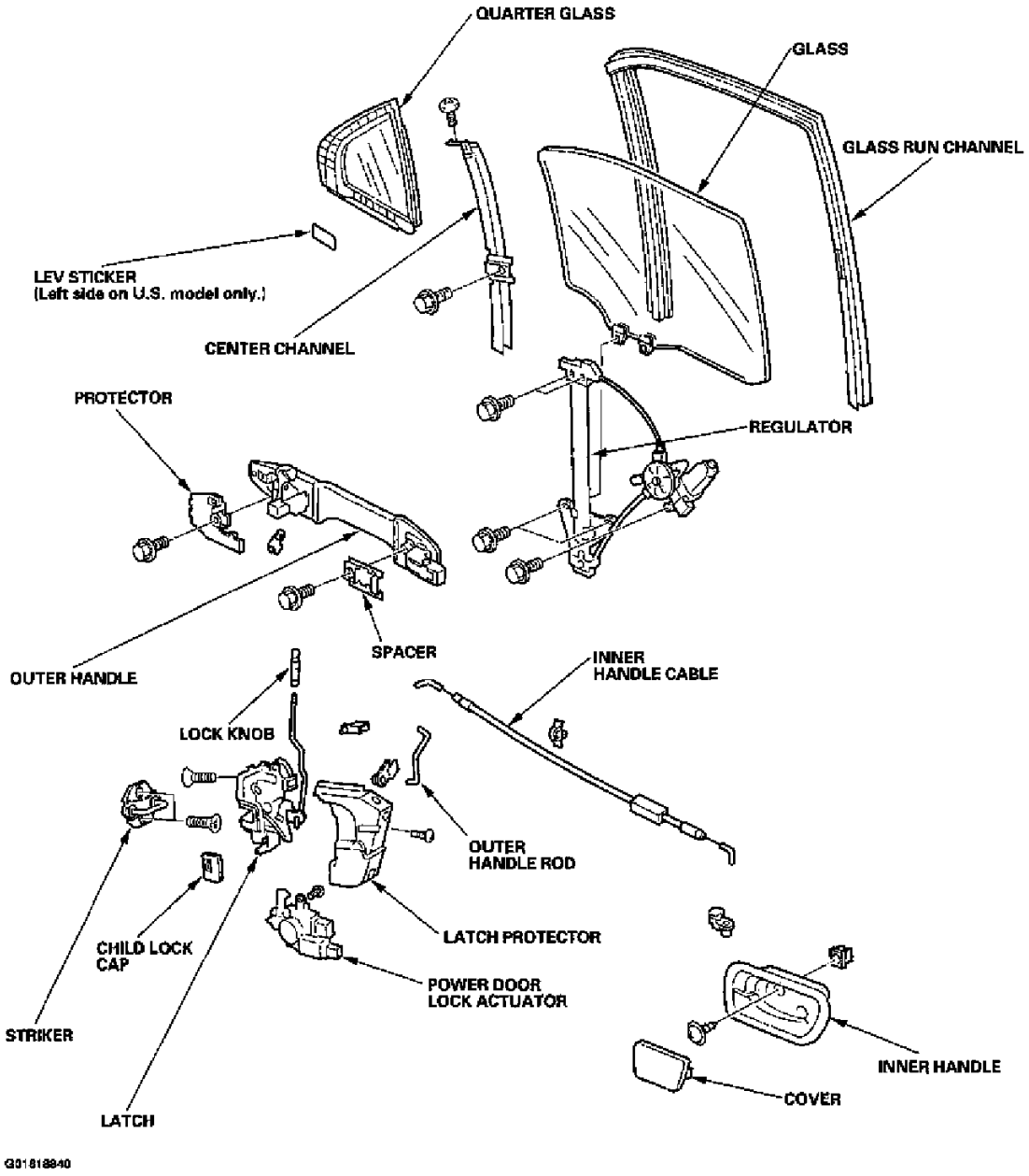


Fig. 4: Locating Rear Door Components (2 Of 2)

FRONT DOOR PANEL REMOVAL/INSTALLATION

Special Tools Required: Trim pad remover, Snap-on A 177A or equivalent, commercially available.

1. Lower the glass fully.
2. Using a flat-tip screwdriver wrapped with protective tape, push on the rear hook (A) and pivot the cover (B) on the front hook (C), then remove the cover and the screw securing the inner handle (D).

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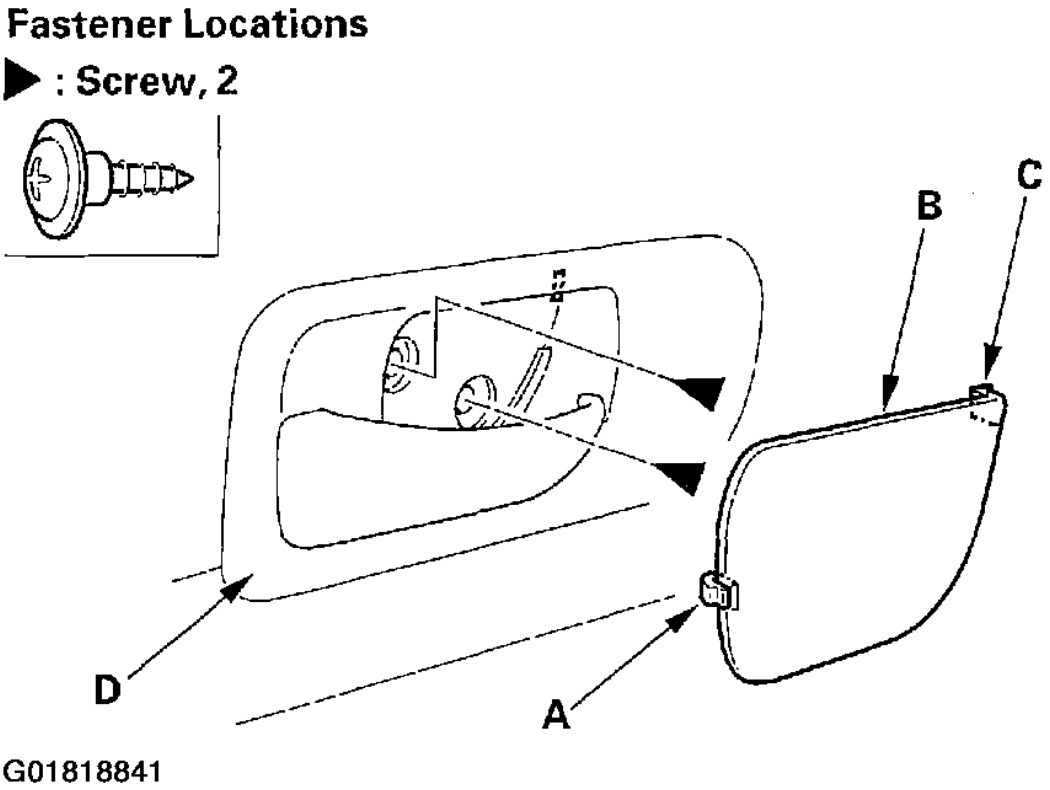


Fig. 5: Removing The Cover And The Screw Securing The Inner Handle

3. Remove the power window switch panel (A).
   a. Pry up on the rear edge (driver's) or front edge (passenger's) of the switch panel with a flat-tip screwdriver wrapped with protective tape to release the rear clip.
   b. Pull out along the edge of the panel to release the hooks (B) and front clip.
   c. Disconnect the power mirror switch connector (C) (driver's) and the power window switch connector (D).

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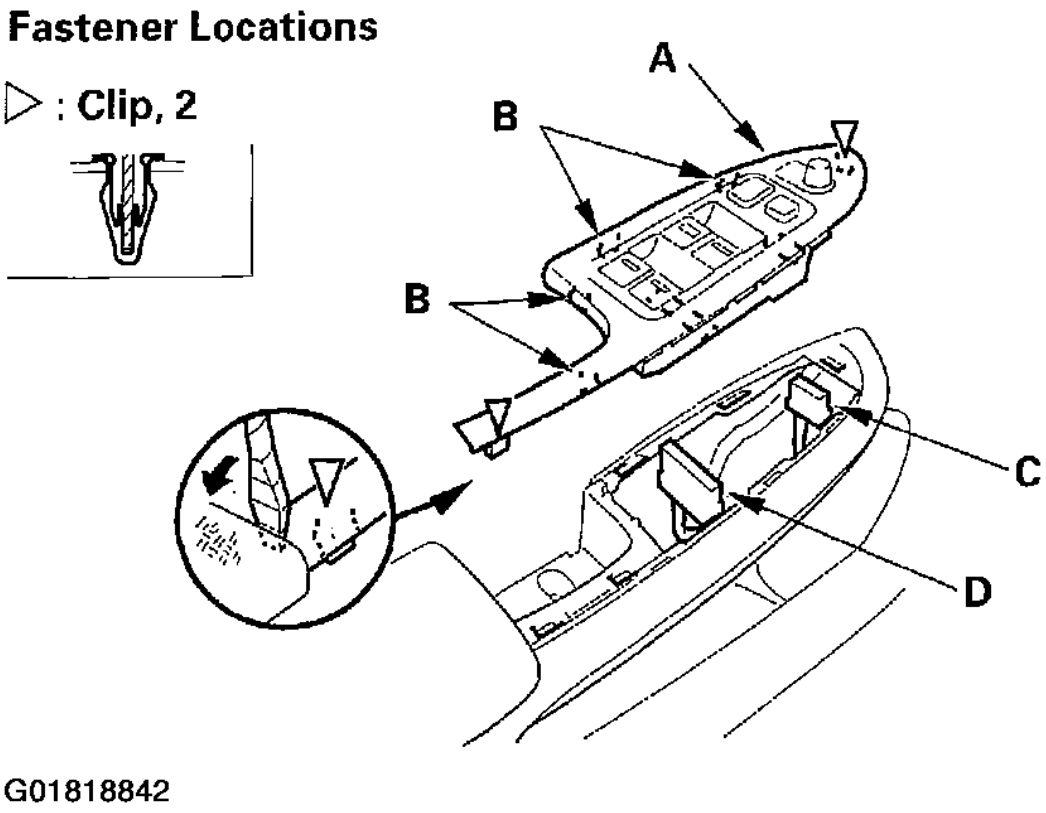


Fig. 6: Removing The Driver's Power Window Switch Panel

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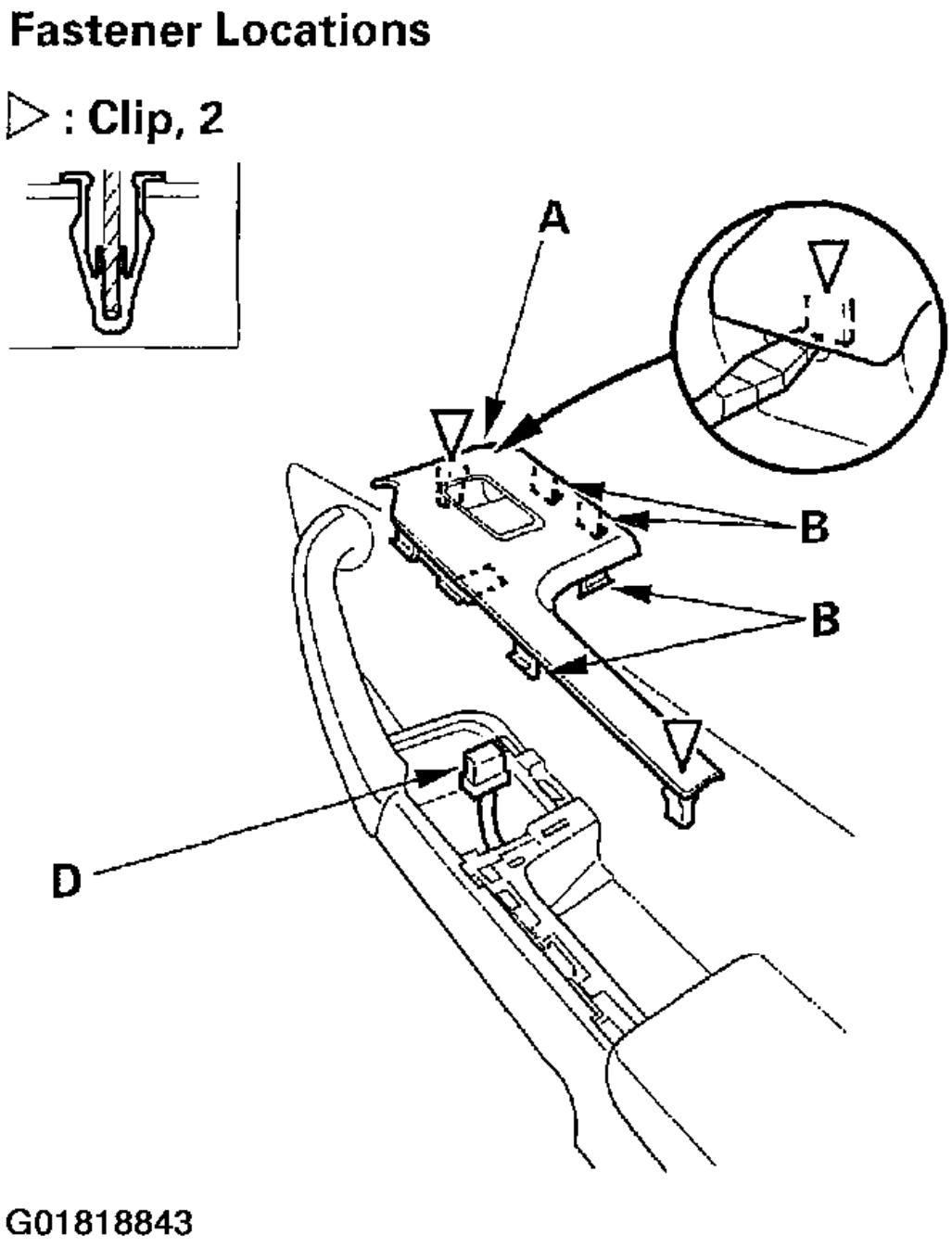


Fig. 7: Removing The Passenger's Power Window Switch Panel (Driver's)

4. Driver's: Remove the screw from under the pull pocket cap (A).

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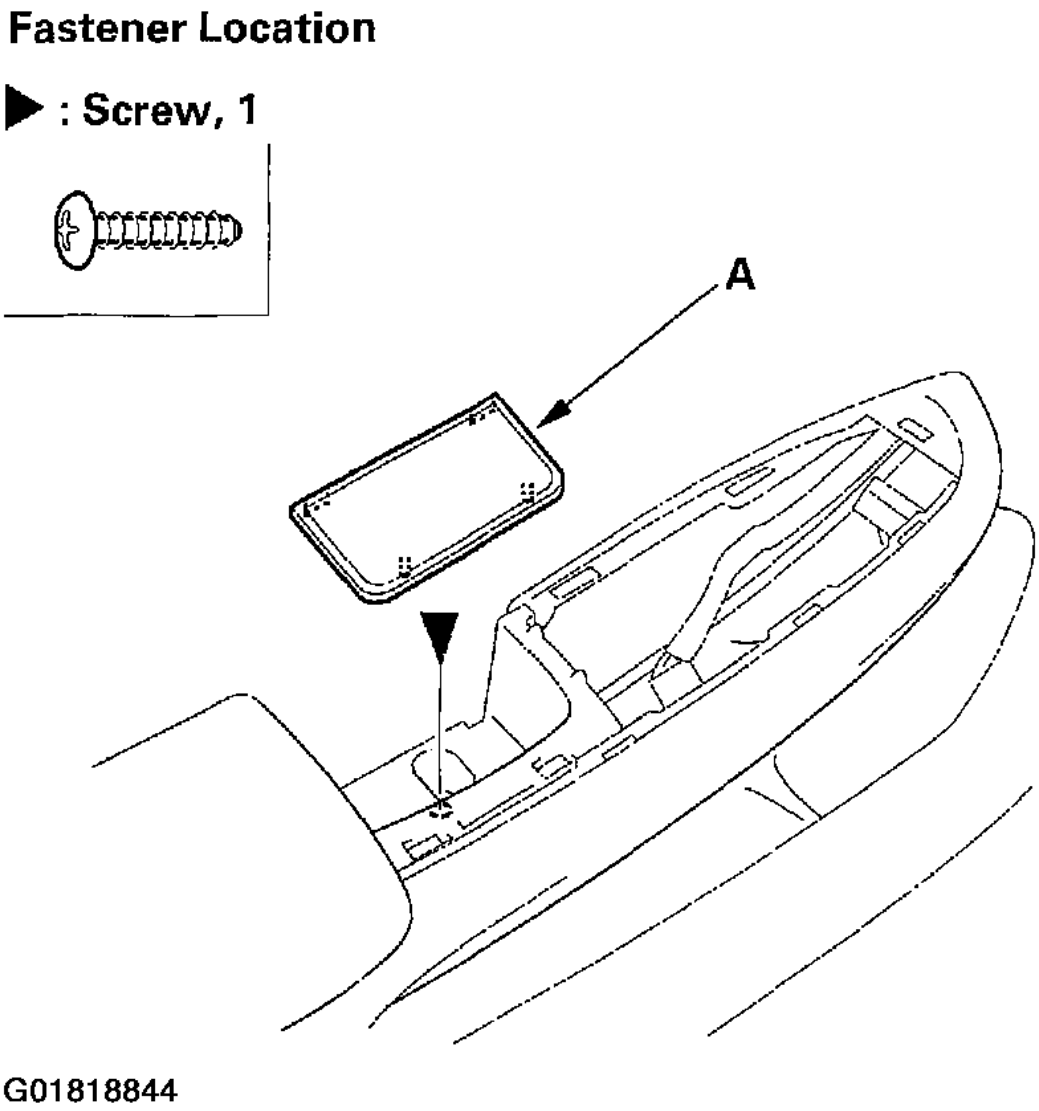


Fig. 8: Removing The Screw From Under The Pull Pocket Cap (Driver's)

5. Passenger's: Pry out the bottom edge of the grip cover (A) with a flat-tip screwdriver wrapped with protective tape to release the hooks (B), then pull out the cover to release the upper hooks (C), and remove the cover.

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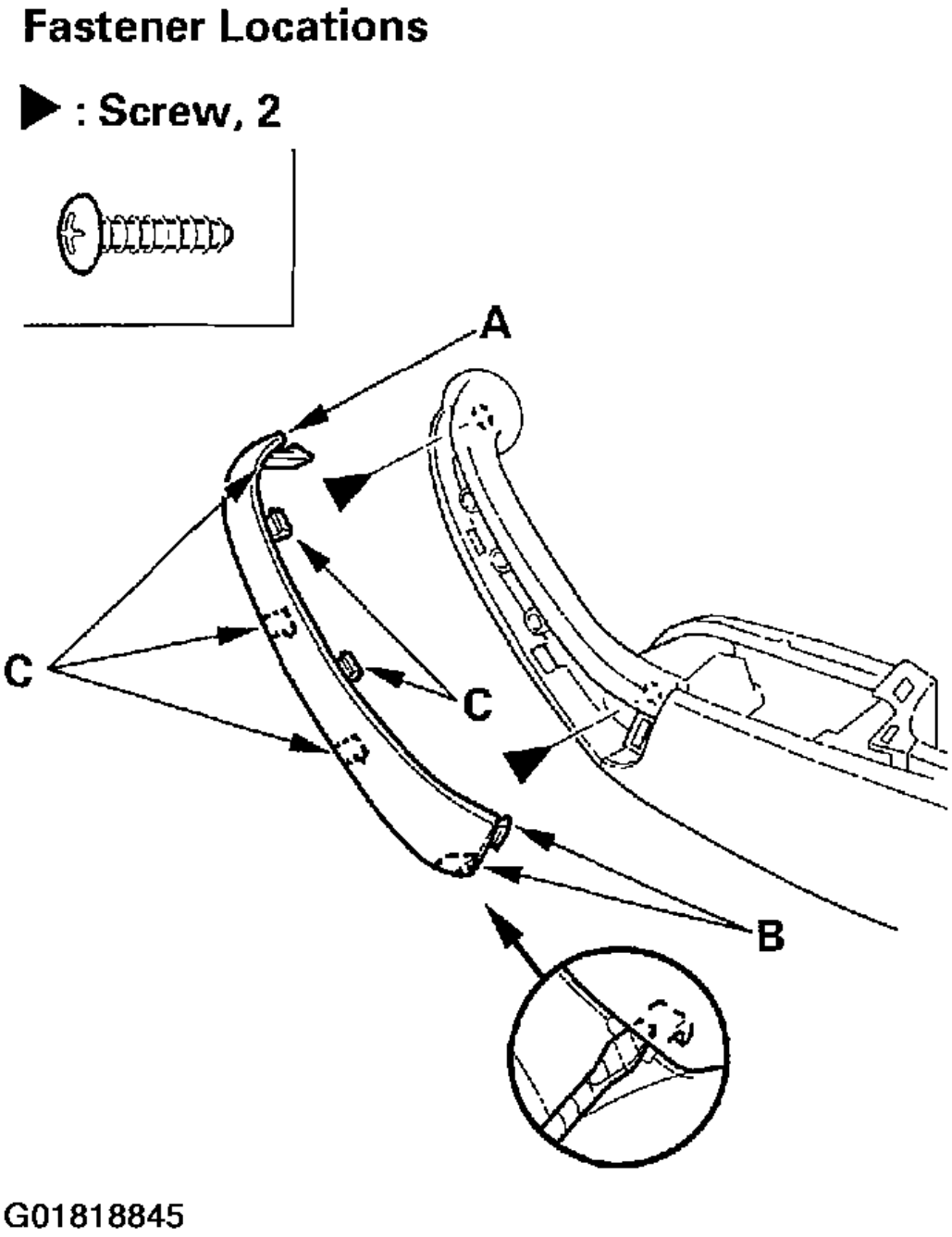


Fig. 9: Removing The Grip Cover (Passenger's)

6. Passenger's: Remove the screws from the grip base (D).
7. Remove the mirror mount cover (see step 2 of **POWER MIRROR REPLACEMENT**).

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8. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.
    a. Start at the bottom edge of the door panel, release the clips that are just above the marks (B) on the edge of the panel with a commercially available trim pad remover (C).
    b. Detach the upper clips.
    c. Starting at the rear, pull the door panel upward, then release the lock knob (D).

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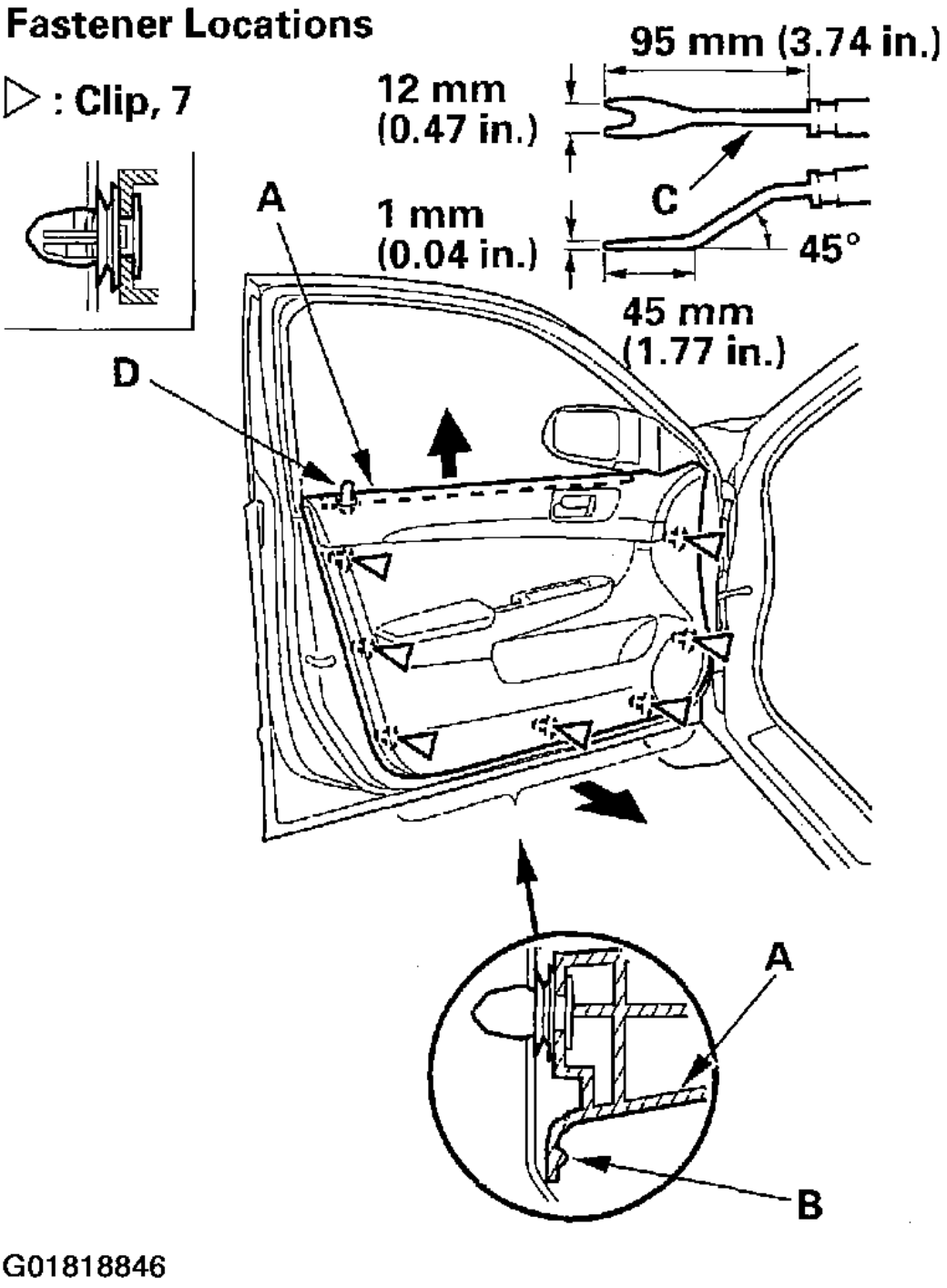


Fig. 10: Removing The Door Panel

9. Disconnect the inner handle cable (A), power door lock switch connector (B) on passenger's door,

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courtesy light bulb socket (C), and detach the harness clip (D). Passenger's door panel is shown; driver's door panel is similar.

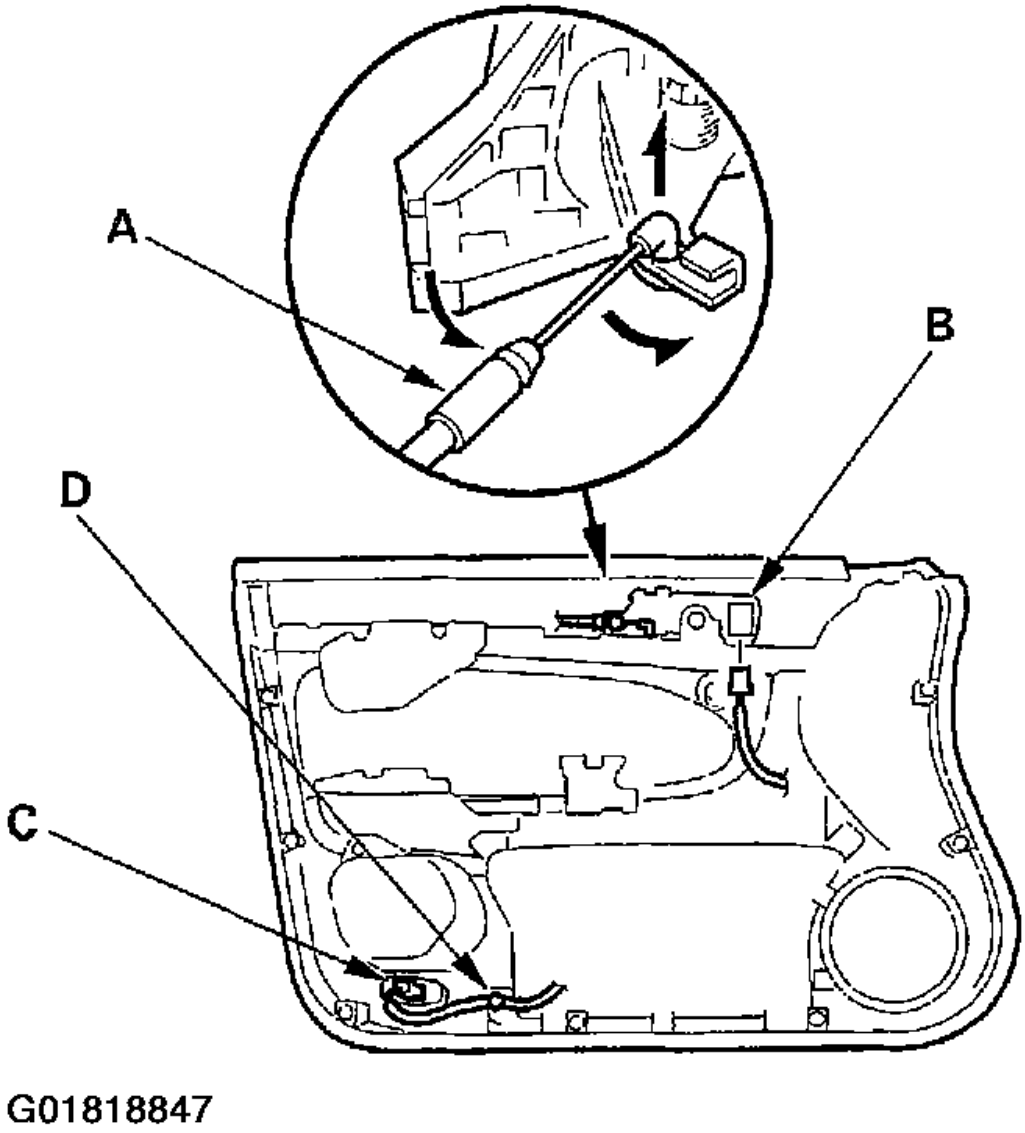


Fig. 11: Disconnecting The Inner Handle Cable, Power Door Lock Switch Connector (Passenger's Door), Courtesy Light Bulb Socket & Detaching The Harness Clip

10. If necessary, remove the door glass inner weatherstrip (A) from the door panel (B) by pulling it down.

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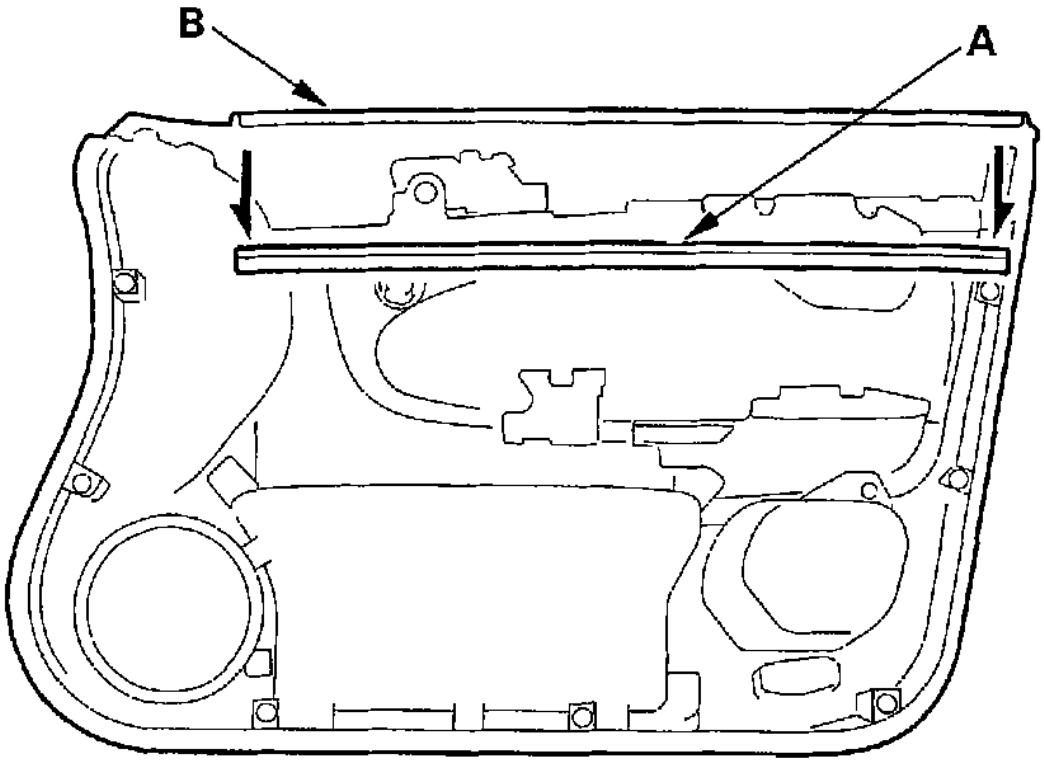


Fig. 12: Removing The Door Glass Inner Weatherstrip From The Door Panel

11. If necessary, remove the inner handle (A).
    a. Carefully peel the edge of the insulator (B) from the back of the door panel as needed.
    b. Remove the screws (C), then remove the door panel trim (D).
    c. Remove the screws (E) from the front of the door panel, then remove the inner handle.

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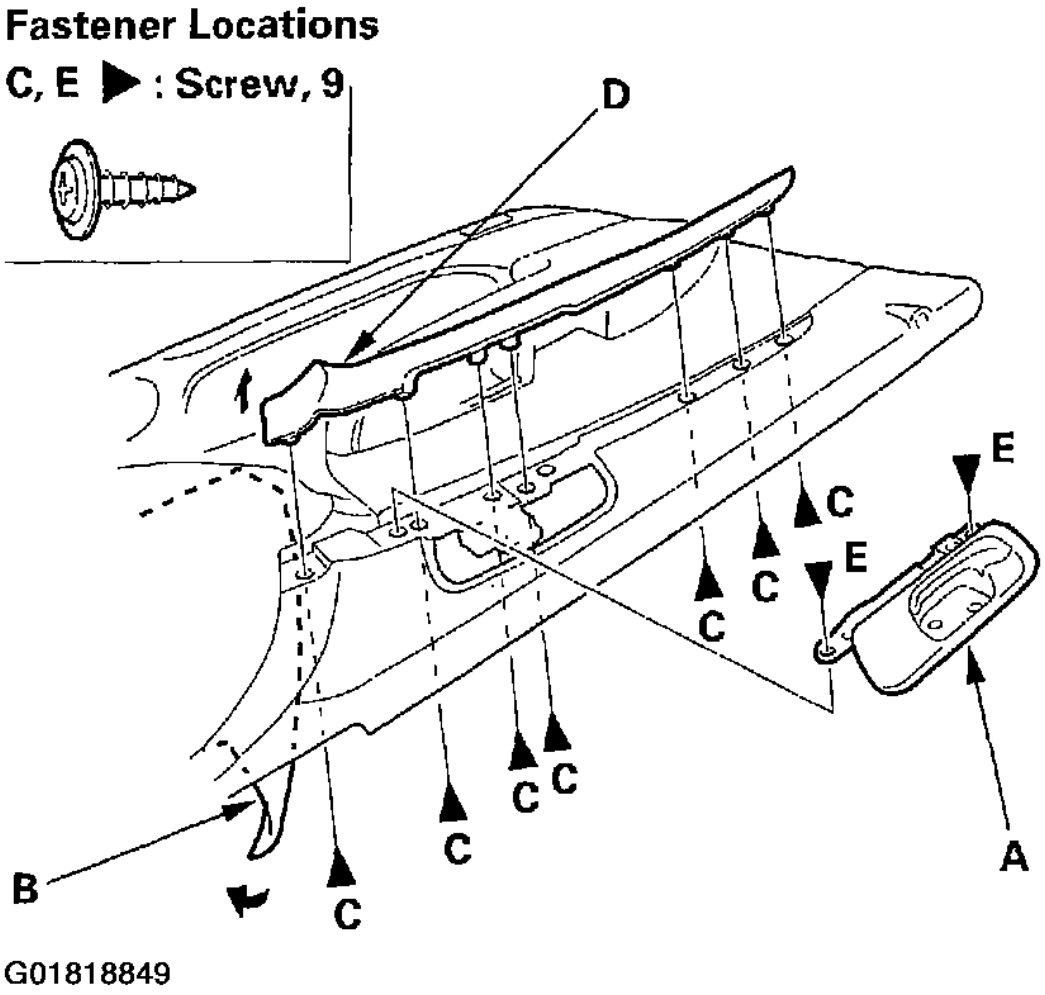


Fig. 13: Removing The Inner Handle

12. Install the door panel in the reverse order of removal, and note these items:
    - Replace any damaged clips.
    - Make sure the connectors are plugged in properly, and the cable and the bulb socket are connected properly.
    - Make sure the window and power door lock operate properly.

FRONT DOOR OUTER HANDLE REPLACEMENT

NOTE: Put on gloves to protect your hands.

1. Remove these items:

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a. Door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**)
b. Plastic cover, as necessary (see **COMPONENT LOCATION INDEX**)

2. Raise the glass fully.
3. Remove the maintenance hole seal (A), then disconnect the outer handle rod (B).

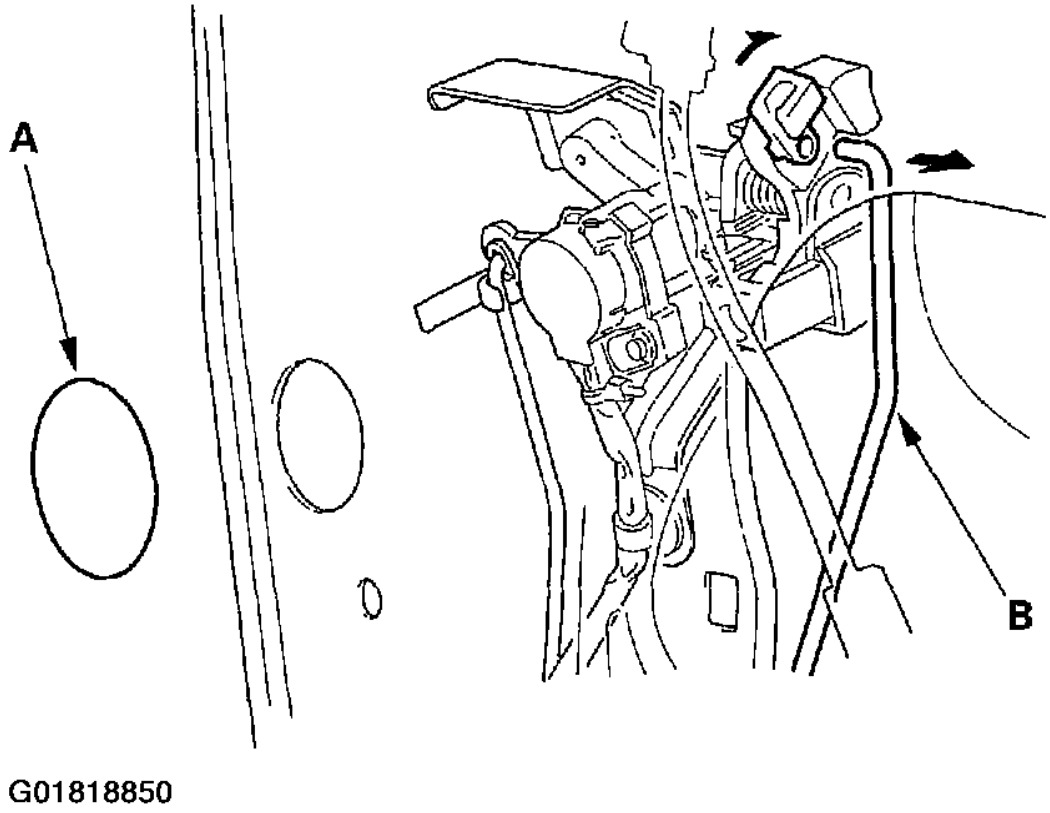


Fig. 14: Removing The Maintenance Hole Seal, Then Disconnecting The Outer Handle Rod

4. Pull the glass run channel (A) away as needed, and remove the bolt, then remove the center lower channel by pulling it downward.

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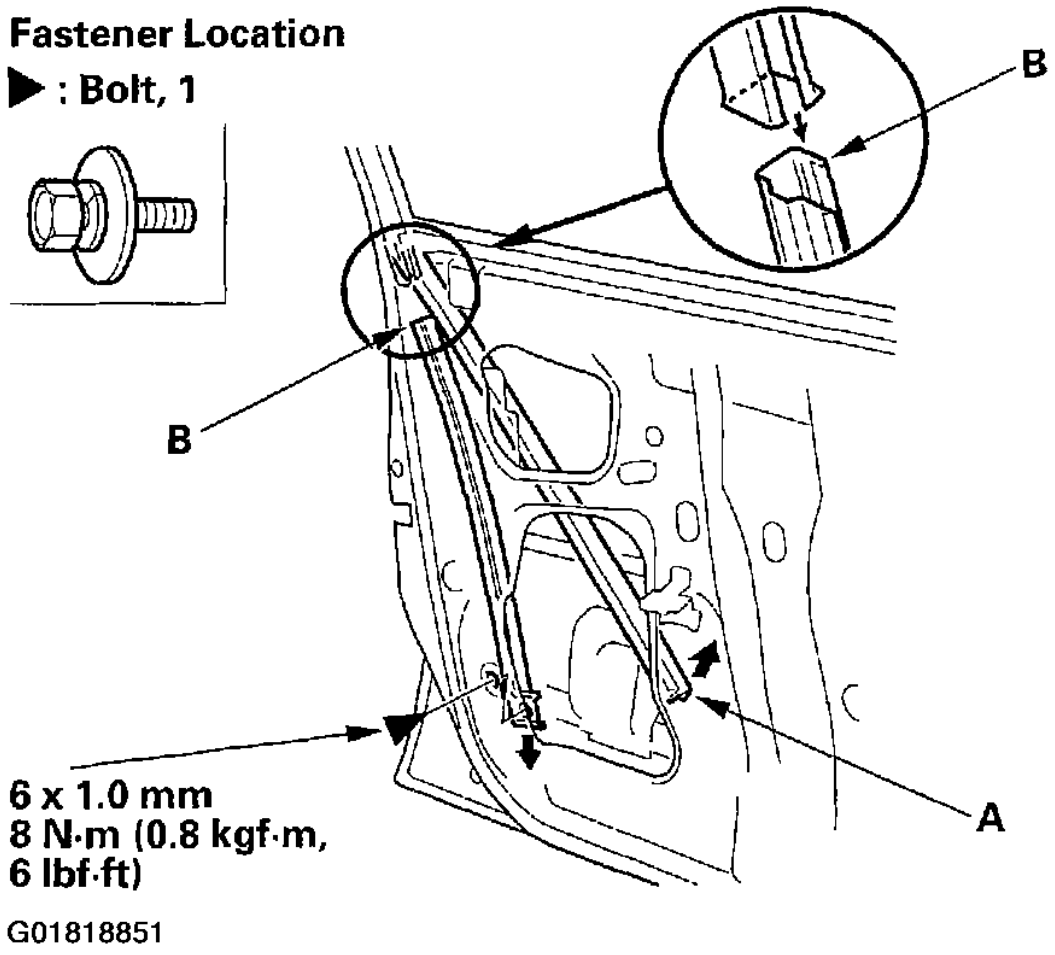


Fig. 15: Pulling The Glass Run Channel Away

5. Disconnect the cylinder rod (A) on driver's side.

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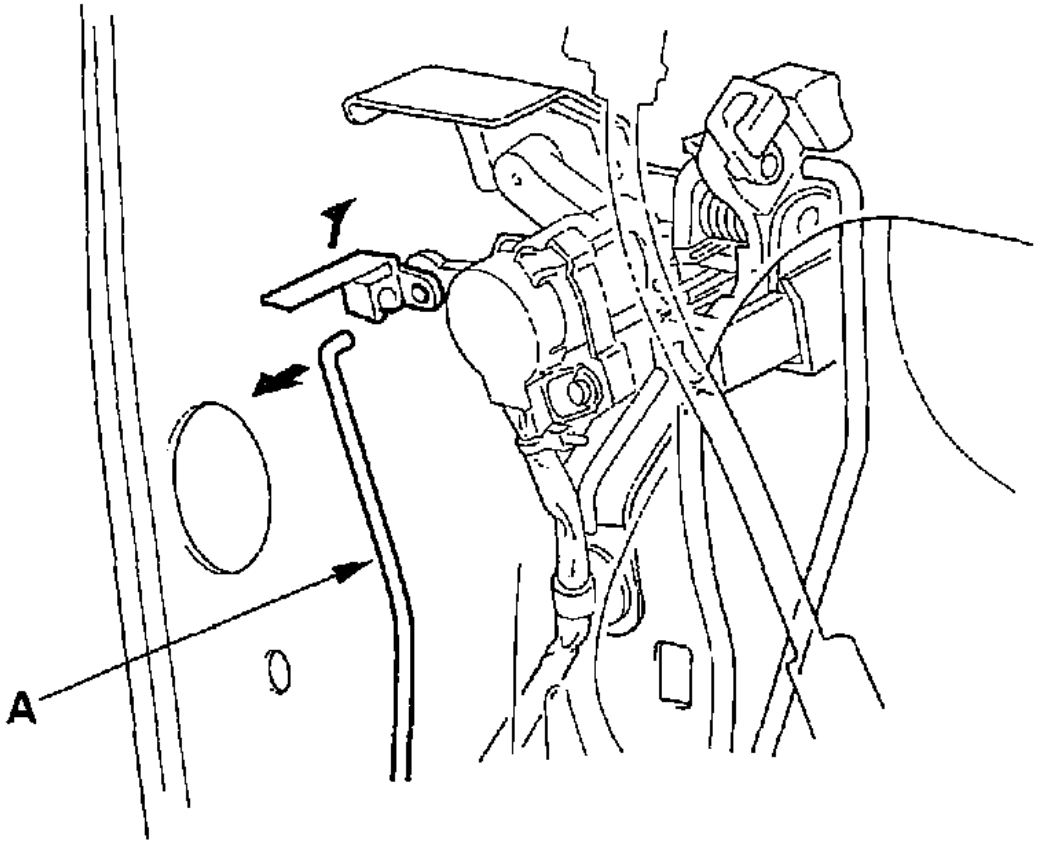


Fig. 16: Disconnecting The Cylinder Rod (Driver's Side)

6. Remove the maintenance cap (A) from the rear of the door, then loosen the screw securing the cylinder protector (B) and the outer handle (C).

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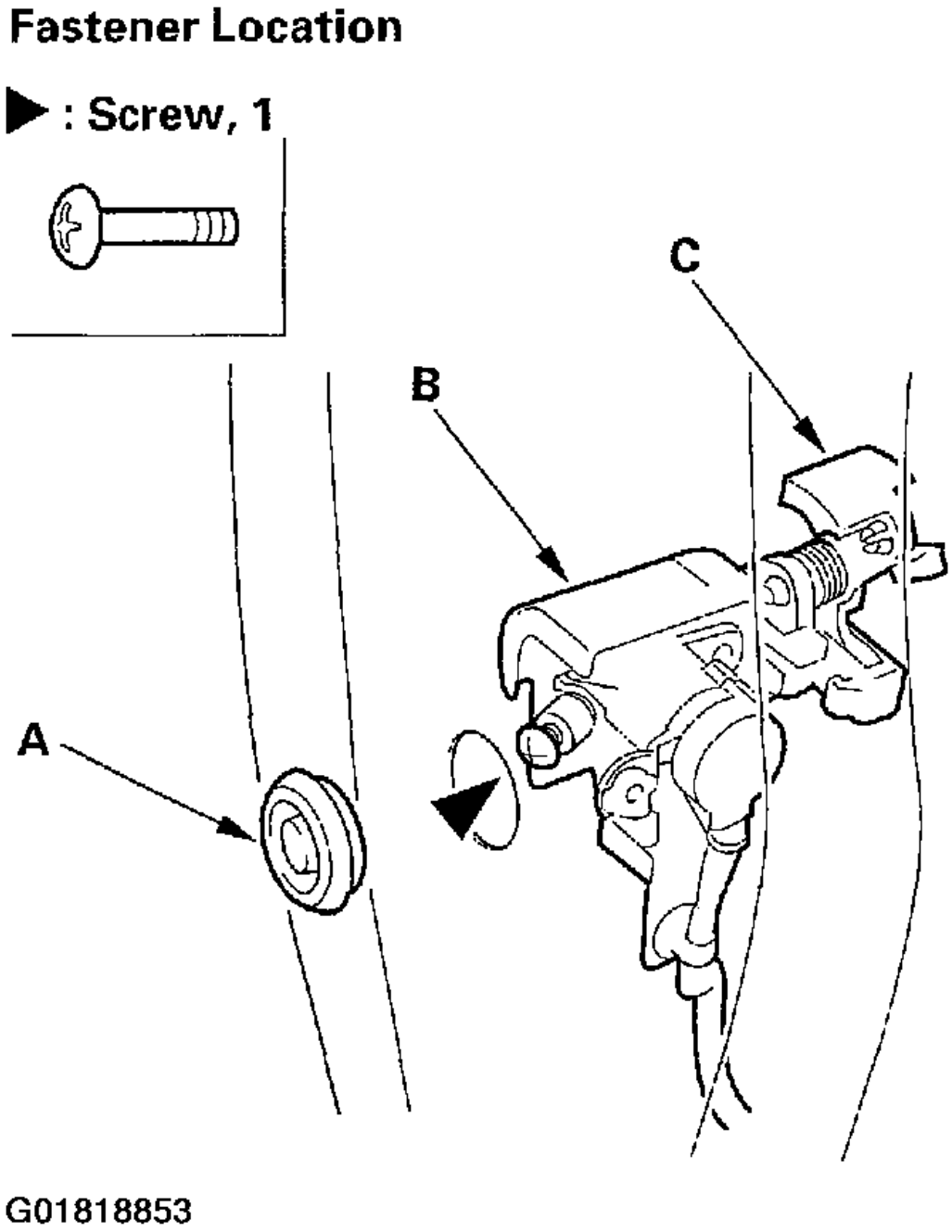


Fig. 17: Loosening The Screw Securing The Cylinder Protector And The Outer Handle

7. Remove the bolt securing the cylinder protector (A), then remove the cylinder switch, lock cylinder (driver's), and cylinder protector as an assembly.

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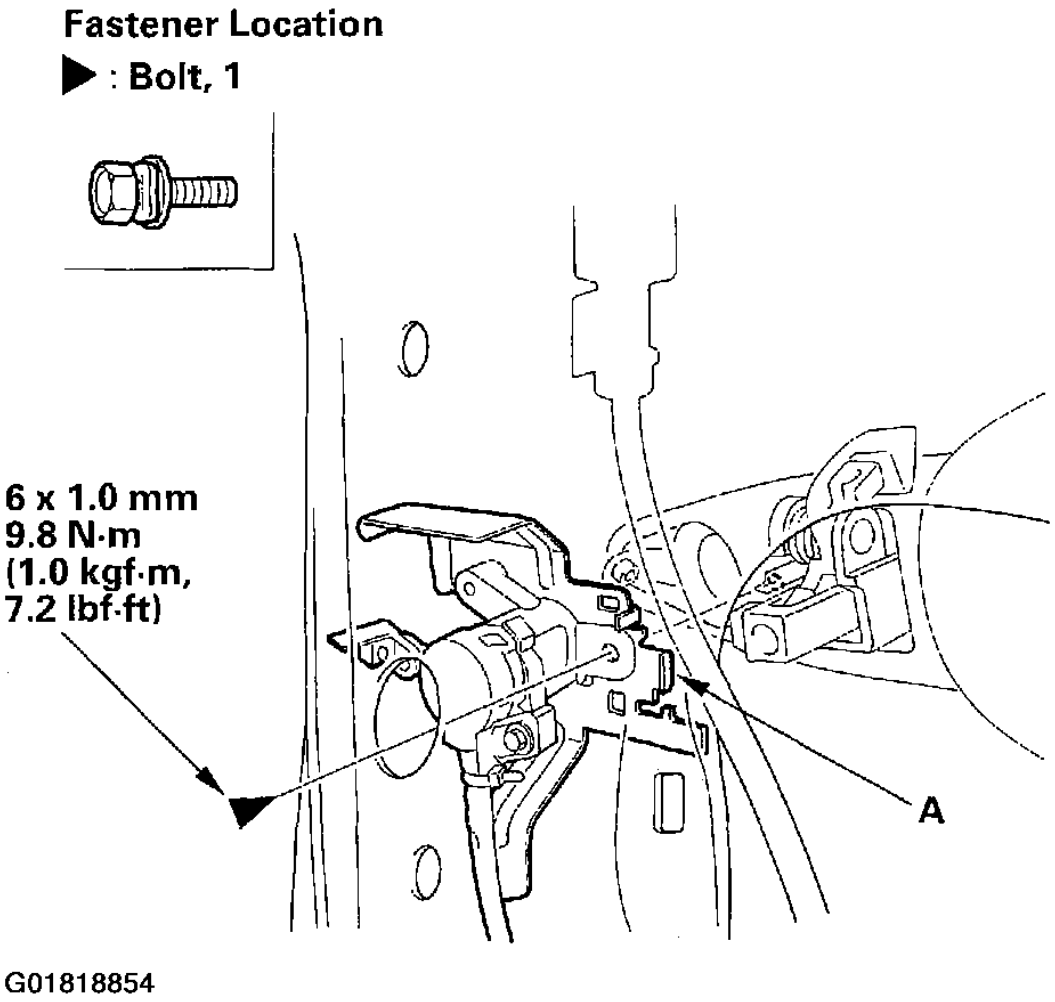


Fig. 18: Removing The Bolt Securing The Cylinder Protector, Then Removing The Cylinder Switch, Lock Cylinder & Cylinder Protector As An Assembly (Driver's)

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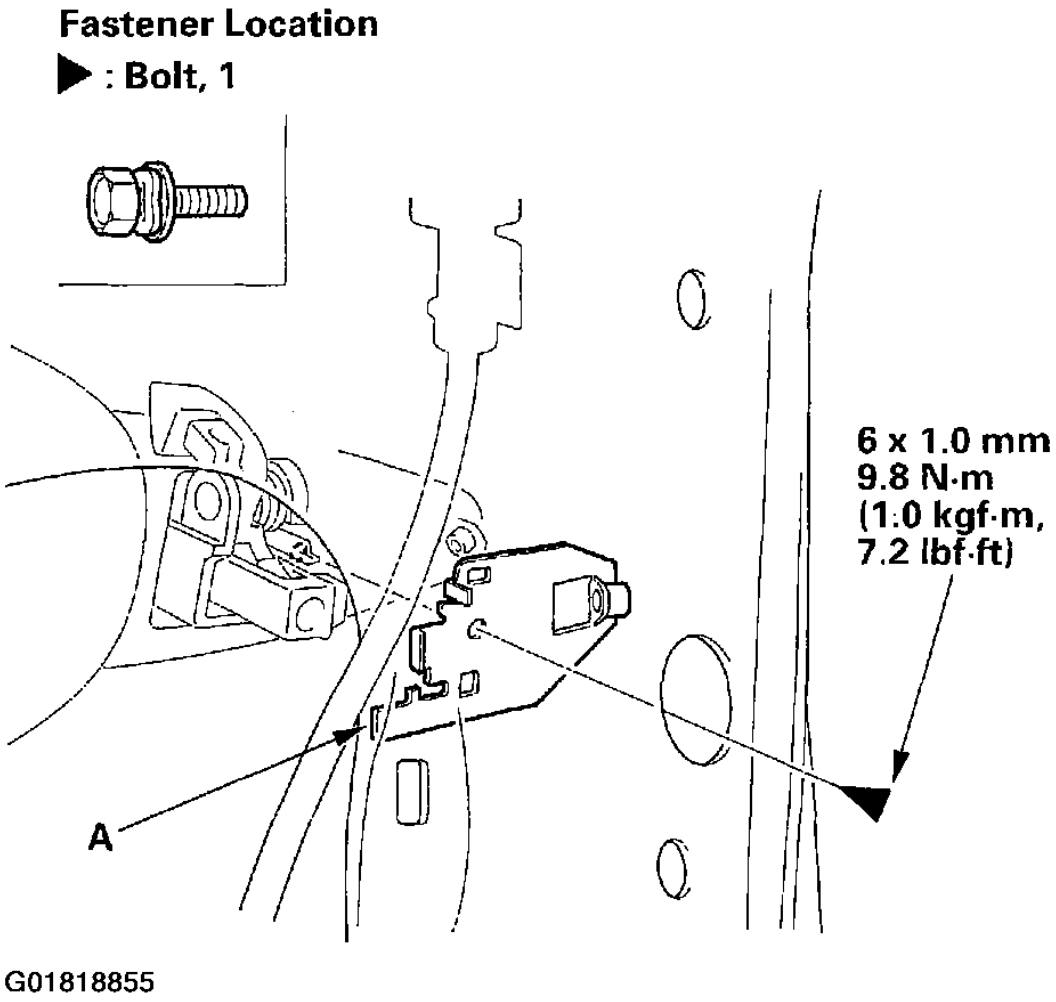


Fig. 19: Removing The Bolt Securing The Cylinder Protector, Then Removing The Cylinder Switch & Cylinder Protector As An Assembly (Passenger's)

8. Driver's: Disconnect the key cylinder switch connector (A), and detach the harness clips (B), then remove the key cylinder switch (C).

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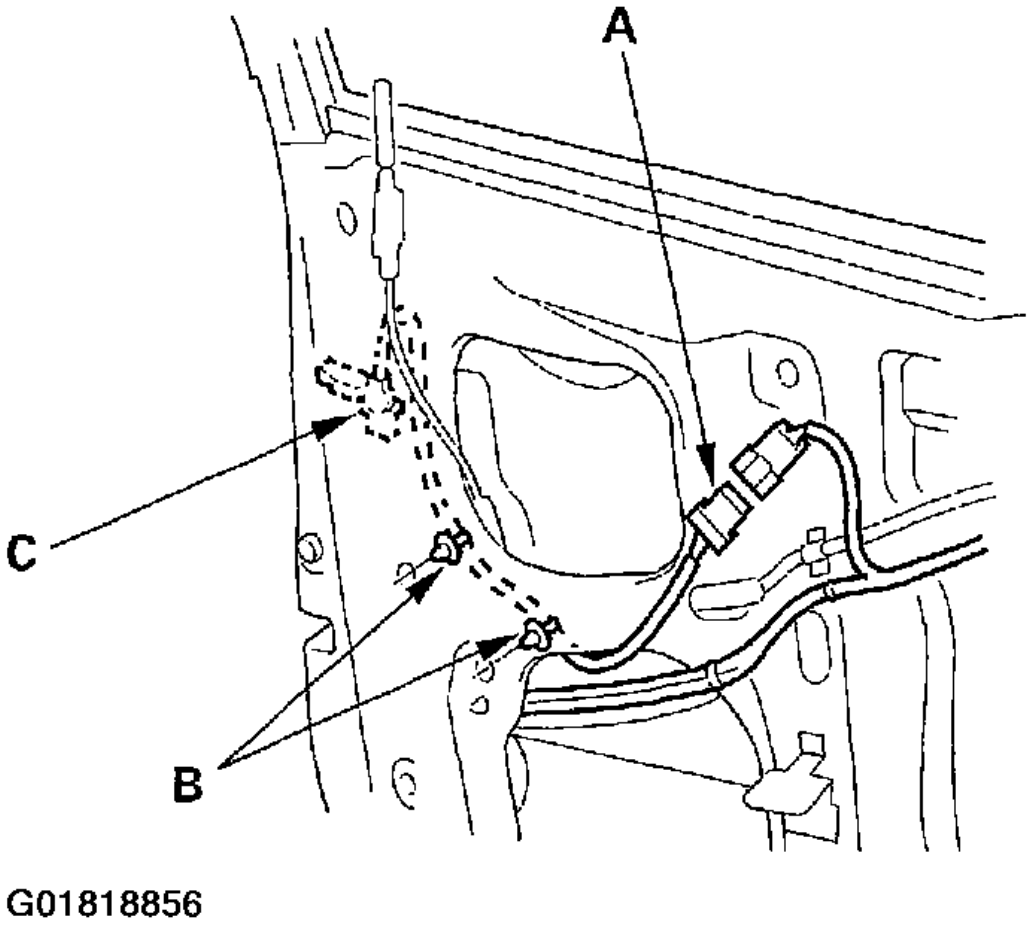


Fig. 20: Removing The Key Cylinder Switch (Driver's)

9. Driver's: Remove the screws (A, B), then separate the lock cylinder (C), key cylinder switch (D), and key cylinder protector (E).

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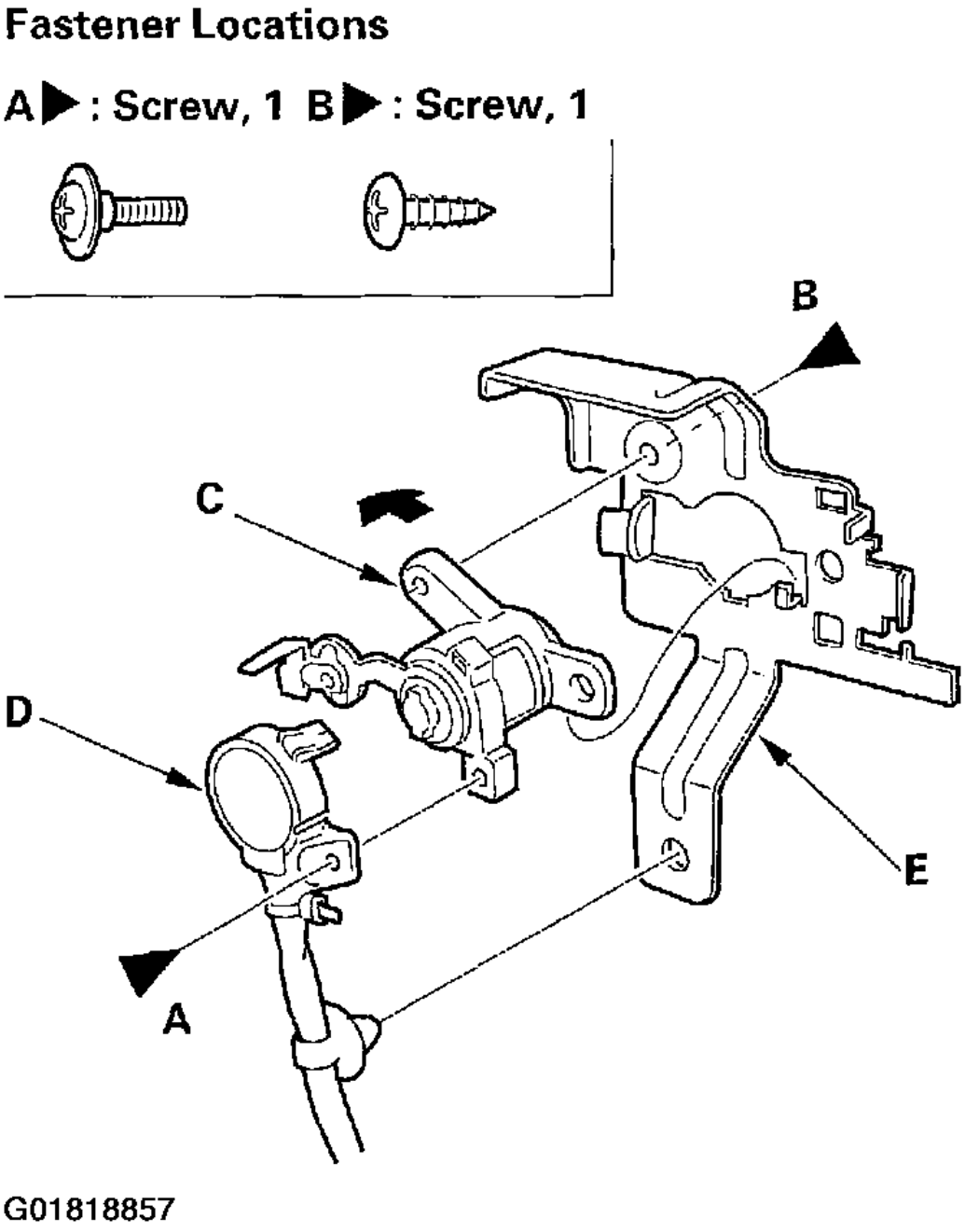


Fig. 21: Separating The Lock Cylinder, Key Cylinder Switch & Key Cylinder Protector (Driver's)

10. Remove the bolt, then remove the spacer (A).

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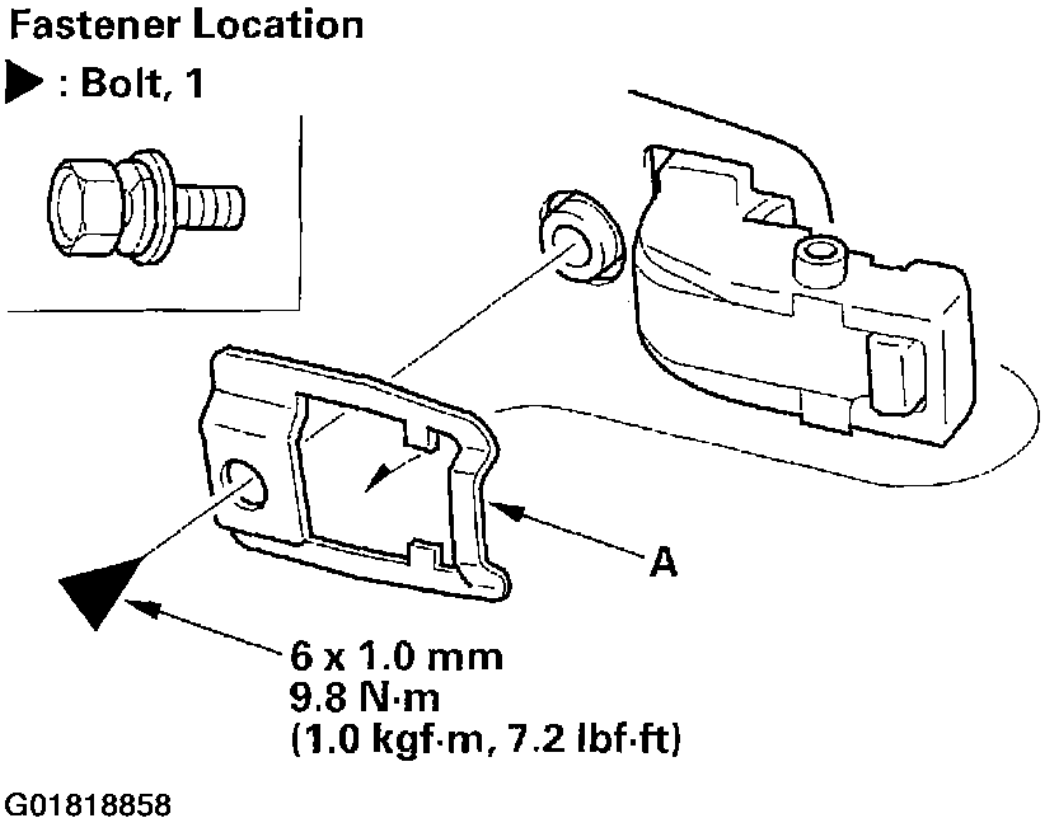


Fig. 22: Removing The Bolt, Then The Spacer

11. While pulling the outer handle (A), remove the handle from the holes in the door panel. Take care not to scratch the door.

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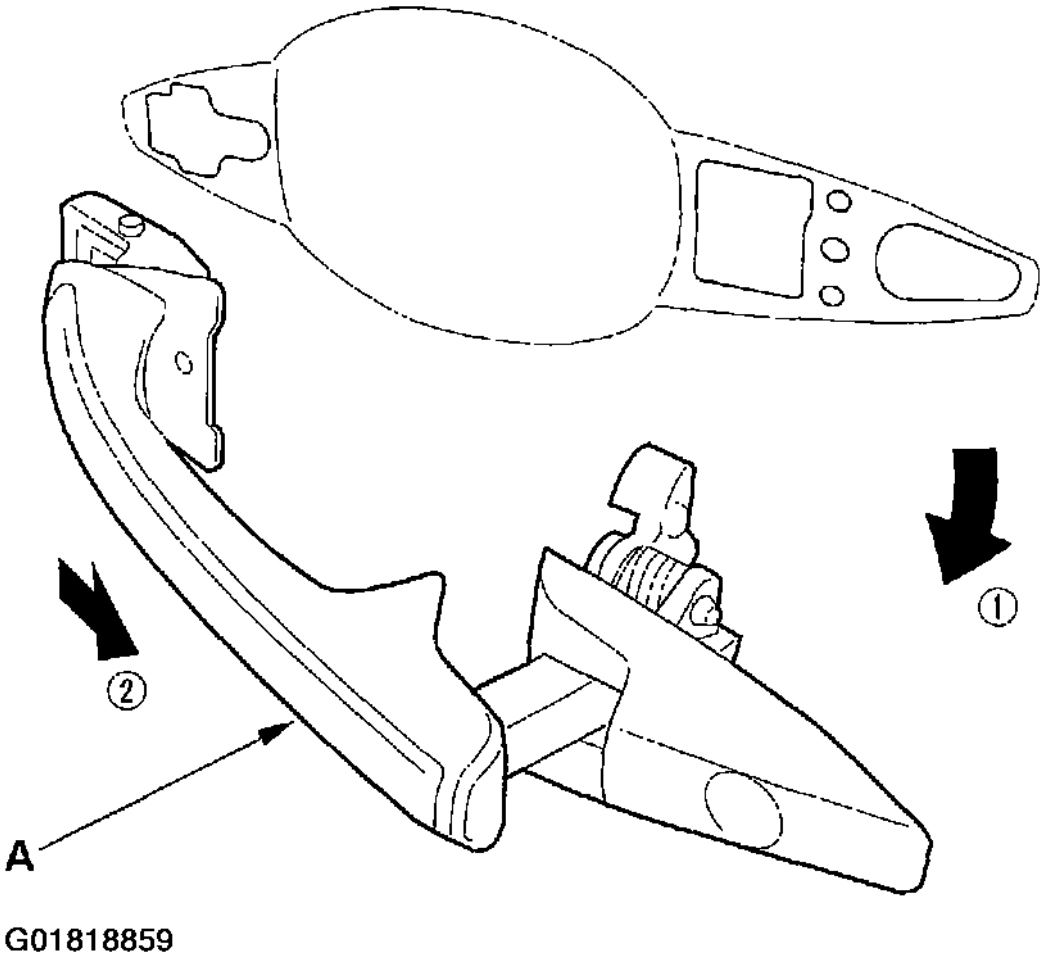


Fig. 23: Removing The Handle From The Holes In The Door Panel

12. Install the handle in the reverse order of removal, and note these items:
    - Make sure the key cylinder switch harness is routed properly.
    - Make sure the key cylinder switch connector is plugged in properly, and each rod is connected securely.
    - Make sure the door key cylinder/door locks operate properly.
    - Make sure the door handle works properly.
    - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

FRONT DOOR LATCH REPLACEMENT

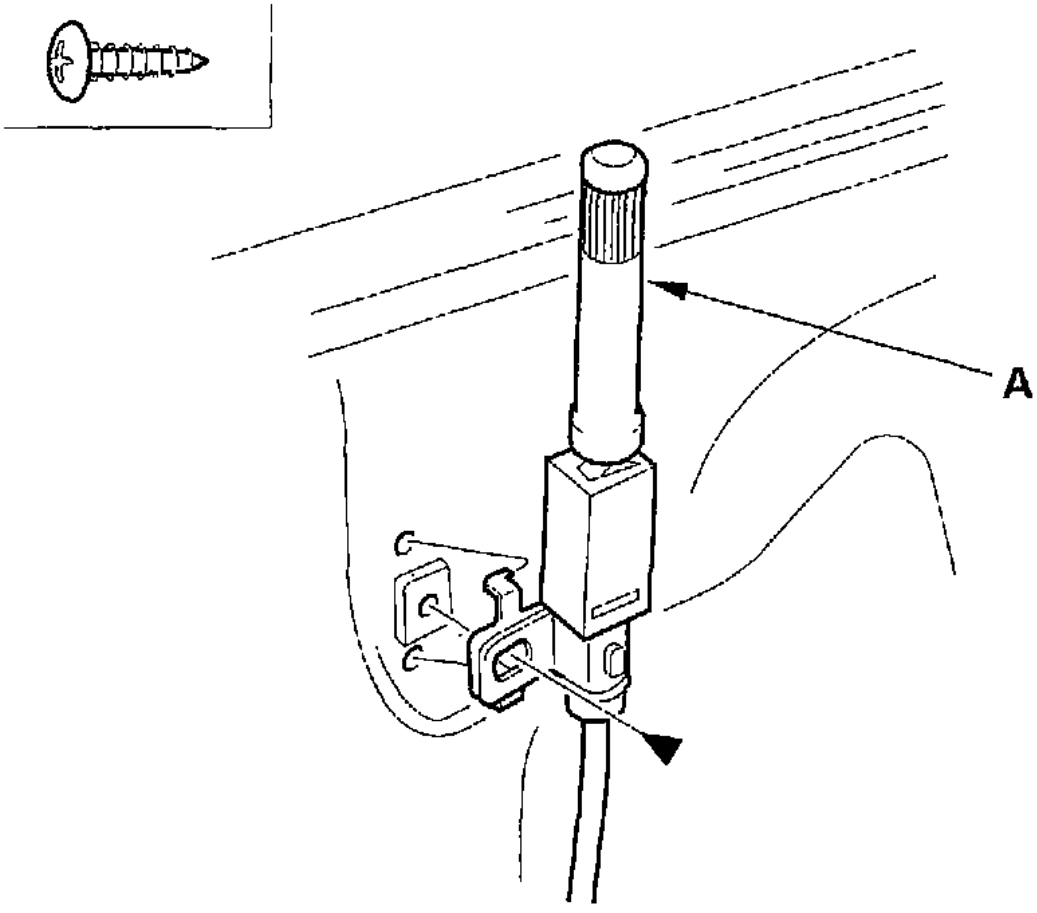
NOTE: Put on gloves to protect your hands.

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1. Raise the glass fully.
2. Remove these items:
   a. Door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**)
   b. Plastic cover, as necessary (see **COMPONENT LOCATION INDEX**)
   c. Center lower channel (see step 4 of **FRONT DOOR OUTER HANDLE REPLACEMENT**)
3. Disconnect the outer handle rod from the outer handle, and the cylinder rod from the lock cylinder (see step 5 of **FRONT DOOR OUTER HANDLE REPLACEMENT**).
4. Remove the screw securing the lock knob (A).

Fastener Location

▶ : Screw, 1



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Fig. 24: Removing The Screw Securing The Lock Knob

5. Disconnect the actuator connectors (A), and detach the inner handle cable clip (B). Remove the screws (C, D) securing the latch (E), and the lock cable protector.

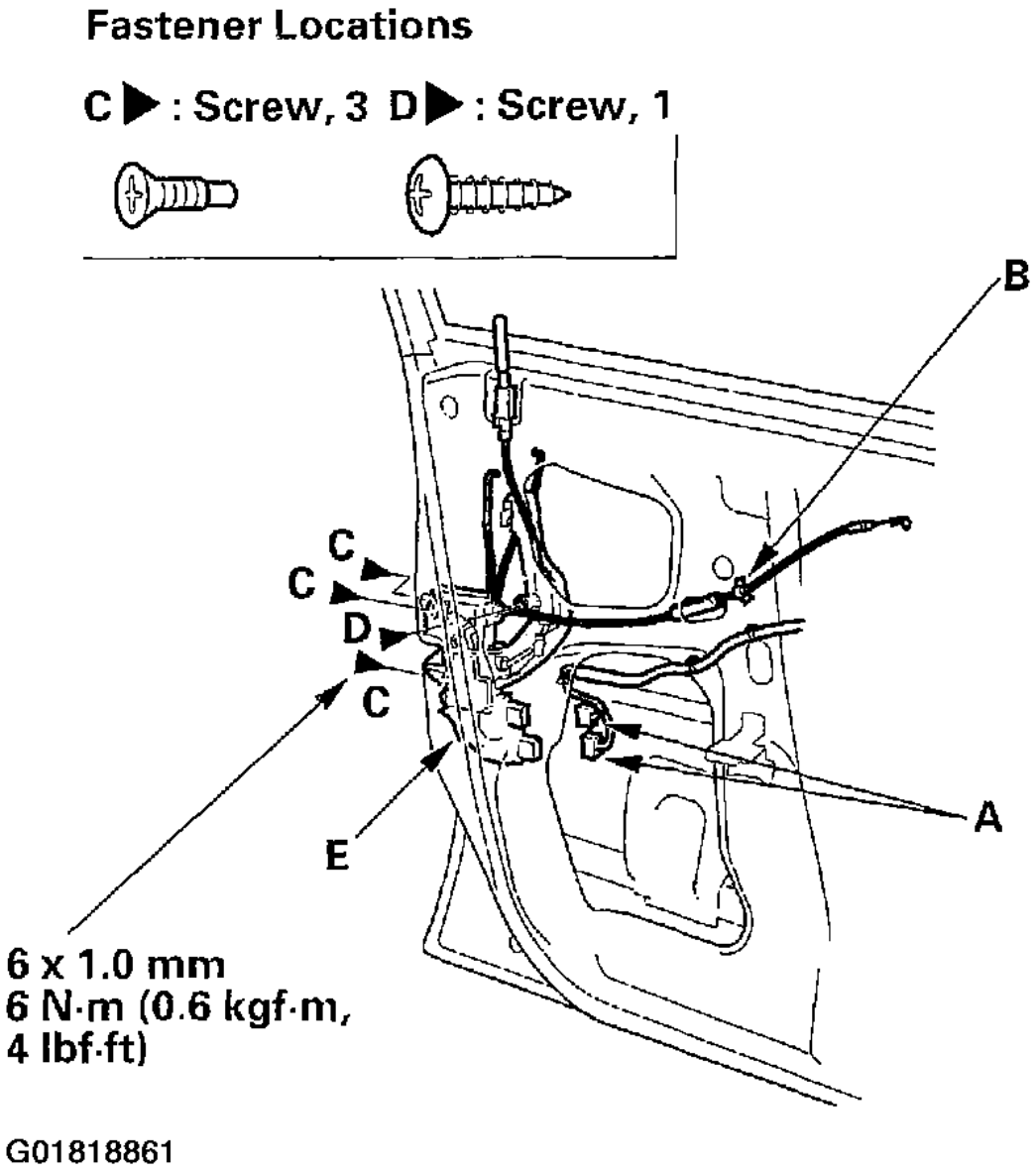
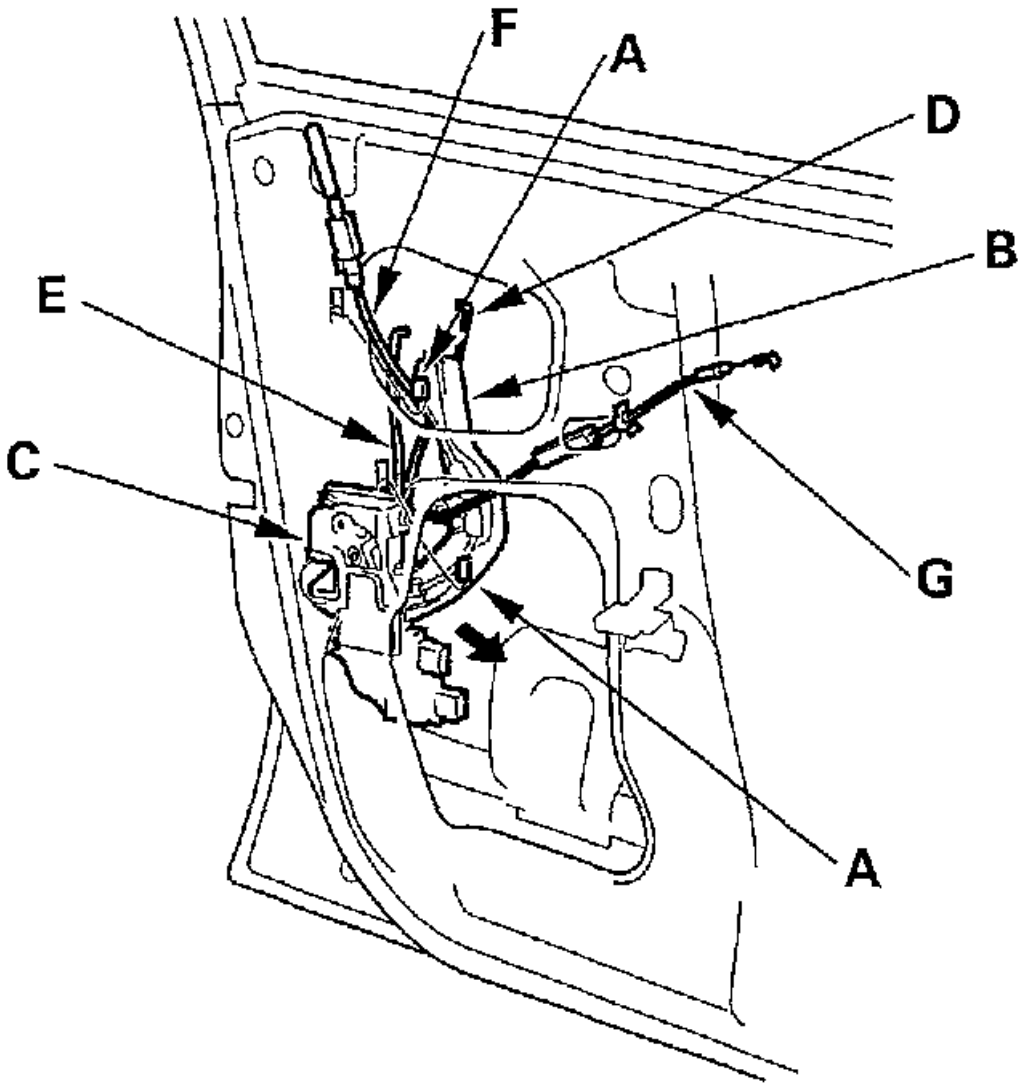


Fig. 25: Disconnecting The Actuator Connectors & Detaching The Inner Handle Cable Clip

6. Release the hooks (A) of the lock cable protector (B) from the door, then remove the latch (C) (with the protector) through the hole in the door. Take care not to bend the outer handle rod (D), cylinder rod (E),

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lock cable (F), and inner handle cable (G).



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Fig. 26: Removing The Latch

7. Remove the lock cable protector (A) from the latch protector (B) by releasing the hook (C).

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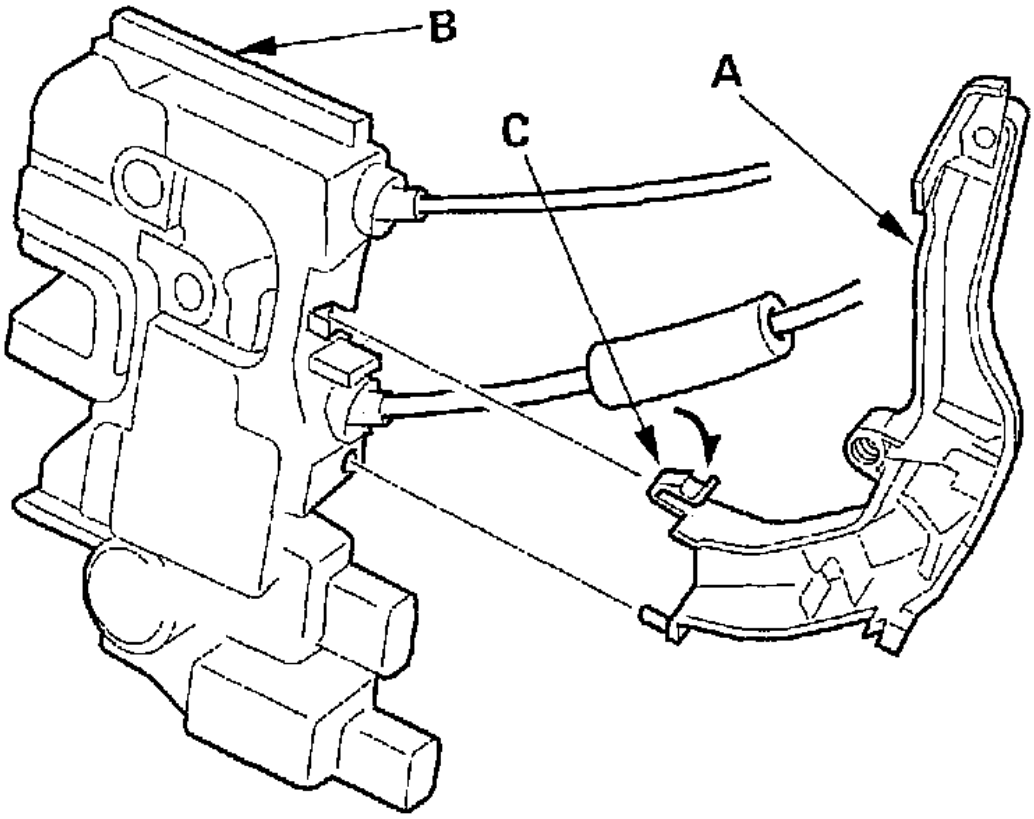


Fig. 27: Removing The Lock Cable Protector

8. Install the latch in the reverse order of removal, and note these items:
   - Make sure the actuator connectors are plugged in properly and each rod is connected securely.
   - Make sure the door locks and opens properly.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

FRONT DOOR GLASS & REGULATOR REPLACEMENT

NOTE: Put on gloves to protect your hands.

1. Remove the door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Driver's: Remove the screws, then remove the panel bracket (A).

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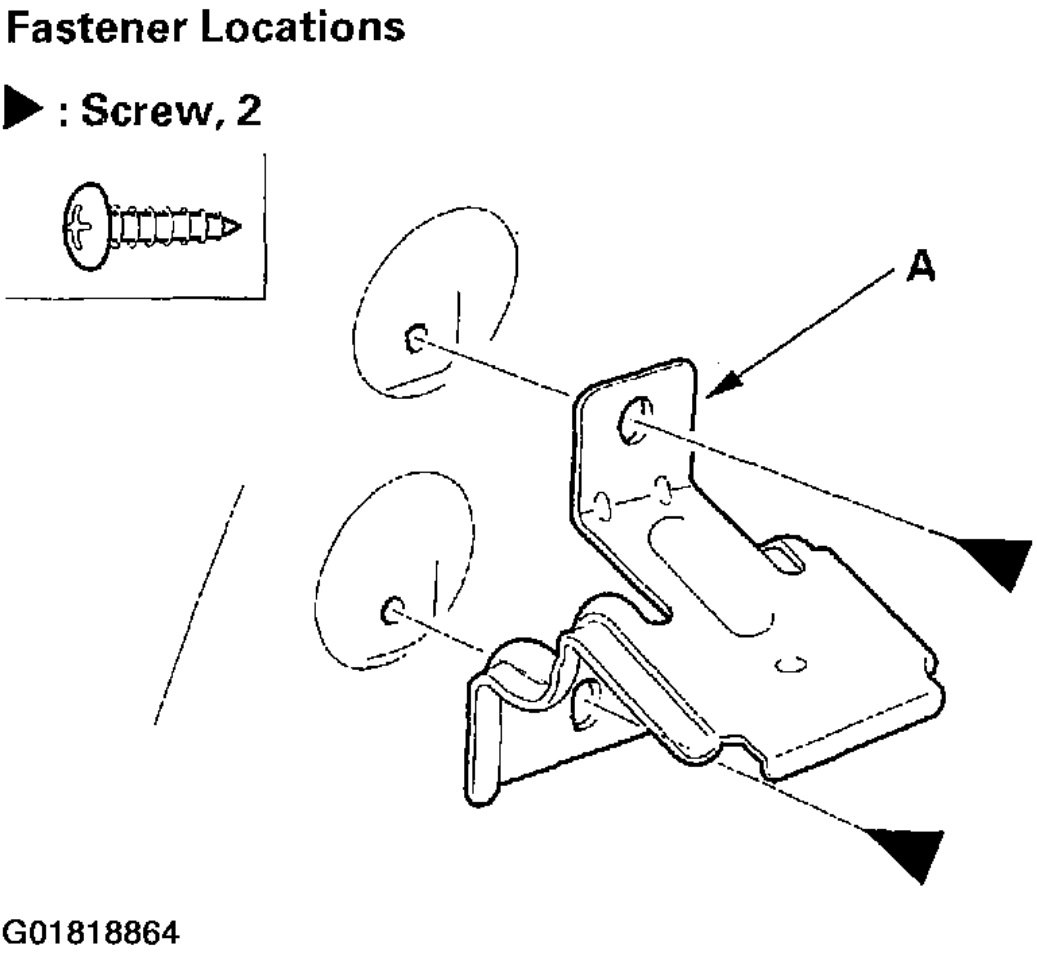


Fig. 28: Removing The Panel Bracket

3. Remove the plastic cover (see **COMPONENT LOCATION INDEX**).
4. Carefully raise the glass (A) until you can see the bolts, then remove them. Carefully pull the glass out through the window slot. Take care not to drop the glass inside the door.

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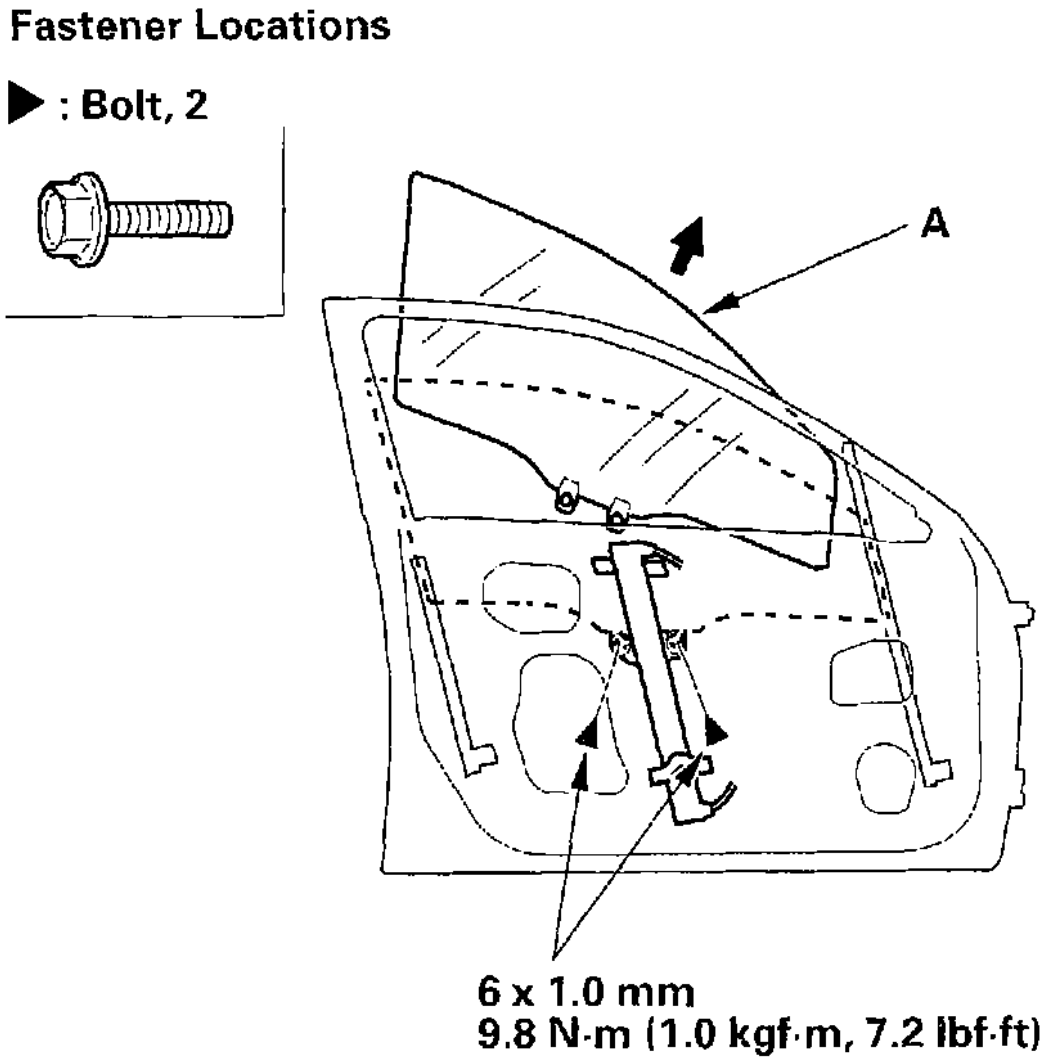


Fig. 29: Carefully Pulling The Glass Out Through The Window Slot

5. Disconnect the connector (A) from the regulator (B).

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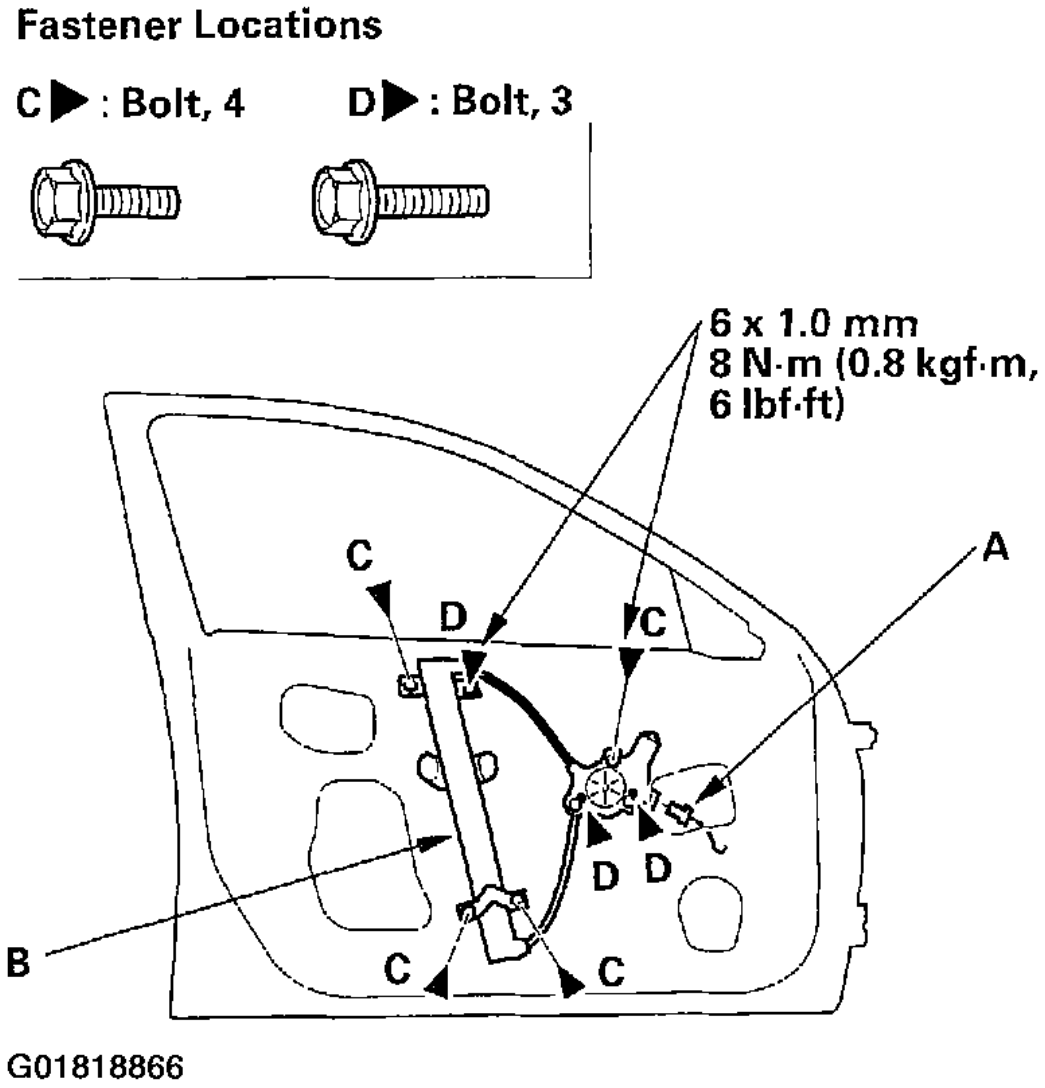


Fig. 30: Removing The Regulator

6. Remove the bolts (C), and loosen the bolts (D), then remove the regulator through the hole in the door.
7. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.

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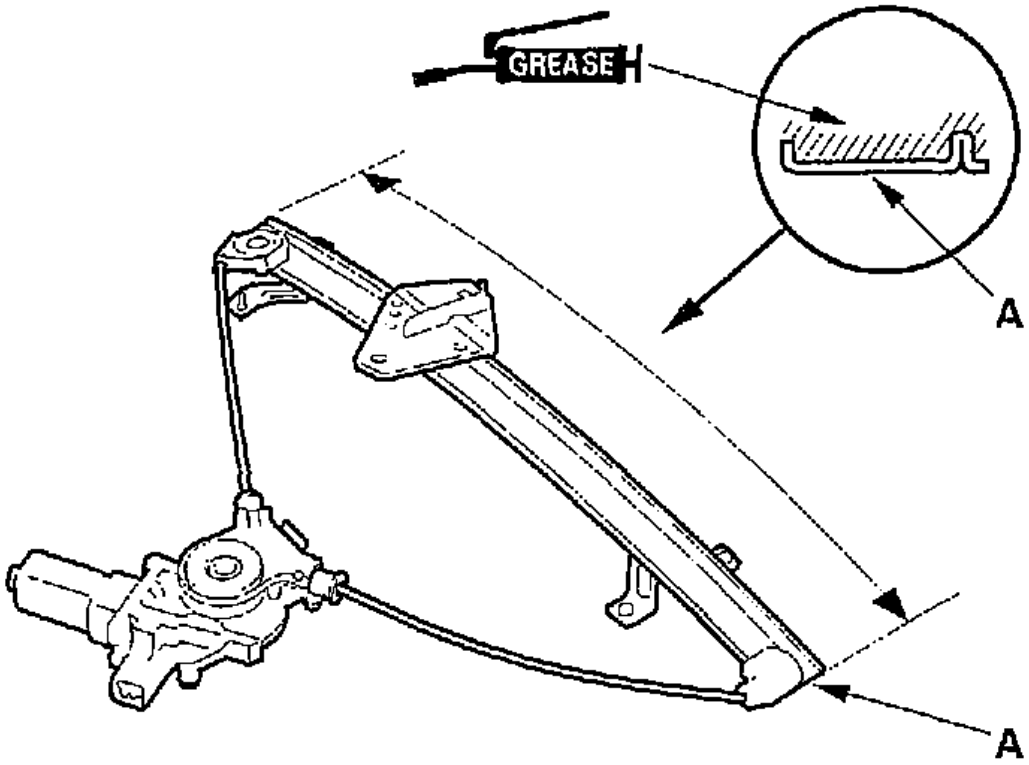


Fig. 31: Applying Multipurpose Grease To The Regulator

8. Install the glass and regulator in the reverse order of removal, and note these items:
   - Roll the glass up and down to see if it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see **FRONT & REAR DOOR GLASS ADJUSTMENT**).
   - Check for water leaks (see step 7 of **FRONT & REAR DOOR GLASS ADJUSTMENT**).
   - Test-drive and check for wind noise and rattles.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
   - Make sure the power door locks, windows and power mirror operate properly.

FRONT DOOR GLASS OUTER WEATHERSTRIP REPLACEMENT

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NOTE:

- **Once you remove the door glass outer weatherstrip, replace it with a new one because it will bend during removal.**
- **Put on gloves to protect your hands.**
- **Take care not to scratch the door.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**

1. Remove these items:
   a. Door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
   b. Power mirror (see **POWER MIRROR REPLACEMENT**).
2. Remove the screw from the rear edge of the door.

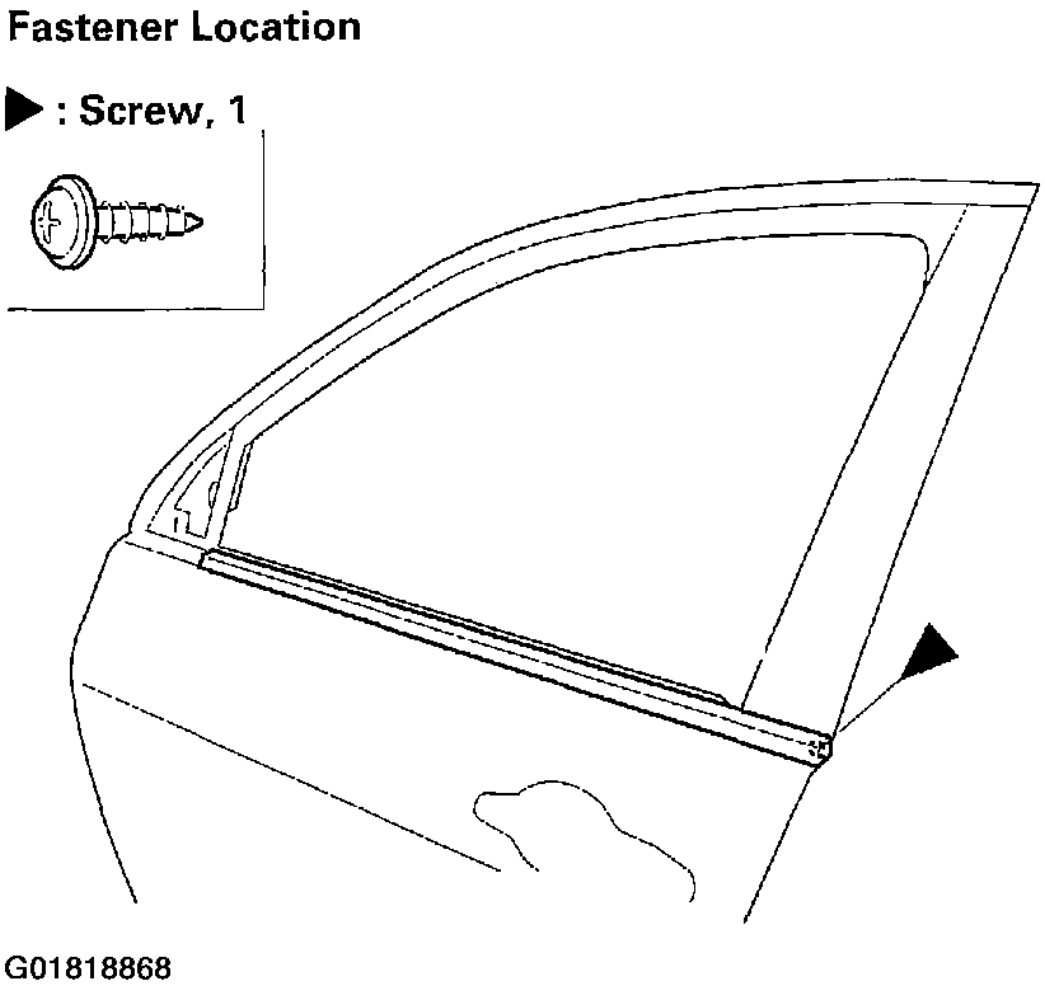


Fig. 32: Removing The Screw From The Rear Edge Of The Door

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3. Starting at the rear, pull the door glass outer weatherstrip (A) up at each portion where the inner molding (B) catches the inside edge of the window slot, then remove the weatherstrip.

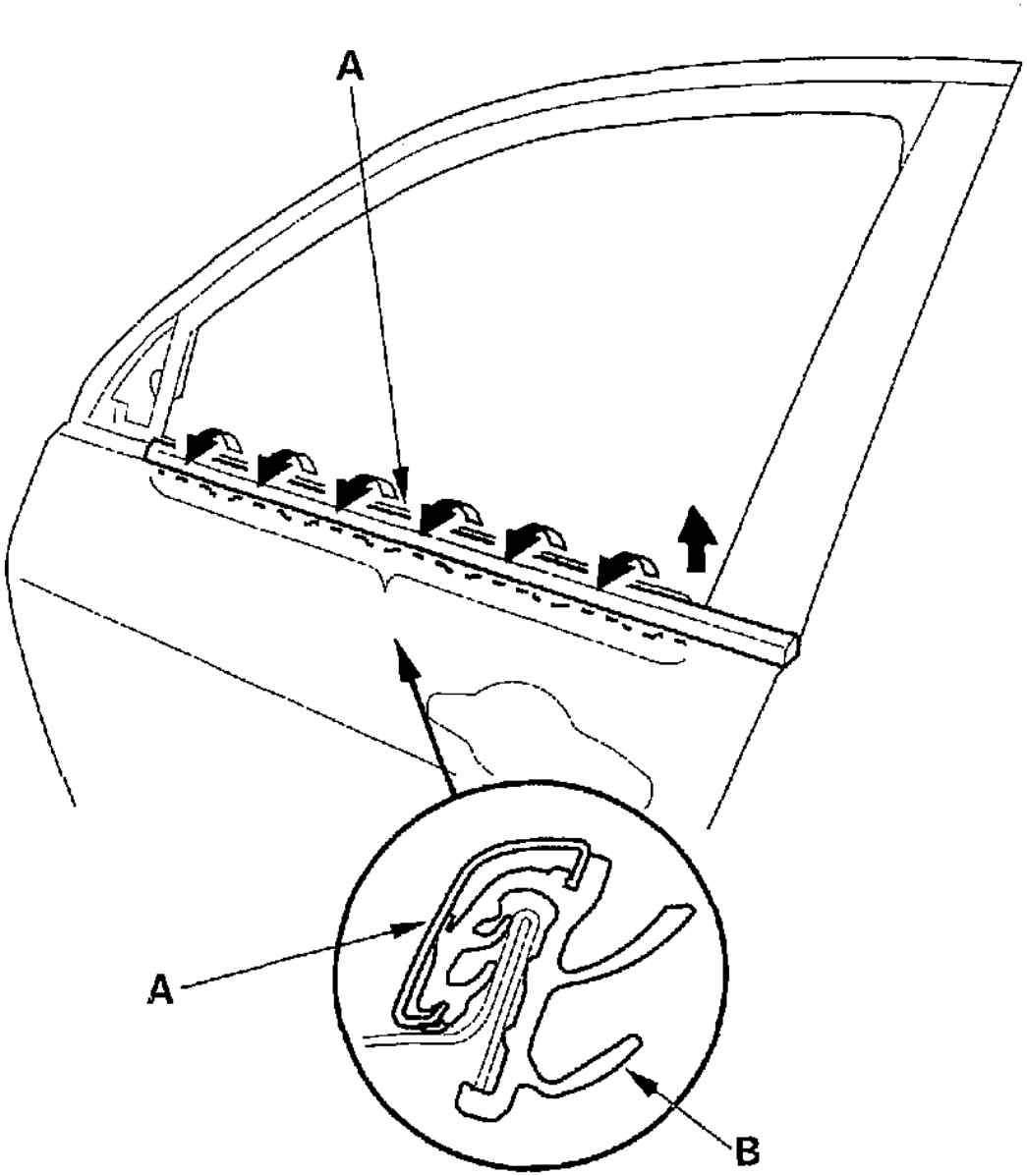


Fig. 33: Removing The Weatherstrip

4. Install a new weatherstrip in the reverse order of removal.

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FRONT DOOR OUTER MOLDING REPLACEMENT

NOTE:

- **Once you remove the door outer molding, replace it with a new one because it will bend during removal.**
- **Put on gloves to protect your hands.**
- **Take care not to scratch the door.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**

1. Remove the power mirror (see **POWER MIRROR REPLACEMENT**). To prevent scratching the power mirror and door, wrap the power mirror with a shop towel. Disconnecting the power mirror connector is not required.
2. Remove the door outer molding (A):
   a. Pry the rear clip with a flat-tip screwdriver.
   b. While removing the upper edge of the door outer molding from the edge of the sash, cut the double-sided adhesive tapes (B) with a utility knife, then remove the molding.

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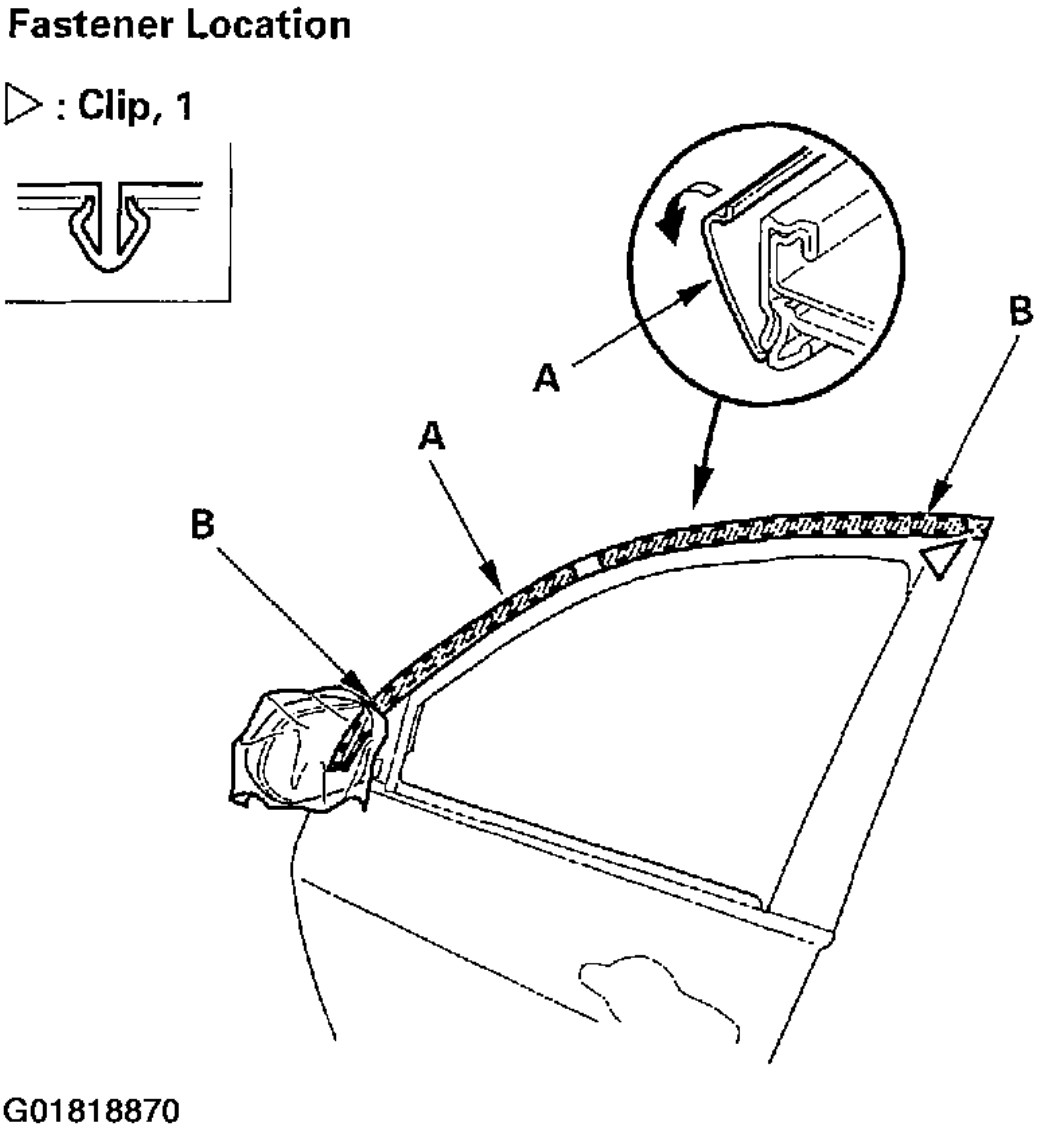


Fig. 34: Removing The Upper Edge Of The Door Outer Molding

3. Scrape off the remaining double-sided adhesive tape from the sash, then clean the sash surface with a sponge dampened in alcohol.
4. Install a new door outer molding in the reverse order of removal, and note these items:
   - Push the clip and the adhesive portions into place securely.
   - Make sure the upper and lower sides of the molding are catching the edges of the sash properly.

FRONT DOOR WEATHERSTRIP REPLACEMENT

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NOTE:

- **Take care not to scratch the door.**
- **Use a clip remover to remove the clips.**

1. At the A-pillar, remove the door stop mounting bolt (A).

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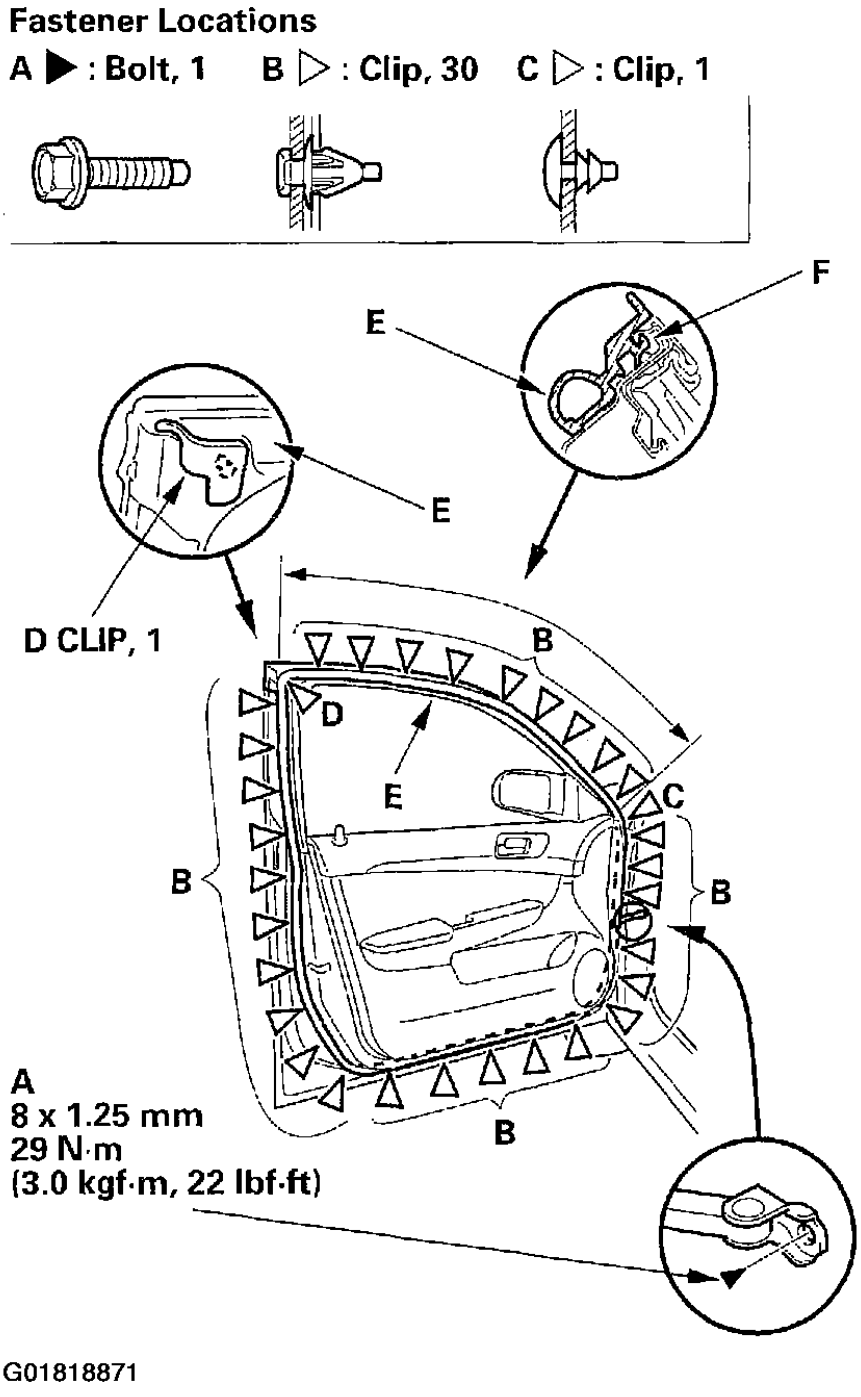


Fig. 35: Removing The Door Weatherstrip

2. Detach the clips (B, C, D), then remove the door weatherstrip (E).
3. Install the weatherstrip in the reverse order of removal and note these items:

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- Replace any damaged clips.
- Make sure the weatherstrip is installed in the holder (F) securely.
- Apply liquid thread lock to door stop mounting bolt before installation.
- Check for water leaks (see step 7 of **FRONT & REAR DOOR GLASS ADJUSTMENT**).

REAR DOOR PANEL REMOVAL/INSTALLATION

Special Tools Required: Trim pad remover, Snap-on A 177A or equivalent, commercially available.

1. Lower the glass fully.
2. Using a flat-tip screwdriver wrapped with protective tape, push on the rear hook (A) and pivot the cover (B) on the front hook (C), then remove the cover and the screws securing the inner handle (D).

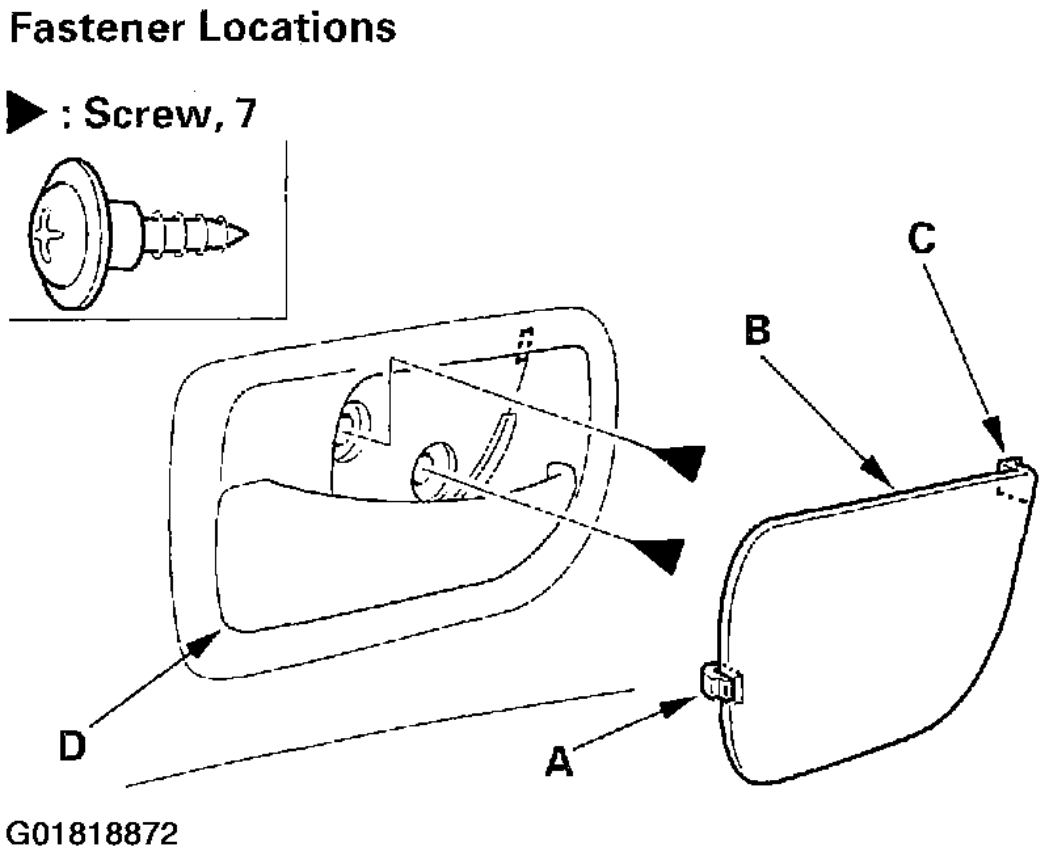


Fig. 36: Removing The Cover And The Screws Securing The Inner Handle

3. Remove the switch panel (A).
   a. Pry up on the front edge of the switch panel with a flat-tip screwdriver wrapped with protective

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tape to release the front clip.

b. Pull out along the edge of the panel to release the hooks (B) and clip.

c. Disconnect the power window switch connector (C).

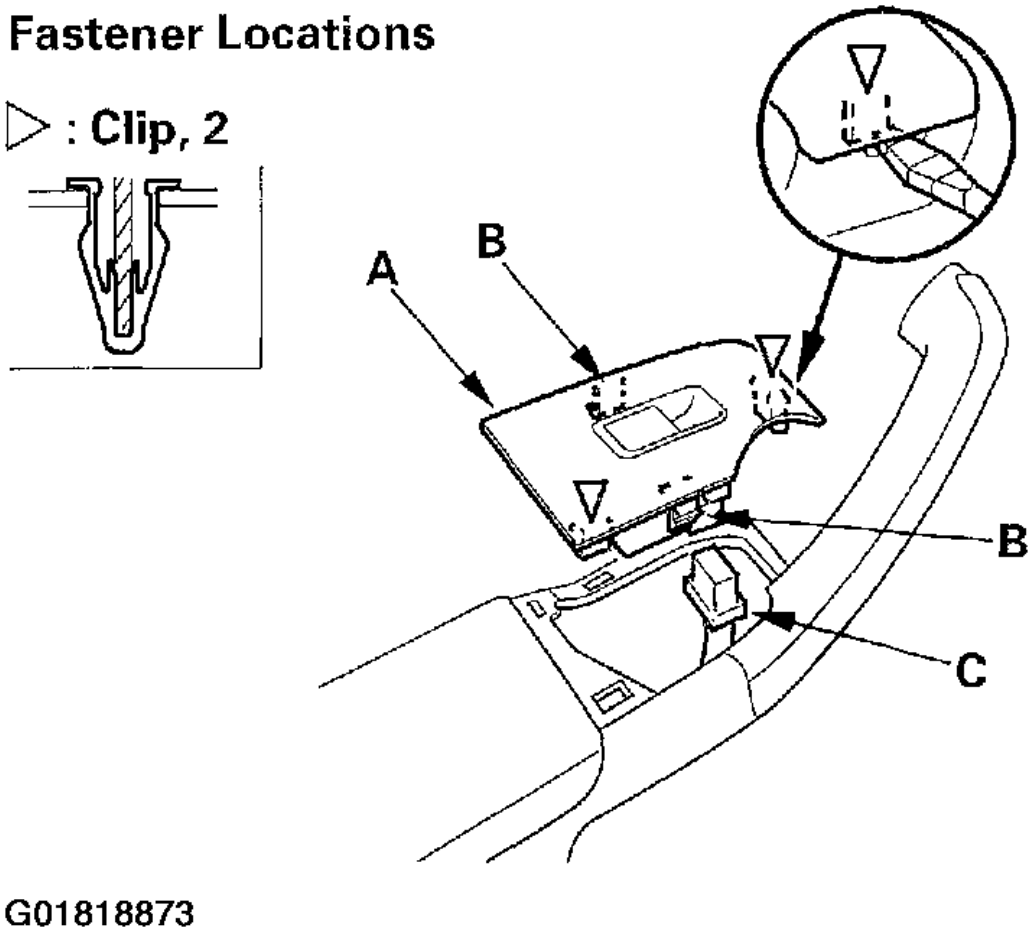


Fig. 37: Removing The Switch Panel

4. Pry out the front lower edge of the grip cover (A) at a gap between the cover and the grip base (B) to release the hooks (C), then pull out the cover to release the upper hooks (D) and remove the cover.

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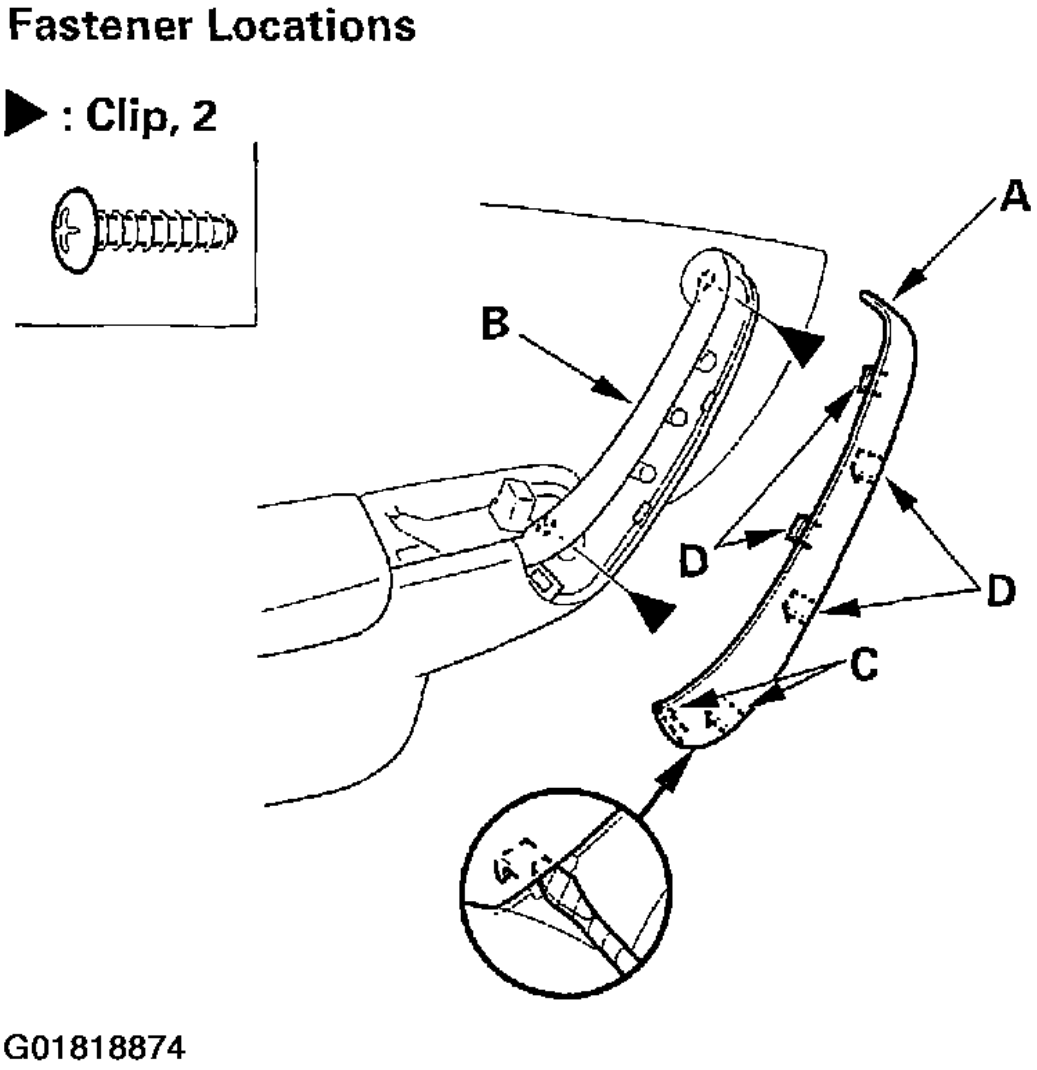


Fig. 38: Removing The Cover

5. Remove the screws from the grip base.
6. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.
   a. Start at the bottom edge of the door panel, release the clips (B) that are just above the marks (C) on the edge of the panel with a commercially available trim pad remover (D).
   b. Detach the upper clips (B, E).
   c. Starting at the rear, pull the door panel upward, then release the lock knob (F).

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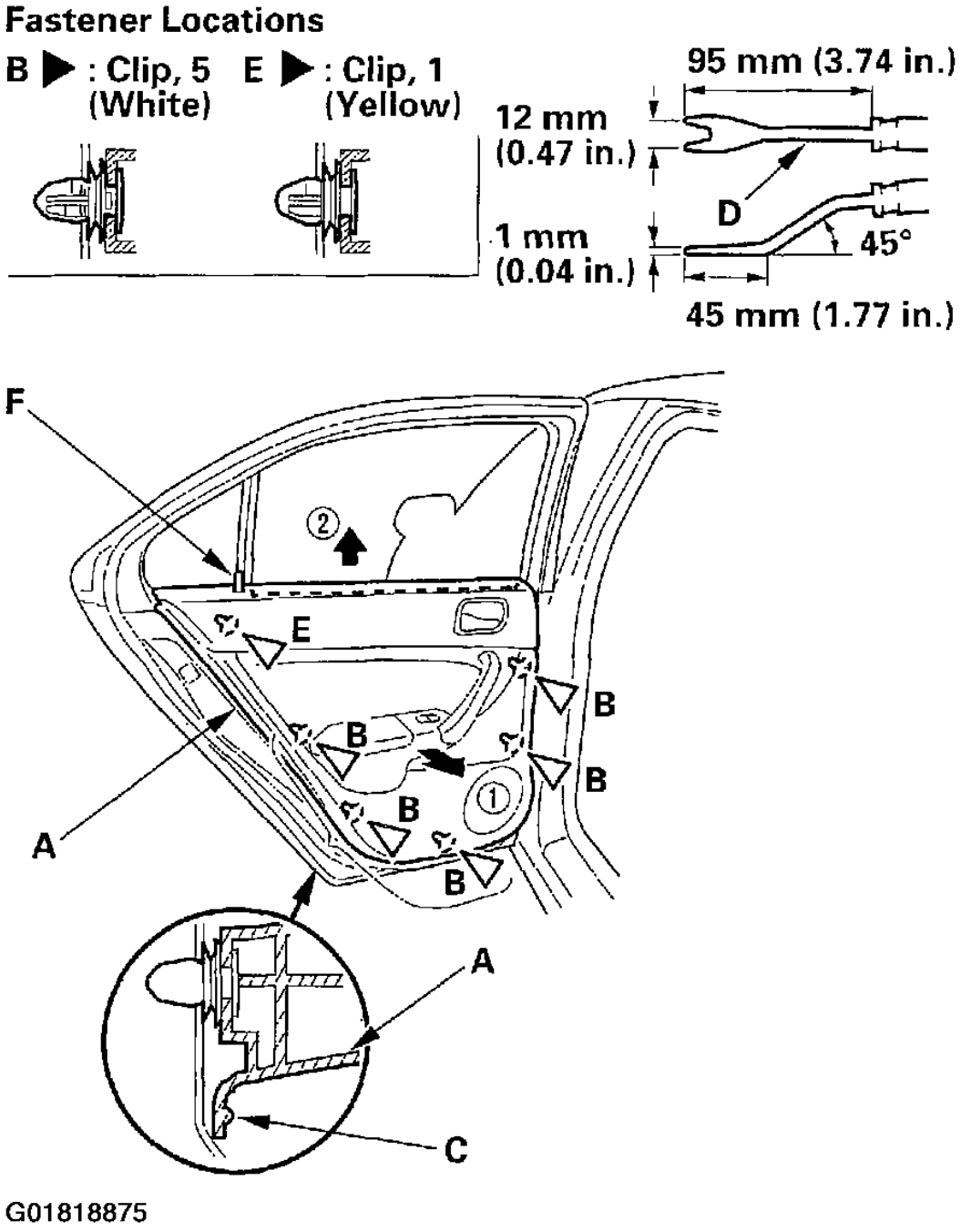


Fig. 39: Removing The Door Panel

7. Disconnect the inner handle cable (A). If necessary, remove the inner handle (B) by releasing the hooks (C, D).

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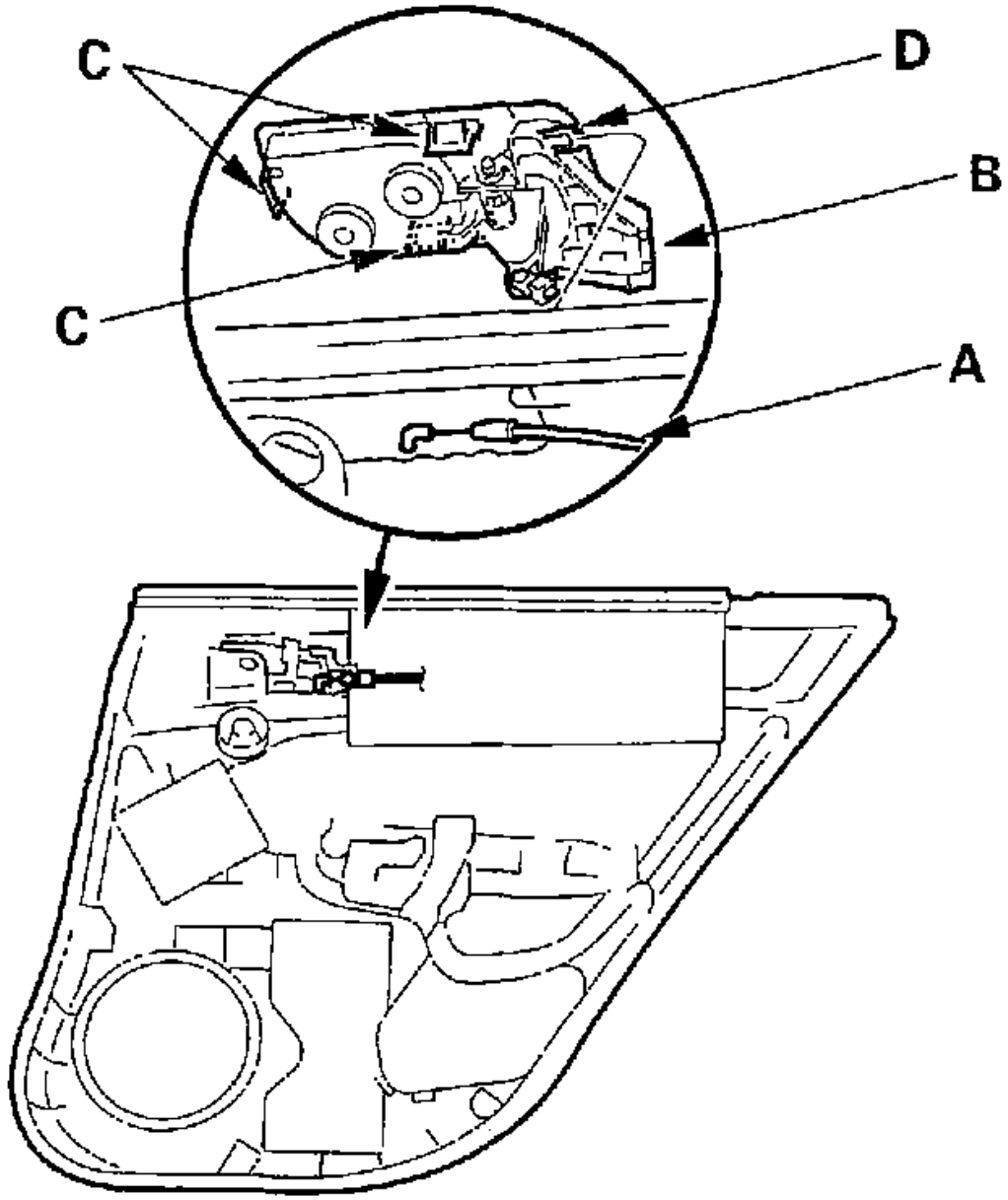


Fig. 40: Removing The Inner Handle Cable

8. If necessary, remove the door glass inner weatherstrip (A) from the door panel (B).

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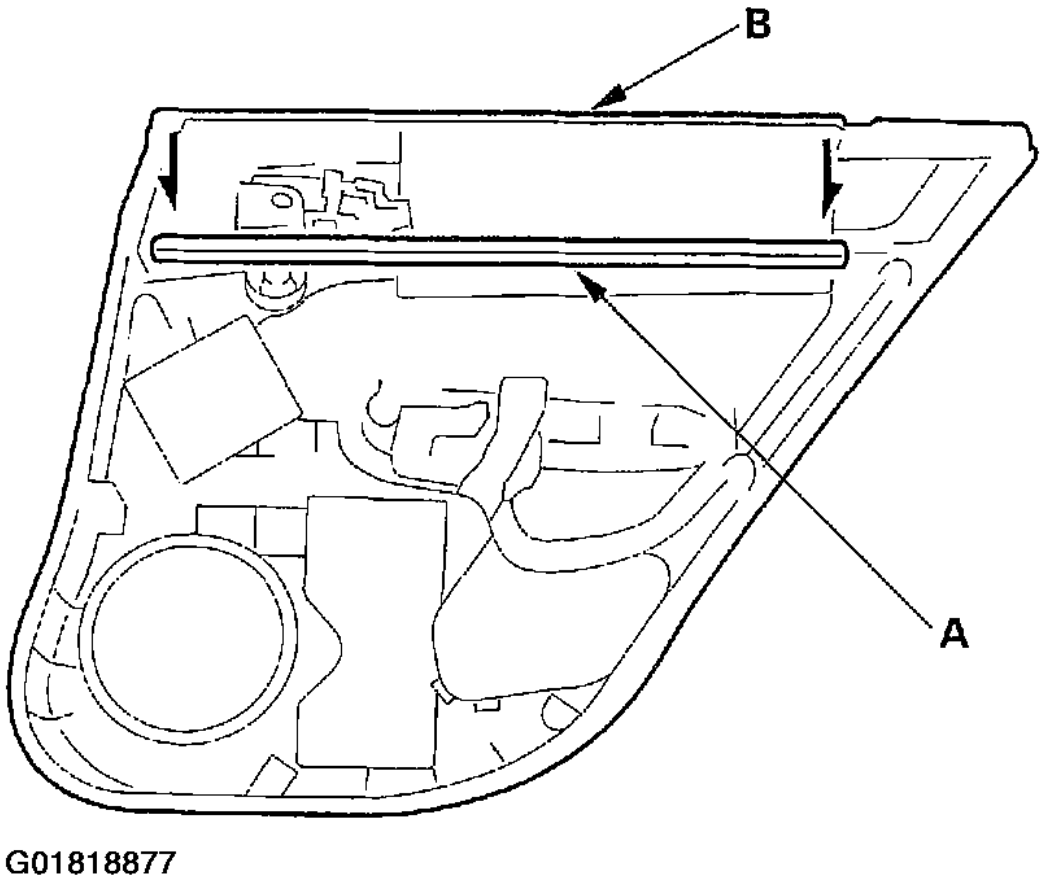


Fig. 41: Removing The Door Glass Inner Weatherstrip From The Door Panel

9. Install the panel in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the connector is plugged in properly and the cable is connected securely.
   - Make sure the window and power door lock operate properly.

REAR DOOR OUTER HANDLE REPLACEMENT

NOTE: Put on gloves to protect your hands.

1. Remove these items:
   a. Door panel (see **REAR DOOR PANEL REMOVAL/INSTALLATION**)
   b. Plastic cover, as necessary (see **COMPONENT LOCATION INDEX**)
2. Raise the glass fully.

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3. Disconnect the outer handle rod (A) from the latch (B).

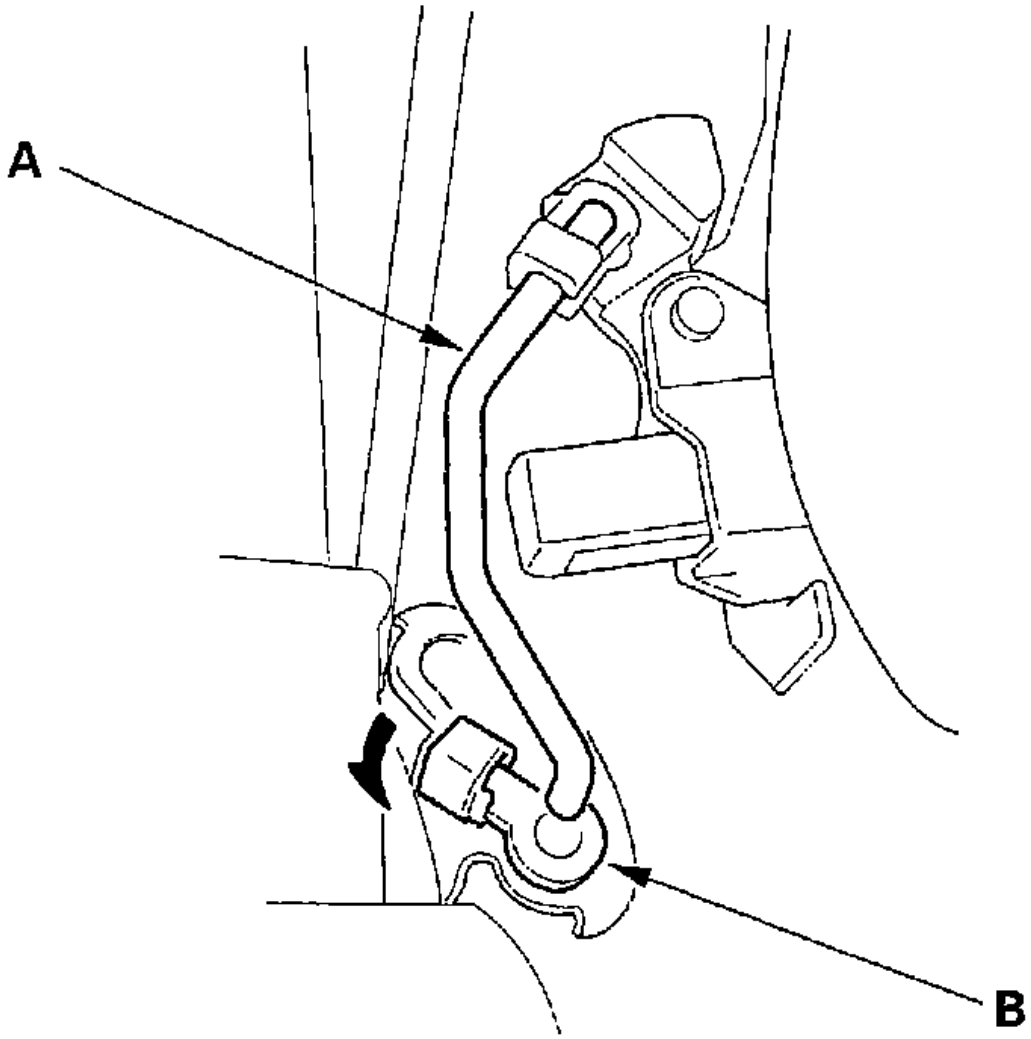


Fig. 42: Disconnecting The Outer Handle Rod

4. Remove the screws securing the latch (A), then lower it.

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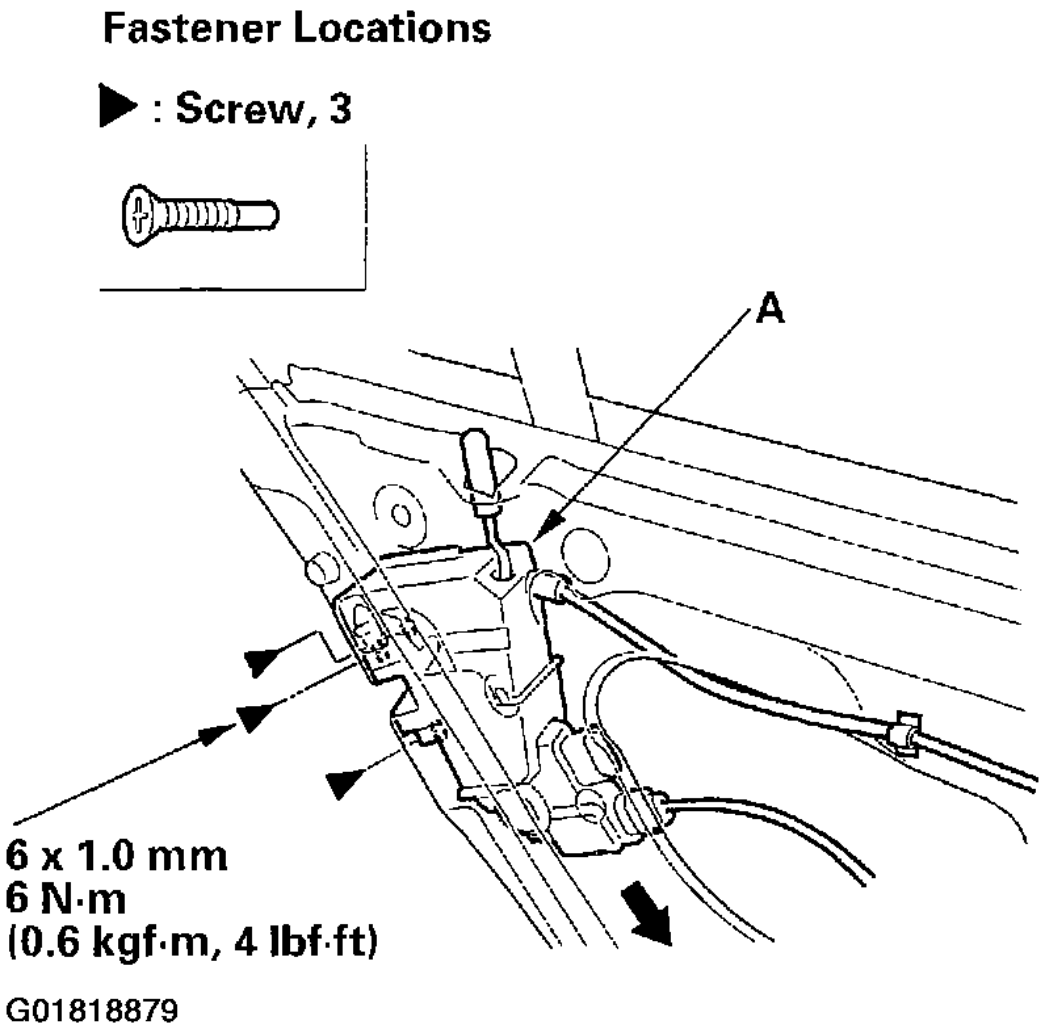


Fig. 43: Removing The Screws Securing The Latch

5. Remove the child lock cap (A) and bolt, then remove the protector (B).

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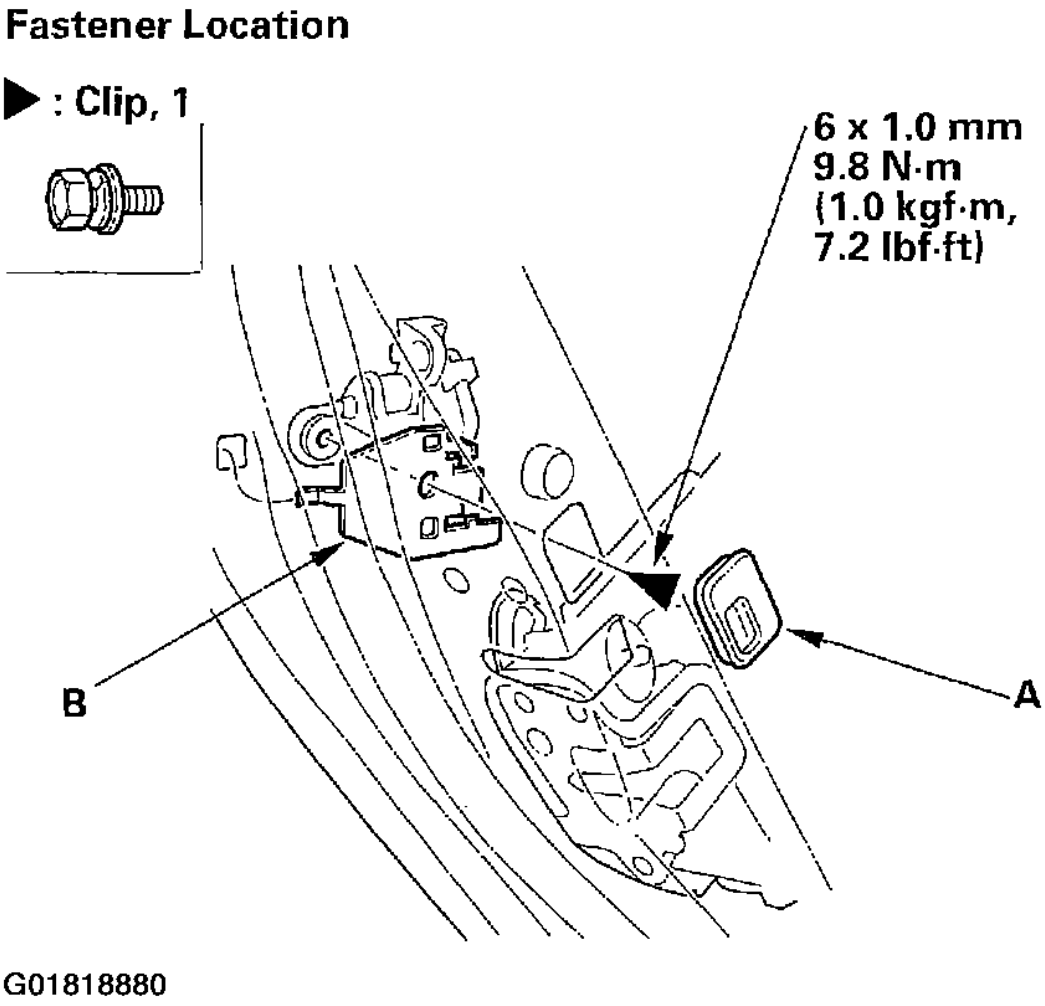


Fig. 44: Removing The Child Lock Cap & Bolt

6. Remove the bolt, then remove the spacer (A).

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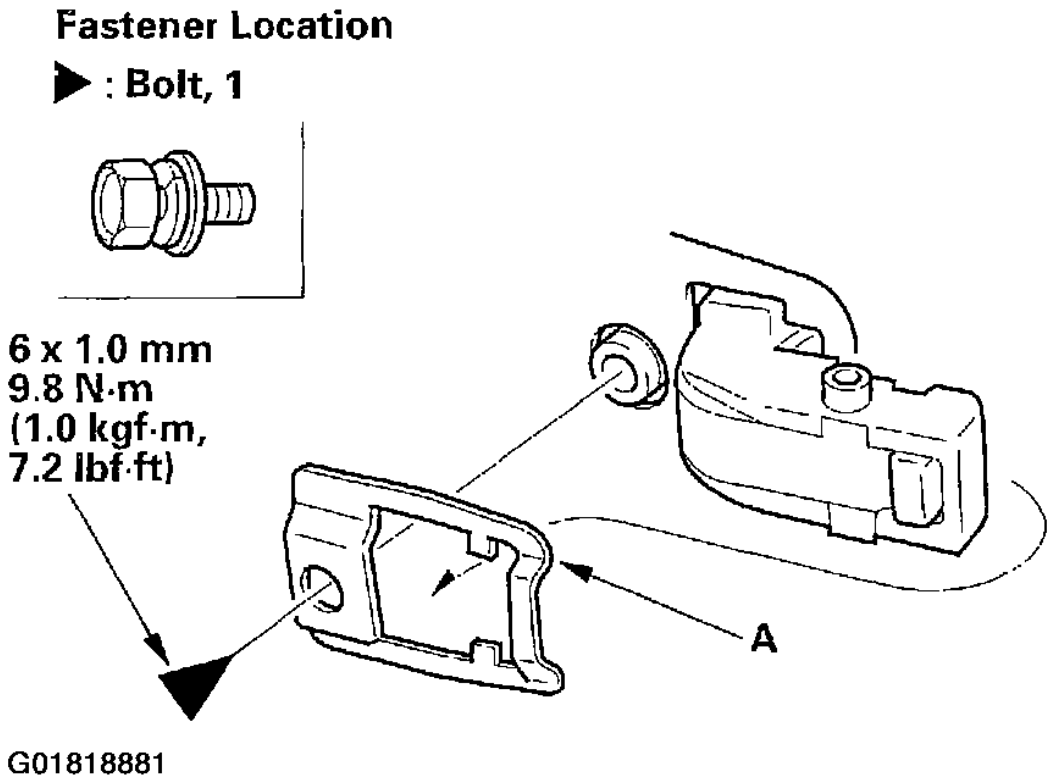


Fig. 45: Removing The Spacer

7. While pulling the outer handle (A), remove the handle from the holes in the door panel. Take care not to scratch the door.

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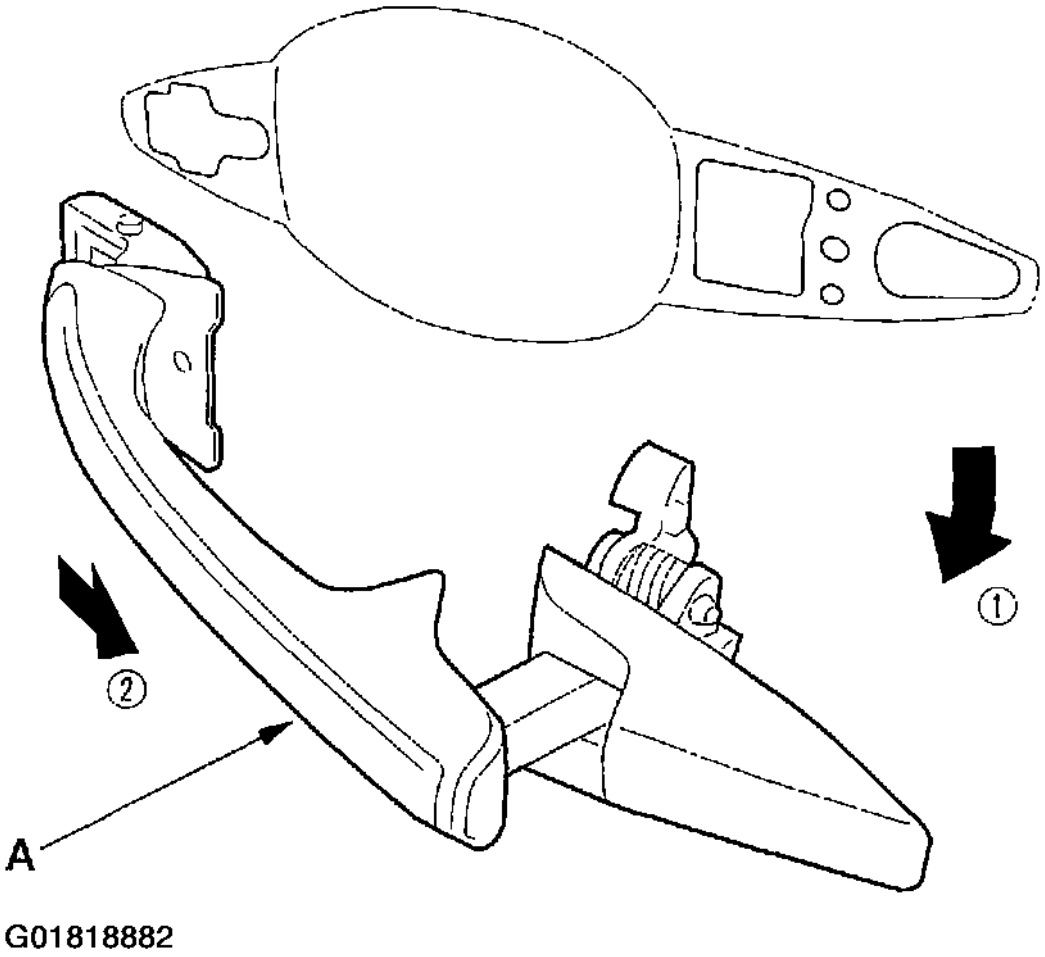


Fig. 46: Removing The Handle From The Holes In The Door Panel

8. Disconnect the outer handle rod (A) from the outer handle (B).

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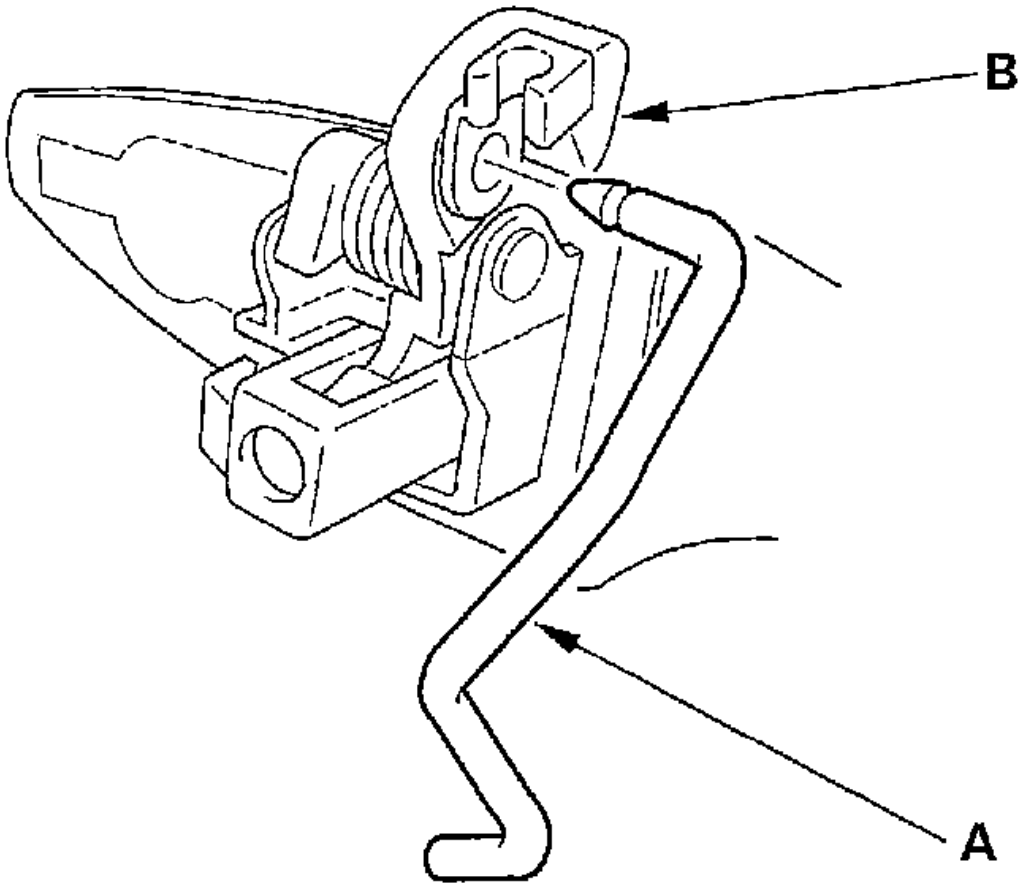


Fig. 47: Disconnecting The Outer Handle Rod

9. Install the handle in the reverse order of removal, and note these items:
   - Make sure the door locks and opens properly.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

REAR DOOR LATCH REPLACEMENT

NOTE: Put on gloves to protect your hands.

1. Remove these items:
   a. Door panel (see **REAR DOOR PANEL REMOVAL/INSTALLATION**)

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b. Plastic cover, as needed (see **COMPONENT LOCATION INDEX**)

2. Raise the glass fully.
3. Disconnect the outer handle rod from the latch (see step 3 of **REAR DOOR OUTER HANDLE REPLACEMENT**).
4. Disconnect the actuator connector(s) (A). Remove the screws securing the latch.

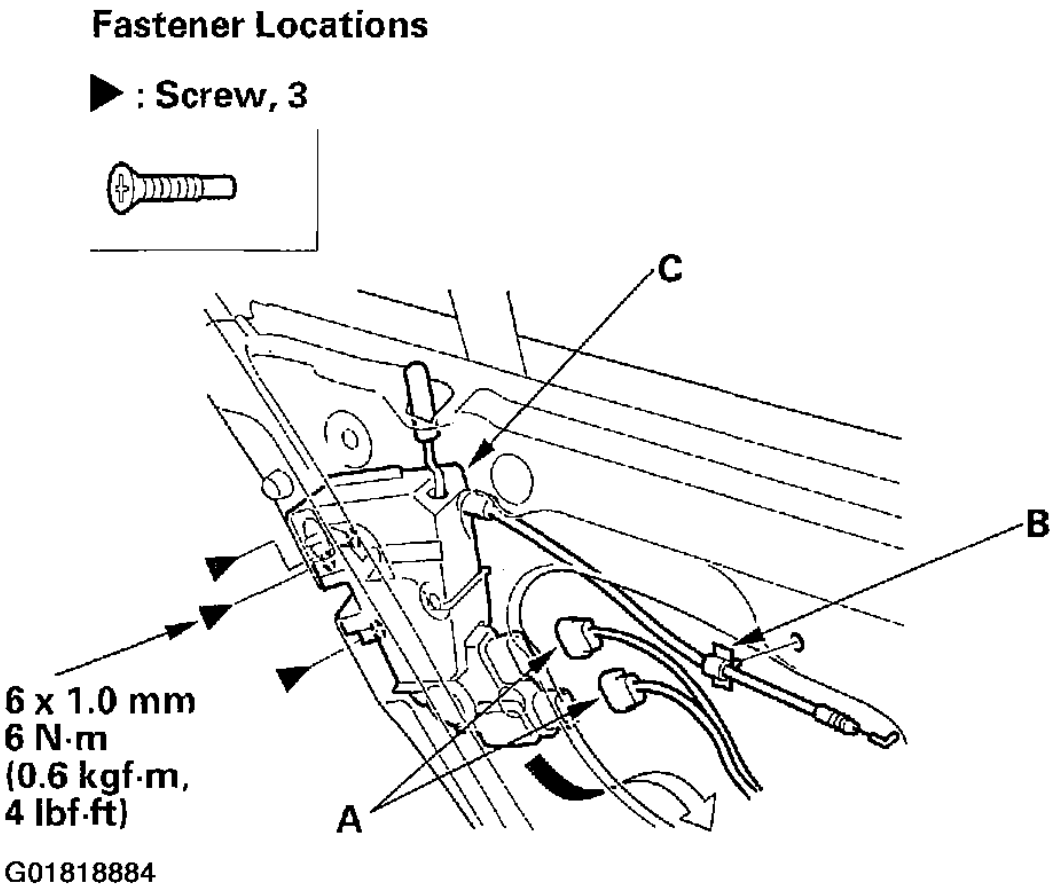


Fig. 48: Removing The Screws Securing The Latch

5. Detach the cable clip (B), then remove the latch (C) through the hole in the door. Take care not to bend the inner handle cable.
6. Install the latch in the reverse order of removal, and note these items:
   - Make sure the actuator connectors are plugged in properly.
   - Make sure the door locks and the window operates properly.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

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REAR DOOR GLASS & REGULATOR REPLACEMENT

NOTE: Put on gloves to protect your hands.

1. Remove these items:
   a. Door panel (see **REAR DOOR PANEL REMOVAL/INSTALLATION**)
   b. Plastic cover, as necessary (see **COMPONENT LOCATION INDEX**)
2. Carefully move the glass (A) until you can see the bolts, then remove them. Remove the glass from the regulator (B), and carefully lower the glass. Take care not to drop the glass inside the door.

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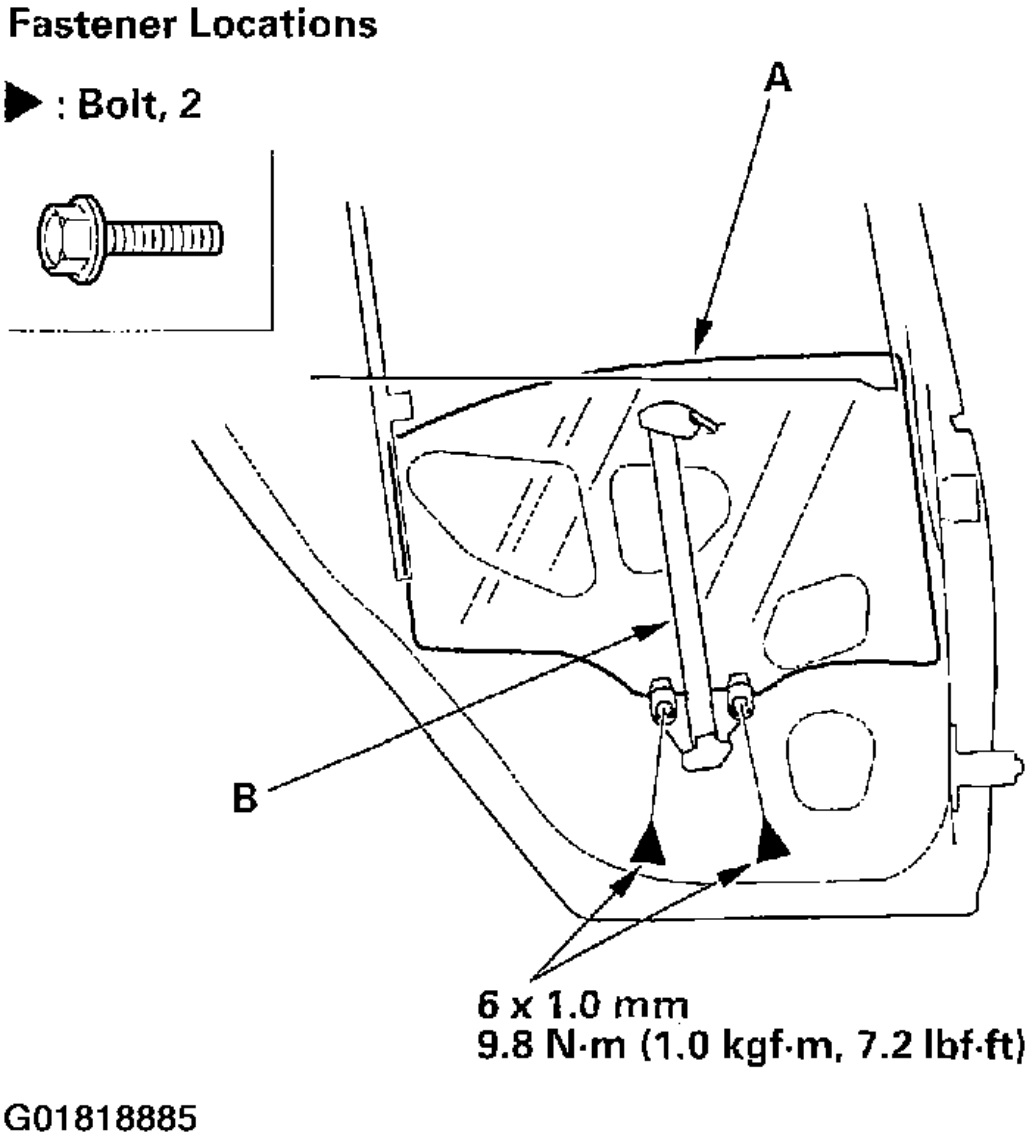


Fig. 49: Removing The Glass From The Regulator

3. Pull the glass run channel (A) away as needed. Pull the door weatherstrip (B) away as needed, then remove the screw (C) with a Torx T15 bit. Remove the bolt (D) securing the center channel (E).

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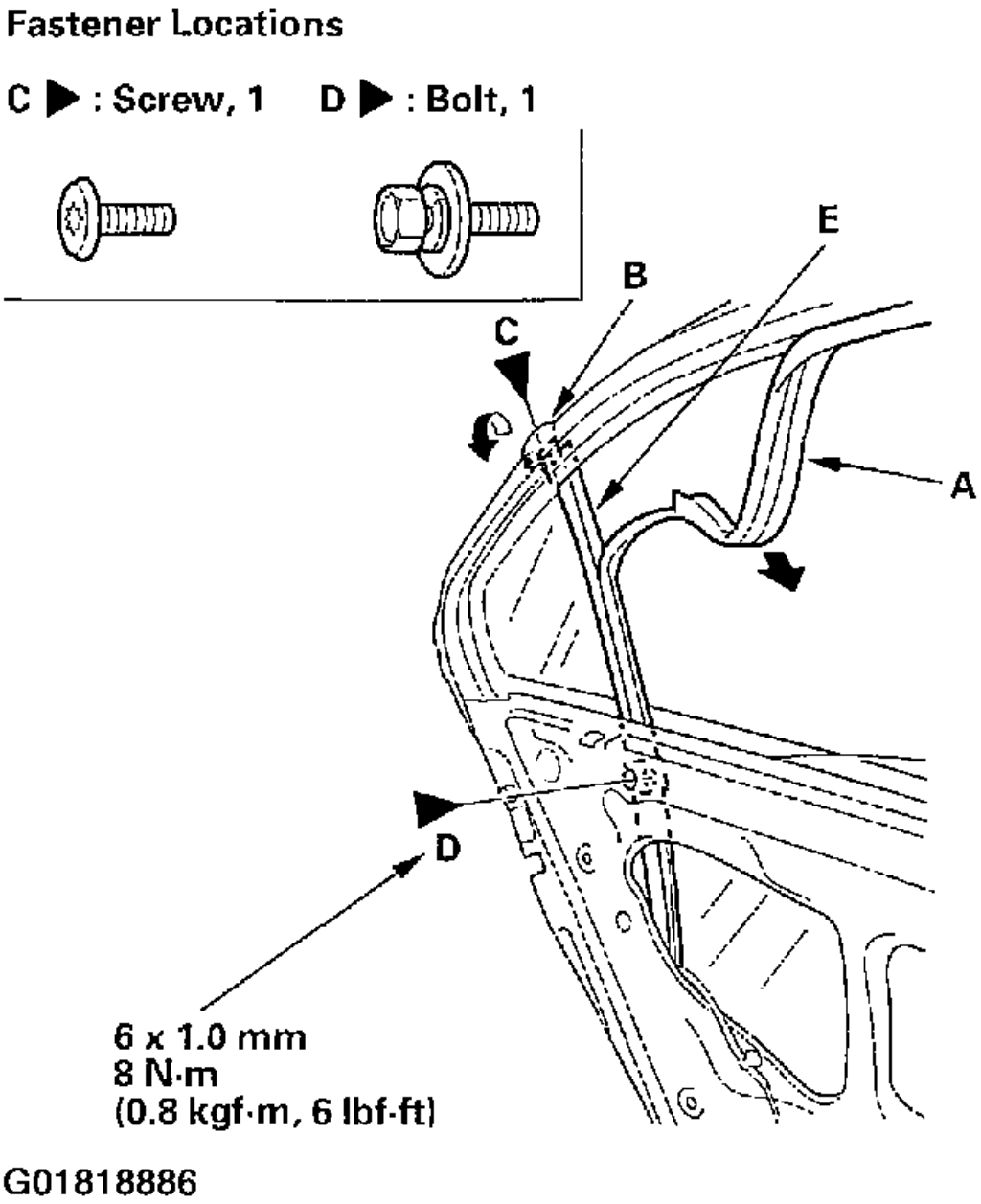


Fig. 50: Pulling The Door Weatherstrip Away

4. Pull the upper portion of the center channel (A) forward to remove it from the door quarter glass seal (B), then pull the glass run channel (C) out from the groove of the center lower channel. Take care not to damage the outer weatherstrip (D).

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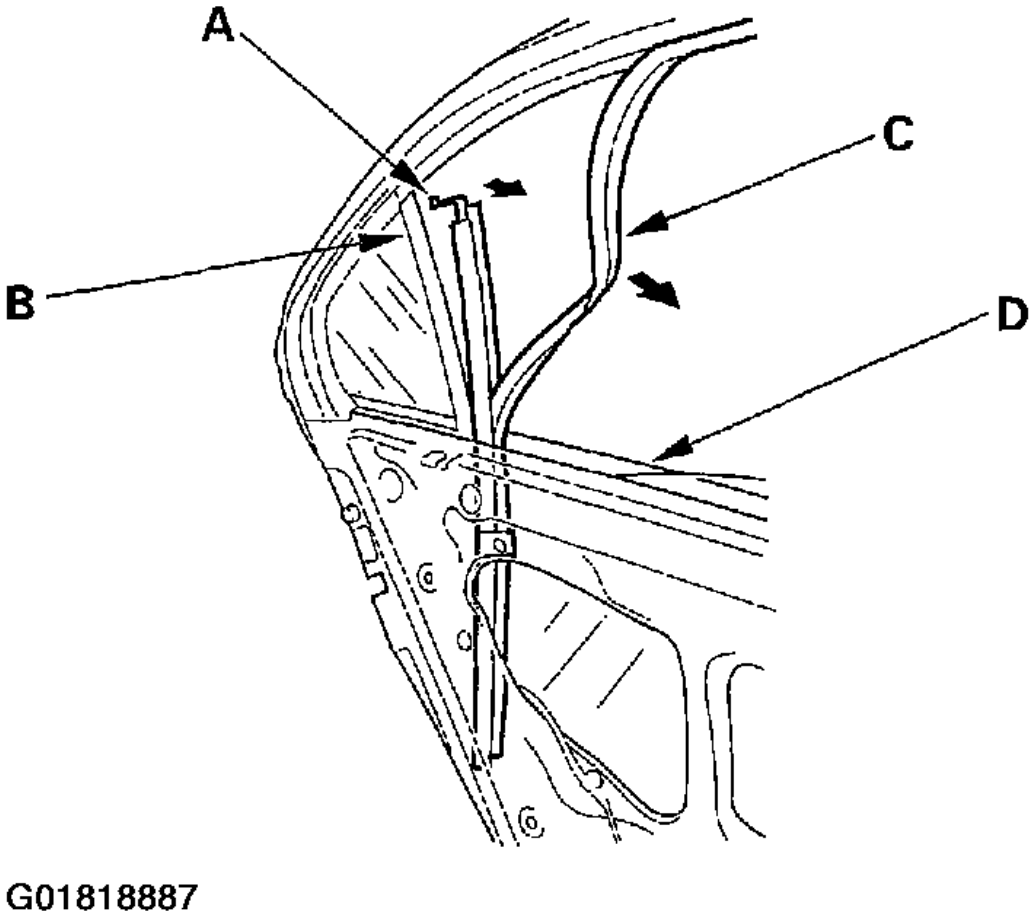


Fig. 51: Pulling The Glass Run Channel Out From The Groove Of The Center Lower Channel

5. Lower the center channel (A) entirely inside the door, then pull out the channel through the hole in the door.

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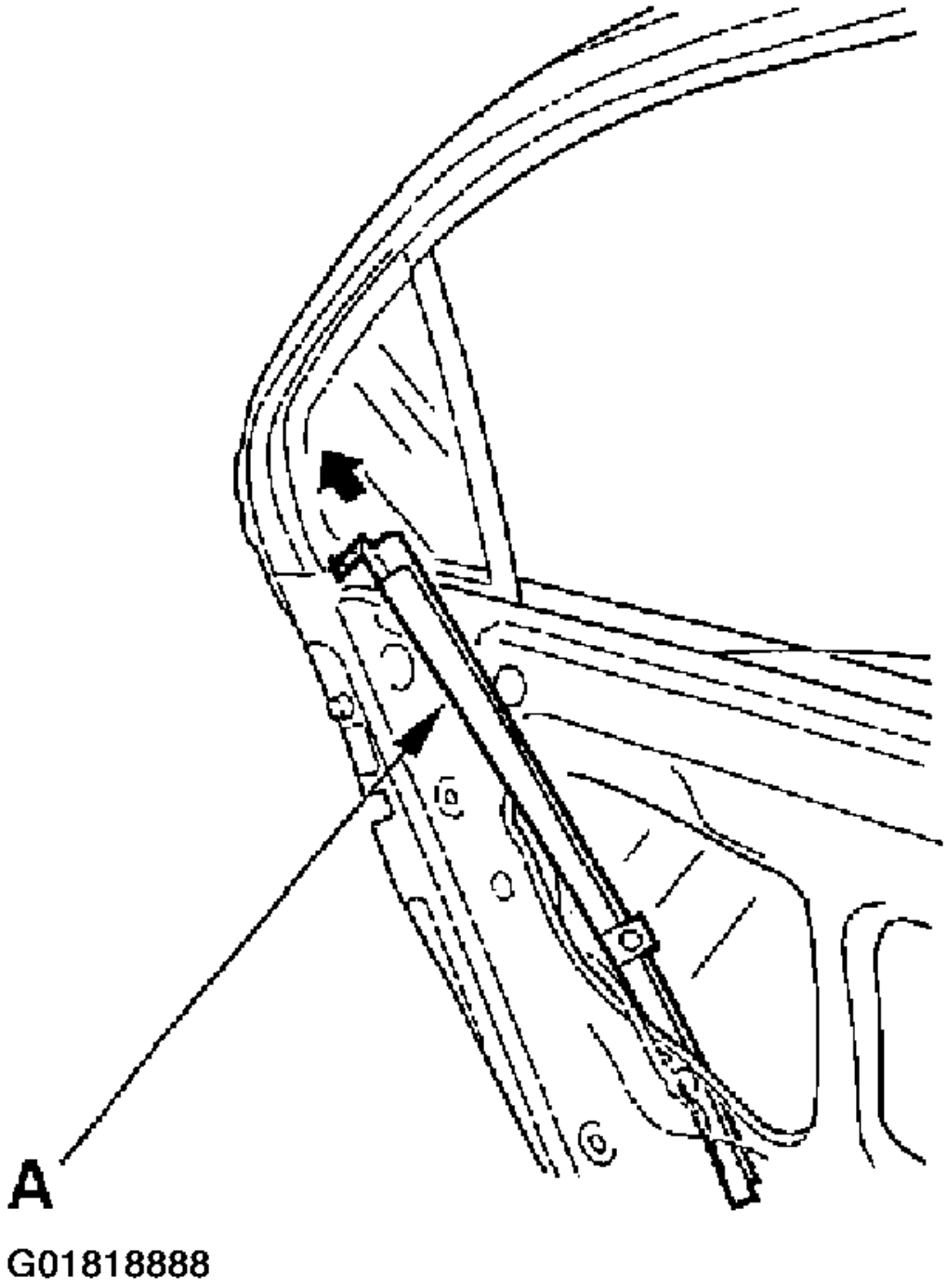


Fig. 52: Removing Glass Run Channel

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6. Remove the quarter glass (A). Take care not to damage the outer weatherstrip (B).

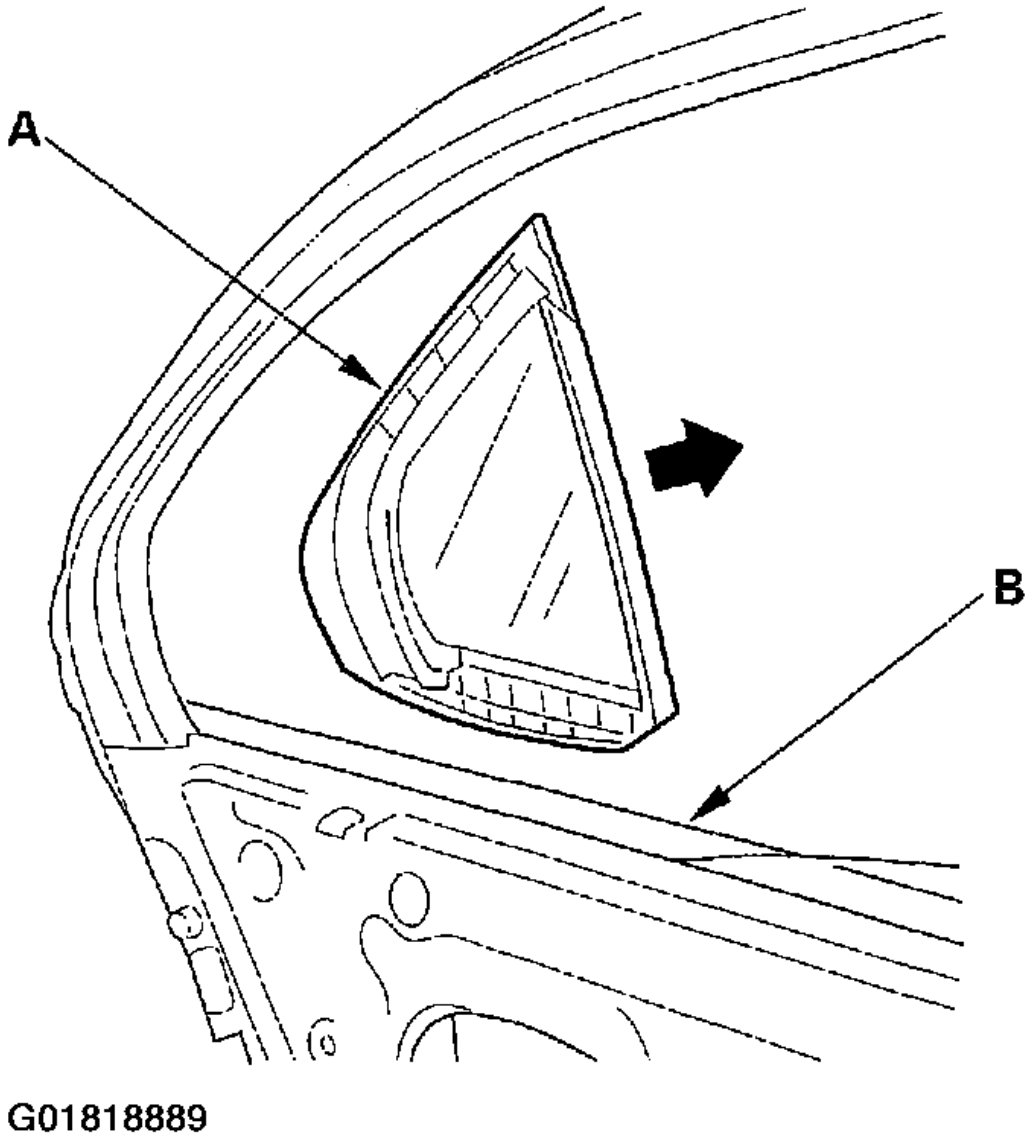


Fig. 53: Removing The Quarter Glass

7. Carefully remove the glass (A) out through the window slot. Take care not to drop the glass inside the door.

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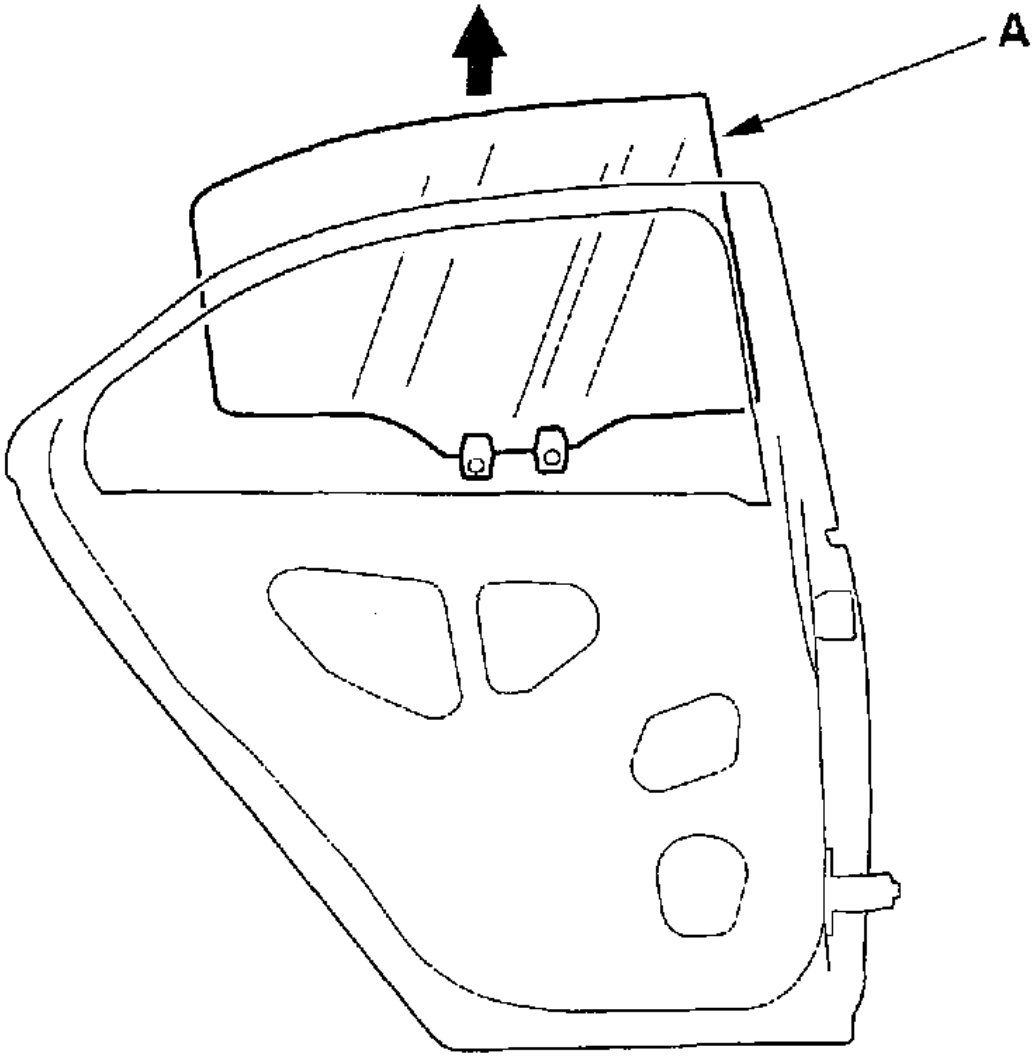


Fig. 54: Removing The Glass

8. Disconnect the connector (A) from the regulator (B).

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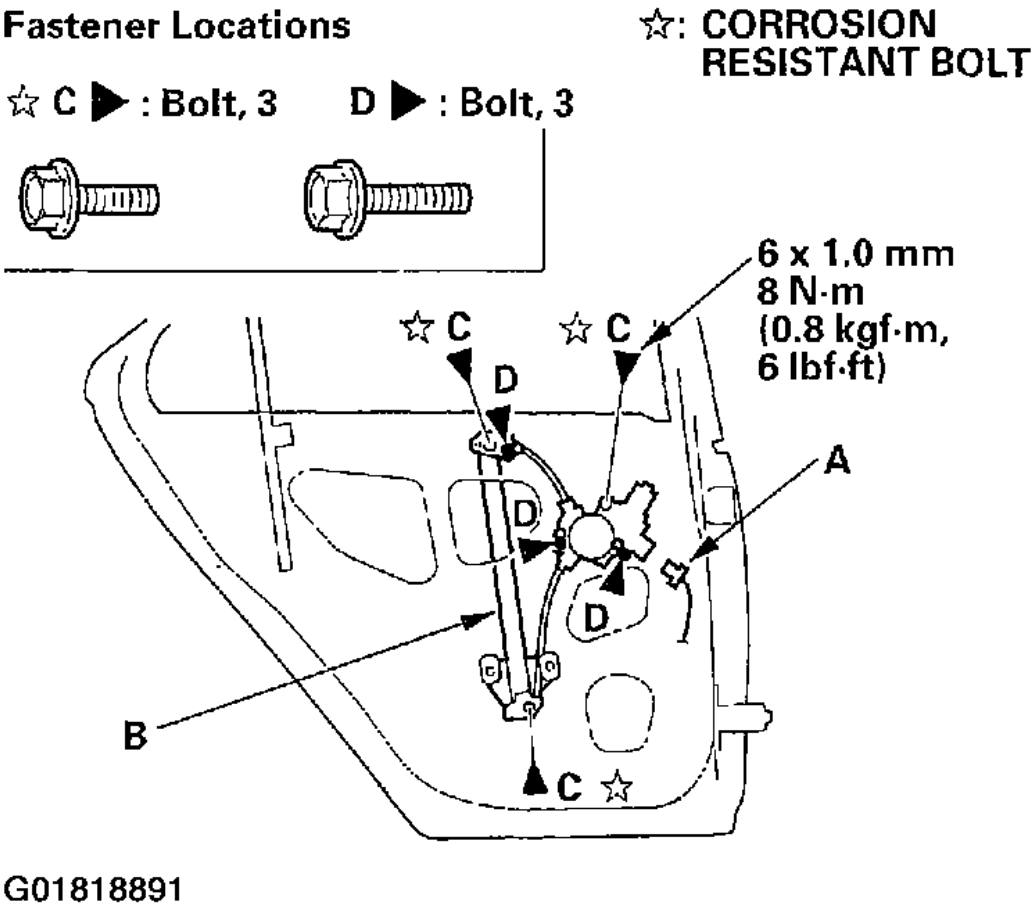


Fig. 55: Removing The Regulator

9. Remove the bolts (C), and loosen the bolts (D), then remove the regulator through the hole in the door.
10. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.

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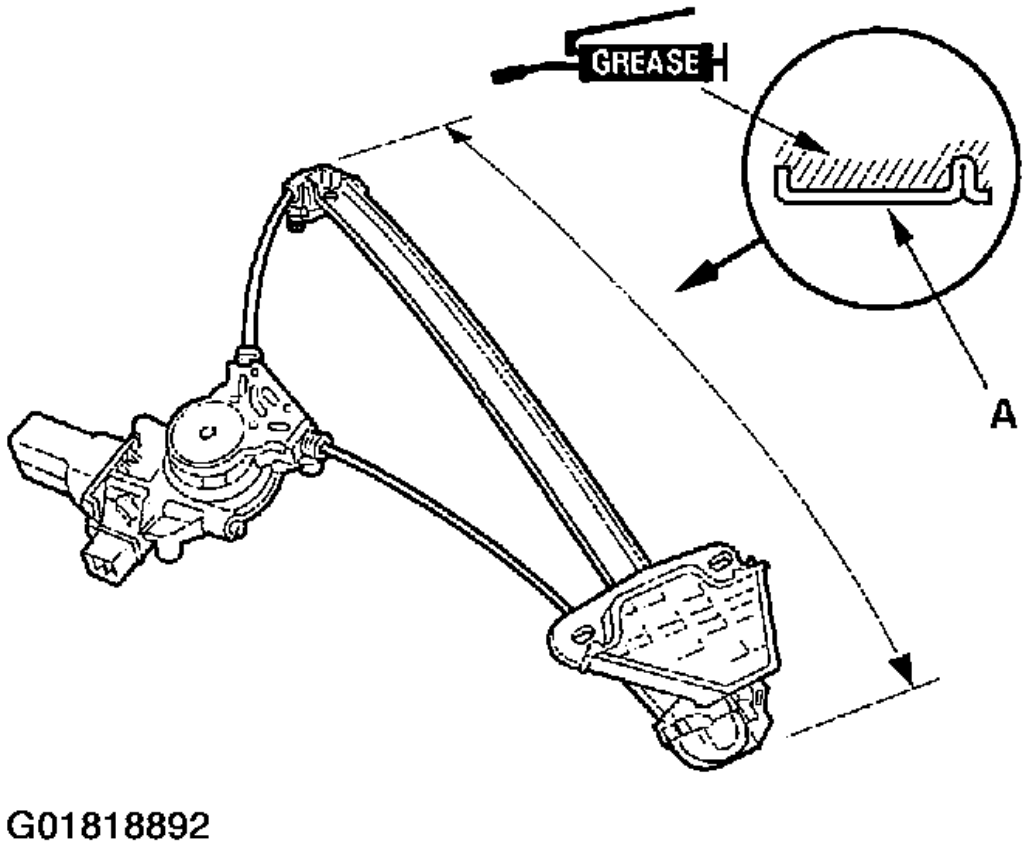


Fig. 56: Applying Multipurpose Grease To The Regulator

11. Install the glass and regulator in the reverse order of removal, and note these items:
    - Never use any kind other than the corrosion resistant bolts where these special bolts were installed in. If other bolts are used, electrolysis may accelerate corrosion around tightening points, resulting in loosening of the joints.
    - Roll the glass up and down to see if it moves freely without binding.
    - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
    - Adjust the position of the glass as necessary (see **FRONT & REAR DOOR GLASS ADJUSTMENT**).
    - Check for water leaks (see step 7 of **FRONT & REAR DOOR GLASS ADJUSTMENT**).
    - Test-drive and check for wind noise and rattles.
    - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

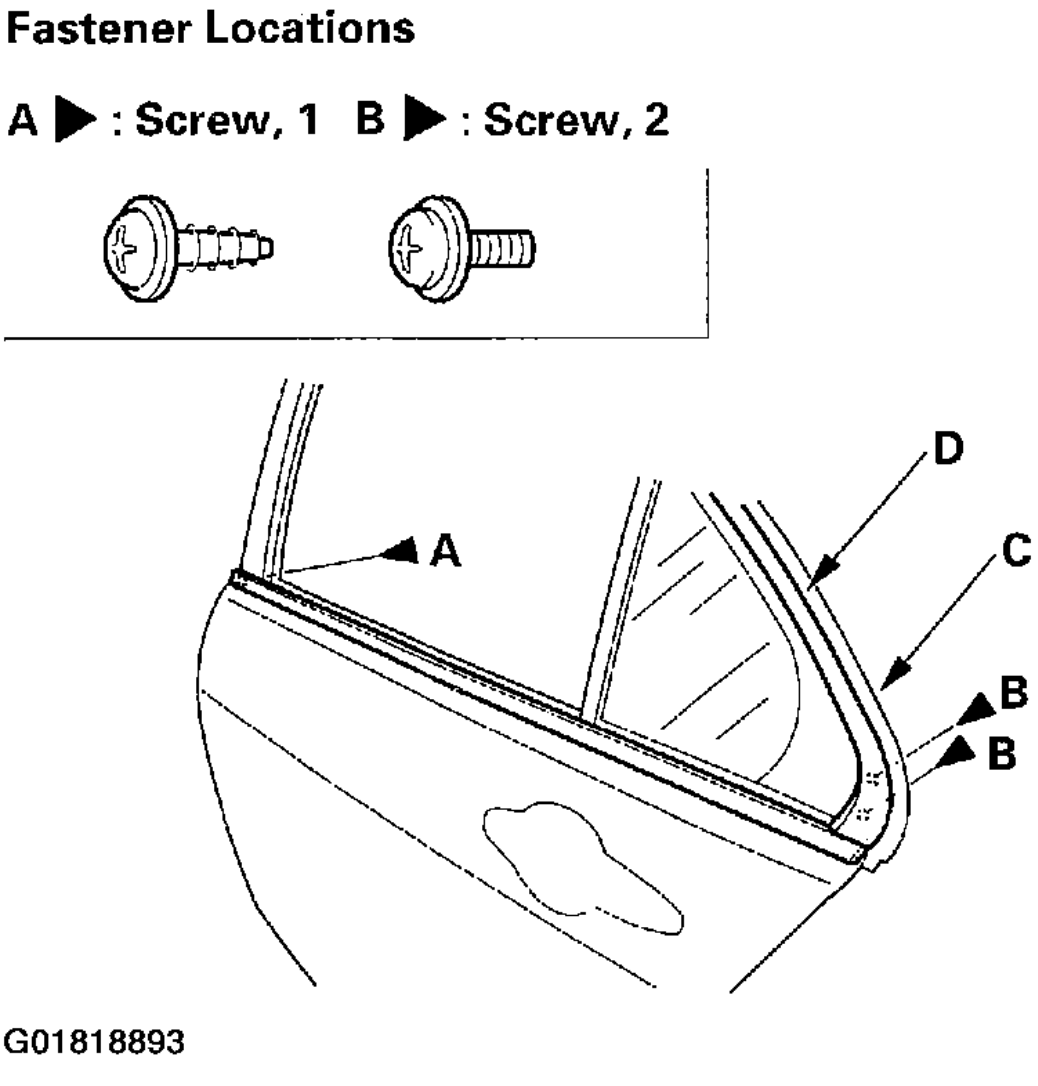
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REAR DOOR GLASS OUTER WEATHERSTRIP REPLACEMENT

NOTE:

- **Once you remove the door glass outer weatherstrip, replace it with a new one because it will bend during removal.**
- **Put on gloves to protect your hands.**
- **Take care not to scratch the door.**

1. Remove the door panel (see **REAR DOOR PANEL REMOVAL/INSTALLATION**).
2. Remove the screw (A) from the front edge of the door, and screws (B) fastening the rear portion of the door weatherstrip (C), sash, and the door outer molding (D).



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Fig. 57: Removing Door Outer Molding Fasteners

3. Starting at the front, pull the door glass outer weatherstrip (A) up at each portion where the inner molding (B) catches the inside edge of the window slot. Take care not to bend the door outer molding (C).

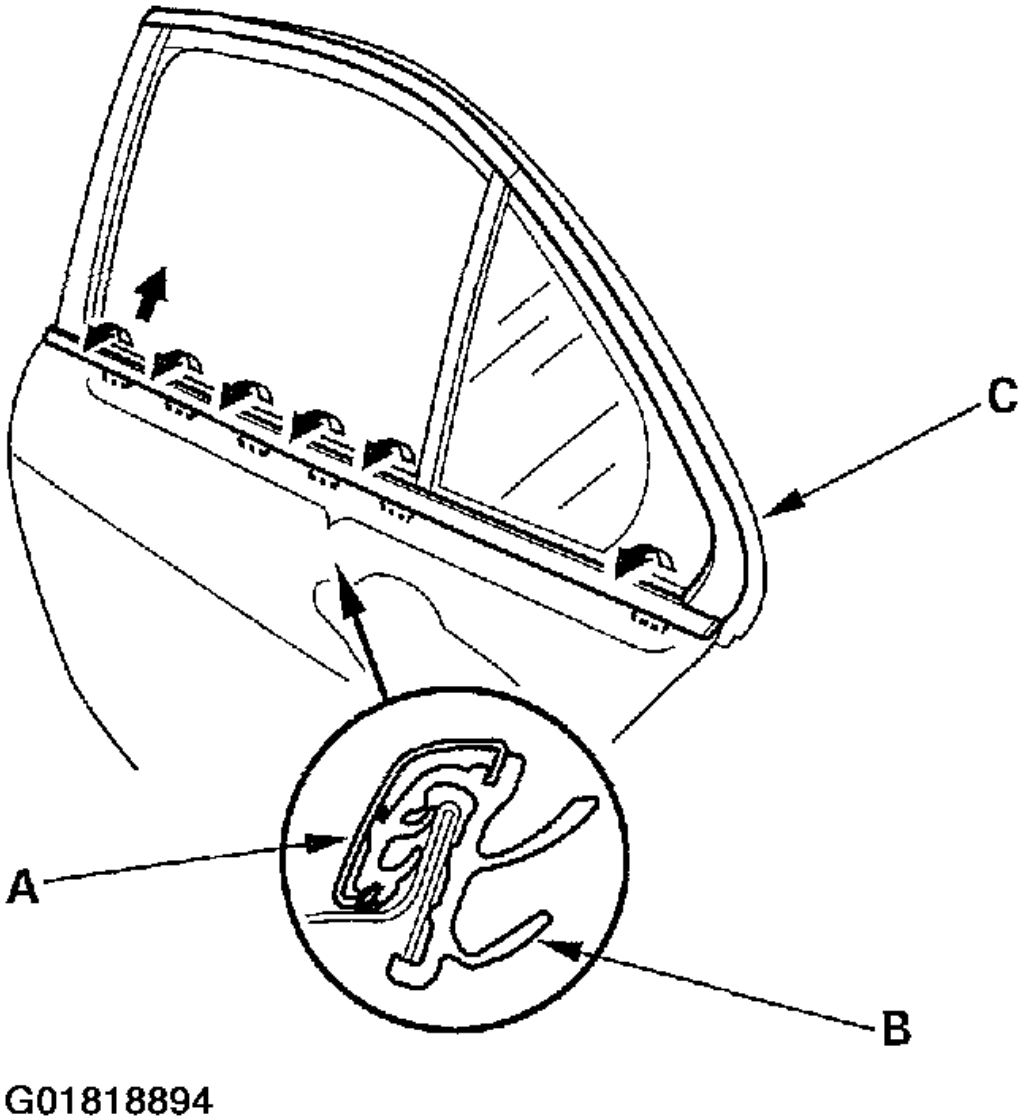


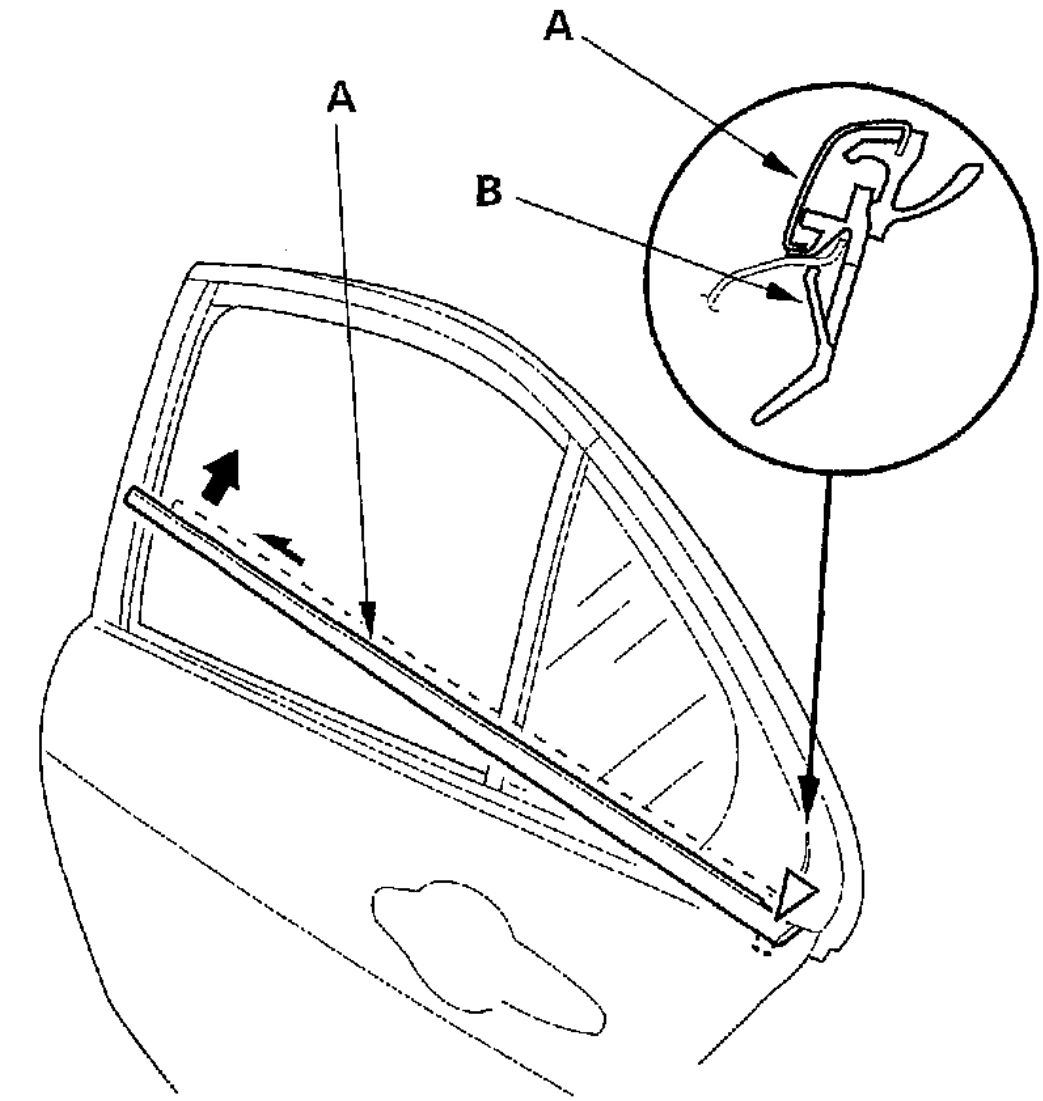
Fig. 58: Removing Door Outer Molding

4. First slide the door glass outer weatherstrip (A) forward slightly, detach the rear clip (B) by pulling the front of the weatherstrip up, then remove the weatherstrip.

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Fastener Location

B ▷: Clip, 1



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Fig. 59: Removing Door Glass Outer Weatherstrip

5. Install a new weatherstrip in the reverse order of removal.

REAR DOOR OUTER MOLDING REPLACEMENT

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NOTE:

- **Once you remove the door outer molding, replace it with a new one because it will bend during removal.**
- **Put on gloves to protect your hands.**
- **Take care not to scratch the door.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**

1. Remove the screws fastening the rear of the door weatherstrip (A), sash, and the door outer molding (B).

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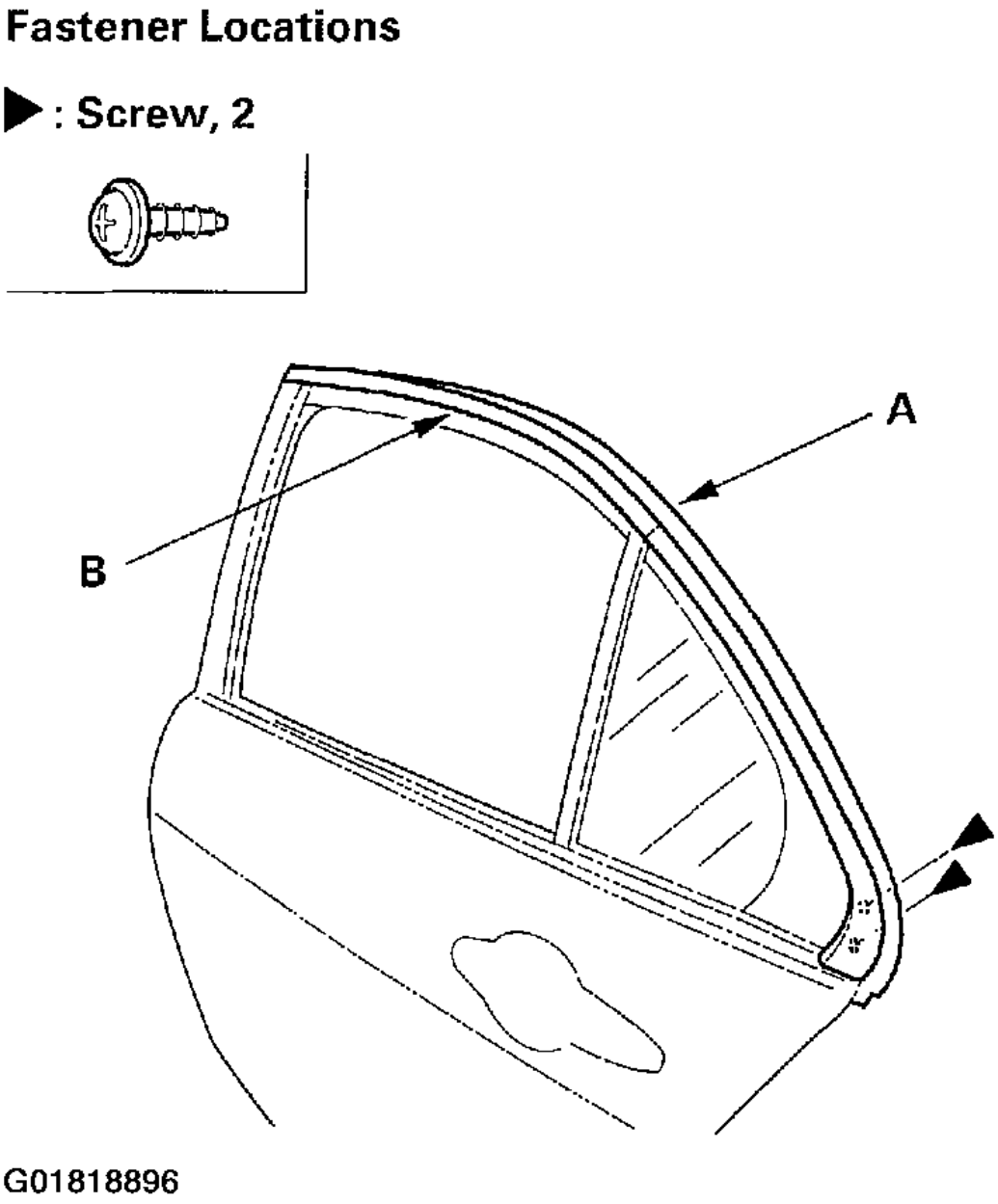


Fig. 60: Removing The Screws Fastening The Rear Of The Door Weatherstrip

2. Pry the front clip with a flat-tip screwdriver.

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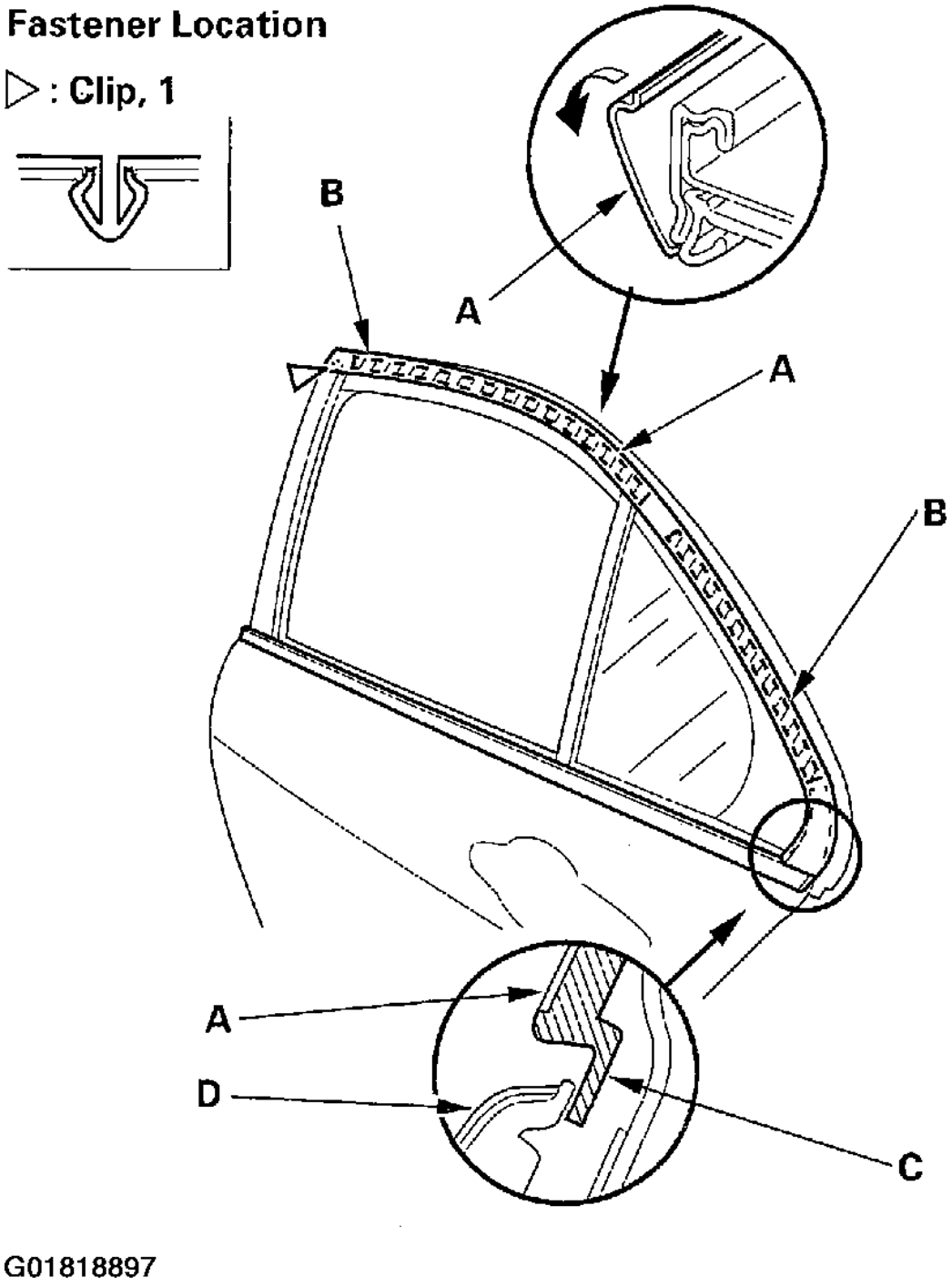


Fig. 61: Prying The Front Clip

3. While removing the upper edge of the door outer molding (A) from the edge of the sash, cut the double-

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sided adhesive tapes (B) with a utility knife, then remove the molding.

4. Scrape off the remaining double-sided adhesive tape from the sash, then clean the sash surface with a sponge dampened in alcohol.
5. Install new door outer molding in the reverse order of removal, and note these items.
   - Push the clip and the adhesive portions into place securely.
   - Make sure the upper and lower sides of the molding are catching the edges of the sash properly.
   - Make sure the seal (C) at the bottom of the molding is under the door glass outer weatherstrip (D).

REAR DOOR WEATHERSTRIP REPLACEMENT

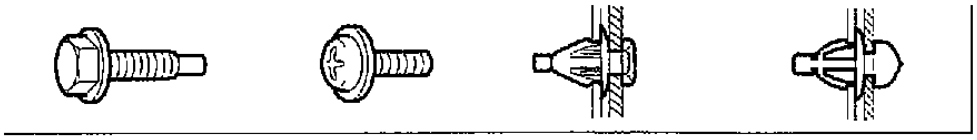
NOTE:
- **Take care not to scratch the door.**
- **Use a clip remover to remove the clips.**

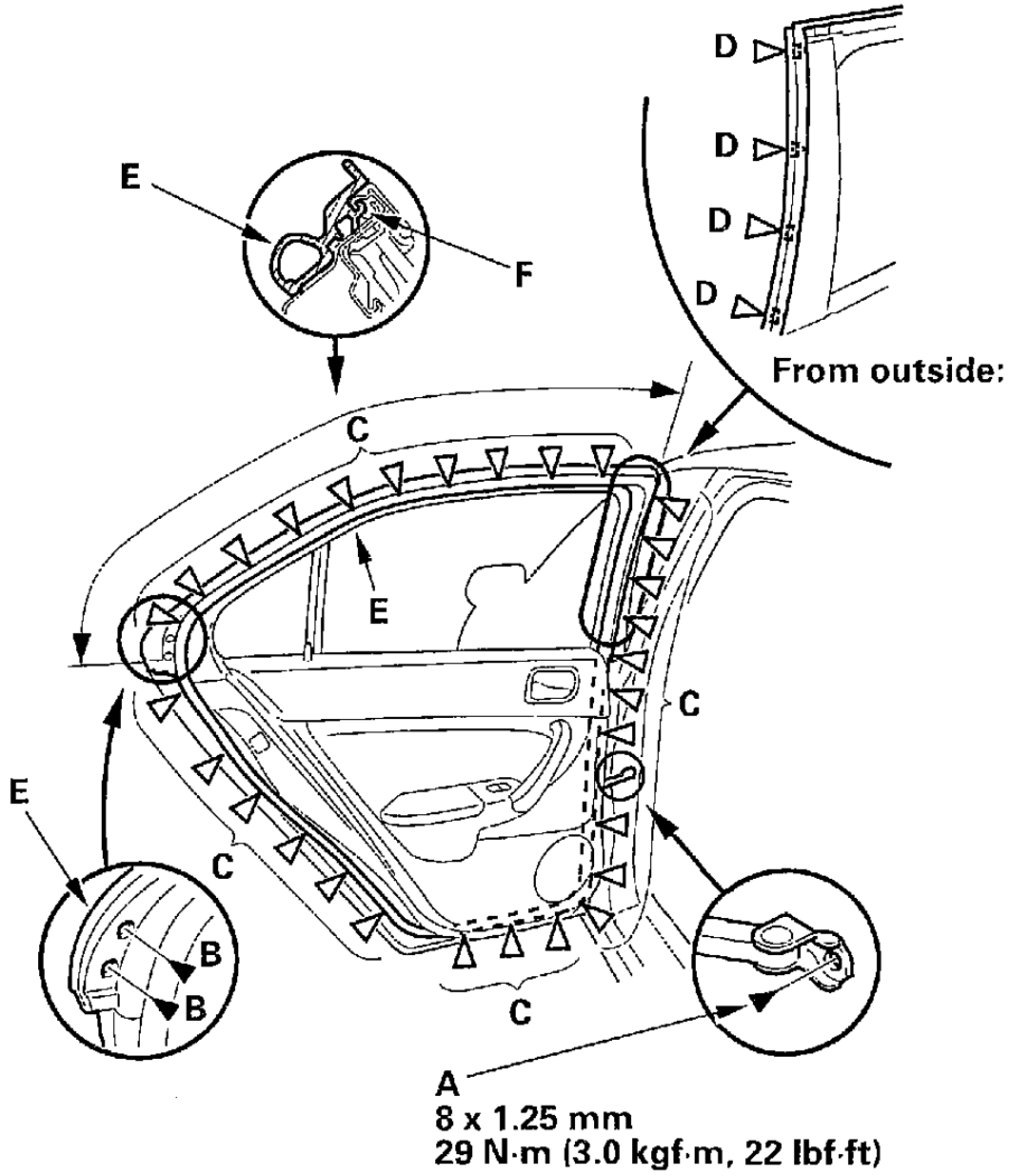
1. At the B-pillar, remove the door stop mounting bolt (A).

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Fastener Locations

A ▶ : Bolt, 1 B ▶ : Screw, 2 C ▷ : Clip, 30 D ▷ : Clip, 4





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Fig. 62: Removing The Door Stop Mounting Bolt

2. Remove the screws (B) securing the rear of the door weatherstrip (C).
3. Detach the clip (C, D), then remove the door weatherstrip (E).
4. Install the weatherstrip in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the weatherstrip is installed in the holder (F) securely.
   - Apply liquid thread lock to the door stop mounting bolt before installation.
   - Check for water leaks (see step 7 of **FRONT & REAR DOOR GLASS ADJUSTMENT**).

REAR DOOR HOOK PIN & CATCH REPLACEMENT

1. With a Torx T40 bit, remove the door hook pin (A) from the door.

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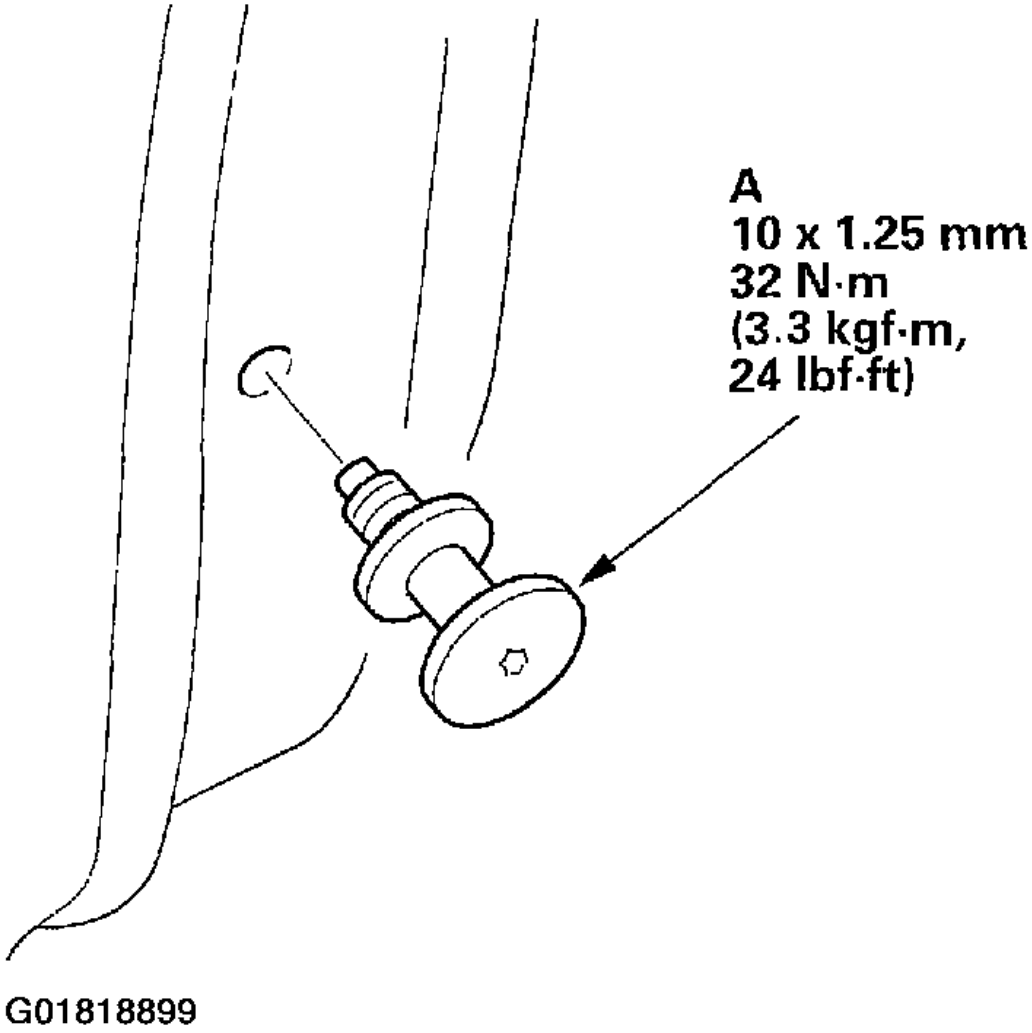


Fig. 63: Removing The Door Hook Pin From The Door

2. With a Torx T40 bit, remove the bolts, then remove the door catch (A) from the body.

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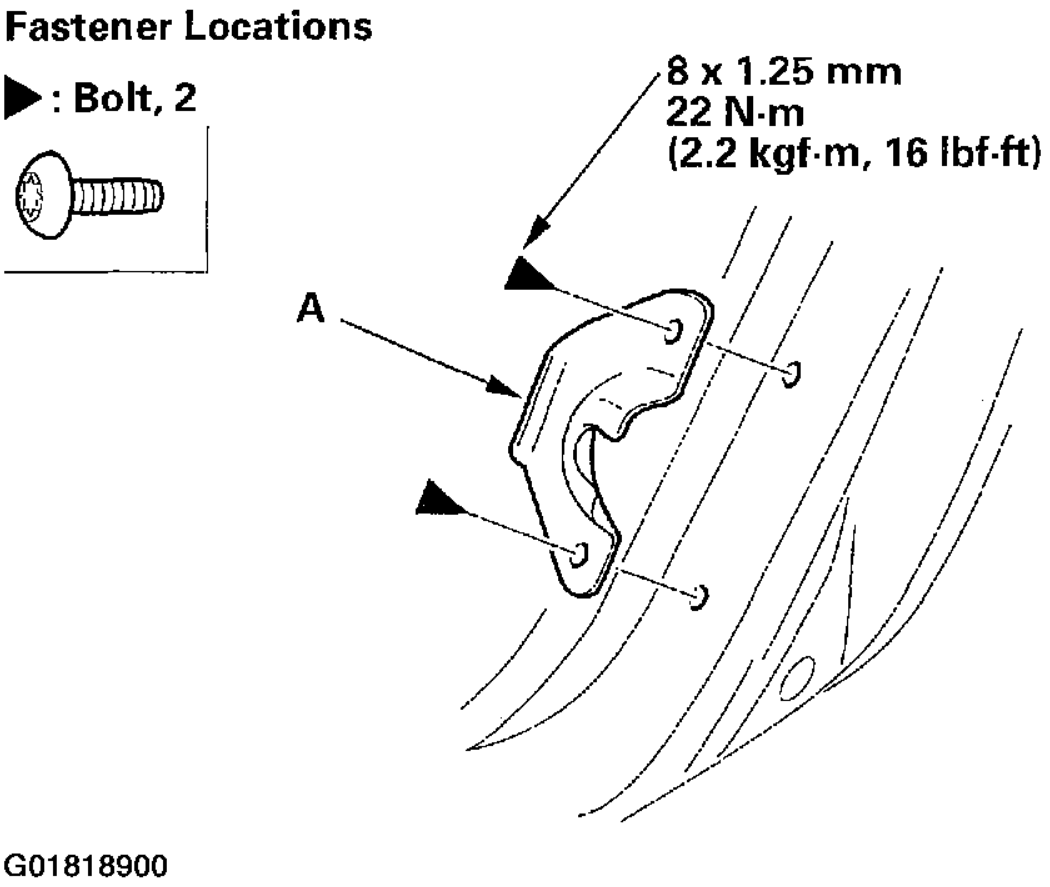


Fig. 64: Removing The Door Catch From The Body

3. Install the hook pin and catch in the reverse order of removal, and apply liquid thread lock to the threads of the door hook pin.

FRONT & REAR DOOR GLASS ADJUSTMENT

NOTE:

- **Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.**
- **Wipe the run channel clean with a shop towel.**
- **Lubricate the run channel with Shin-Etsu grease P/N 08798-9013.**

1. Place the vehicle on a firm, level surface.
2. Remove these items:
   a. Door panel, front door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**), rear door (see **REAR DOOR PANEL REMOVAL/INSTALLATION**)

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b. Plastic cover, front door (see **COMPONENT LOCATION INDEX**), rear door (see **COMPONENT LOCATION INDEX**)

3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.

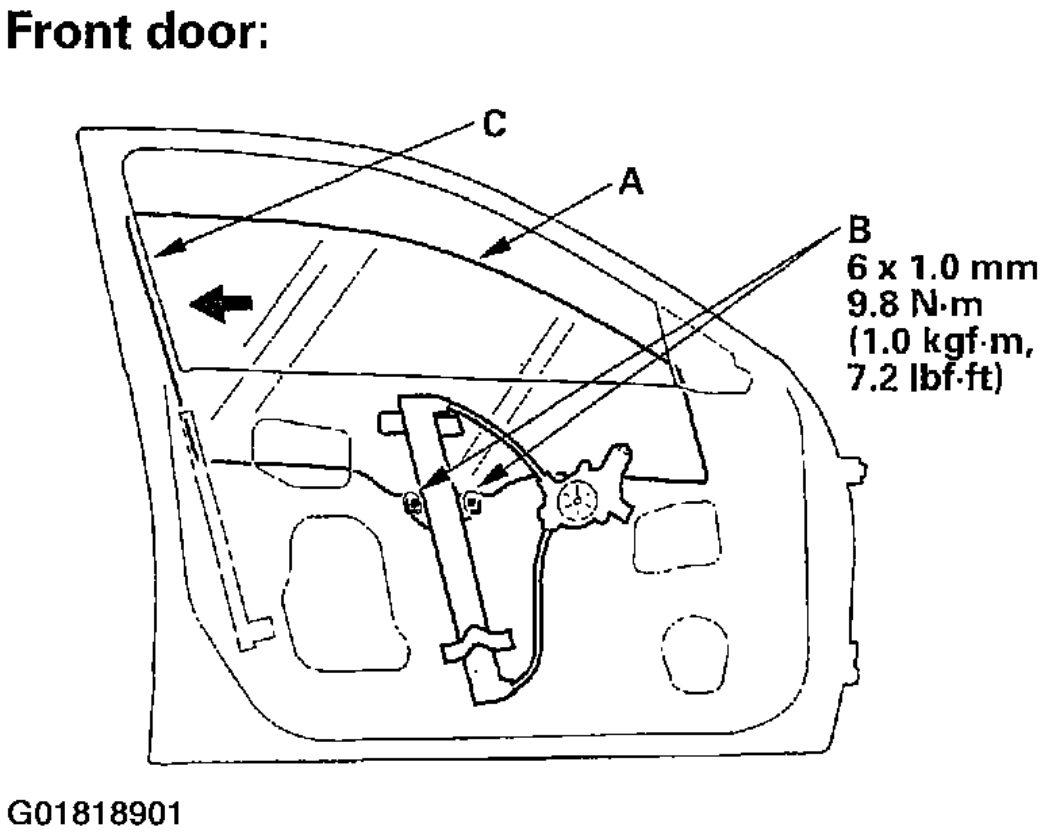


Fig. 65: Loosening Front Door Glass Mounting Bolts

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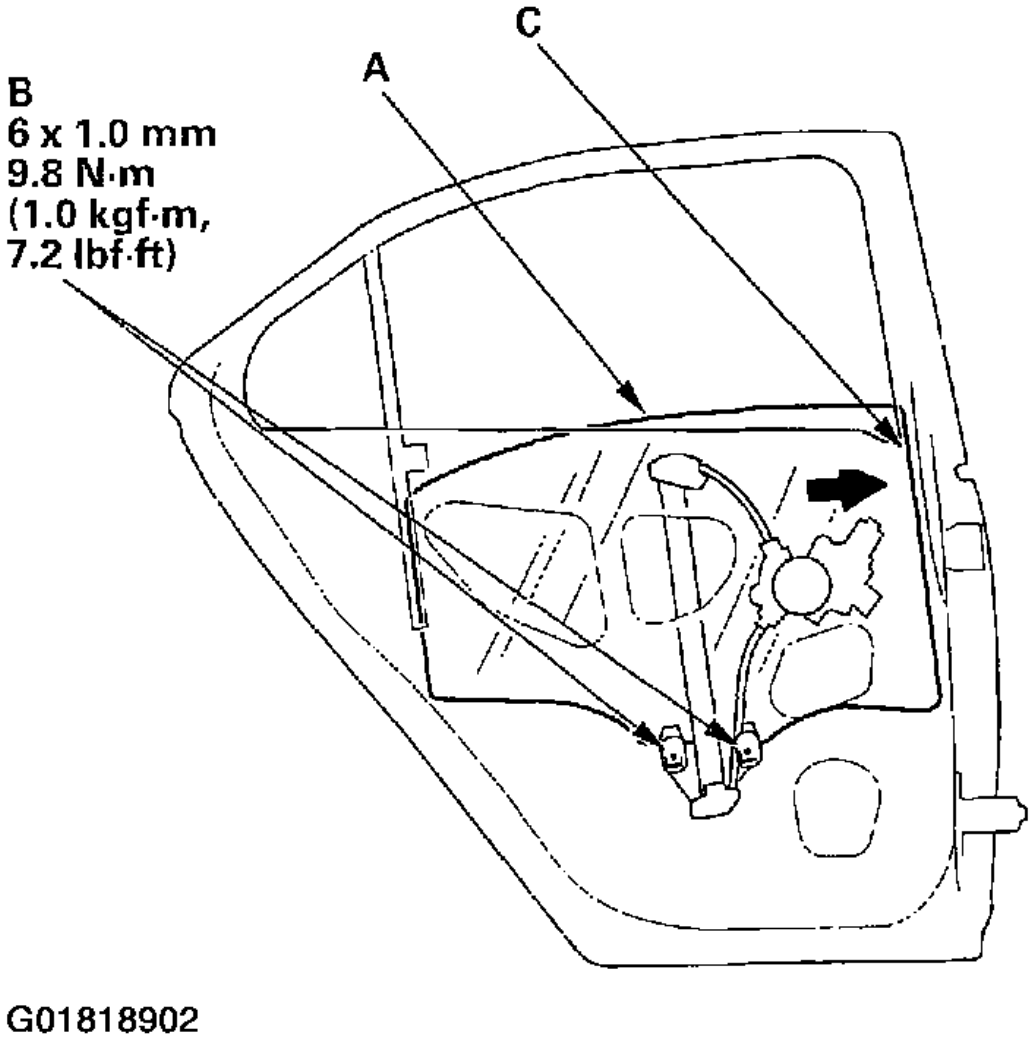


Fig. 66: Loosening Rear Door Glass Mounting Bolts

4. Push the glass (A) against the channel (C), then tighten the glass mounting bolts.
5. Make sure that the glass moves smoothly.
6. Raise the glass fully, and check for gaps. Also check that the glass (A) contacts the glass run channel (B) evenly.

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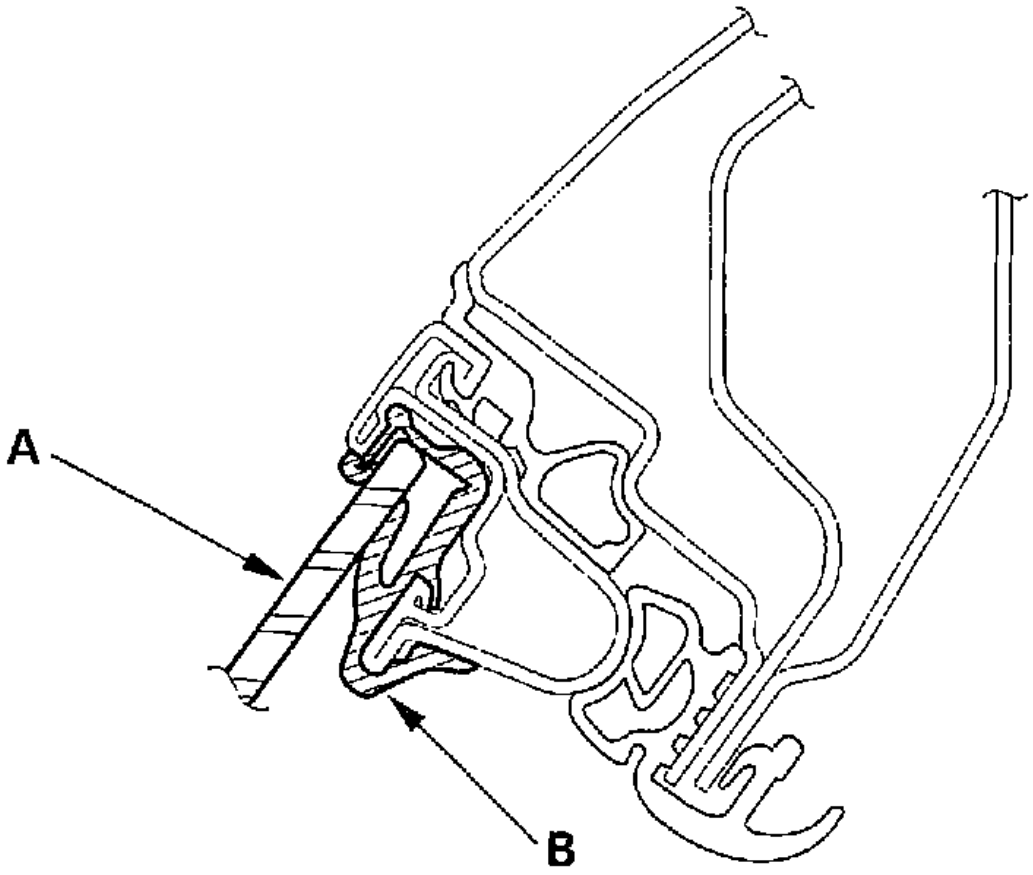


Fig. 67: Checking That The Glass Contacts The Glass Run Channel Evenly

7. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:
   - Use a 12 mm (0.47 in.) diameter hose (A).
   - Adjust the rate of water flow as shown (B).
   - Do not use a nozzle.
   - Hold the hose about 300 mm (12 in.) away from the door (C).

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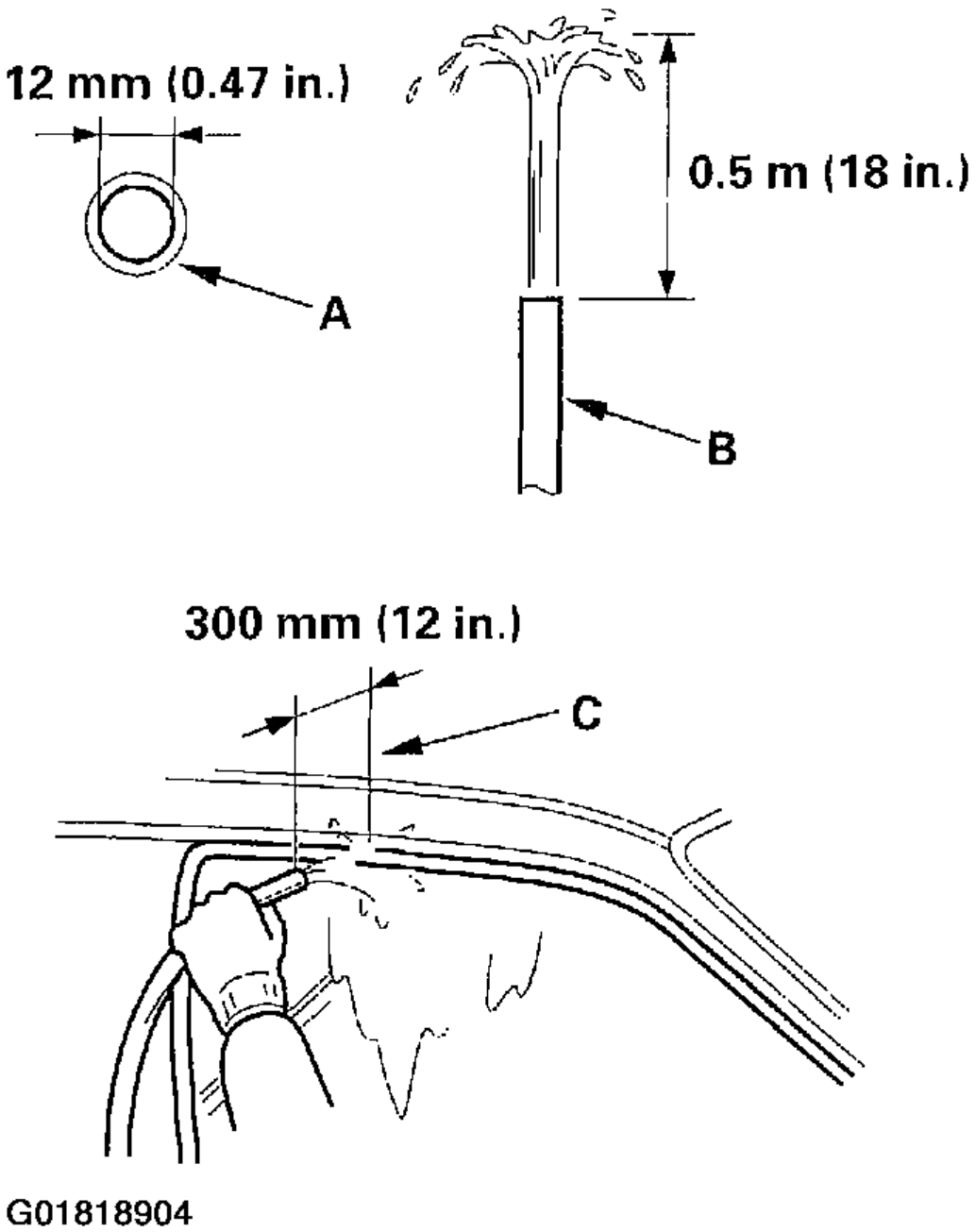


Fig. 68: Checking For Water Leaks

8. Attach the plastic cover, and install the door panel, front door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**), rear door (see **REAR DOOR PANEL REMOVAL/INSTALLATION**).

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FRONT & REAR DOOR POSITION ADJUSTMENT

SRS components are located in the B-pillar bottom area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and body edges are parallel.

1. Place the vehicle on a firm, level surface when adjusting the doors.
2. Adjust at the hinges (A):
   - On the front door: Remove the front inner fender (see **FRONT INNER FENDER REPLACEMENT**) and front fender fairing (see **FRONT FENDER FAIRING REPLACEMENT**). Loosen the hinge mounting bolts (B) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.
   - On the rear door: Remove the B-pillar lower trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**) and remove the front seat belt and retractor (see **AIR BAG RESTRAINT SYSTEMS**), and the plug seal from the body. Loosen the hinge mounting nuts (C) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.
   - Place a shop towel (D) on the jack (E) to prevent damage to the door when adjusting the door.

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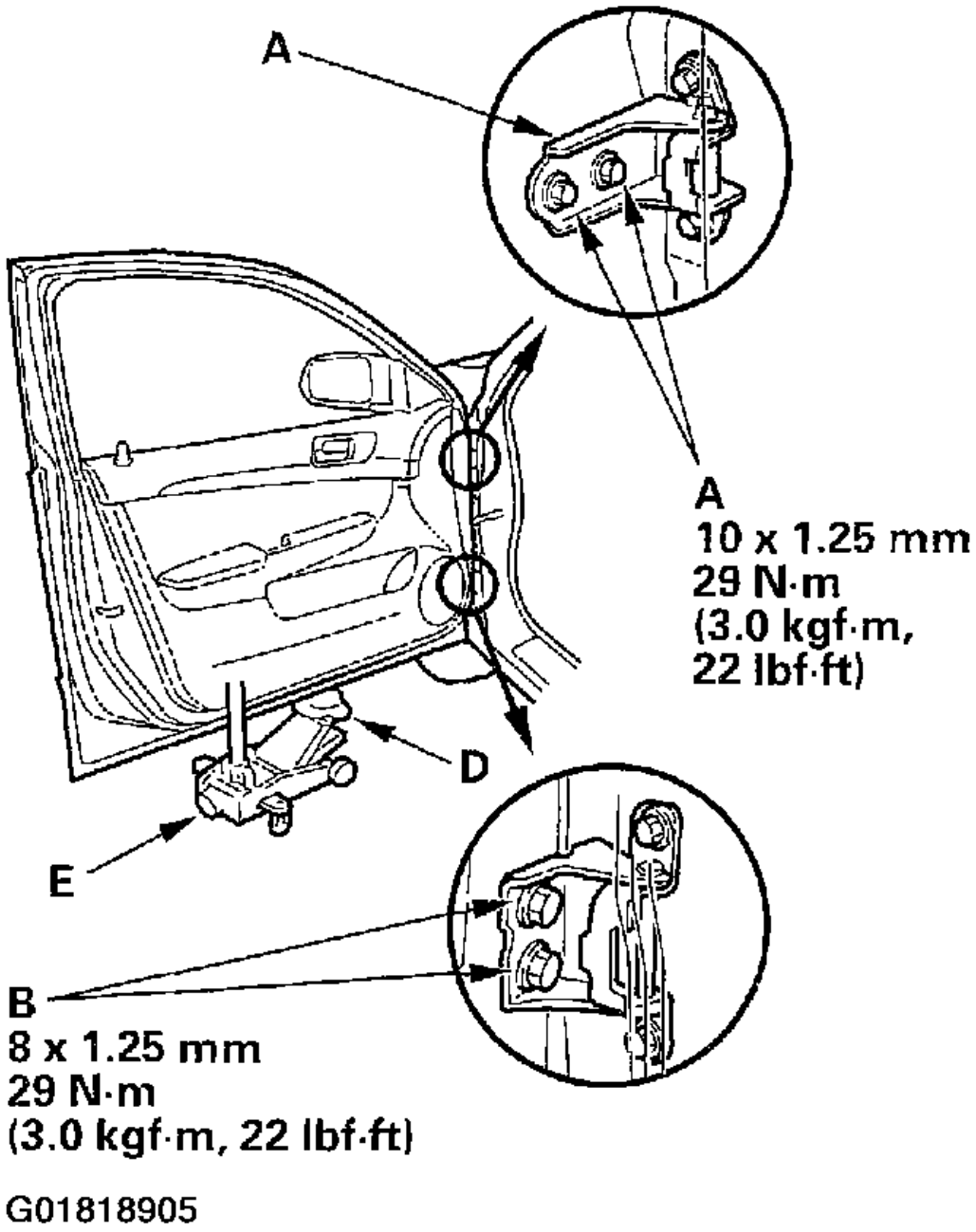


Fig. 69: Adjusting Front Door Position

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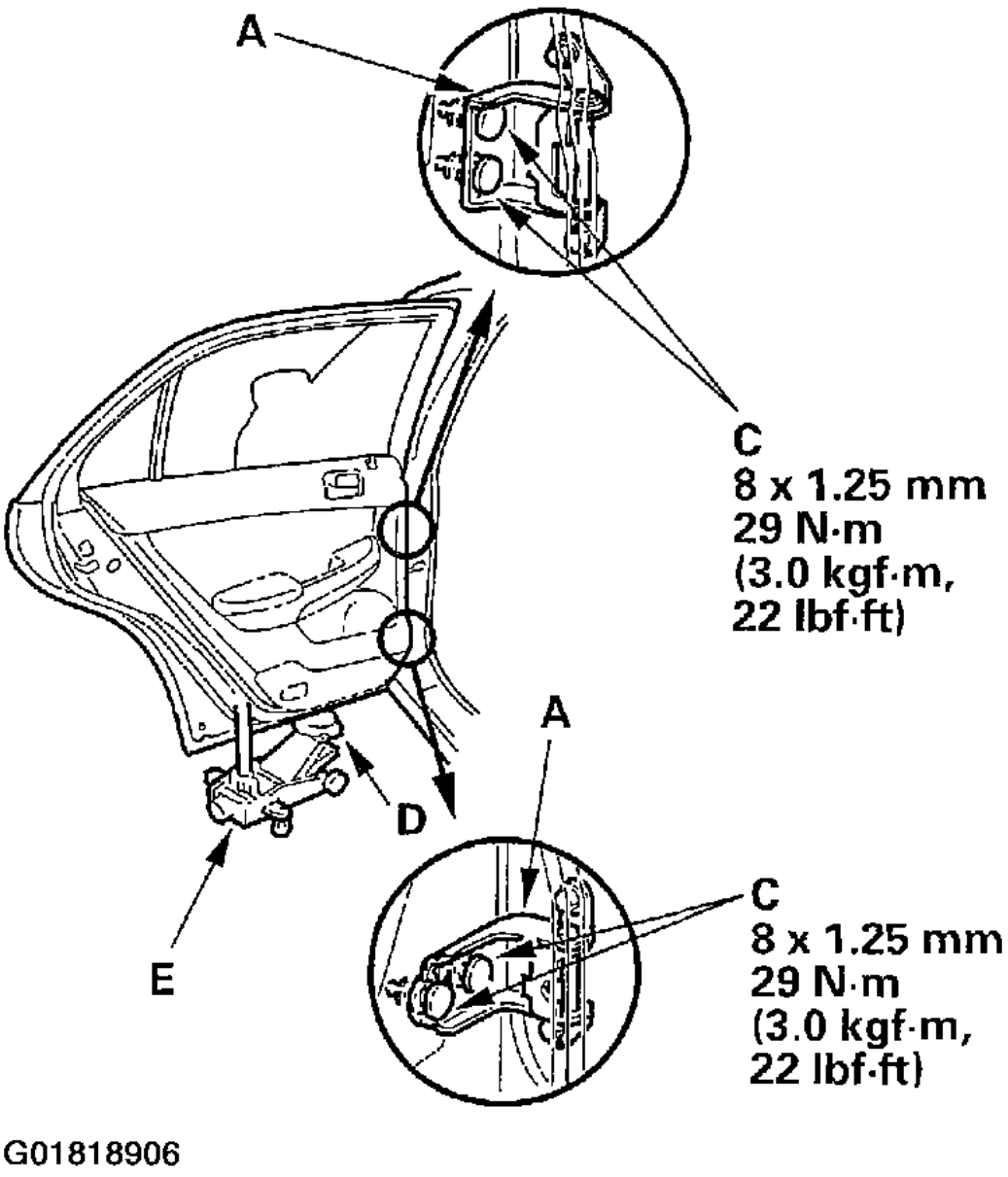


Fig. 70: Adjusting Rear Door Position

3. Make sure that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the doors flush with the body.

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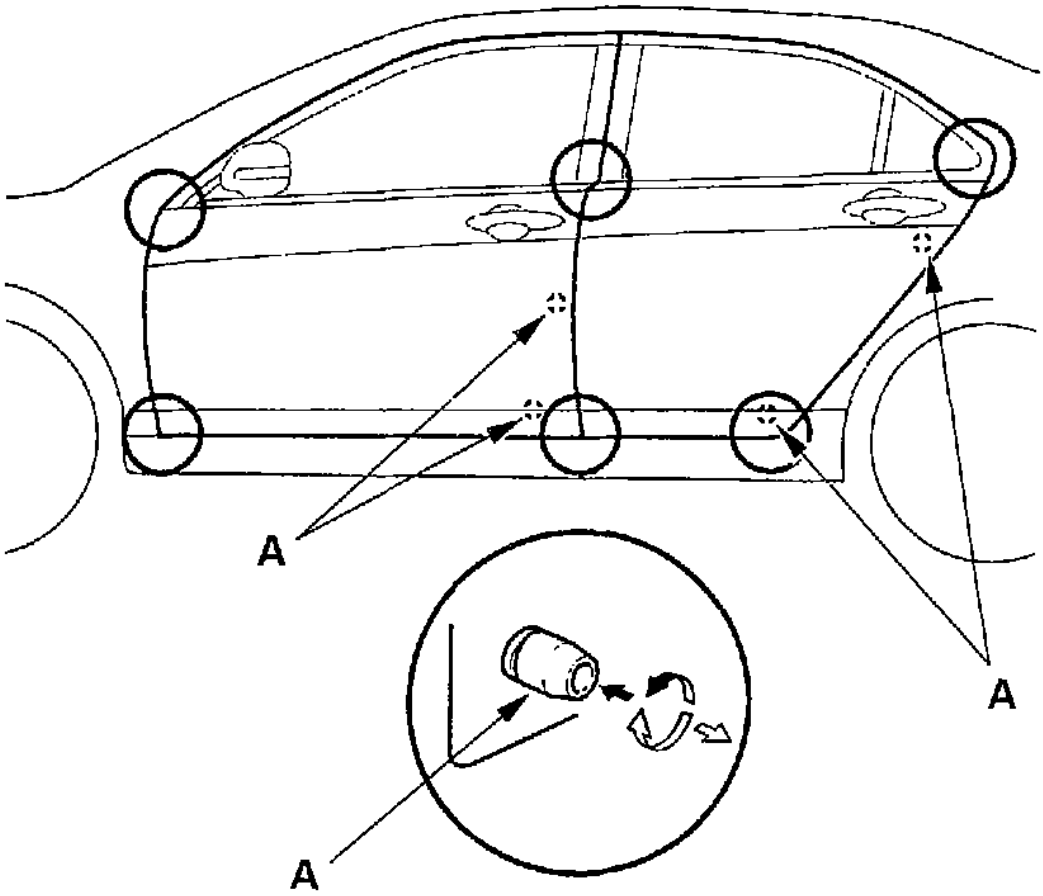


Fig. 71: Ensuring Door & Body Edges Are Parallel

4. Apply touch-up paint to the hinge mounting bolts, and around the hinges.
5. Check for water leaks (see step 7 of **FRONT & REAR DOOR GLASS ADJUSTMENT**).

FRONT & REAR DOOR STRIKER ADJUSTMENT

Make sure the door latches securely without slamming it. If necessary, adjust the striker (A): The striker can be adjusted slightly up or down, and in or out.

1. Loosen but do not remove the screws (B), then insert a shop towel (C) between the body and striker.

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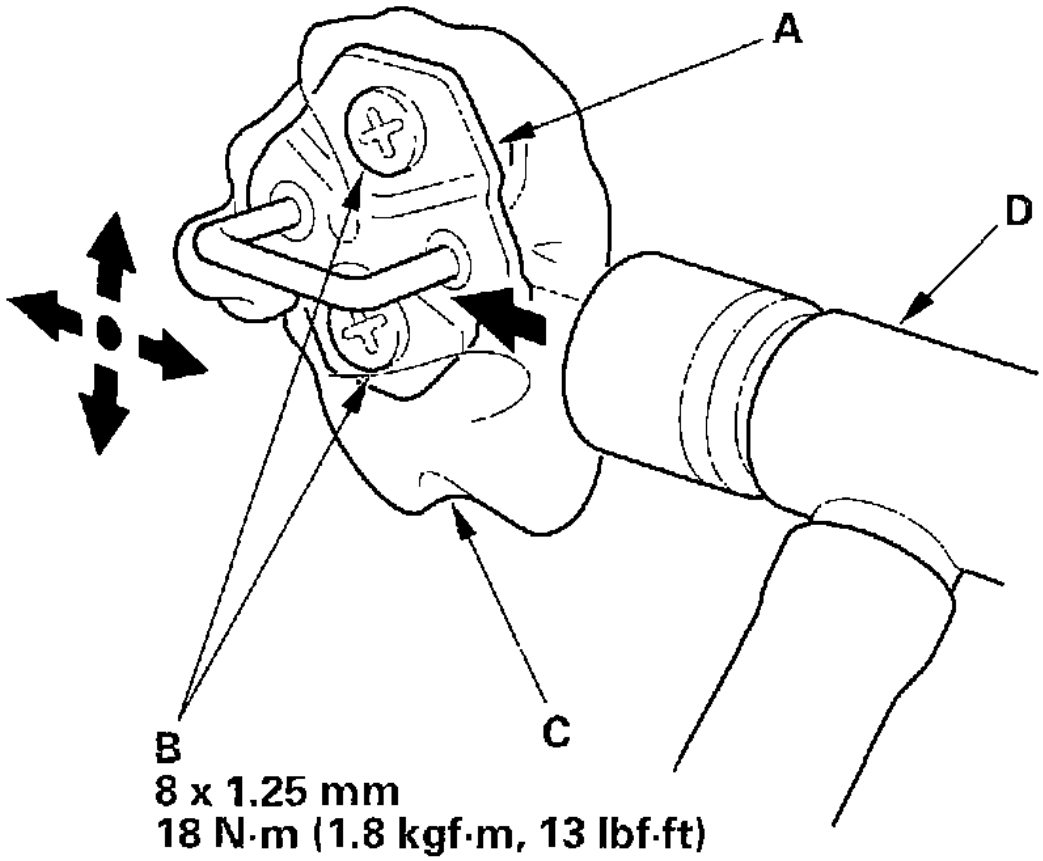


Fig. 72: Adjusting Door Striker

2. Lightly tighten the screws.
3. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (D). Do not hit the striker too hard.
4. Loosen the screws, and remove the shop towel.
5. Lightly tighten the screws.
6. Hold the outer handle out, and push the door against the body to be sure the striker allows a flush fit. If the door latches properly, tighten the screws and recheck.

INTERIOR TRIM

COMPONENT LOCATION INDEX

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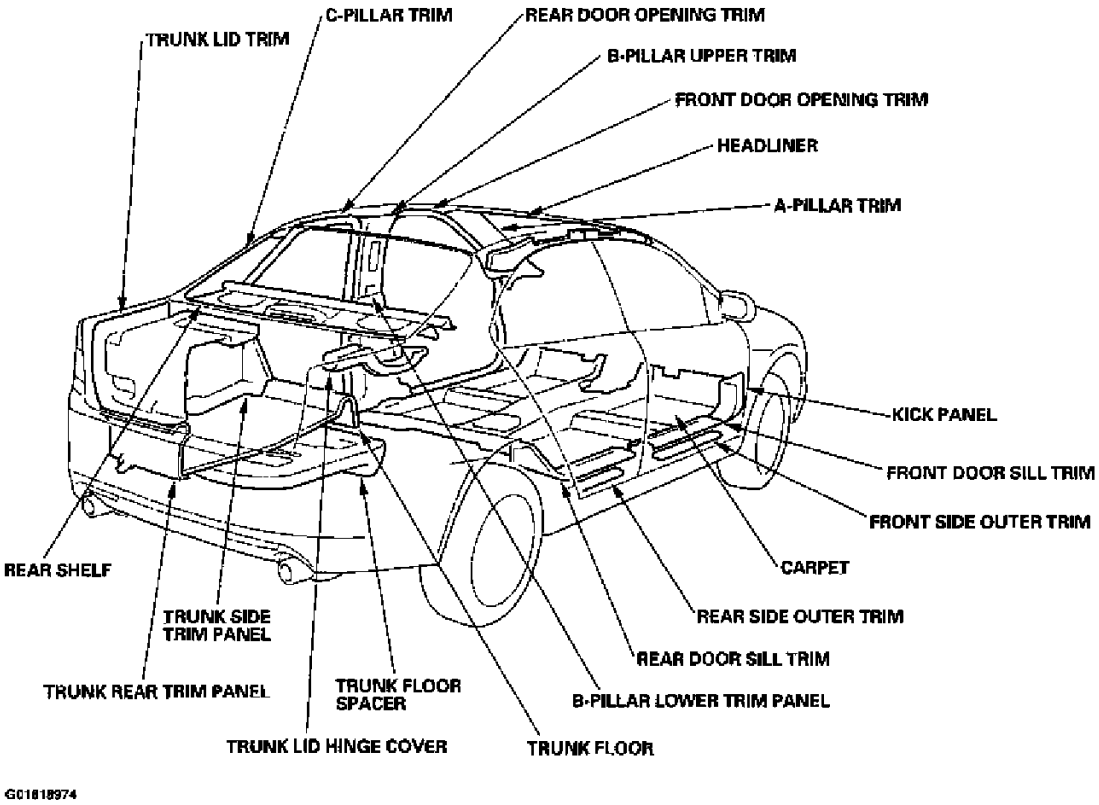


Fig. 73: Locating Interior Trim Components

TRIM REMOVAL/INSTALLATION - DOOR AREA

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

Without Side Curtain Airbag

NOTE:

- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend or scratch the trim and panels.**

1. Remove the trim as shown.
2. Install the trim in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the opener cable is connected securely.
   - Push the clip portions into place securely.
   - Apply liquid thread lock to the front seat belt upper anchor bolt before installation.

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- Before installing the anchor bolts, make sure there are no twists or kinks in the belts.

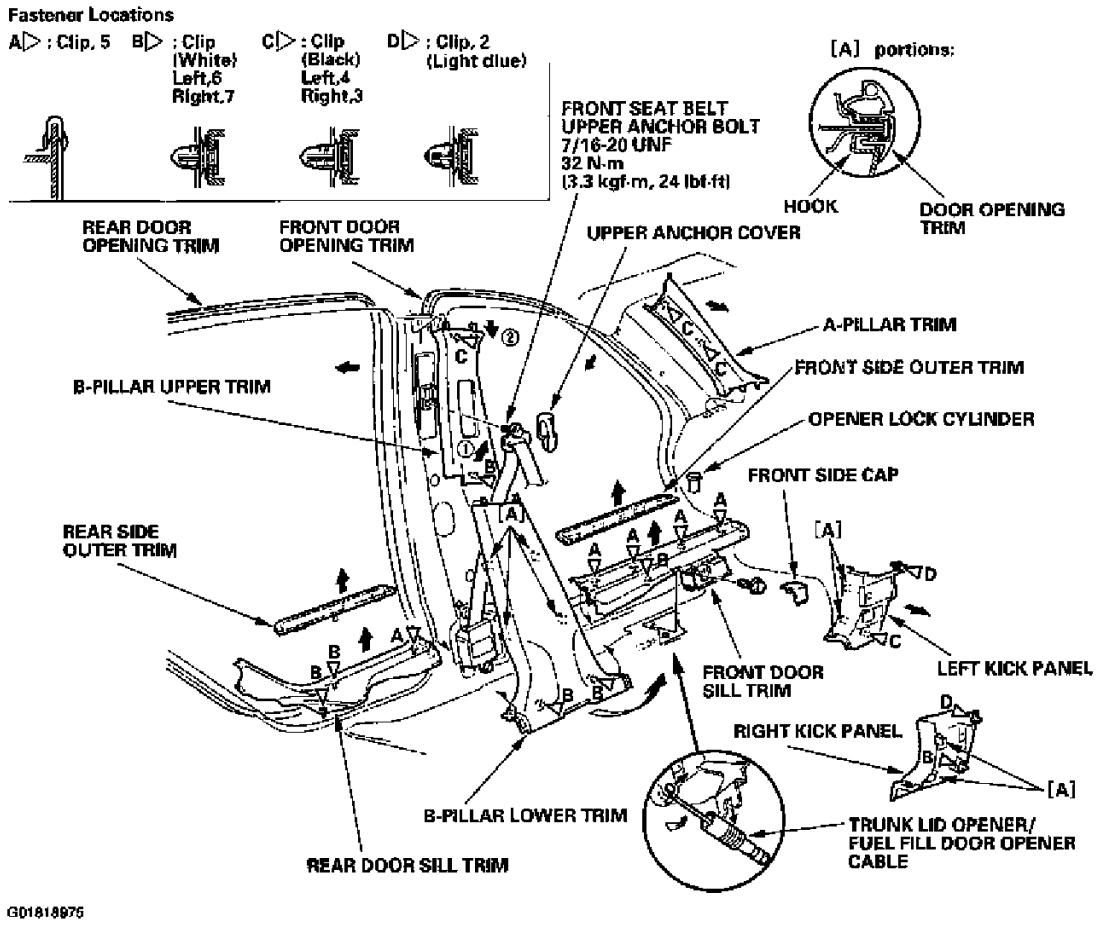


Fig. 74: Removing & Installing Door Area Trim (Without Side Curtain Airbag)

With Side Curtain Airbag

NOTE:

- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend or scratch the trim and panels.**

1. Remove the trim as shown.
2. Install the trim in the reverse order of removal, and note these items:
   - If the side curtain airbag have deployed, be sure to check the removed trim pieces for damage before reinstallation (see **AIR BAG RESTRAINT SYSTEMS**), and if necessary, replace them and trim clips with new ones.
   - If the side curtain airbag have not deployed, removed trim pieces should still be checked for

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damage (see **AIR BAG RESTRAINT SYSTEMS**), and replace them with new ones if necessary.

- Make sure the opener cable is connected securely.
- Make sure the top of the trim overlaps with the headliner correctly (see **AIR BAG RESTRAINT SYSTEMS**).
- Make sure the trim hooks are installed into holes in the side curtain airbag center bracket securely.
- Push the clip portions into place securely.
- Apply liquid thread lock to the front seat belt upper anchor bolt before installation.
- Before installing the anchor bolts, make sure there are no twists or kinks in the belts.

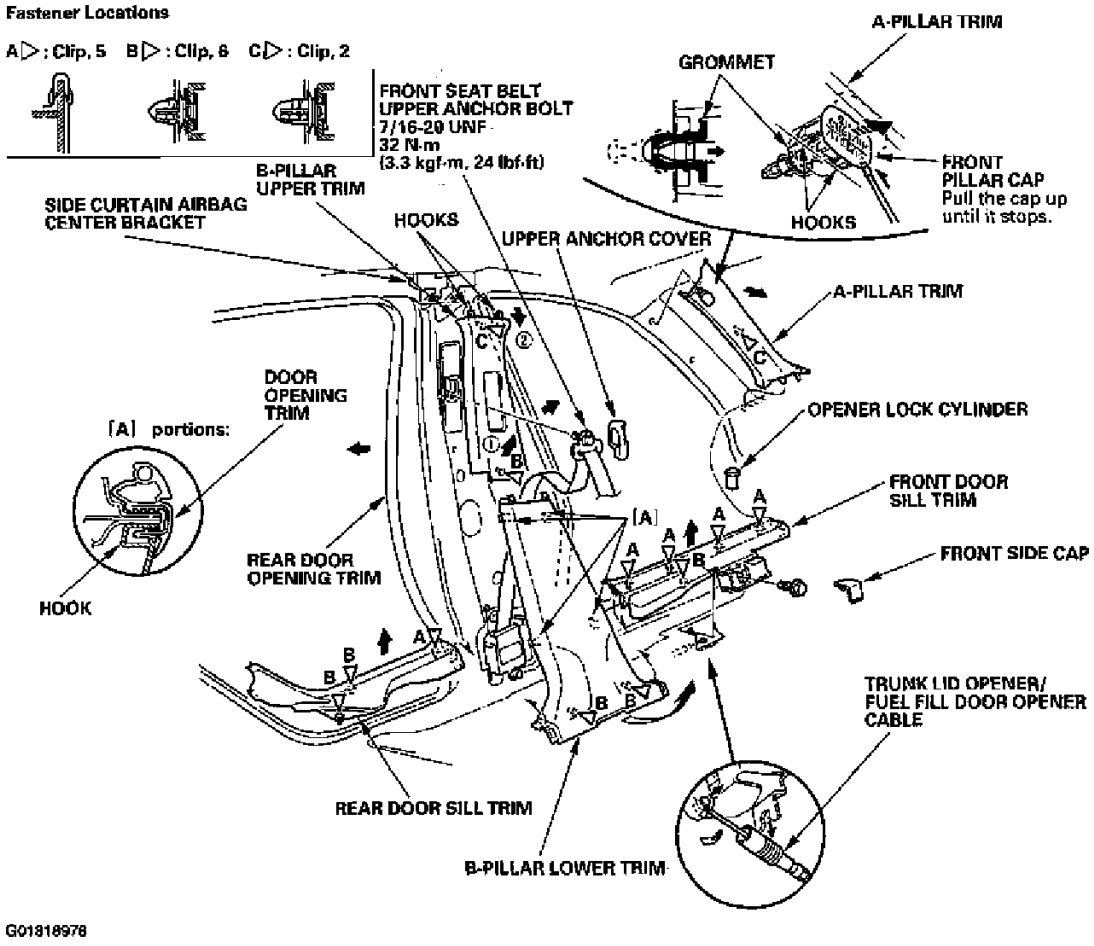


Fig. 75: Removing & Installing Door Area Trim (With Side Curtain Airbag)

TRIM REMOVAL/INSTALLATION - REAR SHELF AREA

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

Without Side Curtain Airbag

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NOTE:

- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend or scratch the trim and panels.**

1. Remove the trim as shown. To remove the high mount brake light, first disconnect the bulb socket.
2. Install the trim in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - When installing the rear shelf, slip the rear seat belts and center seat belt through the slits and hole in the rear shelf.
   - Make sure the high mount brake light bulb socket is connected securely.

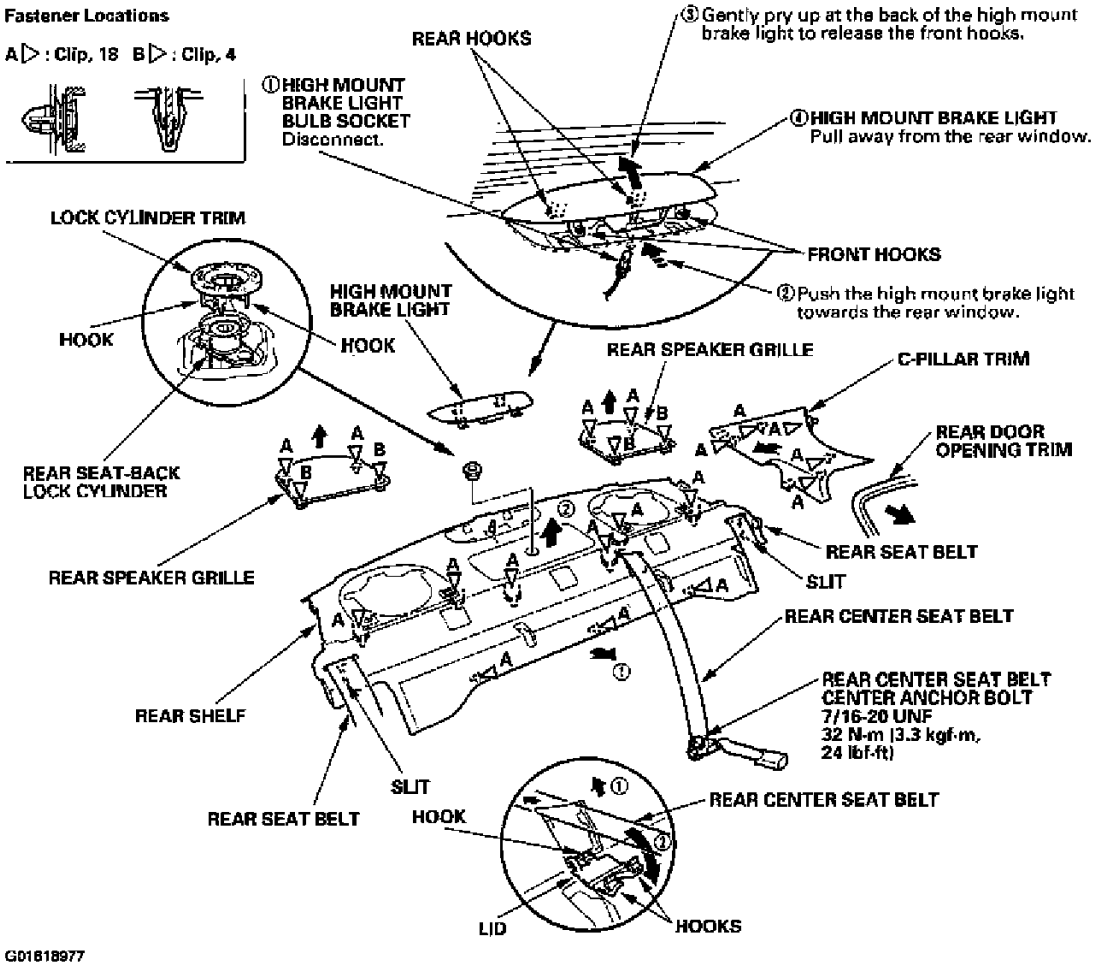


Fig. 76: Removing & Installing Rear Shelf Area Trim (Without Side Curtain Airbag)

C-pillar - With Side Curtain Airbag

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NOTE:

- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend or scratch the trim and panels.**

1. Remove the trim as shown:
2. Install the trim in the reverse order of removal, and note these items:
   - If the side curtain airbag have deployed, be sure to check the removed trim pieces for damage before reinstallation (see **AIR BAG RESTRAINT SYSTEMS**), and if necessary, replace them and the trim clips with new ones.
   - If the side curtain airbag have not deployed, removed trim pieces should still be checked for damage (see **AIR BAG RESTRAINT SYSTEMS**), and replace them with new ones if necessary.
   - Make sure the top of the trim overlaps with the headliner correctly (see **AIR BAG RESTRAINT SYSTEMS**).
   - Push the clip portions into place securely.

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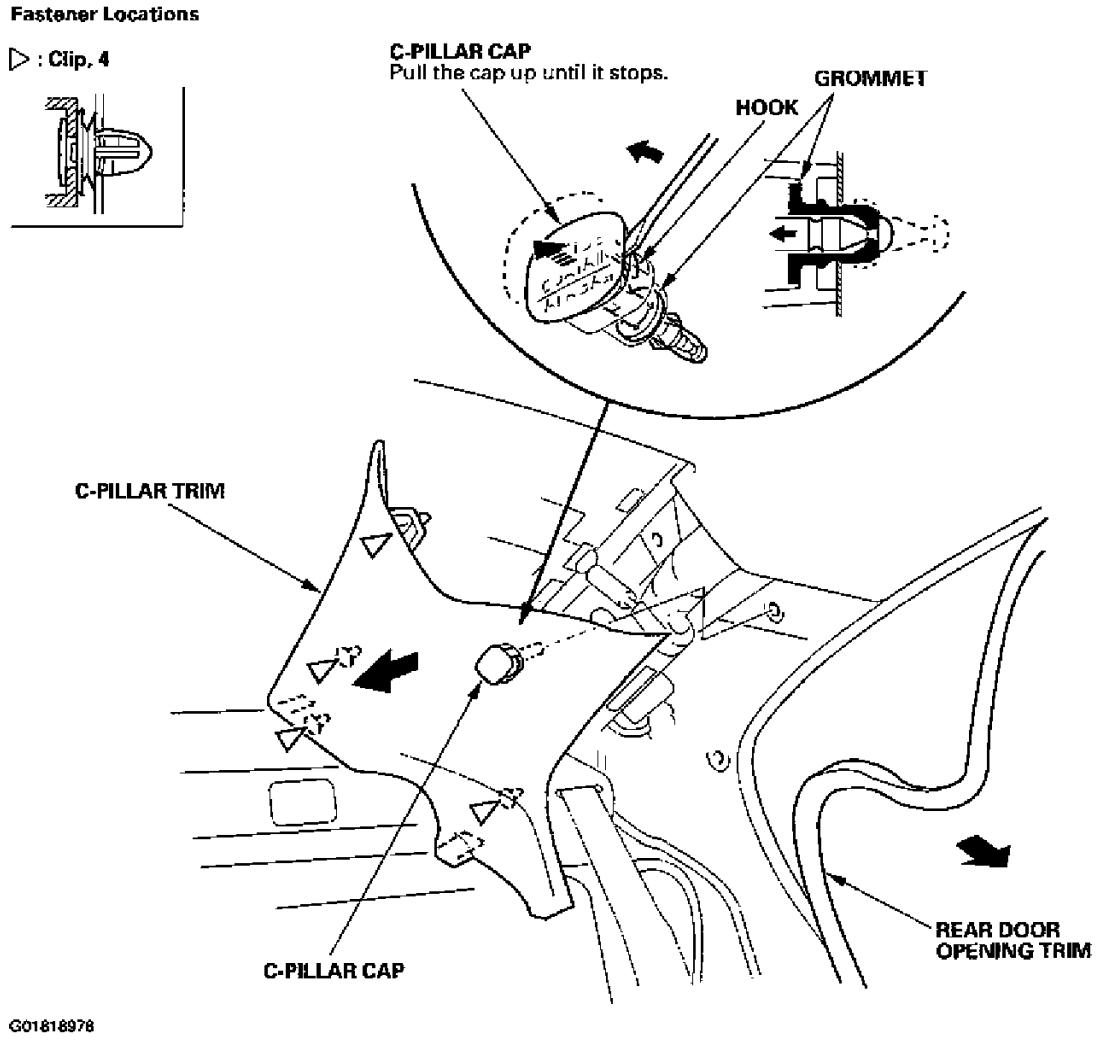


Fig. 77: Removing & Installing C-Pillar Area Trim (With Side Curtain Airbag)

TRIM REMOVAL/INSTALLATION - TRUNK AREA

NOTE:

- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend or scratch the trim and panels.**

1. Remove the trim as shown.
2. Install the trim in the reverse order of removal, and replace any damaged clips.

NOTE: Two clips are located behind the rear seats.

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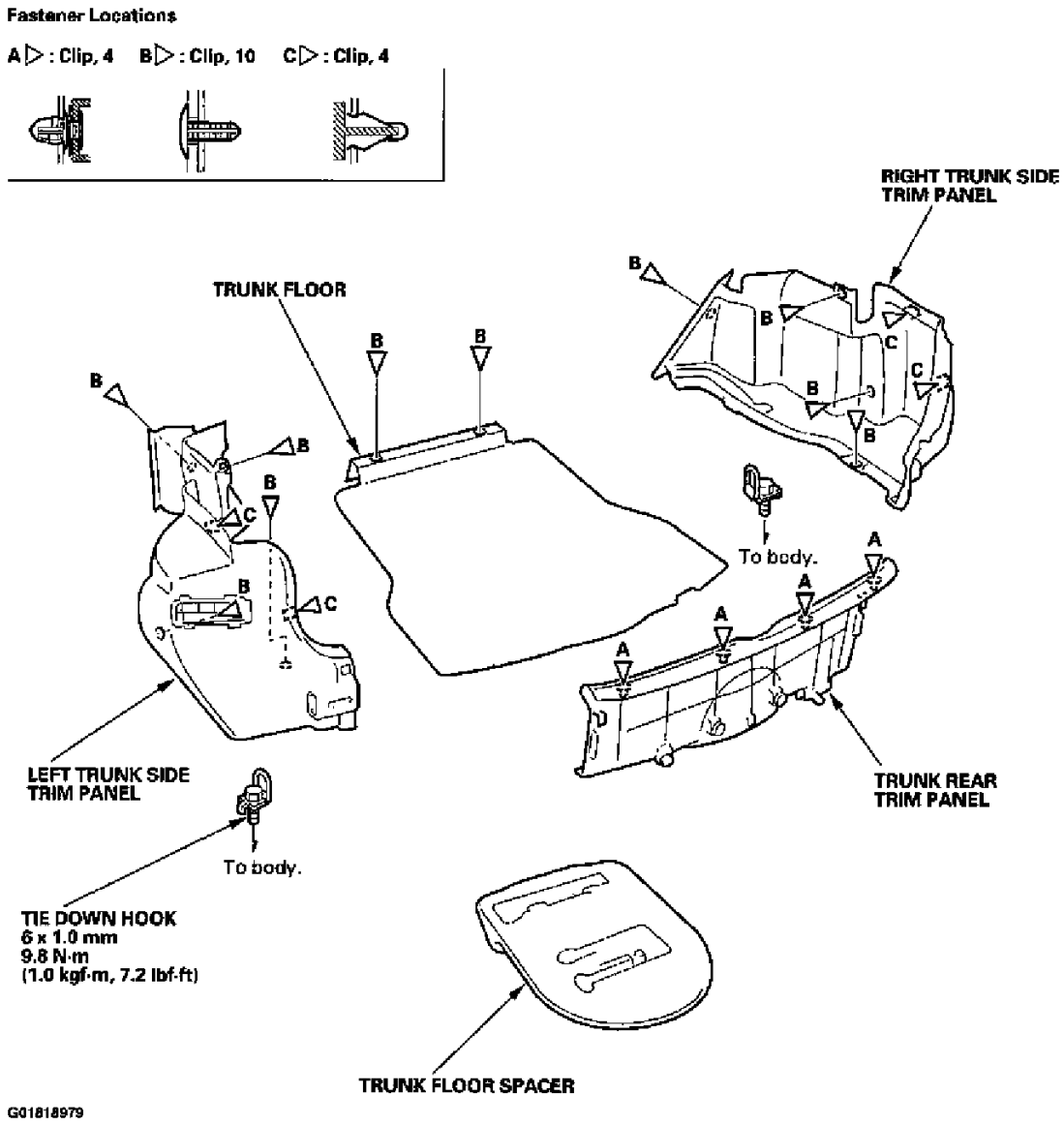


Fig. 78: Removing & Installing Trunk Area Trim

TRIM REMOVAL/INSTALLATION - TRUNK LID

NOTE:

- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend or scratch the trim and panels.**

1. Remove the trim as shown.
2. Install the trim in the reverse order of removal, and replace any damaged clips.

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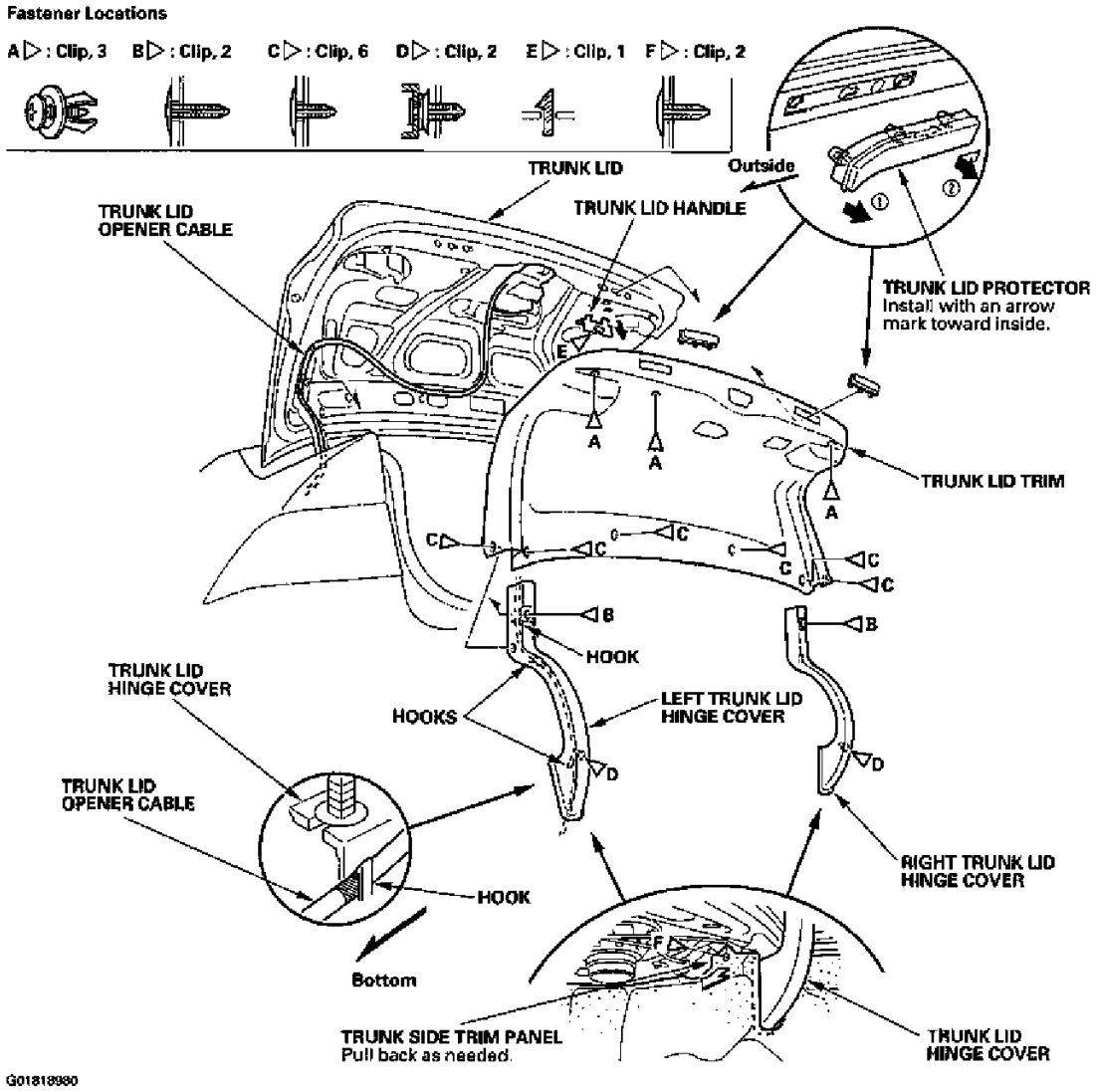


Fig. 79: Removing & Installing Trunk Lid Trim

HEADLINER REMOVAL/INSTALLATION

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend and scratch the headliner.**
- **Be careful not to damage the dashboard and other interior trim.**

1. Remove these items:

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a. A-pillar trim, both sides (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
b. Ceiling light (see **CEILING LIGHT REPLACEMENT**)
c. Front seat belt upper anchor, both sides (see step 6 on **AIR BAG RESTRAINT SYSTEMS**)
d. B-pillar lower trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
e. B-pillar upper trim, both sides (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
f. C-pillar trim, both sides on vehicles without side curtain airbags (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
g. C-pillar trim, both side on vehicles with side curtain airbags (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)

2. From both sides, using a flat-tip screwdriver, release the tabs (A), then remove the sunvisor cap (B) from the bracket (C). Turn the cap, and remove it.

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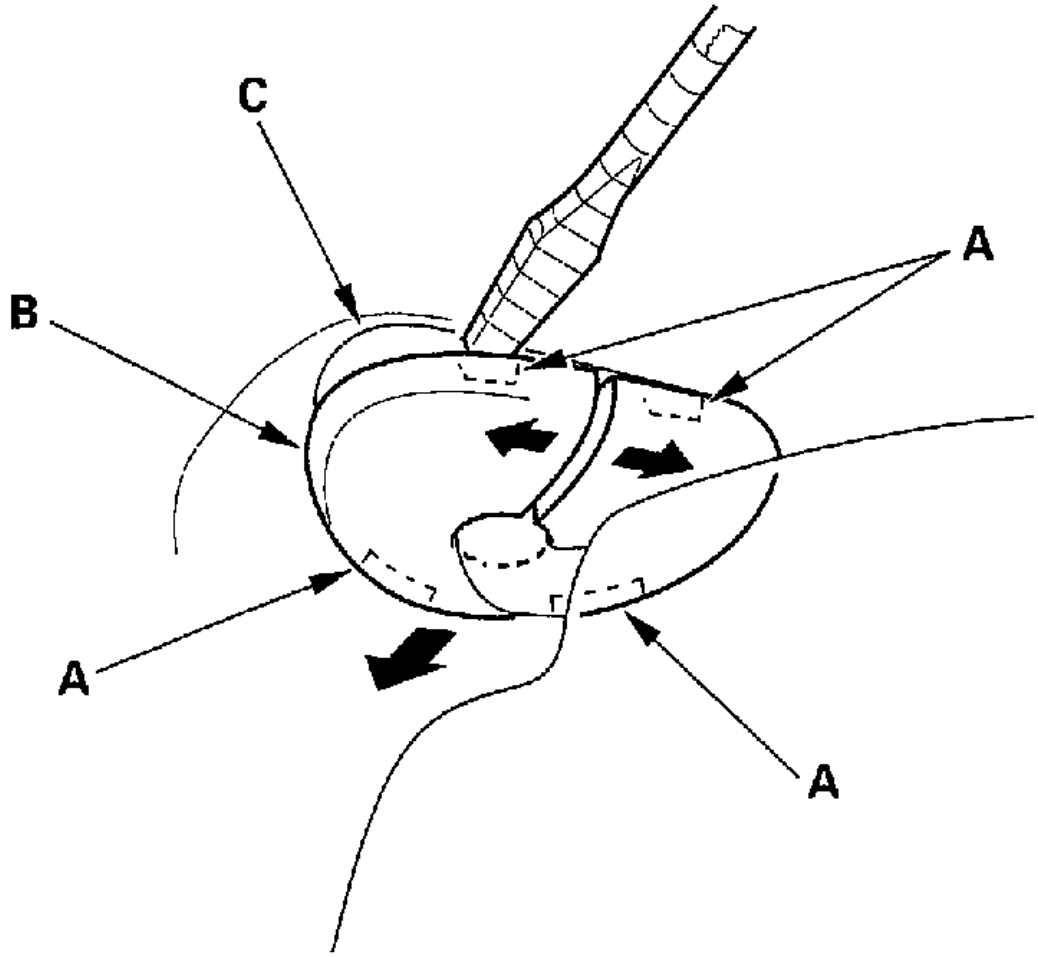


Fig. 80: Removing The Sunvisor Cap

3. From both sides, remove the sunvisor (A) and holder (B).
   a. Remove the self-tapping ET screws.
   b. Remove the sunvisor from the body and holder.
   c. Disconnect the vanity mirror light connector (C).
   d. Using a flat-tip screwdriver, push the hook (D), and turn the holder 90°, then pull it out.

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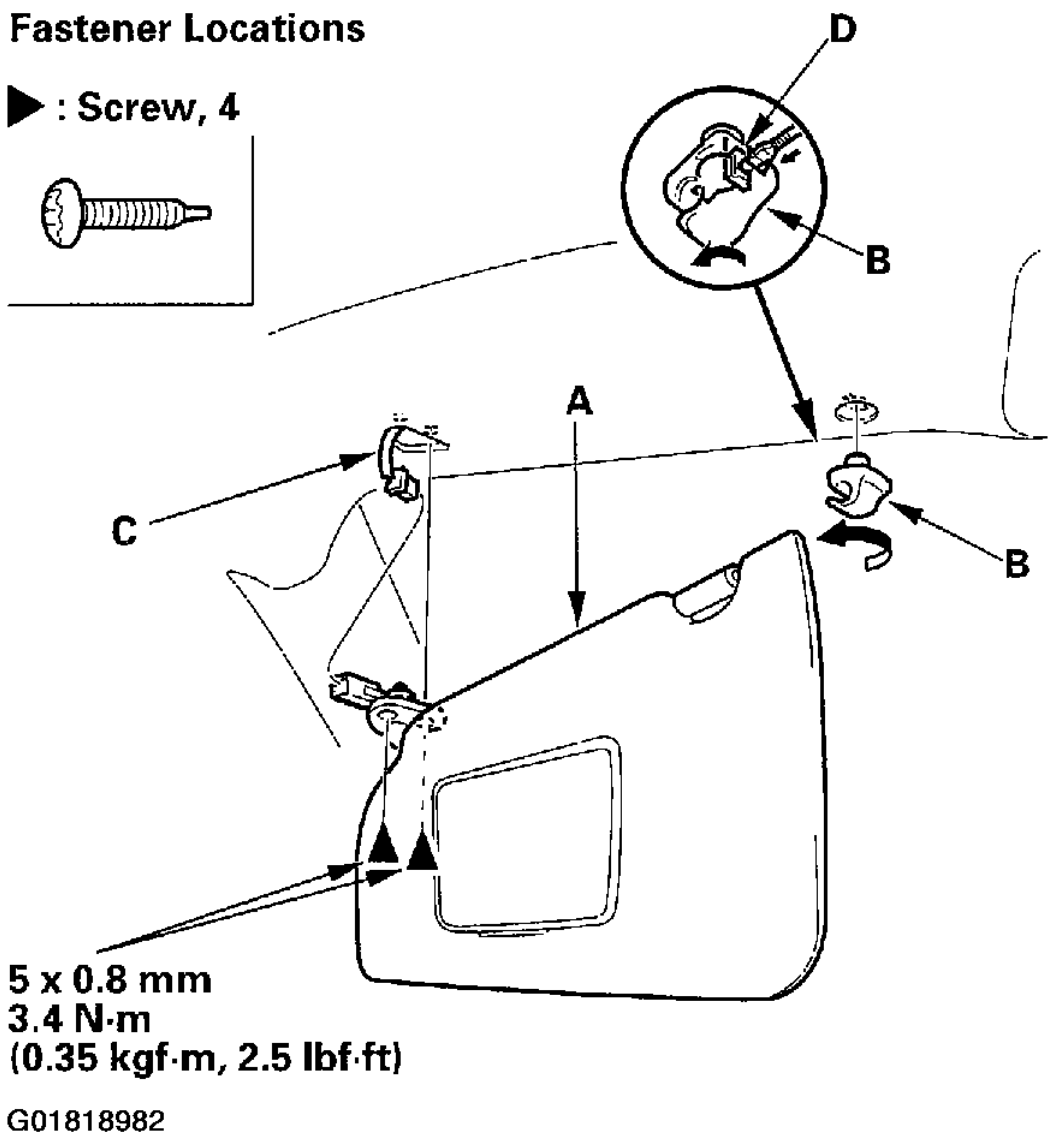


Fig. 81: Removing The Sunvisor

4. Remove the roof console (A).
   a. Remove the lens (B).
   b. Remove the bolts (C, D).
   c. Pull out the roof console, and front individual map light (E). Disconnect the front individual map light connector (F), and ambient light connector (G).

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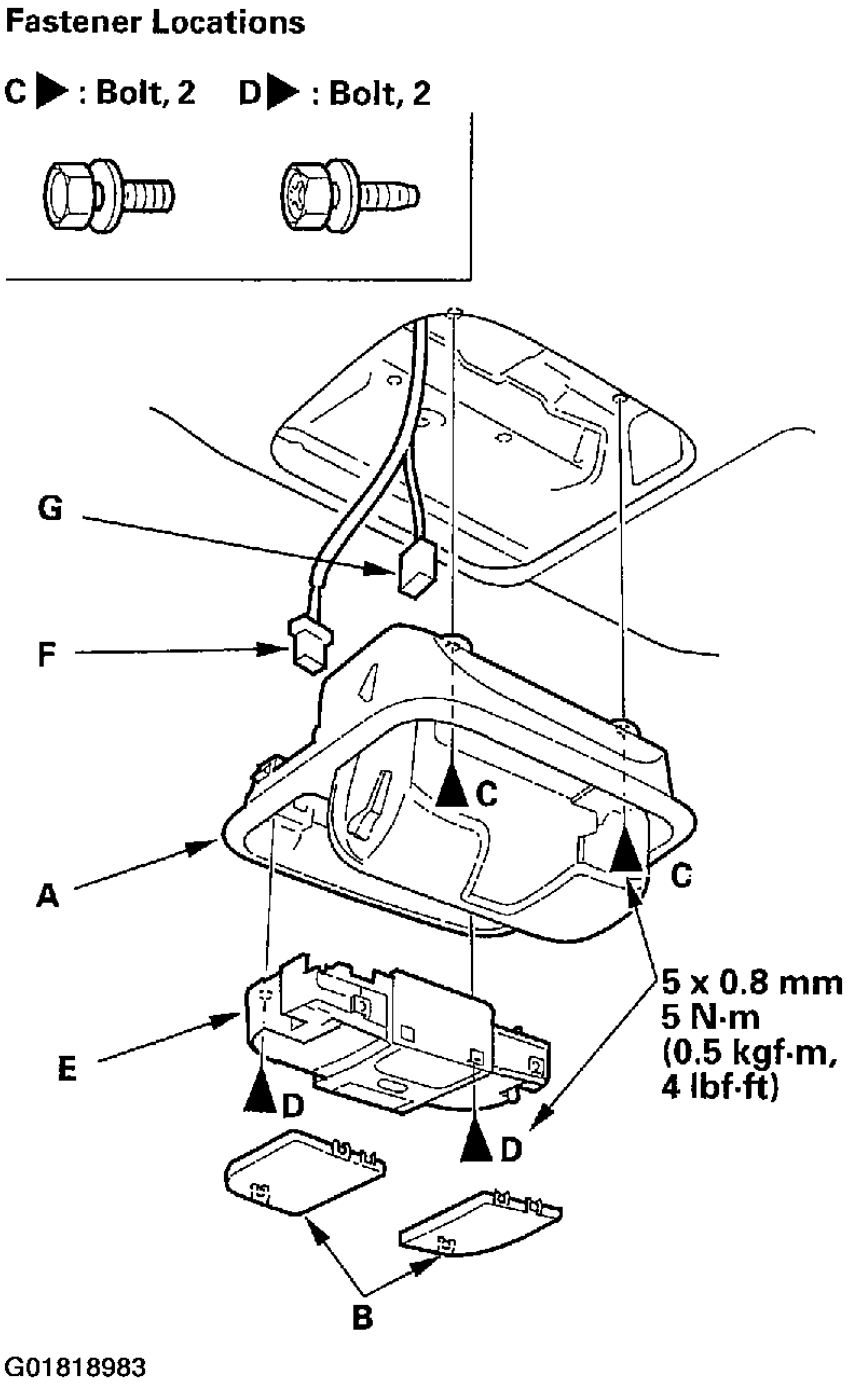


Fig. 82: Removing The Roof Console

5. Lower the grab handle, then pry out the lid (A). Remove the self-tapping ET screws, then remove the grab handle (B). Remove the remaining grab handles.

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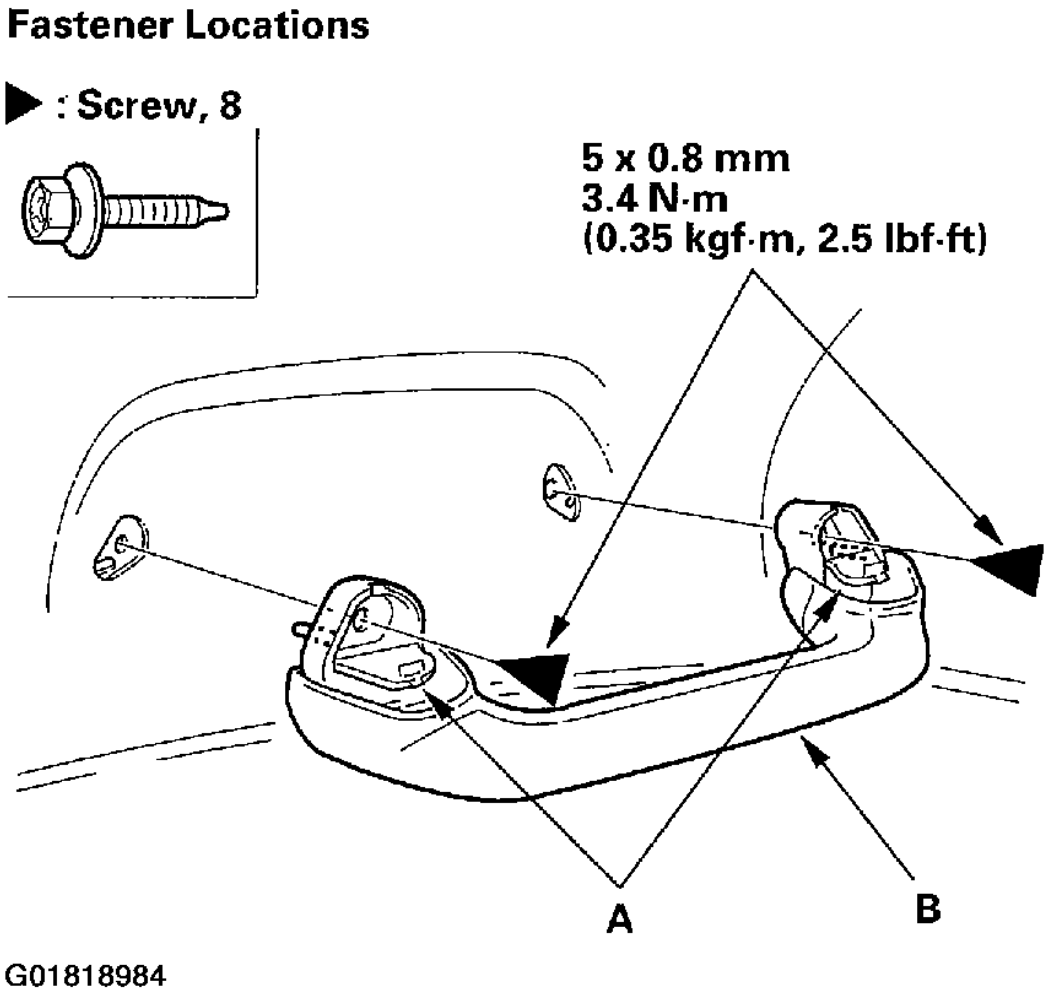


Fig. 83: Removing The Grab Handles

6. Remove the headliner.
   a. Remove the socket plug (A).
   b. Remove the front door opening trim (B) and rear door opening trim (C) from each roof portion.
   c. Detach the clip (D), and release the fasteners (E) by pulling the front portion of the headliner (F) down.
   d. With the help of an assistant, detach the rear clips (G) by pulling the rear portion of the headliner down, release the headliner from the frame (H) by sliding the headliner rearward, and lowering the headliner.
   e. Remove the headliner through the front passenger's door opening.

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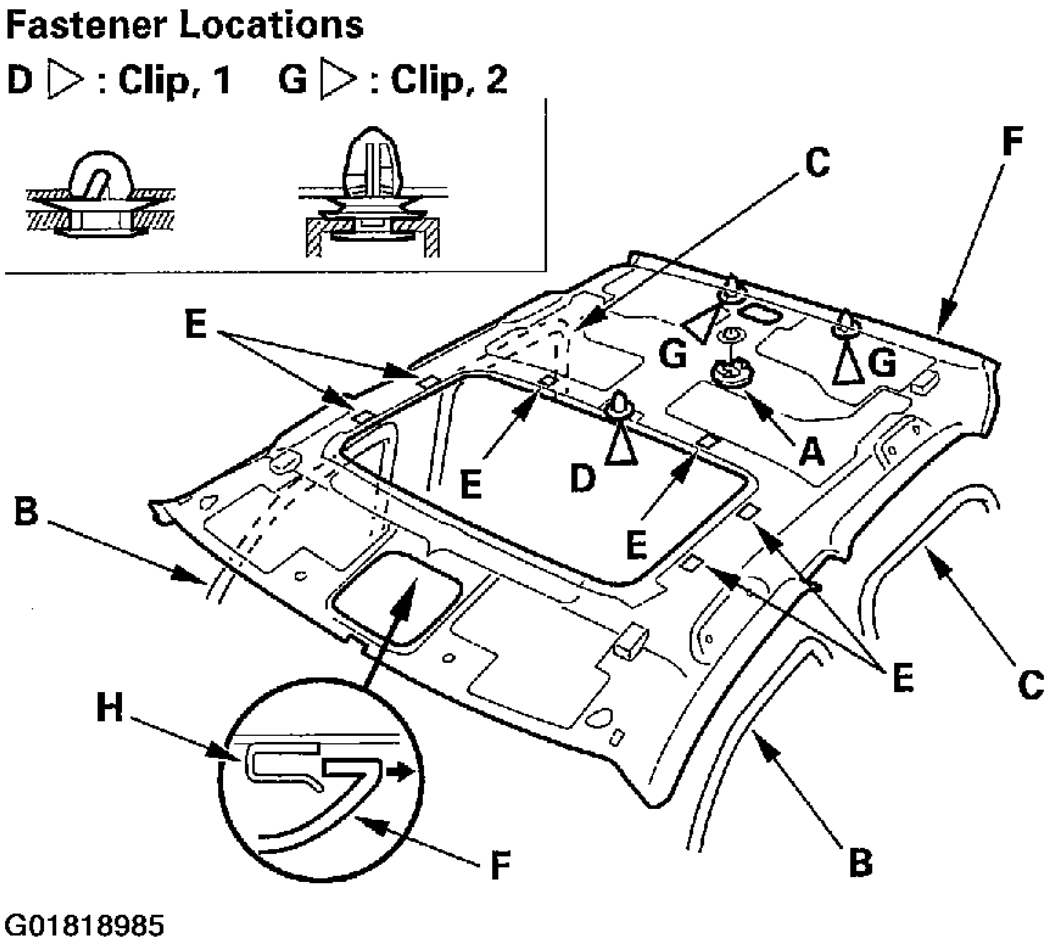


Fig. 84: Removing The Headliner

7. Without side curtain airbag: If necessary, remove the bolts, then remove the front grab handle bracket (A) and rear grab handle bracket (B) from each side by releasing the hooks (C).

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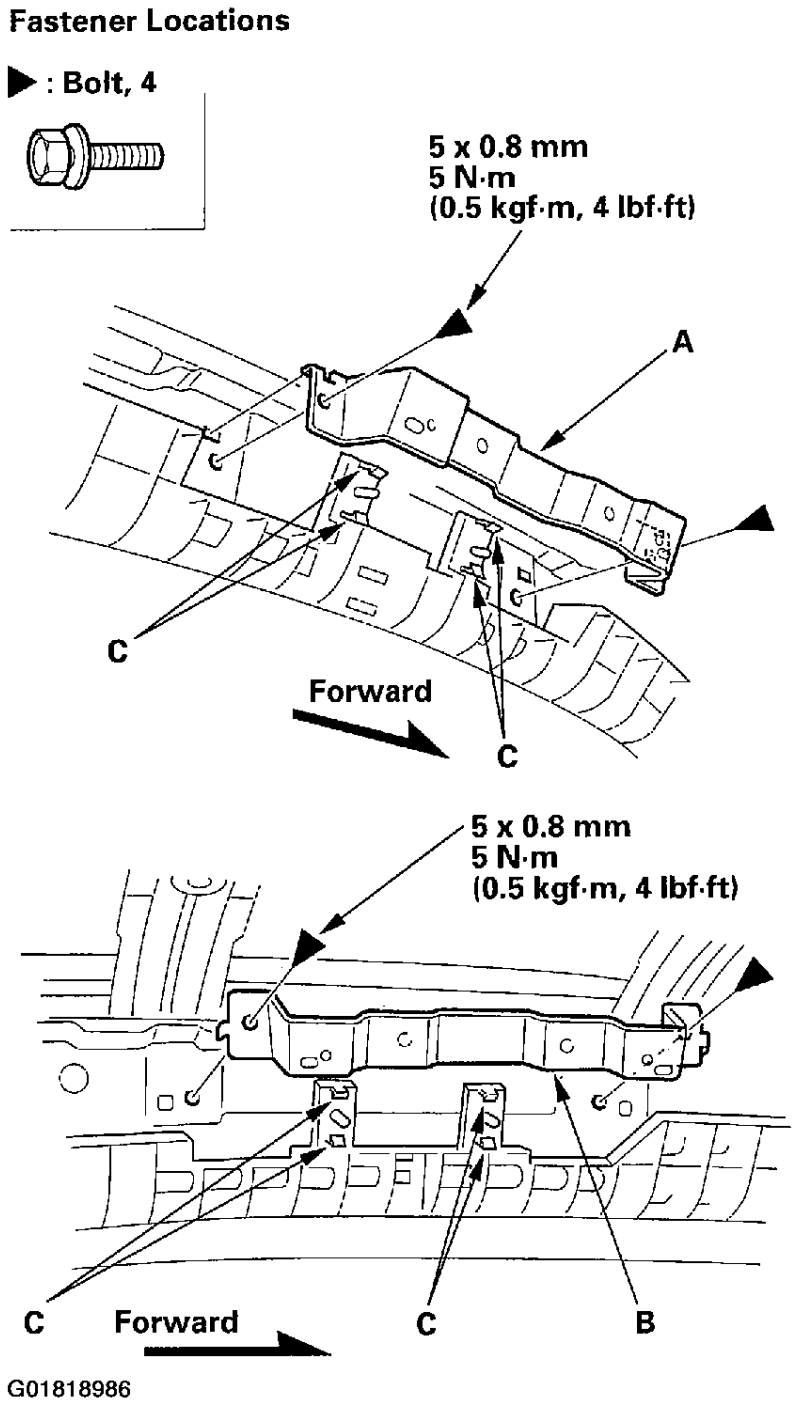


Fig. 85: Removing The Grab Handle Brackets

8. If necessary, detach the hooks (A) and the clip (B), then remove the front roof side pad (C) and rear roof side pad (D).

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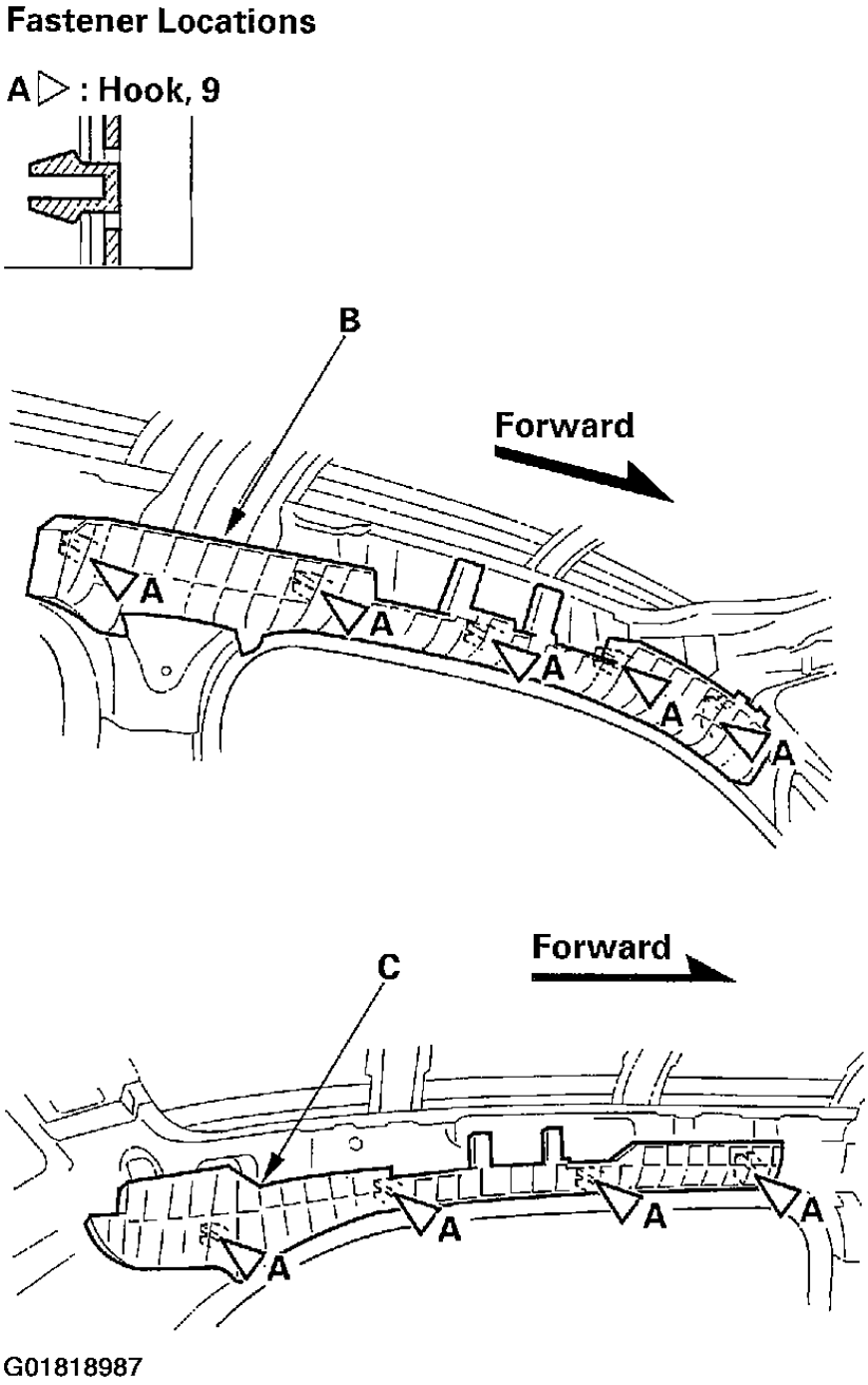


Fig. 86: Removing The Roof Side Pads

9. If necessary, pull down the roof console bracket (A) to release the clip.

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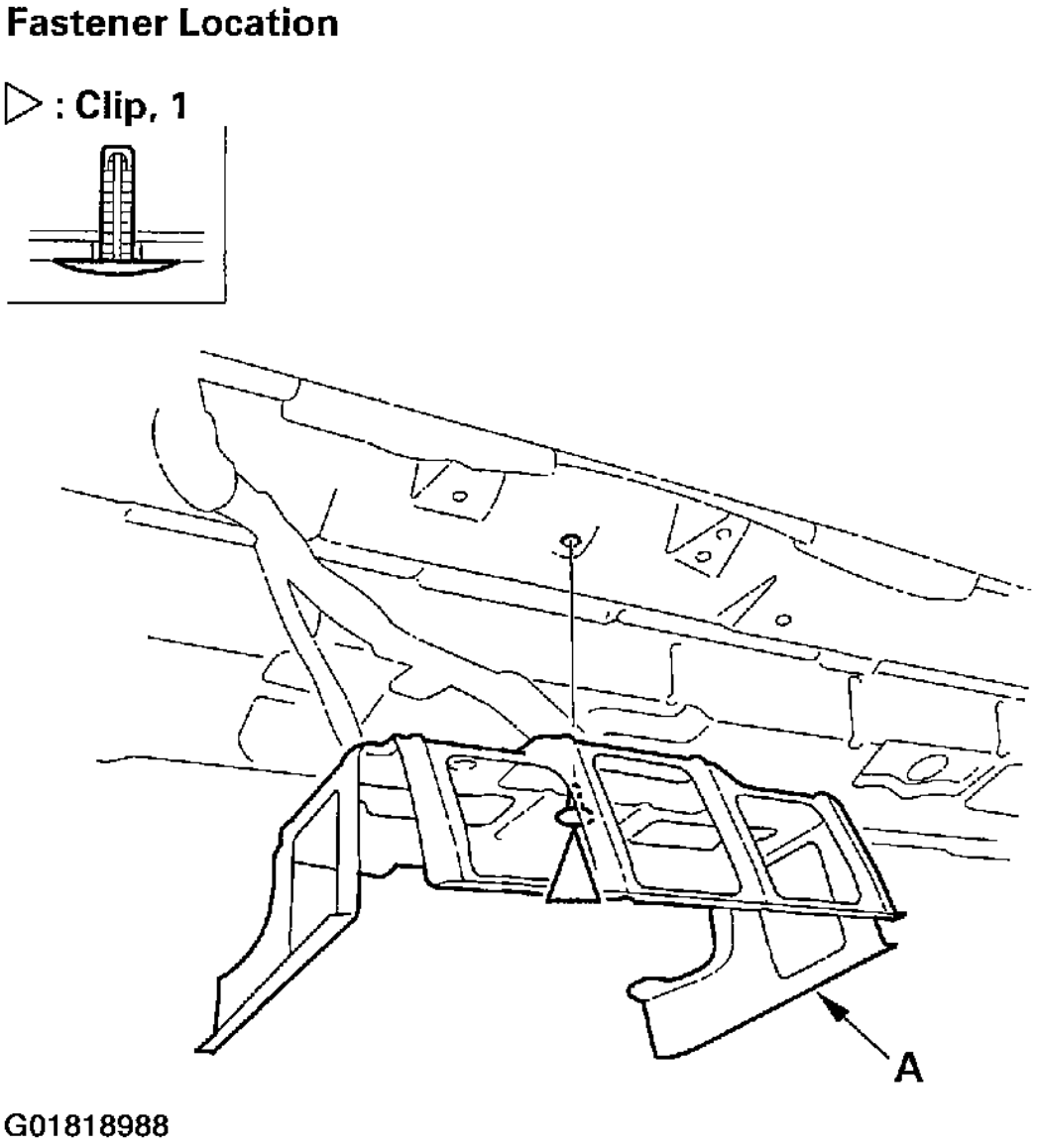


Fig. 87: Pulling Down The Roof Console Bracket To Release The Clip

10. Install the headliner in the reverse order of removal, and note these items:
    - When reinstalling the headliner through the door opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
    - If the threads on a visor and grab handle screws are worn out, use an oversized self-tapping ET screw made specifically for this application:

      Visor: P/N 90137-S30-003

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Grab handle: P/N 90137-S0A-003

- Check that both sides of the headliner are securely attached to the trim.
- Make sure the top of the pillar trim overlaps with the headliner correctly (see **AIR BAG RESTRAINT SYSTEMS**).

CARPET REPLACEMENT

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to damage, wrinkle or twist the carpet.**
- **Be careful not to damage the dashboard or other interior trim pieces.**

1. If equipped with the side curtain airbag, make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the preset buttons.
2. If equipped with the side curtain airbag disconnect the negative battery cable, and wait at least 3 minutes before beginning work.
3. Remove these items:
   a. Front seats, both sides (see **FRONT SEAT REMOVAL/INSTALLATION**)
   b. Rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**)
   c. Rear seat side bolsters, both sides (see **REAR SEAT REMOVAL/INSTALLATION**)
   d. Kick panels, both sides (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   e. Front door sill trim, both sides (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   f. Rear door sill trim, both sides (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   g. B-pillar lower trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   h. Center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**)
   i. Drive's dashboard center lower cover (see step 4 of **DASHBOARD REMOVAL/INSTALLATION**)
   j. Passenger's dashboard center lower cover (see step 5 of **DASHBOARD REMOVAL/INSTALLATION**)
   k. Driver's dashboard under cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**)
   l. Passenger's dashboard lower cover (see **PASSENGER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**)
   m. Parking brake lever (see **PARKING BRAKE CABLE**)
   n. Stereo Amplifier (see **STEREO AMPLIFIER REPLACEMENT**)
4. Remove the front seat belt lower anchor bolt, both sides (see step 3 on **AIR BAG RESTRAINT SYSTEMS**).
5. Push the knob (A) back to release the hook (B) then pull up the accel pedal (C).

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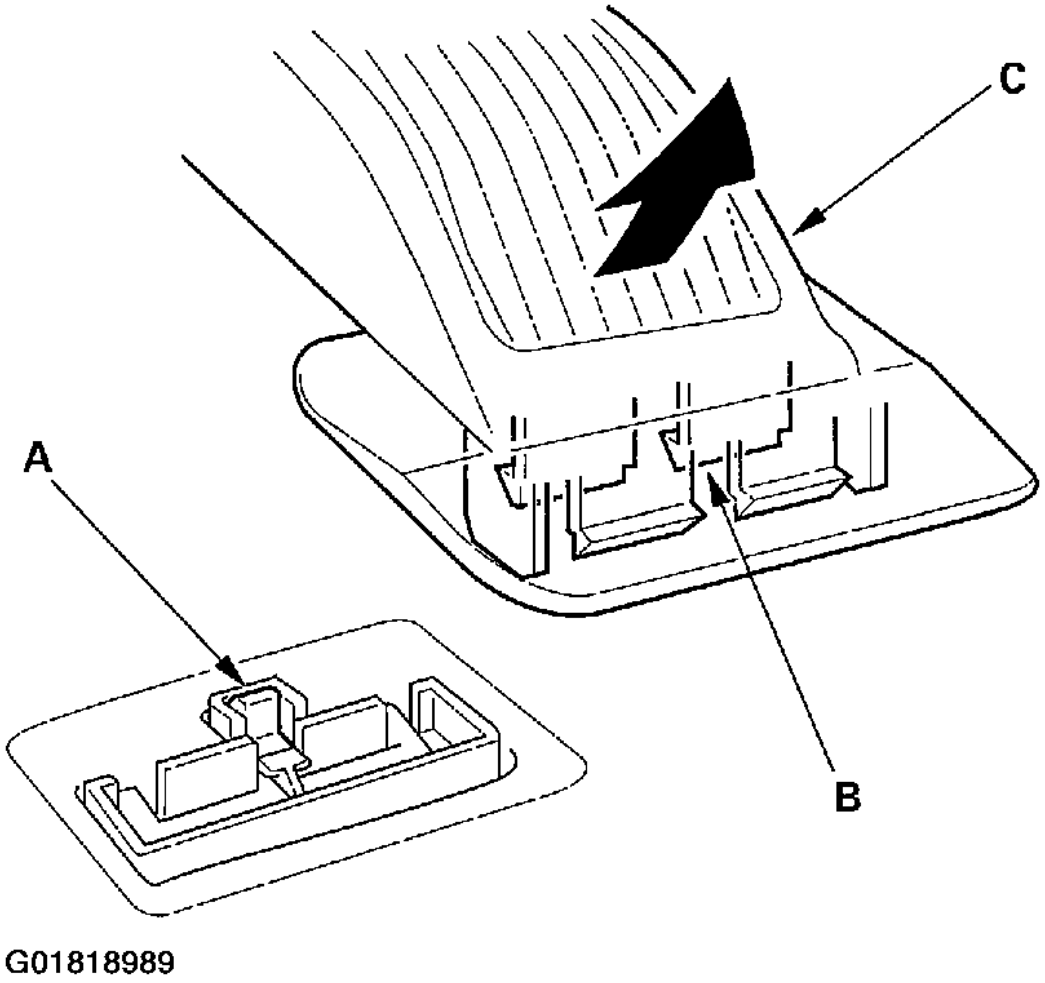


Fig. 88: Pulling Up The Accel Pedal

6. Detach the clips, then remove the footrest (A).

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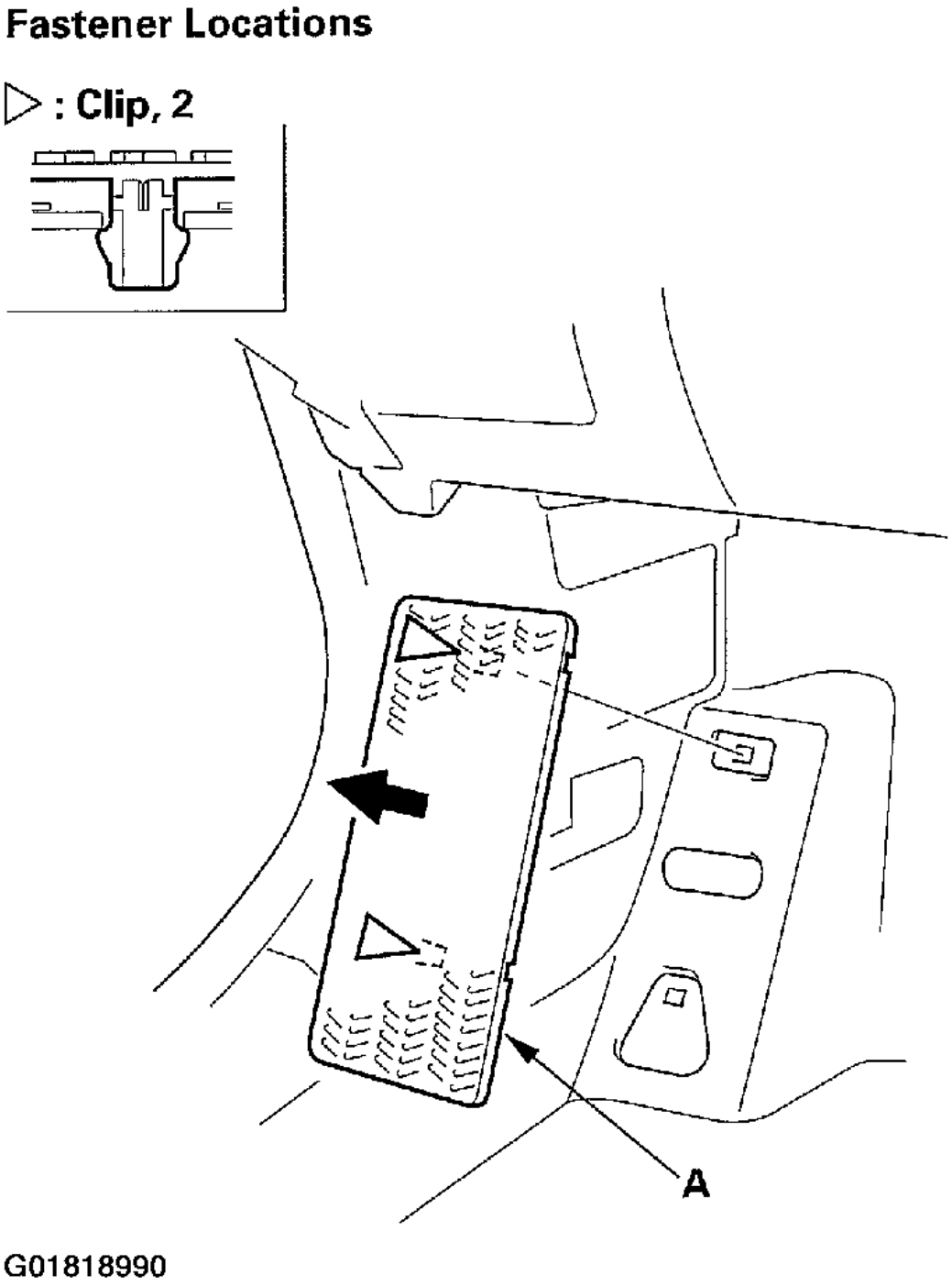


Fig. 89: Removing The Footrest

7. M/T model: Remove the bolts, then remove the center console bracket (A).

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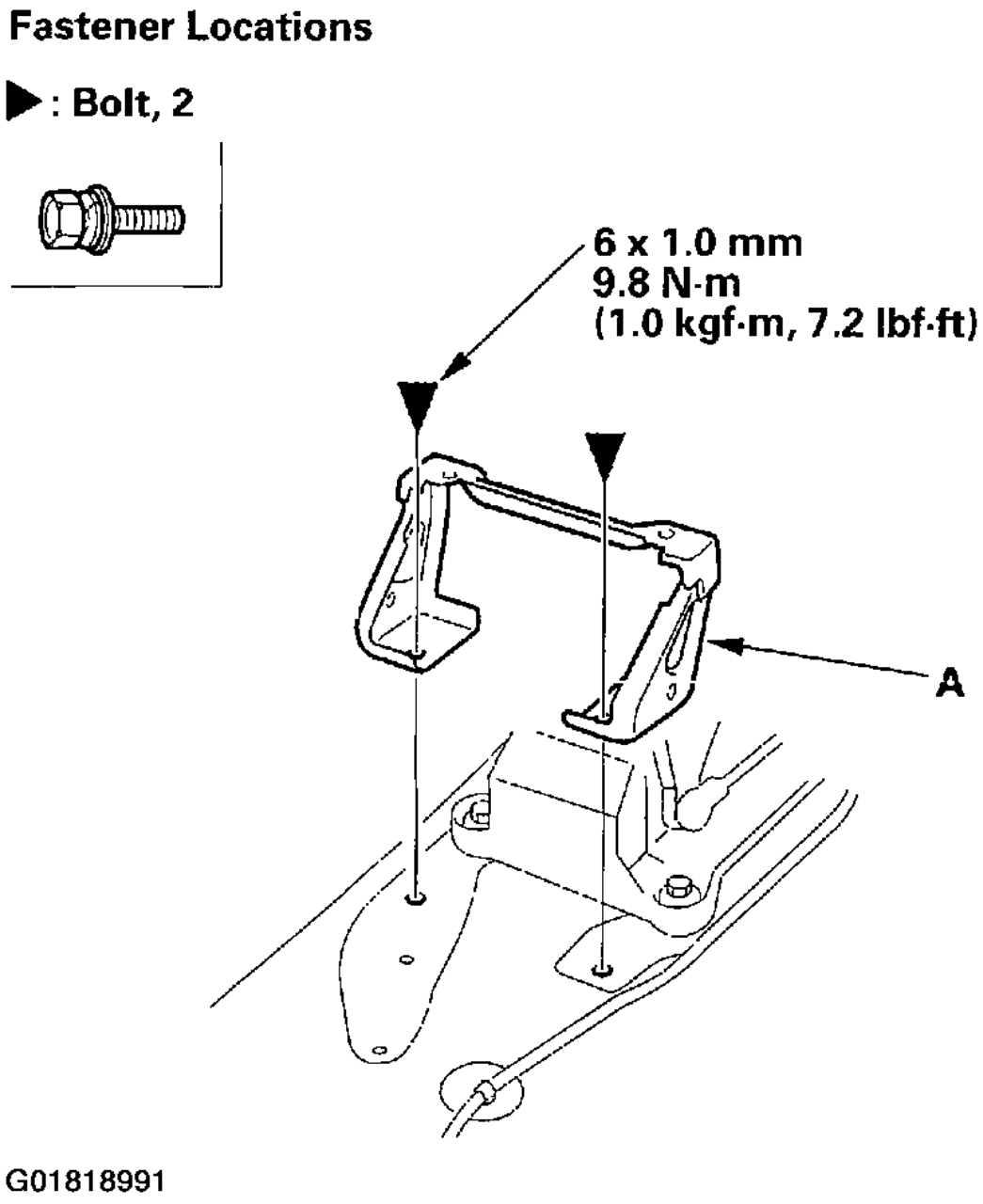


Fig. 90: Removing The Center Console Bracket (M/T)

8. Disconnect the antenna lead (A) and antenna connector (B). If equipped, disconnect the side curtain airbag subharness connector (C), and release the harness clamp (D). Detach the harness clips (E), and on A/T model, harness clips (F).

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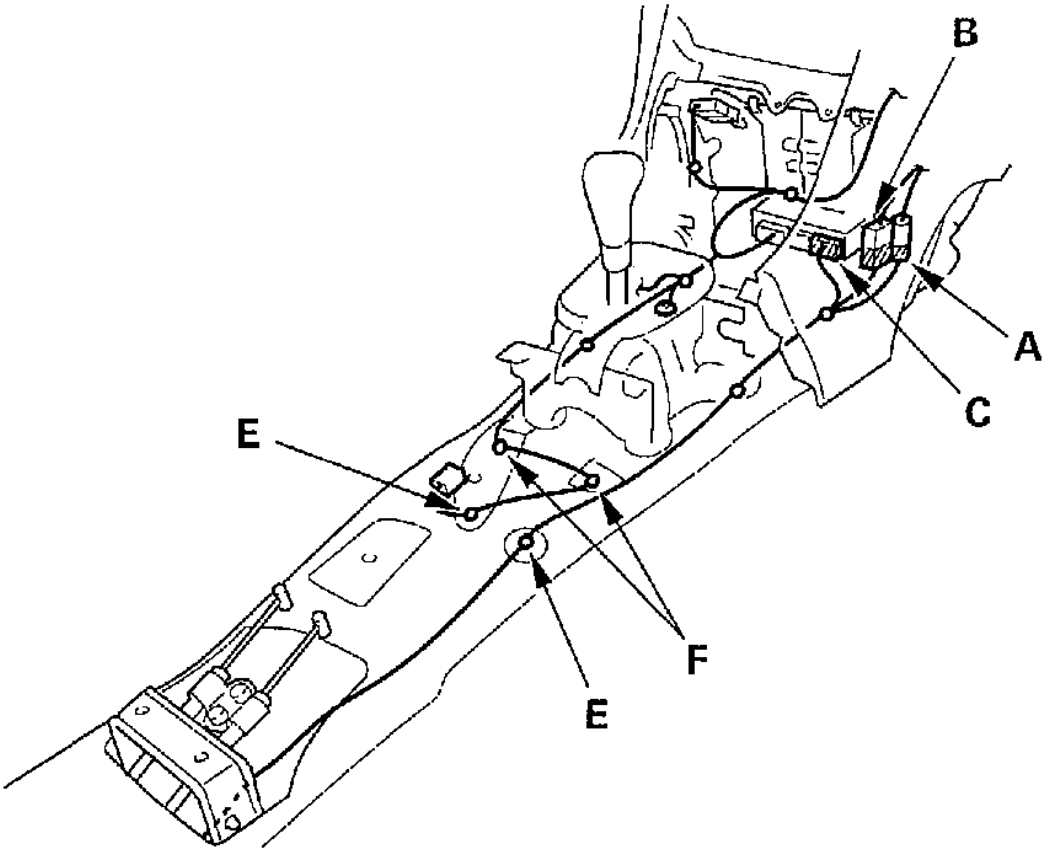


Fig. 91: Removing Connectors & Harnesses (A/T)

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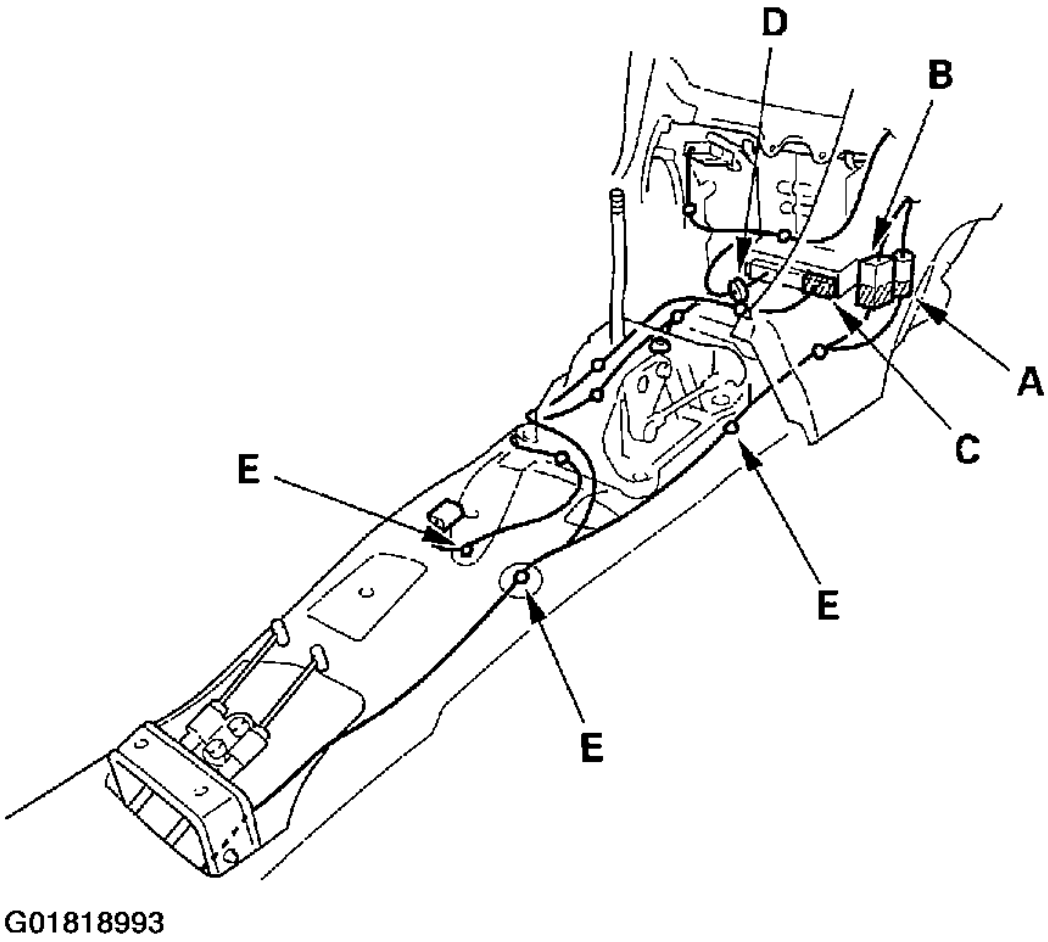


Fig. 92: Removing Connectors & Harnesses (M/T)

9. Remove the bolts securing the change lever bracket or select lever bracket (A).

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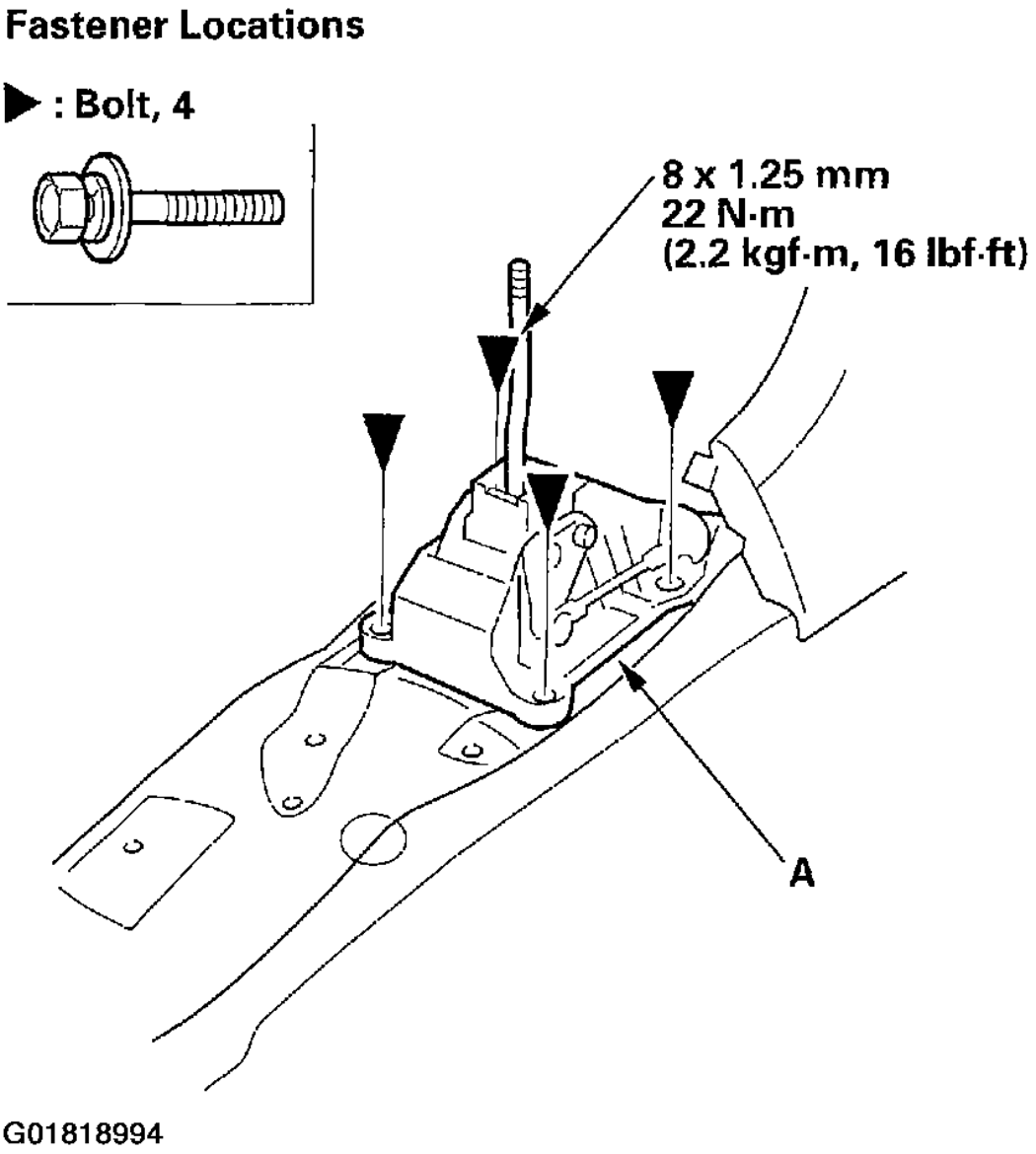


Fig. 93: Removing The Bolts

10. Remove the floor mat holders (A) from the driver's side, and release the clip (B) from middle of the carpet (C).

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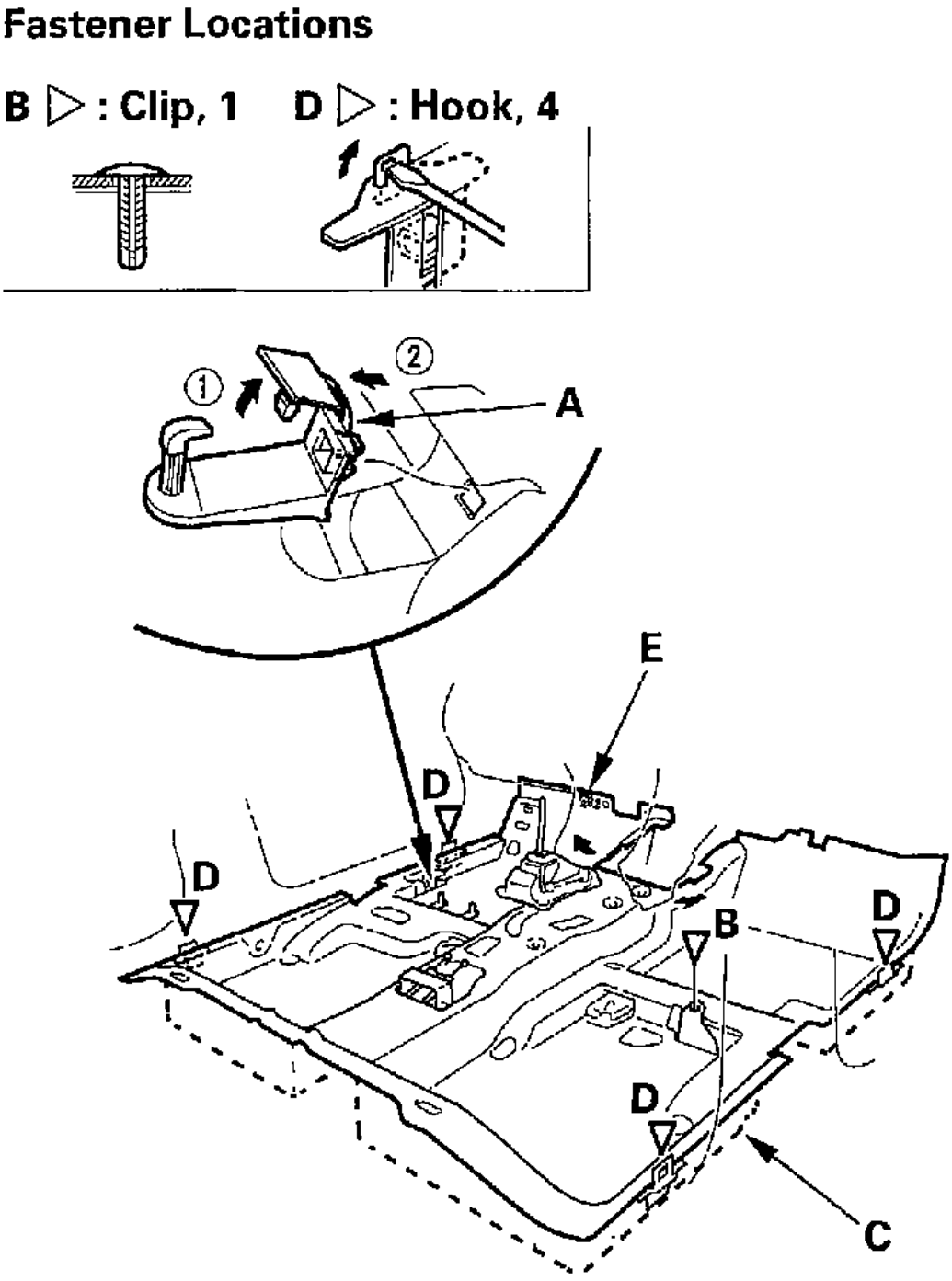


Fig. 94: Removing The Floor Mat Holders & Clip

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11. Release the hooks (D) with a flat-tip screwdriver by pushing the screwdriver toward the door, then lift upwards. Pull the fastener (E) out, then remove the carpet.
12. Install the carpet in the reverse order of removal, and note these items:
    - Take care not to damage, wrinkle or twist the carpet.
    - Make sure the seat harnesses and antenna lead are routed correctly.
    - Replace the clip if it's damaged.

    With side curtain airbag:
    - Reconnect the negative cable to the battery.
    - Reset the clock.
    - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.
    - Perform the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).

CONSOLES

CENTER CONSOLE REMOVAL/INSTALLATION

NOTE:
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to scratch the front seat, dashboard, and related parts.**

1. M/T model: Loosen the lock nut (A) to remove the shift knob (B).

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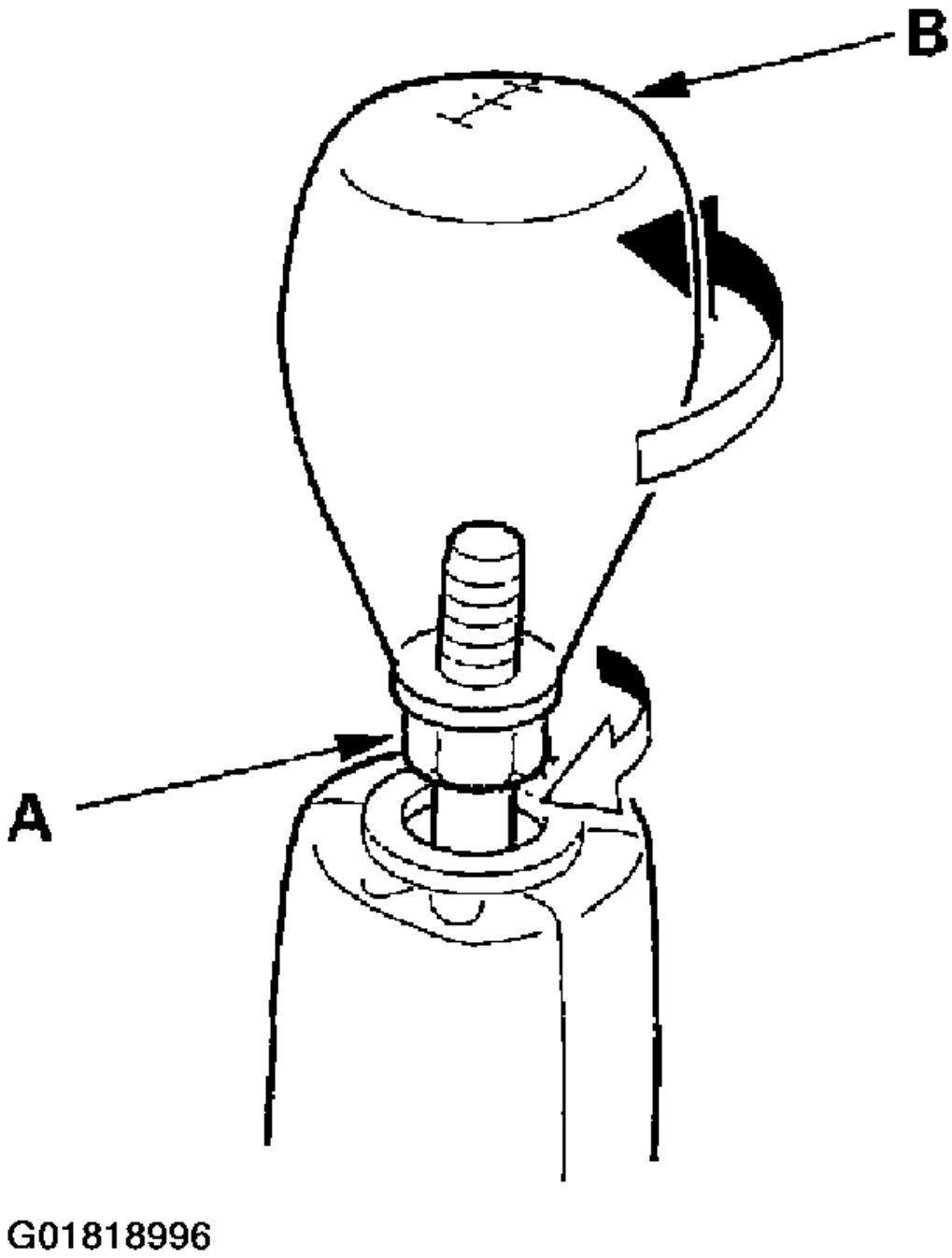


Fig. 95: Removing The Shift Knob (M/T)

2. Starting towards the front of the vehicle detach the clips by pulling the center console panel (A) up. If

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equipped, disconnect the seat heater switch connectors (B).

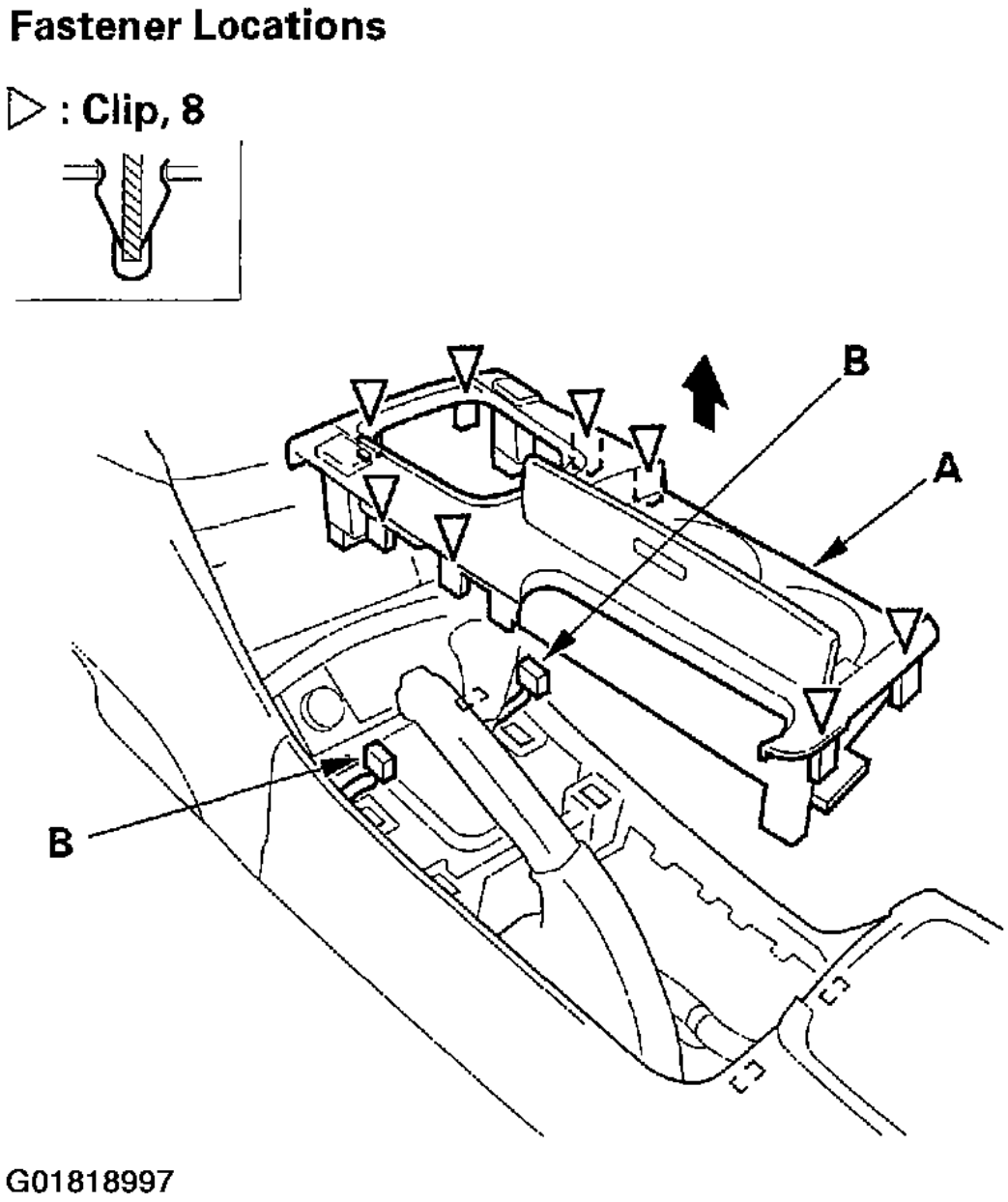


Fig. 96: Detaching The Clips

3. Remove the center upper pocket (A):
    a. Open the lid, then pull at the lower edge the case portion of pocket back by hand to detach the clips. Do not pull the lid portion while removing the center upper pocket. When it is loose, close the lid

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and remove it.

b. Disconnect the pocket light bulb socket (B) and detach the harness, clips (B).

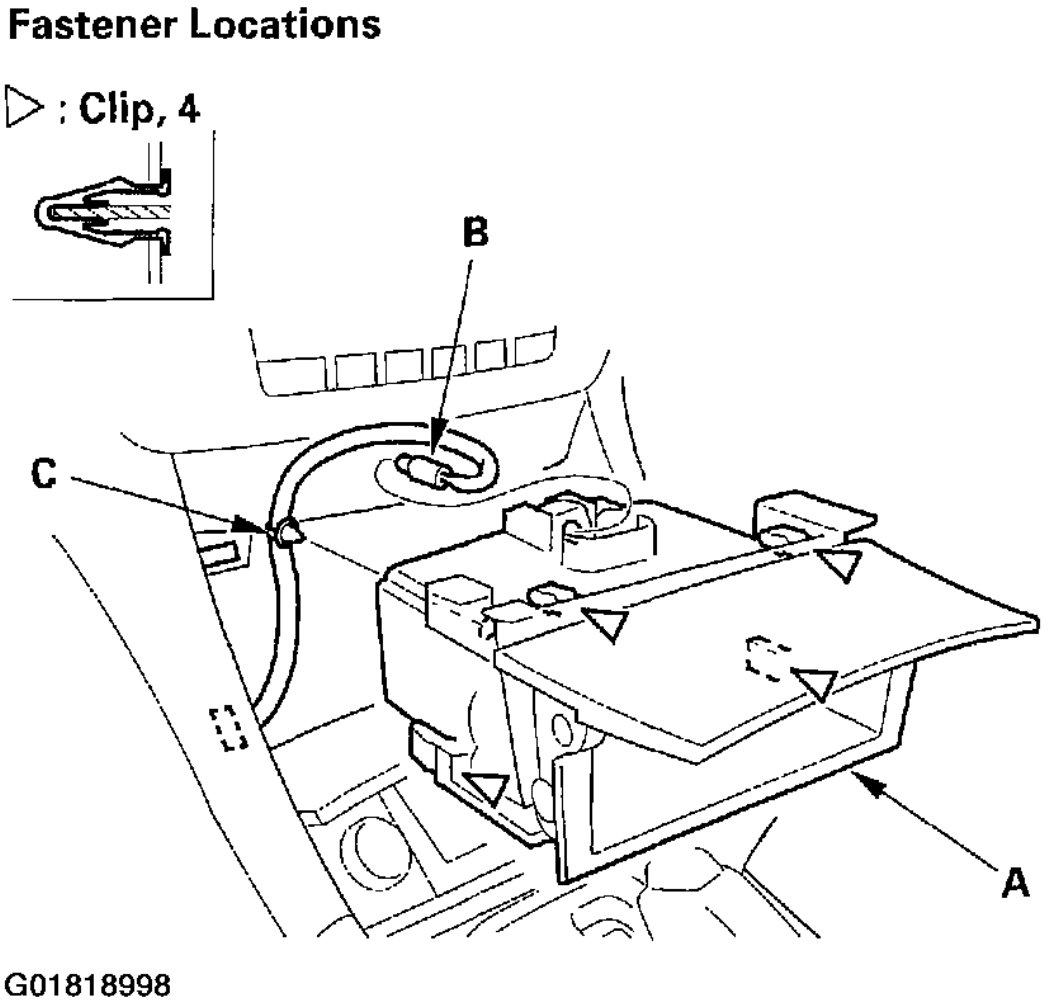


Fig. 97: Removing The Center Upper Pocket

4. Remove the screws, disconnect the front accessory power socket connector (A) and detach the harness clip (B), then remove the center lower pocket (C).

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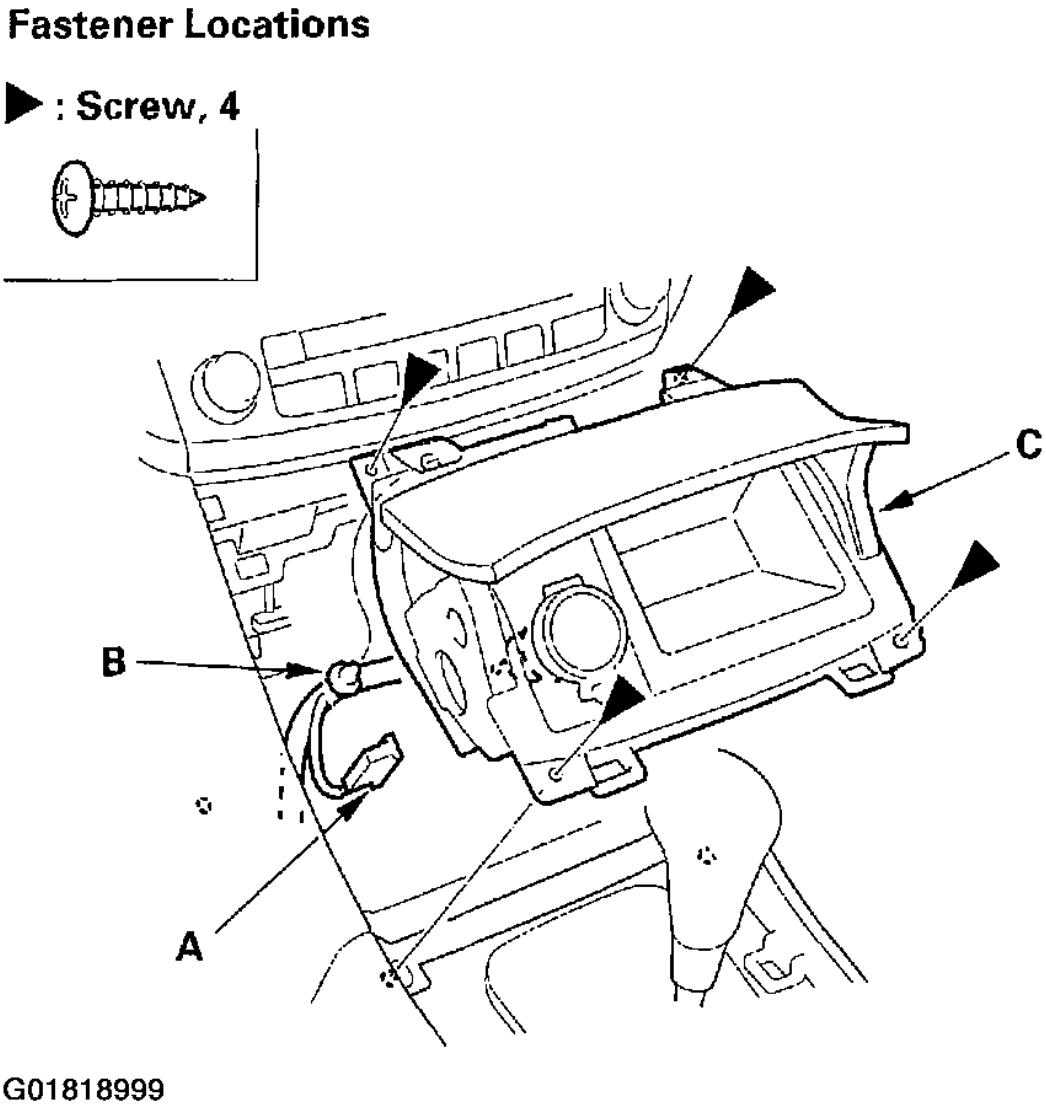


Fig. 98: Removing The Center Lower Pocket

5. Open the console box lid (A) then remove the console mat (B) and screws (C, D).

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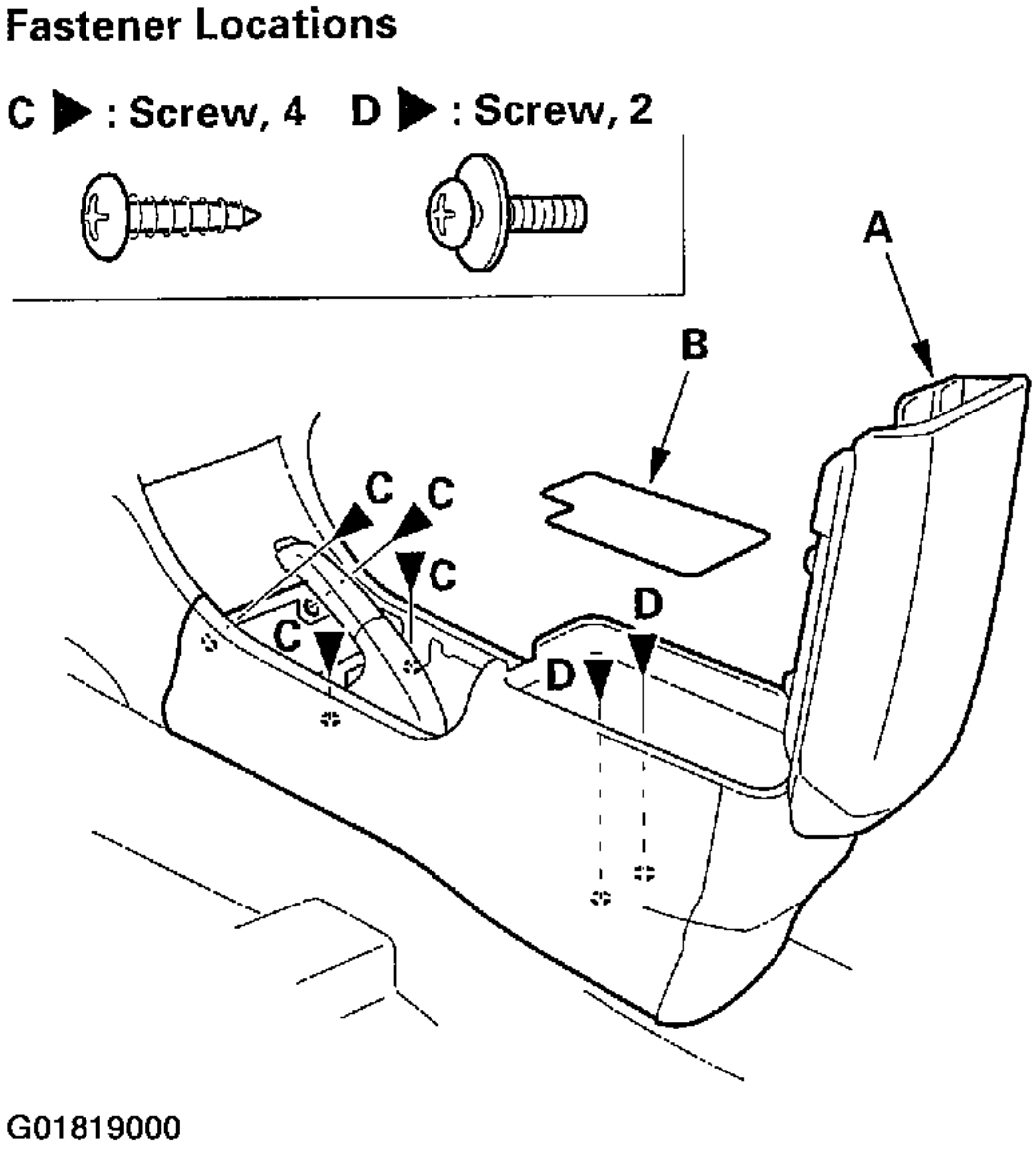


Fig. 99: Removing The Console Mat & Screws

6. Remove the center console (A).
   a. Disconnect the rear accessary power socket connector (B), and detach the clip (C).
   b. Pull up the rear portion of the console up to release the hooks (E), then remove it.

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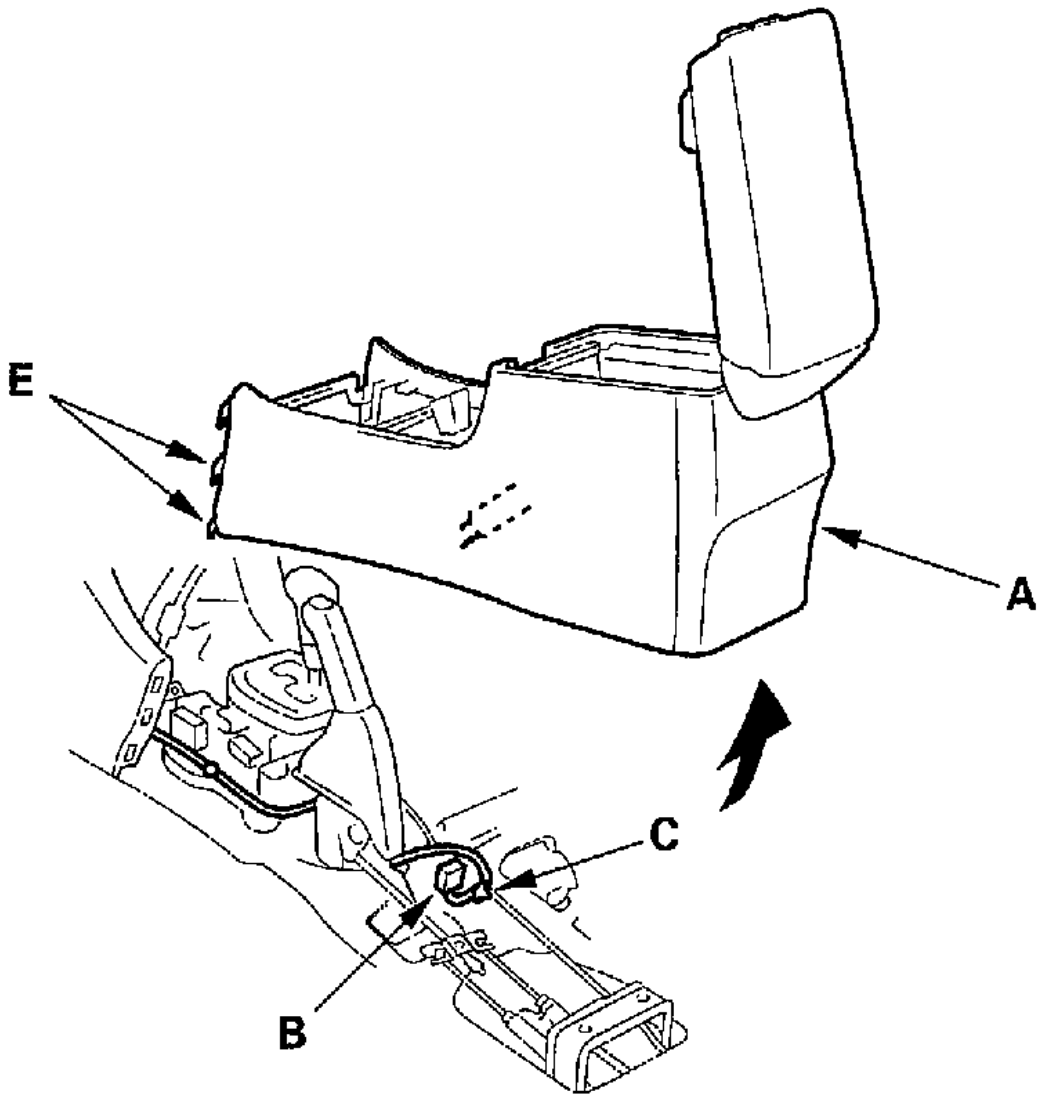


Fig. 100: Removing The Center Console

7. Install the console in the reverse older of removal, and replace any damaged clips.

CENTER CONSOLE REAR COVER REPLACEMENT

NOTE: Take care not to scratch the center console.

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

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2. Open the armrest (A) and remove the hinge mounting screws, then remove the armrest.

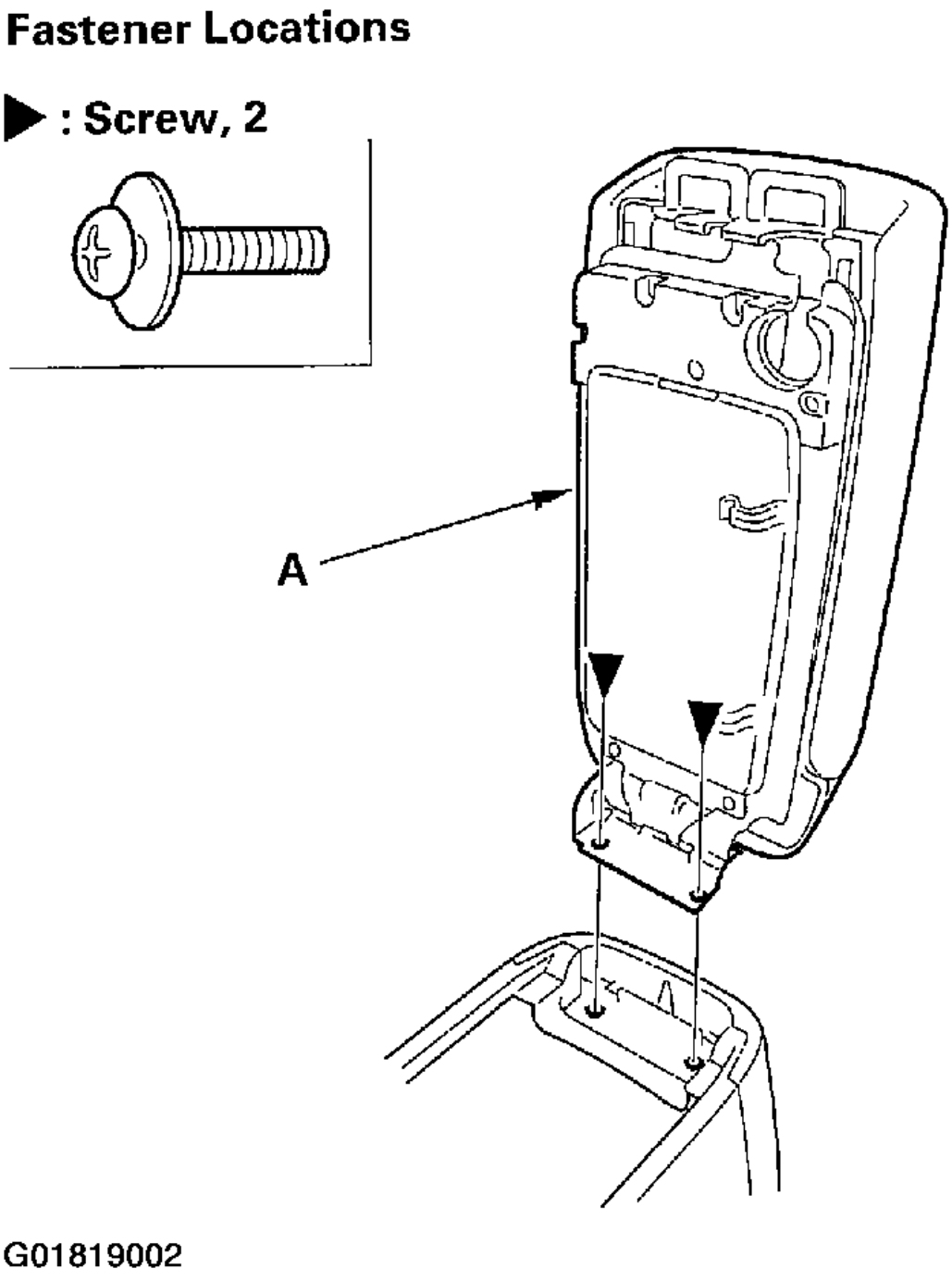


Fig. 101: Removing The Armrest

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3. Remove the screws (A) and detach the clips (B) then remove the center console rear cover (C).

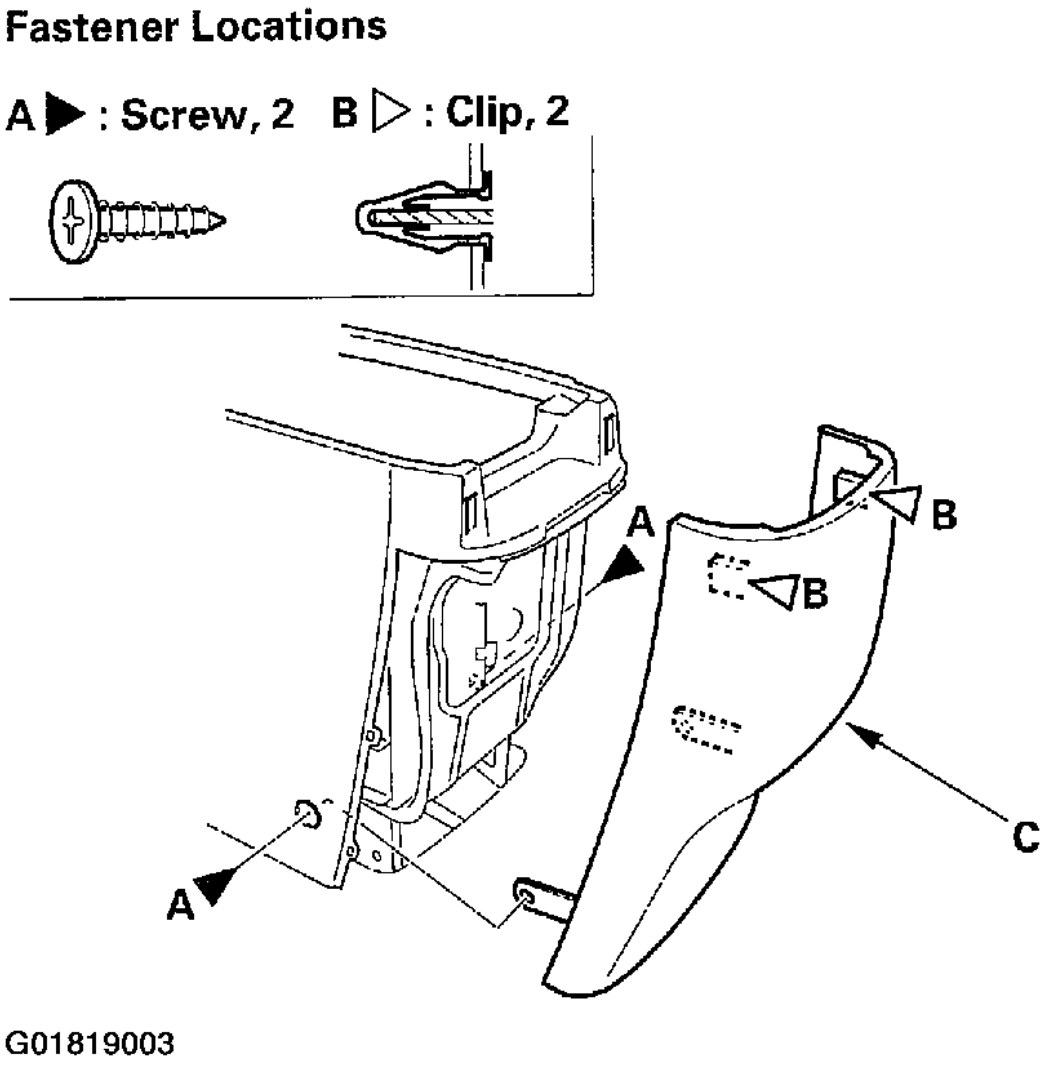


Fig. 102: Removing The Center Console Rear Cover

4. Install the cover the reverse order of removal.

DASHBOARD

DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION

NOTE:

- **Take care not to scratch the dashboard and related parts.**

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- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**

1. Adjust the steering column upward.
2. Remove the screw (A). Gently pull out the bottom, then remove the cover of the dashboard lower cover (B) to detach the clips (C) and hooks (D).

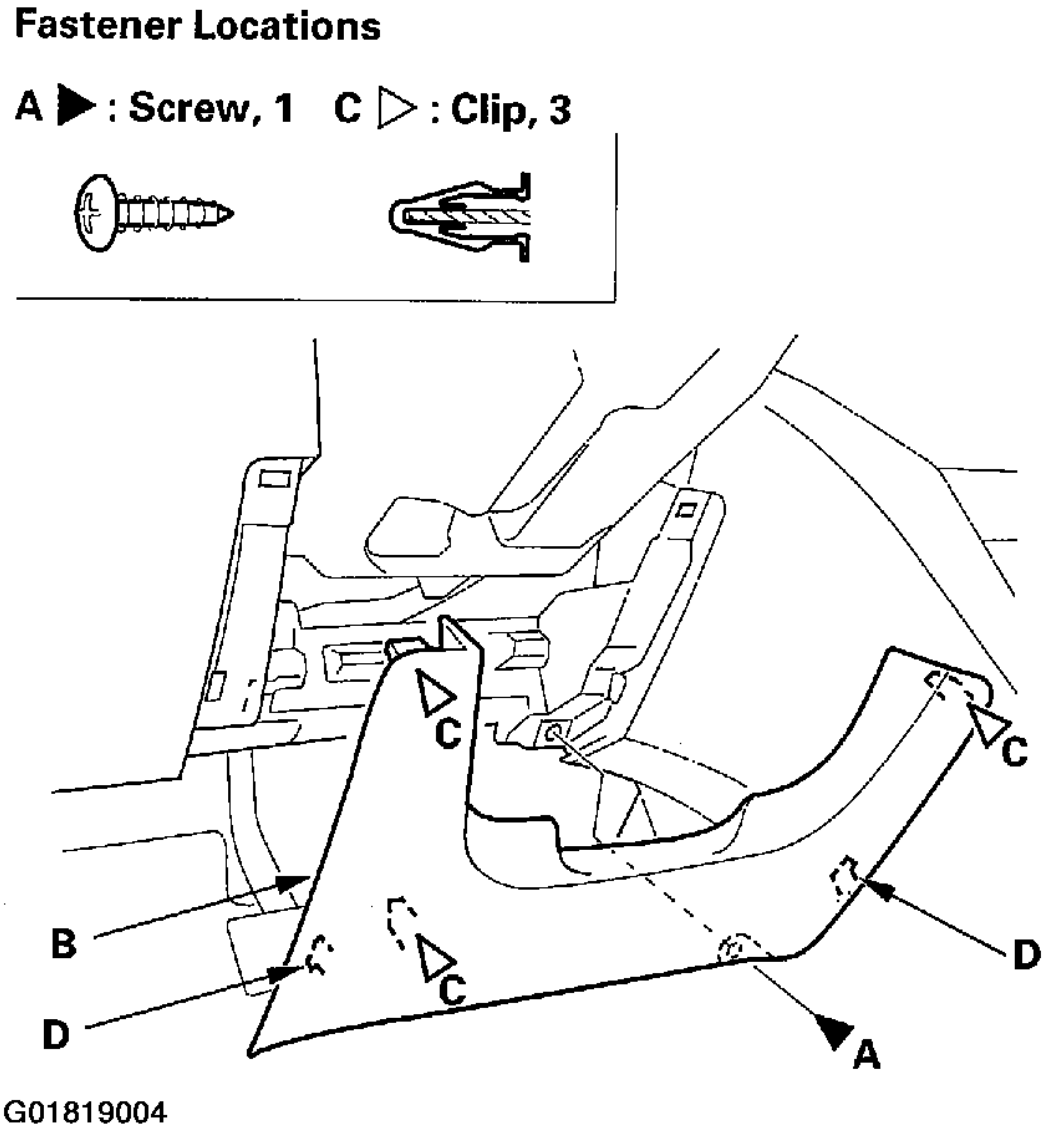


Fig. 103: Removing Driver's Dashboard Lower Cover

3. Install the cover in the reverse order of removal.

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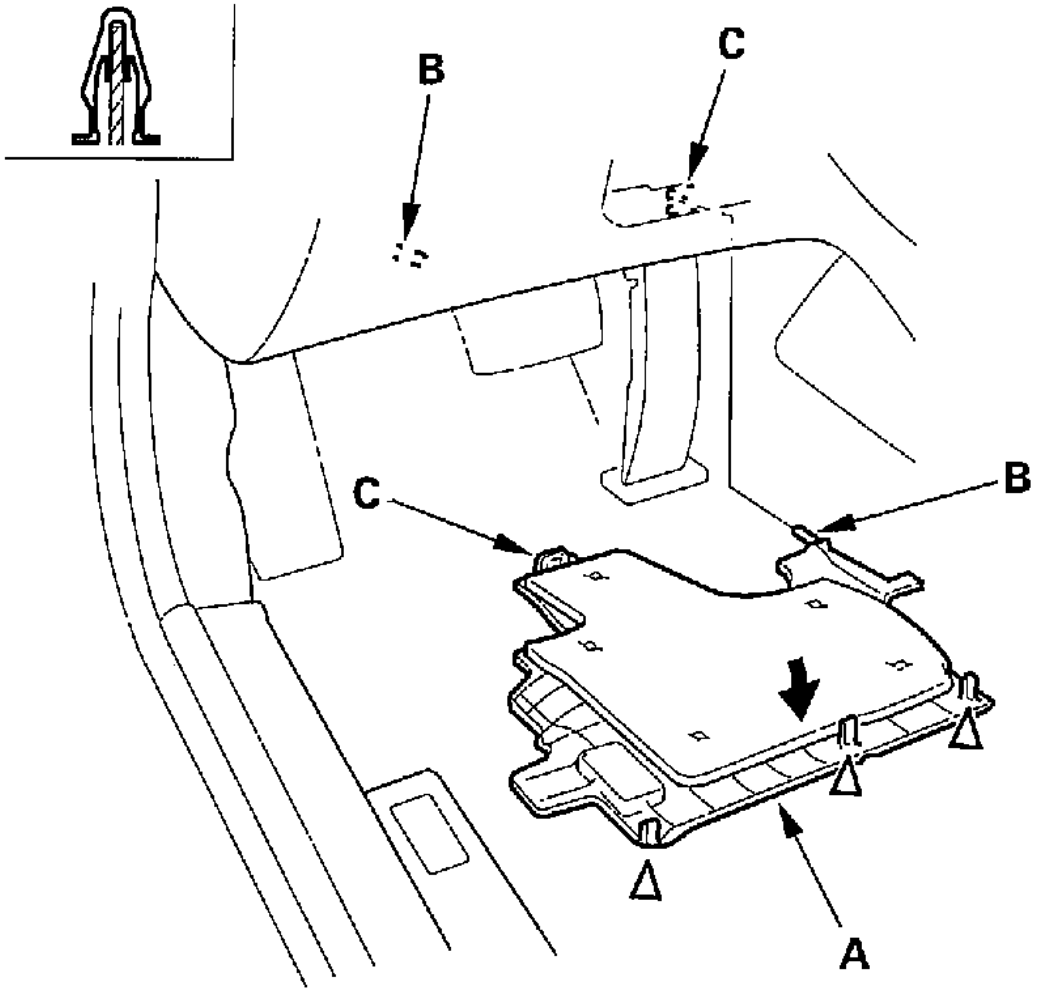
DRIVER'S DASHBOARD UNDER COVER REMOVAL/INSTALLATION

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the driver's dashboard under cover (A).
   a. Gently pull down the rear edge to detach the clip.
   b. Pull the cover away to release the pins (B) from the holders (C).

Fastener Locations

▷ : Clip, 3



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Fig. 104: Removing Driver's Dashboard Under Cover

2. Install the cover in the reverse order of removal.

DRIVER'S OUTER DASHBOARD TRIM REMOVAL/INSTALLATION

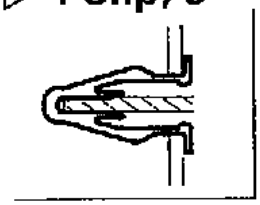
NOTE: Take care not to scratch the dashboard and related parts.

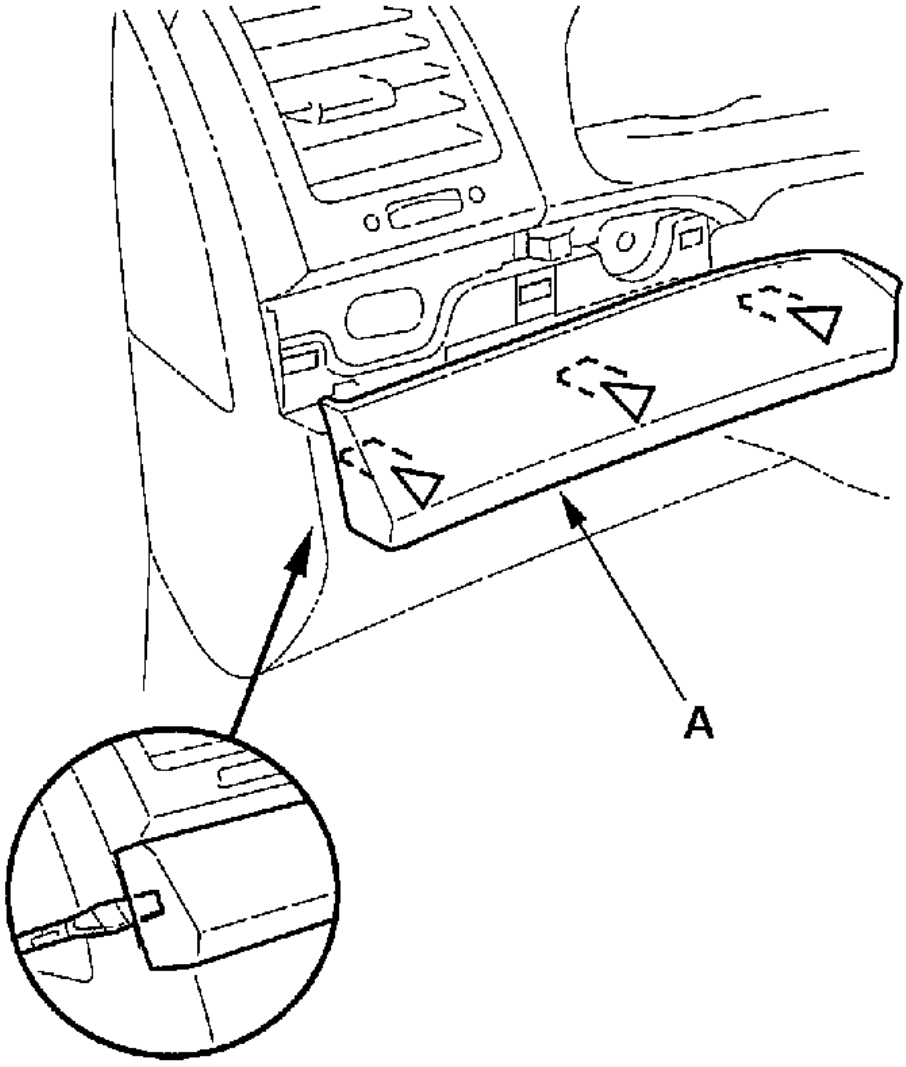
1. Pry up on the outside edge of the driver's outer dashboard trim (A) with a flat-tip screwdriver wrapped with protective tape to detach the clips, then remove the trim.

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Fastener Locations

▷ : Clip, 3





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Fig. 105: Removing Driver's Outer Dashboard Trim

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2. Install the trim in the reverse order of removal, and push the clips into place securely.

DRIVER'S INNER DASHBOARD TRIM REMOVAL/INSTALLATION

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the driver's inner dashboard trim (A).
   a. Using a flat-tip screwdriver wrapped with protective tape, pry up on the edge of the trim at the notch (B).
   b. Detach the clips.
   c. Disconnect the in-car temperature sensor connector (C) and air hose (D).

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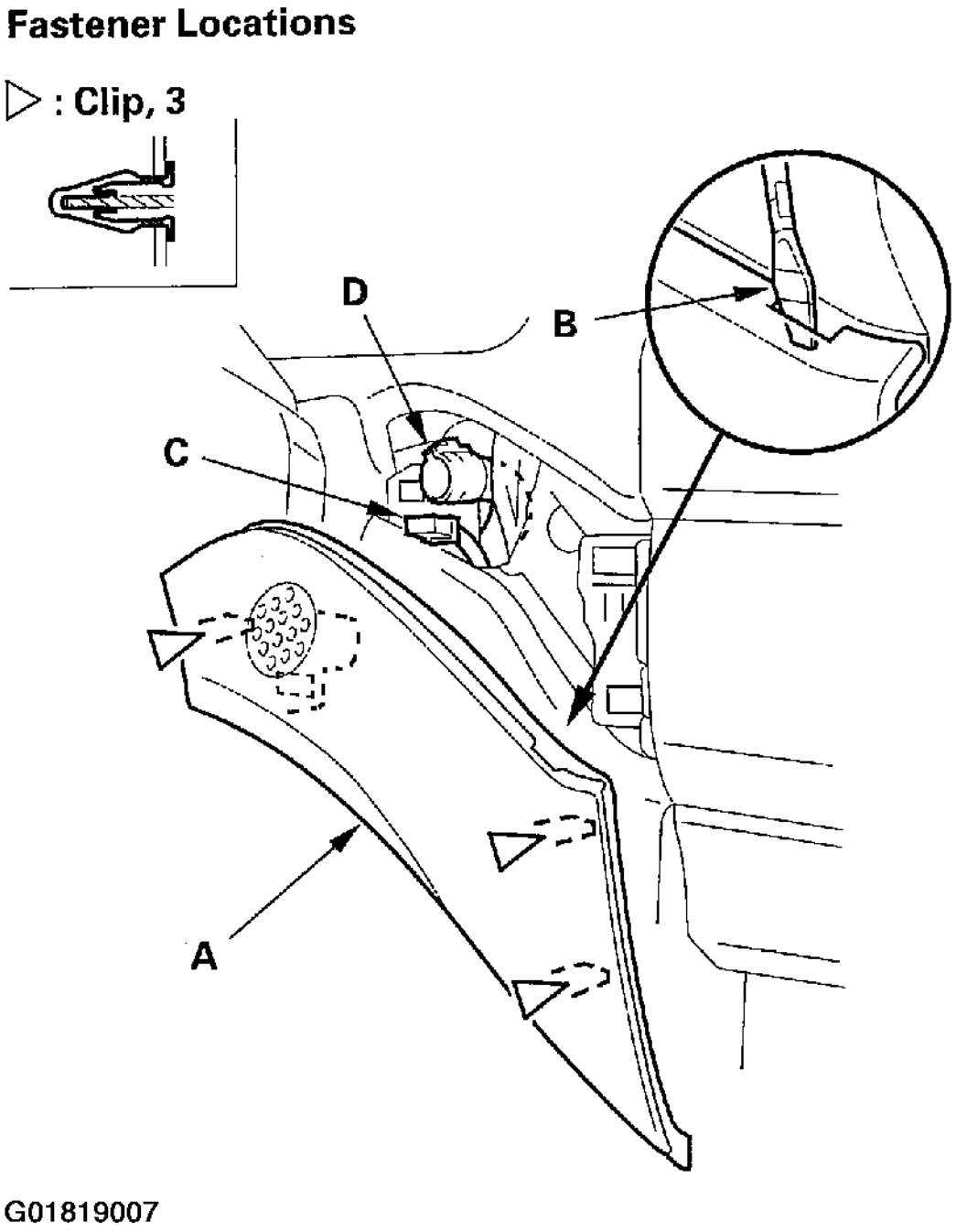


Fig. 106: Removing Driver's Inner Dashboard Trim

2. Install the trim in the reverse order of removal, and make sure the connector is plugged in properly, and the air hose is connected securely.

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PASSENGER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the passenger's dashboard lower cover (A).
   a. Gently pull down the edge nearest the glove box to detach the clips.
   b. Pull the cover away to release the pins (B) from the holders (C).

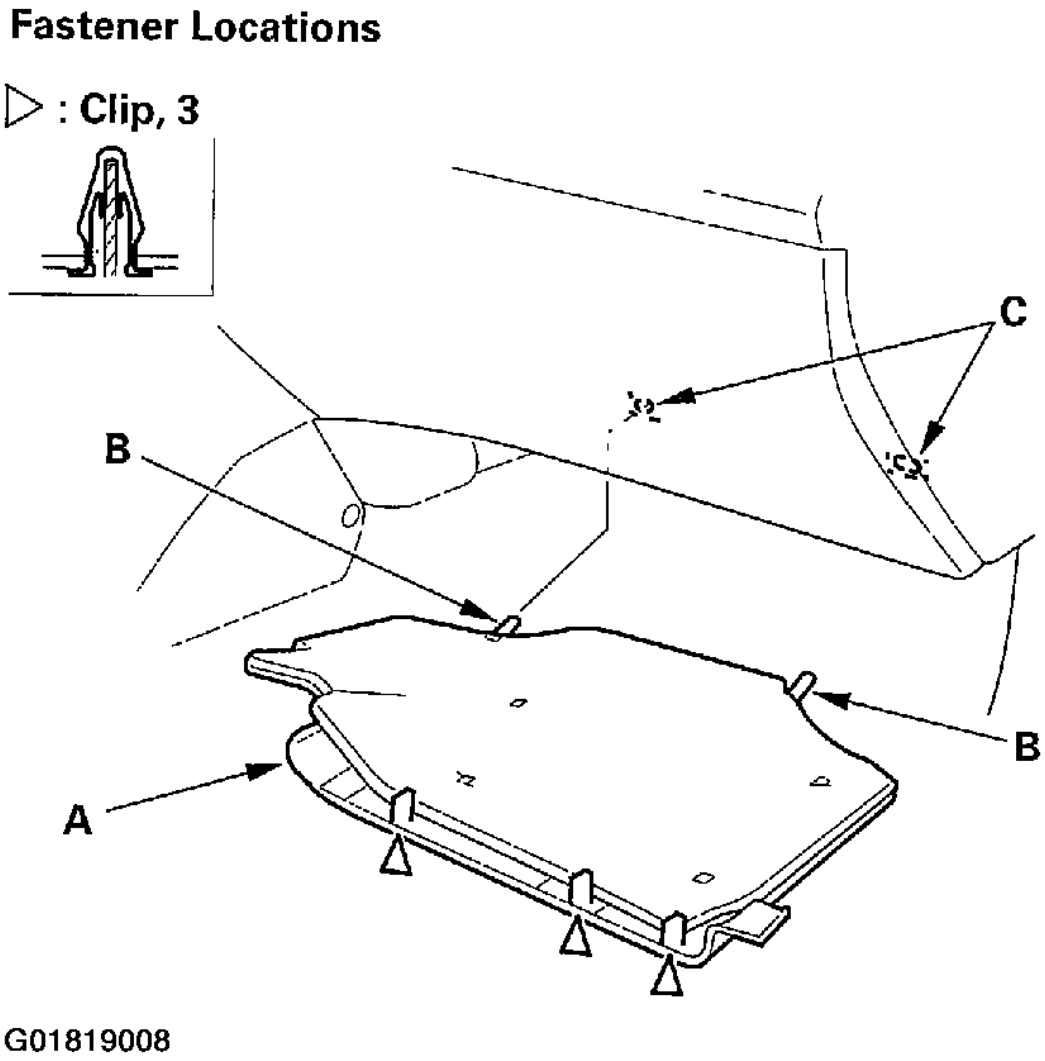


Fig. 107: Removing Passenger's Dashboard Lower Cover

2. Install the cover in the reverse order of removal.

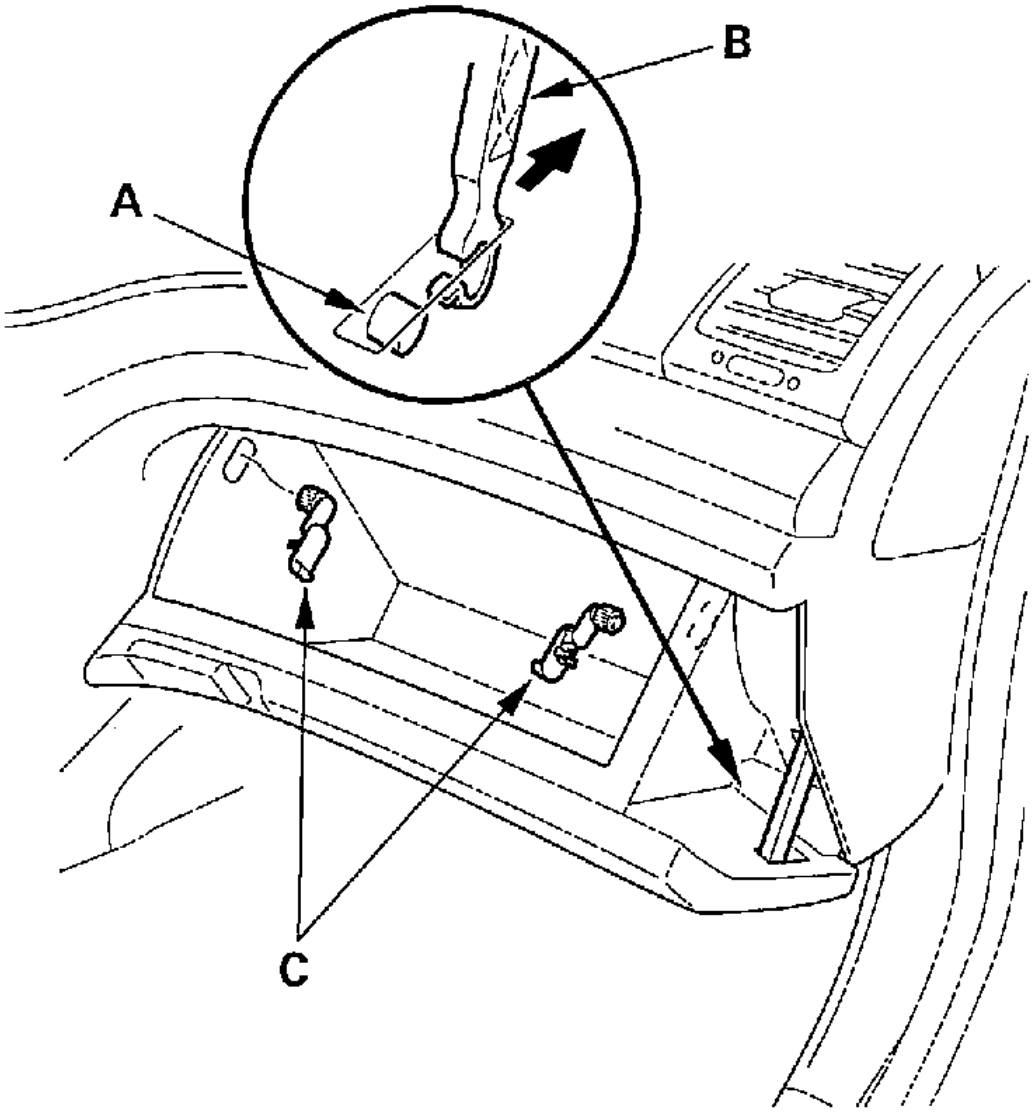
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GLOVE BOX REMOVAL/INSTALLATION

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE: Take care not to scratch the dashboard and related parts.

1. Detach the hook (A) of the glove box damper (B), and remove the glove box stop (C) on each side.



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Fig. 108: Removing Glove Box Stops

2. Disconnect the trunk lid opener main switch connector (A) and detach the harness clip (B).

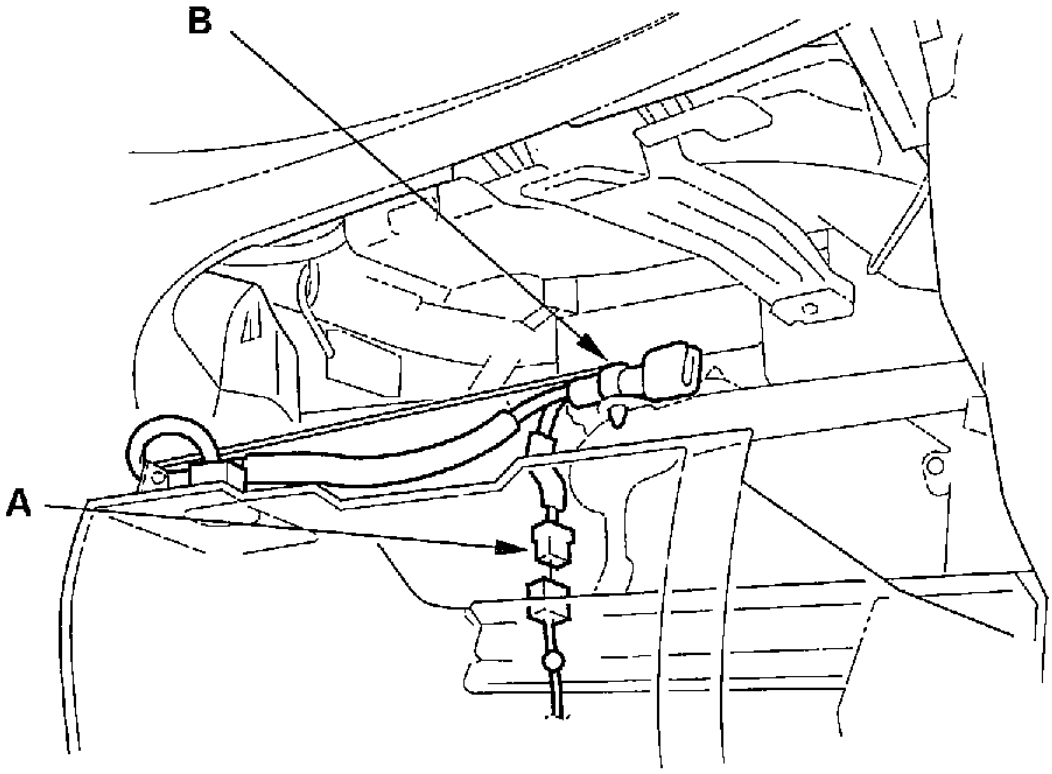


Fig. 109: Disconnecting The Trunk Lid Opener Main Switch Connector

3. While holding the glove box (A), remove the screws, then remove the glove box.

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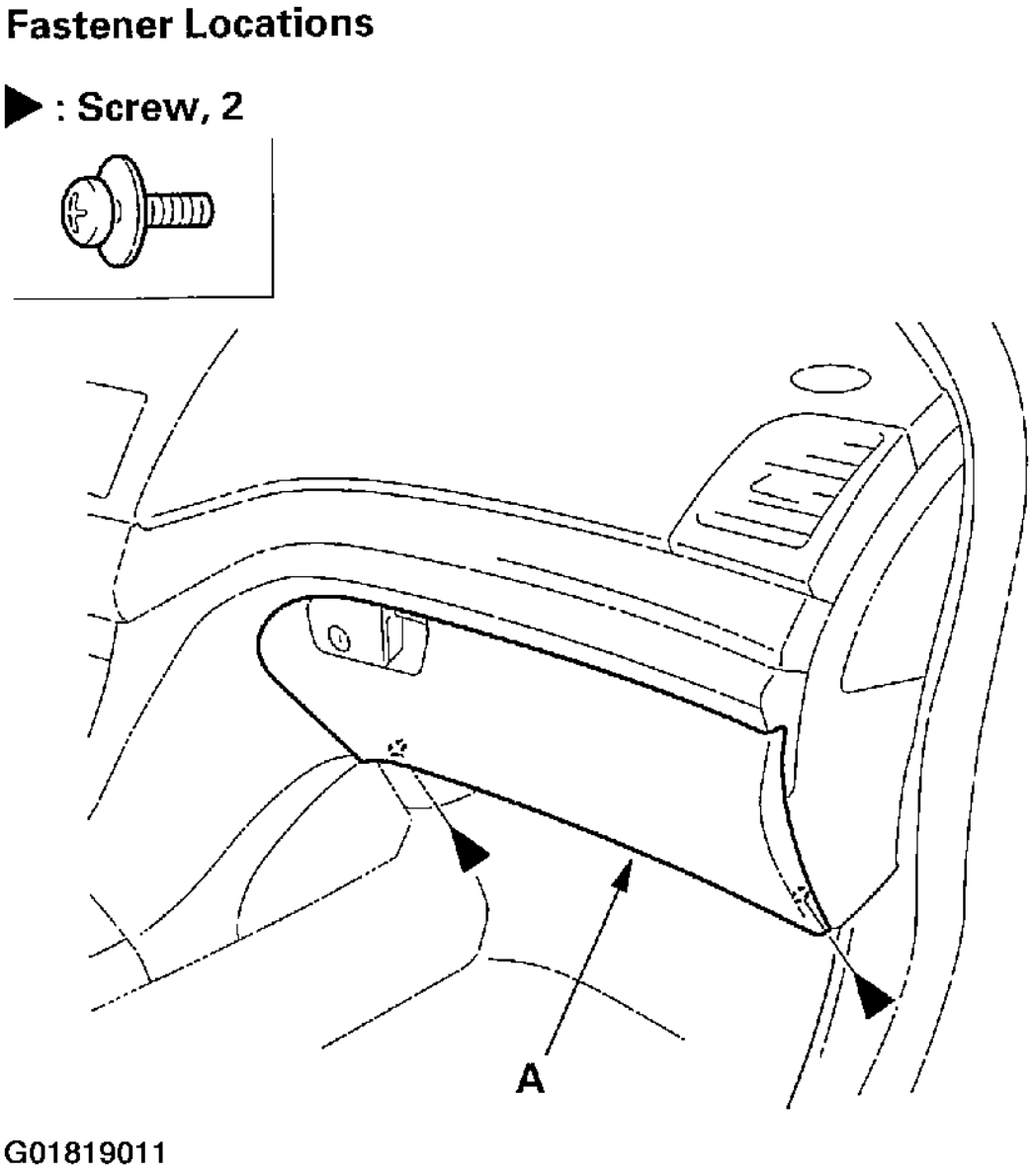


Fig. 110: Removing Glove Box

4. From the inside of the dash, gently push out on the front of the dashboard side cover (A) to release the hooks (B), to remove the cover.

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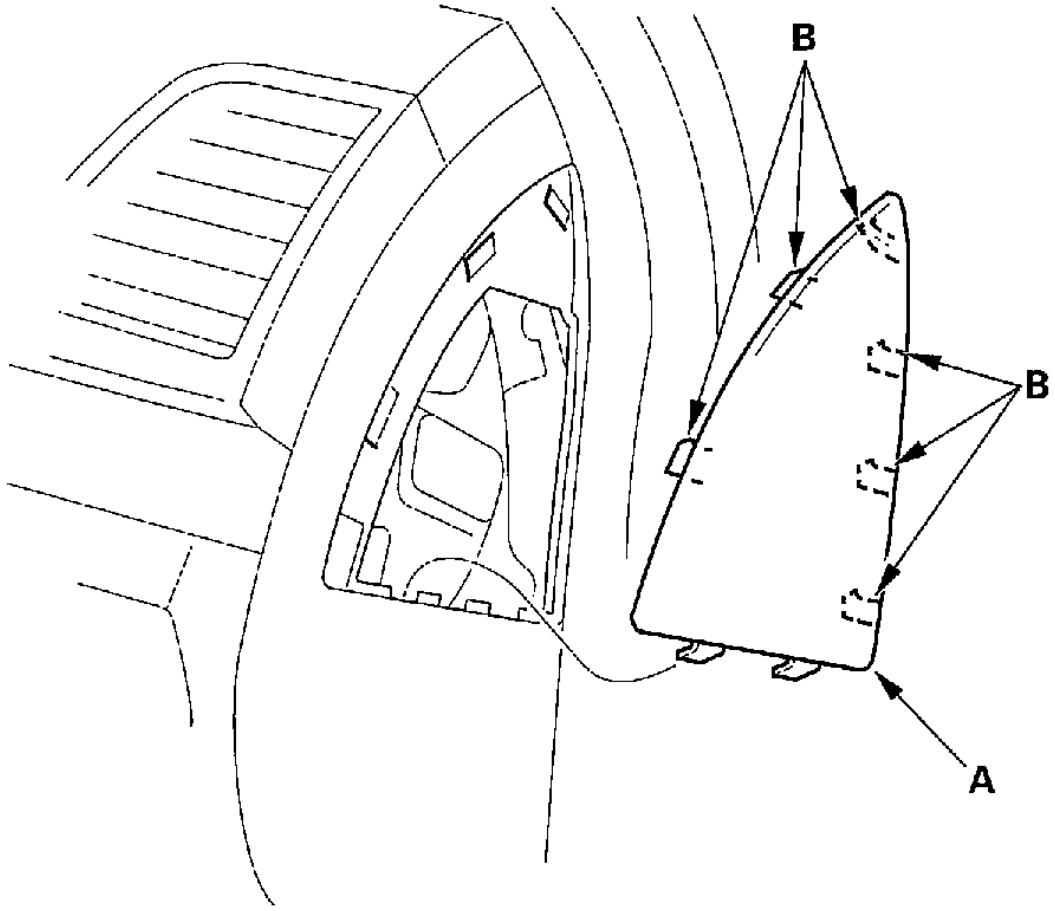


Fig. 111: Removing Dashboard Side Cover

5. Remove the screw, then remove the glove box damper (A).

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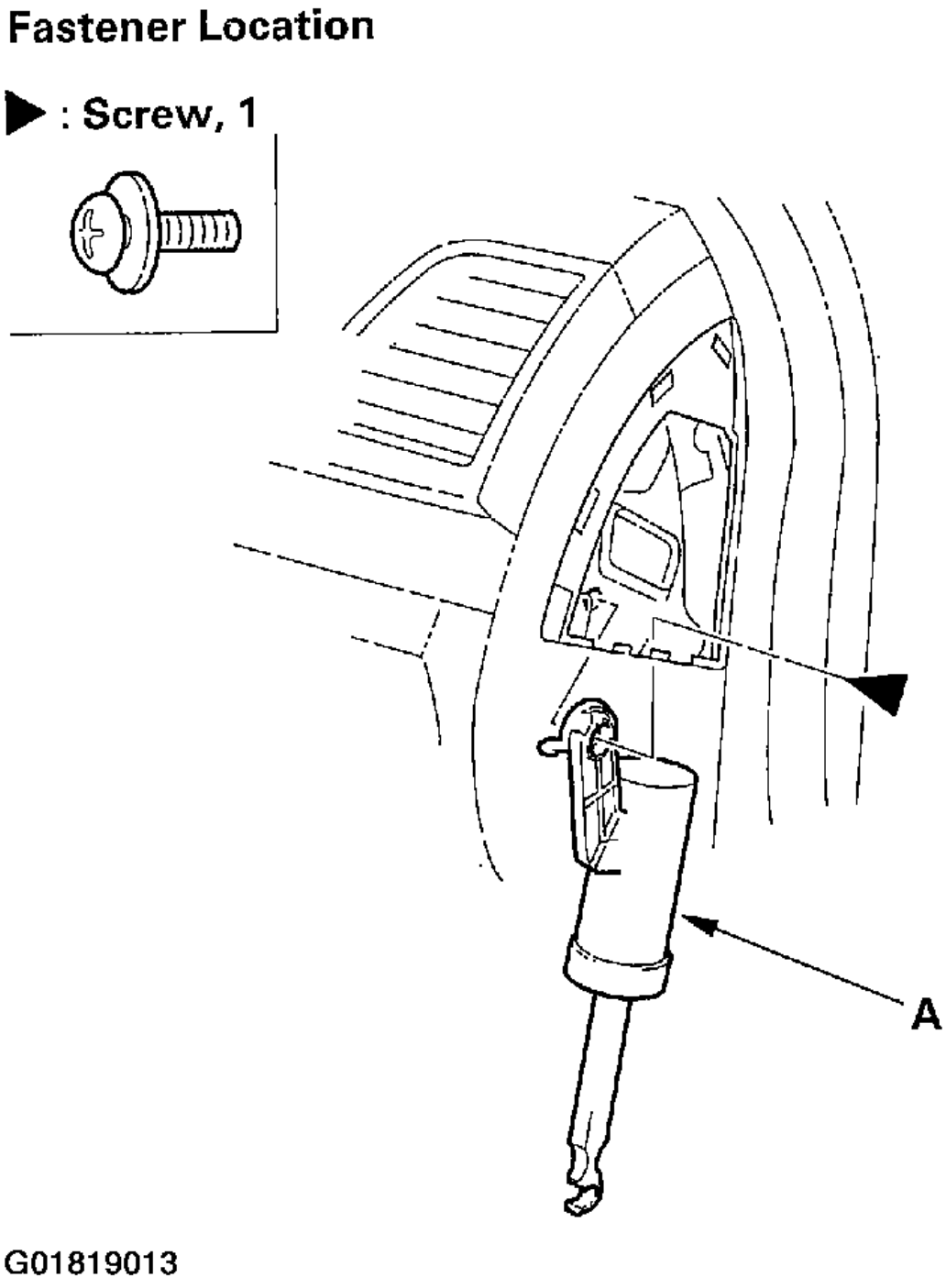


Fig. 112: Removing The Glove Box Damper

6. Install the glove box in the reverse order of removal.

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GLOVE BOX LOCK CYLINDER REPLACEMENT

NOTE: Take care not to scratch the glove box.

1. Remove the glove box (see **GLOVE BOX REMOVAL/INSTALLATION**).
2. Insert a hooked-shaped tool in under the knob (A) while pulling it, and pull the top of the retainer (B) up.

NOTE: Do not remove the retainer entirely. Leave the other side of it in the original position when removing and installing the lock cylinder.

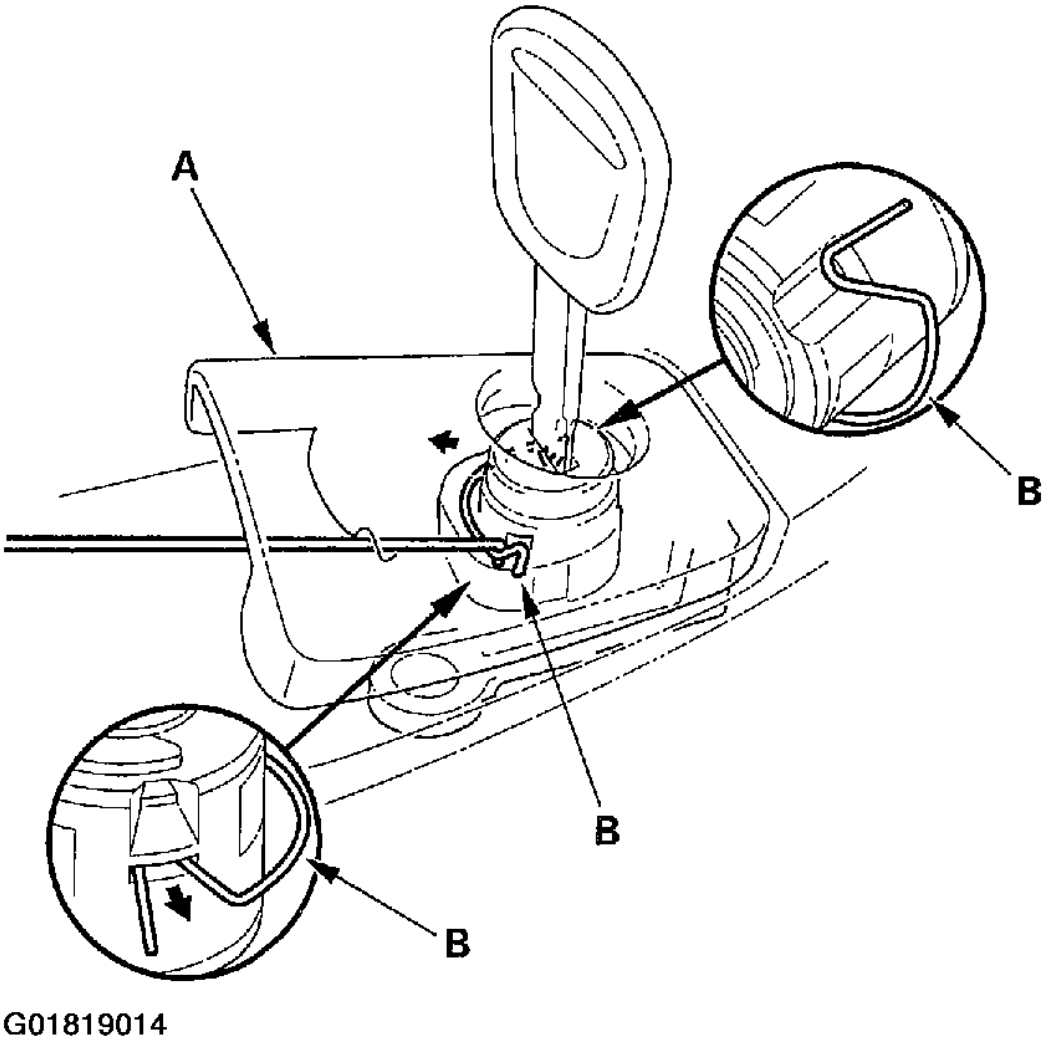


Fig. 113: Pulling The Top Of The Retainer

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3. Remove the glove box lock cylinder (A).

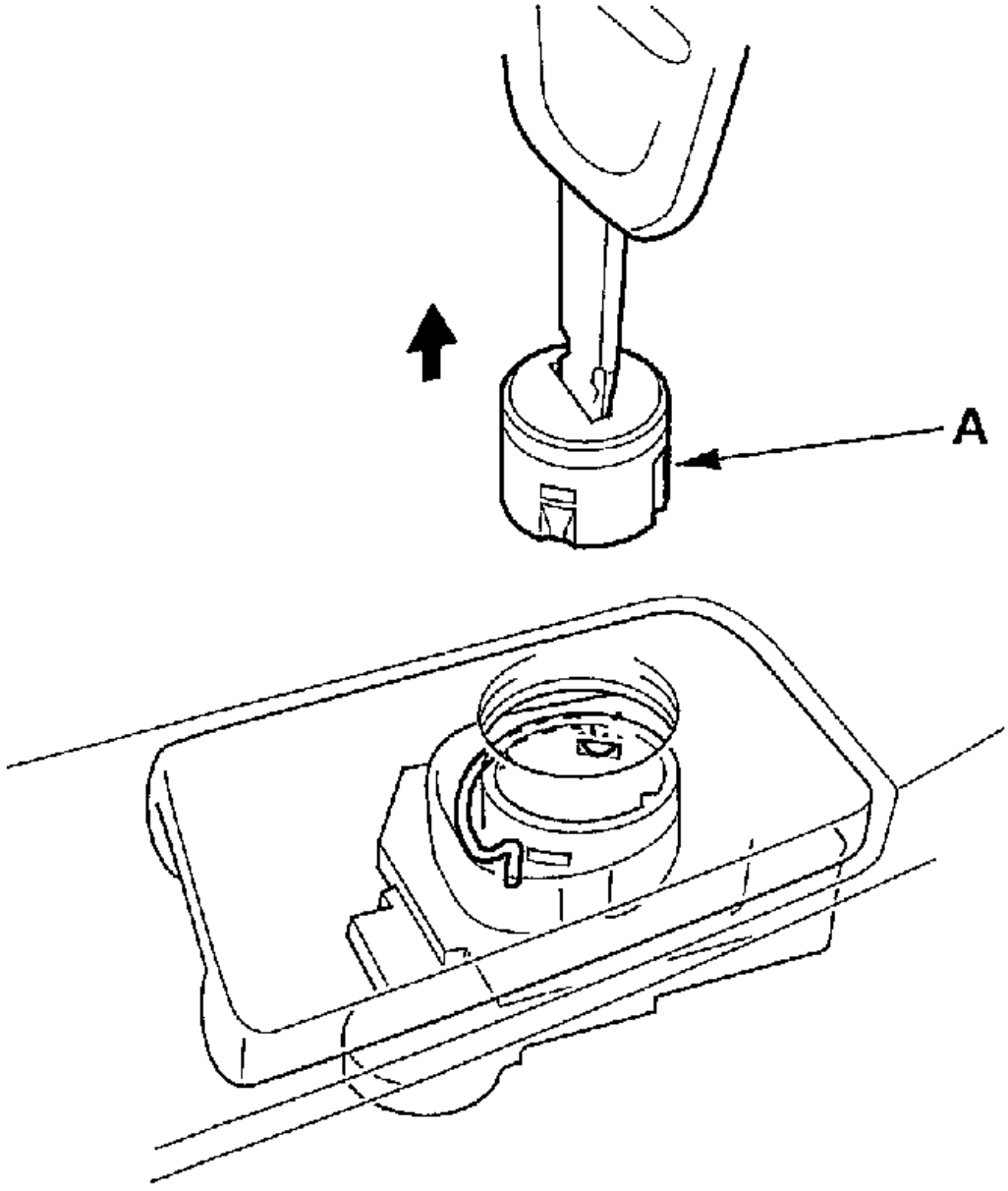


Fig. 114: Removing The Glove Box Lock Cylinder

4. Reinstall the top of the retainer (A) in the original position, then reinstall the lock cylinder (B). Push the

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cylinder into place securely until the retainer snaps into place.

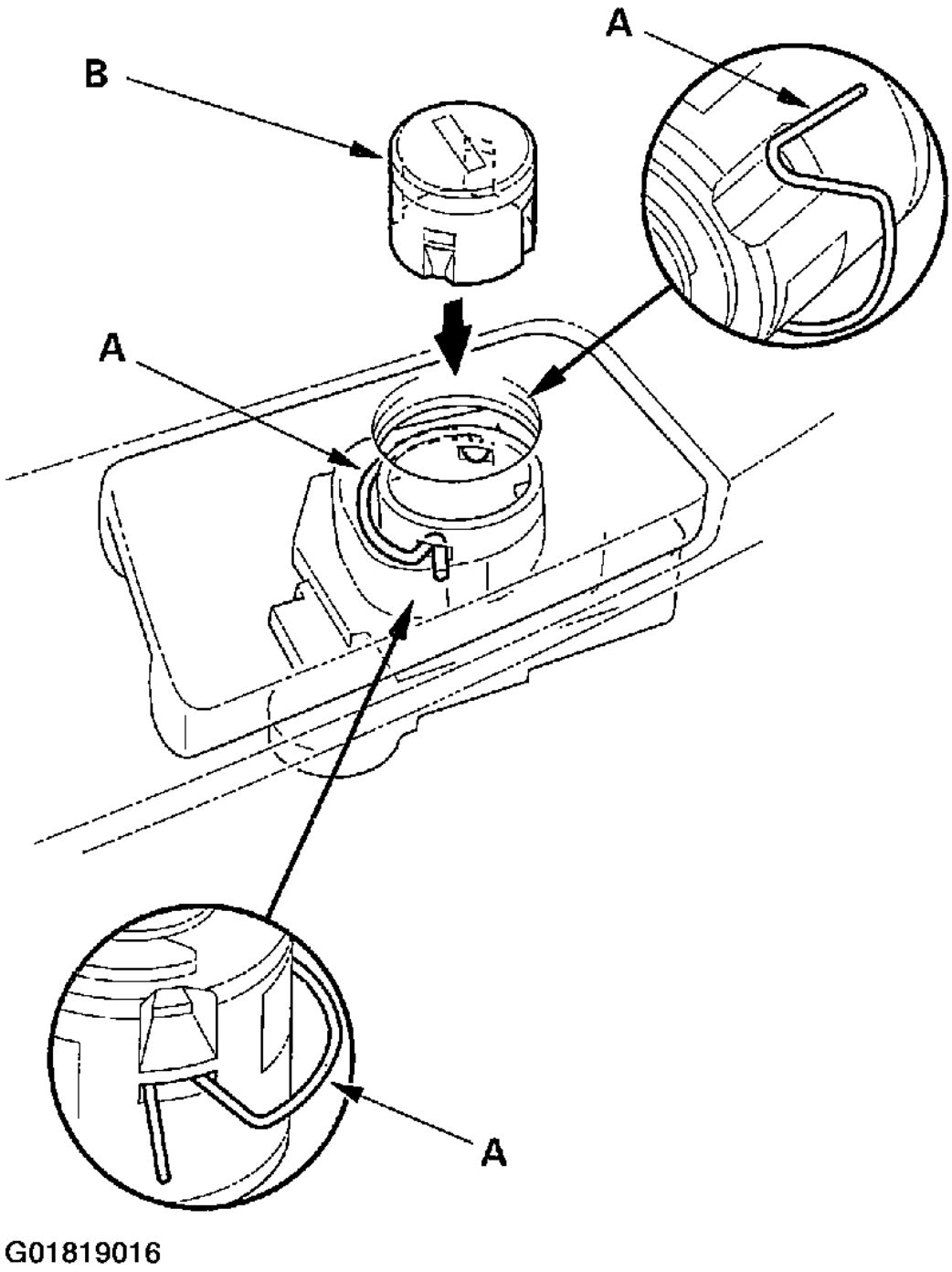


Fig. 115: Installing The Glove Box Lock Cylinder

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PASSENGER'S DASHBOARD TRIM REMOVAL/INSTALLATION

NOTE: Take care not to scratch the dashboard and related parts.

1. Pry up on the outside edge of the passenger's dashboard trim (A) with a flat-tip screwdriver wrapped with protective tape to detach the clips, then remove the trim.

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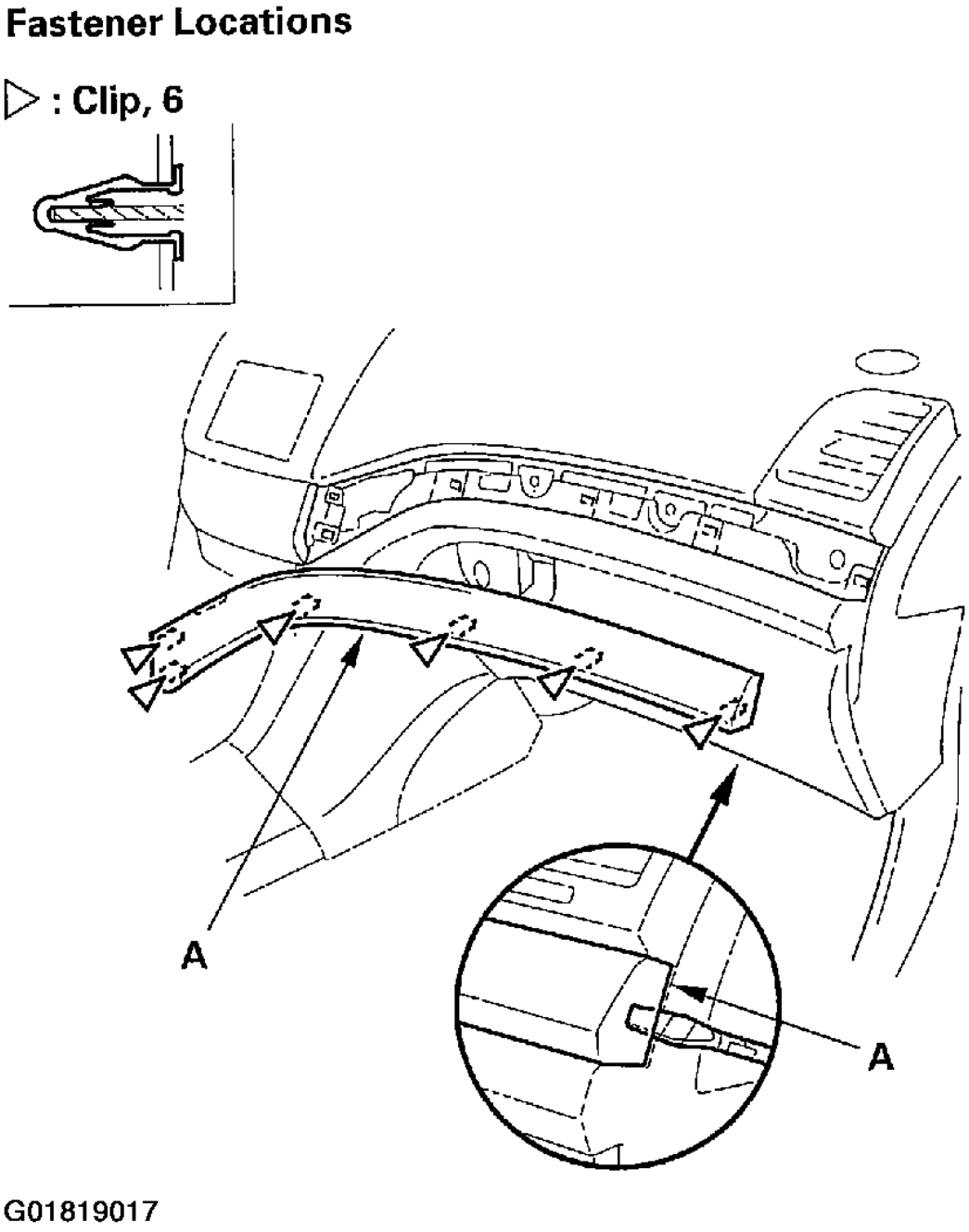


Fig. 116: Removing Passenger's Dashboard Trim

2. Install the trim in the reverse order of removal, and push the clips into place securely.

DASHBOARD CENTER VENT REMOVAL/INSTALLATION

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Without Navigation System

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the dashboard and related parts.**
- **Lay a shop towel under the parts when working on them to protect the face panel from scratches or other damage.**

1. Remove the Audio-HVAC-Display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**).
2. Remove the screws securing the center vent (A), then remove it.

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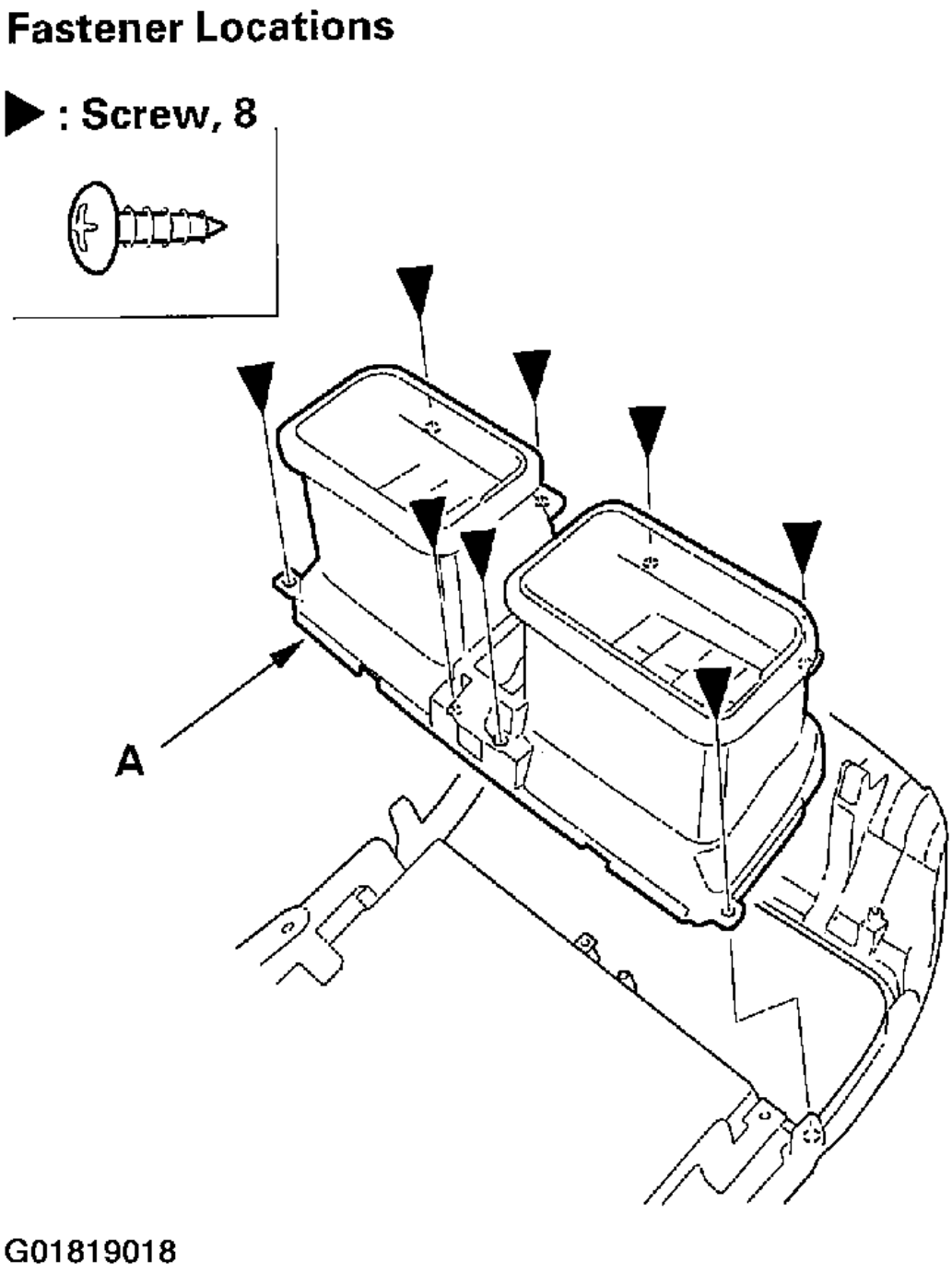


Fig. 117: Removing Center Vent

3. Install the center vent in the reverse order of removal.

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With Navigation System

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the dashboard and related parts.**
- **Lay a shop towel under the parts when working on them to protect the face panel from scratches or other damage.**
- **Do not work in a dusty or dirty place.**
- **Discharge static electricity from your body before and during the work.**
- **Do not touch the circuit board with your bare hands.**
- **Do not work with dirty hands.**
- **Be careful not to fold the flat plate cable.**
- **Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)**

1. Remove the Audio-HVAC-Display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**).
2. Remove the audio unit (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**).
3. Remove the screws (A, B) securing the center vent (C) and the display unit cover (D).

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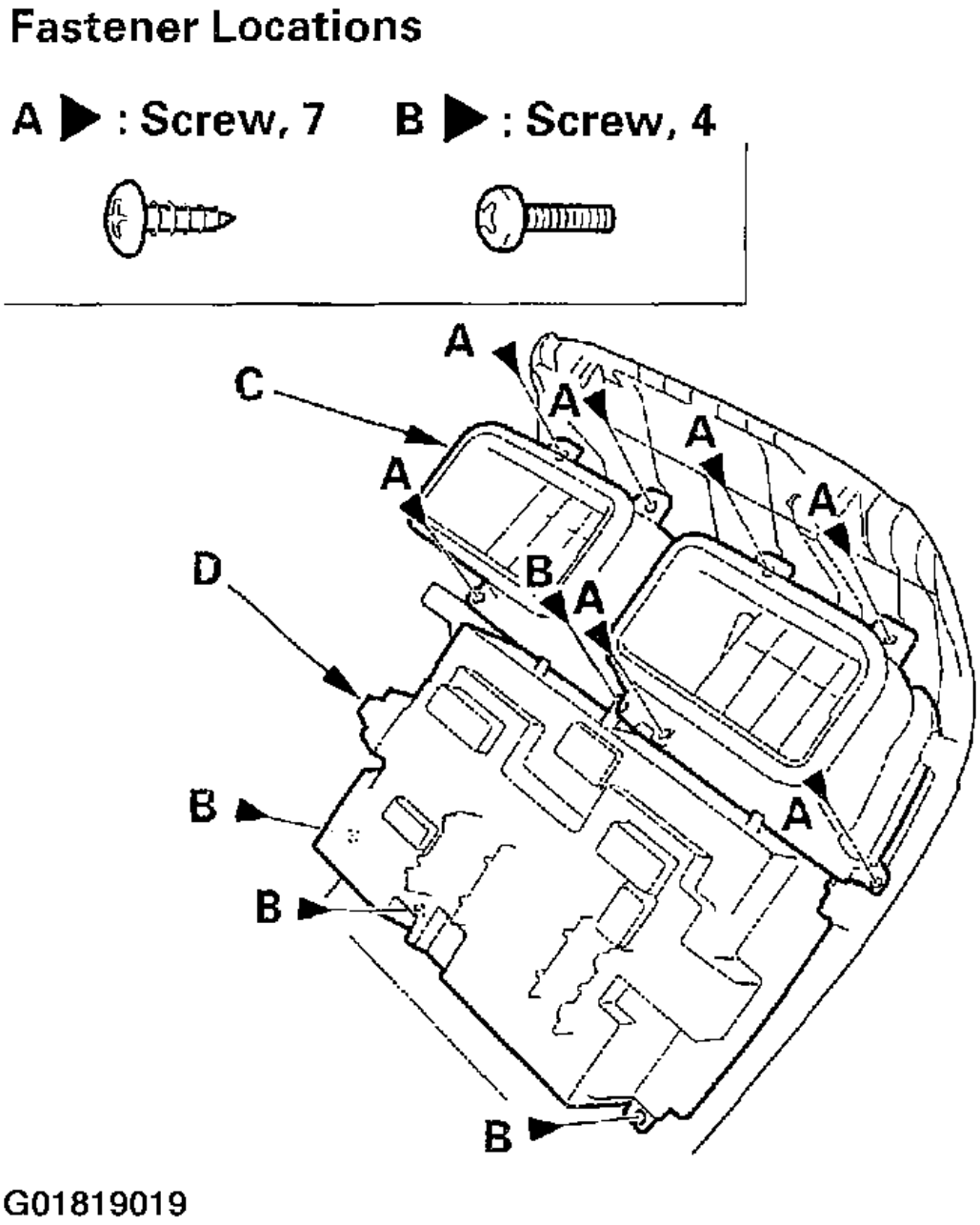


Fig. 118: Removing The Screws

4. Pull up on the top of the display unit cover (A) slightly until the middle mounting portion (B) of the center vent (C) can be removed from under the bracket (D), then remove the center vent from the center panel (E).

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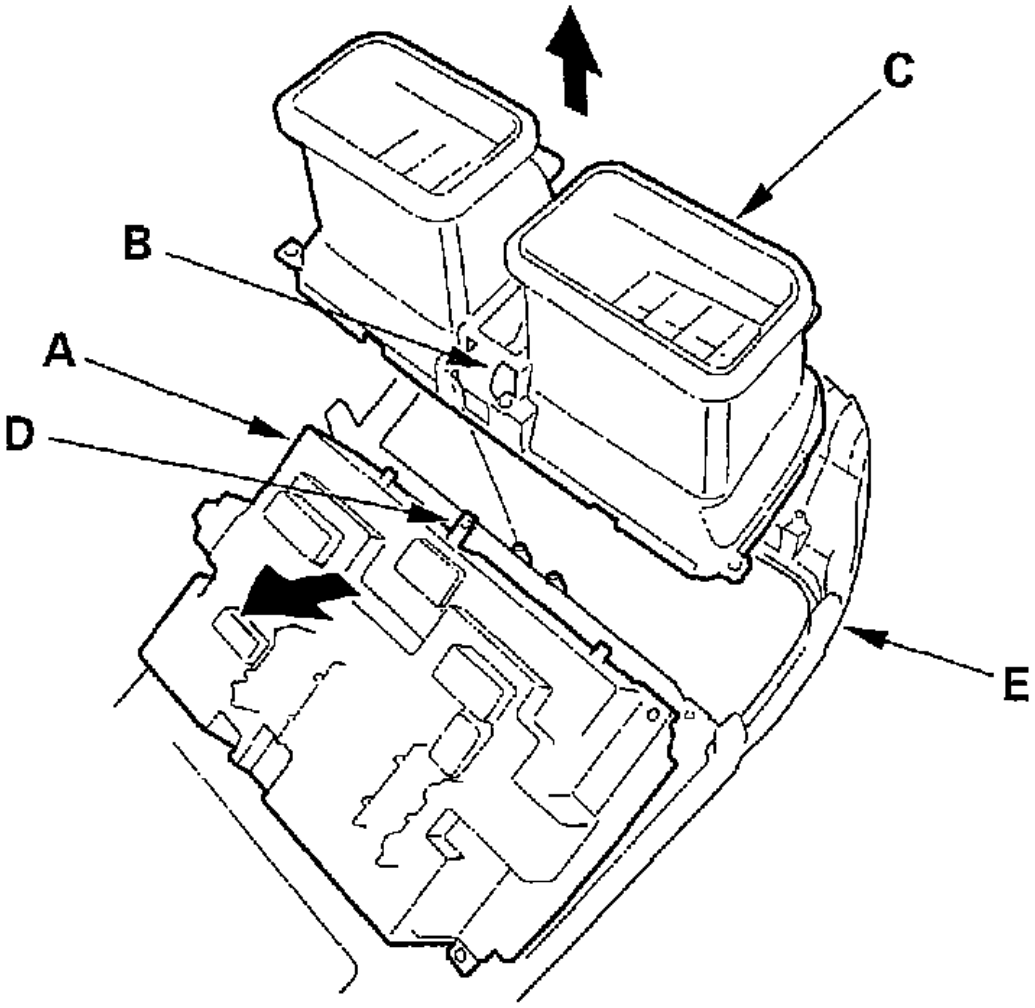


Fig. 119: Removing The Center Vent From The Center Panel

5. Install the center vent in the reverse order of removal.

DASHBOARD SIDE VENT REMOVAL/INSTALLATION

Driver's

NOTE:

- **Take care not to scratch the dashboard and related parts.**
- **Put on gloves to protect your hands.**

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1. Remove these items:
   a. Driver's outer dashboard trim (see **DRIVER'S OUTER DASHBOARD TRIM REMOVAL/INSTALLATION**)
   b. Switch trim (see **STEERING HANGER BEAM REPLACEMENT**)
2. Push on the lower clips (A) by hand to release them. Then gently press up on the driver's side vent (B) from the bottom to release the outer side clips (C). While gently pressing up on the driver's side vent, pry the driver's side vent towards the door opening to release the tabs (D).

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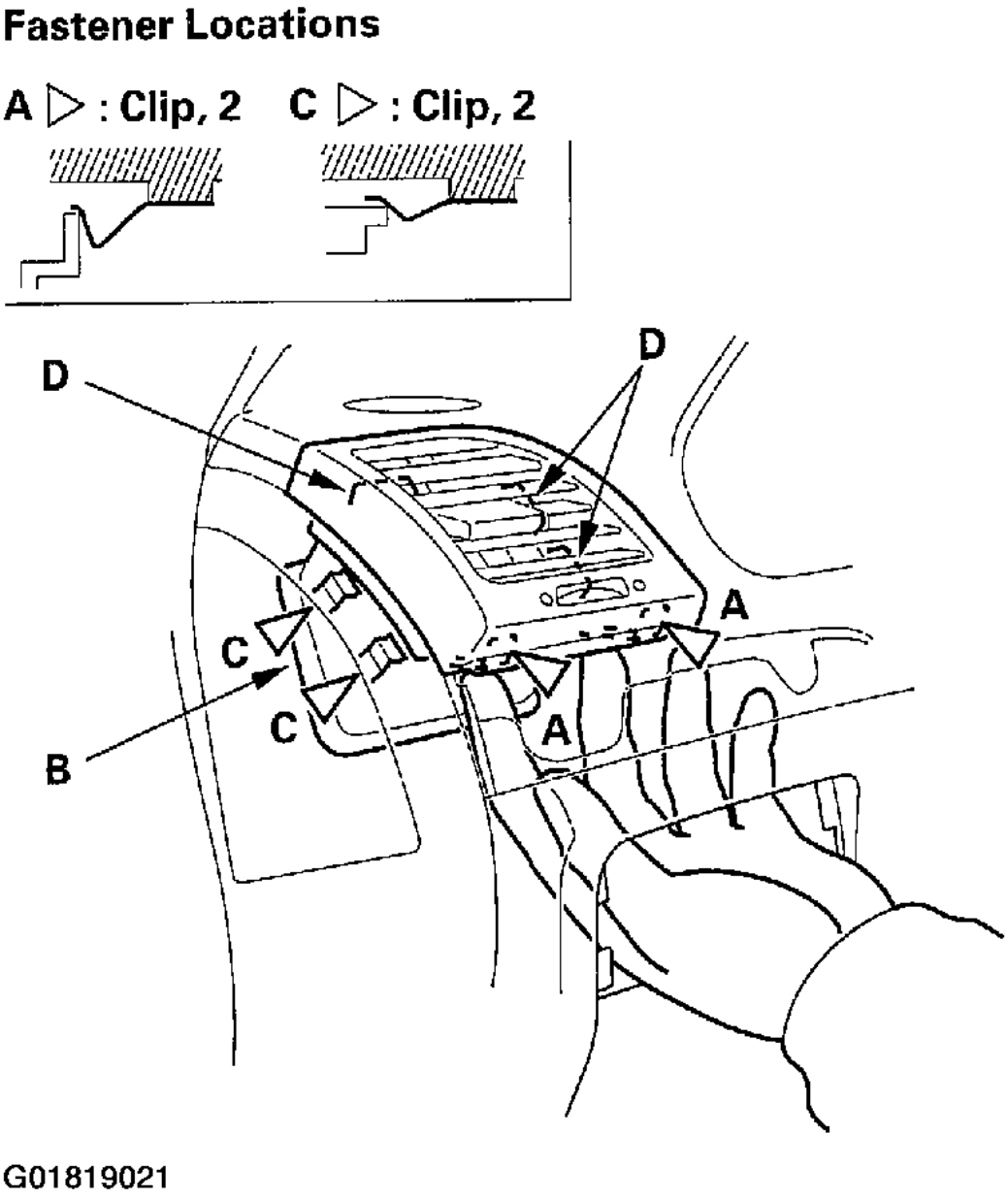


Fig. 120: Removing Driver's Side Vent

3. Reinstall the tab portions of the vent first, then push the clip portions into place securely.

Passenger's

NOTE: Take care not to scratch the dashboard and related parts.

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1. Remove these items:
   a. Glove box (see **GLOVE BOX REMOVAL/INSTALLATION**)
   b. Passenger's dashboard trim (see **PASSENGER'S DASHBOARD TRIM REMOVAL/INSTALLATION**)
2. Push on the lower clips (A) by hand to release them. Then gently press up on the passenger's side vent (B) from the bottom to release the outer side clips (C). While gently pressing up on the passenger's side vent, pry the passenger's side vent towards the door opening to release the tabs (D).

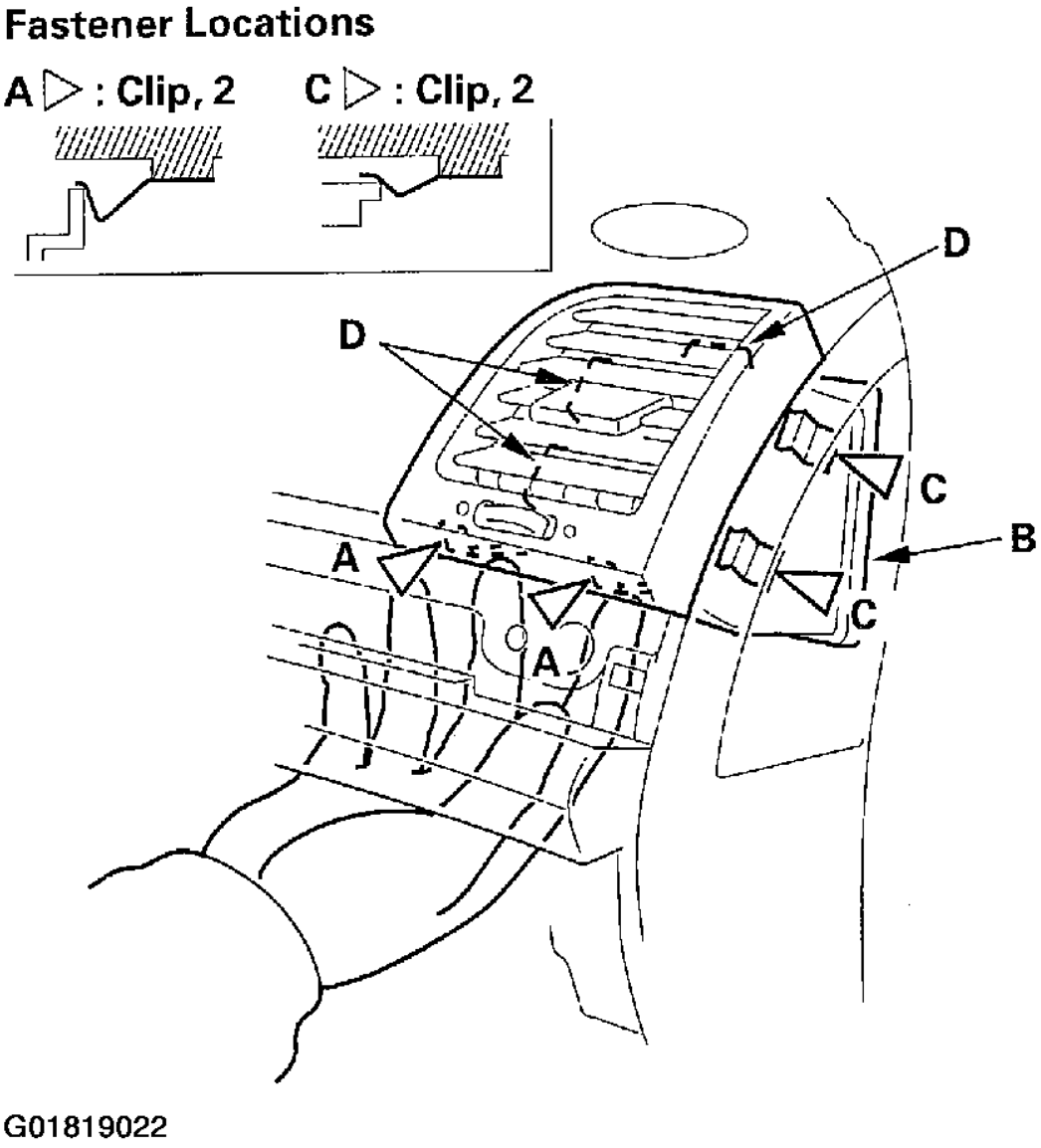


Fig. 121: Removing Passenger's Side Vent

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3. Reinstall the tab portions of the vent first, then push the clip portions into place securely.

DASHBOARD REMOVAL/INSTALLATION

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts to prevent damage.**
- **Have an assistant help you when removing and installing the dashboard.**
- **Take care not to scratch the dashboard, body and other related parts.**
- **Put on gloves to protect your hands.**

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the preset buttons.
2. Disconnect the negative battery cable, and wait at least 3 minutes before beginning work.
3. Remove these items:
   a. Passenger's seat (see **FRONT SEAT REMOVAL/INSTALLATION**)
   b. Center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**)
   c. Center pocket (see **CENTER CONSOLE REMOVAL/INSTALLATION**)
   d. Driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**)
   e. Glove box (see **GLOVE BOX REMOVAL/INSTALLATION**)
   f. Kick panels, both sides (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   g. A-pillar trim, both sides (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**)
   h. Steering column (see **STEERING COLUMN REMOVAL AND INSTALLATION**)
   i. Stereo amplifier (see **STEREO AMPLIFIER REPLACEMENT**)
   j. Shift lever brackets, A/T model (see **SHIFT LEVER**)
   k. SRS control unit (see **AIR BAG RESTRAINT SYSTEMS**)
4. Remove the screw (A) and release the clips (B, C), then remove the driver's center lower cover (D) and the rear vent duct (E).

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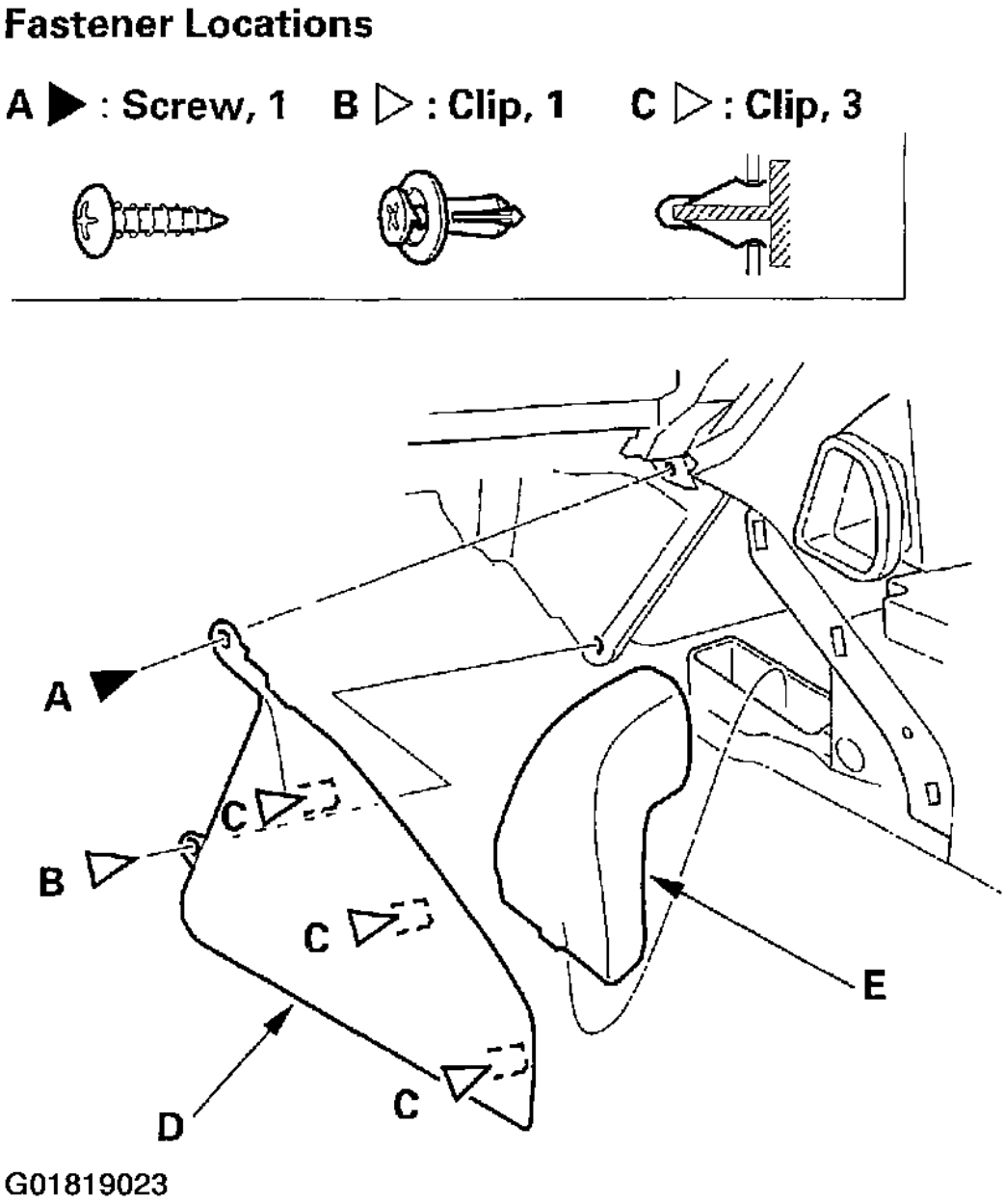


Fig. 122: Removing The Driver's Center Lower Cover & The Rear Vent Duct

5. Release the clips (A, B), then remove the passenger's center lower cover (C) and the rear vent duct (D).

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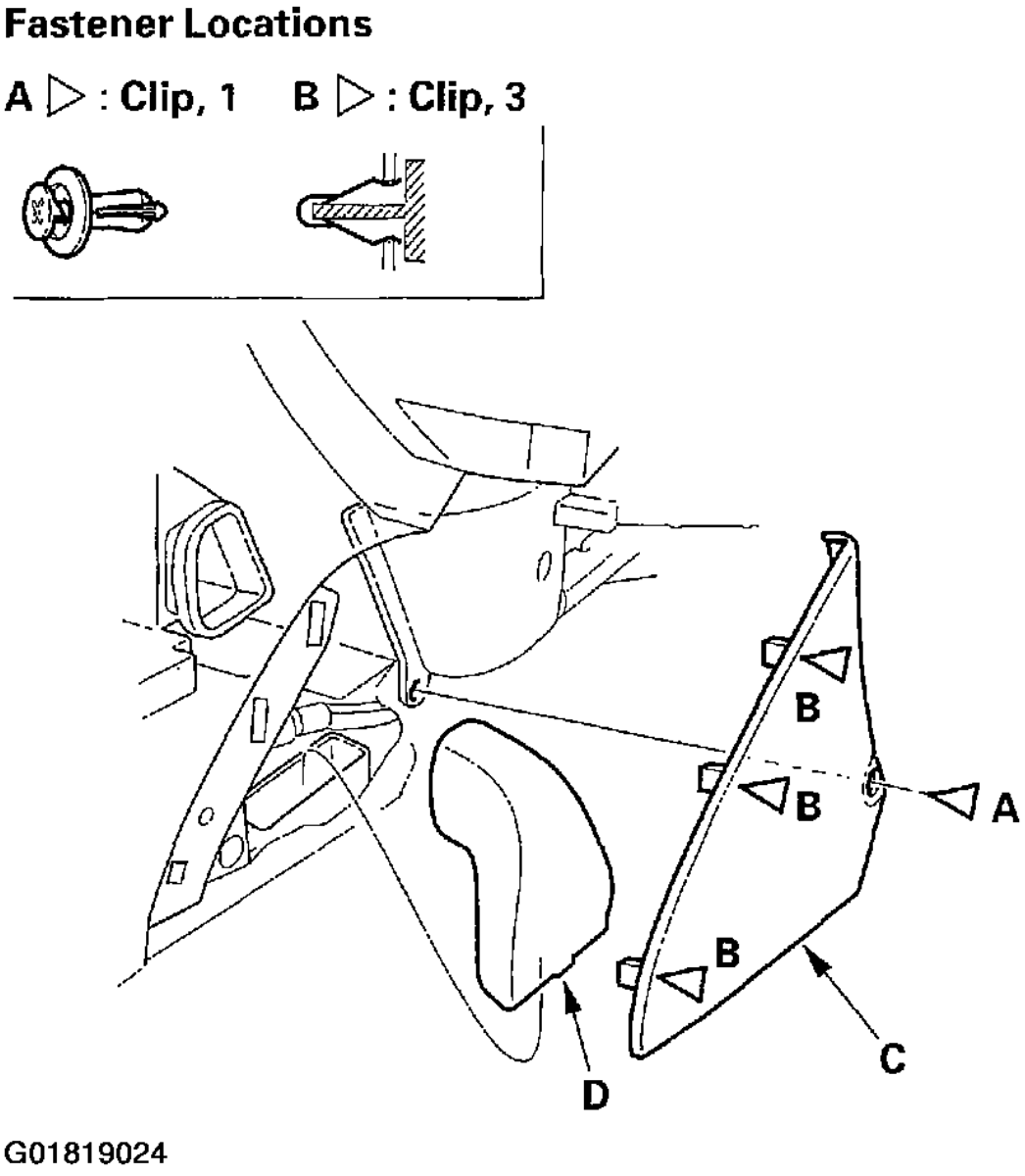


Fig. 123: Removing The Passenger's Center Lower Cover & The Rear Vent Duct

6. Remove the SRS control unit (see **AIR BAG RESTRAINT SYSTEMS**).

   Driver's side:

7. From under the dash, disconnect the interior wire harness connector (A), clutch switch connectors (B) (on M/T model), and brake switch connector (C), floor wire harness connectors (D), engine compartment wire harness connectors (E), and disconnect the dashboard wire harness connectors (F) from the under-

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dash fuse/relay box (G), then release the wire harness clips. Disconnect the air hose (H).

NOTE: Lift the white wire harness connector locks (l) before trying to remove the connectors from the fuse box.

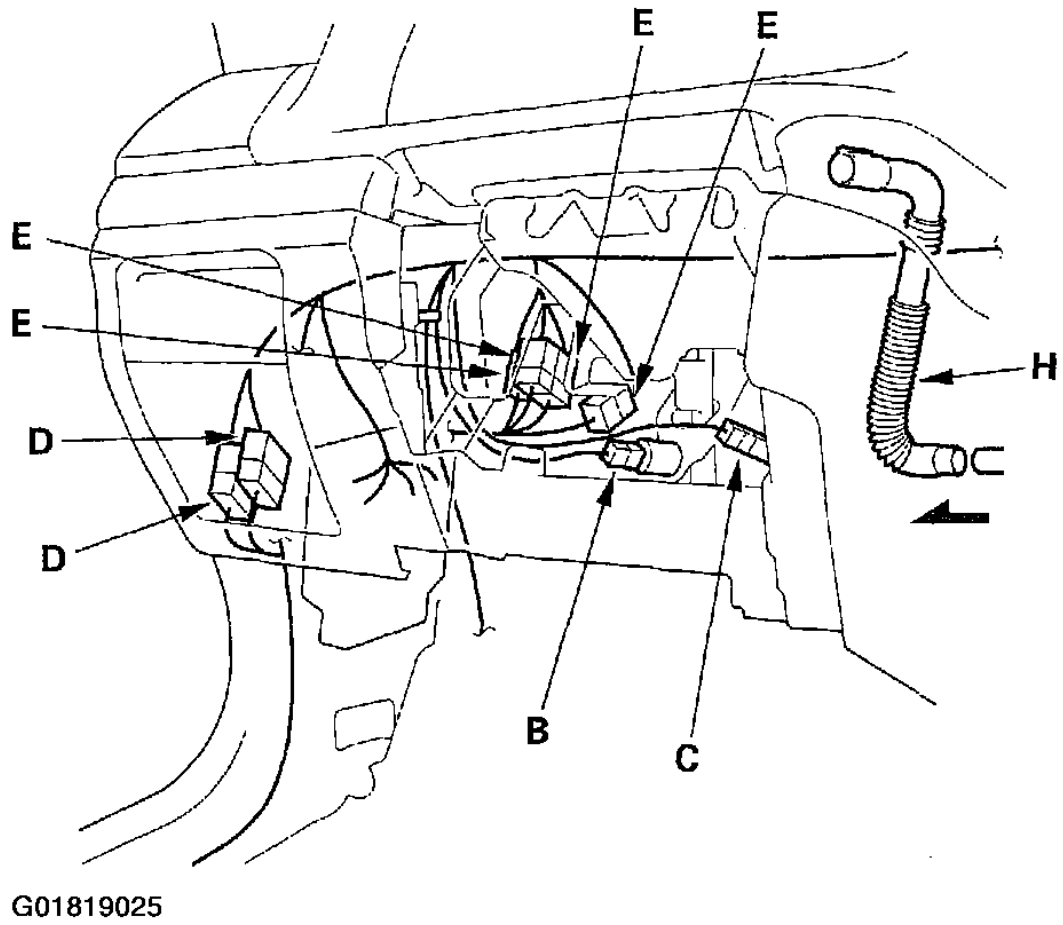


Fig. 124: Disconnecting Driver's Side Under Dash Connectors

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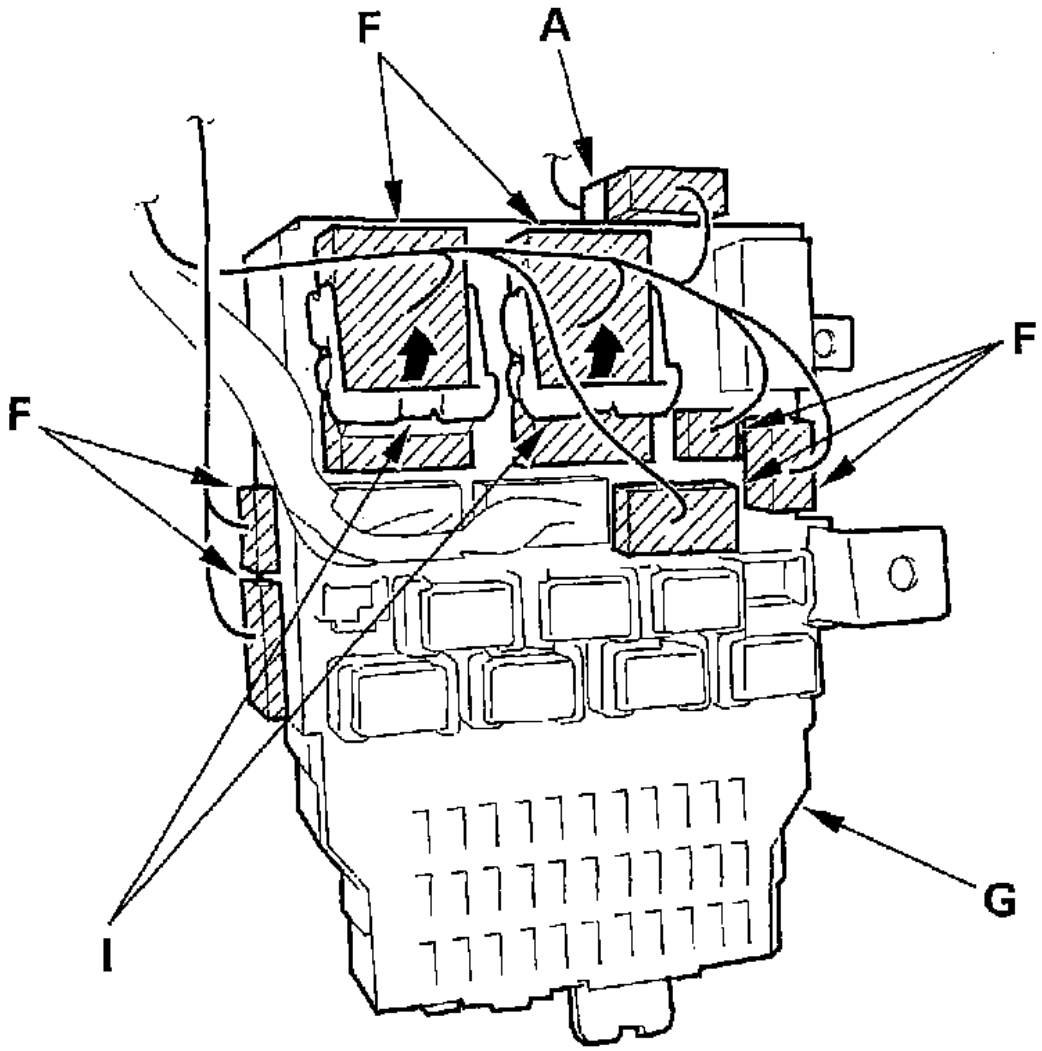


Fig. 125: Disconnecting The Dashboard Wire Harness Connectors From The Under-Dash Fuse/Relay Box

Middle portion (shift lever portion):

8. Disconnect the parking brake switch connector (A), radio antenna connector (B), antenna lead (C), A/C subharness connector (D), then release the wire harness clip (E), and if applicable, release the harness clamp (F). Using a Torx T30 bit, remove the ground bolt (G).

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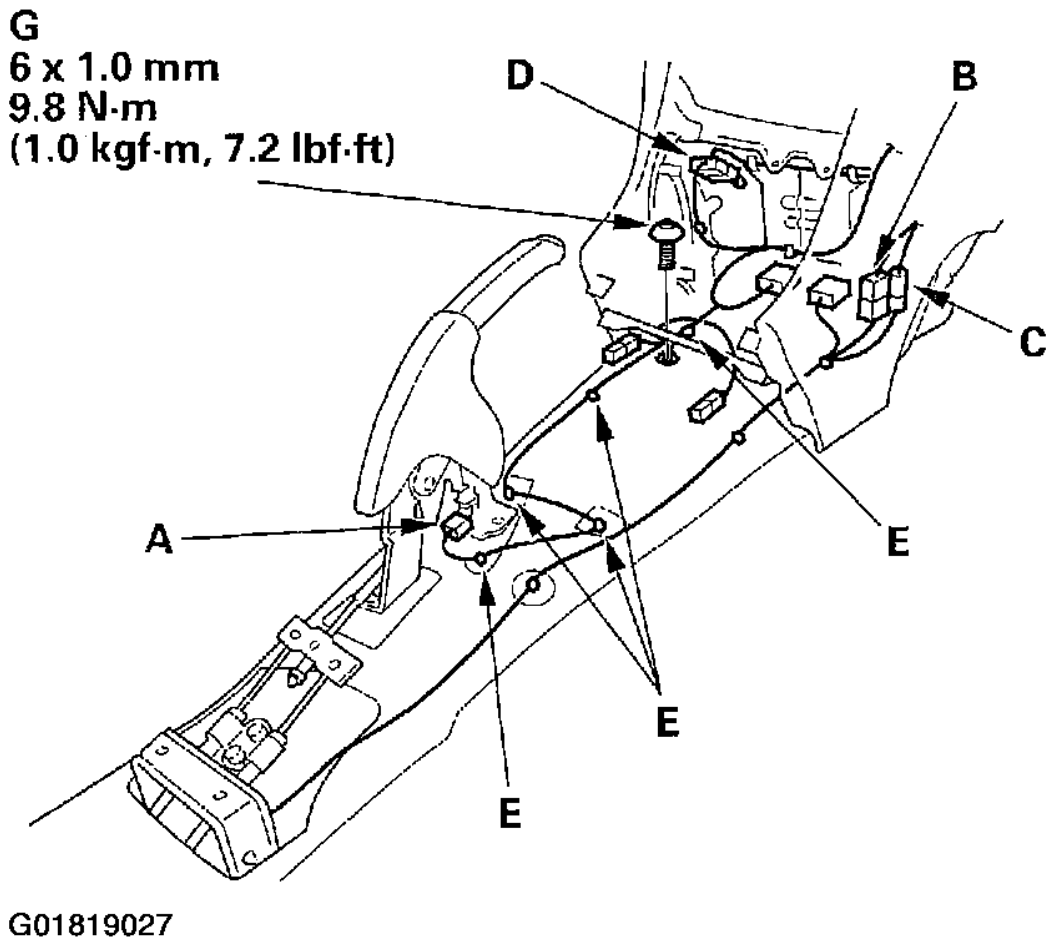


Fig. 126: Disconnecting Middle Portion Under Dash Connectors (Shift Lever Portion - A/T)

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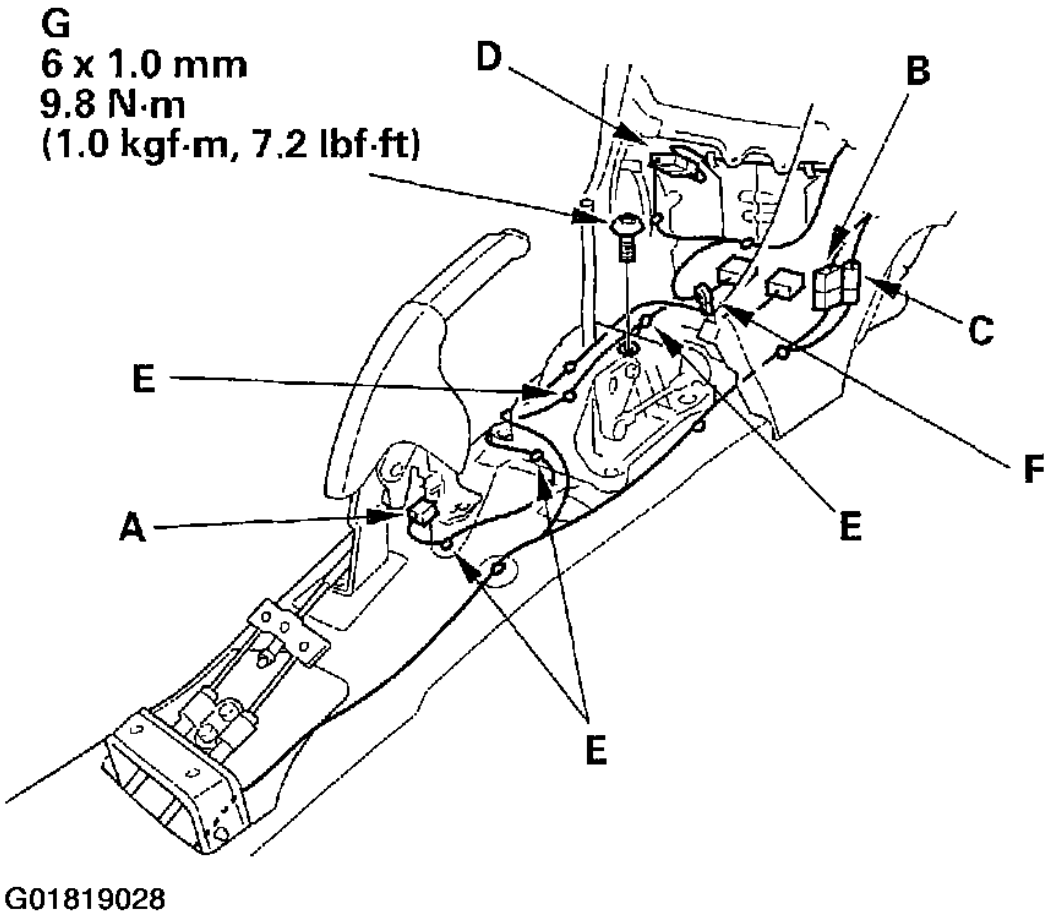


Fig. 127: Disconnecting Middle Portion Under Dash Connectors (Shift Lever Portion - M/T)

Middle portion (passenger's side):

9. From under the dash, disconnect the ECM/PCM connectors (A), power transistor connector (B), and engine wire harness connectors (C), then release the wire harness clips (D).

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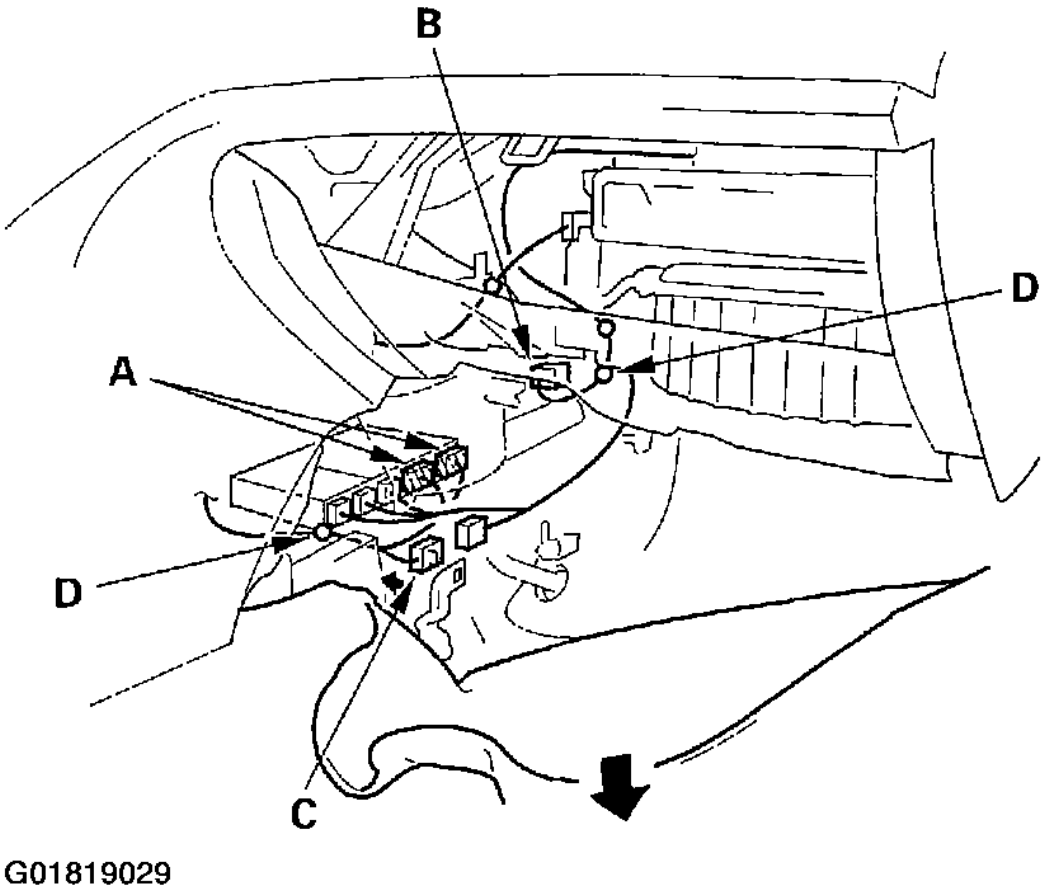


Fig. 128: Disconnecting Middle Portion Under Dash Connectors (Passenger's Side)

Passenger's side:

10. From under the dash, disconnect the passenger's door wire harness connectors (A), floor wire harness connectors (B), interior wire harness connector (C) and blower motor connector (D) and detach the harness clip (E).

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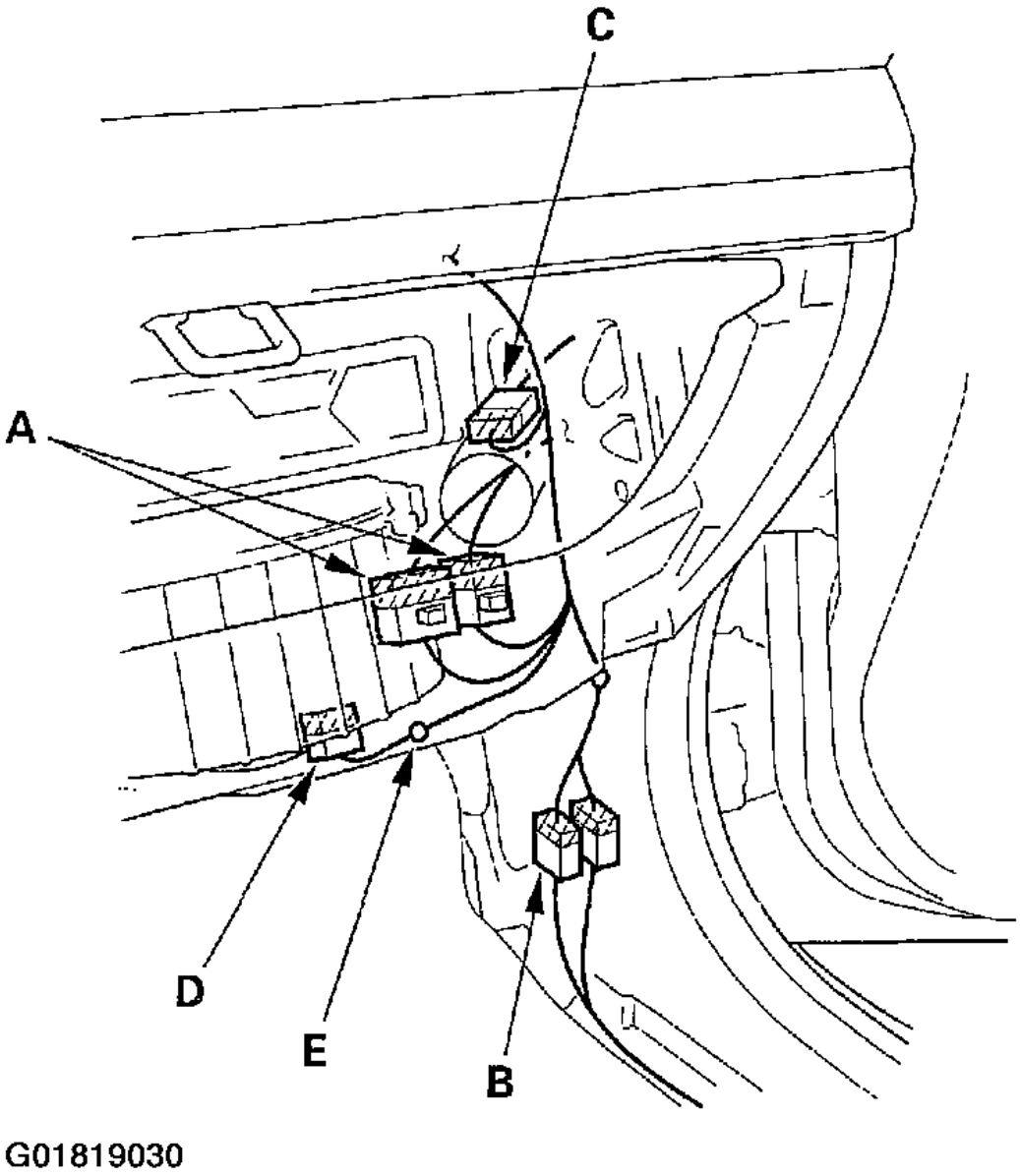


Fig. 129: Disconnecting Passenger's Side Under Dash Connectors

11. Detach all of the harness and connector clips.
12. Remove bolt (A), then remove the brake pedal support member (B).

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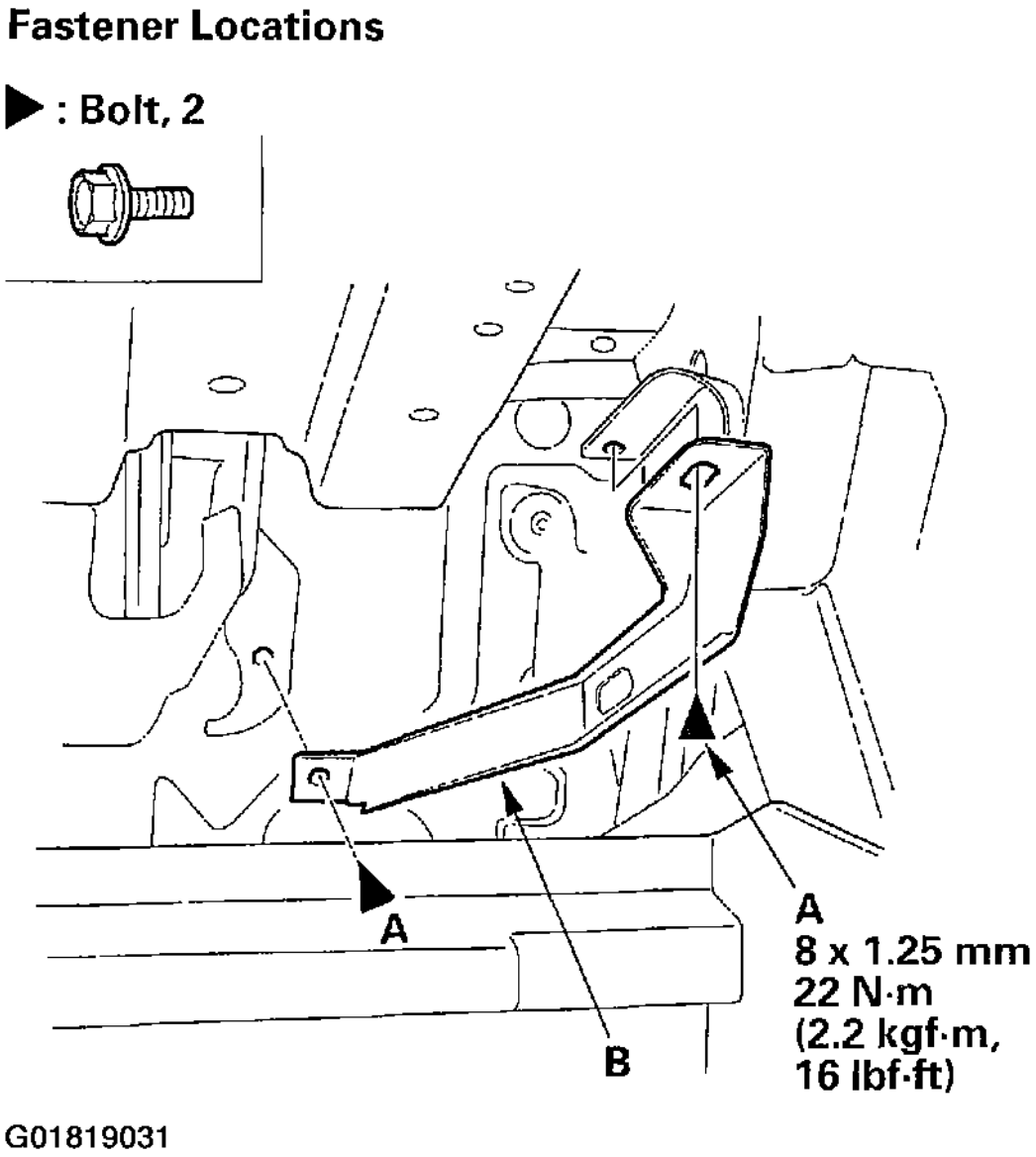


Fig. 130: Removing The Brake Pedal Support Member

13. Cover the parking brake handle to protect it.
14. From outside the driver's door, remove the caps (A), then remove the bolts (B, C, D), and clips (E) and lift up on the dashboard (F) to release it from the guide pins (G, H).

NOTE: Before removing the dashboard, make sure all the harnesses have been disconnected.

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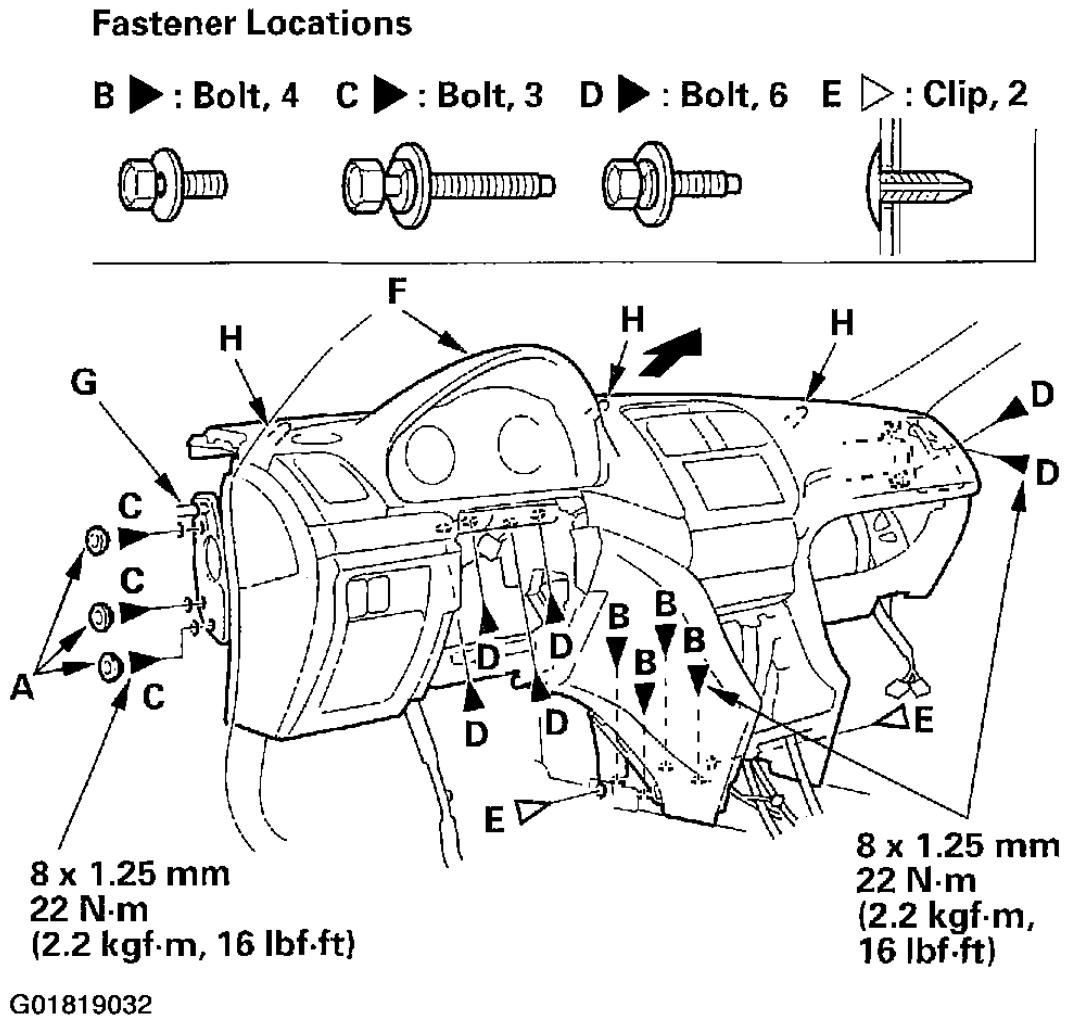


Fig. 131: Removing The Dashboard

15. Carefully remove the dashboard through the front door opening.

NOTE: Lay the dashboard on the front or rear of the dashboard. Do not lay it on the lower console opening or you may damage it.

16. Remove the bolt (A), then remove the center bracket (B).

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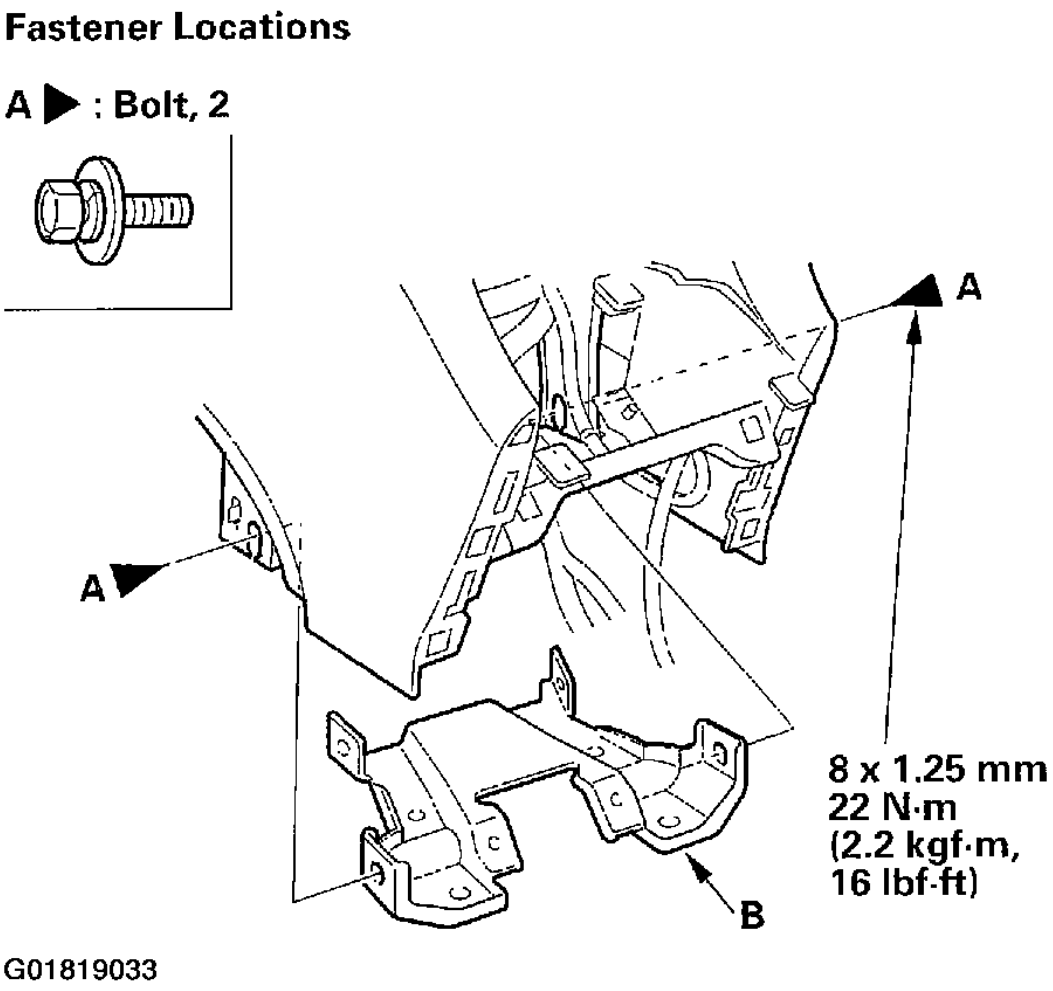


Fig. 132: Removing The Center Bracket

17. Install the dashboard in the reverse order of removal, and note these items:
    - Reinstall the center bracket on the center frame, and slightly tighten the mounting bolts. Reinstall the dashboard on the body. After tightening both dashboard mounting bolts and nut, tighten the center bracket mounting bolts and center frame mounting bolts.
    - Make sure the dashboard fits onto the guide pins correctly.
    - Apply liquid thread lock to the bolts securing the center bracket and the dashboard before reinstallation.
    - Before tightening the bolts, make sure each wire harness is not pinched.
    - Make sure the connectors are plugged in properly, and the antenna lead and air hose are connected properly.
    - Reconnect the negative cable to the battery.
    - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio

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station presets.

- Reset the clock.
- Perform the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).

STEERING HANGER BEAM REPLACEMENT

NOTE: Put on gloves to protect your hands.

1. Remove the dashboard (see **DASHBOARD REMOVAL/INSTALLATION**).
2. Remove the these items from the dashboard:
   a. Driver's outer dashboard trim (see **DRIVER'S OUTER DASHBOARD TRIM REMOVAL/INSTALLATION**)
   b. Gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**)
   c. Audio-HVAC-display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**)
   d. Glove box damper (see **GLOVE BOX REMOVAL/INSTALLATION**)
3. Pull out the switch panel (A) to release the clips, hooks (B) and disconnect the moonroof switch connector (C) and VSA off switch connector (D).

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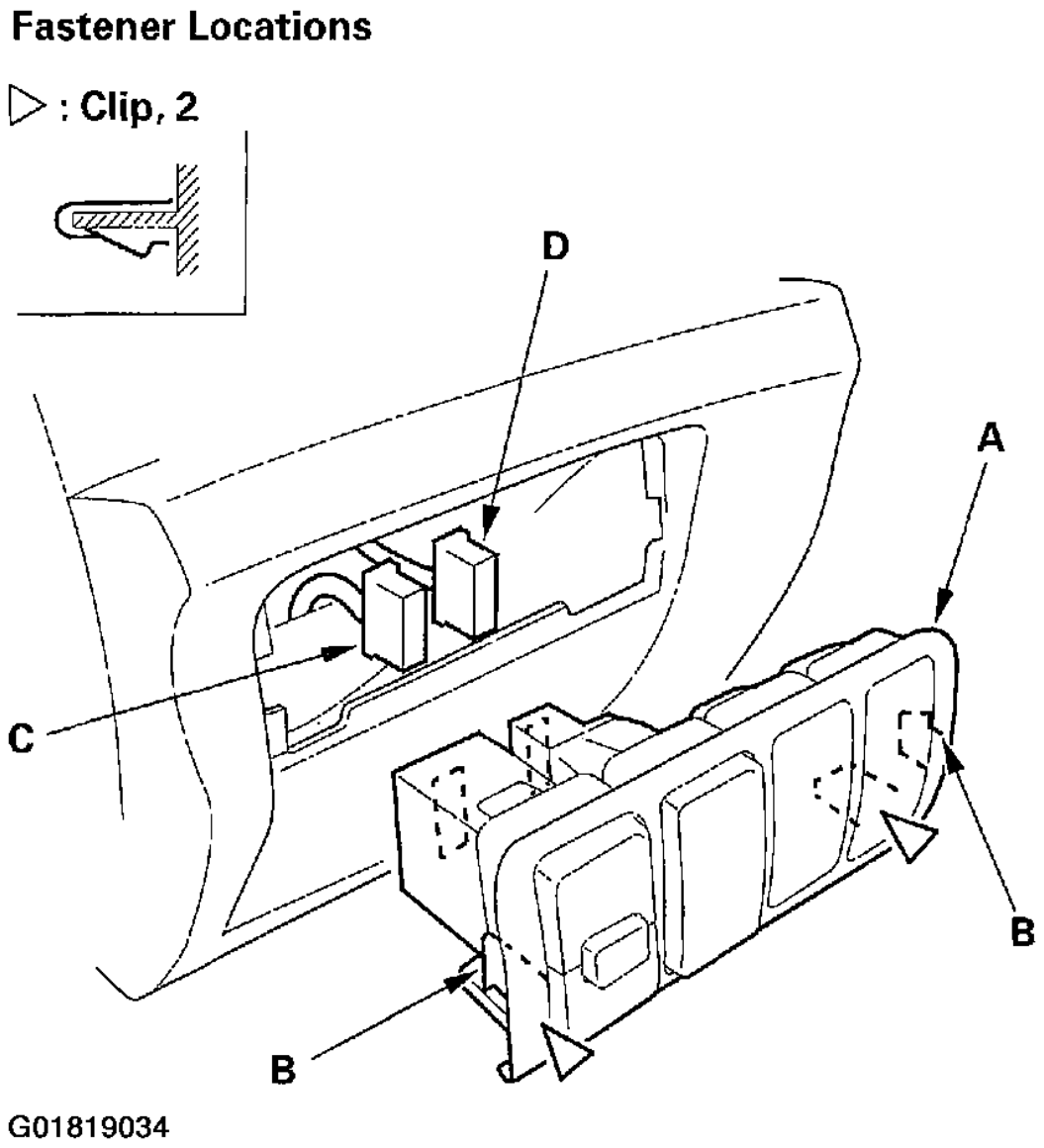


Fig. 133: Removing The Switch Panel

4. On both side, detach the clip, then remove the tweeters (A). Disconnect the tweeter connectors (B).

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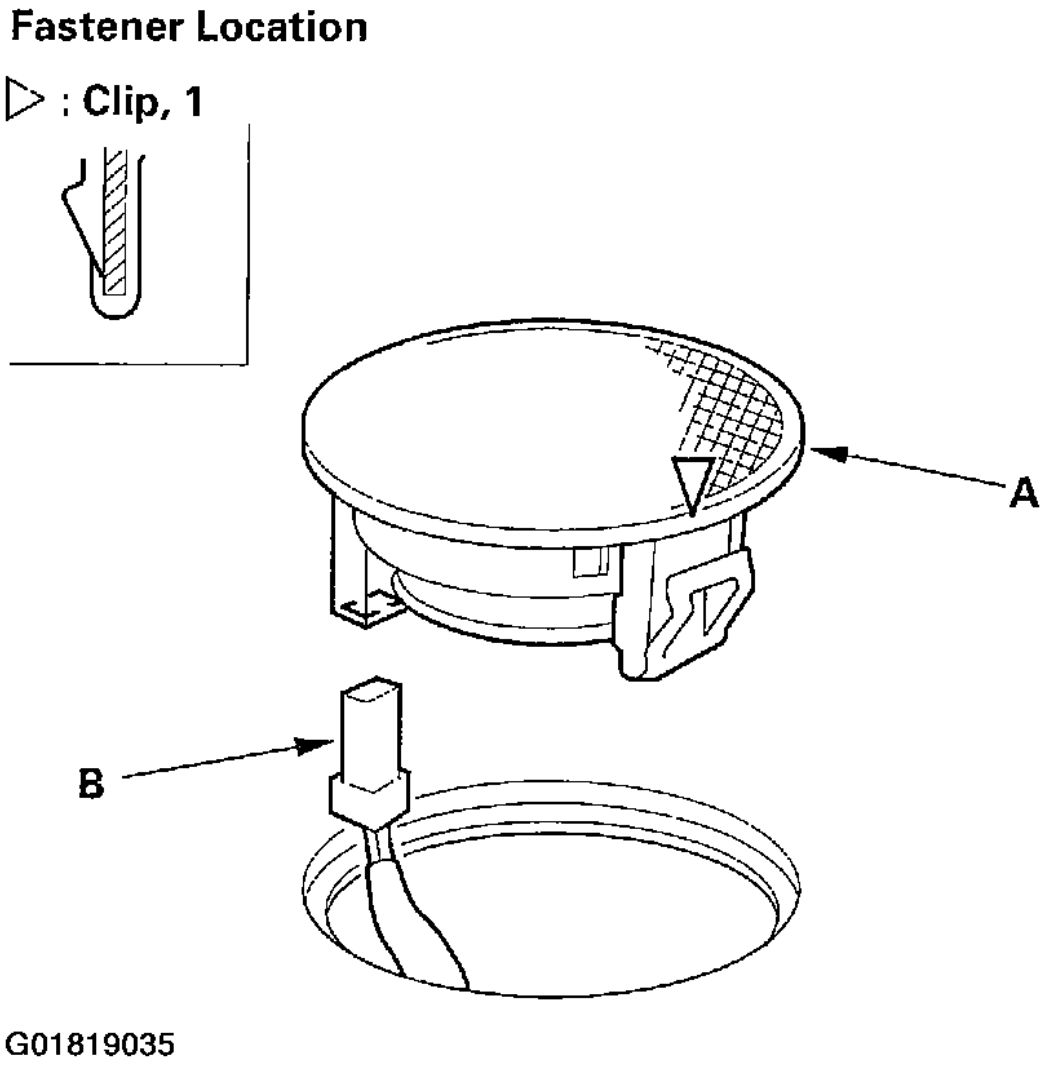


Fig. 134: Removing The Tweeters

5. From the front of the dashboard, detach the harness clips (A, B).

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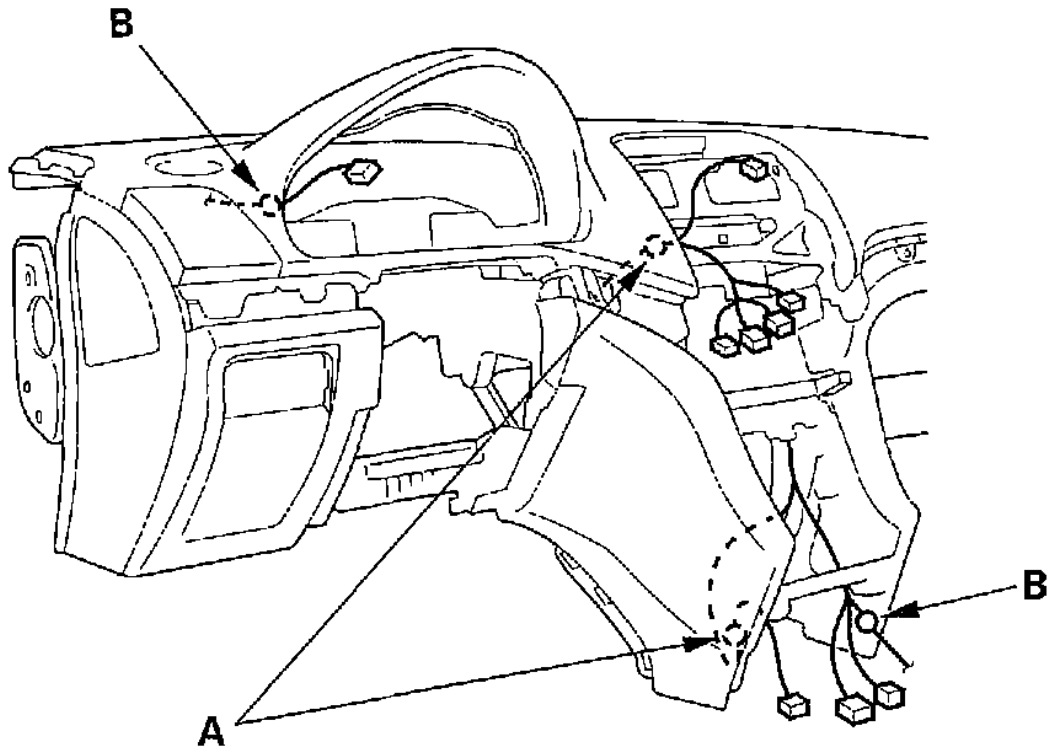


Fig. 135: Detaching The Harness Clips

6. Remove the glove box striker (A).
   a. Remove the screws (B, C) securing the glove box striker.
   b. Disconnect the glove box light bulb socket (D), and detach the harness clips (E, F) from the glove box striker.

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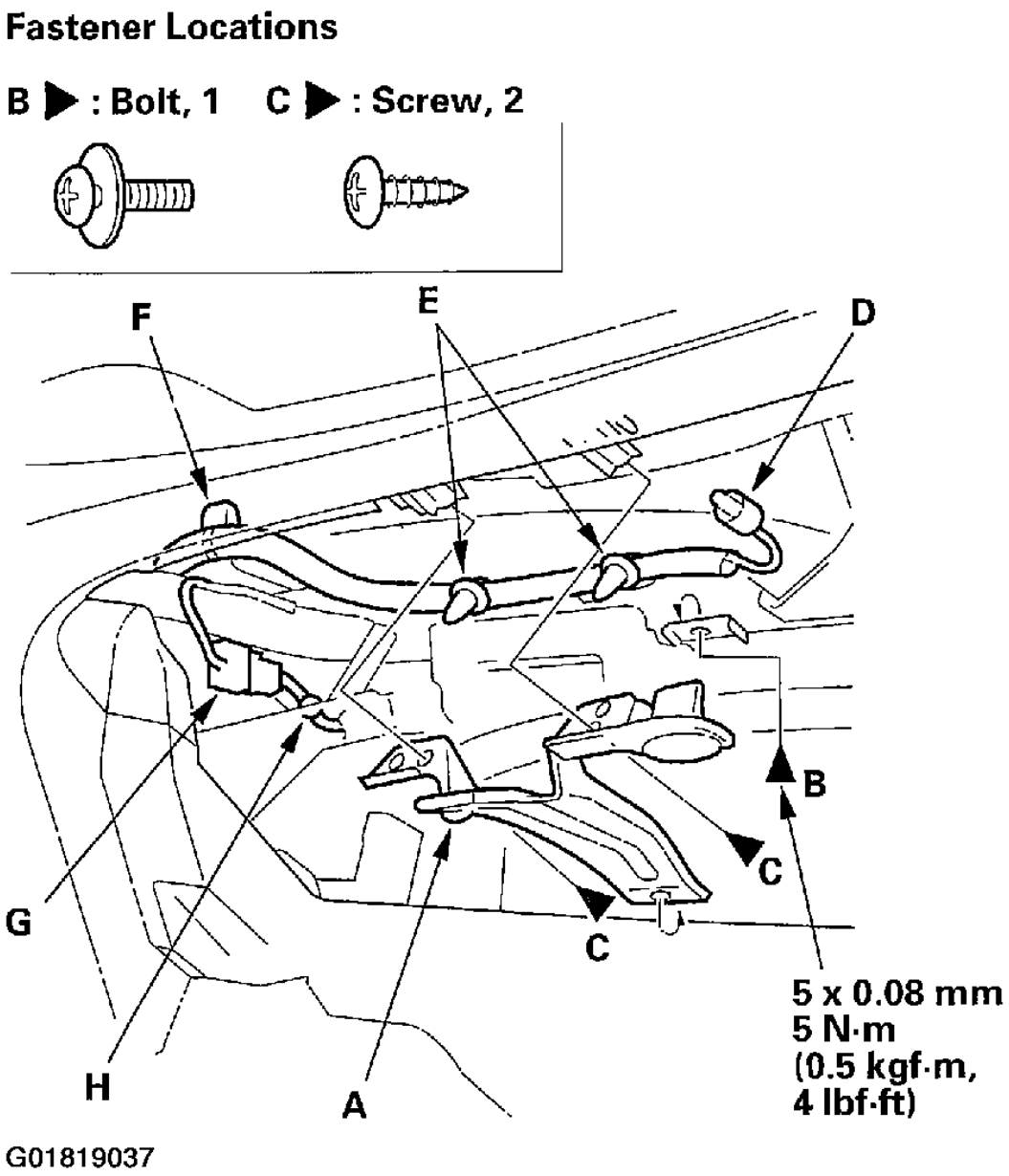


Fig. 136: Removing The Glove Box Striker

7. Disconnect the passenger's airbag connector (G), and detach the harness clip (H).
8. From the back of the dashboard. Disconnect the sunlight sensor connector (A) and peel the cushion tape (B).

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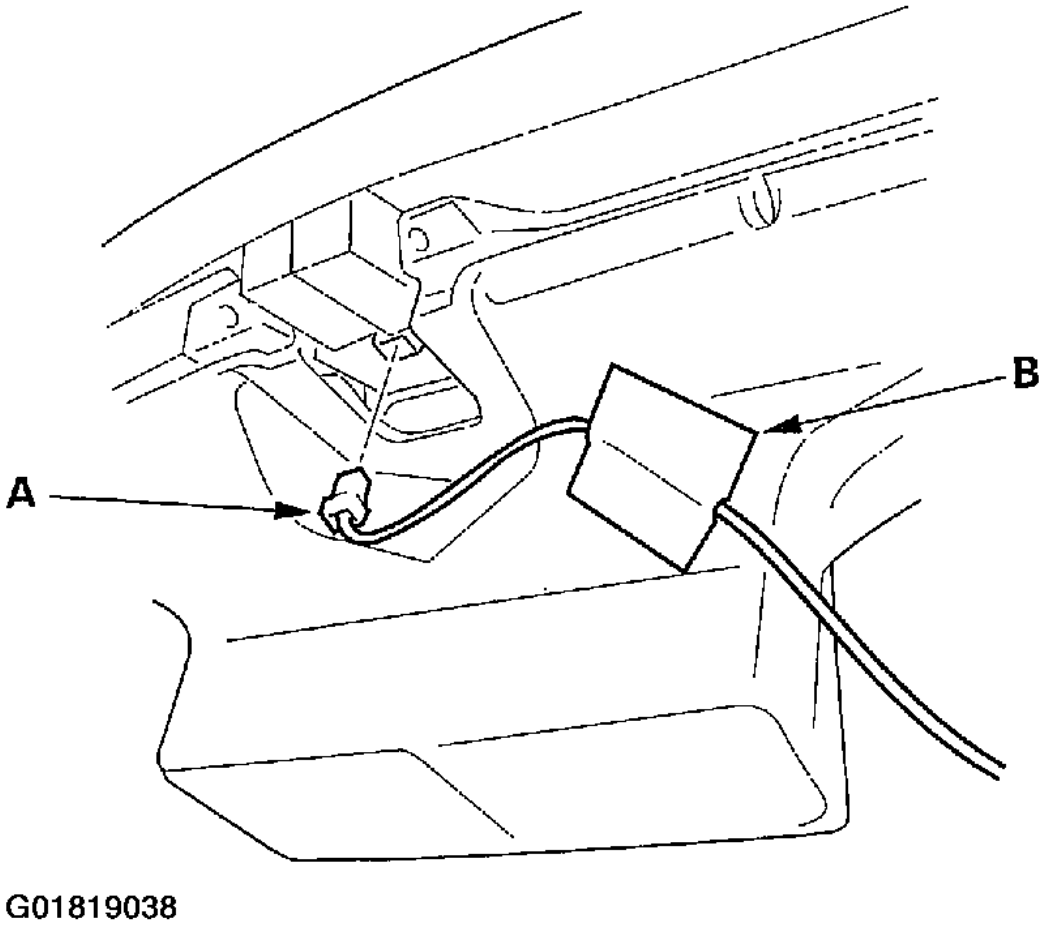


Fig. 137: Disconnecting The Sunlight Sensor Connector

9. From the back of the dashboard, detach the connectors (A) and harness clip (B) on passenger's side.

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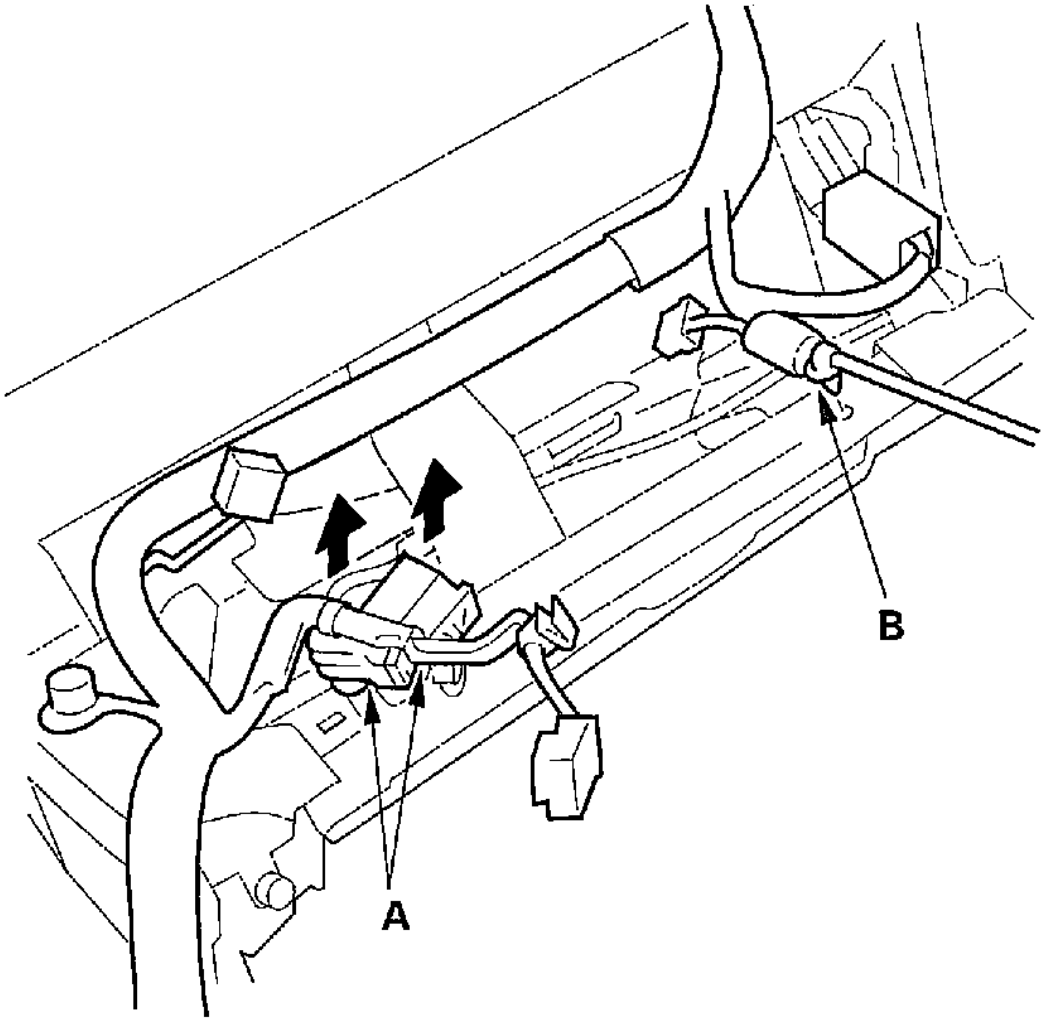


Fig. 138: Detaching The Connectors & Harness Clip On Passenger's Side

10. Remove the bolt securing the passenger's airbag.

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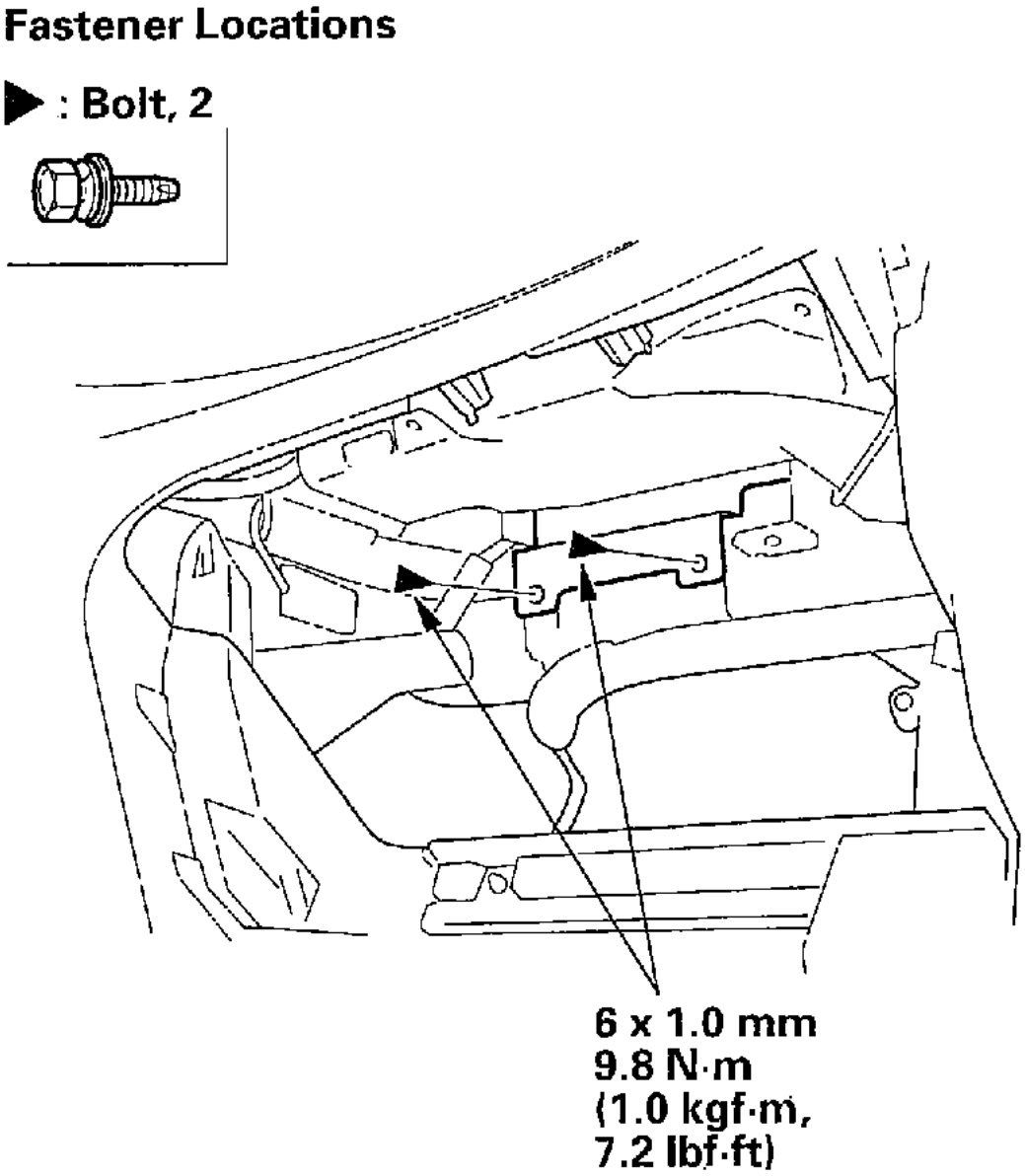


Fig. 139: Removing The Bolt Securing The Passenger's Airbag

11. Remove the screws (A, B) and bolts (C) securing the dashboard (D) and steering hanger beam (E), then separate them.

NOTE: Some screws and bolts may be difficult to see because they are hidden behind wire harnesses. If the cover does not come off easily, look for a

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screw or bolt that you might have missed.

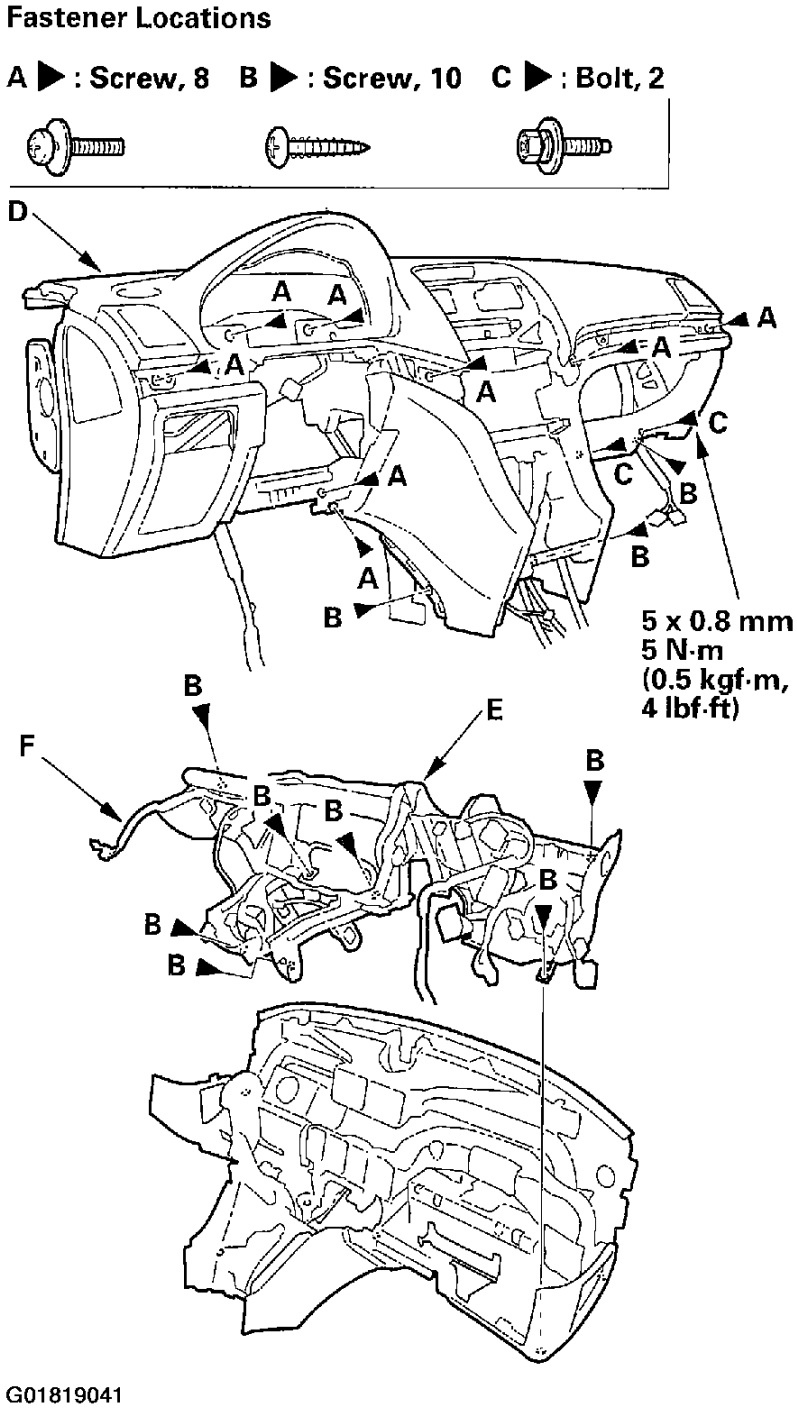


Fig. 140: Removing The Screws & Bolts Securing The Dashboard & Steering Hanger Beam

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12. Install the beam in the reverse order of removal, and note these items:
    - Make sure the dashboard wire harness (F) is not pinched.
    - Make sure the connectors are plugged in properly.

DASHBOARD UPPER PANEL REMOVAL/INSTALLATION

SRS components are located in this area. Review the SRS component locations and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE: Put on gloves to protect your hands.

1. Remove the dashboard (see **DASHBOARD REMOVAL/INSTALLATION**).
2. Remove the these items from the dashboard:
    a. Gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**)
    b. Audio-HVAC-display module (see **AUDIO-HVAC DISPLAY MODULE REMOVAL/INSTALLATION**)
    c. Side vent, both sides (see **DASHBOARD SIDE VENT REMOVAL/INSTALLATION**)
    d. Tweeter, both sides (see **STEERING HANGER BEAM REPLACEMENT**)
    e. Sun light sensor (see **SUNLIGHT SENSOR REPLACEMENT**)
3. Remove the glove box striker (A).
    a. Remove the screw (B, C), then remove the glove box striker.
    b. Disconnect the glove box light bulb socket (D) and detach the harness clip (E) from glove box striker.

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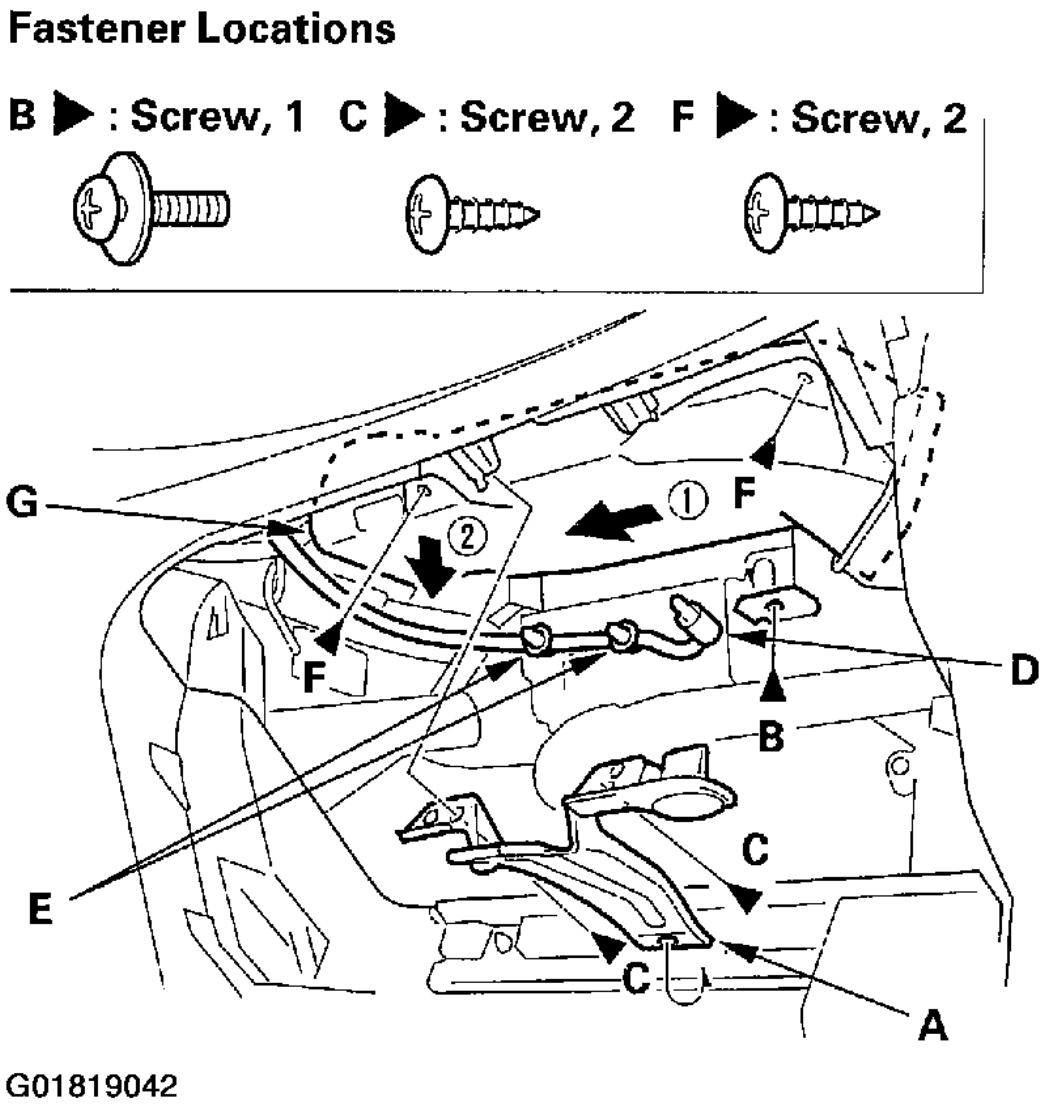


Fig. 141: Removing The Glove Box Striker

4. Remove the screws (F), slide the passenger's A/C duct inside, then lower the duct to remove it.
5. Remove the passenger's airbag (see **AIR BAG RESTRAINT SYSTEMS**).
6. Remove the screws (A, B, C).

NOTE: Some screws and bolts may be difficult to see because they are hidden behind wire harnesses. If the cover dose not come off easily, look for a screw or bolt that you might have missed.

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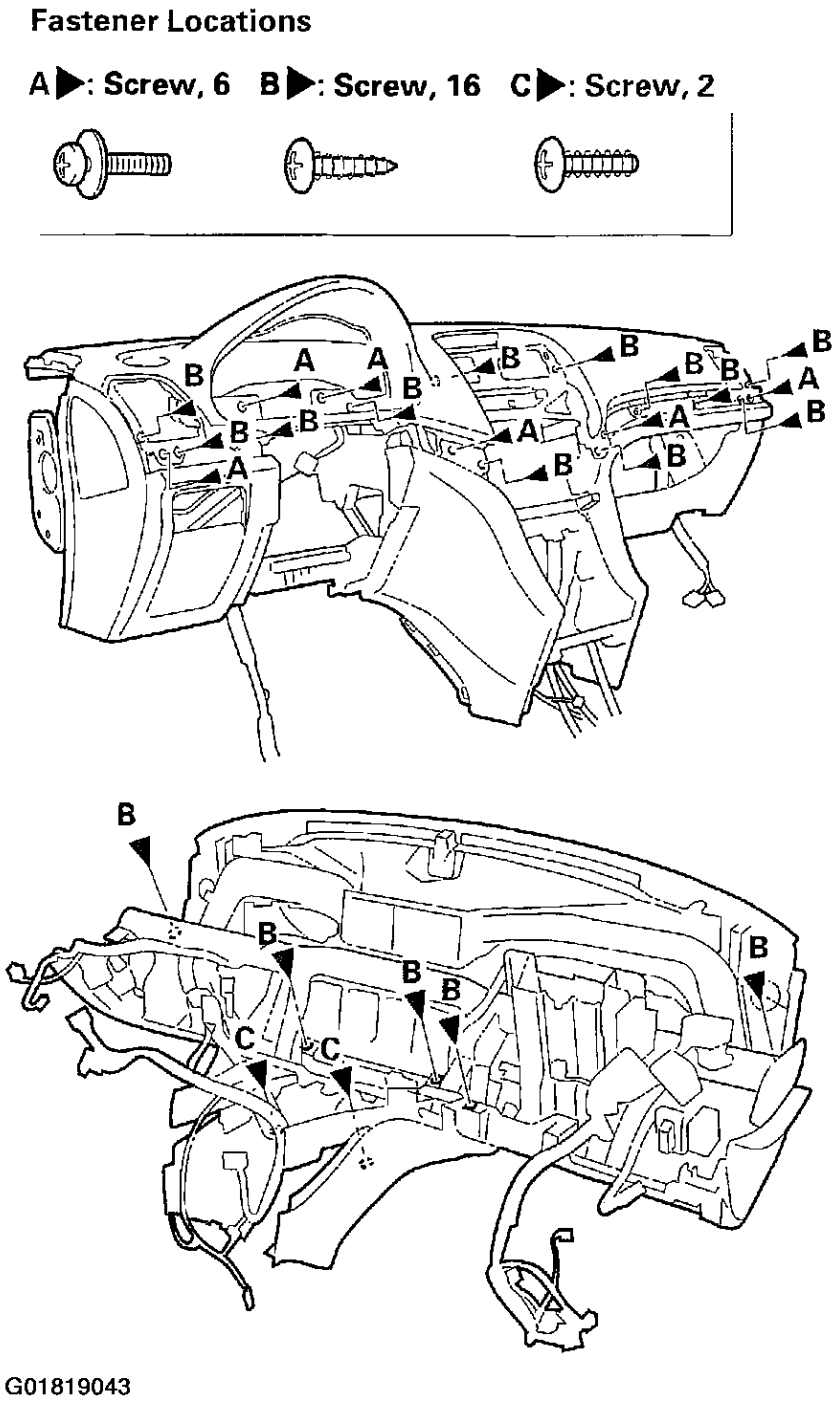


Fig. 142: Removing The Screws

7. Release the hooks (A), then remove the upper panel (B).

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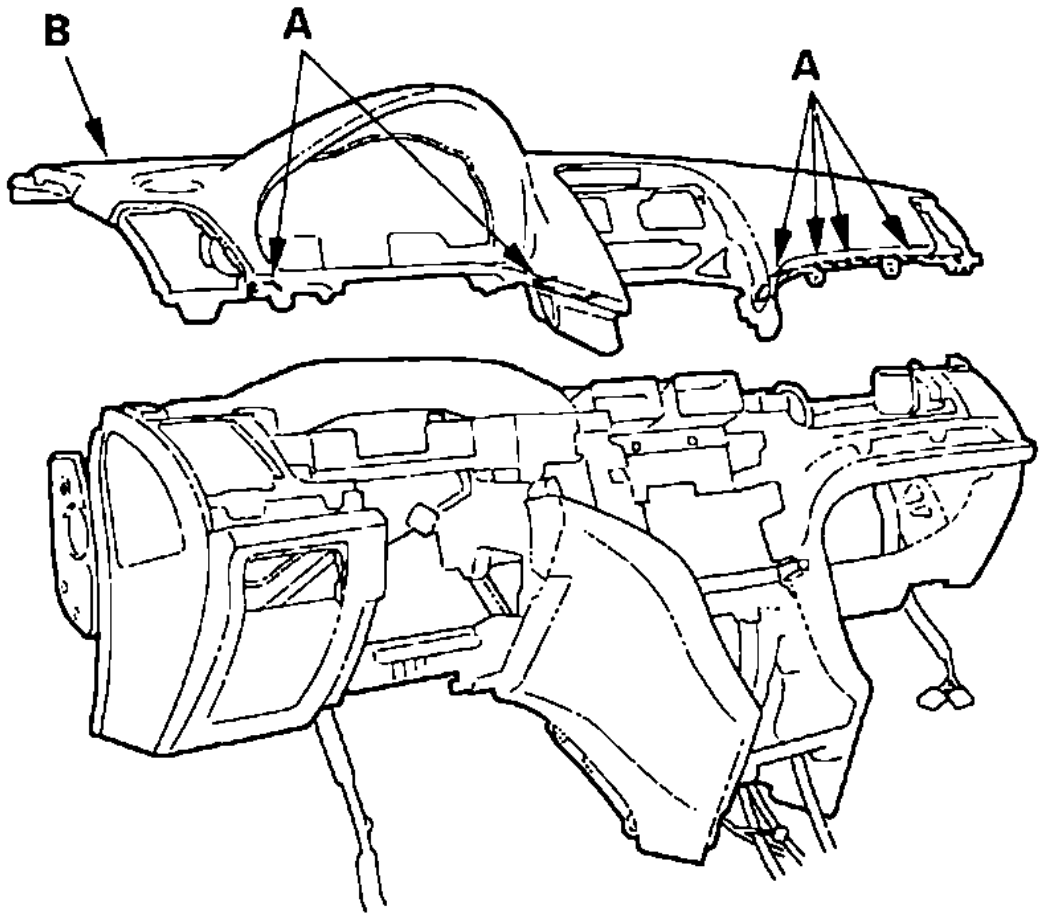


Fig. 143: Removing The Upper Panel

8. Remove the screws, then remove the front vent duct (A) and side defogger vent trim (B).

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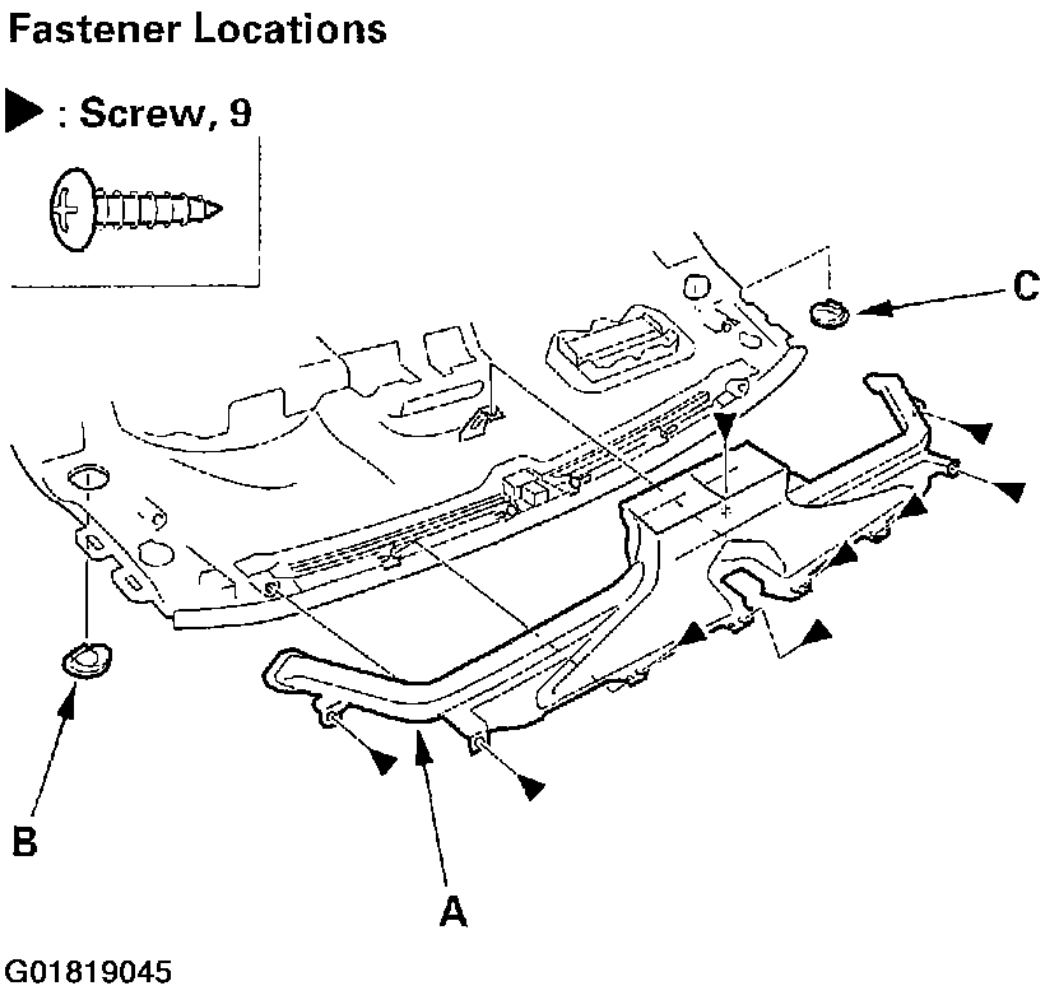


Fig. 144: Removing The Front Vent Duct & Side Defogger Vent Trim

9. Install the upper panel in the reverse order of removal.

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2004 MANUAL TRANSMISSIONS

Overhaul - ASU5 6-Speed

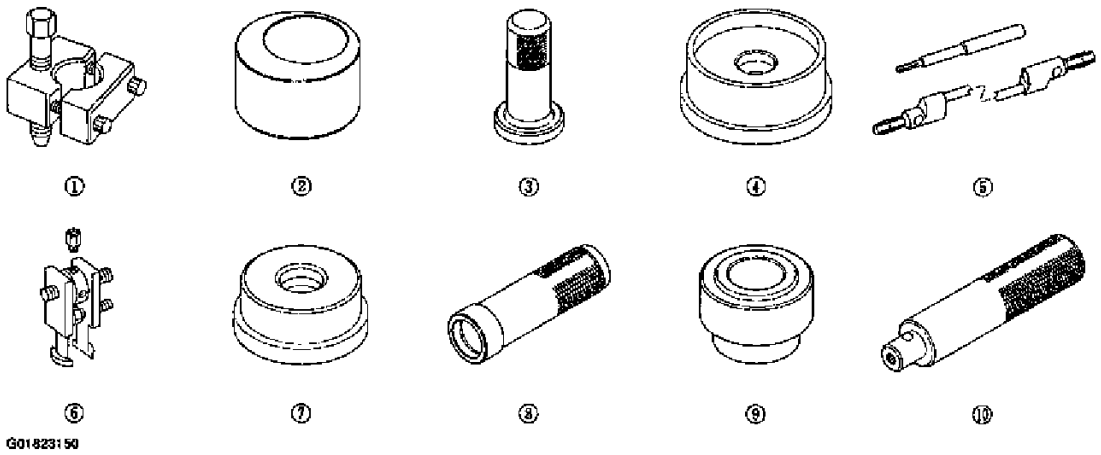
SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
*①	07GAJ-PG20110	Mainshaft Holder	1
*②	07GAJ-PG20130	Mainshaft Base	1
③	07JAD-PL90100	Oil Seal Driver	1
④	07NAD-P20A100	Oil Seal Driver Attachment	1
⑤	07SAZ-001000A	Backprobe Set	2
**⑥	07736-A01000B	Adjustable Bearing Puller, 20—40 mm	1
⑦	07746-0010300	Attachment, 42 x 47 mm	1
⑧	07746-0030100	Driver, 40 mm I.D.	1
⑨	07746-0030300	Driver, 30 mm I.D.	1
⑩	07749-0010000	Driver	1

* Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.
** Must be used with commercially available 3/8"—16 Slide Hammer.

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Fig. 1: Identifying Special Tools (1 Of 2)



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Fig. 2: Identifying Special Tools (2 Of 2)

SERVICE PRECAUTIONS

CLUTCH HOUSING & TRANSMISSION HOUSING

The clutch housing and transmission housing are made of magnesium. When steel and magnesium are in contact with one another, there is a possibility of galvanic corrosion (a corrosion that happens between different types of metals). To prevent this from happening, special bolts and washers are used. Be sure to use only these special bolts and washers in the areas indicated, do not substitute them with regular bolts and washers.

Replace the clutch housing, transmission housing, and the special bolts and washers if galvanic corrosion has

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occurred to these parts.

Transmission 8 mm housing bolts are left-hand threads.

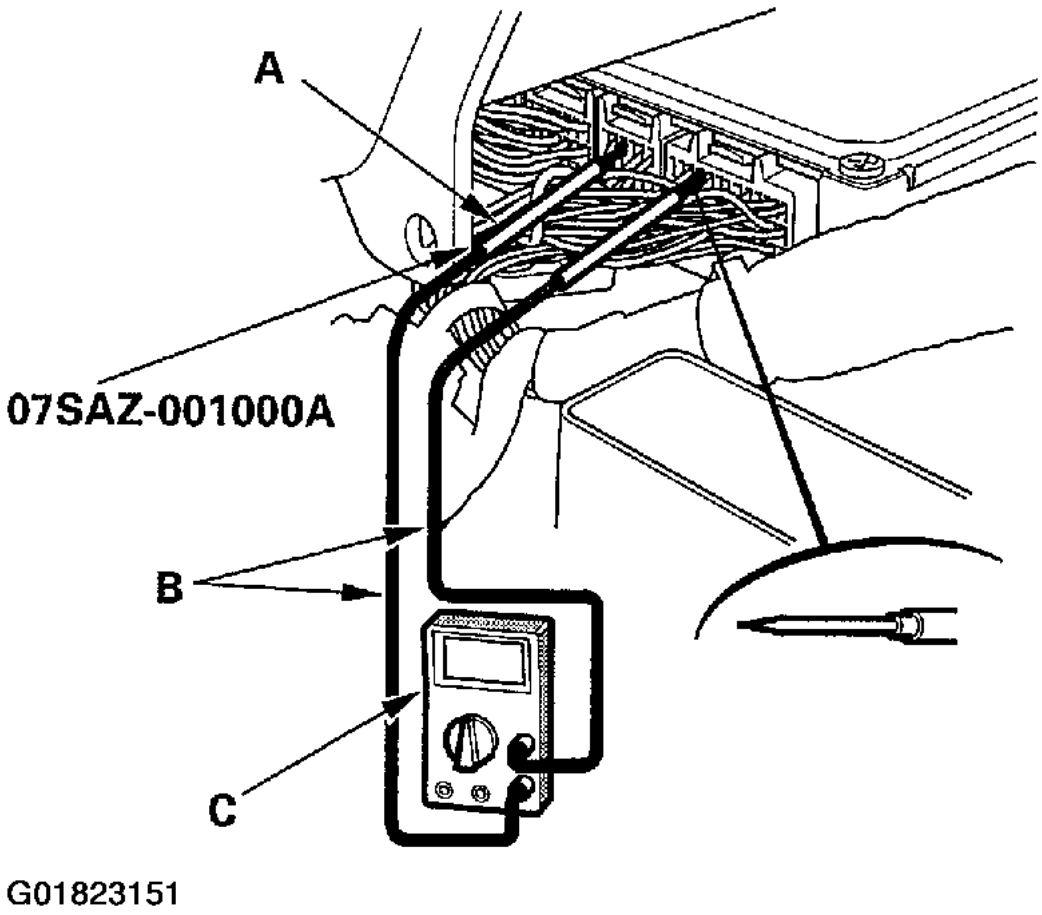
REVERSE LOCKOUT SYSTEM

GENERAL TROUBLESHOOTING INFORMATION

How to Troubleshoot Circuits at the ECM

Special Tools Required: Backprobe set 07SAZ-001000A (2 required)

1. Pull back the carpet from the passenger's and driver's side of the center console to expose the ECM.
2. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a digital multimeter (C).



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Fig. 3: Connecting The Backprobe Adapters To The Stacking Patch Cords & Connecting The Cords To A Digital Multimeter

3. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.

COMPONENT LOCATION INDEX

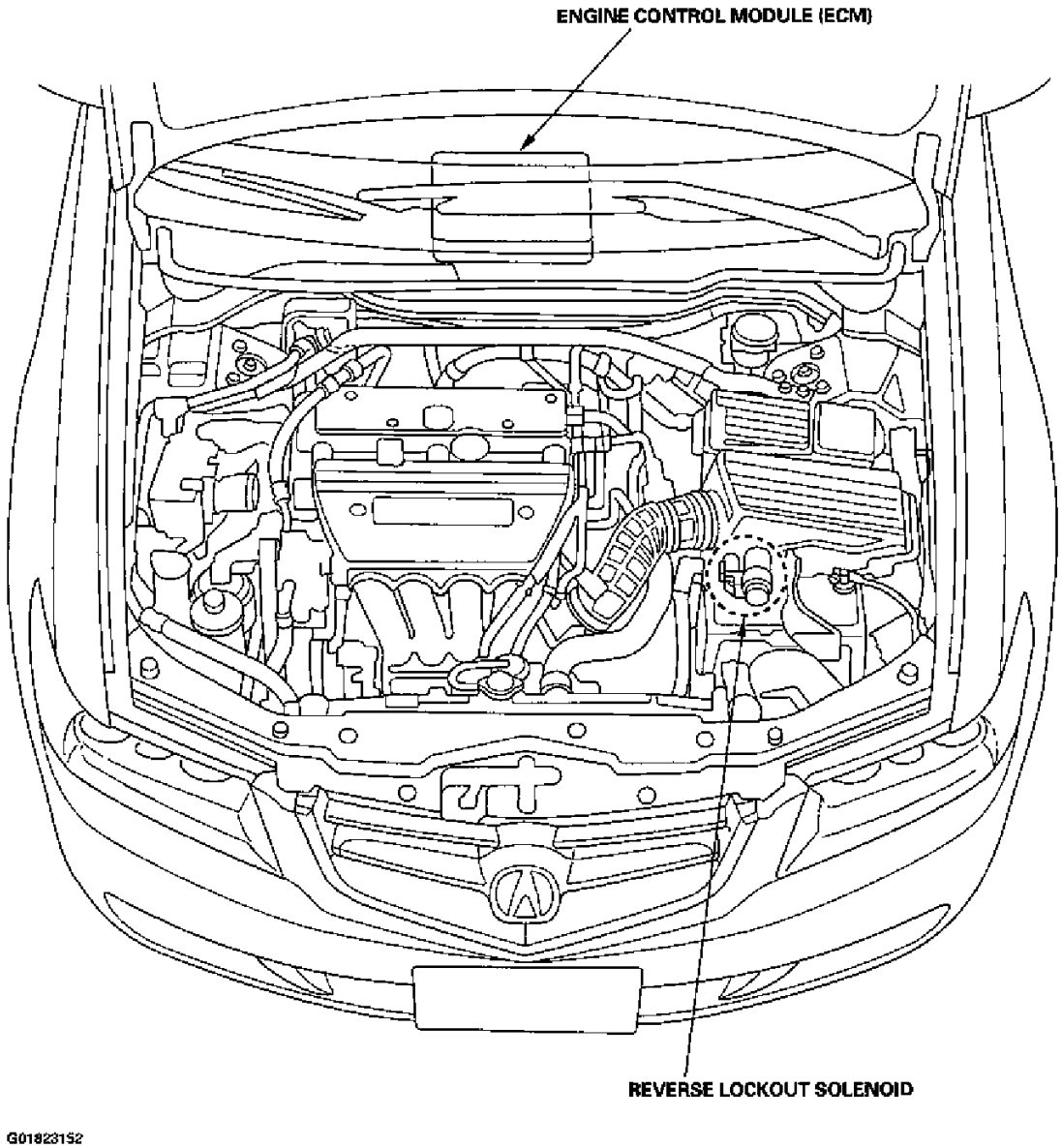


Fig. 4: Locating Reverse Lockout System Components

SYSTEM DESCRIPTION

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At a vehicle speed of 12 mph (20 km/h) or more, a signal from the vehicle speed sensor (VSS) activates the reverse lockout solenoid, which pushes the select lock cam B into the locked position. As a result, the select lever cannot rotate to the reverse select position, making it impossible to engage reverse gear. At a vehicle speed of 9 mph (15 km/h) or less, the signal from the VSS is interrupted which turns off the reverse lockout solenoid. The select lock return spring pulls the select lock cam B back, enabling the select lever to move freely so that reverse gear can be selected.

Vehicle speed	Inhibitor	Reverse selection
Above 12 mph (20 km/h)	ON	Not allowed
Below 9 mph (15 km/h)	OFF	OK
IG-S/W OFF	OFF	OK

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Fig. 5: Reverse Lockout Solenoid Operation

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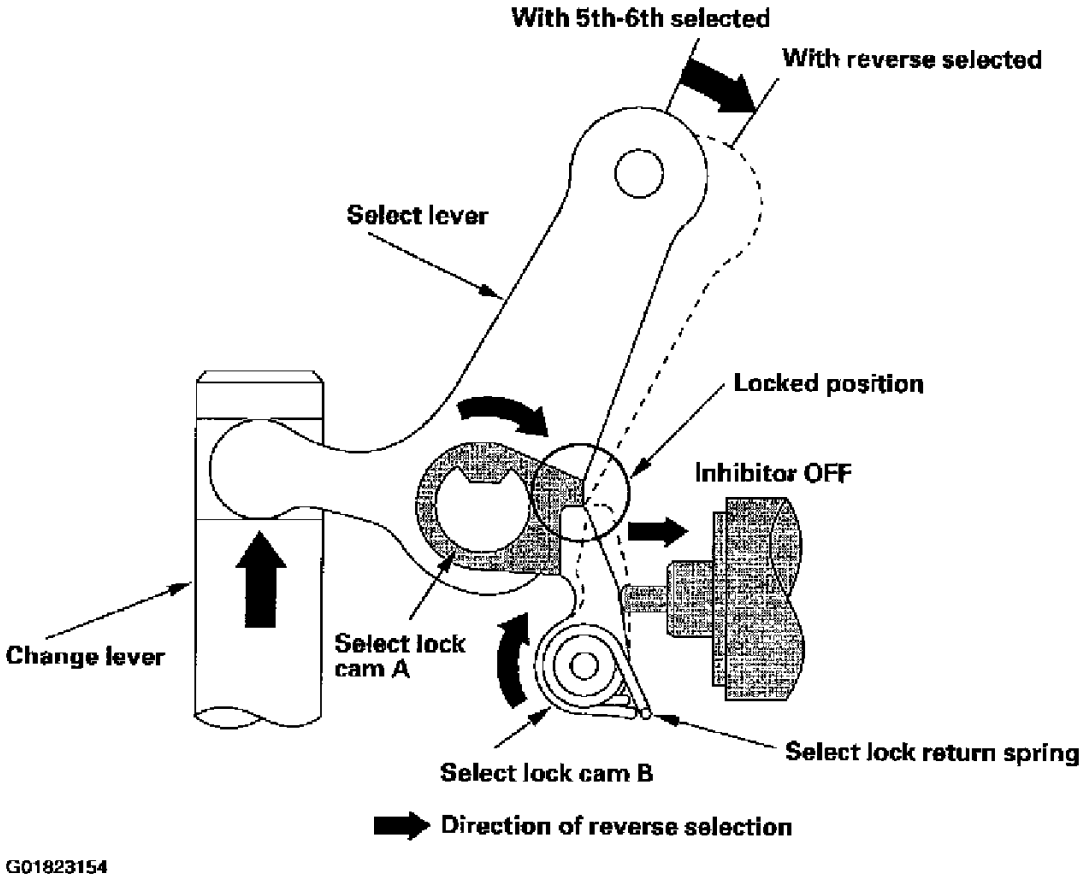


Fig. 6: Reverse Lockout Solenoid Components

CIRCUIT DIAGRAM

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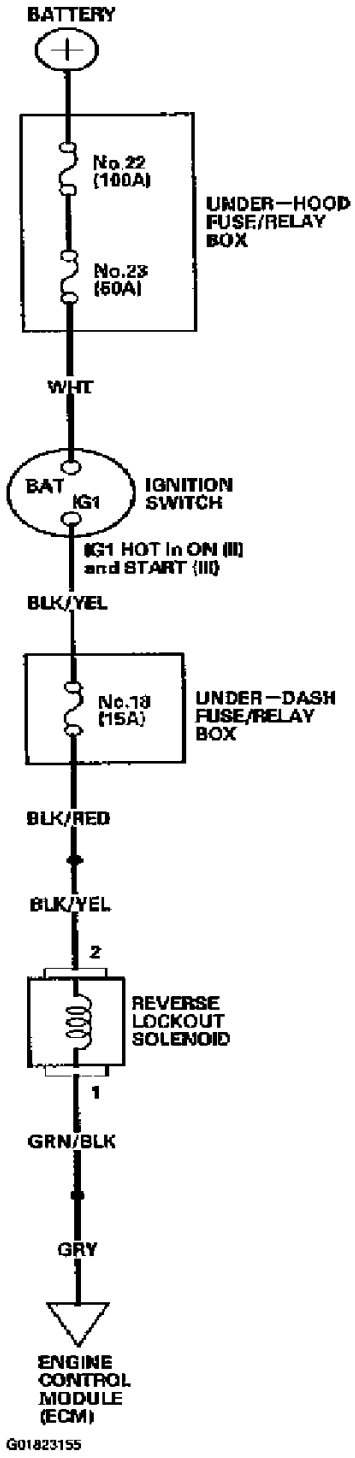


Fig. 7: Reverse Lockout System Wiring Diagram

CIRCUIT TROUBLESHOOTING

1. Check the No. 18 (15A) fuse in the under-dash fuse/relay box.

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Is the fuse OK?

YES: Go to step 2.

NO: Replace the fuse, and recheck.

2. Start the engine and check the malfunction indicator lamp (MIL).

   Does the MIL come on?

   YES: Troubleshoot the DTC (see **GENERAL TROUBLESHOOTING INFORMATION**), and recheck.

   NO: Go to step 3.

3. Turn the ignition switch OFF.
4. Shift into reverse gear.

   Can the transmission be shifted into reverse gear?

   YES: Go to step 5.

   NO: Repair the transmission and recheck.

5. Turn the ignition switch ON (II). With the vehicle moving slowly (vehicle speed below 9 mph (15 km/h), shift the transmission into reverse gear.

   Can the transmission be shifted into reverse gear?

   YES: Go to step 6.

   NO: Go to step 7 .

6. Raise the front wheels and block the rear wheels, run the vehicle to a speed above 12 mph (20 km/h).

   Can the transmission be shifted into reverse gear?

   YES: Go to step 7.

   NO: Intermittent failure, system is OK at this time.

7. Turn the ignition switch OFF.
8. Disconnect the reverse lockout solenoid 2P connector.
9. Turn the ignition switch ON (II).
10. Measure the voltage between the reverse lockout solenoid 2P connector terminal No. 2 and body ground.

    Is there battery voltage?

    YES: Go to step 11.

    NO: Check for loose or poor connections at connector. If the connections are OK, repair open in the wire between No. 18 (15A) fuse in the underdash fuse/relay box and the reverse lockout solenoid.

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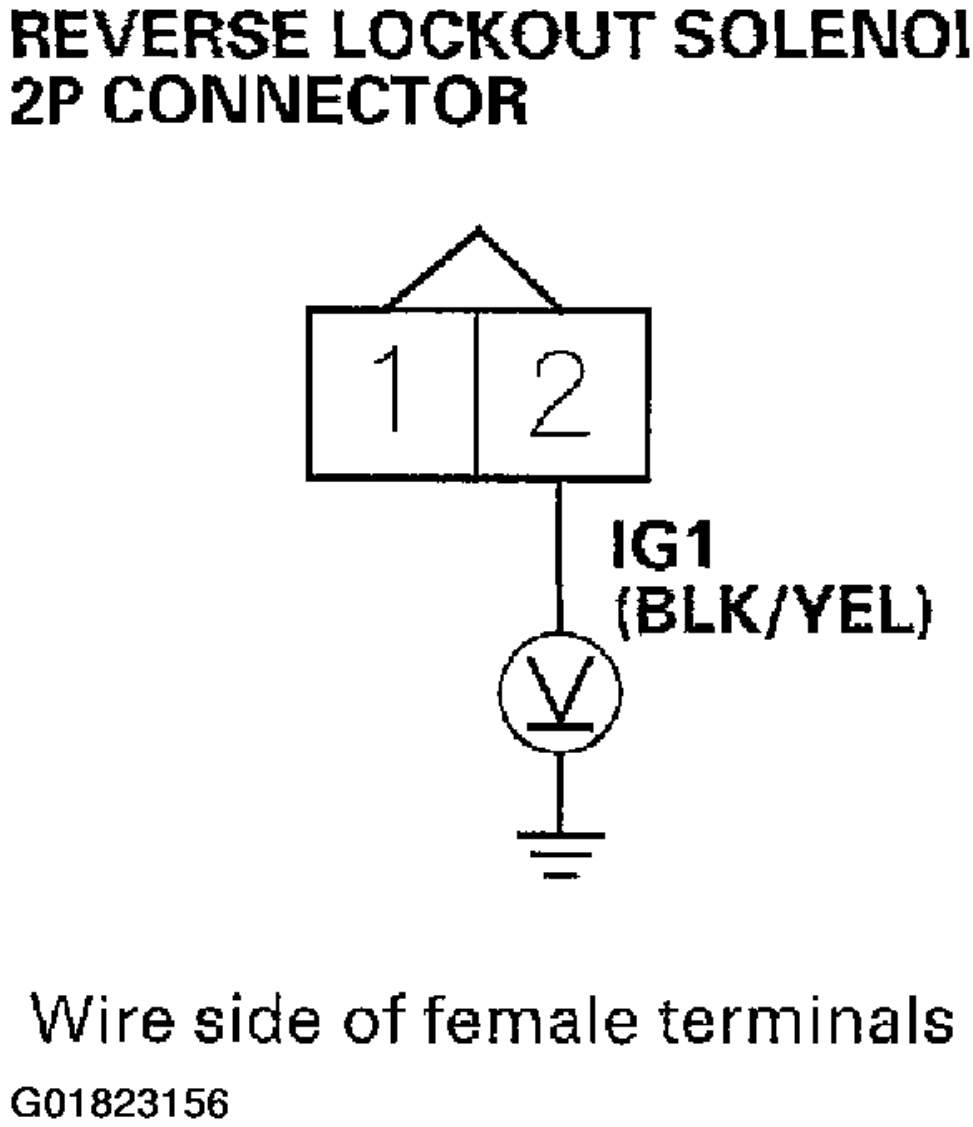


Fig. 8: Measuring Voltage Between The Reverse Lockout Solenoid 2P Connector Terminal No. 2 & Body Ground

11. Turn the ignition switch OFF.
12. Remove the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID DISASSEMBLY/REASSEMBLY**).
13. Connect the No. 2 terminal of the reverse lockout solenoid to the battery positive terminal, and connect the No. 1 to the battery negative terminal. Check that the reverse lockout solenoid operates.

    Does the reverse lockout solenoid operate properly?

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YES: Go to step 14.

NO: Replace the reverse lockout solenoid.

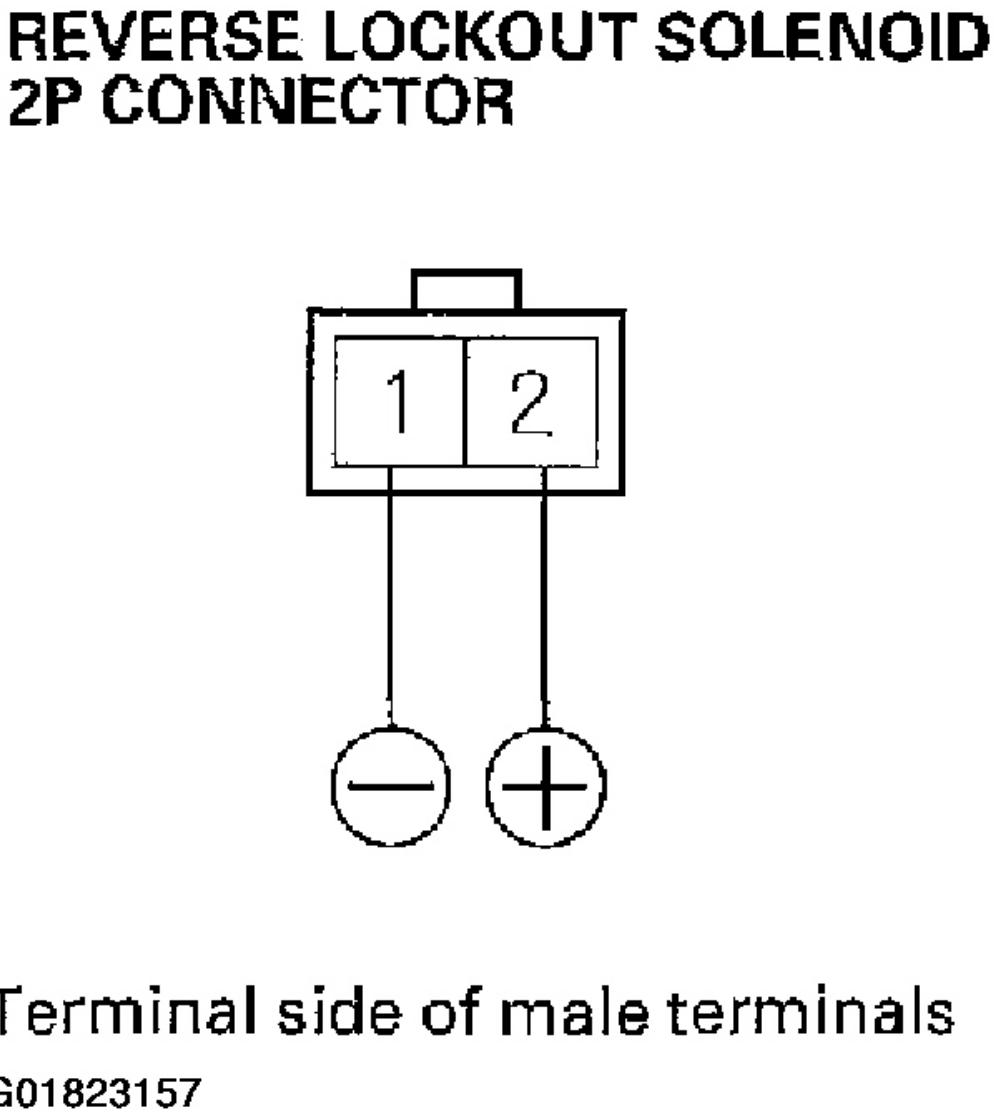


Fig. 9: Connecting The No. 2 Terminal Of The Reverse Lockout Solenoid To The Battery Positive Terminal & The No. 1 To The Battery Negative Terminal

14. Reinstall the reverse lockout solenoid and reconnect the solenoid 2P connector.
15. Turn the ignition switch ON (II).
16. Measure the voltage between ECM connector B2 and body ground.

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Is there battery voltage?

YES: Check for loose connectors at ECM connector B (31P). If necessary, update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM, replace the original ECM.

NO: Repair open in the wire between reverse lockout solenoid and ECM (B2).

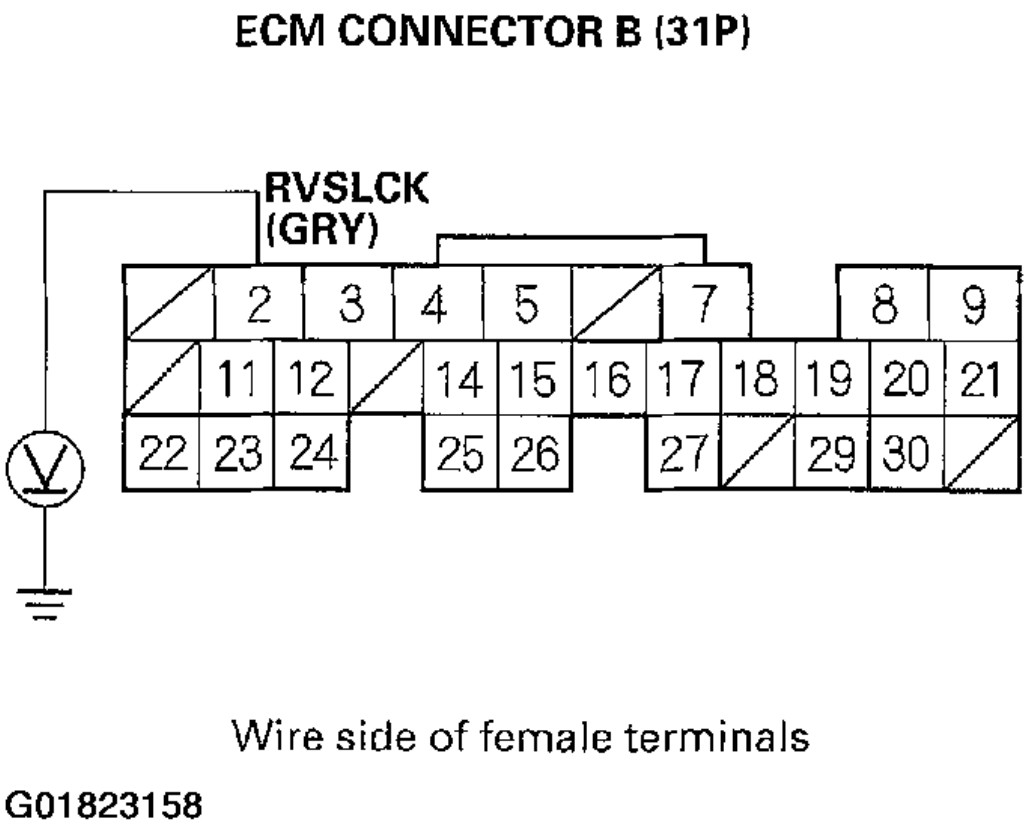


Fig. 10: Measuring The Voltage Between ECM Connector B2 & Body Ground

REVERSE LOCKOUT SOLENOID TEST

1. Remove the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID DISASSEMBLY/REASSEMBLY**).
2. Connect battery positive terminal to the No. 2 terminal of the reverse lockout solenoid 2P connector, and connect the battery negative terminal to the No. 1 terminal.

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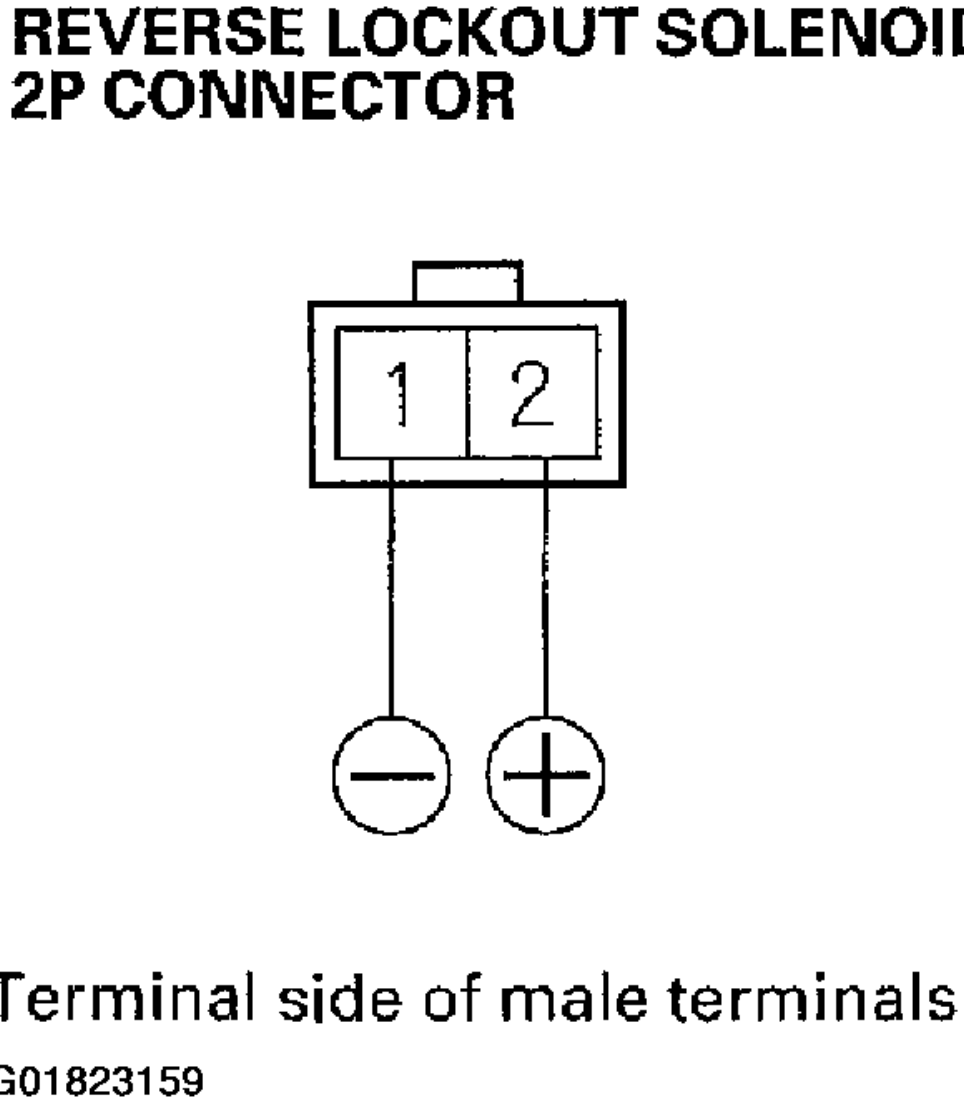


Fig. 11: Connecting The No. 2 Terminal Of The Reverse Lockout Solenoid To The Battery Positive Terminal & The No. 1 To The Battery Negative Terminal

3. Check that the reverse lockout solenoid operates.
4. If the reverse lockout solenoid does not work, replace it.

REVERSE LOCKOUT SOLENOID DISASSEMBLY/REASSEMBLY

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons. Disconnect the negative (-) cable first, then the positive (+)

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cable from the battery. Remove the battery.

2. Remove the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
3. Remove the battery base (see step 6 of **ENGINE REMOVAL**).
4. Carefully remove the shift cable, select cable, and cable bracket together so as not to bend the cables (see step 6 of **TRANSMISSION REMOVAL**).
5. Disconnect the countershaft speed sensor connector, back-up light switch connector, and reverse lockout solenoid connector (see step 7 of **TRANSMISSION REMOVAL**).
6. Remove the bolts (A) and reverse lockout solenoid (B).

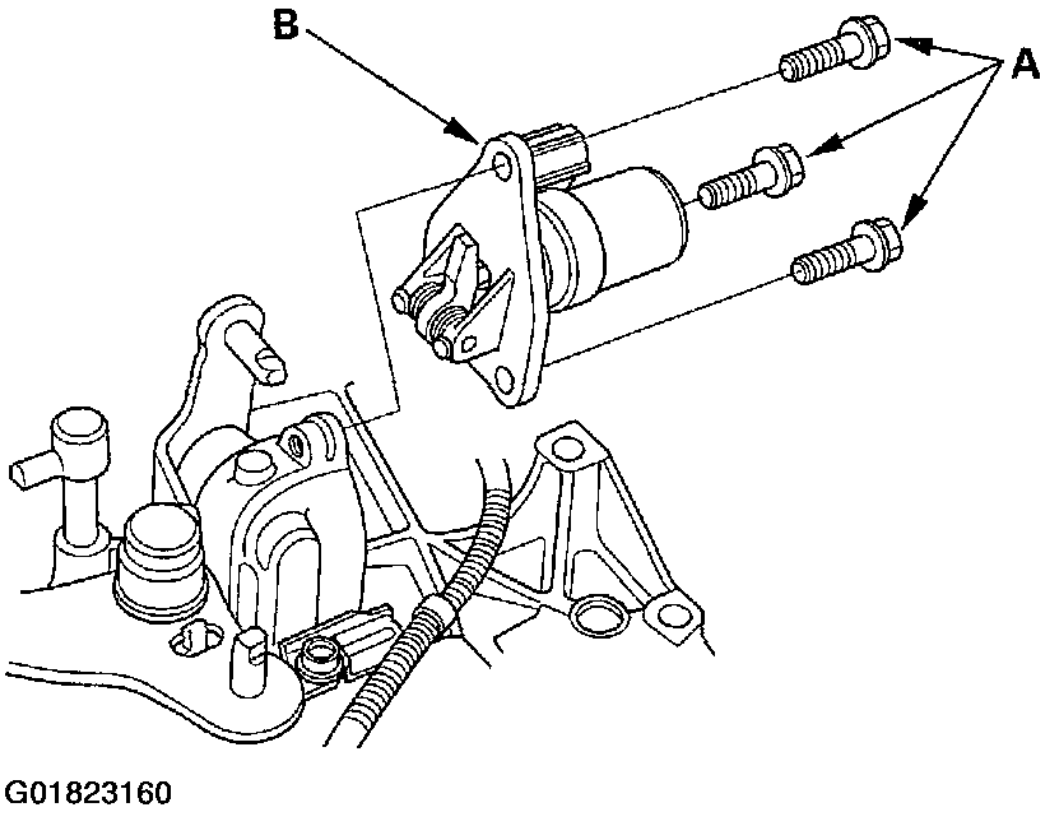


Fig. 12: Removing The Bolts & Reverse Lockout Solenoid

7. Remove the roller (A), the select lock return spring (C), and the select lock cam B.

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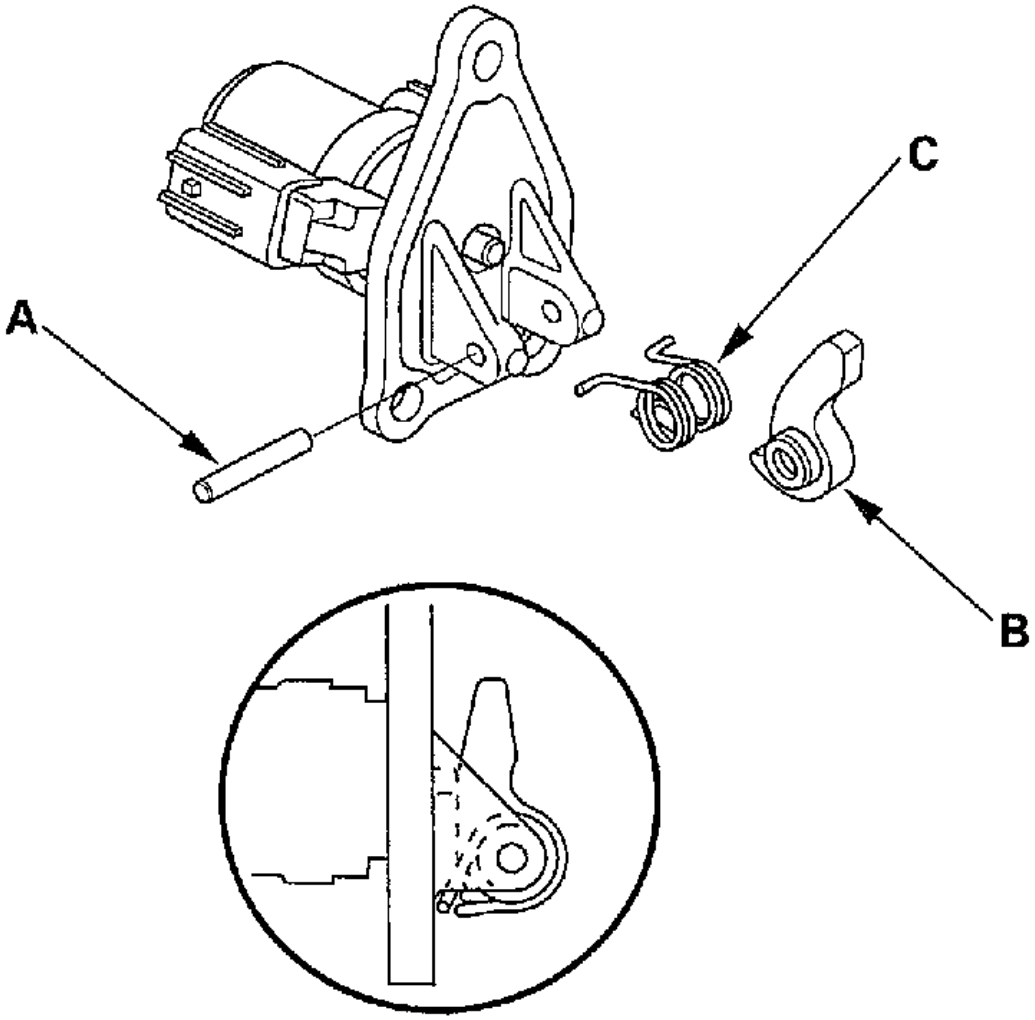


Fig. 13: Removing The Roller, The Select Lock Return Spring & The Select Lock Cam B

8. Install in the reverse order of removal.
9. Remove any dirt and oil from the sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface.

NOTE: If 4 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 20 minutes after assembly before filling the transmission with oil.

10. Install the reverse lockout solenoid.

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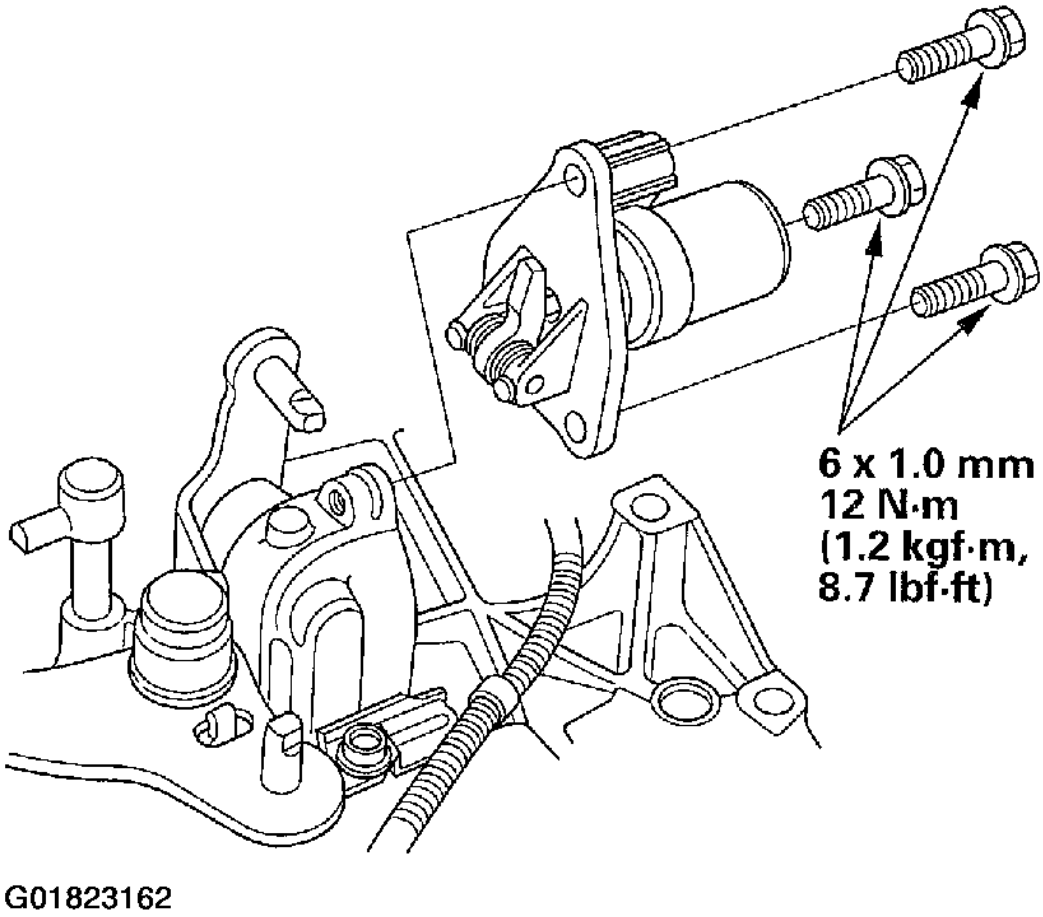


Fig. 14: Installing The Reverse Lockout Solenoid

11. Connect the reverse lockout solenoid connector, back-up light switch connector, and countershaft speed sensor connector (see step 32 of **TRANSMISSION INSTALLATION**).
12. Install the cable bracket, select cable, and shift cable (see step 33 of **TRANSMISSION INSTALLATION**).
13. Install the battery base (see step 43 of **ENGINE INSTALLATION**).
14. Install the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
15. Install the battery. Connect the positive (+) cable first, then the negative (-) cable to the battery.
16. Enter the anti-theft codes for the radio and navigation system, then enter the customer's radio station presets.

MANUAL TRANSMISSION

TRANSMISSION FLUID INSPECTION & REPLACEMENT

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1. Park the vehicle on level ground, and turn the engine OFF.
2. Remove the splash shield (see step 18 of **TRANSMISSION REMOVAL**).
3. Remove the oil filler plug (A) and washer (B), check the condition of the fluid, and make sure it is at the proper level (C).

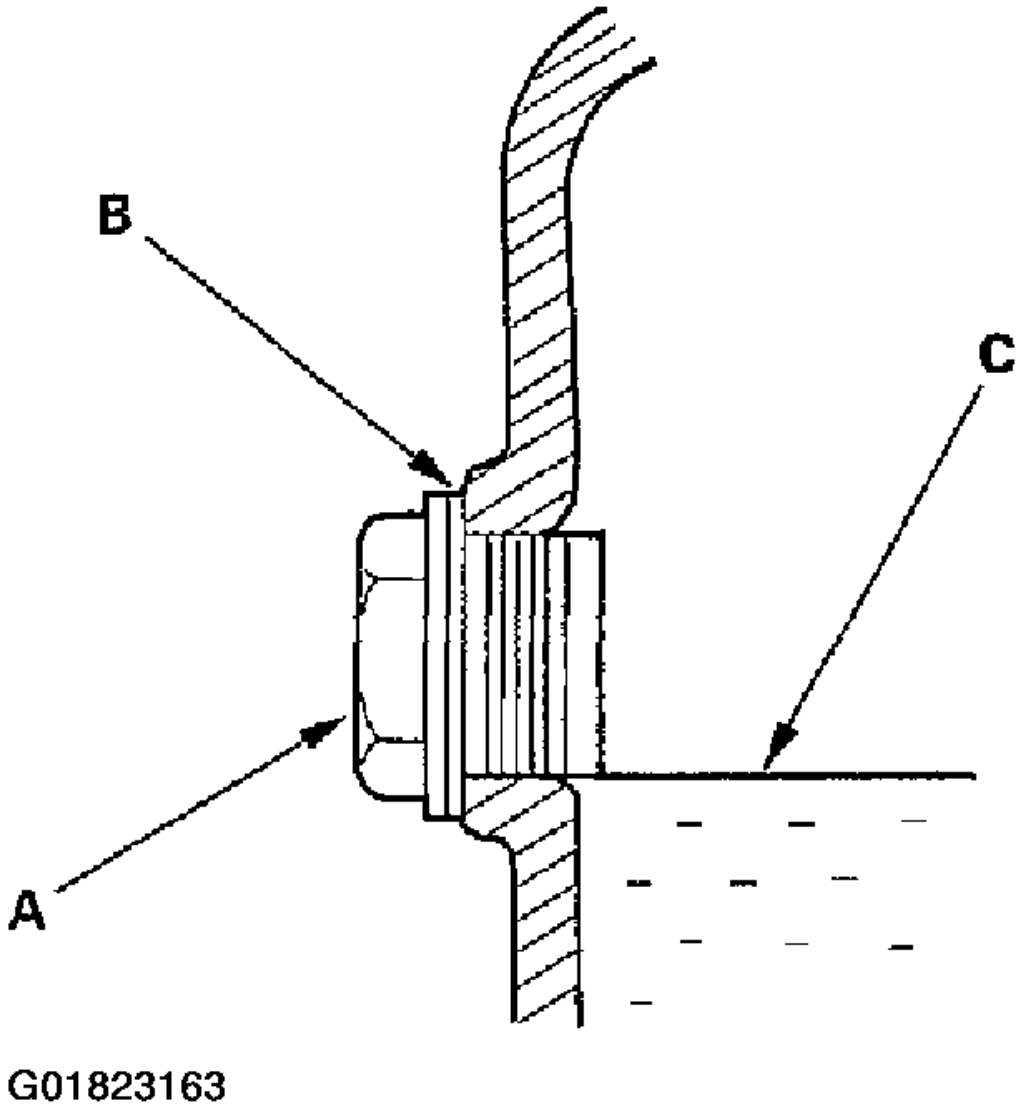


Fig. 15: Removing The Oil Filler Plug And Washer & Checking Level

4. If the fluid is dirty, remove the drain plug (D) and drain it.

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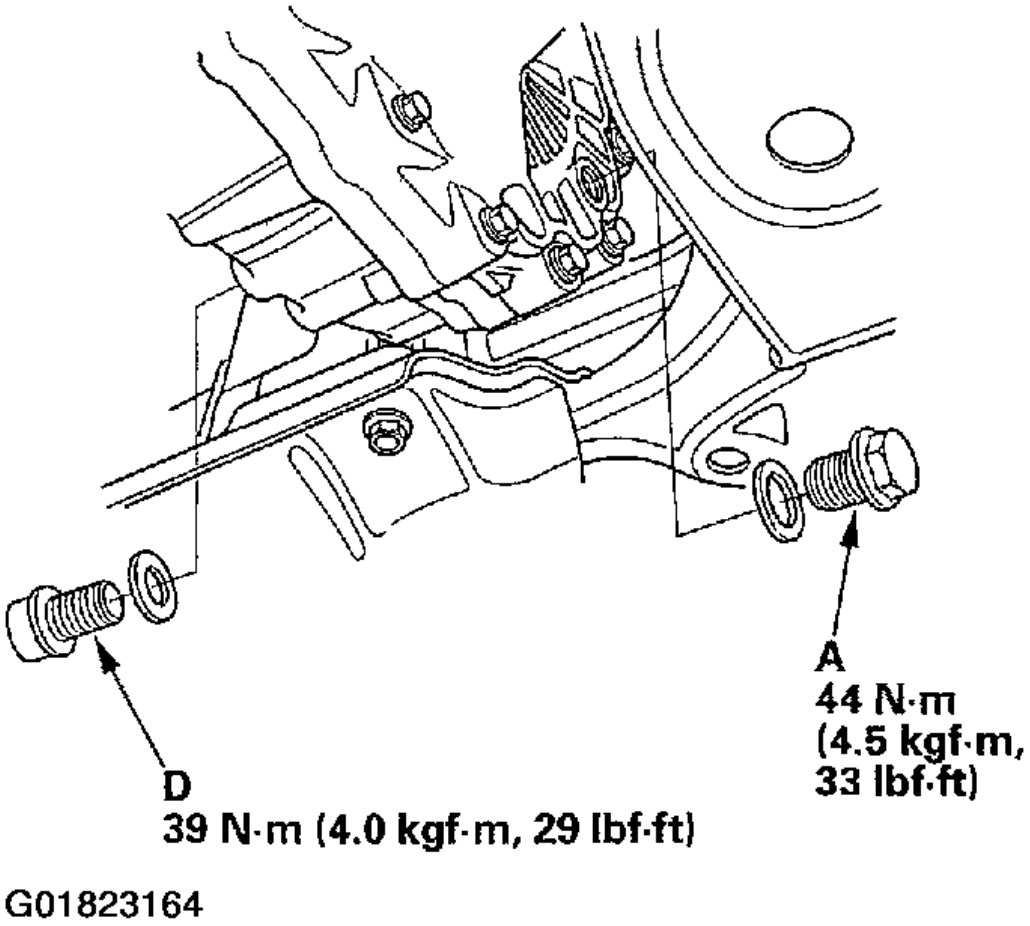


Fig. 16: Removing The Drain Plug & Draining Transmission Fluid

5. Install the drain plug with a new drain plug washer (P/N 90403-RAR-M000), and refill the transmission fluid to the proper level.

   Fluid Capacity:

   2.0 L (2.1 US qt) at fluid change

   2.2 L (2.3 US qt) at overhaul

   Always use Honda Manual Transmission Fluid (MTF). Using motor oil can cause stiffer shifting because it does not contain the proper additives.

6. Install the oil filler plug with a new filler plug washer (P/N 90404-RAR-M000).
7. Install the splash shield (see step 25 of **TRANSMISSION INSTALLATION**).

BACK-UP LIGHT SWITCH TEST

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1. Disconnect the back-up light switch connector.

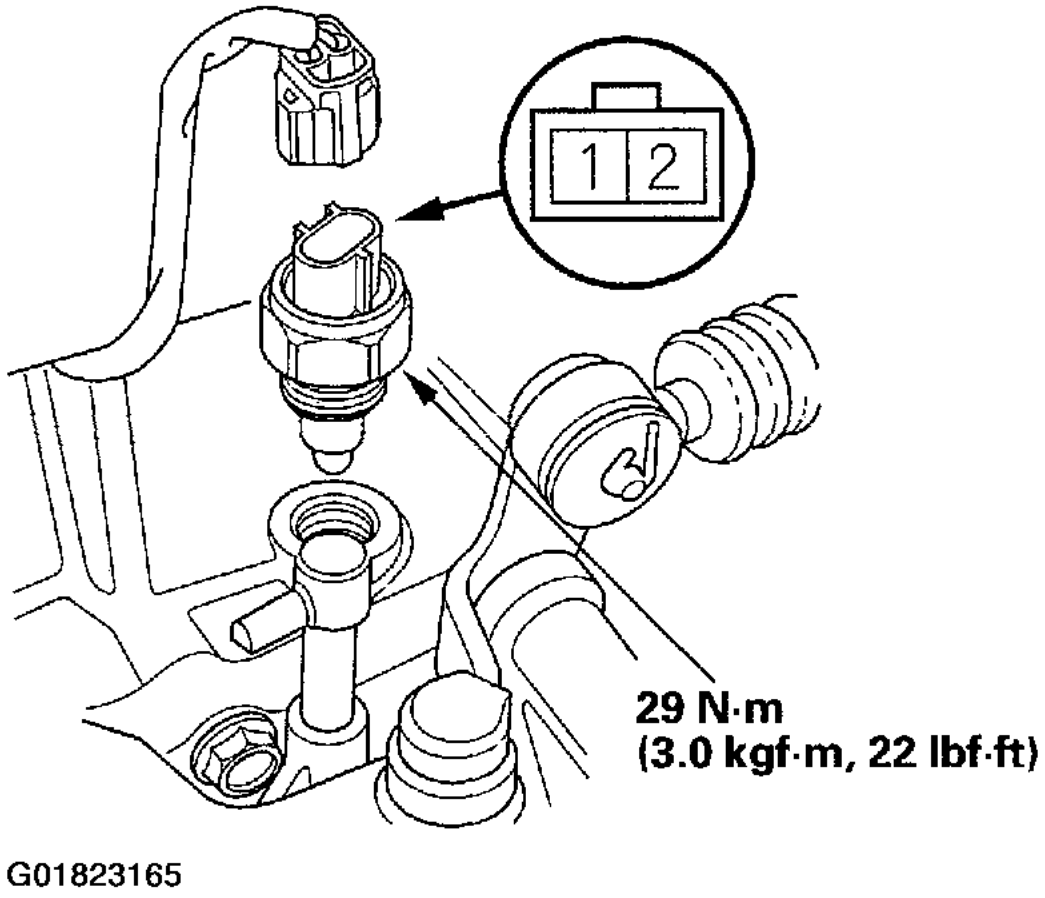


Fig. 17: Disconnecting The Back-Up Light Switch Connector

2. Check for continuity between the No. 1 and No. 2 terminals of the back-up light switch. There should be continuity when the shift lever is in reverse.
3. If necessary, replace the back-up light switch. Apply liquid gasket (P/N 08718-001) (A) to the threads of the switch, and a 2 mm (0.079 in.) bead around the contact surface. Install the back-up light switch on the clutch housing.

NOTE: If 4 minutes have passed after applying liquid gasket, reapply it.

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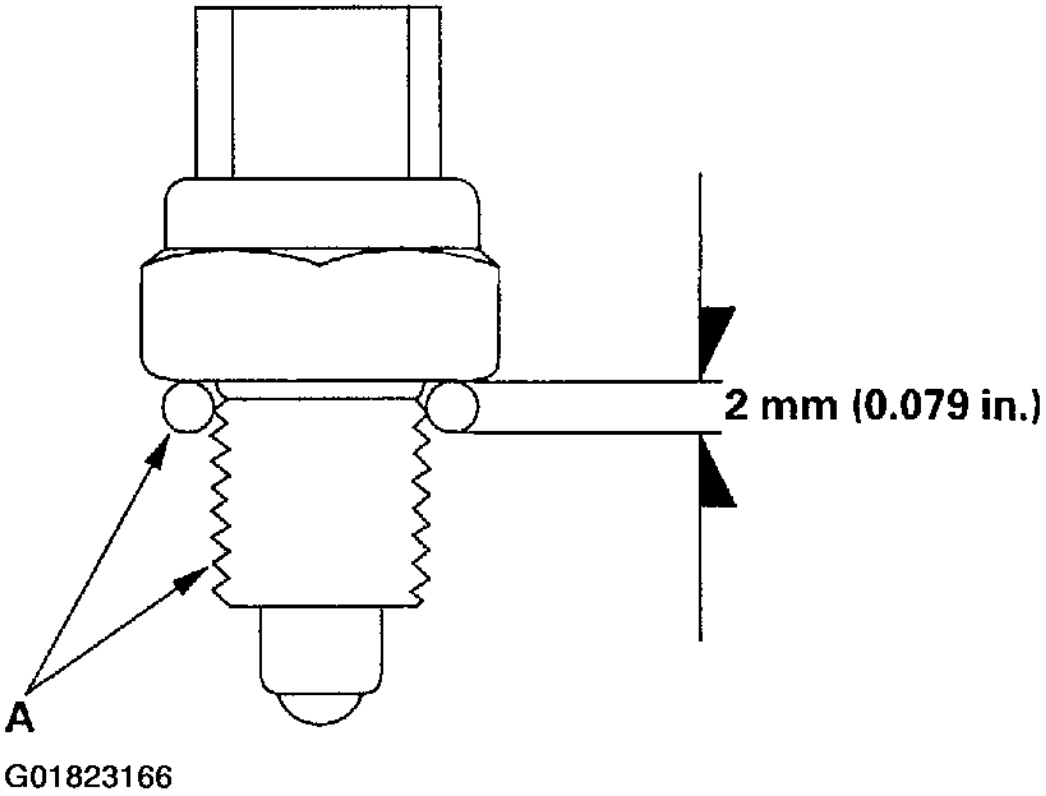


Fig. 18: Applying Liquid Gasket To The Threads Of The Switch

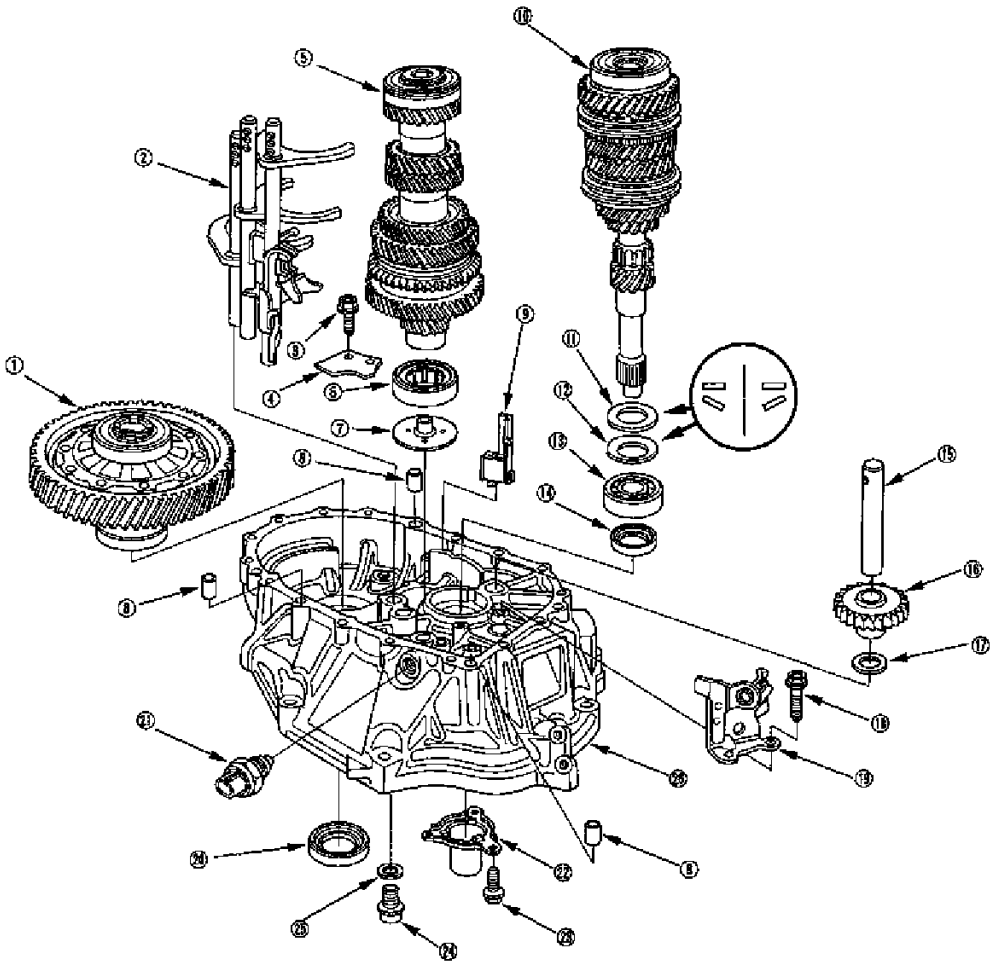
TRANSMISSION REMOVAL & INSTALLATION

See **TRANSMISSION REMOVAL & INSTALLATION** .

TRANSMISSION DISASSEMBLY

Exploded View - Clutch Housing

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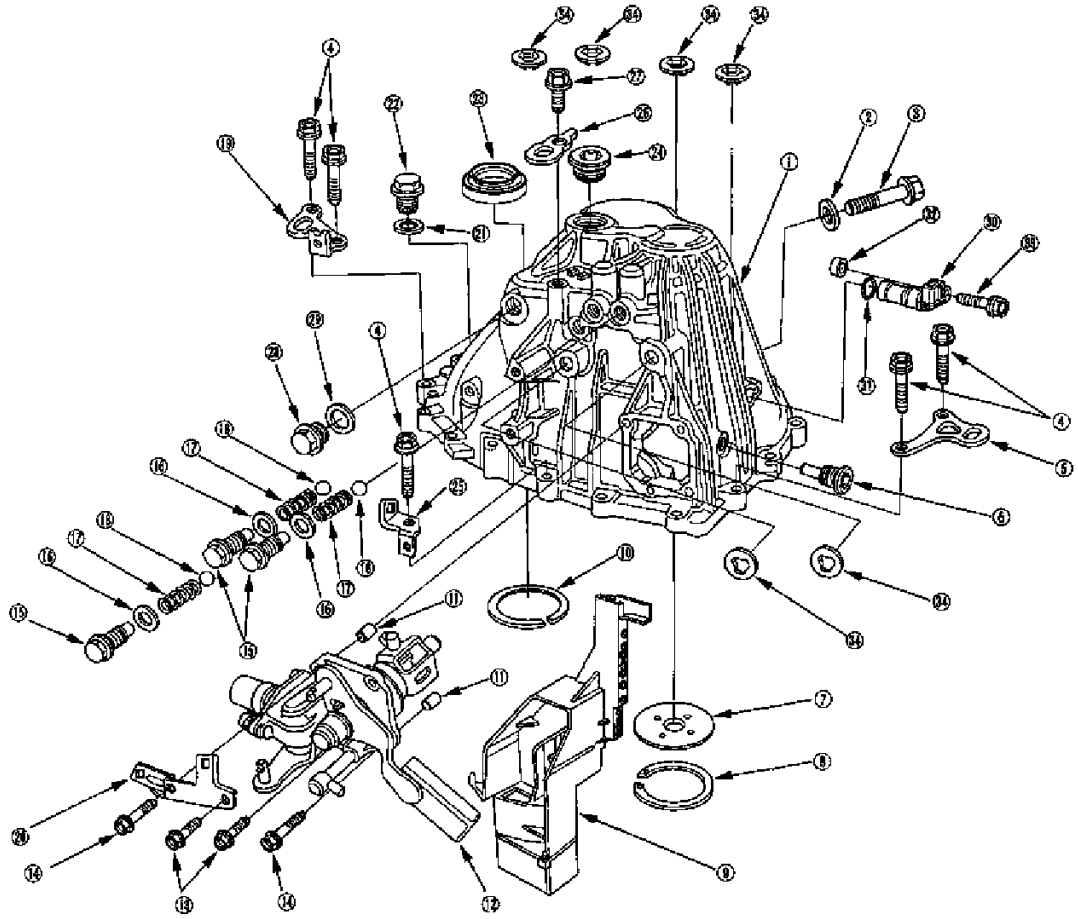
① DIFFERENTIAL ASSEMBLY
② SHIFT FORK ASSEMBLY
③ 8 mm FLANGE BOLT
12.5 N·m (1.25 kgf·m, 9.0 lbf·ft)
④ BEARING SET PLATE
⑤ COUNTERSHAFT ASSEMBLY
⑥ NEEDLE BEARING
⑦ OIL GUIDE PLATE C
⑧ 14 x 20 mm DOWEL PIN
⑨ MAGNET
⑩ MAINSHAFT ASSEMBLY
⑪ 28 mm WASHER
⑫ 28 mm SPRING WASHER
⑬ BALL BEARING
⑭ 28 x 43 x 7 mm OIL SEAL
Replace.
⑮ REVERSE GEAR SHAFT
⑯ REVERSE IDLER GEAR
⑰ 20 x 36 x 2 mm THRUST WASHER
⑱ 6 mm SPECIAL BOLT
15 N·m (1.5 kgf·m, 11 lbf·ft)
⑲ REVERSE SHIFT FORK ASSEMBLY
⑳ 35 x 58 x 8 mm OIL SEAL
Replace.
㉑ BACK-UP LIGHT SWITCH
29 N·m (3.0 kgf·m, 22 lbf·ft)
㉒ RELEASE BEARING GUIDE
㉓ 6 mm FLANGE BOLT
15 N·m (1.5 kgf·m, 10.8 lbf·ft)
㉔ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉕ DRAIN PLUG WASHER
Replace.
㉖ CLUTCH HOUSING

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Fig. 19: Exploded View Of Clutch Housing Components

Exploded View - Transmission Housing

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① TRANSMISSION HOUSING
② 10 mm WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm SPECIAL BOLT (LEFTHAND THREAD)
24 N·m (2.4 kgf·m, 17.4 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 x 30 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 8.7 lbf·ft)
⑭ 6 x 20 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 8.7 lbf·ft)
⑮ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑯ 12 mm WASHER
Replace.
⑰ SPRING
⑱ STEEL BALL
⑲ TRANSMISSION HANGER B
⑳ HARNESS BRACKET A
㉑ FILLER PLUG WASHER
Replace.
㉒ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 40 x 56 x 8 mm OIL SEAL
Replace.
㉔ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)
㉕ HARNESS BRACKET B
㉖ TRANSMISSION HANGER
㉗ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉘ 20 mm BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉙ 20 mm WASHER
Replace.
㉚ COUNTERSHAFT SPEED SENSOR
㉛ O-RING
Replace.
㉜ PLAIN WASHER
㉝ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 8.7 lbf·ft)
㉞ MOUNT BRACKET COLLAR

Service Precaution: Transmission housing 8 mm bolts are lefthand thread.

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Fig. 20: Exploded View Of Transmission Housing Components

NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the detent bolts (A), springs, steel balls and back-up light switch (B).

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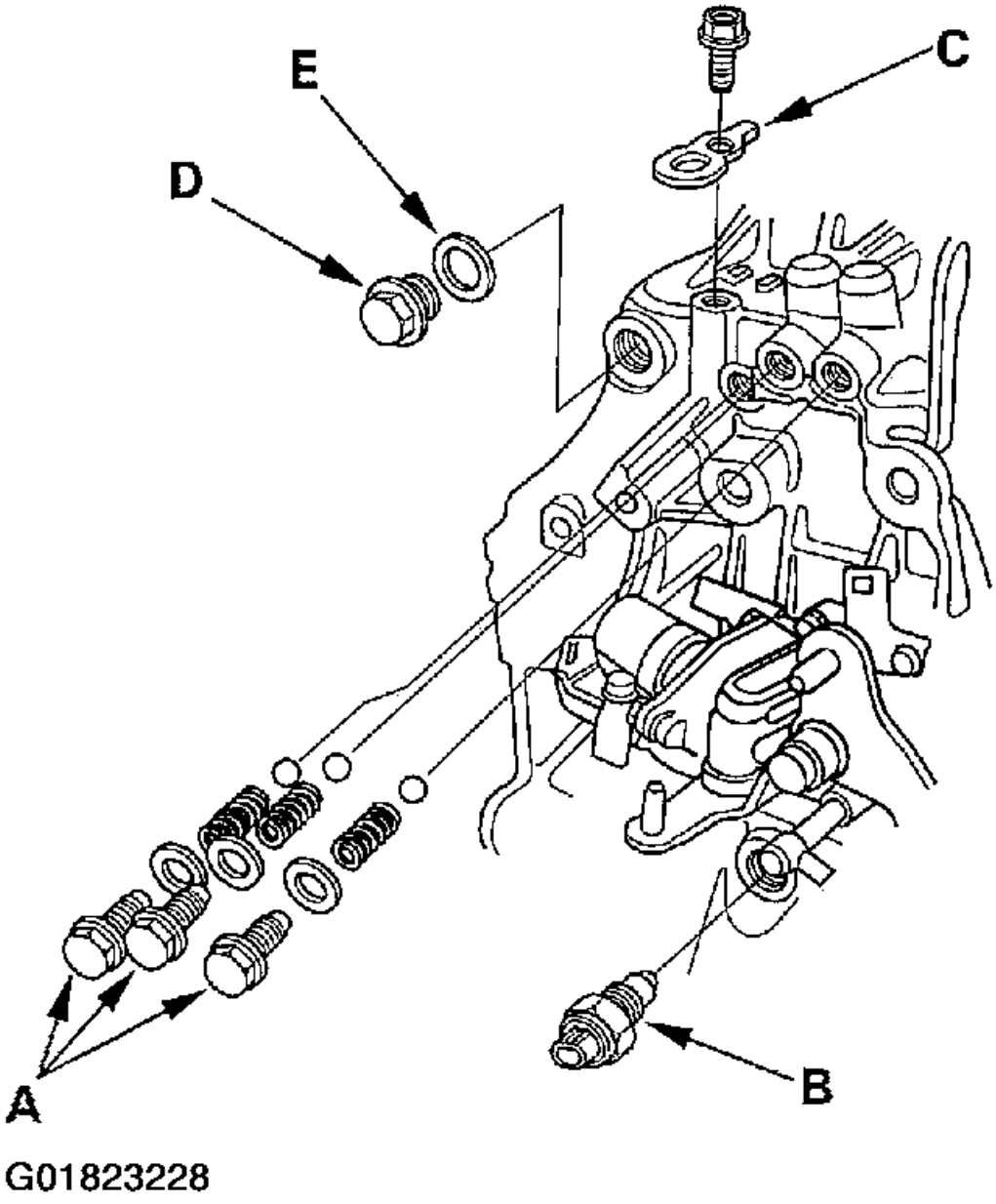


Fig. 21: Removing The Detent Bolts, Springs, Steel Balls & Back-Up Light

2. Remove the transmission hanger (C), 20 mm bolt (D), and 20 mm washer (E)
3. Remove the interlock bolt (B), change lever assembly (C), 8 x 14 mm dowel pins (D), and harness bracket A.

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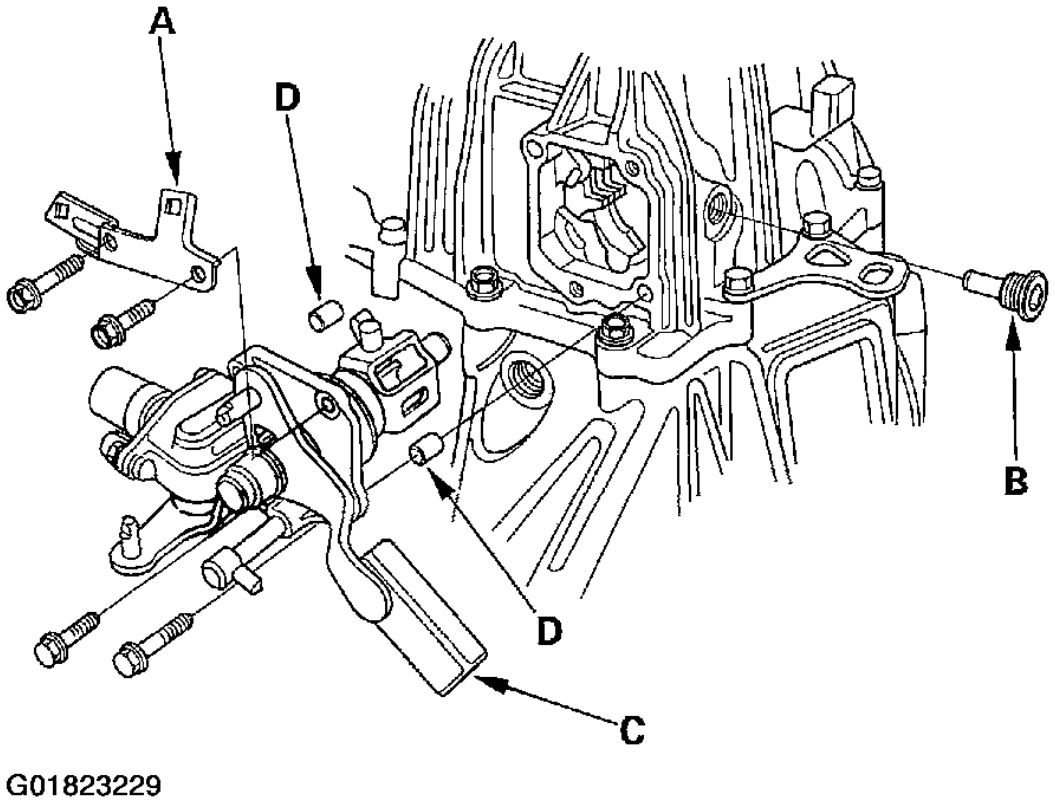


Fig. 22: Removing The Interlock Bolt, Change Lever Assembly, 8 X 14 Mm Dowel Pins & Harness Bracket A

4. Remove the filler plug (A), 10 mm flange bolt (B), mount bracket collar (C).

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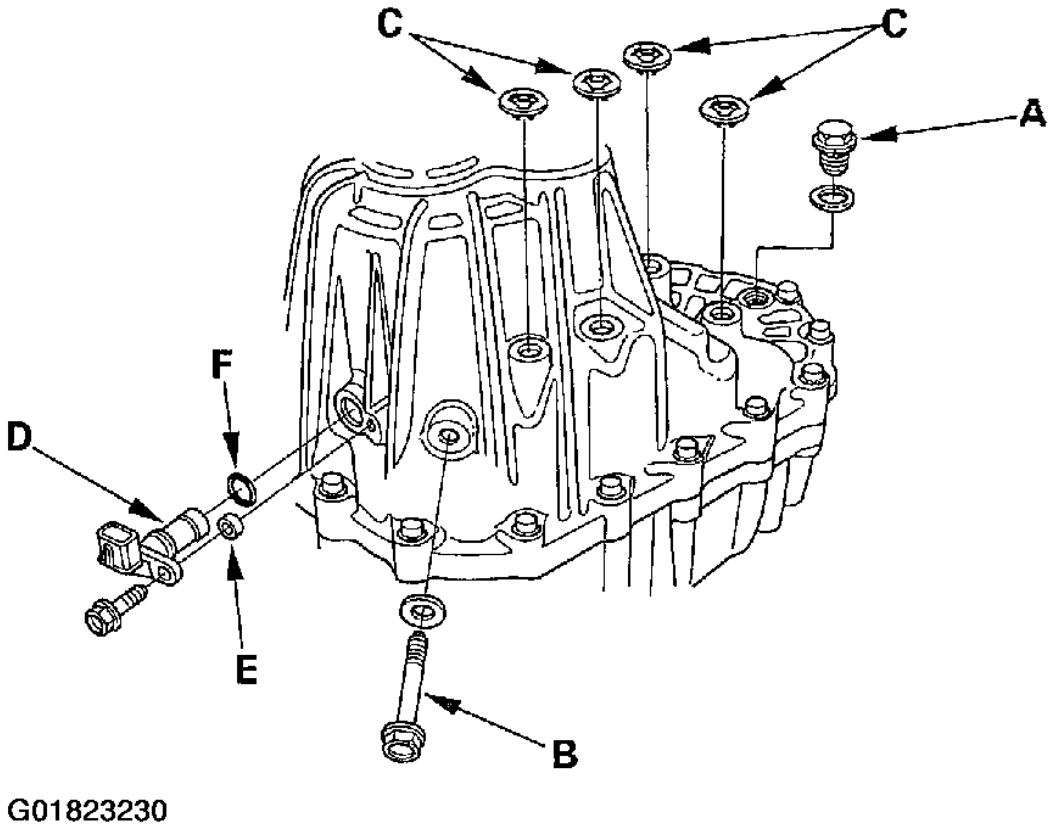


Fig. 23: Removing The Filler Plug, 10 Mm Flange Bolt, Mount Bracket Collar

5. Remove the countershaft speed sensor (D), plain washer (E), and O-ring (F).
6. Remove the 8 mm special bolts (left-hand threads and black color) in a crisscross pattern in several steps.
7. Remove transmission hanger A, transmission hanger B, harness bracket B (C), and mount bracket collar (D).

NOTE: All 8 mm transmission housing bolts are left-hand thread.

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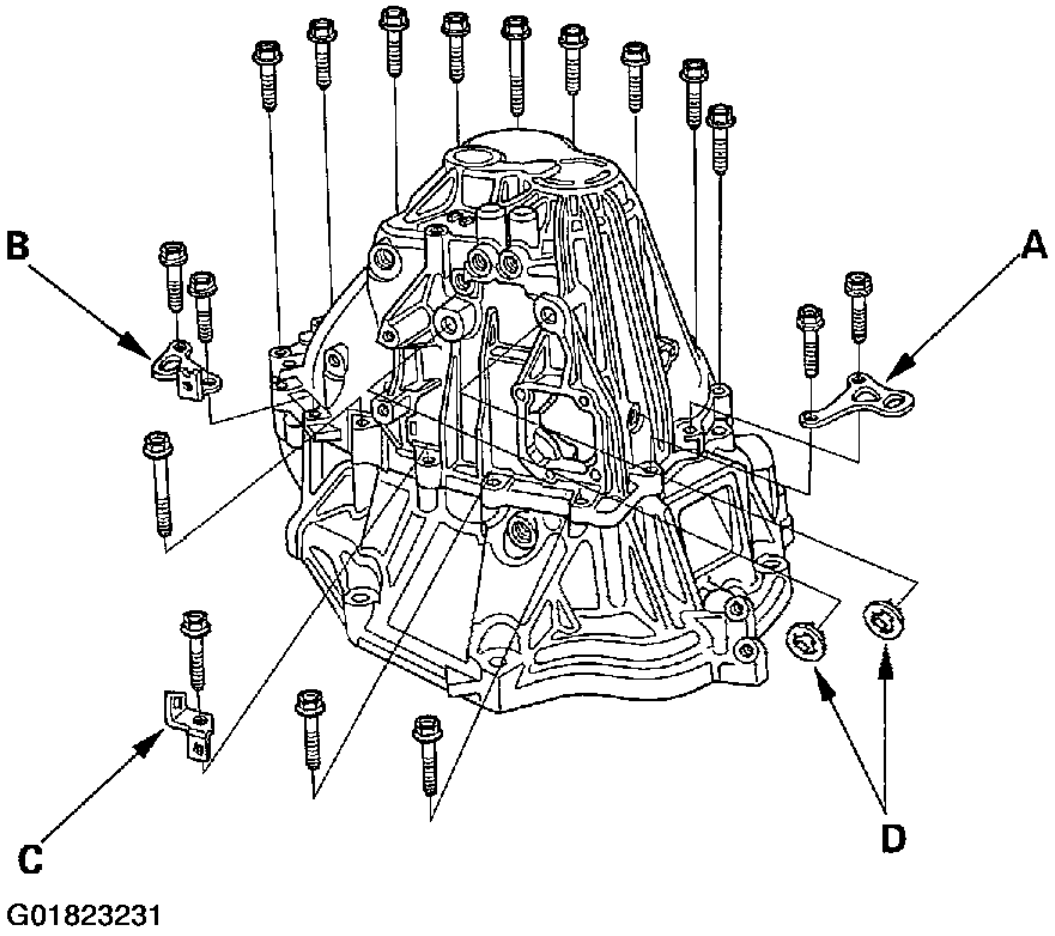


Fig. 24: Removing The 8 mm Special Left-Hand Thread Bolts, Transmission Hanger A, Transmission Hanger B, Harness Bracket B & Mount Bracket Collar

8. Remove the 32 mm sealing cap (A).

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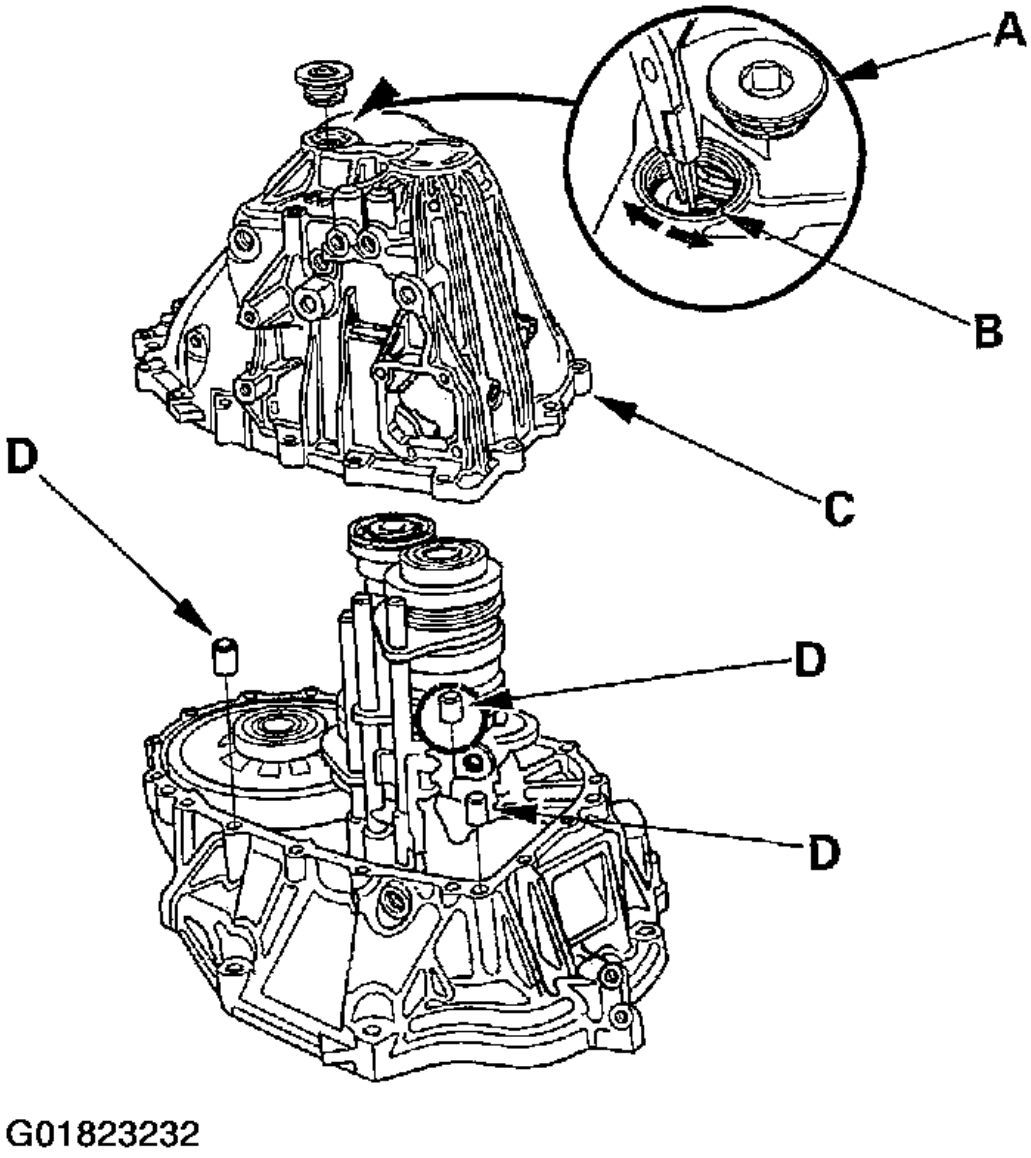


Fig. 25: Removing The 32 mm Sealing Cap

9. Expand the 72 mm snap ring (B) on the countershaft ball bearing, and remove if from the groove with snap ring pliers.
10. Remove the transmission housing (C) and 14 x 20 mm dowel pins (D).
11. Remove the reverse idler gear (A), reverse gear shaft (B), and 20 x 36 x 2 mm thrust washer (C).

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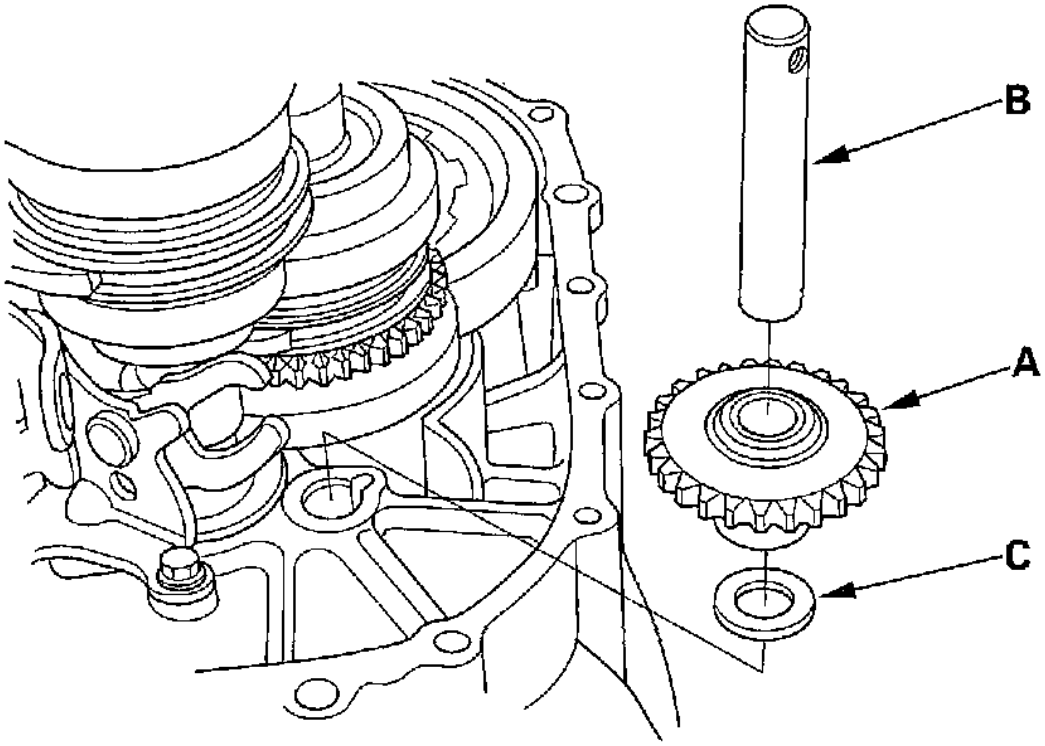


Fig. 26: Removing The Reverse Idler Gear, Reverse Gear Shaft & 20 X 36 X 2 mm Thrust Washer

12. Remove the reverse shift fork.

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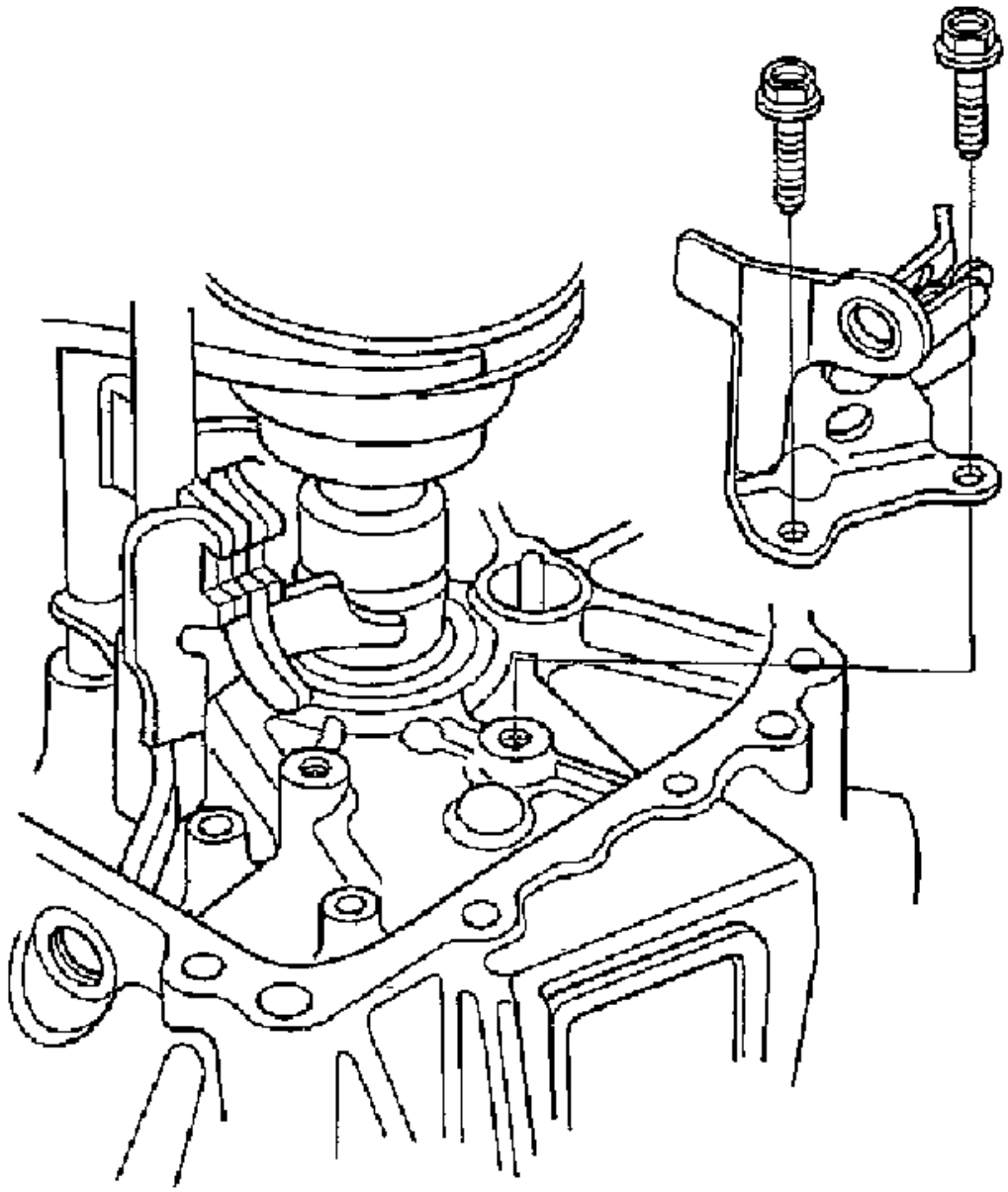


Fig. 27: Removing The Reverse Shift Fork

13. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and countershaft assembly (B) with the shift forks (C) from the clutch housing (D).

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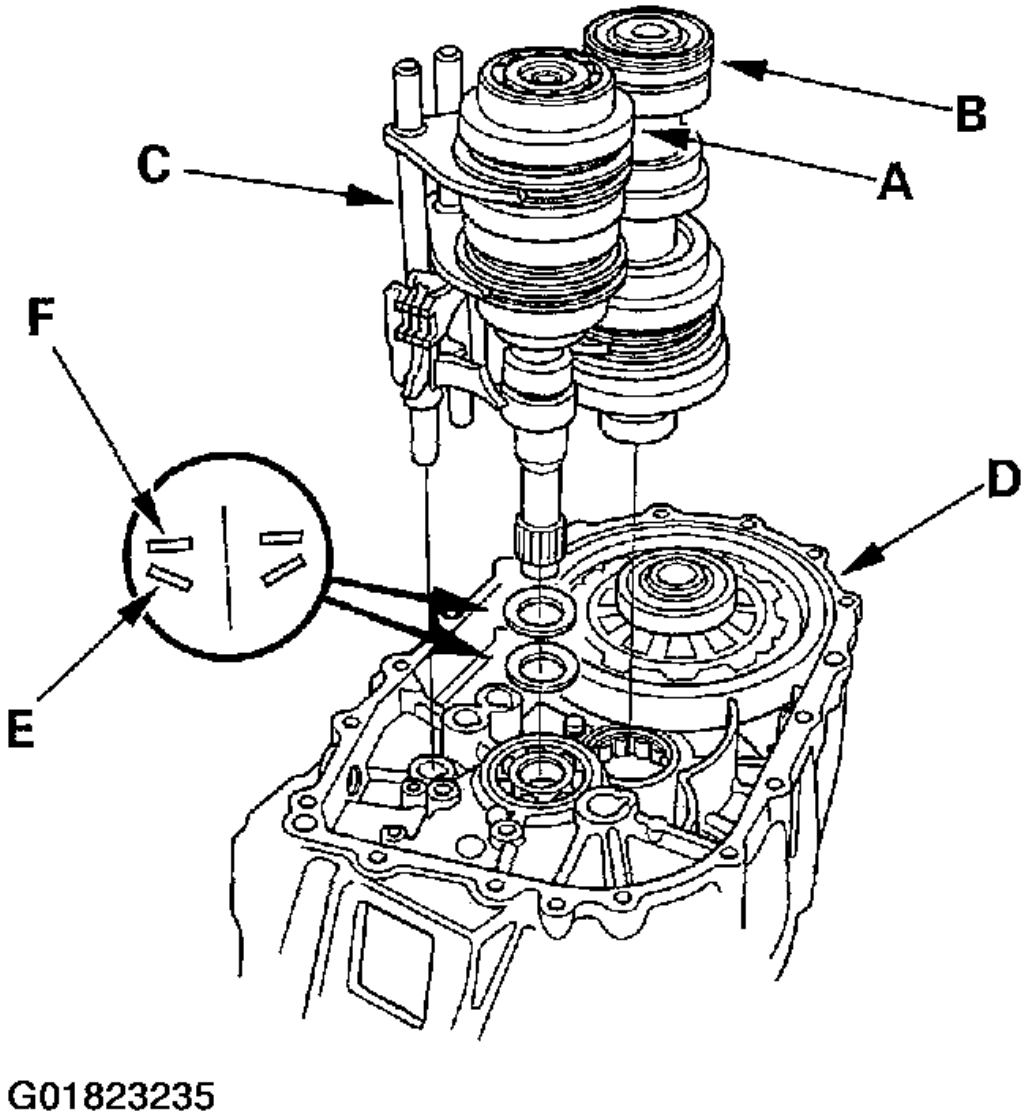


Fig. 28: Removing The Mainshaft Assembly & Countershaft Assembly With The Shift Forks From The Clutch Housing

14. Remove the 28 mm spring washer (E) and 28 mm washer (F).
15. Remove the differential assembly (A) and magnet (B).

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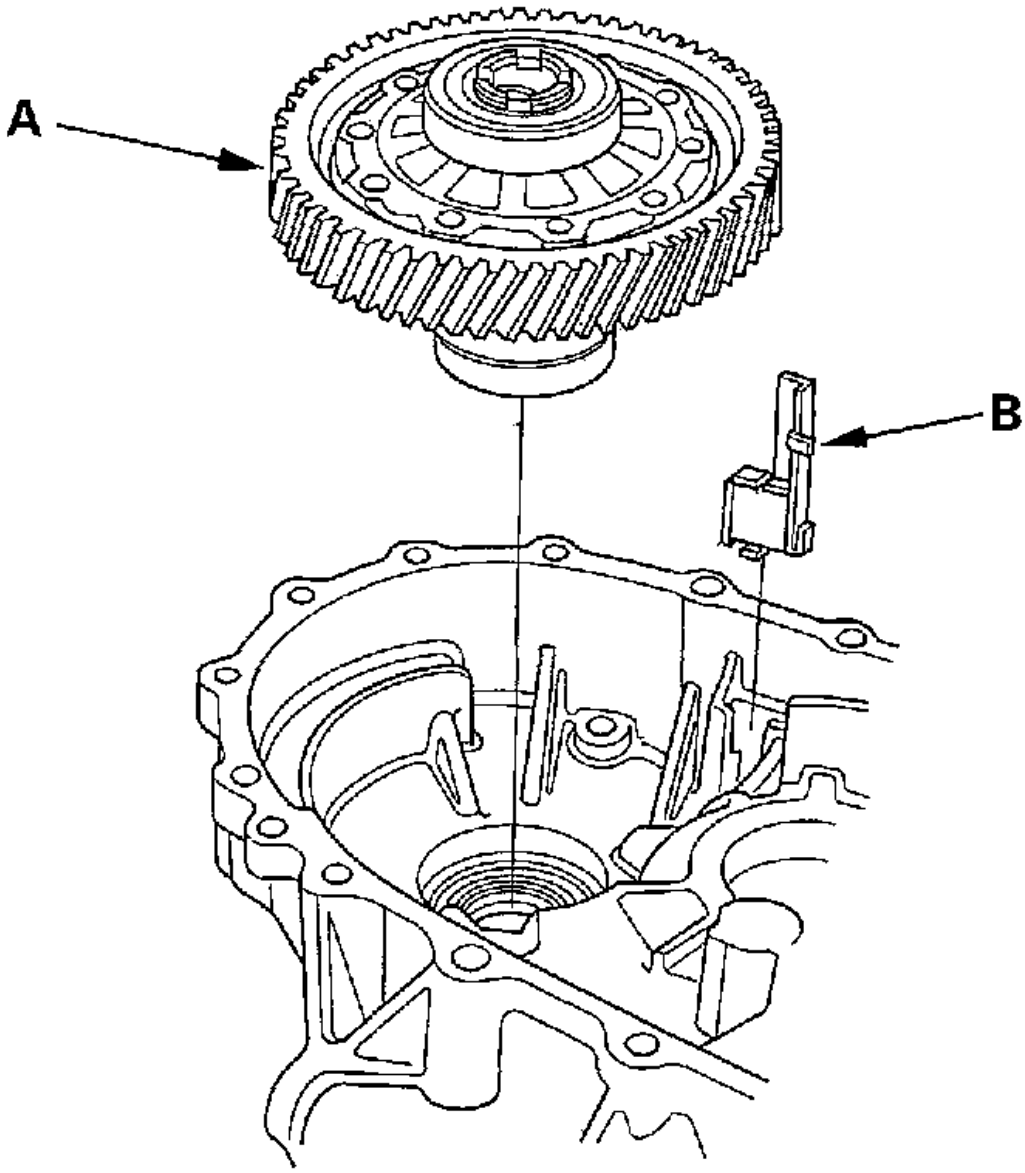
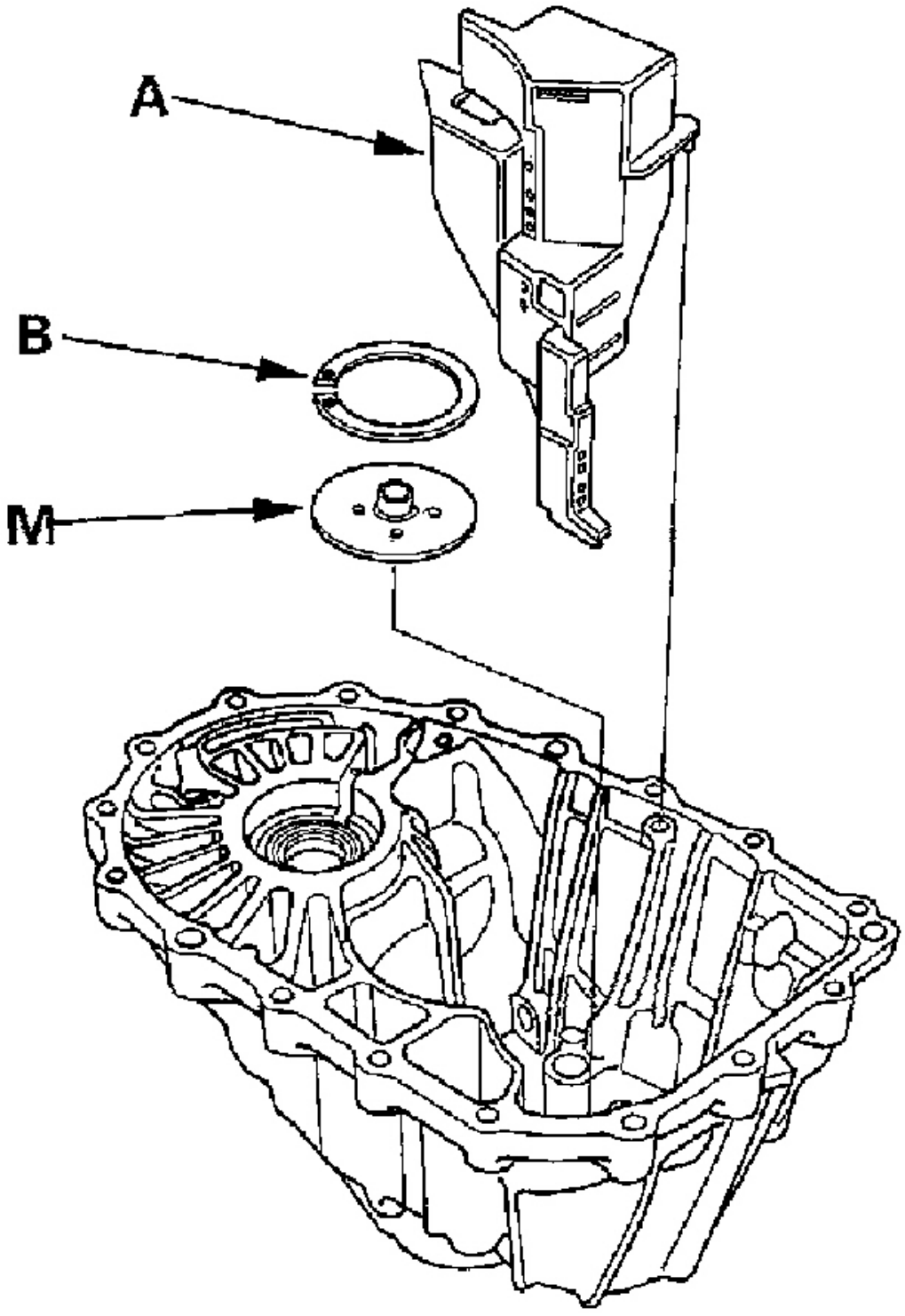


Fig. 29: Removing The Differential Assembly & Magnet

16. Remove the oil gutter plate (A), 72 mm shim (B), and oil guide plate M.

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Fig. 30: Removing The Oil Gutter Plate, 72 mm Shim & Oil Guide Plate M

17. Remove the drain plug (A), drain plug washer (B), and release bearing guide (C).

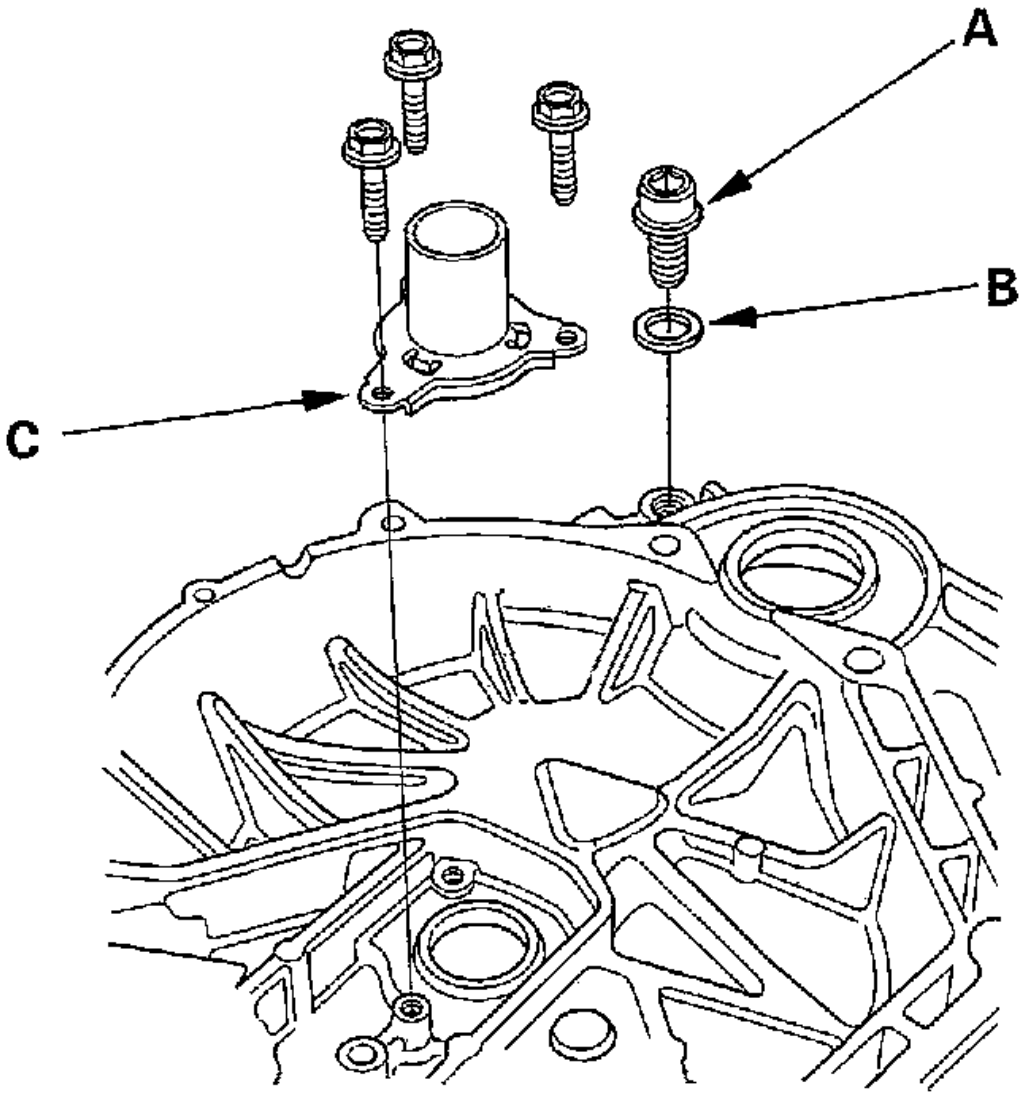


Fig. 31: Removing The Drain Plug, Drain Plug Washer & Release Bearing Guide

REVERSE SHIFT FORK CLEARANCE INSPECTION

1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler

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gauge (C). If the clearance is more than the service limit, go to step 2.

Standard: 0.20-0.59 mm (0.007-0.024 in.)

Service Limit: 1.3 mm (0.051 in.)

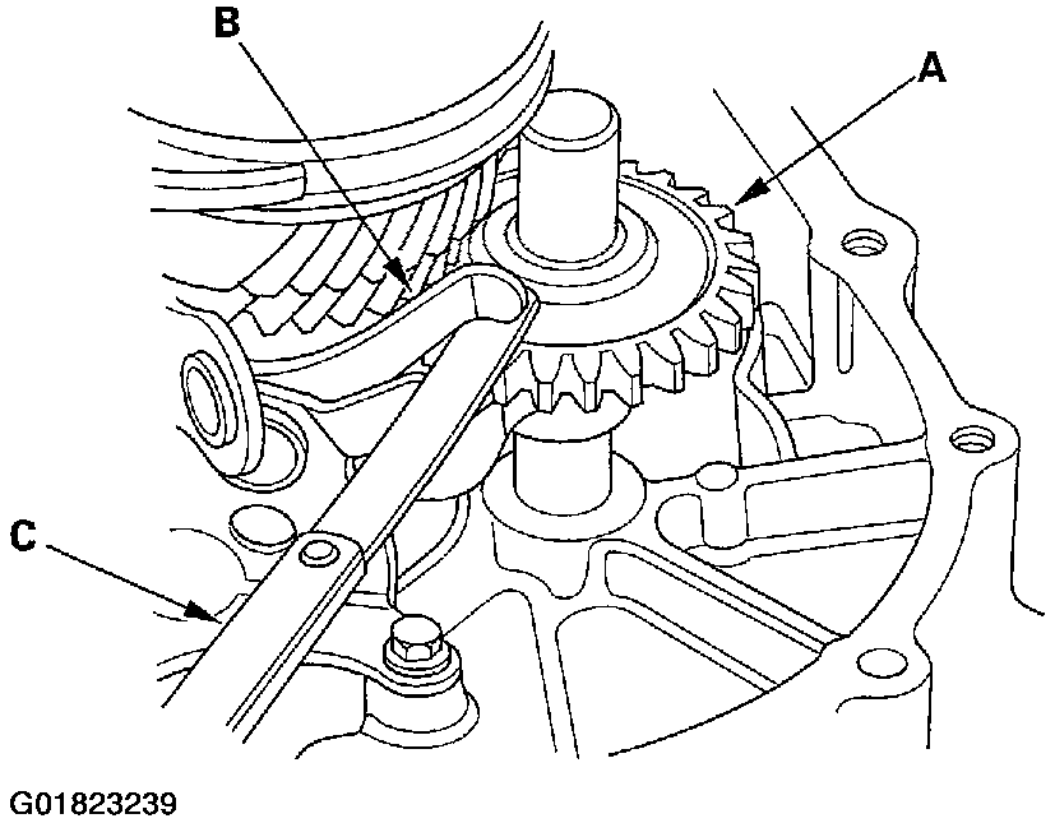


Fig. 32: Measuring The Clearance Between The Reverse Idler Gear & The Reverse Shift Fork With A Feeler Gauge

2. Measure the width of the reverse shift fork.

   Standard: 13.4-13.7 mm (0.527-0.539 in.)

   - If the width is not within the standard, replace the reverse shift fork.
   - If the width is within the standard, replace the reverse gear.

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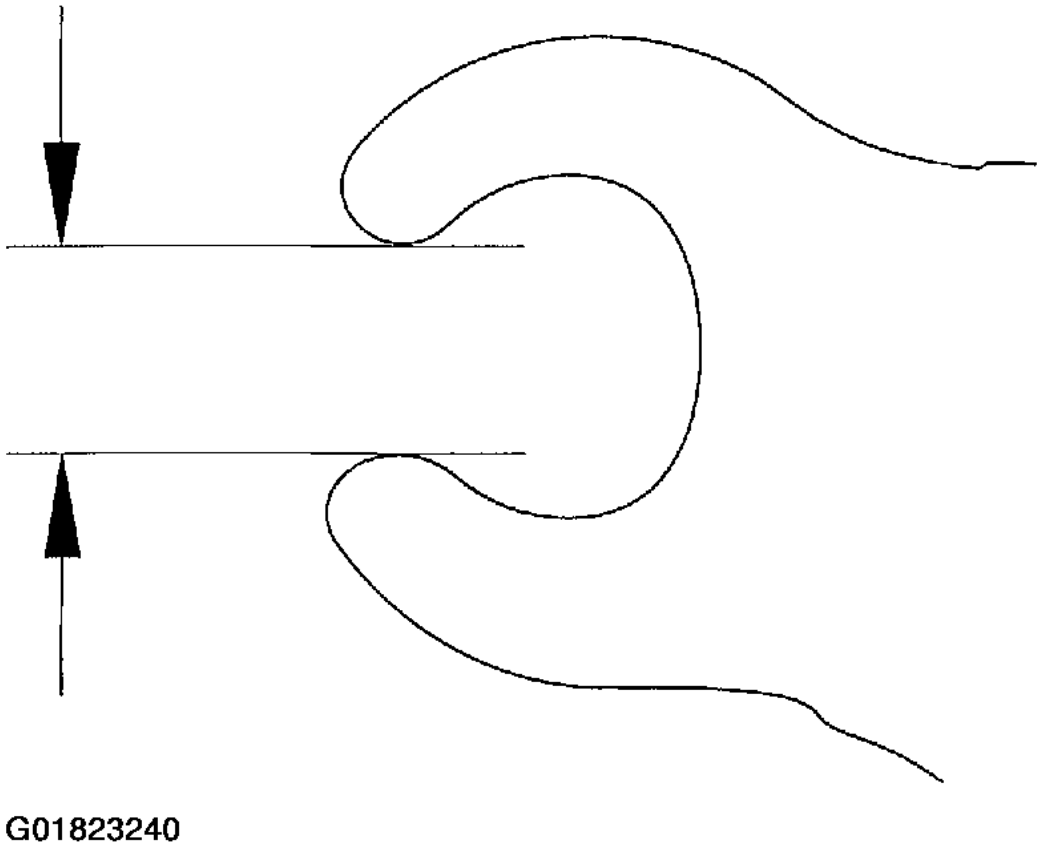


Fig. 33: Measuring The Width Of The Reverse Shift Fork

CHANGE LEVER CLEARANCE INSPECTION

1. Measure the clearance between change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.05-0.25 mm (0.002-0.010 in.)

   Service Limit: 0.5 mm (0.020 in.)

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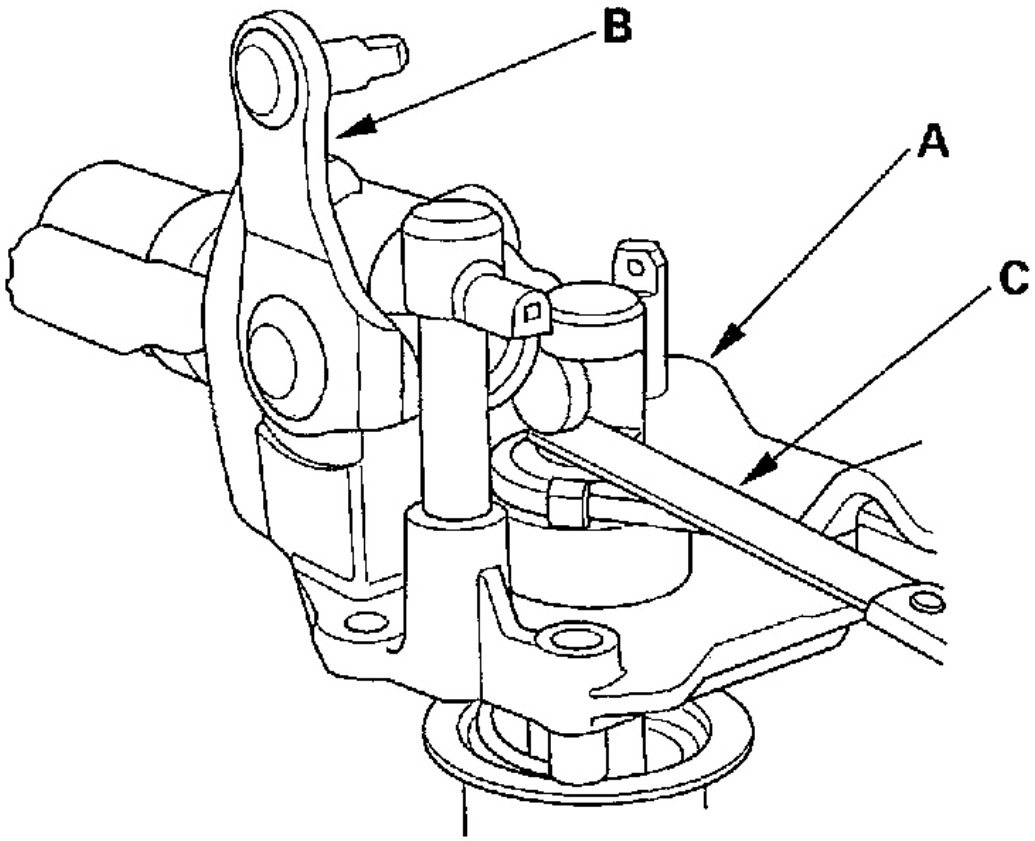


Fig. 34: Measuring The Clearance Between Change Lever & The Select Lever With A Feeler Gauge

2. Measure the groove of the change lever.

   Standard: 15.00-15.10 mm (0.591-0.594 in.)

   - If the groove is not within the standard, replace the change lever.
   - If the groove is within the standard, replace the select lever.

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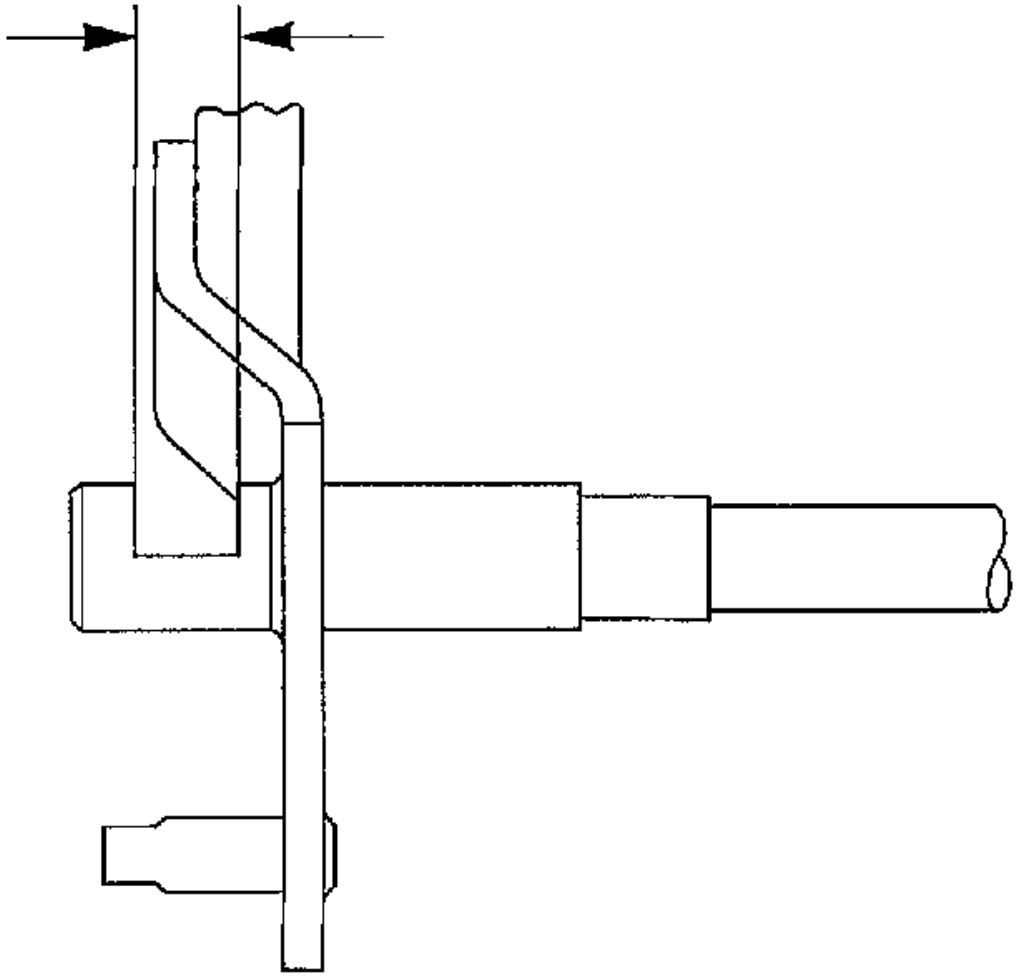


Fig. 35: Measuring The Groove Of The Change Lever

CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY

NOTE:

- **If 5 minutes have passed after applying liquid gasket, reapply it and assembly the shift arm cover.**
- **Prior to reassembling, clean all parts in solvent, dry them, and apply grease to the contact surfaces as shown.**

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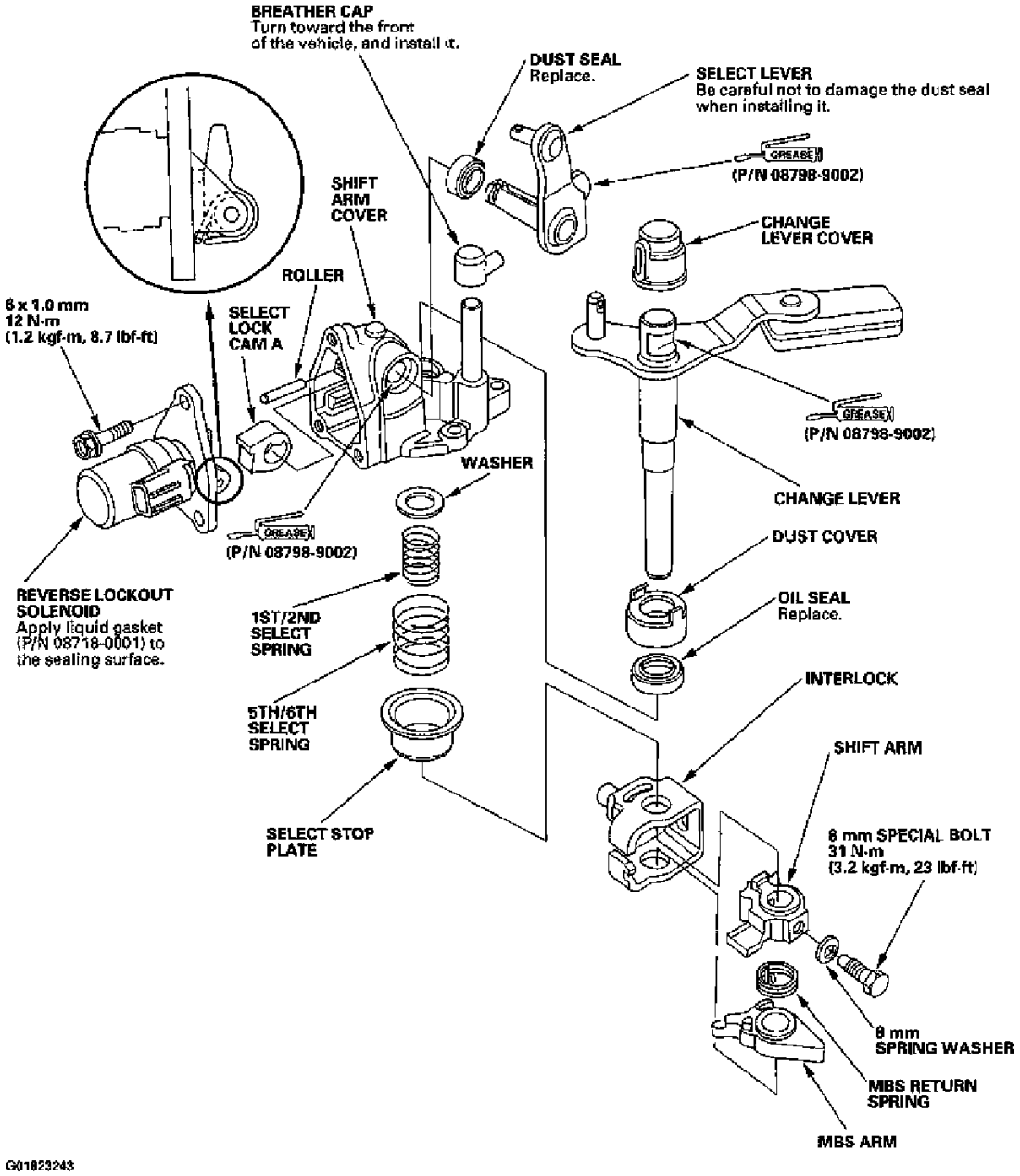


Fig. 36: Exploded View Of Change Lever Assembly Components

SHIFT FORK CLEARANCE INSPECTION

NOTE: The synchro sleeve and synchro hub should be replaced as a set.

1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

   Standard: 0.35-0.65 mm (0.014-0.026 in.)

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Service Limit: 1.0 mm (0.039 in.)

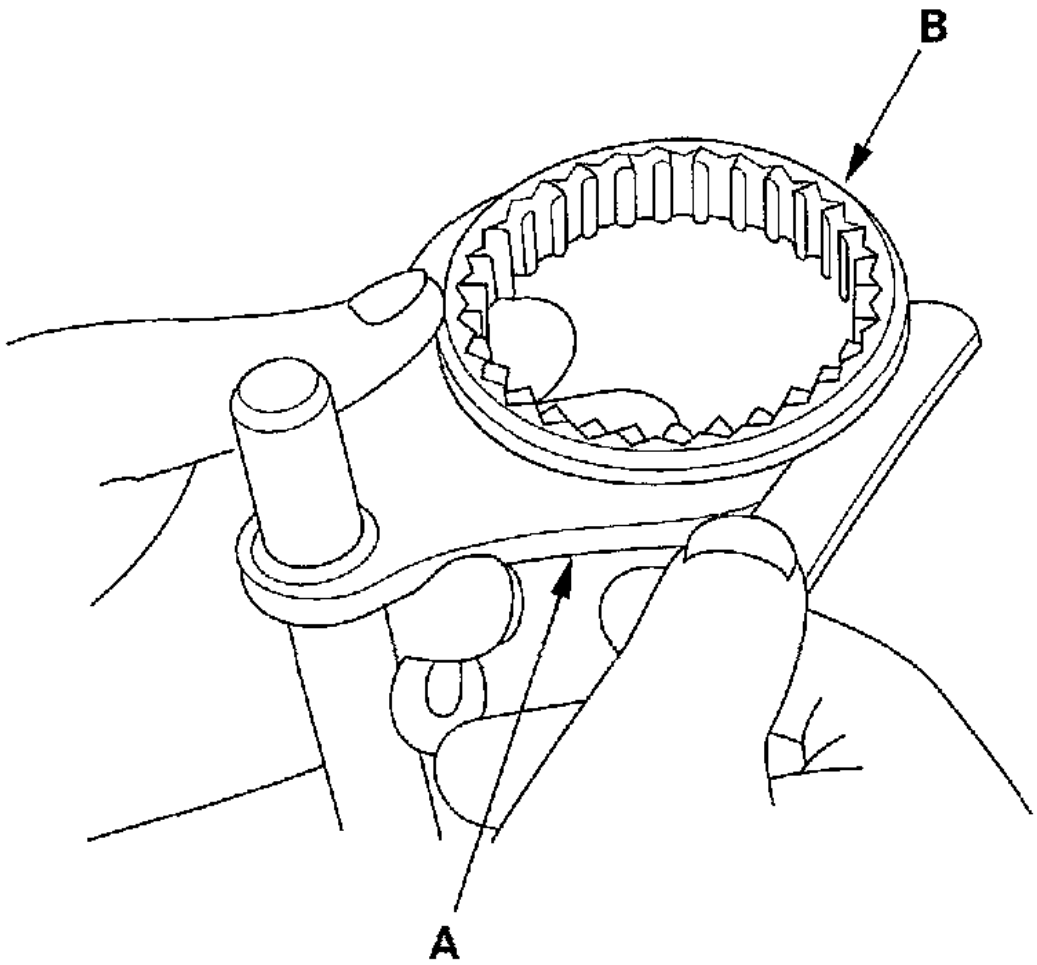


Fig. 37: Measuring The Clearance Between Each Shift Fork & Its Matching Synchro Sleeve

2. Measure the thickness of the shift fork fingers.

   Standard: 7.4-7.6 mm (0.29-0.30 in.)

   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve.
   - If one arm of the shift fork shows more wear than others, the fork may be bent and needs to be replaced.

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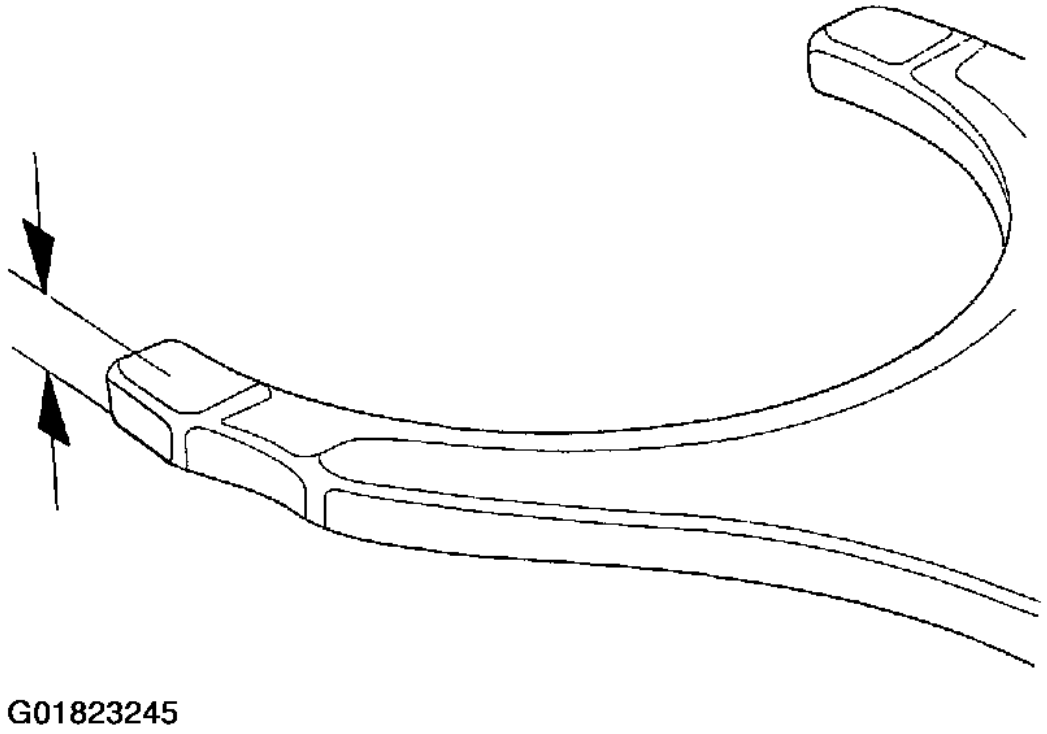


Fig. 38: Measuring The Thickness Of The Shift Fork Fingers

3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

   Standard: 0.2-0.5 mm (0.008-0.020 in.)

   Service Limit: 0.62 mm (0.024 in.)

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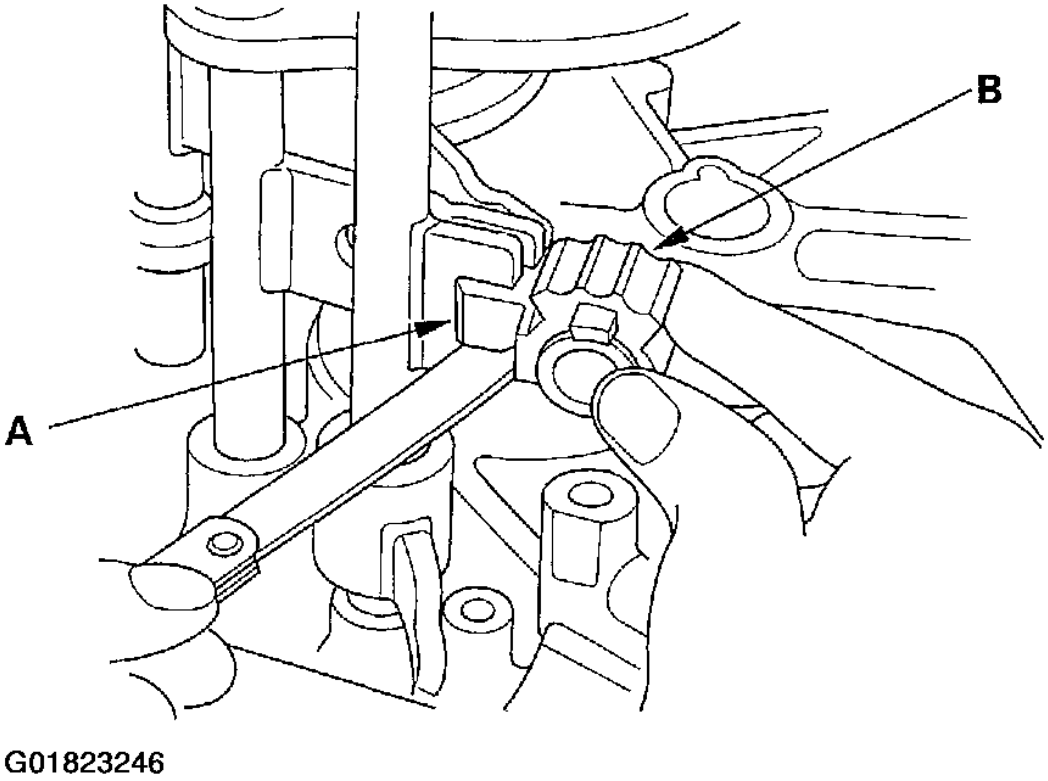


Fig. 39: Measuring The Clearance Between The Shift Fork & The Shift Arm

4. Measure the width of the shift arm.

   Standard: 16.9-17.0 mm (0.665-0.669 in.)

   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork or shift piece.

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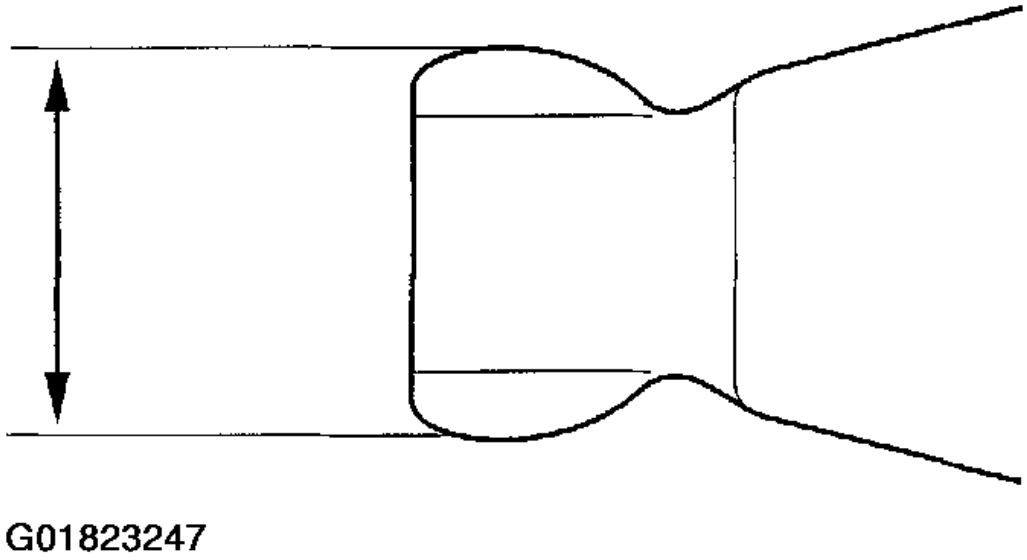


Fig. 40: Measuring The Width Of The Shift Arm

SHIFT FORK DISASSEMBLY/REASSEMBLY

Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to all contact surfaces.

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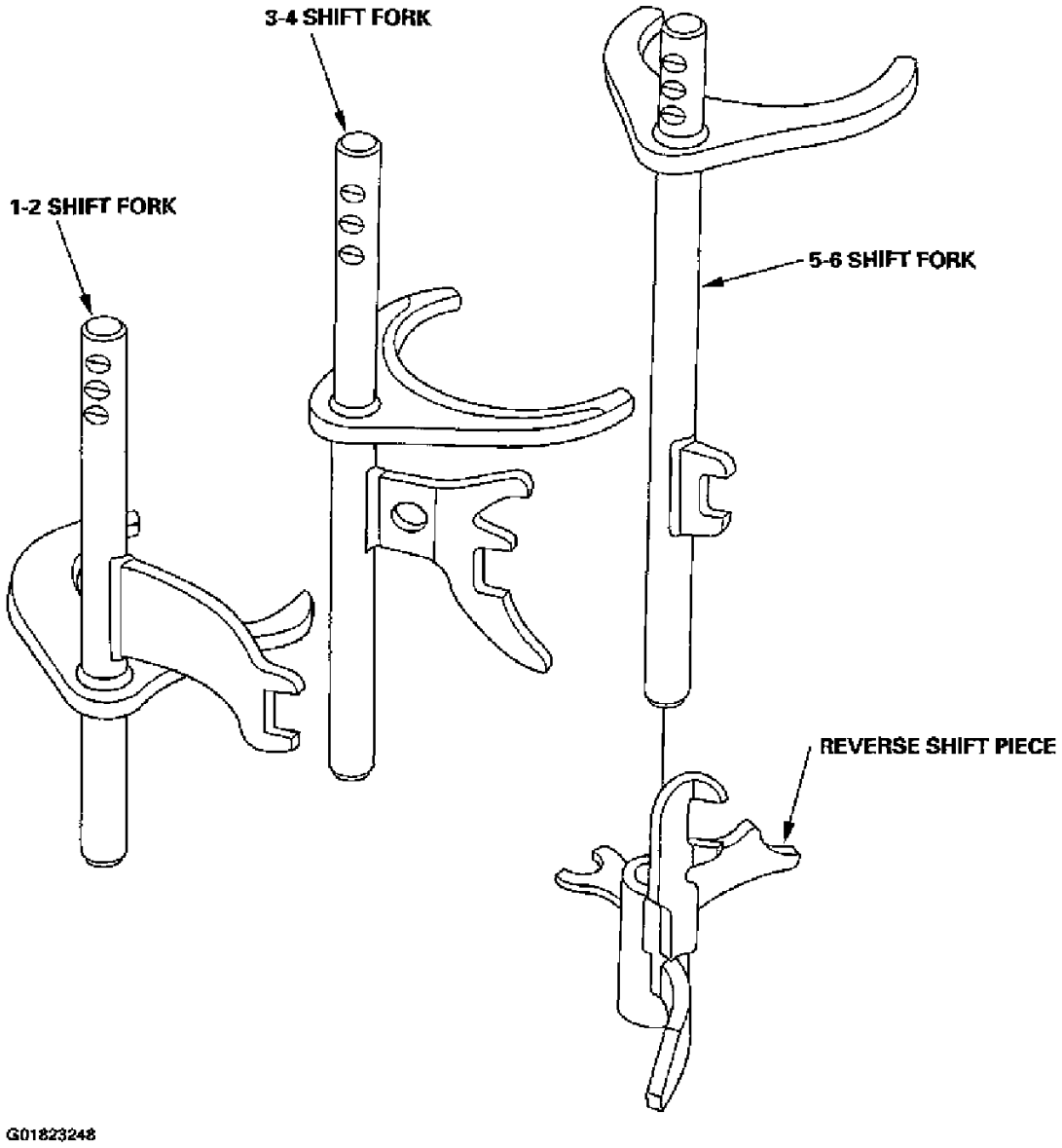


Fig. 41: Identifying Shift Fork Components

MAINSHAFT ASSEMBLY CLEARANCE INSPECTION

NOTE: If replacement is required, always replace the synchro sleeve and hub as a set.

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).

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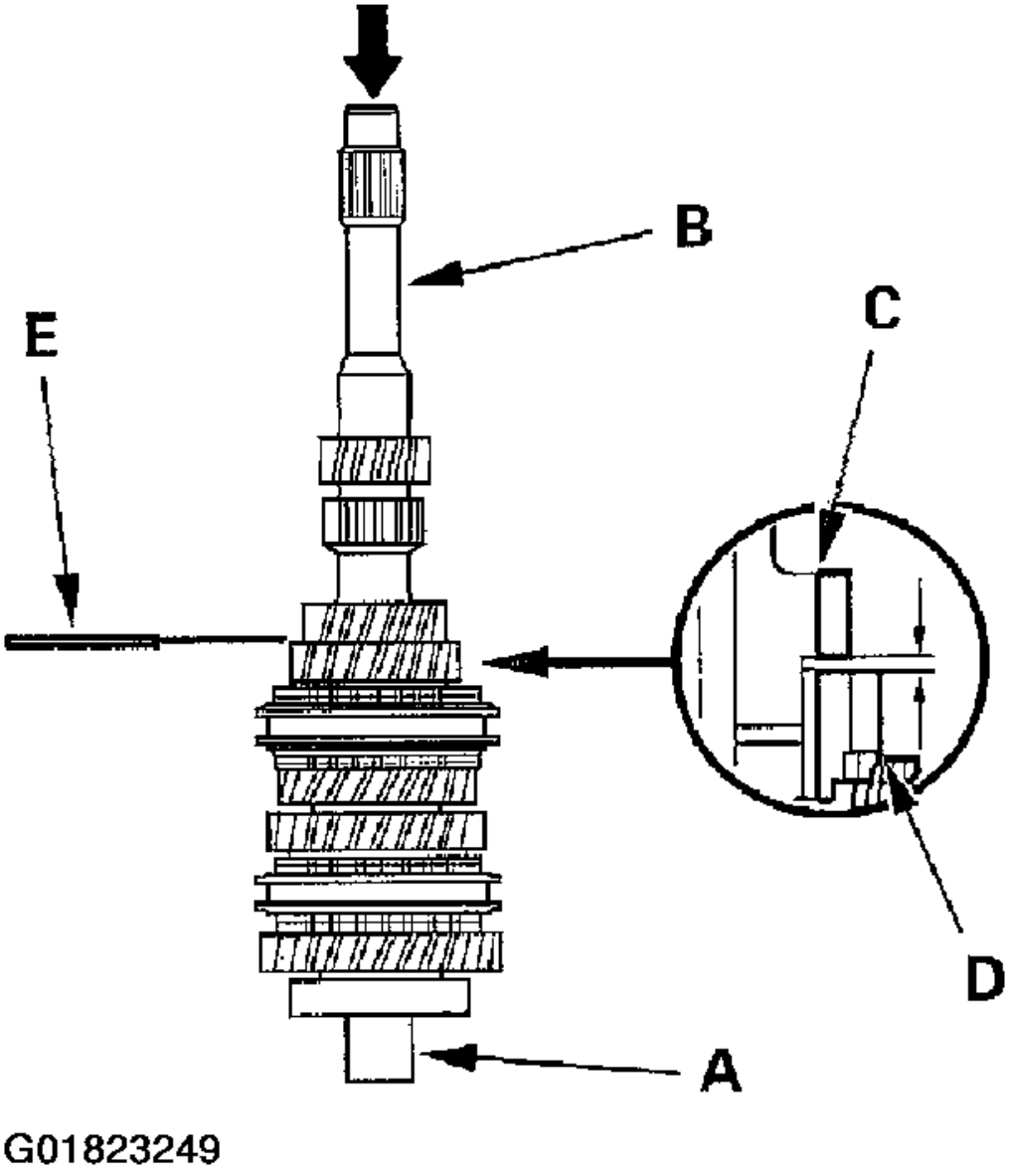


Fig. 42: Inspecting Mainshaft Assembly Clearance

2. Measure the clearance between 2nd (C) and 3rd (D) gears with a feeler gauge (E).
   Standard: 0.06-0.16 mm (0.002-0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)
   - If the clearance is more than the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4 .

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3. Measure the thickness of 3rd gear.

   Standard: 23.92-23.97 mm (0.941-0.944 in.)

   Service Limit: 23.80 mm (0.937 in.)

   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub.

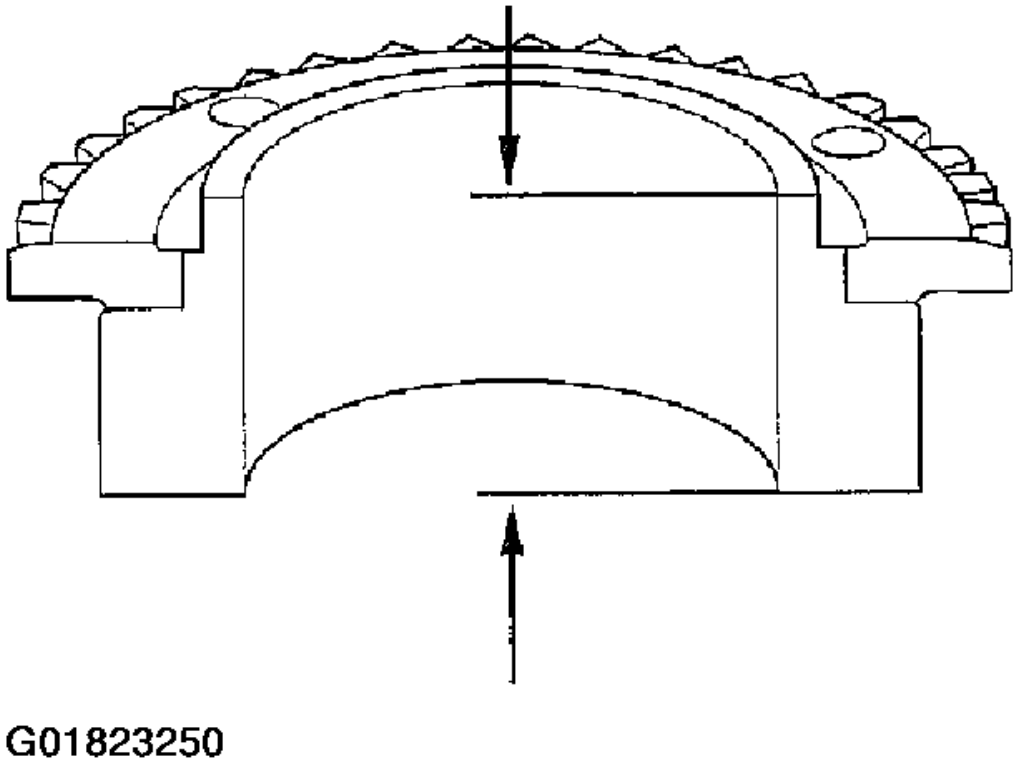


Fig. 43: Measuring The Thickness Of 3rd Gear

4. Measure the clearance between 4th gear (A) and the distance collar (B) with a dial indicator (C). If the clearance is more than the service limit, go to step 5.

   Standard: 0.06-0.16 mm (0.002-0.006 in.)

   Service Limit: 0.25 mm (0.010 in.)

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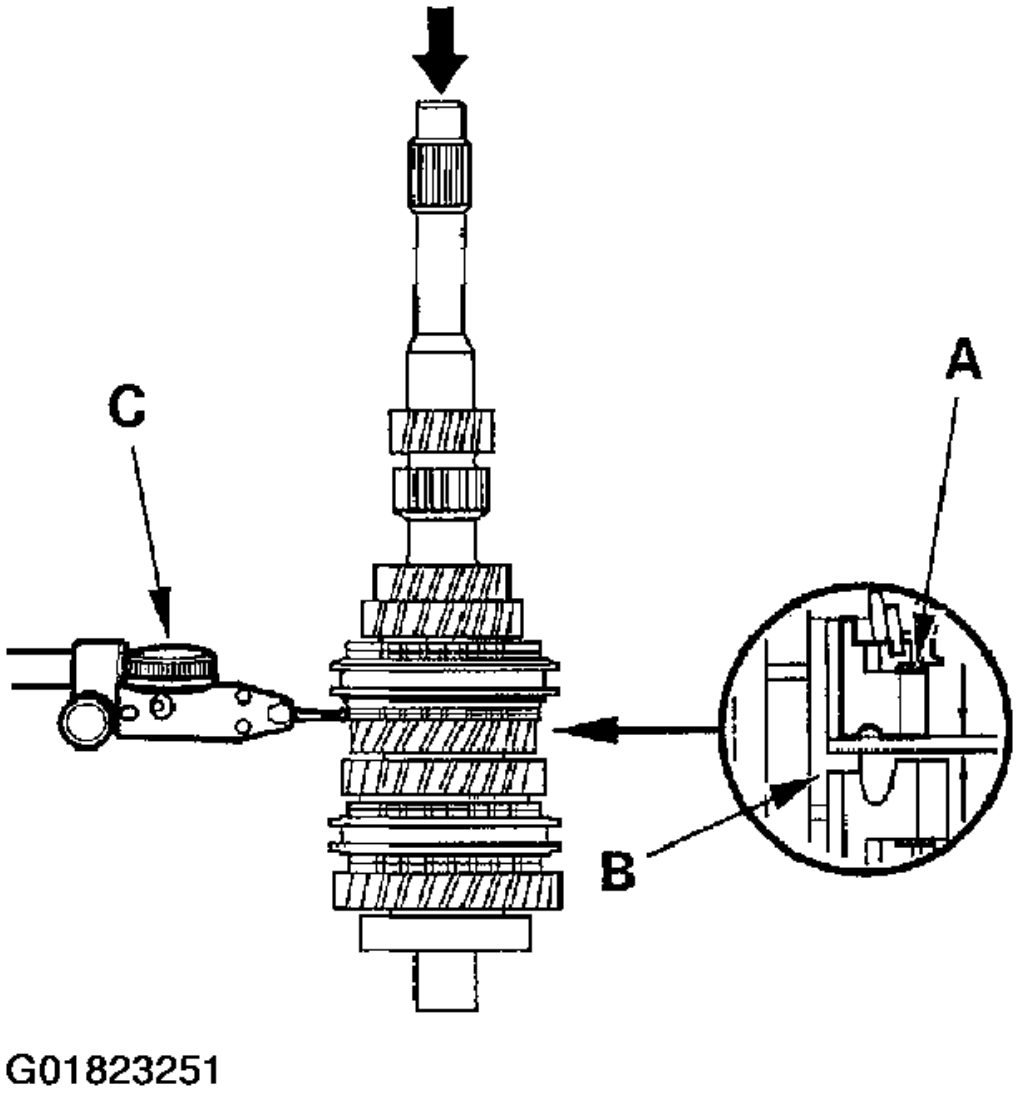


Fig. 44: Measuring The Clearance Between 4th Gear & The Distance Collar

5. Measure distance 1 on the distance collar.

   Standard: 24.03-24.08 mm (0.946-0.948 in.)

   - If distance 1 is not within the standard, replace the distance collar.
   - If distance 1 is within the standard, go to step 6.

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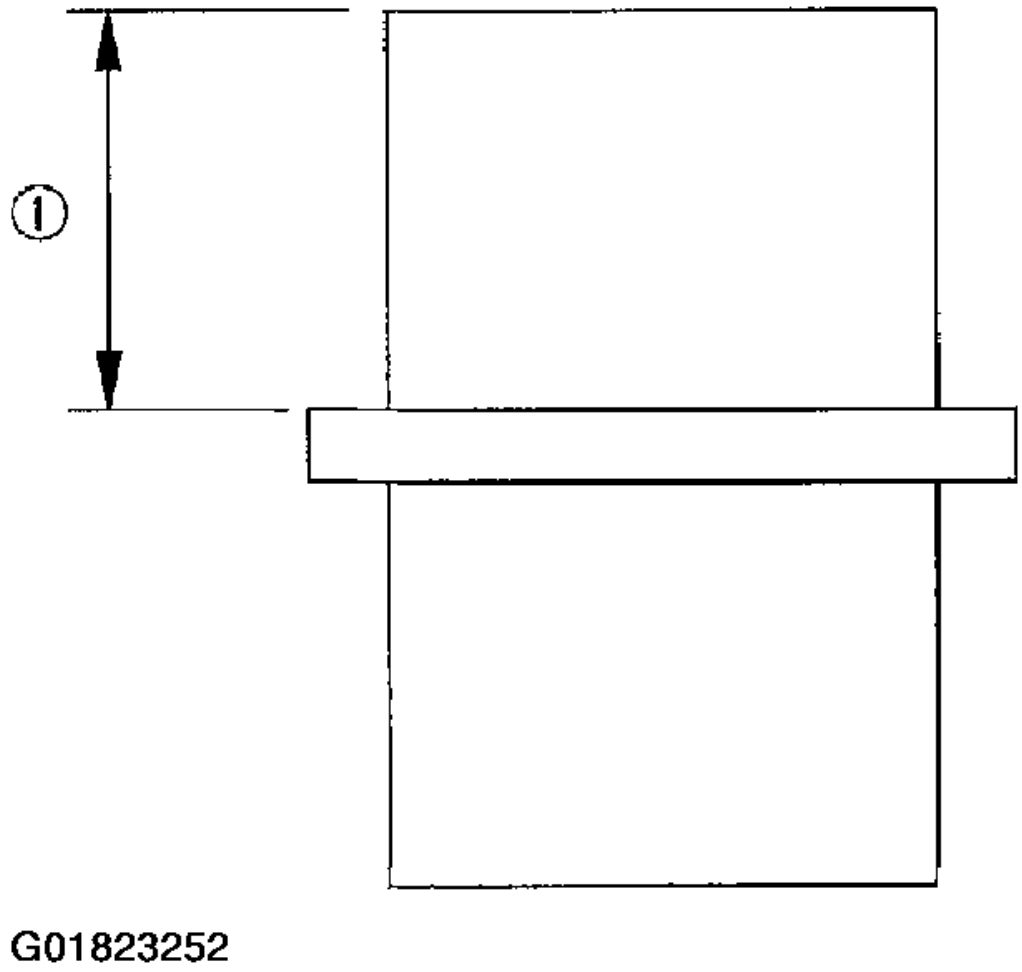


Fig. 45: Measuring Distance 1 On The Distance Collar

6. Measure the thickness of 4th gear.

   Standard: 23.92-23.97 mm (0.941-0.944 in.)

   Service Limit: 23.80 mm (0.937 in.)

   - If the thickness is less than the service limit replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub.

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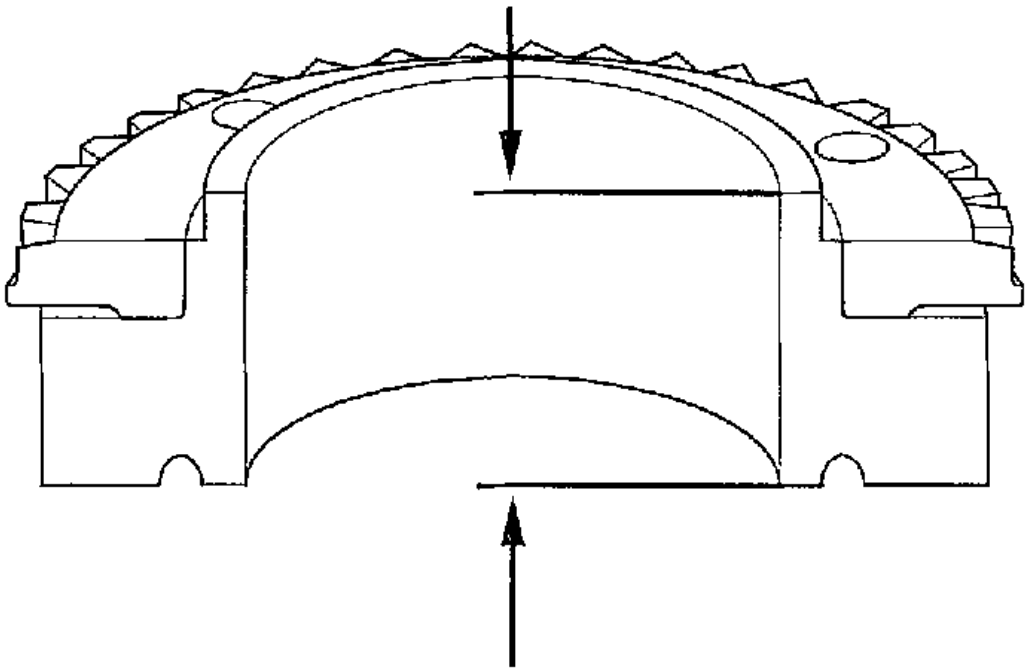


Fig. 46: Measuring The Thickness Of 4th Gear

7. Measure the clearance between the distance collar (A) and 5th gear (B) with a dial indicator (C). If the clearance is more than the service limit, go to step 8.

   Standard: 0.06-0.16 mm (0.002-0.006 in.)

   Service Limit: 0.25 mm (0.010 in.)

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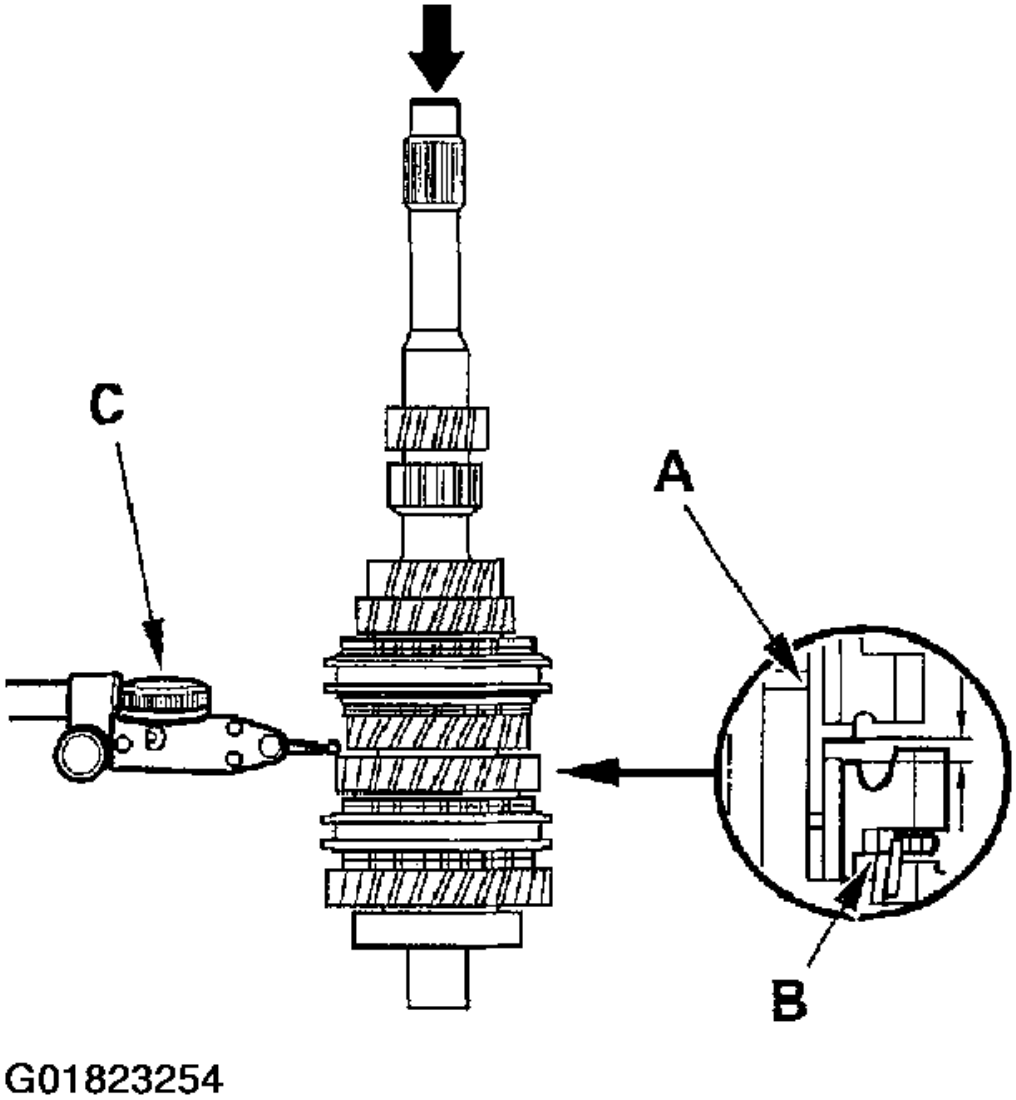


Fig. 47: Measuring The Clearance Between The Distance Collar & 5th Gear

8. Measure distance 2 on the distance collar.

   Standard: 24.03-24.08 mm (0.946-0.948 in.)

   - If distance 2 is not within the standard, replace the distance collar.
   - If distance 2 is within the standard, go to step 9.

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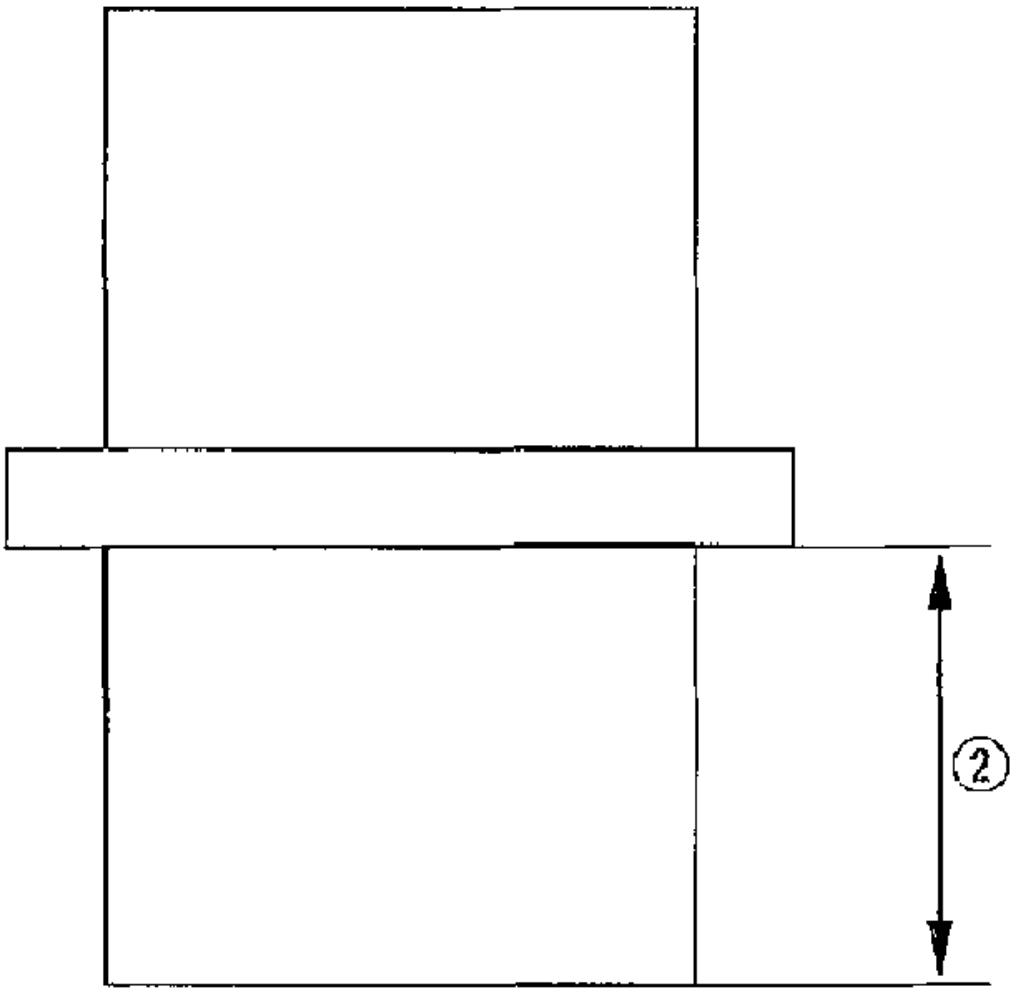


Fig. 48: Measuring Distance 2 On The Distance Collar

9. Measure the thickness of 5th gear.

   Standard: 23.92-23.97 mm (0.941-0.944 in.)

   Service Limit: 23.80 mm (0.937 in.)

   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th/6th synchro hub.

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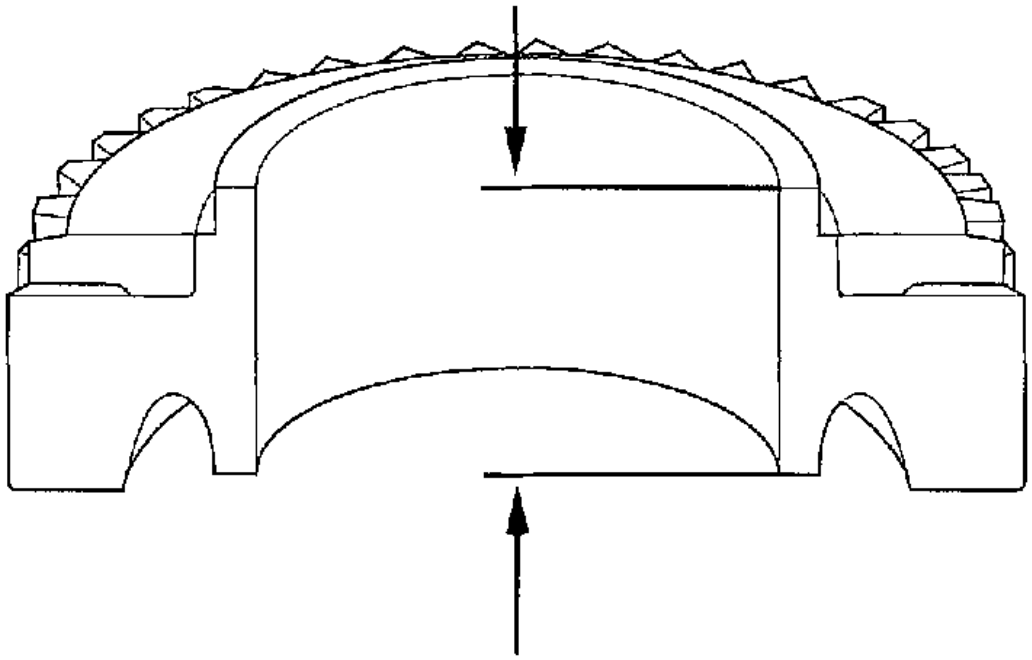


Fig. 49: Measuring The Thickness Of 5th Gear

10. Measure the clearance between the 6th gear (A) and angular ball bearing (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 11.

    Standard: 0.06-0.16 mm (0.002-0.006 in.)

    Service Limit: 0.25 mm (0.010 in.)

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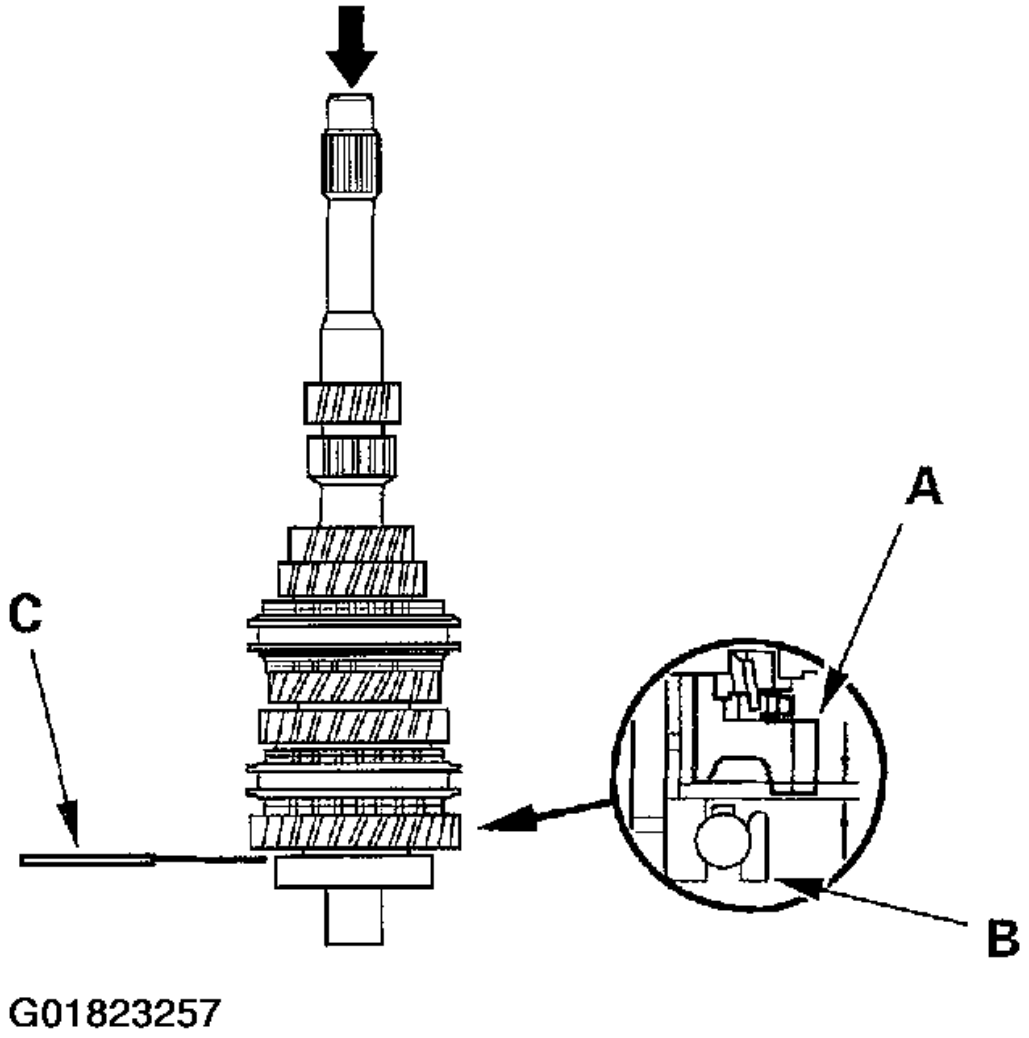


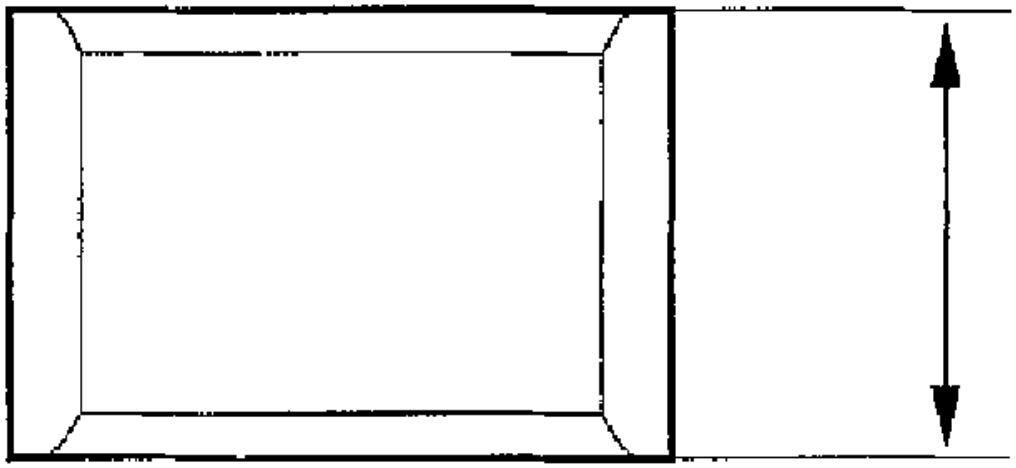
Fig. 50: Measuring The Clearance Between The 6th Gear & Angular Ball Bearing

11. Measure the thickness of the distance collar.

    Standard: 24.03-24.08 mm (0.946-0.948 in.)

    - If the thickness is not within the standard, replace the distance collar.
    - If the thickness is within the standard, go to step 12.

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Fig. 51: Measuring The Thickness Of The Distance Collar

12. Measure the thickness of 6th gear.

    Standard: 23.92-23.97 mm (0.941-0.944 in.)

    Service Limit: 23.80 mm (0.937 in.)

    - If the thickness is less than the service limit, replace 6th gear.
    - If the thickness is within the service limit, replace the 5th/6th synchro hub.

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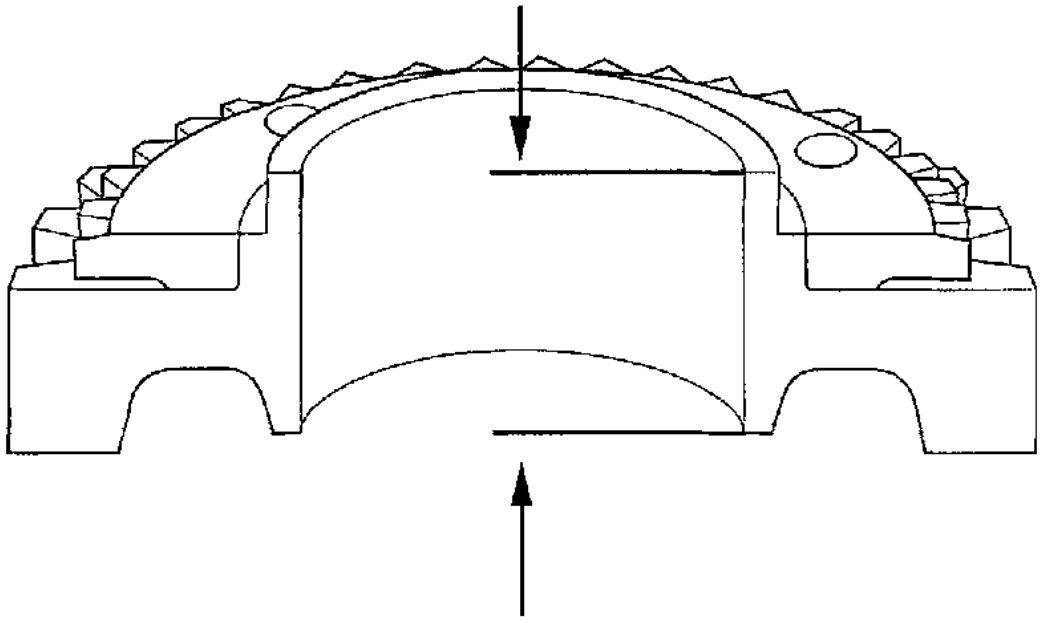


Fig. 52: Measuring The Thickness Of 6th Gear

MAINSHAFT DISASSEMBLY

1. Remove the angular ball bearing (A) using a commercially available bearing separator (B) and bearing puller (C).

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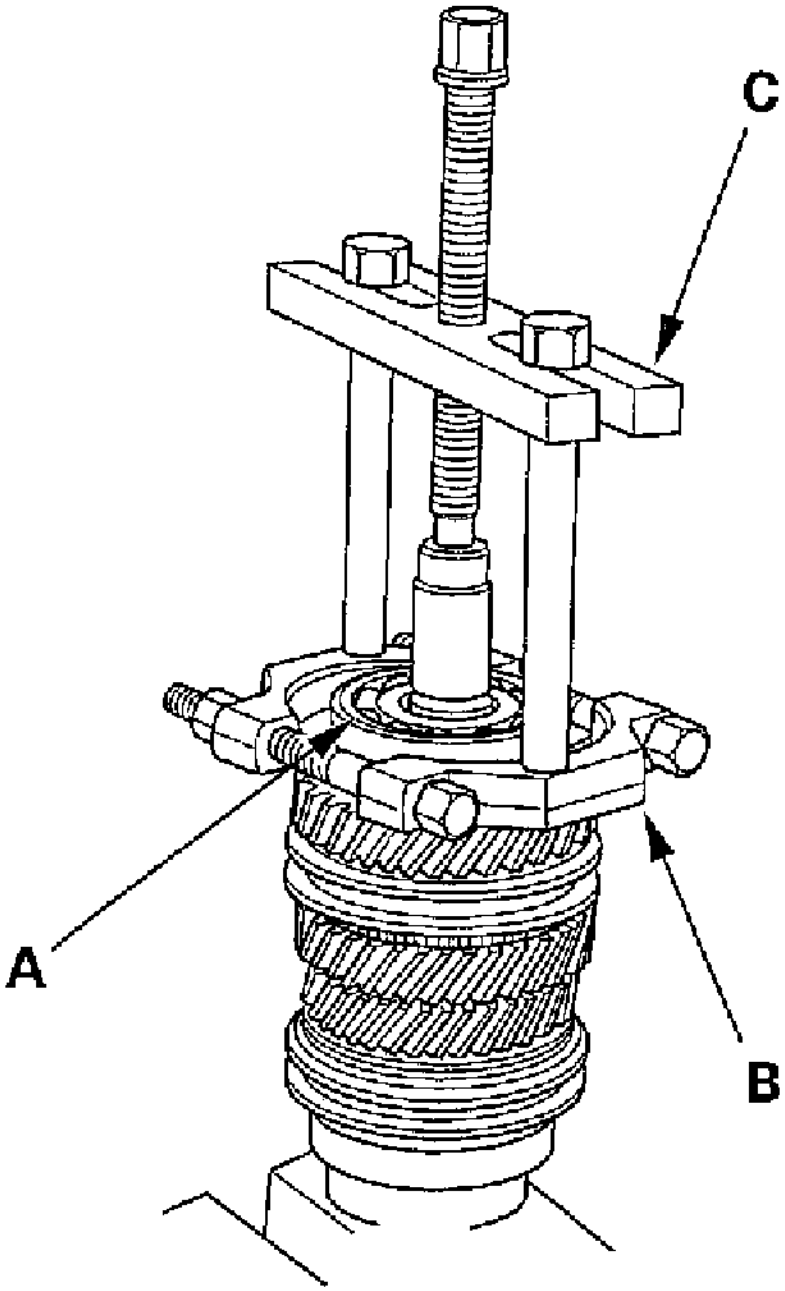


Fig. 53: Removing The Angular Ball Bearing Using A Commercially Available Bearing Separator & Bearing Puller

2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th/6th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.

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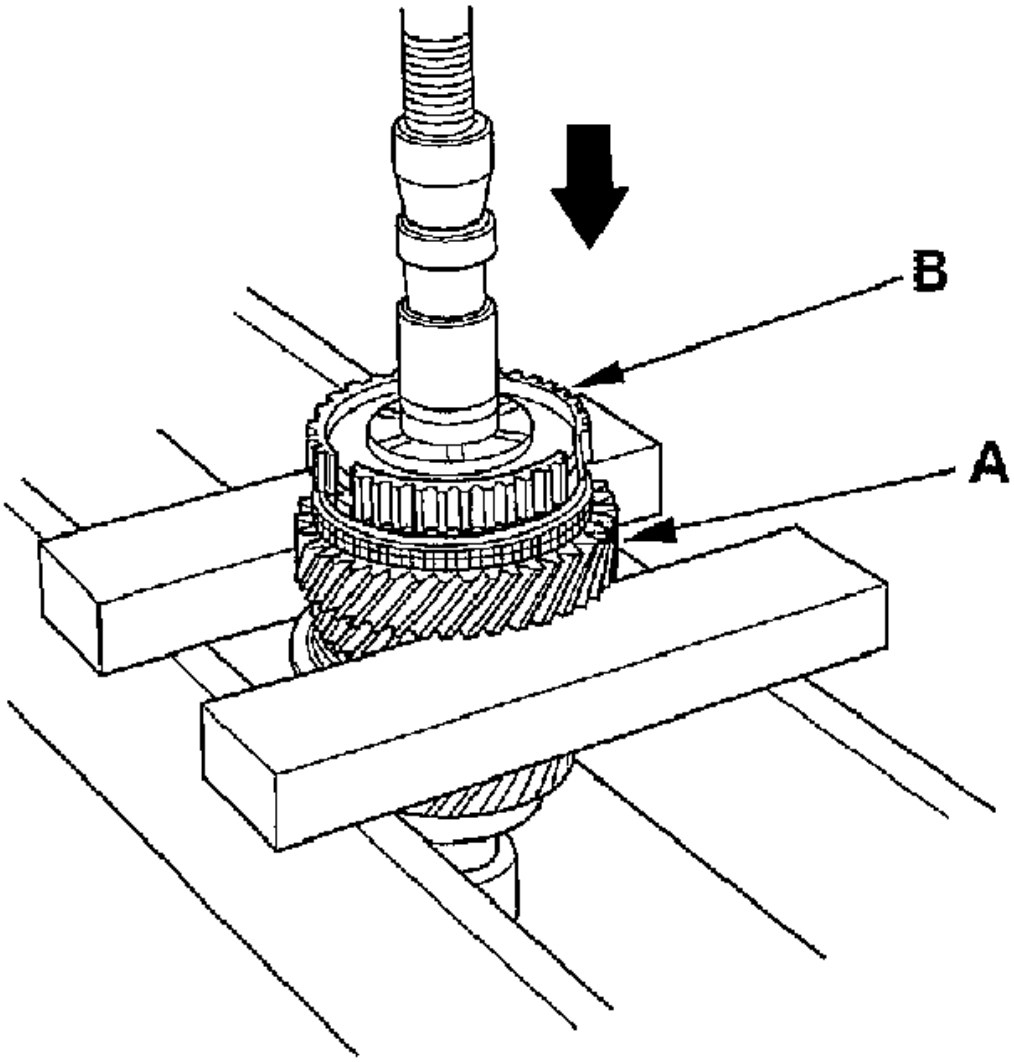


Fig. 54: Supporting 5th Gear On Steel Blocks & Pressing The Mainshaft Out Of The 5th/6th Synchro Hub

3. Support the 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.

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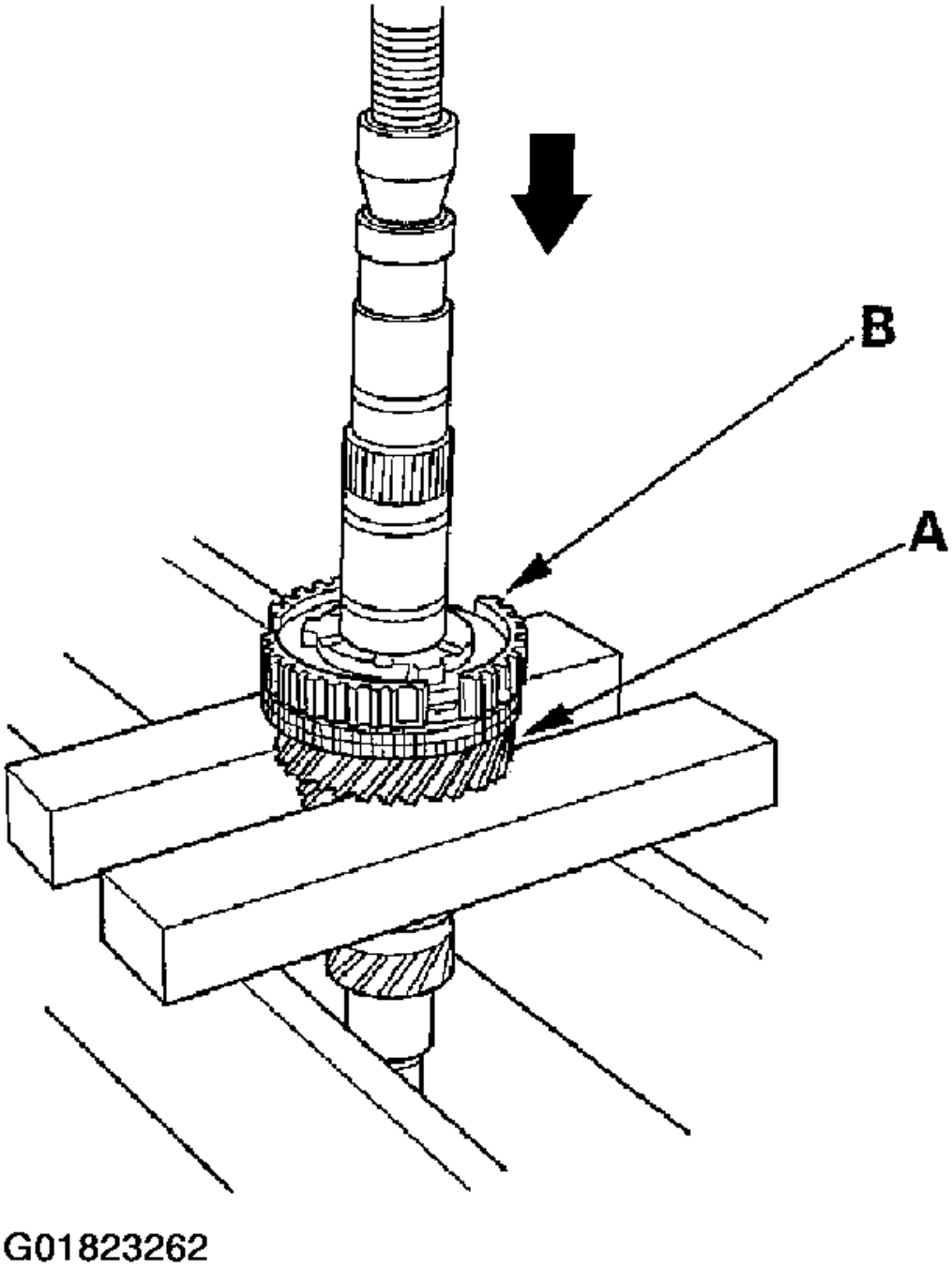


Fig. 55: Supporting The 3rd Gear On Steel Blocks & Pressing The Mainshaft Out Of The 3rd/4th Synchro Hub

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MAINSHAFT INSPECTION

1. Inspect the gear and bearing surfaces for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

Standard:

A Ball Bearing Surface (Transmission Housing Side): 27.987-28.000 mm (1.1019-1.1024 in.)

B Distance Collar Surface: 31.984-32.000 mm (1.2594-1.2598 in.)

C Needle Bearing Surface: 38.984-39.000 mm (1.5348-1.5354 in.)

D Ball Bearing Surface (Clutch Housing Side): 27.977-27.990 mm (1.1015-1.1020 in.)

E Bushing Surface: 20.80-20.85 mm (0.819-0.821 in.)

Service Limit:

A: 27.93 mm (1.100 in.)

B: 31.93 mm (1.257 in.)

C: 38.93 mm (1.533 in.)

D: 27.92 mm (1.099 in.)

E: 20.75 mm (0.817 in.)

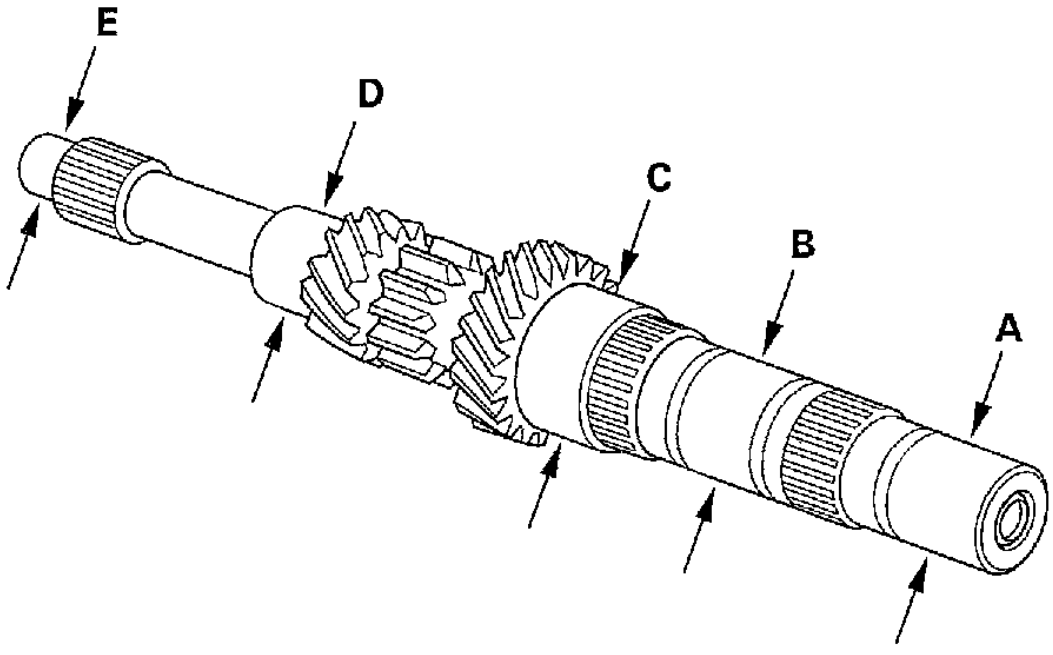


Fig. 56: Inspecting Mainshaft Surfaces

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2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout is more than the service limit, replace the mainshaft.

   Standard: 0.02 mm (0.001 in.) Max.

   Service Limit: 0.05 mm (0.002 in.)

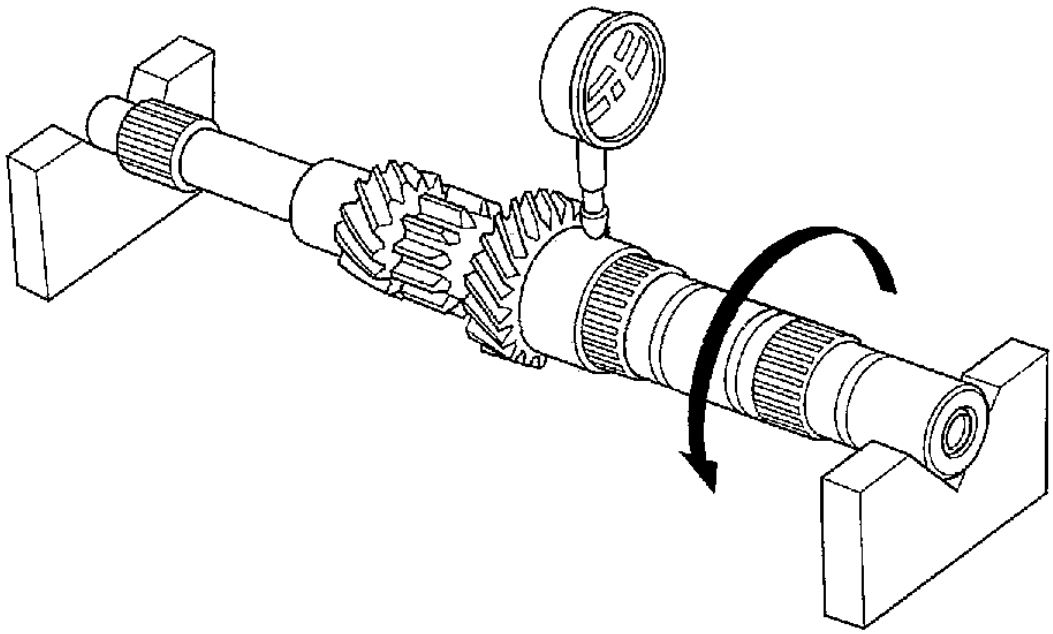


Fig. 57: Inspecting Mainshaft Runout

MAINSHAFT REASSEMBLY

Exploded View

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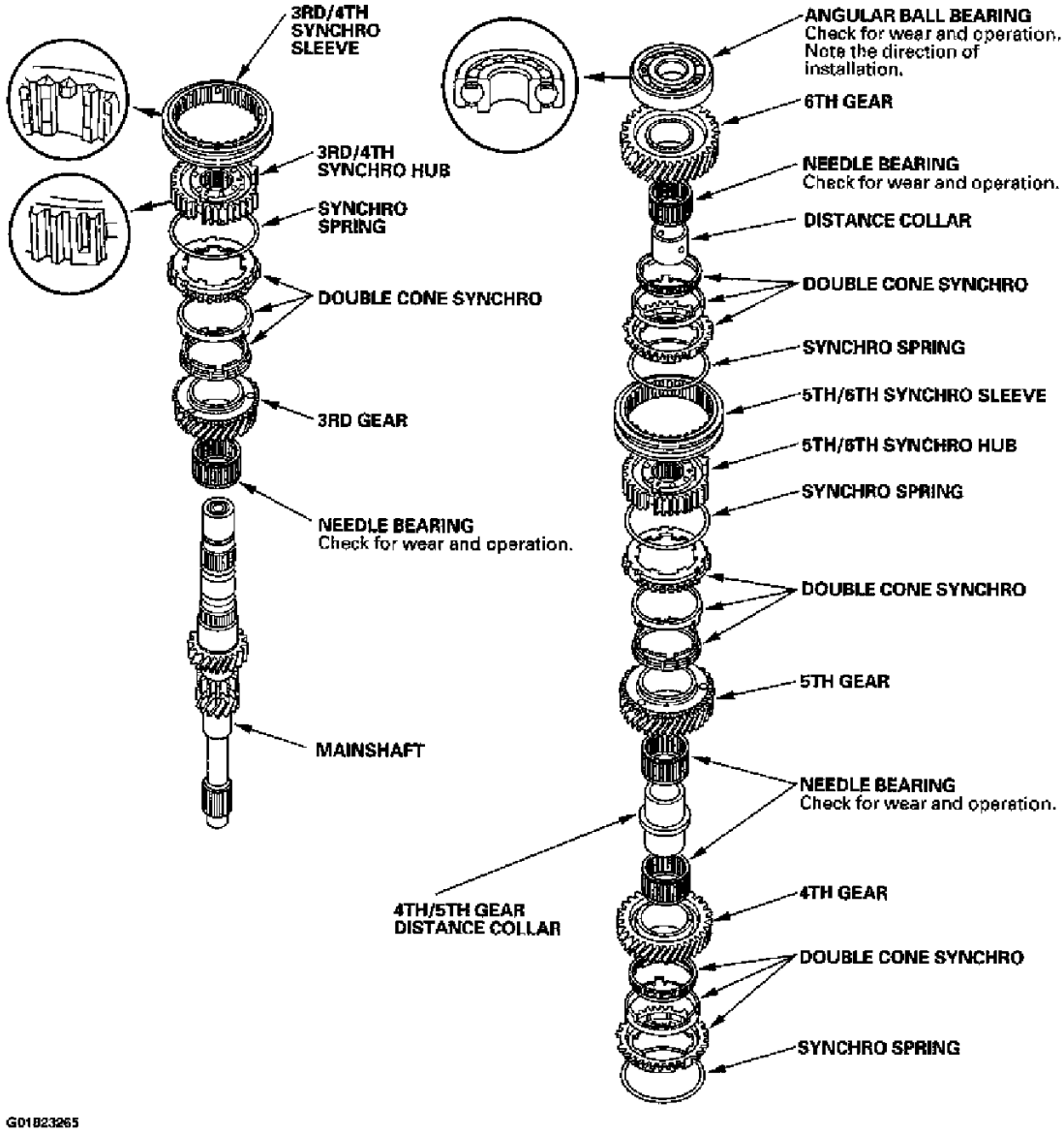


Fig. 58: Exploded View Of Mainshaft Assembly Components

Special Tools Required:

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean all the parts in solvent, dry them, and apply lubricant to all contact surfaces except the 3rd/4th and 5th/6th synchro hubs.
2. Install the needle bearing and 3rd gear on the mainshaft.

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3. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes in 3rd gear (C), then install the synchro spring (D).

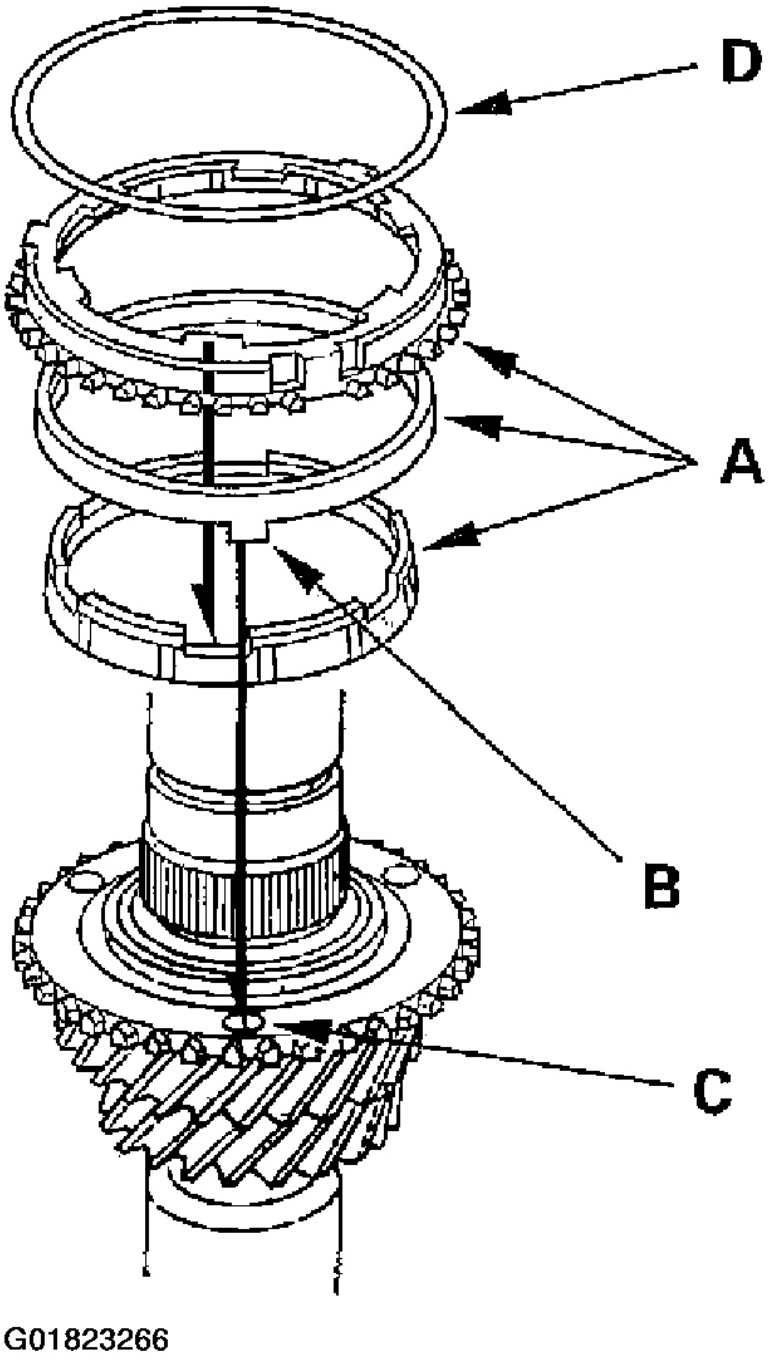


Fig. 59: Installing The Double Cone Synchro Assembly

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4. Install the 3rd/4th synchro hub (A) by aligning the synchro cone fingers (B) with the grooves in 3rd/4th synchro hub (C).

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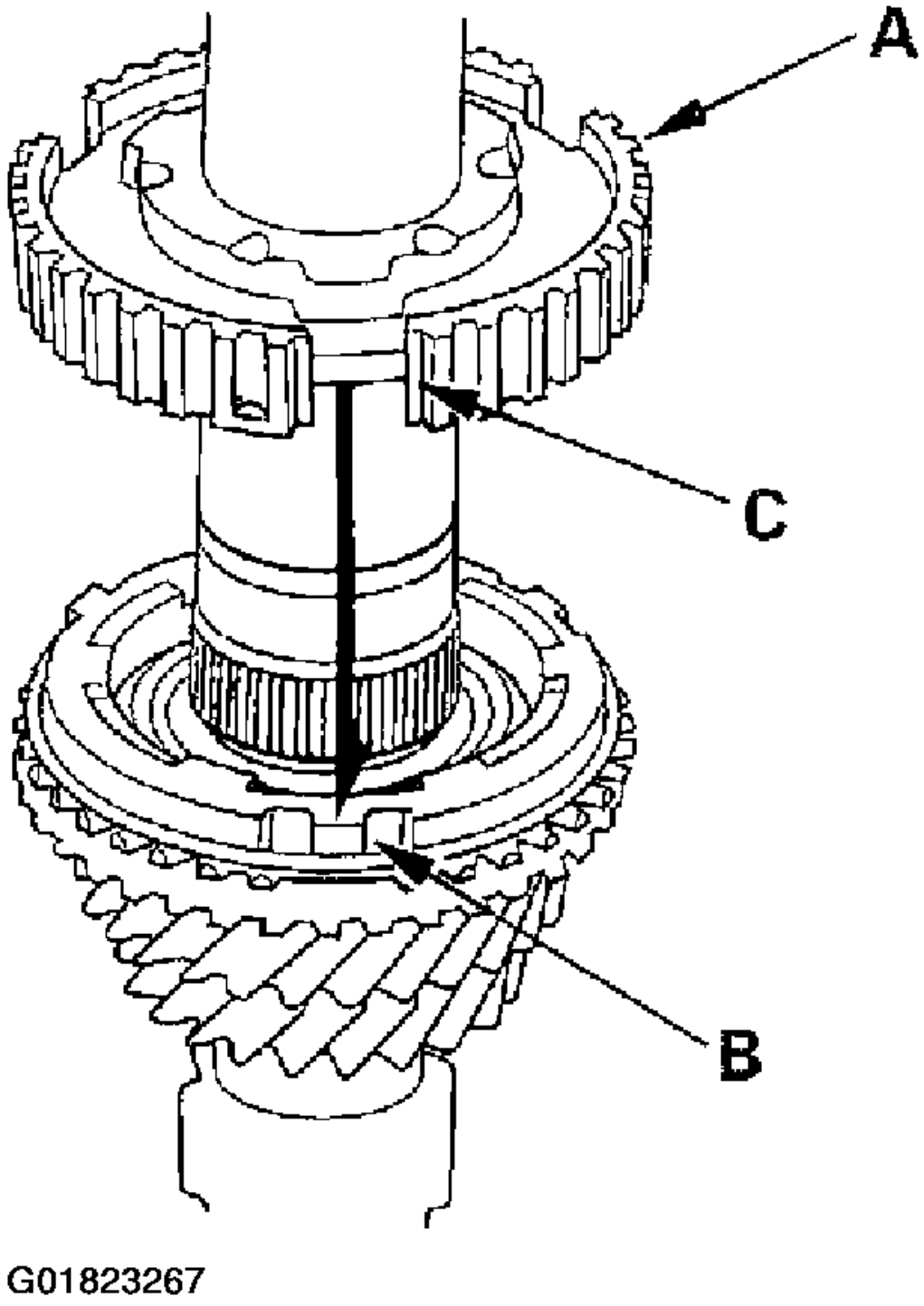


Fig. 60: Aligning The 3rd/4th Synchro Hub

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5. Install the 3rd/4th synchro hub (A) using the special tool.

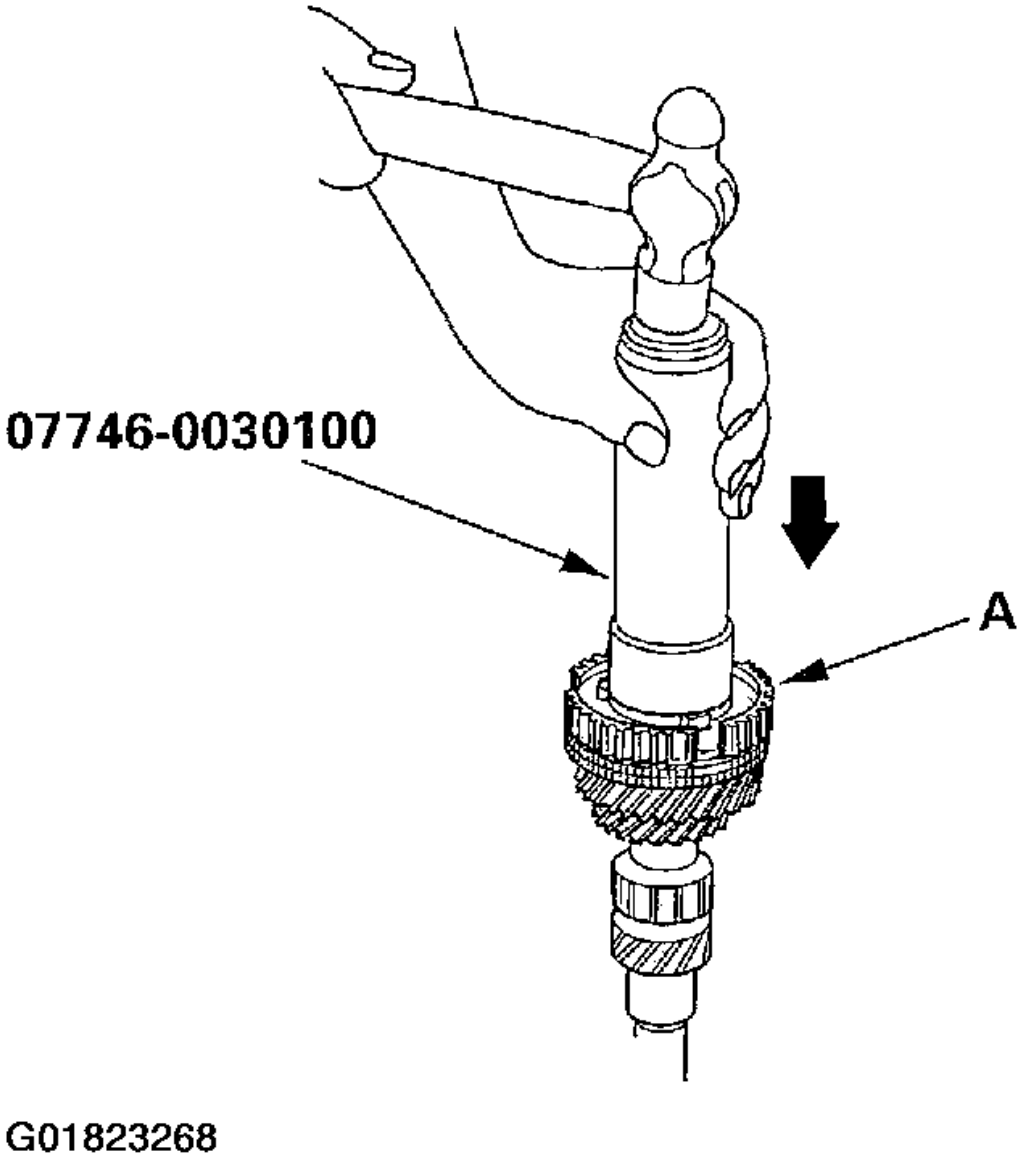


Fig. 61: Installing The 3rd/4th Synchro Hub

6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) with the 3rd/4th synchro sleeve and hub. After installing, check the operation of the 3rd/4th synchro hub set.

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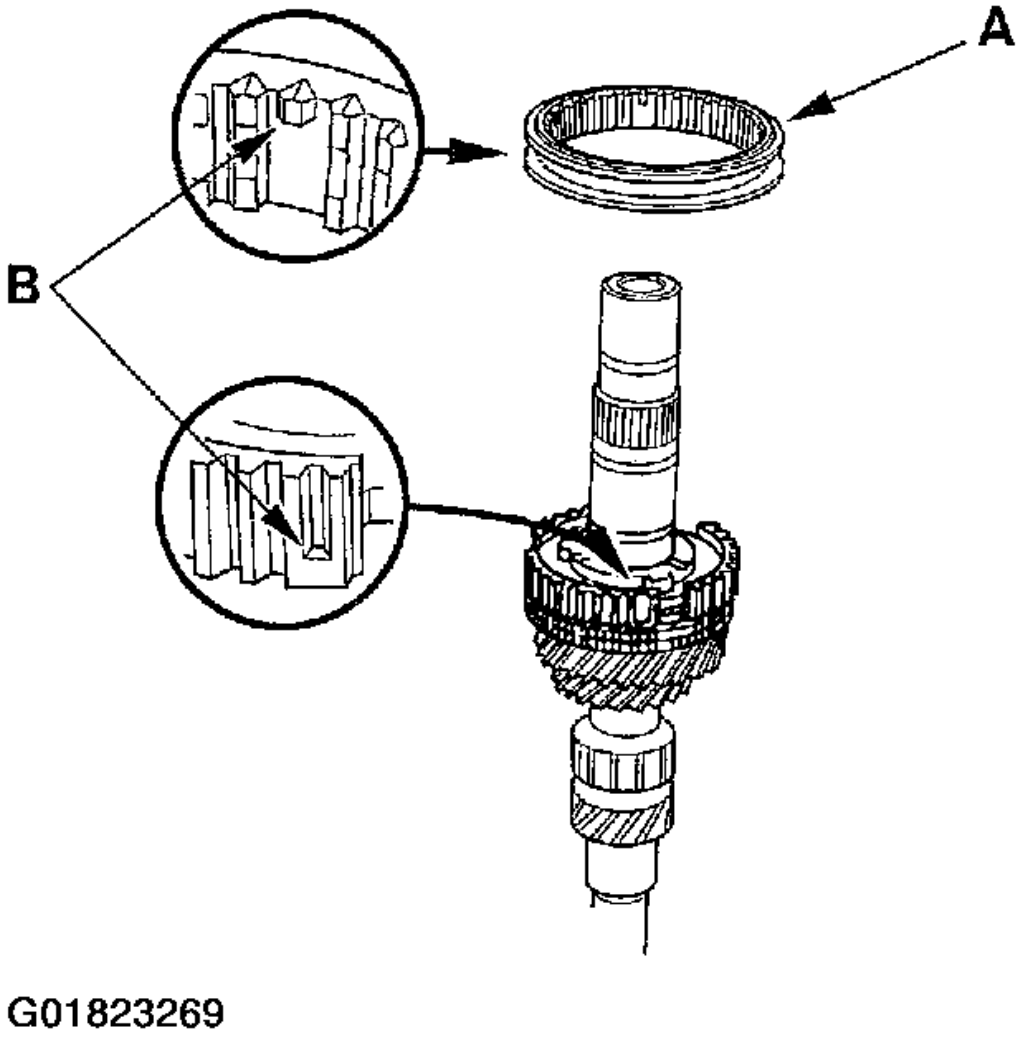


Fig. 62: Installing The 3rd/4th Synchro Sleeve

7. Install the synchro spring (A).

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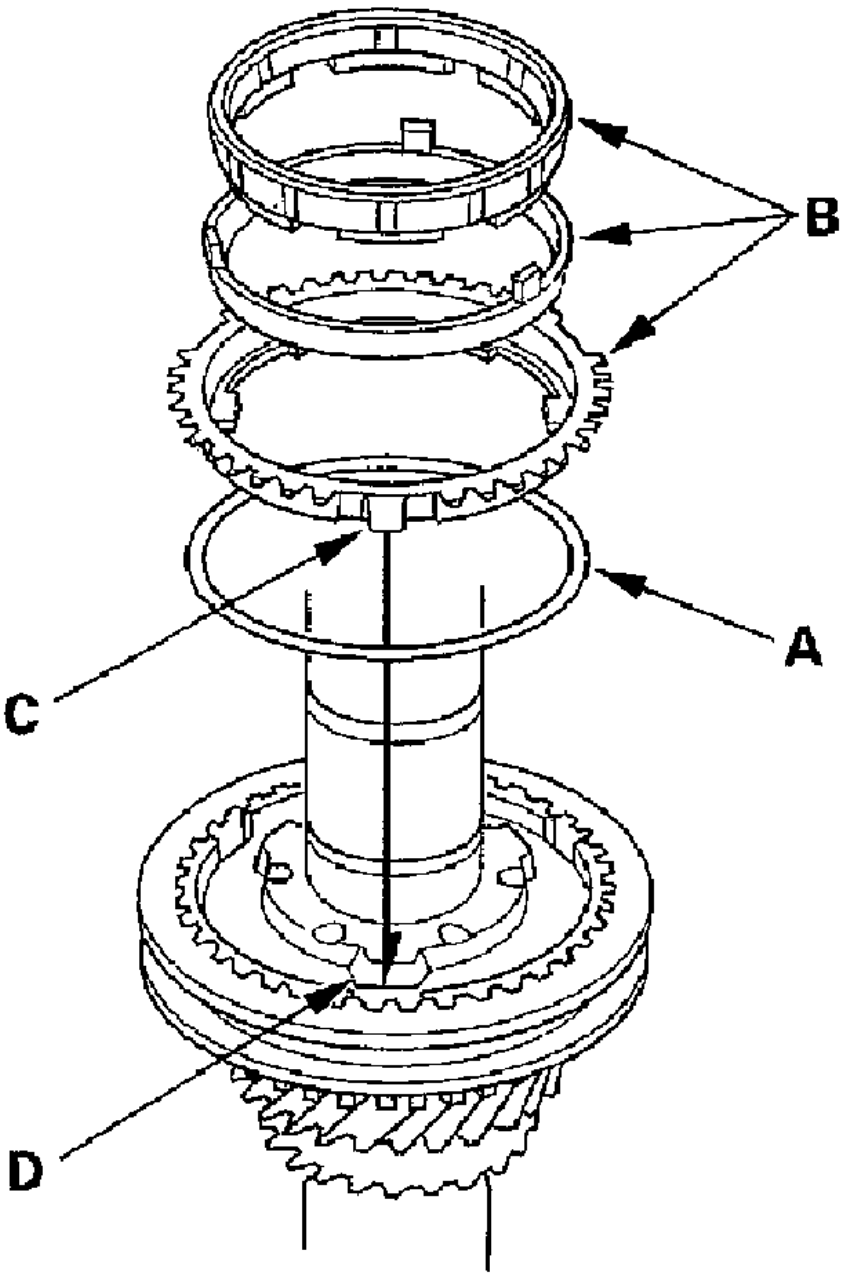


Fig. 63: Installing The Synchro Spring

8. Install the double cone synchro assembly (B) by aligning the synchro cone fingers (C) with the grooves in the 3rd/4th synchro hub (D).

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9. Install 4th gear (A) by aligning the synchro cone fingers (B) with holes in 4th gear (C).

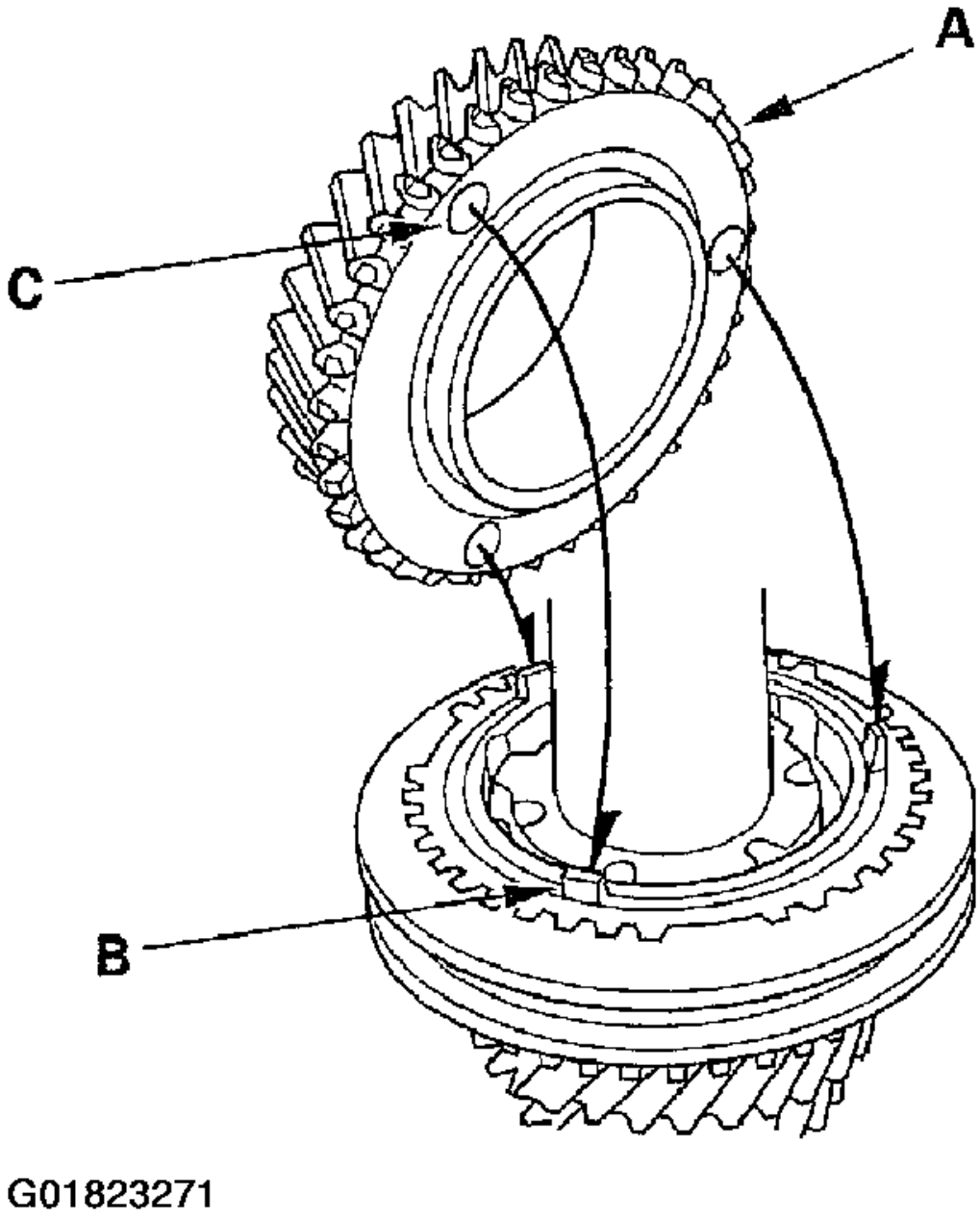


Fig. 64: Installing 4th Gear

10. Install the needle bearings, distance collar, and 5th gear.

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11. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes in 5th gear (C), then install the synchro spring (D).

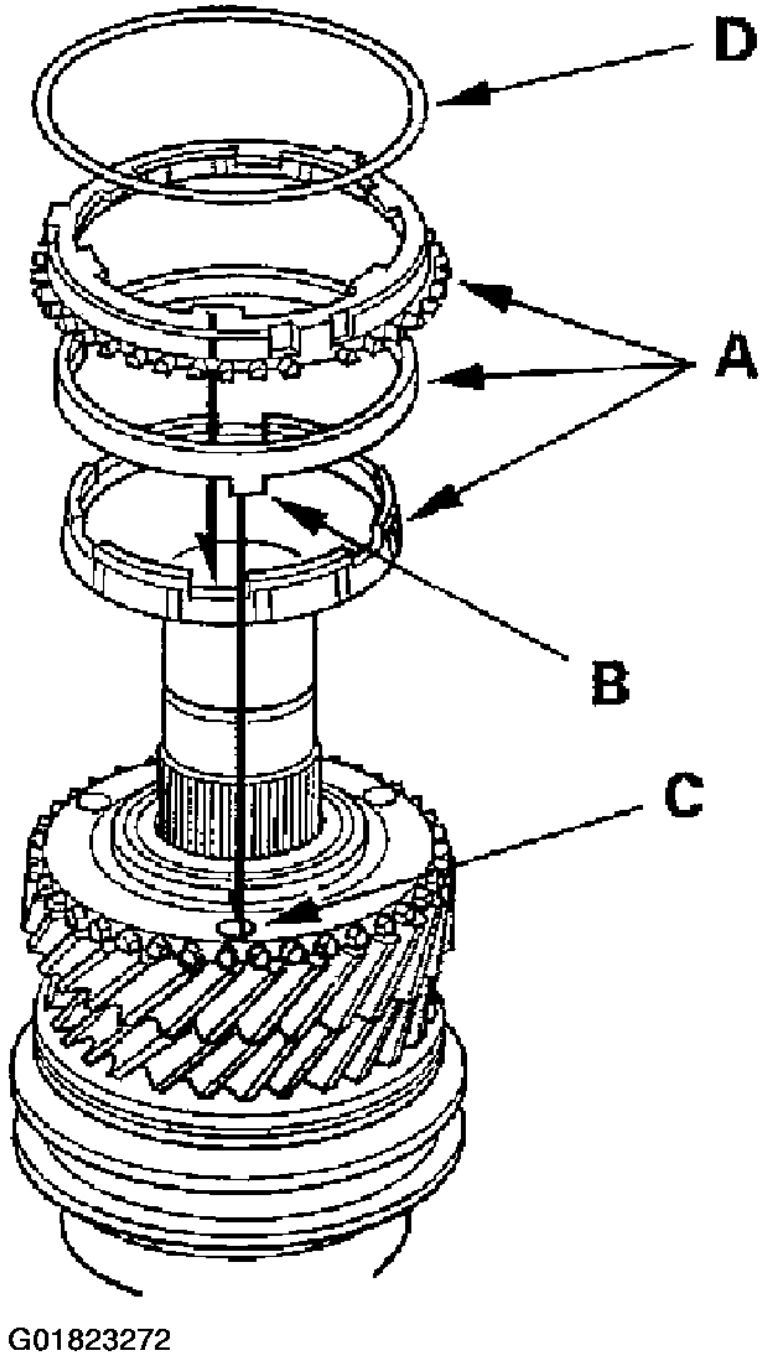
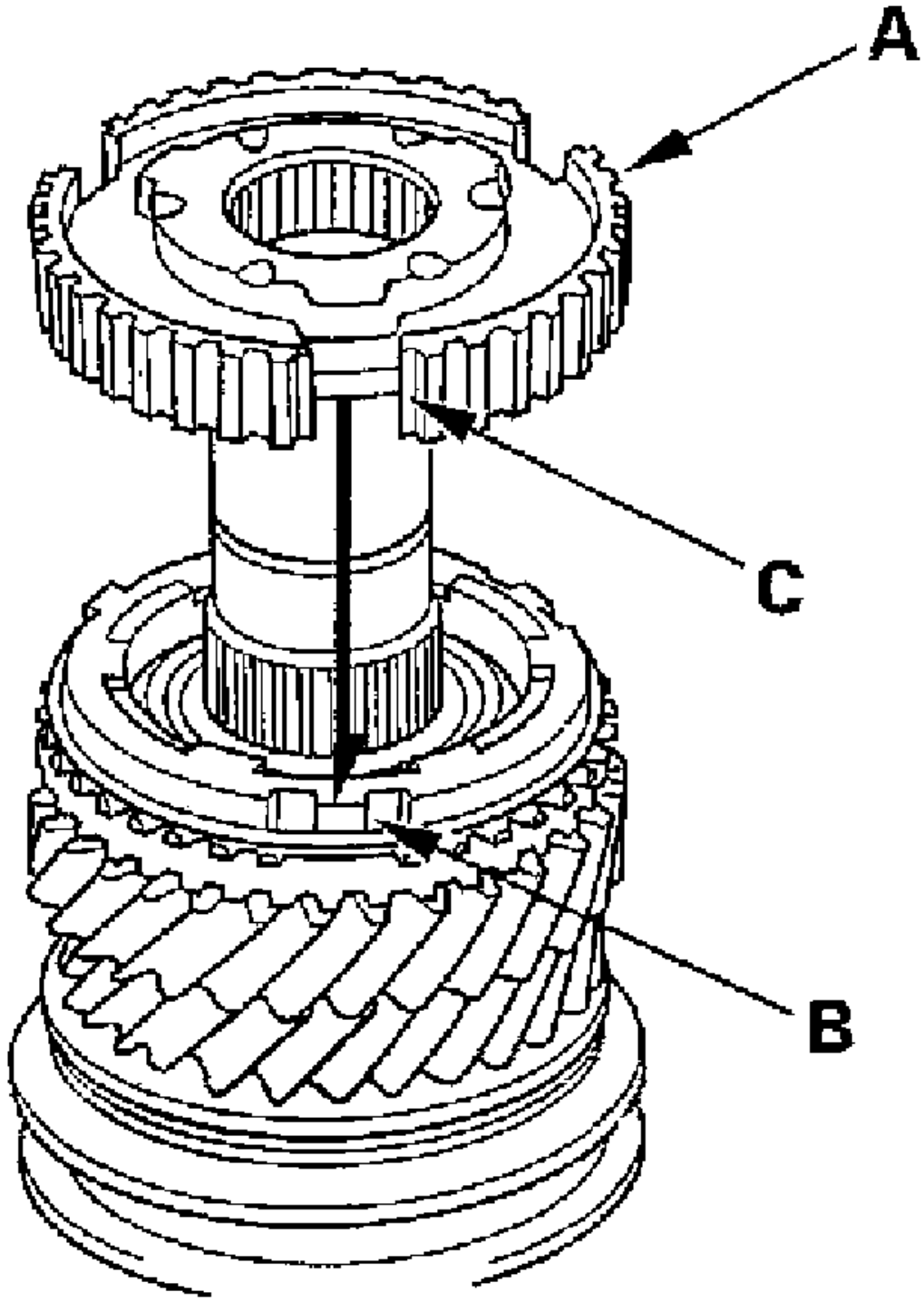


Fig. 65: Installing The Double Cone Synchro Assembly

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12. Install the 5th/6th synchro hub (A) by aligning the synchro cone fingers (B) with the grooves in the 5th/6th synchro hub (C).

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Fig. 66: Aligning The 5th/6th Synchro Hub

13. Install the 5th/6th synchro hub (A) using the special tools.

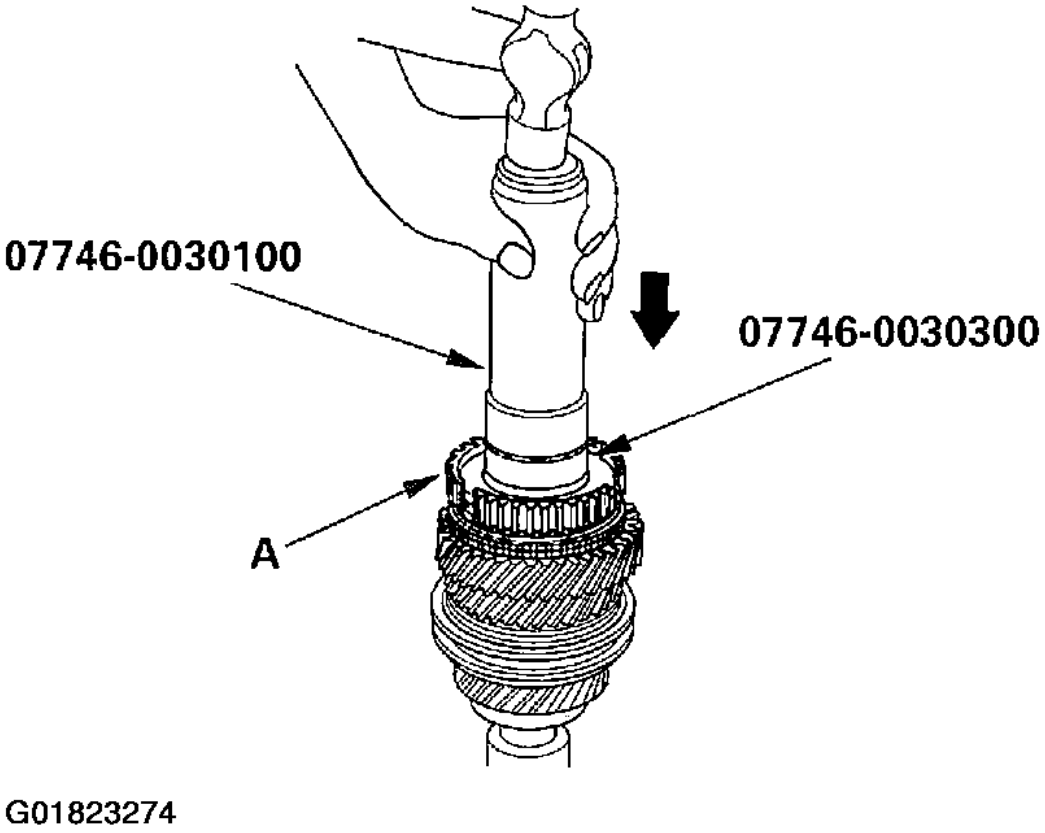


Fig. 67: Installing The 5th/6th Synchro Hub

14. Install the 5th/6th synchro sleeve.
15. Install the synchro spring (A).

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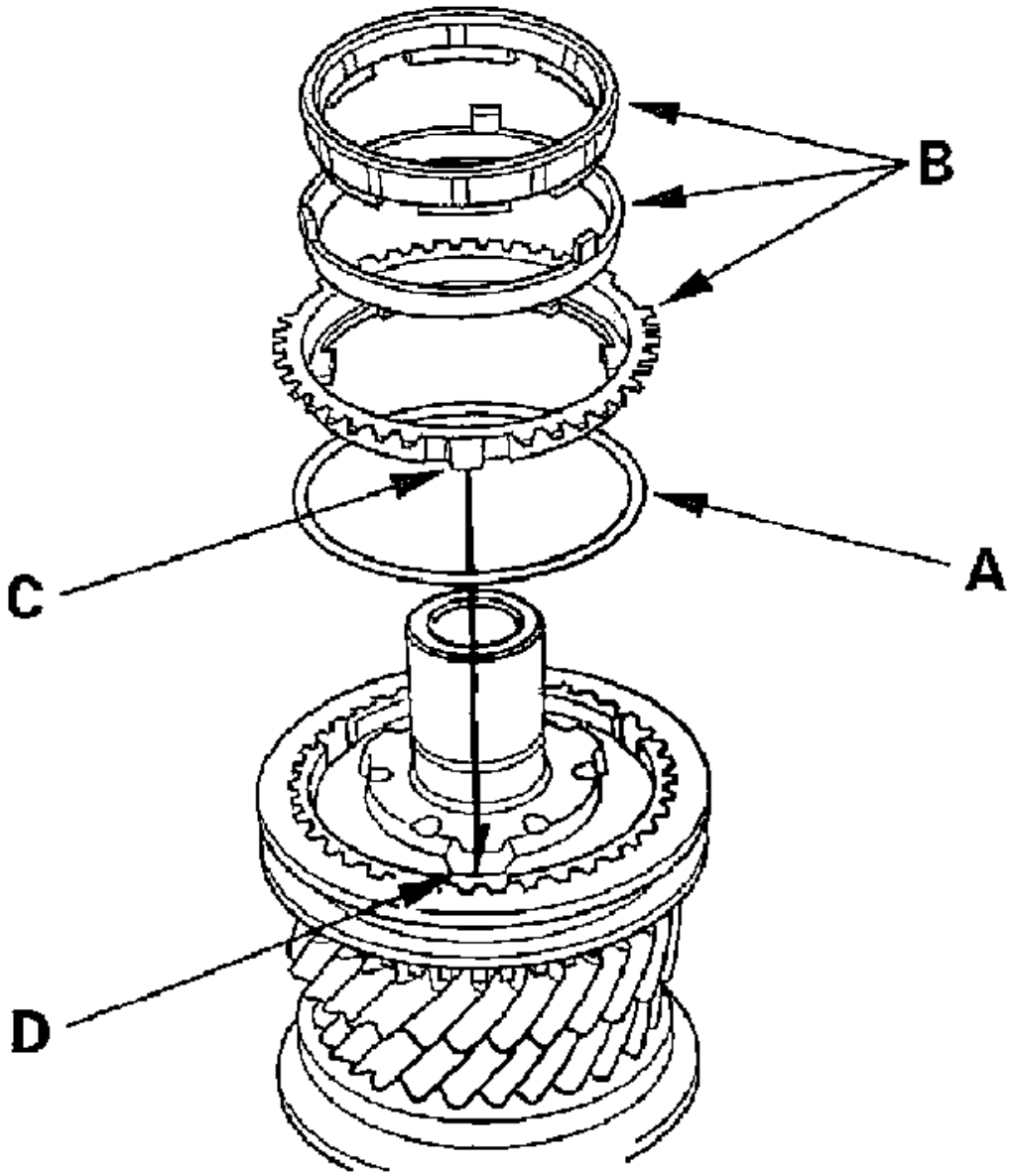


Fig. 68: Installing The Synchro Spring

16. Install the double cone synchro assembly (B) by aligning the synchro cone fingers (C) with the grooves in the 5th/6th synchro hub (D).
17. Install the distance collar and the needle bearing.

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18. Install the 6th gear (A) by aligning the synchro cone fingers (B) with the holes in the 6th gear (C).

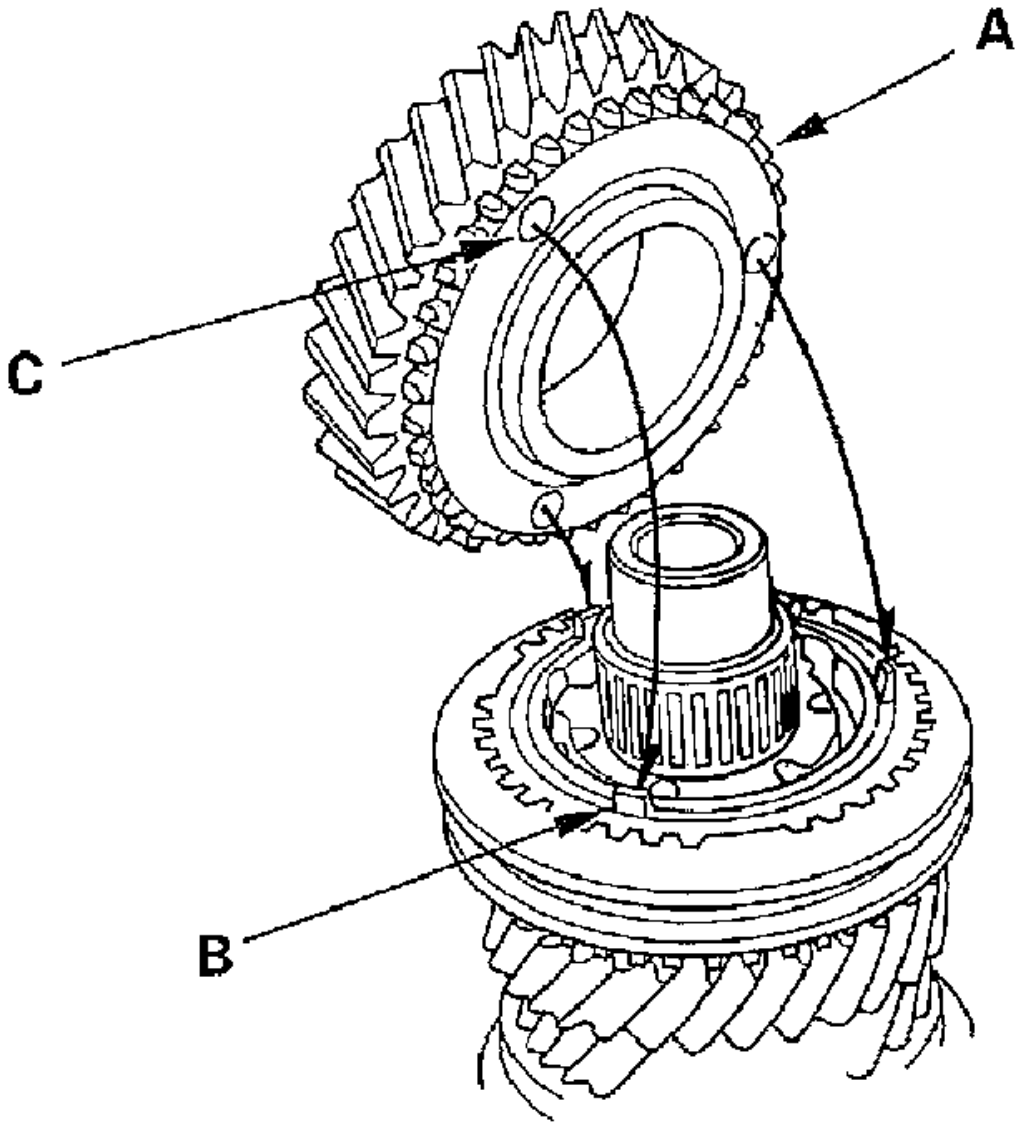


Fig. 69: Installing The 6th Gear

19. Install the NEW ball bearing (A) using the special tools and press (B).

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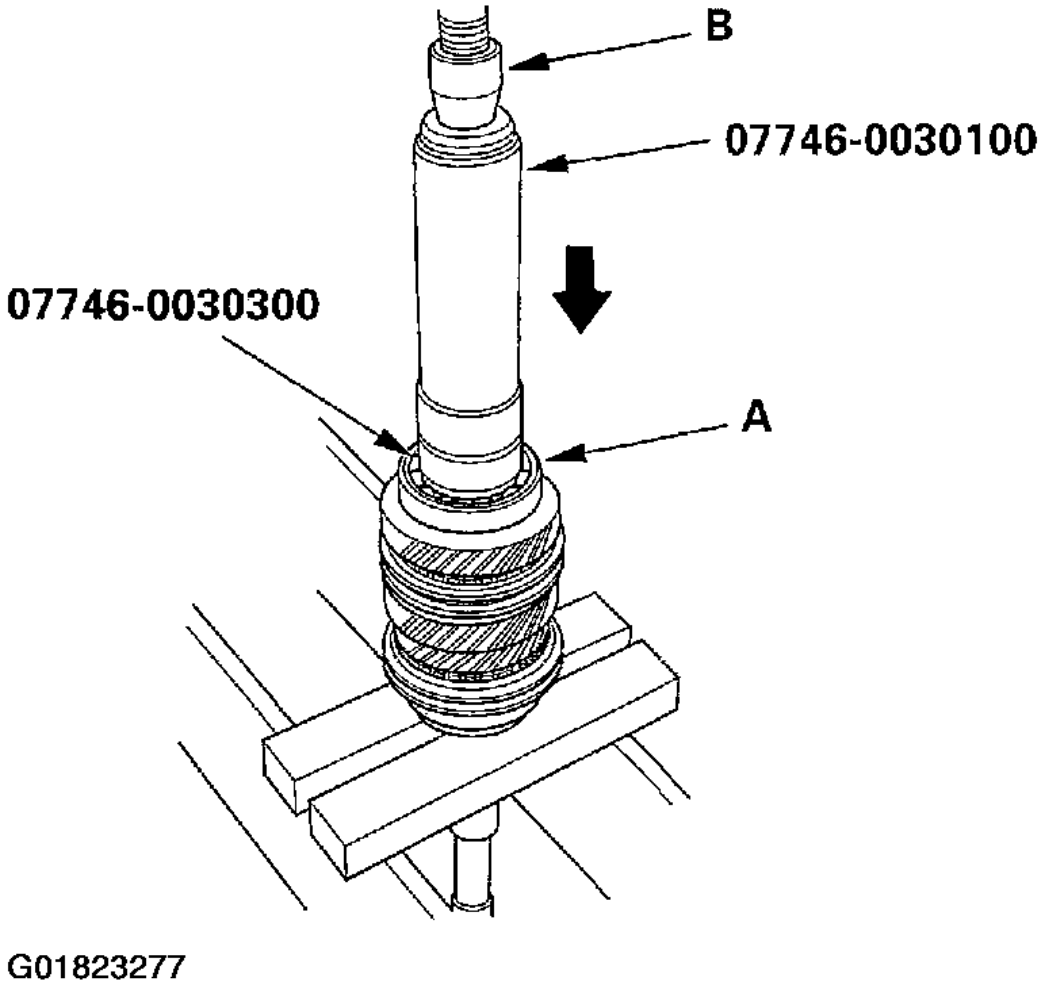


Fig. 70: Installing The NEW Ball Bearing

COUNTERSHAFT ASSEMBLY CLEARANCE INSPECTION

1. Measure the clearance between the 1st gear (A) and the distance collar (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.06-0.16 mm (0.002-0.006 in.)

   Service Limit: 0.25 mm (0.010 in.)

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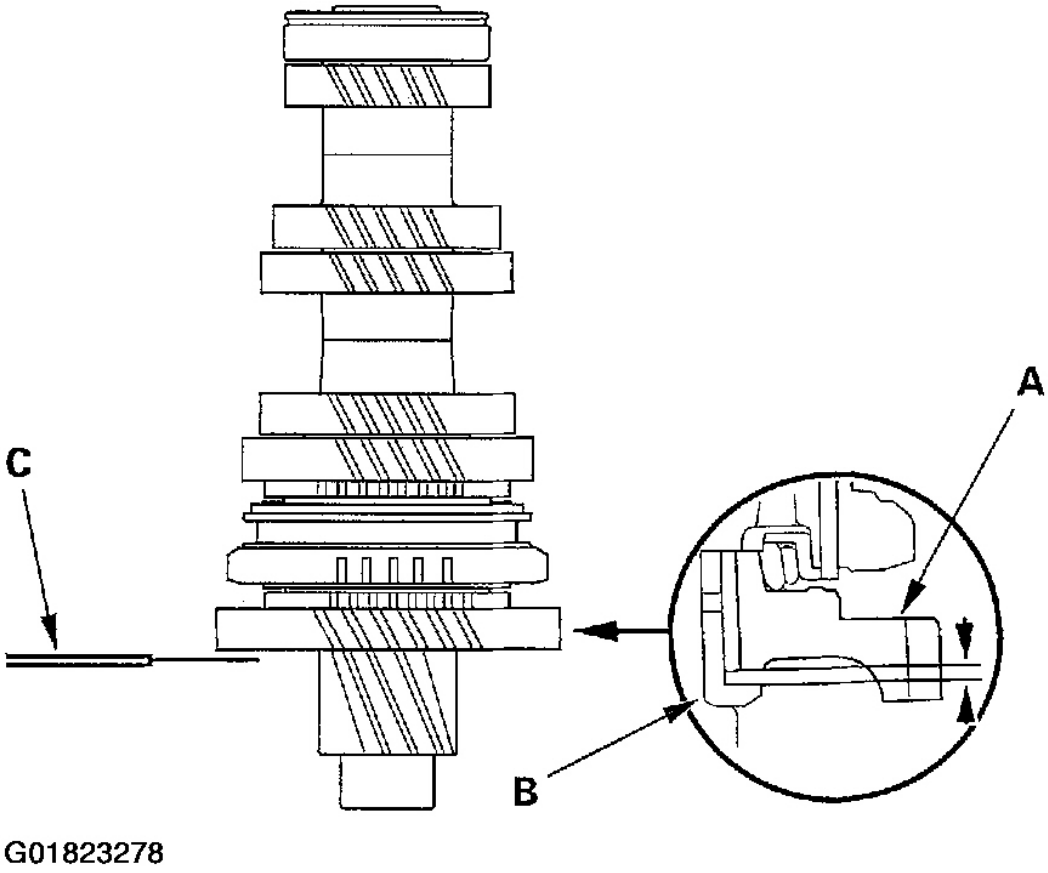


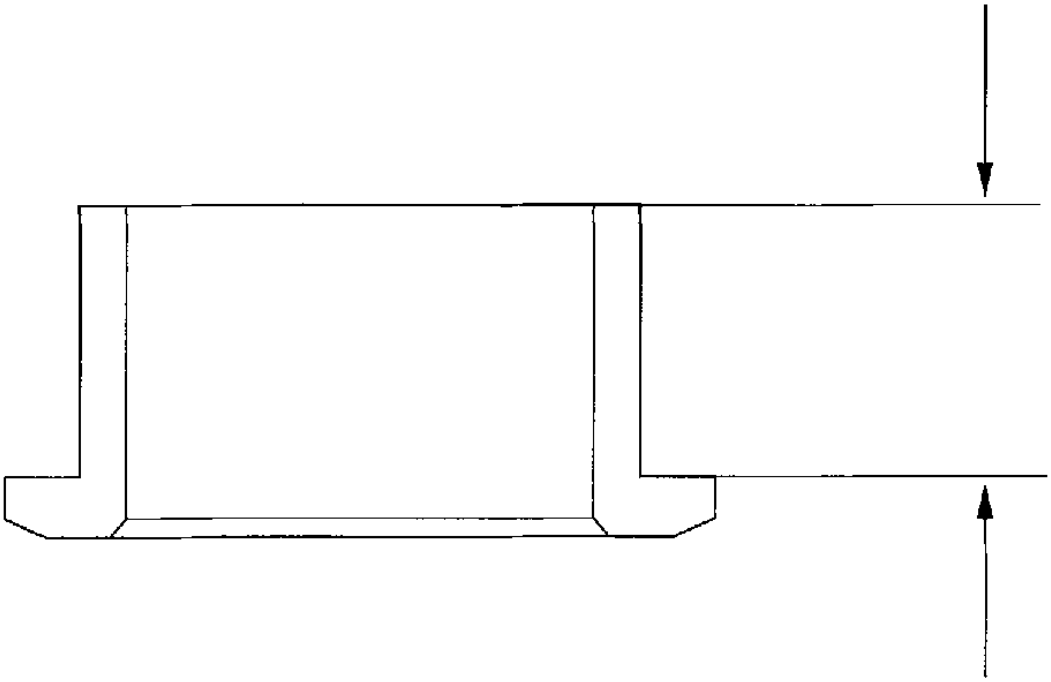
Fig. 71: Measuring The Clearance Between The 1st Gear & The Distance Collar

2. Measure the thickness of the distance collar.

   Standard: 23.03-23.08 mm (0.907-0.909 in.)

   - If the thickness is not within than the standard, replace the distance collar.
   - If the thickness is within the standard, go to step 3.

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Fig. 72: Measuring The Thickness Of The Distance Collar

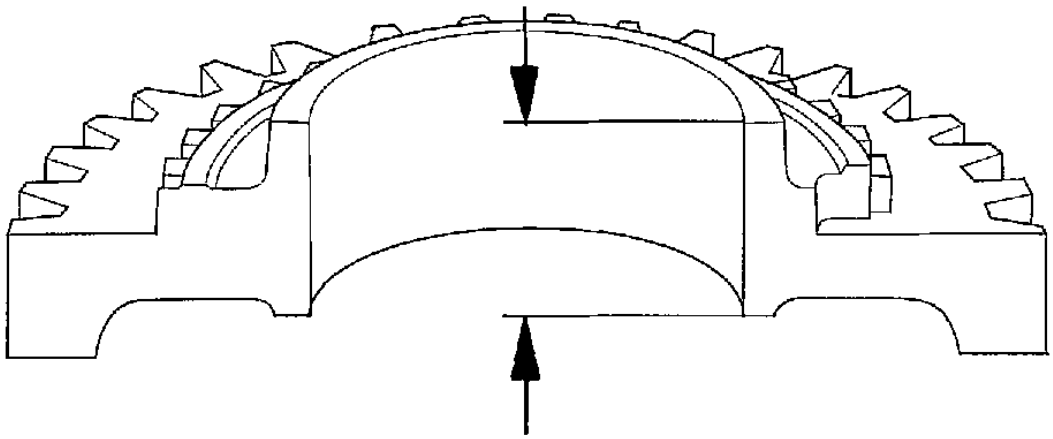
3. Measure the thickness of the 1st gear.

   Standard: 22.92-22.97 mm (0.902-0.904 in.)

   Service Limit: 22.87 mm (0.900 in.)

   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub.

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Fig. 73: Measuring The Thickness Of The 1st Gear

4. Measure the clearance between the 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 5.

   Standard: 0.06-0.16 mm (0.002-0.006 in.)

   Service Limit: 0.25 mm (0.010 in.)

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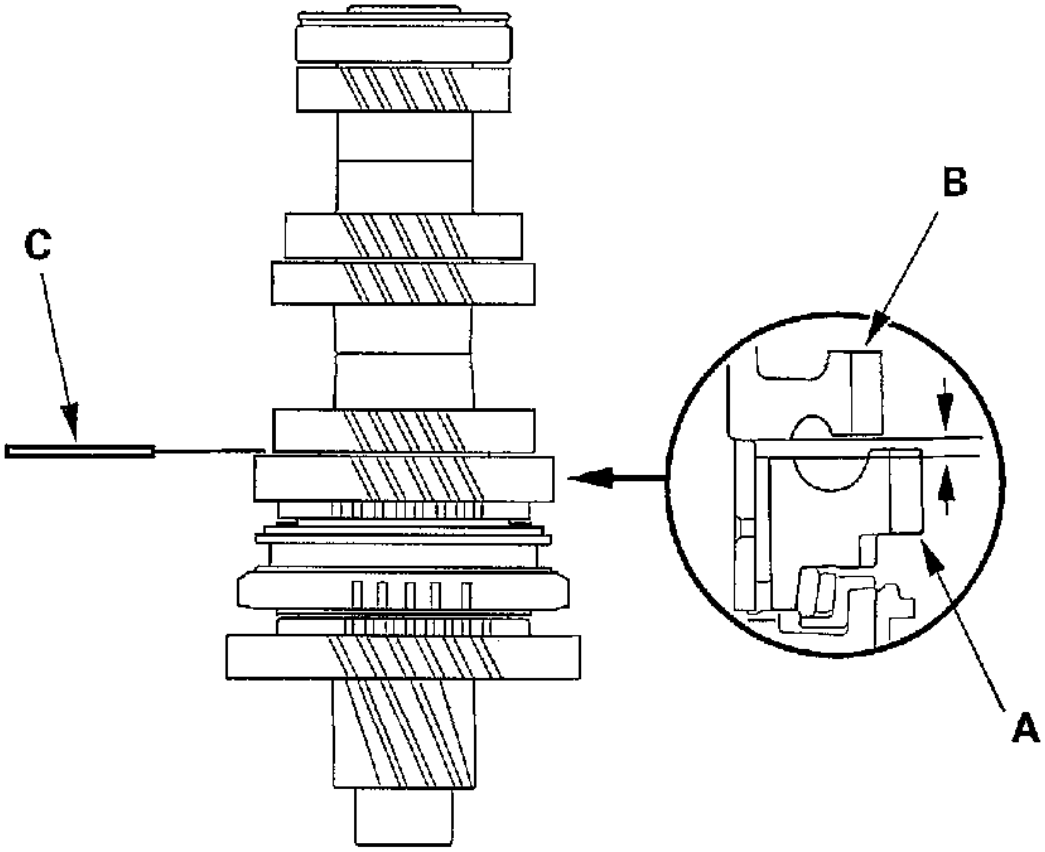


Fig. 74: Measuring The Clearance Between The 2nd Gear & 3rd Gear

5. Measure the thickness of the distance collar.

   Standard: 28.03-28.08 mm (1.104-1.106 in.)

   - If the thickness is not within the standard, replace the distance collar.
   - If the thickness is within the standard, go to step 6.

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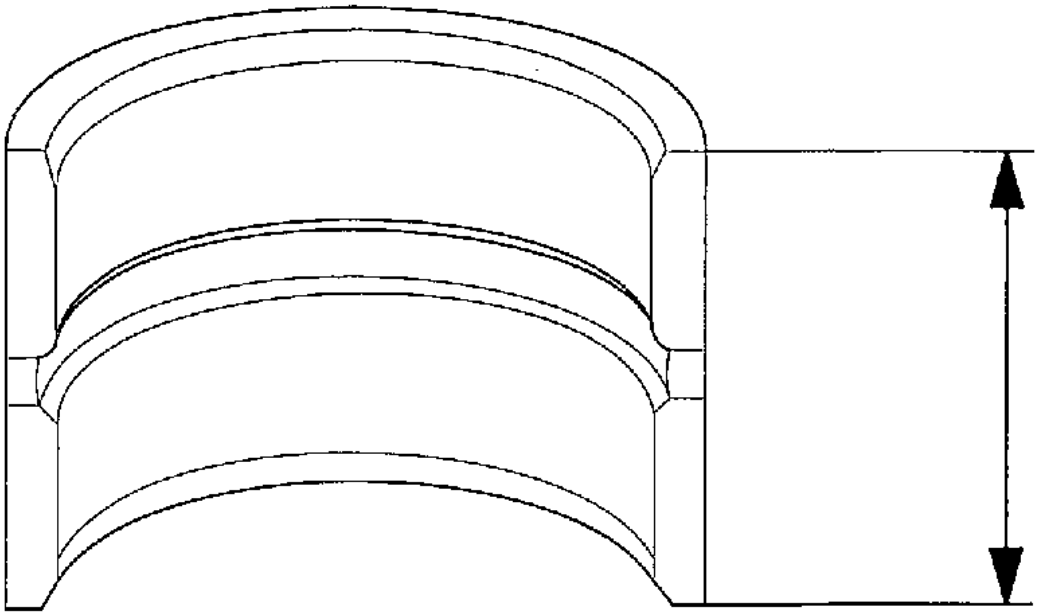


Fig. 75: Measuring The Thickness Of The Distance Collar

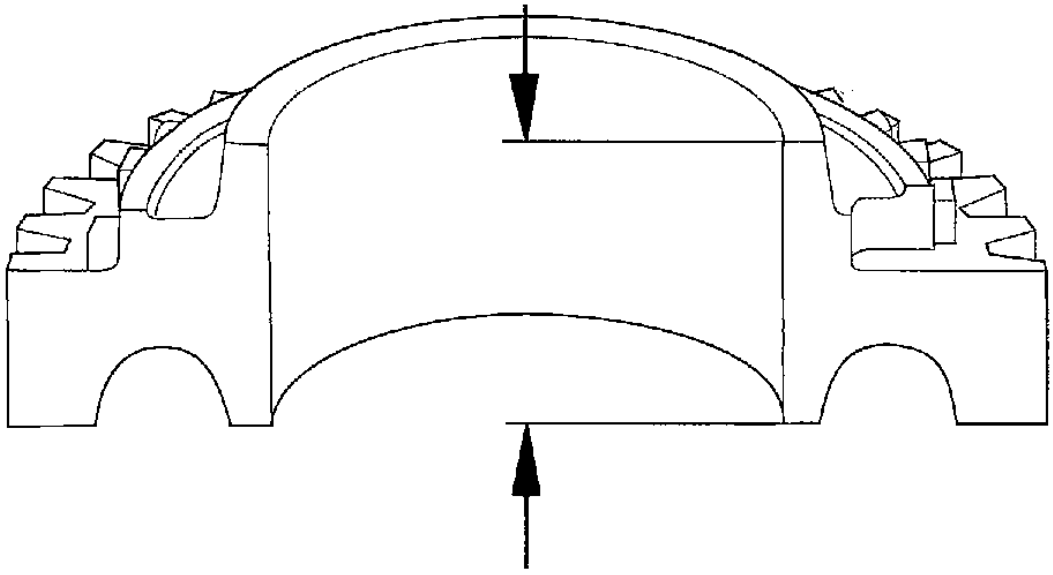
6. Measure the thickness of the 2nd gear.

   Standard: 27.92-27.97 mm (1.099-1.101 in.)

   Service Limit: 27.87 mm (1.097 in.)

   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub.

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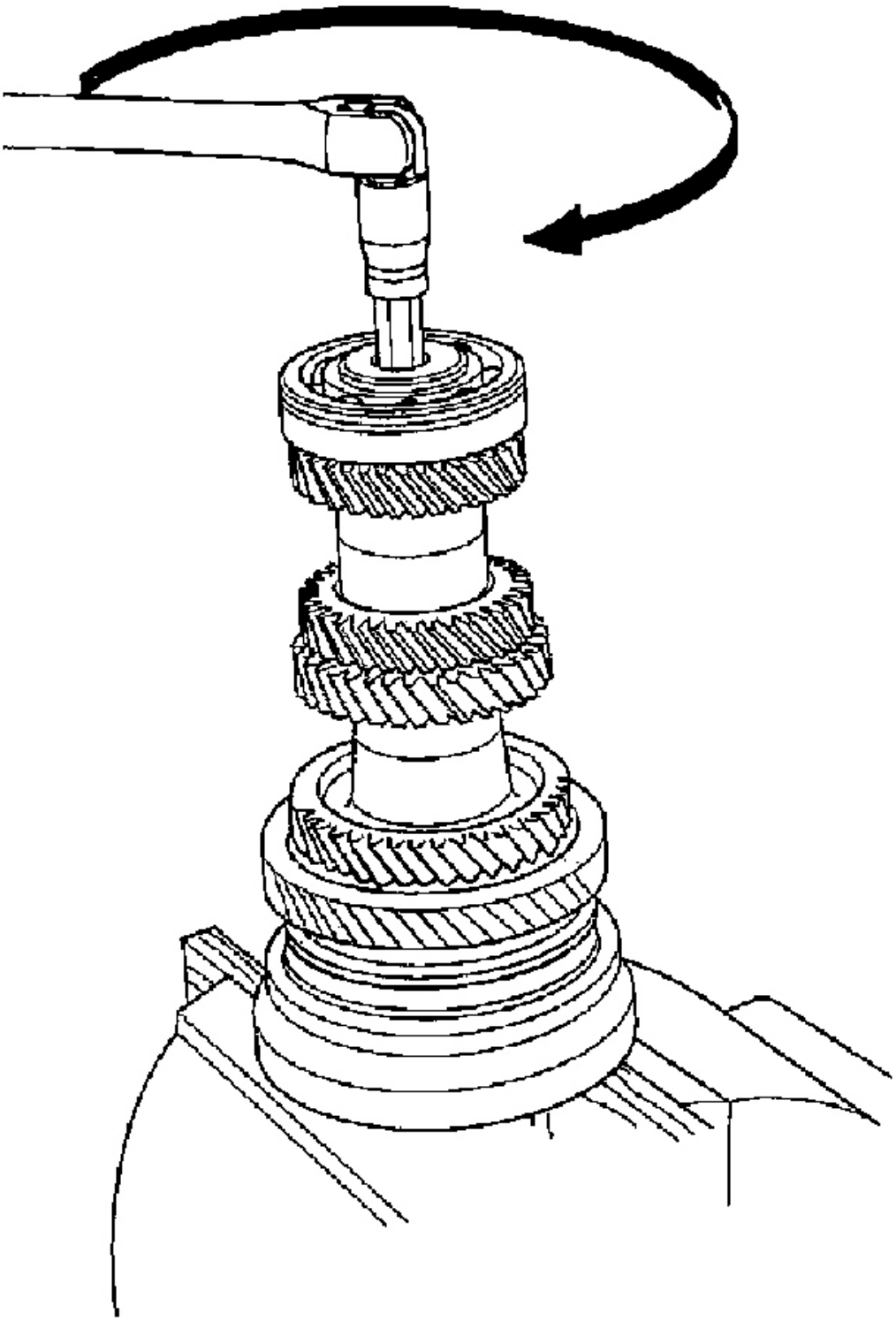
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Fig. 76: Measuring The Thickness Of The 2nd Gear

COUNTERSHAFT DISASSEMBLY

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.

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Fig. 77: Clamping The Countershaft Assembly In A Bench Vise With Wood Blocks

2. Remove the special bolt (left-hand threads).
3. Support the 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

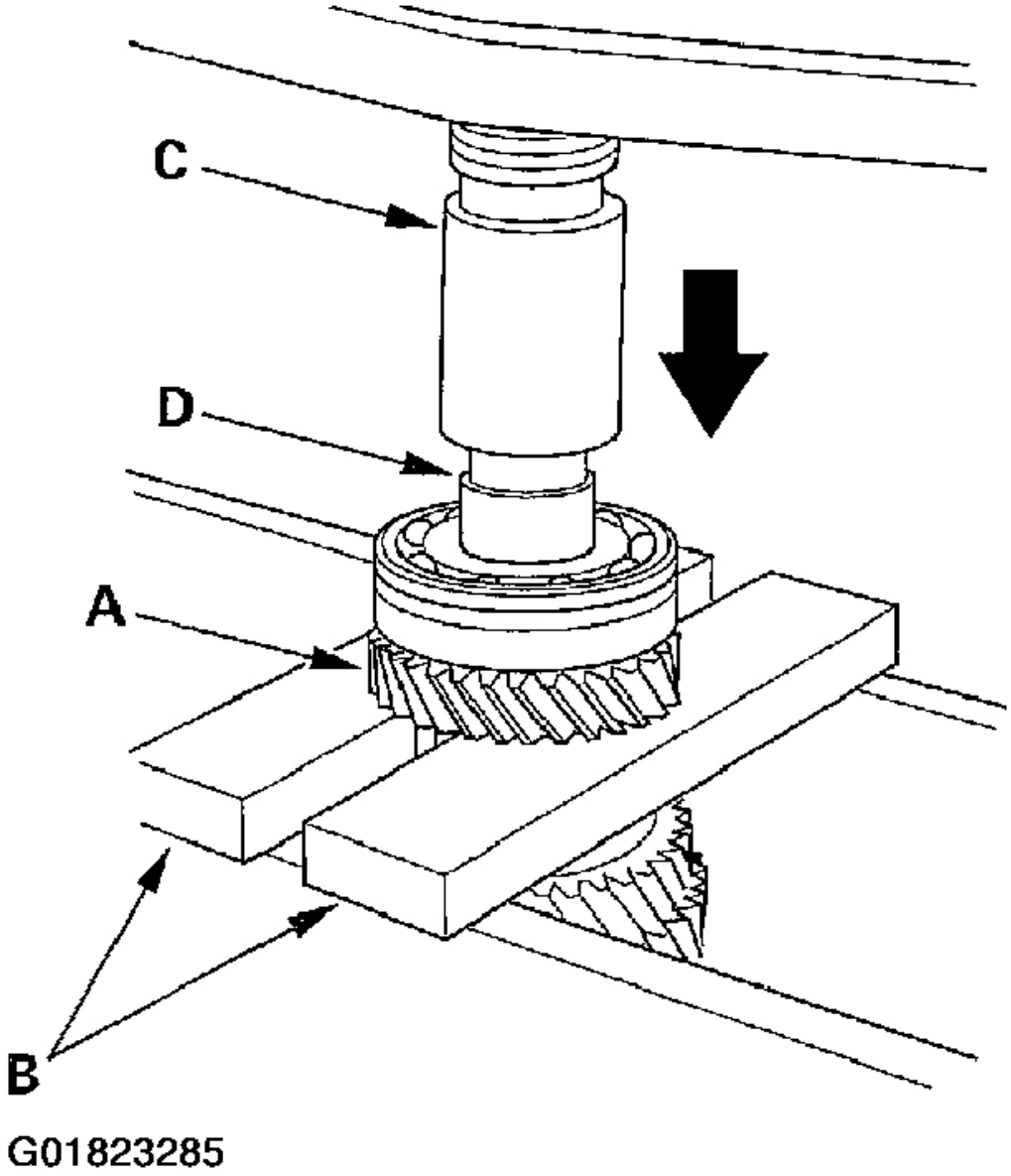


Fig. 78: Pressing The Countershaft Out Of The Ball Bearing

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4. Remove the 35 mm shim.
5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the 5th gear.

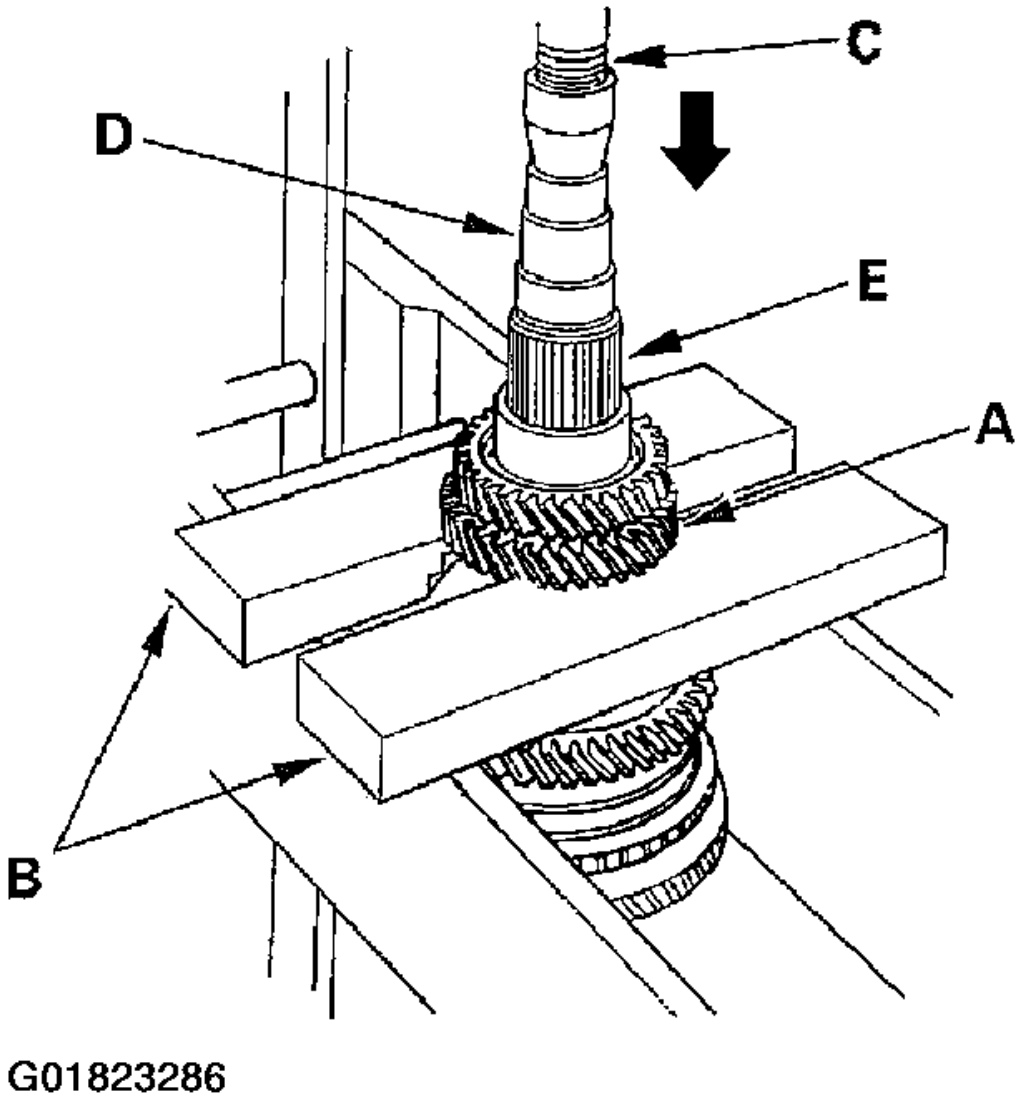


Fig. 79: Pressing The Countershaft Out Of The 5th Gear

6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 3rd gear.

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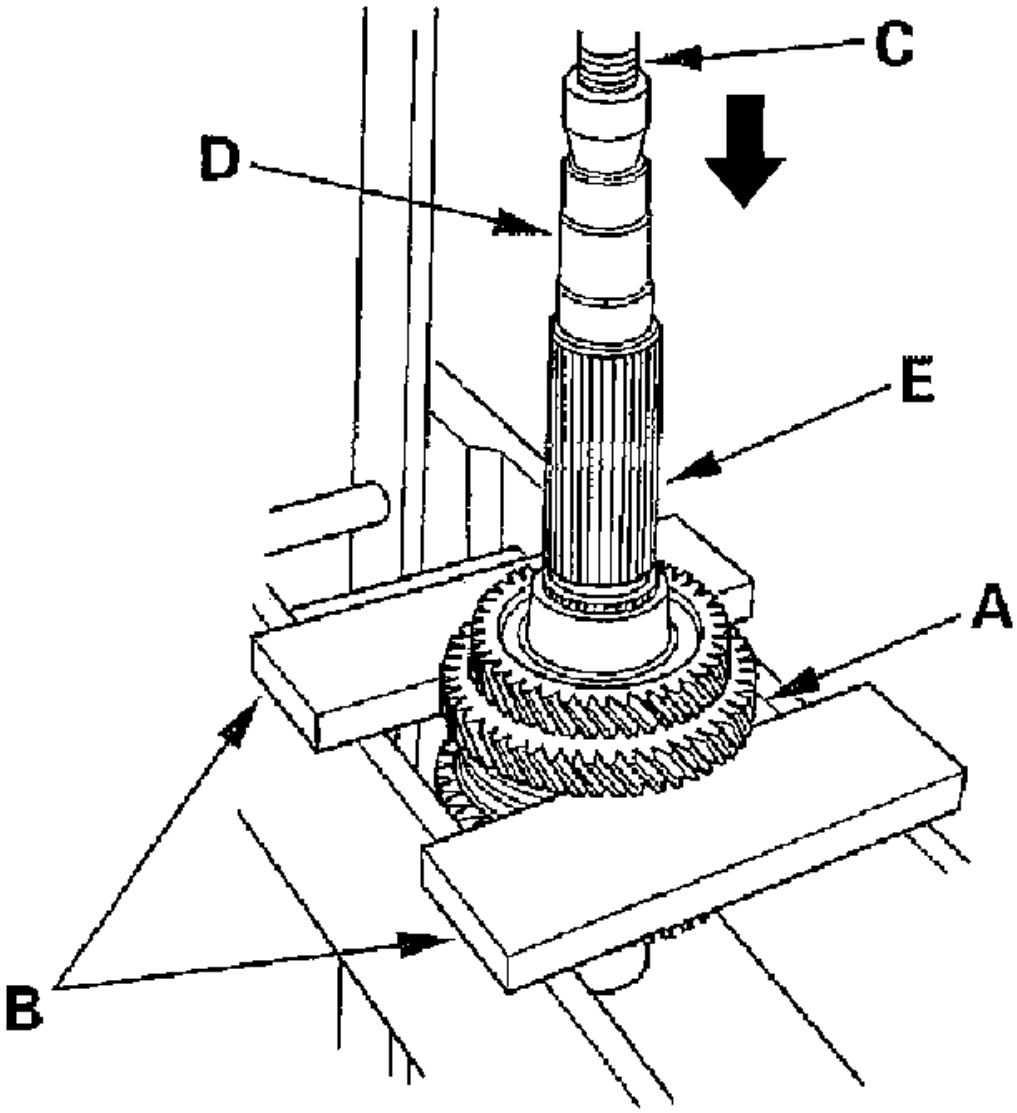


Fig. 80: Pressing The Countershaft Out Of The 3rd Gear

COUNTERSHAFT INSPECTION

1. Inspect the gear and bearing surfaces for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

   Standard:

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A Ball Bearing Surface (Transmission Housing Side): 30.020-30.033 mm (1.1819-1.1824 in.)

B Distance Collar Surface: 39.937-39.950 mm (1.5723-1.5728 in.)

C Needle Bearing Surface (Clutch Housing Side): 35.000-35.015 mm (1.3779-1.3785 in.)

Service Limit:

A: 29.97 mm (1.180 in.)

B: 39.883 mm (1.5702 in.)

C: 34.95 mm (1.376 in.)

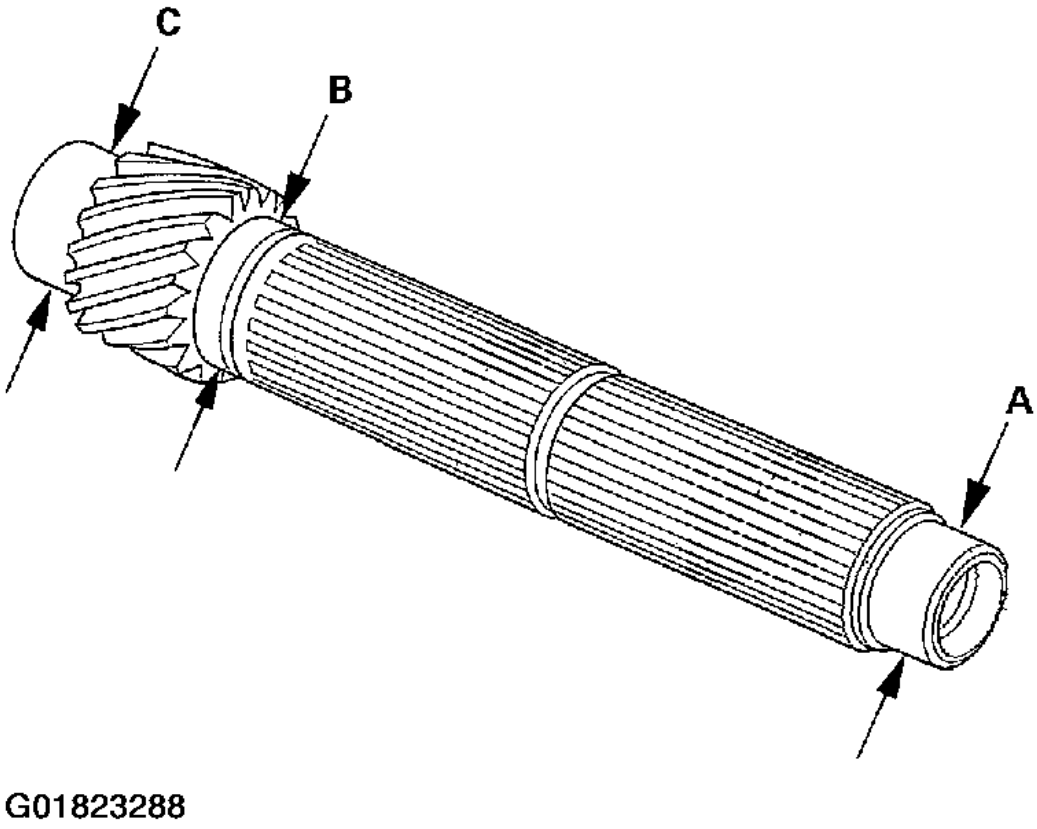


Fig. 81: Inspecting Countershaft Surfaces

2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the countershaft.

   Standard: 0.02 mm (0.001 in.) Max.

   Service Limit: 0.05 mm (0.002 in.)

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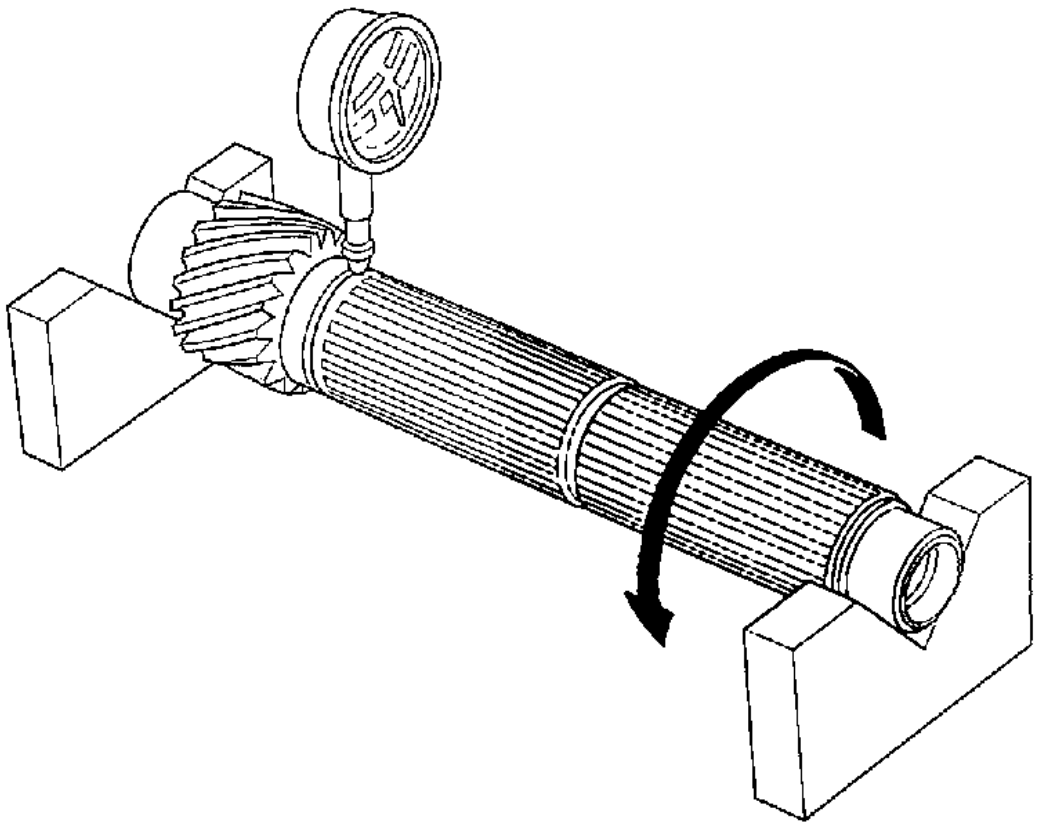


Fig. 82: Inspecting Countershaft Runout

COUNTERSHAFT REASSEMBLY

Exploded View

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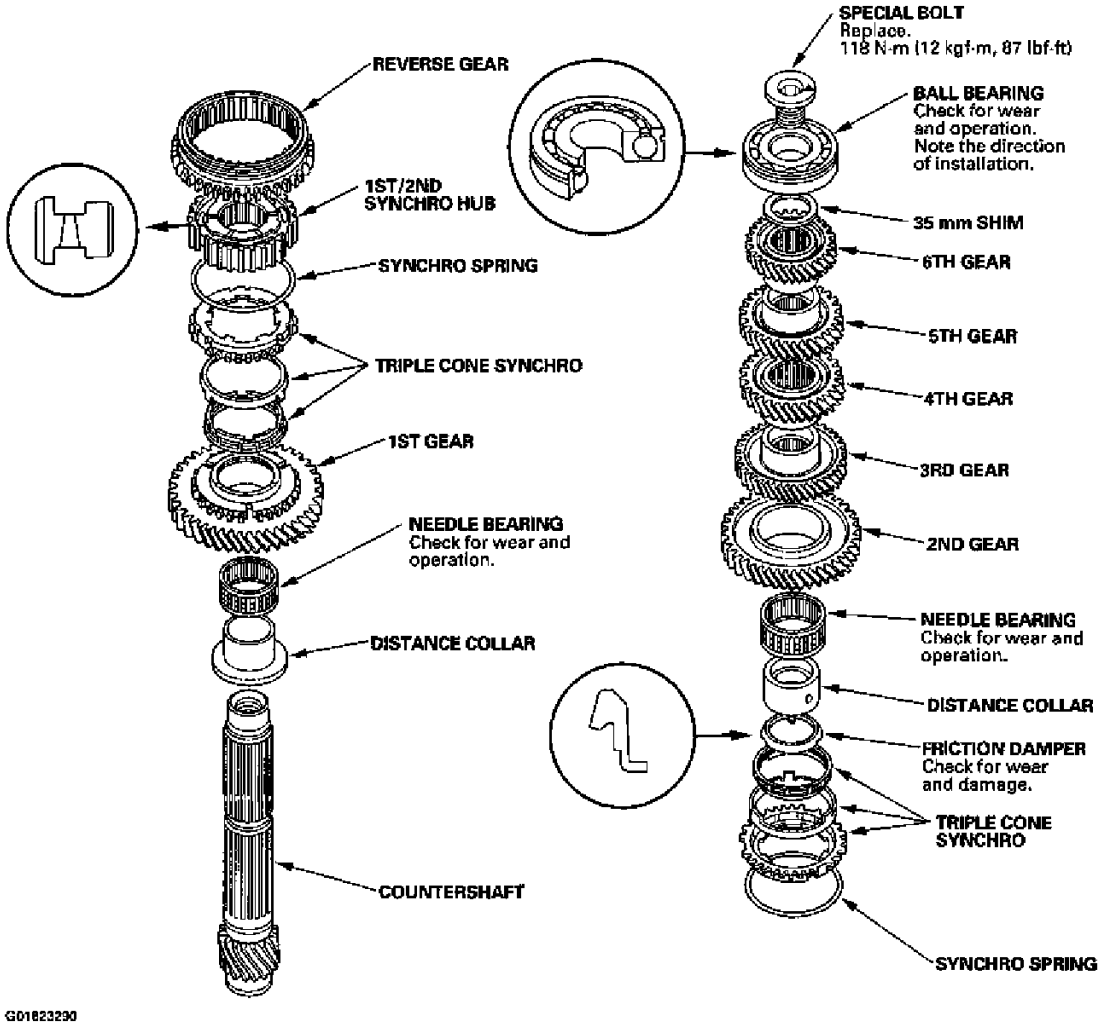


Fig. 83: Exploded View Of Countershaft Components

Special Tools Required:

- Driver, 40 mm I.D 07746-0030100
- Attachment, 30 mm 07746-0030300

NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean all parts in solvent, dry them, and apply lubricant to all contact surfaces.
2. Install the distance collar and needle bearing onto the countershaft.
3. Install the triple cone synchro assembly (A) by aligning the synchro cone fingers (B) with 1st gear grooves (C), then install the synchro spring (D).

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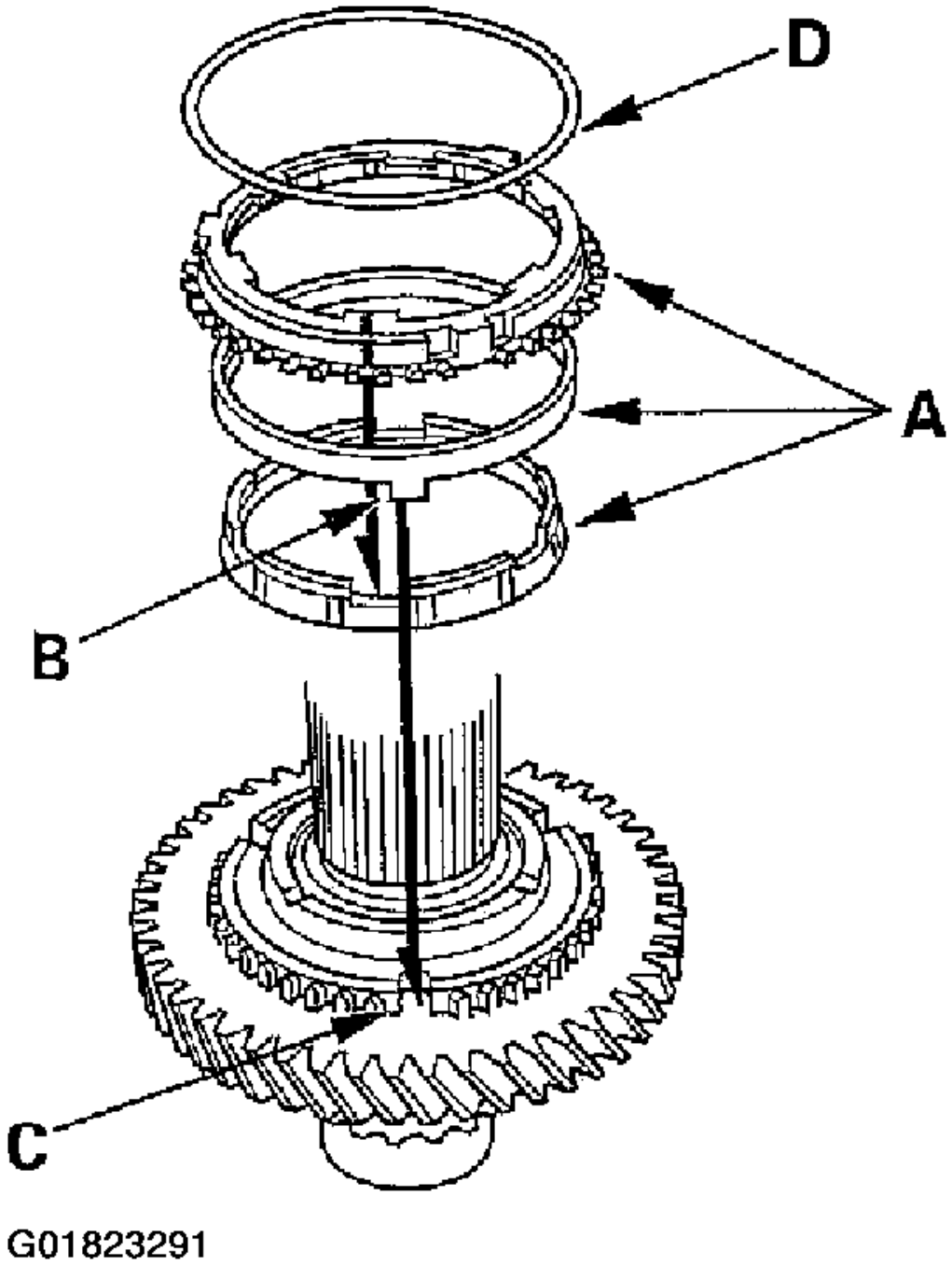


Fig. 84: Installing The Triple Cone Synchro Assembly

4. Install the 1st/2nd synchro hub (A) by aligning the synchro cone fingers (B) with the 1st/2nd synchro hub

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grooves (C).

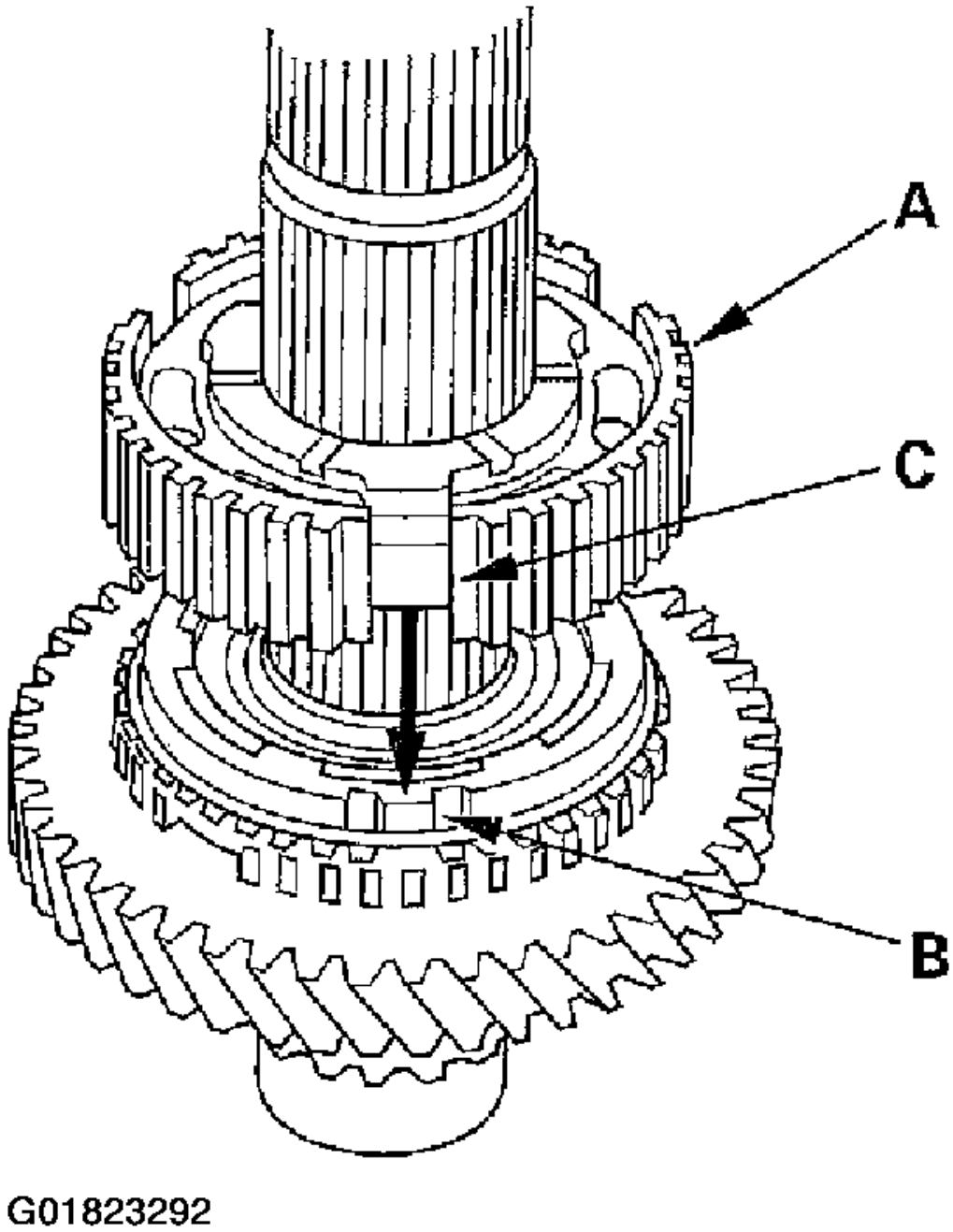
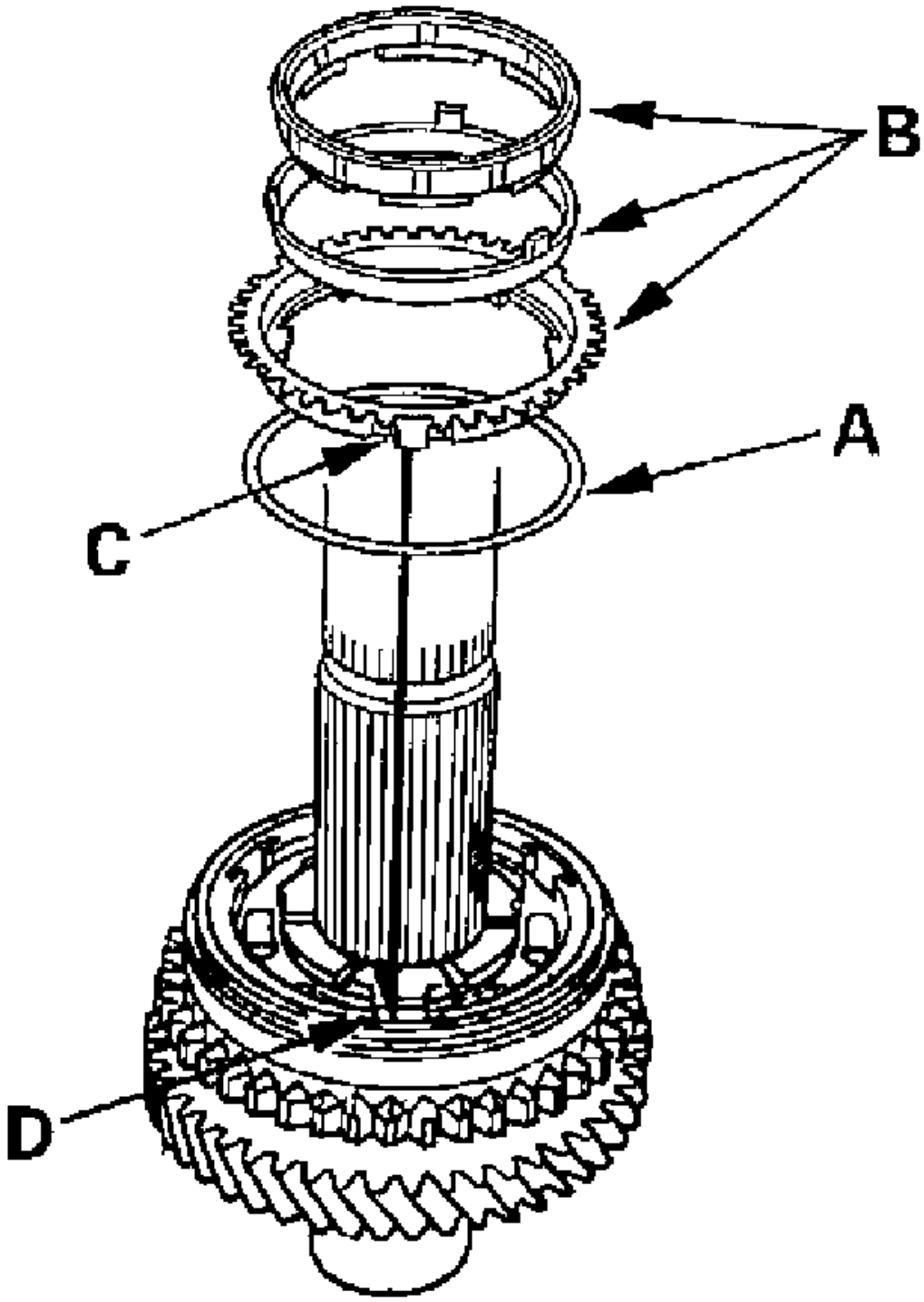


Fig. 85: Installing The 1st/2nd Synchro Hub

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5. Install the reverse gear.
6. Install the synchro spring (A).

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Fig. 86: Installing The Synchro Spring

7. Install the triple cone synchro assembly (B) by aligning the synchro cone fingers (C) with the 1st/2nd synchro hub grooves (D).
8. Install the distance collar (A) and friction damper (B) by aligning the friction damper fingers (C) with the 1st/2nd synchro hub grooves (D).

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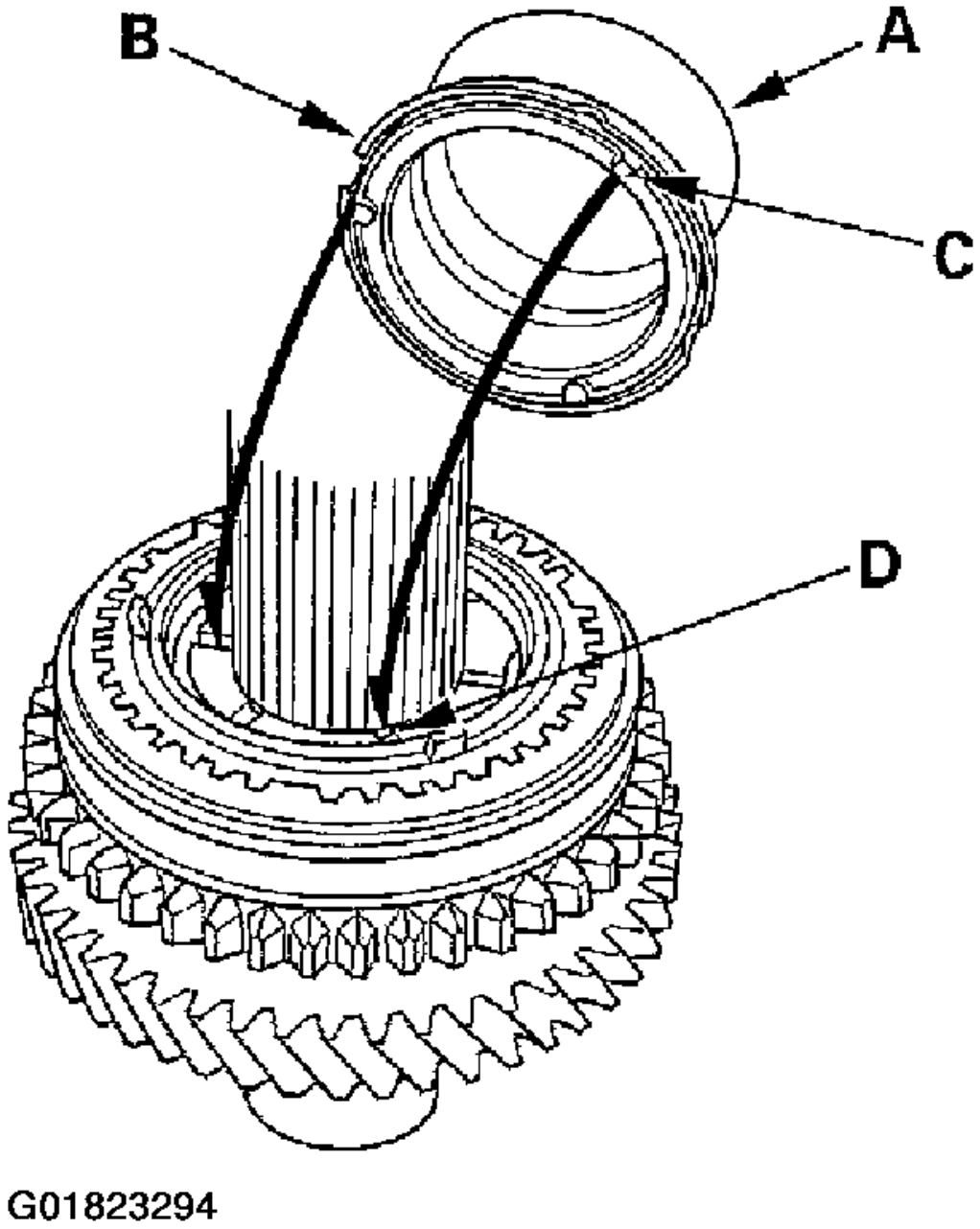


Fig. 87: Installing The Distance Collar & Friction Damper

9. Install the needle bearing.
10. Install the 2nd gear (A) by aligning the synchro cone fingers (B) with the 2nd gear grooves (C).

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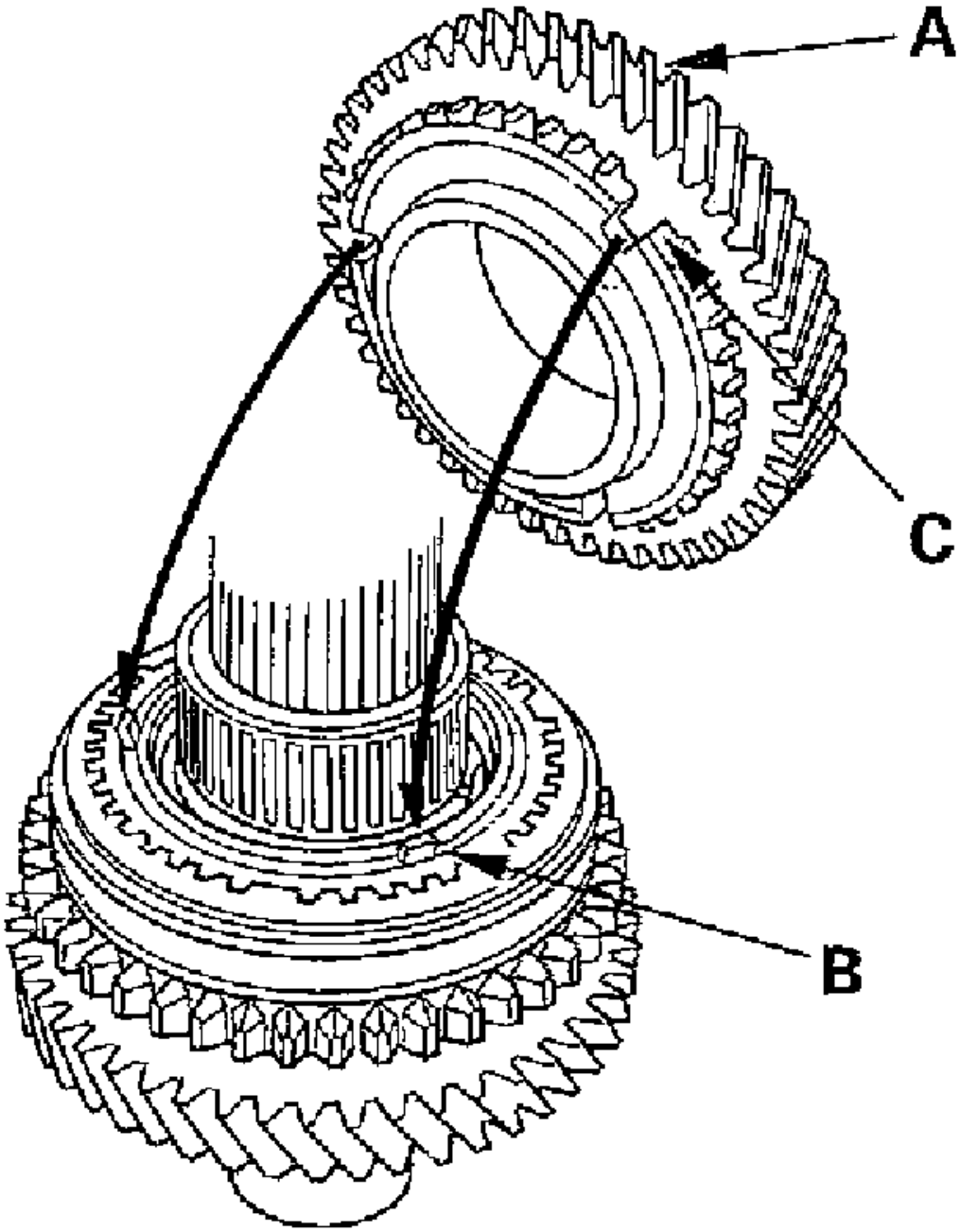


Fig. 88: Installing The 2nd Gear

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11. Support the countershaft (A) on the steel blocks, then install 3rd gear (B) using the special tool and a press (C). Do not exceed the maximum pressure.

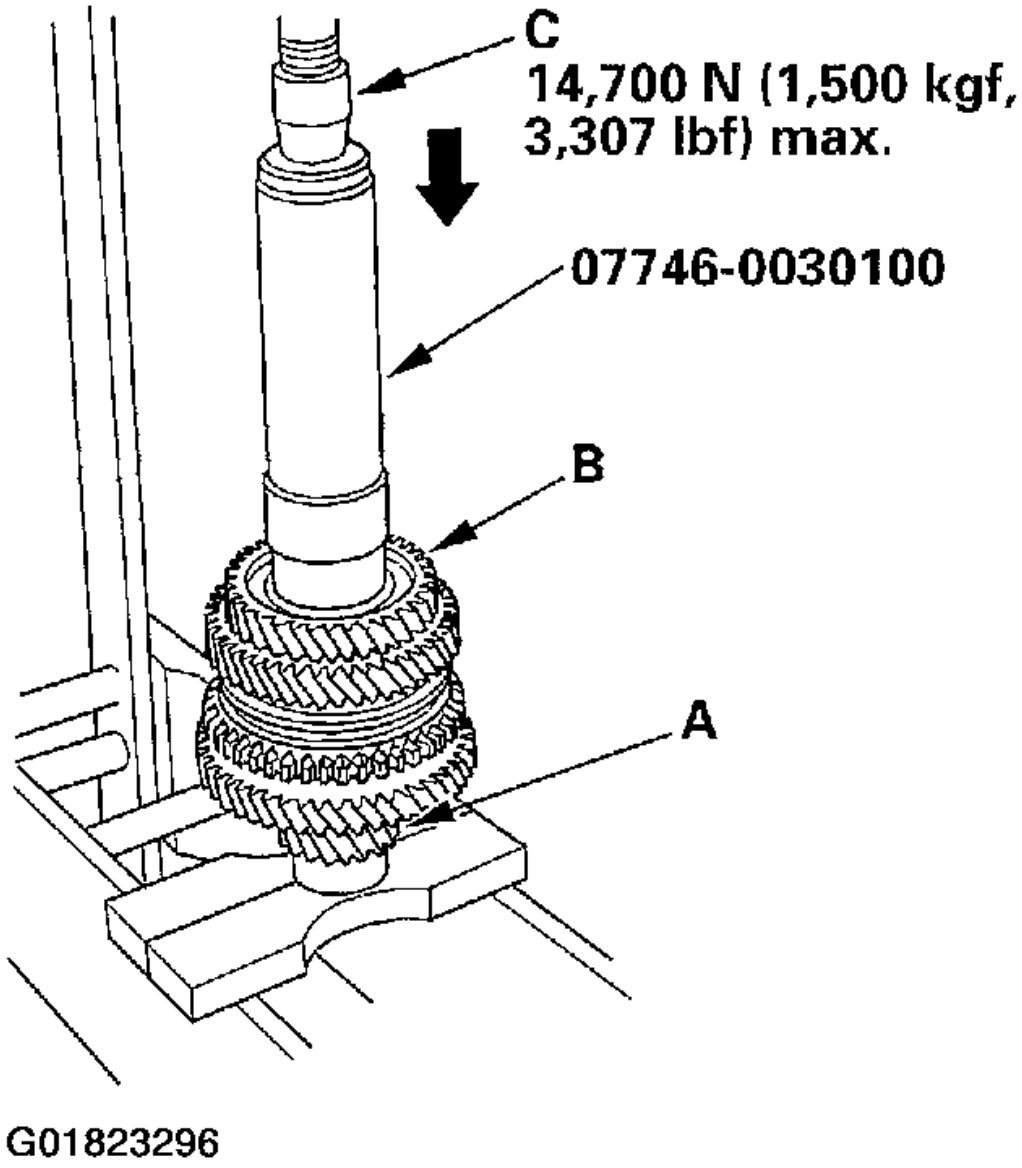


Fig. 89: Installing The 3rd Gear

12. Install the 4th gear (A) using the special tool and a press (B). Do not exceed the maximum pressure.

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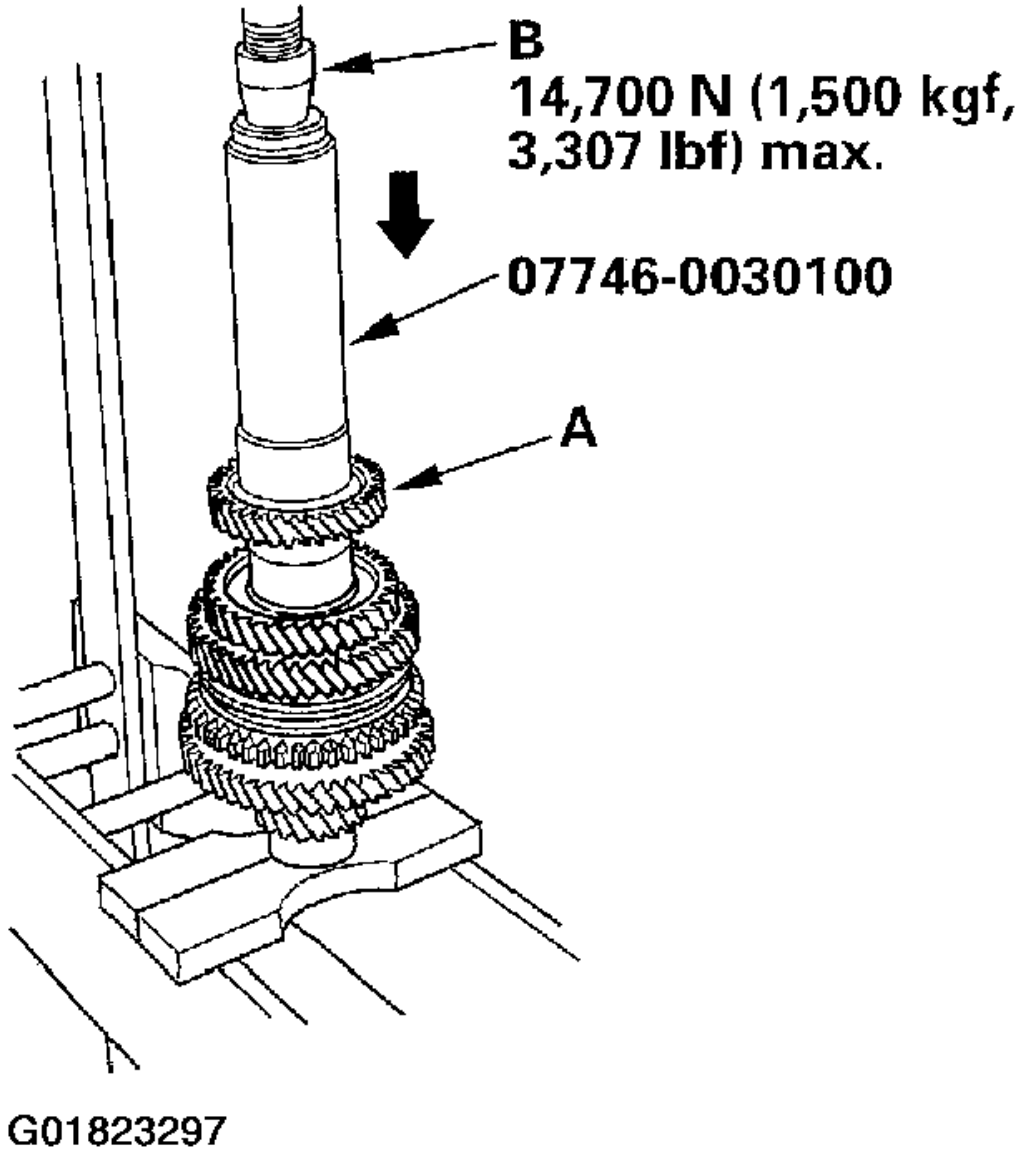


Fig. 90: Installing The 4th Gear

13. Install the 5th gear (A) using the special tool and a press (B). Do not exceed the maximum pressure.

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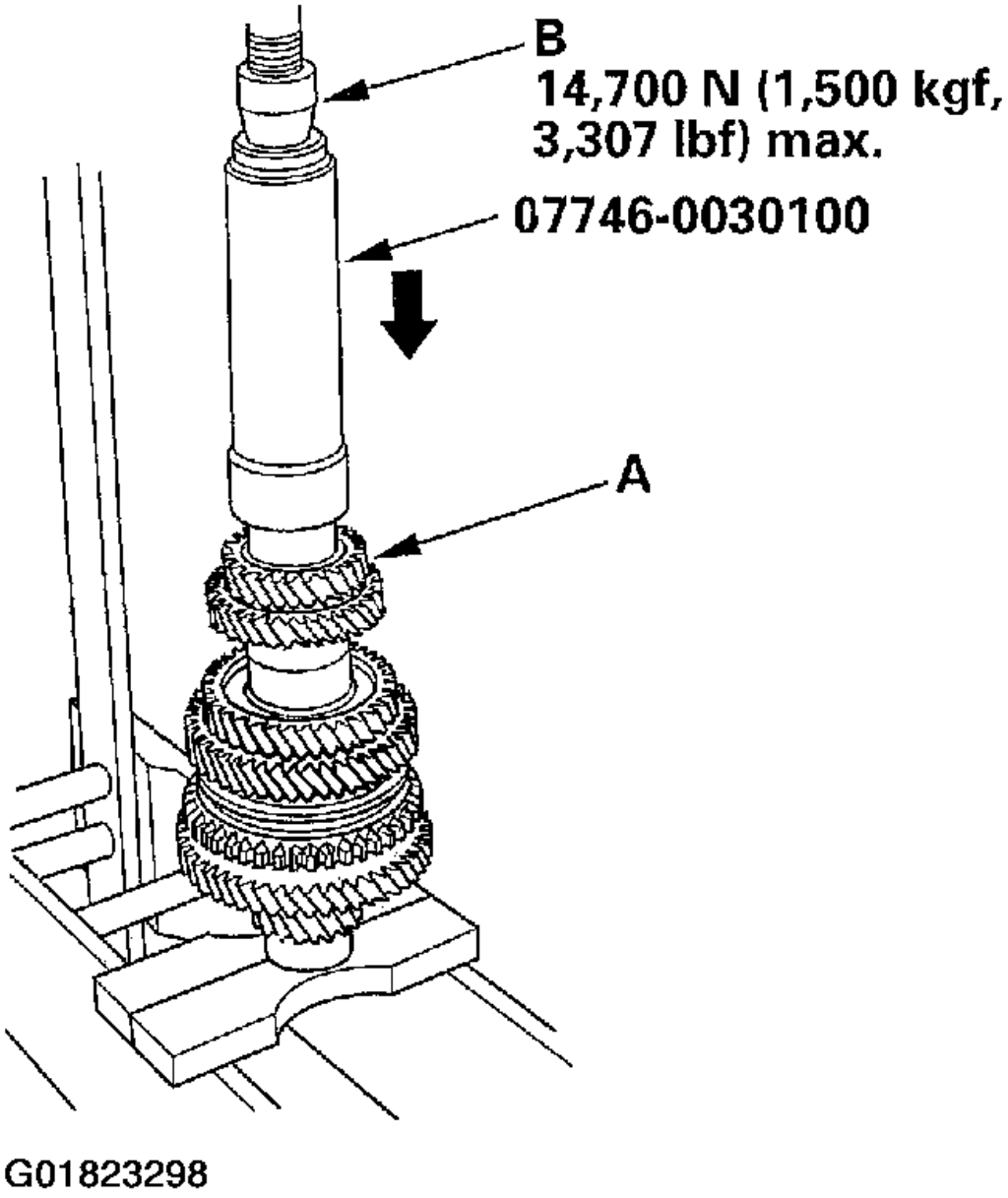


Fig. 91: Installing The 5th Gear

14. Install 6th gear (A) using a special tools and a press (B). Do not exceed the maximum pressure.

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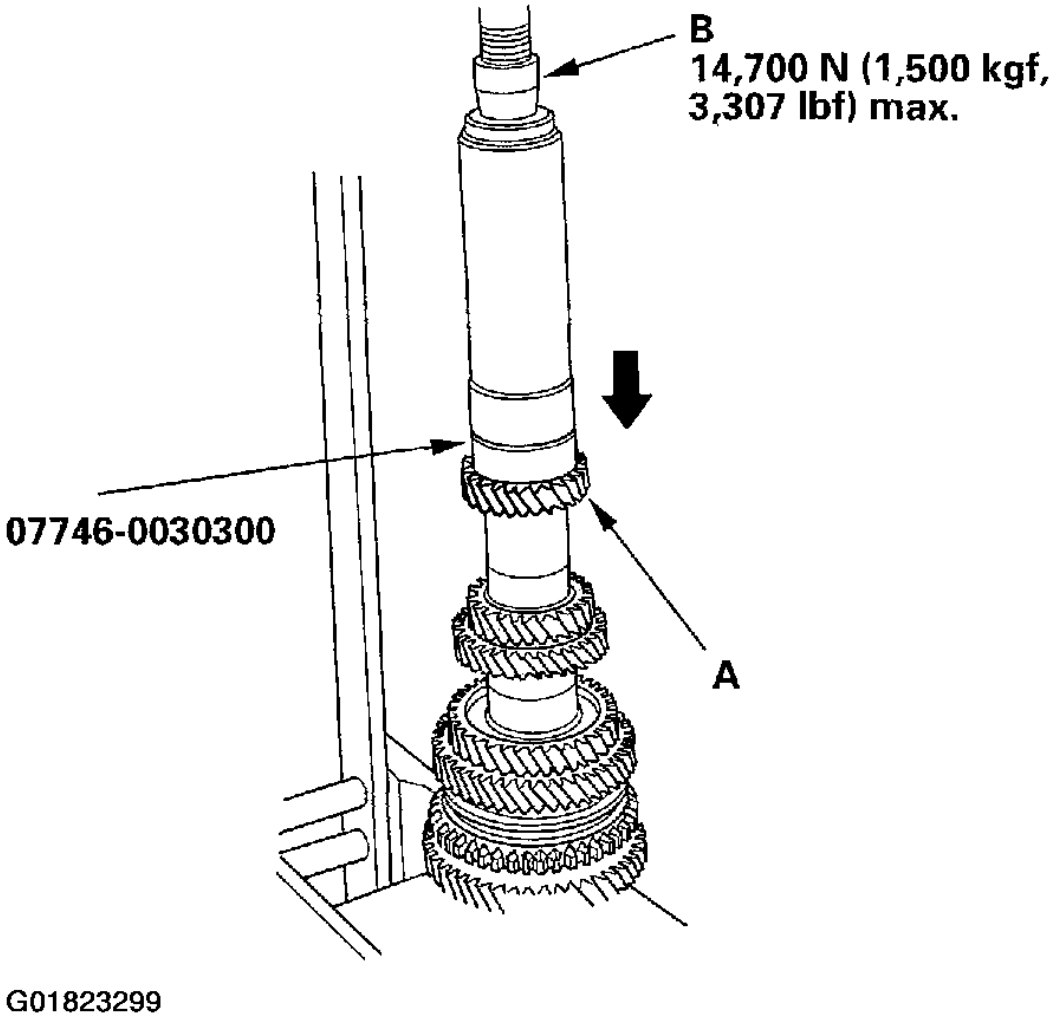


Fig. 92: Installing The 6th Gear

15. Install the 35 mm shim and the old ball bearing (A) using a special tools and a press (B).

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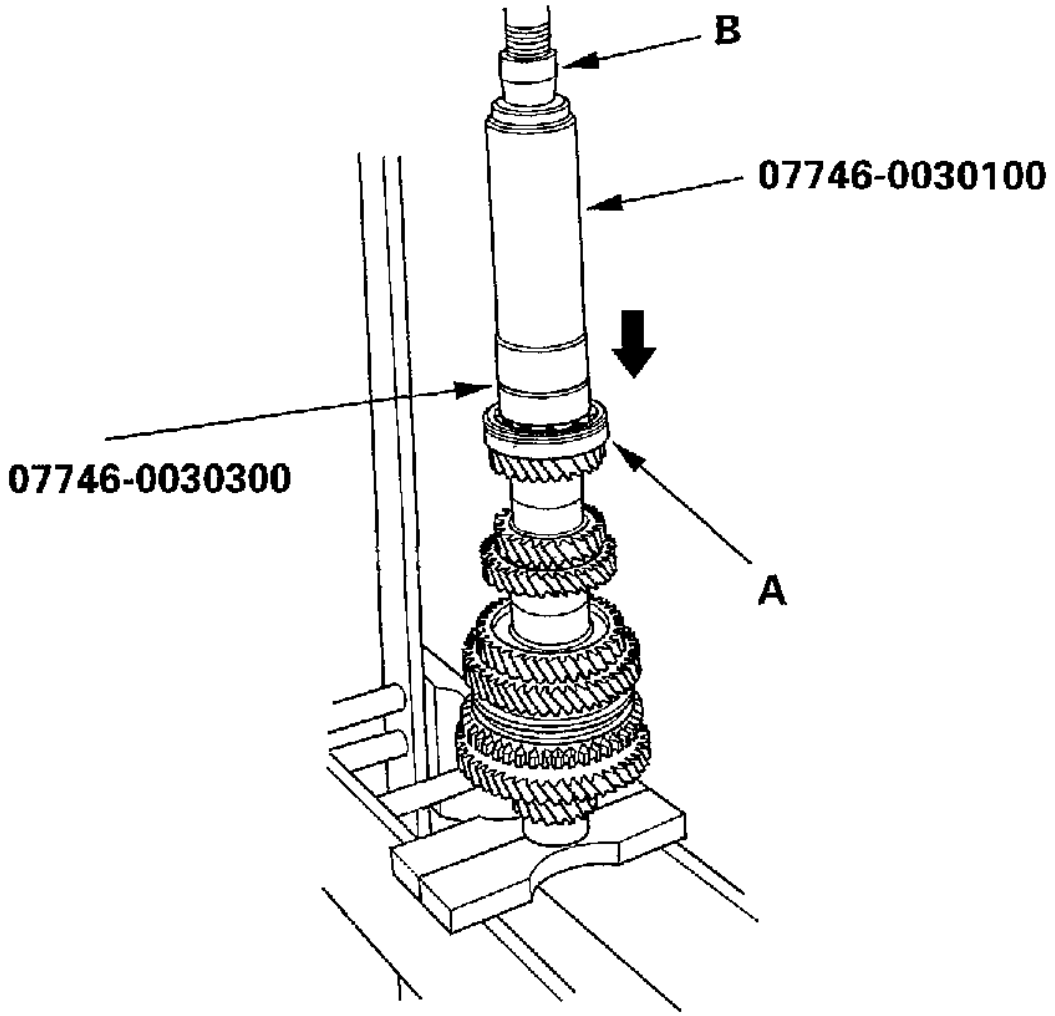


Fig. 93: Installing The 35 mm Shim & The OLD Ball Bearing

16. Measure the clearance between the old bearing (A) and the 35 mm shim (B) with a feeler gauge (C).
    Standard: 0.04-0.10 mm (0.0016-0.0039 in.)

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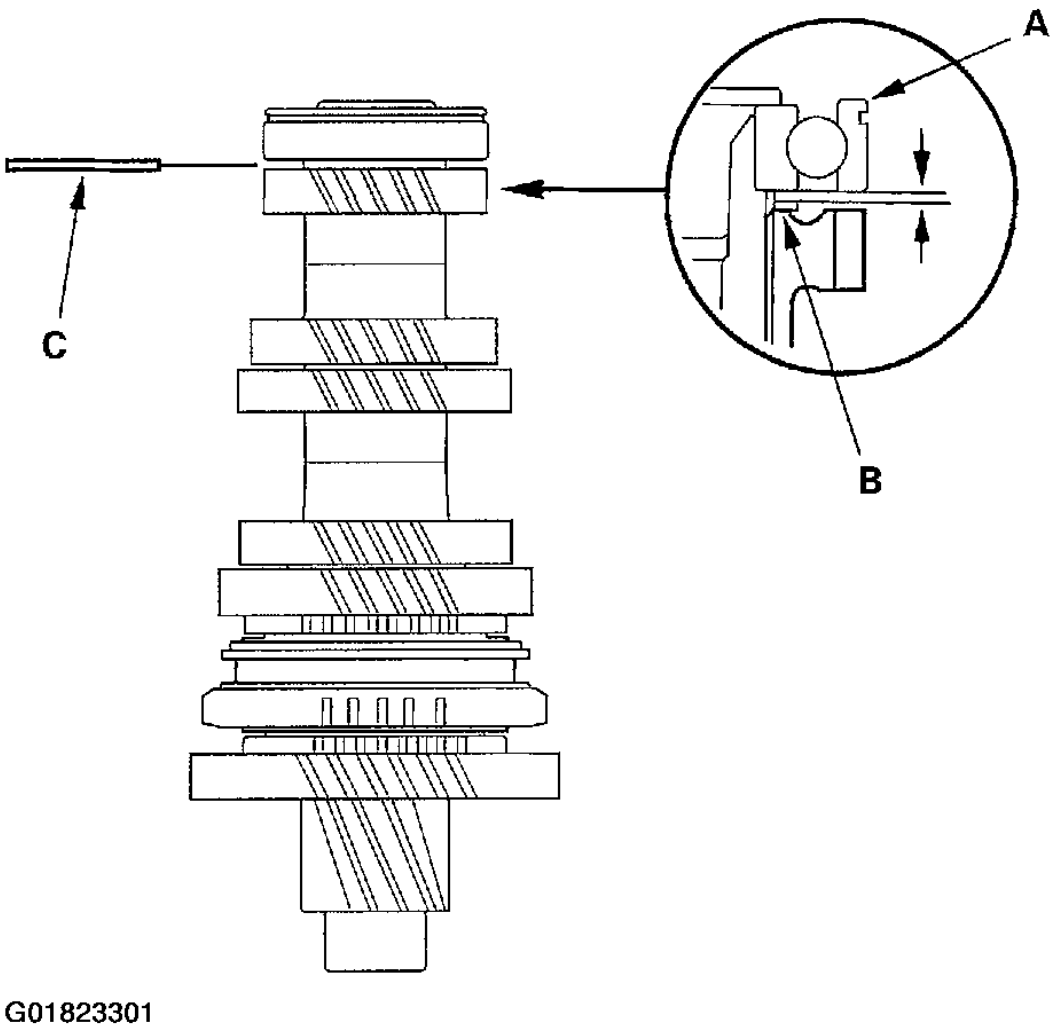


Fig. 94: Measuring The Clearance Between The OLD Bearing & The 35 mm Shim

17. If the clearance is more than the standard, select a new shim from the following table. See **Fig. 95** . If the clearance measured in step 16 is within the standard, replace only the ball bearing.

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	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.034 in.)
AA	23981-PPP-900	0.91 mm (0.036 in.)
B	23982-PPP-000	0.95 mm (0.037 in.)
AB	23982-PPP-900	0.99 mm (0.039 in.)
C	23983-PPP-000	1.03 mm (0.041 in.)
AC	23983-PPP-900	1.07 mm (0.042 in.)
D	23984-PPP-000	1.11 mm (0.044 in.)
AD	23984-PPP-900	1.15 mm (0.045 in.)
E	23985-PPP-000	1.19 mm (0.047 in.)
AE	23985-PPP-900	1.23 mm (0.048 in.)
F	23986-PPP-000	1.27 mm (0.050 in.)
AF	23986-PPP-900	1.31 mm (0.052 in.)
G	23987-PPP-000	1.35 mm (0.053 in.)
AG	23987-PPP-900	1.39 mm (0.055 in.)
H	23988-PPP-000	1.43 mm (0.056 in.)
AH	23988-PPP-900	1.47 mm (0.058 in.)
J	23989-PPP-000	1.51 mm (0.060 in.)
AJ	23989-PPP-900	1.55 mm (0.061 in.)
K	23990-PPP-000	1.59 mm (0.063 in.)
AK	23990-PPP-900	1.63 mm (0.064 in.)
L	23991-PPP-000	1.67 mm (0.066 in.)
AL	23991-PPP-900	1.71 mm (0.067 in.)
M	23992-PPP-000	1.75 mm (0.069 in.)
AM	23992-PPP-900	1.79 mm (0.070 in.)
N	23993-PPP-000	1.83 mm (0.072 in.)
AN	23993-PPP-900	1.87 mm (0.074 in.)
P	23994-PPP-000	1.91 mm (0.075 in.)
AP	23994-PPP-900	1.95 mm (0.077 in.)
Q	23995-PPP-000	1.99 mm (0.078 in.)

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Fig. 95: 35 mm Shim Table

18. Support the 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

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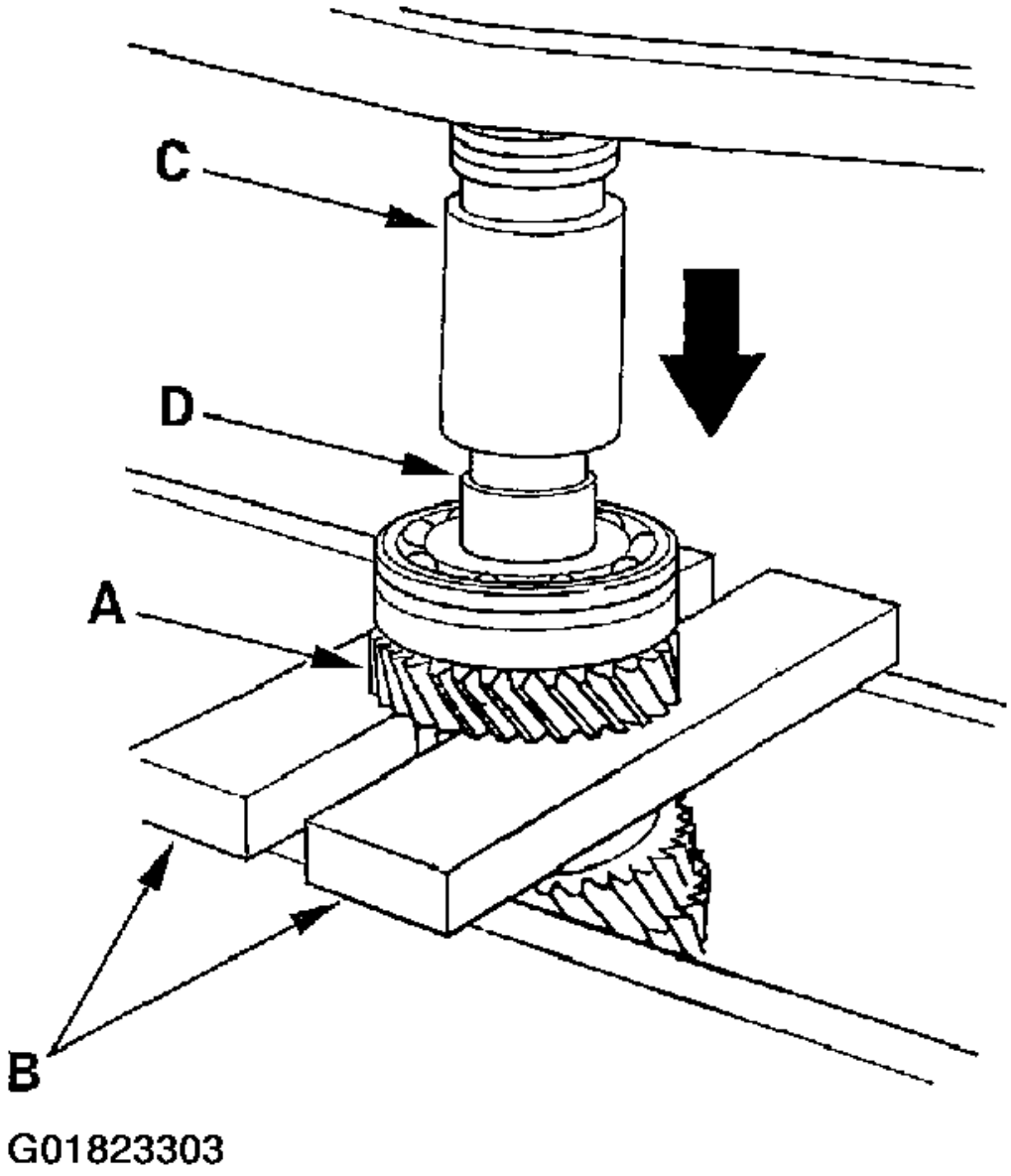


Fig. 96: Pressing The Countershaft Out Of The Ball Bearing

19. If necessary, install the 35 mm shim selected in step 17, then recheck the clearance.
20. Install 6th gear (A) using a special tools and a press (B). Do not exceed the maximum pressure.

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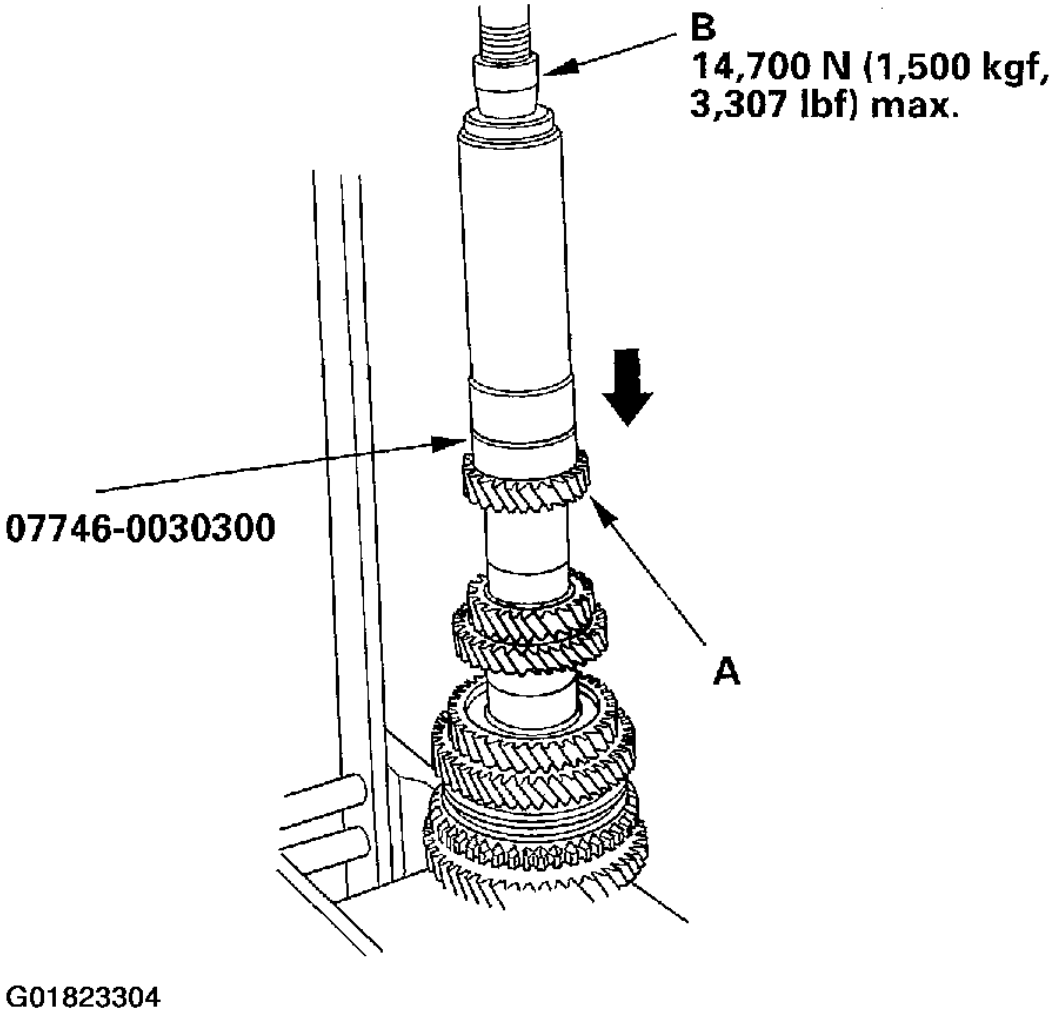


Fig. 97: Installing The 6th Gear

21. Install the new ball bearing (A) using a special tools and a press (B).

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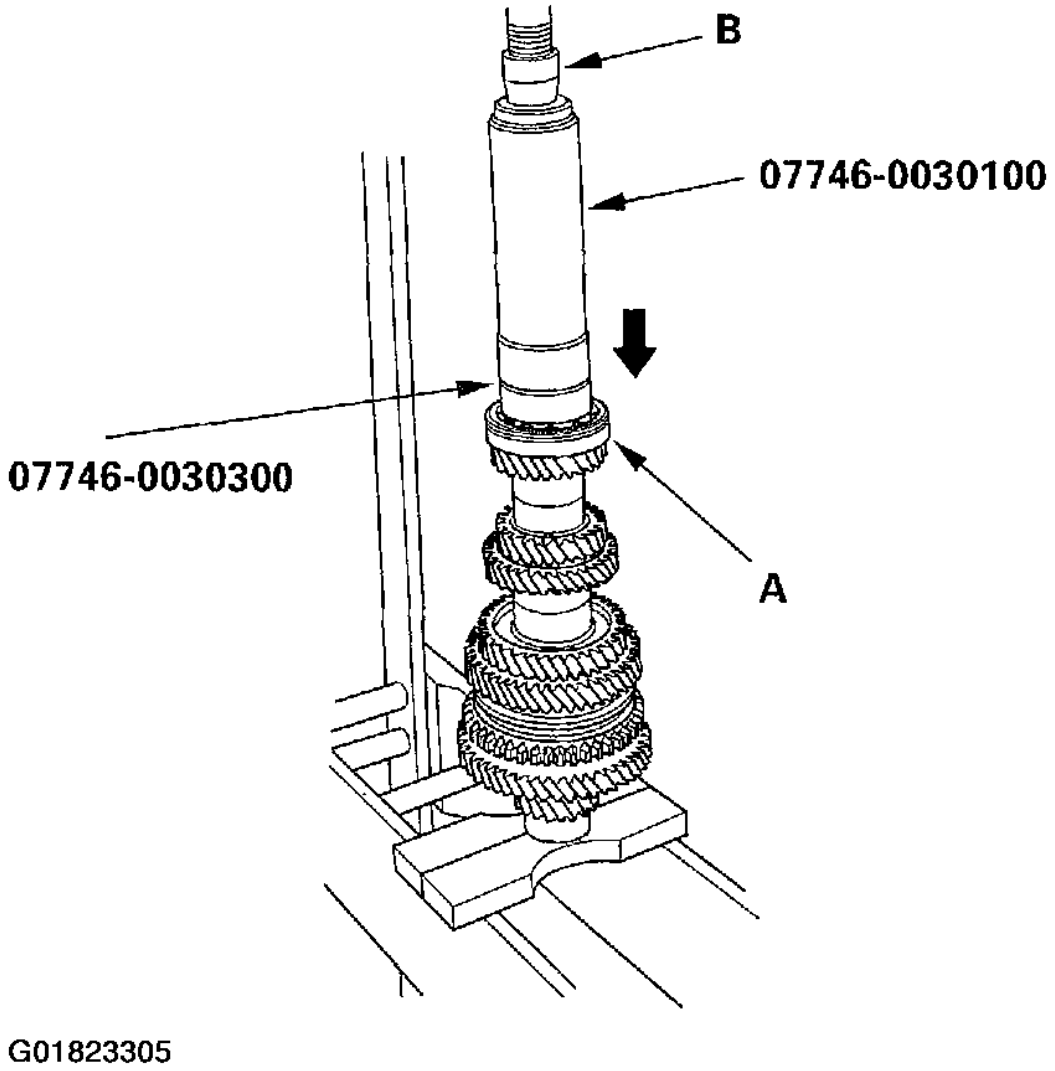


Fig. 98: Installing The NEW Ball Bearing

22. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).

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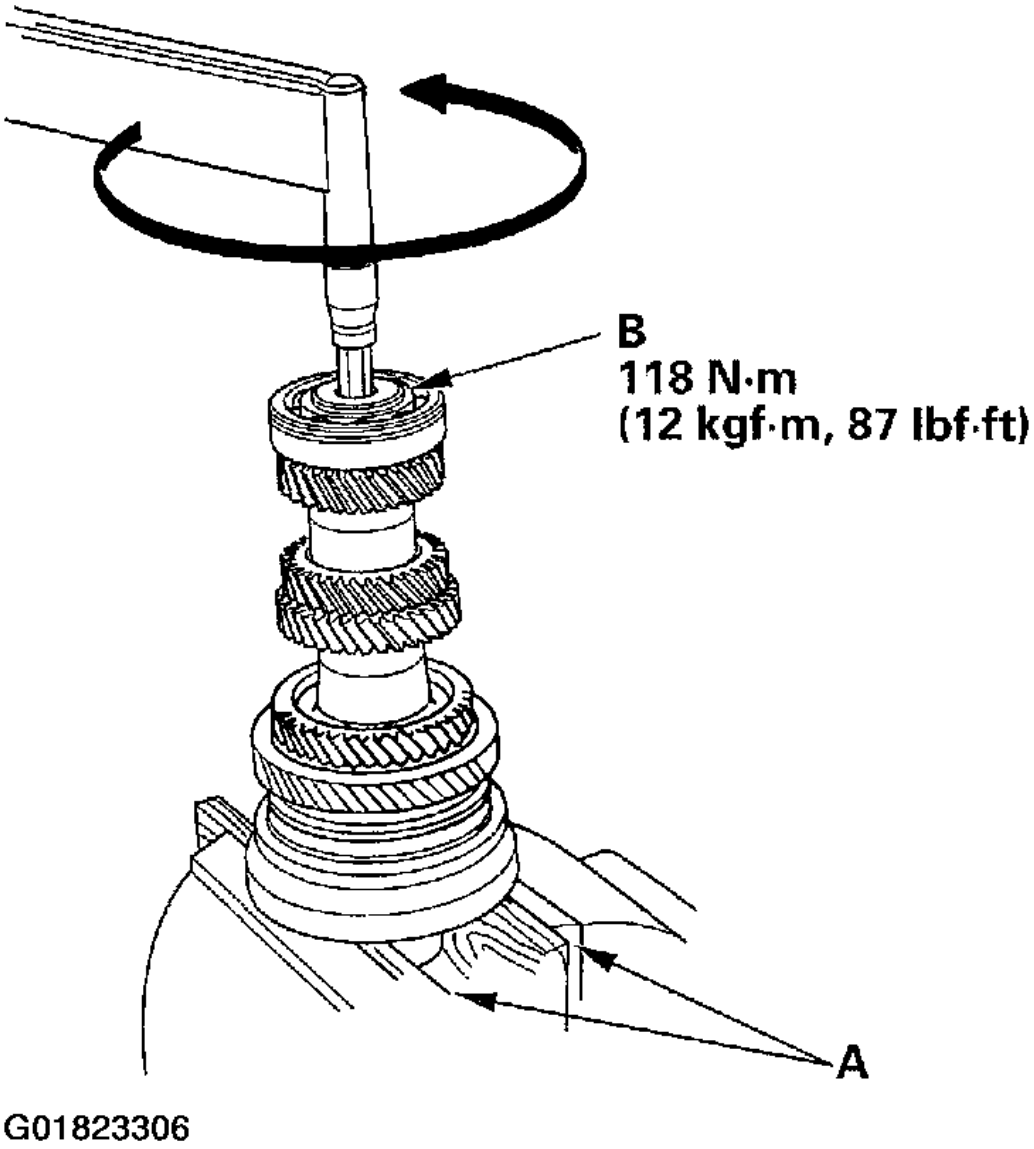


Fig. 99: Clamping The Countershaft Assembly In A Bench Vise With Wood Blocks

23. Tighten the new special bolt (B) (left-hand threads).

SYNCHRO SLEEVE & HUB INSPECTION & REASSEMBLY

1. Inspect gear teeth on all synchro hubs and synchro sleeves for wear (rounded off corners).
2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Be sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub. Do not install the synchro sleeve with its longer teeth in the

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1st/2nd synchro hub slots (E) because it will damage the spring ring.

NOTE: If replacement is required, always replace the synchro sleeve and synchro hub as a set.

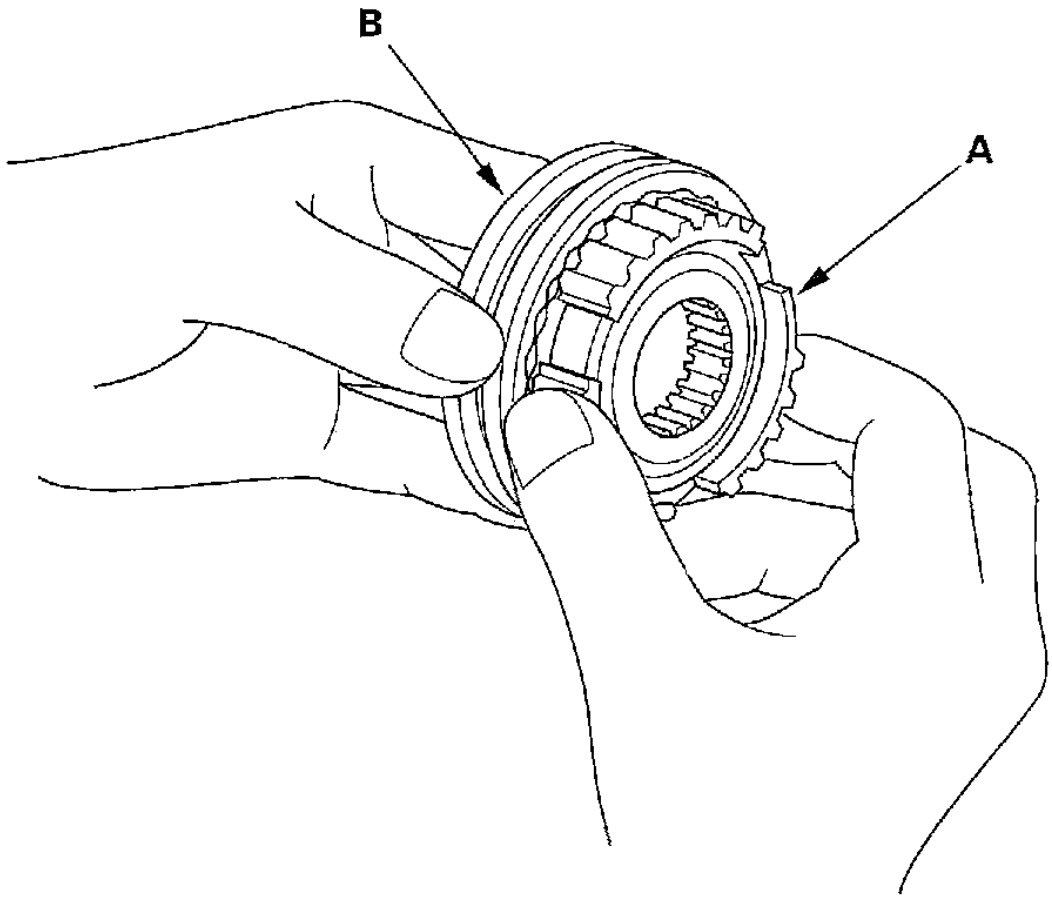


Fig. 100: Installing Each Synchro Hub In Its Mating Synchro Sleeve

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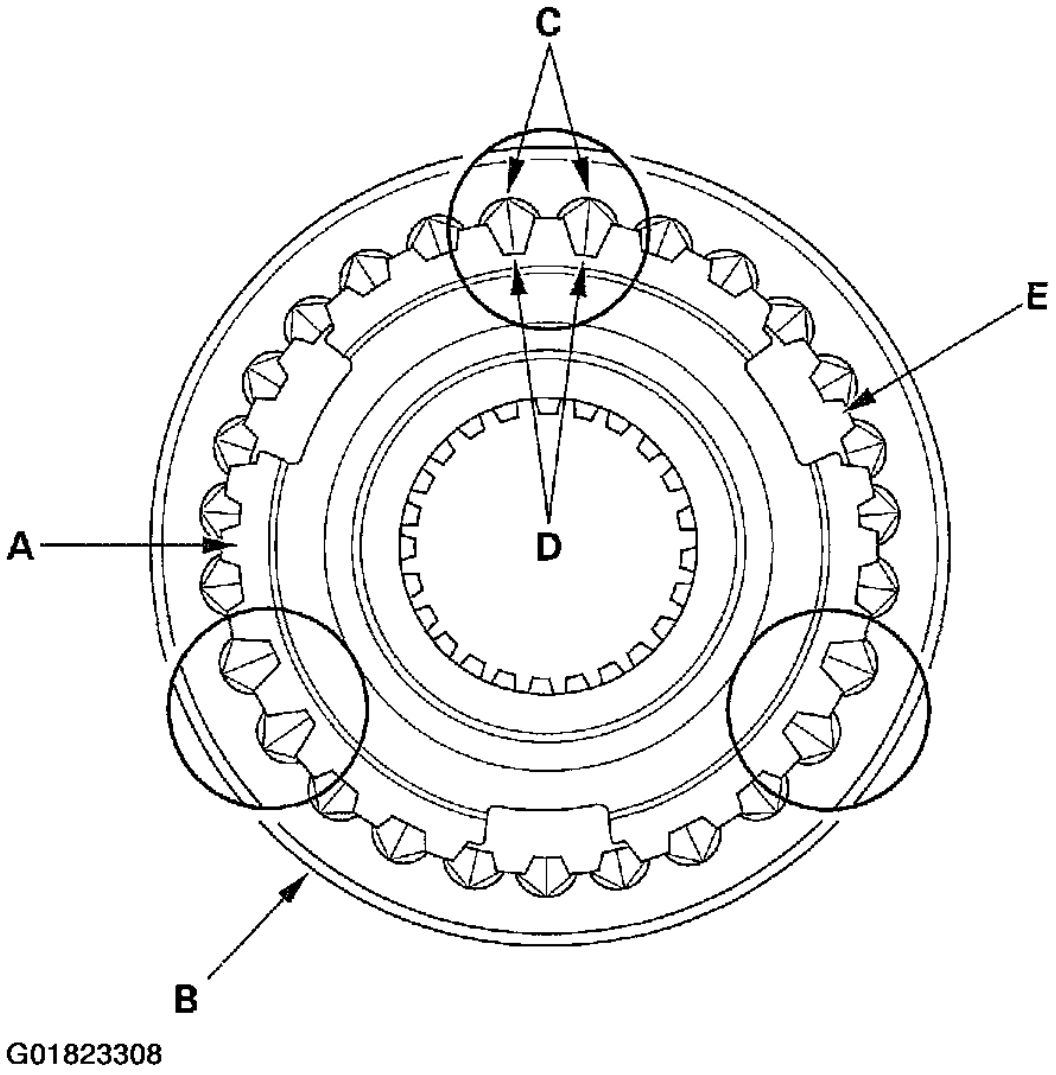


Fig. 101: Matching The Three Sets Of Longer Teeth On The Synchro Sleeve With The Three Sets Of Deeper Grooves In The Synchro Hub

SYNCHRO RING & GEAR INSPECTION

1. Inspect the inside of each synchro ring (A) for wear. Inspect the teeth (B) on each synchro ring for wear (rounded off).

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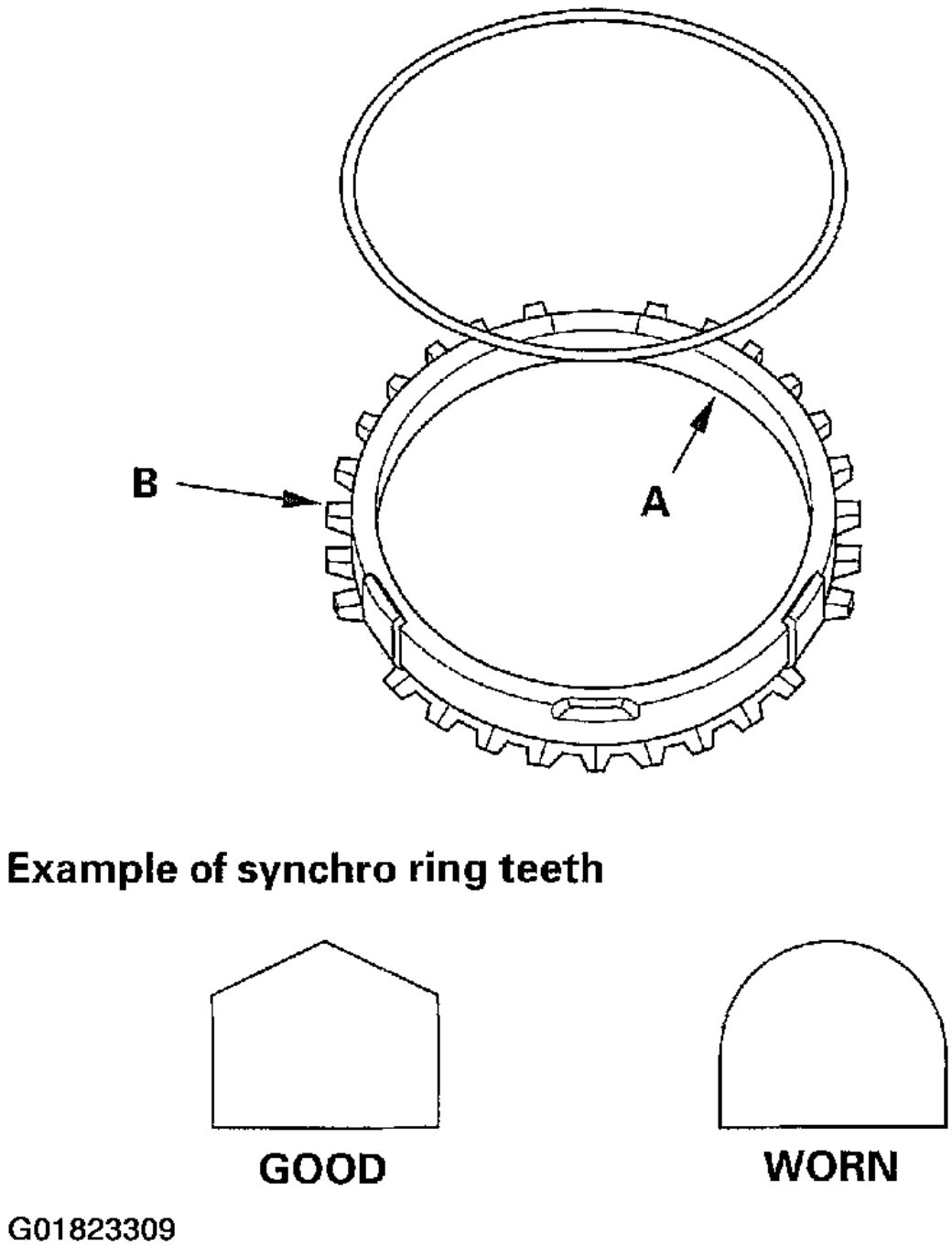


Fig. 102: Inspecting Synchro Ring & Gear

2. Inspect the teeth (C) on each synchro sleeve and matching teeth on each gear for wear (rounded off).

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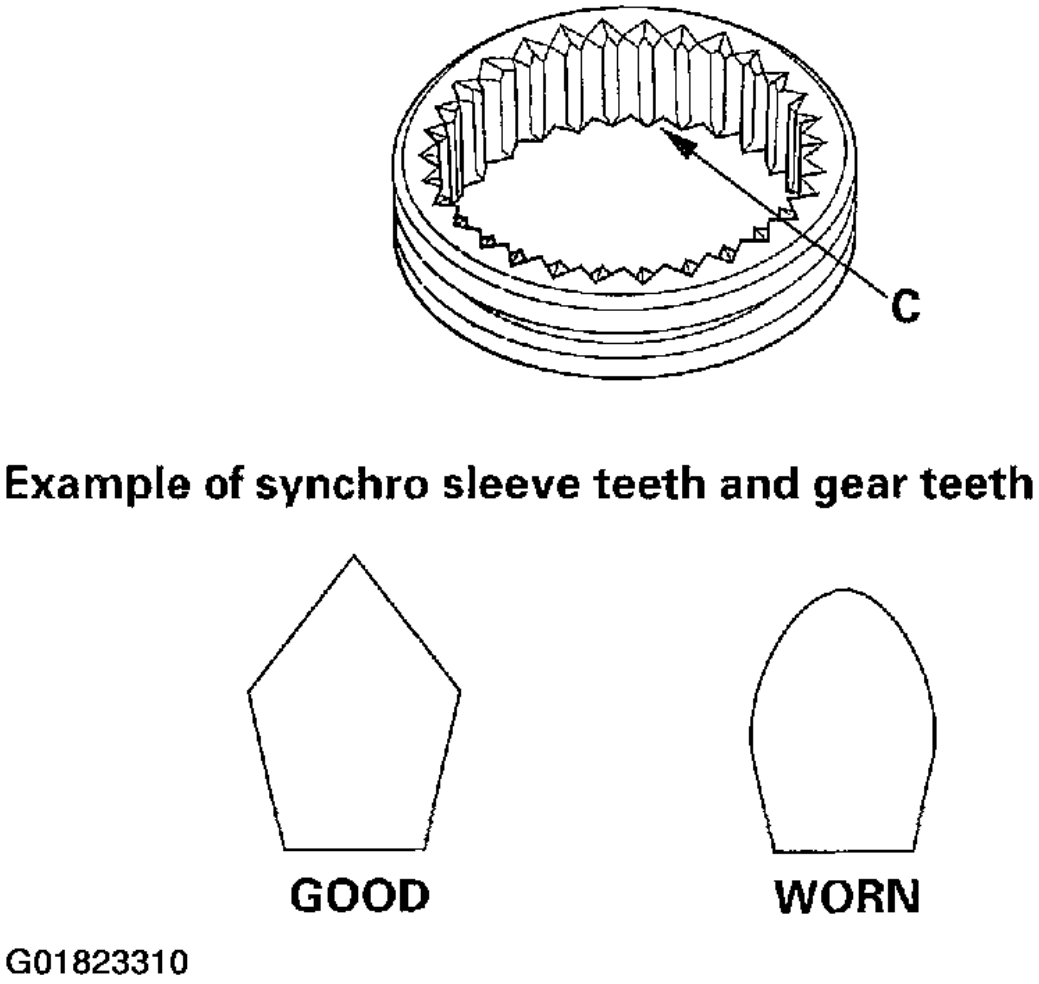


Fig. 103: Inspecting Synchro Sleeve & Teeth

3. Inspect the thrust surface (D) on each gear hub for wear.

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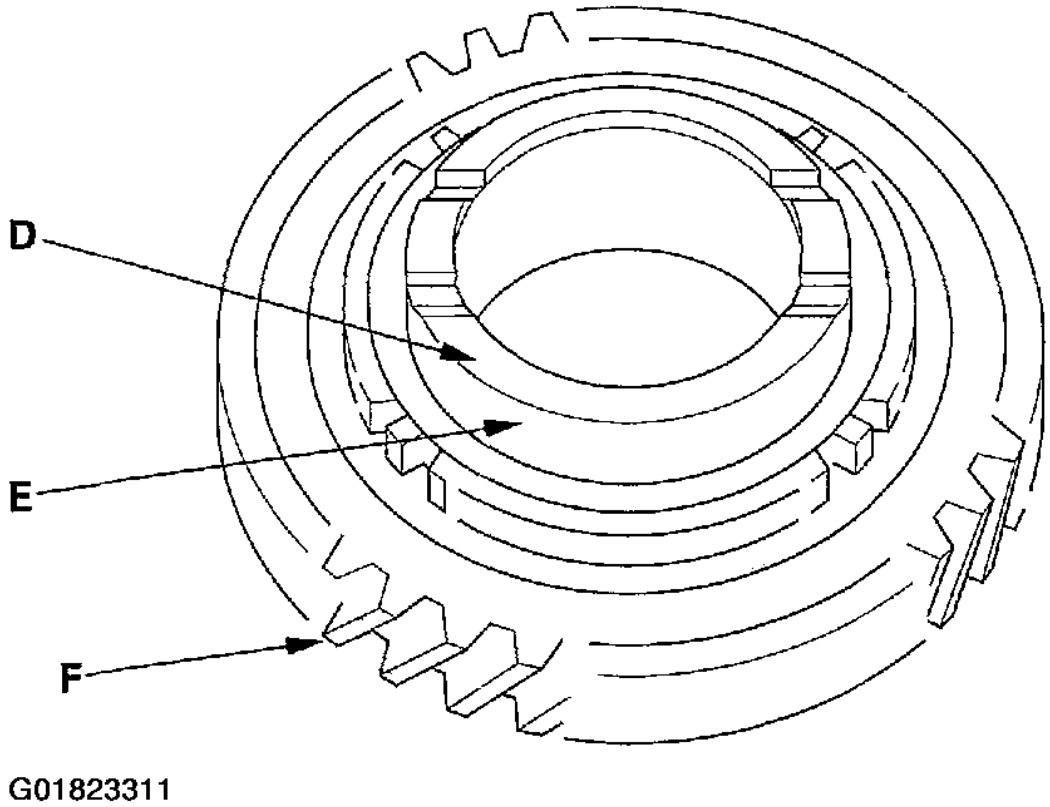


Fig. 104: Inspecting The Gear Hub Thrust Surface

4. Inspect the cone surface (E) on each gear hub for wear and roughness.
5. Inspect the teeth on all gears (F) for uneven wear, scoring, galling, and cracks.
6. Coat the cone surface of each gear (E) with oil, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.
7. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Double Cone Synchro & Triple Cone Synchro-To-Gear Clearance:

Standard:

1: Outer Synchro Ring (B) To Synchro Cone (C) 0.70-1.19 mm (0.028-0.047 in.)

2: Synchro Cone (C) To Gear (A) 0.50-1.04 mm (0.020-0.041 in.)

3: Outer Synchro Ring (B) To Gear (A) 0.95-1.68 mm (0.037-0.066 in.)

Service Limit:

1: 0.3 mm (0.012 in.)

2: 0.3 mm (0.012 in.)

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3: 0.6 mm (0.024 in.)

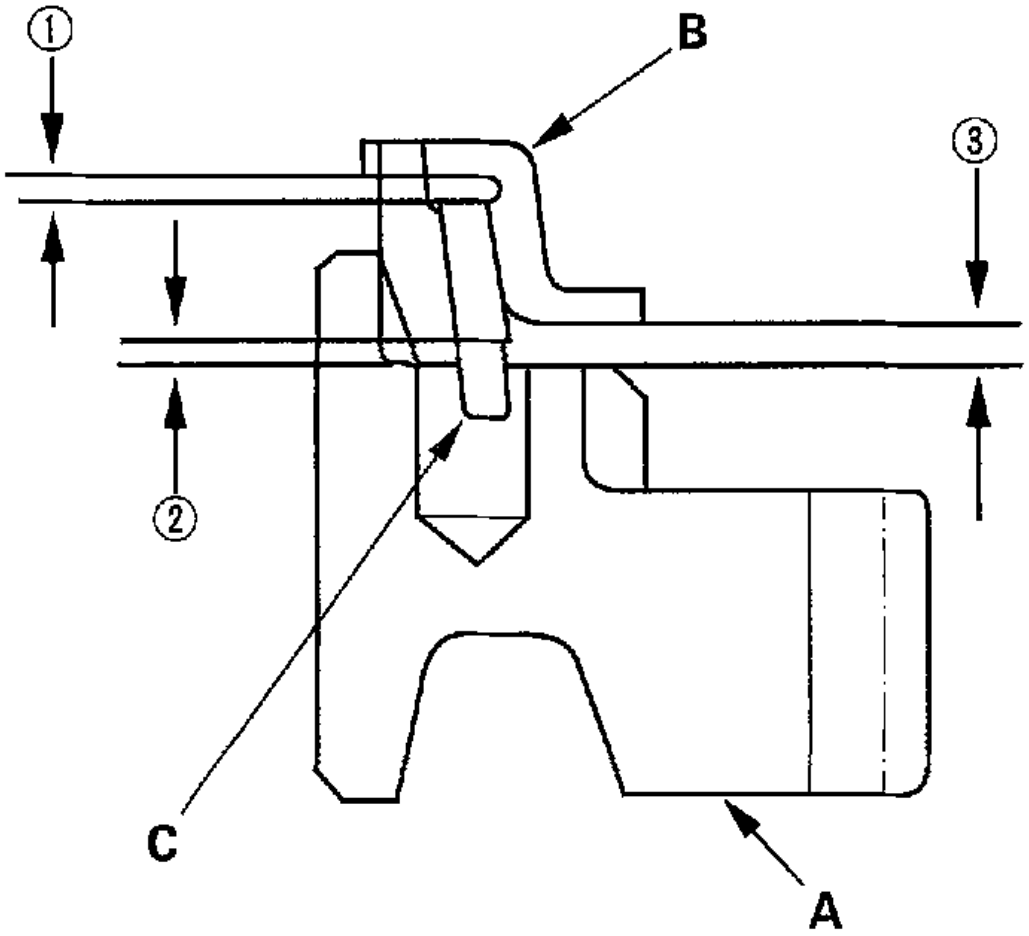


Fig. 105: Measuring The Double Cone Synchro & Triple Cone Synchro-To-Gear Clearance

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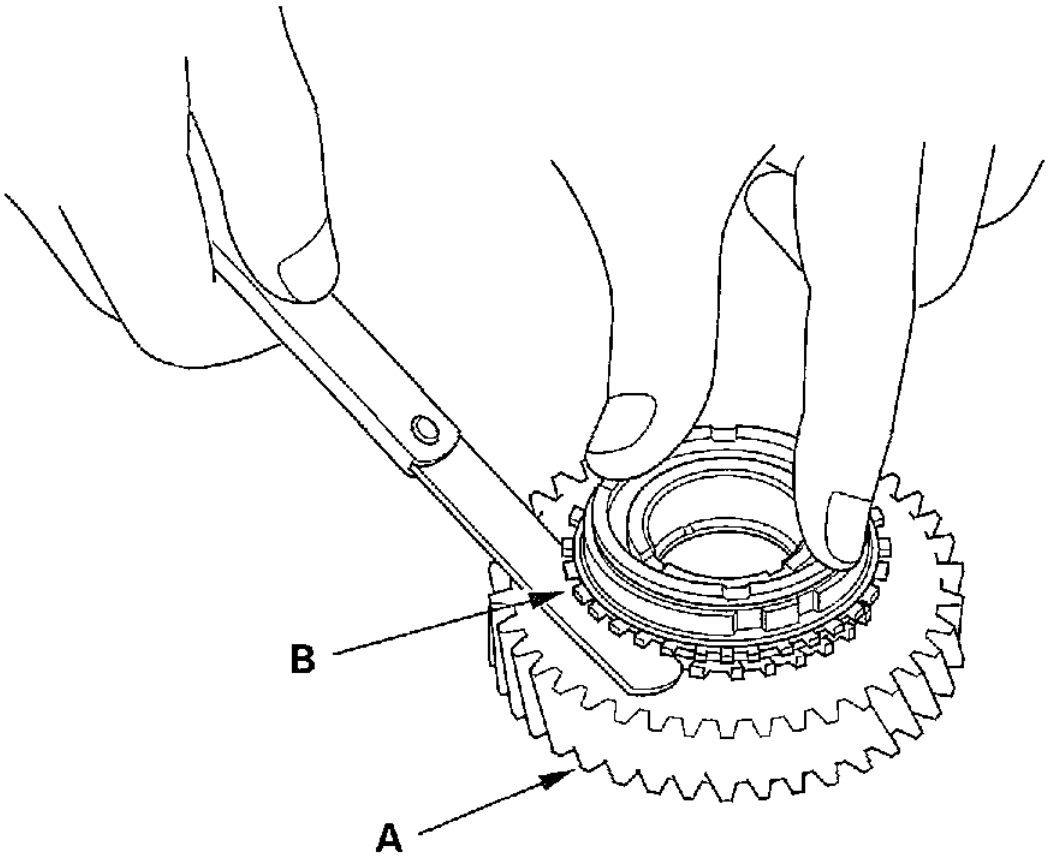


Fig. 106: Measuring The Clearance Between Each Gear & Its Synchro Ring All Around The Gear

MAINSHAFT BEARING & OIL SEAL REPLACEMENT

Special Tools Required:

- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-0010000
- Slide hammer, commercially available

1. Remove the differential assembly.
2. Remove the ball bearing (A) from the clutch housing (B) using the special tool and a commercially available 3/8"-16 slide hammer (C).

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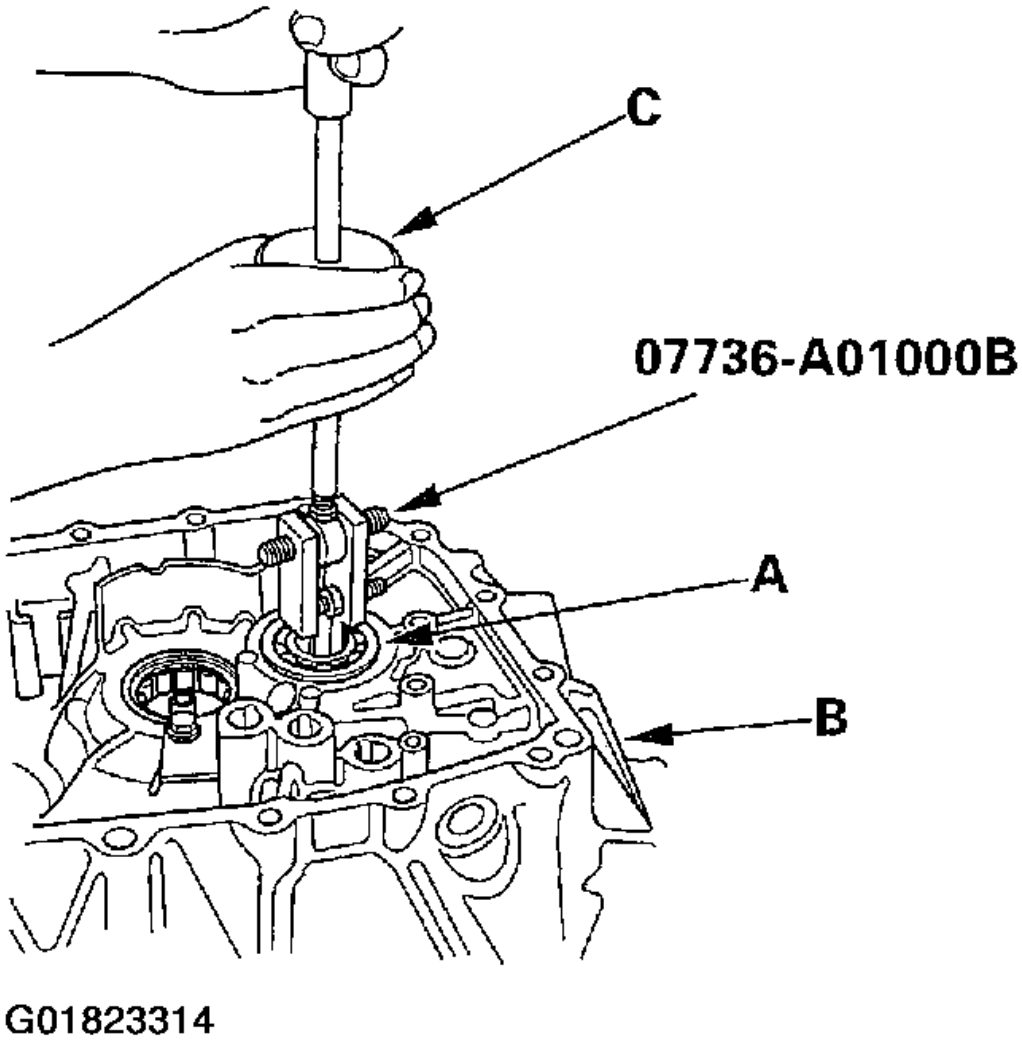


Fig. 107: Removing The Ball Bearing From The Clutch Housing

3. Remove the oil seal (A) from the clutch side. Be careful when removing the seal so the clutch housing is not damaged.

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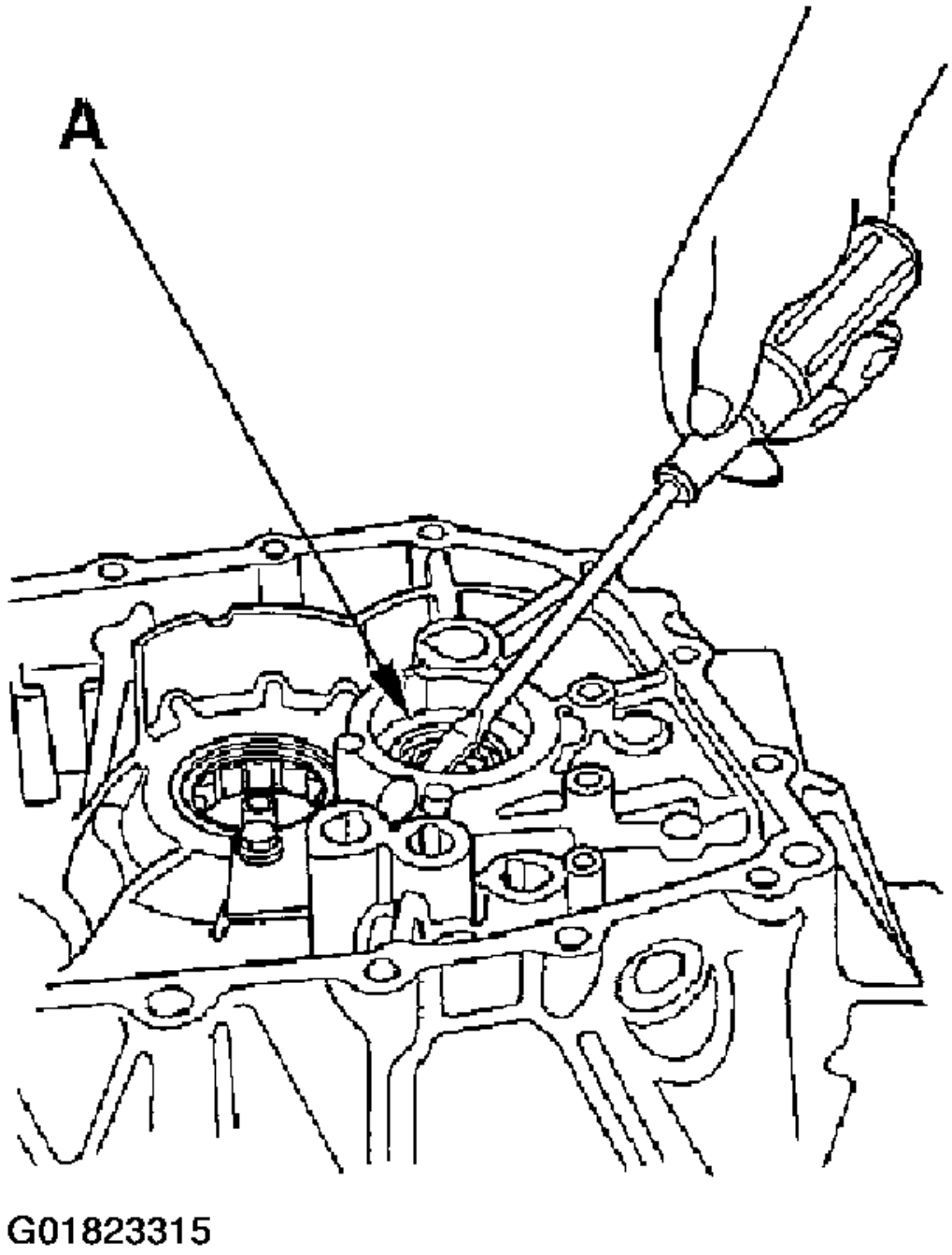


Fig. 108: Removing The Oil Seal From The Clutch Side

4. Drive the new oil seal in from the transmission side using the special tools.

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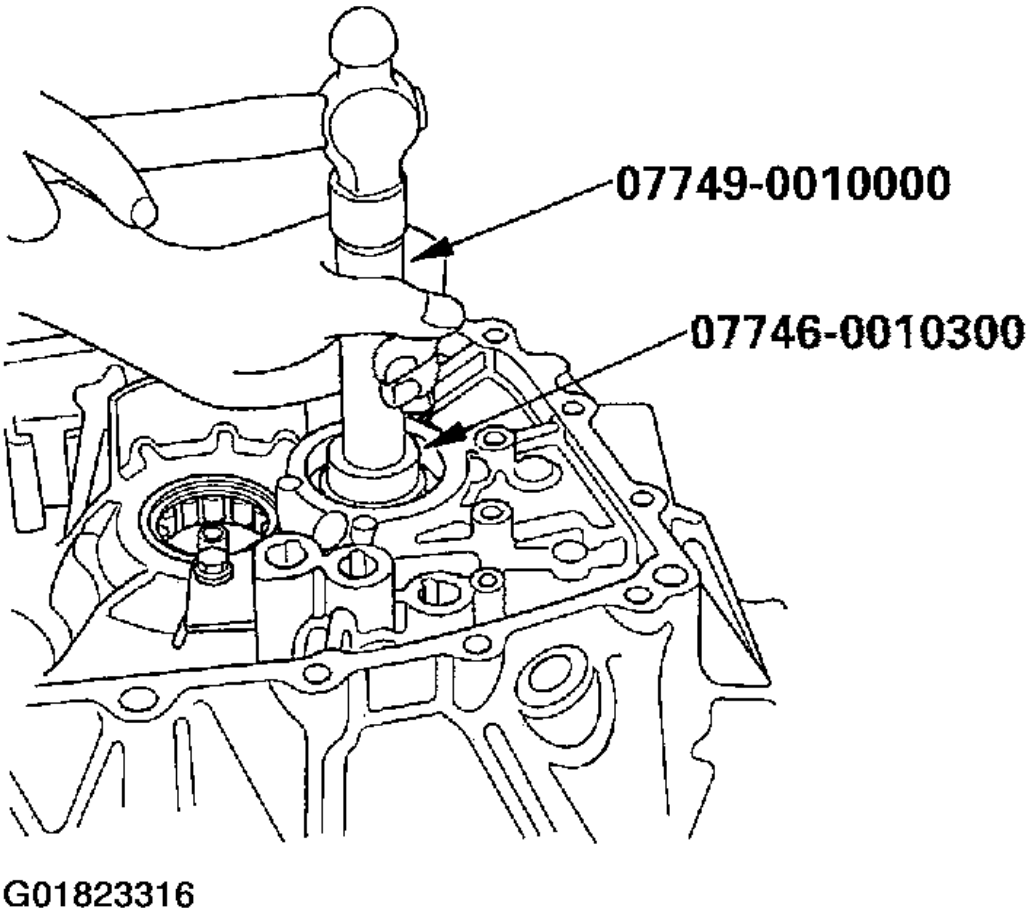


Fig. 109: Driving The New Oil Seal In

5. Drive the new ball bearing (A) in from the transmission side using the special tools.

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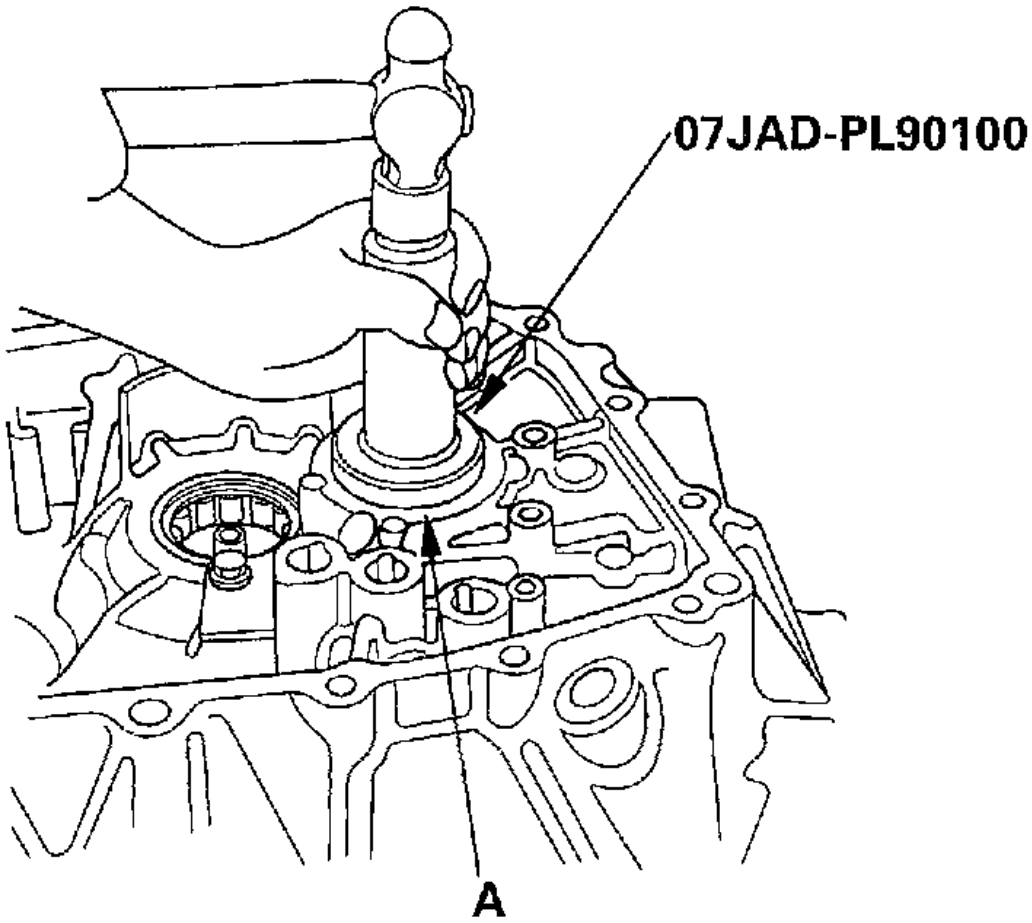


Fig. 110: Driving The New Ball Bearing In

COUNTERSHAFT BEARING REPLACEMENT

Special Tools Required:

- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Slide hammer, commercially available

1. Remove the bearing set plate (A) from the clutch housing (B).

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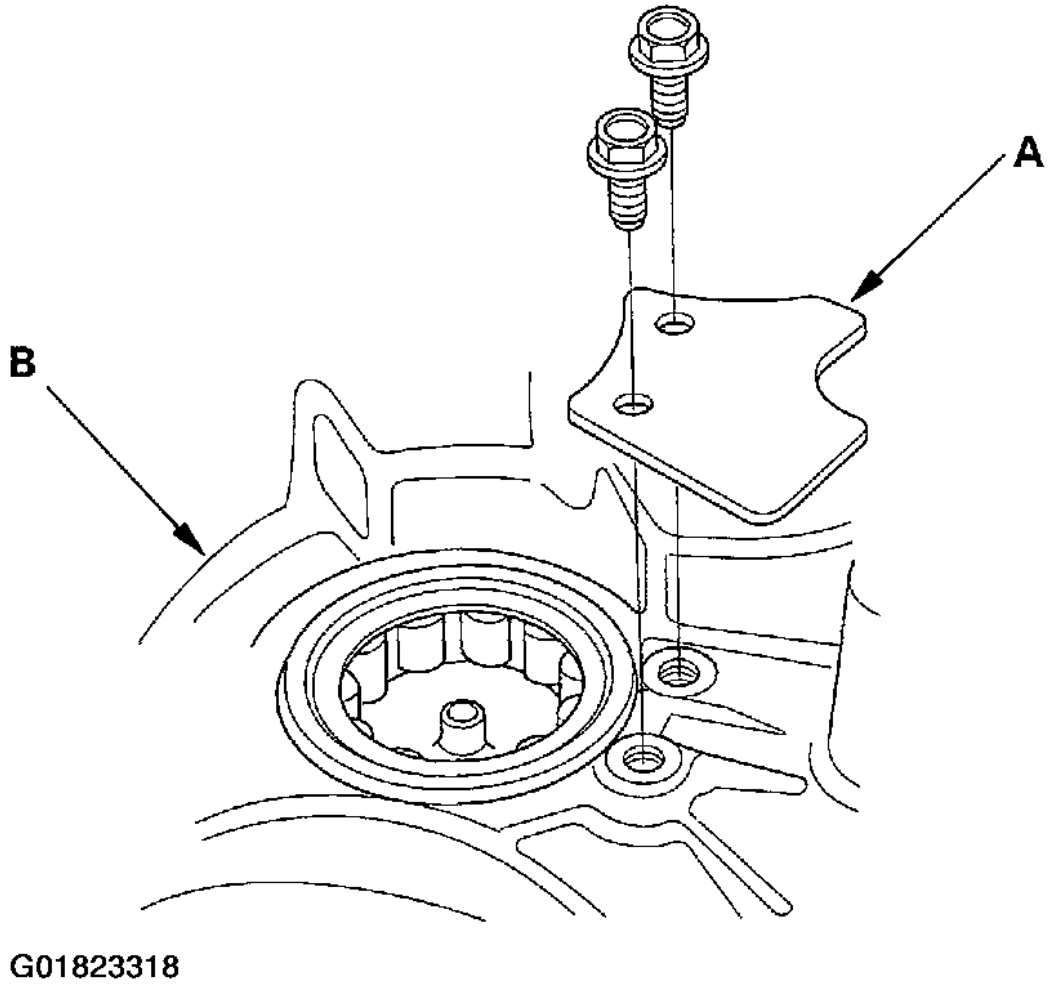


Fig. 111: Removing The Bearing Set Plate From The Clutch Housing

2. Remove the needle bearing (A) using the special tool and a commercially available 3/8"-16 slide hammer (B), then remove the oil guide plate C.

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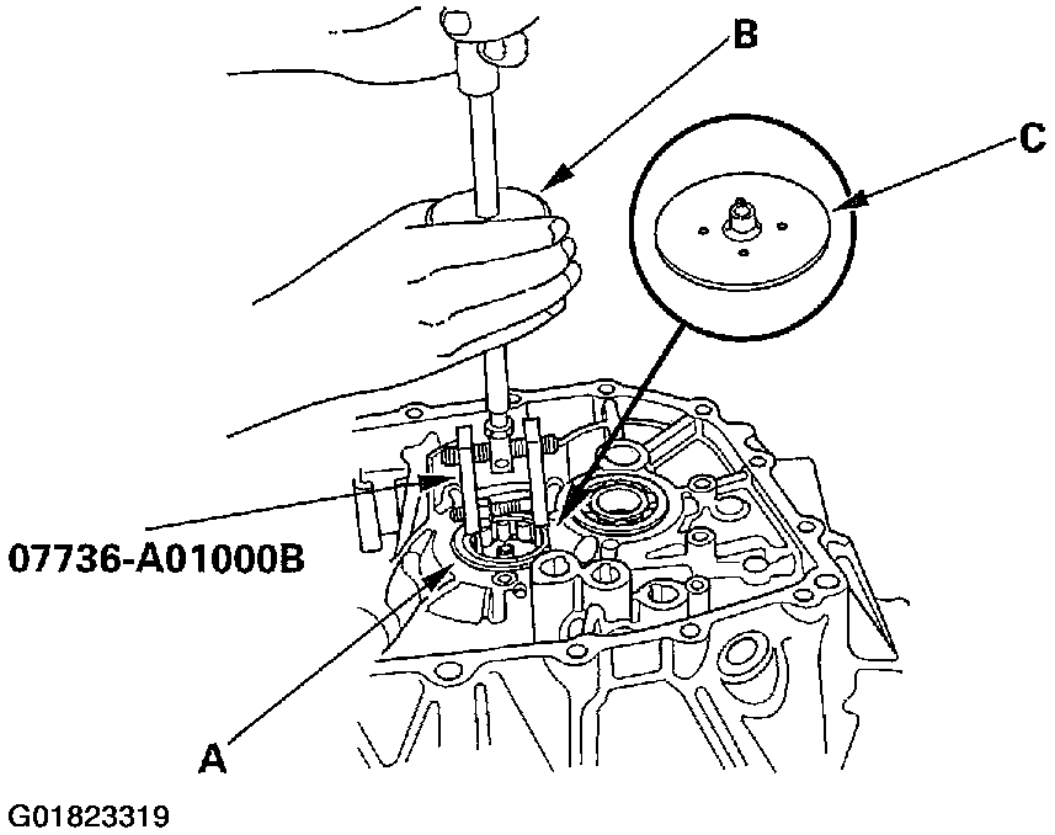


Fig. 112: Removing The Needle Bearing

3. Position the oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).

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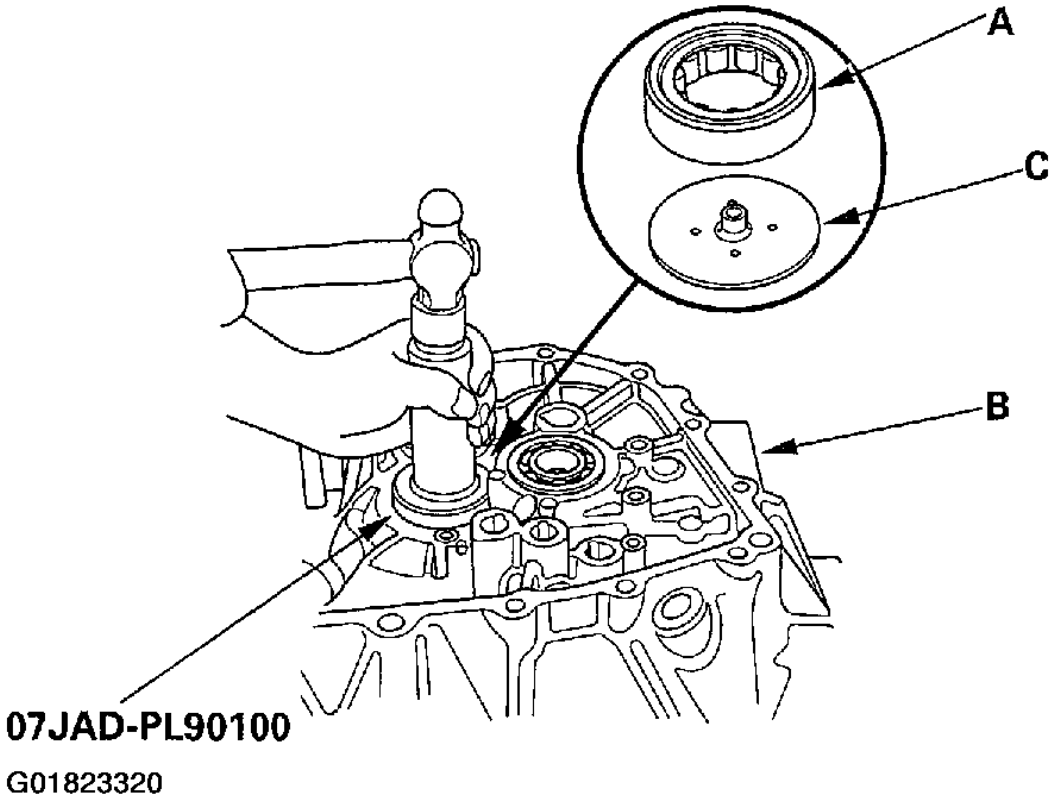


Fig. 113: Positioning The Oil Guide Plate C & New Needle Bearing In The Bore Of The Clutch Housing

4. Install the needle bearing using the special tools.
5. Install the bearing set plate (A) with bolts (B).

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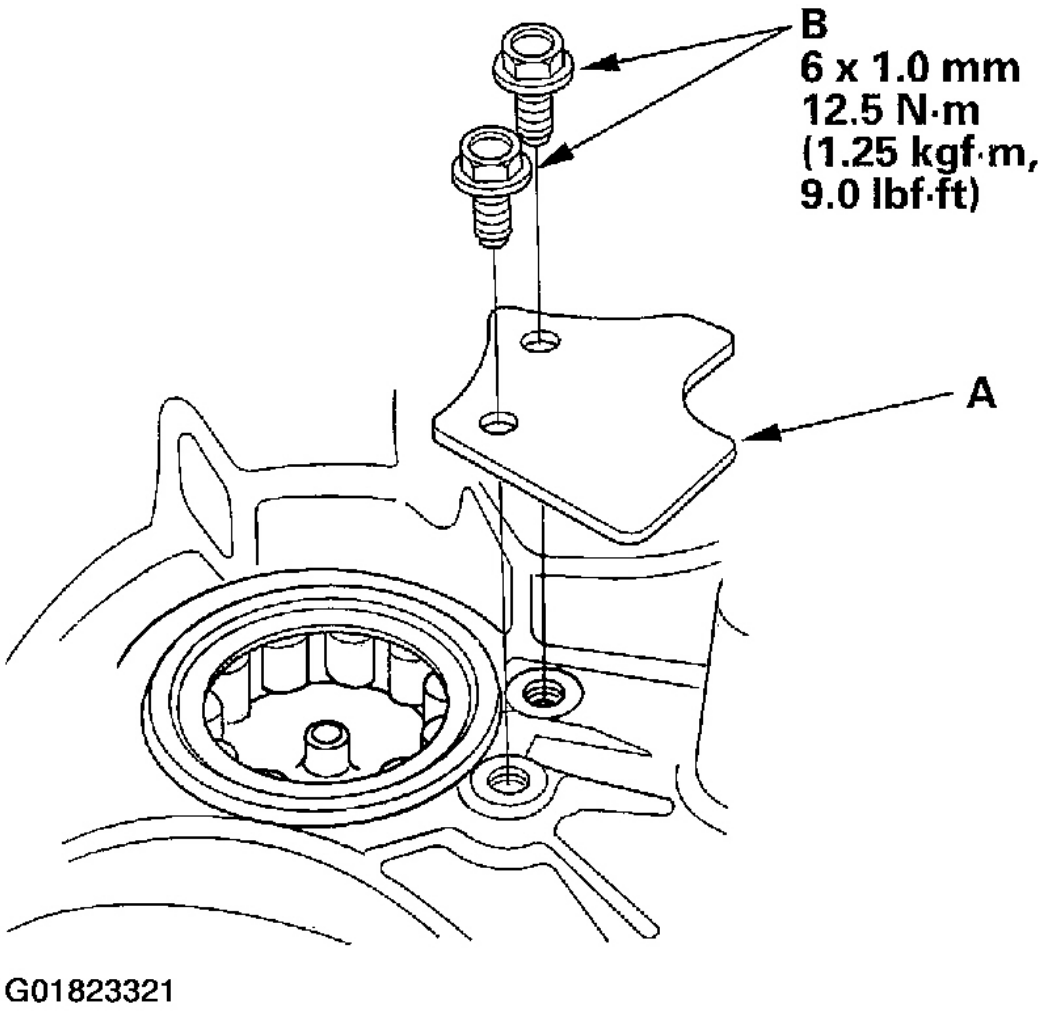


Fig. 114: Installing The Bearing Set Plate With Bolts

MAINSHAFT THRUST CLEARANCE ADJUSTMENT

Special Tools Required:

- Mainshaft holder 07GAJ-PG20110
- Mainshaft base 07GAJ-PG20130

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).

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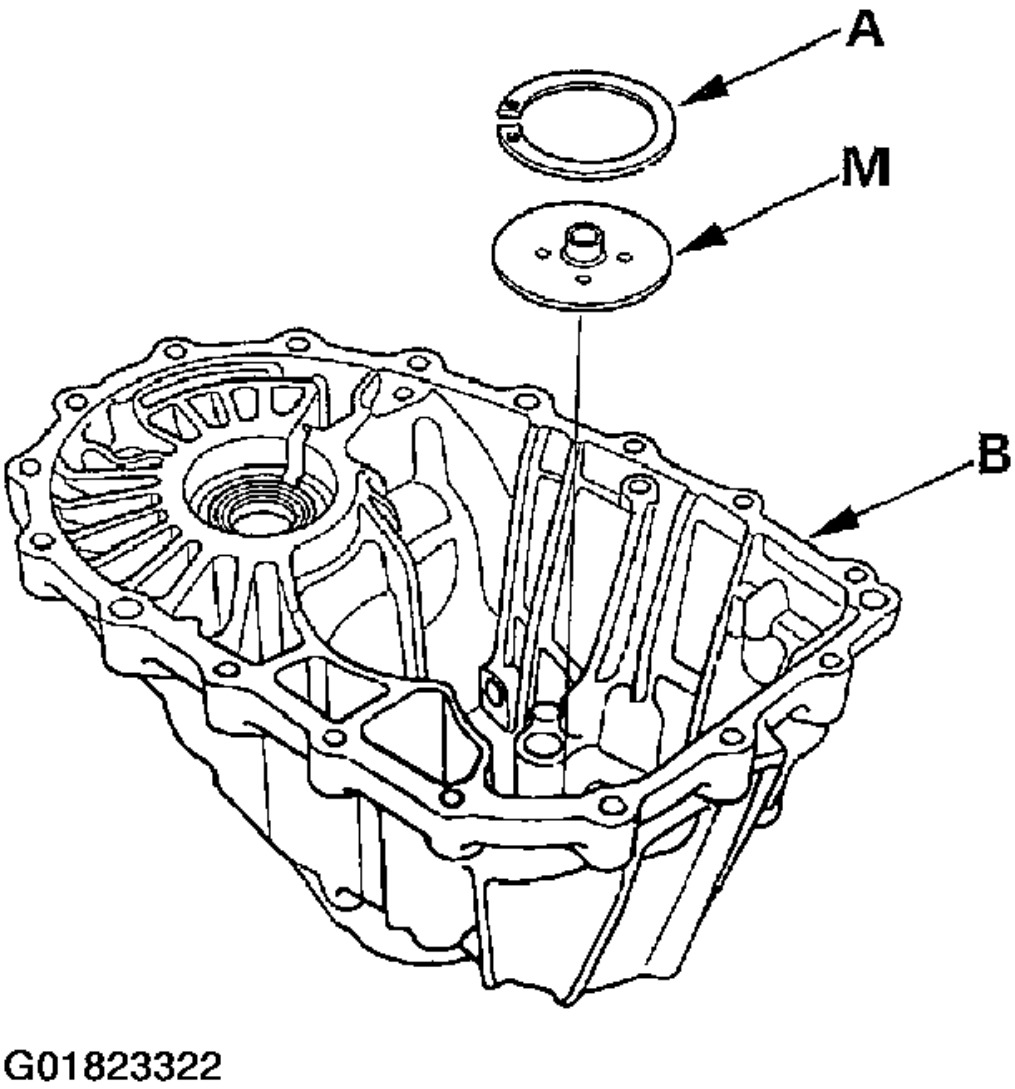


Fig. 115: Removing The 72 mm Shim & Oil Guide Plate M From The Transmission Housing

2. Install the 3rd/4th synchro hub (A), the distance collar (B), the 5th/6th synchro hub (C), distance collar (D), and ball bearing (E) on the mainshaft (F), then install the assembled mainshaft in the transmission housing (G).

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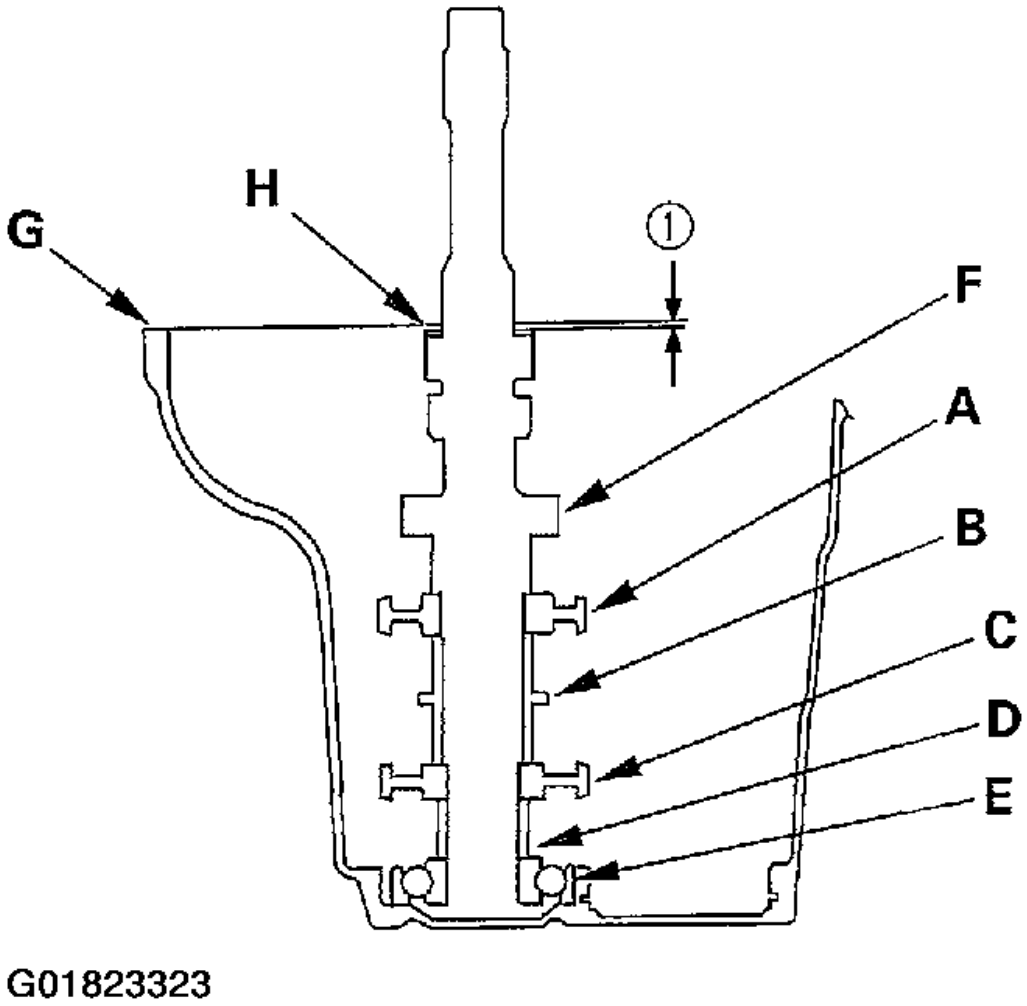


Fig. 116: Installing The 3rd/4th Synchro Hub, The Distance Collar, The 5th/6th Synchro Hub, Distance Collar & Ball Bearing On The Mainshaft

3. Install the washer (H) on the mainshaft.
4. Measure distance 1 between the end of the transmission housing and washer with a straight edge and vernier caliper. Measure at three locations and average the reading.
5. Measure distance 2 between the end of the clutch housing (A) and bearing inner race (B) with a straight edge and depth gauge. Measure at three locations and average the readings.

Shim Selection Formula:

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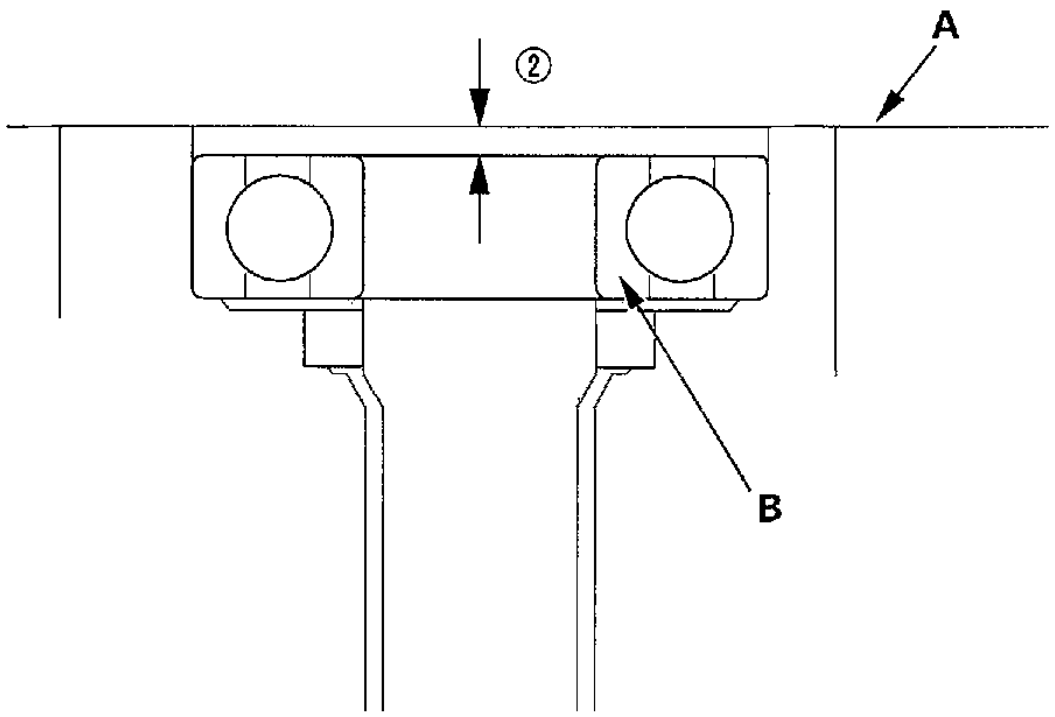


Fig. 117: Measuring Distance 2 Between The End Of The Clutch Housing & Bearing Inner Race With A Straight Edge & Depth Gauge

6. Select the proper 72 mm shim from the chart. See **Fig. 118** . Follow the example below, and use the measurements you made in steps 4 and 5:

(Basic Formula)

1 + 2 - (0.8 + 0.11) = shim thickness (maximum)

1 + 2 - (0.8 + 0.17) = shim thickness (minimum)

Add Distance 2 (Step 5) To Distance 1 (Step 4).

0.8 mm (0.031 in): Spring washer, a dimension in the installation.

0.11 mm (0.004 in): Minimum thrust clearance.

0.17 mm (0.007 in): Maximum thrust clearance.

For Example:

2.32 + 0.15 - (0.8 + 0.11) = 1.56 mm (0.061 in.)

2.32 + 0.15 - (0.8 + 0.17) = 1.50 mm (0.059 in.)

Take the middle value of the minimum value and the maximum value, and select the 1.53 mm (0.060 in.) shim.

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	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.024 in.)
B	23932-P21-000	0.63 mm (0.025 in.)
C	23933-P21-000	0.66 mm (0.026 in.)
D	23934-P21-000	0.69 mm (0.027 in.)
E	23935-P21-000	0.72 mm (0.028 in.)
F	23936-P21-000	0.75 mm (0.030 in.)
G	23937-P21-000	0.78 mm (0.031 in.)
H	23938-P21-000	0.81 mm (0.032 in.)
I	23939-P21-000	0.84 mm (0.033 in.)
J	23940-P21-000	0.87 mm (0.034 in.)
K	23941-P21-000	0.90 mm (0.035 in.)
L	23942-P21-000	0.93 mm (0.037 in.)
M	23943-P21-000	0.96 mm (0.038 in.)
N	23944-P21-000	0.99 mm (0.039 in.)
O	23945-P21-000	1.02 mm (0.040 in.)
P	23946-P21-000	1.05 mm (0.041 in.)
Q	23947-P21-000	1.08 mm (0.043 in.)
R	23948-P21-000	1.11 mm (0.044 in.)
S	23949-P21-000	1.14 mm (0.045 in.)
T	23950-P21-000	1.17 mm (0.046 in.)
U	23951-P21-000	1.20 mm (0.047 in.)
V	23952-P21-000	1.23 mm (0.048 in.)
W	23953-P21-000	1.26 mm (0.050 in.)
X	23954-P21-000	1.29 mm (0.051 in.)
Y	23955-P21-000	1.32 mm (0.052 in.)
Z	23956-P21-000	1.35 mm (0.053 in.)
AA	23957-P21-000	1.38 mm (0.054 in.)
AB	23958-P21-000	1.41 mm (0.056 in.)
AC	23959-P21-000	1.44 mm (0.057 in.)
AD	23960-P21-000	1.47 mm (0.058 in.)
AE	23961-P21-000	1.50 mm (0.059 in.)
AF	23962-P21-000	1.53 mm (0.060 in.)
AG	23963-P21-000	1.56 mm (0.061 in.)
AH	23964-P21-000	1.59 mm (0.063 in.)
AI	23965-P21-000	1.62 mm (0.064 in.)
AJ	23966-P21-000	1.65 mm (0.065 in.)
AK	23967-P21-000	1.68 mm (0.066 in.)
AL	23968-P21-000	1.71 mm (0.067 in.)
AM	23969-P21-000	1.74 mm (0.069 in.)
AN	23970-P21-000	1.77 mm (0.070 in.)
AO	23971-P21-000	1.80 mm (0.071 in.)

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Fig. 118: 72 mm Shim Table

7. Install the 72 mm shim (A) selected and oil guide plate M in the transmission housing (B).

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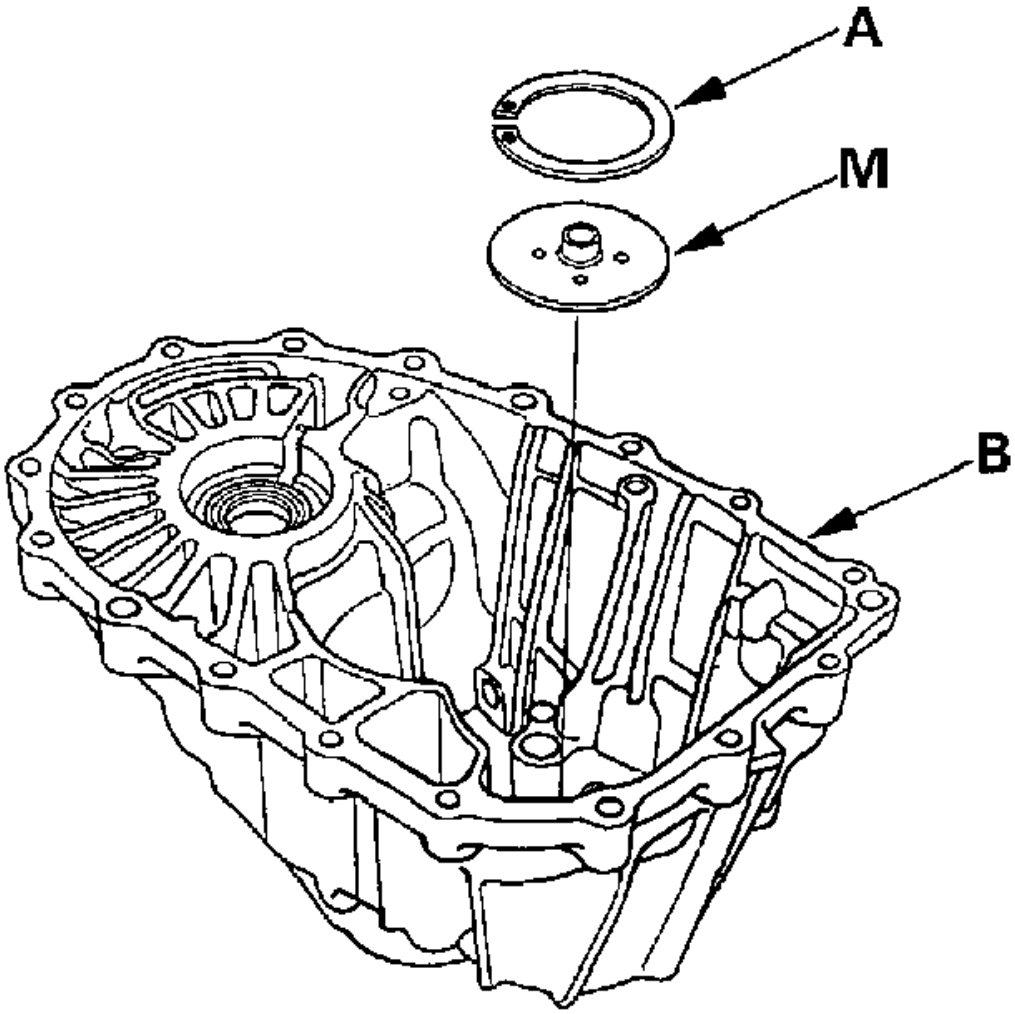


Fig. 119: Install The 72 mm Shim & Oil Guide Plate M In The Transmission Housing

8. Thoroughly clean the spring washer (A) and washer (B) before installing them on the clutch housing side ball bearing (C). Note the installation direction of the spring washer.

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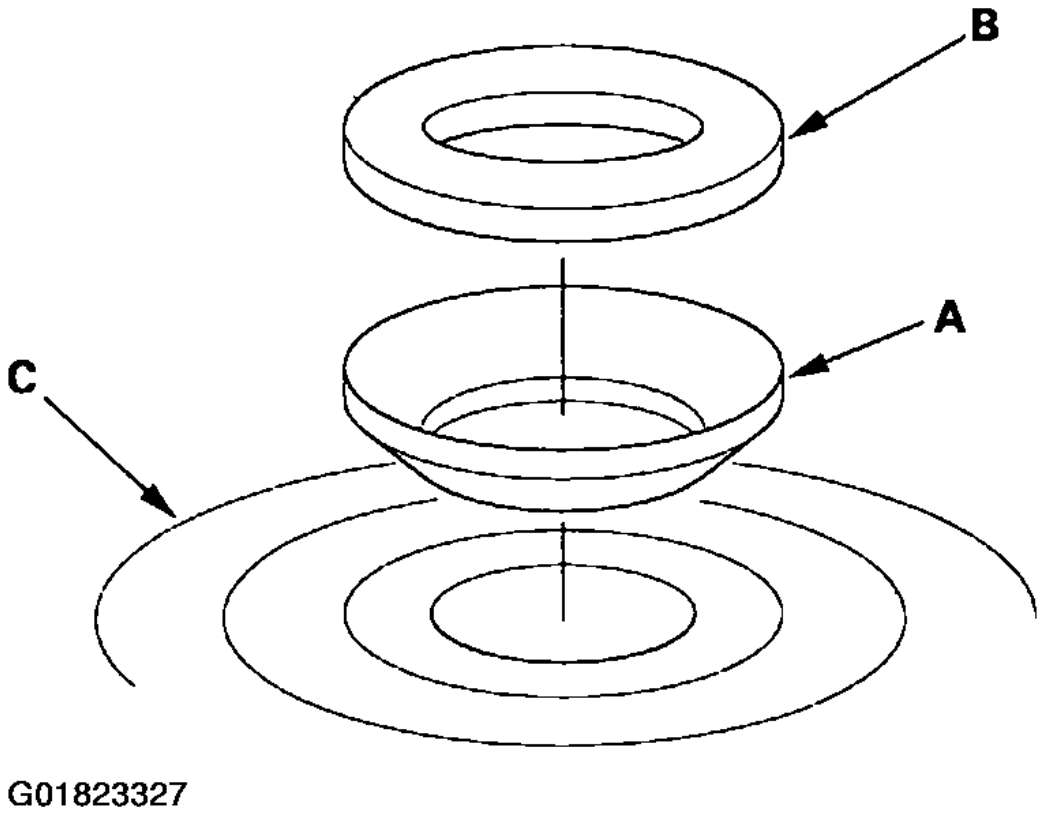


Fig. 120: Installing Spring Washer & Washer On The Clutch Housing Side Ball Bearing

9. Install the mainshaft in the clutch housing.
10. Place the transmission housing over the mainshaft and onto the clutch housing.
11. Tighten the clutch and transmission housings with several 8 mm special bolts (left-hand threads).

NOTE:

- **It is not necessary to use sealing agent between the housings.**
- **The 8 mm special bolts are left-hand thread.**

12. Lightly tap on the mainshaft with a plastic hammer.
13. Attach the special tool to the mainshaft as follows:
    - Back-out the mainshaft holder bolt (A) and loosen the two hex bolts (B).
    - Fit the holder over the mainshaft so its lip is towards the transmission.
    - Align the mainshaft holder lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.

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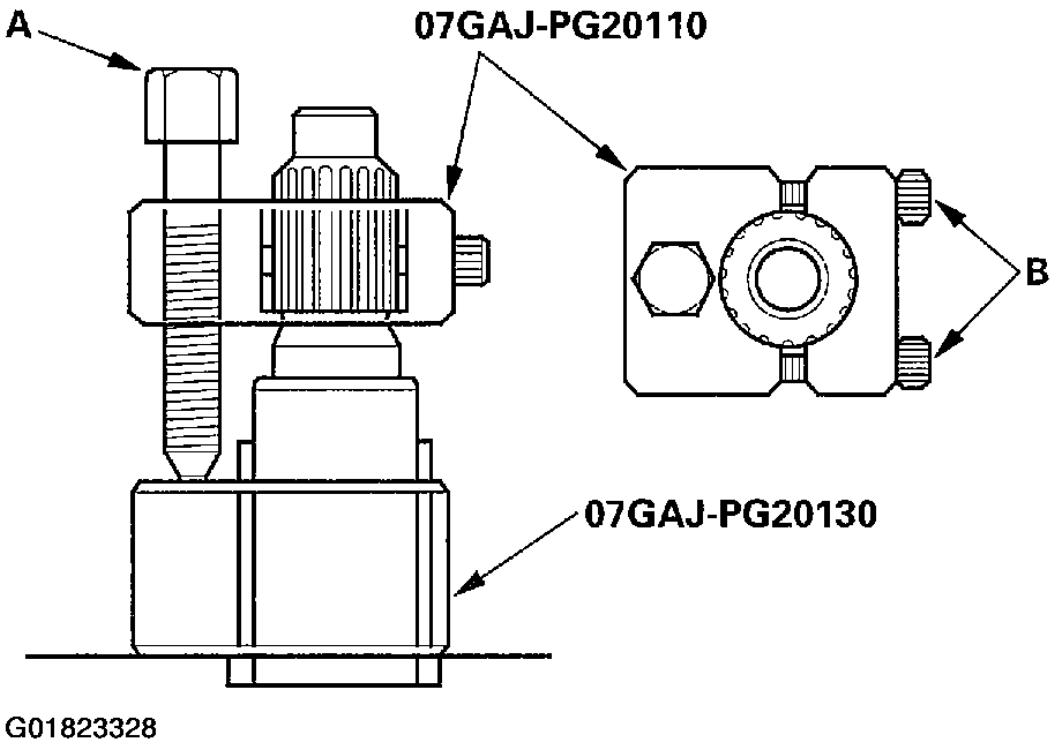


Fig. 121: Attaching The Special Tool To The Mainshaft

14. Seat the mainshaft fully by tapping its end with a plastic hammer.
15. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.
16. Zero a dial gauge (A) on the end of the mainshaft.

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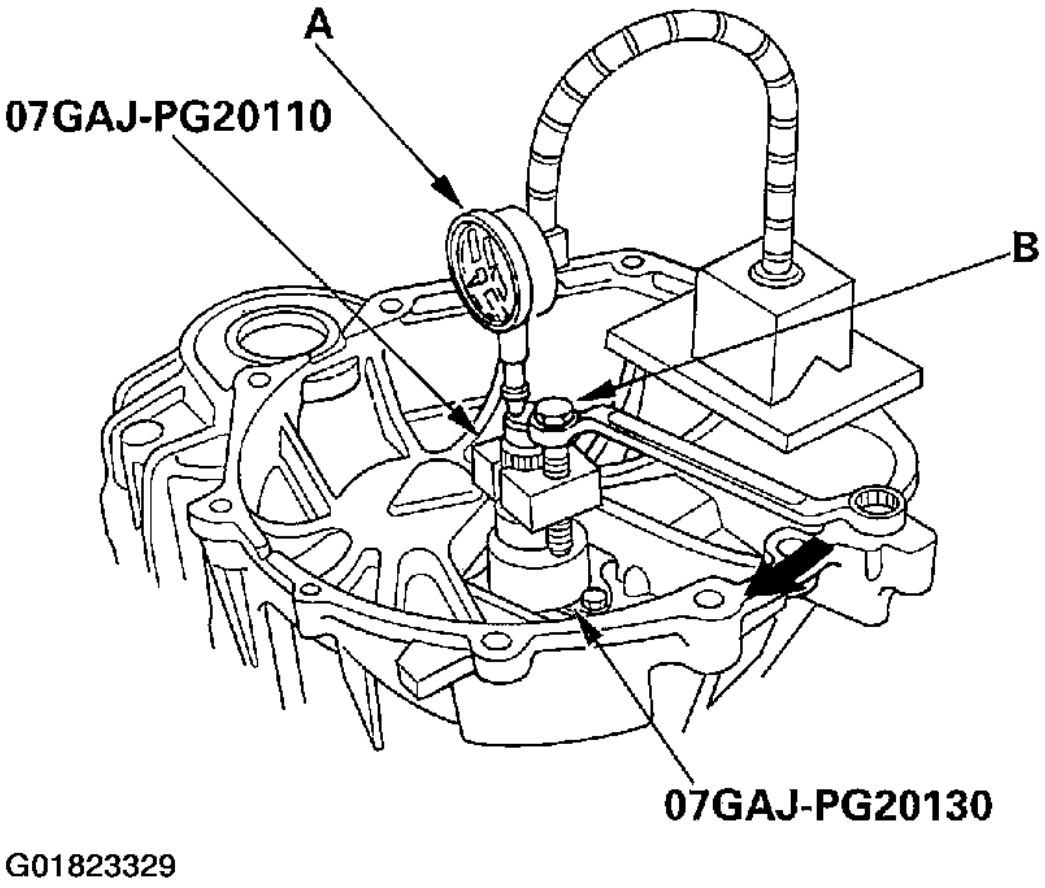


Fig. 122: Zeroing A Dial Gauge On The End Of The Mainshaft

17. Turn the mainshaft holder bolt (B) clockwise; stop turning when the dial gauge (A) has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft end play.

NOTE: Do not turn the mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the mainshaft holder bolt may damage the transmission.

18. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, recheck the shim thickness.

Standard: 0.11-0.17 mm (0.004-0.007 in.)

TRANSMISSION REASSEMBLY

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact surfaces.

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1. Install the release bearing guide (A), new drain plug washer (B), and drain plug (C).

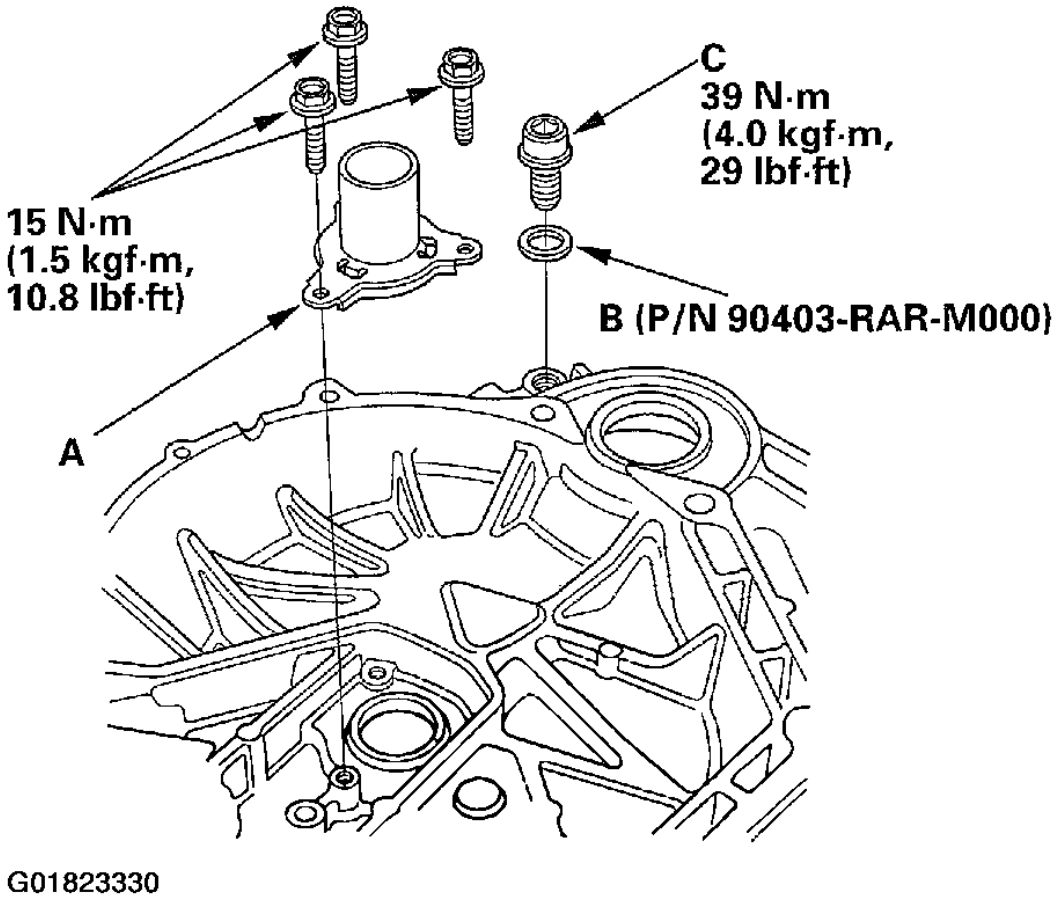


Fig. 123: Installing The Release Bearing Guide, New Drain Plug Washer & Drain Plug

2. Install the magnet (A) and differential assembly (B).

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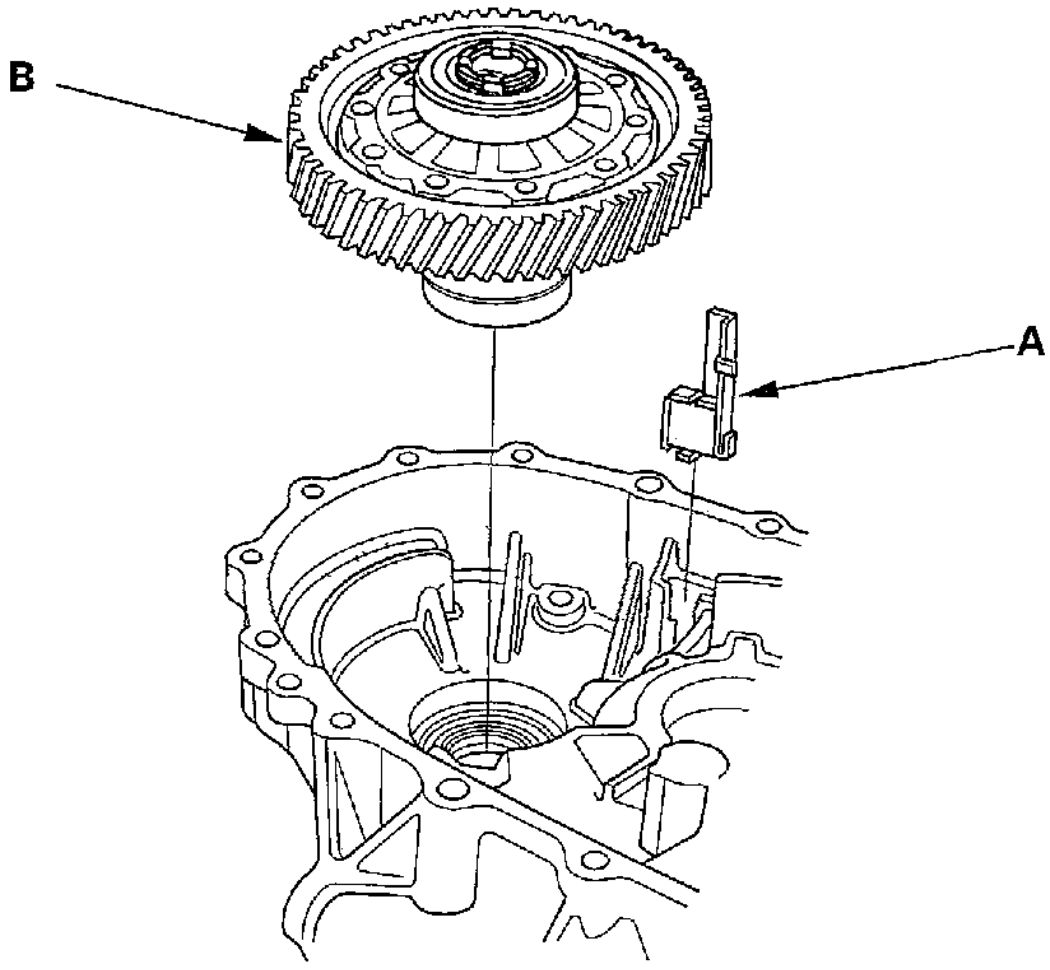


Fig. 124: Installing The Magnet & Differential Assembly

3. Install the 28 mm spring washer (A) and 28 mm washer (B) over the ball bearing (C). Note the installation direction of the spring washer (A).

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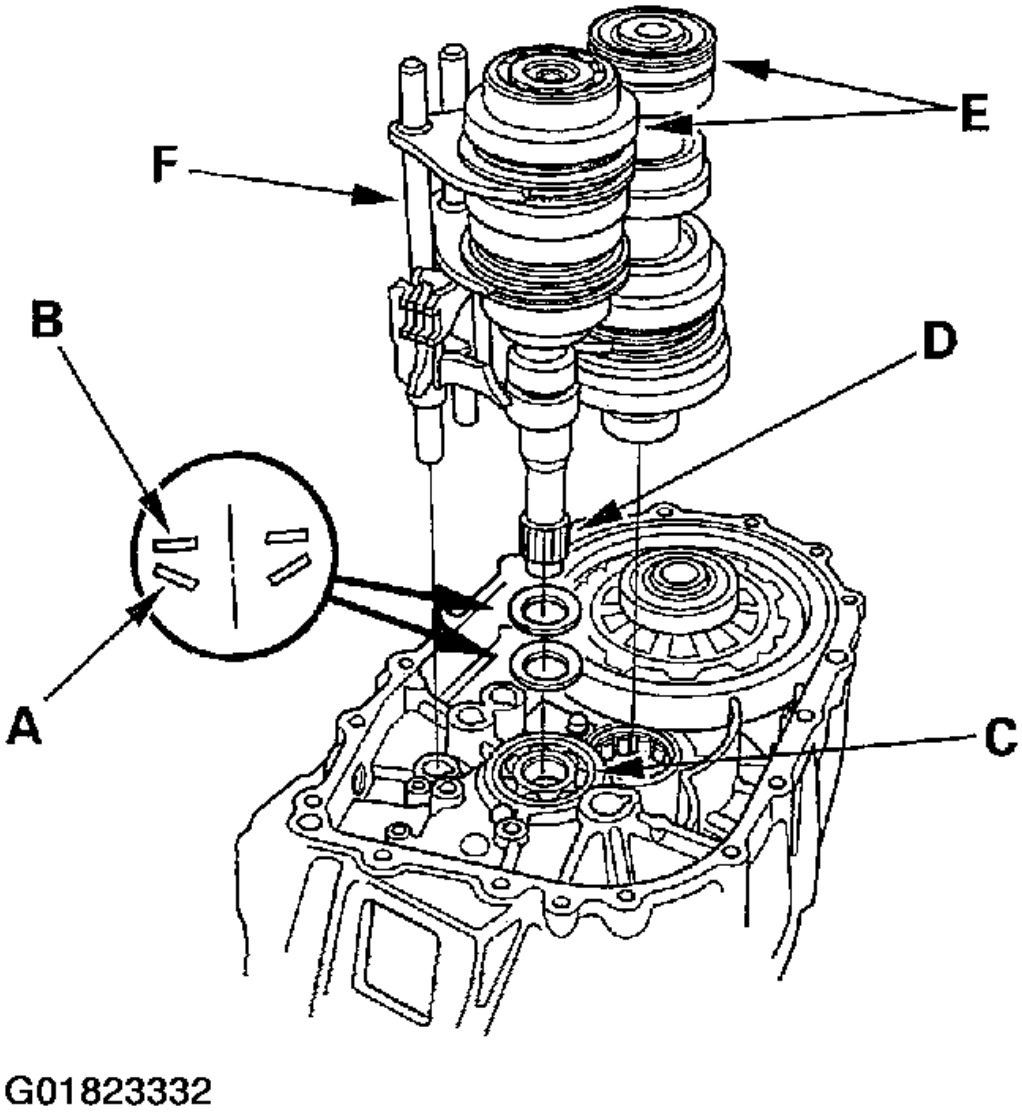
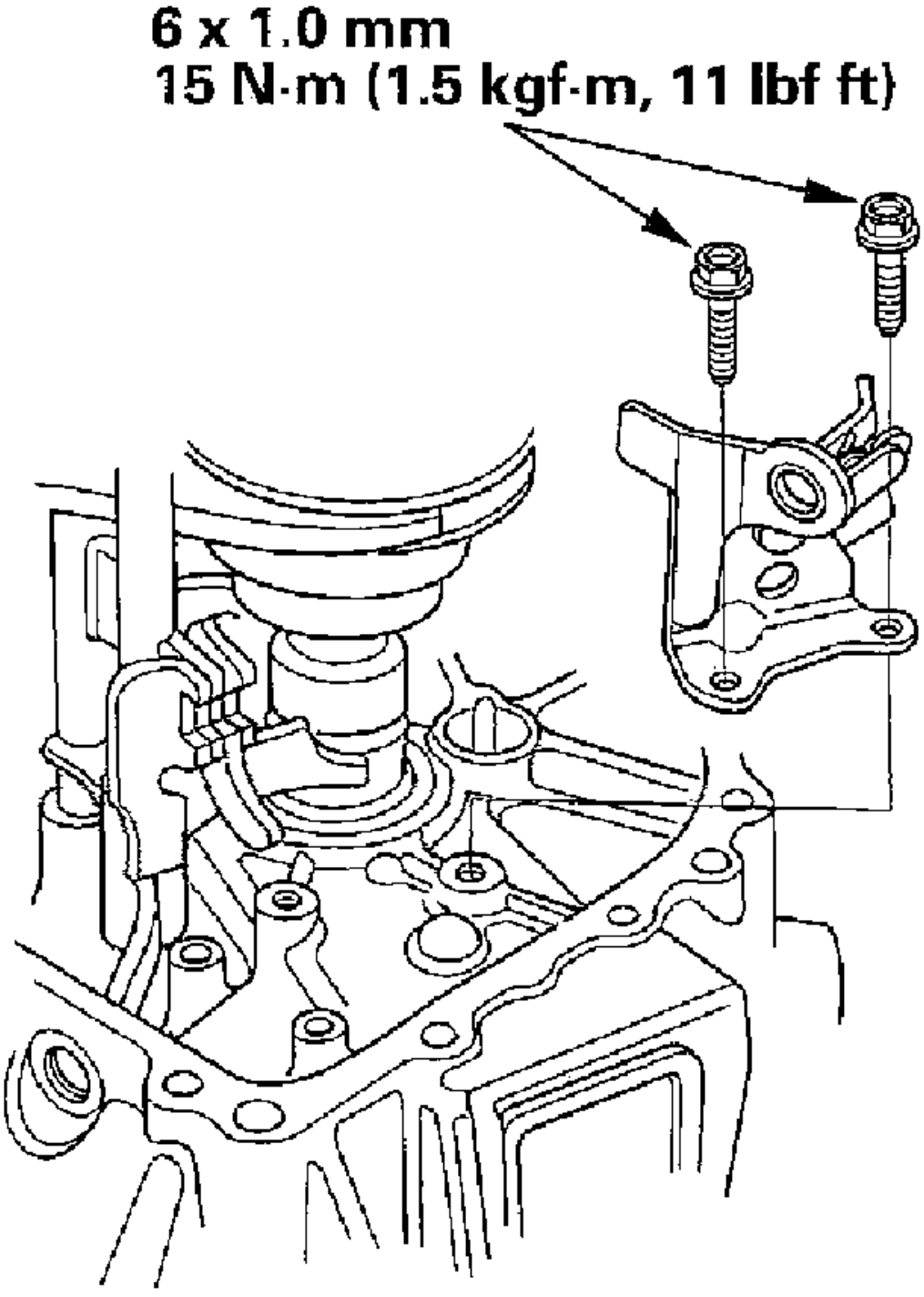


Fig. 125: Installing The 28 mm Spring Washer & 28 mm Washer Over The Ball Bearing

4. Apply vinyl tape the mainshaft splines (D) to protect the seal. Install the mainshaft and countershaft (E) into the shift forks (F), and install them as an assembly.
5. Install the reverse shift fork.

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Fig. 126: Installing The Reverse Shift Fork

6. Install the 20 x 36 x 2 mm thrust washer (A), reverse idler gear (B), and reverse gear shaft (C) by aligning the mark (D) with reverse gear shaft hole (E).

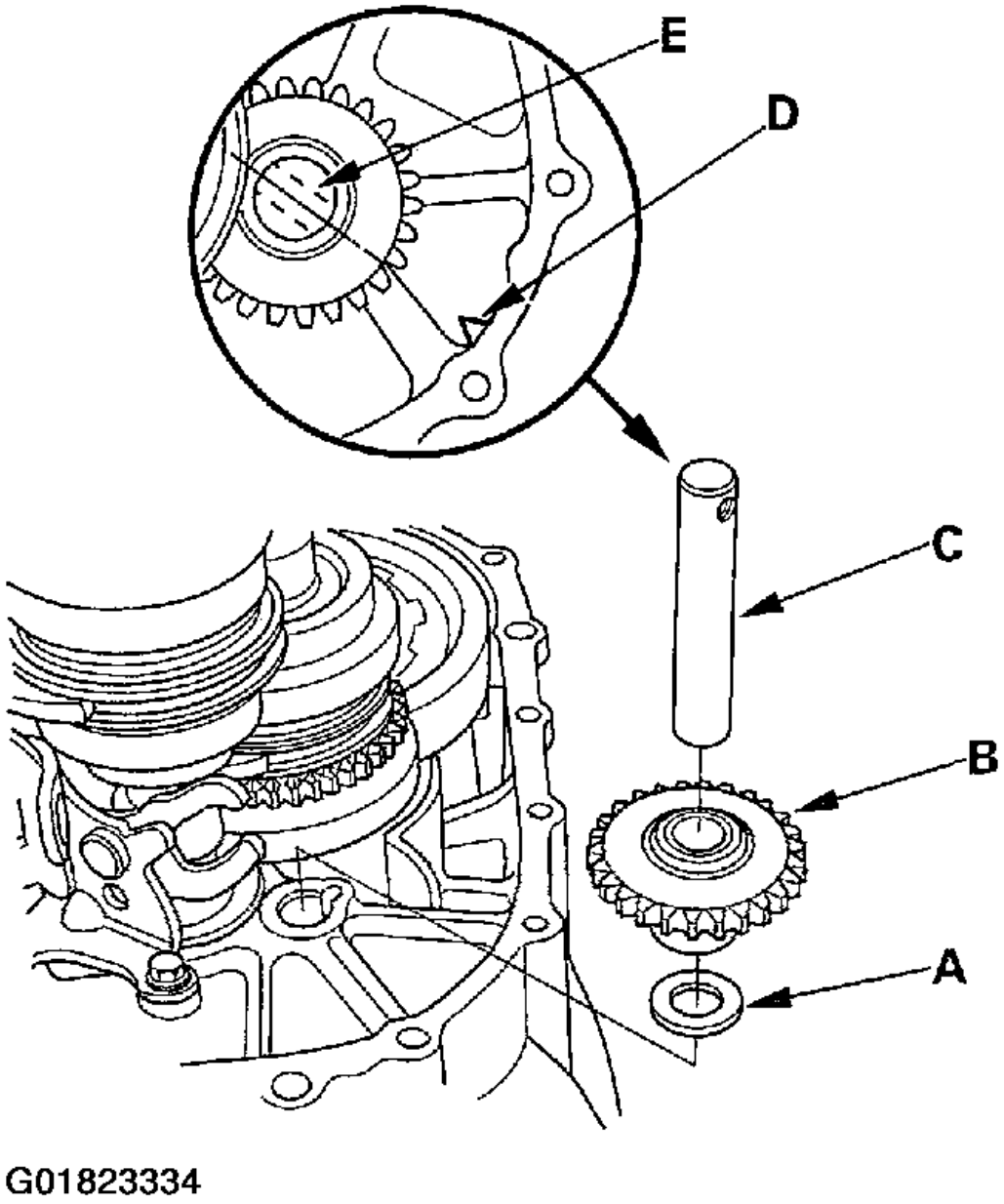


Fig. 127: Installing The 20 X 36 X 2 mm Thrust Washer, Reverse Idler Gear & Reverse Gear Shaft

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7. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see **MAINSHAFT THRUST CLEARANCE ADJUSTMENT**). Install the oil gutter plate (B), oil guide plate M, and 72 mm shim into the transmission housing (C).

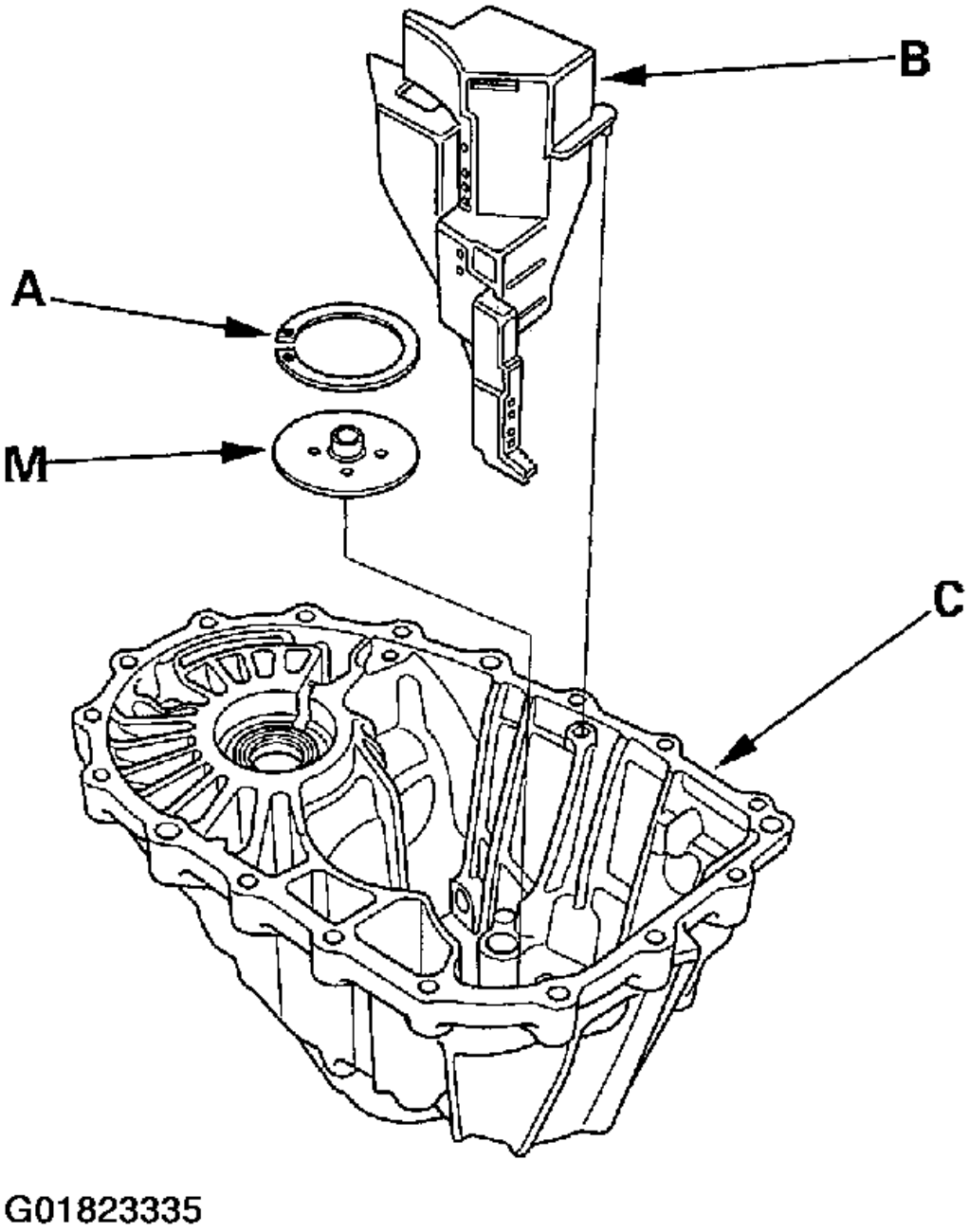


Fig. 128: Installing The Oil Gutter Plate, Oil Guide Plate M & 72 mm Shim Into The Transmission

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Housing

8. Remove any dirt or oil from the transmission housing sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface. Be sure to seal the entire circumference of the bolt holes to prevent oil leakage.

NOTE: If 4 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 20 minutes after assembly before filling the transmission with oil.

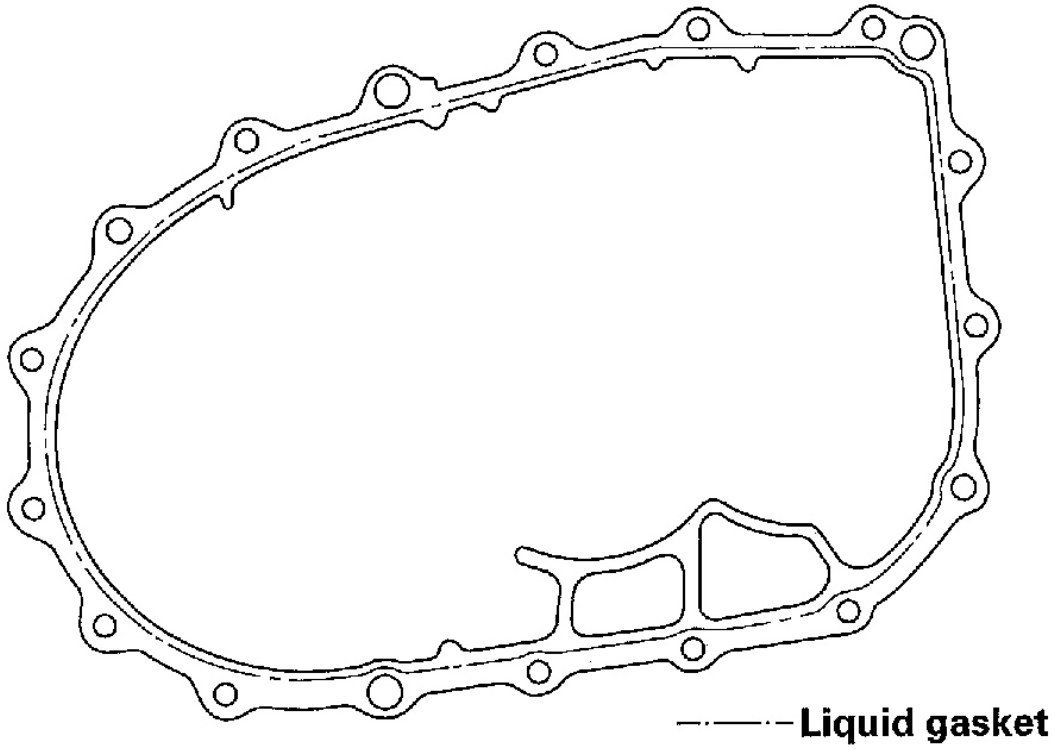


Fig. 129: Applying Liquid Gasket To The Sealing Surface

9. Install the 14 x 20 mm dowel pins (A).

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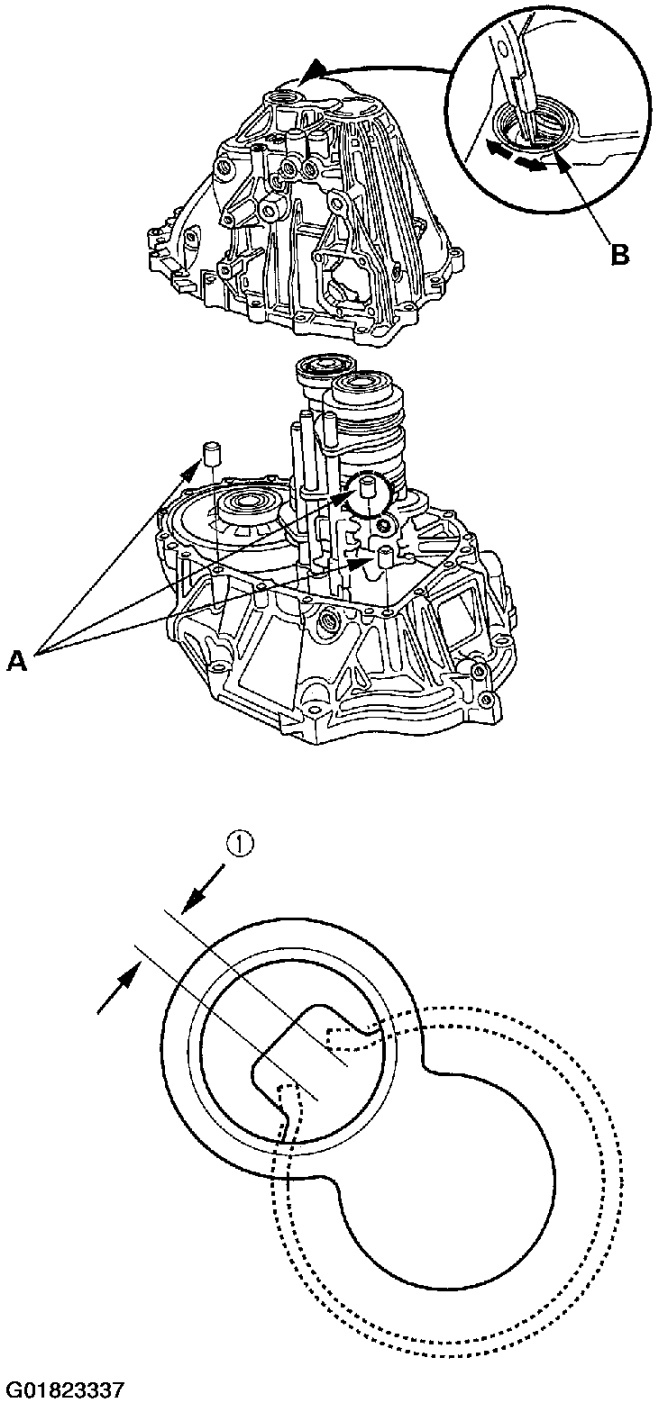


Fig. 130: Installing The 14 x 20 mm Dowel Pins

10. Place the transmission housing over the clutch housing, being careful to line up the shafts.
11. Lower the transmission housing the rest of the way as you expand the 72 mm snap ring (B). Release the snap ring so it seats in the groove of the countershaft bearing.

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12. Check that the 52 mm snap ring is securely seated in the groove of the countershaft bearing.

    Dimension 1 As Installed: 3.3-6.0 mm (0.13-0.24 in.)

13. Apply liquid gasket (P/N 08718-0001) (A) to the threads, and a 2 mm (0.079 in.) bead around the contact surface. Install the 32 mm sealing cap on the transmission housing.

    NOTE: If 4 minutes have passed after applying liquid gasket, reapply it.

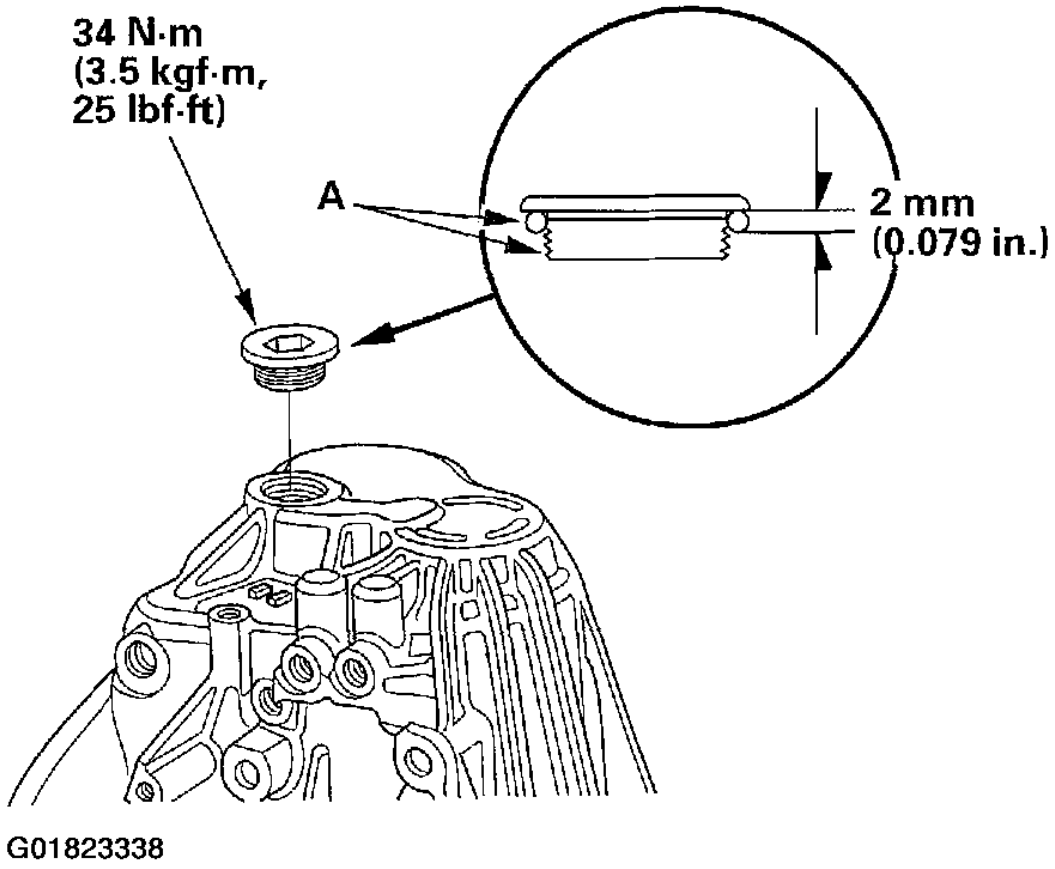


Fig. 131: Apply Liquid Gasket To The Threads & A 2 mm (0.079 in.) Bead Around The Contact Surface

14. Install the transmission hangers A and B, harness bracket B (C), mount bracket collar (D), and 8 mm special bolts (left-hand threads) finger-tight.

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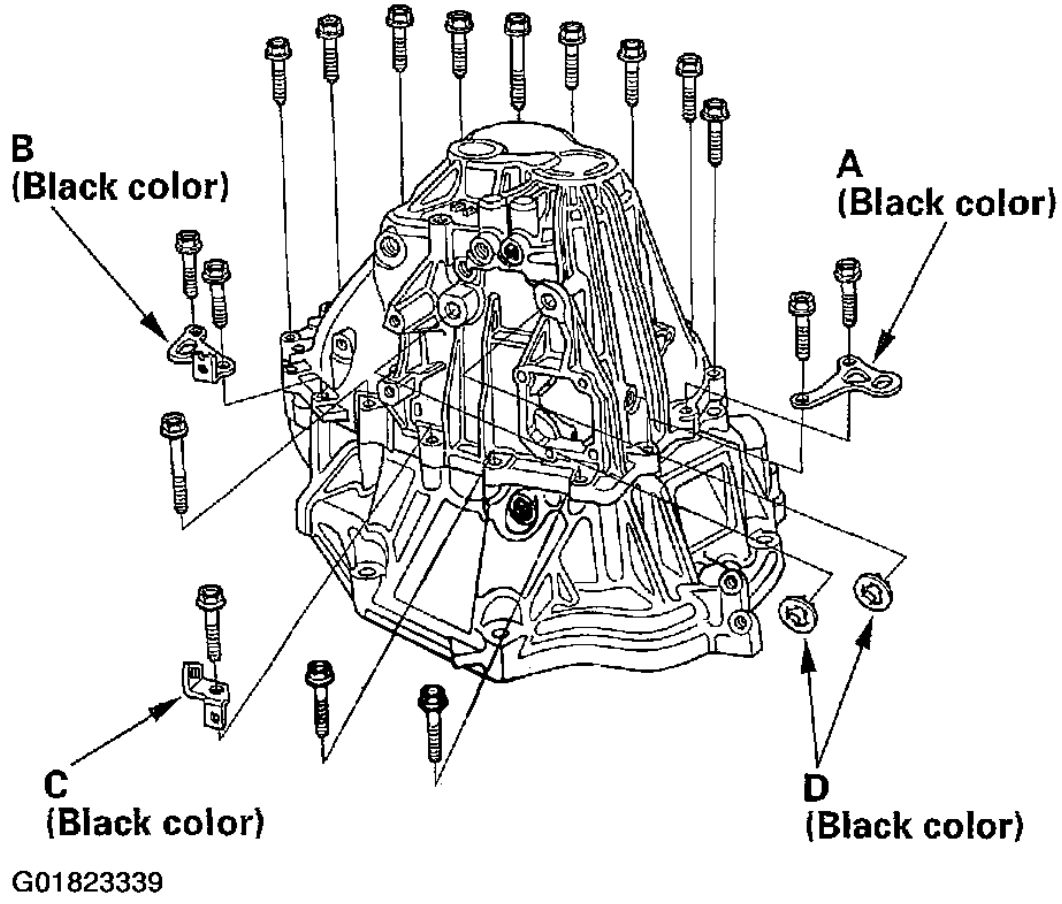


Fig. 132: Installing The Transmission Hangers A & B, Harness Bracket B, Mount Bracket Collar & 8 mm Special Left-Hand Thread Bolts

15. Tighten the 8 mm special bolts (left-hand threads) in a crisscross pattern in several steps.

NOTE: The 8 mm special bolts are left-hand thread.

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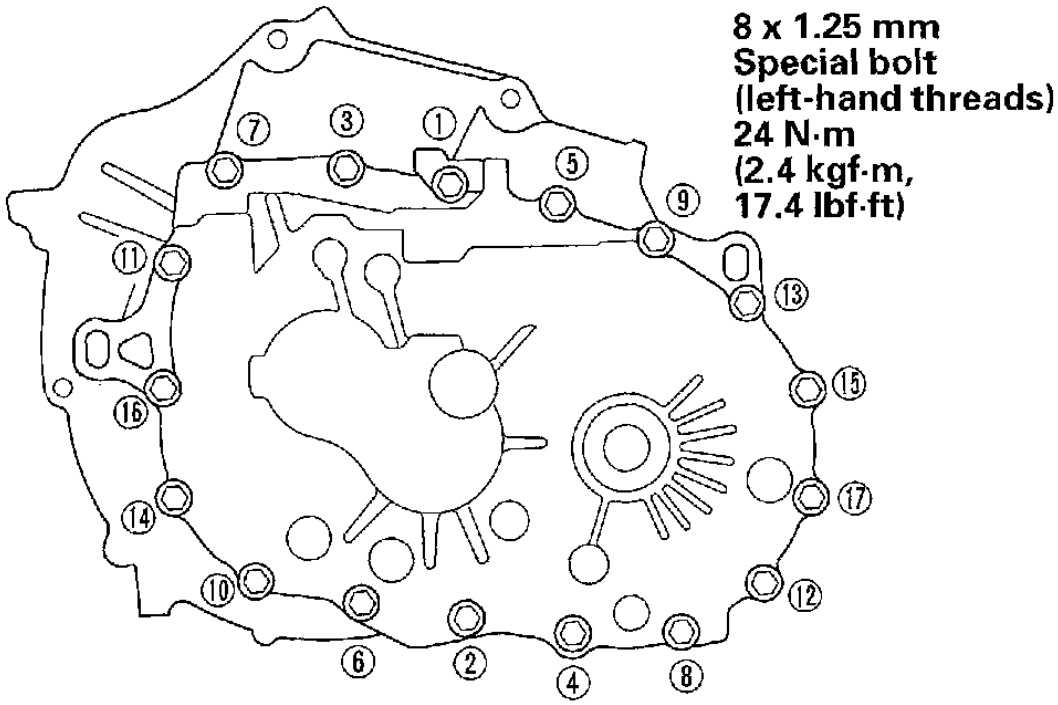


Fig. 133: Tightening Sequence Of 8 mm Special Left-Hand Thread Bolts

16. Remove any dirt or oil from the shift lever cover sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface.

NOTE: If 4 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 20 minutes after assembly before filling the transmission with oil.

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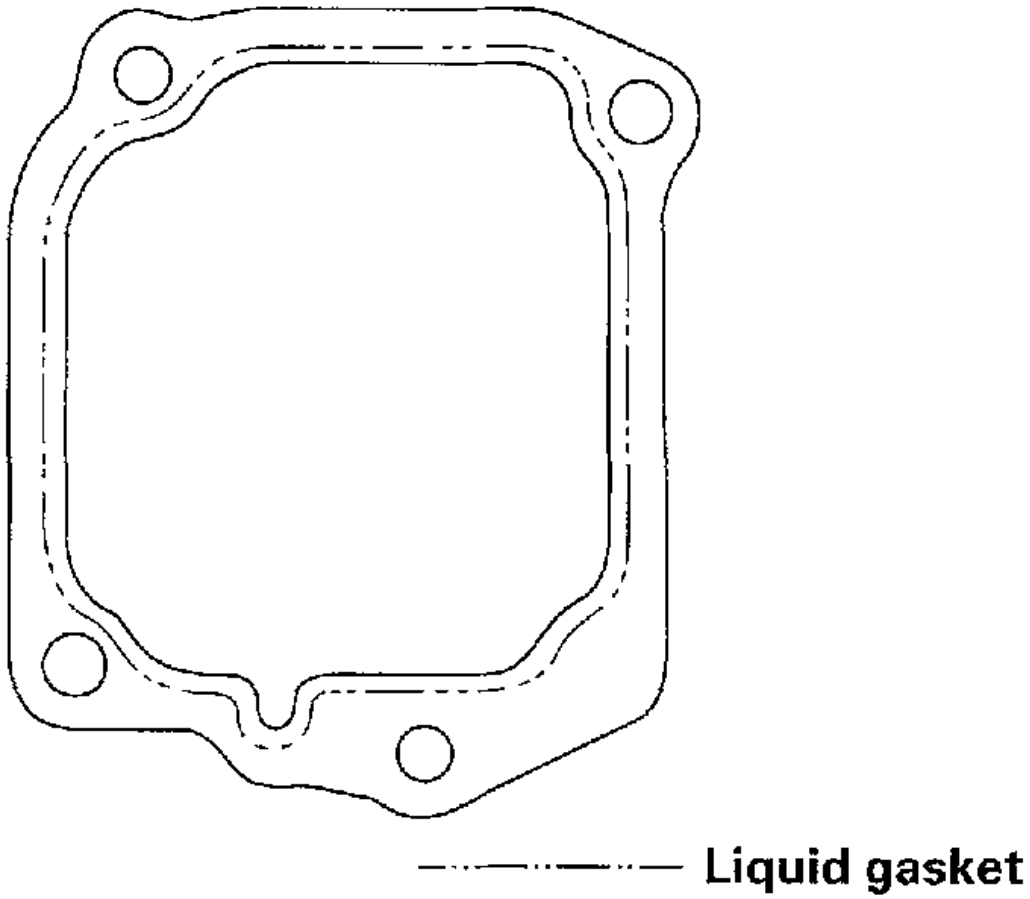


Fig. 134: Applying Liquid Gasket

17. Apply liquid gasket (P/N 08718-0001) (A) to the threads of the interlock bolts (D), and a 2 mm (0.079 in.) bead around the contact surface.

NOTE: If 4 minutes have passed after applying liquid gasket, reapply it.

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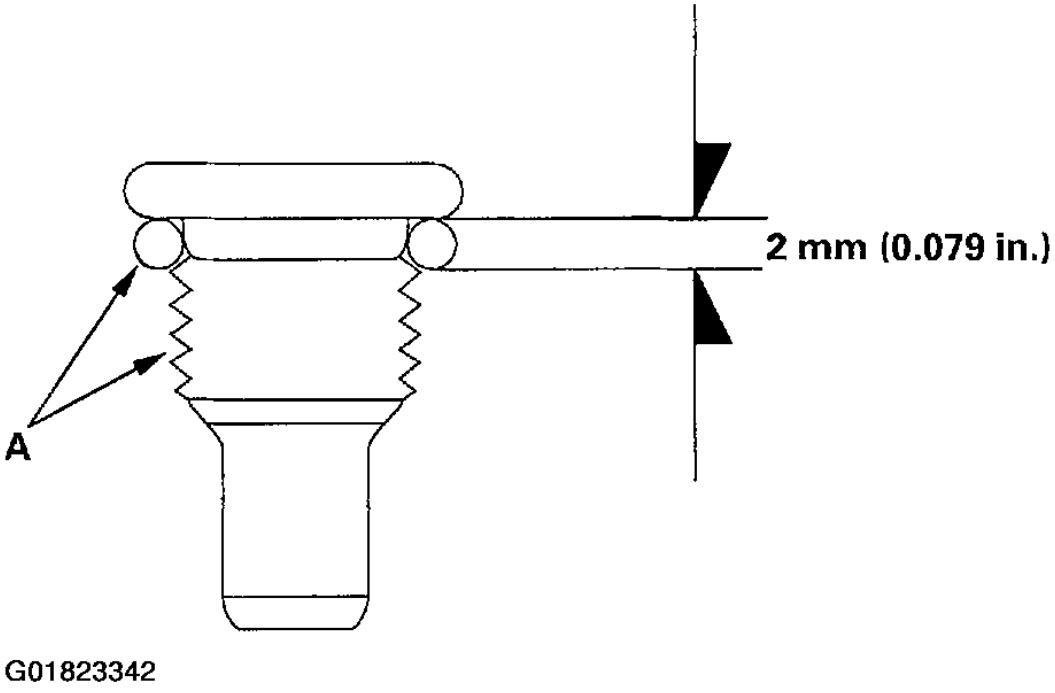


Fig. 135: Applying Liquid Gasket To The Threads & A 2 mm (0.079 in.) Bead Around The Contact Surface

18. Install the 8 x 14 mm dowel pins (B), change lever assembly (C), and harness bracket A.

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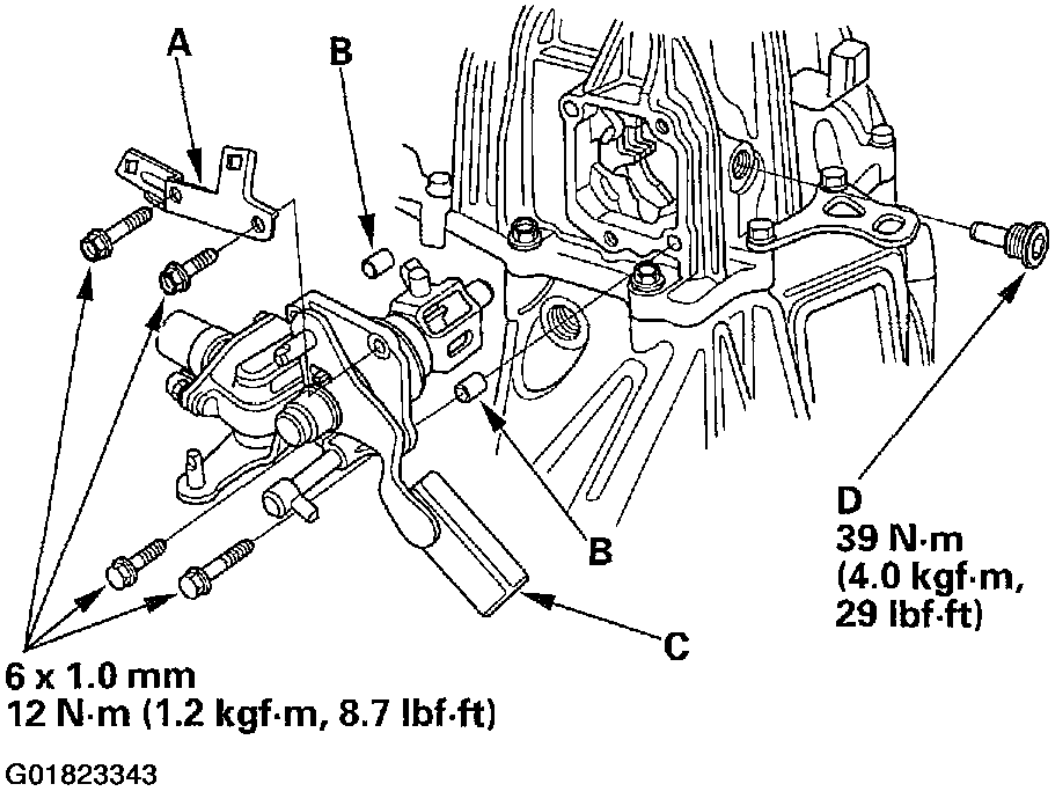


Fig. 136: Installing The 8 X 14 mm Dowel Pins, Change Lever Assembly & Harness Bracket A

19. Install the interlock bolt (D) on the transmission housing.
20. Install the mount bracket collar (A), new filler plug washer (B), filler plug (C), new 10 mm washer (D), and 10 mm flange bolt (E).

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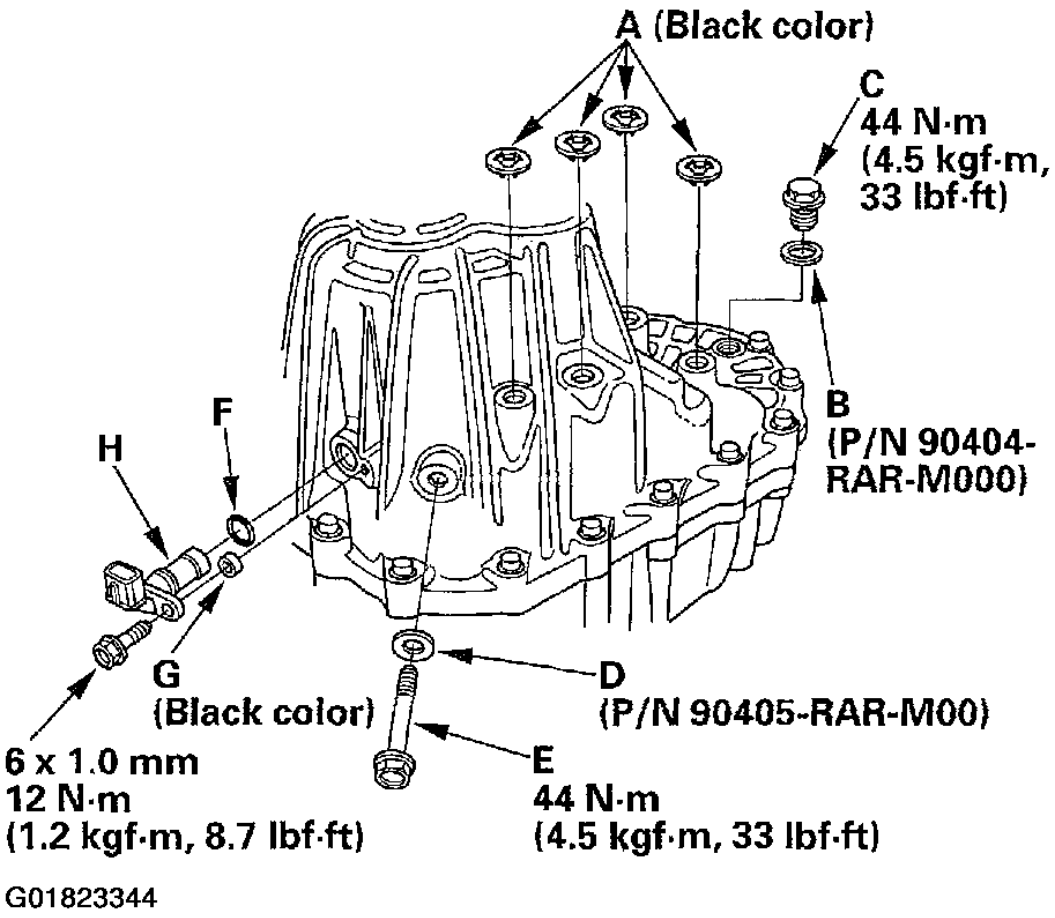


Fig. 137: Installing The Mount Bracket Collar, New Filler Plug Washer, Filler Plug, New 10 mm Washer & 10 mm Flange Bolt

21. Install the new O-ring (F), plain washer (G), and the countershaft speed sensor (H).
22. Apply liquid gasket (P/N 08718-0001) (A) to the threads of the switch, and a 2 mm (0.079 in.) bead around the contact surface.

NOTE: If 4 minutes have passed after applying liquid gasket, reapply it.

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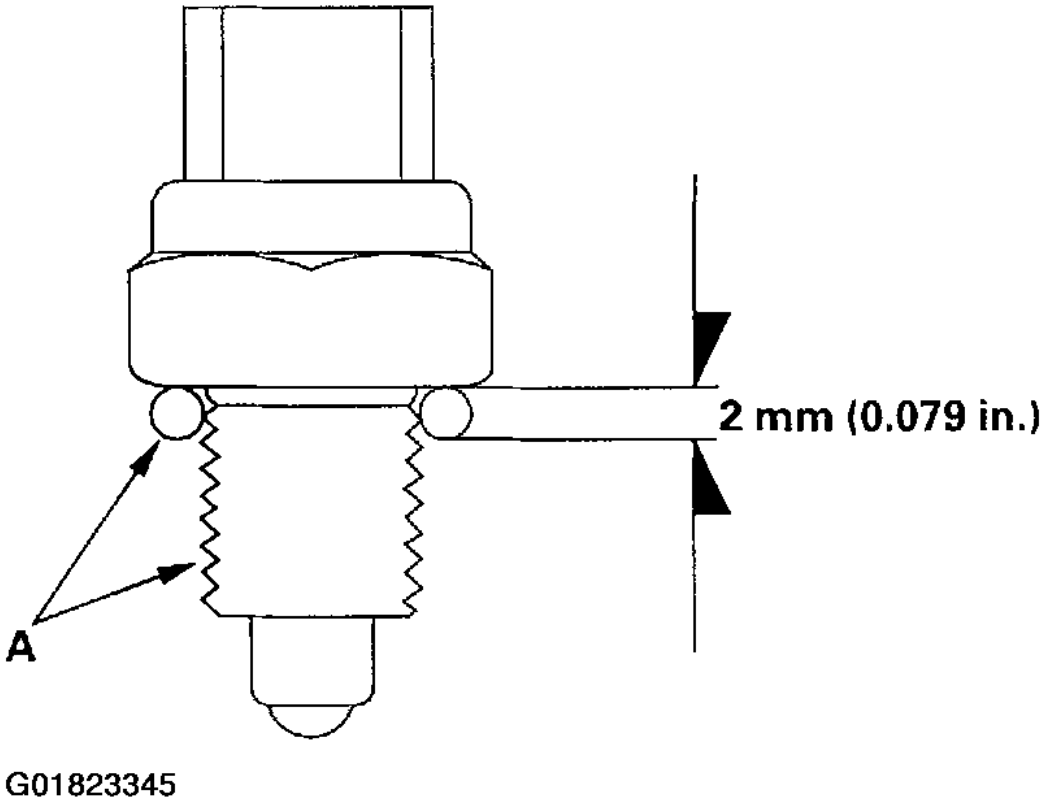


Fig. 138: Applying Liquid Gasket To The Threads & A 2 mm (0.079 in.) Bead Around The Contact Surface

23. Install the detent bolts, spring, and steel balls (A) with new 12 mm washers (B).

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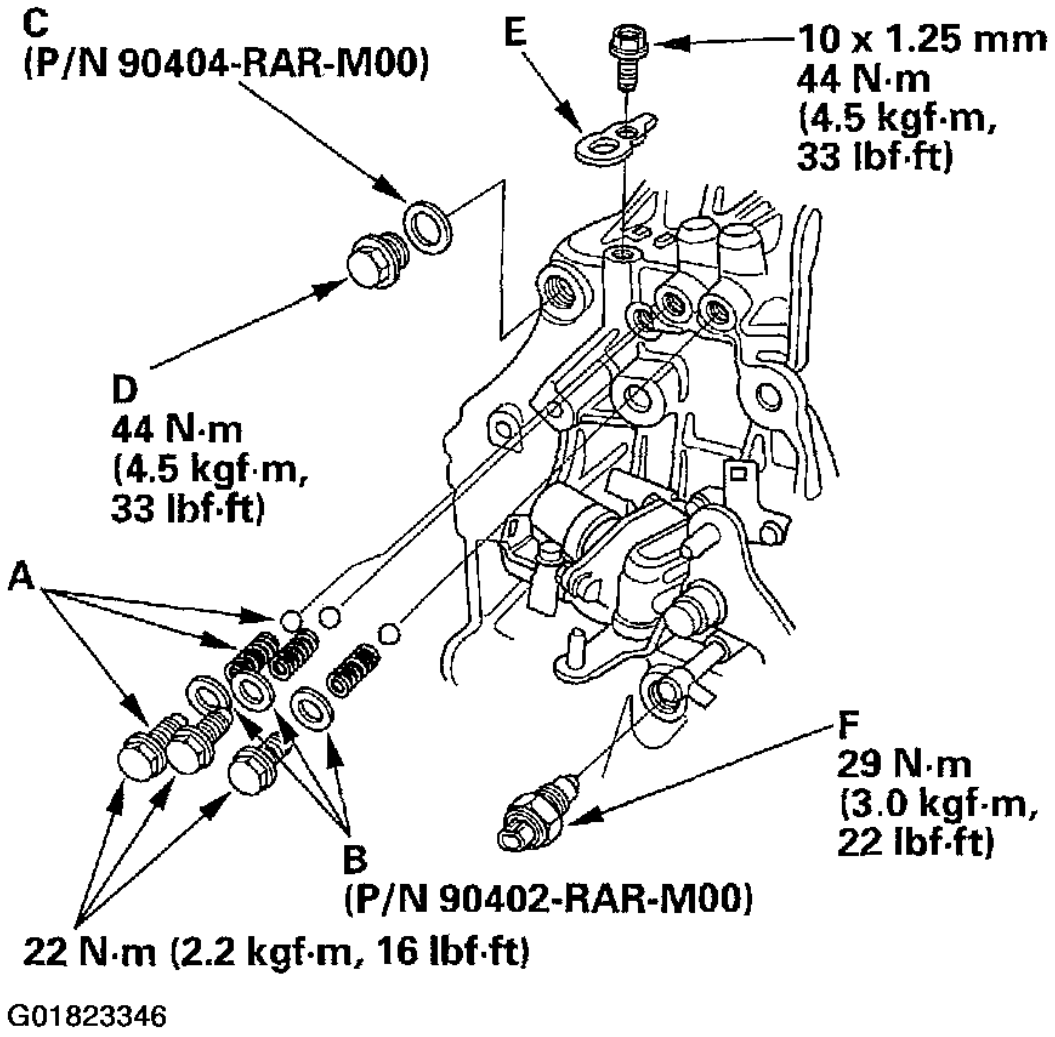


Fig. 139: Installing The Detent Bolts, Spring & Steel Balls With New 12 mm Washers

24. Install the new 20 mm washer (C), 20 mm bolt (D), and transmission hanger (E).
25. Install the back-up light switch (F) on the transmission housing.

GEARSHIFT MECHANISM REPLACEMENT

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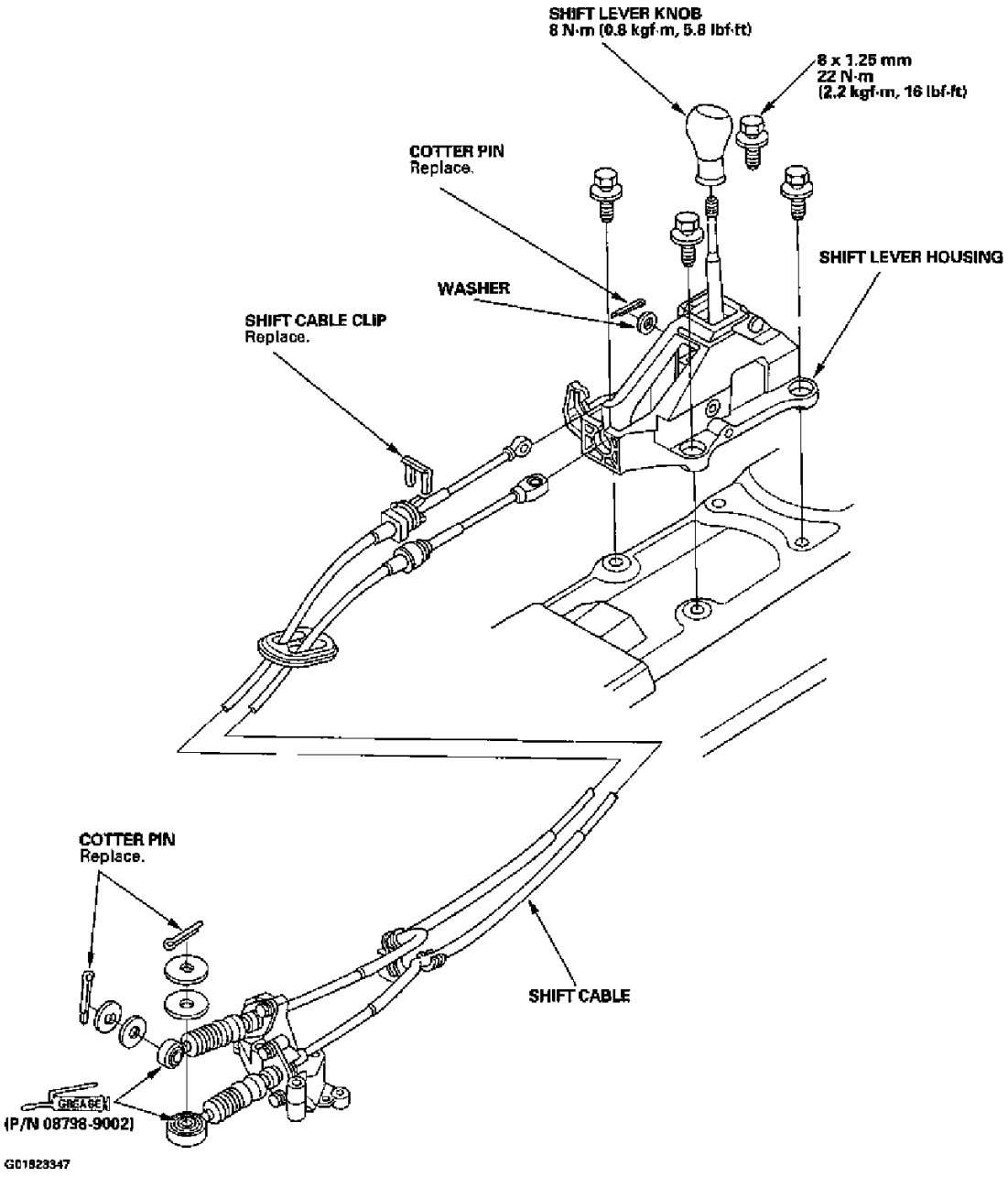


Fig. 140: Exploded View Of Gearshift Mechanism Components

M/T DIFFERENTIAL

COMPONENT LOCATION INDEX

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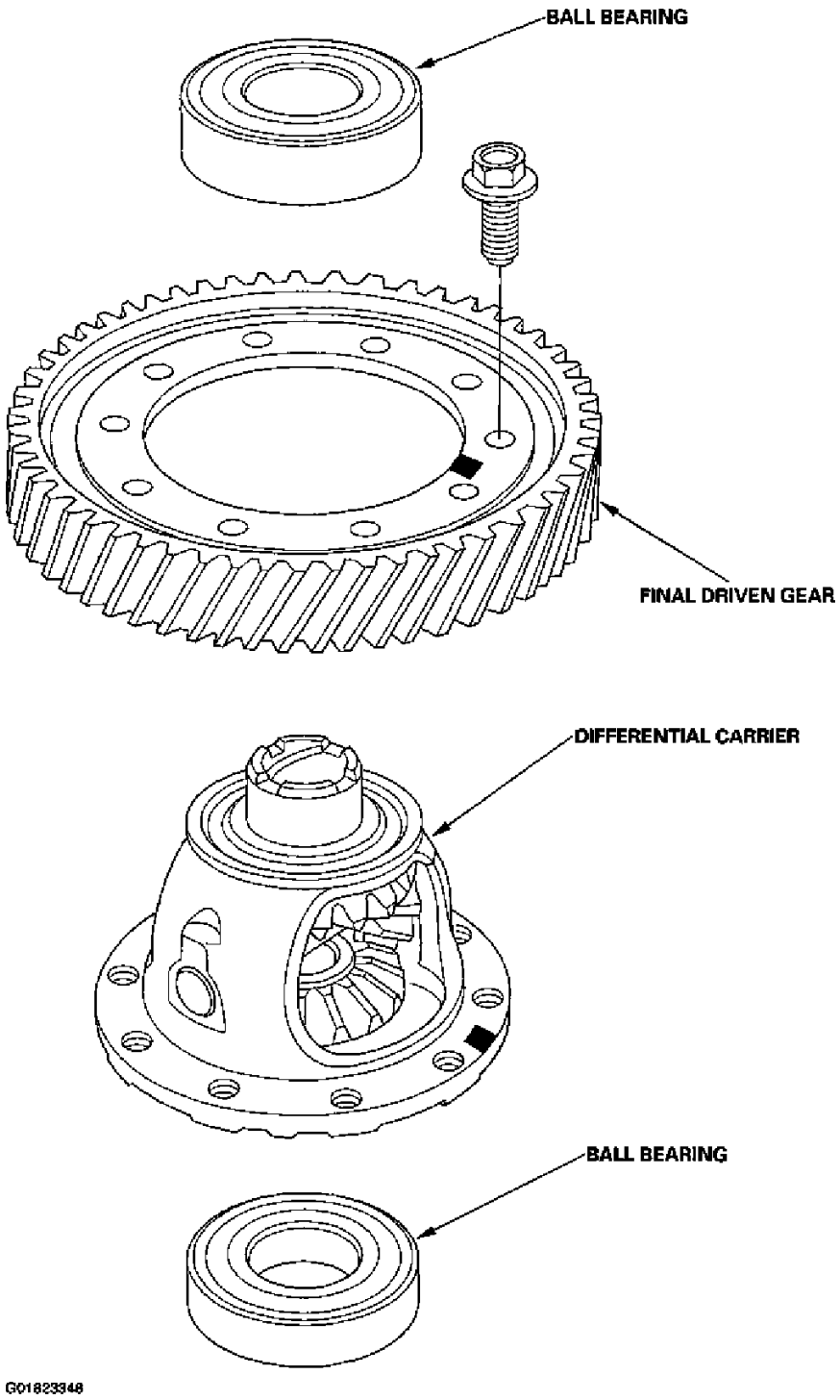


Fig. 141: Locating M/T Differential Components

BACKLASH INSPECTION

1. Place the differential assembly on V-blocks (A), and install both axles.

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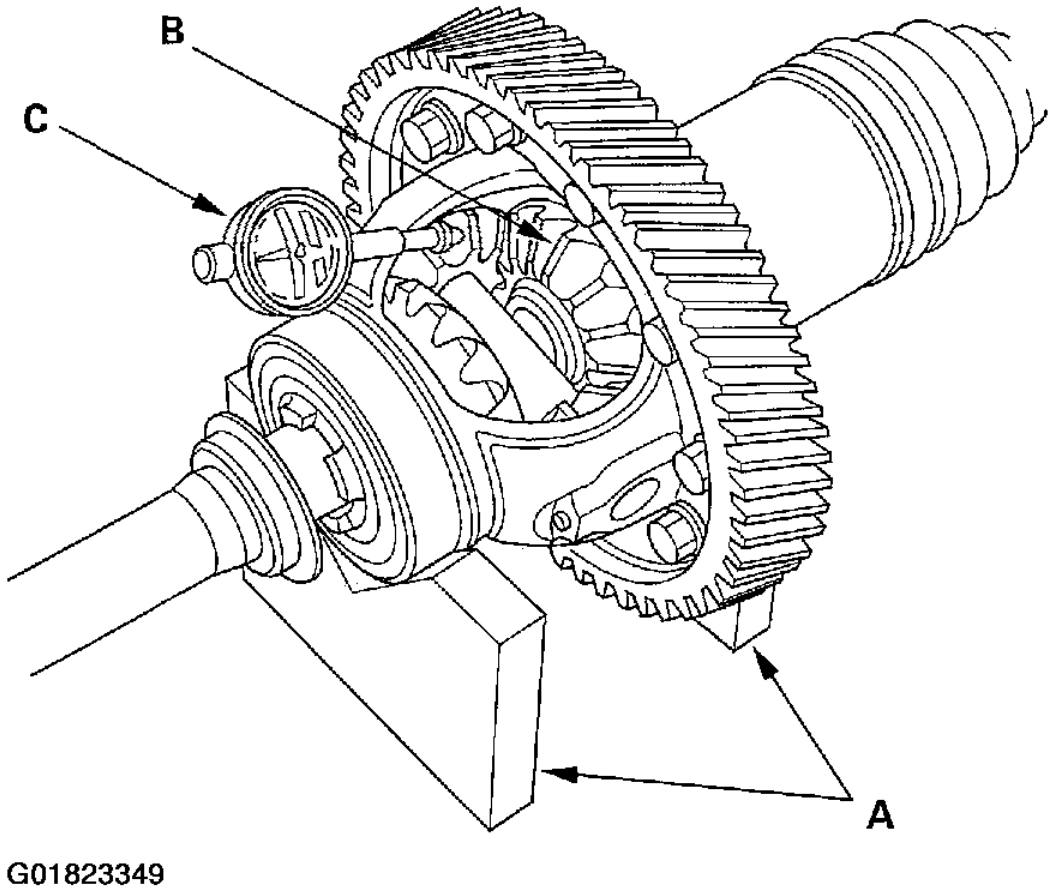


Fig. 142: Inspecting Backlash

2. Measure the backlash of both pinion gears (B) with a dial indicator (C). If the backlash is not within the standard, replace the differential carrier.

   Standard (New): 0.05-0.15 mm (0.002-0.006 in.)

DIFFERENTIAL CARRIER, FINAL DRIVEN GEAR REPLACEMENT

1. Remove the bolts (left-hand threads) in a crisscross pattern in several steps, then remove the final driven gear (A) from the differential carrier (B).

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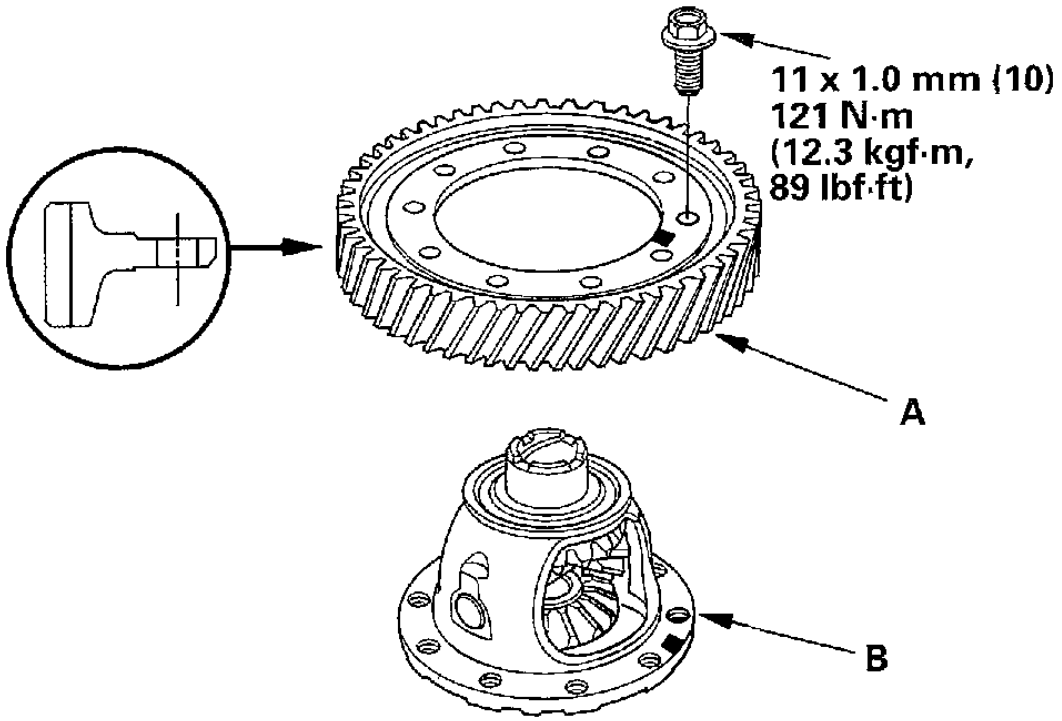


Fig. 143: Removing The Final Driven Gear From The Differential Carrier (Left-Hand Thread Bolts)

2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

CARRIER BEARING REPLACEMENT

Special Tools Required: Driver, 40 mm I.D. 07746-0030100

1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.
2. Remove the carrier bearing (A) with a commercially available bearing puller (B).

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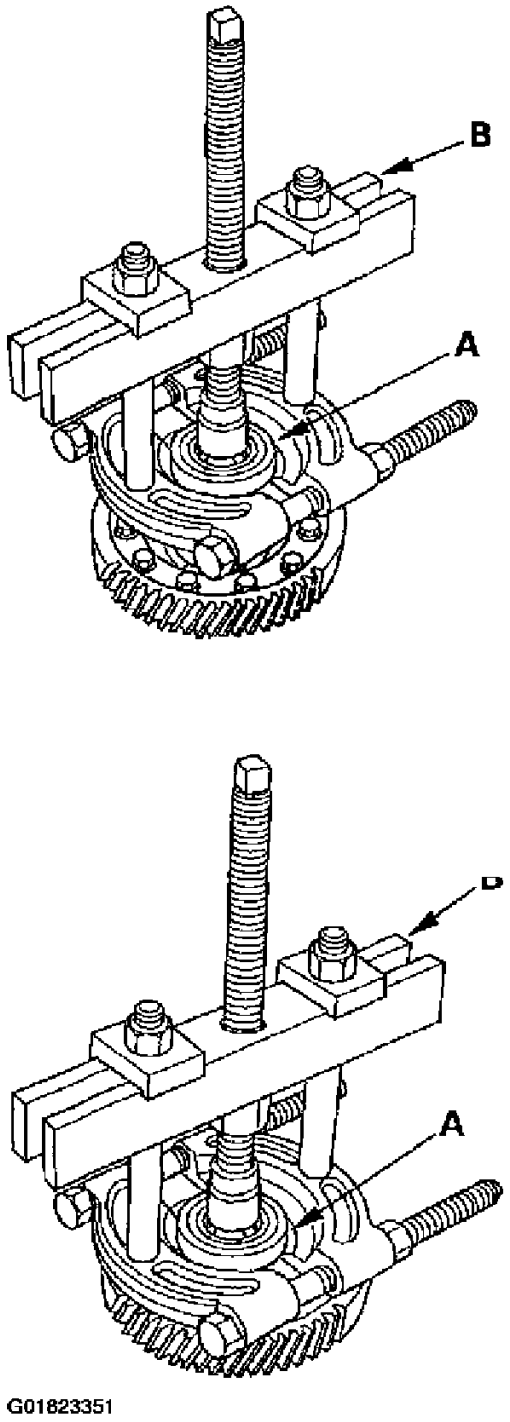


Fig. 144: Removing The Carrier Bearing

3. Install the new bearings (A) with the special tool and a press. Press each bearing on until it bottoms. There should be no clearance between the bearings and the carrier.

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NOTE: **Place the seal part of the bearing (B) towards the outside of the differential, then install it.**

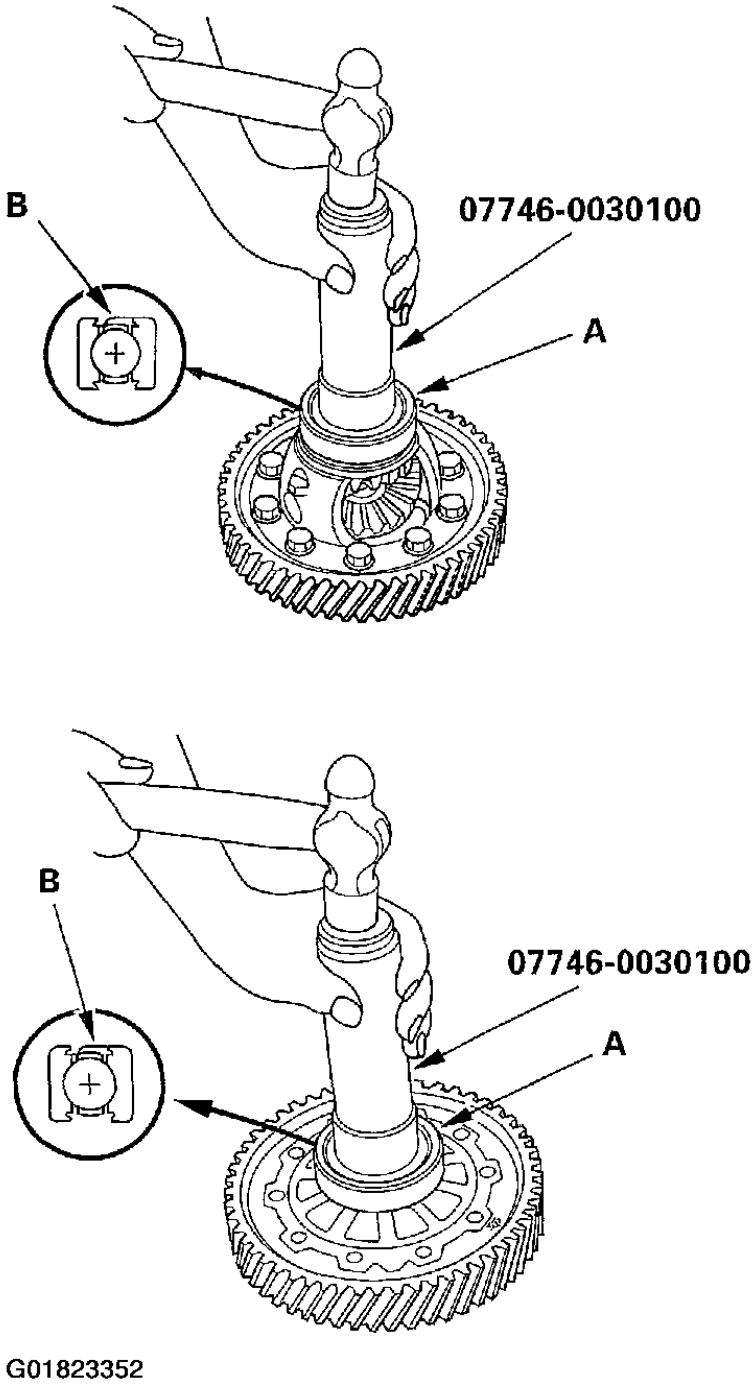


Fig. 145: Installing The New Bearings

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OIL SEAL REPLACEMENT

Special Tools Required:

- Driver 07749-0010000
- Oil seal driver attachment 07NAD-P20A100

1. Remove the differential assembly.
2. Remove the oil seal (A) from the transmission housing (B).

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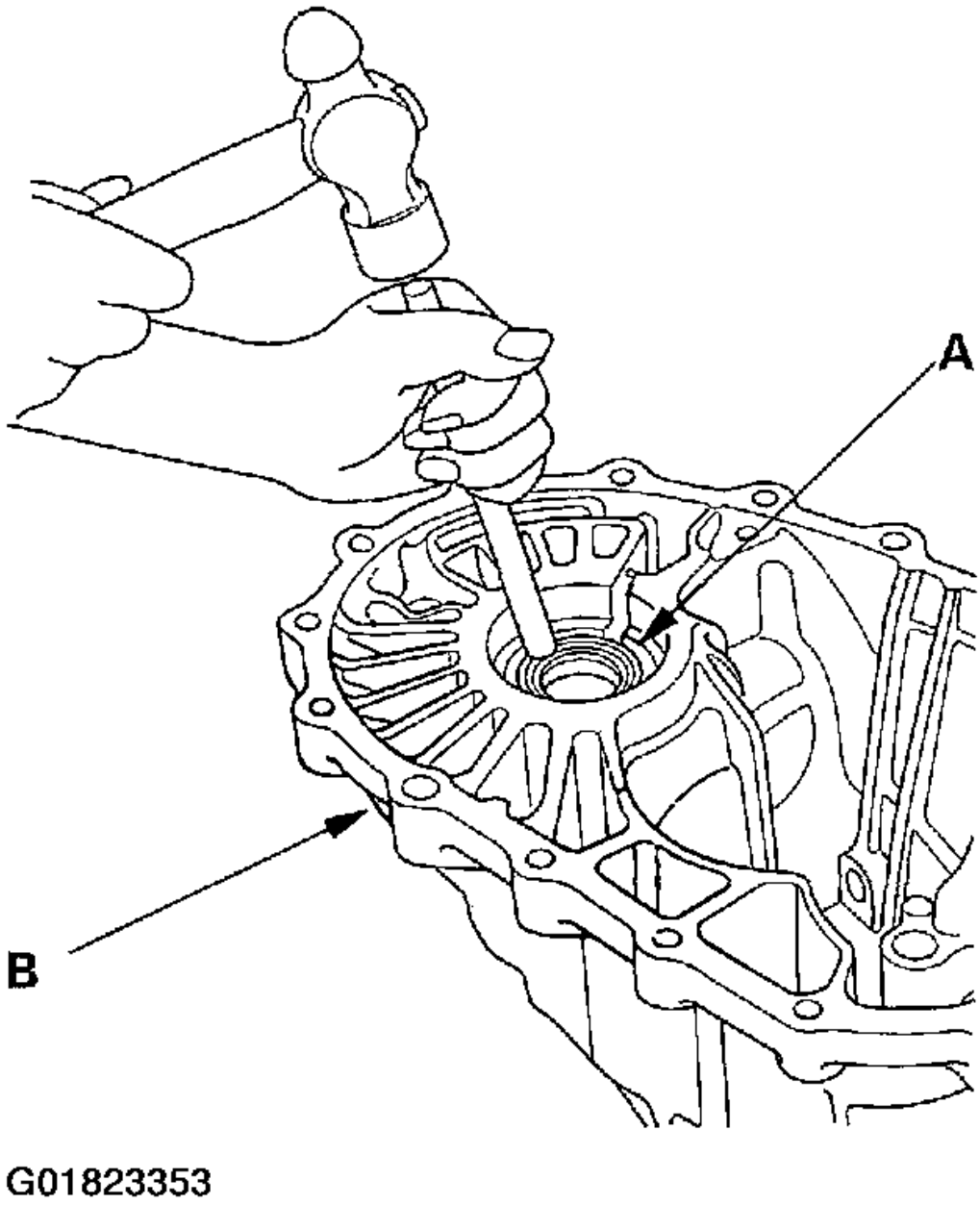


Fig. 146: Removing The Oil Seal From The Transmission Housing

3. Remove the oil seal (A) from the clutch housing (B).

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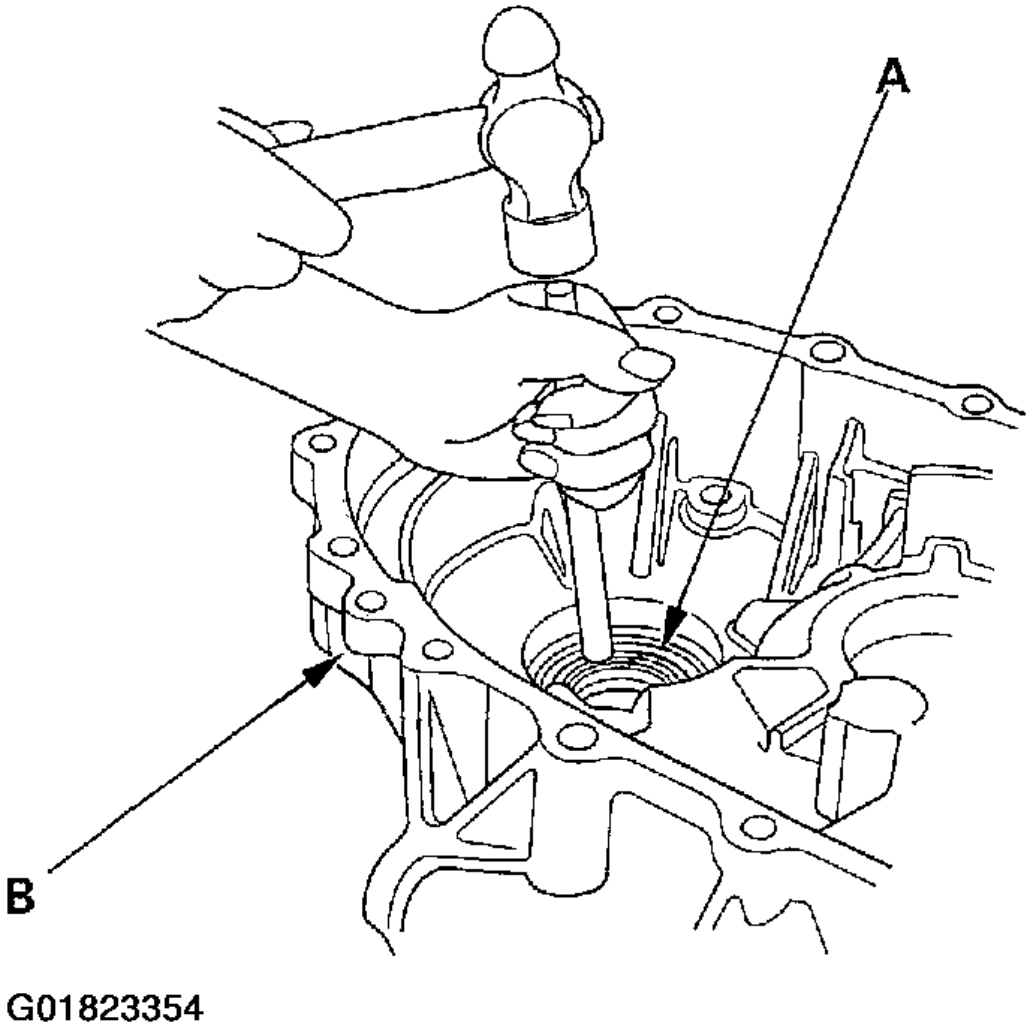


Fig. 147: Removing The Oil Seal From The Clutch Housing

4. Install the new oil seal in the transmission housing with the special tools.

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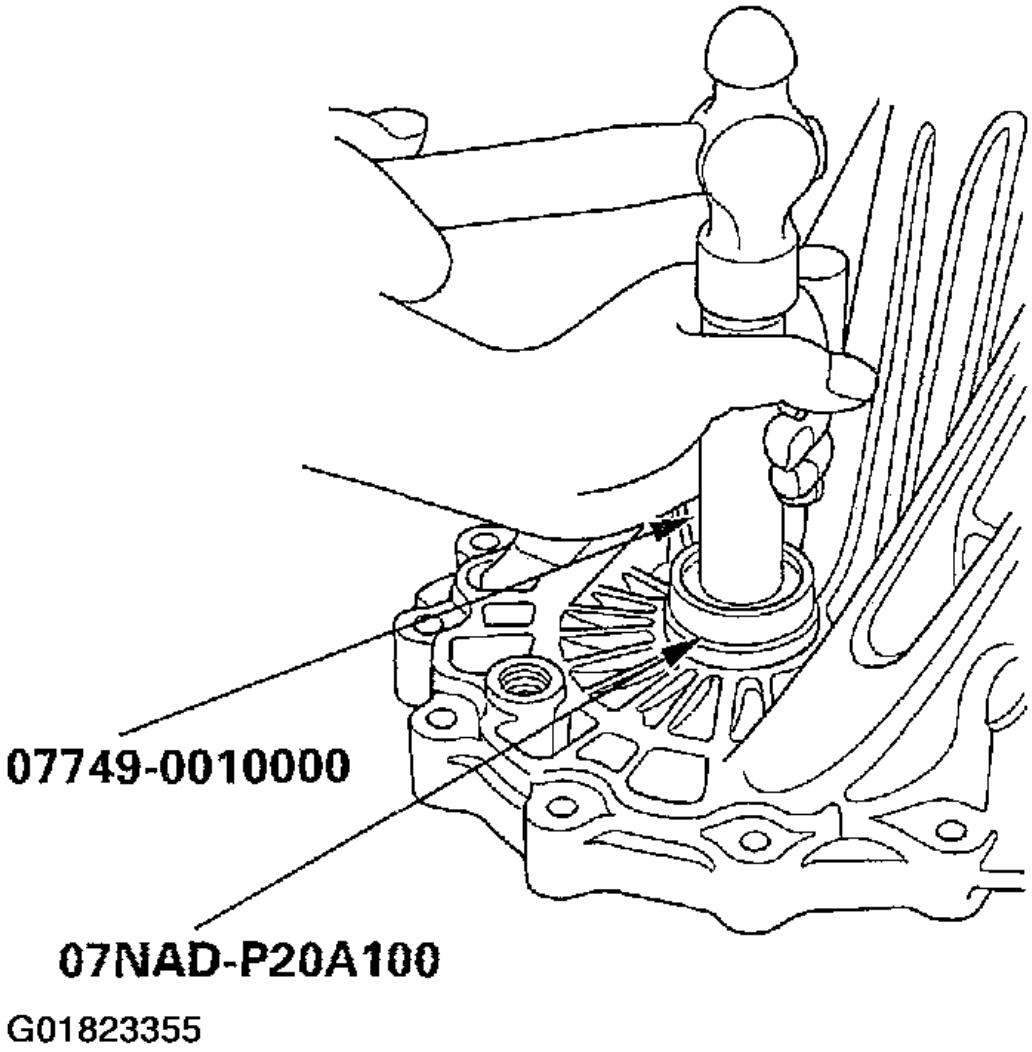


Fig. 148: Installing The New Oil Seal In The Transmission Housing

5. Install the new oil seal in the clutch housing with the special tools.

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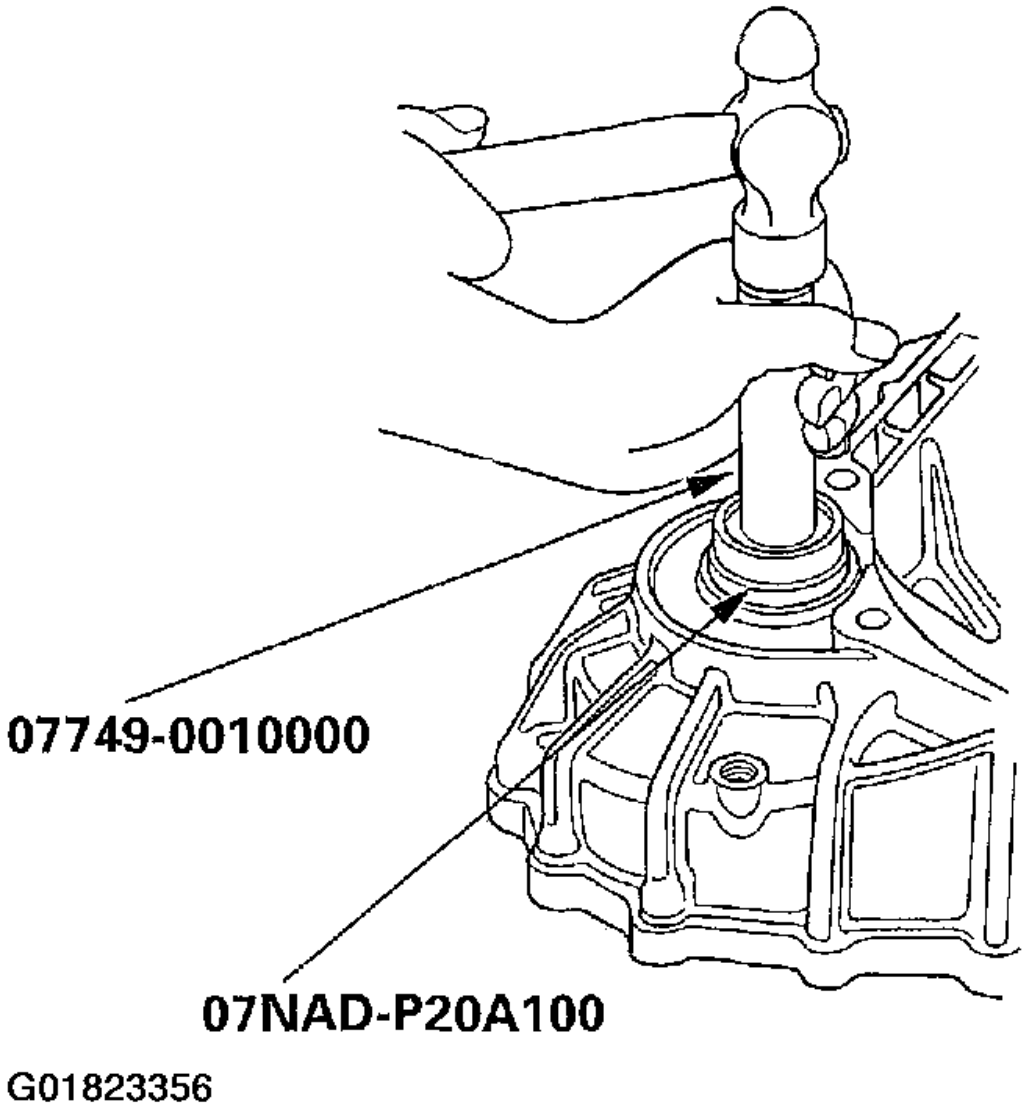


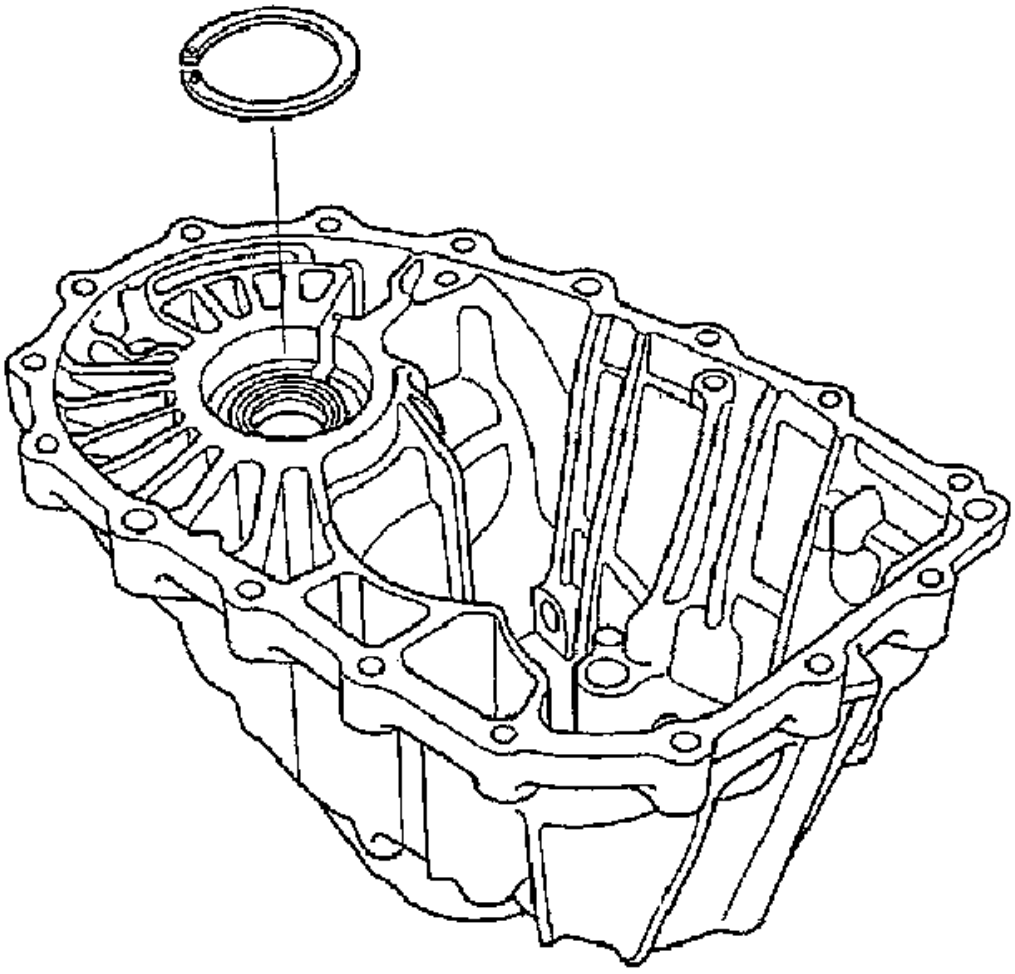
Fig. 149: Installing The New Oil Seal In The Clutch Housing

DIFFERENTIAL THRUST CLEARANCE ADJUSTMENT

Special Tools Required: Driver, 40 mm I.D. 07746-0030100

1. If you removed the 80 mm shim from the transmission housing, reinstall the same sized shim.

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Fig. 150: Installing 80 mm Shim In The Transmission Housing

2. Install the differential assembly into the clutch housing.

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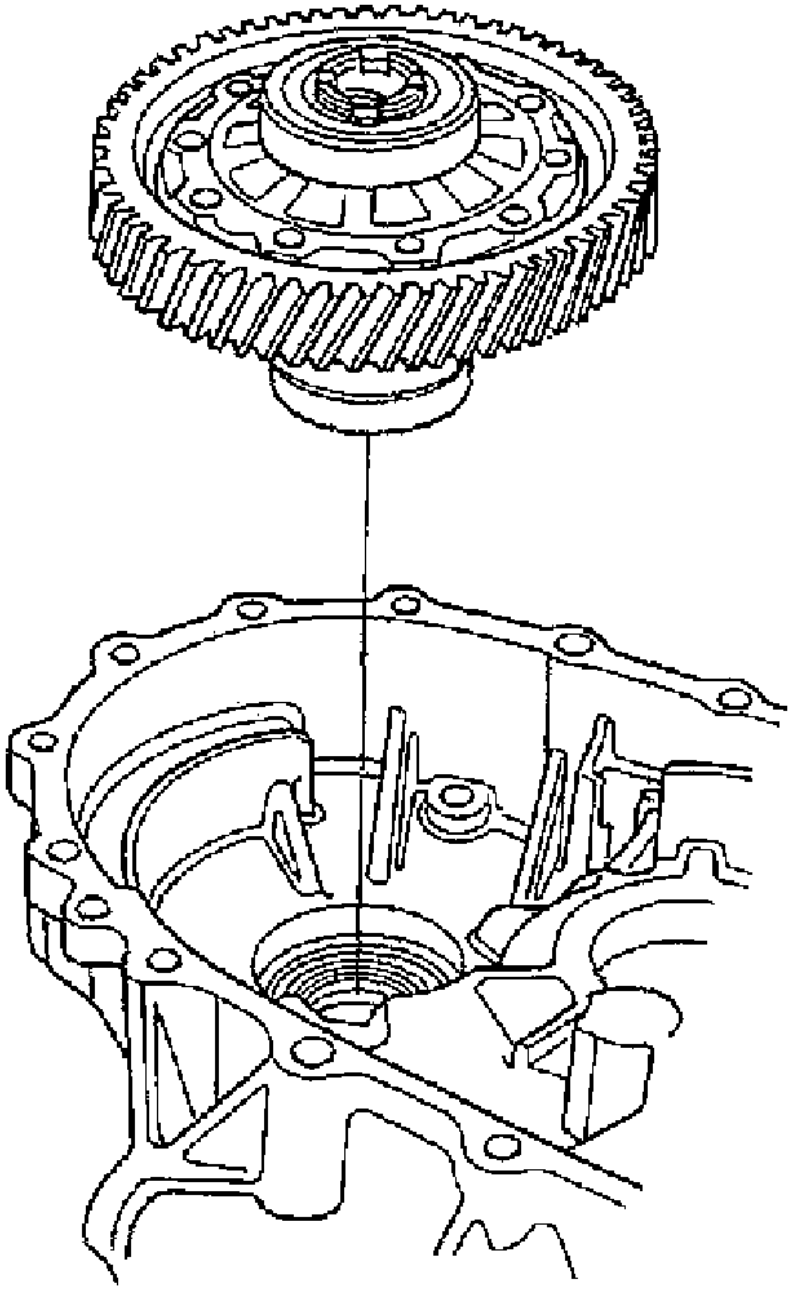


Fig. 151: Installing The Differential Assembly Into The Clutch Housing

3. Install the transmission housing onto the clutch housing, then tighten the 8 mm special bolts (left-hand threads) in a crisscross pattern in several steps (see step 15 of **TRANSMISSION REASSEMBLY**).

8 x 1.25 mm Special Bolt (Left-Hand Thread) Torque: 24 N.m (2.4 kgf.m, 17.4 lbf.ft)

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4. Use the special tool to bottom the differential assembly in the clutch housing.

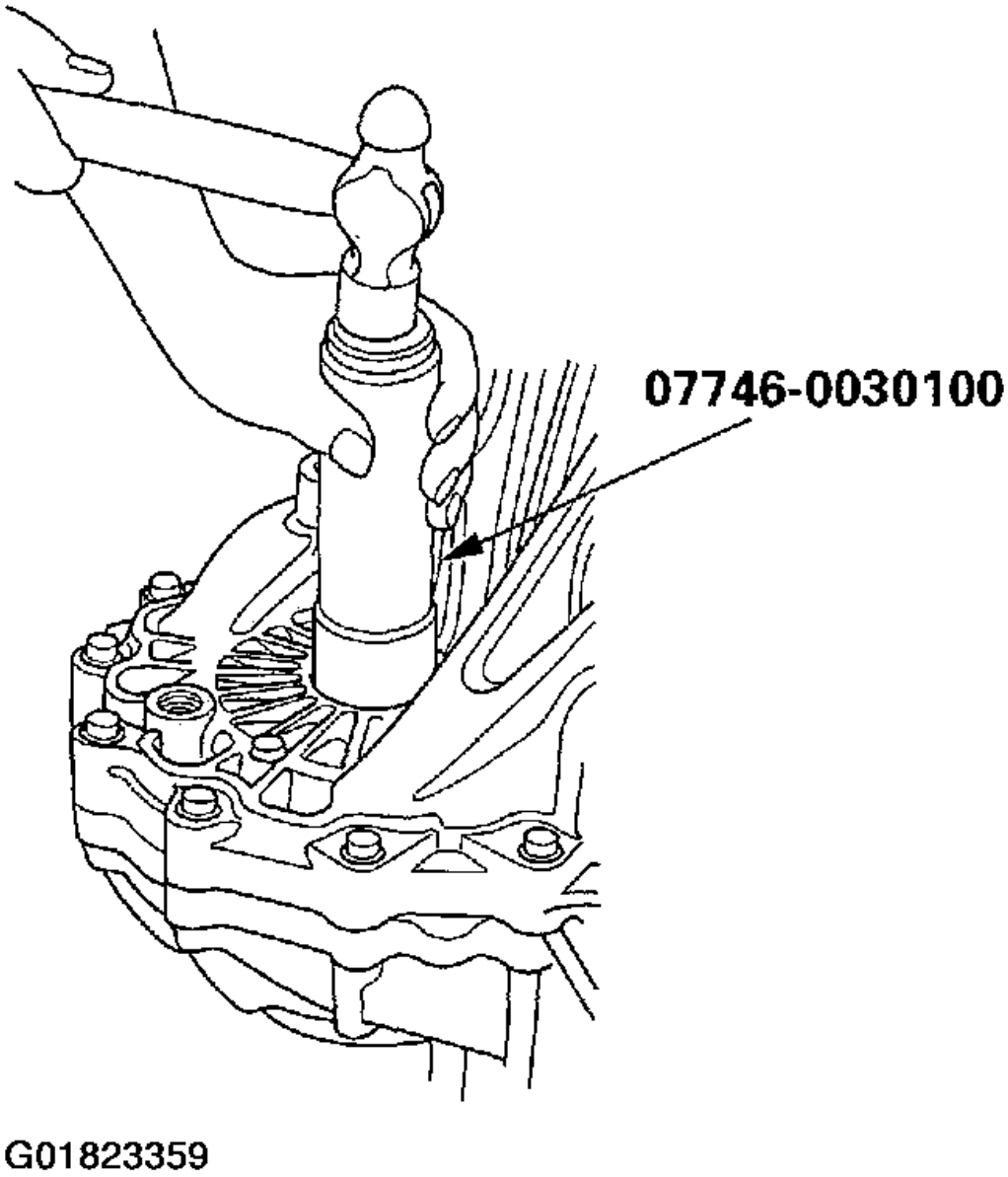
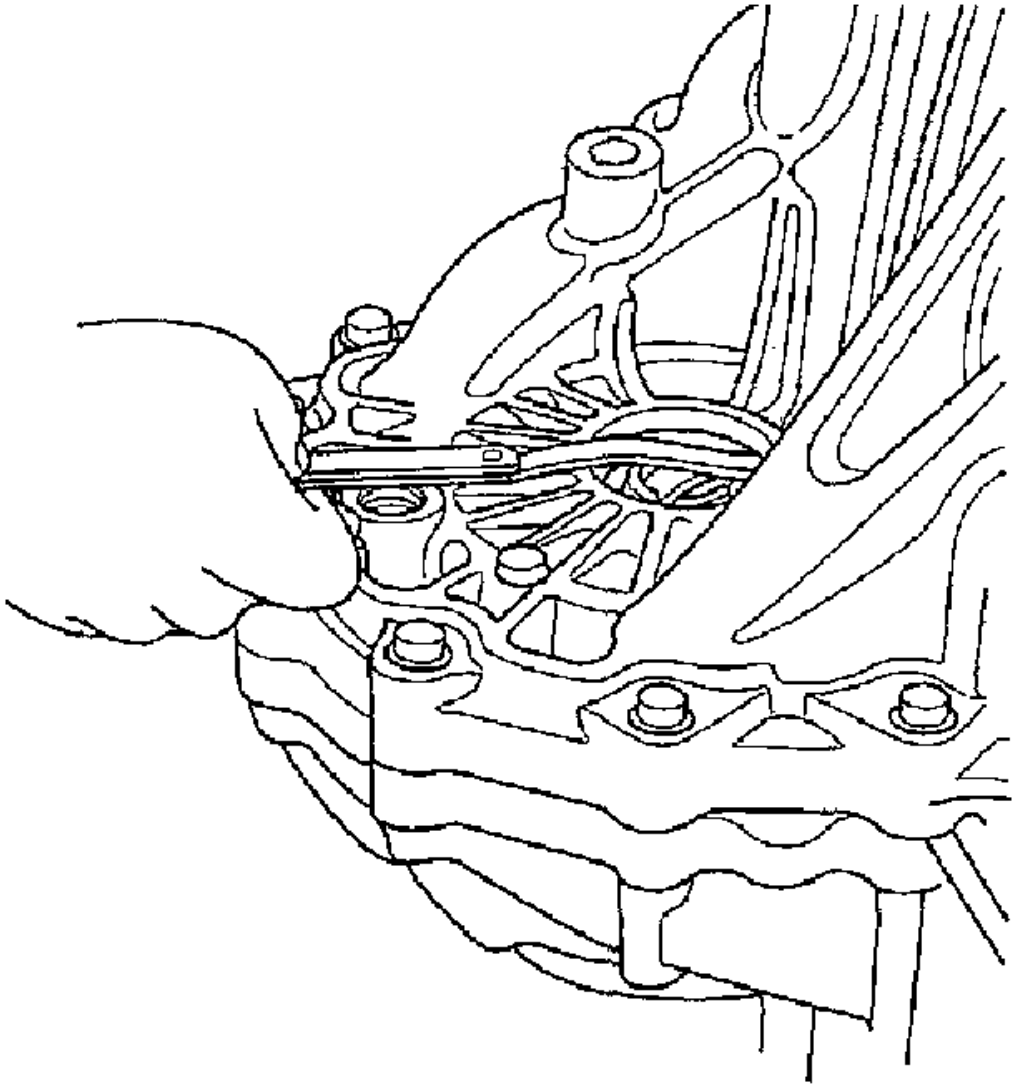


Fig. 152: Bottoming The Differential Assembly In The Clutch Housing

5. Measure clearance between 80 mm shim and bearing outer race in transmission housing.
   Standard: 0-0.10 mm (0-0.0039 in.)

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Fig. 153: Measuring Clearance Between 80 mm Shim & Bearing Outer Race In Transmission Housing

6. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9 .

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	Part Number	Thickness
A	41441-PL3-B00	1.0 mm (0.039 in.)
B	41442-PL3-B00	1.1 mm (0.043 in.)
C	41443-PL3-B00	1.2 mm (0.047 in.)
D	41444-PL3-B00	1.3 mm (0.051 in.)
E	41445-PL3-B00	1.4 mm (0.055 in.)
F	41446-PL3-B00	1.5 mm (0.059 in.)
G	41447-PL3-B00	1.6 mm (0.063 in.)
H	41448-PL3-B00	1.7 mm (0.067 in.)
J	41449-PL3-B00	1.8 mm (0.071 in.)
K	41450-PL3-B00	1.05 mm (0.041 in.)
L	41451-PL3-B00	1.15 mm (0.045 in.)
M	41452-PL3-B00	1.25 mm (0.049 in.)
N	41453-PL3-B00	1.35 mm (0.053 in.)
P	41454-PL3-B00	1.45 mm (0.057 in.)
Q	41455-PL3-B00	1.55 mm (0.061 in.)
R	41456-PL3-B00	1.65 mm (0.065 in.)
S	41457-PL3-B00	1.75 mm (0.069 in.)

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Fig. 154: 80 mm Shim Table

7. Remove the bolts and transmission housing.
8. Replace the thrust shim selected in step 6, then recheck the clearance.
9. Reinstall the transmission.

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2004 MANUAL TRANSMISSIONS

Removal & Installation - TSX

TRANSMISSION REMOVAL

Special Tools Required:

- Engine hanger/adapter VSB02C000015*
- Engine support hanger, A & Reds AAR-T-12566*
- Subframe adapter VSB02C000016*

* Available through the Honda Tool and Equipment Program.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Secure the hood in its vertical position (support rod in the lower hole).

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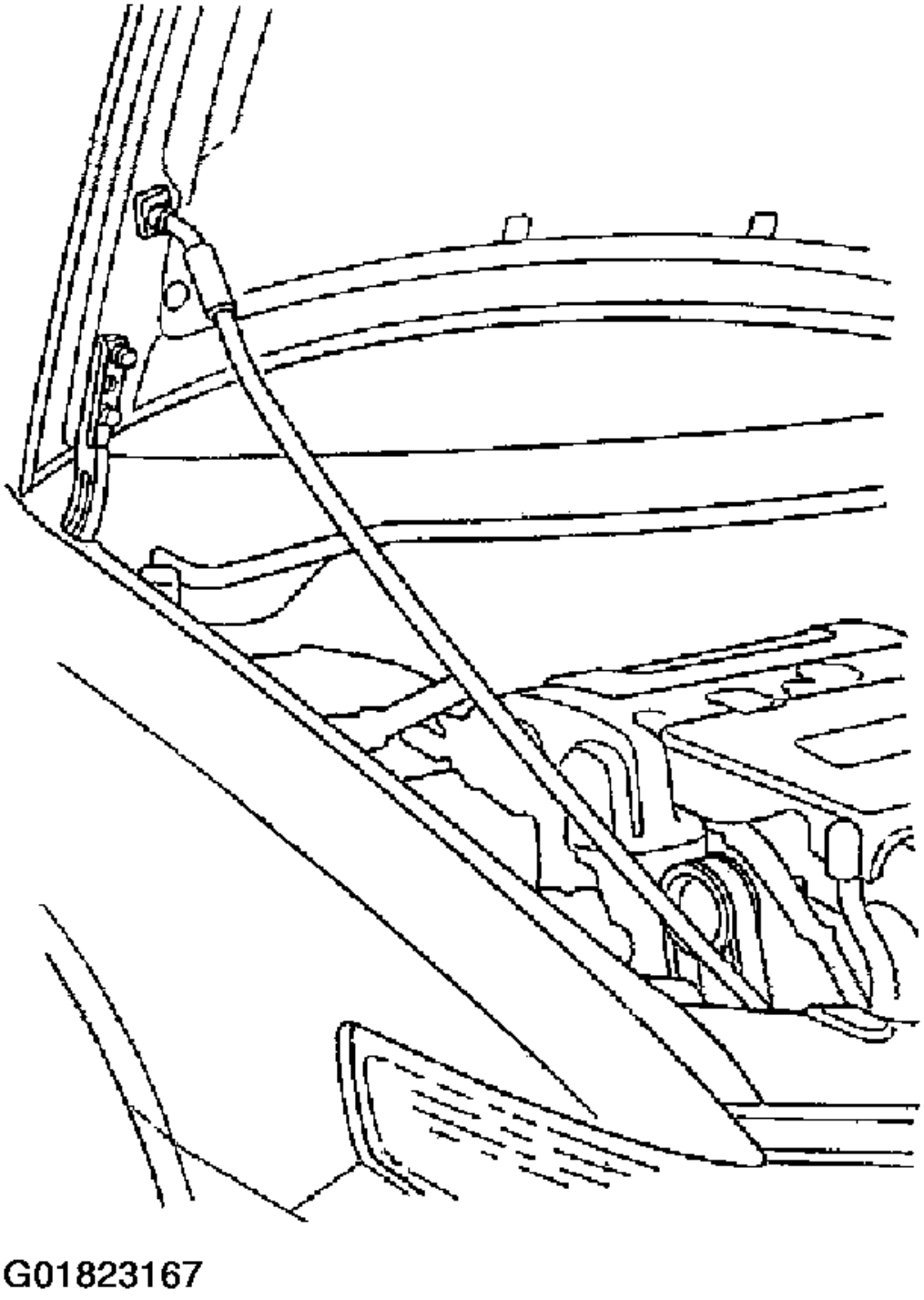


Fig. 1: Secure The Hood With Support Rod In The Lower Hole

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2. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons. Disconnect the negative (-) cable first, then the positive (+) cable from the battery. Remove the battery.
3. Remove the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
4. Remove the battery base (see step 6 of **ENGINE REMOVAL**).
5. Carefully remove the slave cylinder without bending the clutch line. Do not operate the clutch pedal once the slave cylinder has been removed.

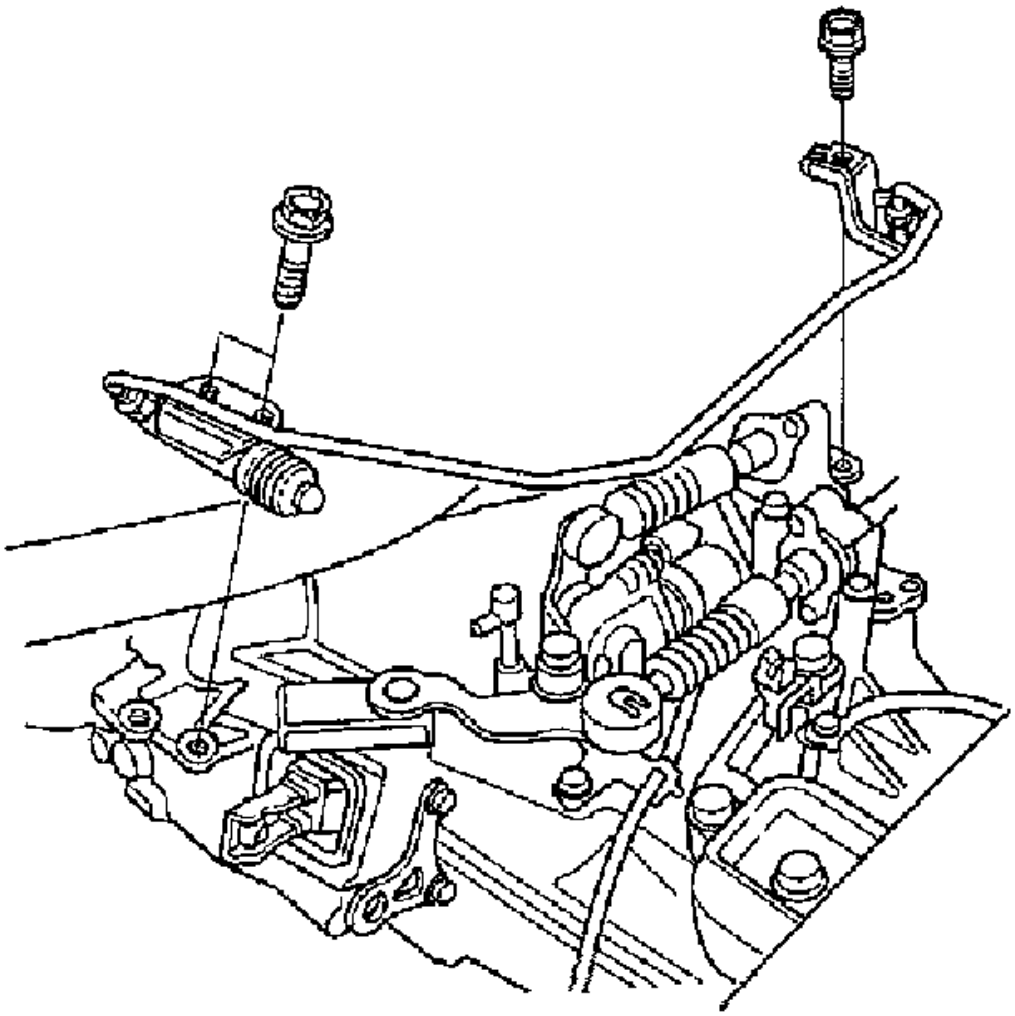


Fig. 2: Removing The Slave Cylinder

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6. Remove the cable bracket (A), then disconnect the cables (B) from the top of the transmission housing. Carefully remove both cables and the bracket together to avoid bending the cables.

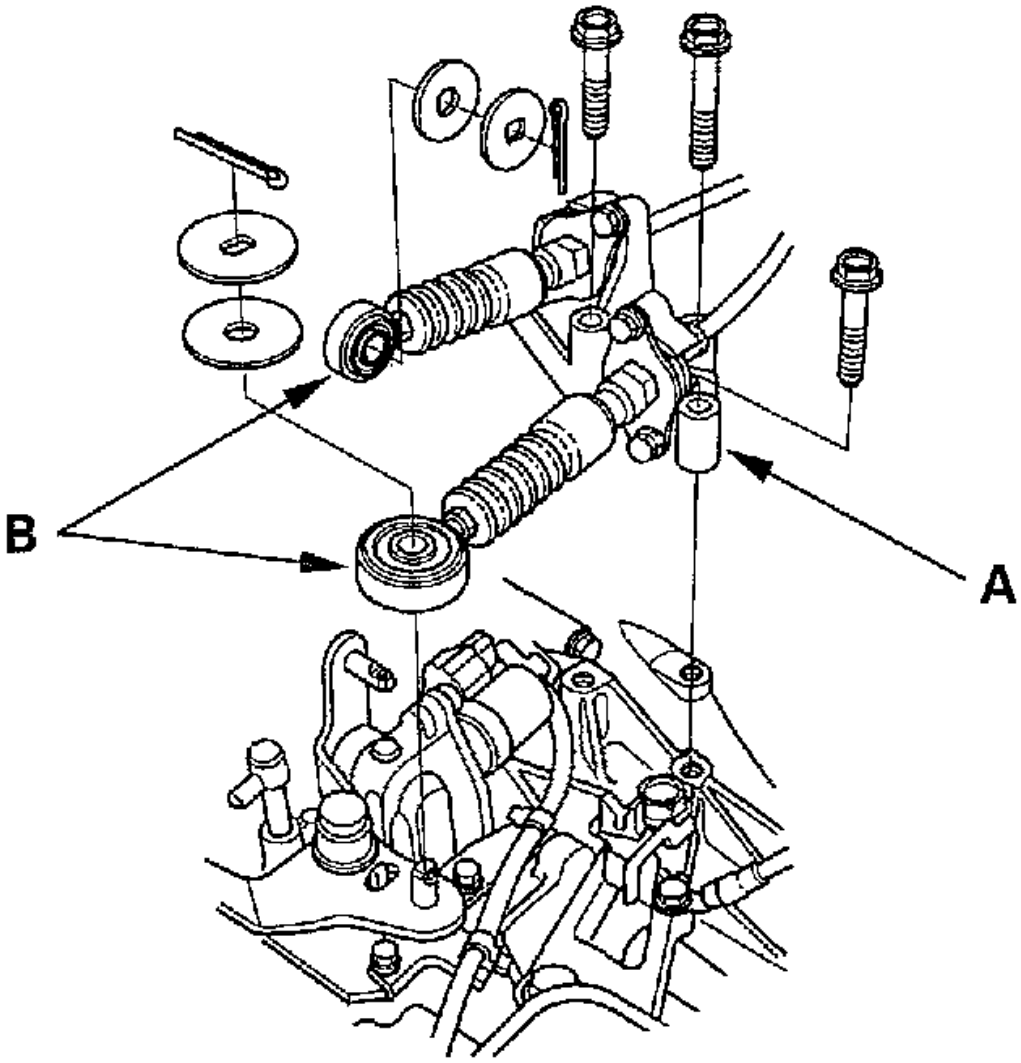


Fig. 3: Removing The Cable Bracket, & Disconnecting The Cables From The Top Of The Transmission Housing

7. Disconnect the countershaft speed sensor connector (A), back-up light switch connector (B), and reverse lockout solenoid connector (C).

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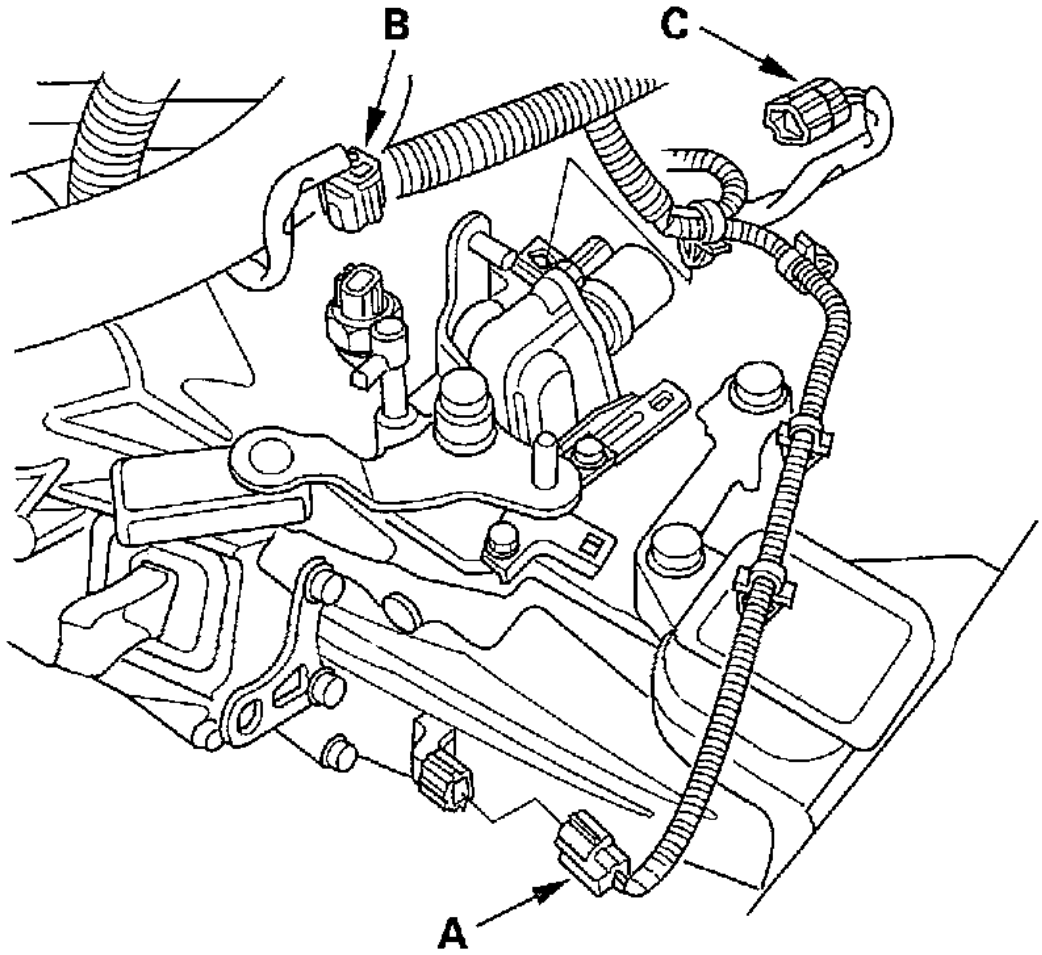


Fig. 4: Disconnecting The Countershaft Speed Sensor, Back-Up Light Switch, And Reverse Lockout Solenoid Connectors

8. Disconnect the secondary heated oxygen sensor (secondary HO2S) connector (A), then remove the bracket (B).

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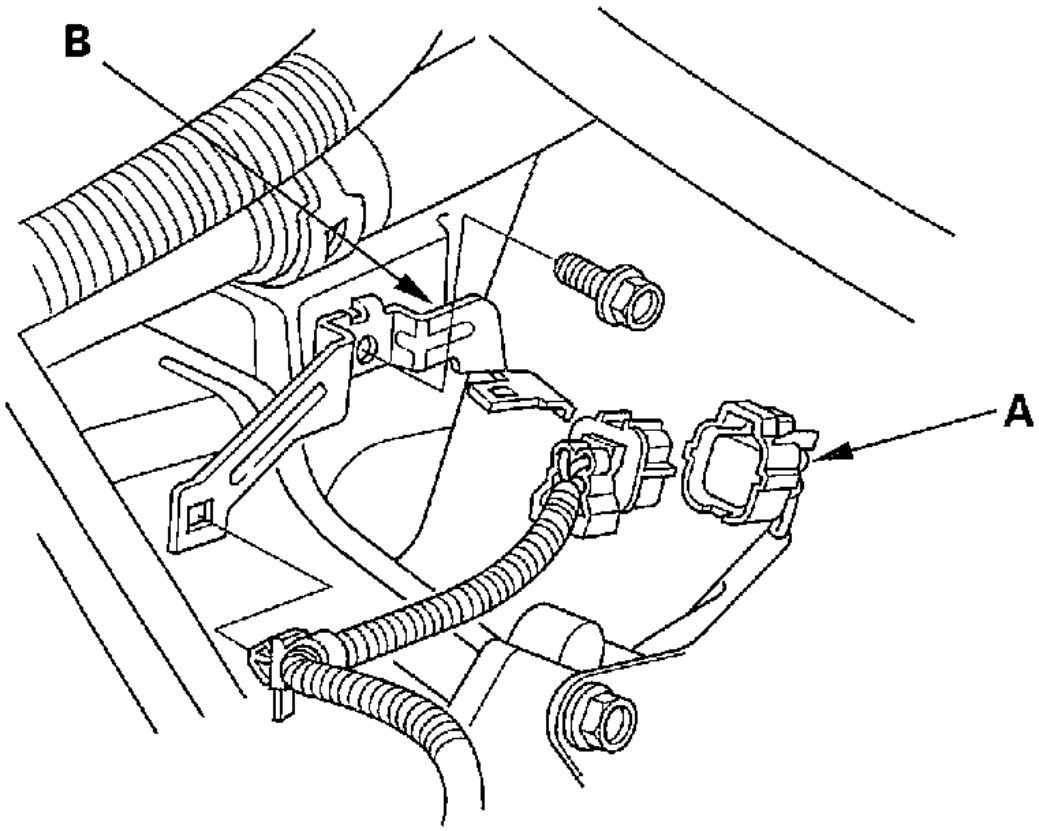


Fig. 5: Disconnecting The Secondary Heated Oxygen Sensor

9. Remove the engine front mount stop (A) and the engine mount front mounting bolt (B).

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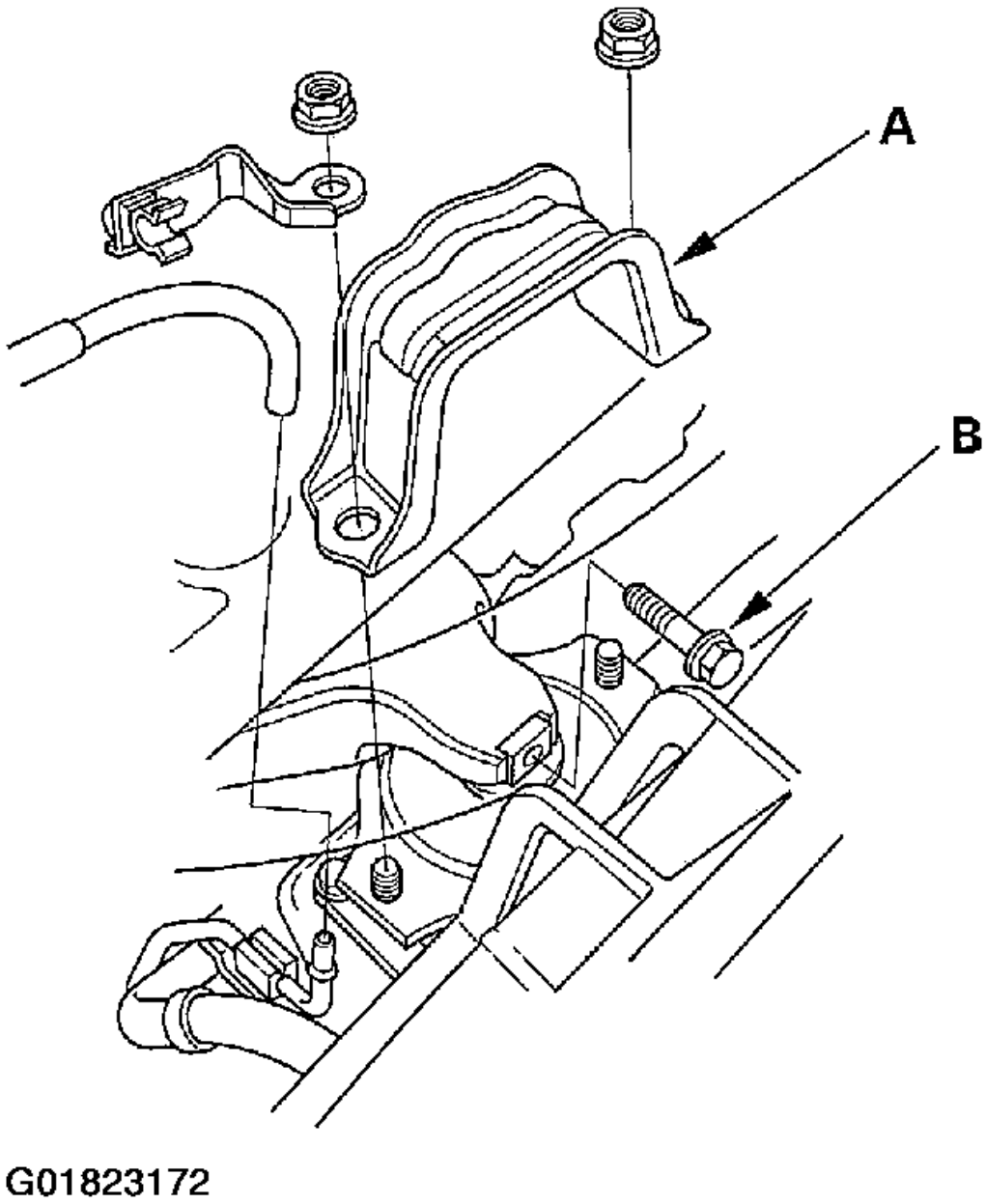
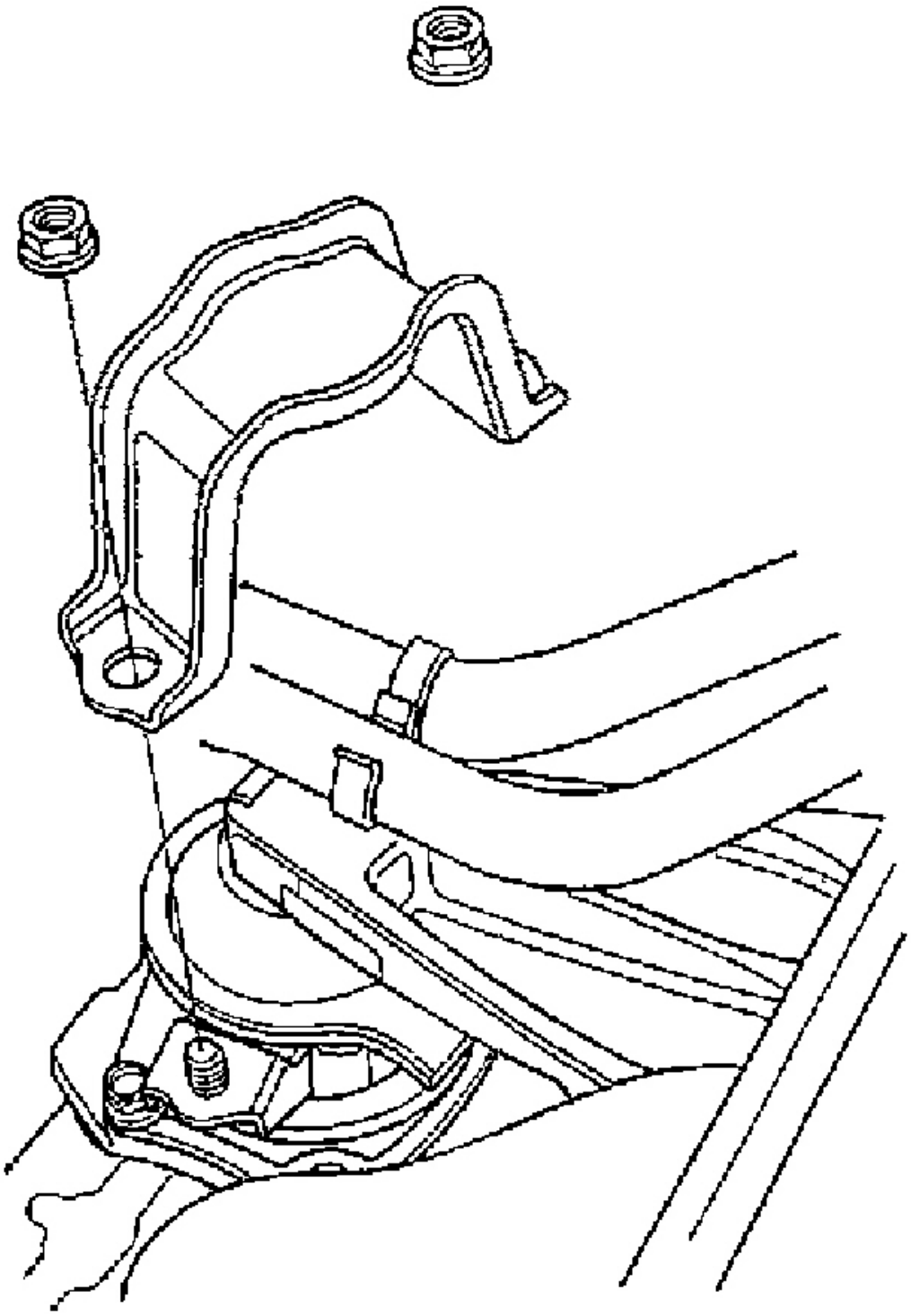


Fig. 6: Removing The Engine Front Mount Stop & The Engine Mount Front Mounting Bolt

10. Remove the engine rear mount stop.

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Fig. 7: Removing The Engine Rear Mount Stop

11. Remove the steering gearbox mounting bolts.

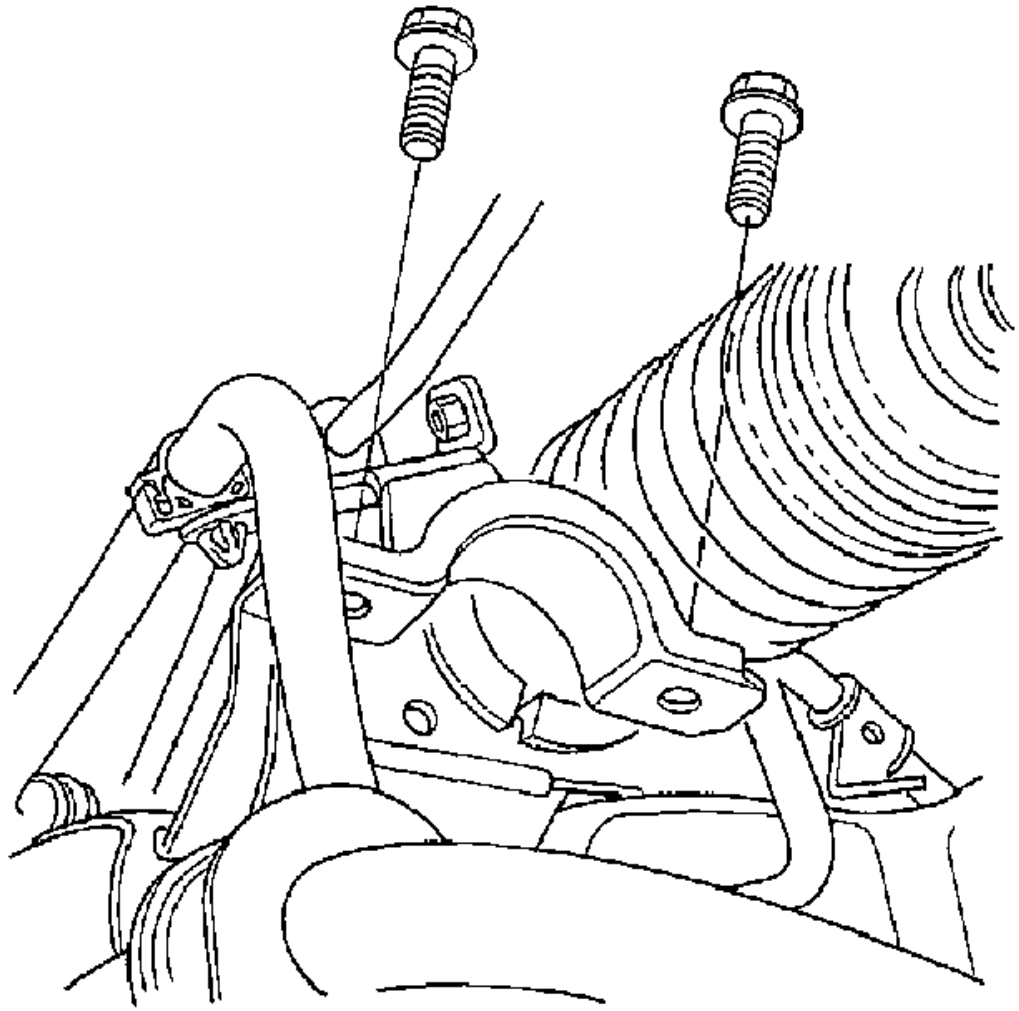


Fig. 8: Removing The Right Side Steering Gearbox Mounting Bolts

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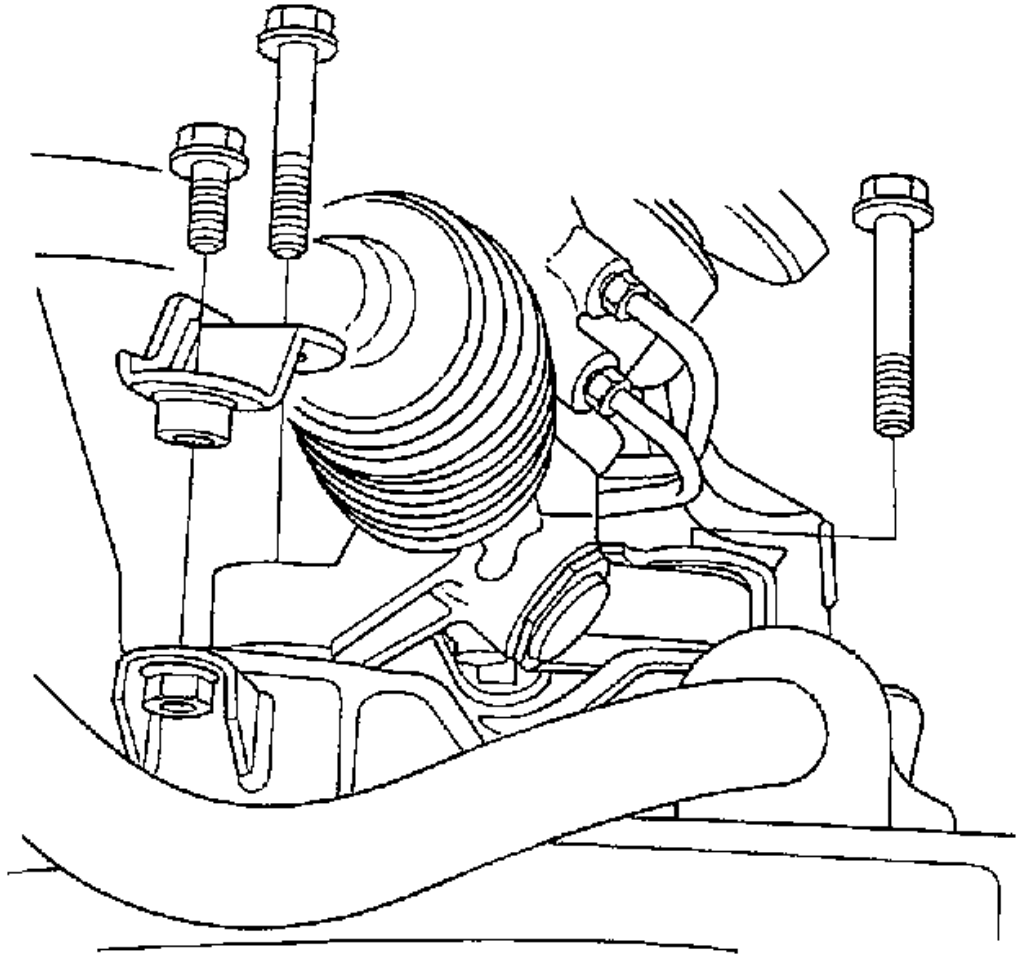


Fig. 9: Removing The Left Side Steering Gearbox Mounting Bolts

12. Remove the transmission upper mounting bolts.

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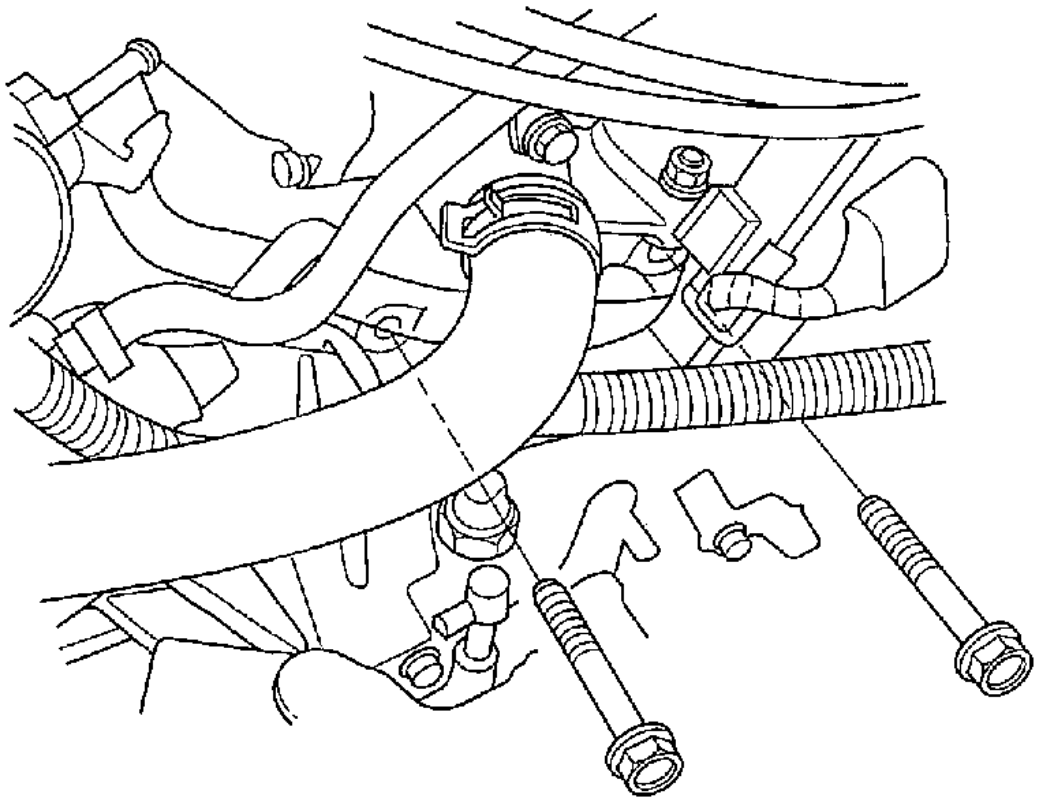


Fig. 10: Removing The Transmission Upper Mounting Bolts

13. Attach the special tool to the threaded holes in the cylinder head.

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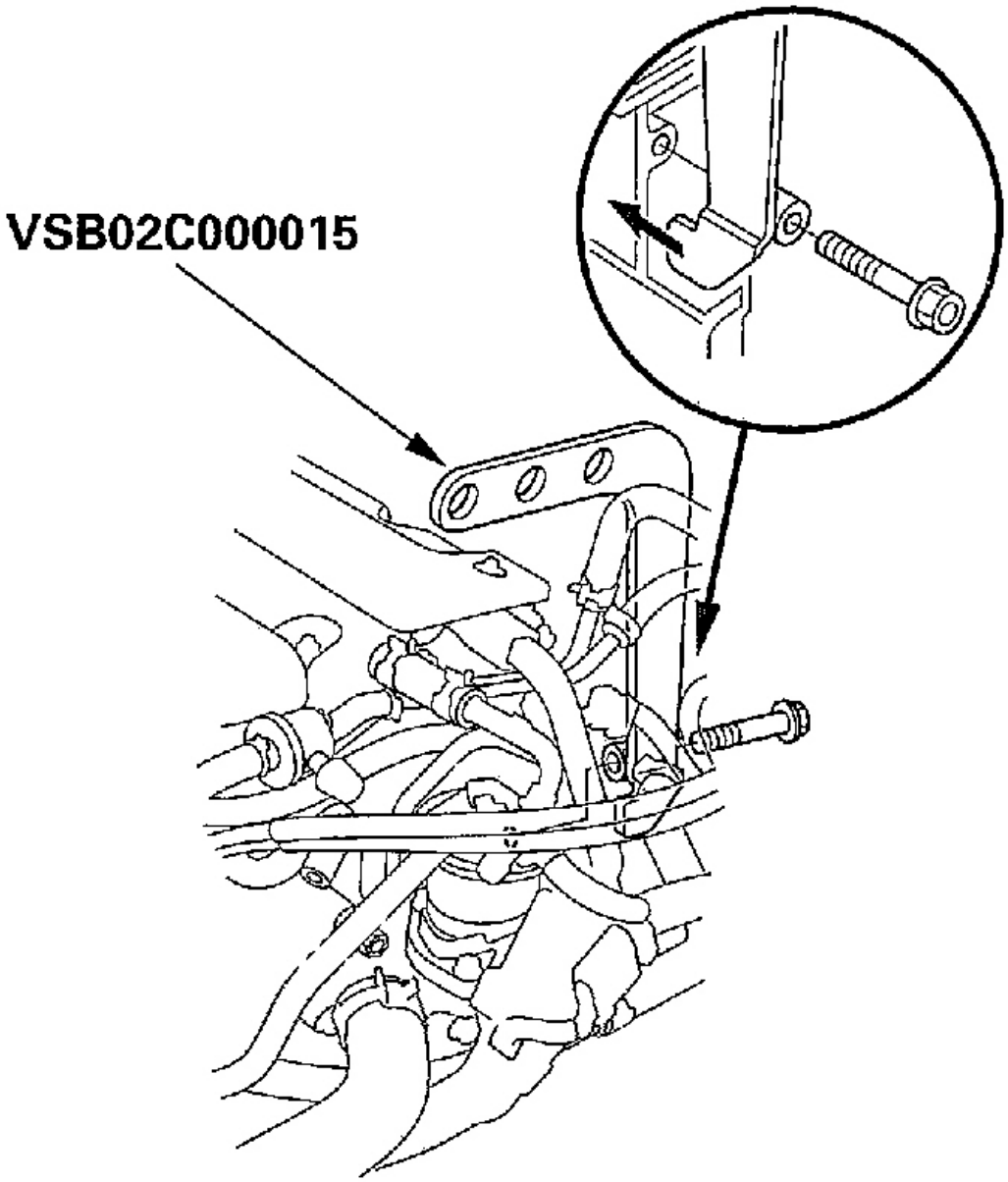


Fig. 11: Attaching The Special Tool To The Threaded Holes In The Cylinder Head

14. Install the engine support hanger (A) to the vehicle, then attach the hook to the special tool.

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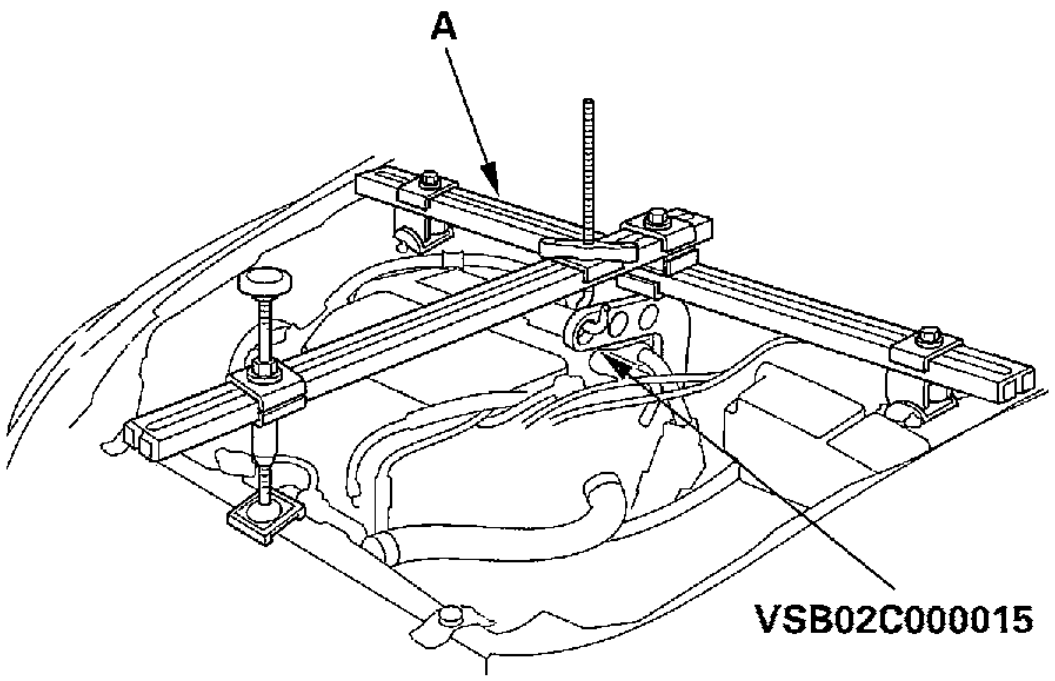
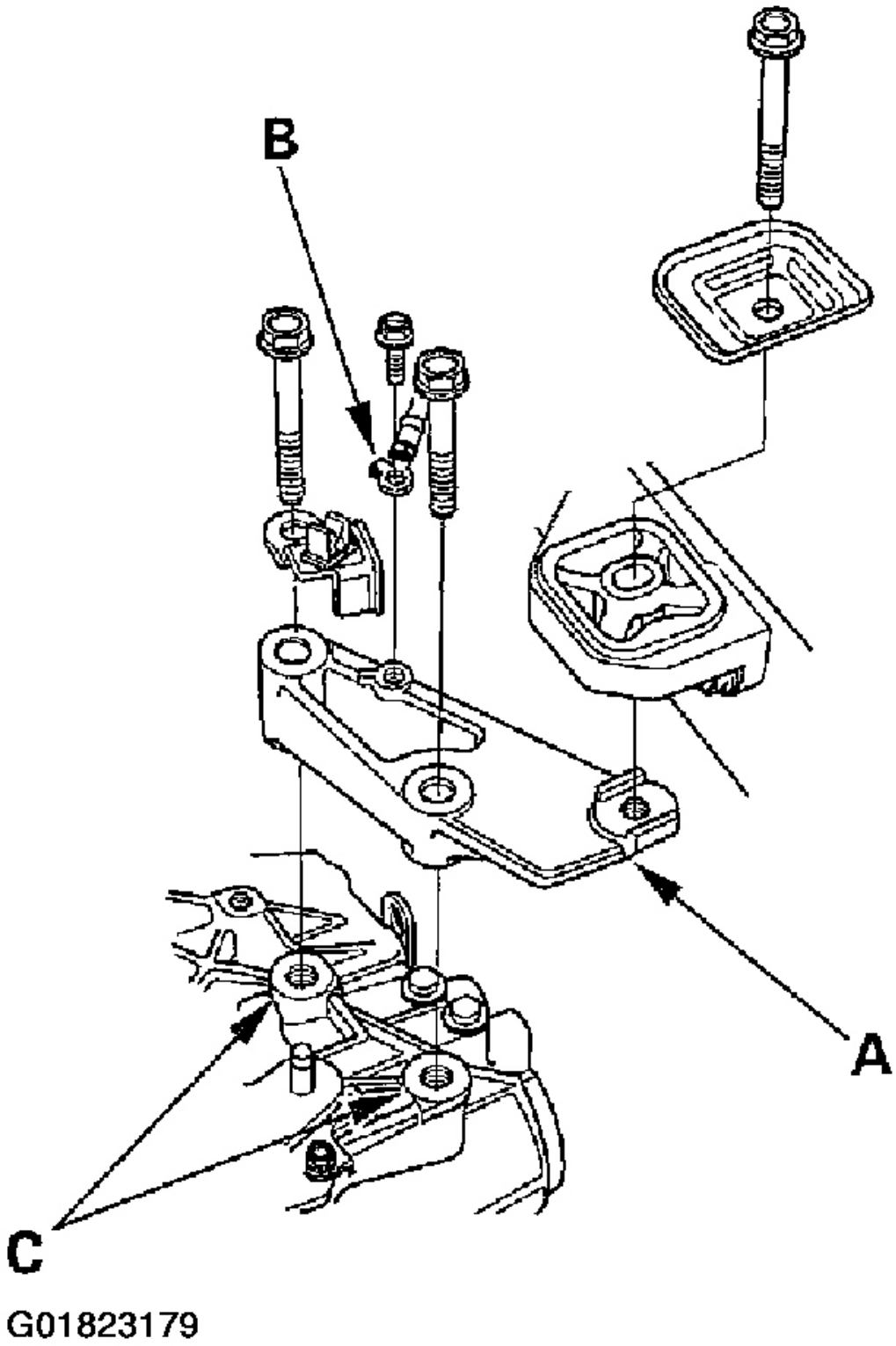


Fig. 12: Installing The Engine Support Hanger To The Vehicle, & Attaching The Hook To The Special Tool

15. Remove the transmission mount bracket (A) and ground cable (B).

NOTE: Be careful not to drop the mount bracket collar (C).

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Fig. 13: Removing The Transmission Mount Bracket And Ground Cable

16. Raise the vehicle, and make sure it is securely supported.
17. Drain the transmission fluid. Reinstall the drain bolt with a new washer (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
18. Remove the splash shield.

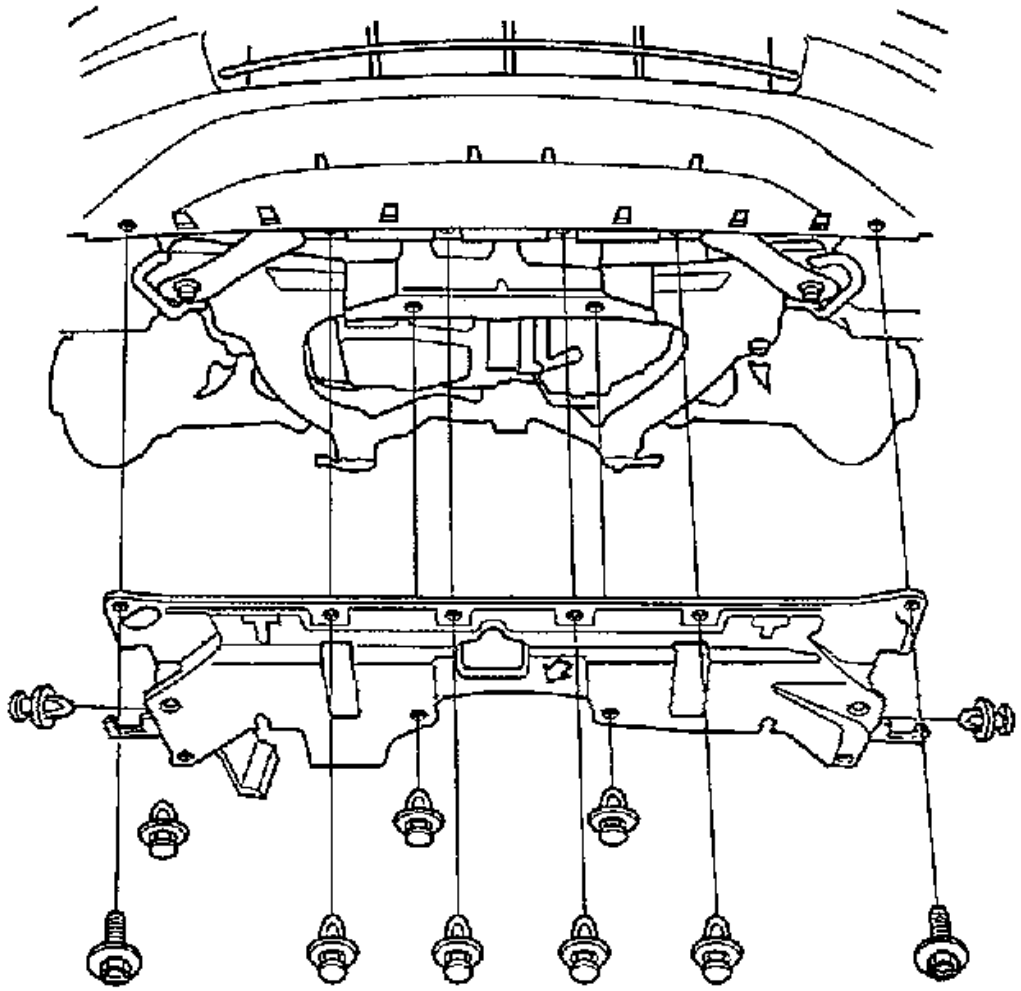
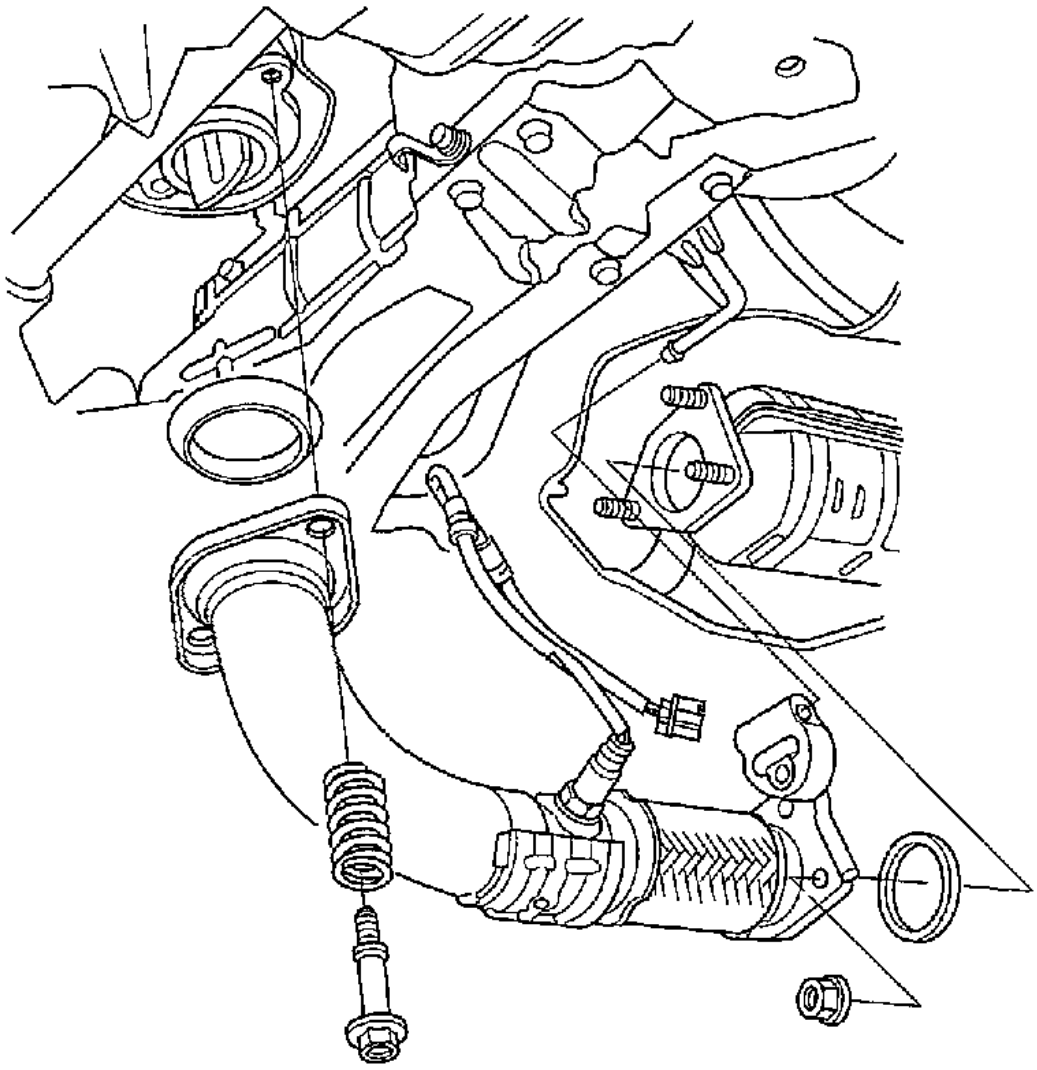


Fig. 14: Removing The Splash Shield

19. Remove the exhaust pipe A.

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Fig. 15: Removing The Exhaust Pipe A

20. Separate the front stabilizer link (see step 5 of **FRONT AXLE SHAFTS**).
21. Remove the damper fork (see step 6 of **FRONT AXLE SHAFTS**).
22. Separate the knuckle from the lower arm (see step 7 of **FRONT AXLE SHAFTS**).
23. Remove the inboard joint of driveshafts (see step 10 of **FRONT AXLE SHAFTS**).
24. Remove the intermediate shaft (see **INTERMEDIATE SHAFT**).
25. Remove the heat shield.

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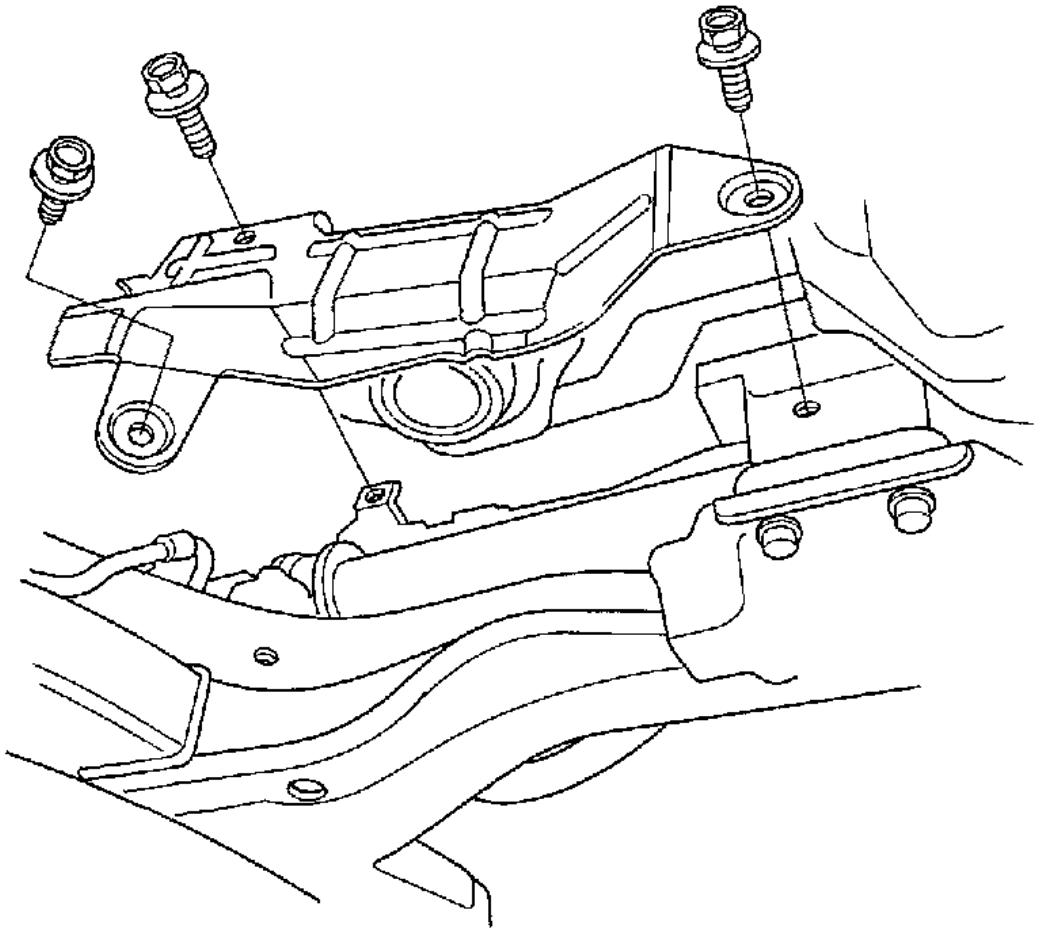


Fig. 16: Removing The Heat Shield

26. Remove the power steering line bracket mounting bolt.

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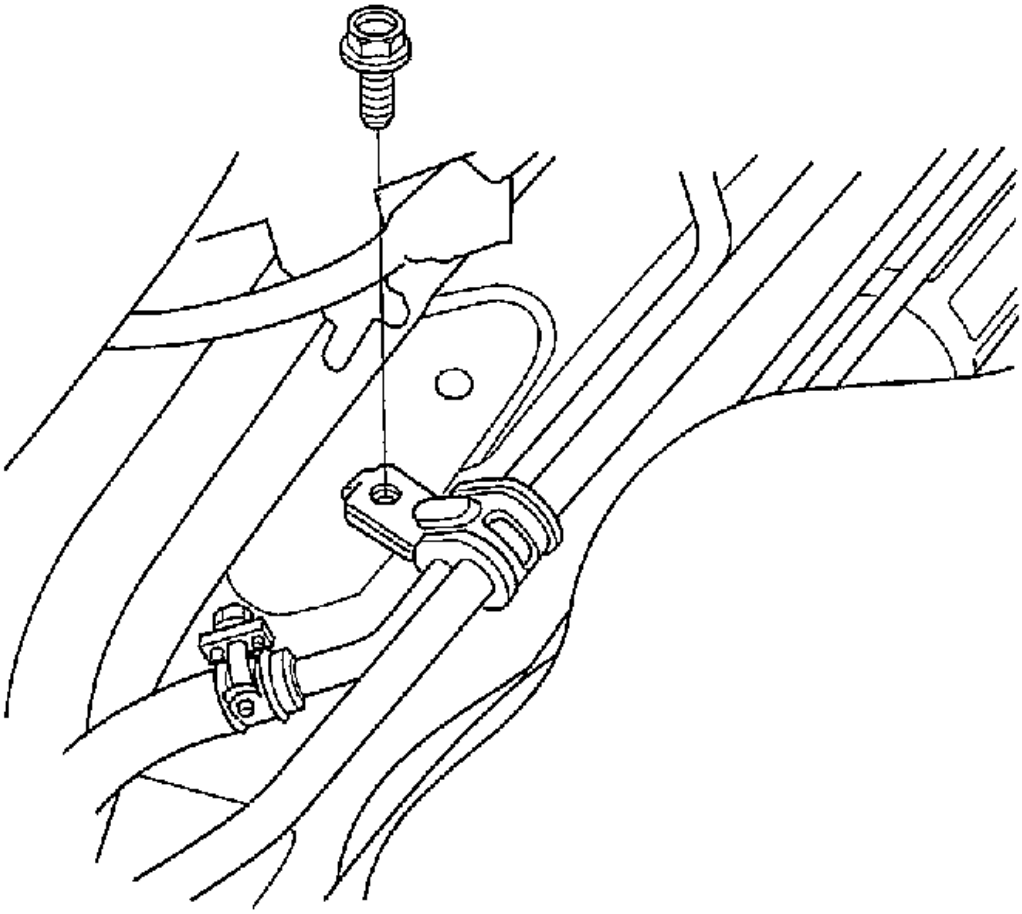
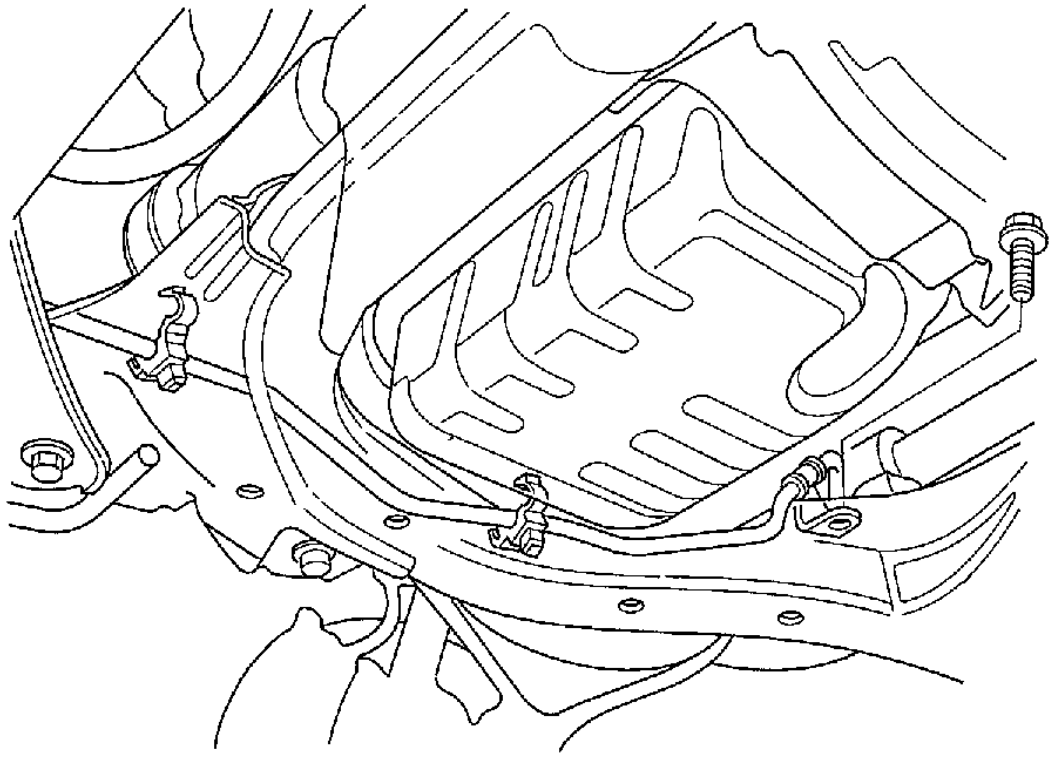


Fig. 17: Removing The Power Steering Line Bracket Mounting Bolt

27. Remove the power steering line from the subframe (two clamps and one mounting bracket bolt).

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Fig. 18: Removing The Power Steering Line From The Subframe

28. Remove the rear engine mount lower mounting bolts.

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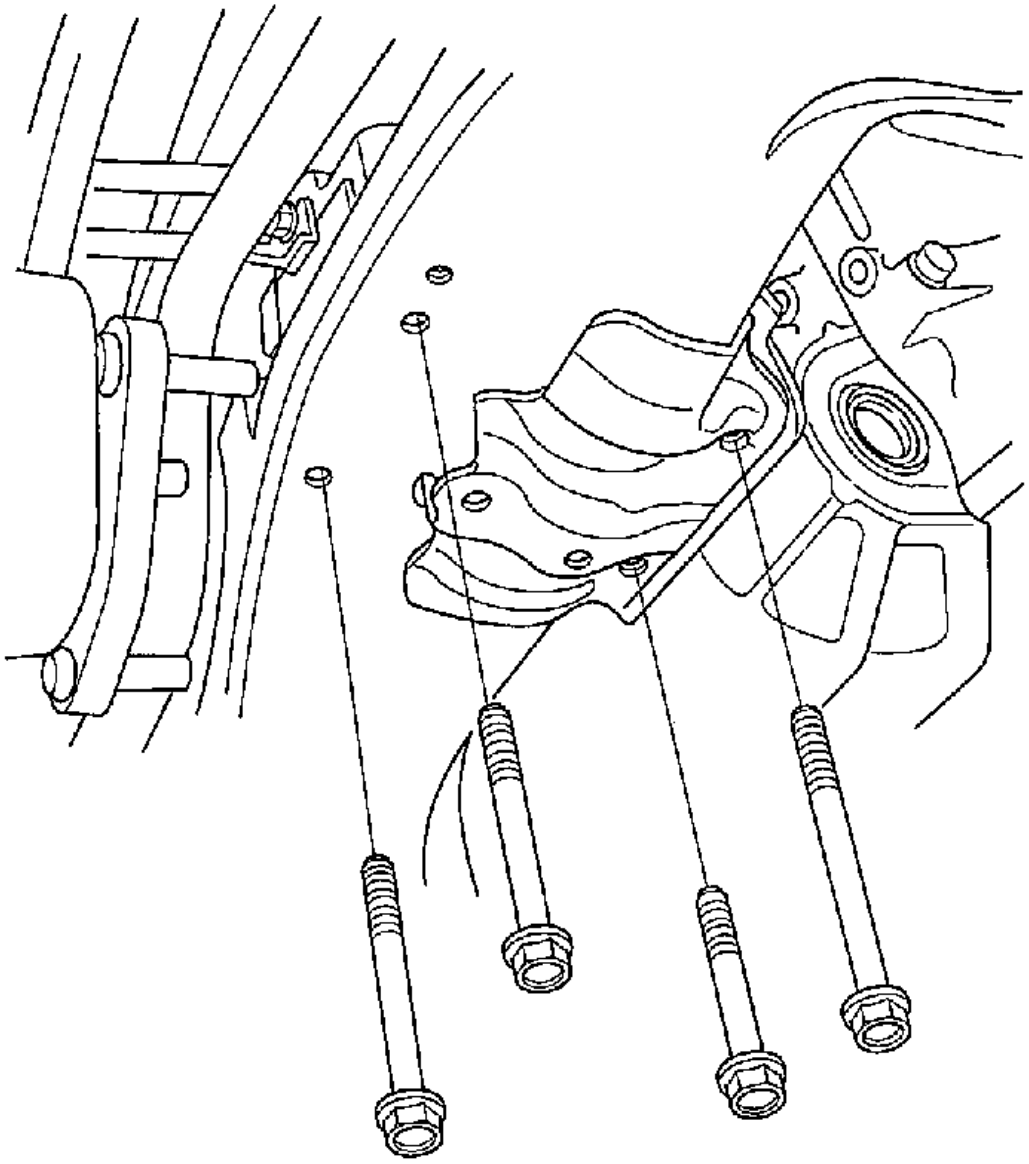


Fig. 19: Removing The Rear Engine Mount Lower Mounting Bolts

29. Remove the transmission lower mount mounting nuts.

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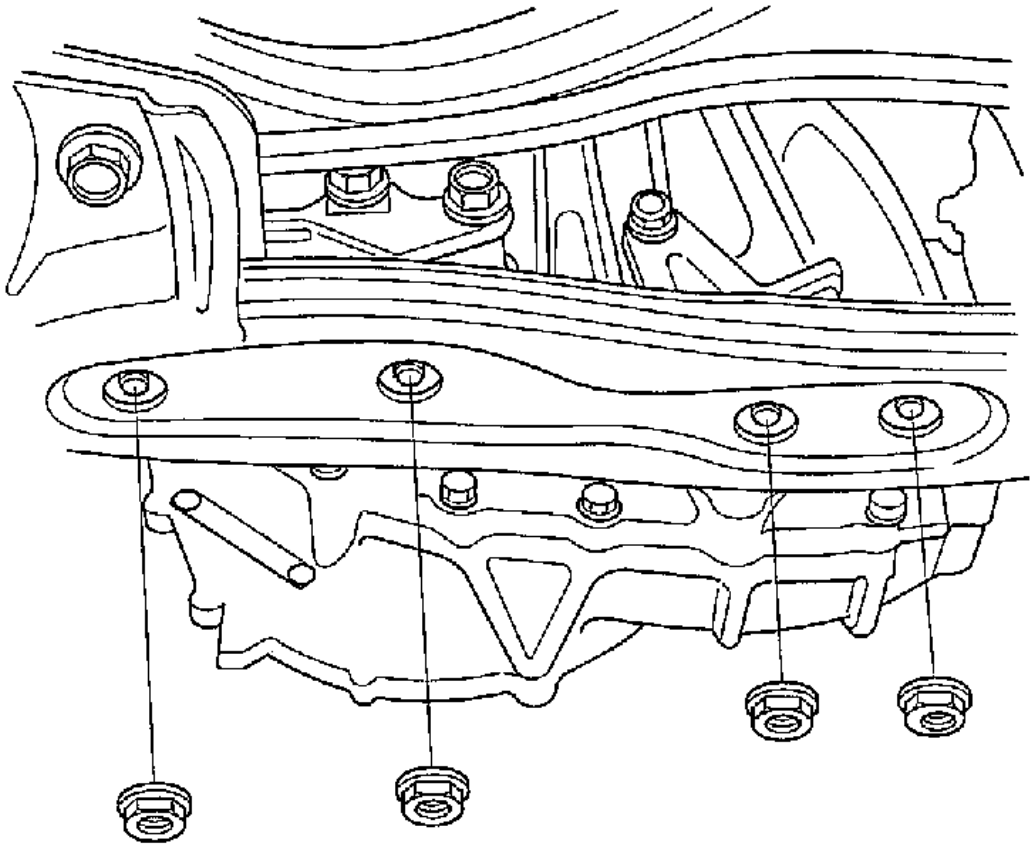


Fig. 20: Removing The Transmission Lower Mount Mounting Nuts

30. Remove the middle subframe mounting bolts.

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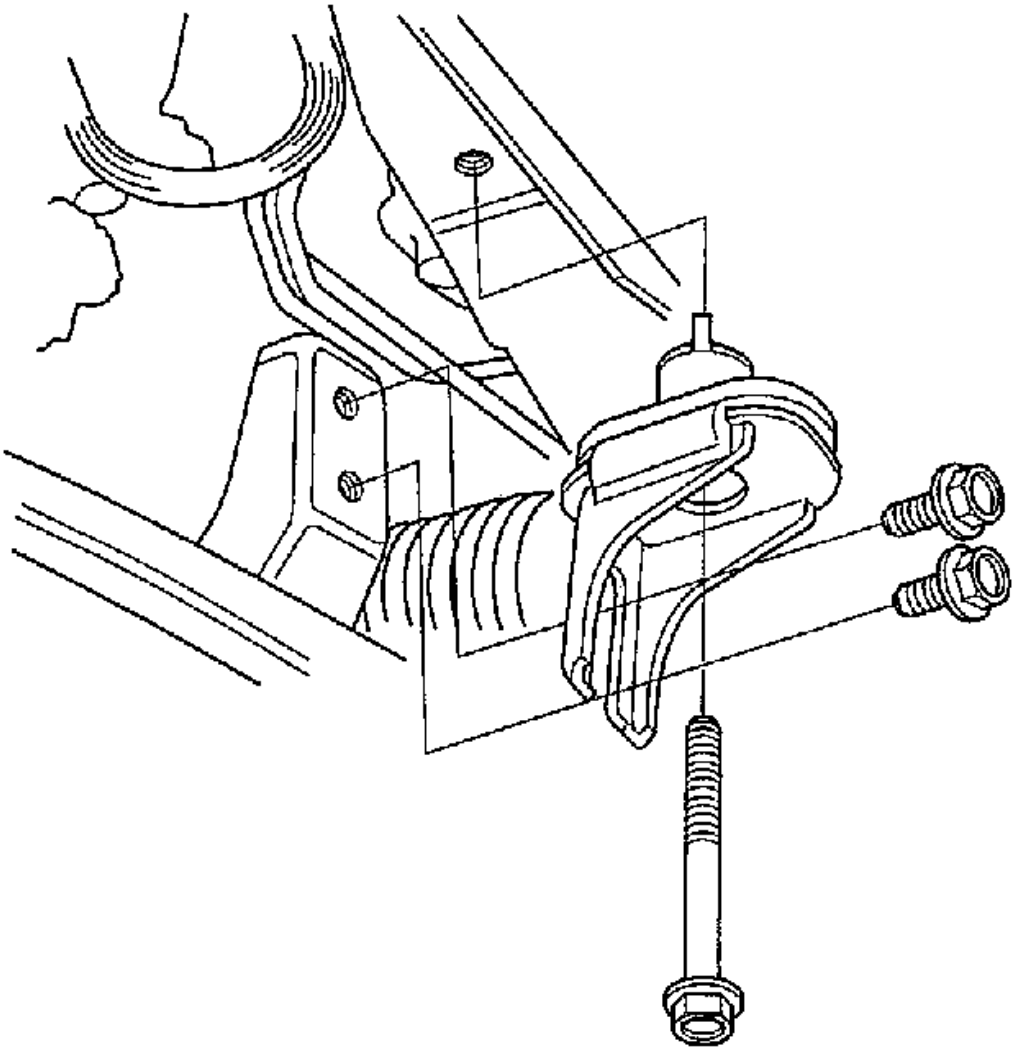


Fig. 21: Removing The Middle Subframe Mounting Bolts

31. Make the appropriate reference lines (A) at both ends of the subframe (B) that line up with the edge (C) of the stiffeners (D).

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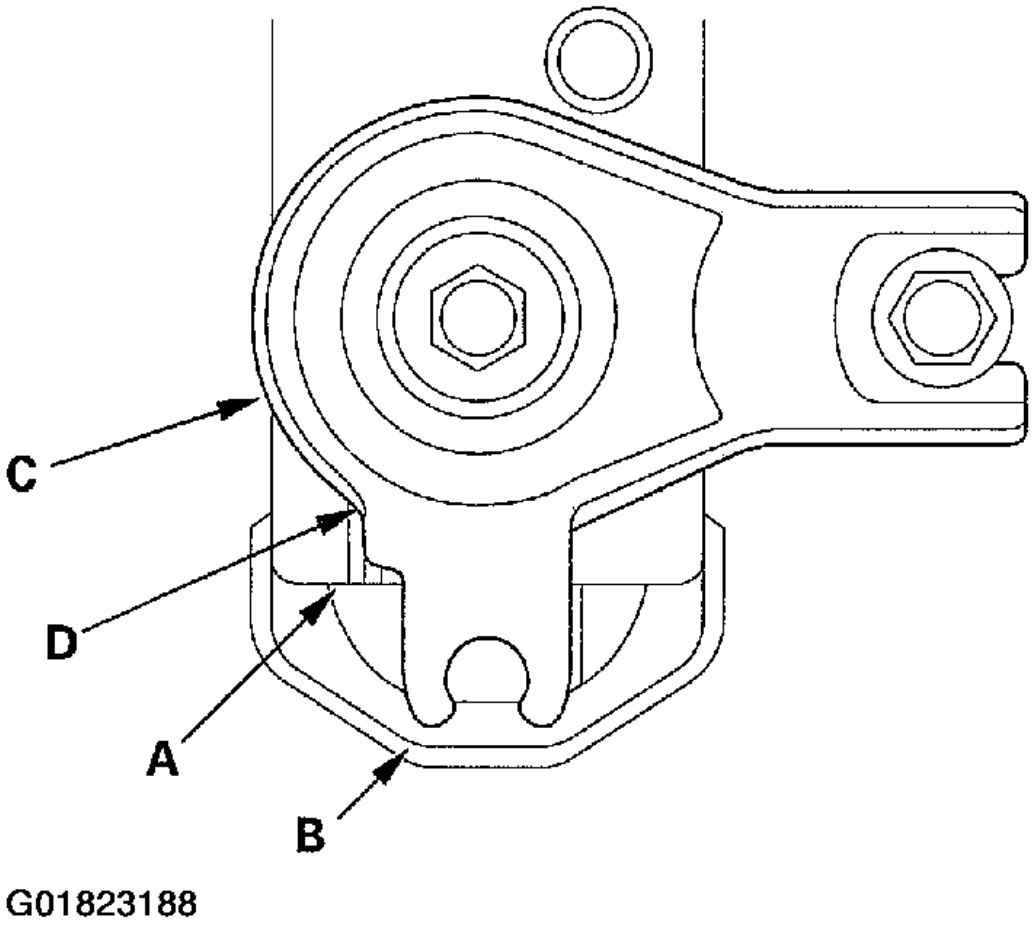


Fig. 22: Making The Appropriate Reference Lines At Both Ends Of The Subframe

32. Support the subframe with the subframe adapter and a jack.

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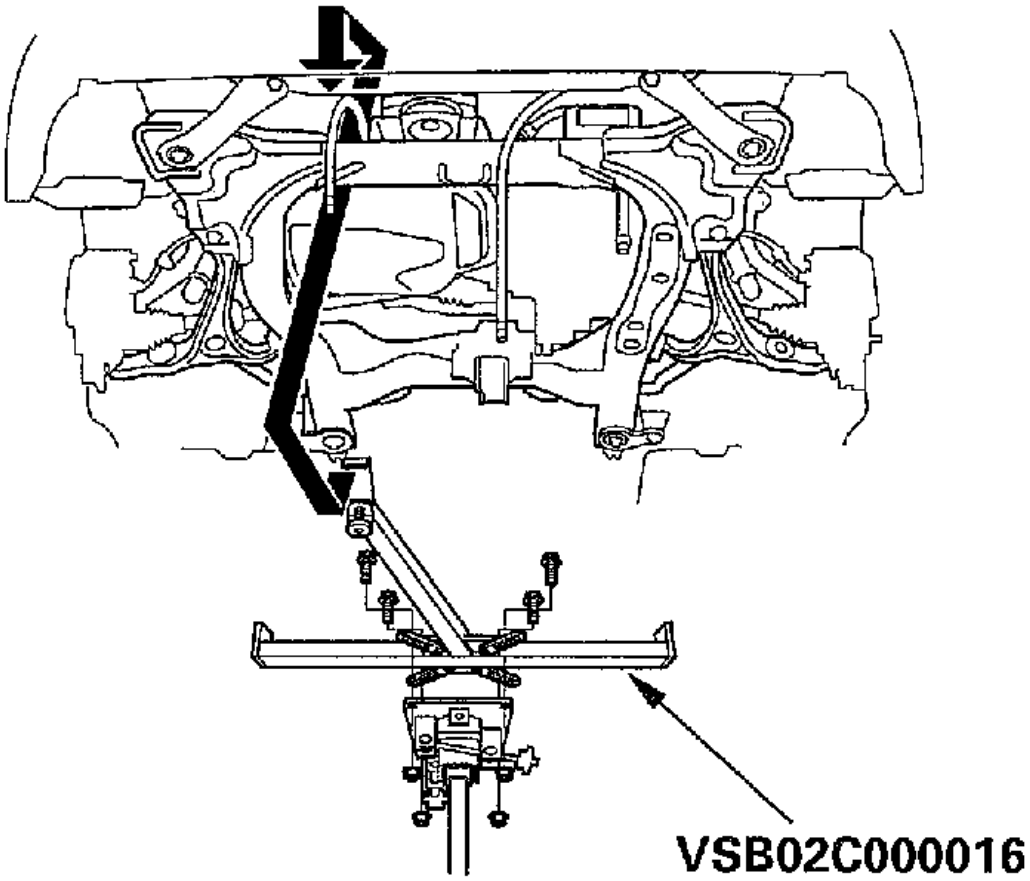


Fig. 23: Supporting The Subframe With The Subframe Adapter And A Jack

33. Remove the front suspension subframe stays (A) and front suspension subframe (B).

NOTE: Suspend the steering gearbox with an appropriate support before lowering the subframe.

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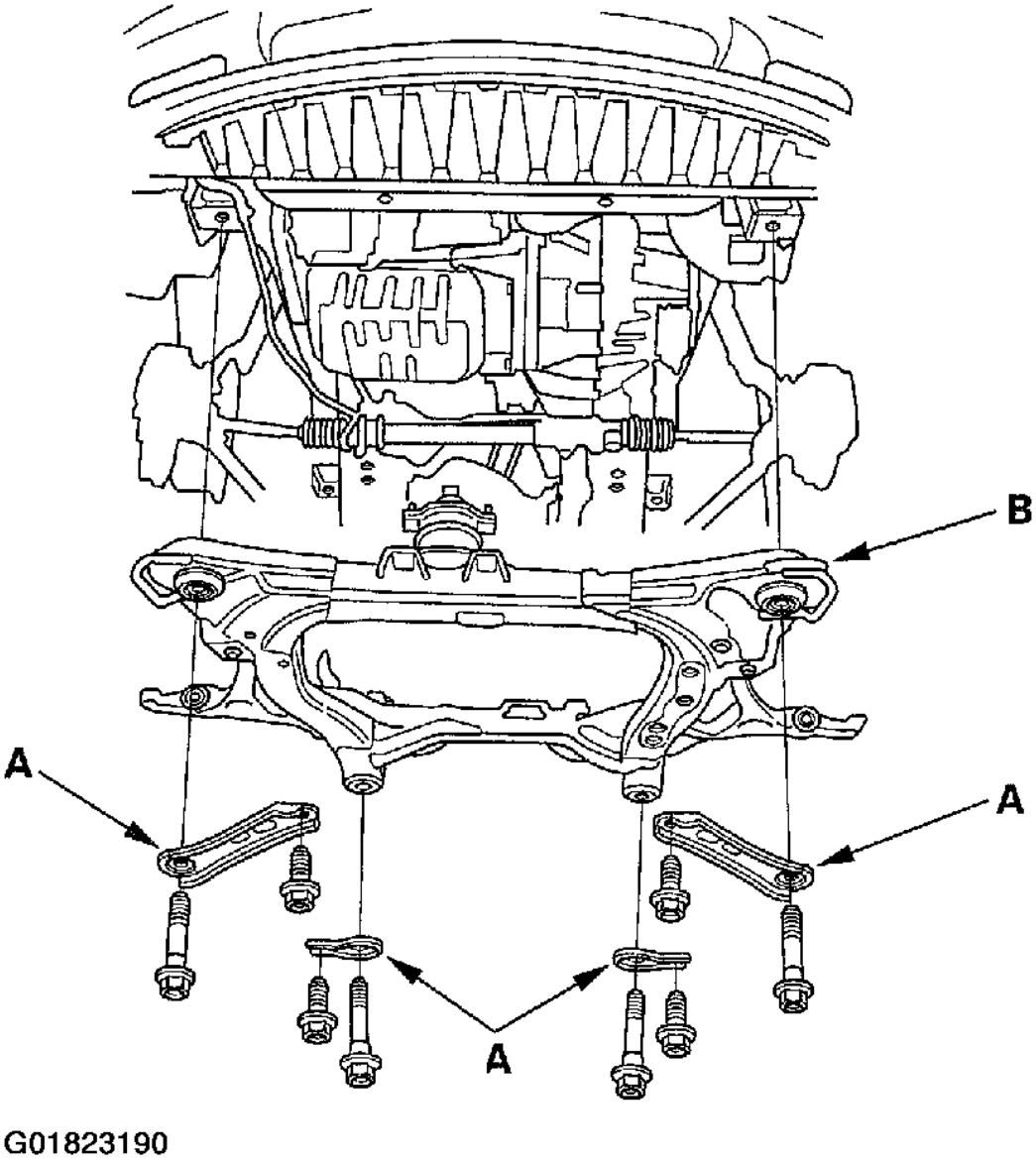


Fig. 24: Removing The Front Suspension Subframe Stays And Front Suspension Subframe

34. Remove the front engine mount upper bracket.

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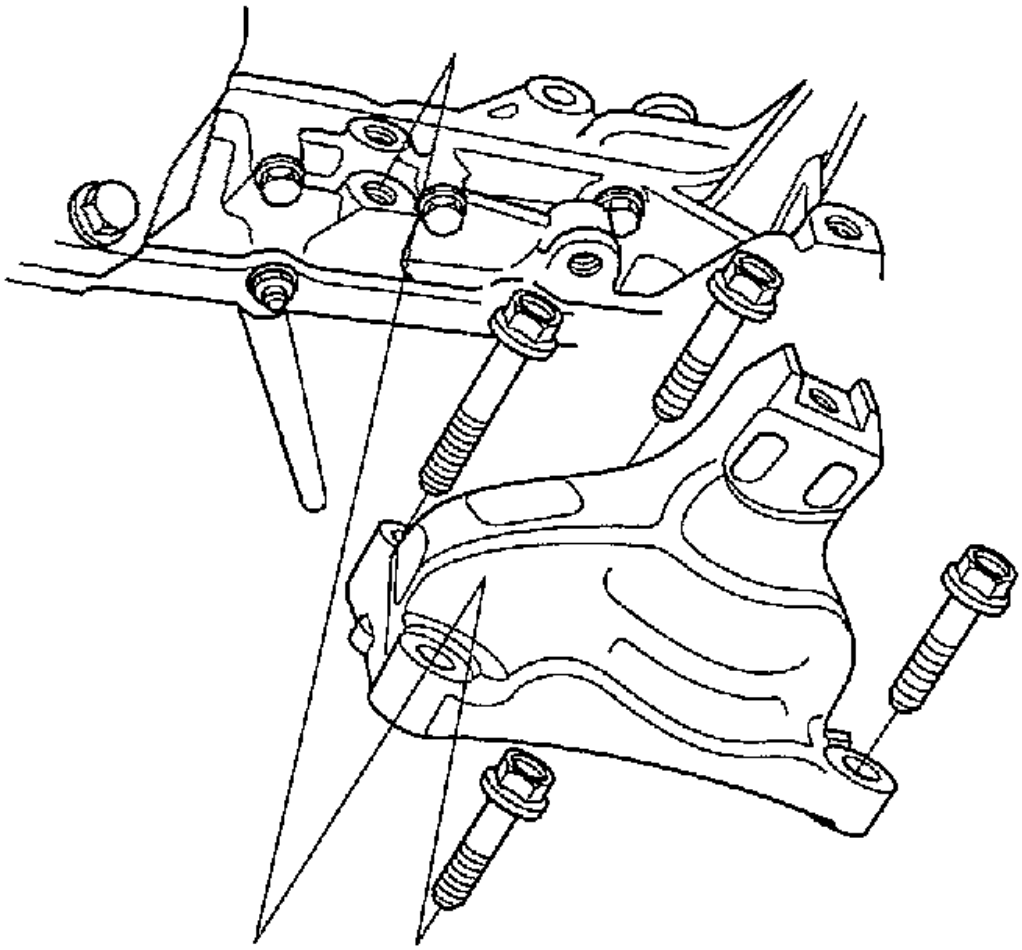


Fig. 25: Removing The Front Engine Mount Upper Bracket

35. Remove the shift cable bracket (A), rear engine mount upper mounting bolt (B) and rear engine mount (C).

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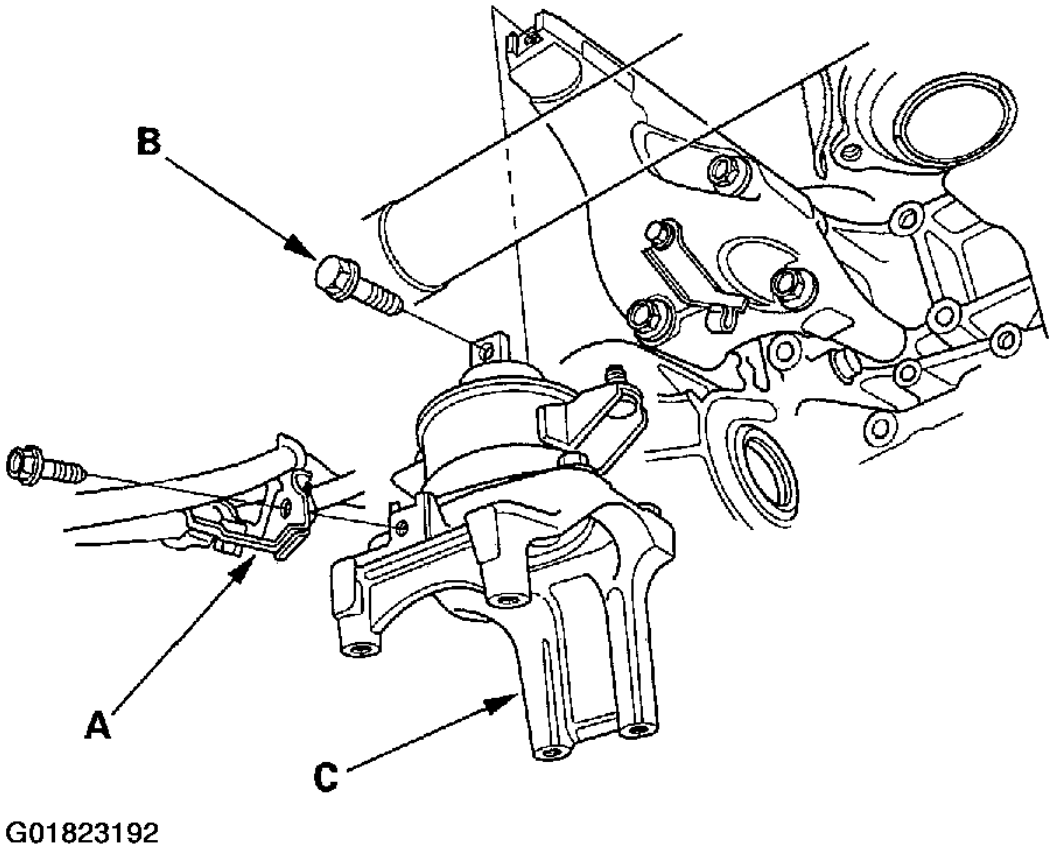


Fig. 26: Removing The Shift Cable Bracket, Rear Engine Mount Upper Mounting Bolt And Rear Engine Mount

36. Remove the rear engine mount upper bracket.

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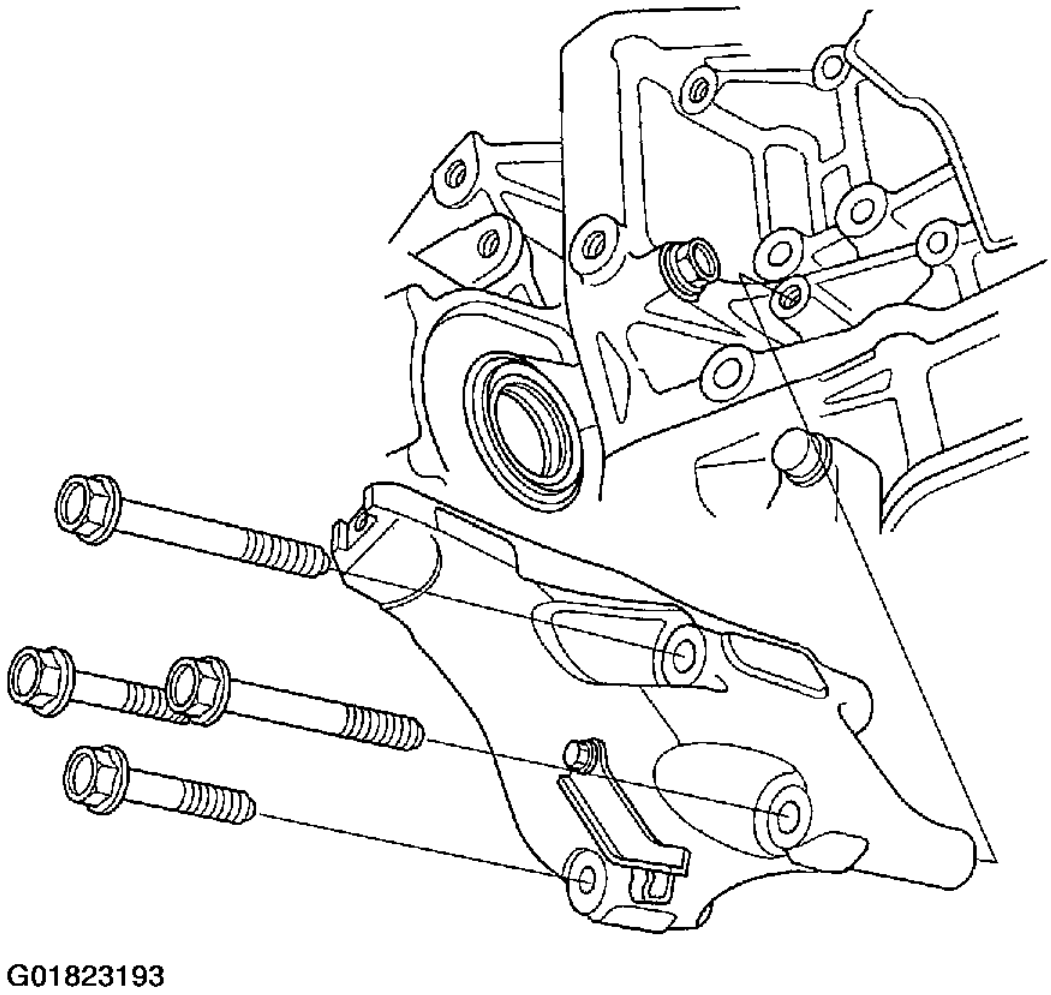


Fig. 27: Removing The Rear Engine Mount Upper Bracket

37. Remove the clutch cover.

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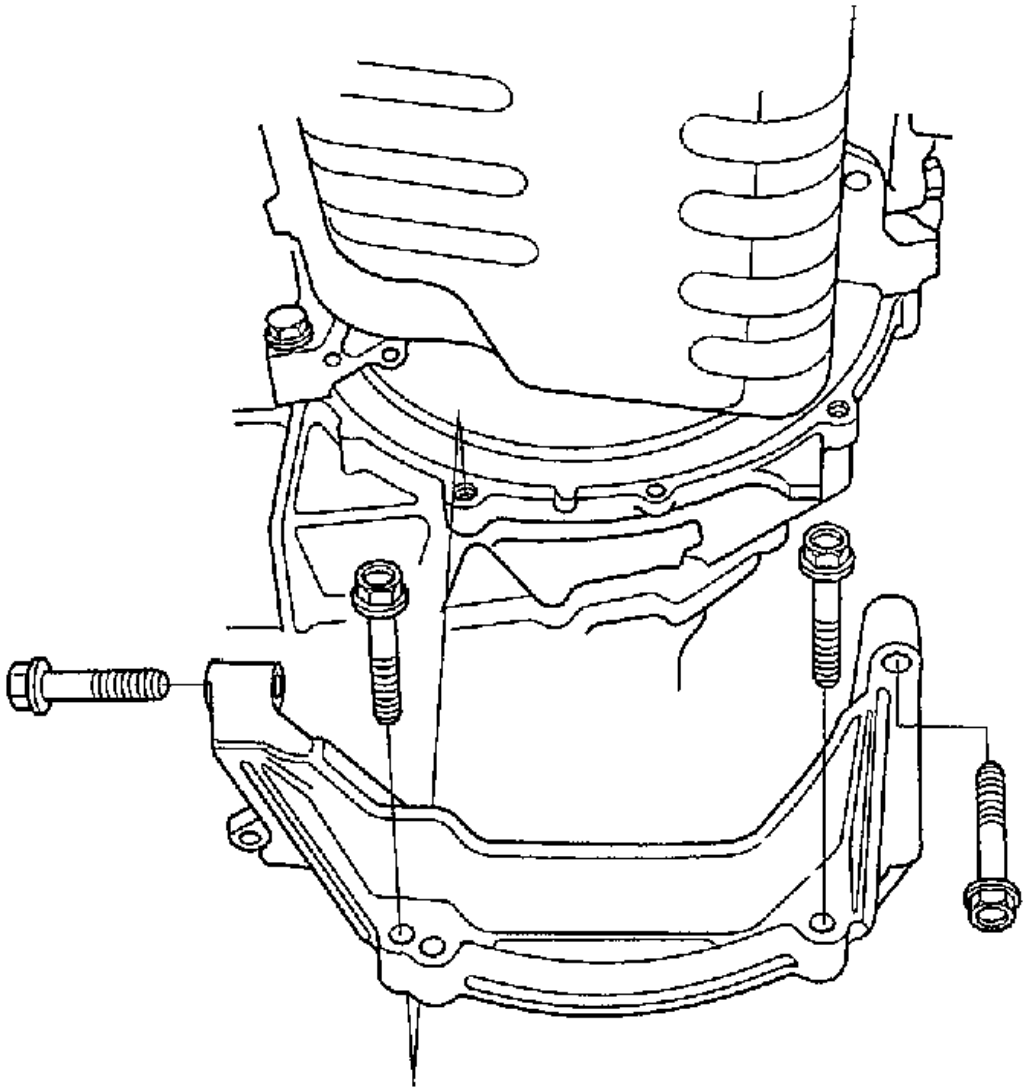


Fig. 28: Removing The Clutch Cover

38. Place the transmission jack under the transmission, and remove the transmission lower mounting bolts.

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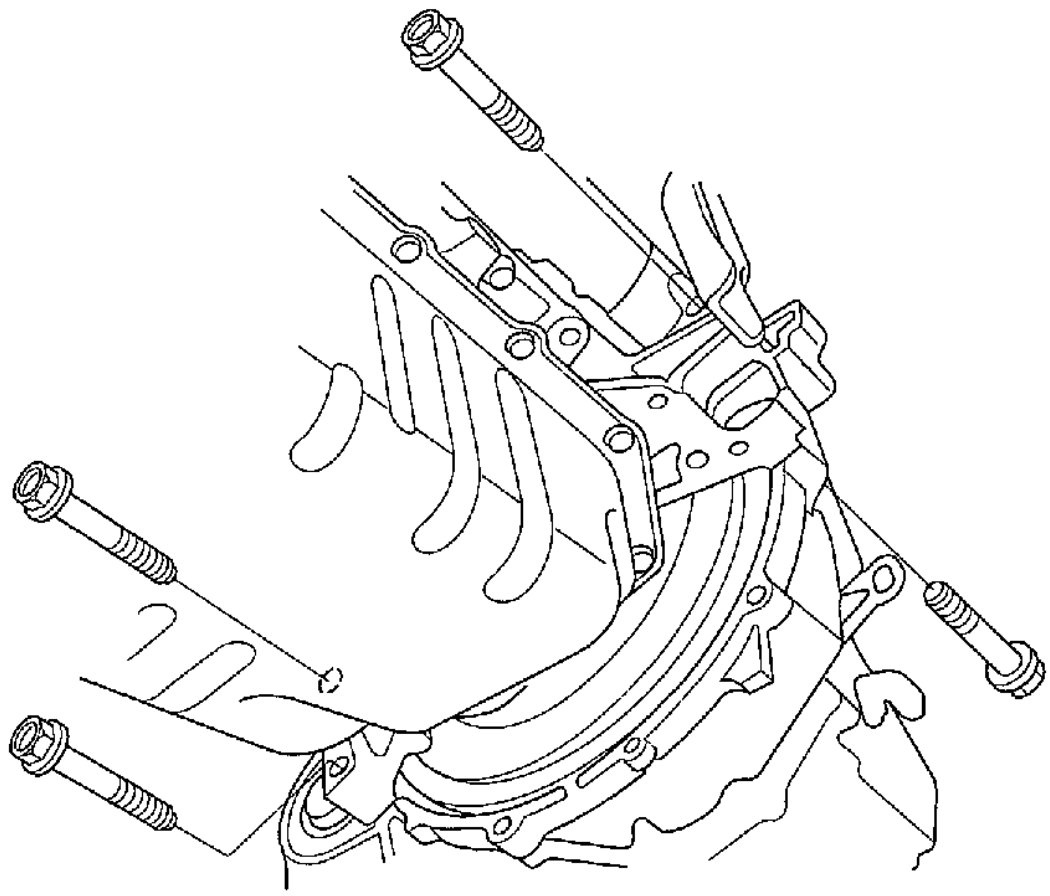


Fig. 29: Removing The Transmission Lower Mounting Bolts

39. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate, then lower the transmission on the transmission jack.
40. Remove the transmission lower front mount (A) and transmission lower rear mount (B).

NOTE: Be careful not to drop the mount bracket collar (C).

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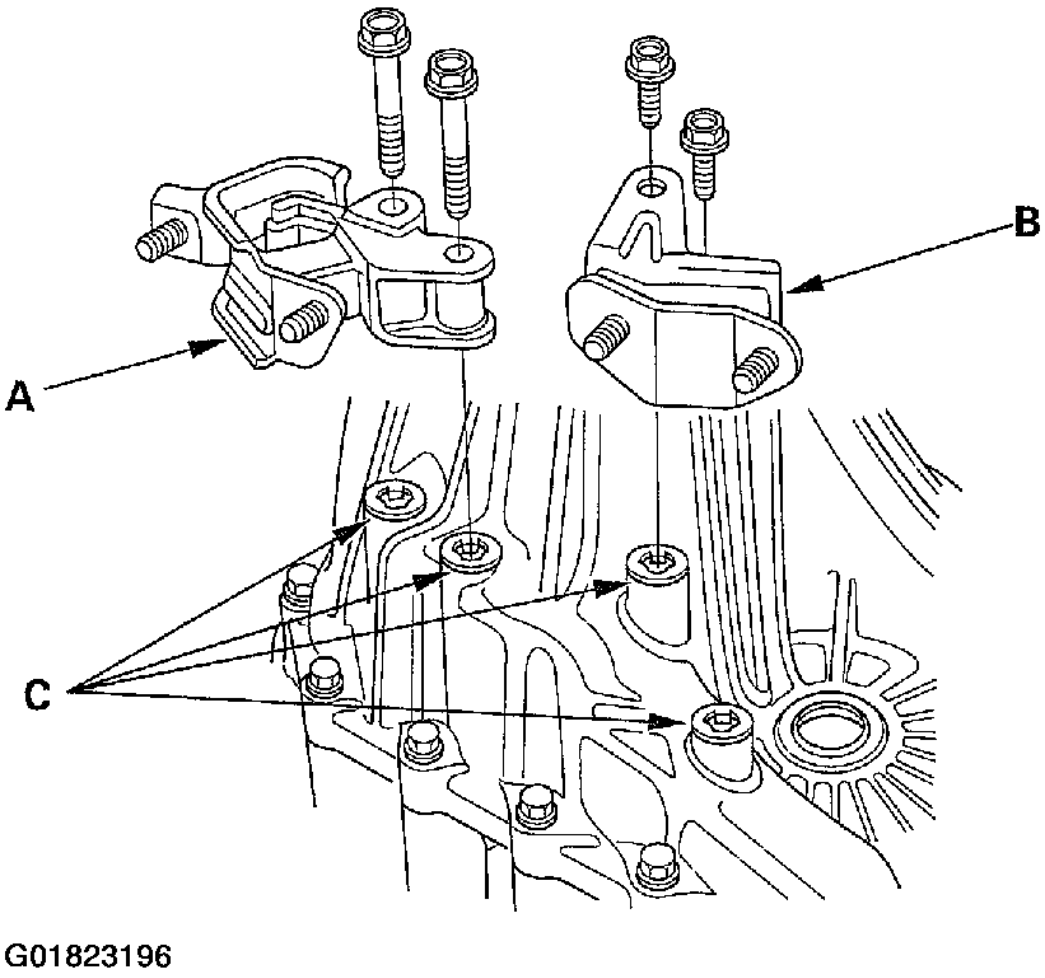


Fig. 30: Removing The Transmission Lower Front Mount And Transmission Lower Rear Mount

41. Remove the release fork boot (A) from the clutch housing (B).

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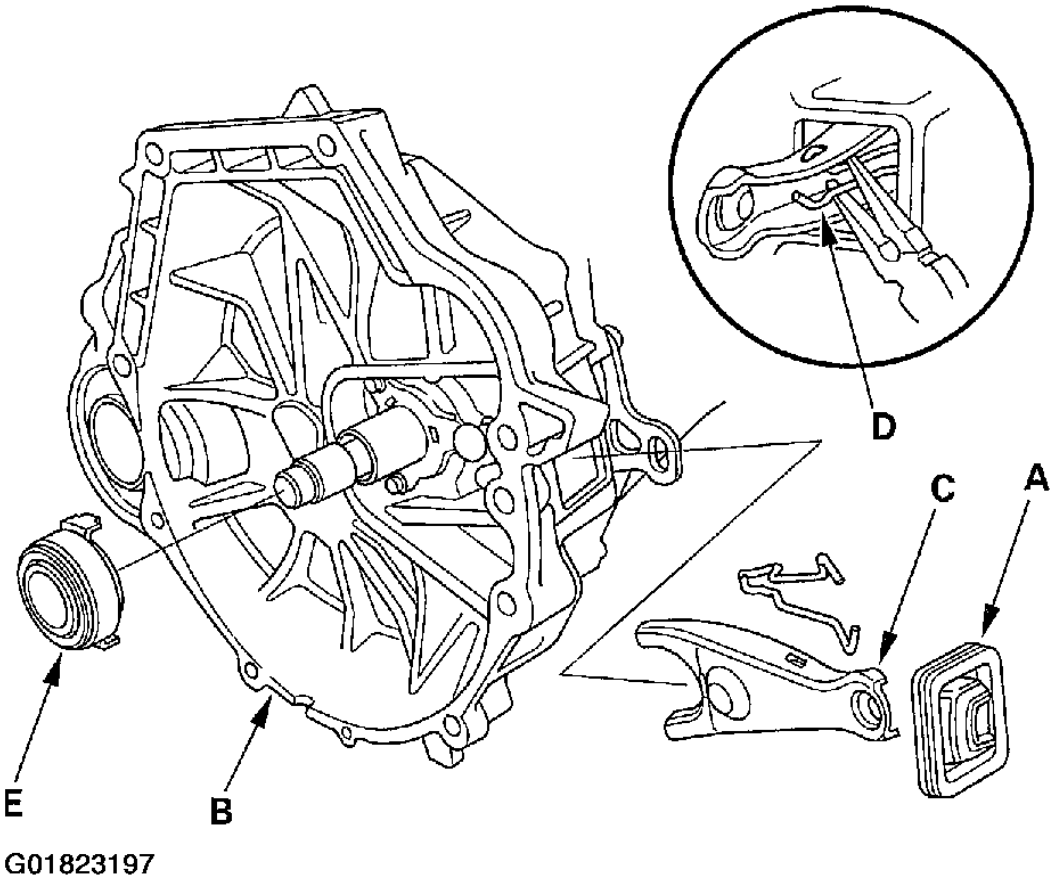


Fig. 31: Removing The Release Fork Boot From The Clutch Housing

42. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

TRANSMISSION INSTALLATION

Special Tools Required:

- Engine hanger/adapter VSB02C000015*
- Engine support hanger, A & Reds AAR-T-12566*
- Subframe adapter VSB02C000016*

*Available through the Honda Tool and Equipment Program 888-424-6857.

1. Check that the two dowel pins are installed in the clutch housing.
2. Apply super high temp urea grease (P/N 08798-9002) to the release fork (A) and the release bearing (B).

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Install the release fork, the release bearing, and the boot (C).

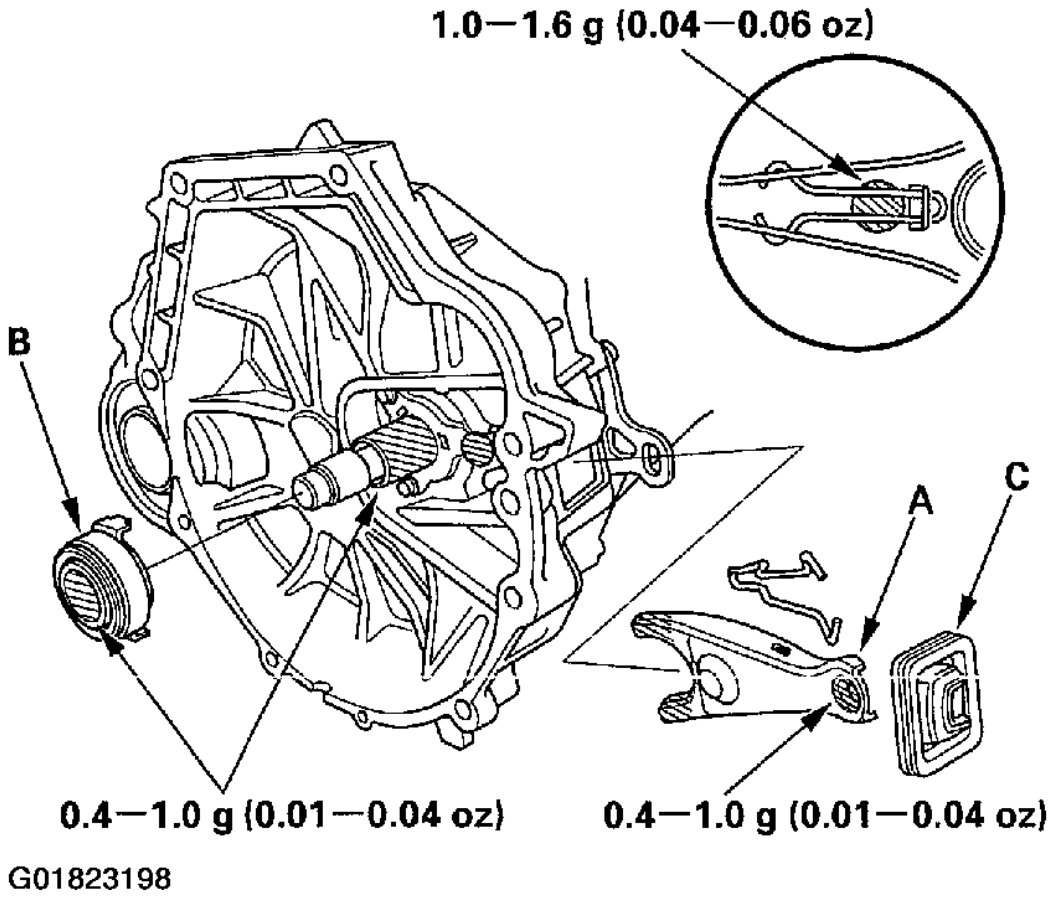


Fig. 32: Installing The Release Fork, The Release Bearing, And The Boot

3. Check that the mount bracket collars (A) are installed in the transmission, then install the transmission lower front mount (B) and transmission lower rear mount (C).

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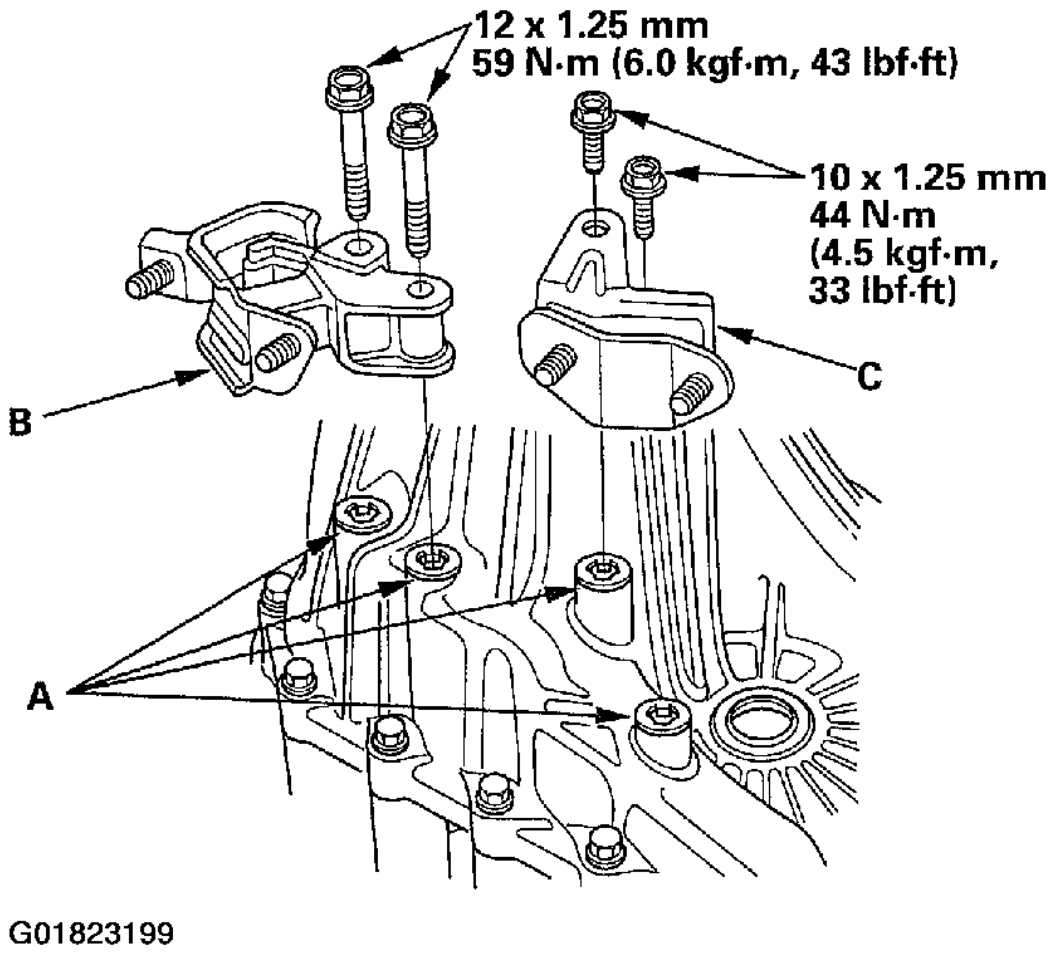


Fig. 33: Installing The Transmission Lower Front Mount And Transmission Lower Rear Mount

4. Place the transmission on the transmission jack, and raise it to the engine level.
5. Install the transmission mounting lower bolts.

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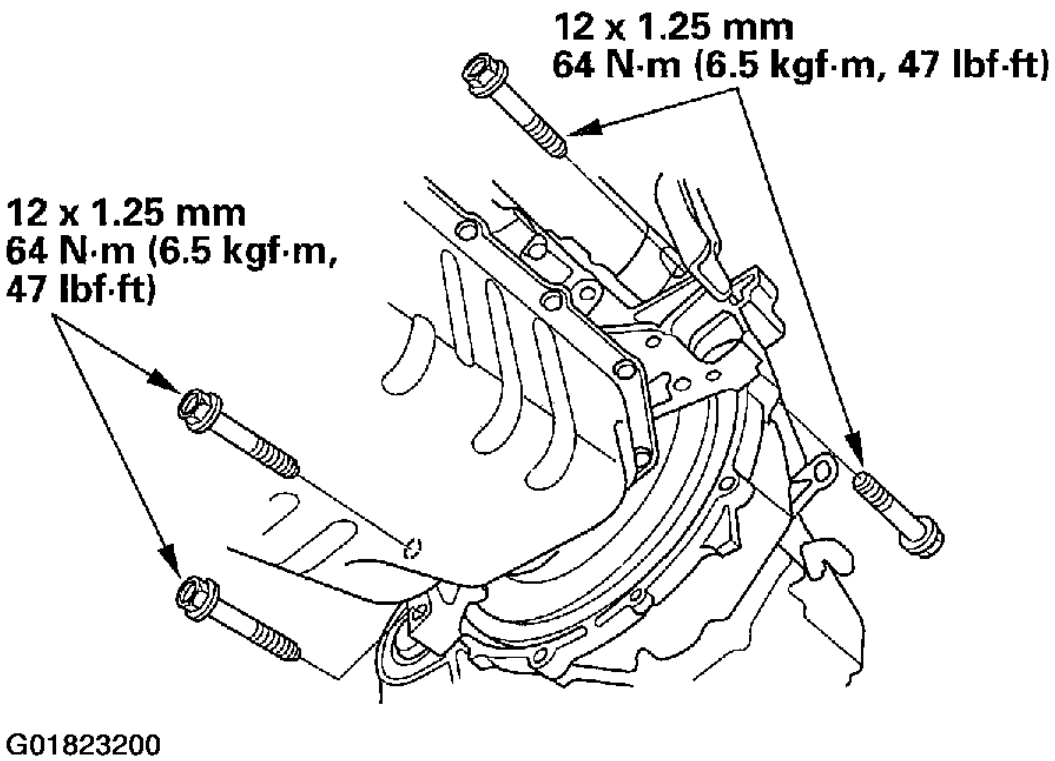


Fig. 34: Installing The Transmission Mounting Lower Bolts

6. Install the clutch cover.

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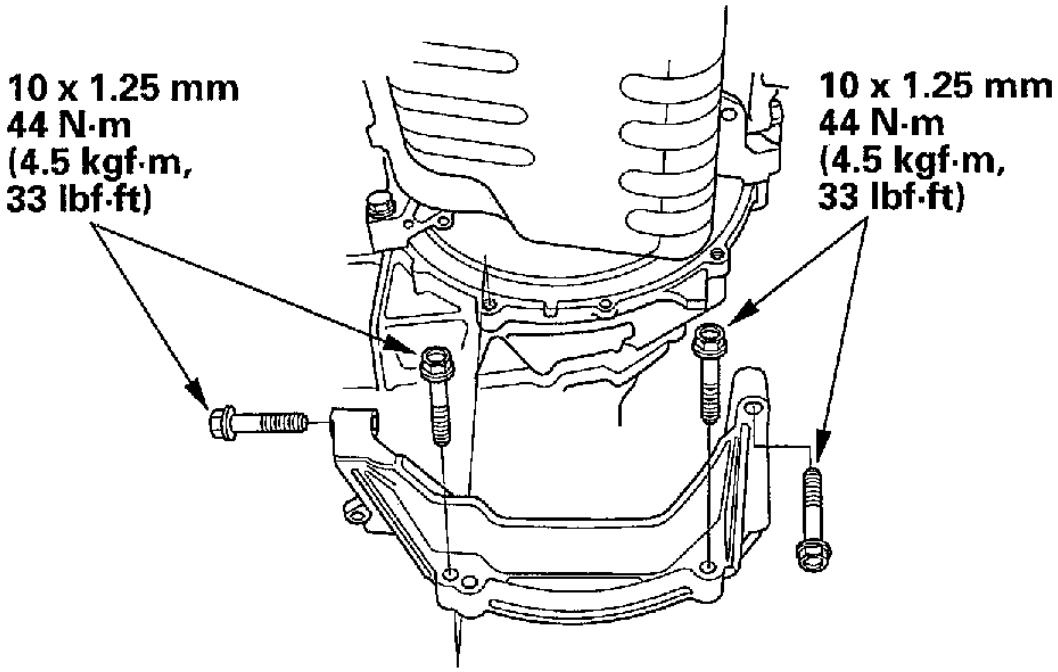


Fig. 35: Installing The Clutch Cover

7. Install the rear engine mount upper bracket.

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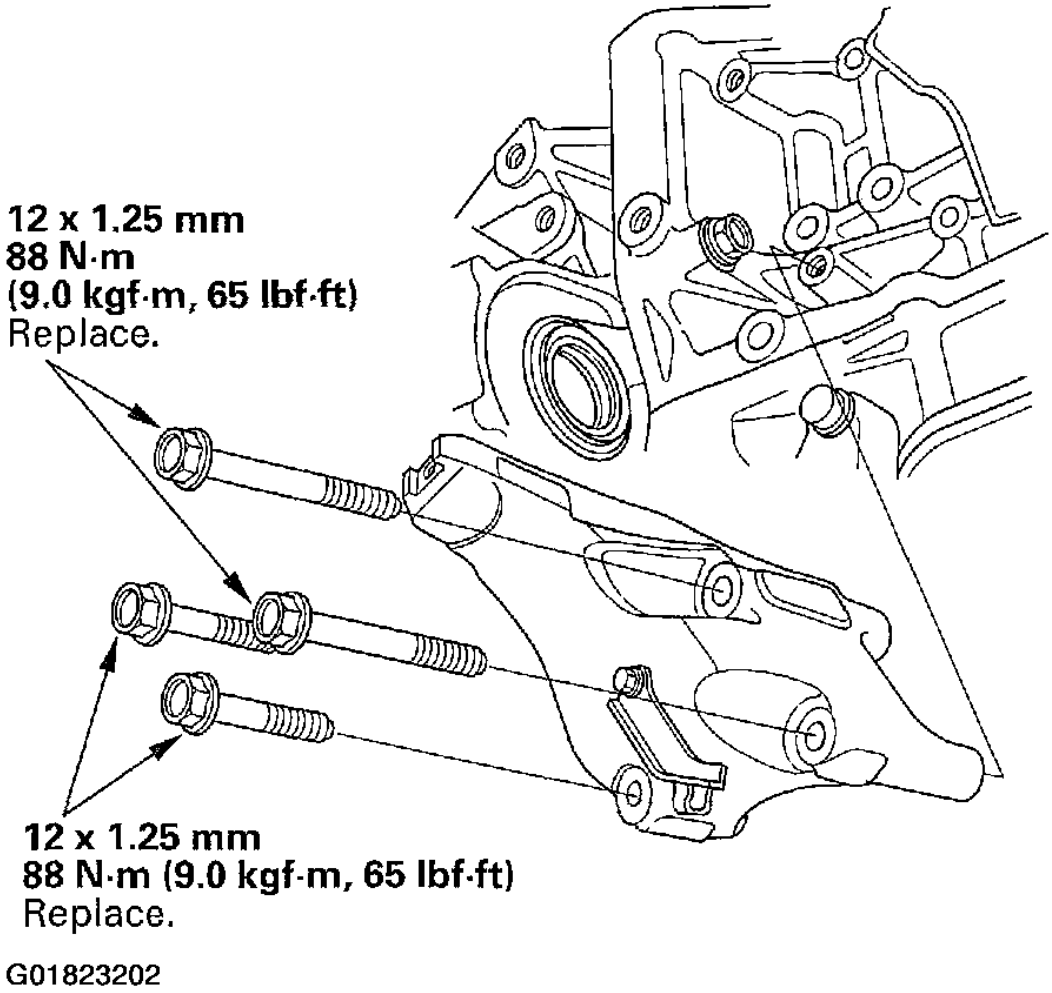


Fig. 36: Installing The Rear Engine Mount Upper Bracket

8. Install the rear engine mount (A), rear engine mount upper mounting bolt (B), and shift cable bracket (C).

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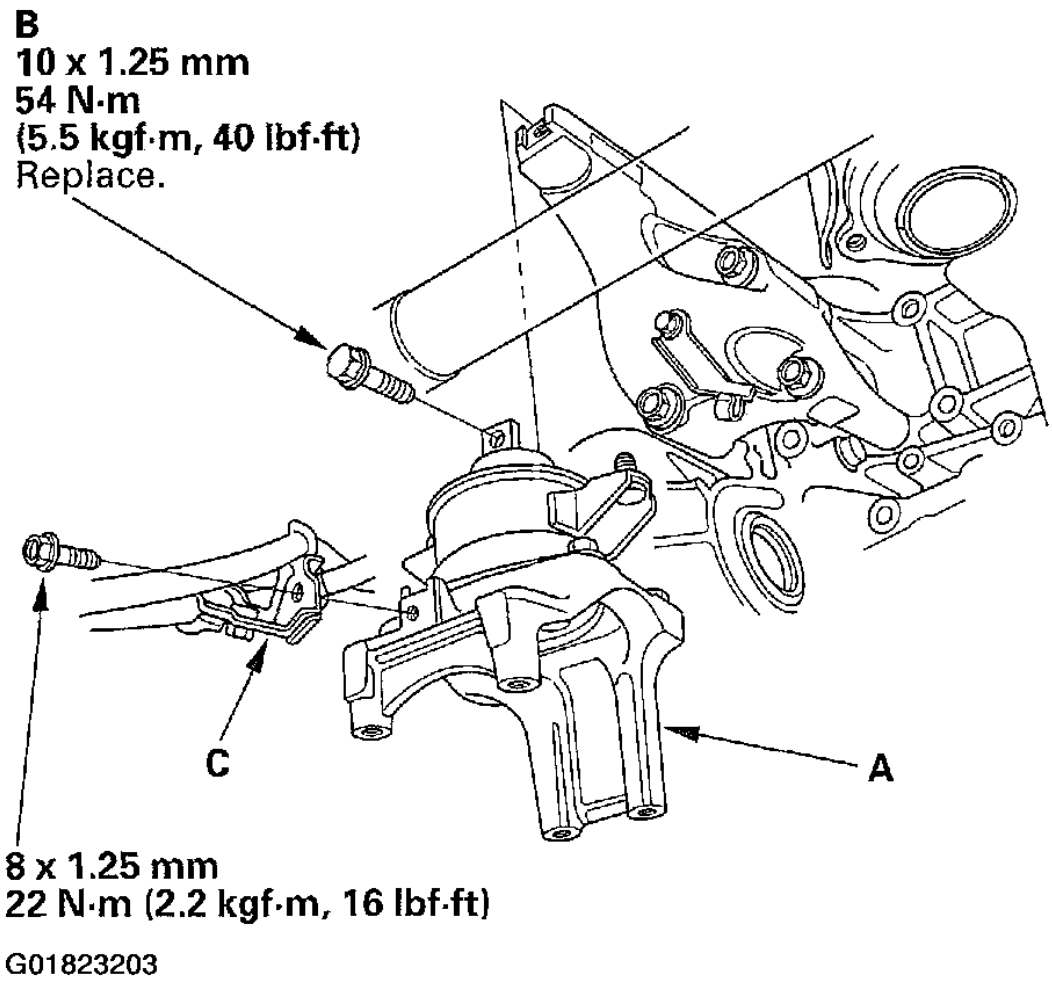


Fig. 37: Installing The Rear Engine Mount, Rear Engine Mount Upper Mounting Bolt, And Shift Cable Bracket

9. Install the front engine mount upper bracket.

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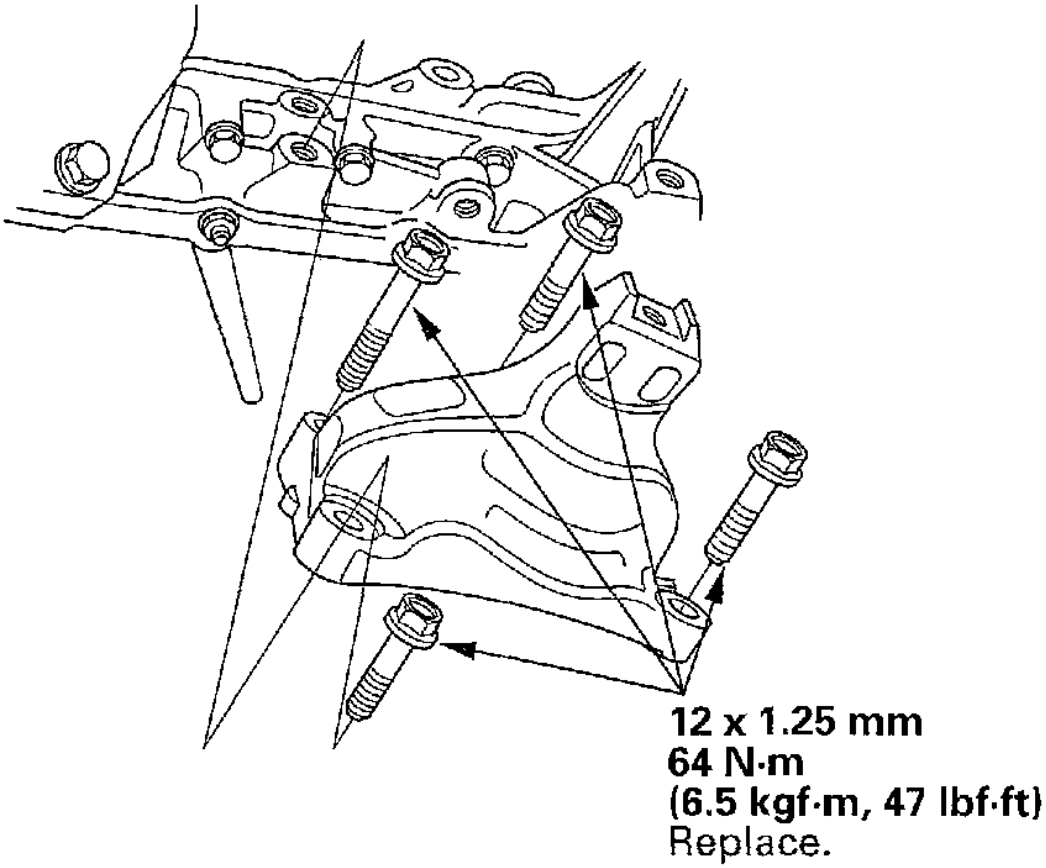


Fig. 38: Installing The Front Engine Mount Upper Bracket

10. Support the subframe with the subframe adapter and a jack.

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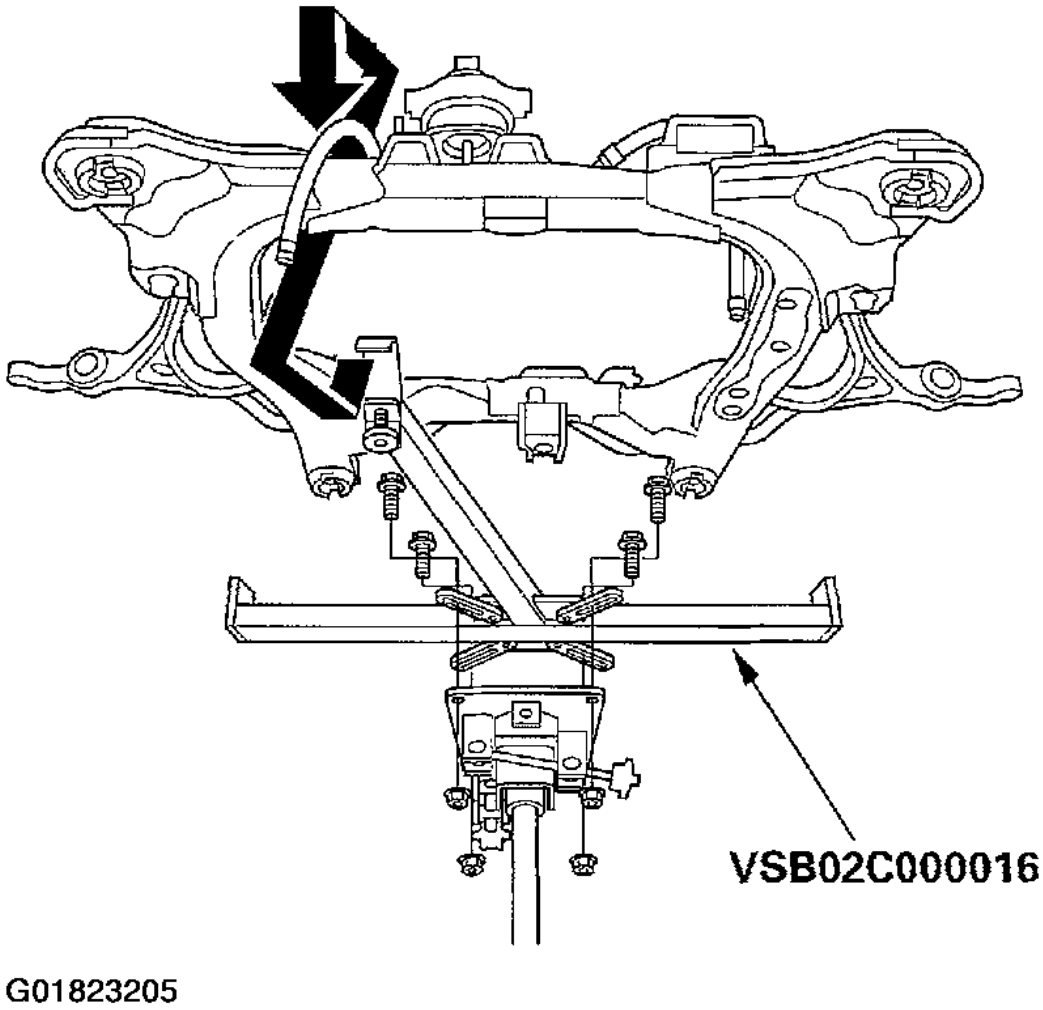


Fig. 39: Support The Subframe With The Subframe Adapter And A Jack

11. Install the front suspension subframe (A) and front suspension subframe stays (B).

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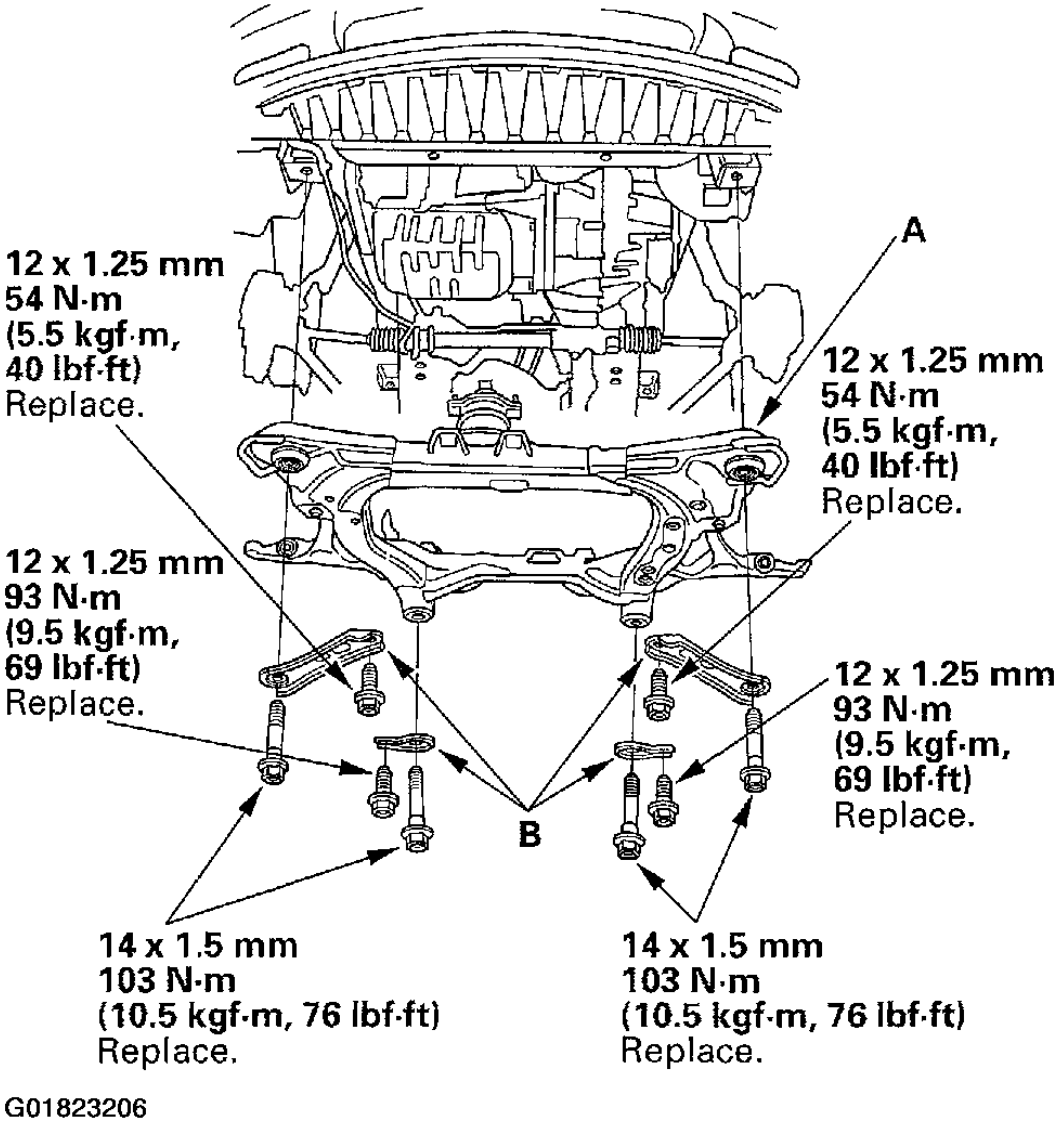


Fig. 40: Installing The Front Suspension Subframe And Front Suspension Subframe Stays

12. Align the reference marks (A) with edge (B) of both rear stiffer (C), and tighten the rear subframe mounting bolts, then front bolts, and tighten the stiffener bolts to the specified torque.

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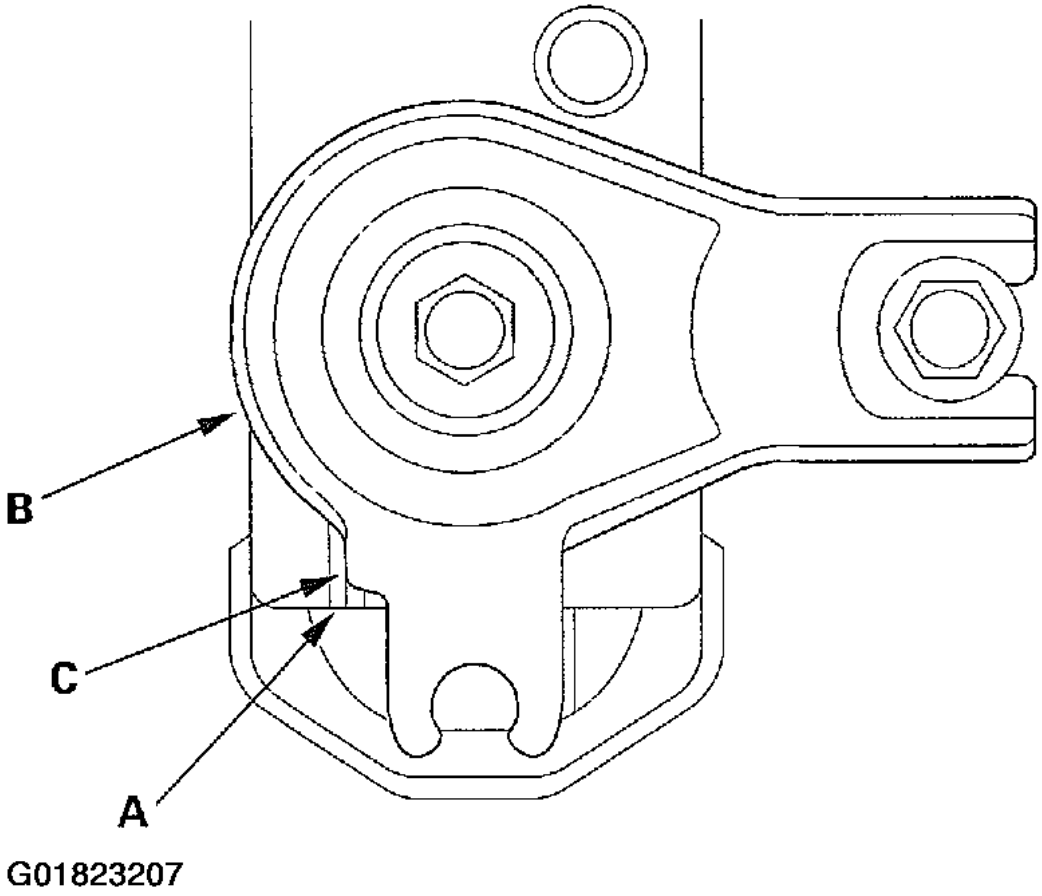


Fig. 41: Aligning The Reference Marks & Tightening The Rear Subframe Mounting Bolts, Front Bolts, And The Stiffener Bolts

13. Install the middle subframe mounting bolts.

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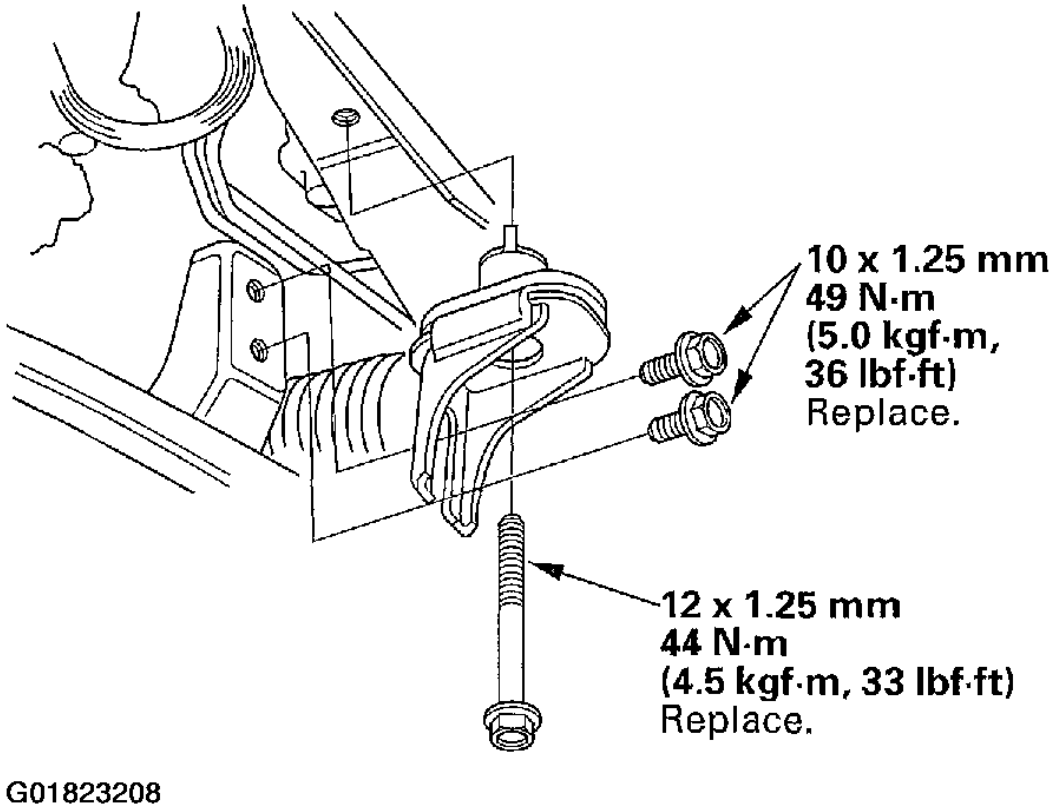


Fig. 42: Installing The Middle Subframe Mounting Bolts

14. Install the transmission lower mount mounting nuts.

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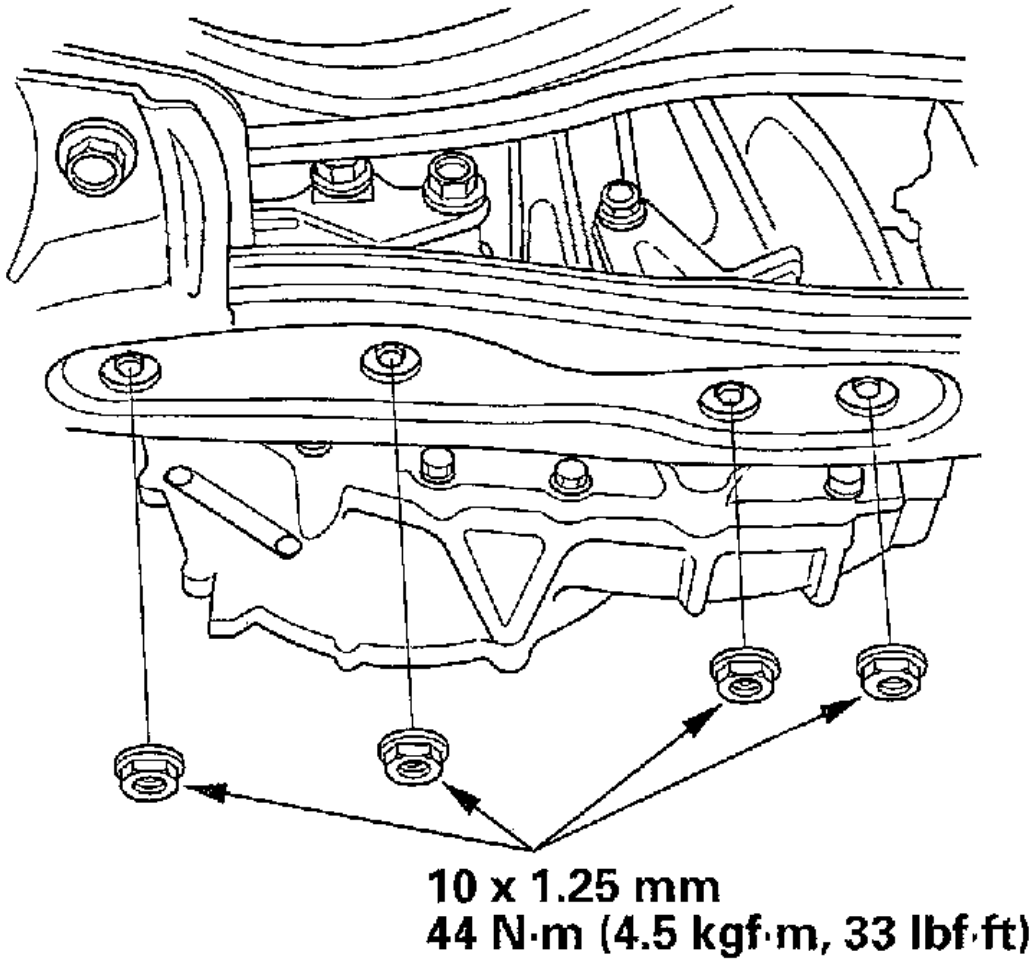


Fig. 43: Installing The Transmission Lower Mount Mounting Nuts

15. Install the rear engine mount lower mounting bolts.

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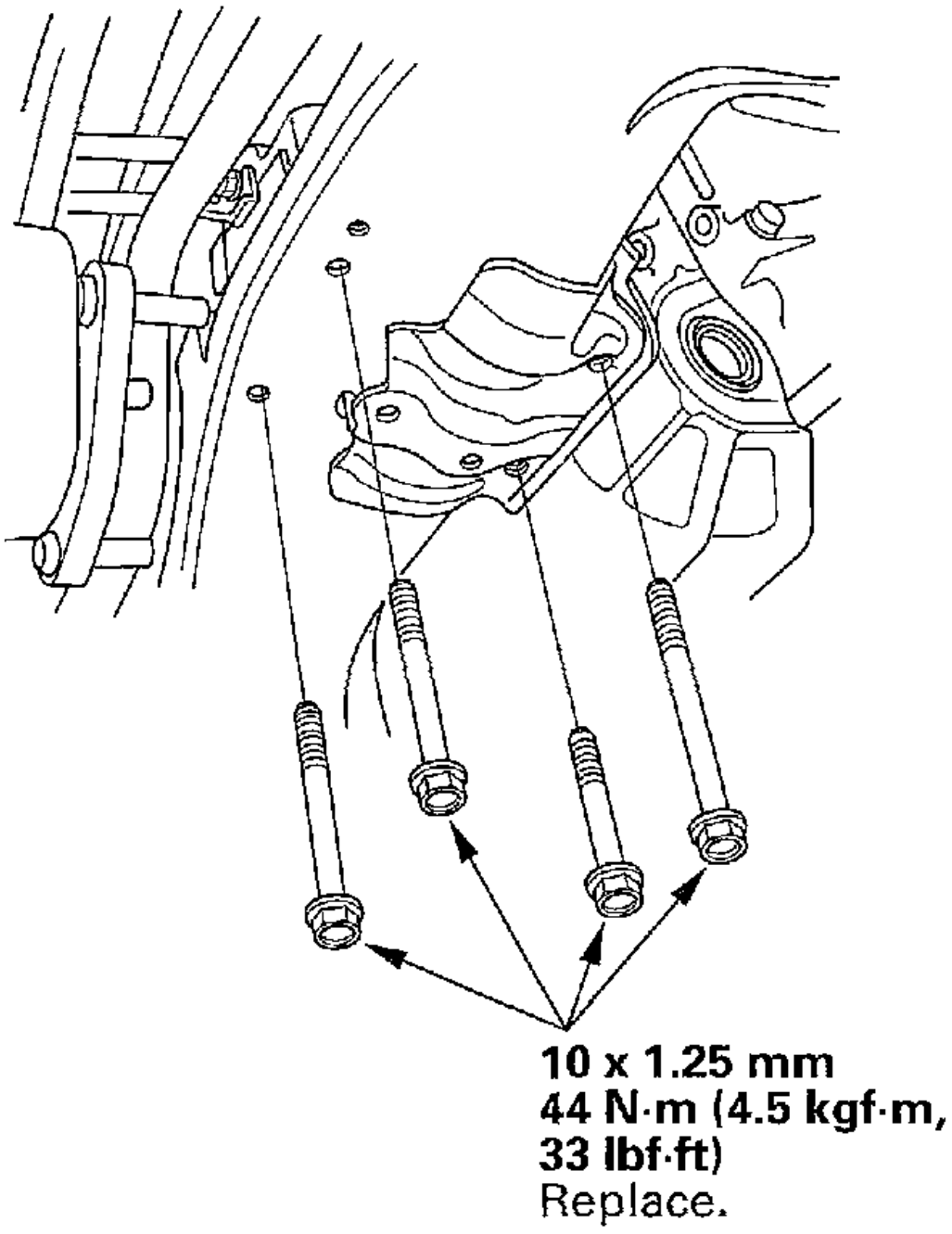


Fig. 44: Installing The Rear Engine Mount Lower Mounting Bolts

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16. Install the power steering line to the subframe (two clamps and one mounting bracket bolt).

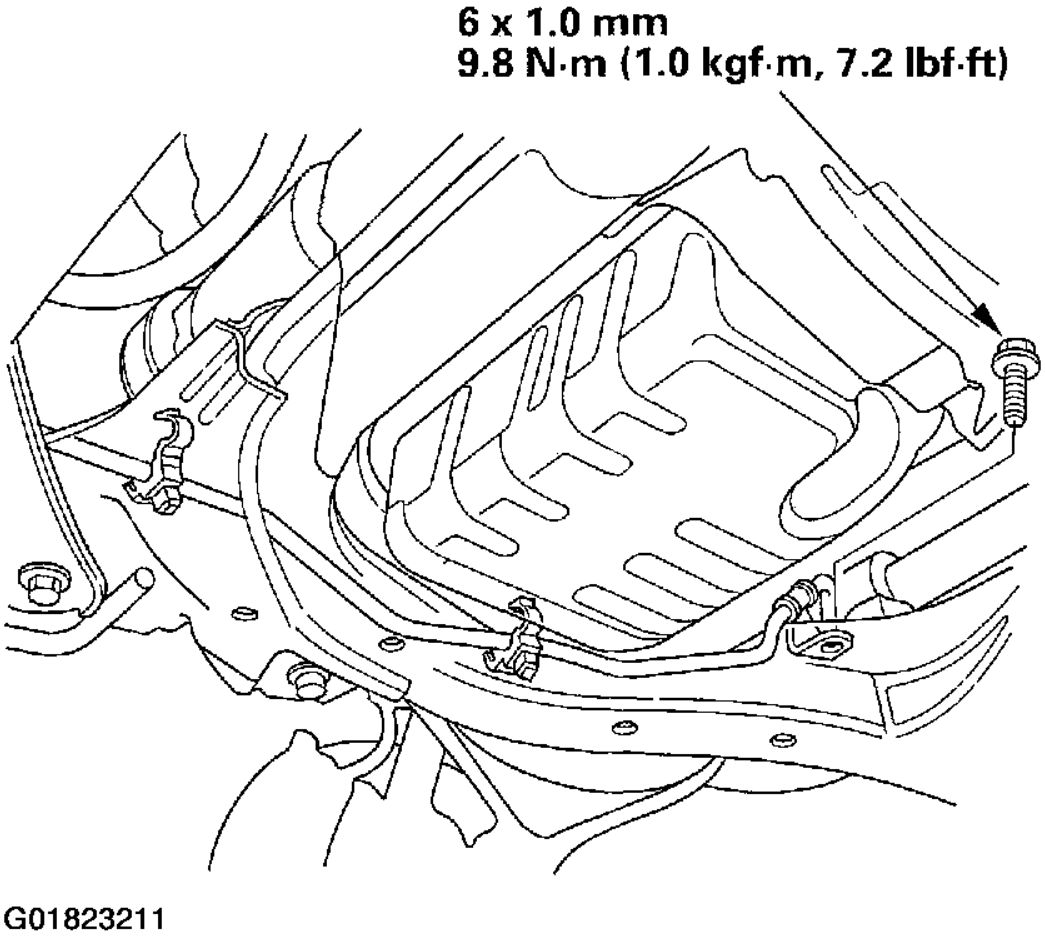


Fig. 45: Installing The Power Steering Line To The Subframe

17. Install the power steering line bracket mounting bolt.

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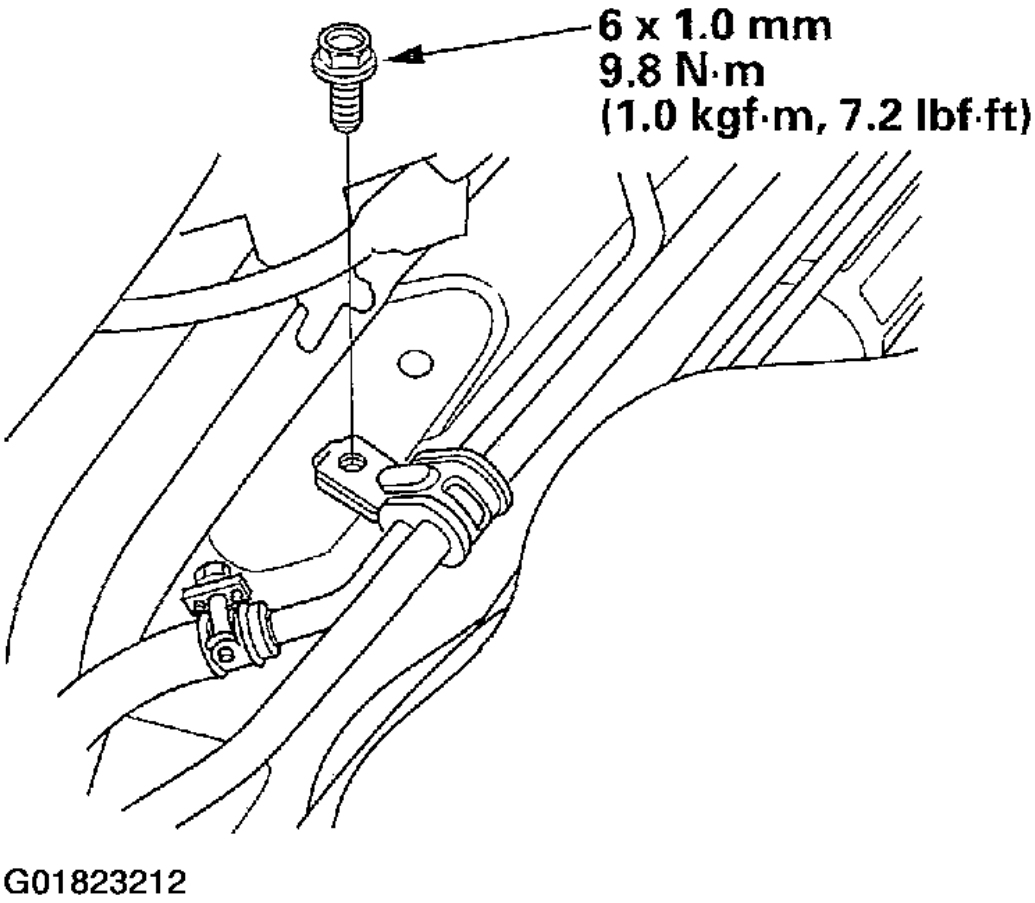


Fig. 46: Installing The Power Steering Line Bracket Mounting Bolt

18. Install the heat shield.

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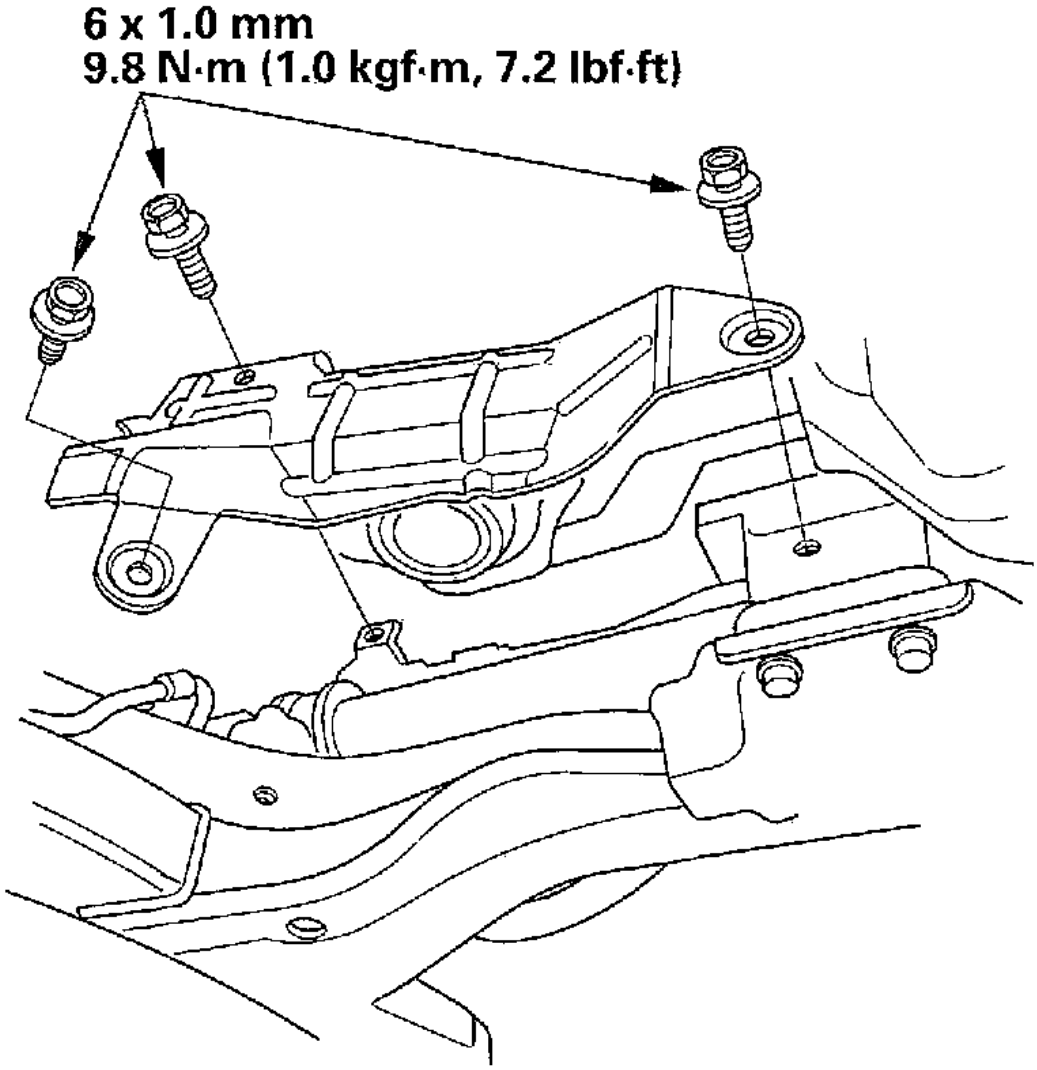


Fig. 47: Installing The Heat Shield

19. Install the intermediate shaft (see **INTERMEDIATE SHAFT**).
20. Install the inboard joint of driveshafts (see **INSTALLATION**).
21. Install the knuckle onto the lower arm (see step 5 of **INSTALLATION**).
22. Install the damper fork (see step 7 of **INSTALLATION**).
23. Connect the front stabilizer (see step 9 of **INSTALLATION**).
24. Install exhaust pipe A and NEW gaskets (B).

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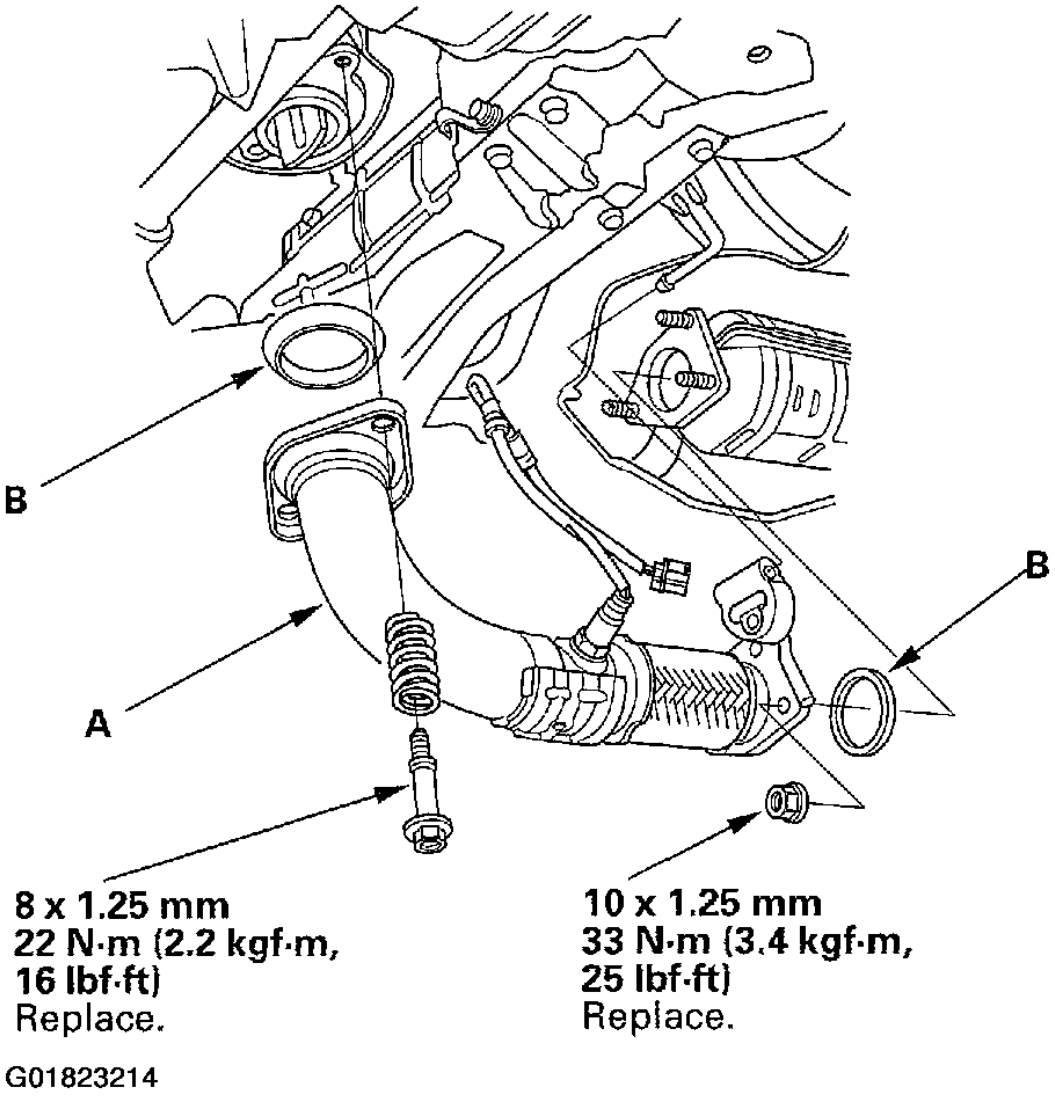


Fig. 48: Installing Exhaust Pipe A

25. Install the splash shield.

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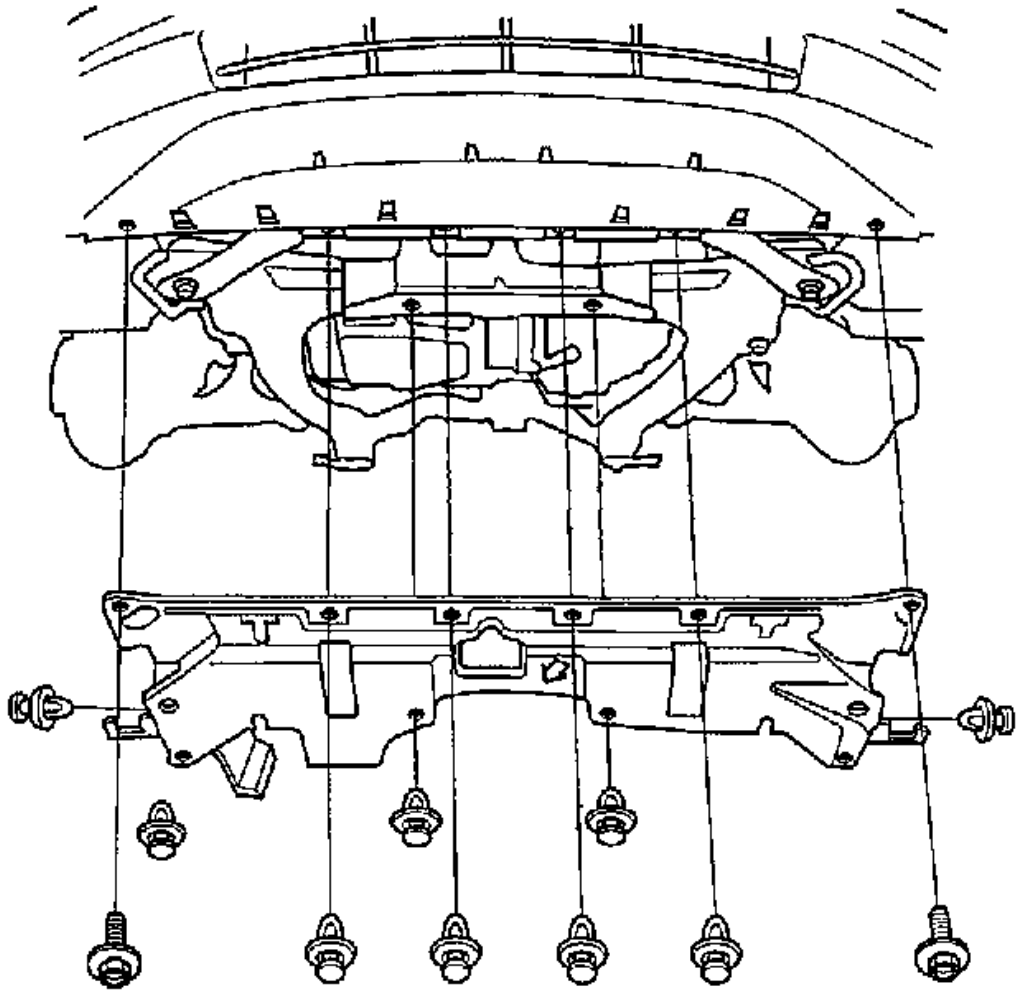


Fig. 49: Installing The Splash Shield

26. Check that the mount bracket collars (A) are installed in the transmission, then install the transmission mount bracket (B) and ground cable (C).

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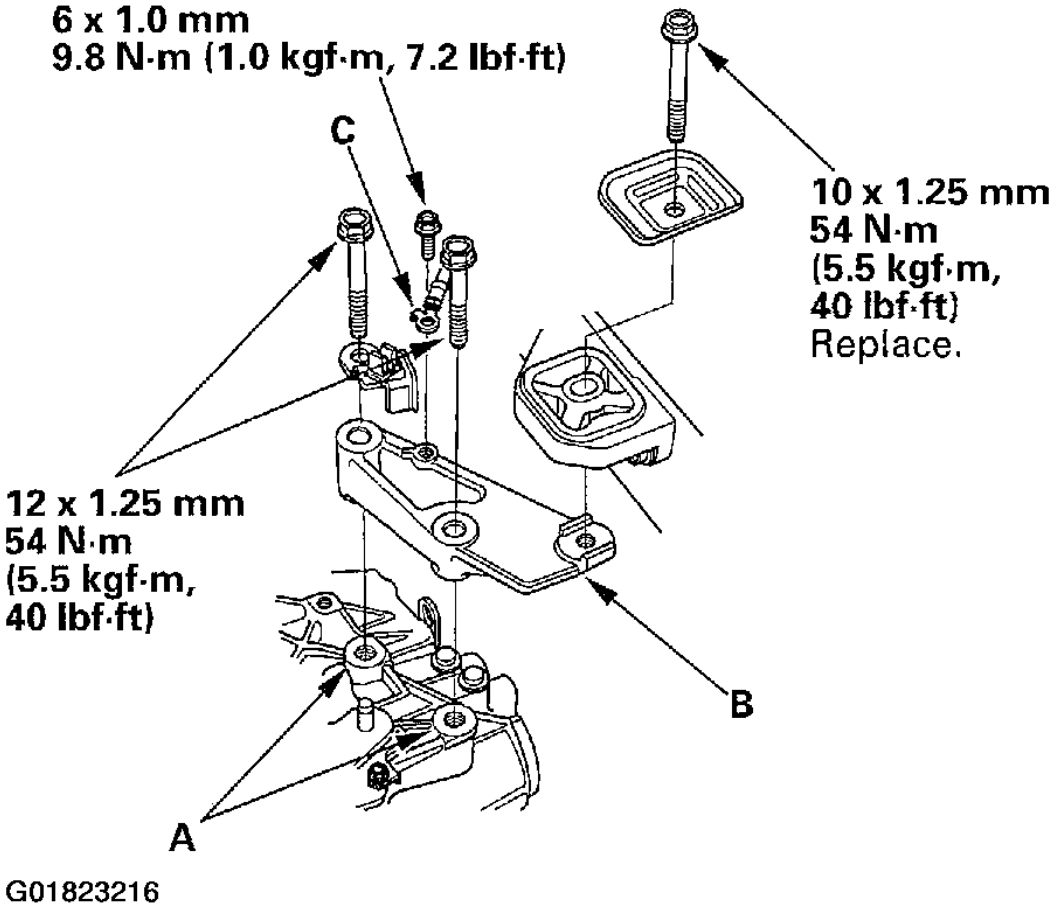


Fig. 50: Installing The Transmission Mount Bracket And Ground Cable

27. Install the transmission upper mounting bolts.

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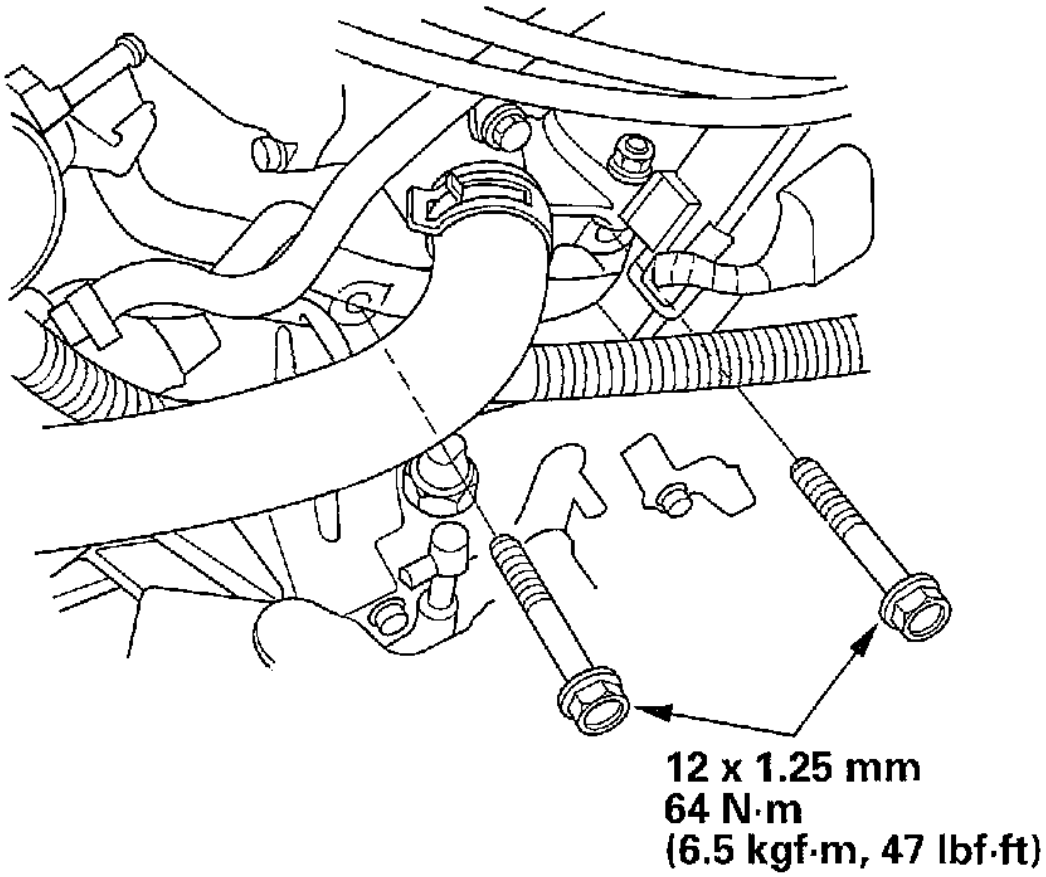


Fig. 51: Installing The Transmission Upper Mounting Bolts

28. Install the steering gearbox mounting bolts.

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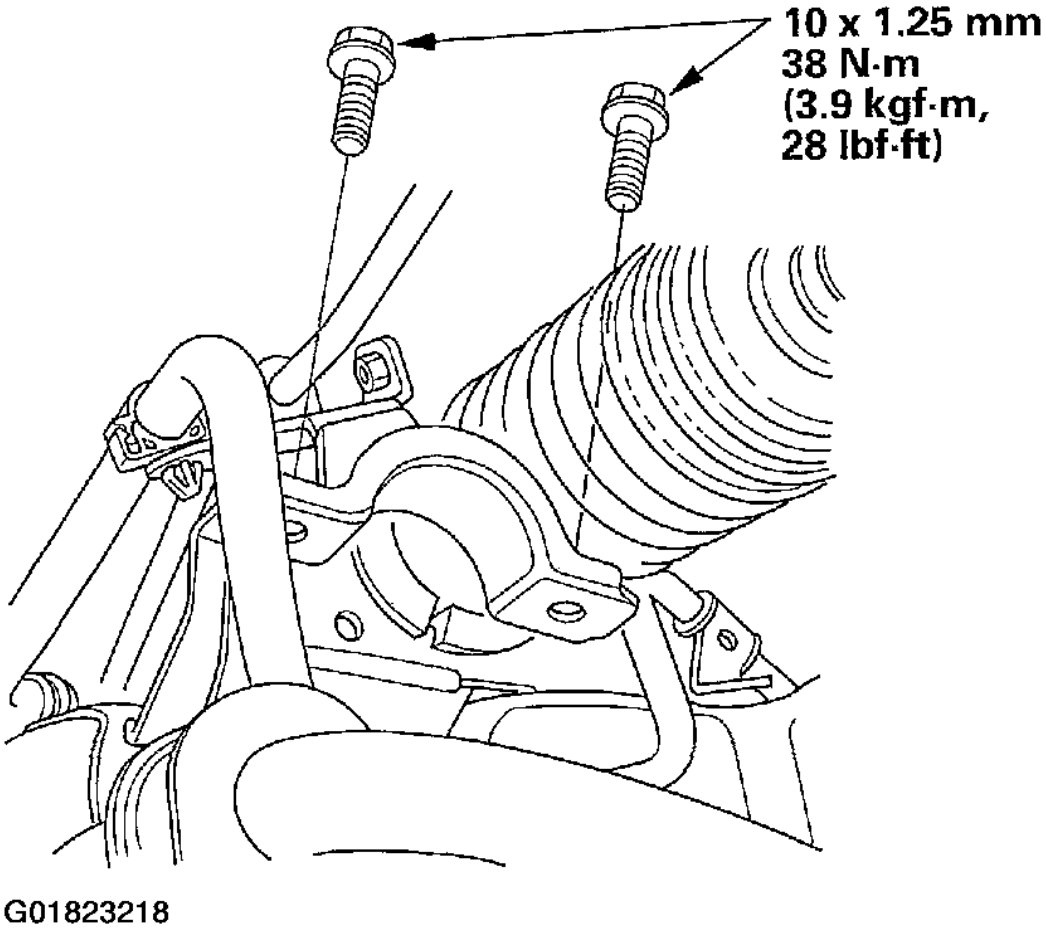


Fig. 52: Installing The Right Side Steering Gearbox Mounting Bolts

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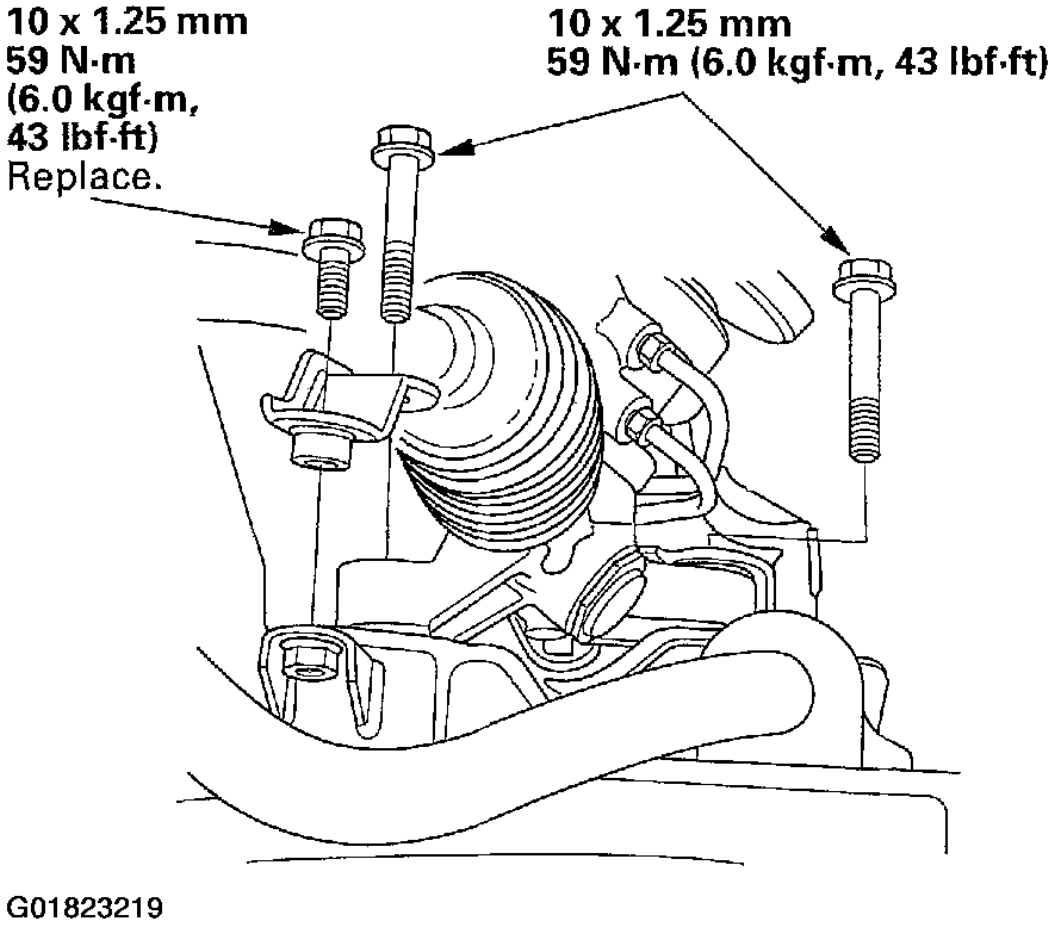


Fig. 53: Installing The Left Side Steering Gearbox Mounting Bolts

29. Install the engine rear mount stop.

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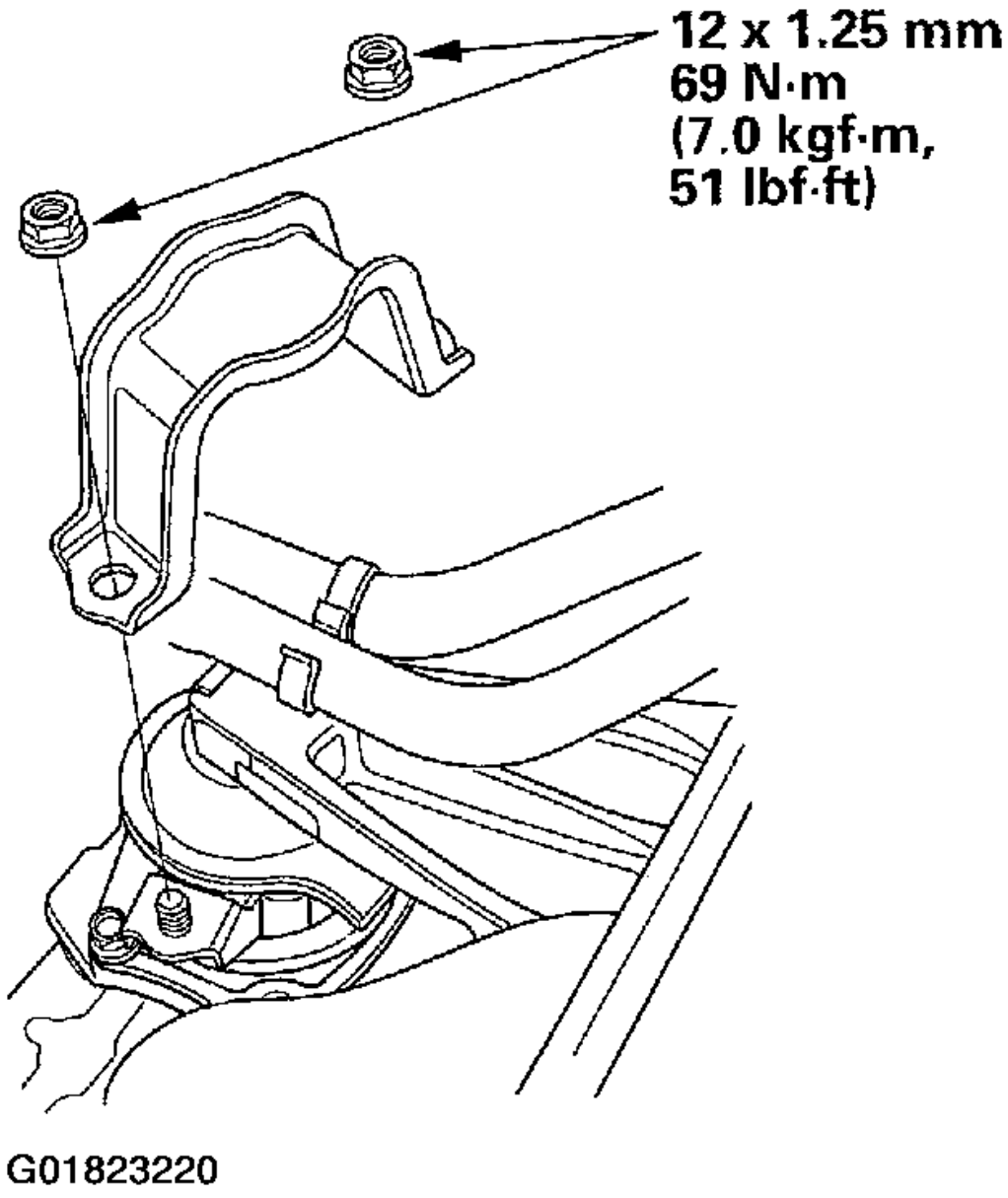


Fig. 54: Installing The Engine Rear Mount Stop

30. Install the engine mount front mounting bolt (A) and the engine front mount stop (B).

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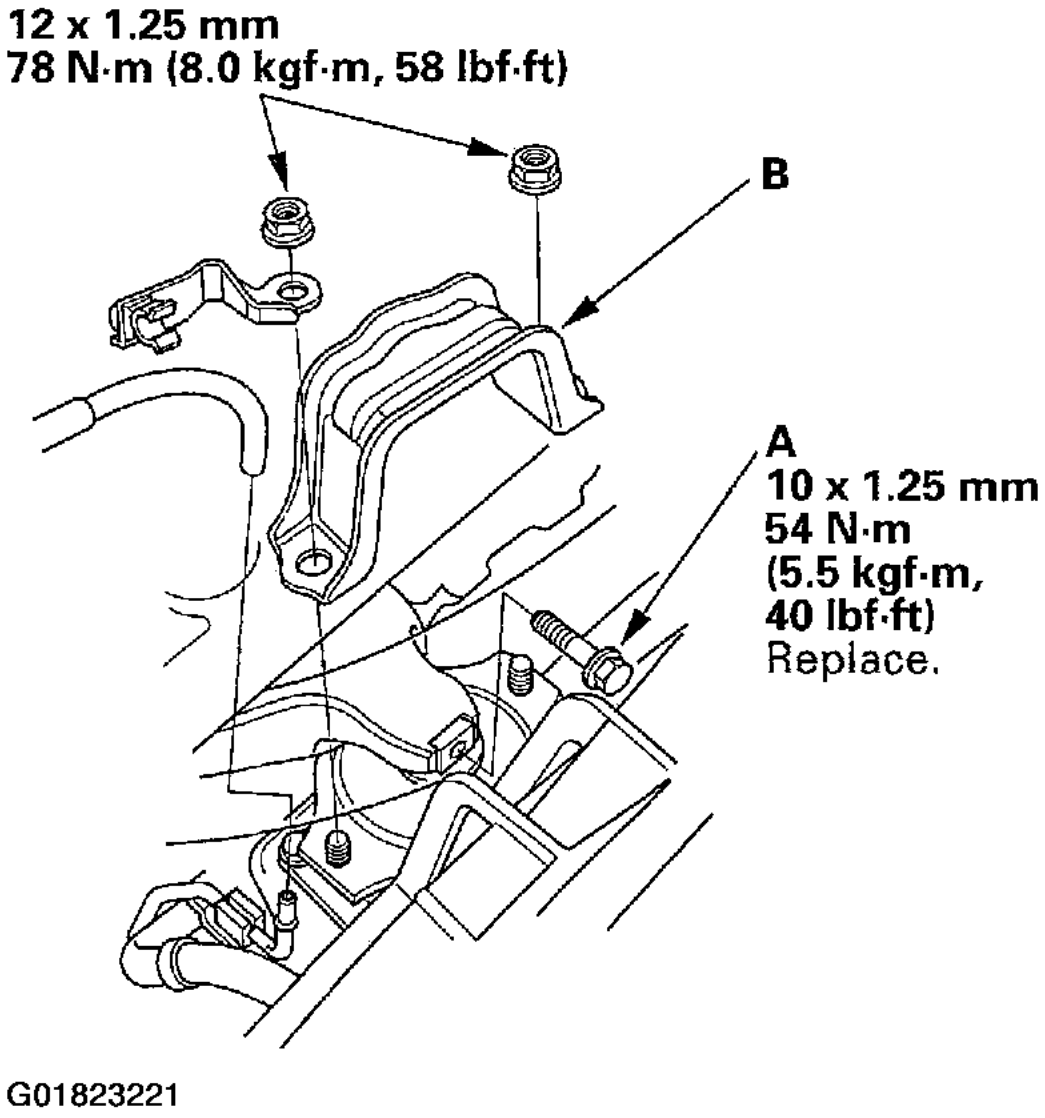


Fig. 55: Installing The Engine Mount Front Mounting Bolt (A) And The Engine Front Mount Stop

31. Install the bracket (A), then connect the secondary heated oxygen sensor (secondary HO2S) connector (B).

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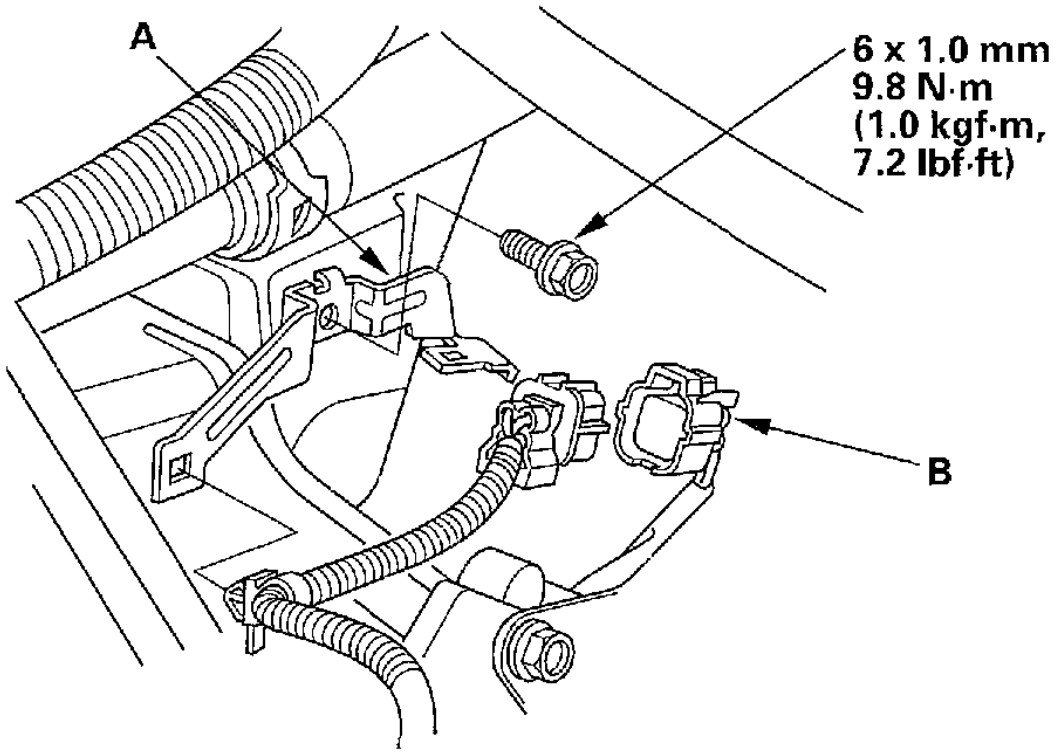


Fig. 56: Installing The Bracket, Then Connect The Secondary Heated Oxygen Sensor (Secondary HO2S) Connector

32. Connect the reverse lockout solenoid connector (A), back-up light switch connector (B), and countershaft speed sensor connector (C).

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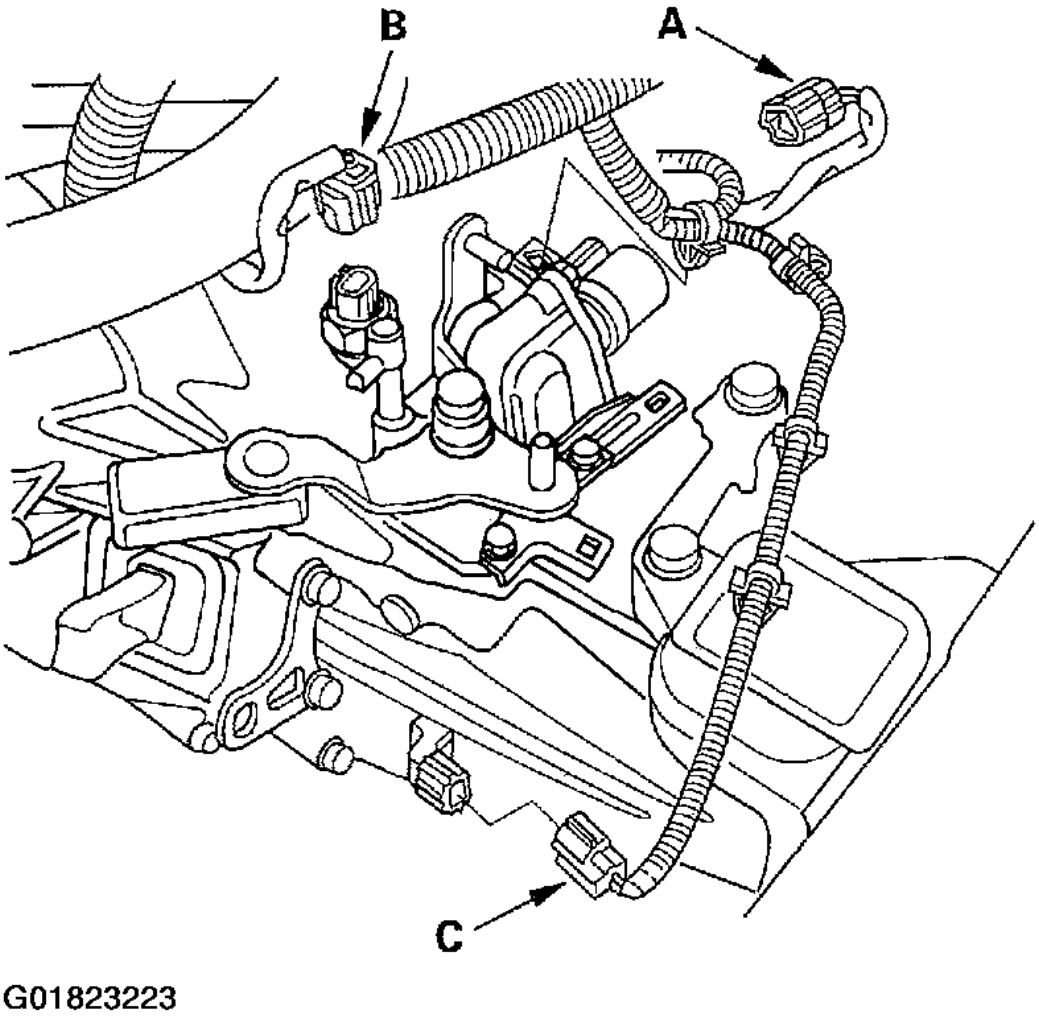


Fig. 57: Connecting The Reverse Lockout Solenoid, Back-Up Light Switch, And Countershaft Speed Sensor Connectors

33. Install the cable bracket (A) and cables (B).

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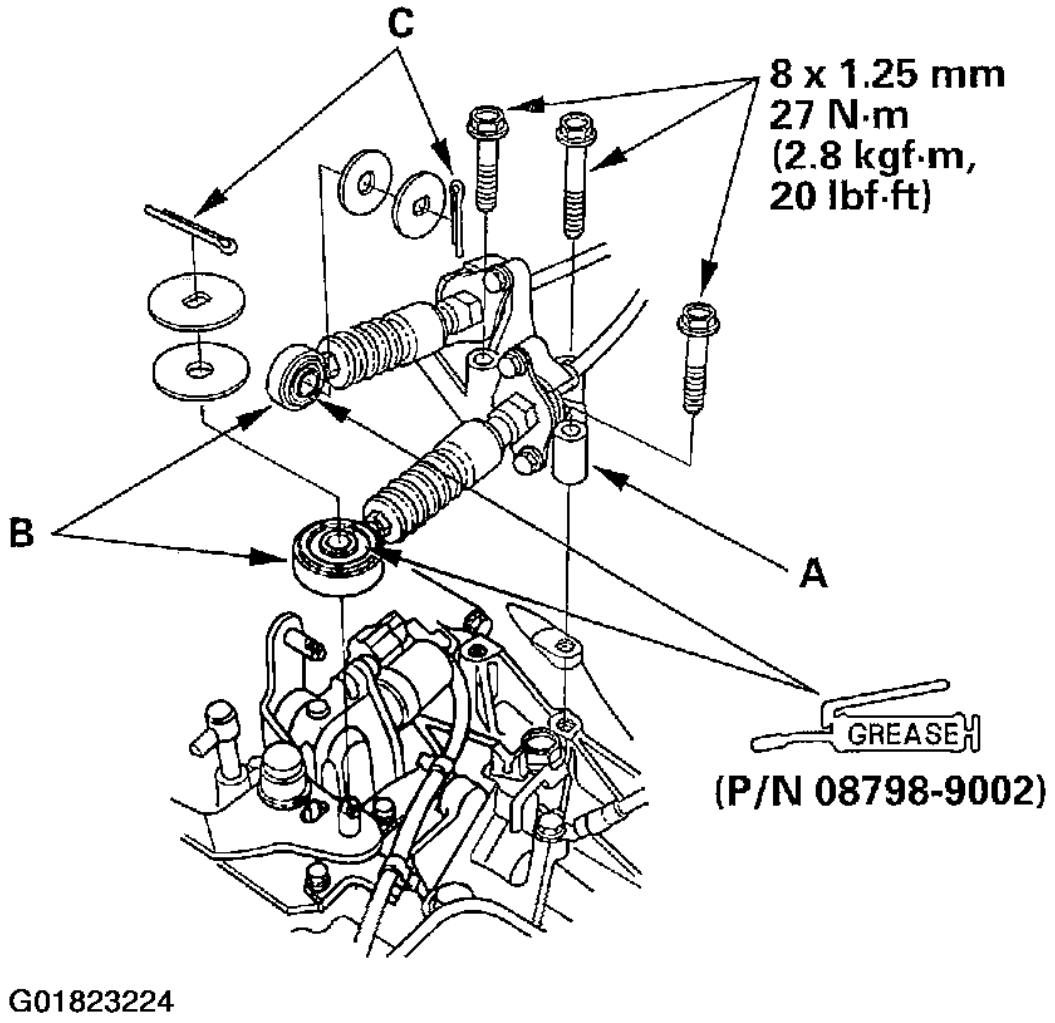


Fig. 58: Installing The Cable Bracket And Cables

34. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the cable ends, and install new cotter pins (C).
35. Apply super high temp urea grease (P/N 08798-9002) to the end of the cylinder rod. Install the slave cylinder. Take care not to bend the clutch line.

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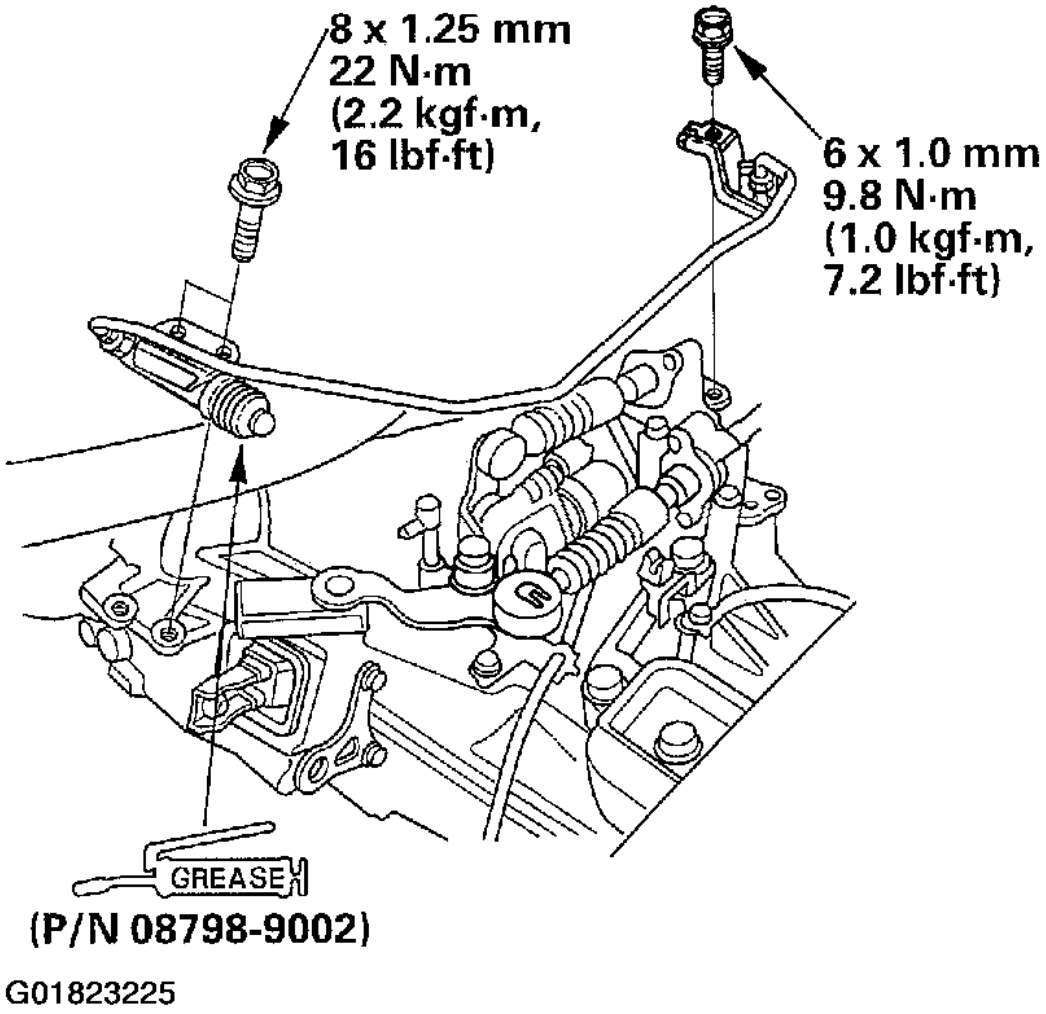


Fig. 59: Installing The Slave Cylinder

36. Install the battery base (see step 43 of **ENGINE INSTALLATION**).
37. Install the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
38. Install the battery. Connect the positive (+) cable first, then the negative (-) cable to the battery.
39. Refill the transmission fluid (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
40. Test-drive the vehicle.
41. Check the clutch operation.
42. Check the front wheel alignment (see **WHEEL ALIGNMENT PROCEDURES**).
43. Enter the anti-theft codes for the radio and navigation system, then enter the customer's radio station presets.

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2004 STEERING

Power Steering System - TSX

SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
①	07GAF-PH70100	Pilot Collar	1
②	07HAG-SF10100	Piston Seal Ring Guide	1
③	07HAG-SF1020A or 07HAG-SF10200	Piston Seal Ring Sizing Tool	1
④	07MAC-SL00200	Ball Joint Remover, 28 mm	1
⑤	07NAD-SR3020A	Cylinder End Seal Remover Attachment	1
⑥	07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑦	07ZAB-S5A0100	Pulley Holder	1
⑧	07VAK-P8A011A	P/S Joint Adaptor (Pump)	1
⑨	07ZAK-S7CA100	P/S Joint Adaptor Plate (Pump)	1
⑩	07ZAK-S7CA200	P/S Joint Adaptor (Hose)	1
⑪	07ZAG-S5A0300	Cylinder End Seal Slider	1
⑫	07406-0010001 or 07406-001000A	P/S Pressure Gauge	1
⑬	07746-0010100	Attachment, 32 x 35 mm	1
⑭	07749-0010000	Driver	1
⑮	07916-SA50001	Locknut Wrench, 40 mm	1
⑯	07965-SA50500	Front Hub Dis/Assembly Tool	1
⑰	07974-SA5020A or 07974-SA50200	Sleeve Seal Ring Sizing Tool	1
⑱	07974-SA50800	Ball Joint Boot Clip Guide	1

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Fig. 1: Special Tools (1 Of 2)

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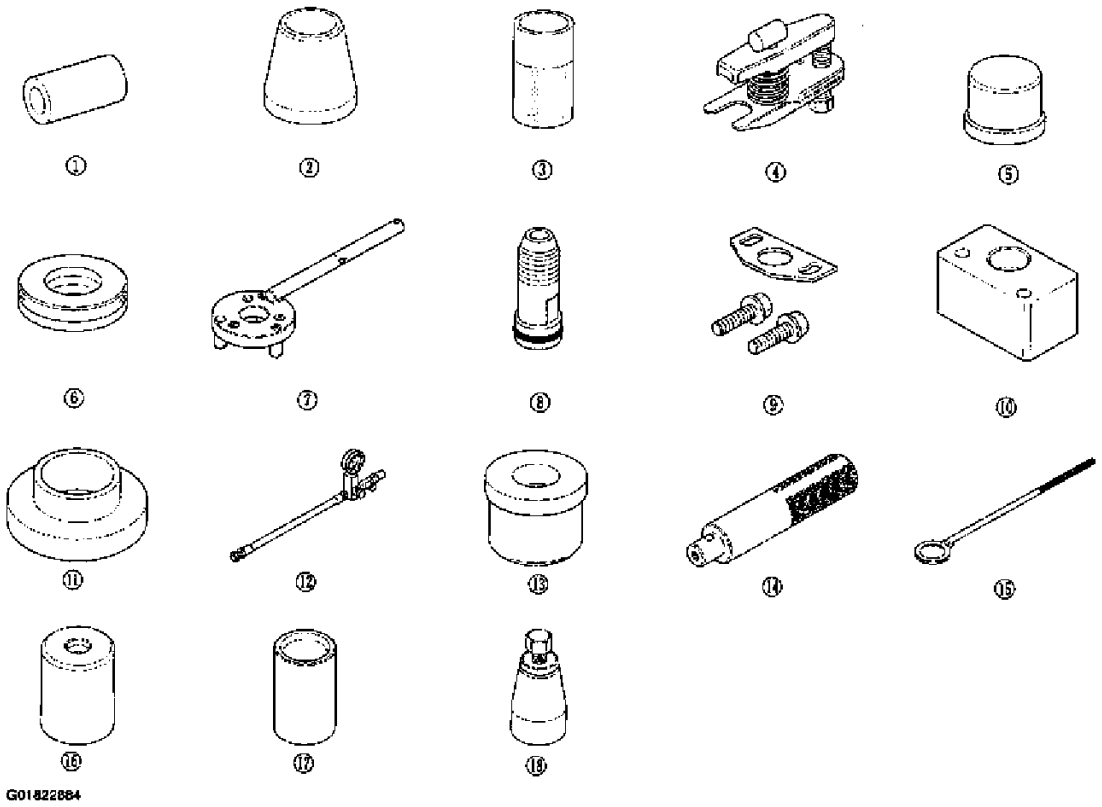


Fig. 2: Special Tools (2 Of 2)

COMPONENT LOCATION INDEX

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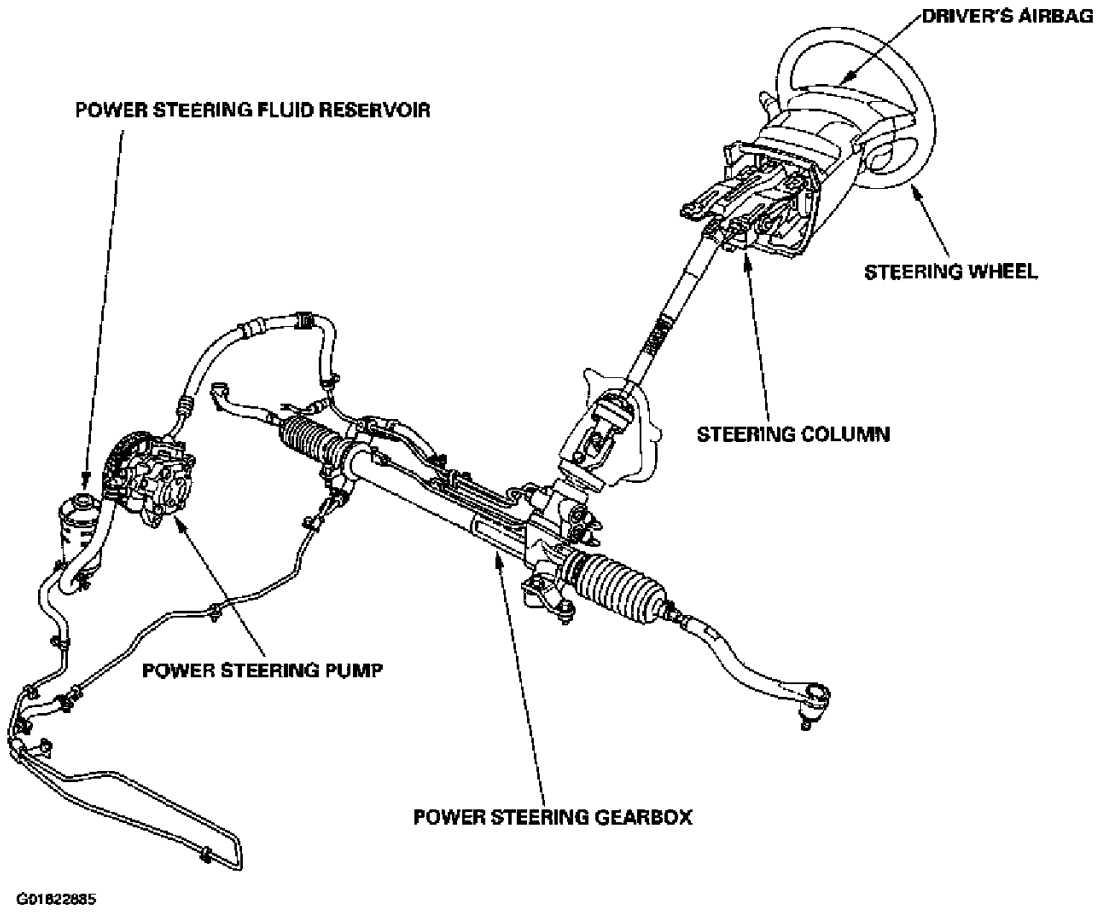


Fig. 3: Locating Power Steering Components

SYMPTOM TROUBLESHOOTING INDEX

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

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Symptom	Procedure(s)	Also check for:
Hard steering	Troubleshoot the system.	• Modified suspension • Damaged suspension • Tire sizes, tire varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment.	Front wheel alignment
Shock or vibration when the steering wheel is turned to full lock	1. Check the rack guide adjustment. 2. Check the drive belt for slippage. 3. Check the power steering pump fluid pressure with T/N 07406-0010001 or T/N 07406-0010001A. 4. Overhaul the steering gearbox.	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check upper and lower ball joints for binding. 3. Check wheel alignment. 4. Overhaul the steering gearbox.	
Uneven or rough steering	1. Check the rack guide adjustment. 2. Check the drive belt. 3. Check low or erratic engine idle speed. 4. Check for air in the power steering system due to air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system. 6. Overhaul the steering gearbox.	
Steering wheel kicks back during wide turns	1. Check the drive belt. 2. Check the power steering pump fluid pressure with T/N 07406-0010001 or T/N 07406-0010001A.	
Humming noise from the power steering system	1. Check when the noise occurs. • If the noise is heard 2—3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turned with the vehicle stopped, this is normal due to the fluid pulsation. 2. Check for the high pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise. 4. Check for air bubbles in the power steering fluid, leak on inlet side of pump. 5. Check for particle contamination of fluid and restricted filter in the reservoir.	Pump pressure
Power steering rack rattle or chattering	1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly. 3. Check the rack guide adjustment. 4. Check the power steering pump pulley. • If the pulley is loose, tighten it • If the pump shaft is loose, replace the pump	
Hissing from the power steering system	• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks. • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system. • Check the power steering pump shaft oil seal for leaks.	Air in the P/S fluid
Noise from the power steering pump	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise up to 2—3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage	• P/S pump pressure • Air in the P/S fluid
Squeaking from the power steering pump	Check the drive belt.	
Fluid leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit: Overhaul the valve body unit. • Fluid leaks from the left boot: Replace the valve oil seal on the pinion shaft. Replace the cylinder end seal on the gearbox side. • Fluid leaks from the right boot: Replace the right cylinder end seal. • Fluid leaks from pinion shaft near the lower steering joint bolt: Overhaul the valve body unit. • Fluid leaks from the steering damping valve covers on the valve body unit: Replace the valve housing.	
Fluid leaks from the power steering line	• Fluid leaks from the cylinder line connections (flare nuts): Tighten the connection and retest. • Fluid leaks from a damaged cylinder lines: Replace the cylinder line. • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts): Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from the power steering pump	• Fluid leaks from the front oil seal: Replace the front oil seal. • Fluid leaks from the power steering pump housing: Replace the leaking O-rings or seals, and if necessary replace the power steering pump.	
Fluid leaks from the power steering reservoir	• Fluid leaks from around the reservoir cap: Fluid level is too high: drain the reservoir to the proper level. Aerated fluid: check for an air leak on the inlet side of pump. • Fluid leaks from reservoir: Check for the reservoir for cracks and replace as necessary.	
Fluid leaks from the power steering pump outlet hose (high-pressure)	• Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swagged joint: Replace the outlet hose.	
Fluid leaks from the power steering pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

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Fig. 4: Symptom Troubleshooting Index

SYMPTOM TROUBLESHOOTING

HARD STEERING

1. Check the power assist (see **POWER ASSIST CHECK**).

   Is the starting load more than 29 N (3.0 kgf, 6.6 lbf)?

   YES: Go to step 2.

   NO: Power assist is OK.

2. Measure steady-state fluid pressure from the pump at idle with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**).

   Is the pressure 1,500 kPa (15 kgf/cm^2 , 213 psi) or less?

   YES: Go to step 3.

   NO: Go to step 7 .

3. Measure the pump relief pressure at idle with T/N 07406-0010001 (see step 10 of **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see step 9 of **PUMP PRESSURE TEST WITH T/N 07406-001000A**).

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)?

   YES: Go to step 4.

   NO: Faulty pump assembly.

4. With a spring scale, measure the power assist in both directions, to the left and to the right.

   Are the two measurements within 2.9 N (0.3 kgf, 0.66 lbf) of each other?

   YES: Go to step 5.

   NO: Go to step 8 .

5. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)?

   YES: Go to step 6.

   NO: Faulty gearbox.

6. Adjust the rack guide (see **RACK GUIDE ADJUSTMENT**), and retest.

   Is the steering OK?

   YES: Repair is completed.

   NO: Faulty gearbox.

7. Check the feed and return lines between the pump and the gearbox for clogging and deformation.

   Are the lines clogged or deformed?

   YES: Repair or replace the lines.

   NO: Faulty valve body unit or pump.

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8. Check the cylinder lines for deformation (see **FLUID LEAKAGE INSPECTION**).

   Are the lines deformed?

   YES: Replace the lines.

   NO: Go to step 9.

9. Check for a bent rack shaft or misadjusted rack guide (too tight).

   Is the rack shaft bent or the rack guide adjusted too tight?

   YES: Replace the rack shaft or readjust the rack guide.

   NO: Faulty valve body unit.

STEERING WHEEL ROTATIONAL PLAY CHECK

1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
   - If the play is within the limit, the gearbox and linkages are OK.
   - If the play exceeds the limit, adjust the rack guide (see **RACK GUIDE ADJUSTMENT**). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see **STEERING LINKAGE AND GEARBOX INSPECTION**).

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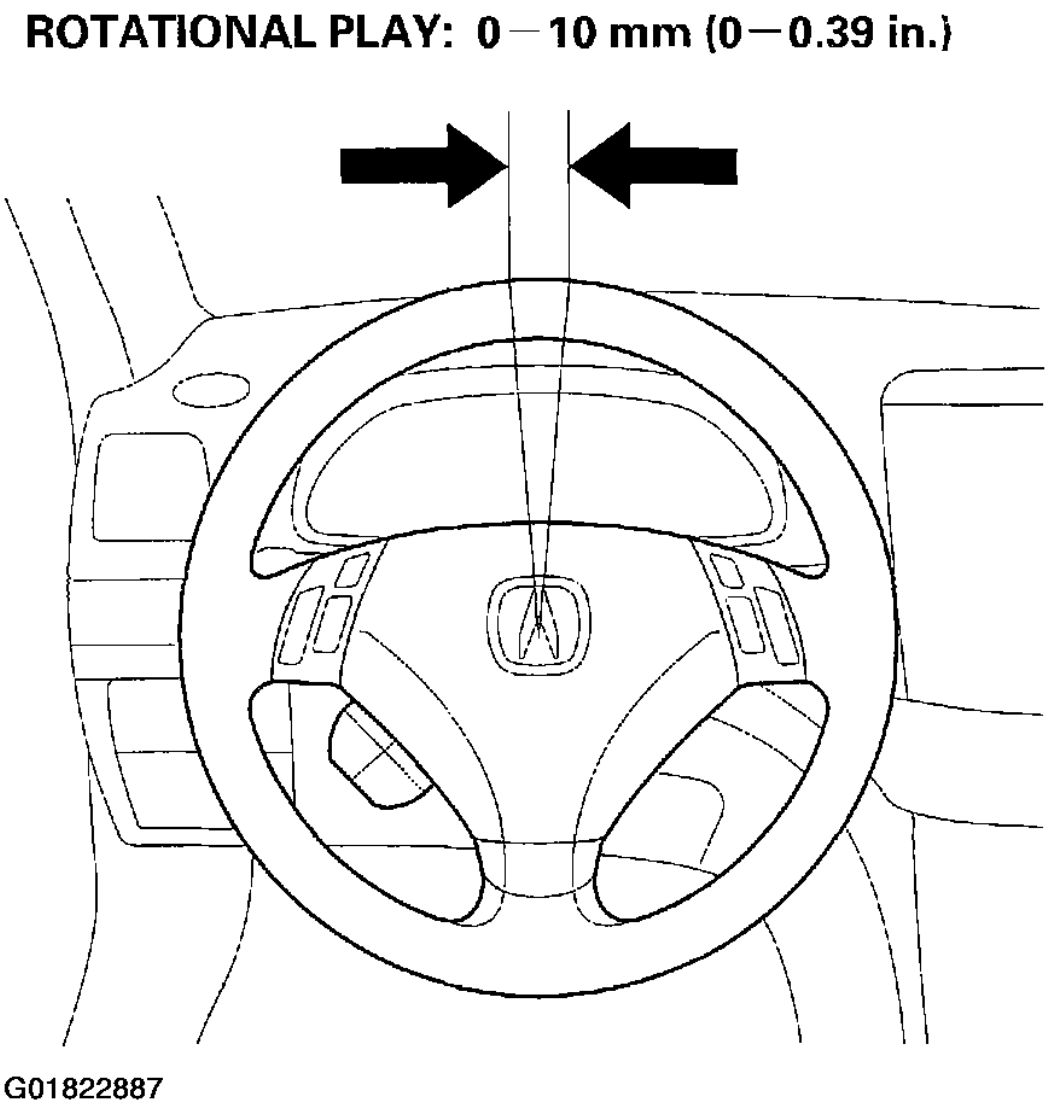


Fig. 5: Checking Steering Wheel Rotational Play

POWER ASSIST CHECK

NOTE: This test should be done with original equipment wheels and tires at the correct tire pressure.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle

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on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.

- If the scale reads no more than specifications, the gearbox and pump are OK.
- If the scale reads more than specifications, troubleshoot the steering system (see **SYMPTOM TROUBLESHOOTING**).

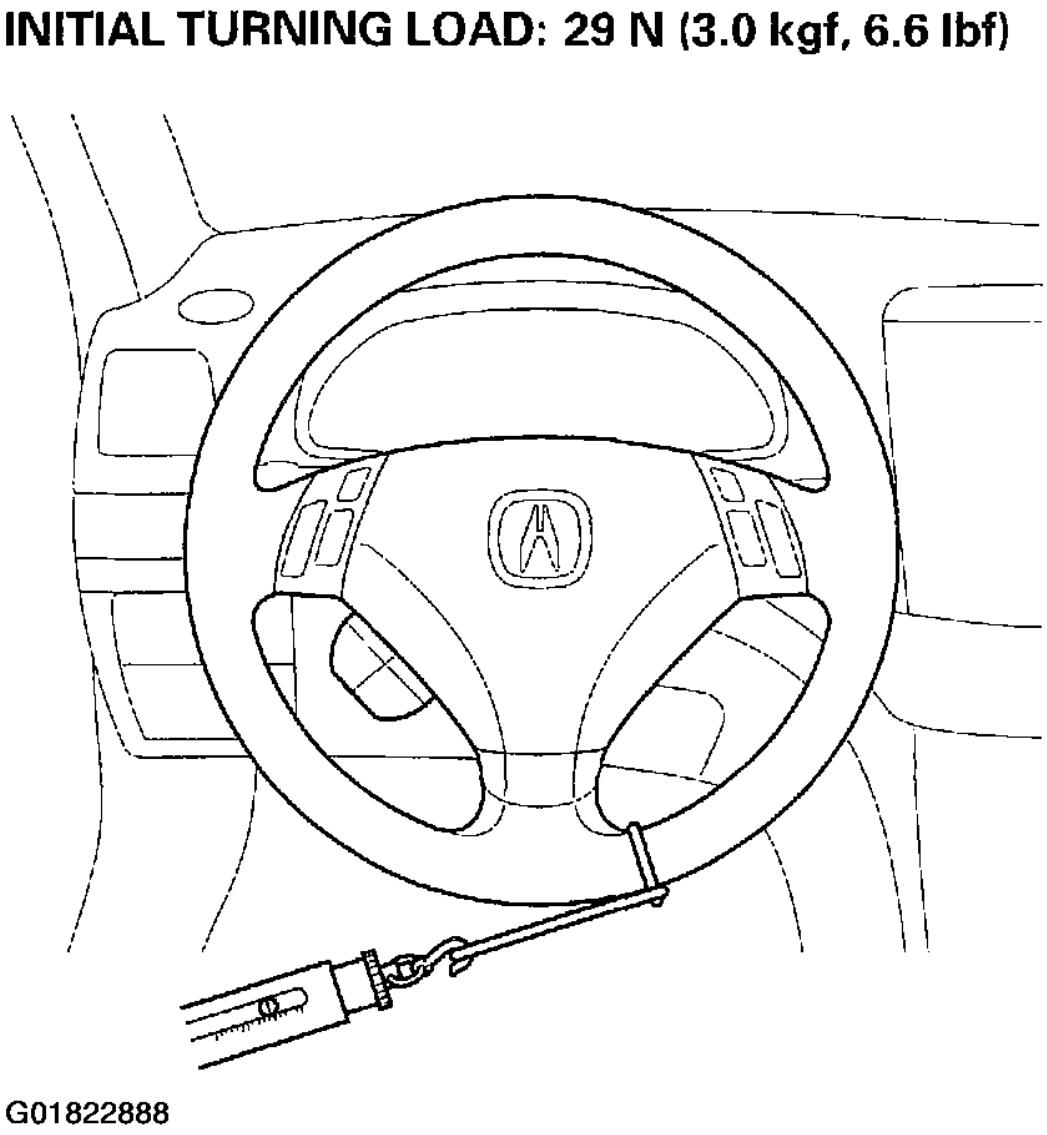


Fig. 6: Checking Power Assist

STEERING LINKAGE & GEARBOX INSPECTION

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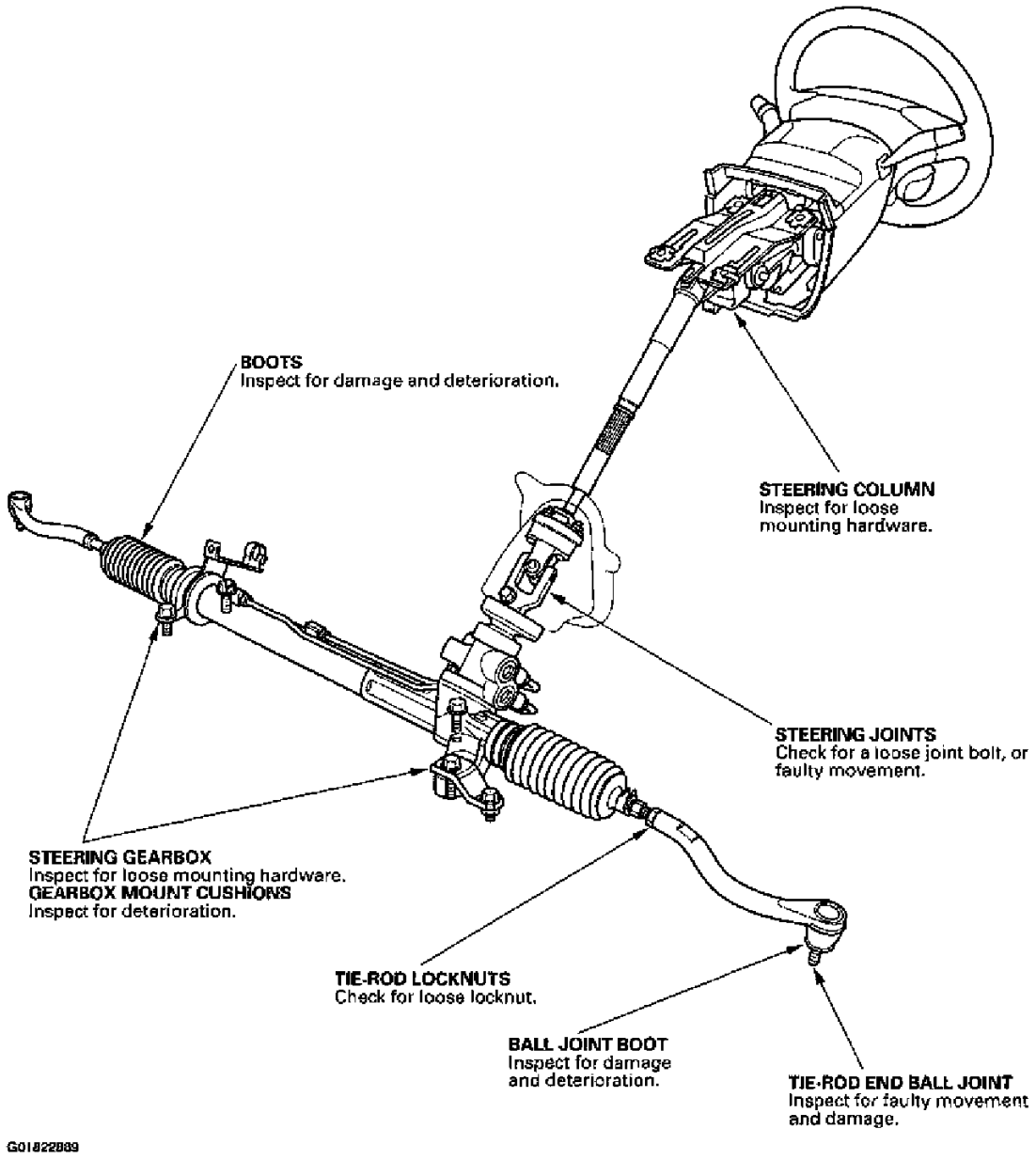


Fig. 7: Inspecting Steering Linkage & Gearbox

PUMP PRESSURE TEST WITH T/N 07406-0010001

Special Tools Required:

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07ZAK-S7CA100
- P/S joint adapter (hose) 07ZAK-S7CA200
- P/S pressure gauge 07406-0010001

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Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts. Install the P/S joint adapter (pump) on the pump outlet (B).

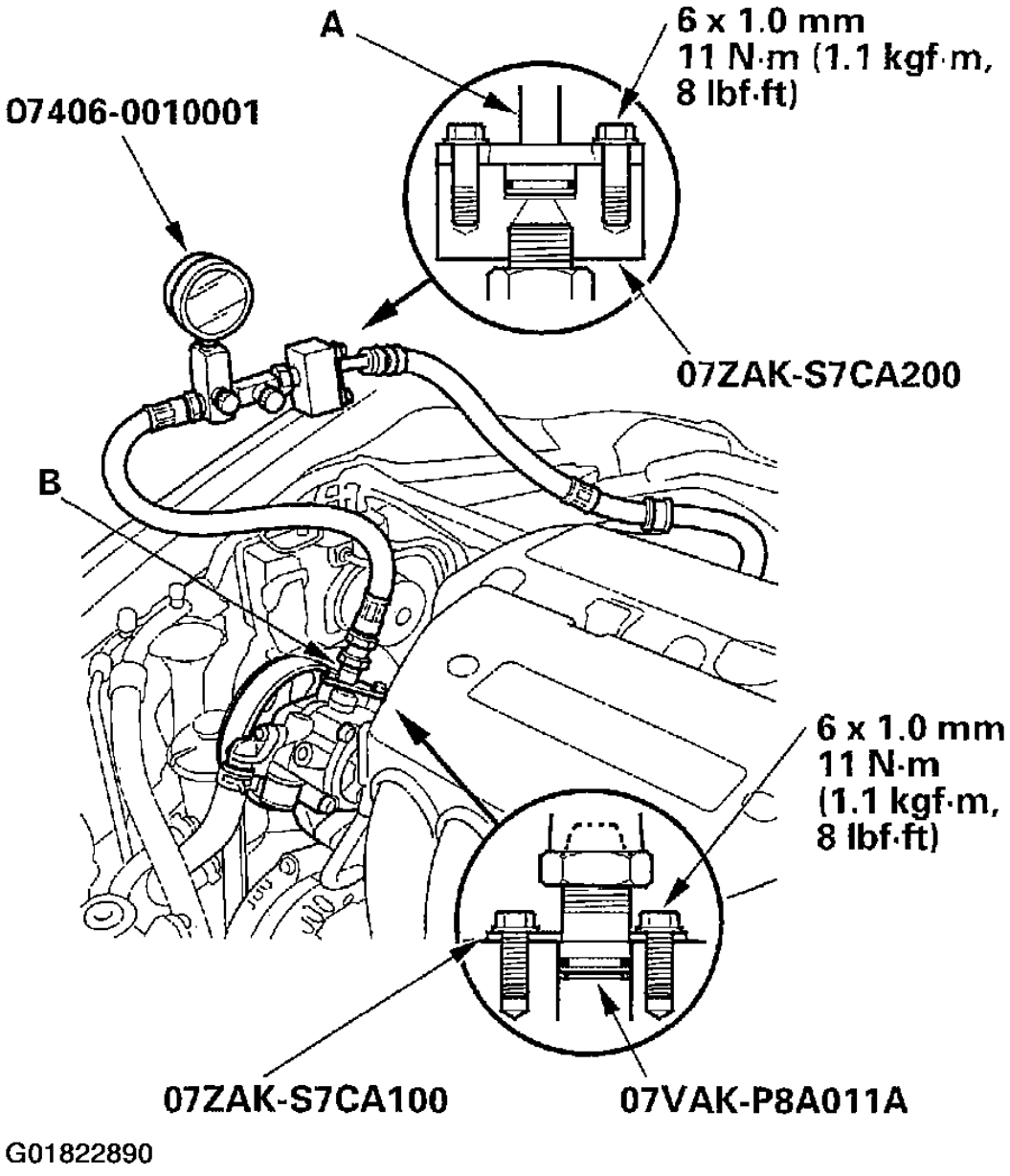


Fig. 8: Installing The P/S Joint Adapter (Pump) On The Pump Outlet

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3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose (A) to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).
5. Fully open the shut-off valve (A).

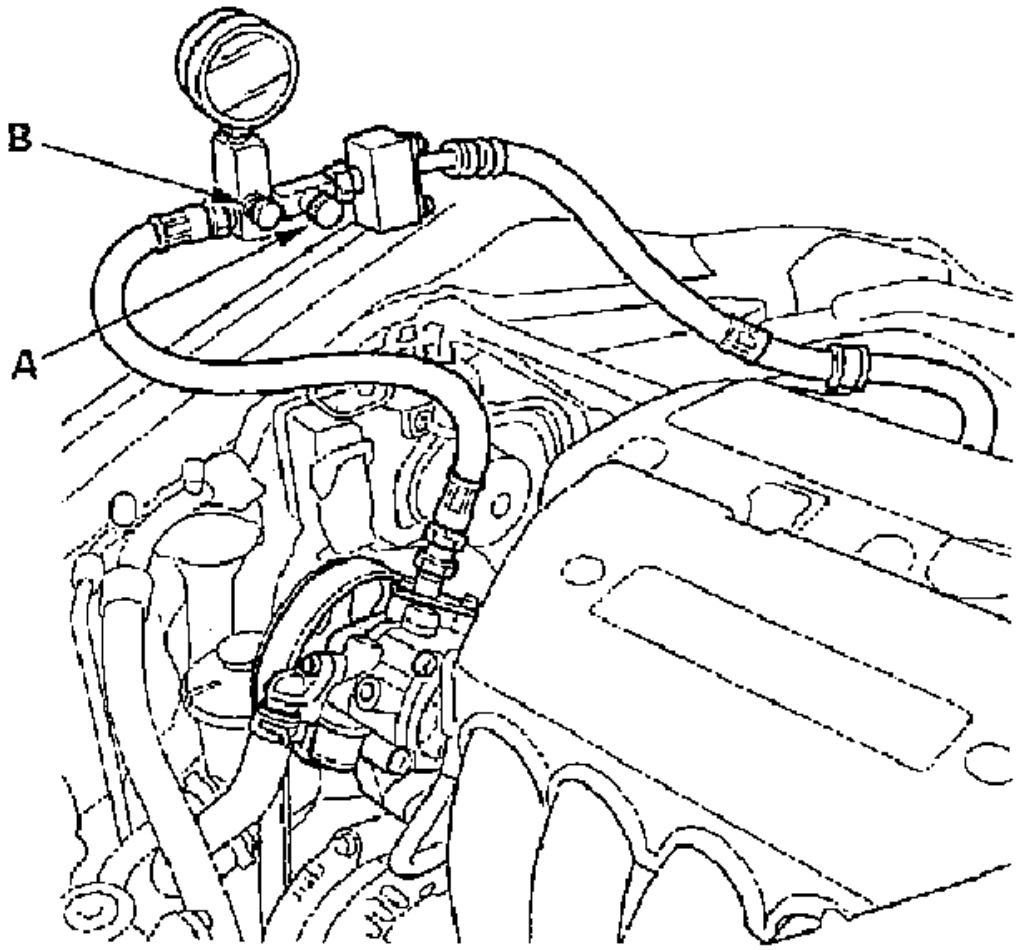


Fig. 9: Fully Open The Shut-Off Valve & The Pressure Control Valve

6. Fully open the pressure control valve (B).
7. Start the engine and let it idle.
8. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).

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9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the pressure should be no more than 1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, check the outlet hose or valve body unit (see Steering System Troubleshooting). Raise the engine speed to 3,000 RPM, and measure the fluid pressure. If the pump is in good condition, the pressure should be at least 1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, repair or replace the pump.
10. Lower the engine speed and let it idle. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

11. Immediately open the pressure control valve fully. If the pump is in good condition and the valve is closed, the gauge should read at least this specification:

7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)

A low reading means pump output is too low for full assist. Repair or replace the pump.

PUMP PRESSURE TEST WITH T/N 07406-001000A

Special Tools Required:

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07ZAK-S7CA100
- P/S joint adapter (hose) 07ZAK-S7CA200
- P/S pressure gauge 07406-001000A

Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts. Install the P/S joint adapter (pump) on the pump outlet (B).

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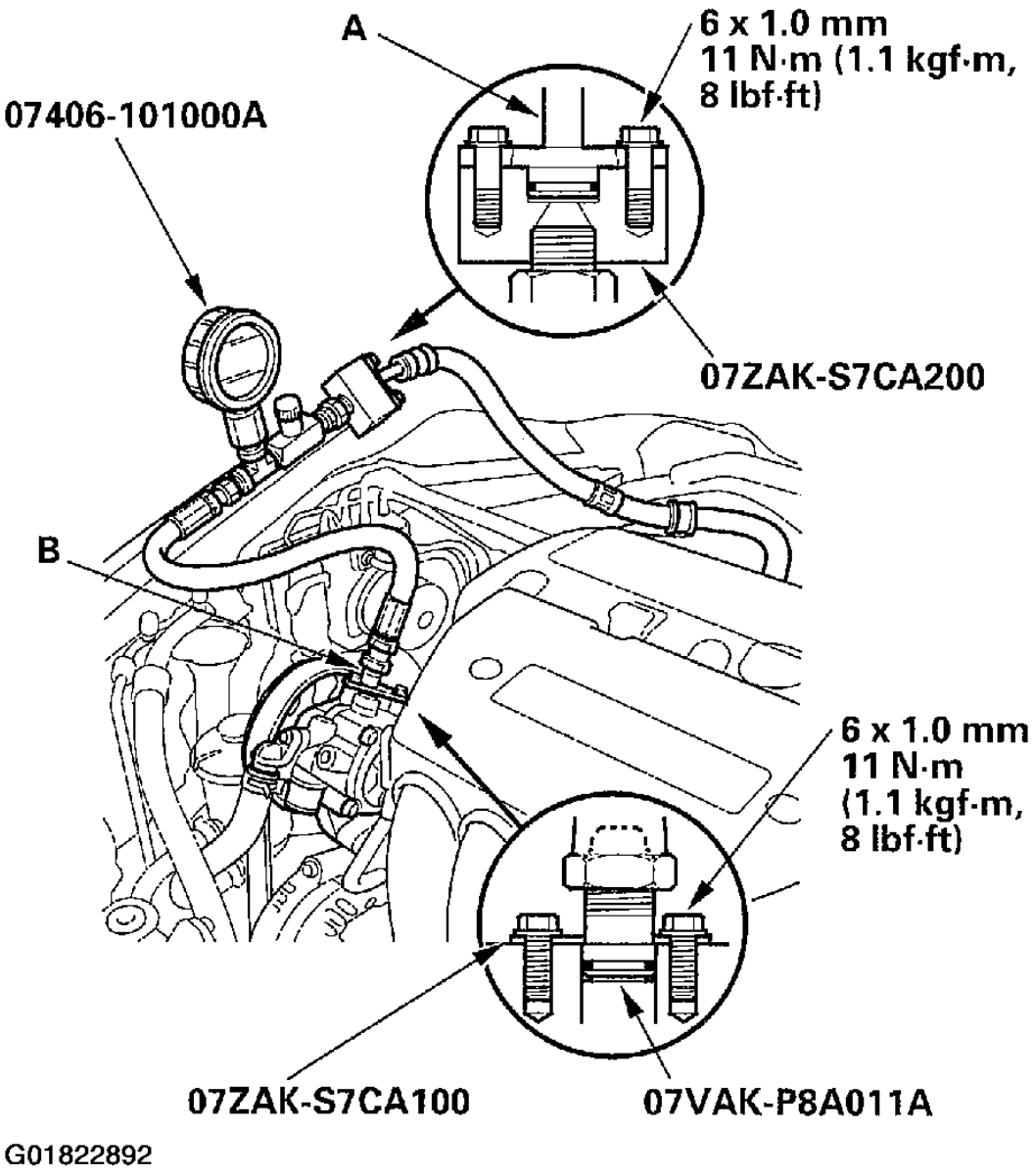
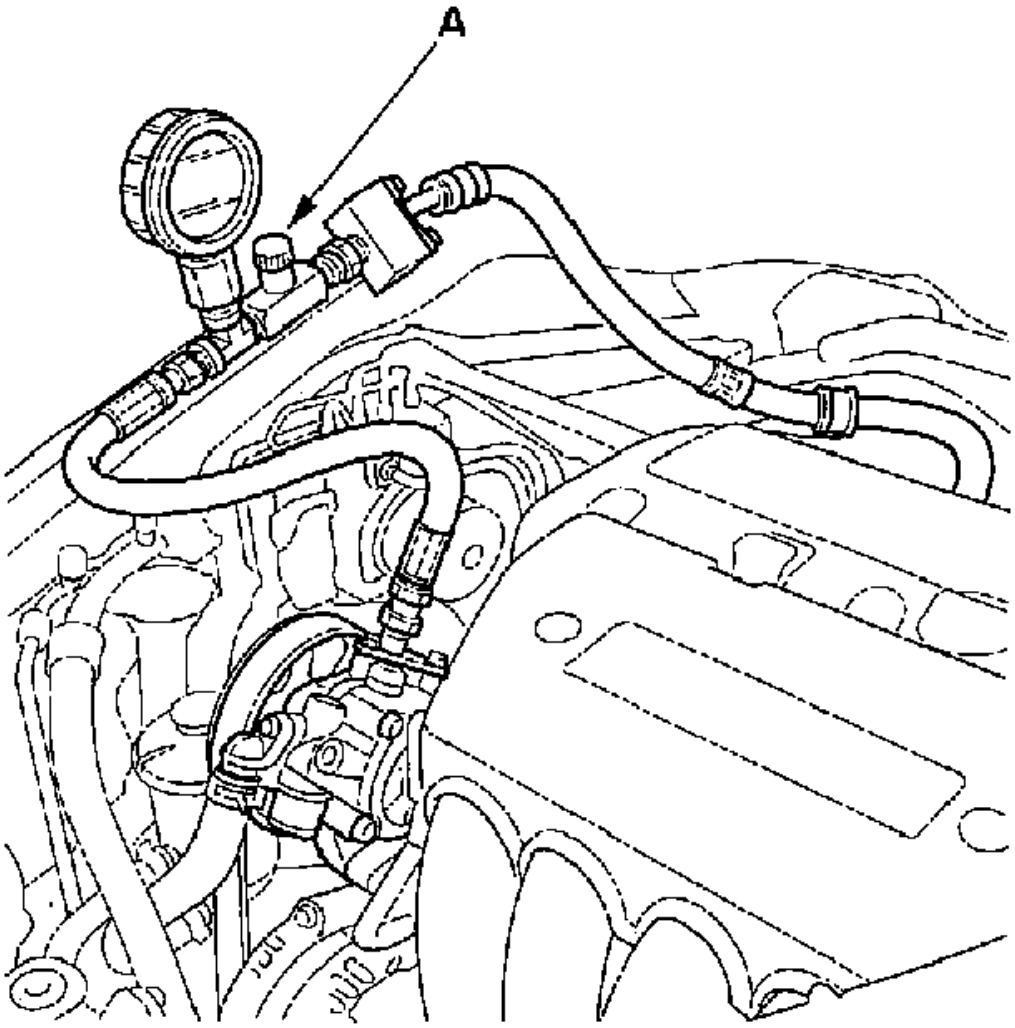


Fig. 10: Installing The P/S Joint Adapter (Pump) On The Pump Outlet

3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose (A) to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).
5. Open the pressure control valve (A) fully.

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Fig. 11: Opening The Pressure Control Valve Fully

6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).
8. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the pressure should be no more than 1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, check the outlet hose or valve body unit (see Steering System Troubleshooting). Raise the engine speed to 3,000 RPM, and measure the fluid pressure. If the pump is in good condition, the pressure should be at least

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1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, repair or replace the pump.

9. Lower the engine speed and let it idle. Close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the pressure control valve closed more than 5 seconds or the pump could be damaged by over-heating.

10. Immediately open the pressure control valve fully. If the pump is in good condition and the valve is closed, the gauge should read at least this specification:

7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)

A low reading means pump output is too low for full assist. Repair or replace the pump.

FLUID LEAKAGE INSPECTION

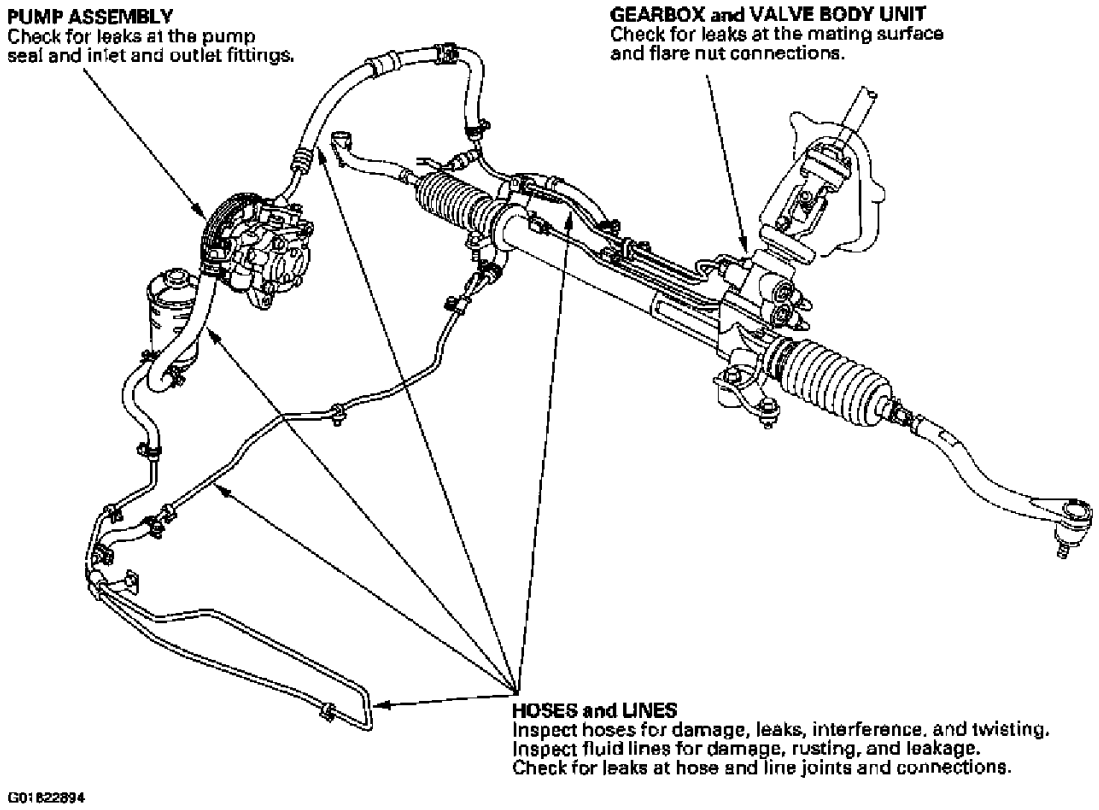


Fig. 12: Inspecting For Fluid Leakage

FLUID REPLACEMENT

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause

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increased wear and poor steering in cold weather.

System Capacity: 1.1 L (1.16 US. qt) at disassembly
Reservoir Capacity: 0.4 L (0.42 US. qt)

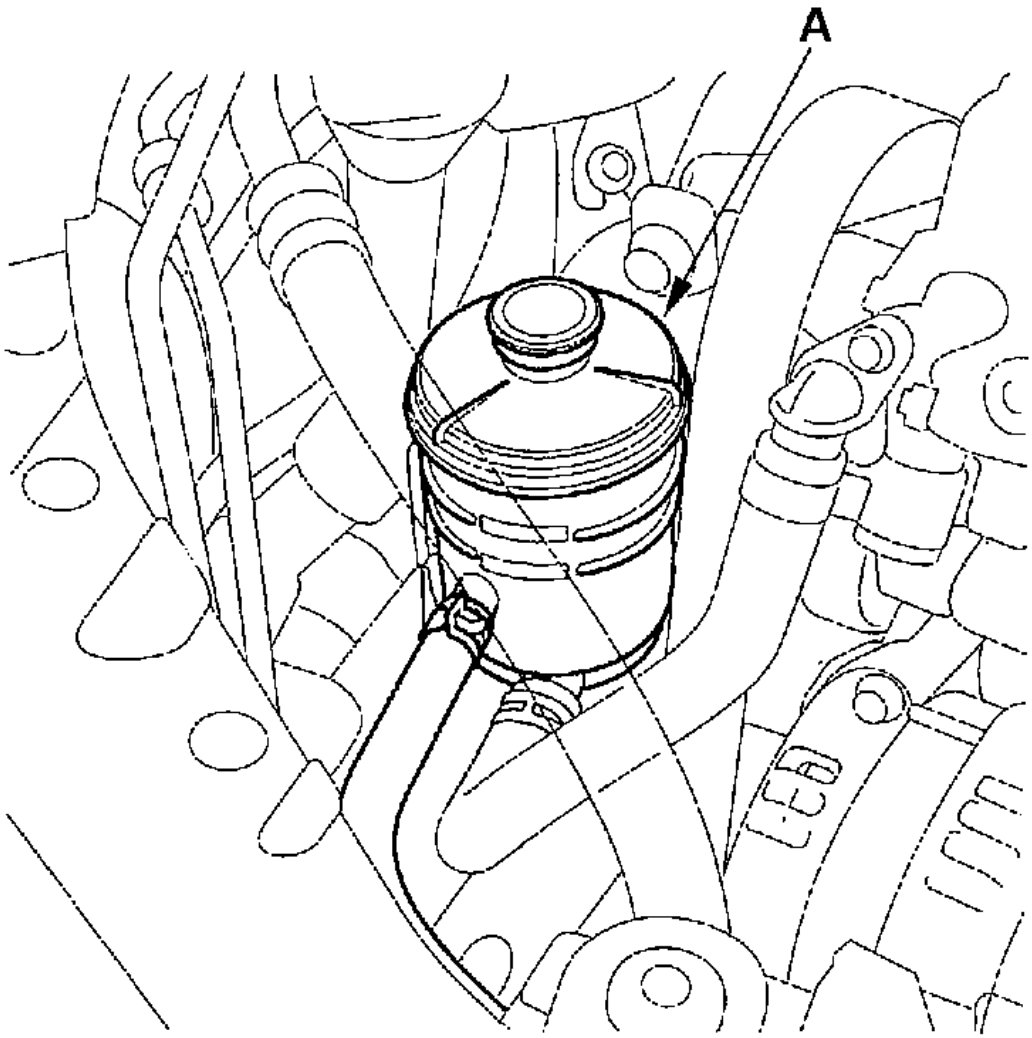


Fig. 13: Identifying Reservoir

1. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off and spilled fluid at once.

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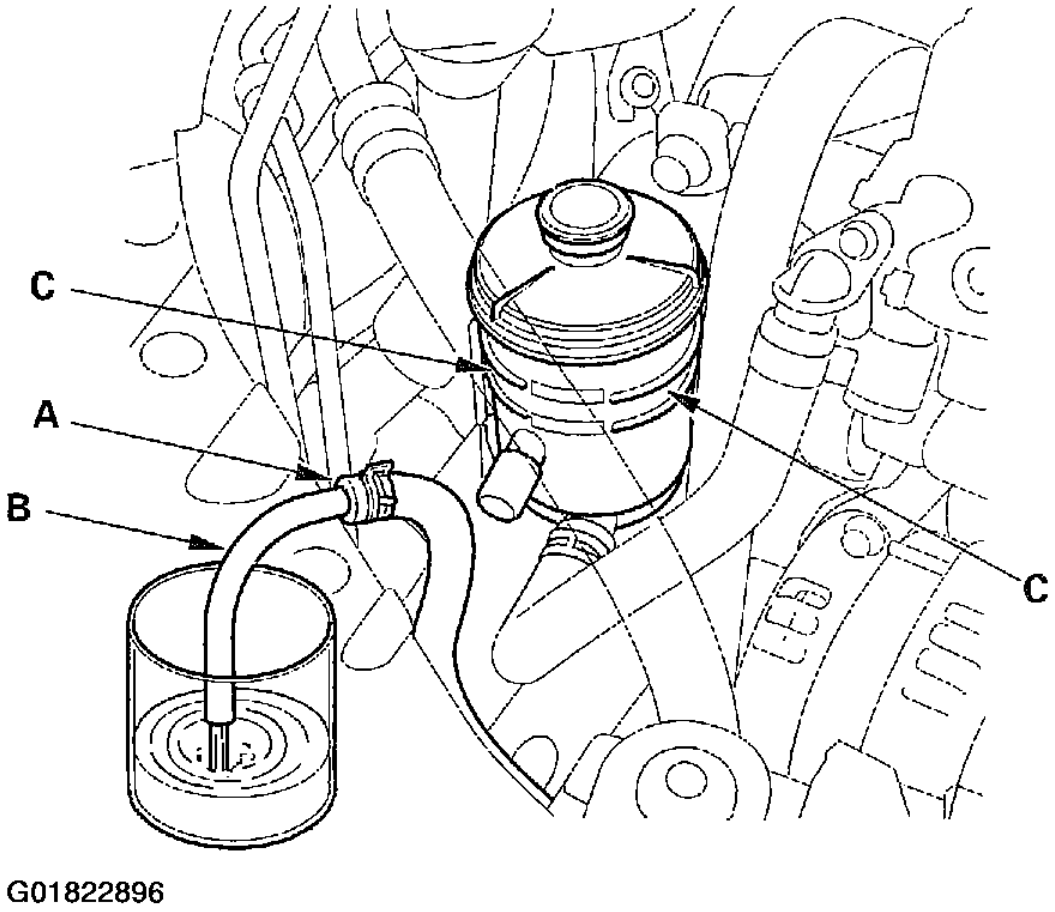


Fig. 14: Draining The Reservoir

2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add more if necessary. Do not fill the reservoir beyond the upper level line.
8. If the fluid is contaminated, dark, or discolored, repeat procedure as necessary.

POWER STEERING HOSE, LINE & PRESSURE SWITCH REPLACEMENT

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Note these items during installation:

- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace with the clamps NEW ones if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.

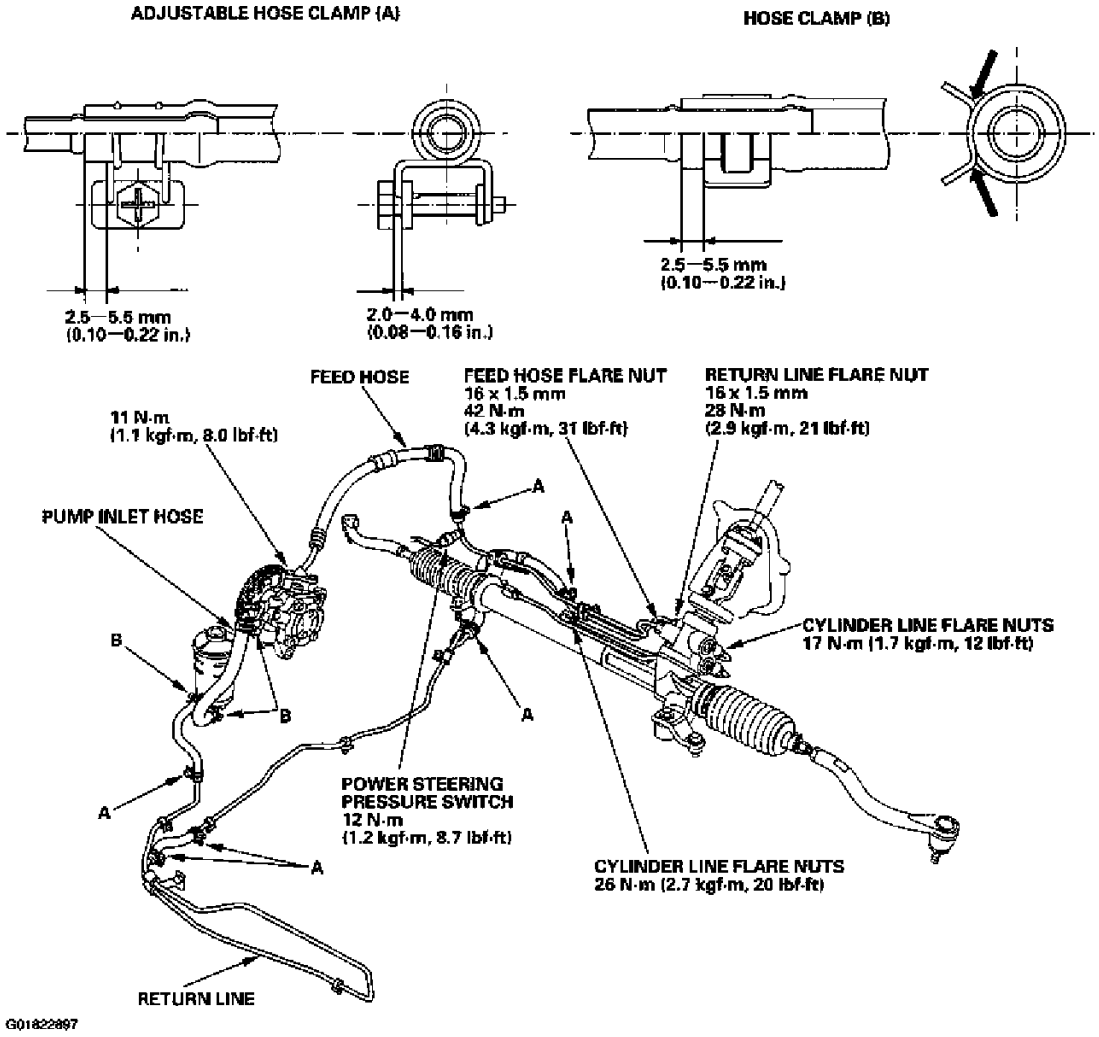


Fig. 15: Replacing Power Steering Hose, Line, And/Or Pressure Switch

PUMP REPLACEMENT

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir.
3. Remove the drive belt (A) from the pump pulley (see **DRIVE BELT**).

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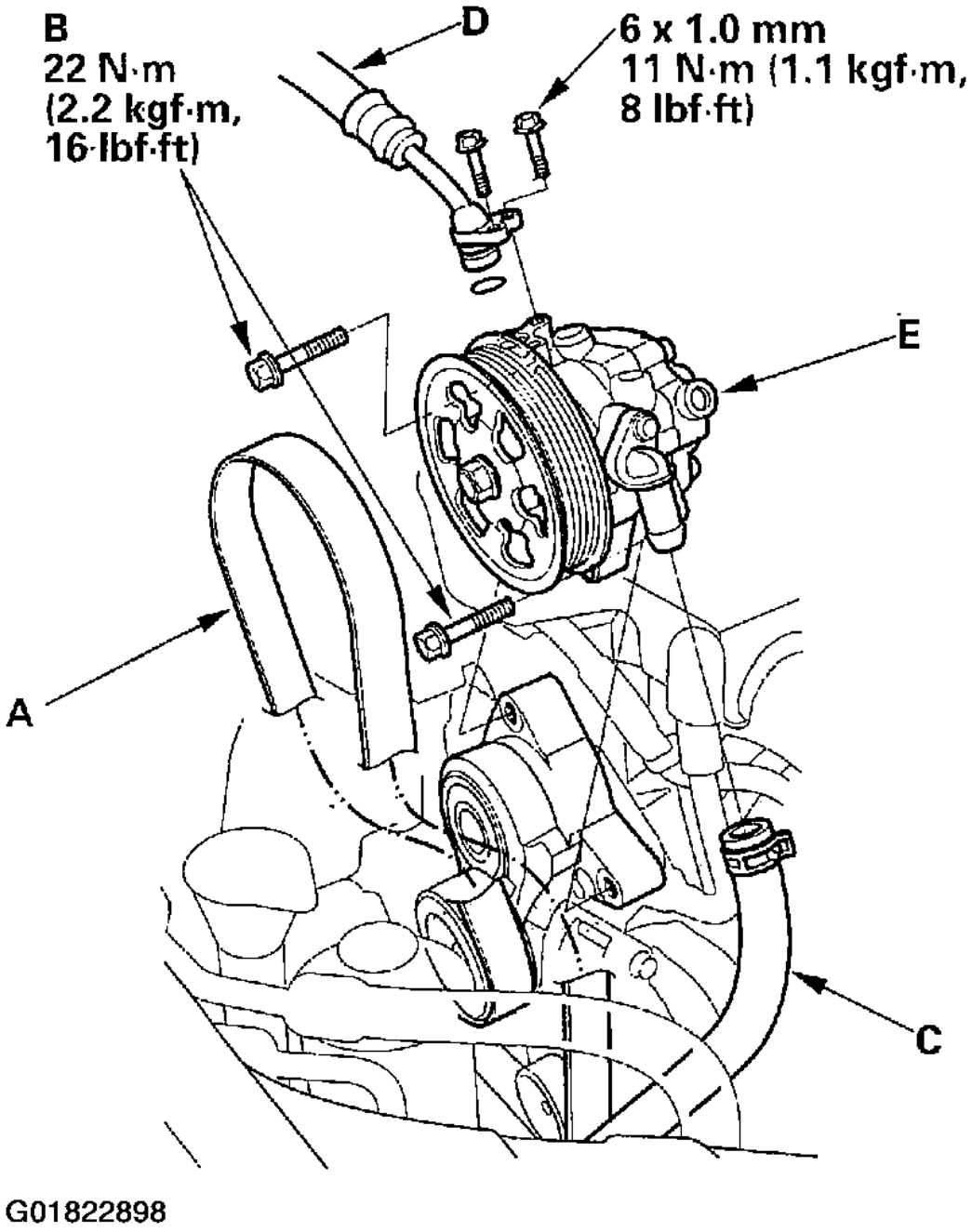


Fig. 16: Removing Pump

4. Remove the pump mounting bolts (B).
5. Cover the auto-tensioner, alternator, and A/C compressor with several shop towels to protect them from spilled power steering fluid. Disconnect the pump inlet hose (C) and jump outlet hose (D) from the pump

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(E), and plug them. Take care not to spill the fluid on the body or parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.

6. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
7. Connect the pump inlet hose and pump outlet hose.
8. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.
9. Install the drive belt (A). Note these item during belt installation:
   - Make sure that the belt is properly positioned on the pulleys (B).
   - Do not get power steering fluid or grease on the auto-tensioner, alternator, A/C compressor, and drive belt or pulley faces. Clean off any fluid or grease before installation.

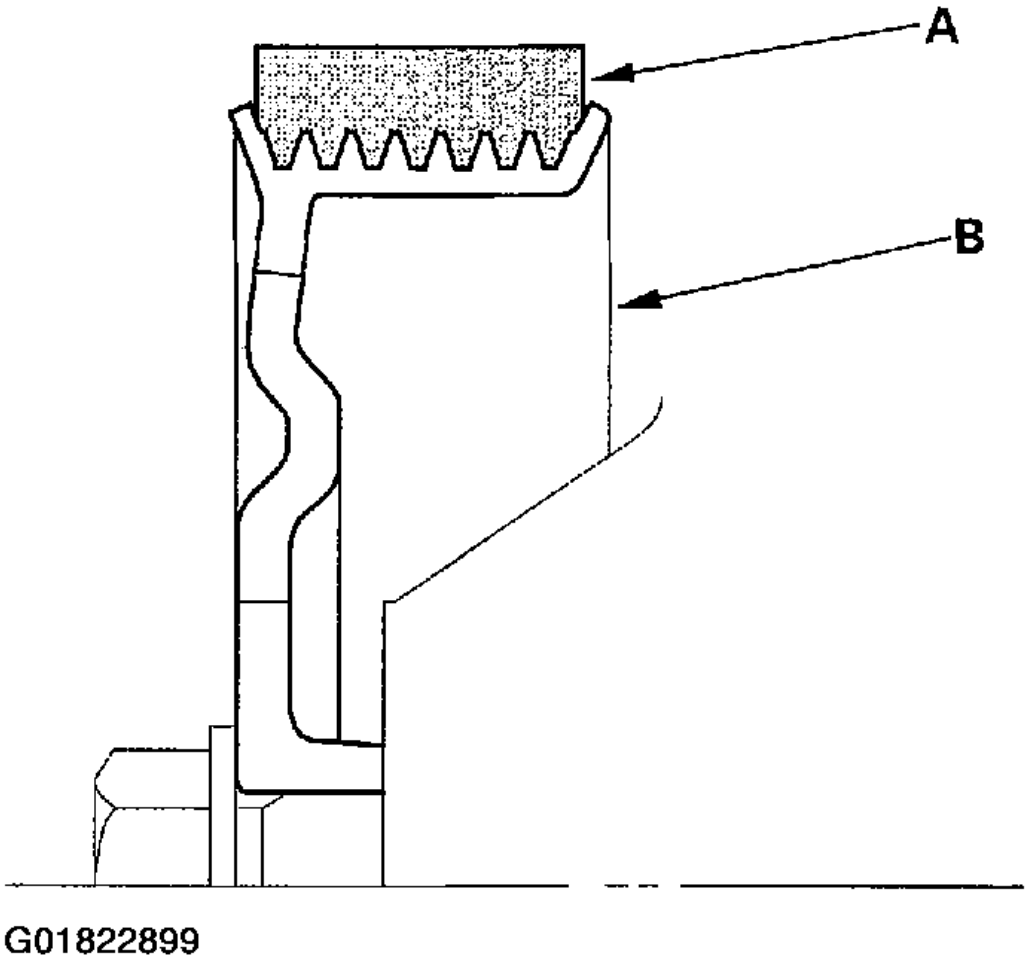


Fig. 17: Ensure That The Belt Is Properly Positioned On The Pulleys

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10. Tighten the pump mounting bolts to the specified torque.
11. Fill the reservoir to the upper level line (see **FLUID REPLACEMENT**).

PUMP OVERHAUL

EXPLODED VIEW

Replace the pump as an assembly if the parts indicated with asterisk (*) are worn or damaged.

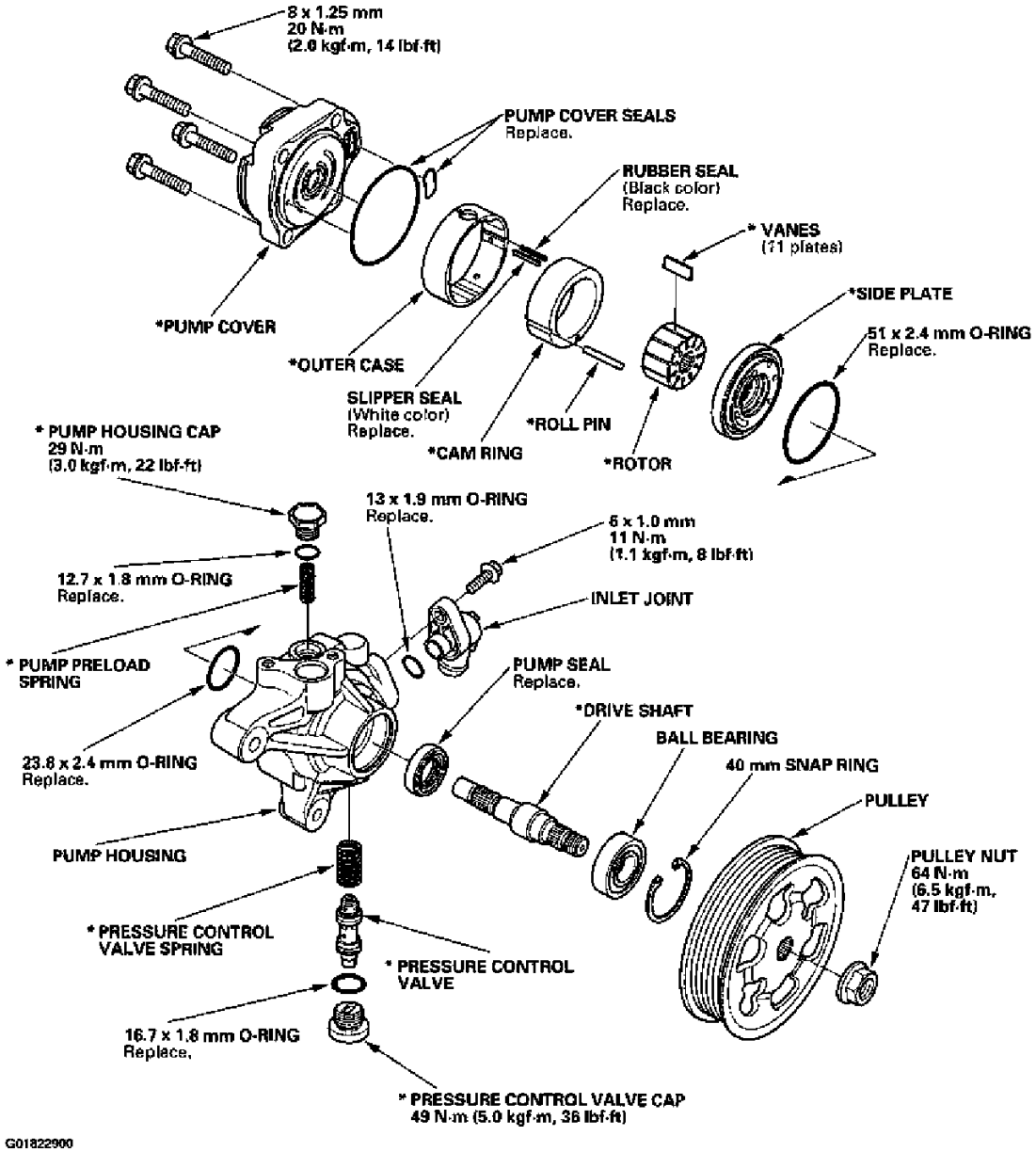


Fig. 18: Exploded View Of Pump

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Special Tools Required:

- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Pulley holder 07ZAB-S5A0100

DISASSEMBLY

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the power steering pump (see **PUMP REPLACEMENT**).
2. Drain the fluid from the pump (see step 1 on **FLUID REPLACEMENT**).
3. Hold the power steering pump (A) in a vise with soft jaws (B), hold the pulley (C) with the special tool (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.

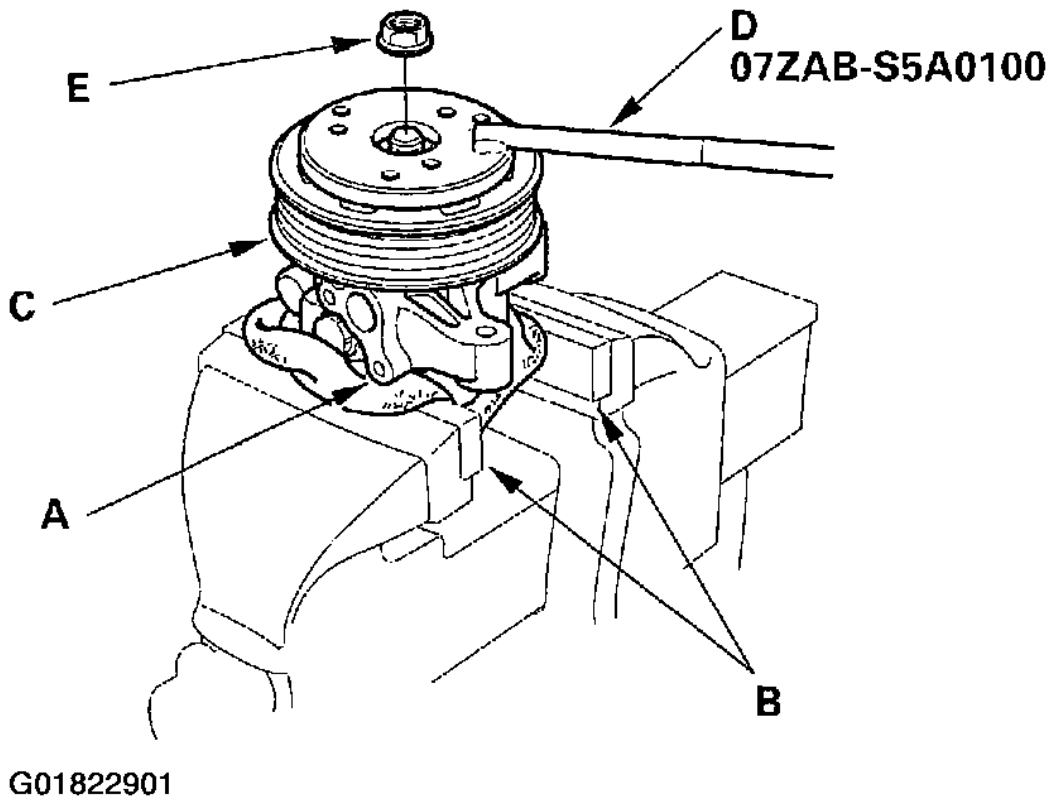


Fig. 19: Removing Pulley

4. Remove the inlet joint and O-ring.

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5. Remove the pressure control valve cap, O-ring, valve spring, and pressure control valve.
6. Remove the pump housing cap, O-ring, and pump preload spring.
7. Remove the pump cover and pump cover seals.
8. Pull out the roll pin.
9. Remove the outer case, cam ring, rotor, vanes, and side plate.
10. Remove the rubber seal and slipper seal from the outer case.
11. Remove the O-rings from the bottom of the housing.
12. Remove the snap ring, then remove the drive shaft by tapping the shaft end with the plastic hammer.
13. Remove the seal from the pump housing.

Inspection

14. Check the pressure control valve for wear, burrs, and other damage to the edges of the edges of the grooves in the valve.

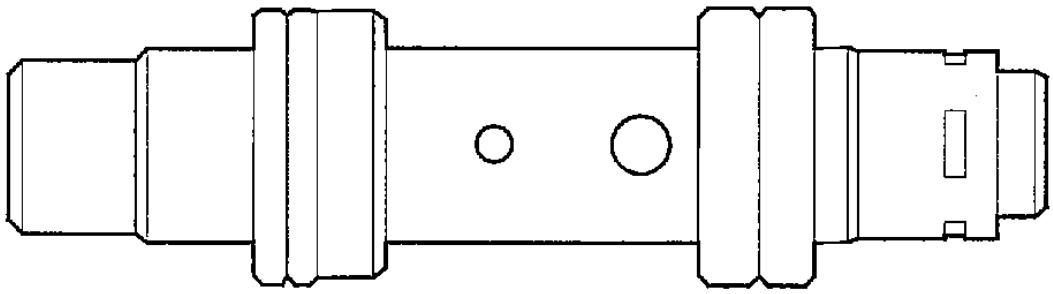


Fig. 20: Checking The Pressure Control Valve

15. Inspect the bore of the pressure control valve on the pump housing for scratches and wear.
16. Slip the pressure control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 17; if not, replace the pump as an assembly. The pressure control valve is not available separately.

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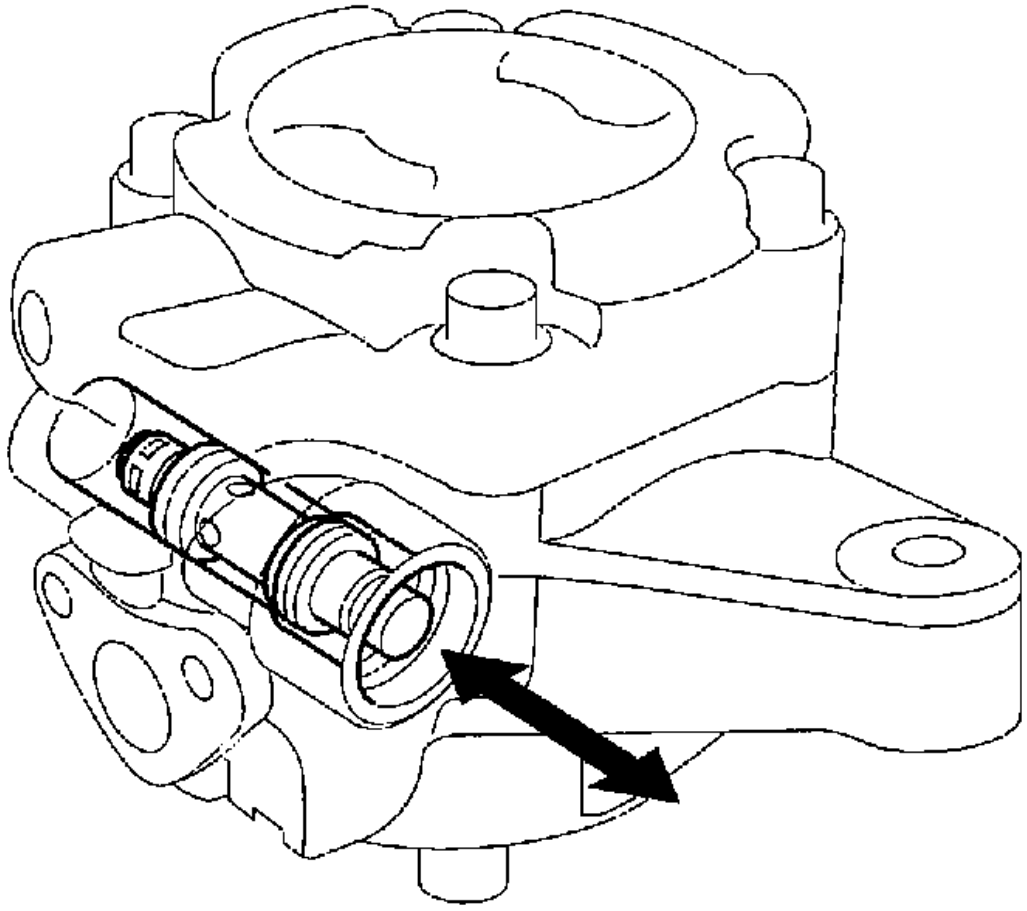


Fig. 21: Slipping The Pressure Control Valve Back In The Pump Housing

17. Attach a hose (A) to the end of the pressure control valve (B) as shown. Then submerge the pressure control valve in a container of power steering fluid or solvent (C), and blow in the hose.
    - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm^2 , 14.2 psi), replace the pump as an assembly. The pressure control valve is not available separately.
    - If the pressure control valve is OK, set it aside for reassembly later.

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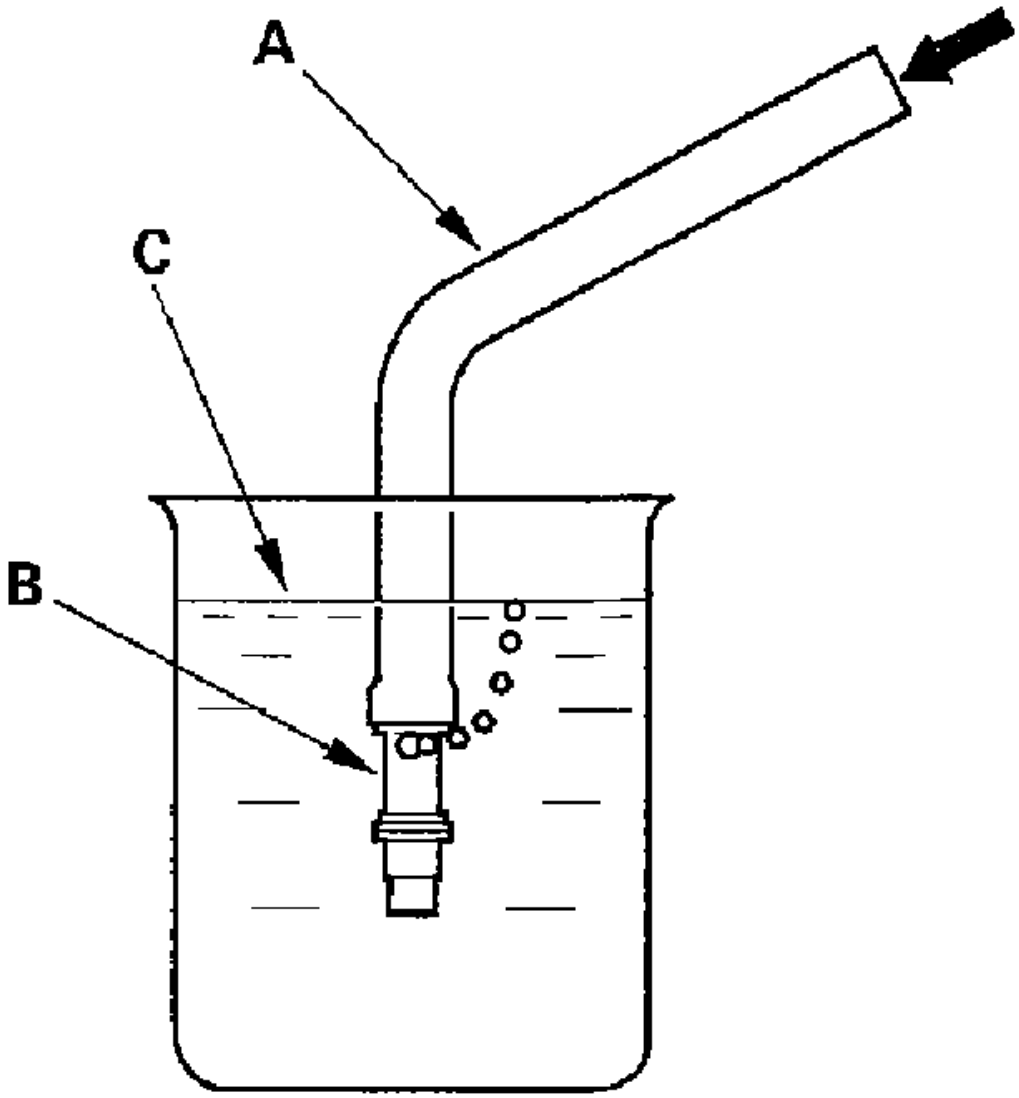


Fig. 22: Checking Pressure Control Valve

18. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A), and install a NEW one (B).

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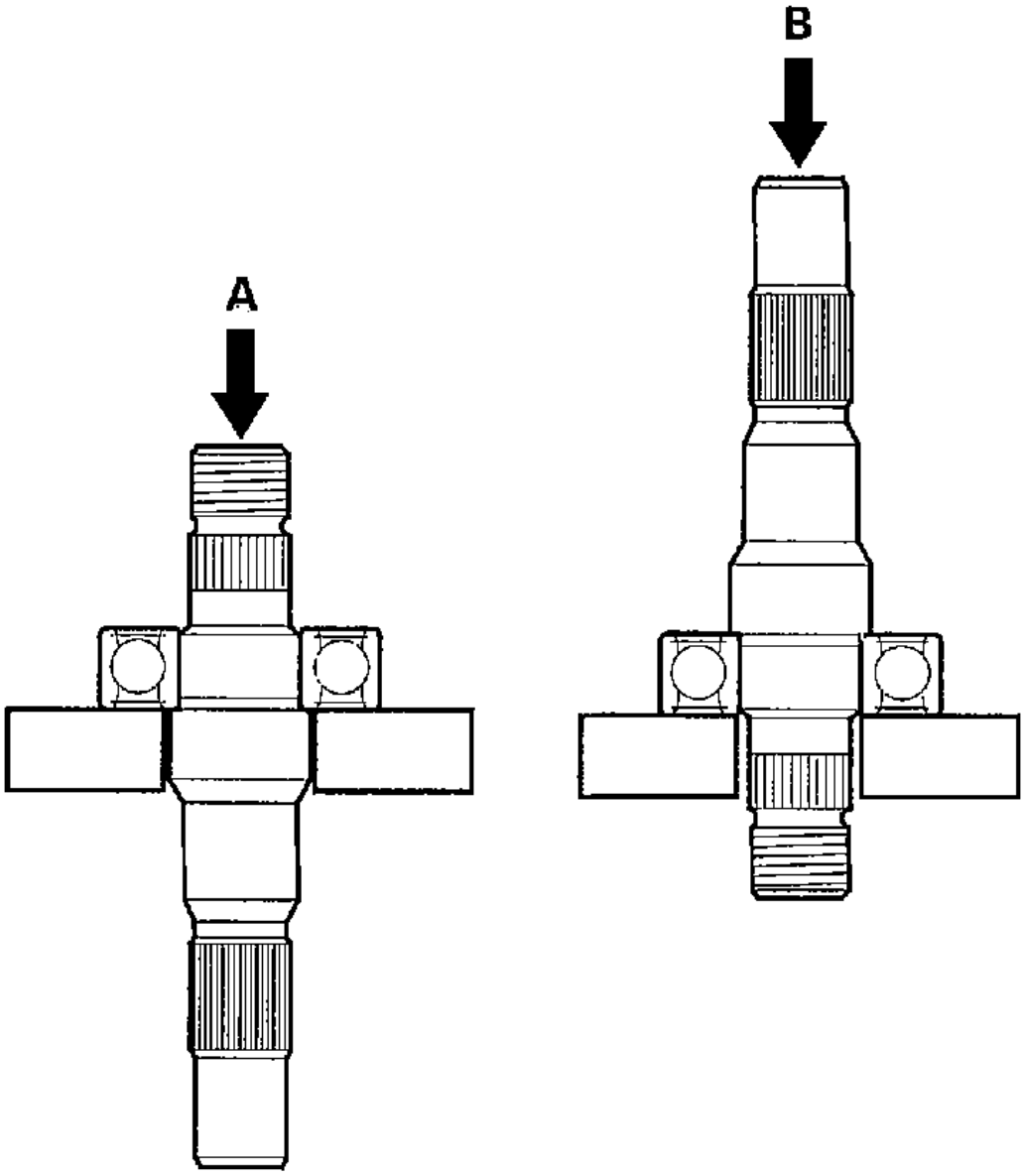


Fig. 23: Replacing The Ball Bearing

19. Inspect each part shown with an asterisk in the Exploded View; if any of them are worn or damaged, replace the pump as an assembly.

Reassembly

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20. Install the NEW pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand first, then drive it in using the special tools with until there is no step at the top of the pump seal, and the seal is fully seated in the pump housing.

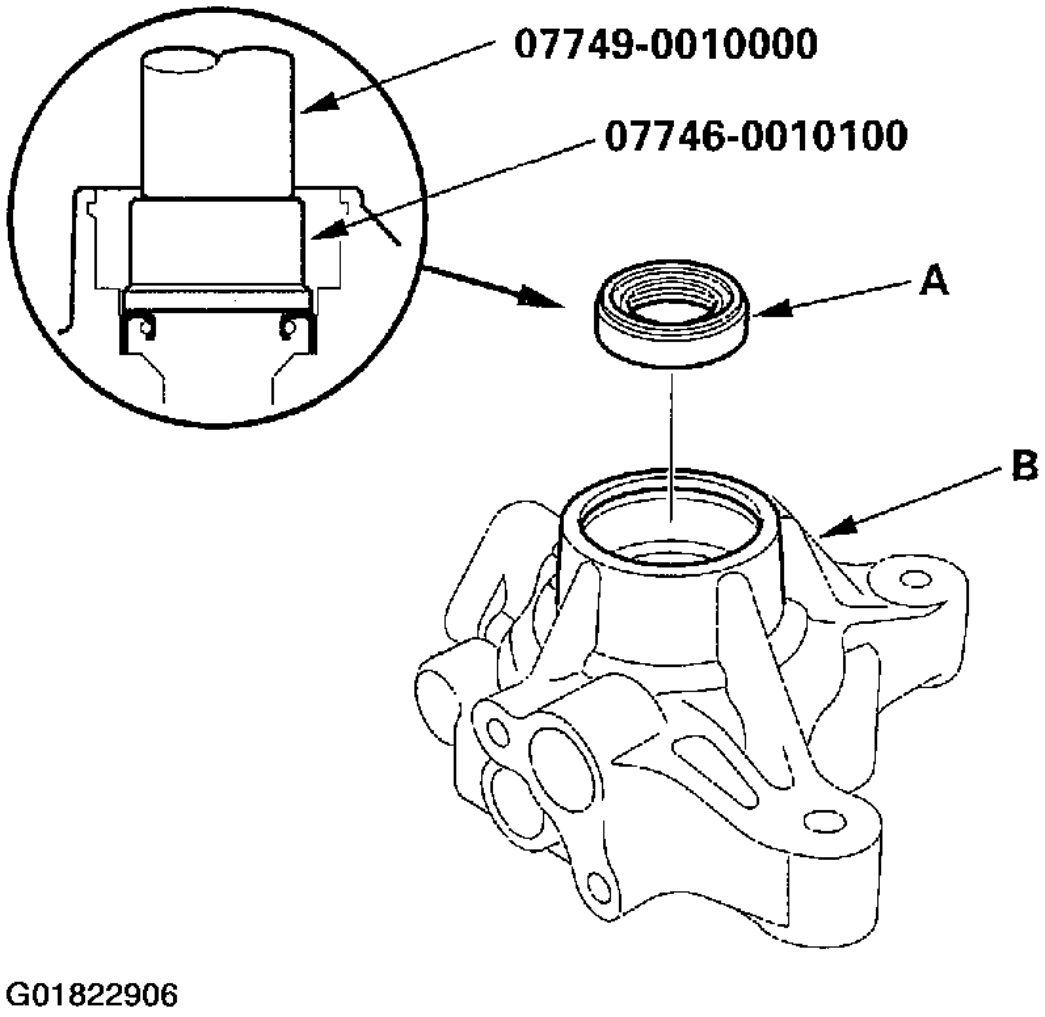


Fig. 24: Installing The NEW Pump Seal

21. Position the pump drive shaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown. Do not apply more than 1,370 N (140 kgf, 308 lbf) of pressure.

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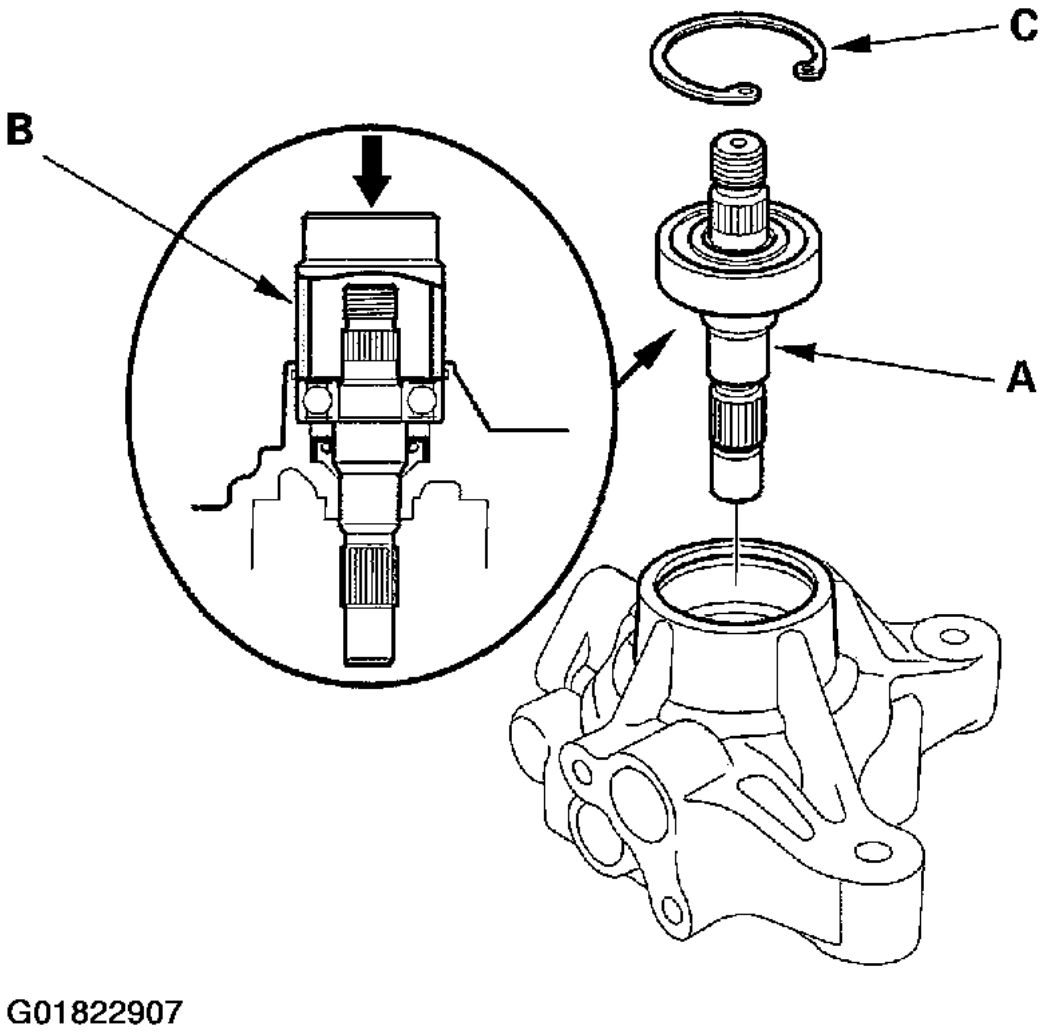


Fig. 25: Pressing Pump Drive Shaft Into The Pump Housing

22. Install the 40 mm snap ring (C) with its radiused edge facing out.
23. Coat the NEW 23.8 mm O-ring (A) with the power steering fluid, then position it on the bottom (B) of the pump housing.

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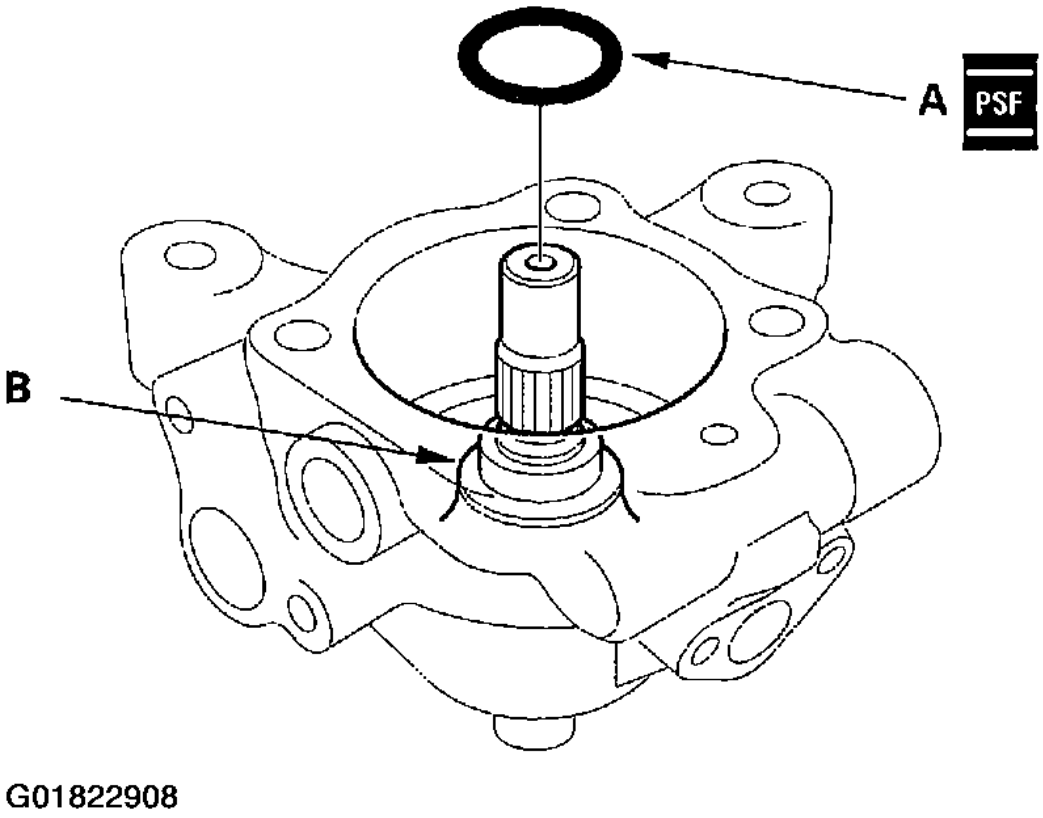


Fig. 26: Installing The NEW 23.8 mm O-Ring

24. Coat the NEW cover seals (A) and (B) with the power steering fluid, then position them into the grooves on the cover (C).

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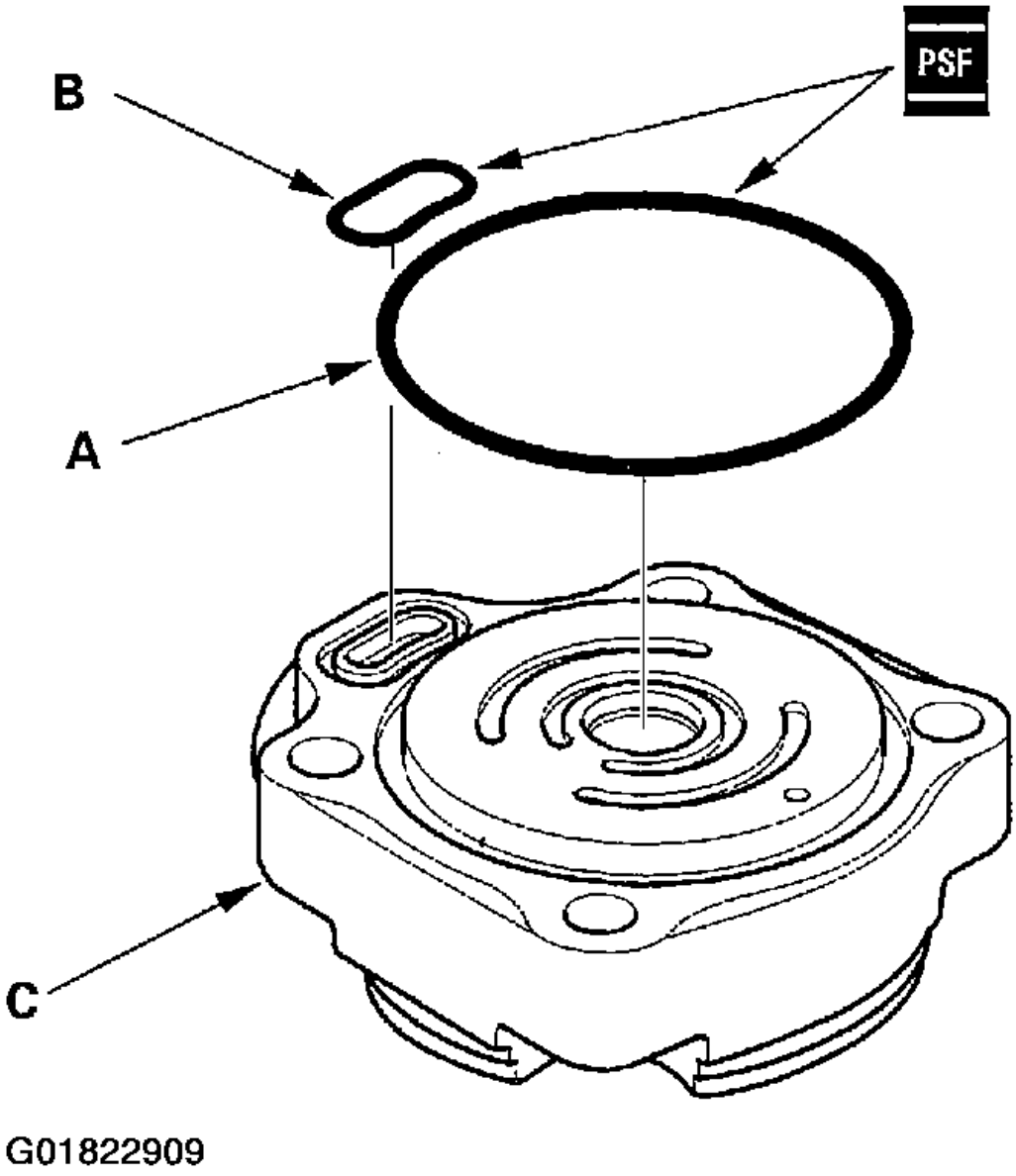


Fig. 27: Installing The NEW Cover Seals

25. Install the outer case (A) by aligning the slot (B) inside the outer case with the cover roll pin hole (C). Be sure that the slit (D) on the outer case is to direction shown.

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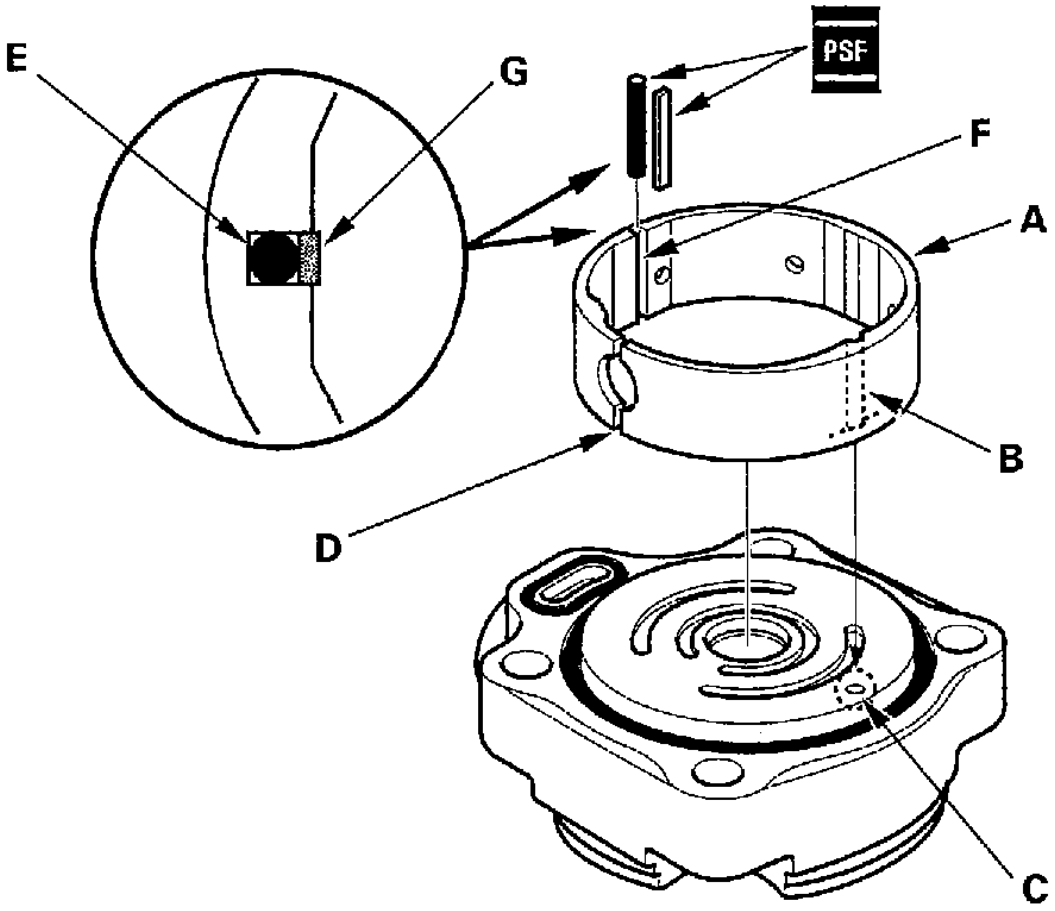


Fig. 28: Installing The Outer Case

26. Apply the power steering fluid to the rubber seal (E) (black), and install it in the slot (F) of the outer case.
27. Apply power steering fluid to the slipper seal (G) (white), and install it on top of the rubber seal you just installed.
28. Install the cam ring (A) with the "." mark (B) facing up. Align the slot (C) with the slot (D) in the outer case.

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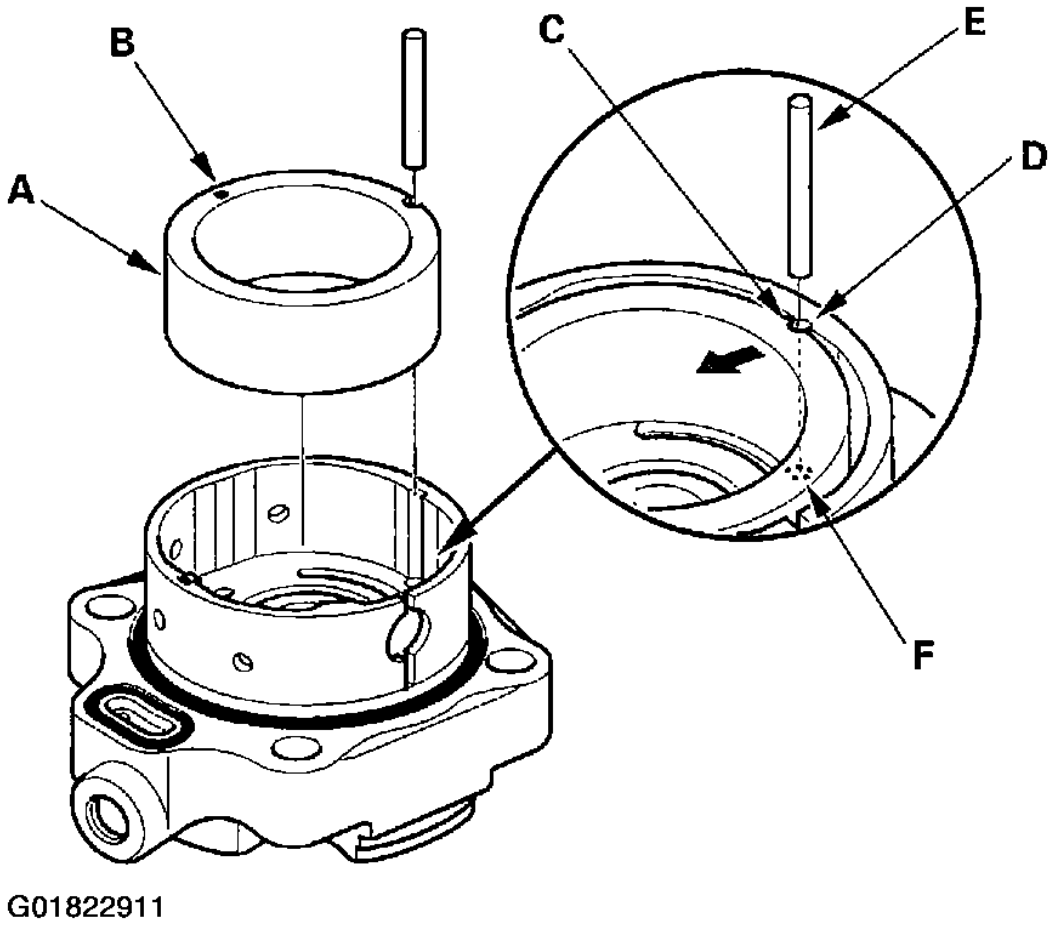


Fig. 29: Installing Components

29. Insert the roll pin (E) into the slots between the cam ring and outer case, then push the roll pin into the set hole (F).
30. Install the rotor (A) in the cam ring (B).

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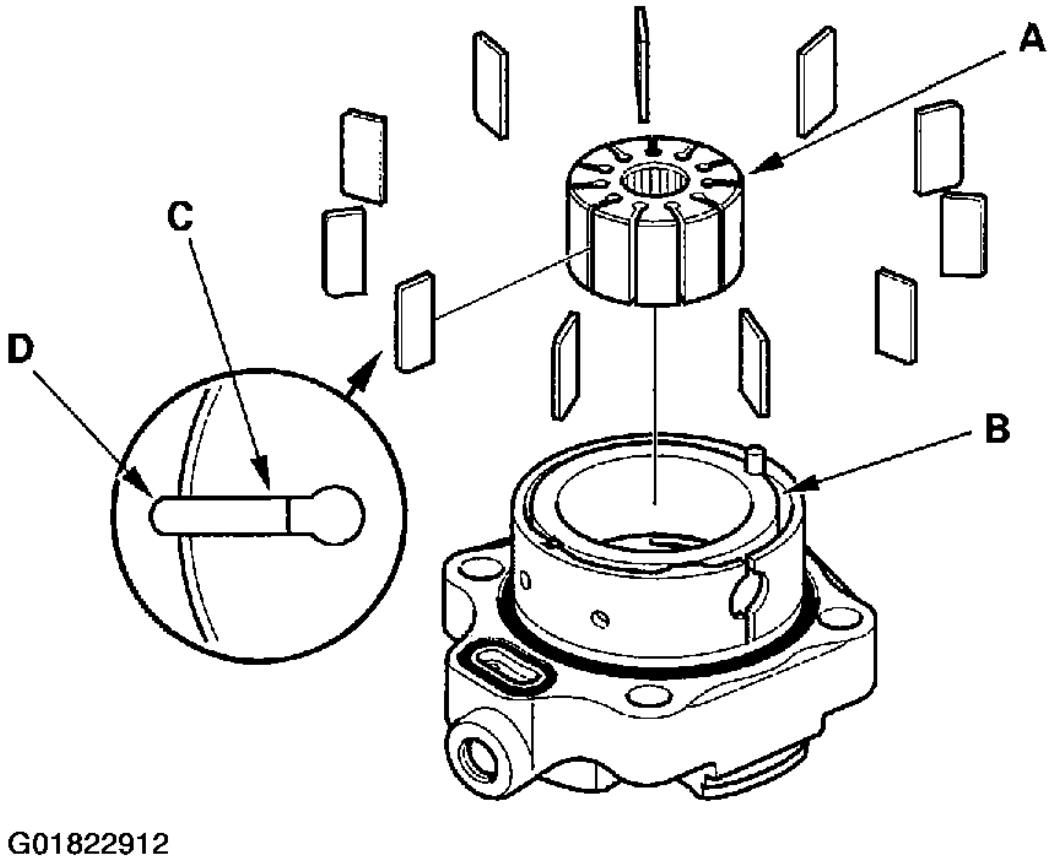


Fig. 30: Installing The Rotor In The Cam Ring & Vanes In The Grooves In The Rotor

31. Set the 11 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) of the vanes are in contact with the sliding surface of the cam ring.
32. Place the side plate (A) on the cam ring, and aligning the roll pin set hole (B) in the side plate with the roll pin end (C).

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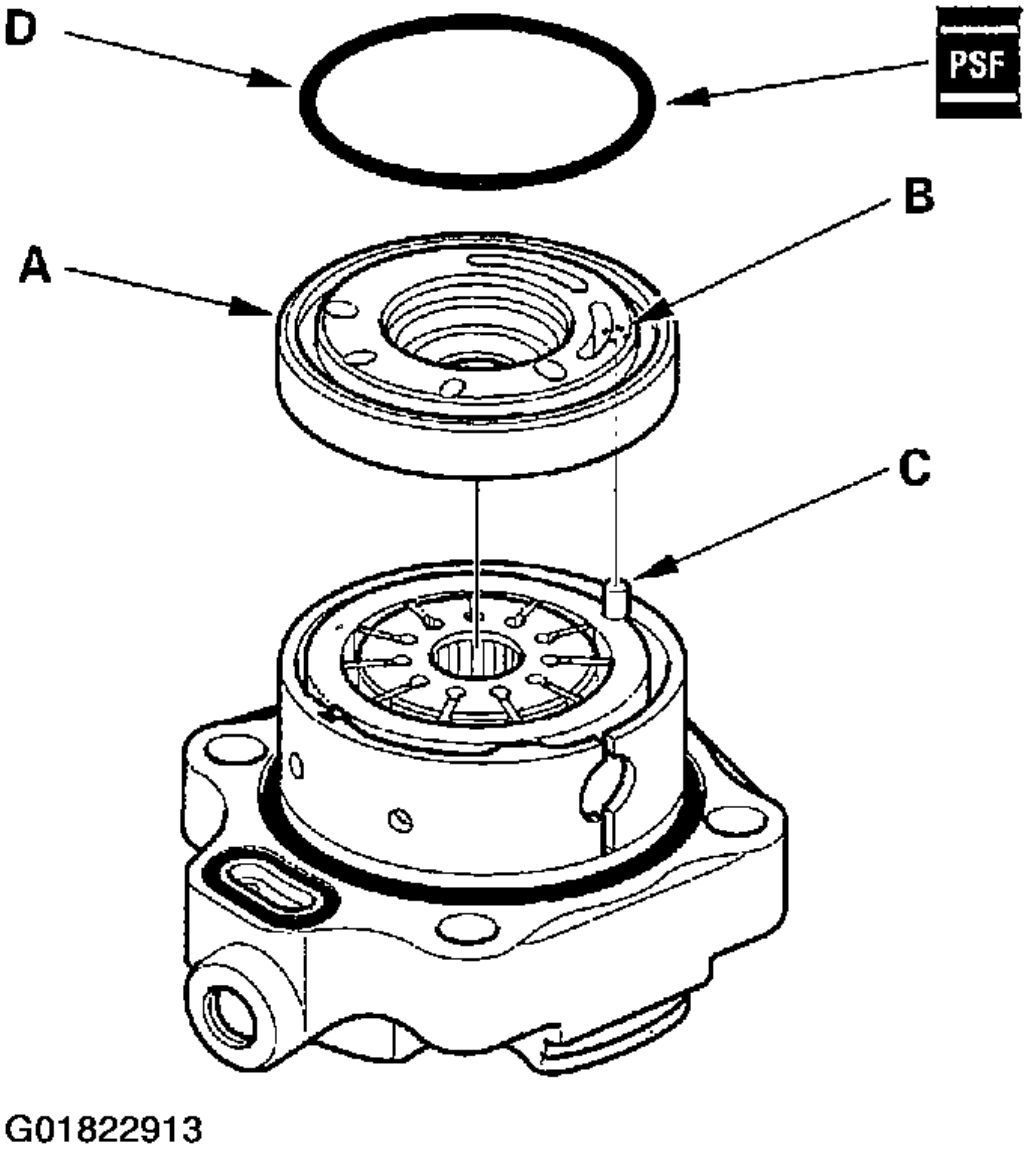


Fig. 31: Placing The Side Plate On The Cam Ring

33. Coat the NEW O-ring (D) with the power steering fluid, then position it into the groove on the side plate.
34. Install the pump housing (A) over the cover assembly (B).

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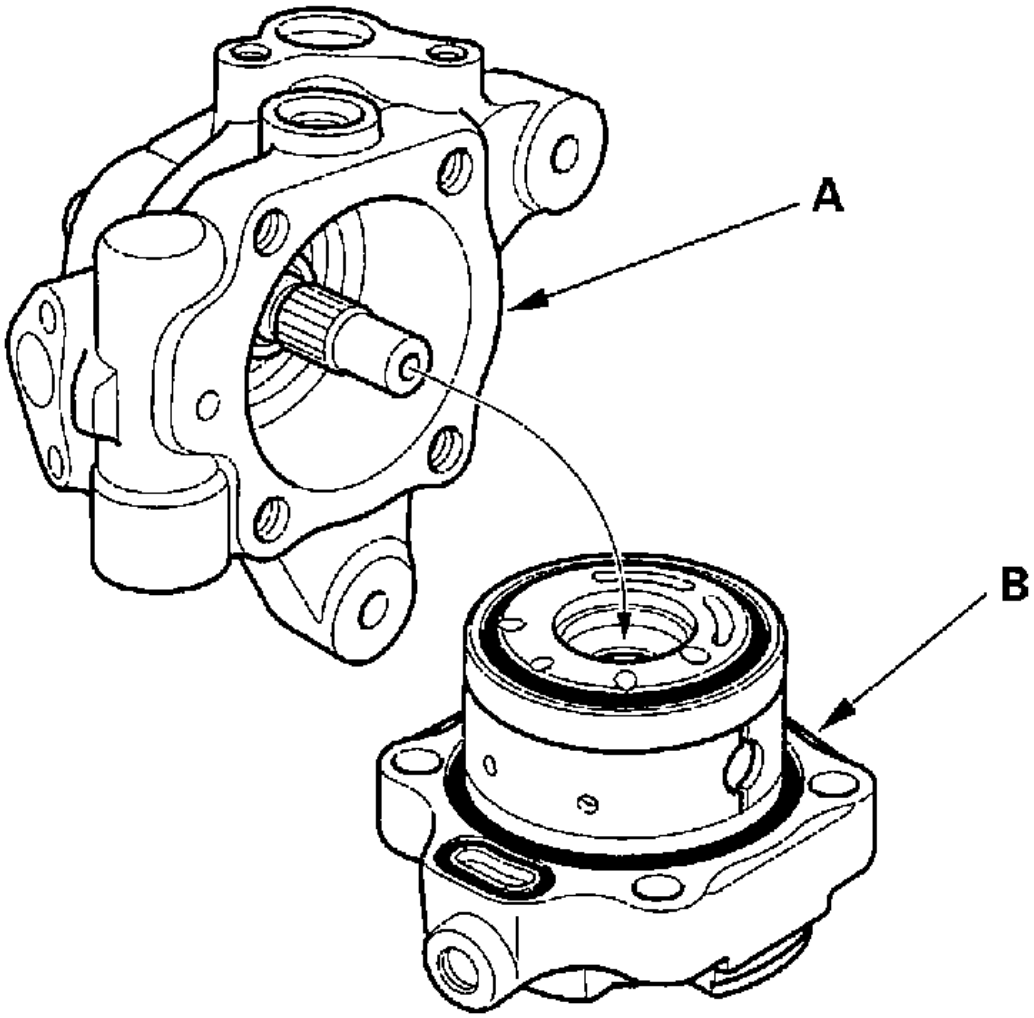


Fig. 32: Installing The Pump Housing Over The Cover Assembly

35. Align the bolt holes in the cover (A) with the threaded holes in the pump housing. Install the flange bolts loosely first, then torque the flange bolts in a crisscross pattern in two or more steps.

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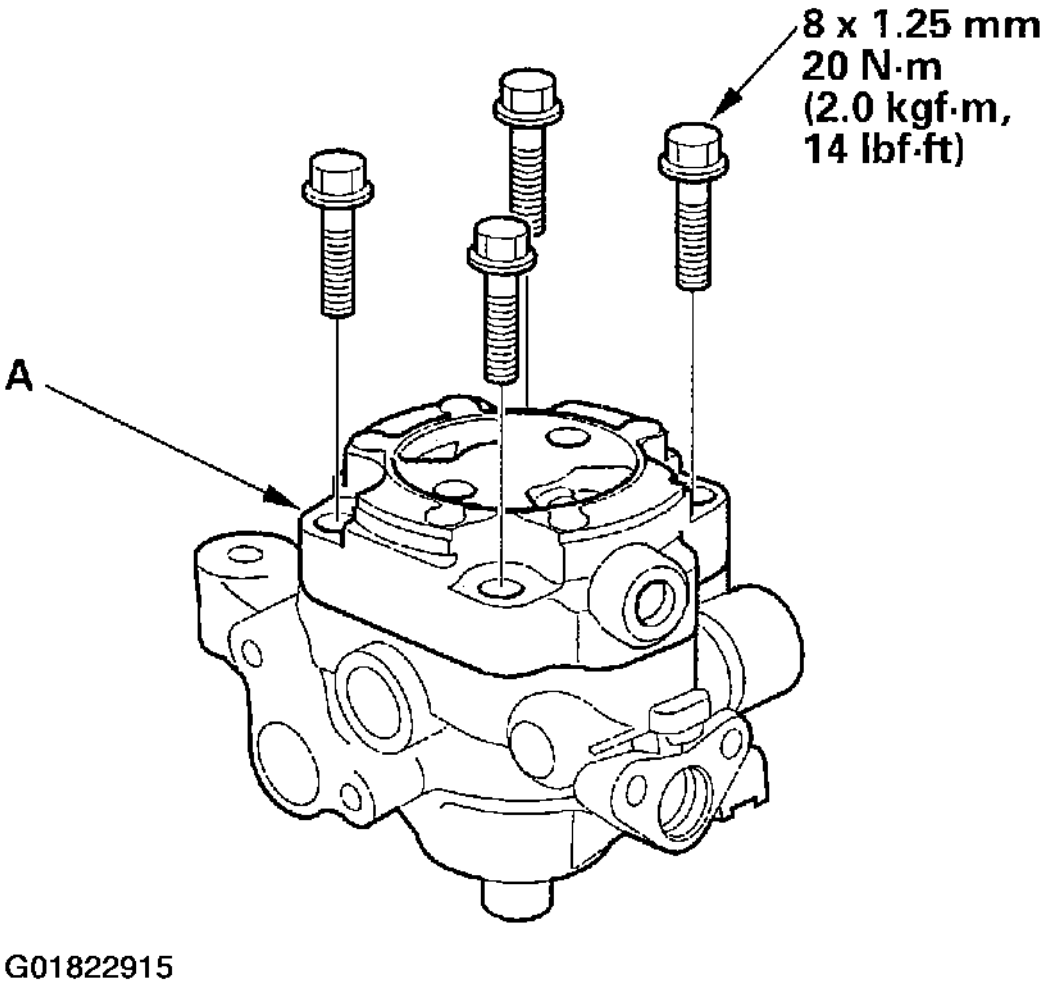


Fig. 33: Aligning The Bolt Holes In The Cover With The Threaded Holes In The Pump Housing

36. Push in the cam ring (A) from the pump housing cap hole (B) with a flat blade screwdriver, to make sure the cam ring is fully seated against the outer case.

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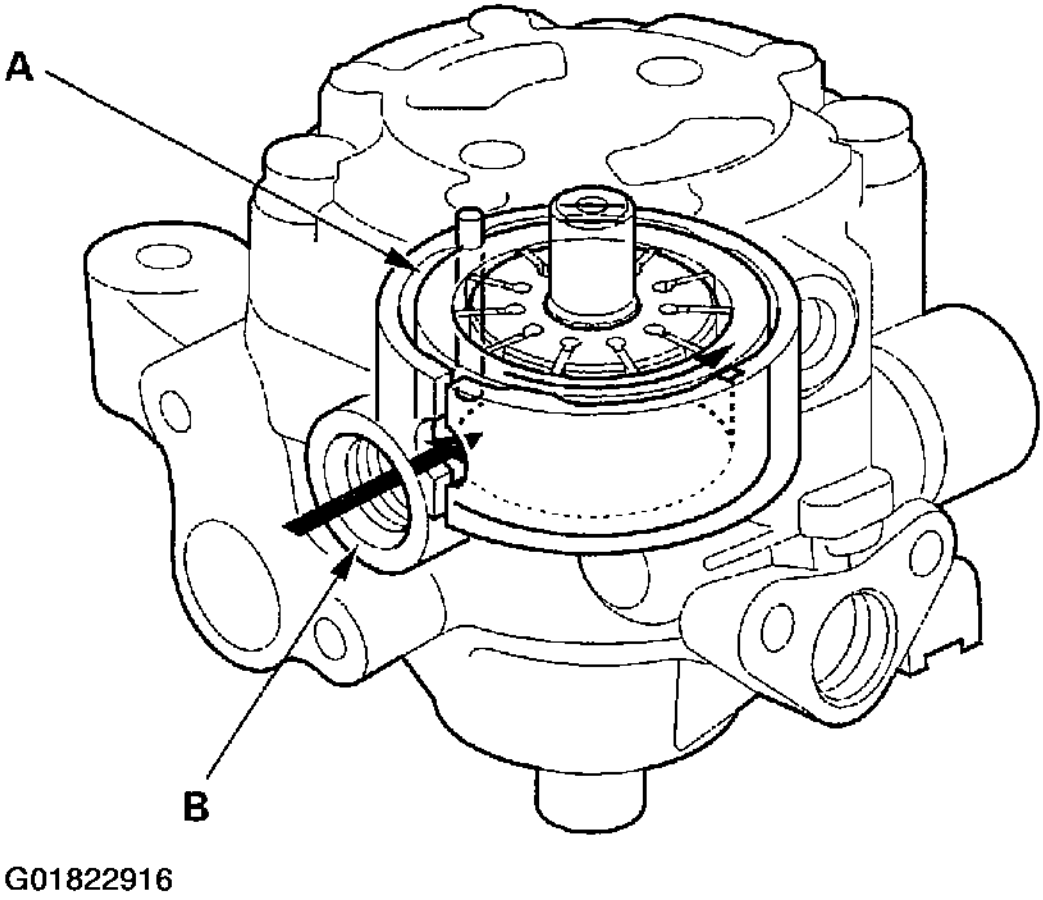


Fig. 34: Pushing In The Cam Ring From The Pump Housing Cap Hole

37. Install the pump preload spring (A) in the pump housing.

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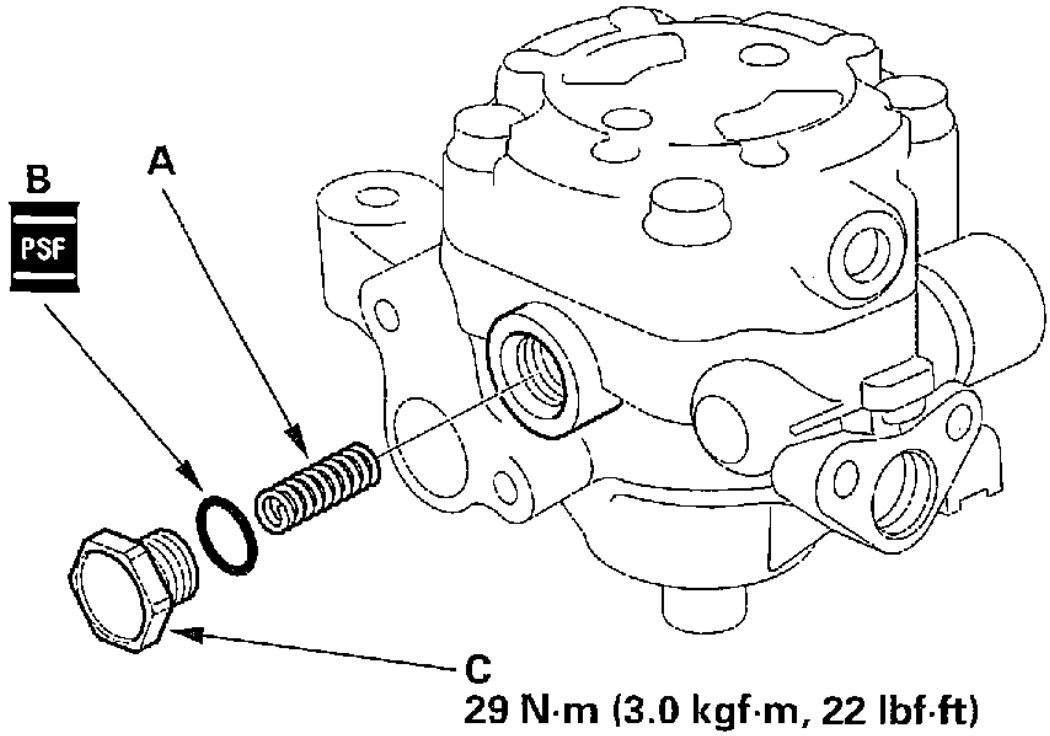


Fig. 35: Installing The Pump Preload Spring In The Pump Housing

38. Coat the NEW 12.7 mm O-ring (B) with power steering fluid, and install it on the pump housing cap (C).
39. Install the pump housing cap on the pump housing, and tighten it to specified torque.
40. Install the pressure control valve spring (A) in the pump housing.

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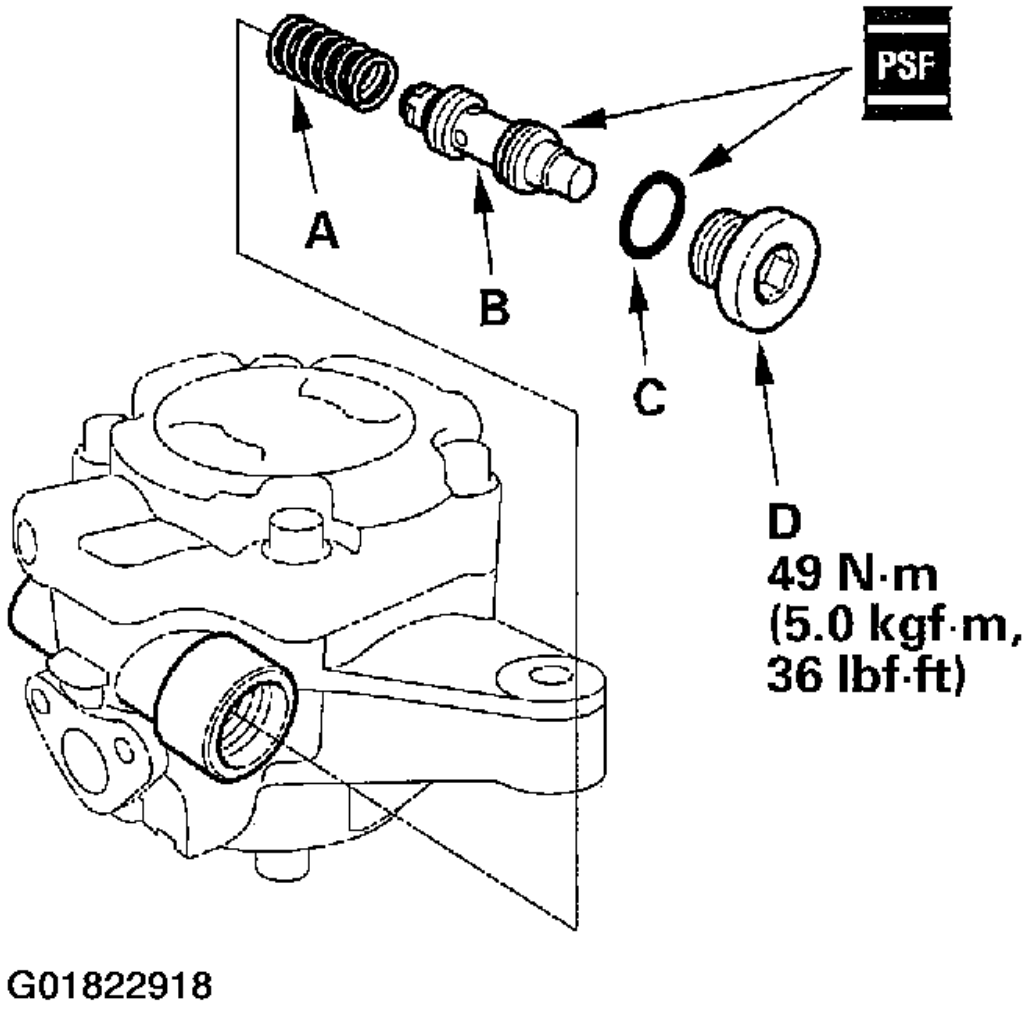


Fig. 36: Installing The Pressure Control Valve Spring In The Pump Housing

41. Coat the pressure control valve (B) with power steering fluid, and install it on the pump housing.
42. Coat the NEW 16.7 mm O-ring (C) with power steering fluid, and install it on the pressure control valve cap (D).
43. Install the pressure control valve cap on the pump housing, and tighten it to the specified torque.
44. Coat the NEW O-ring (A) with power steering fluid, and install it on the inlet joint (B).

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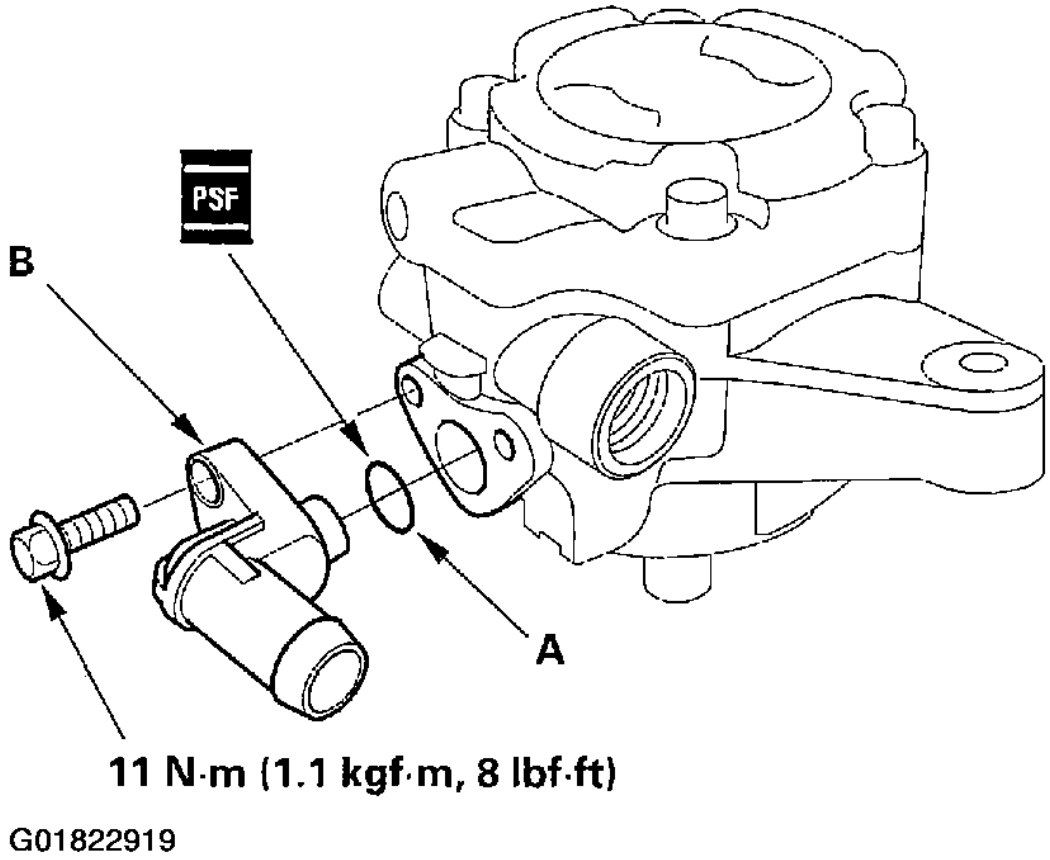


Fig. 37: Installing The Inlet Joint On The Pump Housing

45. Install the inlet joint on the pump housing.
46. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws (C). Be careful not to damage the pump housing with the jaws of the vise.

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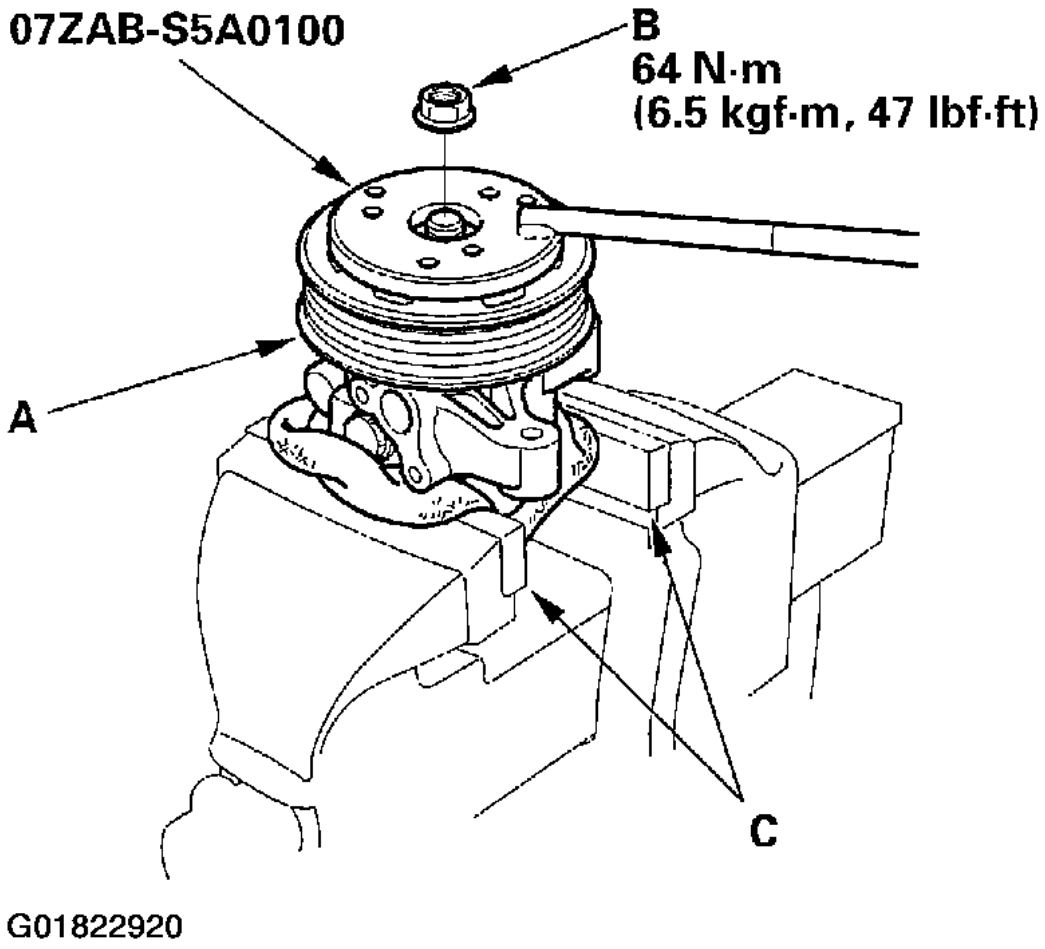


Fig. 38: Installing The Pulley

47. Hold the pulley with the special tool, and tighten the pulley nut to specified torque.
48. Check that the pump turns smoothly by turning the pulley. If it turns hard, loosen the four flange bolts on the cover, then retightening them in the same manner as in the step 35 . Turning the pump again by hand.

STEERING WHEEL REMOVAL

SRS components are located in this area. Review the SRS component locations and precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's radio station presets.
2. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see **AIR BAG RESTRAINT SYSTEMS**).

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3. Disconnect the cruise control set/resume switch, audio remote switch and navigation guide switch connectors (if equipped).
4. Loosen the steering wheel bolt (A).

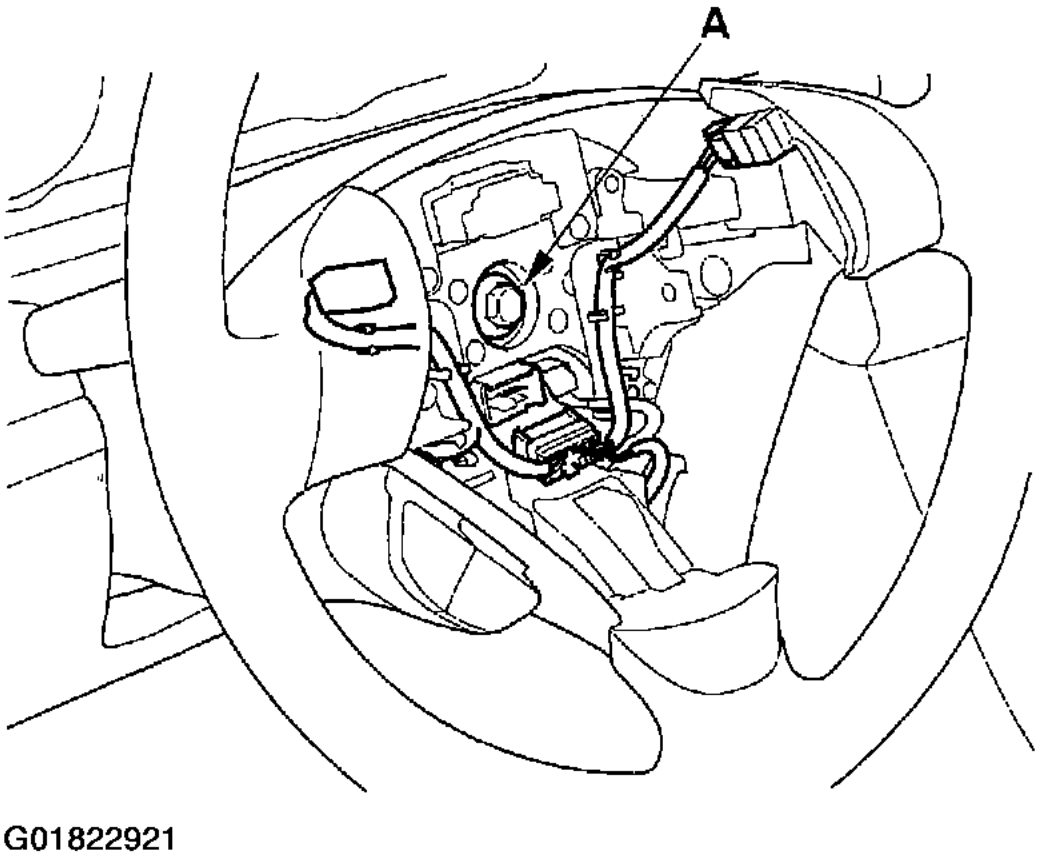


Fig. 39: Loosening The Steering Wheel Bolt

5. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller. Note these items when removing the steering wheel:
   - Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
   - If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.

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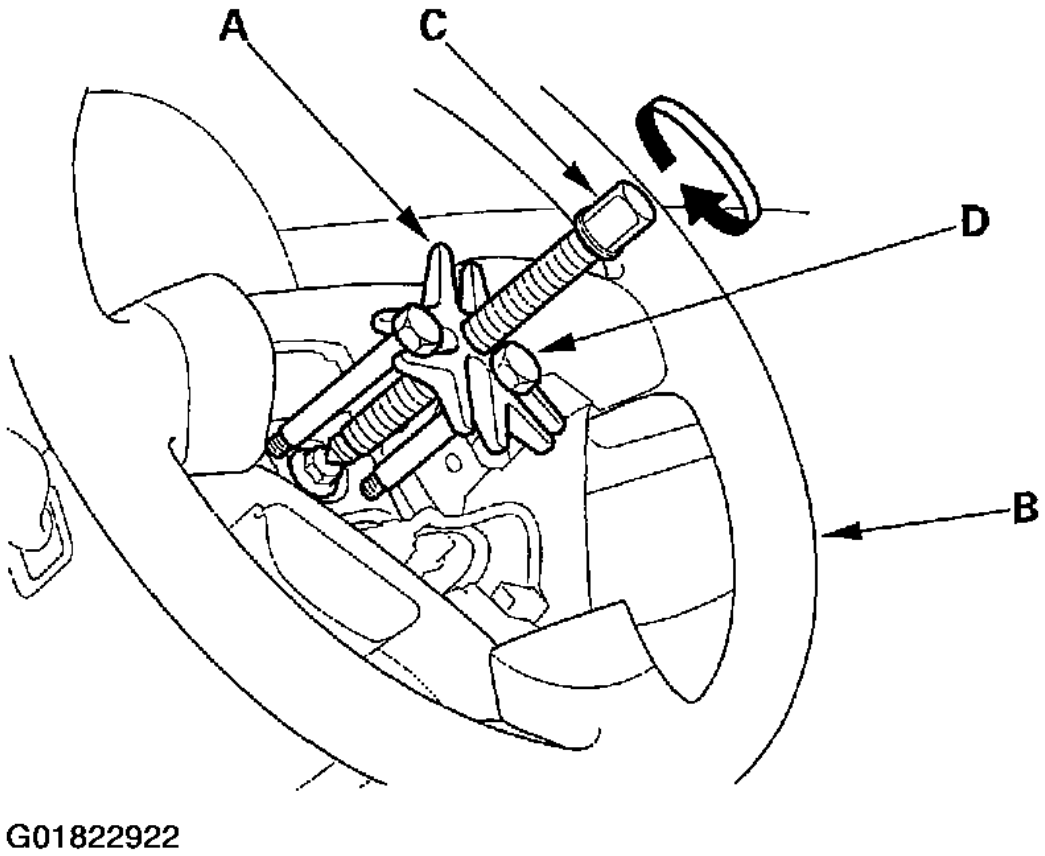


Fig. 40: Freeing The Steering Wheel From The Steering Column Shaft

6. Remove the steering wheel puller, then remove the steering wheel bolt and steering wheel from the steering column.

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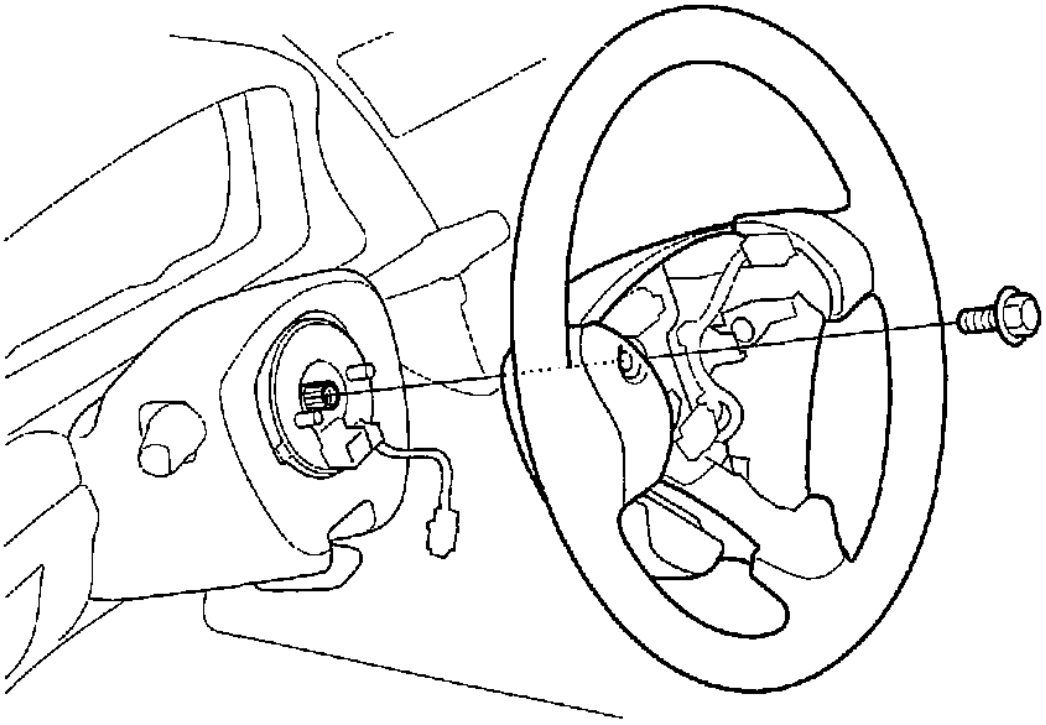


Fig. 41: Removing The Steering Wheel Bolt & Steering Wheel From The Steering Column

STEERING WHEEL DISASSEMBLY/REASSEMBLY

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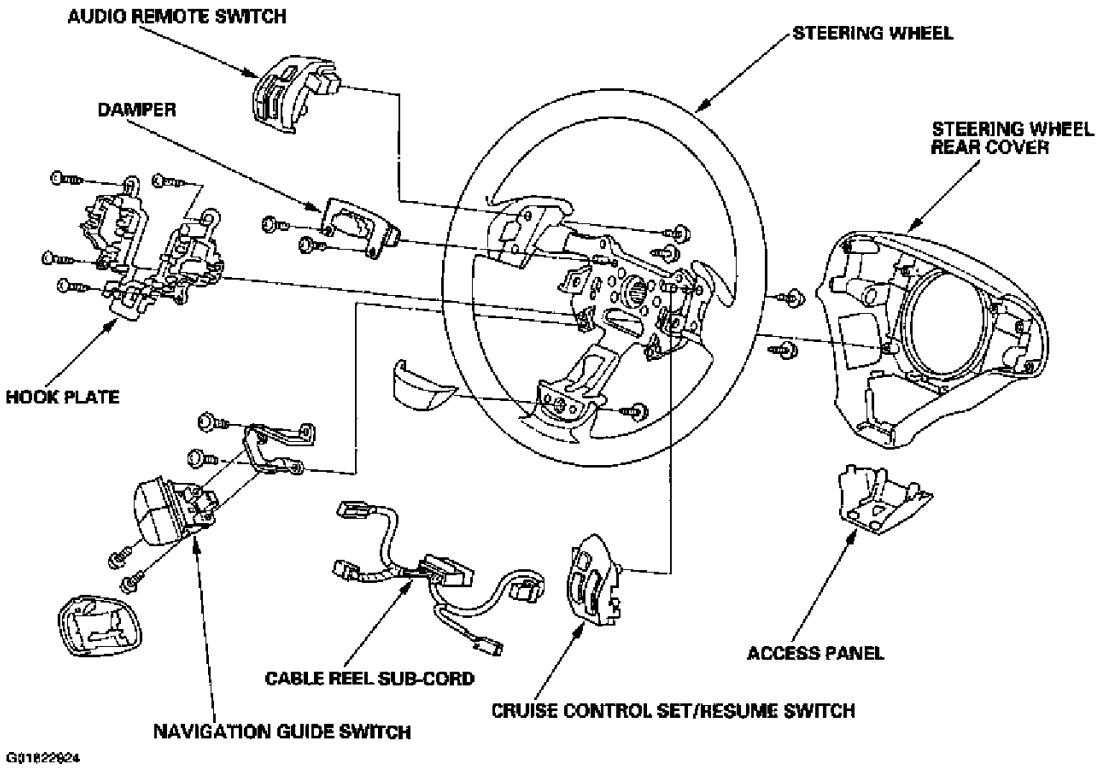


Fig. 42: Exploded View Of Steering Wheel Components

STEERING WHEEL INSTALLATION

1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about three full turns. The arrow mark (B) on the cable reel label point should point straight up.

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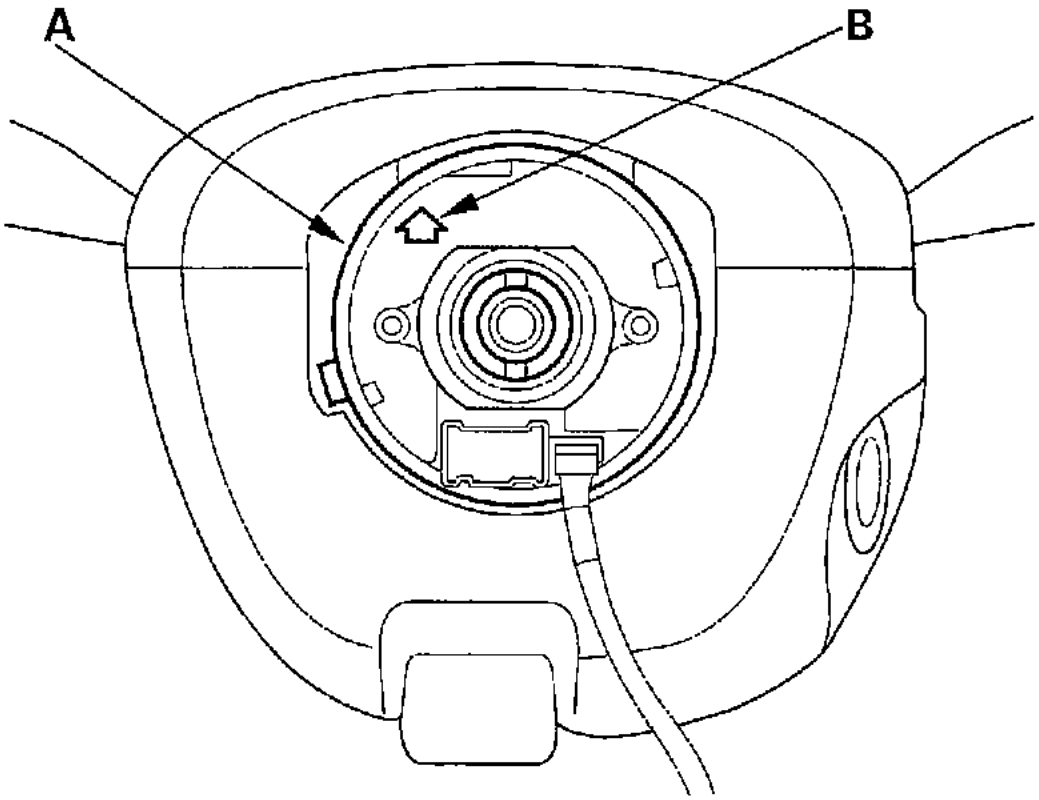


Fig. 43: Centering The Cable Reel

2. Position the two tabs (A) of the turn signal cancelling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the cancelling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.

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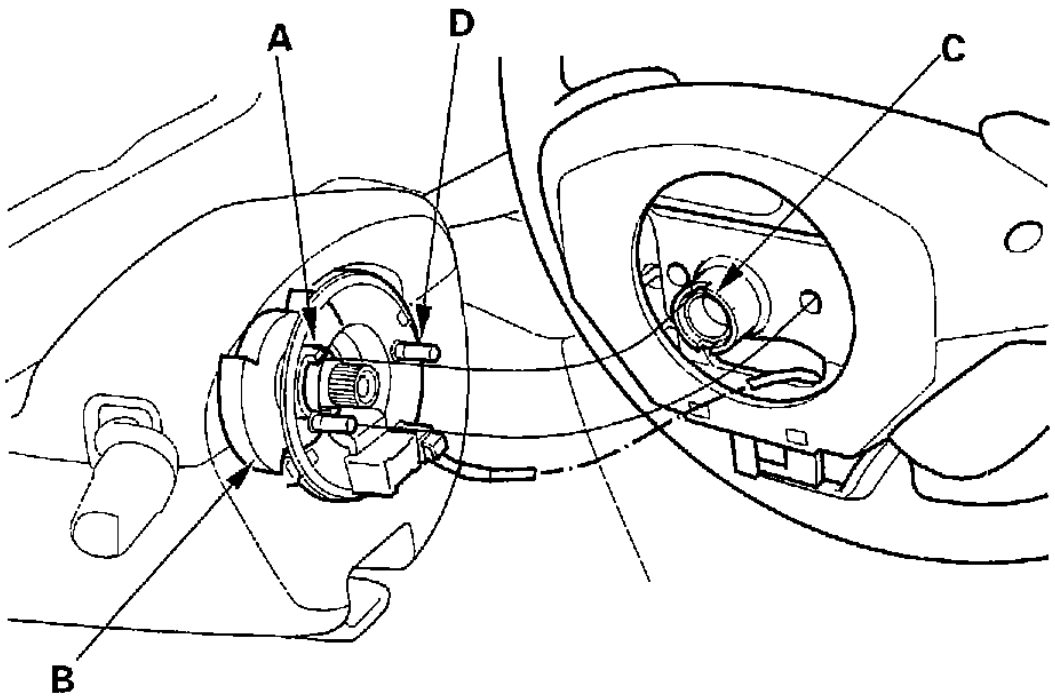


Fig. 44: Positioning The Two Tabs Of The Turn Signal Cancelling Sleeve

3. Install the steering wheel bolt (A) and tighten it to the specified torque. Connect the audio remote, navigation guide and cruise control set/resume switch connectors (if equipped). Make sure the wire harness is routed and fastened properly.

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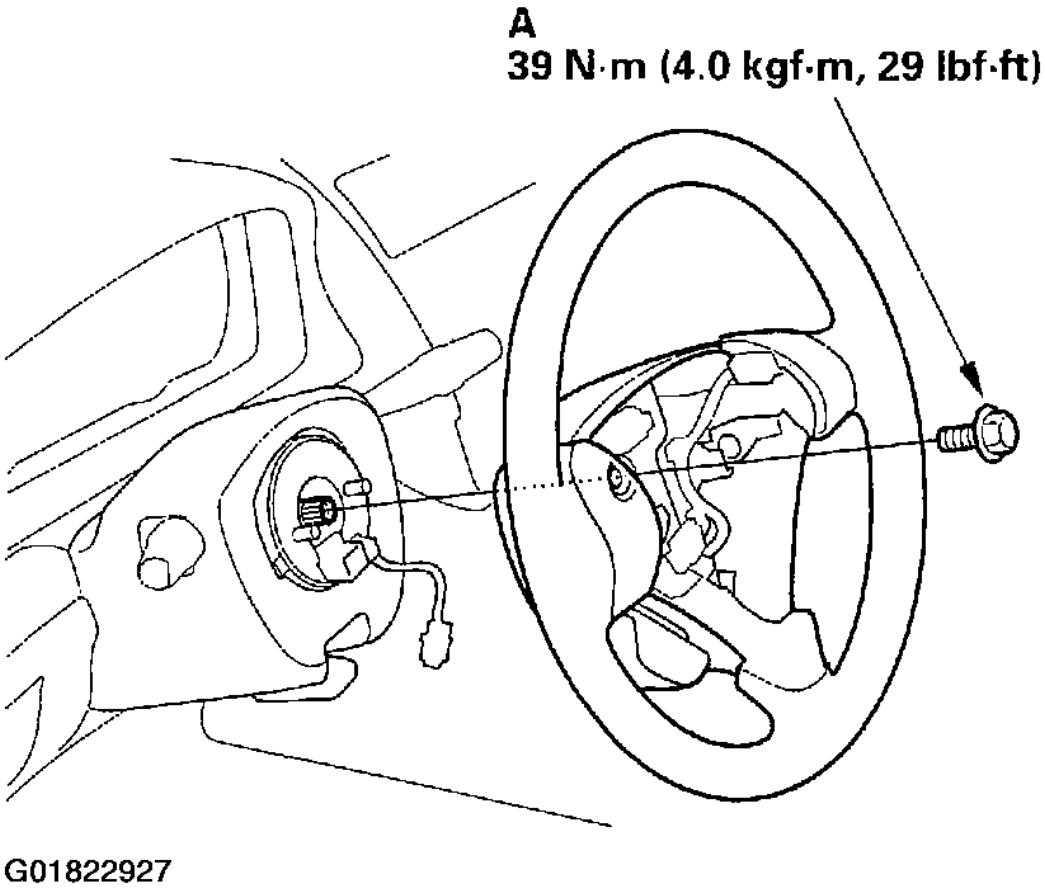


Fig. 45: Installing The Steering Wheel Bolt

4. Install the driver's airbag, and confirm that the system is operating properly (see **AIR BAG RESTRAINT SYSTEMS**).
5. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Reset the clock.
6. Check the cruise control, audio remote, navigation guide and turn signal cancelling for proper operation.

STEERING COLUMN REMOVAL & INSTALLATION

SRS components are located in this area. Review the SRS component locations and precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

REMOVAL

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's radio station presets.

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2. Disconnect the negative cable from the battery.
3. Remove the driver's airbag assembly and the steering wheel (see **STEERING WHEEL REMOVAL**).
4. Remove the column covers.
5. Remove the steering joint cover A.

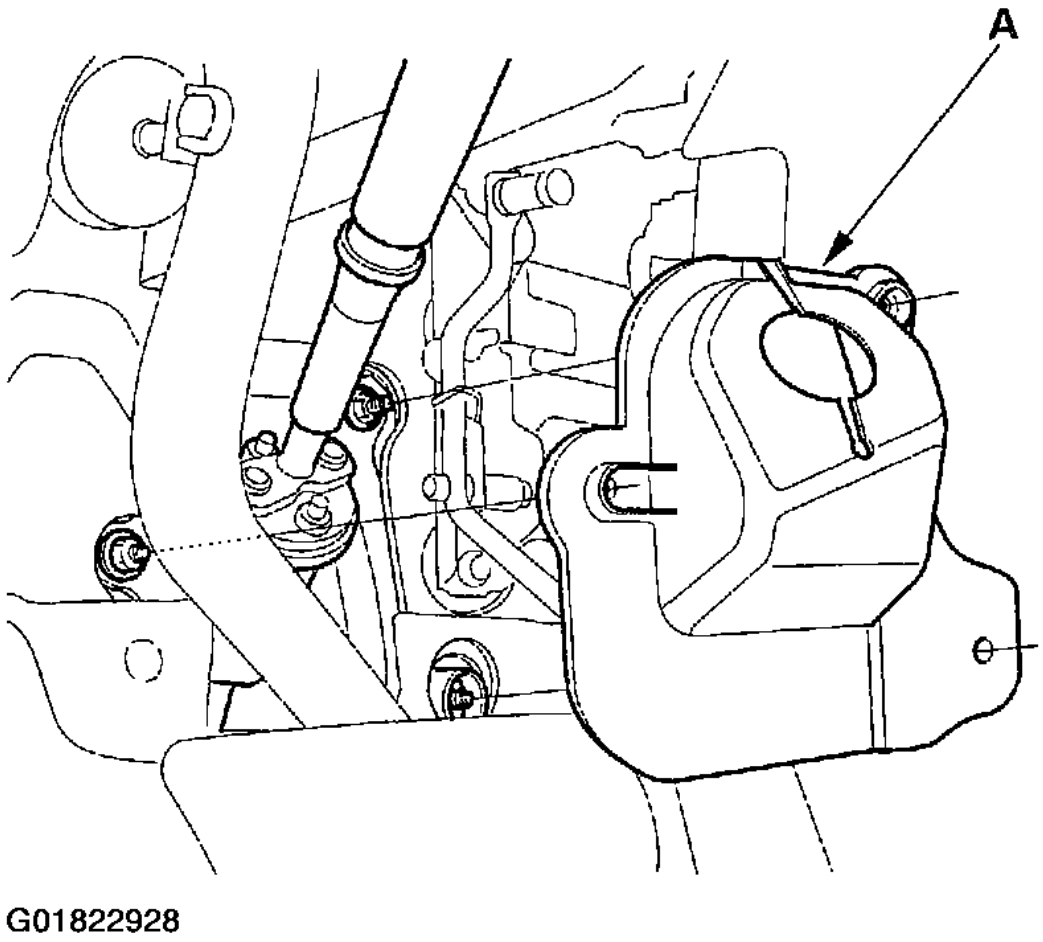


Fig. 46: Removing The Steering Joint Cover A

6. Release the tilt/telescopic lever, and adjust the steering column to full tilt up position, and to the full telescopic in position.
7. Tighten the tilt/telescopic lever.
8. Hold the slider shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the slider shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

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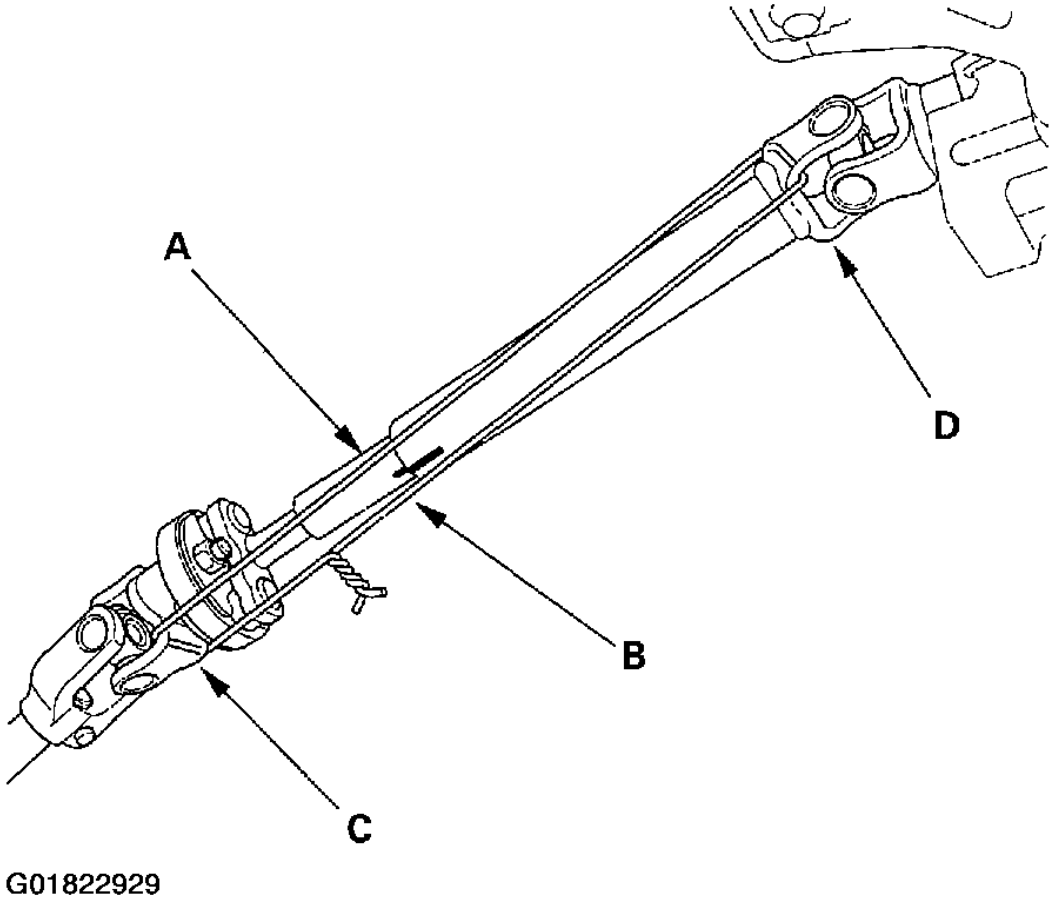


Fig. 47: Holding The Slider Shaft On The Column

9. Release the tilt/telescopic lever, and adjust the steering column to the full telescopic out position, then tighten the tilt/telescopic lever.
10. Disconnect the wire harness connectors from the combination switch assembly (A).

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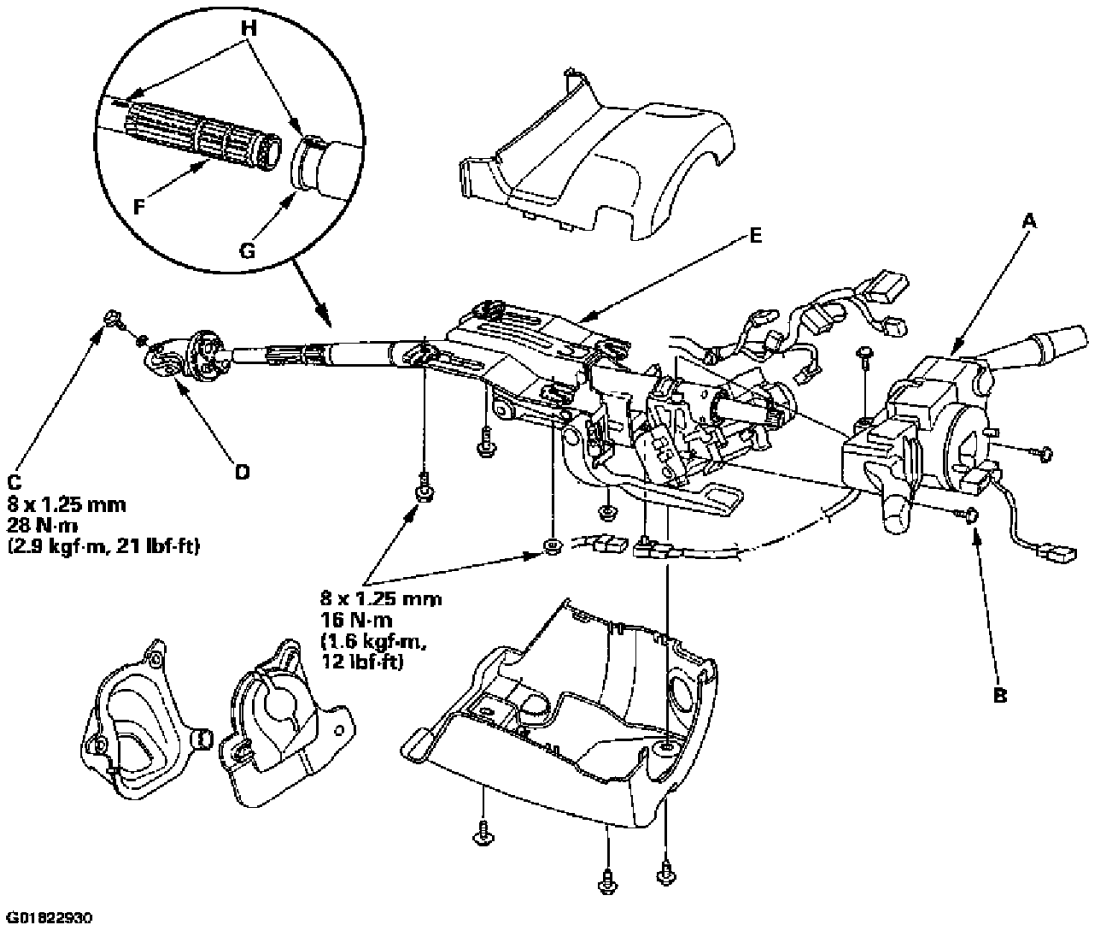


Fig. 48: Removing The Combination Switch Assembly & Steering Column

11. Remove the combination switch assembly from the steering column shaft by removing the screws (B).
12. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.
13. Remove the steering joint bolt (C), then disconnect the steering joint (D) from the pinion shaft.
14. Remove the steering column (E) by removing the attaching nuts and bolts. If the lower slide shaft (F) is removed, slip it into the upper shaft (G) by aligning the paint marks (H).

INSTALLATION

1. Install the steering column in the reverse order of removal, and note these items:
   - Make sure the wires are not caught or pinched by any parts.
   - Take care not to let the sliding capsules fall out of position during column installation.
2. Steering joint connection; center the steering rack within its stroke.
3. Install the steering joint (A) aligning the slit (B) of the steering joint with the tab (C) of the center guide. Position the angle of center guide as shown if necessary.

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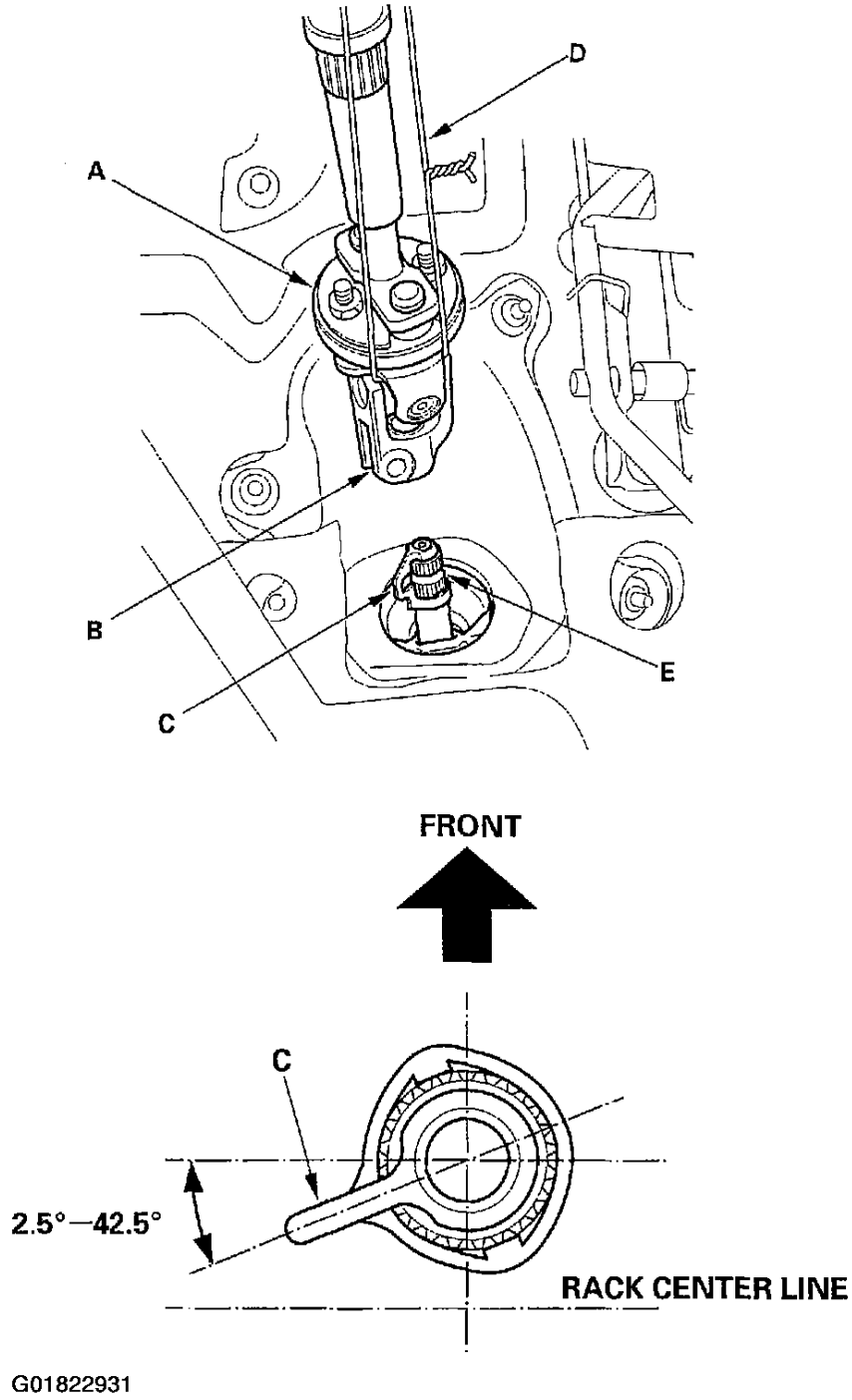
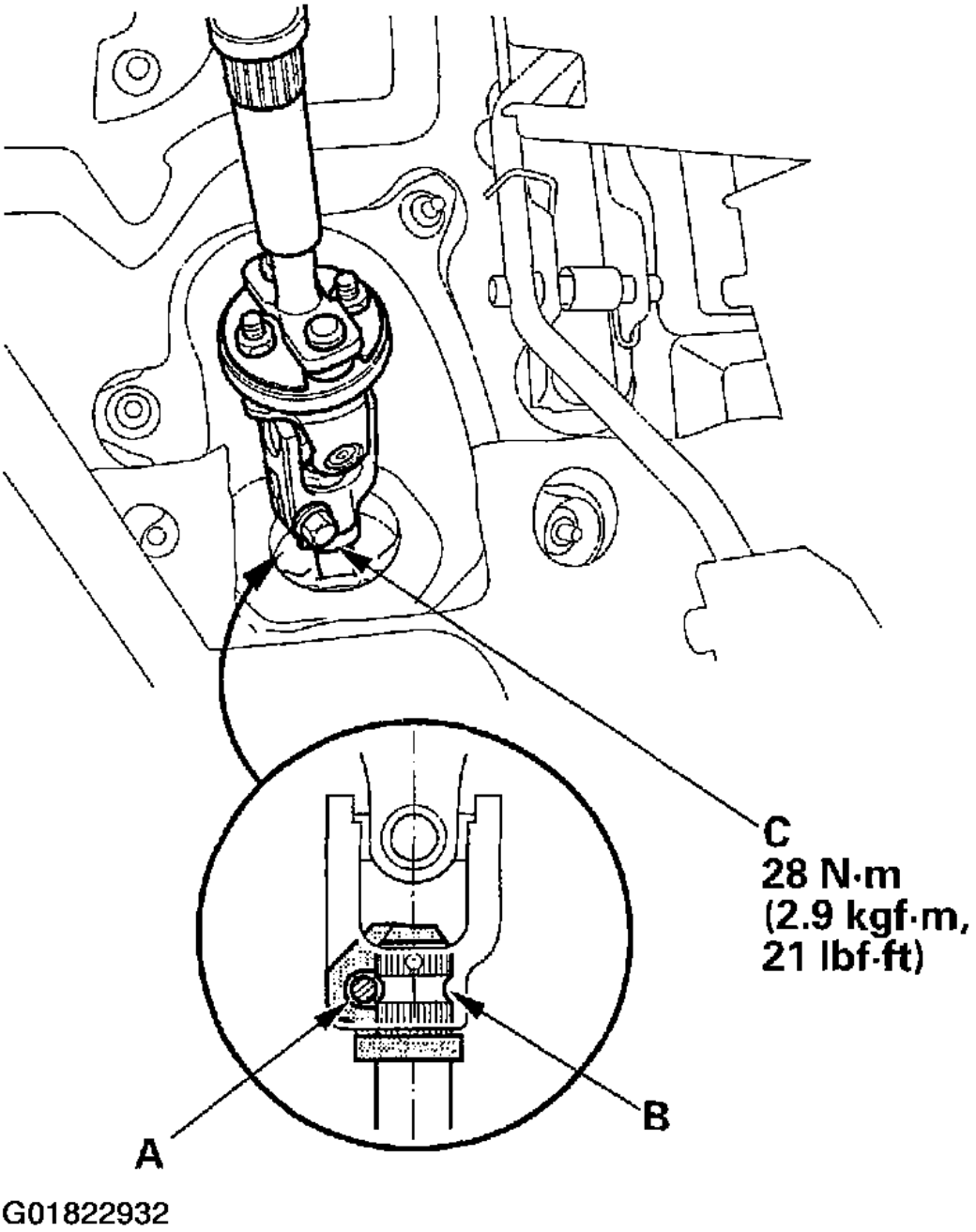


Fig. 49: Installing The Steering Joint Aligning The Slit Of The Steering Joint With The Tab Of The Center Guide

4. With the rack in the straight ahead driving position, cut the wire (D) and slip the lower end of the steering joint on to the pinion shaft (E).

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5. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to specified torque.



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Fig. 50: Slipping The Lower End Of The Steering Joint On To The Pinion Shaft

6. Finish the installation, and note these items:
   - Make sure the connectors are properly connected.
   - Reinstall the steering wheel (see **STEERING WHEEL INSTALLATION**).
   - Reconnect the battery.
   - Enter the anti-theft codes for the radio and the navigation system, then the customer's radio station presets.
   - Set the clock.
   - Verify cruise control, audio remote, navigation guide and turn signal switch operation.
   - Make sure the steering wheel is centered.

STEERING COLUMN/TILT/TELESCOPIC INSPECTION

1. Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
2. Check the lower side shaft (C) for smooth movement in and out. If the lower slide shaft is removed, slip it into the upper shaft by aligning the paint marks (D). If it sticks or binds, replace the steering column as an assembly.
3. Check the sliding capsules (E) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.
4. Check the tilt mechanism and telescopic mechanism for movement and damage.

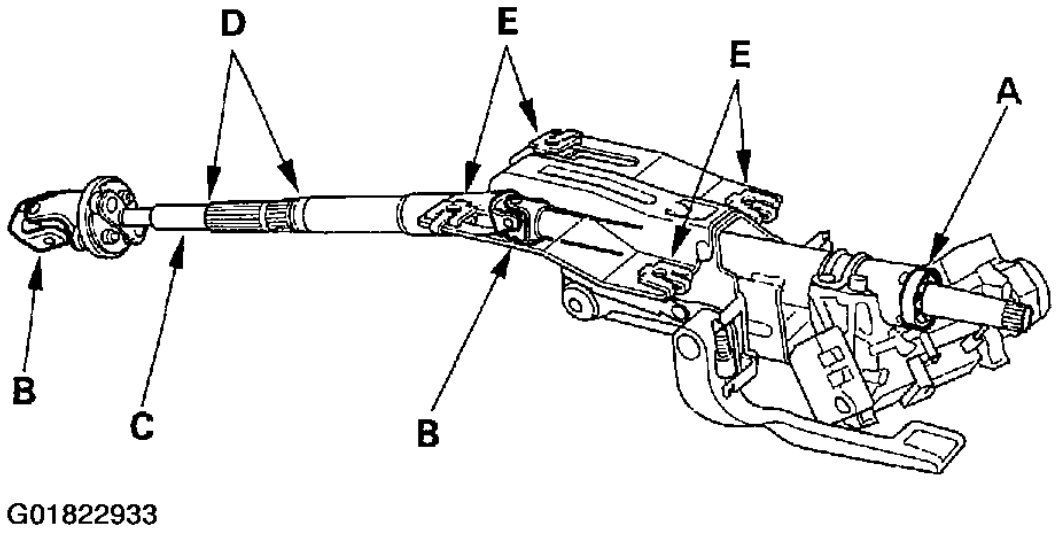


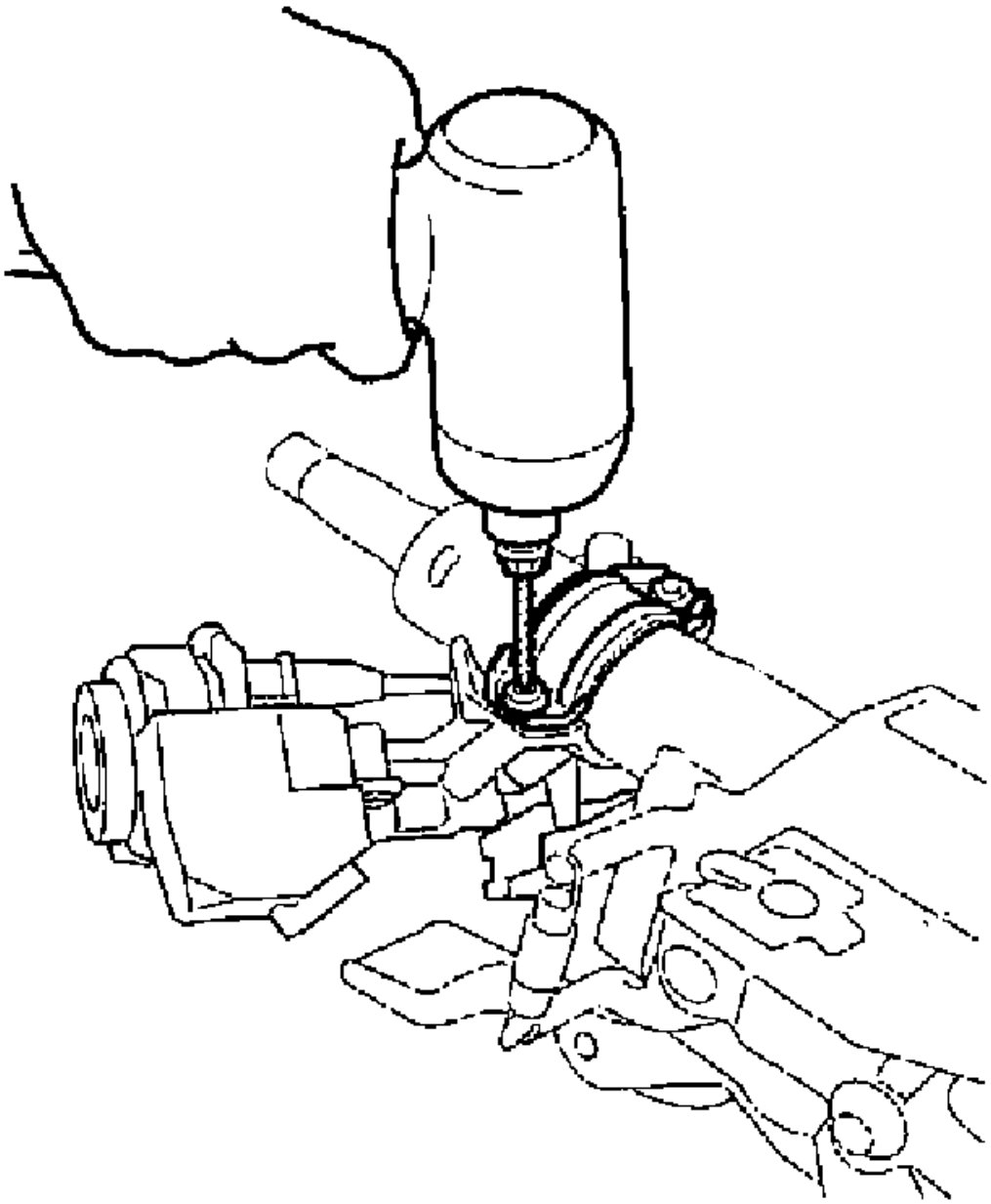
Fig. 51: Inspecting Steering Column/Tilt/Telescopic Components

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STEERING LOCK REPLACEMENT

1. Remove the steering column (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Center-punch each of the two shear bolts, and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.

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Fig. 52: Drilling Shear Bolt Heads

3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.

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5. Loosely tighten the NEW shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.

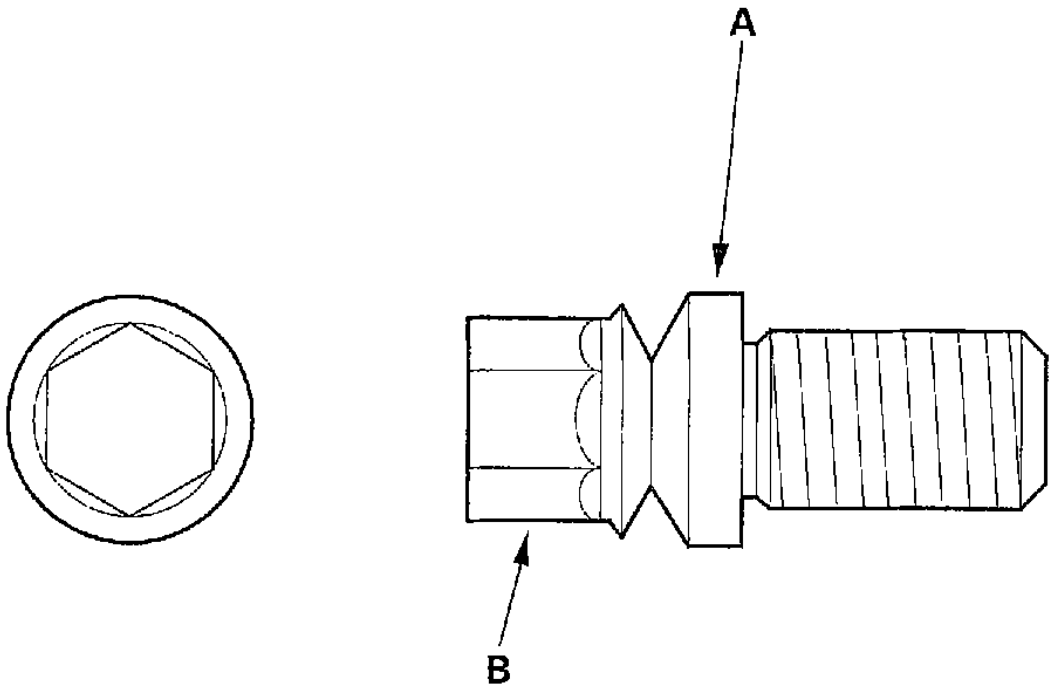


Fig. 53: Identifying The Shear Bolts With The Hex Heads

RACK GUIDE ADJUSTMENT

Special Tools Required: Locknut wrench, 40 mm, 07916-SA50001

1. Set the wheels in the straight ahead position.
2. Loosen the rack guide screw locknut (A) with the special tool, then remove the rack guide screw (B).

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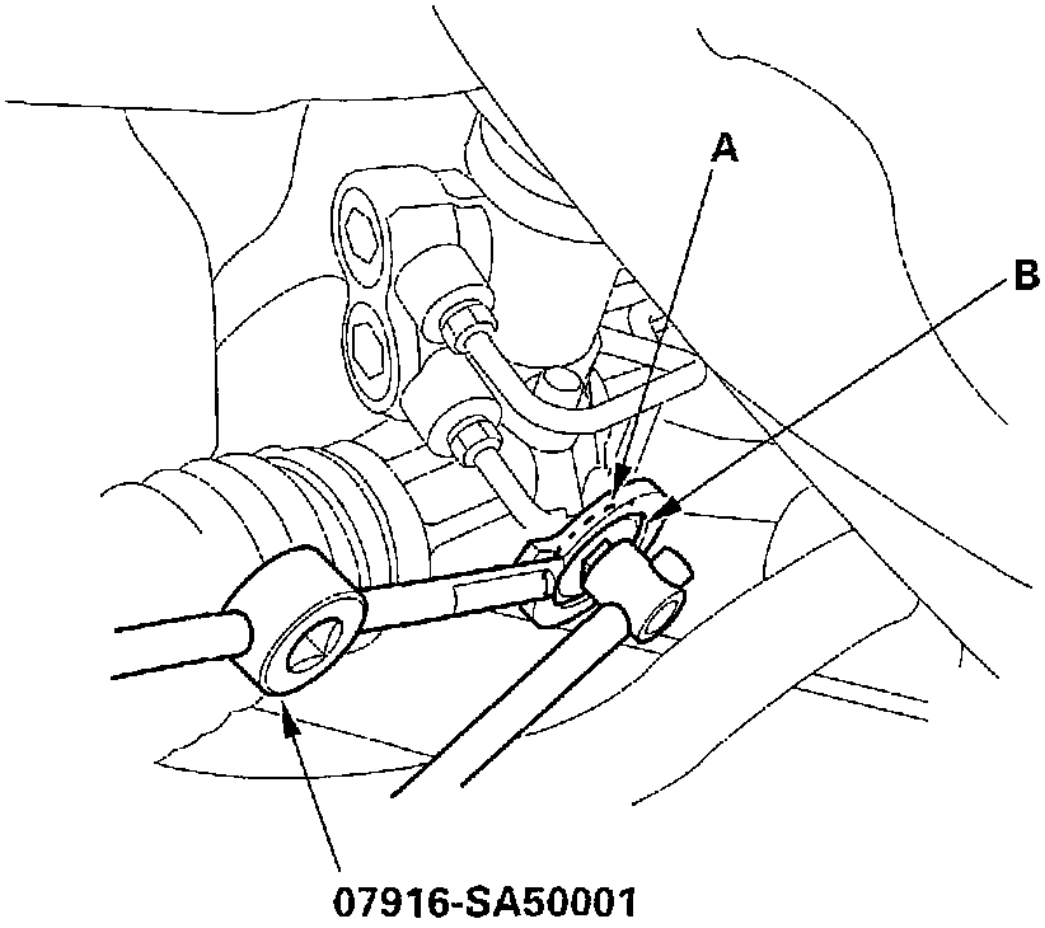


Fig. 54: Loosening The Rack Guide Screw Locknut

3. Remove the old sealant from the rack guide screw, and apply NEW sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads. Loosely install the rack guide screw on the steering gearbox.

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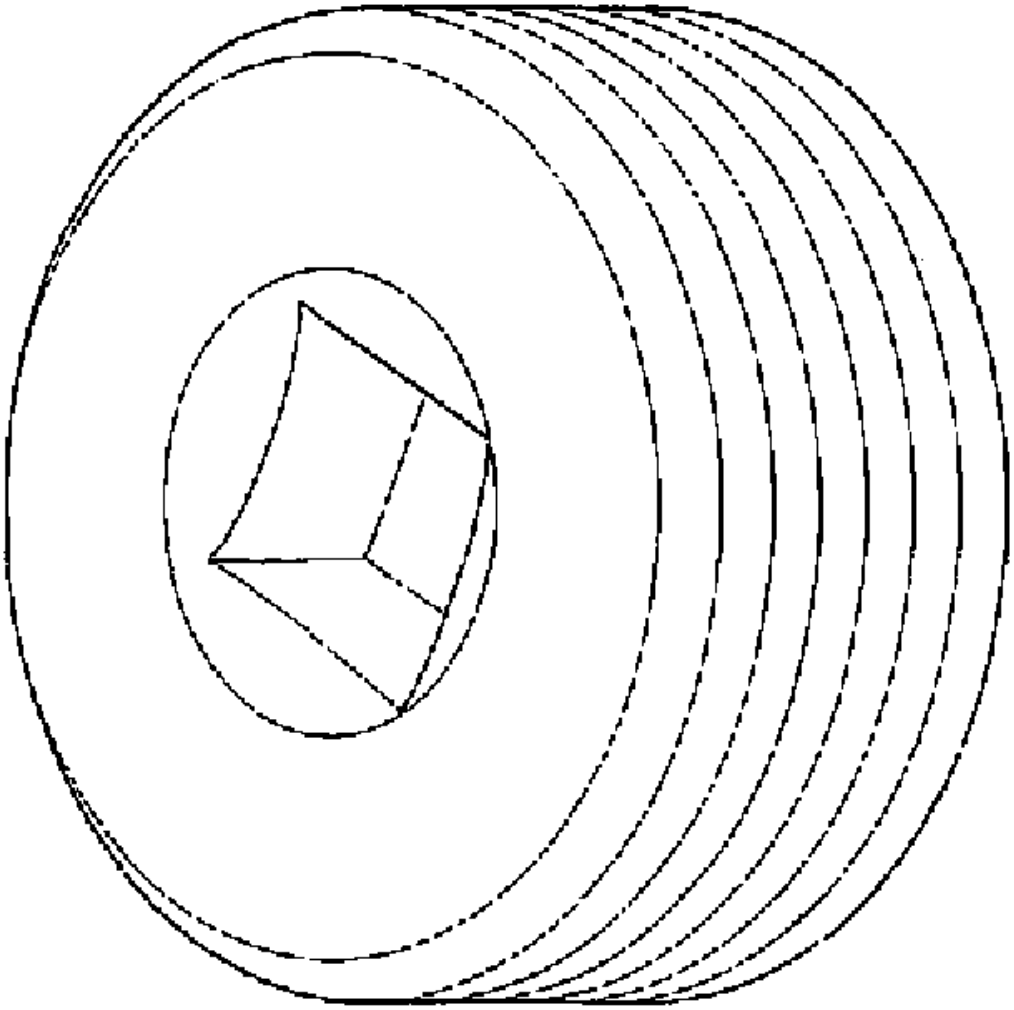


Fig. 55: Identifying Rack Guide Screw

4. Tighten the rack guide screw (A) to 25 N.m (2.5 kgf.m, 18 lbf.ft), then loosen it.

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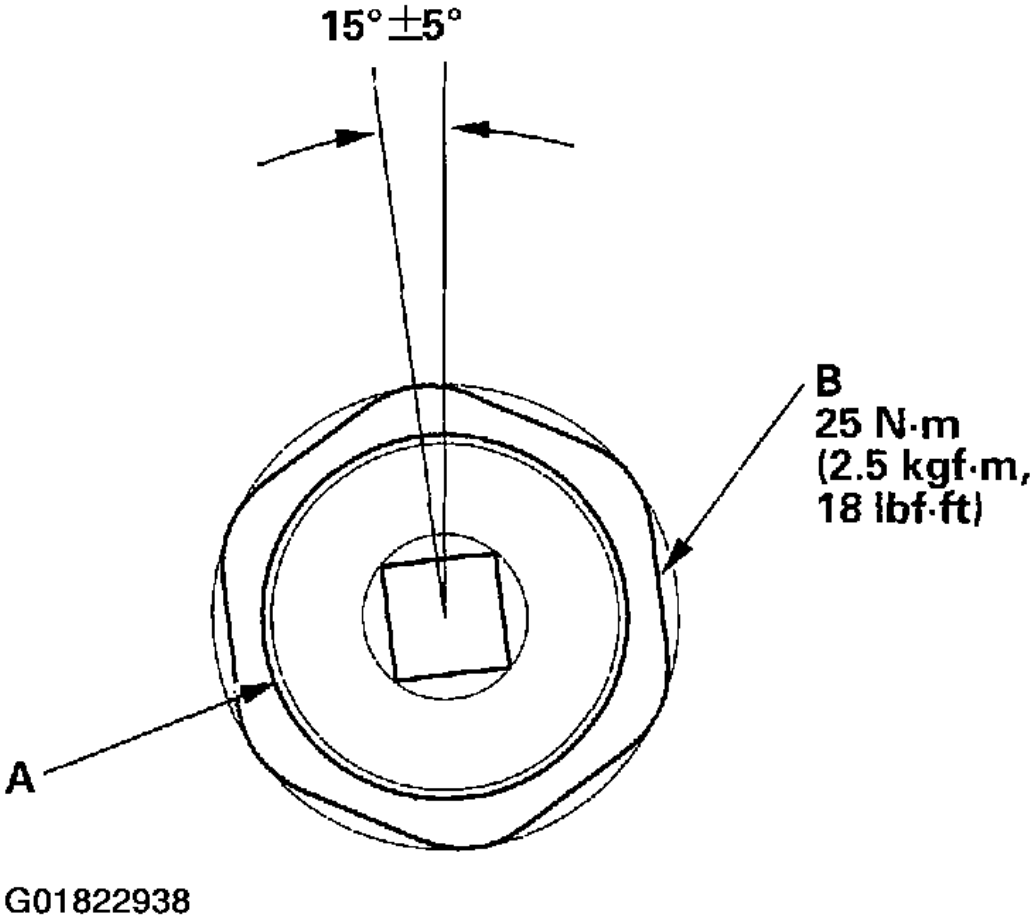


Fig. 56: Tightening The Rack Guide Screw

5. Retighten the rack guide screw to 3.9 N.m (0.4 kgf.m, 4 lbf.ft), then back it off to the specified angle.
   Specified Return Angle: 15° +/- 5°
6. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.
7. Install the special tool on the locknut (B), and hold the rack guide screw stationary with a wrench. Tighten the locknut an additional 30° with the special tool.
8. Check for unusual steering effort through the complete turning range.
9. Check the steering wheel rotation play and the power assist (see **POWER ASSIST CHECK**).

STEERING GEARBOX REMOVAL

Special Tools Required: Ball joint remover, 28 mm 07MAC-SL00200

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Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit, its lines, and the end of the gearbox. Blow dry with compressed air.
- Make sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.

1. Drain the power steering fluid. (see **FLUID REPLACEMENT**).
2. Raise the front of vehicle, and support it with safety stands in the proper locations .
3. Remove the front wheels.
4. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
5. Remove the steering joint cover A.

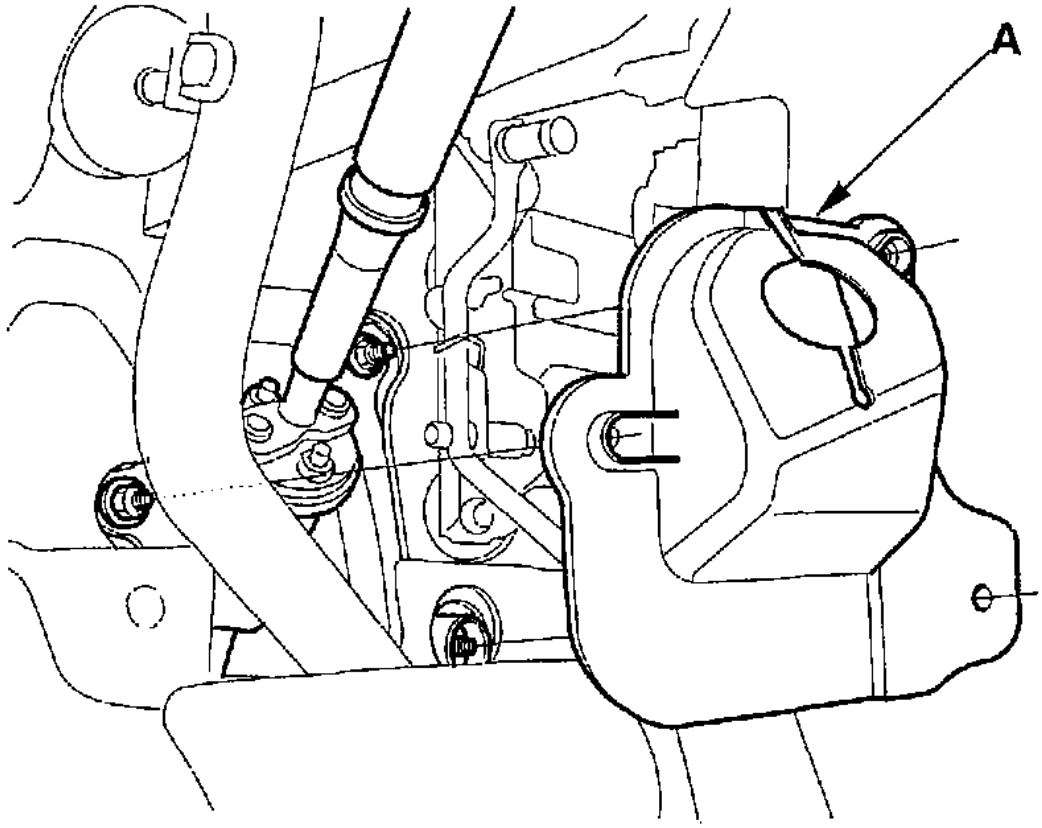


Fig. 57: Removing The Steering Joint Cover A

6. Remove the steering joint bolt (A), and disconnect the steering joint by moving the steering joint (B)

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toward the column. Hold the slider shaft (C) on the column with a piece of wire (D) between the joint yoke (E) on the slider shaft to the joint yoke on the upper shaft (see **STEERING COLUMN REMOVAL AND INSTALLATION**).

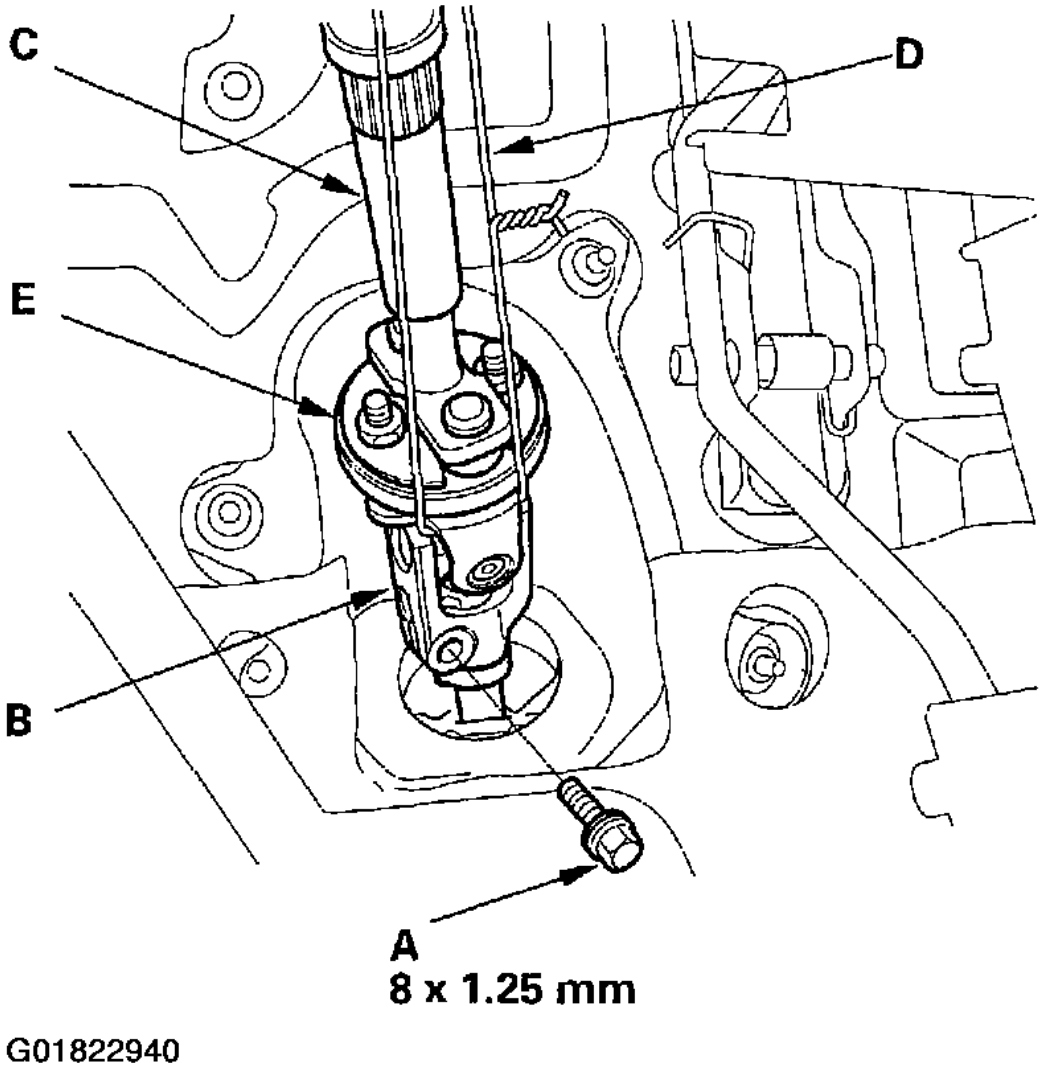


Fig. 58: Holding The Slider Shaft On The Column With A Piece Of Wire

7. Remove the center guide (A), and discard it.

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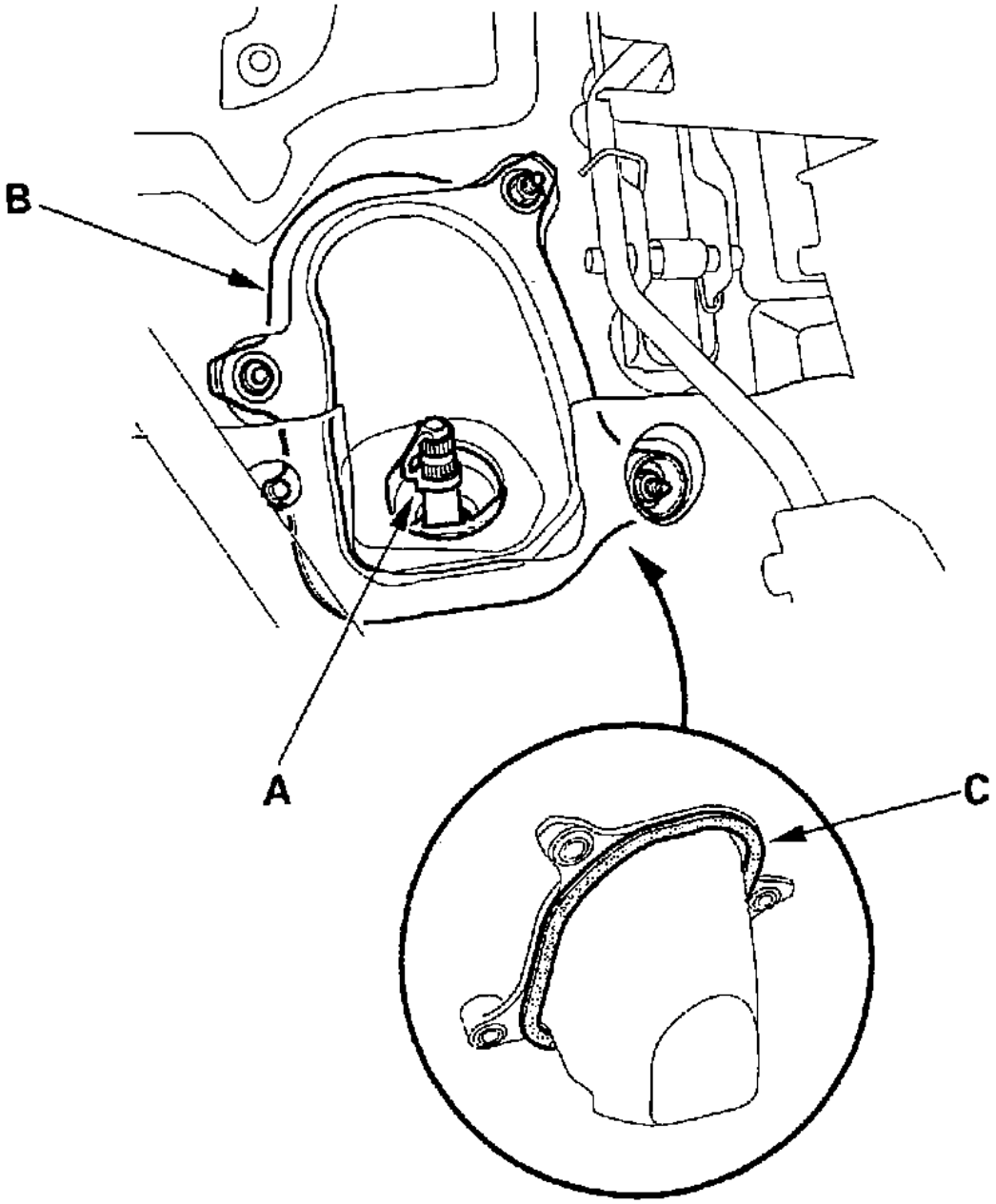


Fig. 59: Removing The Center Guide

8. Remove the steering joint cover B. Be careful not to damage the mating surface on the joint cover B and pinion shaft grommet. Replace the cover seal (C) if necessary.
9. Remove and discard the cotter pin (A) from the tie rod ball joint nut (B), then loosen the nut.

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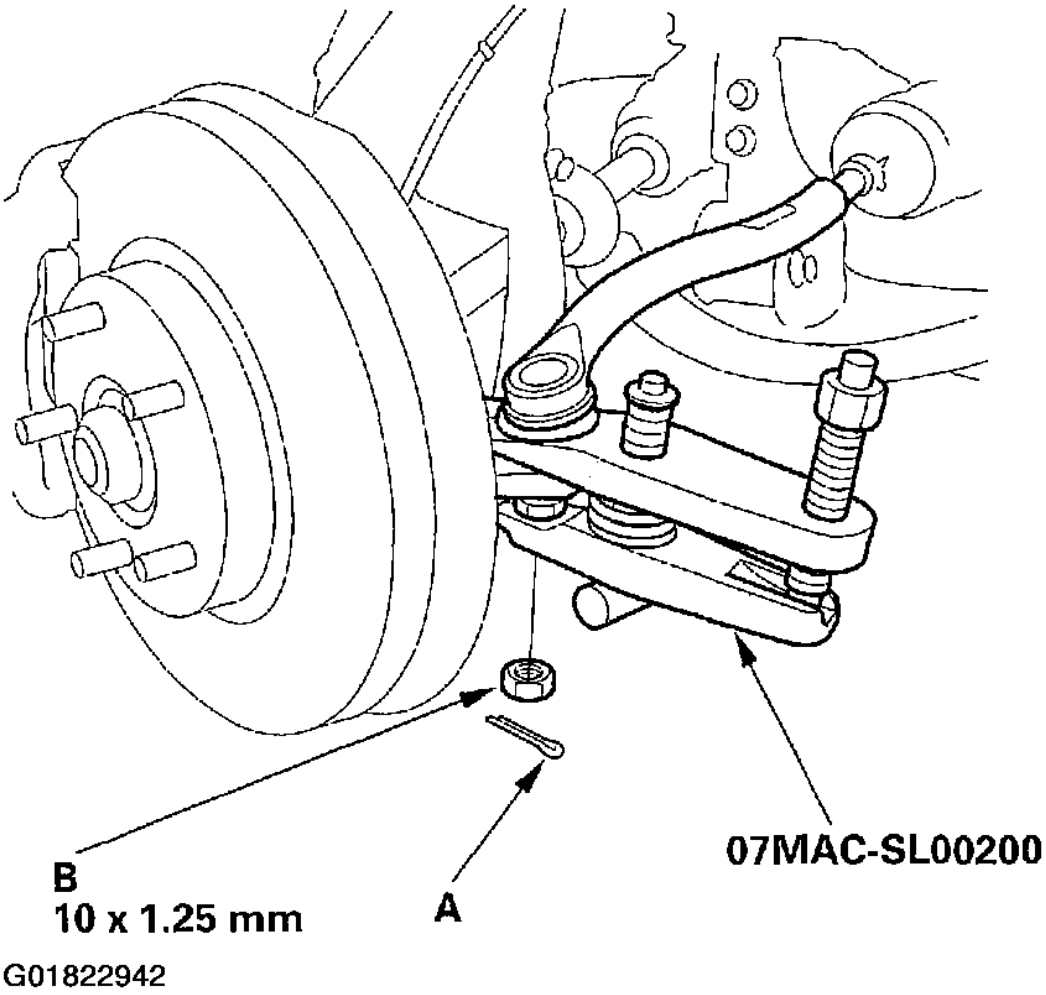


Fig. 60: Separating The Tie-Rod Ball Joint

10. Separate the tie-rod ball joint and knuckle using the special tool (see **BALL JOINT**).
11. Remove the P/S heat baffle plate (A).

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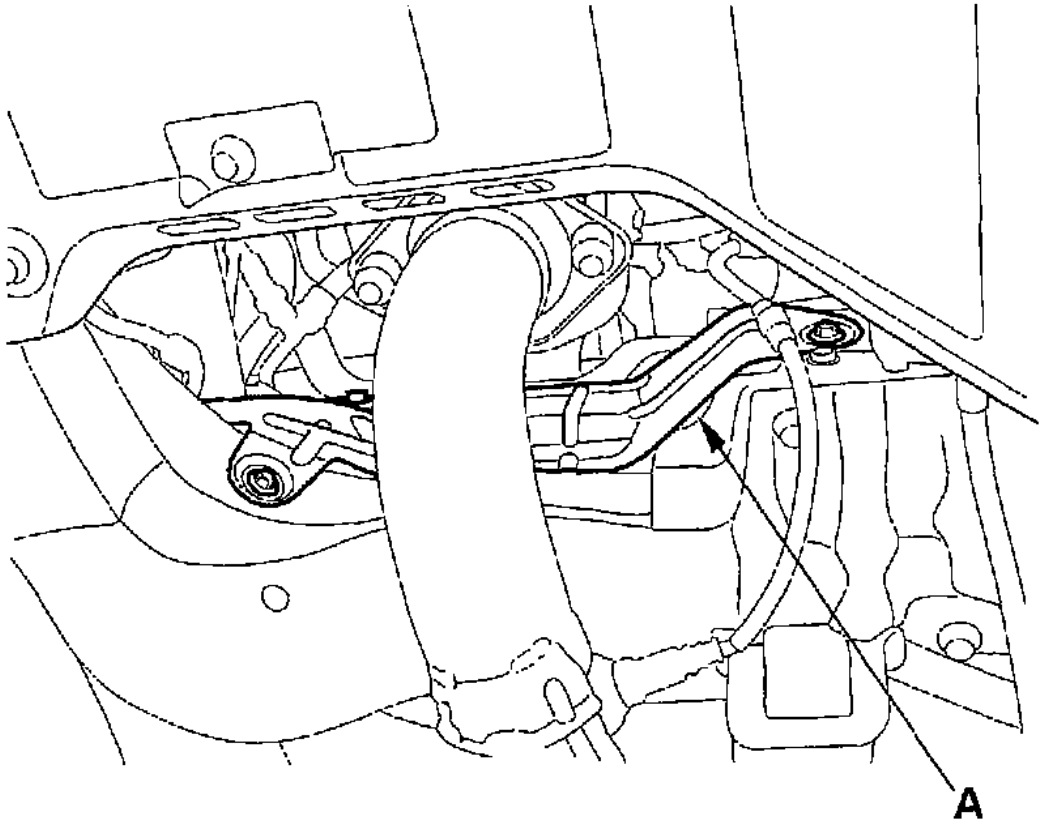


Fig. 61: Removing The P/S Heat Baffle Plate

12. Remove the feed line holder mounting bolt (A) on the front suspension subframe.

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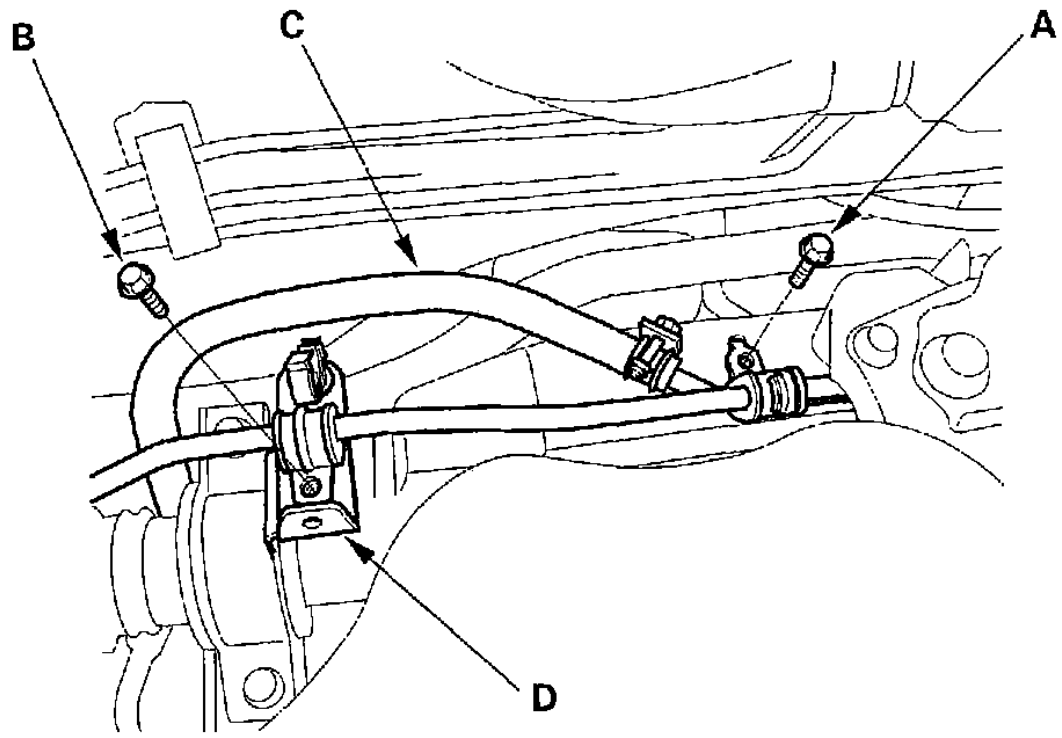


Fig. 62: Removing The Feed Line Holder Mounting Bolt

13. Remove the feed line holder mounting bolt (B) and return hose (C) from the gearbox mounting bracket (D).
14. Place several shop towels under the line connections, and cover the gearbox mounting part to protect it from the power steering fluid. Loosen the flare nut (A), and disconnect the feed line (B).

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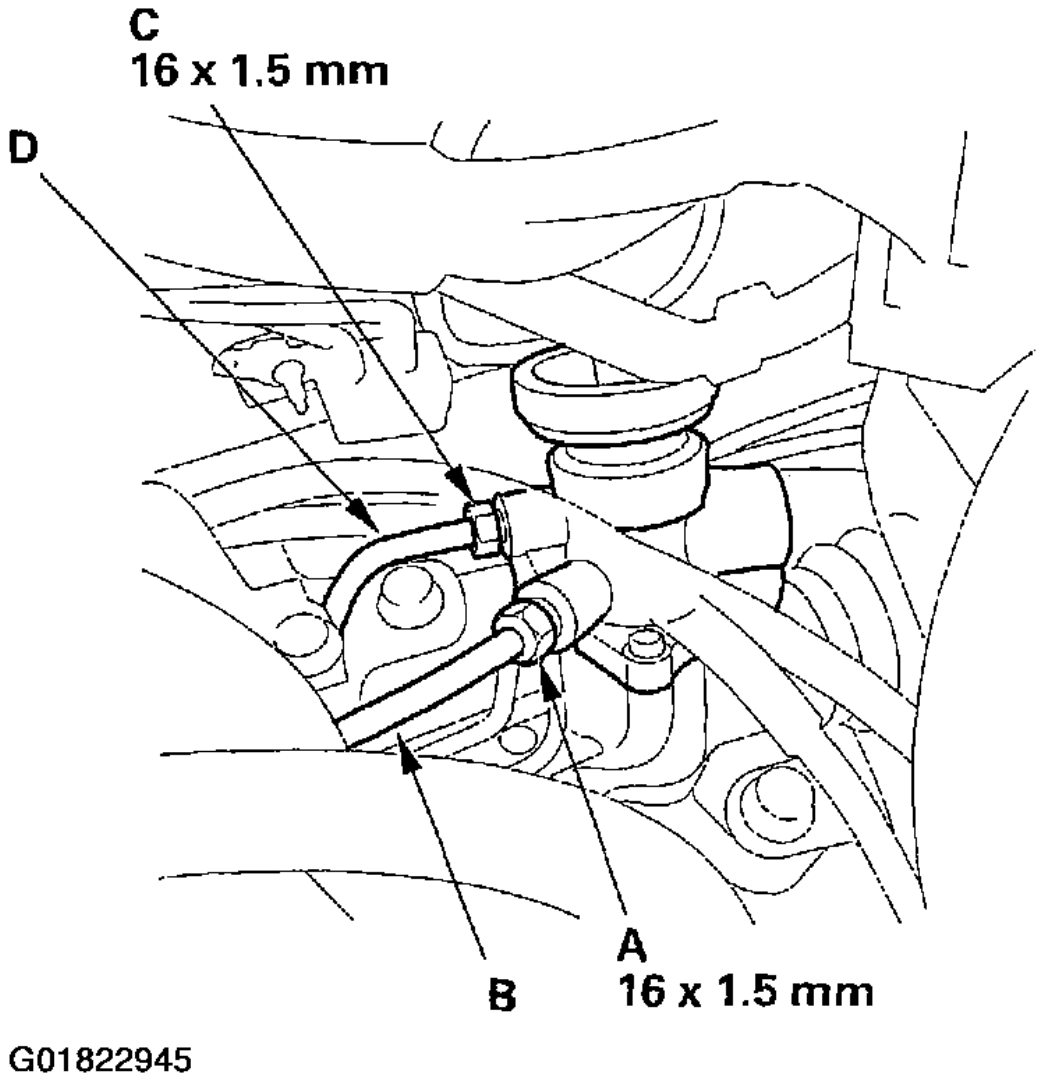


Fig. 63: Disconnecting The Feed & Return Lines

15. Loosen the flare nut (C), and disconnect the return line (D).
16. After disconnecting the lines, plug or seal them with a piece of tape or equivalent to prevent foreign materials from entering.

NOTE: Do not loosen the cylinder line A and B between the valve body unit and the cylinder.

17. Remove the front suspension subframe left mid and mount (A).

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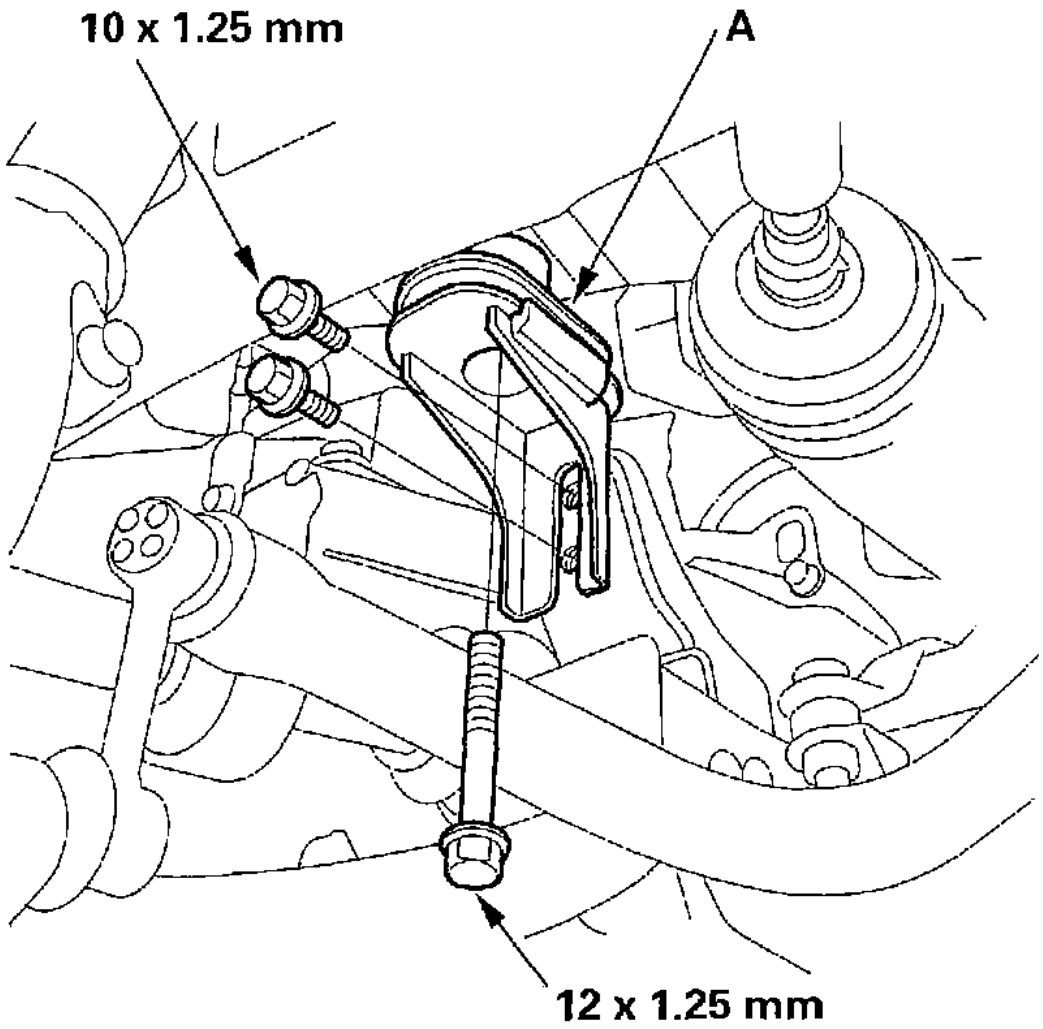


Fig. 64: Removing The Front Suspension Subframe Left Mid & Mount

18. Remove the steering gearbox mounting bolts on the left gearbox mount, and remove the steering stiffener plate (A).

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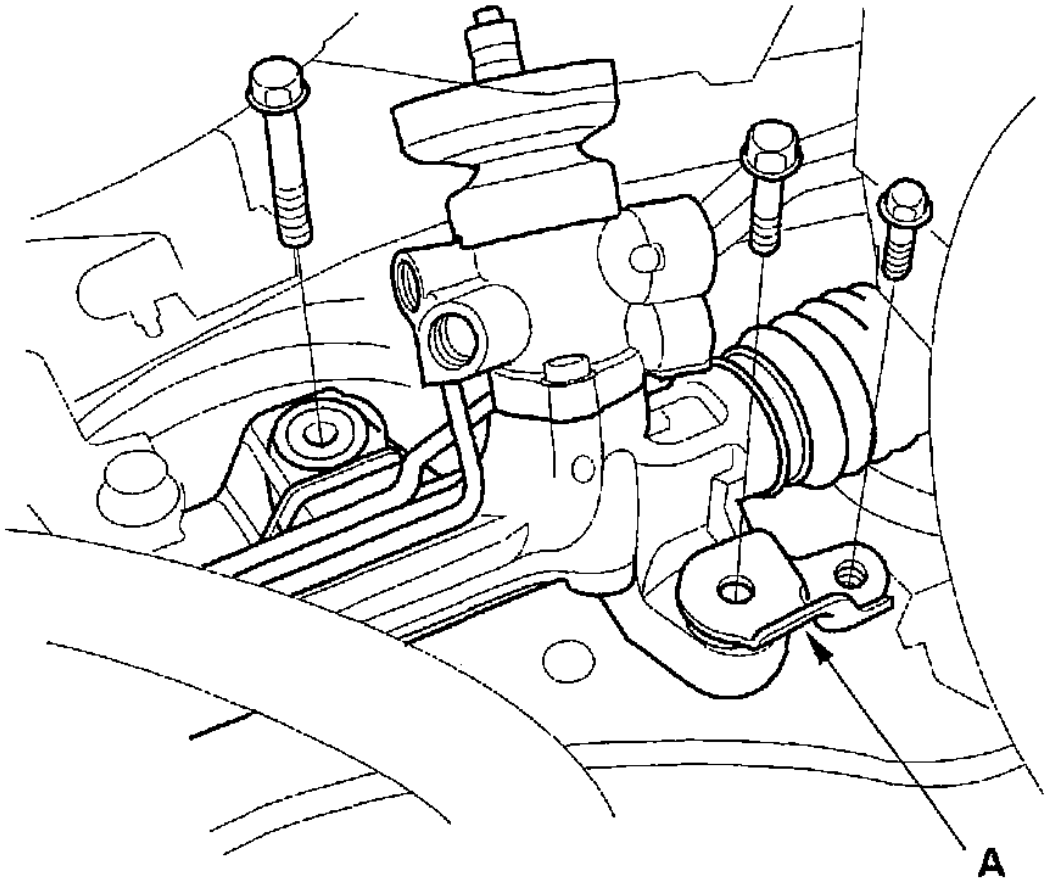


Fig. 65: Removing The Steering Gearbox Mounting Bolts

19. Remove the two flange bolts from the right side of the gearbox, then remove the gearbox mounting bracket (A) and cushion (B).

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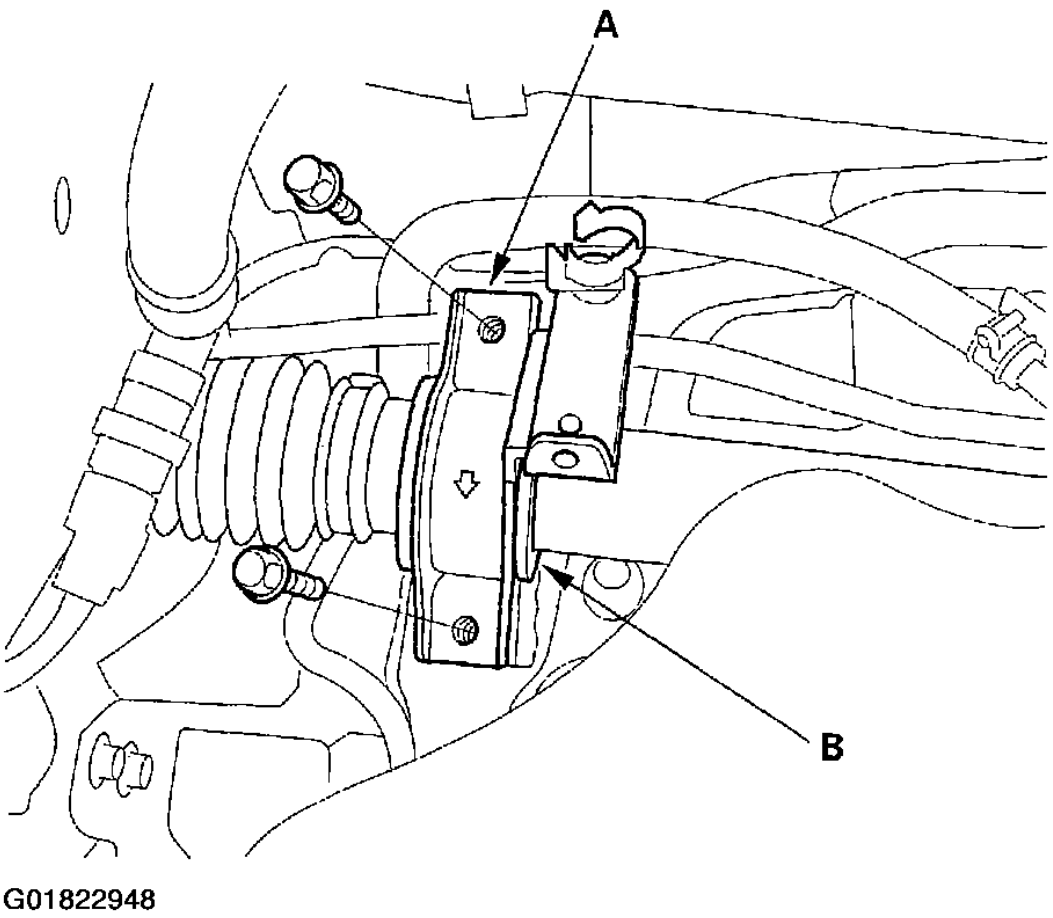
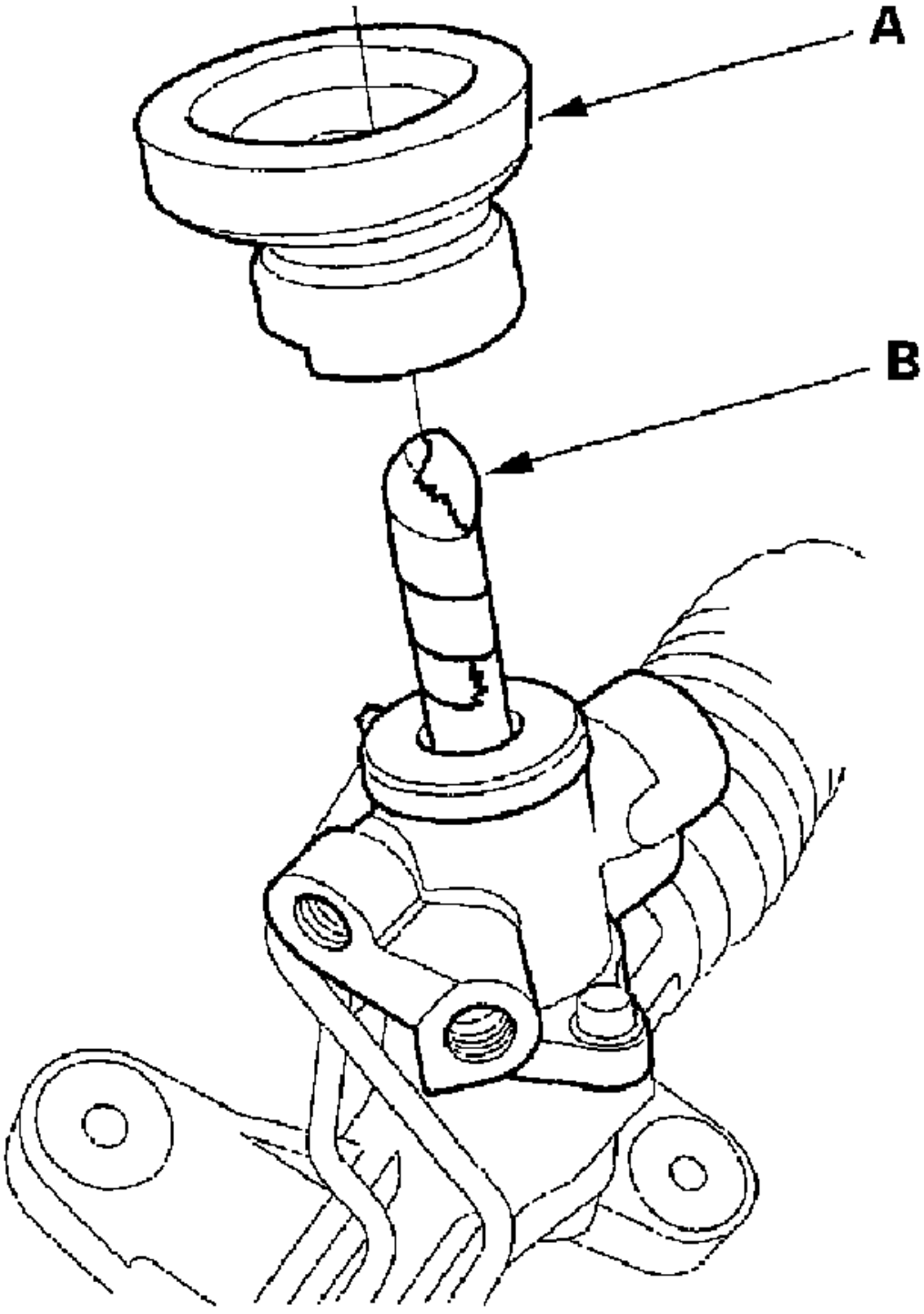


Fig. 66: Removing The Two Flange Bolts

20. Move the steering gearbox toward the front, and remove the pinion shaft grommet (A) from the top of the valve body unit.

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Fig. 67: Removing The Pinion Shaft Grommet

21. Apply vinyl tape (B) to the splines on the pinion shaft.
22. Apply vinyl tape or equivalent material (A) to the brake lines to protect them from the pinion shaft.

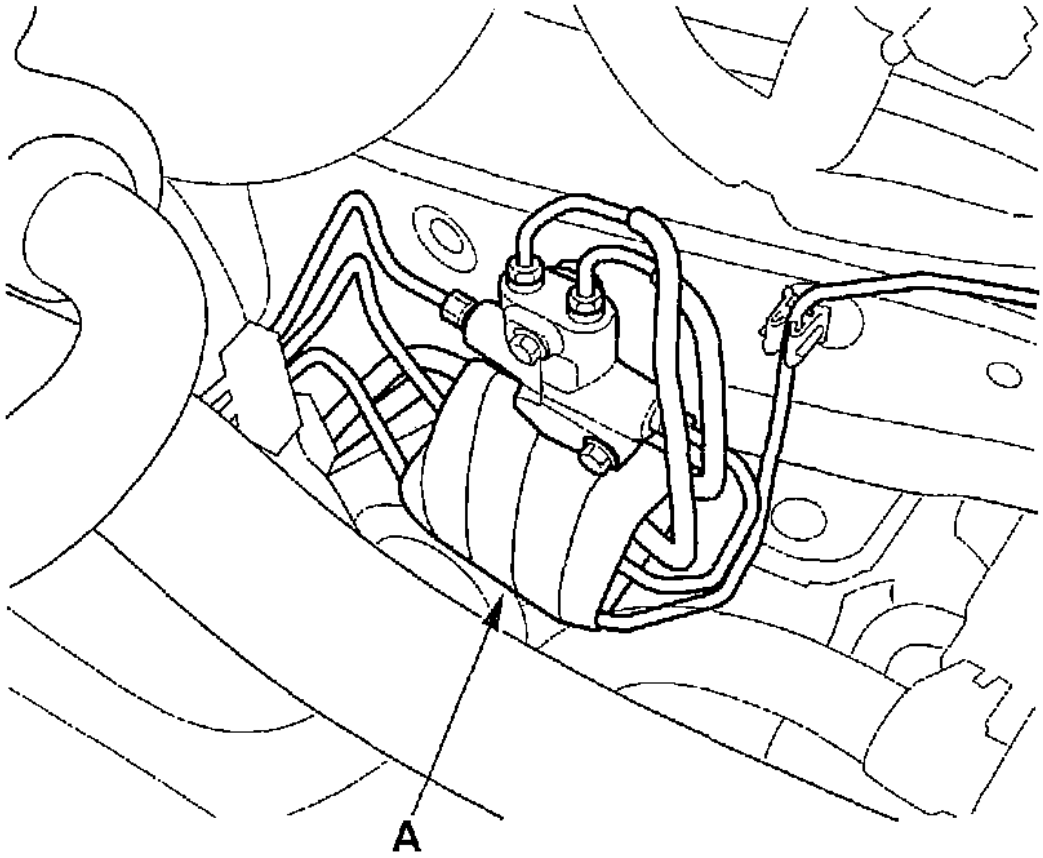


Fig. 68: Applying Vinyl Tape To The Brake Lines

23. Move the steering gearbox to the driver's side, and rotate it so the pinion shaft points toward the front of the vehicle.
24. Carefully move the steering gearbox as an assembly toward the driver's side of the vehicle until the pinion shaft clears the wheelwell opening. Be careful not to damage the brake lines with the pinion shaft.

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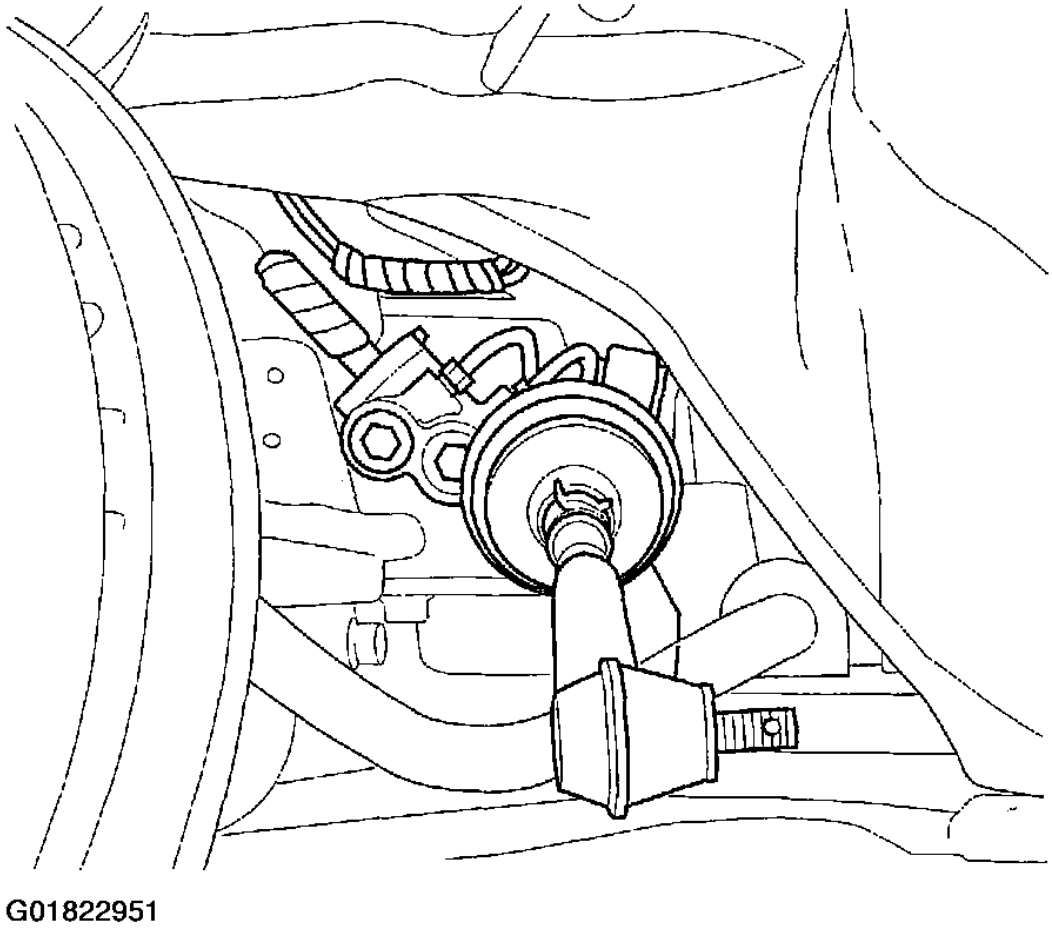


Fig. 69: Rotating Steering Gearbox So The Pinion Shaft Points Toward The Front Of The Vehicle

25. Remove the steering gearbox through the wheelwell opening on the driver's side.

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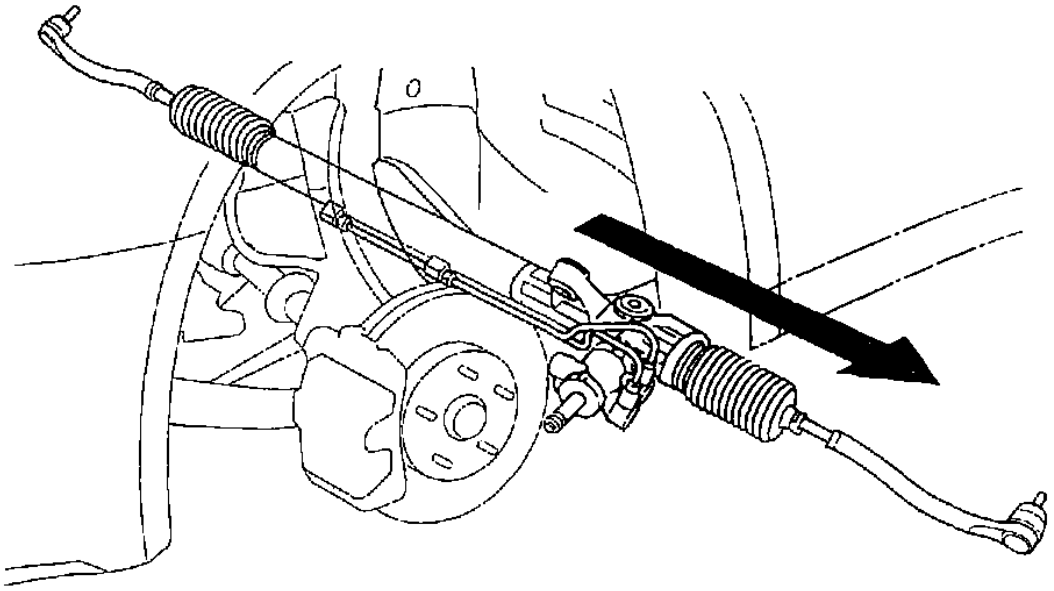


Fig. 70: Removing The Steering Gearbox

26. After removing the steering gearbox, make sure that no power steering fluid gets on the gearbox mount cushions, gearbox housing, surface of the subframe and stiffener. Wipe off any spilled fluid at once.

STEERING GEARBOX OVERHAUL

EXPLODED VIEW

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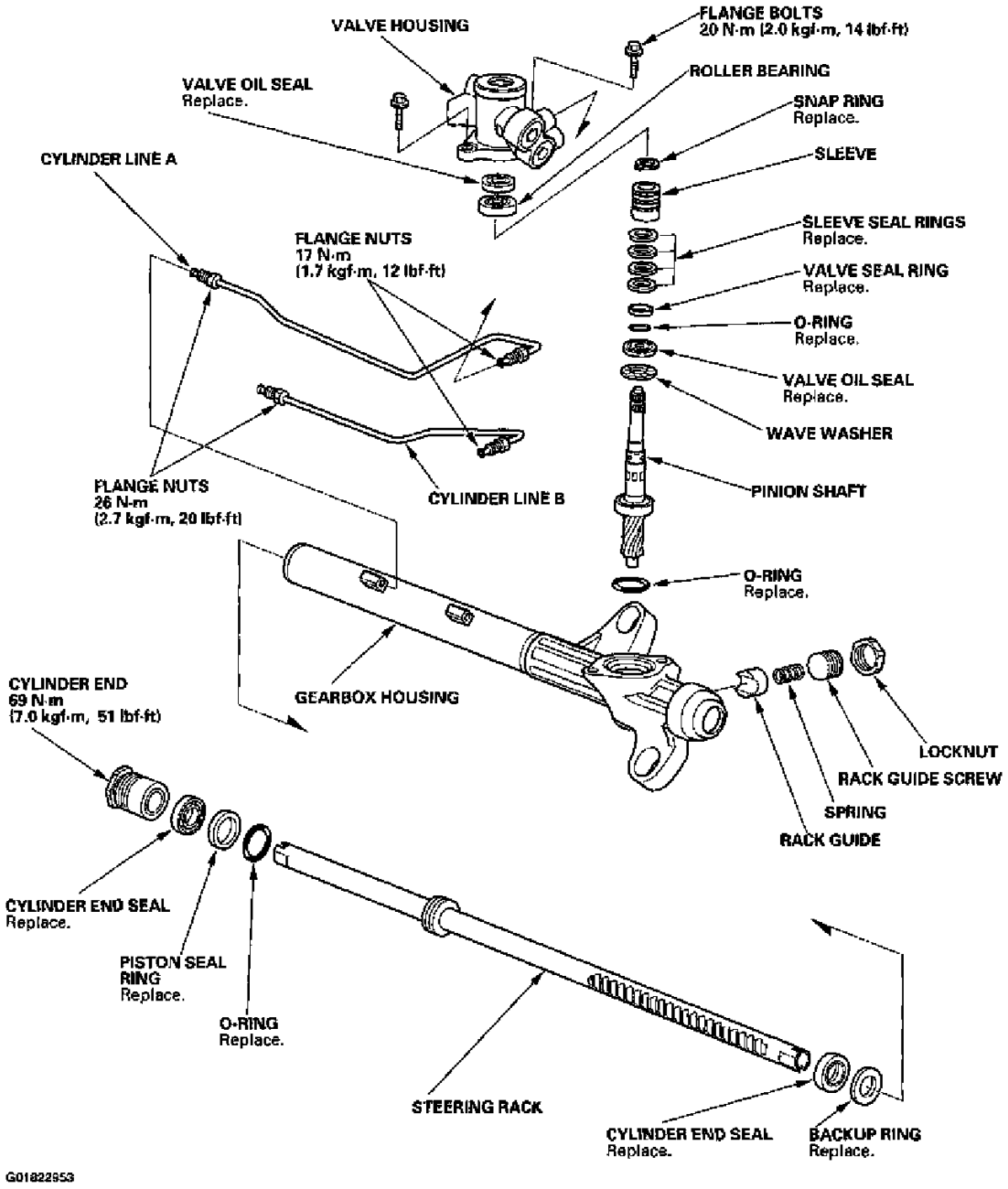


Fig. 71: Exploded View Of Steering Gearbox Components

Special Tools Required:

- Cylinder end seal remover attachment 07NAD-SR3020A
- Pilot collar 07GAF-PH70100
- Valve seal ring sizing tool 07NAG-SR3090A
- Ball joint boot clip guide 07974-SA50800

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- Sleeve seal ring sizing tool 07974-SA5020A or 07974-SA50200
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Piston seal ring guide 07HAG-SF10100
- Piston seal ring sizing tool 07HAG-SF1020A or 07HAG-SF10200
- Cylinder end seal slider 07ZAG-S5A0300
- Pincers Oetiker 1098 or equivalent, commercially available.

NOTE: Refer to the Exploded View as needed during this procedure.

Removal

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL**).

   Disassembly

2. Remove the boot bands (A) and tie-rod clips (B). Pull the boot away from the ends of the steering gearbox.

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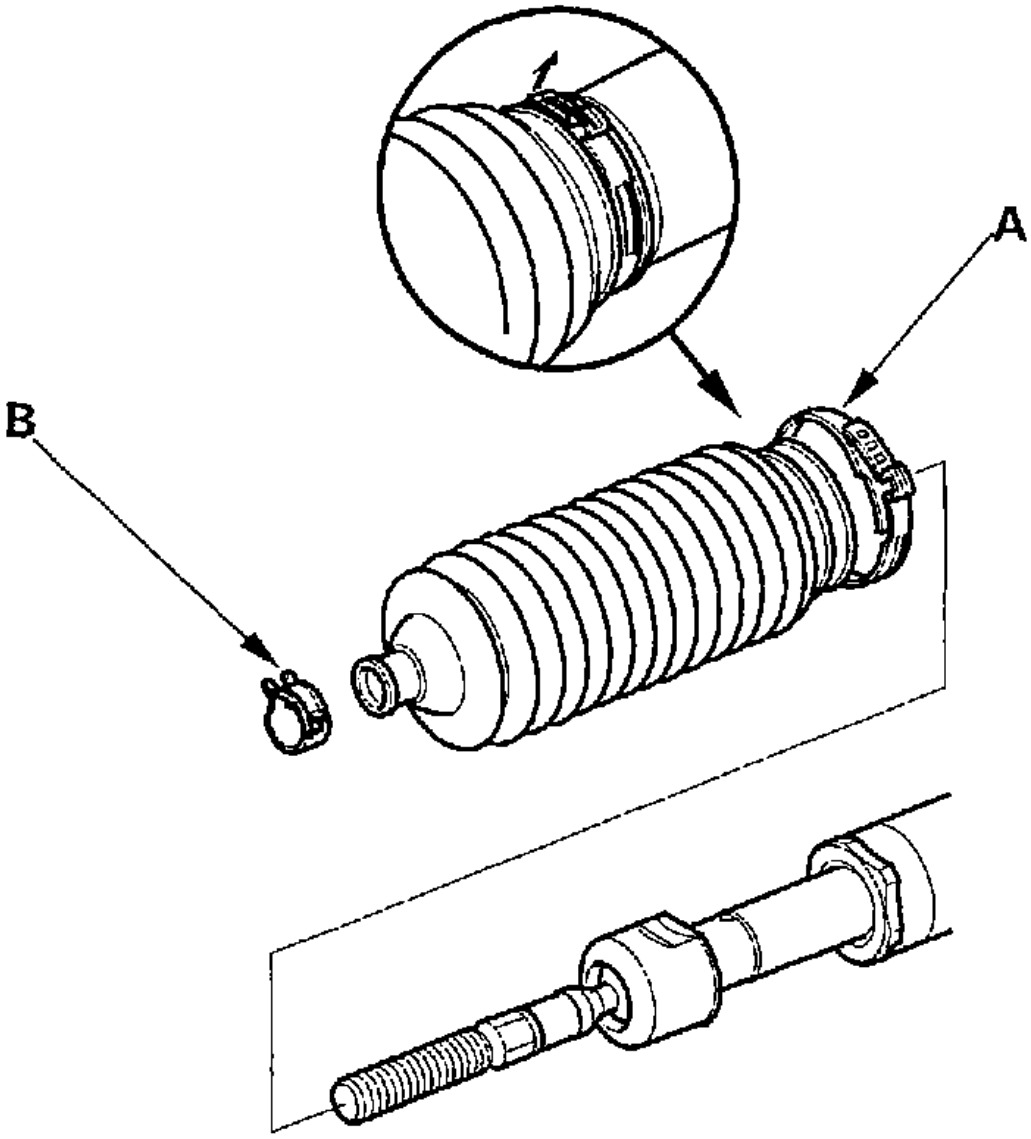


Fig. 72: Removing The Boot Bands & Tie-Rod Clips

3. Unbend the lock washers (A).

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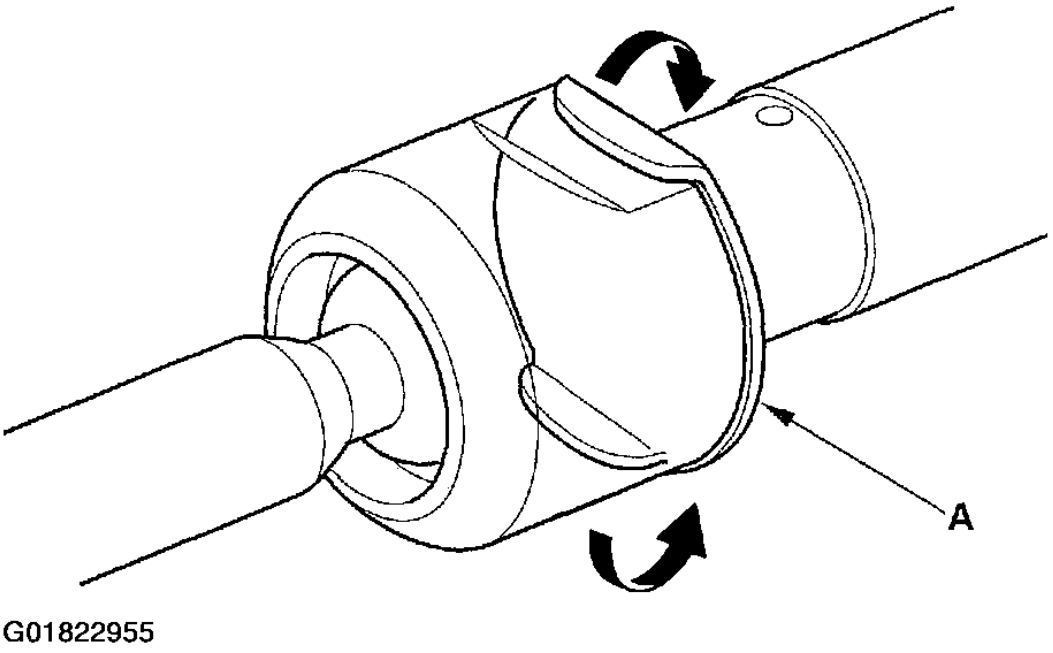


Fig. 73: Unbending The Lock Washers

4. Hold the flat surface sections (A) of the steering rack with a wrench (B), and unscrew both rack ends (C) with a wrench (D). Be careful not to damage the rack surface with the wrench.

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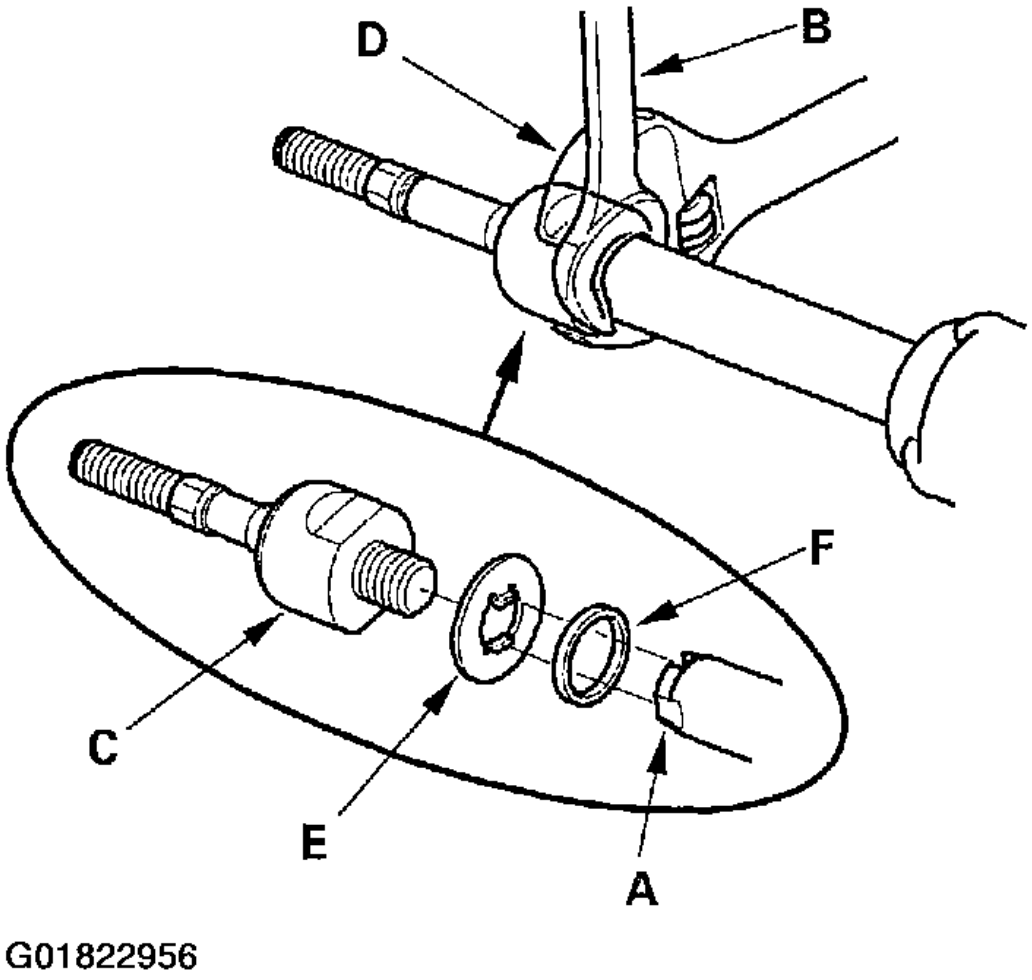


Fig. 74: Unscrewing Both Rack Ends

5. Remove the lock washer (E) and stop rubber (F).
6. Loosen the locknut (A), then remove the rack guide screw (B).

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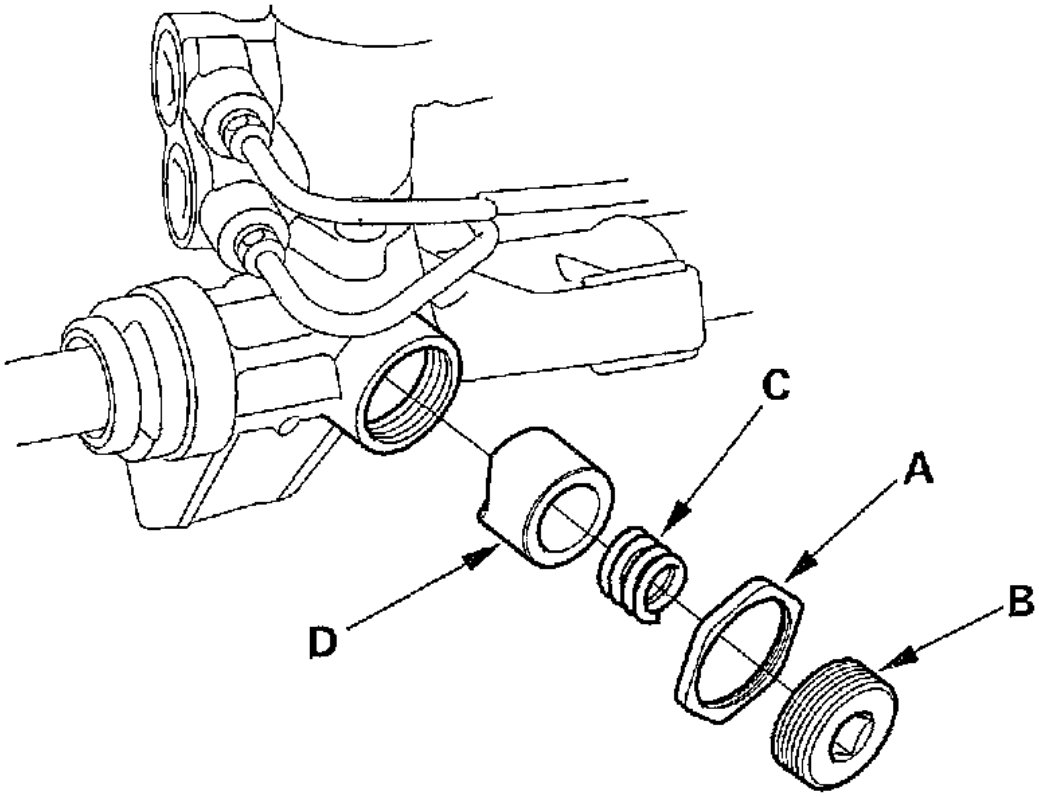


Fig. 75: Loosening The Locknut, Then Removing The Rack Guide Screw

7. Remove the spring (C) and the rack guide (D) from the gearbox housing.
8. Remove the cylinder lines from the gearbox.

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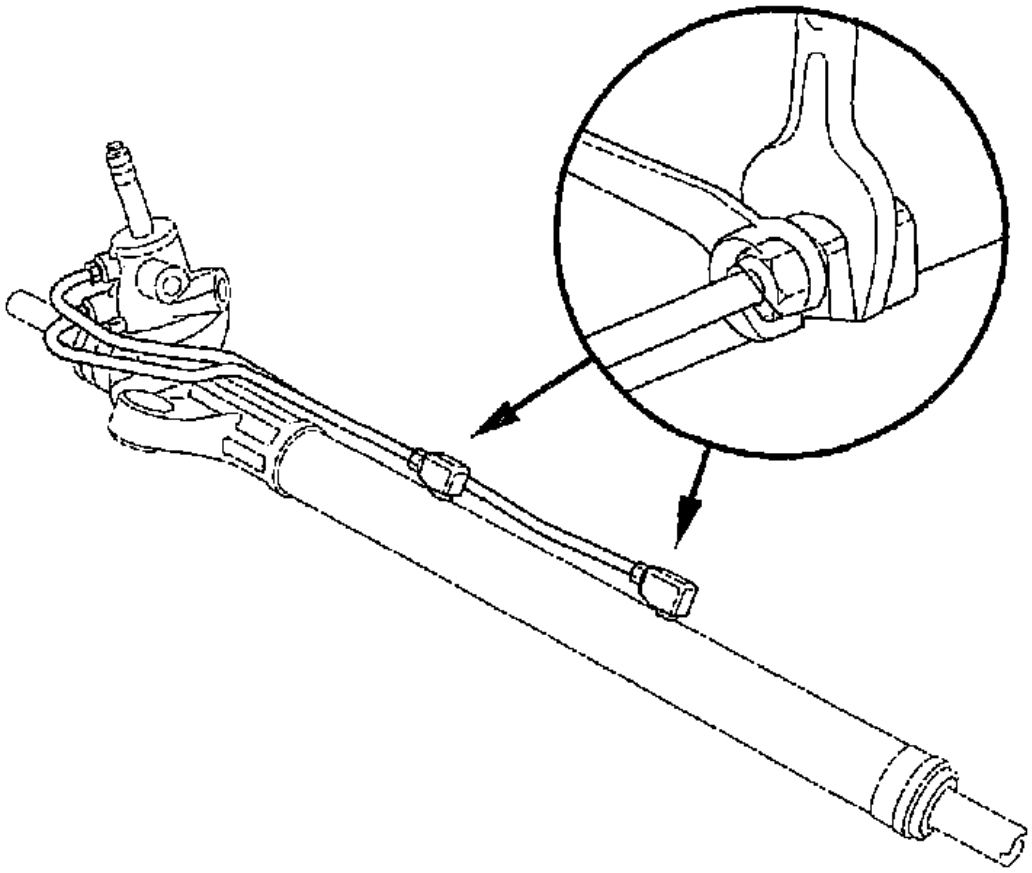


Fig. 76: Removing The Cylinder Lines From The Gearbox

9. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.
10. Remove the two flange bolts, then remove the valve body unit (A) from the gearbox (B). Remove the O-ring (C), and discard it.

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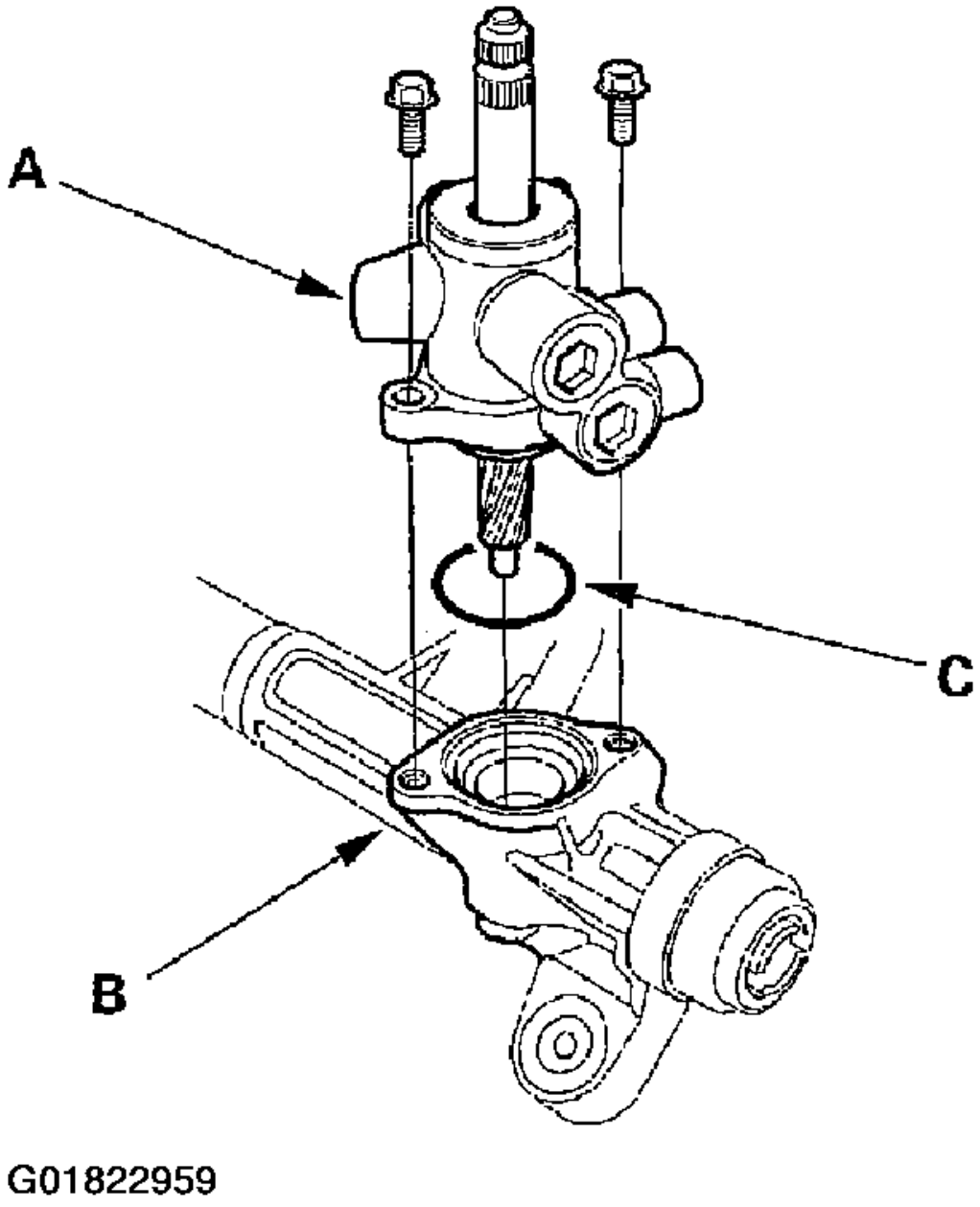


Fig. 77: Removing The Valve Body Unit From The Gearbox

11. Drill a 3 mm (0.12 in.) diameter hole about 2.5-3.0 mm (0.10-0.12 in.) in depth in the staked point (A) on the cylinder. Do not allow metal shavings to enter the cylinder side on the gearbox housing. After removing the cylinder end (B), remove any burrs at the staked point.

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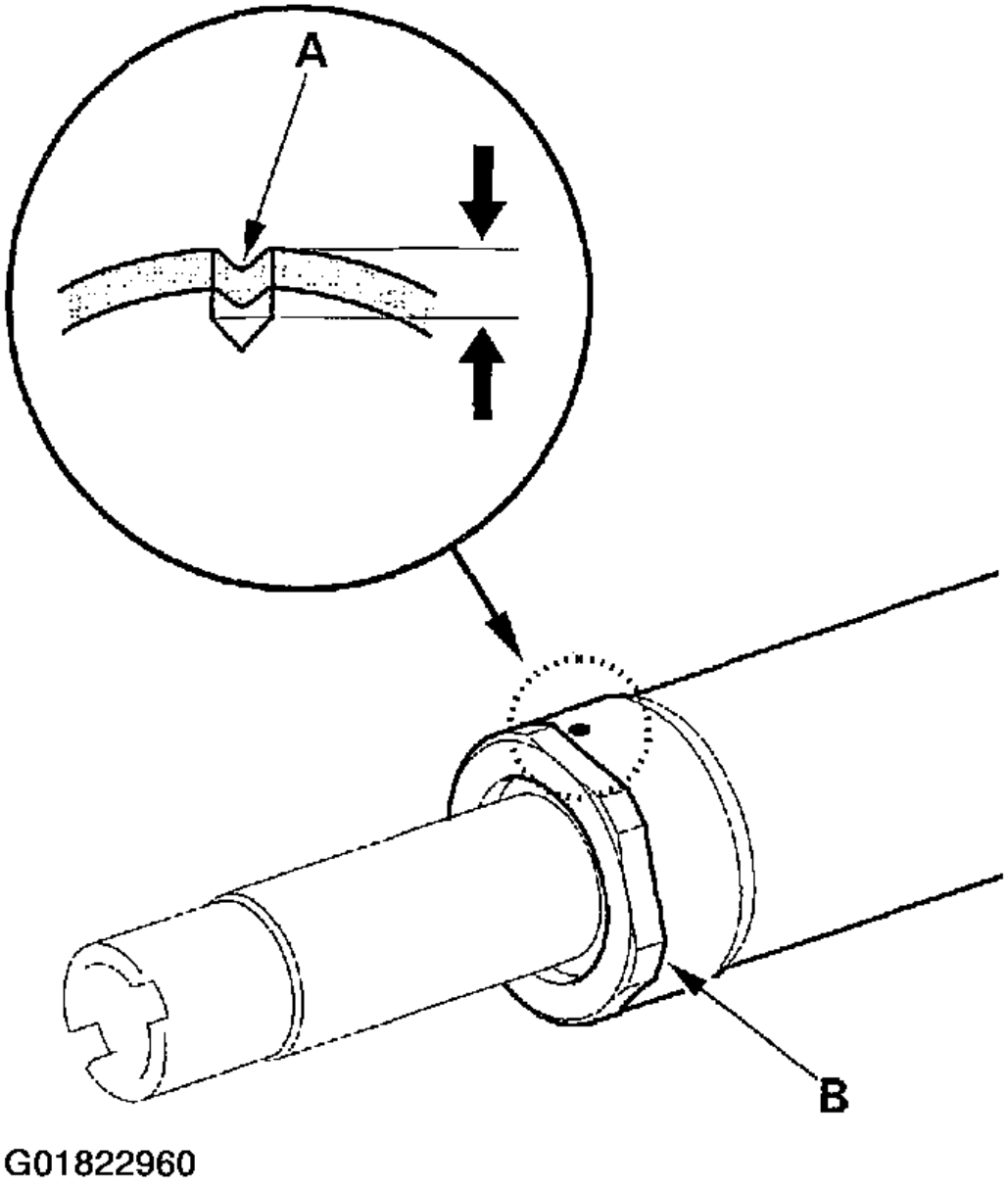


Fig. 78: Drilling A Hole In The Staked Point On The Cylinder

12. Hold the gearbox housing using a C-clamp (commercially available) (A) and the wooden blocks (B) as shown. Do not clamp the cylinder part of the gearbox housing in the vise. Then remove the cylinder end (C).

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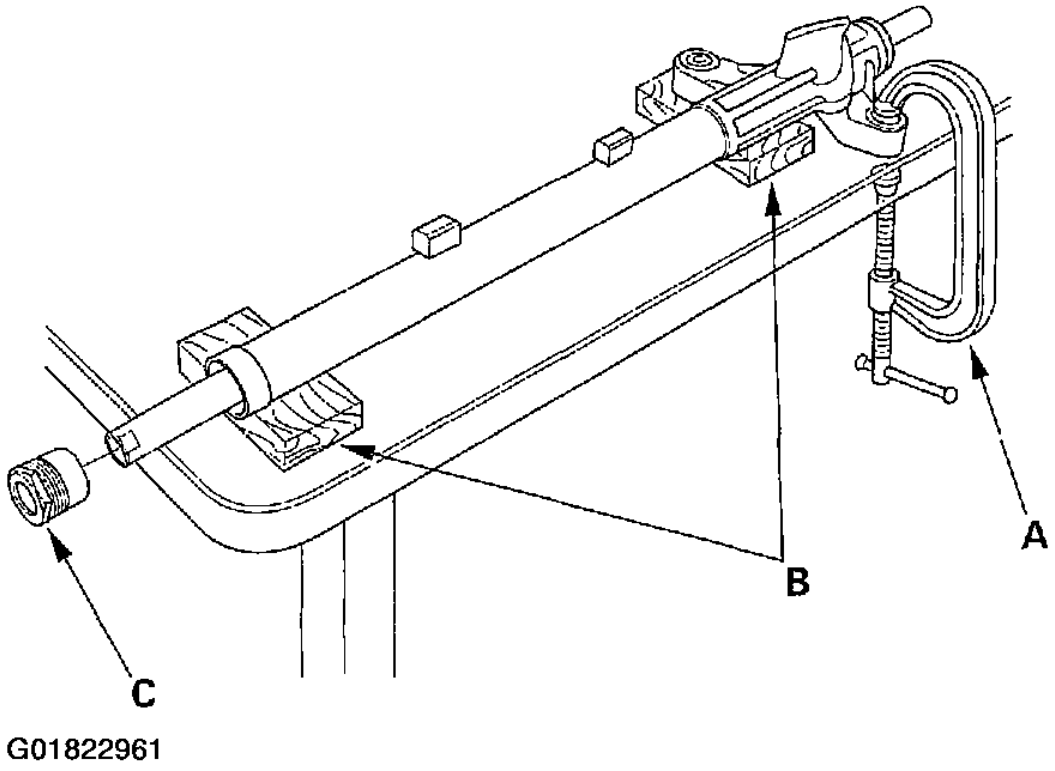


Fig. 79: Holding The Gearbox Housing Using A C-Clamp & The Wooden Blocks

13. Install a commercially available bearing separator (A) in the gearbox housing as shown.

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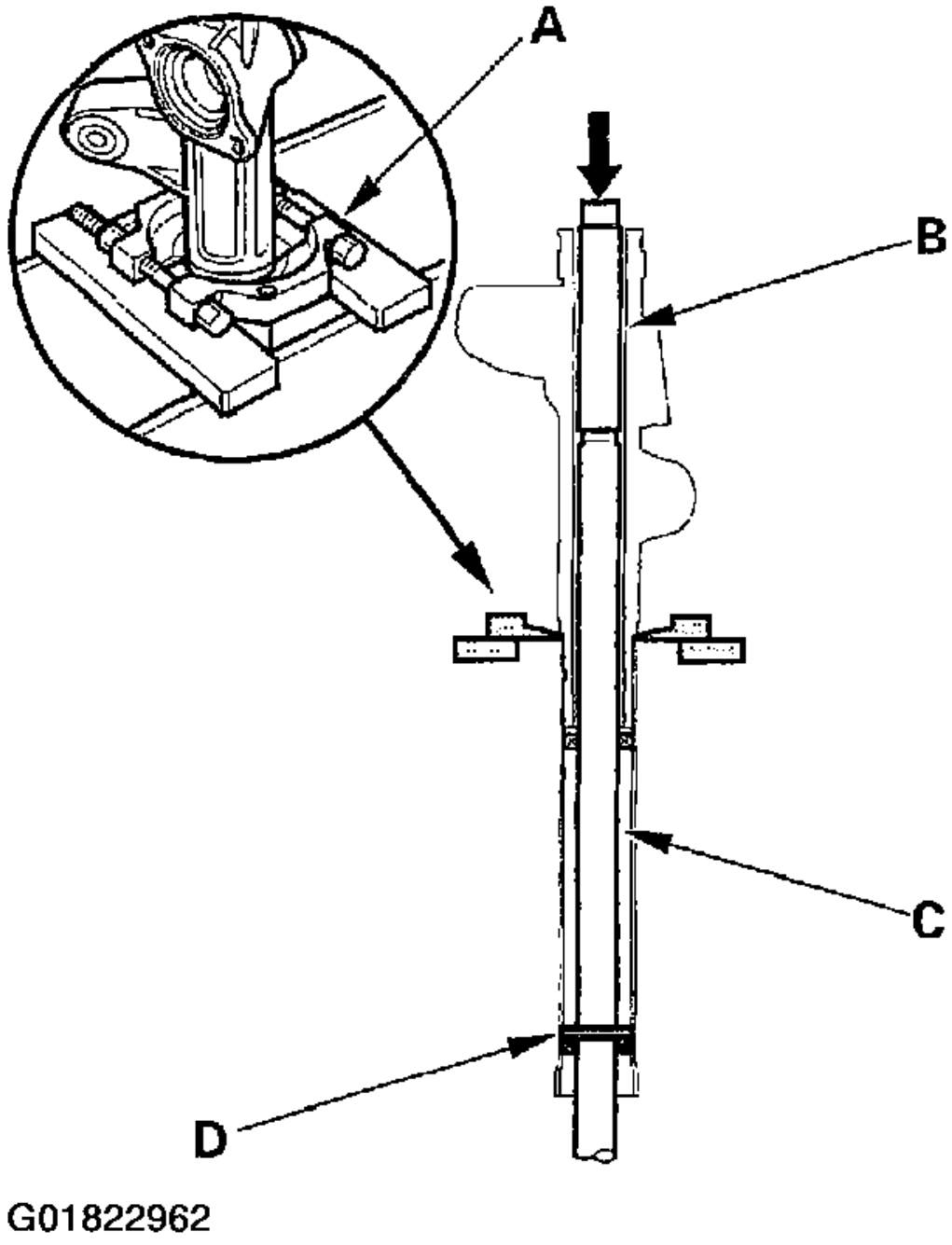


Fig. 80: Installing A Bearing Separator

14. Place an appropriate size deep socket wrench (B) on the steering rack (C).
15. Set the steering gearbox in a press so the gearbox housing side points upward, then press the cylinder end

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seal (D) and steering rack out of the gearbox. Hold the steering rack to keep it from falling when pressed clear. Be careful not to damage the inner surface of the cylinder side on the gearbox housing with the tool.

16. Install the special tool so it will fit through the rack guide hole of the gearbox housing. Insert a 24" long, 3/8" drive extension (A), and install it on the special tool. Make sure the special tool is securely positioned on the backup ring edges. Be careful not to damage the inner surface of the cylinder with the special tool.

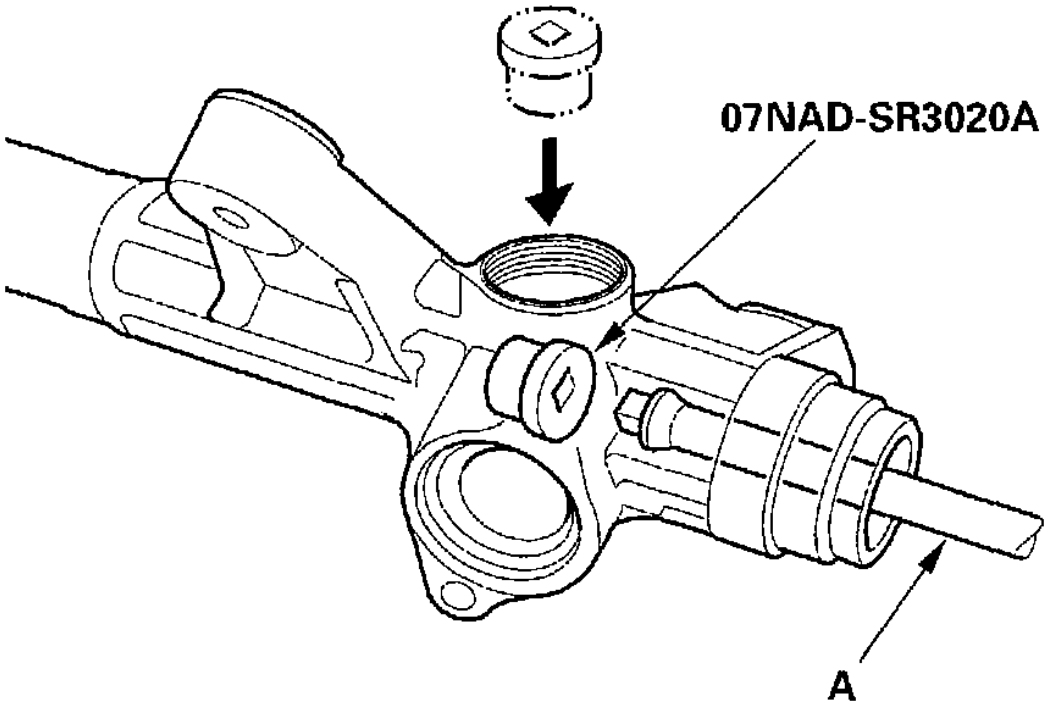


Fig. 81: Installing The Special Tool

17. Place the steering gearbox in a press, then remove the cylinder end seal (A) and backup ring (B) from the gearbox by pressing on the 24" long, 3/8" drive extension. Note these items when pressing the cylinder end seal:
    - Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
    - Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would brake the backup ring, and the cylinder end seal would remain in the gearbox.

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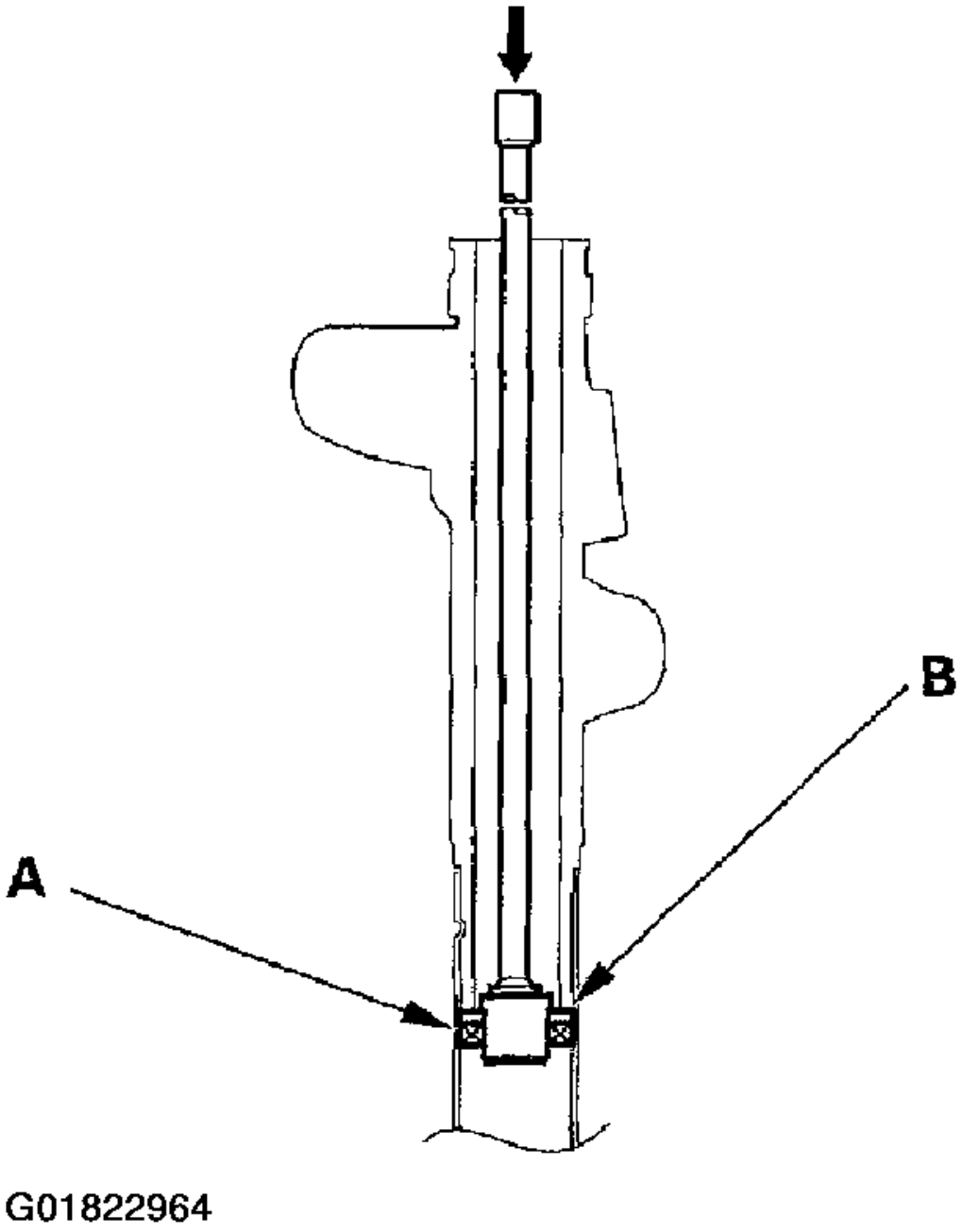


Fig. 82: Pressing The Cylinder End Seal & Backup Ring From The Gearbox

18. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.

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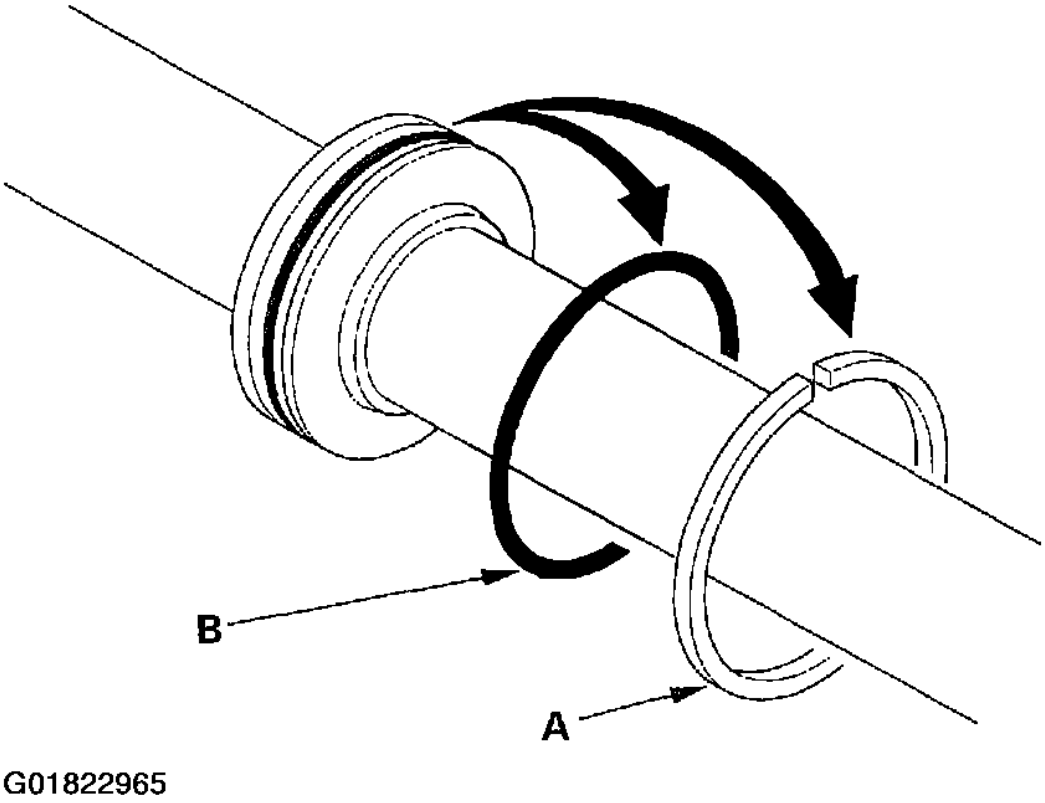


Fig. 83: Prying The Piston Seal Ring & O-Ring Off The Rack Piston

19. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft.

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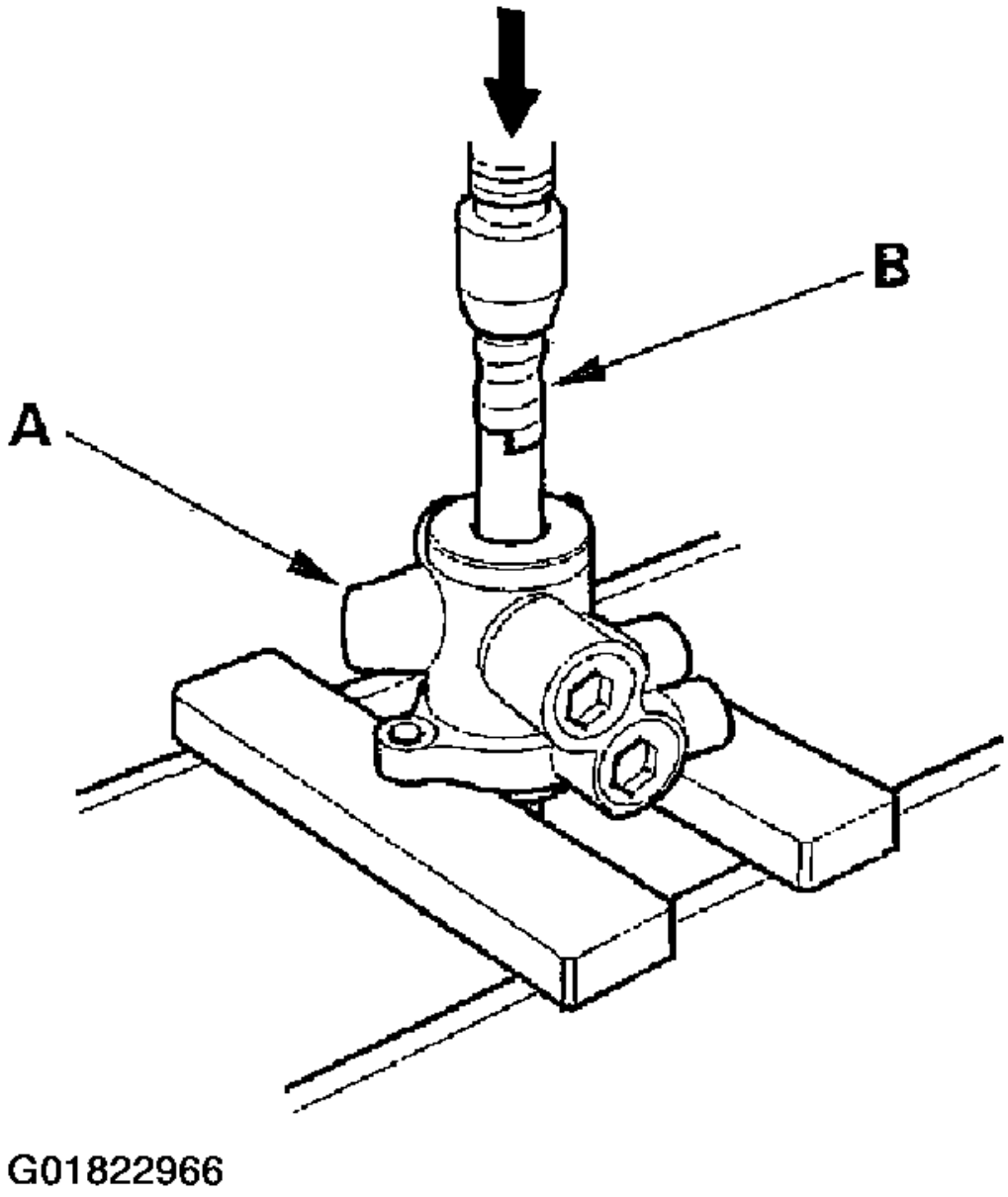


Fig. 84: Pressing Valve Housing From The Pinion Shaft/Valve

20. Separate the valve housing from the pinion shaft/valve using a press.
21. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

NOTE: There may be sliding marks from the seal ring on the wall of the valve

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housing. Replace the valve housing only if the wall is stepped.

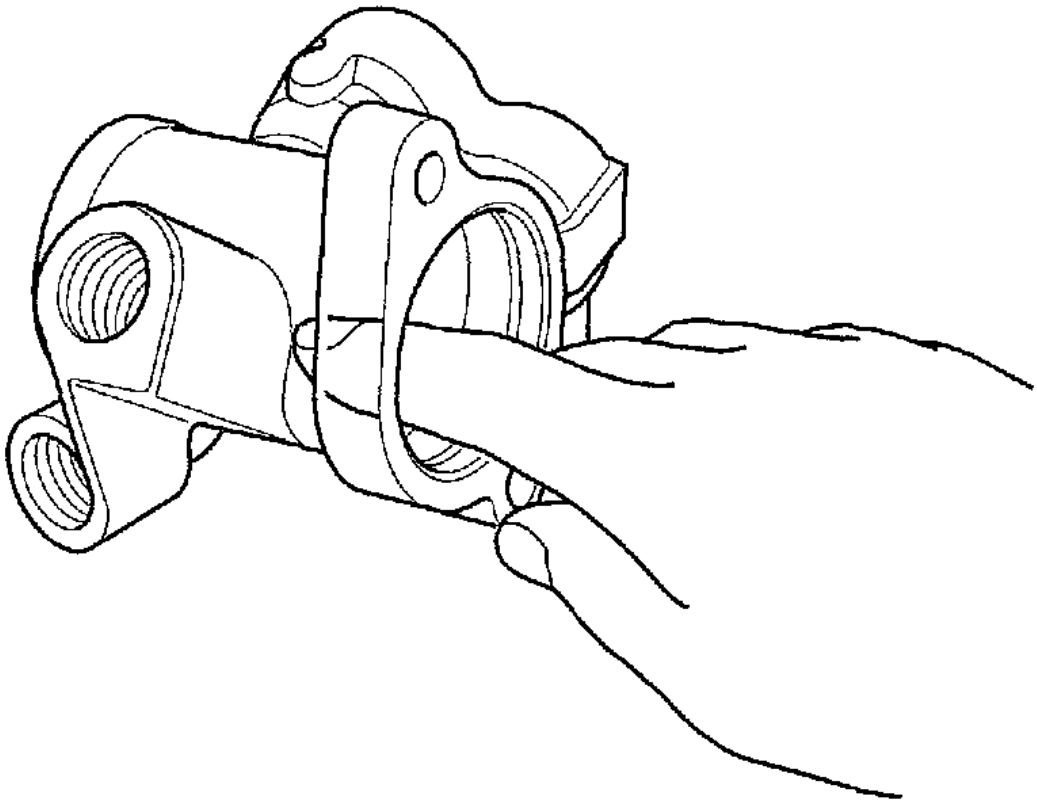


Fig. 85: Checking The Inner Wall Of The Valve Housing

22. Check for wear, burrs, and other damage to the edges of the grooves in the sleeve.

NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.

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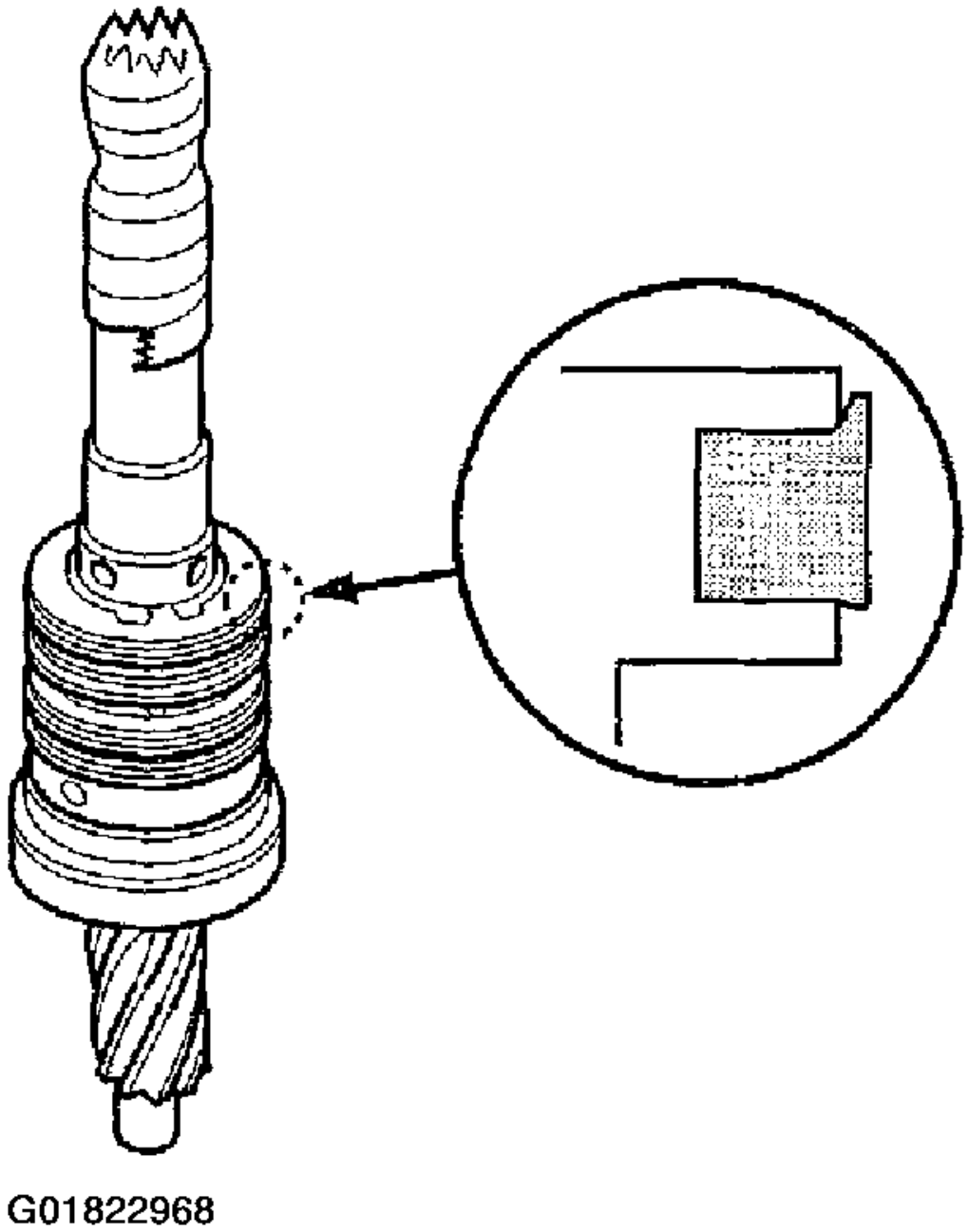


Fig. 86: Checking The Edges Of The Grooves In The Sleeve

23. Remove the snap ring (A) and sleeve (B) from the pinion shaft.

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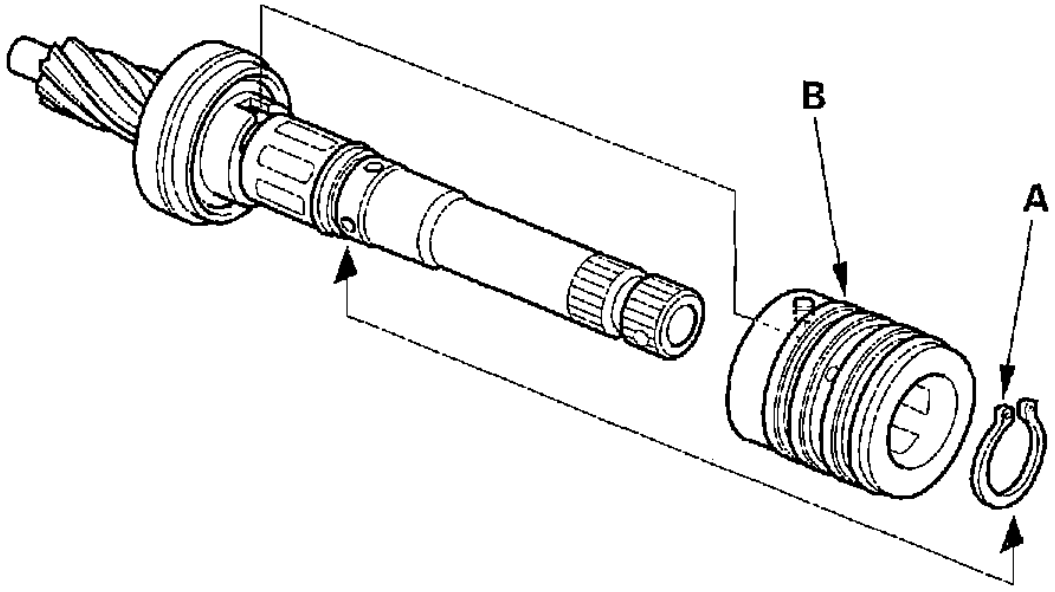


Fig. 87: Removing The Snap Ring & Sleeve From The Pinion Shaft

24. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.

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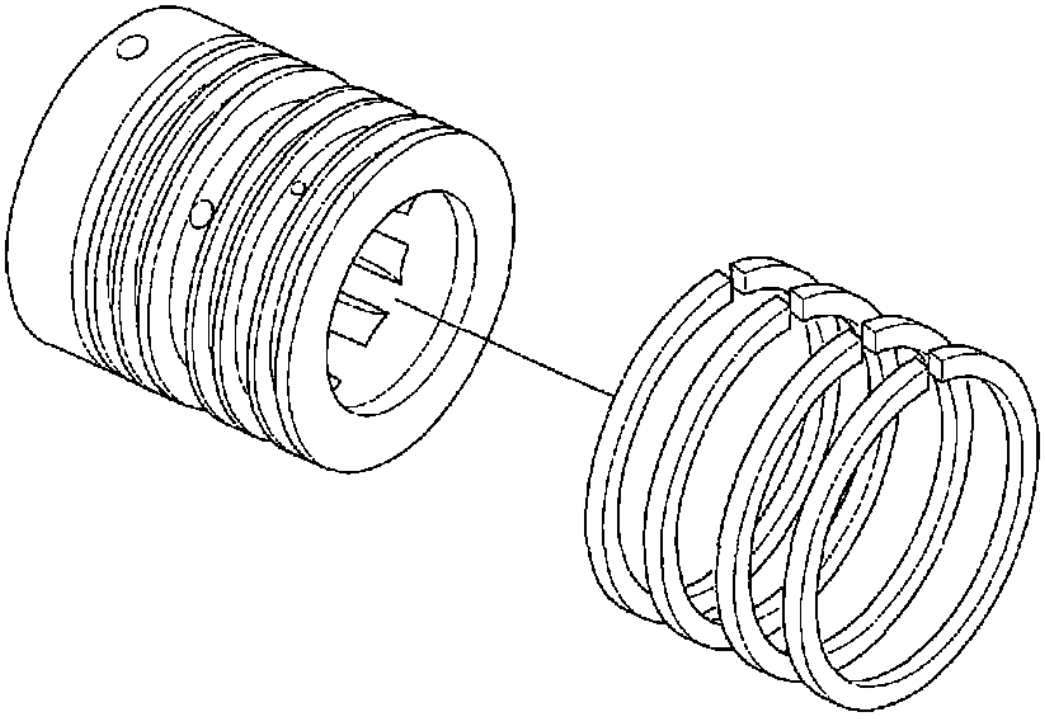


Fig. 88: Removing The Four Seal Rings From The Sleeve

25. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the cutting groove position (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.

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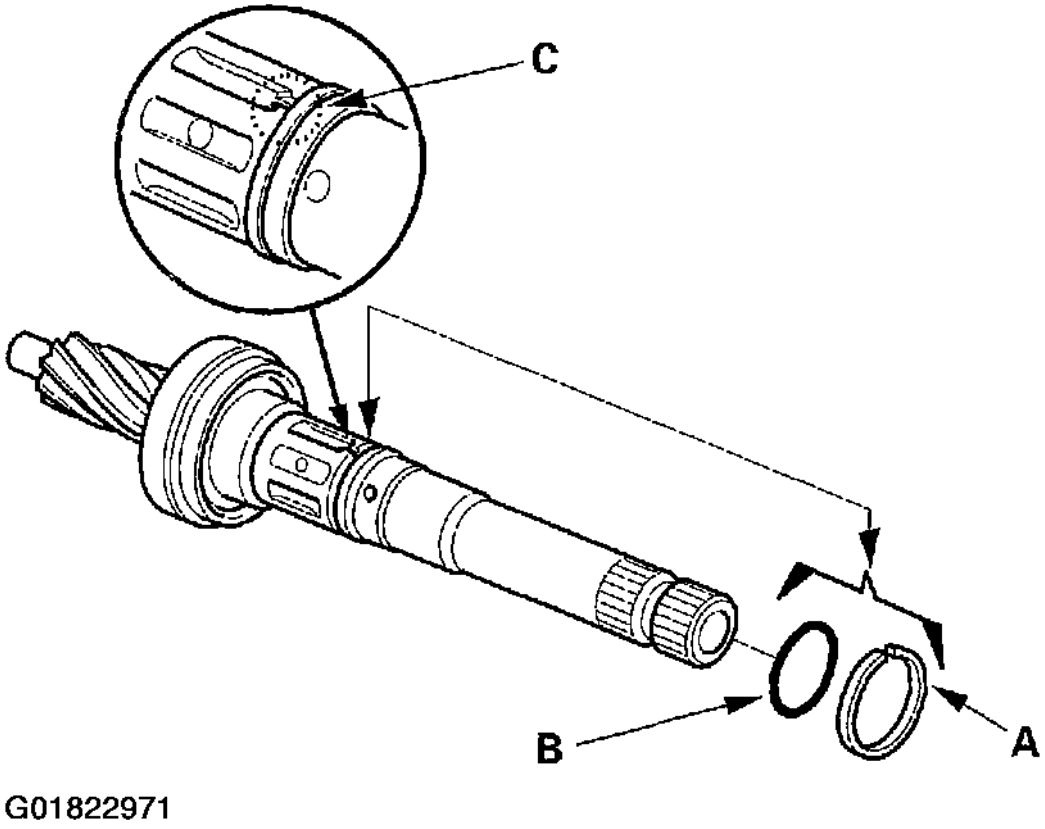


Fig. 89: Removing The Valve Seal Ring & O-Ring

26. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft. Note these items during disassembly:
    - Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play or wear, replace the pinion shaft and sleeve as an assembly.
    - The pinion shaft and sleeve are a precise fit; do not intermix old and NEW pinion shafts and sleeves.

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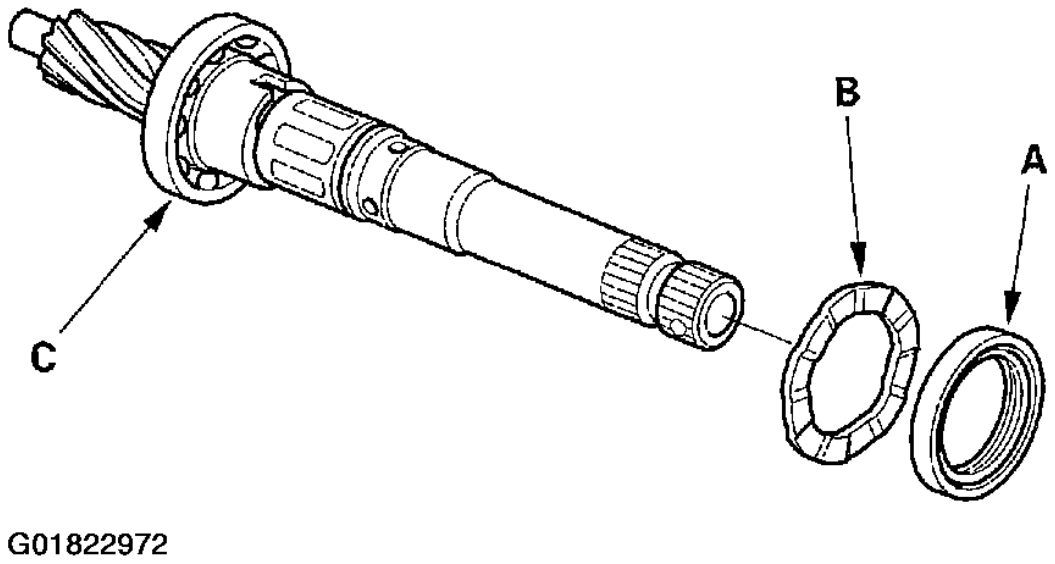


Fig. 90: Removing The Valve Oil Seal And Wave Washer From The Pinion Shaft

27. Press the valve oil seal (A) and roller bearing (B) out of the valve housing using a hydraulic press and special tool.

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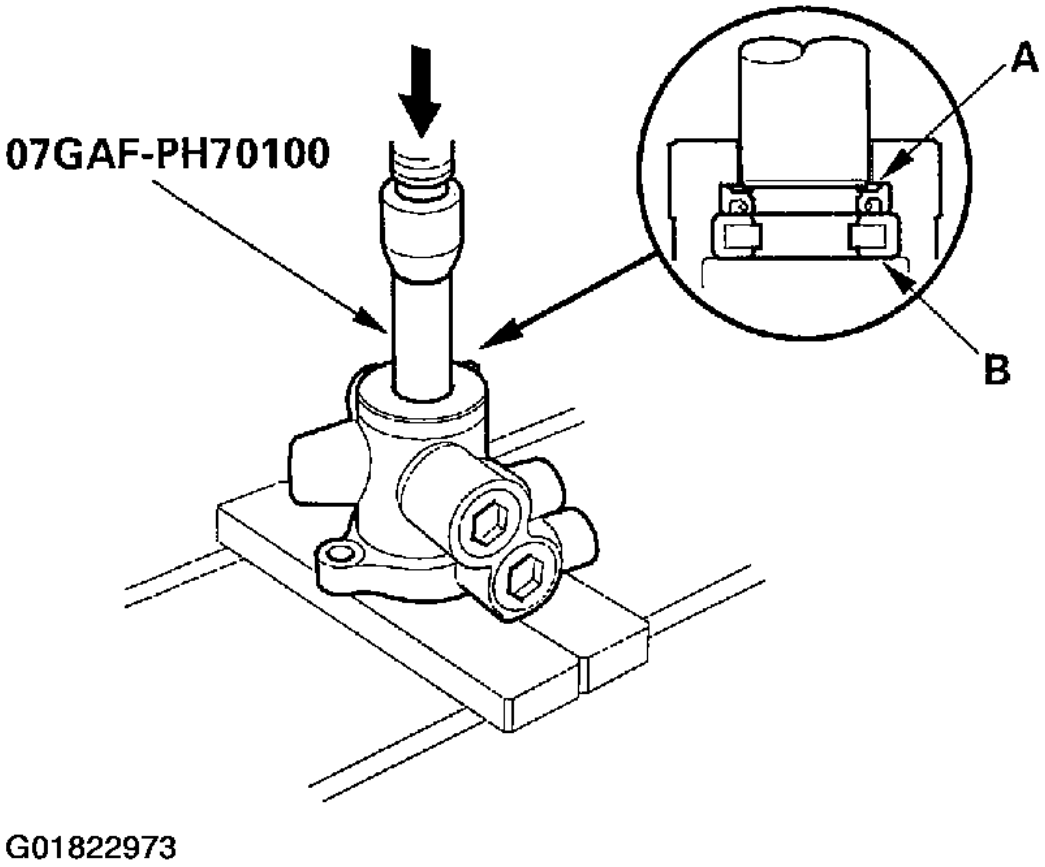


Fig. 91: Pressing The Valve Oil Seal And Roller Bearing Out Of The Valve Housing

28. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in the solvent.

Reassembly

29. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with power steering fluid.

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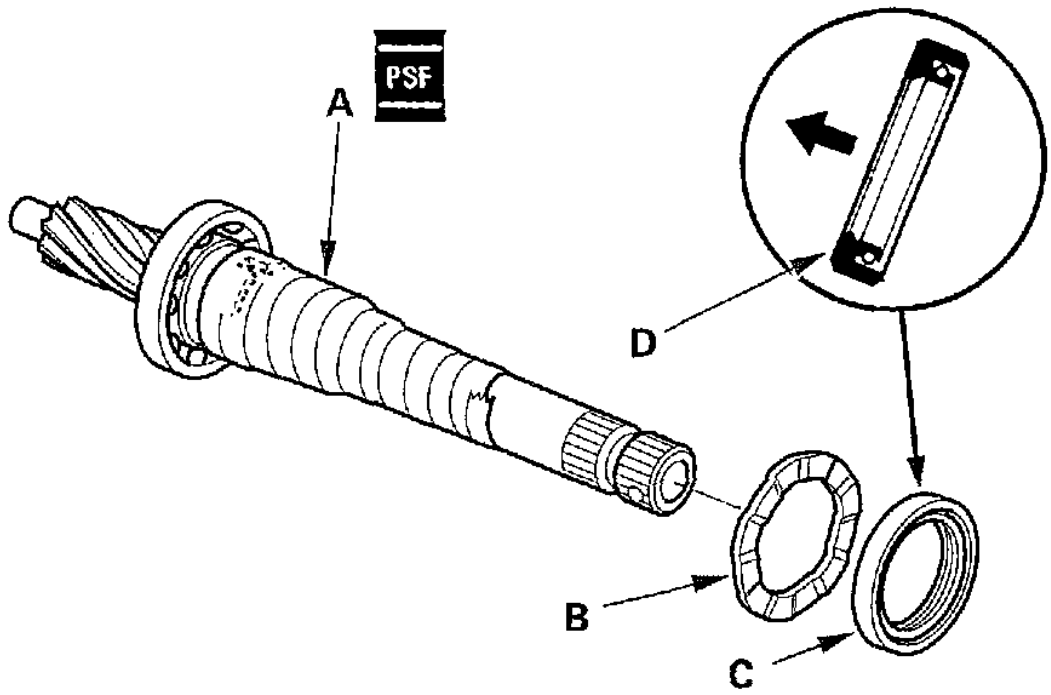


Fig. 92: Applying Vinyl Tape To The Stepped Portion Of The Pinion Shaft

30. Install the wave washer (B).
31. Coat the inside surface of the NEW valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D).
32. Apply vinyl tape (A) to the splines and stepped portion of the shaft, and coat the surface of the vinyl tape with power steering fluid.

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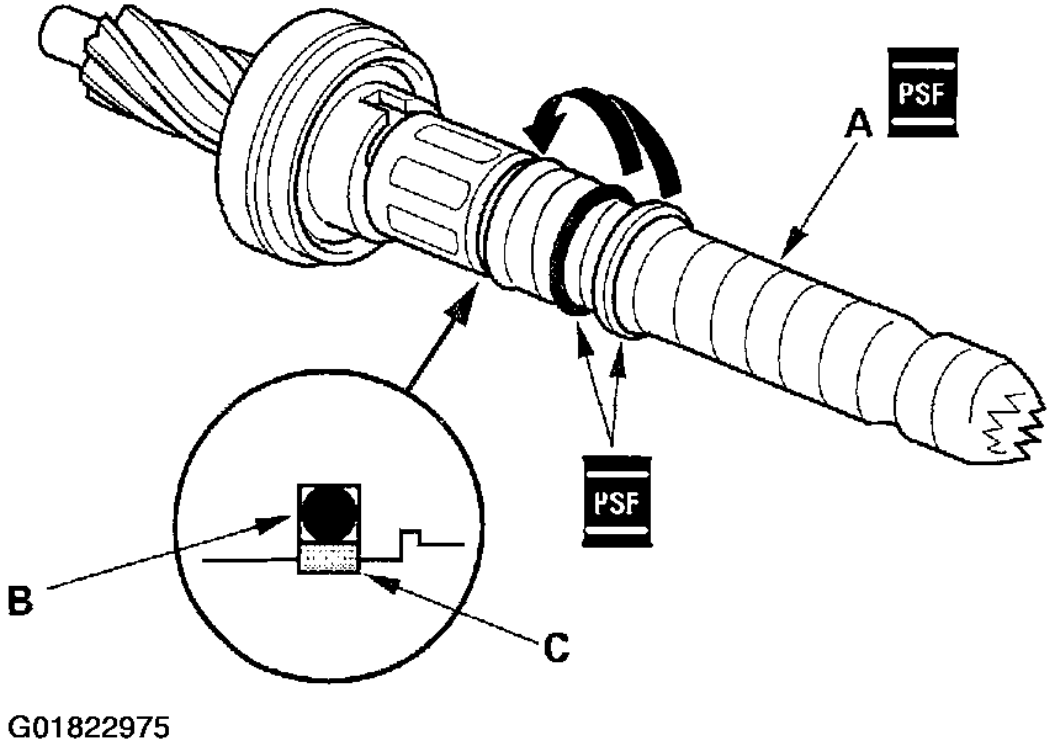


Fig. 93: Fitting The NEW O-Ring & The NEW Valve Seal Ring On The Pinion Shaft

33. Fit the NEW O-ring (B) in the groove of the pinion shaft. Then slide the NEW valve seal ring (C) over the shaft and in the groove on the pinion shaft.
34. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).

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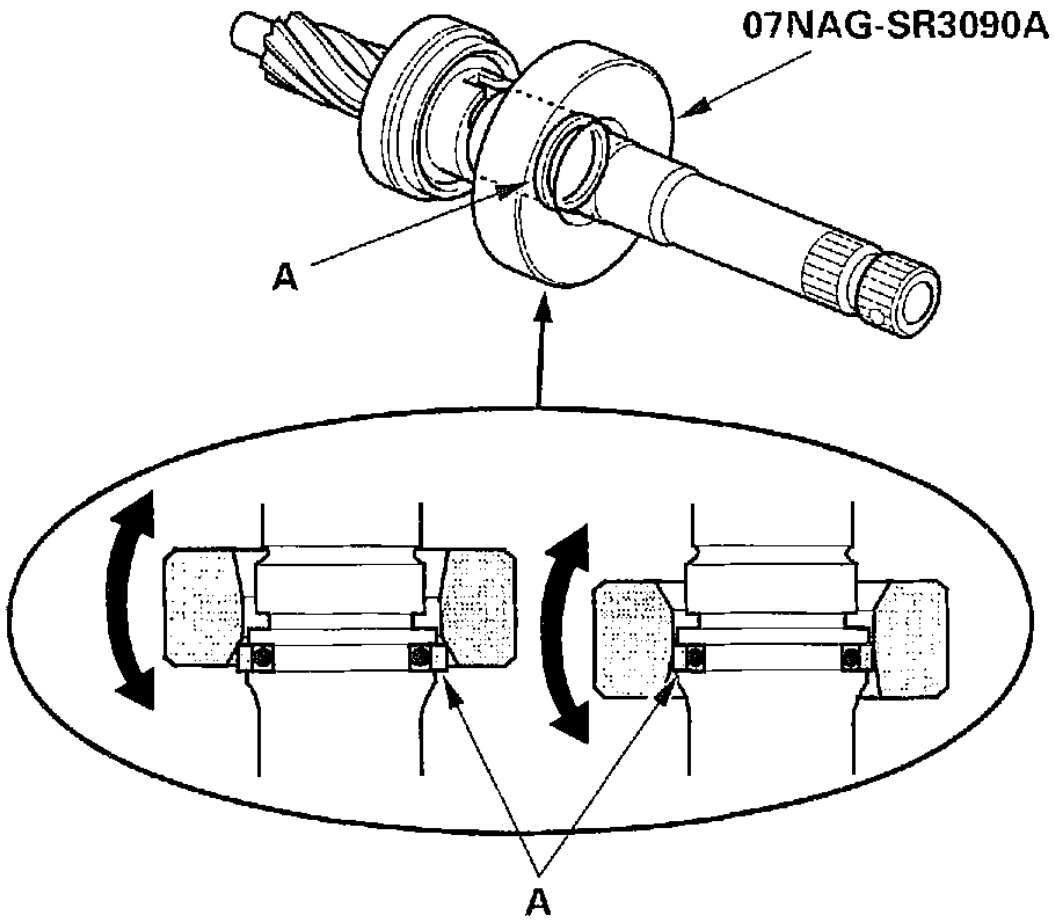


Fig. 94: Fitting Valve Seal Ring In The Pinion Shaft

35. Apply power steering fluid to the inside of the special tool. Set the larger diameter end of the special tool over the valve seal ring, and move the special tool up and down several times to make the valve seal ring fit in the pinion shaft groove.
36. Remove the special tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make the valve seal ring fits snugly in the pinion shaft groove.
37. Apply power steering fluid to the surface of the special tool. Slip two NEW seal rings (A) over the special tool from the smaller diameter end, and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B). Note these items when installing the seal ring:
    - Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal rings using the special tool (sizing tool).
    - There are two types of sleeve seal rings: black and brown. Do not mix the different types of rings as they are not compatible.

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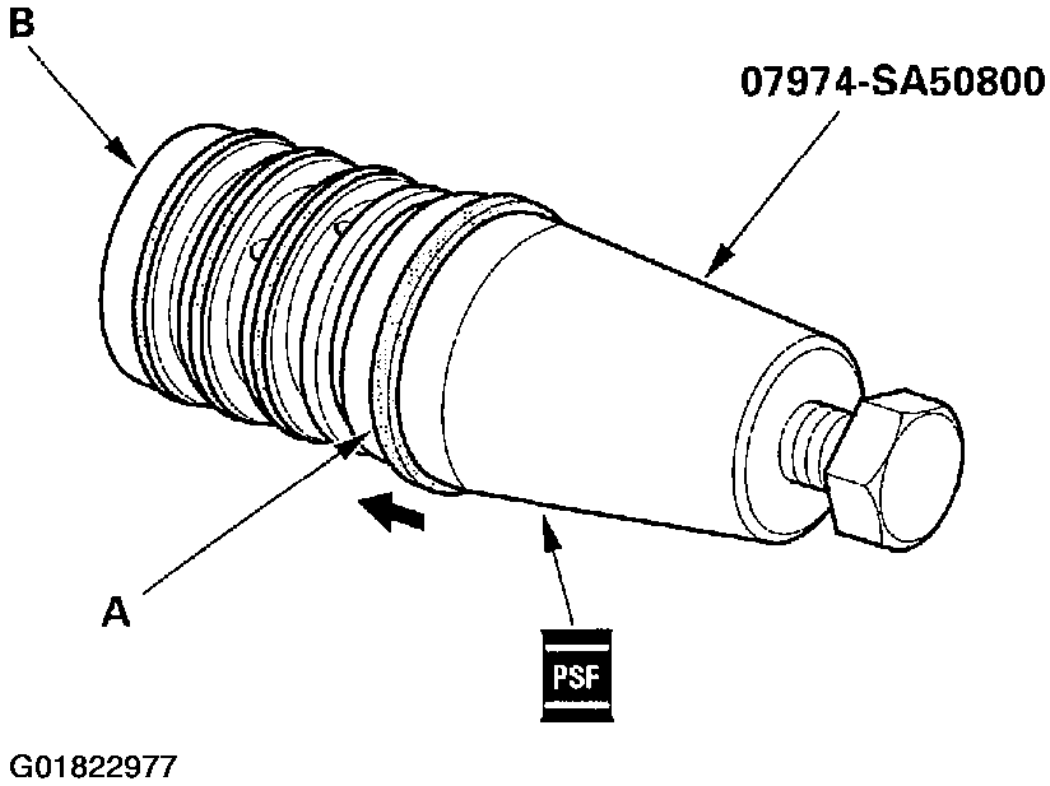


Fig. 95: Slipping NEW Seal Rings Over The Special Tool

38. Align the special tool with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.
39. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the special tool, then slowly insert the sleeve into the special tool.

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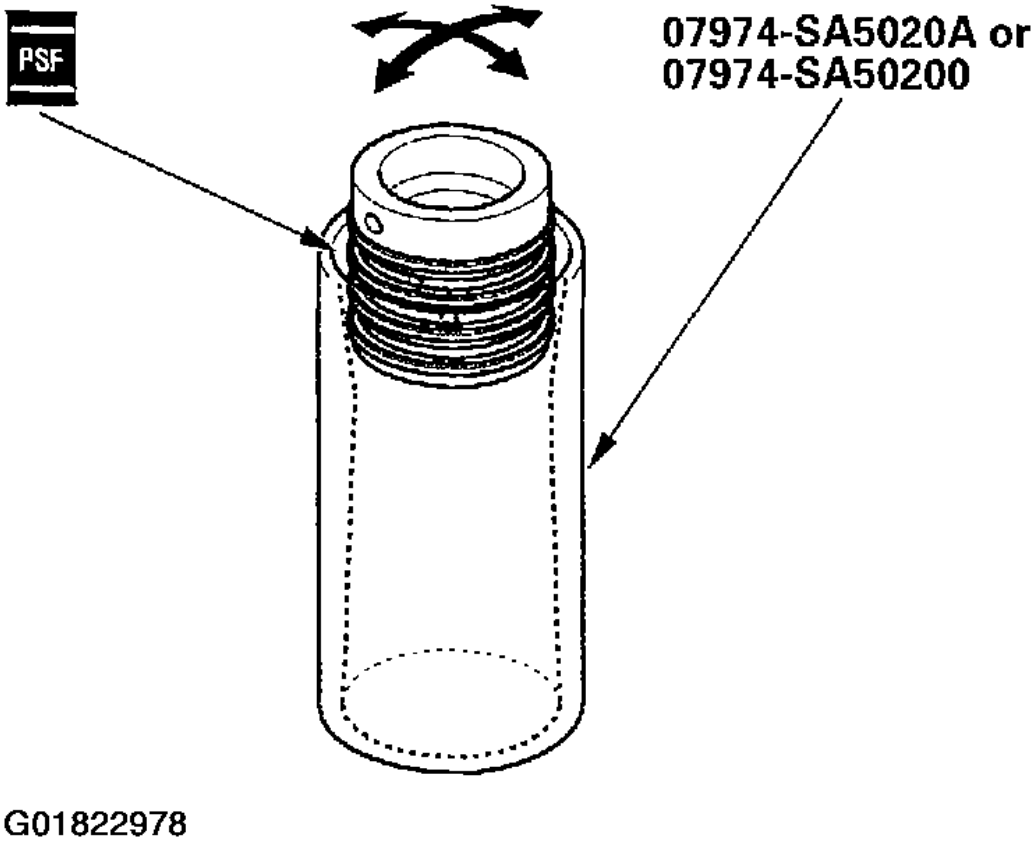


Fig. 96: Seating Seal Rings

40. Move the sleeve back and forth several times to make the seal rings snugly fit in the sleeve. Make sure the seal rings are not twisted.
41. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the NEW snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.

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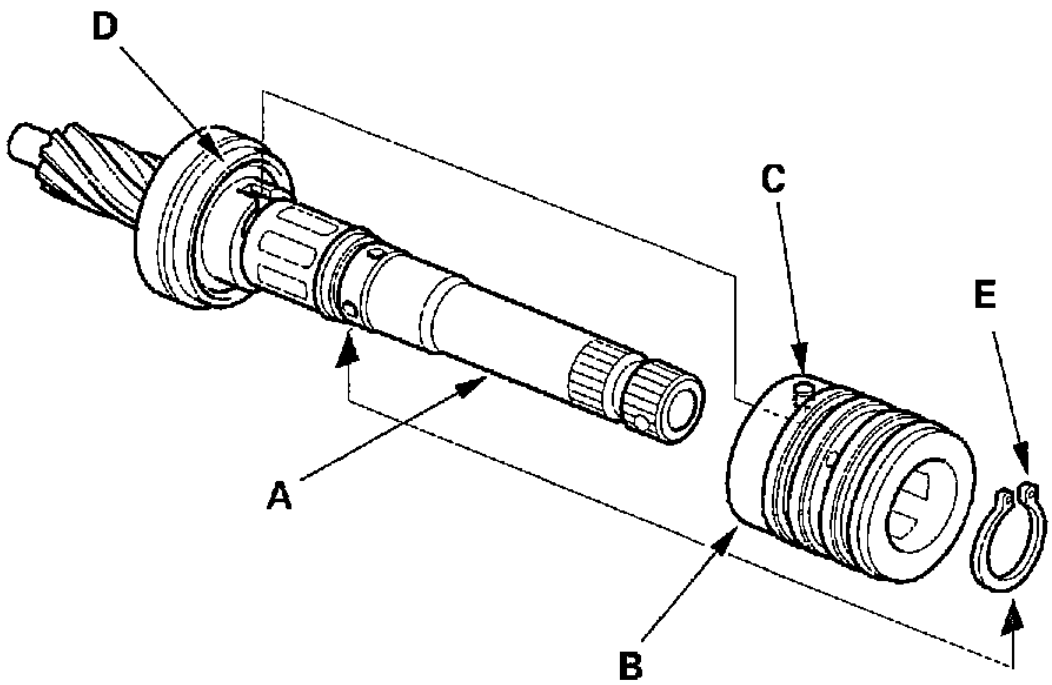


Fig. 97: Sliding The Sleeve Onto The Pinion Shaft

42. Apply power steering fluid to the seal ring lip of the NEW valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press and special tools. Install the seal with its grooved side facing the tool.

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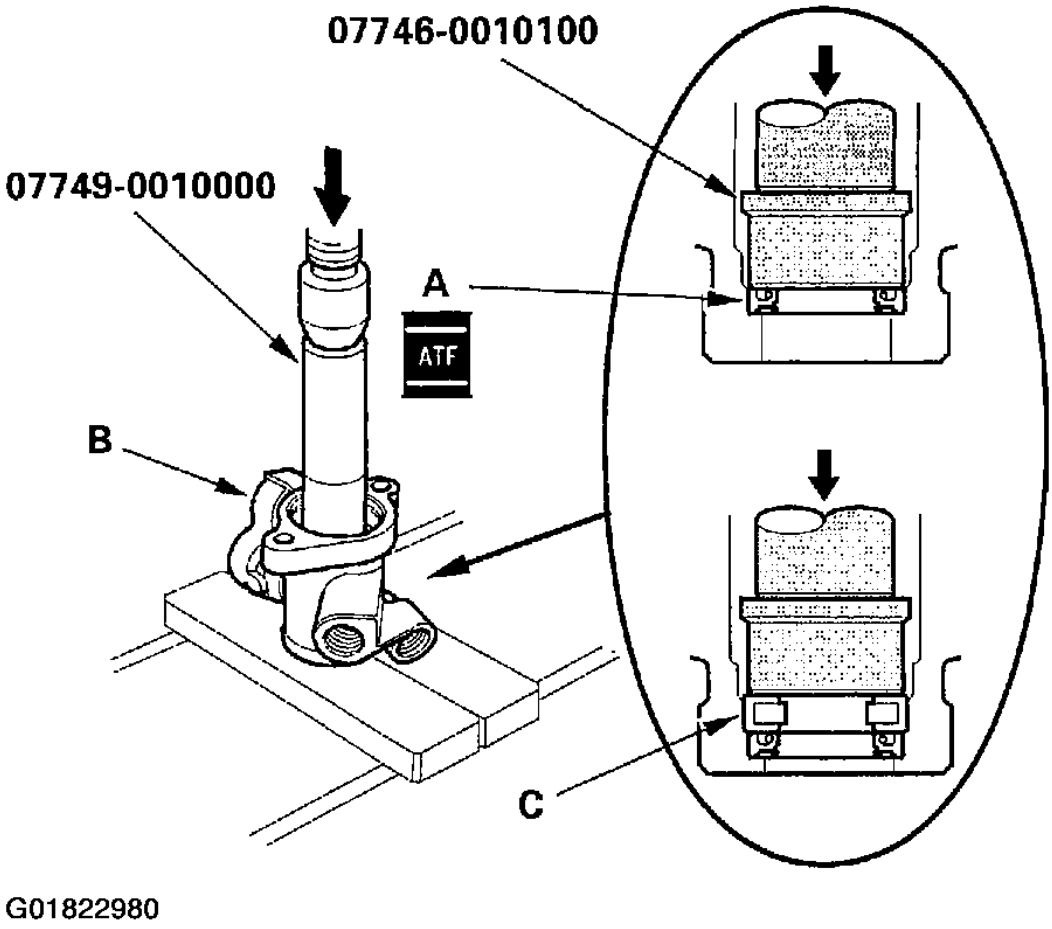


Fig. 98: Installing The Seal In The Valve Housing

43. Press the roller bearing (C) into the valve housing with a hydraulic press and special tool.
44. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.

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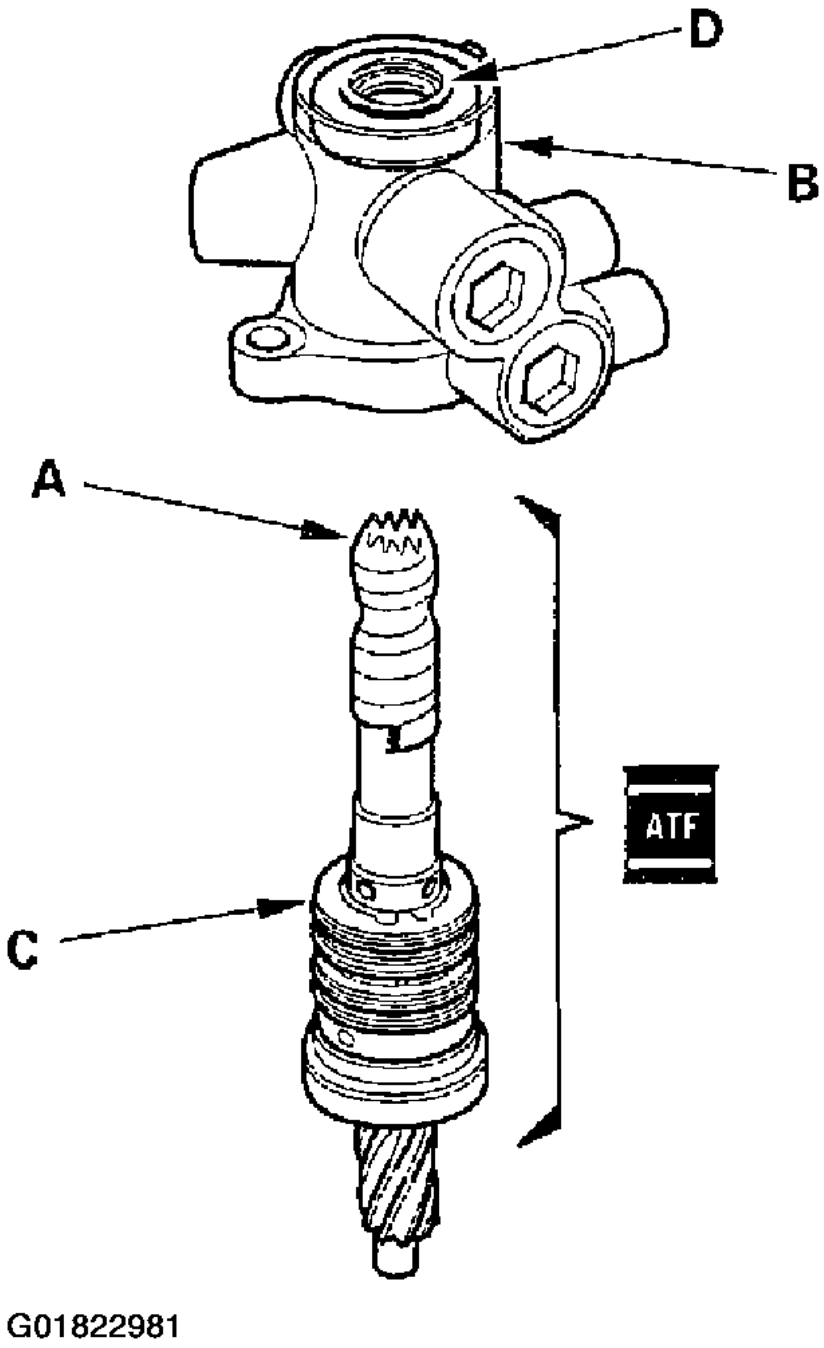


Fig. 99: Inserting The Pinion Shaft Into The Valve Housing

45. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C) and valve oil seal sealing lip (D).

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46. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.
47. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.

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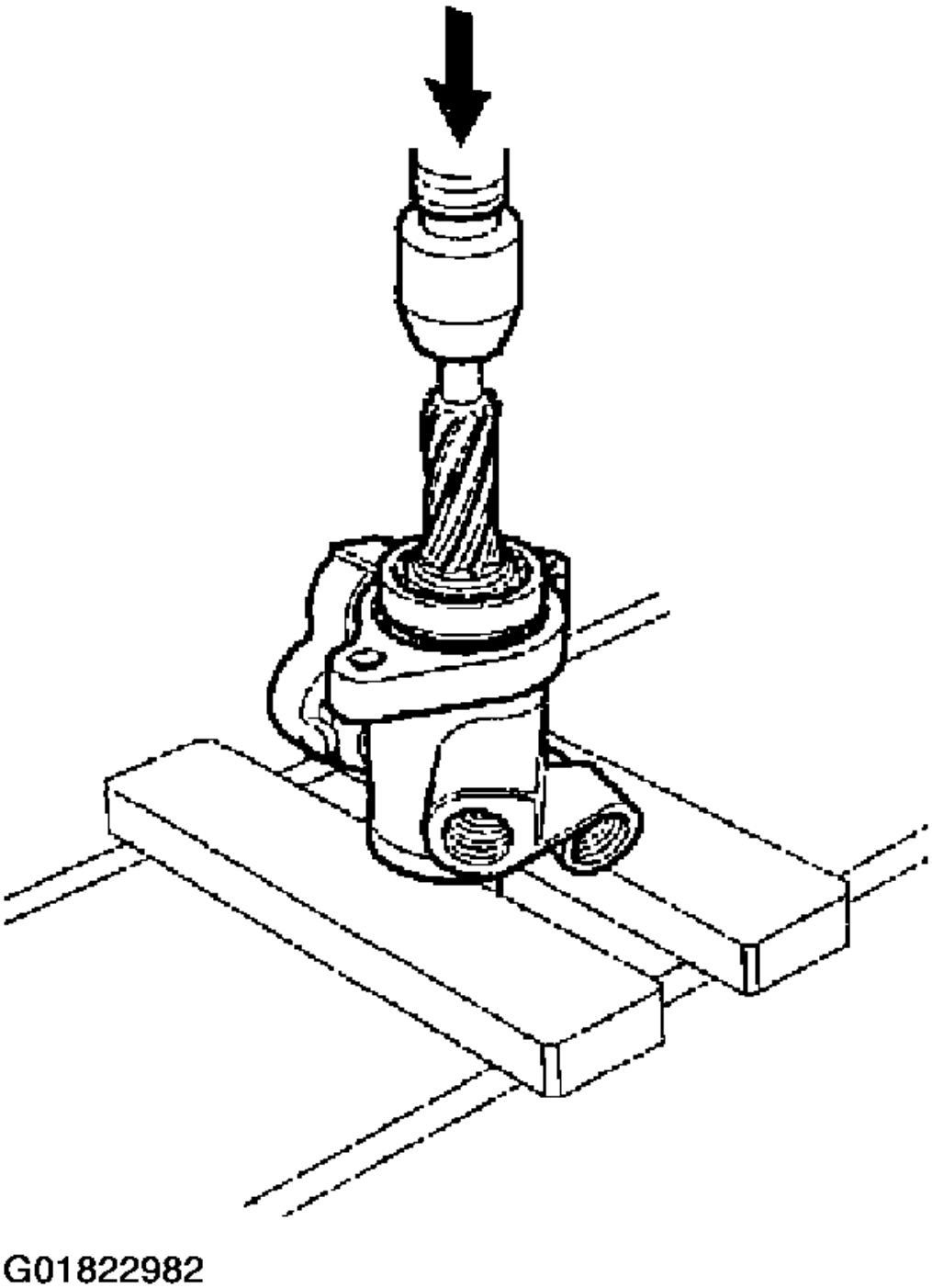


Fig. 100: Pressing The Pinion Shaft/Sleeve Into The Valve Housing

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48. Coat the special tool with power steering fluid, then slide it onto the rack, big end first.
49. Position the NEW O-ring (A) and NEW piston seal ring (B) on the special tool, then slide them down toward the big end of the tool. Note these items during reassembly:
    - Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal ring using the special tool (sizing tool).
    - Replace piston's O-ring and seal ring as a set.

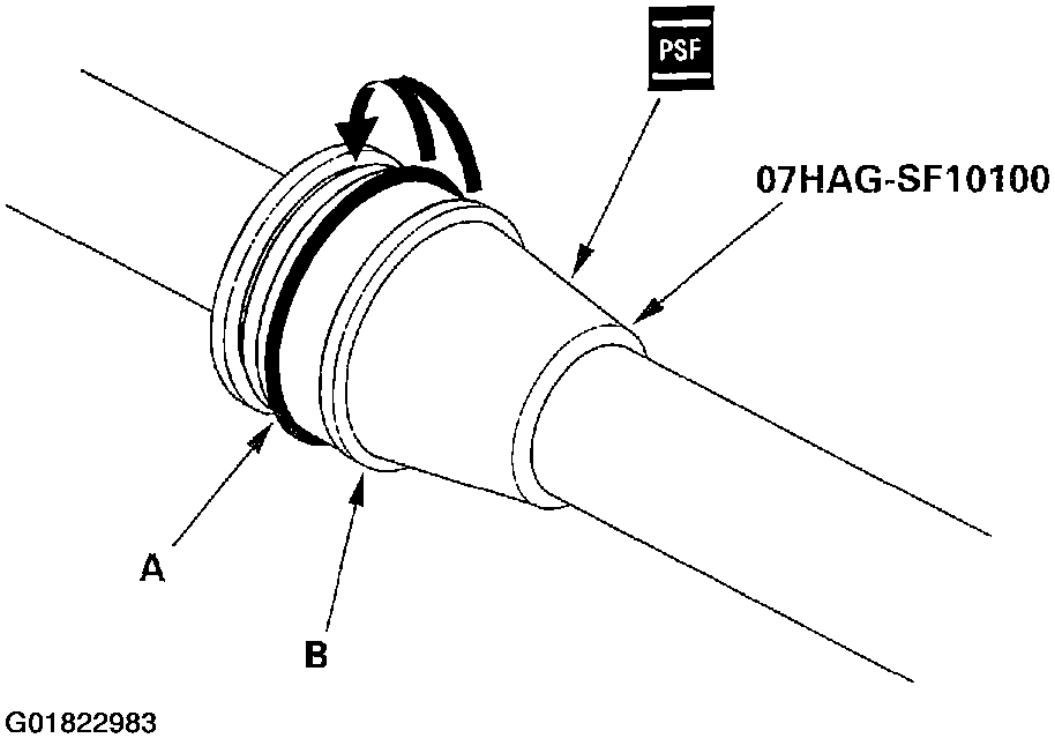


Fig. 101: Positioning The NEW O-Ring & NEW Piston Seal Ring On The Special Tool

50. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.
51. Coat the piston seal ring (A) and the inside of the special tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.
52. Move the special tool back and forth several times to make the piston seal ring fits snugly in the piston.

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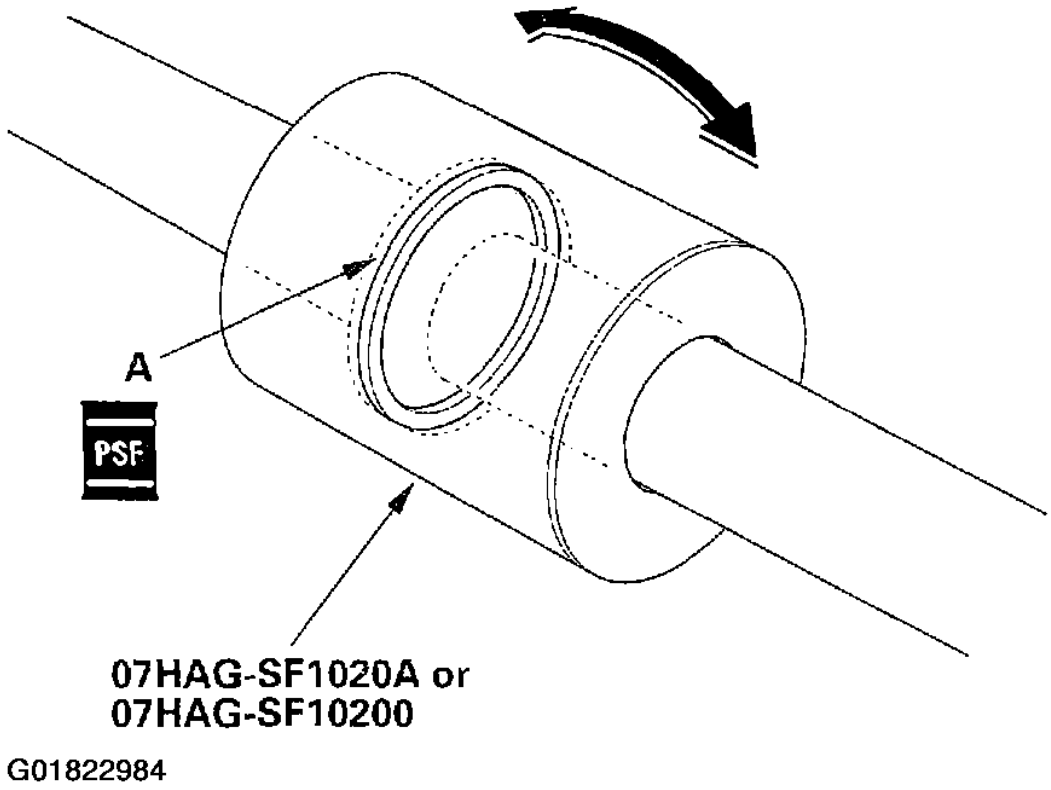


Fig. 102: Seating Piston Seal

53. Coat the sliding surface of the special tool (A) and NEW cylinder end seal (B) with power steering fluid. Place the seal on the special tool with its grooved side (C) facing opposite the special tool.

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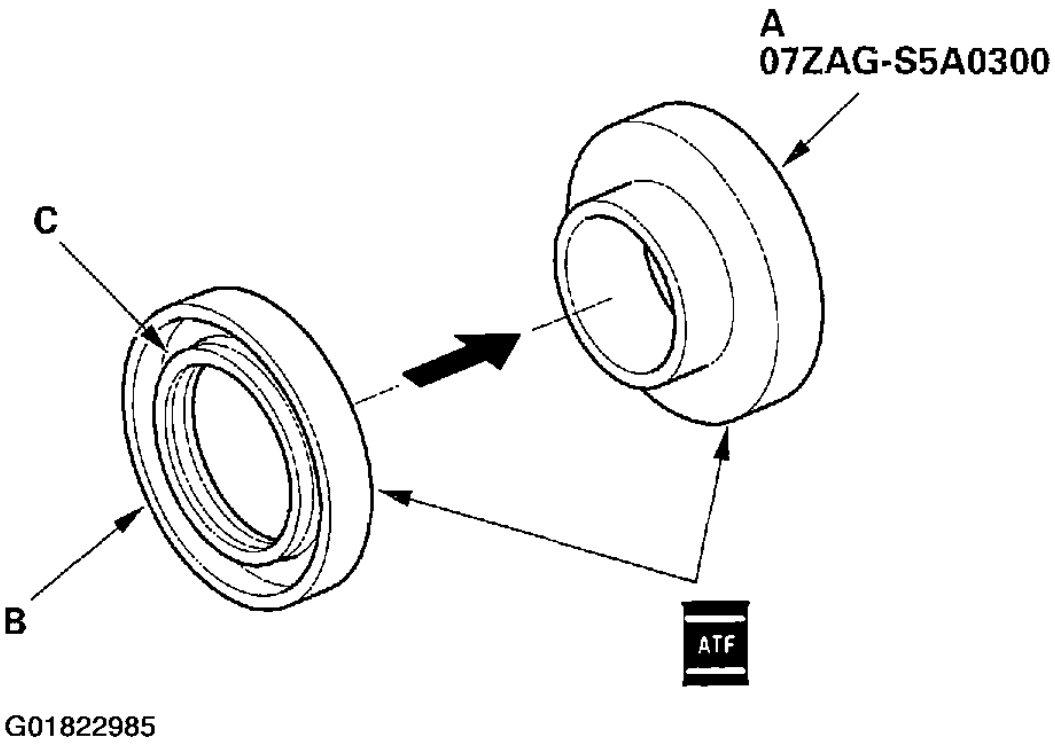


Fig. 103: Placing The Seal On The Special Tool

54. Coat the surface of the steering rack (A) with power steering fluid.

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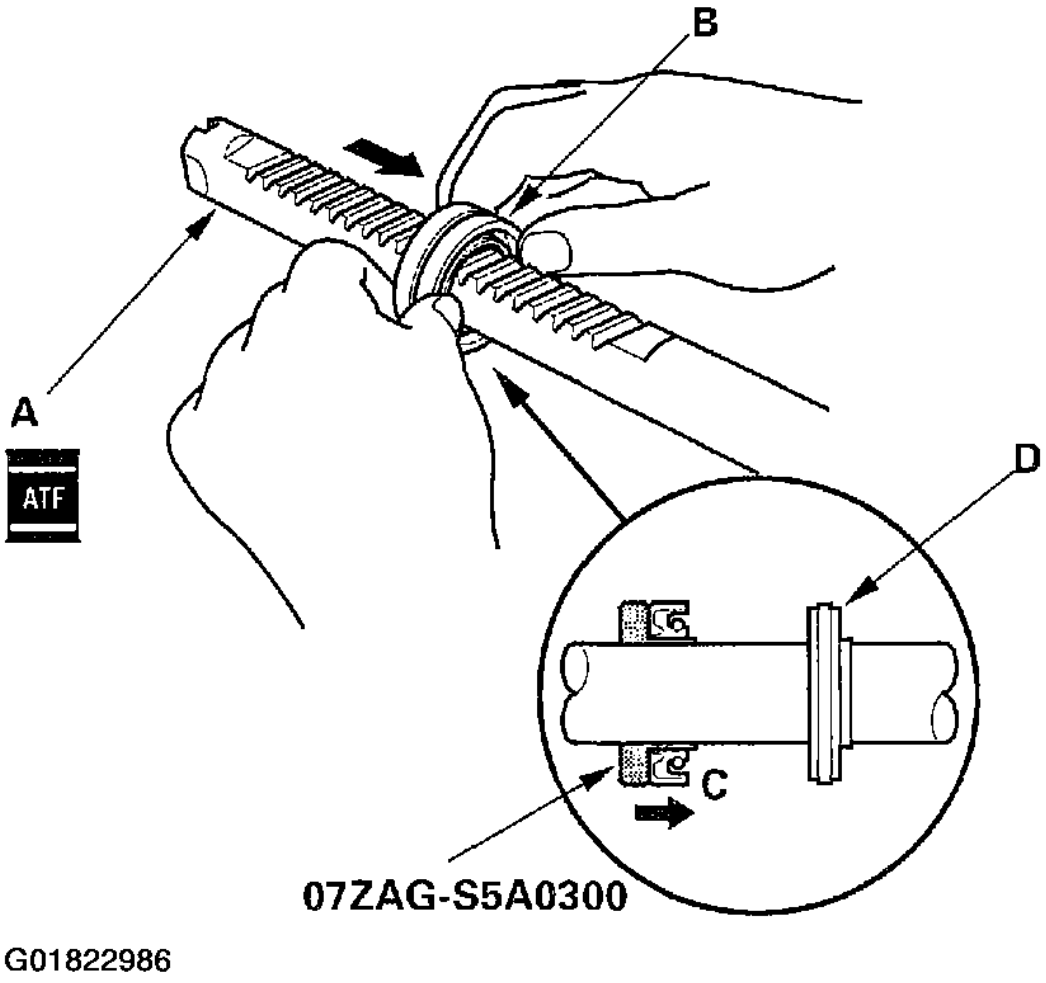


Fig. 104: Installing The Cylinder End Seal Onto The Steering Rack

55. Install the cylinder end seal (B) onto the steering rack with its grooved side (C) toward the piston (D).
56. Separate the cylinder end seal from the special tool, then remove the special tool.
57. Install the NEW backup ring (A) on the steering rack, then place the backup ring and cylinder end seal (B) against the piston (C).

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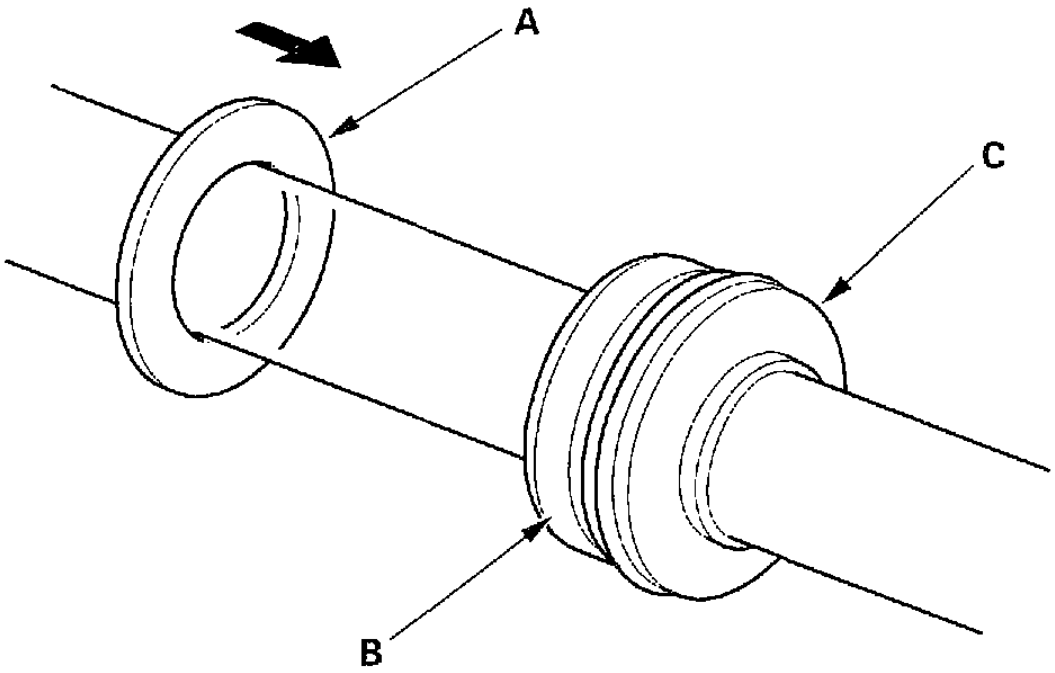


Fig. 105: Installing The NEW Backup Ring On The Steering Rack

58. Apply multipurpose grease to the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.

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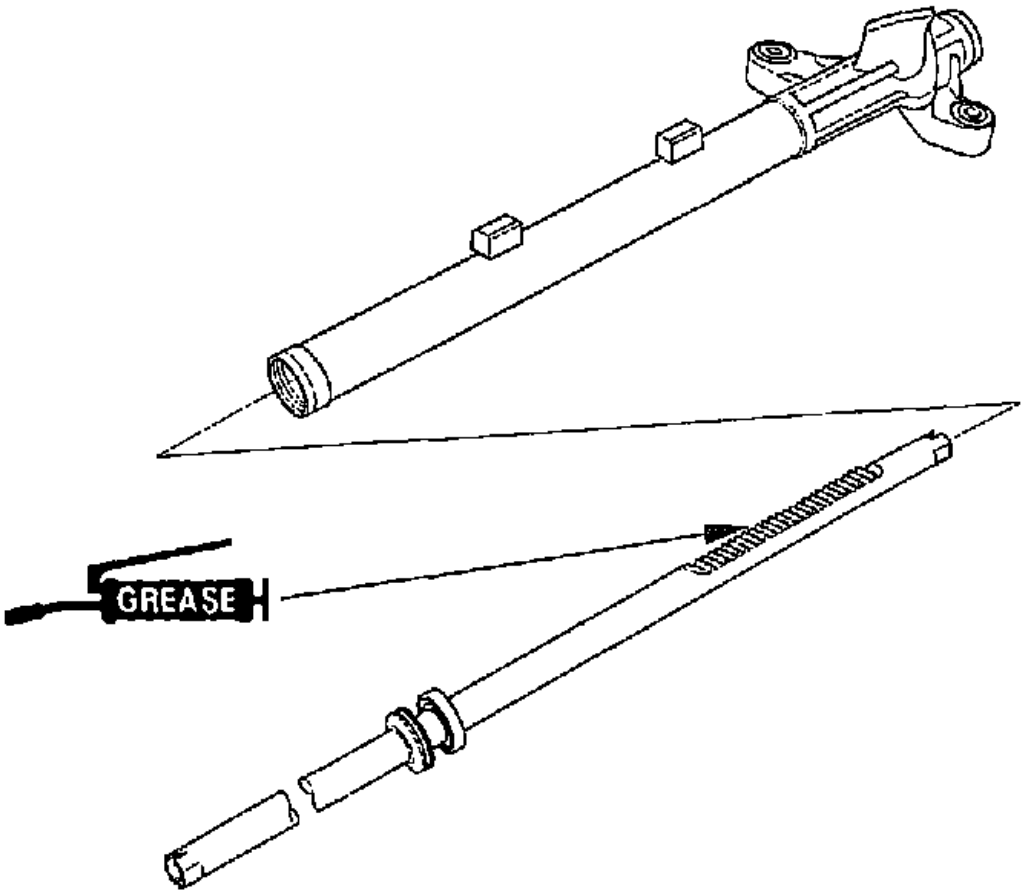


Fig. 106: Inserting The Steering Rack Into The Gearbox Housing

59. Insert an appropriate size deep socket wrench (A) onto the steering rack as shown.

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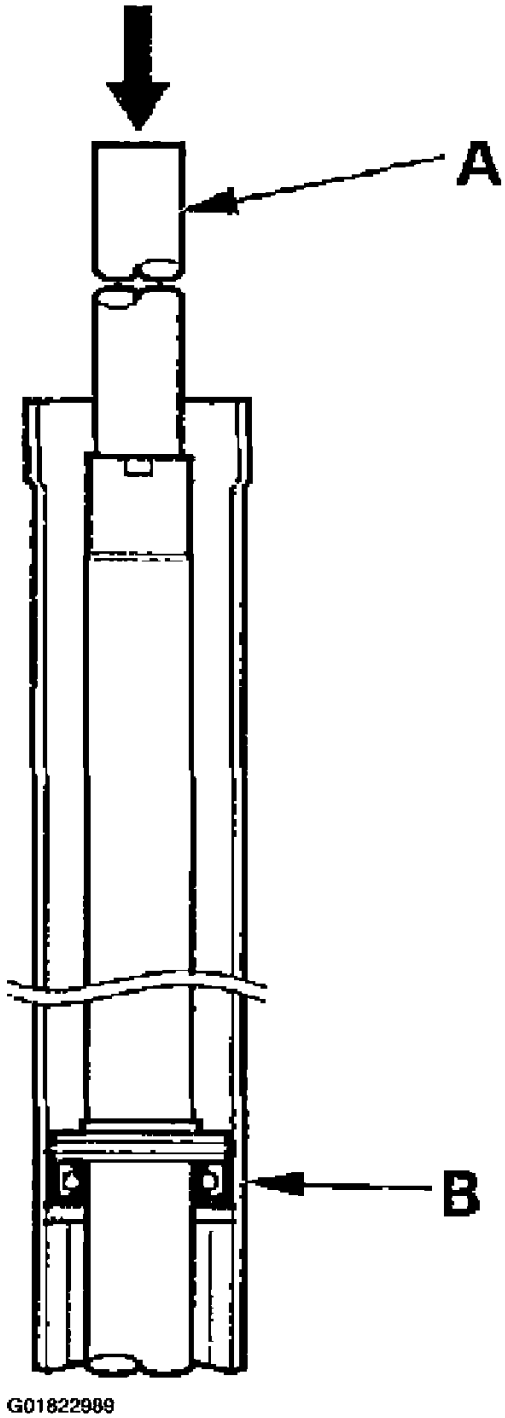


Fig. 107: Inserting An Appropriate Size Deep Socket Wrench Onto The Steering Rack

60. Install the cylinder end seal (B) into the bottom of the cylinder by pressing on the tool with a press. Do not push on the tool with excessive force as it may damage the cylinder end seal.
61. Remove the tool, and center the steering rack.

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62. Coat the sliding surface of the special tool (A) and NEW cylinder end seal (B) with power steering fluid. Place the seal on the special tool with its grooved side (C) facing opposite the special tool.

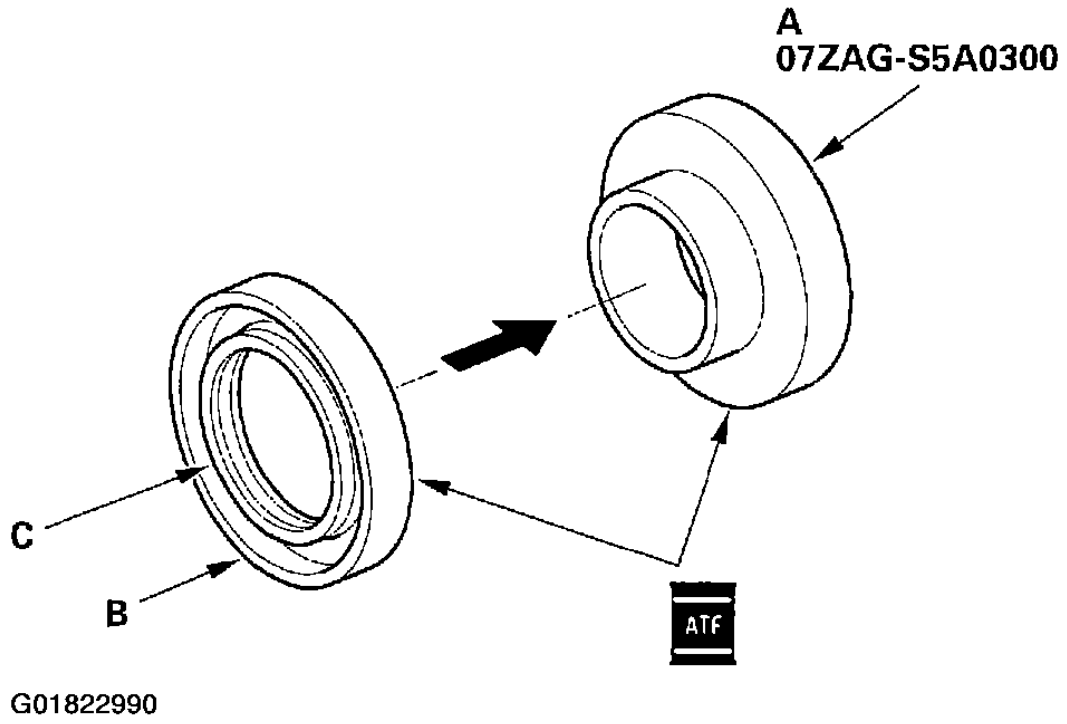


Fig. 108: Placing The Seal On The Special Tool

63. Coat the inside surface of the special tool and steering rack with power steering fluid, then install the cylinder end seal (A) onto the steering rack with its grooved side toward the cylinder.

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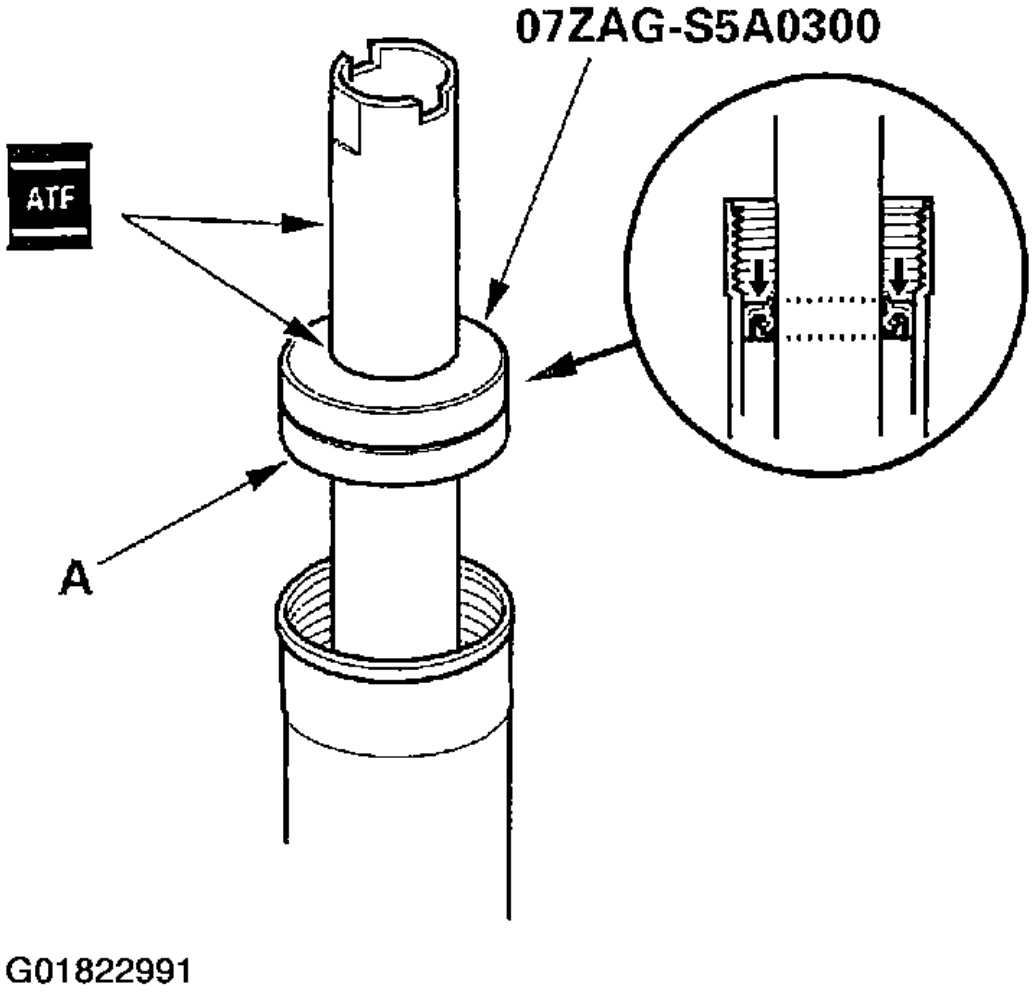


Fig. 109: Installing The Cylinder End Seal Onto The Steering Rack

64. Separate the cylinder end seal from the special tool, then remove the special tool.
65. Push in the cylinder end seal with your finger. Be careful not to damage the face of the seal with the threads and burrs at the staked position of the cylinder housing.
66. Hold the gearbox housing using a C-clamp (commercially available) (A) and wooden blocks (B). Do not clamp the cylinder part of the gearbox housing in the vise.

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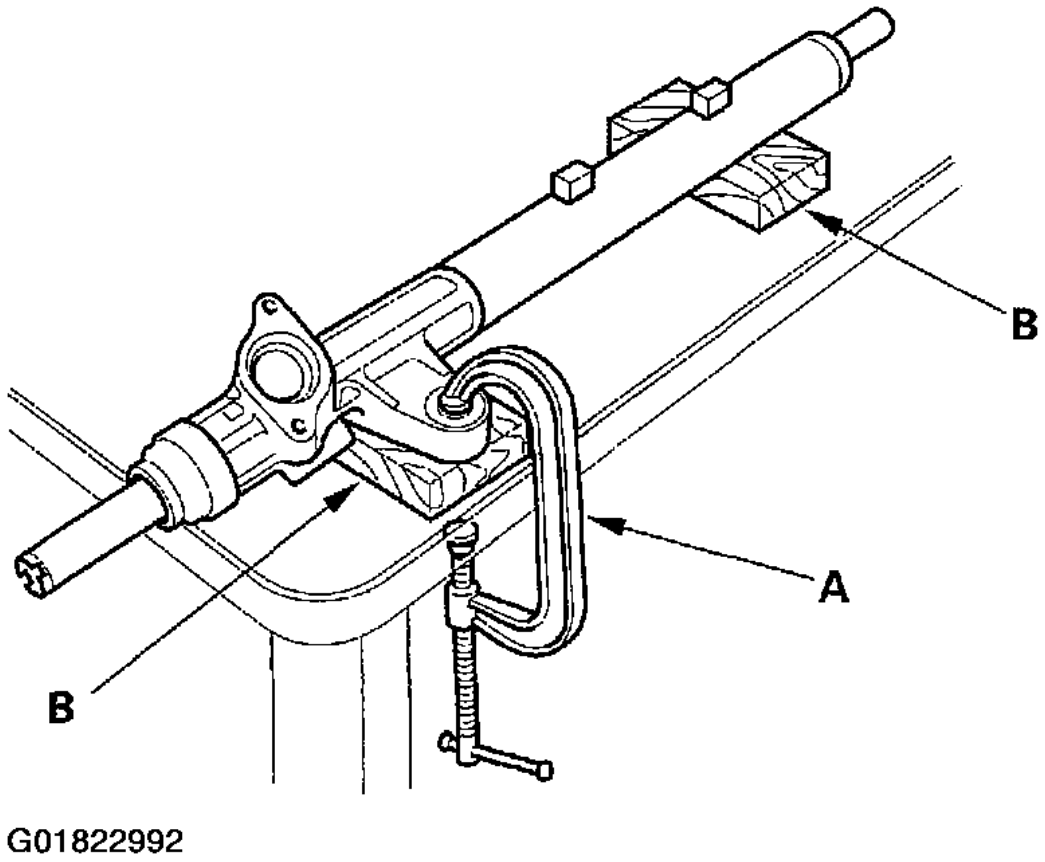


Fig. 110: Holding The Gearbox Housing Using A C-Clamp & Wooden Blocks

67. Coat the inside surface of the cylinder end (A) with power steering fluid, then install the cylinder end by screwing it into the cylinder (B). Tighten the cylinder end to the specified torque.

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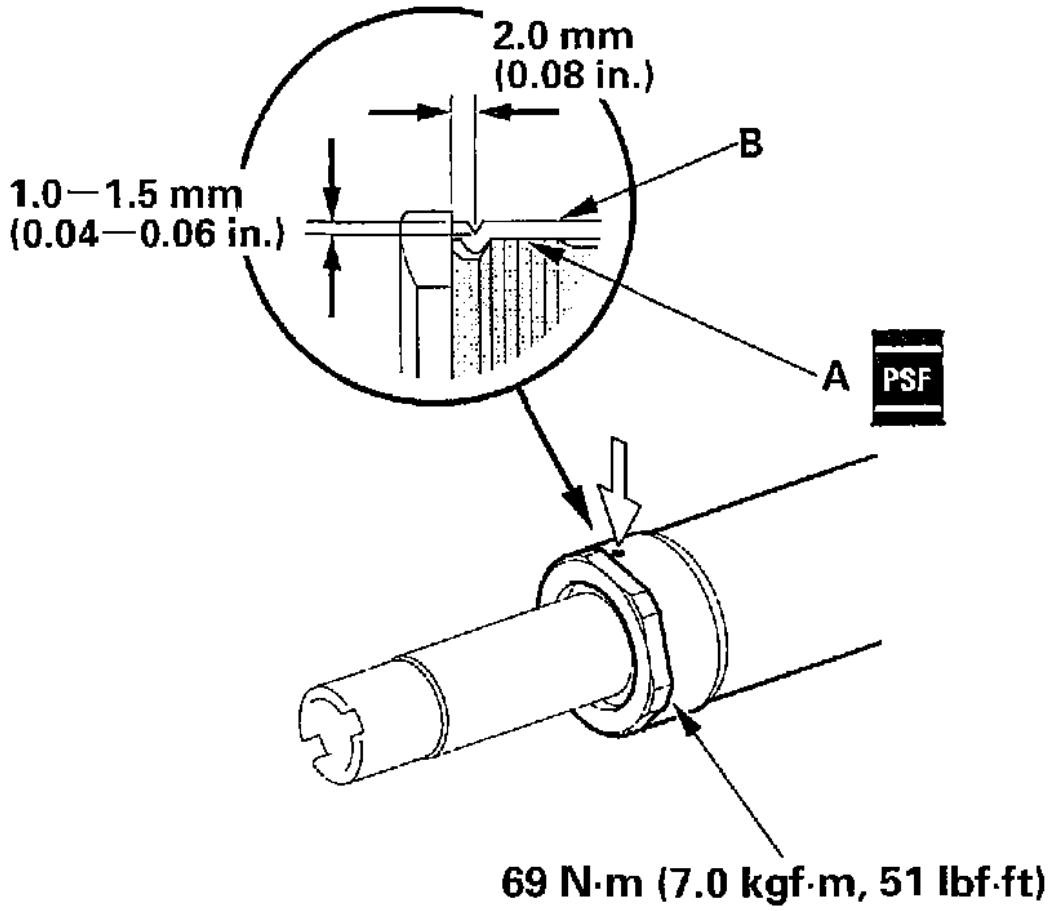


Fig. 111: Installing The Cylinder End By Screwing It Into The Cylinder & Staking

68. Stake the point of the cylinder shown (opposite from where the stake was removed during disassembly).
69. Coat the NEW O-ring (A) with multipurpose grease, and carefully fit it on the valve housing.

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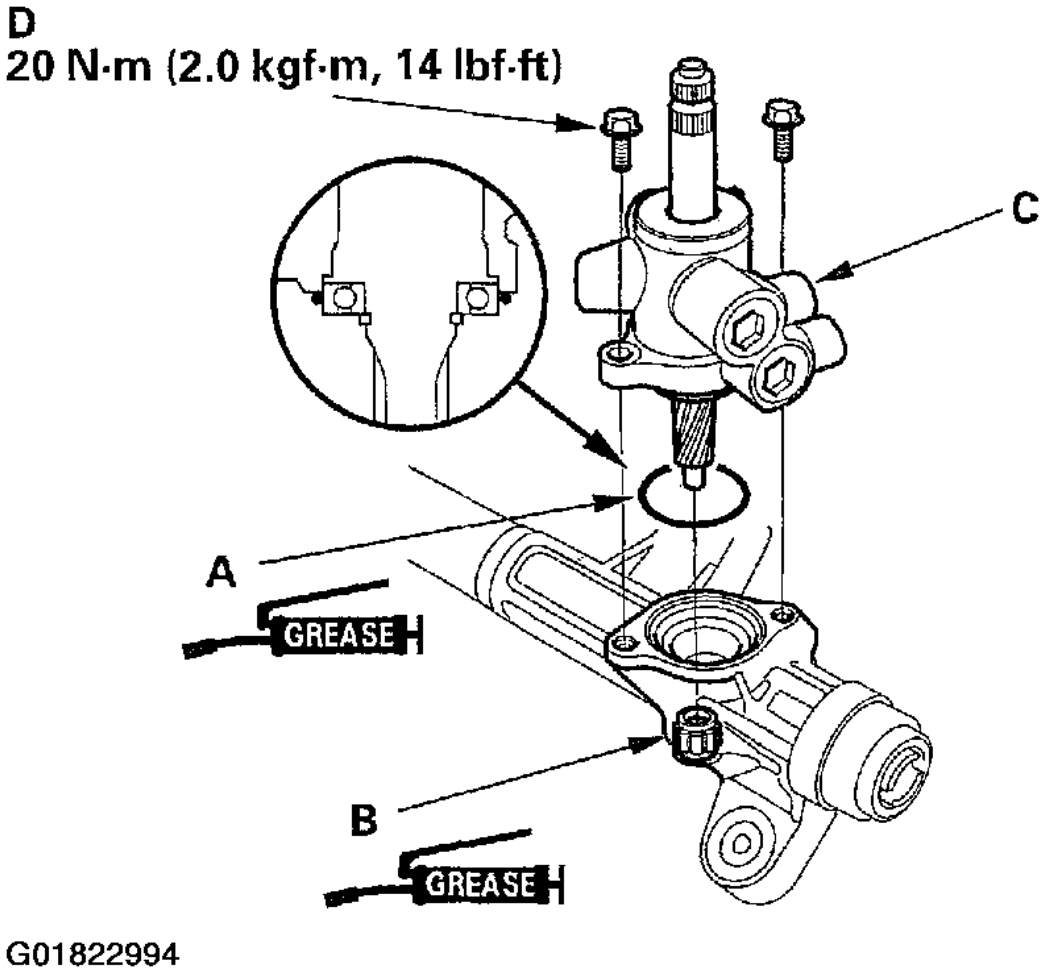


Fig. 112: Installing The Valve Body Unit By Engaging The Gears

70. Apply multipurpose grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).
71. Tighten the flange bolts (D) to the specified torque.
72. Install the cylinder lines. Note these items during reassembly:
    - Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
    - Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.

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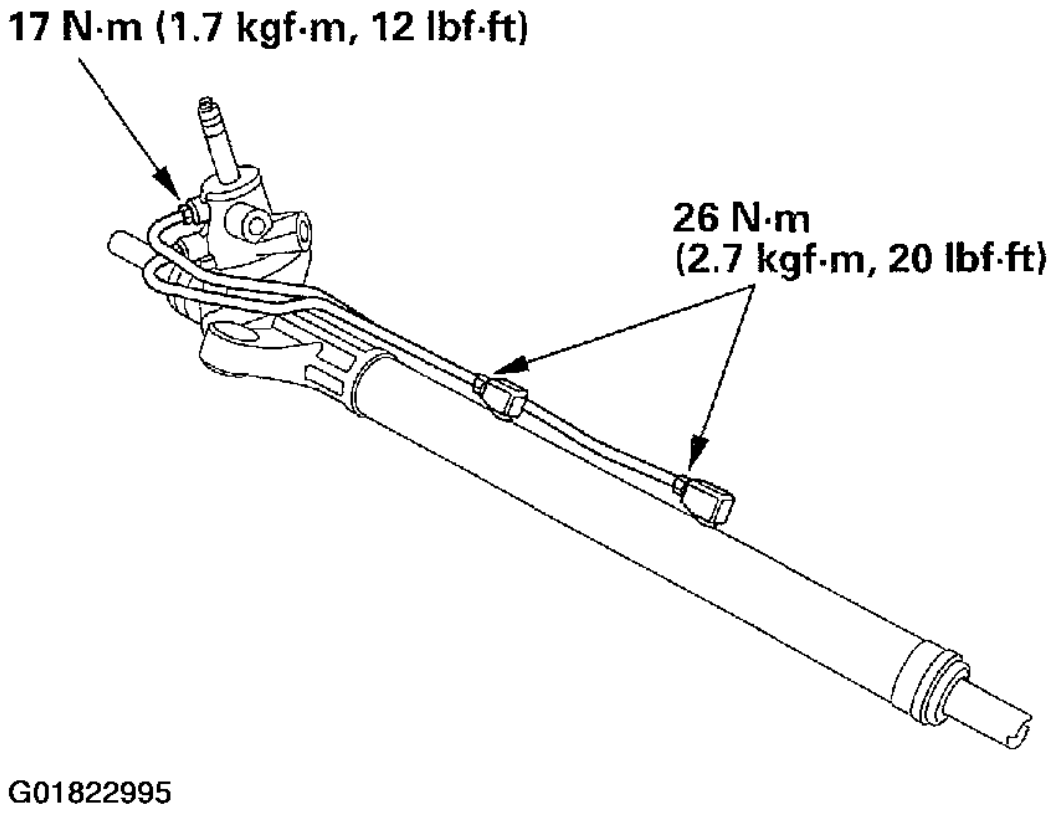


Fig. 113: Installing The Cylinder Lines

73. Apply multipurpose grease to the sliding surface and circumference of the rack guide (A), and install it onto the gearbox housing.

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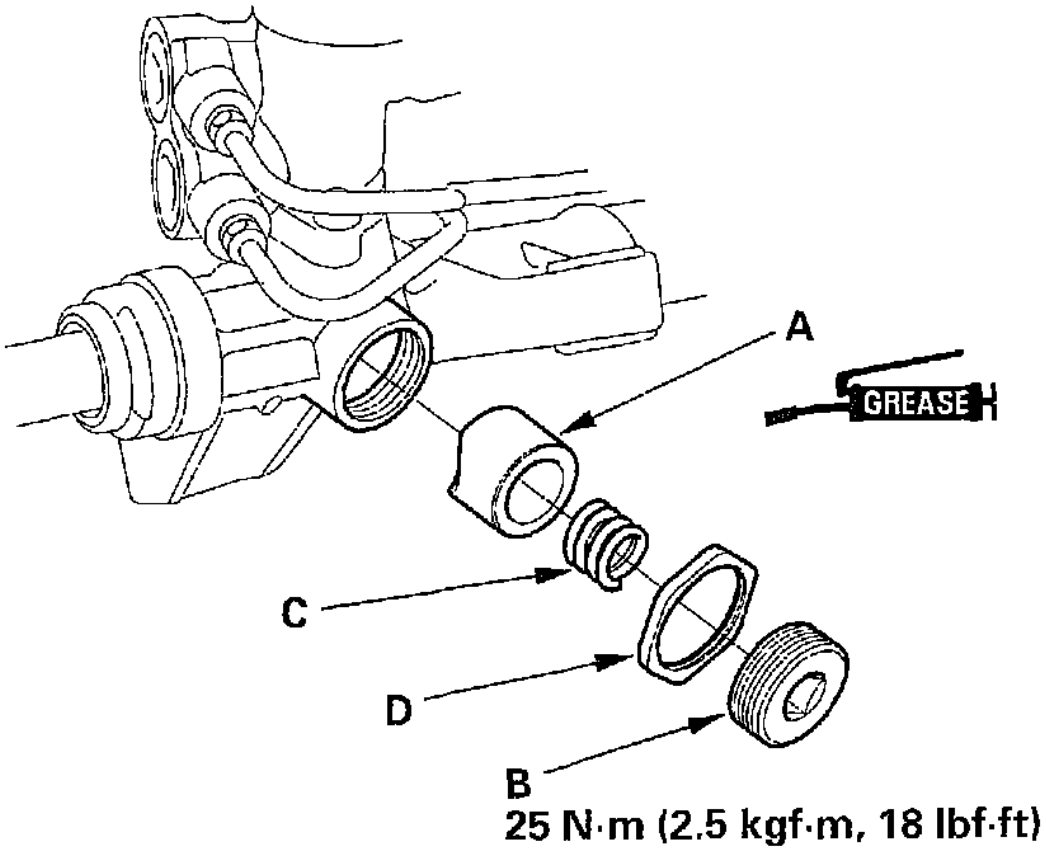


Fig. 114: Installing The Spring, Rack Guide Screw & Locknut

74. Apply NEW sealant (Three Bond 1215 or Loctite 5699) to middle of the threads on the rack guide screw (B), then install the spring (C) and rack guide screw.
75. Tighten the rack guide screw, and loosely install the locknut (D).
76. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.
77. Install a NEW stop rubber (A) and a NEW lock washer (B). Align the lock washer tabs (D) with the slots (E) on the rack end (C) while holding the lock washer in place. Repeat this step for the other side of the rack.

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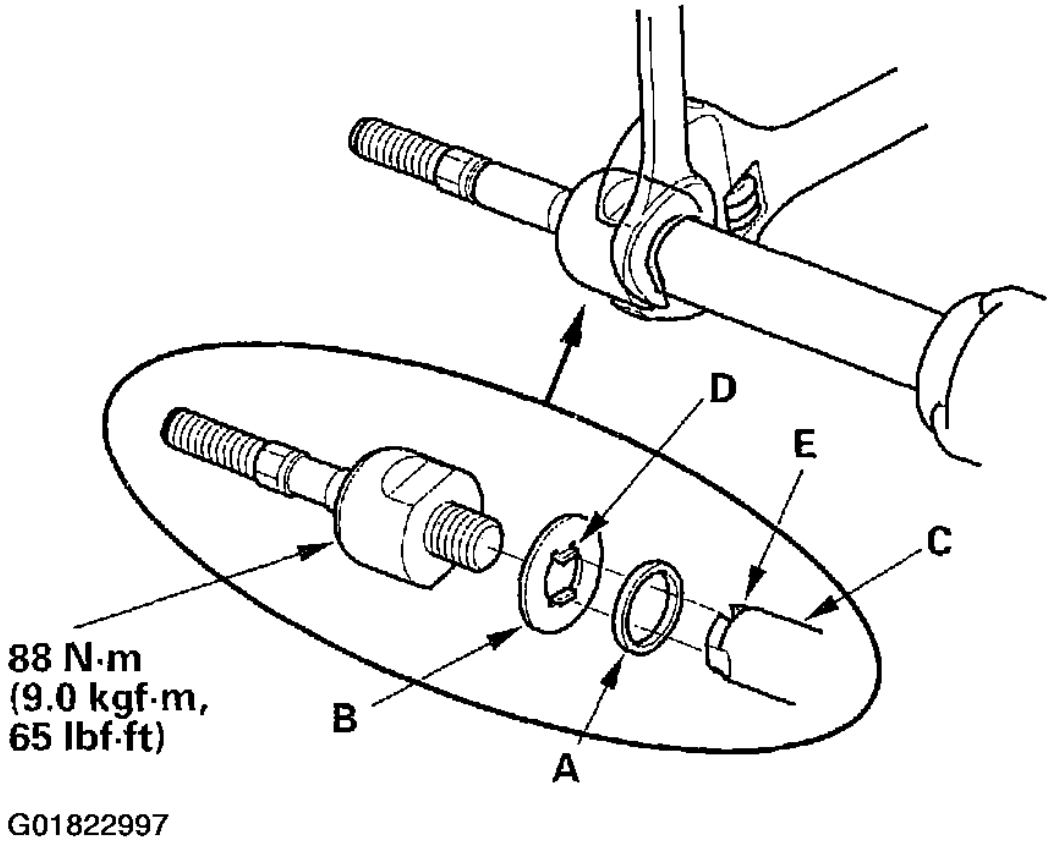


Fig. 115: Installing A NEW Stop Rubber & A NEW Lock Washer

78. Hold the flat surface sections of the steering rack with a wrench, and tighten both rack ends. Be careful not to damages the rack surface with the wrench.
79. Bend the lock washer (A) back against the flat spots on the rack end joint housing.

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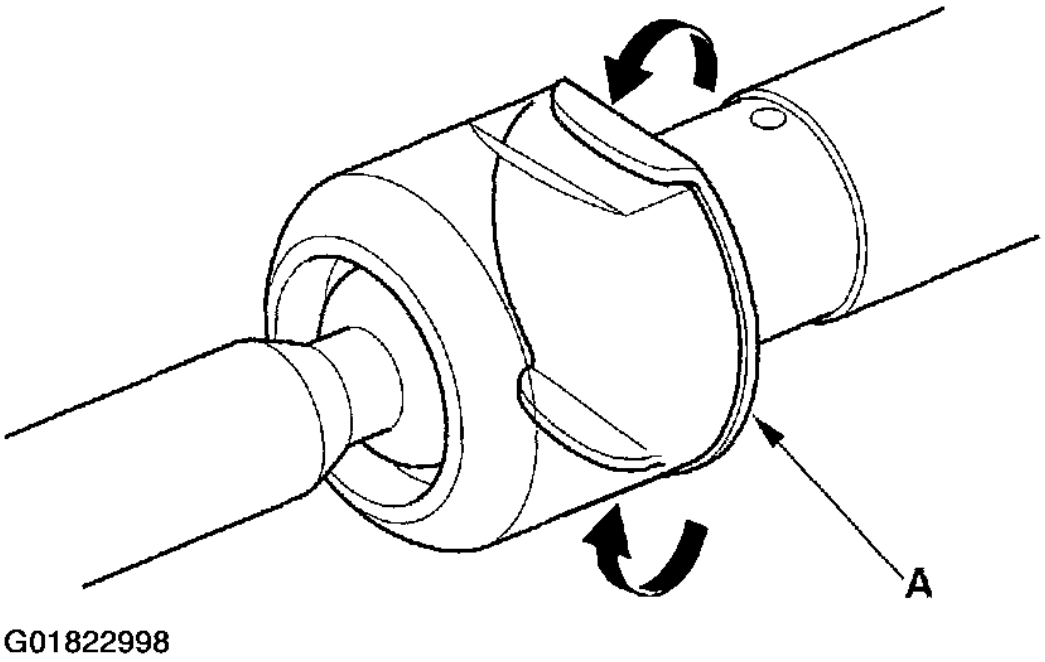


Fig. 116: Bending The Lock Washer Back Against The Flat Spots On The Rack End Joint Housing

80. Apply multipurpose grease to the circumference of the rack end joint housing (A).

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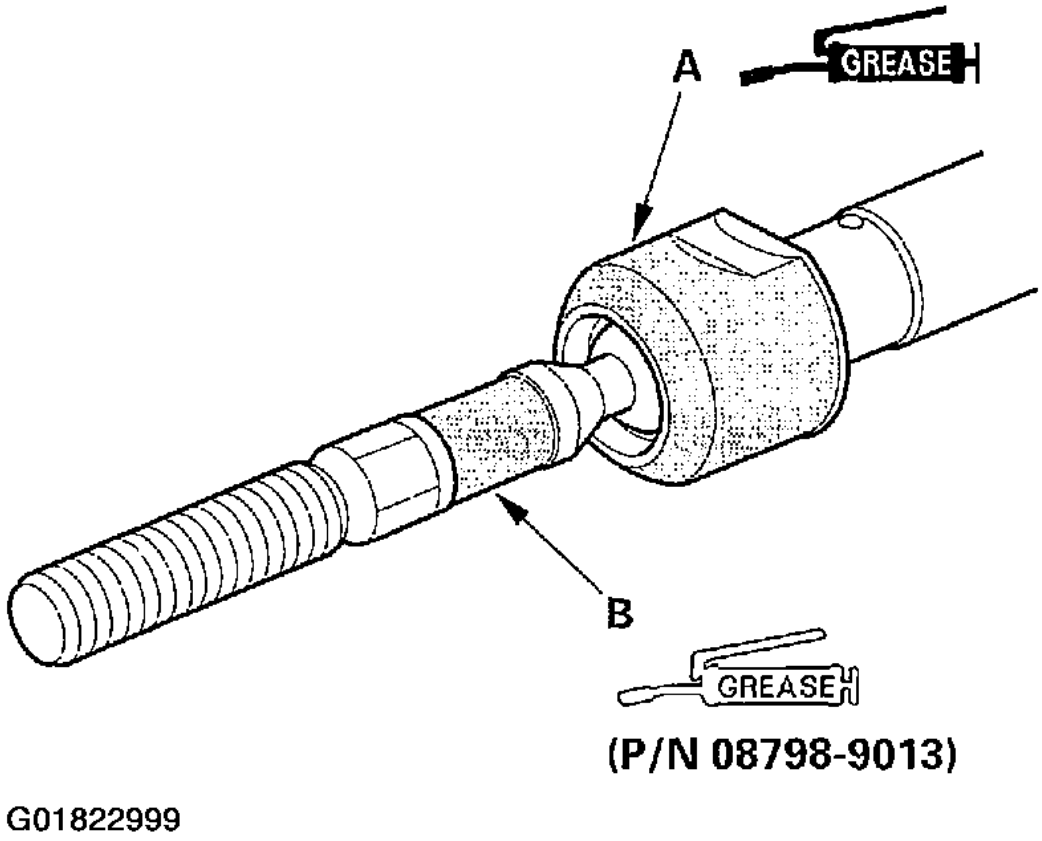


Fig. 117: Applying Multipurpose Grease To The Circumference Of The Rack End Joint Housing & Boot Grooves On The Rack Ends

81. Apply a light coat of silicone grease to the boot grooves (B) on the rack ends.
82. Center the steering rack within its stroke.
83. Clean off the any grease or contamination from the boot installation grooves (A) around on the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.

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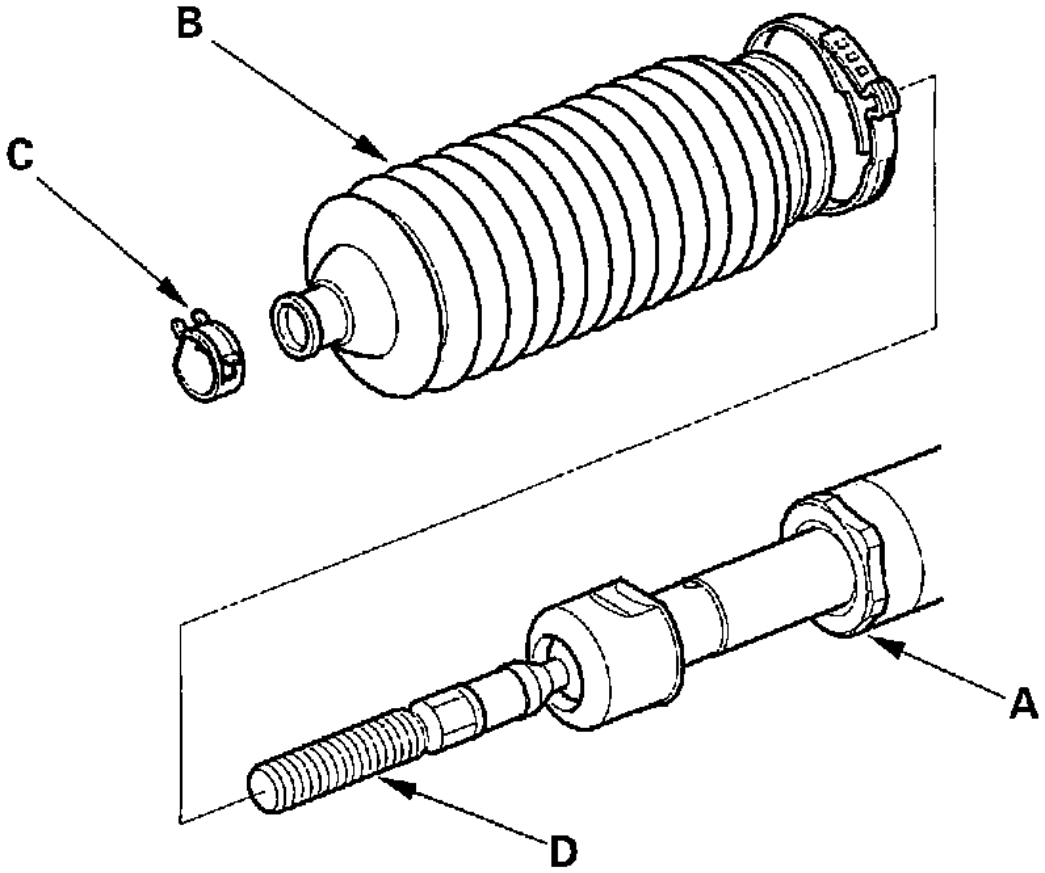


Fig. 118: Installing The Boots

84. After installing the boots, wipe the grease off the threaded section (D) of the rack end.
85. Install the NEW boot bands by aligning the tabs (A) with the holes (B) of the band.

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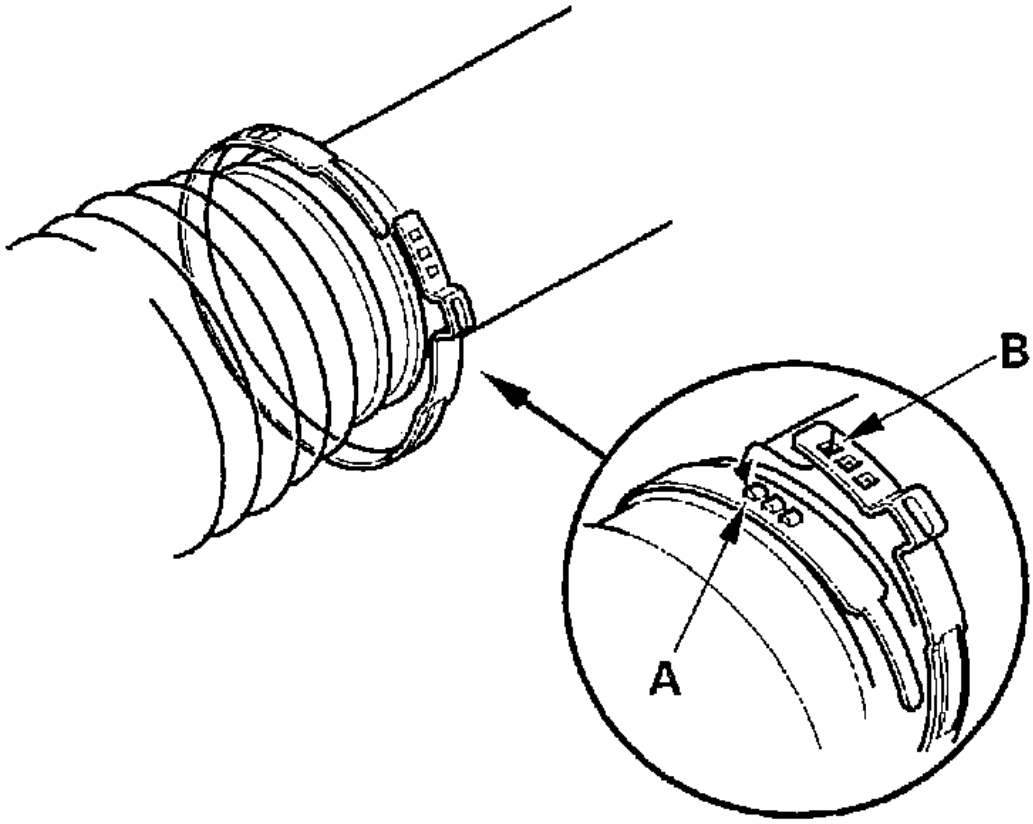


Fig. 119: Installing The NEW Boot Bands

86. Close the ear portion (A) of the band (B) with commercially available pincers, Oetiker 1098 or equivalent (C).

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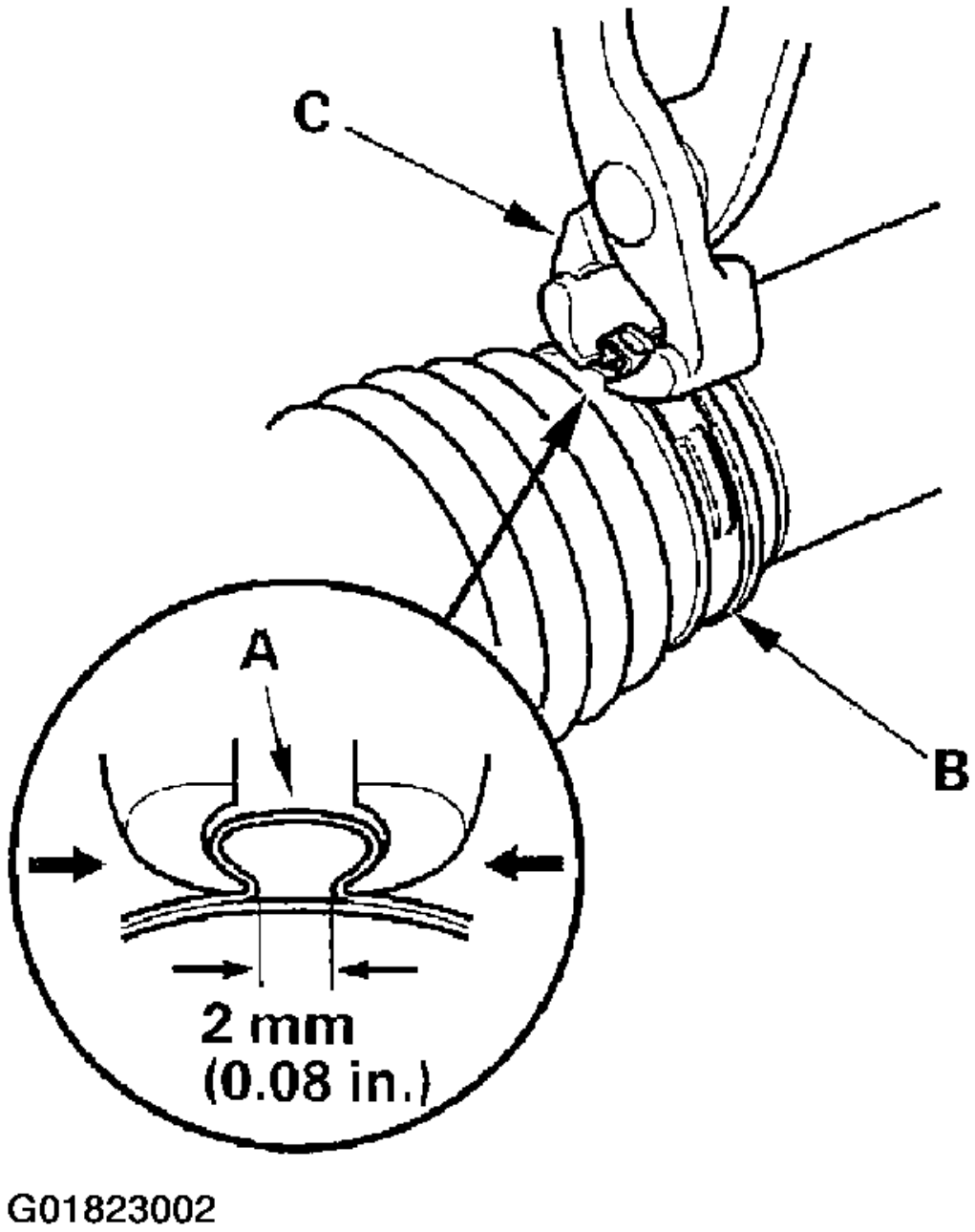


Fig. 120: Closing The Ear Portion Of The Band

87. Slide the rack right and left to be certain that the boots are not deformed or twisted.

STEERING GEARBOX INSTALLATION

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1. Before installing the steering gearbox, make sure that no power steering fluid is on the mating surface of the gearbox and a front suspension subframe. To prevent the gearbox mounting bolts from loosening after the installation, remove the power steering fluid from the mount cushions and bolt holes.
2. Apply a mild soap and water solution to both side of the mount cushion mating surfaces (A).

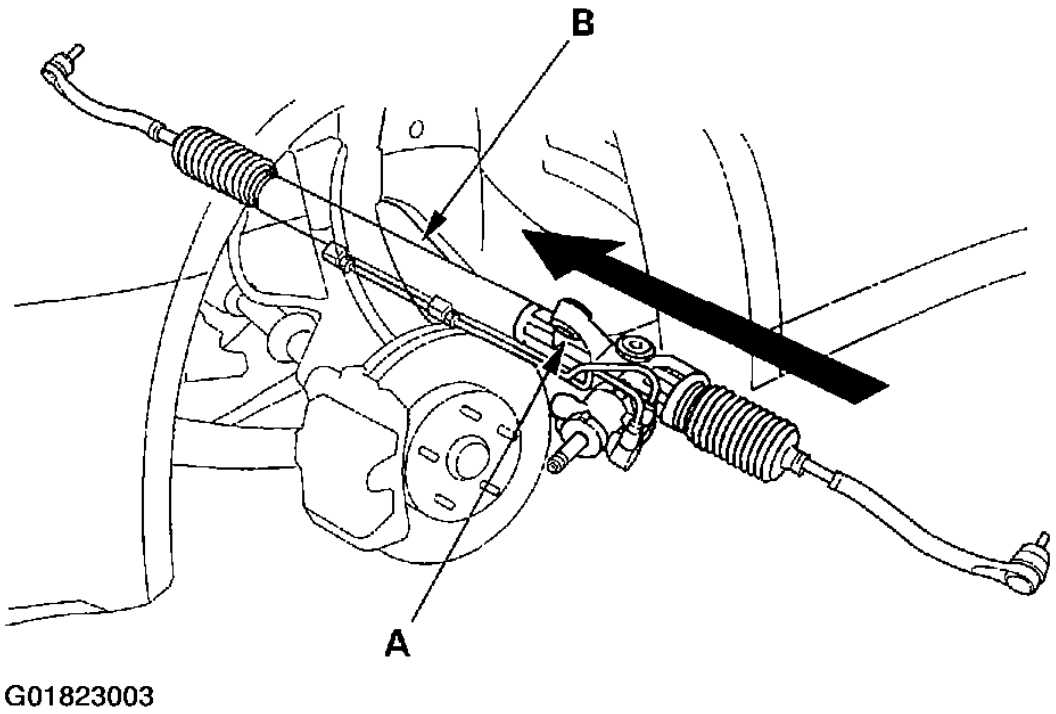


Fig. 121: Apply A Mild Soap & Water Solution To Both Sides Of The Mount Cushion Mating Surfaces & Pass The Steering Gearbox Through The Wheelwell Opening On The Driver's Side

3. Pass the cylinder of the steering gearbox (B) through the wheelwell opening on the driver's side.
4. Carefully move the steering gearbox toward the passenger's side until the pinion shaft clears the wheelwell opening on the body.
5. Rotate the steering gearbox so the pinion shaft (A) points upward.

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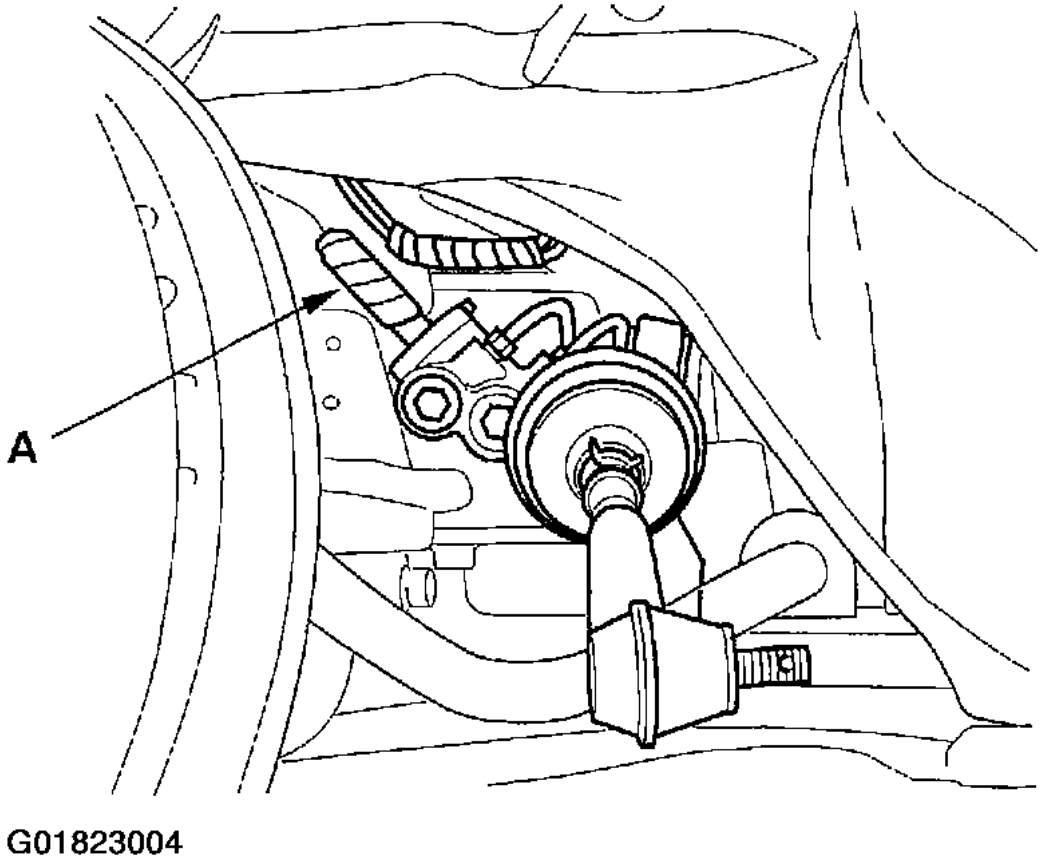


Fig. 122: Rotating The Steering Gearbox So The Pinion Shaft Points Upward

6. Continue moving the gearbox toward the passenger's side until the steering gearbox is in position. Make sure the power steering return line and feed line are routed above the gearbox.
7. Remove the vinyl tape from the pinion shaft, and install the pinion shaft grommet (A). Align the slot in the pinion shaft grommet with the lug portion (B) on the valve housing.

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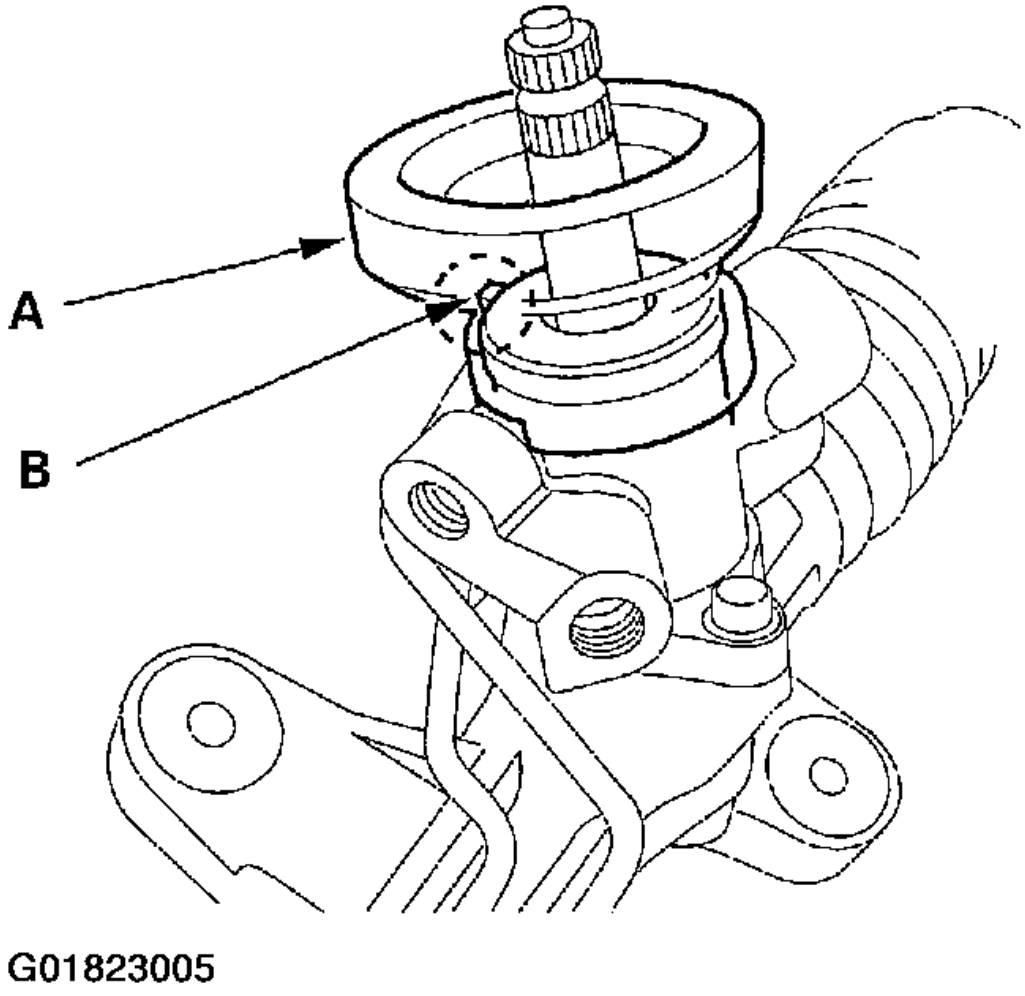


Fig. 123: Installing The Pinion Shaft Grommet

8. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the cylinder of the gearbox securely.

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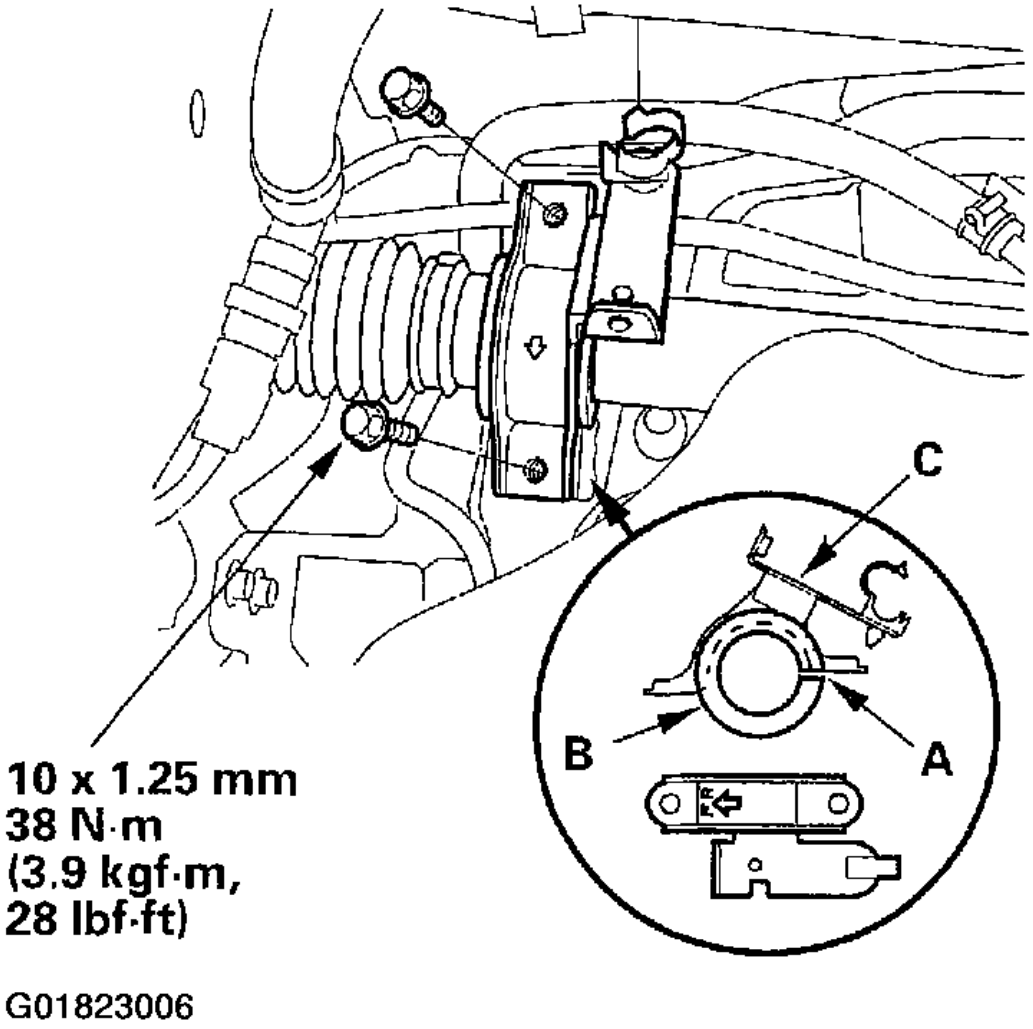


Fig. 124: Installing Mounting Cushion On The Cylinder Of The Gearbox

9. Install the gearbox mounting bracket (C) over the mounting cushion, and loosely install the two flange bolts.
10. Install the steering stiffener plate (A) and gearbox mounting bolts on the left side of the gearbox, then tighten them to the specified torque.

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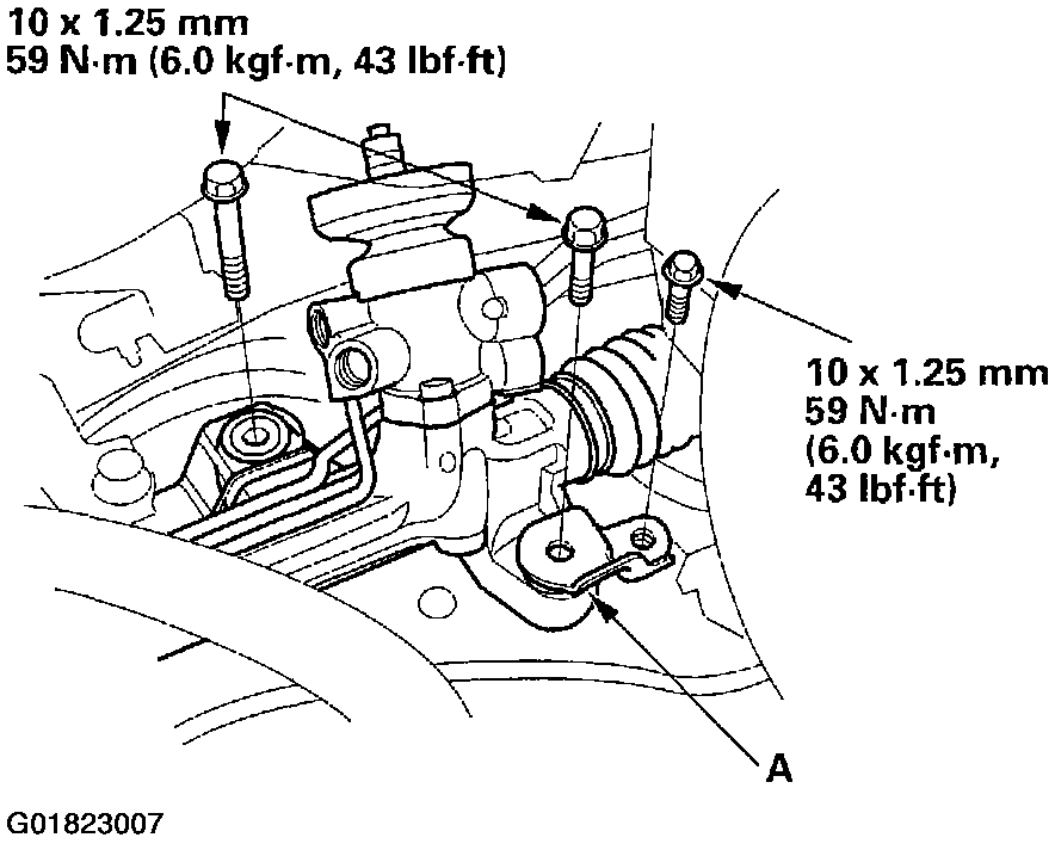


Fig. 125: Installing The Steering Stiffener Plate & Gearbox Mounting Bolts

11. Tighten the flange bolts on the right side of the gearbox to specified torque alternately in two or more steps.
12. Loosely connect the return line and feed line by hand securely.
13. Install the feed line holder (A) and return hose (B) on the gearbox mounting bracket (C)

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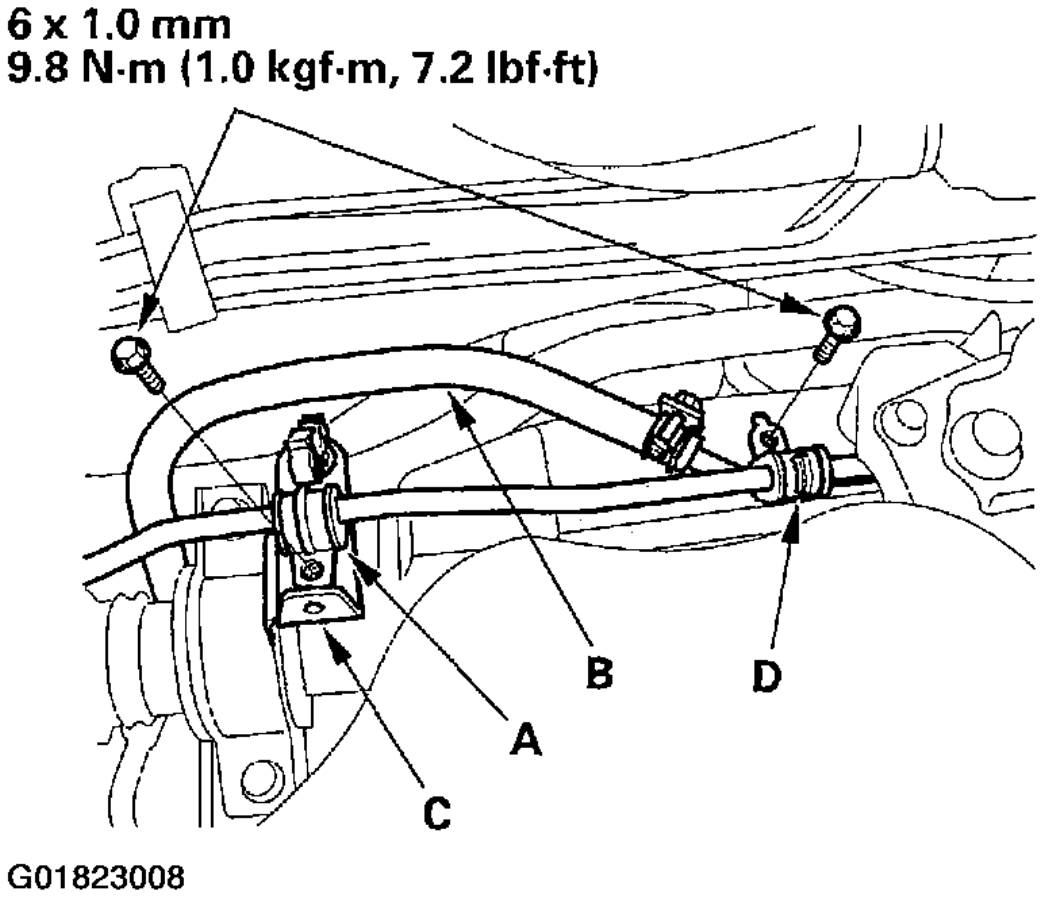


Fig. 126: Installing The Feed Line & Return Line

14. Install the feed line holder (D) on the front suspension subframe. Make sure that there is no interference between the feed and return lines and any other parts.
15. Retighten the return line flare nut (A) to the specified torque.

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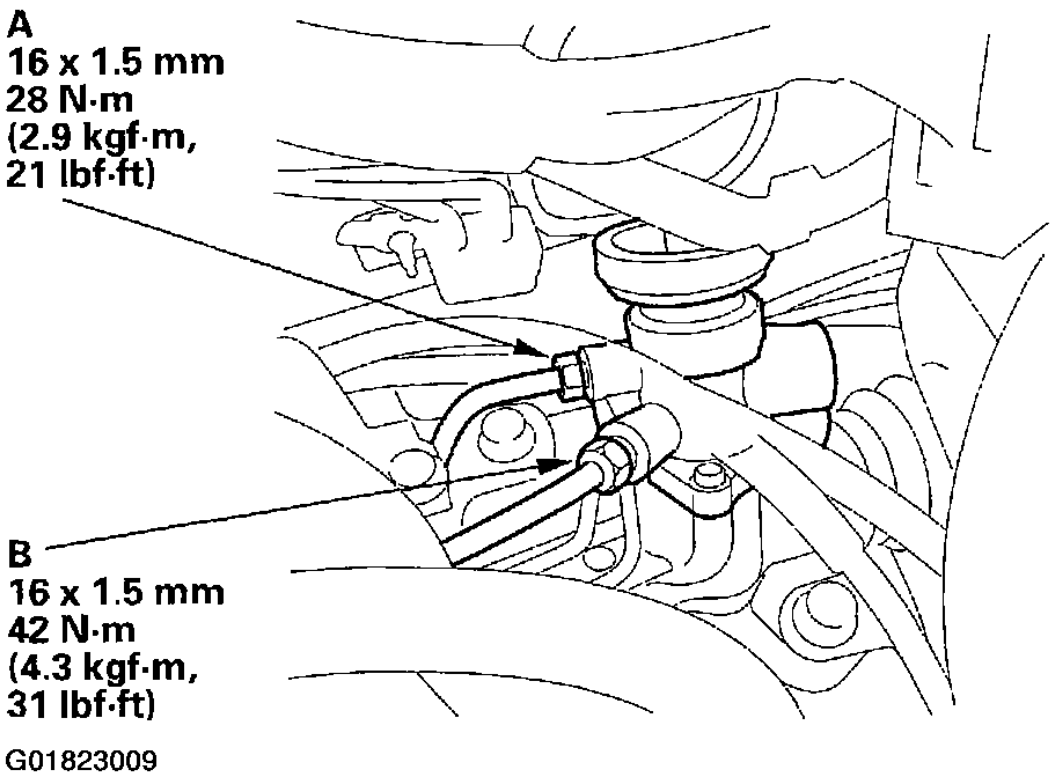


Fig. 127: Tightening The Feed Line & Return Line Flare Nuts

16. Retighten the feed line flare nut (B) to the specified torque.
17. Install the front suspension subframe left mid mount (A).

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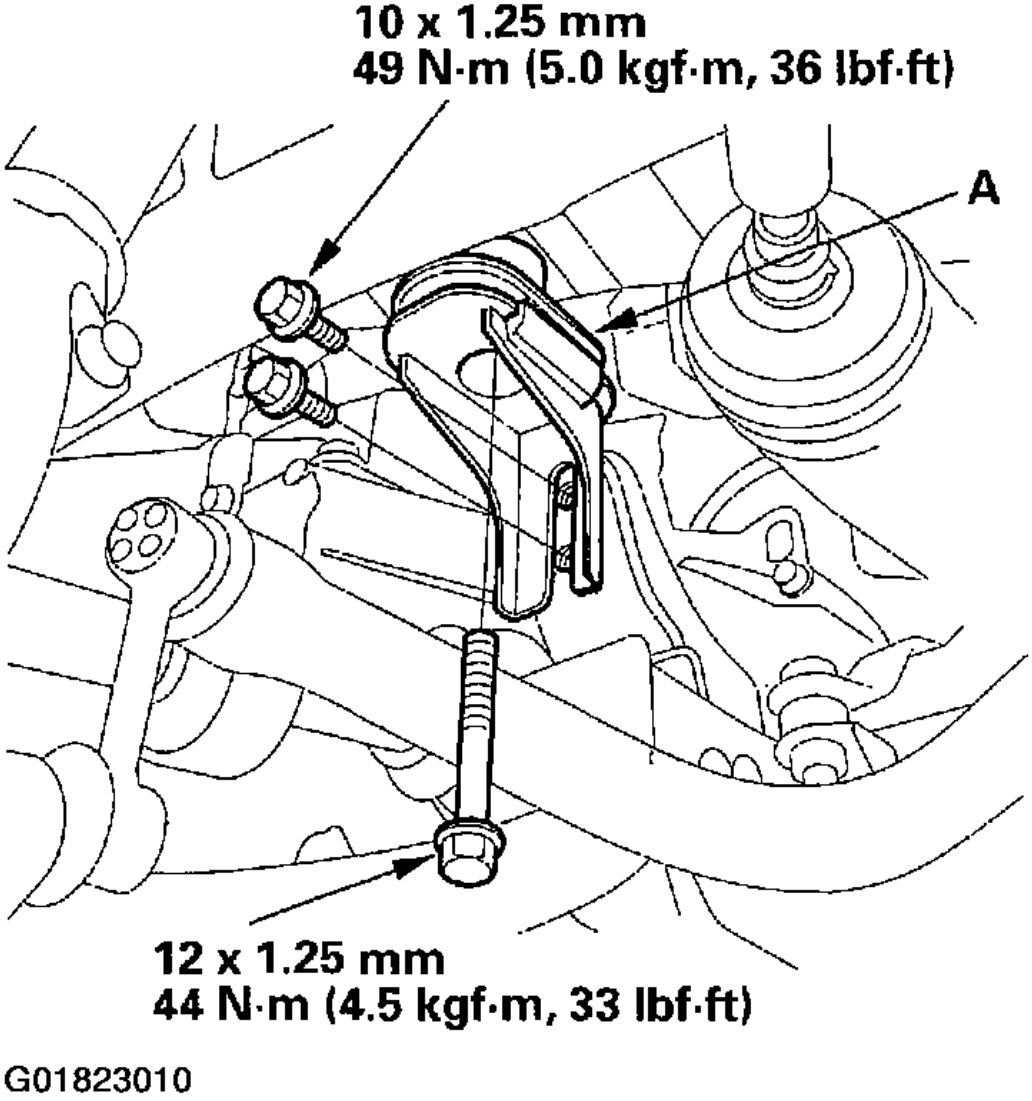


Fig. 128: Installing Front Suspension Subframe Left Mid Mount

18. Install the P/S heat baffle plate (A).

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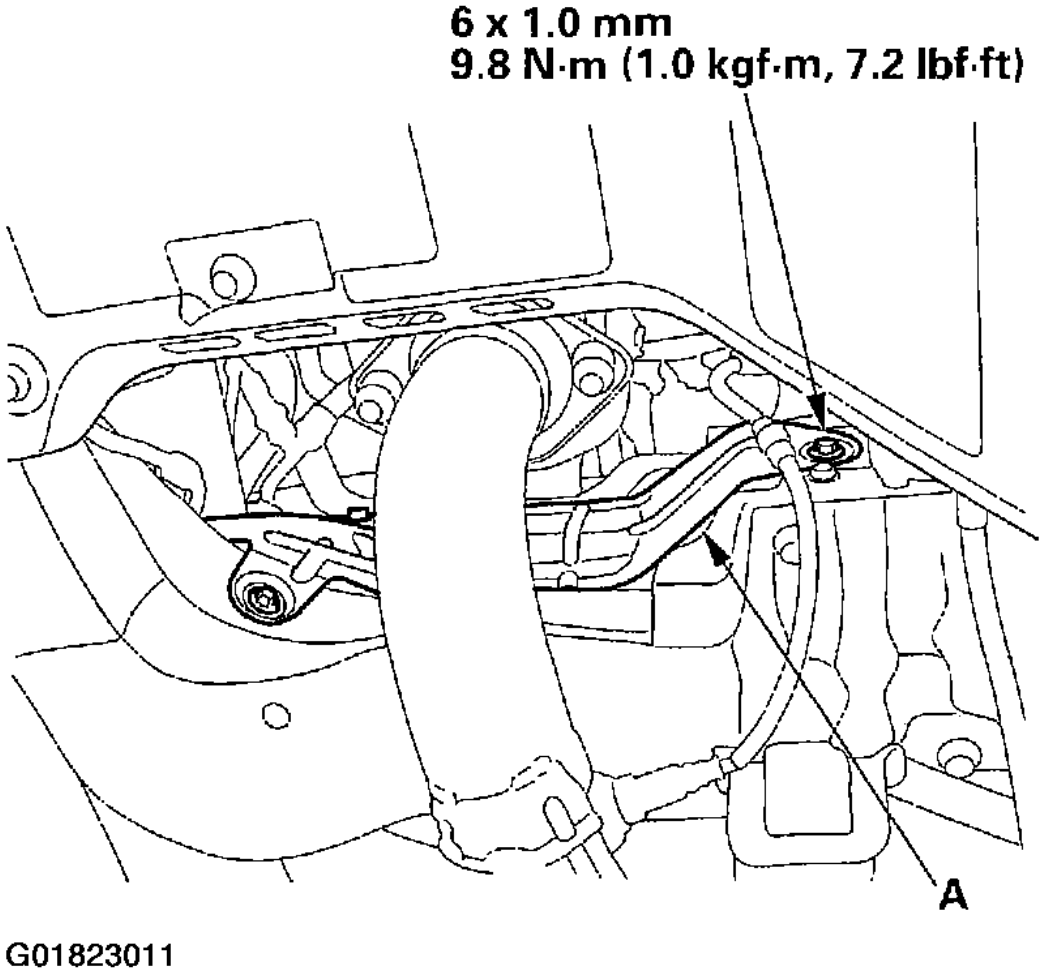


Fig. 129: Installing The P/S Heat Baffle Plate

19. Wipe off any grease contamination from the ball joint tapered section and threads. Then reconnect the tie-rod end (A) to the knuckle arms.

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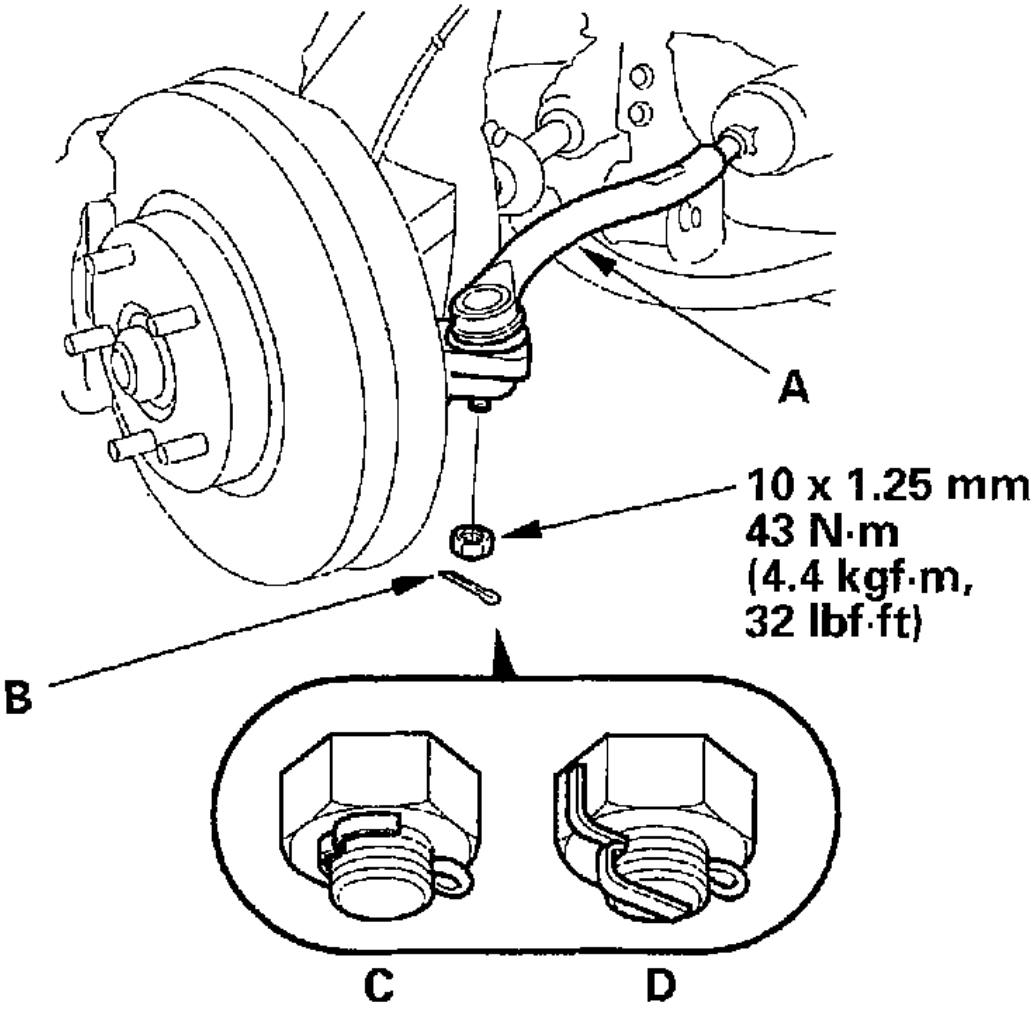


Fig. 130: Connecting Tie-Rod Ends To The Knuckle Arms

20. Install the tie-rod end ball joint nut, and tighten it to the specified torque. Then install the NEW cotter pin (B), and bend it as shown (C) or (D).
21. Install the NEW cover seal (A) all the way around in the steering joint cover B. Make sure there are no wrinkles in the seal, then install the steering joint cover B.

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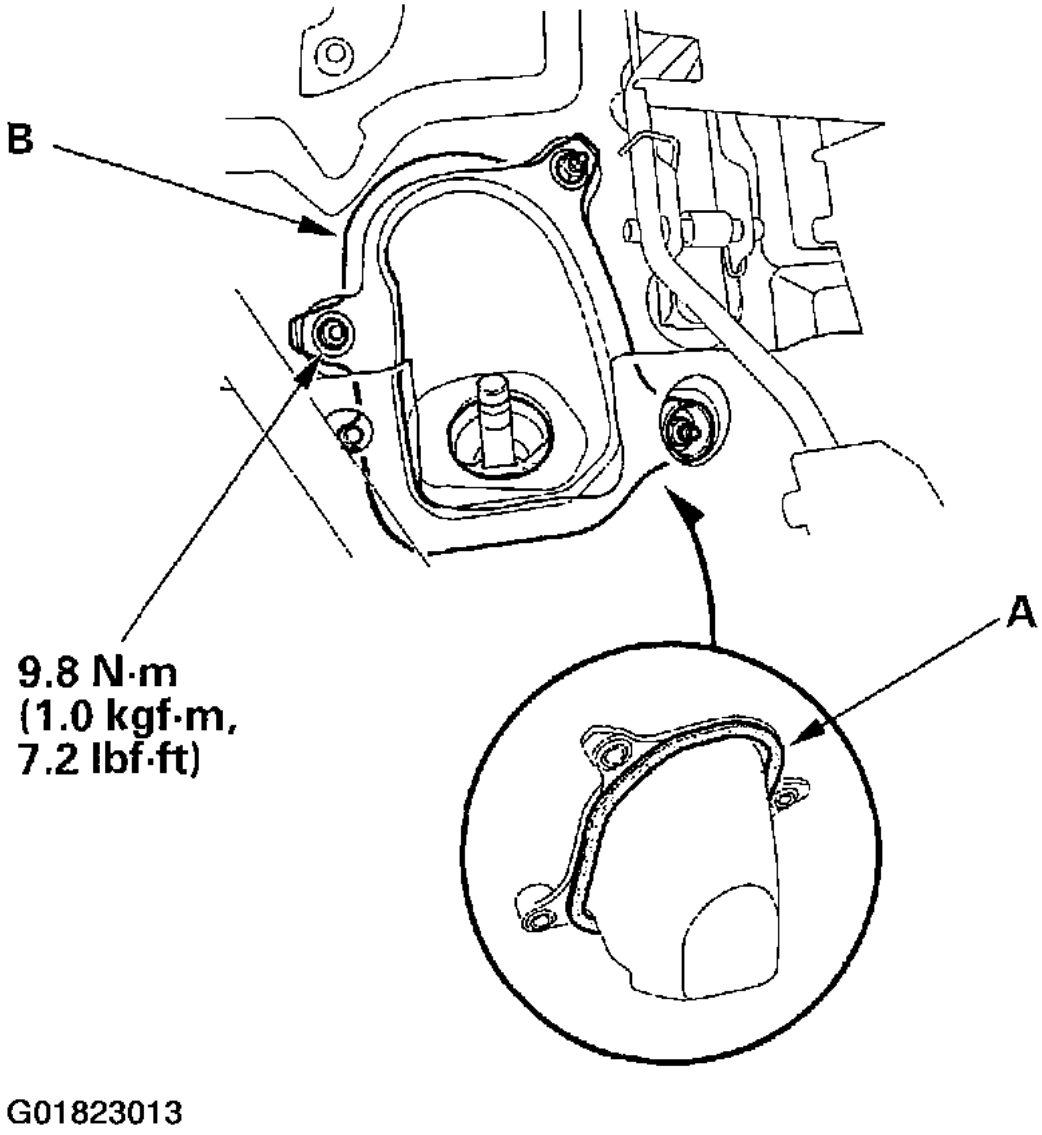


Fig. 131: Installing NEW Cover Seal & Steering Joint Cover B

22. Center the steering rack within its stroke.
23. Position the steering column joint (A) so the bolt (B) opposite to the notch (C) is within the range shown.

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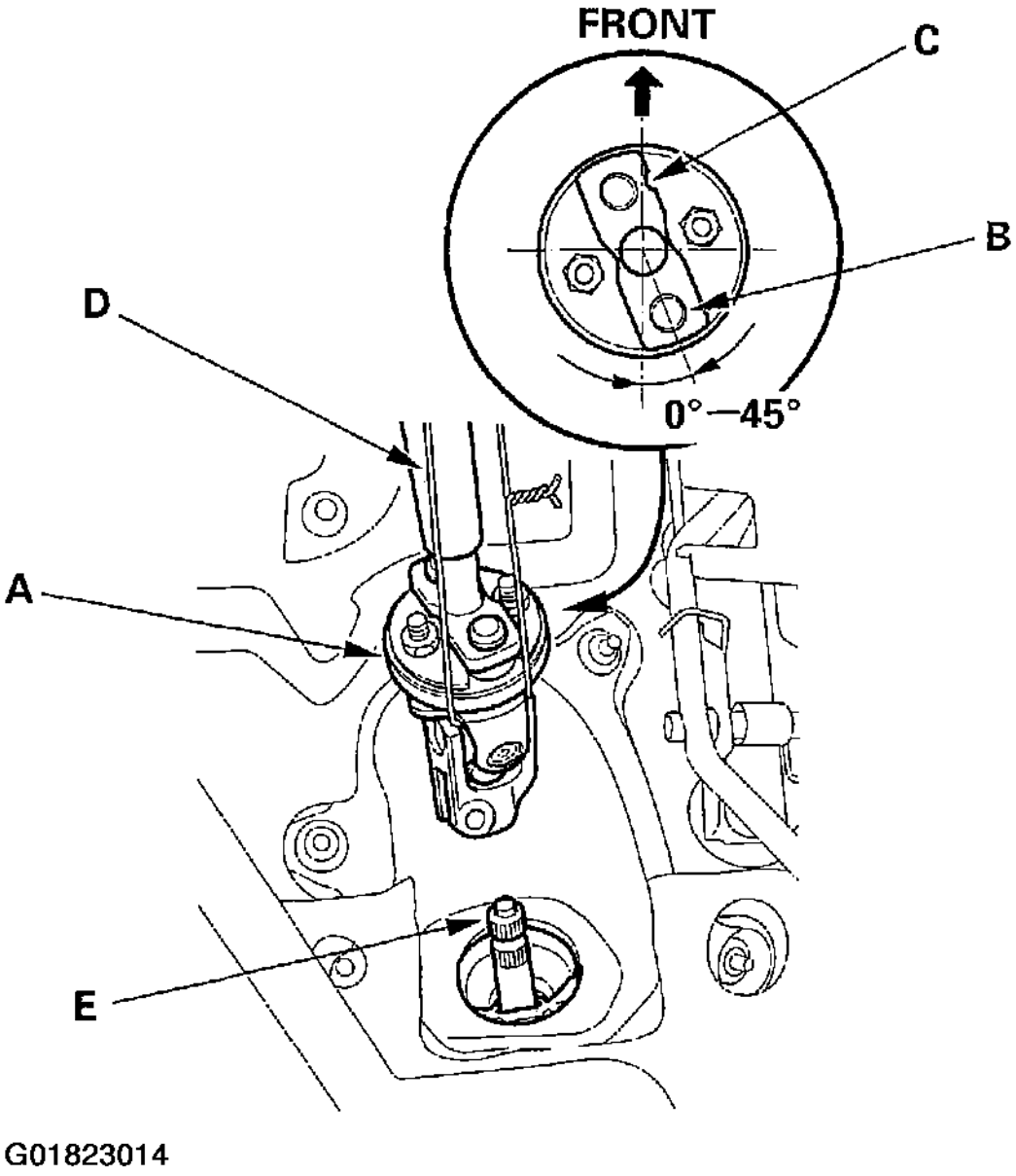


Fig. 132: Positioning The Steering Column Joint

24. With the rack in the straight ahead driving position, cut the wire (D) and slip the lower end of the steering joint on to pinion shaft (E).
25. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Make sure the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure the steering joint is fully seated.

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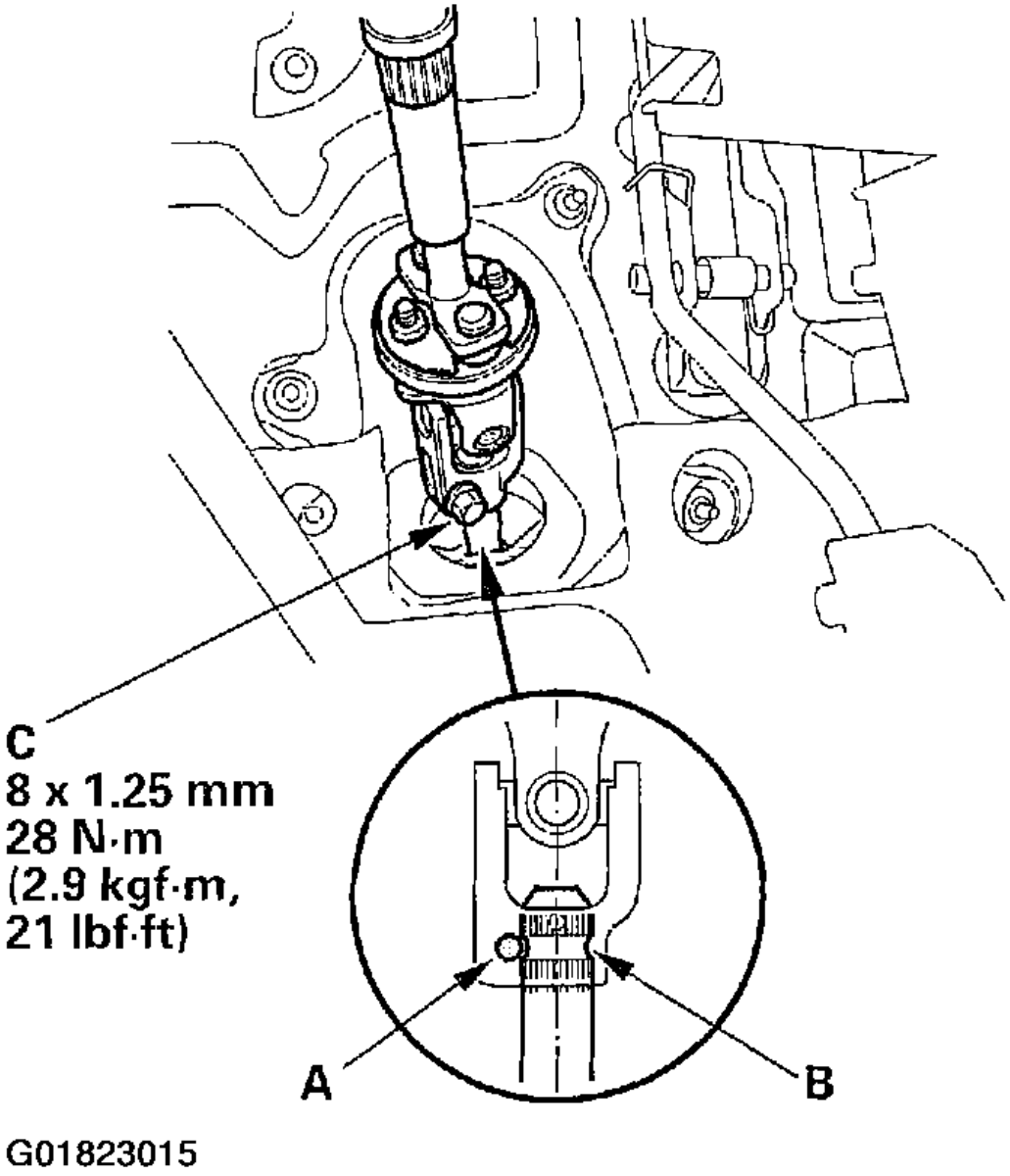


Fig. 133: Installing Steering Joint To The Pinion Shaft

26. Tighten the steering joint bolt to the specified torque.
27. Install the steering joint cover A.

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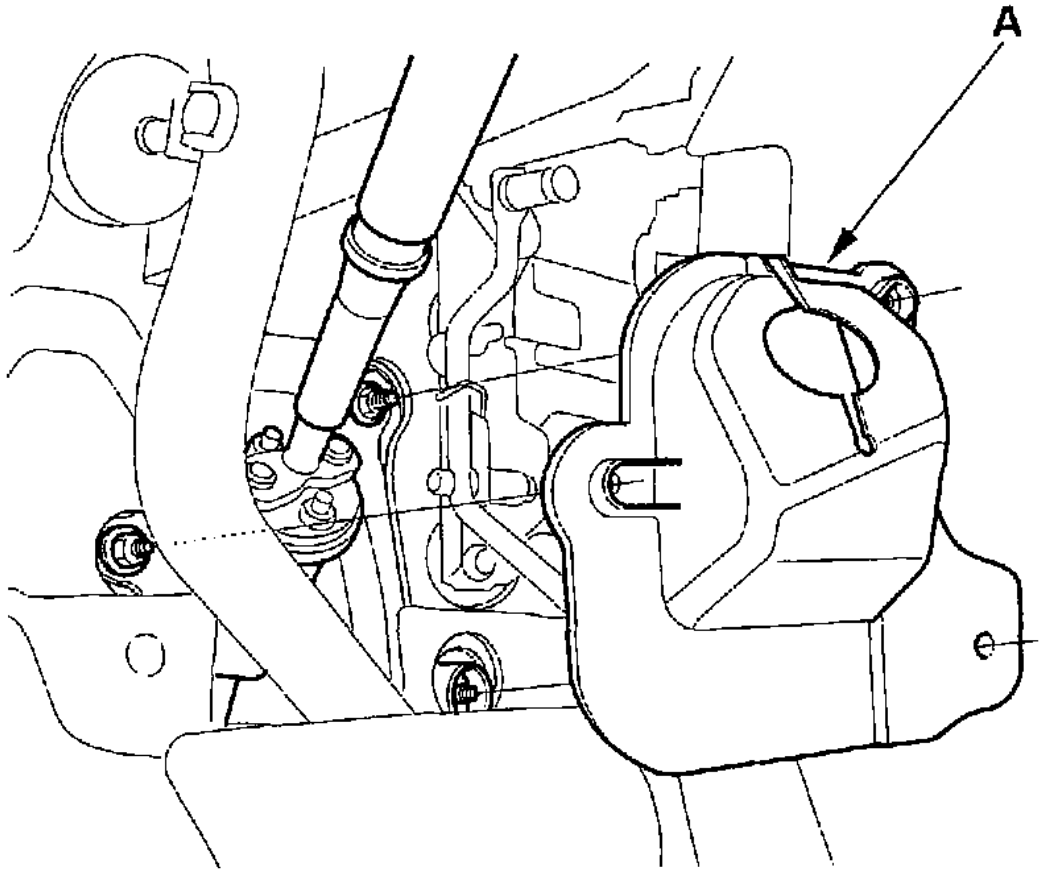


Fig. 134: Installing The Steering Joint Cover A

28. Install the front wheel, then set the wheels in the straight ahead position.
29. Center the cable reel by first rotating it clockwise until it stops. Then rotate it counterclockwise (about three full turns) until the arrow mark on the label points straight up. Reinstall the steering wheel (see **STEERING WHEEL INSTALLATION**).
30. Fill the system with power steering fluid, and bleed air from the system (see **FLUID REPLACEMENT**).
31. After installation, do the following checks:
    - Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up to the fluid. Check the gearbox for leaks (see **FLUID LEAKAGE INSPECTION**).
    - Do the front toe inspection (see **WHEEL ALIGNMENT**).
    - Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steeling wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.

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TIE-ROD BALL JOINT BOOT REPLACEMENT

Special Tools Required: Front hub dis/assembly tool, 07965-SA50500

1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

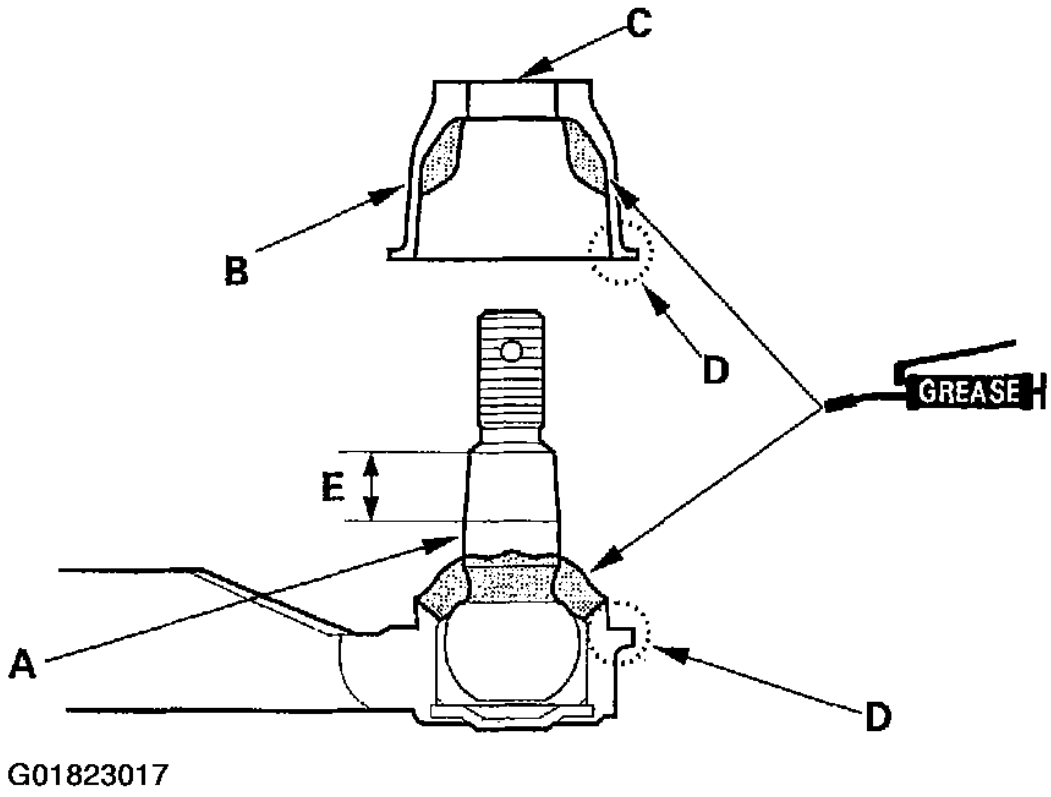


Fig. 135: Packing The Lower Area Of The Ball Pin With Fresh Multipurpose Grease

3. Pack the interior of the NEW boot (B) and lip (C) with fresh multipurpose grease. Note these items when installing NEW grease:
   - Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.
4. Install the NEW boot (A) using the special tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

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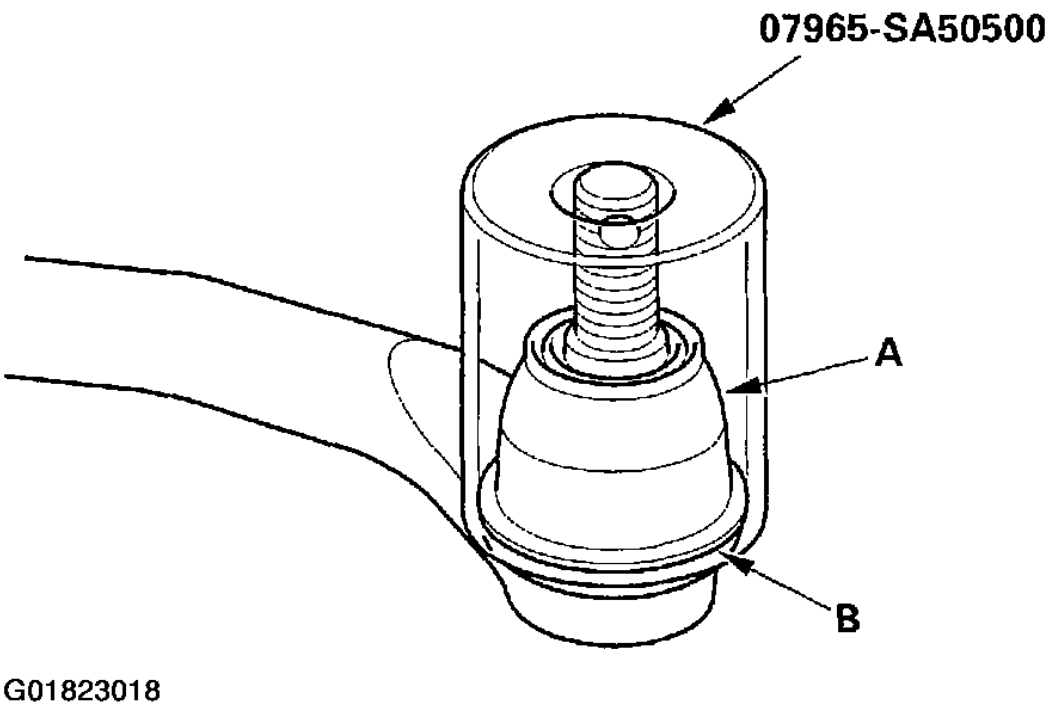


Fig. 136: Installing The NEW Boot Using The Special Tool

GEARBOX MOUNT CUSHION REPLACEMENT

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL**).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.

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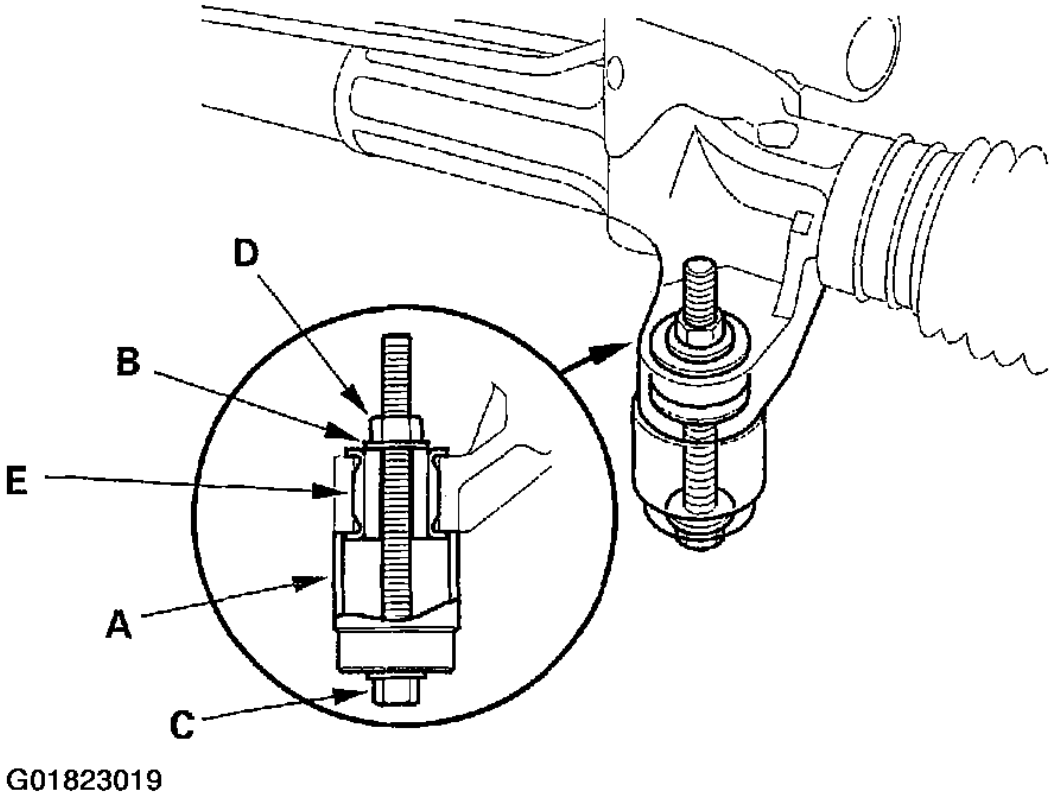


Fig. 137: Positioning The 34 mm Socket Wrench On The Flange Part Of The Gearbox Housing With A Washer, 10 X 105 mm Flange Bolt & The 10 mm Nut

3. Hold the flange bolt with a wrench, and tighten the nut with a wrench. Remove the gearbox mount cushion (E).
4. Apply a mild soap and water solution to the NEW gearbox mount cushion surface (A), then place it on the gearbox mounting cushion hole.

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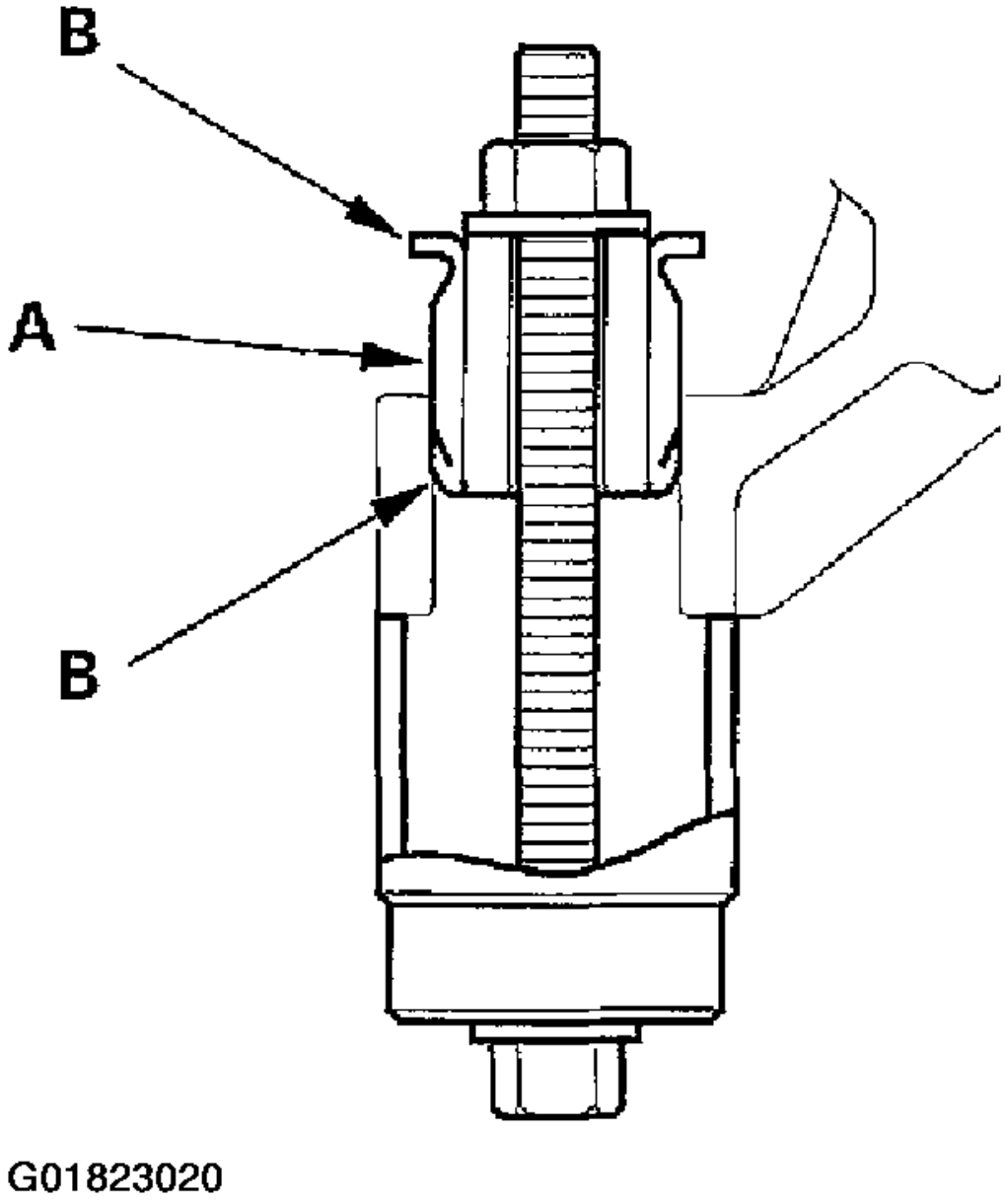


Fig. 138: Installing The NEW Gearbox Mount Cushion

5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) properly fit on the gearbox flange surface.

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2004 ACCESSORIES & EQUIPMENT

Moonroof - TSX

COMPONENT LOCATION INDEX

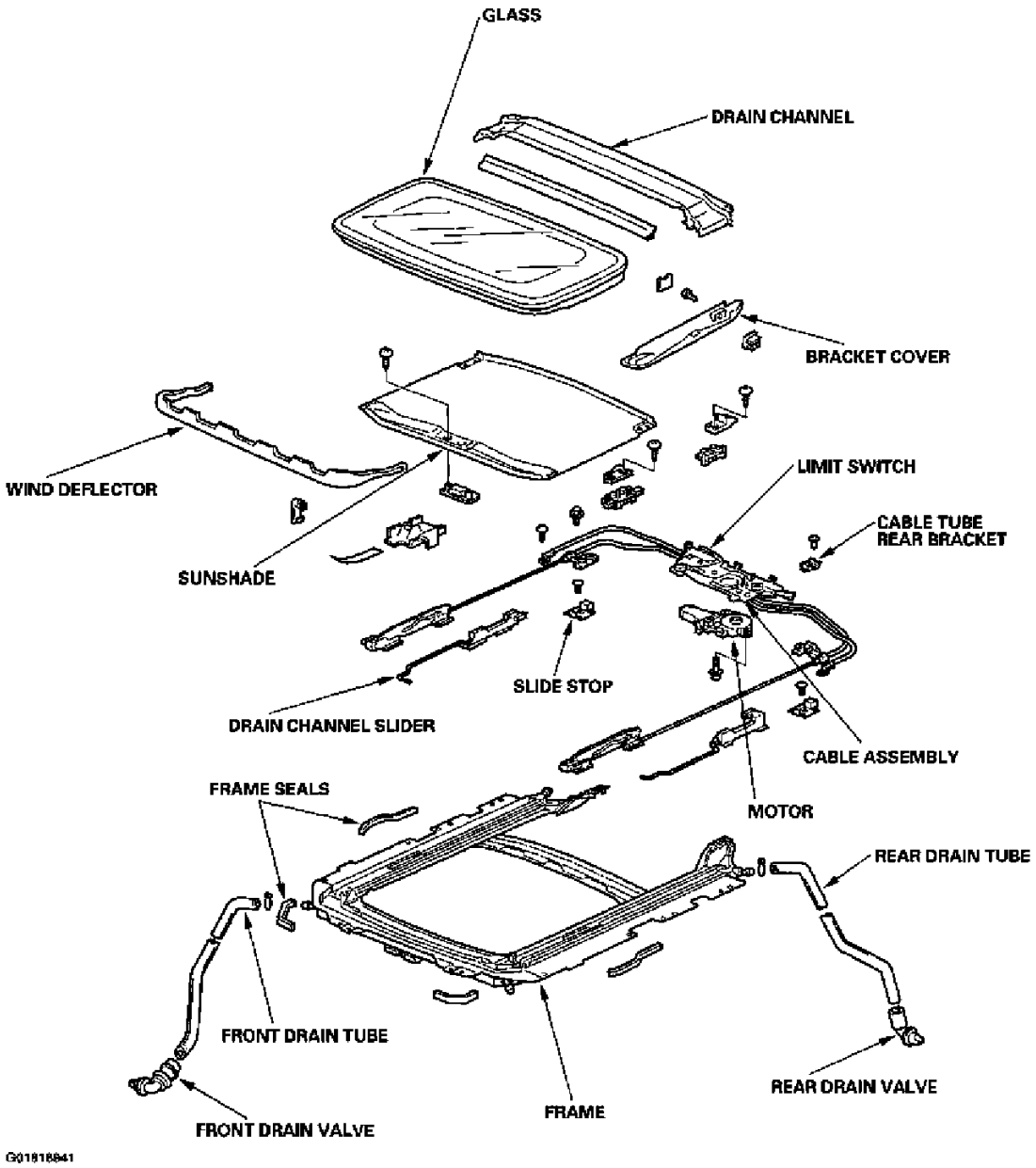


Fig. 1: Locating Moonroof Components

SYMPTOM TROUBLESHOOTING INDEX

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Symptom	Diagnostic procedure	Also check for
Water leaks from moonroof	1. Check for a clogged drain tube. 2. Check for a gap between the glass weatherstrip and the roof panel. 3. Check for a defective or an improperly installed glass weatherstrip or drain channel. 4. Check for a gap between the drain seal and the roof panel.	
Wind noise from moonroof	1. Check for excessive clearance between the glass weatherstrip and the roof panel.	
Motor noise from moonroof	1. Check for a loose motor. 2. Check for a worn gear or bearing. 3. Check for a deformed cable assembly.	
Moonroof glass does not move, but motor turns	1. Check for a defective gear or inner cable. 2. Check for foreign matter stuck between the guide rail and the slider. 3. Check for a loose inner cable. 4. Make sure the cable assembly is attached properly.	
Moonroof glass does not move and motor does not turn (glass can be moved with moonroof wrench)	1. Check for a blown fuse. 2. Check for a faulty moonroof switch. 3. Check the limit switch. 4. Check for a run down battery. 5. Check for a defective motor. 6. Check for a faulty relay.	

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Fig. 2: Symptom Troubleshooting Index

GLASS HEIGHT ADJUSTMENT

The roof panel (A) should be even with the glass weatherstrip (B), to within 0 +1/-1 mm (0 +0.04/-0.04 in.) all the way around. If not, make the following adjustment:

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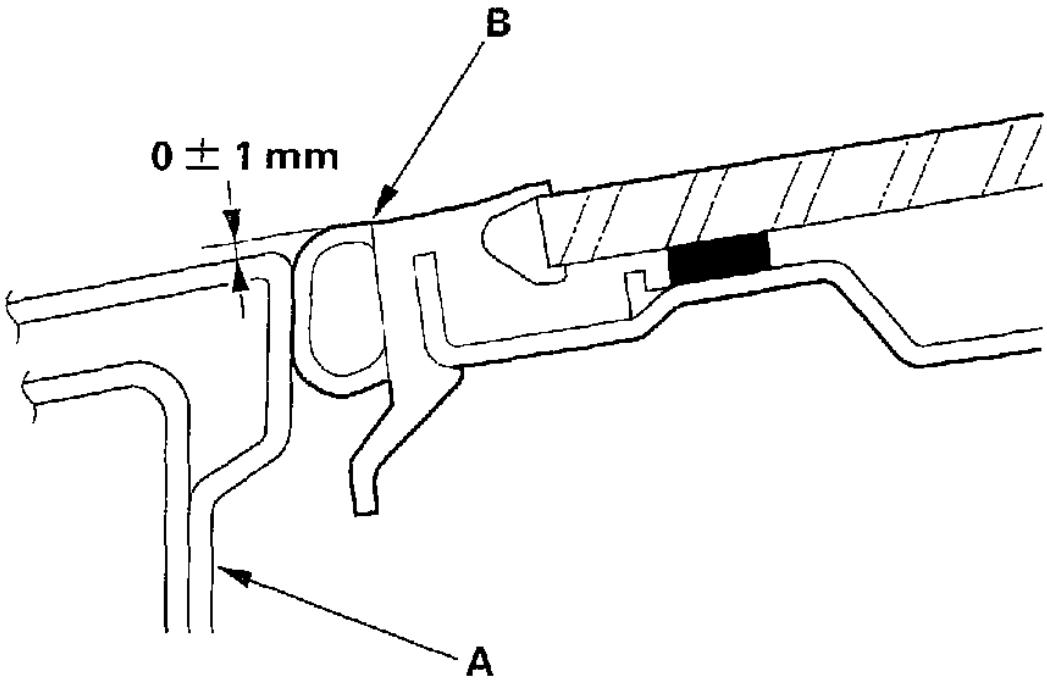


Fig. 3: Checking Glass Height

1. Remove the bracket cover.
2. Loosen the bolts on each side, and adjust the glass (A).

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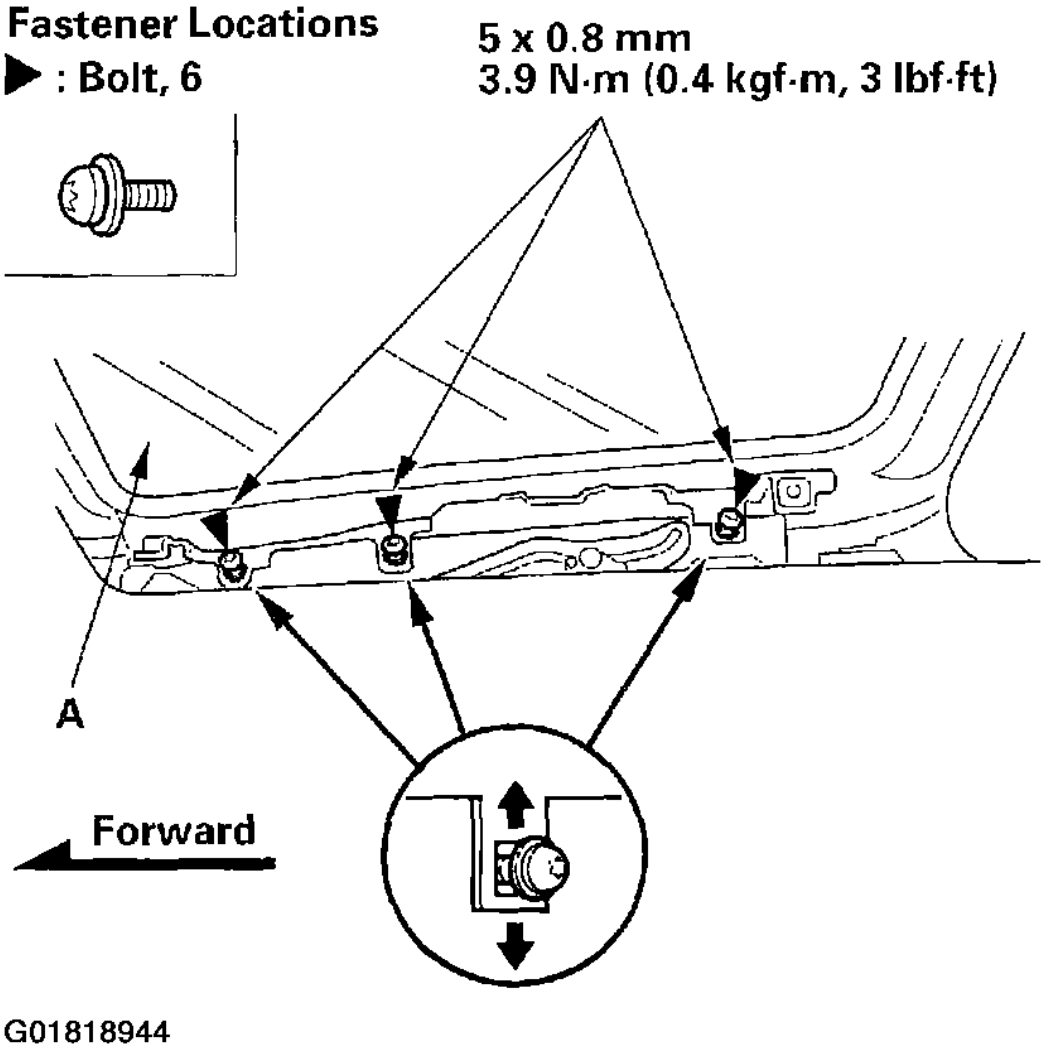


Fig. 4: Adjusting The Glass

3. If necessary, repeat on the opposite side.

GLASS REPLACEMENT

1. Close the glass fully.
2. Slide the sunshade all the way back.
3. Pry out the lid (A), remove the screws (B), and release the hooks (C), then remove both bracket covers (D). With a Torx T25 bit, remove the bolts (E) from both glass brackets (F).

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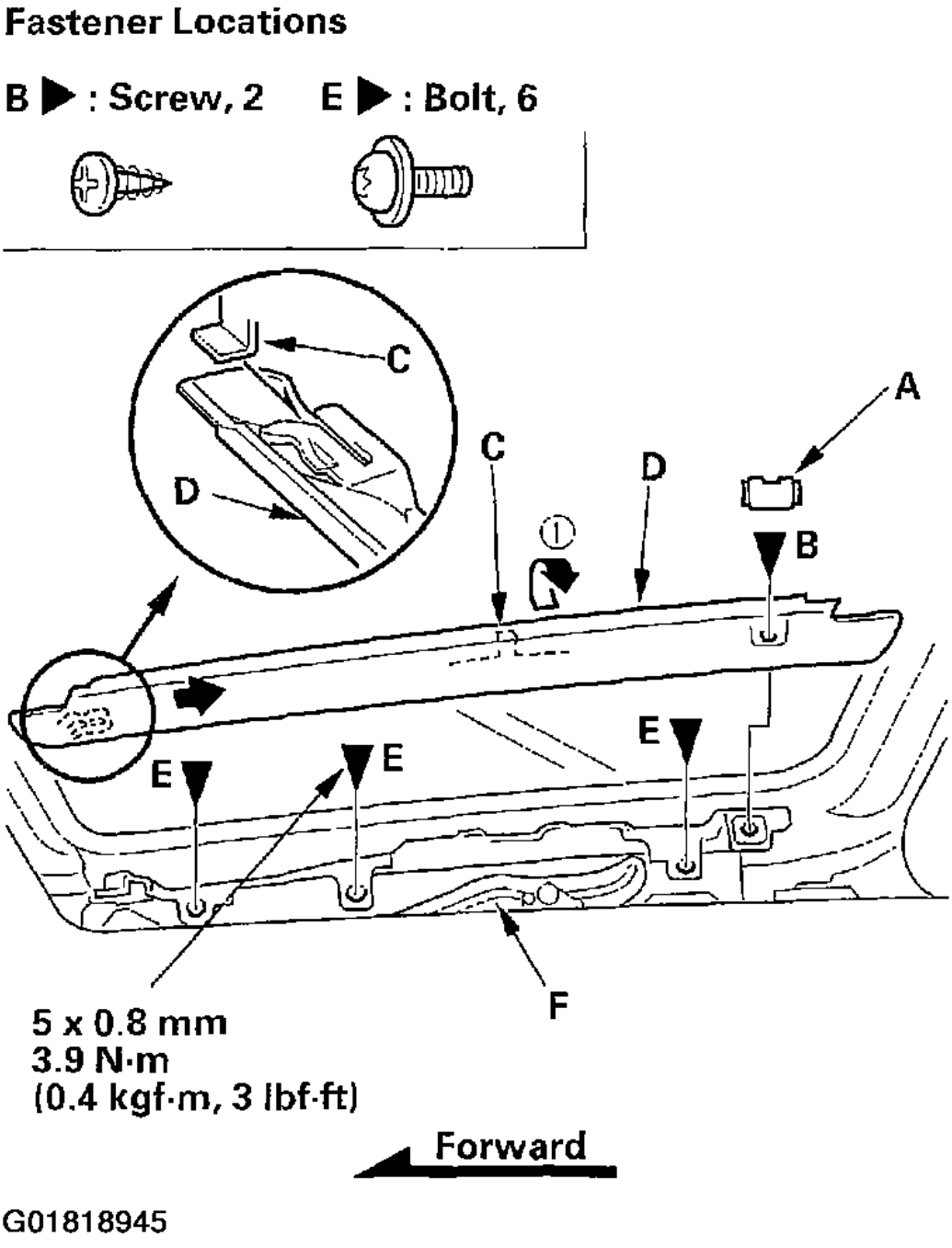


Fig. 5: Removing Both Bracket Covers

4. Remove the glass (A) by lifting it up. Do not damage the roof panel.

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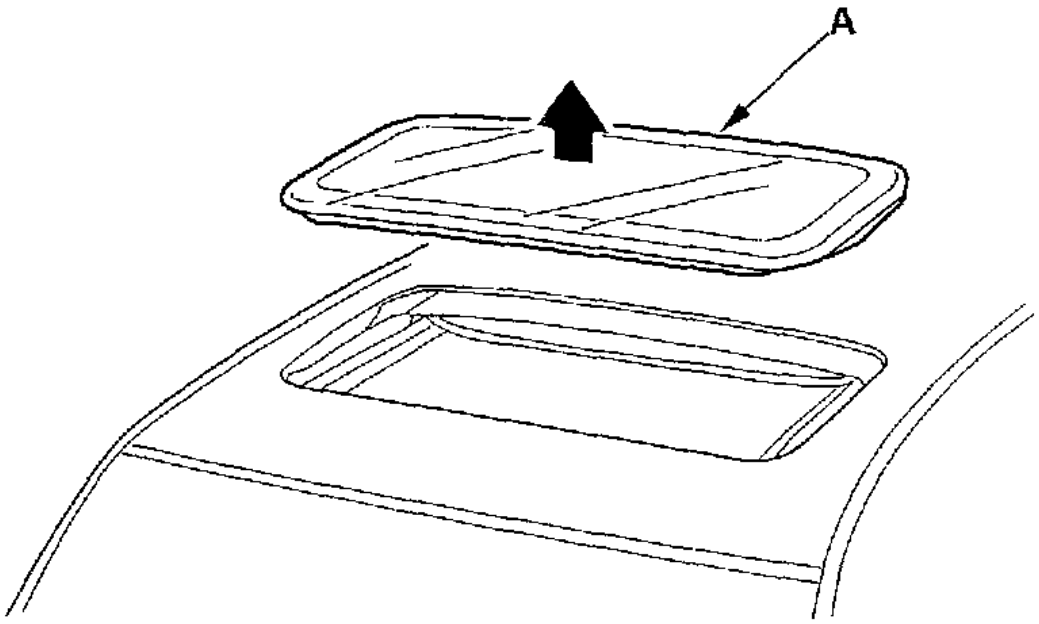


Fig. 6: Removing The Glass

5. Install the glass in the reverse order of the removal, and adjust the glass height alignment.
6. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.

NOTE: It is normal for some water to seep past the moonroof into the moonroof frame, and exit through the drains.

WIND DEFLECTOR REPLACEMENT

1. Open the glass fully.
2. Remove the links (A) from both sides.

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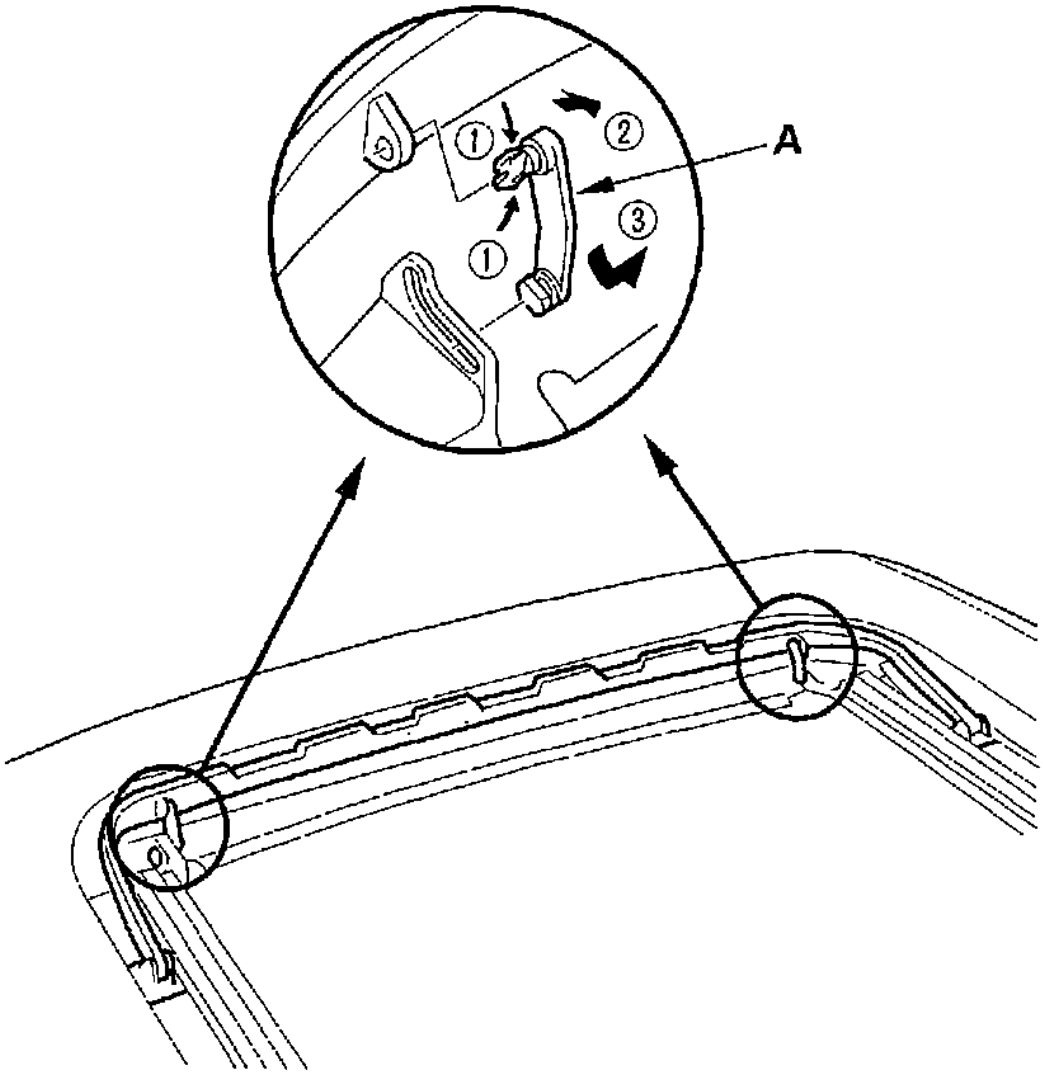


Fig. 7: Removing The Links From Both Sides

3. Remove the wind deflector (A).

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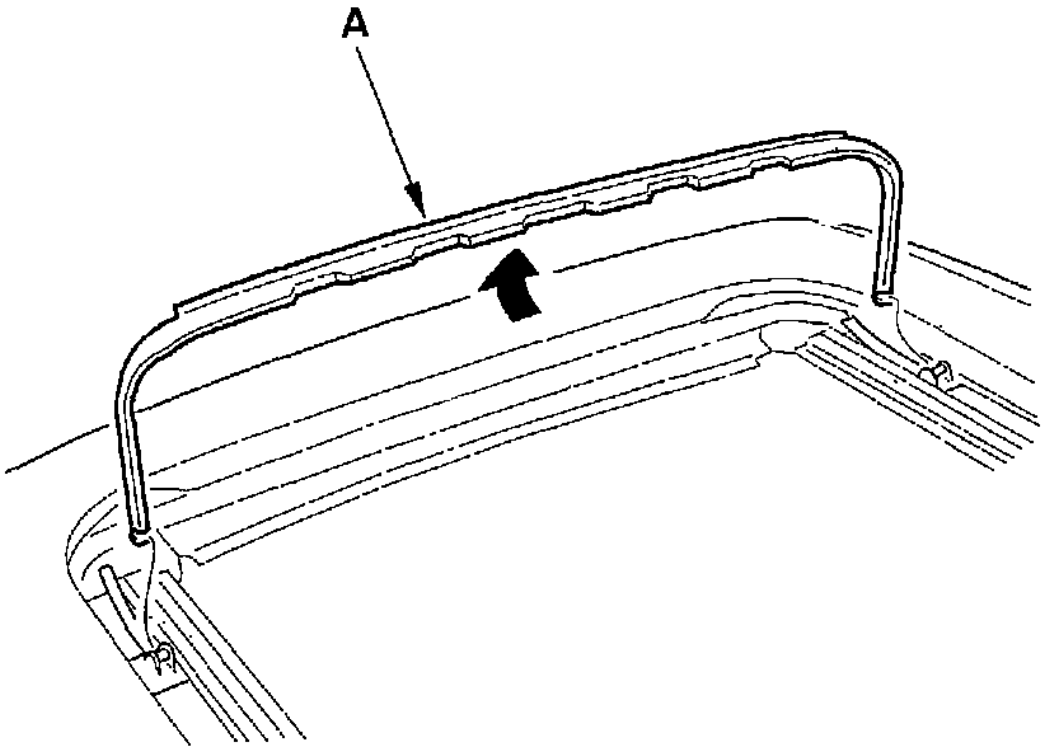


Fig. 8: Removing The Wind Deflector

4. Pry up on the deflector bases (A) and release the hooks (B), then remove the bases with springs (C) from both sides.

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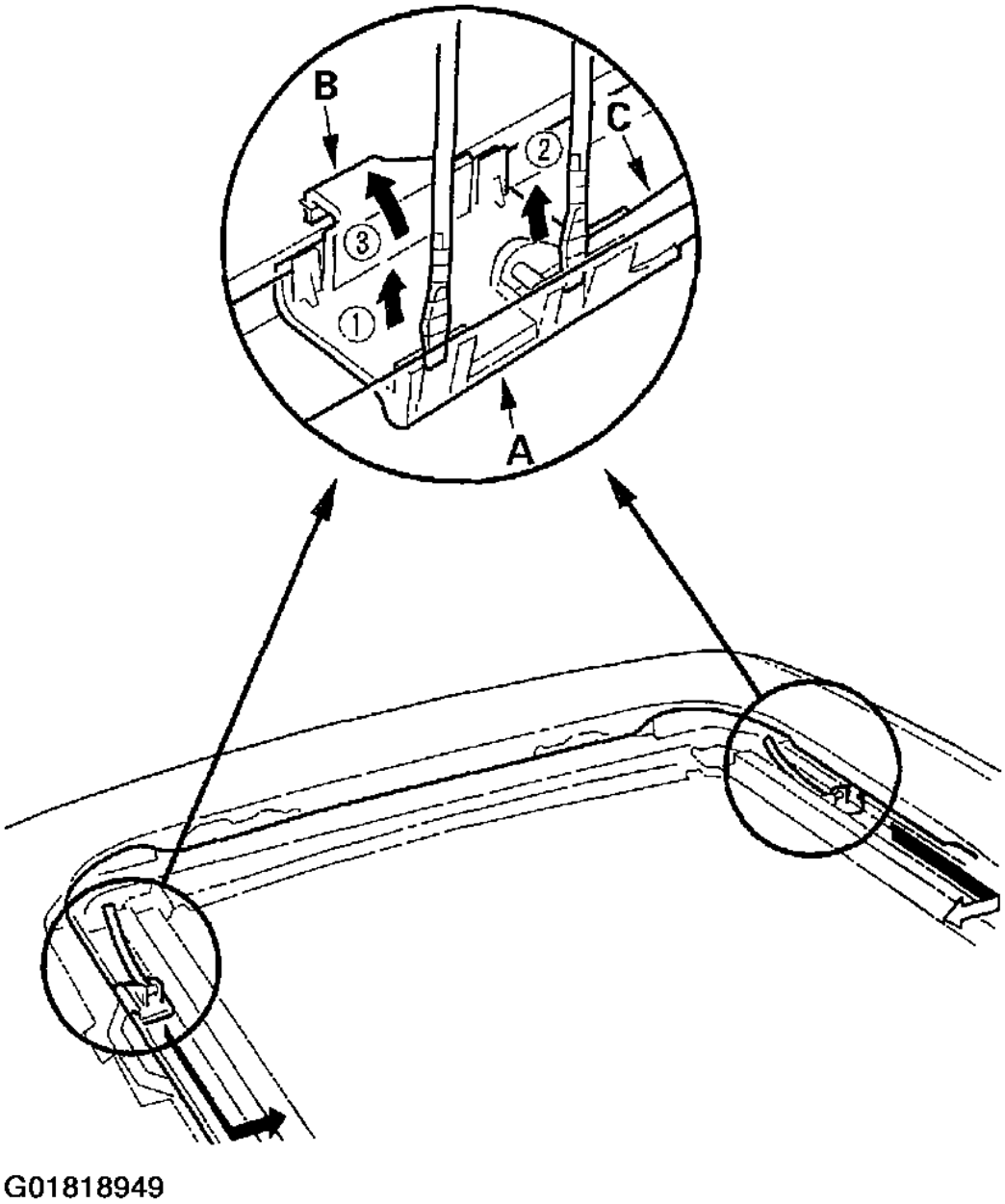


Fig. 9: Removing The Bases With Springs

5. Install the deflector in the reverse order of removal.

DRAIN CHANNEL REPLACEMENT

1. Remove the glass (see **GLASS REPLACEMENT**).

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2. With the moonroof wrench, move both glass brackets (A) to the position where the moonroof normally tilts up and disconnect the drain channel rod (B) on both sides.

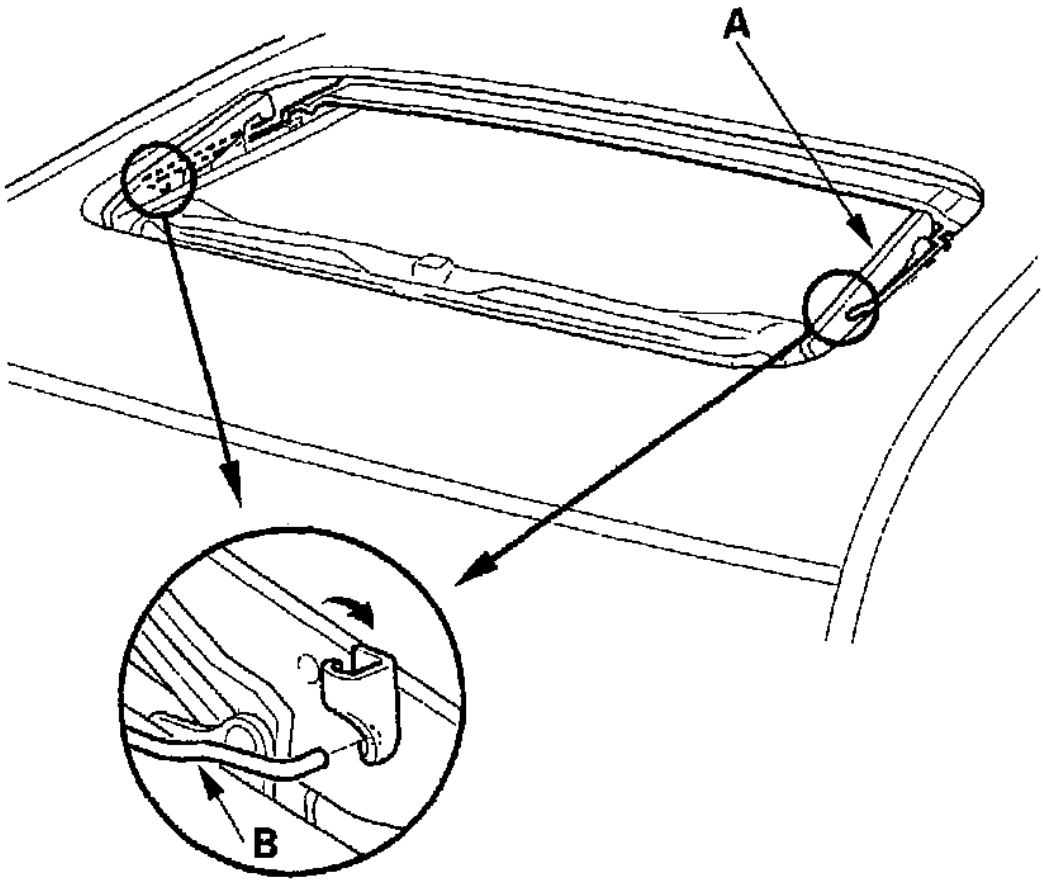


Fig. 10: Disconnecting The Drain Channel Rod

3. Slide the drain channel (A) forward.

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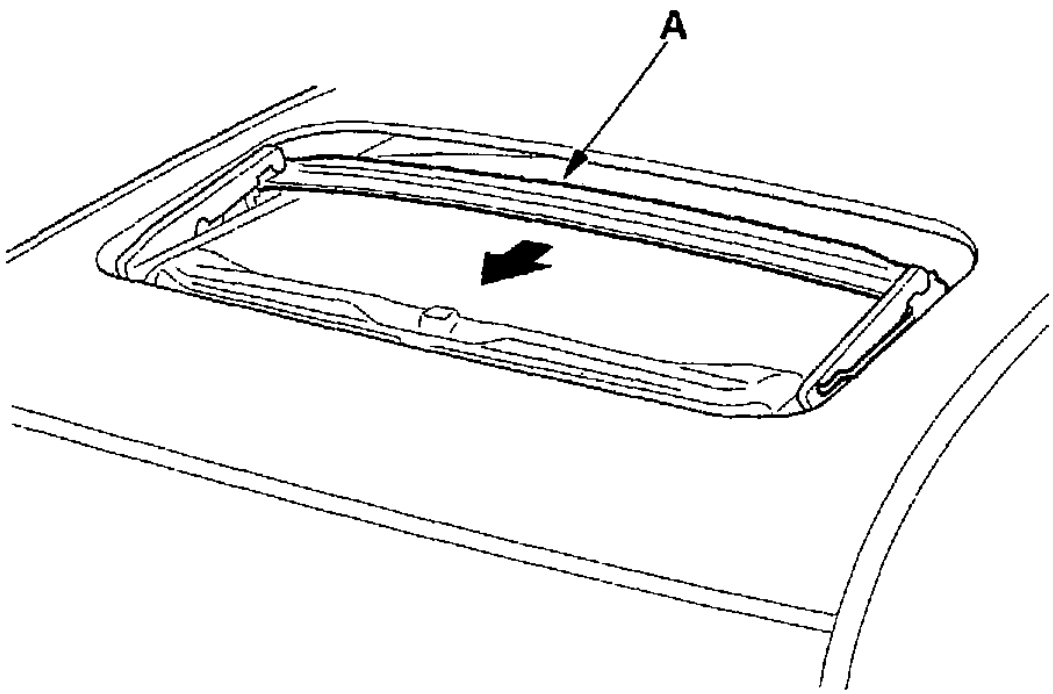


Fig. 11: Sliding The Drain Channel Forward

4. Pull the rear edge of the drain channel (A) up while pushing both clips (B), and release the channel from both hooks (C) of the drain channel slider by pulling it rearward

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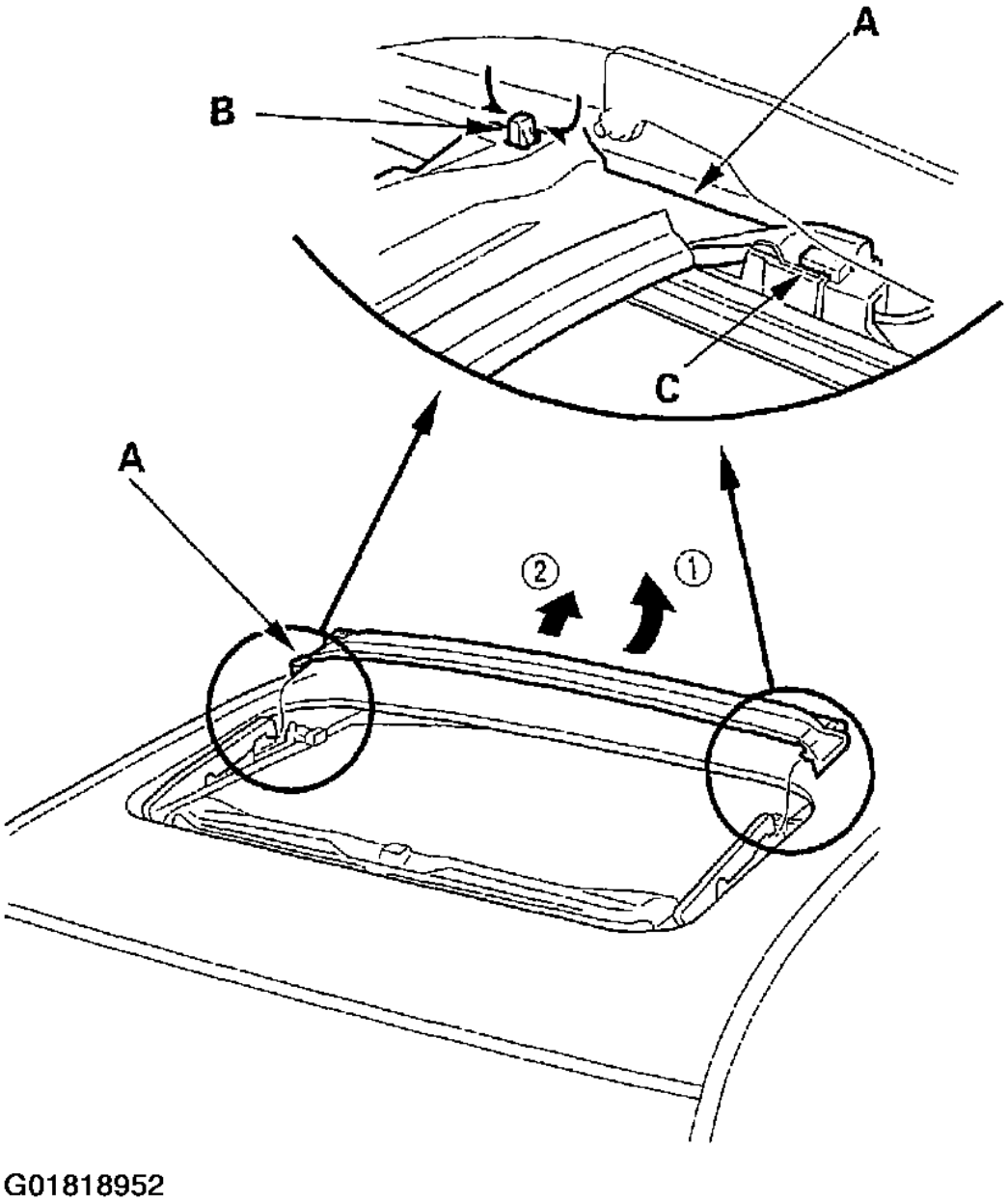


Fig. 12: Releasing The Channel From Both Hooks Of The Drain Channel Slider

5. Remove the drain channel.
6. Install the channel in the reverse order of removal, and note these items:
   - Push the clip portions into place securely.
   - Check the glass height adjustment (see **GLASS REPLACEMENT**).
7. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure

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spray.

SUNSHADE REPLACEMENT

1. Remove the drain channel (see **DRAIN CHANNEL REPLACEMENT**).
2. Slide the sunshade (A) until you can see both sunshade slider spacers (B).

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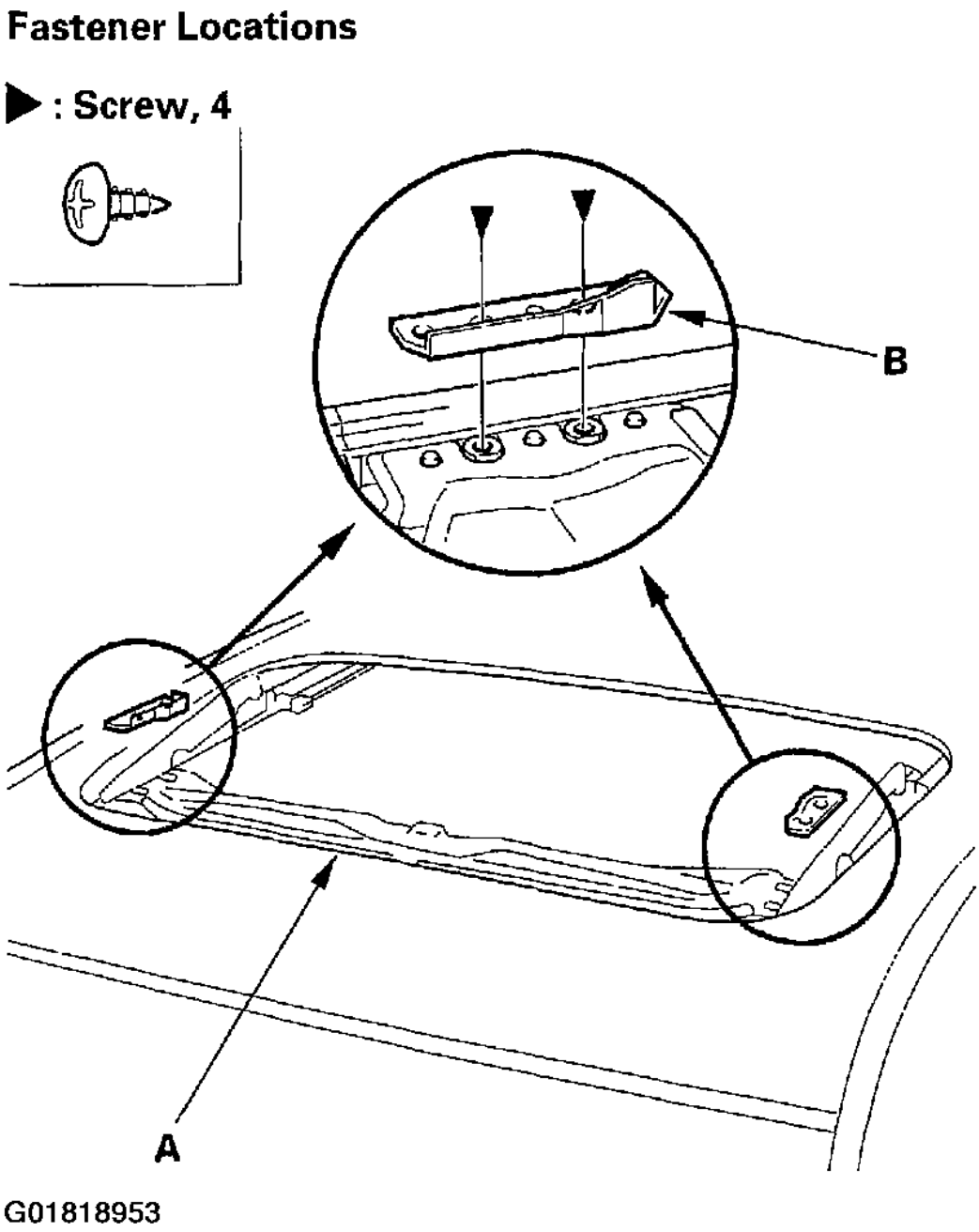


Fig. 13: Sliding The Sunshade

3. Remove the screws, then remove both spacers.
4. While lifting the front portion of the sunshade (A), move the sunshade forward until you can see both sunshade rear hooks (B). Do not damage the sunshade and hooks.

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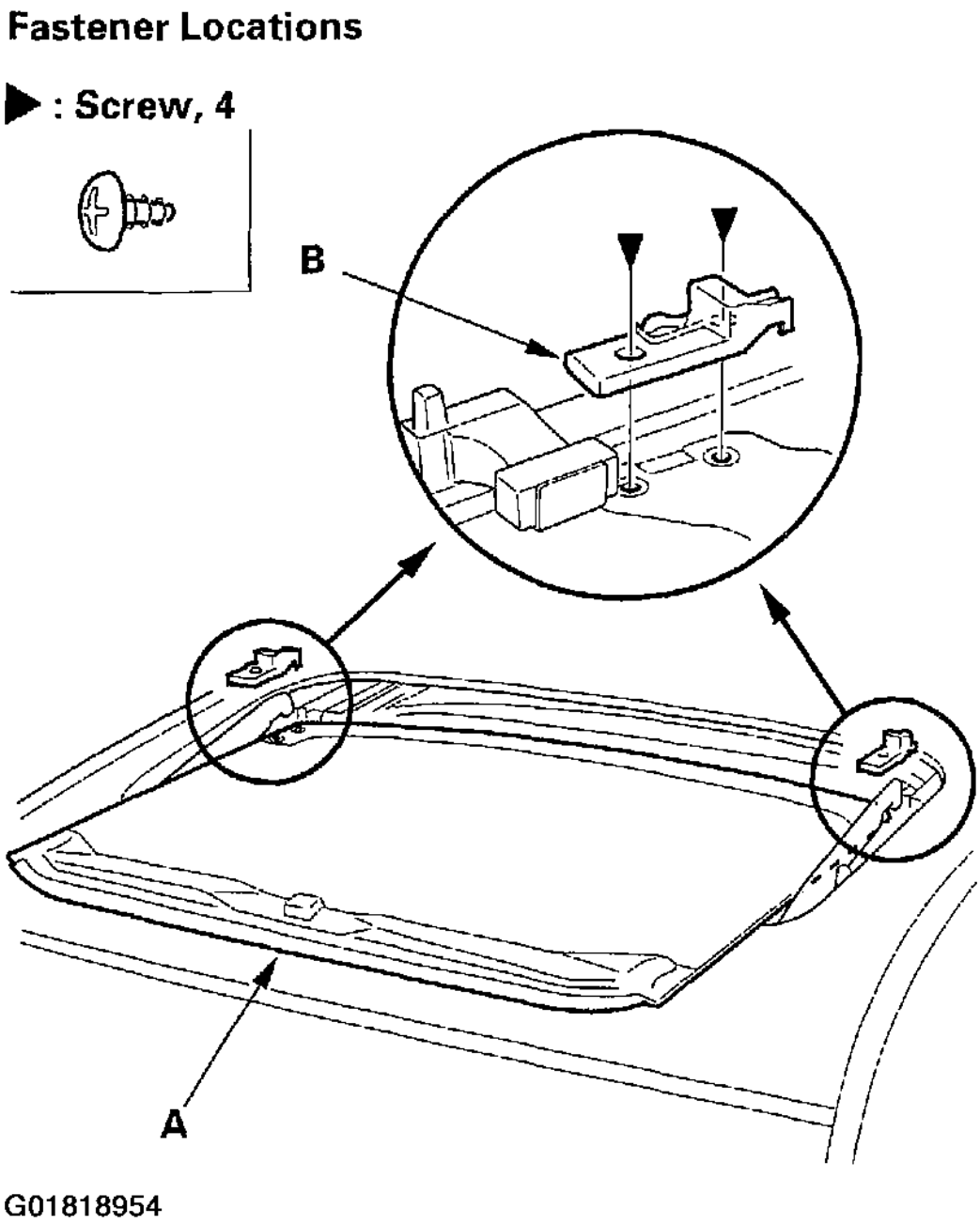


Fig. 14: Moving The Sunshade Forward Until You Can See Both Sunshade Rear Hooks

5. Remove the screws, then remove both hooks.
6. Remove the sunshade (A).

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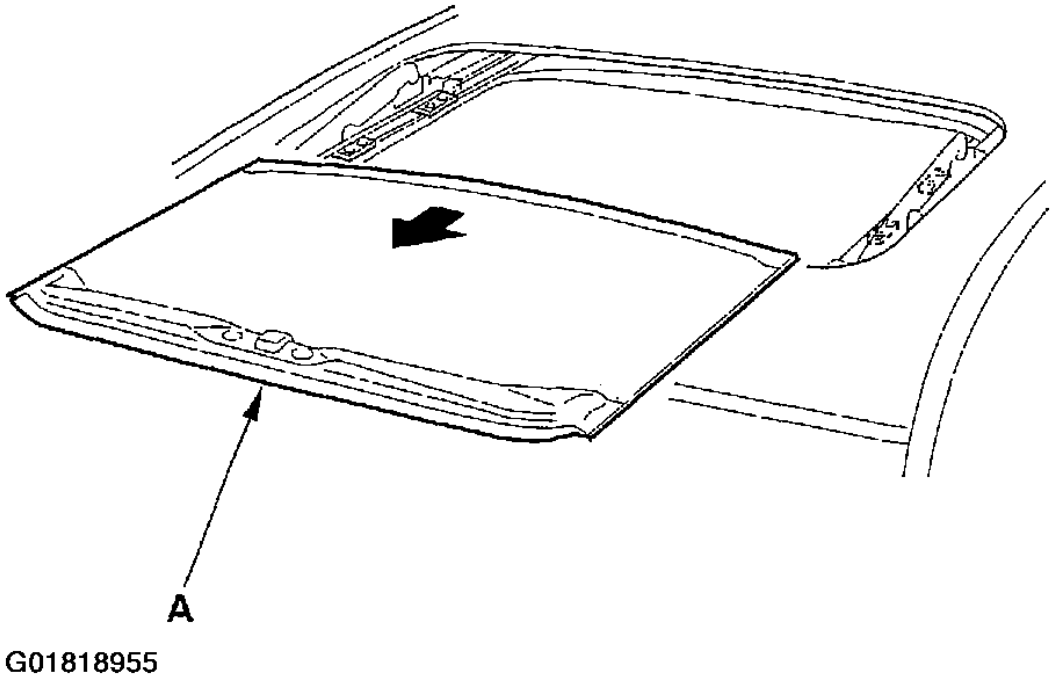


Fig. 15: Removing The Sunshade

7. Remove both front sunshade base sliders (A) and both rear sunshade base sliders (B).

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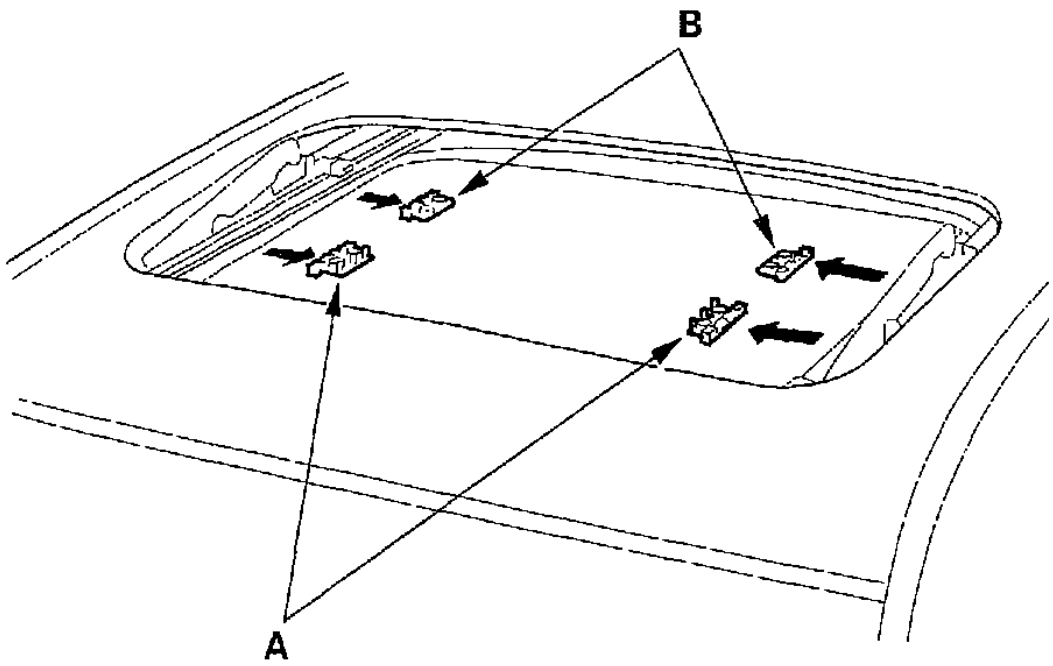


Fig. 16: Removing Front & Rear Sunshade Base Sliders

8. Install the sunshade in the reverse order of removal, and check the glass height adjustment (see **GLASS REPLACEMENT**).
9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

MOTOR REPLACEMENT

1. Remove the headliner (see **HEADLINER REMOVAL/INSTALLATION**).
2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor (B).

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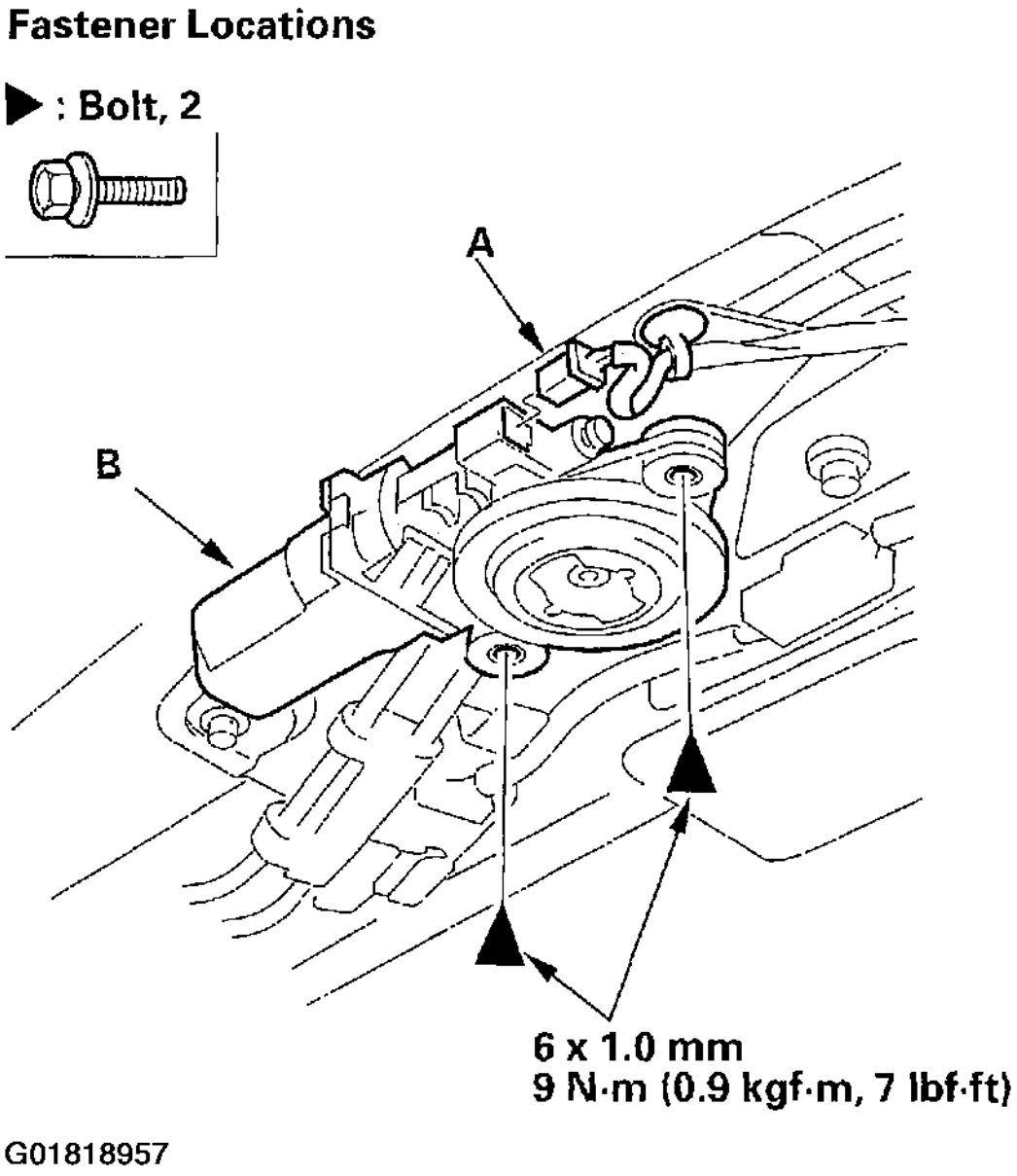


Fig. 17: Removing The Motor

3. Install the motor in the reverse order of removal, and note these items:
   - Make sure the connector is plugged in properly.
   - Check the motor operation.

FRAME & DRAIN TUBE REPLACEMENT

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SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

1. Remove these items:
   - Headliner (see **HEADLINER REMOVAL/INSTALLATION**)
   - Moonroof glass (see **GLASS REPLACEMENT**)
   - Without side curtain airbag: Rear grab handle bracket, both sides (see step 7 of **HEADLINER REMOVAL/INSTALLATION**)
   - Without side curtain airbag: Roof side pad, front and rear both sides (see step 8 of **HEADLINER REMOVAL/INSTALLATION**)
2. With side curtain airbag: Remove the bolts securing both rear grab handle brackets (A), then release them from the body. Do not pull the bracket with the airbag excessively. Take care not to damage the airbag.

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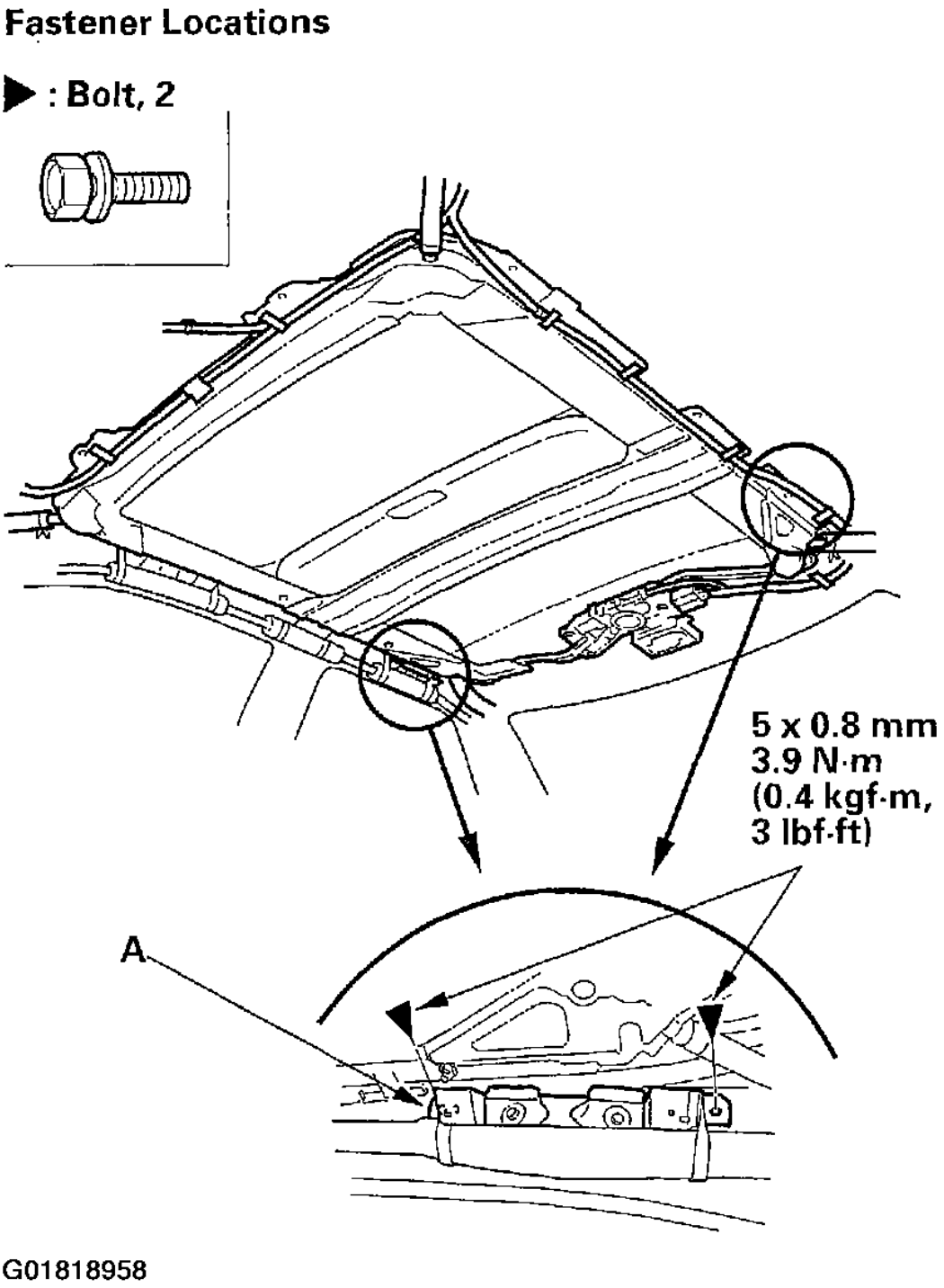


Fig. 18: Removing The Bolts Securing Both Rear Grab Handle Brackets

3. Put on gloves to protect your hands. Disconnect the motor connector (A), open/close-tilt/close switch

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connector (B), and remove the moonroof relays (C).

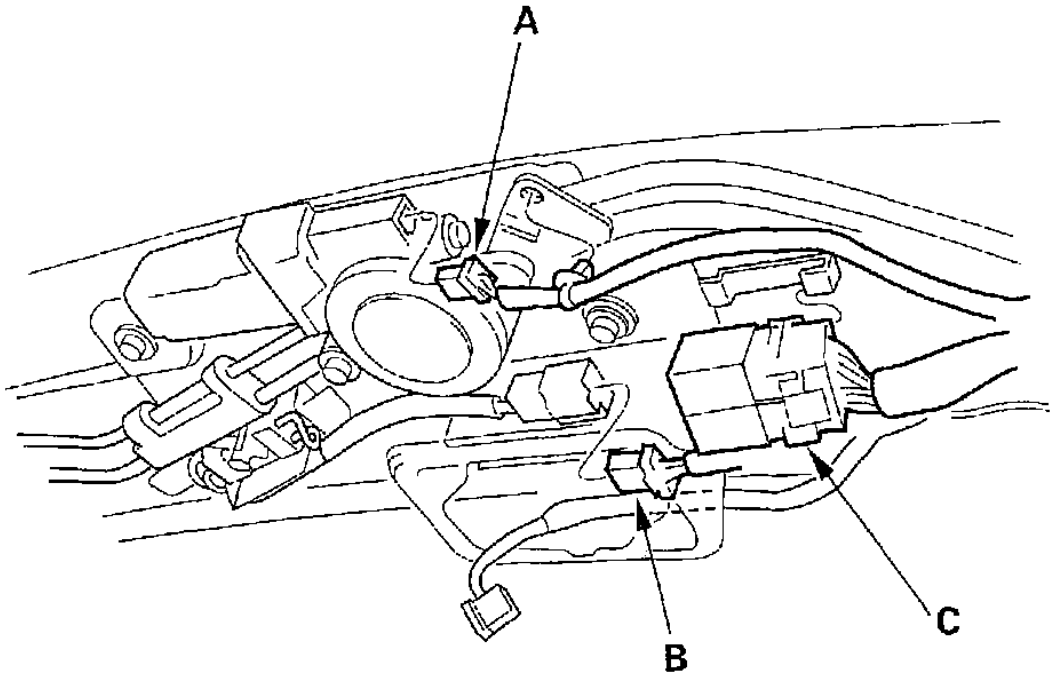


Fig. 19: Removing The Moonroof Relays

4. Disconnect the drain tubes (A).

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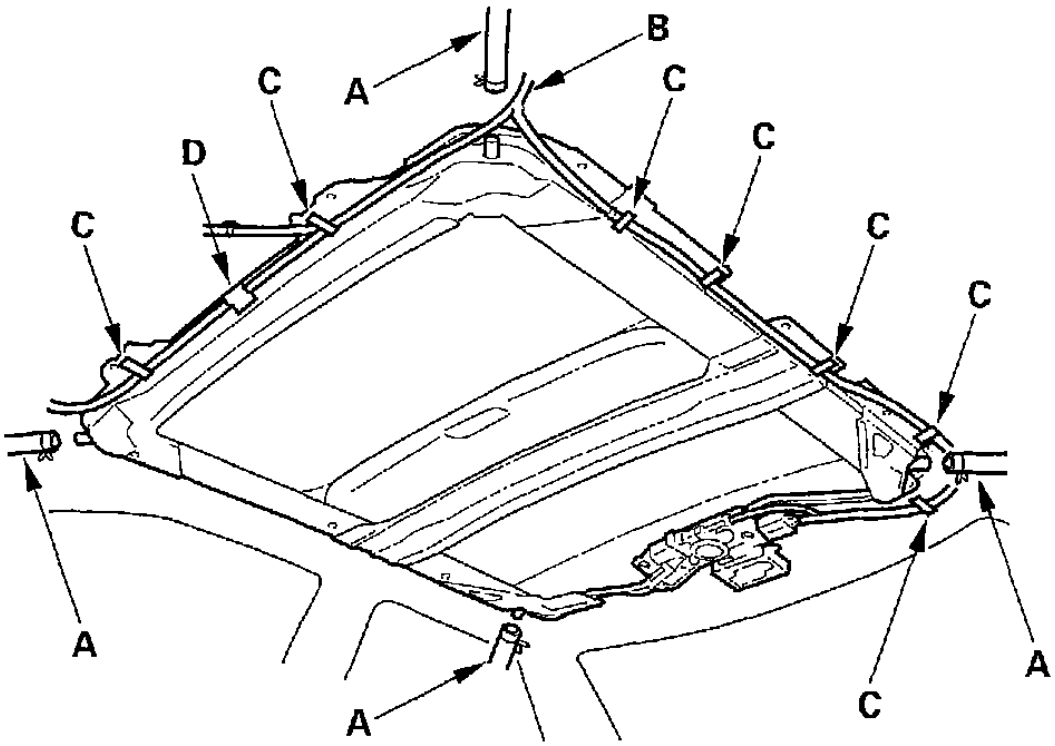


Fig. 20: Disconnecting The Drain Tubes

5. Remove the interior harness (B) by detaching the harness clips (C) and removing the tape (D).
6. With an assistant holding the frame (A), remove the bolts, starting at the rear, and release the rear hooks (B) by moving the frame forward.

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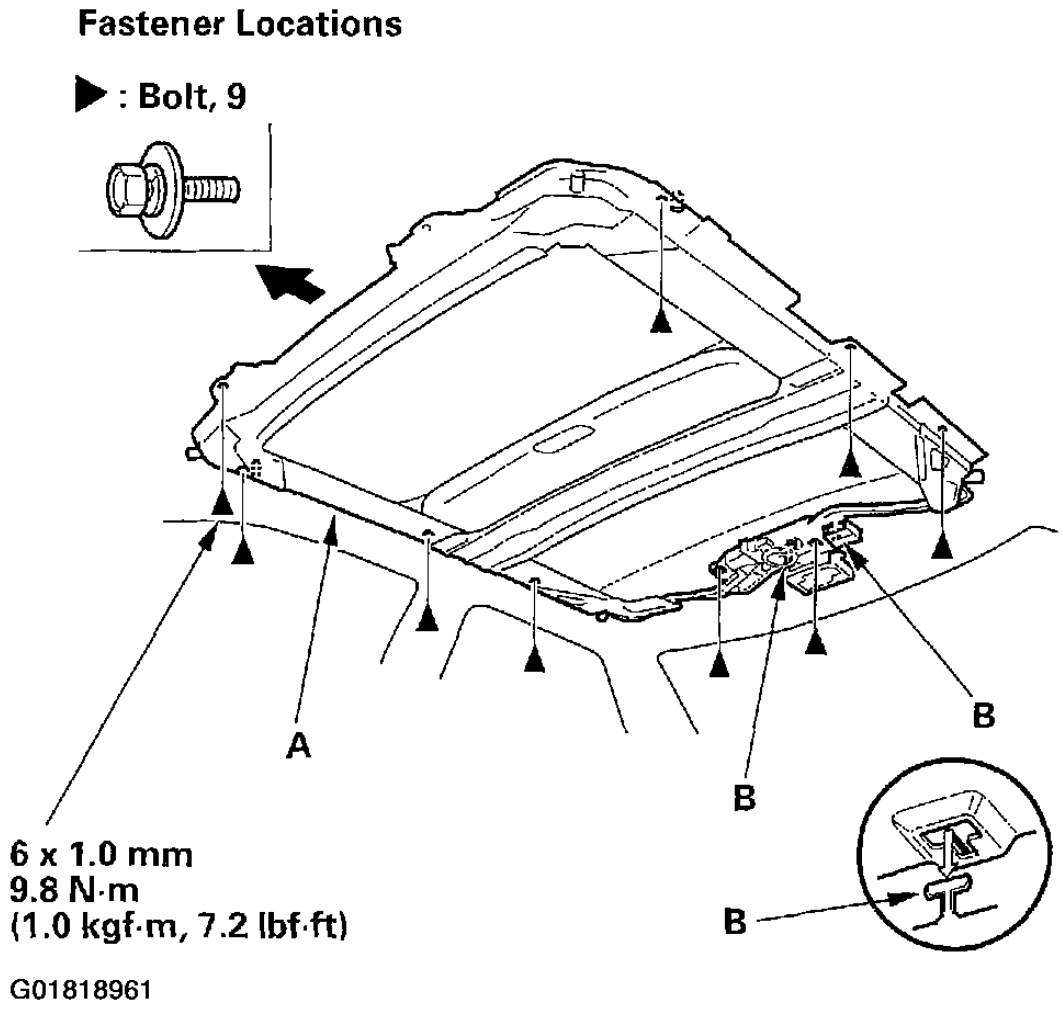


Fig. 21: Removing The Bolts & Releasing The Rear Hooks

7. With the help of an assistant, move the frame (A) to the left or right, then lower the opposite side of rear grab handle down. If equipped, keep the rear grab handle bracket (B) away from the frame while lowering the frame. Take care not to hang the frame on the bracket.

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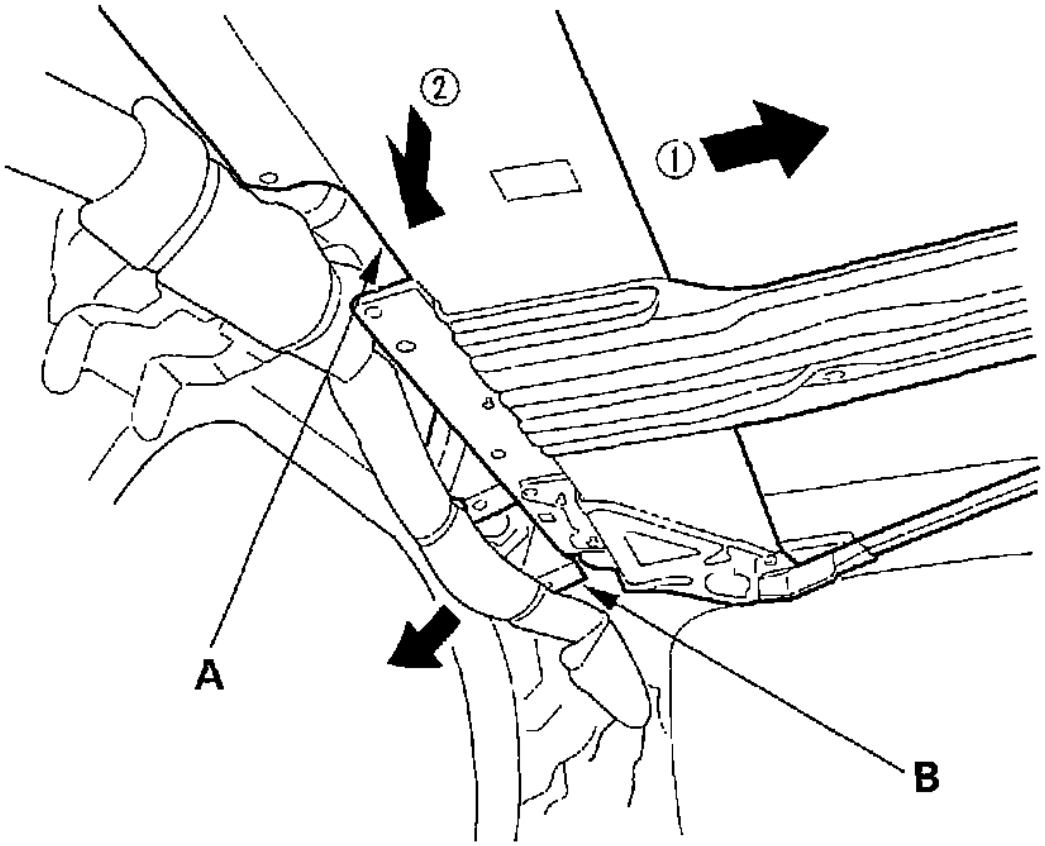


Fig. 22: Moving The Frame, Then Lowering The Opposite Side Of Rear Grab Handle Down

8. With the help of an assistant, carefully remove the frame through the front door opening. Take care not to scratch the interior trim and body, or tear the seat covers.
9. To remove a front drain valve (A) from the body, remove the kick panel, left or right (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**). Tie a string to the top end of the drain tube, then pull the front drain tube (B) down out of the A-pillar.

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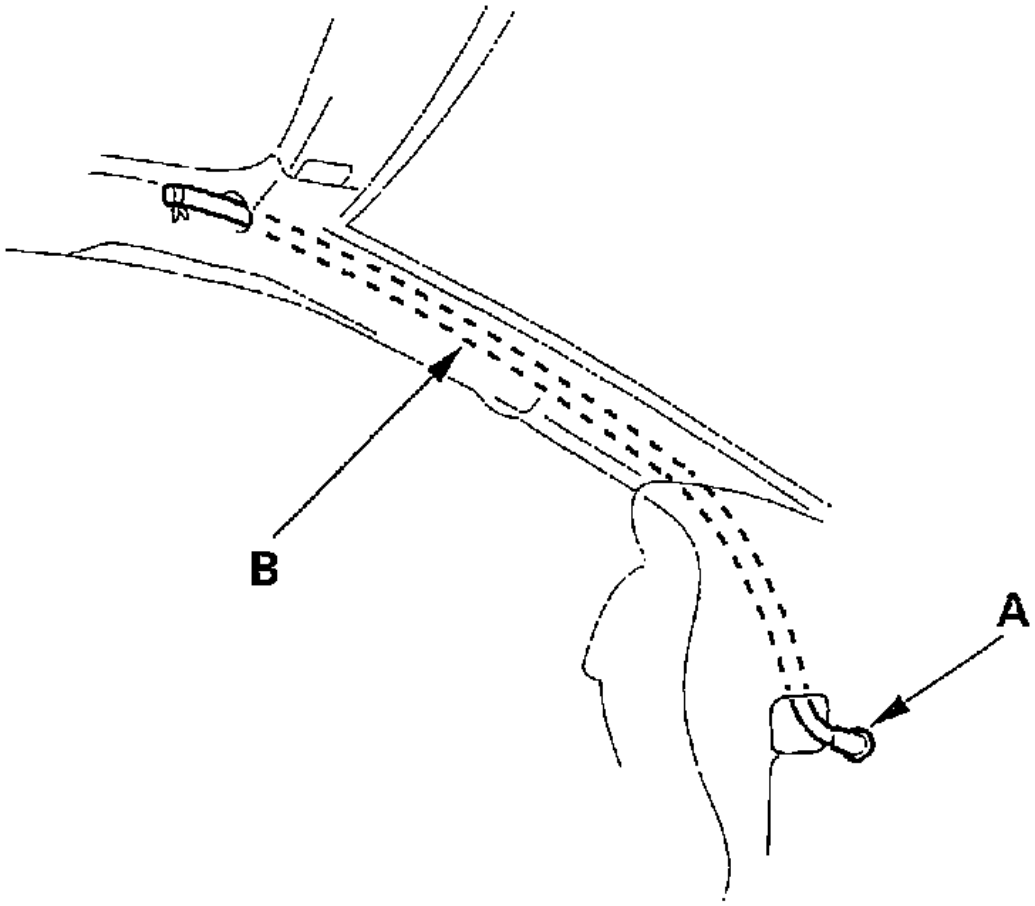


Fig. 23: Removing The Front Drain Valve

10. To remove a rear drain valve (A) from the body, remove these parts (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**):
    - Spare tire lid
    - Trunk rear trim panel

    Tie a string to the top end of the rear drain tube (B), then pull back the trunk side trim panel and pull the drain tube down out of the pillar.

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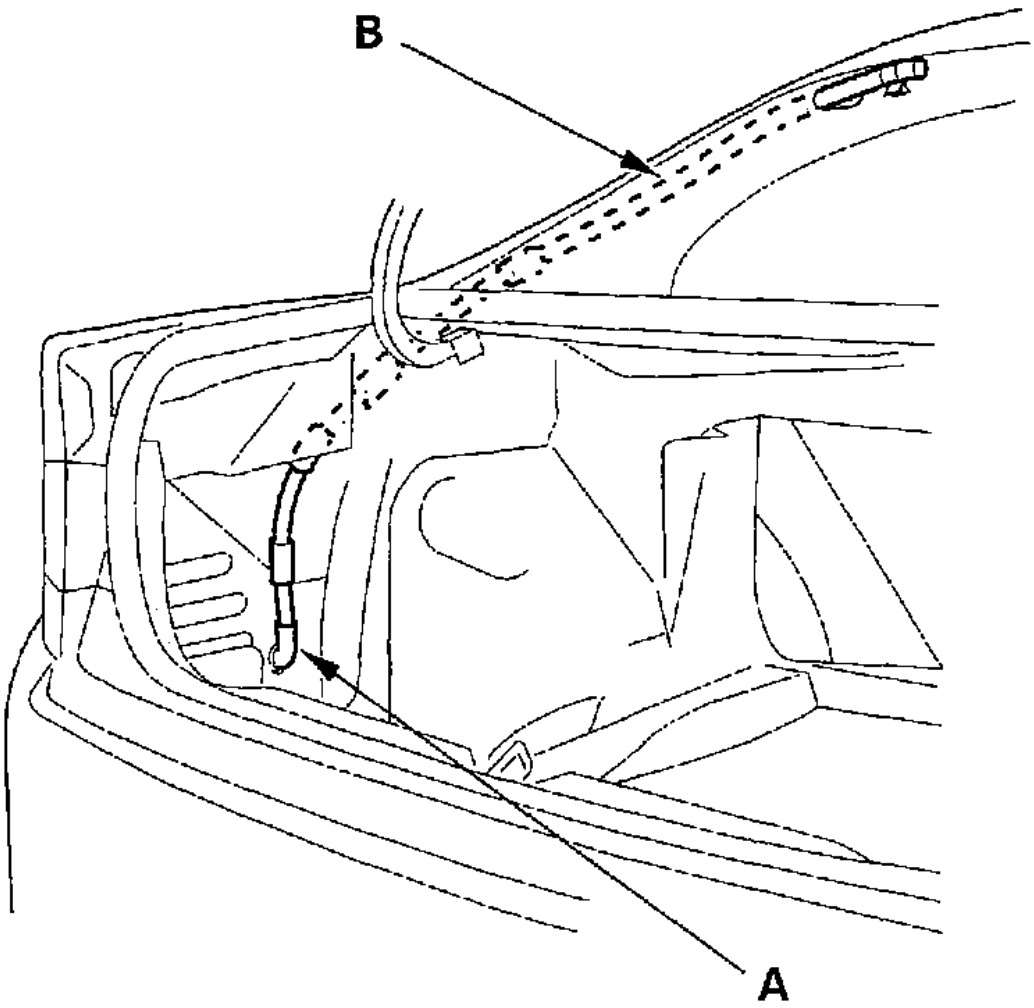


Fig. 24: Removing The Rear Drain Tube

11. Install the frame and drain tube in the reverse order of removal, and note these items:
    - Before installing the frame, clear the drain tubes and drain valves using compressed air.
    - When installing, tie a string to the top end of the new drain tube and pull it up into the roof.
    - Check the frame seal.
    - Clean the surface of the frame.
    - When installing the frame, first attach the rear hooks into the body holes.
    - Make sure the connectors are plugged in properly.
    - When connecting the drain tube, slide it over the frame nozzle at least 10 mm (0.39 in.).

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- Install the tube clip (A) on the drain tube (B) as shown.

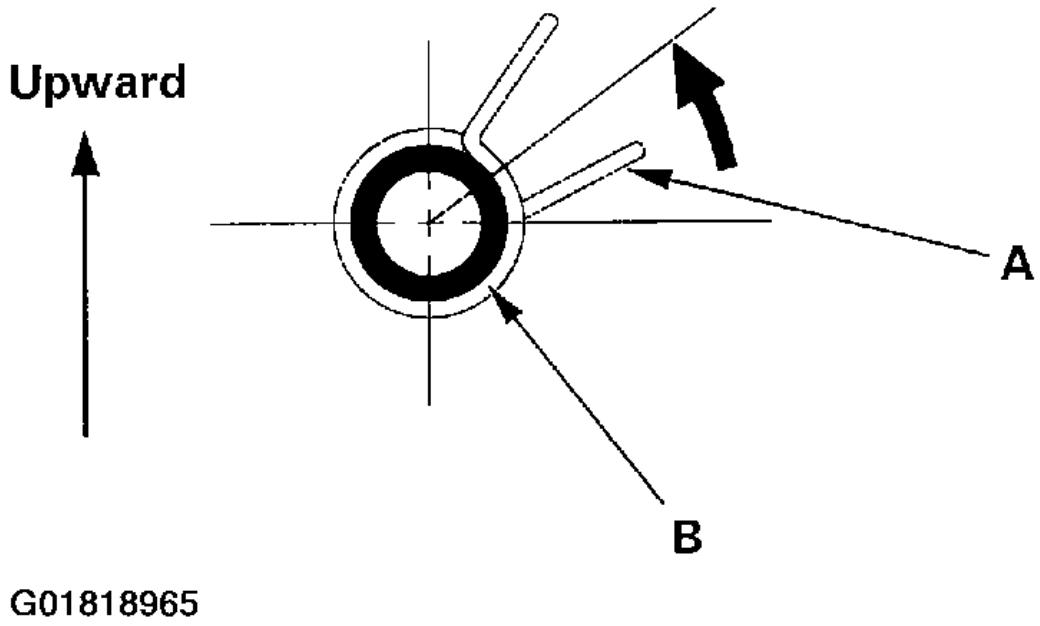


Fig. 25: Identifying Proper Orientation Of Tube Clip On The Drain Tube

12. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

DRAIN CHANNEL SLIDER & CABLE ASSEMBLY REPLACEMENT

1. Remove the frame (see **FRAME & DRAIN TUBE REPLACEMENT**).
2. Remove these parts from the frame:
   - Sunshade (see **SUNSHADE REPLACEMENT**)
   - Moonroof motor (see **MOTOR REPLACEMENT**)
3. Put on gloves to protect your hands. Remove the screws (A, B) securing the slide stops (C), and cable tube rear brackets (D), cable tube side bracket mounting bolts (E) and the cable tube mounting screws (F) from both sides of the frame (G).

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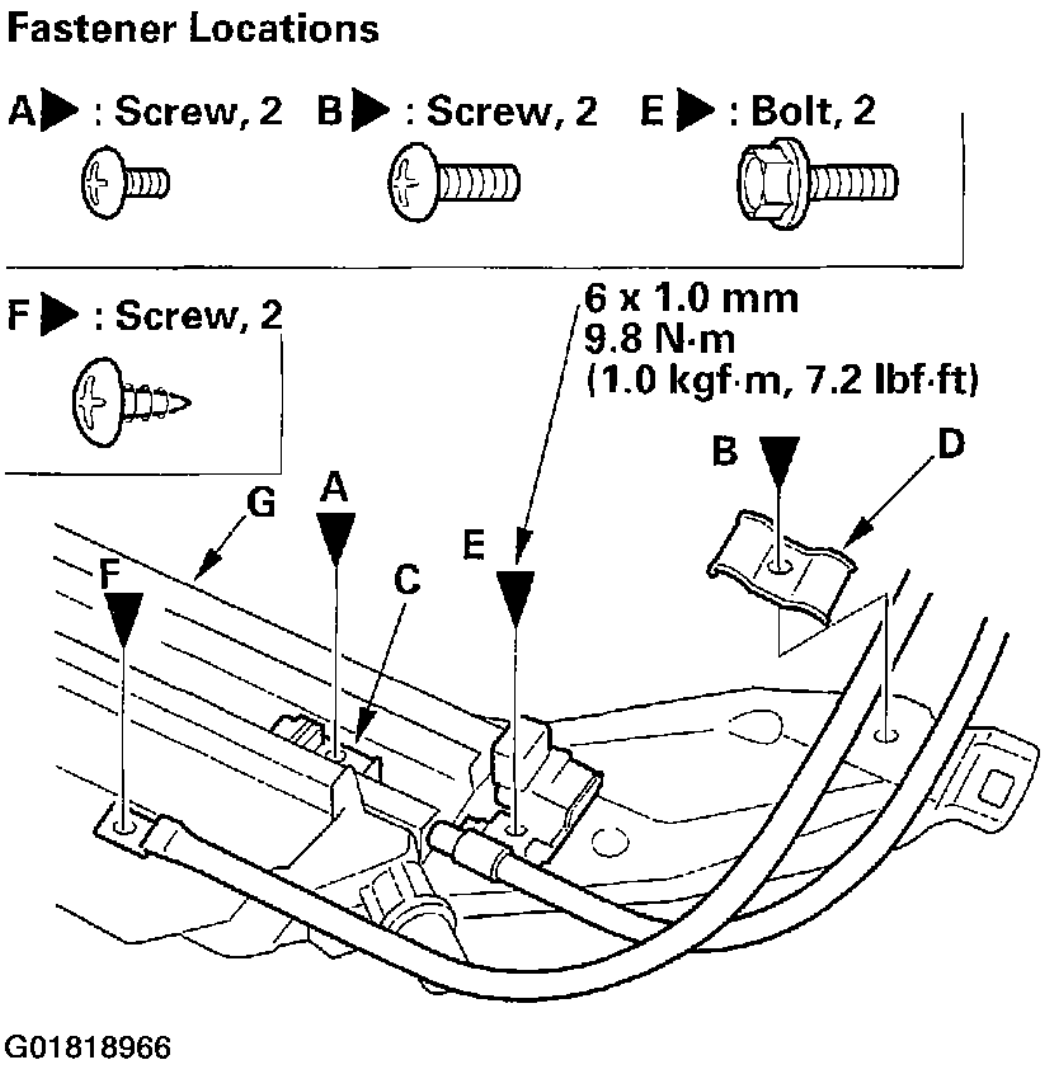


Fig. 26: Removing The Screws

4. Turn both cable tube side brackets (A) up to release the hooks (B) from the holes in both sides of the frame.

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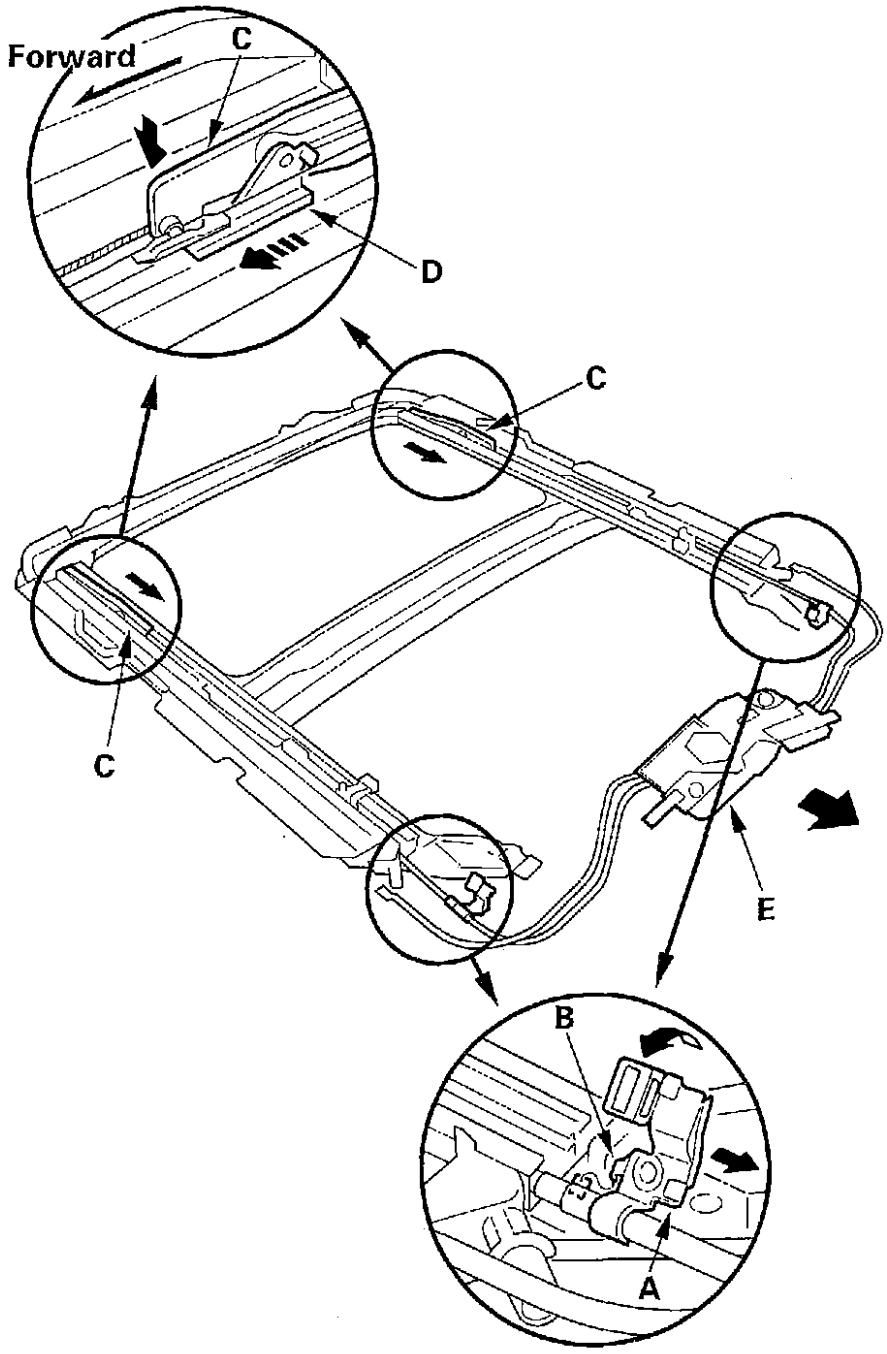


Fig. 27: Releasing The Hooks

5. Pivot the glass bracket (C) down by sliding the link lifter (D) back, then slide both glass brackets back with the link lifters.
6. Slide the cable assembly (E) half-way.

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7. Remove the slide stops (A) and the drain channel sliders (B) from both sides.

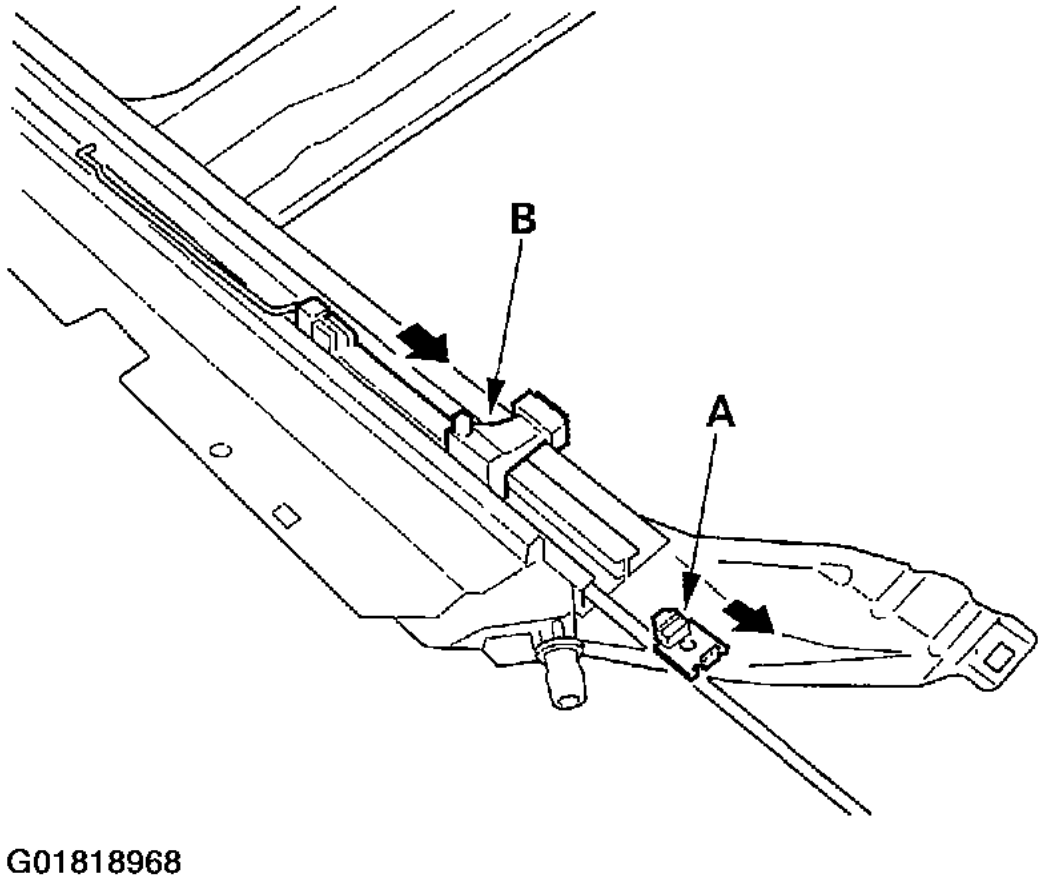


Fig. 28: Removing The Slide Stops & The Drain Channel Sliders

8. Slide the cable assembly (A) and both glass brackets (B) back, remove the deflector sliders (C) from both glass brackets, then remove them from the frame (D).

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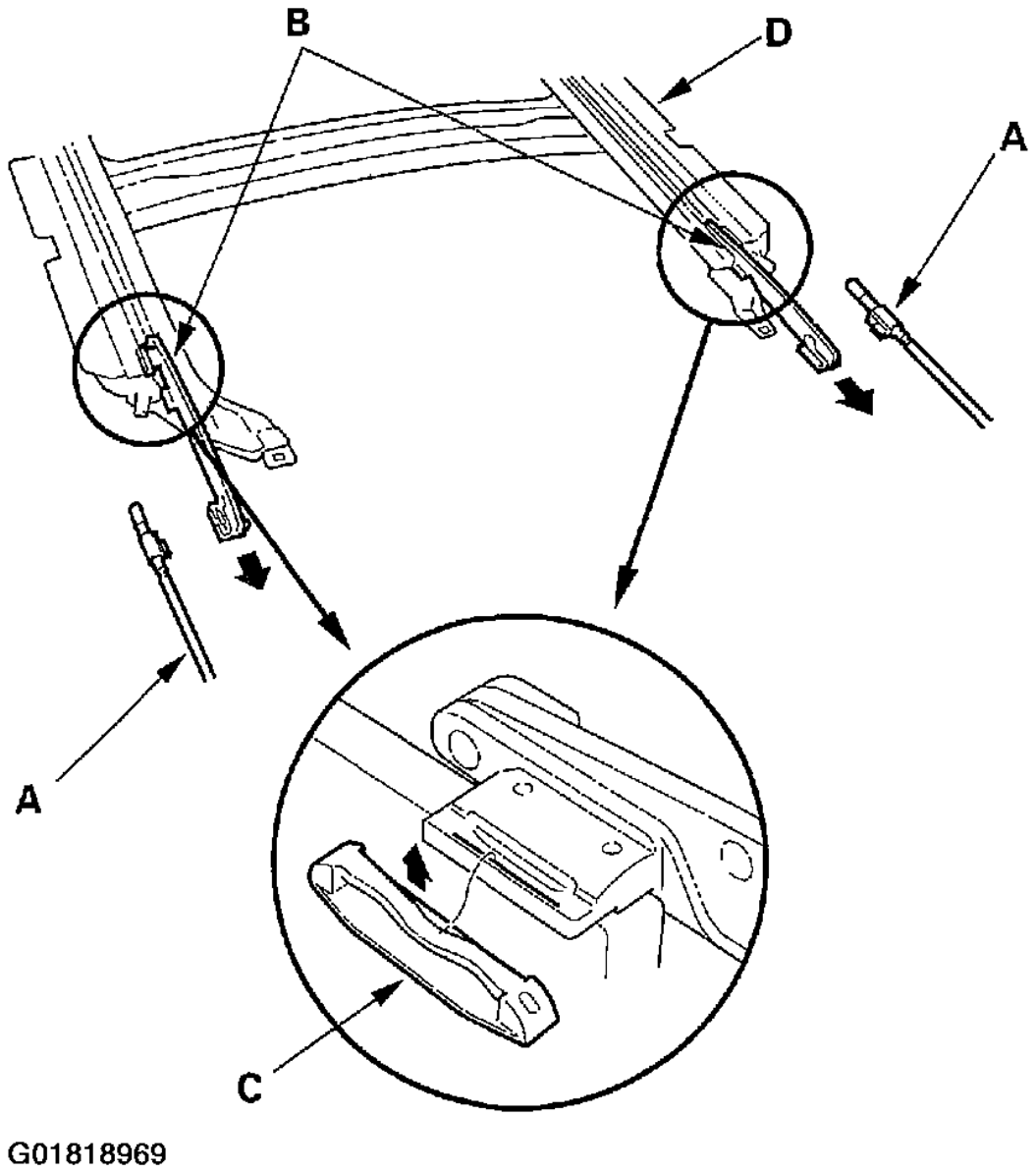
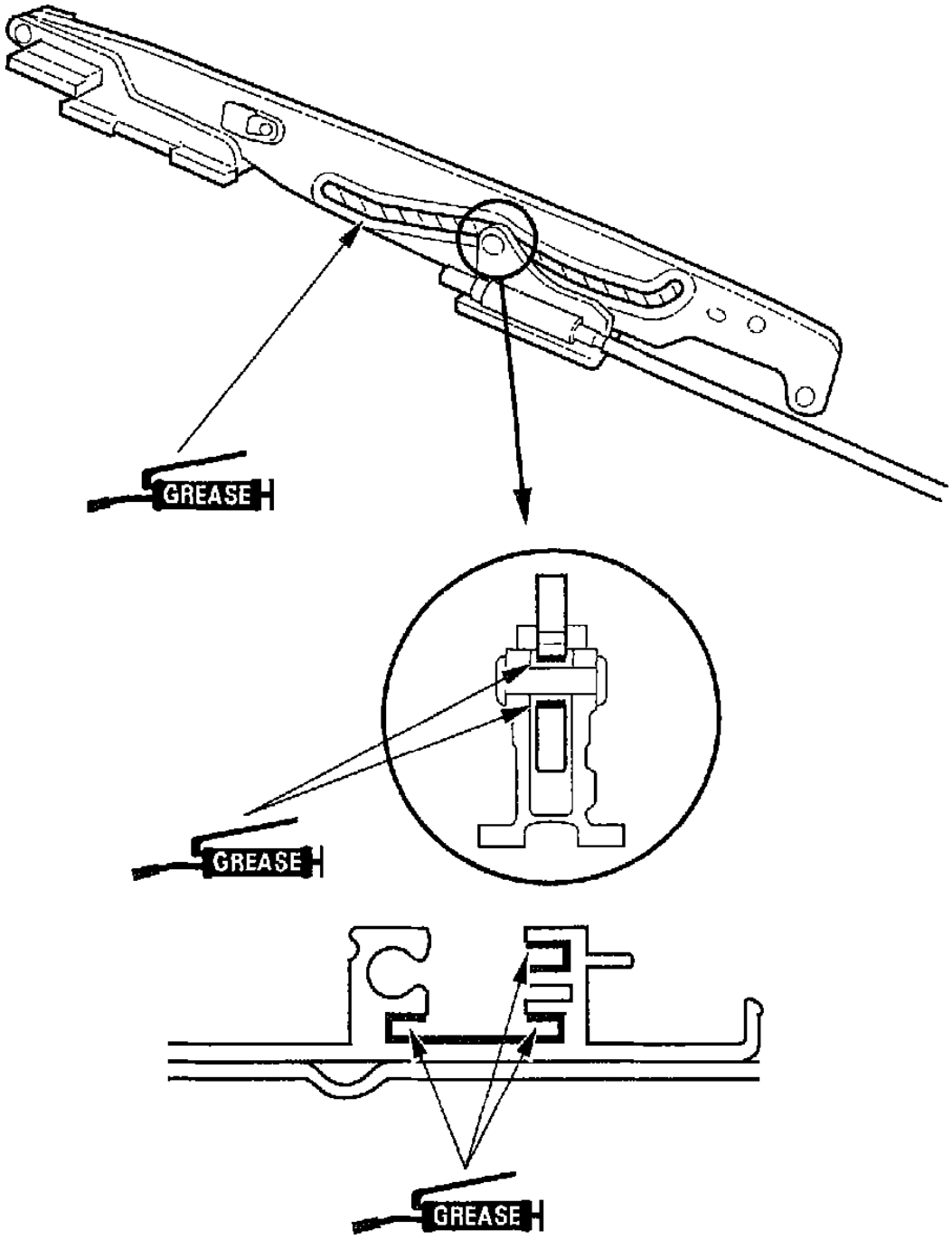


Fig. 29: Removing The Deflector Sliders

9. Install the slider and cable assembly in the reverse order of removal, and note these items:
   - Damaged parts should be replaced.
   - Apply multipurpose grease to the glass bracket (A) and guide rail portion of the frame (B) indicated by the arrows.
   - Before reinstalling the motor, make sure both link lifters are parallel, and in the fully closed position.

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- Before reinstalling the motor, install the frame and glass, then check the opening drag (see **CLOSING FORCE & OPENING DRAG CHECK**).



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Fig. 30: Applying Multipurpose Grease

LIMIT SWITCH ADJUSTMENT

1. Remove the headliner (see **HEADLINER REMOVAL/INSTALLATION**).
2. With the moonroof wrench, close the glass (A) fully:
   - Make sure both link lifters (B) are parallel, and in the position shown.
   - Check the glass fit to the roof panel and the glass height (see **GLASS REPLACEMENT**).

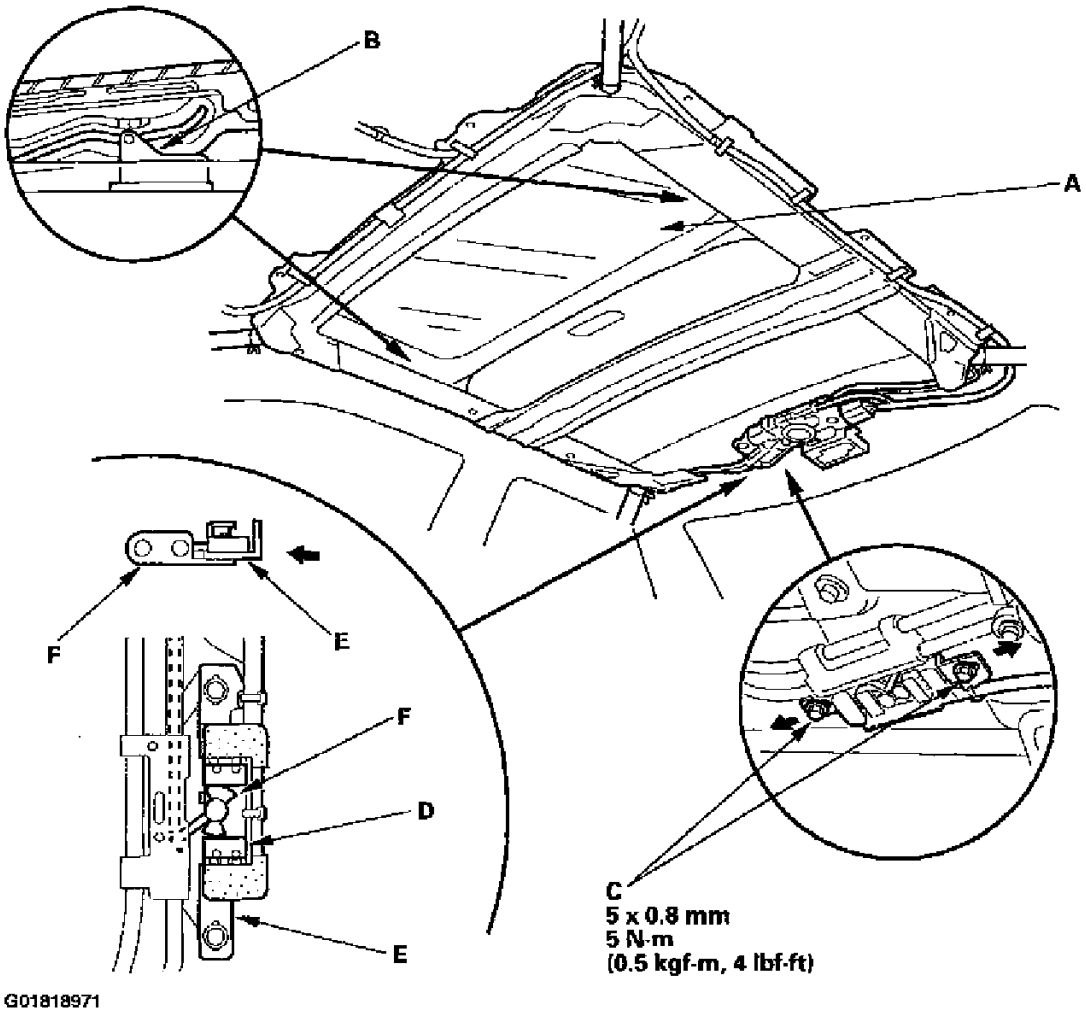


Fig. 31: Adjusting Limit Switch

3. With an open-end wrench, loosen the limit switch mounting bolts (C).
4. Adjust the limit switch (D):
   - Move the switch plate (E) a little at a time, then secure it at the position where you hear a faint click when the switch cam (F) pushes the limit switch (open/close).

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- Check that the switch plate contacts the switch bracket (F).
- Check the operation of the glass (from the tilt-up position to fully closed position, from the fully open position to the fully closed position) by operating the moonroof switch.

NOTE: Adjust the switch plate until the glass opens and closes correctly.

- Reinstall all remaining parts in the reverse order of removal.

CLOSING FORCE & OPENING DRAG CHECK

1. Remove the headliner (see **HEADLINER REMOVAL/INSTALLATION**).
2. Closing force check:
   - With a shop towel (A) on the leading edge of the glass (B), attach a spring scale (C) as shown.
   - Have an assistant hold the switch to close the glass while you measure the force required to stop it.
   - Read the force as soon as the glass stops moving, then immediately release the switch and spring scale.

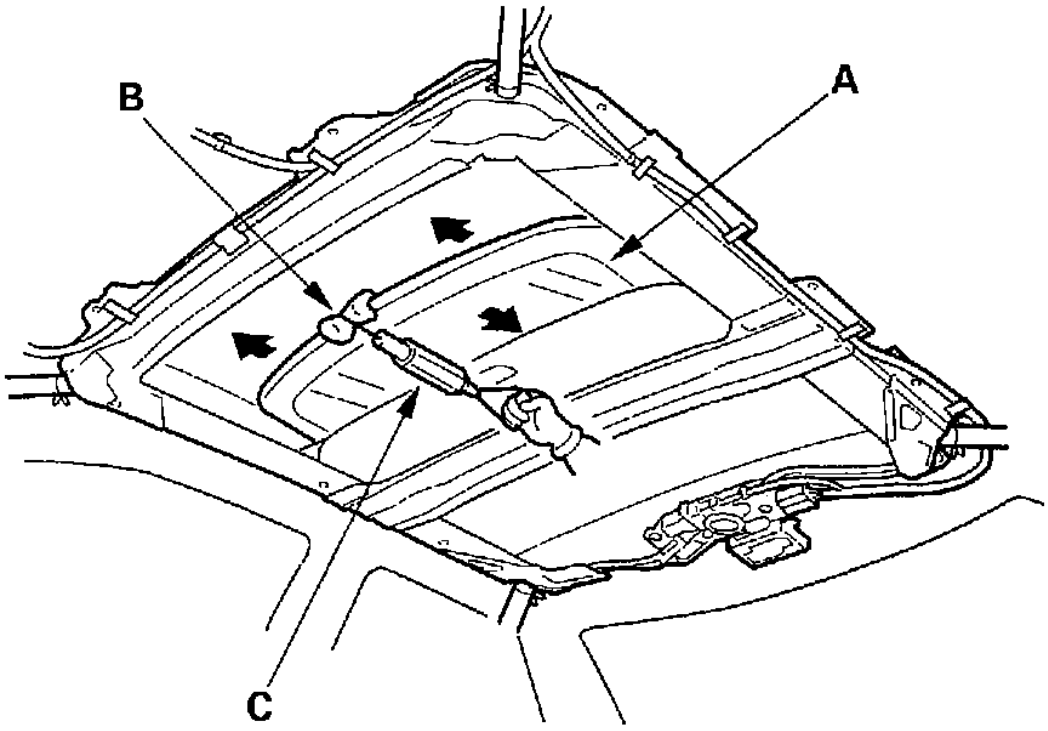


Fig. 32: Checking Closing Force

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3. If the force in not within specification, remove the moonroof motor (see **MOTOR REPLACEMENT**), then check:
   - The gear portion and the inner cable for breakage and damage. If the gear portion is broken, replace the motor. If the inner cable is damaged, remove the frame (see **FRAME & DRAIN TUBE REPLACEMENT**), and replace the cable (see **DRAIN CHANNEL SLIDER & CABLE ASSEMBLY REPLACEMENT**).
   - The moonroof motor (see **MOTOR TEST**). If the motor fails to run or doesn't turn smoothly, replace it.
   - The opening drag. Go to step 4.
4. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.

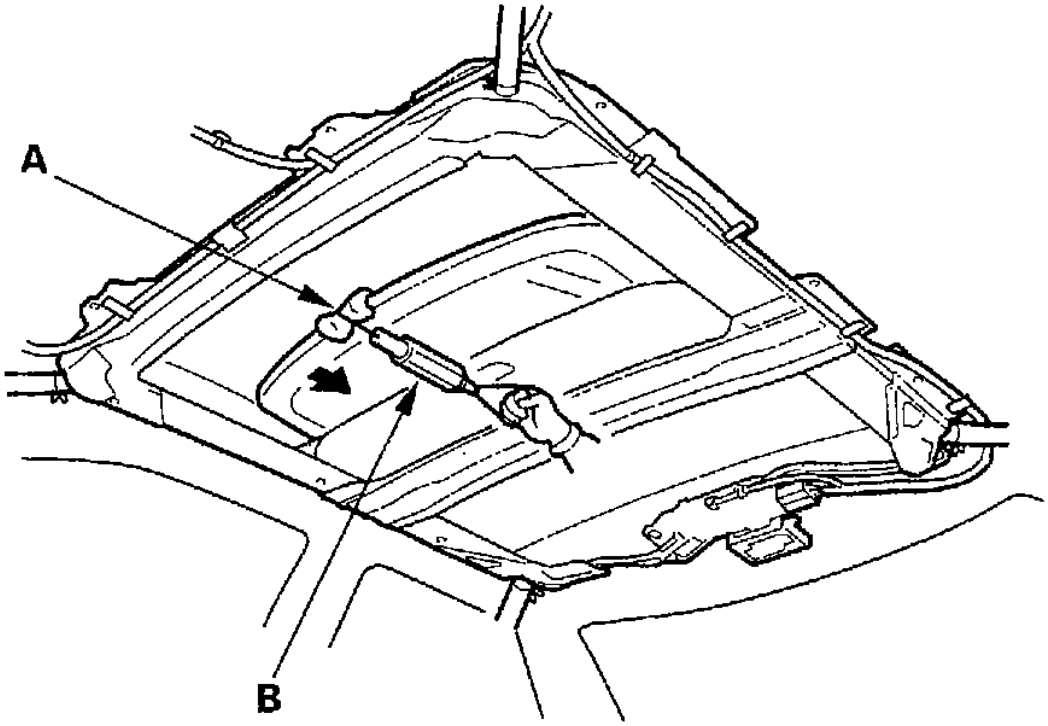


Fig. 33: Checking Opening Drag

5. If the load is over 40 N (4 kgf, 9 lbf), check:
   - The side clearance and glass height adjustment (see **GLASS REPLACEMENT**).
   - For broken or damaged sliding parts. If any sliding parts are damaged, replace them.

COMPONENT LOCATION INDEX

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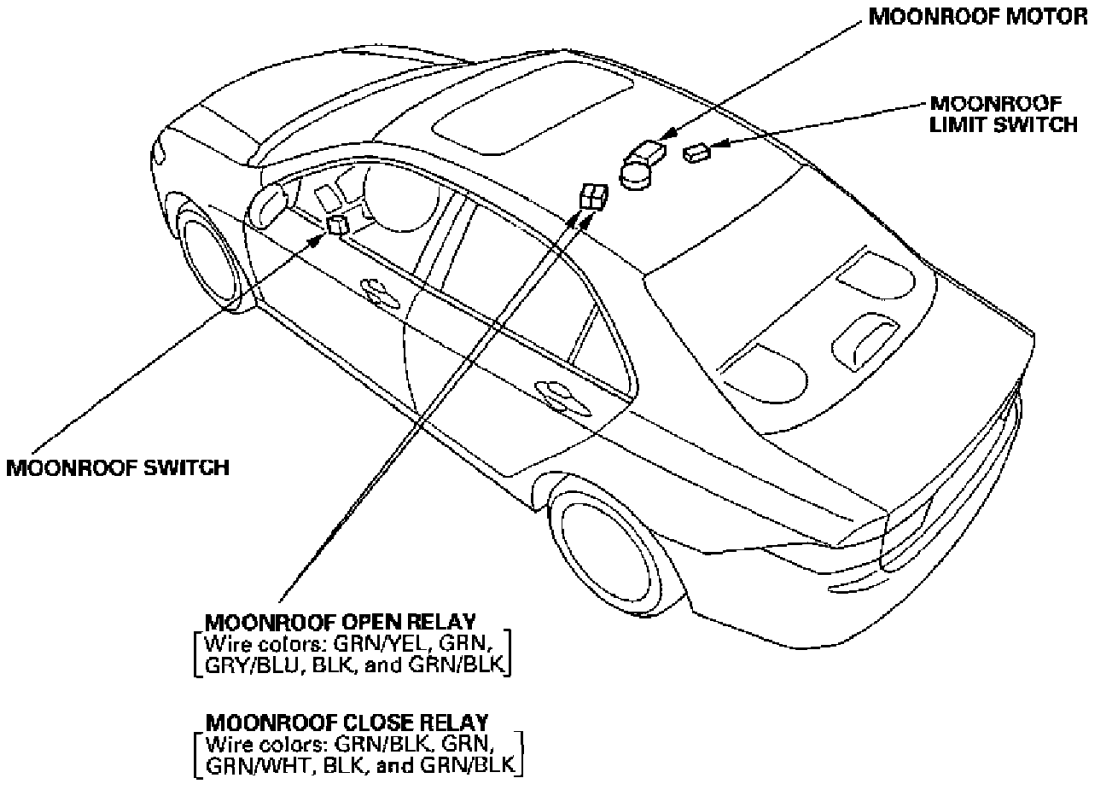
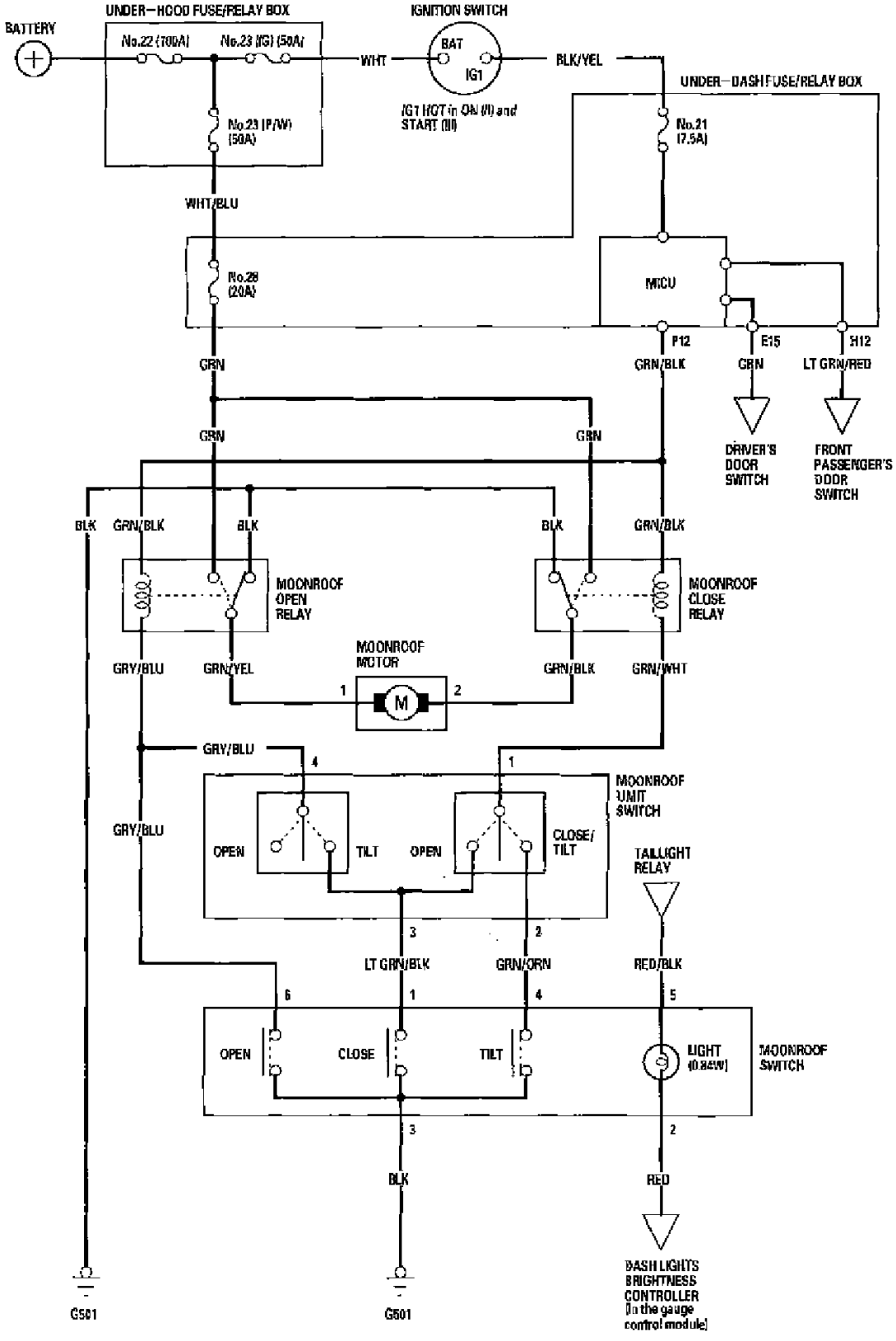


Fig. 34: Locating Moonroof Components

CIRCUIT DIAGRAM

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Fig. 35: Moonroof Wiring Diagram

SWITCH TEST

NOTE: The moonroof can still be operated for about 10 minutes after the ignition switch is turned from the "II" to the "I" or "O" positions, as long as none of the doors are opened.

1. Carefully pry out the switch panel (A), then disconnect the 6P connector (B) from the switch.

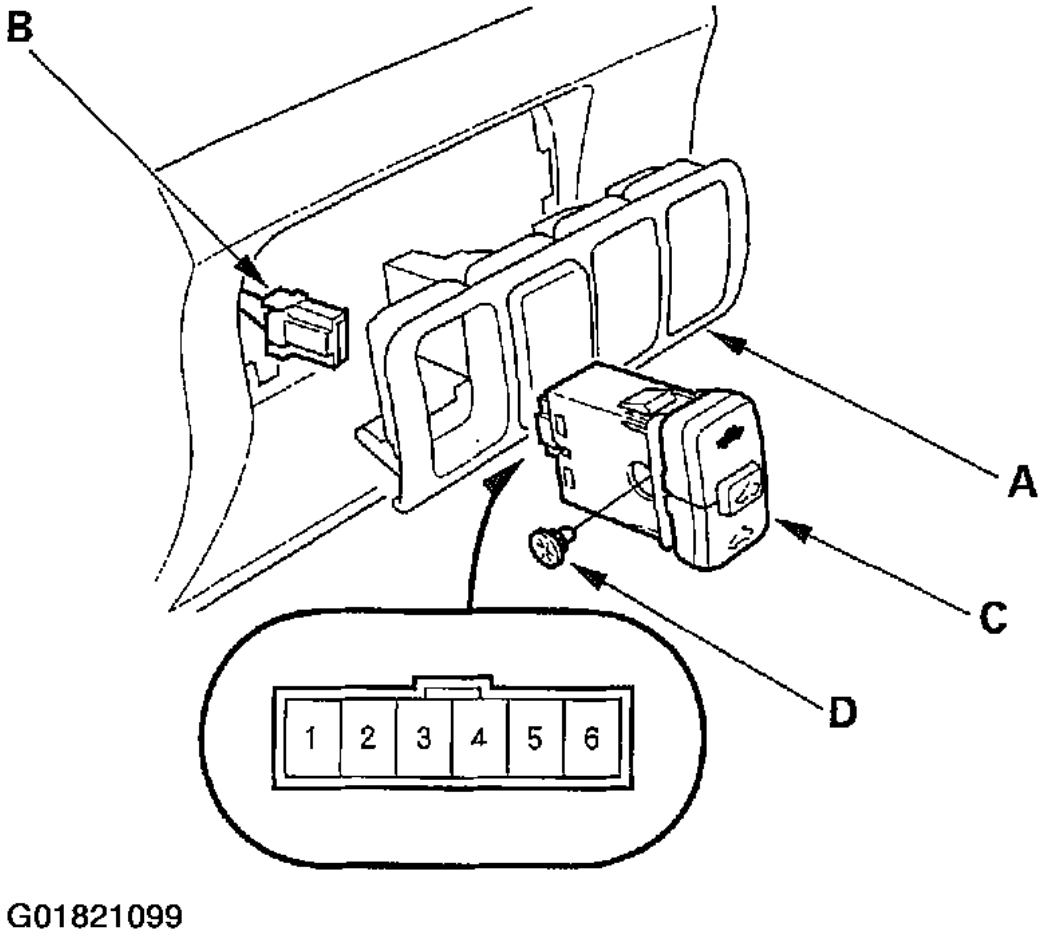
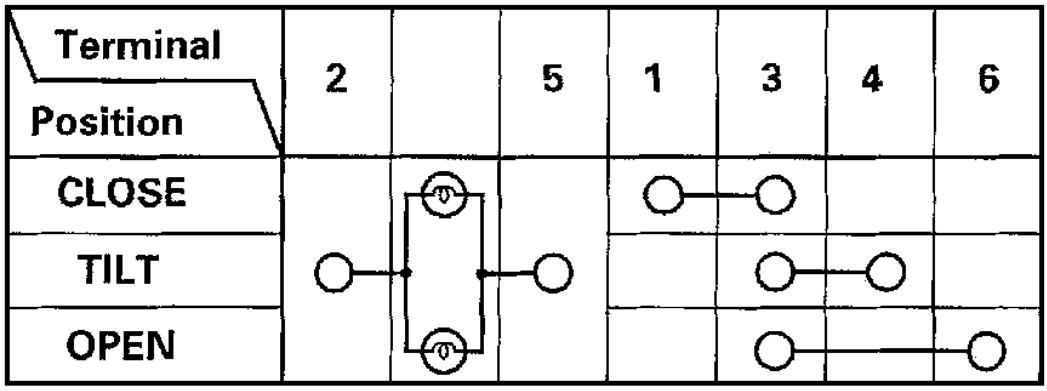


Fig. 36: Removing Moonroof Switch

2. Carefully push out the moonroof switch (C) from behind the switch panel.
3. Check for continuity between the terminals in each switch position according to the table.

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Fig. 37: Moonroof Switch Test Table

4. If the continuity is not as specified, replace the bulb (D) or the switch.

MOTOR TEST

1. Remove the headliner (see **HEADLINER REMOVAL/INSTALLATION**).
2. Disconnect the 2P connector from the moonroof motor.

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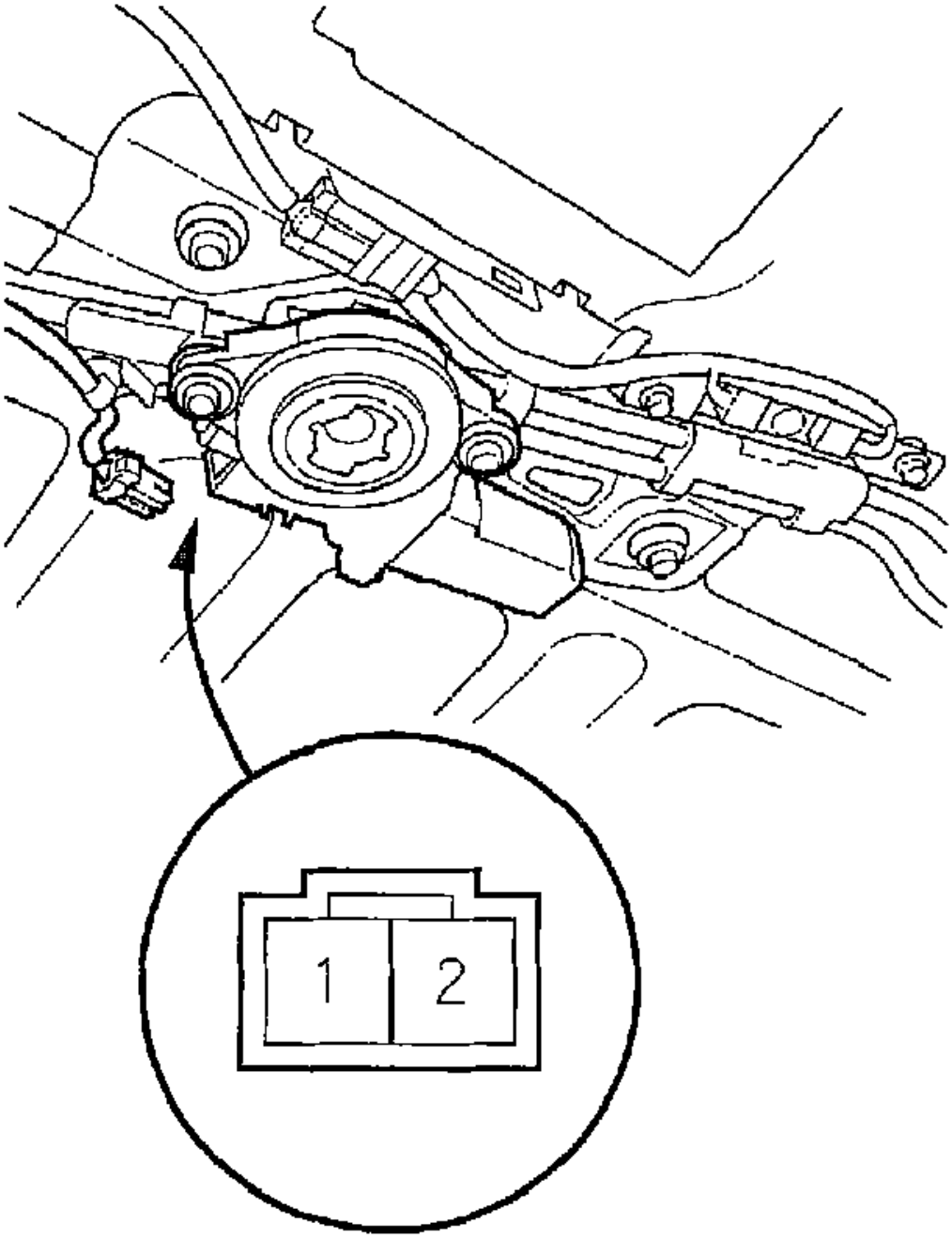


Fig. 38: Disconnecting The 2P Connector From The Moonroof Motor

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3. Check the motor by connecting power and ground according to the table.

Terminal / Position	1	2
OPEN	⊕	⊖
CLOSE	⊖	⊕

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Fig. 39: Moonroof Motor Test Table

4. If the motor does not run, replace it.

NOTE: See closing force check (see CLOSING FORCE & OPENING DRAG CHECK) for motor clutch test.

LIMIT SWITCH TEST

1. Remove the headliner (see **HEADLINER REMOVAL/INSTALLATION**).
2. Disconnect the 4P connector (A) from the moonroof limit switch (B).

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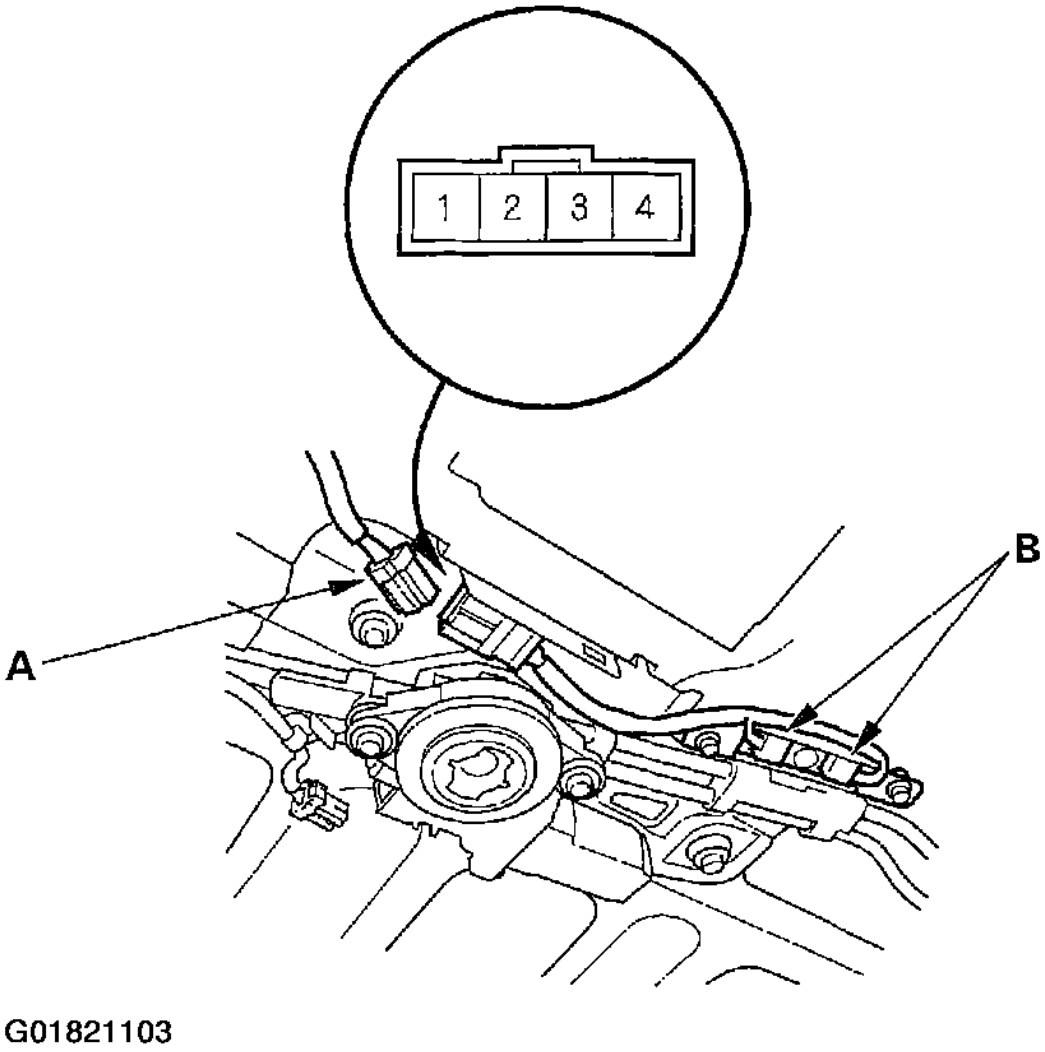


Fig. 40: Disconnecting The 4P Connector From The Moonroof Limit Switch

3. Check for continuity between the terminals in each switch position according to the table.

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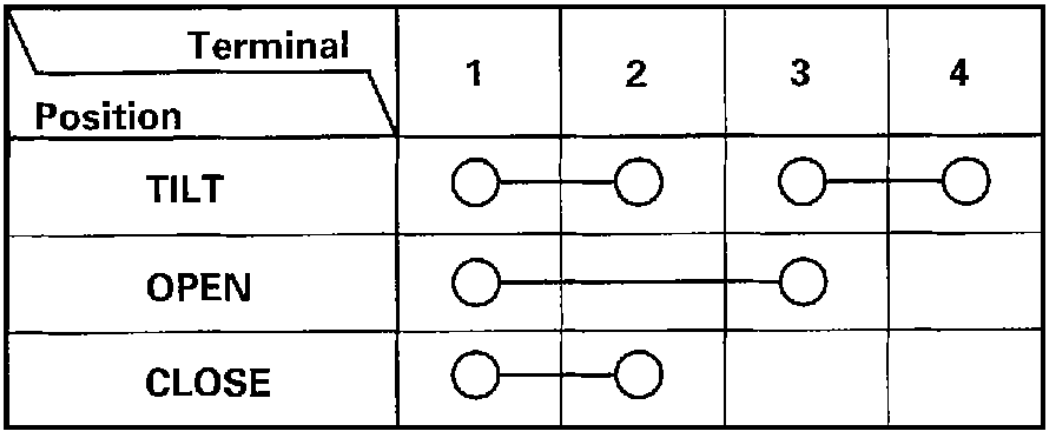


Fig. 41: Limit Switch Test Table

4. If the continuity is not specified, replace the moonroof motor assembly.

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2004 ACCESSORIES & EQUIPMENT

Multiplex Integrated Control System - TSX

COMPONENT LOCATION INDEX

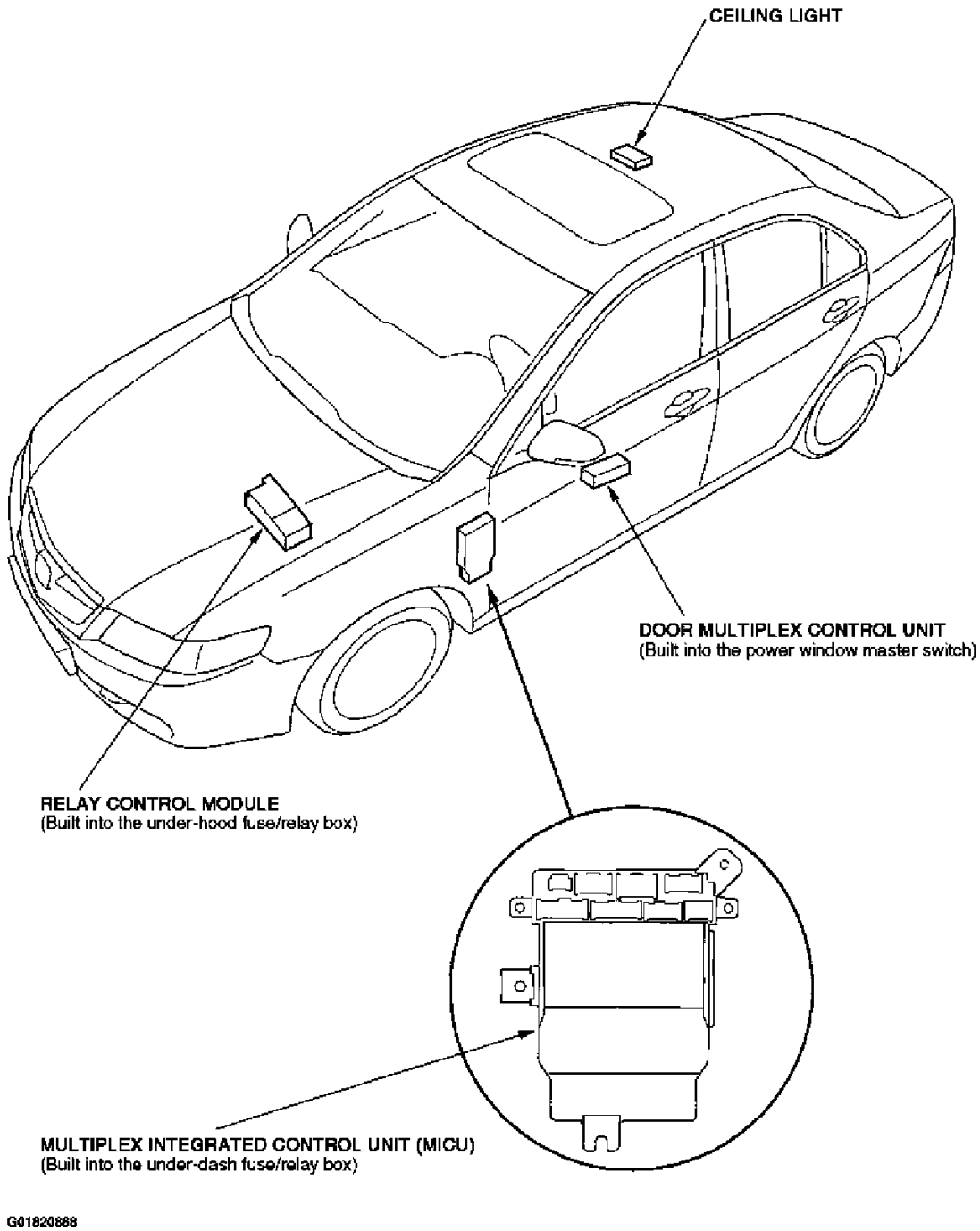


Fig. 1: Locating Multiplex Integrated Control System Components (1 Of 2)

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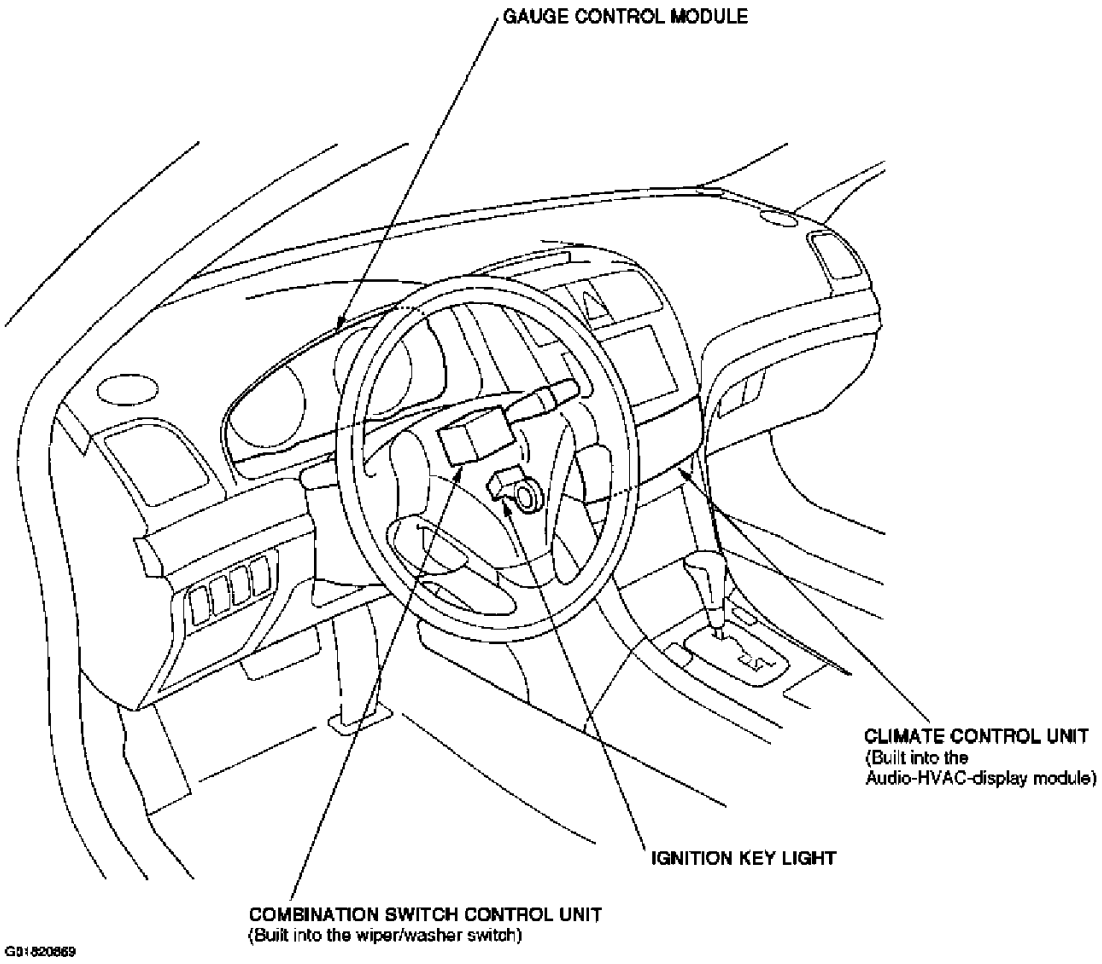


Fig. 2: Locating Multiplex Integrated Control System Components (2 Of 2)

SYSTEM DESCRIPTIONS

BODY CONTROLLER AREA NETWORK (B-CAN) & FAST CONTROLLER AREA NETWORK (F-CAN):

Fast Controller Area Network (F-CAN) and Body Controller Area Network (B-CAN) share information between multiple Electronic Control Units (ECUs). B-CAN communication moves at a slower speed for convenience related items, and for other functions. F-Can information moves at a faster speed for "real time" functions such as fuel and emissions data. To allow both systems to share information, the Gauge Control Module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.

The ECUs on the B-CAN and F-CAN transmit and receive information in the form of structured messages that may be received by several different ECUs on the network at one time. These message are transmitted and received across a communication circuit that consists of a single wire that is shared by all the ECUs on the circuit. Since messages on the F-CAN network are typically of higher importance, a second wire is used for communication circuit integrity monitoring. A backup circuit is also added to the headlight and wiper circuits

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on the B-CAN network in the event of a network wire or ECU failure that would effect the operation of the system.

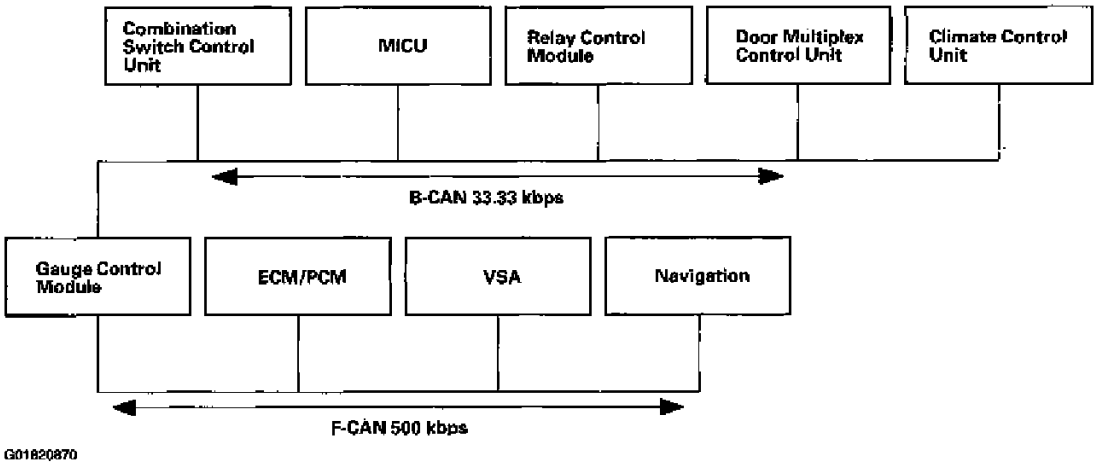


Fig. 3: Network Schematic

Messages are transmitted by an ECU (that monitors an input) over the communication circuit. ECUs that use the message (information related to that input) are the receivers. For example, the Combination Switch Control Unit monitors the wiper switch. When the wiper switch is placed in the low speed position, the Combination Switch Control Unit transmits that message on the communication circuit. The Relay Control Module receives the message and turns on the wipers by providing a ground for the relay.

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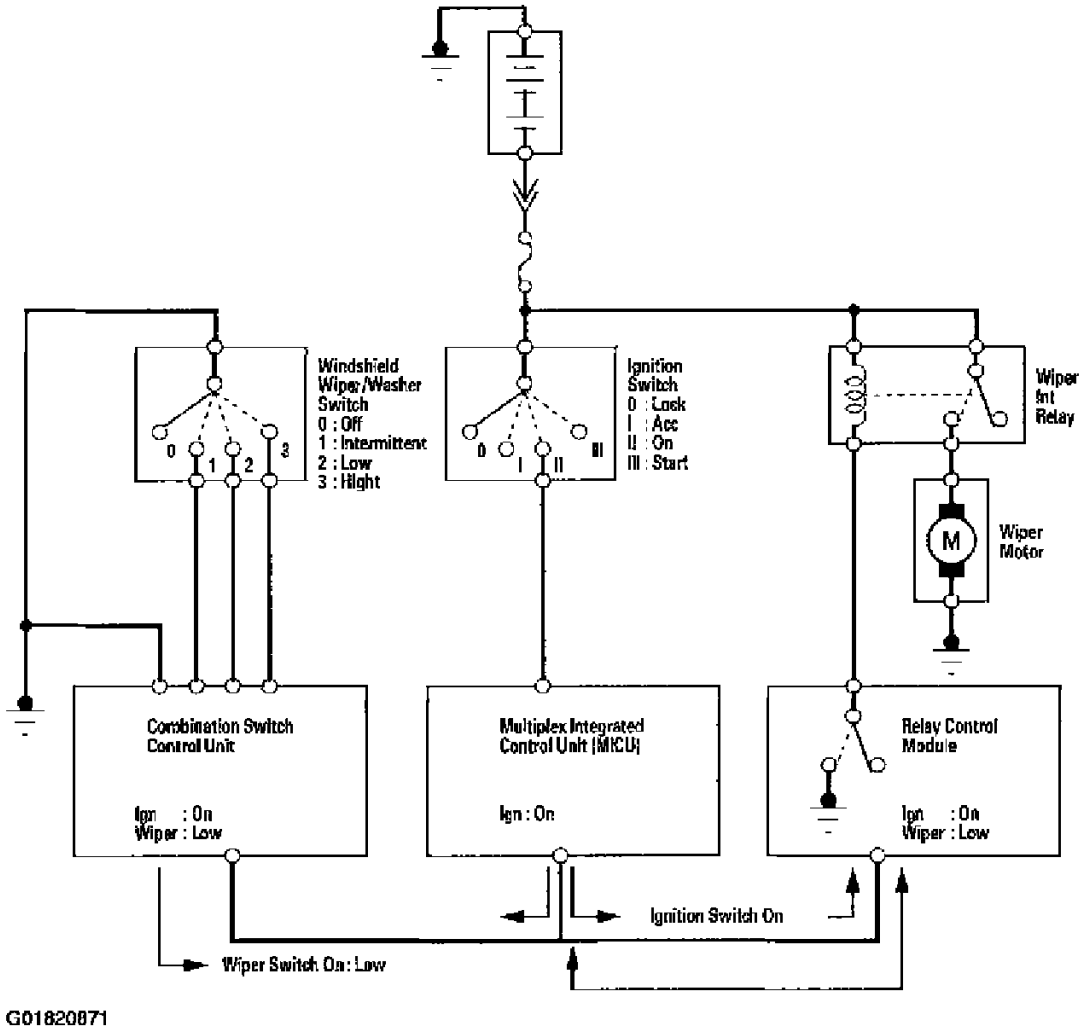


Fig. 4: Combination Switch Control Unit Monitoring The Wiper Switch

"CONNECTED" ECUS

Several ECUs are connected to each of the two networks. The Gauge Control Module is part of both networks since it is the "Gateway" between them. Below is a list of ECUs and the network they are connected to.

B-CAN ECUS

- Gauge Control Module
- Relay Control Module
- Multiplex Integrated Control Unit (MICU)
- Door Multiplex Control Unit
- Combination Switch Control Unit

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- Climate Control Unit

F-CAN ECUS

- Gauge Control Module
- ECM/PCM
- Navigation Control Unit
- VSA (Vehicle Stability Assist)

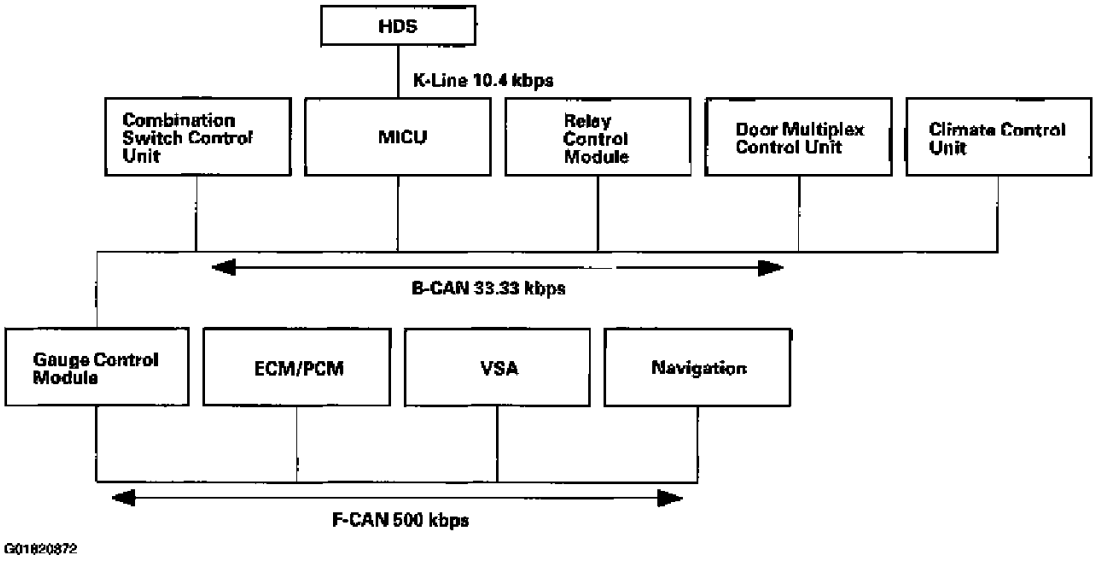


Fig. 5: Network Schematic

NETWORK "LOSS OF COMMUNICATION" ERROR CHECKING

The B-CAN and F-CAN systems send messages to each other to check the integrity of the network communication circuit. They do this by sending a specific digital message out after an event. For example, turning the ignition switch to ON. After the switch to ON, all the ECUs on the communication circuit expect to receive a message from other specific units within a specified amount of time. If the message is not received, the ECU will transmit a DTC reporting that the control units did not communicate.

EXAMPLE OF COMMUNICATION CIRCUIT TEST

Normal Circuit

1. Ignition switch turned ON.
2. The door multiplex control unit transmits a door switch signal.
3. The multiplex integrated control unit (MICU), relay control module and gauge control module receive the door lock switch signal.
4. Communication circuit test is passed.

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Since the door lock switch message was received by all the ECUs expecting to receive a signal, the communication circuit between those units is OK. There are multiple signal sent and received by each ECU during this time to insure that the communication circuit is intact.

Failed Circuit

1. Ignition switch is turned ON.
2. The door multiplex control unit transmits a door switch signal.
3. The multiplex integrated control unit (MICU), relay control module and gauge control module expect to receive the door lock switch signal, but since there is a break in the communication circuits, it is not received.
4. Each ECU that expects to receive the door lock switch signal from the door multiplex control unit will transmit DTCs for the signal that it did not receive.

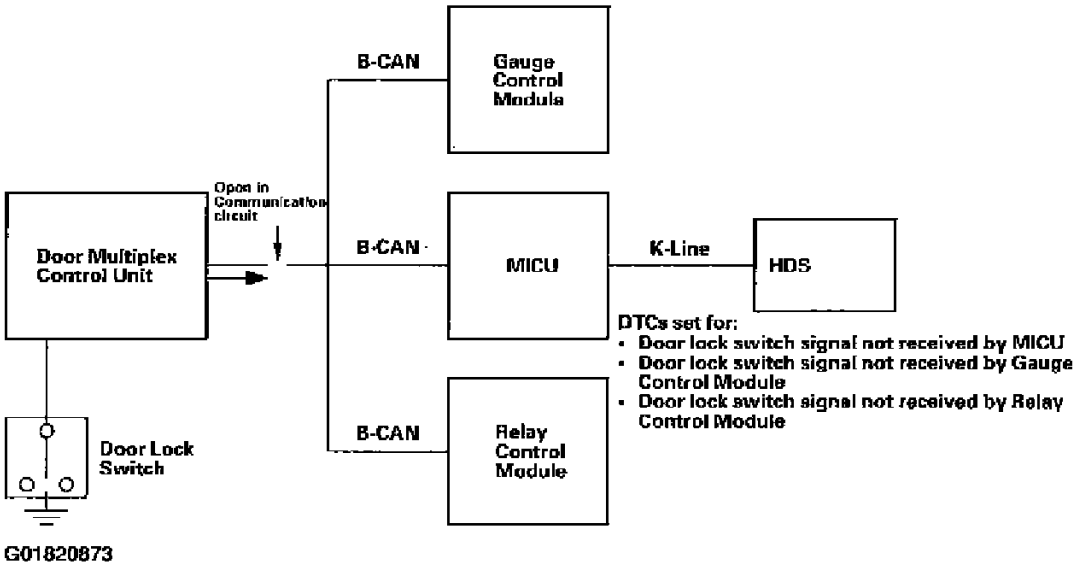


Fig. 6: Example Of Failed Circuit

Since there is a break in the communication circuit, the door lock switch signal could not be received by the gauge control module, multiplex integrated control unit (MICU) or the relay control module. Each of these units will set "loss of communication" error codes for the signal(s) they did not receive. There may be multiple communication DTCs if the unit that has become disconnected from the network would normally transmit multiple messages during the communication line test. For example, the door multiplex control unit sends keyless panic signal and door lock switch signal during the communication circuit test.

DIAGNOSTIC TROUBLE CODES

There are three DTC types used by the CAN networks.

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Internal error DTCs	The ECUs run internal checks. If one finds that there is an internal ECU problem, it will set an internal error DTC. Confirm that the battery and charging system are OK. If so, this indicates that the ECU needs to be replaced.
Loss of communication DTCs	Loss of communication DTCs (and Bus-off DTCs) are set when there is a problem with the communication between ECUs. This could be in the connections, the wiring, or the ECU (as called out in the DTC Troubleshooting index).
Signal error DTCs	The ECUs can run diagnostics on some input circuits to determine if that circuits is functioning properly(no opens or shorts). If a circuit fails the diagnostic test, a DTC will set (NOTE: Not all input circuits are tested for errors).

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Fig. 7: CAN Networks Diagnostic Trouble Code Type Table

TROUBLESHOOTING THE CAN CIRCUIT RELATED PROBLEMS

Using the HDS (Preferred method)

1. Go to B-CAN System Diagnosis Test Mode A to check for "Connected units" and DTCs (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. If no DTCs are retrieved, go to B-CAN System Diagnosis Test Mode C or D.

Without the HDS (Should be used only if HDS is unavailable)

1. Check for communication circuit problems using B-CAN System Diagnosis Test Mode 1 (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Check for DTCs while in Mode 1 (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
3. Sort, and then troubleshoot the DTCs in the order below. Refer to the DTC troubleshooting Index for DTC descriptions.
   - **1st:** Internal error and voltage failure DTCs
   - **2nd:** Loss of communication DTCs
   - **3rd:** Signal error DTCs
4. If no DTCs are retrieved, use B-CAN System Diagnosis Test Mode 2 to check all inputs related to failure (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

Loss of Communication DTC cross-reference chart

When an ECU is unable to communicate with the other ECUs on the circuit, the other units will set loss of communication DTCs. Use this chart to find the control unit that is not communicating.

1. Find the Transmitting Unit that is in the same row as all of the loss of communication DTCs retrieved.
2. Perform the input test for the transmitting unit.

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Transmitting Unit	Message	Receiving Unit/Loss of Communication DTC					
		MICU	Relay Control Module	Door Multiplex Control unit	Gauge Control Module	Combination Switch Control Unit	Climate Control Unit
MICU	Alarm		B1056				
	MICU		B1055	RX	B1157	B1255	
	Door Switch		B1057	RX	B1159		
Relay Control Module	Relay Control Module	B1005			B1158		
Door Multiplex Control unit	Panic	B1010	B1059				
	Door Lock Switch	B1006	B1058		B1160		
Gauge Control Module	VSP/NE		B1060				B1205
	A/T	B1008	B1061				
	ENGTEMP						B1206
	ILLUMI						B1207
Combination Switch Control Unit	Headlight Switch	B1007	B1062		B1155		
	Wiper Switch	B1009	B1063		B1156		

RX: Receiving unit does not set a loss of communication DTC.

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Fig. 8: Loss Of Communication DTC Cross-Reference Chart

B-CAN SYSTEM SWITCH DEVICE INDEX

Combination Switch Control Unit	
Input signal	**Output signal/device**
Dimmer switch, Lighting switch, Passing switch, Turn signal switch, Wiper/washer switch, Intermittent dwell time controller	None

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Fig. 9: Combination Switch Control Unit Table

Relay Control Module	
Input signal	**Output signal/Device**
A/C pressure switch, Climate control switch, Daytime running lights control (Canada), Hood switch, Horn switch, Windshield wiper motor.	Daytime running lights control (Canada), Headlight, Parking light, Horn, Windshield washer motor, Windshield wiper motor.

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Fig. 10: Relay Control Module Table

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Door Multiplex Control Unit	
Input signal	**Output signal**
Driver's door key cylinder switch (lock/unlock), Driver's door lock knob switch (lock/unlock), Driver's door lock switch, Driver's power window switches (up, down, auto up, auto down), Passenger's power window switches (up, down), Driver's power window motor pulser.	Driver's power window motor, Passenger's power window switches, Power window relay control.

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Fig. 11: Door Multiplex Control Unit Table

Multiplex Integrated Control Unit	
Input signal	**Output signal/Device**
Audio-HVAC display module security ground, Brake pedal position switch, Door switches, Ignition key cylinder switch, Park pin switch (A/T), Passenger's door lock knob switches (unlock), Passenger's door lock switch, Power window motor, Seat belt switch (unbuckled), Transmission range switch (P, R position), Trunk latch switch.	Door lock actuators, Hazard warning lights, Interior lights, Ignition key light, Key interlock solenoid, Turn signal lights, Moonroof relay, Trunk lid opener solenoid, Door courtesy lights.

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Fig. 12: Multiplex Integrated Control Unit Table

Gauge Control Module	
Input signal	**Output signal/Device**
Dash lights brightness controller, Daytime running lights signal (Canada), Engine oil pressure switch signal, Washer fluid level switch signal (Canada) Parking brake switch, Brake fluid level switch, fuel level sensor, Select /Reset switch, Cruise control combination switch (set, cancel, resume, master).	Dash lights, Fuel gauge, Gauge lights, Indicator, LEDs, Speedometer, Tachometer, ECT gauge, Warning buzzer, Odometer/Outside temperature display

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Fig. 13: Gauge Control Module Table

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Climate Control Unit	
Input signal	**Output signal/Device**
Evaporator temperature sensor, In-car temperature sensor, Outside air temperature sensor, Sunlight sensor Air mix motor position (Driver's and Passenger's), Mode motor position, Blower motor control feedback.	Air mix control motors (Driver's/Passenger's), Blower motor transistor, Mode control motor, Rear defogger relay, A/C Request, Recirculation motor.

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Fig. 14: Climate Control Unit Table

TROUBLESHOOTING

B-CAN SYSTEM DIAGNOSIS TEST MODE A

NOTE:

- **Perform this diagnosis first if the symptom is related to the B-CAN system.**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Make sure the system is related to B-CAN:
   - Gauge control module
   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Safety indicators
   - Rear window defogger
   - Horns (security and panic)
   - Chimes (key, seatbelt and lights ON)
   - Power windows
   - Moonroof timer
   - Wiper/washer
   - Security
   - Keyless entry
   - Power door locks
   - Climate control
   - Key interlock
   - Dash light brightness

   Is the symptom related to the B-CAN system?

   YES: Go to step 2.

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NO: Go to the system troubleshooting for the system with the symptom.

2. Connect the Honda Diagnostic System (HDS).
3. From BODY ELECTRICAL MENU, select connected units UNIT INFORMATION, and then select CONNECTED UNIT.
   - MICU
   - Door multiplex control unit
   - Gauge control module
   - Combination switch control unit
   - Relay control module
   - Climate control unit

NOTE:
- **If the unit is communicating with the scan tool, DETECT will be displayed.**
- **If the unit is not communicating, "NOT AVAILABLE" will be displayed.**

Are all control units communicating with the HDS?

YES: Go to step 4.

NO: If any of them are not communicating, go to B-CAN System Diagnosis Test Mode B. If all units are not communicating, go to DTC B1000 troubleshooting (see **DTC B1000: COMMUNICATION BUS LINE ERROR**).

4. Select the system that has the problem from the BODY ELECTRICAL MENU, then select DTCs.

Are any DTCs indicated?

YES: Go to step 5.

NO: If the problem is related to one the following items, go to B-CAN System Diagnosis Test Mode C:

- Exterior lights
- Turn signals
- Entry light control
- Interior lights
- Rear window defogger (climate control)
- Horns (security and panic)
- Power windows
- Moonroof timer
- Wiper/washer
- Power door locks

NOTE: **In the problem is related to one of the following items, go to the troubleshooting for that individual system:**

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- Gauge control module
- Safety indicators
- Chimes (key, seat belt and lights ON)
- Security
- Keyless entry
- Climate control
- Key interlock
- Dash light brightness
- Audio System
- Navigation

5. Record all DTCs and sort them by DTC type using the DTC troubleshooting Index.
6. Troubleshoot the DTC(s) in the following order:
   - Battery voltage DTCs.
   - Internal error DTCs.
   - Loss of communicator DTCs. Begin troubleshooting with the lowest number first (Example: if DTC B1006 and B1058 are retrieved, begin by troubleshooting B1006).
   - Signal error DTCs.

B-CAN SYSTEM DIAGNOSIS TEST MODE B

NOTE:

- **Perform this diagnosis if any of the control units are not communicating (NONE displayed in the HDS.) as found by the B-CAN system Diagnosis Test Mode A.**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Using the Honda Diagnostic System (HDS), select the system that has the symptom from the BODY ELECTRICAL MENU.
2. Select DTCs, and then check for loss of communication DTCs (use the DTC Troubleshooting Index to find the DTC type).

   Are loss of communication DTCs indicated?

   YES: Go to step 3.

   NO: Replace the MICU.
3. Perform the input test for the unit not communicating with the HDS.
   - **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**
   - **GAUGE CONTROL MODULE INPUT TEST**
   - **DOOR MULTIPLEX CONTROL UNIT INPUT TEST**
   - **COMBINATION SWITCH CONTROL UNIT INPUT TEST**
   - **RELAY CONTROL MODULE INPUT TEST**

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- **DTC B1205: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (VSP/NE MESSAGES); DTC B1206: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (ECT MESSAGES); DTC B1207: CLIMATE CONTROL UNIT LOST COMMUNICATION WITH THE GAUGE CONTROL MODULE (ILLUMI MESSAGES)**

B-CAN SYSTEM DIAGNOSIS TEST MODE C

NOTE:

- **Perform this diagnosis if a component that is controlled by the B-CAN system does not stop or does not turn off.**
- **If the component does not turn ON, go to B-CAN System Diagnosis Test Mode D.**
- **See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see B-CAN SYSTEM SWITCH DEVICE INDEX).**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Check for DTCs by selecting the TEST MODE MENU from the Honda Diagnostic System (HDS).

   Are any DTCs indicated?

   YES: Go to B-CAN System Diagnosis Test Mode A.

   NO: Go to step 2.
2. Turn OFF the switch that controls the malfunctioning component.
3. Select DATA LIST from the TEST MODE MENU, and check the input of the switch that controls the component.

   Does the tester indicate the switch is OFF?

   YES: Go to step 4.

   NO: Go to step 6 .
4. In the DATA LIST of, check the output signal of the malfunctioning component.

   Is the output signal OFF?

   YES: Go to step 5.

   NO: Replace the control unit that controls the device that will not turn OFF (see **B-CAN SYSTEM SWITCH DEVICE INDEX**).
5. Check the relay if applicable, then check for a short in the wire between the relay and the component, relay and control unit or the component and control unit.

   Are the relay and the wire harness OK?

   YES: Replace the control unit that controls the component that will not turn OFF.

   NO: Replace the relay or repair the wire harness.
6. Check the switch, then check for a short in the wire between the switch and the control unit that monitors the switch.

   Is the switch and wire harness OK?

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YES: Replace the control unit that monitors the switch.

NO: Replace the switch or repair the wire harness.

B-CAN SYSTEM DIAGNOSIS TEST MODE D

NOTE:

- **Perform this diagnosis a component that is controlled by the B-CAN system does not run or does not come on.**
- **If the component does not turn off or does not stop, go to B-CAN System Diagnosis Test Mode C.**
- **See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see B-CAN SYSTEM SWITCH DEVICE INDEX).**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Check the fuse of the malfunctioning output device.

   Is the fuse OK?

   YES: Go to step 2.

   NO: Replace the fuse and recheck.
2. Check for DTCs by selecting the TEST MODE MENU from the Honda Diagnostic System (HDS).

   Are any DTCs indicated?

   YES: Go to B-CAN System Diagnosis Test Mode A.

   NO: Go to step 3.
3. Turn ON the switch that controls the malfunctioning component.
4. Select DATA LIST from the TEST MODE MENU, and check output signal for the malfunctioning component.

   Is there an output signal?

   YES: Go to step 5.

   NO: Go to step 9 .
5. Check the relay and ground, then check for an open or a short in the circuit for the malfunctioning component.

   Are the relay and circuit OK?

   YES: Go to step 6.

   NO: Replace the relay or repair the wire circuit.
6. Perform the function test for the malfunctioning component.

   Does the output device pass the function test?

   YES: Go to step 7.

   NO: Replace the component.
7. With the malfunctioning output component, connect a voltmeter between the malfunctioning component and body ground on the wire that the control unit uses to control the component circuit.

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8. Select MISC. TEST from the TEST MODE MENU, and do the forced operation test of the malfunctioning component.

   Is there a change in voltage (12 V to 0 V or 0 V to 12 V)?

   YES: Replace the component.

   NO: Replace the control unit that controls the malfunctioning component.

9. Select DATA LIST from the TEST MODE MENU, and make sure the switch signal input for the malfunctioning system indicates a change when operated.

   Does the switch input indicate ON when the switch is ON?

   YES: Replace the control unit that controls the malfunctioning component.

   NO: Go to step 10.

10. Check the switch and its ground (if applicable), then check for an open or a short in the wire between the switch and the control unit that monitors it.

    Is the switch and the wire harness OK?

    YES: Replace the control unit that monitors the switch.

    NO: Replace the switch or repair the wire harness.

B-CAN SYSTEM DIAGNOSIS TEST MODE 1 (TROUBLESHOOTING WITHOUT THE HDS)

1. Check the No. 7 (10A) fuse and No. 21 (7.5A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES: Go to step 2.

   NO: Find and repair the cause of the blown fuse.

2. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
3. Turn the ignition switch ON (II).
4. Connect the MPCS Service connector (A) to the MCIC socket (B) in the under-dash fuse/relay box.

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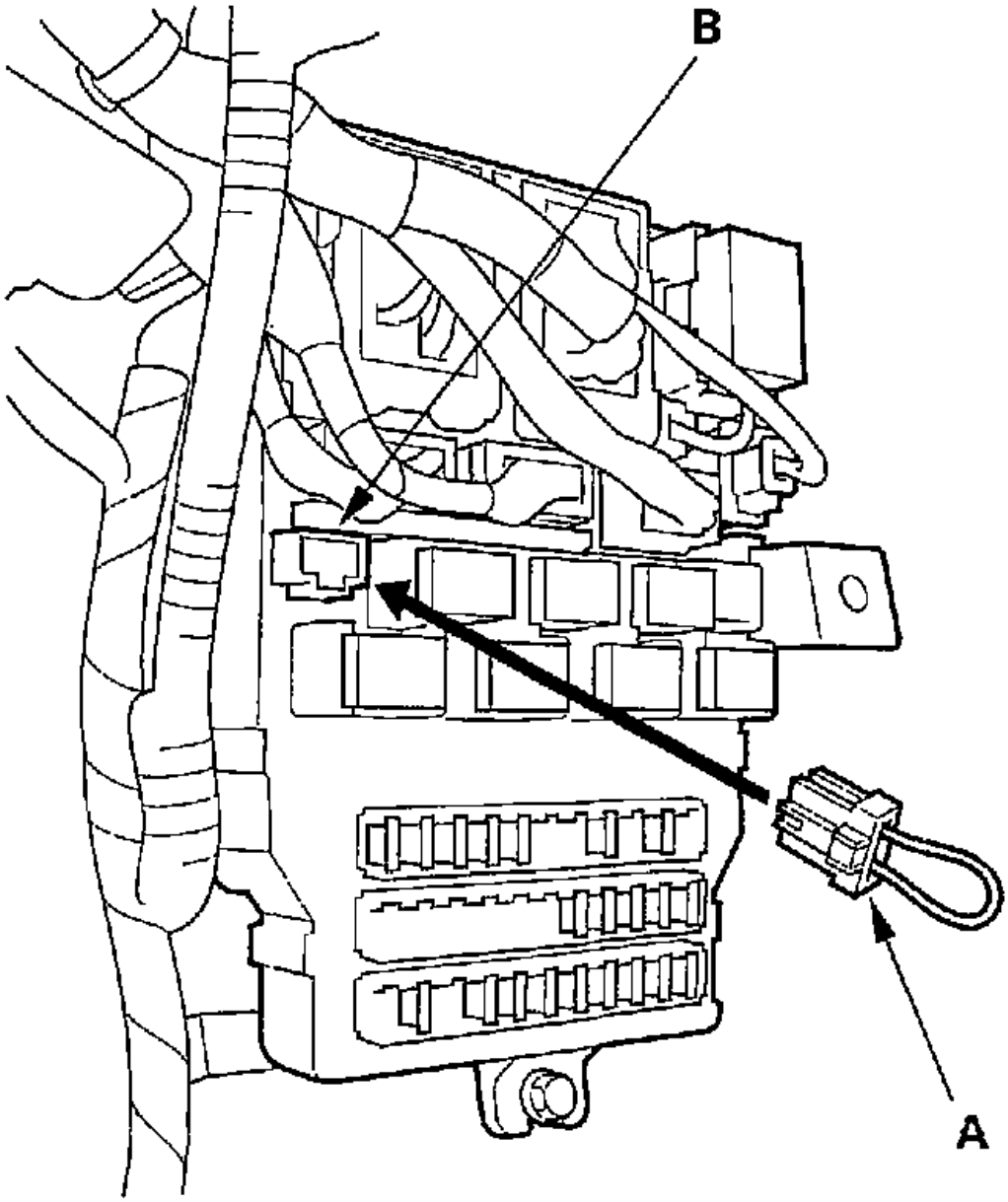


Fig. 15: Connecting The MPCS Service Connector To The MCIC Socket In The Under-Dash Fuse/Relay Box

5. Wait 5 seconds, then watch the ceiling light.
6. If there is a DTC, the ceiling light and ignition switch light will blink, pause, then repeat the DTC as long

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as the ignition switch ON (II).

Is there a repeating DTC?

YES: Count the blinks, then go to step 7.

NO: Go to step 8 .

7. About 1 second after you go into self-diagnosis Mode 1, the ceiling light will indicate the DTC, and repeat it every 3 seconds. If there is more than one DTC, the system will indicate them in ascending order, beginning from the DTC with the lowest numerical value. Troubleshoot the DTCs as indicated below:
   - **DTC 2, 3, 4 And 5 Simultaneously:** Check for an open in the BLU wire between multiplex integrated control unit D11 and relay module J7, BRN/RED wire between multiplex integrated control unit J4 and door multiplex control unit No. 16, LT GRN wire between multiplex integrated control unit X27 and combination switch control unit No. 4, BRN/YEL wire between multiplex integrated control unit N28 and gauge B25. If the wire is OK, substitute a known-good under-dash fuse/relay box (multiplex integrated control unit), under-hood fuse/relay box, power window master switch, wiper/washer switch and gauge one at a time, in that order, and recheck for the DTCs after each substitution.
   - **DTC 1 Only:** Go to MICU input test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).
   - **DTC 2 Only (No Other DTCs Present):** Go to the relay module input test. If all inputs are OK, substitute a known-good relay module and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
   - **DTC 3 Only (No Other DTCs Present):** Go to the door multiplex control unit input test. If all inputs are OK, substitute a known-good door multiplex control unit and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
   - **DTC 4 Only (No Other DTCs Present):** Go to the combination switch control unit input test. If all inputs are OK, substitute a known-good wiper/washer switch and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
   - **DTC 5 Only (No Other DTCs Present):** Go to the gauge control module input test. If all inputs are OK, substitute a known-good gauge control module and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.

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DTC	Cause
1	The MICU cannot receive signals from the bus communication line.
2	The MICU cannot receive signals from the relay module communication line.
3	The MICU cannot receive signals from the power window communication line.
4	The MICU cannot receive signal from the combination switch communication line.
5	The MICU cannot receive signals from the gauge control module.

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Fig. 16: DTC Table

8. Check for B-CAN DTCs indicated by the gauge control module while still in Test Mode 1.
   Are any DTCs indicated?
   YES: Go to step 9.
   NO: Go to step 11 .
9. Record all DTCs and sort them by type using the DTC Troubleshooting Index.
10. Troubleshoot the DTCs in the following order:
    - Battery voltage DTCs
    - Internal error DTCs
    - Loss of communication DTCs (begin with the lowest number first; for example, if B1006 and B1059 are retrieved, troubleshoot B1006 first)
    - Signal error DTCs
11. Remove the MPCS service connector from the under-dash fuse/relay box socket for 5-10 seconds, then re-insert it.

NOTE: If the MPCS connector is disconnected for too short or too long of a time, or the ignition switch is turned OFF, the system will return to Test Mode 2.

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12. In the table below is a list of circuits that can be checked in Test Mode 2. Operate the switch that is most closely related to the problem. If the circuit is OK, the ceiling light will blink once. If the circuit is faulty, there will be no indication.

Does the ceiling light indicate proper switch operation?

YES: Go to function and input test for the system related to the failure.

NO: Repair the open, short, or replace the faulty switch.

Item
Driver's door switch (OPEN)
Front passenger's door switch (OPEN)
Left rear door switch (OPEN)
Right rear door switch (OPEN)
Trunk latch switch (OPEN)
Front passenger's door lock knob switch (UNLOCK)*
Left rear door lock knob switch (UNLOCK)
Right rear door lock knob switch (UNLOCK)*
Audio-HVAC display module security ground (disconnected)
Driver's seat belt switch (unbuckled)
Brake pedal position switch (ON; brake pedal pressed)
Passenger's door lock switch (LOCK/UNLOCK)

* The front passenger's and right rear door lock knob switches must be in the locked position when beginning the test.

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Fig. 17: MICU Table

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Item
Windsheld wiper switch (AUTO STOP/PARK)
Hood switch (open)
A/C pressure switch (/thermal protector (A/C ON)

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Fig. 18: Relay Control Module Table

Item
Turn signal switch (LEFT)
Turn signal switch (RIGHT)
Combination light switch (ON; each position)
Dimmer switch (ON)
Passing switch (ON)
Windsheld wiper switch (ON)
Intermittent wiper dwell timer
Windshield washer switch (ON)

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Fig. 19: Combination Switch Control Unit Table

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Item
Power window master switch (Driver's Window UP)
Power window master switch (Driver's Window DOWN)
Power window master switch (Driver's Window AUTO UP)
Power window master switch (Driver's Window AUTO DOWN)
Power window master switch (Front Passenger's Window UP)
Power window master switch (Front Passenger's Window DOWN)
Power window master switch (Left Rear Window UP)
Power window master switch (Left Rear Window DOWN)
Power window master switch (Right Rear Window UP)
Power window master switch (Right Rear Window DOWN)
Driver's door key cylinder switch (LOCK)
Driver's door key cylinder switch (UNLOCK)
Driver's door lock switch (LOCK)
Driver's door lock switch (UNLOCK)
Driver's door lock knob switch (LOCK)
Driver's door lock knob switch (UNLOCK)

* A second key is necessary to check the key cylinder inputs.
Be sure to rotate the key cylinder switch two times to each position (lock and lock, unlock and unlock) to ensure the door lock knob switch is in the appropriate position.

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Fig. 20: Power Window Master Switch (Door Multiplex Control Unit) Table

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Item
Parking brake switch (ON; parking brake applied)
Cruise control SET/RESUME/CANCEL switch (ON; switch pressed)
Transmission range switch (P, R, N, D)
Washer fluid level switch (Canada)
Brake fluid level switch (fluid removed)

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Fig. 21: Gauge Control Module Table

HOW TO DISPLAY DTC ON THE GAUGE CONTROL MODULE

While in Test Mode 1, the DTCs which have been detected and stored individually by various B-CAN (Body-Controller Area Network) units, will be shown one by one on the ODO display when the communication between the Multiplex Integrated Control Unit (MICU) and the gauge control module is normal. To scroll through the DTCs, press the RESET knob on the gauge control module.

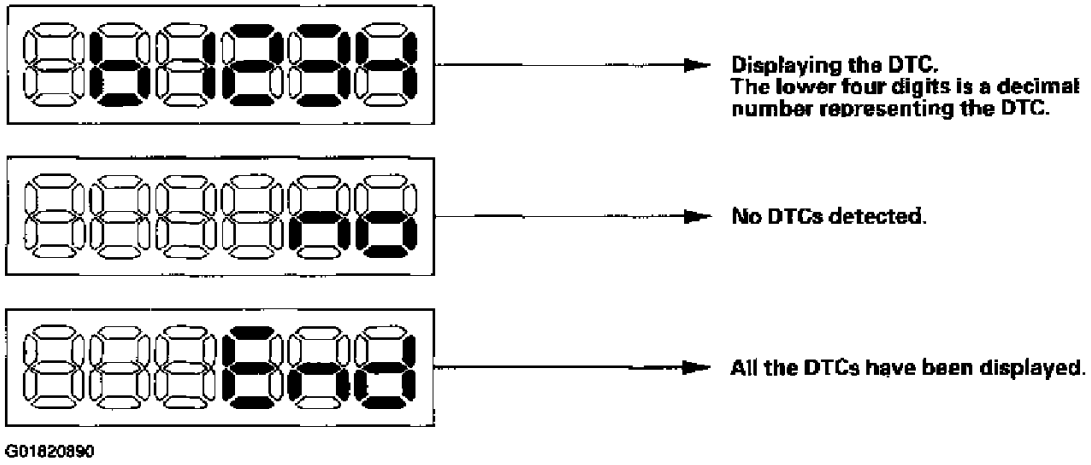


Fig. 22: Displaying DTCs On The Gauge Control Module

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MICU	10
Relay Control Module	11
Door Multiplex Control Unit	30
Gauge Control Module	50
Climate Control Module	51
Combination Switch Control Unit	70

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Fig. 23: Control Unit DTC Table

HOW TO CLEAR THE DTC

1. While in Test Mode 1, press and hold down the RESET knob for more than 10 seconds.
2. The unit that has stored the code can be identified by the number shown on the trip display.

DTC TROUBLESHOOTING INDEX

DTC	Description	ECU	DTC type	Page
B1000	Communication circuit error (BUS Off)	MICU	Loss of Communication	(see page 22-102)
B1001	MICU Internal Error	MICU	Internal Error	(see page 22-103)
B1002	MICU Internal Error	MICU	Internal Error	(see page 22-103)
B1005	MICU lost communication with Relay Control Module	MICU	Loss of Communication	(see page 22-104)
B1006	MICU lost communication with Door Multiplex Control Unit (door lock switch message)	MICU	Loss of Communication	(see page 22-104)
B1007	MICU lost communication with Combination Switch Control Unit (headlight switch message)	MICU	Loss of Communication	(see page 22-105)
B1008	MICU lost communication with Gauge Control Module (A/T message)	MICU	Loss of Communication	(see page 22-105)
B1009	MICU lost communication with Combination Switch Control Module (wiper switch message)	MICU	Loss of Communication	(see page 22-106)
B1010	MICU lost communication with Door Multiplex Control Unit (panic message)	MICU	Loss of Communication	(see page 22-106)
B1026	Passenger's door lock switch malfunction	MICU	Signal Error	(see page 22-134)
B1050	Communication circuit error (BUS Off)	Relay Control Module	Loss of Communication	(see page 22-102)

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Fig. 24: DTC Troubleshooting Index (1 Of 6)

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DTC	Description	ECU	DTC type	Page
B1055	Relay Control Module lost communication with MICU	Relay Control Module	Loss of Communication	(see page 22-62)
B1056	Relay Control Module lost communication with MICU (alarm message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1057	Relay Control Module lost communication with MICU (door switch message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1058	Relay Control Module lost communication with Door Multiplex Control Unit (door lock switch message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1059	Relay Control Module lost communication with Door Multiplex Control Unit (panic message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1060	Relay Control Module lost communication with Gauge Control Module (VSP/NE message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1061	Relay Control Module lost communication with Gauge Control Module (A/T message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1062	Relay Control Module lost communication with Combination Switch Control Module (headlight switch message)	Relay Control Module	Loss of Communication	(see page 22-62)
B1063	Relay Control Module lost communication with Combination Switch Control Module (wiper switch message)	Relay Control Module	Loss of Communication	(see page 22-62)

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Fig. 25: DTC Troubleshooting Index (2 Of 6)

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DTC	Description	ECU	DTC type	Page
B1075	Headlight switch malfunction	Relay Control Module	Signal Error	(see page 22-155)
B1076	Windshield wiper signal error	Relay Control Module	Signal Error	(see page 22-206)
B1077	Wiper switch (As) malfunction	Relay Control Module	Signal Error	(see page 22-207)
B1078	Daytime running lights malfunction	Relay Control Module	Signal Error	(see page 22-156)
B1080	Power supply circuit (IG1 line) input error for Relay Control Module and MICU	Relay Control Module	Signal Error	(see page 22-108)
B1100	Communication circuit error (BUS Off)	Door Multiplex Control Unit	Loss of Communication	(see page 22-102)
B1102	Door Multiplex Control Unit Internal Error	Door Multiplex Control Unit	Internal Error	(see page 22-107)
B1125	Driver's power window motor A pulse malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-202)
B1126	Driver's power window motor B pulse malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-202)
B1127	Driver's door lock key cylinder switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-135)
B1128	Driver's door lock switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-136)
B1129	Driver's door knob switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-137)
B1140	Driver's power window position detect circuit malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-202)
B1150	Communication circuit error (BUS Off)	Gauge Control Module	Loss of Communication	(see page 22-102)
B1152	Gauge Control Module Internal Error	Gauge Control Module	Internal Error	(see page 22-230)
B1155	Gauge Control Module lost communication with Combination Switch Control Module (headlight switch message)	Gauge Control Module	Loss of Communication	(see page 22-231)
B1156	Gauge Control Module lost communication with Combination Switch Control Module (wiper switch message)	Gauge Control Module	Loss of Communication	(see page 22-231)

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Fig. 26: DTC Troubleshooting Index (3 Of 6)

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DTC	Description	ECU	DTC type	Page
B1157	Gauge Control Module lost communication with MICU	Gauge Control Module	Loss of Communication	(see page 22-232)
B1158	Gauge Control Module lost communication with Relay Control Module	Gauge Control Module	Loss of Communication	(see page 22-232)
B1159	Gauge Control Module lost communication with MICU (door switch message)	Gauge Control Module	Loss of Communication	(see page 22-233)
B1160	Gauge Control Module lost communication with Door Multiplex Control Unit (door lock switch message)	Gauge Control Module	Loss of Communication	(see page 22-233)
B1168	Gauge Control Module lost communication with ECM/PCM (engine messages)	Gauge Control Module	Loss of Communication	(see page 22-107)
B1169	Gauge Control Module lost communication with PCM (A/T messages)	Gauge Control Module	Loss of Communication	(see page 22-107)
B1175	Fuel gauge sending unit signal malfunction	Gauge Control Module	Signal Error	(see page 22-234)
B1177	Abnormal battery voltage (7.5 V)	Gauge Control Module	Signal Error	(see page 22-235)
B1178	F-CAN communication circuit error	Gauge Control Module	Loss of Communication	(see page 22-107)
B1200	Communication circuit error (BUS Off)	Climate Control Unit	Loss of Communication	(see page 22-102)
B1202	Climate Control Unit Internal Error	Climate Control Unit	Internal Error	(see page 21-47)
B1205	Climate Control Unit lost communication with Gauge Control Module (VSP/NE message)	Climate Control Unit	Loss of Communication	(see page 21-48)
B1206	Climate Control Unit lost communication with Gauge Control Module (ENGTEMP message)	Climate Control Unit	Loss of Communication	(see page 21-48)
B1207	Climate Control Unit lost communication with Gauge Control Module (ILLUMI message)	Climate Control Unit	Loss of Communication	(see page 21-48)
B1225	Open in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-26)
B1226	Short in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-27)
B1227	Open in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-28)

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Fig. 27: DTC Troubleshooting Index (4 Of 6)

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DTC	Description	ECU	DTC type	Page
B1228	Short in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-29)
B1229	Open in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-30)
B1230	Short in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-32)
B1231	Open in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-33)
B1232	Short in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-34)
B1233	Open in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-35)
B1234	Short in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-36)
B1235	Problem in the driver's air mix control linkage, door, or motor	Climate Control Unit	Signal Error	(see page 21-38)
B1236	Open in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-45)
B1237	Short in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-46)
B1238	Problem in the passenger's air mix control linkage, door, or motor	Climate Control Unit	Signal Error	(see page 21-47)
B1239	Open or short in the mode control motor circuit	Climate Control Unit	Signal Error	(see page 21-38)
B1240	Problem in the mode control linkage, doors, or motor	Climate Control Unit	Signal Error	(see page 21-40)
B1241	Problem in the blower motor circuit	Climate Control Unit	Signal Error	(see page 21-41)
B1250	Communication circuit error (BUS Off)	Combination Switch Control Unit	Loss of Communication	(see page 22-102)
B1251	Combination Switch Control Unit internal error	Combination Switch Control Unit	Internal Error	(see page 22-109)
B1255	Combination Switch Control Unit lost communication with MICU	Combination Switch Control Unit	Loss of Communication	(see page 22-109)

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Fig. 28: DTC Troubleshooting Index (5 Of 6)

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DTC	Description	ECU	DTC type	Page
B1275	Headlight switch OFF position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1276	Headlight switch SMALL position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1277	Headlight switch AUTO position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1278	Headlight switch ON position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-158)
B1279	Dimmer switch circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-159)
B1280	Turn signal switch circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-160)
B1281	Windshield wiper switch MIST position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)
B1282	Windshield wiper switch INT (AUTO) position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)
B1283	Windshield wiper switch LOW position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)
B1284	Windshield wiper switch HIGH position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-210)

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Fig. 29: DTC Troubleshooting Index (6 Of 6)

DESCRIPTION

HDS INPUTS & COMMANDS

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System Menu	Data List	Data List Indication
Wiper	Brake Pedal Position	Brake pedal pushed: ON Brake pedal released: OFF
	Windshield Wiper Park Switch (AUTO STOP/PARK)	Wipers in park position: ON Wipers in other position: OFF
	Windshield Wiper Switch (BACK-UP)	Wiper switch in HI position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (INTERMITTENT)	Wiper switch in INT position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (LOW)	Wiper switch in LOW position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (HIGH)	Wiper switch in HI position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (MIST)	Wiper switch in MIST position: ON Wiper switch in other position: OFF
	Windshield Washer Switch	Washer switch on: ON Washer switch off: OFF
	Windshield Wiper Motor HI Command	Wiper high speed command on: ON Wiper high speed command off: OFF
	Windshield Wiper Motor Lo Command	Wiper low speed command on: ON Wiper high low command off: OFF
	Windshield Washer Motor Command	Washer command on: ON Washer command off: OFF
	Intermittent Wiper Dwell Timer	Switch at short setting: 0.0 Switch at long setting: 25
Power window	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	P/W Main Switch	On: ON Off: OFF
	P/W Master Switch (Driver's window AUTO)	Auto position: ON Neutral position: OFF
	P/W Master Switch (Driver's window UP)	Up position: ON Neutral position: OFF
	P/W Master Switch (Driver's window DOWN)	Down position: ON Neutral position: OFF
	P/W Master SW. (Front Psngr's Wndw UP)	Up position: ON Neutral position: OFF
	P/W Master SW. (Front Psngr's Wndw DOWN)	Down position: ON Neutral position: OFF
	P/W Master Switch (Left Rear window UP)	UP position: ON Neutral position: OFF
	P/W Master Switch (Left Rear window DOWN)	Down position: ON Neutral position: OFF
	P/W Master Switch (Right Rear Wndw UP)	UP position: ON Neutral position: OFF
	P/W Master SW. (Right Rear Wndw DOWN)	Down position: ON Neutral position: OFF
	Driver's P/W Motor Pulse A	Window in motion: EXIST Window stopped: N/A
	Driver's P/W Motor Pulse B	Window in motion: EXIST Window stopped: N/A
	Driver's P/W Motor Command	OFF/UP/DOWN
	Front Passenger's P/W Motor Command	OFF/UP/DOWN
	Left Rear P/W Motor Command	OFF/UP/DOWN
	Right Rear P/W Motor Command	OFF/UP/DOWN
	P/W Relay Command	On command: ON Off command: OFF
	Moonroof Timer Command	Enabled: ON Disabled: OFF

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Fig. 30: HDS Inputs & Commands Table (1 Of 8)

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System Menu	Data List	Data List Indication
Lighting	Driver's Door Switch	Door open: ON Door closed: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other positions: OFF
	Horn Command	Horn on command: ON Horn off command: OFF
	Headlight Switch (OFF)	In off position: ON In other positions: OFF
	Headlight Switch (Parking)	In park light position: ON In other positions: OFF
	Headlight Switch (HEADLIGHT)	In headlight position: ON In other position: OFF
	Headlight Switch (BACK-UP)	In headlight position: ON In headlight position: OFF
	Headlight Switch (DIMMER)	In hi-beam position: ON In low-beam position: OFF
	Headlight Switch (PASSING)	Passing switch on: ON Passing switch off: OFF
	Turn Signal Switch (LEFT)	In left position: ON Neutral position: OFF
	Turn Signal Switch (RIGHT)	In right position: ON Neutral position: OFF
	DRL Signal (Canada)	
	Ignition Key Cylinder Light Command	Light on command: ON Light off command: OFF
	Interior Light Command	Light on command: ON Light off command: OFF
	Foot Light Command	Light on command: ON Light off command: OFF
	Left Turn Signal Command	Light on command: ON Light off command: OFF
	Right Turn Signal Command	Light on command: ON Light off command: OFF
	Hazard Signal Command	Hazard on command: ON Hazard off command: OFF
	DRL Relay command (Canada)	Relay on command: ON Relay off command: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF
	Fog Light Command	Light on command: ON Light off command: OFF
	Rear Defroster Command	Defroster on command: ON Defroster off command: OFF
	DRL Command (Canada)	DRL on command: ON DRL off command: OFF

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Fig. 31: HDS Inputs & Commands Table (2 Of 8)

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System Menu	Data List	Data List Indication
Gauge	Driver's Door Switch	Door open: ON Door Closed:OFF
	Front Passenger's Door Switch	Door open: ON Door Closed:OFF
	Left Rear Door Switch	Door open: ON Door Closed:OFF
	Right Rear Door Switch	Door open: ON Door Closed:OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk Closed:OFF
	Trunk Lid Release Command	Release command: ON Other: OFF
	Headlight Switch (OFF)	In off position: ON In other positions: OFF
	Headlight Switch (Parking)	In park light position: ON In other positions: OFF
	Headlight Switch (HEADLIGHT)	In headlight position: ON In other positions: OFF
	Headlight Switch (DIMMER)	In hi-beam position: ON In low-beam position: OFF
	Headlight Switch (PASSING)	Passing switch on: ON Passing switch off: OFF
	Turn Signal Switch (LEFT)	In left position: ON Neutral position: OFF
	Turn Signal Switch (RIGHT)	In right position: ON Neutral position: OFF
	DRL Signal (Canada)	
	Left Turn Signal Command	Light on command: ON Light off command: OFF
	Right Turn Signal Command	Light on command: ON Light off command: OFF
	Hazard Signal Command	Hazard on command: ON Hazard off command: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF
	Fog Light Command	Light on command: ON Light off command: OFF
	Brake Pedal Position Switch	Brake pedal pushed: ON Brake pedal released: OFF

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Fig. 32: HDS Inputs & Commands Table (3 Of 8)

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System Menu	Data List	Data List Indication
Gauge	Ignition Key Cylinder Switch	Key in ignition: ON Key out of ignition: OFF
	Driver's Seat Belt Buckle Switch	Unbuckled: ON Buckled: OFF
	A/T Gear Position Switch (R)	Shifter in reverse position: ON Shifter in other position: OFF
	Cruise Control Main Switch Input	Cruise main switch on: ON Cruise main switch off: OFF
	Engine Oil Pressure Switch	Engine off (low pressure): ON Engine running: OFF
	Washer Fluid Level Switch (Canada)	Fluid level low: ON Fluid level normal: OFF
	Gauge Select/Reset Switch	Reset button pushed: ON Reset button released: OFF
	Parking Brake Switch	Park brake lever pulled: ON Park brake lever released: OFF
	Brake Fluid Level Switch	Fluid level low: ON Fluid level normal: OFF
	Fuel Sending Unit Input 1	Fuel tank empty: 4V Fuel tank half full: 2.5V Fuel tank full: 1V
	Fuel Sending Unit Input 2	Fuel tank empty: 5° Fuel tank half full: 50° Fuel tank full: 100°
	ABS Indicator	Indicator command on: ON Indicator command off: OFF
	EBD (Brake Light) Indicator	Indicator command on: ON Indicator command off: OFF
	MIL Indicator	Indicator command on: ON Indicator command off: OFF
	Washer Fluid Level Indicator (Canada)	Indicator command on: ON Indicator command off: OFF
	DRL Indicator (Canada)	Indicator command on: ON Indicator command off: OFF
	Low Oil Pressure Indicator	Indicator command on: ON Indicator command off: OFF
	Charge System Indicator	Indicator command on: ON Indicator command off: OFF
	Cruise Main Switch ON Indicator	Indicator command on: ON Indicator command off: OFF
	Maintenance Required Indicator	Indicator command on: ON Indicator command off: OFF
	High Beam Indicator	Indicator command on: ON Indicator command off: OFF
	Parking Light ON Indicator	Indicator command on: ON Indicator command off: OFF
	Low Fuel Warning Indicator	Indicator command on: ON Indicator command off: OFF
	Security Indicator	Indicator command on: ON Indicator command off: OFF
	Fuel gauge Needle Command	Fuel tank empty: 4V Fuel tank half full: 2.5V Fuel tank full: 1V

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Fig. 33: HDS Inputs & Commands Table (4 Of 8)

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System Menu	Data List	Data List Indication
Door lock	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Sw. (LOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Sw. (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob up: OFF
	Driver's Door Key Cylinder Switch (LOCK)	Key turned to lock: ON Neutral position: OFF
	Driver's Door Key Cylinder Switch (UNLOCK)	Key turned to unlock: ON Neutral position: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
Climate control	Air Pressure Switch/Thermal Protector	A/C on: ON

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Fig. 34: HDS Inputs & Commands Table (5 Of 8)

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System Menu	Data List	Data List Indication
Keyless	Driver's Door Switch	Door open: ON Door Closed: OFF
	Front Passenger's Door Switch	Door open: ON Door Closed: OFF
	Left Rear Door Switch	Door open: ON Door Closed: OFF
	Right Rear Door Switch	Door open: ON Door Closed: OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk closed: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (LOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Driver's Door Key Cylinder Switch (LOCK)	Key turned to lock: ON Neutral position: OFF
	Driver's Door Key Cylinder Switch (UNLOCK)	Key turned to lock: ON Neutral position: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other positions: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
	Trunk Lid/Tailgate Release Command	Release command: ON Other: OFF

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Fig. 35: HDS Inputs & Commands Table (6 Of 8)

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System Menu	Data List	Data List Indication
Security	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk closed: OFF
	Hood Switch	Hood open: ON Hood closed: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (LOCK)	Switch pushed: ON Switch released: OFF
	Front Psngr's Door Lock Sw. (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: ON Knob down: OFF
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Lock Knob Sw. (LOCK)	Knob up: ON Knob down: OFF
	Front Psngr's Lock Knob Sw. (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other position: OFF
	Horn Command	Horn on command: ON Horn off command: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
	Trunk Lid/Tailgate Release Command	Release command: ON Other: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF

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Fig. 36: HDS Inputs & Commands Table (7 Of 8)

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System	Description	Data List
Gauge	Speedometer displays value inputted	Speedometer
	Tachometer displays value inputted	Tachometer
	Fuel gauge displays value inputted	Fuel Level Gauge
	Temperature gauge displays value inputted	Engine Temperature Gauge
	Turns ABS indicator on/off	ABS Indicator
	Turns BRAKE indicator on/off	EBD Indicator
	Turns MIL on/off	MIL Status
	Turns washer level indicator on/off	Windshield Washe Fluid Level Indicator (Canada)
	Turns DRL indicator on/off	Daytime Running Lights Indicator (Canada)
	Turns Low oil pressure indicator on/off	Engine Oil Pressure Indicator
	Turns charging system indicator on/off	Charging System Indicator
	Turns cruise main switch indicator on/off	Cruise Control Main Switch Indicator
	TURNS maintenance required indicator on/off	Maintenance Required Indicator
	Turns high beam indicator on/off	High Beam Indicator
	Turns light on indicator on/off	Lights On Indicator
	Turns low fuel indicator on/off	Low Fuel Indicator
	Turns security indicator on/off	Security Indicator
	Displays inputted value	Trip Meter
	Turns A/T P position indicator on/off	A/T Gear Position Indicator (P)
	Turns A/T R position indicator on/off	A/T Gear Position Indicator (R)
	Turns A/T N position indicator on/off	A/T Gear Position Indicator (N)
	Turns A/T D position indicator on/off	A/T Gear Position Indicator (D)
	Turns A/T D3 position indicator on/off	A/T Gear Position Indicator (D3)
	Turns A/T 2 position indicator on/off	A/T Gear Position Indicator (2)
	Turns A/T 1 position indicator on/off	A/T Gear Position Indicator (1)
	Turns VSA indicator on/off	VSA Indicator
	Turns VSA activation Indicator on/off	VSA Activation Indicator
	Controls gauge illumination brightness to inputted value	Illumination Brightness Control
	Turns key chime on/off	Key Chime
	Turns headlight chime on/off	Headlight Chime
	Turns seatbelt chime on/off	Seatbelt Reminder Chime
Lighting	Turns ignition key cylinder light on/off	Ignition Key Cylinder Light Command
	Turns interior light(s) on/off	Interior Light Command
	Turns foot light on/off	Foot Light Command
	Turns left signal light on/off	Left Turn Signal Command
	Turns right turn signal light on/off	Right Signal Command
	Turns hazard lights on/off	Hazard Signal Command
	Turns DRL relay on/off	Daytime Running Lights Relay Command (Canada)
	Turns headlights on/off	Headlight Command
	Turns high beams on/off	Headlight High Beam Command
	Turns parking lights on/off	Parking Lights Command
	Controls DRL functions on command	Daytime Running Lights Signal (Canada)
Door lock	Controls lock and unlock functions on command	Door LOCK Command
Keyless	Turns trunk release actuator on/off	Trunk Lid/Tailgate Release Command
Climate control	Turns rear defoster on/off	Rear Defroster
Power window	Runs driver's window up	Driver's Window Up
	Runs driver's window down	Driver's Window Down
	Runs passenger's window up	Front Passenger's Window Up
	Runs passenger's window down	Front Passenger's Window Down
	Runs left rear window up	Left Rear Window Up
	Runs left rear window down	Left Rear Window Down
	Runs right rear window up	Right Rear Window Up
	Runs right rear window down	Right Rear window Down
	Turns power window relay on/off	Power Window Relay Command
Wiper	Turns wiper low speed on/off	Windshield Wiper Motor Low Command
	Turns wiper high speed on/off	Windshield Wiper Motor High Command
	Turns washer on/off	Windshield Washer Command
	Turns wiper intermittent function on/off	Intermittent Wiper Dwell Timer
Security	Turns horns on/off	Horn Command
Climate control	Initiates climate control self test function	Climate Control Self Test (INSPECTION MENU)

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Fig. 37: HDS Inputs & Commands Table (8 Of 8)

CIRCUIT DIAGRAM

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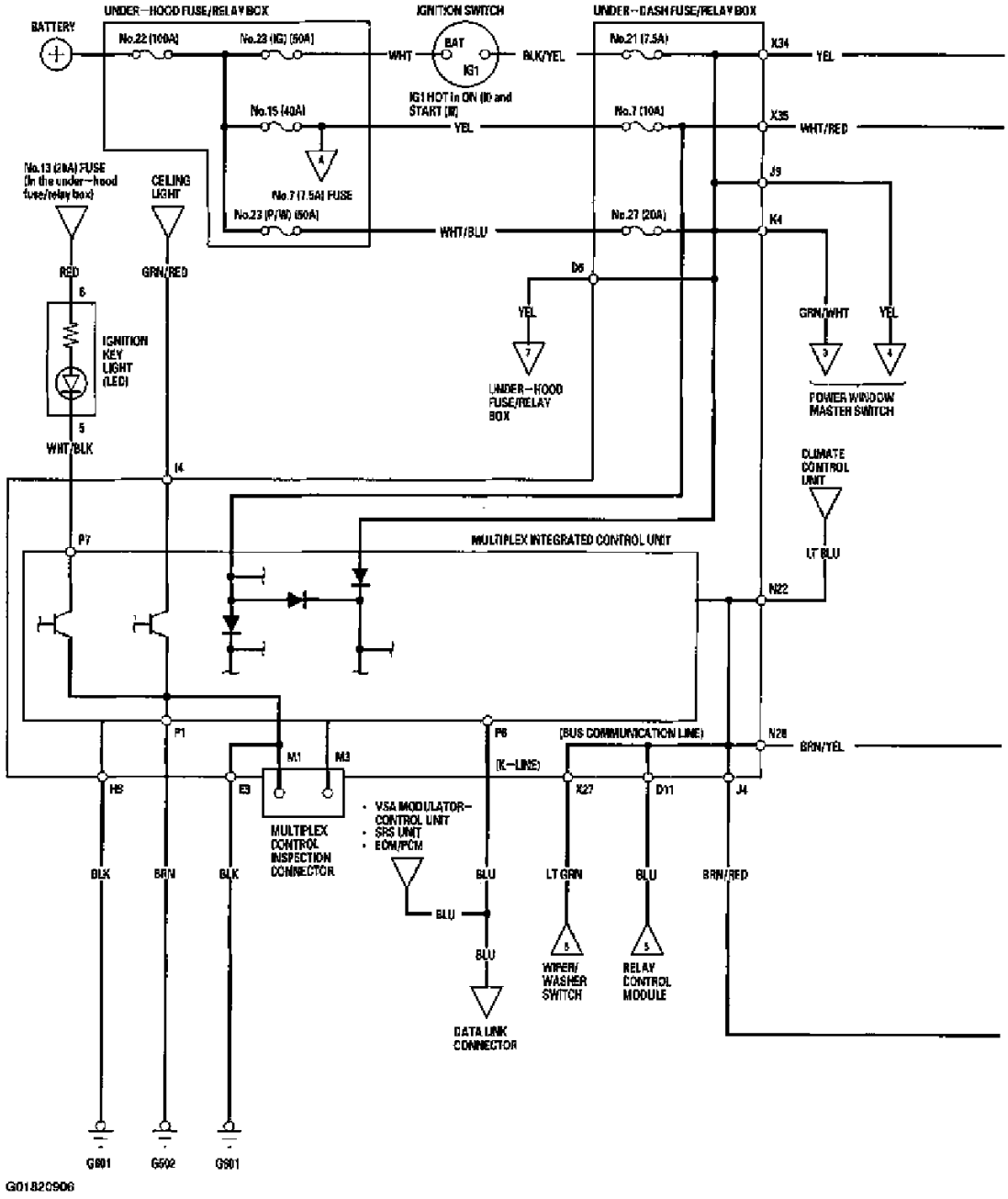


Fig. 38: Multiplex Integrated Control System Wiring Diagram (1 Of 2)

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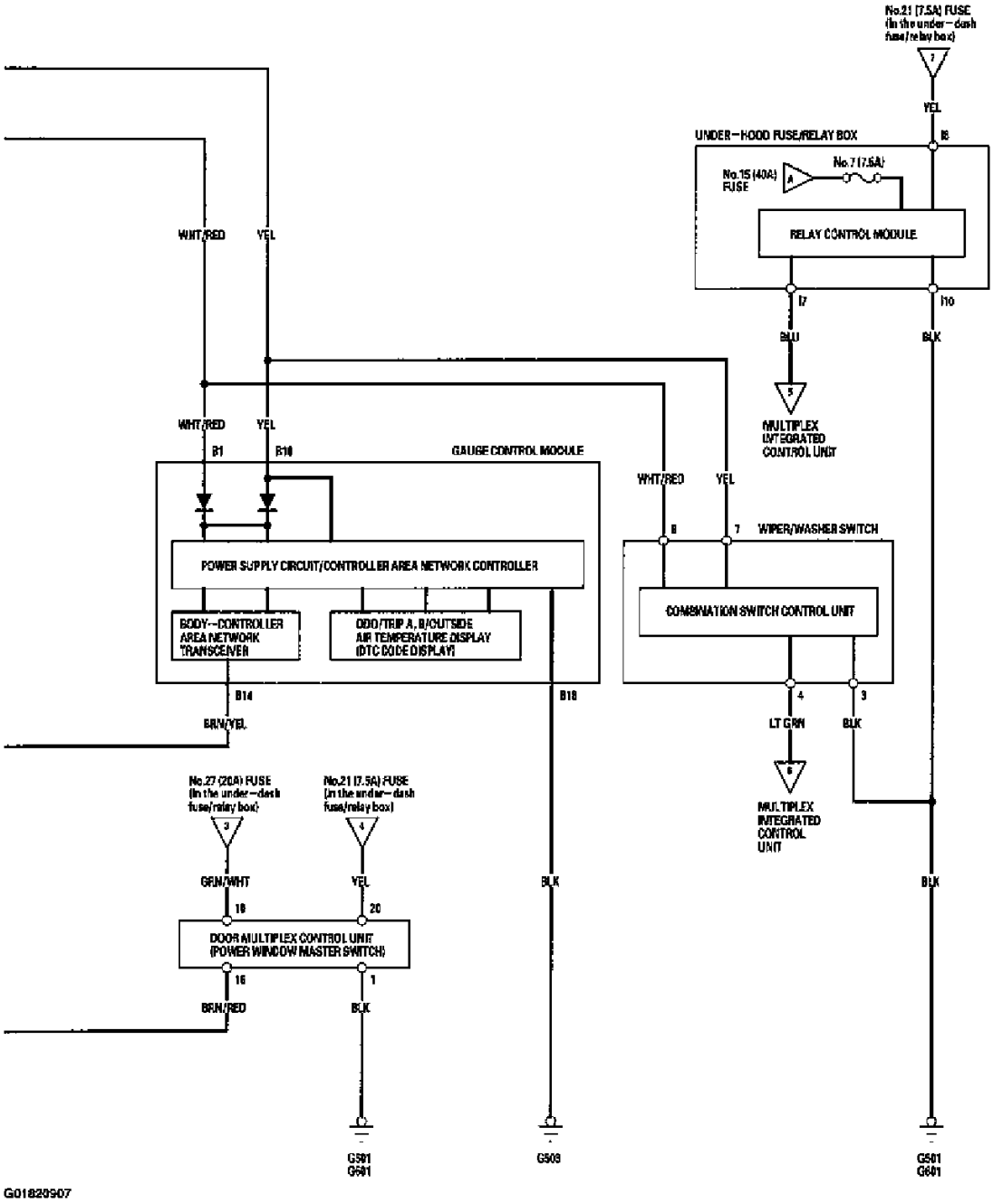


Fig. 39: Multiplex Integrated Control System Wiring Diagram (2 Of 2)

DTC TROUBLESHOOTING

DTC B1000: COMMUNICATION BUS LINE ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.

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3. Check for DTCs using the HDS.

   Is DTC B1000 indicated?

   YES: Go to step 4.

   NO: Intermittent failure. The communication bus line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs using the HDS.

   Are DTC B1005, B1006, B1007, B1008, B1009 and B1010 indicated?

   YES: Go to step 5.

   NO: Replace the MICU.

5. Disconnect each control unit one at a time. Clear the DTC, then recheck for DTCs after each unit is disconnected.
   - Gauge control module
   - Relay control module
   - Driver's multiplex control unit
   - Climate control unit
   - Combination switch control unit

   Is DTC B1000 indicated with each unit disconnected?

   YES: Check for a short to power or ground in the communication circuit by disconnecting the harness at each control unit and testing for continuity to ground or short to power. Repair or replace the harness as necessary.

   NO: Replace the control unit that was disconnected, and did not set DTC B1000.

DTC B1050, B1100, B1150, B1200, B1250: COMMUNICATION BUS LINE ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Are DTC(s) B1050, B1100, B1150, B1200 or B1250 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the system is OK at this time.

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B1050	Relay Control Module
B1100	Door Multiplex Control Unit
B1150	Gauge Control Module
B1200	Audio-HVAC-Display Module
B1250	Combination Switch Control Unit

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Fig. 40: DTC Table

4. Check for DTCs using the HDS.

   Is DTC(s) B1000 indicated?

   YES: Troubleshoot DTC B1000.

   NO: If DTC B1050 is indicated, replace the relay control module. If DTC B1100 is indicated, replace the door multiplex control unit. If DTC B1150 is indicated, replace the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**). If DTC B1200 is indicated, replace the climate control unit. If DTC B1250 is indicated, replace the combination switch control unit.

DTC B1001, B1002: MULTIPLEX INTEGRATED CONTROL UNIT (MICU) INTERNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the door lock (LOCK/UNLOCK).
4. Check for DTCs using the HDS.

   Is DTC B1001 or B1002 indicated?

   YES: Faulty MICU; replace the under-dash fuse/relay box.

   NO: Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

DTC B1005: MICU LOST COMMUNICATION WITH RELAY CONTROL MODULE

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1005 indicated?

   YES: Go to step 4.

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NO: Intermittent failure, the relay module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs in the gauge control module using the HDS.

Is DTC B1158 indicated?

YES: Go to Relay Control Module Input Test (see **RELAY CONTROL MODULE INPUT TEST**).

NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the relay control module. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1006: MICU LOST COMMUNICATION WITH DOOR MULTIPLEX CONTROL UNIT DOOR LOCK SWITCH MESSAGE

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1006 indicated?

YES: Go to step 2.

NO: Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs in the gauge control module and relay module using the HDS.

Is DTC B1160 and B1058 indicated?

YES: Go to Door Multiplex Control Unit Input Test (see **DOOR MULTIPLEX CONTROL UNIT INPUT TEST**).

NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1007: MICU LOST COMMUNICATION WITH THE COMBINATION SWITCH CONTROL UNIT (HEADLIGHT SWITCH MESSAGE)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1007 indicated?

YES: Go to step 4.

NO: Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check for DTCs of the gauge control module and relay control module using the HDS.

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Is DTC B1155 and B1062 indicated?

YES: Go to the Combination Switch Control Unit Input Test (see **COMBINATION SWITCH CONTROL UNIT INPUT TEST**).

NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the combination switch control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1008: MICU LOST COMMUNICATION (A/T MESSAGE) WITH THE GAUGE CONTROL MODULE

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1008 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs in the relay control module using the HDS.

   Is DTC B1161 indicated?

   YES: Go to the Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

   NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the gauge control module. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1009: MICU LOST COMMUNICATION WITH THE COMBINATION SWITCH CONTROL UNIT (WIPER/WASHER SWITCH MESSAGE)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1009 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the combination switch control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs of the gauge control module and relay control module using the HDS.

   Is DTC B1156 and B1063 indicated?

   YES: Go to the Combination Switch Control Unit Input Test (see **COMBINATION SWITCH CONTROL UNIT INPUT TEST**).

   NO: Check for an open, or a short to power or ground in the communication circuit between

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the MICU and the combination switch control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1010: MICU LOST COMMUNICATION (PANIC MESSAGE) WITH THE DOOR MULTIPLEX CONTROL UNIT

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1010 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs of the relay control module using the HDS.

   Is DTC B1059 indicated?

   YES: Go to the Door Multiplex Control Unit Input Test (see **DOOR MULTIPLEX CONTROL UNIT INPUT TEST**).

   NO: Check for an open, or a short to power or ground in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open, or short to power or ground.

DTC B1102: DOOR MULTIPLEX CONTROL UNIT INTERNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the power window (UP/DOWN).
4. Check for DTCs using the HDS.

   Is DTC B1102 indicated?

   YES: Faulty door multiplex control unit; replace the power window master switch.

   NO: Intermittent failure, the door multiplex control unit is OK at this time. Check for loose for or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

DTC B1178: F-CAN COMMUNICATION LINE ERROR; DTC B1168: GAUGE CONTROL MODULE LOST COMMUNICATION WITH ECM/PCM (ENGINE MESSAGES); DTC B1169: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE PCM (A/T MESSAGES)

1. Clear the DTCs using the HDS.
2. Turn the ignition switch OFF then back to the ON (II).
3. Start and run the engine for at least 5 seconds then turn the engine off.
4. Check for DTCs using the HDS.

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Is DTC B1178, B1168 and/or B1169 indicated?

YES: Go to step 5.

NO: Intermittent failure, the F-CAN communication line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

5. Check for DTCs in the ECM/PCM.

   Are any DTCs indicated?

   YES: Troubleshoot the ECM/PCM DTCs.

   NO: Go to step 6.

6. Perform the Gauge Control Module Input Test (see **GAUGE CONTROL MODULE INPUT TEST**).

   Are all inputs OK?

   YES: Go to step 7.

   NO: Repair the faulty input then recheck for DTCs.

7. Substitute a known-good gauge control module.
8. Clear the DTCs using the HDS.
9. Turn the ignition switch OFF then back to the ON (II).
10. Start and run the engine for at least 5 seconds then turn the engine off.
11. Check for DTCs using the HDS.

    Is DTC B1178, B1168 and/or B1169 indicated?

    YES: Replace the ECM/PCM.

    NO: The original gauge control module is faulty; replace the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).

DTC B1080: POWER SUPPLY CIRCUIT (IG1 LINE) INPUT ERROR FOR RELAY CONTROL MODULE & MICU

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Turn the ignition switch ON (II) and wait for 2 seconds or more.

   Is DTC B1080 indicated again?

   YES: Go to step 4.

   NO: Intermittent failure, the relay control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

4. Check the MICU IG1 power supply No. 21 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES: Go to MICU Input Test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).

   NO: Replace the fuse and recheck for DTCs.

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DTC B1251: COMBINATION SWITCH CONTROL UNIT INTERNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1251 indicated?

   YES: Faulty combination switch control unit; replace the wiper/washer switch.

   NO: Intermittent failure, the CPU in the combination switch control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .

DTC B1255: COMBINATION SWITCH CONTROL UNIT LOST COMMUNICATION WITH MICU

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

   Is DTC B1255 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition and the charging system. See **GENERATORS & REGULATORS** .
4. Check for DTCs in the combination switch control using the HDS.

   Is DTC B1055 and B1157 indicated?

   YES: Go to MICU input test (see **MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST**).

   NO: Replace the combination switch control unit.

MULTIPLEX INTEGRATED CONTROL UNIT INPUT TEST

1. Remove the left side kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**).
2. Disconnect the under-dash fuse/relay box connectors D, E, H, I, J, K, N, P and X.

NOTE: All connectors shown in Fig. 41 are wire side of female terminals.

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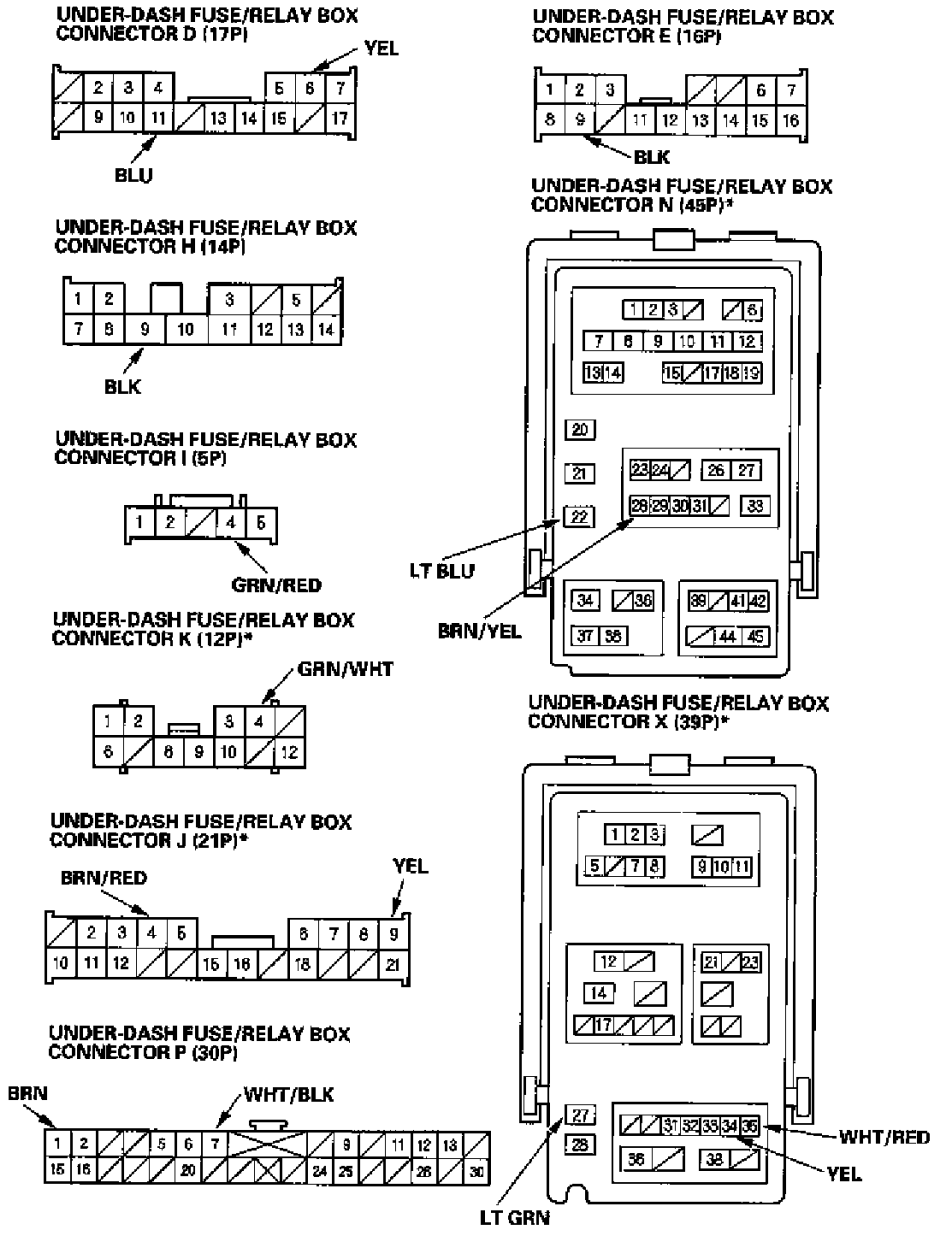


Fig. 41: Identifying Multiplex Integrated Control Unit Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the connectors still disconnected from the under-hood fuse/relay box, make these input tests at the connector(s). See **Fig. 42** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.

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- If all the input tests prove okay, go to step 5.

Cavity	Wire	Test condition	Test; Desired result	Possible cause if result is not obtained
H9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G601) • An open in the wire
P1	BRN	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G502) • An open in the wire
E9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G601) • An open in the wire
N22	LT BLU	Under all conditions	Check for continuity between terminal N22 and the climate control unit B (16P) connector terminal No. 14: There should be continuity.	• An open in the wire
		Climate control unit B (16P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
J4	BRN/RED	Under all conditions	Check for continuity between terminal J4 and power window master switch 23P connector terminal No. 16: There should be continuity.	• An open in the wire
		Power window master switch 23P connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
D11	BLU	Under all conditions	Check for continuity between terminal D11 and relay module J (10P) connector terminal No. 7: There should be continuity.	• An open in the wire
		Relay control module I (10P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
X27	LT GRN	Under all conditions	Check for continuity between terminal X27 and wiper/washer switch 8P connector terminal No. 4: There should be continuity.	• An open in the wire
		Wiper/washer switch 8P connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground
N28	BRN/YEL	Under all conditions	Check for continuity between terminal N28 and gauge assembly (30P) connector terminal No. 25: There should be continuity.	• An open in the wire
		Gauge control module B (18P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 42: Multiplex Integrated Control Unit Input Test Table

5. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the appropriate connectors on the under-dash fuse/relay box. See **Fig. 43** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex integrated control unit must be faulty, replace the under-dash fuse/relay box assembly.

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Cavity	Wire	Test condition	Test; Desired result	Possible cause if result is not obtained
P7	WHT/BLK	Under all conditions	Attach to ground: The ignition key light should come on.	• Blown No. 13 (20A) fuse in the under-hood fuse/relay box • Blown LED • An open in the wire
I4	GRN/RED	Ceiling light switch in the middle position, all doors closed	Attach to ground: The ceiling light should come on.	• Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Faulty ceiling light • An open in the wire
D6 . J9 . X34	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
K4	WHT/GRN	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 27 (20A) fuse in the under-dash fuse/relay box • An open in the wire
X35	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (10A) fuse in the under-dash fuse/relay box • An open in the wire

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Fig. 43: Identifying Under-Dash Fuse/Relay Box Input Tests

GAUGE CONTROL MODULE INPUT TEST

1. Remove the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).
2. Disconnect the 18P connector from the gauge control module.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
    - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
    - If the terminals look OK, go to step 4.

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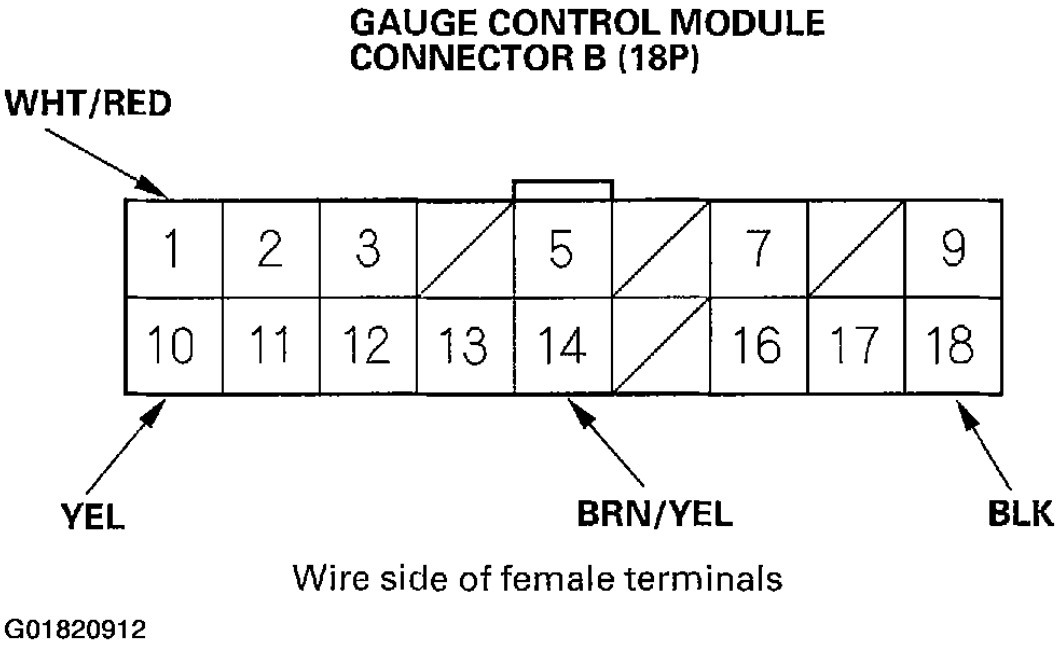


Fig. 44: Identifying Gauge Control Module Connector Terminals

4. With the connector still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, replace the gauge control module.

Cavity	Wire	Test Condition	Test: Desired result	Possible cause if result is not obtained
B10	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
B1	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage	• Blown No. 7 (10A) fuse in the under-dash fuse/relay box • An open in the wire
B18	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G503) • An open in the wire
B14	BRN/YEL	Under all conditions	Check for coninuity between the No. 14 terminal and under-dash fuse/relay box N (45P) connector No. 28 terminal: There should be coninuity	• An open in the wire
		Under-dash fuse/relay box connector N (45P) disconnected	Check coninuity to ground: There should be no continuity	• Short to ground on the wire

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Fig. 45: Gauge Control Module Input Test Table

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DOOR MULTIPLEX CONTROL UNIT INPUT TEST

1. Remove the driver's door switch panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 23P connector from the power window master switch.

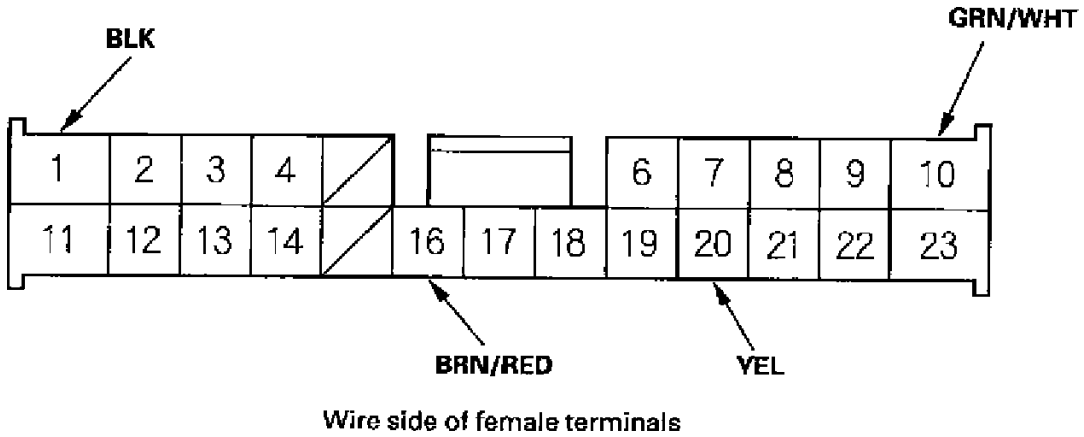


Fig. 46: Identifying Door Multiplex Control Unit Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the door multiplex control unit still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the door multiplex control unit must be faulty, replace the power window master switch.

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Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G601) • An open in the wire
10	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 27 (20A) fuse in the under-dash fuse/relay box • An open in the wire
20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
16	BRN/RED	Under all conditions	Check for continuity between terminal 16 and the under-dash fuse/relay box connector J (21P) connector terminal No. 4: There should be continuity.	• An open in the wire
		Under-dash fuse/relay box connector J (21P) disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 47: Door Multiplex Control Unit Input Test

COMBINATION SWITCH CONTROL UNIT INPUT TEST

1. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Disconnect the 8P connector (A) from the wiper/washer switch (B).

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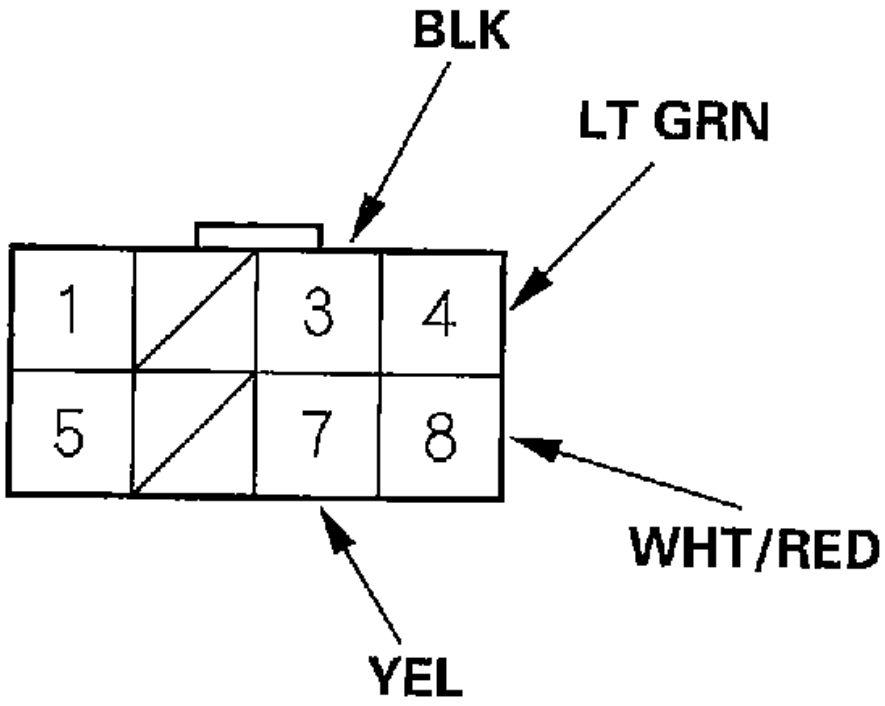


Fig. 48: Identifying Combination Switch Control Unit Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the control unit still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the combination switch control unit must be faulty, replace the wiper/washer switch.

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Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G601) • An open in the wire
8	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (10A) fuse in the under-dash fuse/relay box • An open in the wire
7	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
4	LT GRN	Under all conditions	Check for continuity between terminal 4 and the under-dash fuse/relay box connector X (39P) connector terminal No. 27: There should be continuity.	• An open in the wire
		Under-dash fuse/relay box connector X (39P) connector disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 49: Combination Switch Control Unit Input Test

RELAY CONTROL MODULE INPUT TEST

1. Remove the under-hood fuse/relay box under cover.
2. Disconnect the 10P connector (A) from the under -hood fuse/relay box (B).

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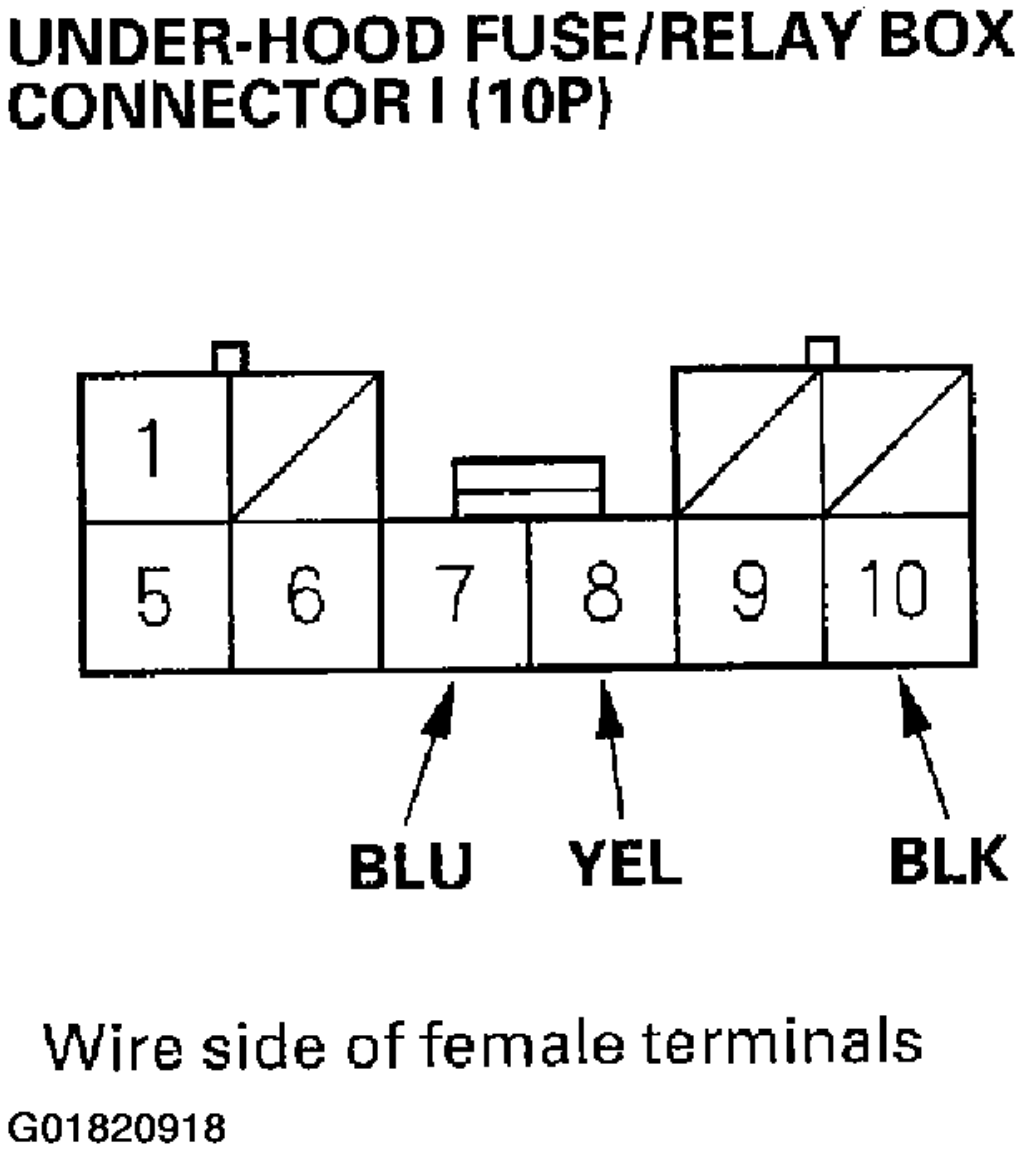


Fig. 50: Identifying Relay Control Module Connector Terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the connector still disconnected, make these input tests at the connector:
   - If any test indicates a problem, find and correct the cause, then recheck the system.

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- If all the input tests prove OK, the relay control module must be faulty, replace the under-hood fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
10	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G601) • An open in the wire
8	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
7	BLU	Under all conditions	Check for continuity between terminal 7 and the under-dash fuse/relay box connector D (17P) connector terminal No. 11: There should be continuity.	• An open in the wire
		Under-dash fuse/relay box connector D (17P) disconnected	Check for continuity to ground: There should be no continuity.	• Short to ground

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Fig. 51: Relay Control Module Input Test

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2004 ACCESSORIES & EQUIPMENT

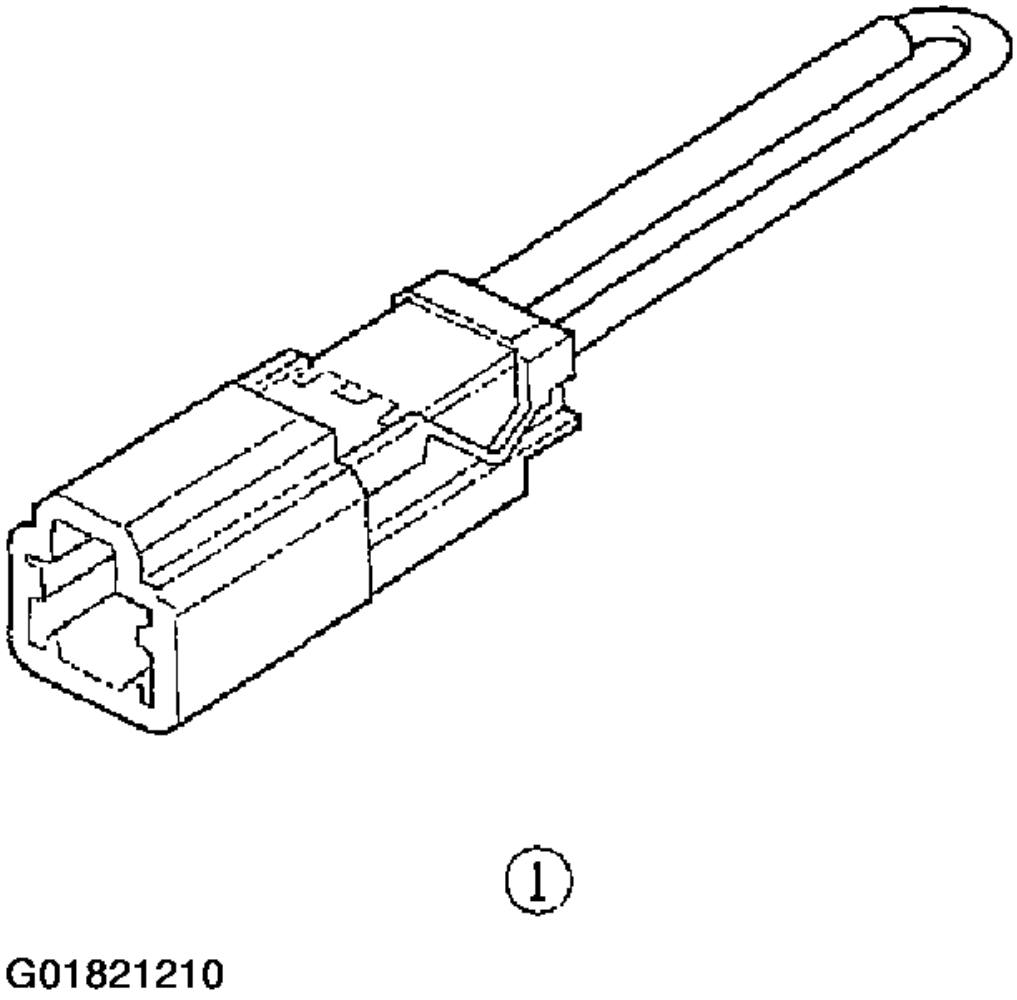
Navigation System - TSX

SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
①	07PAZ-0010100	SCS Service Connector	1

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Fig. 1: Special Tools (1 Of 2)



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Fig. 2: Special Tools (2 Of 2)

COMPONENT LOCATION INDEX

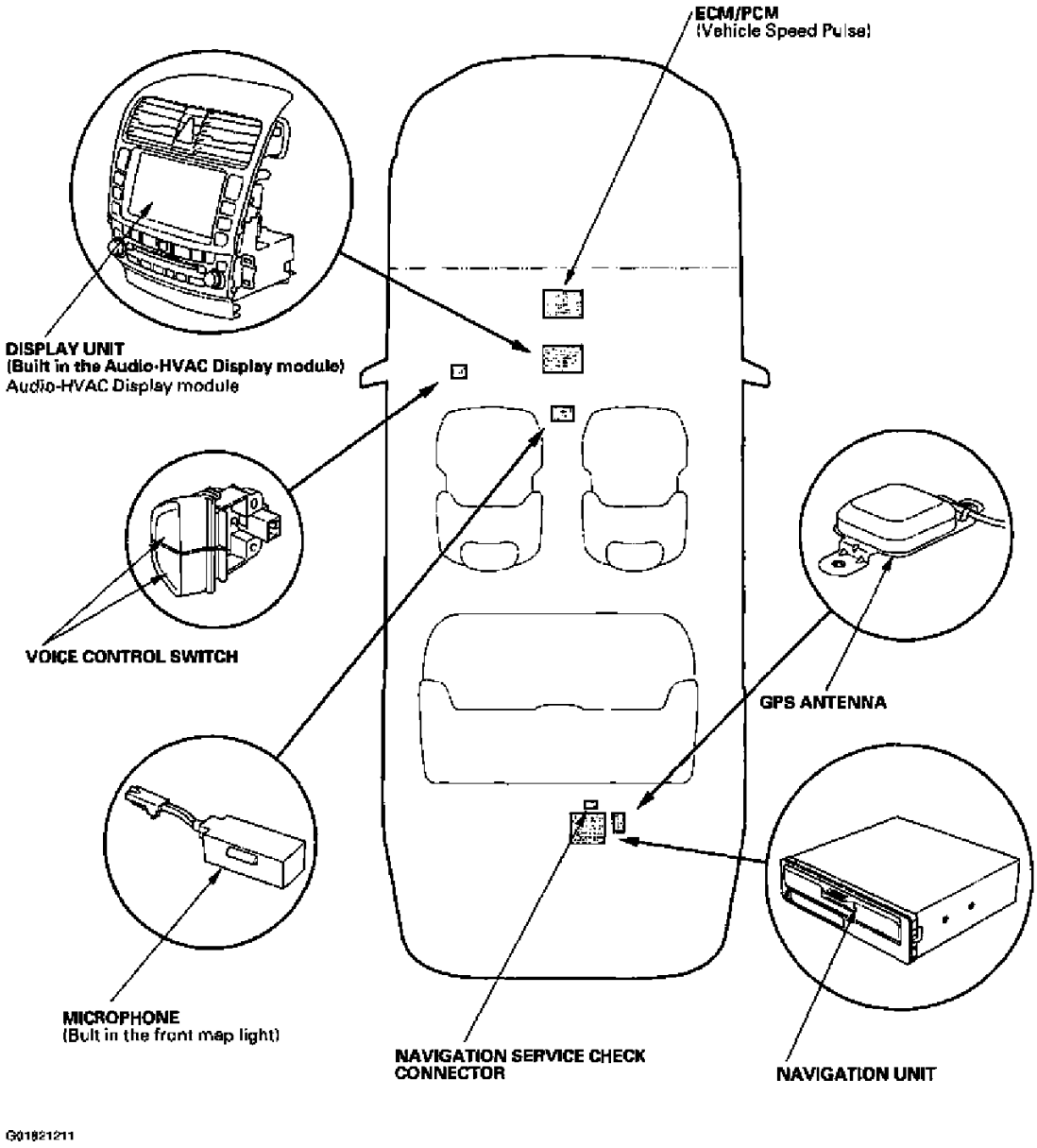


Fig. 3: Locating Navigation System Components

GENERAL TROUBLESHOOTING INFORMATION

GENERAL OPERATION

Refer to the Acura Navigation System Owner's manual, for the navigation system operating procedures.

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ANTI-THEFT FEATURE

The navigation system has a coded theft protection circuit. Be sure to get the customer's 4-digit security code number before;

- disconnecting the battery
- disconnecting the navigation unit 8P connector
- removing the No. 7 (10A) fuse from the under-dash fuse/relay box

After service, reconnect power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit security code, then select "Done".

If the code cannot be found, use the Interactive Network (**i** N) to look it up. You will need the serial number for the navigation unit in the trunk. It is on a tag on the underside of the unit. Alternatively, you can view the serial number in one of the Navi ECU diagnostic screen (see **NAVI ECU**).

When replacing the navigation unit, be sure to give the customer the new anti-theft security code.

SYMPTOM DIAGNOSIS

Certain circumstances and system limitations will result in occasional vehicle positioning errors. Some customers may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing customers about symptoms of the navigation system.

SELF-INERTIAL NAVIGATION LIMITATIONS

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause some discrepancies between the vehicle's actual position and the indicated vehicle position (GPS vehicle position). However, if GPS signals cannot be received, you must tune the vehicle's position manually.

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the navigation system on and the vehicle stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table
- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
  - Continuous tire slippage on a slippery surface
  - Driving with snow chains mounted
  - Abnormal tire pressure
  - Incorrect tire size
  - Frequent lane changes across a wide highway
  - Continuous driving on a straight or gently curving highway
- Tolerances in the system and map inaccuracies sometimes limit how precisely the vehicle position is indicated. Examples of this include:

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- Driving on roads not shown on the map (map matching is not possible)
- Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage
- Driving on a road with a series of sharp hair-pin turns
- Driving near a gradual highway exit or transition
- Driving on one of two close parallel roads
- Making many 90 degree turns

GLOBAL POSITIONING SYSTEM (GPS) LIMITATIONS

The GPS cannot detect the vehicle's position during the following instances:

- For the first 5 to 10 minutes after reconnecting the battery (This can take as long as 45 minutes)
- When the satellite signals are blocked by tall building, mountains, tunnels, large trees, or large trucks
- When the GPS antenna is blocked by something on the rear shelf
- When there is no satellite signal output (Signal output is sometimes stopped for satellite servicing)
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, and theft recovery systems) and window tinting above the GPS antenna

The accuracy of GPS is reduced during these instances:

- When only two satellite signals can be received (Three satellite signals are required for accurate positioning)
- When the satellite control centers are experiencing problems
- When driving near high tension power lines

MUTING LOGIC

Whenever the navigation system is giving guidance the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

LCD DISPLAY UNIT LIMITATIONS

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops.
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the touch panel may sometimes be noticeable because of the panel's low-reflection coating. When cleaning the panel, wipe it gently with a soft cloth. To avoid scratching the panel, do not rub too hard, or use abrasive cleaners or shop towels.
- The touch panel consists of a touch sensitive resistive membrane covering the display. Unlike previous

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systems, you must actually "touch" the display to activate it. Never use hard or sharp implements to operate the screen because you risk damaging the sensing membrane. If a touch "switch" does not function immediately, shift your finger slightly, and touch it again.

NOTE: The display is unaffected by sunlight, as in previous displays.

SYMPTOM DUPLICATION

- When the symptom can be duplicated, follow the self-diagnostic procedures and the appropriate troubleshooting procedures.
- When the symptom does not reappear or only reappears intermittently, ask the customer about the conditions when the symptom occurred.
  - Try to establish if outside interference may have been the cause.
  - Try to duplicate the symptom under the same conditions the customer was experiencing.
  - Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
  - Inspect the vehicle for after-market electronic devices (vehicle locators, radar detectors, amps, etc.) that may be hidden.

SERVICE PRECAUTIONS

- Before disconnecting the battery, make sure you have the anti-theft codes for the radio and the navigation system, and write down the frequencies for the radio's preset buttons.
- When the battery is disconnected, the internal GPS clock is reset to "0:00". The clock will reset to the correct time after the system finishes GPS initialization.
- After reconnecting the battery, you have to wait to get the initial signal from the satellites. This may take from 10 to 45 minutes.
- After reconnecting the battery, do the power window control unit resetting procedure (see **RESETTING THE POWER WINDOW**).
- Before returning the vehicle to the customer, enter the radio code, then enter the customer's radio station presets, and set the clock. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

AFTER SERVICING-MAP MATCHING

- Park the vehicle in an area where the GPS satellite signals will be unobstructed, and make sure the satellite mark is displayed on the screen.
- Drive the vehicle 1 mile before entering a destination and confirm the road being used is displayed at the bottom of the screen (map matched).
- Enter the dealer address and confirm the system routes and performs normally.
- Clear any previous destinations that may have been entered for testing purposes.

OBTAINING A NAVIGATION DVD

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If the Navigation DVD is lost or damaged, or you need a yearly update DVD, you can order on-line at www.Acura.com. This requires a credit card. The DVD for this model has an orange label, and cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Earlier model Acura navigation DVDs (black label)
- Map software programs manufactured by other companies
- DVD movies, or DVDs containing audio recordings

Update DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced map and Points of Interest (POI) coverage
- Fixes for minor software bugs
- Additional features

NOTE: Update is of course optional, and there is not program to provide free DVDs containing yearly mapping updates.

SYMPTOM TROUBLESHOOTING INDEX

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Symptom	Diagnostic procedure	Also check for
No picture is displayed	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
Picture is missing a red/green/blue color or tone, or rolling picture	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
Picture has lines/other issues	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
Display unit buttons do not work	Troubleshooting	• Navigation unit • Display unit • Harness/fuses/switches
GPS icon is white	Troubleshooting	• Navigation unit • GPS antenna/cable • Harness/fuses/switches
Voice guidance cannot be heard	Troubleshooting	• Navigation unit • Audio unit/amplifier • Harness/fuses/switches
Voice control does not work	Troubleshooting	• Navigation unit • Microphone/voice control switch • Harness/fuses/switches
Touch switch malfunction	Troubleshooting	
Cursor constantly leaves road	Troubleshooting	• Navigation unit • GPS antenna/cable • ECM/PCM (speed and fuel pulses) • Harness/fuses/switches
DVD screen error messages	Troubleshooting	• Navigation unit • Display unit • DVD
Trip computer-no distance	Troubleshooting	• ECM/PCM (speed and fuel pulses) • Harness/fuses/switches
Trip computer-no fuel information	Troubleshooting	• Gauge assembly (CAN) • Harness/fuses/switches
Navigation cannot control A/C	Troubleshooting	• Display unit • Harness/fuses/switches
Display day/night mode does not work	Troubleshooting	• Display unit • Gauge assembly (CAN) • Harness/fuses/switches
System locks up constantly	Troubleshooting	• Navigation unit • Harness/fuses/switches • DVD
Vehicle icon spins when parked	Troubleshooting	• Navigation unit
Navigation drives by itself when parked	Troubleshooting	

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Fig. 4: Symptom Troubleshooting Table (1 Of 2)

Symptom	Diagnostic procedure	Also check for
Navigation cannot control audio/CD	Troubleshooting	
Audio-HVAC subdisplay does not work properly	Troubleshooting	• Navigation unit • Audio-HVAC subdisplay • Harness/fuses/switches

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Fig. 5: Symptom Troubleshooting Table (2 Of 2)

SYSTEM DESCRIPTION

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR A (20P)

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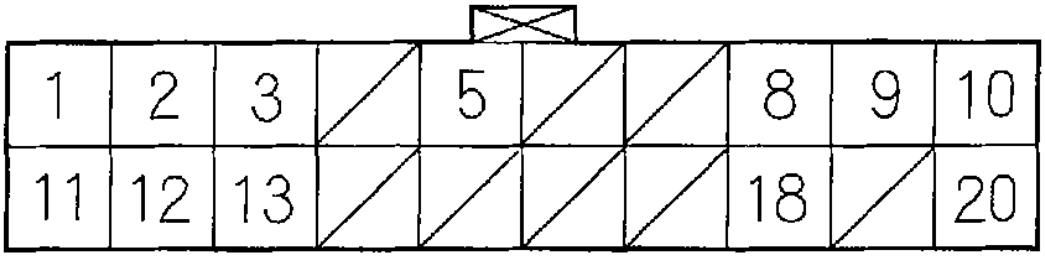


Fig. 6: Identifying Navigation Unit Connector A (20P) Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	R SIG (Red signal)	Red color signal	0—1 V	If open: Red color missing (see "RGB Color" diagnostic). If short to ground: Red color missing (see "RGB Color" diagnostic).
2	RED	G SIG (Green signal)	Green color signal	0—1 V	If open: Green color missing (see "RGB Color" diagnostic). If short to ground: Green color missing (see "RGB Color" diagnostic).
3	GRY	SH SIG (Shield signal)	Shield for terminal No. 1, 2, 11, 12, 13	0 V	If open: No change to display. If short to ground: No change to display.
5	RED/BLK	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights, under-hood "Relay fuse box"	Lights on= battery voltage, Lights off=0 V	If open: When brightness="Auto", night mode for the display is inoperative when lights on. If short to ground: Blows fuse 4 in under-hood fuse/relay box.
8	WHT	CAN-H (CAN high)	F-CAN bus communication	Pulses 2.5—6 V average 3 V	If open: 1) System Links FI-ECU, and Meter both show "NG". 2) F-CAN diagnostic="NG". 3) B-CAN diagnostic="NG". 4) Car status CHG (CAN)=0. 5) Functional Setup, Trip info, FUP & Sampled FL=0. If short to ground: Same diagnostic conditions as when open, and also sets the following DTCs. • B1168 Gauge Control Module loss of Comm. (Engine) • B1169 Gauge Control Module loss of Comm. (A/T) • B1178 F-CAN communication Circuit error. • U0073 (F-CAN bus off) • U0155 (F-CAN Gauge control) • U0121 (F-CAN TCS control)
9	GRN/BLK	SH DISP BUS (Shield display bus)	Shield for display bus terminal No. 10, 20	0 V	If open: No change to display. If short to ground: No change to display.
10	RED/WHT	DISP BUS (+) (Display bus positive)	Date bus (+) GA-Net	0 V—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.

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Fig. 7: Navigation Unit Pin Voltage Chart Connector A (20P) (1 Of 2)

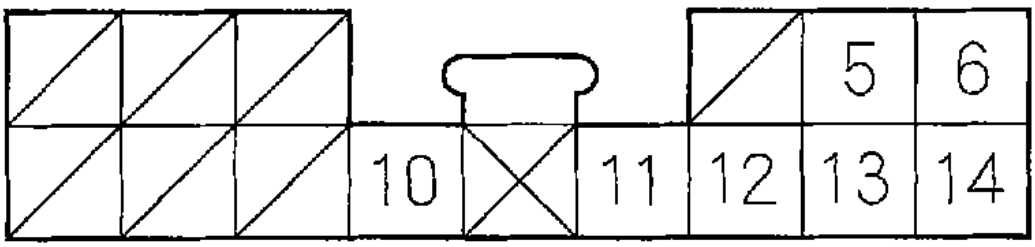
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Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
11	YEL	B SIG (Blue signal)	Blue color signal	0 – 1 V AC	If open: Blue color missing (see "RGB Color" diagnostic). If short to ground: Blue color missing (see "RGB Color" diagnostic).
12	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) Synchronizing signal	0.3 V AC	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
13	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	RED	CAN-L (CAN low)	F-CAN bus communication	Pulses 2.5 – 6 V average 3 V	If open: 1) System Links ECM/PCM, and Gauge Control Module both show "NG". 2) F-CAN diagnostic="NG". 3) B-CAN diagnostic="NG". 4) Car status CHG (CAN)=0. 5) Functional Setup, Trip into, FUP & Sampled FL=0. If short to ground: Same diagnostic conditions as when open, and also sets the following DTCs. • B1168 Gauge Control Module loss of Comm. (Engine) • B1169 Gauge Control Module loss of Comm. (A/T) • B1178 F-CAN communication Circuit error. • U0073 (F-CAN bus off) • U0155 (F-CAN Gauge control) • U0121 (F-CAN TCS control)
20	RED/BLU	DISP BUS (–) (Display bus negative)	Date bus (–) GA-Net	0 V – 5 V pulses nominally 2.5 V	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.

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Fig. 8: Navigation Unit Pin Voltage Chart Connector A (20P) (2 Of 2)

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR B (14P)



Wire side of female terminals

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Fig. 9: Identifying Navigation Unit Connector B (14P) Terminals

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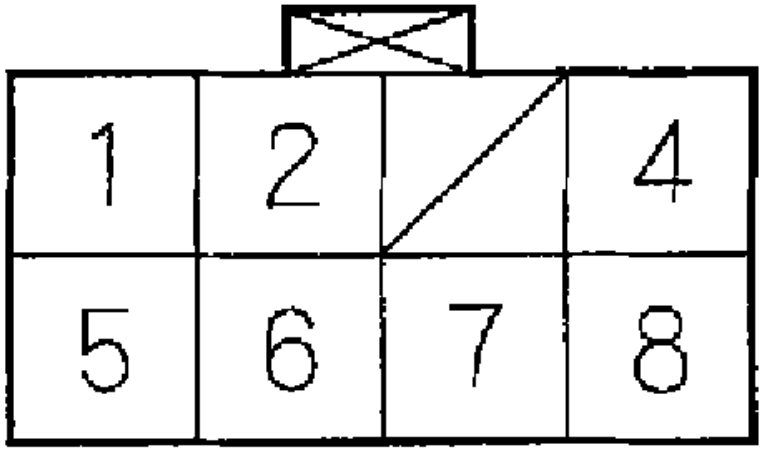
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
5	WHT/GRN	RG L (+) (Route guidance voice left positive)	Left audio signal of voice guidance, and Voice Recognition (VR) prompts	Audio signal 0.004—0.04 V	If open: If voice activated, radio speakers buzz; if voice off, no effect. If short to ground: If voice activated, radio speakers buzz; if voice off, no effect.
6	BLU	MIC SIG (+) (Mic signal positive)	Microphone output signal positive	4—5 V	If open: No microphone signal shown in diagnostic screens: "Navi System Link" and Functional Setup "Mic Level". If short to ground: No microphone signal shown in diagnostic screens: "Navi System Link" and Functional Setup "Mic Level".
10	GRY	STRG SW (Steering switches)	Steering switch output	4—5 V (Talk button depressed) 2.5—3 V (Back button depressed)	If open: Steering wheel "Talk", and "Back" buttons do not work. If short to ground: Steering wheel "Talk", and "Back" buttons do not work.
11	LT GRN	SH RG (Shield route guidance)	Shield for terminal No. 5, 12	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
12	GRN	GND RG (Ground route guidance)	Ground for voice guidance, and Voice Recognition (VR) prompts	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
13	LT BLU	SH MIC (Shield mic)	Shield for terminal No. 6, 14	0 V	If open: No effect on voice control. If short to ground: No effect on voice control.
14	PNK	GND MIC (Ground mic)	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: "Navi System Link" and Functional Setup "Mic Level". If short to ground: No effect on voice recognition.

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Fig. 10: Navigation Unit Pin Voltage Chart Connector B (14P)

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR C (8P)

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Wire side of female terminals

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Fig. 11: Identifying Navigation Unit Connector C (8P) Terminals

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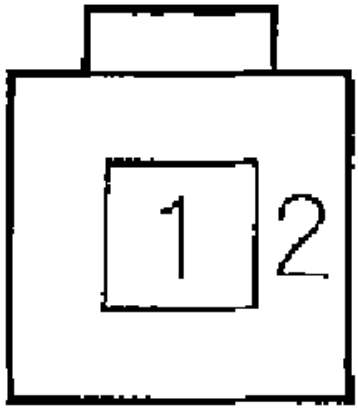
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/RED	+B (+B Power source)	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to "enter code" screen. If short to ground: Blows fuse No. 7 (10A) in the under-dash fuse/relay box.
2	YEL/RED	ACC (Accessory)	Power source for accessories	Battery voltage at ACC (I)	If open: Display picture goes out (display back light still on). If short to ground: Blows fuse No. 32 (7.5A) in the under-dash fuse/relay box.
4	BLK	GND (Ground)	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
5	GRN	BACK LT (Back light)	Reverse signal of select lever from "Multiplex Integrated Control Unit" (A/T) or backup light switch (M/T)	In reverse, battery voltage; Otherwise 0 V	If open: Navigation never sees reverse. Diagnostic screen "Car Status", "Back"=0. If short to ground: Blows fuse No. 21 (7.5A) in the under-dash fuse/relay box.
6	BLU/WHT	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from PCM	Pulses 0 – 5 V: Average 2.5 V, when moving	If open: No vehicle speed pulses. Diagnostic screen "Car Status", VSP Navi=0. If short to ground: No vehicle speed pulses. Diagnostic screen "Car Status", VSP Navi=0.
7	GRN/RED	DIAG P (Diagnostic positive)	Service check signal for navigation system	5 – 6 V	If open: No effect on system. If short to ground: System goes into diagnostic mode.
8	GRN/YEL	DIAG N (Diagnostic negative)	Ground for service check signal	0 V	If open: No effect on system. If short to ground: No effect on system.

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Fig. 12: Navigation Unit Pin Voltage Chart Connector C (8P)

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR E (2P)

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Wire side of female terminals

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Fig. 13: Identifying Navigation Unit Connector E (2P) Terminals

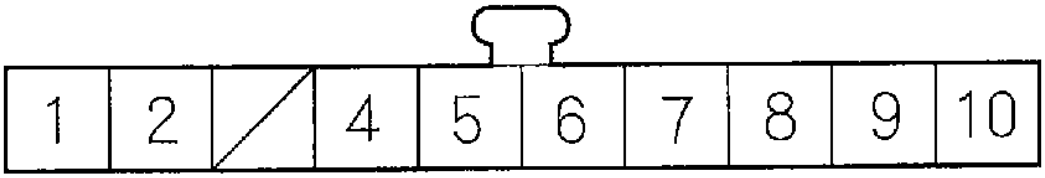
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	——	GPS	GPS signal	5 V	If open: GPS icon on screen is white, system links screen ANT shows "NG". If short to body ground: Same as open.
2	——	GND GPS	Ground for GPS signal	0 V	If open: GPS icon on screen is white, system links screen ANT shows "NG". If short to body ground: No effect on system.

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Fig. 14: Navigation Unit Pin Voltage Chart Connector E (2P)

AUDIO-HVAC DISPLAY PANEL INPUTS AND OUTPUTS FOR CONNECTOR C (10P)

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Wire side of female terminals

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Fig. 15: Identifying Audio-HVAC Display Panel Connector C (10P) Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BLK	GND SIG		0 V	If open: Audio-HVAC subdisplay visible, but very dim. If short to ground: Audio-HVAC subdisplay unaffected.
2	BLU/ORN	5 V		5 V	If open: All Audio-HVAC subdisplay segments show briefly at key on. If short to ground: All Audio-HVAC subdisplay LCD segments do not work Audio-HVAC subdisplay backlight on.
4	YEL/RED	RESET	Time set sync signal	5 V	If open: Clock Audio-HVAC subdisplay will not set to navigation time (when time offset is applied or when "Reset" touched in Setup "Clock Adjustment" screen). If short to ground: All Audio-HVAC subdisplay LCD segments do not work display backlight on.
5	YEL	CLOCK		0 – 5 V Data 0.04 V Average	If open: Audio-HVAC subdisplay randomly displays some characters, display backlight on. If short to ground: Audio-HVAC subdisplay randomly displayed characters, display backlight on.
6	BLU/RED	DATA		0 – 5 V Data 4 – 5 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
7	BLU	CE		0 – 5 V Data 4 – 6 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
8	GRY	SH SIG	Shield for terminal No. 4, 5, 6, 7	0 V	If open: No effect on Audio-HVAC subdisplay. If short to ground: No effect on Audio-HVAC subdisplay.
9	RED	LCD BL – (LCD backlight –)	Power for LCD backlight –	0 – 0.2 V	If open: Audio-HVAC subdisplay function normal, but display is very dim. If short to ground: Audio-HVAC subdisplay functions normally.
10	GRN	LCD BL + (LCD backlight +)	Power for LCD backlight +	9.6 V	If open: Audio-HVAC subdisplay completely blank. If short to ground: Audio-HVAC subdisplay completely blank.

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Fig. 16: Audio-HVAC Display Panel Pin Voltage Chart Connector C (10P)

DISPLAY UNIT INPUTS AND OUTPUTS FOR 20P CONNECTOR

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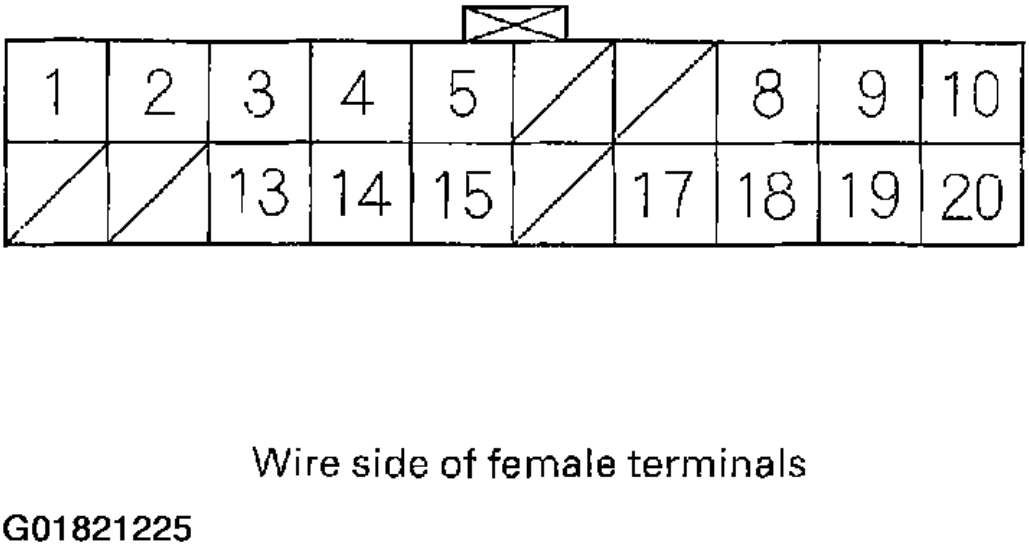


Fig. 17: Identifying Display Unit Connector Terminals

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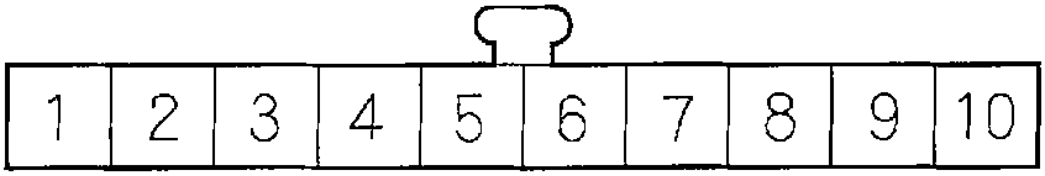
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/RED	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows fuse No. 7 (10A) in the under-dash fuse/relay box.
2	YEL/RED	ACC (Accessory)	Power source for accessory	Battery voltage at ACC (I)	If open: Display and buttons do not work. If short to ground: Blows fuse No. 32 (7.5A) in the under-dash fuse/relay box.
3	BLU/RED	AUD BUS (+) (Audio bus positive)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.
4	BLK	SH AUD BUS (Shield audio bus)	Shield for audio bus terminal No. 3, 13	0 V	If open: No change to display. If short to ground: No change to display
5	RED/WHT	DISP BUS (+) (Display bus positive)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.
8	WHT	R SIG (Red signal)	Red color signal	0—1 V	If open: Red color missing (see "RGB Color" diagnostic). If short to ground: Red color missing (see "RGB Color" diagnostic).
9	RED	G SIG (Green signal)	Green color signal	0—1 V	If open: Green color missing (see "RGB Color" diagnostic). If short to ground: Green color missing (see "RGB Color" diagnostic).
10	BLK	GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.
13	WHT	AUD BUS (—) (Audio bus negative)	Data bus (—) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.
14	GRN/BLK	SH DISP BUS (Shield display bus)	Shield for display bus terminal No. 5, 15	0 V	If open: No change to display. If short to ground: No change to display.
15	RED/BLU	DISP BUS (—) (Display bus negative)	Date bus (—) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.
17	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	YEL	B SIG (Blue signal)	Blue color signal	0—1 V	If open: Blue color missing (see "RGB Color" diagnostic). If short to ground: Blue color missing (see "RGB Color" diagnostic).
19	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) synchronizing signal	0.3 V	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
20	GRY	SH SIG (Shield signal)	Shield for terminal No. 8, 9, 17, 18, 19	0 V	If open: No change to display. If short to ground: No change to display.

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Fig. 18: Display Unit Pin Voltage Chart (1 Of 2)

AUDIO-HVAC SUBDISPLAY INPUTS AND OUTPUTS FOR 10P CONNECTOR

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Fig. 19: Identifying Audio-HVAC Subdisplay Connector Terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BLK	GND SIG		0 V	If open: Audio-HVAC subdisplay visible, but very dim. If short to ground: Audio-HVAC subdisplay unaffected.
2	BLU/ORN	5 V		5 V	If open: All Audio-HVAC subdisplay segments show briefly at key on. If short to ground: All Audio-HVAC subdisplay LCD segments do not work Audio-HVAC subdisplay backlight on.
3	BLK	GND		0 V	
4	YEL/RED	RESET	Time set sync signal	5 V	If open: Clock Audio-HVAC subdisplay will not set to navigation time (when time offset is applied or when "Reset" touched in Setup "Clock Adjustment" screen). If short to ground: All Audio-HVAC subdisplay LCD segments do not work display backlight on.
5	YEL	CLOCK		0—5 V Data 0.04 V Average	If open: Audio-HVAC subdisplay randomly displays some characters, display backlight on. If short to ground: Audio-HVAC subdisplay randomly displayed characters, display backlight on.
6	BLU/RED	DATA		0—5 V Data 4—6 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
7	BLU	CE		0—5 V Data 4—6 V Average	If open: All Audio-HVAC subdisplay LCD segments on, backlight on. If short to ground: All Audio-HVAC subdisplay LCD segments on, backlight on.
8	GRY	SH SIG	Shield for terminal No. 4, 5, 6, 7	0 V	If open: No effect on Audio-HVAC subdisplay. If short to ground: No effect on Audio-HVAC subdisplay.
9	RED	LCD BL— (LCD backlight—)	Power for LCD backlight—	0—0.2 V	If open: Audio-HVAC subdisplay function normal, but display is very dim. If short to ground: Audio-HVAC subdisplay functions normally.
10	GRN	LCD BL+ (LCD backlight+)	Power for LCD backlight+	9.5 V	If open: Audio-HVAC subdisplay completely blank. If short to ground: Audio-HVAC subdisplay completely blank.

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Fig. 20: Audio-HVAC Subdisplay Pin Voltage Chart

OVERVIEW

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The Acura navigation system is a highly-sophisticated, hybrid locating system that uses satellites and a map database to show you where you are and to help guide you to a desired destination.

The navigation system receives signals from the global positioning system (GPS), a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude elevation of the vehicle. In addition, signals from the system's yaw rate sensor and the ECM/PCM (vehicle speed pulse) enable the system to keep track of the vehicle's direction and speed of travel.

This hybrid system has advantages over a system that is either entirely self-contained or one that relies totally on the GPS. For example, the self-contained portion of the system can keep track of vehicle position even when satellite signals cannot be received. When the navigation system is on, the GPS can keep track of the vehicle position even when the vehicle is transported by ferry.

The navigation system applies all this location, direction, and speed information to the maps and calculates a route to the destination entered. As you drive to that destination, the system provides both visual and audio guidance.

This navigation system also has voice recognition that allows voice control of most of the navigation functions. The TALK and BACK buttons on the steering wheel activate the voice control. The voice control also allows control of the audio and climate control.

The navigation system provides a trip computer function. The fuel economy display is calculated by data provided by the ECM/PCM. The ECM/PCM provides fuel pulses via the F-CAN bus, and a dedicated speed signal.

The illumination signal is used by the navigation unit to automatically switch the display between "Night" and "Day" brightness modes. When the instrument panel brightness control is set to full brightness, the navigation system stays in the day mode, even with the headlights on.

The audio amplifier gets its power either from the navigation system (if the audio unit is off) or from the audio unit (if the navigation system is off). When the navigation system is giving guidance commands, the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

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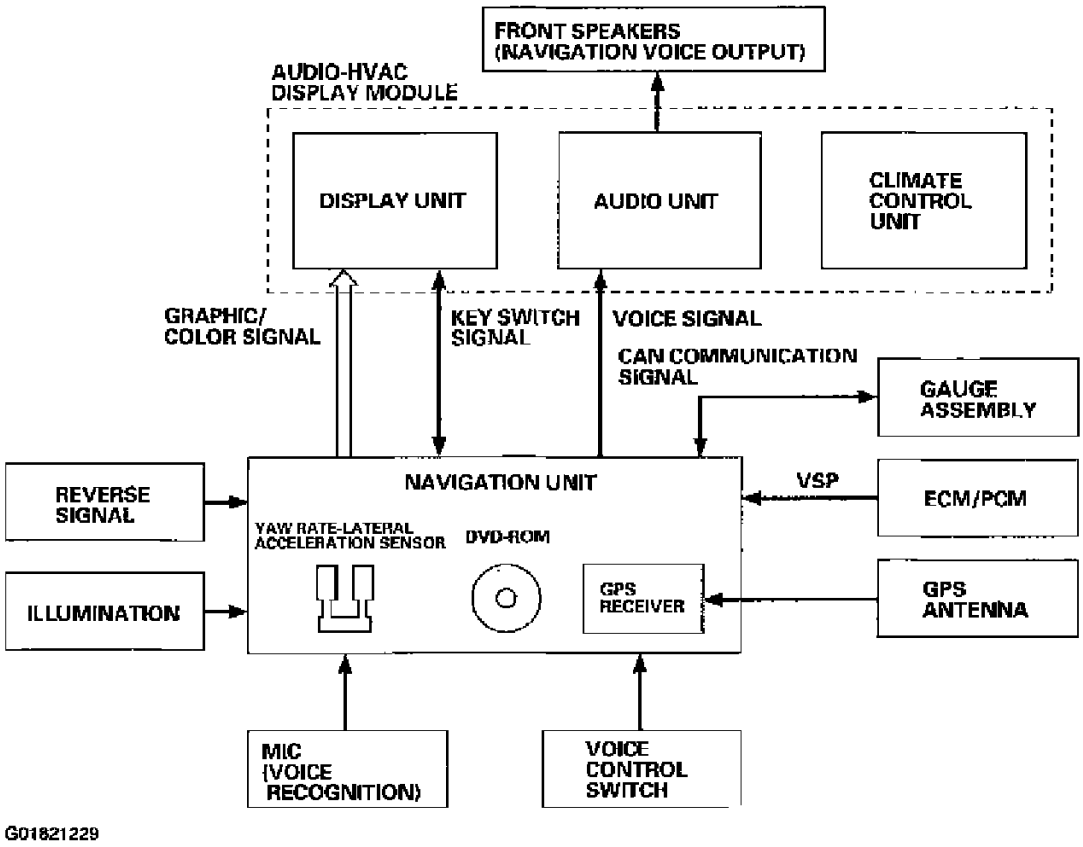


Fig. 21: Navigation System Schematic

NAVIGATION FUNCTION

The navigation system is composed of the navigation unit, the ECM/PCM (vehicle speed signal), the GPS antenna, microphone, voice control switch, audio unit, climate control unit, and the display unit.

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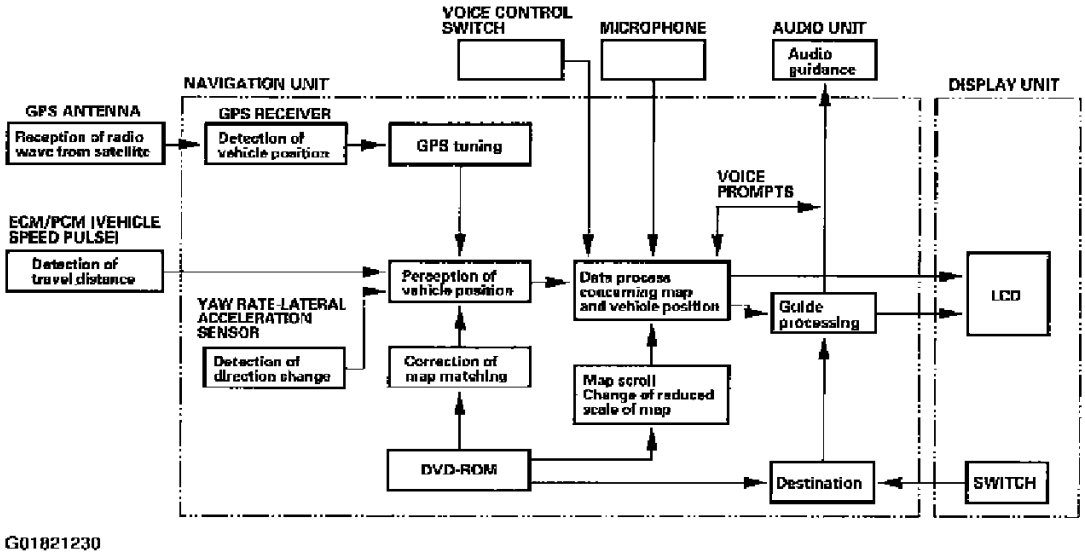


Fig. 22: Navigation Function Diagram

VEHICLE SPEED PULSE

The vehicle speed pulse is sent by the ECM/PCM. The ECM/PCM receives a signal from the countershaft speed sensor, then the processes the signal and transmits it to the speedometer and other systems.

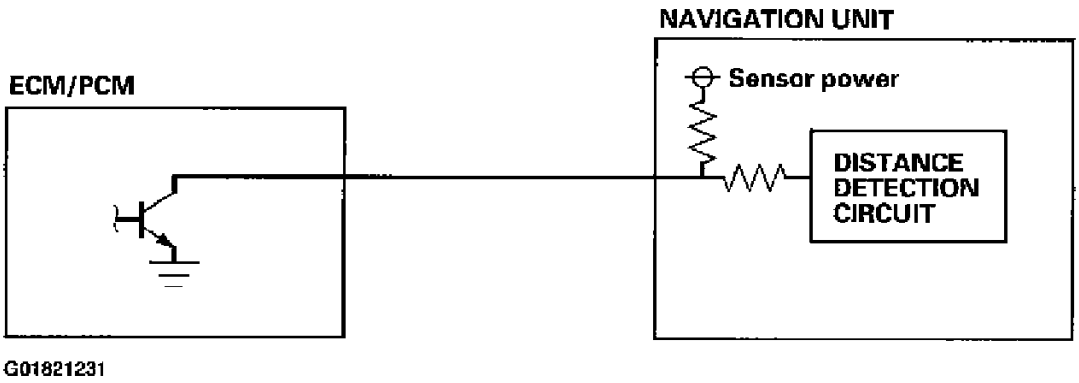


Fig. 23: Vehicle Speed Pulse Input

YAW RATE-LATERAL ACCELERATION SENSOR

The yaw rate-lateral acceleration sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

SENSOR ELEMENT STRUCTURE

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The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

OSCILLATION GYRO PRINCIPLES

The piezoelectric parts have "electric/mechanical transfer characteristics." They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and "Coriolis force." (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

OPERATION

1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part, The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force)
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.

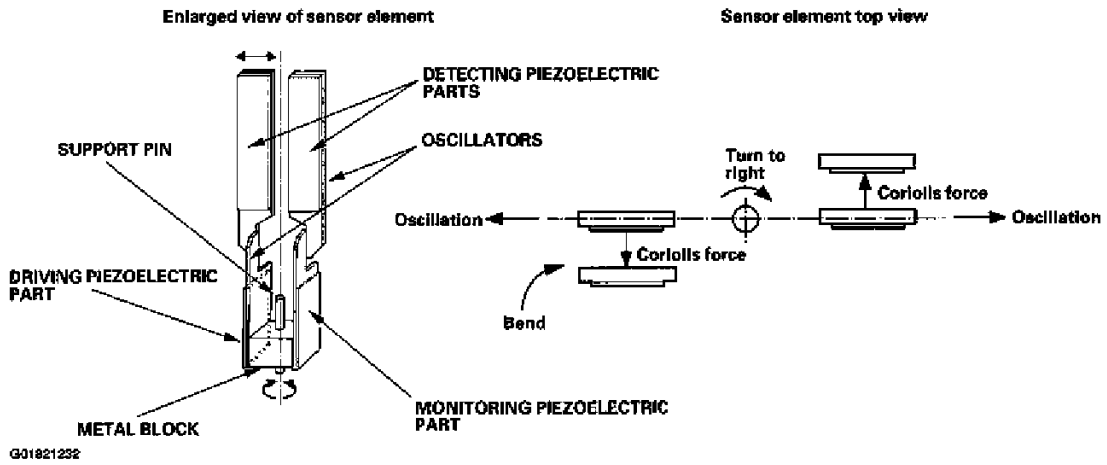


Fig. 24: Piezoelectric Operation

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GLOBAL POSITIONING SYSTEM (GPS)

The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by utilizing the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from three or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellite positions on their respective orbits.

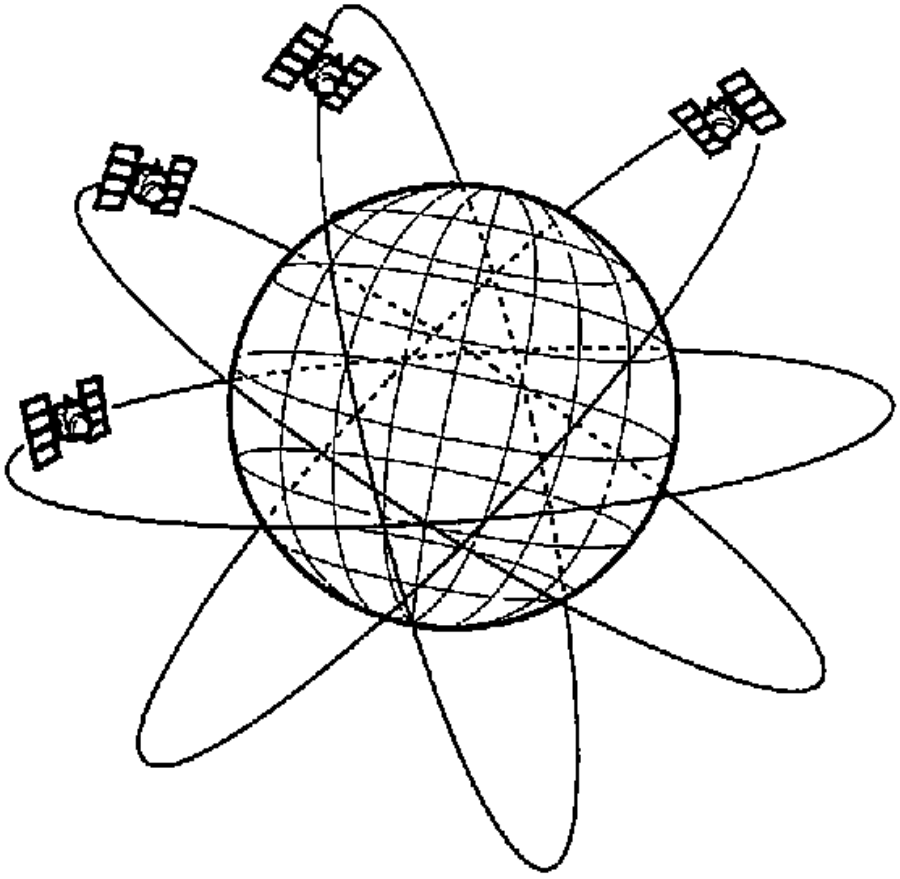
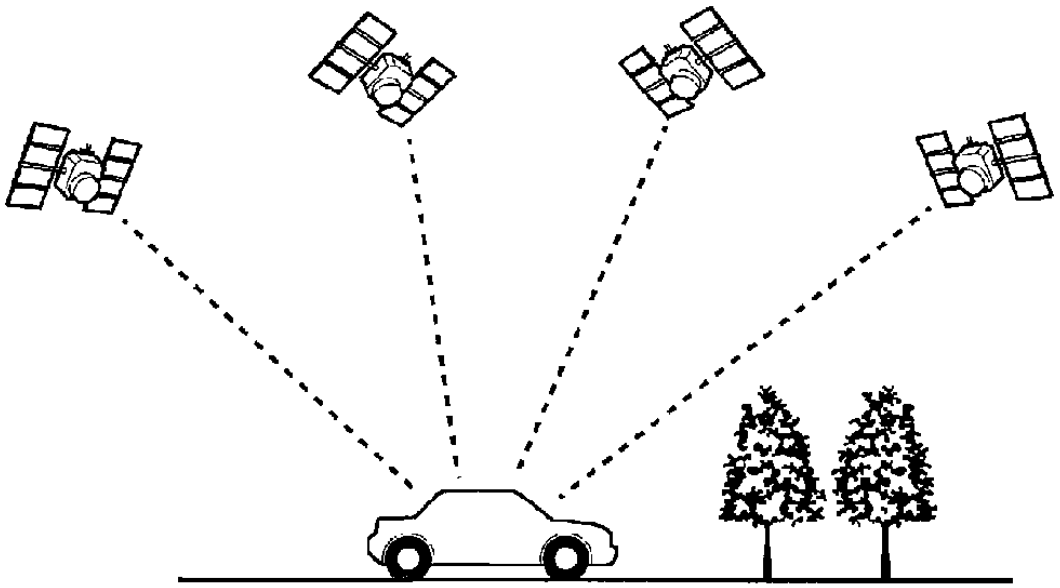


Fig. 25: Position Detection Image With GPS Satellite

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Fig. 26: GPS Receiver Receiving A Signal From Three Or More Satellites Simultaneously

PRECISION OF GPS

The precision of the GPS varies according to the number of satellites from which electric waves are received and the control condition. The precision is indicated by the color of the GPS icon shown on the upper right of the display.

GPS ICON	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
White GPS icon	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Green GPS icon	3	Vehicle position detectable in 2 demensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
Green GPS icon	4 or more	Vehicle position detectable in 3 dimensions	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)
Not indicated	———	Faulty	The GPS can't be utilized due to a faulty GPS receiver, open in the wire, or other fault or interference.

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Fig. 27: Identifying GPS Icon Display

GPS ANTENNA

The GPS antenna amplifies and transmits the signals received from the satellites to the GPS receiver.

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GPS RECEIVER

The GPS receiver is built in the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The vehicle position and signal reception condition is transmitted from the GPS receiver to the navigation control unit to adjust vehicle position.

NAVIGATION UNIT

The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions and the DVD-ROM drive, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the display unit and audio driving instructions to the audio unit.

CALCULATION OF VEHICLE POSITION

The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCMs vehicle speed pulse (VSP) signal.

MAP MATCHING TUNING

The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicated on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS TUNING

The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

DISTANCE TUNING

The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

ROUTE GUIDANCE

The navigation unit can calculate different routes to a selected destination. You have five options:

- Direct Route - Calculate a route that is the most direct.
- Easy Route - Calculate a route that minimizes the number of turns needed.

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- Minimize Freeways - Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Minimize Toll Roads - Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways - Calculate a route that uses freeways as much as possible.

AUDIO GUIDANCE

The navigation unit transmits audio driving instructions before entering an intersection or passing a junction. The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers when the voice control system is being used.

DVD-ROM

The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:

- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.

AUDIO UNIT

The audio unit receives the audio driving instructions from the navigation unit and transmits the instructions through the front speakers even when the audio system is in use.

DISPLAY UNIT

The display unit uses a liquid crystal display (LCD). The LCD is a 8-inch-diagonal, thin film transistor (TFT), stripe type with 336,960 picture elements. The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD consists of a touch sensitive resistive membrane with an infinite number of possible touch locations. To maintain compatibility with earlier display units the sensing locations are confined to a grid of 20 vertical and 9 horizontal touch locations. This produces 180 total sensing points. The display unit transmits the signal from each operation key and the touch switches to the navigation unit over the GA-Net bus.

MICROPHONE

The microphone receives voice commands and transmits them to the navigation unit for interpretation.

TALK BUTTON (VOICE CONTROL SWITCH)

Activates the voice control system in the navigation unit to accept voice commands.

BACK BUTTON (VOICE CONTROL SWITCH)

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Returns the display to the previous screen.

GLOSSARY

The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

Item	Definition
B-CAN	Body CAN Bus (see CAN)
Breadcrumbs	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CAN	Controller Area Network. This communication network allows processors in the vehicle to send/receive information. The fuel pulses used by the trip computer are received from the PCM using the F-CAN (Fast Controller Area Network) bus.
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed Coverage Area. Main metropolitan areas in the Lower 48 states, and Canada are mapped to this level. See the Navigation Owner's manual for a list of these areas.
DTC	Diagnostic Trouble Codes. Use the PGM Tester, or HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead Reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when the GPS signal is obscured by tall buildings, or while driving in a tunnel.
Digitized Road	A road that appears on the navigation screen. The road name will appear at the bottom of the navigation screen. If the user drives "off road" the navigation system will display "Not on a digitized road", and if 1/2 mile, then "breadcrumbs" will appear.
Disclaimer Screen	Screen containing cautionary information. It is meant to read carefully and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation Owner's Manual for information on how to order a replacement or update DVD.
ECM	Engine Control Module. Typically referred to as the PCM.
E/T	Elapsed Time for the current trip as displayed by the trip computer screen.
FAQ	Frequency Asked Question. See the Navigation Owner's Manual for a list of the customer FAQs, and troubleshooting information.
F-CAN	Fast CAN Bus (see CAN)
FE	Fuel Economy value as displayed on the trip computer screen.
Fuel Pulses	This signal is transmitted on the CAN bus, and is used by the Trip Computer to calculate the fuel economy.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately positioning the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC for use in diagnosing vehicle problems. This device can be used to obtain DTC codes for diagnosis of navigation system CAN related problems.
H/U	Head Unit. The navigation system display assembly in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
LCD	Liquid Crystal Display (the navigation screen)
Map Matching	The received GPS information allows the navigation system to position the vehicle on the map. Map matching has occurred if the map screen is displaying the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling.

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Fig. 28: Voice Recognition Navigation System Glossary (1 Of 3)

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Item	Definition
MW	Maneuver Window. While on-route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System.
Off Route	This occurs when the user leaves mapped roads. Off road tracking dots ("breadcrumbs") are displayed if the option is enabled in Setup. The user can use them to return to a mapped road. The bottom of the navigation screen will say "Not on a digitized road"
Outlying Areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since they have not been verified.
PC Card Slot	The PC Card (PCMCIA, type II) slot is for factory use only. Make sure that the sliding door is closed at all items, if opened, an error message is displayed on the screen.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal, and sends fuel pulses for the trip computer function via the F-CAN network.
PCMCIA	An computer industry defined term referring to the PC Card slot standard.
PGM Tester	A Honda diagnostic tool for use in diagnosing vehicle problems.
PIN	Personal Identification Number, a random 4 digit number created by the customer to protect personal information.
POI	Point Of Interest. These are the businesses, schools etc. found under the "places" option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools etc. See the Navigation Owner's Manual "Traveling to Your Destination" for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
SCS connector	The 2-pin connector used to put the navigation system into the diagnostic mode.
Security Code	Code needed to activate the navigation system. The security code can be obtained from the "IN" by entering the navigation system control serial number. The serial number can be found from the diagnostic screens (Unit Check, Navi ECU), or from the under side of the control unit.
Touch Switches or Touch Sensor	The touch sensitive resistive membrane covering the display. The navigation software artificially creates a grid of 20 horizontal and 9 vertical lines for a total of 180 sensing locations. Unlike earlier navigation systems, the screen surface must be touched in order to operate.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either "System Description", or "System Diagnosis Mode" (see page 22-360) in this manual.
Unverified Streets	These streets have not been verified for turn restrictions, one-way, etc. They are shown in light brown on the map. You can enter address destinations in these areas, but voice guidance ends at the last verified street closest to your destination.

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Fig. 29: Voice Recognition Navigation System Glossary (2 Of 3)

Item	Definition
Verified Streets	These streets consist of the detailed metropolitan coverage areas, and all other inter-town connection roads. These roads are shown in black on the map.
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map. Touch this icon to show the latitude, longitude, and elevation of your current position.
VR	Voice Recognition. This allows voice control of many of the navigation functions. The hardware consists of the microphone, voice control switch (Talk/Back buttons), and the front speakers. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the PCM is used to update the Vehicle position on the map, and to calculate the trip computer fuel economy. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal from the MICU and directs the VP to move backwards on the map.
VSS	Vehicle Speed Sensor. This sensor reads the output shaft speed at the transmission and, provides a speed pulse to the PCM. The PCM sends this pulse to the navigation system and speedometer.
Yaw Sensor	This device is located in the navigation system control unit and senses the side-to-side twisting force generated when the vehicle turns. See a detailed description of how this sensor works in this manual.

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Fig. 30: Voice Recognition Navigation System Glossary (3 Of 3)

CIRCUIT DIAGRAM

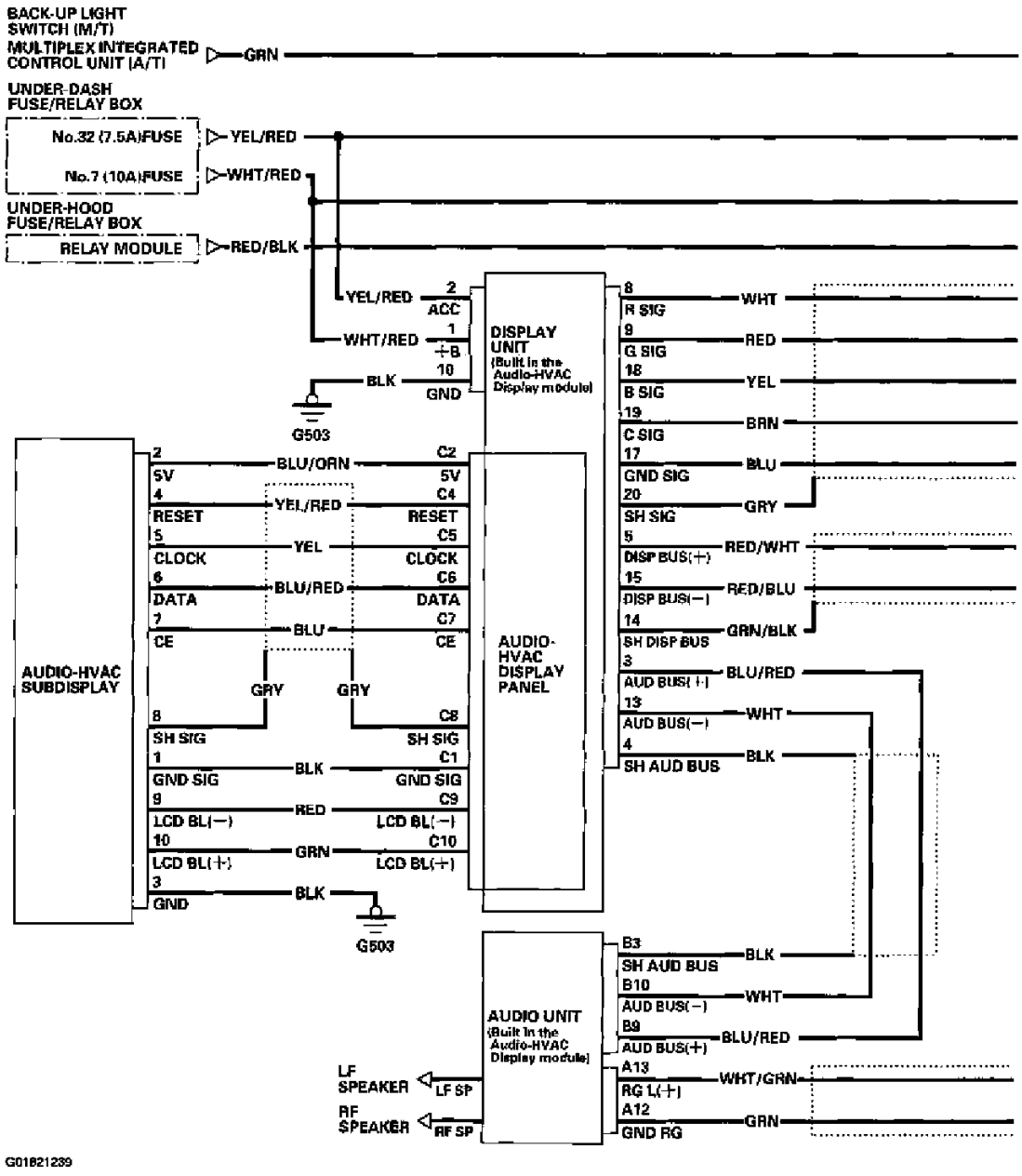


Fig. 31: Voice Recognition Navigation System Wiring Diagram (1 Of 2)

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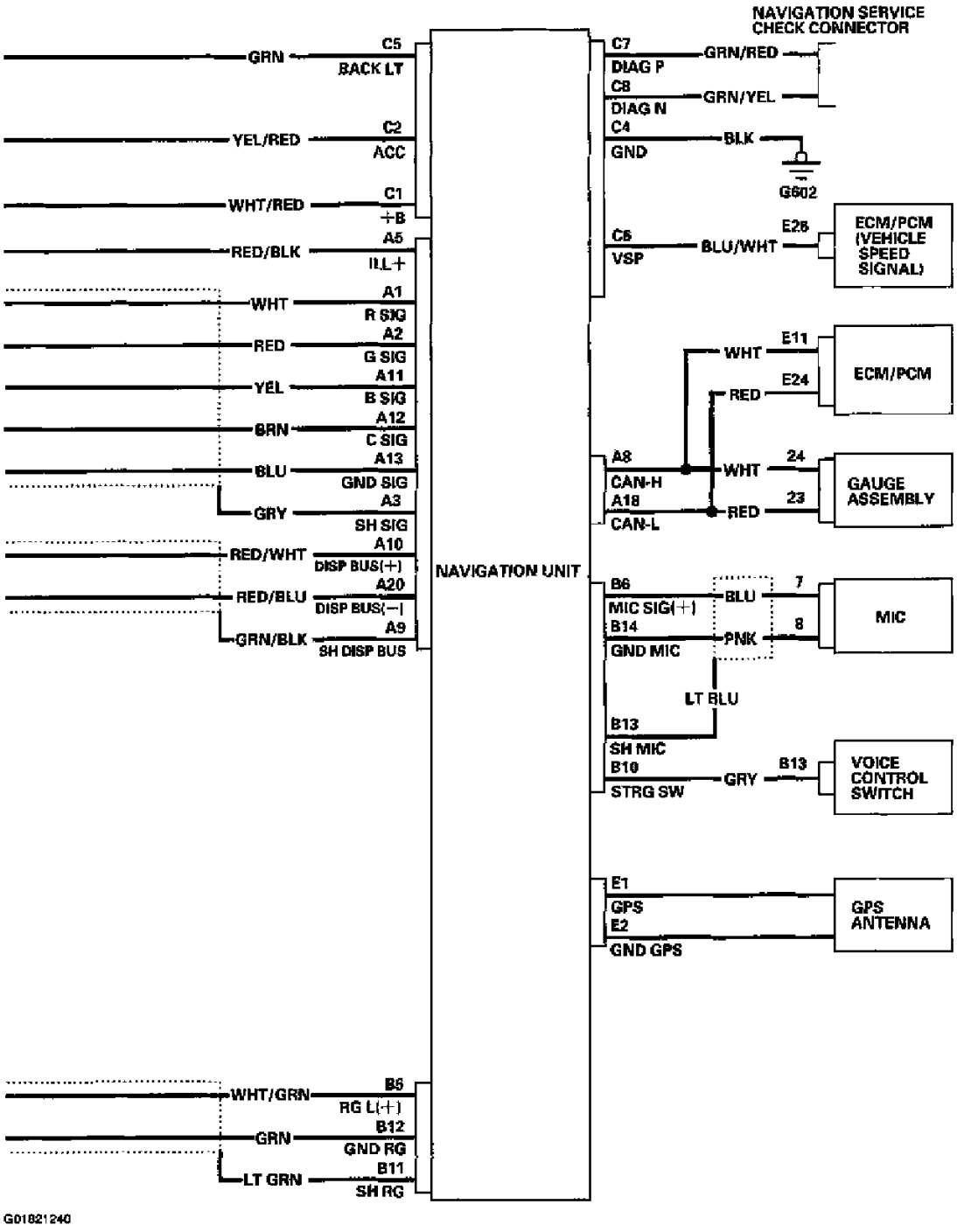


Fig. 32: Voice Recognition Navigation System Wiring Diagram (2 Of 2)

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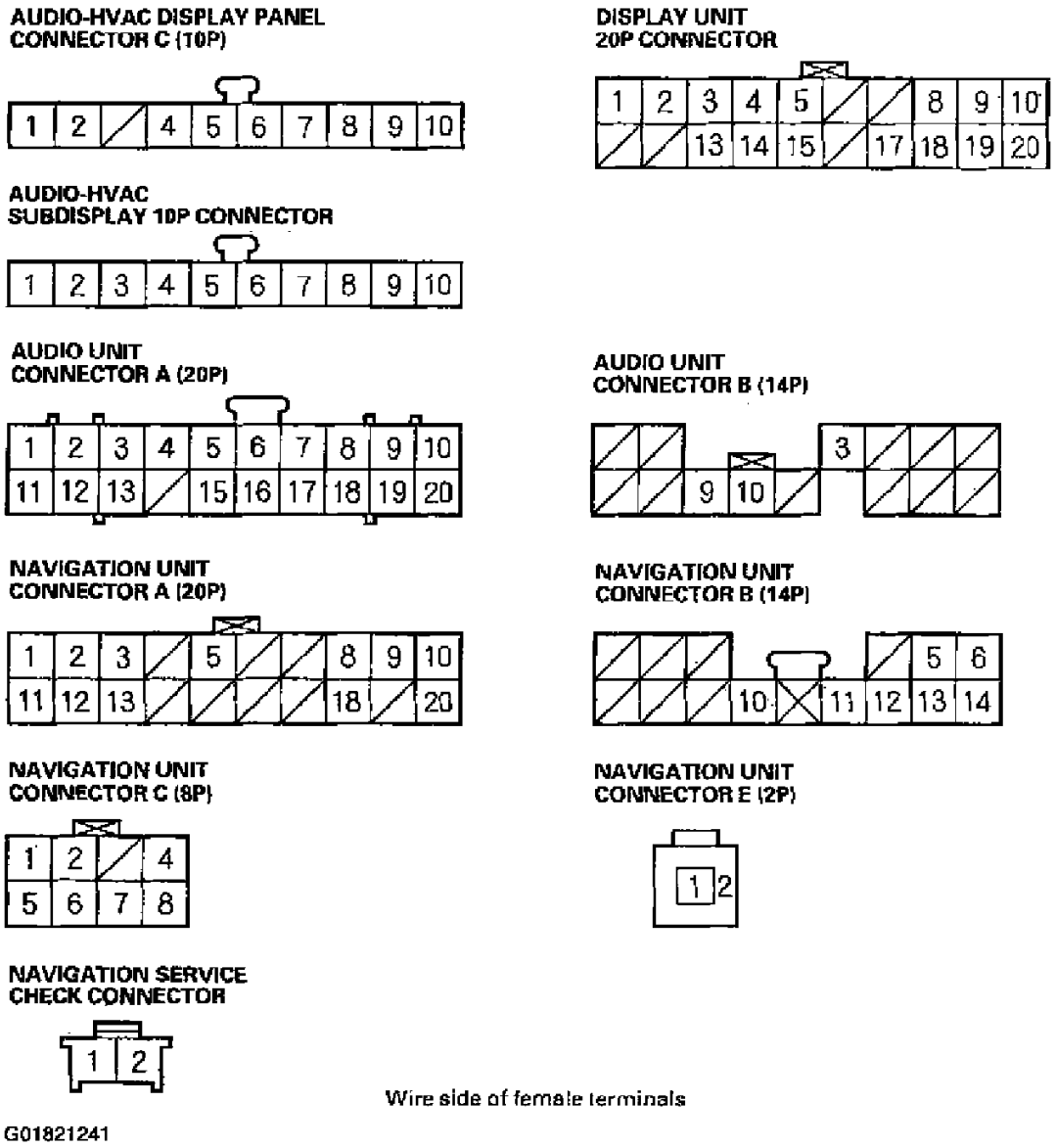


Fig. 33: Identifying Voice Recognition Navigation System Connector Terminals

SYMPTOM TROUBLESHOOTING

NO PICTURE IS DISPLAYED

Diagnostic Test: Navi System Link

NOTE: Always check the connectors for poor connections or loose terminals.

1. Check the No. 7 (10A) fuse and No. 32 (7.5A) fuse in the under-dash fuse relay box, and reinstall the

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fuses if they are OK.

Are the fuses OK?

YES -Go to step 2.

NO -Replace the fuse and recheck.

2. Turn the ignition switch to ACC (I).
3. Operate the radio and listen to the audio.

Can audio be heard?

YES -Go to step 4.

NO -Check the ACC circuit.

4. Turn the ignition switch ON (II).
5. Measure the voltage between body ground and navigation unit connector C (8P) terminals No. 1 and No. 2 individually.

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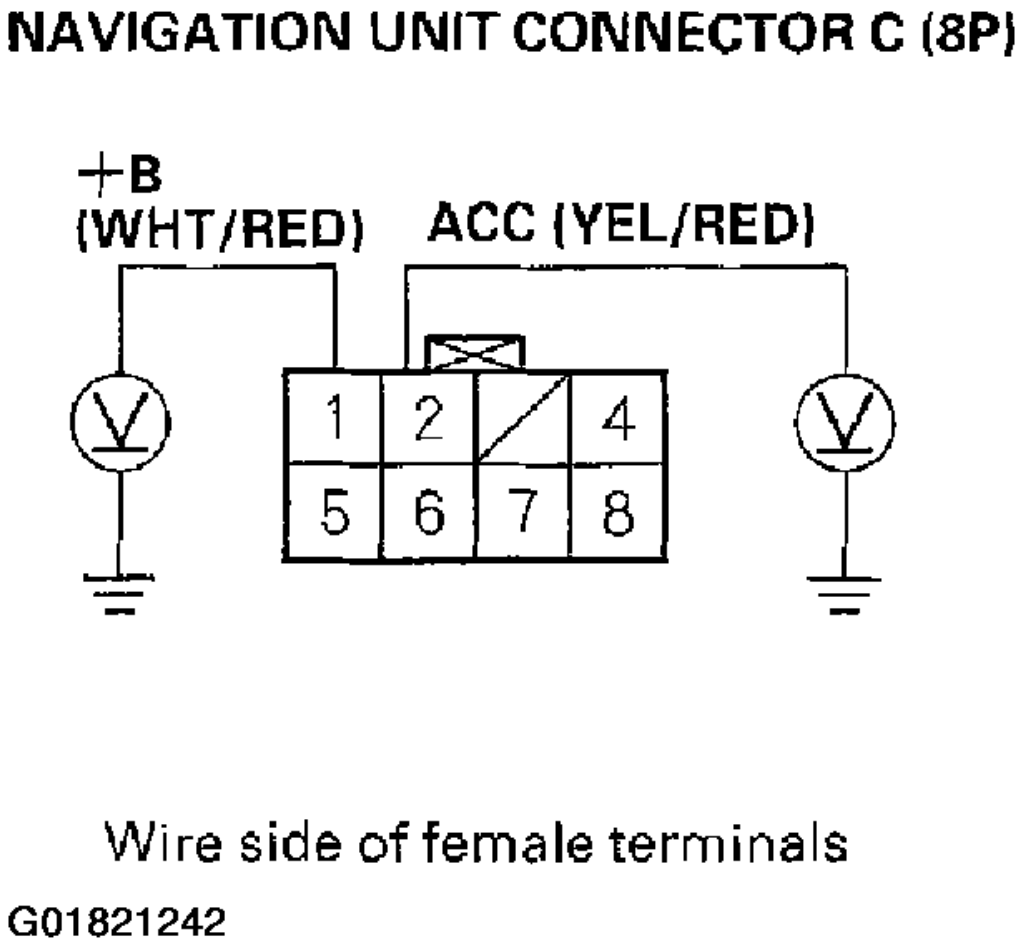


Fig. 34: Measuring The Voltage Between Body Ground And Navigation Unit Connector C (8P) Terminals No. 1 And No. 2

Is there battery voltage?

YES -Go to step 6.

NO -If the + B wire does not have voltage, repair open in the wire between the under-dash fuse relay box and the navigation unit. If the ACC wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the navigation unit.

6. Turn the ignition switch OFF.
7. Disconnect the navigation unit connector C (8P).
8. Check for continuity between navigation unit connector C (8P) terminal No. 4 and body ground.

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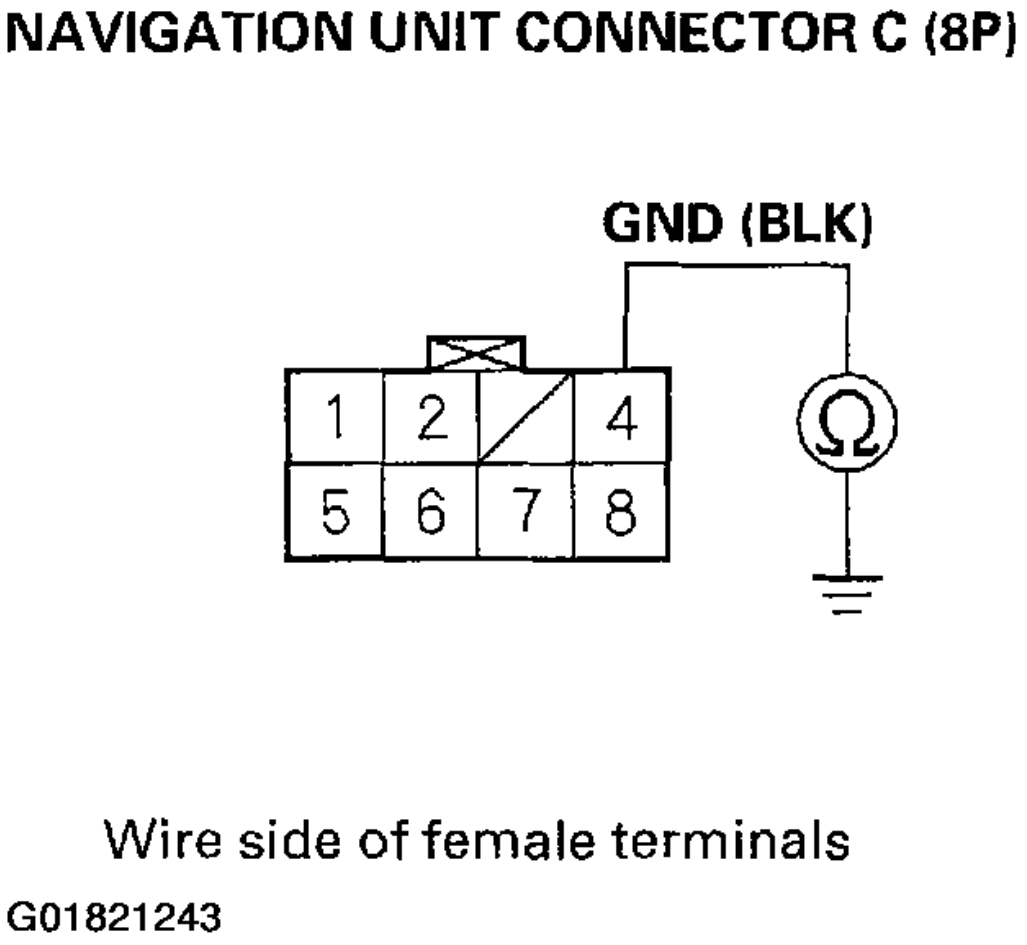


Fig. 35: Checking For Continuity Between Navigation Unit Connector C (8P) Terminal No. 4 And Body Ground

Is there continuity?

YES -Go to step 9.

NO -Repair open in the wire between the navigation unit and body ground (G602).

9. Reconnect the navigation unit connector C (8P).
10. Perform the forced starting of the display (see **FORCED STARTING OF DISPLAY**).

Is the diagnosis menu of the picture diagnosis displayed?

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YES -Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **DIAGNOSTIC TEST: NAVI SYSTEM LINK**) to check the links.

NO -Go to step 11.

11. Shield the display unit from the sun with your hand, and check that the display is back lit (only back light is ON.)

Can you see the back light?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Go to step 12.

12. Turn the ignition switch ON (II).
13. Measure the voltage between body ground and display unit 20P connector terminal No. 1 and No. 2 individually.

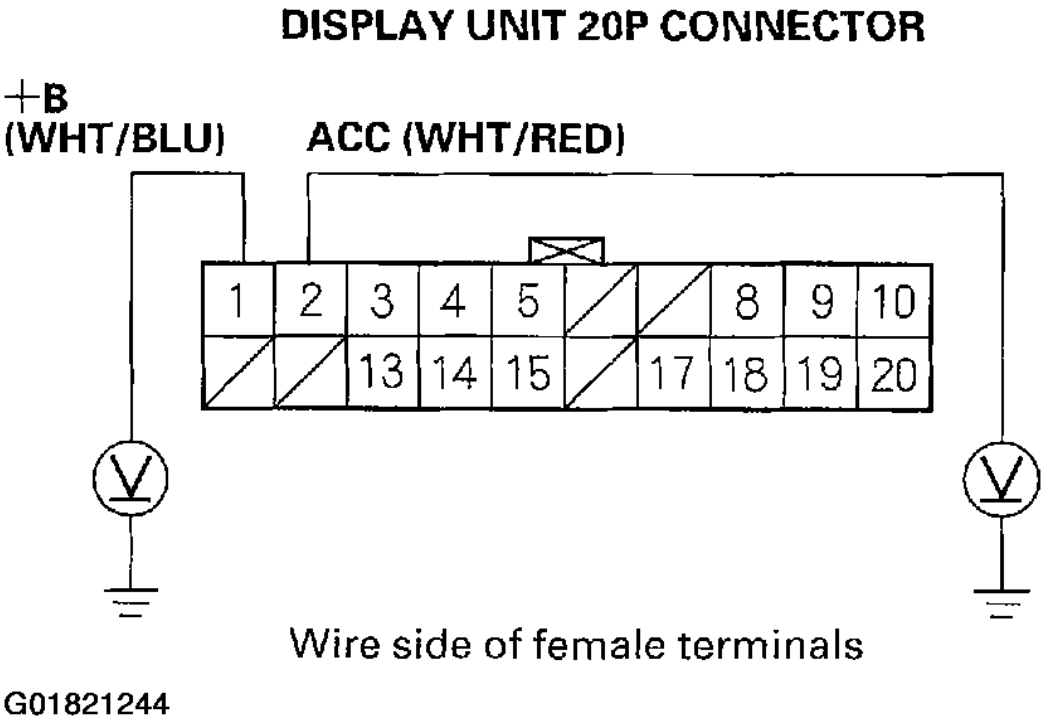


Fig. 36: Measuring The Voltage Between Body Ground And Display Unit 20P Connector Terminal No. 1 And No. 2

Is there battery voltage?

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YES -Replace the display unit.

NO -If the +B wire does not have voltage, repair open in the wire between the under-dash fuse relay box and the display unit. If the ACC wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the display unit.

PICTURE IS MISSING A RED/GREEN/BLUE COLOR OR TONE, OR ROLLING PICTURE

Diagnostic Test: Monitor Check

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Go into the Diagnostic mode and use "RGB Color" diagnostic under Monitor Check (see **RGB Color**).

   Are the red, green, and blue colored circles shown?

   YES -The system is OK at this time.

   NO -Go to step 2.

2. Turn the ignition switch to OFF.
3. Disconnect the navigation unit connector A (20P) and display unit 20P connector.
4. Check for loose terminals at navigation unit connector A (20P) and display unit 20P connector.

   Are there loose terminals?

   YES -Repair the terminal.

   NO -Go to step 5.

5. Check for continuity between the appropriate terminals of navigation unit connector A (20P) and display unit 20P connector based on the missing color(s).

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Missing color	Navigation unit connector A (20P)	Display unit 20P connector	Wire color
Blue	A11	18	YEL
Green	A2	9	RED
Red	A1	8	WHT
Rolling Picture	A12	19	BRN

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Fig. 37: Checking For Continuity Between The Appropriate Terminals Of Navigation Unit Connector A (20P) And Display Unit 20P Connector Based On The Missing Color(s)

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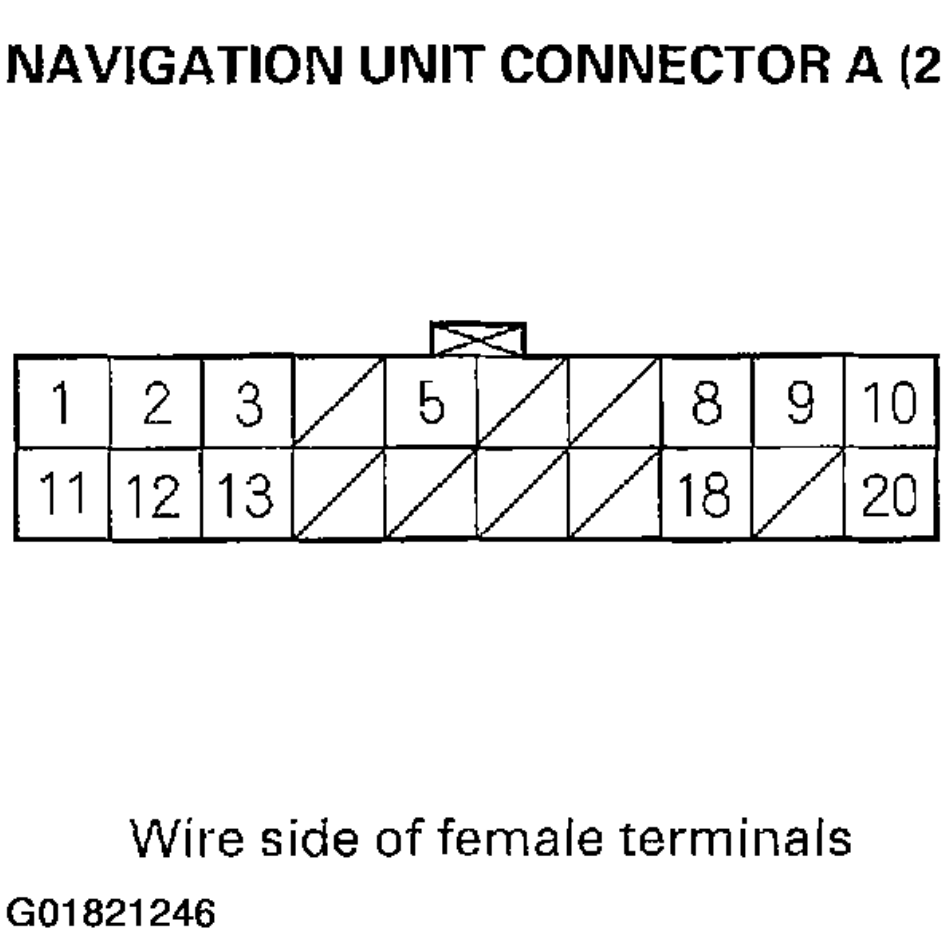


Fig. 38: Identifying Navigation Unit Connector A (20P) Terminals

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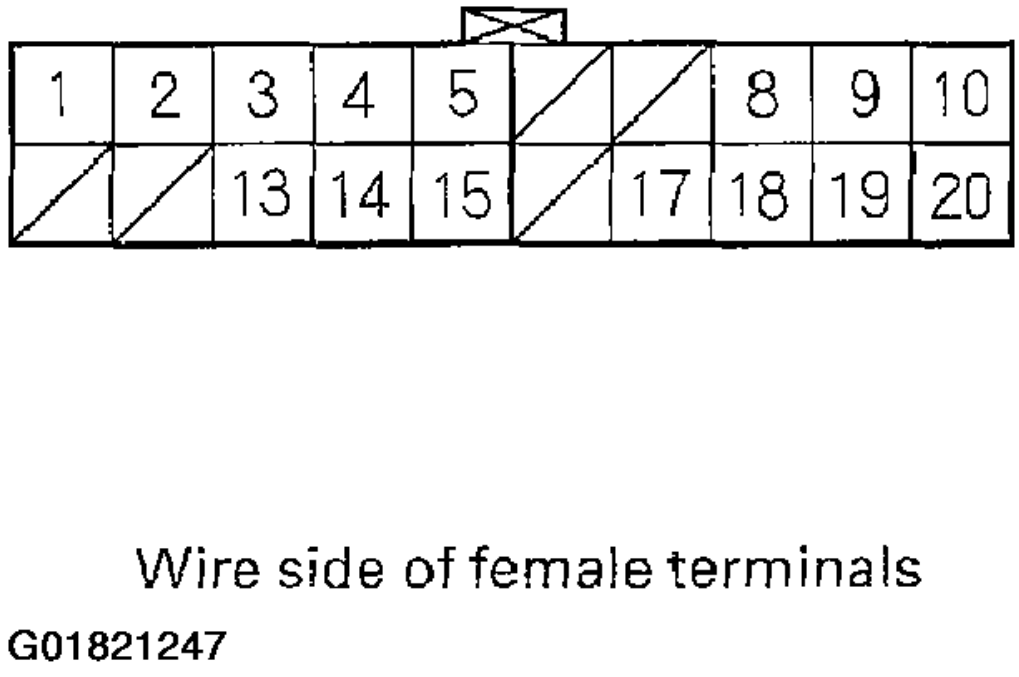


Fig. 39: Identifying Display Unit 20P Connector Terminals

Is there continuity?

YES -Go to step 6.

NO -There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display unit and navigation unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

6. Check for continuity between the appropriate terminals of display unit 20P connector based on the missing color(s).

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Missing color	Display unit 20P connector terminal	Display unit 20P connector terminals
Blue	18	10, 20
Green	9	10, 20
Red	8	10, 20
Rolling Picture	19	10, 20

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Fig. 40: Checking For Continuity Between The Appropriate Terminals Of Display Unit 20P Connector Based On The Missing Color(s)

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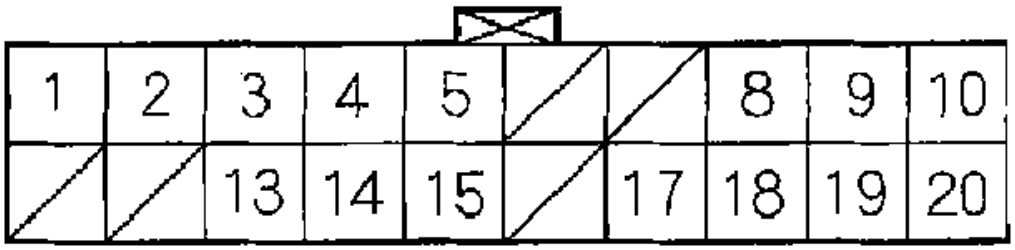


Fig. 41: Identifying Display Unit 20P Connector Terminals

Is there continuity?

YES -There is a short to body ground in the circuit between the display unit and the navigation unit. Replace the affected shielded harness.

NO -Check for poor connections or loose terminals at the navigation unit and recheck. If a poor connection or loose terminal is found, replace the shielded harness. If no poor connections or loose terminals are found, substitute a known-good navigation unit and recheck. If the problem is gone, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**). If not replace the display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

PICTURE HAS LINES/OTHER ISSUES

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Diagnostic Test: Monitor Check

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the display unit or the navigation unit.

   Are there any electronic accessories?

   YES -Disable the accessories, and recheck.

   NO -Go to step 2.

2. Start up the navigation picture.

   Is the picture scrolling horizontally (left to right or right to left)?

   YES -Check for an open or short to ground in the C SIG wire from navigation unit connector A (20P) terminal No. 12 to display unit 20P connector terminal No. 19. Also check for a short to ground between display unit 20P connector terminal No. 19 and terminal No. 20.

   NO -Go to step 3.

3. Go into the Diagnostic mode and use "RGB Color" diagnostic under Monitor Check (see **RGB Color**).

   Is the picture missing a red, green or blue color?

   YES -Do troubleshooting for the picture is missing a red, green or blue color or tone (see **PICTURE IS MISSING A RED/GREEN/BLUE COLOR OR TONE, OR ROLLING PICTURE**).

   NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Substitute a known-good display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**), and recheck.

   Is the picture OK?

   YES -Check for loose connections, then replace the original display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

   NO -Check for loose connections and recheck. If a poor connection or loose terminal is found, replace the shielded harness. If no poor or loose terminals are found, substitute a known-good navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**) and recheck. If the problem is gone, replace

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the original navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

DISPLAY UNIT BUTTONS DO NOT WORK

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Turn the ignition switch to ACC (I).
2. Try several navigation buttons and touch screen buttons.

   Do all buttons function properly?

   YES -The system is OK at this time.

   NO -

   - If all navigation buttons and touch screen are inoperative, go to step 3.
   - If some navigation buttons operate normally, while others do not, go into the Diagnostic mode and use "Touch Panel" diagnostic under Monitor Check (see **TOUCH PANEL CHECK**) and if necessary, "Display" diagnostic under Unit Check (see **DISPLAY**).
3. Measure the voltage between body ground and display unit 20P connector terminal No. 1 and No. 2 individually.

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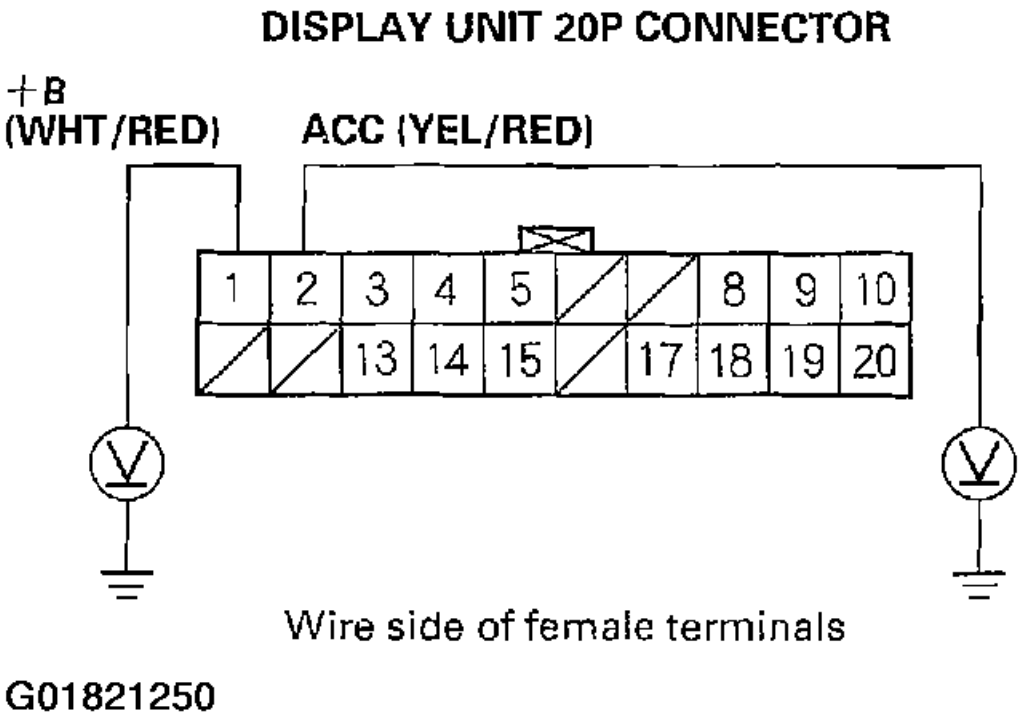


Fig. 42: Measuring The Voltage Between Body Ground And Display Unit 20P Connector Terminal No. 1 And No. 2

Is there battery voltage?

YES -Go to step 4.

NO -If the +B wire does not have voltage, repair the open in the wire between the under-dash fuse/relay box and the display unit. If the ACC wire does not have voltage, repair the open in the wire between the under-dash fuse/relay box and the display unit.

4. Turn the ignition switch OFF.
5. Disconnect the display unit 20P connector.
6. Disconnect the navigation unit connector A (20P).
7. Check for continuity between display unit 20P connector terminal No. 10 and body ground.

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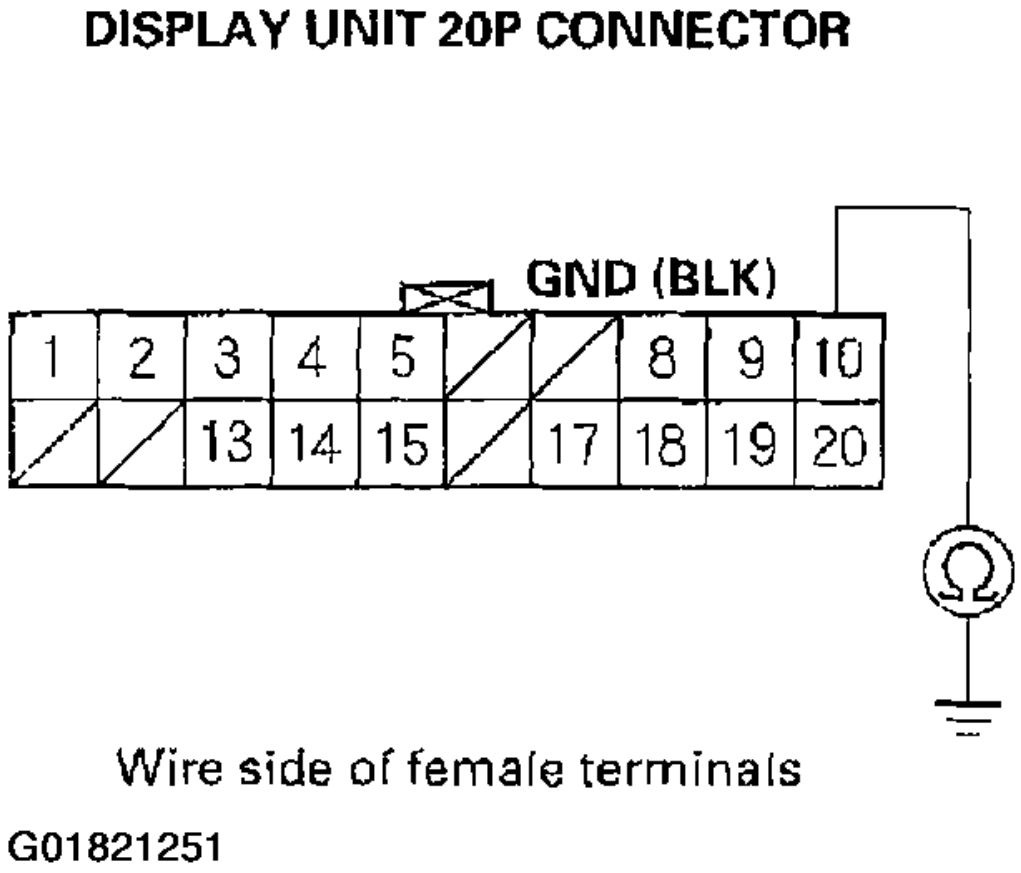


Fig. 43: Checking For Continuity Between Display Unit 20P Connector Terminal No. 10 And Body Ground

Is there continuity?

YES -Go to step 7.

NO -Repair the open in the wire between the display unit and body ground (G503).

8. Check for continuity between body ground and display unit 20P connector terminal No. 3, No. 5, No. 13 and No. 15 individually.

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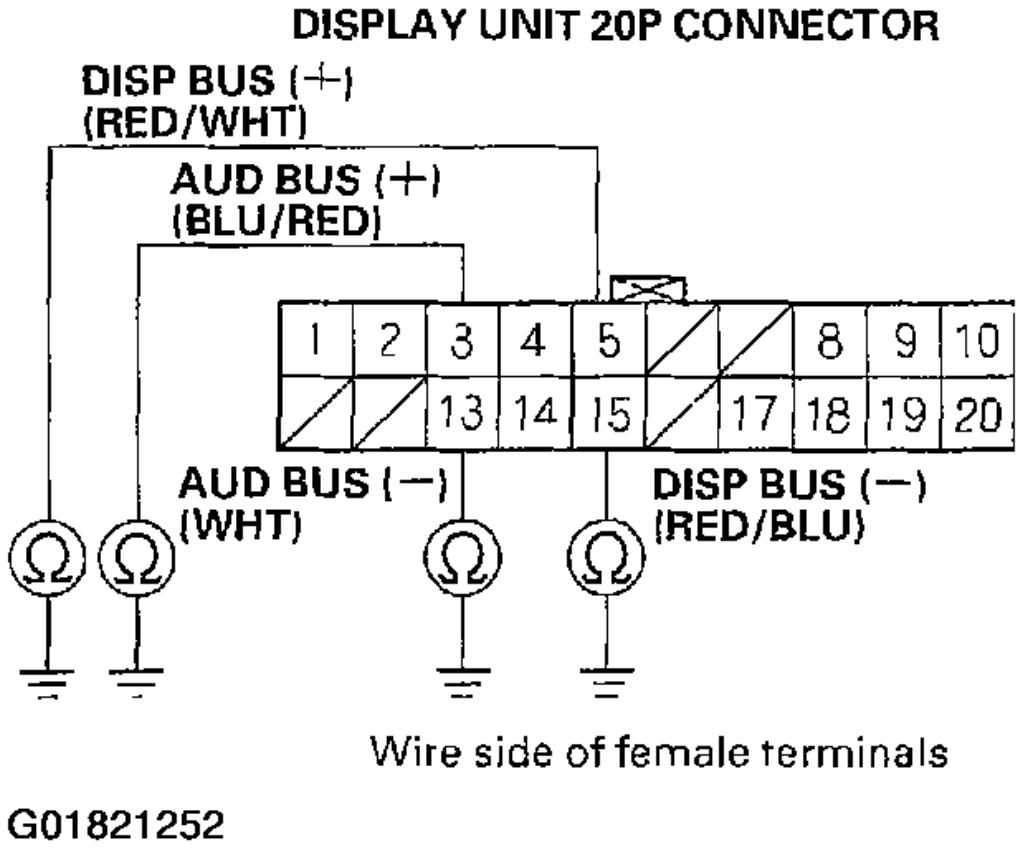


Fig. 44: Checking For Continuity Between Body Ground And Display Unit 20P Connector Terminal No. 3, No. 5, No. 13 And No. 15

Is there continuity?

YES -There is a short to body ground in the circuit between the display unit and the navigation unit. Replace the affected shielded harness.

NO -Go to step 9.

9. Check for continuity between display unit 20P connector terminal No. 4 and terminals No. 3 and No. 13 individually.

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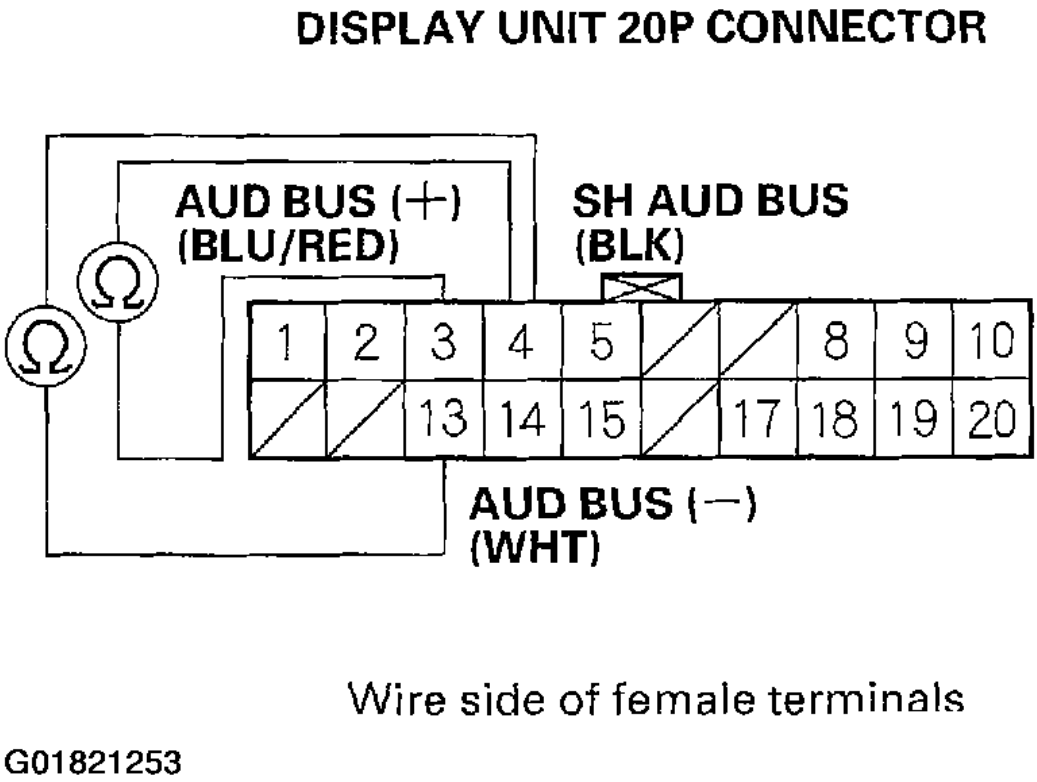


Fig. 45: Checking For Continuity Between Display Unit 20P Connector Terminal No. 4 And Terminals No. 3 And No. 13

Is there continuity?

YES -There is a short between the display unit and the audio unit. Replace the shielded harness.

NO -Go to step 10.

10. Check for continuity between display unit 20P connector terminal No. 14 and terminals No. 5 and No. 15 individually.

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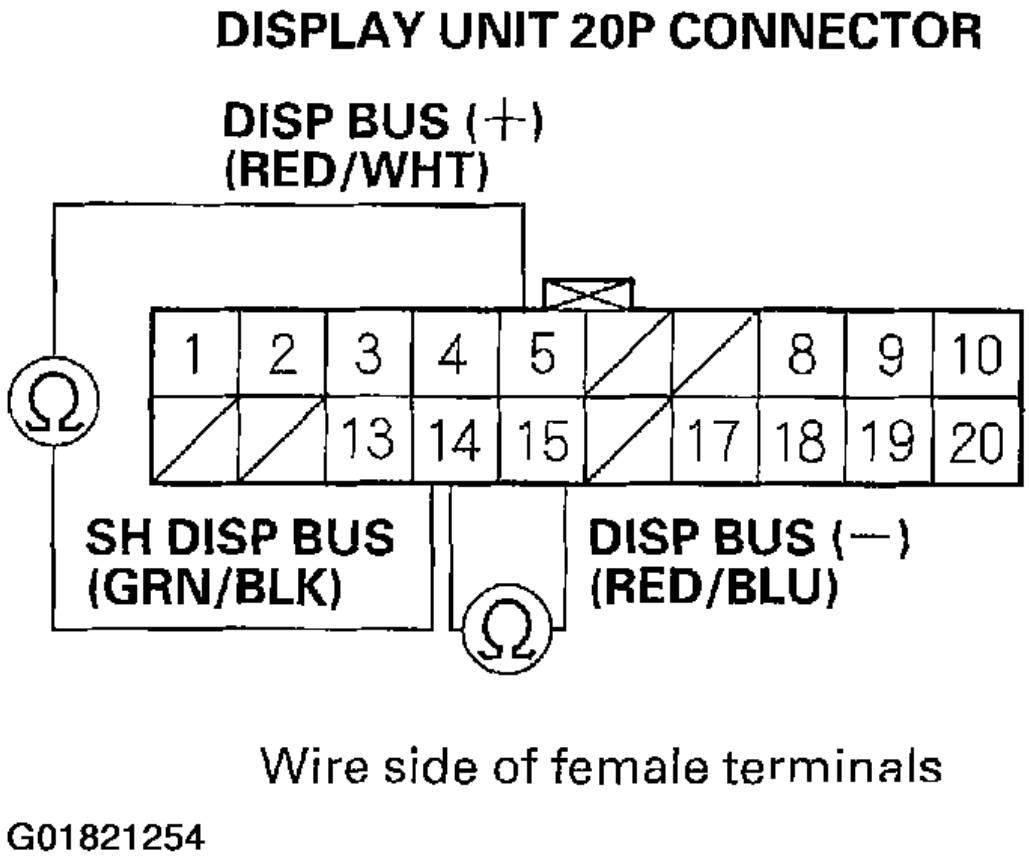


Fig. 46: Checking For Continuity Between Display Unit 20P Connector Terminal No. 14 And Terminals No. 5 And No. 15

Is there continuity?

YES -There is a short between the display unit and the navigation unit. Replace the affected shielded harness.

NO -Go to step 11.

11. Check for continuity between display unit 20P connector terminal No. 5 and navigation unit connector A (20P) terminal No. 10.

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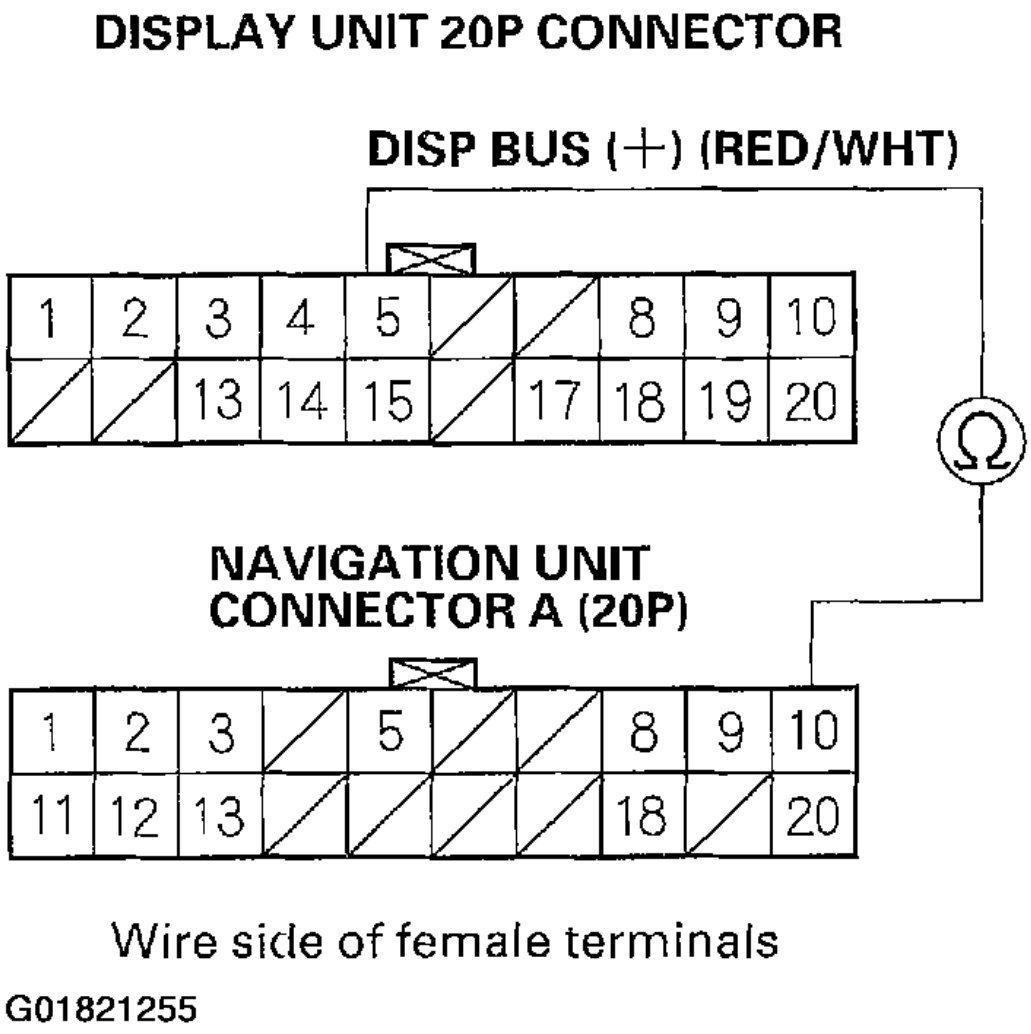


Fig. 47: Checking For Continuity Between Display Unit 20P Connector Terminal No. 5 And Navigation Unit Connector A (20P) Terminal No. 10

Is there continuity?

YES -Go to step 12.

NO -There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display unit and navigation unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

12. Check for continuity between display unit 20P connector terminal No. 15 and navigation unit connector A (20P) terminal No. 20.

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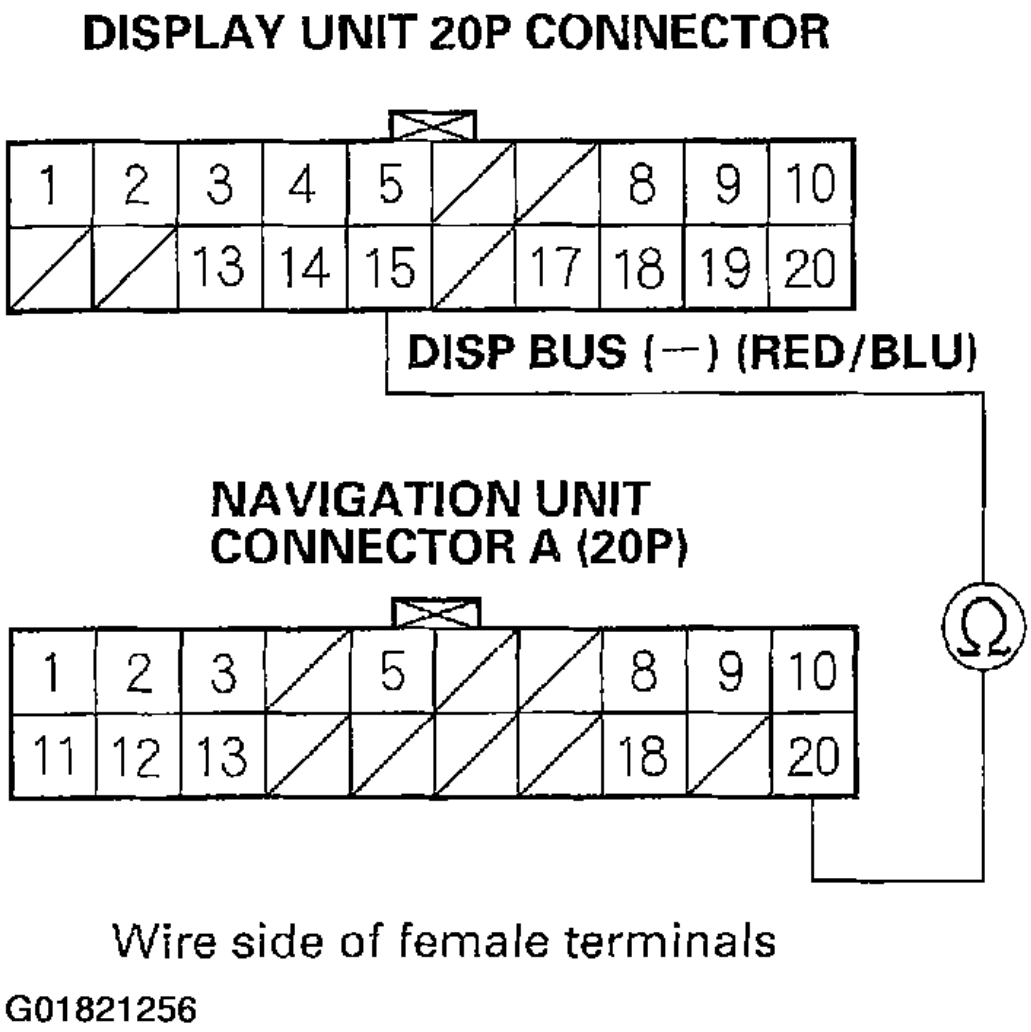


Fig. 48: Checking For Continuity Between Display Unit 20P Connector Terminal No. 15 And Navigation Unit Connector A (20P) Terminal No. 20

Is there continuity?

YES -Go to step 13.

NO -There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display unit and navigation unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

13. Check for continuity between display unit 20P connector terminal No. 3 and audio unit connector B (14P) terminal No. 9.

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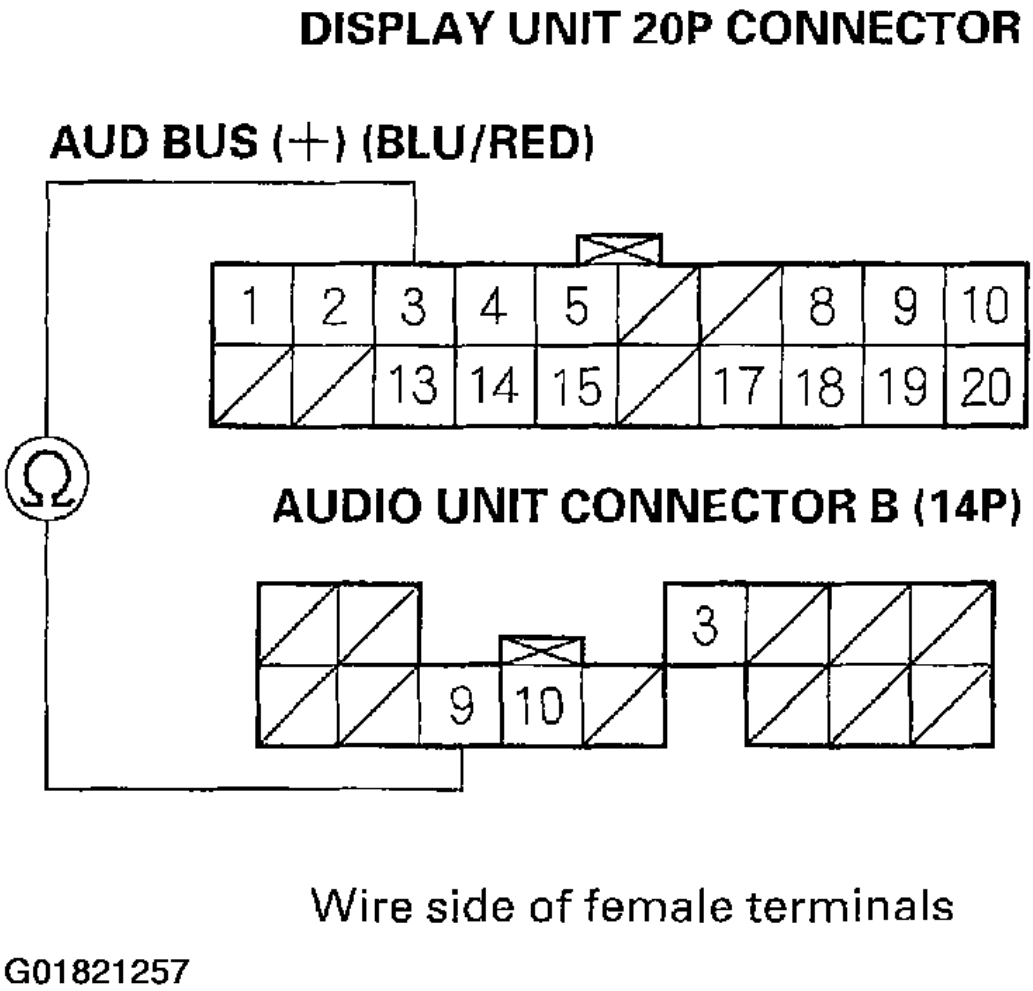


Fig. 49: Checking For Continuity Between Display Unit 20P Connector Terminal No. 3 And Audio Unit Connector B (14P) Terminal No. 9

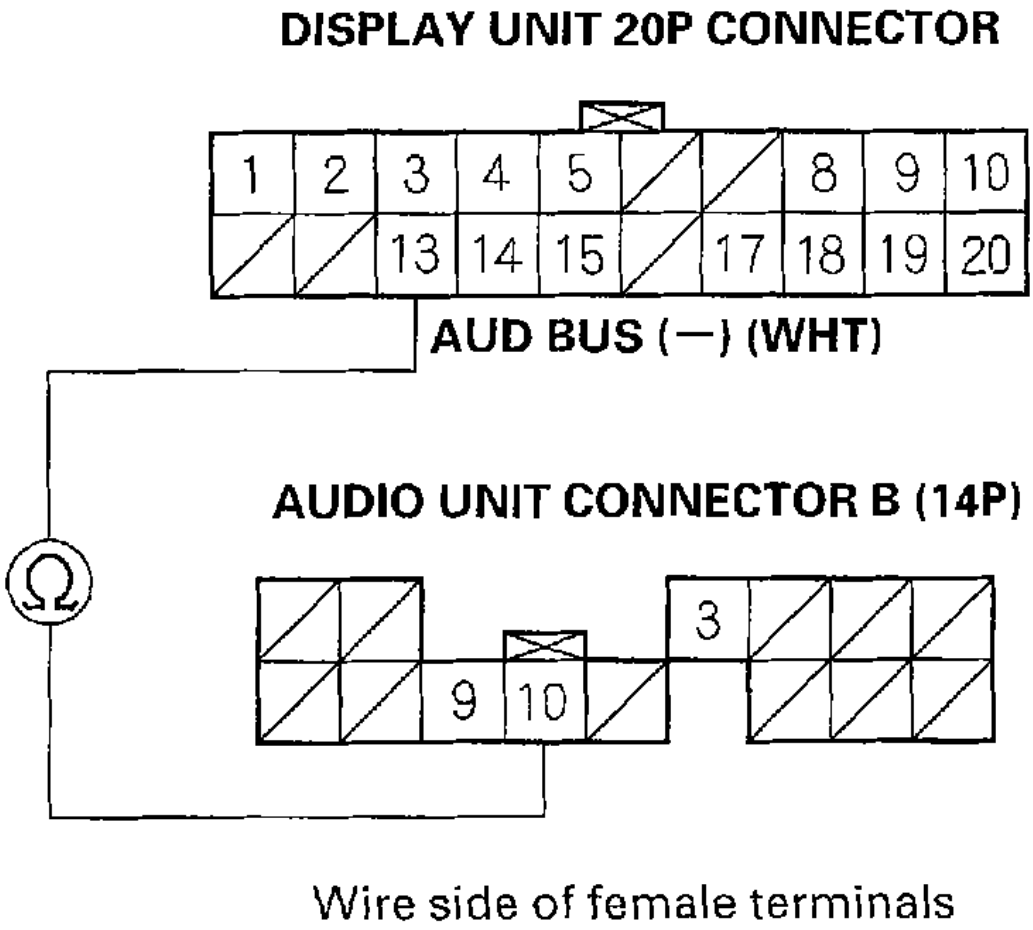
Is there continuity?

YES -Go to step 14.

NO -There is an open in the circuit between the display unit and the audio unit. Check for poor connections or loose terminals at the display unit and audio unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

14. Check for continuity between display unit 20P connector terminal No. 13 and audio unit connector B (14P) terminal No. 10.

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Fig. 50: Checking For Continuity Between Display Unit 20P Connector Terminal No. 13 And Audio Unit Connector B (14P) Terminal No. 10

Is there continuity?

YES -Replace the display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

NO -There is an open in the circuit between the display unit and the audio unit. Check for poor connections or loose terminals at the display unit and audio unit. If a poor connection or loose terminal is found, replace the affected shielded harness.

GPS ICON IS WHITE

Diagnostic Test: Navi System Link

NOTE:

- **Make sure the vehicle is parked outside and away from buildings.**
- **Refer to GPS Information (see GPS INFORMATION) for realtime satellite reception display.**

Before assuming that a GPS antenna reception complaint is hardware related, be aware of the following:

- The GPS signal is extremely weak (about one billionth the strength of a radio broadcast signal received by a radio antenna)
- If the rear window has been tinted with metallic tint, this can seriously degrade or block GPS reception.
- Loose items on the rear package tray can block satellite antenna reception.
- Aftermarket devices like Lo-Jack, remote starters or other electronic devices located near the navigation unit or GPS antenna can potentially interfere with the operation of the navigation system.

1. Check for metallic window tint on the windshield and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

   Is there metallic window tint or electronic accessories?

   YES -Remove tint or the accessories and recheck.

   NO -Go to step 2.

2. Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **NAVI SYSTEM LINK**) to check the GPS antenna.

   Is "GPS Ant" icon red?

   YES -Check for a kinked, crushed, or disconnected GPS antenna wire. If icon is still red, replace the GPS antenna.

   NO -Check that nothing is blocking the GPS antenna located under the package shelf and recheck. Substitute a known-good GPS antenna, and recheck.

   - If the symptom is gone, replace the GPS antenna.
   - If the symptom is still present, substitute a known-good navigation unit and recheck. If the symptom is gone, replace the original navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

VOICE GUIDANCE CANNOT BE HEARD

Diagnostic Test: Navi System Link

NOTE:

- **Always check the connectors for poor connections or loose terminals.**

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- **Before troubleshooting, write down the customer's radio station presets, and get the radio and navigation system anti-theft codes.**
- **After troubleshooting, enter the radio and navigation system anti-theft codes, and the radio station presets.**

1. Press the display unit SET-UP button.
2. Check the volume setting for the navigation system.

   Is it set to OFF?

   YES -Set the volume to an audible level.

   NO -Go to step 3.

3. Check the radio operation.

   Can you hear the radio?

   YES -Go to step 4.

   NO -Troubleshoot the audio system.

4. Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **NAVI SYSTEM LINK**) to check the radio.

   Is "Radio" icon red?

   YES -Troubleshoot the audio system.

   NO -Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the navigation unit connector B (14P) and the audio unit connector A (20P).
7. Check for continuity between body ground and navigation unit connector B (14P) terminals No. 5, No. 12 individually.

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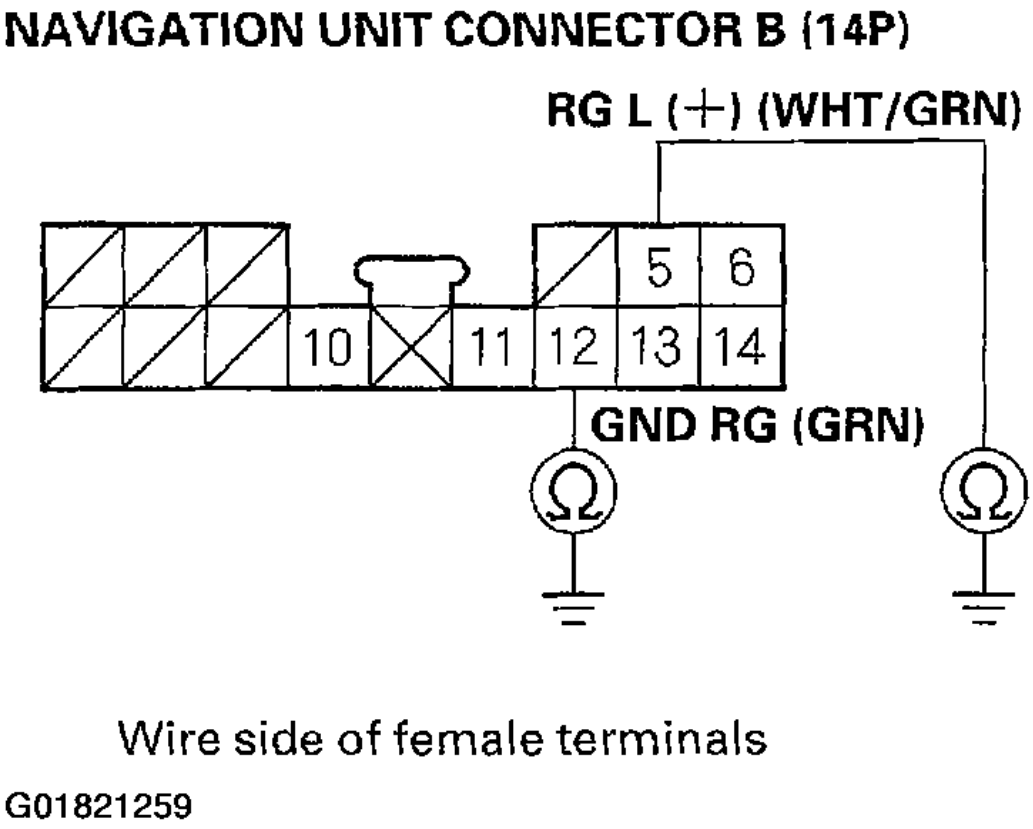


Fig. 51: Checking For Continuity Between Body Ground And Navigation Unit Connector B (14P) Terminals No. 5, No. 12

Is there continuity?

YES -Repair short to ground in the harness between the navigation and audio units. Replace the affected shielded harness.

NO -Go to step 8.

8. Check for continuity between navigation unit connector B (14P) terminal No. 11 and terminals No. 5 and No. 12 individually.

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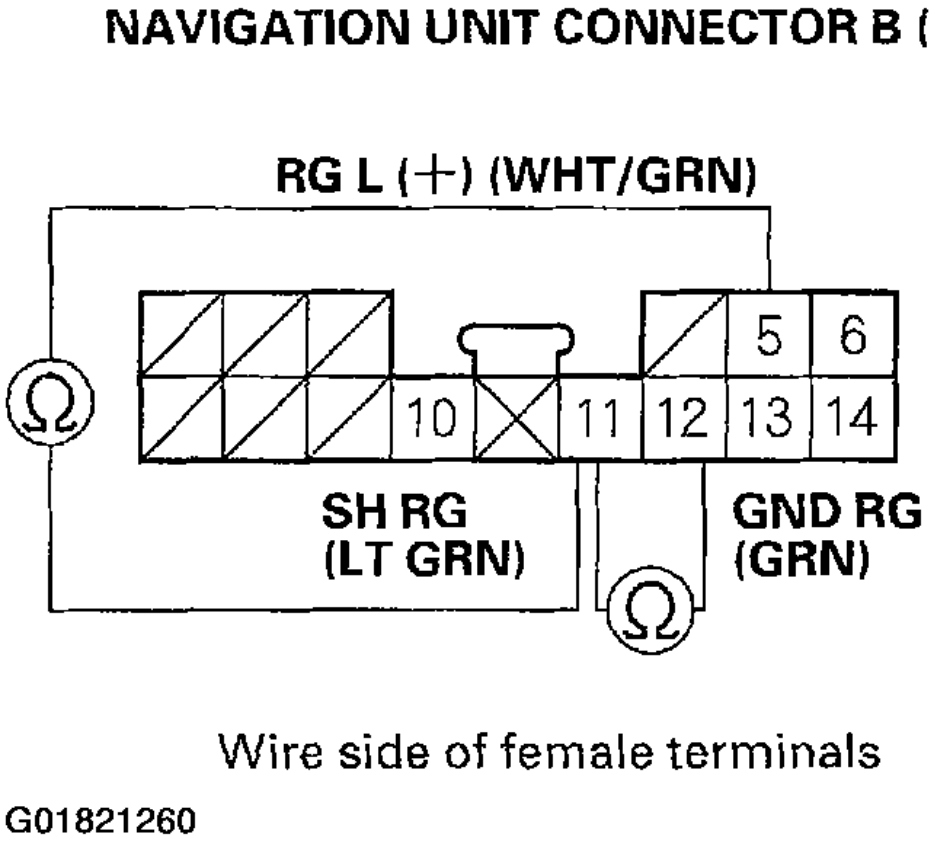


Fig. 52: Checking For Continuity Between Navigation Unit Connector B (14P) Terminal No. 11 And Terminals No. 5 And No. 12

Is there continuity?

YES -Repair short to ground in the harness between the navigation and audio units. Replace the affected shielded harness.

NO -Go to step 9.

9. Check for continuity between navigation unit connector B (14P) terminal No. 5 and the audio unit connector A (20P) terminal No. 13.

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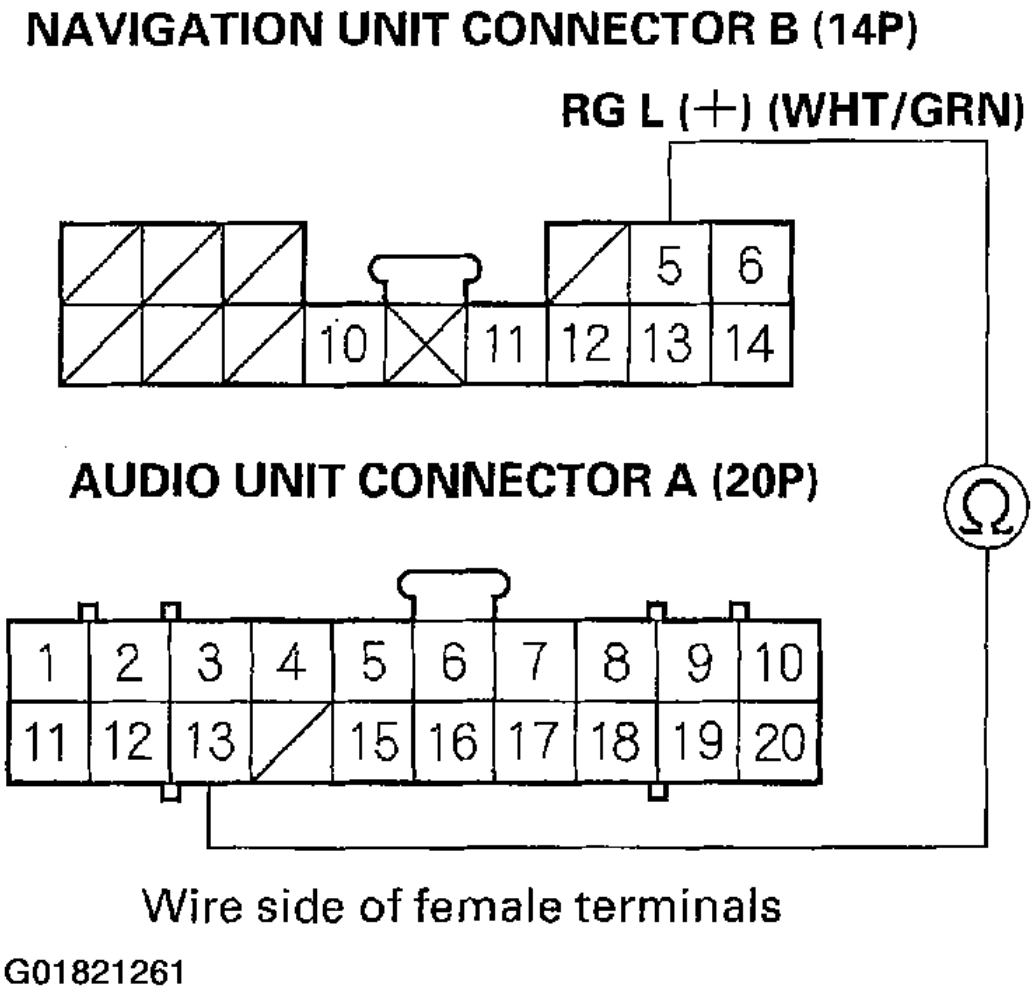


Fig. 53: Checking For Continuity Between Navigation Unit Connector B (14P) Terminal No. 5 And The Audio Unit Connector A (20P) Terminal No. 13

Is there continuity?

YES -Go to step 10.

NO -There is an open in the circuit between the navigation unit and audio unit. Check for poor connections or loose terminals at the audio and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness.

10. Check for continuity between navigation unit connector B (14P) terminal No. 12 and the audio unit connector A (20P) terminal No. 12.

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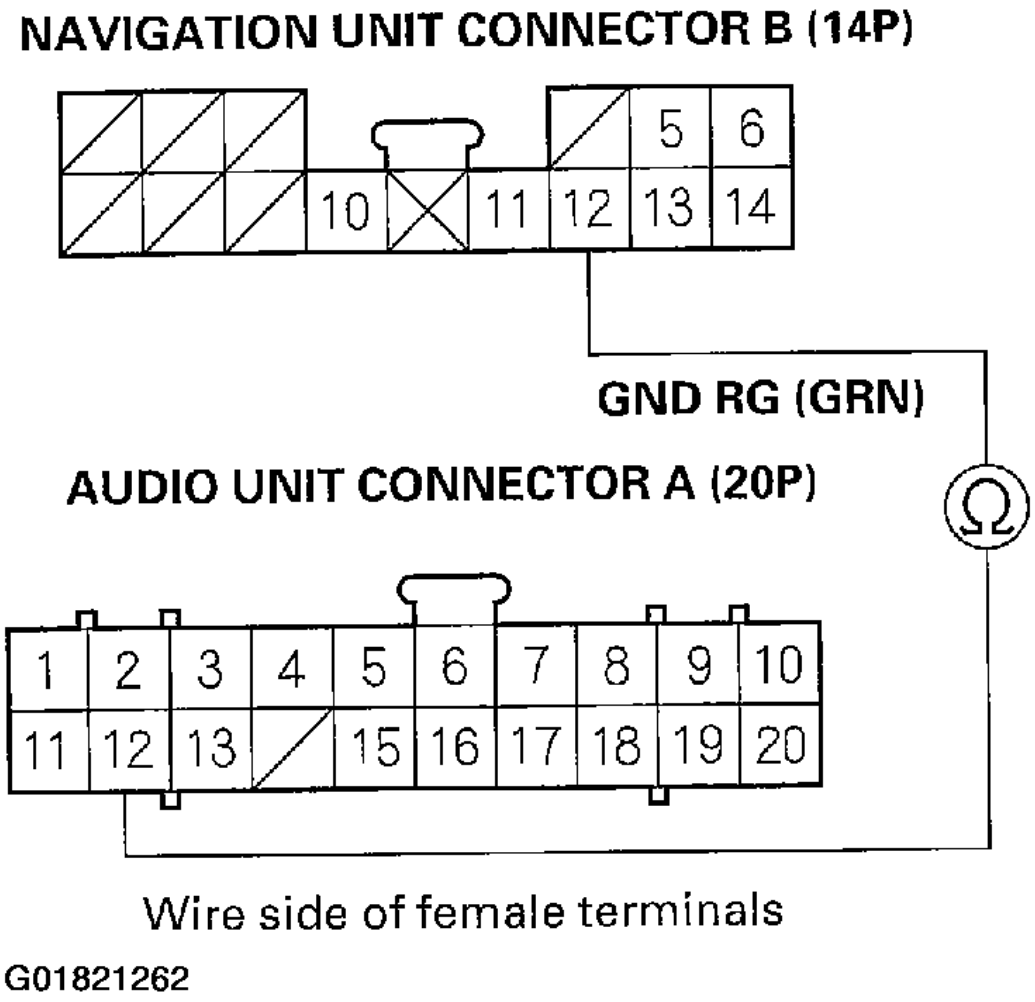


Fig. 54: Checking For Continuity Between Navigation Unit Connector B (14P) Terminal No. 12 And The Audio Unit Connector A (20P) Terminal No. 12

Is there continuity?

YES -Go to step 11.

NO -There is an open in the circuit between the navigation unit and the audio unit. Check for poor connections or loose terminals at the audio and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness.

11. Substitute a known-good audio unit, and recheck.

Is the system OK?

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YES -Replace the audio unit.

NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

VOICE CONTROL DOES NOT WORK

Diagnostic Test: Navi System Link and Functional Setup

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, write down the customer's radio station presets, and get the radio and navigation system anti-theft codes.**
- **After troubleshooting, enter the radio and navigation system anti-theft codes, and the radio station presets.**

Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.

- Make sure you are on the correct screen when trying to issue a voice command. For instance, the command "Find the nearest Italian Restaurant" only works on a Map screen. (See the Navigation Owner's manual for a complete list of allowed voice commands for the information being displayed).
- Close the windows and sunroof
- Set the fan speed to low (1 of 2).
- Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
- Pause after pressing the TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
- If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
- If you speak a command with something in your mouth, the system may misunderstand your command.

1. Go into the Diagnostic mode and use the "Mic Level" diagnostic under Functional Setup (see **MIC LEVEL**) to check the operation of the TALK and BACK buttons.

   Are the TALK and BACK buttons operational?

   YES -Go to step 2.

   NO -Check for an open or short to ground on navigation unit connector B (14P) terminal No. 10 or a faulty voice control switch assembly.

2. Use the "Mic Level" diagnostic under Functional Setup (see **MIC LEVEL**) to check the operation of the microphone.

   Is the microphone operational?

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YES -Check the operation of the voice control system (see the Navigation System Owner's Manual).

NO -Check for a loose front map light (microphone) assembly. If OK, check for an open or short to ground on navigation unit connector B (14P) terminals No. 6 and No. 14. If the wiring is OK, replace the front map light assembly.

TOUCH SWITCH MALFUNCTION

Diagnostic Test: Display Under Unit Check

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, write down the customer's radio station presets, and get the radio and navigation system anti-theft codes.**
- **After troubleshooting, enter the radio and navigation system anti-theft codes, and the radio station presets.**

1. Go into the Diagnostic mode and use "Touch Panel Check" diagnostic the under Monitor Check (see **TOUCH PANEL CHECK**) to check the operation of the touch switches.

   Do the switches operate normally?

   YES -The system is OK at this time.

   NO -Replace the display unit.

CURSOR CONSTANTLY LEAVES ROAD

Diagnostic Test: Yaw Rate and Car status

1. Check the GPS icon on the navigation picture.

   Is the GPS icon white?

   YES -Do the troubleshooting for GPS icon is white (see **GPS ICON IS WHITE**).

   NO -Go to step 2.

2. Go into the Diagnostic mode and use the "Yaw Rate" diagnostic (see **YAW RATE**), to check the yaw rate sensor.
3. Go into the Diagnostic mode and use the "Car Status" diagnostic (see **CAR STATUS**), to check the vehicle speed pulse.

   Are the yaw rate sensor and vehicle speed pulse OK?

   YES -The problem may be normal. Check to see if the problem occurs in the same place. If it does, the

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problem could be in the database. Go to step 4.

NO -If the problem is the yaw rate sensor, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**) If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit.

4. Substitute a known-good navigation unit and check to see if the problem occurs in the same place.

   Does the problem occur in the same place?

   YES -The problem is in the database. Report the problem according to the Navigation System Owner's Manual under "Reporting Errors".

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

DVD SCREEN ERROR MESSAGES

Diagnostic Test: Car Status

NOTE:

- **Check the Navigation System Owner's Manual for a list of common DVD screen error messages and the probable cause.**
- **Go into the Diagnostic mode and use the "Car Status" diagnostic (see CAR STATUS) to check the status of the DVD lid.**

1. Check the DVD-ROM reading surface for scratches.

   Are there any scratches on the DVD-ROM reading surface?

   YES -Replace the DVD-ROM (see **DVD-ROM REPLACEMENT**).

   NO -If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

TRIP COMPUTER-NO DISTANCE

Diagnostic Test: Car Status

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**
- **If the Previous button on the Trip Computer screen is not active, make sure to answer OK to the Disclaimer screen.**

1. Go into the Diagnostic Mode and use "Car Status" diagnostic (see **CAR STATUS**) to check for a vehicle

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speed pulse (VSP).

Is there a VSP when the vehicle is moving?

YES -Check the CAN bus wires for an open or short to ground between navigation unit connector A (20P) terminals No. 8 and No. 18 and PCM connector B (56P) terminals No. 6 and No. 2. If OK, replace the navigation unit.

NO -Check the VSP wire for an open or short to ground between navigation unit connector C (8P) terminal No. 6 and PCM connector B (56P) terminal No. 46.

TRIP COMPUTER-NO FUEL INFORMATION

Diagnostic Test: Navi System Link

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**
- **If the Previous button on the Trip Computer screen is not active, make sure to answer OK to the Disclaimer screen.**

Perform the "Navi System Link" check (see **NAVI SYSTEM LINK**) to check the communication line between the PCM (FI-ECU) and the navigation unit.

1. Start the engine.
2. Go into the Diagnostic mode and use "Trip Information" diagnostic under Functional Setup (see **TRIP INFORMATION**).

Are the values greater than zero?

YES -The system is OK.

NO -Check for B or F-CAN DTCs, then troubleshoot them.

NAVIGATION CANNOT CONTROL A/C

Diagnostic Test: Navi System Link

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**

1. Go into the Diagnostic Mode and perform the "Navi System Link" check (see **NAVI SYSTEM LINK**).

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Is "Air-con" icon red?

YES -Do the climate control system troubleshooting.

NO -Check for loose connection at the climate control unit and display unit. If OK, replace the display unit (see **AUDIO-HVAC DISPLAY PANEL REMOVAL/INSTALLATION**).

DISPLAY DAY/NIGHT MODE DOES NOT WORK

Diagnostic Test: Car Status

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft codes.**
- **After troubleshooting, enter the navigation system anti-theft codes.**
- **Full brightness on the instrument panel brightness control causes the system to stay in the day mode, even when the lights are on.**

1. Make sure the instrument panel brightness control is not on full brightness.
2. Change the day/night mode to AUTO under "Set-up" and recheck.

   Does the display change to day and night modes?

   YES -The system is OK at this time.

   NO -Go to step 3.

3. Go into the Diagnostic Mode and use "Car Status" to check the ILL signal (see **CAR STATUS**) by turning the head lights ON, then OFF.

   Is the "ILL" signal OK?

   YES -The system is OK.

   NO -Check the ILL+ circuit between the navigation unit and relay module.

SYSTEM LOCKS UP CONSTANTLY

Diagnostic Test: Unit Check

Check the DVD for scratches or damage and the navigation unit for water damage. If OK, perform all of the "Unit Check" checks under System Diagnosis Test (see **UNIT CHECK**).

VEHICLE ICON SPINS WHEN PARKED

Diagnostic Test: Yaw Rate

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NOTE: Perform this diagnostic when the vehicle is cold.

1. Go into the Diagnostic Mode and use the "Yaw Rate" diagnostic (see **YAW RATE**).

   Are the values correct?

   YES -The system is OK.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION DRIVES BY ITSELF WHEN PARKED

Diagnostic Test: Functional Setup

NOTE:

- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft code.**
- **After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system.**

1. Start the engine.
2. From the main menu, select places, then select any destination, and begin the trip.
3. With the vehicle parked, watch the vehicle icon on the display.

   Does the vehicle position icon move by itself?

   YES -Go to step 4.

   NO -The system is OK at this time.

4. Go into the Diagnostic mode, select "Functional Setup", then select "Demonstration".

   Is "Demonstration Mode" set to "YES"?

   YES -Set the Demonstration mode to "NO".

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION CANNOT CONTROL AUDIO/CD

Diagnostic Test: Navi System Link

1. Make sure the anti-theft code for the audio system is entered.
2. Go into the Diagnostic mode and use the "Navi System Link" diagnostic (see **NAVI SYSTEM LINK**).

   Is the "Radio" icon red?

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YES -Do the troubleshooting for the voice guidance cannot be heard (see **VOICE GUIDANCE CANNOT BE HEARD**).

NO -Go to step 3.

3. Substitute a known-good navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**), and recheck.

   Can the navi control audio/CD?

   YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

   NO -Do the audio system troubleshooting.

AUDIO-HVAC SUBDISPLAY DOES NOT WORK PROPERLY

1. Check the connections at the audio-HVAC subdisplay 10P connector and the audio-HVAC display panel connector C (10P).

   Are the connections and terminals connected properly?

   YES -Go to step 2.

   NO -Repair the connection and recheck.

2. Check for continuity between the audio-HVAC subdisplay 10P connector and the audio-HVAC display panel connector C (10P) terminals for each wire listed in the chart.

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Wire	Audio-HVAC subdisplay 10P connector terminal	Audio-HVAC display panel connector C (10P) terminal
BLU/ORN	2	C2
YEL/RED	4	C4
YEL	5	C5
BLU/RED	6	C6
BLU	7	C7
GRY	8	C8
BLK	1	C1
RED	9	C9
GRN	10	C10
BLK	3	(Body ground)

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Fig. 55: Audio-HVAC Subdisplay And Audio-HVAC Display Panel Continuity Chart

Is there continuity?

YES -Go to step 3.

NO -Repair the open in the wire between the audio-HVAC display panel and the audio-HVAC subdisplay.

3. Check for continuity between each audio-HVAC subdisplay 10P connector terminal and body ground.

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Wire	Audio-HVAC subdisplay 10P connector terminal
BLU/ORN	2
YEL/RED	4
YEL	5
BLU/RED	6
BLU	7
GRY	8
BLK	1
RED	9
GRN	10
BLK	3

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Fig. 56: Checking For Continuity Between Each Audio-HVAC Subdisplay 10P Connector Terminal And Body Ground

Is there continuity?

YES -Repair short to ground in the wire between the audio-HVAC display panel and the audio-HVAC subdisplay.

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NO -Go to step 4.

4. Substitute a known-good audio-HVAC subdisplay and recheck.

   Does the subdisplay work properly?

   YES -Replace the original audio-HVAC subdisplay.

   NO -Substitute a known-good audio-HVAC display panel and retest. If the problem is gone, replace the original audio-HVAC display panel.

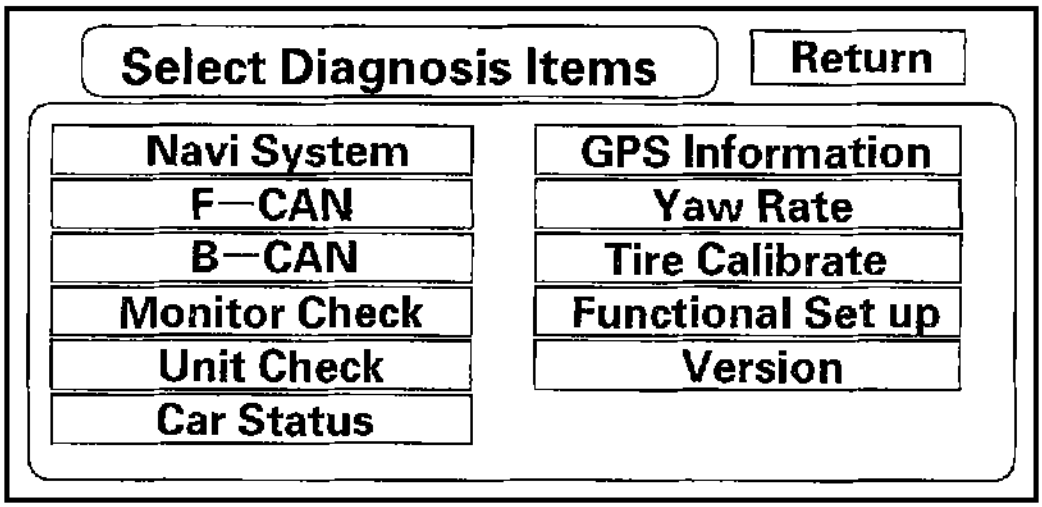
SYSTEM DIAGNOSIS MODE

START-UP PROCEDURE AND DIAGNOSIS MENU

1. Turn the ignition switch ON (II).
   A. If the battery has not been disconnected, then press and hold Menu, Map/Guide, and Cancel buttons. Keep them pressed for approximately 5 seconds. The display screen then goes directly to the "Select Diagnosis Items" menu.
   B. If the battery was disconnected and reconnected prior to this test, hold down the Menu and Zoom Out button. You will see the "Navi System Link" screen. Push the joystick to go directly to the "Select Diagnosis Items" menu.

NOTE: This only allows access to the diagnostic screens. All other Navigation functions are disabled.

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Fig. 57: Select Diagnosis Items Menu Display

2. After the display changes to the select Diagnosis Items menu, touch the item you want to check, and the check will start. To return to the previous screen, touch "Return".
    - Navi System. (Link)
    - F-CAN (System Link)
    - B-CAN (System Link)
    - Monitor Check.
    - Unit Check.
    - Car Status.
    - GPS Information.
    - Yaw Rate.
    - Tire Calibrate.
    - Functional Setup.
    - Version.

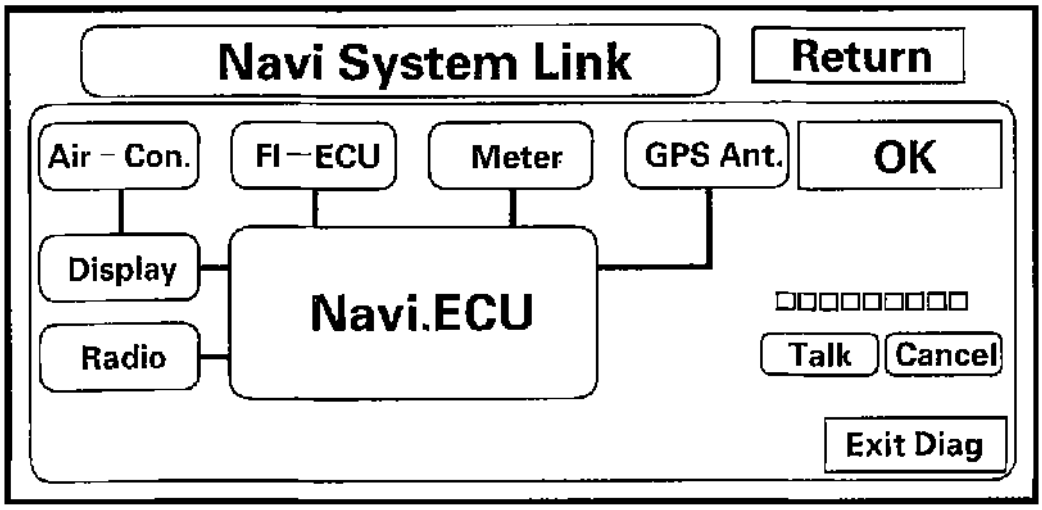
Navi System Link

- This diagnostic tests the cables connecting the navigation components. Ensure that the ignition switch is in the ON (II) position. When the diagnostic begins, a "bong" sound is heard. The system is in a "Detecting" mode, and is waiting for all items in white to be tested. This includes the steering wheel (TALK/BACK) switches, and microphone, Push the "TALK" button on the steering wheel, and in a normal voice, say "testing". The Talk indicator on the screen should become green, and the voice level indicator should move to the 6th bar to pass. Next, touch the Steering wheel "BACK" button. This should

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cause the "Cancel" indicator to go green.

- If all of the communication lines connecting the system components, and the steering wheel buttons/microphone check out OK (all block diagram items green), then the "OK" indicator will become green.
- If there is a problem with the system, the faulty system component item will change to red, and the screen will show "NG" in red. Use the troubleshooting index, and other diagnostic screens to help locate the problem.
- The indication on the screen will not change until the ignition switch is cycled. After repairing the affected cable or system, repeat this diagnostic.
- NOTE: Green boxes and green "OK" indicate that the communications lines (cables) are intact. This diagnostic does not necessarily imply that the individual components are functioning properly. For instance, the GPS antenna wire may be crushed, but still show as "green." A road test, or other diagnostic may be necessary to find the problem.
- Touch the "Exit Diag" button to exit.



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Fig. 58: Navi System Link Display

F-CAN System Link

F-CAN (Fast Controller Area Network) passes information between processors on the network. For example, the F-CAN network is used to pass fuel pulses between the PCM and the navigation for the trip computer function. The F-CAN network uses a communication protocol that transmits data at 500 Kbps.

- If the diagnostic screen below reads NG, then diagnostic trouble codes (DTCs) for the F-CAN can be retrieved with a PGM Tester or HDS (Honda Diagnostic System). The data displayed in the ID boxes is

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for troubleshooting at the factory.

- For more details on troubleshooting the F-CAN, refer to multiplex system.

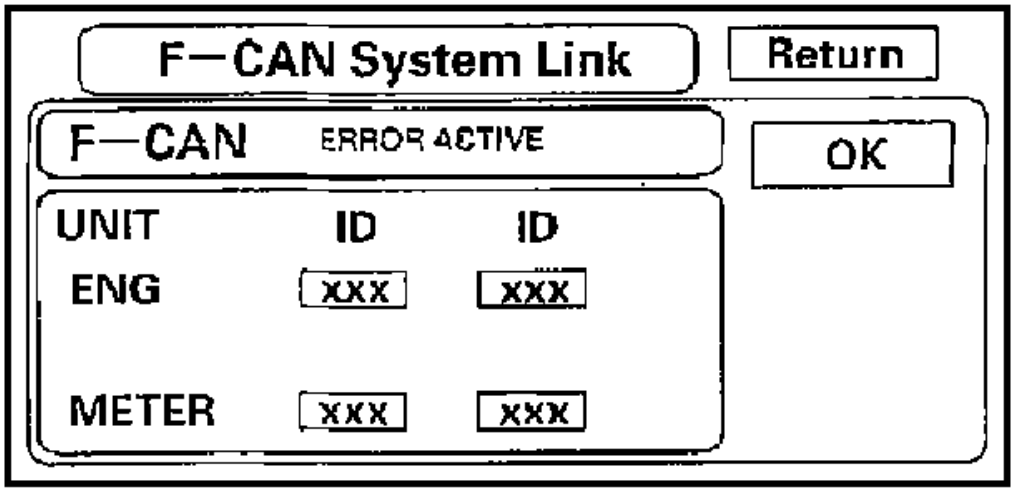


Fig. 59: F-CAN System Link Display

B-CAN System Link

B-CAN (Body Controller Area Network) communication moves at a slower speed for convenience related items, and for other functions.

- If the diagnostic screen below reads NG, then diagnostic trouble codes (DTCs) for the B-CAN can be retrieved with a PGM Tester or HDS (Honda Diagnostic System). The data displayed in the ID boxes is for troubleshooting at the factory.
- For more details on troubleshooting the B-CAN, refer to multiplex system.

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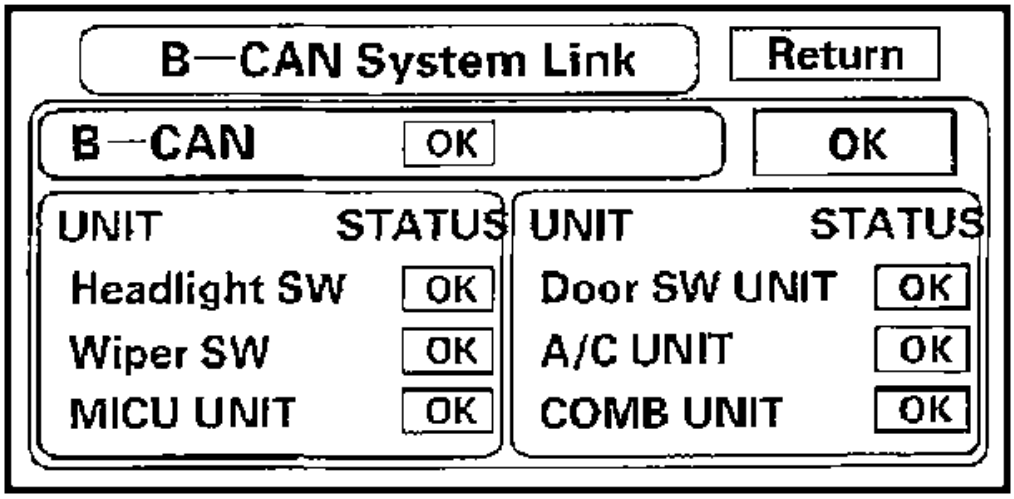


Fig. 60: B-CAN System Link Display

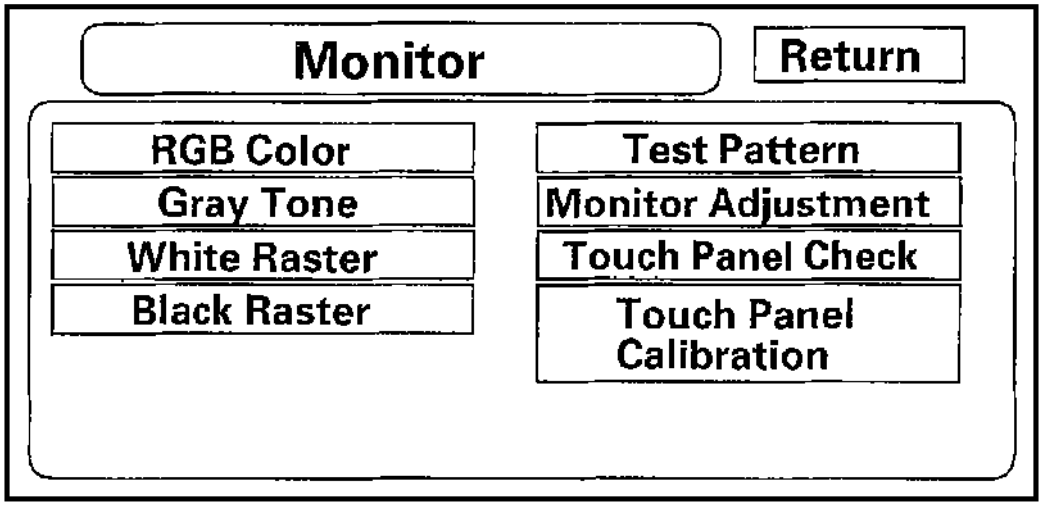
Monitor Check

Overview of display unit

- The display unit communicates with the navigation unit over its own GA-Net bus. Information is sent to the navigation unit whenever the user activates the touch screen, or hard buttons. Information sent by the navigation unit to the display unit includes commands to control the LCD back light.
- The display unit is protected by the security system by daisy-chaining the security signal through it, and then passing the signal to the audio unit.
- The illumination input from the gauge brightness control provides back lighting for the hard buttons surrounding the screen.
- The display unit also communicates with the climate control module to set the A/C mode, and fan speed, and to receive the outside temperature that is displayed on the A/C-INFO screen.

These screens allow troubleshooting of the display unit. Touch the menu item you want to troubleshoot, and follow the diagnostic instructions.

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Fig. 61: Monitor Display

RGB Color

This screen verifies that the display unit is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all be shown without distortion. The combination of all three should produce a central white section. If any of the colors are missing, troubleshoot for the color signal (see **PICTURE IS MISSING A RED/GREEN/BLUE COLOR OR TONE, OR ROLLING PICTURE**). If the picture has lines in it, or scrolls horizontally or vertically, troubleshoot for a Composite sync problem (see **Picture is missing a red/green/blue color or tone, or rolling picture** page 22-344).

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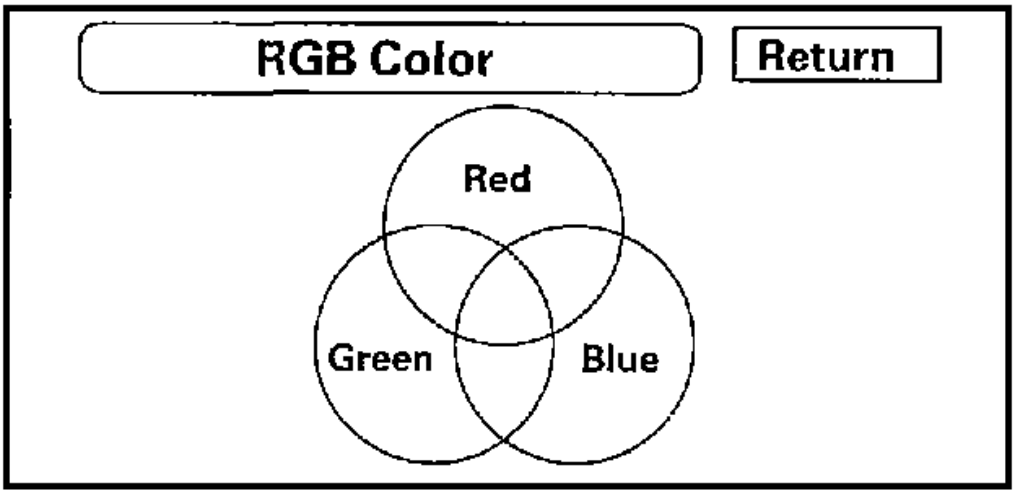


Fig. 62: RGB Color Display

Gray Tone

This screen diagnoses problems with contrast. You should be able to see the changes from bar to bar across the scale. It is normal for the 2 bars on either side to appear the same.

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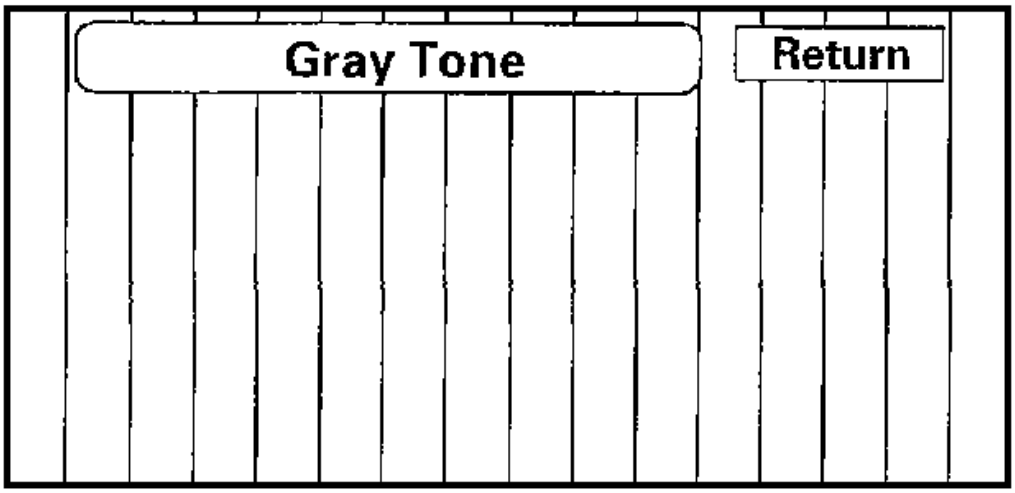


Fig. 63: Gray Tone Display

White Raster

The entire display must be shown in white.

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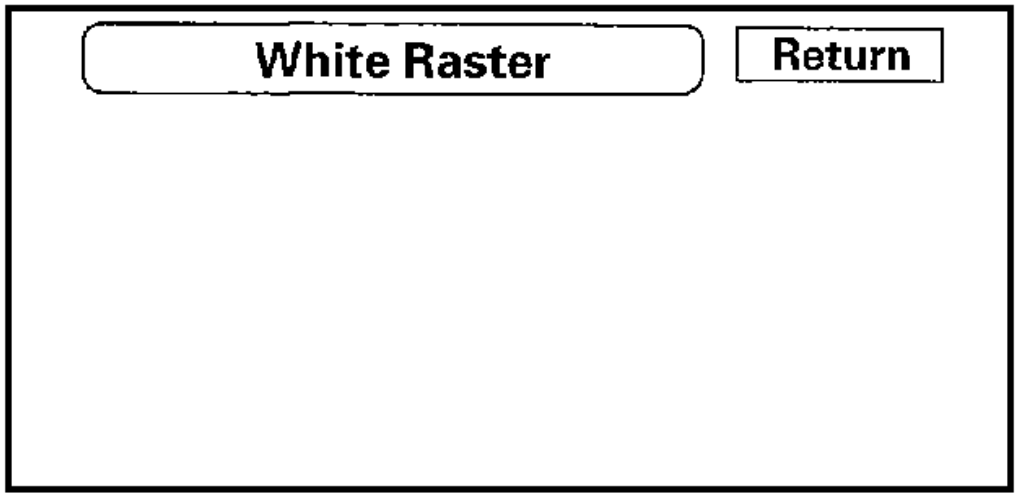


Fig. 64: White Raster Display

Black Raster

The entire display must be shown in black.

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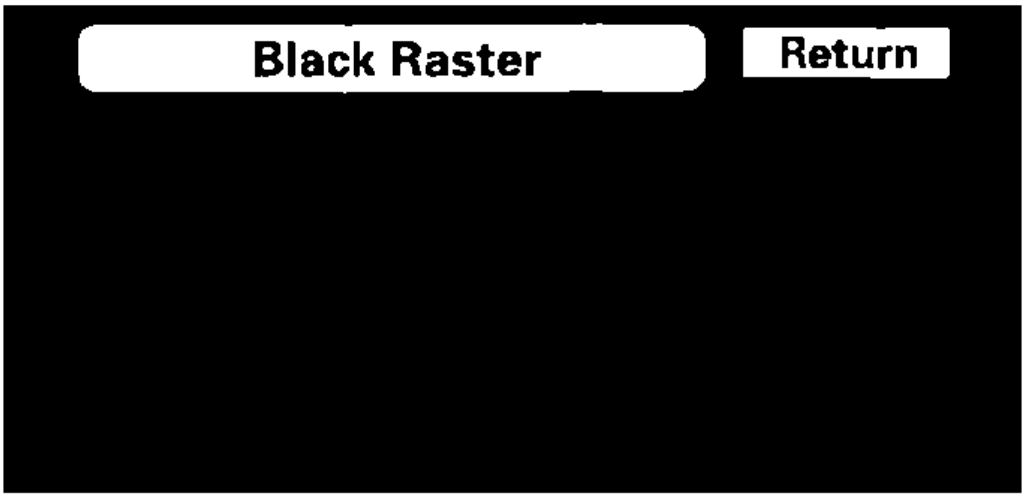


Fig. 65: Black Raster Display

Test Pattern

The chart below; shows the colors being used for the map and menu screens. This is for factory use only. To check the color signal use the "RGB Color" diagnostic.

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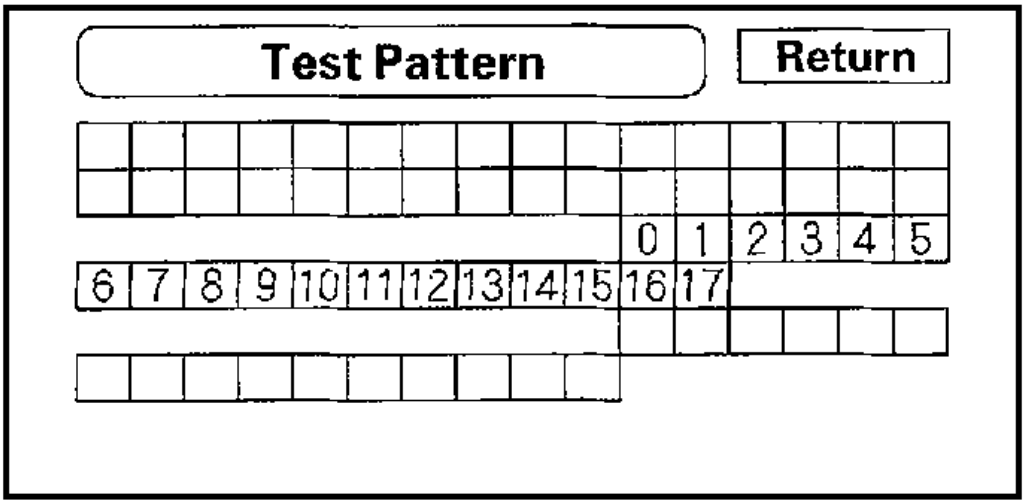
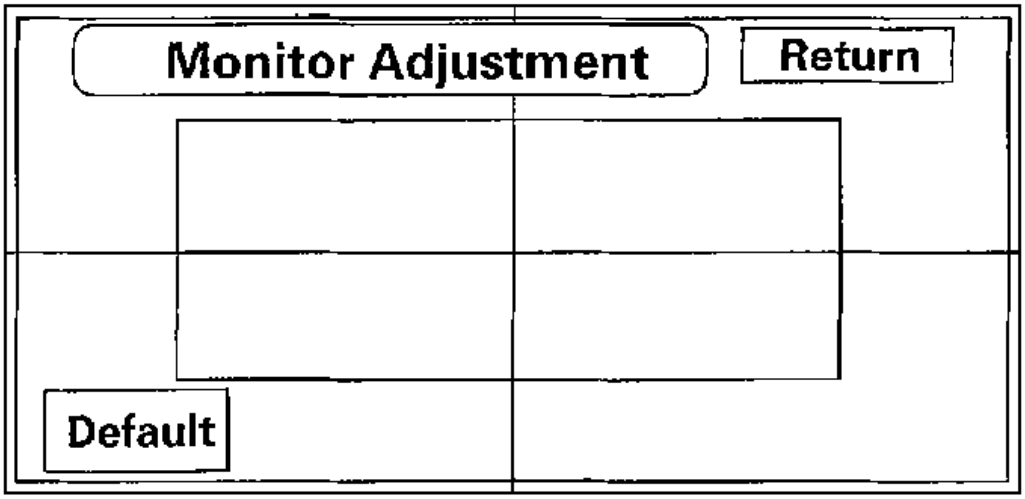


Fig. 66: Test Pattern Display

Monitor Adjustment

This allows the navigation display to be centered. Use the joystick to move the picture up/down or left/right. It is unlikely that you will ever need to adjust the monitor position. The "Default" button will reset the display position to factory specifications.

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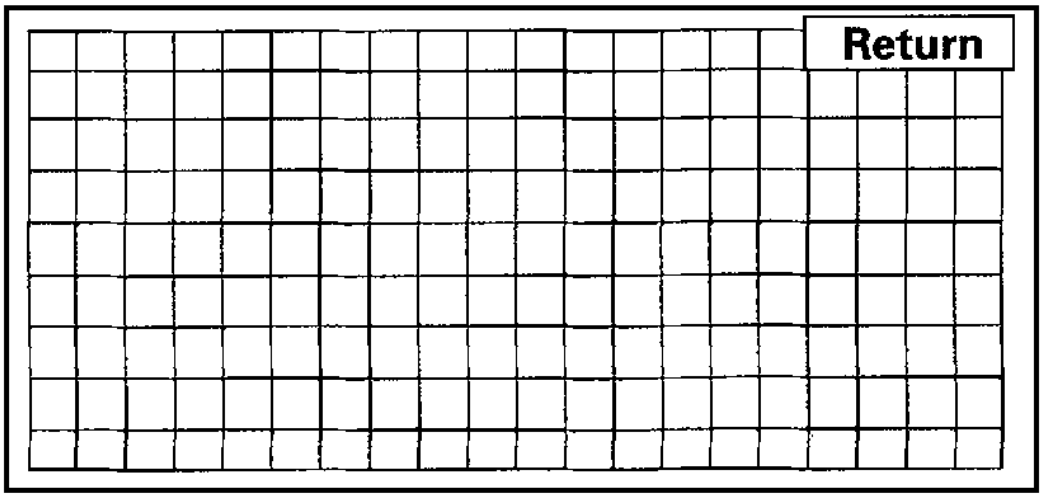
Fig. 67: Monitor Adjustment Display

Touch Panel Check

The panel touch sensing system consists of a touch sensitive resistive membrane covering the display. Contrary to other systems using infrared beams, the screen has to be physically "touched" to make it work. The display has capability of an almost infinite number of touch locations. However, to be compatible with earlier systems, the software only senses the locations shown on the diagnostic screen below. Every possible touch button position is shown on this diagnostic screen. Touching one of these areas should cause its color to reverse, and sound a "beep". If the touch locations are off slightly (by less than one touch location), use the "Touch Panel Calibration" diagnostic to re-align the touch "zones" with the screen image. If any areas of the screen either don't respond, or respond at some other location when touched, then replace the display unit.

NOTE: Unlike earlier screens that used infrared sensors, direct sunlight will not affect this test.

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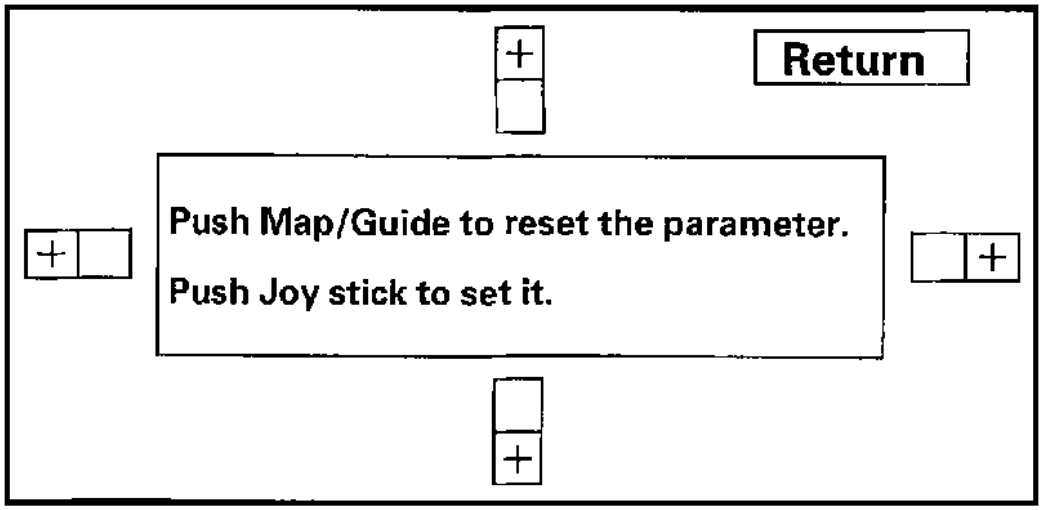
G01821276

Fig. 68: Touch Panel Check Display

Touch Panel Calibration

Touch the four "+" item on the screen. If the screen responds at some other location when touched, adjust respond point to touched point using the joy stick.

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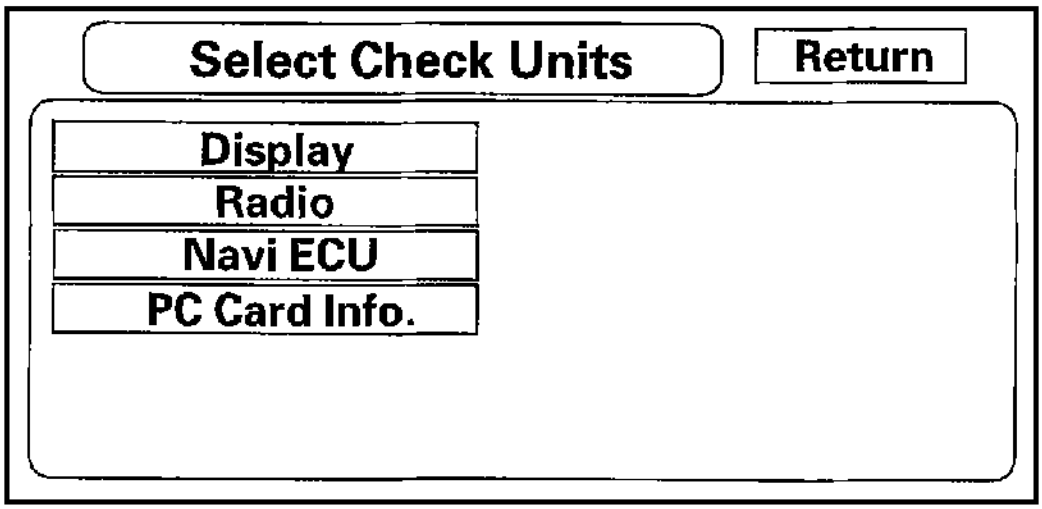


G01821277

Fig. 69: Touch Panel Calibration Display

Unit Check

Touch the item you want to check, and the check starts.



G01821278

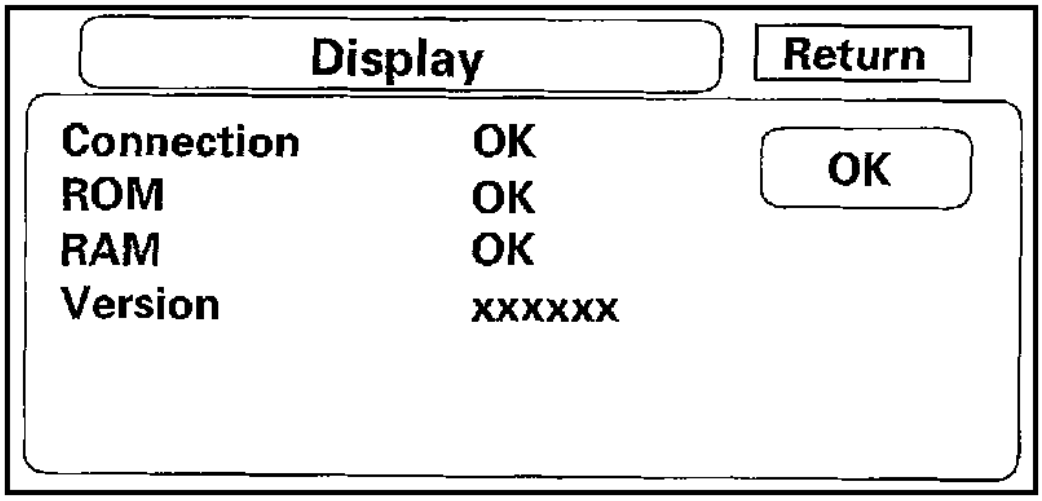
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Fig. 70: Select Check Units Display

Display

This diagnostic performs additional checks on the communication bus between the control unit, and the display. In addition, the internal display electronics components are check.

- When the connection is NG, first check for loose terminals at the navigation unit and the display unit connections. Next check for an open or short in the communication line between the navigation unit and the display unit. If the line is found to have an open or short, replace the affected shielded harness.
- If the ROM or RAM is NG, replace the display unit.
- The version represents the software version in the display, and is for factory use only.



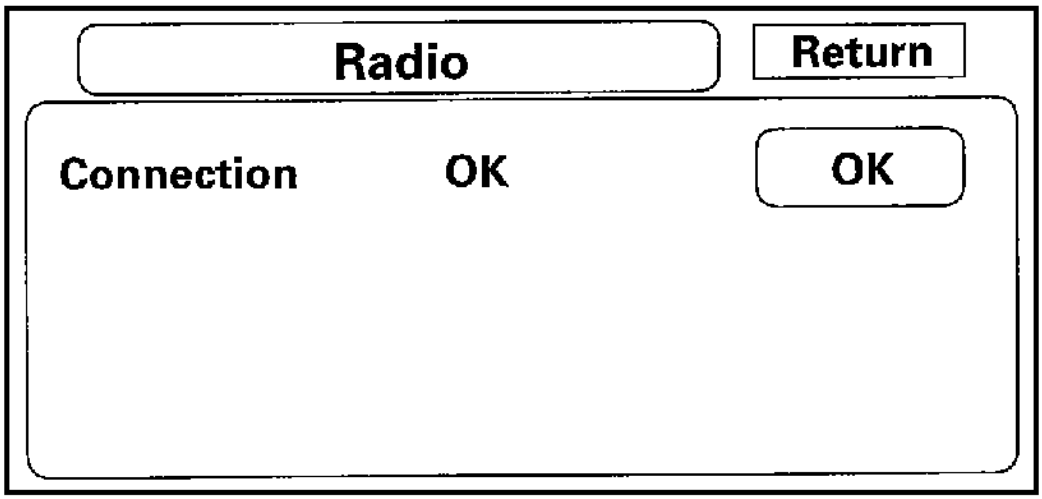
G01821279

Fig. 71: "Display" Display

Radio

If the NG is indicated, check for loose audio unit connector.

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G01821280

Fig. 72: Radio Display

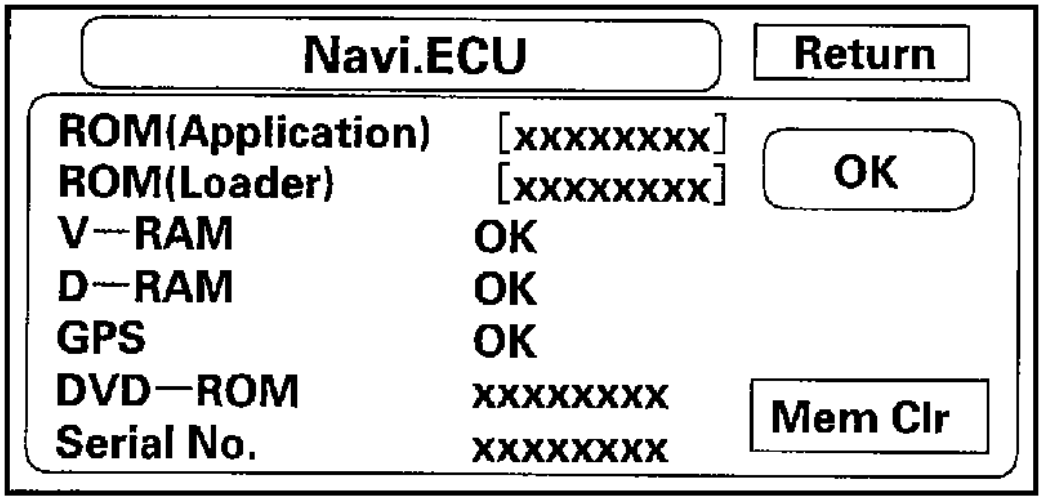
Navi ECU

This screen diagnosis the navigation unit. When this diagnostic is initiated, there is a delay of up to a minute while it runs.

- "ROM (Application)", and "ROM (Loader)" are for factory use.
- If "V-RAM" or "D-RAM" is NG, then replace the navigation unit.
- If "GPS" indicates "NG (ANT)", then check the entire GPS Antenna wire from the navigation unit to the antenna. If the wire is crushed or damaged, try a known-good antenna. If this diagnostic reads OK, then order a new GPS antenna. If the diagnostic still reads NG (ANT), then replace the navigation unit.
- "DVD-ROM" represents the database version on the DVD. This information can also be found in Setup Screen 4 by touching "information".
- "Serial No." should be the same as the serial number found on the underside of the navigation unit. This number is needed to obtain the security code from the Interactive Network (IN) system.
- The "Mem Clr" button is for factory use and should not be used unless instructed by the factory.

  Touching this button will erase the customer's settings, personal information, GPS orbital data, and anything else stored in memory.

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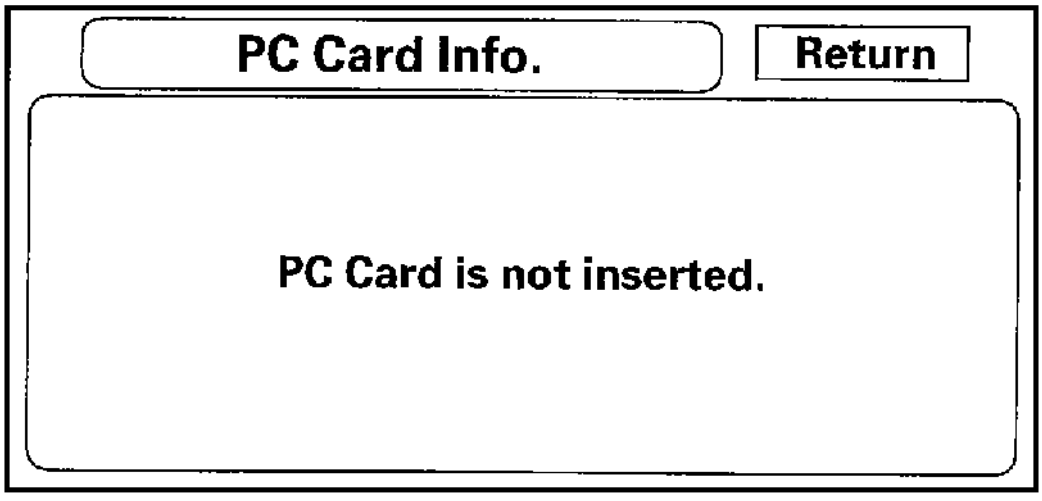


G01821281

Fig. 73: Navi ECU Display

PC Card info

Normally there is no PC Card in the PC slot, and the screen should say, "PC Card is not inserted".



G01821282

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Fig. 74: PC Card Info Display (PC Card is not inserted)

If the factory instructs you to insert a card, then this screen displays the Manufacturer, and Product Name as shown in the following screen.

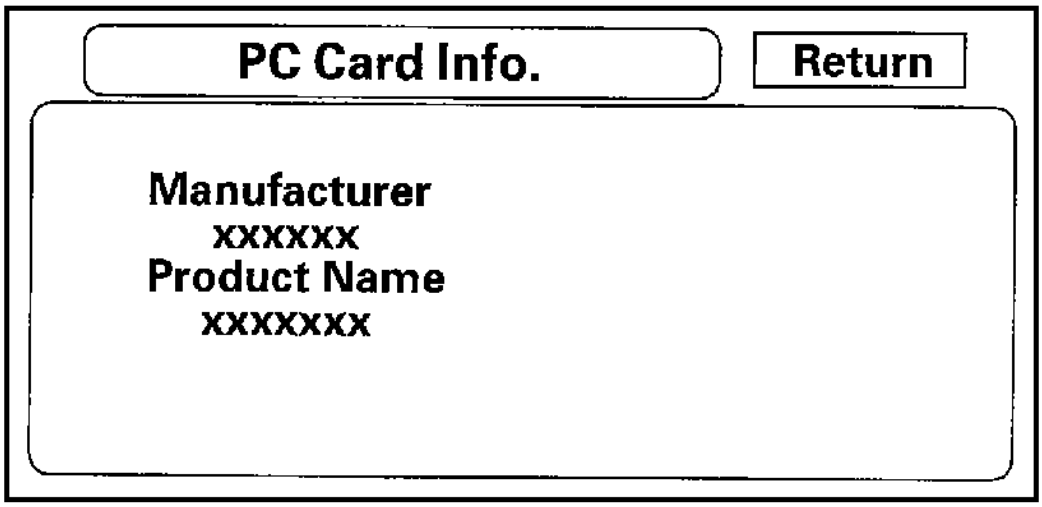


Fig. 75: PC Card Info Display (Manufacturer And Product Name)

Car Status

This screen is used to confirm that navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.

- CHG-(OBSELETE-NOT USED) Charge indicator (Pin 3 of C-Connector)

  a) OFF (0) when engine is off, or alternator is not charging

  b) ON (1) when engine is running

This signal was used by the previous DVD navigation system. If CHG was off, then the screen was shut off after 10 minutes of inactivity to minimize battery consumption.

- VSP-Vehicle Speed Pulse from PCM (Pin 6 of C-connector)

  a) OFF (0) when vehicle is not moving

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b) ON (1) when vehicle is moving

The VSP comes from the PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor. As this scaling factor becomes more accurate, the "Level" gradually increases from 0 to 10.

- BACK-Reverse indication from taillight relay (Pin 5 of C-connector)

  a) OFF (0) when shift lever is in any position other than reverse

  b) ON (1) when shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse. This signal is needed because the Speed Pulse has no direction indication.

- CHG (CAN)-Charge indicator from PCM using F-CAN bus (Pin 8, 18 of navigation unit A-connector)

  a) OFF (0) when engine is off

  b) ON (1) when engine is running

This signal is obtained off of the F-CAN bus. For problems, see the service manual section for troubleshooting F-CAN. Diagnostic trouble codes (DTCs) for the F-CAN can be retrieved with a PGM Tester or a HDS (Honda Diagnostic System).

- ILL-Illumination Indication (Pin 5 of navigation unit A-connector)

  a) OFF (0) when parking lights, or headlights are off

  b) ON (1) when parking lights, or headlights are off

This signal is used by the navigation unit to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- DVD Lid-senses if DVD door is open

  a) (Close) when door is closed

  b) (Open) when door is open

The navigation unit has a micro switch to detect this. If open is indicated when the door is closed, replace the navigation unit.

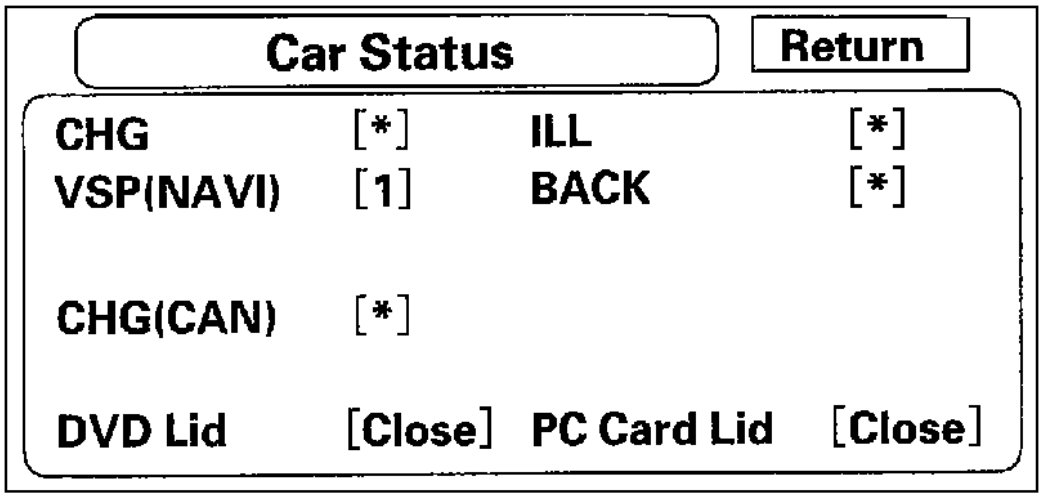
- PC Card Lid-Senses if PC Card door is open

  a) (Close) when door is closed

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b) (Open) when door is open

The navigation unit has a micro switch to detect this. If open is indicated when the door is slid shut, then replace the navigation unit. This slot is for insertion of PC Flash memory cards for gathering diagnostic information. This is for factory use only.



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Fig. 76: Car Status Display

GPS Information

This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow numbers) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represents 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Naturally, nearby obstructions, like tall buildings will block satellites in that direction. That is why it is necessary to be in an open area to effectively troubleshoot GPS reception issues.

The satellite numbers shown on the diagram correspond to the "PRN" number in the "GPS Details" screen. There are always 24 "active" GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

NOTE: To use this screen for troubleshooting, the vehicle should be out side away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.

- The "Number of Satellites" box shows the number of acquired satellites (maximum of 12). It should

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contain 3 or more icons. If not troubleshoot for "GPS icon is white" (see**GPS ICON IS WHITE**).

- The "Current Position" shows latitude, longitude, and elevation (in meters). If there are less than 3 satellites, the elevation can be grossly inaccurate.
- The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the customer in Setup screen 2 "Adjust Time Zone/Clock".

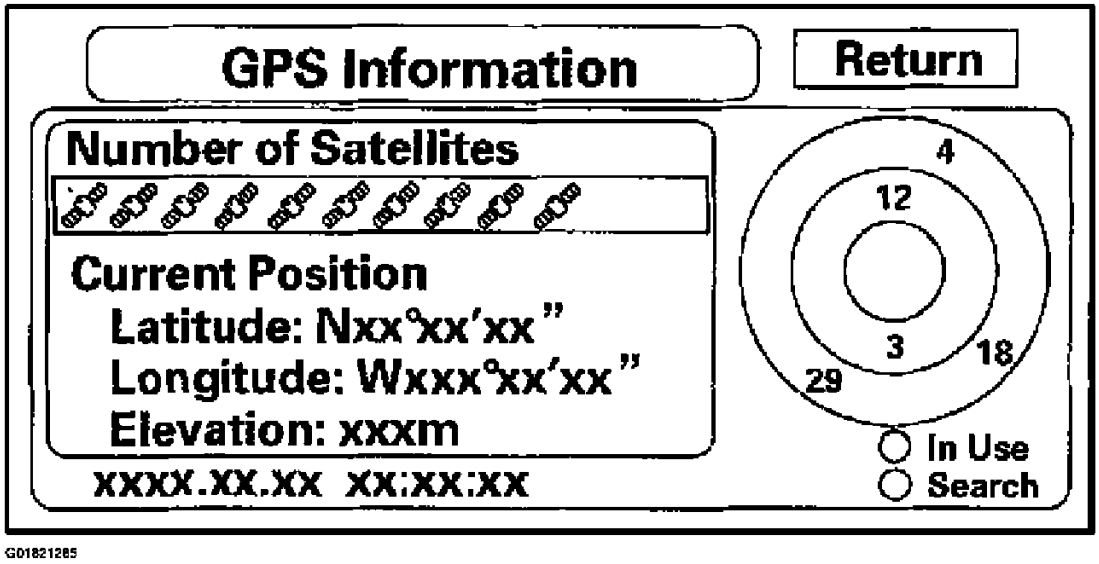


Fig. 77: GPS Information Display

GPS Detail

By pressing and holding the MENU button for 10 seconds, a GPS Detail screen is displayed. This screen displays real time incoming satellite positional data. Most of the information shown on this screen is for factory use, however some of the data can indicate partial GPS signal interference.

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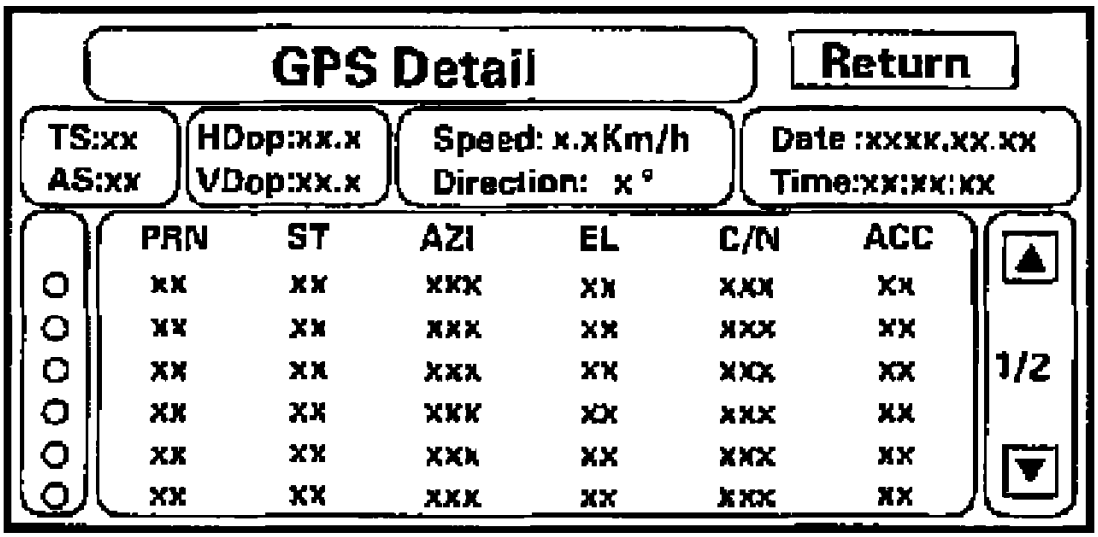


Fig. 78: GPS Detail Display

- The box TS/AS and HDop/VDop is for factory use.
- The Speed and Direction information is updated in real time when driving, and can be used to detect intermittent speed sensor problems.
- The Date/Time Information is the same as in Setup screen 2 "Adjust Time Zone/Clock".
- If the "3D" icon is shown above the yellow dots, this implies that at least 4 satellites are available for map positioning, and the "GPS" indicator on the map screen will be green. See the "Global Positioning System" detailed explanation in the "System Description" (see **SYSTEM DESCRIPTION**).
- If the row of data in the table below begins with a "yellow dot", the AZI and EL fields can be used to locate each satellite on the circular GPS diagram (see prior screen).

NOTE: The data shown in the "GPS Detail" screen is an example only.

The table of values shown on the screen below has the following columns:

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Column	Description	Problem indication
Active	Active satellites (Yellow Dot)	If "3D" is missing, follow troubleshooting (see page 22-351).
PRN	The satellite ID number	See "GPS Information."
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, follow troubleshooting (see page 22-351).
AZI	Azimuth, the angle (0—360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Healthy signal is 49—52, no signal: 27—33
ACC	N/A	

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Fig. 79: GPS Detail Table

Yaw Rate

This diagnostic checks the yaw rate sensor in the control unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see the yaw rate sensor theory of operation under "System Description" (see **SYSTEM DESCRIPTION**)

- "Sensor" indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 bolts when stopped.
- "Offset" is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 volts when stopped.
- A "sensor" output voltage HIGHER than the "Offset" voltage indicates that the vehicle is turning to the right. A "sensor" output voltage LOWER than the "Offset" voltage indicates that the vehicle is turning to the left.
- The yaw rate offset, and sensor should both indicate about 2.500 volts when stopped. If either reads zero, or 5.000 volts, replace the navigation unit.
- The yaw rate offset and sensor should be within +/- 0.01 V of each other when stopped. The sensor value should change relative to the offset as the car is turned while driving. If not, replace the navigation unit.

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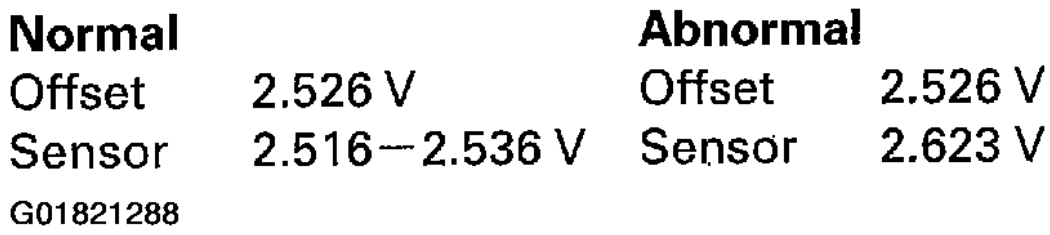


Fig. 80: Yaw Rate Display (Example: Car Stopped)

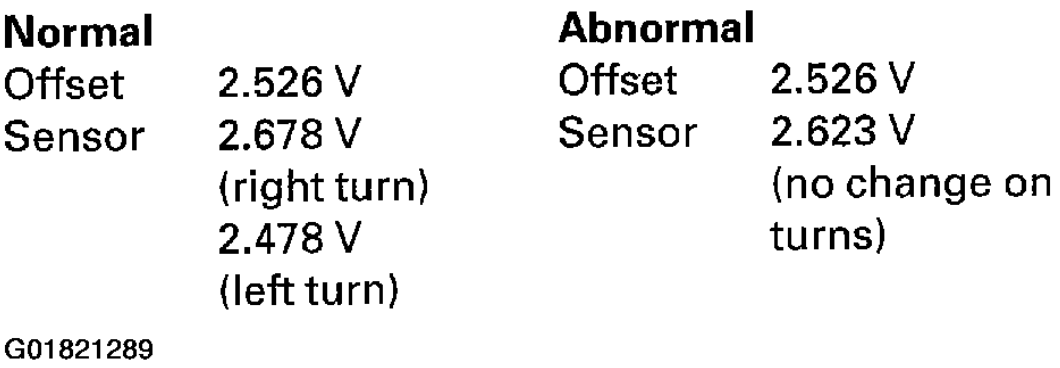
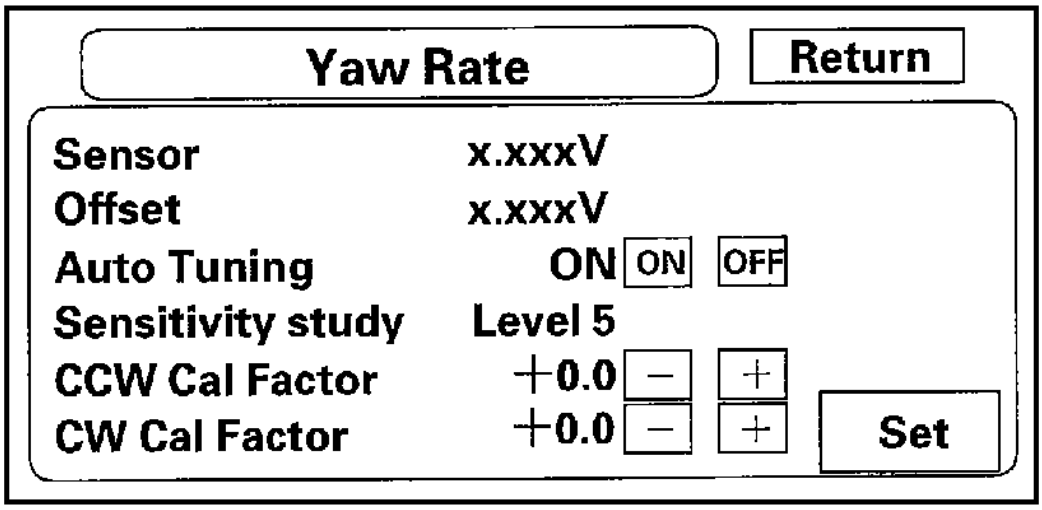


Fig. 81: Yaw Rate Display (Example: Car Turning)

- Auto tuning should always be on. If it is off, turn it on.
- "Sensitivity study" represents the status of the internal tuning function. At initialization, this value starts at 6 and increases to # 10 as the internal correction values become more accurate.
- The settings "CCW Cal Factor", "CW Cal Factor", and "Set" are for factory use only. THIS SHOULD NEVER BE USED.

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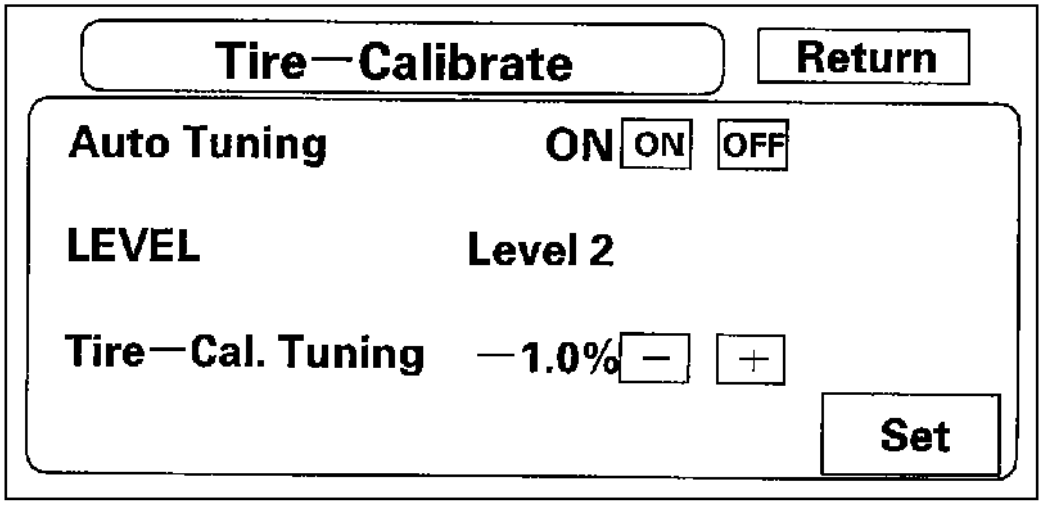
Fig. 82: Yaw Rate Display

Tire Calibrate

As the vehicle moves, the navigation system receives speed pulses from the PCM. These pulses are converted using a conversion factor to a mph speed that moves the vehicle position (VP) on the map. The navigation system has an internal tuning function that generates and refines this factor based on actual driving. The "Level" indicates the status of the tuning. At navigation initialization, it begins at 0, and increases to 10 as the navigation system is used.

- The "Auto Tuning" is factory set to "ON", and should remain on.
- The "LEVEL" indicates the tuning status. If it is less than 10, the unit is still calibrating.
- The "Tire-Cal. Tuning" and the "Set" button should not be used. It is for factory use only.

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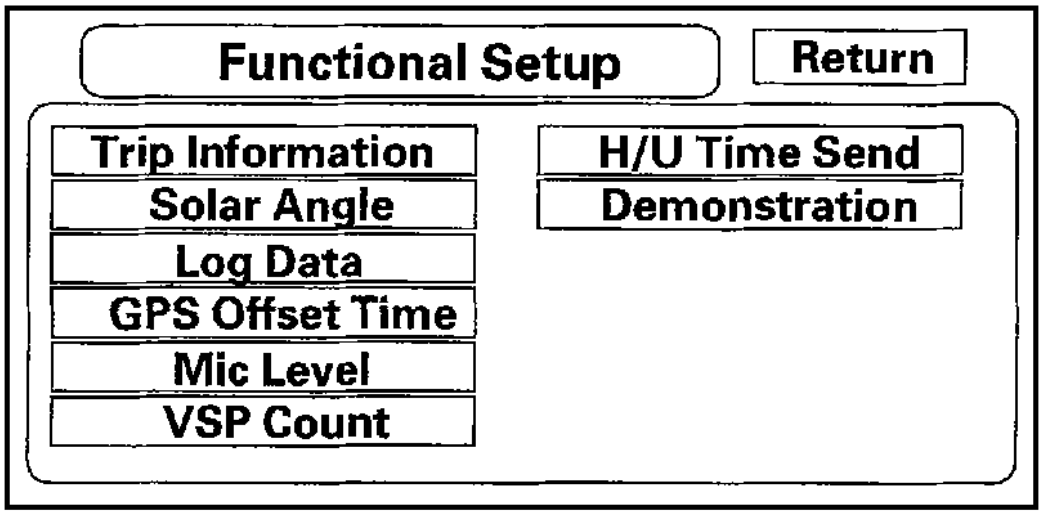


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Fig. 83: Tire Calibrate Display

Functional Setup

Touch the item you want to check.



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Fig. 84: Functional Setup Display

Trip Information

This screen shows current internal values used for trip computer calculations. They are for factory use only.

- The simulation "Start" button is for factory use.
- The "Data Save" button should always be on. It is for factory use only.

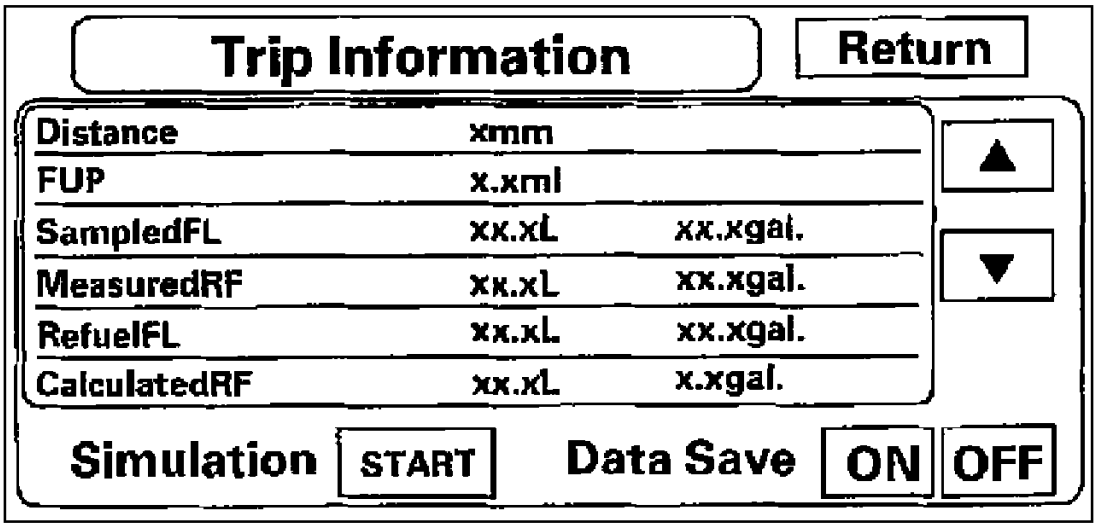


Fig. 85: Trip Information Display

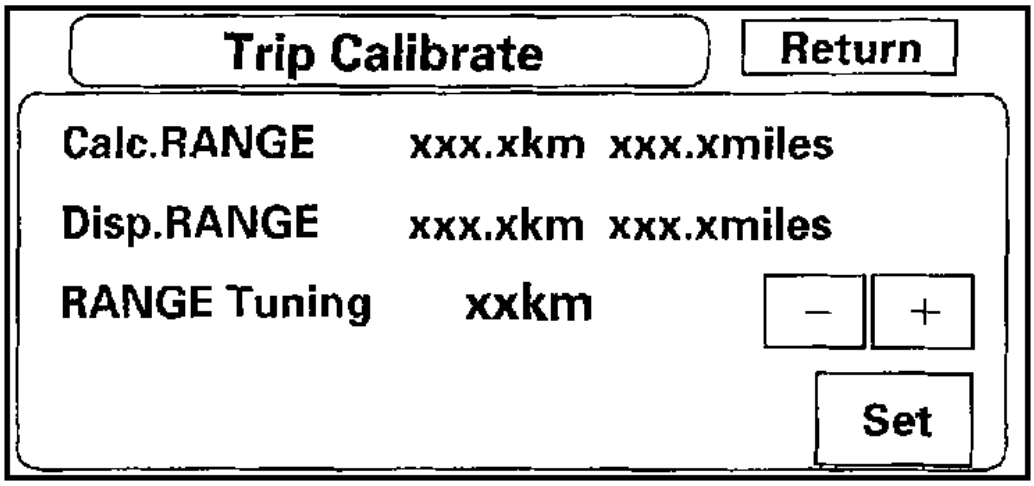
Trip Calibrate

By holding down the MENU button while on the "Trip Information" screen, you will see the screen below. This screen allows you to adjust the vehicle range (distance to empty).

- "Calc. RANGE" is the calculated value.
- "Disp. RANGE" is the distance displayed on the trip computer "Range" field. If it reads "0", the vehicle will have enough fuel to travel approximately 20 miles.
- Range Tuning can be adjusted "+" or "-" to adjust the range to empty. It is recommended that this value not be changed.

NOTE: Setting the range offset too low (+10) could result in the vehicle running out of gas before the display reads "0". Make changes slowly when changing this value.

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Fig. 86: Trip Calibrate Display

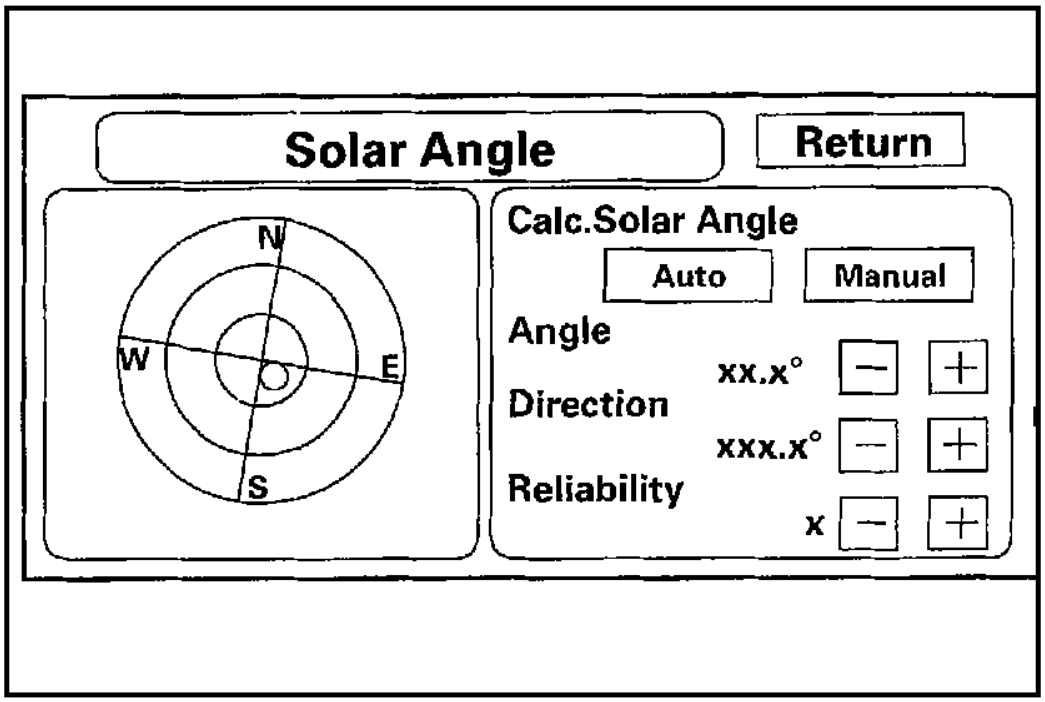
Solar Angle

NOTE: This model does not use this feature.

This screen is used to graphically display the sun's position as determined by GPS. The Navi System uses the sun's angle, along with the sunlight sensor to control the driver/passenger A/C air flow. The heat that must be removed by the A/C unit varies, depending on the angle of the sun entering the vehicle. This screen is for factory use only, and should not be adjusted.

- The screen shows a circular diagram of the sky oriented in the direction that the vehicle is pointing. During daylight hours a red dot is shown, representing the direction and elevation of the sun. The outer circle represents the horizon (0 degrees elevation). The middle circle is 30 degrees, the center circle is 60 degrees, and the very center is directly overhead (90 degrees).
- The "Auto button" should always be on (yellow).
- The "Angle", "Dir", and "Reliability" settings are used by the factory to simulate the sun's position for debugging this function.

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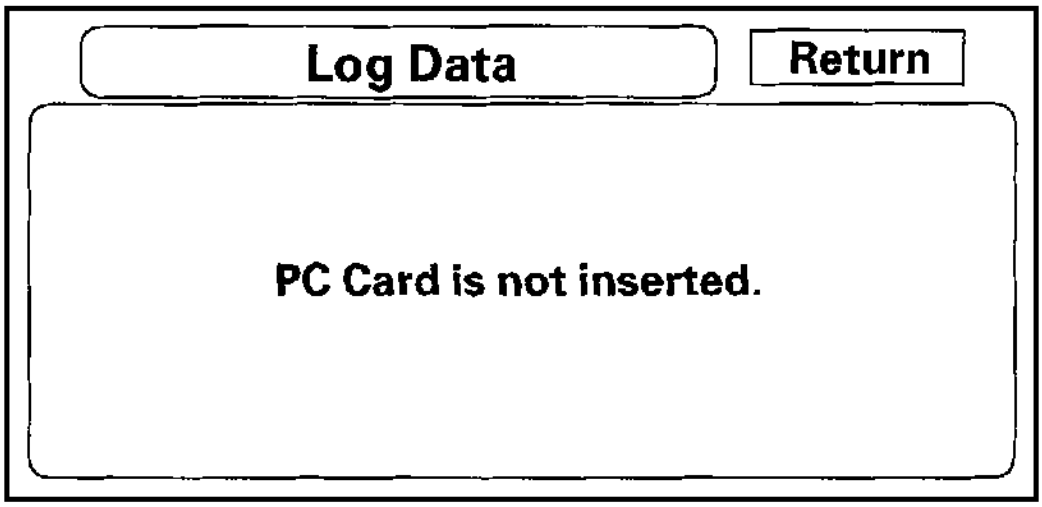
Fig. 87: Solar Angle Display

Log Data

This screen allows the factory to select log data to troubleshoot navigation system issues.

- Normally there is no card in the "PC Card Slot", and, the PC slot door should always be closed. The screen should look like below.

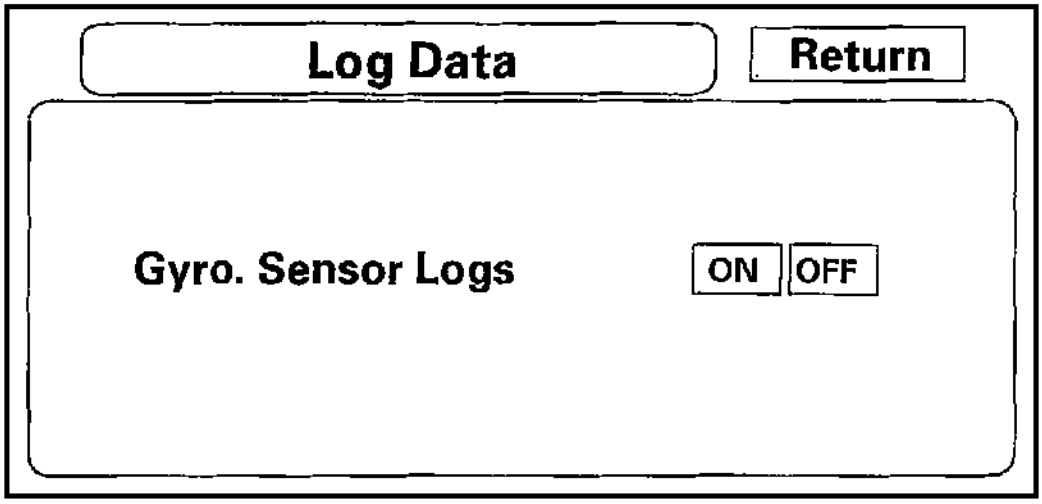
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Fig. 88: Log Data Display (PC Card Not Inserted)

- However, if the factory instructs you to insert a PC Card, insert it into the card slot (label side up), and then slide the PC Card door shut. If instructed by the factory, touch the "Gyro. Sensor Logs ON" button on the screen. Follow the factory procedure for gathering test data, and properly ending the test.



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Fig. 89: Log Data Display (PC Card Inserted)

GPS Offset Time

This screen is for factory use only. It allows adjustment of the GPS time. This display updates in real time.

- "GPS Time" is the time as received from the GPS satellites. It is in Greenwich Mean Time (GMT).
- "System Time" is the internal time used by the navigation unit to calculate your position on the map. It is also in Greenwich Mean Time (GMT).
- "Display Time" is the time shown on Setup screen 2 "Adjust Time Zone/Clock", and reflects any changes due to daylight savings time or time adjustments entered by the customer.
- Date, Hour, Minute, and "Set" buttons should not be used.

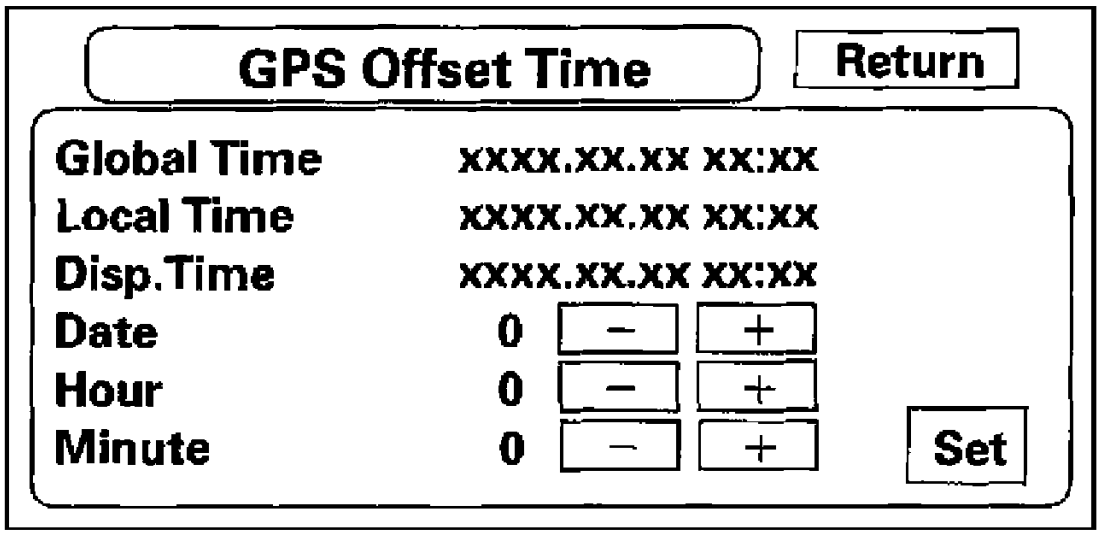


Fig. 90: GPS Offset Time Display

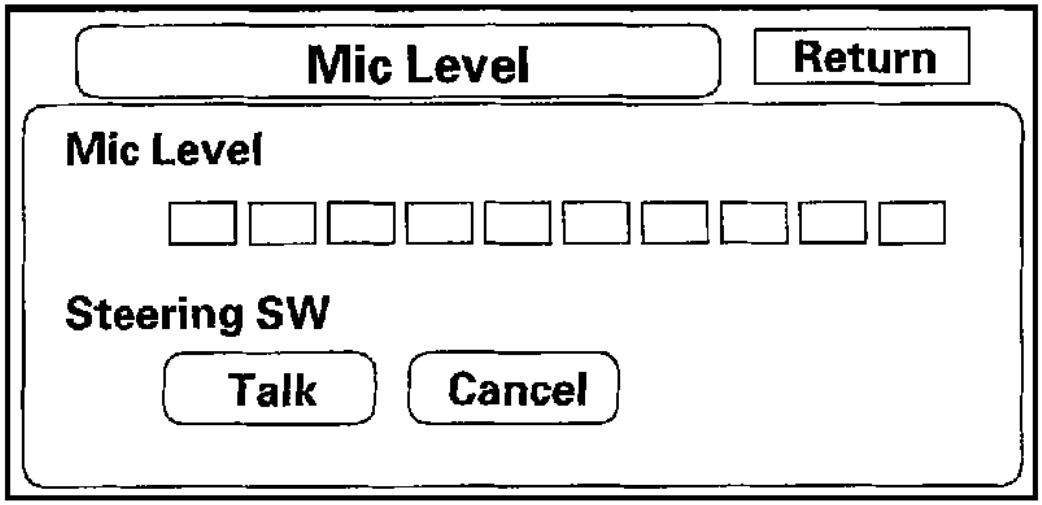
Mic Level

This diagnostic allows you to independently test the microphone and steering wheel TALK, and BACK buttons. The microphone and steering wheel buttons are used to activate the voice control system. The microphone is located near the map light in the ceiling. It is directional, and works best if the voice is coming from the drivers seat.

- Push the TALK button on the steering wheel, and in a normal voice say "testing". The TALK indicator on the screen should momentarily become green, and the text "Now Recording..." should appear in yellow. In addition, the Mic Level indicator should on the screen does not briefly become green, then check the wiring from the steering wheel talk button to the navigation unit. If there is no "Mic Level" movement when you speak, then you should check the wire running from the microphone to the control unit.
- Push the BACK button on the steering wheel. This should cause the Cancel indicator on the screen to momentarily become green. If it does not briefly change to green, then check the wiring from the steering

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wheel BACK button to the navigation unit.



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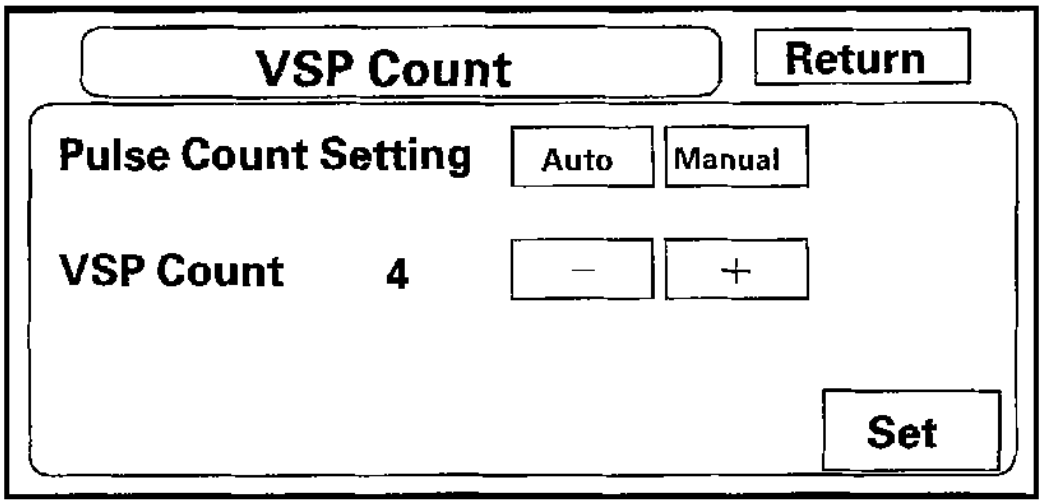
Fig. 91: Mic Level Display

VSP Count

This screen displays the number of pulses per revolution of the tire. This is for factory use only, and should not be changed.

- "Pulse Count Setting" should always be set to "Auto".
- "VSP Count" should always be "4", and should never be adjusted or set to any other value.

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G01821300

Fig. 92: VSP Count Display

H/U Time Send

This screen determines whether to automatically send the navigation time to the audio-HVAC subdisplay. The audio-HVAC display panel connector C (10P) passes this information to the audio-HVAC subdisplay. The navigation time can be found in the Setup screen 2 "Adjust Time Zone/Clock" setting.

- "H/U Time Send" should always be set to "ON".

NOTE: Touching "Reset" on the Adjust Time Zone/Clock screen automatically resets this diagnostic function to "ON".

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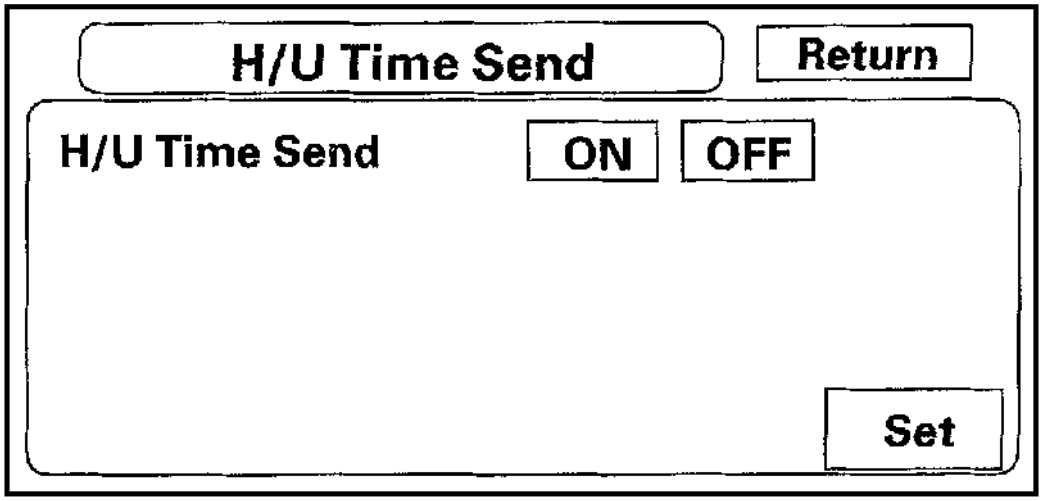


Fig. 93: H/U Time Send Display

Demonstration

This screen is for factory use only, and should always be set to "OFF". Occasionally this setting is turned "ON" when vehicles are being used at Auto Shows or similar events. Turning this feature on, allows the navigation system to automatically follow a route to a destination when the vehicle is stationary.

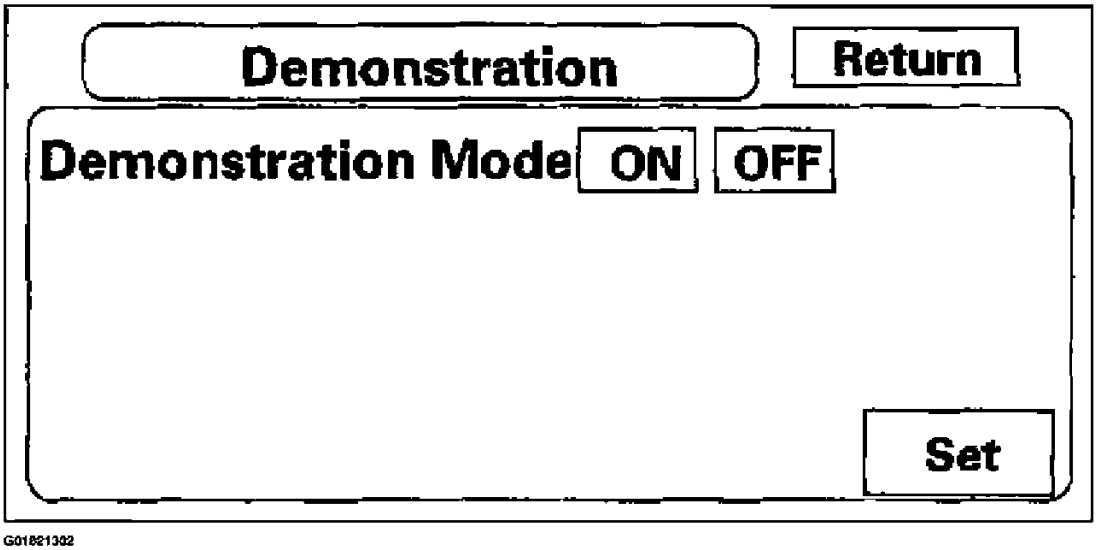


Fig. 94: Demonstration Display

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Version

This screen displays the current version of the program, and allows the loading of a new version of the program either from a CD/DVD or from a PC card.

The D-Ram Program version should always be greater than or equal to the Disc Program version. The mapped database version is the date of the database on the DVD.

The Model code is 22H, and is for factory use only. This code is stored on a chip in the navigation unit. Therefore, every model has a unique part number for the navigation unit.

Do not use either of the load buttons, unless instructed to do so by the factory.

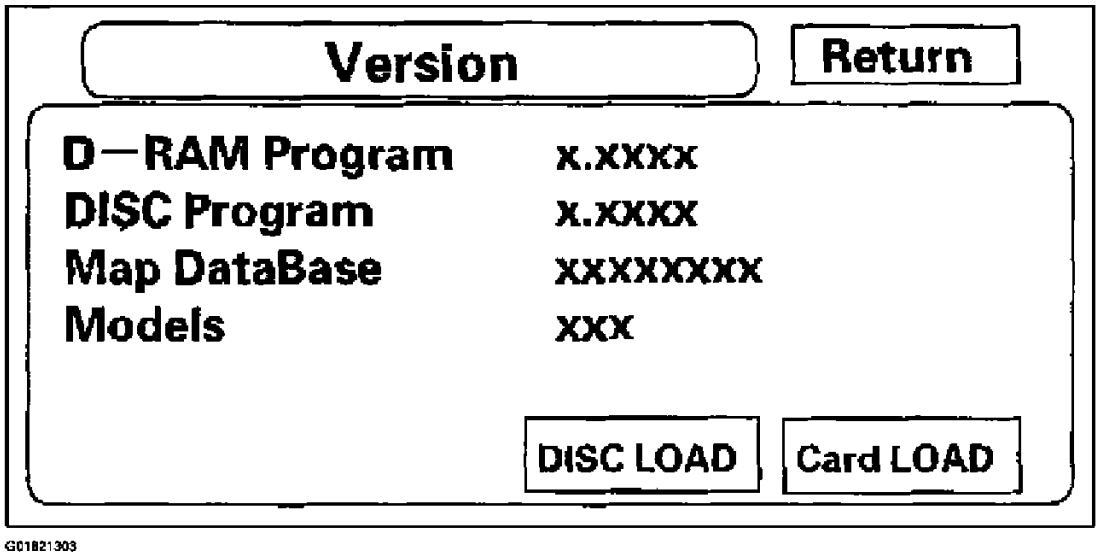


Fig. 95: Version Display

FORCED STARTING OF DISPLAY

1. Connect the SCS service connector (A) to the navigation service check connector (B) located behind the navigation unit.

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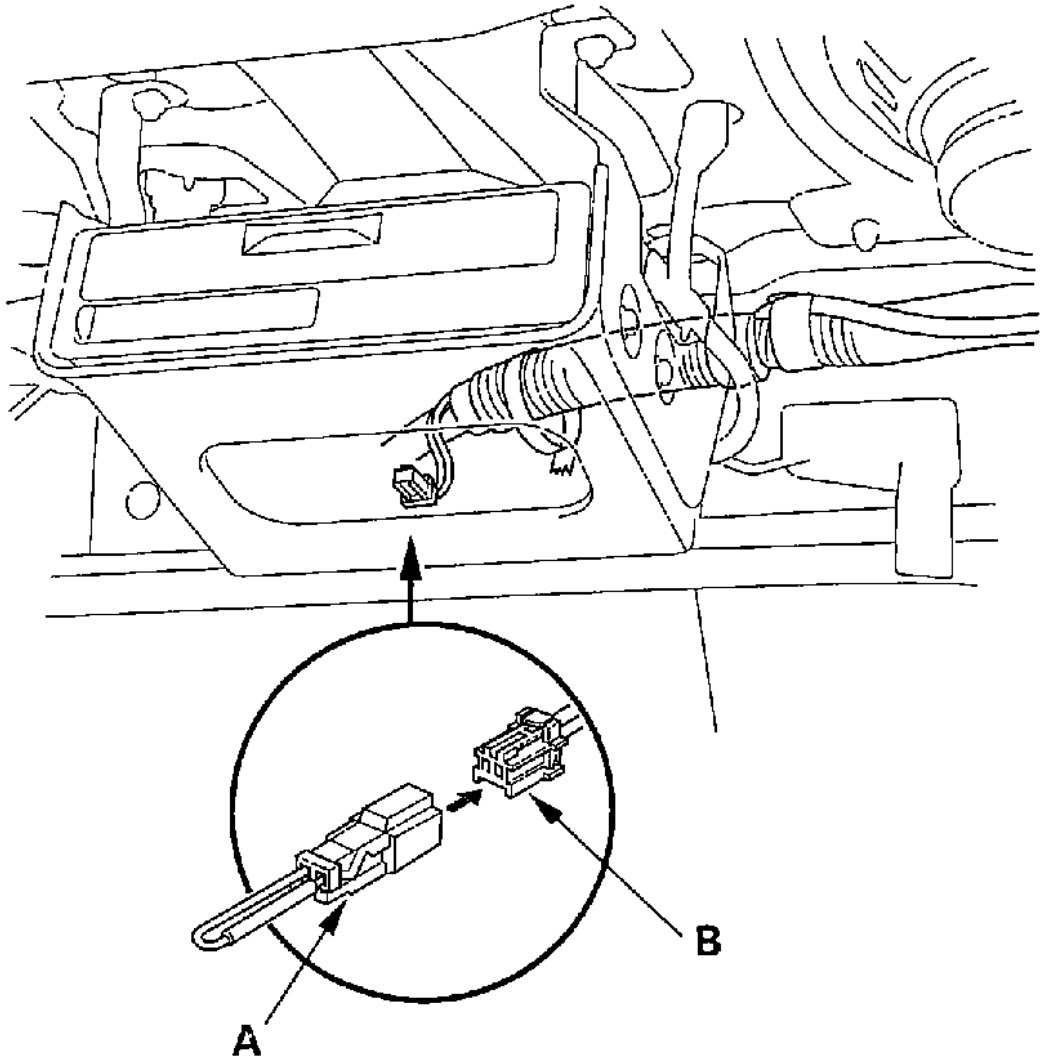


Fig. 96: Connecting The SCS Service Connector To The Navigation Service Check Connector Located Behind The Navigation Unit

2. Check that the diagnosis menu for the picture diagnosis starts up and then changes to the system link menu.

NOTE: If the display fails to the system link screen is not displayed, refer to no picture is displayed (see NO PICTURE IS DISPLAYED).

DVD-ROM REPLACEMENT

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NOTE: When the DVD-ROM is re-inserted or replaced, a map match must be done (see AFTER SERVICING-MAP MATCHING).

1. Turn the ignition switch ON (II).
2. Open the front cover (A) of the navigation unit (B) located trunk room.

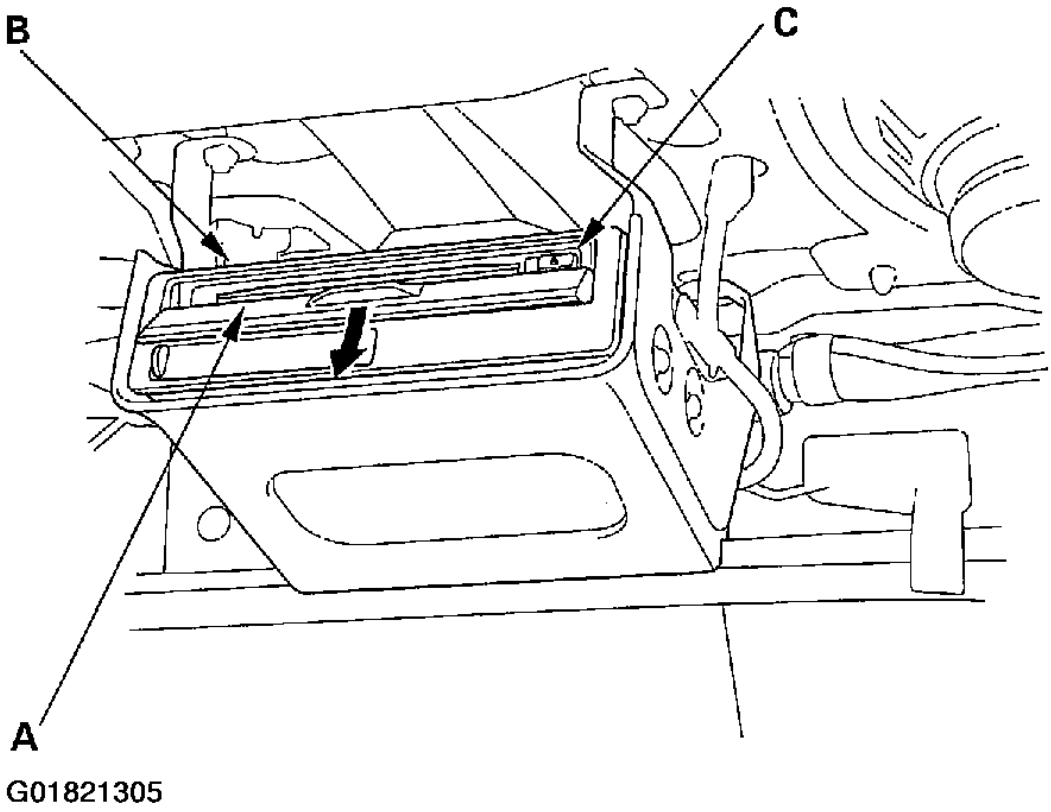


Fig. 97: Opening The Front Cover Of The Navigation Unit Located Trunk Room

3. Press the EJECT button (C).
4. Remove the DVD-ROM.
5. Insert the new DVD-ROM.
6. Close the front cover. Do not turn the ignition switch OFF, until data is down loaded to navigation unit.

NOTE: After servicing, the front cover must be closed. If you start up the navigation system with the front cover open, the display will indicate. "Navigation unit door is open or No DVD Disk installed. Please check system".

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NAVIGATION UNIT REMOVAL/INSTALLATION

1. Remove the four screws (A) from the bracket (B) located the trunk room.

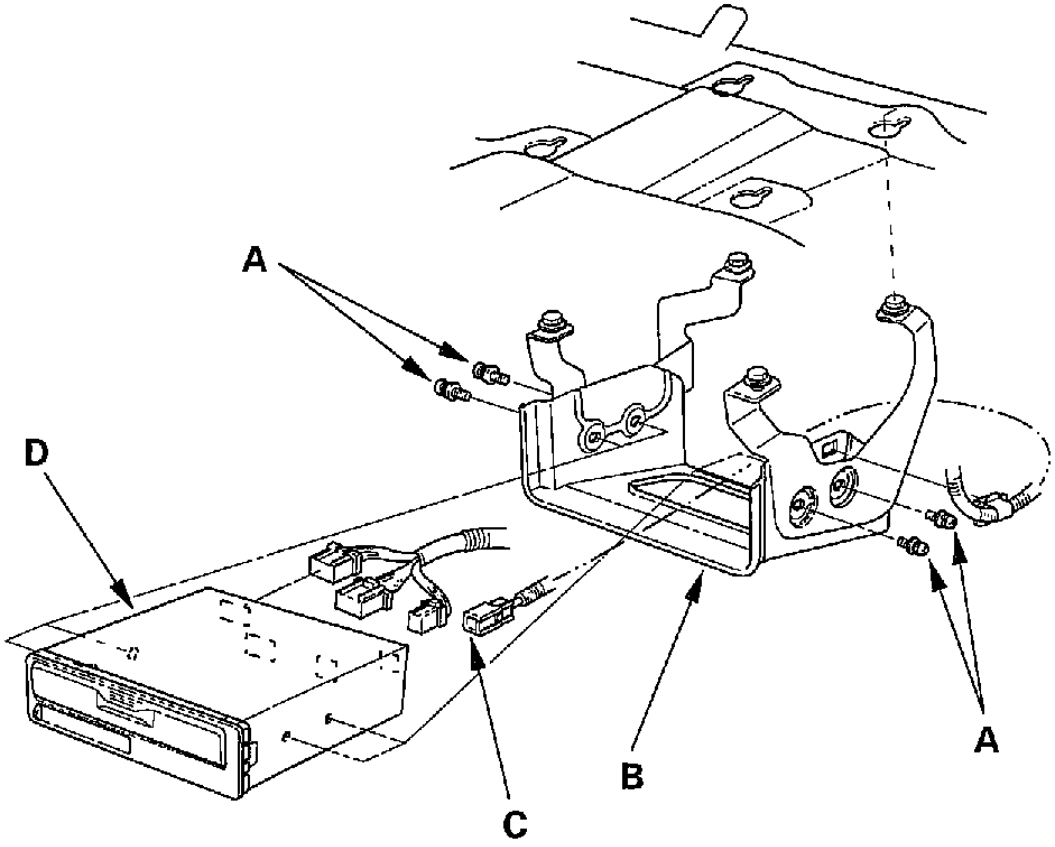


Fig. 98: Remove The Four Screws From The Bracket Located The Trunk Room

2. Disconnect the navigation unit connectors (C).
3. Remove the navigation unit (D).
4. Install in the reverse order of removal.

GPS ANTENNA REMOVAL/INSTALLATION

1. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).
2. Disconnect the GPS antenna connector (A).

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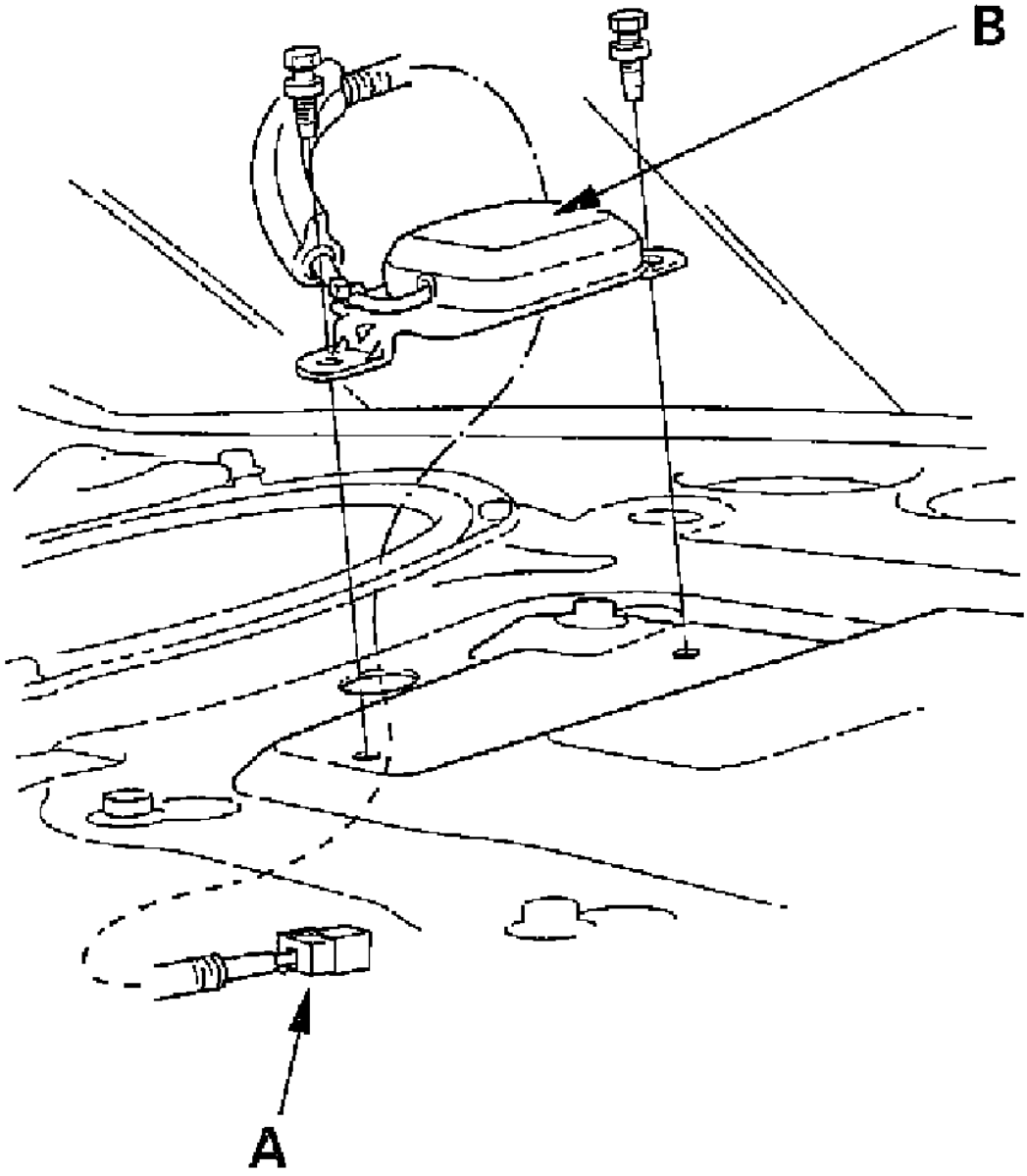


Fig. 99: Removing The GPS Antenna

3. Remove the GPS antenna (B).
4. Install in the reverse order of removal.

VOICE CONTROL SWITCH REMOVAL/INSTALLATION

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1. Remove the voice control switch cover (A) from left side of the steering wheel.

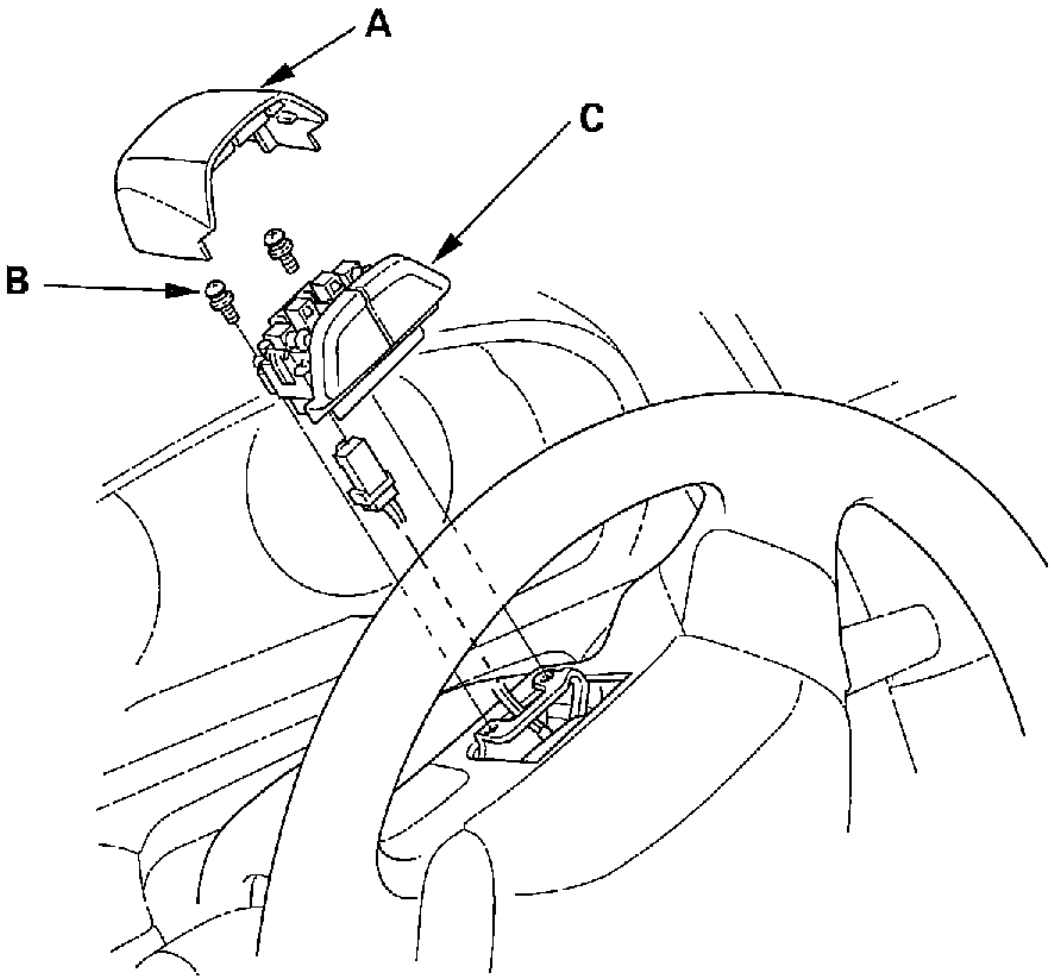


Fig. 100: Removing The Voice Control Switch

2. Remove the two screws (B) from the voice control switch (C), then remove the voice control switch.
3. Disconnect the voice control switch connector.
4. Install in the reverse order of removal.

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2004 ENGINE PERFORMANCE

PGM-FI System - TSX

COMPONENT LOCATION INDEX

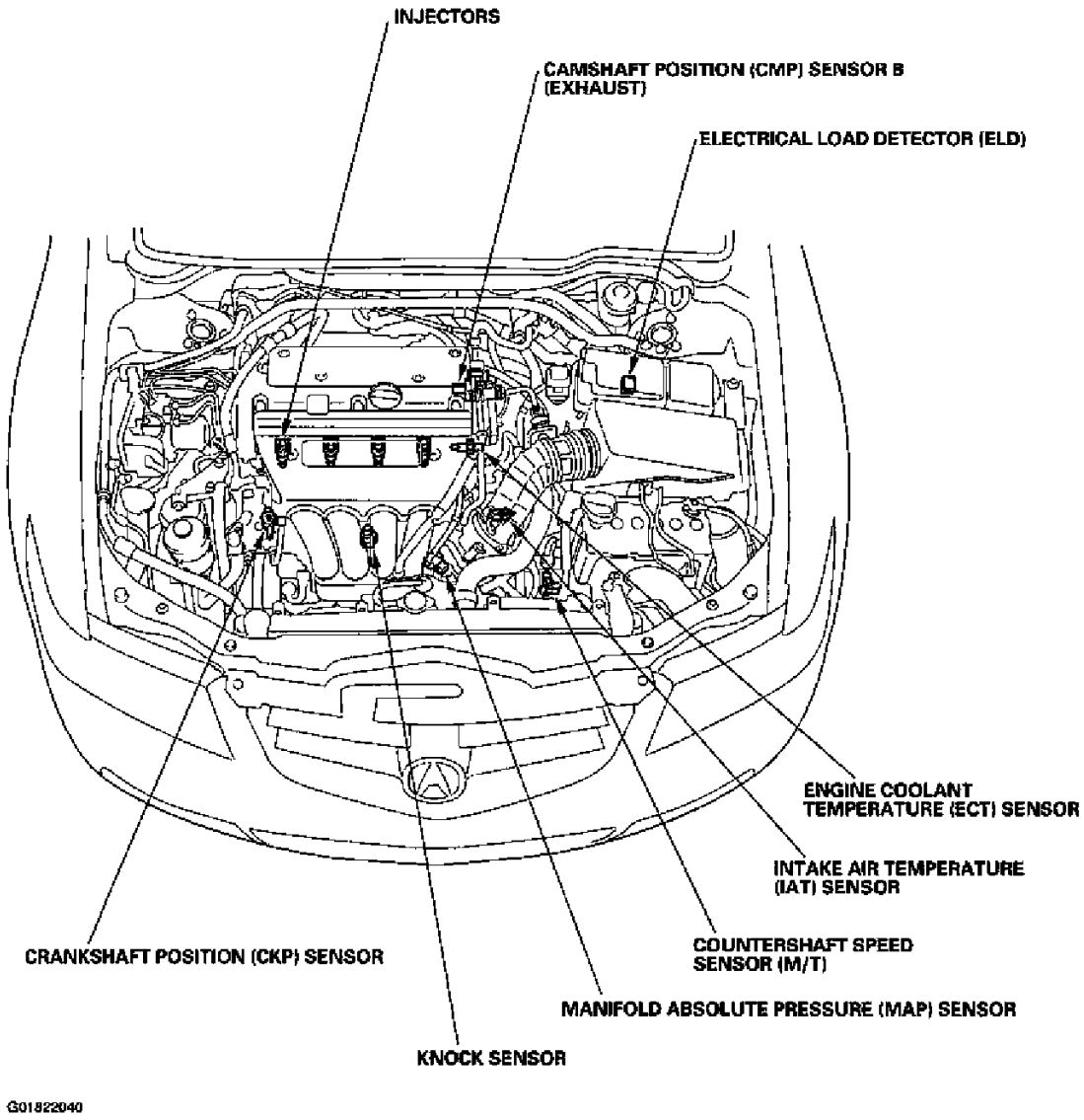


Fig. 1: Locating PGM-FI System Components (1 Of 3)

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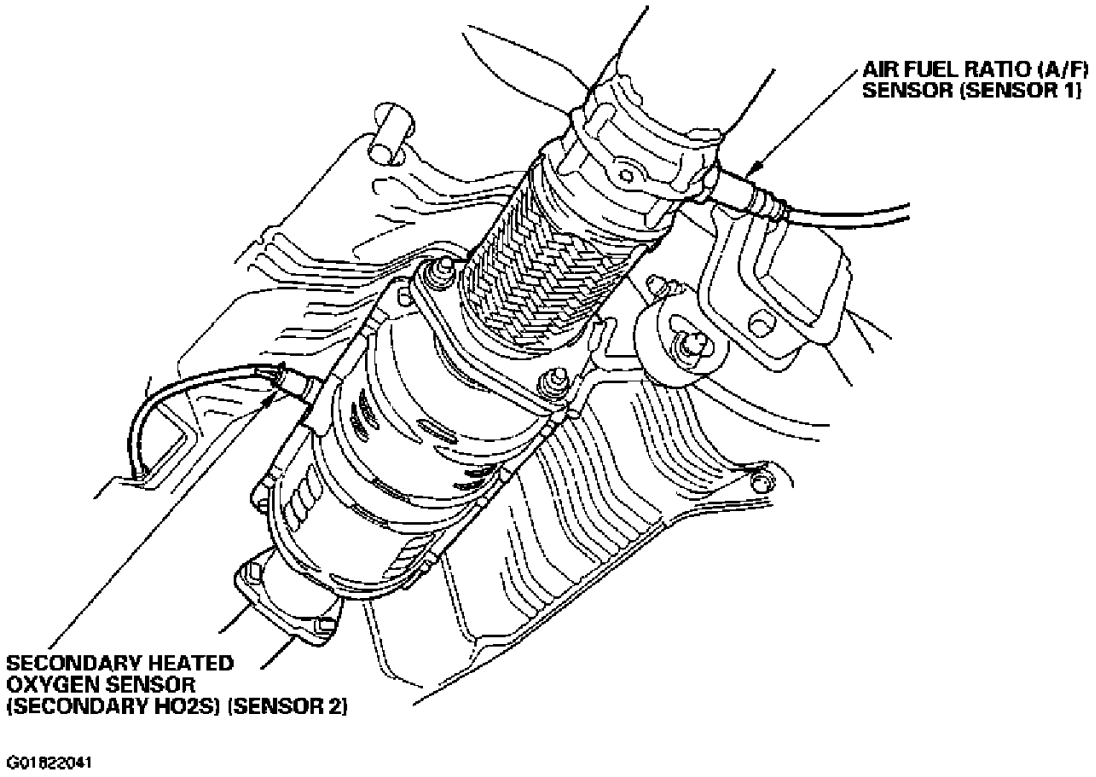


Fig. 2: Locating PGM-FI System Components (2 Of 3)

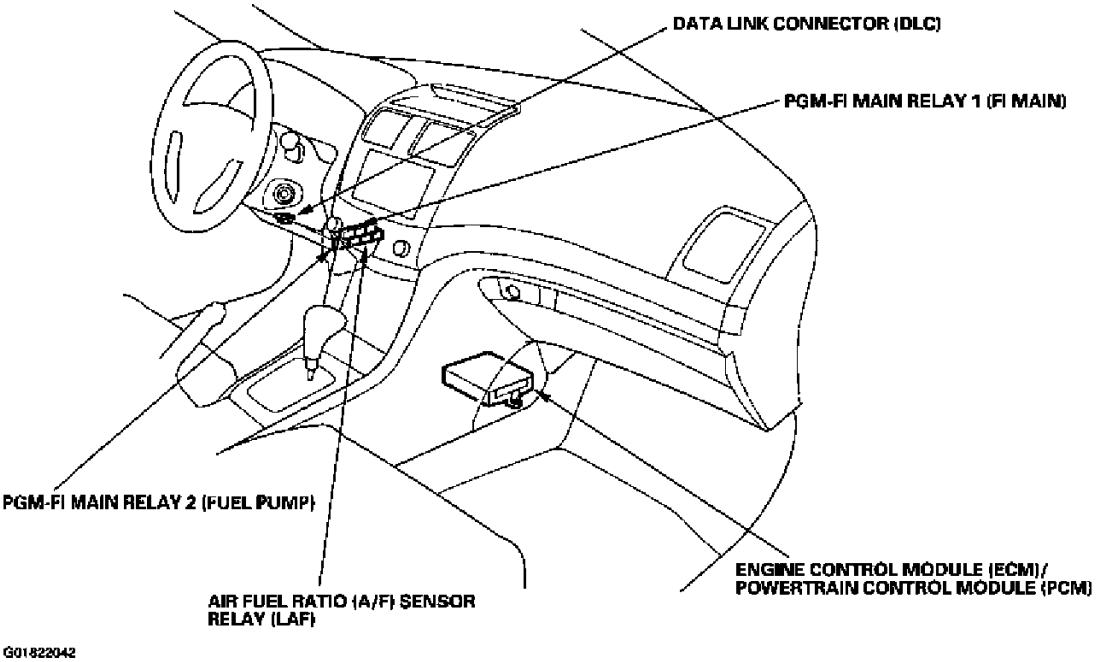


Fig. 3: Locating PGM-FI System Components (3 Of 3)

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DTC TROUBLESHOOTING

DTC TROUBLESHOOTING INDEX

DTC	Description
DTC P0107	MAP Sensor Circuit Low Voltage
DTC P0108	MAP Sensor Circuit High Voltage
DTC P1128	MAP Sensor Signal Lower Than Expected
DTC P1129	MAP Sensor Signal Higher Than Expected
DTC P0112	IAT Sensor Circuit Low Voltage
DTC P0113	IAT Sensor Circuit High Voltage
DTC P0116	ECT Sensor Circuit Range/Performance Problem
DTC P0117	ECT Sensor Circuit Low Voltage
DTC P0118	ECT Sensor Circuit High Voltage
DTC P0125	ECT Sensor Malfunction/Slow Response
DTC P0128	Cooling System Malfunction
DTC P0133	A/F Sensor (Sensor 1) Response Malfunction/Slow Response in Circuit
DTC P0134	A/F Sensor (Sensor 1) Heater System Malfunction
DTC P0135	A/F Sensor (Sensor 1) Heater Circuit Malfunction
DTC P1157	A/F Sensor (Sensor 1) AFS Line High Voltage
DTC P2195	A/F Sensor (Sensor 1) Signal Stuck Lean
DTC P2238	A/F Sensor (Sensor 1) AFS+ Line Low Voltage
DTC P2252	A/F Sensor (Sensor 1) AFS- Line Low Voltage
DTC P2A00	A/F Sensor (Sensor 1) Range/Performance Problem
DTC P0137	Secondary HO2S (Sensor 2) Circuit Low Voltage

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DTC P0138	Secondary HO2S (Sensor 2) Circuit High Voltage
DTC P0139	Slow Response in Secondary HO2S (Sensor 2) Circuit
DTC P0141	Secondary HO2S (Sensor 2) Heater Circuit Malfunction
DTC P0171	Fuel System Too Lean
DTC P0172	Fuel System Too Rich
DTC P0300	Random Misfire and Any Combination of the Following: DTC P0301: No. 1 Cylinder Misfire; DTC P0302: No. 2 Cylinder Misfire; DTC P0303: No. 3 Cylinder Misfire; DTC P0304: No. 4 Cylinder Misfire
DTC P0301	No. 1 Cylinder Misfire
DTC P0302	No. 2 Cylinder Misfire
DTC P0303	No. 3 Cylinder Misfire
DTC P0304	No. 4 Cylinder Misfire
DTC P0325	Knock Sensor Circuit Malfunction
DTC P0335	CKP Sensor No Signal
DTC P0339	CKP Sensor Intermittent Interruption
DTC P0365	CMP Sensor B No Signal
DTC P0369	CMP Sensor B Intermittent Interruption
DTC P0563	ECM/PCM Power Source Circuit Unexpected Voltage
DTC P0603	ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error
DTC P0606	ECM/PCM Processer Malfunction
DTC P0685	ECM/PCM Power Control Circuit Malfunction
DTC P0720	Countershaft Speed Sensor Circuit Malfunction
DTC P1297	ELD Circuit Low Voltage
DTC	ELD Circuit High Voltage

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P1298	
DTC P2227	BARO Sensor Range/Performance Problem
DTC P2228	BARO Sensor Circuit Low Voltage
DTC P2229	BARO Sensor Circuit High Voltage
DTC U0073	FCAN Malfunction (Bus-Off)
DTC U0122	FCAN Malfunction (VSA - ECM/PCM)
DTC U0155	FCAN Malfunction (Gauge Control Module - ECM/PCM)

DTC P0107: MAP SENSOR CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (26 mm Hg, 1.0 in. Hg), or 0.23 V or less indicated?

   YES: Go to step 3.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM.
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (26 mm Hg, 1.0 in. Hg), or 0.23 V or less indicated?

   YES: Go to step 9 .

   NO: Go to step 7.
7. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

   Is there about 5 V?

   YES: Go to step 13 .

   NO: Go to step 8.

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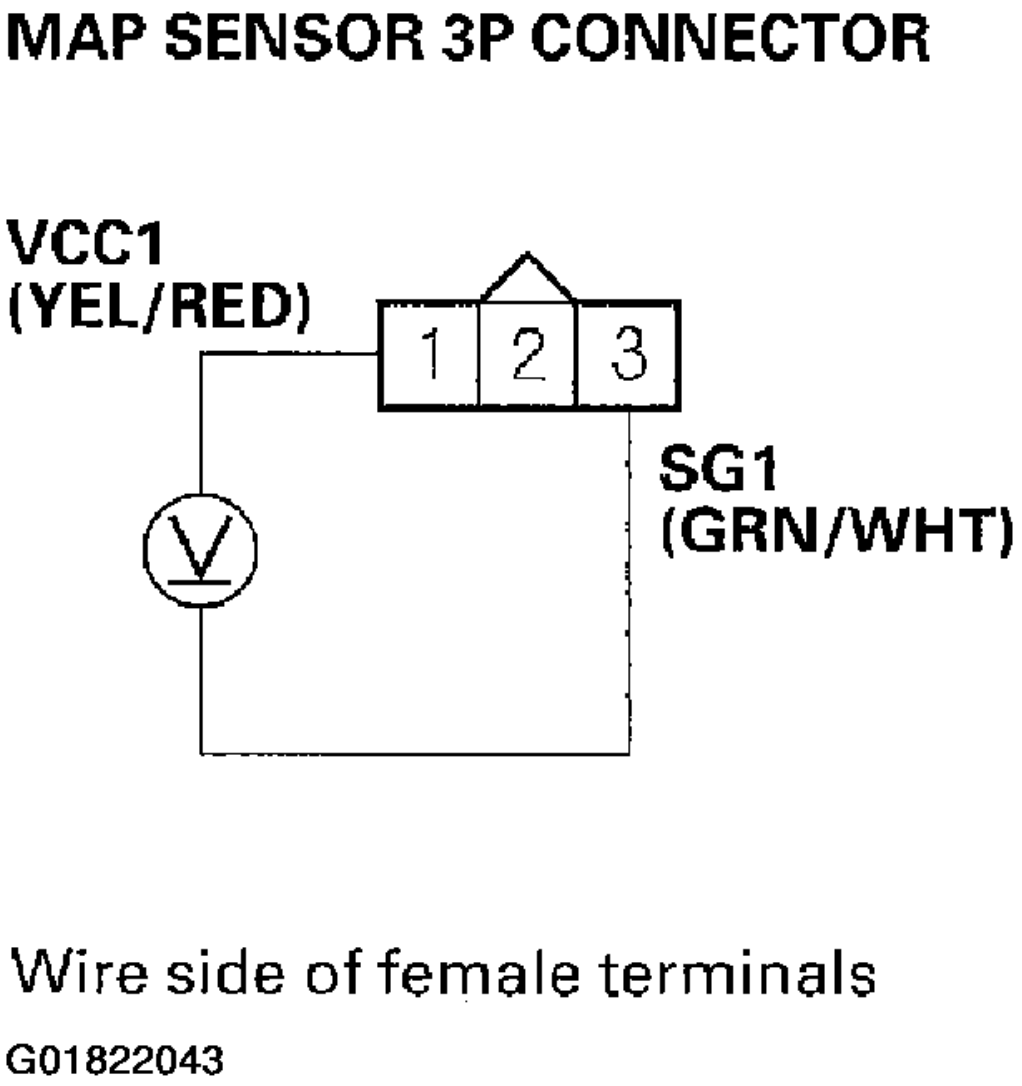


Fig. 4: Measuring Voltage Between MAP Sensor 3P Connector Terminals No. 1 & No. 3

8. Measure voltage between ECM/PCM connector terminals A21 and A24.

   Is there about 5 V?

   YES: Repair open in the wire between the ECM/PCM (A21) and the MAP sensor, then go to step 15 .

   NO: Go to step 19 .

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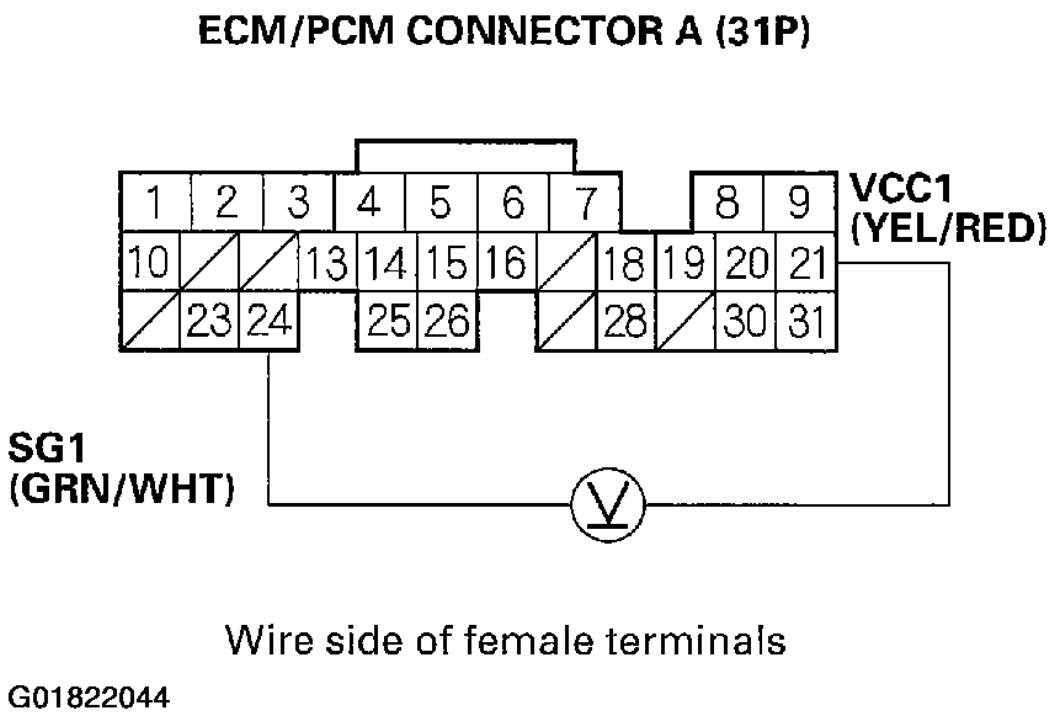


Fig. 5: Measuring Voltage Between ECM/PCM Connector Terminals A21 & A24

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (31P).
12. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (A30) and the MAP sensor, then go to step 15 .

NO: Go to step 19 .

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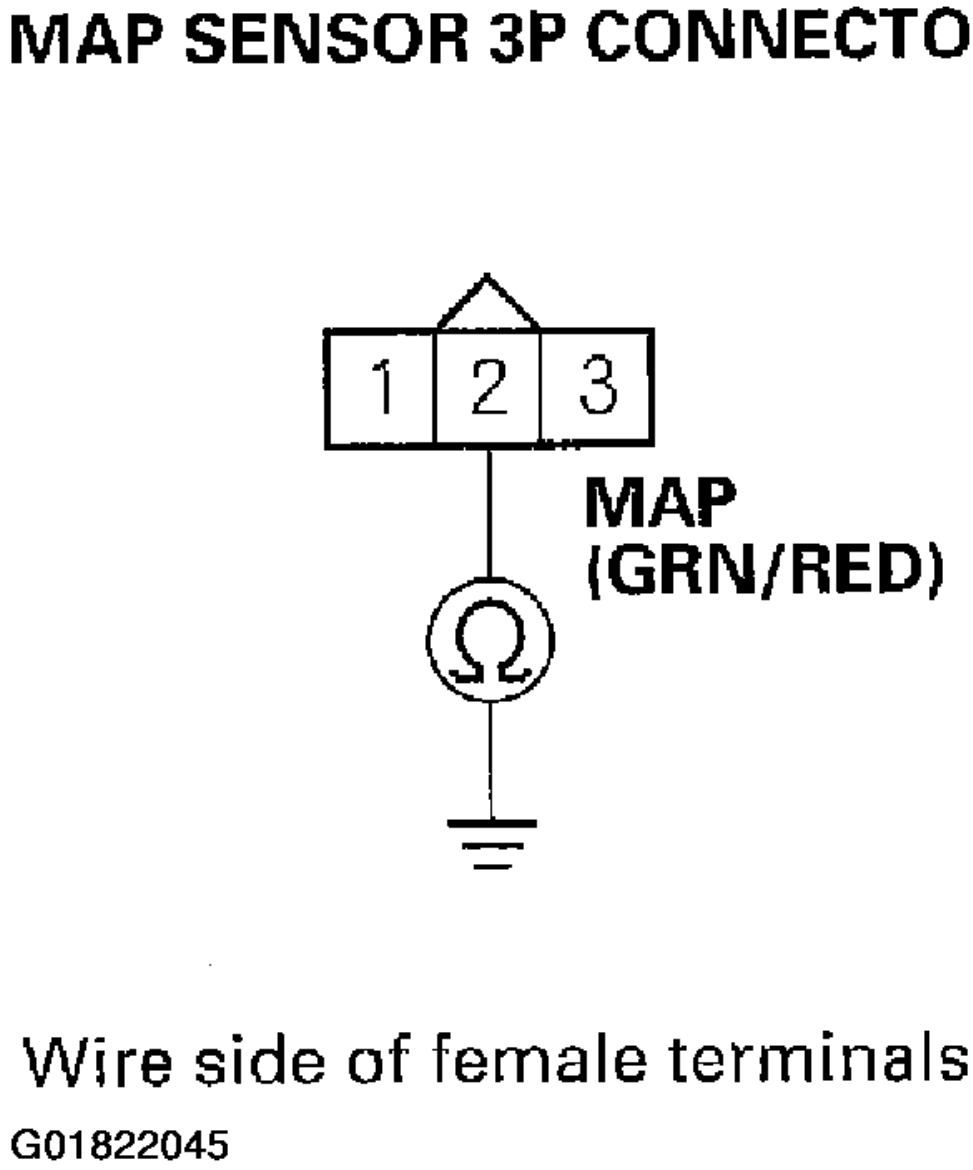


Fig. 6: Checking For Continuity Between MAP Sensor 3P Connector Terminal No. 2 & Body Ground

13. Turn the ignition switch OFF.
14. Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.

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17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0107 is indicated, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.
19. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0107 is indicated, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0108: MAP SENSOR CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (1,197 mm Hg, 47.1 in. Hg), 4.49 V or more indicated?

   YES: Go to step 3.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM.
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

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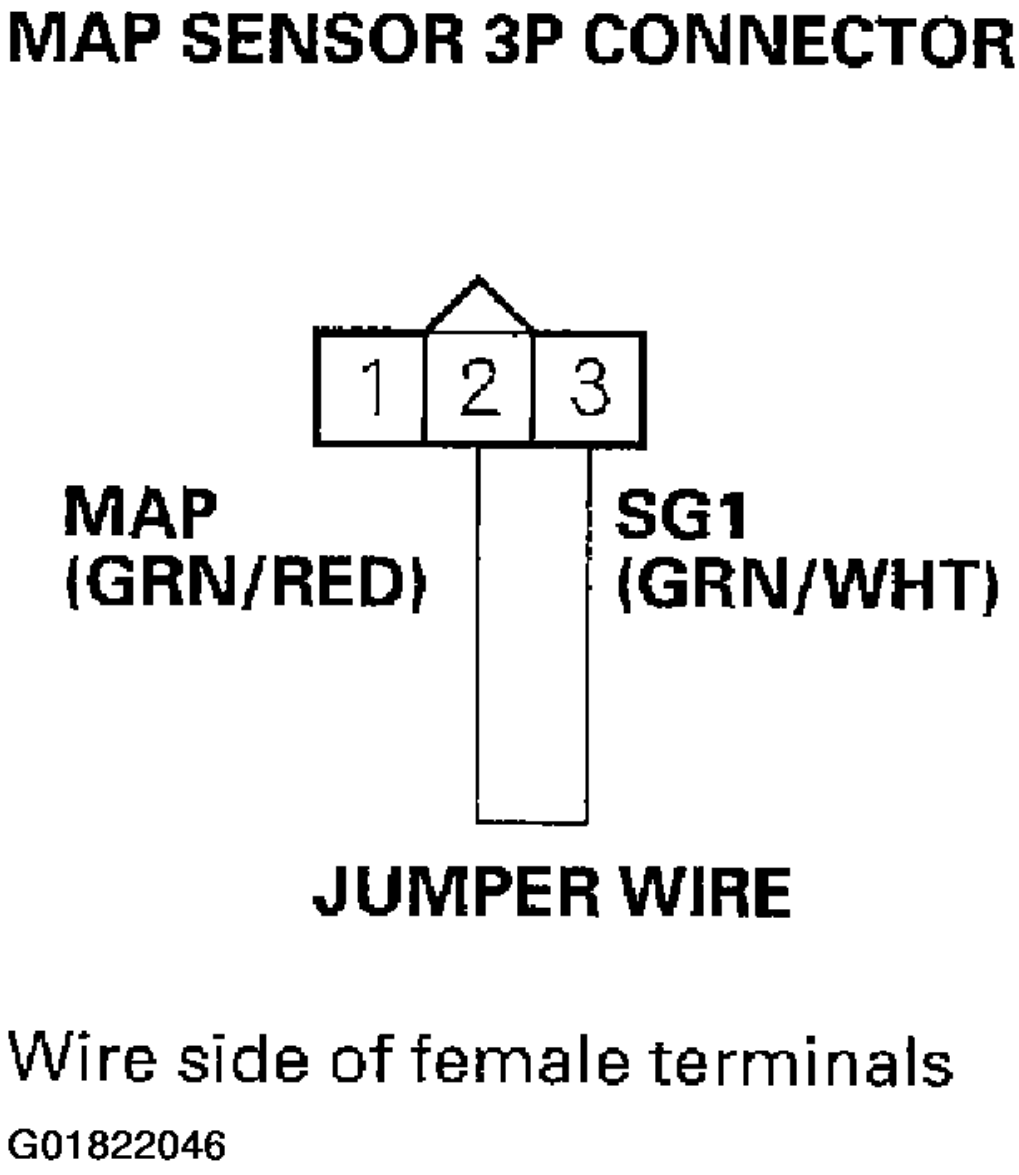


Fig. 7: Connecting MAP Sensor 3P Connector Terminals No. 2 & No. 3 With A Jumper Wire

6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (1,197 mm Hg, 47.1 in. Hg), 4.49 V or more indicated?

YES: Go to step 8.

NO: Go to step 14 .

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8. Remove the jumper wire.
9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

Is there about 5 V?

YES: Go to step 10.

NO: Repair open in the wire between the ECM/PCM (A24) and the MAP sensor, then go to step 16 .

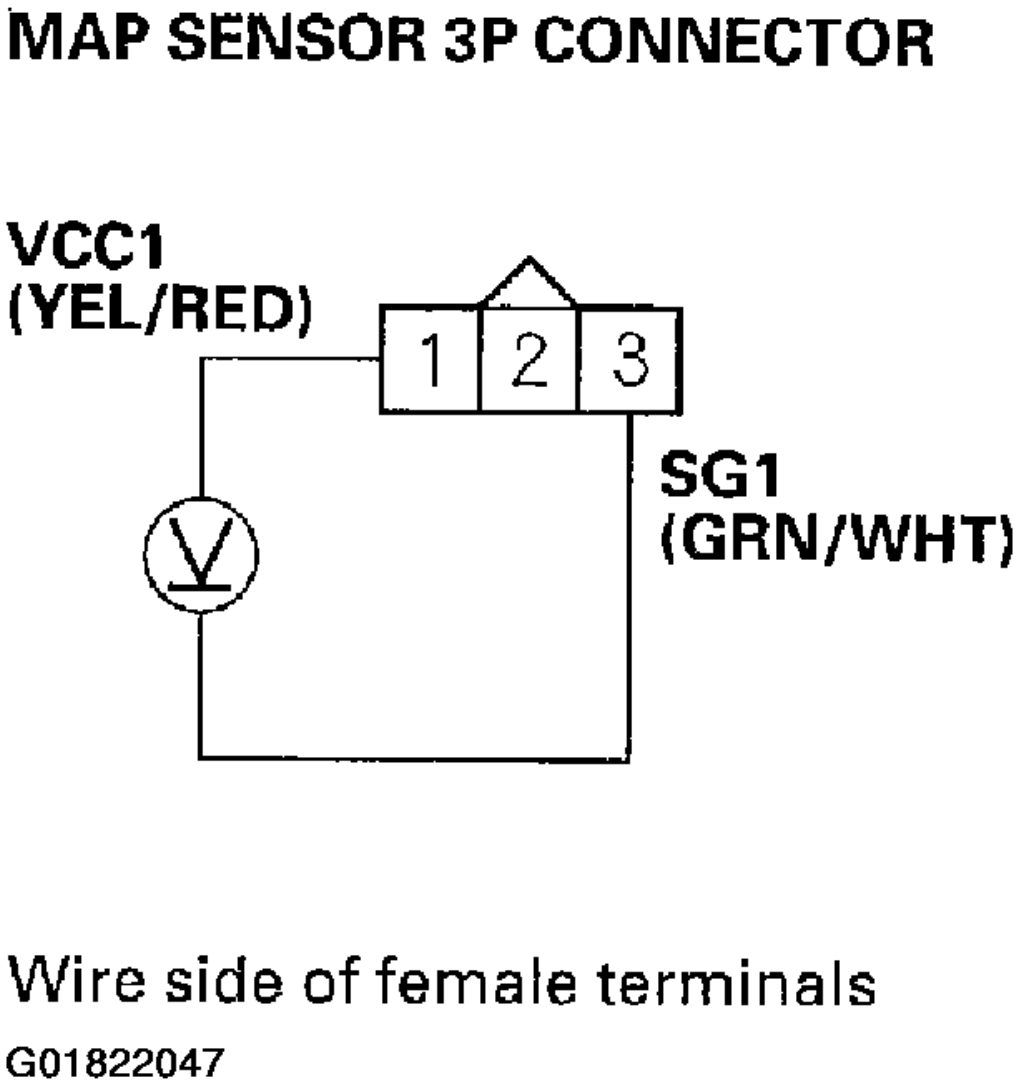


Fig. 8: Measuring Voltage Between MAP Sensor 3P Connector Terminals No. 1 & No. 3

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10. Turn the ignition switch OFF.
11. Connect ECM/PCM connector terminals A30 and A24 with a jumper wire.

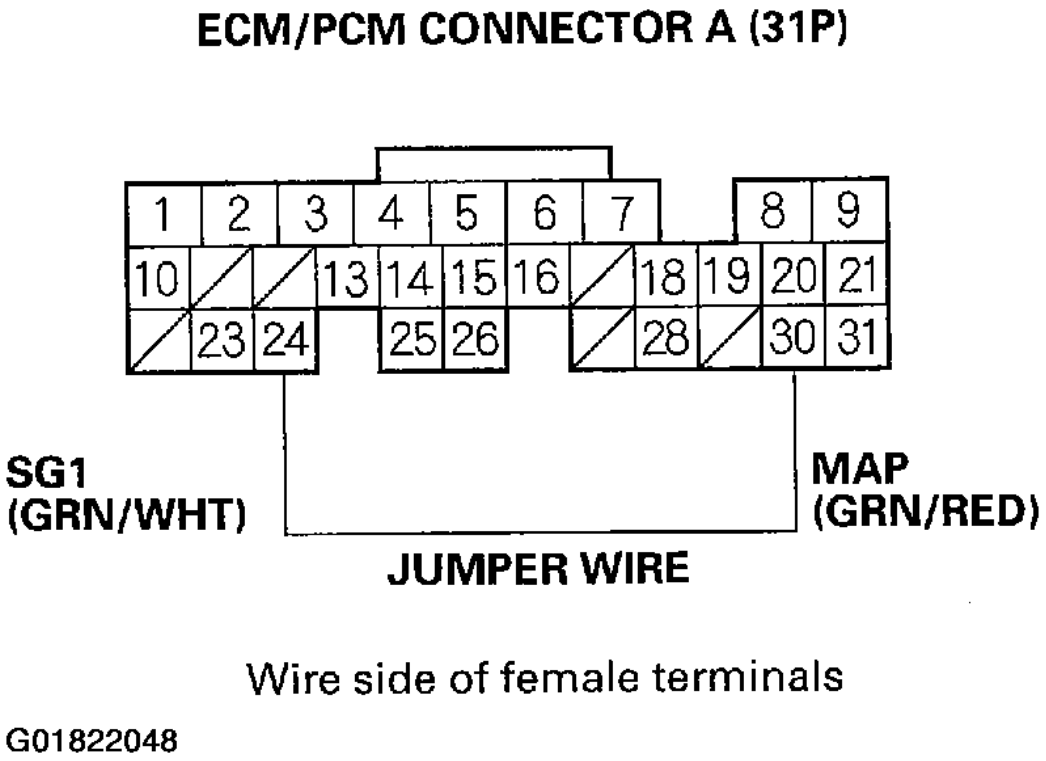


Fig. 9: Connecting ECM/PCM Connector Terminals A30 & A24 With A Jumper Wire

12. Turn the ignition switch ON (II).
13. Check the MAP SENSOR in the DATA LIST with the HDS.

    Is about 160 kPa (1,197 mm Hg, 47.1 in. Hg), 4.49 V or more indicated?

    YES: Go to step 20 .

    NO: Repair open in the wire between the ECM/PCM (A30) and the MAP sensor, then go to step 16 .
14. Turn the ignition switch OFF.
15. Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).
16. Turn the ignition switch ON (II).
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

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YES: If DTC P0108 is indicated, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

20. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0108 is indicated, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P1128: MAP SENSOR SIGNAL LOWER THAN EXPECTED

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is less than 54.1 kPa (406 mm Hg, 16.0 in. Hg) or 1.61 V held for more than 5 seconds?

   YES: Go to step 7 .

   NO: Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under the following conditions:
   - Engine coolant temperature more than 158°F (70°C)
   - Engine speed between 1,400 and 6,500 RPM
   - A/T in D position (M/T in 3rd gear)
   - Vehicle speed accelerated from 16 MPH (25 km/h) to 31 MPH (50 km/h) under half throttle
6. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 7.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

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12. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - Engine speed between 1,400 and 6,500 RPM
    - A/T in D position (M/T in 3rd gear)
    - Vehicle speed accelerated from 16 MPH (25 km/h) to 31 MPH (50 km/h) under half throttle
14. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P1128 is indicated, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 15.
15. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 12 and recheck.

DTC P1129: MAP SENSOR SIGNAL HIGHER THAN EXPECTED

1. Check for vacuum leaks in these parts:
    - PCV valve
    - PCV hose
    - EVAP canister purge valve
    - Throttle body
    - Brake booster hose

    Are the parts OK?

    YES: Go to step 2.

    NO: Repair or replace leaking parts, then go to step 9 .
2. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
3. Check the MAP SENSOR in the DATA LIST with the HDS.

    Is more than 36.9 kPa (277 mm Hg, 11.0 in. Hg) or 1.1 V held for more than for 5 seconds?

    YES: Go to step 7 .

    NO: Go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)

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- Engine speed between 1,400 and 6,500 RPM
- A/T in D position (M/T in 5th gear)
- Vehicle speed decelerated from more than 50 MPH (80 km/h) with the throttle fully closed for at least 5 seconds

6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 7.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
12. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - Engine speed between 1,400 and 6,500 RPM
    - A/T in D position (M/T in 5th gear)
    - Vehicle speed decelerated from more than 50 MPH (80 km/h) with the throttle fully closed for at least 5 seconds
14. Check for Temporary DTCs or DTC in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P1129 is indicated, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 15.

15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 12 and recheck.

DTC P0112: IAT SENSOR CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 356°F (180°C) or higher, or 0.08 V or less indicated?

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YES: Go to step 3.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Turn the ignition switch ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about 356°F (180°C) or higher, or 0.08 V or less indicated?

YES: Go to step 7.

NO: Go to step 11 .

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (24P).
10. Check for continuity between IAT sensor 2P connector terminal No. 2 and body ground.

Is there continuity?

YES: Repair short in the wire between the IAT sensor and ECM/PCM (B17), then go to step 13 .

NO: Go to step 17 .

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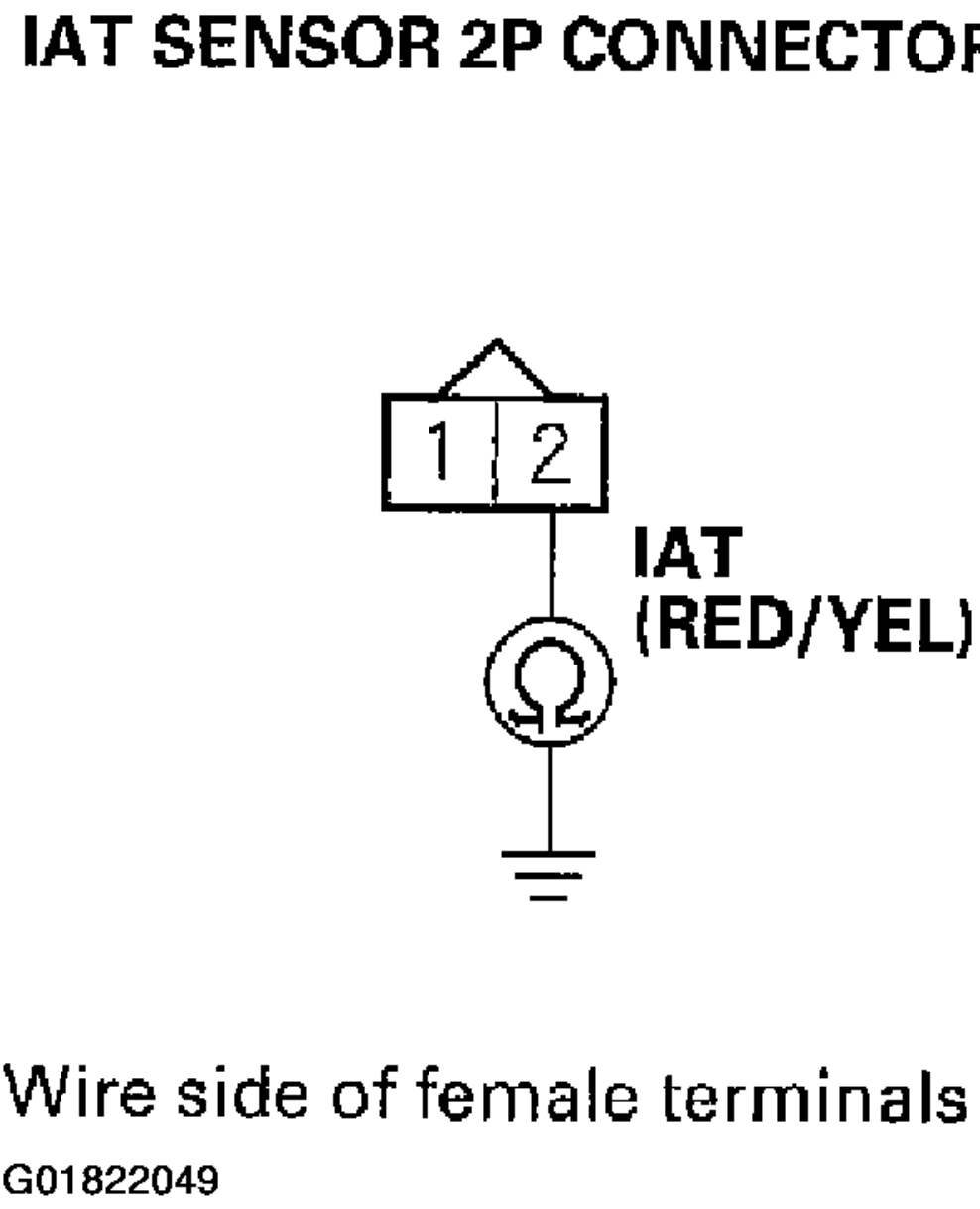


Fig. 10: Checking For Continuity Between IAT Sensor 2P Connector Terminal No. 2 & Body Ground

11. Turn the ignition switch OFF.
12. Replace the IAT sensor (see **IAT SENSOR REPLACEMENT**).
13. Turn the ignition switch ON (II).

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14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0112 is indicated, check for poor connections or loose terminals at the IAT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.
17. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0112 is indicated, check for poor connections or loose terminals at the IAT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0113: IAT SENSOR CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

    Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

    YES: Go to step 3.

    NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM/PCM.
3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Connect IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.
6. Turn the ignition switch ON (II).
7. Check the IAT SENSOR in the DATA LIST with the HDS.

    Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

    YES: Go to step 8.

    NO: Go to step 13 .

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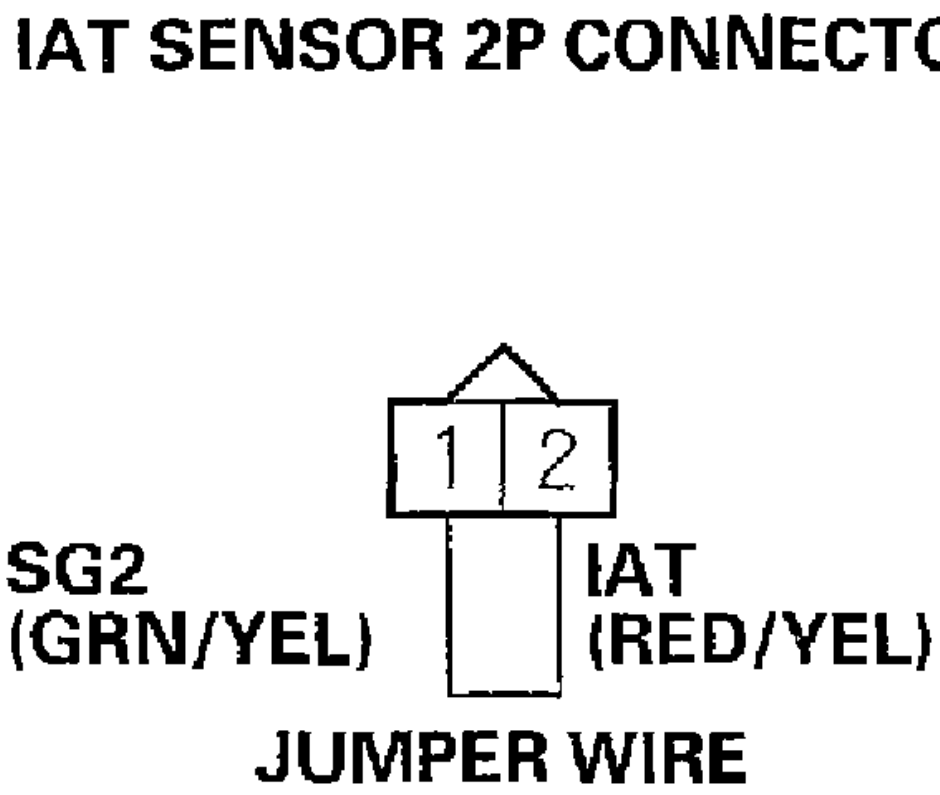


Fig. 11: Connecting IAT Sensor 2P Connector Terminals No. 1 & No. 2 With A Jumper Wire

8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between IAT sensor 2P connector terminal No. 2 and body ground.

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Is there about 5 V?

YES: Repair open in the wire between the ECM/PCM (A23) and the IAT sensor, then go to step 15 .

NO: Go to step 12.

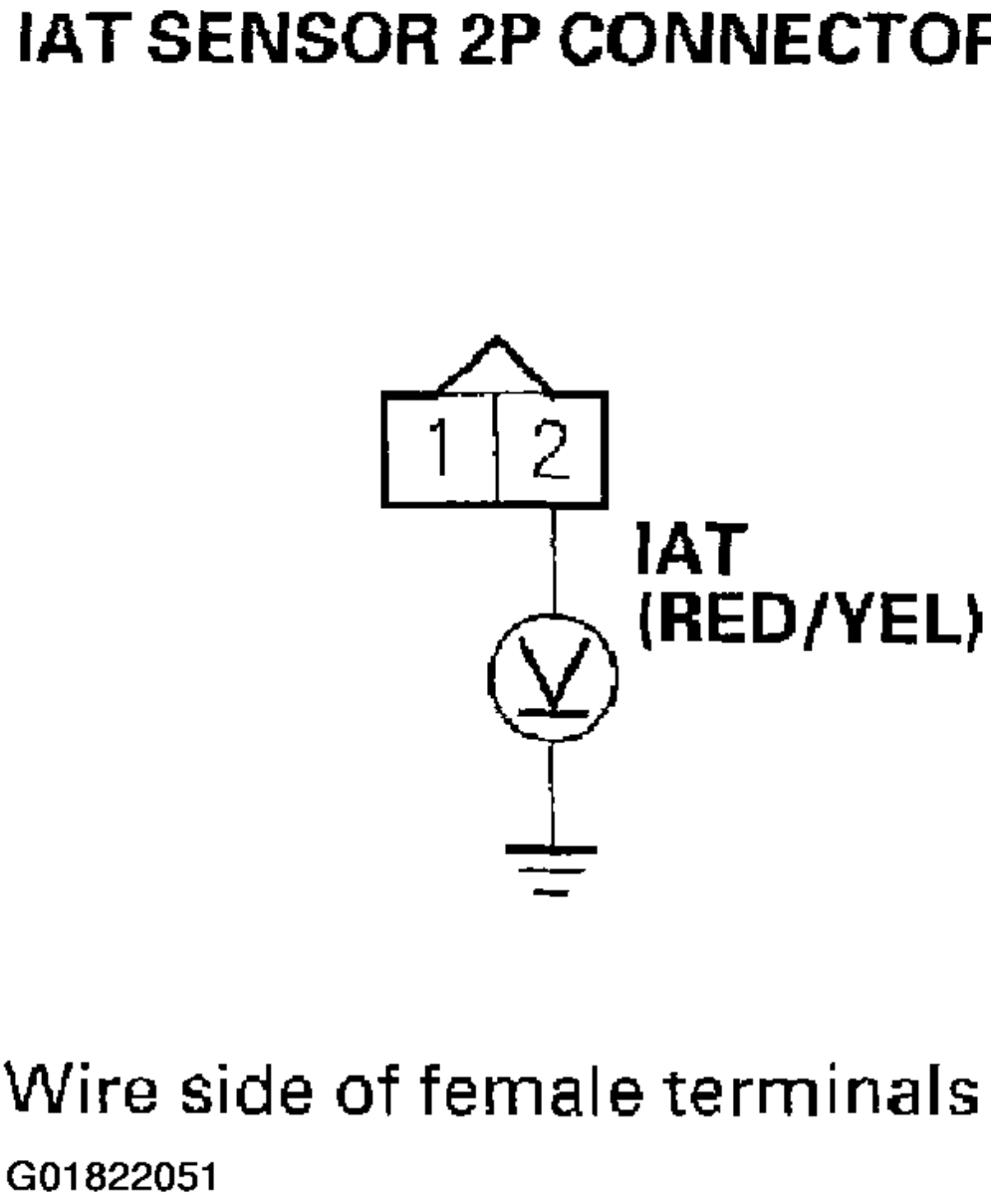


Fig. 12: Measuring Voltage Between IAT Sensor 2P Connector Terminal No. 2 & Body Ground

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12. Measure voltage between ECM/PCM connector terminal B17 and body ground.

Is there about 5 V?

YES: Repair open in the wire between the ECM/PCM (B17) and the IAT sensor, then go to step 15 .

NO: Go to step 19 .

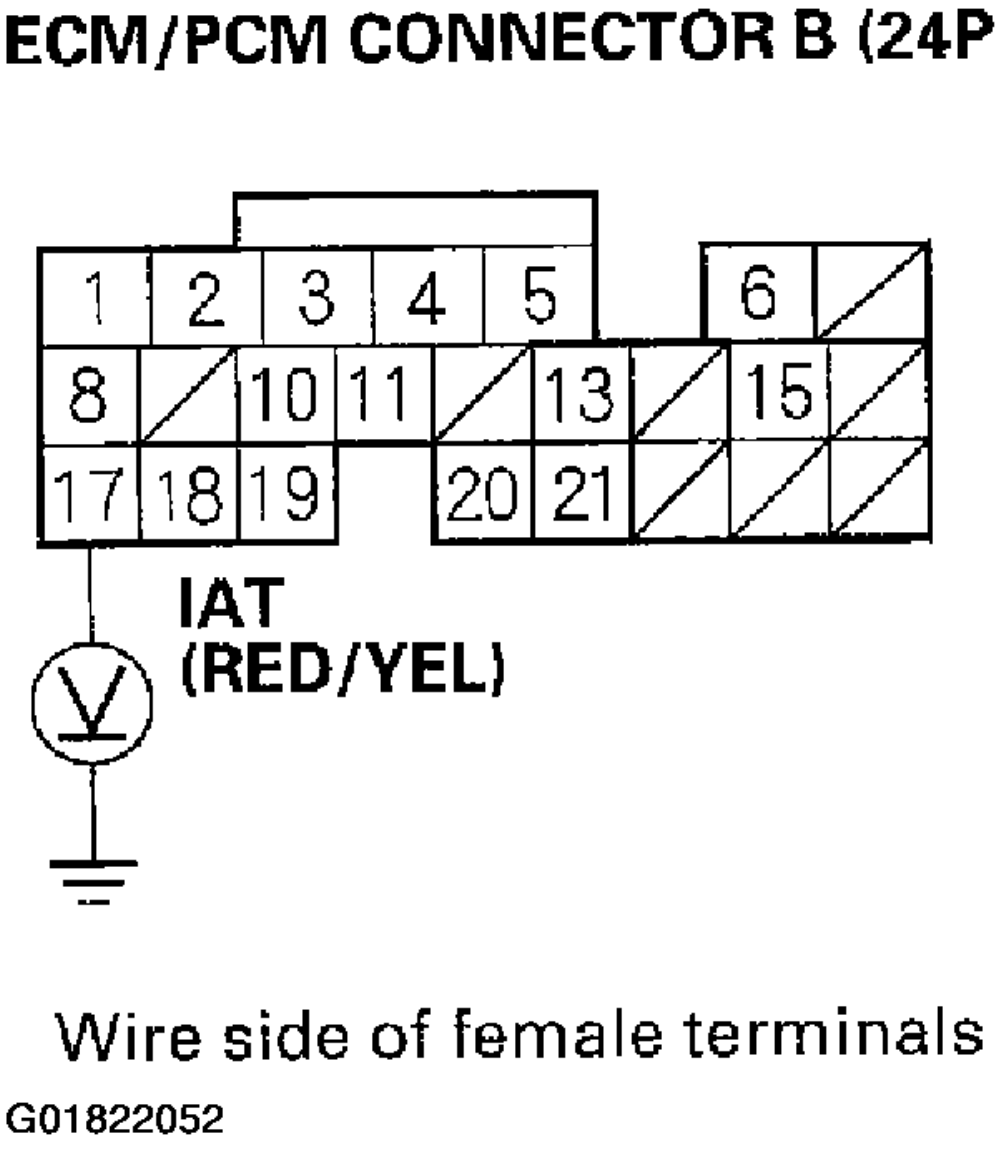


Fig. 13: Measuring Voltage Between ECM/PCM Connector Terminal B17 & Body Ground

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13. Turn the ignition switch OFF.
14. Replace the IAT sensor (see **IAT SENSOR REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0113 is indicated, check for poor connections or loose terminals at the IAT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC Troubleshooting.

    NO: Troubleshooting is complete.
19. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0113 is indicated, check for poor connections or loose terminals at the IAT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0116: ECT SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

1. Turn the ignition switch ON (II).
2. Check the ECT SENSOR in the DATA LIST with the HDS.

   Is about 176°F (80°C) or higher, or 0.86 V or less indicated?

   YES: Go to step 3.

   NO: Go to step 7 .
3. Note the current coolant temperature from step 2.
4. Turn the ignition switch OFF.
5. Let the engine cool for 1 hour.
6. Check the ECT SENSOR in the DATA LIST with the HDS.

   Did the ECT change 3.6°F (2°C) or more?

   YES: Intermittent failure, system is OK at this time. Check the thermostat and the cooling system.

   NO: Go to step 10 .
7. Note the current coolant temperature.
8. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

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9. Check the ECT SENSOR in the DATA LIST with the HDS.

   Does the ECT change 3.6°F (2°C) or more?

   YES: Intermittent failure, system is OK at this time. Check the thermostat and the cooling system.

   NO: Go to step 10.
10. Turn the ignition switch OFF.
11. Replace the ECT sensor (see **ECT SENSOR REPLACEMENT**).
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Allow the engine to cool to between 23°F (-5°C) and 77°F (25°C).
16. Start the engine, and let it idle for 20 minutes.
17. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0116 is indicated, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 18.
18. Monitor the OBD STATUS for DTC P0116 in the DTCs MENU with the HDS.

    Does the screen indicates PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 15 and recheck.

DTC P0117: ECT SENSOR CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the ECT SENSOR in the DATA LIST with the HDS.

   Is about 356°F (180°C) or higher, or 0.08 V or less indicated?

   YES: Go to step 3.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ECT sensor and the ECM/PCM.
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2P connector.
5. Turn the ignition switch ON (II).
6. Check the ECT SENSOR in the DATA LIST with the HDS.

   Is about 356°F (180°C) or higher, or 0.08 V or less indicated?

   YES: Go to step 7.

   NO: Go to step 11 .

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7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (24P).
10. Check for continuity between ECT sensor 2P connector terminal No. 1 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECT sensor and ECM/PCM (B8), then go to step 13 .

NO: Go to step 17 .

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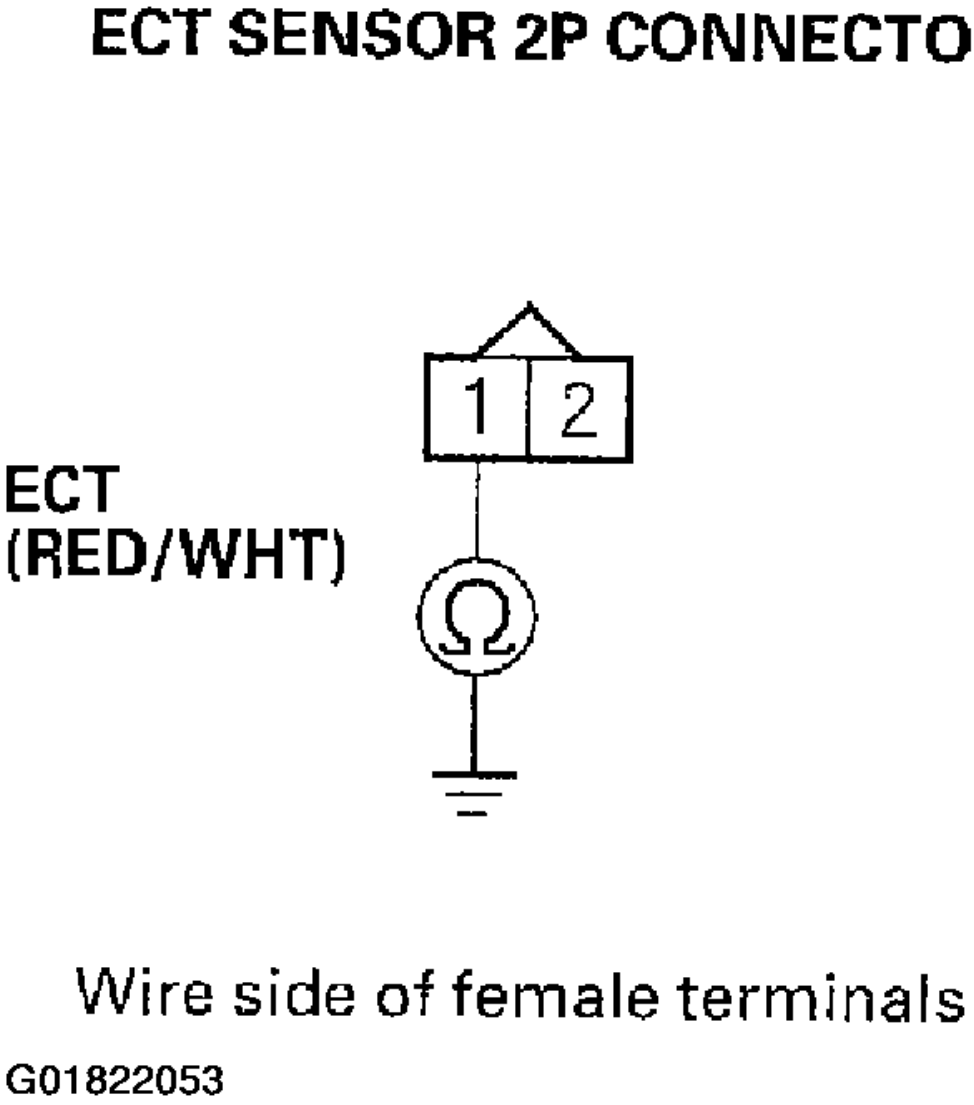


Fig. 14: Checking For Continuity Between ECT Sensor 2P Connector Terminal No. 1 & Body Ground

11. Turn the ignition switch OFF.
12. Replace the ECT sensor (see **ECT SENSOR REPLACEMENT**).
13. Turn the ignition switch ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0117 is indicated, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

17. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0117 is indicated, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0118: ECT SENSOR CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the ECT SENSOR in the DATA LIST with the HDS.

Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

YES: Go to step 3.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ECT sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2P connector.
5. Connect ECT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

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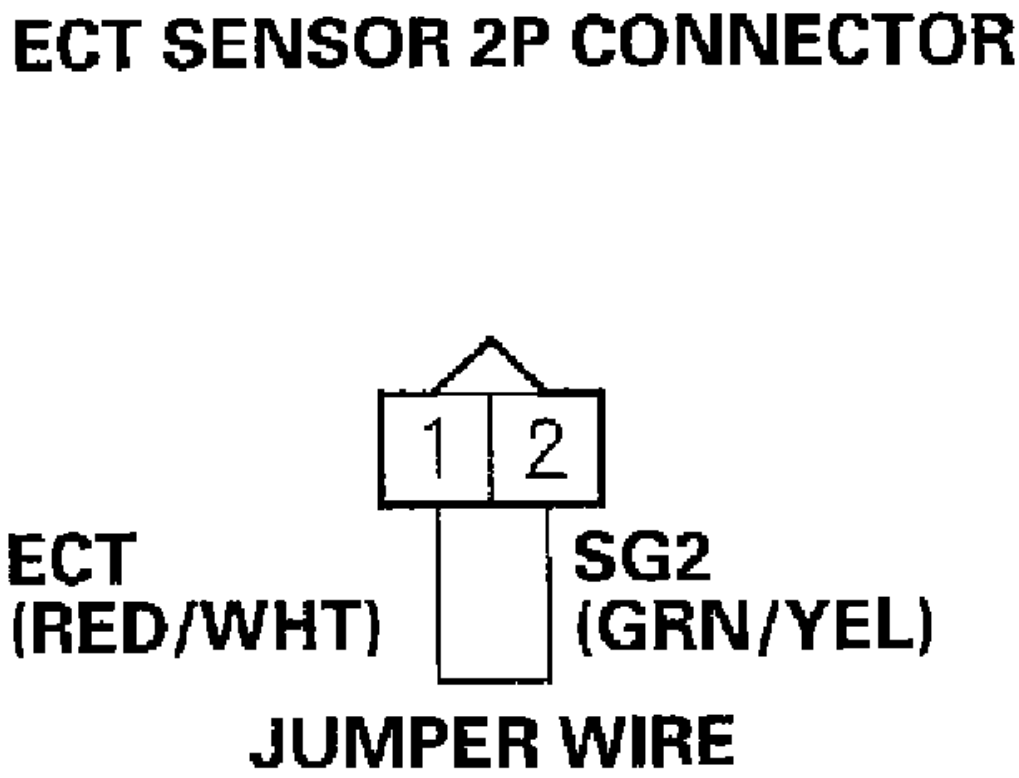


Fig. 15: Connecting ECT Sensor 2P Connector Terminals No. 1 & No. 2 With A Jumper Wire

6. Turn the ignition switch ON (II).
7. Check the ECT SENSOR in the DATA LIST with the HDS.

Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

YES: Go to step 8.

NO: Go to step 13 .

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8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 2P connector terminal No. 1 and body ground.

Is there about 5 V?

YES: Repair open in the wire between the ECM/PCM (A23) and the ECT sensor, then go to step 15 .

NO: Go to step 12.

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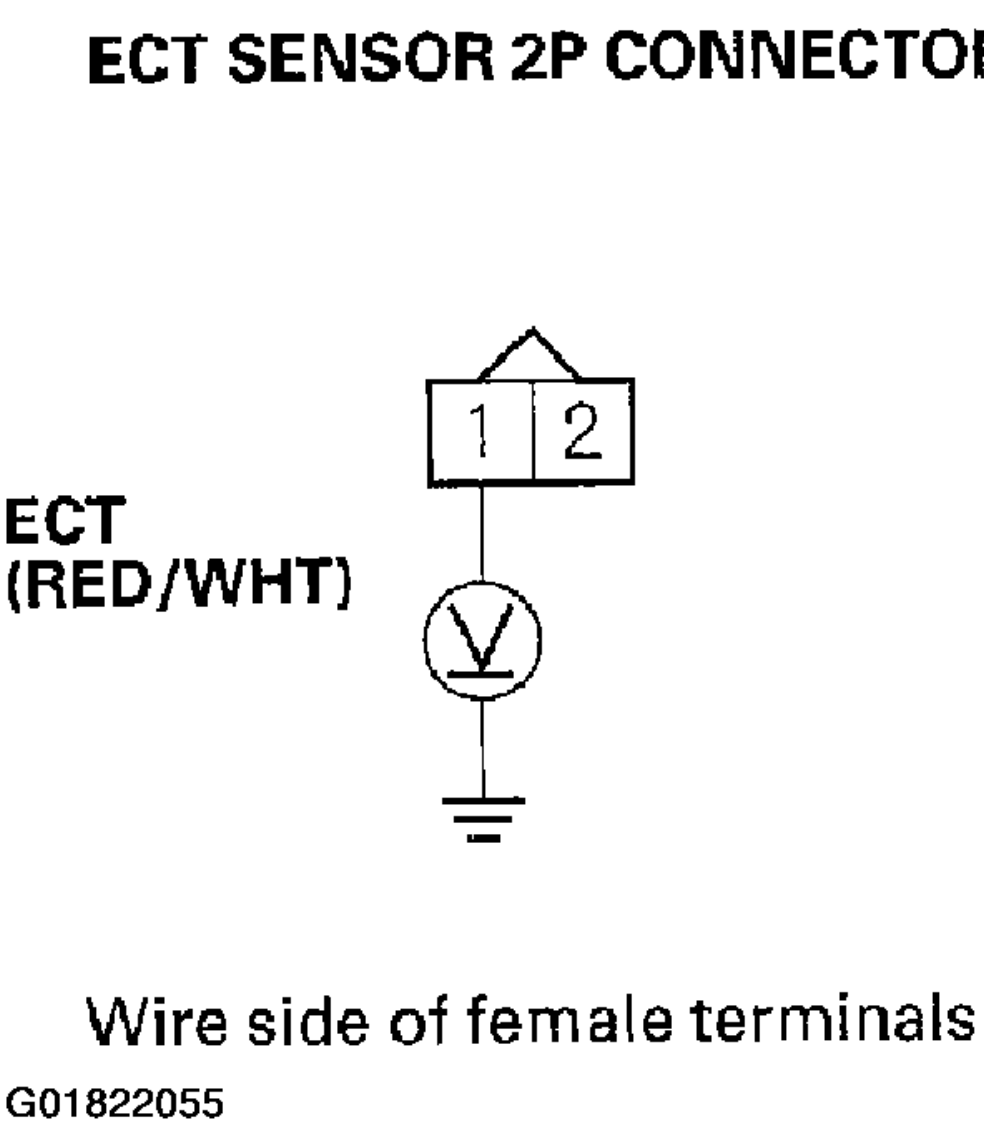


Fig. 16: Measuring Voltage Between ECT Sensor 2P Connector Terminal No. 1 & Body Ground

12. Measure voltage between ECM/PCM connector terminal B8 and body ground.

    Is there about 5 V?

    YES: Repair open in the wire between the ECM/PCM (B8) and the ECT sensor, then go to step 15 .

    NO: Go to step 19 .

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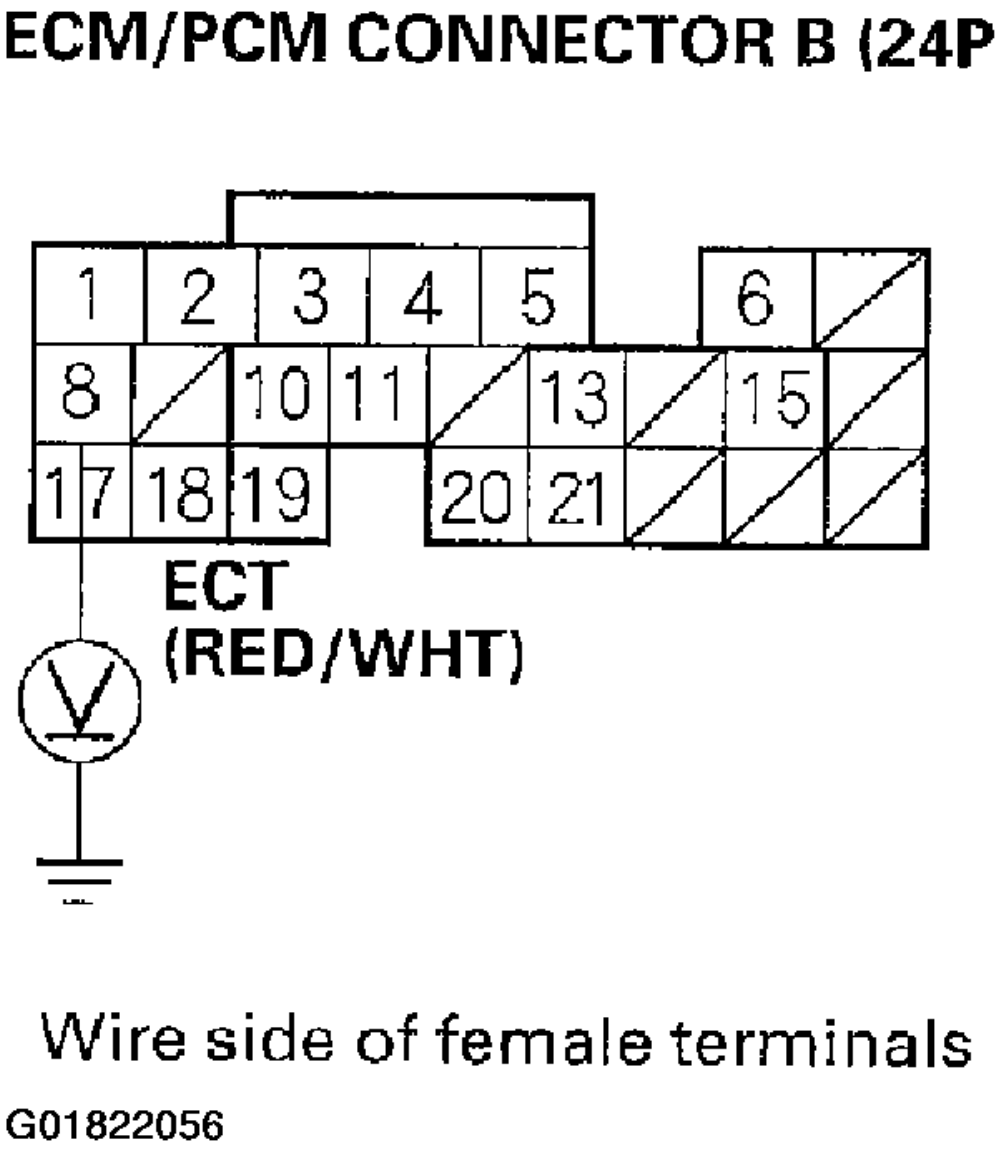


Fig. 17: Measuring Voltage Between ECM/PCM Connector Terminal B8 & Body Ground

13. Turn the ignition switch OFF.
14. Replace the ECT sensor (see **ECT SENSOR REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0118 is indicated, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

19. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0118 is indicated, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0125: ECT SENSOR MALFUNCTION/SLOW RESPONSE

1. Start the engine, and let it idle.
2. Check the ECT SENSOR in the DATA LIST with the HDS.

Is about 86°F (30°C) or less, or 2.61 V or higher indicated?

YES: Go to step 3.

NO: Intermittent failure, system is OK at this time. Check the thermostat and the cooling system.

3. Let the engine idle for 6 minutes.
4. Check the ECT SENSOR in the DATA LIST with the HDS.

Is about 86°F (30°C) or less, or 2.61 V or higher indicated?

YES: Go to step 5.

NO: Intermittent failure, system is OK at this time. Check the thermostat and the cooling system.

5. Turn the ignition switch OFF.
6. Replace the ECT sensor (see **ECT SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Allow the engine to cool between 23°F (-5°C) and 77°F (25°C).
11. Start the engine, and let it idle for 20 minutes.
12. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0125 is indicated, check for poor connections or loose terminals at the ECT

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sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 13.

13. Monitor the OBD STATUS for DTC P0125 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 10 and recheck.

DTC P0128: COOLING SYSTEM MALFUNCTION

NOTE: If the DTCs listed below are stored at the same time as DTC P0128, troubleshoot those DTCs first, then recheck for P0128. DTC P0128 can occasionally set when the hood is opened while the engine is running.

P0112, P0113: Intake air temperature (IAT) sensor
P0116, P0117, P0118, P0125: Engine coolant temperature (ECT) sensor
P0300: Random misfire
P0301, P0302, P0303, P0304: No. 1, No. 2, No. 3, or No. 4 cylinder misfire
P0335, P0339: Crankshaft position (CKP) sensor
P2227, P2228, P2229: Barometric pressure (BARO) sensor
P2646, P2647, P2648, P2648: VTEC system
P0506, P0507: Idle control system malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the blower switch OFF.
4. Turn the A/C switch OFF.
5. Check the FAN CTRL in the DATA LIST with the HDS.

Is it OFF?

YES: Go to step 6.

NO: Wait until the FAN CTRL is turned off, then go to step 6.

6. Check the ECT SENSOR in the DATA LIST with the HDS, then check the radiator fan operation.

Does the radiator fan keep running when the engine coolant temperature is less than 158°F (70°C)?

YES: Check the radiator fan circuit (see **RADIATOR FAN CIRCUIT TROUBLE SHOOTING**), the radiator fan switch circuit (see **RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING**), and the radiator fan switch (see **RADIATOR FAN SWITCH**). If the circuits and the switch are OK, go to step 21 .

NO: Go to step 7.

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7. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
8. Turn the ignition switch OFF.
9. Turn the ignition switch ON (II).
10. Do the RADIATOR FAN TEST in the INSPECTION MENU with the HDS for 20 minutes.
11. Check the ECT SENSOR in the DATA LIST with the HDS.

    Is about 151°F (66°C) or less, or 1.25 V or more indicated?

    YES: Intermittent failure, system is OK at this time.

    NO: Go to step 12.
12. Turn the ignition switch OFF.
13. Cool down the engine until the coolant temperature is between 23°F (-5°C) and 95°F (35°C).
14. Replace the thermostat (see **THERMOSTAT REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0128 is indicated, check the cooling system, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 20.
20. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check cooling system, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 18 and recheck.
21. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
22. Cool down the engine until the coolant temperature is between 23°F (-5°C) and 95°F (35°C).
23. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
24. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0128 is indicated, check for poor connections or loose terminals at the ECT sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

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DTC P0133: A/F SENSOR (SENSOR 1) RESPONSE MALFUNCTION/SLOW RESPONSE IN CIRCUIT

NOTE: If DTC P0139 is stored at the same time as DTC P0133, troubleshoot DTC P0139 first, then recheck for DTC P0133.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under the following conditions:
   - Engine coolant temperature more than 158°F (70°C)
   - A/T in D position (M/T in 5th gear)
   - Vehicle speed at 30 MPH (48 km/h) or more, and engine speed between 1,000 and 3,000 RPM
5. Check the AF FB AVG in the DATA LIST with the HDS.

   Is the value between 0.8-1.2?

   YES: Go to step 6.

   NO: Go to step 4 and recheck.
6. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 7.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 2 and recheck.
7. Turn the ignition switch OFF.
8. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
12. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 5th gear)
    - Vehicle speed at 30 MPH (48 km/h) or more, and engine speed between 1,000 and 3,000 RPM
14. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0133 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

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NO: Go to step 15.

15. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

Does the screen indicates PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 12 and recheck.

DTC P0134: A/F SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION

NOTE: If DTC P0135 is stored at the same time as DTC P0134, troubleshoot DTC P0135 first, then recheck for DTC P0134.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P0134 indicated?

YES: Go to step 5.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0134 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 12.

11. Monitor the OBD STATUS for DTC P0134 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 8 and recheck.

DTC P0135: A/F SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION

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1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0135 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.
5. Turn the ignition switch OFF.
6. Check the following fuses:
   - No. 19 OPTION (40A) fuse in under-hood fuse/relay box.
   - No. 4 A/F SENSOR (15A) fuse in under-dash fuse/relay box.
   - No. 23 IGP (7.5A) fuse in under-dash fuse/relay box.

   Are any of the fuses blown?

   YES: Repair short in the wire between the A/F sensor relay and the fuses, then go to step 23 .

   NO: Go to step 7.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Measure resistance between A/F sensor (Sensor 1) 4P connector terminals No. 3 and No. 4.

   Is there 2.1-2.9 ohm at room temperature?

   YES: Go to step 9.

   NO: Go to step 22 .

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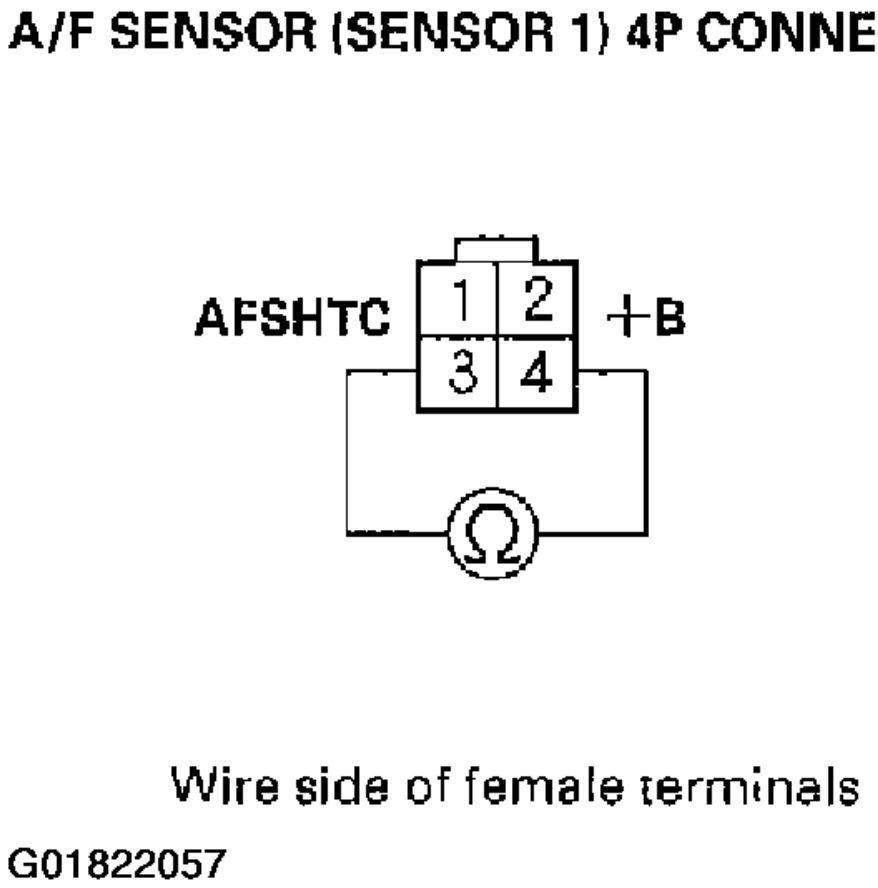


Fig. 18: Measuring Resistance Between A/F Sensor (Sensor 1) 4P Connector Terminals No. 3 & No. 4

9. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 1 and A/F sensor (Sensor 1) 4P connector terminals No. 3 and No. 4 individually.

   Is there continuity?

   YES: Go to step 22 .

   NO: Go to step 10.

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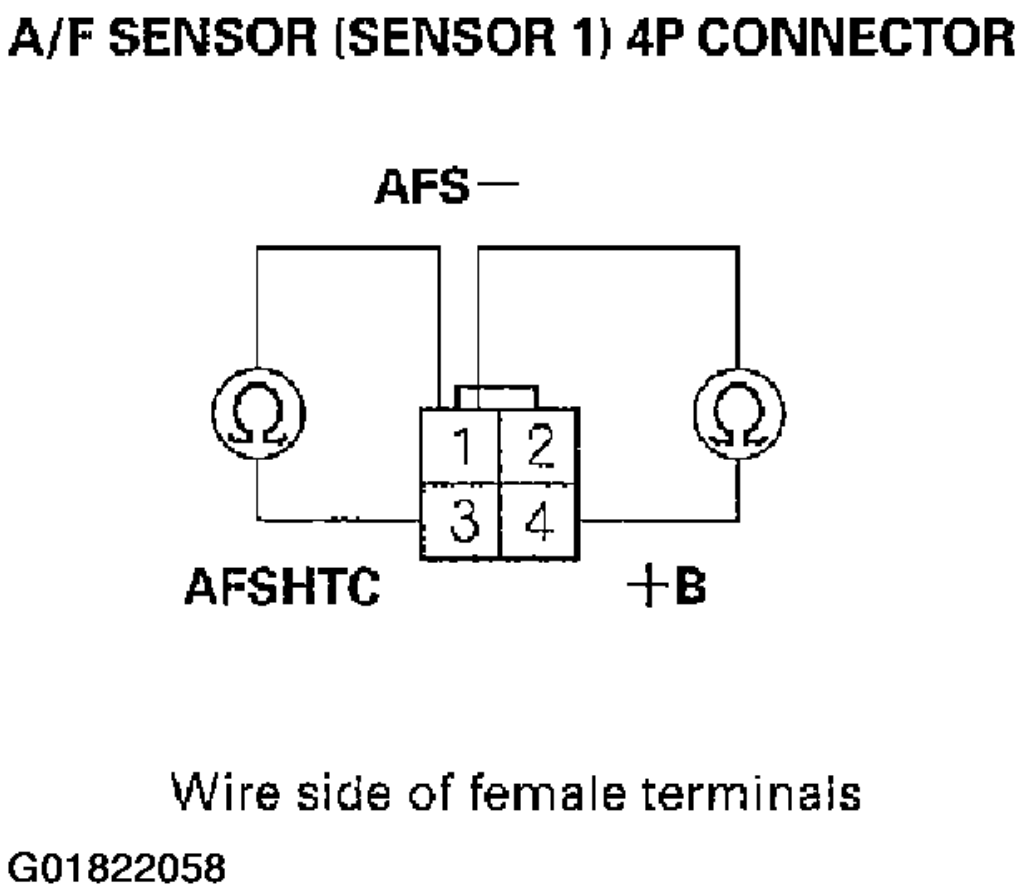


Fig. 19: Checking For Continuity Between A/F Sensor (Sensor 1) 4P Connector Terminal No. 1 & A/F Sensor (Sensor 1) 4P Connector Terminals No. 3 & No. 4

10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (31P).
12. Check for continuity between ECM/PCM connector terminals A10 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (A10) and the A/F sensor (Sensor 1), then go to step 23 .

NO: Go to step 13.

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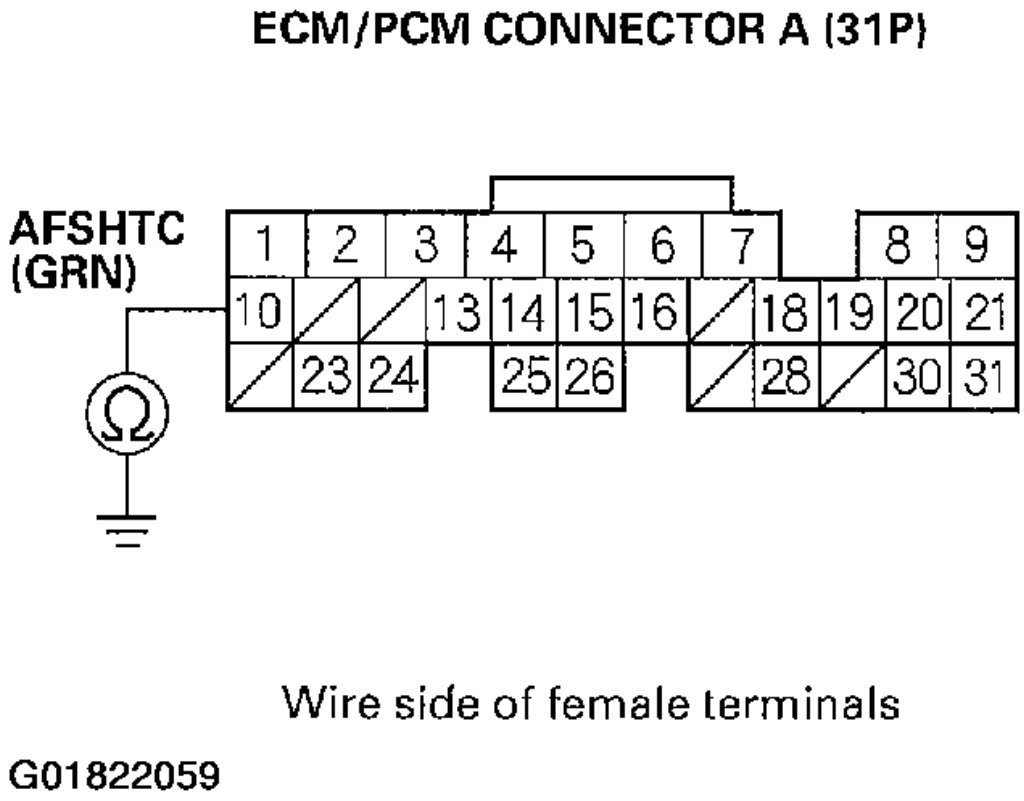


Fig. 20: Checking For Continuity Between ECM/PCM Connector Terminals A10 & Body Ground

13. Connect the A/F sensor (Sensor 1) 4P connector terminal No. 3 to body ground with a jumper wire.

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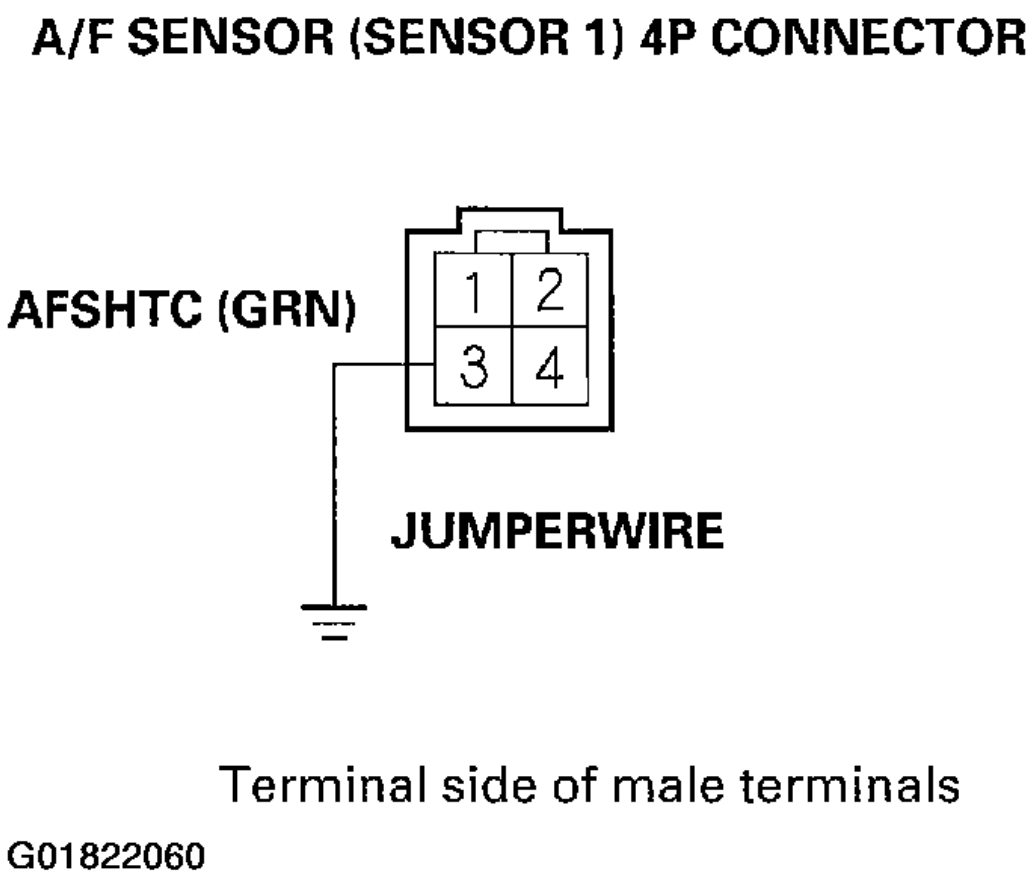


Fig. 21: Connecting The A/F Sensor (Sensor 1) 4P Connector Terminal No. 3 To Body Ground With A Jumper Wire

14. Check for continuity between ECM/PCM connector terminal A10 and body ground.

    Is there continuity?

    YES: Go to step 15.

    NO: Repair open in the wire between the ECM/PCM (A10) and the A/F sensor (Sensor 1), then go to step 23 .

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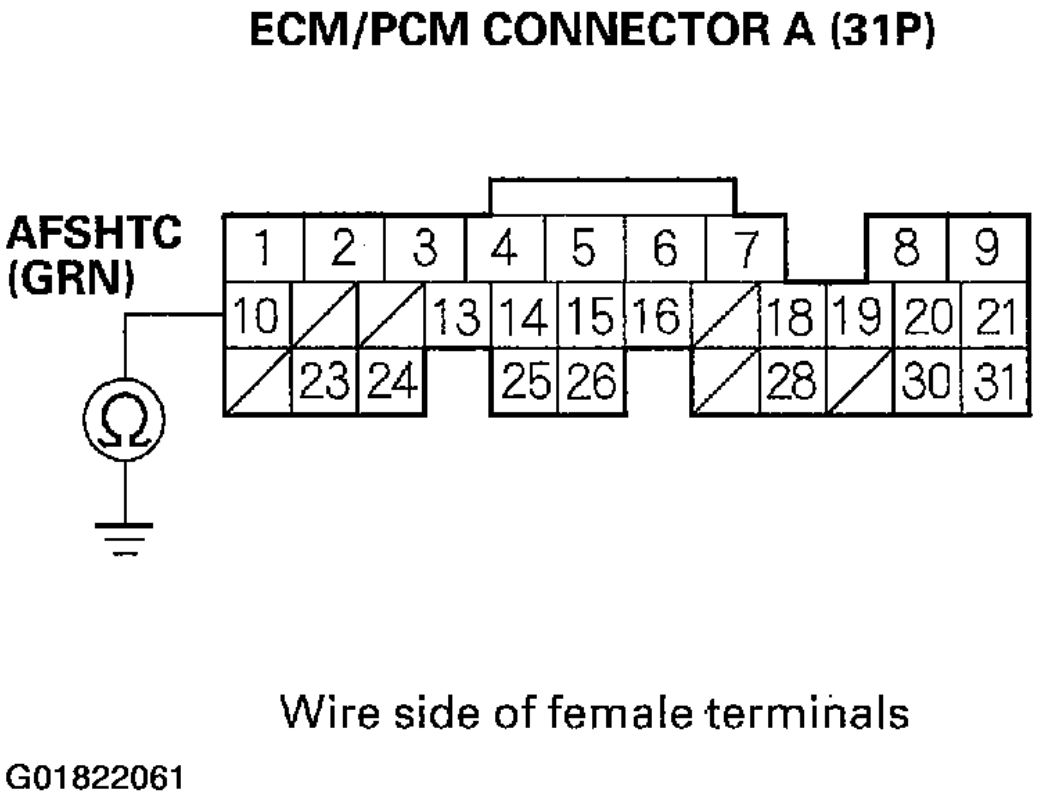


Fig. 22: Checking For Continuity Between ECM/PCM Connector Terminal A10 & Body Ground

15. Connect A/F sensor (Sensor 1) 4P connector terminal No. 4 to body ground with a jumper wire.

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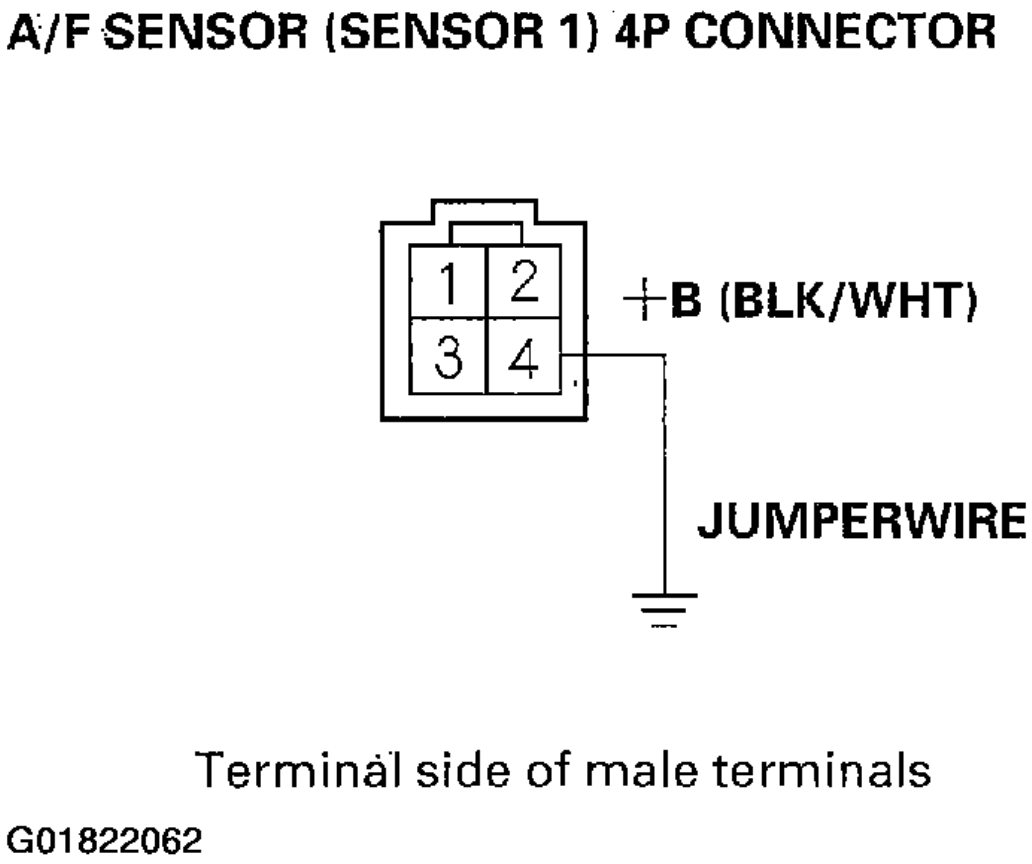


Fig. 23: Connecting A/F Sensor (Sensor 1) 4P Connector Terminal No. 4 To Body Ground With A Jumper Wire

16. Remove the A/F sensor relay (A).

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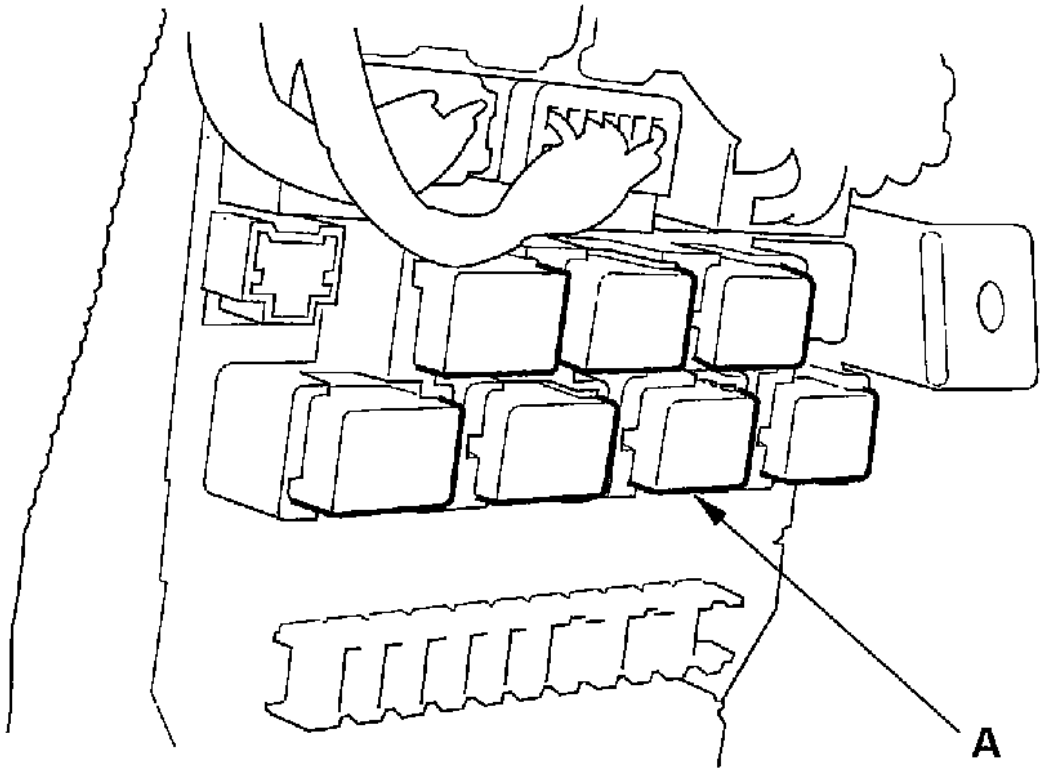


Fig. 24: Removing The A/F Sensor Relay

17. Check for continuity between A/F sensor relay terminal No. 2 and body ground.

    Is there continuity?

    YES: Go to step 18.

    NO: Repair open in the wire between the A/F sensor (Sensor 1) and the A/F sensor relay, then go to step 23 .

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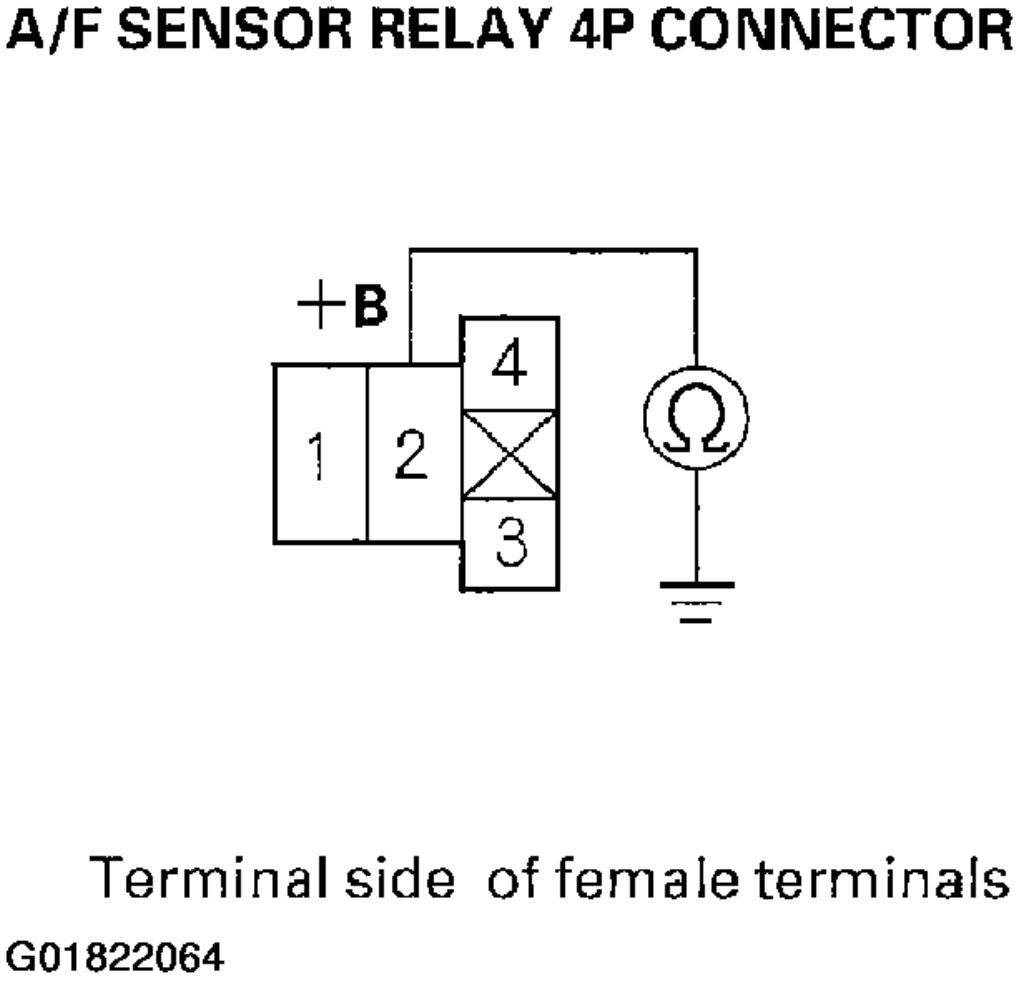


Fig. 25: Checking For Continuity Between A/F Sensor Relay Terminal No. 2 & Body Ground

18. Disconnect ECM/PCM connector E (31P).
19. Check for continuity between ECM/PCM connector terminal E8 and the A/F sensor relay terminal No. 4.

Is there continuity?

YES: Go to step 20.

NO: Repair open in the wire between the ECM/PCM (E8) and the A/F sensor relay, then go to step 22 .

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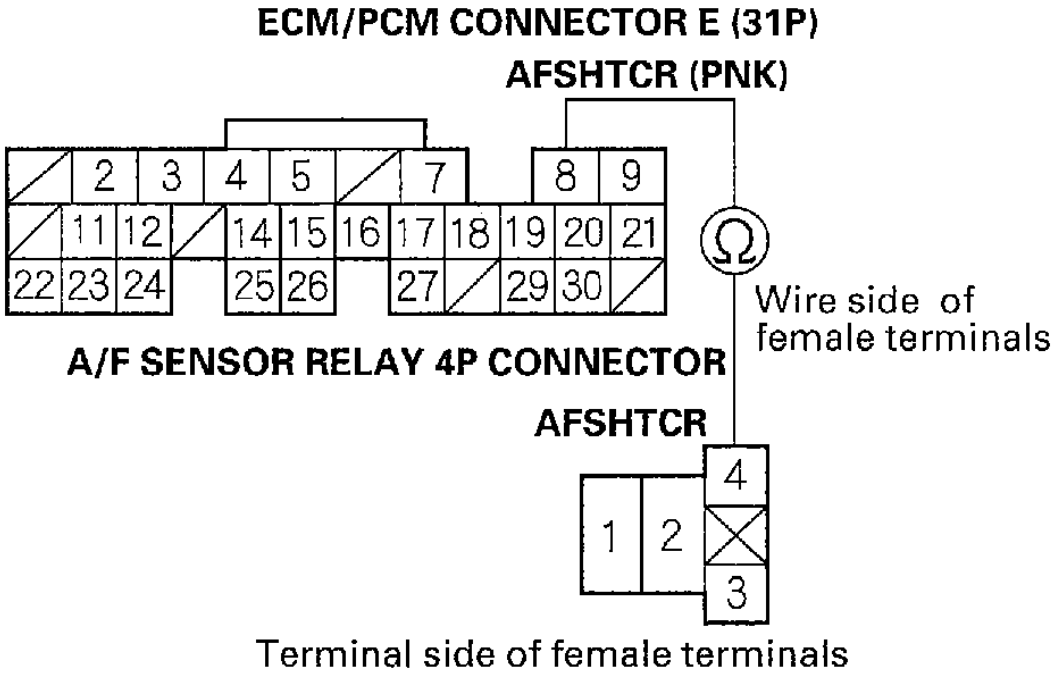


Fig. 26: Checking For Continuity Between ECM/PCM Connector Terminal E8 & The A/F Sensor Relay Terminal No. 4

20. Check the A/F sensor relay (see **RELAYS**).

    Is the A/F sensor relay OK?

    YES: Go to step 27 .

    NO: Replace the A/F sensor relay, then go to step 22 .
21. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0135 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 26.
26. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

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YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 24 and recheck.

27. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
28. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0135 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1), and the A/F sensor relay and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P1157: A/F SENSOR (SENSOR 1) AFS LINE HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P1157 indicated?

YES: Go to step 5.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector A (31P).
9. Connect A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.

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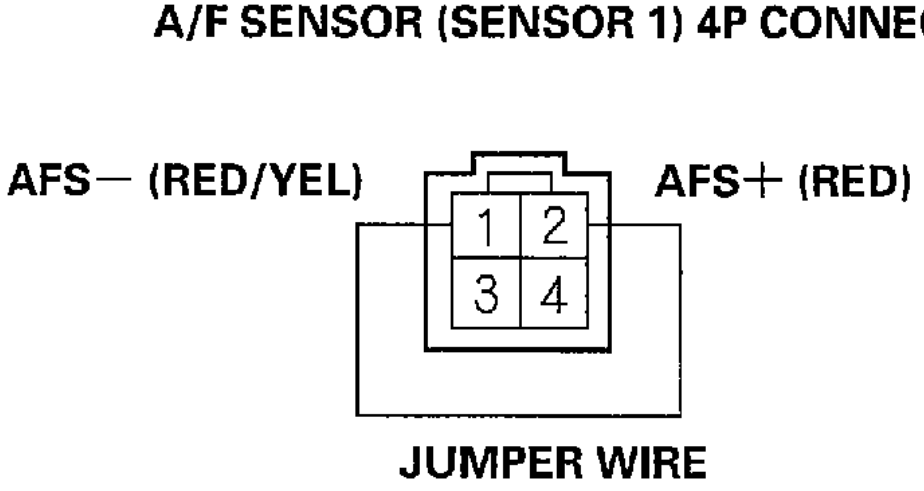


Fig. 27: Connecting A/F Sensor (Sensor 1) 4P Connector Terminals No. 1 & No. 2 With A Jumper Wire

10. Check for continuity between ECM/PCM connector terminals A28 and A31.

    Is there continuity?

    YES: Go to step 14 .

    NO: Go to step 11.

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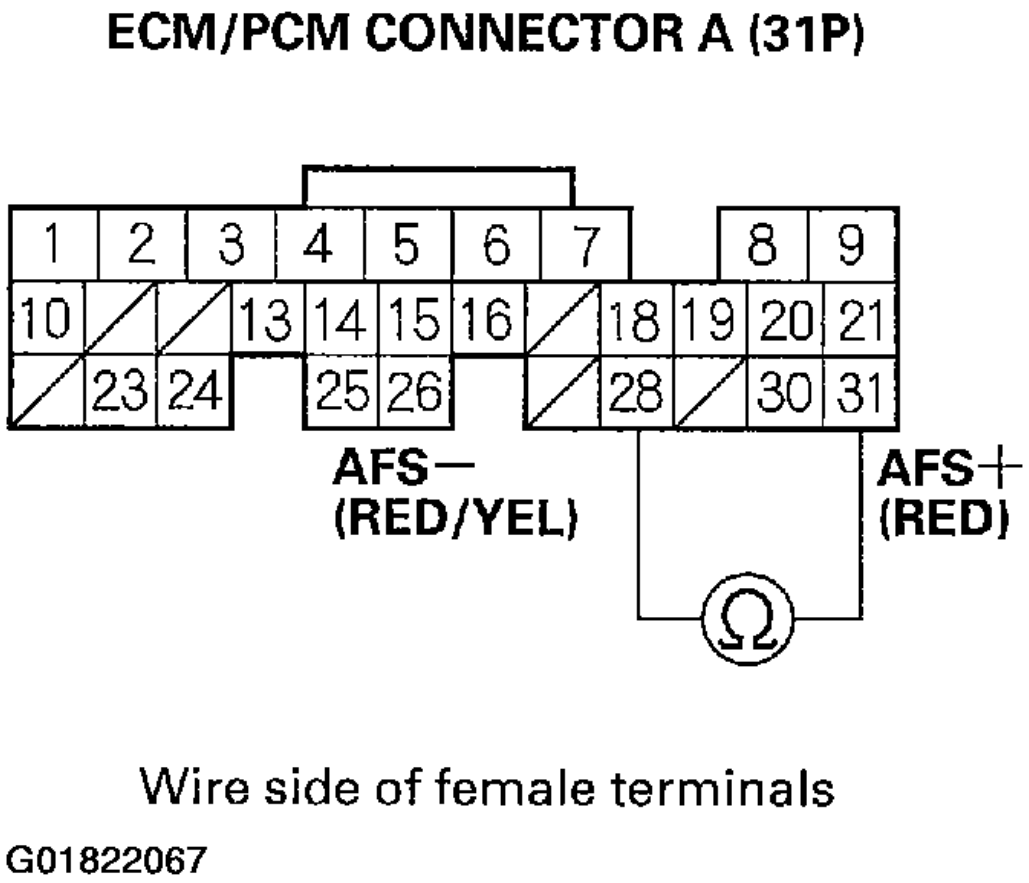


Fig. 28: Checking For Continuity Between ECM/PCM Connector Terminals A28 & A31

11. Remove the jumper wire from the A/F sensor (Sensor 1) 4P connector.
12. Connect A/F sensor (Sensor 1) 4P connector terminal No. 2 to body ground with a jumper wire.

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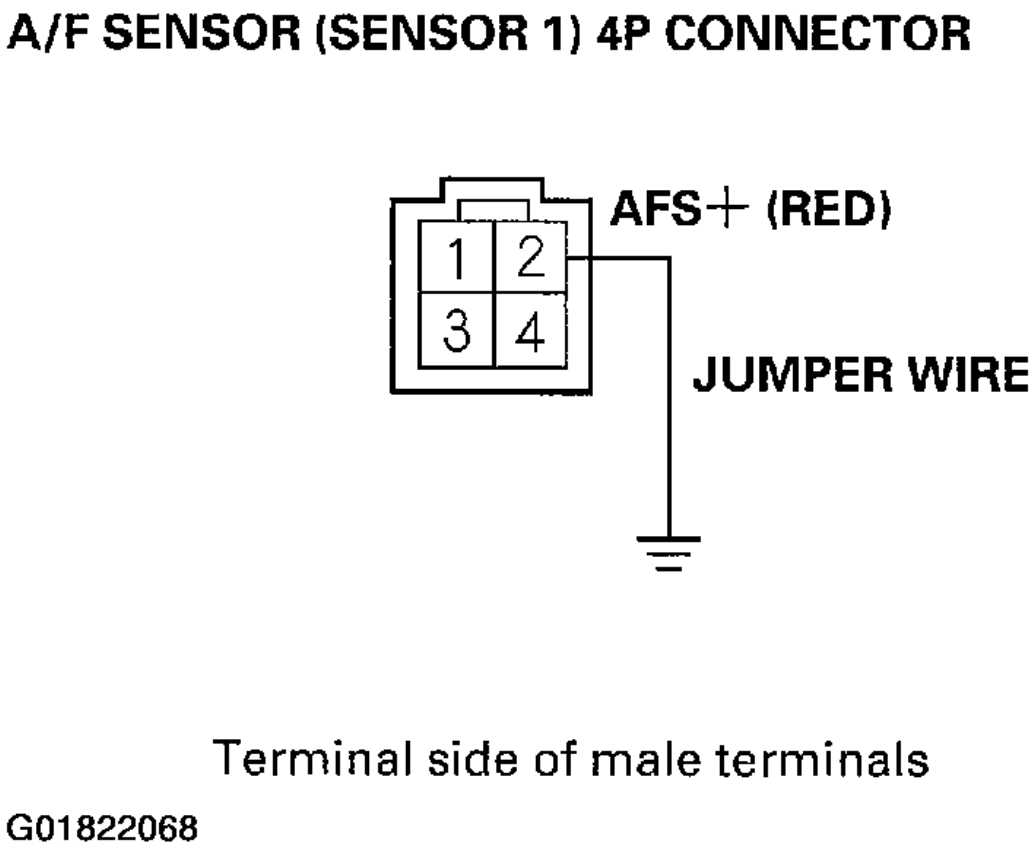


Fig. 29: Connecting A/F Sensor (Sensor 1) 4P Connector Terminal No. 2 To Body Ground With A Jumper Wire

13. Check for continuity between ECM/PCM connector terminal A31 and body ground.

    Is there continuity?

    YES: Repair open in the wire between the ECM/PCM (A28) and the A/F sensor (Sensor 1), then go to step 15 .

    NO: Repair open in the wire between the ECM/PCM (A31) and the A/F sensor (Sensor 1), then go to step 15 .

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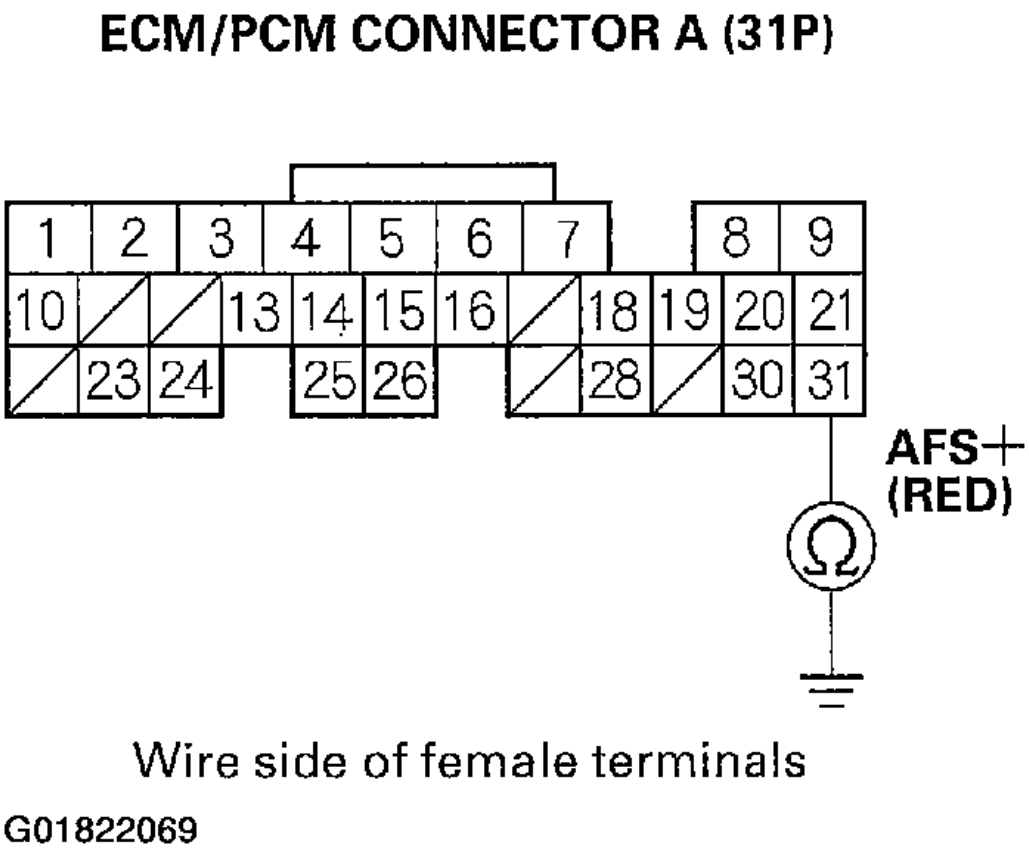


Fig. 30: Checking For Continuity Between ECM/PCM Connector Terminal A31 & Body Ground

14. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
15. Reconnect ECM/PCM connector A (31P).
16. Turn the ignition switch ON (II).
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
19. Check for Temporary DTCs or DTCs in the DTC MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P1157 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the connector and terminal fits are OK, go to step 21 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 20.
20. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

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Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step and recheck.

21. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P1157 indicated?

YES: Go to step 20 and recheck.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2195: A/F SENSOR (SENSOR 1) SIGNAL STUCK LEAN

1. Inspect the condition of the A/F sensor (Sensor 1).

Is it loose in the exhaust pipe?

YES: Go to step 2.

NO: Go to step 4 .

2. Turn the ignition switch OFF.
3. Reinstall the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
4. Turn the ignition switch ON (II).
5. Reset the ECM/PCM with the HDS.
6. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
7. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2195 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the connection and terminal fits are OK, go to step 8. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.

8. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 2 . If the screen indicates NOT COMPLETED, go to step 5 and recheck.

DTC P2238: A/F SENSOR (SENSOR 1) AFS+ LINE LOW VOLTAGE

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1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P2238 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.
4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the A/F sensor (Sensor 1) 4P connector.
7. Disconnect ECM/PCM connector A(31P).
8. Check for continuity between ECM/PCM connector terminal A31 and body ground.

   Is there continuity?

   YES: Repair short in the wire between the ECM/PCM (A31) and the A/F sensor (Sensor 1), then go to step 11 .

   NO: Go to step 9.

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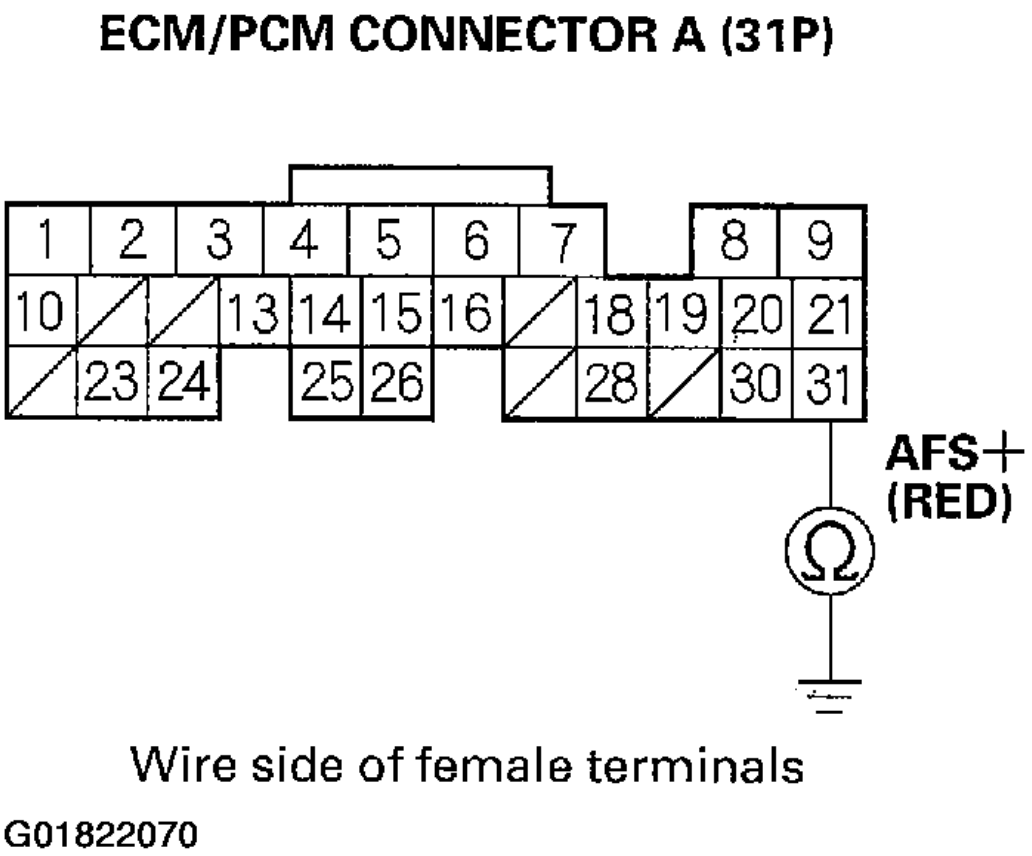


Fig. 31: Checking For Continuity Between ECM/PCM Connector Terminal A31 And Body Ground

9. Reconnect ECM/PCM connector A (31P).
10. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
14. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2238 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the connector and terminal fits are OK, go to step 16 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 15.
15. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

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Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 13 and recheck.

16. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
17. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P2238 indicated?

YES: Go to step 15 and recheck.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2252: A/F SENSOR (SENSOR 1) AFS- LINE LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P2252 indicated?

YES: Go to step 5.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector A (31P).
9. Check for continuity between ECM/PCM connector terminal A28 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (A28) and the A/F sensor (Sensor 1), then go to step 12 .

NO: Go to step 10.

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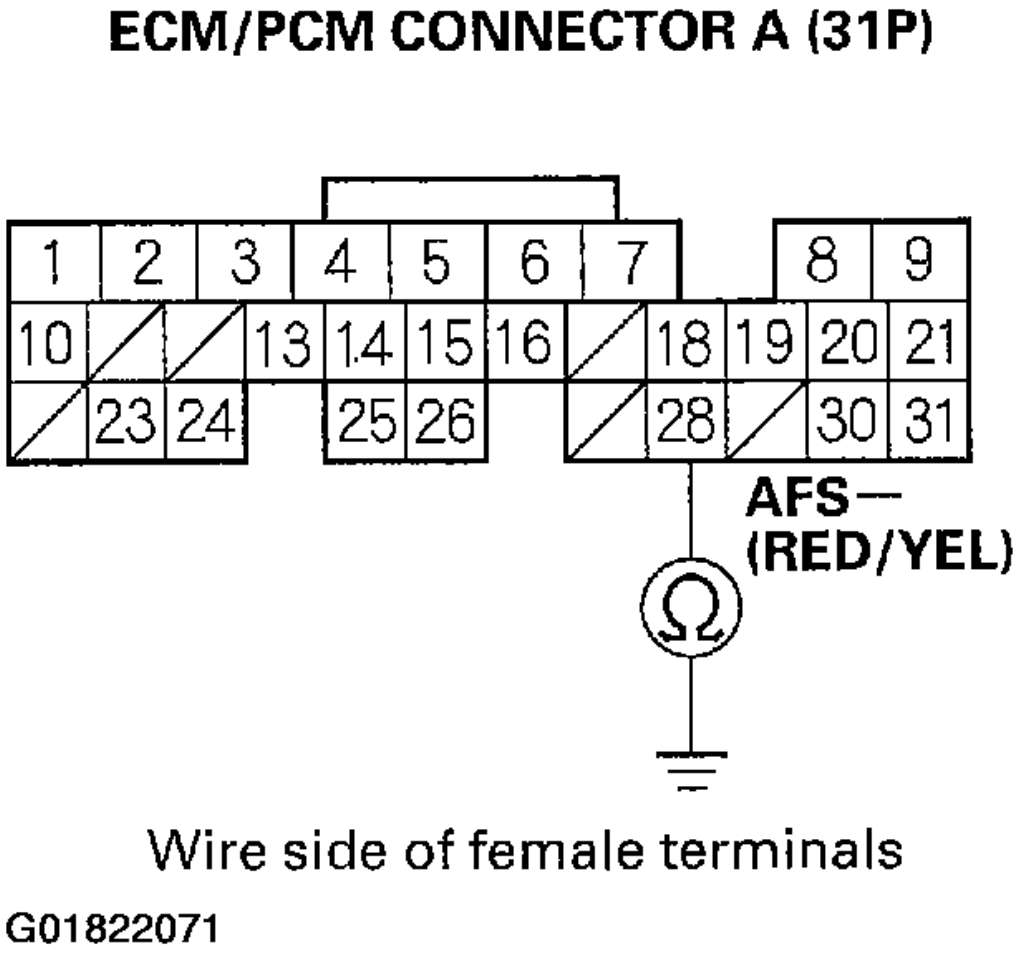


Fig. 32: Checking For Continuity Between ECM/PCM Connector Terminal A28 & Body Ground

10. Reconnect ECM/PCM connector A (31P).
11. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2252 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the connector and terminal fits are OK, go to step 17 . If any other Temporary DTCs or DTCs are indicated, go to the indicated

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DTC troubleshooting.

NO: Go to step 16.

16. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 14 and recheck.

17. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P2252 indicated?

    YES: Go to step 16 and recheck.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2A00: A/F SENSOR (SENSOR 1) RANGE/PERFORMANCE PROBLEM

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the AF FB AVG in the DATA LIST with the HDS.

   Is the value between 0.8-1.2?

   YES: Go to step 5.

   NO: Go to step 2 and recheck.

5. Test-drive under the following conditions:
   - Engine coolant temperature more than 158°F (70°C)
   - A/T in D position (M/T in 3rd gear)
   - Vehicle speed at 26 MPH (41 km/h) or more, and engine speed at 3,250 RPM or less
   - Drive with the throttle fully opened for 5 seconds at an engine speed of 1,600 RPM, then slow down with the throttle completely closed.
6. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 7.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates out of CONDITION, go to step 3 and recheck.

7. Turn the ignition switch OFF.

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8. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
12. Check the AF FB AVG in the DATA LIST with the HDS.

    Is the value between 0.8-1.2?

    YES: Go to step 13.

    NO: Go to step 11 and recheck.
13. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 3rd gear)
    - Vehicle speed at 26 MPH (41 km/h) or more, and engine speed at 3,250 RPM or less
    - Drive with the throttle fully opened for 5 seconds at an engine speed of 1,600 RPM, then slow down with the throttle completely closed.
14. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2A00 is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 15.
15. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1 . If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 11 and recheck.

DTC P0137: SECONDARY HO2S (SENSOR 2) CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the HO2S S2 in the DATA LIST with the HDS.

    Does the voltage stay at 0.29 V or less?

    YES: Go to step 5.

    NO: Go to step 9 .
5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector (see **SECONDARY HO2S**

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REPLACEMENT).

7. Turn the ignition switch ON (II).
8. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 V or less?

   YES: Go to step 11 .

   NO: Go to step 15 .
9. Test-drive under the following conditions:
   - Engine coolant temperature more than 158°F (70°C)
   - A/T in D position (M/T in 4th gear)
   - Engine speed at 2,000-3,000 RPM
   - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds
10. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate FAILED?

    YES: Go to step 16 .

    NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step and recheck.
11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector E (31P).
14. Check for continuity between Secondary HO2S (Sensor 2) 4P connector terminal No. 2 and body ground.

    Is there continuity?

    YES: Repair short in the wire between the ECM/PCM (E20) and the secondary HO2S (Sensor 2), then go to step 17 .

    NO: Go to step 24 .

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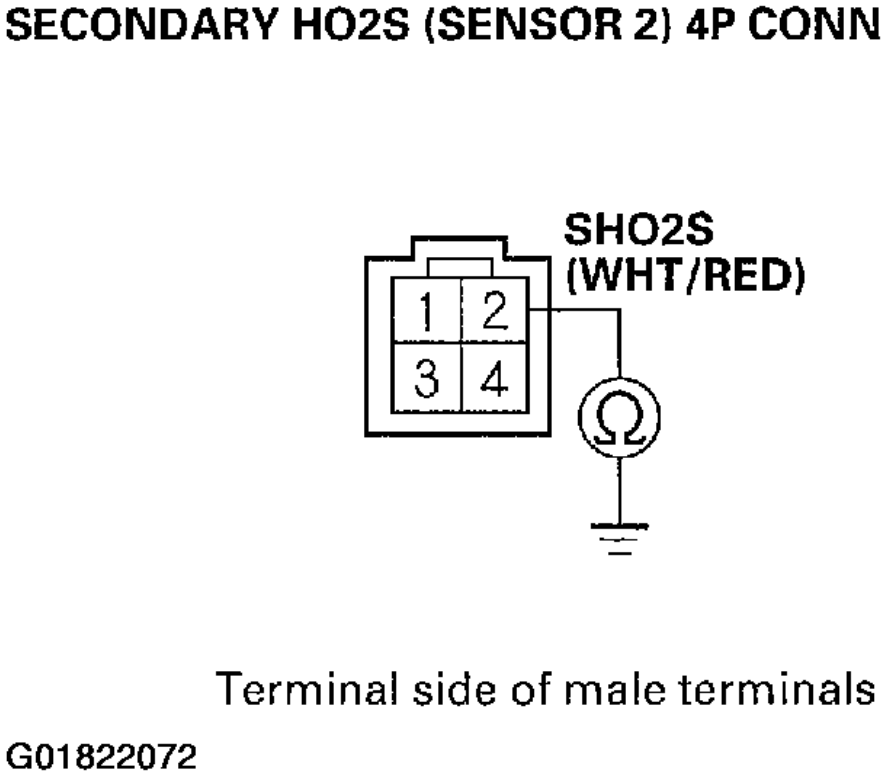


Fig. 33: Checking For Continuity Between Secondary HO2S (Sensor 2) 4P Connector Terminal No. 2 & Body Ground

15. Turn the ignition switch OFF.
16. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
17. Turn the ignition switch ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
20. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
21. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 5th gear)
    - Engine speed at 2,000-3,000 RPM
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

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YES: If DTC P0137 is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 23.

23. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 20 and recheck.

24. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
25. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
26. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 5th gear)
    - Engine speed at 2,000-3,000 RPM
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds
27. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0137 is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0138: SECONDARY HO2S (SENSOR 2) CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.75 V or higher?

   YES: Go to step 7 .

   NO: Go to step 5.

5. Test-drive under the following conditions:
   - Engine coolant temperature more than 158°F (70°C)

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- A/T in D position (M/T in 5th gear)
- Engine speed at 2,000-3,000 RPM
- Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds

6. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 19 .

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Disconnect the Secondary HO2S (Sensor 2) 4P connector.
9. Connect Secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

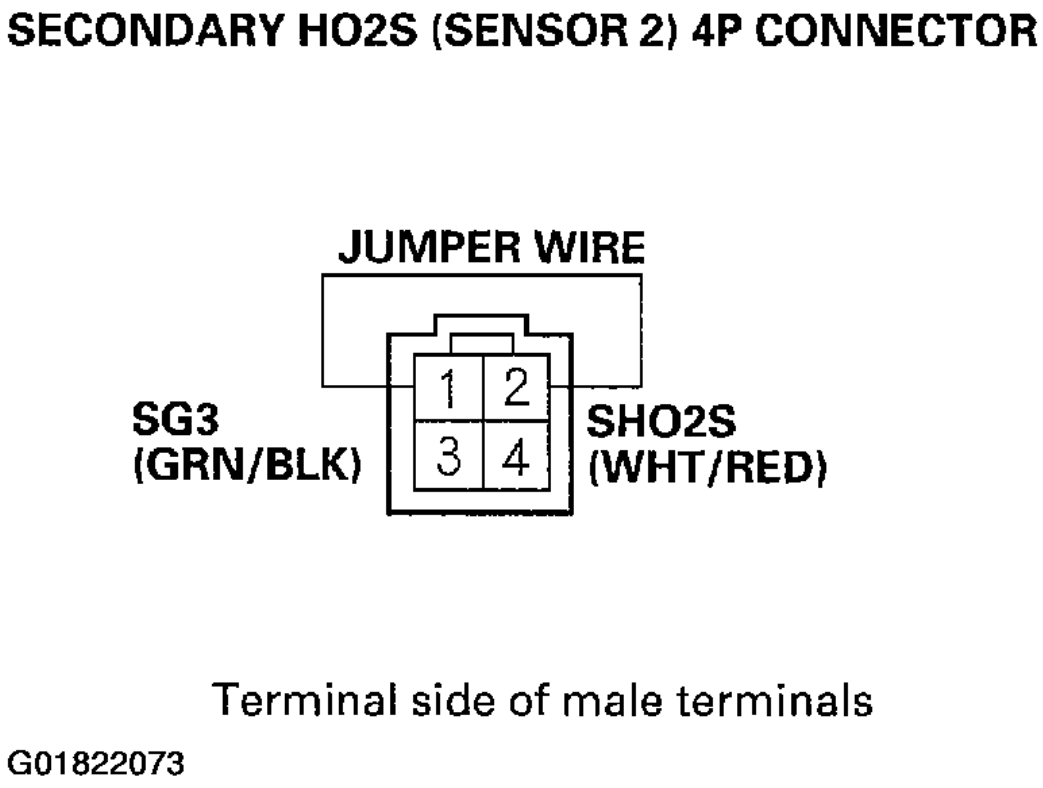


Fig. 34: Connecting Secondary HO2S (Sensor 2) 4P Connector Terminals No. 1 & No. 2 With A Jumper Wire

10. Turn the ignition switch ON (II).
11. Check the HO2S S2 in the DATA LIST with the HDS.

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Does the voltage stay at 0.75 V or higher?

YES: Go to step 12.

NO: Go to step 19 .

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector E (31P).
15. Check for continuity between ECM/PCM connector terminals E4 and E20.

Is there continuity?

YES: Go to step 28 .

NO: Go to step 16.

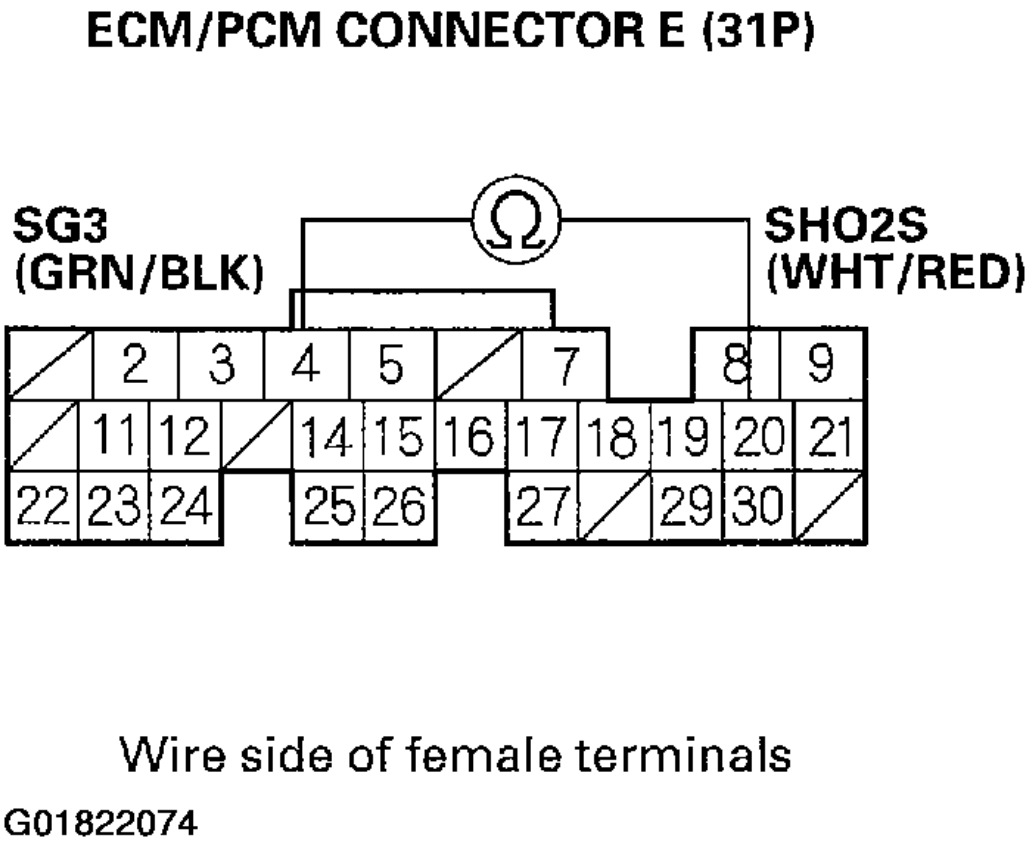


Fig. 35: Checking For Continuity Between ECM/PCM Connector Terminals E4 & E20

16. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
17. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 2 to body ground with a jumper wire.

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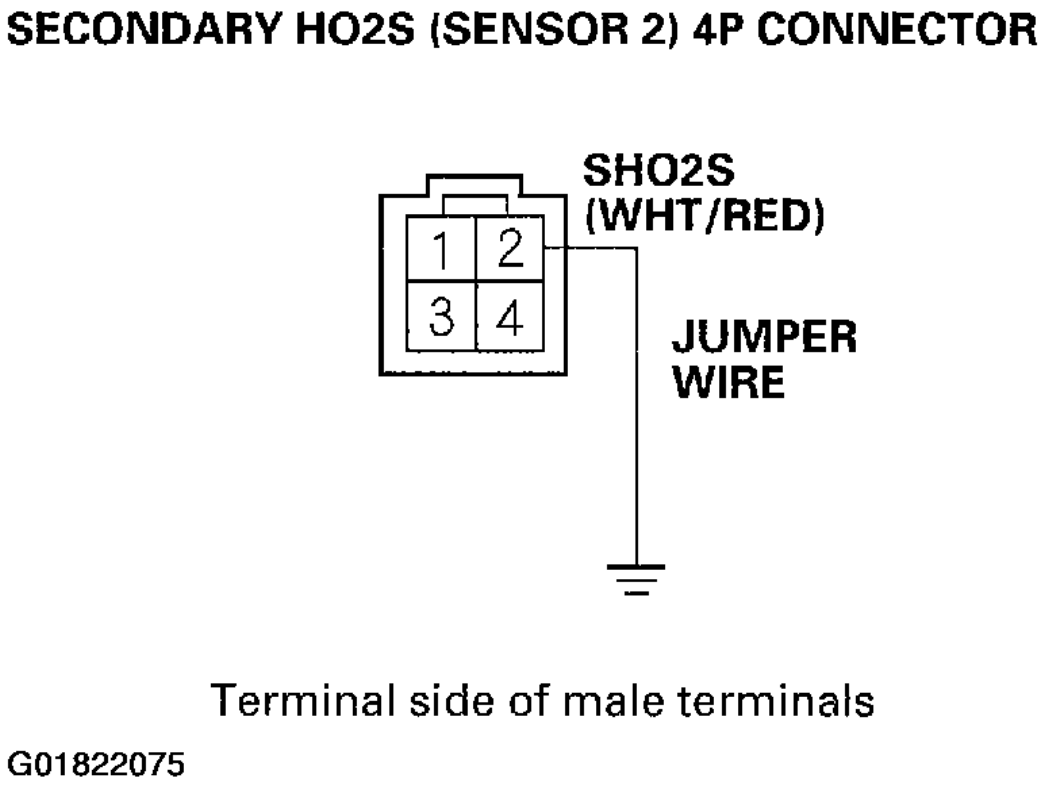


Fig. 36: Connecting Secondary HO2S (Sensor 2) 4P Connector Terminal No. 2 To Body Ground With A Jumper Wire

18. Check for continuity between ECM/PCM connector terminal E20 and body ground.

    Is there continuity?

    YES: Repair open in the wire between the ECM/PCM (E4) and the secondary HO2S (Sensor 2), then go to step 21 .

    NO: Repair open in the wire between the ECM/PCM (E20) and the secondary HO2S (Sensor 2), then go to step 21 .

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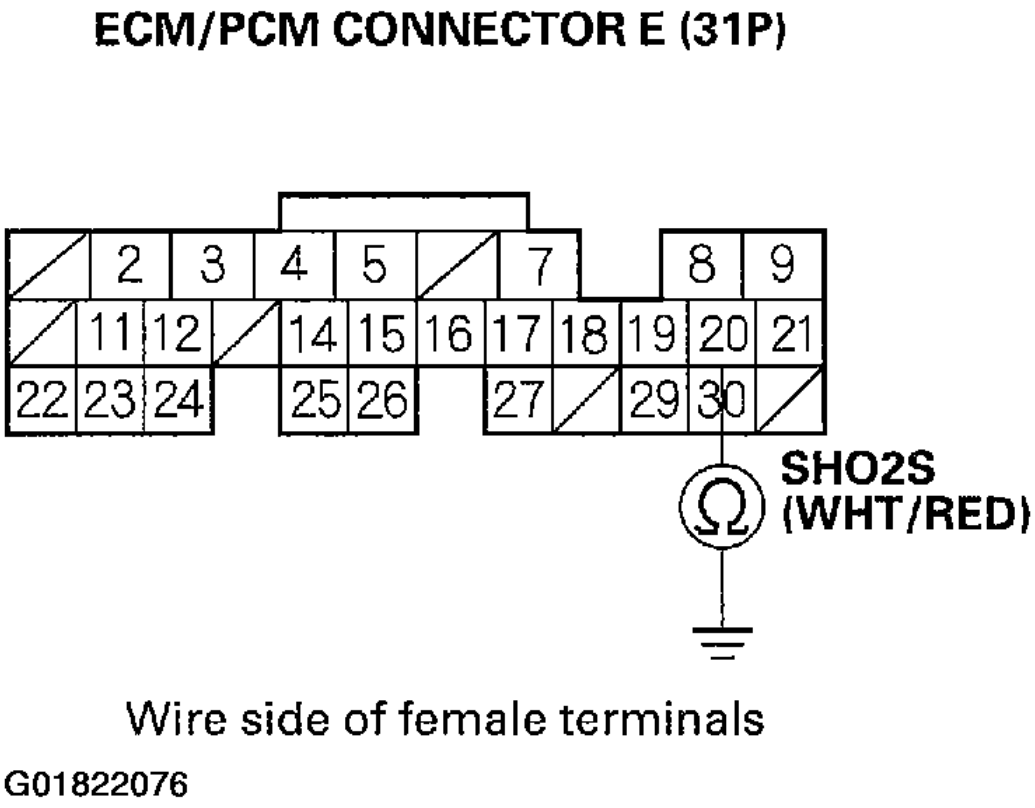


Fig. 37: Checking For Continuity Between ECM/PCM Connector Terminal E20 & Body Ground

19. Turn the ignition switch OFF.
20. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
25. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 5th gear)
    - Engine speed at 2,000-3,000 RPM
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds
26. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0138 is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 27.

27. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 24 and recheck.

28. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
29. With engine at operating temperature, (the radiator fans come on) let the engine idle for 10 minutes.

NOTE: The engine must idle for 10 minutes in addition to the idle learn procedure.

30. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 5th gear)
    - Engine speed at 2,000-3,000 RPM
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds
31. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0138 is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0139: SLOW RESPONSE IN SECONDARY HO2S (SENSOR 2) CIRCUIT

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 4th gear)

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- Engine speed at 2,000-3,000 RPM
- Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds

5. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 6.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - Engine speed at 2,000-3,000 RPM
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds.
13. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0139 is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 14.

14. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 11 and recheck.

DTC P0141: SECONDARY HO2S (SENSOR 2) HEATER CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Is DTC P0141 indicated?

YES: Go to step 5.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM.

5. Check the No. 18 ACG (15A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES: Go to step 6.

NO: Repair short in the wire between the secondary HO2S (Sensor 2) and the No. 4 ACG (10A) fuse, then go to step 24 .

6. Turn the ignition switch OFF.
7. Disconnect the secondary HO2S (Sensor 2) 4P connector (see **SECONDARY HO2S REPLACEMENT**).
8. At the secondary HO2S (Sensor 2), measure resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

Is there 5.0-6.4 ohm at room temperature?

YES: Go to step 9.

NO: Go to step 23 .

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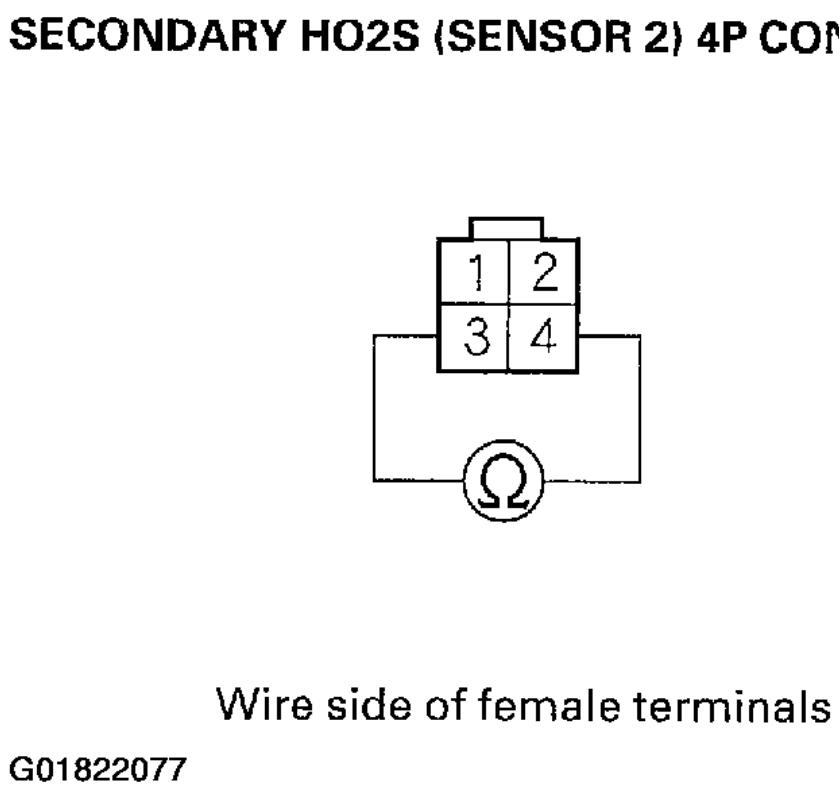


Fig. 38: Measuring Resistance Between Secondary HO2S (Sensor 2) 4P Connector Terminals No. 3 & No. 4

9. At the secondary HO2S (Sensor 2), check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

   Is there continuity?

   YES: Go to step 23 .

   NO: Go to step 10.

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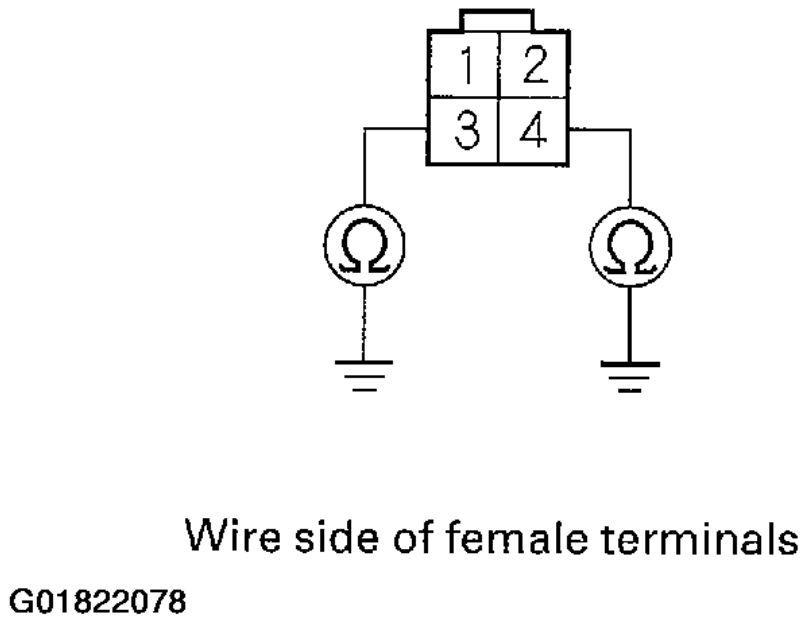


Fig. 39: Checking For Continuity Between Body Ground & Secondary HO2S (Sensor 2) 4P Connector Terminals No. 3 & No. 4

10. Turn the ignition switch ON (II).
11. On the harness side, measure voltage between secondary HO2S 4P connector terminals No. 3 and No. 4.

Is there battery voltage?

YES: Go to step 12.

NO: Go to step 16 .

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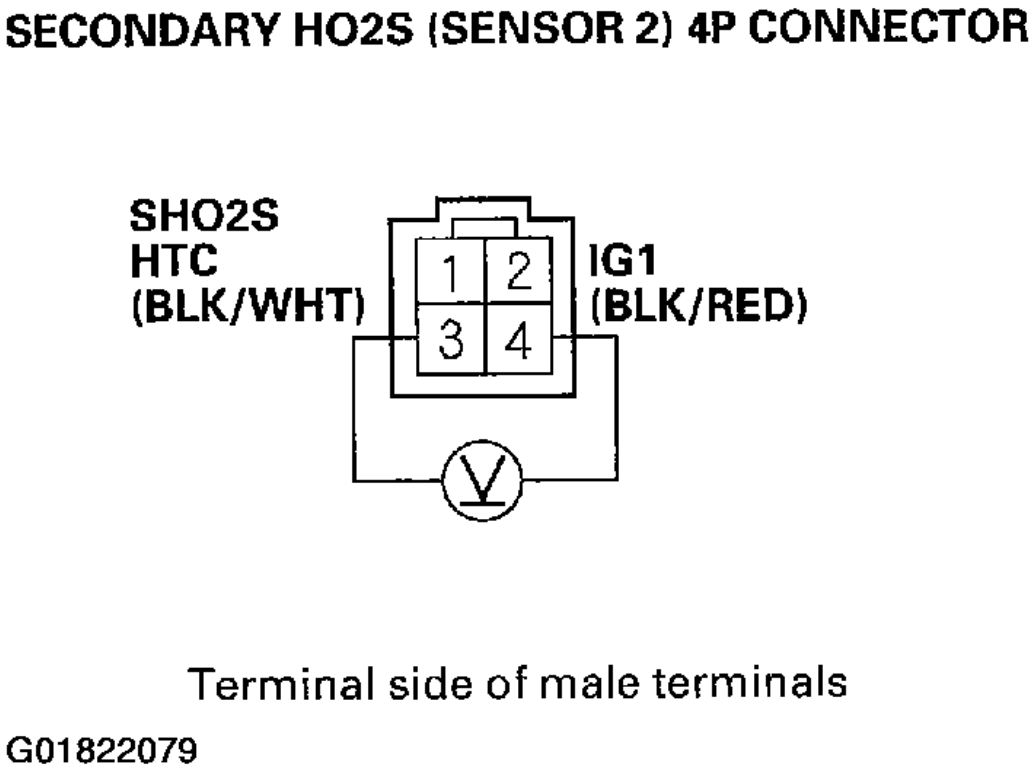


Fig. 40: Measuring Voltage Between Secondary HO2S 4P Connector Terminals No. 3 & No. 4

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector E (31P).
15. Check for continuity between ECM/PCM connector terminal E21 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (E21) and the secondary HO2S (Sensor 2), then go to step 24 .

NO: Go to step 29 .

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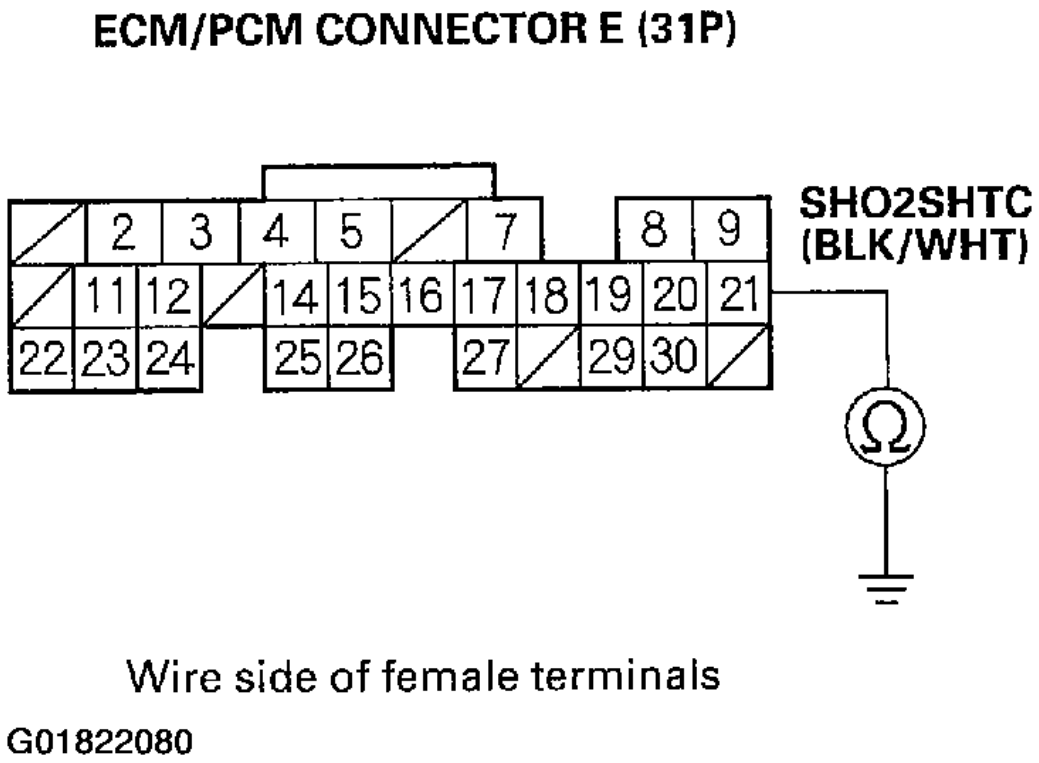


Fig. 41: Checking For Continuity Between ECM/PCM Connector Terminal E21 & Body Ground

16. Measure voltage between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

    Is there battery voltage?

    YES: Go to step 17.

    NO: Check the No. 18 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the secondary HO2S (Sensor 2) and No. 4 ACG (10A) fuse, then go to step 24 .

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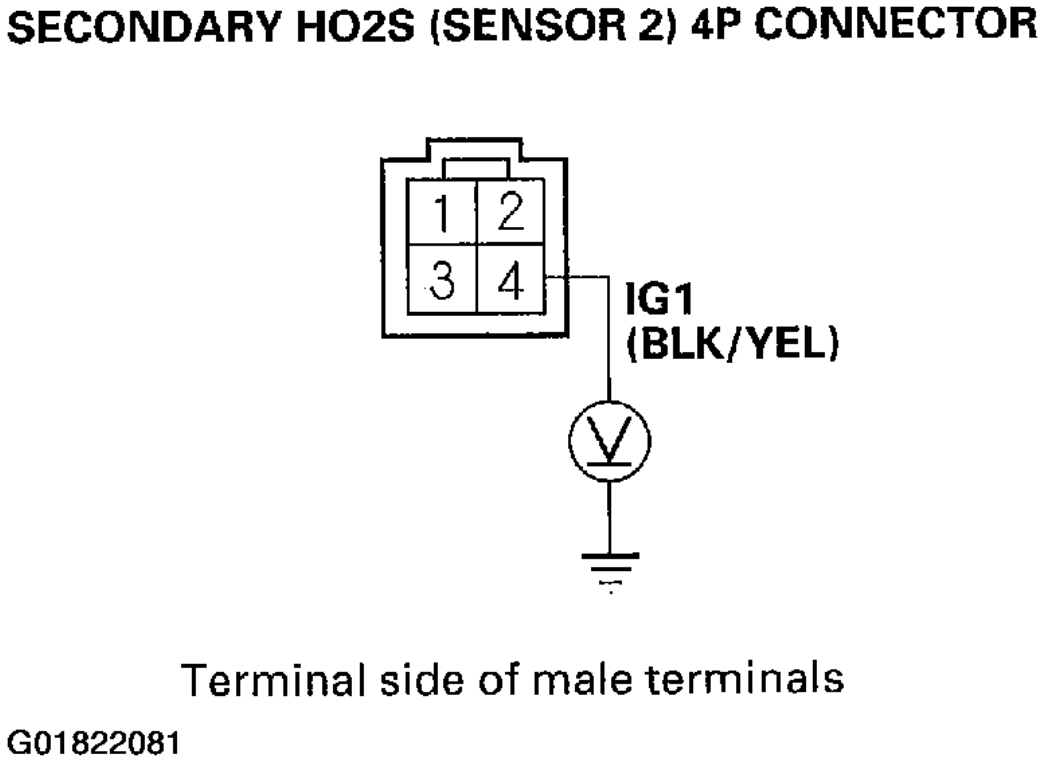


Fig. 42: Measuring Voltage Between Secondary HO2S (Sensor 2) 4P Connector Terminal No. 4 & Body Ground

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Reconnect the secondary HO2S (Sensor 2) 4P connector.
20. Disconnect ECM/PCM connector E (31P).
21. Turn the ignition switch ON (II).
22. Measure voltage between ECM/PCM connector terminals A5 and E21.

Is there 0.1 V or less?

YES: Repair open in the wire between the ECM/PCM (E21) and the secondary HO2S (Sensor 2), then go to step 25 .

NO: Go to step 29 .

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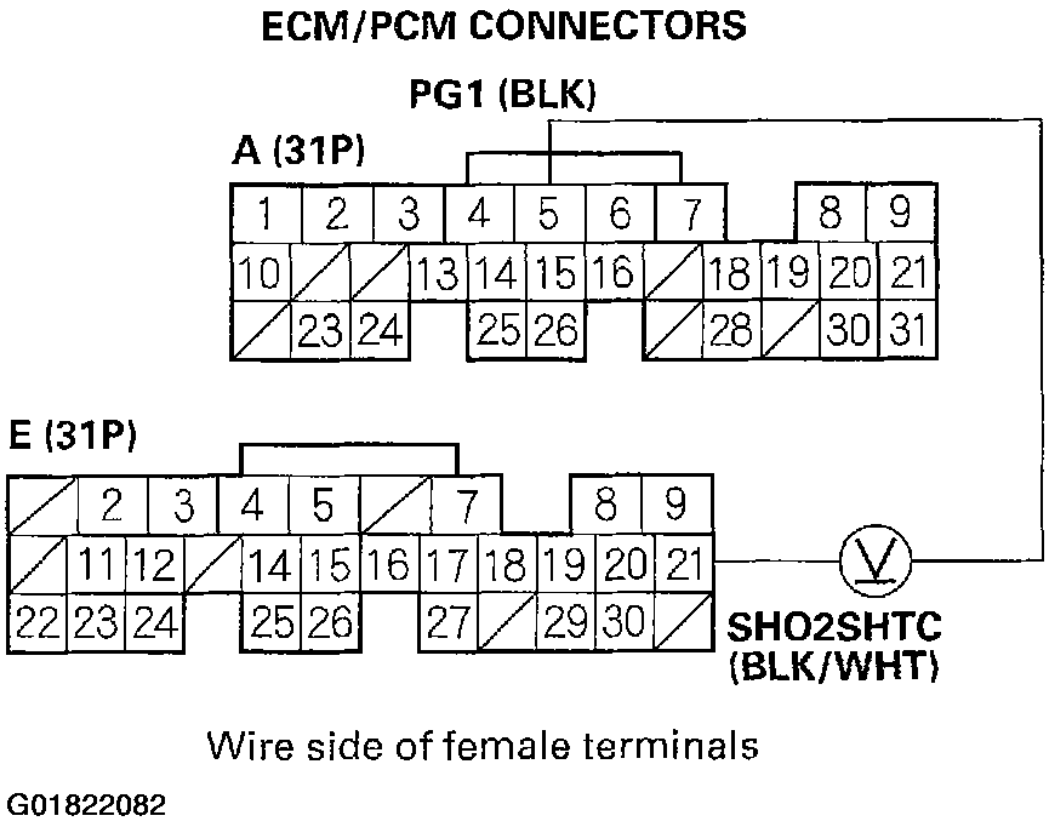


Fig. 43: Measuring Voltage Between ECM/PCM Connector Terminals A5 & E21

23. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0141 is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 28.
28. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If the screen indicates

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NOT COMPLETED, go to step 26 and recheck.

29. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
30. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0141 is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0171: FUEL SYSTEM TOO LEAN; DTC P0172: FUEL SYSTEM TOO RICH

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P0133, P1157, P2195, P2238, P2252, P2A00: Air fuel ratio (A/F) sensor (Sensor 1)
P0134, P0135: Air fuel ratio (A/F) sensor (Sensor 1) heater
P0137, P0138, P0139: Secondary HO2S (Sensor 2)
P0141: Secondary HO2S (Sensor 2) heater
P2646, P2647, P2648, P2649: VTEC system
P2279: Intake air leakage

1. Check the fuel pressure (see **FUEL PRESSURE TEST**).

Is the fuel pressure OK?

YES: Check the engine valve clearances and adjust if necessary. If the valve clearances are OK, replace the injectors (see **INJECTOR REPLACEMENT**), then go to step 2.

NO: Check the fuel pressure (see **FUEL PRESSURE TEST**).

- If the pressure is too high, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 2.
- If the pressure is too low, check the fuel pump and the fuel feed line, then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the ECM/PCM with the HDS.
4. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
5. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
6. Test-drive under the following conditions:

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- Engine coolant temperature more than 158°F (70°C)
- Transmission in 5th gear (A/T in D position)
- Drive at a steady speed between 15-75 MPH (24-120 km/h)

NOTE: DTC P0171 and/or P0172 may take up to 40 minutes of test driving to set. Using the HDS, monitor the long term fuel trim (LT FUEL TRIM) or air fuel feed back AVE (AF FB AVG) for 15 minutes of driving. If the fuel trim/AF AVG stays within 10% of 1.0 (0.0%), there is no problem at this time.

7. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES: If DTC P0171 or P0172 is indicated, go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

   NO: Troubleshooting is complete.

DTC P0300: RANDOM MISFIRE AND ANY COMBINATION OF THE FOLLOWING: DTC P0301: NO. 1 CYLINDER MISFIRE; DTC P0302: NO. 2 CYLINDER MISFIRE; DTC P0303: NO. 3 CYLINDER MISFIRE; DTC P0304: NO. 4 CYLINDER MISFIRE

Special Tools Required:

- Pressure gauge adaptor 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070300
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adaptor 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

NOTE:

- **If the misfire is frequent enough to trigger detection of increased emissions during 2 consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0304) will be stored.**
- **If the misfire is frequent enough to damage the catalyst, the MIL will flash whenever the misfire occurs, and DTC P0300 (and some combination of P0301 through P0304) will be stored. When the misfire stops, the MIL will remain on.**
- **Troubleshoot the following DTCs first, if any of them were stored along with the random misfire DTC(s):**

  P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor

  P0171, P0172: Fuel system

  P0335, P0339: Crankshaft position (CKP) sensor

  P0365, P0369: Camshaft position (CMP) sensor B

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P0506, P0507: Idle control system

1. Note the following freeze data:
   - Engine speed
   - Vehicle speed
   - Throttle position
   - CLV
   - Gear position
2. Clear the DTC with the HDS.
3. Start the engine with no load (in Park or neutral), then let it idle.
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 9 .

   NO: If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, wait for several minutes, and recheck.
5. Check the CYL 1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES: Go to step 9 .

   NO: Go to step 6.
6. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 9 .

   NO: If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 6 and recheck.
8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES: Go to step 9.

   NO: Intermittent failure, system is OK at this time.
9. Turn the ignition switch OFF.
10. Check the fuel quality.

    Is the quality good?

    YES: Go to step 11.

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NO: Drain the tank and fill it with known-good fuel, then go to step 20 .

11. Inspect the spark plugs (see **SPARK PLUG INSPECTION**). If the spark plugs are fouled or worn, replace them.
12. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES: Go to step 14.

    NO: Go to step 20 .
14. Check the fuel pressure (see **FUEL PRESSURE TEST**).

    Is the fuel pressure OK?

    YES: Go to step 15.

    NO:

    - If the pressure is too high, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 20 .
    - If the pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 20 .
15. Turn the ignition switch OFF.
16. Remove the VTEC oil pressure switch (A), and install the special tools as shown, then install the VTEC oil pressure switch (A) in the pressure gauge adapter (B).

NOTE: Install the switch in the reverse order of removal with a new O-ring.

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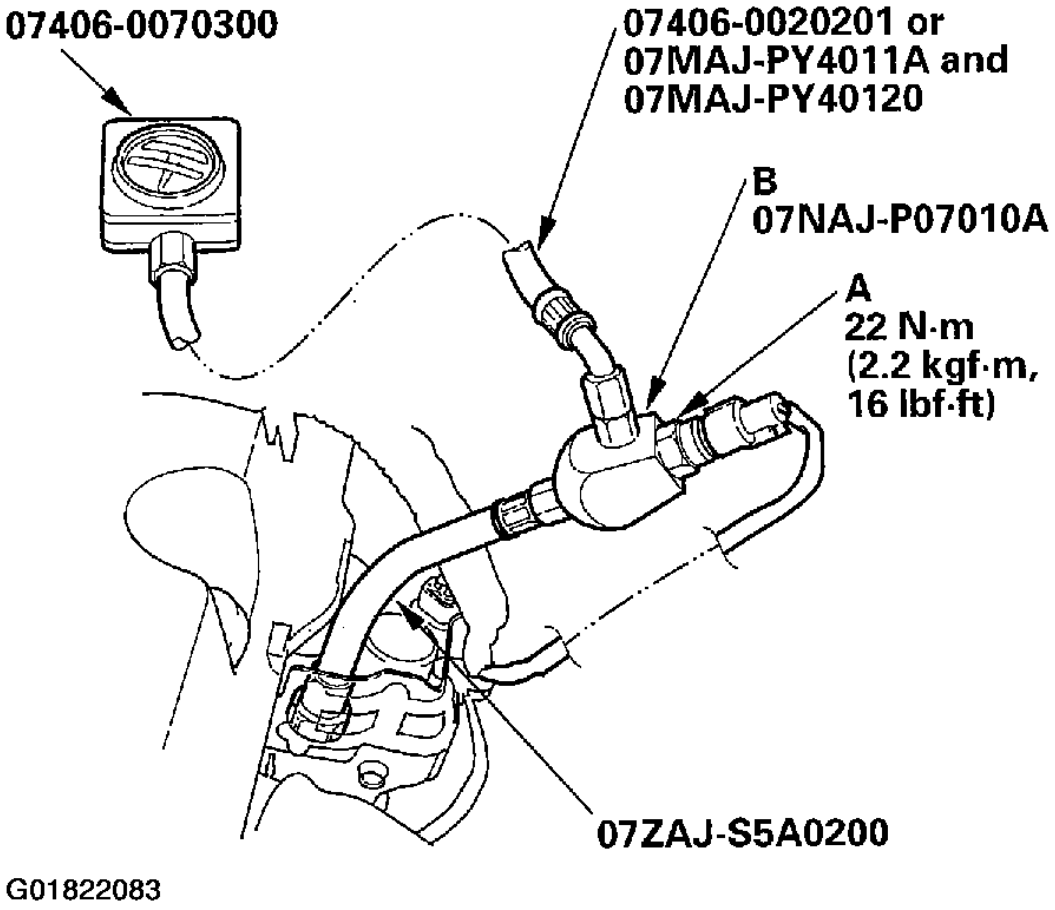


Fig. 44: Installing The Special Tools, Then Installing The VTEC Oil Pressure Switch In The Pressure Gauge Adapter

17. Reconnect the VTEC oil pressure switch 2P connector.
18. Start the engine. Hold the engine at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on.
19. Check the oil pressure at engine speeds of 1,000 and 2,000 RPM. Keep the test time as short as possible (less than 1 minute) because the engine is running with no load.

    Is the oil pressure below 49 kPa (0.5 kgf/cm^2 , 7 psi)?

    YES: Check the fuel pressure (see **FUEL PRESSURE TEST**), and repair as needed, then go to step 20.

    NO: Inspect the VTEC system, then go to step 20.
20. Turn the ignition switch ON (II).
21. Reset the ECM/PCM with the HDS.
22. Clear the CKP pattern with the HDS.

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23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Do the CKP pattern learn procedure (see **CKP PATTERN CLEAR/CKP PATTERN LEARN PROCEDURE**).
25. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
26. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0300, P0301, P0302, P0303, or P0304 are indicated, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM, then go to troubleshooting DTC P0301, P0302, P0303, or P0304 (see **DTC P0301: NO. 1 CYLINDER MISFIRE; DTC P0302: NO. 2 CYLINDER MISFIRE; DTC P0303: NO. 3 CYLINDER MISFIRE; DTC P0304: NO. 4 CYLINDER MISFIRE**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 27.
27. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 25 and recheck.

DTC P0301: NO. 1 CYLINDER MISFIRE; DTC P0302: NO. 2 CYLINDER MISFIRE; DTC P0303: NO. 3 CYLINDER MISFIRE; DTC P0304: NO. 4 CYLINDER MISFIRE

1. Note the following freeze data:
   - Engine speed
   - Vehicle speed
   - Throttle position
   - CLV
   - Gear position
2. Clear the DTC with the HDS.
3. Start the engine with no load (in Park or neutral), then let it idle.
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 9 .

   NO: If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, wait for several minutes, and recheck.
5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

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YES: Go to step 9 .

NO: Go to step 6.

6. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 9 .

   NO: If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 6 and recheck.
8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES: Go to step 9.

   NO: Intermittent failure, system is OK at this time.
9. Turn the ignition switch OFF.
10. Remove the intake manifold cover (see step 3 of **REMOVAL**).
11. Start the engine, and listen for a clicking sound at the injector of the problem cylinder.

    Does the injector click?

    YES: Go to step 12.

    NO: Go to step 43 .
12. Turn the ignition switch OFF.
13. Exchange the ignition coil from the problem cylinder with one from another cylinder.
14. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
15. Check the CYL 1 MISFIRE, CYL 2 MISFIRE, CYL 3 MISFIRE, and/or CYL 4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL 1 MISFIRE, CYL 2 MISFIRE, CYL 3 MISFIRE, and/or CYL 4 MISFIRE show misfire counts?

    YES: Go to step 16.

    NO: Intermittent misfire due to poor contact at the ignition coil connector (no misfire at this time). Make sure the coil connections are secure.
16. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was moved?

    YES: Replace the faulty ignition coil (see **IGNITION COIL REMOVAL/INSTALLATION**), then go to step 63 .

    NO: Go to step 17.
17. Turn the ignition switch OFF.
18. Exchange the spark plug from the problem cylinder with one from another cylinder.
19. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

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20. Check the CYL 1 MISFIRE, CYL 2 MISFIRE, CYL 3 MISFIRE, and/or CYL 4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL 1 MISFIRE, CYL 2 MISFIRE, CYL 3 MISFIRE, and/or CYL 4 MISFIRE show misfire counts?

    YES: Go to step 21.

    NO: Intermittent misfire due to spark plug fouling (no misfire at this time).

21. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the spark plug was moved?

    YES: Replace the faulty spark plug, then go to step 63 .

    NO: Go to step 22.

22. Turn the ignition switch OFF.
23. Exchange the injector from the problem cylinder with one from another cylinder.
24. Start the engine, and let it idle for 2 minutes.
25. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
26. Check the CYL 1 MISFIRE, CYL 2 MISFIRE, CYL 3 MISFIRE, and/or CYL 4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL 1 MISFIRE, CYL 2 MISFIRE, CYL 3 MISFIRE, and/or CYL 4 MISFIRE show misfire counts?

    YES: Go to step 27.

    NO: Intermittent misfire due to bad contact in the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector.

27. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the injector was moved?

    YES: Replace the faulty injector (see **INJECTOR REPLACEMENT**), then go to step 63 .

    NO: Go to step 28.

28. Turn the ignition switch OFF.
29. Disconnect the ignition coil 3P connector from the problem cylinder.
30. Turn the ignition switch ON (II).
31. Measure voltage between ignition coil 3P connector terminal No. 3 and body ground.

    Is there battery voltage?

    YES: Go to step 32.

    NO: Repair open in the wire between the ignition coil and the No. 1 ignition coil (15A) fuse relay, then go to step 63 .

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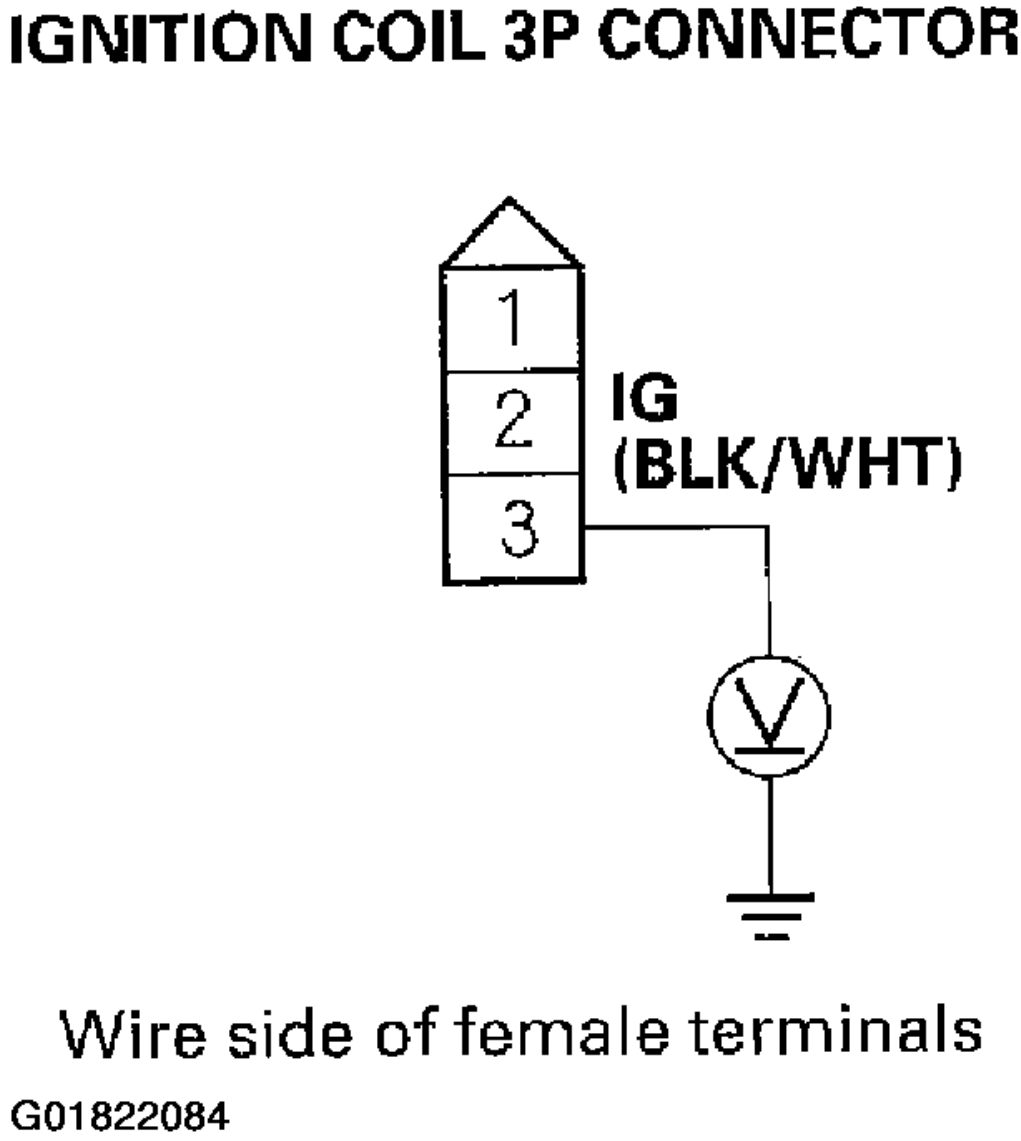


Fig. 45: Measuring Voltage Between Ignition Coil 3P Connector Terminal No. 3 & Body Ground

32. Turn the ignition switch OFF.
33. Check for continuity between ignition coil 3P connector terminal No. 2 and body ground.

Is there continuity?

YES: Go to step 34.

NO: Repair open in the wire between the ignition coil and G 101, then go to step 63 .

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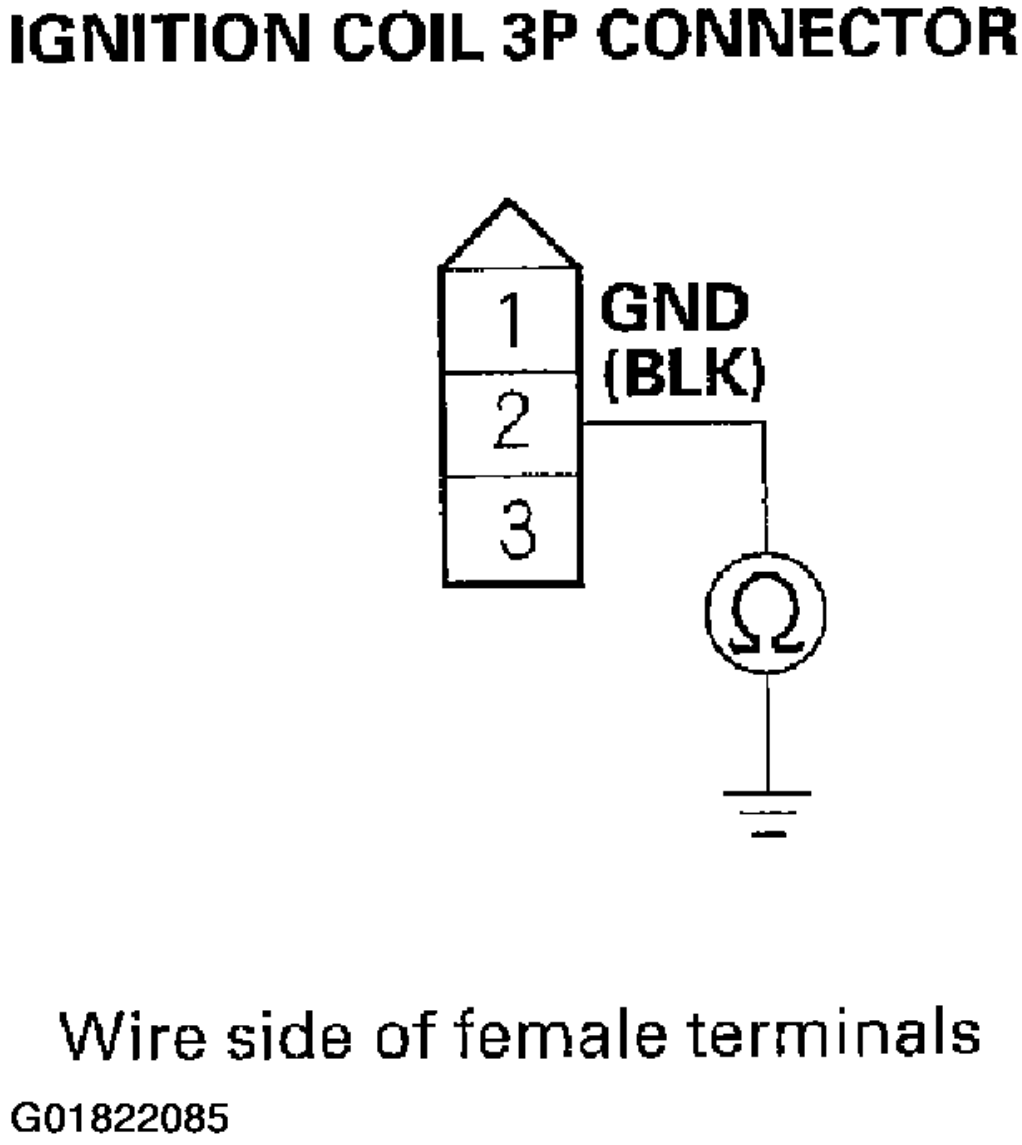


Fig. 46: Checking For Continuity Between Ignition Coil 3P Connector Terminal No. 2 & Body Ground

34. Turn the ignition switch OFF.
35. Jump the SCS line with the HDS.
36. Disconnect ECM/PCM connector A (31P).
37. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see **Fig. 47** and **Fig. 48**).

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Is there continuity?

YES: Repair short in the wire between the ECM/PCM and the ignition coil, then go to step 63 .

NO: Go to step 63 .

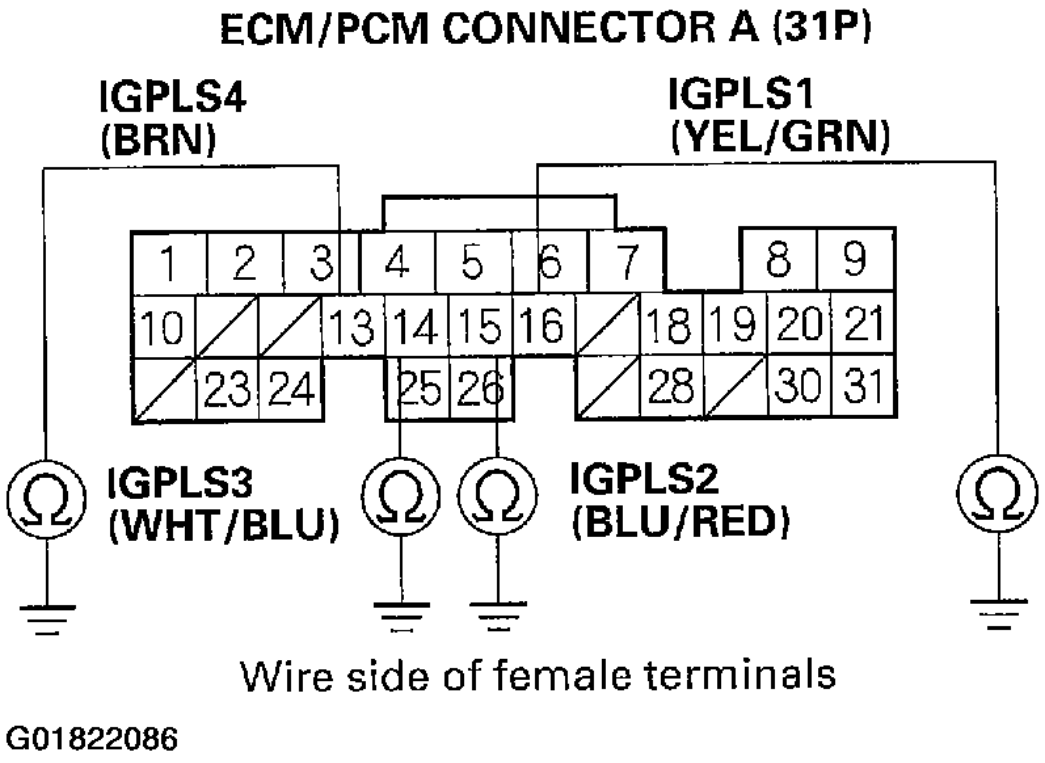


Fig. 47: Checking For Continuity Between Body Ground & The Appropriate ECM/PCM Connector Terminals

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PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	A16	YEL/GRN
No. 2	P0302	A15	BLU/RED
No. 3	P0303	A14	WHT/BLU
No. 4	P0304	A13	BRN

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Fig. 48: DTC/Terminal Identification Table

38. Connect the appropriate ignition coil 3P connector terminal No. 1 to body ground with a jumper wire (see **Fig. 49** and **Fig. 50**).

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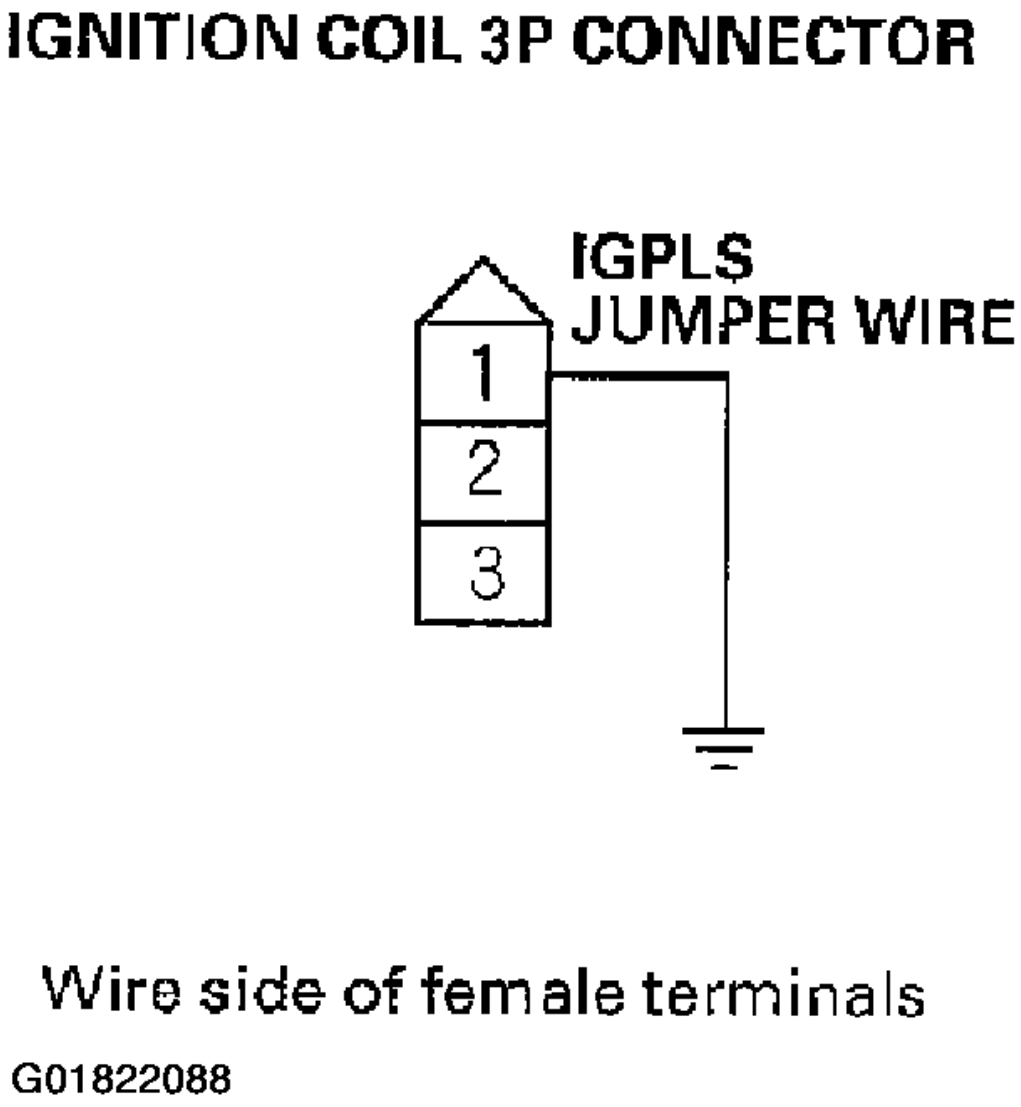


Fig. 49: Connecting The Appropriate Ignition Coil 3P Connector Terminal No. 1 To Body Ground With A Jumper Wire

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PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	YEL/GRN
No. 2	P0302	BLU/RED
No. 3	P0303	WHT/BLU
No. 4	P0304	BRN

G01822089

Fig. 50: DTC/Terminal Identification Table

39. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see **Fig. 51** and **Fig. 52**).

    Is there continuity?

    YES: Go to step 40.

    NO: Repair open in the wire between the ECM/PCM and the ignition coil, then go to step 63 .

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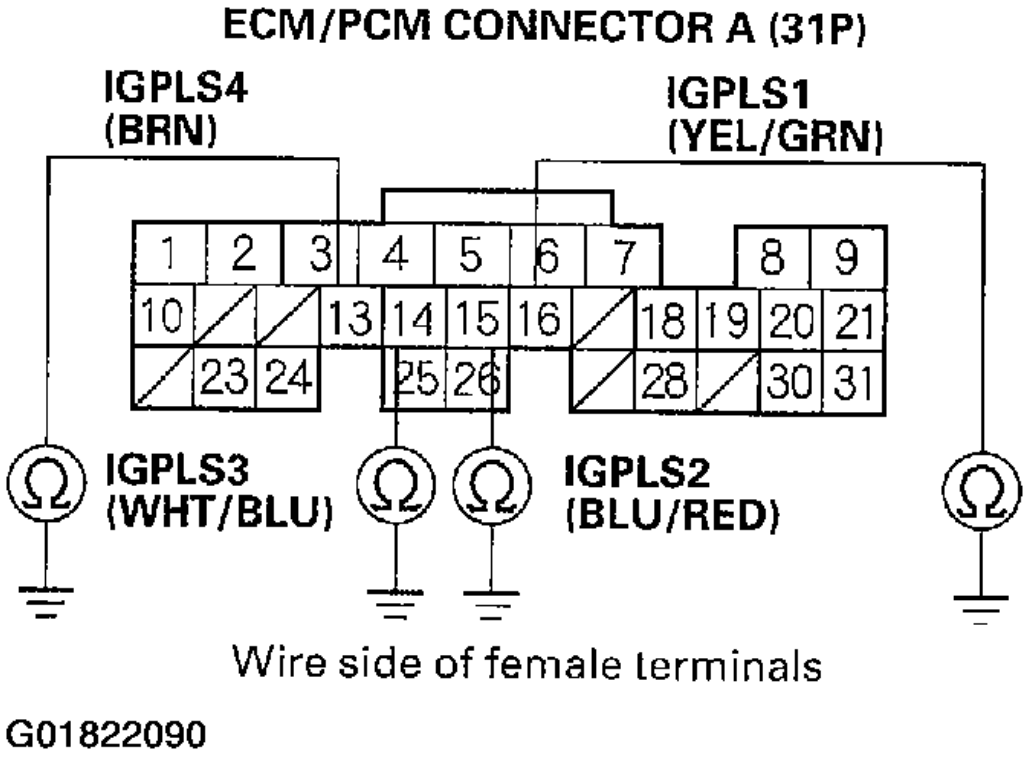


Fig. 51: Checking For Continuity Between Body Ground & The Appropriate ECM/PCM Connector Terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	A16	YEL/GRN
No. 2	P0302	A15	BLU/RED
No. 3	P0303	A14	WHT/BLU
No. 4	P0304	A13	BRN

G01822091

Fig. 52: DTC/Terminal Identification Table

40. Reconnect the ignition coil 3P connector and ECM/PCM connector A (31P).

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41. Do an engine compression and a cylinder leakdown test.

    Did the engine pass both tests?

    YES: Go to step 42.

    NO: Repair the engine, then go to step 63 .

42. Do the VTEC rocker arm test (see **VTEC ROCKER ARM TEST**).

    Did the VTEC rocker arm pass the test?

    YES: Go to step 71 .

    NO: Repair as necessary, then go to step 63 .

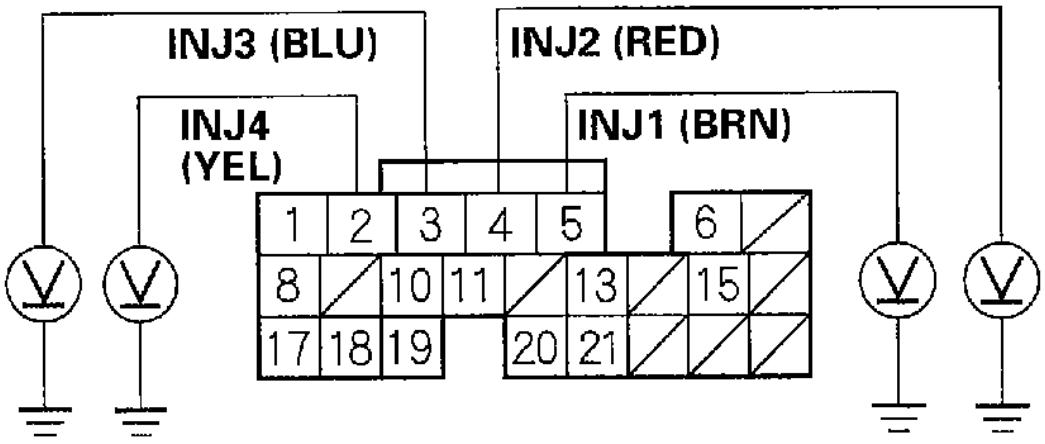
43. Turn the ignition switch OFF.
44. Jump the SCS line with the HDS.
45. Disconnect ECM/PCM connector B (24P).
46. Turn the ignition switch ON (II).
47. Measure voltage between body ground and the appropriate ECM/PCM connector terminal (see **Fig. 53** and **Fig. 54**).

    Is there battery voltage?

    YES: Go to step 57 .

    NO: Go to step 48.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

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Fig. 53: Measuring Voltage Between Body Ground & The Appropriate ECM/PCM Connector Terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

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Fig. 54: DTC/Terminal Identification Table

48. Turn the ignition switch OFF.
49. Remove the intake manifold cover (see step 3 of **REMOVAL**).
50. Disconnect the injector 2P connector from the problem cylinder.
51. Turn the ignition switch ON (II).
52. Measure voltage between injector 2P connector terminal No. 1 and body ground.

Is there battery voltage?

YES: Go to step 53.

NO: Repair open in the wire between the injector and the PGM-FI main relay, then go to step 63 .

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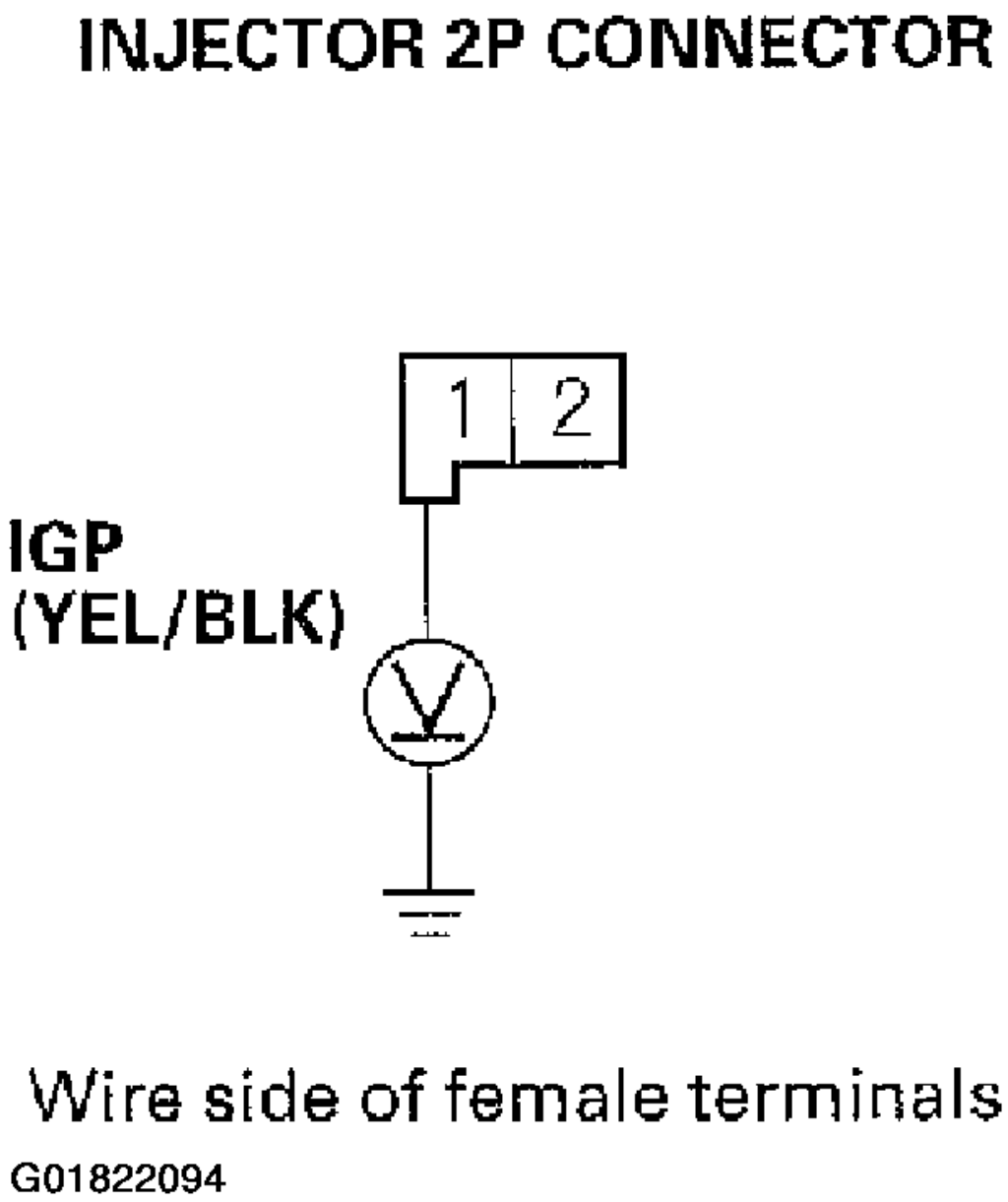


Fig. 55: Measuring Voltage Between Injector 2P Connector Terminal No. 1 & Body Ground

53. Turn the ignition switch OFF.
54. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see **Fig. 56** and **Fig. 57**).

    Is there continuity?

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YES: Repair short in the wire between the ECM/PCM and the injector, then go to step 63 .
NO: Go to step 55.

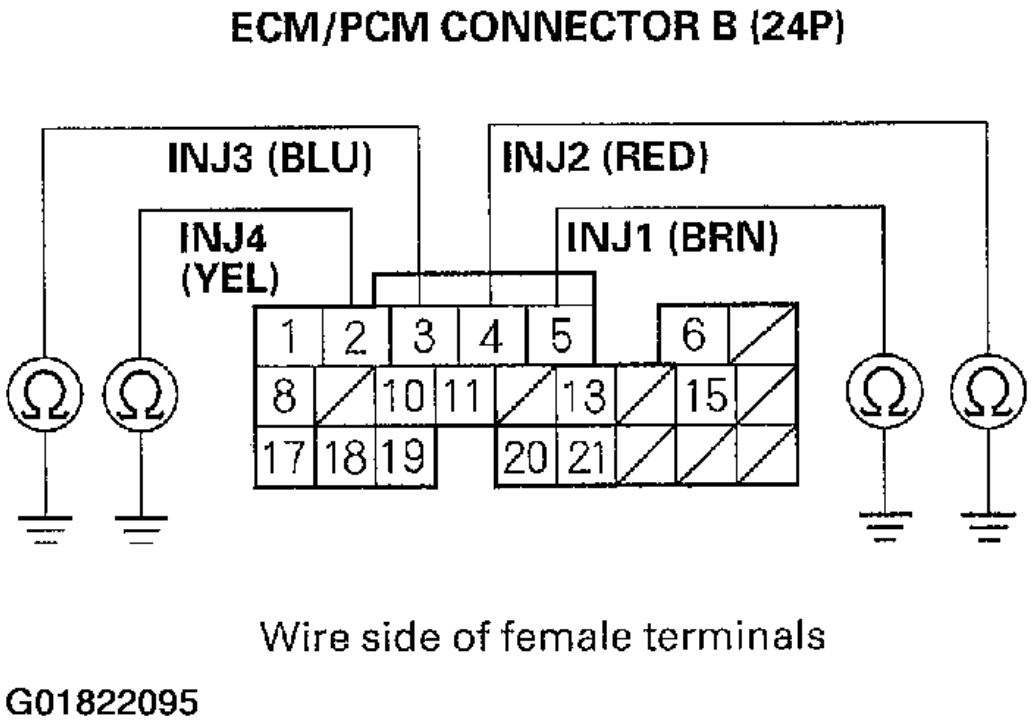


Fig. 56: Checking For Continuity Between Body Ground & The Appropriate ECM/PCM Connector Terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

G01822096

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Fig. 57: DTC/Terminal Identification Table

55. Connect the appropriate injector 2P connector terminal No. 2 to body ground with a jumper wire (see **Fig. 58** and **Fig. 59**).

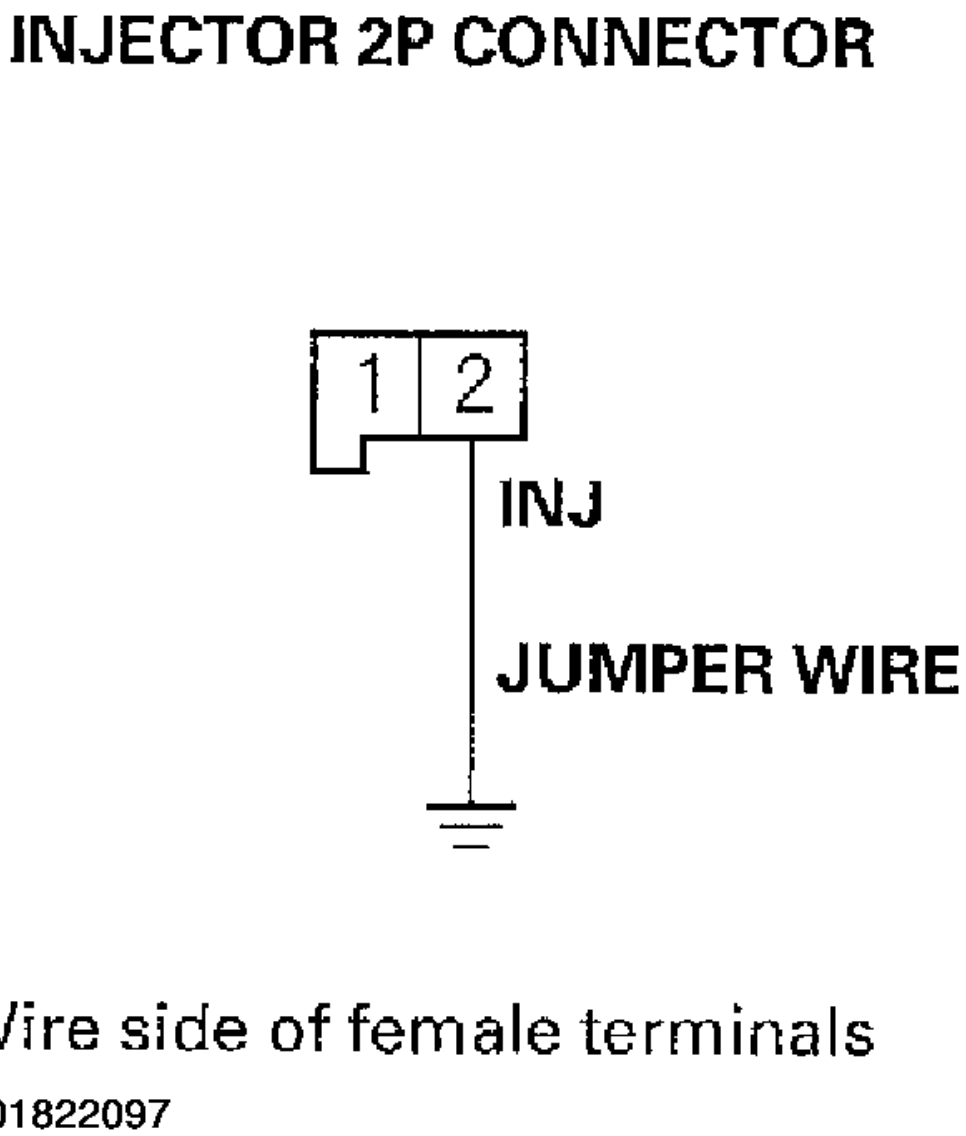


Fig. 58: Connecting The Appropriate Injector 2P Connector Terminal No. 2 To Body Ground With A Jumper Wire

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PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	BRN
No. 2	P0302	RED
No. 3	P0303	BLU
No. 4	P0304	YEL

G01822098

Fig. 59: DTC/Terminal Identification Table

56. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see **Fig. 60** and **Fig. 61**).

    Is there continuity?

    YES: Go to step 57.

    NO: Repair open in the wire between the ECM/PCM and the injector, then go to step 63 .

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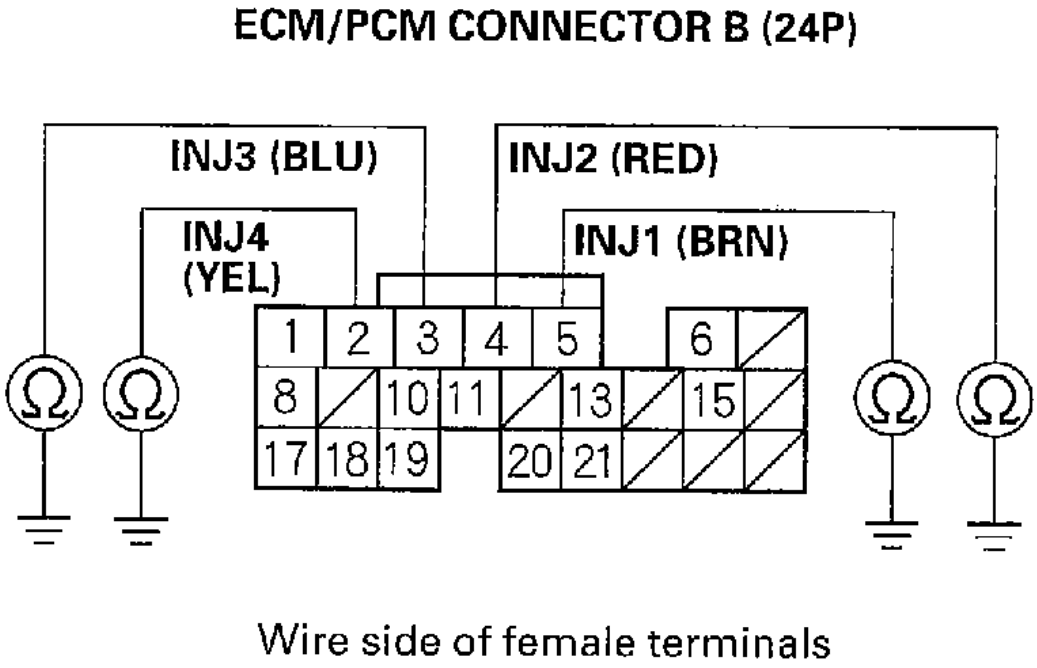


Fig. 60: Checking For Continuity Between Body Ground & The Appropriate ECM/PCM Connector Terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	B5	BRN
No.2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

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Fig. 61: DTC/Terminal Identification Table

57. Measure resistance between injector 2P connector terminals No. 1 and No. 2.

Is there 10-13 ohm?

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YES: Go to step 58.
NO: Replace the injector (see **INJECTOR REPLACEMENT**), then go to step 63 .

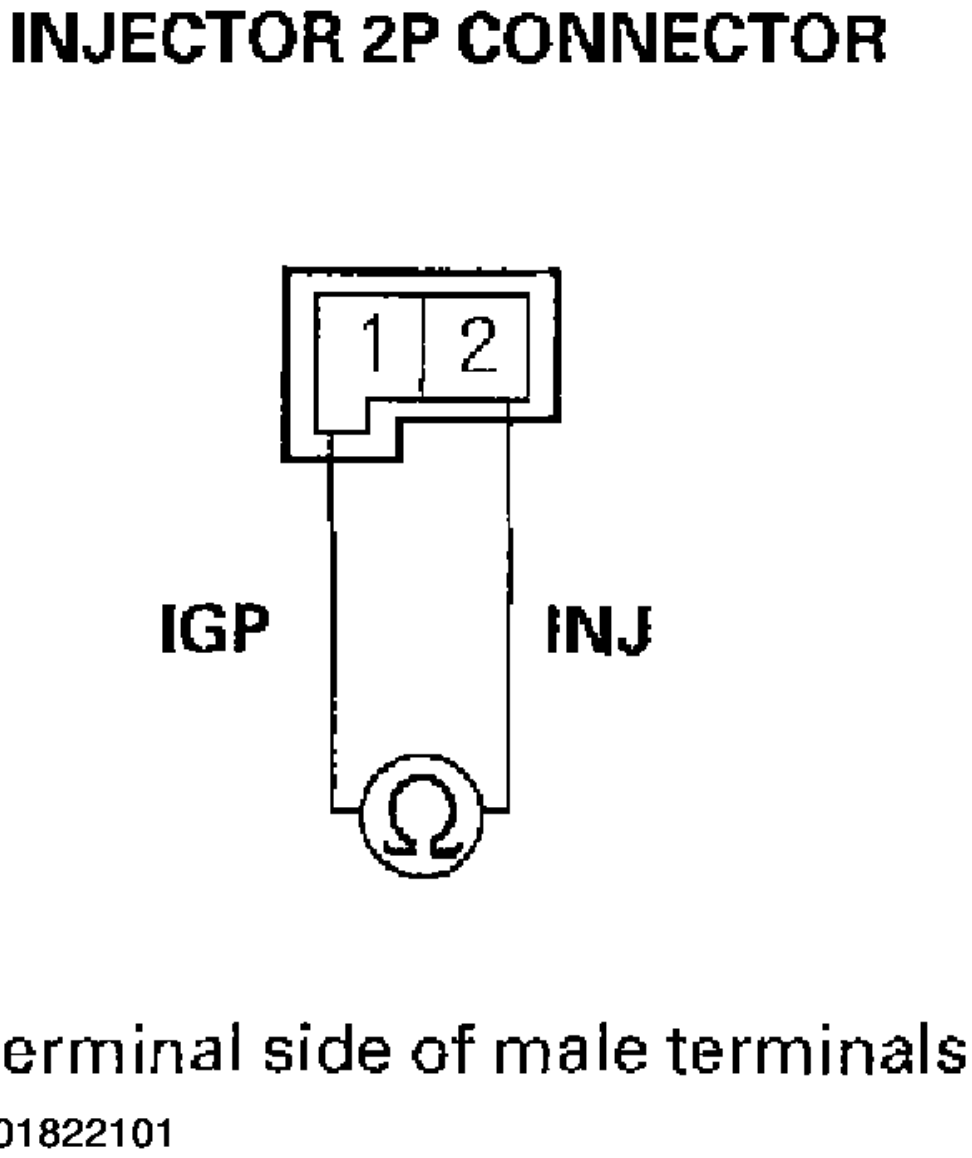


Fig. 62: Measuring Resistance Between Injector 2P Connector Terminals No. 1 & No. 2

58. Substitute a known-good injector from another cylinder to the problem cylinder.
59. Reconnect ECM/PCM connector B (24P).
60. Start the engine, and let it idle for 2 minutes.

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61. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
62. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES: Go to step 71 .

    NO: Replace the original injector (see **INJECTOR REPLACEMENT**), then go to step 63.
63. Turn the ignition switch ON (II).
64. Reset the ECM/PCM with the HDS.
65. Clear the CKP pattern with the HDS.
66. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
67. Do the CKP pattern learn procedure (see **CKP PATTERN CLEAR/CKP PATTERN LEARN PROCEDURE**).
68. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
69. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0301, P0302, P0303, or P0304 are indicated, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM, then go to troubleshooting DTC P0300, P0301, P0302, P0303, or P0304 (see **DTC P0300: RANDOM MISFIRE AND ANY COMBINATION OF THE FOLLOWING: DTC P0301: NO. 1 CYLINDER MISFIRE; DTC P0302: NO. 2 CYLINDER MISFIRE; DTC P0303: NO. 3 CYLINDER MISFIRE; DTC P0304: NO. 4 CYLINDER MISFIRE**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 70.
70. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates Out of CONDITION, go to step 68 and recheck.
71. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
72. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
73. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0301, P0302, P0303, or P0304 are indicated, check for poor connections or loose terminals at the injector, the ignition coil, and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

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DTC P0325: KNOCK SENSOR CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine at 3,000-4,000 RPM for at least 60 seconds.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0325 indicated?

   YES: Go to step 6.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the ECM/PCM.
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor 1P connector.
9. Disconnect ECM/PCM connector A (31P).
10. Check for continuity between ECM/PCM connector terminal A1 and body ground.

    Is there continuity?

    YES: Repair short in the wire between the ECM/PCM (A1) and the knock sensor, then go to step 14 .

    NO: Go to step 11.

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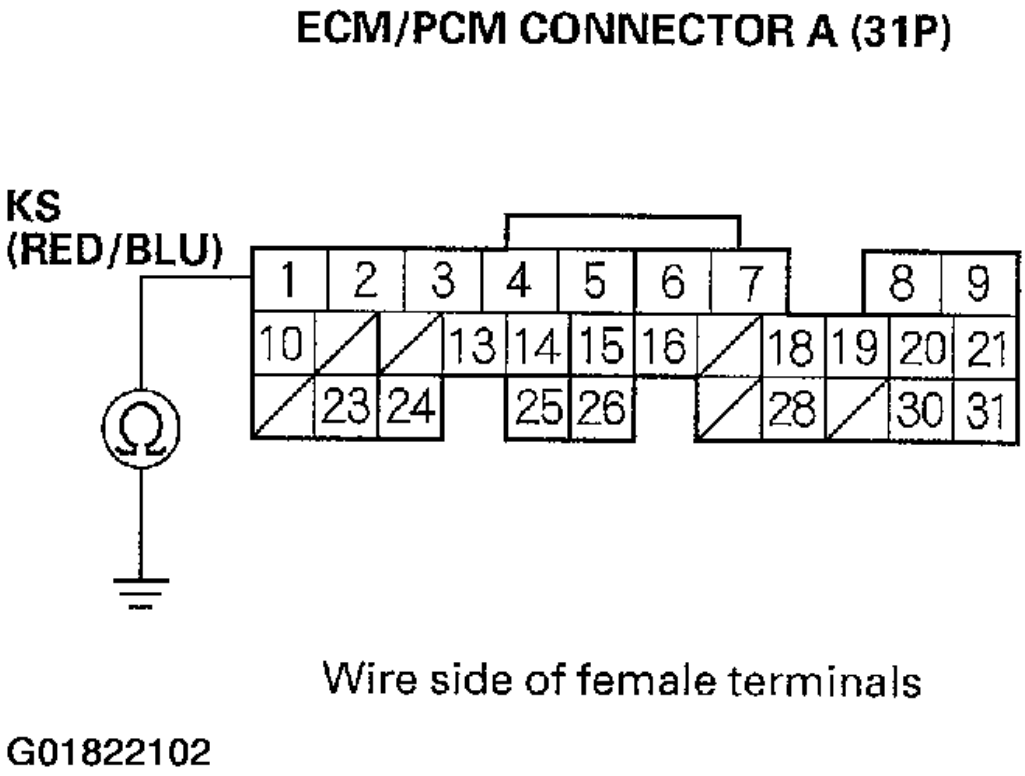


Fig. 63: Checking For Continuity Between ECM/PCM Connector Terminal A1 & Body Ground

11. Connect the knock sensor 1P connector terminal to body ground with a jumper wire.

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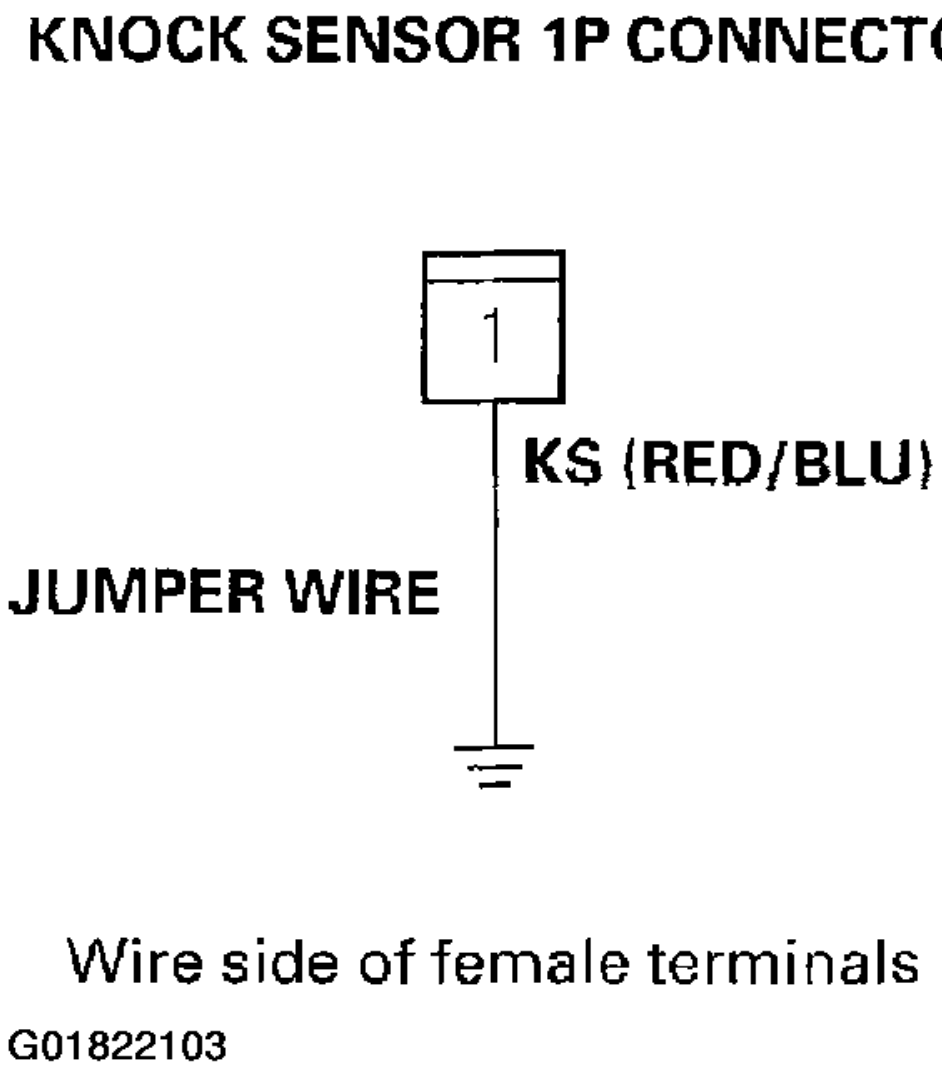


Fig. 64: Connecting The Knock Sensor 1P Connector Terminal To Body Ground With A Jumper Wire

12. Check for continuity between ECM/PCM connector terminal A1 and body ground.

    Is there continuity?

    YES: Go to step 13.

    NO: Repair open in the wire between the ECM/PCM (A1) and the knock sensor, then go to step 14 .

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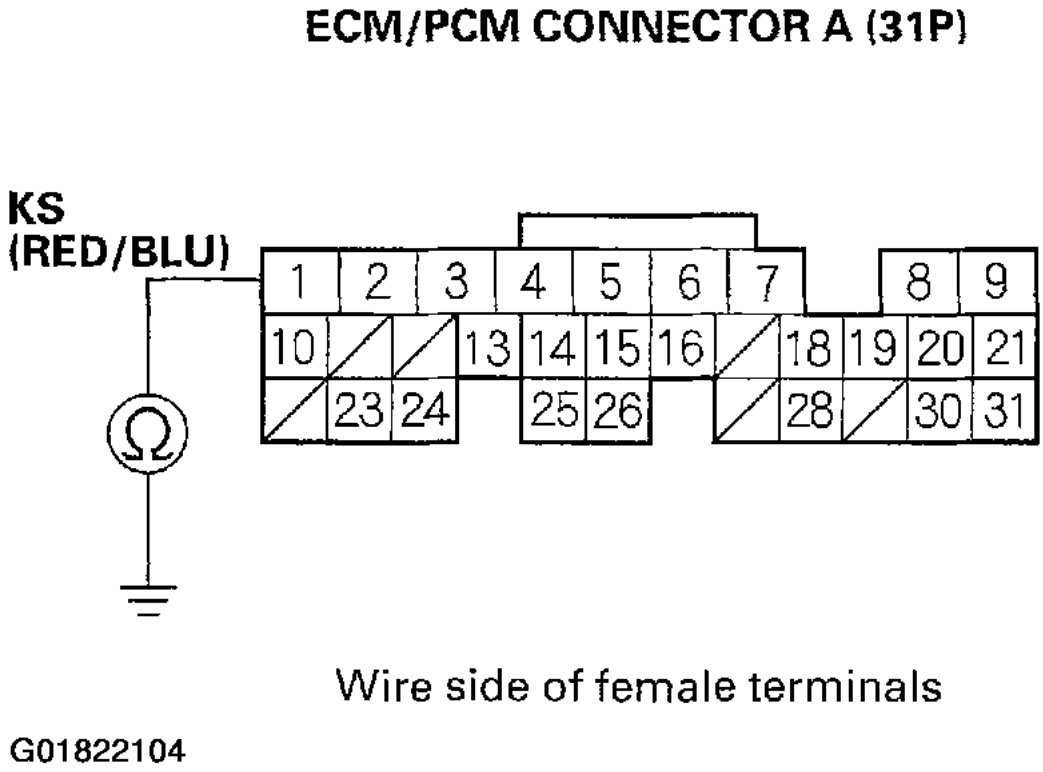


Fig. 65: Checking For Continuity Between ECM/PCM Connector Terminal A1 & Body Ground

13. Replace the knock sensor (see **IAT SENSOR REPLACEMENT**).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Hold the engine at 3,000-4,000 RPM for at least 60 seconds.
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: Go to step 20 .

    NO: Go to step 19.
19. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 16 and recheck.

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20. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
21. Hold the engine at 3,000-4,000 RPM for at least 60 seconds.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0325 is indicated, check for poor connections or loose terminals at the knock sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0335: CKP SENSOR NO SIGNAL

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P0335 indicated?

    YES: Go to step 5.

    NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM.
5. Turn the ignition switch OFF.
6. Disconnect the CKP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CKP sensor 3P connector terminal No. 1 and body ground.

    Is there battery voltage?

    YES: Go to step 9.

    NO: Repair open in the wire between the CKP sensor and PGM-FI main relay 1, then go to step 19 .

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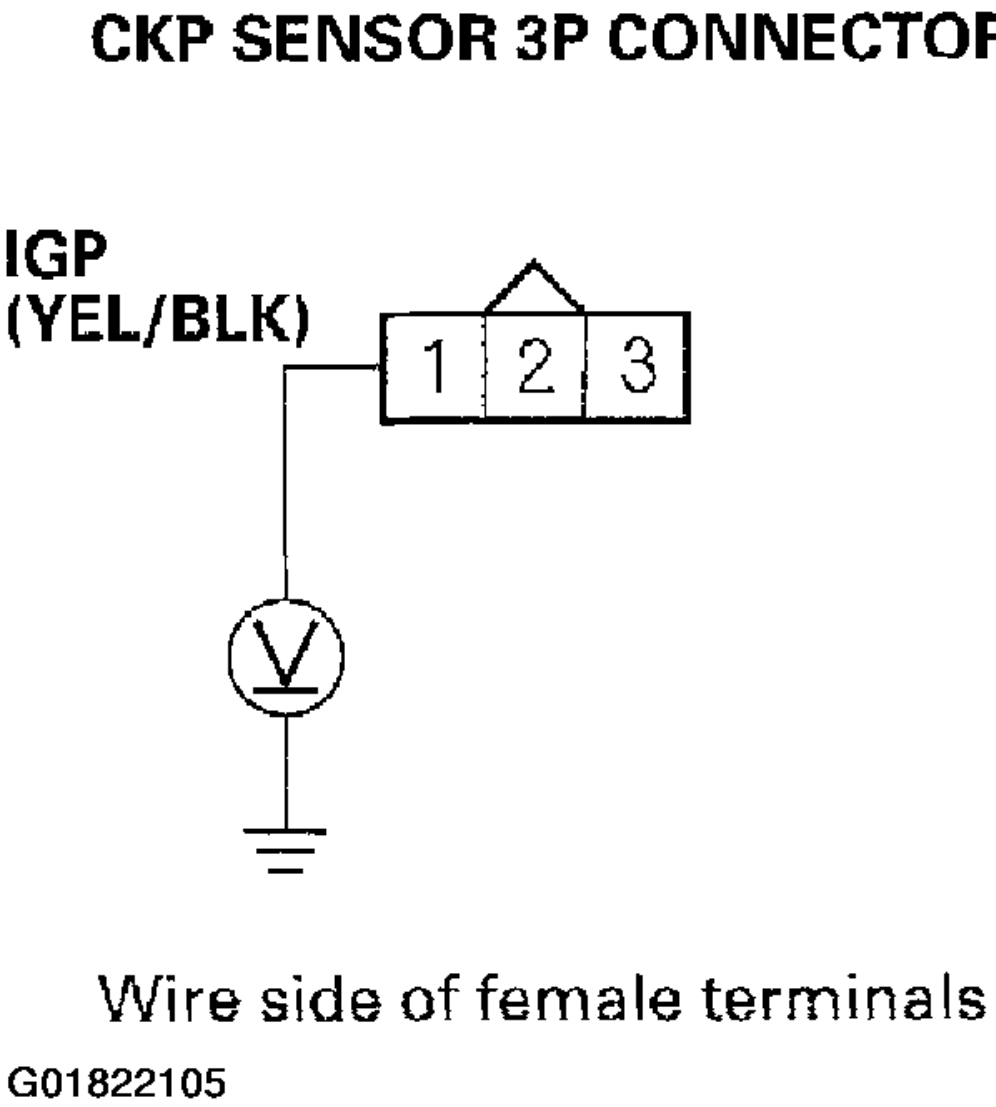


Fig. 66: Measuring Voltage Between CKP Sensor 3P Connector Terminal No. 1 & Body Ground

9. Measure voltage between CKP sensor 3P connector terminal No. 2 and body ground.

   Is there about 5 V?

   YES: Go to step 10.

   NO: Go to step 11 .

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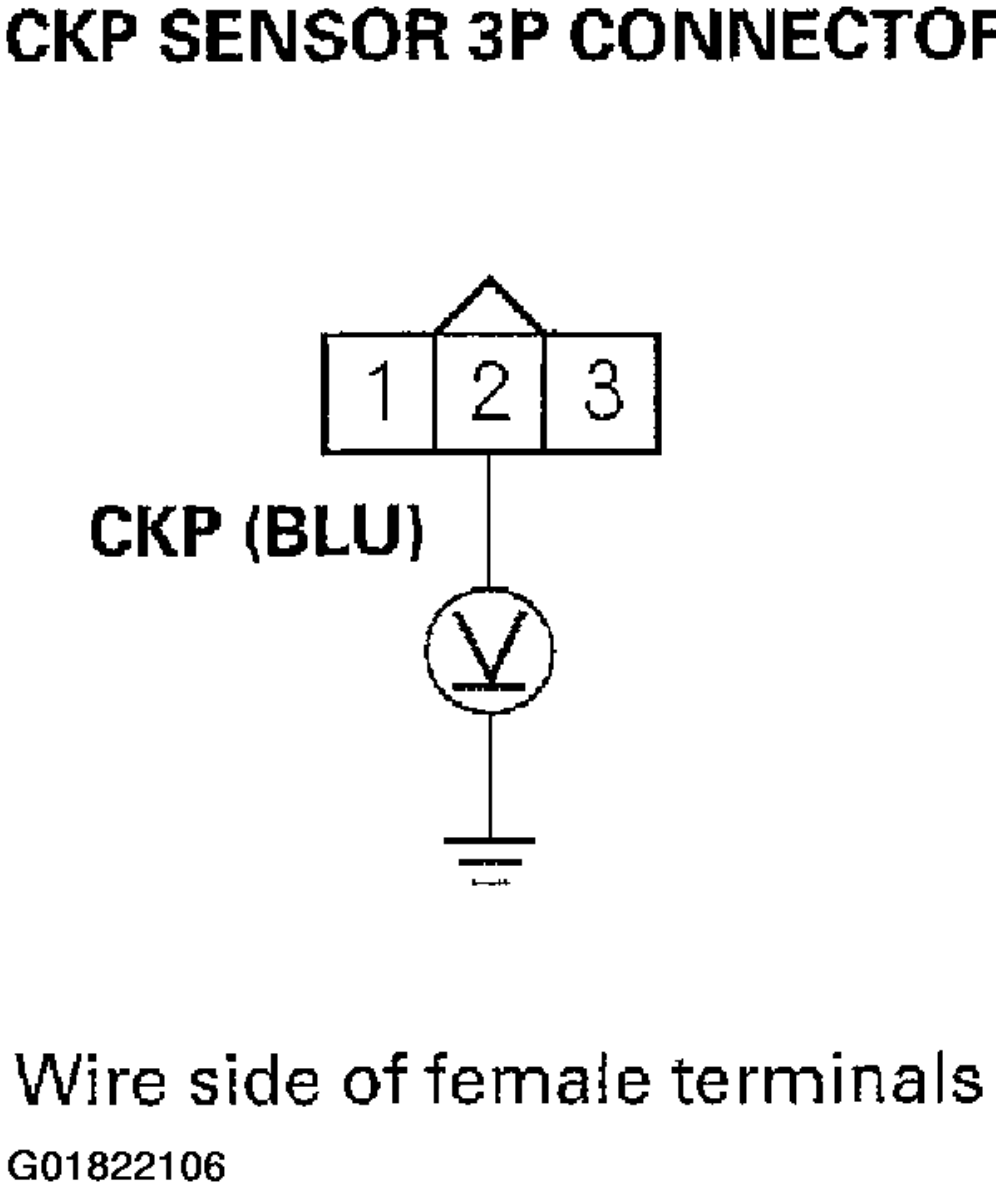


Fig. 67: Measuring Voltage Between CKP Sensor 3P Connector Terminal No. 2 & Body Ground

10. Measure voltage between CKP sensor 3P connector terminals No. 1 and No. 3.

    Is there battery voltage?

    YES: Go to step 16 .

    NO: Repair open in the wire between the CKP sensor and G101, then go to step 19 .

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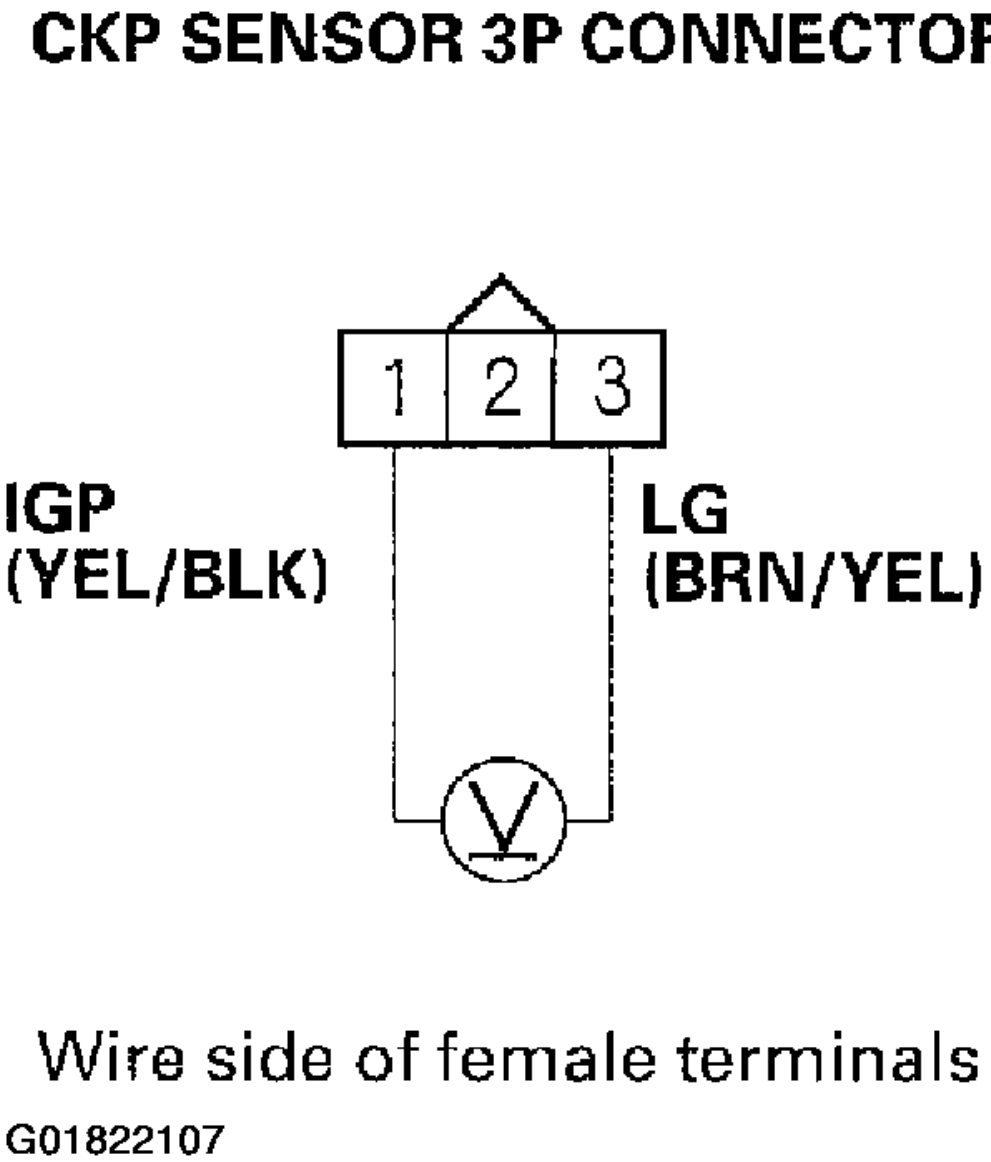


Fig. 68: Measuring Voltage Between CKP Sensor 3P Connector Terminals No. 1 & No. 3

11. Measure voltage between ECM/PCM connector terminal A7 and body ground.

    Is there about 5 V?

    YES: Repair open in the wire between the ECM/PCM (A7) and the CKP sensor, then go to step 19 .

    NO: Go to step 12.

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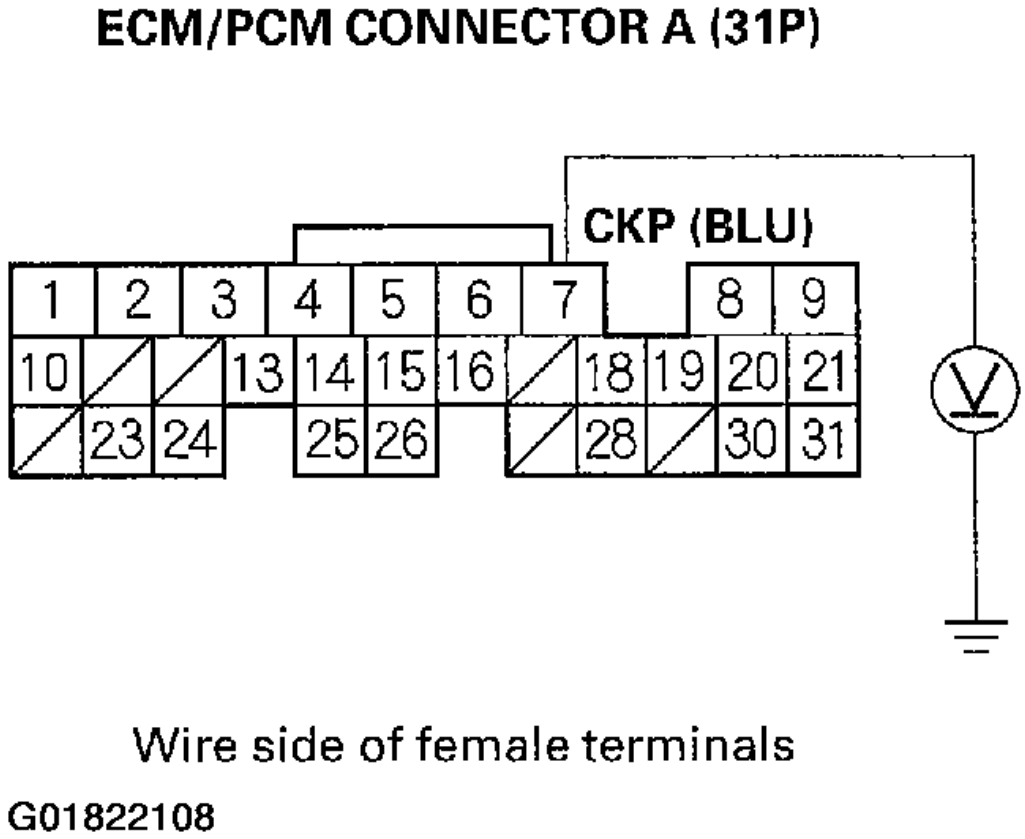


Fig. 69: Measuring Voltage Between ECM/PCM Connector Terminal A7 & Body Ground

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (31P).
15. Check for continuity between ECM/PCM connector terminal A7 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (A7) and the CKP sensor, then go to step 18 .

NO: Go to step 24 .

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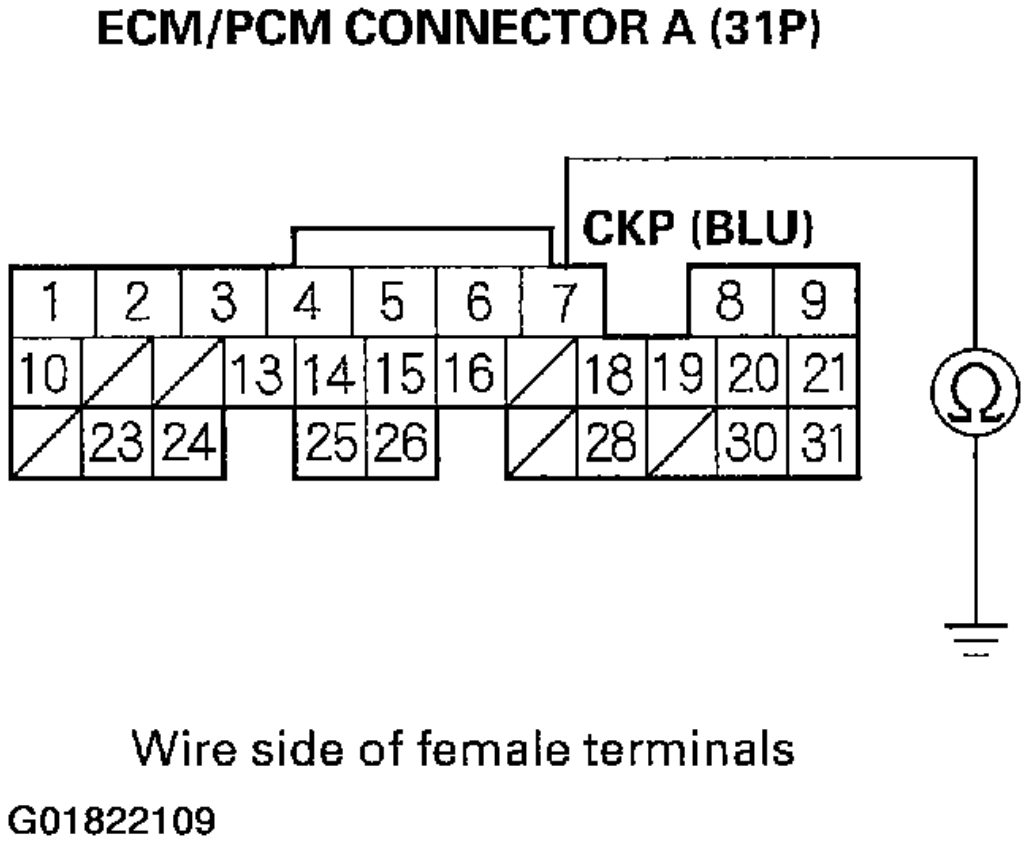


Fig. 70: Checking For Continuity Between ECM/PCM Connector Terminal A7 & Body Ground

16. Turn the ignition switch OFF.
17. Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**), then go to step 18.
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Clear the CKP pattern with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Do the CKP pattern learn procedure (see **CKP PATTERN CLEAR/CKP PATTERN LEARN PROCEDURE**).
23. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0335 is indicated, check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are

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indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

24. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0335 is indicated, check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0339: CKP SENSOR INTERMITTENT INTERRUPTION

1. Note the following freeze data.
   - Engine speed
   - Vehicle speed
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CKP NOISE COUNT in the DATA LIST with the HDS.

Are 0 counts indicated?

YES: Go to step 7 .

NO: Go to step 5.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
6. Check the CKP NOISE COUNT in the DATA LIST with the HDS.

Are 0 counts indicated?

YES: Go to step 7.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM.

7. Check for poor or loose connections and terminals at the following:
   - CKP sensor
   - ECM/PCM
   - Engine ground
   - Body ground

Are the connections and terminals OK?

YES: Go to step 8.

NO: Repair the connectors or terminals, then go to step 11 .

8. Remove the cam chain case (see **CAM CHAIN REMOVAL**), and check for damage on the CKP sensor pulse plate.

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Is the pulse plate damaged?

YES: Replace the CKP sensor pulse plate, then go to step 11 .

NO: Go to step 9.

9. Turn the ignition switch OFF.
10. Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM/PCM with the HDS.
13. Clear the CKP pattern with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Do the CKP pattern learn procedure (see **CKP PATTERN CLEAR/CKP PATTERN LEARN PROCEDURE**).
16. Start the engine, and let it idle for 10 seconds.
17. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0339 is indicated, check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

DTC P0365: CMP SENSOR B NO SIGNAL

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P0365 indicated?

YES: Go to step 5.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at CKP sensor B and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor B 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor B 3P connector terminal No. 3 and body ground.

Is there battery voltage?

YES: Go to step 9.

NO: Repair open in the wire between CMP sensor B and PGM-FI main relay 1, then go to step 19 .

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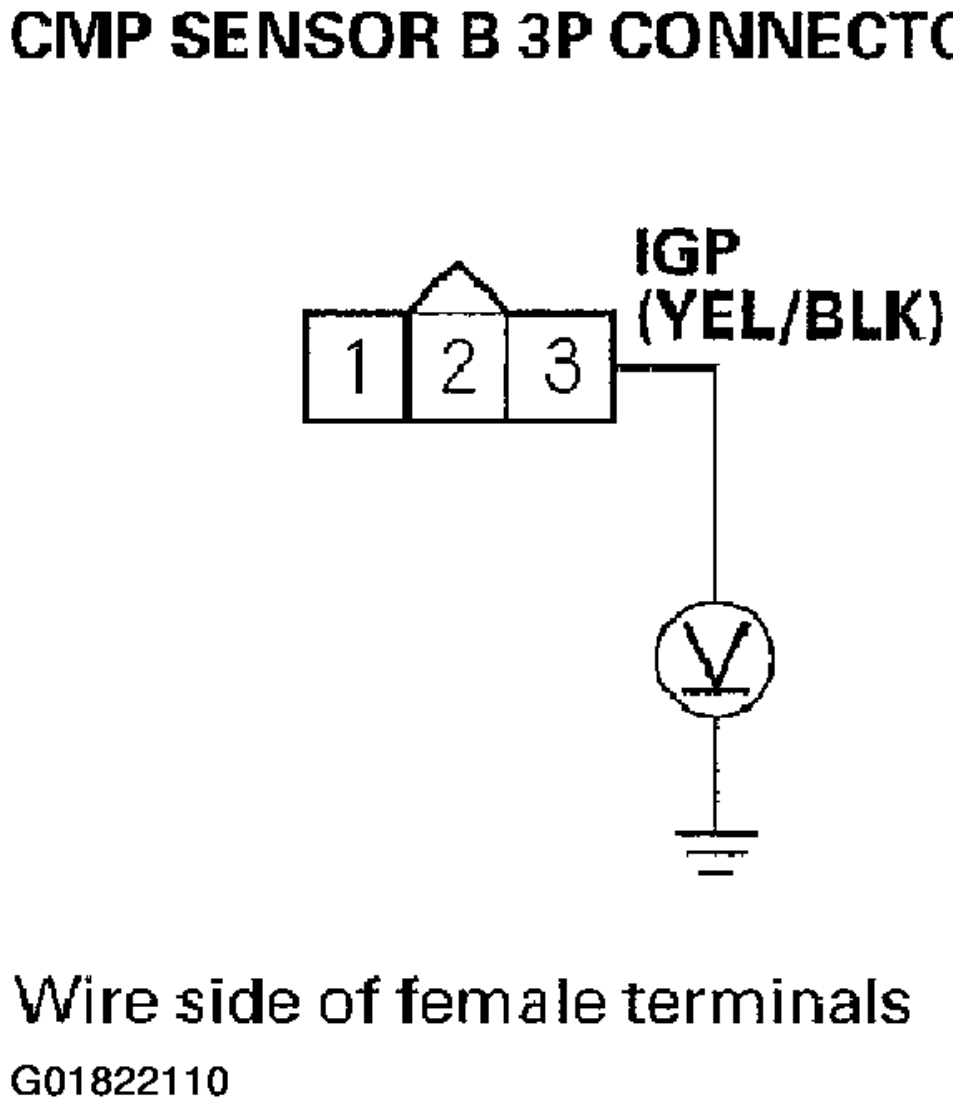


Fig. 71: Measuring Voltage Between CMP Sensor B 3P Connector Terminal No. 3 & Body Ground

9. Measure voltage between CMP sensor B 3P connector terminal No. 1 and body ground.

   Is there about 5 V?

   YES: Go to step 10.

   NO: Go to step 11 .

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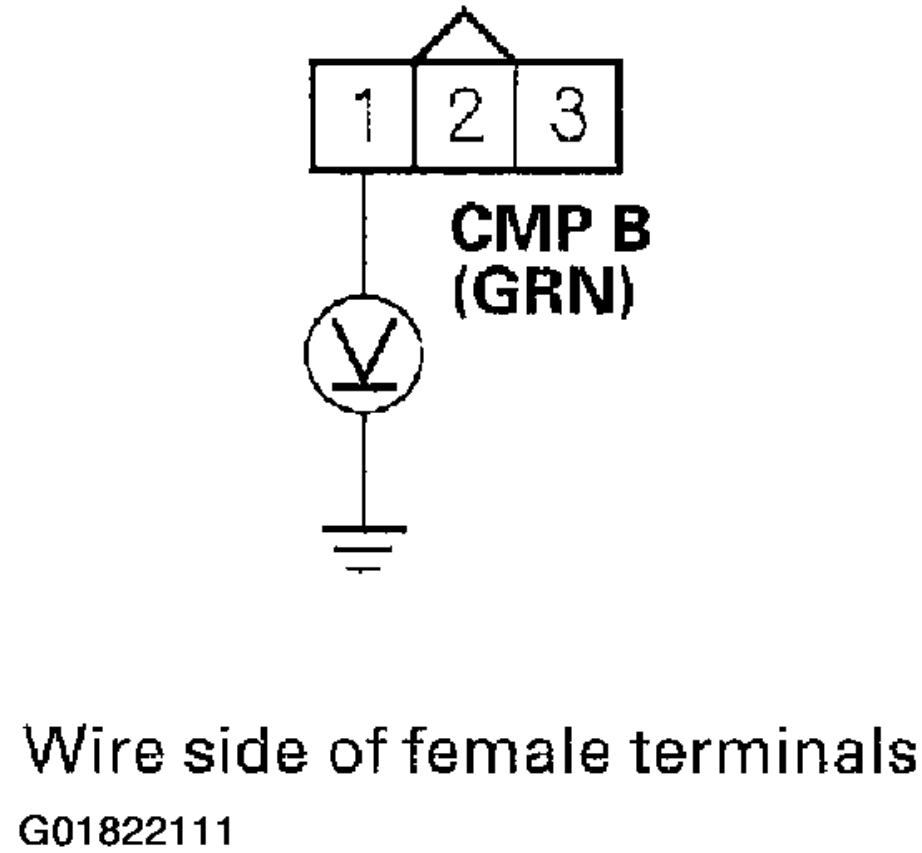


Fig. 72: Measuring Voltage Between CMP Sensor B 3P Connector Terminal No. 1 & Body Ground

10. Measure voltage between CMP sensor B 3P connector terminals No. 2 and No. 3.

    Is there battery voltage?

    YES: Go to step 16 .

    NO: Repair open in the wire between CMP sensor B and G101, then go to step 19 .

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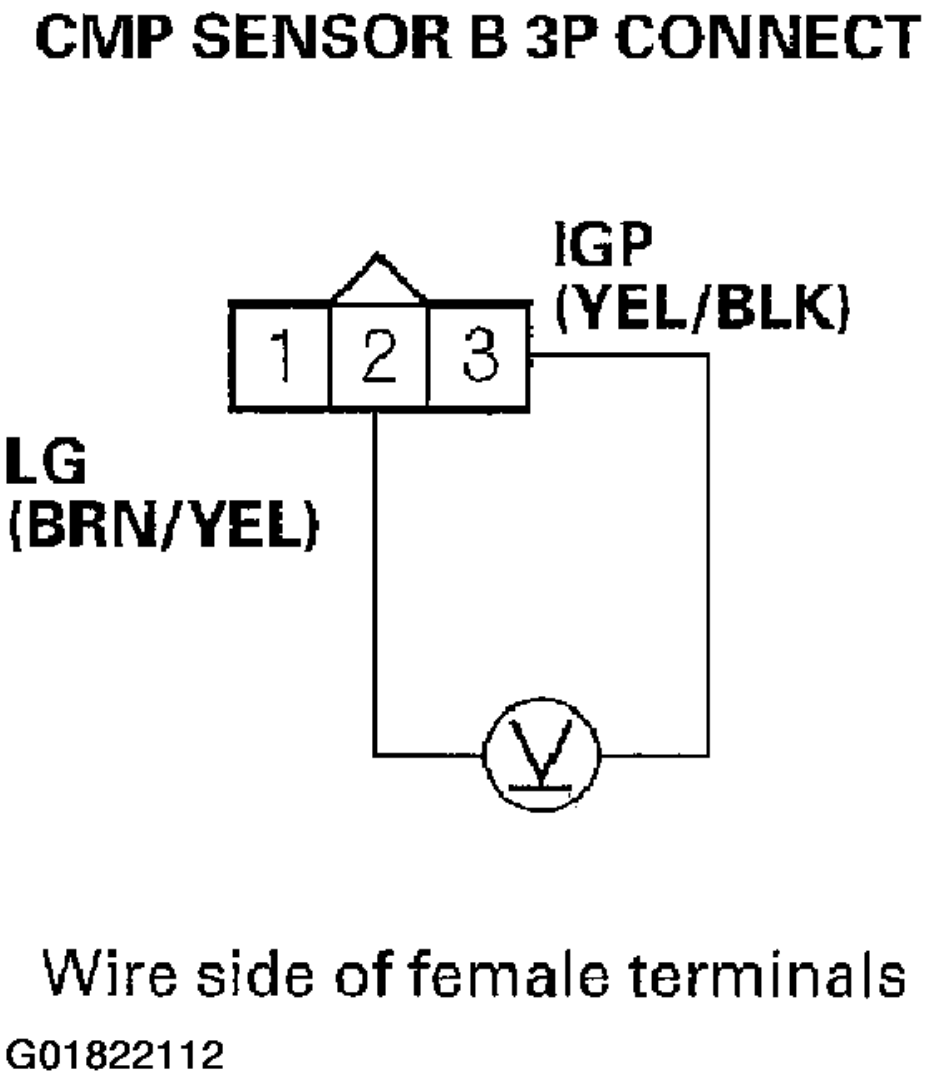


Fig. 73: Measuring Voltage Between CMP Sensor B 3P Connector Terminals No. 2 & No. 3

11. Measure voltage between ECM/PCM connector terminal A6 and body ground.

    Is there about 5 V?

    YES: Repair open in the wire between the ECM/PCM (A6) and CMP sensor B, then go to step 19 .

    NO: Go to step 12.

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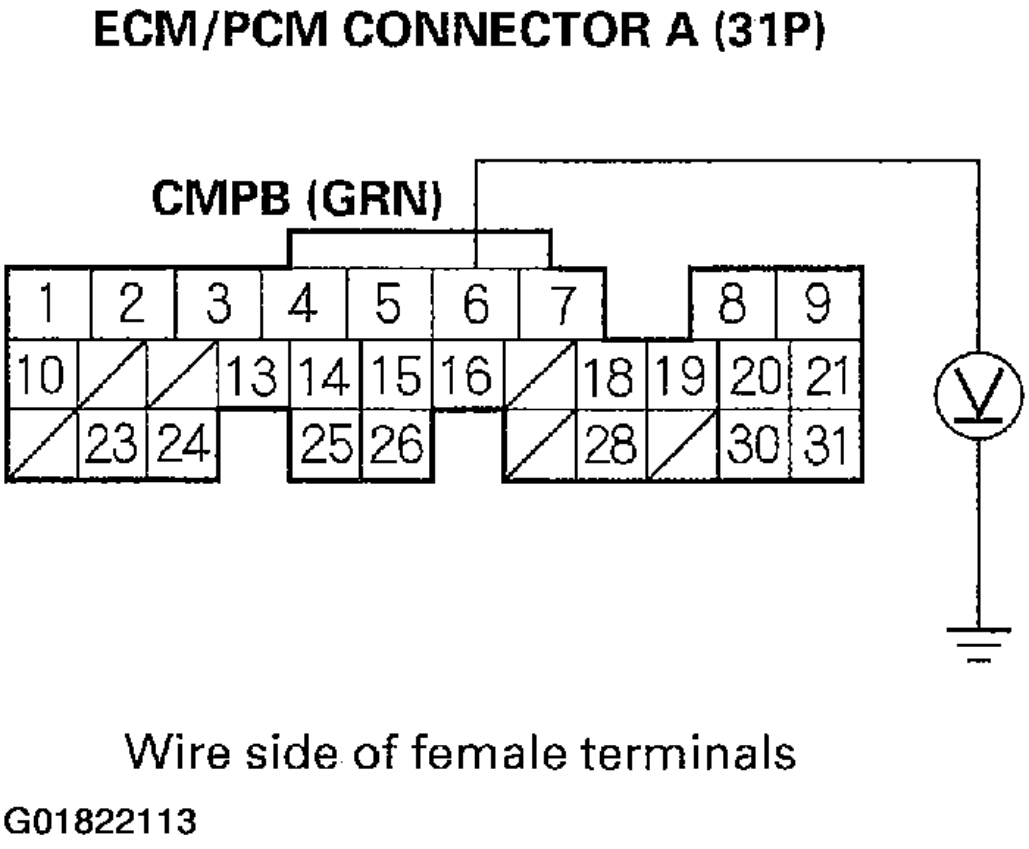


Fig. 74: Measuring Voltage Between ECM/PCM Connector Terminal A6 & Body Ground

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (31P).
15. Check for continuity between ECM/PCM connector terminal A6 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (A6) and CMP sensor B, then go to step 19 .

NO: Go to step 23 .

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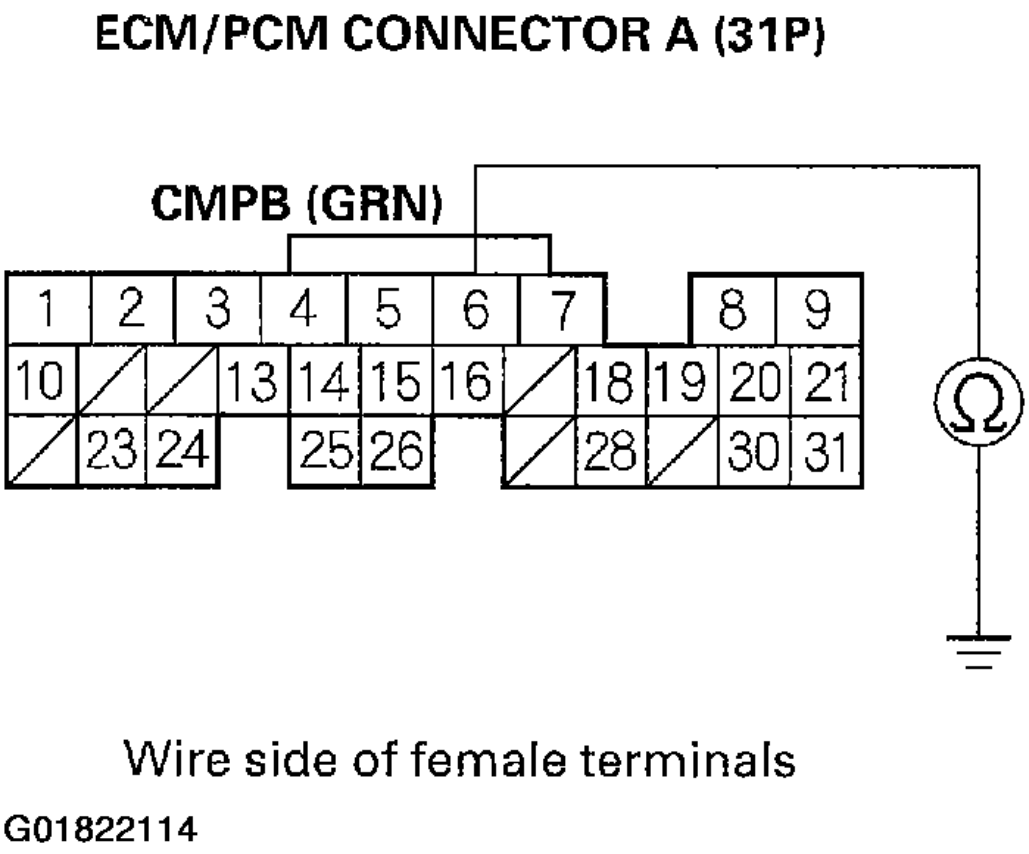


Fig. 75: Checking For Continuity Between ECM/PCM Connector Terminal A6 & Body Ground

16. Turn the ignition switch OFF.
17. Replace CMP sensor B (see **ECT SENSOR REPLACEMENT**).
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Start the engine.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0365 is indicated, check for poor connections or loose terminals at CMP sensor B and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.
23. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see

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HOW TO SUBSTITUTE THE ECM/PCM).

24. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0365 is indicated, check for poor connections or loose terminals at CMP sensor B and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0369: CMP SENSOR B INTERMITTENT INTERRUPTION

1. Note the following freeze data.
   - Engine speed
   - Vehicle speed
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP NOISE B COUNT in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES: Go to step 7 .

   NO: Go to step 5.
5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
6. Check the CMP NOISE B COUNT in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES: Go to step 7.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM.
7. Check for poor or loose connections and terminals at these locations:
   - CMP sensor B
   - ECM/PCM
   - Engine ground
   - Body ground

   Are the connections and terminals OK?

   YES: Go to step 8.

   NO: Repair the connectors or terminals, then go to step 11 .
8. Check for damage on the CMP sensor B pulse plate (see **CMP PULSE PLATE B REPLACEMENT**).

   Is the pulse plate damaged?

   YES: Replace the CMP sensor B pulse plate (see **CMP PULSE PLATE B REPLACEMENT**), then go to step 11 .

   NO: Go to step 9.

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9. Turn the ignition switch OFF.
10. Replace CMP sensor B (see **ECT SENSOR REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
14. Start the engine, and let it idle for 10 seconds.
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0369 is indicated, check for poor connections or loose terminals at CMP sensor B and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

DTC P0563: ECM/PCM POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P0563 indicated?

YES: Go to step 7.

NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the No. 8 ECU (ECM/PCM) (15A) fuse in the underhood fuse/relay box, PGM-FI main relay 1, and the ECM/PCM.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector E (31P).
10. Measure voltage between ECM/PCM connector terminal E7 and body ground.

Is there battery voltage?

YES: Go to step 13 .

NO: Go to step 11.

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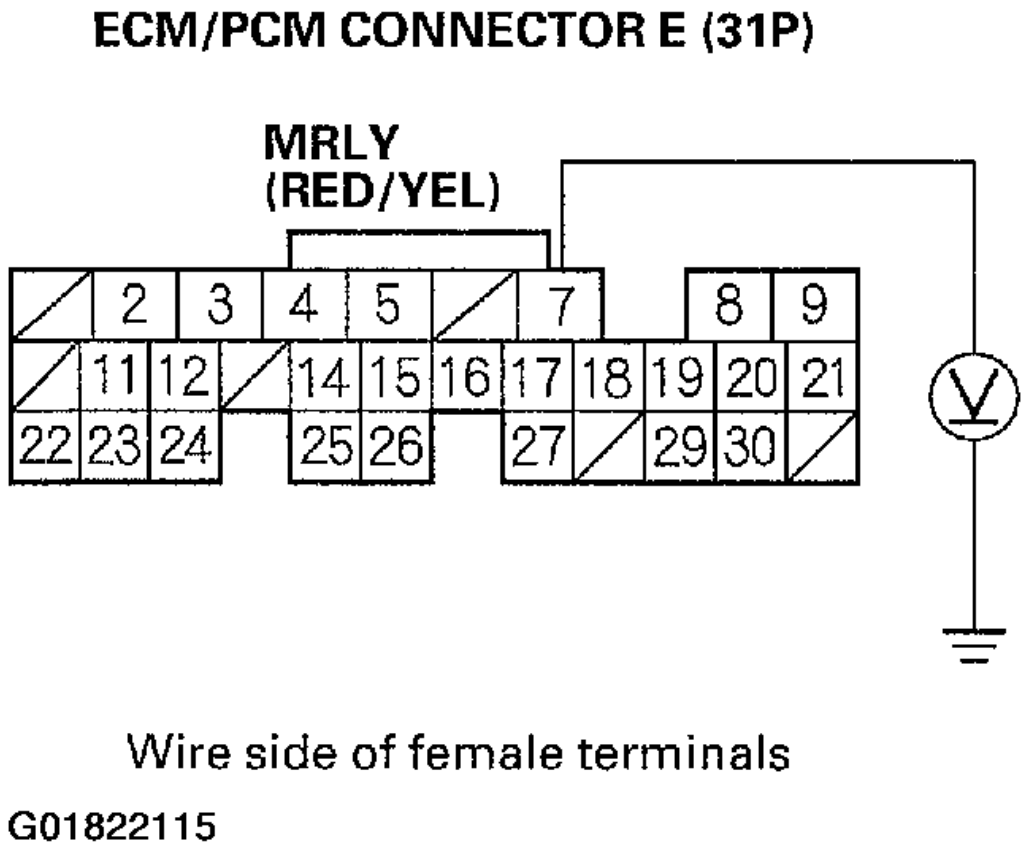


Fig. 76: Measuring Voltage Between ECM/PCM Connector Terminal E7 & Body Ground

11. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**), then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.

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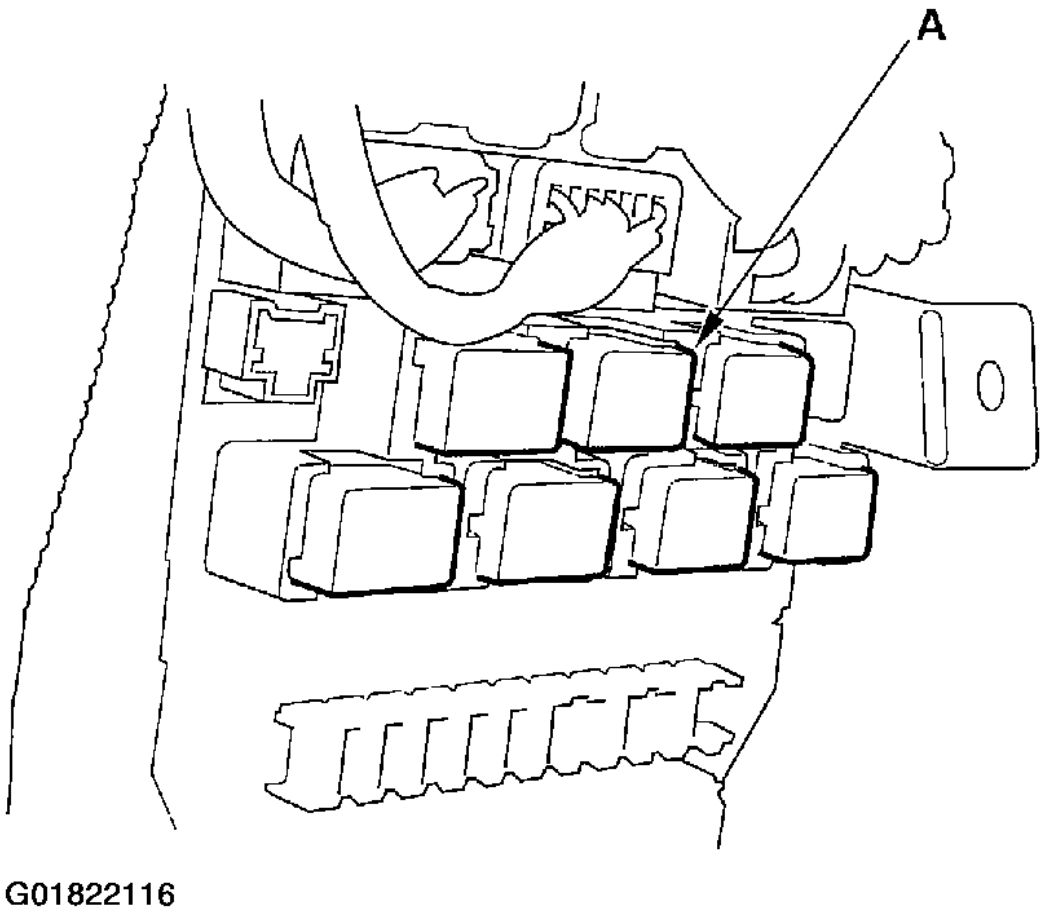


Fig. 77: Removing PGM-FI Main Relay 1 (FI MAIN) From The Under-Dash Fuse/Relay Box

12. Check for continuity between ECM/PCM connector terminal E7 and body ground.

    Is there continuity?

    YES: Repair short in the wire between the ECM/PCM (E7) and PGM-FI main relay 1, then go to step 20 .

    NO: Go to step 19 .

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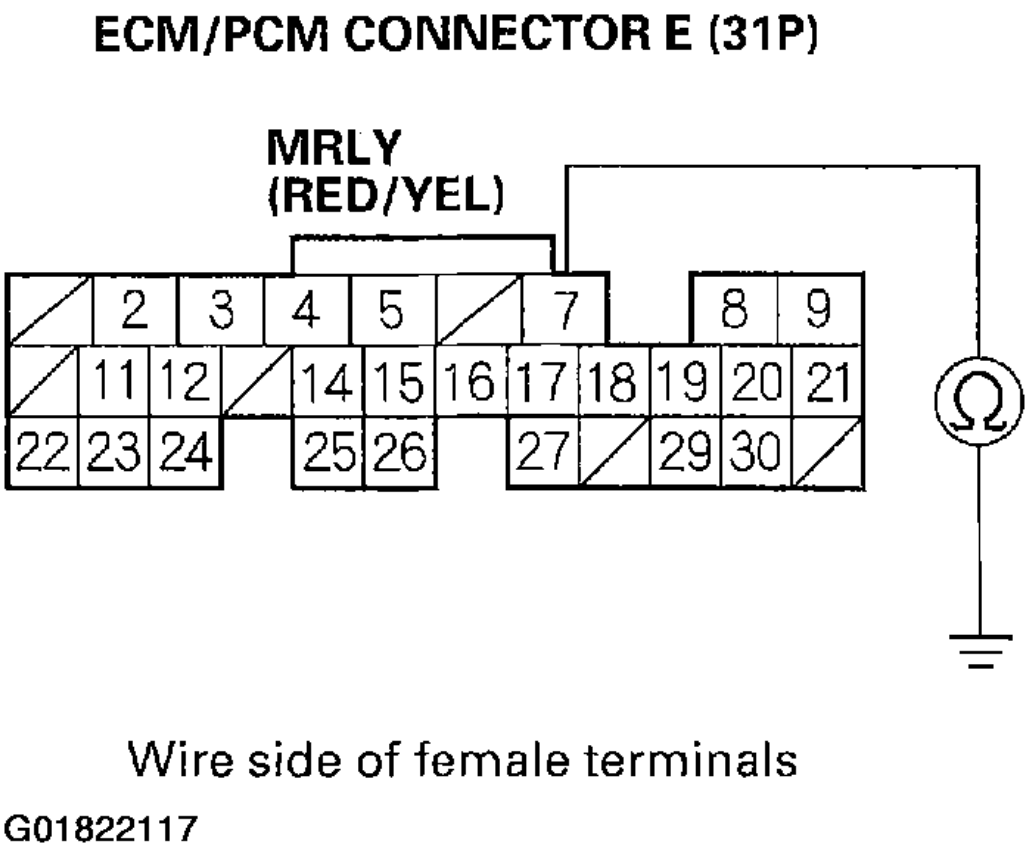


Fig. 78: Checking For Continuity Between ECM/PCM Connector Terminal E7 & Body Ground

13. Reconnect ECM/PCM connector E (31P).
14. Measure voltage between ECM/PCM connector terminal E7 and body ground.

Is there battery voltage?

YES: Go to step 15.

NO: Go to step 26 .

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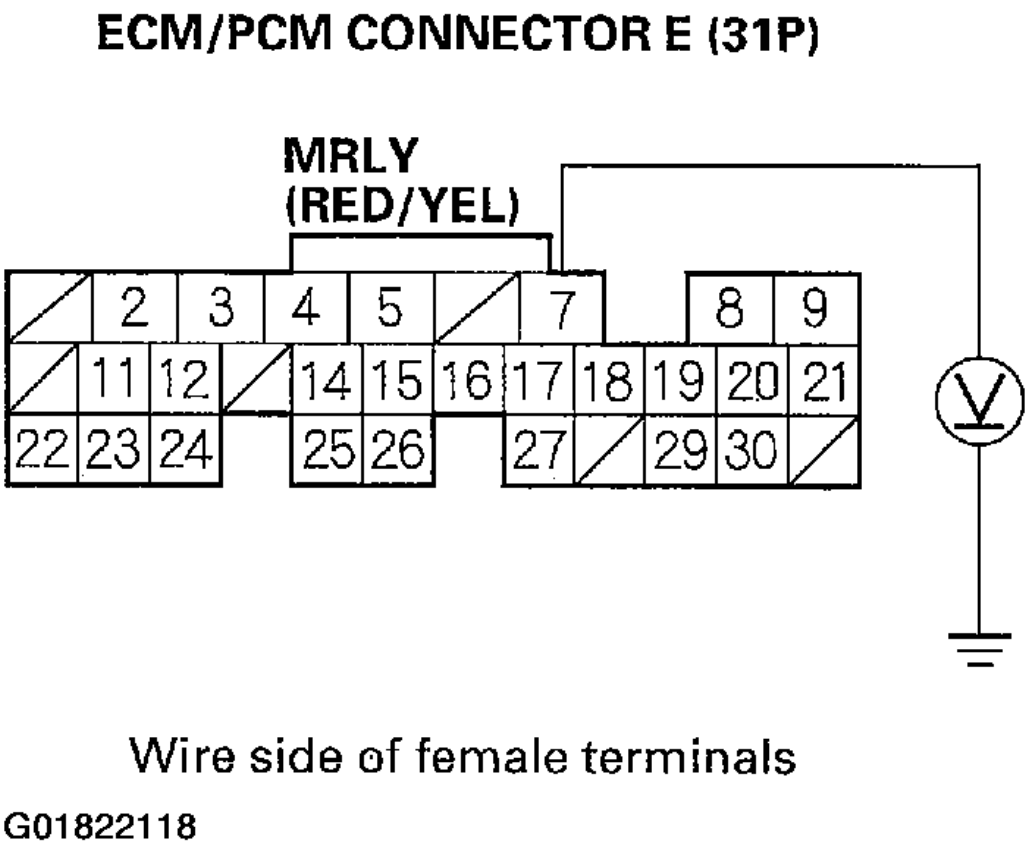


Fig. 79: Measuring Voltage Between ECM/PCM Connector Terminal E7 & Body Ground

15. Disconnect ECM/PCM connector A (31P).
16. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

    Is there battery voltage?

    YES: Go to step 17.

    NO: Go to step 26 .

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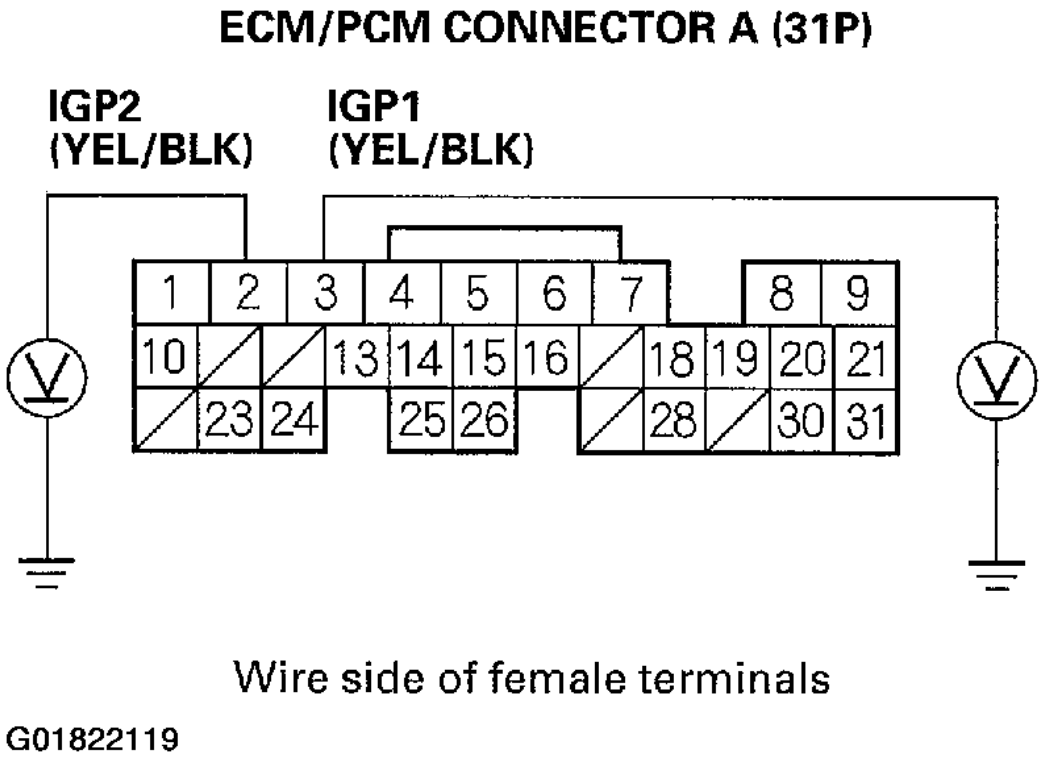


Fig. 80: Measuring Voltage Between Body Ground And ECM/PCM Connector Terminals A3 & A2

17. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**), then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.

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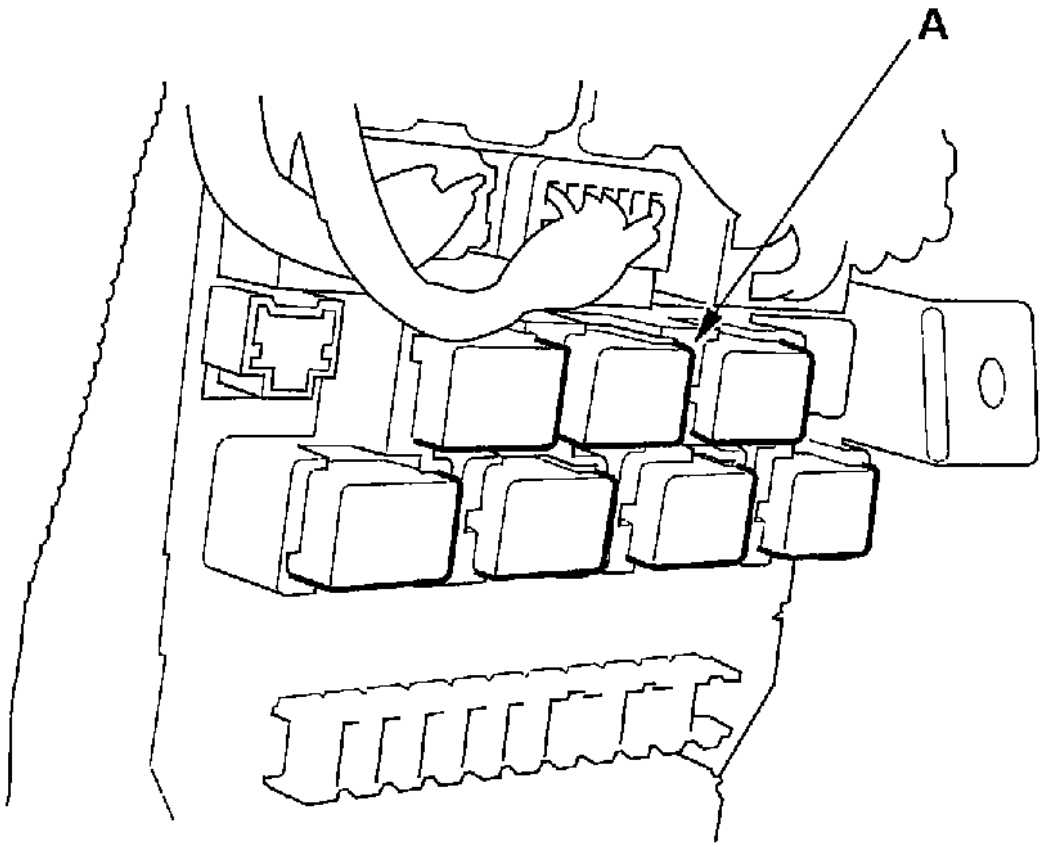


Fig. 81: Removing PGM-FI Main Relay 1 (FI MAIN) From The Under-Dash Fuse/Relay Box

18. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

    Is there battery voltage?

    YES: Repair short to power in the wire between the ECM/PCM (A2, A3) and PGM-FI main relay 1, then go to step 20 .

    NO: Go to step 19.

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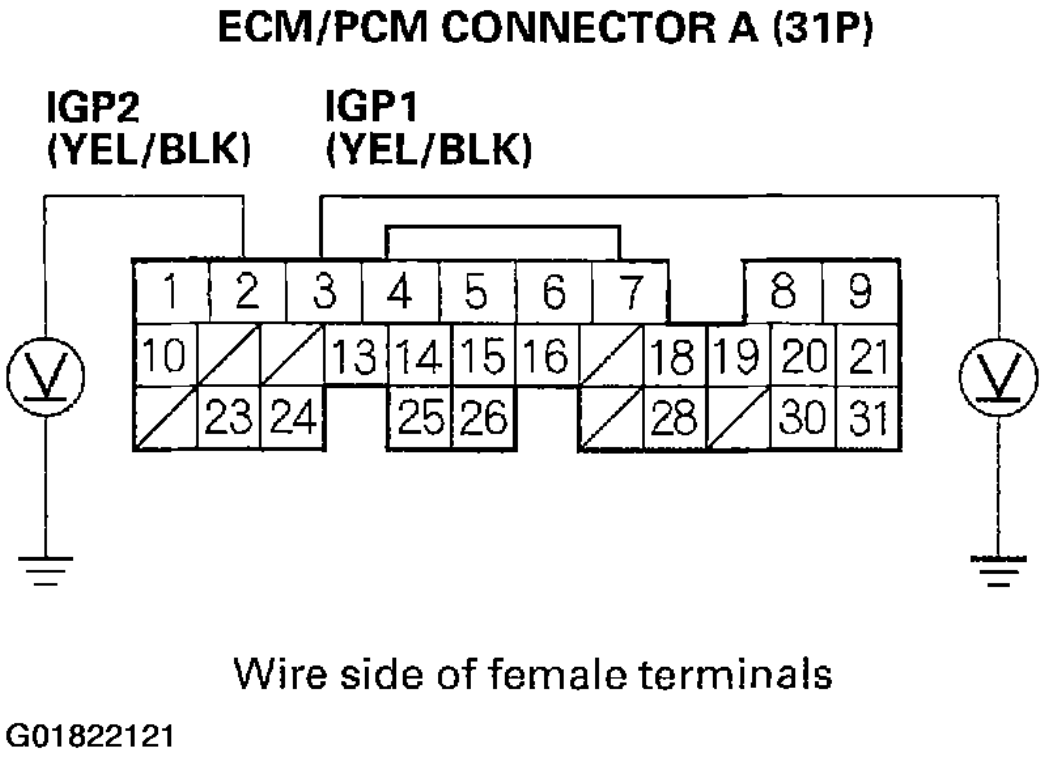


Fig. 82: Measuring Voltage Between Body Ground And ECM/PCM Connector Terminals A3 & A2

19. Replace PGM-FI main relay 1 (A).

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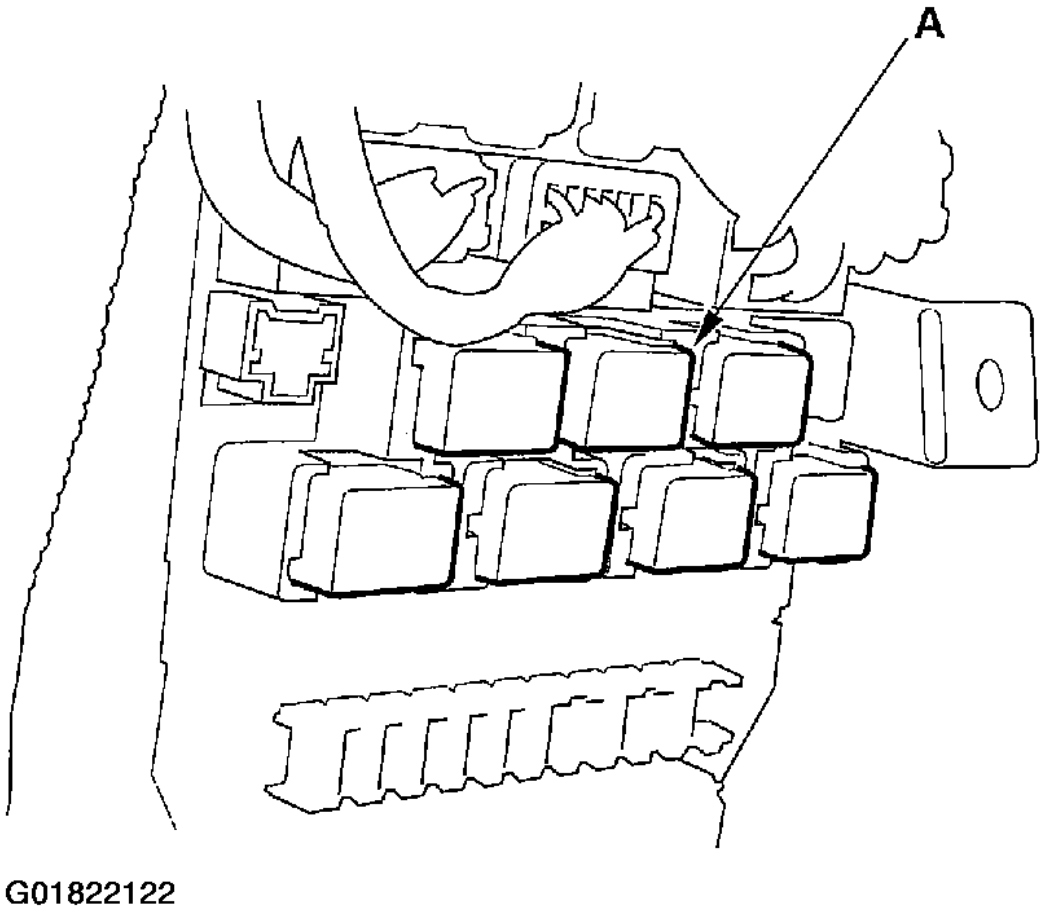


Fig. 83: Replacing PGM-FI Main Relay 1

20. Turn the ignition switch ON (II).
21. Reset the ECM/PCM with the HDS.
22. Turn the ignition switch OFF.
23. Wait 10 seconds.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0563 is indicated, check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.
26. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).

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27. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0563 is indicated, check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0603: ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

NO: Intermittent failure, system is OK at this time.

DTC P0606: ECM/PCM PROCESSOR MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Wait 40 seconds.
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P0606 indicated?

YES: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

NO: Intermittent failure, system is OK at this time.

DTC P0685: ECM/PCM POWER CONTROL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

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YES: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

NO: Intermittent failure, system is OK at this time.

DTC P0720: COUNTERSHAFT SPEED SENSOR CIRCUIT MALFUNCTION

NOTE: This DTC only occurs on M/T vehicles.

1. Start the engine. Hold the engine speed at 3,000 RPM with no load (in neutral) until the radiator fan comes on, then let it idle.
2. Test-drive several miles.
3. Check the C SHAFT SPD in the DATA LIST with the HDS.

   Is any vehicle speed indicated?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the countershaft speed sensor and the ECM.

   NO: Go to step 4.
4. Turn the ignition switch OFF.
5. Disconnect the countershaft speed sensor 3P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between countershaft speed sensor 3P connector terminal No. 1 and body ground.

   Is there about 5 V?

   YES: Go to step 8.

   NO: Repair open in the wire between the ECM (A21) and the countershaft speed sensor, then go to step 18 .

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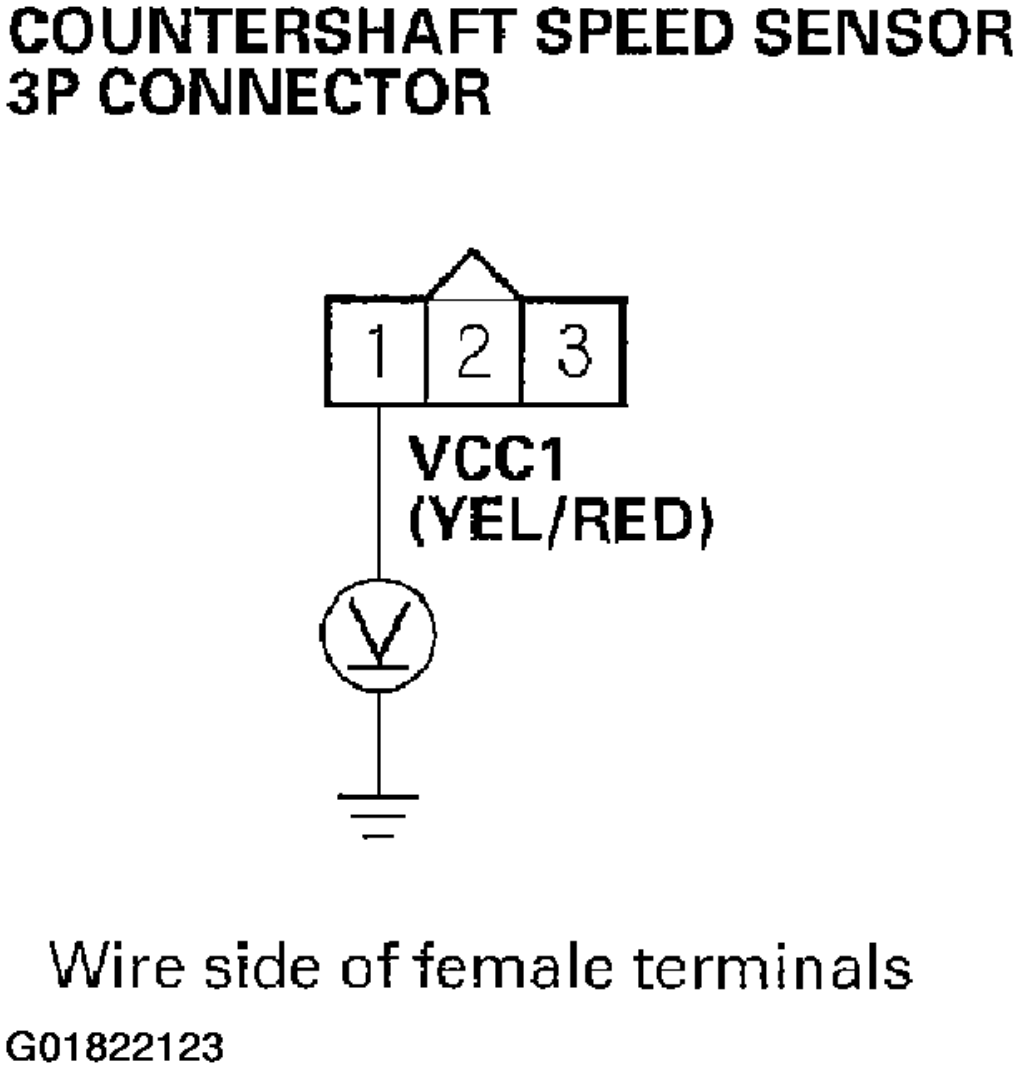


Fig. 84: Measuring Voltage Between Countershaft Speed Sensor 3P Connector Terminal No. 1 & Body Ground

8. Measure voltage between countershaft speed sensor 3P connector terminal No. 2 and body ground.

   Is there about 5 V?

   YES: Go to step 9.

   NO: Go to step 10 .

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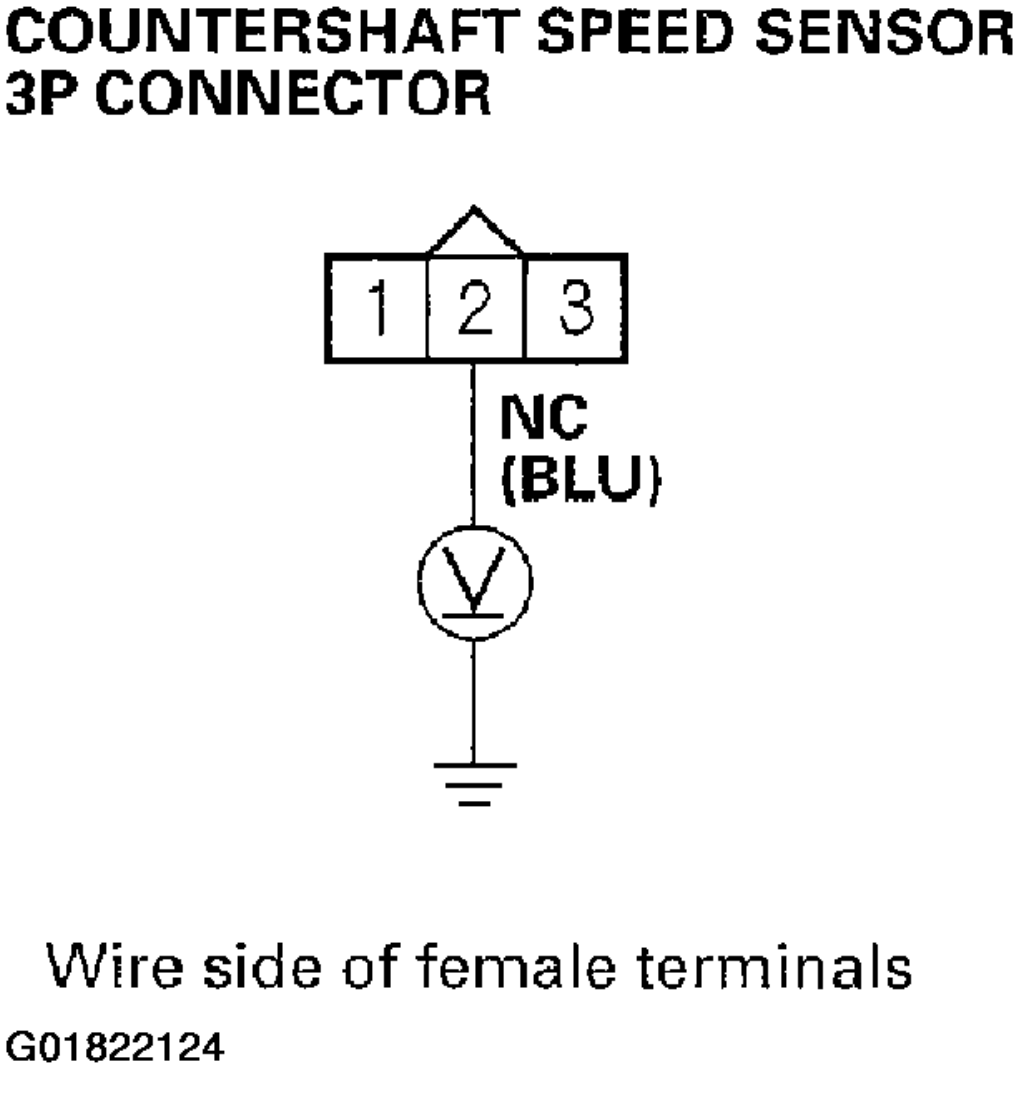


Fig. 85: Measuring Voltage Between Countershaft Speed Sensor 3P Connector Terminal No. 2 & Body Ground

9. Measure voltage between countershaft speed sensor 3P connector terminals No. 1 and No. 3.

   Is there about 5 V?

   YES: Go to step 15 .

   NO: Repair open in the wire between the countershaft speed sensor and G101, then go to step 18 .

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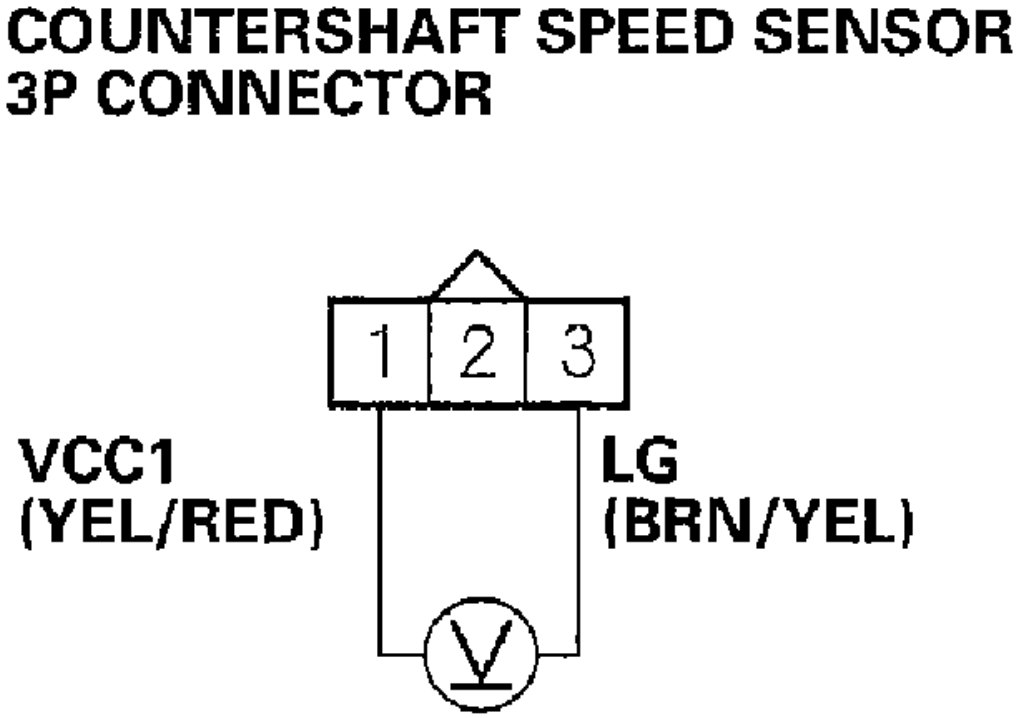


Fig. 86: Measuring Voltage Between Countershaft Speed Sensor 3P Connector Terminals No. 1 & No. 3

10. Measure voltage between ECM connector terminal A18 and body ground.

    Is there about 5 V?

    YES: Repair open in the wire between the ECM (A18) and the countershaft speed sensor, then go to step 18 .

    NO: Go to step 11.

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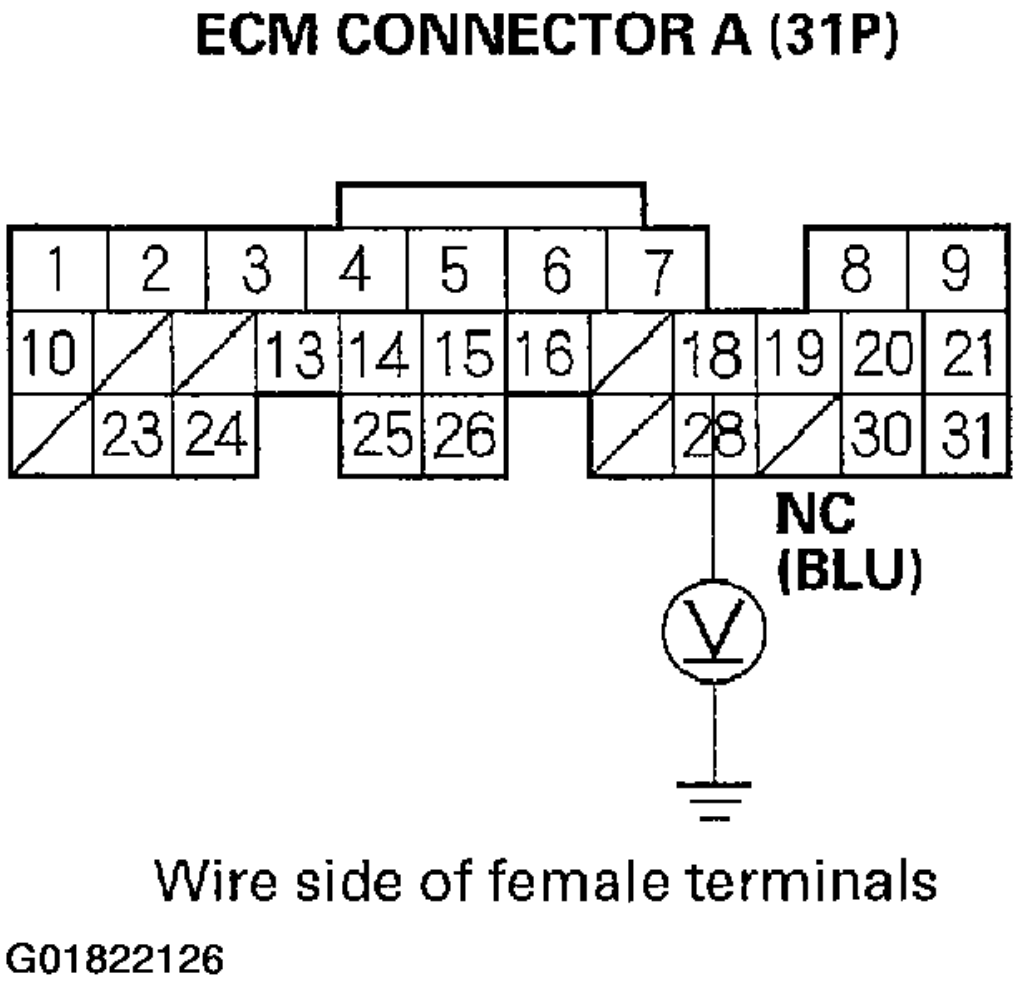


Fig. 87: Measuring Voltage Between ECM Connector Terminal A18 & Body Ground

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector A (31P).
14. Check for continuity between ECM connector terminal A 18 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM (A18) and the countershaft speed sensor, then go to step 17 .

NO: Go to step 23 .

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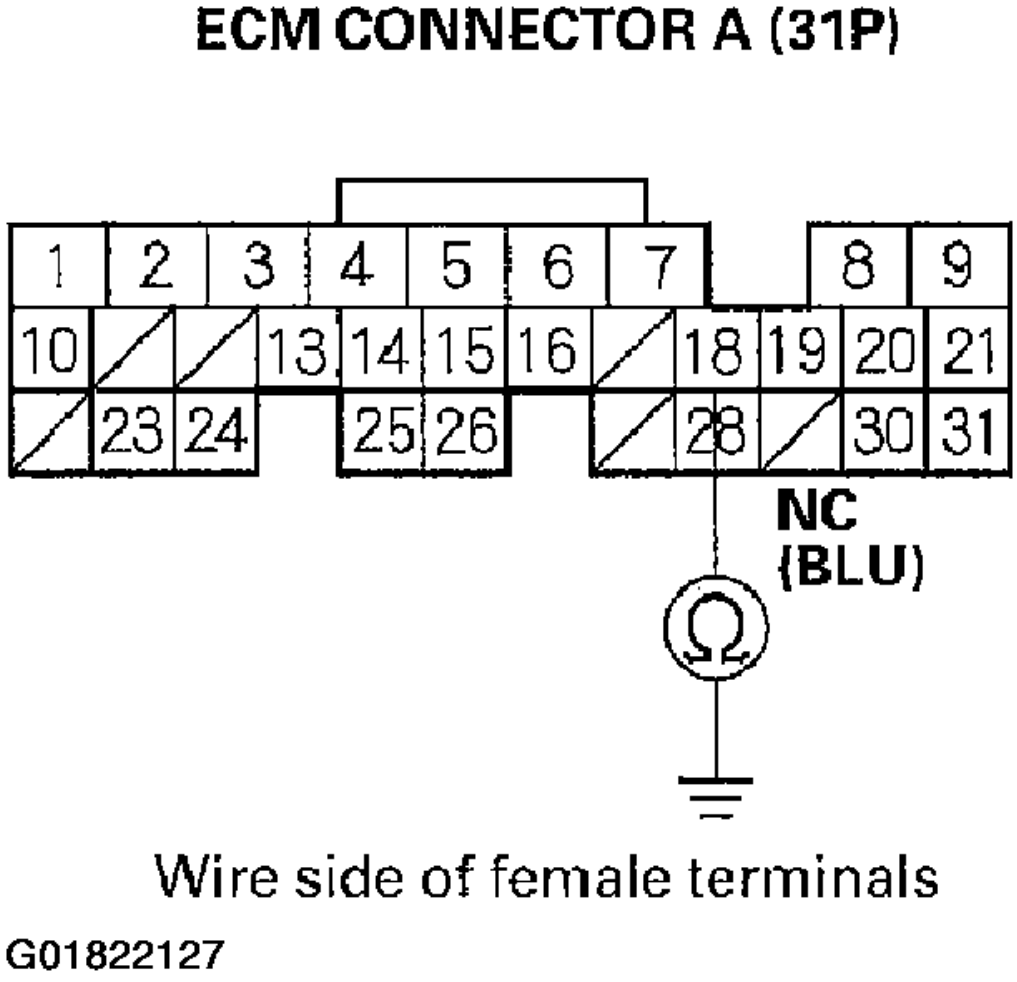


Fig. 88: Checking For Continuity Between ECM Connector Terminal A 18 & Body Ground

15. Turn the ignition switch OFF.
16. Replace the countershaft speed sensor (see **CKP SENSOR REPLACEMENT**), then go to step 16.
17. Turn the ignition switch ON (II).
18. Reset the ECM with the HDS.
19. Do the ECM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
20. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - Transmission in 5th gear
    - Engine speed at 2,000-3,000 RPM

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- Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0720 is indicated, check for poor connections or loose terminals at the output shaft speed sensor and the ECM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 22.

22. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 20 and recheck.

23. Update the ECM if it does not have the latest software, or substitute a known-good ECM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
24. Test-drive under the following conditions:
    - Engine coolant temperature more than 158°F (70°C)
    - Transmission in 5th gear
    - Engine speed at 2,000-3,000 RPM
    - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0720 is indicated, check for poor connections or loose terminals at the countershaft speed sensor and the ECM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **HOW TO SUBSTITUTE THE ECM/PCM**).

DTC P1297: ELD CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 72A or more indicated?

   YES: Go to step 3.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Check the ELD in the DATA LIST with the HDS.

   Is 72A or more indicated?

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YES: Go to step 7.

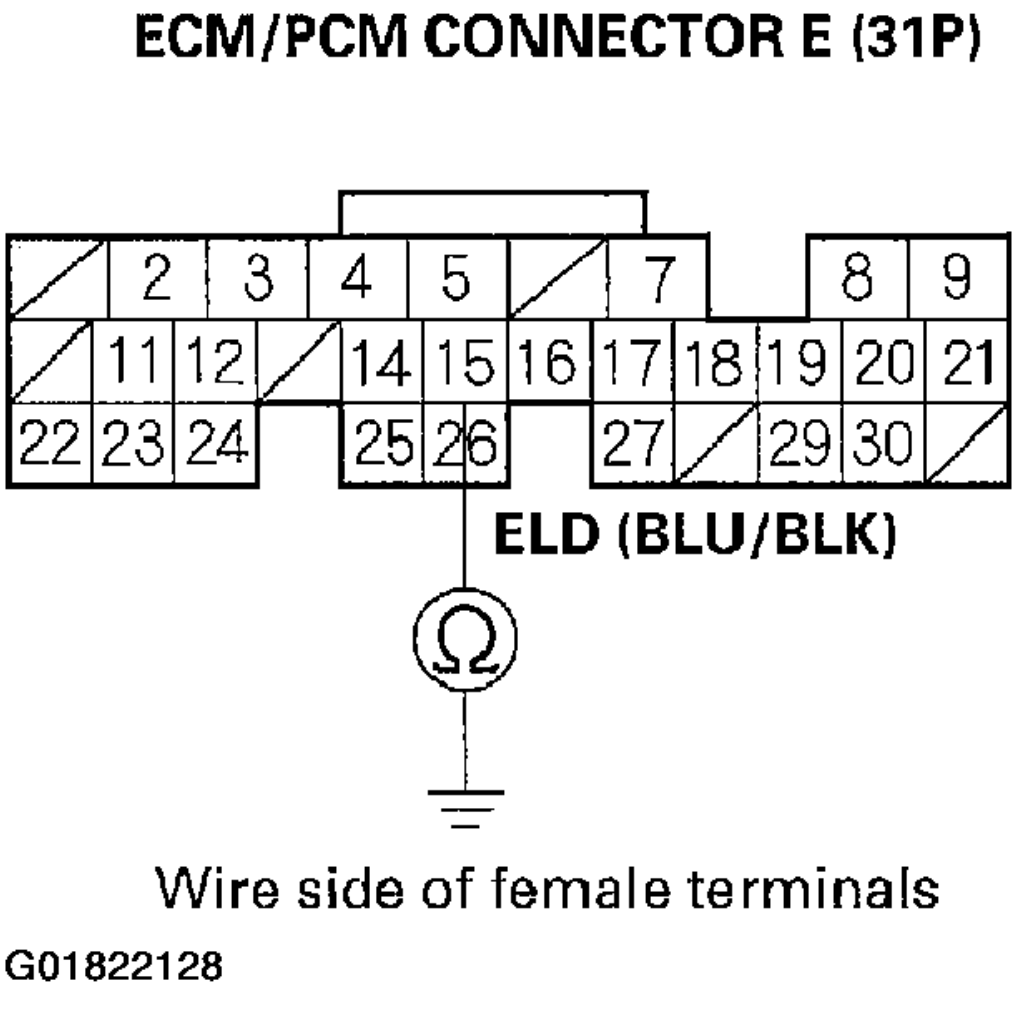
NO: Go to step 11 .

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector E (31P).
10. Check for continuity between ECM/PCM connector terminal E15 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (E15) and the ELD, then go to step 13 .

NO: Go to step 19 .



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Fig. 89: Checking For Continuity Between ECM/PCM Connector Terminal E15 & Body Ground

11. Turn the ignition switch OFF.
12. Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).
13. Turn the ignition switch ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Start the engine.
17. Turn on the headlights.
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P1297 is indicated, check for poor connections or loose terminals at the ELD and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.
19. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
20. Start the engine.
21. Turn on the headlights.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P1297 is indicated, check for poor connections or loose terminals at the ELD and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P1298: ELD CIRCUIT HIGH VOLTAGE

1. Start the engine and let it idle.
2. Check the ELD in the DATA LIST with the HDS.

   Is 0.2A or less indicated?

   YES: Go to step 3.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM.
3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between ELD 3P connector terminal No. 1 and body ground.

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Is there battery voltage?

YES: Go to step 7.

NO: Repair open in the wire between the No. 18 ACG (15A) fuse and the ELD, then go to step 14 .

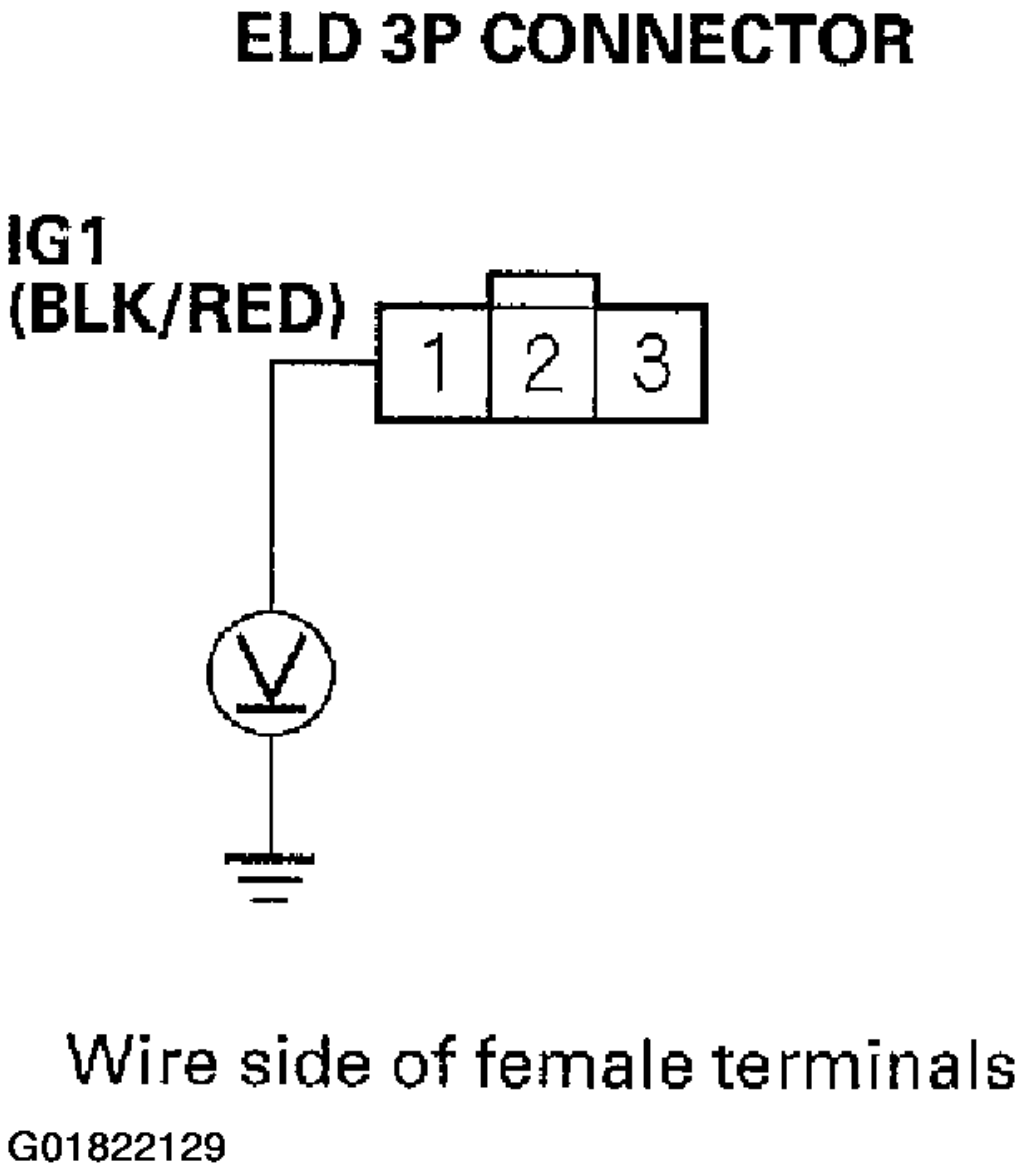


Fig. 90: Measuring Voltage Between ELD 3P Connector Terminal No. 1 & Body Ground

7. Turn the ignition switch OFF.

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8. Connect ELD 3P connector terminal No. 3 to body ground with a jumper wire.

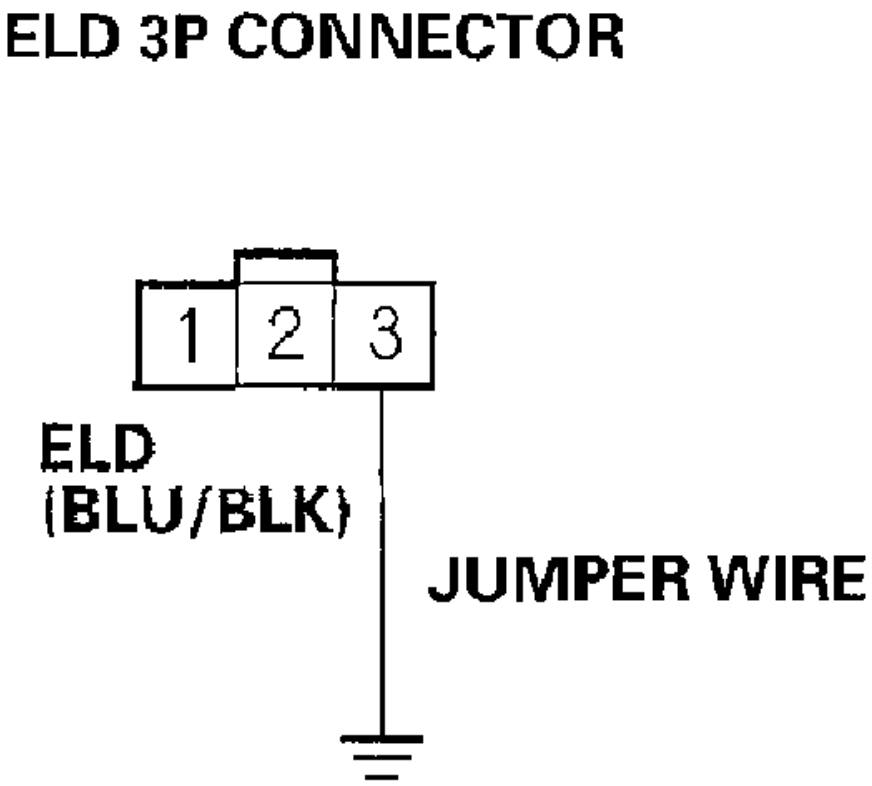


Fig. 91: Connecting ELD 3P Connector Terminal No. 3 To Body Ground With A Jumper Wire

9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector E (31P).
11. Check for continuity between ECM/PCM connector terminal E15 and body ground.

Is there continuity?

YES: Go to step 12.

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NO: Repair open in the wire between the ECM/PCM (E15) and the ELD, then go to step 14 .

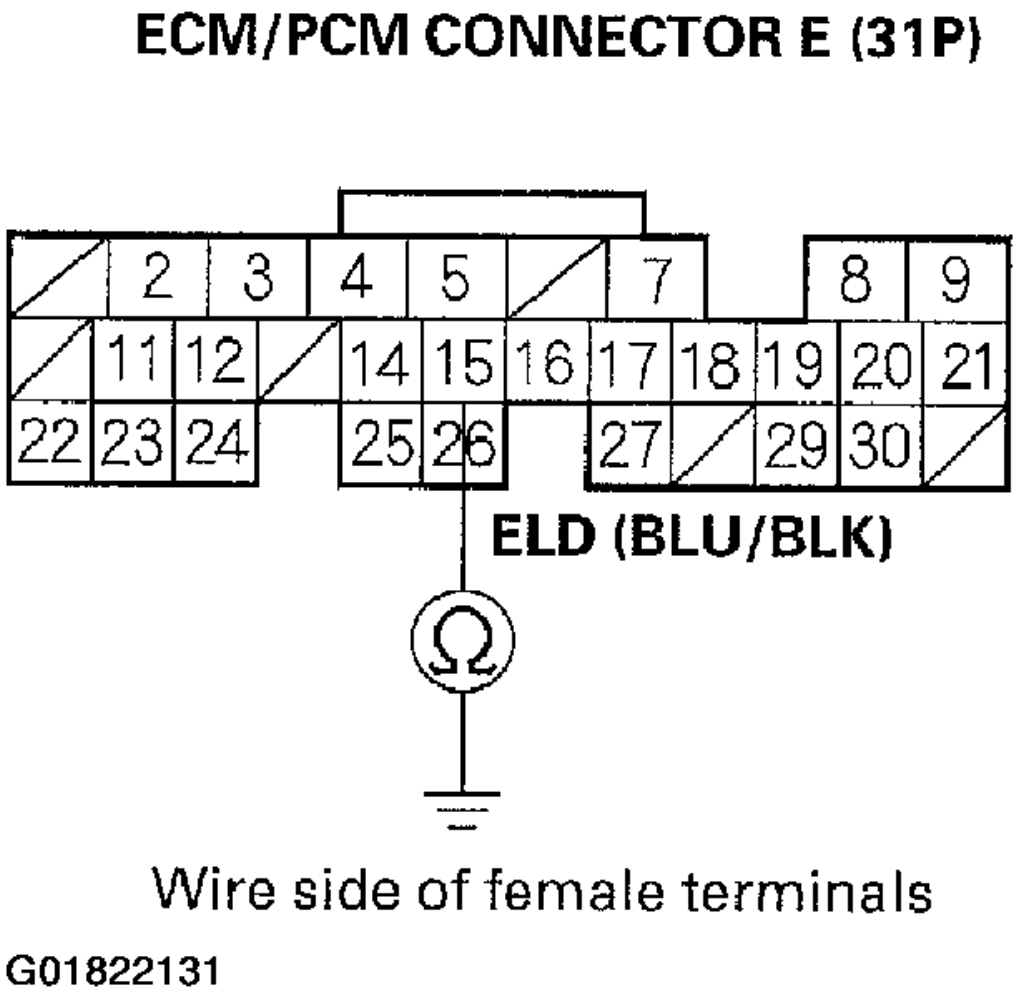


Fig. 92: Checking For Continuity Between ECM/PCM Connector Terminal E15 & Body Ground

12. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

Is there continuity?

YES: Go to step 13.

NO: Repair open in the wire between the ELD and G201, then go to step 14 .

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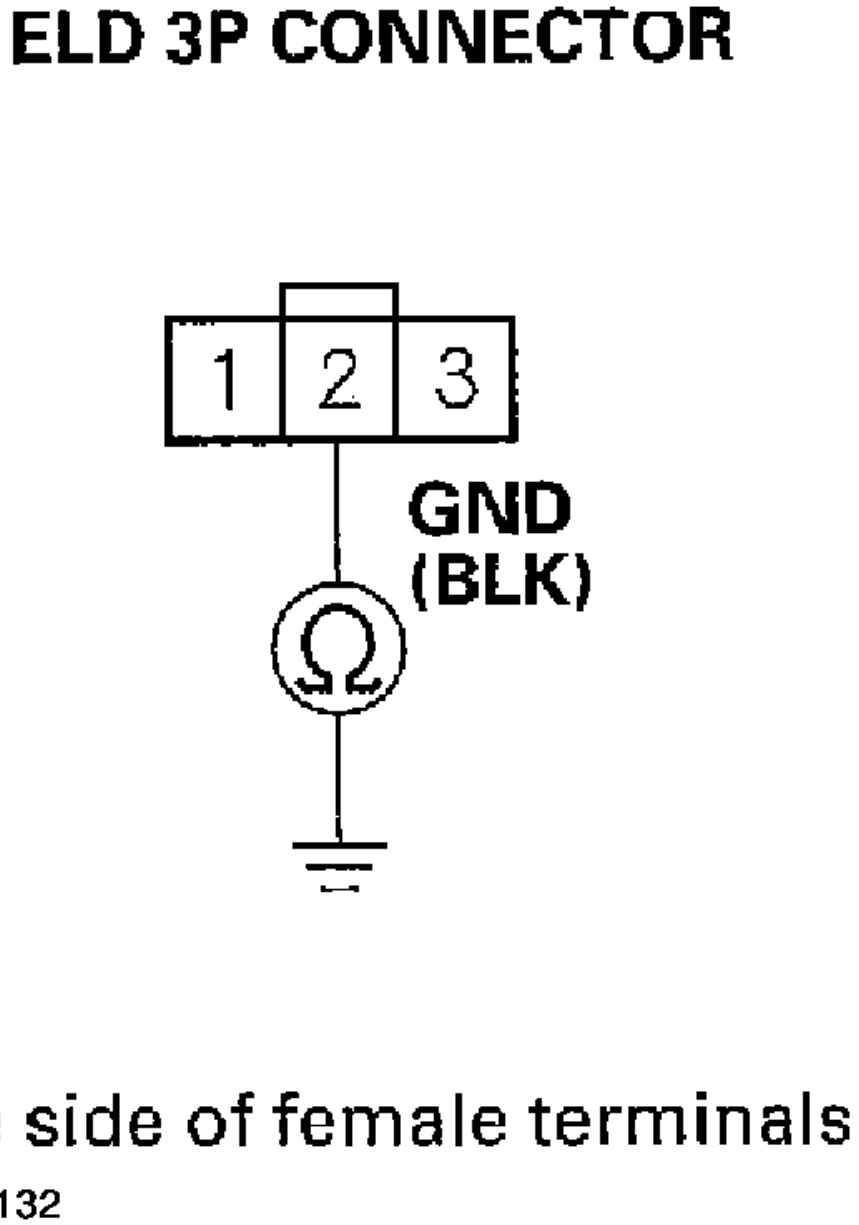


Fig. 93: Checking For Continuity Between ELD 3P Connector Terminal No. 2 & Body Ground

13. Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.

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16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: Go to step 18.

    NO: Troubleshooting is complete.
18. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P1298 is indicated, check for poor connections or loose terminals at the ELD and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2227: BARO SENSOR RANGE/PERFORMANCE PROBLEM

NOTE: If DTC P0107, P0108, P1128 and/or P1129 are stored at the same time as DTC P2227 troubleshoot those DTCs first, then recheck for DTC P2227.

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 101kPa (760 mm Hg, 29.9 in. Hg), or about 2.9 V at sea level indicated?

   YES: Go to step 3.

   NO: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.
3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under the following conditions, then connect the HDS:
   - Engine coolant temperature more than 158°F (70°C)
   - A/T in D position (M/T in 4th gear)
   - Throttle position between 12 degrees and 20 degrees for 2 seconds
6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 7.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

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7. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2227 is indicated, check for poor connections or loose terminals at the ECM/PCM then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2228: BARO SENSOR CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 53 kPa (397 mm Hg, 15.6 in. Hg), 1.58 V, or less indicated?

YES: Go to step 3.

NO: Intermittent failure, system is OK at this time.

3. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2228 is indicated, check for poor connections or loose terminals at the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2229: BARO SENSOR CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (1200 mm Hg, 47.2 in. Hg), 4.5 V, or higher indicated?

YES: Go to step 3.

NO: Intermittent failure, system is OK at this time.

3. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2229 is indicated, check for poor connections or loose terminals at the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC U0073: FCAN MALFUNCTION (BUS-OFF); DTC U0155: FCAN MALFUNCTION (GAUGE CONTROL MODULE - ECM/PCM)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC U0073 and/or U0155 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the gauge control module, VSA control unit, the navigation unit and the ECM/PCM.
4. Check for DTCs in the DTCs MENU in the Body Electrical system with the HDS.

   Is DTC B1168, B1169 and/or B1178 indicated?

   YES: Go to step 5.

   NO: Perform the gauge control module input test (see **GAUGE CONTROL MODULE INPUT TEST**).
5. Turn the ignition switch OFF.
6. Remove the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).
7. Disconnect the gauge control module 30P connector.
8. Disconnect the VSA control unit 47P connector.
9. If equipped with the navigation system, disconnect the navigation unit 20P connector.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector E (31P).
12. Check for continuity between ECM/PCM connector terminals E11, E24 and body ground individually.

    Is there continuity?

    YES: Repair short in the wire between the gauge control module, VSA control unit, the navigation unit, and the ECM/PCM E11 (E24 - CANL line), then go to step 17 .

    NO: Go to step 13.

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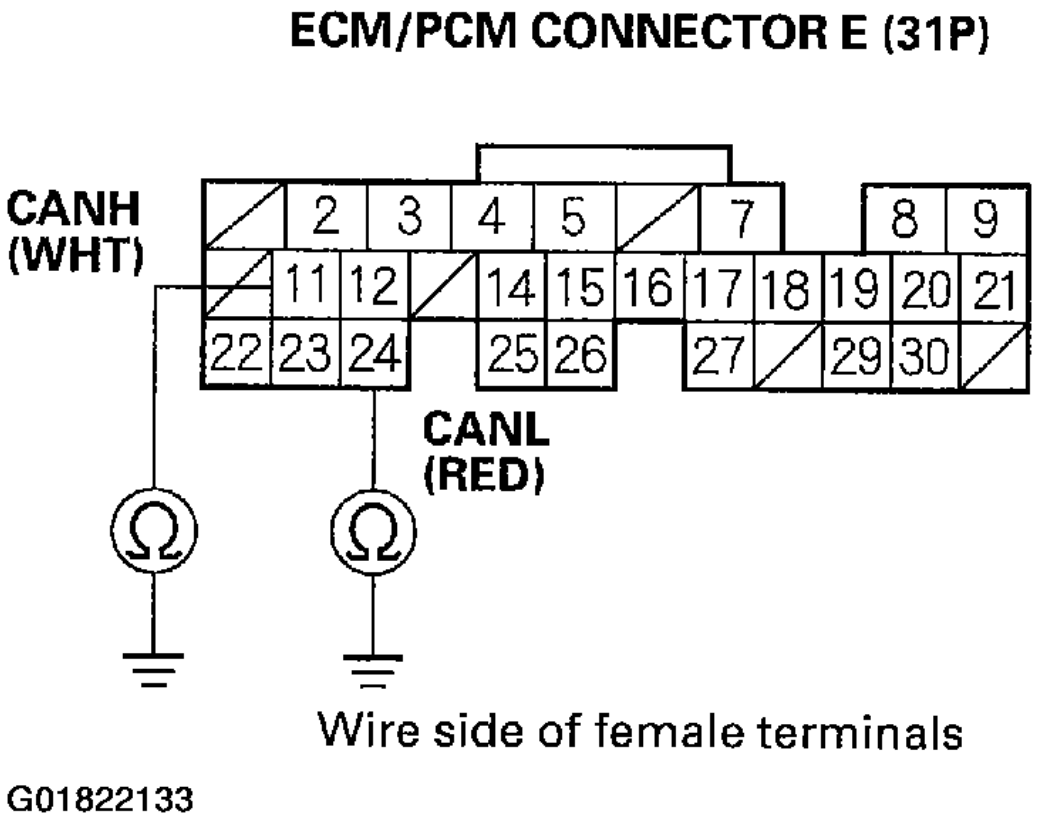


Fig. 94: Checking For Continuity Between ECM/PCM Connector Terminals E11, E24 & Body Ground

13. Check for continuity between ECM/PCM connector terminals E11 and E24.

    Is there continuity?

    YES: Repair short in the wire between the ECM/PCM E11 (CANH line) and E24 (CANL line), then go to step 17 .

    NO: Go to step 14.

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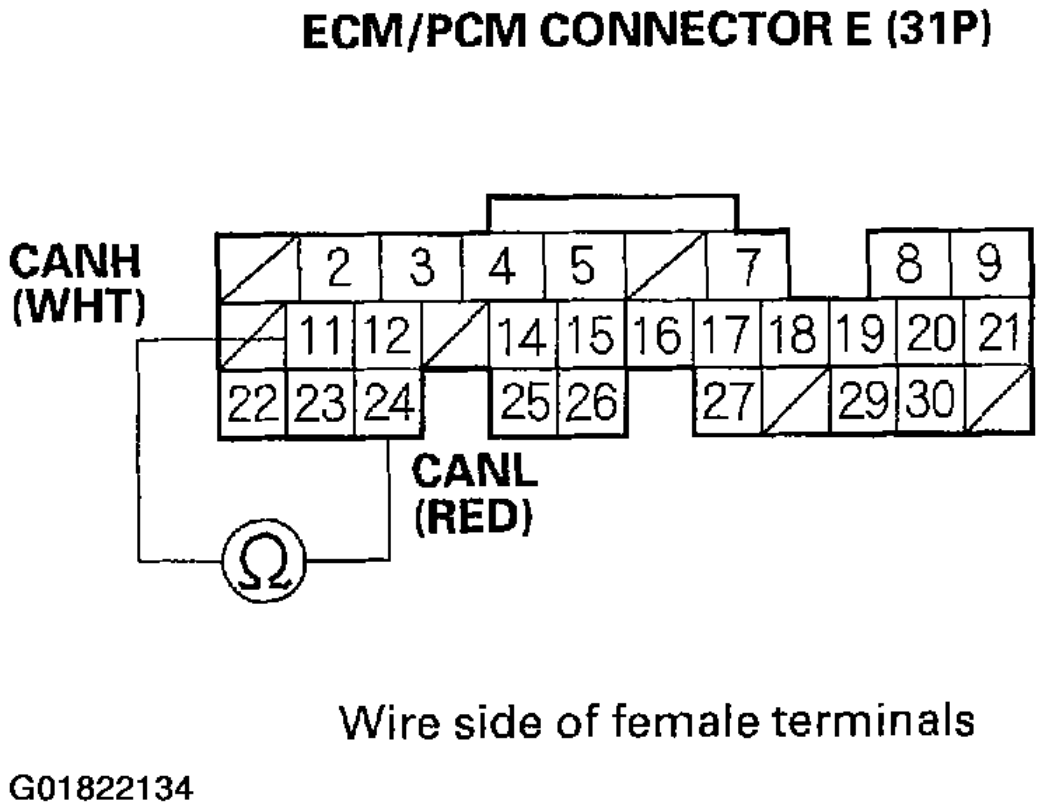


Fig. 95: Checking For Continuity Between ECM/PCM Connector Terminals E11 & E24

14. Check for continuity between ECM/PCM connector terminal E11 and the connector terminals shown in the table. See **Fig. 96** .

    Is there continuity between the ECM/PCM terminal and each of the terminals in the chart?

    YES: Go to step 15.

    NO: Repair open in the wire between the ECM/PCM and the appropriate connector, then go to step 17 .

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Connector	Terminal
Gauge control module 30P	No. 12 (WHT)
VSA control unit 47P	No. 14 (WHT)
Navigation unit 20P	No.8 (WHT)

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Fig. 96: ECM/PCM Connector Terminal E11 Continuity Table

15. Check for continuity between ECM/PCM connector terminal E24 and the connector terminals shown in the table. See **Fig. 97** .

    Is there continuity between the ECM/PCM terminal and each of the terminals in the chart?

    YES: Go to step 16.

    NO: Repair open in the wire between the ECM/PCM and the appropriate connector, then go to step 17 .

Connector	Terminal
Gauge control module 30P	No. 13 (RED)
VSA control unit 47P	No. 30 (RED)
Navigation unit 20P	No.18 (RED)

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Fig. 97: ECM/PCM Connector Terminal E24 Continuity Table

16. Refer to the following chart. See **Fig. 98** . Select the row that most closely represents the combination of DTCs retrieved from the PGM-FI, VSA, and Body Electrical systems: Check connections at the control module indicated in the last column. If all connections are OK, substitute a known-good control module, then go to step 17 and recheck.

    Are the DTCs still indicated?

    YES: Substitute the remaining control modules, one at time, until the DTCs are no longer present, then replace that control module. After replacing the faulty control module, go to step 17.

    NO: Replace the faulty control module, then go to step 17.

PGM-FI	ABS/TCS	Body Electrical	Control module
U0155	86-1	B1168 B1169 B1178	Gauge Control Module
U0073 U0122 U0155	68-1 86-1	B1168 B1169 B1178	ECM/PCM
U0073 U0122 U0155	68-1 86-1	B1168 B1178	VSA control unit

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Fig. 98: Control Module DTC Symptom Table

17. Reconnect all the connectors.
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC U0073 and/or U0155 is indicated, check for poor connections or loose terminals at the gauge assembly, VSA control unit, navigation unit, and the ECM/PCM, then go to the indicated DTC troubleshooting.

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NO: Troubleshooting is complete.

DTC U0122: FCAN MALFUNCTION (VSA-ECM/PCM)

NOTE: If DTC U0073 is stored at the same time as DTC U0122, troubleshoot DTC U0073 first, then recheck for DTC U0122.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC U0122 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the gauge assembly, the VSA control unit, and the ECM/PCM.
4. Check for DTCs in the DTCs MENU with the HDS.

   Is TCS DTC 86 indicated?

   YES: Go to step 5.

   NO: Go to step 9 .
5. Turn the ignition switch OFF.
6. Disconnect the VSA control unit 47P connector.
7. Check for continuity between VSA control unit 47P connector terminals No. 14 and No. 30.

   Is there continuity?

   YES: Go to step 8.

   NO: Repair open in the wire between the VSA control unit No. 14 (No. 30 - CANL line) and the ECM/PCM E11 (E24 - CANL line), then go to step 14 .

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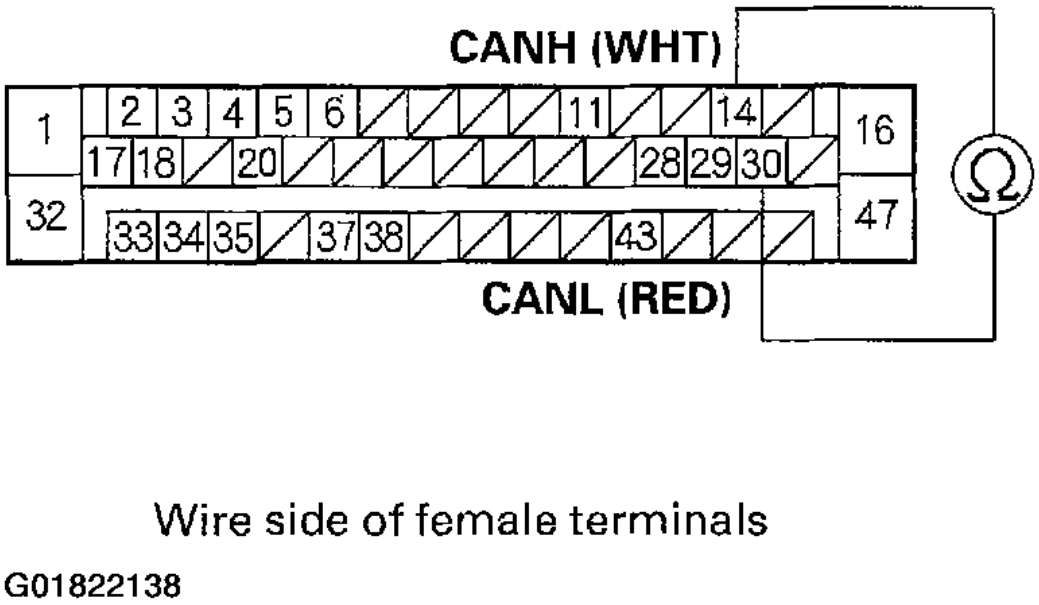


Fig. 99: Checking For Continuity Between VSA Control Unit 47P Connector Terminals No. 14 & No. 30

8. Check for poor connection at the cabin wire harness/dashboard wire harness 20P connector.

   Is it OK?

   YES: Substitute a known-good VSA control unit, then go to step 14 and recheck. If no DTCs are indicated, replace the original VSA control unit, then go to step 14 .

   NO: Reconnect the cabin wire harness/dashboard wire harness 20P connector, then go to step 14 .

9. Turn the ignition switch OFF.
10. Disconnect the VSA control unit 47P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between VSA control unit 47P connector terminal No. 38 and body ground.

    Is there battery voltage?

    YES: Go to step 13.

    NO: Check the No. 21 IG METER (7.5A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 21 IG METER (7.5A) fuse and the VSA control unit, then go to step 14 .

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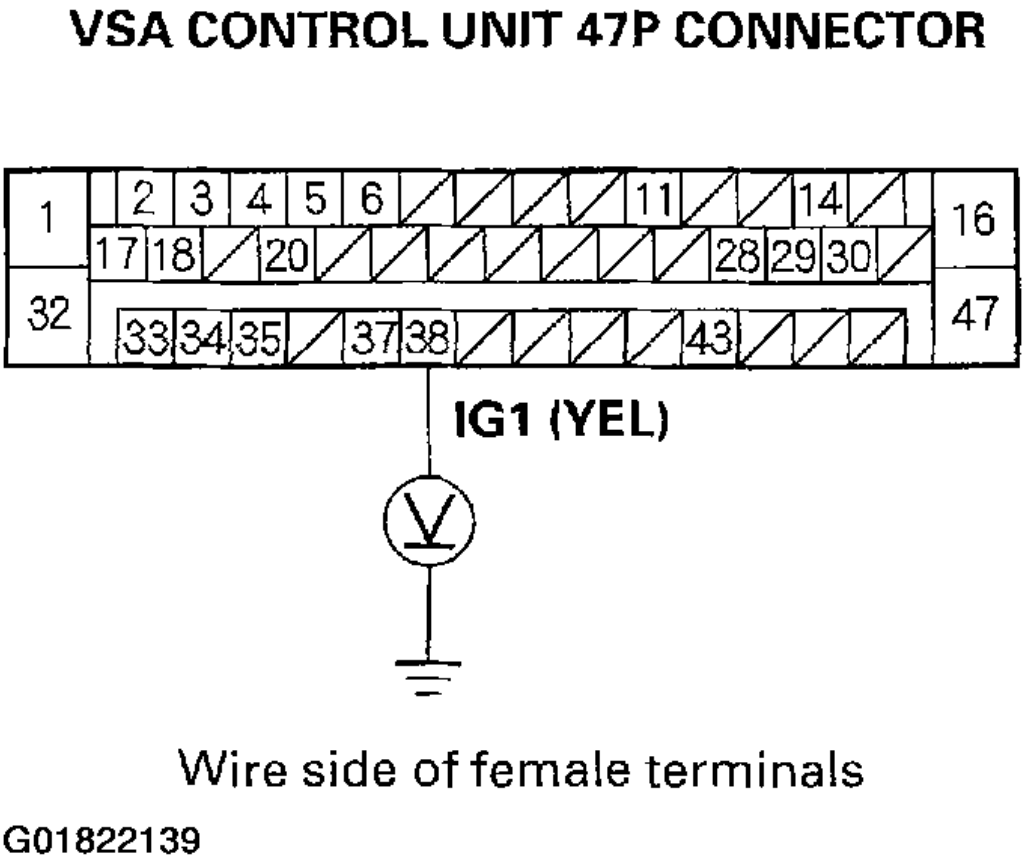


Fig. 100: Measuring Voltage Between VSA Control Unit 47P Connector Terminal No. 38 & Body Ground

13. Check for continuity between VSA control unit 47P connector terminal No. 32 and body ground.

    Is there continuity?

    YES: Substitute a known-good VSA control unit, then go to step 14 and recheck. If no DTCs are indicated, replace the original VSA control unit, then go to step 14.

    NO: Repair open in the wire between the VSA control unit and G203, then go to step 14.

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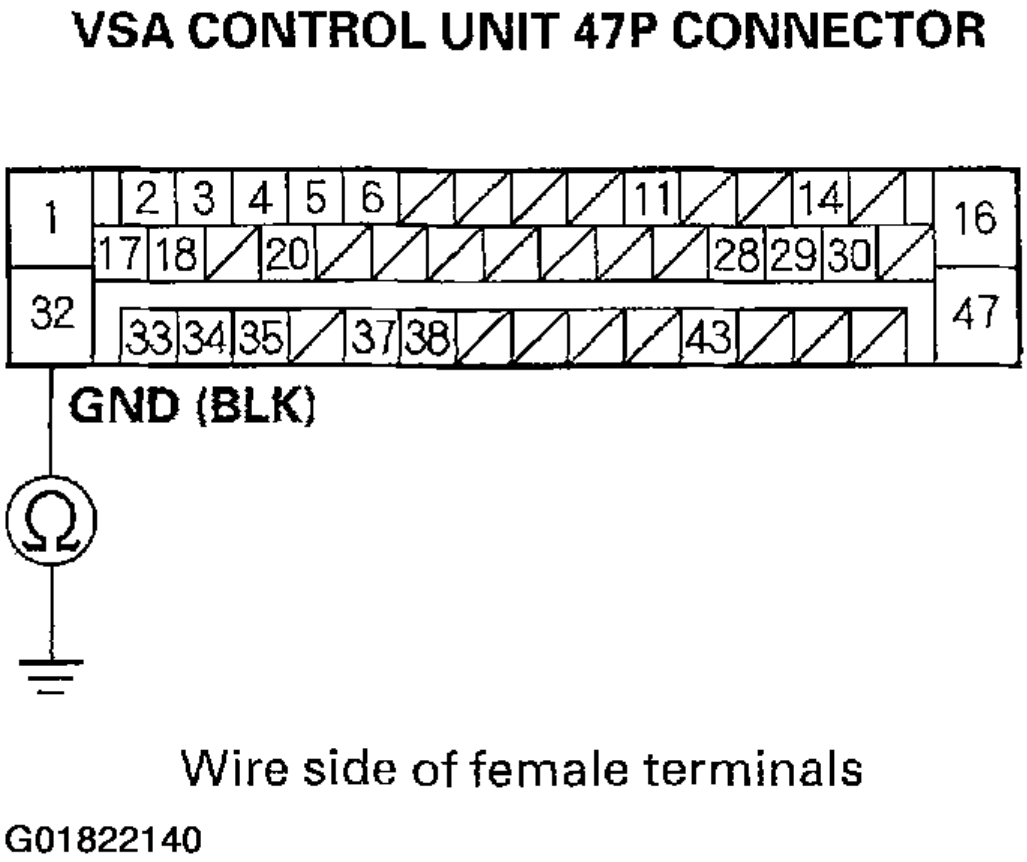


Fig. 101: Checking For Continuity Between VSA Control Unit 47P Connector Terminal No. 32 & Body Ground

14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC U0122 is indicated, check for poor connections or loose terminals at the gauge assembly, the VSA control unit, and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.

MIL CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).

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2. Do the gauge self-diagnostic procedure (see **SELF-DIAGNOSTIC PROCEDURE**).

   Does the MIL indicator flash?

   YES: Go to step 3.

   NO: Substitute a known-good gauge assembly (see **GAUGE CONTROL MODULE REPLACEMENT**), and recheck. If the MIL circuit is OK, replace the original gauge assembly.

3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and watch the MIL.

   Does the MIL stay off?

   YES: Go to step 17 .

   NO: Go to step 5.

5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), wait 20 seconds, and watch the MIL.

   Does the MIL stay on or flash more than 5 times?

   YES: Go to step 7.

   NO: The MIL circuit is OK.

7. Turn the ignition switch OFF.
8. Connect the HDS. (see **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
9. Turn the ignition switch ON (II), and read the HDS.

   Does the HDS communicate with the ECM/PCM?

   YES: Go to step 10.

   NO: Go to "DLC Circuit Troubleshooting" (see **DLC CIRCUIT TROUBLESHOOTING**). If no problem is found in the DLC troubleshooting, go to step 21 .

10. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: Go to the DTC Troubleshooting Index.

    NO: Go to step 11.

11. Check the MIL in the DATA LIST with the HDS.

    Is ON indicated?

    YES: Go to step 12.

    NO: Substitute a known-good gauge assembly, and recheck. If the MIL circuit is OK, replace the original gauge assembly.

12. Check the SCS in the DATA LIST with the HDS.

    Is a short indicated?

    YES: Go to step 13.

    NO: Update the ECM/PCM If it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original

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ECM/PCM.

13. Turn the ignition switch OFF.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector E (31P).
16. Check for continuity between ECM/PCM connector terminal E29 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (E29) and the DLC.

NO: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

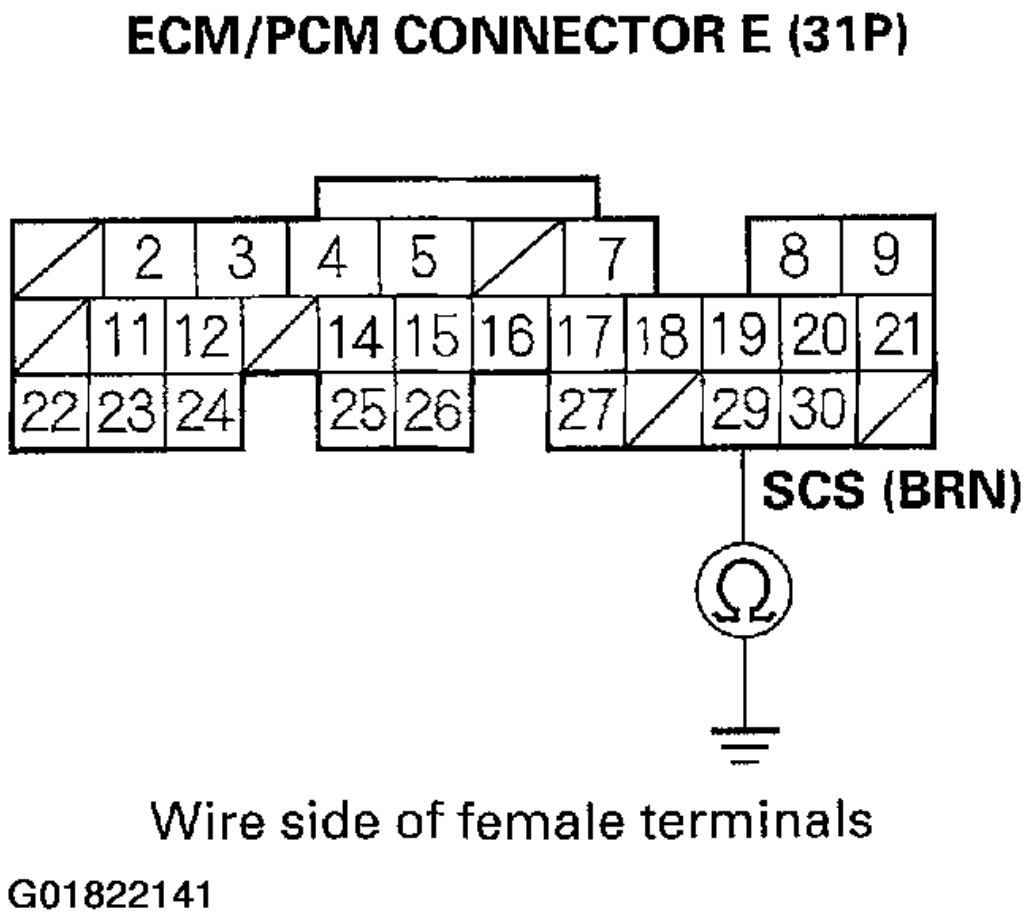


Fig. 102: Checking For Continuity Between ECM/PCM Connector Terminal E29 & Body Ground

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17. Try to start the engine.

    Did the engine not start, or does it idle rough?

    YES: Go to step 22 .

    NO: Go to step 18.

18. Turn the ignition switch OFF.
19. Connect the HDS (see **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
20. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS communicate with the ECM/PCM?

    YES: Go to step 21.

    NO: Go to "DLC Circuit Troubleshooting" (see **DLC CIRCUIT TROUBLESHOOTING**). If no problem is found in the DLC troubleshooting, go to step 21.

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC U0073 and/or U0155 indicated?

    YES: Go to the indicated DTC troubleshooting.

    NO: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

22. Turn the ignition switch OFF.
23. Inspect the No. 23 + B IG MAIN (50A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES: Repair open in the wire between the No. 20 IG (50A) fuse and the ignition switch. If the wire is OK, go to step 24.

    NO: Repair short in the wire between No. 23 + B IG MAIN (50A) fuse and the under-dash fuse/relay box. Also replace the No. 23 + B IG MAIN (50A) fuse.

24. Inspect the No. 8 FI ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES: Go to step 31 .

    NO: Go to step 25.

25. Remove the blown No. 8 FI ECU (ECM/PCM) (15A) fuse from the under-dash fuse/relay box.
26. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**), then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-hood fuse/relay box.

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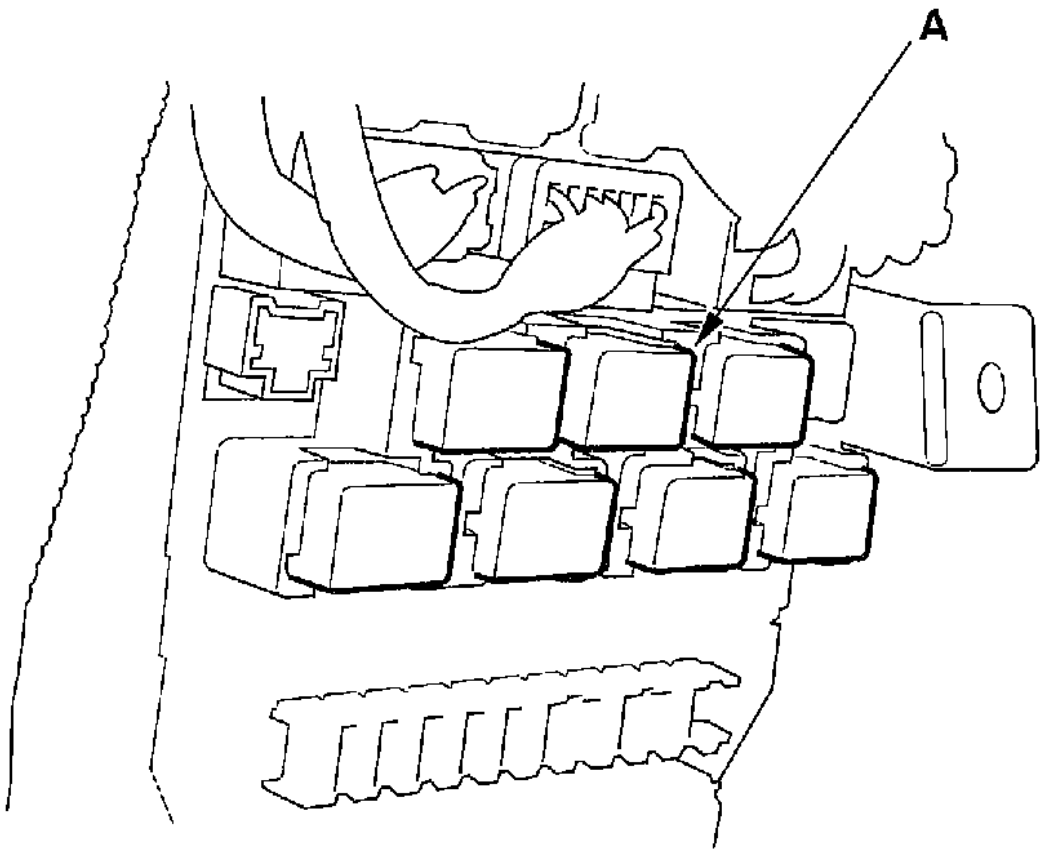


Fig. 103: Removing PGM-FI Main Relay 1 (FI MAIN) From The Under-Hood Fuse/Relay Box

27. Check for continuity between body ground and PGM-FI main relay 1 (FI MAIN) 4P connector terminals No. 2 and No. 3 individually.

    Is there continuity?

    YES: Repair short in the wire between the No. 8 FI ECU (ECM/PCM) (15A) fuse and PGM-FI main relay 1. Also replace the No. 8 FI ECU (ECM/PCM) (15A) fuse.

    NO: Go to step 28.

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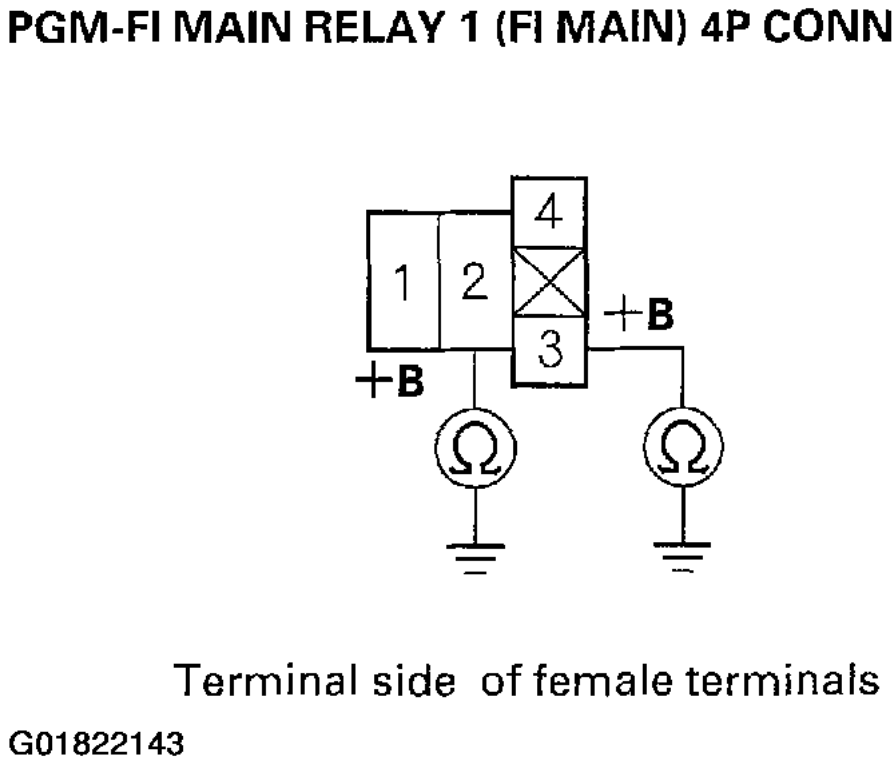


Fig. 104: Checking For Continuity Between Body Ground & PGM-FI Main Relay 1 (FI MAIN) 4P Connector Terminals No. 2 & No. 3

28. Disconnect each of the components or connectors below, one at a time, and check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and body ground:
    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (31P)
    - Each injector 2P connector
    - Camshaft position (CMP) sensor B 3P connector
    - Crankshaft position (CKP) sensor 3P connector

    Is there continuity?

    YES: Go to step 29.

    NO: Replace the component that made the short to body ground go away when disconnected. If the item is the ECM/PCM, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. Also replace the No. 8 FI ECU (ECM/PCM) (15A) fuse.

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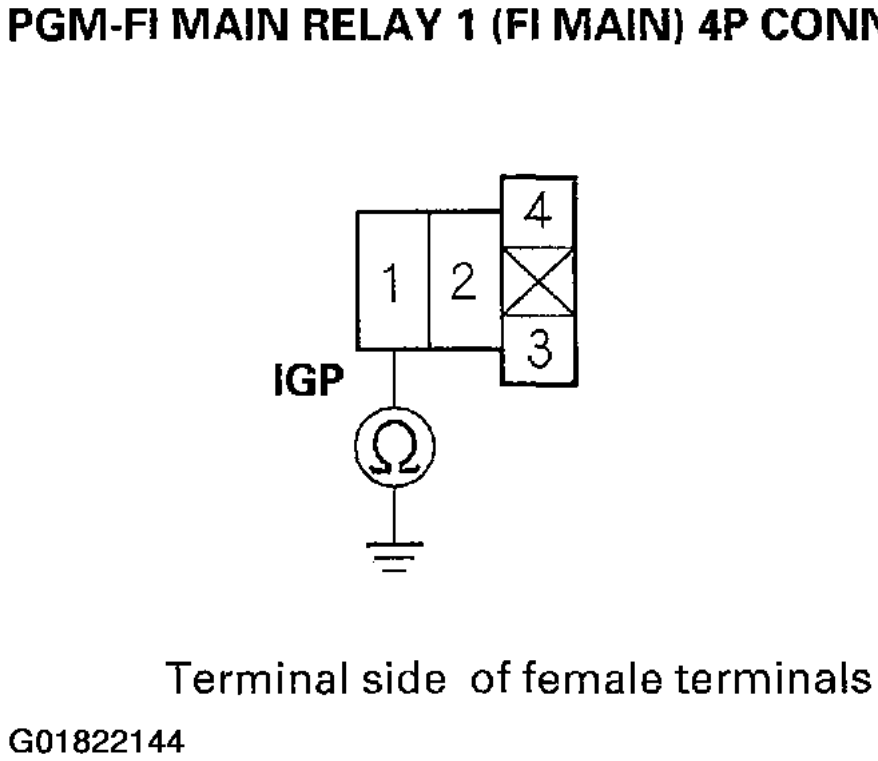


Fig. 105: Checking For Continuity Between PGM-FI Main Relay 1 (FI MAIN) 4P Connector Terminal No. 1 & Body Ground

29. Disconnect the connectors from these components:
    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (31P)
    - Injectors
    - Camshaft position (CMP) sensor B
    - Crankshaft position (CKP) sensor
30. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and body ground.

    Is there continuity?

    YES: Repair short in the wire between PGM-FI main relay 1 (FI MAIN) and each item. Also replace the No. 8 FI ECU (ECM/PCM) (15A) fuse.

    NO: Replace PGM-FI main relay 1 (FI MAIN). Also replace the No. 8 FI ECU (ECM/PCM) (15A) fuse.

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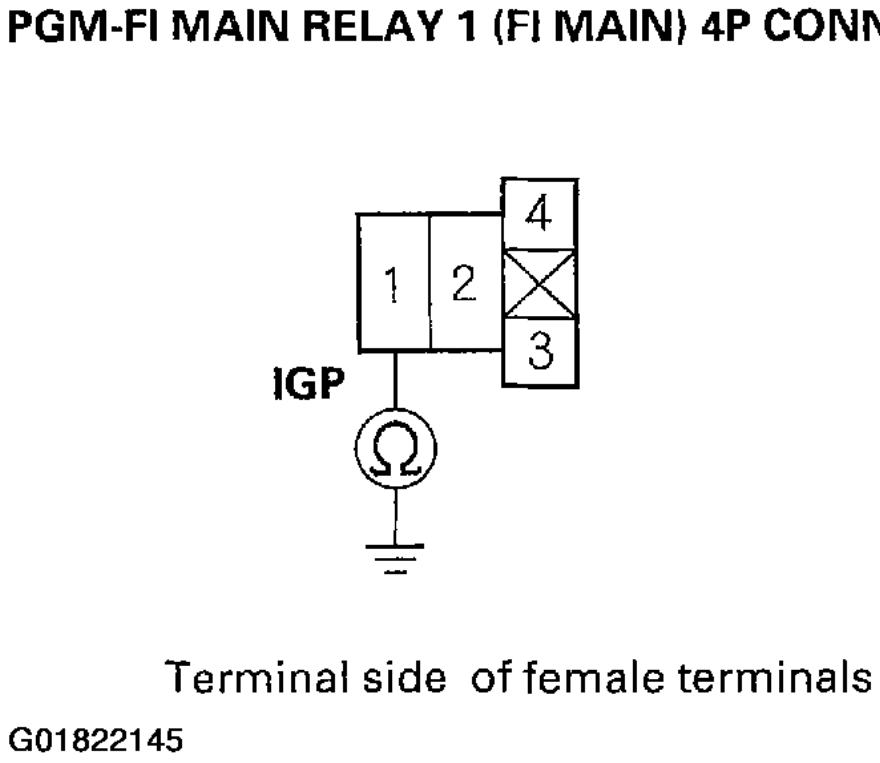


Fig. 106: Checking For Continuity Between PGM-FI Main Relay 1 (FI MAIN) 4P Connector Terminal No. 1 & Body Ground

31. Inspect the No. 19 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

    YES: Go to step 44 .

    NO: Go to step 32.

32. Remove the blown No. 19 FUEL PUMP (15A) fuse from the under-dash fuse/relay box.
33. Jump the SCS line with the HDS.
34. Disconnect ECM/PCM connector E (31P).
35. Check for continuity between ECM/PCM connector terminal E9 and body ground.

    Is there continuity?

    YES: Go to step 36.

    NO: Replace the No. 19 FUEL PUMP (15A) fuse, and update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

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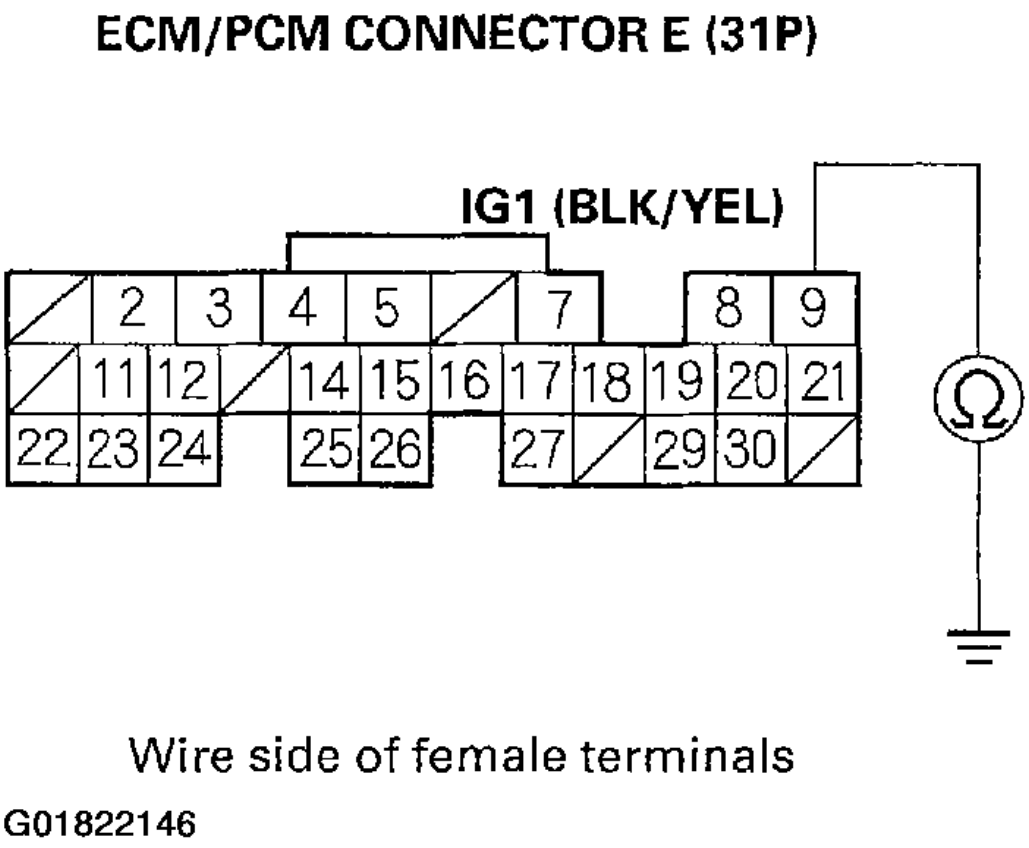


Fig. 107: Checking For Continuity Between ECM/PCM Connector Terminal E9 & Body Ground

36. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-hood fuse/relay box.

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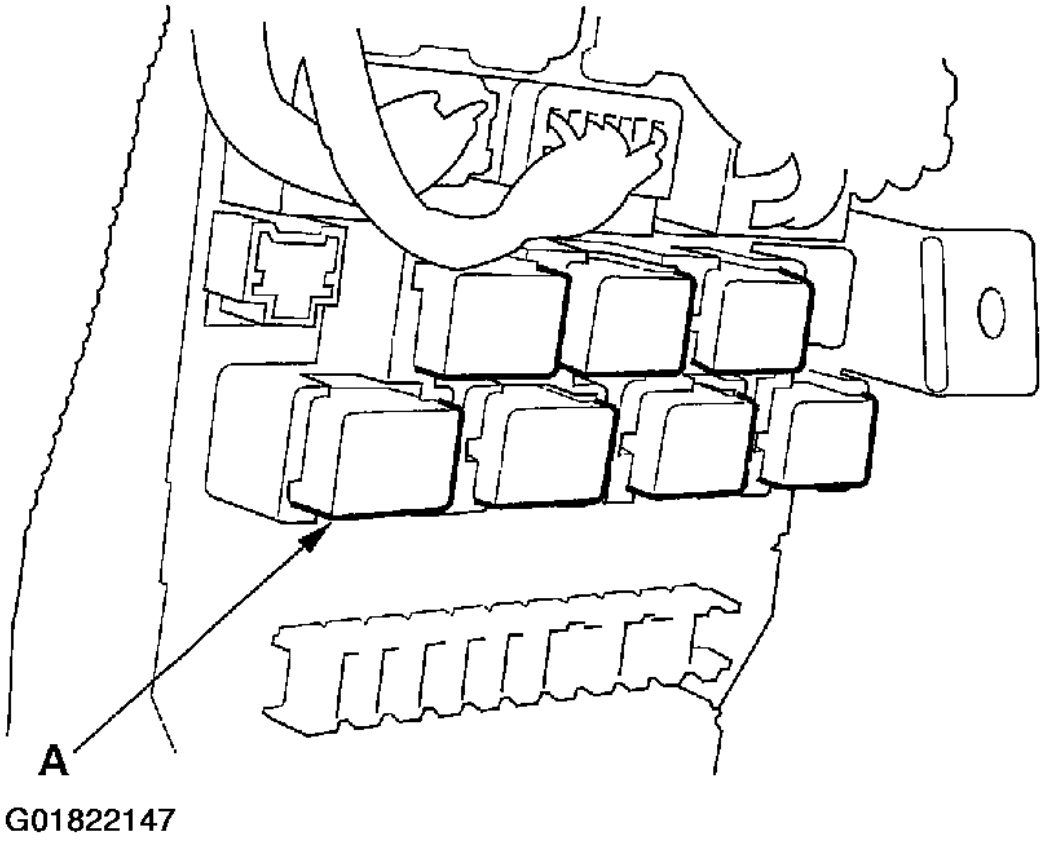


Fig. 108: Removing PGM-FI Main Relay 2 (FUEL PUMP) From The Under-Hood Fuse/Relay Box

37. Check for continuity between ECM/PCM connector terminal E9 and body ground.

    Is there continuity?

    YES: Repair short in the wire between the No. 19 FUEL PUMP (15A) fuse and the ECM/PCM (E9), or between the No. 19 FUEL PUMP (15A) fuse and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 FUEL PUMP (15A) fuse.

    NO: Go to step 38.

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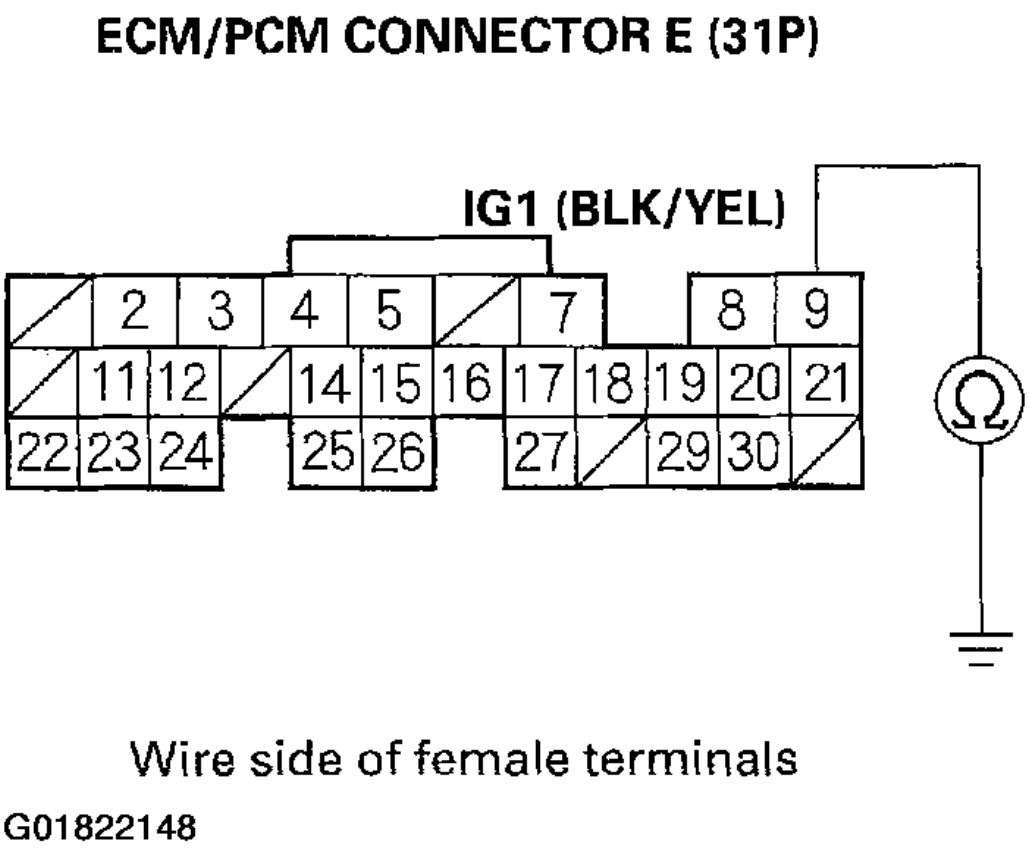


Fig. 109: Checking For Continuity Between ECM/PCM Connector Terminal E9 & Body Ground

38. Remove the trunk floor trim panel (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**).
39. Remove the access panel from the floor (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).
40. Disconnect the fuel pump 5P connector.
41. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

    Is there continuity?

    YES: Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 FUEL PUMP (15A) fuse.

    NO: Go to step 42.

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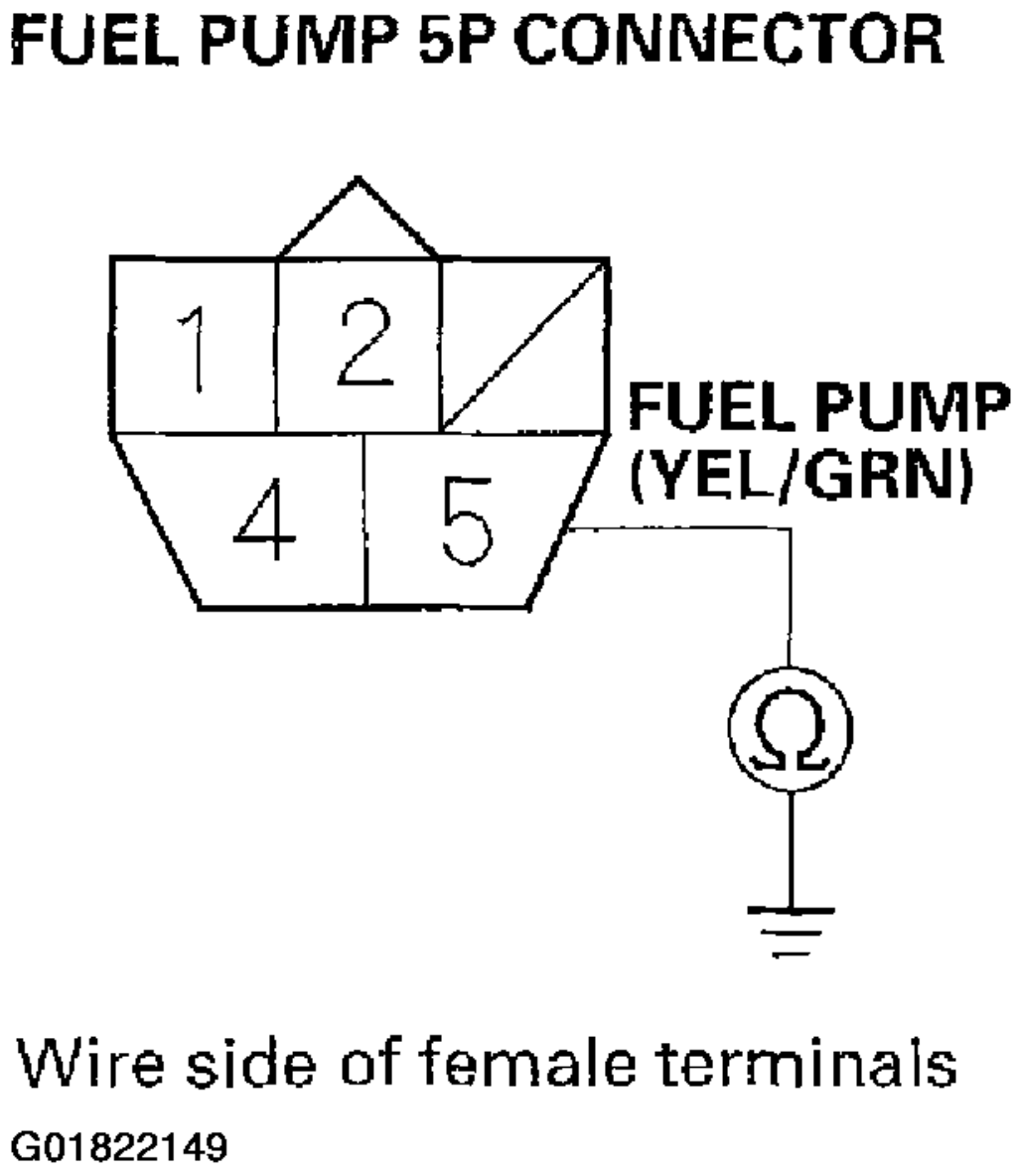


Fig. 110: Checking For Continuity Between Fuel Pump 5P Connector Terminal No. 5 & Body Ground

42. Reinstall PGM-FI main relay 2 (FUEL PUMP) (A).

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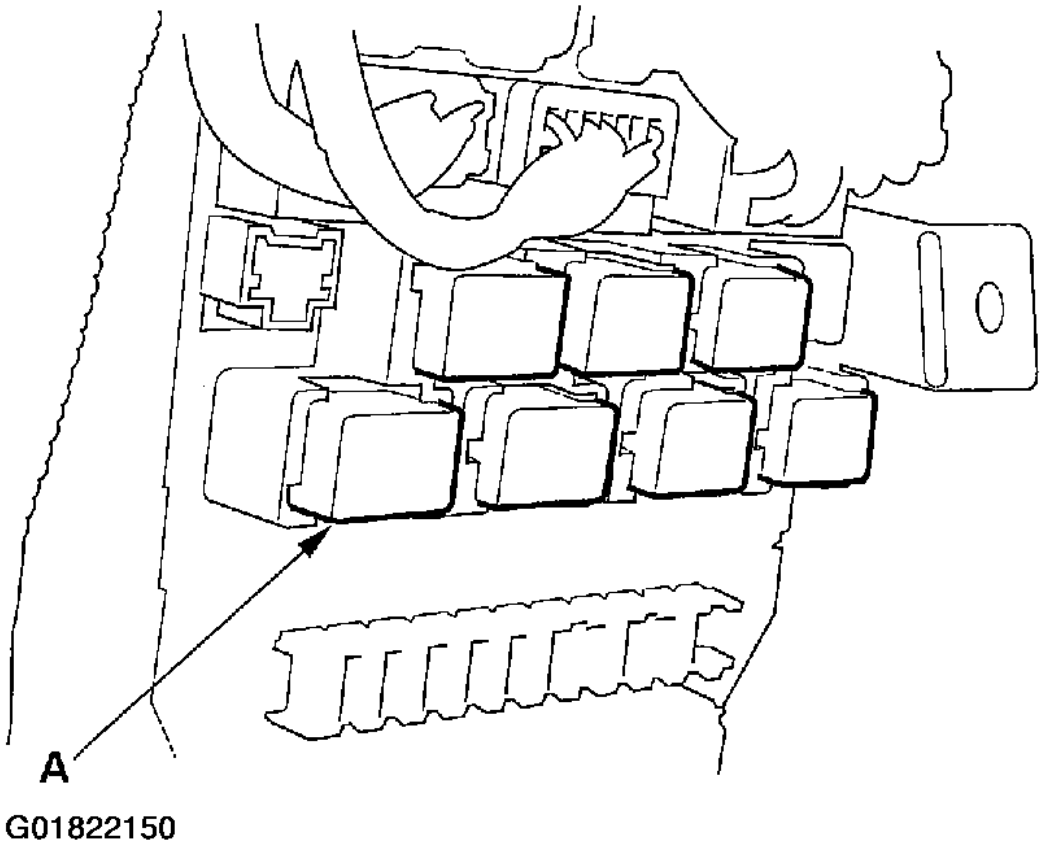


Fig. 111: Reinstalling PGM-FI Main Relay 2 (FUEL PUMP)

43. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

Is there continuity?

YES: Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 FUEL PUMP (15A) fuse.

NO: Check the fuel pump, and replace it if necessary. Also replace the No. 19 FUEL PUMP (15A) fuse.

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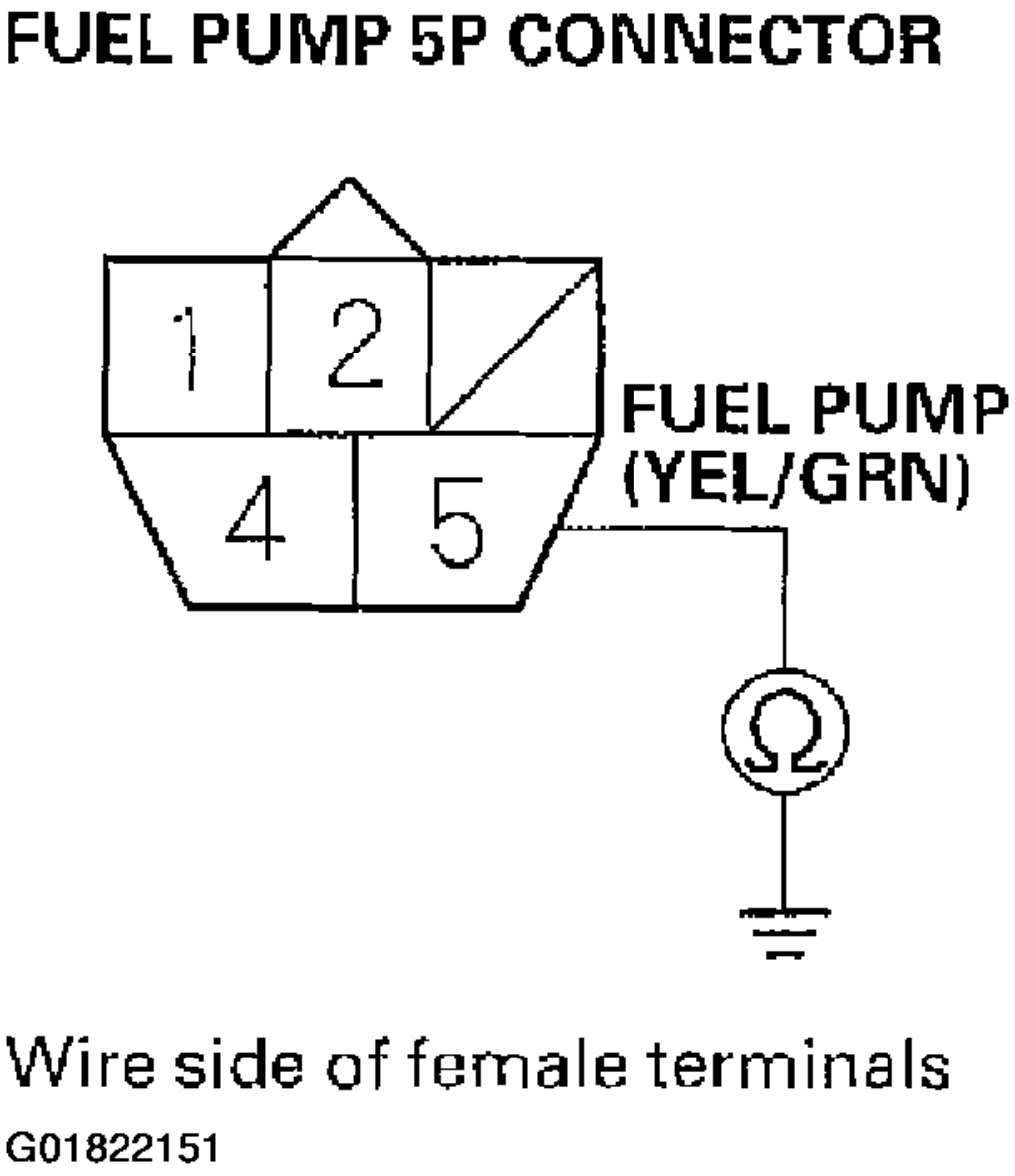


Fig. 112: Checking For Continuity Between Fuel Pump 5P Connector Terminal No. 5 & Body Ground

44. Jump the SCS line with the HDS.
45. Disconnect ECM/PCM connector E (31P).
46. Turn the ignition switch ON (II).
47. Measure voltage between ECM/PCM connector terminal E9 and body ground.

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Is there battery voltage?

YES: Go to step 48.

NO: Repair open in the wire between the No. 19 FUEL PUMP (15A) fuse and the ECM/PCM (E9).

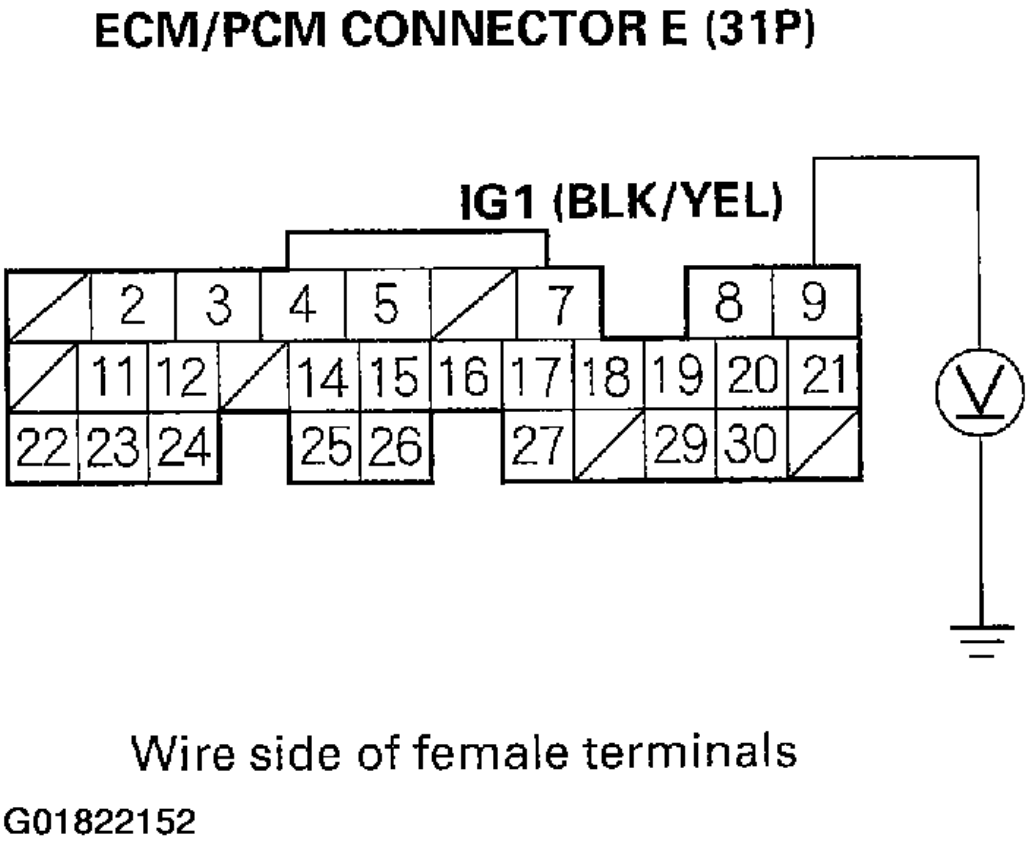


Fig. 113: Measuring Voltage Between ECM/PCM Connector Terminal E9 & Body Ground

48. Measure voltage between ECM/PCM connector terminal E7 and body ground.

Is there battery voltage?

YES: Go to step 53 .

NO: Go to step 49.

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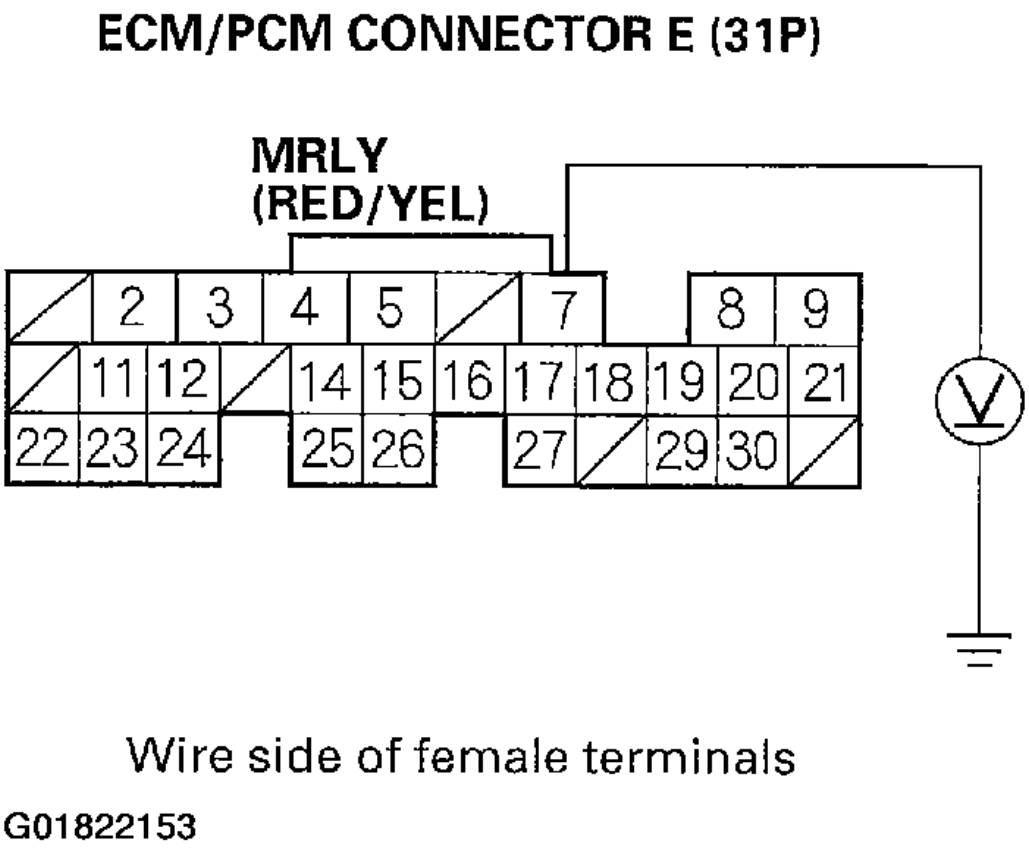


Fig. 114: Measuring Voltage Between ECM/PCM Connector Terminal E7 & Body Ground

49. Turn the ignition switch OFF.
50. Remove the left kick panel (see **TRIM REMOVAL/INSTALLATION - DOOR AREA**), then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-hood fuse/relay box.

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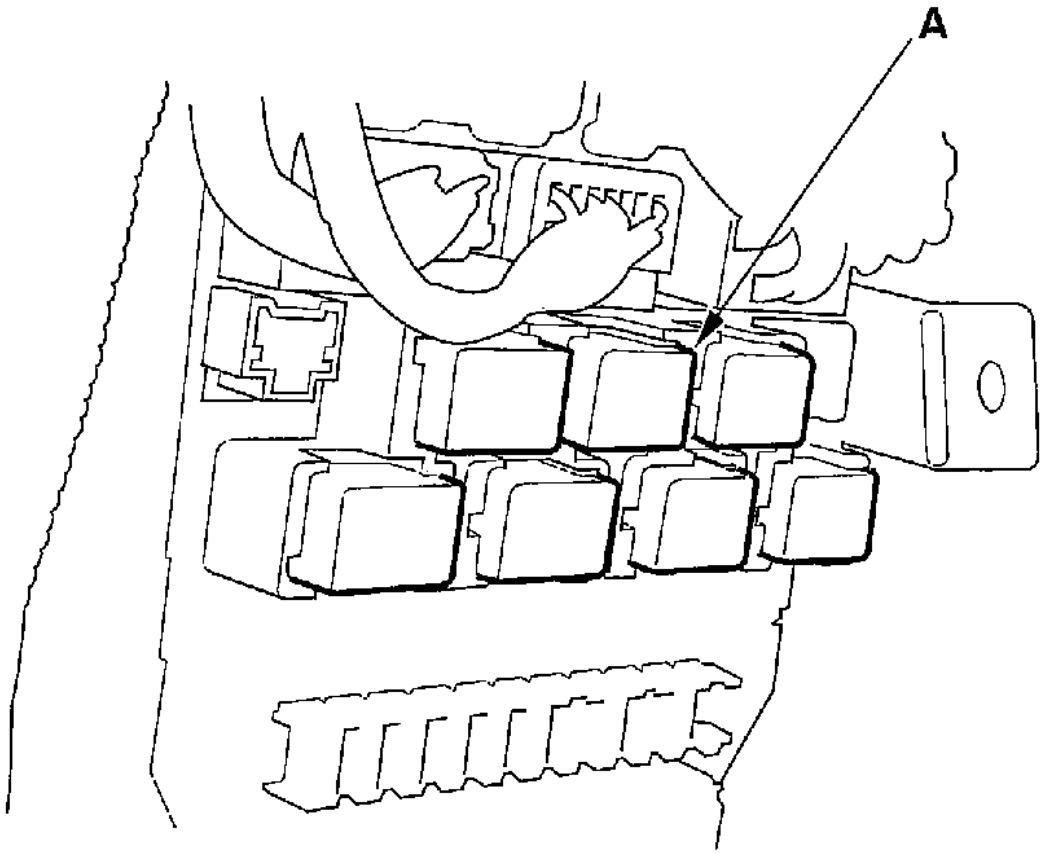


Fig. 115: Removing PGM-FI Main Relay 1 (FI MAIN) From The Under-Hood Fuse/Relay Box

51. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 3 and body ground.

    Is there battery voltage?

    YES: Go to step 52.

    NO: Repair open in the wire between the No. 8 FI ECU (ECM/PCM) (15A) fuse and PGM-FI main relay 1.

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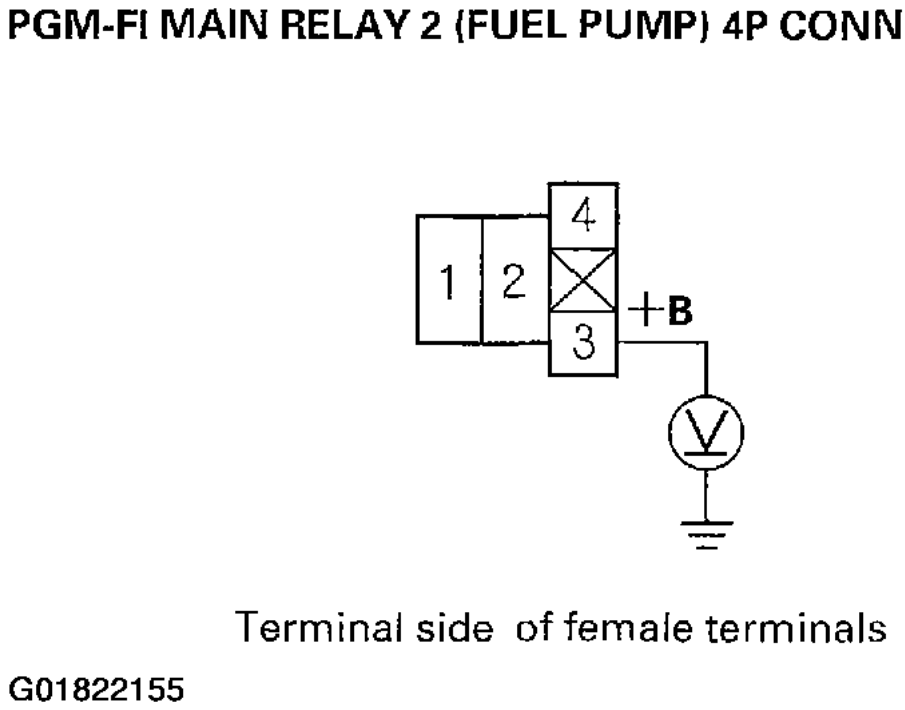


Fig. 116: Measuring Voltage Between PGM-FI Main Relay 1 (FI MAIN) 4P Connector Terminal No. 3 & Body Ground

52. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 4 and ECM/PCM connector terminal E7.

Is there continuity?

YES: Test PGM-FI main relay 1 (FI MAIN) (see **RELAYS**). If the relay is OK, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

NO: Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the ECM/PCM (E7).

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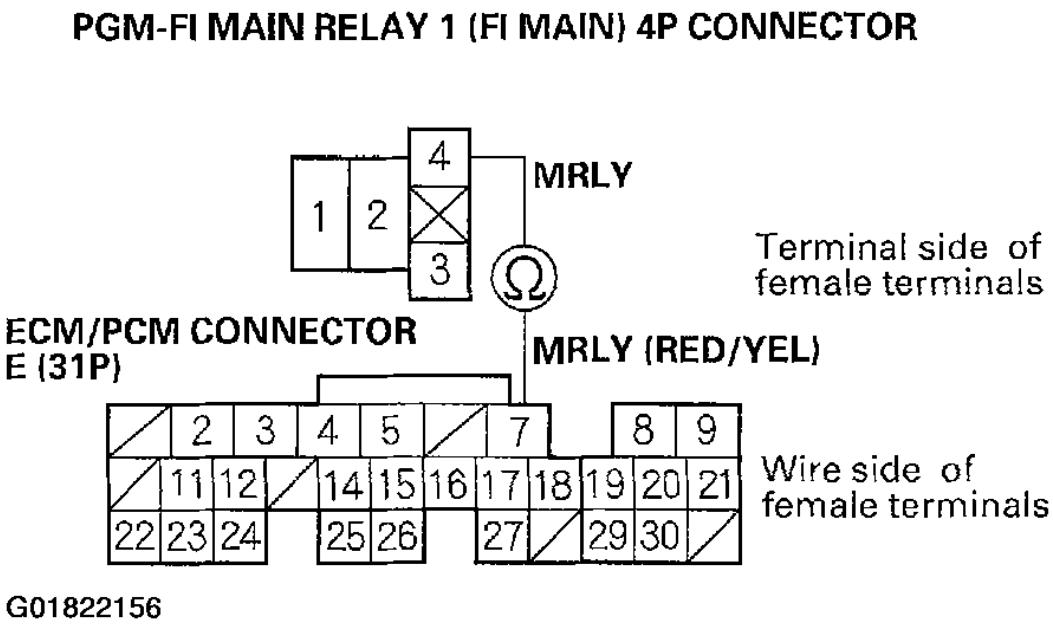


Fig. 117: Checking For Continuity Between PGM-FI Main Relay 1 (FI MAIN) 4P Connector Terminal No. 4 & ECM/PCM Connector Terminal E7

53. Reconnect ECM/PCM connector E (31P).
54. Turn the ignition switch ON (II).
55. Measure voltage between body ground and ECM/PCM connector terminals A2 and A3 individually.

Is there battery voltage?

YES: Go to step 62 .

NO: Go to step 56.

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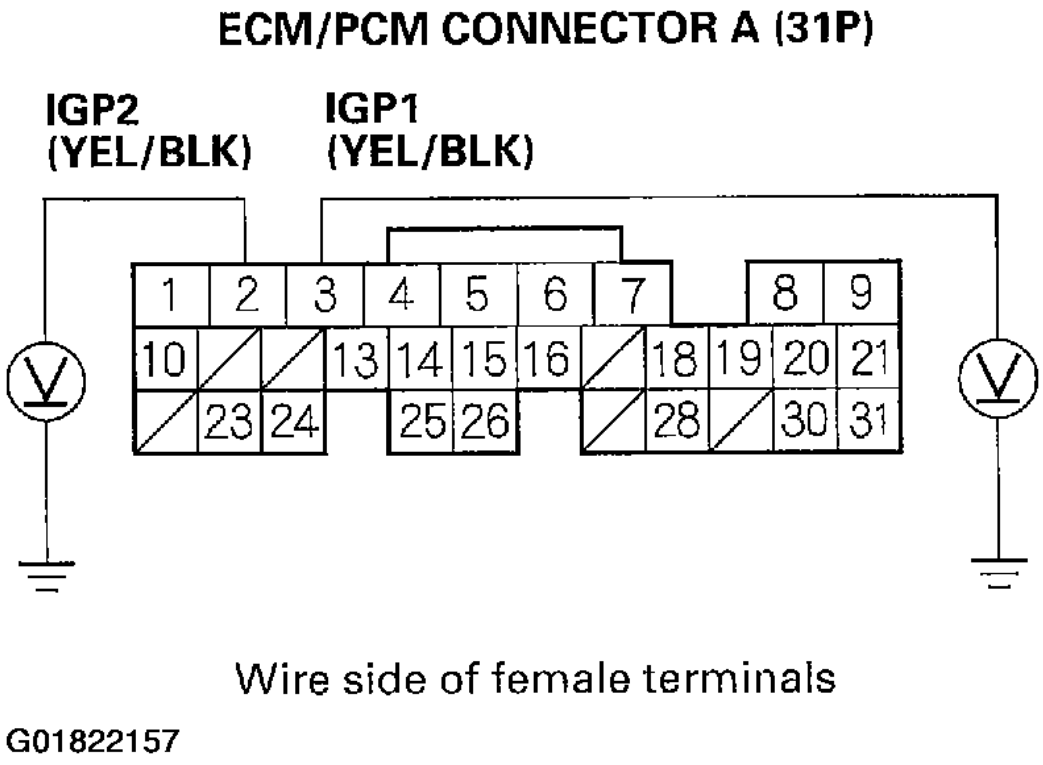


Fig. 118: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminals A2 & A3

56. Turn the ignition switch OFF.
57. Remove PGM-FI main relay 1 (FI MAIN) (A).

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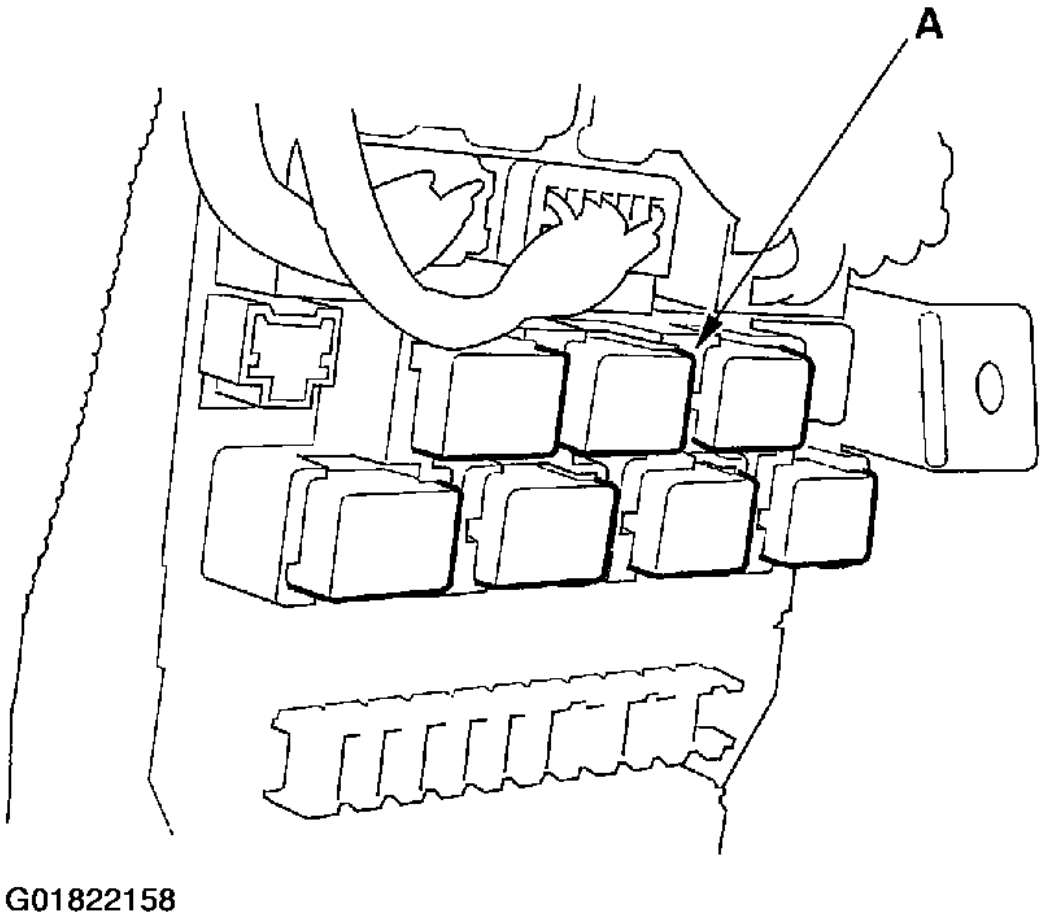


Fig. 119: Removing PGM-FI Main Relay 1 (FI MAIN)

58. Turn the ignition switch ON (II).
59. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

Is there battery voltage?

YES: Go to step 60.

NO: Repair open in the wire between the No. 8 FI ECU (ECM/PCM) (15A) fuse and PGM-FI main relay 1 (FI MAIN).

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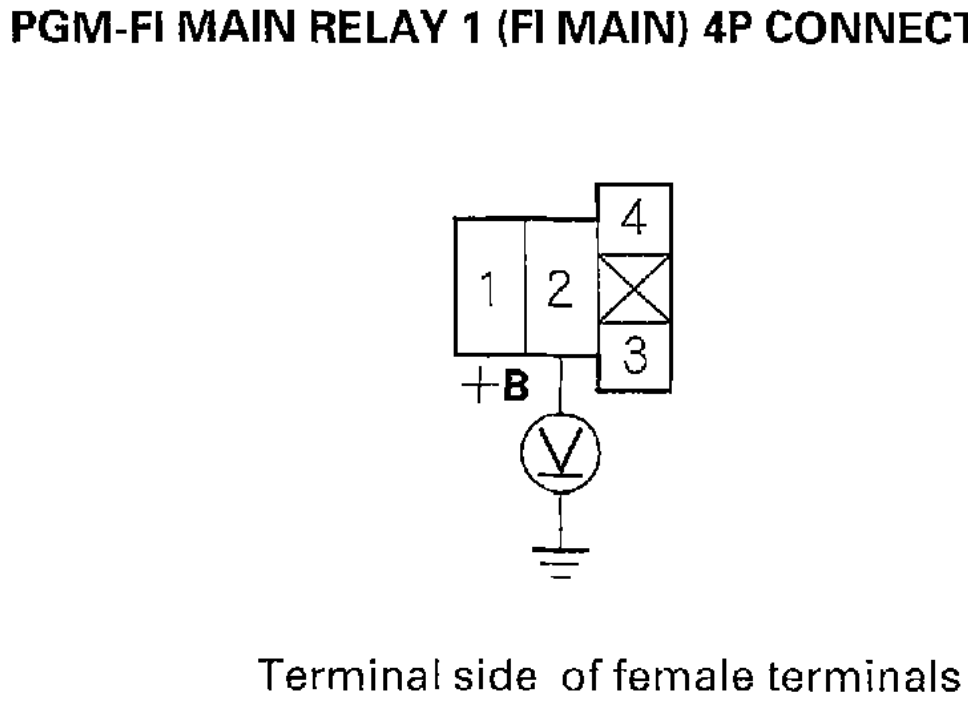


Fig. 120: Measuring Voltage Between PGM-FI Main Relay 1 4P Connector Terminal No. 2 & Body Ground

60. Turn the ignition switch OFF.
61. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and ECM/PCM connector terminals A2 and A3 individually.

Is there continuity?

YES: Replace PGM-FI main relay 1 (FI MAIN).

NO: Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the ECM/PCM (A2, A3).

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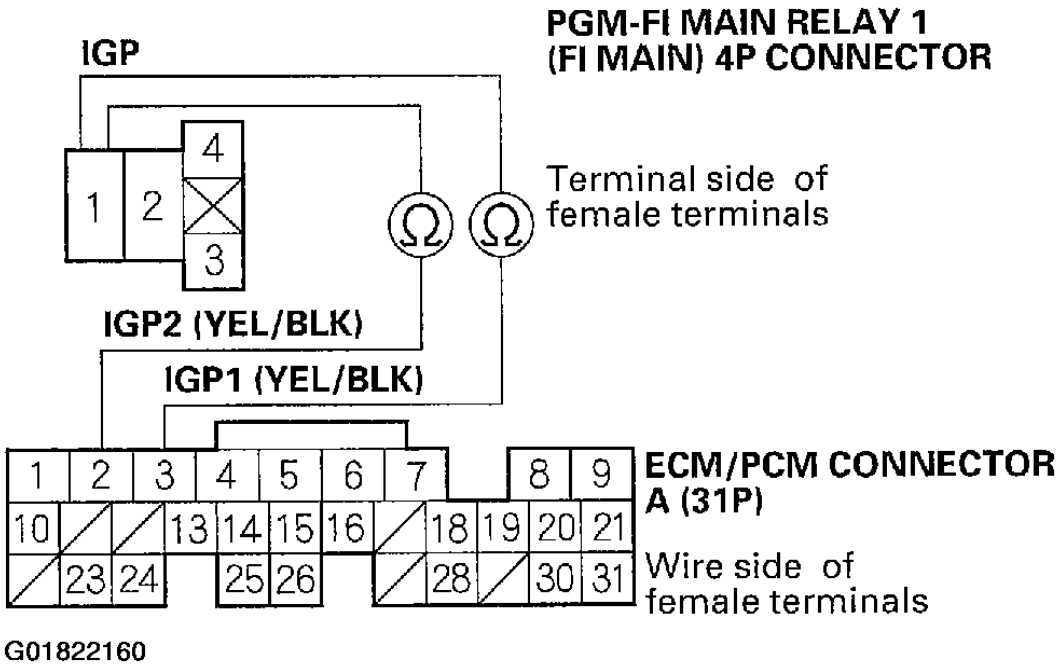


Fig. 121: Checking For Continuity Between PGM-FI Main Relay 1 (FI MAIN) 4P Connector Terminal No. 1 & ECM/PCM Connector Terminals A2 & A3

62. Measure voltage between body ground and ECM/PCM connector terminals A4, A5, A8 and A9 individually.

Is there more than 0.2 V?

YES: Repair open in the wire(s) that had more than 0.2 V between G101 and the ECM/PCM (A4, A5, A8, A9).

NO: Go to step 63.

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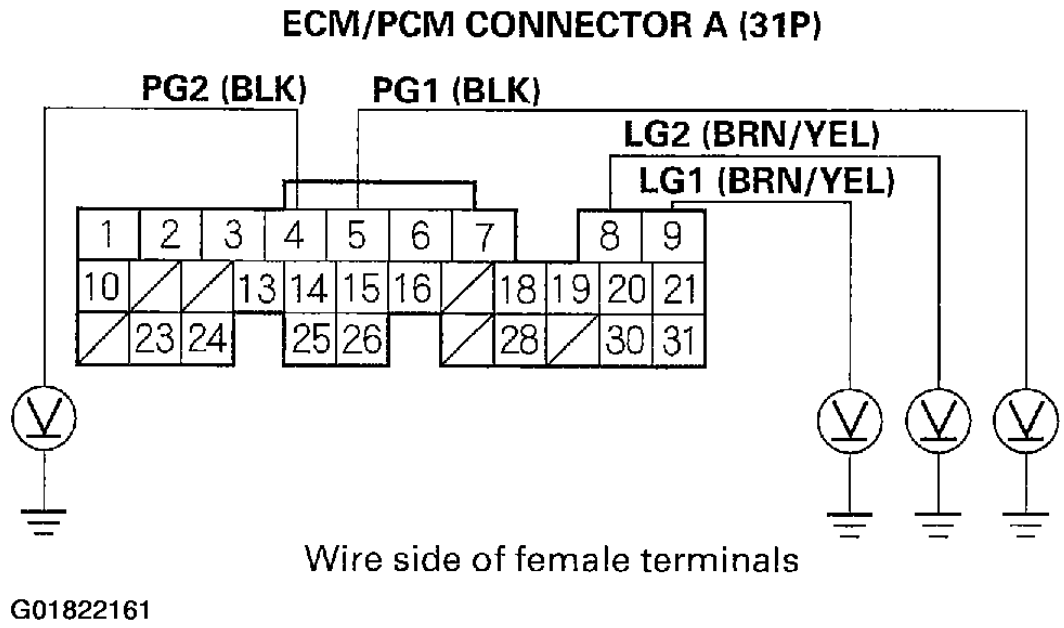


Fig. 122: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminals A4, A5, A8 & A9

63. Measure voltage between body ground and ECM/PCM connector terminal A21.

Is there more than 5 V?

YES: Go to step 71 .

NO: Go to step 64.

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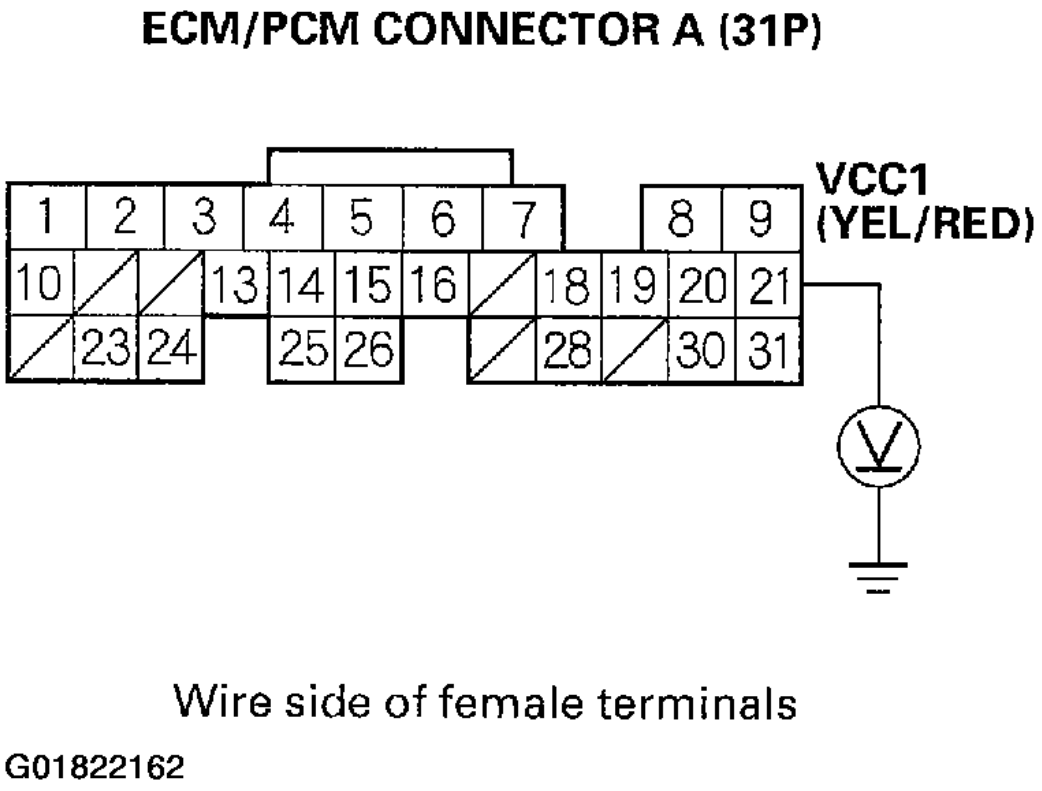


Fig. 123: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminal A21

64. Turn the ignition switch OFF.
65. Disconnect the connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A21 with the ignition switch ON (II):
    - Manifold absolute pressure (MAP) sensor
    - Accelerator pedal position (APP) sensor
    - Mainshaft speed sensor (A/T)

    Is there about 5 V?

    YES: Replace the sensor that restored 5 V when disconnected.

    NO: Go to step 66.

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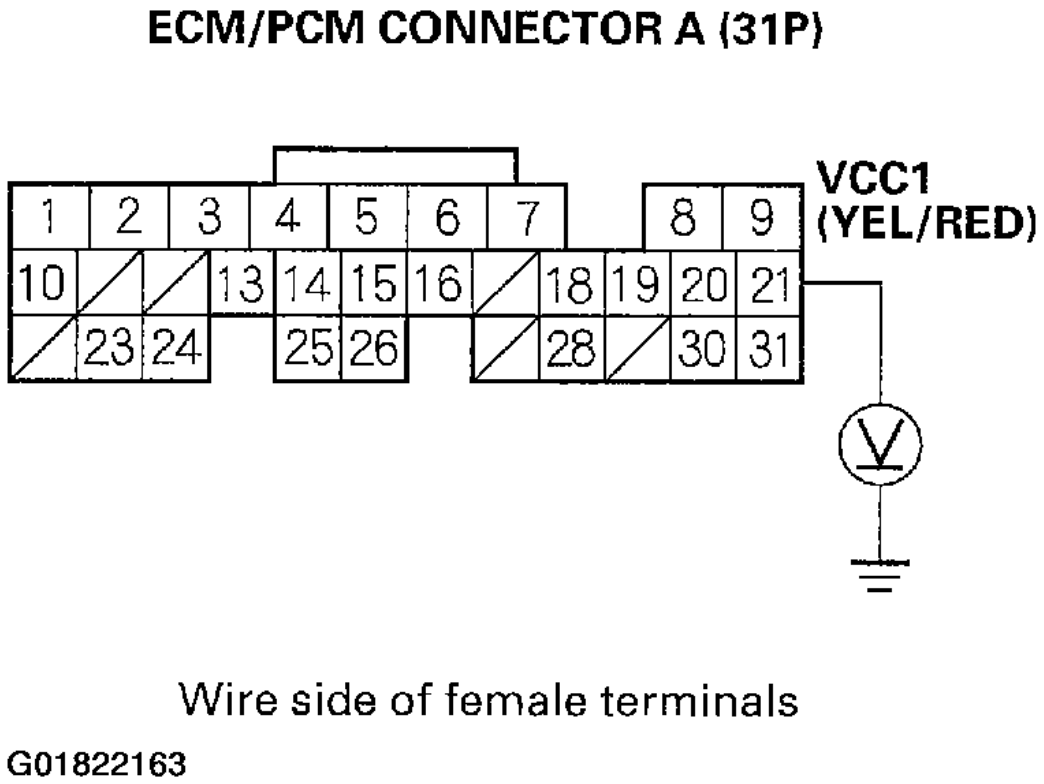


Fig. 124: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminal A21

66. Turn the ignition switch OFF.
67. Jump the SCS line with the HDS.
68. Disconnect the connectors from the following sensors:
    - Manifold absolute pressure (MAP) sensor
    - Accelerator pedal position (APP) sensor
    - Mainshaft speed sensor (A/T)
69. Disconnect ECM/PCM connector A (31P).
70. Check for continuity between ECM/PCM connector terminal A21 and body ground.

    Is there continuity?

    YES: Repair short in the wire between the ECM/PCM (A21) and the MAP sensor, APP sensor or mainshaft speed sensor (A/T).

    NO: Update the ECM/PCM if it does not have the latest software, or substitute a known-good, ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication does away with a known-good ECM/PCM, replace the original ECM/PCM.

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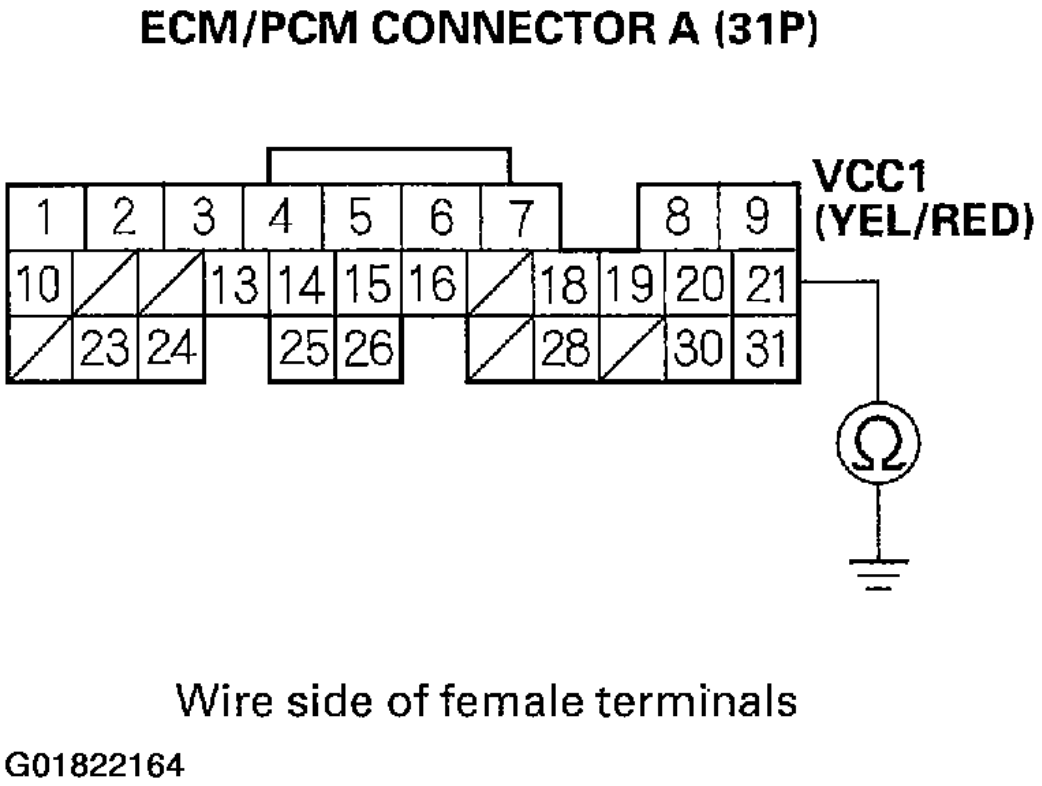


Fig. 125: Checking For Continuity Between ECM/PCM Connector Terminal A21 & Body Ground

71. Measure voltage between body ground and ECM/PCM connector terminal A20.

Is there about 5 V?

YES: Go to step 79 .

NO: Go to step 72.

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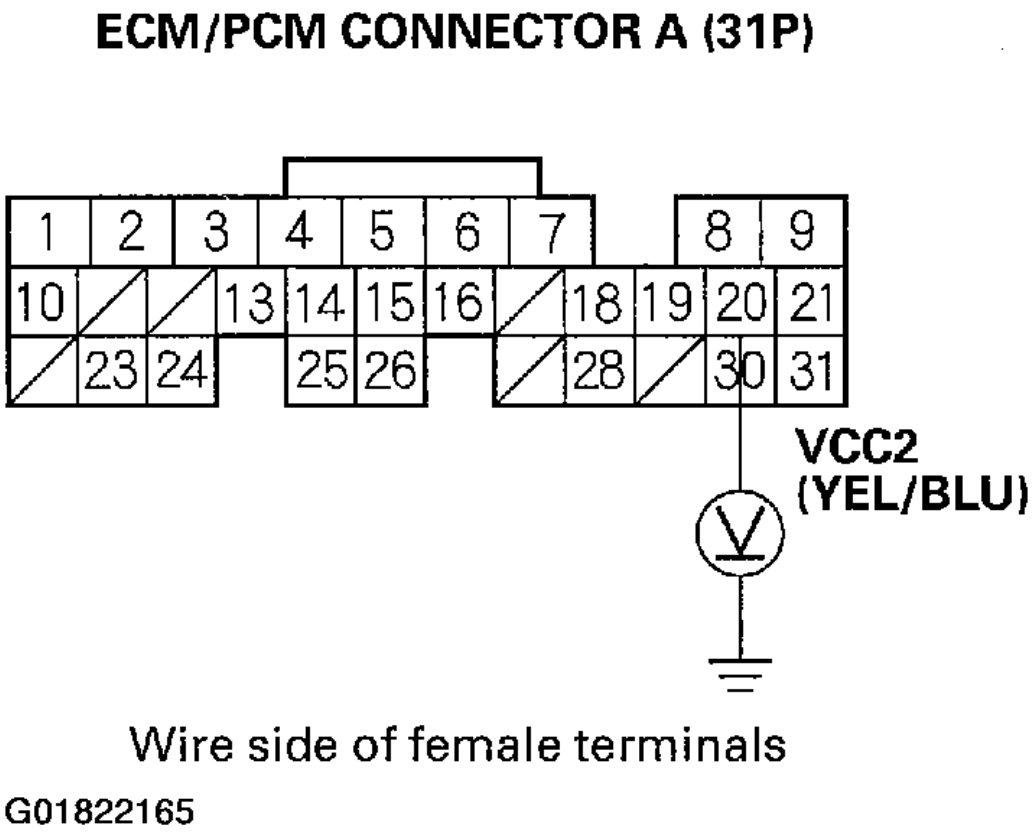


Fig. 126: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminal A20

72. Turn the ignition switch OFF.
73. Disconnect the connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A20 with the ignition switch ON (II):
    - Throttle position (TP) sensor
    - Accelerator pedal position (APP) sensor
    - Countershaft speed sensor

    Is there about 5 V?

    YES: Replace the sensor that restored 5 V when disconnected.

    NO: Go to step 74.

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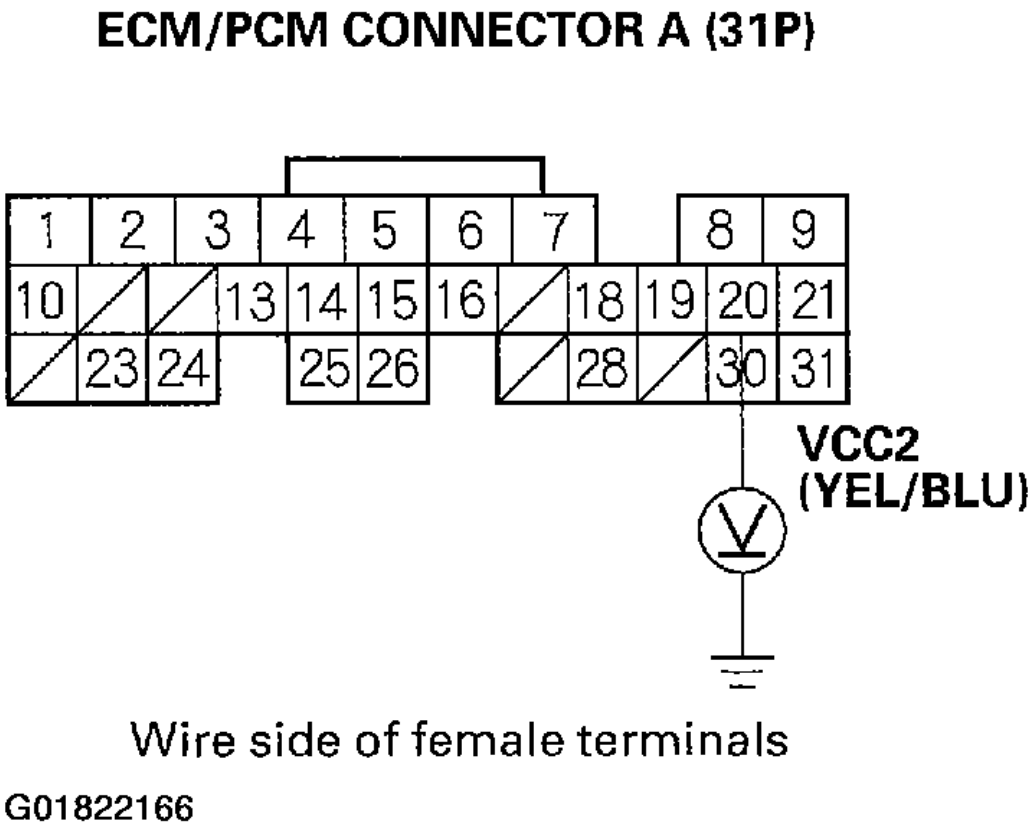


Fig. 127: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminal A20

74. Turn the ignition switch OFF.
75. Jump the SCS line with the HDS.
76. Disconnect the connector from the following sensors:
    - Throttle position (TP) sensor
    - Accelerator pedal position (APP) sensor
    - Countershaft speed sensor
77. Disconnect ECM/PCM connector A (31P).
78. Check for continuity between ECM/PCM connector terminal A20 and body ground.

    Is there continuity?

    YES: Repair short in the wire between the ECM/PCM (A20) and the TP sensor, APP sensor, EGR valve or countershaft speed sensor.

    NO: Update the ECM/PCM if it does not have the latest software, or substitute a known-good, ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original

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ECM/PCM.

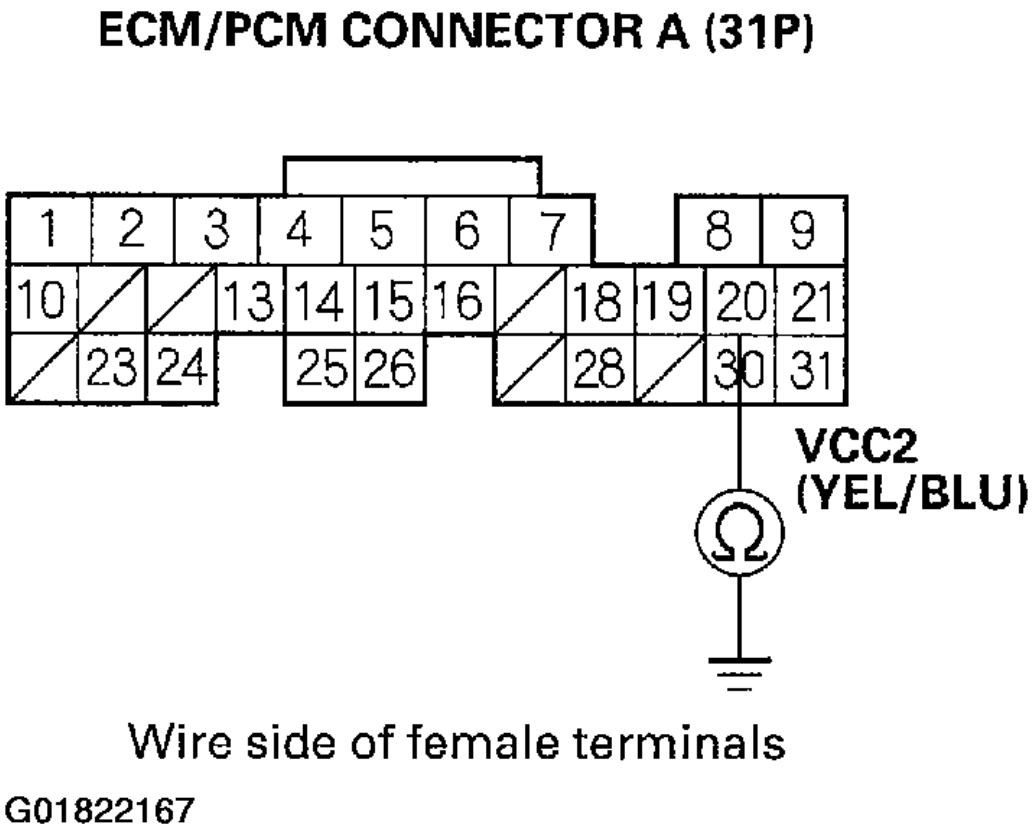


Fig. 128: Checking For Continuity Between ECM/PCM Connector Terminal A20 & Body Ground

79. Measure voltage between body ground and ECM/PCM connector terminal E5.

Is there about 5 V?

YES: Update the ECM/PCM if it does not have the latest software, or substitute a known-good, ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

NO: Go to step 80.

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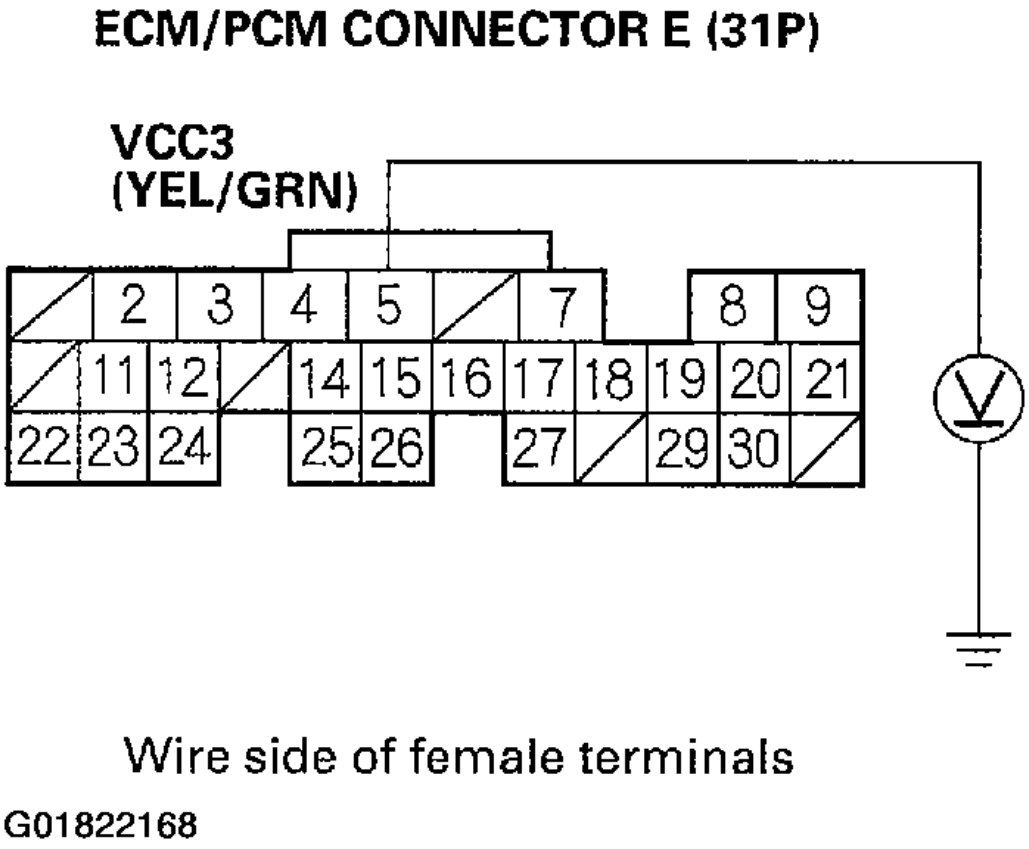


Fig. 129: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminal E5

80. Turn the ignition switch OFF.
81. Disconnect the FTP sensor 3P connector, and measure voltage between body ground and ECM/PCM connector terminal E5 with the ignition switch ON (II).

Is there about 5 V?

YES: Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).

NO: Go to step 82.

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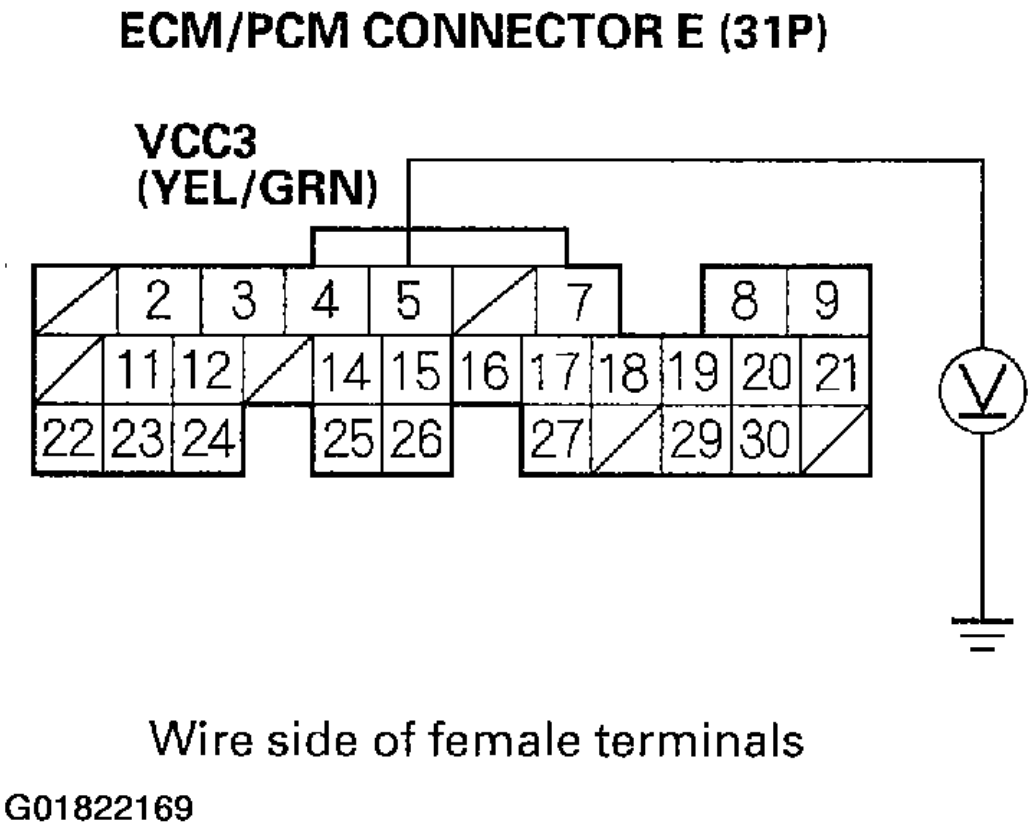


Fig. 130: Measuring Voltage Between Body Ground & ECM/PCM Connector Terminal E5

82. Turn the ignition switch OFF.
83. Jump the SCS line with the HDS.
84. Disconnect the FTP sensor 3P connector.
85. Disconnect ECM/PCM connector E (31P).
86. Check for continuity between ECM/PCM connector terminal E5 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (E5) and FTP sensor.

NO: Update the ECM/PCM if it does not have the latest software, or substitute a known-good, ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

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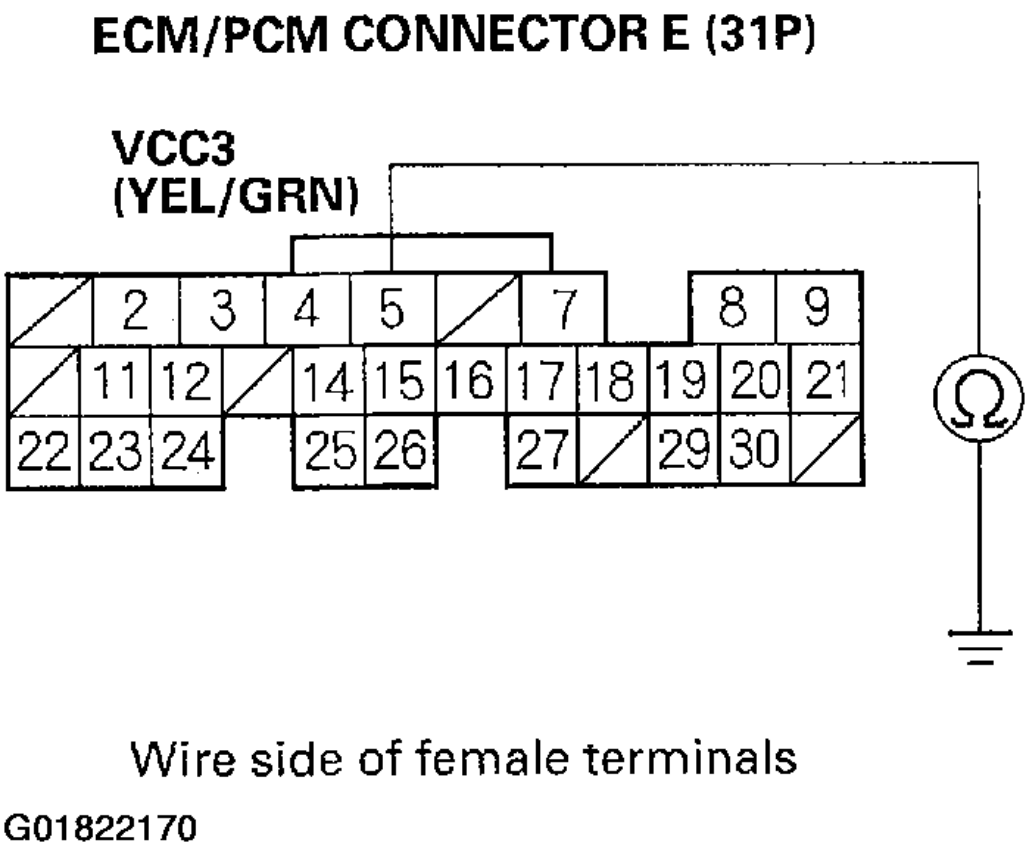


Fig. 131: Checking For Continuity Between ECM/PCM Connector Terminal E5 & Body Ground

DLC CIRCUIT TROUBLESHOOTING

NOTE:

- **If the ECM/PCM does not communicate with the HDS, do this troubleshooting procedure.**
- **Check that the MIL circuit is normal, then do this troubleshooting.**

1. Measure voltage between DLC terminal No. 16 and body ground.

   Is there battery voltage?

   YES: Go to step 2.

   NO: Repair open in the wire between DLC terminal No. 16 and the No. 8 FI ECU (15A) fuse in the underhood fuse/relay box.

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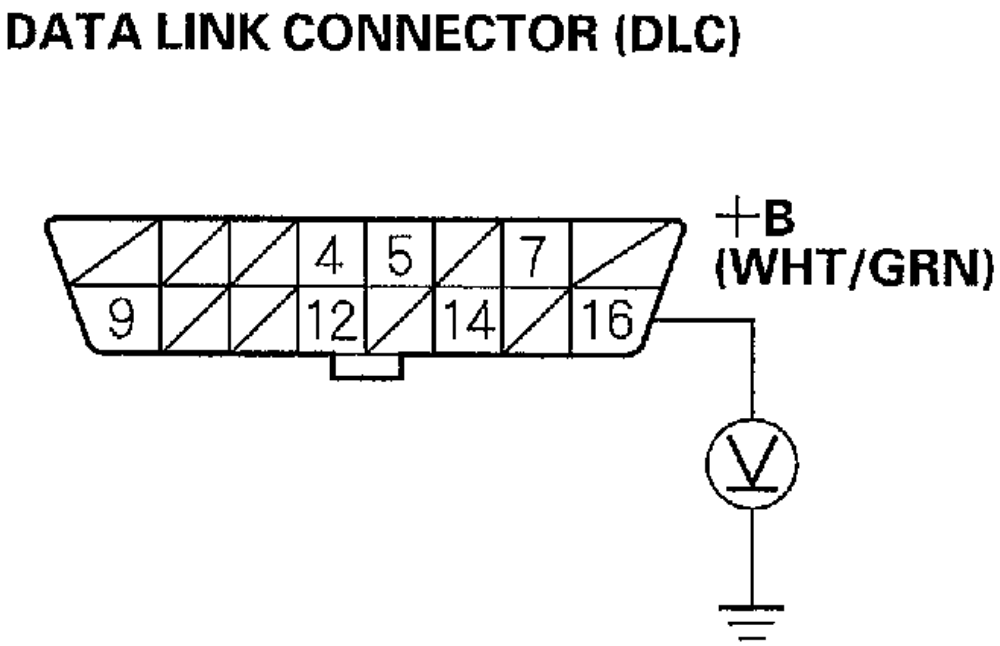


Fig. 132: Measuring Voltage Between DLC Terminal No. 16 & Body Ground

2. Measure voltage between DLC terminals No. 4 and No. 16.

   Is there battery voltage?

   YES: Go to step 3.

   NO: Repair open in the wire between DLC terminal No. 4 and body ground (G451).

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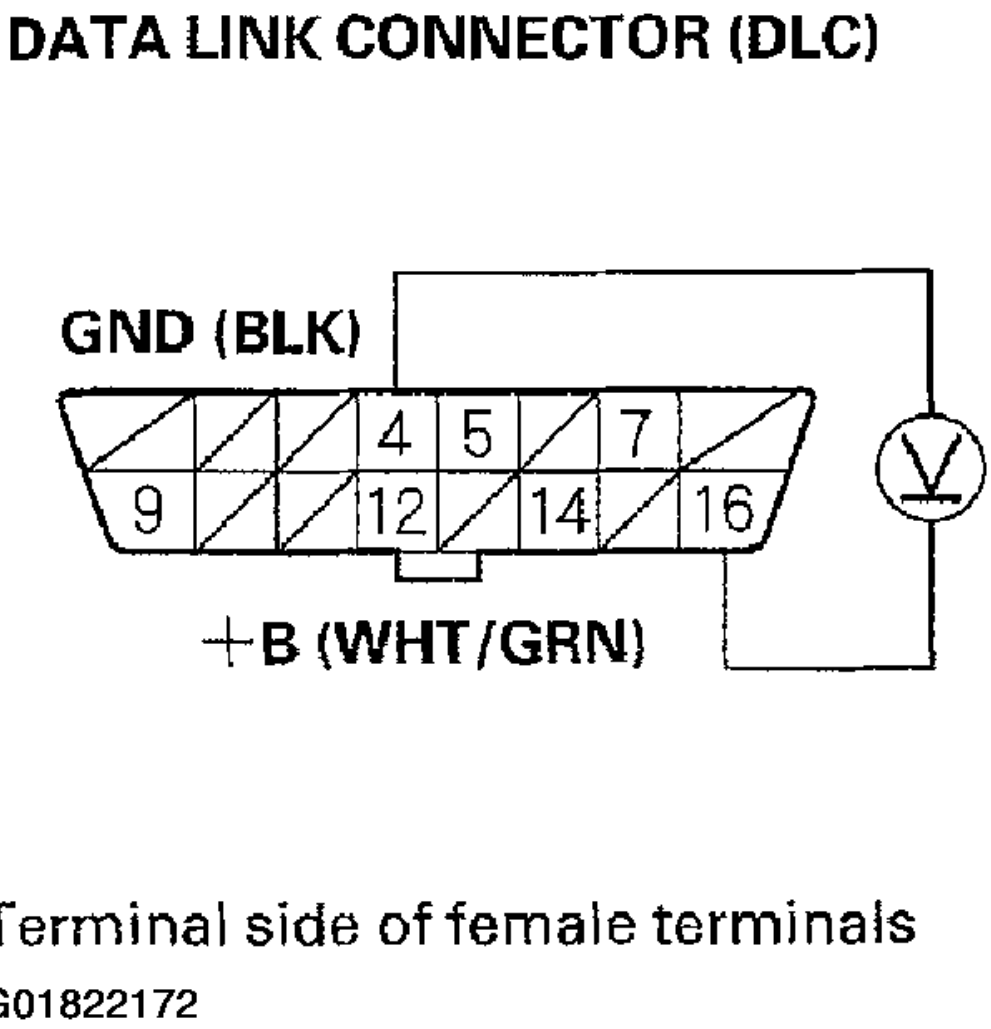


Fig. 133: Measuring Voltage Between DLC Terminals No. 4 & No. 16

3. Measure voltage between DLC terminals No. 5 and No. 16.

   Is there battery voltage?

   YES: Go to step 4.

   NO: Repair open in the wire between the ECM/PCM (E3) and DLC terminal No. 5.

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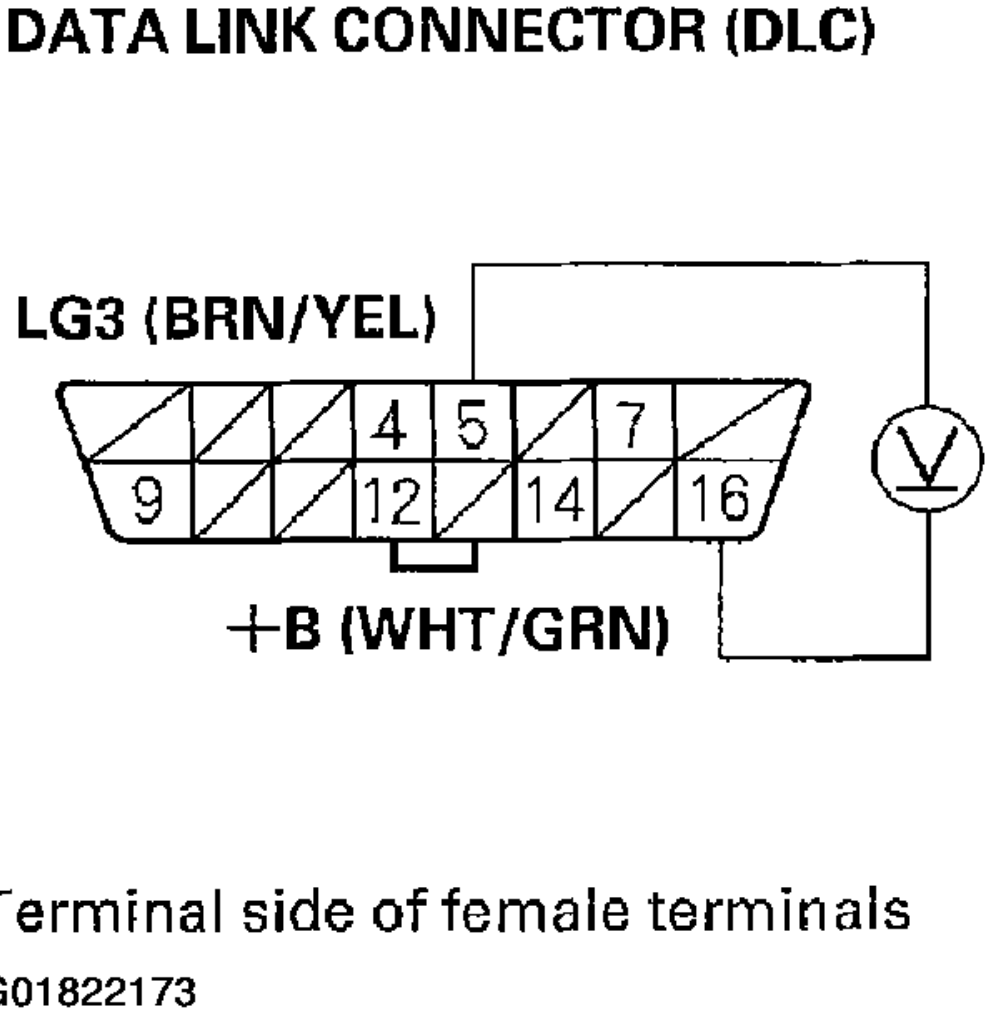


Fig. 134: Measuring Voltage Between DLC Terminals No. 5 & No. 16

4. Turn the ignition switch ON (II).
5. Measure voltage between DLC terminals No. 5 and No. 7.

Is there 8.5 V or more?

YES: Go to step 11 .

NO: Go to step 6.

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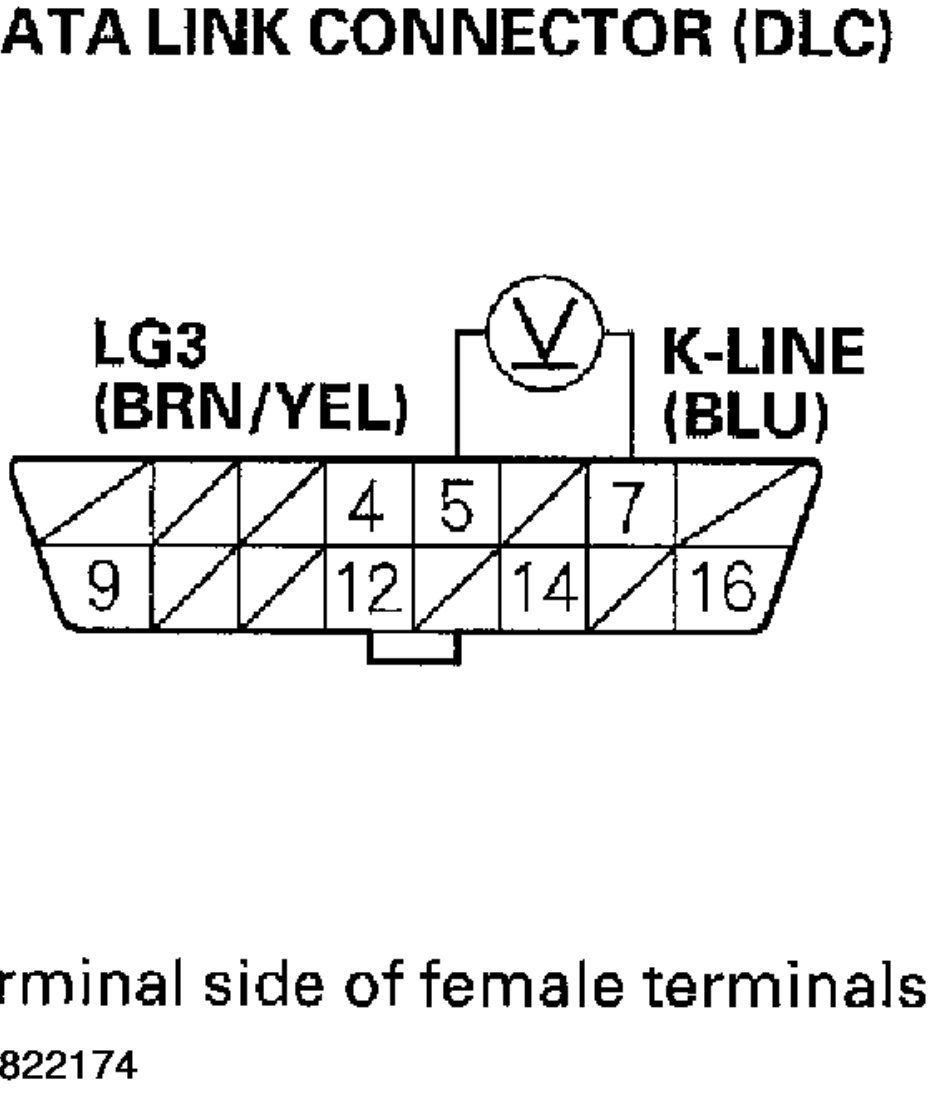


Fig. 135: Measuring Voltage Between DLC Terminals No. 5 & No. 7

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector E (31P).
9. Check for continuity between DLC terminal No. 7 and body ground.

Is there continuity?

YES: Repair short to ground in the wire between DLC terminal No. 7 and the ECM/PCM (E23). After repairing the wire, check for a DTC with the HDS, then go to the indicated DTC

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troubleshooting.

NO: Go to step 10.

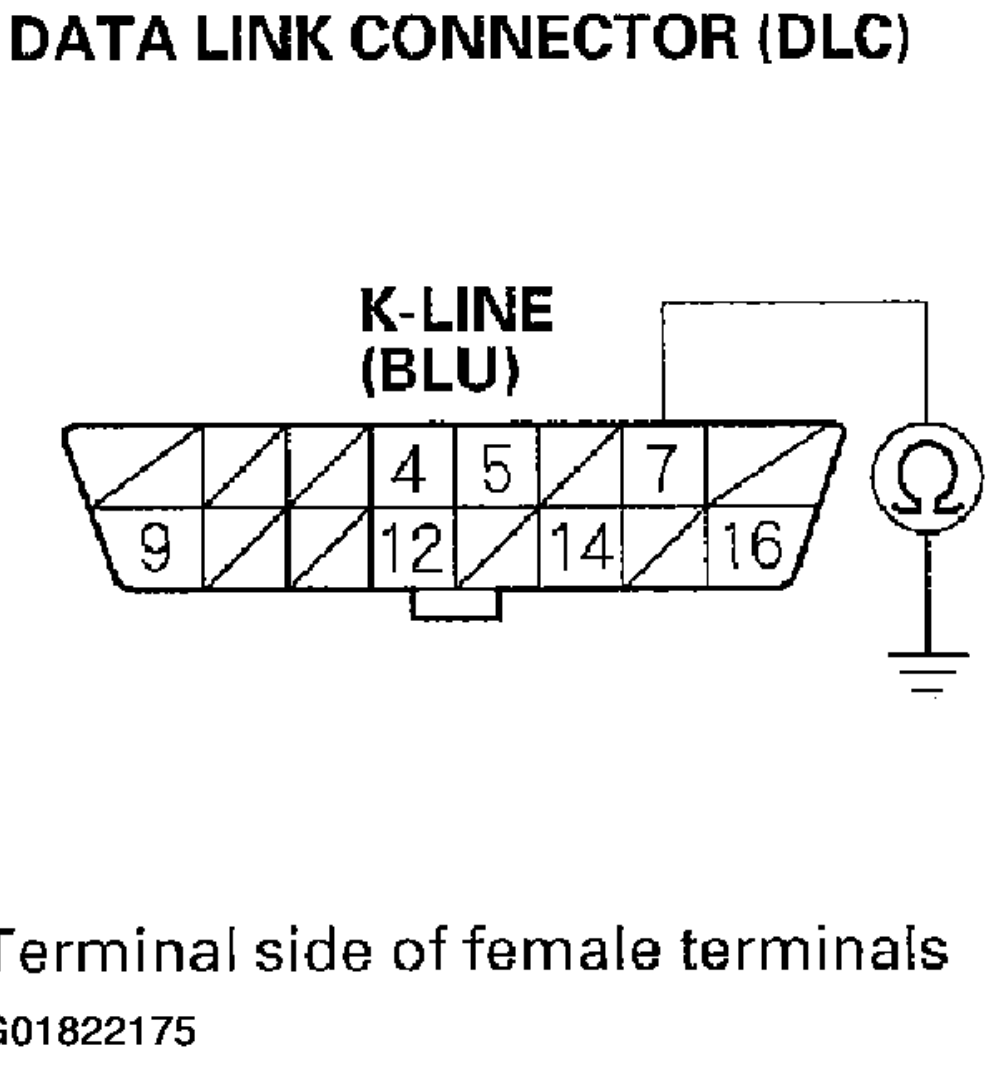


Fig. 136: Checking For Continuity Between DLC Terminal No. 7 & Body Ground

10. Check for continuity between DLC terminal No. 7 and ECM/PCM terminal E23.

Is there continuity?

YES: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

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NO: Repair open in the wire between DLC terminal No. 7 and the ECM/PCM (E23). After repairing the wire, check for a DTC with the HDS, then go to the indicated DTC troubleshooting.

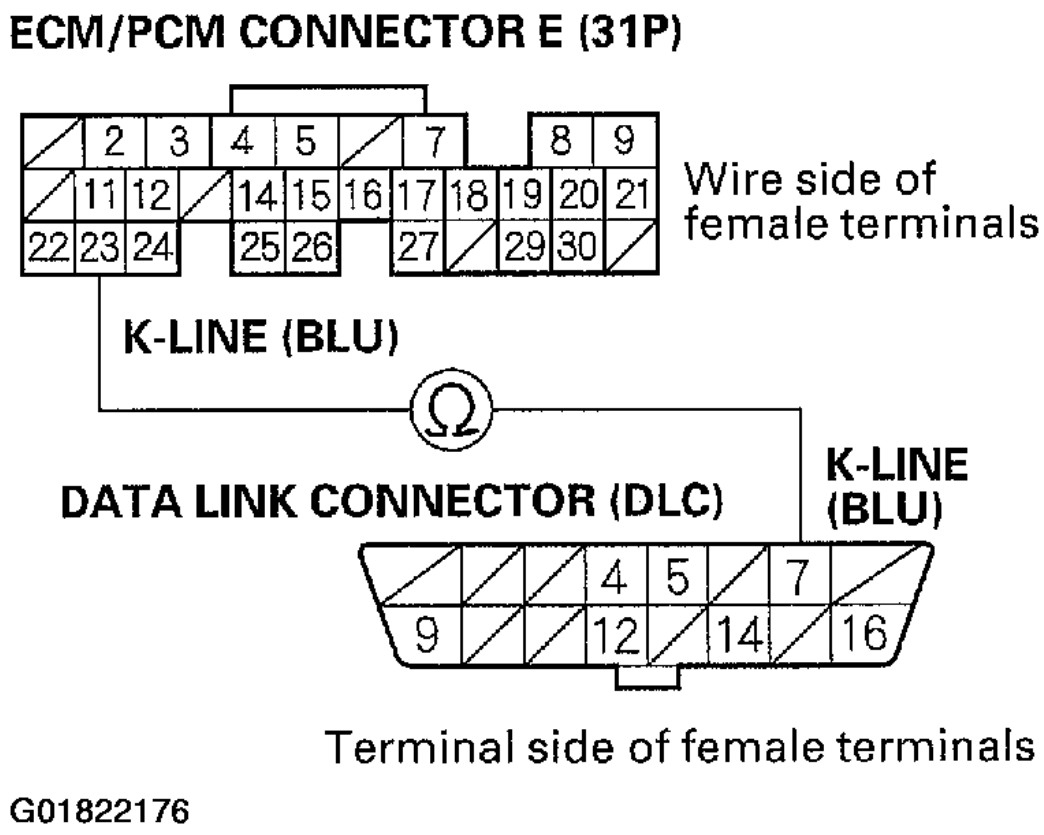


Fig. 137: Checking For Continuity Between DLC Terminal No. 7 & ECM/PCM Terminal E23

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector E (31P).
14. Turn the ignition switch ON (II).
15. Measure voltage between DLC terminals No. 5 and No. 7.

Is there 0 V?

YES: Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see **HOW TO SUBSTITUTE THE ECM/PCM**). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.

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NO: Repair short to power in the wire between DLC terminal No. 7 and the ECM/PCM (E23). After repairing the wire, check for a DTC with the HDS, then go to the indicated DTC troubleshooting.

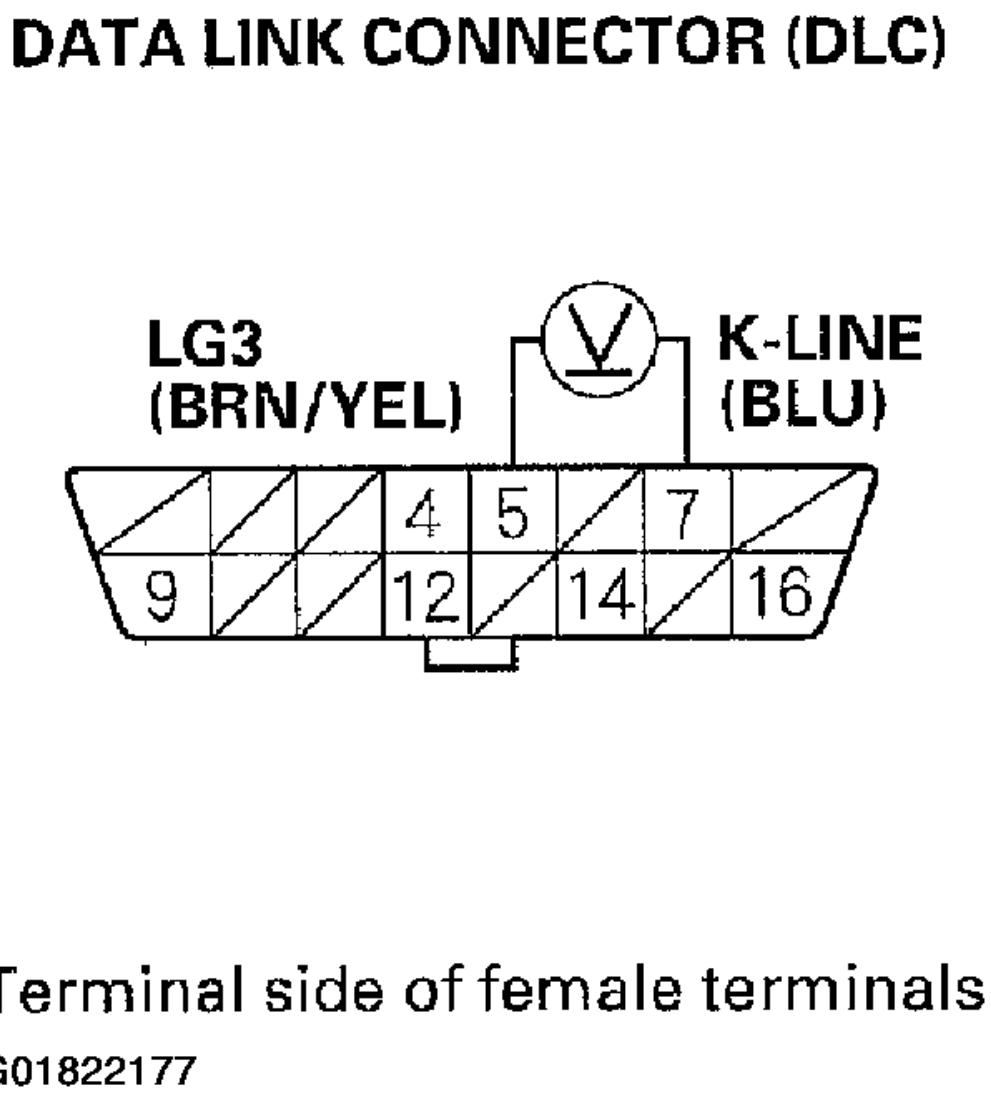


Fig. 138: Measuring Voltage Between DLC Terminals No. 5 & No. 7

REMOVAL & INSTALLATION

INJECTOR REPLACEMENT

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1. Relieve fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Remove the intake manifold cover (see **CYLINDER HEAD COVER REMOVAL**).
3. Disconnect the connectors from the injectors (A) and the engine mount control solenoid valve (B).
4. Remove the ground cable bolt (G101) (C).

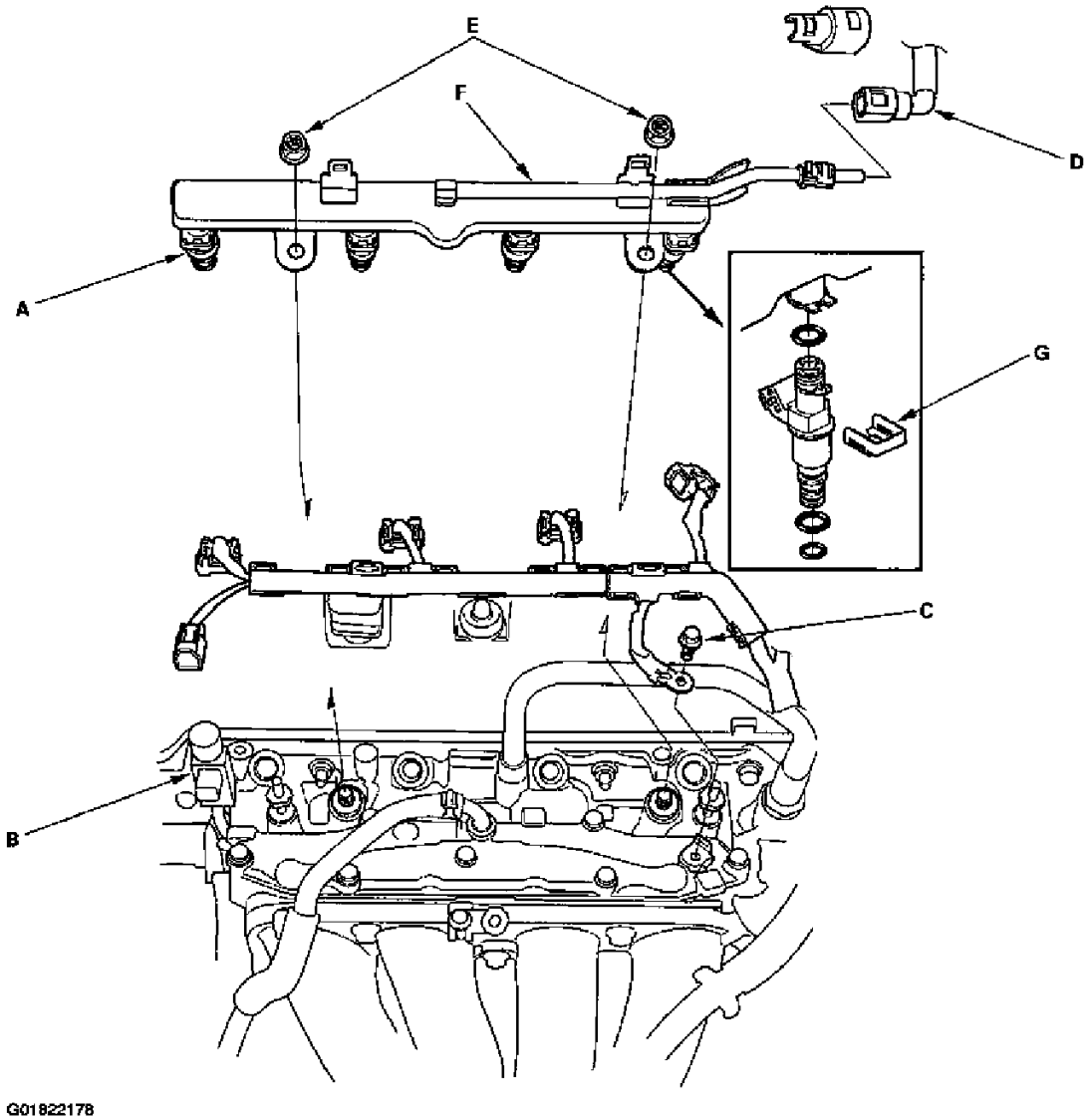


Fig. 139: Removing Injectors

5. Disconnect the quick-connect fittings (D).
6. Remove the fuel rail mounting nuts (E) from the fuel rail (F).
7. Remove the injector clip (G) from the injector.
8. Remove the injector from the fuel rail.

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9. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).

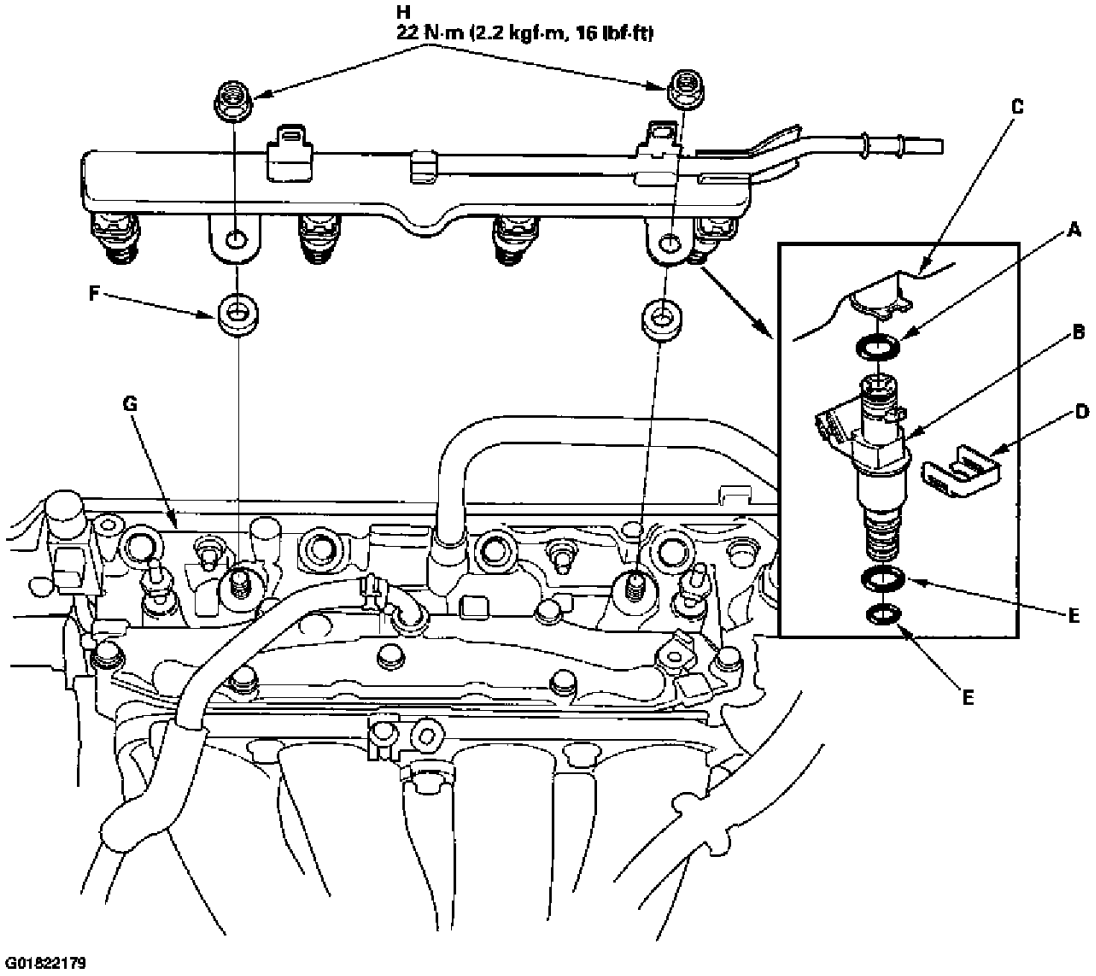


Fig. 140: Inserting The Injectors Into The Fuel Rail

10. Install the injector clip (D).
11. Coat the injector O-rings (E) with clean engine oil.
12. Install the fuel rail insulator (F), and injectors in the injector base (G).
13. Install the fuel rail mounting nuts (H) and the ground cable bolt (G101).
14. Connect the connectors on the injectors and the engine mount control solenoid valve.
15. Connect the quick-connect fitting.
16. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel rail will be pressurized. Repeat this two or three times, then check for fuel leakage.

A/F SENSOR REPLACEMENT

Special Tools Required: O2 sensor wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially

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available

1. Disconnect the A/F sensor 4P connector (A), then remove the A/F sensor (B).

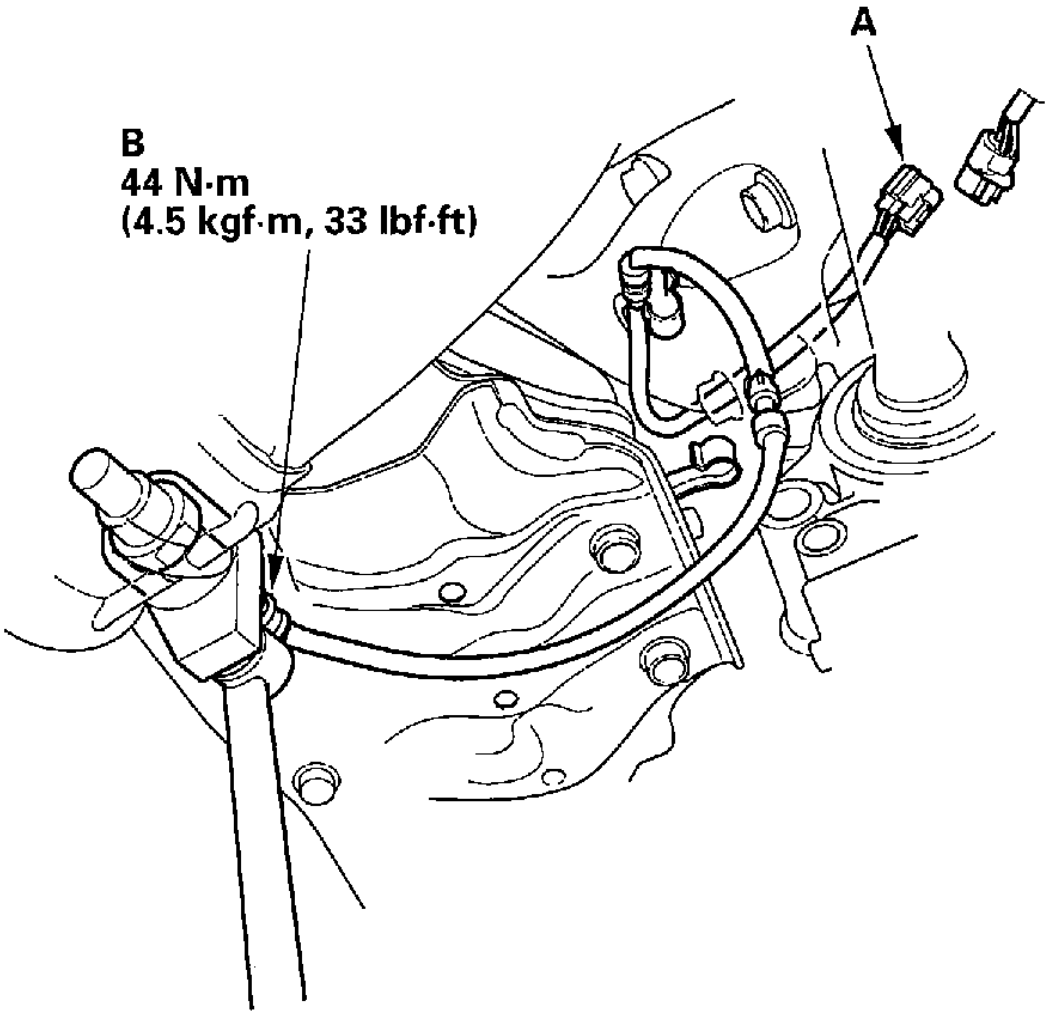


Fig. 141: Removing The A/F Sensor

2. Install the A/F sensor in the reverse order of removal.

SECONDARY HO2S REPLACEMENT

Special Tools Required: O2 sensor wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

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1. Pull back the carpet from the floor rail under the front edge of the front passenger seat to expose the secondary HO2S 4P connector that is attached to the floor rail.
2. Disconnect the secondary HO2S 4P connector (A), under the passenger's seat.

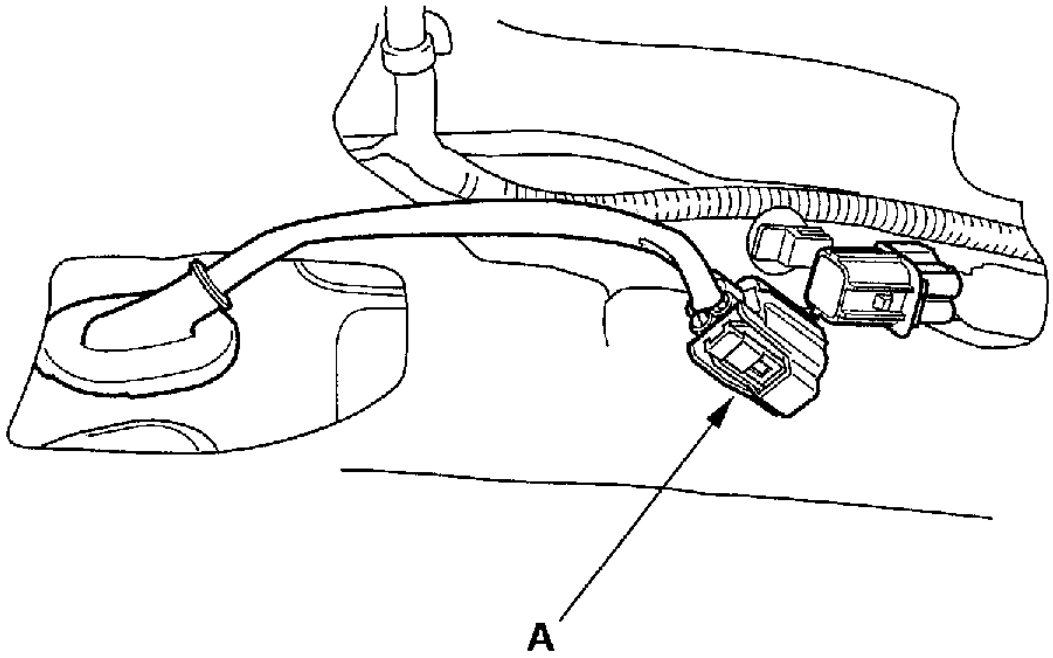


Fig. 142: Disconnecting The Secondary HO2S 4P Connector

3. Remove the secondary HO2S (A), and the clips (B).

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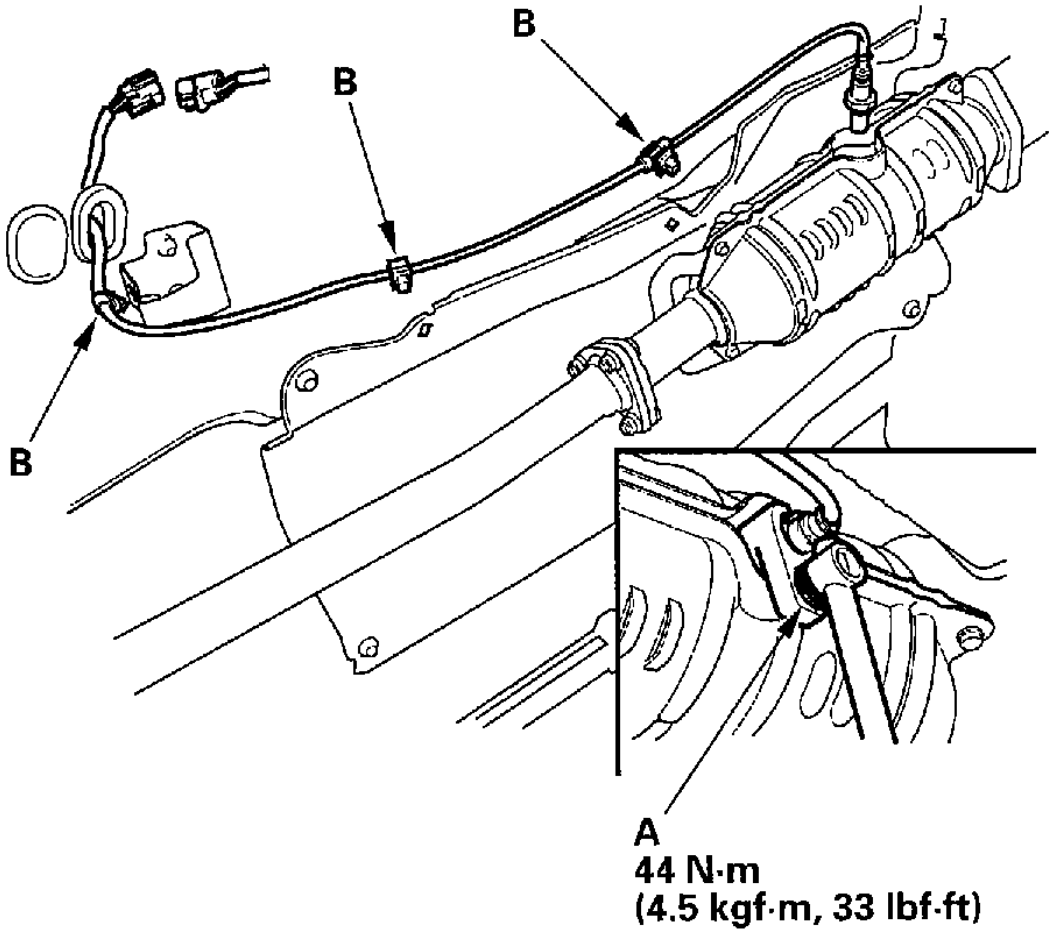


Fig. 143: Removing The Secondary HO2S

4. Install the secondary HO2S in the reverse order of removal.

ECT SENSOR REPLACEMENT

1. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Remove the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
3. Unbolt the under-hoot fuse/relay box bolt and move the box aside.
4. Disconnect the ECT sensor connector (A).

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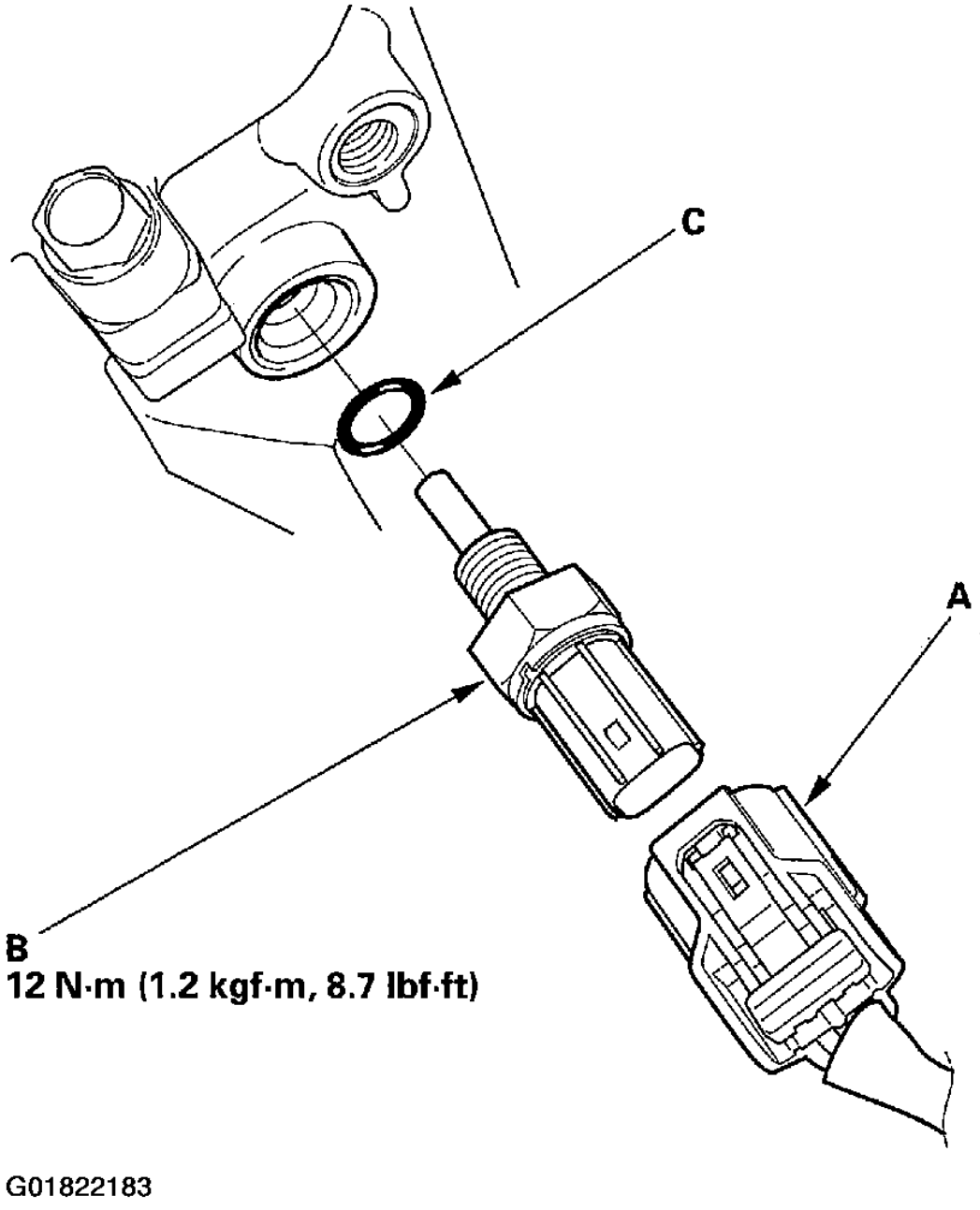


Fig. 144: Removing The ECT Sensor

5. Remove the ECT sensor (B).
6. Install the sensor in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see **COOLANT REPLACEMENT**), and bleed air from the cooling system with the heater valve open.

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CMP SENSOR B REPLACEMENT

1. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Remove the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
3. Disconnect the CMP sensor B connector (A).

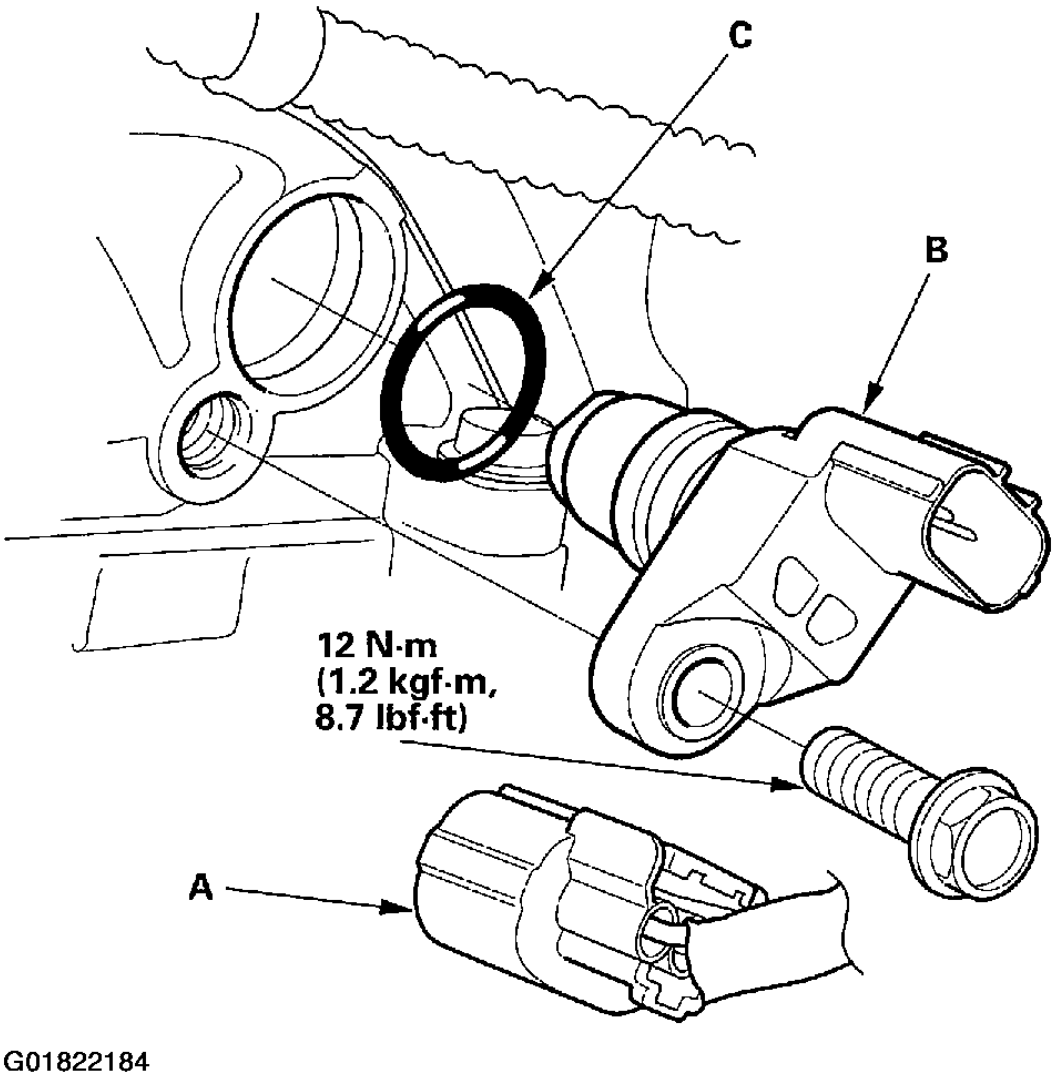


Fig. 145: Removing CMP Sensor B

4. Remove CMP sensor B (B).
5. Install the sensor in the reverse order of removal with a new O-ring (C).

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IAT SENSOR REPLACEMENT

1. Disconnect the IAT sensor connector (A).

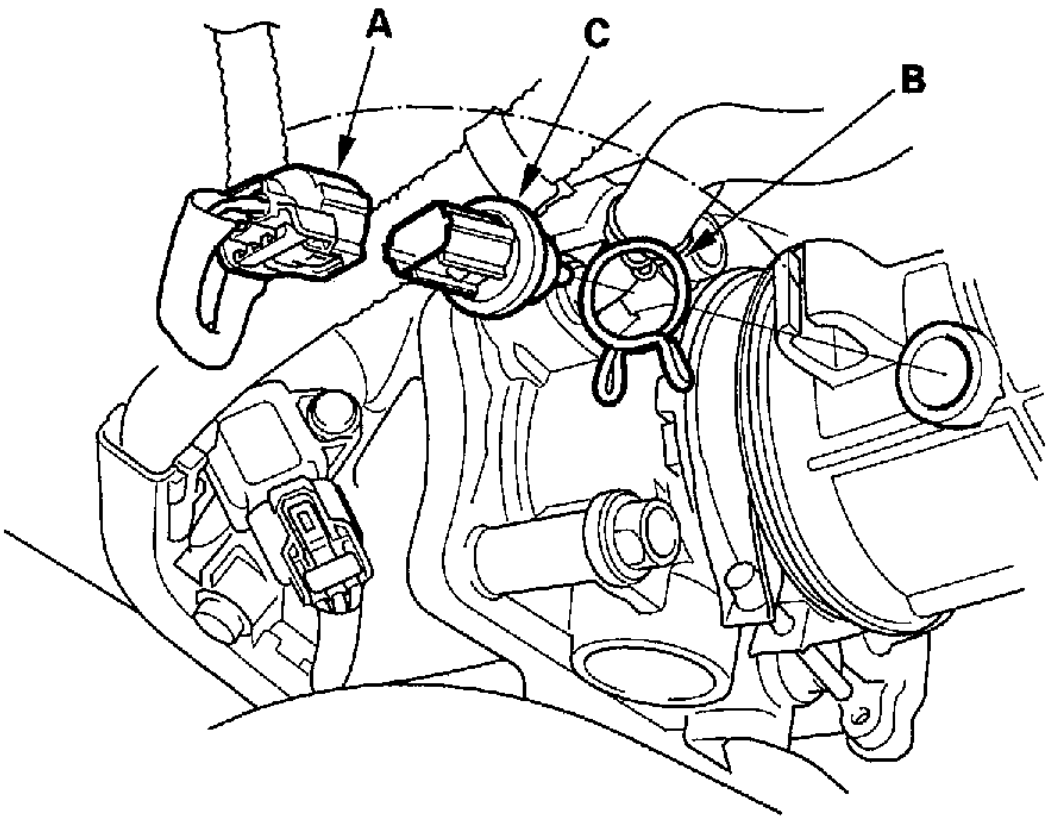


Fig. 146: Removing The IAT Sensor

2. Remove the clamp (B) and the IAT sensor (C).
3. Install the sensor in the reverse order of removal.

KNOCK SENSOR REPLACEMENT

1. Disconnect the knock sensor connector (A).

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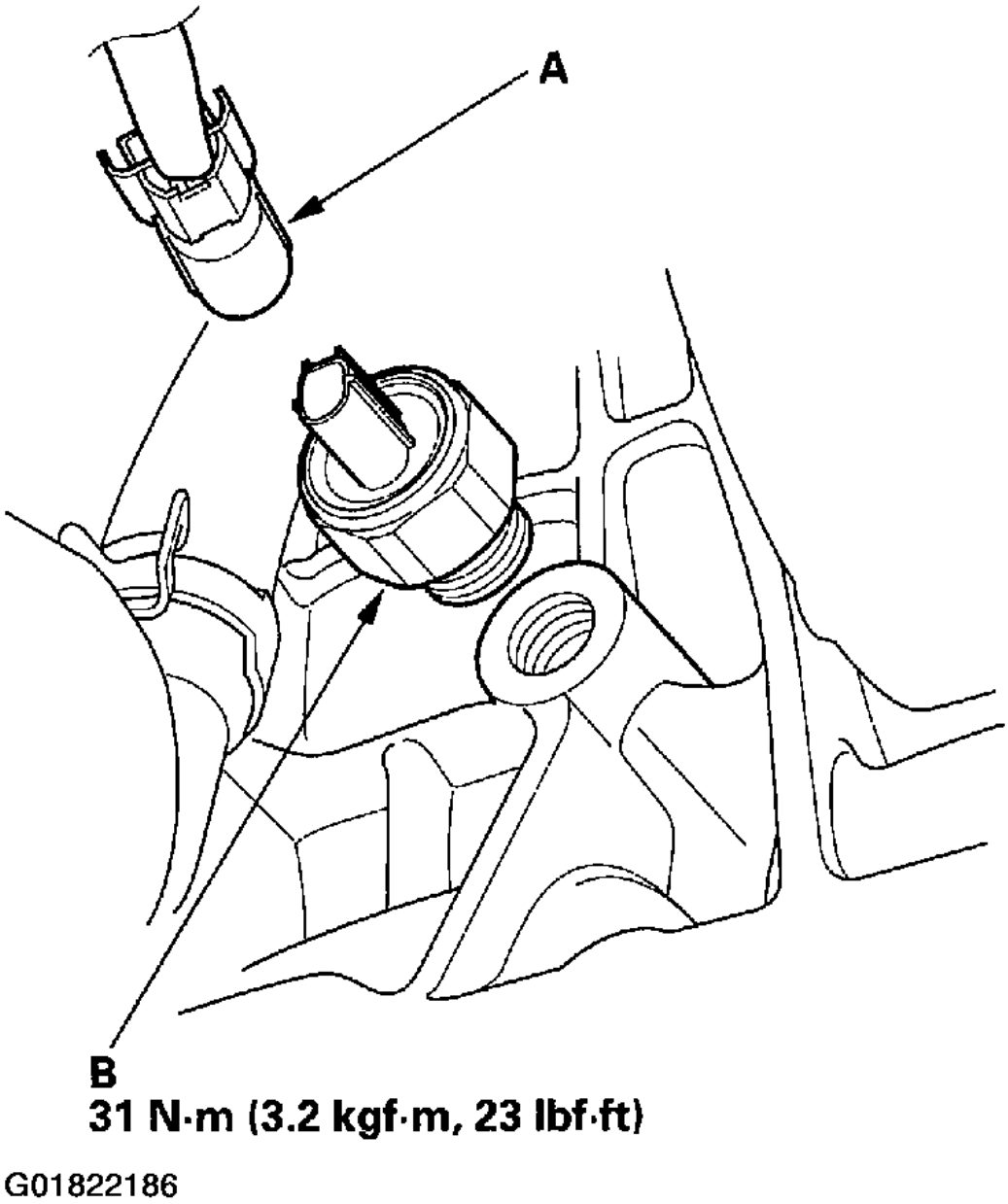


Fig. 147: Removing The Knock Sensor

2. Remove the knock sensor (B).
3. Install the sensor in the reverse order of removal.

CKP SENSOR REPLACEMENT

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1. Disconnect the CKP sensor connector (A).

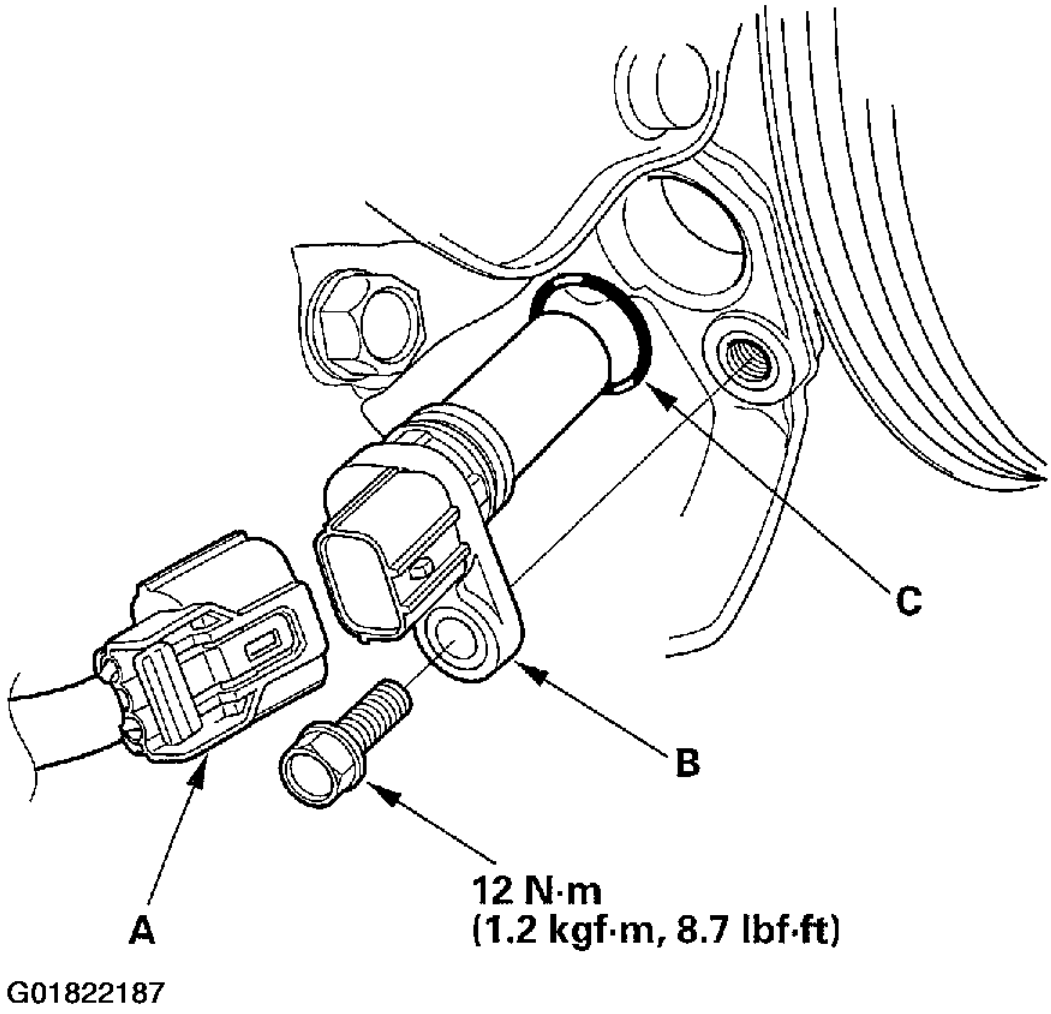


Fig. 148: Removing The CKP Sensor

2. Remove the CKP sensor (B).
3. Install the sensor in the reverse order of removal with a new O-ring (C).

COUNTERSHAFT SPEED SENSOR REPLACEMENT

1. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Disconnect the countershaft speed sensor connector (A).

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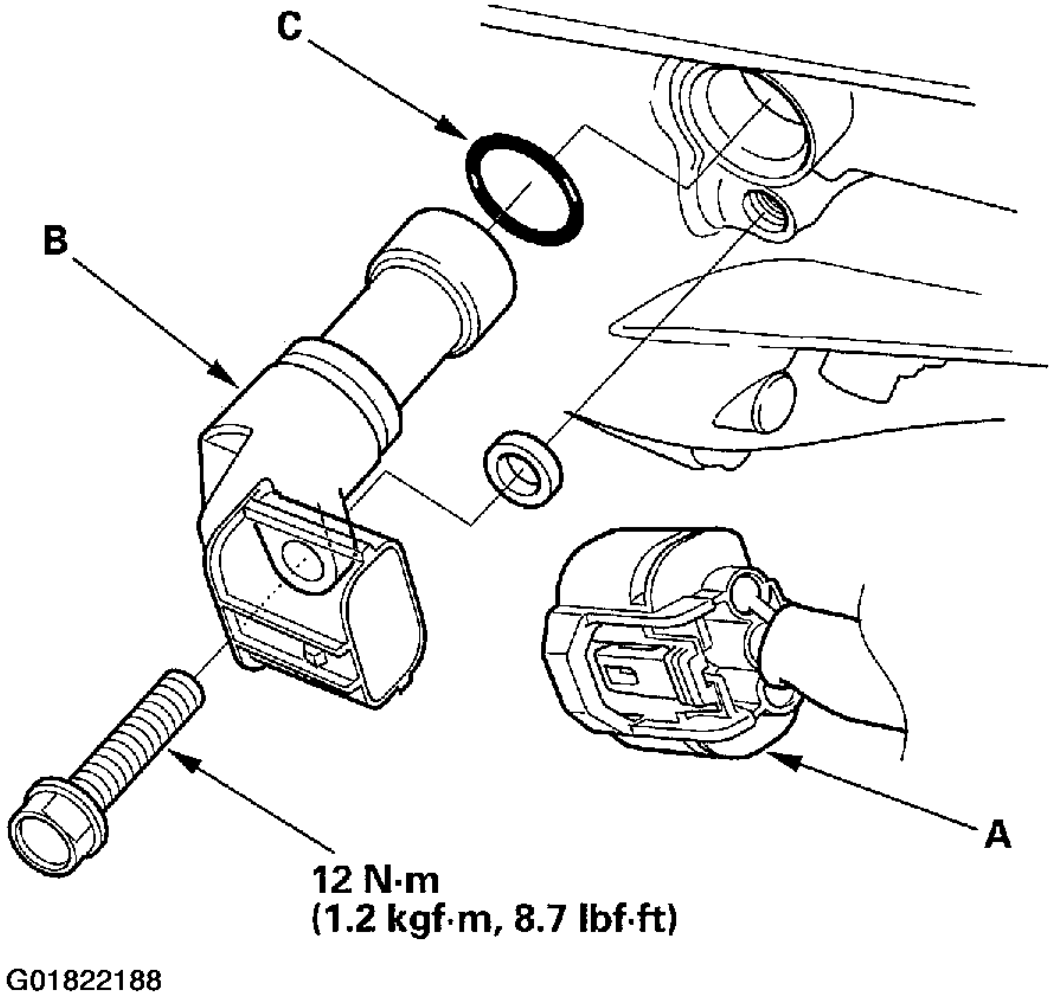


Fig. 149: Removing The Countershaft Speed Sensor

3. Remove the countershaft speed sensor (B).
4. Install the sensor in the reverse order of removal with a new O-ring (C).

MAP SENSOR REPLACEMENT

1. Disconnect the MAP sensor connector (A).

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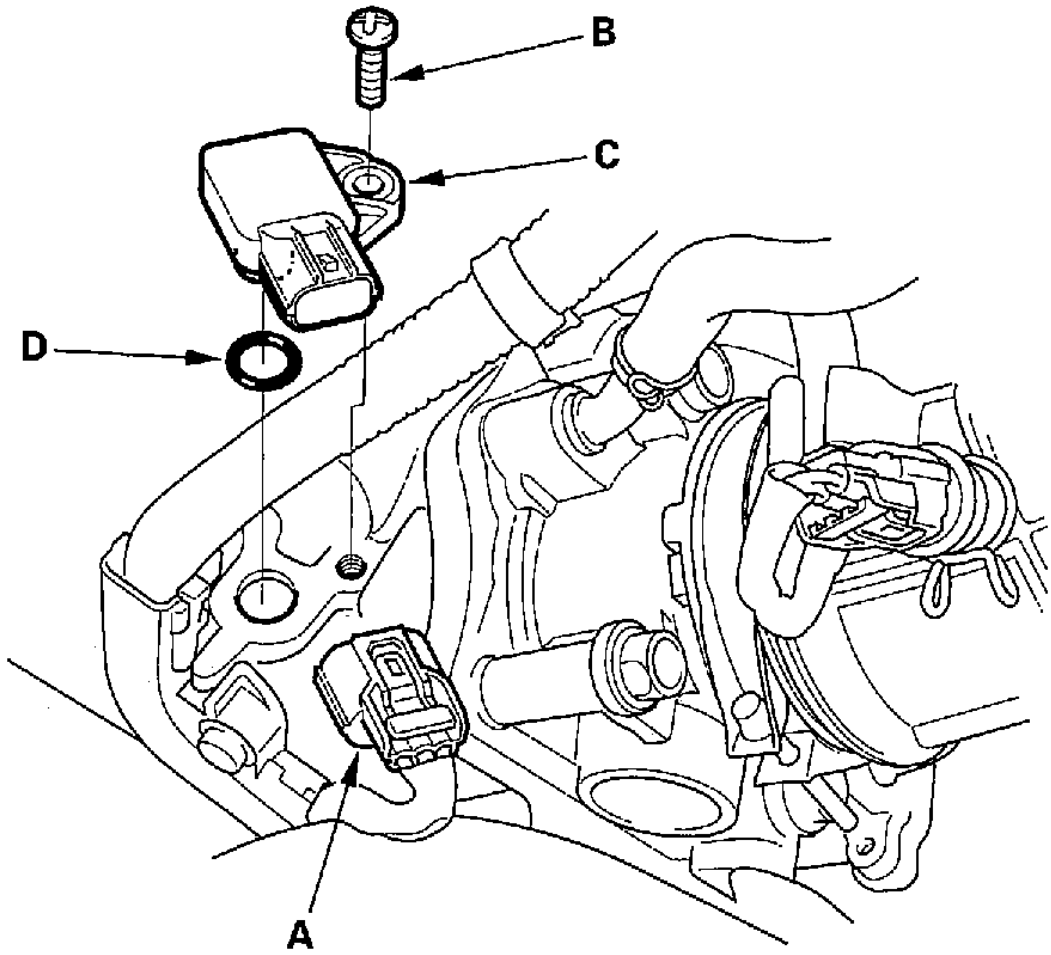


Fig. 150: Removing The MAP Sensor

2. Remove the screw (B).
3. Remove the MAP sensor (C).
4. Install the sensor in the reverse order of removal with a new O-ring (D).

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2004 ACCESSORIES & EQUIPMENT

Power Heated Seats - TSX

SEATS

COMPONENT LOCATION INDEX

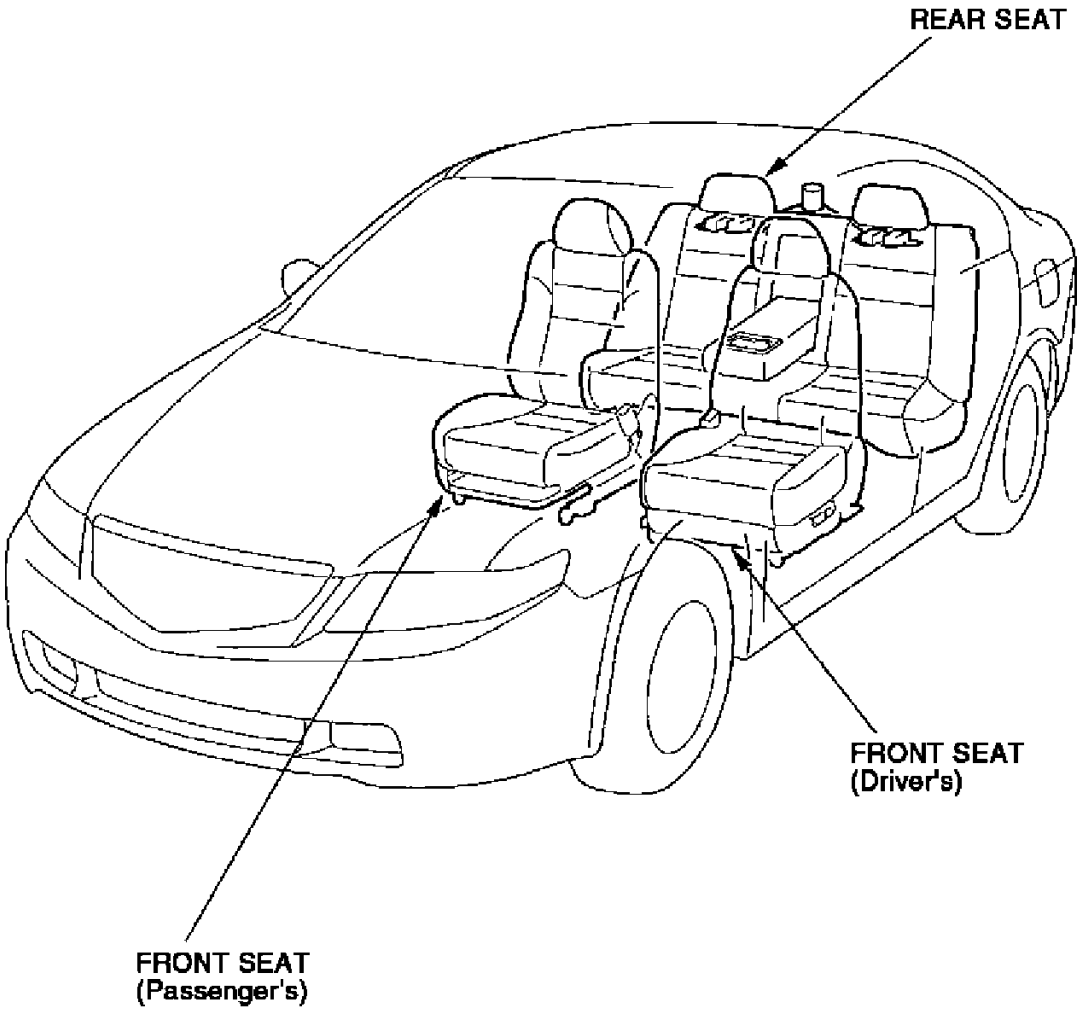


Fig. 1: Locating Seat Components

FRONT SEAT REMOVAL/INSTALLATION

SRS components are located in this area. Review the SRS component locations, and the precautions and

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procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to scratch the body or tear the seat covers.**
- **Put on gloves to protect your hands.**

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the preset buttons.
2. Adjust the steering column to the full till up, and the full telescopic in position.
3. Slide the seat all the way forward, then remove the seat track end covers (A) from the back of both seat tracks.

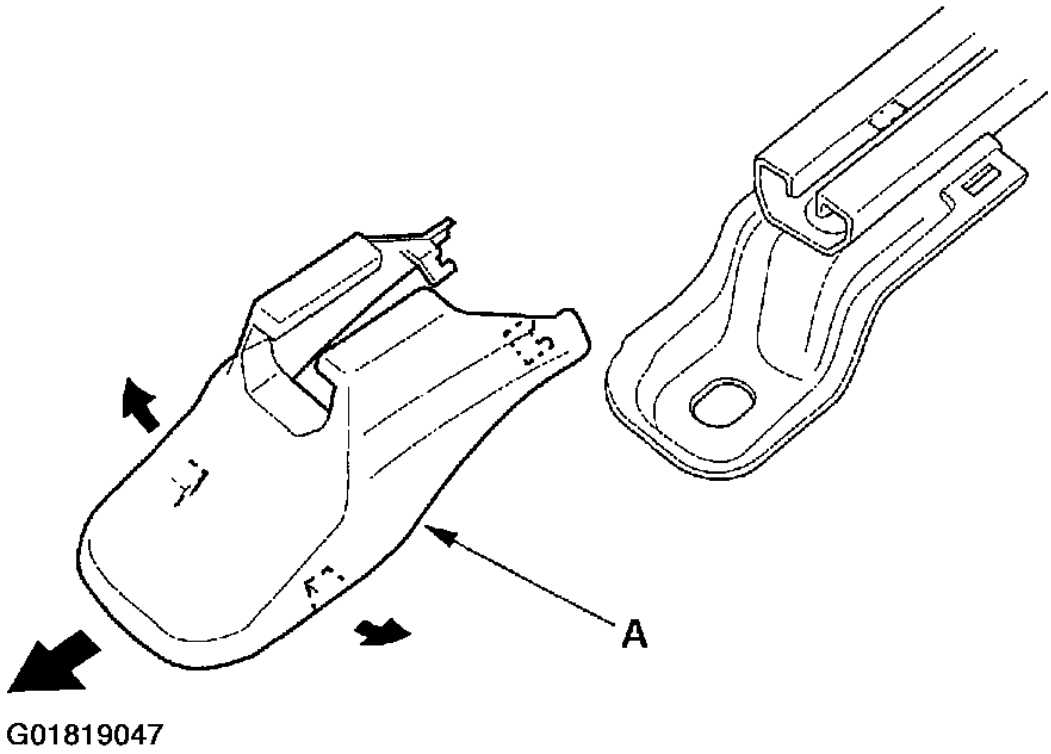


Fig. 2: Removing The Seat Track End Covers (Manual Seat)

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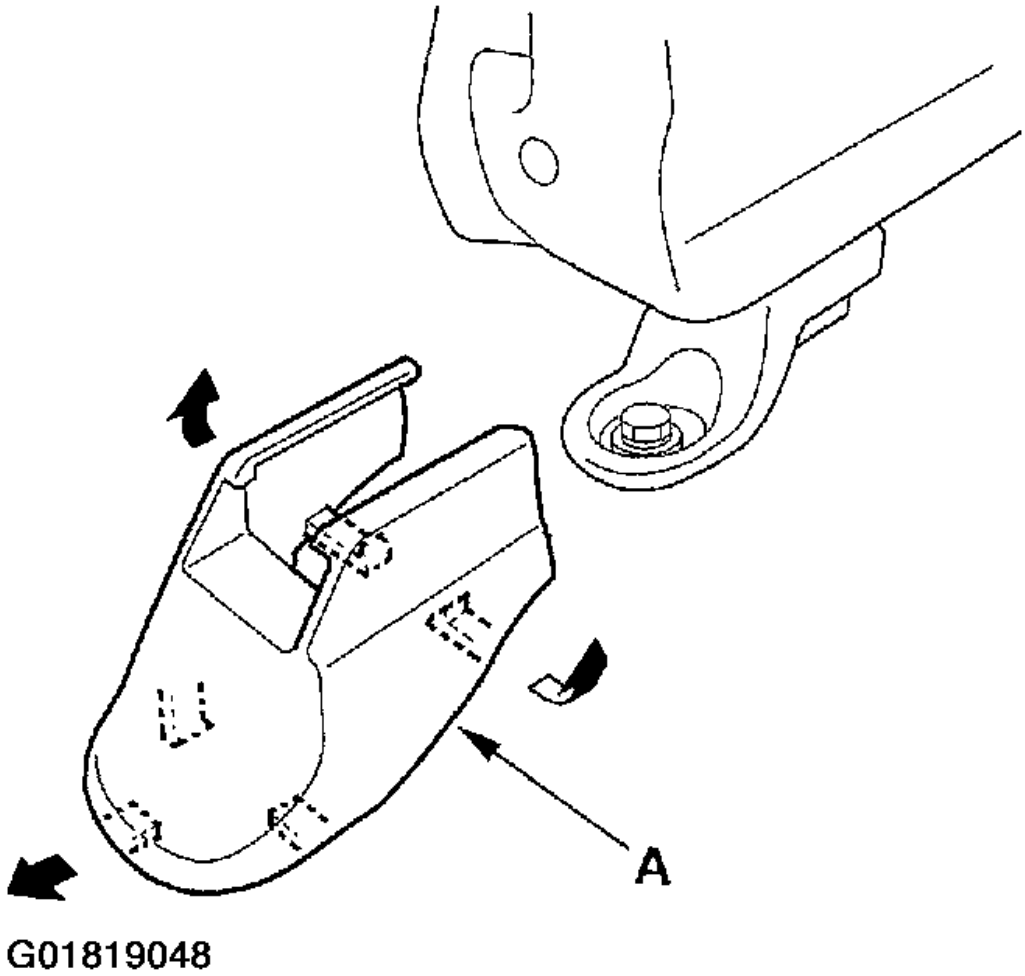


Fig. 3: Removing The Seat Track End Covers (8-Way Power Seat)

4. Slide the seat to the rear, about half way so you can access the seat mounting bolts. On the 8-way power seat, fully raise the seat.
5. Disconnect the negative battery cable, and wait at least 3 minutes before removing the seat.
6. Remove the bolts securing the front seat (A).

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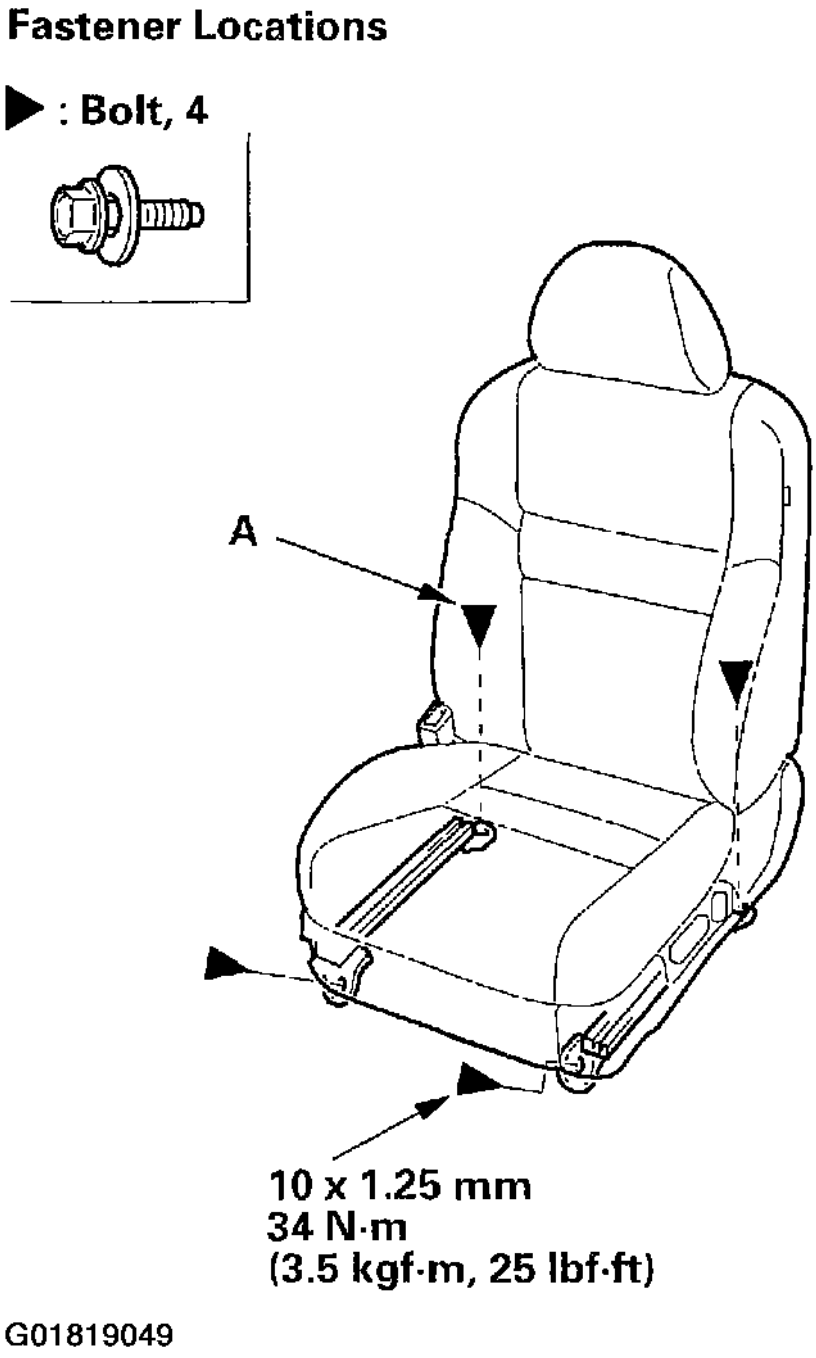


Fig. 4: Removing The Bolts Securing The Front Seat

7. Lift up the front seat, then detach the harness clip (A), and disconnect the seat belt switch connector (B) on the manual seat, the power seat harness connector (C) on the 8-way power seat, the seat heater connector (D) on the manual seat, the side airbag connector (E) on the 8-way power and manual seat, and

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the OPDS unit connector (F) on the manual seat.

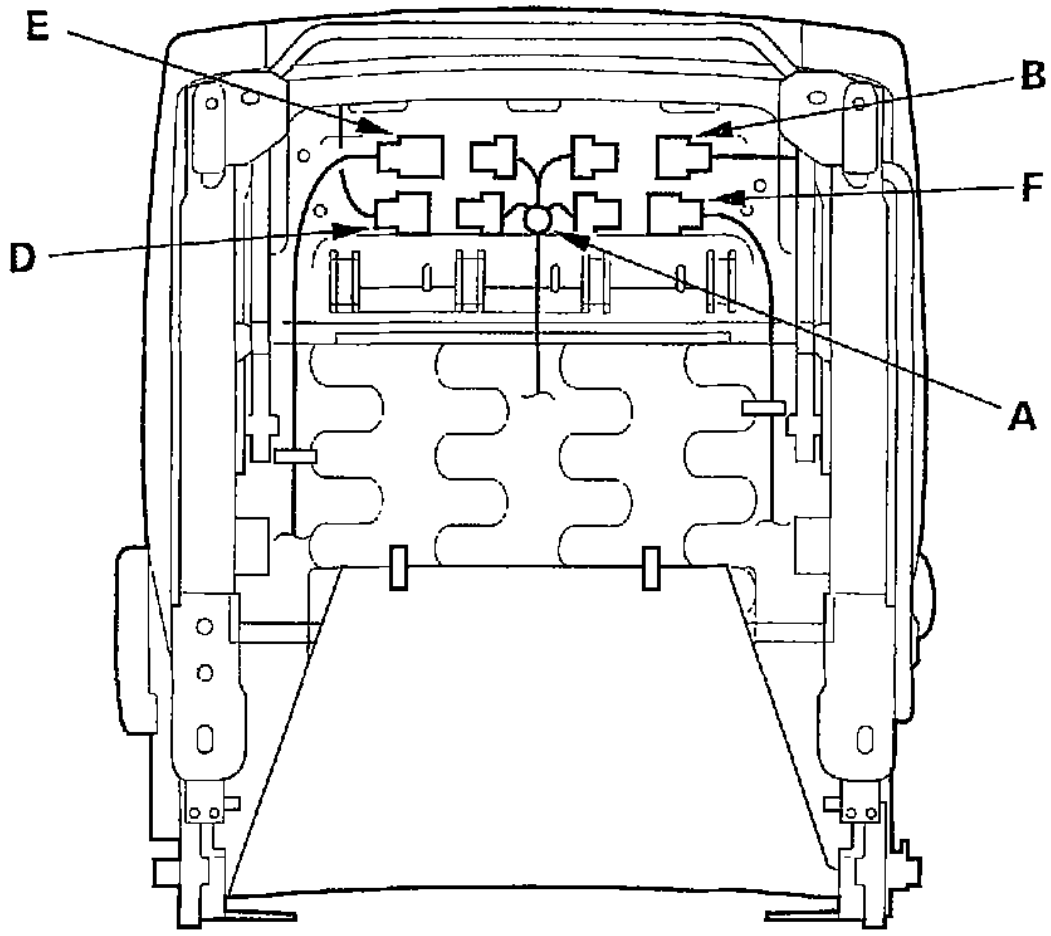


Fig. 5: Detaching The Harness Clip & Disconnecting The Seat Connectors (Manual Seat)

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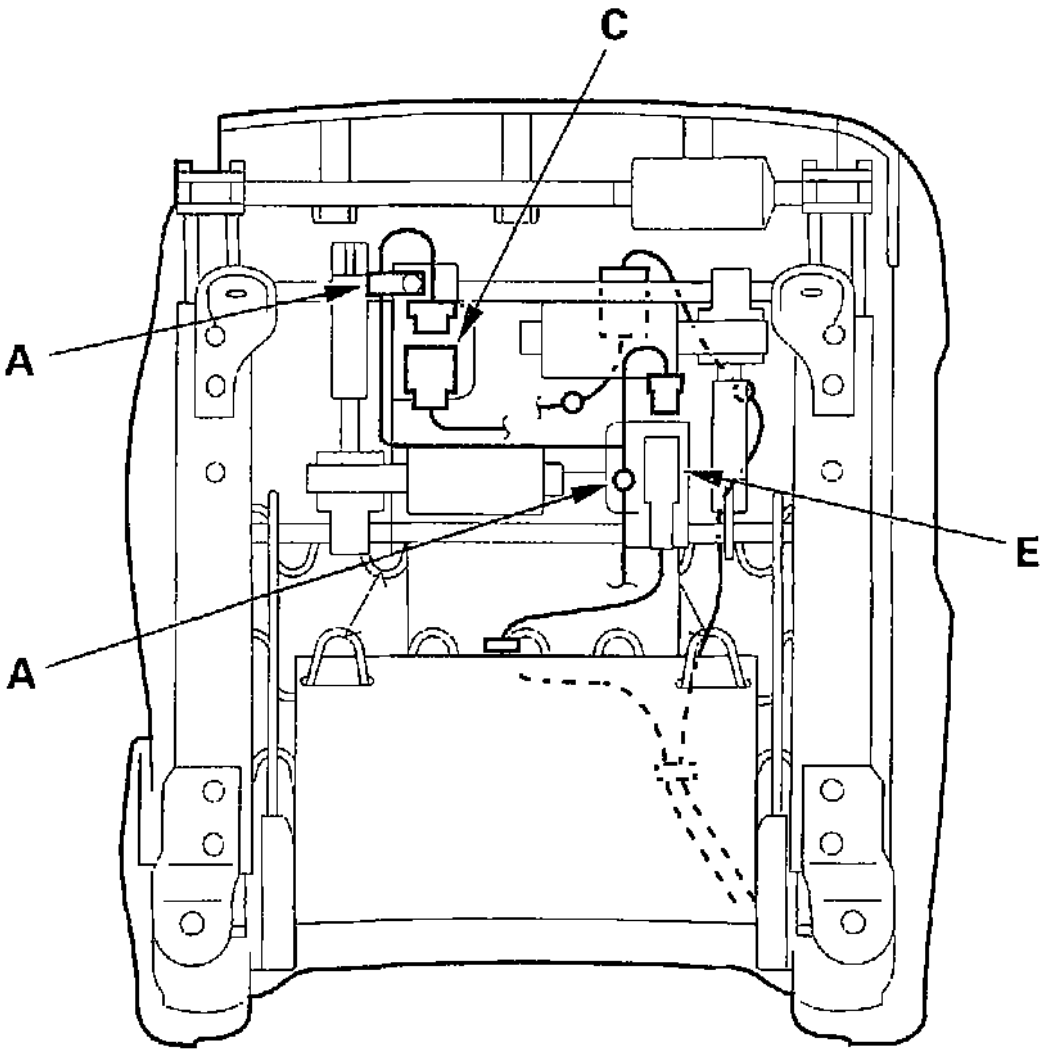


Fig. 6: Detaching The Harness Clip & Disconnecting The Seat Connectors (8-Way Power Seat)

8. With the help of an assistant, carefully remove the front seat through the front door opening.
9. Install the seat in the reverse order of removal, and note these items:
    - Apply liquid thread lock to the front seat mounting bolts before reinstallation.
    - Make sure each connector is plugged in properly.
    - Reconnect the negative cable to the battery.
    - Enter the anti-theft codes for the radio and navigation system, then enter the customer's radio station presets.
    - Reset the clock.

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- Perform the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).

FRONT SEAT DISASSEMBLY/REASSEMBLY - MANUAL

SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Apply multipurpose grease to the moving portion of the seat track.**
- **To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.**

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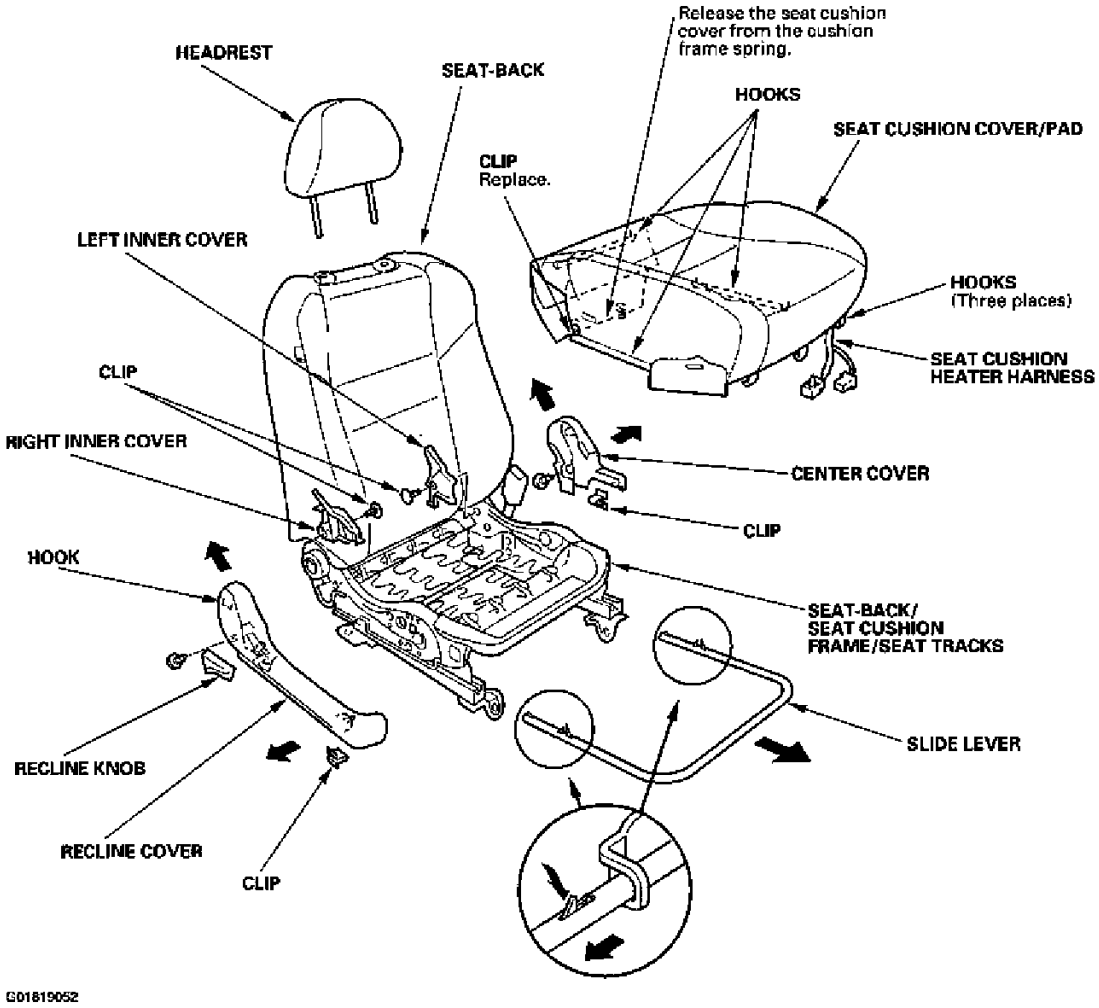


Fig. 7: Exploded View Of Front Seat (Manual)

FRONT SEAT DISASSEMBLY/REASSEMBLY - 8-WAY POWER

SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Apply multipurpose grease to the moving portion of the seat track.**
- **To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.**

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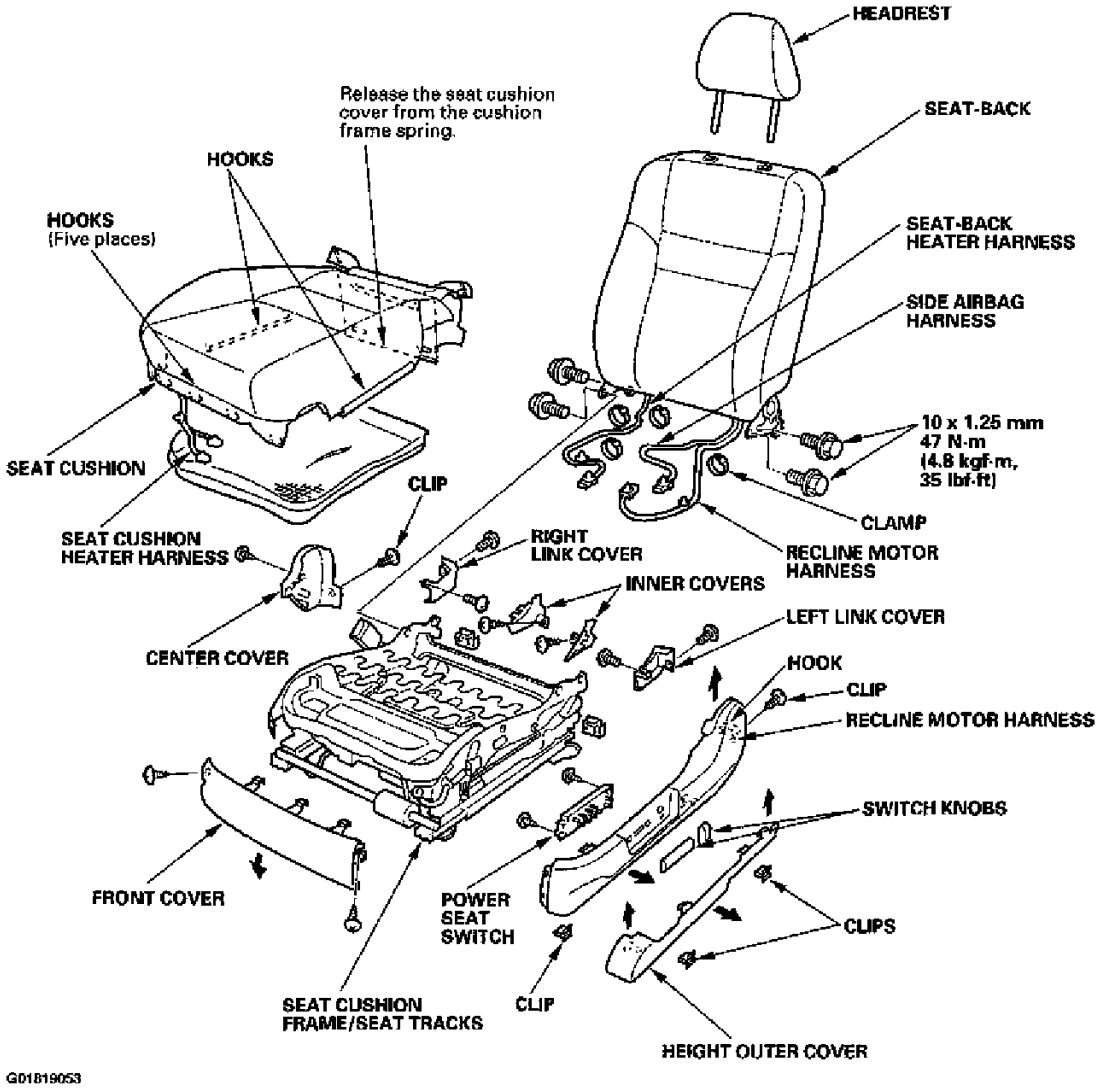


Fig. 8: Exploded View Of Front Seat (8-Way Power)

FRONT SEAT RECLINE MOTOR REPLACEMENT

8-Way Power Seat

SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE: Put on gloves to protect your hands.

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove the seat-back cover/pad from the seat-back frame (see **FRONT SEAT COVER REPLACEMENT**).

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3. Remove the recline motor (A):
   a. Release the push nut (B) from the motor side end of the connecting rod (C).
   b. Gently tap on the motor side of the connecting rod to remove it from the recline motor and both recline adjusters (D).
   c. Remove the rod cover (E).
   d. Remove the bolt and clamp (F), then remove the recline motor.

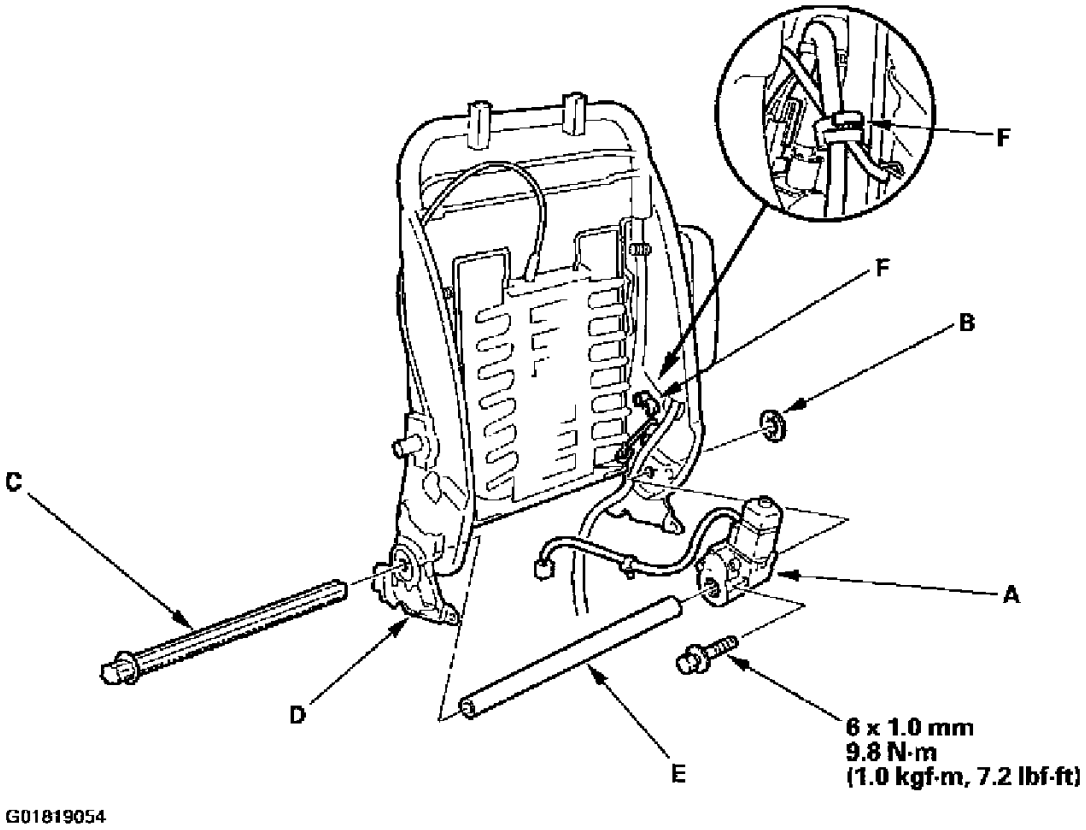


Fig. 9: Removing The Recline Motor

4. Install the motor in the reverse order of removal, and note these items:
   - Replace the push nut with a new one. Make sure the push nut is installed correctly.
   - Apply liquid thread lock to the motor mounting bolt before reinstallation.

FRONT SEAT LUMBER SUPPORT REPLACEMENT

8-Way Power Seat

SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

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NOTE:

- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend the cable.**
- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove these items:
   a. Lumbar support knob (see step 5 of **FRONT SEAT COVER REPLACEMENT**)
   b. Back panel (see step 6 of **FRONT SEAT COVER REPLACEMENT**)
2. Release the hook strips on the inside of the seat-back (see step 8 of **FRONT SEAT COVER REPLACEMENT**)
3. Remove the screws securing the lumbar support actuator (A).

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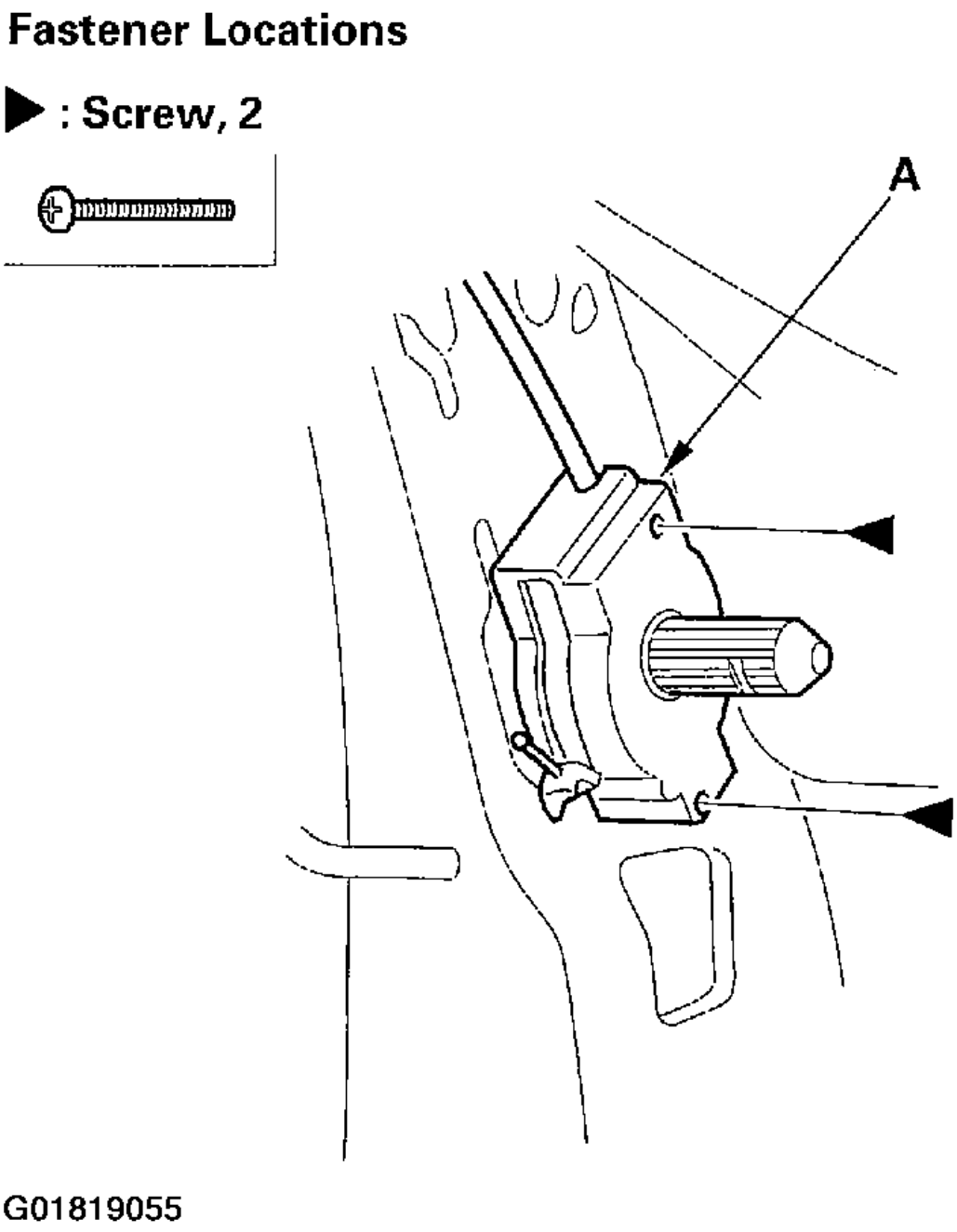


Fig. 10: Removing The Screws Securing The Lumbar Support Actuator

4. Release the hook of the yoke wire (A) from top of the basket (B) to loosen the lumbar support cable (C), then disconnect it.

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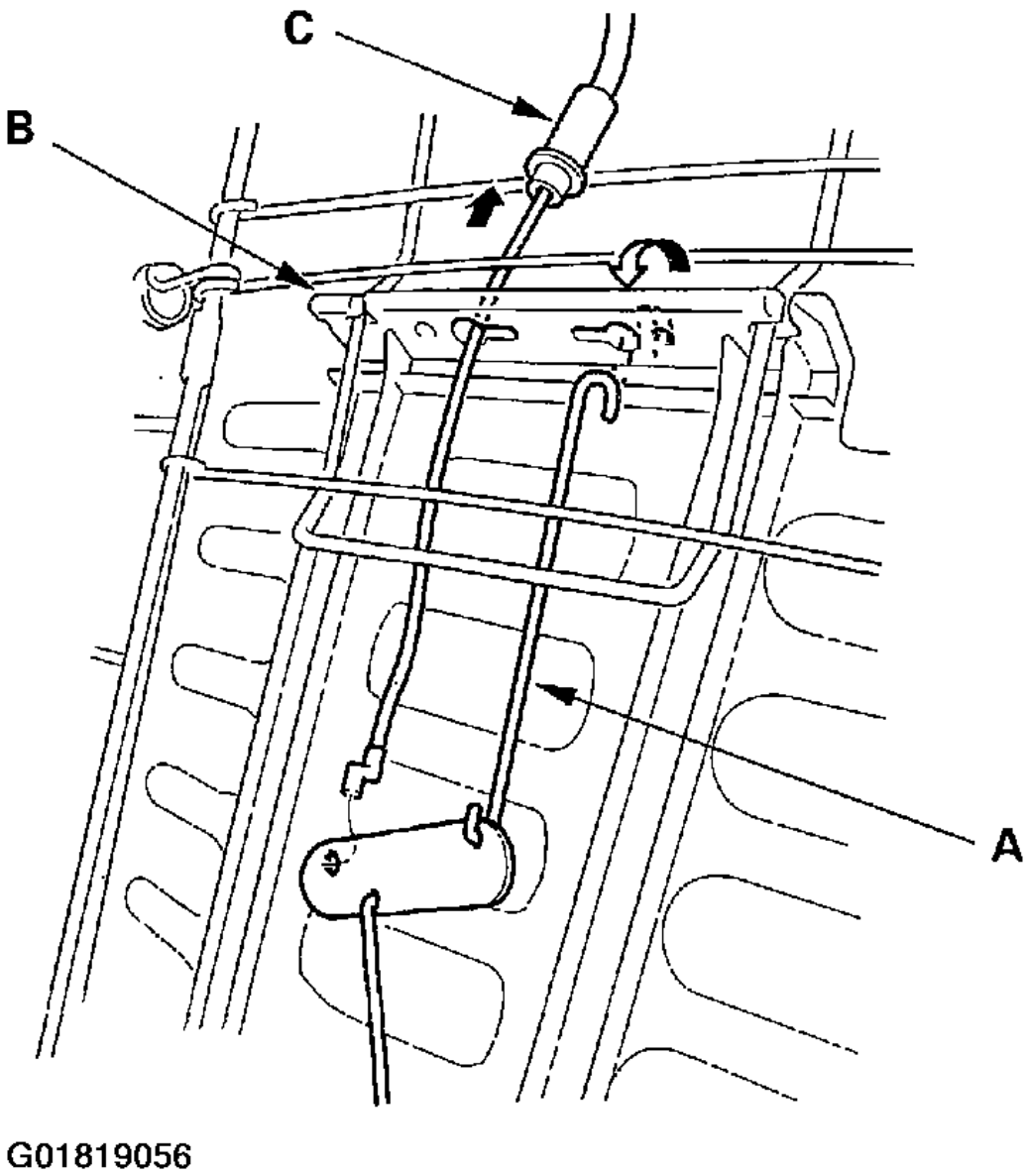


Fig. 11: Releasing The Hook Of The Yoke Wire From Top Of The Basket To Loosen The Lumbar Support Cable

5. Release the wire tie (A), then remove the lumbar support cable (B) and actuator (C) as an assembly.

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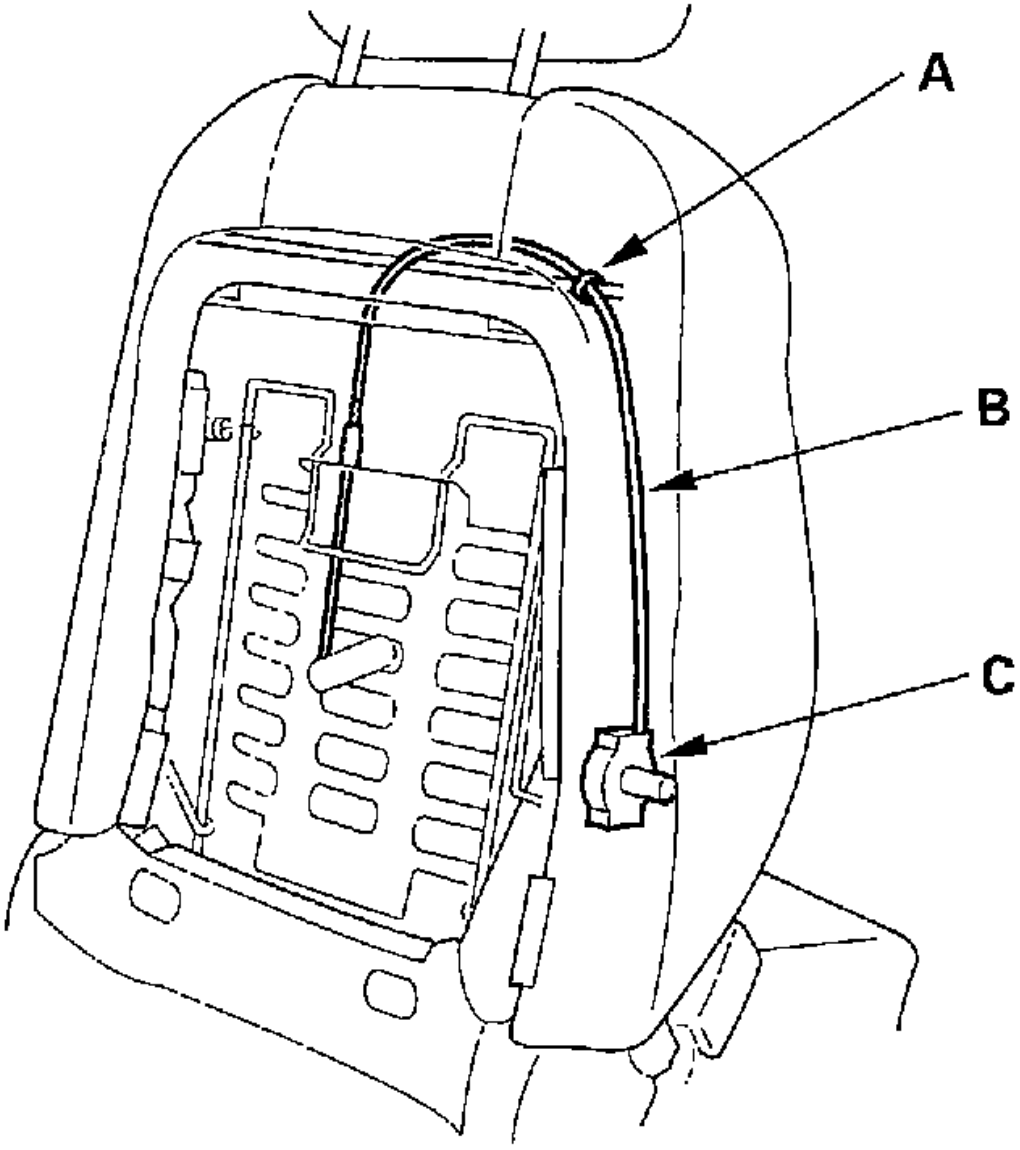


Fig. 12: Removing The Lumbar Support Cable & Actuator As An Assembly

6. Disconnect the lumbar support cable (A) from the lumbar support actuator (B).

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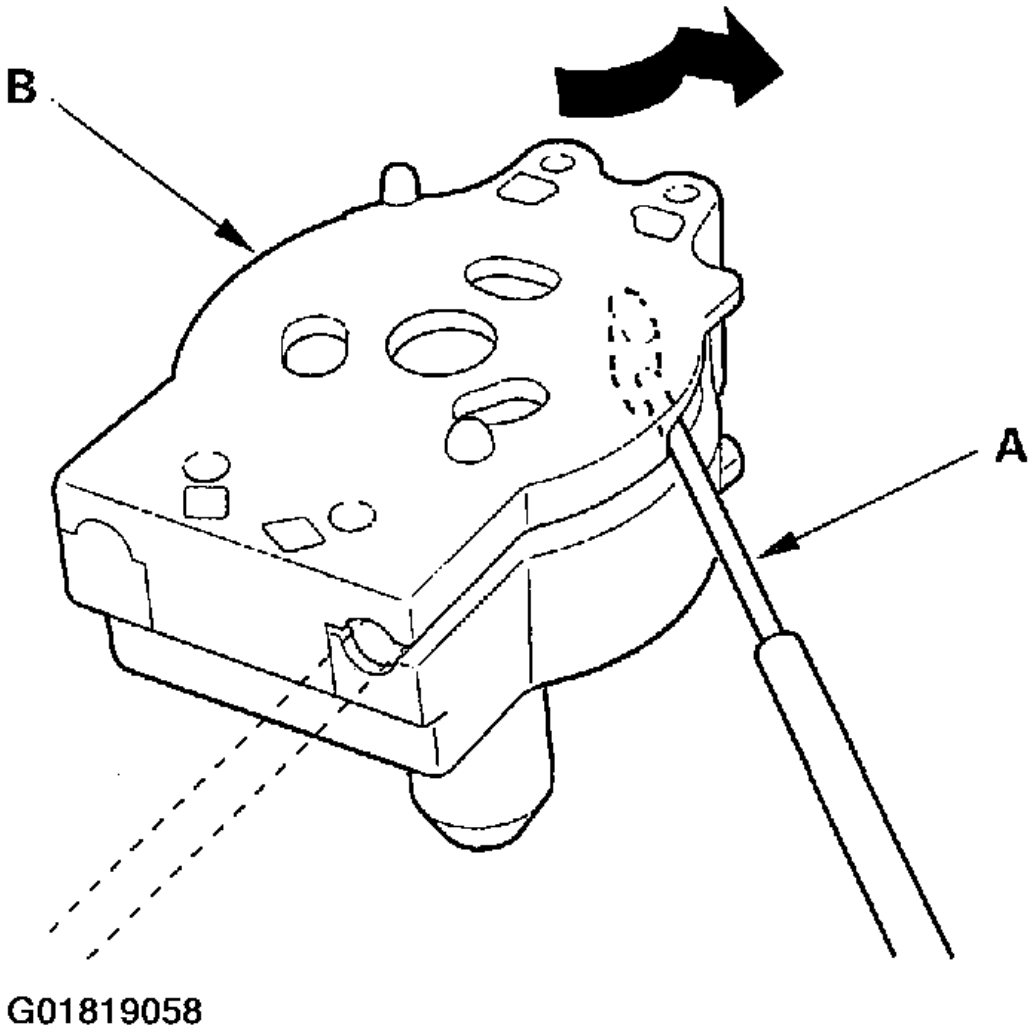


Fig. 13: Disconnecting The Lumbar Support Cable From The Lumbar Support Actuator

7. Remove the lumbar support (A).
   a. Release the clamp (B) fastening the recline motor harness with the lower spring (C).
   b. Release both lower springs (C) from inside the seat-back.
   c. Release the lumbar support from both upper springs (D)

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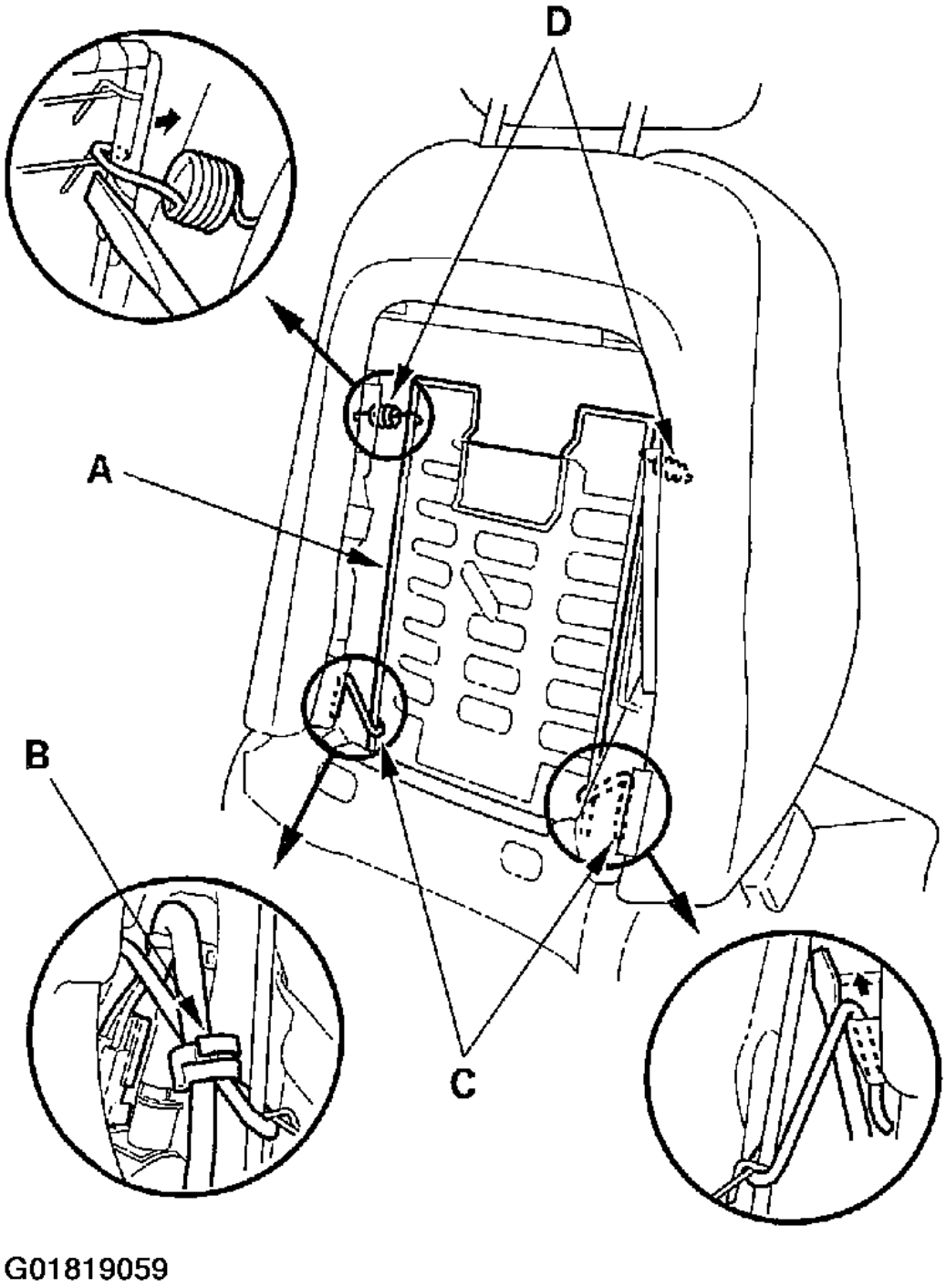


Fig. 14: Removing The Lumbar Support

8. Install the lumbar support in the reverse order of removal, and note these items:

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- Make sure the cable is connected securely.
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hook strips.
- Replace the back panel clips as new ones.

FRONT SEAT COVER REPLACEMENT

SRS components are located in this area. Review the SRS component locations, and the precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

Seat-back Cover

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove the headrest.
3. From under the seat cushion, disconnect the recline motor connector (A), and the seat-back heater connector (B) on the 8-way power seat. Detach the side airbag connector clip (C), OPDS unit connector clip (D) on the manual seat, and harness clips (E). Release the clips (F) (manual seat) and seat cushion cover (G) from the seat cushion frame spring (H), then pull the cover back, and remove the clamps (I).

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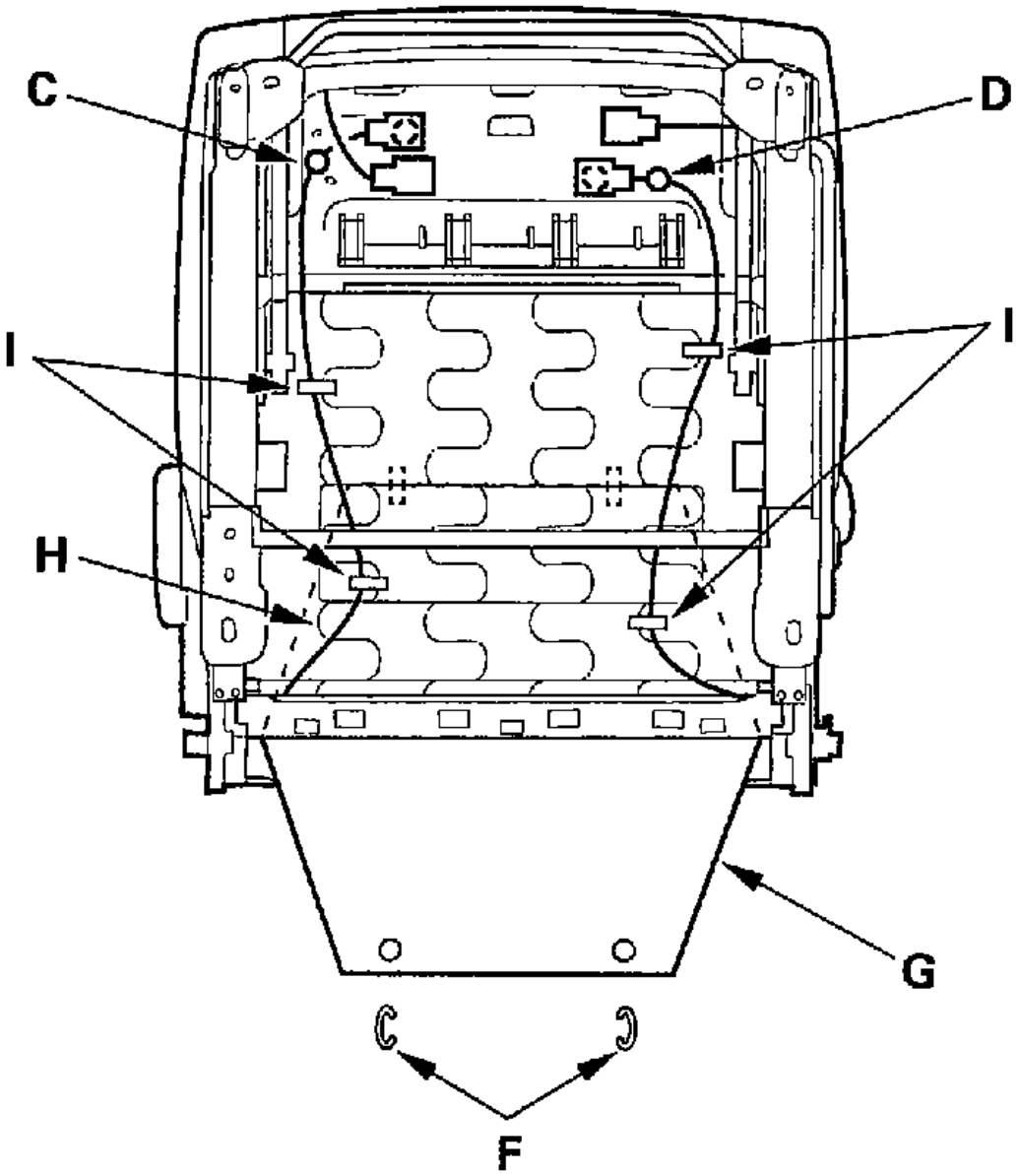


Fig. 15: Detaching The Harness Clip & Disconnecting The Seat Connectors (Manual Seat)

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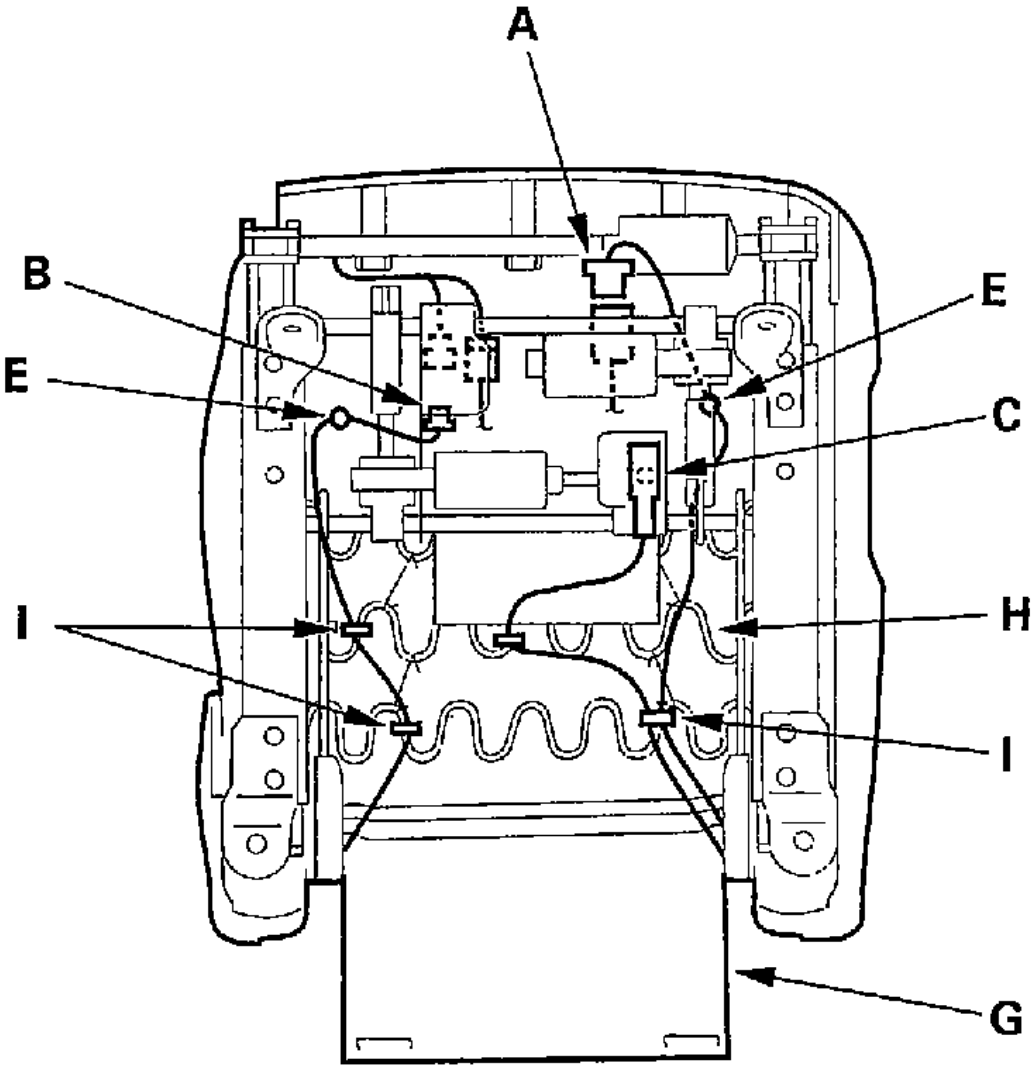


Fig. 16: Detaching The Harness Clip & Disconnecting The Seat Connectors (8-Way Power Seat)

4. Remove these items from the front seat, then remove the seat cushion, manual seat (see **FRONT SEAT DISASSEMBLY/REASSEMBLY - MANUAL**), 8-way power seat (see **FRONT SEAT DISASSEMBLY/REASSEMBLY - 8-WAY POWER**):
   a. Recline cover
   b. Center cover
   c. Front cover
5. 8-way power seat: Remove the clip (A), then remove the lumbar support handle (B).

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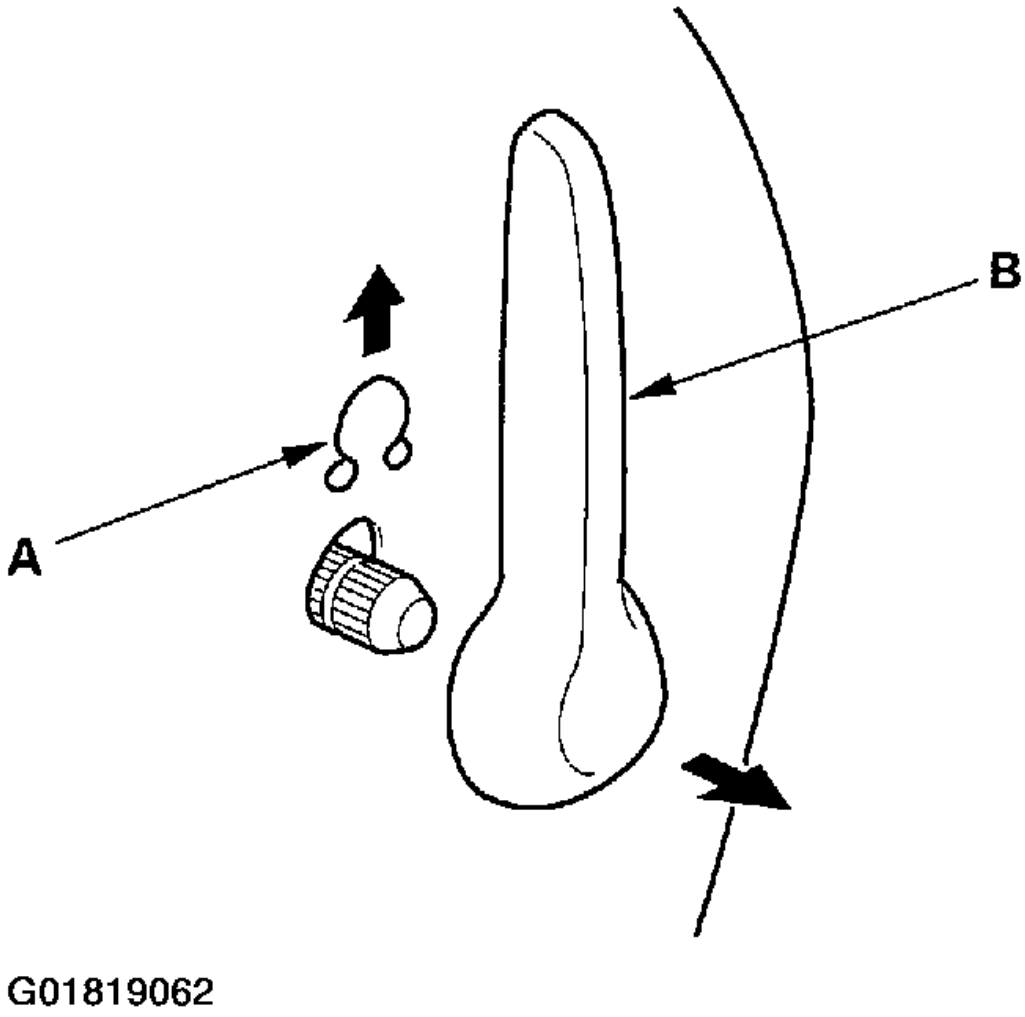


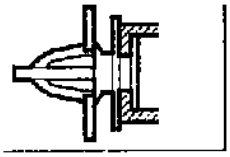
Fig. 17: Removing The Clip & The Lumbar Support Handle (8-Way Power Seat)

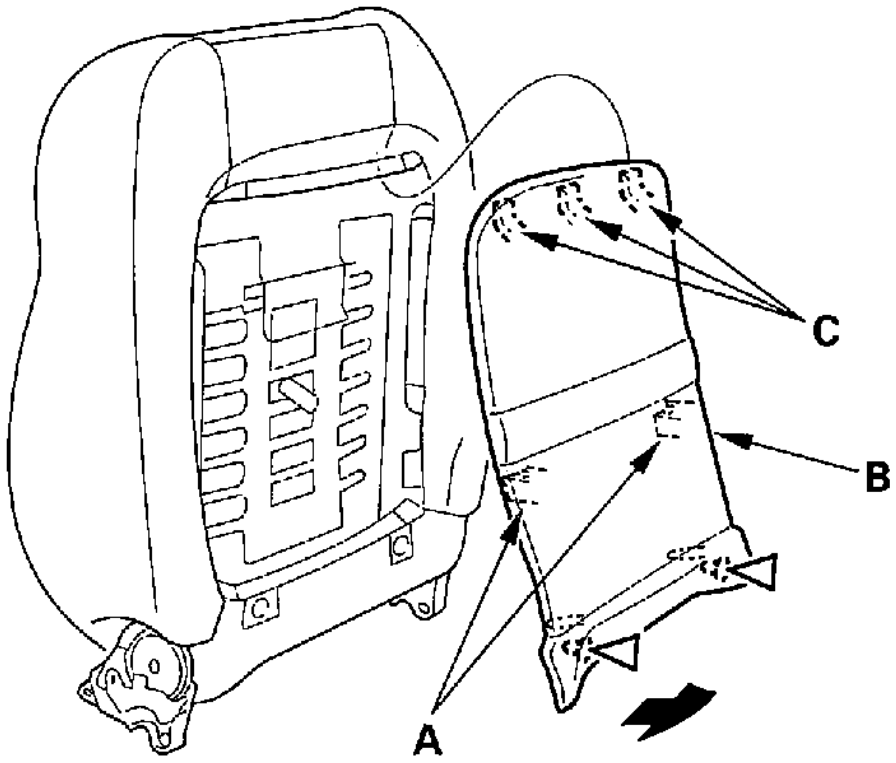
6. Detach the clips and hooks (A) by pulling the bottom of the back panel (B) back, then pull the panel downward to release the hooks (C) from the seat back frame, and remove the panel. 8-way power seat is shown; Manual seat is similar.

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Fastener Locations

▷ : Clip, 2





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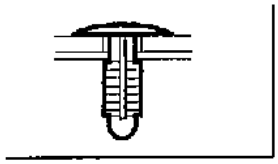
Fig. 18: Removing The Back Panel (8-Way Power Seat Is Shown; Manual Seat Is Similar)

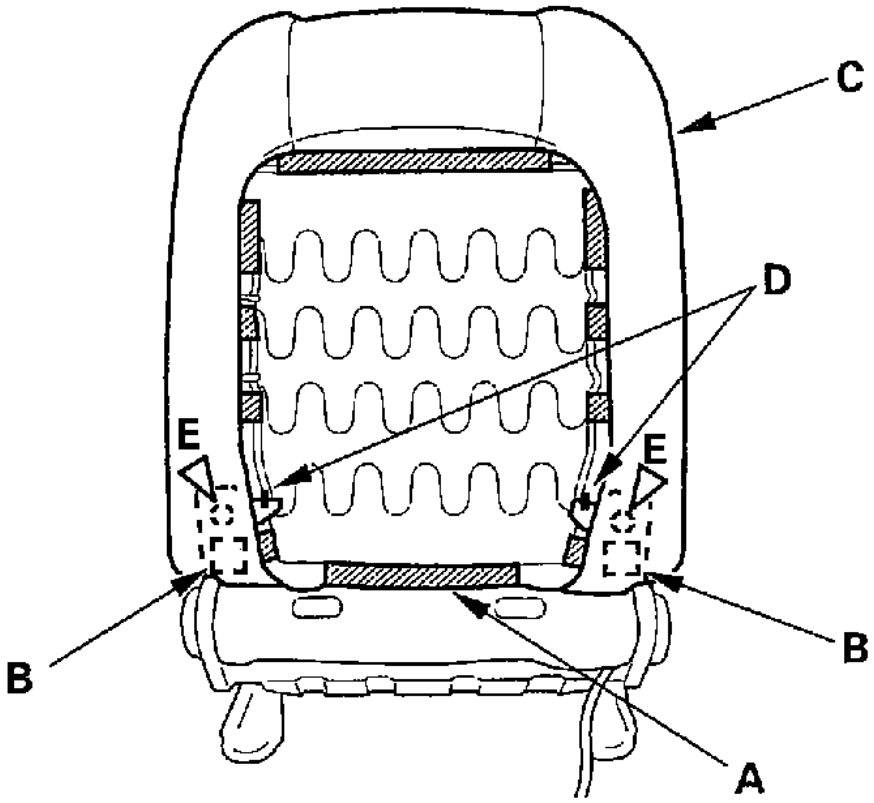
7. Release the hook strips (A), and fasteners (B) on the manual seat, then loosen the seat-back cover (C). Release the clips (D) and/or detach the clips (E).

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Fastener Locations

E ▷ : Clip, 2





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Fig. 19: Loosening The Seat-Back Cover (Manual Seat)

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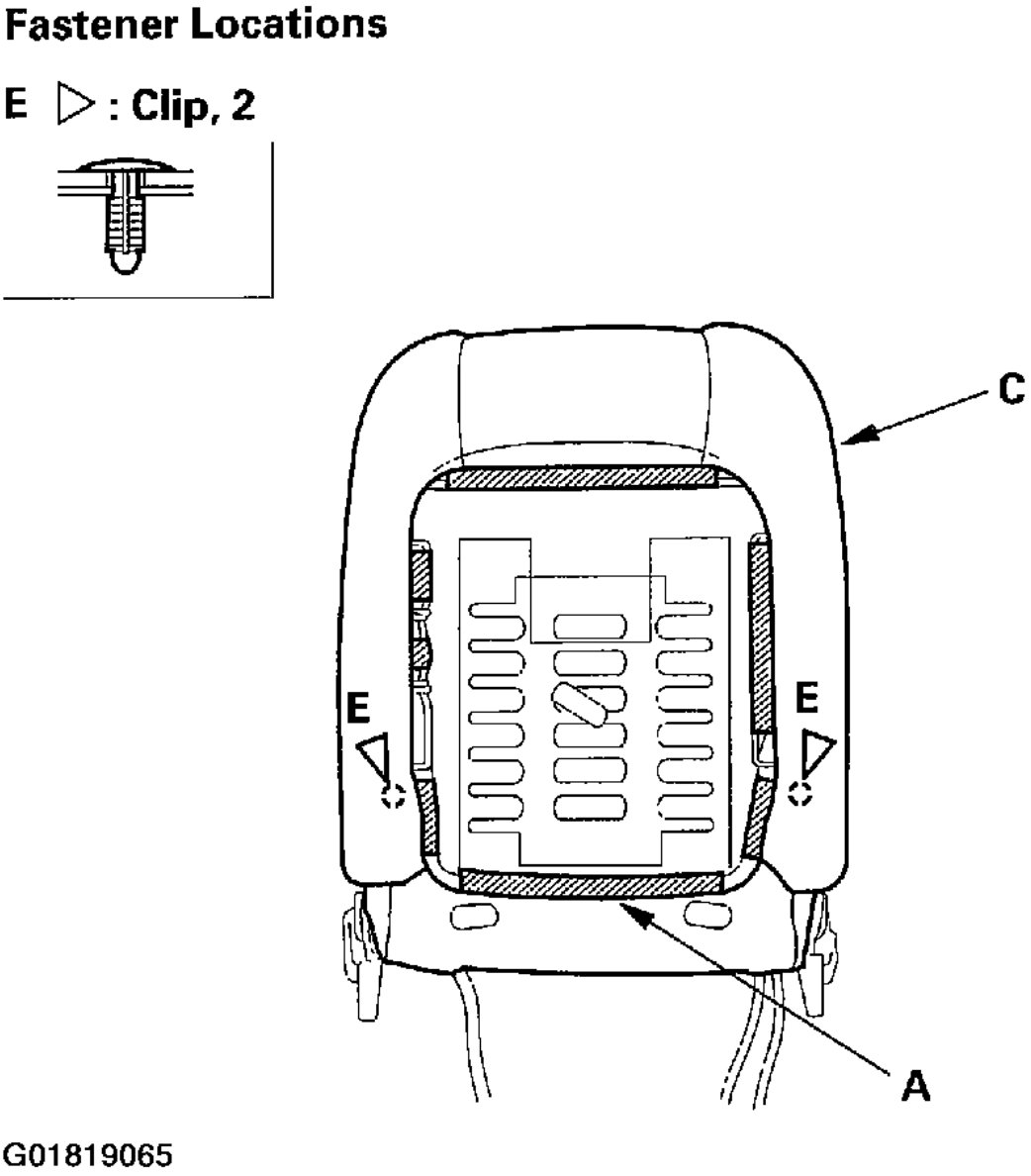


Fig. 20: Loosening The Seat-Back Cover (8-Way Power Seat)

8. Pull the recline motor harness (A) and seat-back heater harness (B) (8-way power seat), side airbag harness (C), and OPDS unit harness (manual seat) out through the hole (E) in the seat-back cover. 8-way power seat is shown; manual seat is similar.

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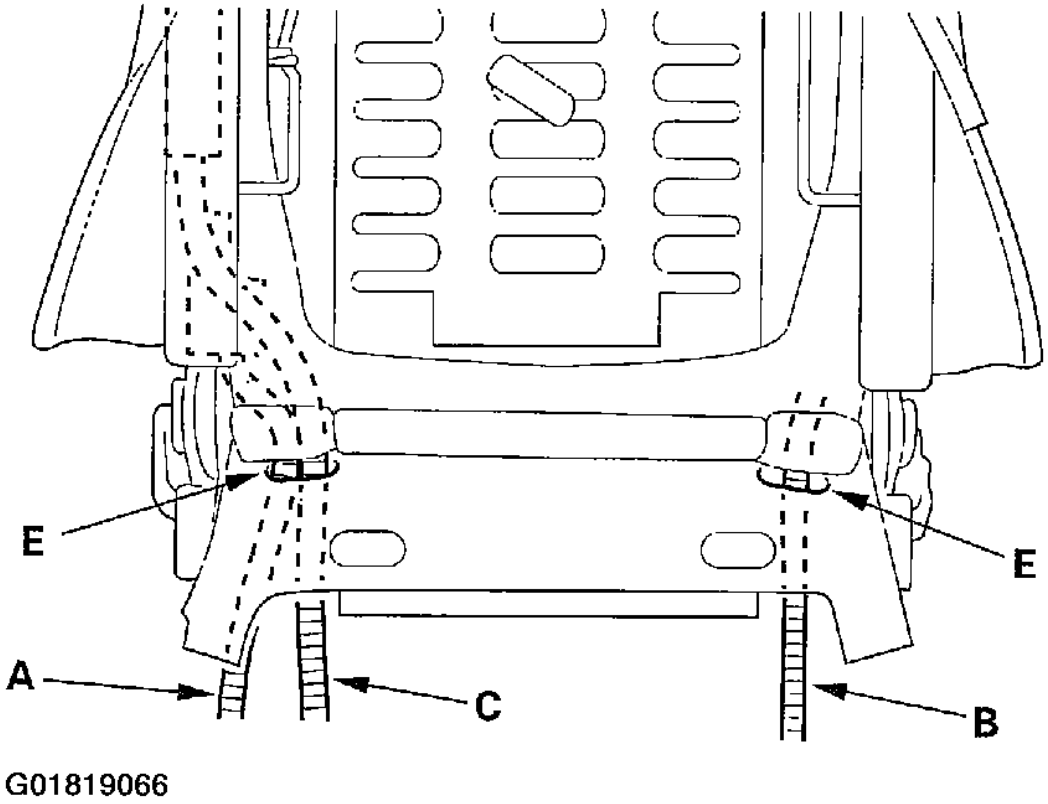


Fig. 21: Removing The Harnesses (8-Way Power Seat Is Shown; Manual Seat Is Similar)

9. Release the front hook (A) and rear hook (B) of the reinforcing cloth (C) from seat-back frame (D).

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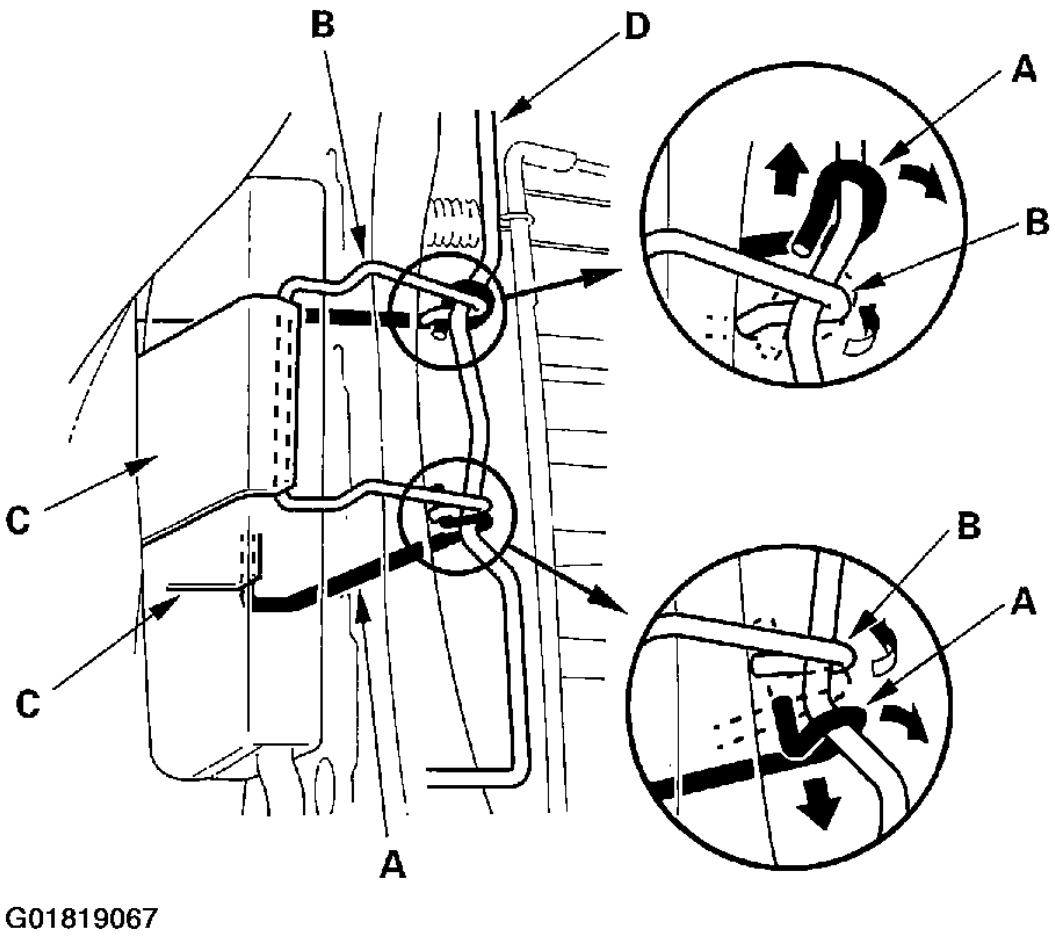
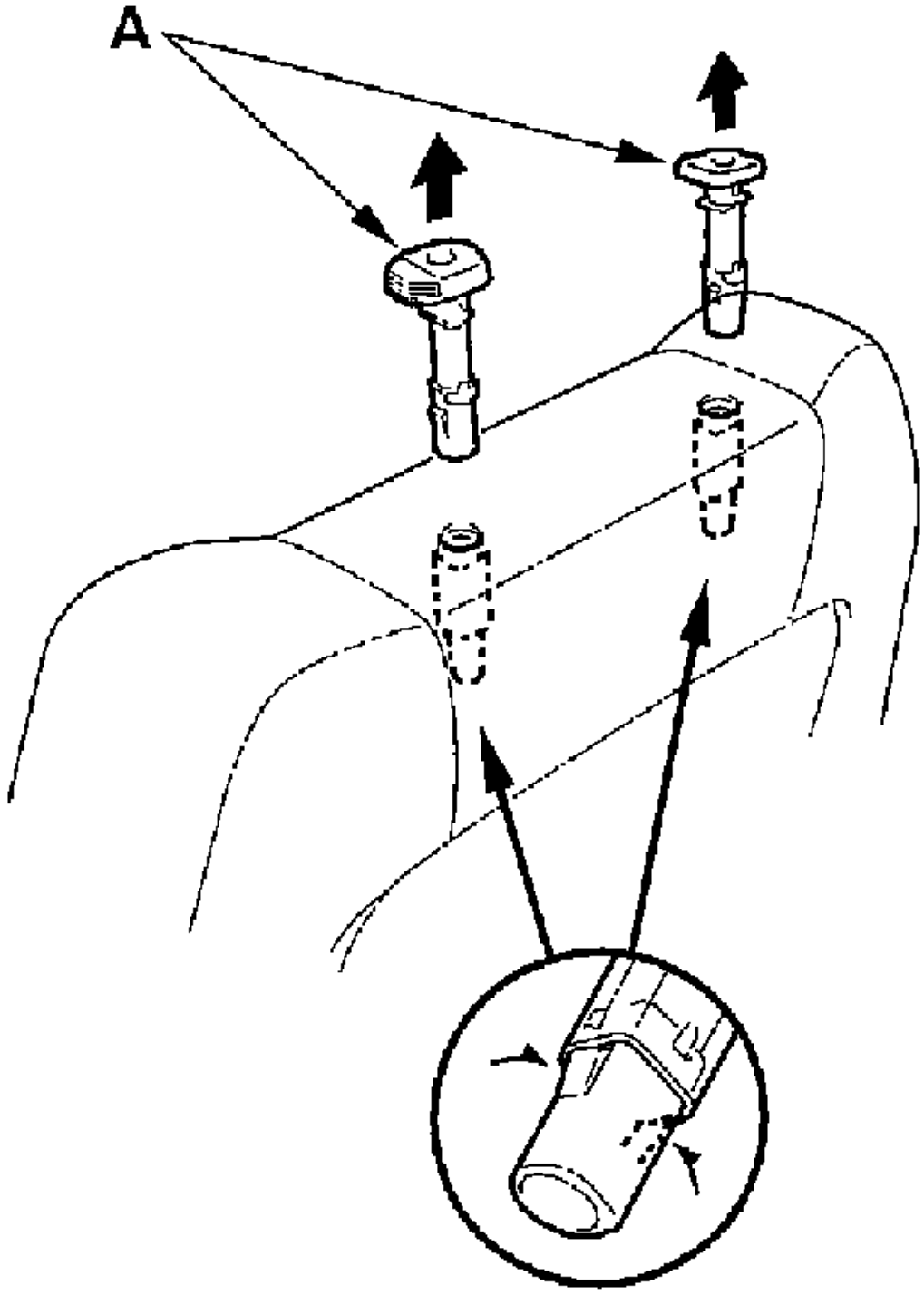


Fig. 22: Releasing The Front Hook & Rear Hook Of The Reinforcing Cloth From Seat-Back Frame

10. Pull out the headrest guides (A) while pinching the end of the guides, and remove them.

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Fig. 23: Pulling Out The Headrest Guides

11. From the back of the seat-back, release the clips (A).

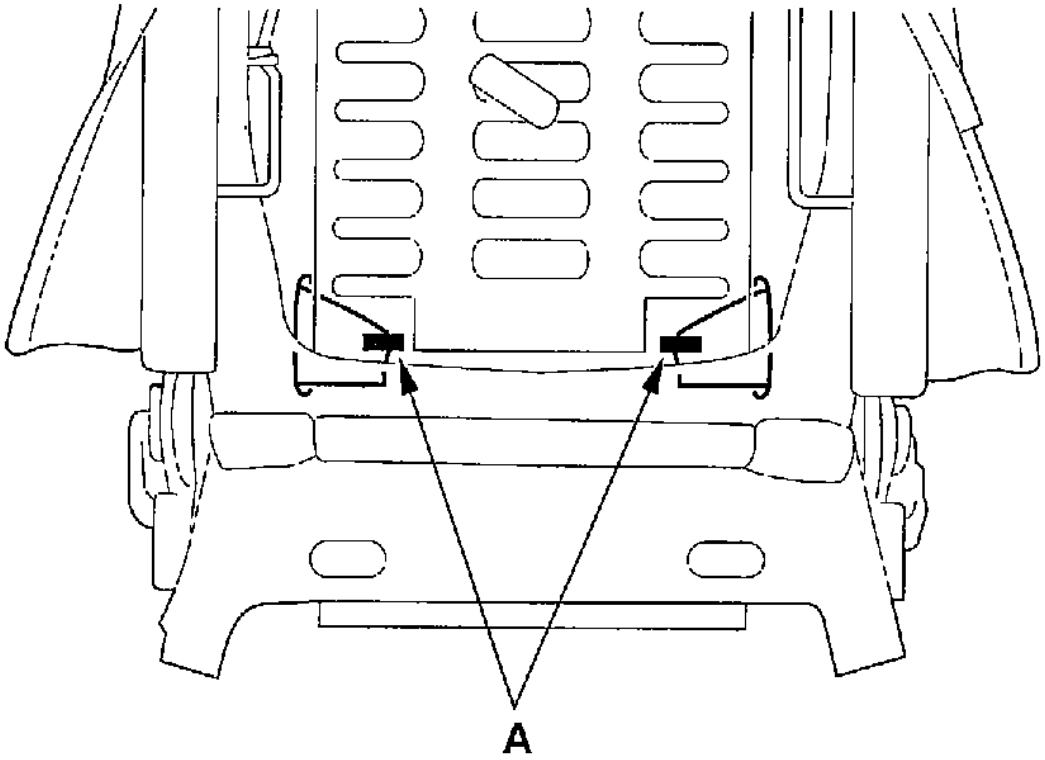


Fig. 24: Releasing The Clips

12. Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.

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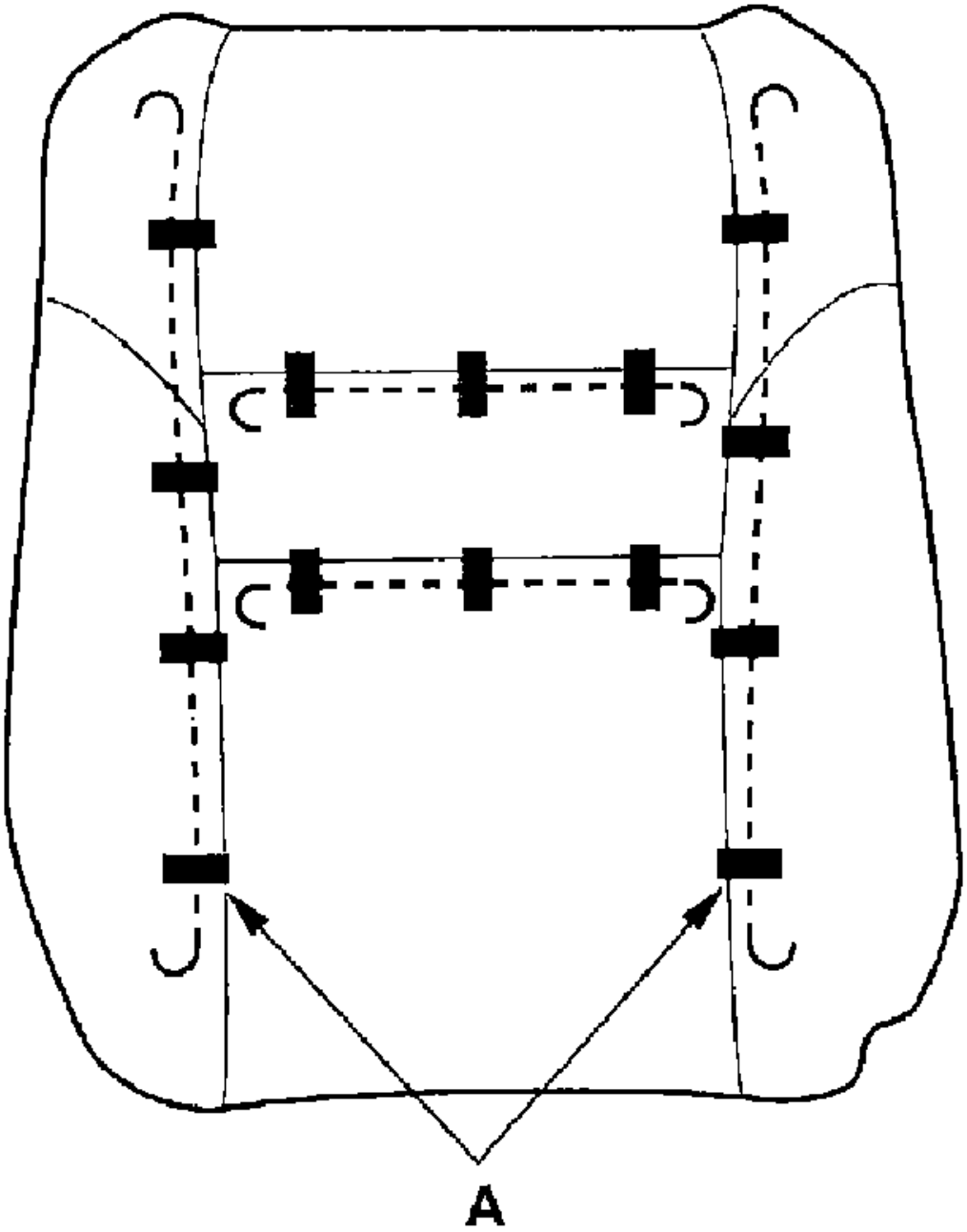


Fig. 25: Removing The Seat-Back Cover

13. Install the cover in the reverse order of removal, and note these items:

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- Reinitialize the OPDS control unit (see **AIR BAG RESTRAINT SYSTEMS**).
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook strips.
- Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).
- Reinstall the front hook (C) and rear hook (D) of the reinforcing cloth (E) securely.
- Use only original Acura replacement seat-back covers.
- Make sure the recline motor harness, side airbag harness, seat-back heater harness (8-way power seat), and OPDS unit harness (manual seat) are routed properly.

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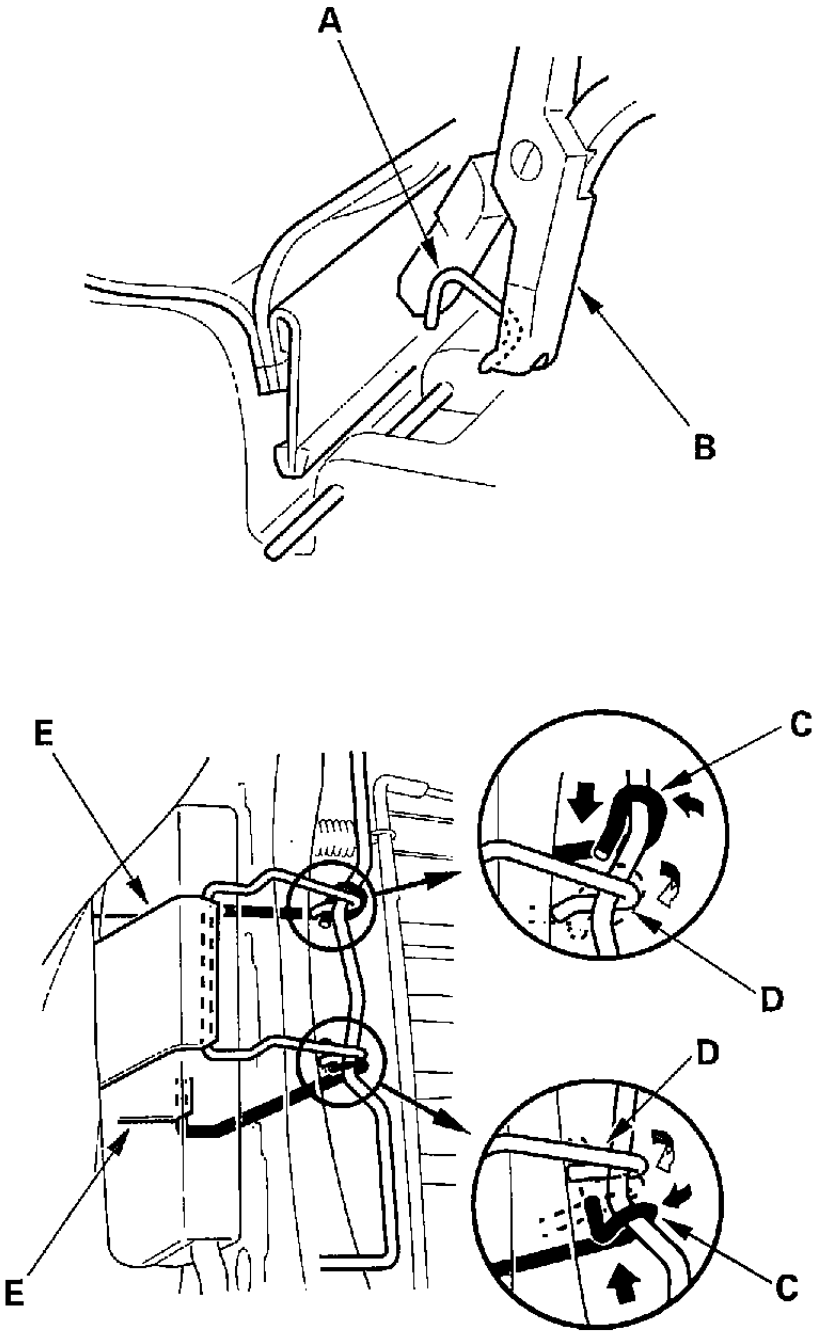


Fig. 26: Cover Installation Points

Seat Cushion Cover

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).

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2. 8-way power seat: From under the seat cushion, detach the recline motor connector clip, if equipped, the side airbag connector clip and the seat heater connector clip. Release the seat cushion cover from the seat cushion frame spring, then pull the cover back, and remove the clamps.
3. Remove these items from the front seat, then remove the seat-back, manual seat (see **FRONT SEAT DISASSEMBLY/REASSEMBLY - MANUAL**), 8-way power seat (see **FRONT SEAT DISASSEMBLY/REASSEMBLY - 8-WAY POWER**):
   a. Recline cover
   b. Center cover
   c. Front cover (8-way power seat)
4. 8-way power seat:

   Remove the seat-back (see **FRONT SEAT DISASSEMBLY/REASSEMBLY - 8-WAY POWER**).

5. Release the hook strips (A) from both sides the seat cushion.

NOTE: 8-way power seat is shown; manual seat is similar, but its seat-back remains on.

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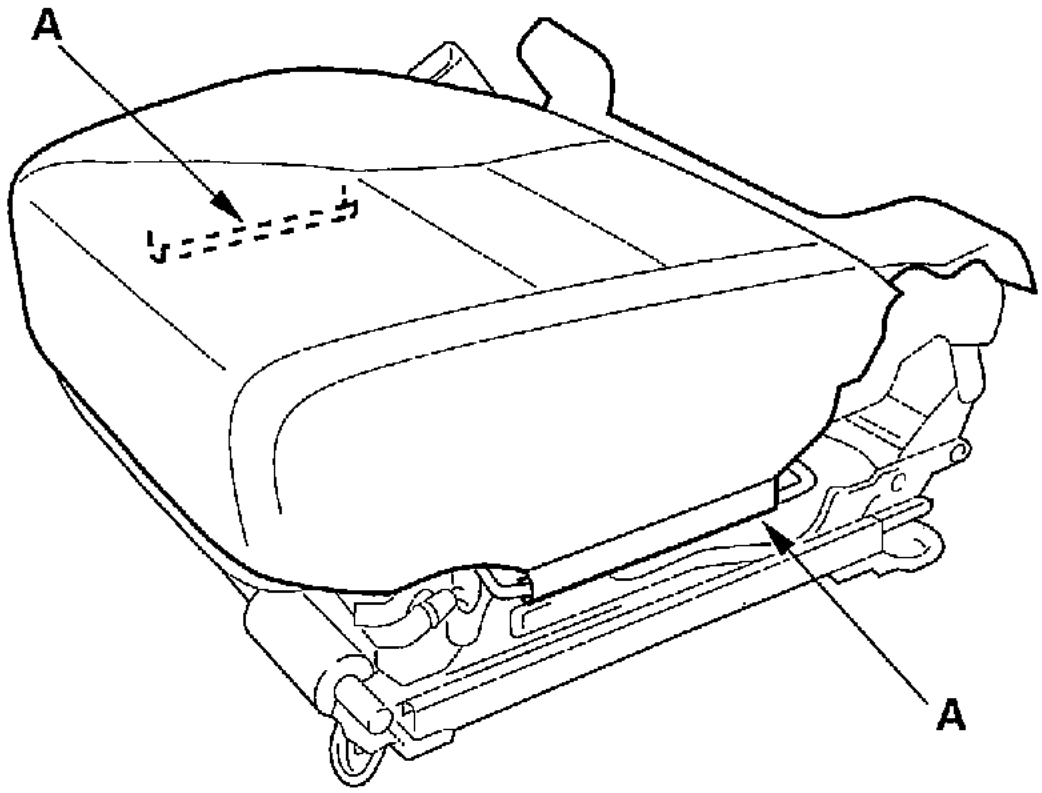


Fig. 27: Releasing The Hook Strips From Both Sides The Seat Cushion (8-Way Power Seat Is Shown)

6. Release the clips (A) (manual seat/manual height adjustable seat), then pull back the seat cushion cover (B), and release the hooks (C) from under the seat cushion.

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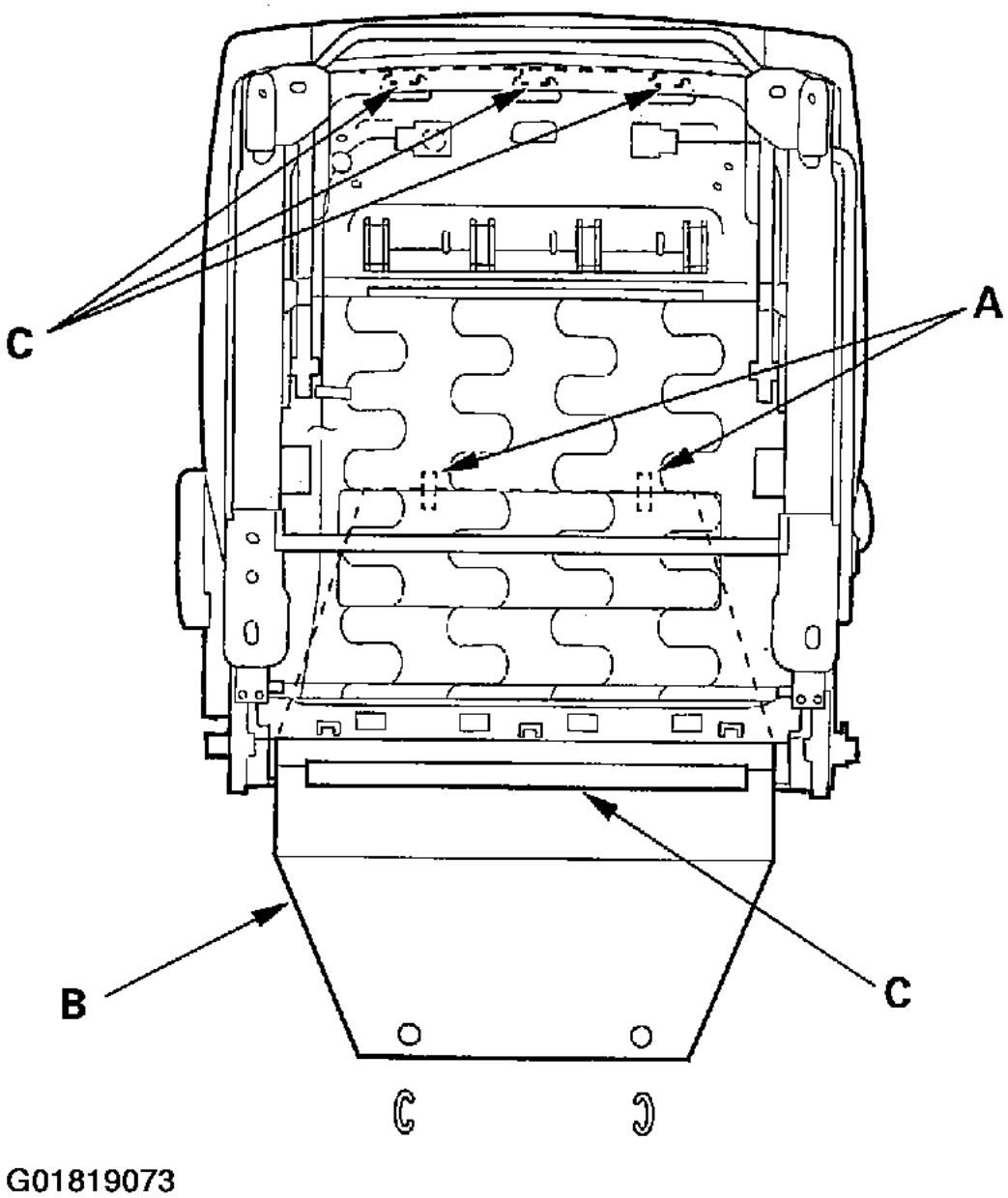


Fig. 28: Releasing The Clips, Then Pulling Back The Seat Cushion Cover & Releasing The Hooks From Under The Seat Cushion (Manual Seat)

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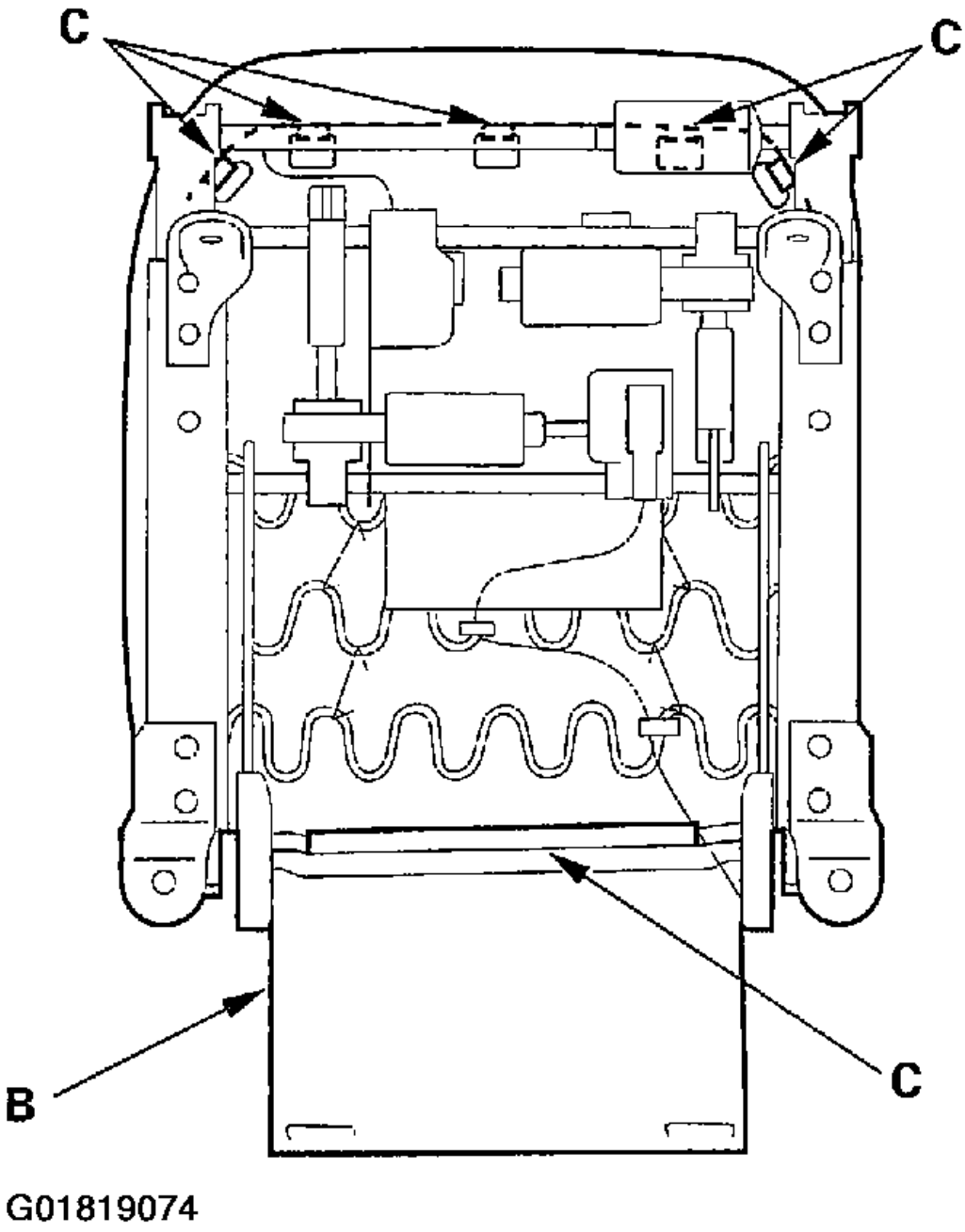


Fig. 29: Releasing The Clips, Then Pulling Back The Seat Cushion Cover & Releasing The Hooks From Under The Seat Cushion (8-Way Power Seat)

7. Remove the cushion cover/pad from the seat cushion frame.
8. Release the clips (A) from under the seat cushion (B).

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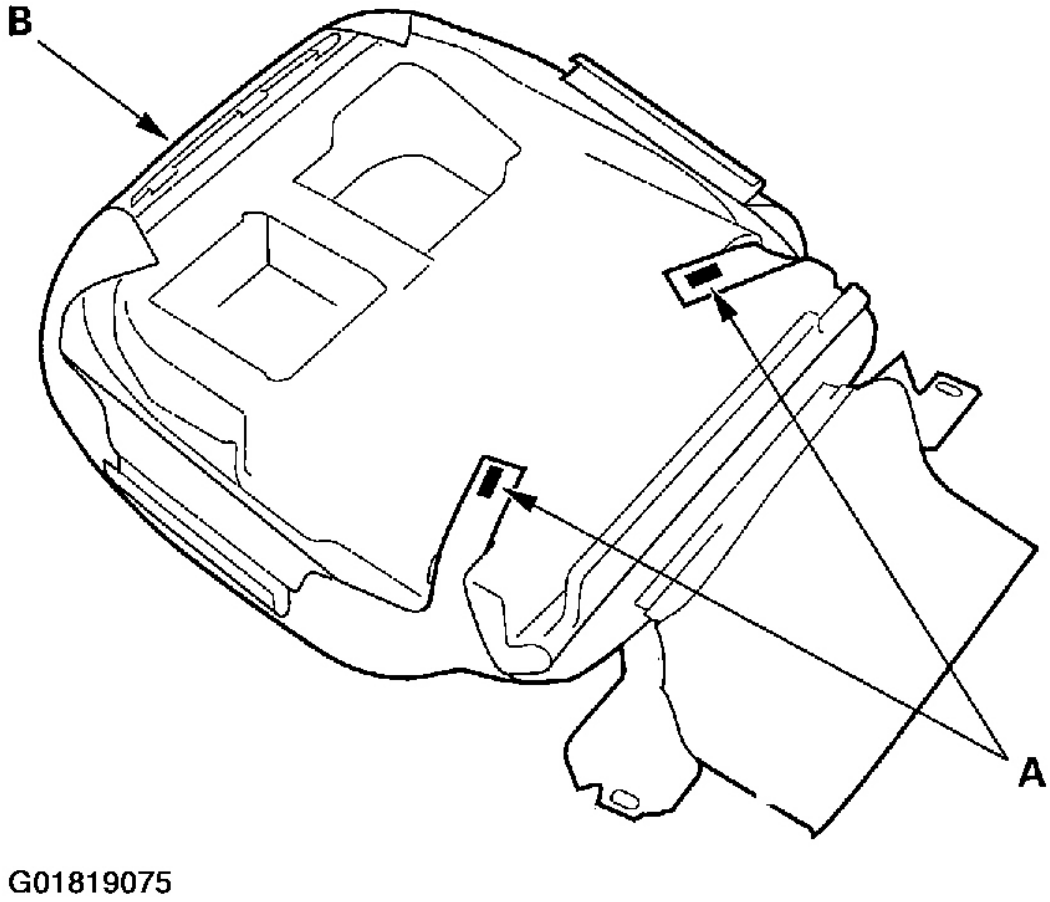


Fig. 30: Releasing The Clips From Under The Seat Cushion

9. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.

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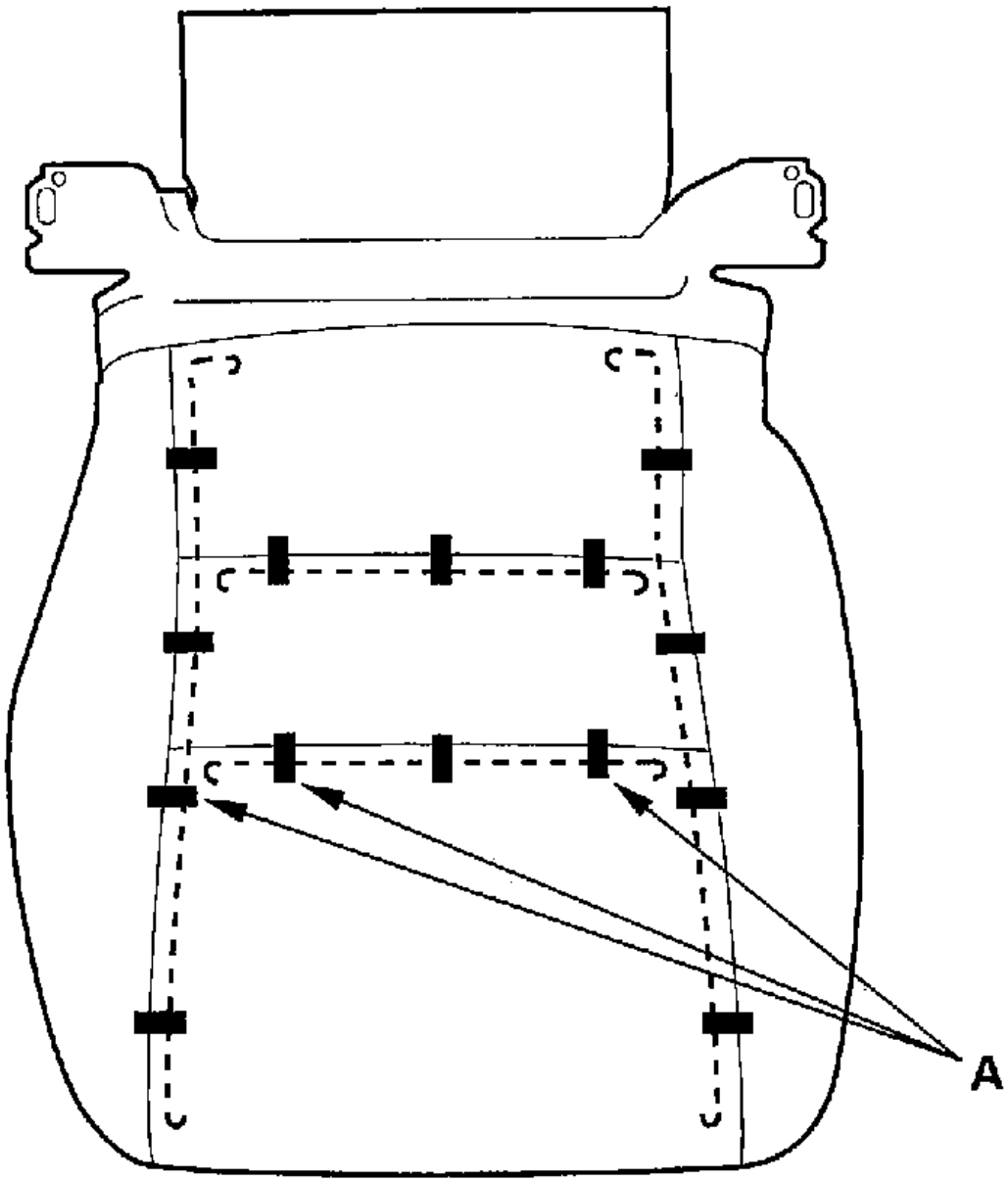


Fig. 31: Removing The Seat Cushion Cover

10. Install the cover in the reverse order of removal, and note these items:
    - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the paid before securing the clips and hook strips.
    - Replace any clips you removed with new ones (A). Install them with commercially available

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upholstery ring pliers (B).

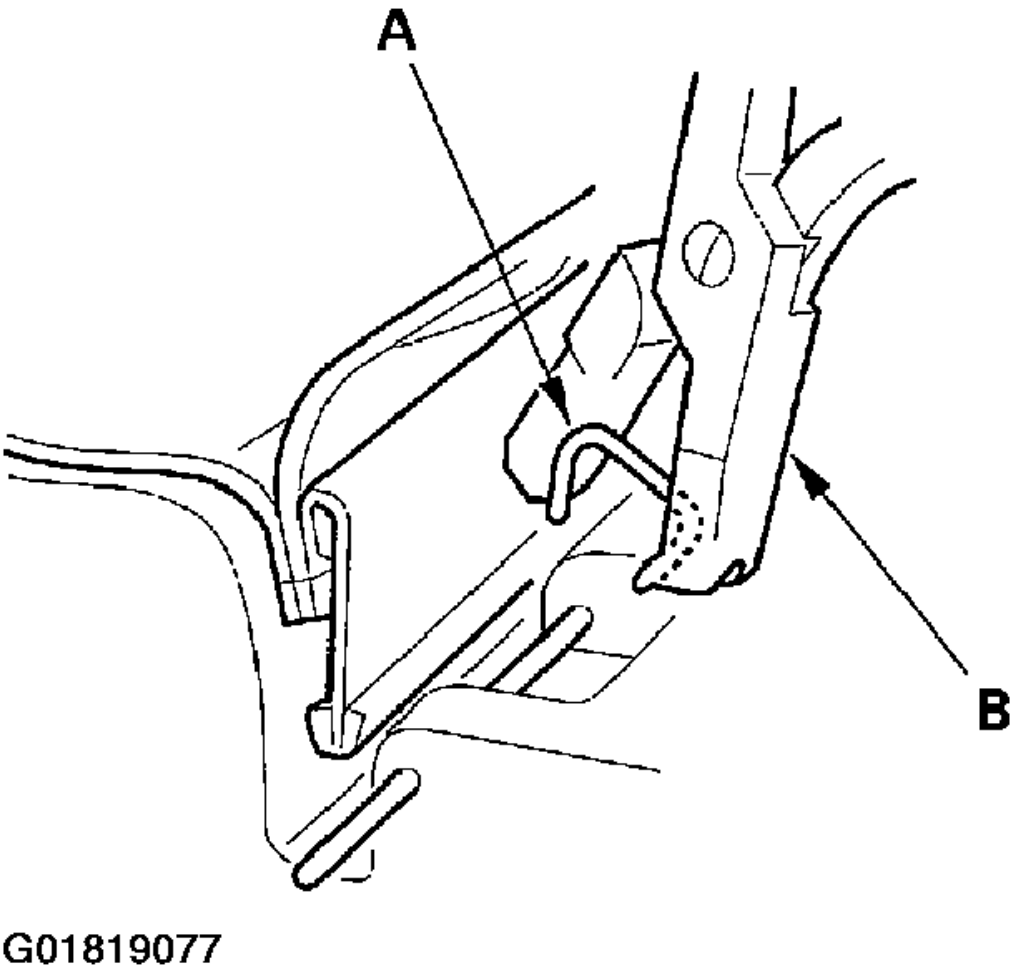


Fig. 32: Seat Cushion Cover Installation Points

REAR SEAT REMOVAL/INSTALLATION

NOTE: Take care not to scratch the body or tear the seat covers.

1. Remove the rear seat as shown.
2. Install the seat in the reverse order of removal, and note these items:
   - Before attaching the rear seat-back and cushion, make sure there are no twists or kinks in the rear seat belts and center seat belt.
   - When installing the seat cushion, slip the seat belt buckles through the slits in the seat cushion.

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- Make sure the seat-back locks securely.

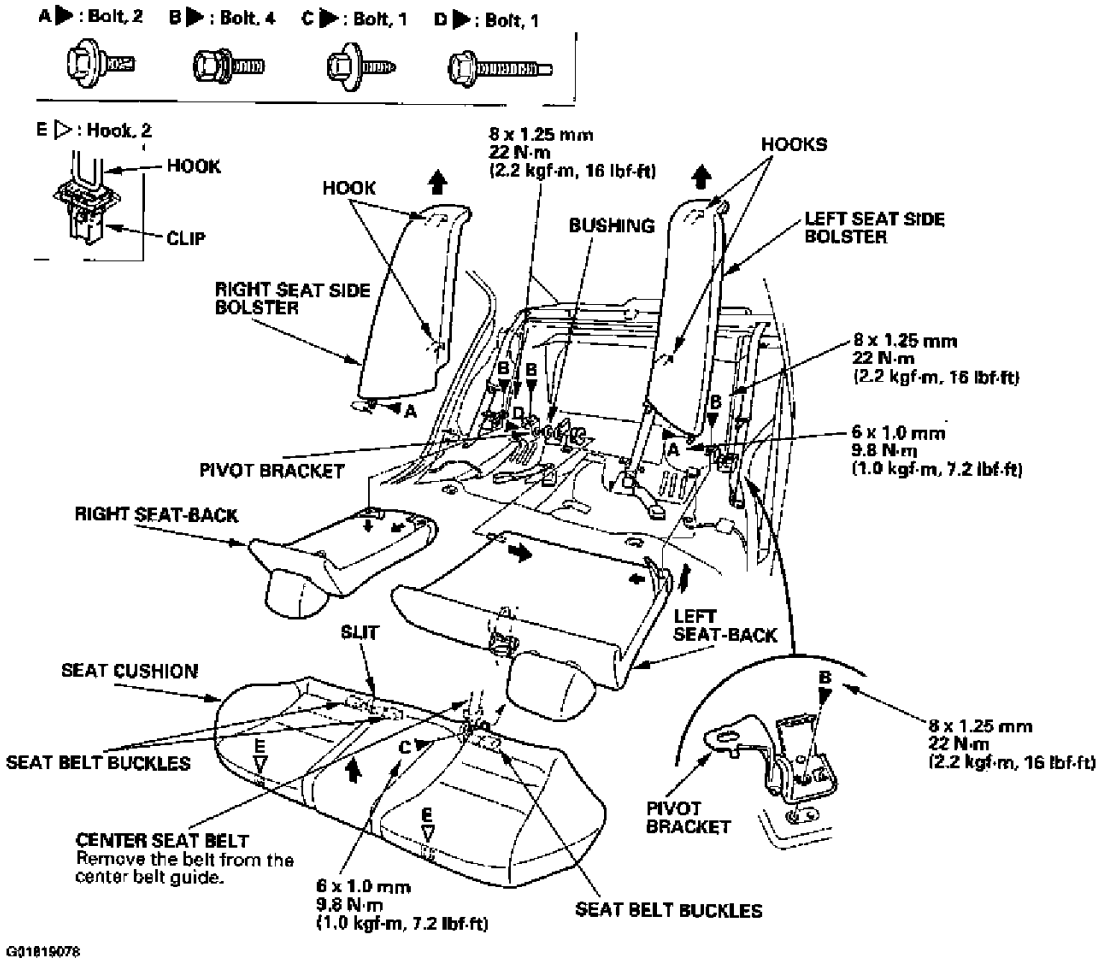


Fig. 33: Removing The Rear Seat

REAR SEAT-BACK LATCH REPLACEMENT

NOTE:

- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to bend or scratch the interior trim.**

1. Remove these items:
   a. Seat side bolster, both sides (see **REAR SEAT REMOVAL/INSTALLATION**)
   b. Rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
2. Disconnect the cylinder rod (A), remove the bolts, then remove the seat-back latch (B).

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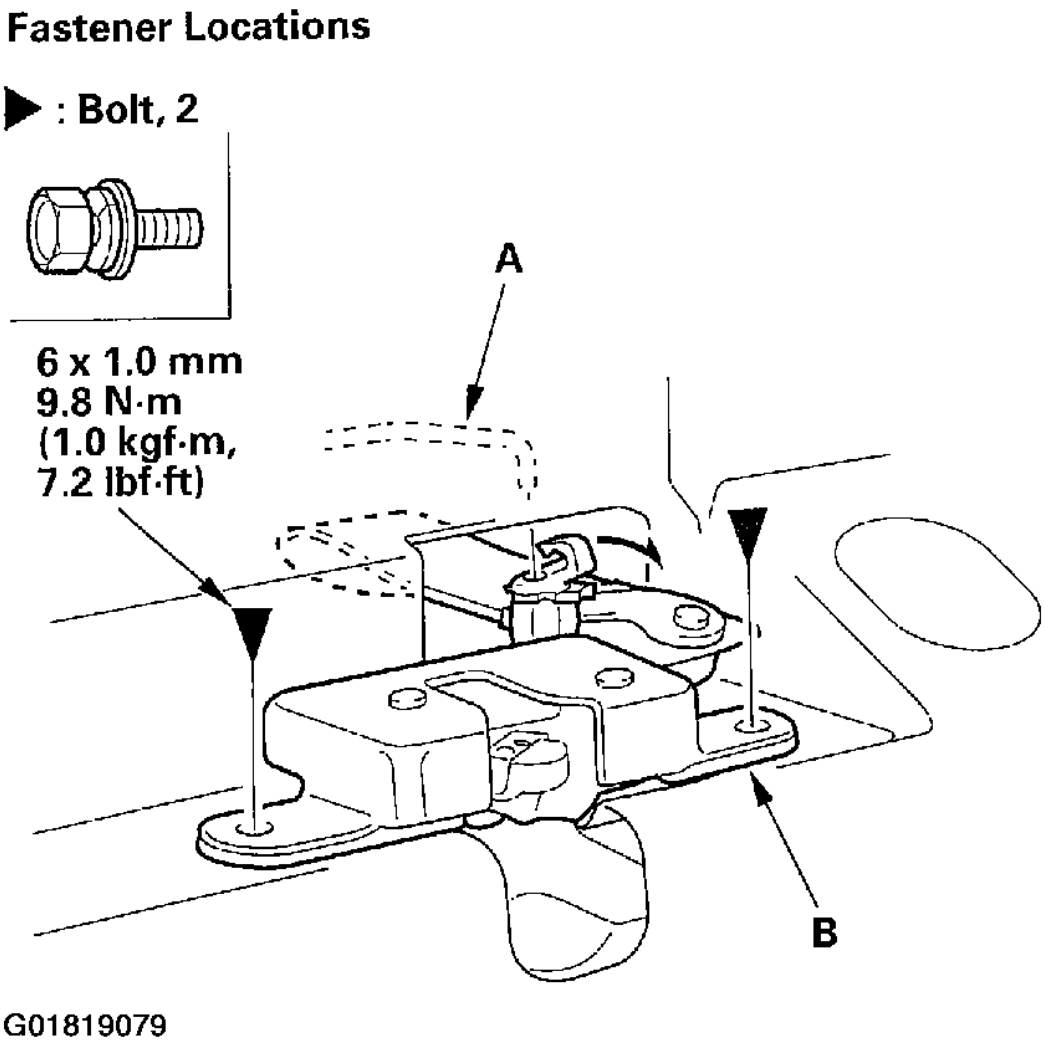


Fig. 34: Removing The Seat-Back Latch

3. Install the latch in the reverse order of removal, and note these items:
   - Make sure the cylinder rod is connected securely.
   - Make sure the seat-back locks securely and unlocks properly.

REAR SEAT-BACK LOCK CYLINDER REPLACEMENT

NOTE: Take care not to scratch the interior trim.

1. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).
2. Disconnect the cylinder rods from both seat-back latches (see **REAR SEAT-BACK LATCH**

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REPLACEMENT).

3. Remove the self-tapping ET screws, then remove the seat-back lock cylinder (A) and cylinder rods (B).

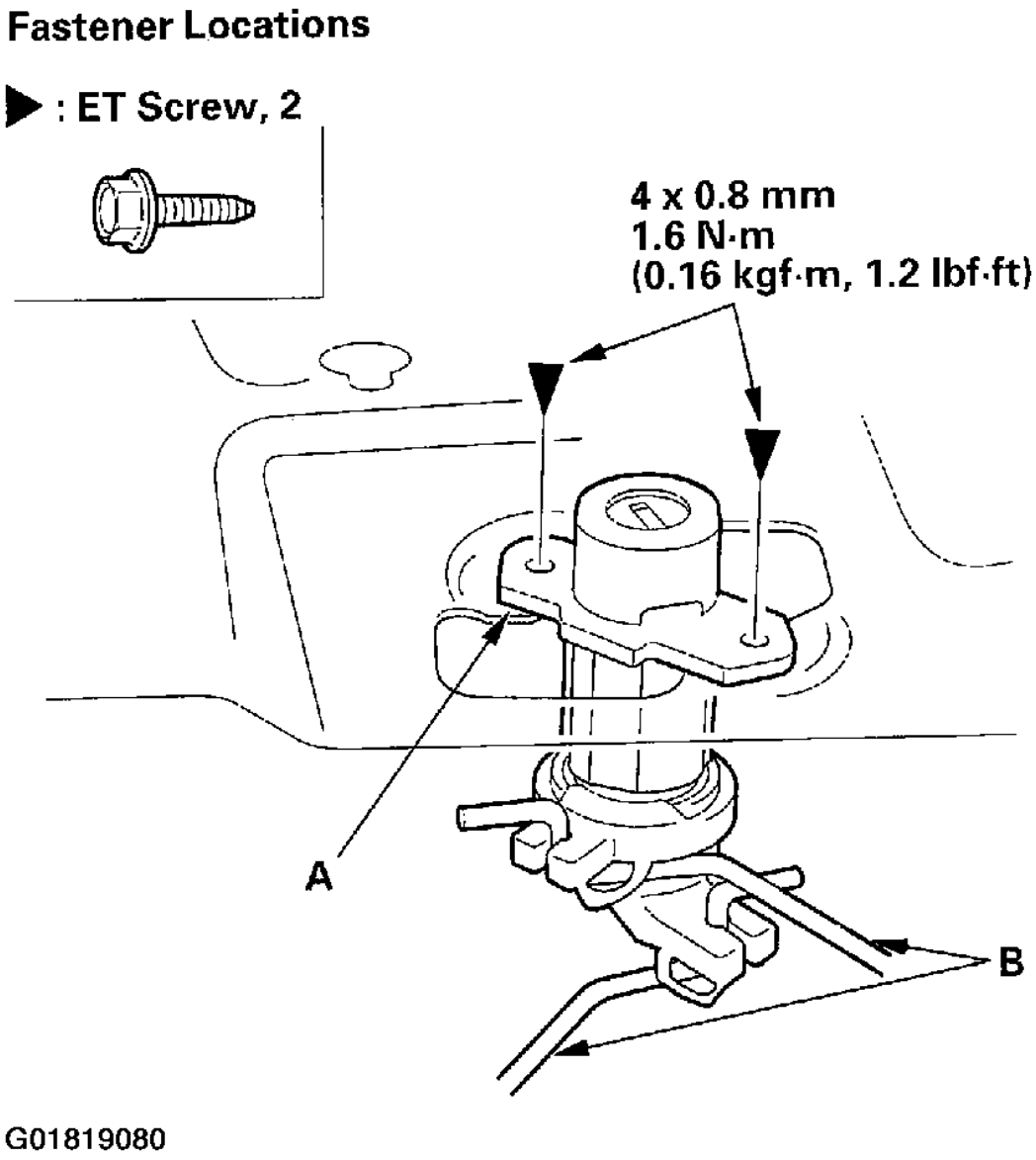


Fig. 35: Removing The Seat-Back Lock Cylinder & Cylinder Rods

4. Install the lock cylinder in the reverse order of removal, and note these items:
   - Make sure the cylinder rod is connected securely.
   - Make sure the seat-back unlocks properly.

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REAR SEAT ARMREST REPLACEMENT

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the clip (A) from the left portion of the armrest pivot.

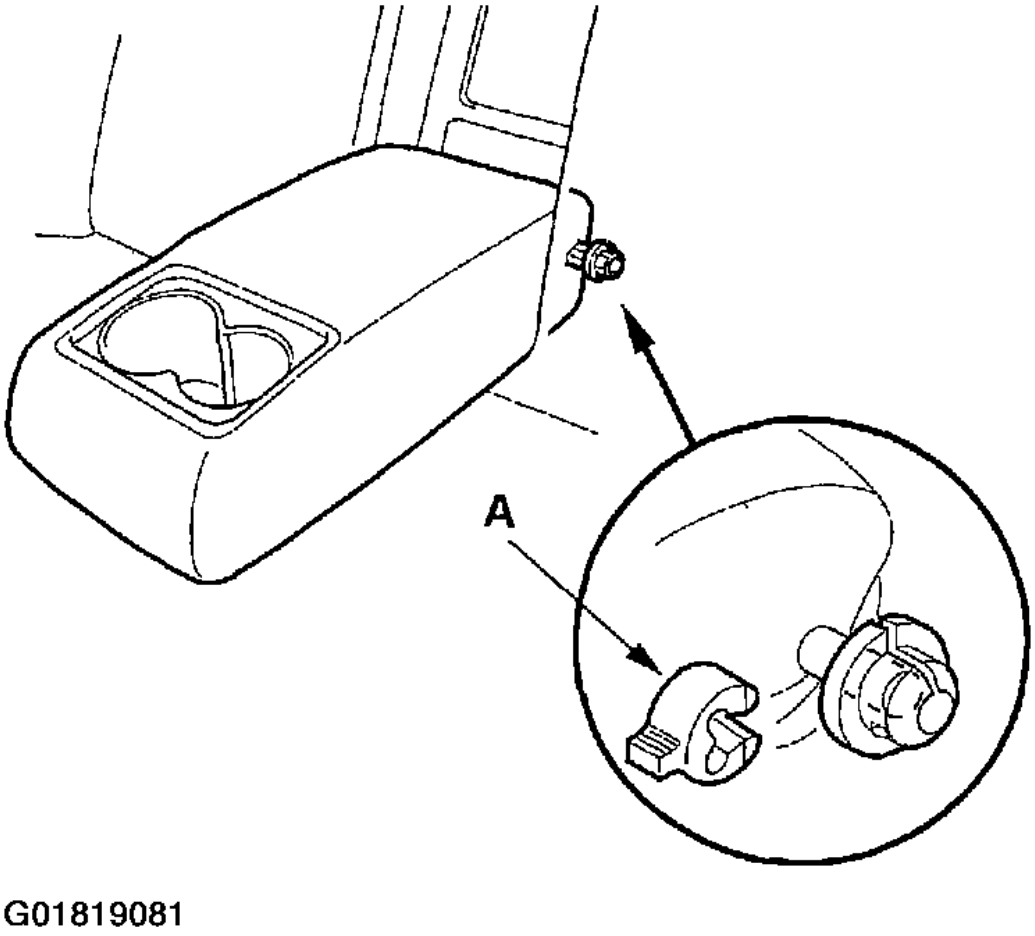


Fig. 36: Removing The Clip From The Left Portion Of The Armrest Pivot

2. Remove the armrest.
   a. Slide the armrest (A) toward the driver's side of the vehicle.
   b. Remove the pivot shaft (B) from the collar (C) on the passenger's side of the vehicle by pulling up on the armrest, and remove the pivot shaft (B) from the collar (D) by pulling up on the armrest.

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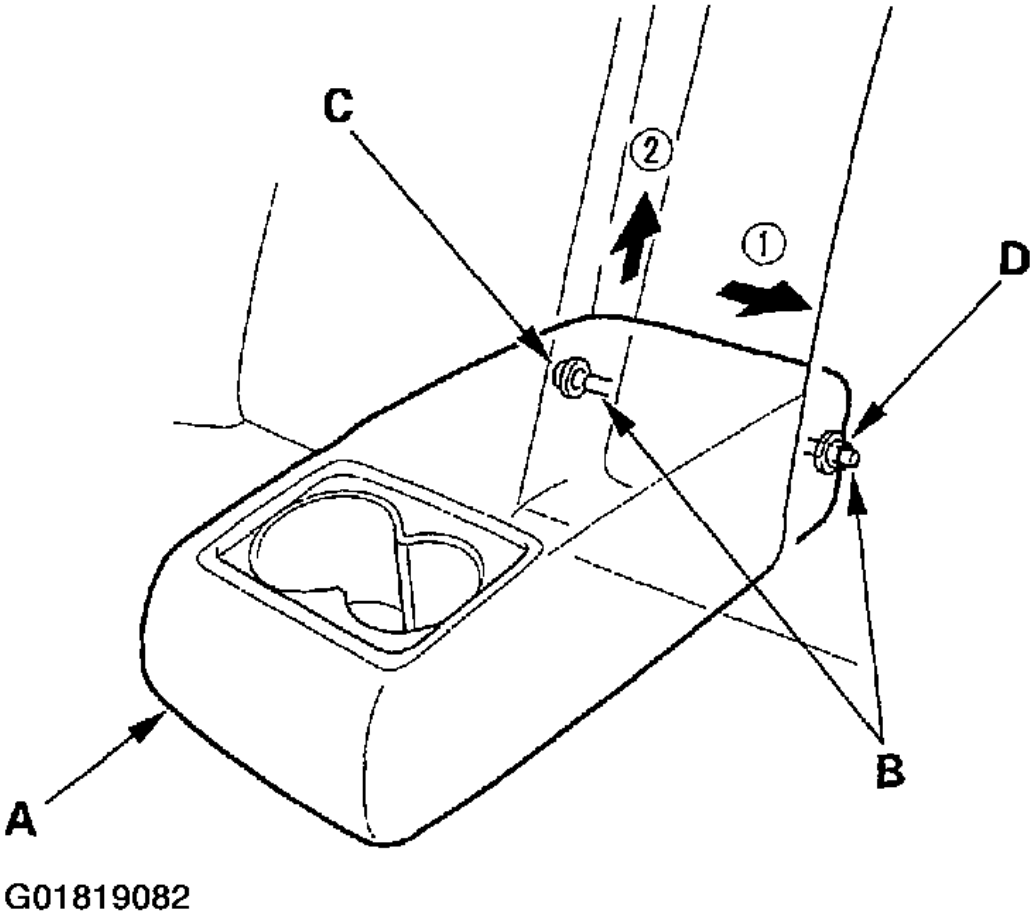


Fig. 37: Removing The Armrest

3. Remove the beverage holder.

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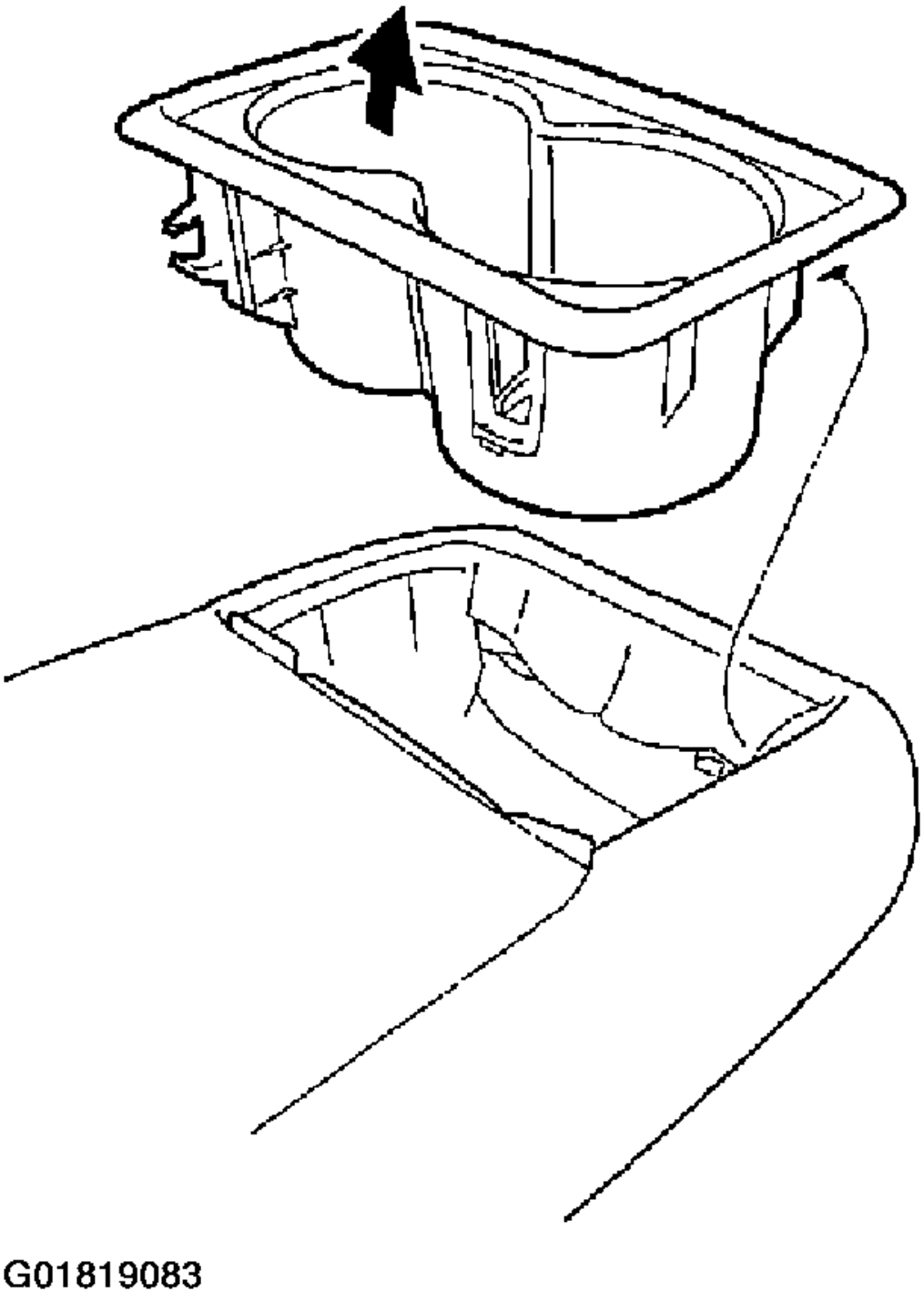


Fig. 38: Removing The Beverage Holder

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4. Install the armrest in the reverse order of removal.

REAR SEAT-BACK COVER REPLACEMENT

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the seat-back (see **REAR SEAT REMOVAL/INSTALLATION**).
2. Remove these items:
   a. Armrest (see **REAR SEAT ARMREST REPLACEMENT**)
   b. Headrest
3. Left seat-back: Remove the screws, then remove the center belt guide.

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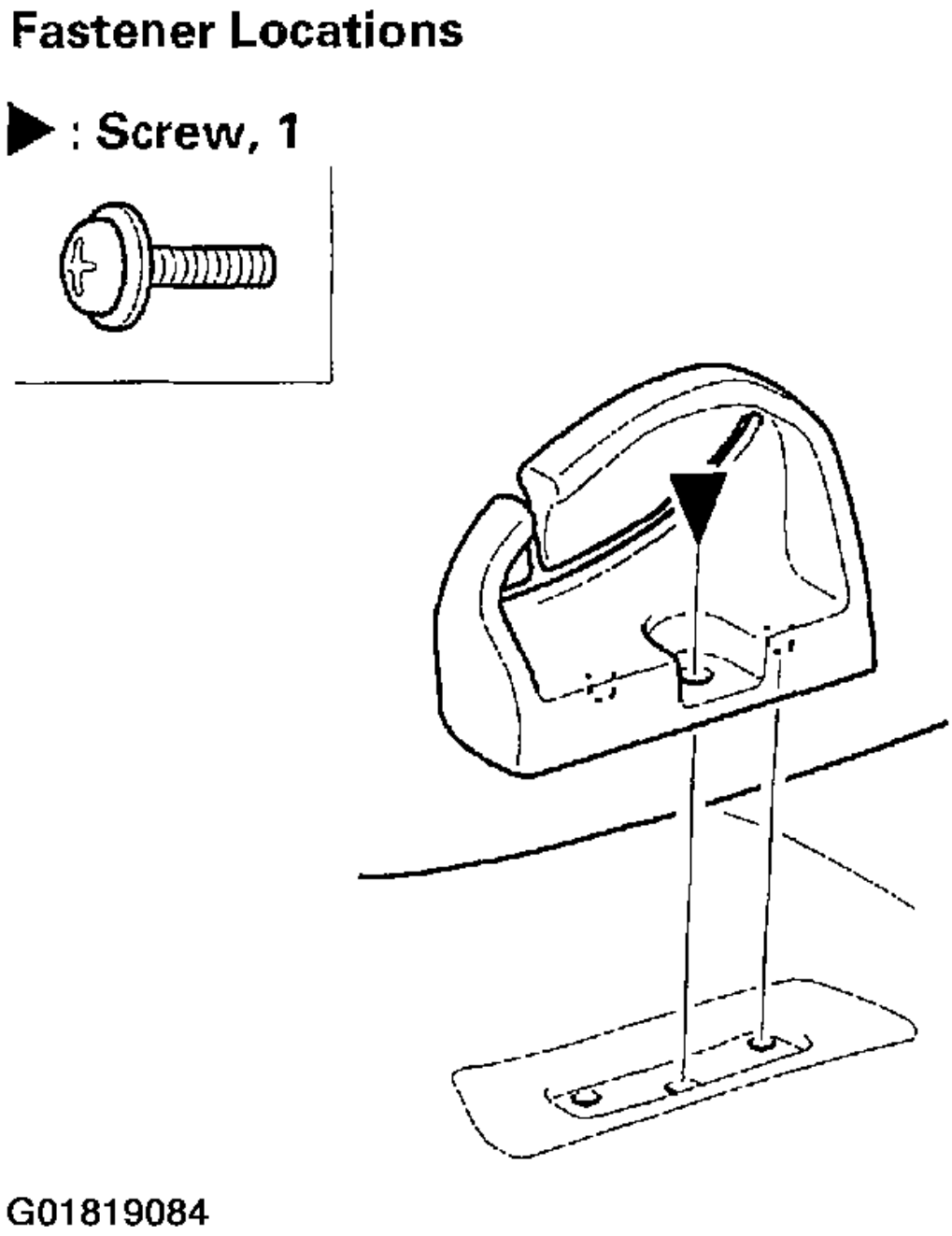


Fig. 39: Removing The Center Belt Guide

4. Left seat-back: From the front of the seat-back, detach the clips to remove the armrest back panel (A).

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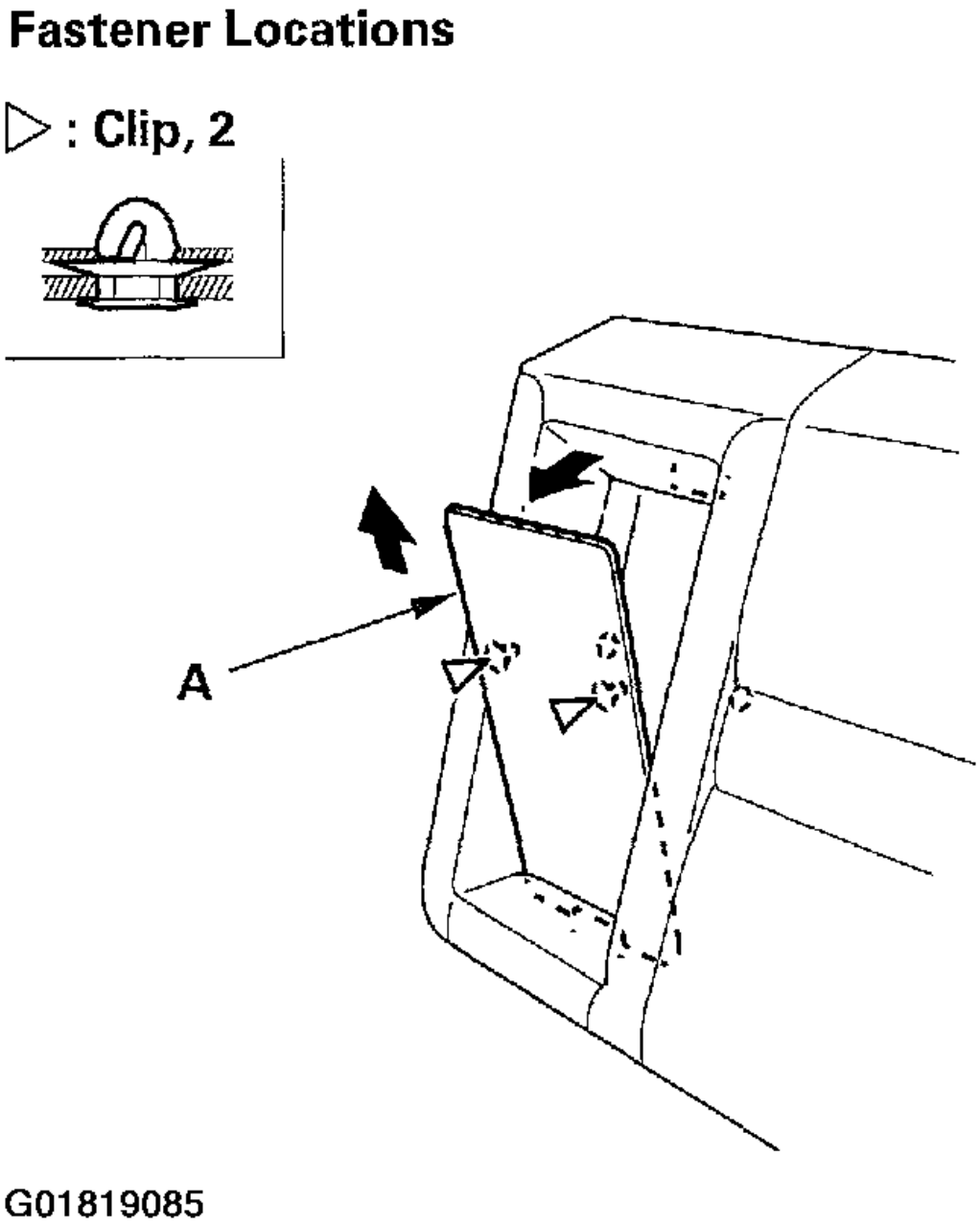


Fig. 40: Removing The Armrest Back Panel

5. Left seat-back: Release the hooks (A, B) from the seat-back frame (C).

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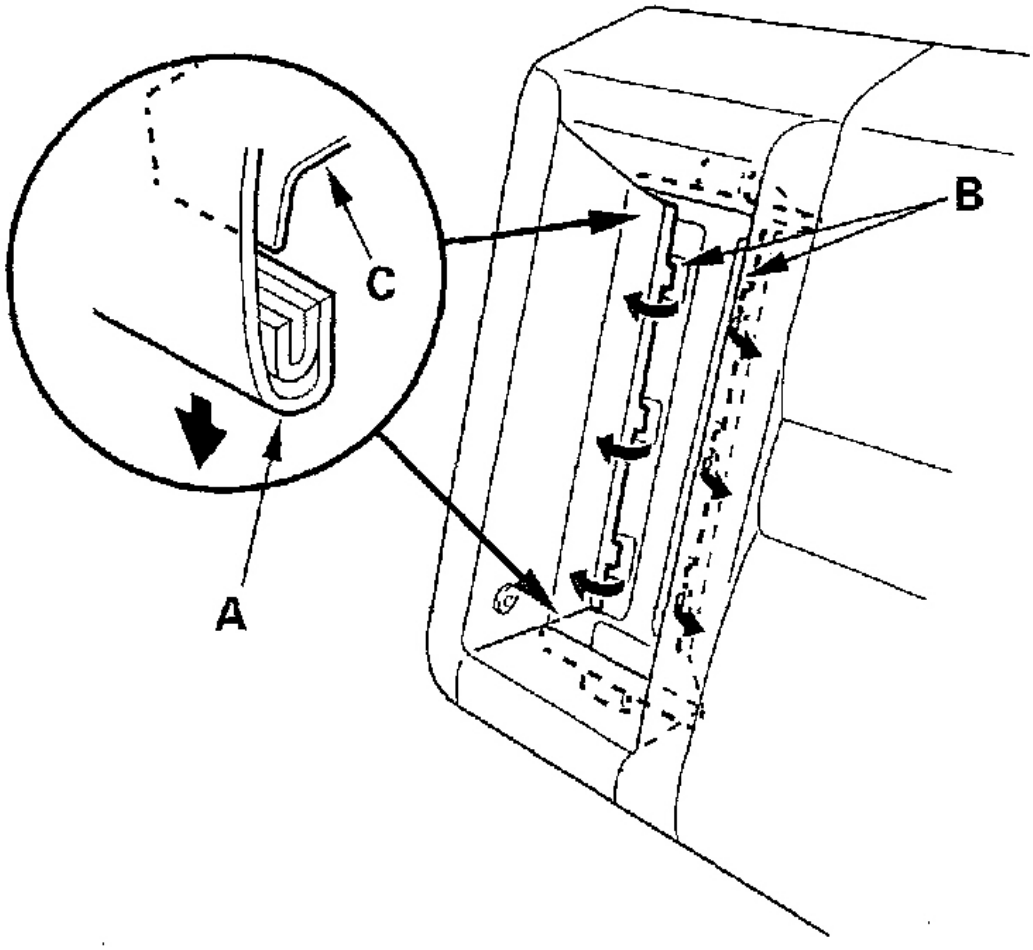


Fig. 41: Releasing The Hooks From The Seat-Back Frame

6. Release the hook (A) and fastener (B), and unzip the seat-back cover (C). The left seat-back is shown; the right seat-back is similar.

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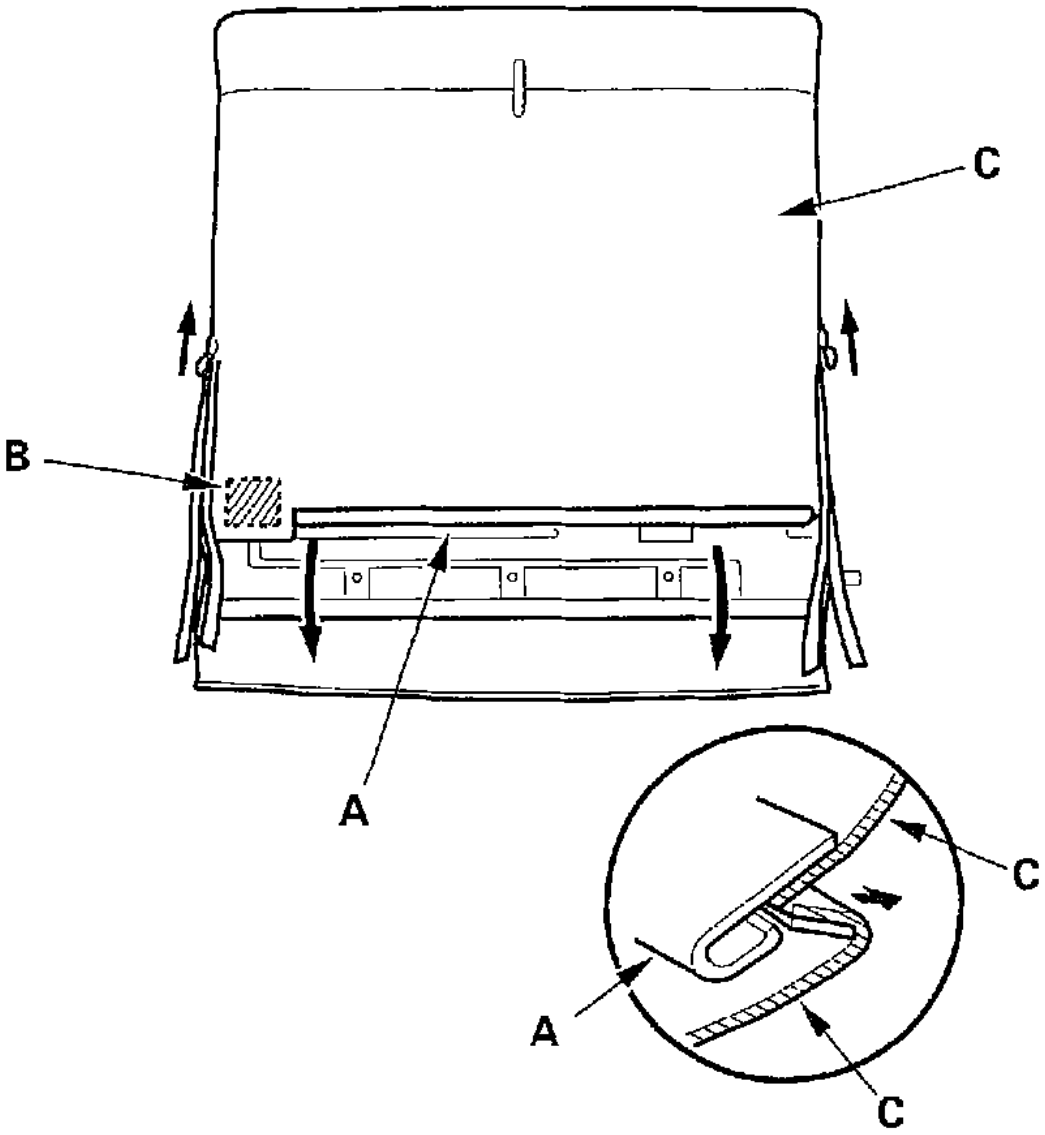


Fig. 42: Releasing The Hook & Fastener & Unzipping The Seat-Back Cover

7. Release all the clips (A), and fold back the seat-back cover (B).

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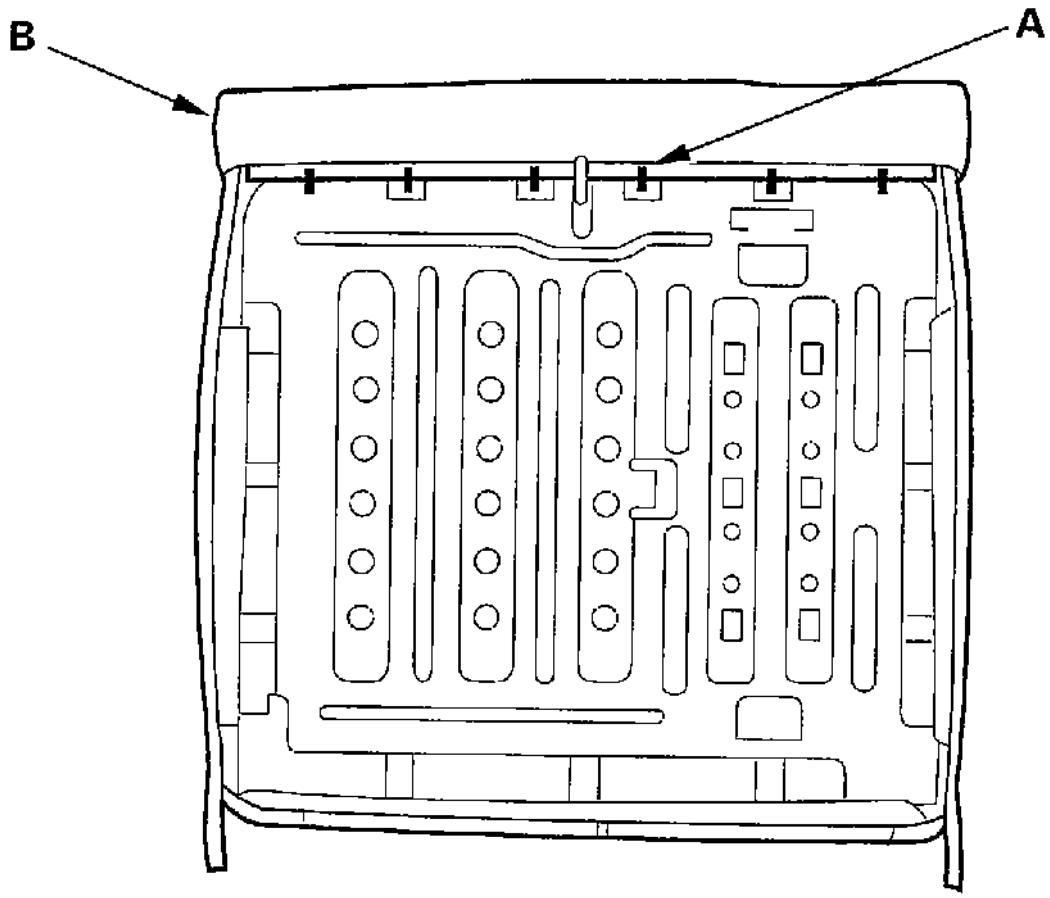


Fig. 43: Releasing All The Clips & Folding Back The Left Seat-Back Cover

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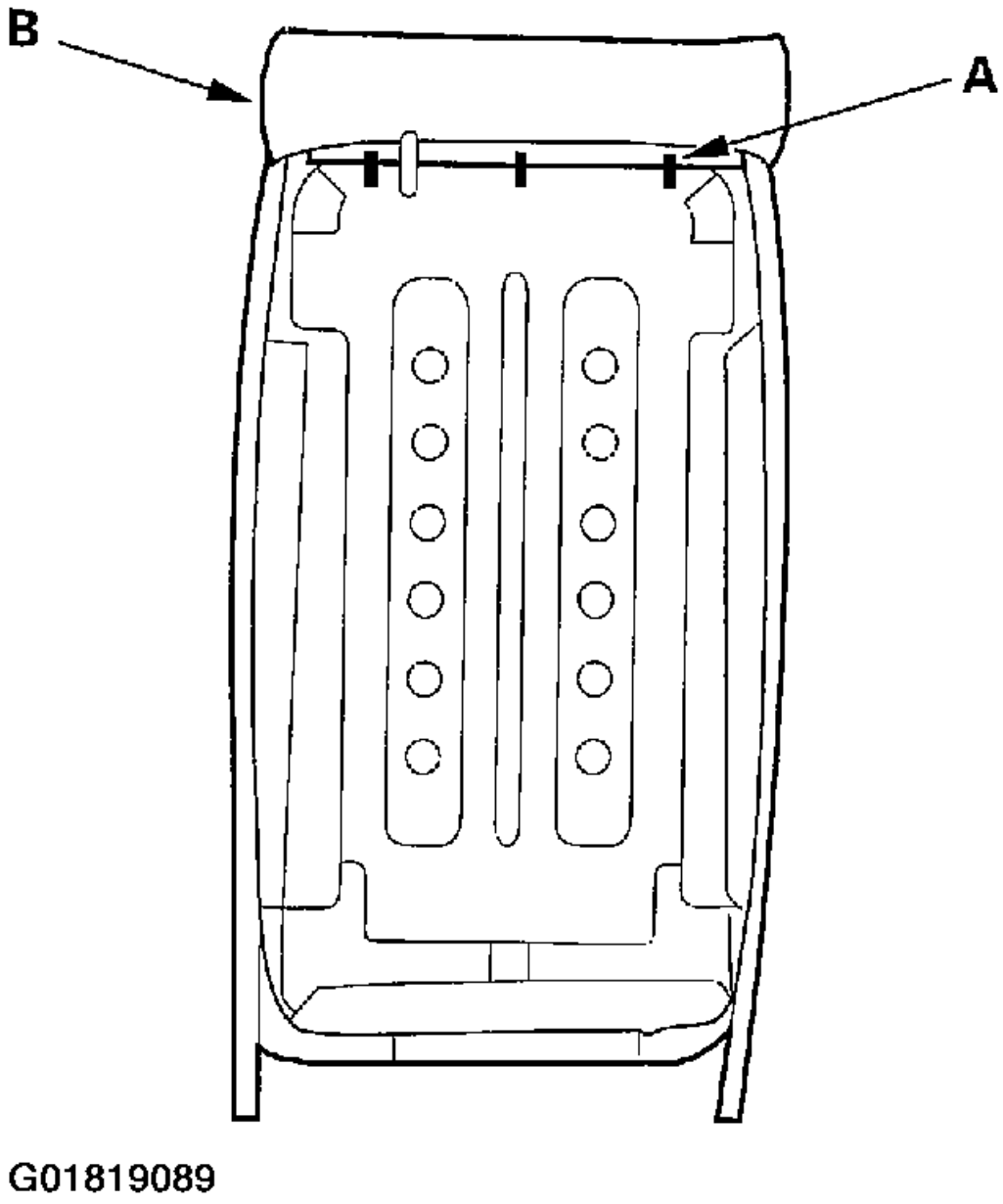


Fig. 44: Releasing All The Clips & Folding Back The Right Seat-Back Cover

8. Pull out the seat-back pad (A) from the frame (B), then pull out the headrest guides (C) while pinching the end of the guides, and remove them.

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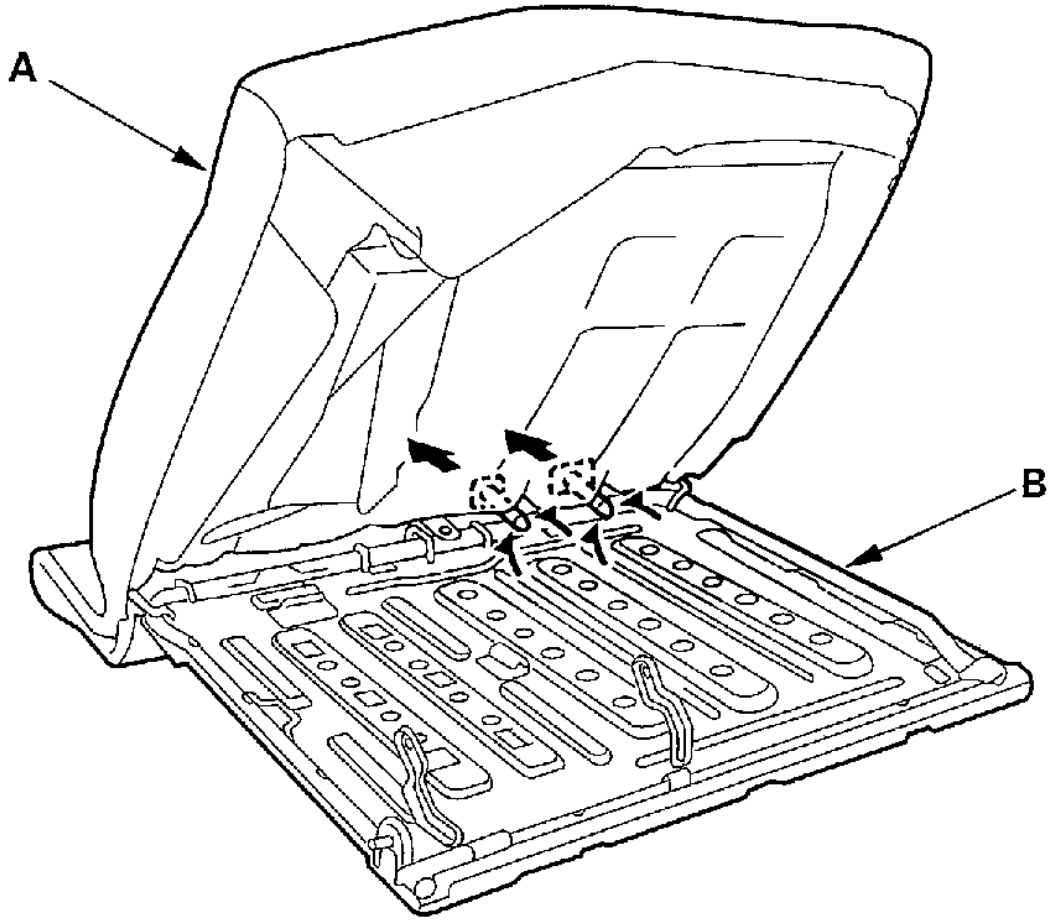


Fig. 45: Removing The Seat-Back Pad & The Headrest Guides

9. Remove the seat-back cover and pad from the seat-back frame.
10. Pull back the edge of the seat-back cover (A) all the way around, and release the clips (B), then remove the seat-back cover.

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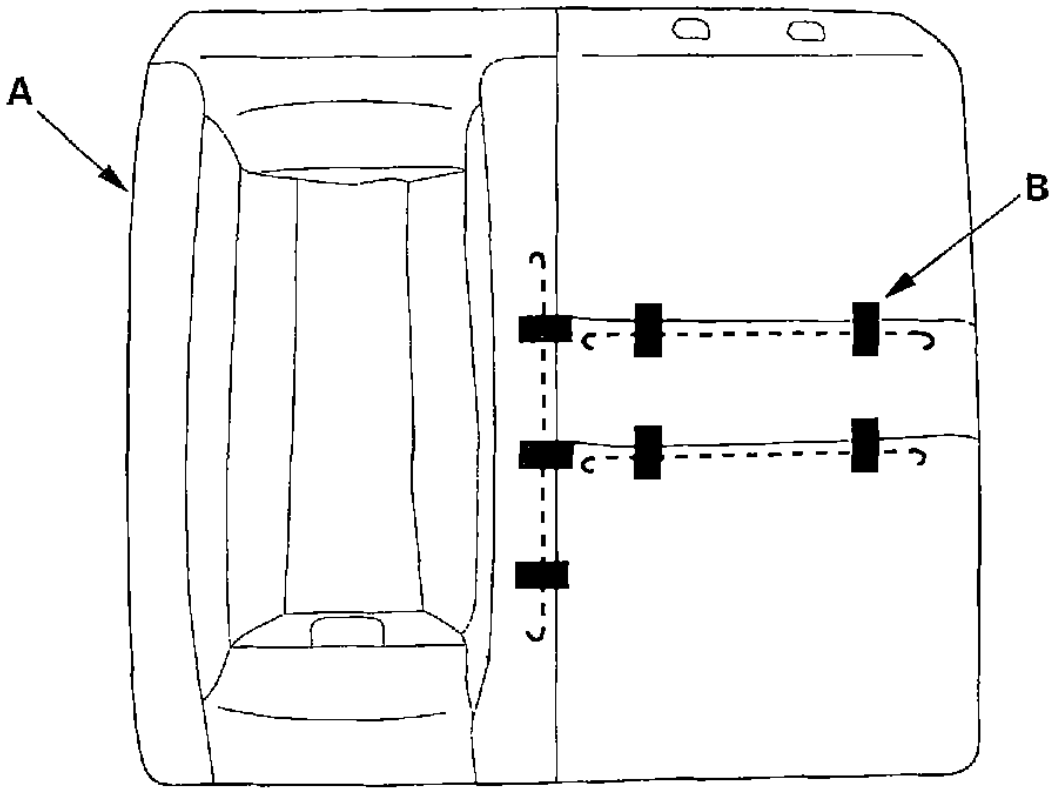


Fig. 46: Removing The Left Seat-Back Cover

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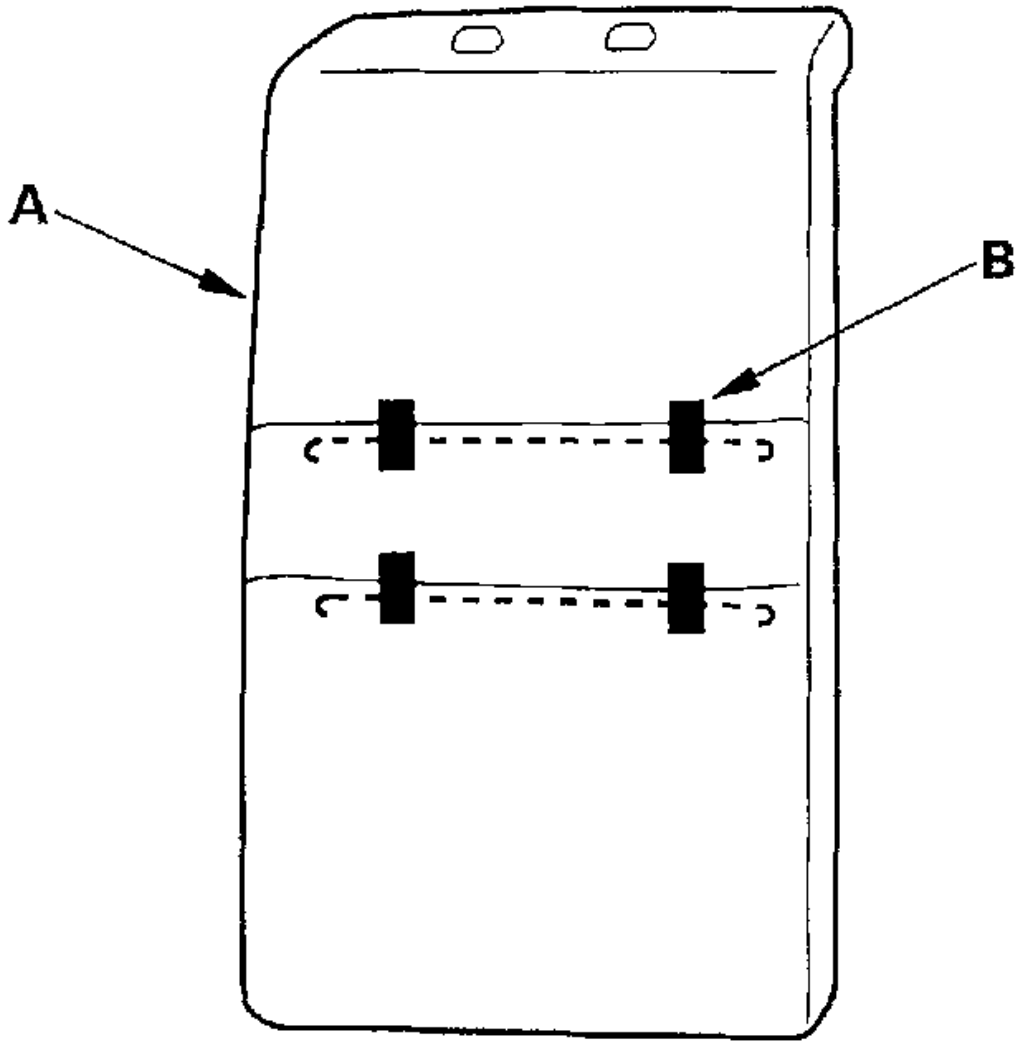


Fig. 47: Removing The Right Seat-Back Cover

11. Install the cover the in the reverse order of removal, and note these items:
    - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
    - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

REAR SEAT SIDE BOLSTER COVER REPLACEMENT

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1. Remove the seat side bolster (see **REAR SEAT REMOVAL/INSTALLATION**).
2. Release all the hook strips (A), and fold back the seat side bolster cover (B), and release the cover from the hook (C), and release the staples (D) fastening the cover, to remove it.

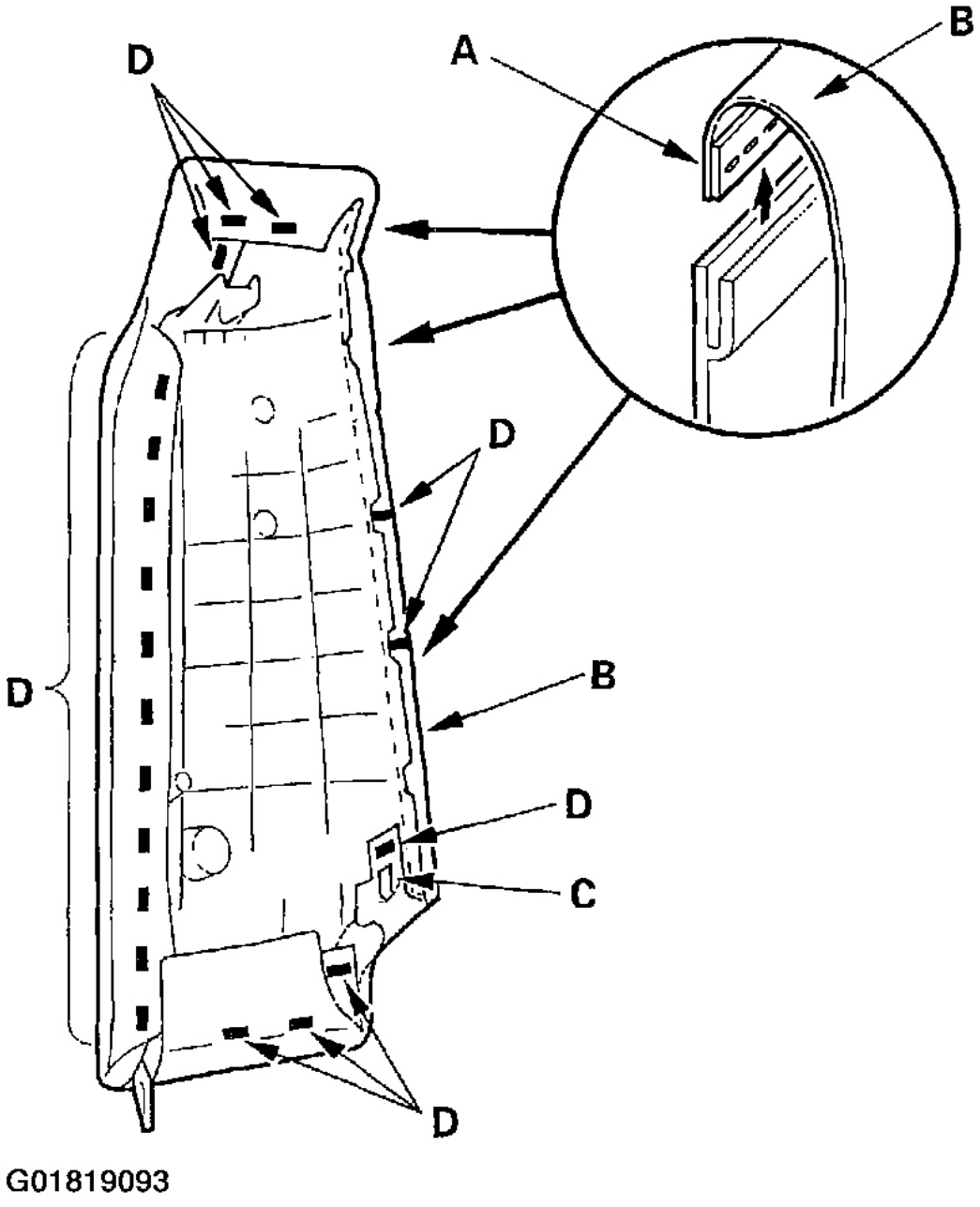


Fig. 48: Releasing All The Hook Strips & Folding Back The Seat Side Bolster Cover

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3. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the hook strips and staples.
   - Fasten the cover with new staples (MAX 1005F) securely.

REAR SEAT CUSHION COVER REPLACEMENT

1. Remove the seat-backs and seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
2. Release all the clips (A) from under the seat cushion, and fold back the seat cushion cover.

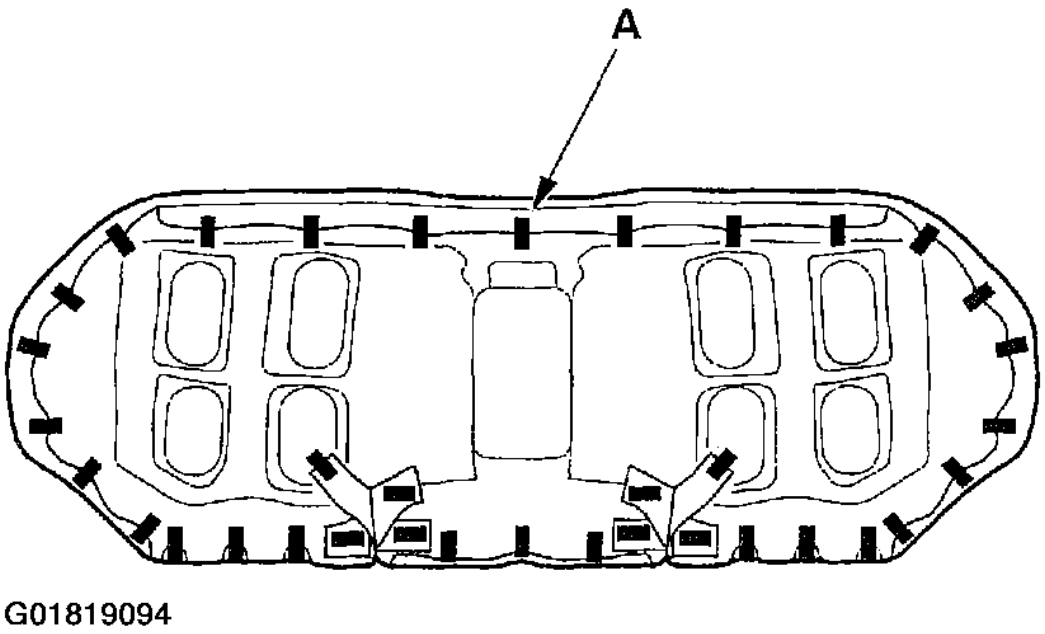


Fig. 49: Releasing All The Clips From Under The Seat Cushion & Folding Back The Seat Cushion Cover

3. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.

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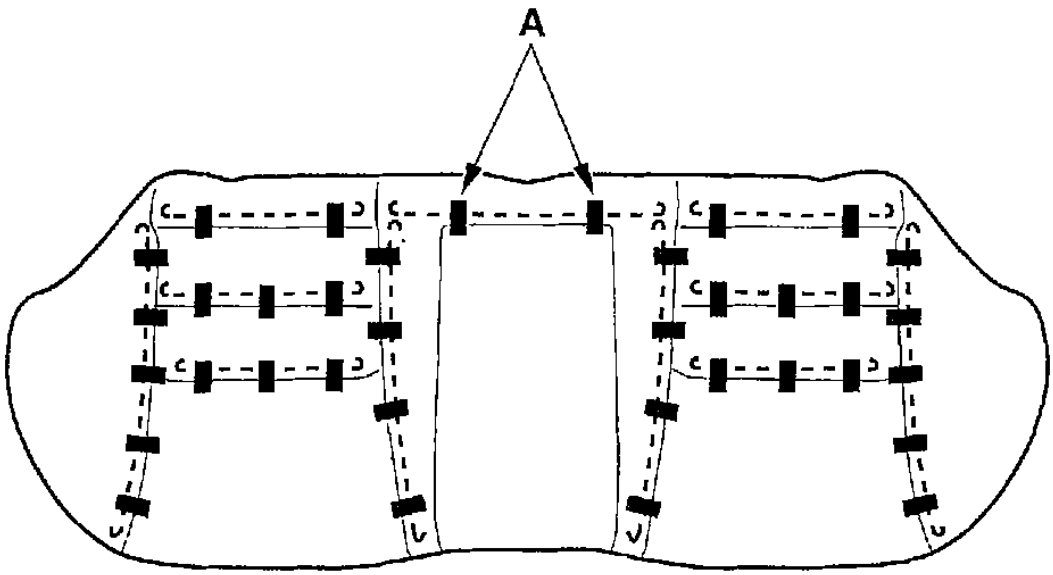


Fig. 50: Removing The Seat Cushion Cover

4. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
   - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.
5. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
   - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

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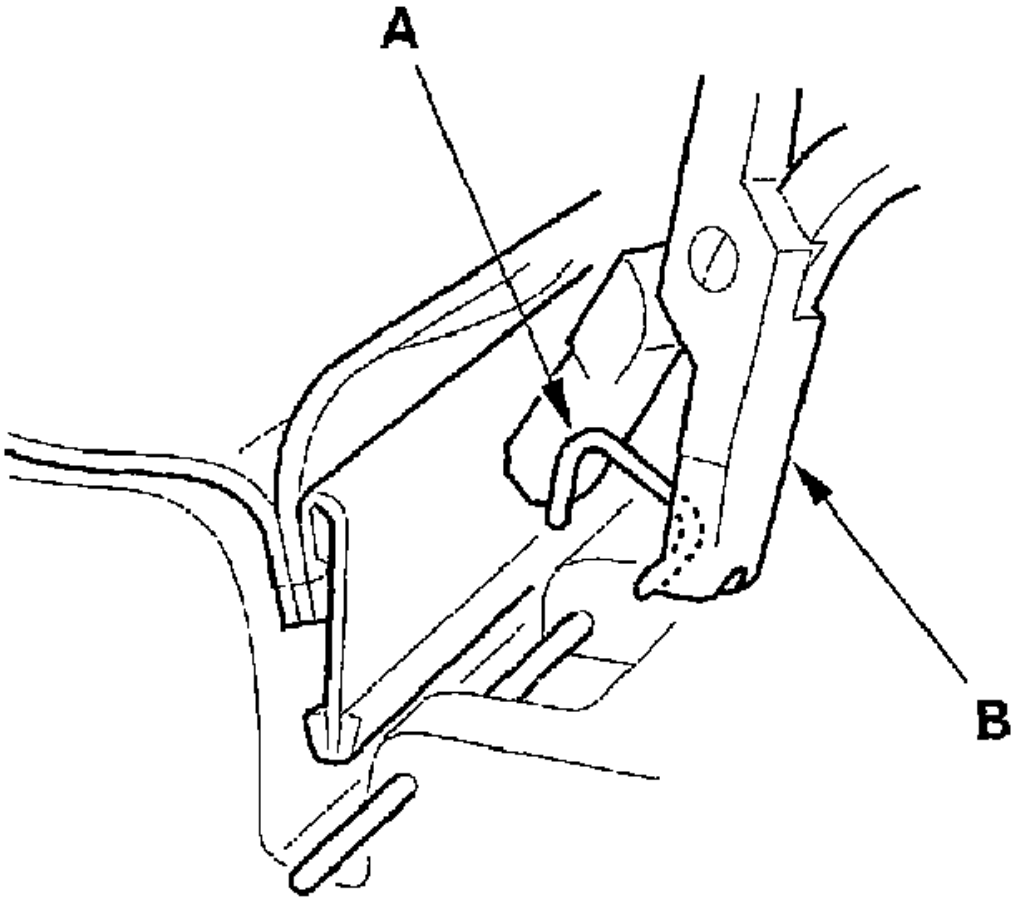


Fig. 51: Installing Clips

POWER SEATS

COMPONENT LOCATION INDEX

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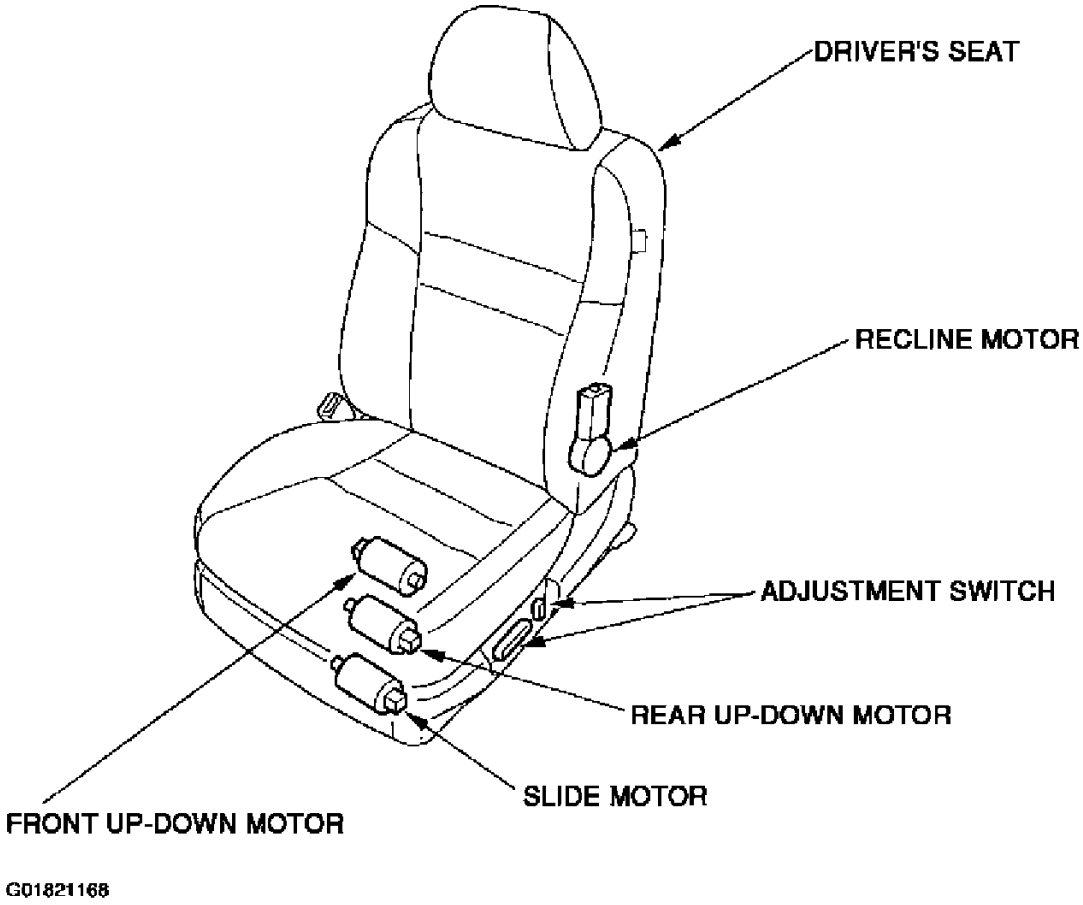


Fig. 52: Locating Power Seat Components

CIRCUIT DIAGRAM

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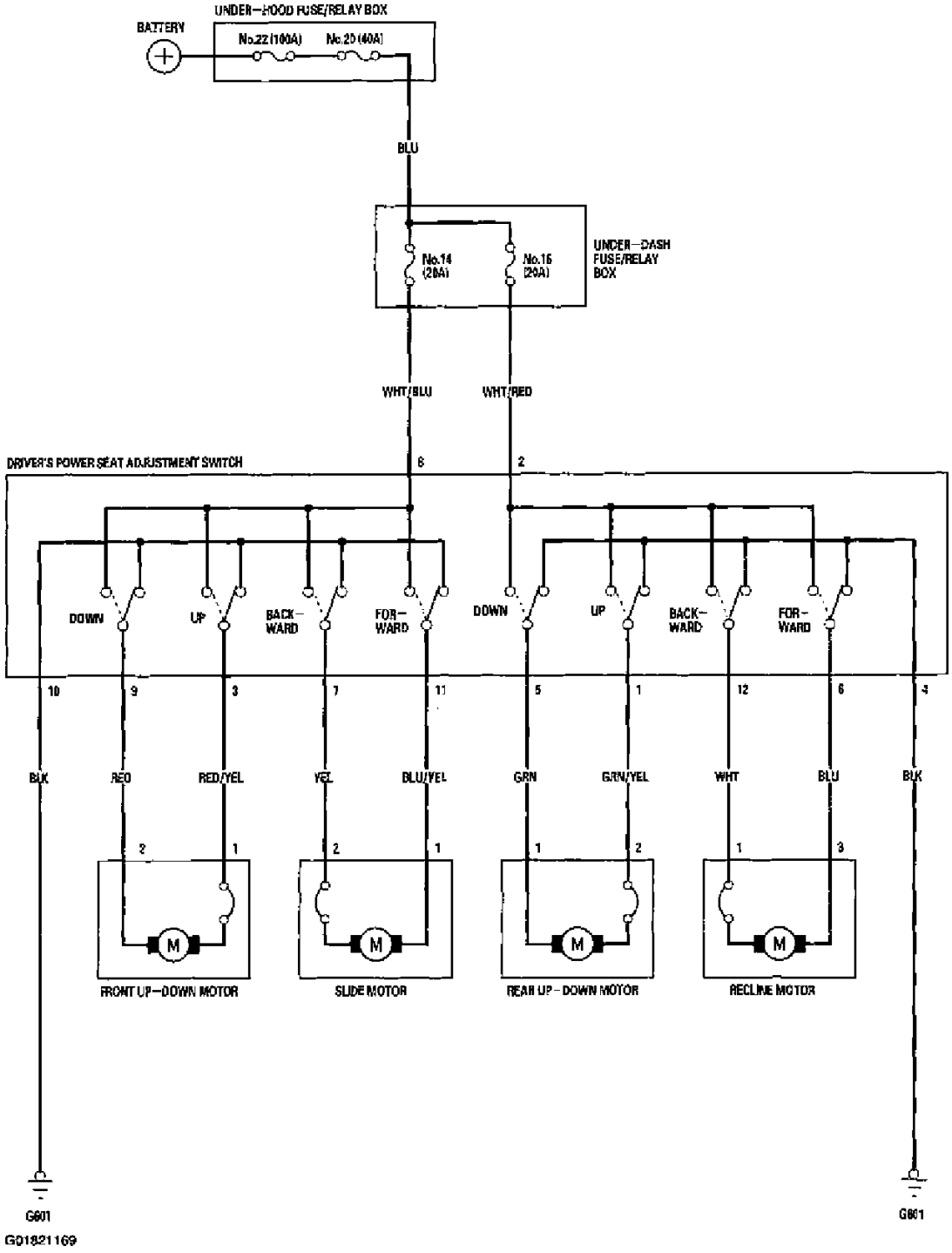


Fig. 53: Power Seat System Wiring Diagram

SWITCH TEST/REPLACEMENT

1. Remove the power seat adjustment switch knobs (A) and recline cover from the driver's power seat (see

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FRONT SEAT REMOVAL/INSTALLATION), then remove the two screws and the power seat switch.

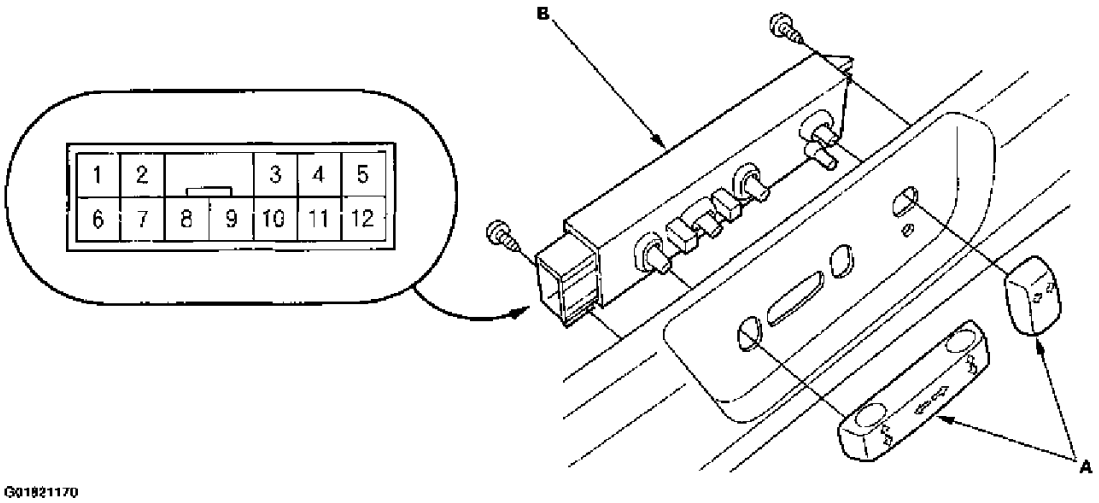


Fig. 54: Removing Power Seat Switch

2. Disconnect the 12P connector from the power seat adjustment switch (B).
3. Reinstall the adjustment switch knobs to the switch.
4. Check for continuity between the terminals in each switch position according to the table. See **Fig. 55** .

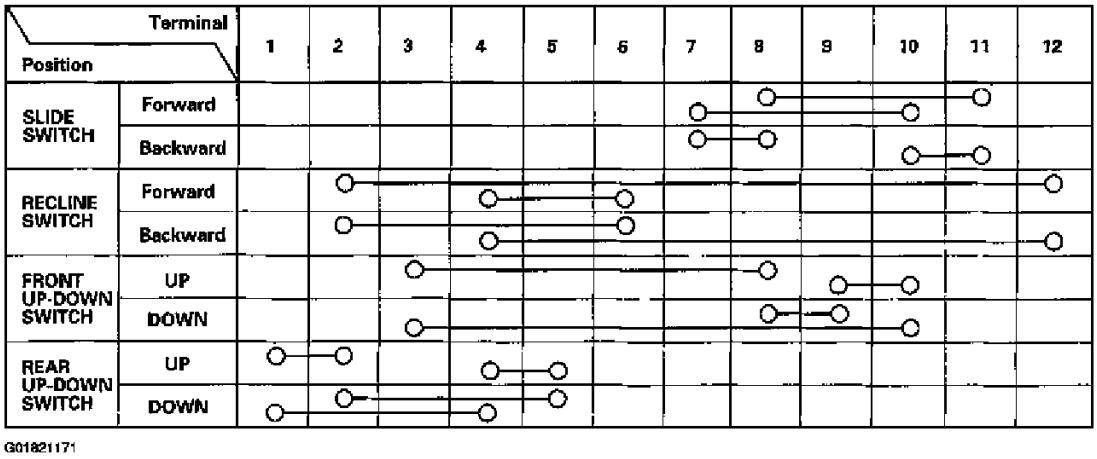


Fig. 55: Power Seat Switch Test Table

5. If the continuity is not as specified, replace the switch.

MOTOR TEST

1. Remove the driver's seat (see **FRONT SEAT REMOVAL/INSTALLATION**).

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2. Disconnect the 12P connector (A) from the power seat adjustment switch (B).

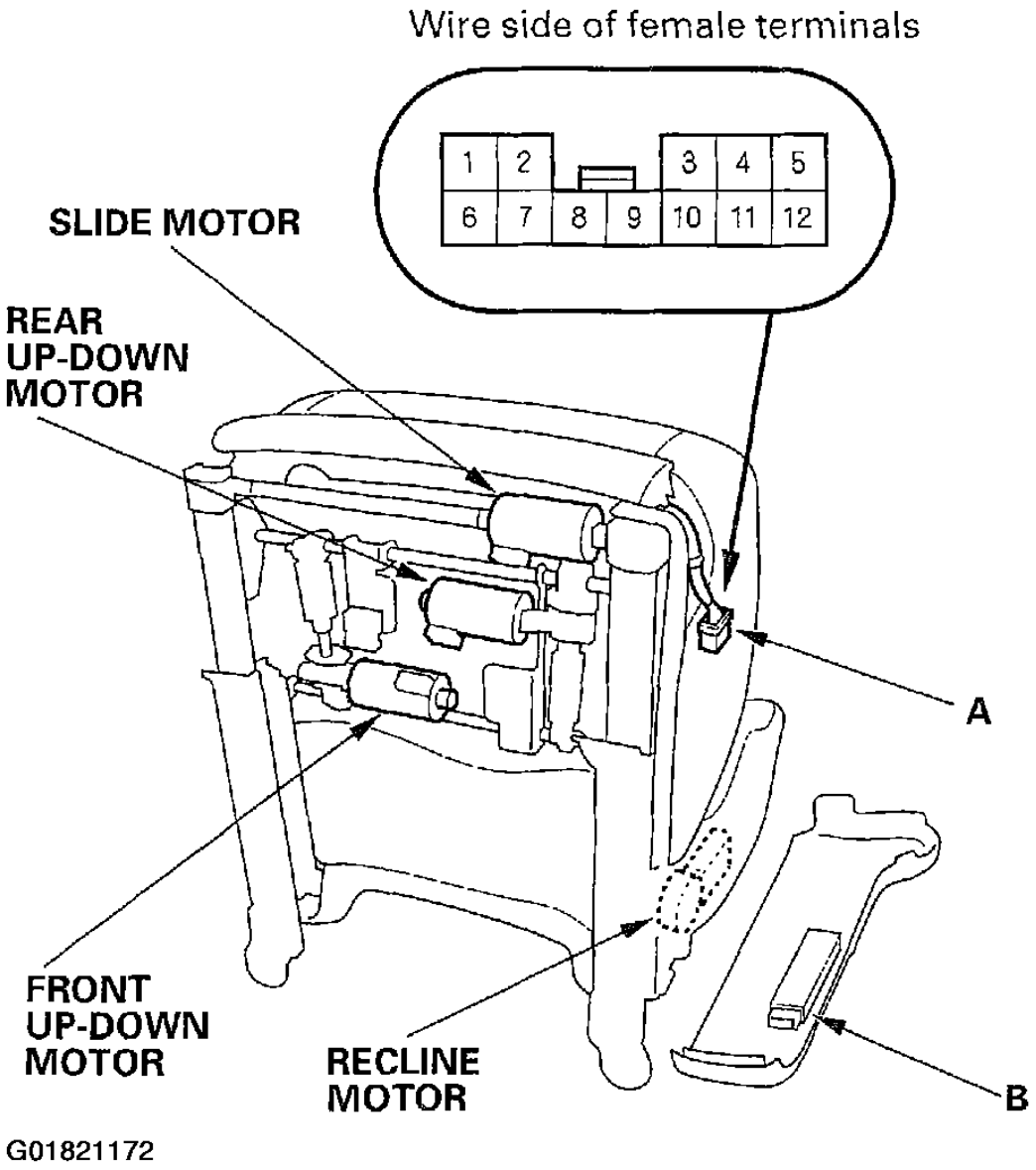


Fig. 56: Disconnecting The 12P Connector From The Power Seat Adjustment Switch

3. Test each motor by applying battery voltage and body ground to the terminals.

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Terminal / Position	7	11
Forward	⊖	⊕
Backward	⊕	⊖

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Fig. 57: Slide Motor Test

Terminal / Position	6	12
Forward	⊖	⊕
Backward	⊕	⊖

G01821174

Fig. 58: Recline Motor Test

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Terminal / Position	3	9
UP	⊕	⊖
DOWN	⊖	⊕

G01821175

Fig. 59: Front Up-Down Motor Test

Terminal / Position	1	5
UP	⊕	⊖
DOWN	⊖	⊕

G01821176

Fig. 60: Rear Up-Down Motor Test

4. If the motor does not run or fails to run smoothly, check for an open in the driver's seat wire harness between the 12P connector and each motor connector. If the harness is OK, replace the motor (see **FRONT SEAT RECLINE MOTOR REPLACEMENT**).

SEAT HEATERS

COMPONENT LOCATION INDEX

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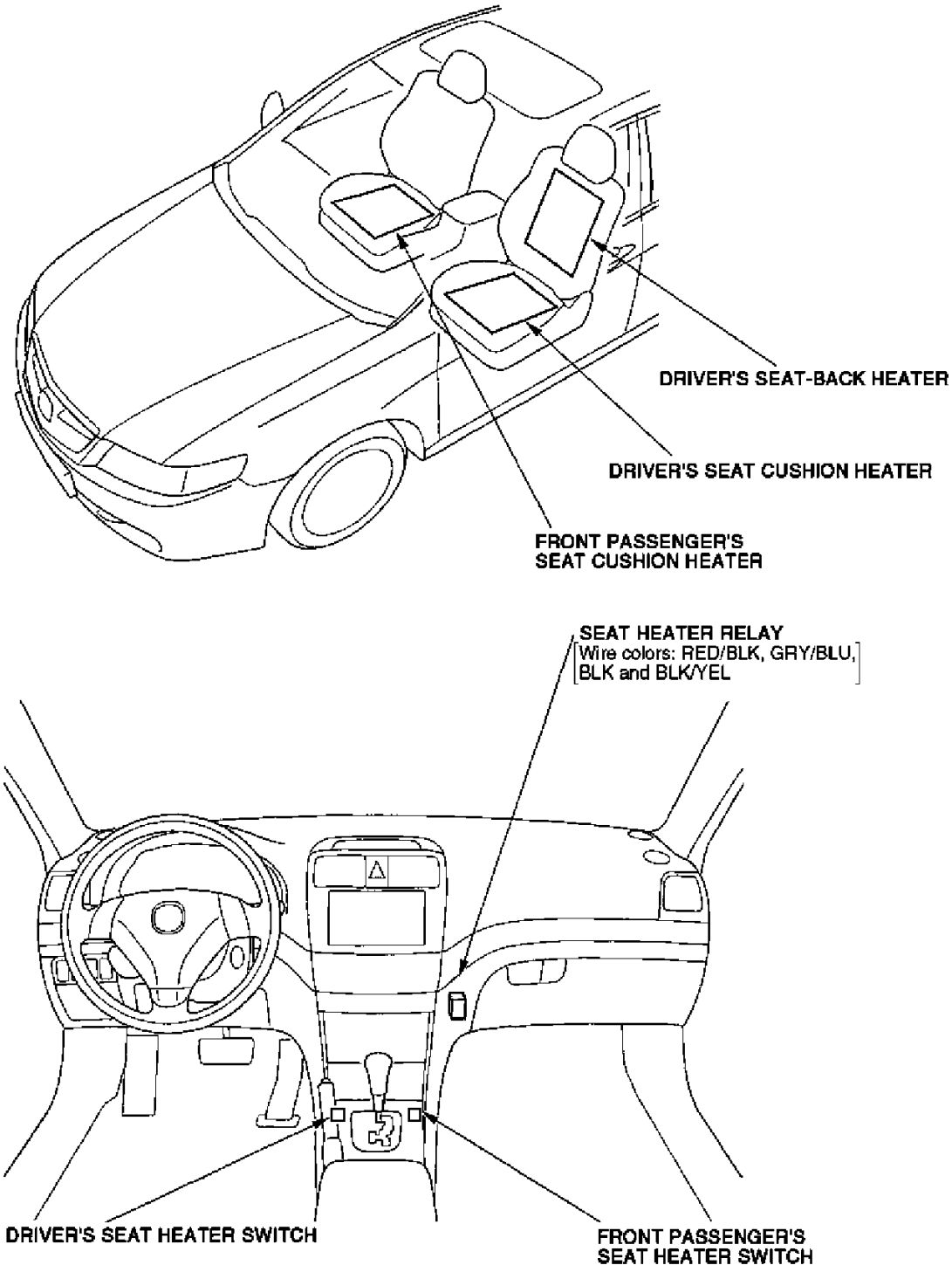


Fig. 61: Locating Seat Heater Components

CIRCUIT DIAGRAM

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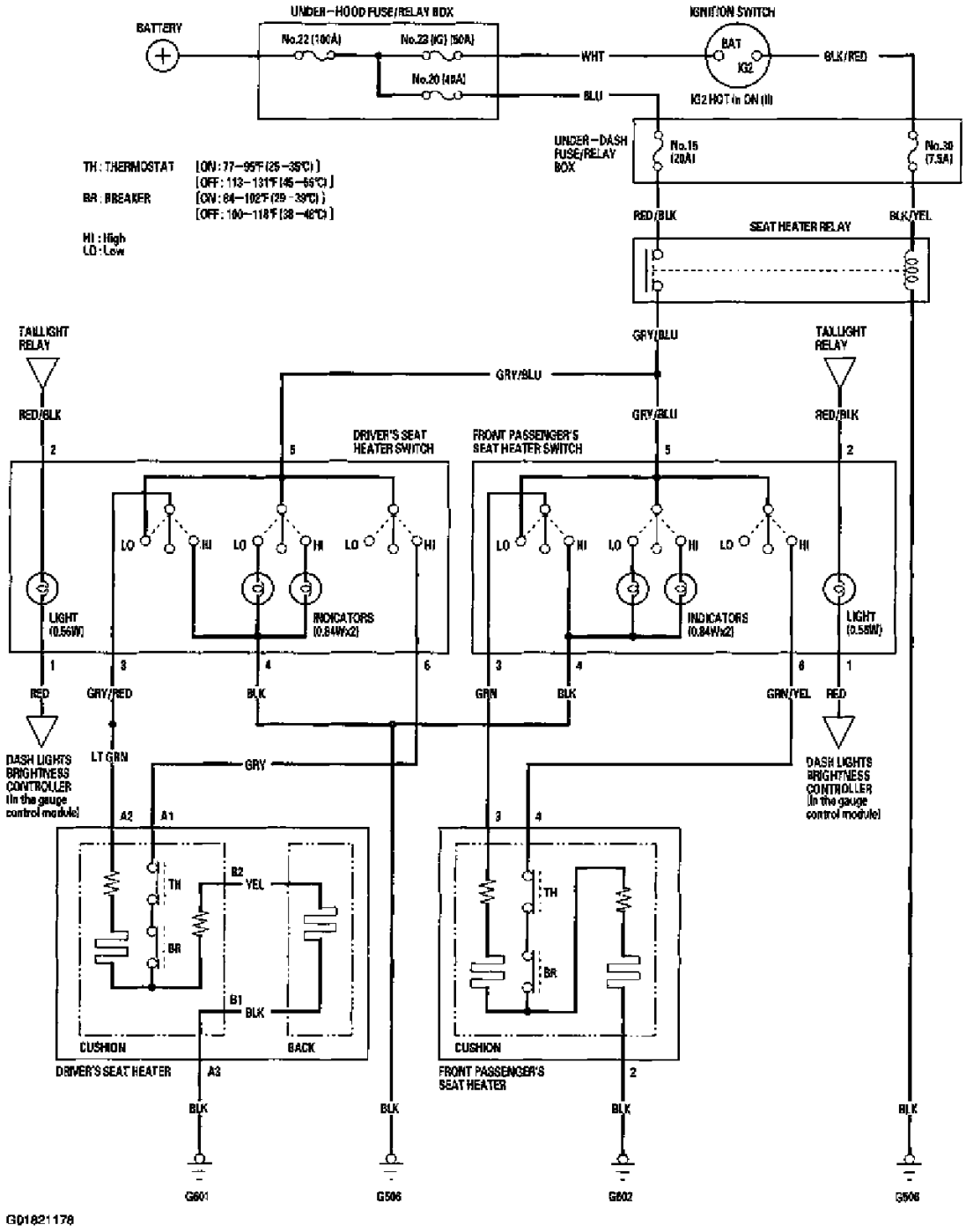


Fig. 62: Seat Heater System Wiring Diagram

SEAT HEATER TEST

Driver's Seat

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1. Remove the driver's seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Disconnect the 4P connector (A) and 2P connector (B) from the seat heater.

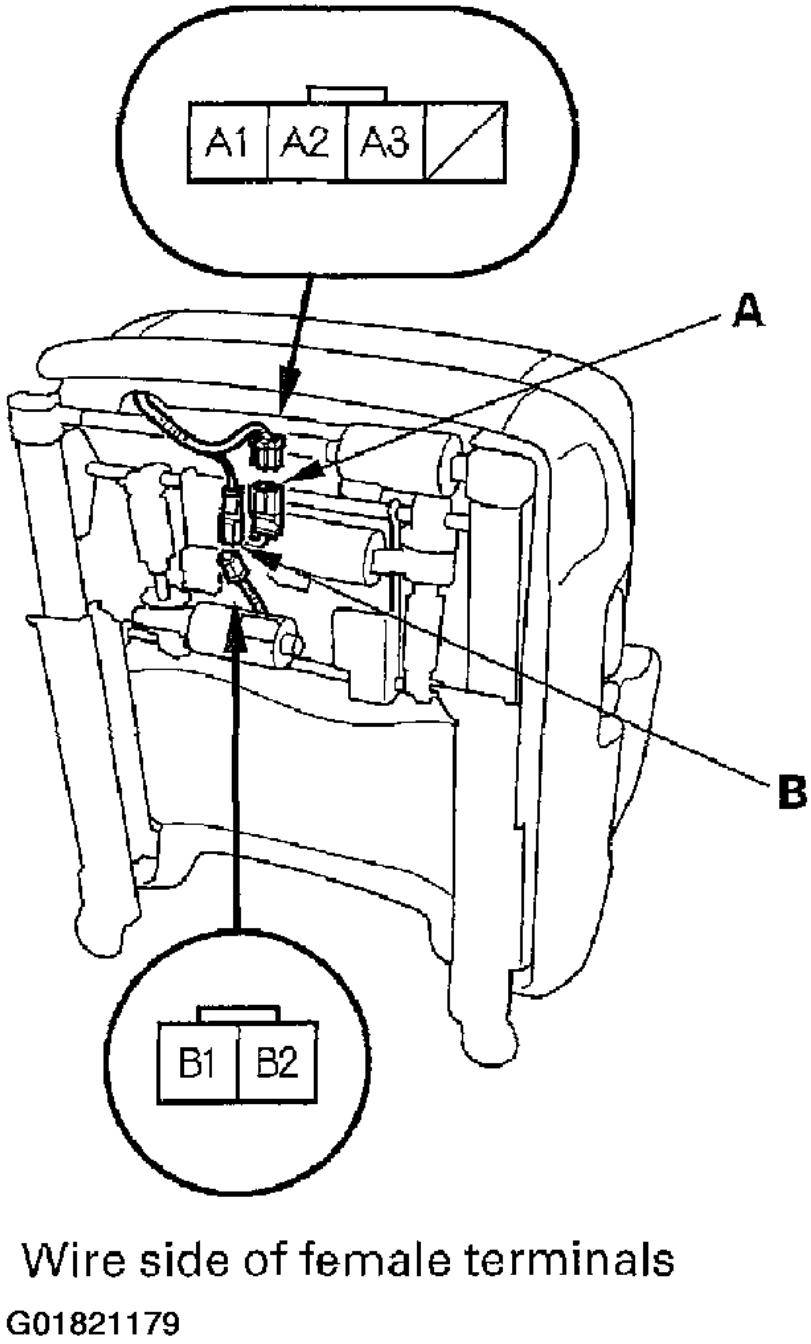


Fig. 63: Disconnecting The 4P Connector & 2P Connector From The Seat Heater

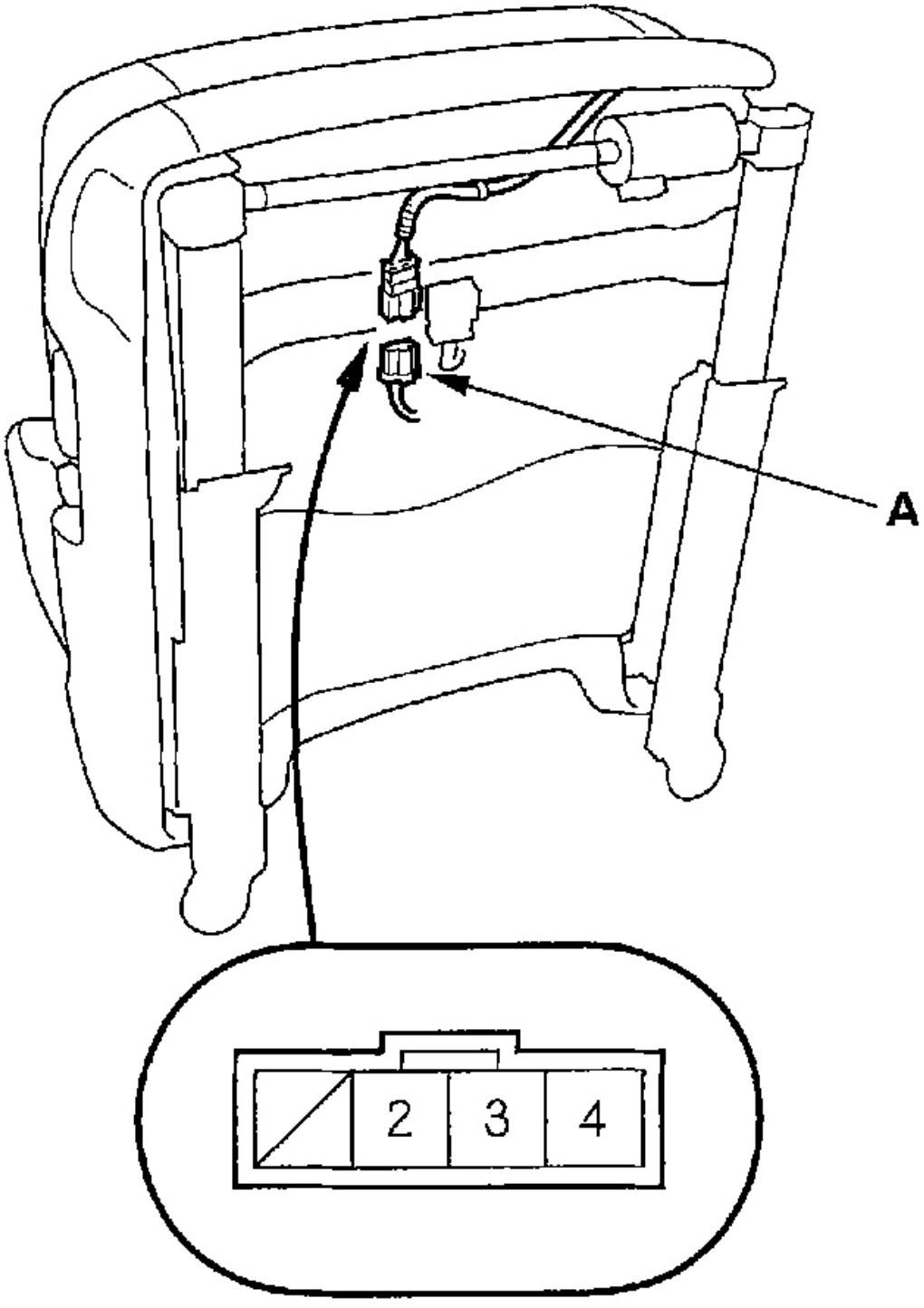
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3. Check for continuity between the B1 and B2 terminals of the seat-back heater 2P connector. There should be continuity.
4. Check for continuity between the A1 and A2 terminals, and the A1 and B2 terminals. There should be continuity.
5. If the continuity check is not as specified, replace the seat heater.

Front Passenger's Seat

1. Remove the passenger's seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Disconnect the 4P connector (A) from the seat heater.

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Terminal side of male terminals

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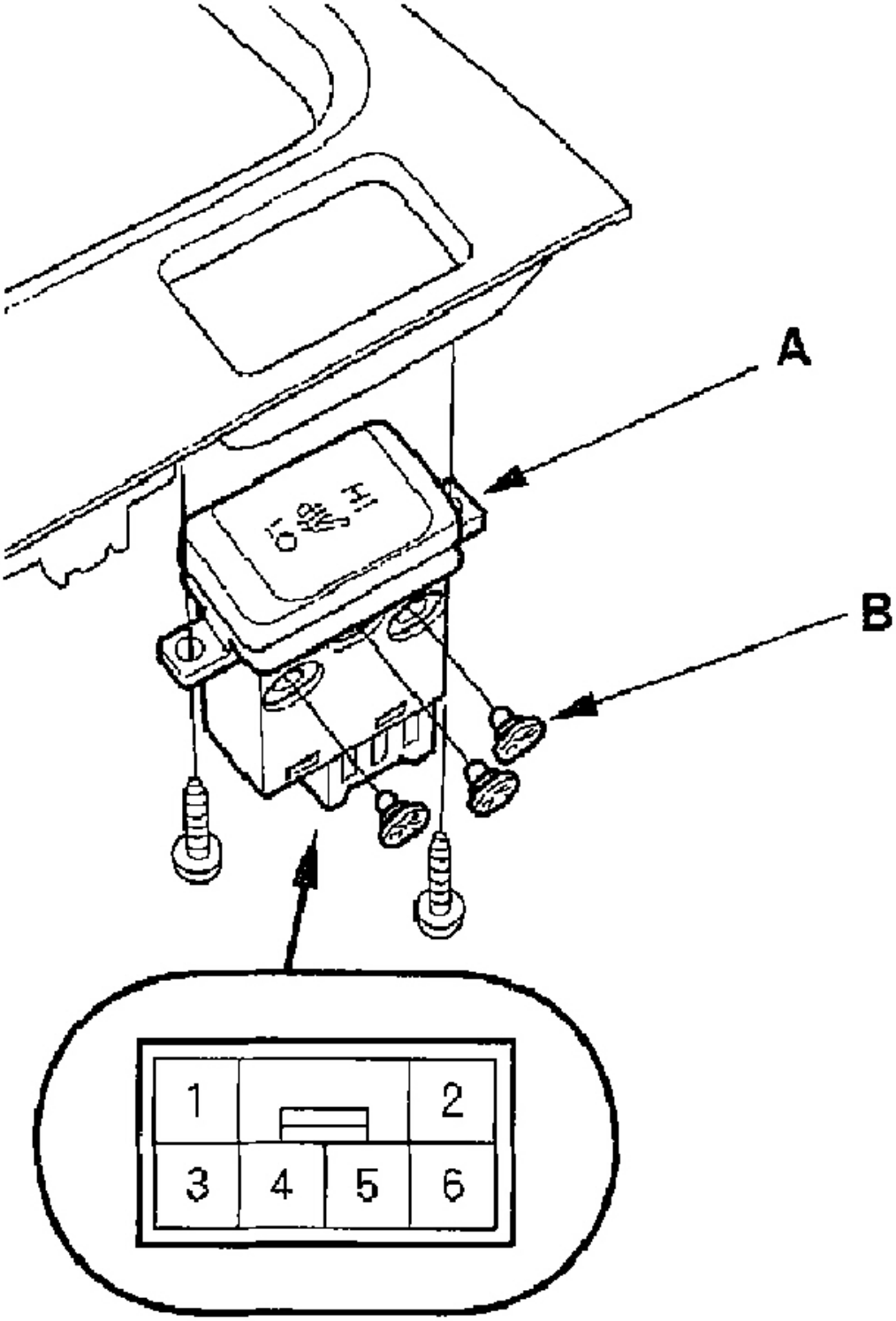
Fig. 64: Disconnecting The 4P Connector From The Seat Heater

3. Check for continuity between the No. 2 and No. 3 terminals, and No. 3 and No. 4 terminals of the 4P connector. There should be continuity.
4. If the continuity is not as specified, replace the seat heater.

SWITCH TEST

1. Remove the center console front panel (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Disconnect the 6P connector from the seat heater switch (A), then remove the switch.

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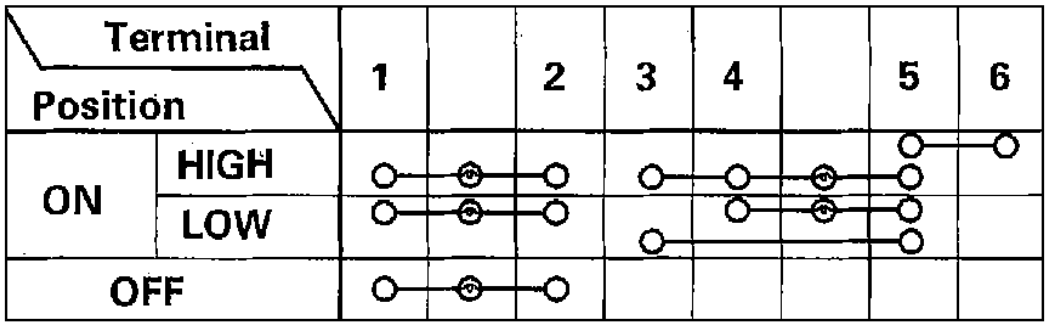


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Fig. 65: Removing The Seat Heater Switch

3. Check for continuity between the terminals in each switch position according to the table. See **Fig. 66** .



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Fig. 66: Seat Heater Switch Test Table

4. If the continuity check is not as specified, replace the illumination bulbs (B) or the switch.

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2004 ACCESSORIES & EQUIPMENT

Power Mirrors & Automatic Dimming Inside Mirror - TSX

MIRRORS

COMPONENT LOCATION INDEX

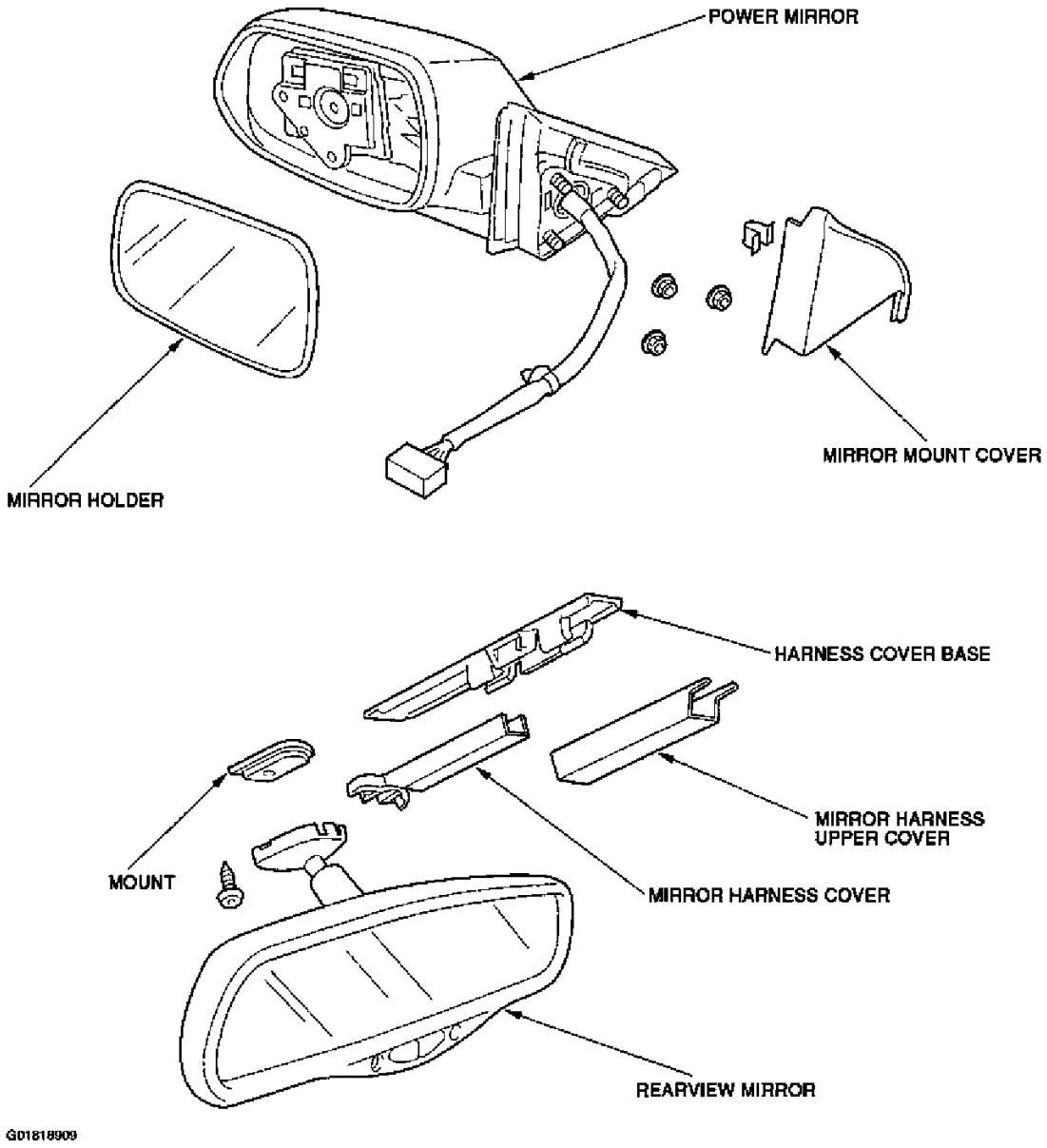


Fig. 1: Locating Mirror Components

POWER MIRROR REPLACEMENT

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1. Lower the door glass fully.
2. Carefully pry out the mirror mount cover (A) by hand in the sequence shown.

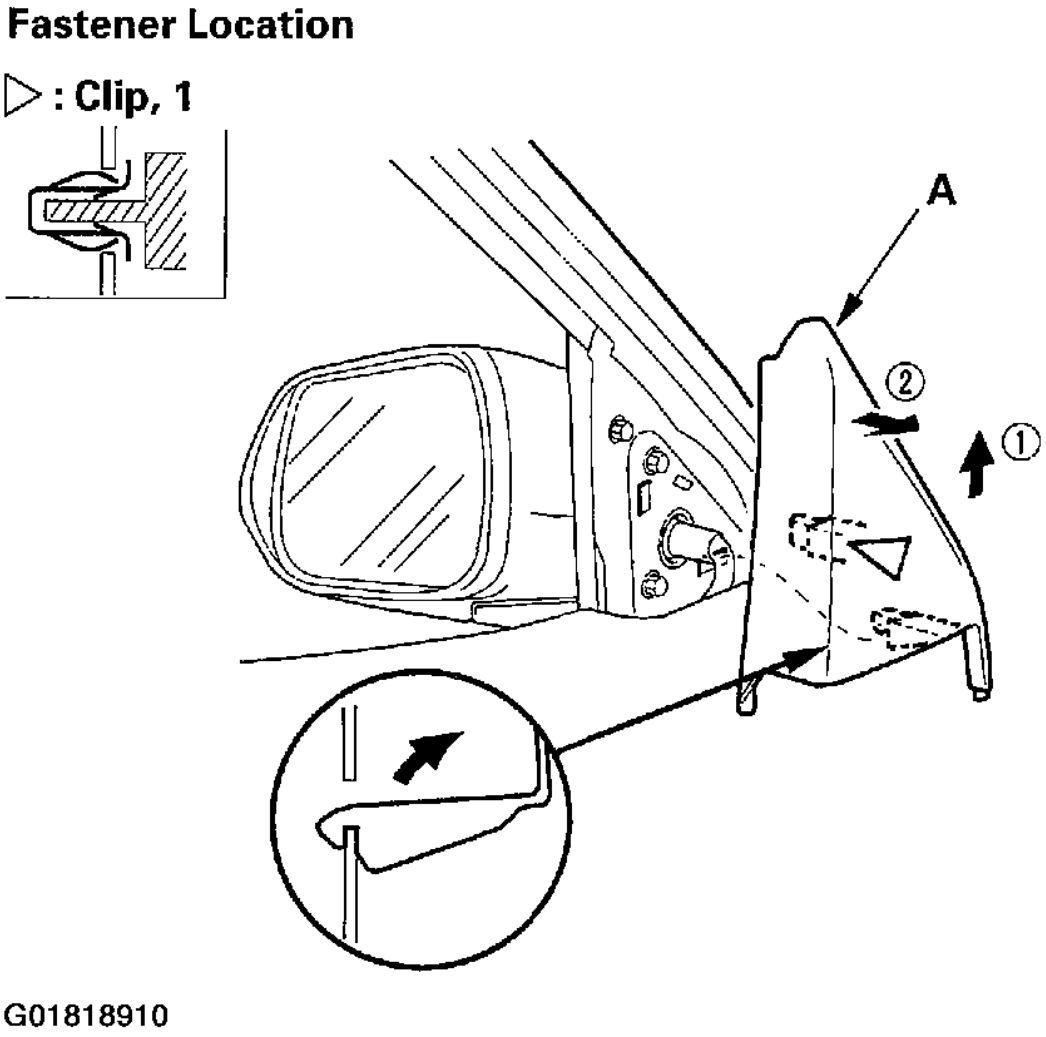


Fig. 2: Prying Out The Mirror Mount Cover

3. Remove the door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
4. Remove the plastic cover as necessary, then detach the harness clip (A), and disconnect the connector (B). While holding the mirror (C), remove the nuts.

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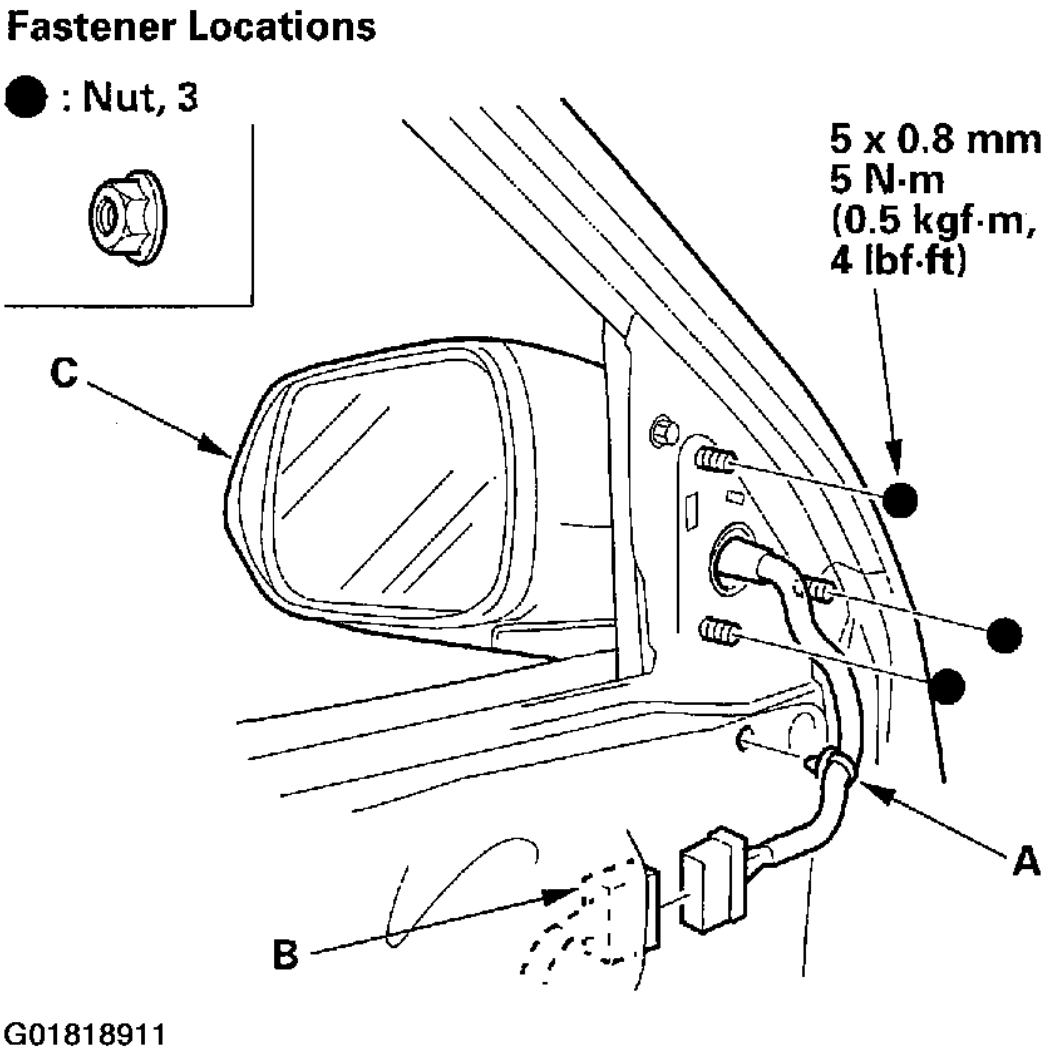


Fig. 3: Disconnecting The Connector

5. Remove the mirror (A). Take care not to scratch the door.

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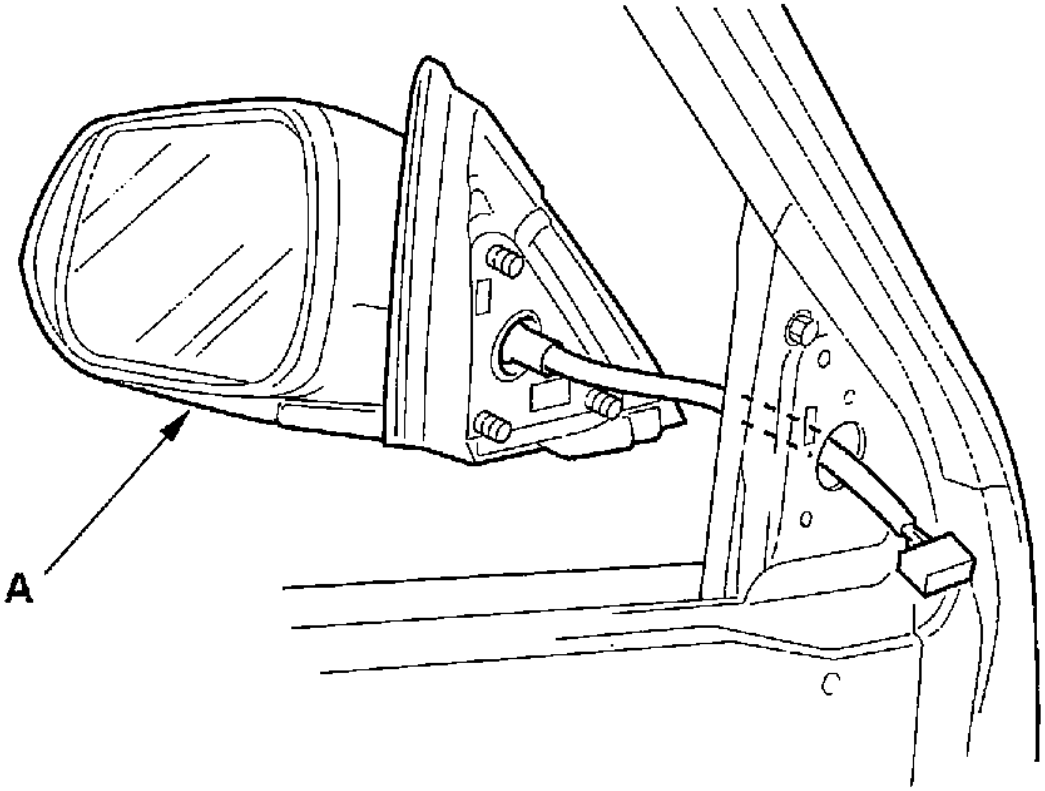


Fig. 4: Removing The Mirror

6. Install the mirror in the reverse order of removal, and make sure the connector is plugged in properly.

MIRROR HOLDER REPLACEMENT

1. Carefully pull out the bottom edge of the mirror holder (A) by hand. Take care not to scratch the mirror.

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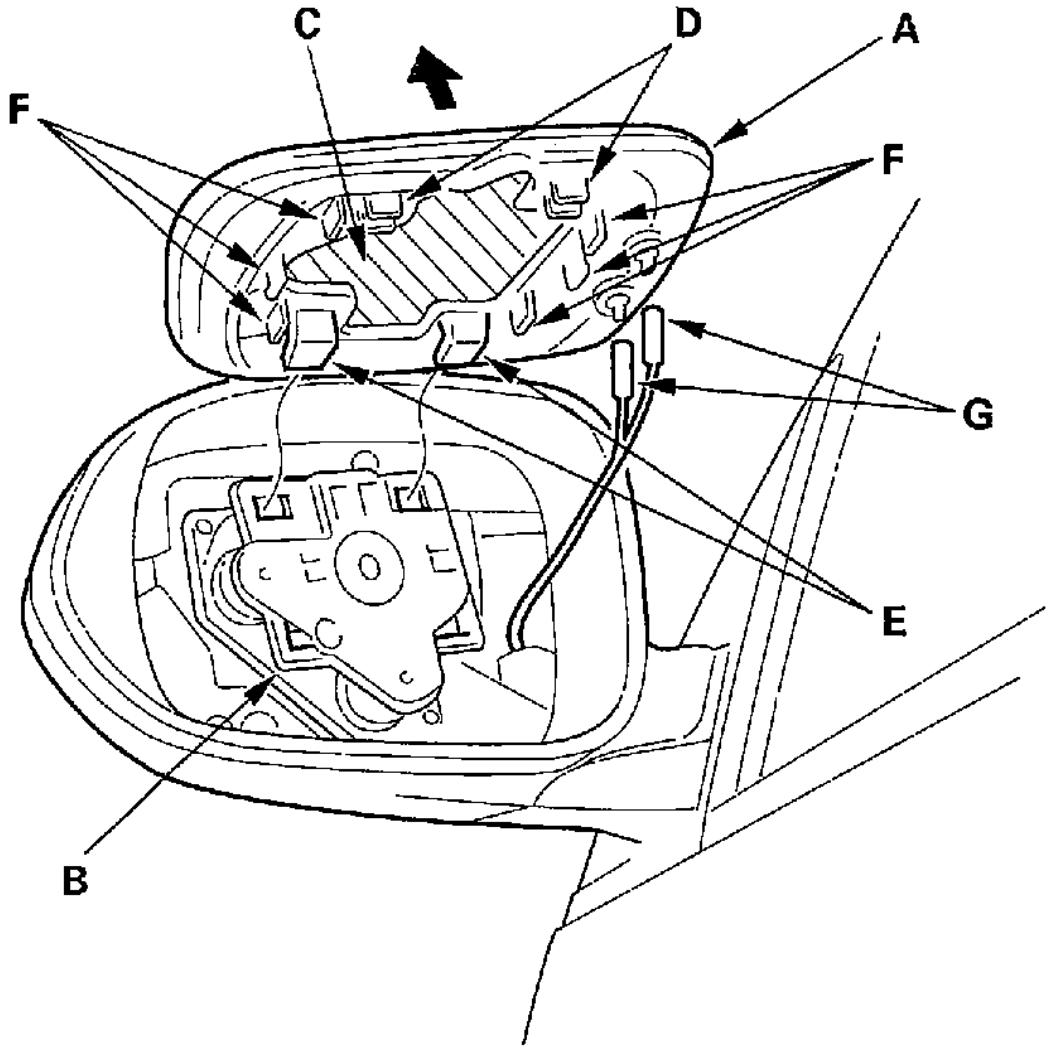


Fig. 5: Pulling Out The Mirror Holder

2. Separate the mirror holder from the actuator (B) by slowly pulling them apart while removing the adhesive (C), detaching the clips (D), and releasing the hooks (E, F). If equipped, disconnect the mirror defogger connectors (G).
3. If equipped, reconnect the mirror defogger connectors.
4. Reattach the hooks of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the clip portions of the mirror holder until the mirror holder locks into place.
5. Check the operation of the actuator.

REARVIEW MIRROR REPLACEMENT

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1. Disconnect the connector (A).

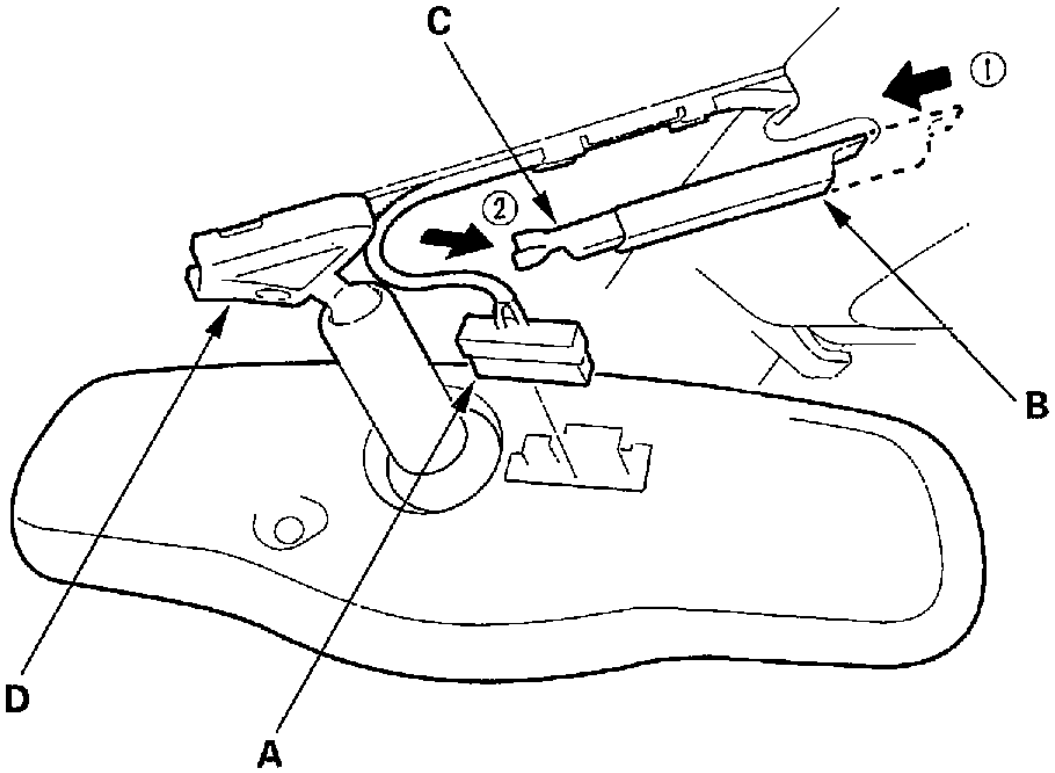


Fig. 6: Disconnecting The Connector

2. Slide the mirror harness upper cover (B) forward, then remove the mirror harness cover (C) from the mirror base (D).
3. Using a Torx T20 bit, loosen the bolt, then slide the rearview mirror (A) rearward and off the mount (B).

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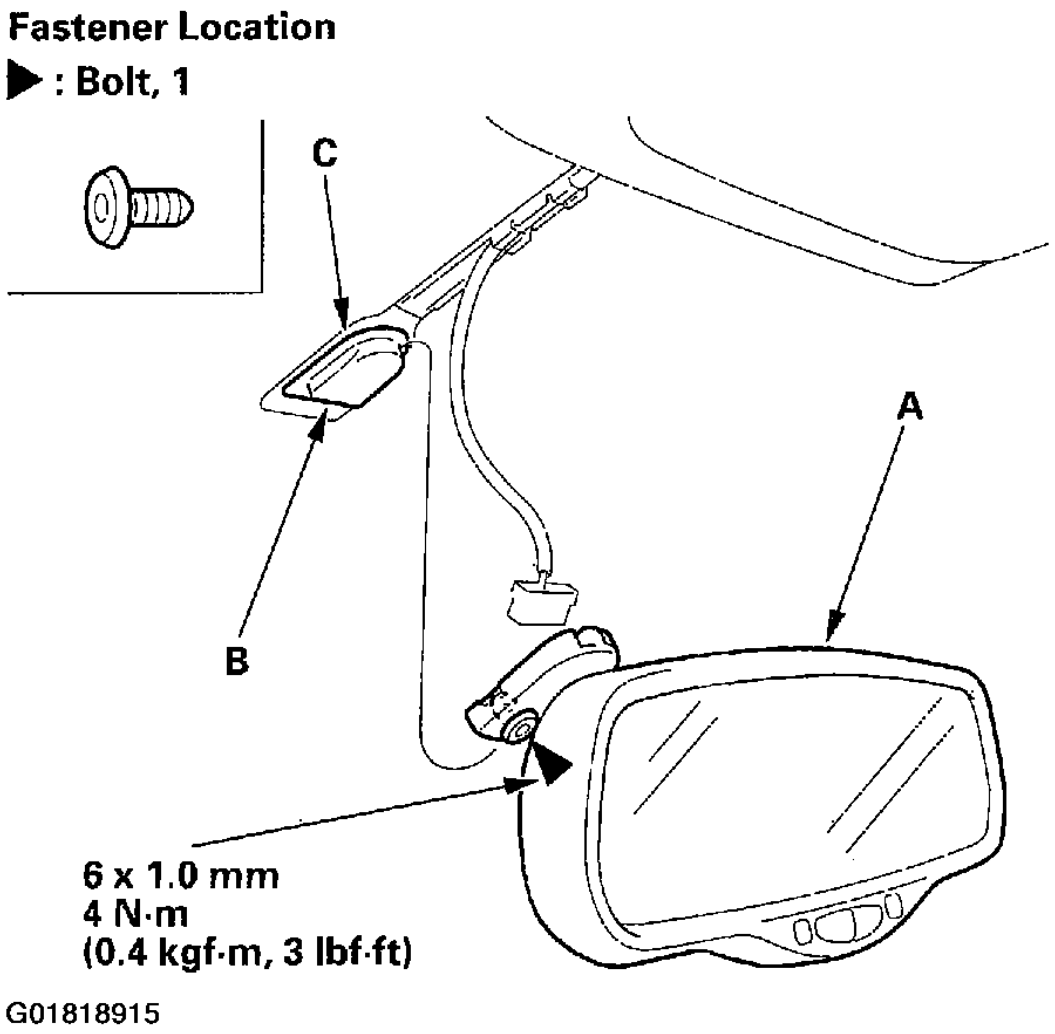


Fig. 7: Removing Rearview Mirror

4. Install the mirror in the reverse order of removal, and note these items:
   - Before installing the mirror, remove the Torx screw, and apply liquid thread lock to it.
   - Make sure the connector is plugged in properly.

POWER MIRRORS

COMPONENT LOCATION INDEX

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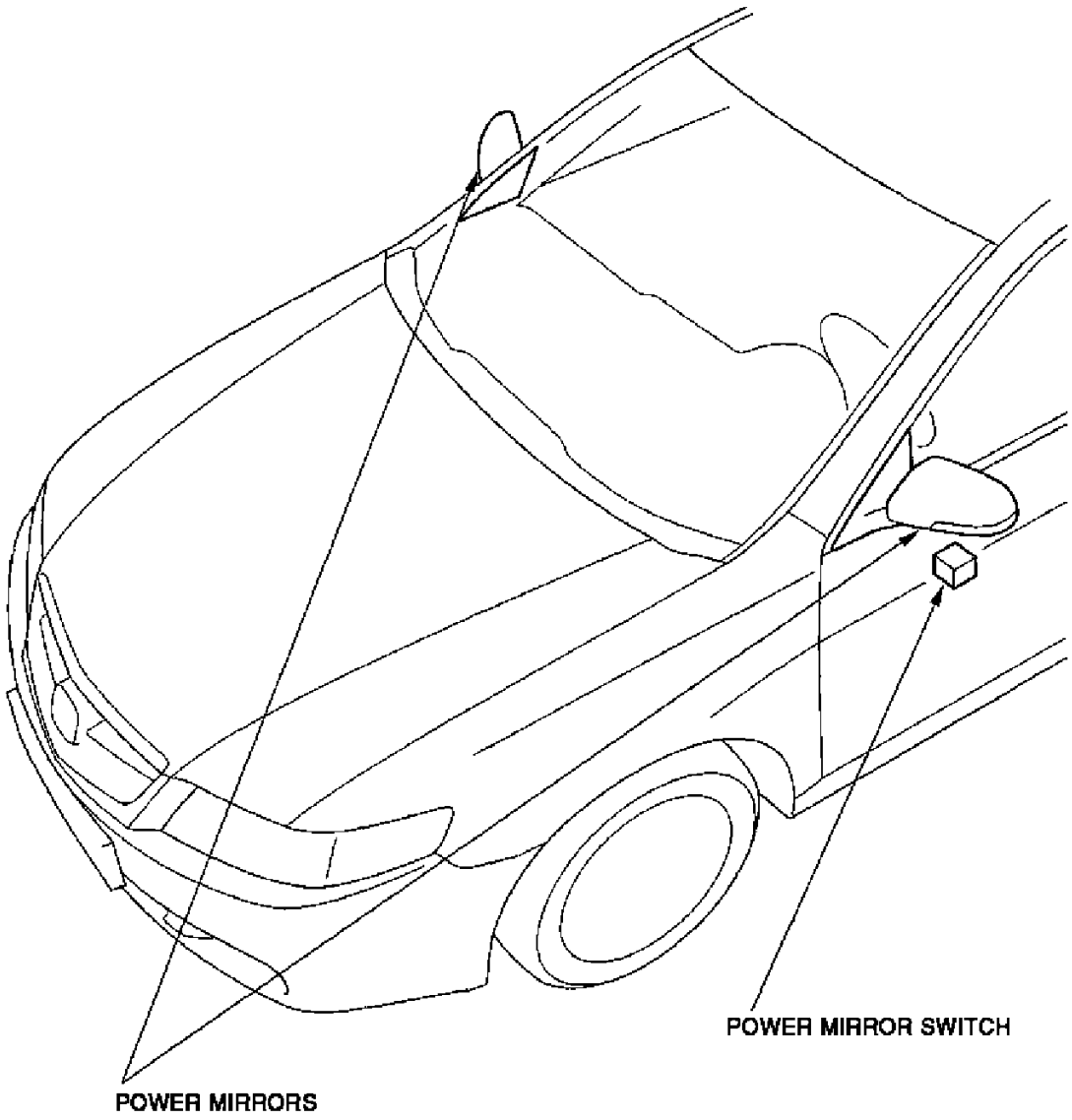


Fig. 8: Locating Power Mirror Components

CIRCUIT DIAGRAM

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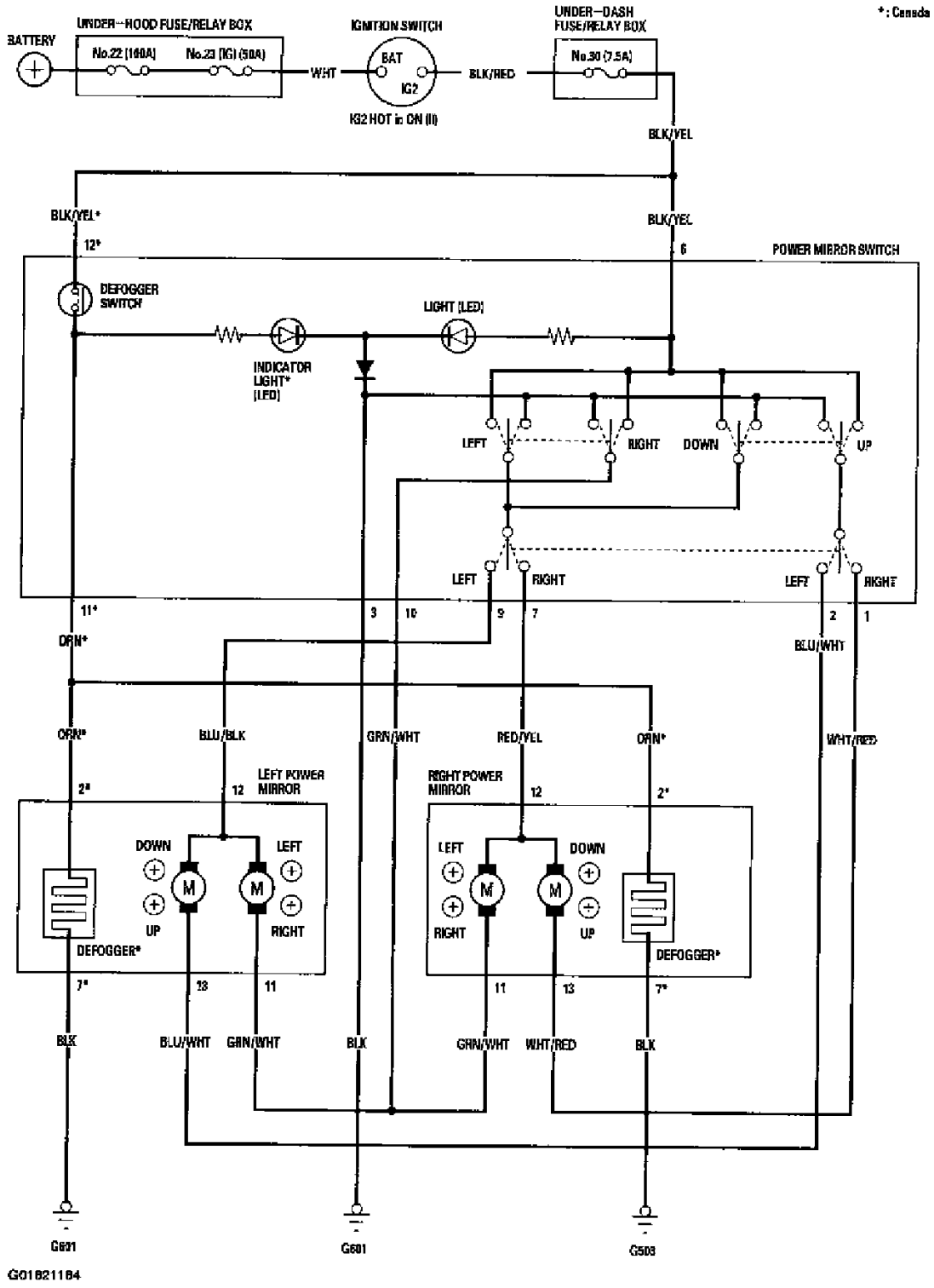


Fig. 9: Power Mirror Wiring Diagram

FUNCTION TEST

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1. Remove the driver's door switch trim (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).

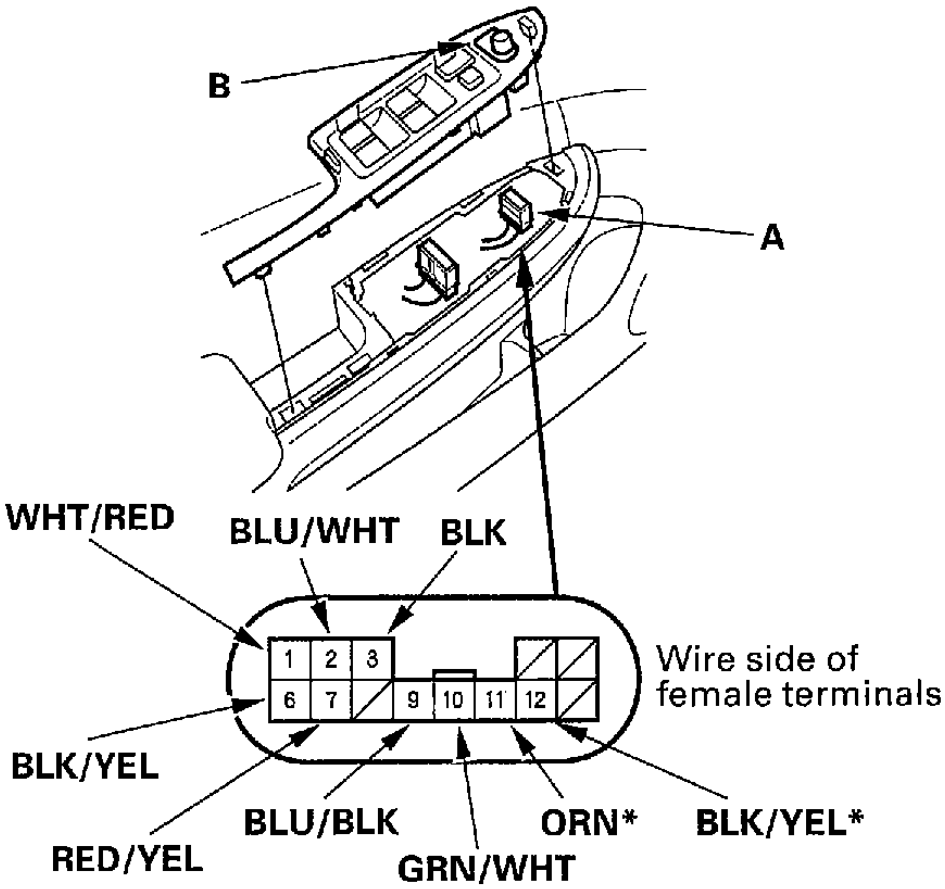


Fig. 10: Removing The Driver's Door Switch Trim

2. Disconnect the 13P connector (A) from the power mirror switch (B), and inspect the terminals. If OK, go to step 3.
3. Choose the appropriate test based on the symptom:
   - Both mirrors don't work, go to step 4.
   - Left mirror doesn't work, go to step 6 .
   - Right mirror doesn't work, go to step 7 .
   - Defogger doesn't work (Canada), go to step 8 .

Both Mirrors:

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4. Check for voltage between the No. 6 terminal and body ground with the ignition switch ON (II). There should be battery voltage.
    - If there is no battery voltage, check for:
        - blown No. 30 (7.5A) fuse in the under-dash fuse/relay box.
        - an open in the BLK/YEL wire.
    - If there is battery voltage, go to step 5.
5. Check for continuity between the No. 3 terminal and body ground. There should be continuity.
    - If there is no continuity, check for:
        - an open in the BLK wire.
        - poor ground (G 601).
    - If there is continuity, check both mirrors individually.

Left Mirror:

6. Connect the No. 6 terminal to the No. 9 terminal, and the No. 2 (or No. 10) terminal to the No. 3 terminal with jumper wires. The left mirror should tilt down (or swing left) with the ignition switch ON (II).
    - If the mirror does not tilt down (or does not swing left), check for an open in the BLU/WHT (or GRN/WHT) wire between the left mirror and the 13P connector. If the wire is OK, check the left mirror actuator.
    - If the mirror neither tilts down nor swings left, repair the BLU/BLK wire.
    - If the mirror works properly, check the mirror switch.

Right Mirror:

7. Connect the No. 6 terminal to the No. 7 terminal, and the No. 1 (or No. 10) terminal to the No. 3 terminal with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch ON (II).
    - If the mirror does not tilt down (or does not swing left), check for an open in the WHT/RED (or GRN/WHT) wire between the right mirror and the 13P connector. If the wire is OK, check the right mirror actuator.
    - If the mirror neither tilts down nor swings left, repair the RED/YEL wire.
    - If the mirror works properly, check the mirror switch.

Defogger (Canada):

8. Connect the No. 12 and No. 11 terminals with a jumper wire, and check for voltage between the No. 2 terminal of the mirror connectors and body ground. There should be battery voltage and both mirrors should warm up with the ignition switch ON (II).
    - If there is no voltage or neither warms up, check for:
        - an open in the BLK/YEL or ORN wire.
        - blown No. 30 (7.5A) fuse in the under-dash fuse/relay box.
    - If only one fails to warm up, check:
        - its defogger.

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    - poor ground at G601 (left mirror) or G503 (right mirror).
- If both warm up, check the defogger switch.

POWER MIRROR SWITCH TEST/REPLACEMENT

1. Remove the driver's door switch trim (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 13P connector (A) from the power mirror switch (B).

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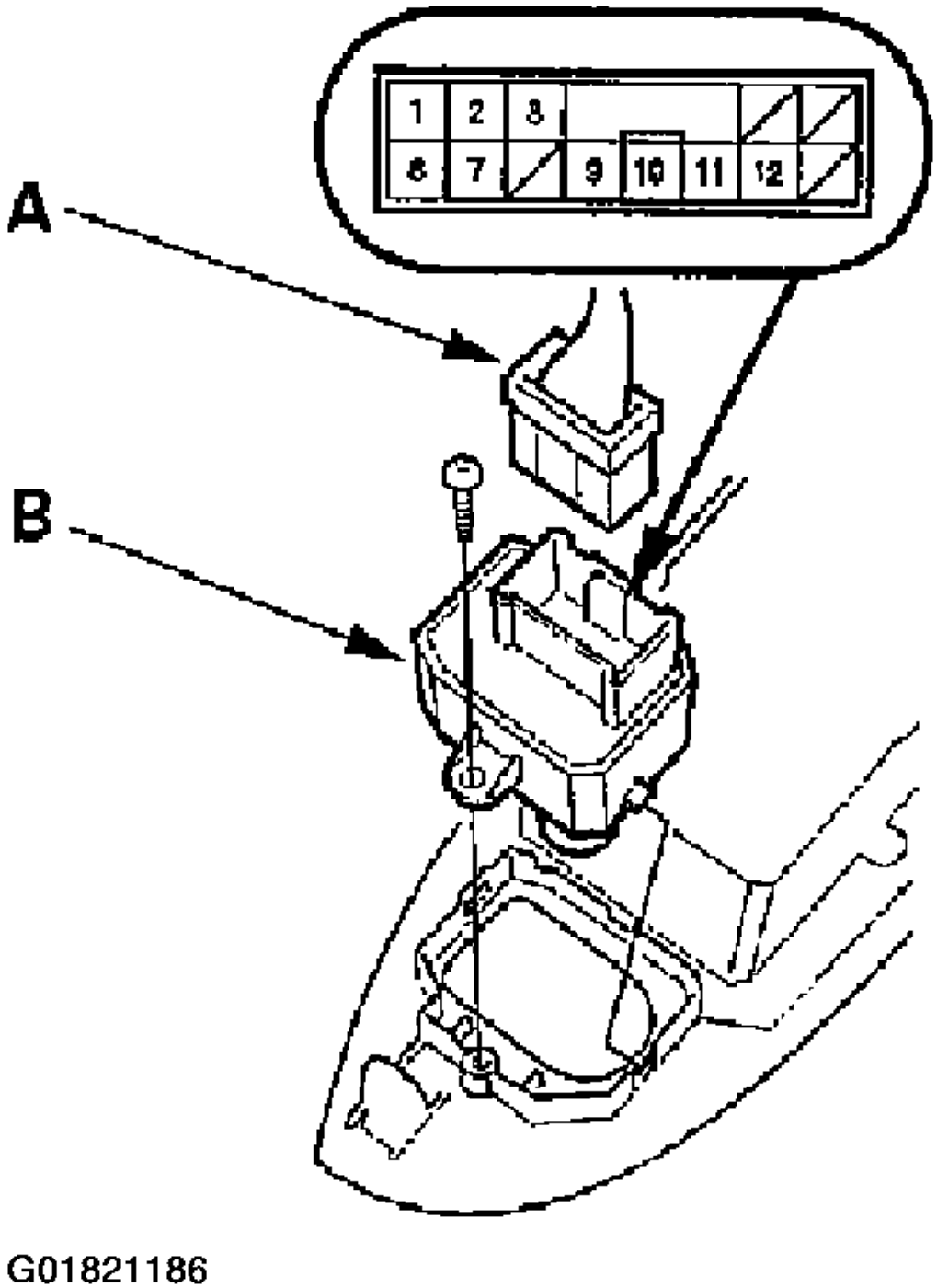


Fig. 11: Removing The Driver's Door Switch Trim

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3. Check for continuity between the terminals in each switch position according to the table.

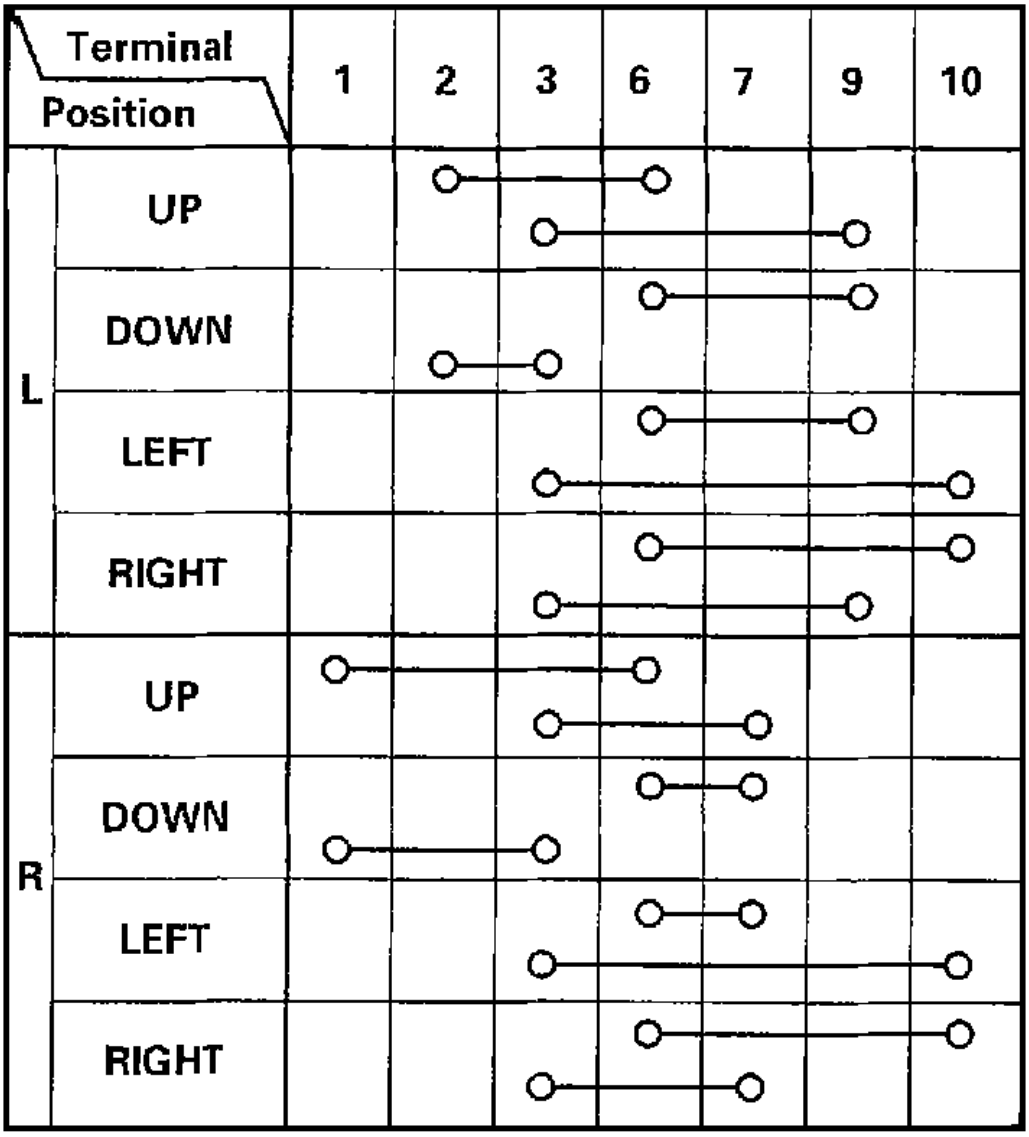


Fig. 12: Power Mirror Switch Test Table

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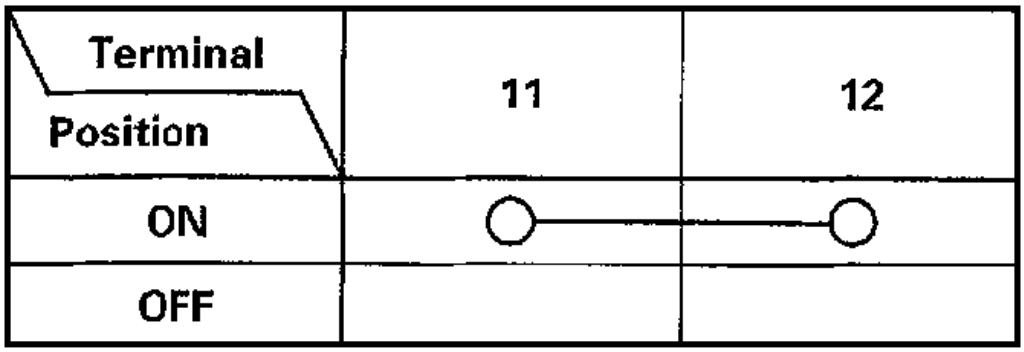


Fig. 13: Defogger Switch Test Table (Canada)

4. If the continuity is not as specified, replace the power mirror switch.

POWER MIRROR ACTUATOR TEST

1. Remove the door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 13P connector (A) from the power mirror actuator (B).

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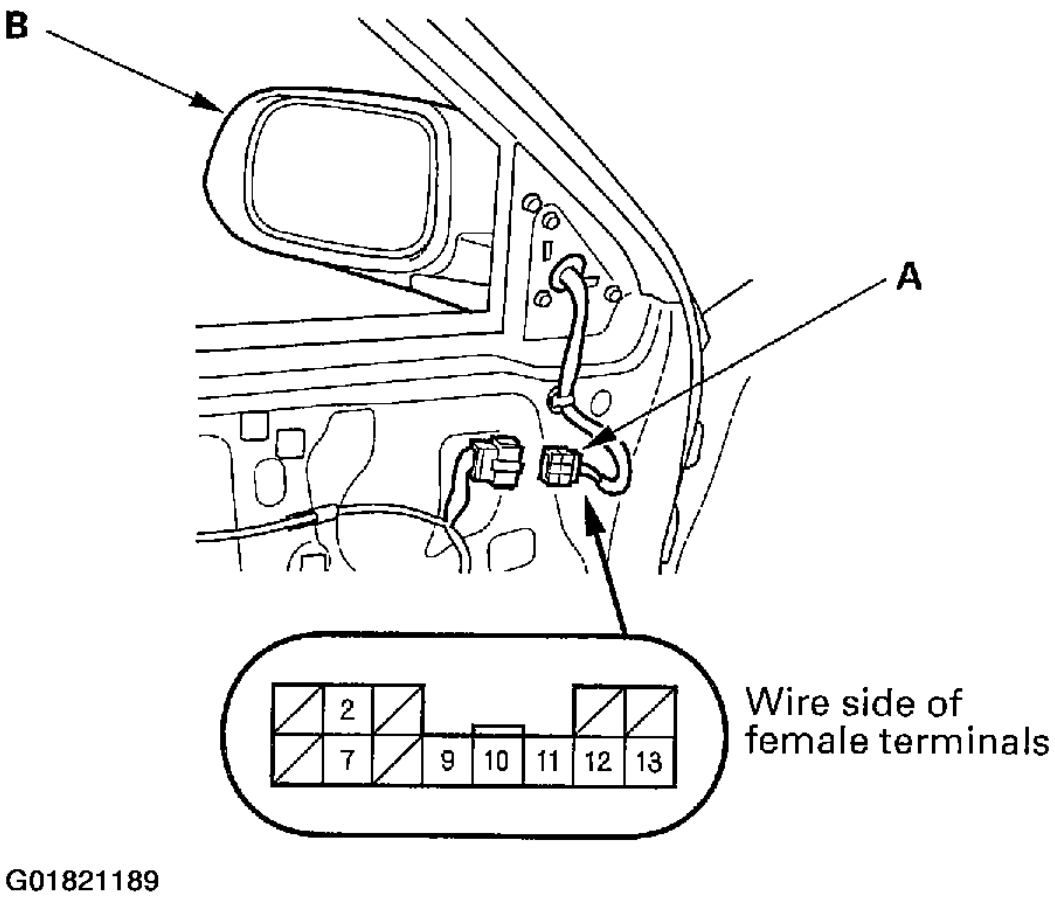


Fig. 14: Disconnecting The 13P Connector From The Power Mirror Actuator

3. Check actuator operation by connecting power and ground according to the table.

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Terminal / Position	11	12	13
TILT UP		⊖	⊕
TILT DOWN		⊕	⊖
SWING LEFT	⊖	⊕	
SWING RIGHT	⊕	⊖	

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Fig. 15: Power Mirror Actuator Test Table

4. If the mirror fails to work properly, replace the mirror actuator.

Defogger Test (Canada):

5. Check for continuity between the No. 2 and No. 7 terminals of the 13P connector. There should be continuity with the defogger switch ON. If there is no continuity, check for an open circuit.

POWER MIRROR ACTUATOR REPLACEMENT

1. Remove the mirror holder (see **MIRROR HOLDER REPLACEMENT**), power mirror (see **POWER MIRROR REPLACEMENT**), and disconnect the connector.
2. Cut the wire harness (A), tube (B) with cutter, and remove the clip (C).

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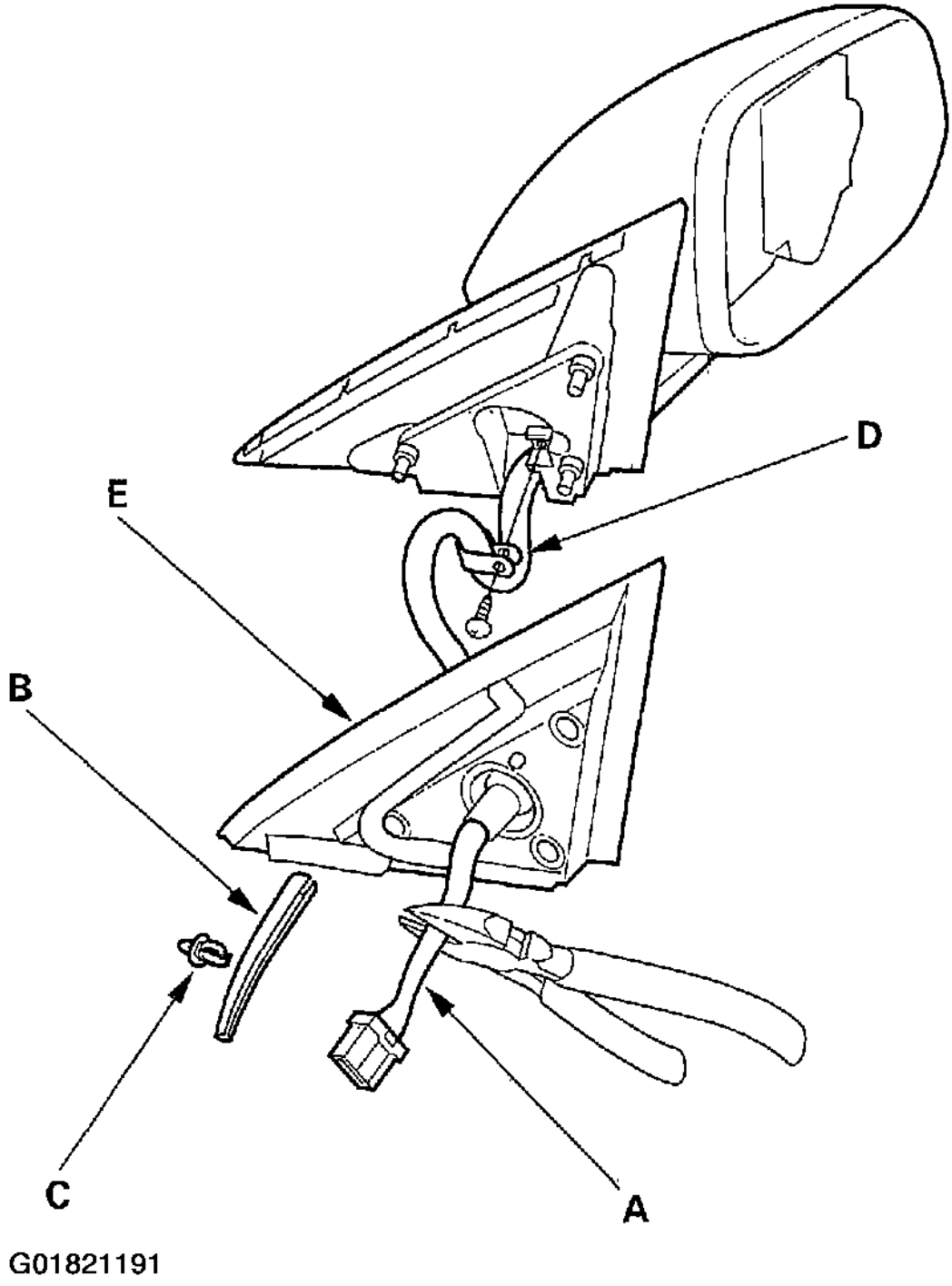


Fig. 16: Cutting The Wire Harness Tube & Removing The Clip

3. Remove the screw from the harness clip (D) and the gasket (E).

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4. Remove the three screws, and separate the mirror housing (A) from the bracket (B).

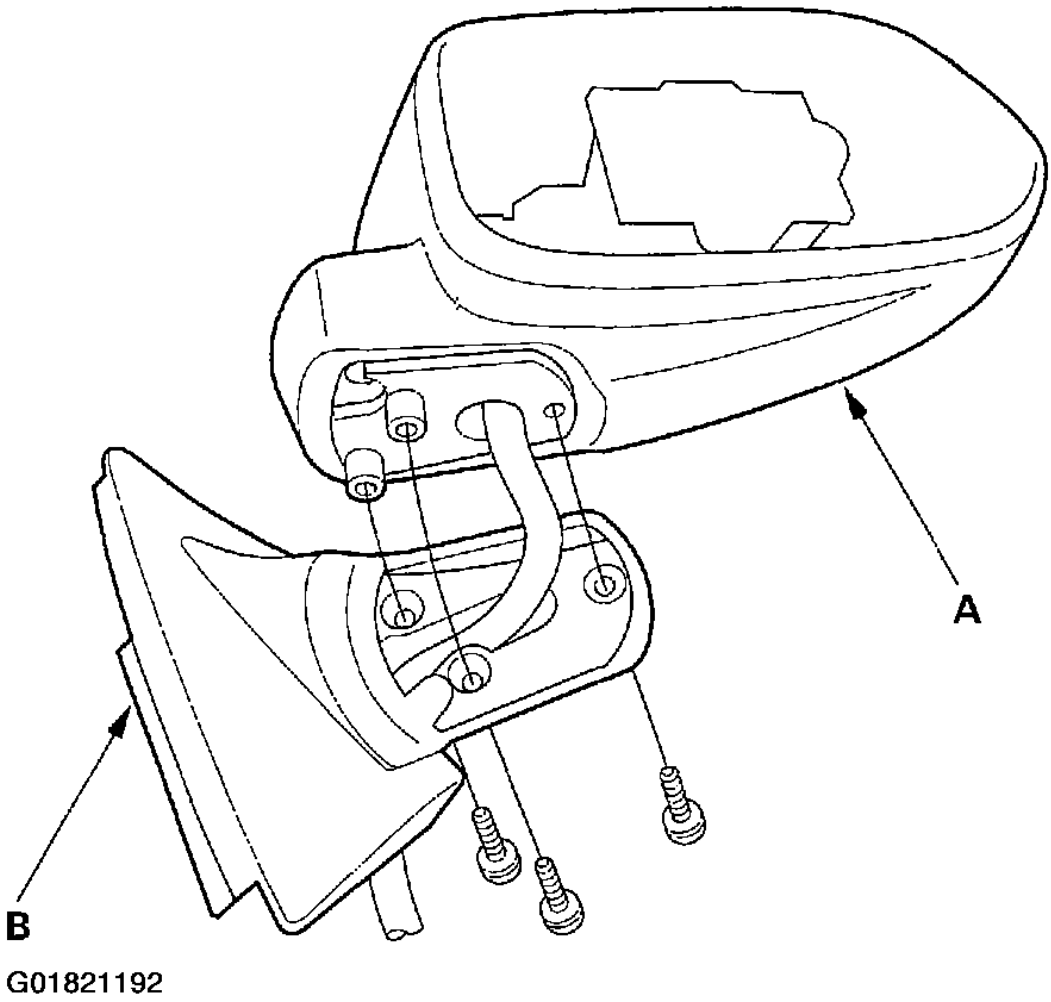


Fig. 17: Separating The Mirror Housing From The Bracket

5. Remove the four screws, and the visor (A).

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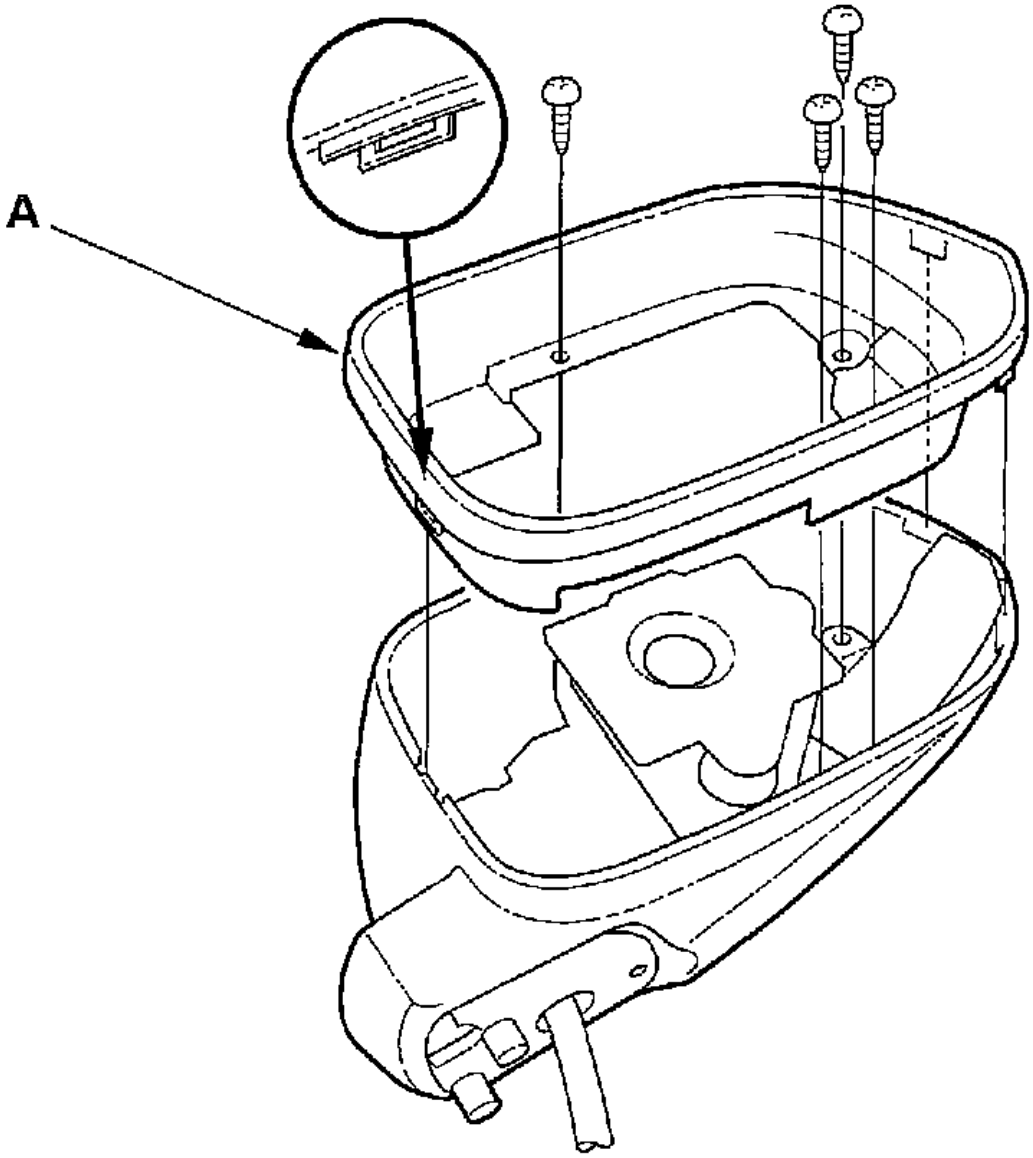


Fig. 18: Removing The Visor

6. Remove the one screw and separate the actuator (A) from the housing (B), then disconnect the 2P connector (C).

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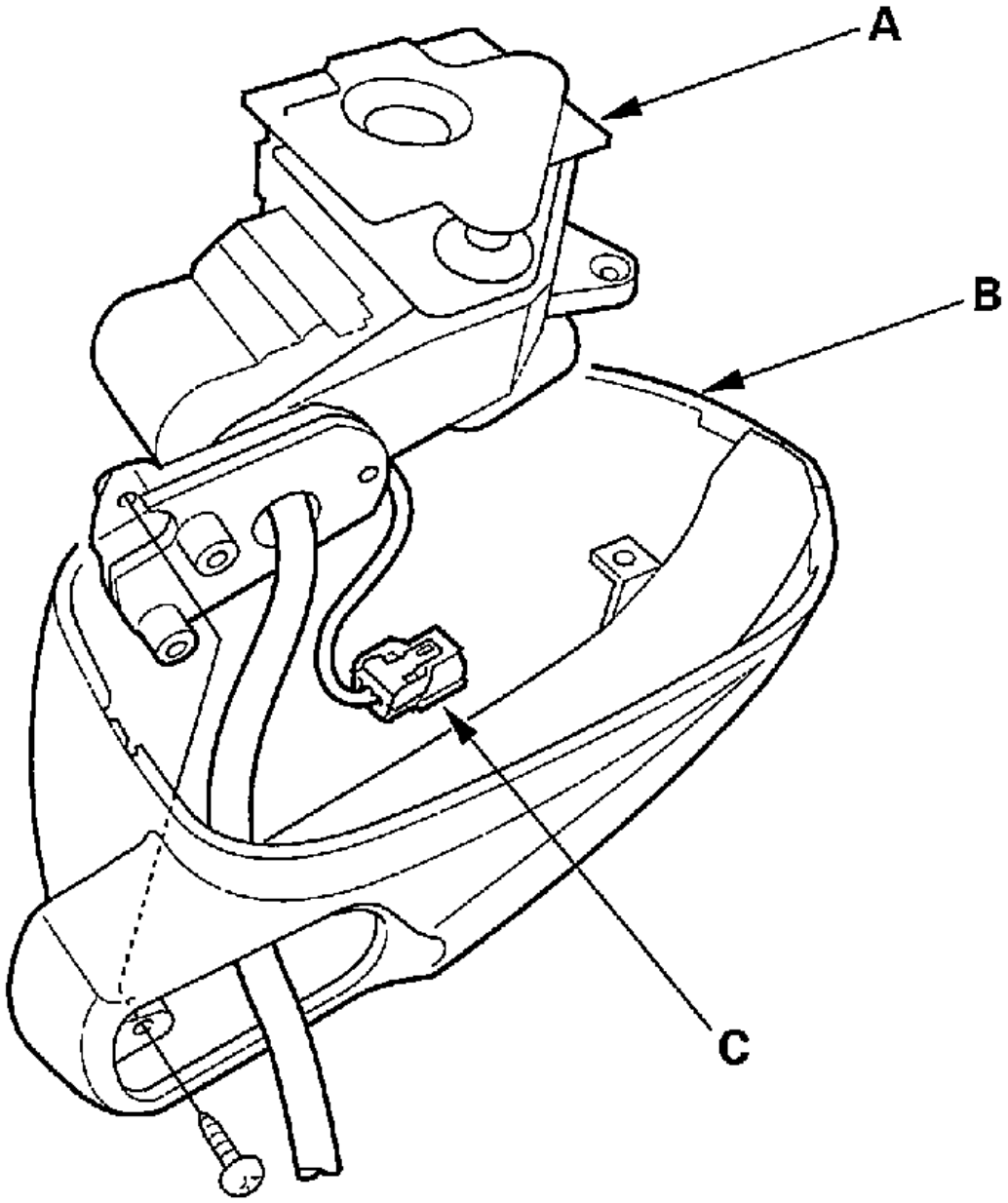


Fig. 19: Separating The Actuator From The Housing

7. Route the wire harness of the new actuator through the hole in the bracket and gasket.
8. Install the actuator, bracket, harness clip, and gasket in the reverse order of removal.
9. Install the new actuator terminals into the connector in the original arrangement as shown.

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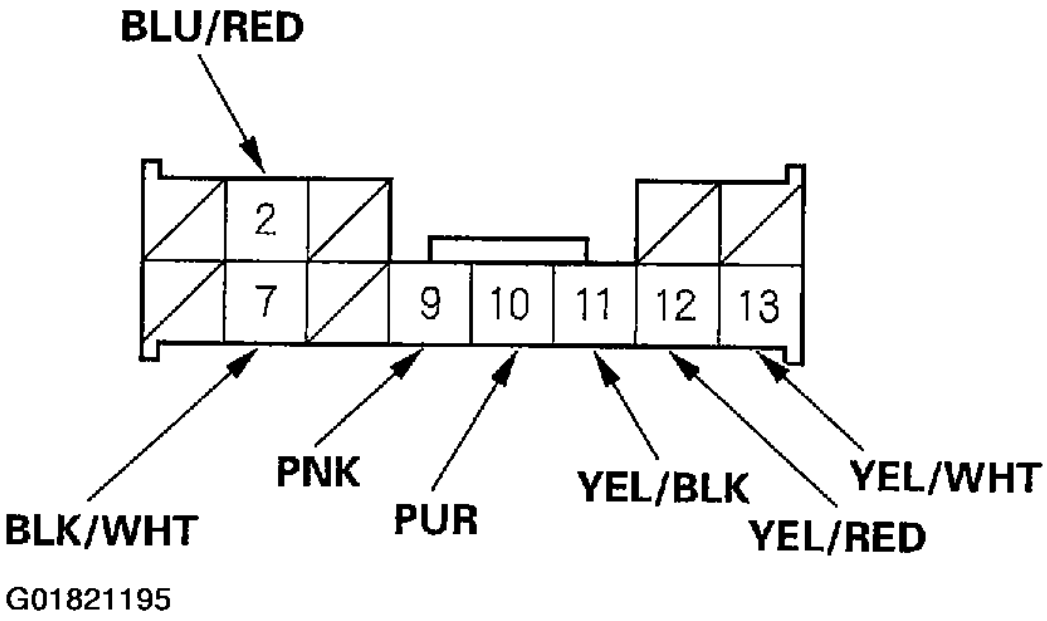


Fig. 20: Installing The New Actuator Terminals Into The Connector (Left)

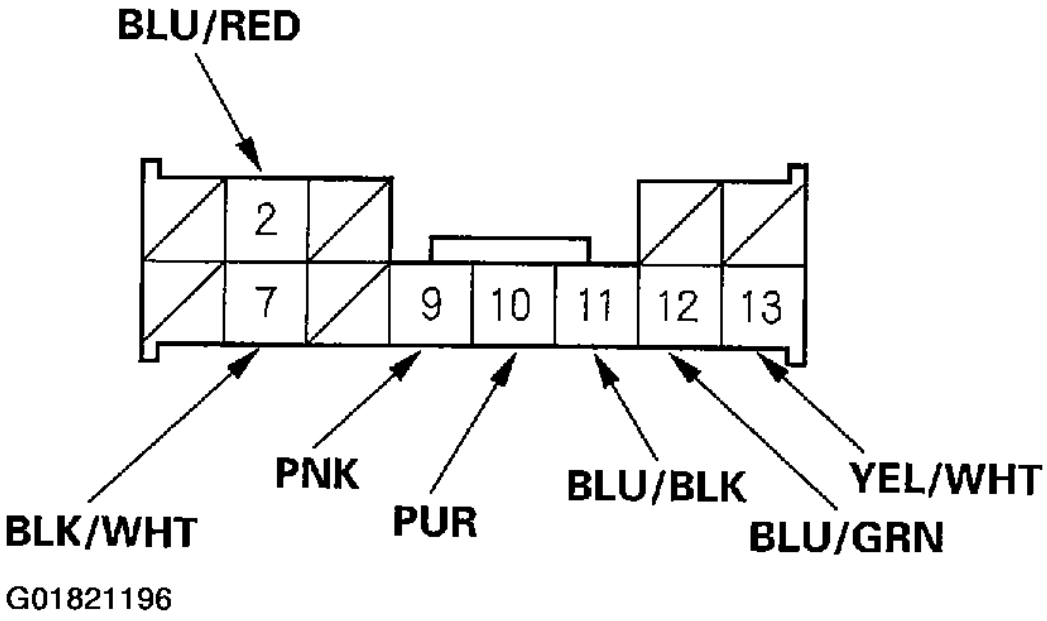


Fig. 21: Installing The New Actuator Terminals Into The Connector (Right)

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10. Cover the harness hole with a tape (A).

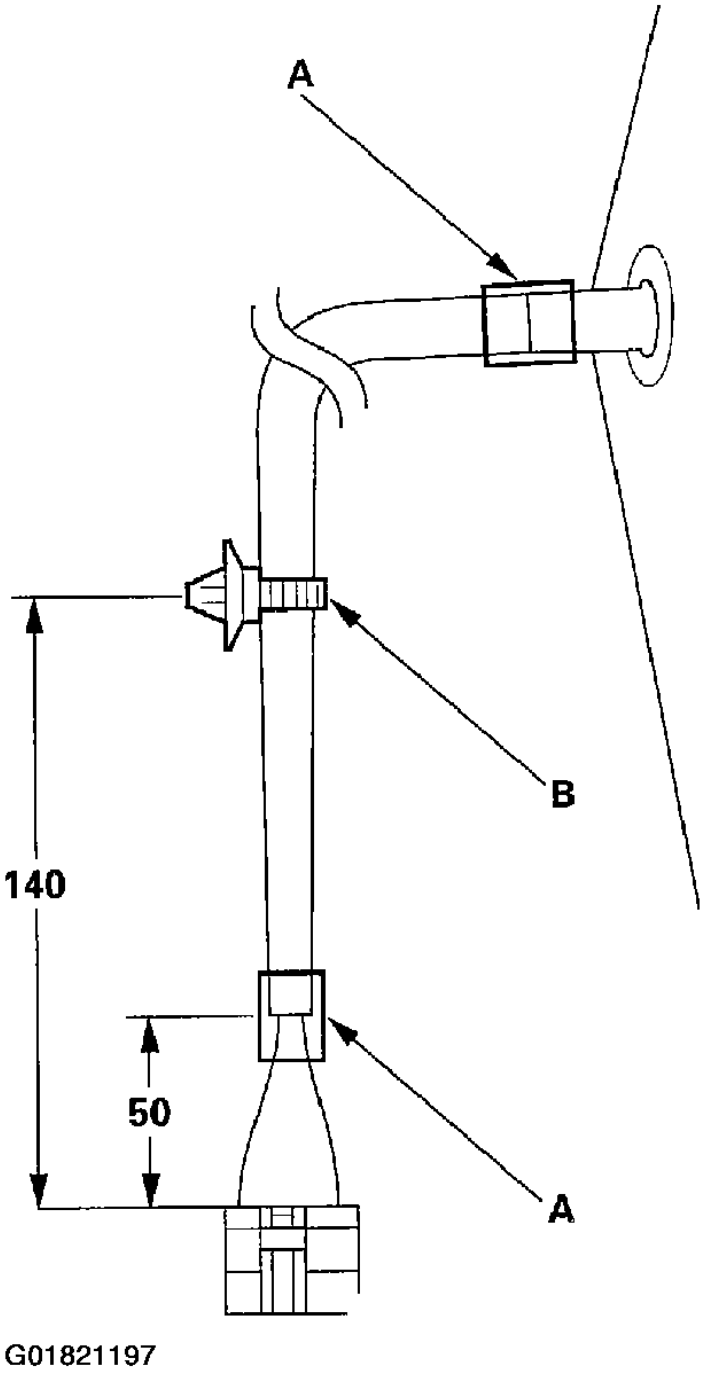


Fig. 22: Covering The Harness Hole With Tape

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11. Install the clip (B).
12. Reinstall the mirror assembly to the door.
13. Operate the power mirror to ensure smooth operation.

AUTOMATIC DIMMING INSIDE MIRROR

DESCRIPTION

The automatic dimming inside mirror has a front-facing lux level sensor (A), a rear-facing lux level sensor (B), and a control unit. The control unit receives signals from each sensor. Based on the difference between the two lux levels (the light outside the vehicle and the light from the headlights of the other vehicle, etc.), the control unit controls the electro-chromic gel to reduce the glare. This dimming function is canceled when the transmission is in reverse, or when the automatic dimming off switch (C) is turned OFF.

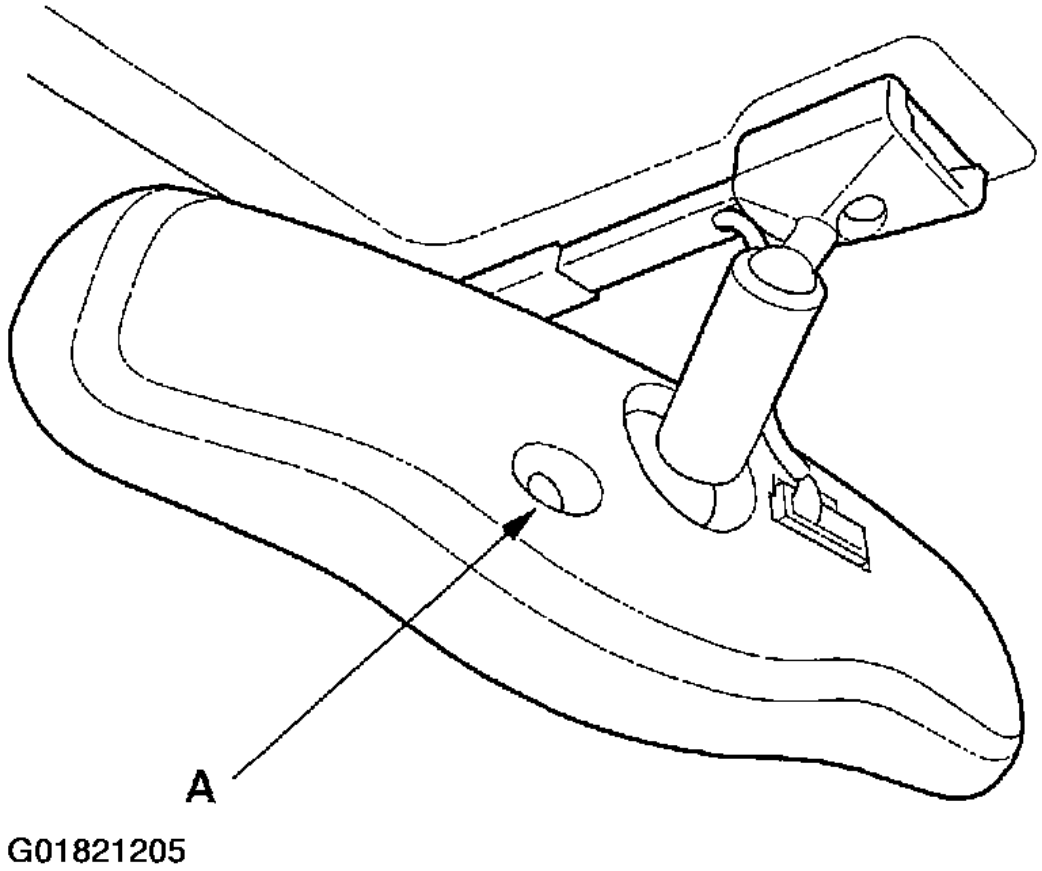


Fig. 23: Locating Front-Facing Lux Level Sensor

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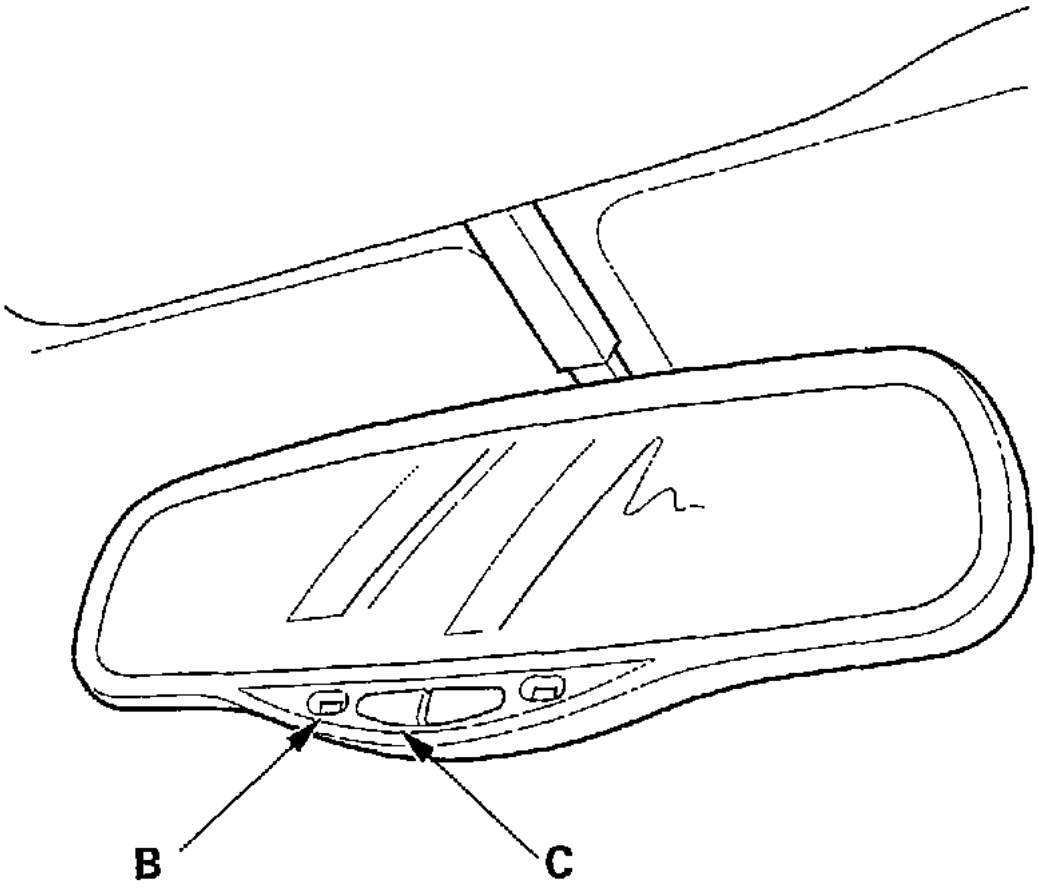


Fig. 24: Locating Rear-Facing Lux Level Sensor & Automatic Dimming Off Switch

CIRCUIT DIAGRAM

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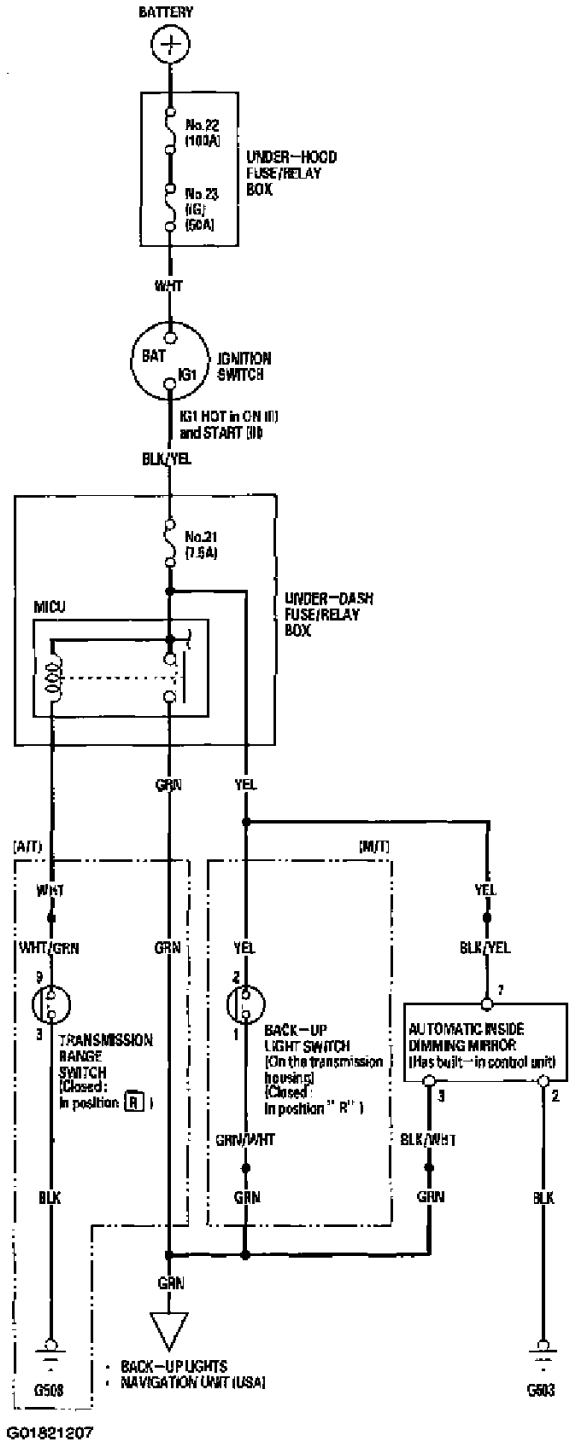


Fig. 25: Automatic Dimming Inside Mirror System Wiring Diagram

TEST/REPLACEMENT

1. Remove the automatic dimming inside mirror cover.

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2. Disconnect the 7P connector (A) from the automatic inside dimming mirror (B).

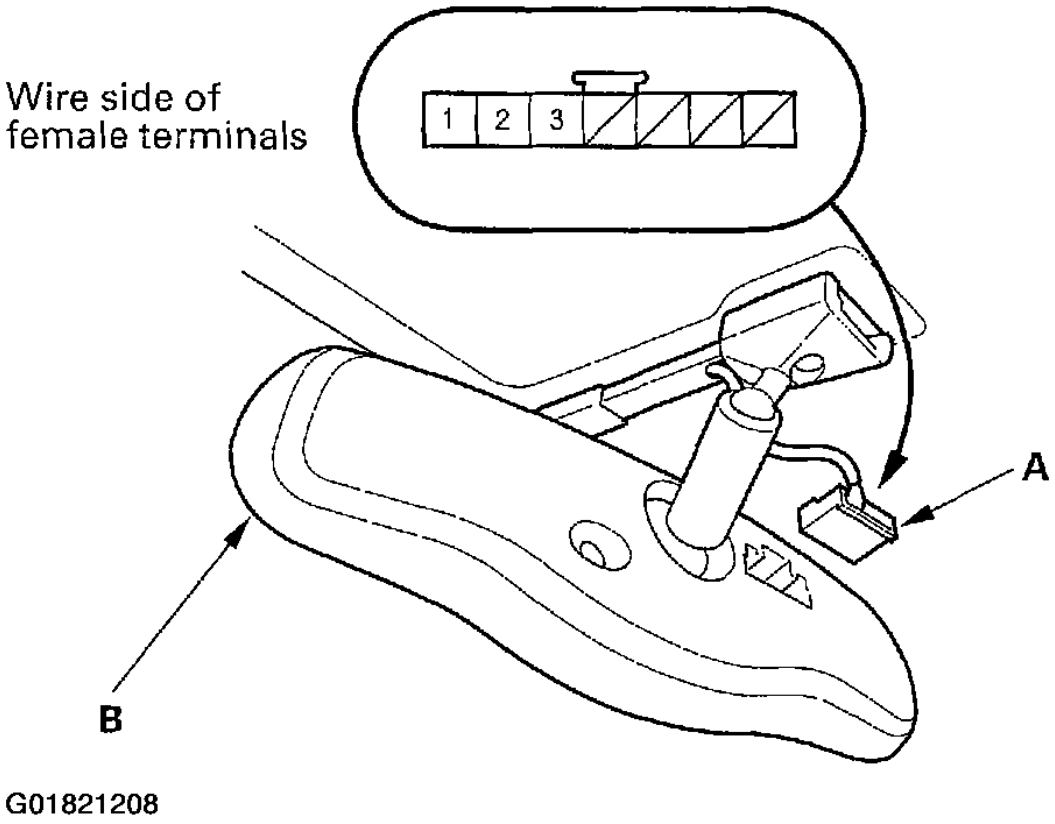


Fig. 26: Disconnecting The 7P Connector From The Automatic Inside Dimming Mirror

3. Check for continuity between No. 2 terminal and body ground.
   - If there is continuity, go to step 4.
   - If there is no continuity, check for:
     - an open in the wire.
     - poor ground (G 503).
4. Check for voltage between No. 1 terminal and body ground with the ignition switch ON (II).
   - If there is battery voltage, go to step 5.
   - If there is no voltage, check for:
     - blown No. 21 (7.5A) fuse in the driver's under-dash fuse/relay box.
     - an open in the wire.
5. Check for voltage between No. 3 terminal and body ground with the ignition switch turned ON (II) and transmission range switch (A/T) or back-up light switch (M/T) in reverse.
   - If there is battery voltage, replace the mirror assembly.

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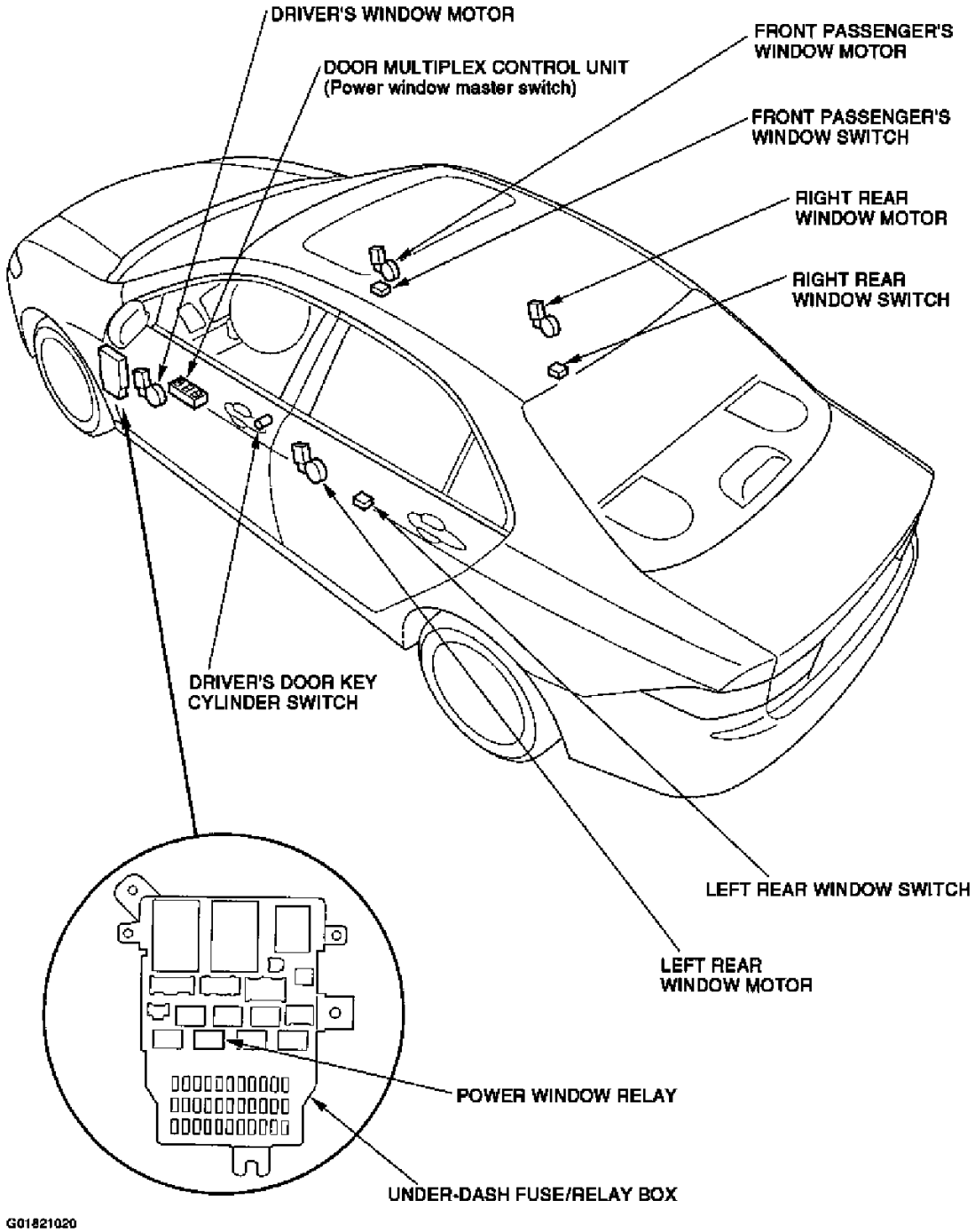
- If there is no voltage, check for:
  - an open in the wire.
  - blown No. 21 (7.5A) fuse in the under-dash fuse/relay box.
  - faulty reverse relay.
  - faulty transmission range switch.

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2004 ACCESSORIES & EQUIPMENT

Power Windows - TSX

COMPONENT LOCATION INDEX



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Fig. 1: Locating Power Windows Components

DESCRIPTIONS

KEY CYLINDER OPERATION

With the key inserted in the driver's door key cylinder, turn the key a second time and hold within 10 seconds to operate the windows (clockwise to open, counterclockwise to close). The windows stop moving when the key is released.

KEYLESS OPERATION

By pressing the UNLOCK button of the keyless transmitter a second time and holding, the windows open. The windows stop moving when the UNLOCK button is released. The windows do not close with the LOCK button.

ANTI-TRAP POWER WINDOW OPERATION

The system is composed of the power window master switch, the power window control unit and the driver's window motor. The power window motor incorporates a pulser which generates pulses during the motor's operation and sends the pulses to the power window control unit. As soon as the power window control unit detects no pulses from the pulser, the control unit makes the power window motor stop and reverse. This is to prevent pinching your hand or fingers during auto-up operation.

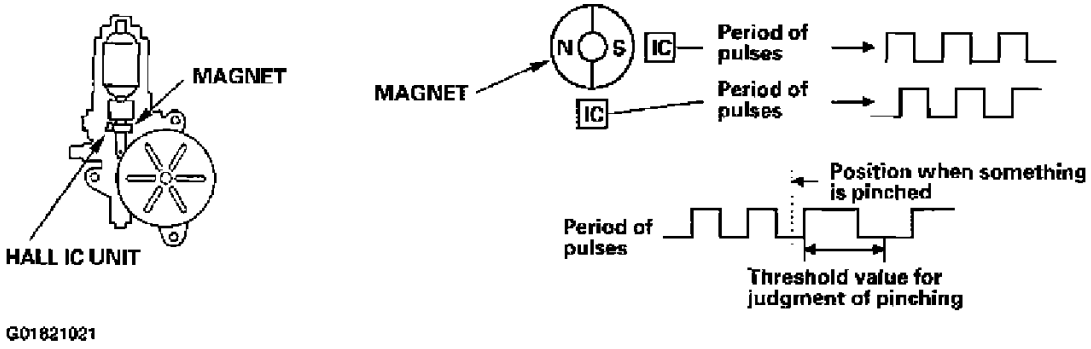


Fig. 2: Anti-Trap Power Window Operation

RESETTING THE POWER WINDOW

Resetting the power window is required when any of the following have been removed or repaired:

- Power window regulator
- Power window motor
- Window run channel
- Front or rear door sash

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- Door glass

Using the HDS

1. Connect the Honda Diagnostic System (HDS) to the vehicle's DLC.
2. Turn the ignition switch ON (II), then enter the vehicle's VIN and mileage at the prompts.
3. Select Body Electrical from the System Selection menu.
4. From the Body Electrical System Select menu, select Power Windows.
5. From the Mode menu, select Adjustments.
6. From the Adjustment menu, select Window P Reset.
7. Follow the prompts on the screen.
8. Confirm that the power window control unit is reset by using the driver's window AUTO UP and DOWN function.

CIRCUIT DIAGRAM

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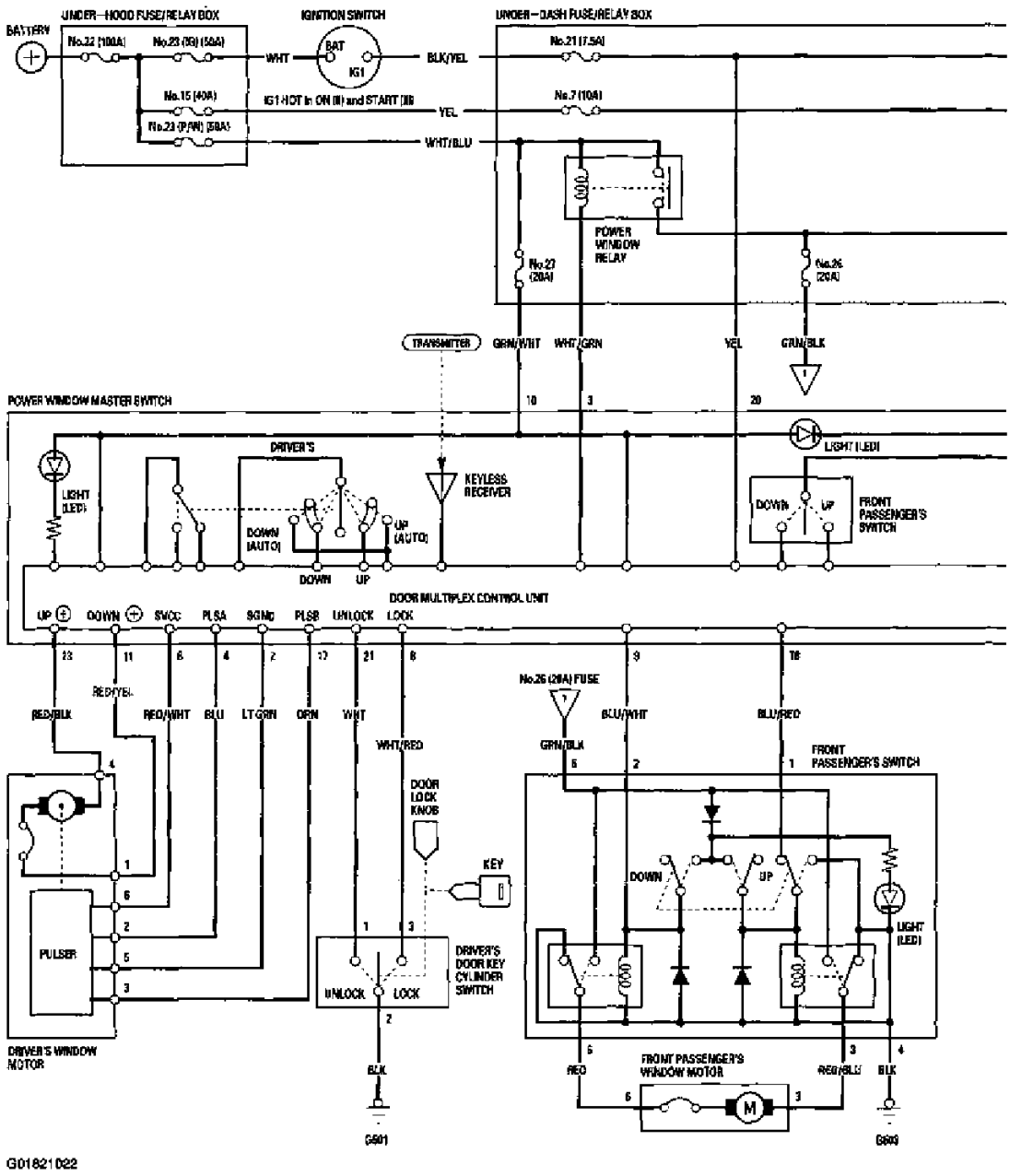


Fig. 3: Power Windows Wiring Diagram (1 Of 2)

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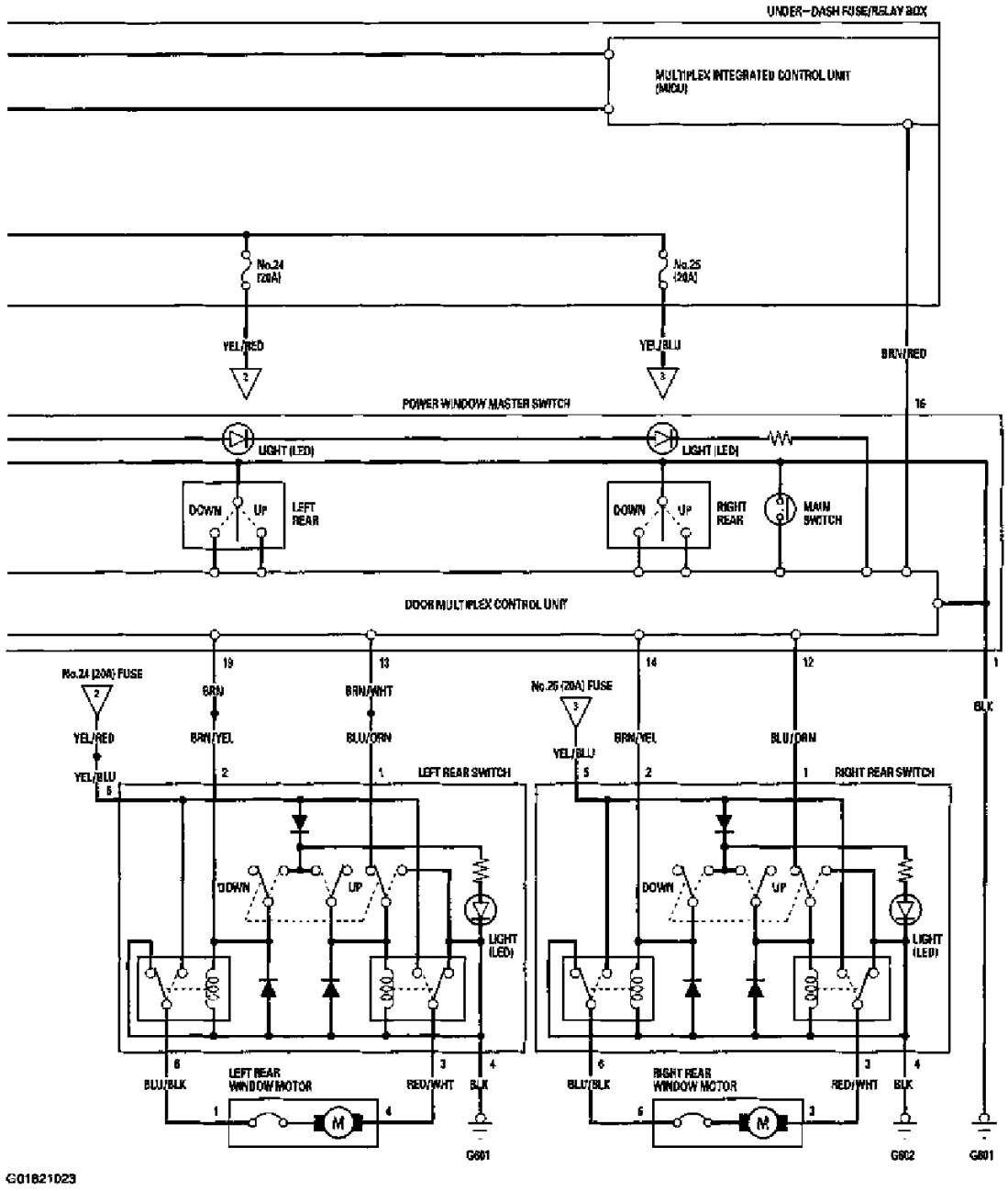


Fig. 4: Power Windows Wiring Diagram (2 Of 2)

MASTER SWITCH INPUT TEST

1. Before testing the power windows, troubleshoot the multiplex integrated control system using B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Remove the driver's door switch trim (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
3. Disconnect the power window master switch 23P connector (A) from the power window master switch

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(B).

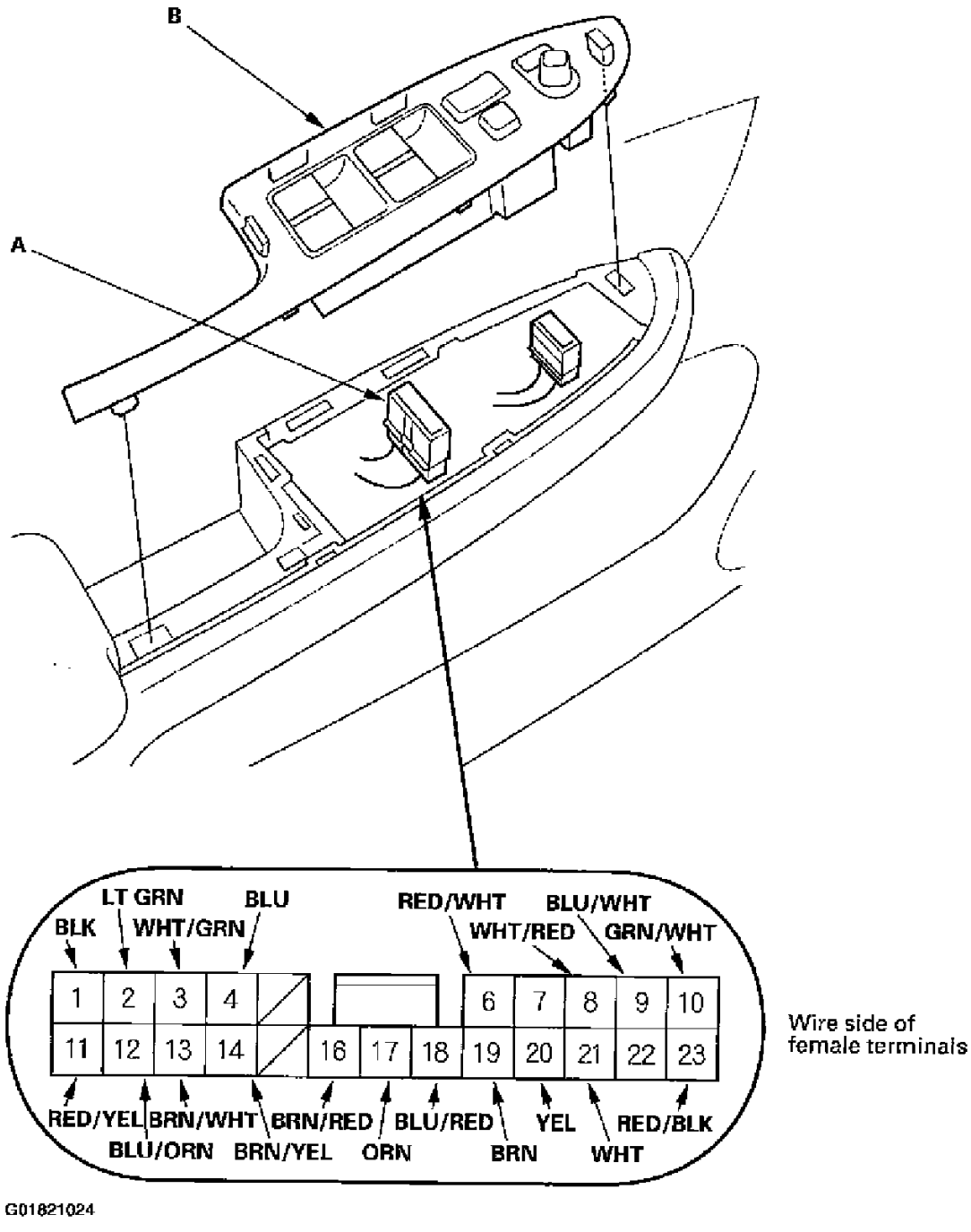


Fig. 5: Disconnecting The Connector From The Power Window Master Switch

4. Inspect the connector and socket terminals to be sure they are all making good contact.
    - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.

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- If the terminals look OK, go to step 5.

5. With the power window master switch still disconnected, make these input tests at the connector. See **Fig. 6** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	WHT/GRN	Under all conditions	Connect terminal No. 3 to ground. Check for voltage at under-dash fuse/relay box No. 26 (20A) fuse: There should be battery voltage.	• Blown No. 23 (P/W) (50A) fuse in the under-hood fuse/relay box. • Faulty power window relay • Faulty under-dash fuse/relay box • An open in the wire
10	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 23 (P/W) (50A) fuse in the under-hood fuse/relay box • Blown No. 27 (20A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G601) • An open in the wire
11	RED/YEL	Connect the No. 10 and No. 11 terminals with a jumper wire, and No. 23 terminal to body ground.	Check the driver's window motor operation: The window should go down.	• Blown No. 27 (20A) fuse in the under-dash fuse/relay box • Faulty driver's power window motor • An open in the wire
23	RED/BLK	Connect the No. 10 and No. 23 terminals with a jumper wire, and No. 11 terminal to body ground.	Check for driver's window motor operation: The window should go up.	
9	BLU/WHT	Conect the No. 10 and No. 9 terminals with a jumper wire.	Check the front passenger's window motor operation: The window should go down.	• Poor ground (G603) • Blown No. 26 (20A) fuse in the under-dash fuse/relay box • Faulty front passenger's power window switch • Faulty front passenger's power window motor • An open in the wire
18	BLU/RED	Connect the No. 10 and No. 18 terminals with a jumper wire.	Check the front passenger's window motor operation: The window should go up.	
13	BRN/WHT	Connect the No. 10 and No. 13 terminals with a jumper wire.	Check the left rear window motor operation: The window should go up.	• Poor ground (G601) • Blown No. 24 (20A) fuse in the under-dash fuse/relay box • Faulty left rear power window switch • Faulty left rear power window motor • An open in the wire
19	BRN	Connect the No. 10 and No. 19 terminals with a jumper wire.	Check the left rear window motor operation: The window should go down.	
12	BUL/GRN	Connect the No. 10 and No. 12 terminals with a jumper wire.	Check the right rear window motor operation: The window should go up.	• Poor ground (G602) • Blown No. 25 (20A) fuse in the under-dash fuse/relay box • Faulty right rear power window switch • Faulty right rear power window motor • An open in the wire
14	BRN/YEL	Connect the No. 10 and No. 14 terminals with a jumper wire.	Check the right rear window motor operation: The window should go down.	

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Fig. 6: Master Switch Input Test (Disconnected)

6. Reconnect the 23P connector to the switch, and perform the following input tests. See **Fig. 7** .
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

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Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	RED/WHT	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Faulty power window master switch • Short to ground in the wire
2	LT GRN	Under all conditions	Check for voltage to ground: There should be 1 V or less.	Faulty power window master switch
4	BLU	Ignition switch ON (II), and the driver's window switch AUTO DOWN	Check for voltage between the No. 4 and No. 2 terminals: There should be 0 V→about 5 V→0 V →about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	• Blown no. 21 (7.5A) fuse in the under-dash fuse/relay box • Blown No. 27 (20A) fuse in the under-dash fuse/relay box • Faulty power window master switch • Short to ground in the wire • Faulty driver's window motor
17	ORN	Ignition switch ON (II), and the driver's window switch AUTO DOWN	Check for voltage between the No. 17 and No. 2 terminals: There should be 0 V→about 5 V→0 V →about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	
21	WHT	Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 5 V or more.	
8	WHT/RED	Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 5 V or more.	

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Fig. 7: Master Switch Input Test (Connected)

DRIVER'S WINDOW MOTOR TEST

MOTOR TEST

1. Remove the driver's door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 6P connector (A) from the window motor.

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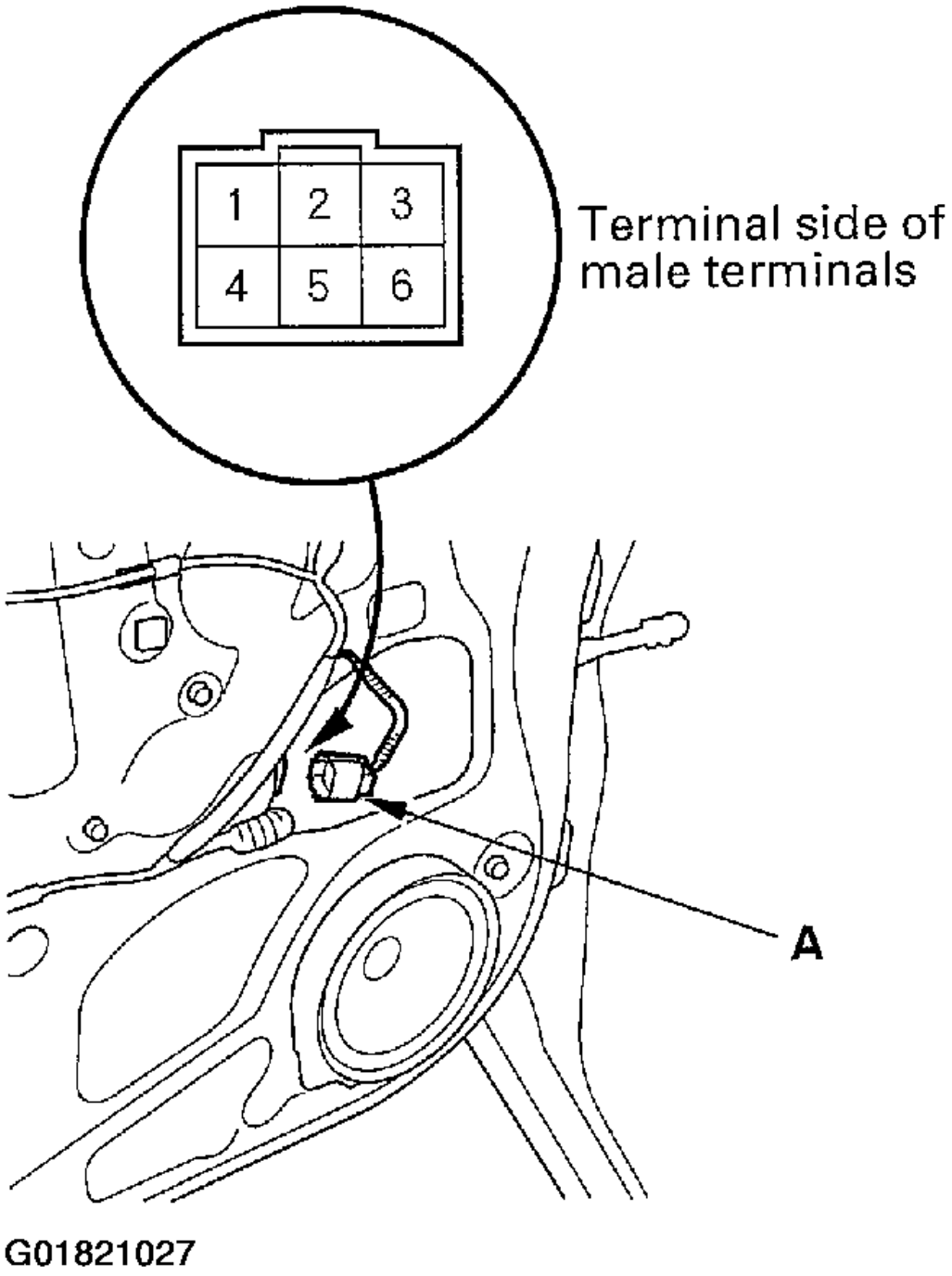
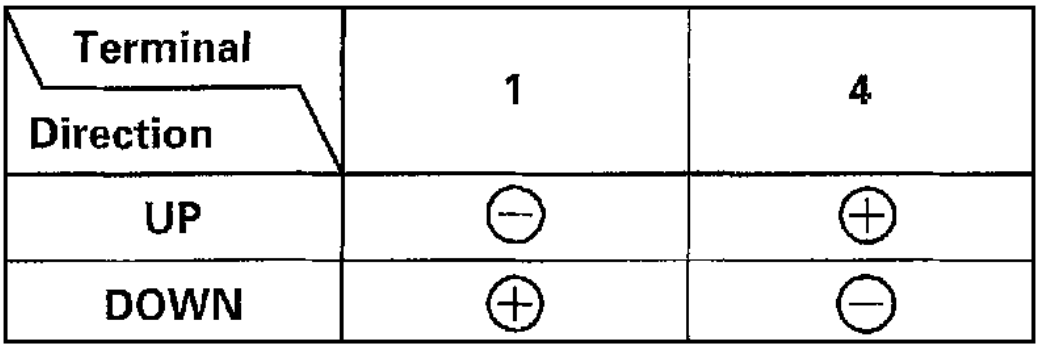


Fig. 8: Disconnecting The 6P Connector From The Window Motor

3. Test the motor in each direction by connecting battery power and ground according to the table. See **Fig.**

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9 . When the motor stops running, disconnect one lead immediately.



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Fig. 9: Driver's Window Motor Test Table

4. If the motor does not run or fails to run smoothly, replace it.

Pulser Test:

5. Reconnect the 6P connector to the window motor.
6. Check for voltage between the terminals.
   - There should be battery voltage between the No. 6 (+) and No. 5 (-) terminals when the ignition switch is ON (II).
   - Connect an analog voltmeter between the No. 2 (+) and No. 5 (-) terminals, and run the window motor down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0-5 V).
   - Connect an analog voltmeter between the No. 3 (+) and No. 5 (-) terminals, and run the window motor at down or up. The voltmeter needle should move back and forth alternately.

If the voltage is not as specified, replace the driver's window motor.

PASSENGER'S WINDOW MOTOR TEST

1. Remove the passenger's door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION** and/or **REAR DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 6P connector from the window motor.

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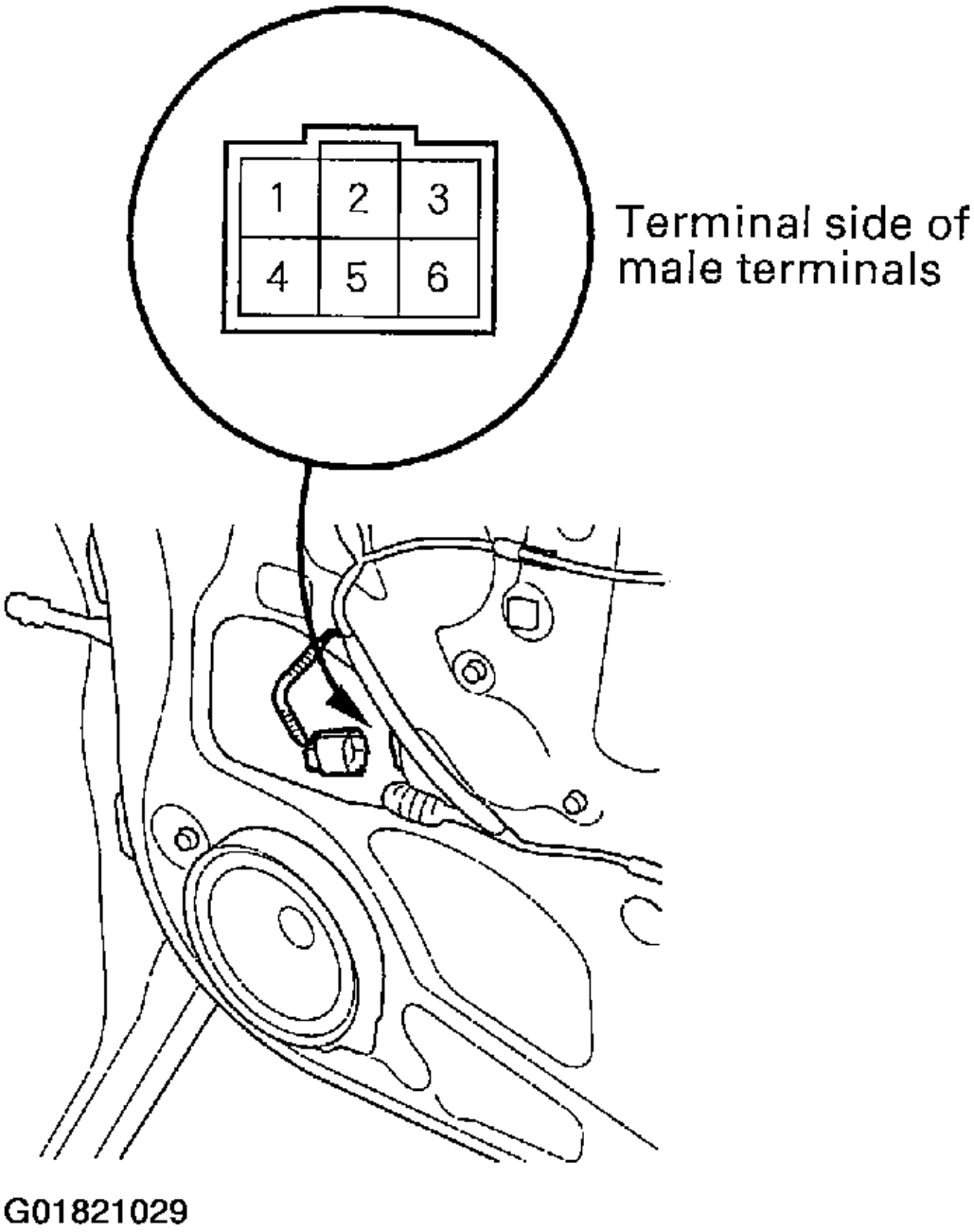


Fig. 10: Disconnecting The 6P Connector From The Window Motor

3. Test the motor by connecting battery power and ground according to the table. See **Fig. 11** . When the motor stops running, disconnect one lead immediately.

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Terminal / Direction	3(4)	6(1)
UP	⊕	⊖
DOWN	⊖	⊕

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Fig. 11: Passenger's Window Motor Test Table

4. If the motor does not run or fails to run smoothly, replace it.

MASTER SWITCH REPLACEMENT

1. Carefully pry off the driver's door switch trim (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the power mirror and power window switch connectors (A).

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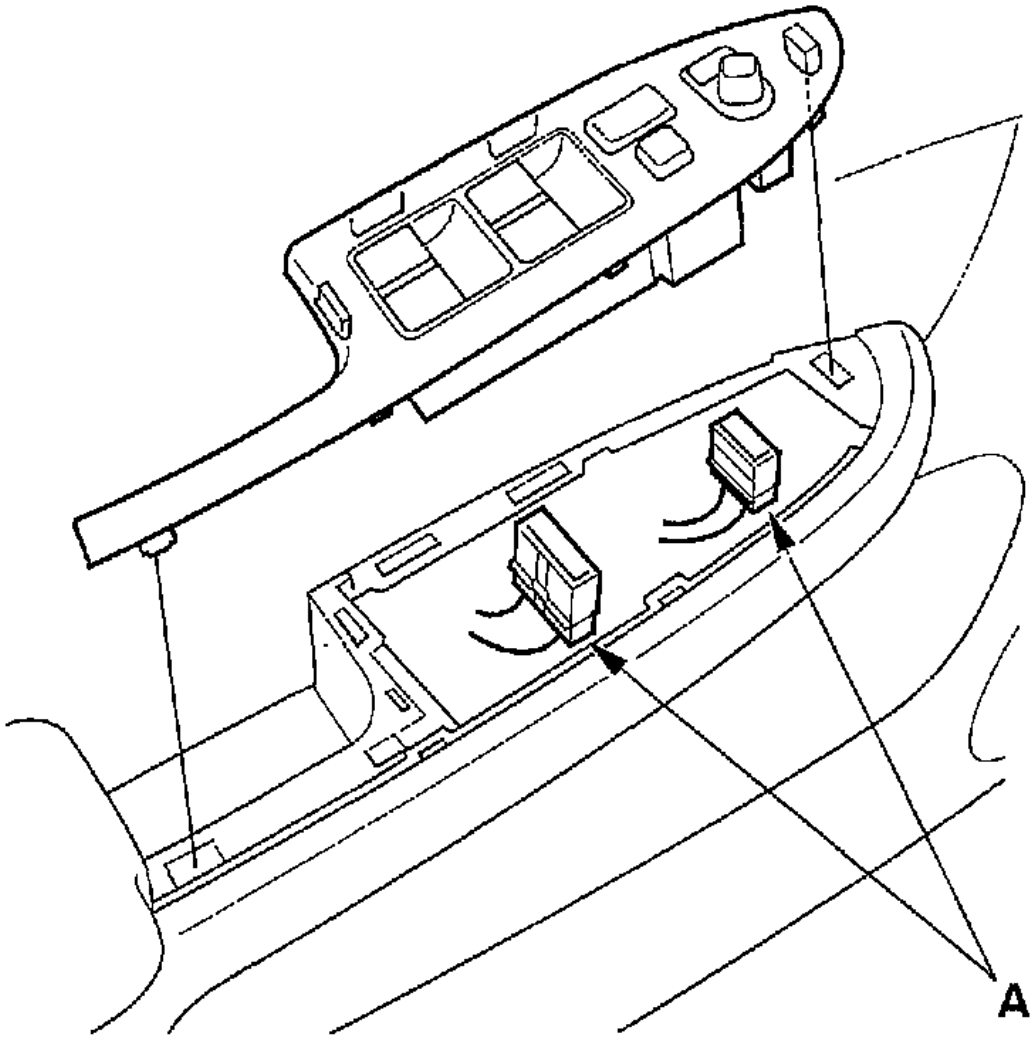
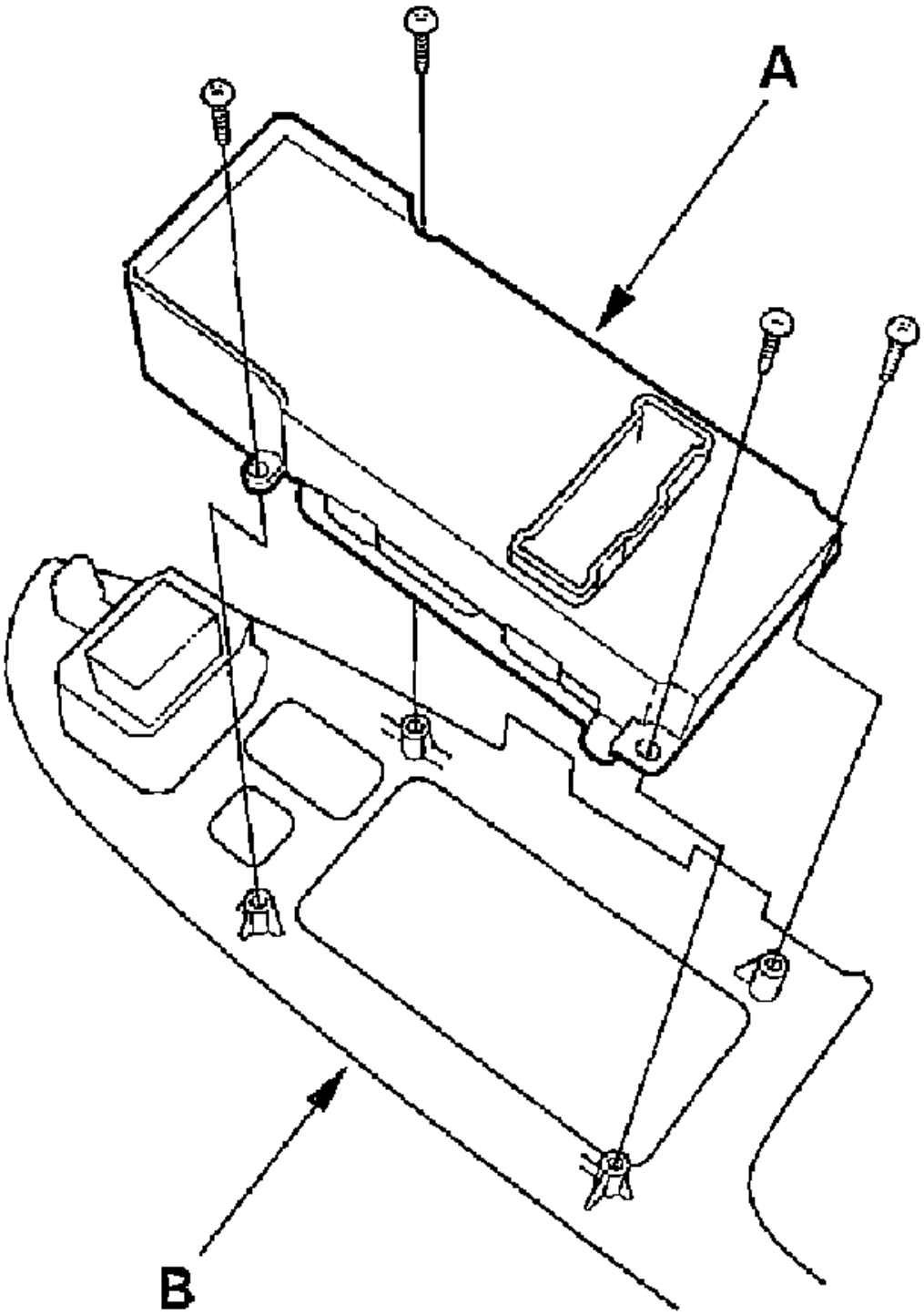


Fig. 12: Disconnecting The Power Mirror & Power Window Switch Connectors

3. Remove the four mounting screws, then remove the master switch (A) from the panel (B).

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Fig. 13: Removing The Master Switch From The Panel

PASSENGER'S WINDOW SWITCH TEST/REPLACEMENT

1. Carefully pry off the door switch trim (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the power window switch connector (A), then remove the three mounting screws and the power window switch (B) from the switch trim (C).

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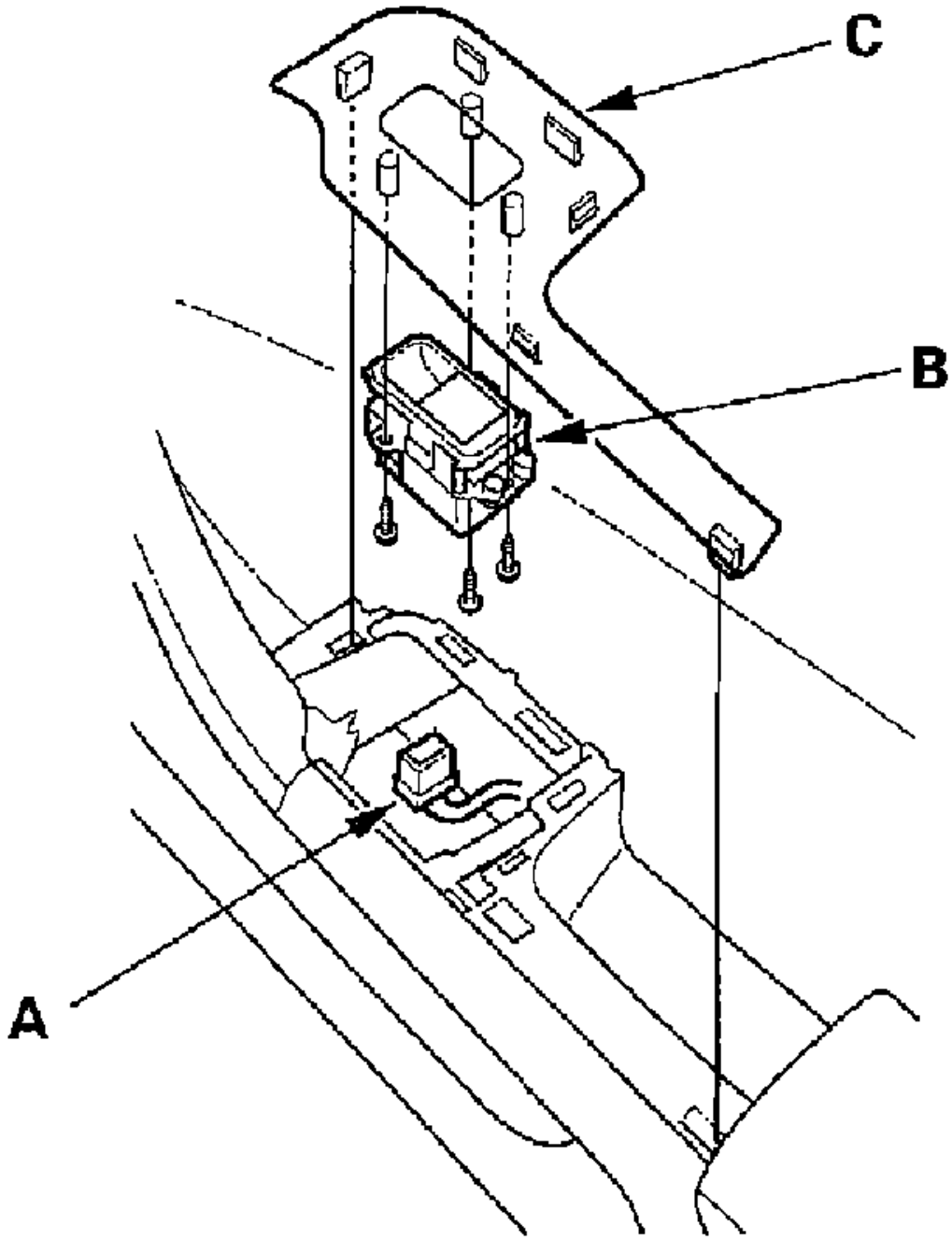


Fig. 14: Removing The Front Passenger's Power Window Switch

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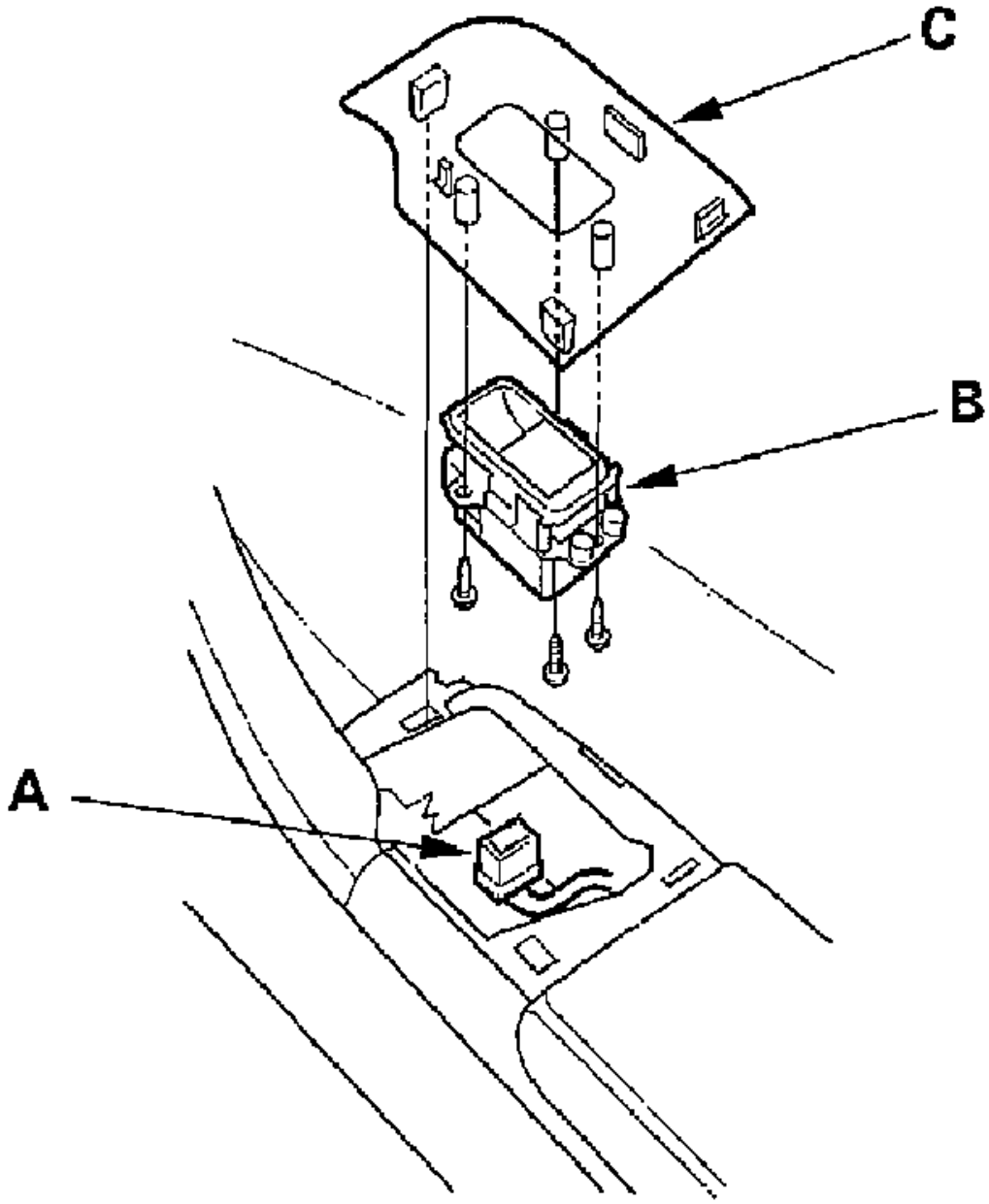


Fig. 15: Removing The Rear Passenger's Power Window Switch

3. Swap the window switch with another known-good switch and test. If the original window switch is faulty, replace it.

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DTC TROUBLESHOOTING

DTC B1125: DRIVER'S POWER WINDOW MOTOR A PULSE ERROR; DTC B1126: DRIVER'S POWER WINDOW MOTOR B PULSE ERROR

1. Open and close the driver's power window by using the driver's switch manually.
2. While the power window moving, select POWER WINDOWS from the HDS and enter the DATA LIST.
3. Check the EXIST/NONE information of the P/W PLSA (B1125) or P/W PLSB (B1126) in the DATA LIST.

   Do the information indicators display EXIST?

   YES: Replace the power window master switch.

   NO: Go to step 4.
4. Refer to the power window master switch input test, check for continuity between the driver's power window motor 6P connector and the power window master switch 23P connector (see **MASTER SWITCH INPUT TEST**).

   Are all the wire harnesses OK?

   YES: Substitute a known-good power window master switch, and recheck. If DTC is gone, the original master switch is faulty; replace it. If the DTC is still indicated, replace the driver's power window motor.

   NO: Repair a short or an open in the wire.

DTC B1140: DRIVER'S POWER WINDOW POSITION DETECT CIRCUIT ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).
3. Open and close the driver's power window by using the driver's switch manually.
4. Check for DTCs using the HDS.

   Is DTC B1125 or B1126 indicated?

   YES: Troubleshoot the DTC B1125 or B1126 (see **DTC B1125: DRIVER'S POWER WINDOW MOTOR A PULSE ERROR; DTC B1126: DRIVER'S POWER WINDOW MOTOR B PULSE ERROR**).

   NO: Go to step 5.
5. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW**).
6. Check for DTCs again using the HDS.

   Is DTC B1140 indicated?

   YES: Faulty door multiplex control unit; replace the power window master switch.

   NO: The system is recovered at this time.

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2004 SUSPENSION

Rear - TSX

DESCRIPTION

Model uses an independent control arm suspension system. Suspension consists of a vertically mounted strut or damper, and coil spring connected to a knuckle/spindle assembly, upper control arm, lower control arm, trailing arm, and a stabilizer bar. See **Fig. 1** .

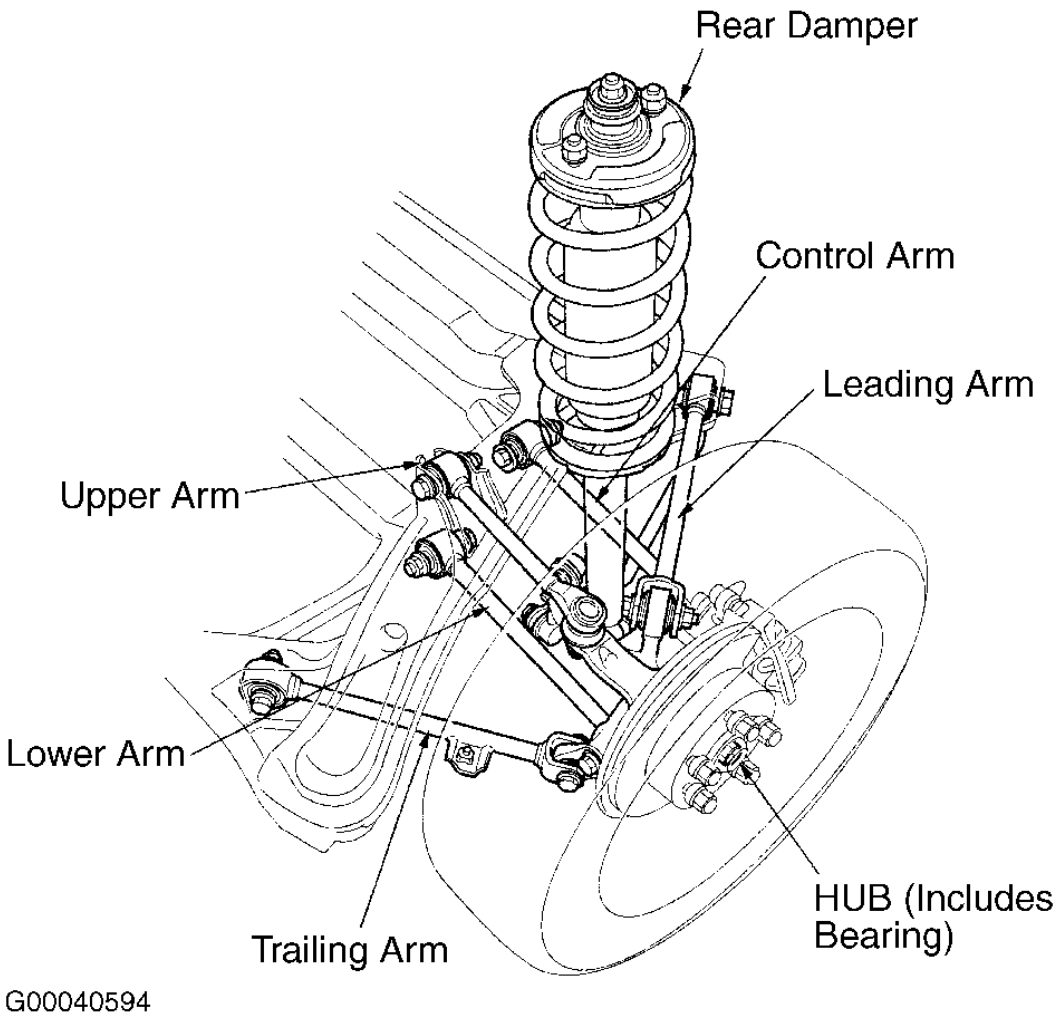


Fig. 1: Identifying Rear Suspension Components
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ADJUSTMENTS & INSPECTION

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WHEEL ALIGNMENT

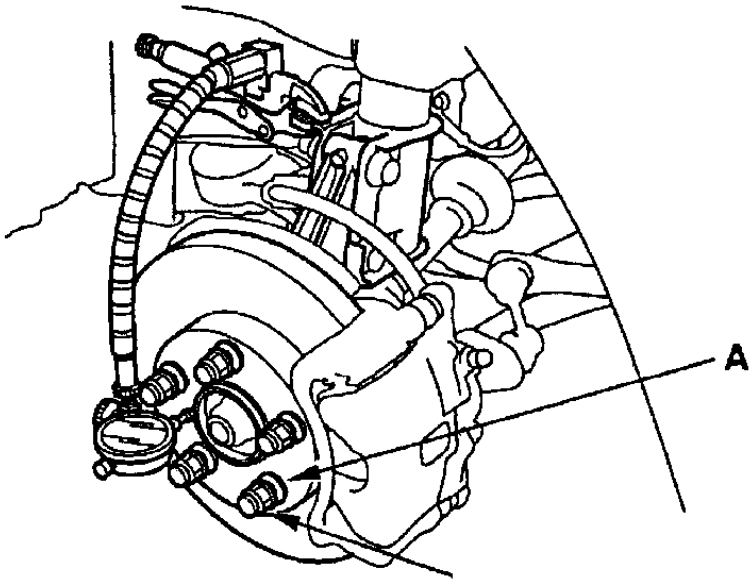
NOTE: See SPECIFICATIONS & PROCEDURES article.

WHEEL BEARING

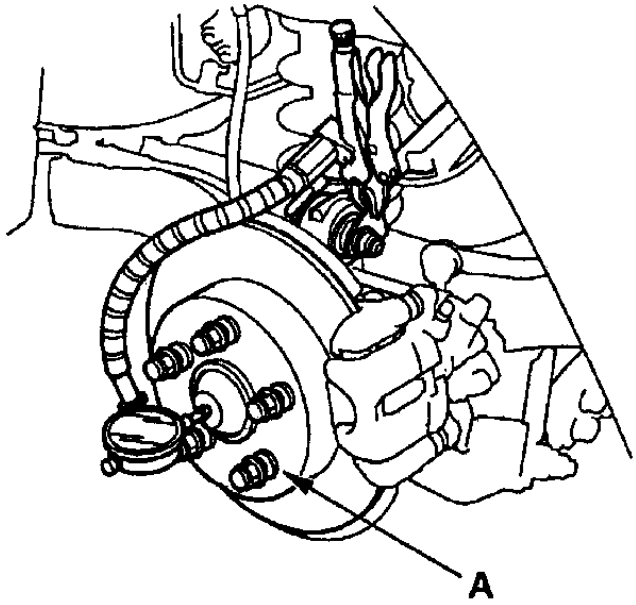
Wheel bearings are not adjustable. Remove tire and wheel assembly. Install wheel lug nuts. Check wheel bearing end play using a dial indicator. See **Fig. 2** . If rear wheel bearing end play is greater than .002" (.05 mm), replace hub and wheel bearing assembly. See **HUB/BEARING ASSEMBLY** under REMOVAL & INSTALLATION.

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Front:



Rear:



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Fig. 2: Measuring Wheel Bearing End Play
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REMOVAL & INSTALLATION

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BALL JOINT

Removal

NOTE: Always use a ball joint remover to disconnect a ball joint. DO NOT strike the housing or any other part of the ball joint connection to disconnect.

1. Install the ball joint thread protector onto the threads of the ball joint (A) by hand until it stops to prevent damage to the threaded end of the ball joint pin. See **Fig. 3** .
2. Apply grease (A) to the ball joint remover on the areas shown. See **Fig. 4** . These will ease installation of the tool and prevent damage to the pressure bolt threads.
3. Loosen the pressure bolt (A), and install the ball joint remover. See **Fig. 5** . Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the adjusting bolt (B).
4. After adjusting the adjusting bolt, make sure the head (C) of the adjusting bolt is in the position shown to allow the jaw to pivot.

NOTE: DO NOT use pneumatic or electric tools on the pressure bolt.

5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the ball joint pin hole. If necessary, apply penetrating type lubricant to loosen the ball joint pin.
6. Remove the tool, then remove the nut from the end of the ball joint pin, and pull the ball joint out of the ball joint pin hole. Inspect the ball joint boot, and replace it if damaged.

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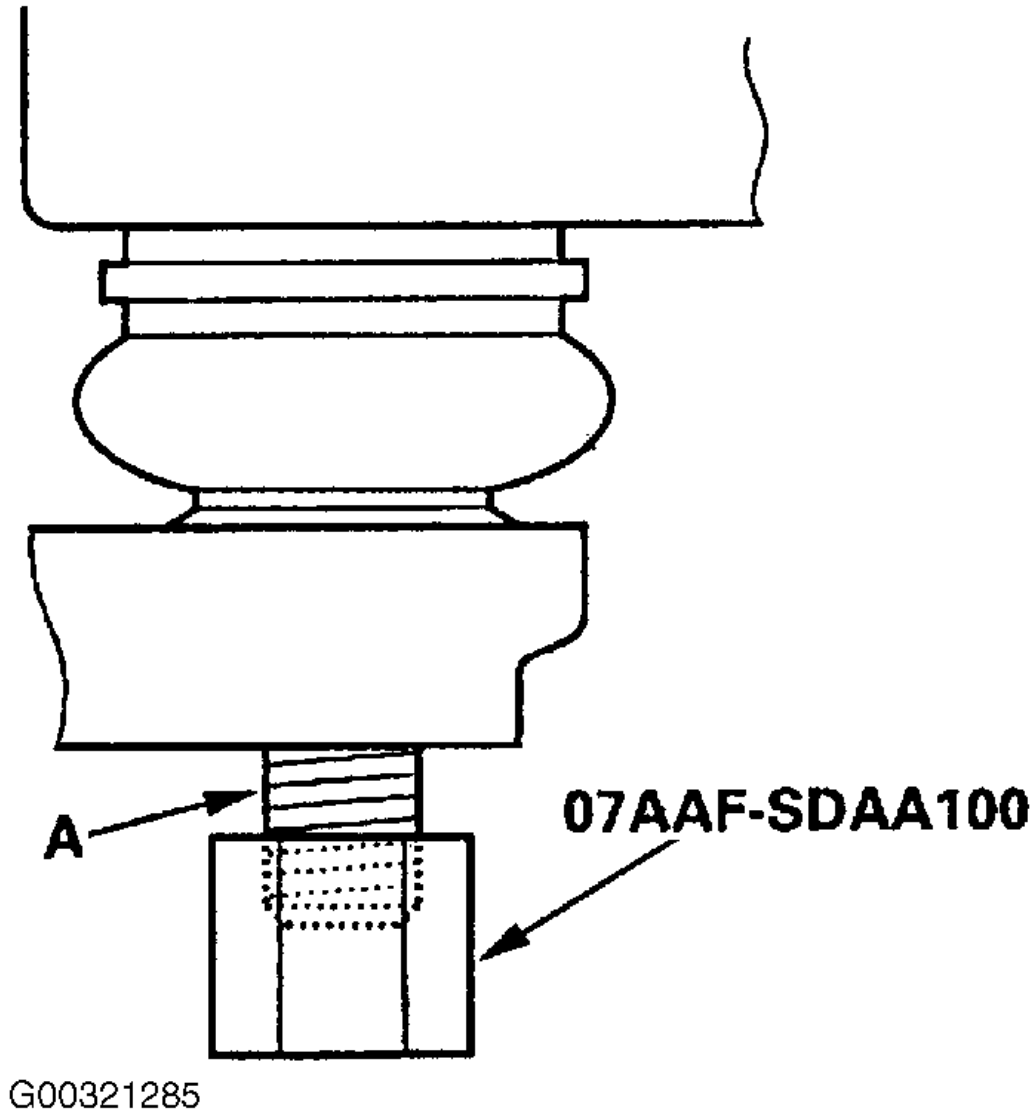


Fig. 3: Installing Ball Joint Thread Protector
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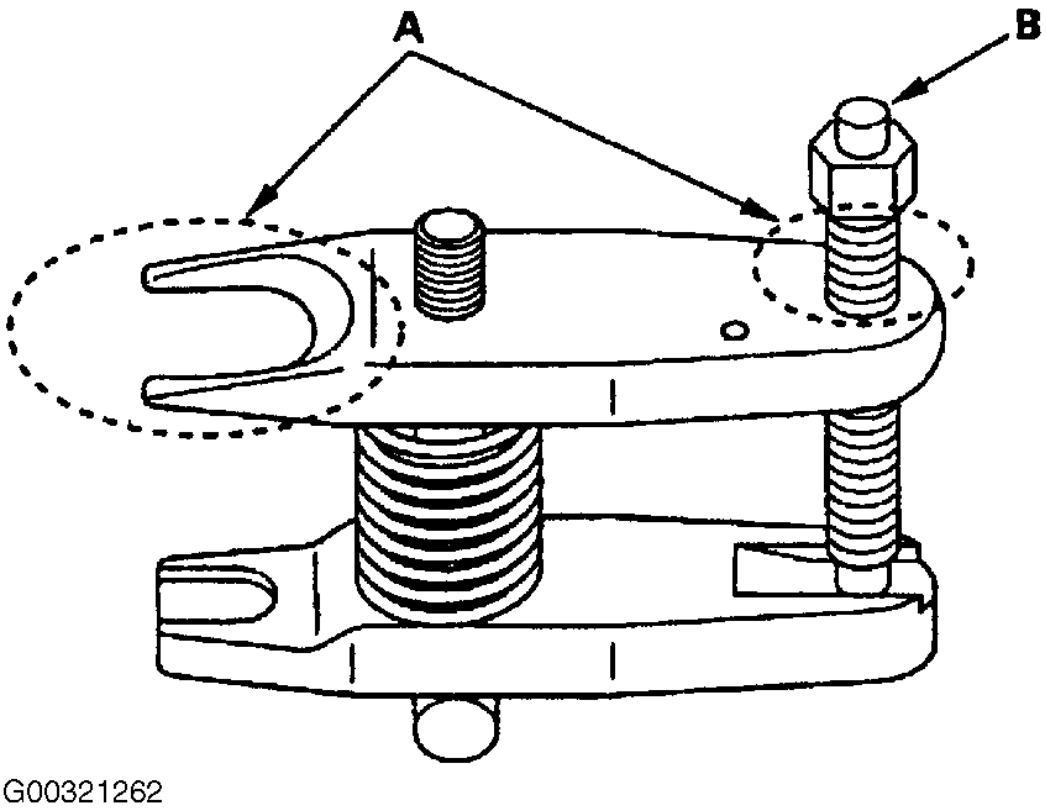


Fig. 4: Applying Molybdenum Grease To Ball Joint Remover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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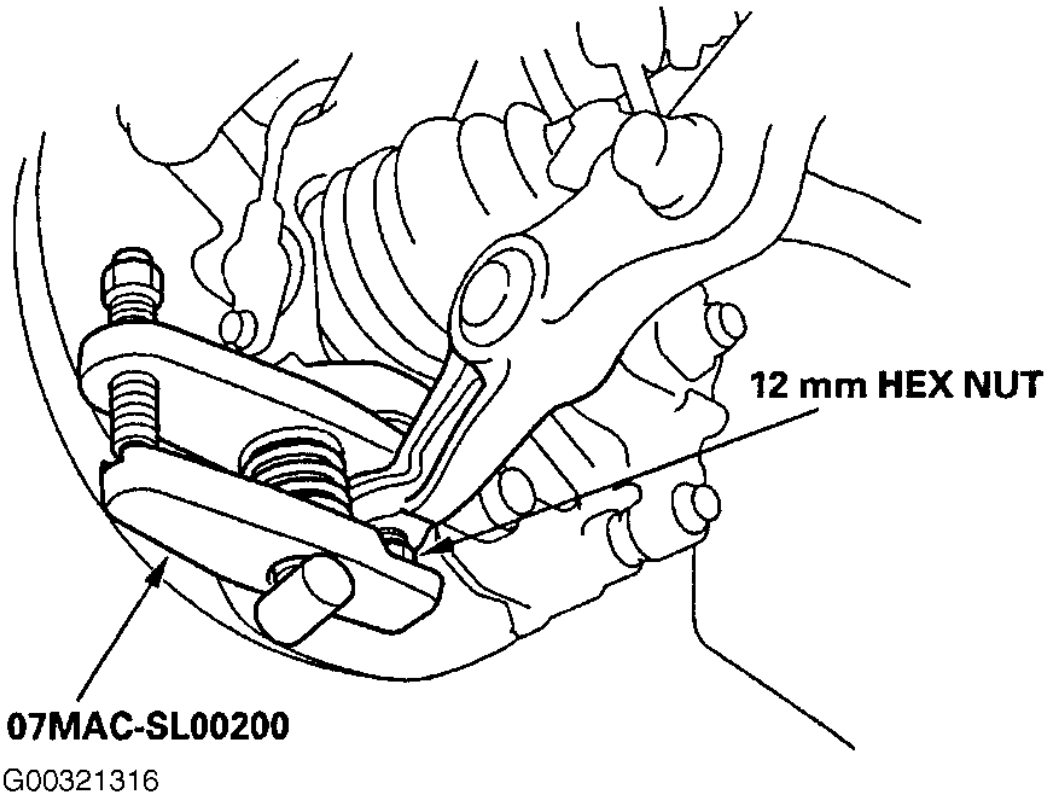


Fig. 5: Installing Ball Joint Remover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DAMPER/SPRING

For exploded view of damper/spring, see **Fig. 6** .

Removal

1. Raise the rear of the vehicle, and make sure it is securely supported. Remove the rear wheels.
2. Remove the rear shelf. See **Fig. 7** .
3. Remove the seat side bolster. See **Fig. 8** .
4. Remove the 2 flange nuts (B). See **Fig. 9** .
5. Remove the flange bolt (A) from the knuckle.
6. Remove the flange nut (B) while holding the joint pin (C) with a hex wrench (D), and disconnect the stabilizer link (E) from the stabilizer link bracket. See **Fig. 10** .
7. Lower the rear suspension, then remove the damper (G) from the vehicle. Damper springs are different, left and right. Mark the spring "L" and "R" before you continue.

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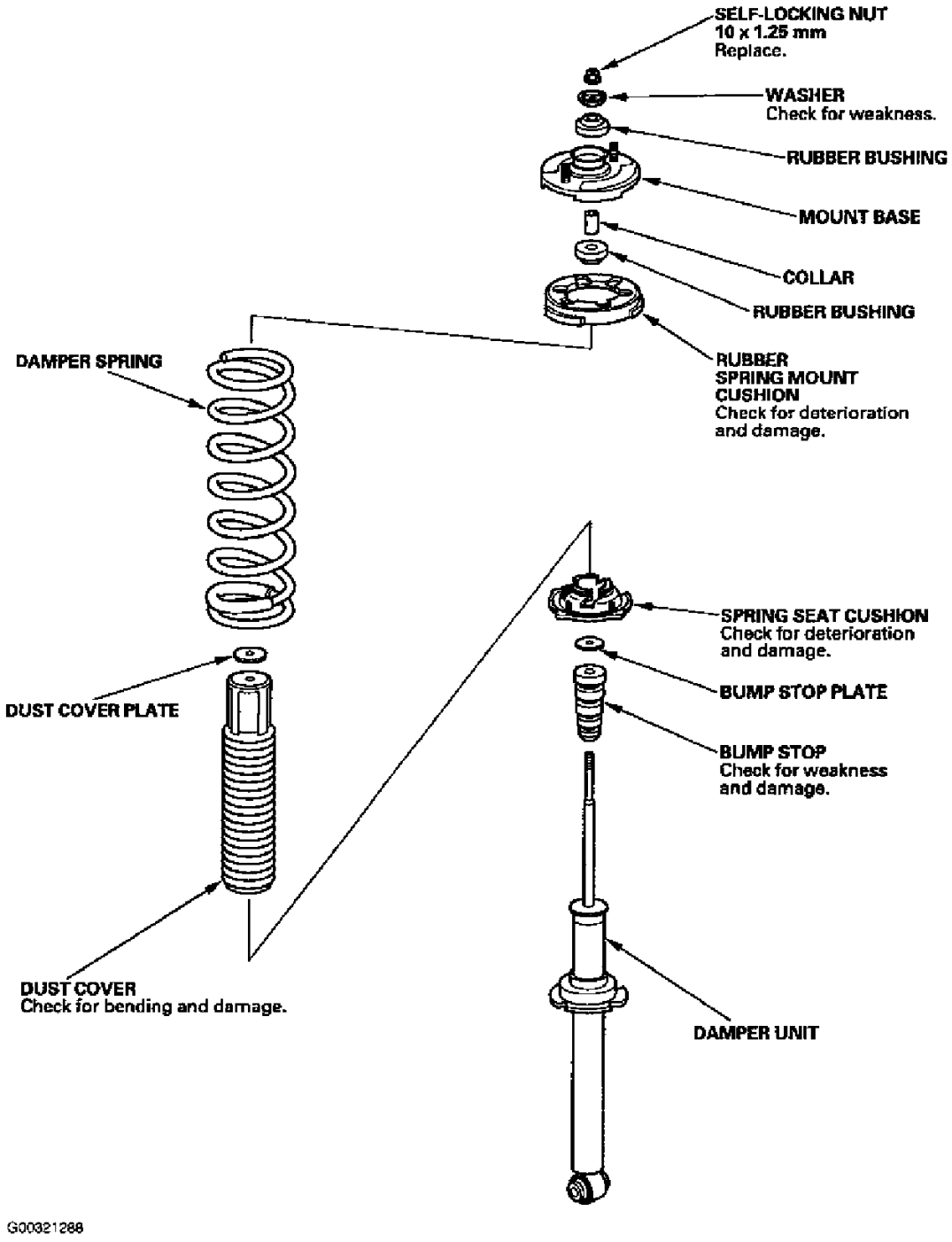


Fig. 6: Exploded View Of Damper/Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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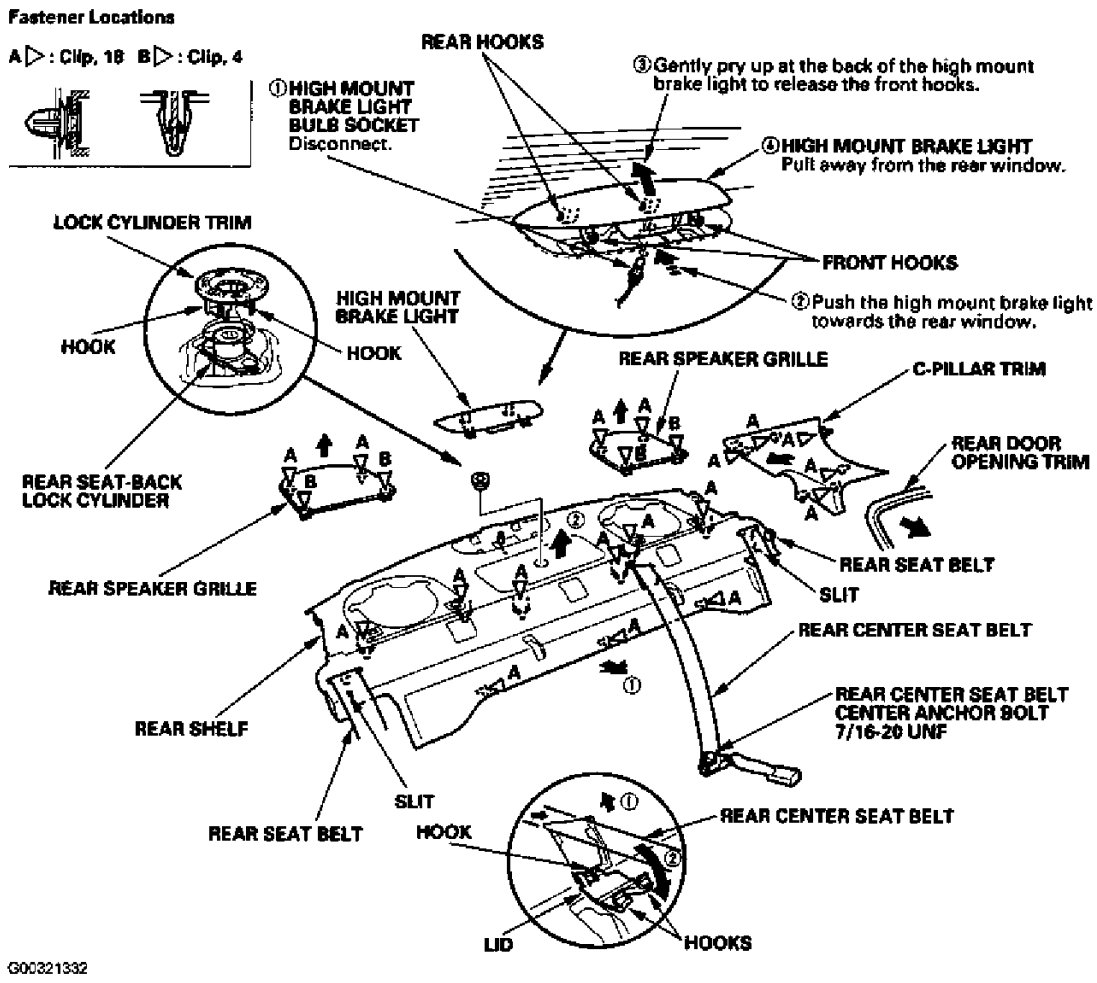


Fig. 7: Removing Rear Shelf
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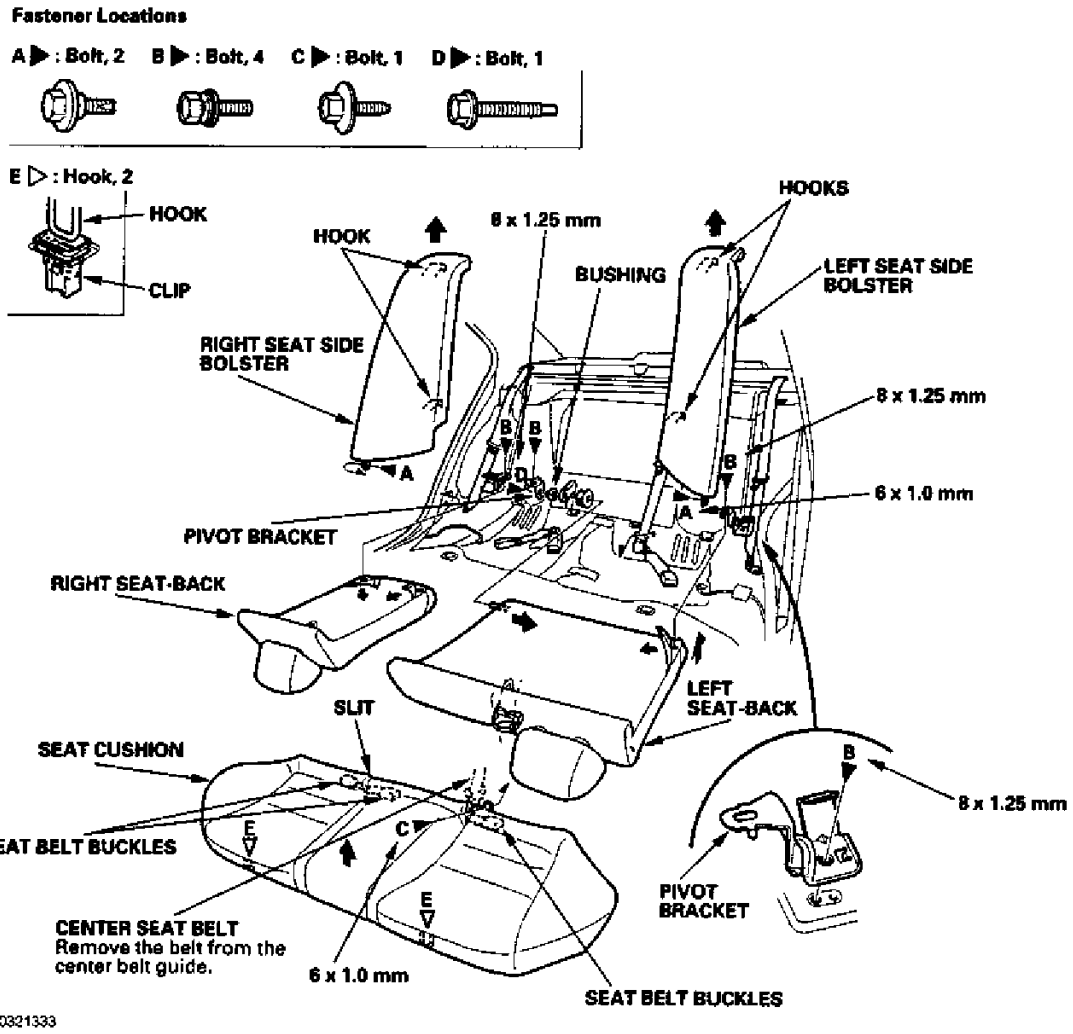


Fig. 8: Removing Seat Side Bolster
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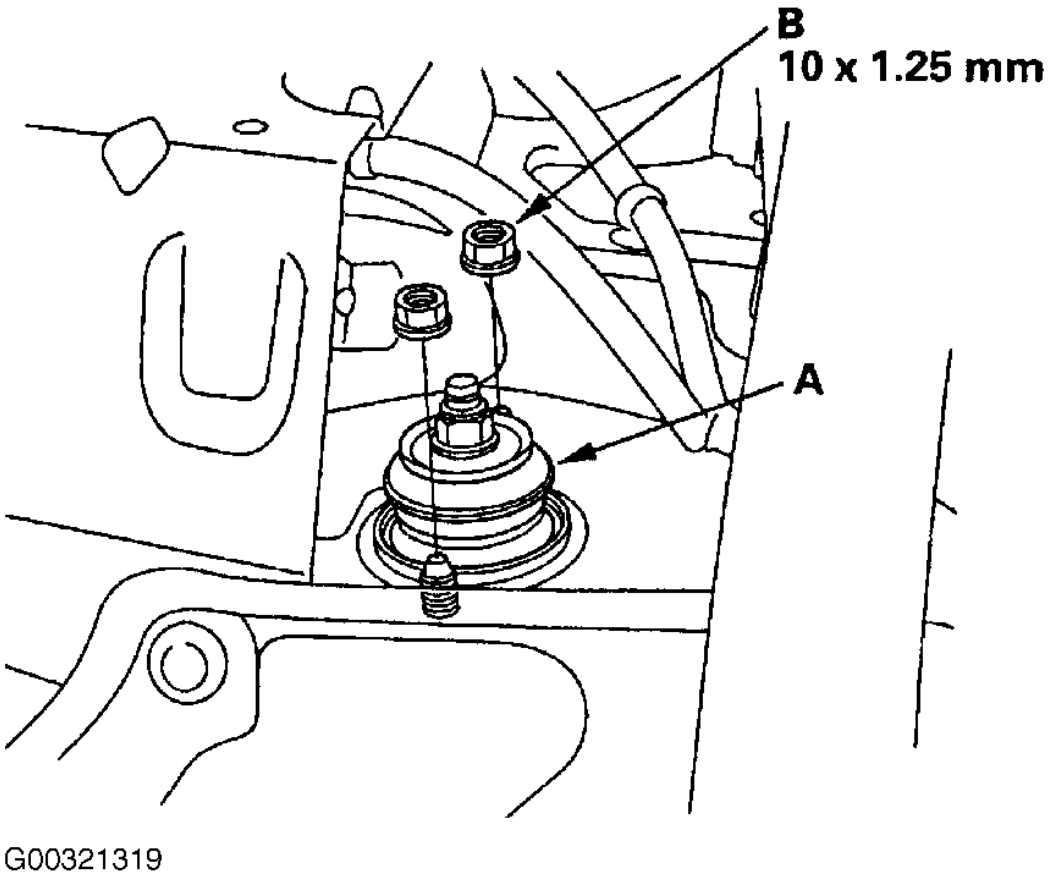


Fig. 9: Removing Flange Nuts
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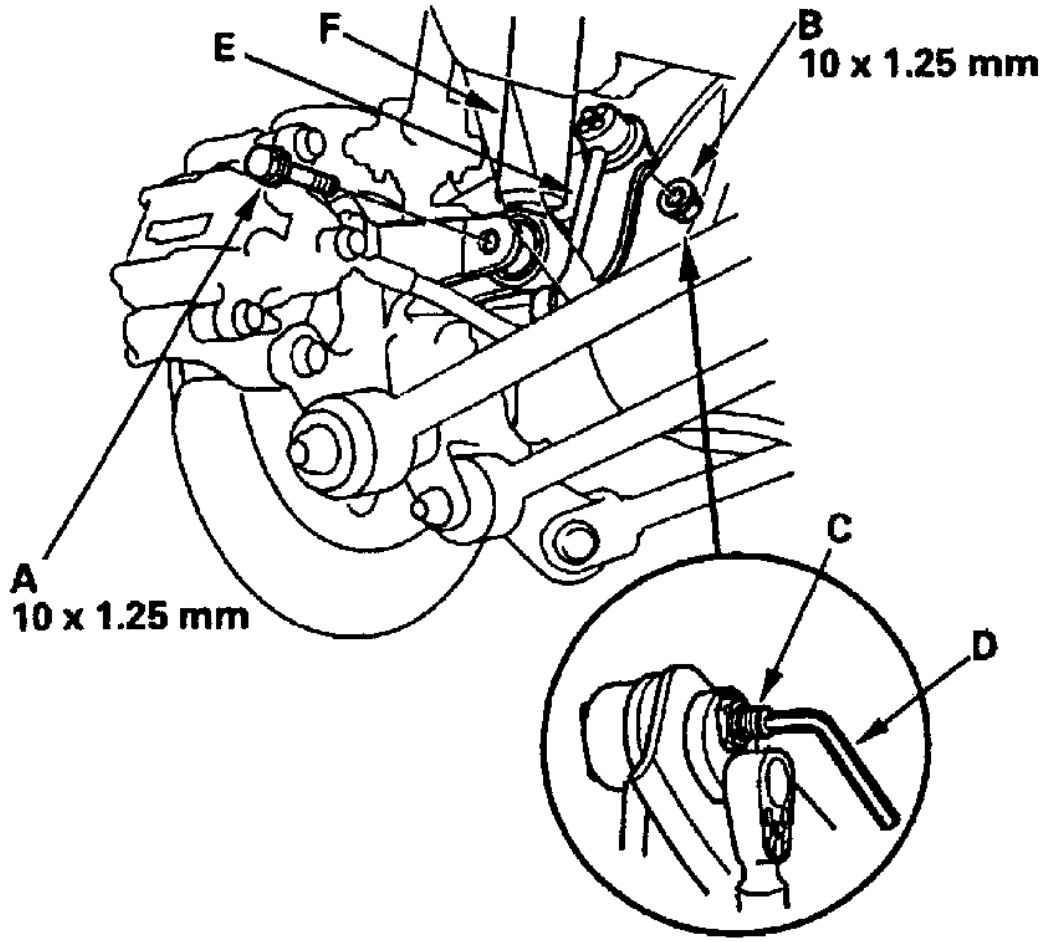


Fig. 10: Removing Flange Bolt From Knuckle
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Disassembly/Inspection

1. Compress the damper spring with appropriate strut spring compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B). See **Fig. 11** . DO NOT compress the spring more than necessary to remove the self-locking nut.
2. Release the pressure from the strut spring compressor, then disassemble the damper. See **Fig. 6** .
3. Reassemble all parts, except the spring.
4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extends smoothly and constantly when the compression is released. If it does not, the gas is leaking, and the damper should be replaced.
5. Check for oil leaks, abnormal noises, and binding during these tests.

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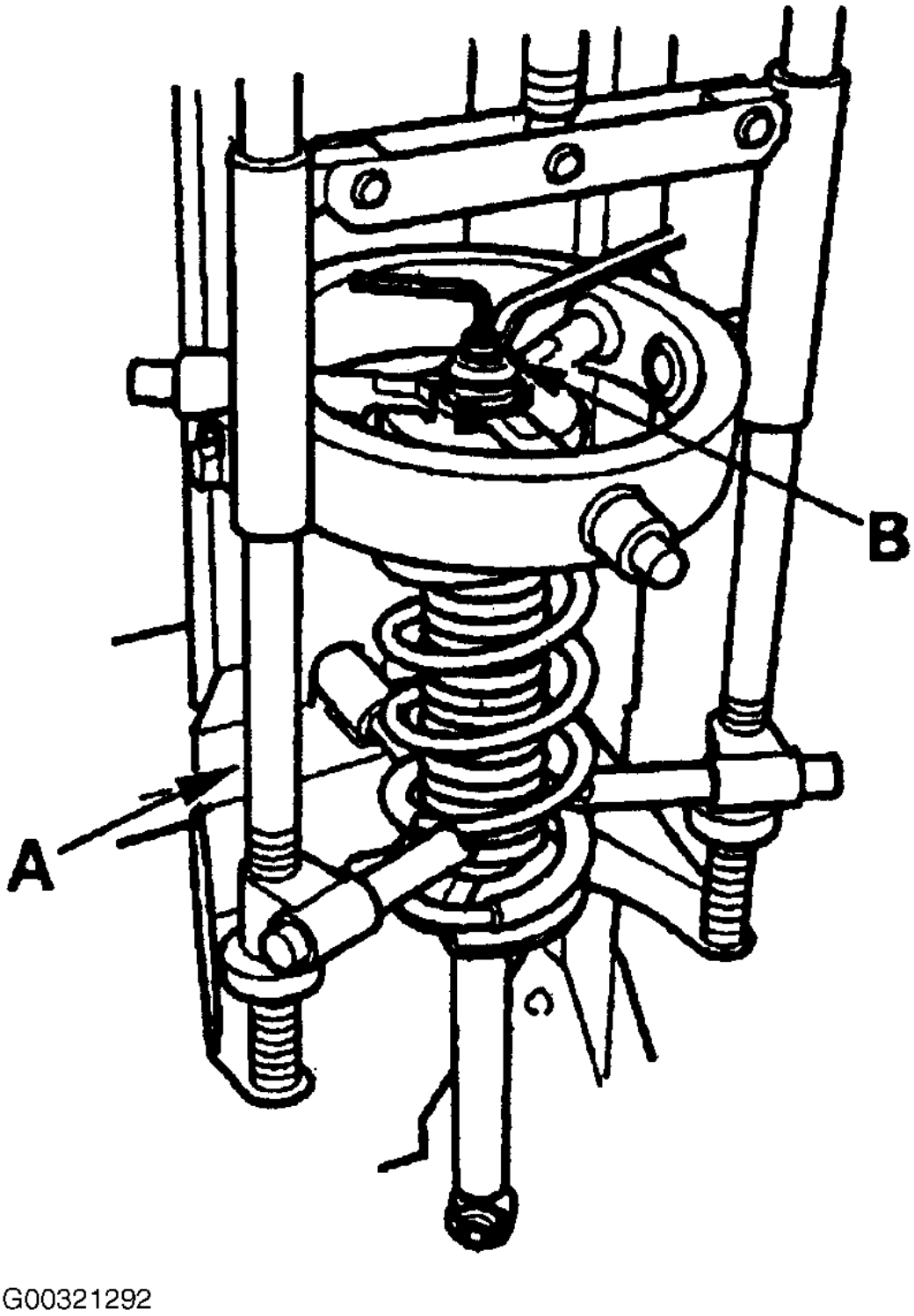


Fig. 11: Removing Self-Locking Nut

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Reassembly

1. Install the damper unit on appropriate strut spring compressor (A). See **Fig. 12** .
2. Assemble the damper in the reverse order of disassembly, except for the washer and self-locking nut. Align the bottom end of the damper spring and the stepped part of the spring lower seat (B).
3. Position the damper mounting base on the damper unit.
4. Compress the damper spring with the spring compressor.
5. Install the washer (A), and loosely install a new self-locking nut (B). See **Fig. 13** .
6. Hold the damper shaft with a hex wrench, and tighten the self-locking nut.

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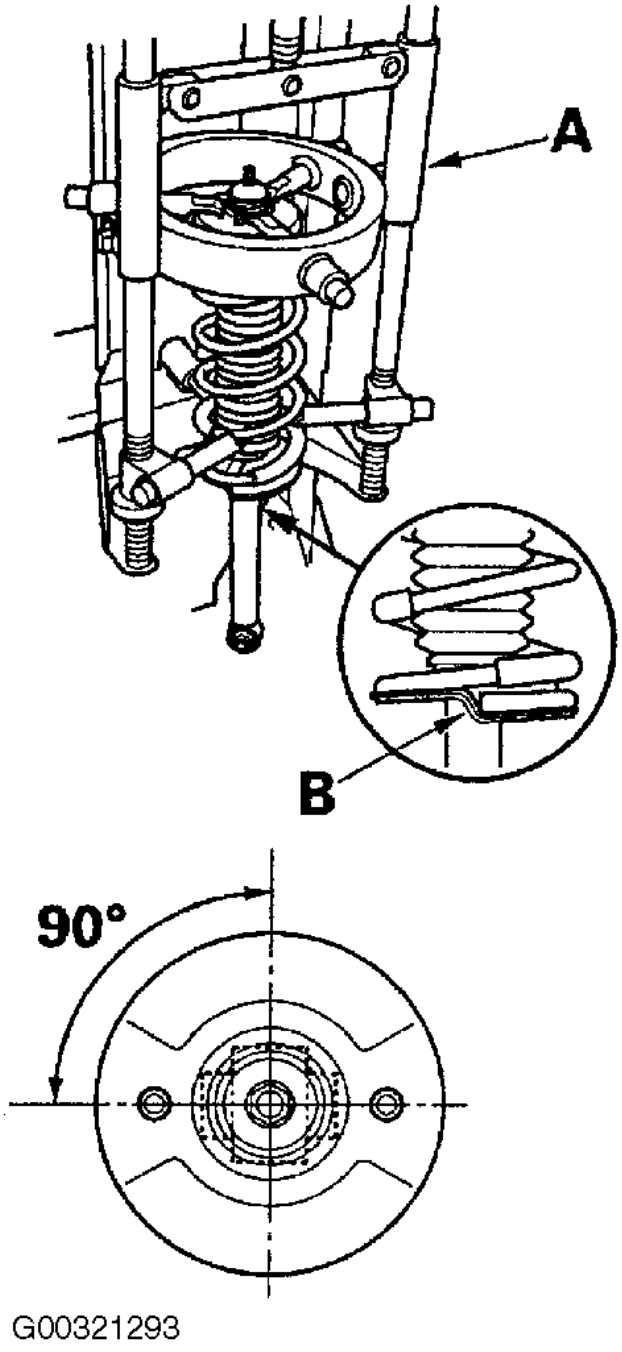


Fig. 12: Installing Damper Unit
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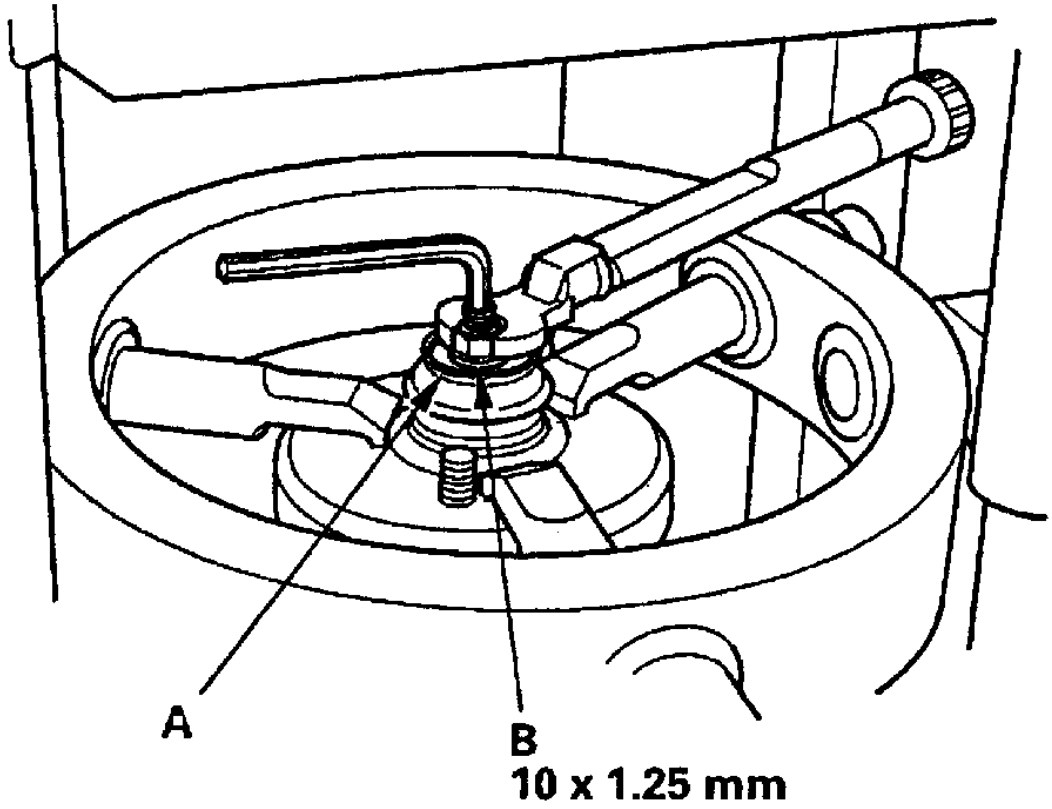


Fig. 13: Installing Washer & Self-Locking Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Lower the rear suspension, position the damper (A), and loosely install the 2 flange nuts (B). See **Fig. 9** .
2. Loosely install the flange nuts (B) onto the top of the damper.
3. Loosely install the flange bolt (A) on the bottom of the damper. Connect the stabilizer link (A) on the bracket, and loosely install the flange nut (B). See **Fig. 10** .
4. Raise the rear suspension with a floor jack load the vehicle's weight, and tighten the flange bolt to specification. See **TORQUE SPECIFICATIONS** .
5. Tighten the flange nut while holding the joint pin (C) with a hex wrench (D).
6. Tighten the 2 flange nuts on top of the damper to specification.
7. Install the seat side bolster. See **Fig. 8** .
8. Install the rear shelf. See **Fig. 7** .
9. Clean the mating surface of the brake disc and the inside of the wheel, then install the rear wheel.
10. Check the rear wheel alignment, and adjust it if necessary. See **WHEEL ALIGNMENT** under

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ADJUSTMENTS & INSPECTION.

KNUCKLE/HUB ASSEMBLY

For exploded view of hub bearing, see **Fig. 14** .

Removal & Installation

1. Raise the rear of the vehicle, and make sure it is securely supported.
2. Remove the wheel nuts and rear wheel.
3. Remove the brake hose mounting bracket (A). See **Fig. 15**
4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. DO NOT twist the brake hose with force.
5. Remove the 2 washers (A). See **Fig. 16** .
6. Remove the 6-mm brake disc/drum retaining flat screws (A). See **Fig. 17** .
7. Screw two 8 x 1.25 mm bolts (B) into the disc/drum to push it away from the hub. Turn each bolt 2 turns at a time to prevent cocking the disc/drum excessively.
8. Remove the brake disc/drum (C).
9. Remove the hub bearing unit (A) and "O" ring (B). See **Fig. 18** .
10. Install the hub bearing unit in the reverse order of removal, and note the following items:
    - Use a new "O" ring on reassembly.
    - Tighten all mounting hardware to specification. See **TORQUE SPECIFICATIONS** .
    - Before installing the brake disc, clean the matching surfaces of the hub bearing unit and brake disc.
    - Before installing the wheel, clean the mating surface of the brake disc/drum and the inside of the wheel.

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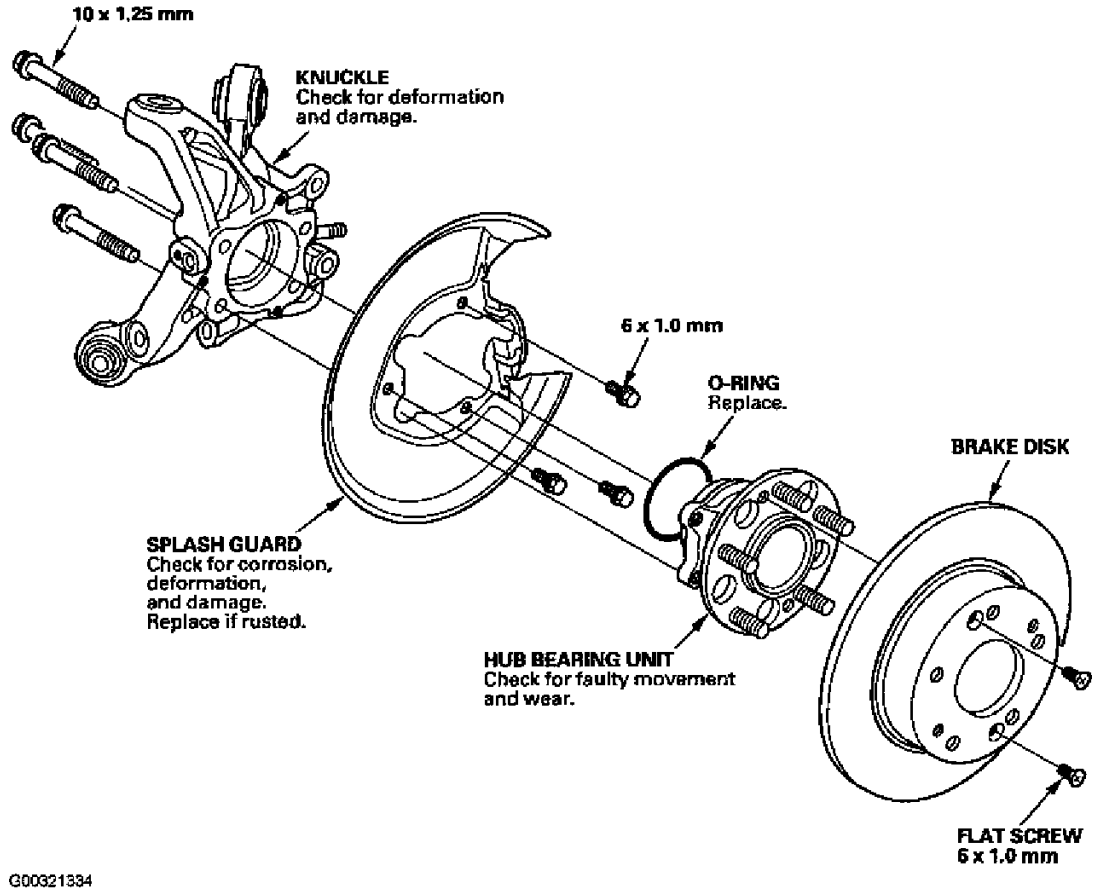


Fig. 14: Exploded View Of Knuckle/Hub Assembly
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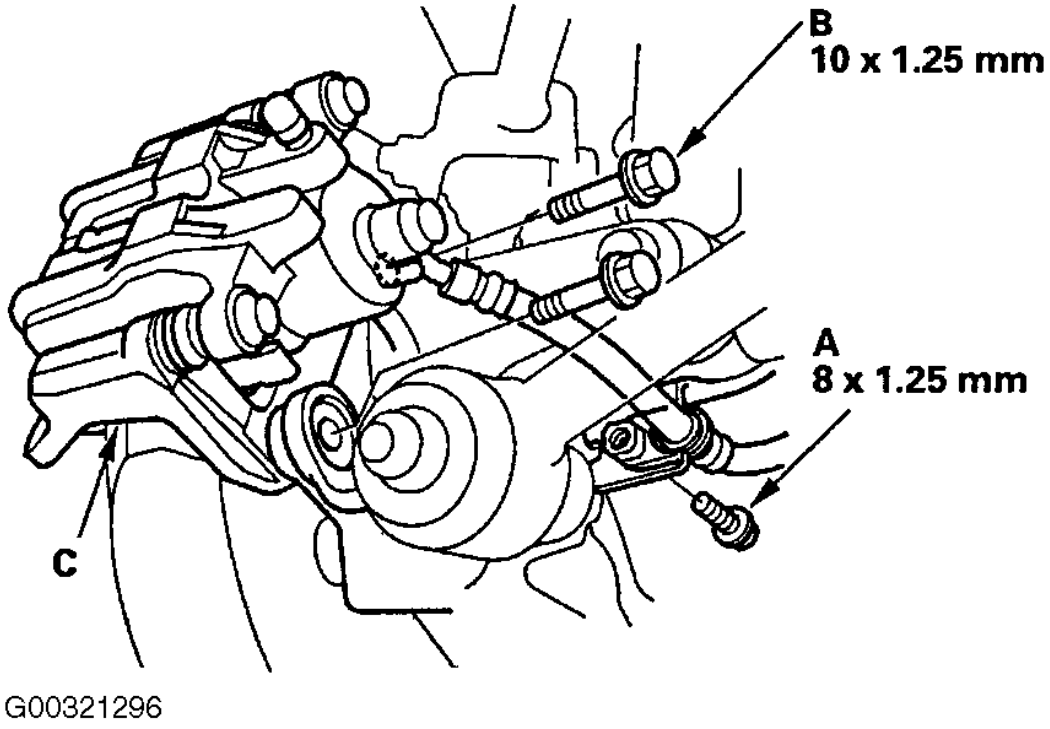


Fig. 15: Removing Brake Hose, Caliper Bracket & Assembly
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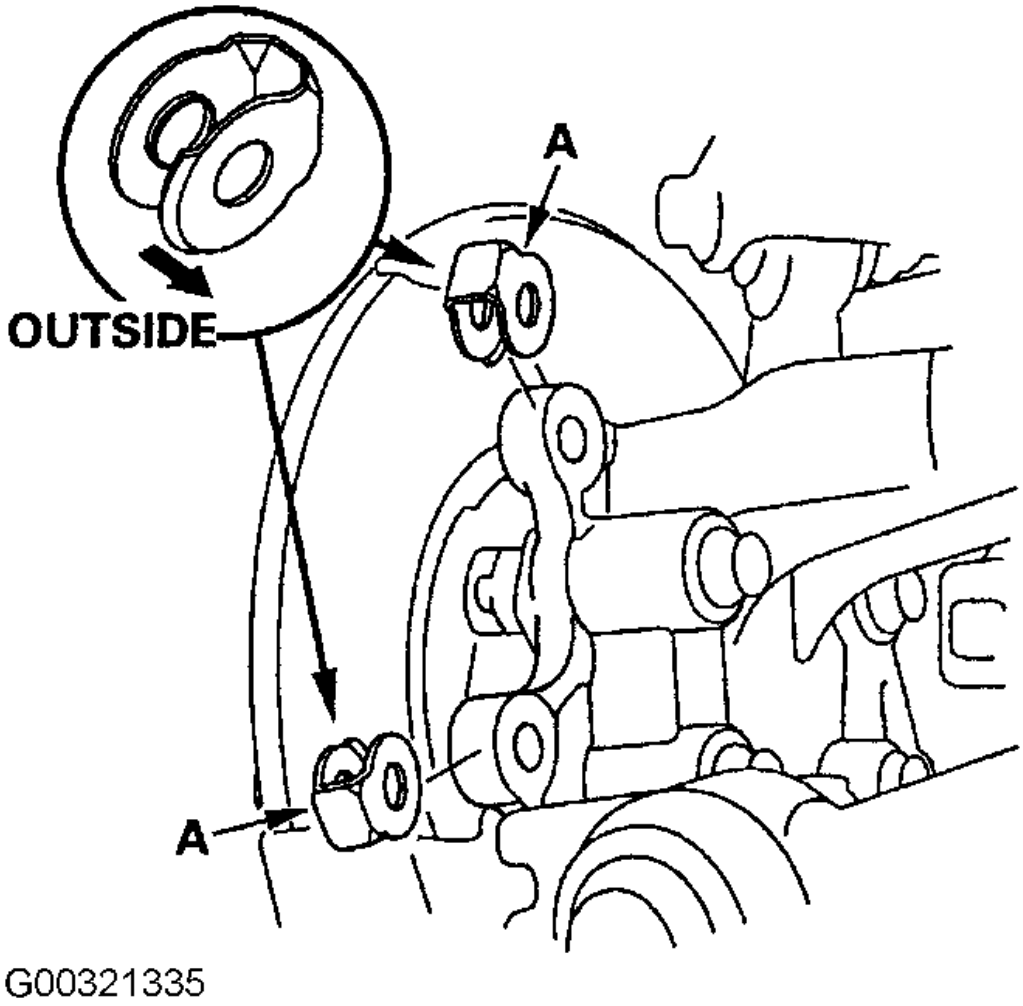


Fig. 16: Removing Caliper Washers
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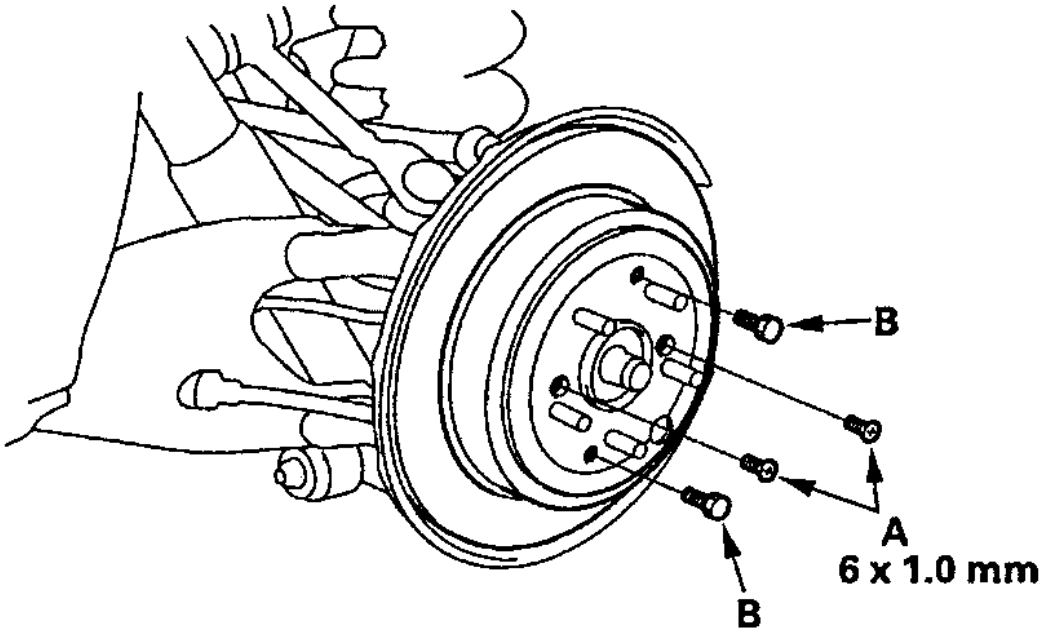


Fig. 17: Removing Brake Disc Retaining Screws
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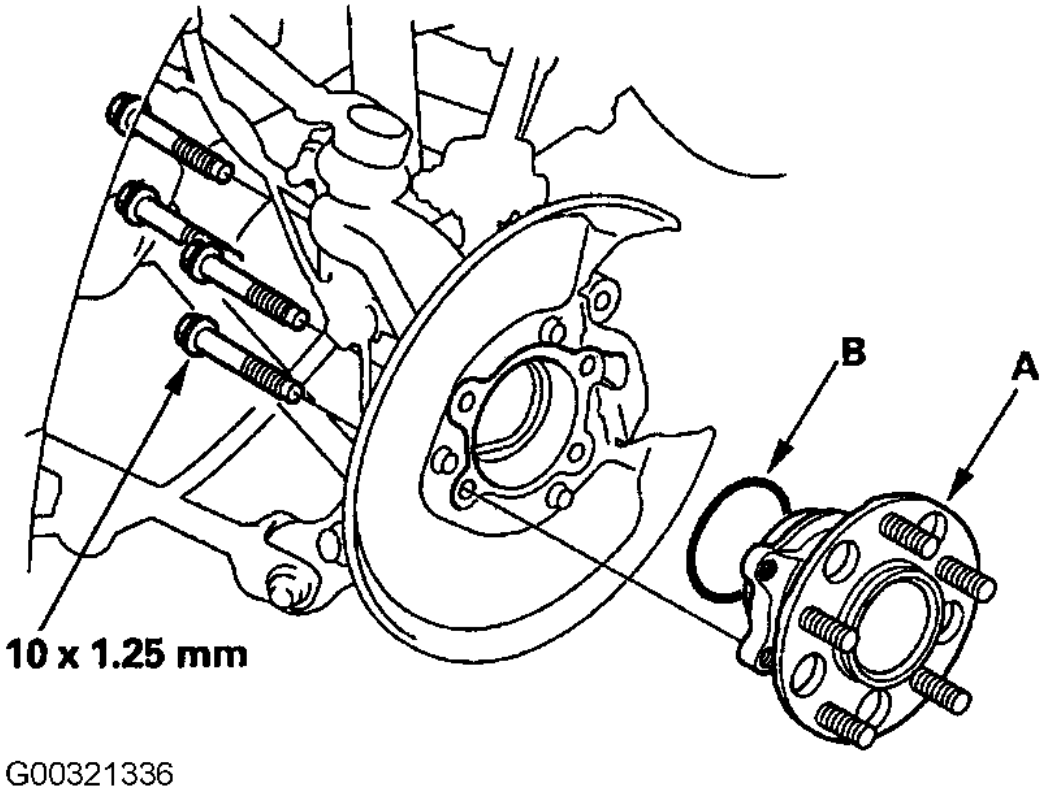


Fig. 18: Removing Hub Bearing Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

KNUCKLE

Removal & Installation

1. Remove the hub bearing unit. See **Fig. 14** .
2. Remove the splash guard (A). See **Fig. 19** .

NOTE: During installation, install the new lock pin after tightening the nut.

3. Remove the lock pin (A) from the upper arm ball joint, and remove the castle nut (B). See **Fig. 20** .
4. Disconnect the upper arm ball joint from the knuckle using the ball joint remover.
5. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the stabilizer link bracket (E). See **Fig. 21** .
6. Remove the damper lower mounting bolt (F), and disconnect the damper from the knuckle.
7. Remove the wheel sensor (A) from the knuckle. See **Fig. 22** . DO NOT disconnect the wheel sensor

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connector.

8. Remove the stabilizer link bracket (B) from the knuckle.
9. Remove the leading arm mounting bolt (A) from the knuckle. See **Fig. 23** .
10. Remove the control arm mounting nut (A) and washer (B). See **Fig. 24** .
11. Remove the trailing arm mounting bolt (A) from the knuckle. See **Fig. 25** .
12. Remove the lower arm mounting bolt (A), then remove the knuckle (B). See **Fig. 26** .
13. Install the knuckle in the reverse order of removal, and note the following items:
    - Be careful not to damage the ball joint boot when installing the knuckle when connecting the upper arm to the knuckle.
    - Use a new lower arm mounting nut and control arm mounting nut on reassembly.
    - Tighten the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. DO NOT align the castle nut by loosening it.
    - Tighten all mounting hardware to specification. See **TORQUE SPECIFICATIONS** .
    - Before installing the wheel, clean the mating surface on the brake disc/drum and the inside of the wheel.
    - Set the wheel alignment. See **WHEEL ALIGNMENT** under ADJUSTMENTS & INSPECTION.

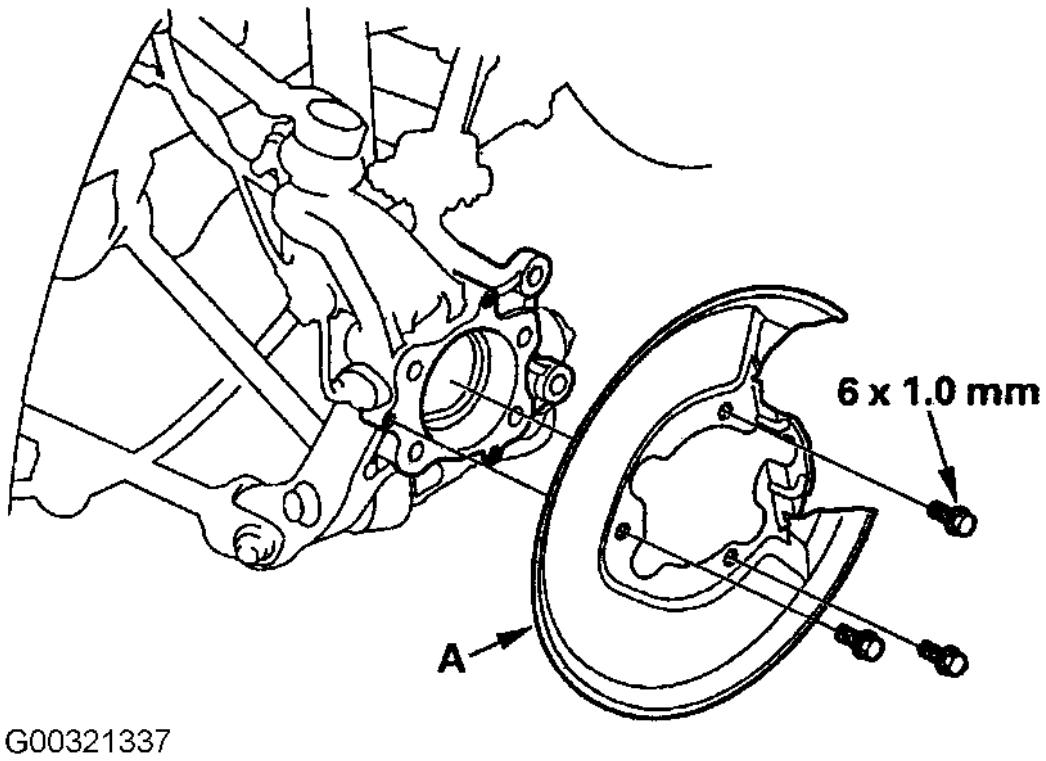


Fig. 19: Removing Splash Guard

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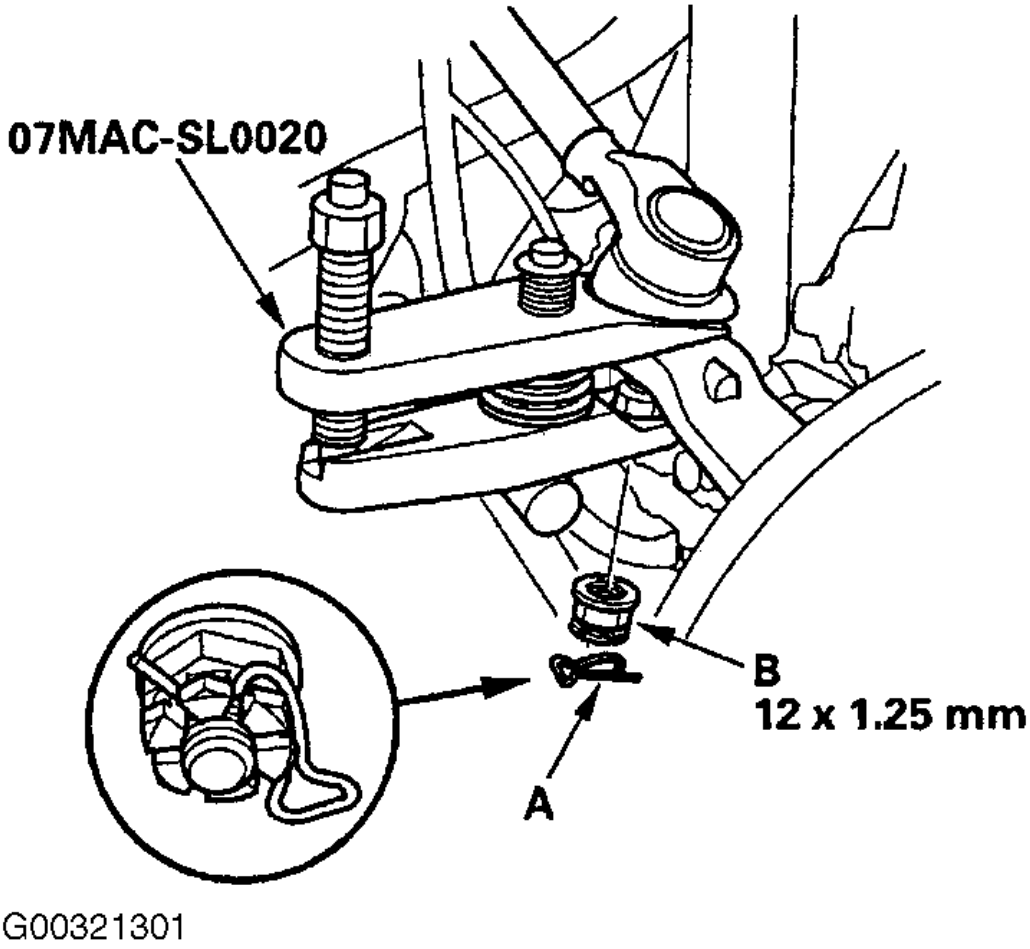


Fig. 20: Removing Lock Pin From Upper Arm Ball Joint
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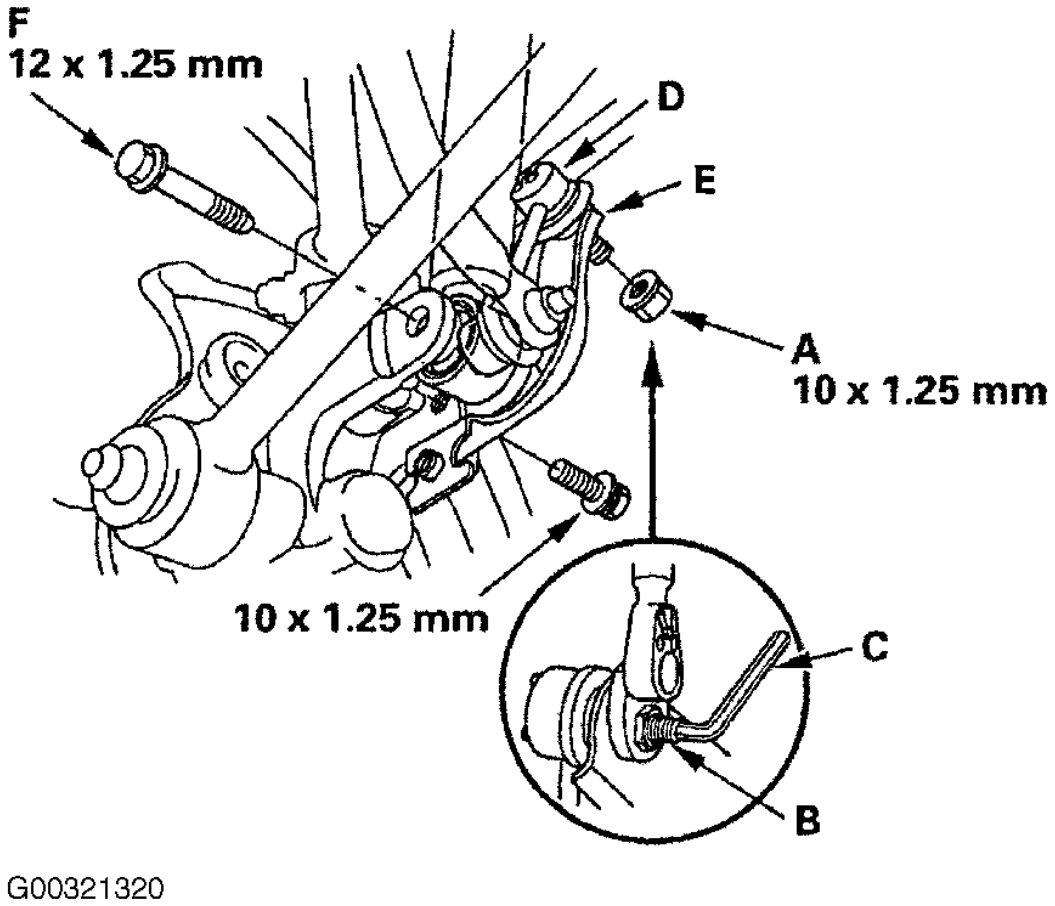


Fig. 21: Removing Flange Bolts Holding Joint Pin
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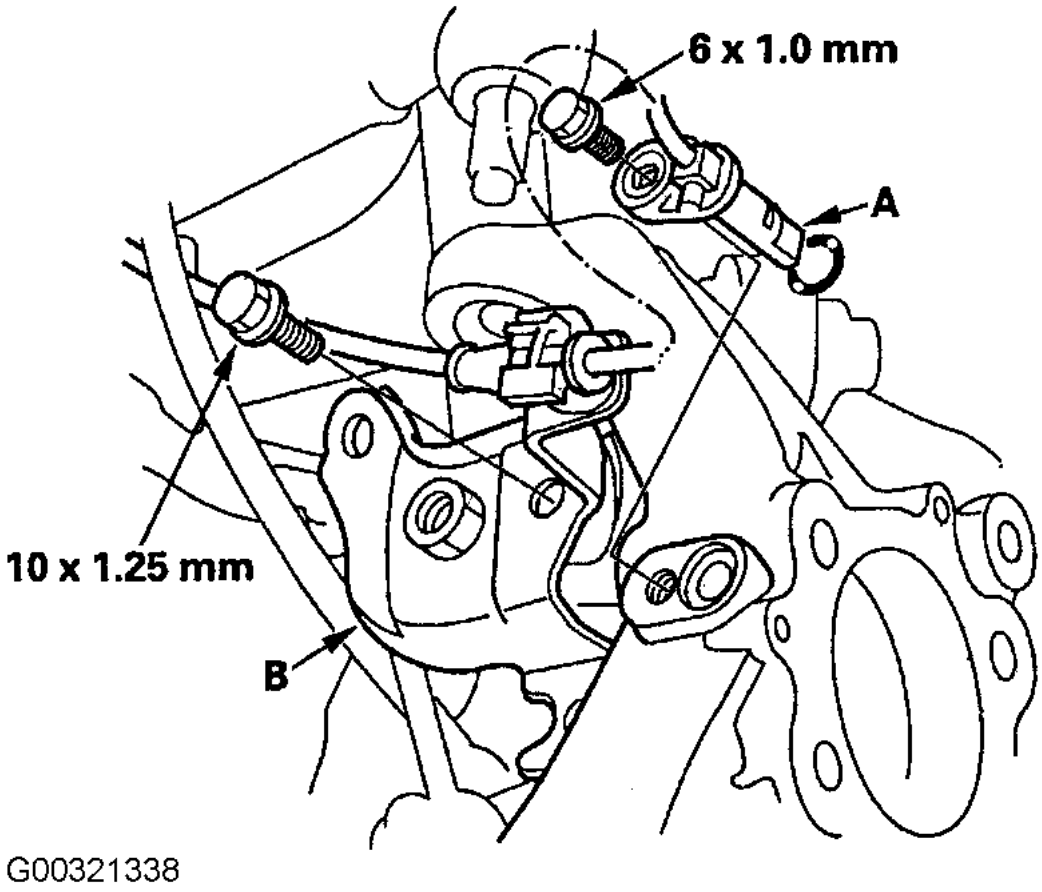


Fig. 22: Removing Wheel Sensor From Knuckle
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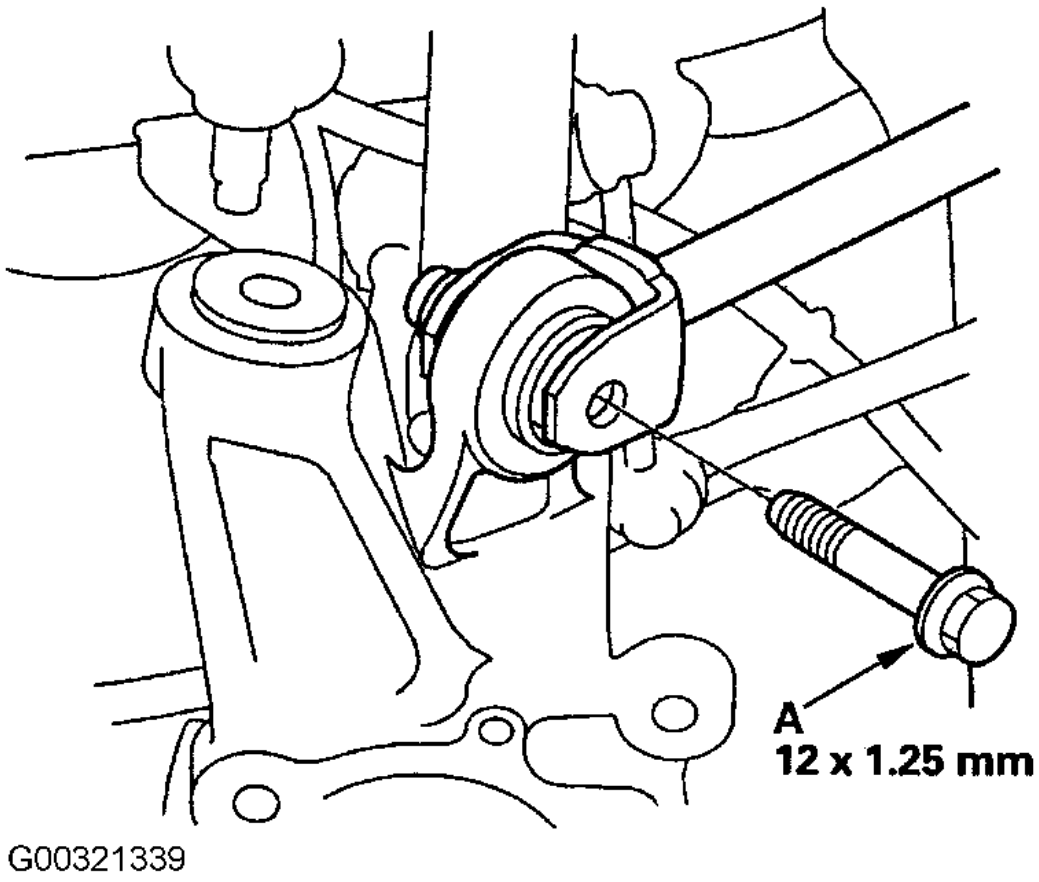


Fig. 23: Removing Leading Arm Mounting Nut
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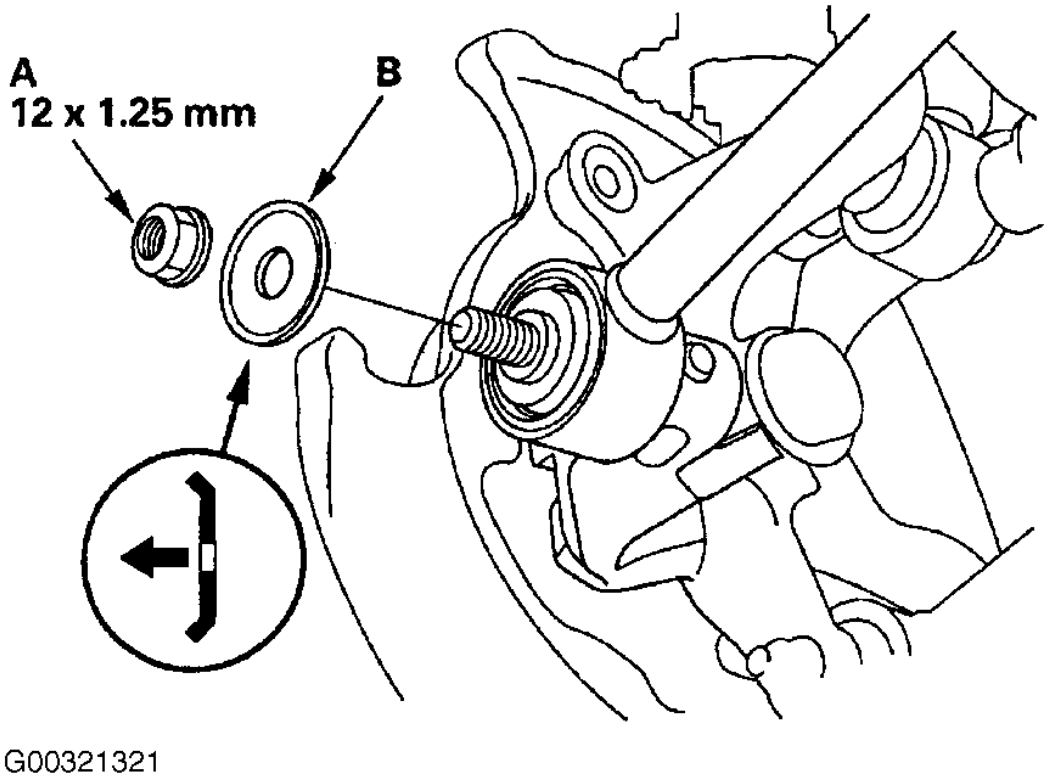


Fig. 24: Removing Control Arm Mounting Nut & Washer
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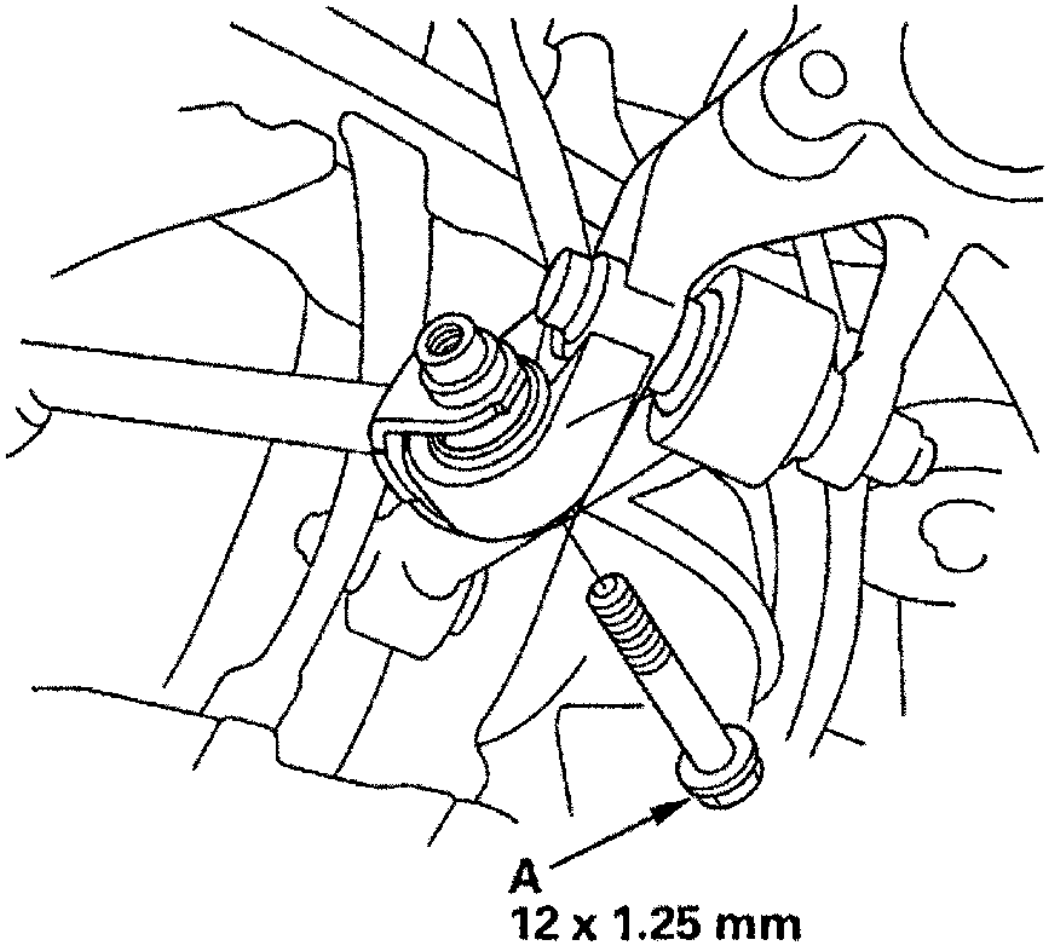


Fig. 25: Removing Trailing Arm Mounting Bolt
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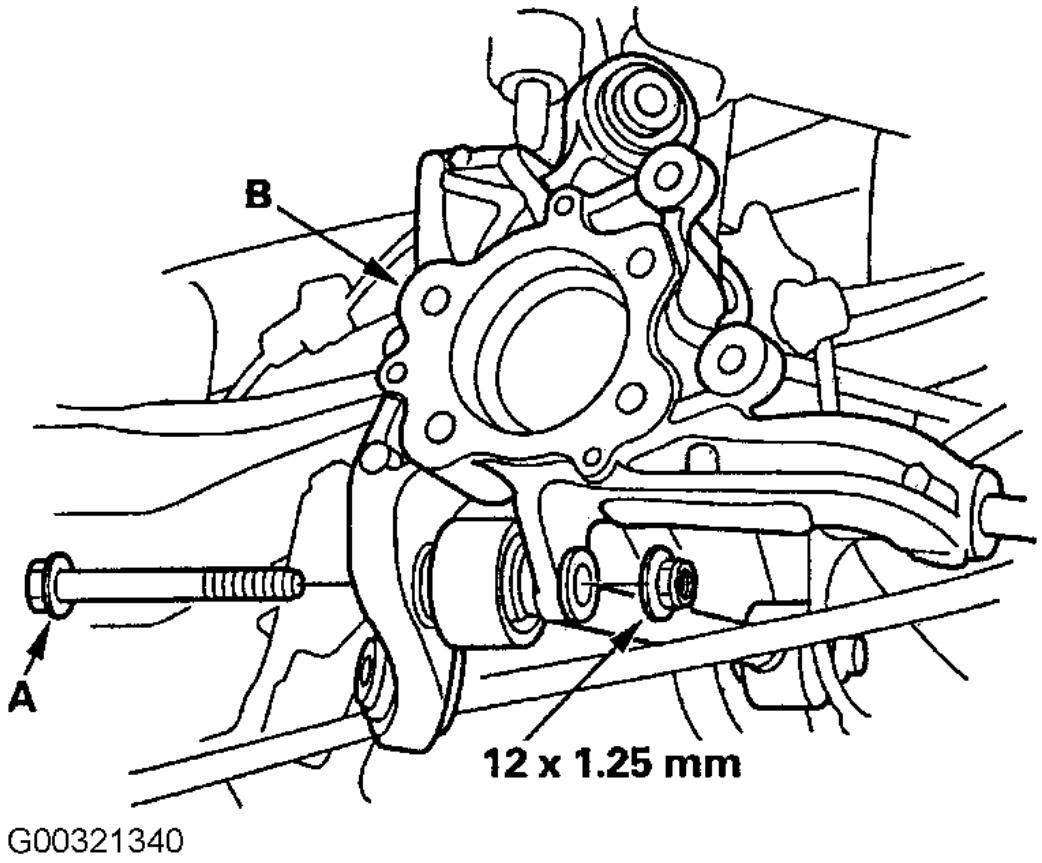


Fig. 26: Removing Lower Arm Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STABILIZER BAR

Removal & Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations. Remove the rear wheels.
2. Disconnect the stabilizer links from the stabilizer bar (A) on the right and left. See **STABILIZER LINK** . See **Fig. 27** .
3. Remove the flange bolts and bushing holders (B), then remove the bushing (C) and the stabilizer bar.
4. Install the stabilizer bar in the reverse order of removal, and note the following items:
   - Make sure the right and left ends of the stabilizer bar are installed on their respective sides of the vehicle.
   - Align the ends of the paint marks (A) on the stabilizer bar with the bushing (B). See **Fig. 28** .
   - See **STABILIZER LINK** to connect the stabilizer to the links.

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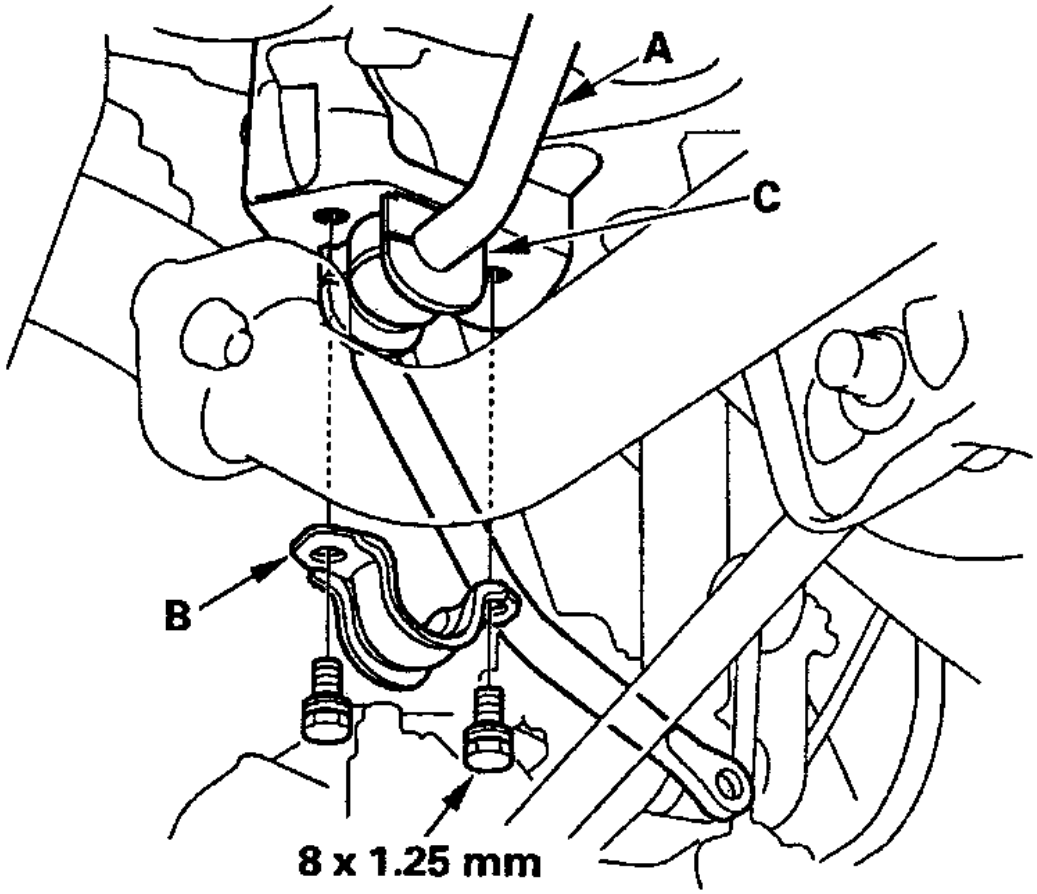


Fig. 27: Disconnecting Stabilizer Links
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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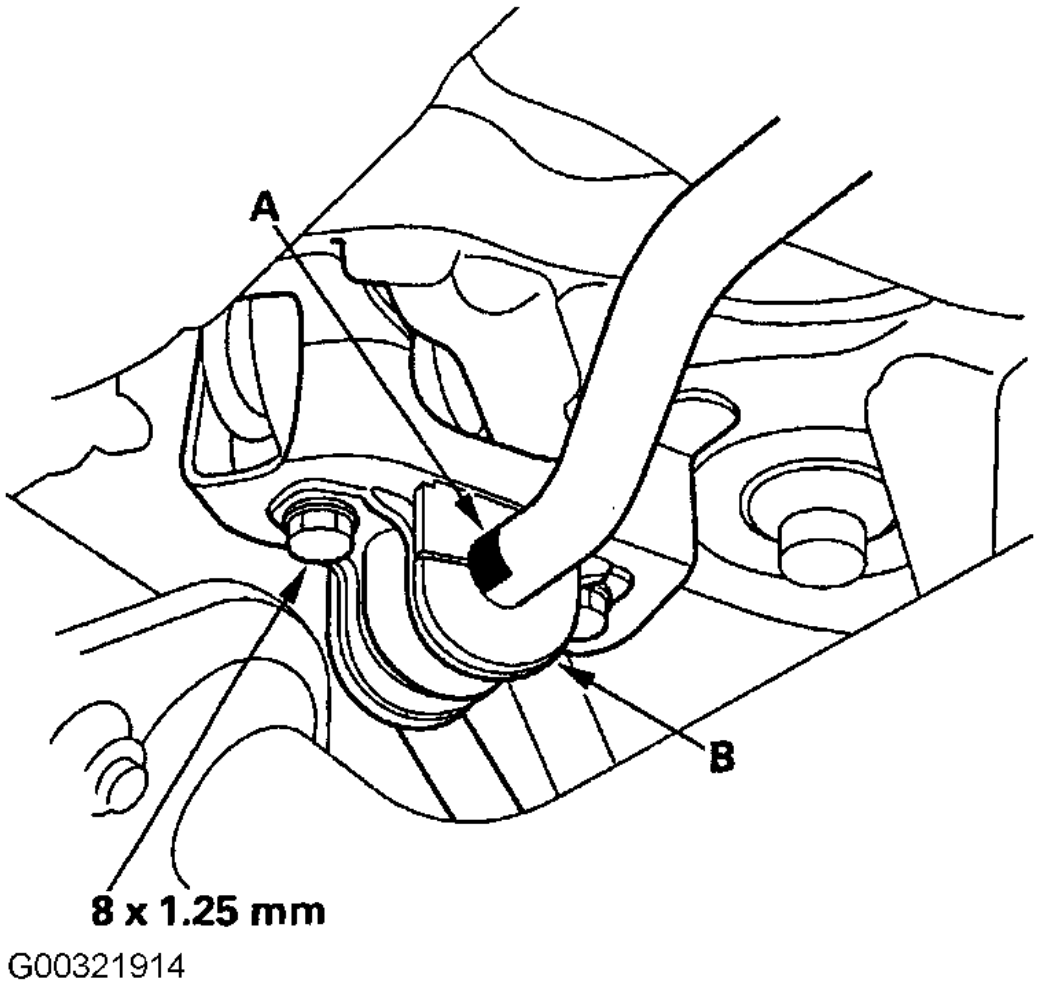


Fig. 28: Aligning Ends Of Paint Marks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STABILIZER LINK

Removal & Installation

1. Raise the rear of the vehicle, and make sure it is securely supported. Remove the rear wheels.
2. Remove the self-locking nut (A) and flange nut (B) while holding the respective joint pins (C) with a hex wrench (D), and remove the stabilizer link (E). See **Fig. 29** .

NOTE: The left stabilizer link has a White paint mark (D), while the right stabilizer link has a Yellow painting mark.

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3. Install the stabilizer link (A) on the stabilizer bar (B) and stabilizer link bracket (C) with the joint pins set at the center of each moving range. See **Fig. 30** .

NOTE: Use a new self-locking nut on assembly.

4. Install the self-locking nut and flange nut, and lightly tighten them.
5. Place a jack under the knuckle, and raise the suspension to load the vehicle weight.
6. Tighten the self-locking nut (A) and flange nut (B) to specification while holding the respective joint pins (C) with a hex wrench. See **TORQUE SPECIFICATIONS** . See **Fig. 29** .
7. After 5 minutes of driving, tighten the self-locking nut again to specification.

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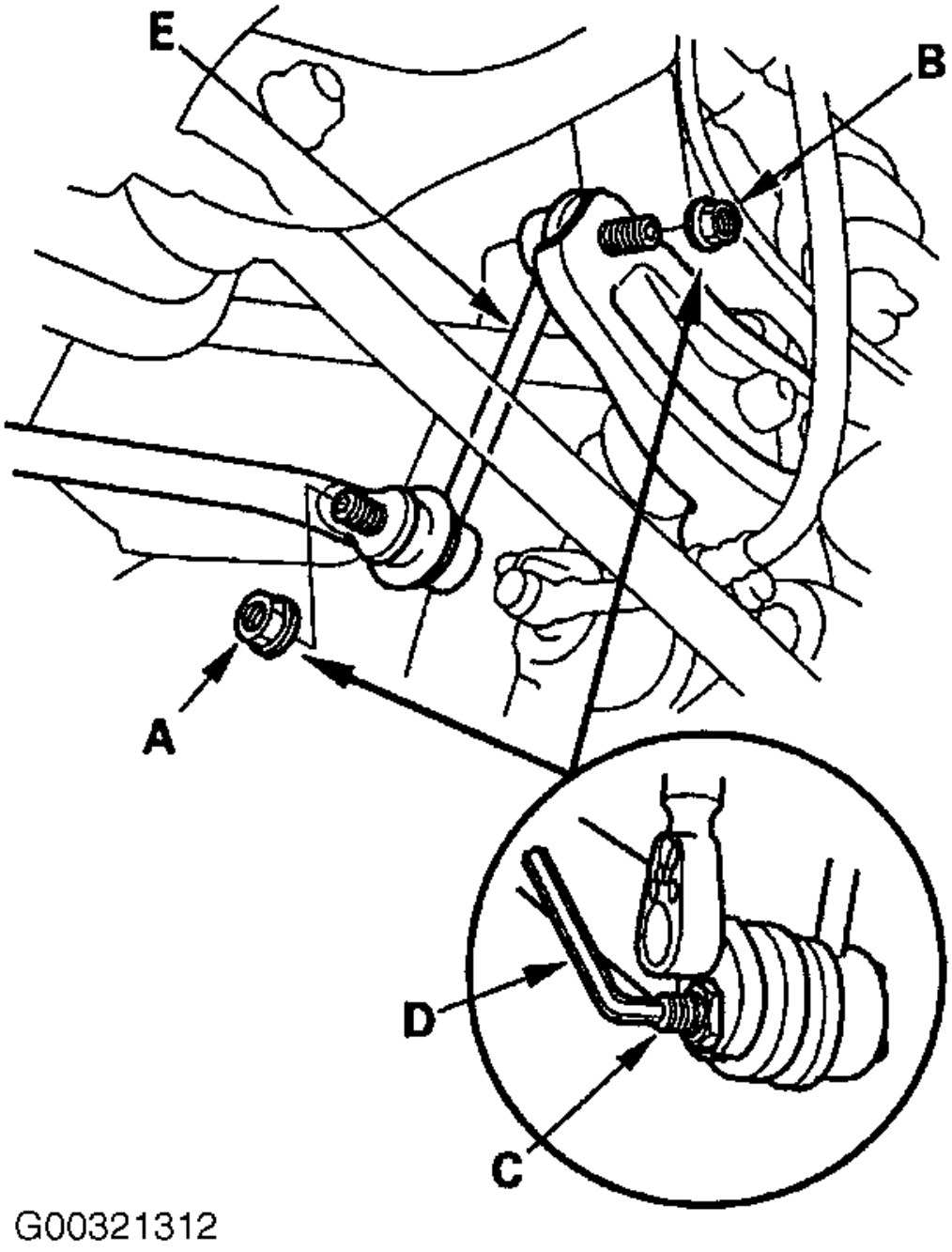
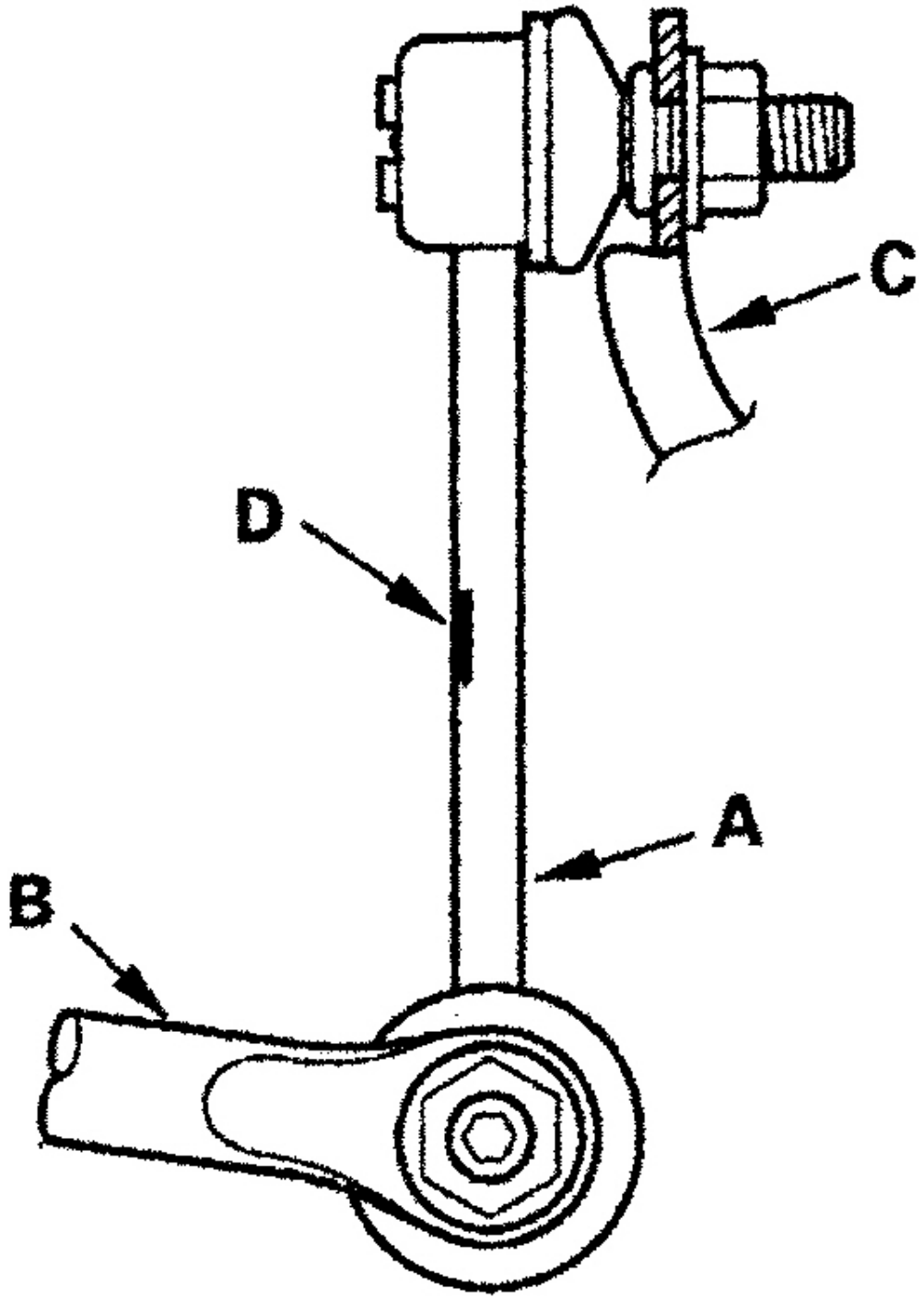


Fig. 29: Removing Self-Locking Nut & Flange Nut Holding Joint Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 30: Installing Stabilizer Link
Courtesy of AMERICAN HONDA MOTOR CO., INC.

UPPER ARM

Removal & Installation

NOTE: During installation, install the new lock pin after tightening the nut.

1. Remove the lock pin (A) from the upper arm ball joint, and loosen the nut (B). See **Fig. 20** .
2. Disconnect the upper arm ball joint from the knuckle using the ball joint remover.
3. Remove the brake hose mounting bracket (A). See **Fig. 31** . DO NOT disconnect the brake line.
4. Remove the wheel sensor harness mounting bracket (B).
5. Remove the flange bolt (A), and remove the upper arm (B) from the vehicle. See **Fig. 32** .
6. Install the upper arm in the reverse order of removal, and note the following items:
   - Be careful not to damage the ball joint boot when connecting the upper arm to the knuckle.
   - Tighten all mounting hardware to specifications. See **TORQUE SPECIFICATIONS** .
   - Install all the components and lightly tighten bolts and nuts, then raise the suspension to load it with the vehicle weight before fully tightening bolts and nuts to specification.
   - Tighten the castle nut to the lower torque specification, then tighten it only far enough to align the slot with pin hole. DO NOT align the castle nut by loosening it.
   - Before installing the wheel, clean the mating surface on the brake disc/drum and the inside of the wheel.
   - Set the rear wheel alignment. See **WHEEL ALIGNMENT** under ADJUSTMENTS & INSPECTION.

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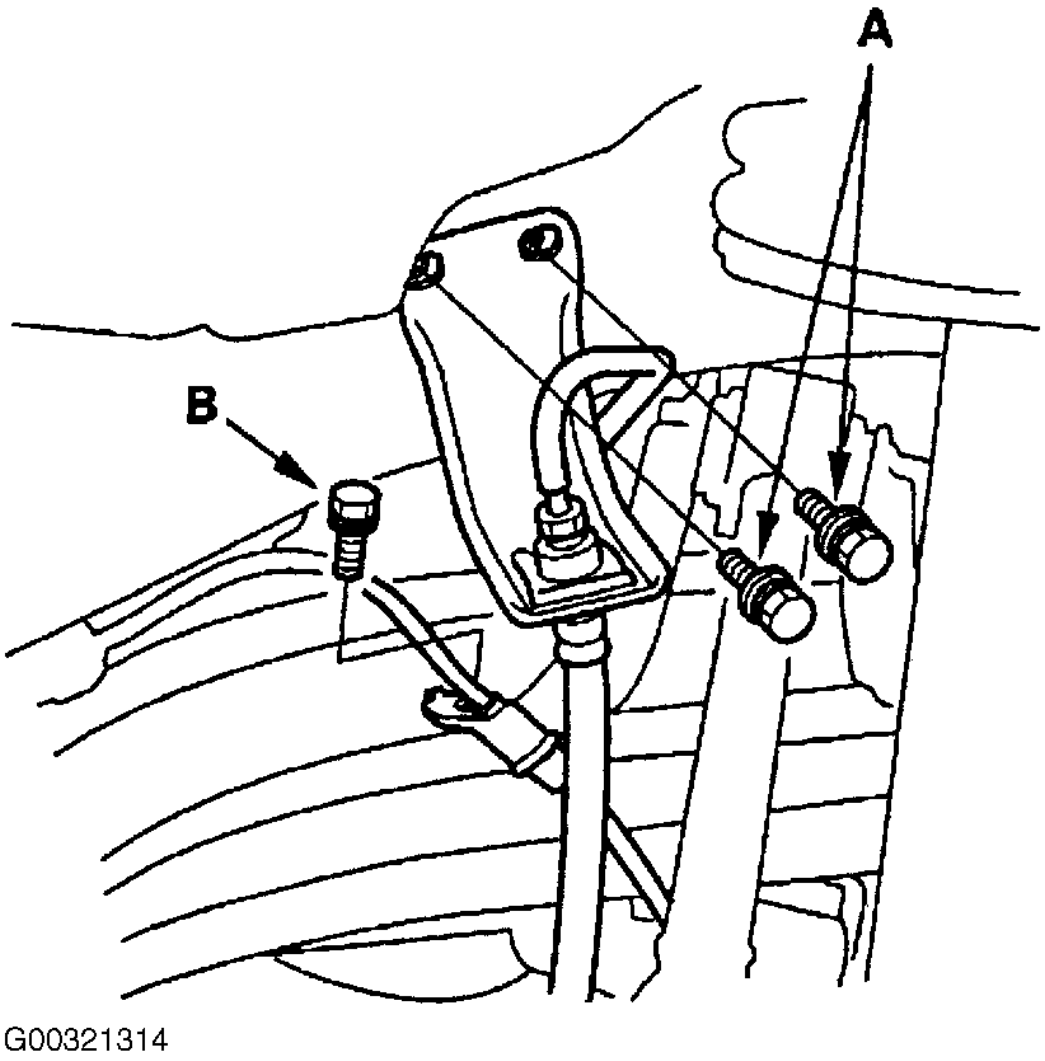


Fig. 31: Removing Brake Hose Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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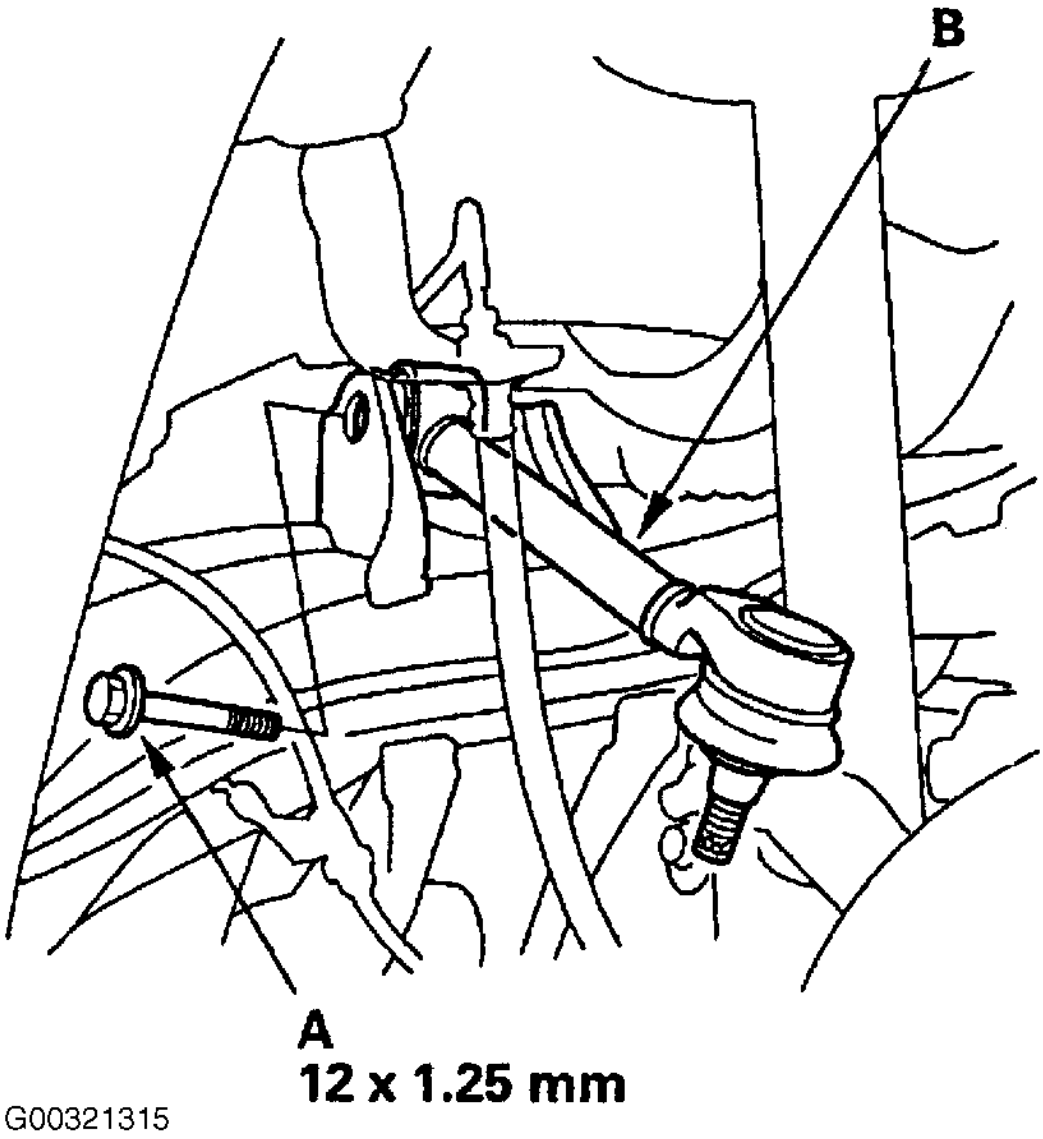


Fig. 32: Removing Upper Arm Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TRAILING ARM

Removal & Installation

1. Raise the rear of the vehicle and make sure it is securely supported.
2. Remove the rear wheels.
3. Remove the parking brake cable bracket (A) from the trailing arm (B). See **Fig. 33** .

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4. Remove the mounting bolts (C), then remove the trailing arm.
5. Install the trailing arm in the reverse order of removal, and note the following items:
   - Tighten all mounting hardware to specification. See **TORQUE SPECIFICATIONS** .
   - Before installing the wheel, clean the mating surfaces on the brake disc/drum and the inside of the wheel.
   - Check the rear wheel alignment. See **WHEEL ALIGNMENT** under ADJUSTMENTS & INSPECTION.

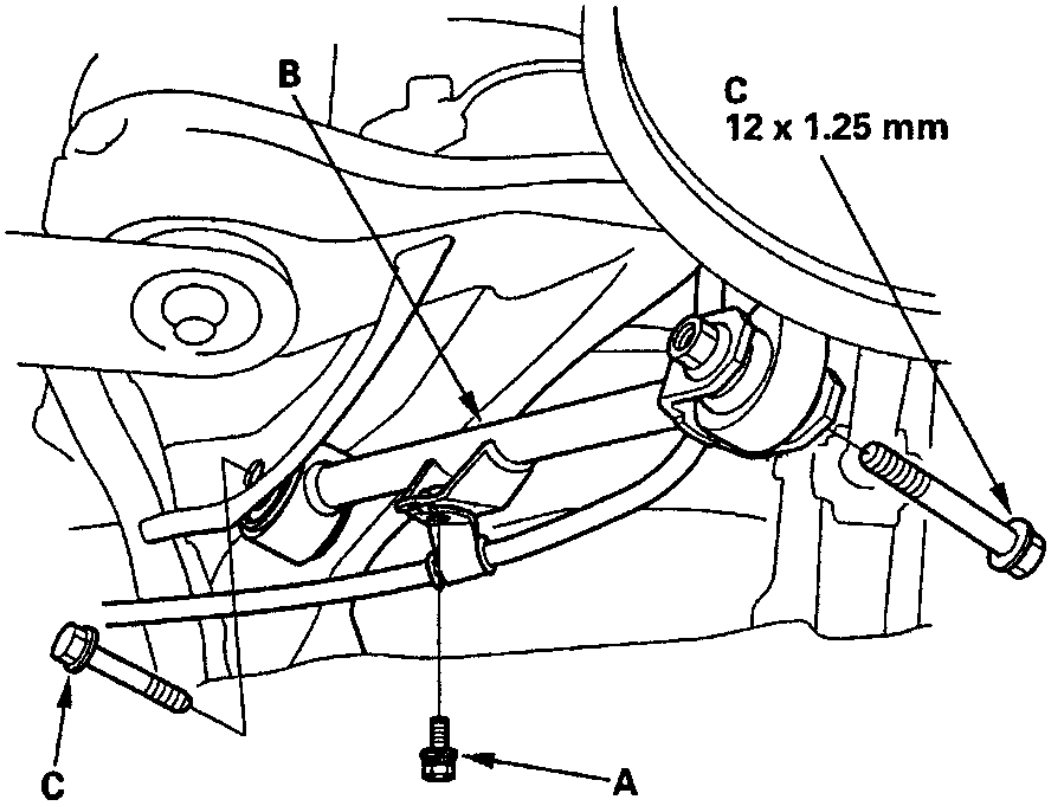


Fig. 33: Removing Parking Cable From Trailing Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

LEADING ARM

Removal & Installation

1. Raise the rear of the vehicle, and make sure it is securely supported. Remove the rear wheels.
2. Remove the leading arm mounting bolts (A), and remove the leading arm (B) from the vehicle. See **Fig.**

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34 .

3. Install the trailing arm in the reverse order of removal, and note the following items:
   - Tighten all mounting hardware to specification. See **TORQUE SPECIFICATIONS** .
   - Before installing the wheel, clean the mating surfaces on the brake disc/drum and the inside of the wheel.
   - Set the rear wheel alignment. See **WHEEL ALIGNMENT** under ADJUSTMENTS & INSPECTION.

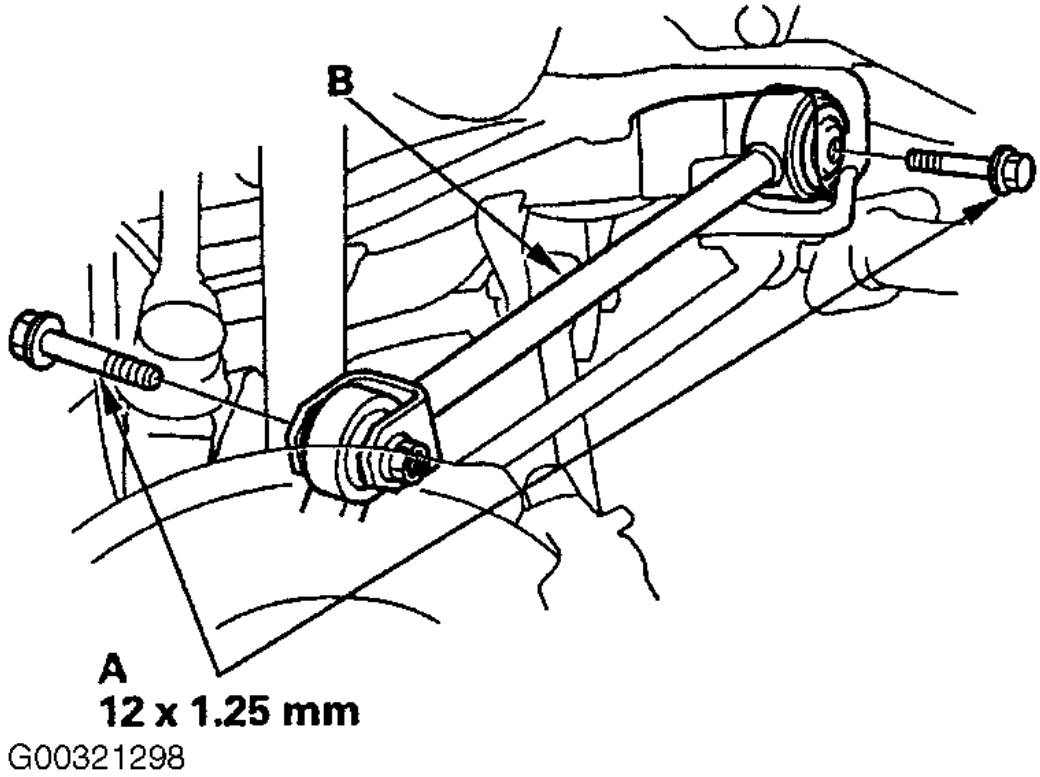


Fig. 34: Removing Leading Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

LOWER ARM

Removal & Installation

1. Raise the rear of the vehicle, and make sure it is securely supported.
2. Remove the rear wheels.
3. Remove the lower arm mounting bolts (A) and self-locking nut (B), and remove the lower arm (C) from the knuckle side. See **Fig. 35** .

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4. Remove the flange bolt (C), and remove the lower arm (D).
5. Install the lower arm in the reverse order of removal, and note the following items:
   - Use a new lower arm mounting nut on reassembly.
   - Tighten all mounting hardware to specification. See **TORQUE SPECIFICATIONS** .
   - Before installing the wheel, clean the mating surfaces on the brake disc/drum and the inside of the wheel.
   - Set the rear wheel alignment. See **WHEEL ALIGNMENT** under ADJUSTMENTS & INSPECTION.

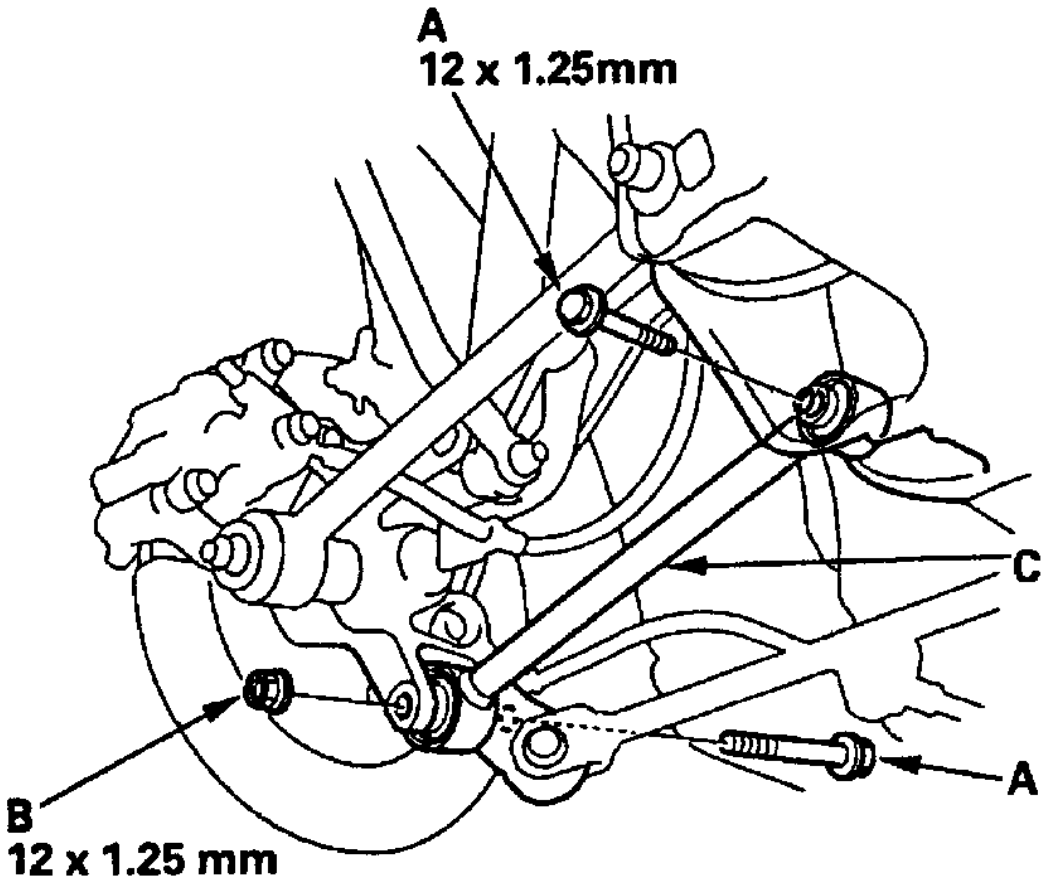


Fig. 35: Removing Lower Arm & Self-Locking Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONTROL ARM

Removal & Installation

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1. Raise the rear of the vehicle, and make sure it is securely supported.
2. Remove the rear wheels.
3. Remove the control arm mounting nut (A) and washer (B) from the knuckle side. See **Fig. 36** .
4. Mark the cam positions of adjusting bolt (C) and adjusting cam (D), then remove the self-locking nut (E), adjusting cam, and adjusting bolt. Discard the self-locking nut and control arm mounting nut.
5. Remove the control arm (F).
6. Install the control arm in the reverse order of removal, and not the following items:
   - Align the cam positions of the adjusting bolt and adjusting cam with the marked positions when tightening.
   - Use a new self-locking nut and control arm mounting nut on reassembly.
   - Tighten all mounting hardware to specification. See **TORQUE SPECIFICATIONS** .
   - Install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to specification.
   - Before installing the wheel, clean the mating surface on the brake disc/drum and inside of the wheel.
   - Check the wheel alignment, and adjust if necessary. See **WHEEL ALIGNMENT** under ADJUSTMENTS & INSPECTION.

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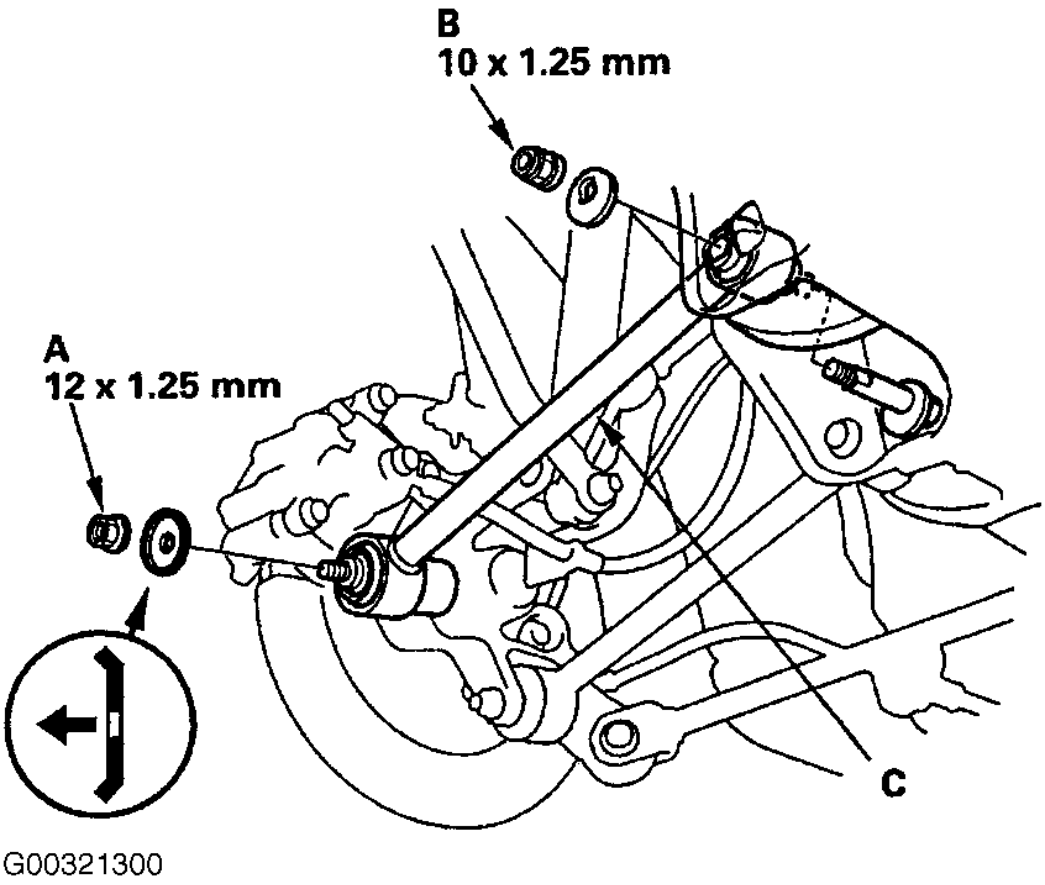


Fig. 36: Removing Self-Locking From Knuckle Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Brake Caliper Bracket Bolt	41 (55)
Brake Hose Mounting Bolt	
8-mm	16 (22)
10-mm	54 (74)
Castle Nut	36-43 (49-58)
Control Arm Mounting Nut	51 (69)
Hub Bearing Bolt	47 (64)
Leading Arm Bolt	43 (59)
Lower Arm Bolt	43 (59)

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Lower Mounting Bolt	80 (108)
Parking Brake Cable Bracket Nut	16 (22)
Spindle Nut	134 (181)
Stabilizer Link Bracket Bolt	33 (44)
Stabilizer Link Nut	29 (39)
Stabilizer Mounting Bolt	16 (22)
Strut Center Nut	22 (30)
Strut-To-Body Nut	37 (50)
Trailing Arm Bolt	43 (59)
Upper Arm Attaching Bolt	43 (59)
Upper Ball Joint Nut	36-43 (49-58)
Wheel Lug Nut	80 (108)
	INCH Lbs. (N.m)
Brake Disc Retaining Screw	89 (10)
Splash Guard Bolt	89 (10)
Wheel Sensor Bolt	89 (10)

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2004 ACCESSORIES & EQUIPMENT

Rear Window Defogger - TSX

COMPONENT LOCATION INDEX

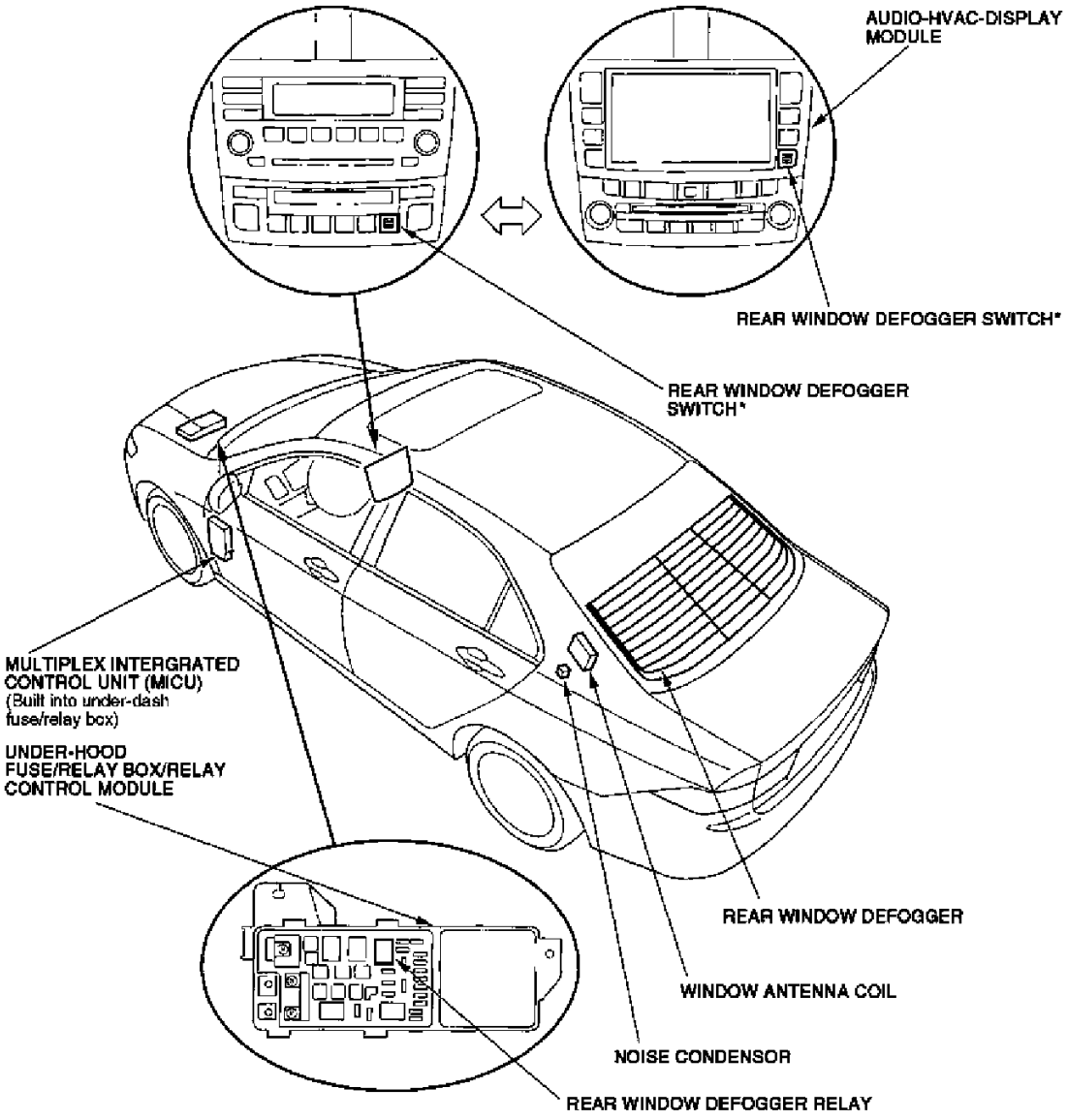


Fig. 1: Locating Rear Window Defogger Components

CIRCUIT DIAGRAM

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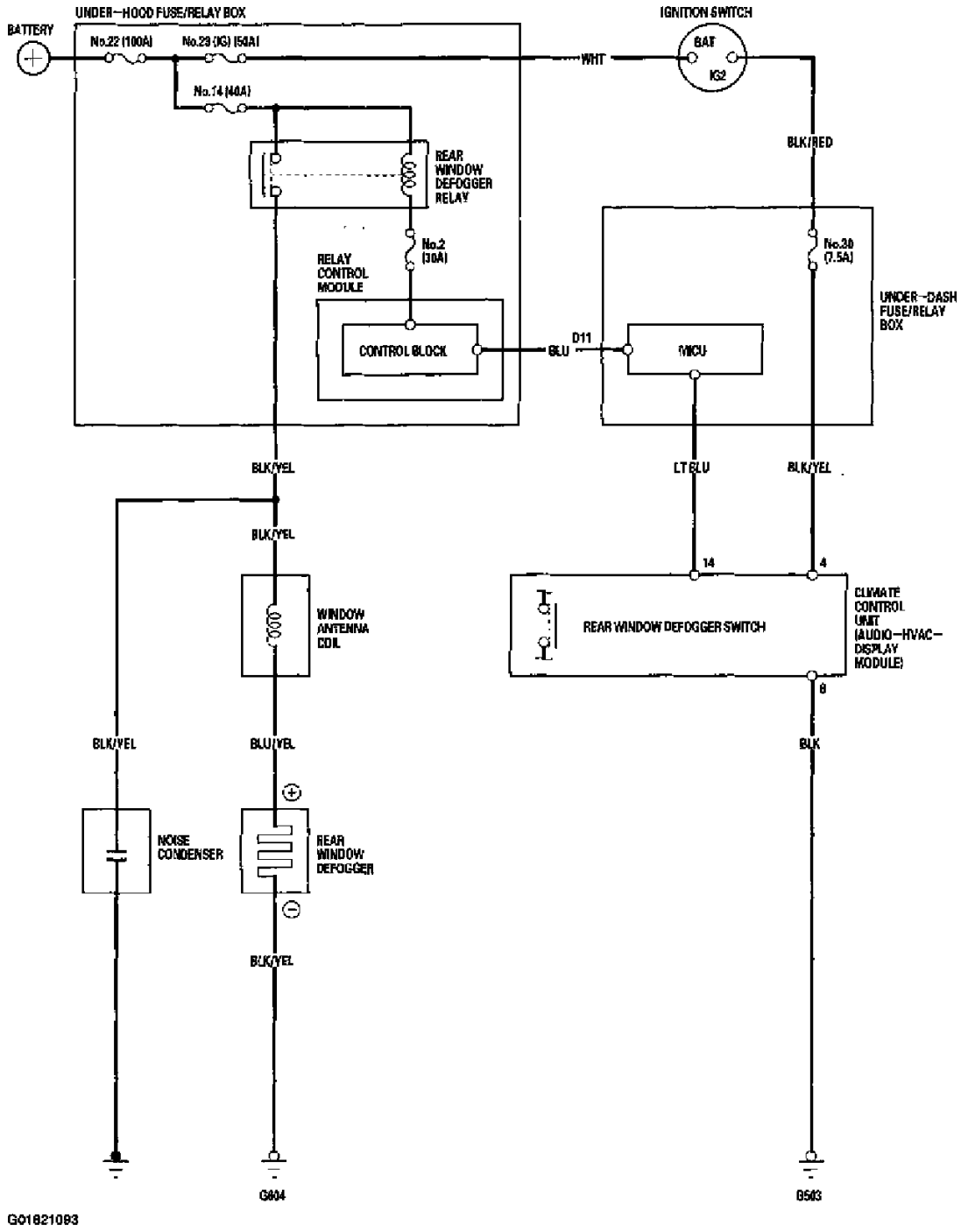


Fig. 2: Rear Window Defogger System Wiring Diagram

FUNCTION TEST

Before troubleshooting the rear window circuit, perform multiplex integrated control system troubleshooting using B-CAN System Diagnosis Test Mode A (see **B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

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NOTE:

- **Be careful not to scratch or damage the defogger wires with the tester probe.**
- **Before testing, check the No. 14 (40A) fuse in the under-hood fuse/relay box and No. 30 (7.5A) fuse in the under-dash fuse/relay box.**

1. Check for voltage between the positive terminal (A) and body ground with the ignition switch and defogger switch ON. There should be battery voltage.
   - If there is no voltage, check for:
     - Faulty defogger relay.
     - Faulty window antenna coil.
     - Faulty climate control unit (audio-HVAC-display module)
     - An open in the BLK/YEL wire to the positive terminal.
   - If there is voltage, go to step 2.

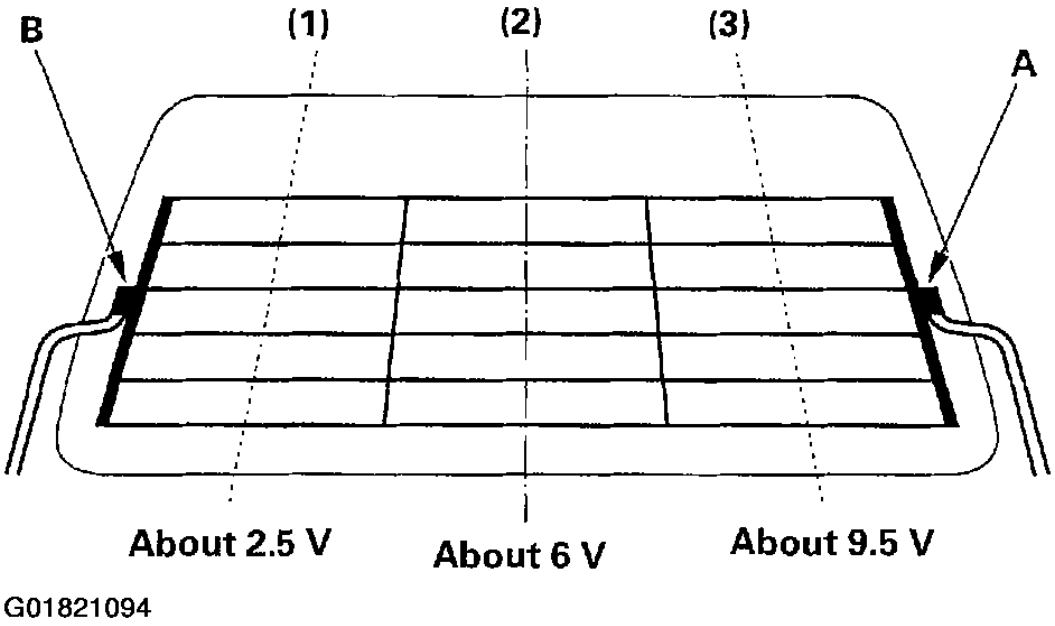


Fig. 3: Checking For Voltage Between The Positive Terminal & Body Ground

2. Disconnect the negative terminal (B) from the rear window defogger.
3. Check for continuity between the negative terminal (B) and body ground.
   - If there is no continuity, check for an open in the BLK/YEL wire and ground.
   - If there is continuity, go to step 4.
4. Reconnect the negative terminal to the rear window defogger.
5. Turn the ignition switch ON (II) and the rear window defogger switch ON.

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6. Touch the voltmeter positive probe to the points (1), (2), (3) on each defogger wire, and the negative probe to the negative terminal.
   - If the voltage is as specified, the defogger wire up to that point is OK.
   - If the voltage is not as specified, repair the defogger wire.
     - If it is more than specified at one of the points, there is a break in the negative half of the wire.
     - If it is less than specified at one of the points, there is a break in the negative half of the wire.

DEFOGGER WIRE REPAIR

NOTE: To make an effective repair, the broken section must be no longer than one inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.

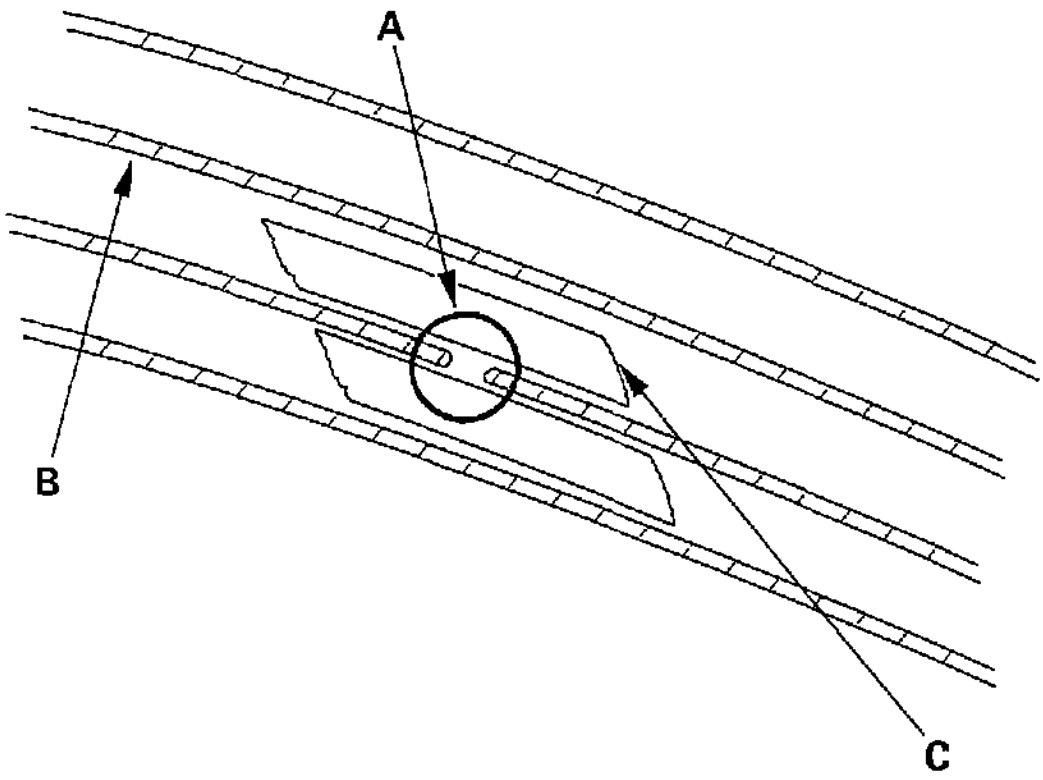


Fig. 4: Cleaning & Masking Repair Area

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2. Carefully mask above and below the broken portion of the defogger wire (B) with cellophane tape (C).
3. Using a small brush, apply a heavy coat of silver conductive paint (commercially available) extending about 1/8" on both sides of the break. Allow 25 minutes to dry.

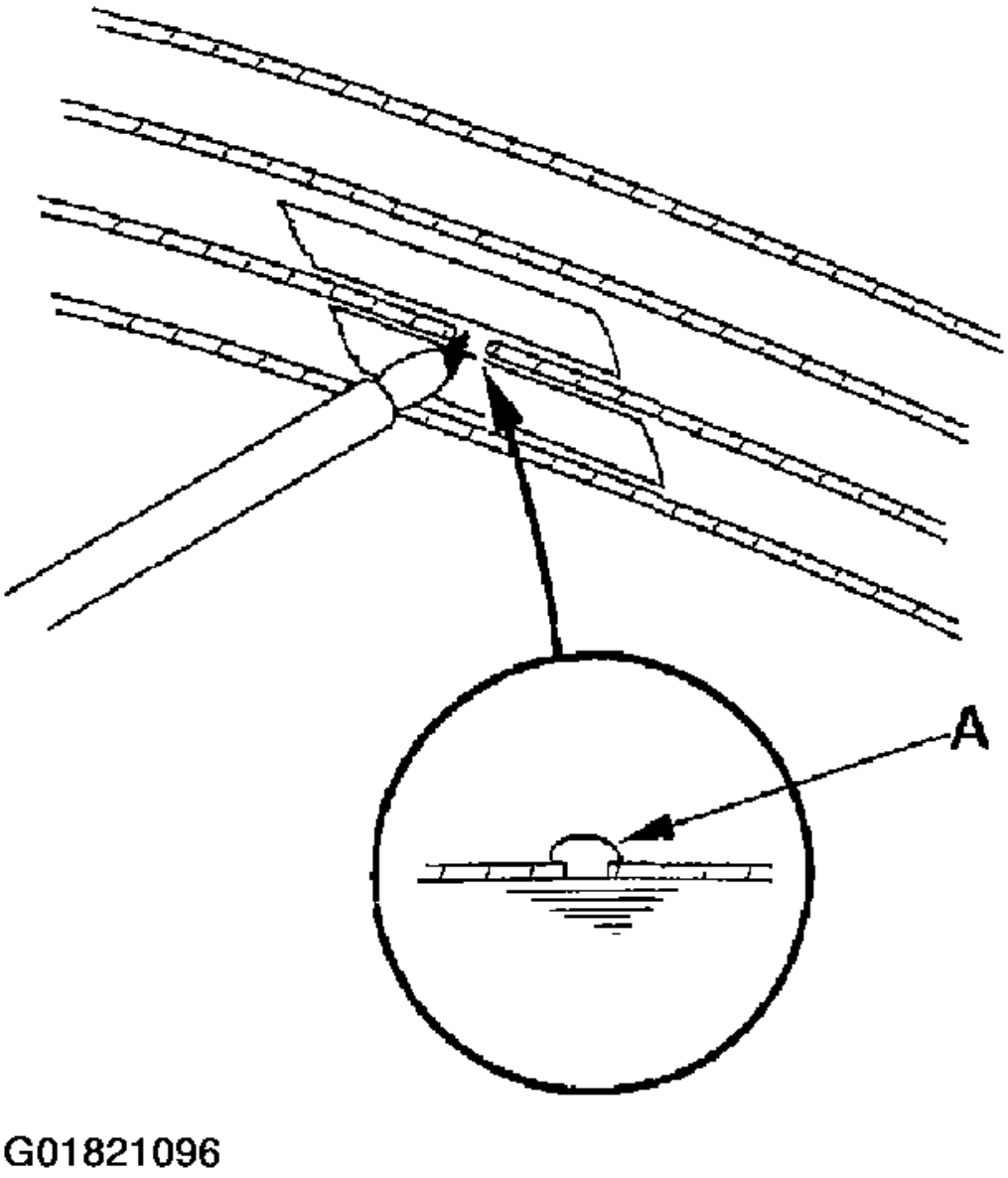


Fig. 5: Applying A Heavy Coat Of Silver Conductive Paint

4. Perform the function test to confirm that the wire is repaired.

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5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

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2004 ELECTRICAL

Relay & Control Unit Locations - TSX

RELAY & CONTROL UNIT LOCATIONS

ENGINE COMPARTMENT

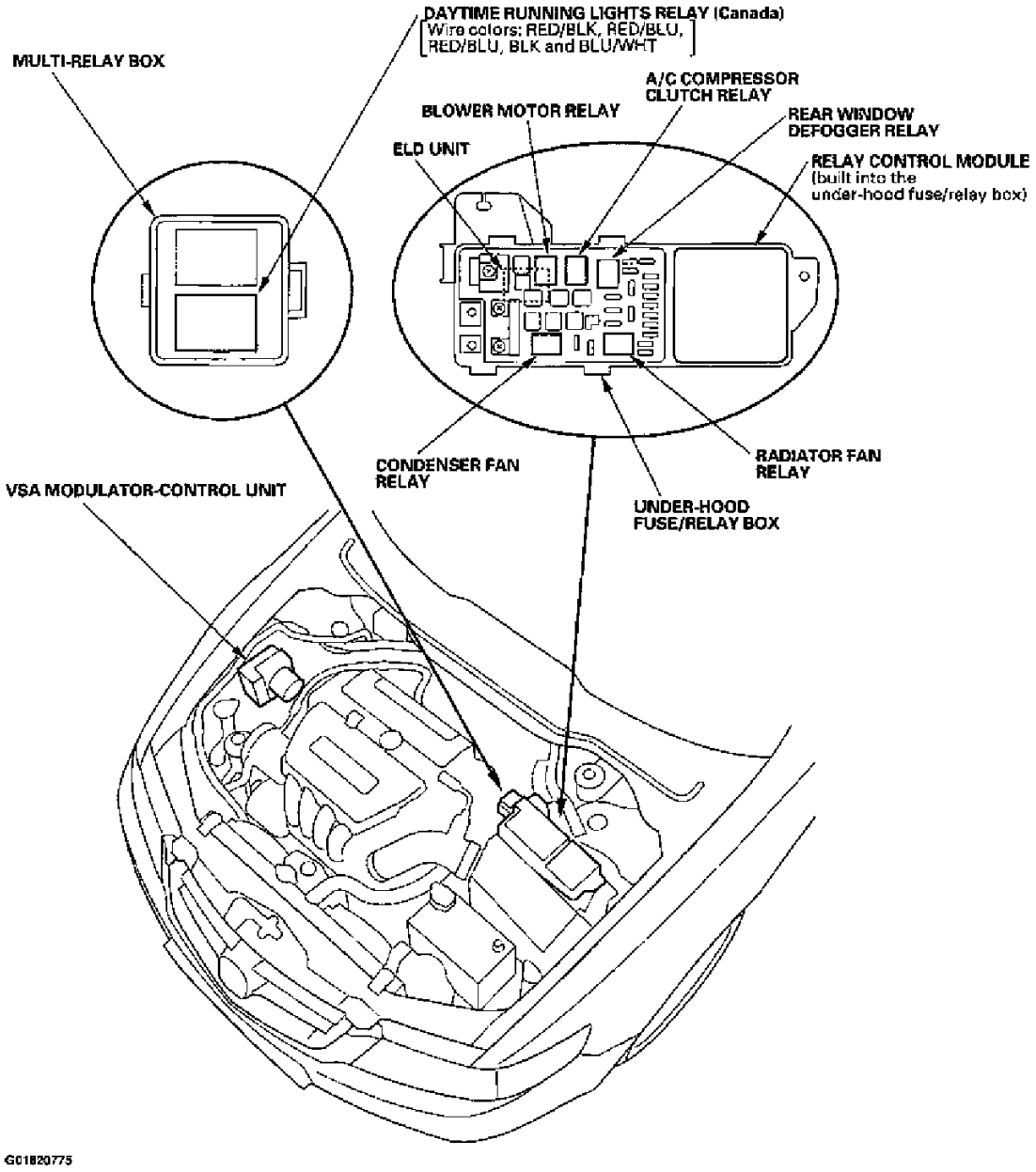


Fig. 1: Locating Relays & Control Units (Engine Compartment)

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DASHBOARD

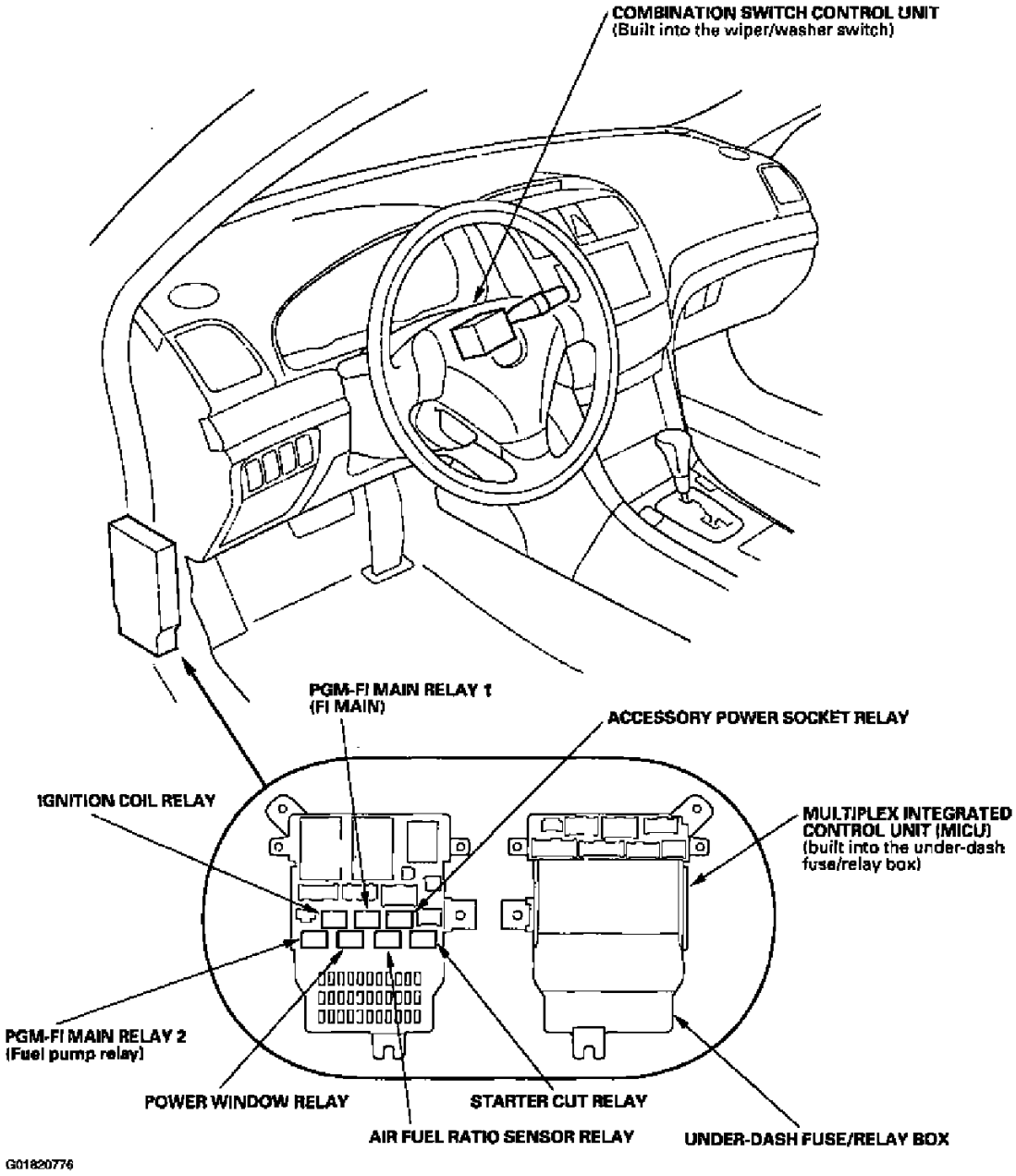


Fig. 2: Locating Relays & Control Units (Dashboard - 1 Of 3)

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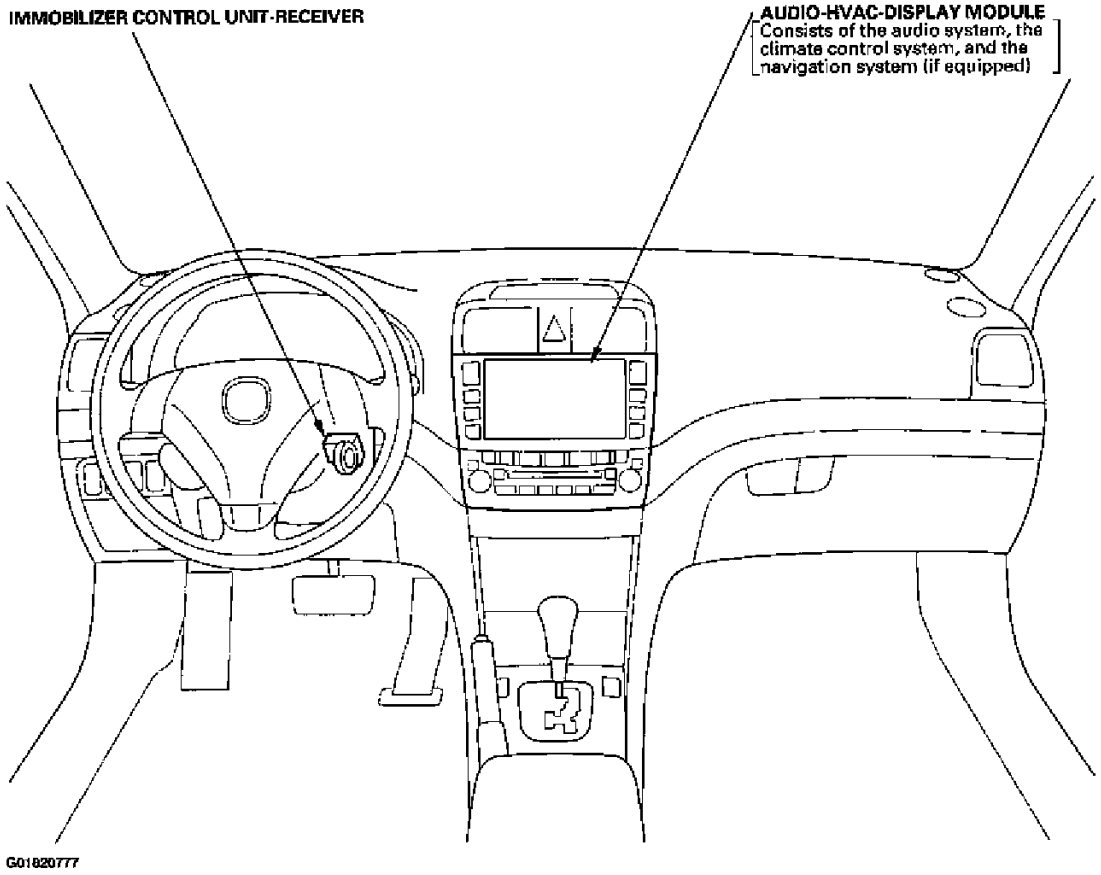


Fig. 3: Locating Relays & Control Units (Dashboard - 2 Of 3)

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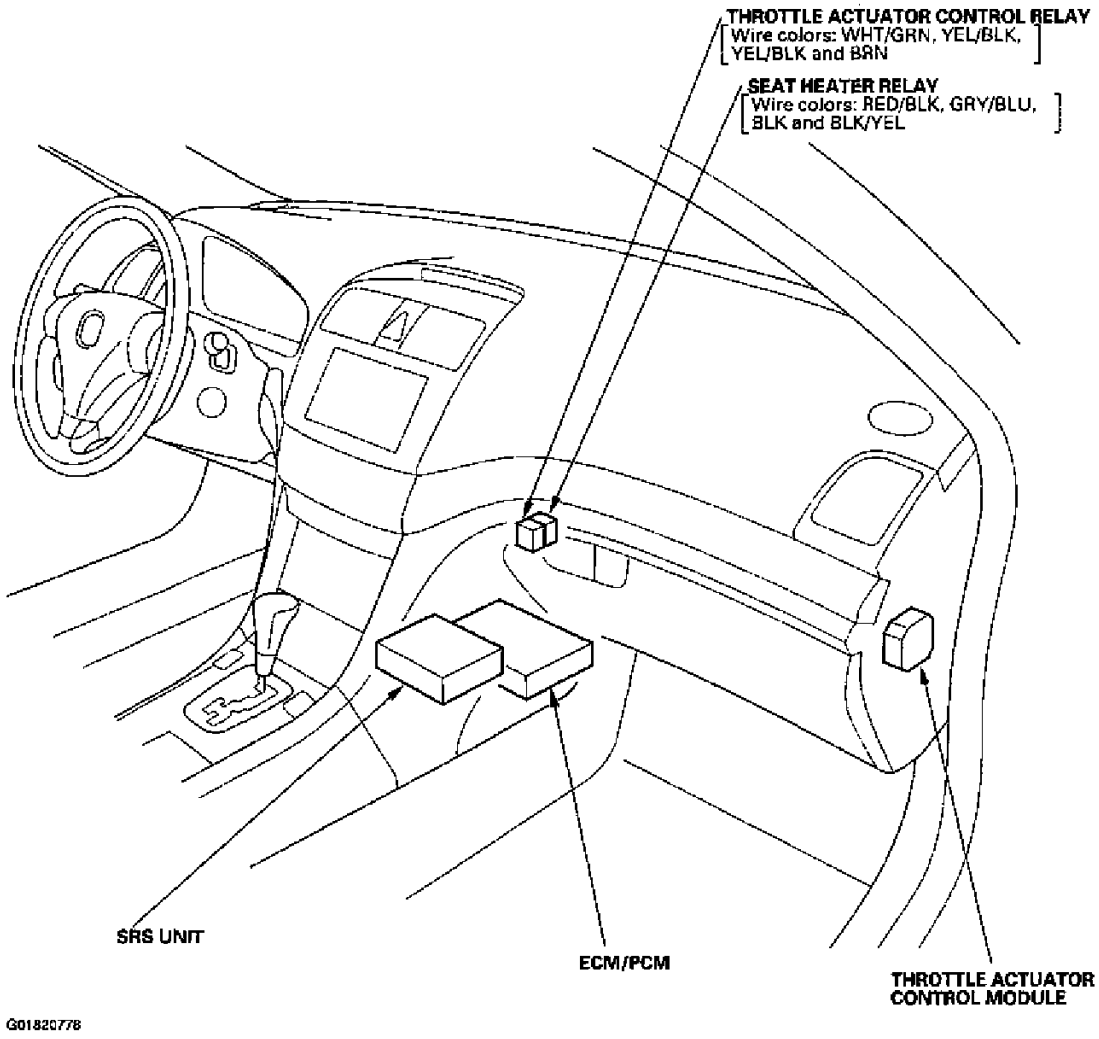


Fig. 4: Locating Relays & Control Units (Dashboard - 3 Of 3)

ROOF & TRUNK

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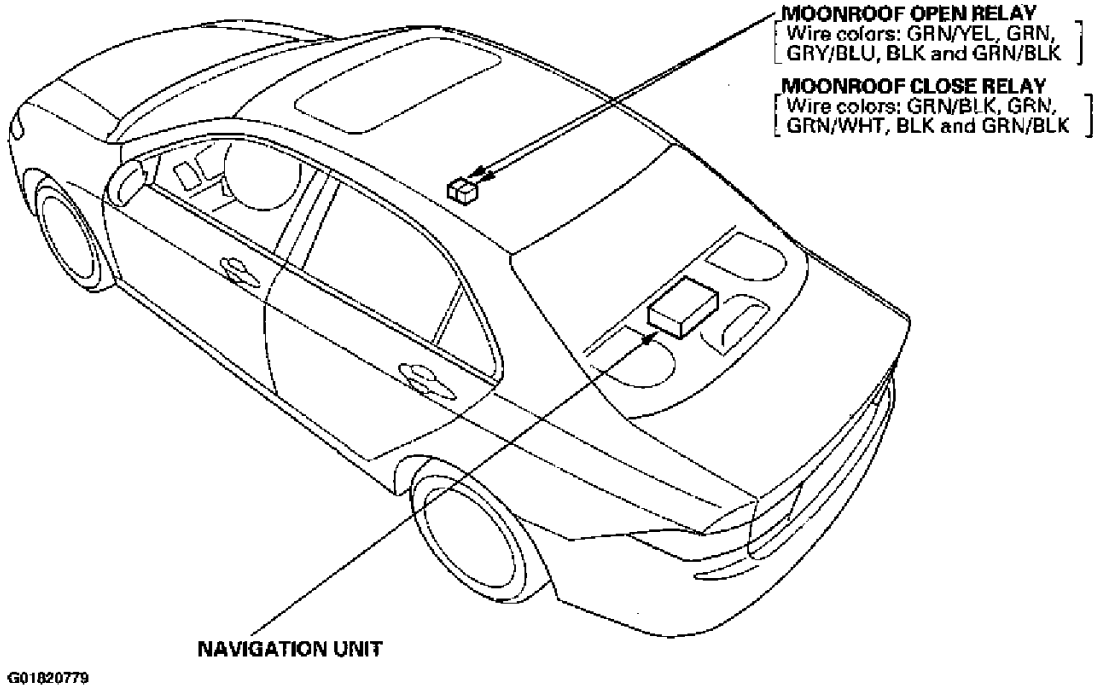


Fig. 5: Locating Relays & Control Units (Roof & Trunk)

DOOR & SEAT

Driver's Door

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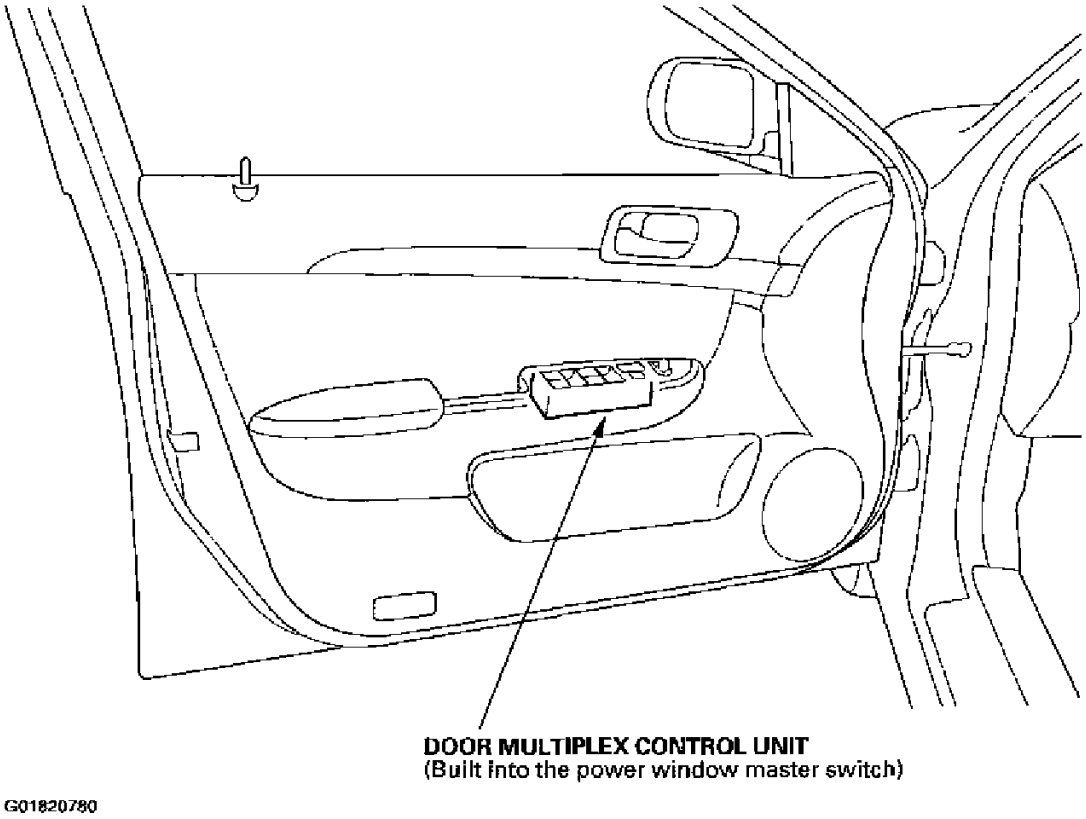


Fig. 6: Locating Relays & Control Units (Driver's Door)

Front Passenger's Seat

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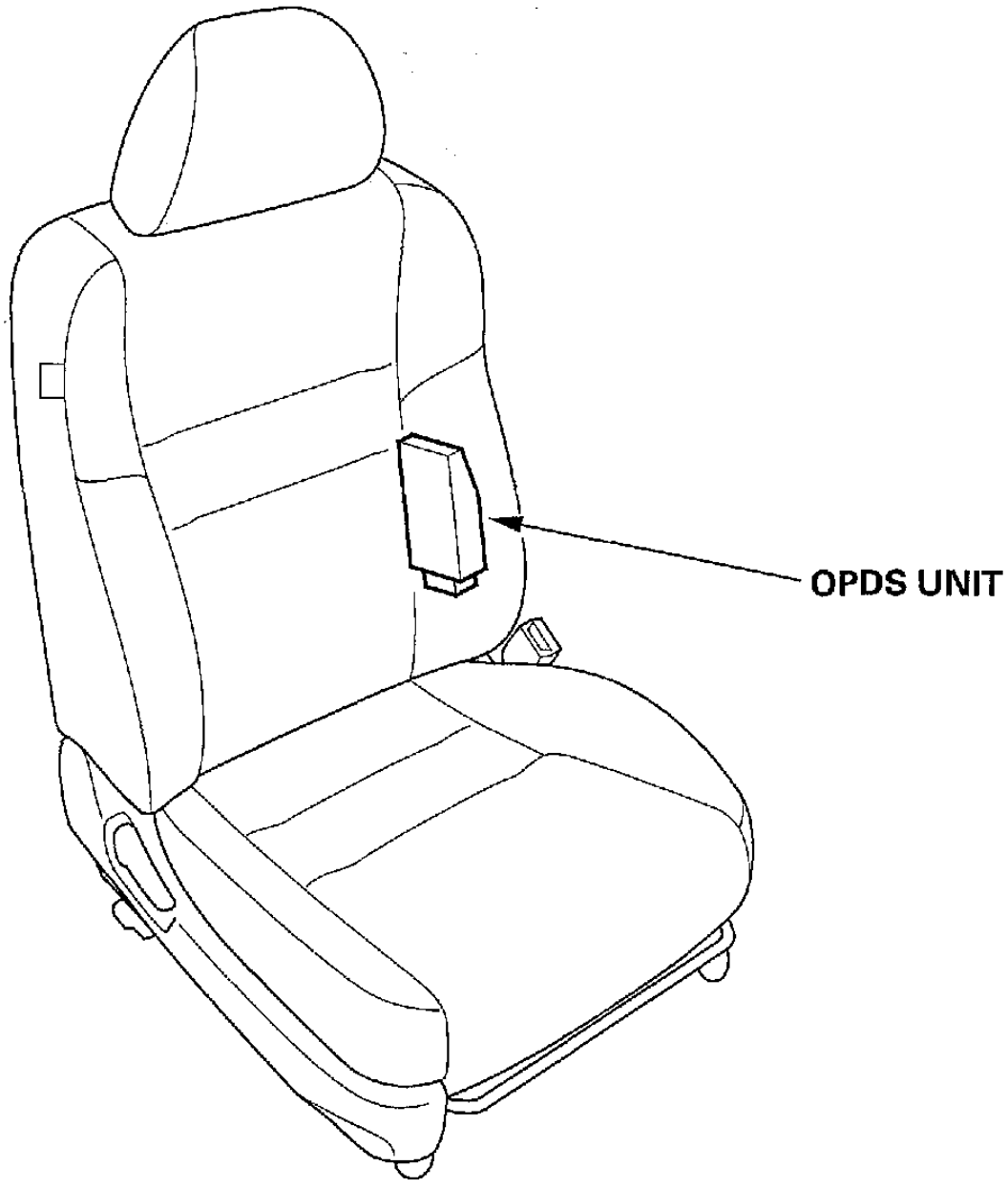


Fig. 7: Locating Relays & Control Units (Front Passenger's Seat)

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2004 ENGINE COOLING

Specifications & Drive Belt Routing - TSX

COOLING SYSTEM BLEEDING

Cooling system bleeding procedure for TSX is not available from manufacturer.

DRIVE BELT ROUTING

Information not available from manufacturer.

DRIVE BELT ADJUSTMENTS

A/C COMPRESSOR, ALTERNATOR BELT & POWER STEERING BELT

Drive belt adjustment is not required as TSX is equipped with an automatic drive belt tensioner.

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B). See **Fig. 1** . If it is out of the standard range, replace the drive belt.

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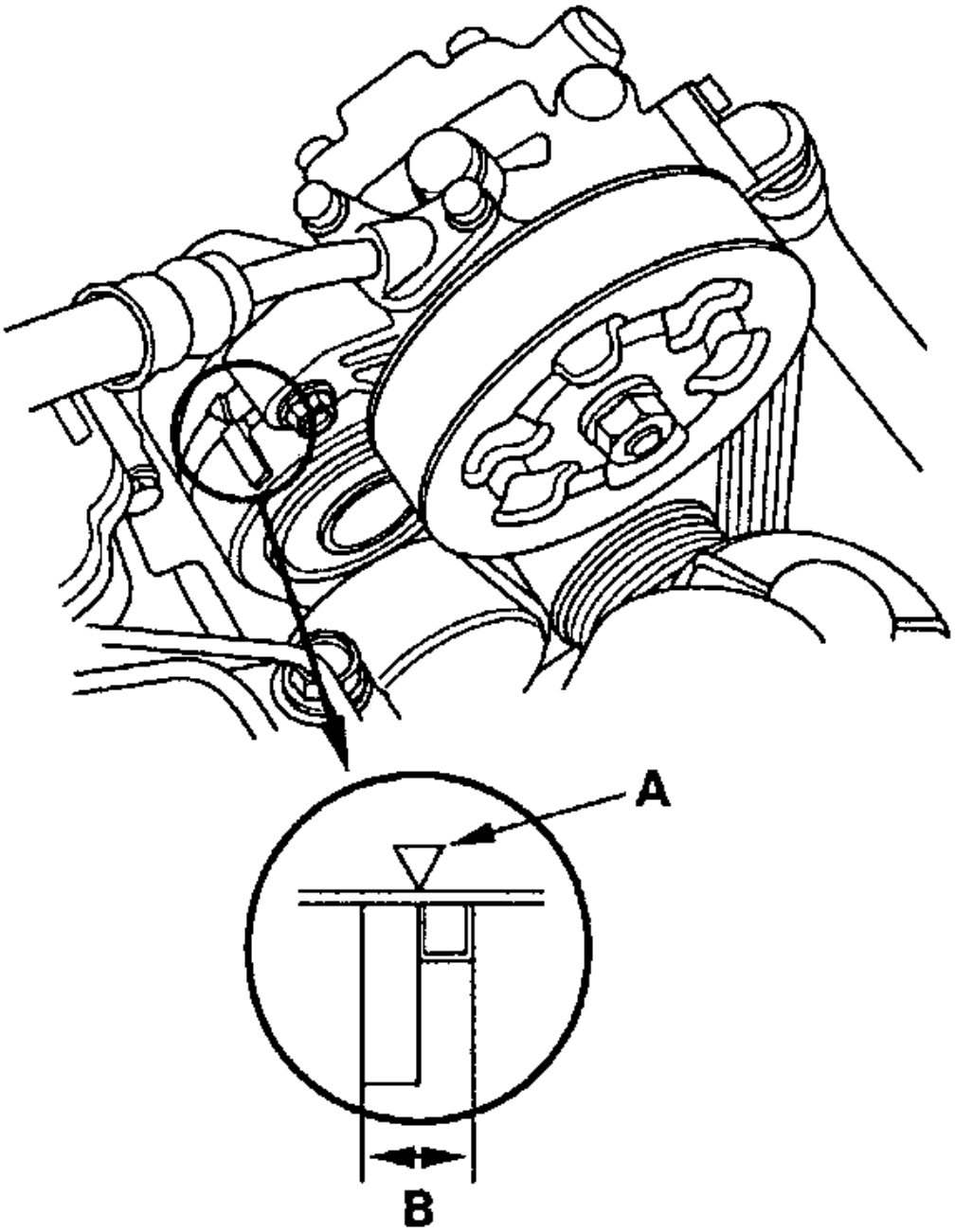


Fig. 1: Identifying A/C Compressor/Alternator Belt Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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SPECIFICATIONS

COOLING SYSTEM

COOLING SYSTEM SPECIFICATIONS

Model	Specification
Coolant Replacement Interval	120,000 Miles (1)
Coolant Capacity	
A/T	5.6 Qts. 5.3 L)
M/T	5.7 Qts. (5.4 L)
Pressure Cap Opens	14-18 psi (93-123 kPa)
Thermostat Opens	
Starts	169-176° F (76-80° C)
Fully Open	194° F (90° C)
(1) Replace after 10 years.	

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2004 SPECIFICATIONS

TSX

AIR CONDITIONING

AUTOMATIC SYSTEM

Air Conditioning Service Specifications

AIR CONDITIONING SPECIFICATIONS

Application	Specification
Compressor Type	N/A
Refrigerant Oil (1)	
Compressor Oil Capacity	4.3-5 ozs.
Condenser Oil Capacity	.83 ozs.
Evaporator Oil Capacity	1.5 ozs.
Line & Hose Capacity	.33 ozs.
Receiver/Drier Oil Capacity	.33 ozs.
Refrigerant (R-134a) Capacity	17.6-19.4 ozs.
System Operating Pressures	(2)

(1) Use DENSO: ND-Oil 8 (Part No. 38897-PR7-A01AH or 38899-PR7-A01).

(2) See **Fig. 1** .

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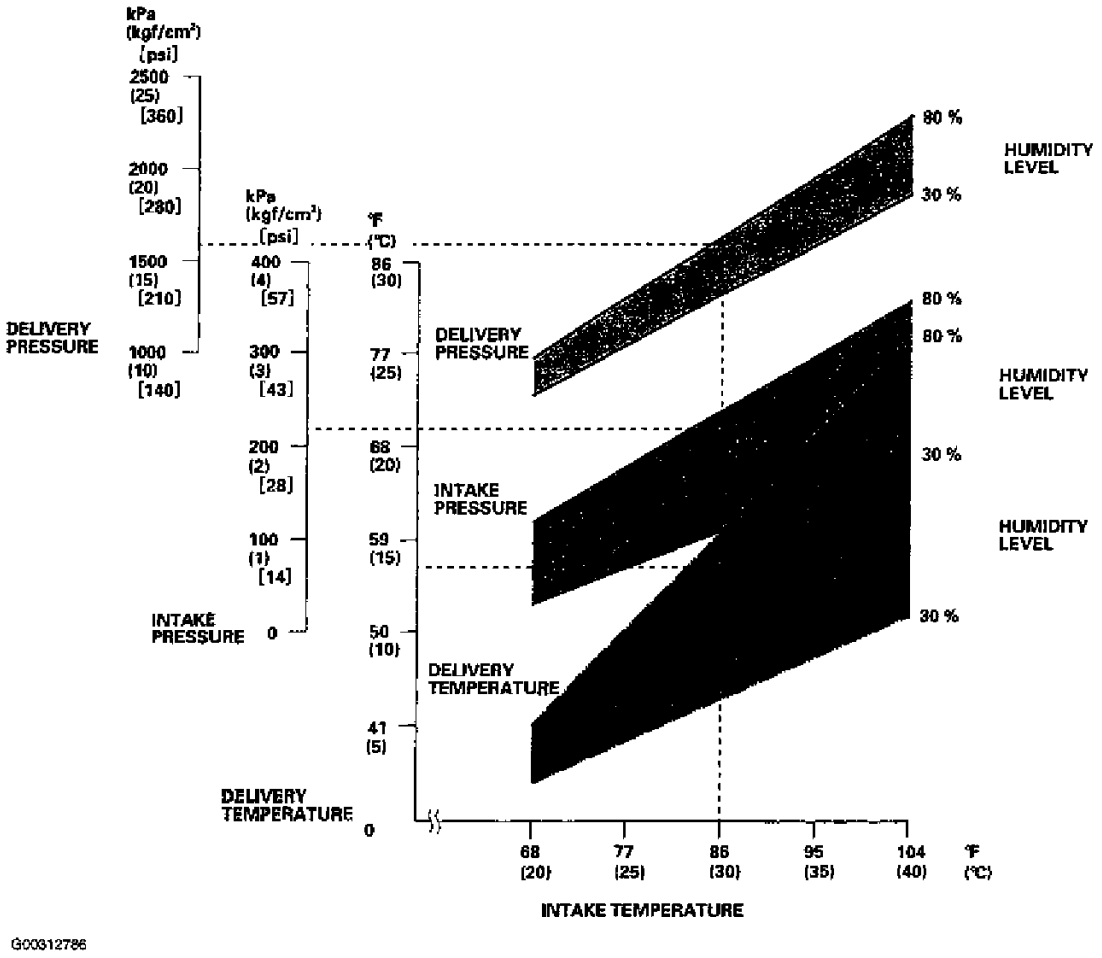


Fig. 1: Identifying A/C System Operating Pressures
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Air Conditioning Torque Specifications

AIR CONDITIONING TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Compressor-To-Bracket Bolts	16 (22)
Compressor Bracket-To-Engine Block Bolts	33 (44)
Compressor Clutch Center Bolt	13 (18)
	INCH Lbs. (N.m)
A/C Line-To-Condenser Nut	89 (10)
A/C Line-To-Evaporator Nut	89 (10)
Blower Unit Nuts	89 (10)
Compressor Relief Valve	89 (10)
Condenser Bolts	89 (10)
Discharge Hose-To-Compressor Bolt	89 (10)

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Discharge Hose-To-Condenser Bolt	89 (10)
Discharge Line-To-Compressor Nut	89 (10)
Discharge Line-To-Condenser Bolt	89 (10)
Fan Shroud Bolts	89 (10)
Heater Unit Nuts	
6 mm	87 (9.8)
8 mm	115 (13)
Radiator Bracket Bolts	89 (10)
Receiver Line-To-Condenser Bolt	89 (10)
Receiver Line & Suction Line-To-Evaporator Bolt	89 (10)
Suction Line-To-Compressor Bolt	89 (10)

BATTERY

Battery Service Specifications

BATTERY SERVICE SPECIFICATIONS

Application	Specification
Capacity	65 AH/20 HR
Battery Load Test	
Remove Surface Charge (15 Seconds)	300 Amps
Load Test (15 Seconds)	280 Amps

BRAKES

BLEEDING SEQUENCE

Start at the left front wheel, then proceed to the right front wheel, right rear wheel and finally, the left rear wheel.

DISC BRAKES

Disc Brake Service Specifications

DISC BRAKE SPECIFICATIONS

Application	In. (mm)
Brake Pad Thickness	
Front	.41-.45 (10.5-11.5)
Rear	.35-.36 (8.9-9.1)
Service Limit	.06 (1.6)
Maximum Runout	.004 (.1)
Standard Disc Thickness	
Front	1.10-1.11 (27.9-28.1)

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Rear	.35-.36 (8.9-9.1)
Maximum Disc Refinish Thickness	
Front	1.02 (26)
Rear	.31 (8)
Parallelism	.0006 (.015)

Disc Brake Torque Specifications

DISC BRAKE TORQUE SPECIFICATIONS

Application	**Ft. Lbs. (N.m)**
Brake Booster Push Rod Lock Nut	13 (18)
Brake Booster Mounting Nut	10 (13)
Brakeline-To-VSA Modulator	11 (15)
Brakeline-To-Flex Hose	11 (15)
Brakeline-To-Master Cylinder	11 (15)
Brakeline-To-Proportioning Valve	11 (15)
Caliper Body Mounting Bolt	
Front	36 (49)
Rear	17 (23)
Caliper Mount Bracket Bolt	
Front	80 (108)
Rear	28 (38)
Flex Hose-To-Caliper Banjo Bolt	25 (34)
Master Cylinder Mounting Nut	11 (15)
Parking Brake Cable Mounting Bolt	16 (22)
Parking Brake Lever Bolt	16 (22)
Rear Caliper Arm Bolt	18 (25)
Rear Caliper Parking Brake Nut	20 (27)
Rear Hub Bearing Unit Bolt	16 (22)
Rear Spindle Nut	134 (181)
Strut Brace Nut	16 (22)
Wheel Lug Nut	80 (108)
	INCH Lbs. (N.m)
Accelerator Pedal Position Sensor Mounting Bolt	89 (10)
Brake Bleed Screw	80 (9)
Brake Disc Retaining Screw	89 (10)
Cable Clamp Bolt	89 (10)
Flange-To-Damper Bolt	106 (12)
Underhood Fuse/Relay Box Bolt	89 (10)

CHARGING SYSTEM

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GENERATOR

Generator Service Specifications

GENERATOR SPECIFICATIONS

Application	Specification
Brush Length	
Standard	.75" (19.0 mm)
Limit (Minimum)	.20" (5.0 mm)
Rotor Resistance	1.84 - 2.10 ohms
Output (1)	90A
(1) Output at 13.5 V and normal engine temperature.	

Generator Torque Specifications

GENERATOR TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Alternator Bolt	16 (22)
Drive Belt Auto Tensioner Bolt	16 (22)
Power Steering Pump Bolt	16 (22)
Pulley Bolt	81(110)
Tensioner Pulley Bolt	41 (56)
	INCH Lbs. (N.m)
Alternator Wiring Locknut/Bolt	71 (8)

DRIVE BELTS

A/C COMPRESSOR, ALTERNATOR BELT & POWER STEERING BELT ADJUSTMENT

Drive belt adjustment is not required as TSX is equipped with an automatic drive belt tensioner.

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B). See **Fig. 2** . If it is out of the standard range, replace the drive belt.

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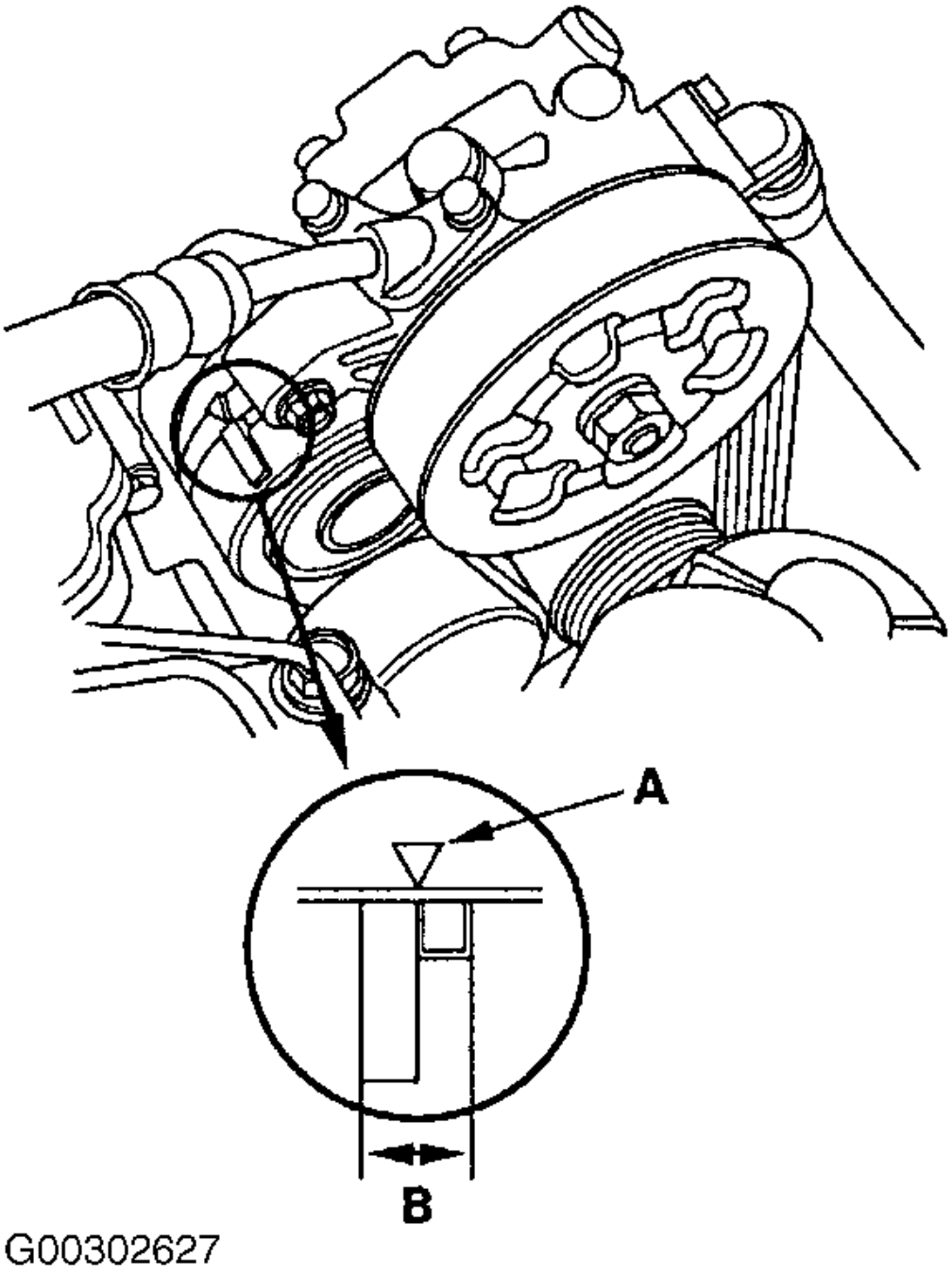


Fig. 2: Identifying A/C Compressor/Alternator Belt Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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DRIVE BELT ROUTING

Information not available from manufacturer.

ENGINE COOLING

SERVICE

Cooling System Specifications

COOLING SYSTEM SPECIFICATIONS

Model	Specification
Coolant Replacement Interval	120,000 Miles (1)
Coolant Capacity	
A/T	5.6 Qts. 5.3 L)
M/T	5.7 Qts. (5.4 L)
Pressure Cap Opens	14-18 psi (93-123 kPa)
Thermostat Opens	
Starts	169-176° F (76-80° C)
Fully Open	194° F (90° C)
(1) Replace after 10 years.	

FUEL SYSTEM

FUEL PRESSURE

Fuel Pressure Specifications

FUEL PRESSURE SPECIFICATION

Condition	Specification
At Idle	48-55 psi (3.4-3.9 kg/cm^2)

IDLE SPEED

IDLE SPEED SPECIFICATION

Condition	Specification
Transmission	
A/T	750-850 RPM
M/T	700-800 RPM

IGNITION SYSTEM

FIRING ORDER

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Illustrations

To identify firing order, see **Fig. 3** .

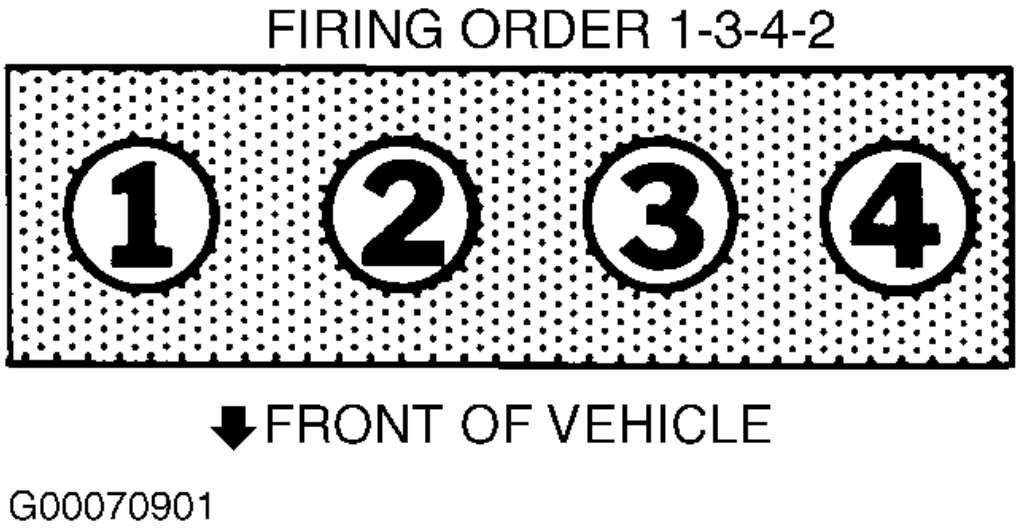


Fig. 3: Firing Order
Courtesy of AMERICAN HONDA MOTOR CO., INC.

IGNITION TIMING

Check ignition timing in no-load condition (headlights, blower fan, rear defogger and A/C off) with M/T in Neutral or A/T in Neutral or Park. Connect scan tool to 16-pin Data Link Connector (DLC) before checking timing. Ensure idle speed and ignition timing are set to 6-10° BTDC (Red mark). See **IDLE SPEED SPECIFICATION** table. For timing mark identification, refer to illustration. See **Fig. 4** .

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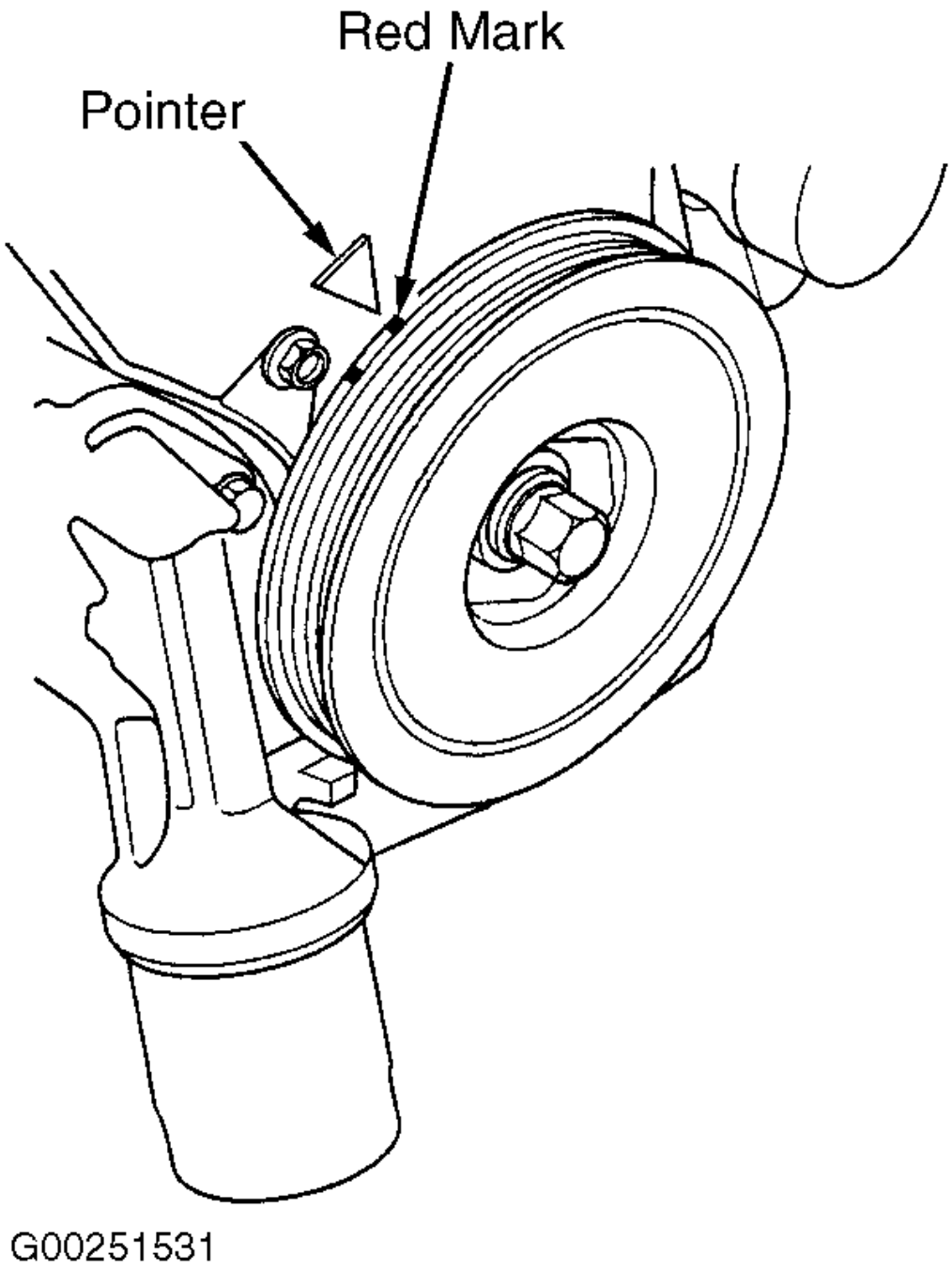


Fig. 4: Identifying Ignition Timing Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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SPARK PLUGS

All Specifications

SPARK PLUG TYPE

Application	Specification
Nippondenso	SKJ20DR-M11
NGK	IZFR6K-11

SPARK PLUG SPECIFICATIONS

Application	Specification
Standard (NEW) Gap (1)	.039-.043 In. (1.0-1.1 mm)
Torque	13 Ft. lbs. (18 N.m)
(1) DO NOT adjust gap on platinum spark plugs. If adjustment is required, replace with NEW platinum spark plug.	

STARTING SYSTEM

STARTER

Starting System Service Specifications

CRANKING TEST SPECIFICATIONS

Minimum Cranking Volts	Maximum Current Draw (Amps)
8.5	380

STARTER NO-LOAD TEST SPECIFICATIONS

Maximum Amps	Minimum RPM
80	2600

STARTER PERFORMANCE TEST SPECIFICATIONS

Application	(1) Maximum Amps @ Minimum RPM
Starter	80 @ 2300
(1) Battery voltage must stay at 11.5 volts or more during test.	

STARTER SPECIFICATIONS

Application	Specification
Brush Length	
Standard	.44 -.45" (11.1- 11.5 mm)
Minimum	.17" (4.3 mm)
Commutator Diameter	
Standard	1.102-1.106" (28.0-28.1 mm)

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Minimum	1.083" (27.5)
Commutator Mica Depth	
Standard	.016-.020" (.40-.50 mm)
Minimum	.006" (.15 mm)
Commutator Runout	
Standard	.001" (.02 mm)
Minimum	.002" (.05 mm)

Starting System Torque Specifications

STARTING SYSTEM TORQUE SPECIFICATIONS

Application	**Ft. Lbs. (N.m)**
Starter Bolts (12 x 1.25 mm)	47 (64)
Starter Mounting Bolts (10 x 1.25 mm)	33 (44)
	INCH Lbs. (N.m)
Starter Cable Nut	80 (9)

WHEEL ALIGNMENT

WHEEL ALIGNMENT SPECIFICATIONS

Wheel Alignment Service Specifications

For wheel alignment service specifications, see **WHEEL ALIGNMENT SPECIFICATIONS** in SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

Wheel Alignment Torque Specifications

For wheel alignment torque specifications, see **TORQUE SPECIFICATIONS** in SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

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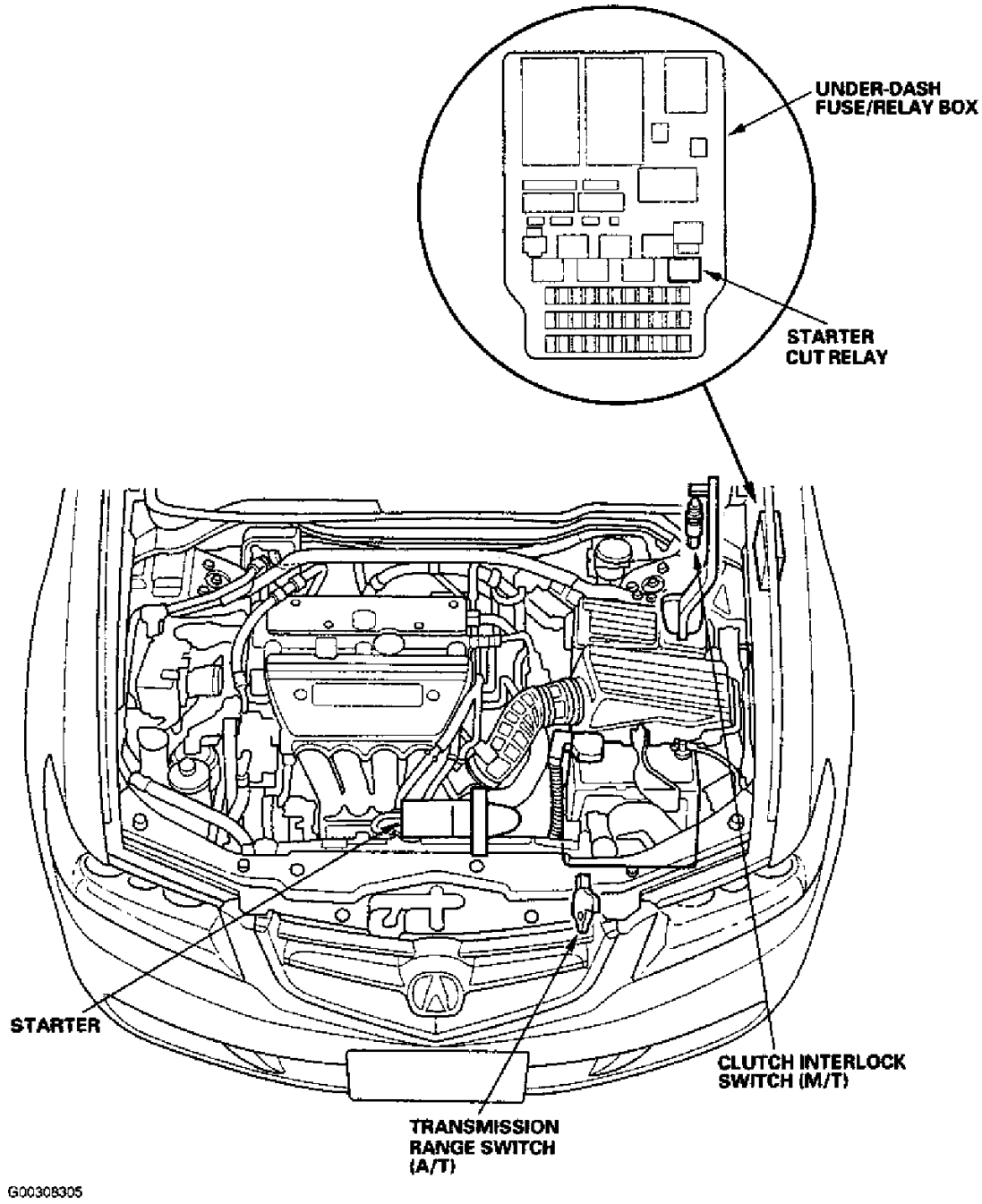


Fig. 1: Identifying Component Locations
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TROUBLE SHOOTING

STARTER CIRCUIT TROUBLE SHOOTING

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NOTE:

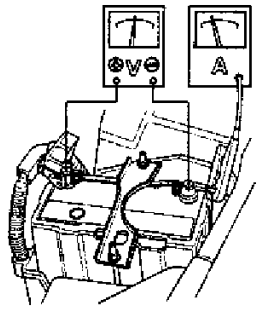
- **Air temperature must be between 59° and 100°F (15° and 38°C) during this procedure.**
- **After this test, or any subsequent repair, reset the Engine Control Module (ECM)/Powertrain Control Module (PCM) to clear any codes.**
- **The battery must be in good condition and fully charged.**

Recommended Procedure

Manufacturer recommends to use a starter system tester. Connect and operate the equipment in accordance with the manufacturer's instructions. For starter circuit trouble shooting procedure chart, see **Fig. 2** .

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1. Hook up the following equipment:
   - Ammeter, 0—400A
   - Voltmeter, 0—20 V (accurate within 0.1 volt)



2. Connect the HDS to the data link connector (DLC).
3. Select PGM-FI, then INSPECTION, then ALL INJECTORS OFF function on the HDS.
4. With the shift lever in N or P (A/T) or clutch pedal pressed (M/T), turn the ignition switch to start (III).

   Did the starter crank the engine normally?

   YES—The starting system is OK. Go to step 11.

   NO—Go to step 5.

5. Check the battery condition. Check electrical connections at the battery, the negative battery cable to body, the engine ground cables and the starter for looseness and corrosion. Then try cranking the engine again.

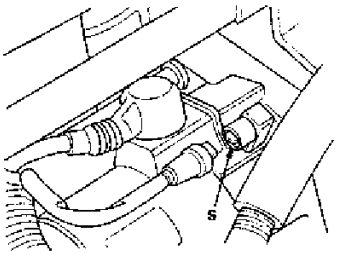
   Did the starter crank the engine?

   YES—Repairing the loose connection corrected the problem. The starting system is OK. Go to step 11.

   NO—Check the following:

   - If the starter will not crank the engine at all, go to step 6.
   - If it cranks the engine erratically or too slowly, go to step 8.
   - If it won't disengage from the flywheel or torque converter ring gear when you release the key, check the following:
     – Solenoid plunger and switch malfunction
     – Dirty drive gear or damaged overruning clutch

6. Make sure the transmission is in neutral, then disconnect the BLK/WHT wire from the starter solenoid S terminal. Connect a jumper wire from the battery positive terminal to the solenoid terminal.



   Did the starter crank the engine?

   YES—Go to step 7.

   NO—Remove the starter, and repair or replace as necessary.■

7. Check the following items in the order listed until you find the open circuit:

   - The BLK/WHT wire and connectors between the under-dash fuse/relay box and the ignition switch, and between the under-dash fuse/relay box and the starter.
   - The ignition switch.
   - The transmission range switch and connector (A/T) or the clutch interlock switch and connector (M/T).
   - The starter cut relay.

8. While cranking the engine, check the cranking voltage and current draw.

   Is cranking voltage greater than or equal to 8.5 V and current draw less than or equal to 380A?

   YES—Go to step 9.

   NO—Replace the starter, or remove and disassemble it, and check the following:■

   - Starter armature dragging
   - Shorted armature winding
   - Excessive drag in engine

9. Check the engine speed while cranking the engine.

   Is the engine speed above 100 rpm?

   YES—Go to step 10.

   NO—Replace the starter, or remove and disassemble it, and check the following:■

   - Open circuit in starter armature commutator segments
   - Excessively worn starter brushes
   - Open circuit in commutator brushes
   - Dirty or damaged helical splines or drive gear
   - Faulty drive gear clutch

10. Remove the starter, and inspect its drive gear and the flywheel or torque converter ring gear for damage. Replace any damaged parts.
11. Select ECM/PCM reset to stop the ALL INJECTORS OFF function on the HDS.

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Fig. 2: Starter Circuit Troubleshooting Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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SYMPTOM TROUBLESHOOTING

For symptom troubleshooting chart, see **Fig. 3** .

Symptom	Diagnostic procedure
Engine does not start (does not crank)	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge. 3. Check the starter. 4. Check the starter cut relay. 5. Check the transmission range switch (A/T). 6. Check the clutch interlock switch (M/T). 7. Check the ignition switch or wire.
Engine cranks, but does not start	1. Troubleshoot the immobilizer system. 2. Test the fuel pump. 3. Check for plugged or damaged fuel line. 4. Check for plugged fuel filter. 5. Check the throttle body. 6. Check for PGM-FI DTC's. 7. Check for low engine compression. 8. Check for damage or broken cam chain.
Hard starting	1. Test the fuel pump. 2. Check for plugged or damaged fuel line. 3. Check for plugged fuel filter. 4. Check for restricted three way catalytic converter (TWC) or exhaust system. 5. Check for PGM-FI DTC's.

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Fig. 3: Symptom Troubleshooting Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ON-VEHICLE TESTING

CLUTCH INTERLOCK SWITCH TEST

1. Disconnect the clutch interlock switch 2 pin connector (A). See **Fig. 4** .
2. Remove the clutch interlock switch (B).
3. Check for continuity between the terminals according to the table. See **Fig. 5** . If the continuity is not as specified, replace the clutch interlock switch. If OK, install clutch interlock switch and adjust the pedal height. See appropriate CLUTCHES article in TRANSAXLE/TRANSMISSION.

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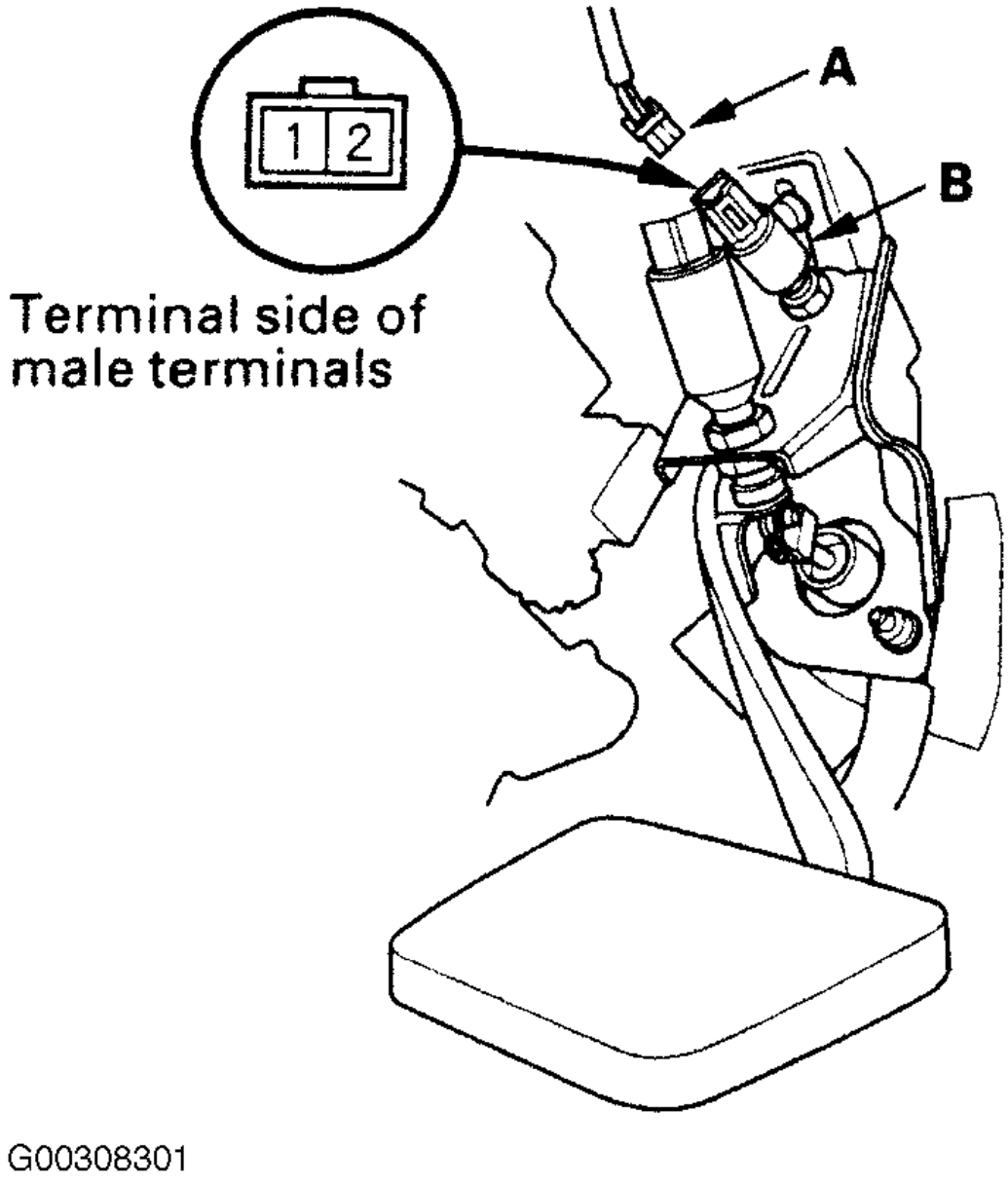


Fig. 4: Disconnecting Clutch Interlock Switch 2-Pin Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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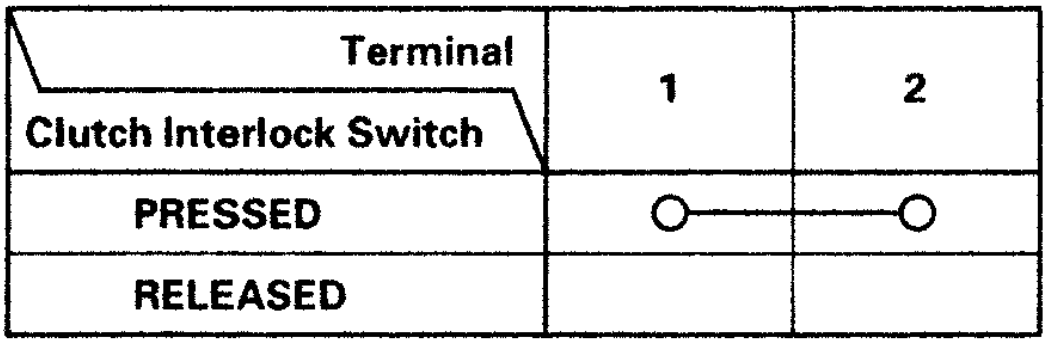


Fig. 5: Checking Continuity Between Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM TESTS

STARTER PERFORMANCE TEST

1. Connect the battery to the starter by using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds. If the starter pinion moves out, it is working properly. See **Fig. 6** .
2. Disconnect the battery from the body. See **Fig. 7** . If the pinion retracts immediately, it is working properly.
3. Clamp the starter firmly in a vise.
4. Connect the starter to the battery, and confirm that the motor starts and keeps rotating. See **Fig. 8** .
5. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly. See **STARTER PERFORMANCE TEST SPECIFICATIONS** .

STARTER PERFORMANCE TEST SPECIFICATIONS

Application	(1) Maximum Amps @ Minimum RPM
Starter	80 @ 2300
(1) Battery voltage must stay at 11.5 volts or more during test.	

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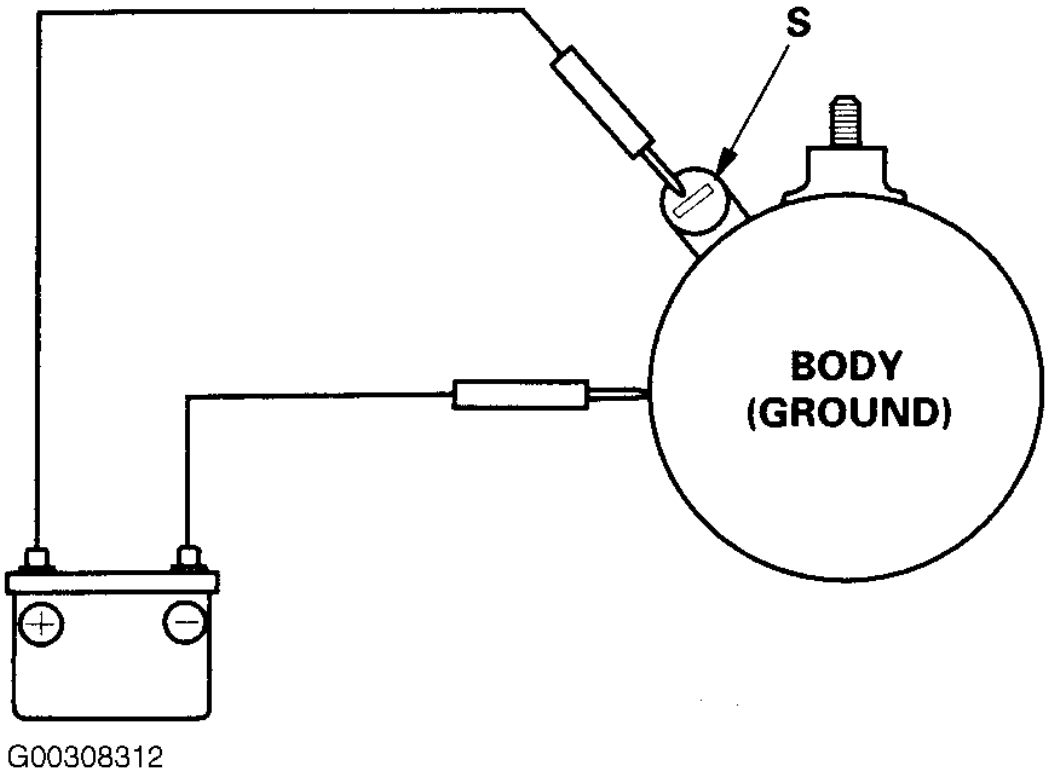


Fig. 6: Connecting Battery To Starter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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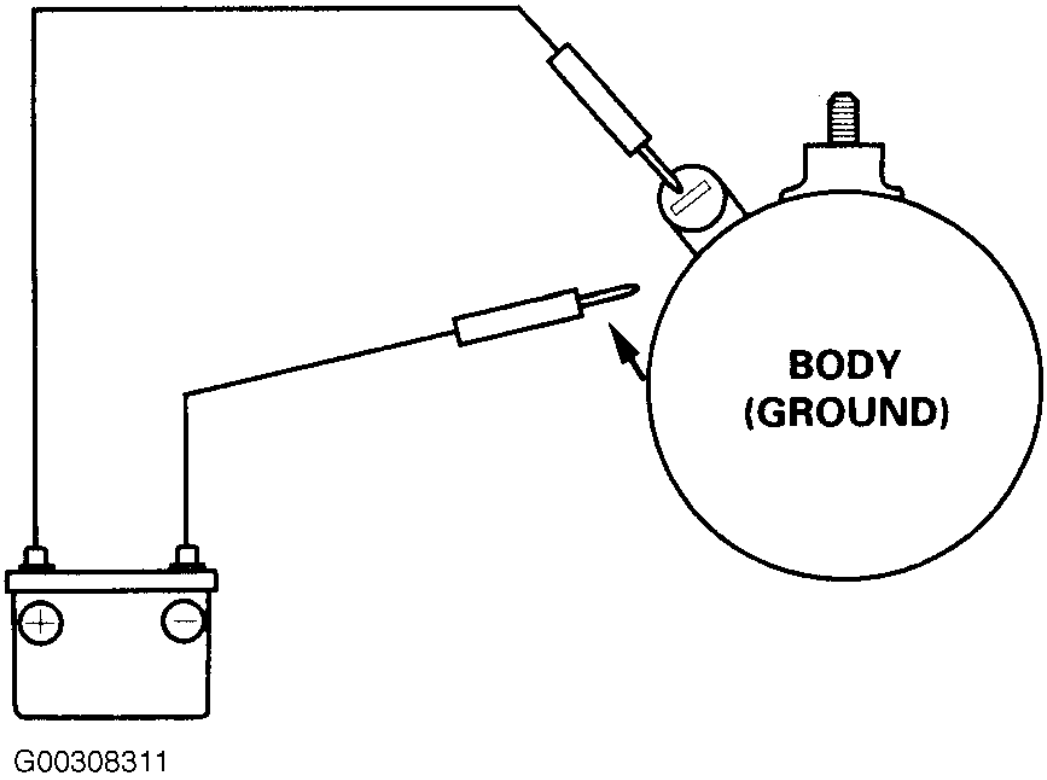


Fig. 7: Disconnecting Battery From Starter Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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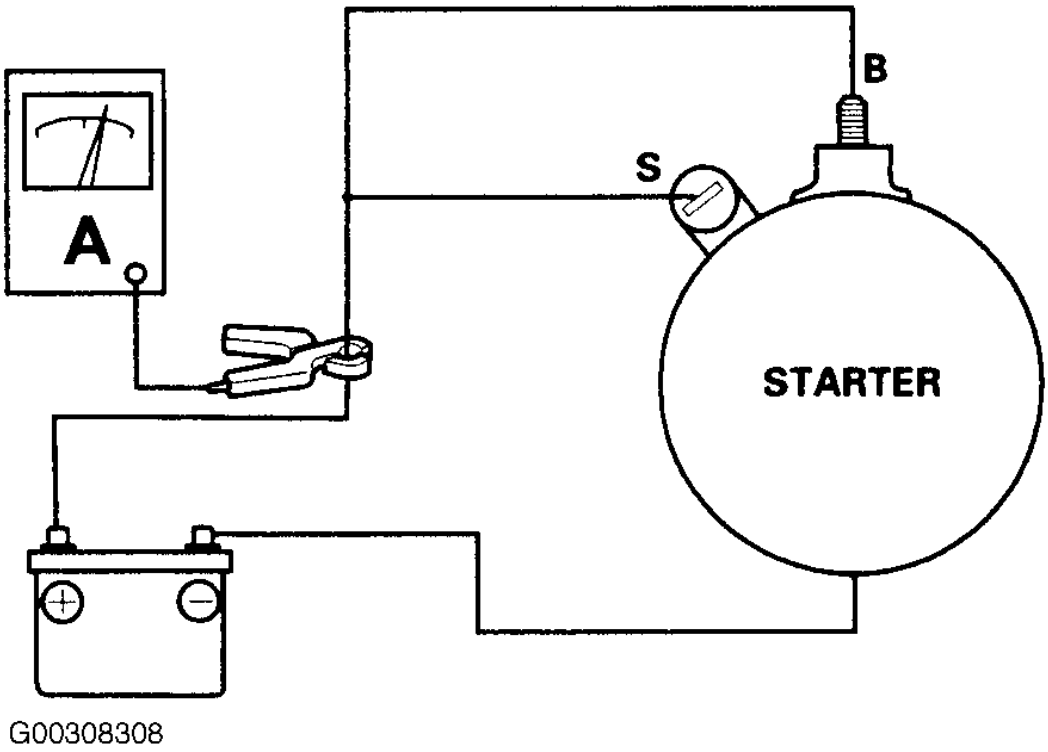


Fig. 8: Connecting Starter To The Battery With Ammeter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BENCH TESTING

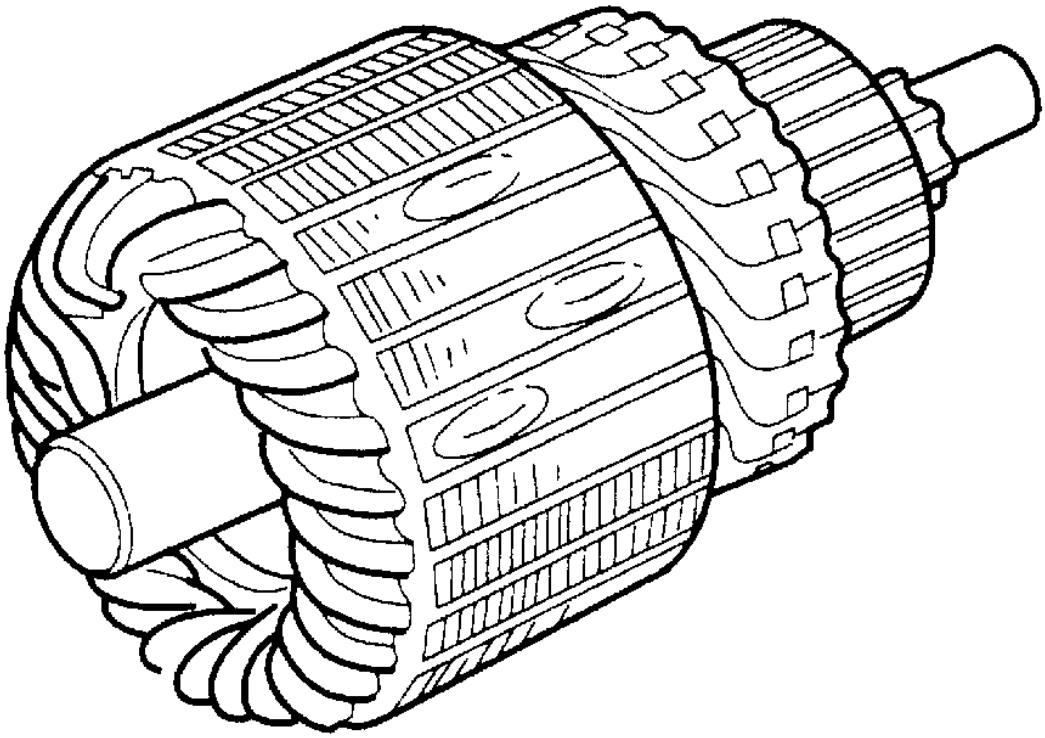
ARMATURE TEST

1. Remove the starter. See **STARTER** under REMOVAL & INSTALLATION.
2. Disassemble starter. See **STARTER** under OVERHAUL.
3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature. See **Fig. 9** .
4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface with emery cloth or a lathe within specifications, or recondition with # 500 or # 600 sandpaper (B). See **Fig. 10** .
5. Check the commutator diameter. See **Fig. 11** . See **STARTER SPECIFICATIONS** . If the diameter is below the service limit, replace the armature.
6. Measure the commutator runout. See **Fig. 12** . See **STARTER SPECIFICATIONS** . If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments. If the commutator runout is not within the service limit, replace the armature.
7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be

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too shallow, too narrow, or V-shaped (D). See **Fig. 13** .

8. Check for continuity between the segments of the commutator. See **Fig. 14** . If an open circuit exists between any segments, replace the armature.
9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. See **Fig. 15** . If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.
10. Check with an ohmmeter that no continuity exists between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If continuity exists, replace the armature. See **Fig. 16** .



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Fig. 9: Identifying Armature
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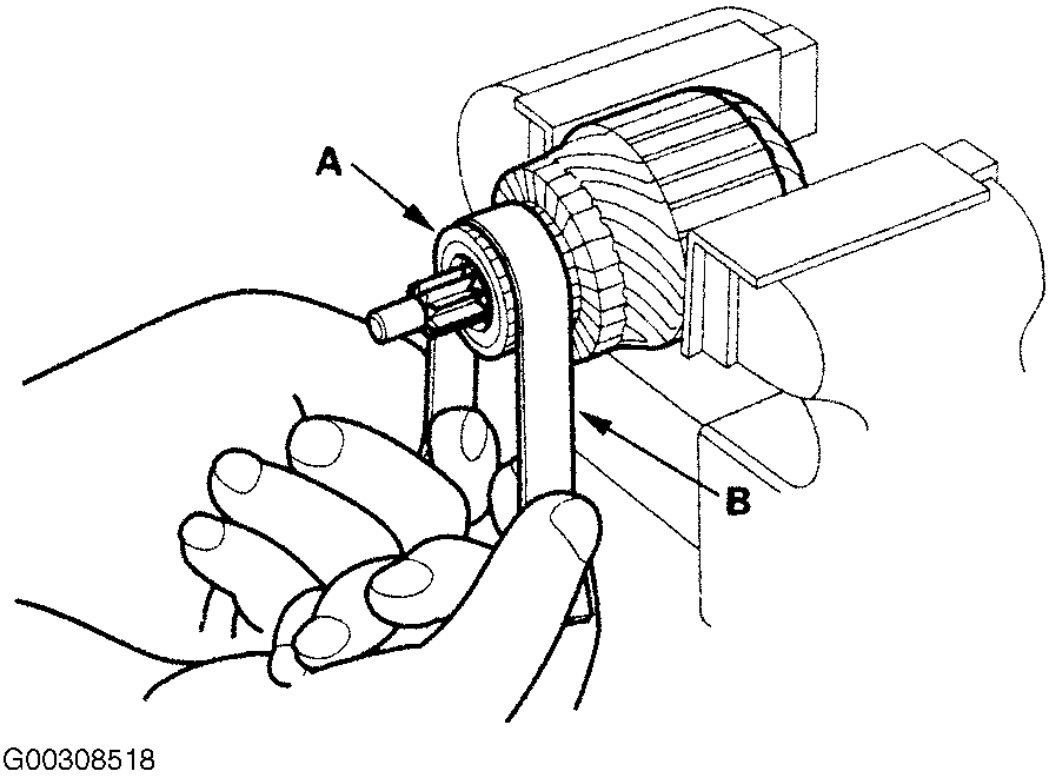
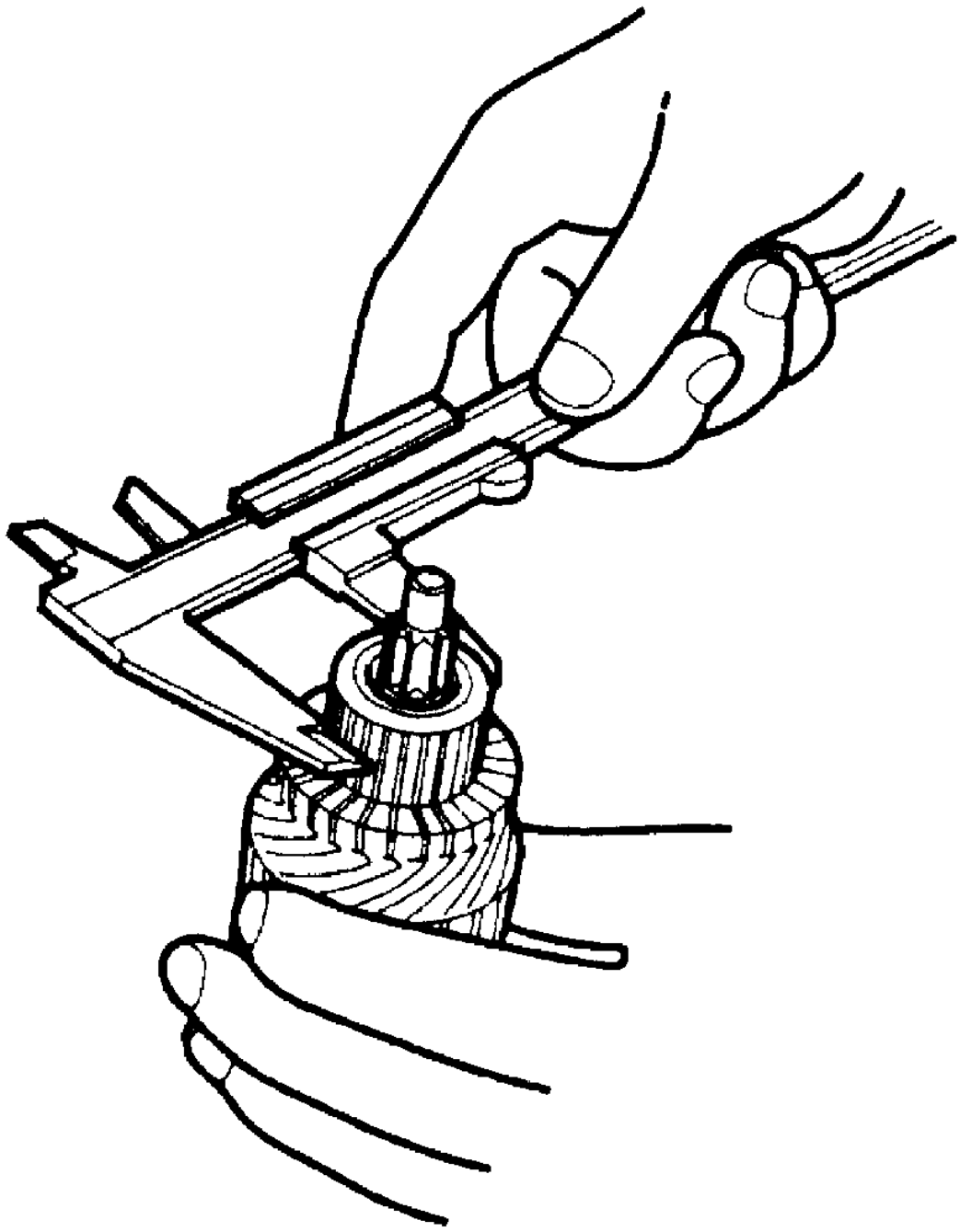


Fig. 10: Checking Condition Of The Commutator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 11: Checking Commutator Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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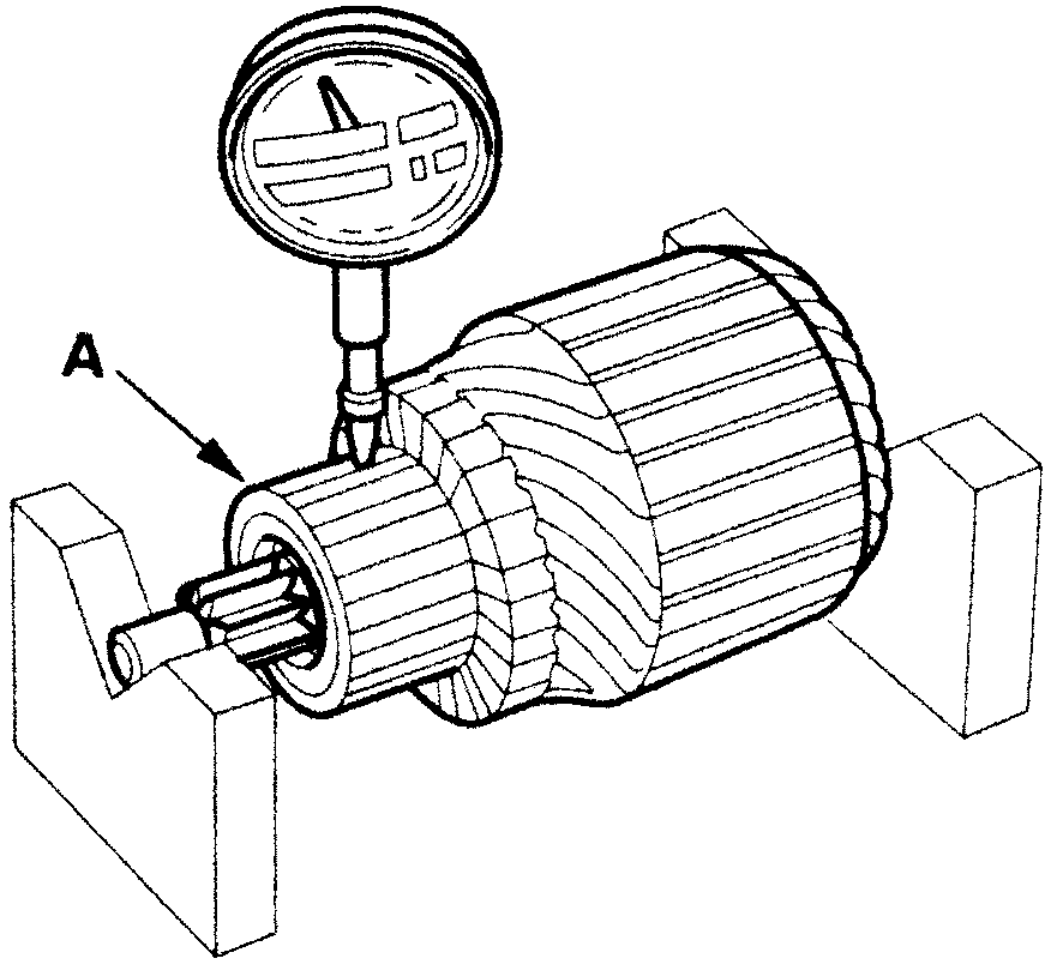


Fig. 12: Measuring Commutator Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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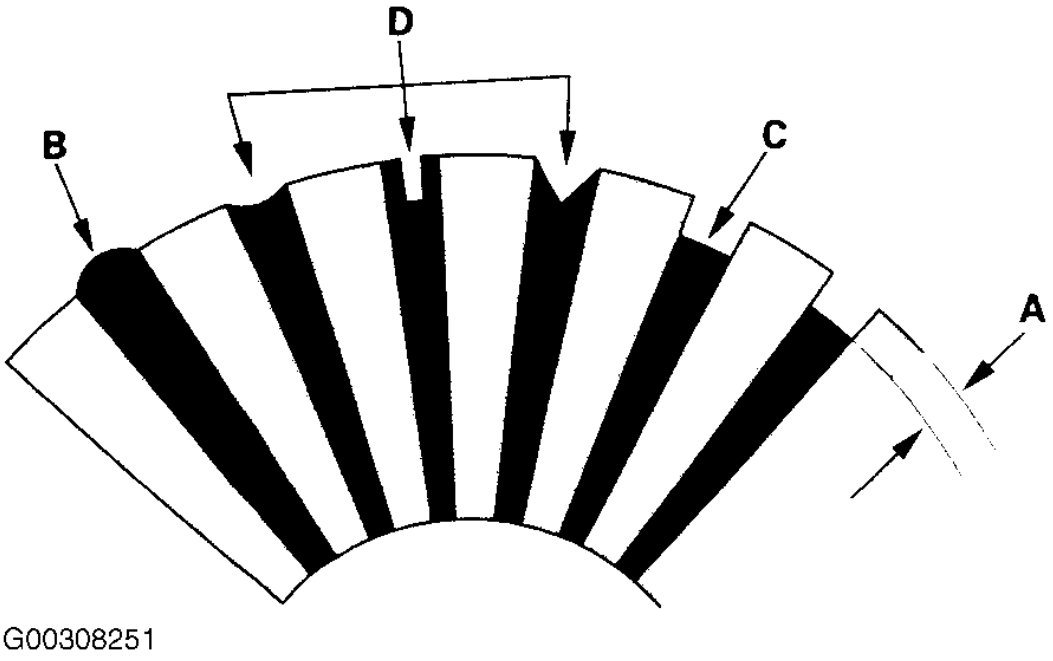


Fig. 13: Checking Mica Depth
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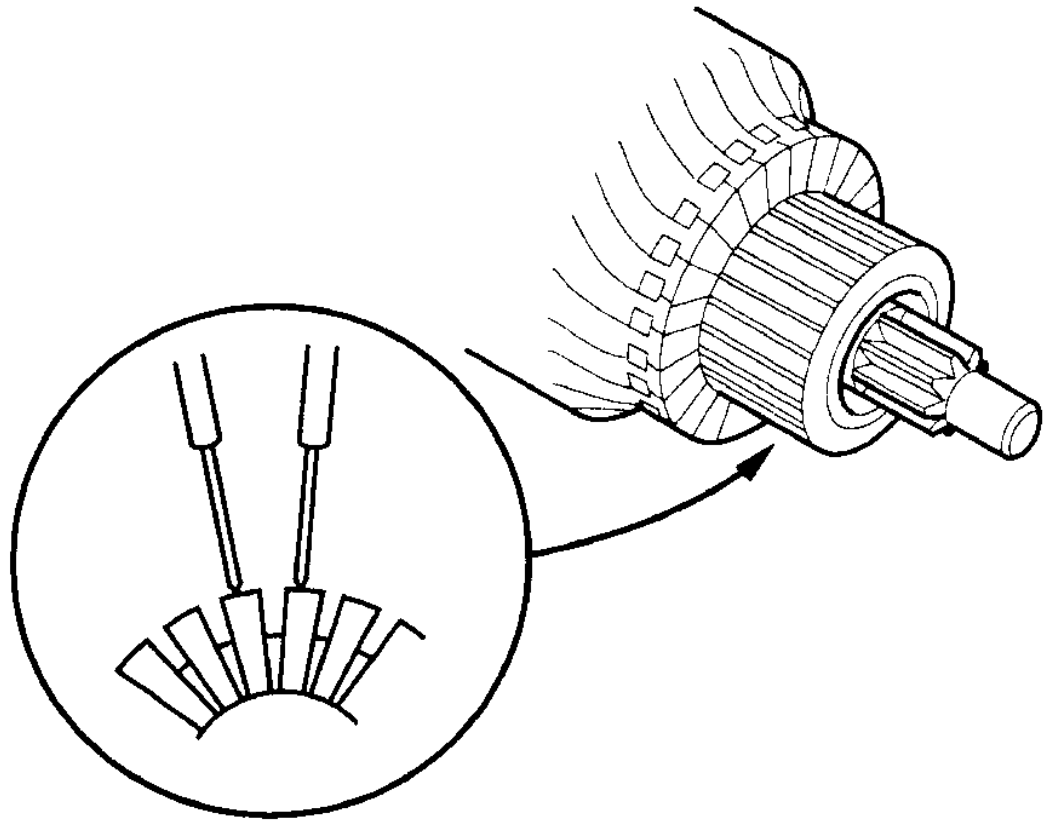


Fig. 14: Checking Continuity Between Commutator Segments
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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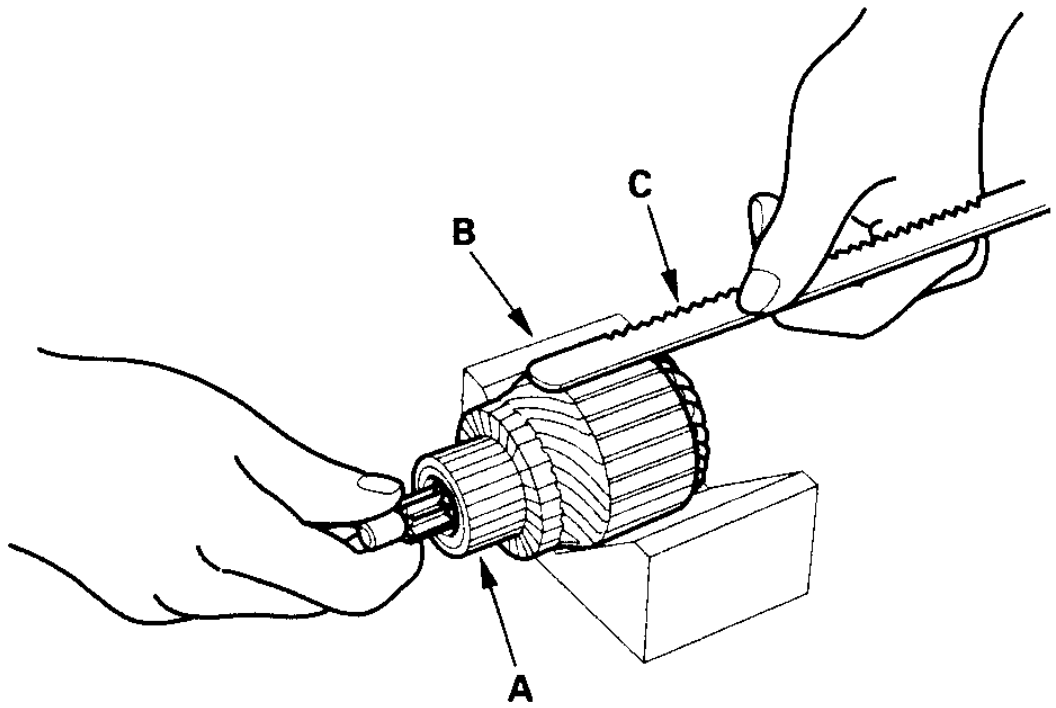


Fig. 15: Checking Armature On Armature Tester
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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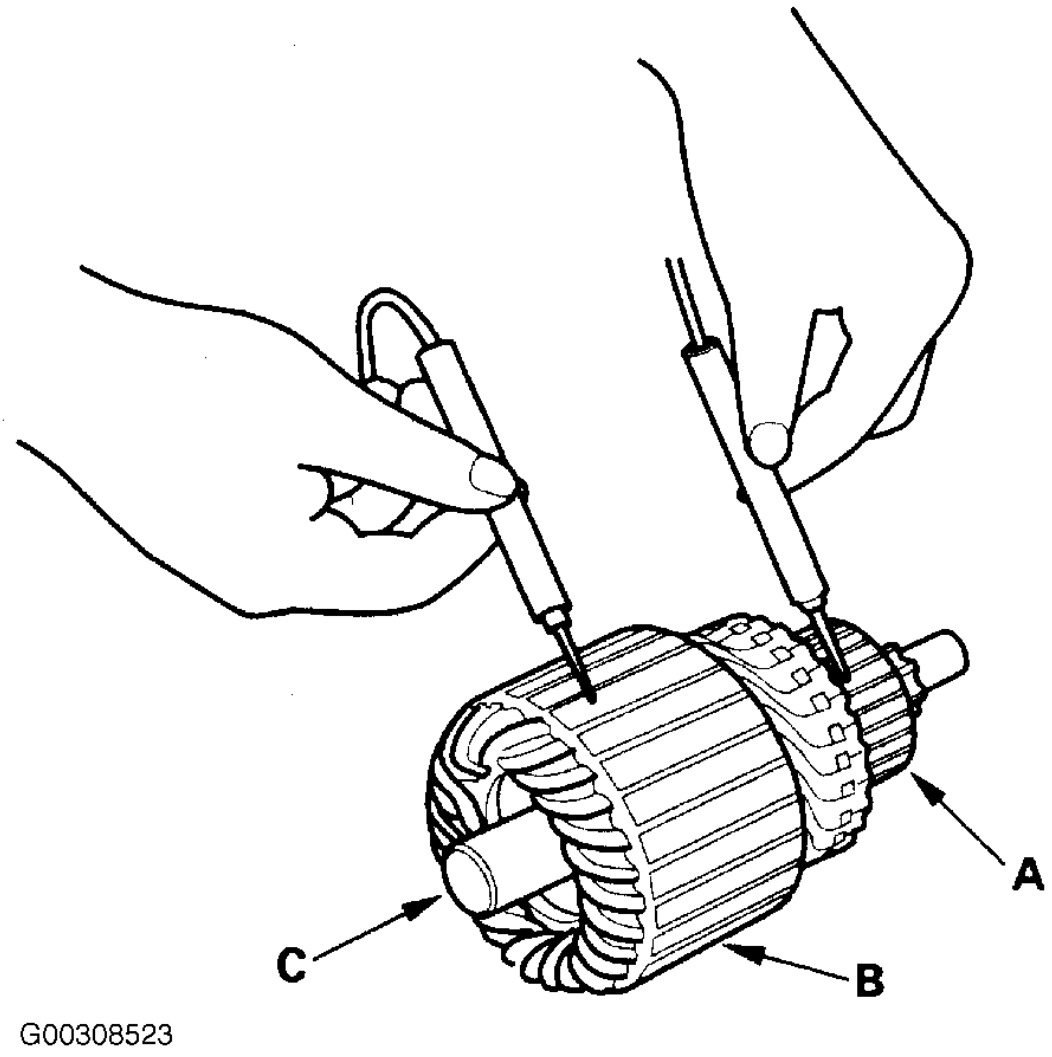


Fig. 16: Checking Continuity Between Commutator, Armature Coil Core And Armature Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BRUSH HOLDER TEST

1. Using an ohmmeter, check that there is no continuity between positive brush (A) and negative brush (B). If there is continuity, replace the brush holder assembly. See **Fig. 17** .
2. Measure the brush length. If it is not within the service limit, replace the brush holder assembly. See **Fig. 18** . See **STARTER SPECIFICATIONS** .

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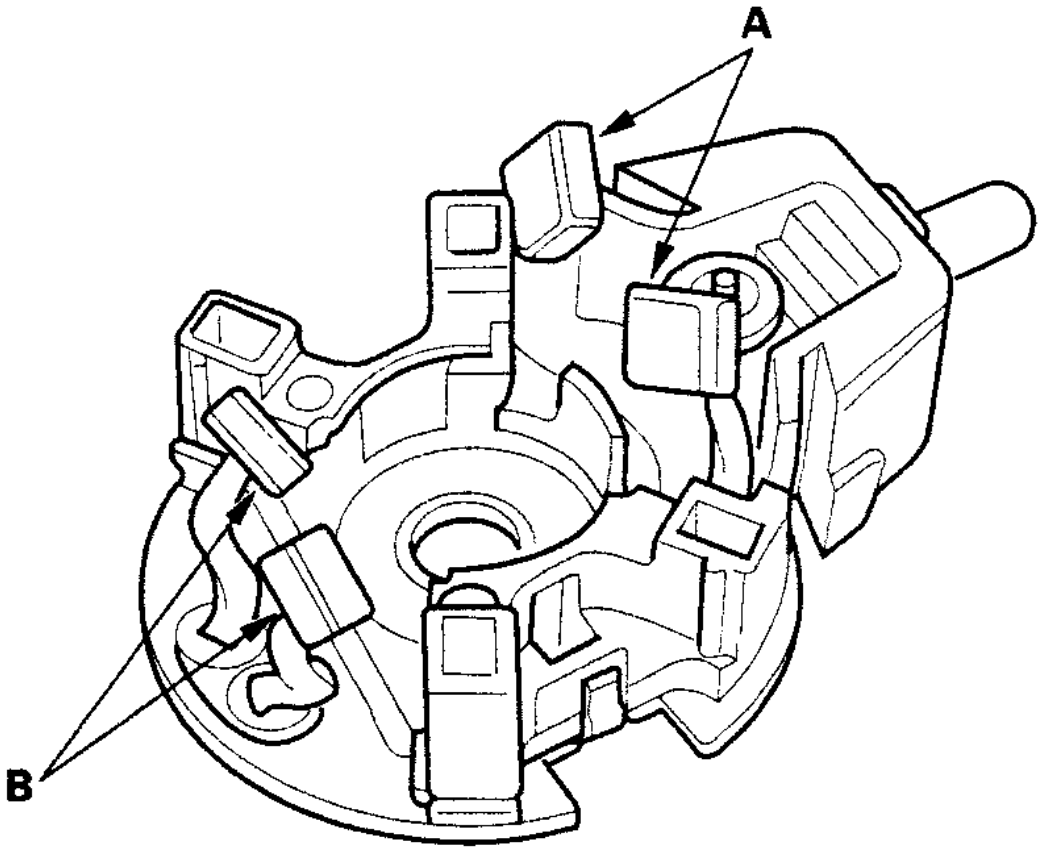


Fig. 17: Identifying Brush Holders
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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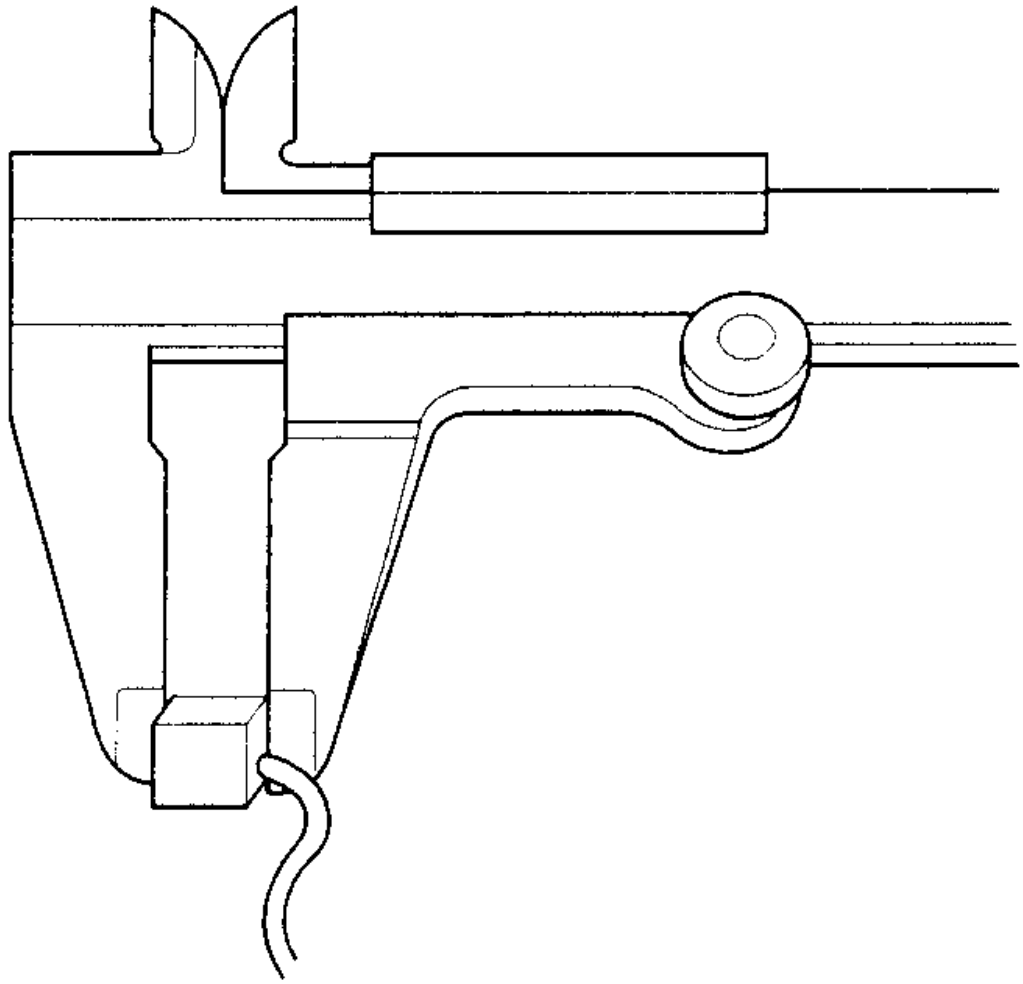
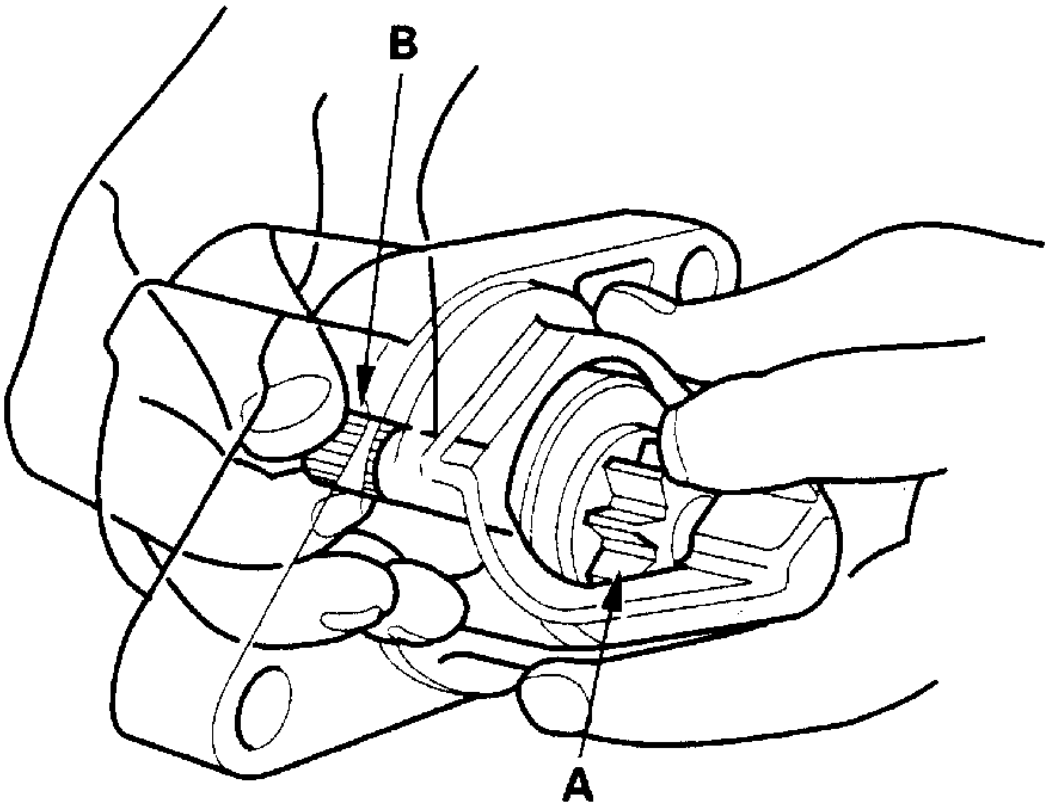


Fig. 18: Measuring Brush Length
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OVERRUNNING CLUTCH TEST

1. While holding the drive gear (A), turn the gear shaft (B) clockwise. See **Fig. 19** . Check that the drive gear comes out to the other end. If the drive gear does not move smoothly, replace the gear cover assembly.
2. While holding the drive gear, turn the gear shaft counterclockwise. The gear shaft should rotate freely. If the gear shaft does not rotate smoothly, replace the gear cover assembly.
3. If the starter drive gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the torque converter ring gear to see if the teeth are damaged.

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Fig. 19: Inspecting Overrunning Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REMOVAL & INSTALLATION

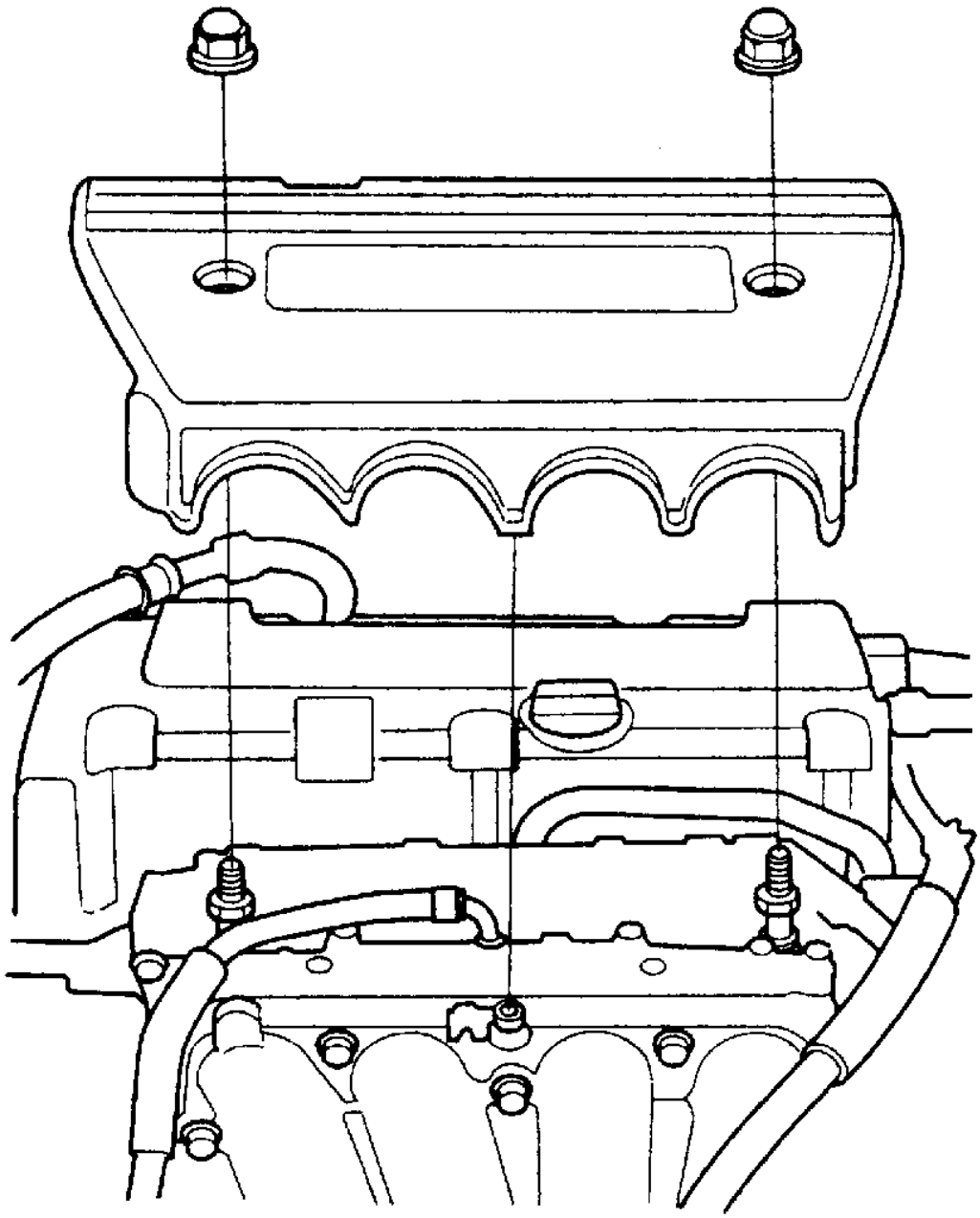
STARTER

Removal

1. Ensure you have the anti-theft codes for the radio and the navigation system, write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative cable. Disconnect the positive cable.
3. Remove the intake manifold cover. See **Fig. 20** .
4. Disconnect the starter cable (A) from the "B" terminal. Disconnect the Black/White wire (B) from the "S" terminal.
5. Remove the harness clamp (C). See **Fig. 21** .
6. Remove the harness holder (D).

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7. Remove the two bolts holding the starter. Remove the starter.



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Fig. 20: Removing Intake Manifold Cover
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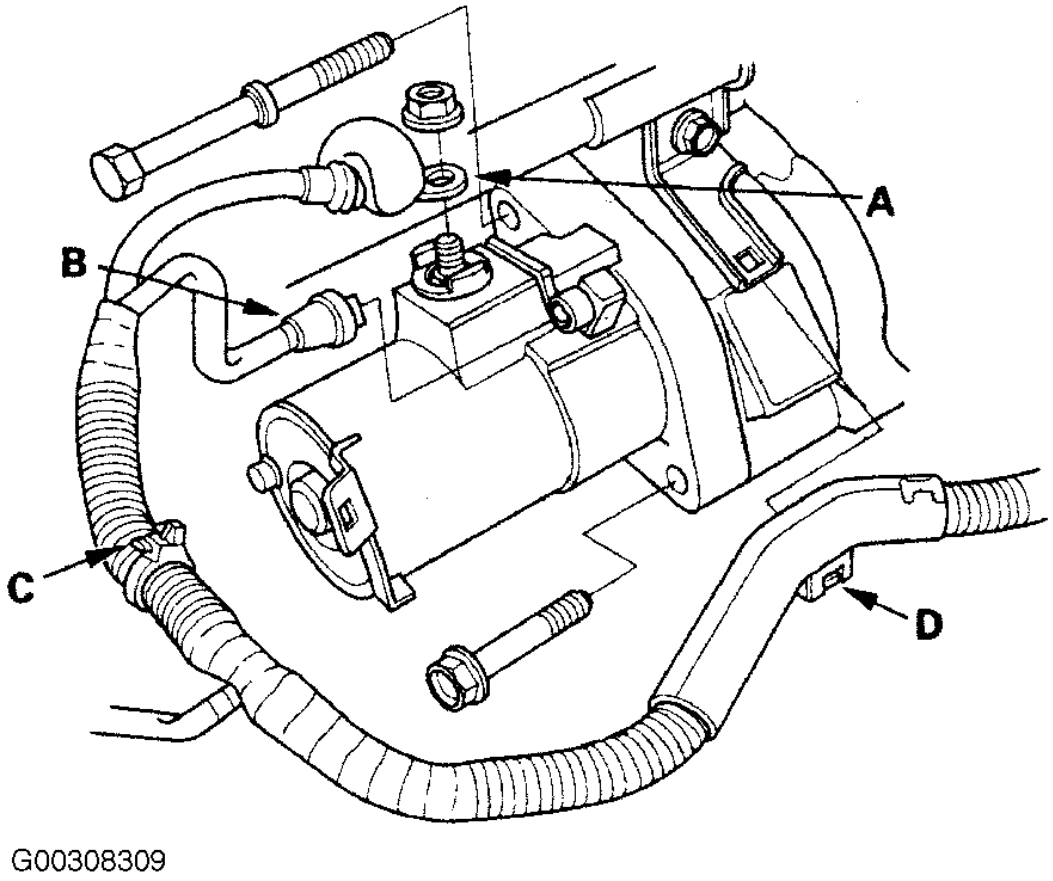


Fig. 21: Removing Harness Clamp And Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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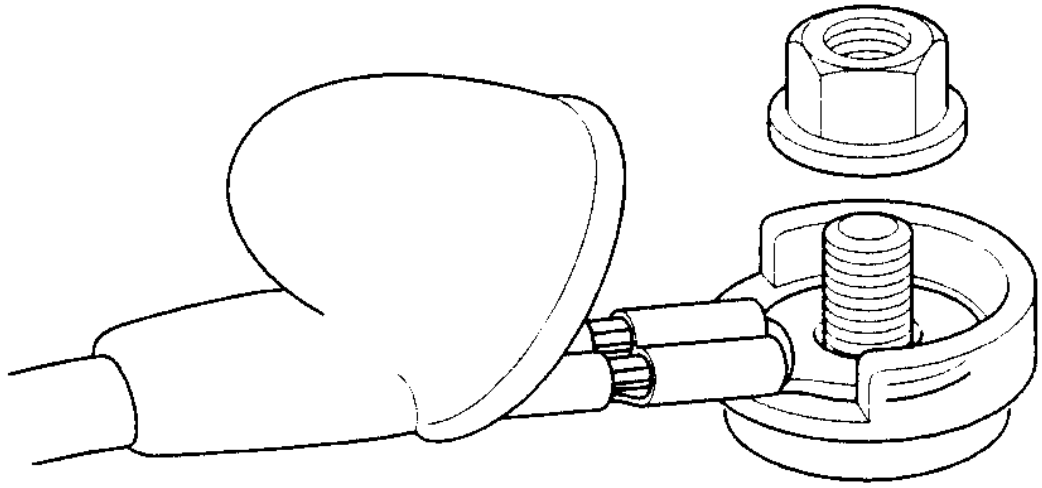


Fig. 22: Positioning Crimped Side Of The Ring Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Install in the reverse order of removal. Ensure the crimped side of the ring terminal is facing out. See **Fig. 22** .
2. Connect the battery positive cable and negative cable to the battery.
3. Start the engine to ensure the starter works properly.
4. Enter the anti-theft codes for the radio and the navigation system, enter the customer's radio channel presets.
5. Set the clock.

OVERHAUL

STARTER

Disassembly

For disassembly, use exploded view of starter, see **Fig. 23** .

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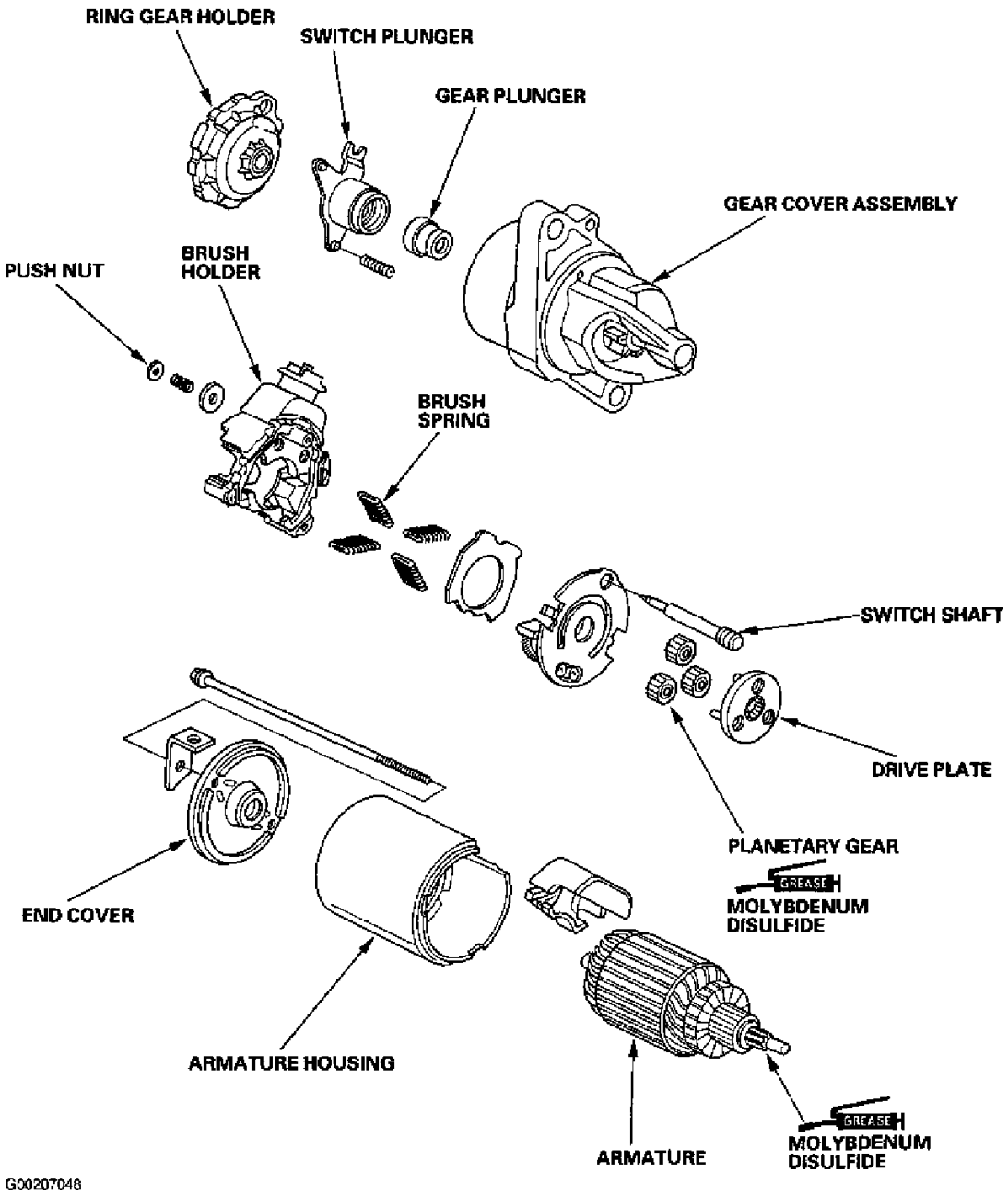


Fig. 23: Exploded View Of Starter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Planetary Gear

Check the planetary gears (A) and ring gear (B). Replace them if they are worn or damaged. See **Fig. 24** .

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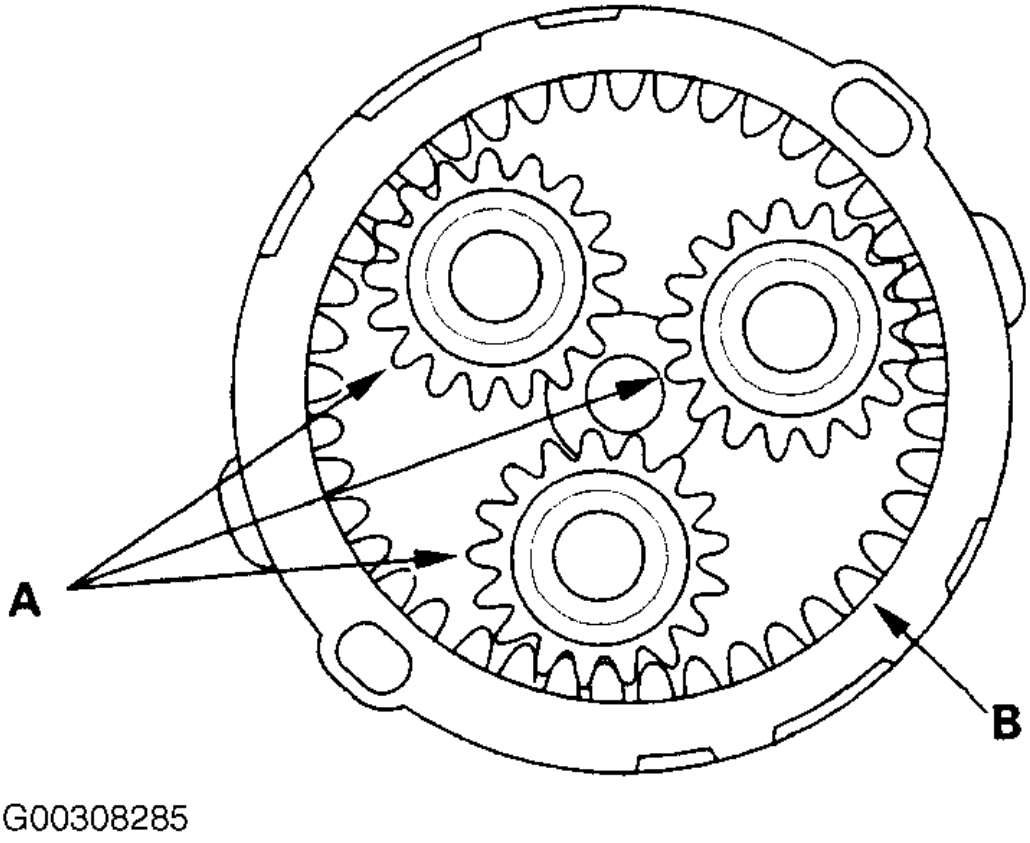


Fig. 24: Identifying Planetary Gear Inspection
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reassembly

NOTE: To seat the new brushes, slip a strip of #500 or #600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly rotate the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.

1. Install the brush into the brush holder, and set the armature (A) in the brush holder (B). See **Fig. 25** .
2. While squeezing a spring (C), insert it in the hole on the brush holder, and push it until it bottoms. Repeat this for the other springs (D,E and F).

NOTE: Ensure the armature stays in the holder.

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3. Install the armature and brush holder assembly into the housing.

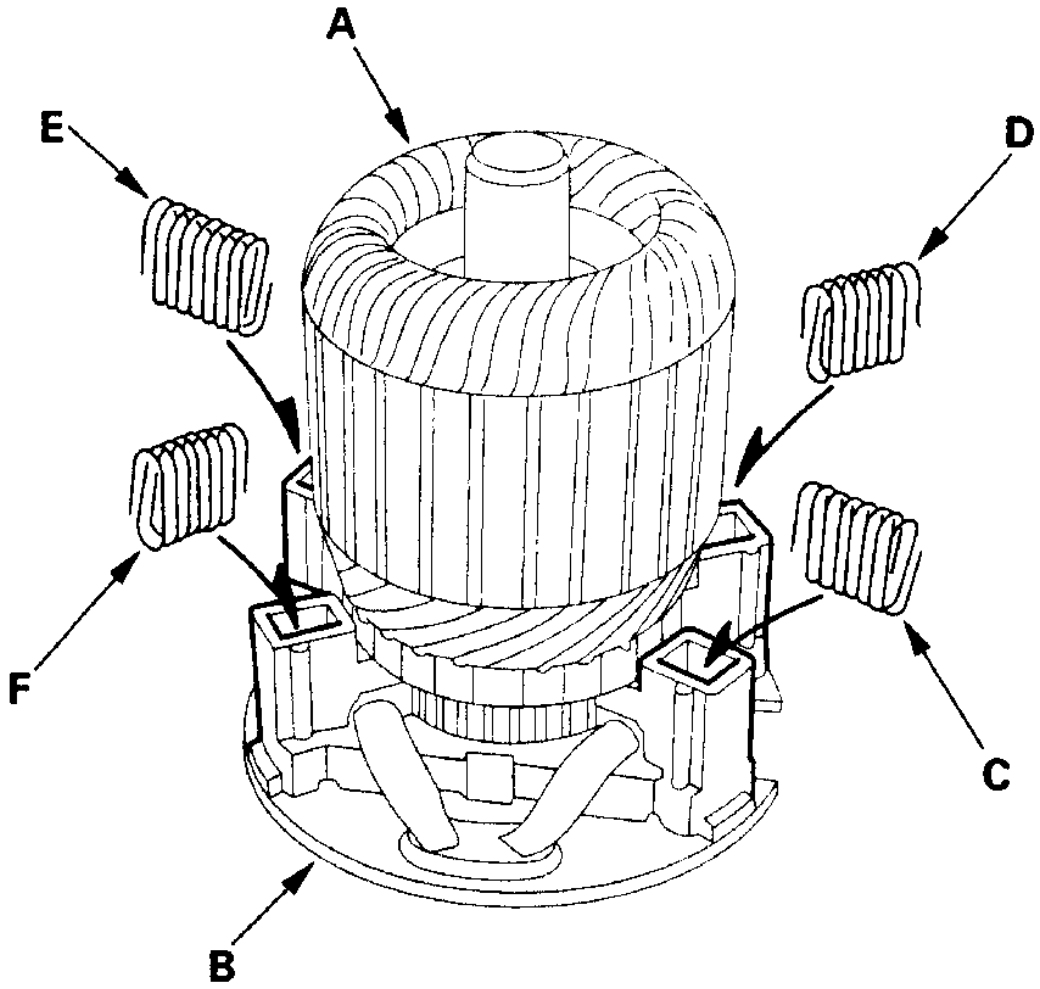


Fig. 25: Installing Brush Into The Brush Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STARTER SPECIFICATIONS

For starter service specifications, see **SERVICE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

TORQUE SPECIFICATIONS

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For starter torque specifications, see **TORQUE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

WIRING DIAGRAMS

For wiring diagram on 2004 TSX models, see appropriate SYSTEM WIRING DIAGRAM article in ELECTRICAL.

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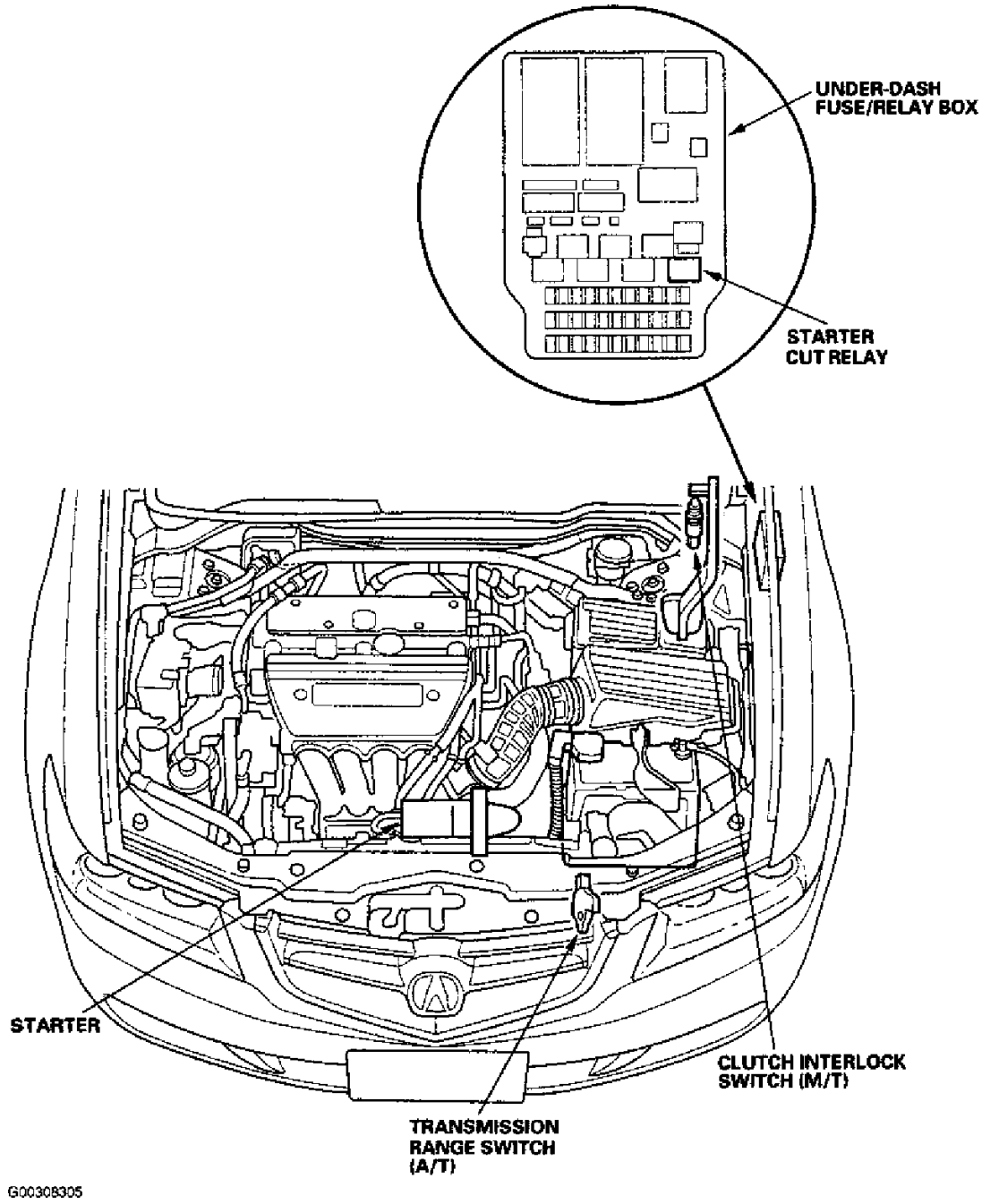


Fig. 1: Identifying Component Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TROUBLE SHOOTING

STARTER CIRCUIT TROUBLE SHOOTING

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NOTE:

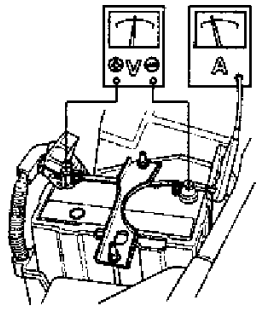
- **Air temperature must be between 59° and 100°F (15° and 38°C) during this procedure.**
- **After this test, or any subsequent repair, reset the Engine Control Module (ECM)/Powertrain Control Module (PCM) to clear any codes.**
- **The battery must be in good condition and fully charged.**

Recommended Procedure

Manufacturer recommends to use a starter system tester. Connect and operate the equipment in accordance with the manufacturer's instructions. For starter circuit trouble shooting procedure chart, see **Fig. 2** .

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1. Hook up the following equipment:
   - Ammeter, 0—400A
   - Voltmeter, 0—20 V (accurate within 0.1 volt)



2. Connect the HDS to the data link connector (DLC).
3. Select PGM-FI, then INSPECTION, then ALL INJECTORS OFF function on the HDS.
4. With the shift lever in N or P (A/T) or clutch pedal pressed (M/T), turn the ignition switch to start (III).

   Did the starter crank the engine normally?

   YES—The starting system is OK. Go to step 11.

   NO—Go to step 5.

5. Check the battery condition. Check electrical connections at the battery, the negative battery cable to body, the engine ground cables and the starter for looseness and corrosion. Then try cranking the engine again.

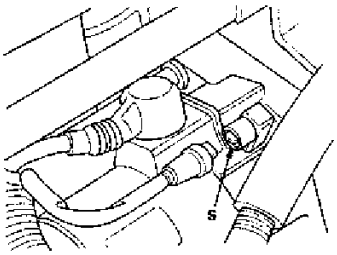
   Did the starter crank the engine?

   YES—Repairing the loose connection corrected the problem. The starting system is OK. Go to step 11.

   NO—Check the following:

   - If the starter will not crank the engine at all, go to step 6.
   - If it cranks the engine erratically or too slowly, go to step 8.
   - If it won't disengage from the flywheel or torque converter ring gear when you release the key, check the following:
     – Solenoid plunger and switch malfunction
     – Dirty drive gear or damaged overruning clutch

6. Make sure the transmission is in neutral, then disconnect the BLK/WHT wire from the starter solenoid S terminal. Connect a jumper wire from the battery positive terminal to the solenoid terminal.



   Did the starter crank the engine?

   YES—Go to step 7.

   NO—Remove the starter, and repair or replace as necessary.■

7. Check the following items in the order listed until you find the open circuit:

   - The BLK/WHT wire and connectors between the under-dash fuse/relay box and the ignition switch, and between the under-dash fuse/relay box and the starter.
   - The ignition switch.
   - The transmission range switch and connector (A/T) or the clutch interlock switch and connector (M/T).
   - The starter cut relay.

8. While cranking the engine, check the cranking voltage and current draw.

   Is cranking voltage greater than or equal to 8.5 V and current draw less than or equal to 380A?

   YES—Go to step 9.

   NO—Replace the starter, or remove and disassemble it, and check the following:■

   - Starter armature dragging
   - Shorted armature winding
   - Excessive drag in engine

9. Check the engine speed while cranking the engine.

   Is the engine speed above 100 rpm?

   YES—Go to step 10.

   NO—Replace the starter, or remove and disassemble it, and check the following:■

   - Open circuit in starter armature commutator segments
   - Excessively worn starter brushes
   - Open circuit in commutator brushes
   - Dirty or damaged helical splines or drive gear
   - Faulty drive gear clutch

10. Remove the starter, and inspect its drive gear and the flywheel or torque converter ring gear for damage. Replace any damaged parts.
11. Select ECM/PCM reset to stop the ALL INJECTORS OFF function on the HDS.

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Fig. 2: Starter Circuit Troubleshooting Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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SYMPTOM TROUBLESHOOTING

For symptom troubleshooting chart, see **Fig. 3** .

Symptom	Diagnostic procedure
Engine does not start (does not crank)	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge. 3. Check the starter. 4. Check the starter cut relay. 5. Check the transmission range switch (A/T). 6. Check the clutch interlock switch (M/T). 7. Check the ignition switch or wire.
Engine cranks, but does not start	1. Troubleshoot the immobilizer system. 2. Test the fuel pump. 3. Check for plugged or damaged fuel line. 4. Check for plugged fuel filter. 5. Check the throttle body. 6. Check for PGM-FI DTC's. 7. Check for low engine compression. 8. Check for damage or broken cam chain.
Hard starting	1. Test the fuel pump. 2. Check for plugged or damaged fuel line. 3. Check for plugged fuel filter. 4. Check for restricted three way catalytic converter (TWC) or exhaust system. 5. Check for PGM-FI DTC's.

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Fig. 3: Symptom Troubleshooting Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ON-VEHICLE TESTING

CLUTCH INTERLOCK SWITCH TEST

1. Disconnect the clutch interlock switch 2 pin connector (A). See **Fig. 4** .
2. Remove the clutch interlock switch (B).
3. Check for continuity between the terminals according to the table. See **Fig. 5** . If the continuity is not as specified, replace the clutch interlock switch. If OK, install clutch interlock switch and adjust the pedal height. See appropriate CLUTCHES article in TRANSAXLE/TRANSMISSION.

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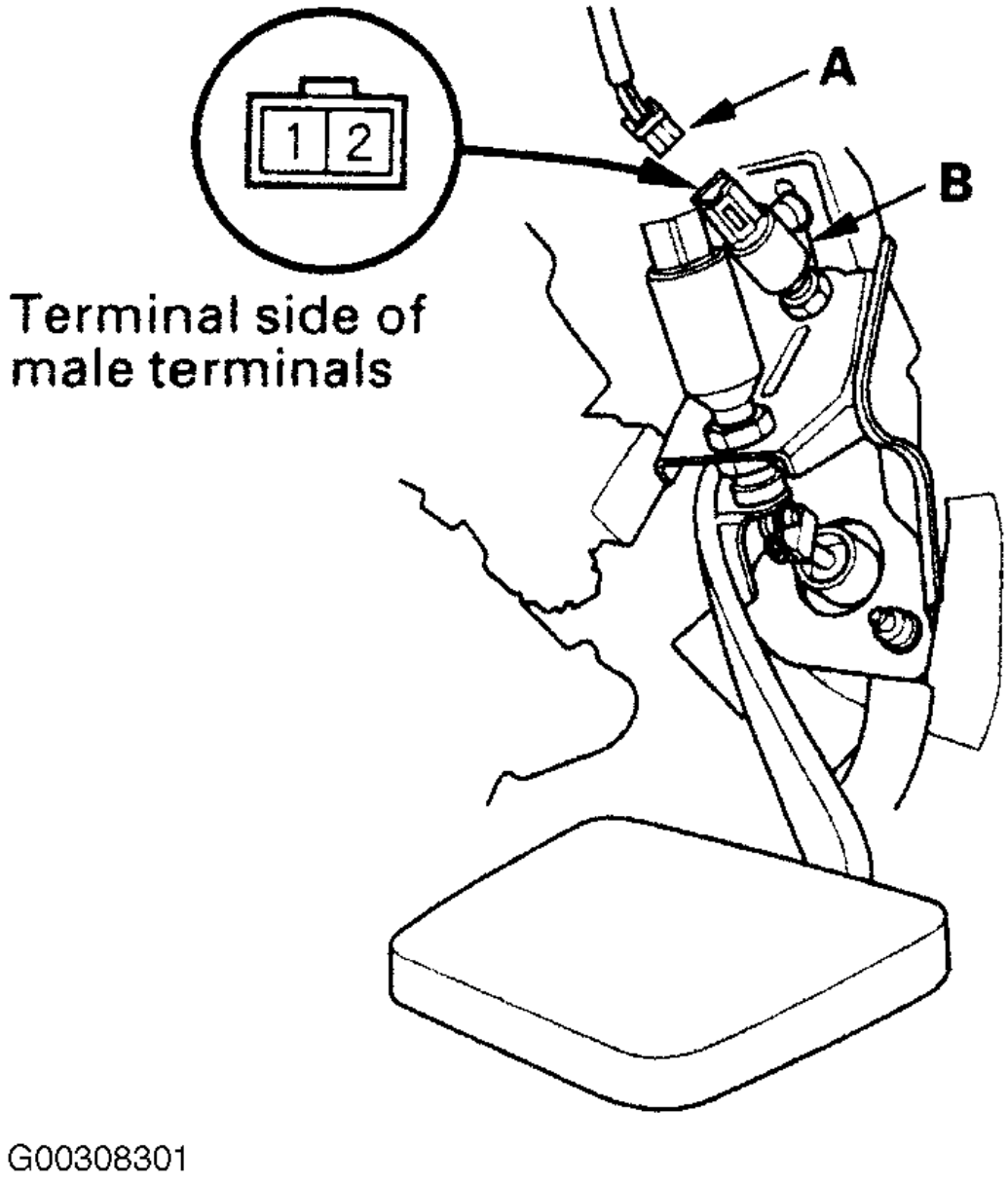
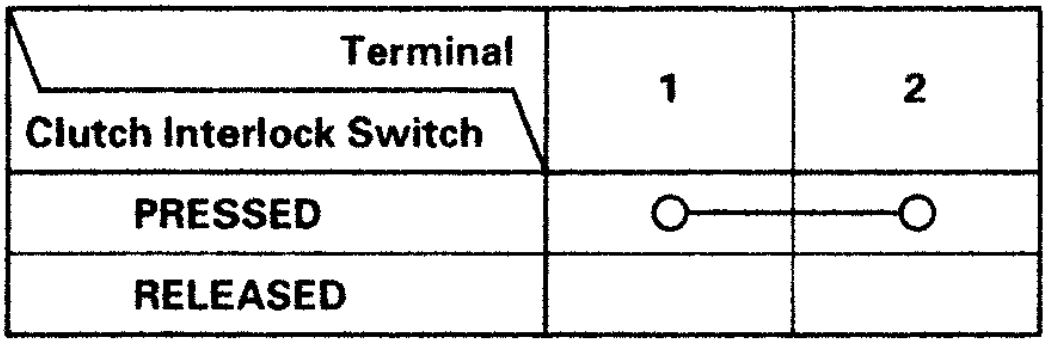


Fig. 4: Disconnecting Clutch Interlock Switch 2-Pin Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 5: Checking Continuity Between Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM TESTS

STARTER PERFORMANCE TEST

1. Connect the battery to the starter by using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds. If the starter pinion moves out, it is working properly. See **Fig. 6** .
2. Disconnect the battery from the body. See **Fig. 7** . If the pinion retracts immediately, it is working properly.
3. Clamp the starter firmly in a vise.
4. Connect the starter to the battery, and confirm that the motor starts and keeps rotating. See **Fig. 8** .
5. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly. See **STARTER PERFORMANCE TEST SPECIFICATIONS** .

STARTER PERFORMANCE TEST SPECIFICATIONS

Application	(1) Maximum Amps @ Minimum RPM
Starter	80 @ 2300
(1) Battery voltage must stay at 11.5 volts or more during test.	

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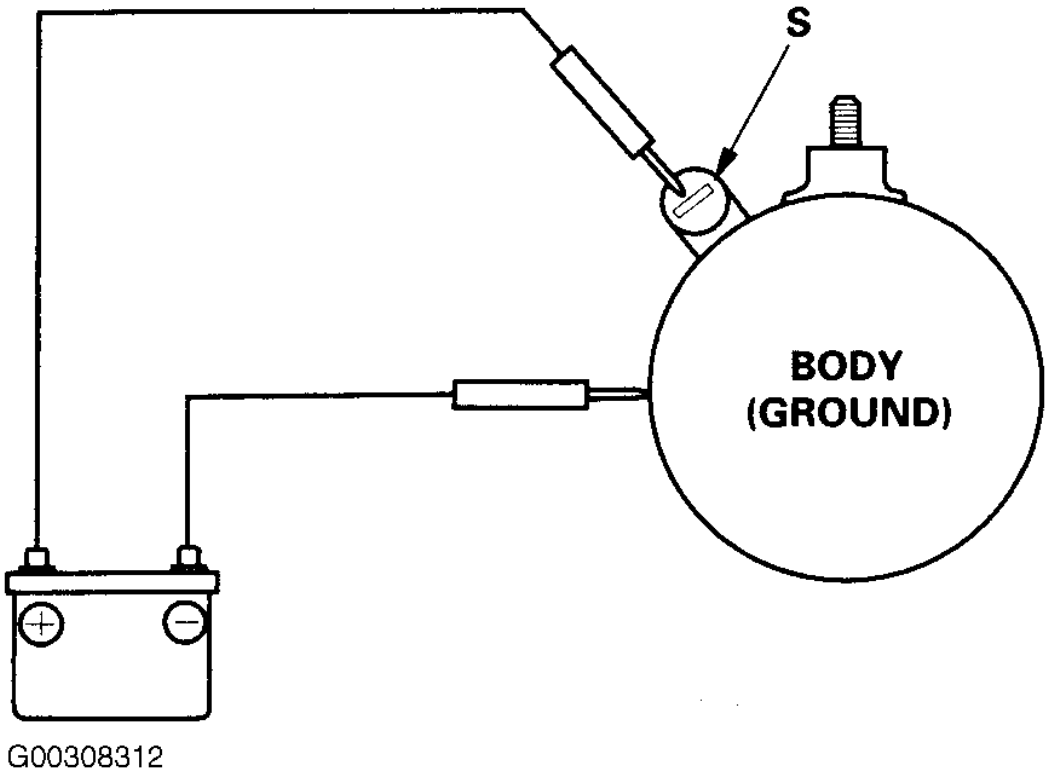


Fig. 6: Connecting Battery To Starter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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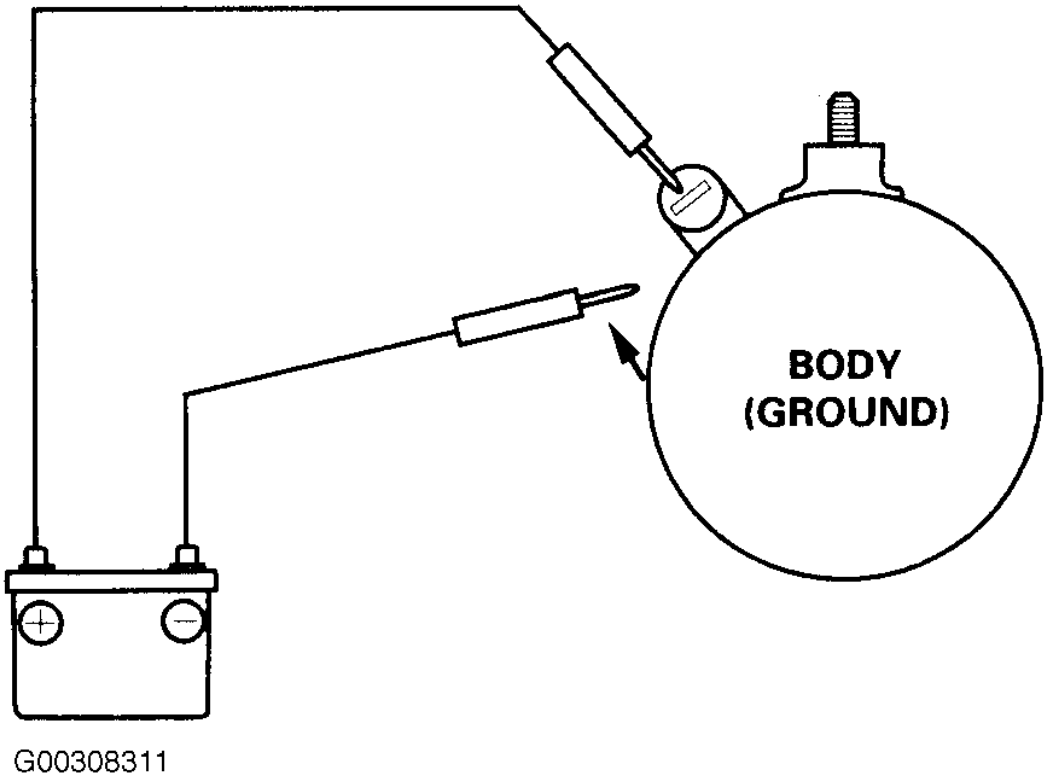


Fig. 7: Disconnecting Battery From Starter Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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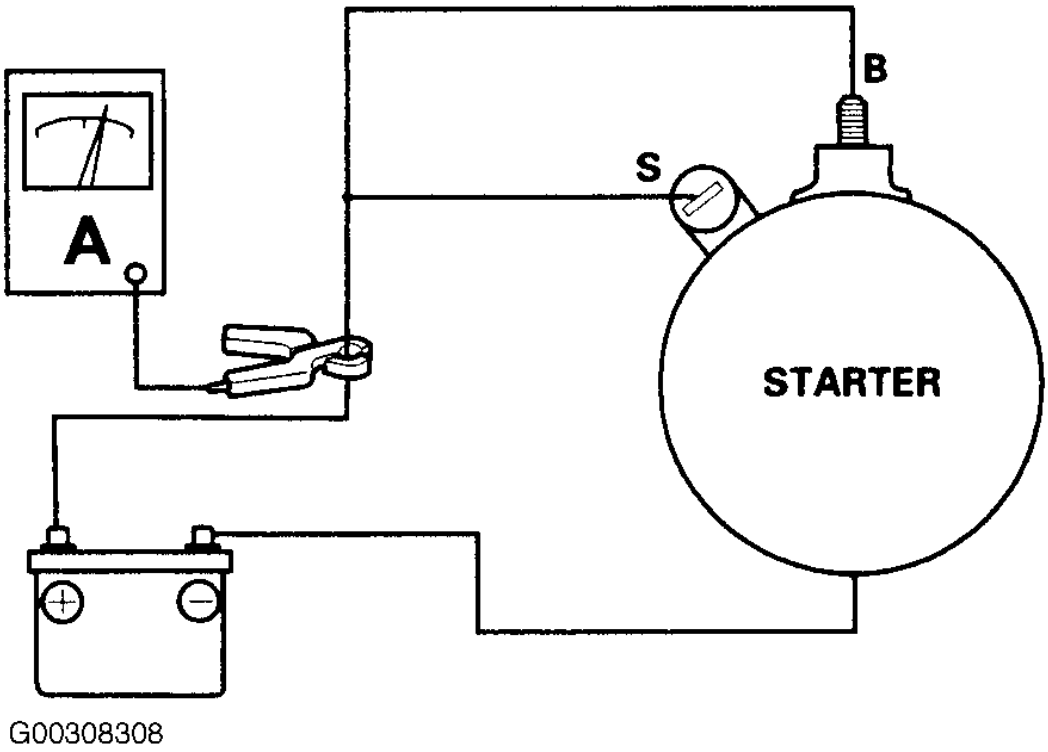


Fig. 8: Connecting Starter To The Battery With Ammeter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BENCH TESTING

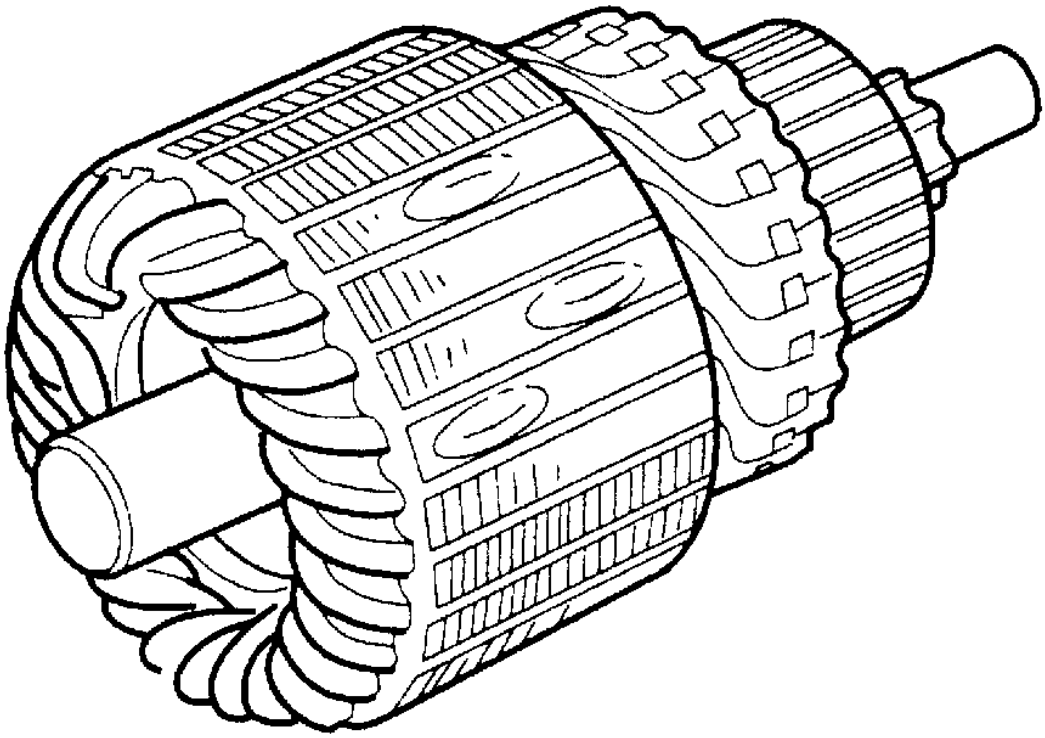
ARMATURE TEST

1. Remove the starter. See **STARTER** under REMOVAL & INSTALLATION.
2. Disassemble starter. See **STARTER** under OVERHAUL.
3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature. See **Fig. 9** .
4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface with emery cloth or a lathe within specifications, or recondition with # 500 or # 600 sandpaper (B). See **Fig. 10** .
5. Check the commutator diameter. See **Fig. 11** . See **STARTER SPECIFICATIONS** . If the diameter is below the service limit, replace the armature.
6. Measure the commutator runout. See **Fig. 12** . See **STARTER SPECIFICATIONS** . If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments. If the commutator runout is not within the service limit, replace the armature.
7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be

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too shallow, too narrow, or V-shaped (D). See **Fig. 13** .

8. Check for continuity between the segments of the commutator. See **Fig. 14** . If an open circuit exists between any segments, replace the armature.
9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. See **Fig. 15** . If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.
10. Check with an ohmmeter that no continuity exists between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If continuity exists, replace the armature. See **Fig. 16** .



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Fig. 9: Identifying Armature
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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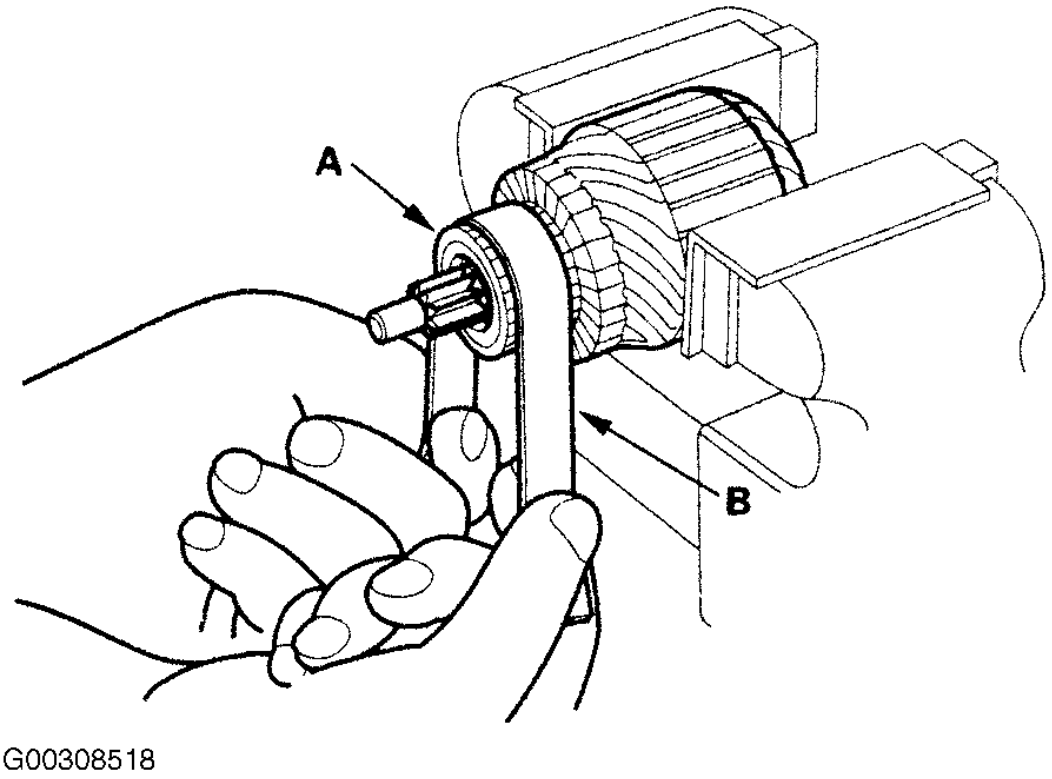
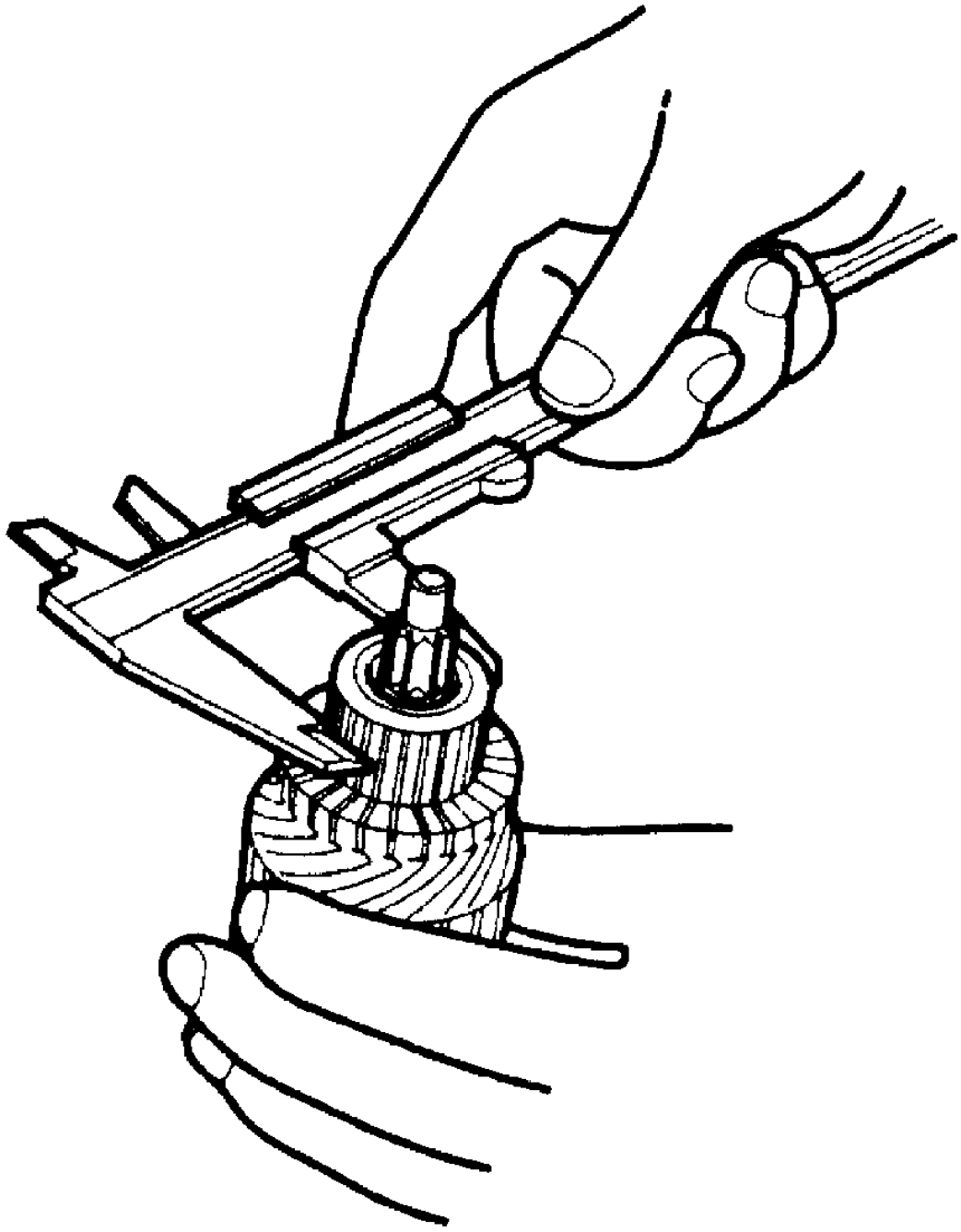


Fig. 10: Checking Condition Of The Commutator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 11: Checking Commutator Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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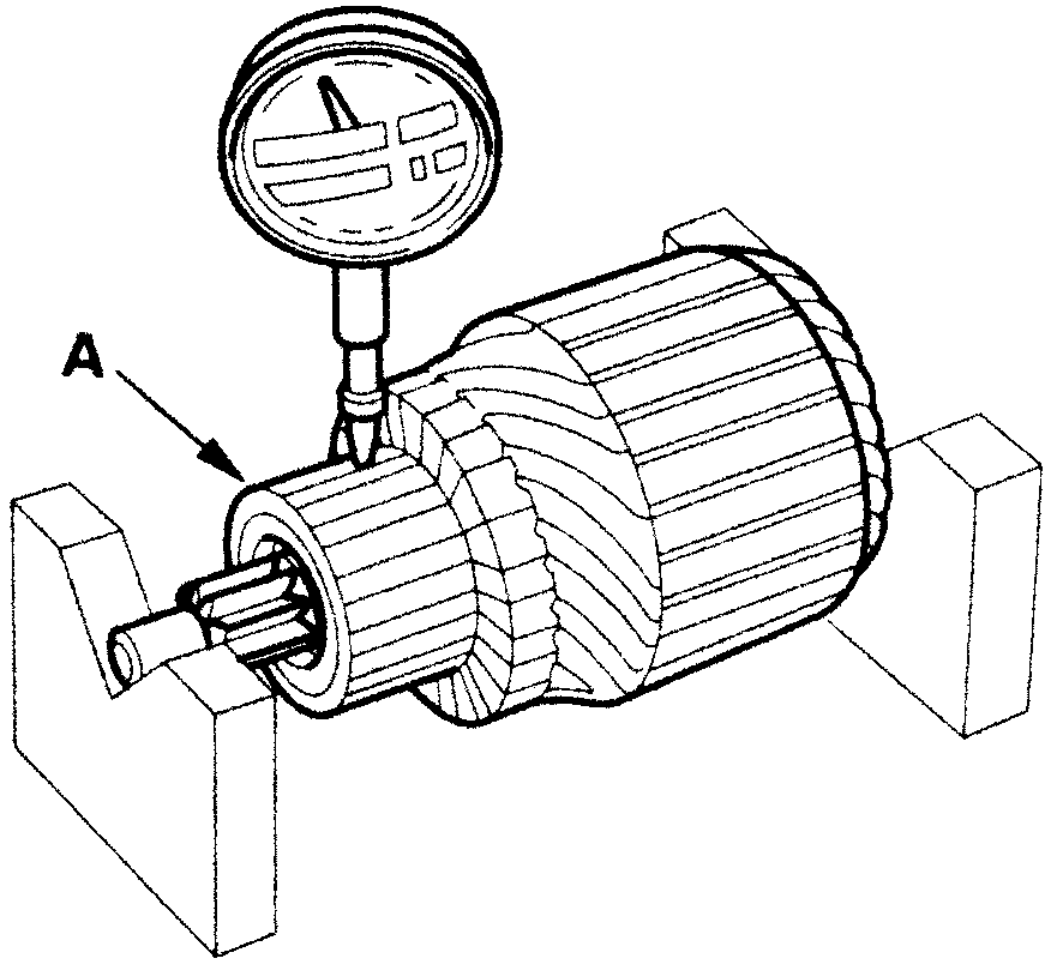


Fig. 12: Measuring Commutator Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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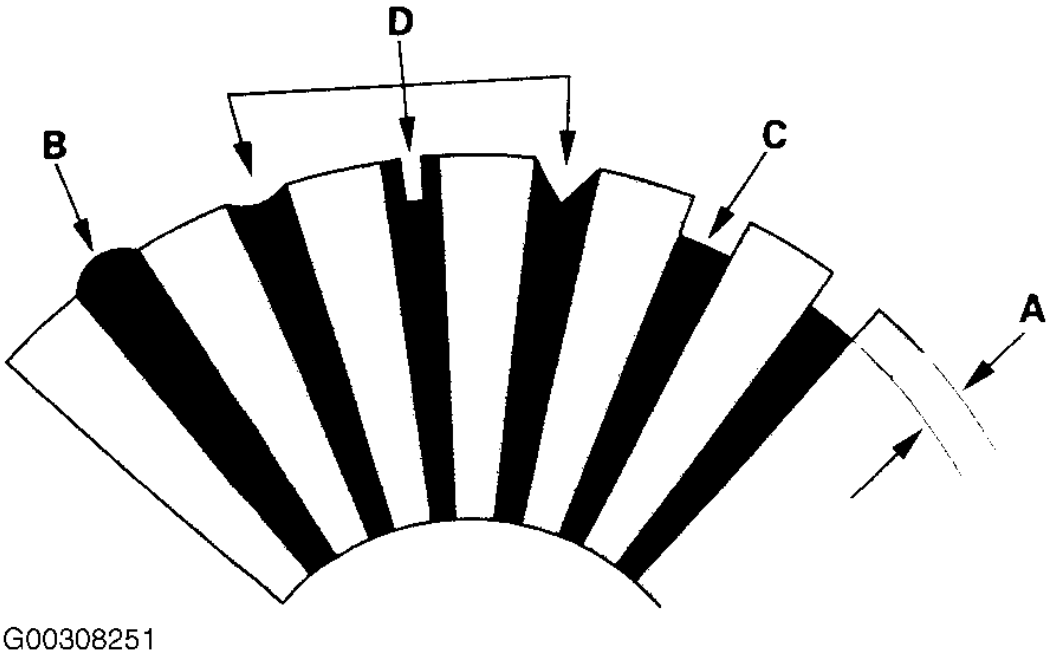


Fig. 13: Checking Mica Depth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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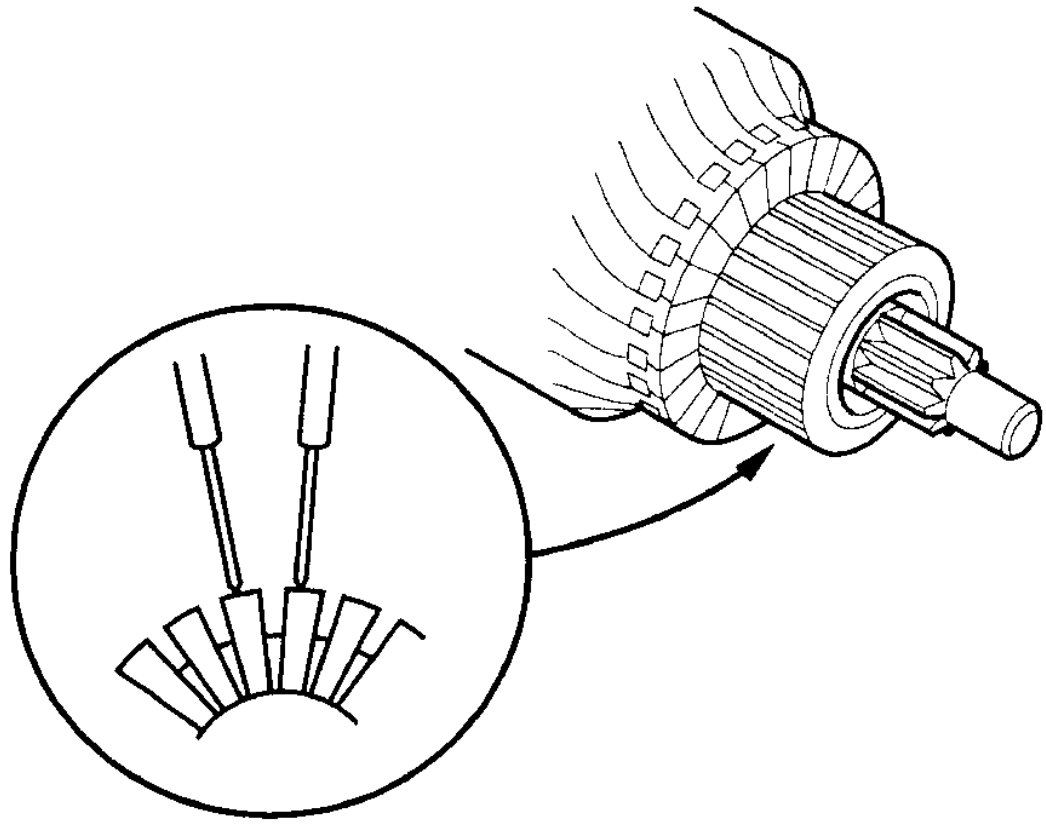


Fig. 14: Checking Continuity Between Commutator Segments
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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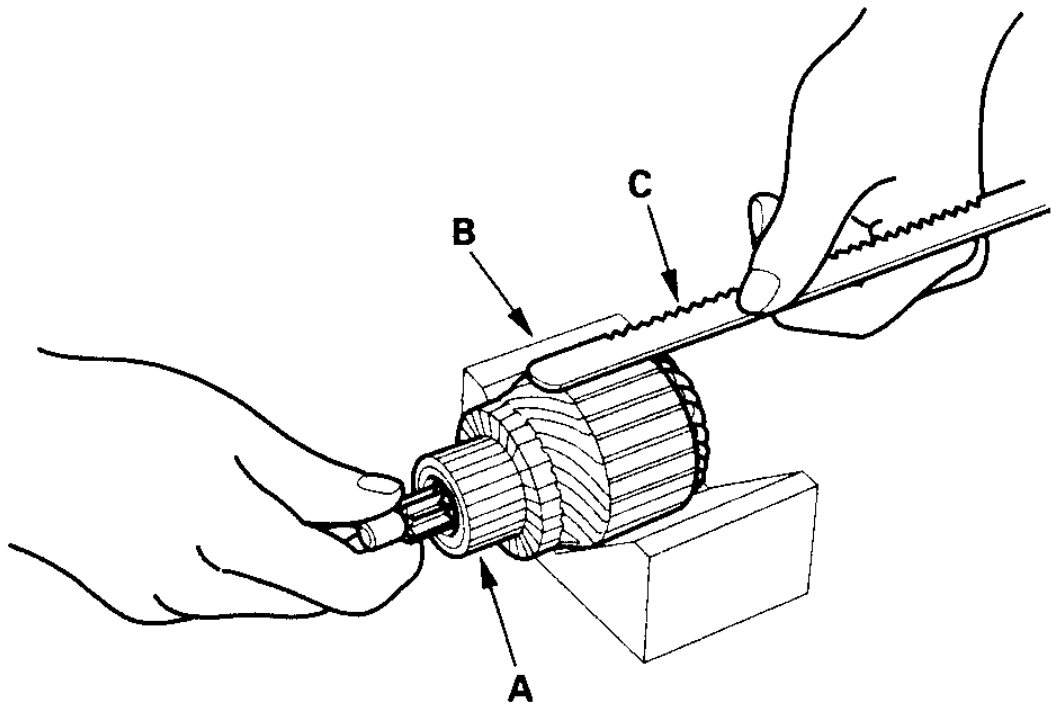


Fig. 15: Checking Armature On Armature Tester
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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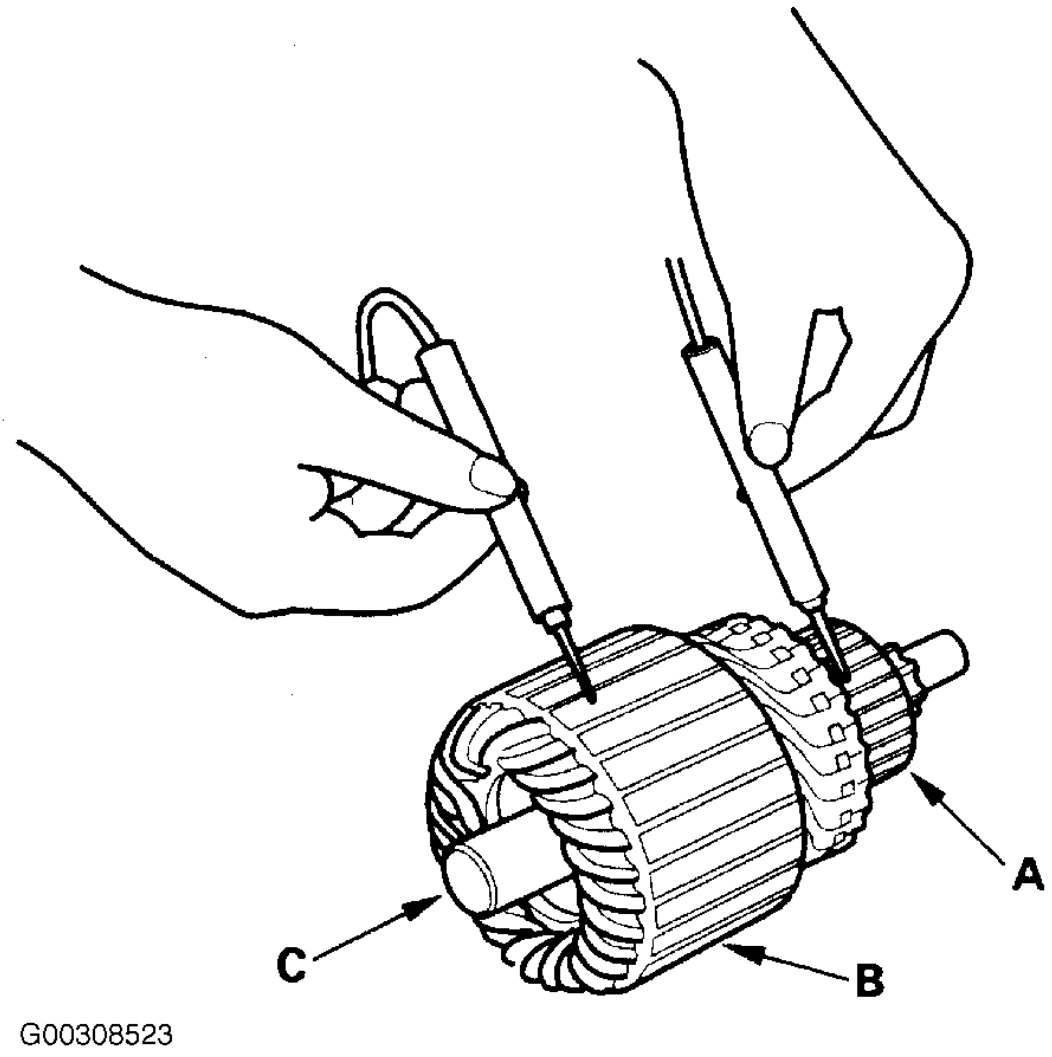
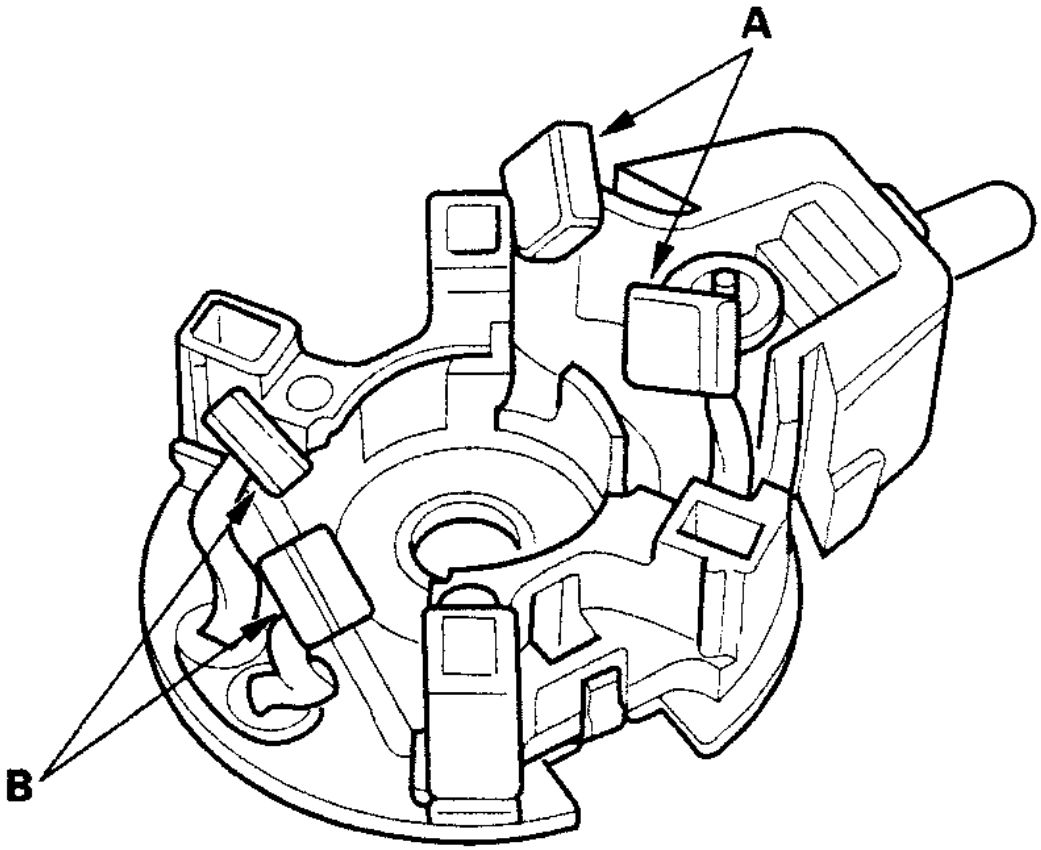


Fig. 16: Checking Continuity Between Commutator, Armature Coil Core And Armature Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BRUSH HOLDER TEST

1. Using an ohmmeter, check that there is no continuity between positive brush (A) and negative brush (B). If there is continuity, replace the brush holder assembly. See **Fig. 17** .
2. Measure the brush length. If it is not within the service limit, replace the brush holder assembly. See **Fig. 18** . See **STARTER SPECIFICATIONS** .

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Fig. 17: Identifying Brush Holders
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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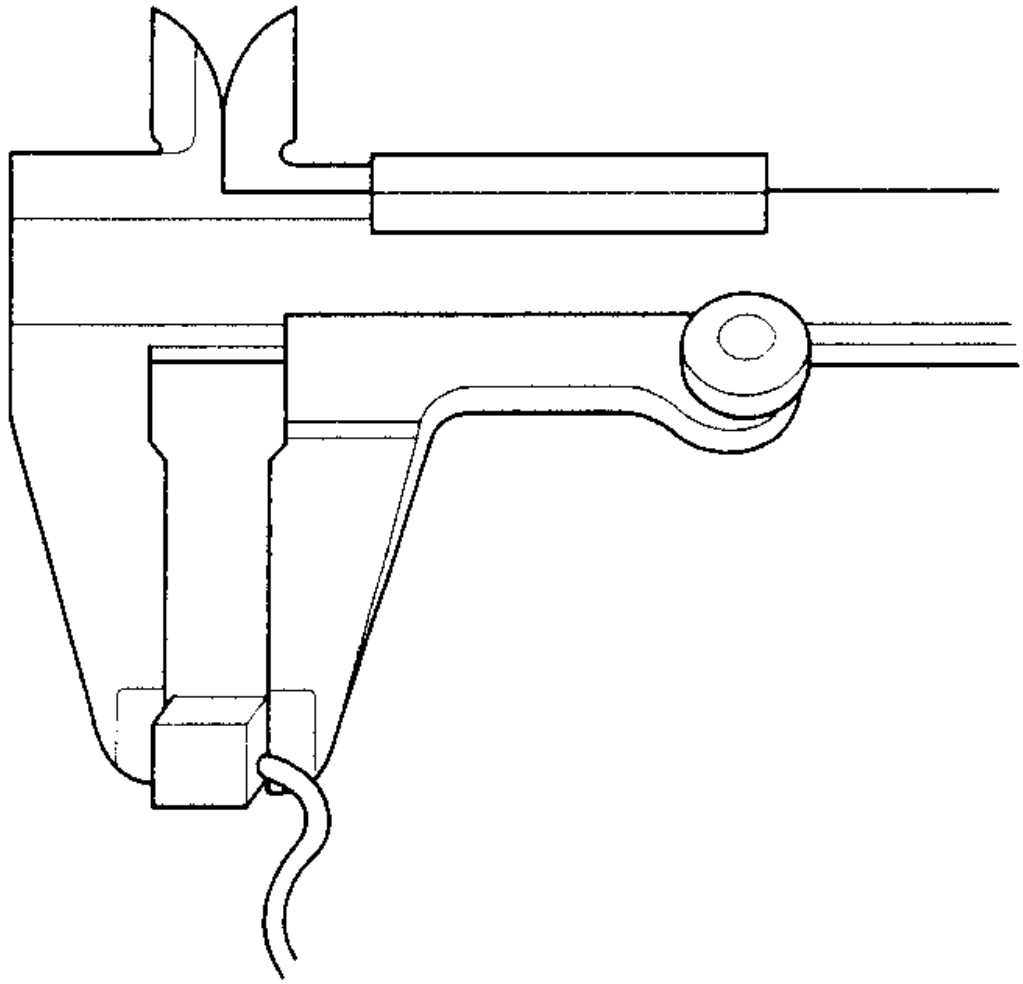
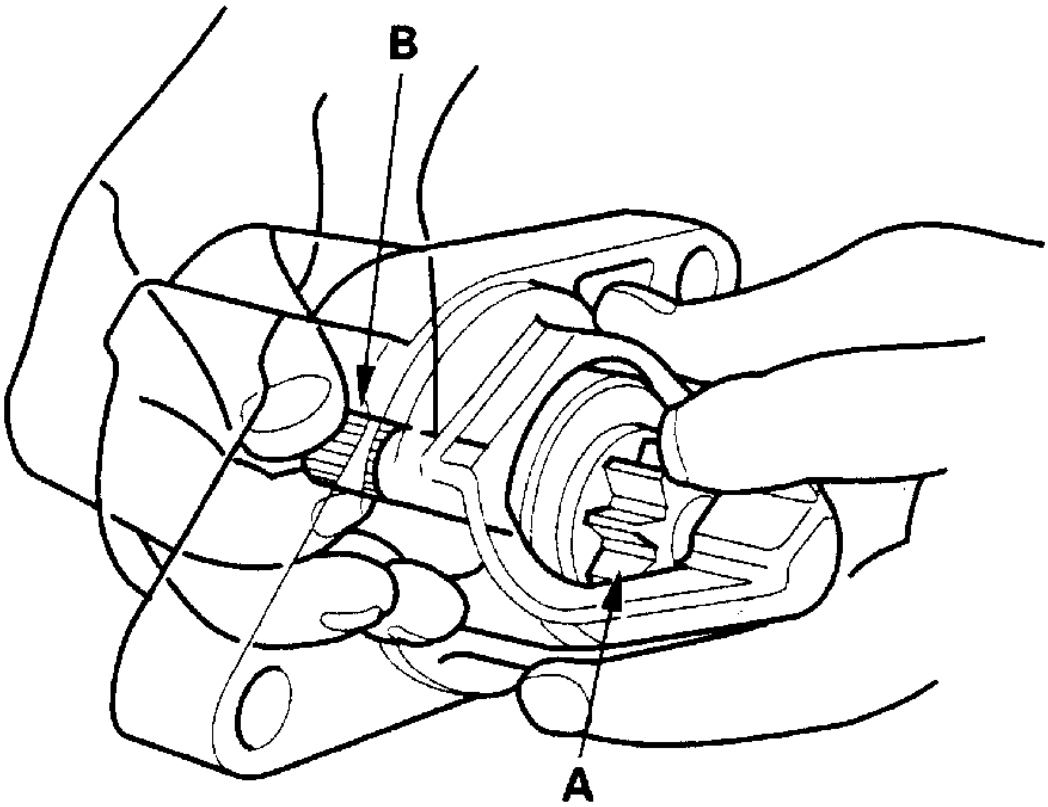


Fig. 18: Measuring Brush Length
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OVERRUNNING CLUTCH TEST

1. While holding the drive gear (A), turn the gear shaft (B) clockwise. See **Fig. 19** . Check that the drive gear comes out to the other end. If the drive gear does not move smoothly, replace the gear cover assembly.
2. While holding the drive gear, turn the gear shaft counterclockwise. The gear shaft should rotate freely. If the gear shaft does not rotate smoothly, replace the gear cover assembly.
3. If the starter drive gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the torque converter ring gear to see if the teeth are damaged.

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Fig. 19: Inspecting Overrunning Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REMOVAL & INSTALLATION

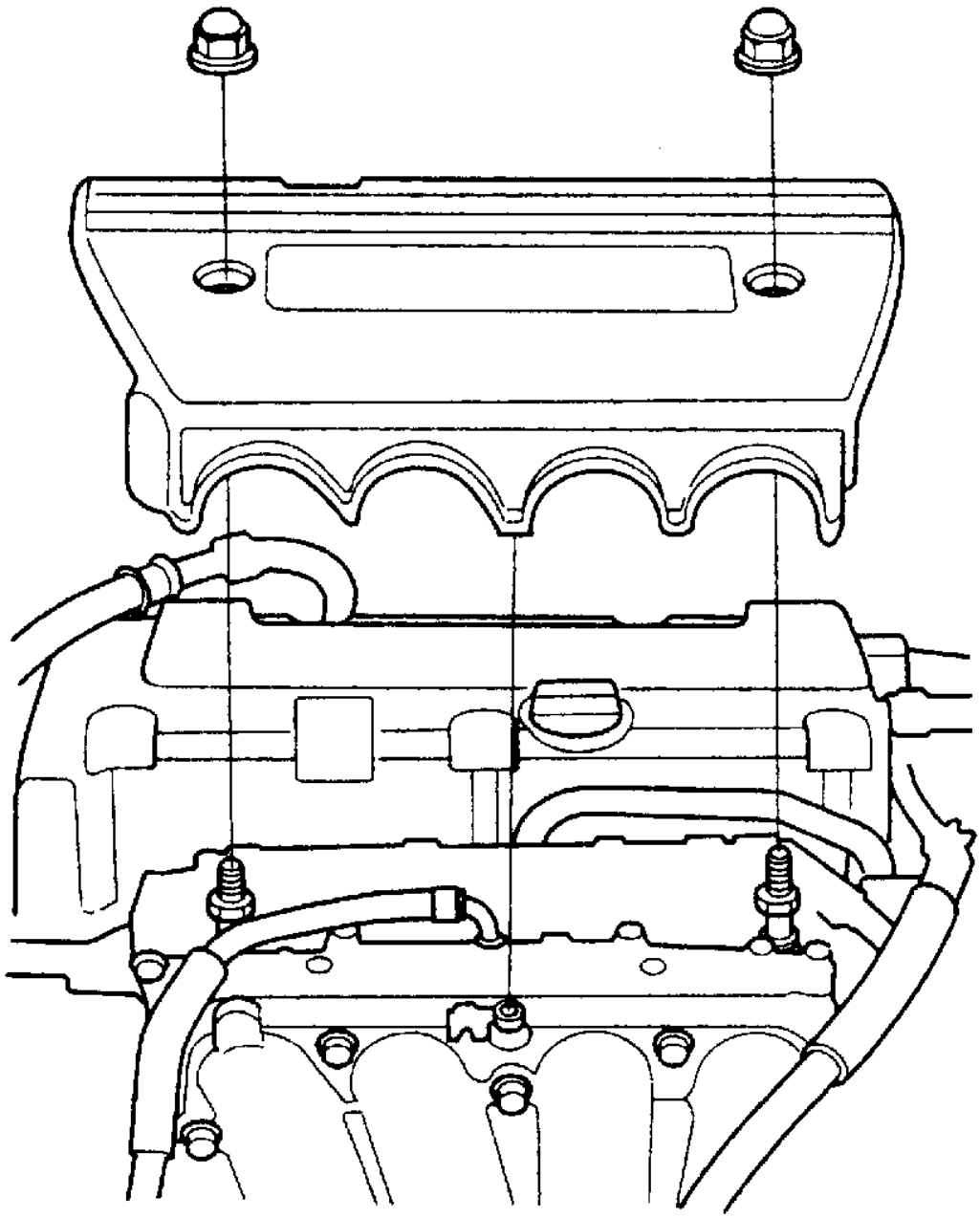
STARTER

Removal

1. Ensure you have the anti-theft codes for the radio and the navigation system, write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative cable. Disconnect the positive cable.
3. Remove the intake manifold cover. See **Fig. 20** .
4. Disconnect the starter cable (A) from the "B" terminal. Disconnect the Black/White wire (B) from the "S" terminal.
5. Remove the harness clamp (C). See **Fig. 21** .
6. Remove the harness holder (D).

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7. Remove the two bolts holding the starter. Remove the starter.



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Fig. 20: Removing Intake Manifold Cover
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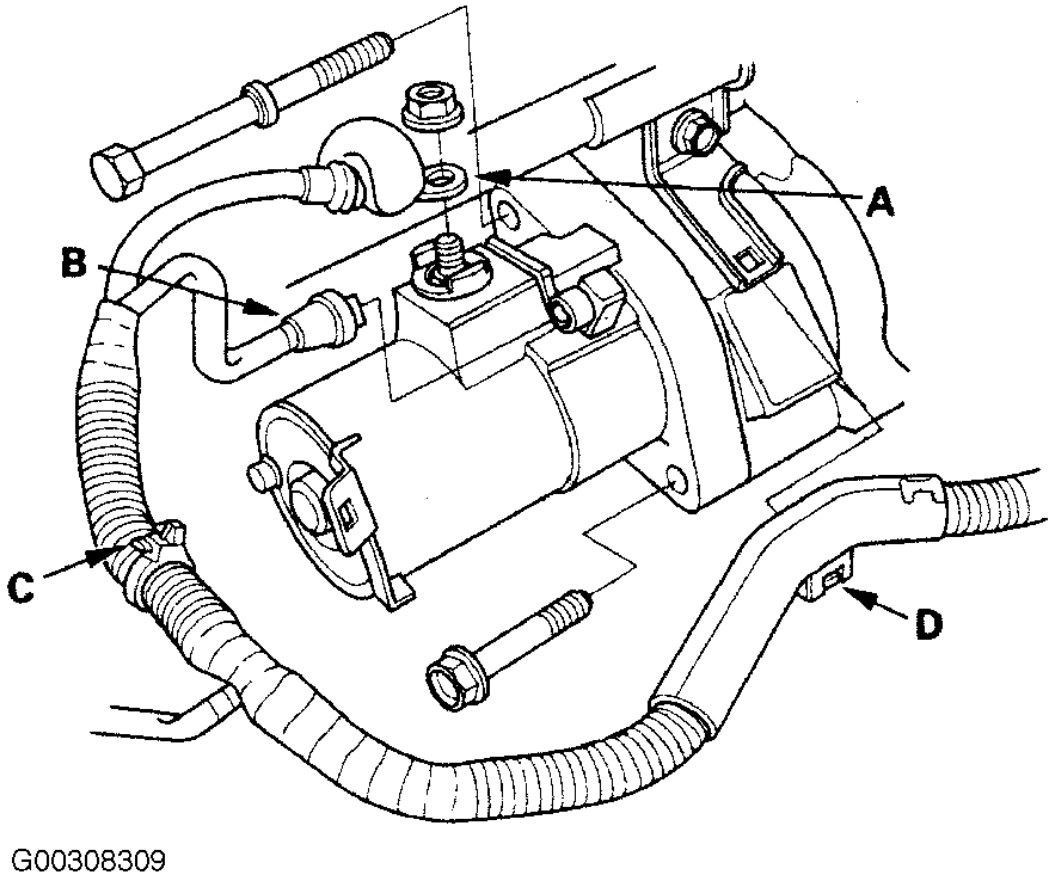


Fig. 21: Removing Harness Clamp And Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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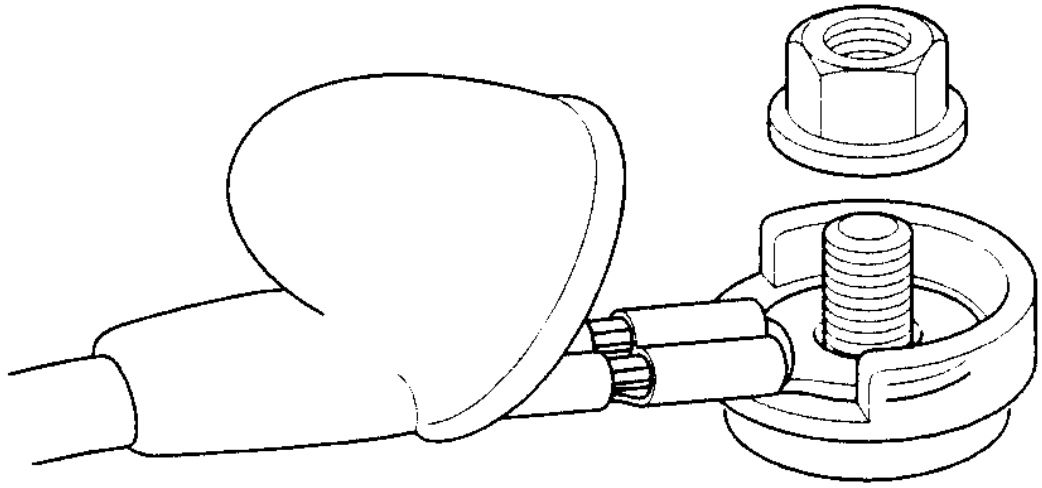


Fig. 22: Positioning Crimped Side Of The Ring Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Install in the reverse order of removal. Ensure the crimped side of the ring terminal is facing out. See **Fig. 22** .
2. Connect the battery positive cable and negative cable to the battery.
3. Start the engine to ensure the starter works properly.
4. Enter the anti-theft codes for the radio and the navigation system, enter the customer's radio channel presets.
5. Set the clock.

OVERHAUL

STARTER

Disassembly

For disassembly, use exploded view of starter, see **Fig. 23** .

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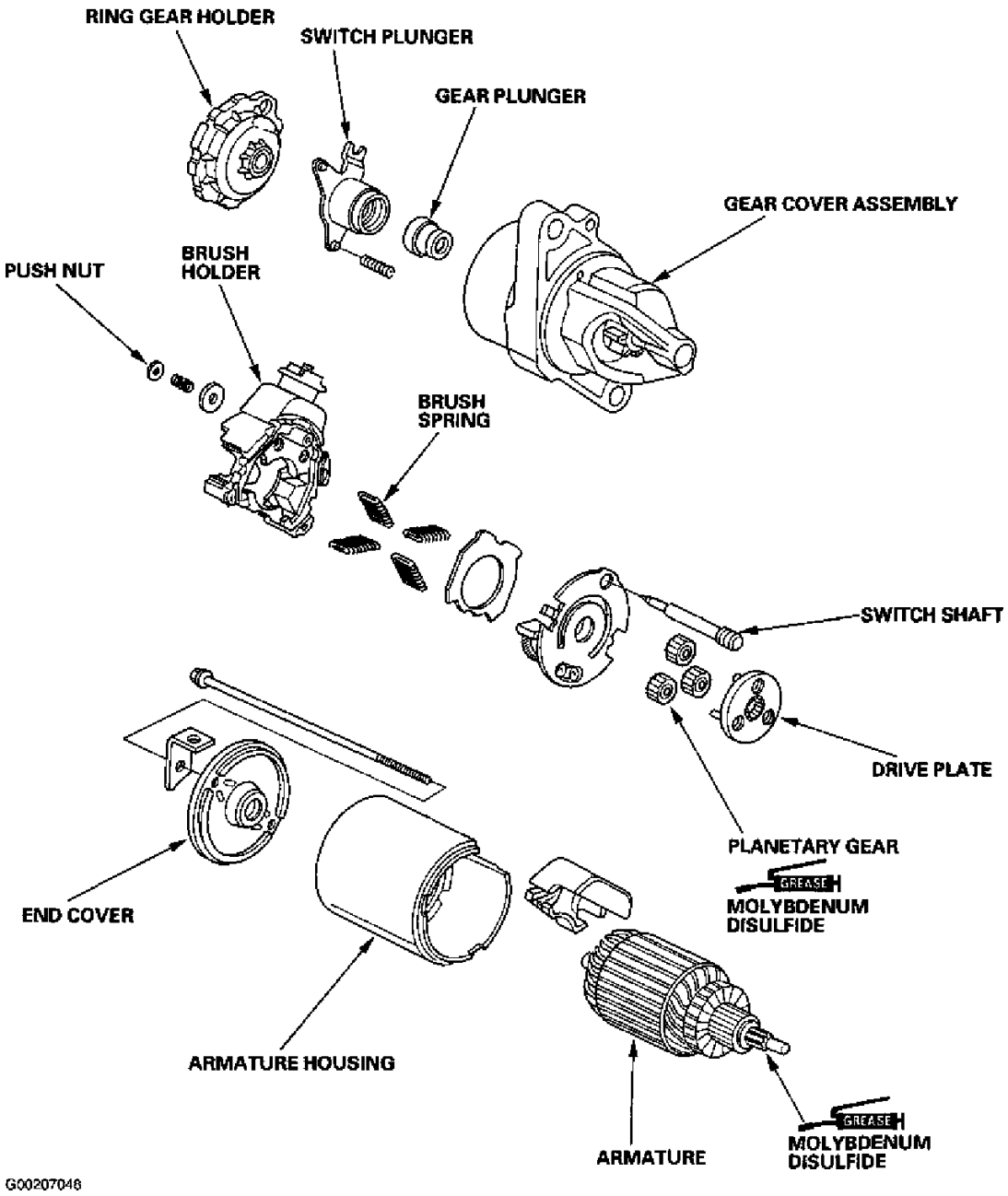


Fig. 23: Exploded View Of Starter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Planetary Gear

Check the planetary gears (A) and ring gear (B). Replace them if they are worn or damaged. See **Fig. 24** .

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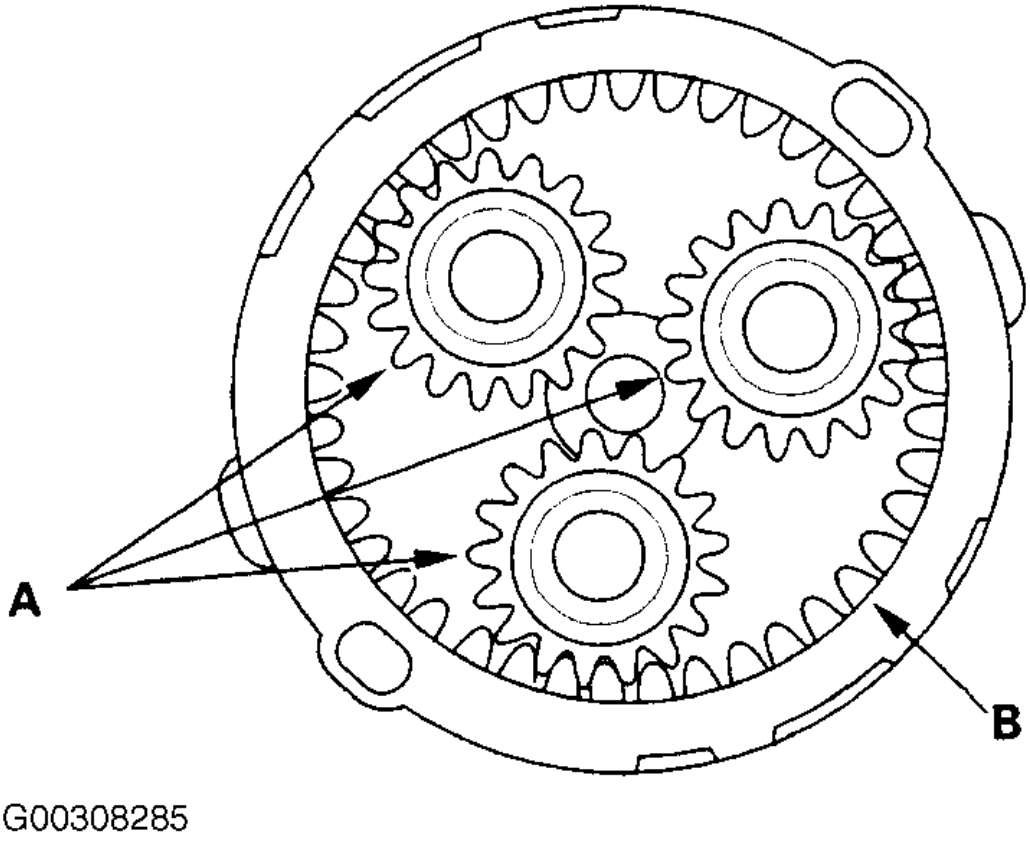


Fig. 24: Identifying Planetary Gear Inspection
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reassembly

NOTE: To seat the new brushes, slip a strip of #500 or #600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly rotate the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.

1. Install the brush into the brush holder, and set the armature (A) in the brush holder (B). See **Fig. 25** .
2. While squeezing a spring (C), insert it in the hole on the brush holder, and push it until it bottoms. Repeat this for the other springs (D,E and F).

NOTE: Ensure the armature stays in the holder.

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3. Install the armature and brush holder assembly into the housing.

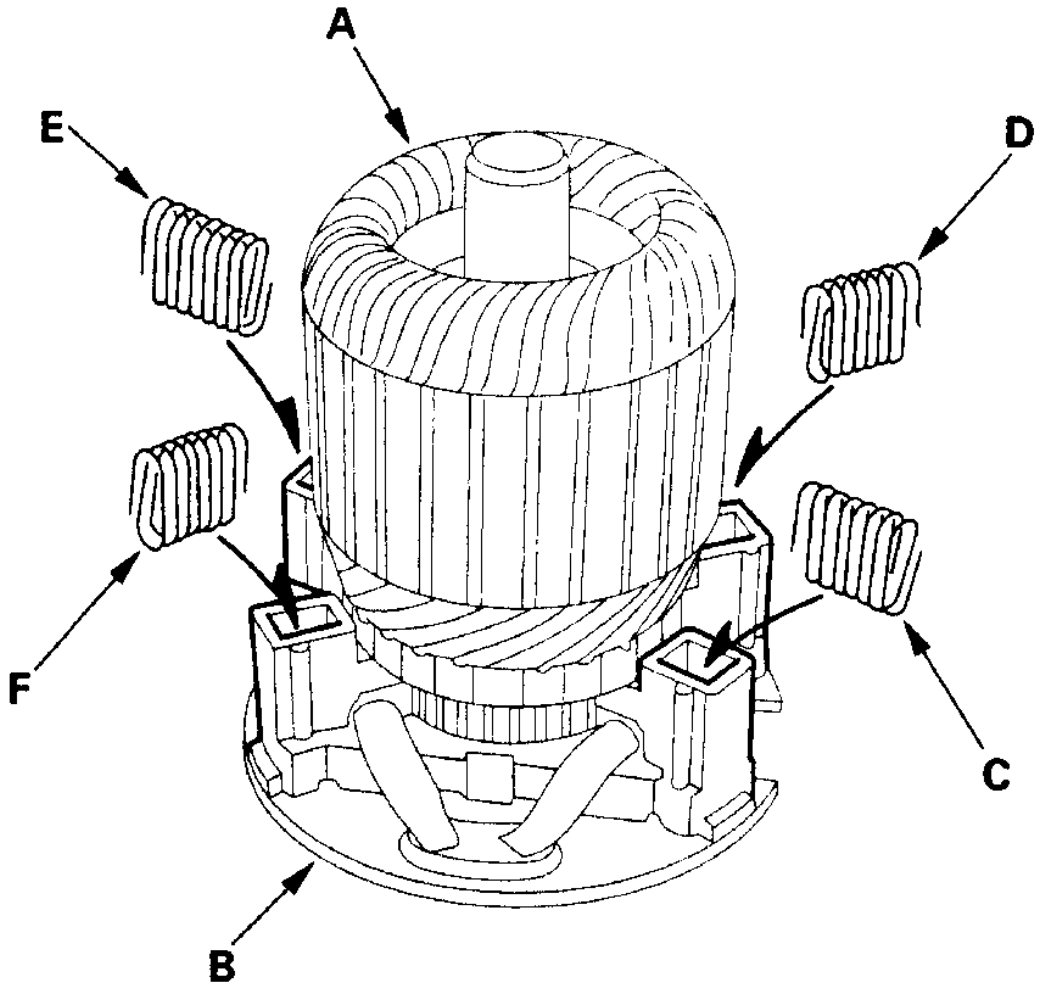


Fig. 25: Installing Brush Into The Brush Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STARTER SPECIFICATIONS

For starter service specifications, see **SERVICE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

TORQUE SPECIFICATIONS

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For starter torque specifications, see **TORQUE SPECIFICATIONS** in ACURA - TSX article in SPECIFICATIONS.

WIRING DIAGRAMS

For wiring diagram on 2004 TSX models, see appropriate SYSTEM WIRING DIAGRAM article in ELECTRICAL.

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2004 STEERING

Power Steering System - TSX

SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
①	07GAF-PH70100	Pilot Collar	1
②	07HAG-SF10100	Piston Seal Ring Guide	1
③	07HAG-SF1020A or 07HAG-SF10200	Piston Seal Ring Sizing Tool	1
④	07MAC-SL00200	Ball Joint Remover, 28 mm	1
⑤	07NAD-SR3020A	Cylinder End Seal Remover Attachment	1
⑥	07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑦	07ZAB-S5A0100	Pulley Holder	1
⑧	07VAK-P8A011A	P/S Joint Adaptor (Pump)	1
⑨	07ZAK-S7CA100	P/S Joint Adaptor Plate (Pump)	1
⑩	07ZAK-S7CA200	P/S Joint Adaptor (Hose)	1
⑪	07ZAG-S5A0300	Cylinder End Seal Slider	1
⑫	07406-0010001 or 07406-001000A	P/S Pressure Gauge	1
⑬	07746-0010100	Attachment, 32 x 35 mm	1
⑭	07749-0010000	Driver	1
⑮	07916-SA50001	Locknut Wrench, 40 mm	1
⑯	07965-SA50500	Front Hub Dis/Assembly Tool	1
⑰	07974-SA5020A or 07974-SA50200	Sleeve Seal Ring Sizing Tool	1
⑱	07974-SA50800	Ball Joint Boot Clip Guide	1

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Fig. 1: Special Tools (1 Of 2)

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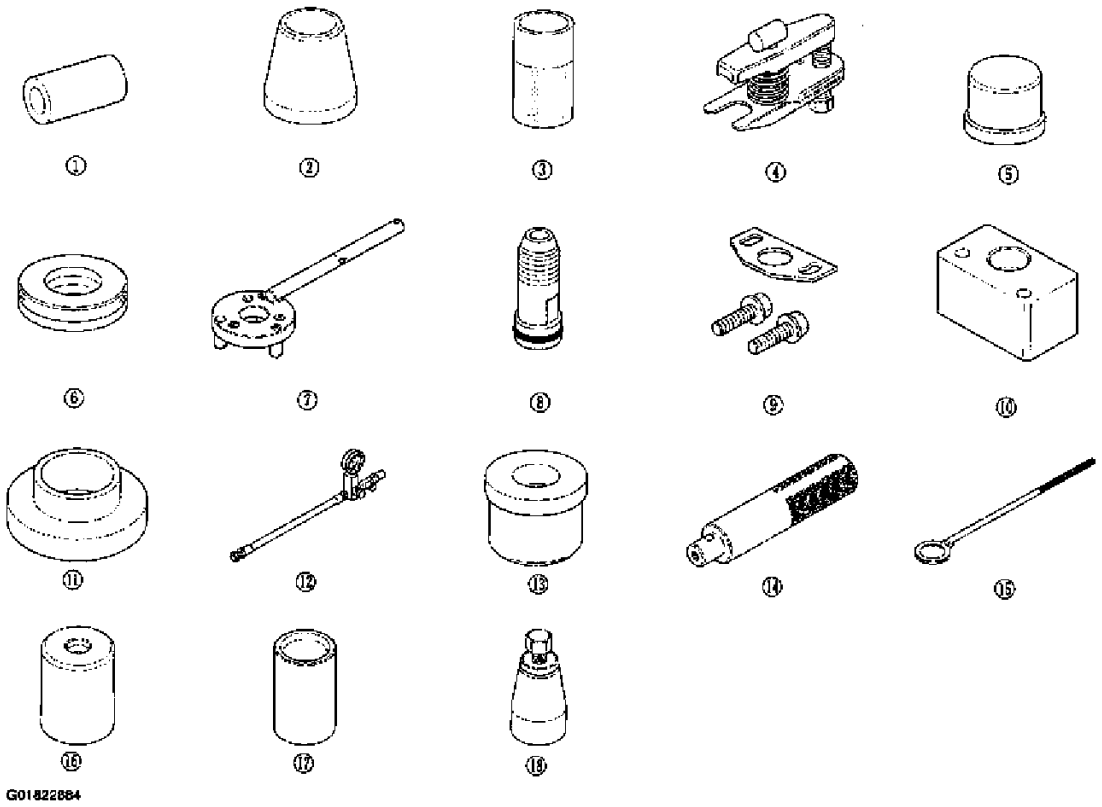


Fig. 2: Special Tools (2 Of 2)

COMPONENT LOCATION INDEX

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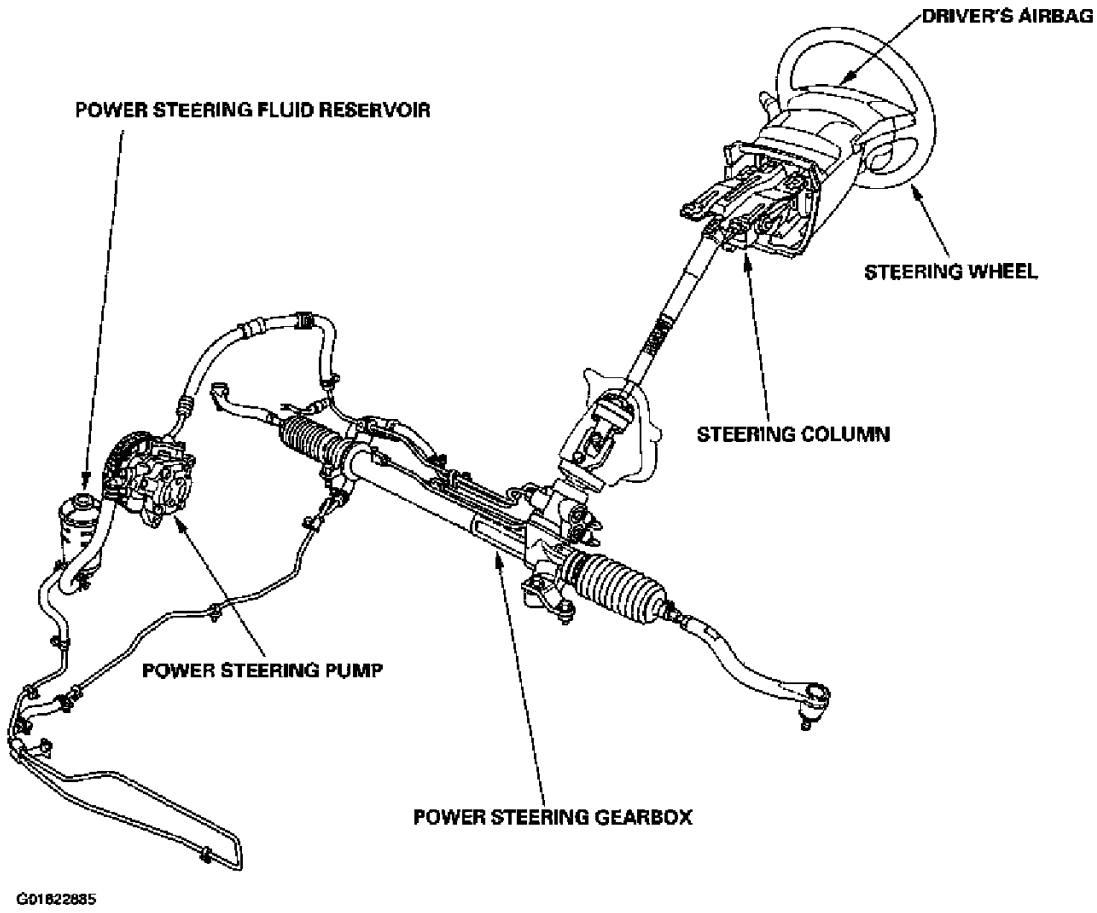


Fig. 3: Locating Power Steering Components

SYMPTOM TROUBLESHOOTING INDEX

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

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Symptom	Procedure(s)	Also check for:
Hard steering	Troubleshoot the system.	• Modified suspension • Damaged suspension • Tire sizes, tire varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment.	Front wheel alignment
Shock or vibration when the steering wheel is turned to full lock	1. Check the rack guide adjustment. 2. Check the drive belt for slippage. 3. Check the power steering pump fluid pressure with T/N 07406-0010001 or T/N 07406-0010000A. 4. Overhaul the steering gearbox.	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check upper and lower ball joints for binding. 3. Check wheel alignment. 4. Overhaul the steering gearbox.	
Uneven or rough steering	1. Check the rack guide adjustment. 2. Check the drive belt. 3. Check low or erratic engine idle speed. 4. Check for air in the power steering system due to air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system. 6. Overhaul the steering gearbox.	
Steering wheel kicks back during wide turns	1. Check the drive belt. 2. Check the power steering pump fluid pressure with T/N 07406-0010001 or T/N 07406-0010000A.	
Humming noise from the power steering system	1. Check when the noise occurs. • If the noise is heard 2—3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turned with the vehicle stopped, this is normal due to the fluid pulsation. 2. Check for the high pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise. 4. Check for air bubbles in the power steering fluid, leak on inlet side of pump. 5. Check for particle contamination of fluid and restricted filter in the reservoir.	Pump pressure
Power steering rack rattle or chattering	1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly. 3. Check the rack guide adjustment. 4. Check the power steering pump pulley. • If the pulley is loose, tighten it • If the pump shaft is loose, replace the pump	
Hissing from the power steering system	• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks. • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system. • Check the power steering pump shaft oil seal for leaks.	Air in the P/S fluid
Noise from the power steering pump	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise up to 2—3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage	• P/S pump pressure • Air in the P/S fluid
Squeaking from the power steering pump	Check the drive belt.	
Fluid leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit: Overhaul the valve body unit. • Fluid leaks from the left boot: Replace the valve oil seal on the pinion shaft. Replace the cylinder end seal on the gearbox side. • Fluid leaks from the right boot: Replace the right cylinder end seal. • Fluid leaks from pinion shaft near the lower steering joint bolt: Overhaul the valve body unit. • Fluid leaks from the steering damping valve covers on the valve body unit: Replace the valve housing.	
Fluid leaks from the power steering line	• Fluid leaks from the cylinder line connections (flare nuts): Tighten the connection and retest. • Fluid leaks from a damaged cylinder lines: Replace the cylinder line. • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts): Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from the power steering pump	• Fluid leaks from the front oil seal: Replace the front oil seal. • Fluid leaks from the power steering pump housing: Replace the leaking O-rings or seals, and if necessary replace the power steering pump.	
Fluid leaks from the power steering reservoir	• Fluid leaks from around the reservoir cap: Fluid level is too high: drain the reservoir to the proper level. Aerated fluid: check for an air leak on the inlet side of pump. • Fluid leaks from reservoir: Check for the reservoir for cracks and replace as necessary.	
Fluid leaks from the power steering pump outlet hose (high-pressure)	• Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swagged joint: Replace the outlet hose.	
Fluid leaks from the power steering pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

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Fig. 4: Symptom Troubleshooting Index

SYMPTOM TROUBLESHOOTING

HARD STEERING

1. Check the power assist (see **POWER ASSIST CHECK**).

   Is the starting load more than 29 N (3.0 kgf, 6.6 lbf)?

   YES: Go to step 2.

   NO: Power assist is OK.

2. Measure steady-state fluid pressure from the pump at idle with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**).

   Is the pressure 1,500 kPa (15 kgf/cm^2 , 213 psi) or less?

   YES: Go to step 3.

   NO: Go to step 7 .

3. Measure the pump relief pressure at idle with T/N 07406-0010001 (see step 10 of **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see step 9 of **PUMP PRESSURE TEST WITH T/N 07406-001000A**).

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)?

   YES: Go to step 4.

   NO: Faulty pump assembly.

4. With a spring scale, measure the power assist in both directions, to the left and to the right.

   Are the two measurements within 2.9 N (0.3 kgf, 0.66 lbf) of each other?

   YES: Go to step 5.

   NO: Go to step 8 .

5. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)?

   YES: Go to step 6.

   NO: Faulty gearbox.

6. Adjust the rack guide (see **RACK GUIDE ADJUSTMENT**), and retest.

   Is the steering OK?

   YES: Repair is completed.

   NO: Faulty gearbox.

7. Check the feed and return lines between the pump and the gearbox for clogging and deformation.

   Are the lines clogged or deformed?

   YES: Repair or replace the lines.

   NO: Faulty valve body unit or pump.

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8. Check the cylinder lines for deformation (see **FLUID LEAKAGE INSPECTION**).

   Are the lines deformed?

   YES: Replace the lines.

   NO: Go to step 9.

9. Check for a bent rack shaft or misadjusted rack guide (too tight).

   Is the rack shaft bent or the rack guide adjusted too tight?

   YES: Replace the rack shaft or readjust the rack guide.

   NO: Faulty valve body unit.

STEERING WHEEL ROTATIONAL PLAY CHECK

1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
   - If the play is within the limit, the gearbox and linkages are OK.
   - If the play exceeds the limit, adjust the rack guide (see **RACK GUIDE ADJUSTMENT**). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see **STEERING LINKAGE AND GEARBOX INSPECTION**).

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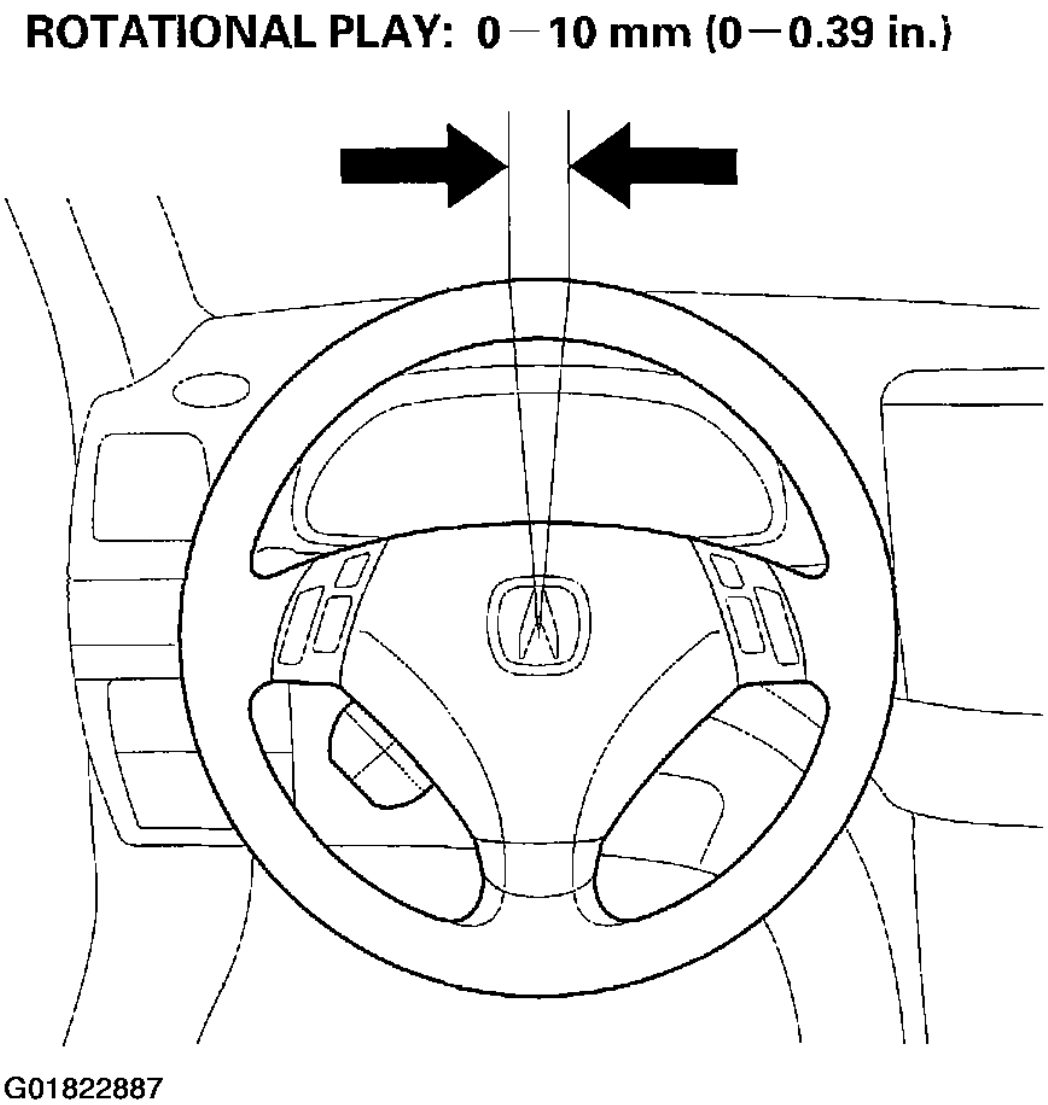


Fig. 5: Checking Steering Wheel Rotational Play

POWER ASSIST CHECK

NOTE: This test should be done with original equipment wheels and tires at the correct tire pressure.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle

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on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.

- If the scale reads no more than specifications, the gearbox and pump are OK.
- If the scale reads more than specifications, troubleshoot the steering system (see **SYMPTOM TROUBLESHOOTING**).

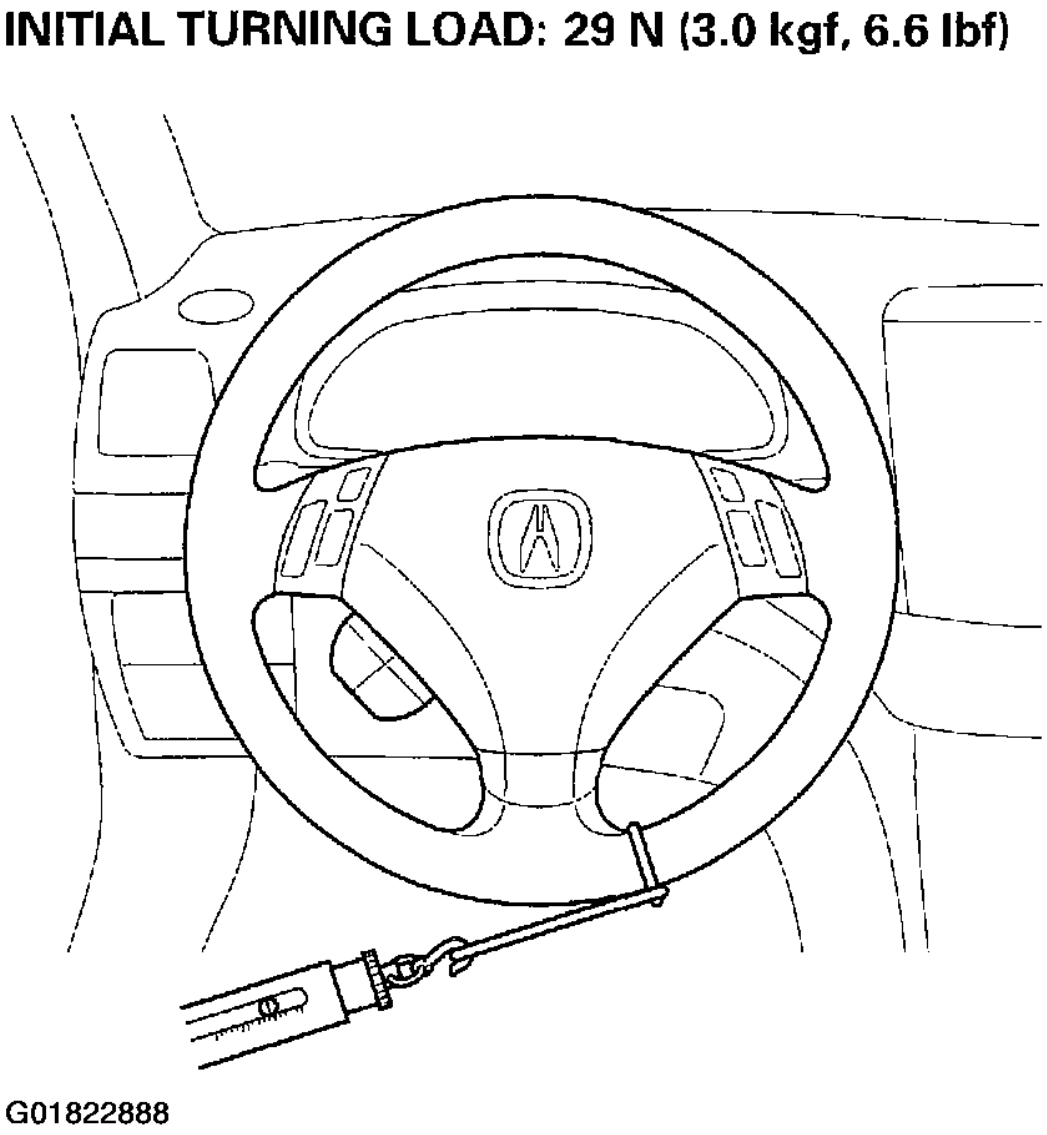


Fig. 6: Checking Power Assist

STEERING LINKAGE & GEARBOX INSPECTION

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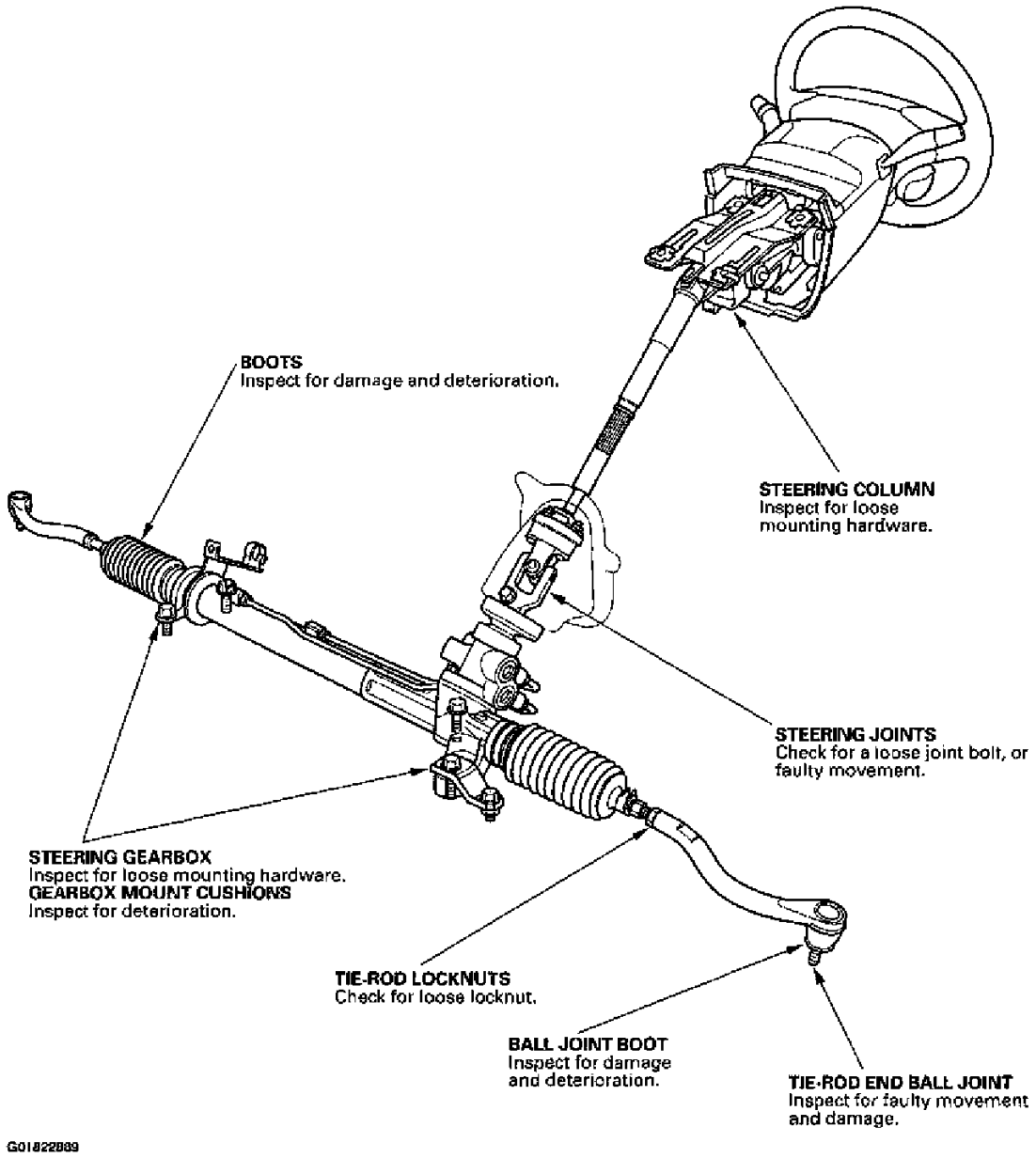


Fig. 7: Inspecting Steering Linkage & Gearbox

PUMP PRESSURE TEST WITH T/N 07406-0010001

Special Tools Required:

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07ZAK-S7CA100
- P/S joint adapter (hose) 07ZAK-S7CA200
- P/S pressure gauge 07406-0010001

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Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts. Install the P/S joint adapter (pump) on the pump outlet (B).

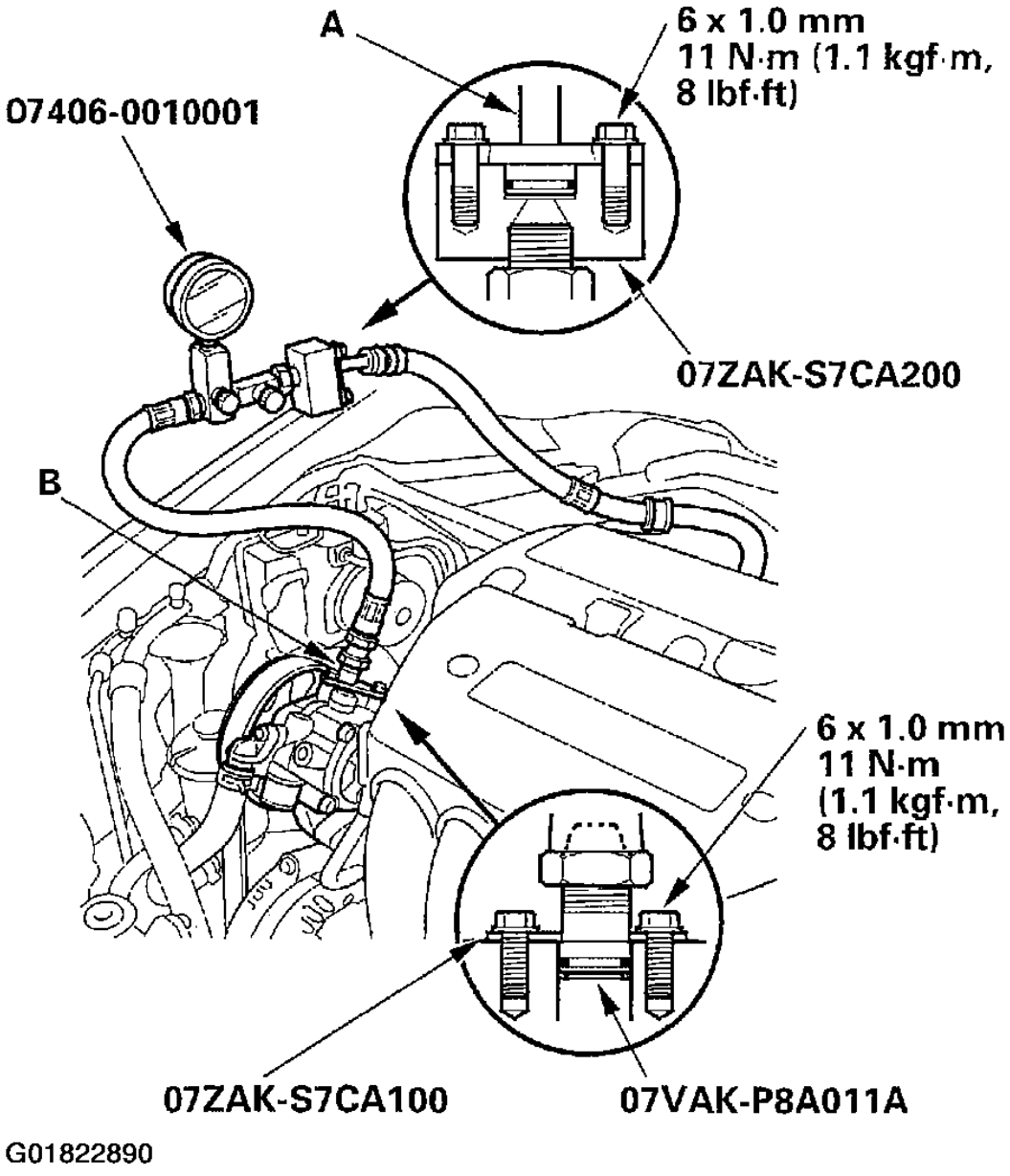


Fig. 8: Installing The P/S Joint Adapter (Pump) On The Pump Outlet

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3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose (A) to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).
5. Fully open the shut-off valve (A).

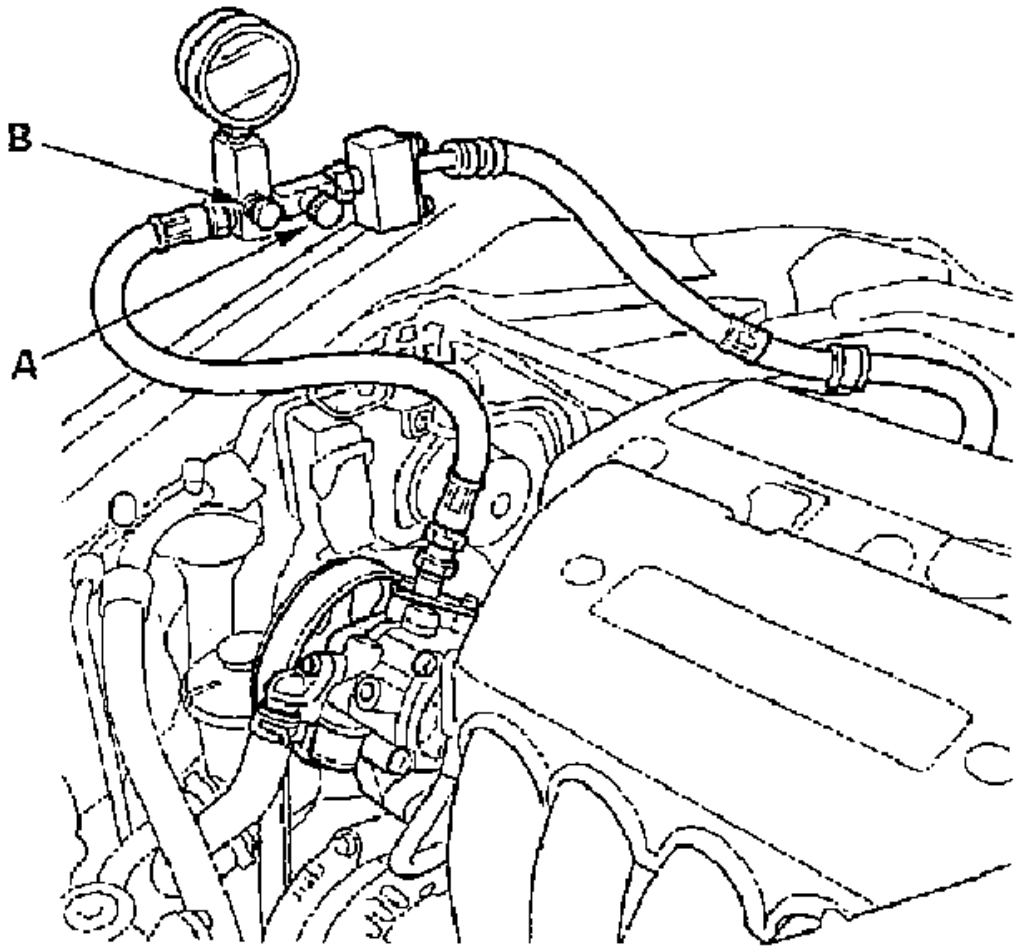


Fig. 9: Fully Open The Shut-Off Valve & The Pressure Control Valve

6. Fully open the pressure control valve (B).
7. Start the engine and let it idle.
8. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).

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9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the pressure should be no more than 1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, check the outlet hose or valve body unit (see Steering System Troubleshooting). Raise the engine speed to 3,000 RPM, and measure the fluid pressure. If the pump is in good condition, the pressure should be at least 1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, repair or replace the pump.
10. Lower the engine speed and let it idle. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

11. Immediately open the pressure control valve fully. If the pump is in good condition and the valve is closed, the gauge should read at least this specification:

    7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)

    A low reading means pump output is too low for full assist. Repair or replace the pump.

PUMP PRESSURE TEST WITH T/N 07406-001000A

Special Tools Required:

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07ZAK-S7CA100
- P/S joint adapter (hose) 07ZAK-S7CA200
- P/S pressure gauge 07406-001000A

Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts. Install the P/S joint adapter (pump) on the pump outlet (B).

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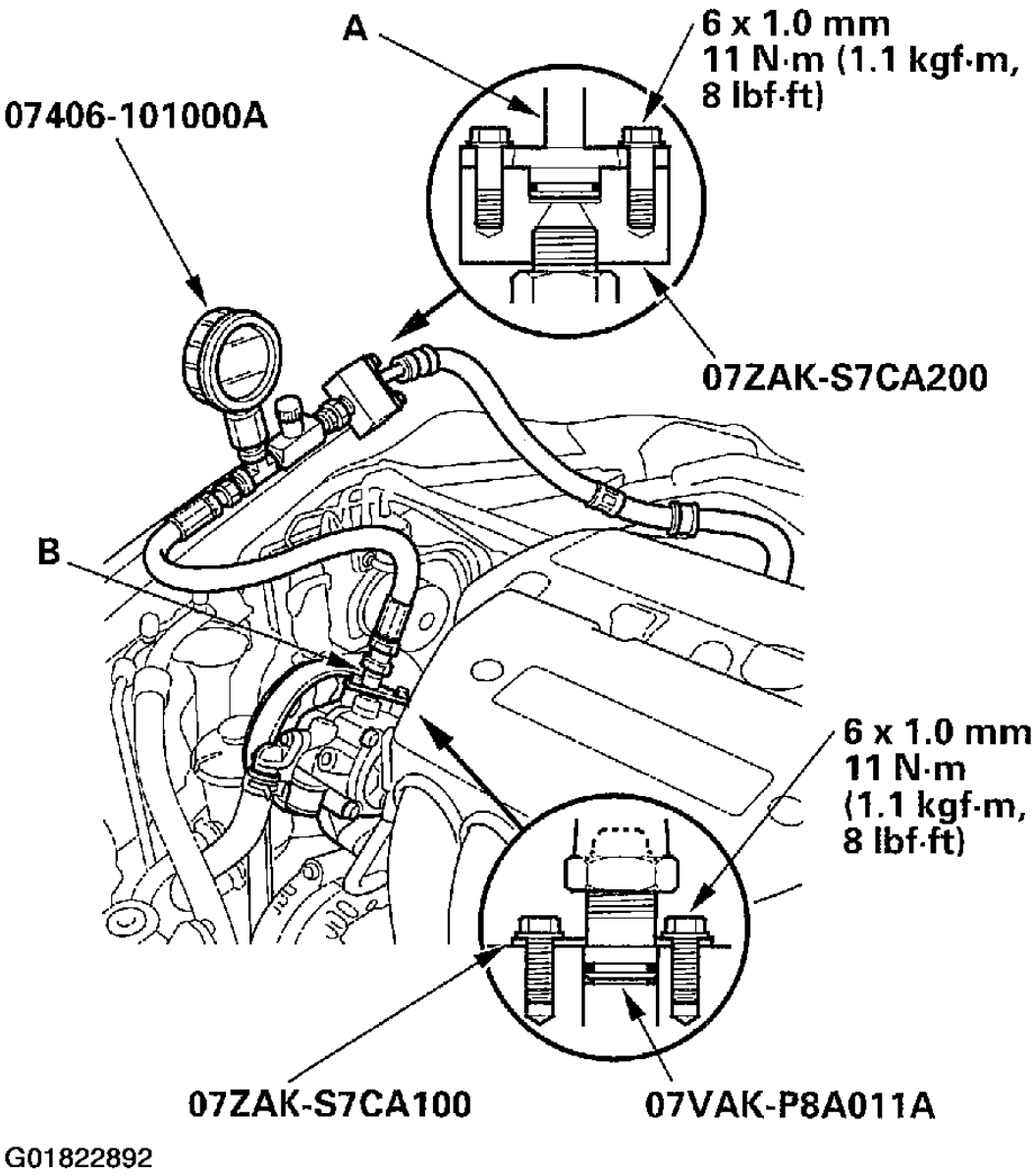
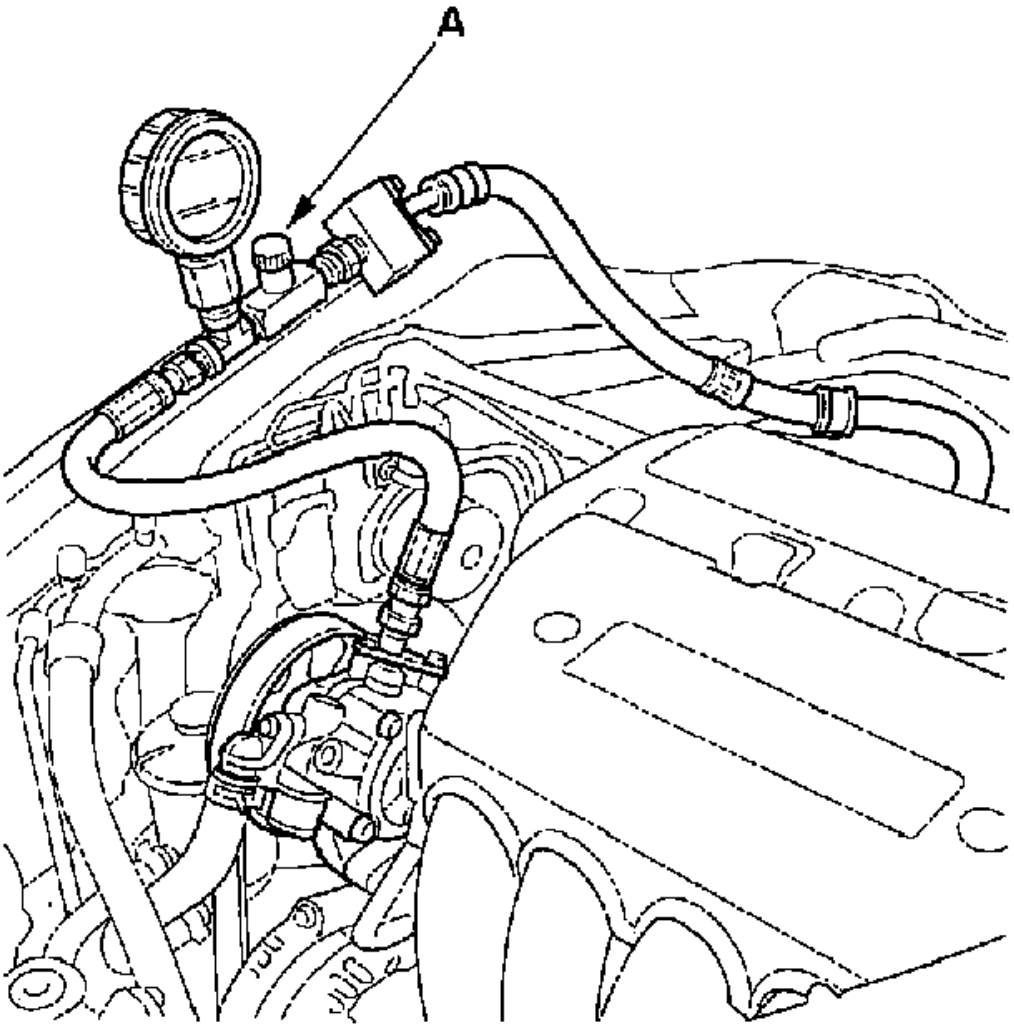


Fig. 10: Installing The P/S Joint Adapter (Pump) On The Pump Outlet

3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose (A) to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).
5. Open the pressure control valve (A) fully.

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Fig. 11: Opening The Pressure Control Valve Fully

6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).
8. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the pressure should be no more than 1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, check the outlet hose or valve body unit (see Steering System Troubleshooting). Raise the engine speed to 3,000 RPM, and measure the fluid pressure. If the pump is in good condition, the pressure should be at least

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1,500 kPa (15 kgf/cm^2 , 214 psi). If the pressure is too high, repair or replace the pump.

9. Lower the engine speed and let it idle. Close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the pressure control valve closed more than 5 seconds or the pump could be damaged by over-heating.

10. Immediately open the pressure control valve fully. If the pump is in good condition and the valve is closed, the gauge should read at least this specification:

7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)

A low reading means pump output is too low for full assist. Repair or replace the pump.

FLUID LEAKAGE INSPECTION

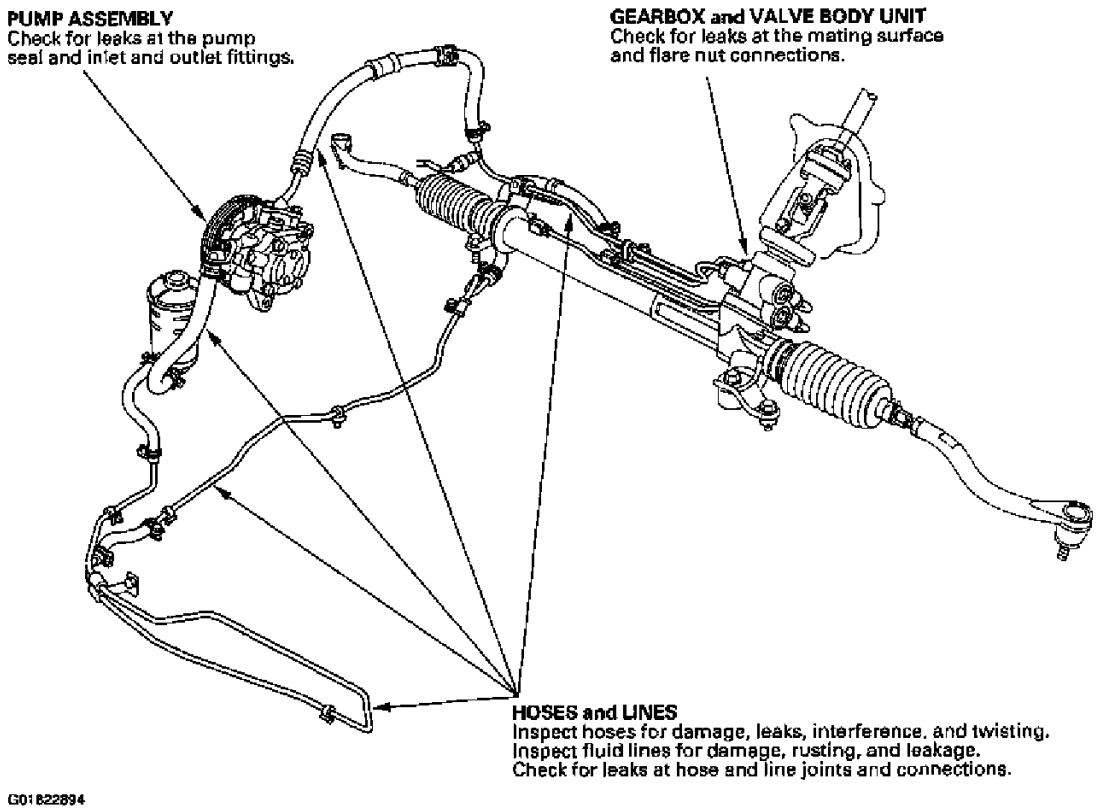


Fig. 12: Inspecting For Fluid Leakage

FLUID REPLACEMENT

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause

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increased wear and poor steering in cold weather.

System Capacity: 1.1 L (1.16 US. qt) at disassembly
Reservoir Capacity: 0.4 L (0.42 US. qt)

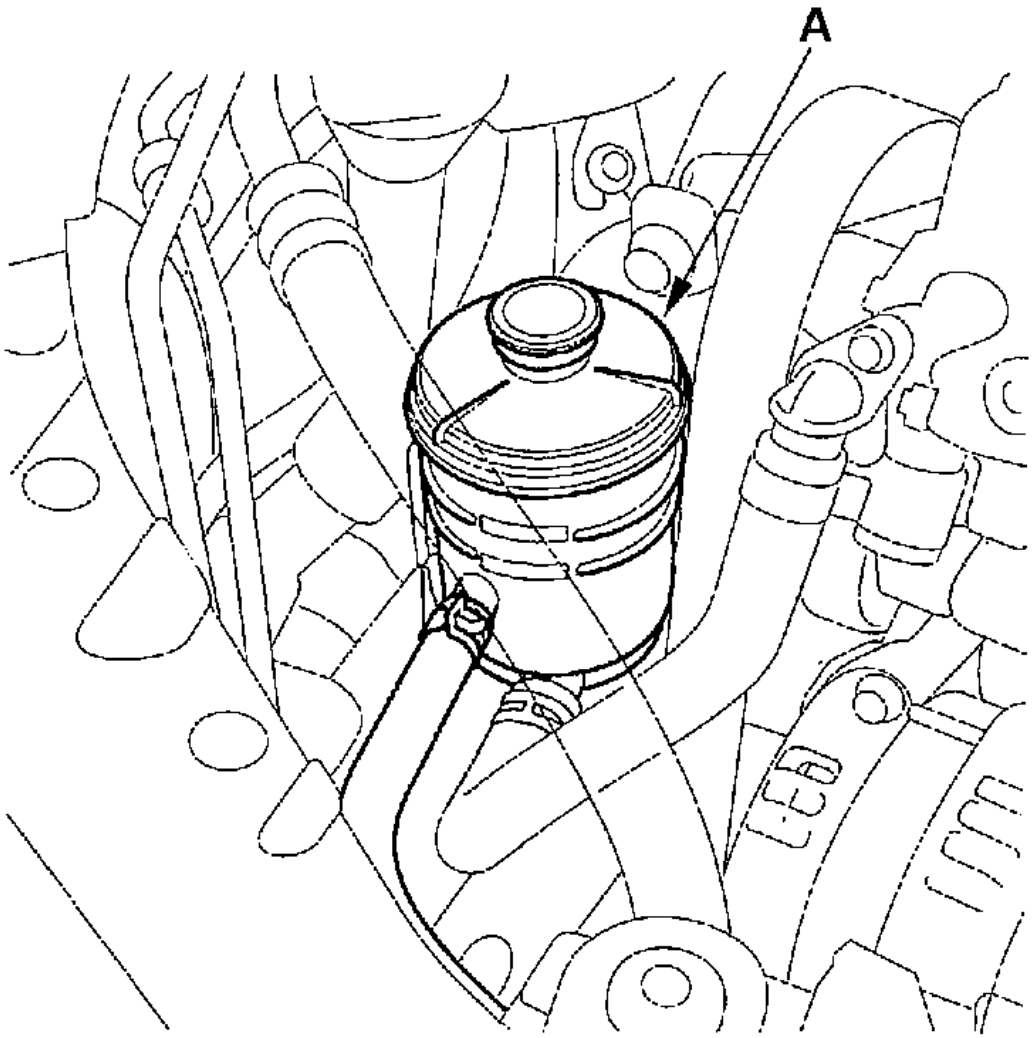


Fig. 13: Identifying Reservoir

1. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off and spilled fluid at once.

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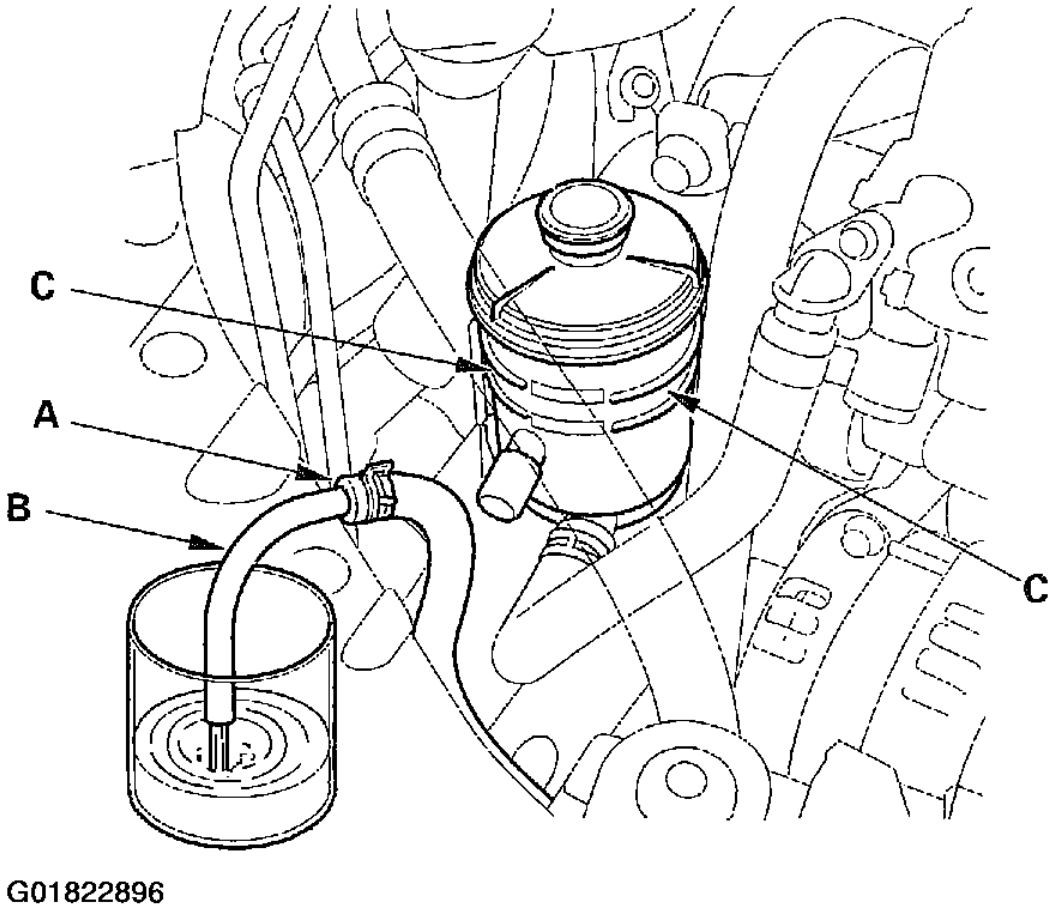


Fig. 14: Draining The Reservoir

2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add more if necessary. Do not fill the reservoir beyond the upper level line.
8. If the fluid is contaminated, dark, or discolored, repeat procedure as necessary.

POWER STEERING HOSE, LINE & PRESSURE SWITCH REPLACEMENT

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Note these items during installation:

- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace with the clamps NEW ones if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.

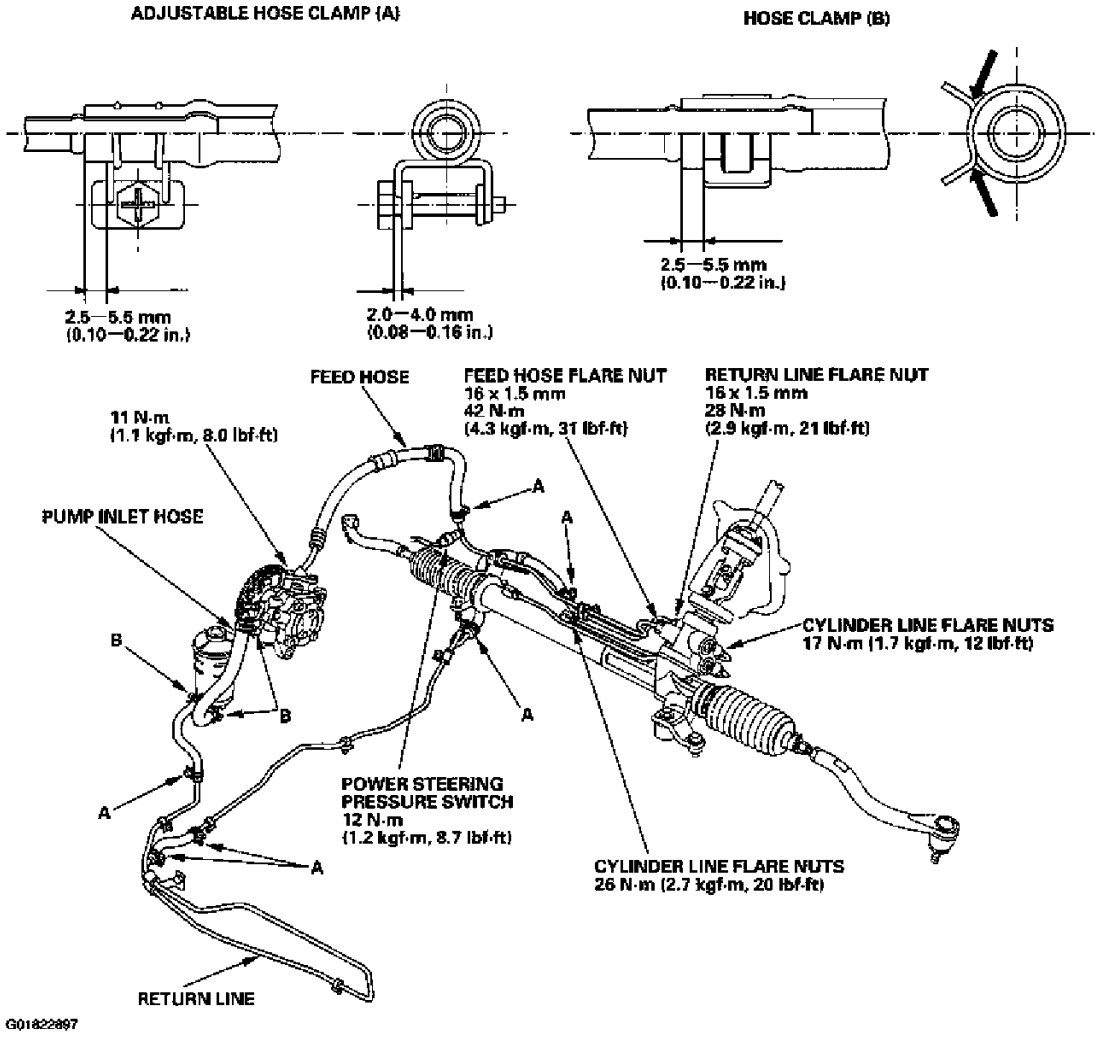


Fig. 15: Replacing Power Steering Hose, Line, And/Or Pressure Switch

PUMP REPLACEMENT

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir.
3. Remove the drive belt (A) from the pump pulley (see **DRIVE BELT**).

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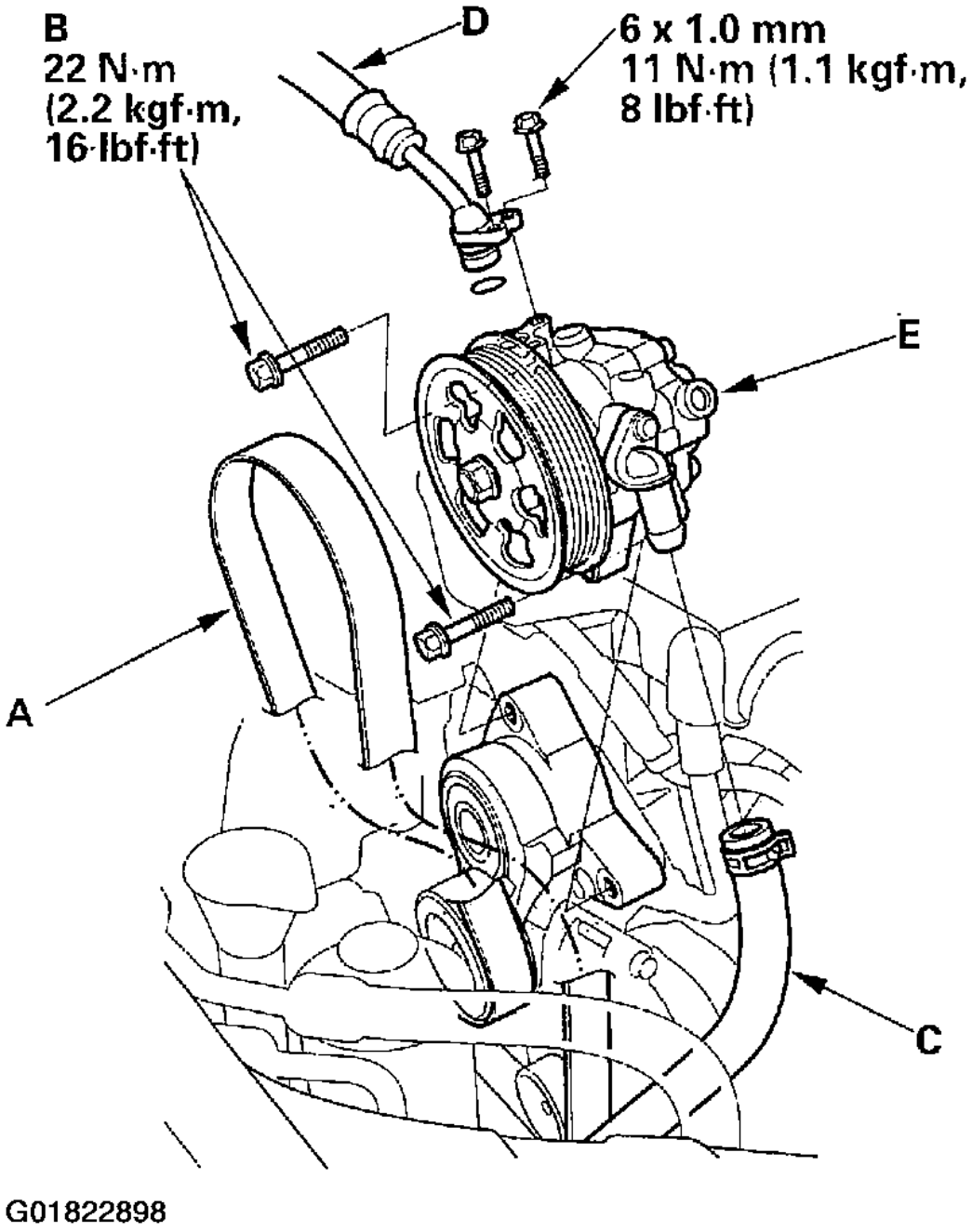


Fig. 16: Removing Pump

4. Remove the pump mounting bolts (B).
5. Cover the auto-tensioner, alternator, and A/C compressor with several shop towels to protect them from spilled power steering fluid. Disconnect the pump inlet hose (C) and jump outlet hose (D) from the pump

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(E), and plug them. Take care not to spill the fluid on the body or parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.

6. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
7. Connect the pump inlet hose and pump outlet hose.
8. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.
9. Install the drive belt (A). Note these item during belt installation:
   - Make sure that the belt is properly positioned on the pulleys (B).
   - Do not get power steering fluid or grease on the auto-tensioner, alternator, A/C compressor, and drive belt or pulley faces. Clean off any fluid or grease before installation.

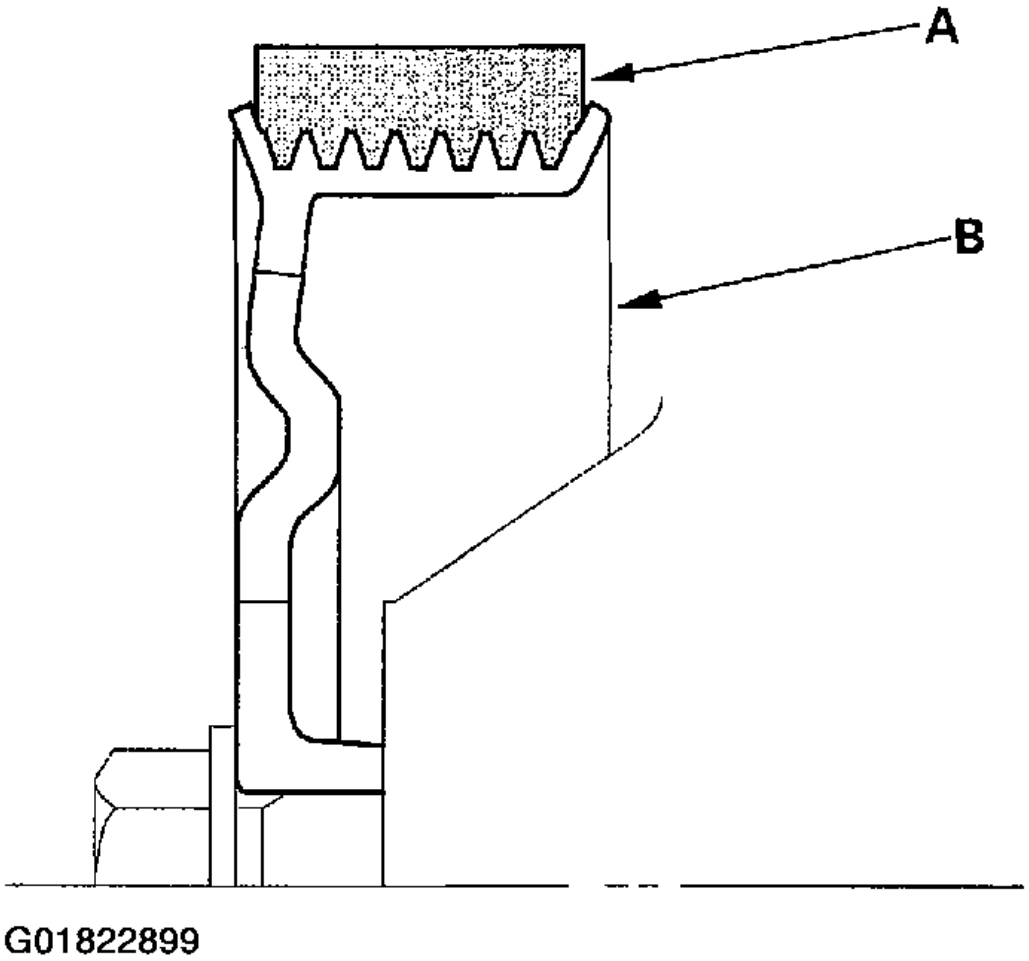


Fig. 17: Ensure That The Belt Is Properly Positioned On The Pulleys

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10. Tighten the pump mounting bolts to the specified torque.
11. Fill the reservoir to the upper level line (see **FLUID REPLACEMENT**).

PUMP OVERHAUL

EXPLODED VIEW

Replace the pump as an assembly if the parts indicated with asterisk (*) are worn or damaged.

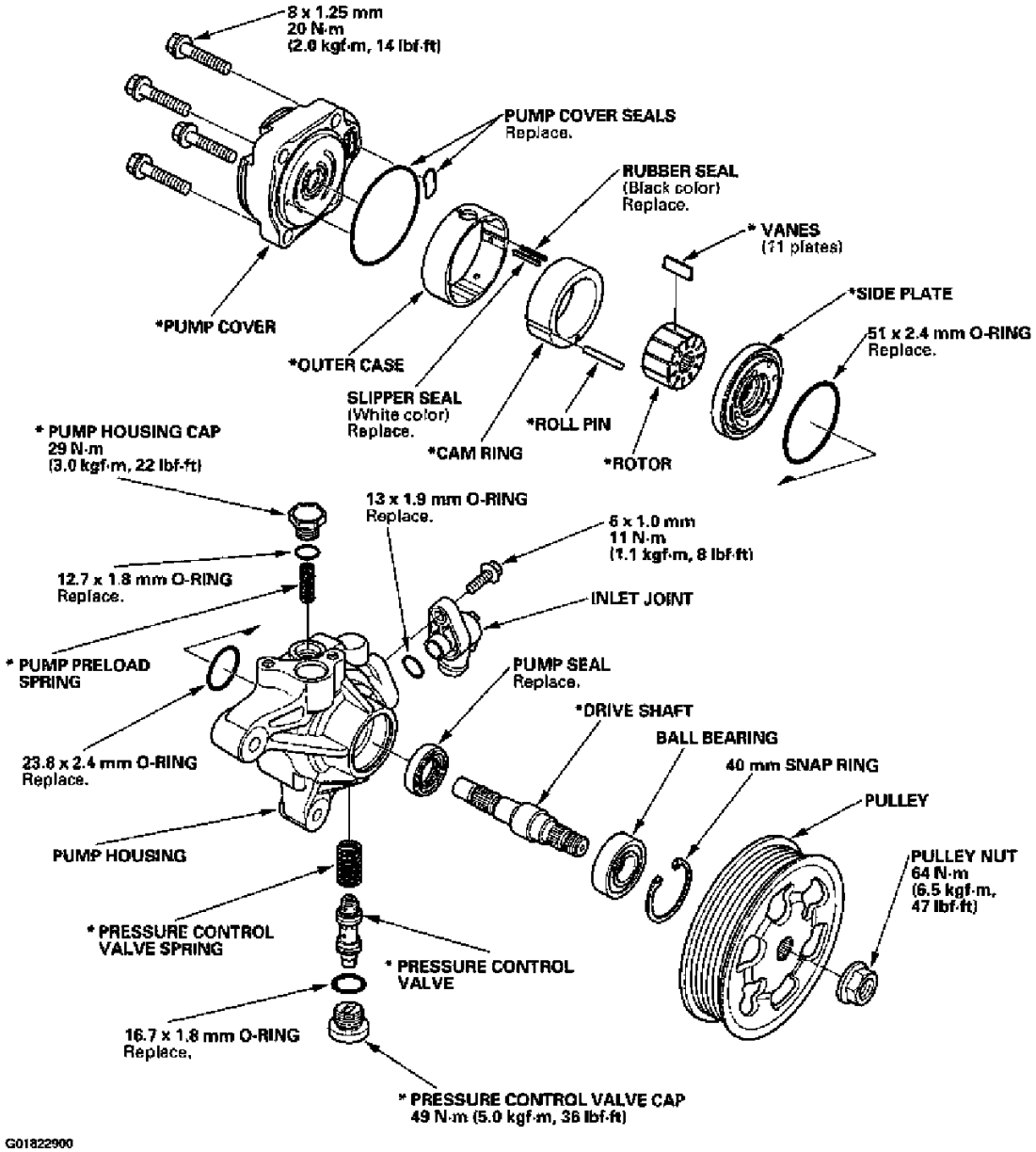


Fig. 18: Exploded View Of Pump

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Special Tools Required:

- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Pulley holder 07ZAB-S5A0100

DISASSEMBLY

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the power steering pump (see **PUMP REPLACEMENT**).
2. Drain the fluid from the pump (see step 1 on **FLUID REPLACEMENT**).
3. Hold the power steering pump (A) in a vise with soft jaws (B), hold the pulley (C) with the special tool (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.

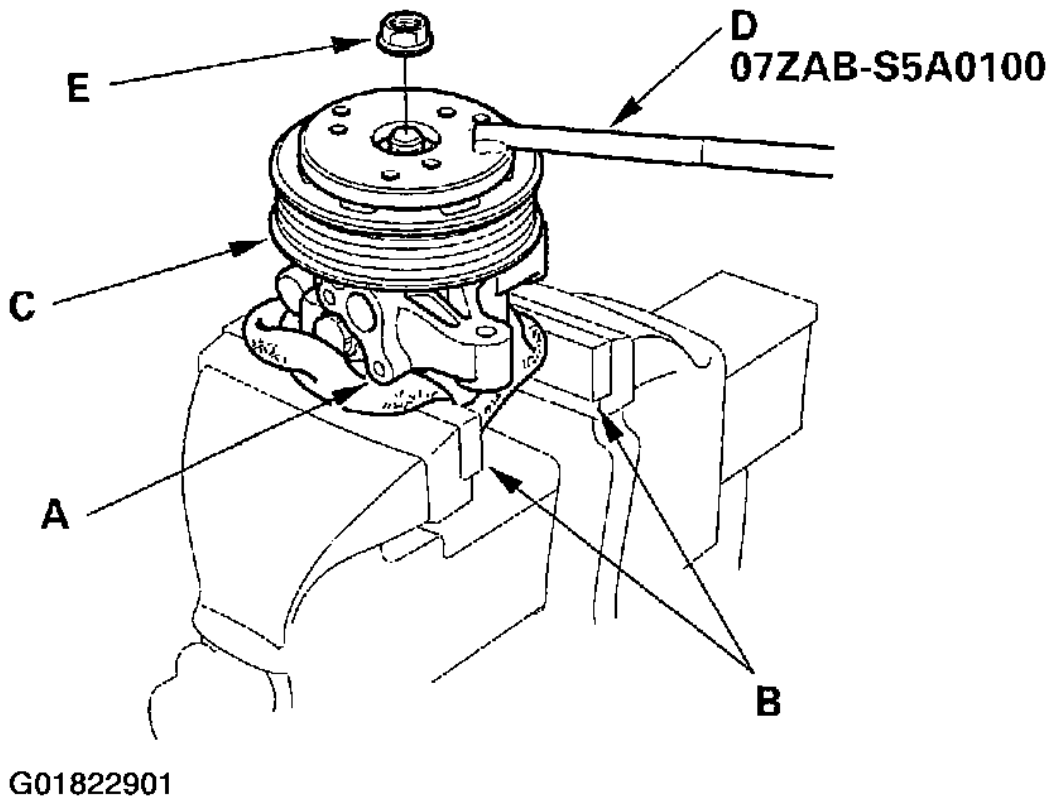


Fig. 19: Removing Pulley

4. Remove the inlet joint and O-ring.

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5. Remove the pressure control valve cap, O-ring, valve spring, and pressure control valve.
6. Remove the pump housing cap, O-ring, and pump preload spring.
7. Remove the pump cover and pump cover seals.
8. Pull out the roll pin.
9. Remove the outer case, cam ring, rotor, vanes, and side plate.
10. Remove the rubber seal and slipper seal from the outer case.
11. Remove the O-rings from the bottom of the housing.
12. Remove the snap ring, then remove the drive shaft by tapping the shaft end with the plastic hammer.
13. Remove the seal from the pump housing.

Inspection

14. Check the pressure control valve for wear, burrs, and other damage to the edges of the edges of the grooves in the valve.

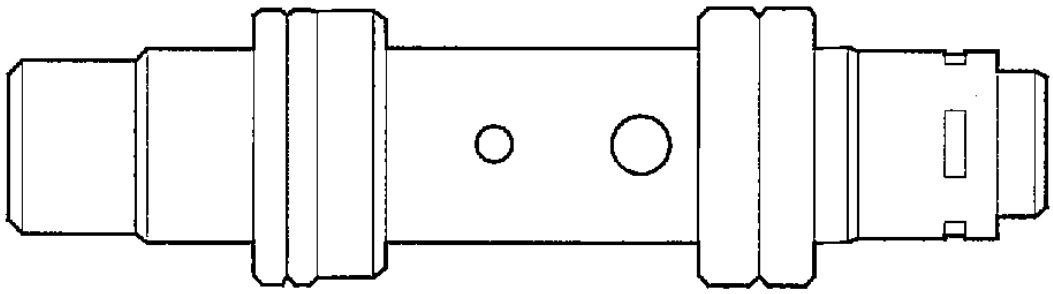


Fig. 20: Checking The Pressure Control Valve

15. Inspect the bore of the pressure control valve on the pump housing for scratches and wear.
16. Slip the pressure control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 17; if not, replace the pump as an assembly. The pressure control valve is not available separately.

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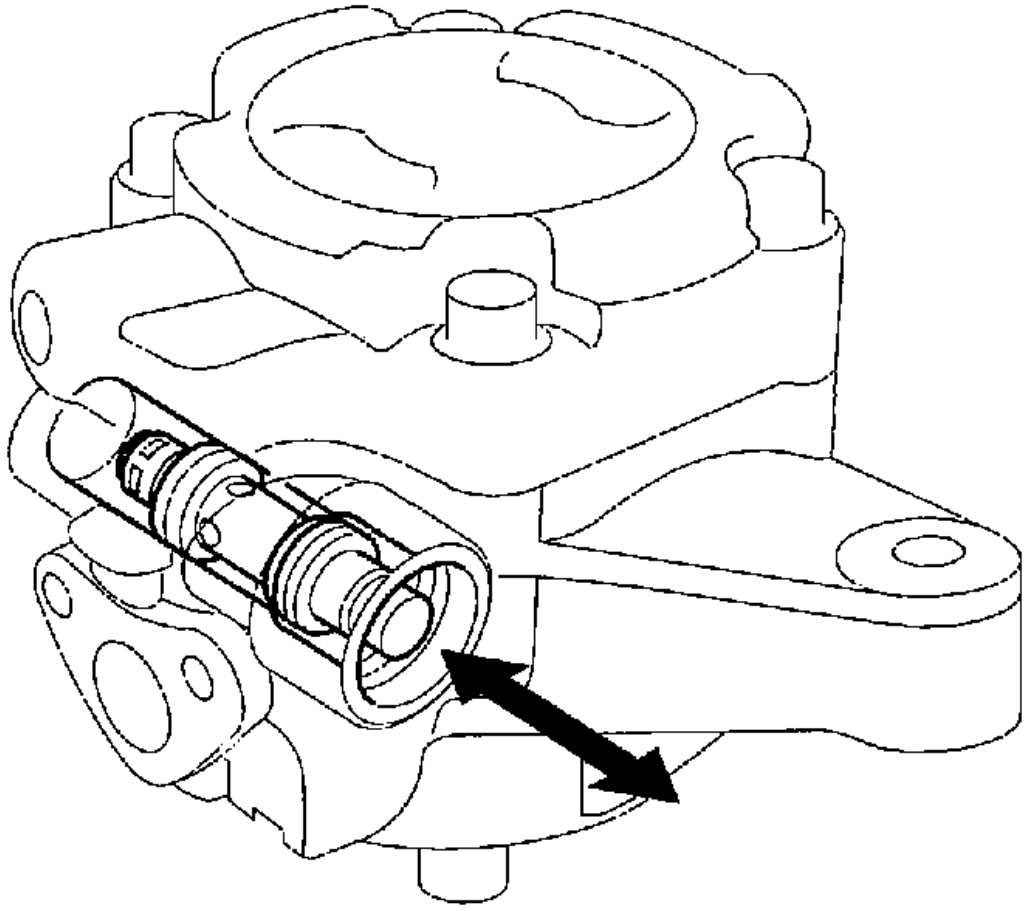


Fig. 21: Slipping The Pressure Control Valve Back In The Pump Housing

17. Attach a hose (A) to the end of the pressure control valve (B) as shown. Then submerge the pressure control valve in a container of power steering fluid or solvent (C), and blow in the hose.
    - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm^2 , 14.2 psi), replace the pump as an assembly. The pressure control valve is not available separately.
    - If the pressure control valve is OK, set it aside for reassembly later.

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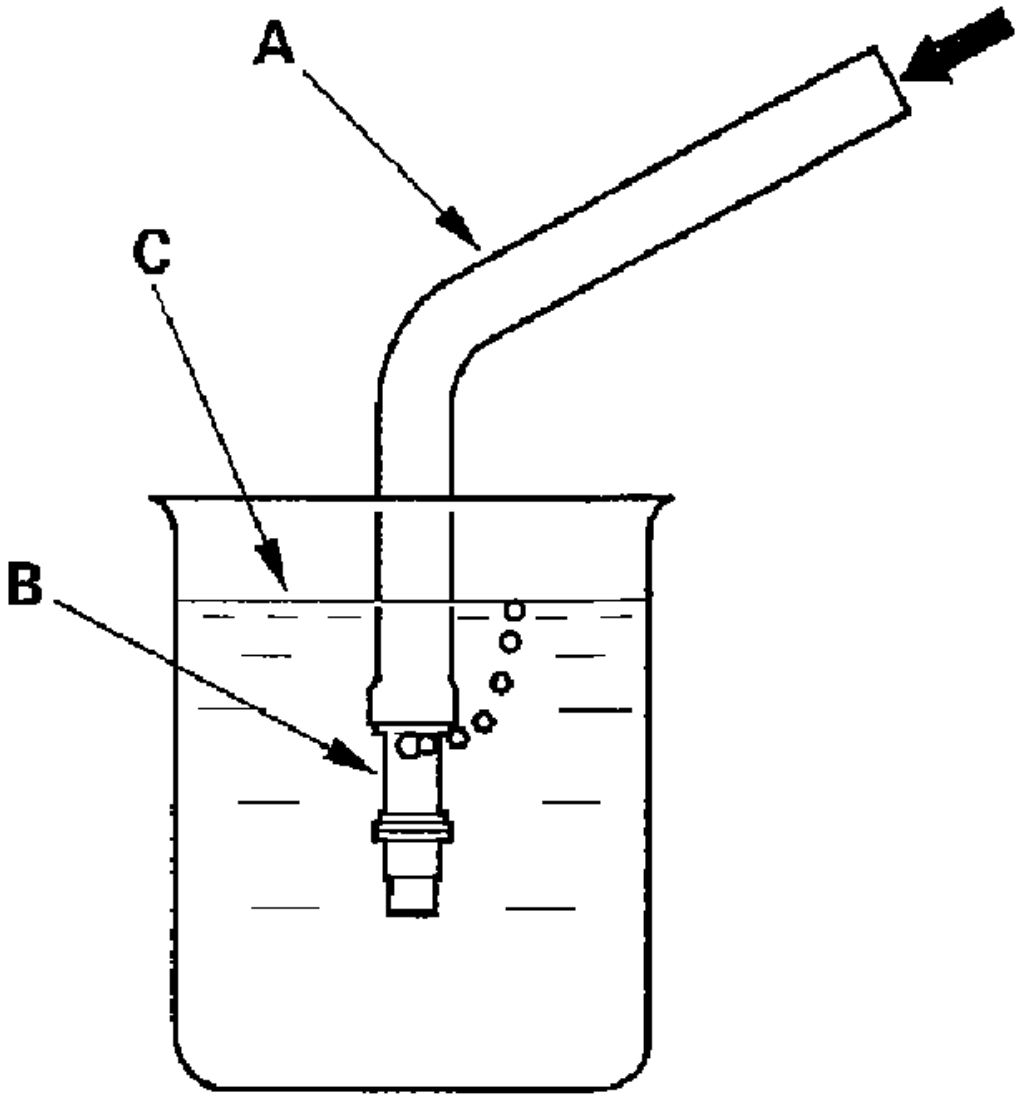


Fig. 22: Checking Pressure Control Valve

18. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A), and install a NEW one (B).

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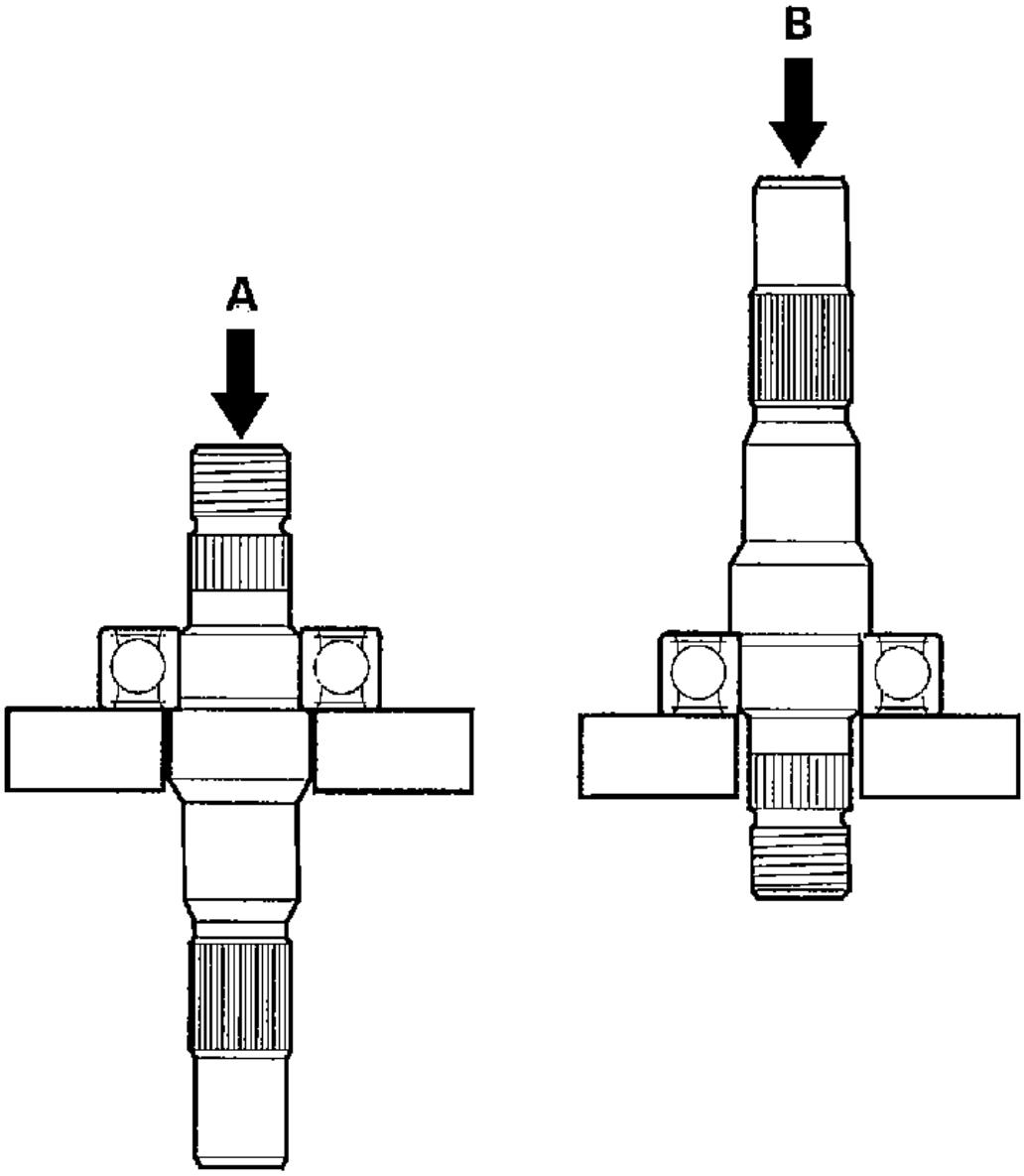


Fig. 23: Replacing The Ball Bearing

19. Inspect each part shown with an asterisk in the Exploded View; if any of them are worn or damaged, replace the pump as an assembly.

Reassembly

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20. Install the NEW pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand first, then drive it in using the special tools with until there is no step at the top of the pump seal, and the seal is fully seated in the pump housing.

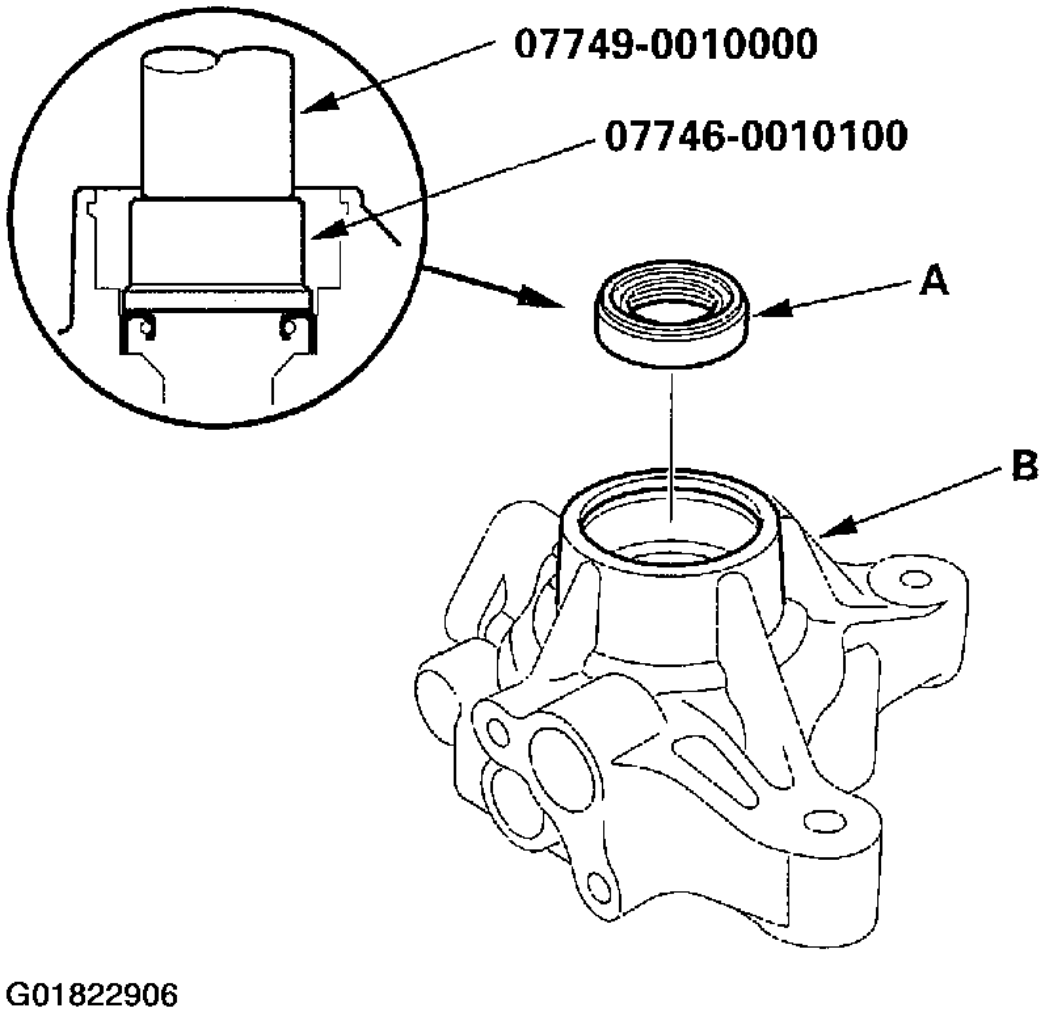


Fig. 24: Installing The NEW Pump Seal

21. Position the pump drive shaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown. Do not apply more than 1,370 N (140 kgf, 308 lbf) of pressure.

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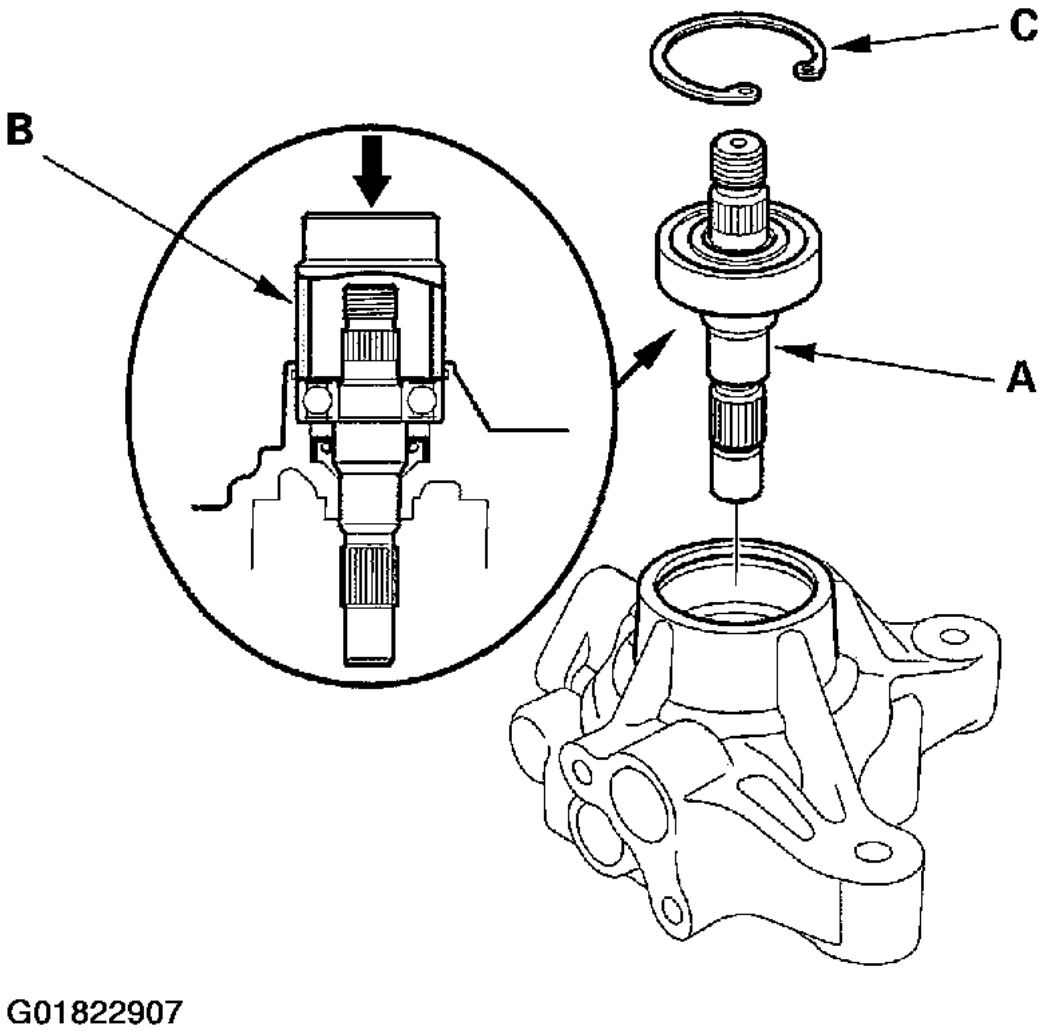


Fig. 25: Pressing Pump Drive Shaft Into The Pump Housing

22. Install the 40 mm snap ring (C) with its radiused edge facing out.
23. Coat the NEW 23.8 mm O-ring (A) with the power steering fluid, then position it on the bottom (B) of the pump housing.

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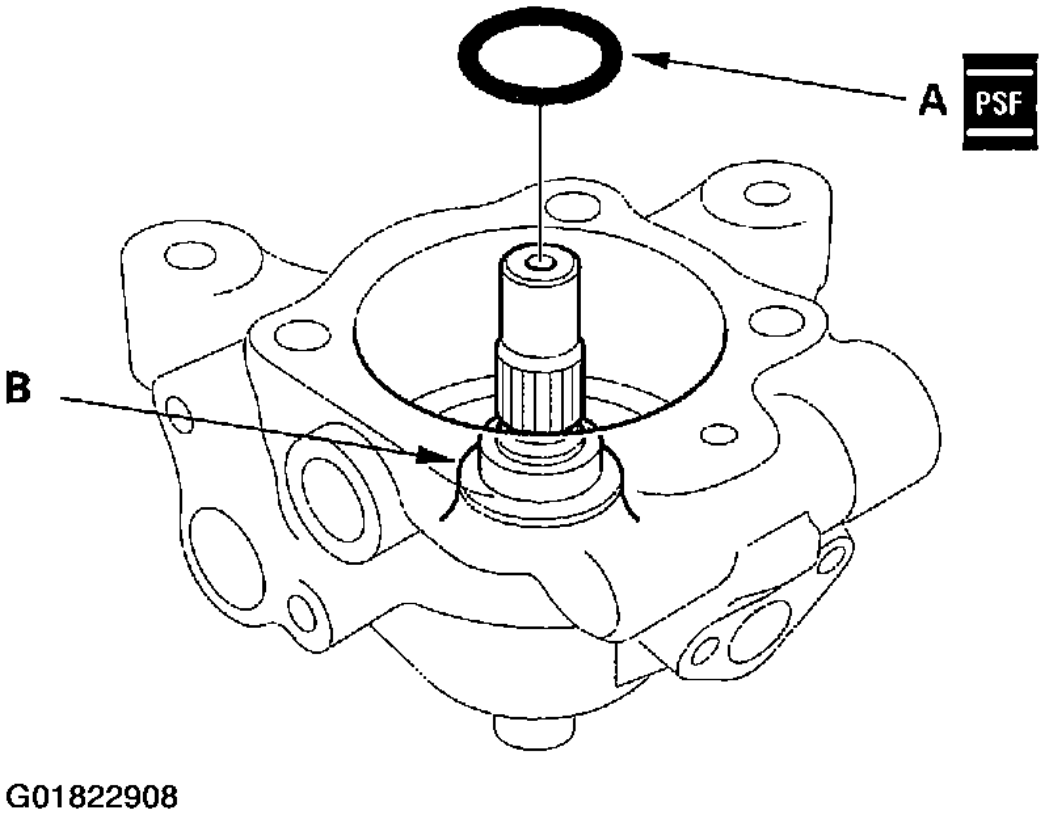


Fig. 26: Installing The NEW 23.8 mm O-Ring

24. Coat the NEW cover seals (A) and (B) with the power steering fluid, then position them into the grooves on the cover (C).

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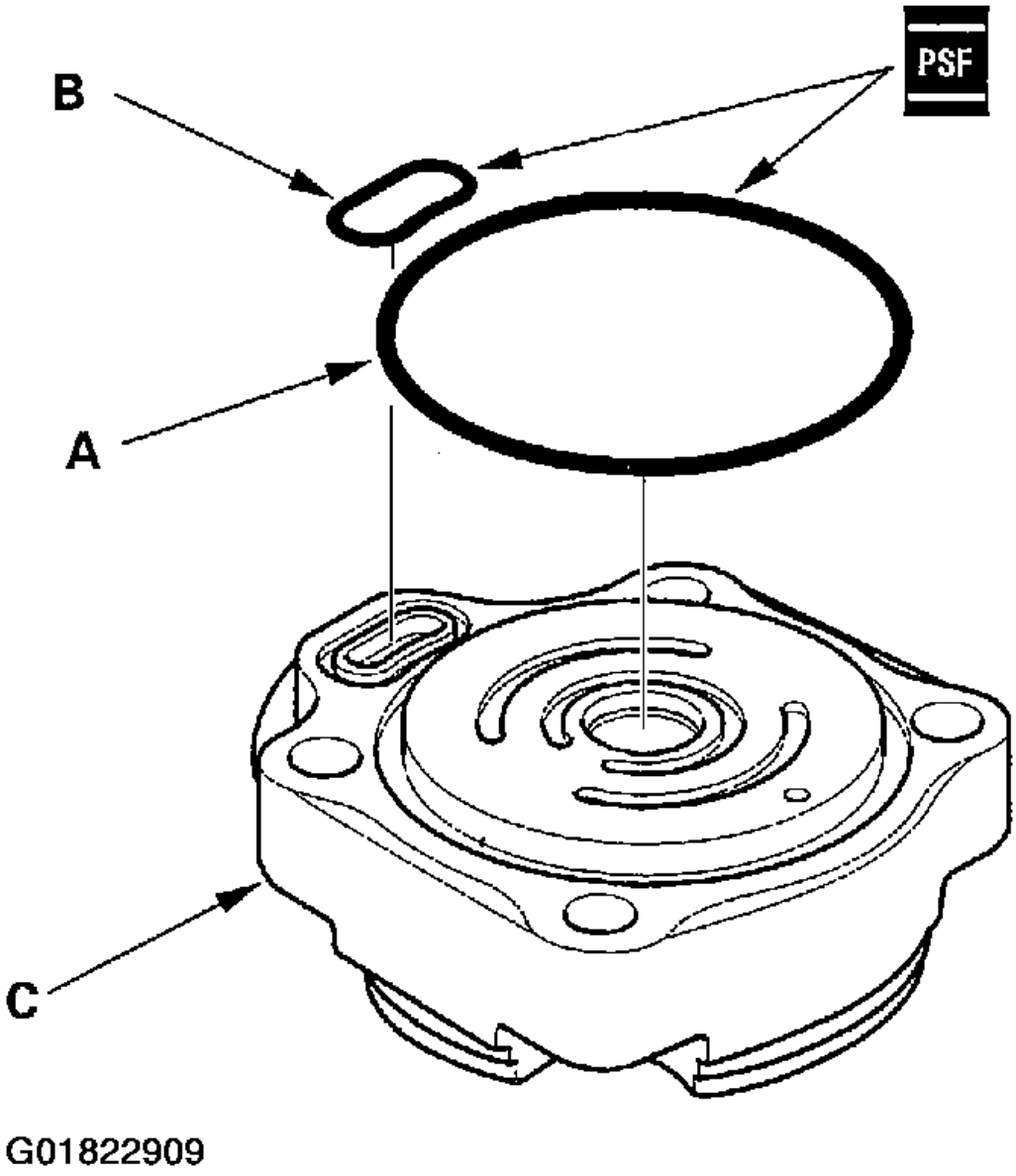


Fig. 27: Installing The NEW Cover Seals

25. Install the outer case (A) by aligning the slot (B) inside the outer case with the cover roll pin hole (C). Be sure that the slit (D) on the outer case is to direction shown.

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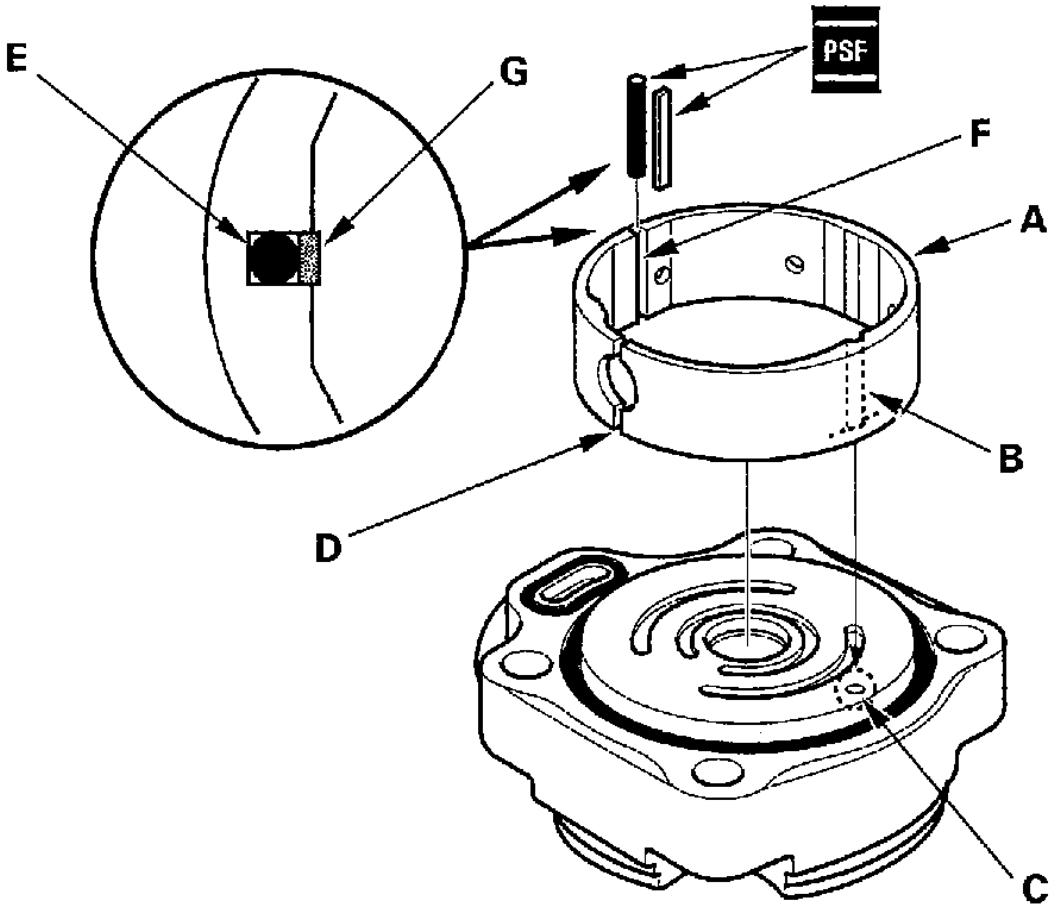


Fig. 28: Installing The Outer Case

26. Apply the power steering fluid to the rubber seal (E) (black), and install it in the slot (F) of the outer case.
27. Apply power steering fluid to the slipper seal (G) (white), and install it on top of the rubber seal you just installed.
28. Install the cam ring (A) with the "." mark (B) facing up. Align the slot (C) with the slot (D) in the outer case.

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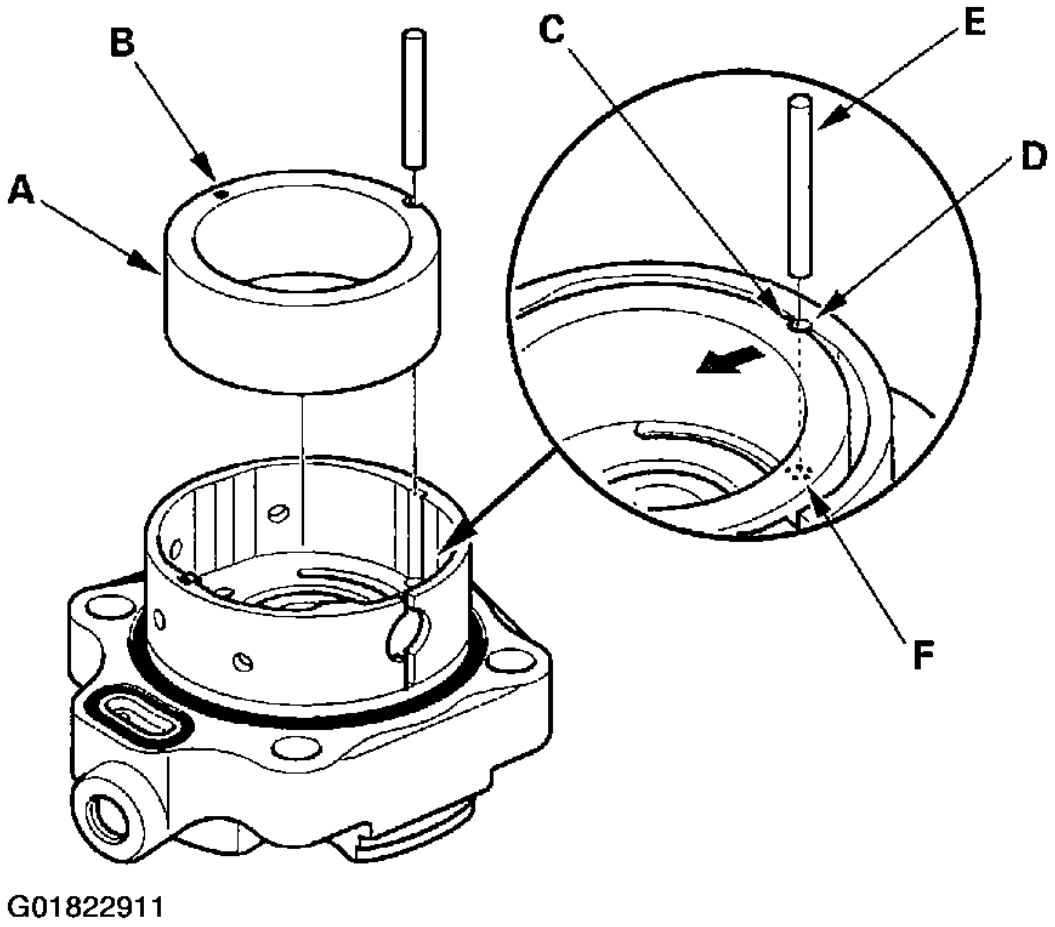


Fig. 29: Installing Components

29. Insert the roll pin (E) into the slots between the cam ring and outer case, then push the roll pin into the set hole (F).
30. Install the rotor (A) in the cam ring (B).

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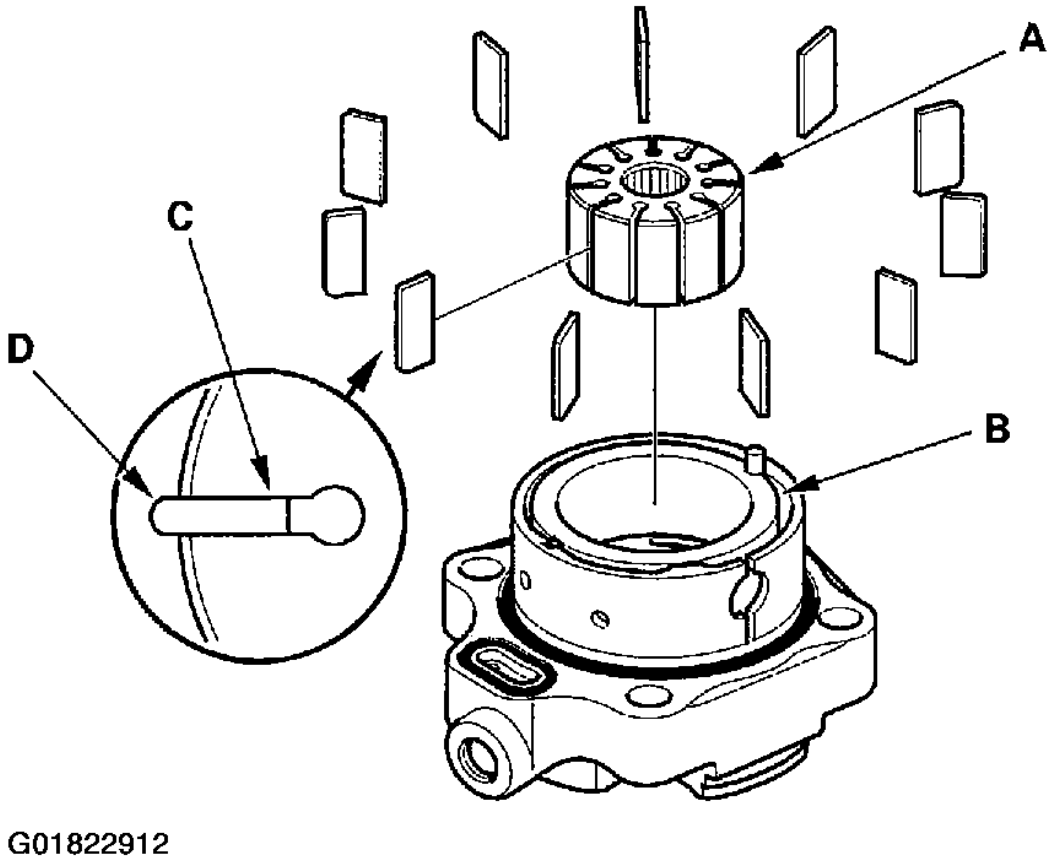


Fig. 30: Installing The Rotor In The Cam Ring & Vanes In The Grooves In The Rotor

31. Set the 11 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) of the vanes are in contact with the sliding surface of the cam ring.
32. Place the side plate (A) on the cam ring, and aligning the roll pin set hole (B) in the side plate with the roll pin end (C).

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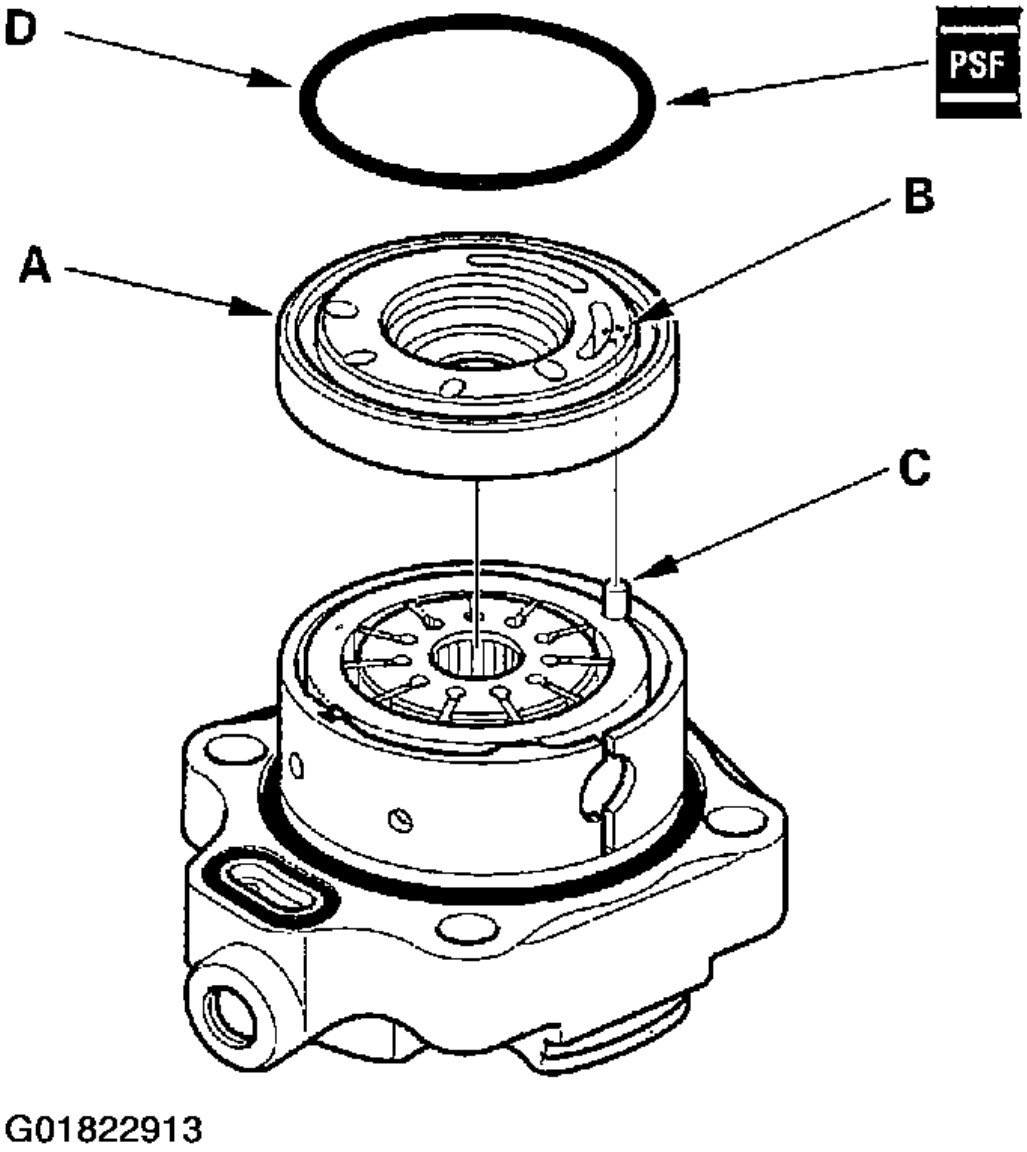


Fig. 31: Placing The Side Plate On The Cam Ring

33. Coat the NEW O-ring (D) with the power steering fluid, then position it into the groove on the side plate.
34. Install the pump housing (A) over the cover assembly (B).

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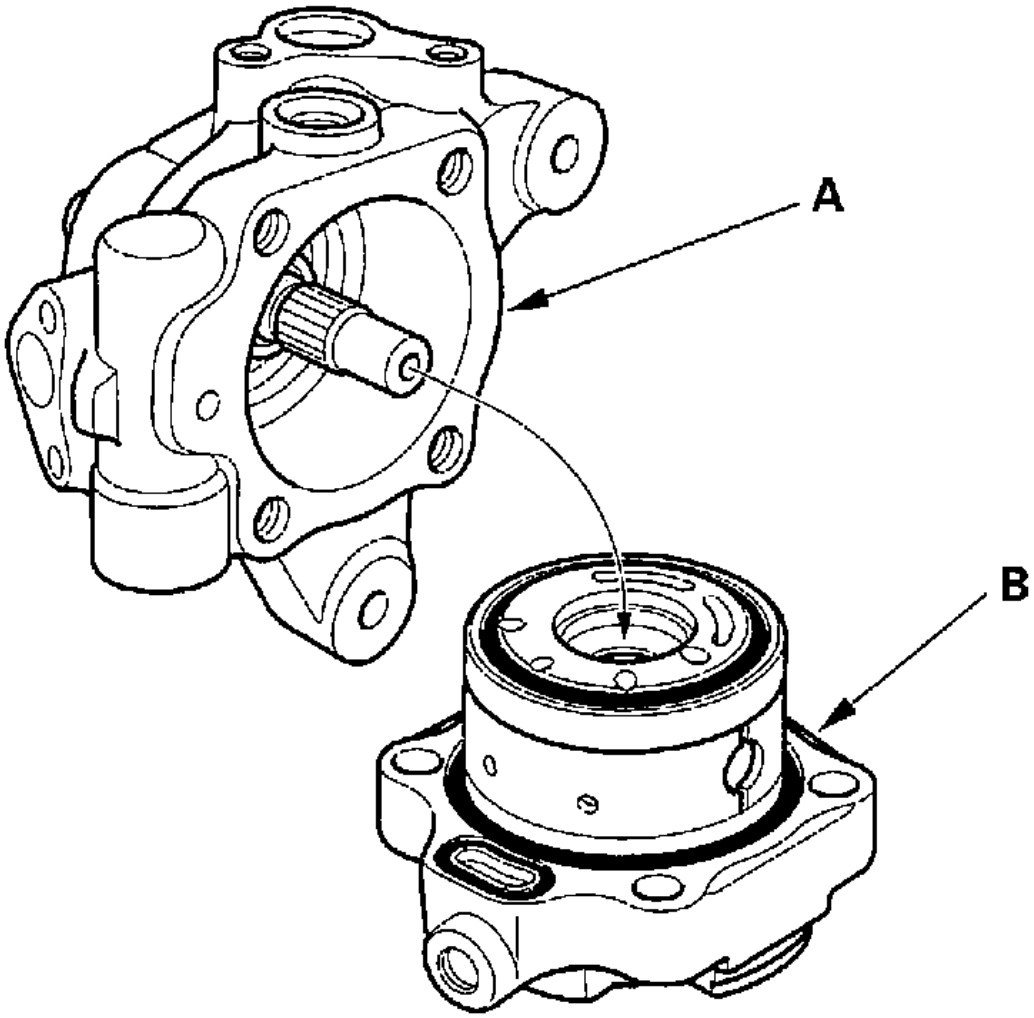


Fig. 32: Installing The Pump Housing Over The Cover Assembly

35. Align the bolt holes in the cover (A) with the threaded holes in the pump housing. Install the flange bolts loosely first, then torque the flange bolts in a crisscross pattern in two or more steps.

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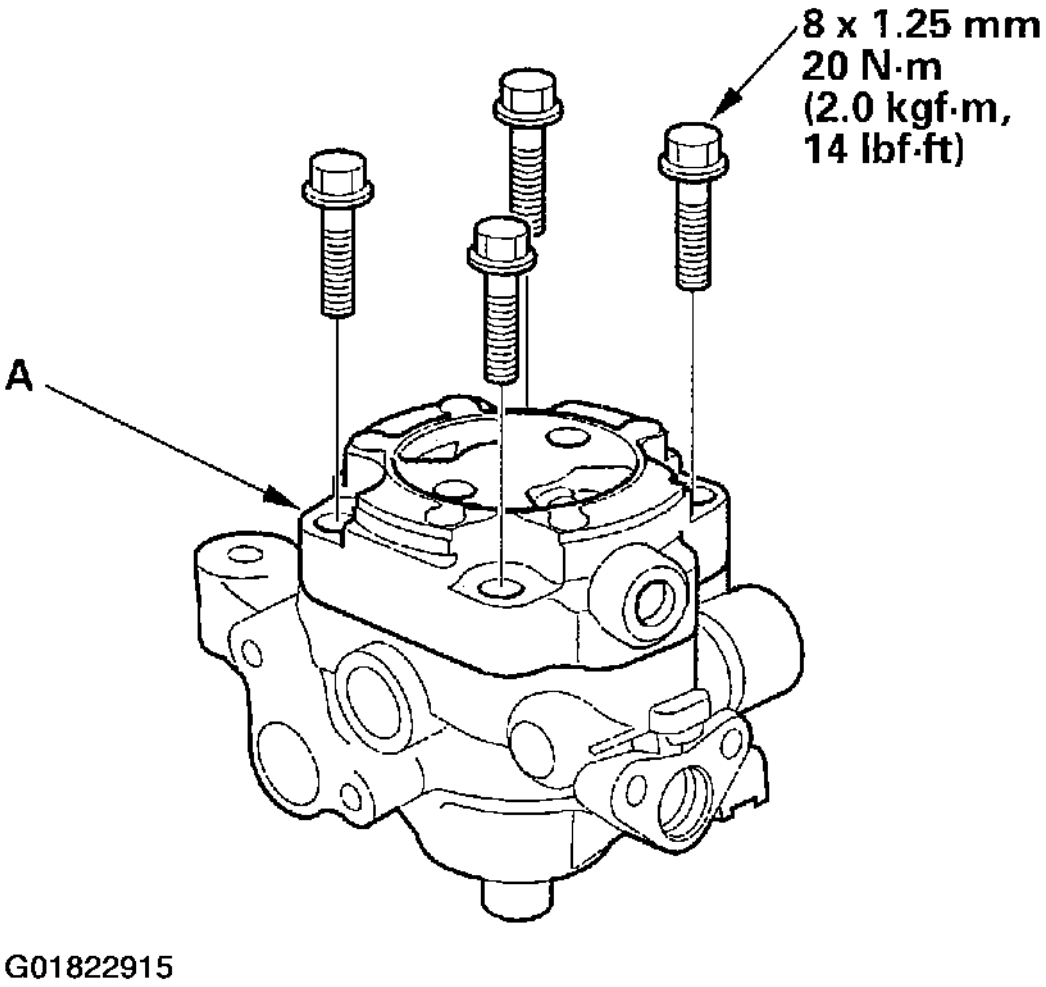


Fig. 33: Aligning The Bolt Holes In The Cover With The Threaded Holes In The Pump Housing

36. Push in the cam ring (A) from the pump housing cap hole (B) with a flat blade screwdriver, to make sure the cam ring is fully seated against the outer case.

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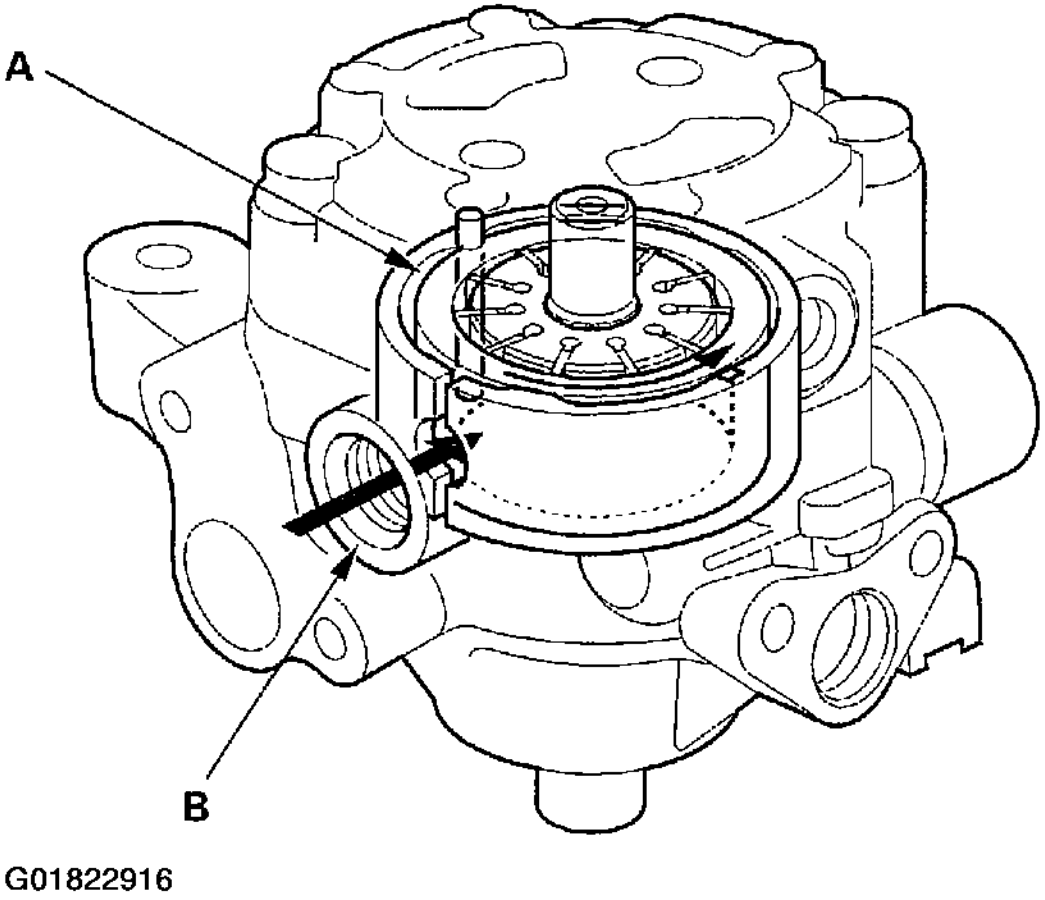


Fig. 34: Pushing In The Cam Ring From The Pump Housing Cap Hole

37. Install the pump preload spring (A) in the pump housing.

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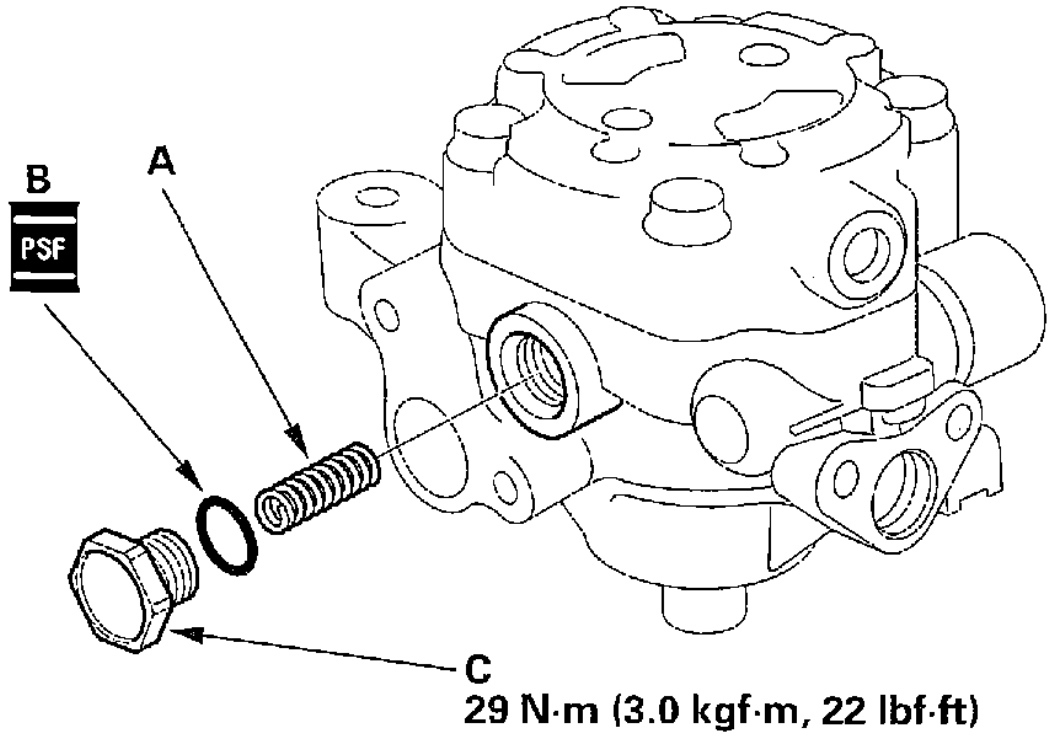


Fig. 35: Installing The Pump Preload Spring In The Pump Housing

38. Coat the NEW 12.7 mm O-ring (B) with power steering fluid, and install it on the pump housing cap (C).
39. Install the pump housing cap on the pump housing, and tighten it to specified torque.
40. Install the pressure control valve spring (A) in the pump housing.

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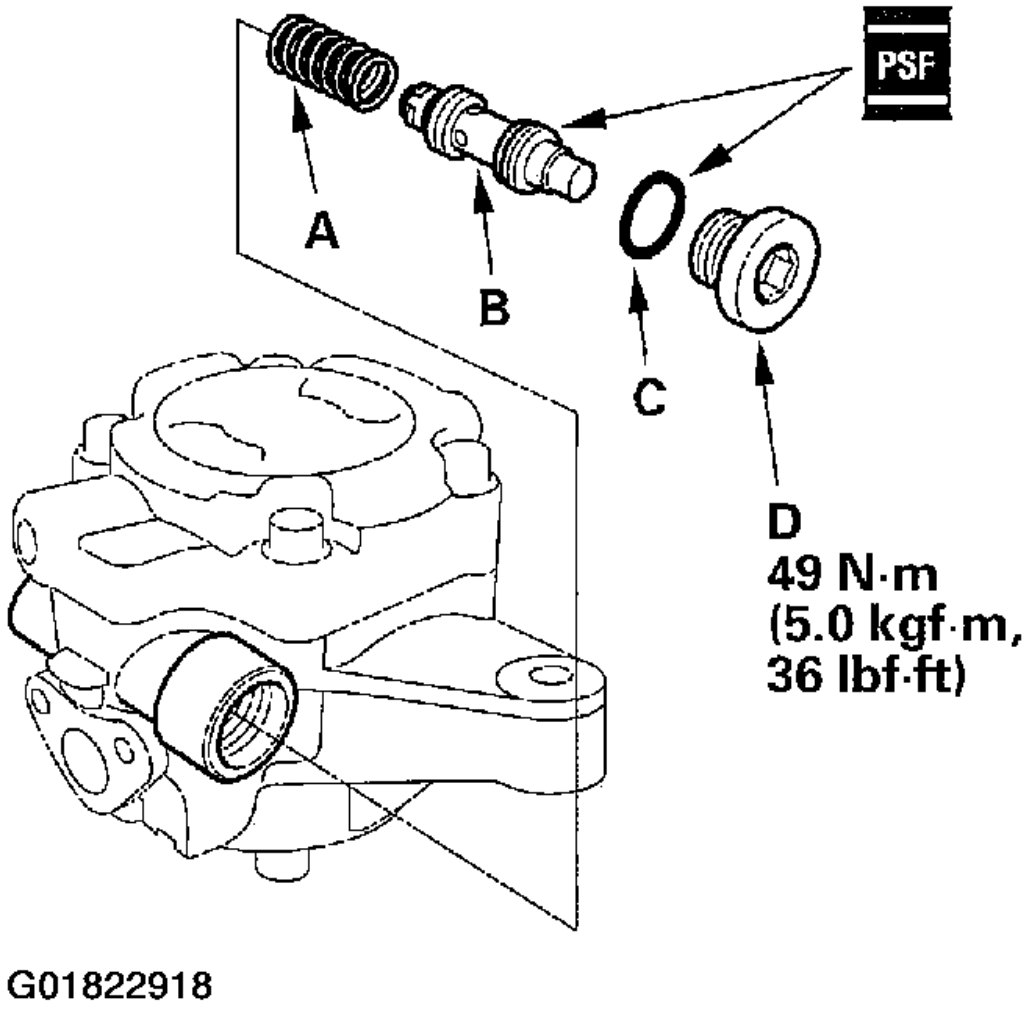


Fig. 36: Installing The Pressure Control Valve Spring In The Pump Housing

41. Coat the pressure control valve (B) with power steering fluid, and install it on the pump housing.
42. Coat the NEW 16.7 mm O-ring (C) with power steering fluid, and install it on the pressure control valve cap (D).
43. Install the pressure control valve cap on the pump housing, and tighten it to the specified torque.
44. Coat the NEW O-ring (A) with power steering fluid, and install it on the inlet joint (B).

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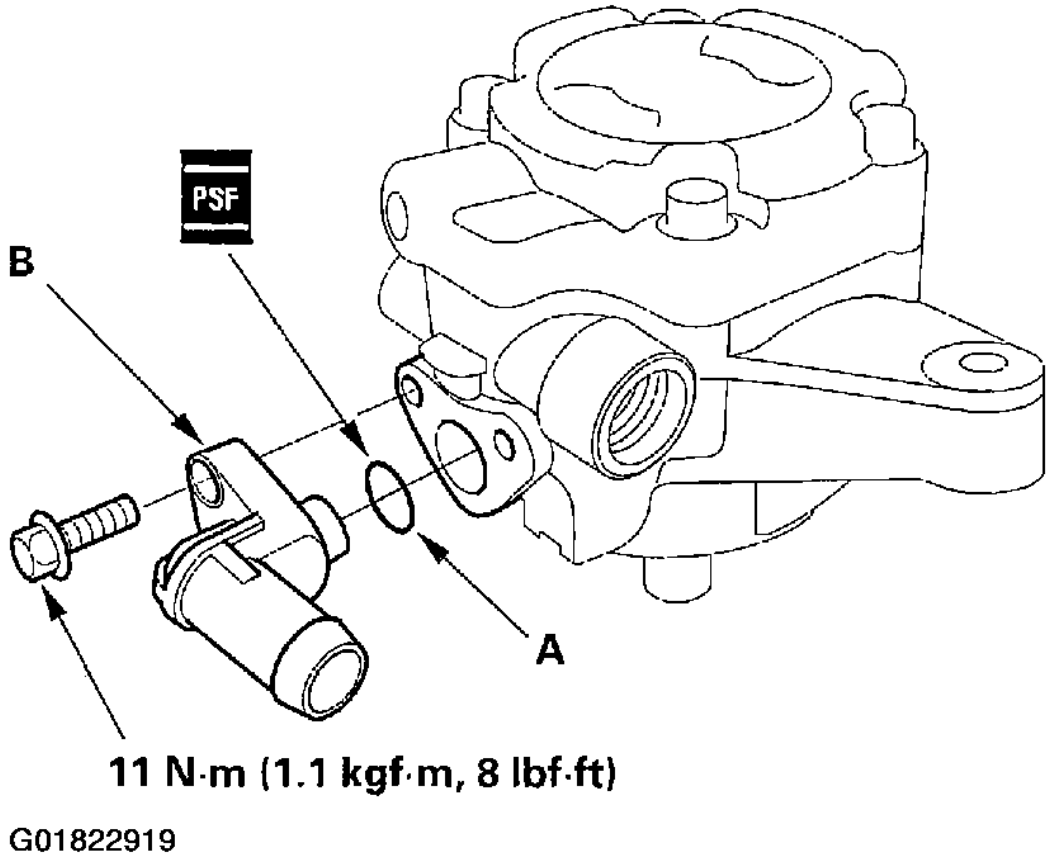


Fig. 37: Installing The Inlet Joint On The Pump Housing

45. Install the inlet joint on the pump housing.
46. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws (C). Be careful not to damage the pump housing with the jaws of the vise.

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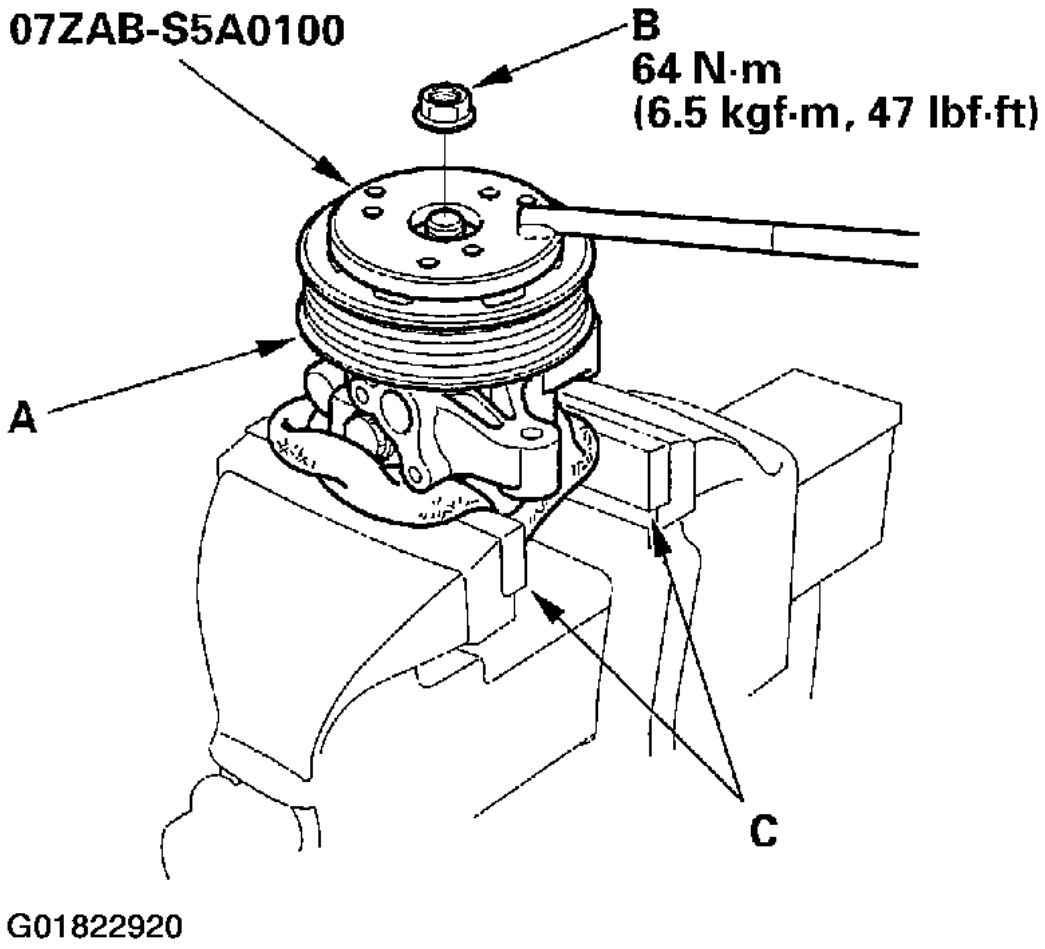


Fig. 38: Installing The Pulley

47. Hold the pulley with the special tool, and tighten the pulley nut to specified torque.
48. Check that the pump turns smoothly by turning the pulley. If it turns hard, loosen the four flange bolts on the cover, then retightening them in the same manner as in the step 35 . Turning the pump again by hand.

STEERING WHEEL REMOVAL

SRS components are located in this area. Review the SRS component locations and precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's radio station presets.
2. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see **AIR BAG RESTRAINT SYSTEMS**).

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3. Disconnect the cruise control set/resume switch, audio remote switch and navigation guide switch connectors (if equipped).
4. Loosen the steering wheel bolt (A).

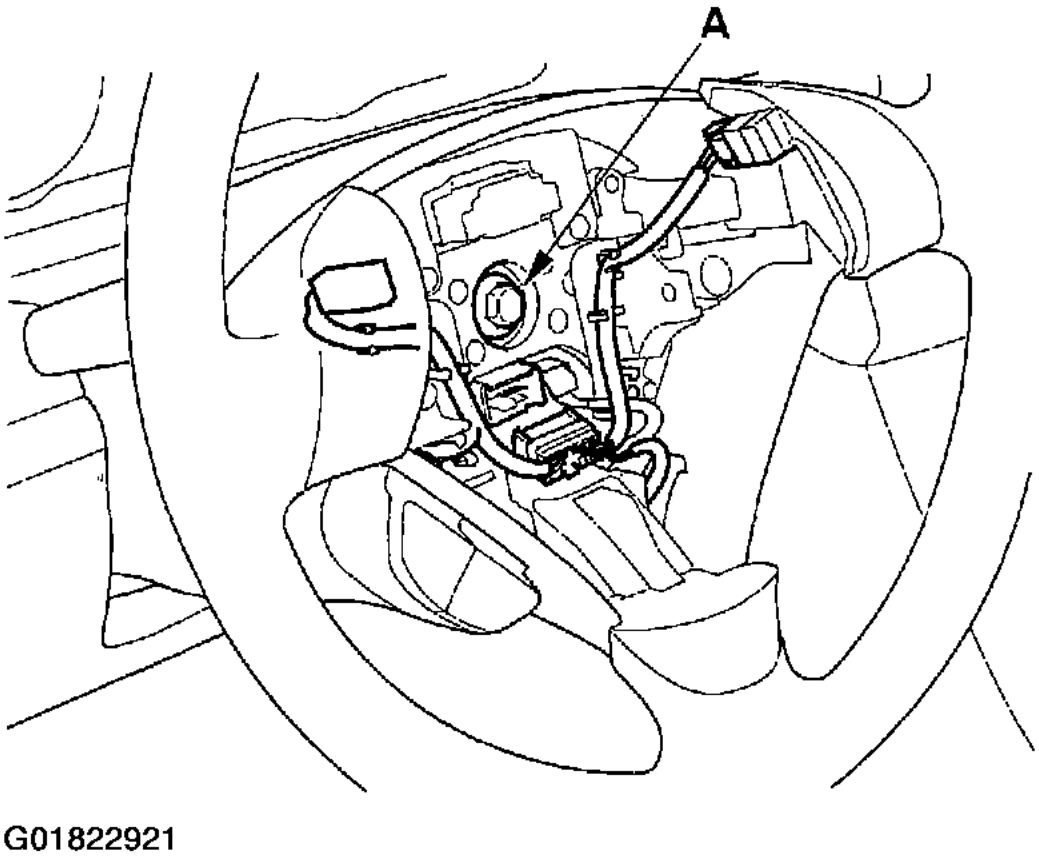


Fig. 39: Loosening The Steering Wheel Bolt

5. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller. Note these items when removing the steering wheel:
   - Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
   - If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.

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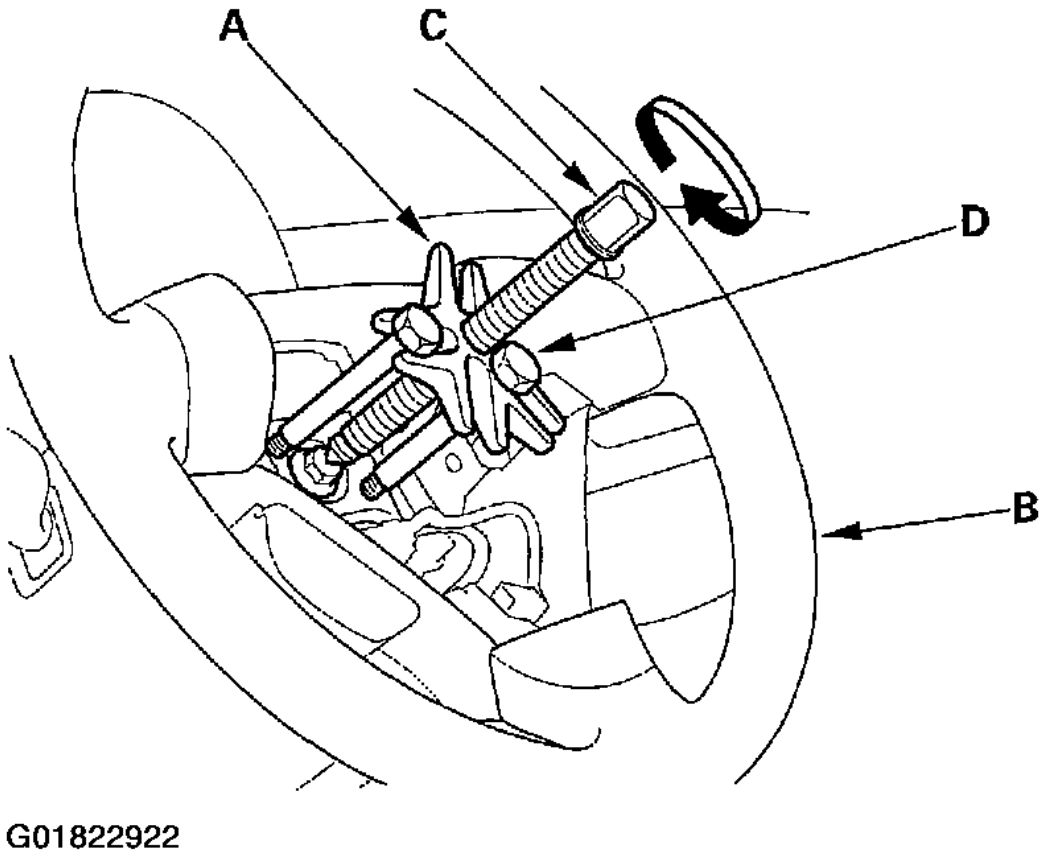


Fig. 40: Freeing The Steering Wheel From The Steering Column Shaft

6. Remove the steering wheel puller, then remove the steering wheel bolt and steering wheel from the steering column.

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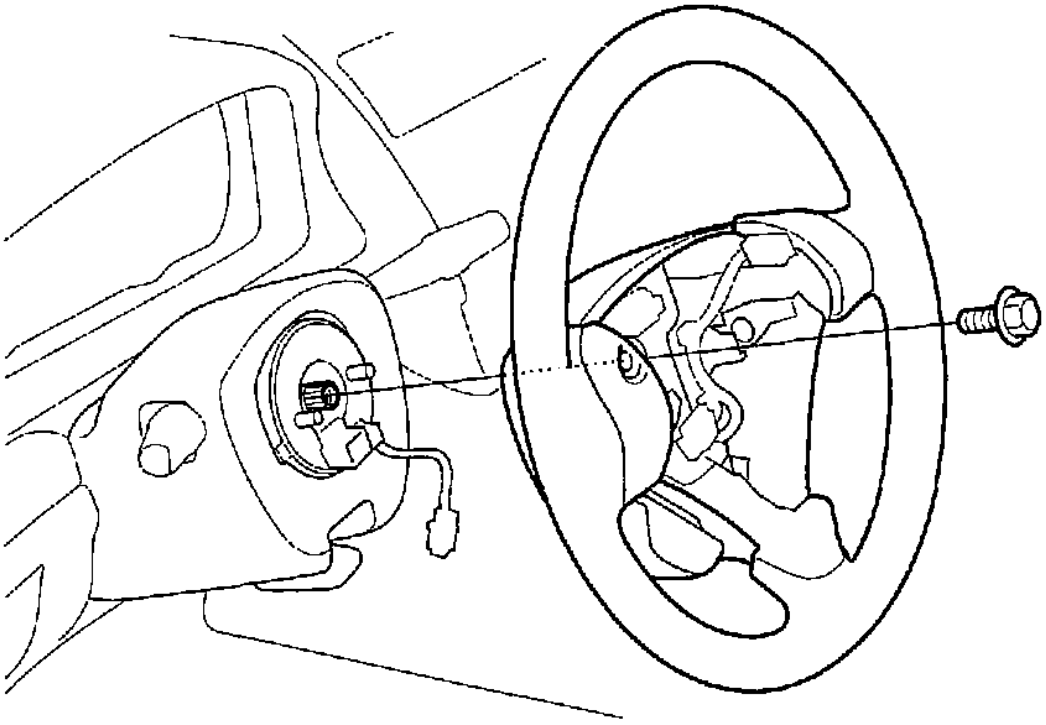


Fig. 41: Removing The Steering Wheel Bolt & Steering Wheel From The Steering Column

STEERING WHEEL DISASSEMBLY/REASSEMBLY

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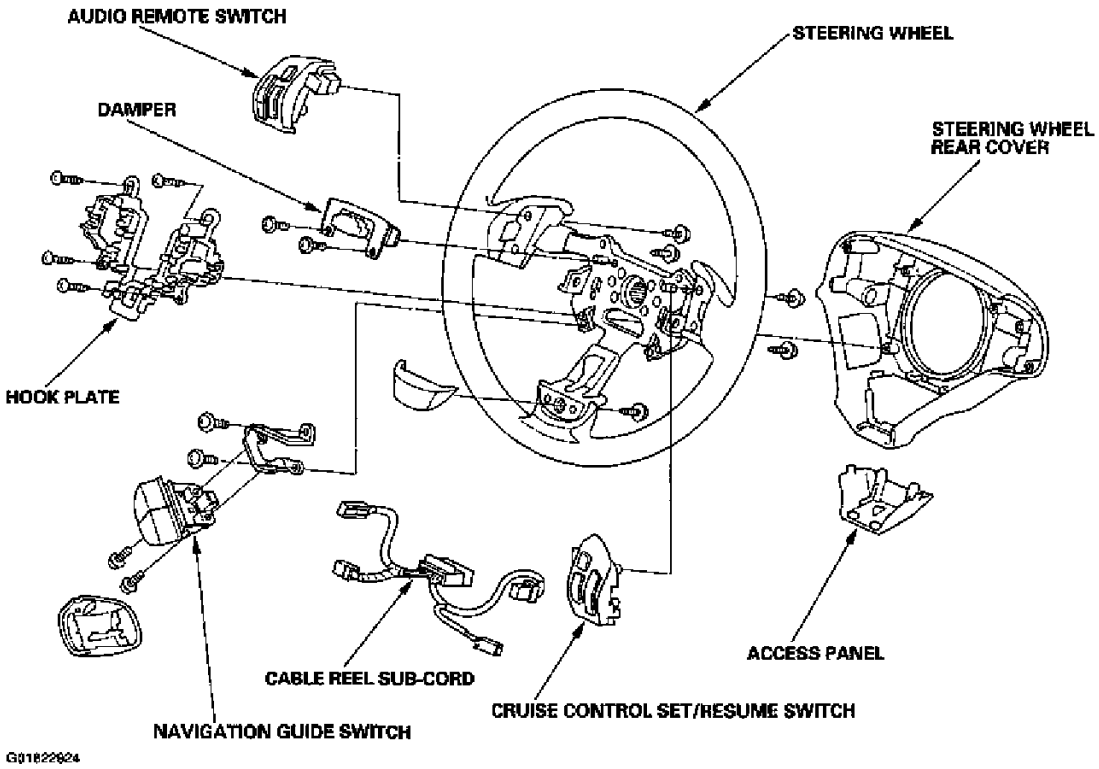


Fig. 42: Exploded View Of Steering Wheel Components

STEERING WHEEL INSTALLATION

1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about three full turns. The arrow mark (B) on the cable reel label point should point straight up.

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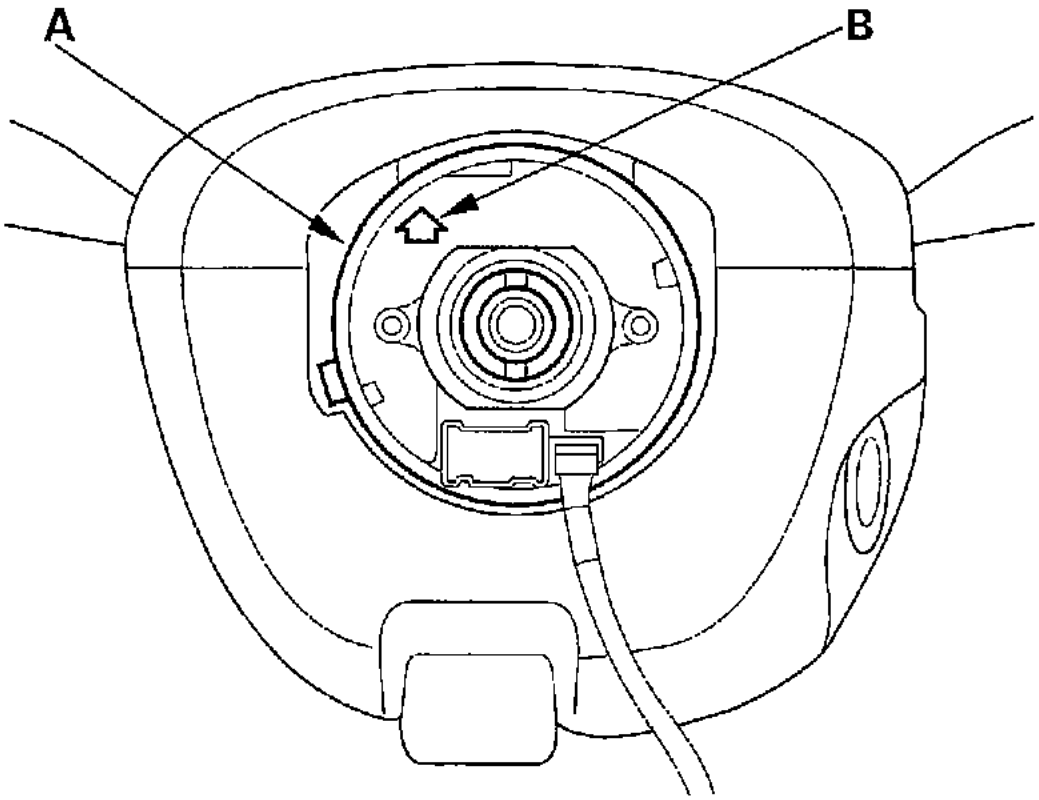


Fig. 43: Centering The Cable Reel

2. Position the two tabs (A) of the turn signal cancelling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the cancelling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.

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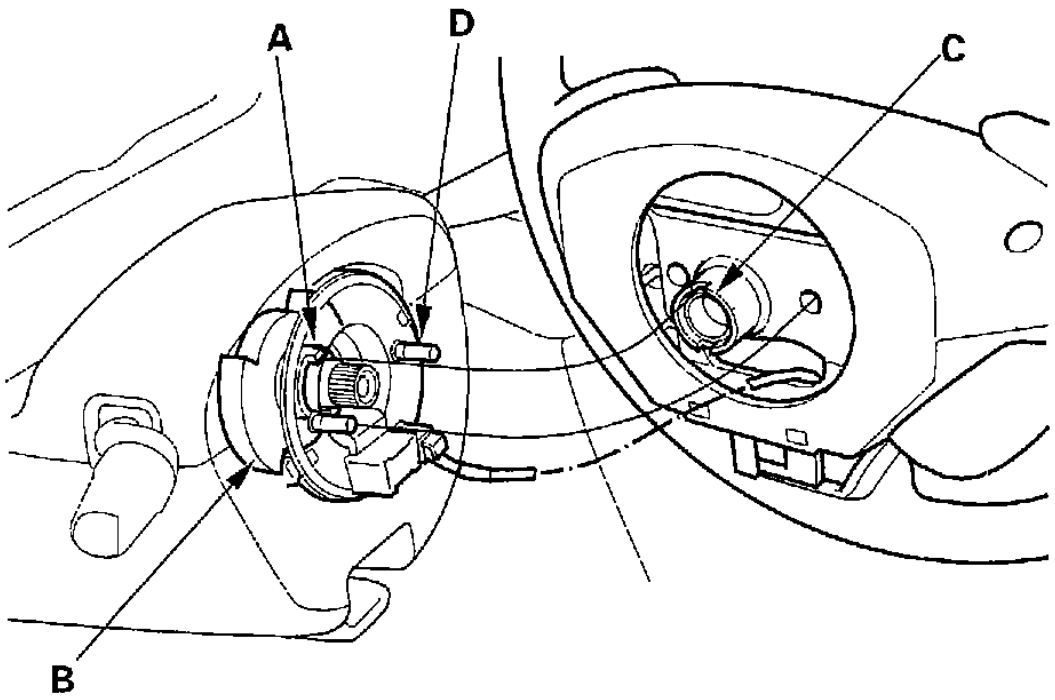


Fig. 44: Positioning The Two Tabs Of The Turn Signal Cancelling Sleeve

3. Install the steering wheel bolt (A) and tighten it to the specified torque. Connect the audio remote, navigation guide and cruise control set/resume switch connectors (if equipped). Make sure the wire harness is routed and fastened properly.

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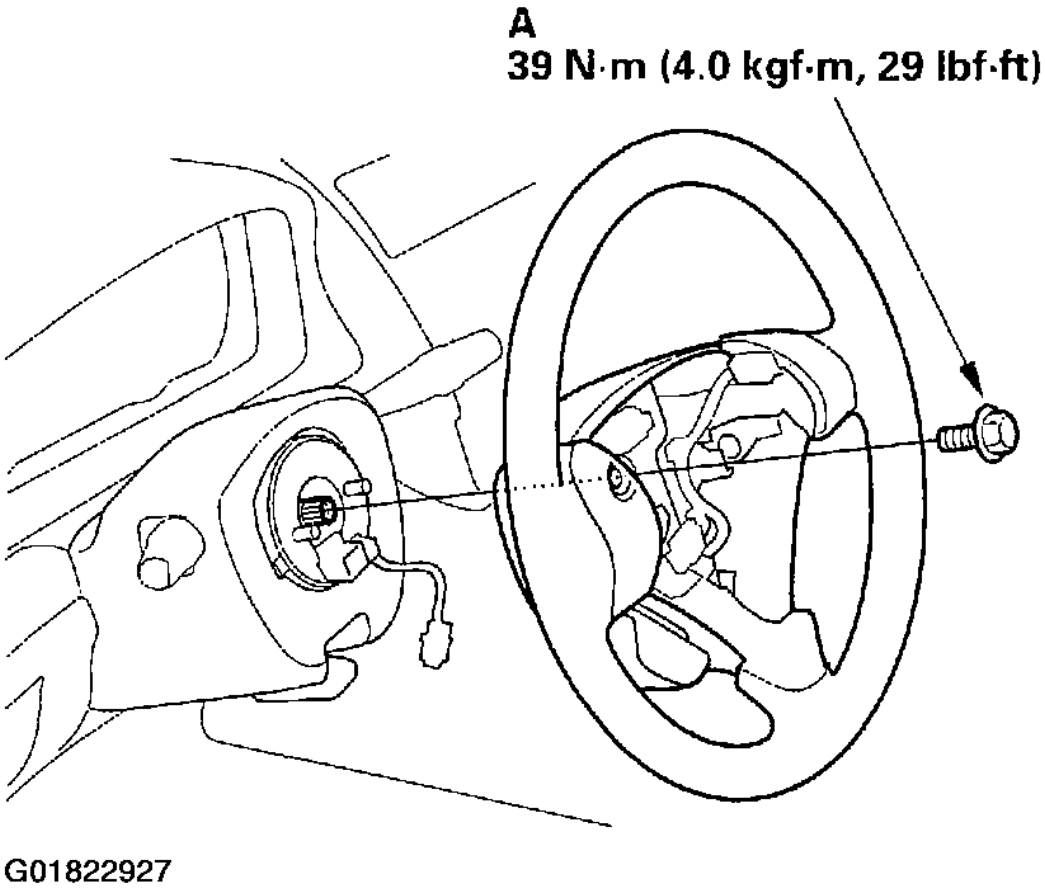


Fig. 45: Installing The Steering Wheel Bolt

4. Install the driver's airbag, and confirm that the system is operating properly (see **AIR BAG RESTRAINT SYSTEMS**).
5. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Reset the clock.
6. Check the cruise control, audio remote, navigation guide and turn signal cancelling for proper operation.

STEERING COLUMN REMOVAL & INSTALLATION

SRS components are located in this area. Review the SRS component locations and precautions and procedures in the SRS section before performing repairs or service. See **AIR BAG RESTRAINT SYSTEMS** .

REMOVAL

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's radio station presets.

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2. Disconnect the negative cable from the battery.
3. Remove the driver's airbag assembly and the steering wheel (see **STEERING WHEEL REMOVAL**).
4. Remove the column covers.
5. Remove the steering joint cover A.

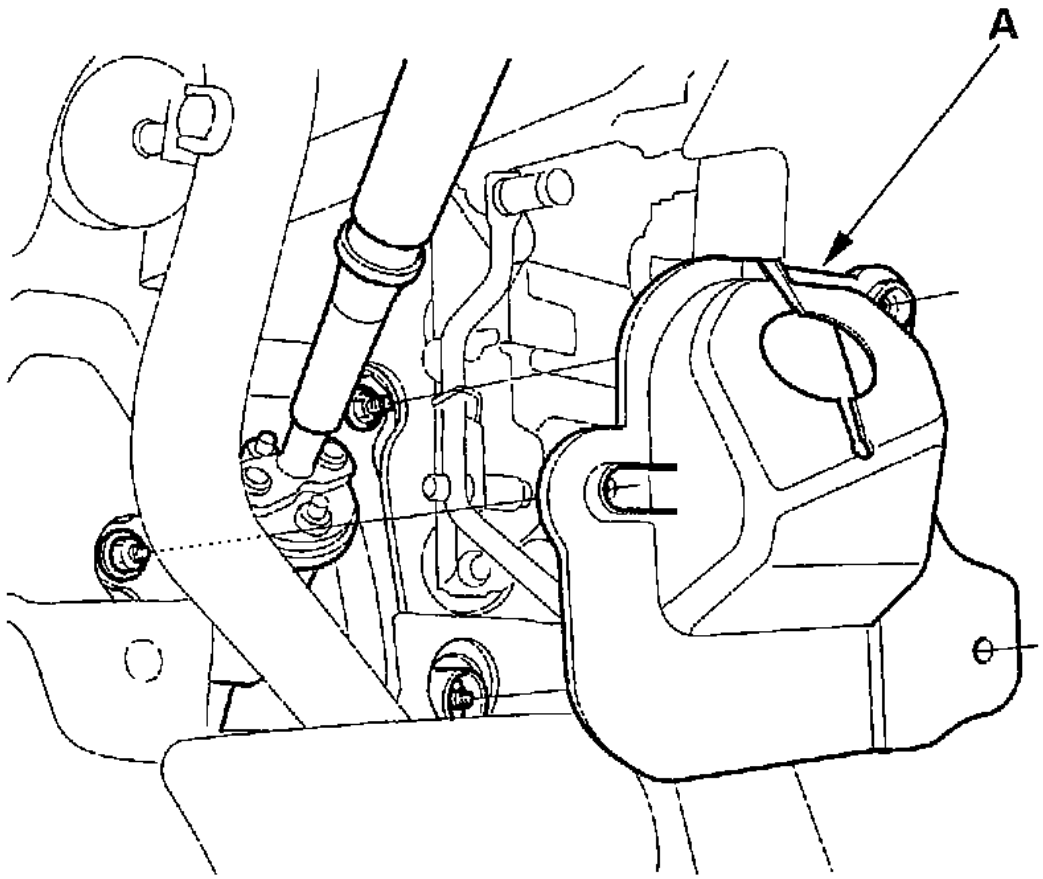


Fig. 46: Removing The Steering Joint Cover A

6. Release the tilt/telescopic lever, and adjust the steering column to full tilt up position, and to the full telescopic in position.
7. Tighten the tilt/telescopic lever.
8. Hold the slider shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the slider shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

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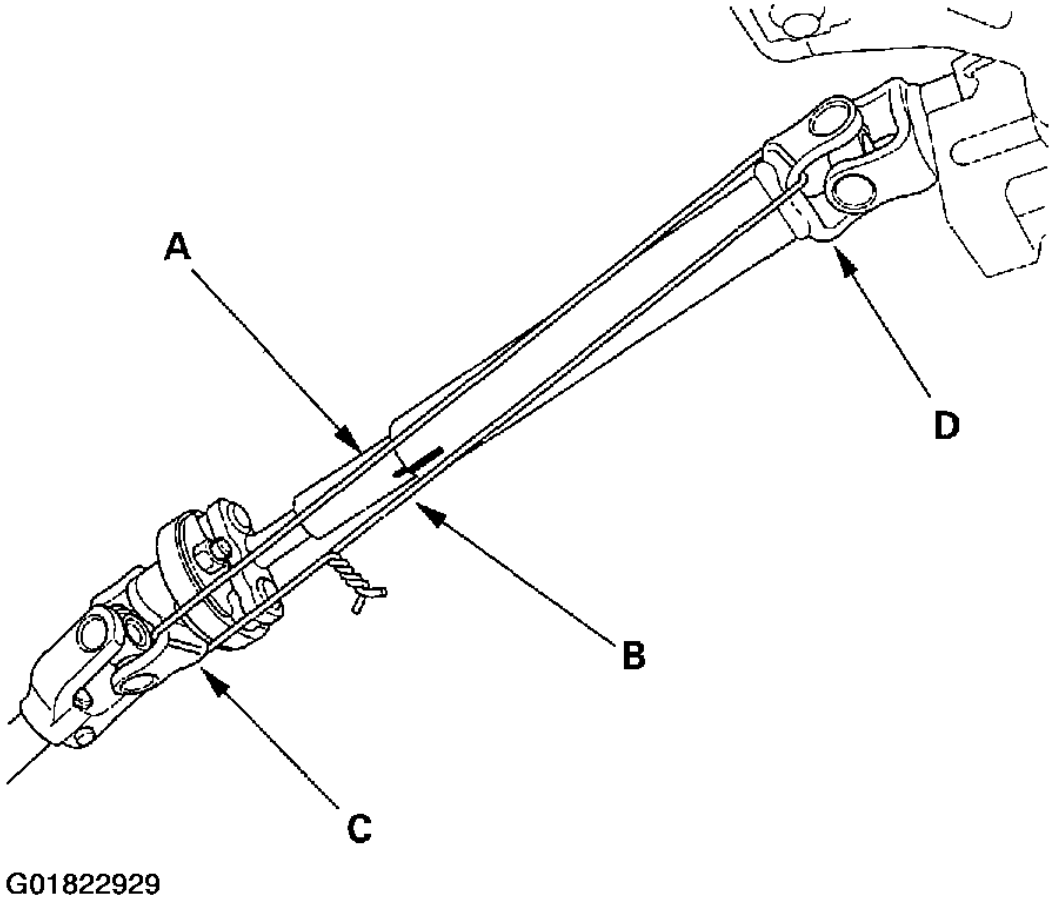


Fig. 47: Holding The Slider Shaft On The Column

9. Release the tilt/telescopic lever, and adjust the steering column to the full telescopic out position, then tighten the tilt/telescopic lever.
10. Disconnect the wire harness connectors from the combination switch assembly (A).

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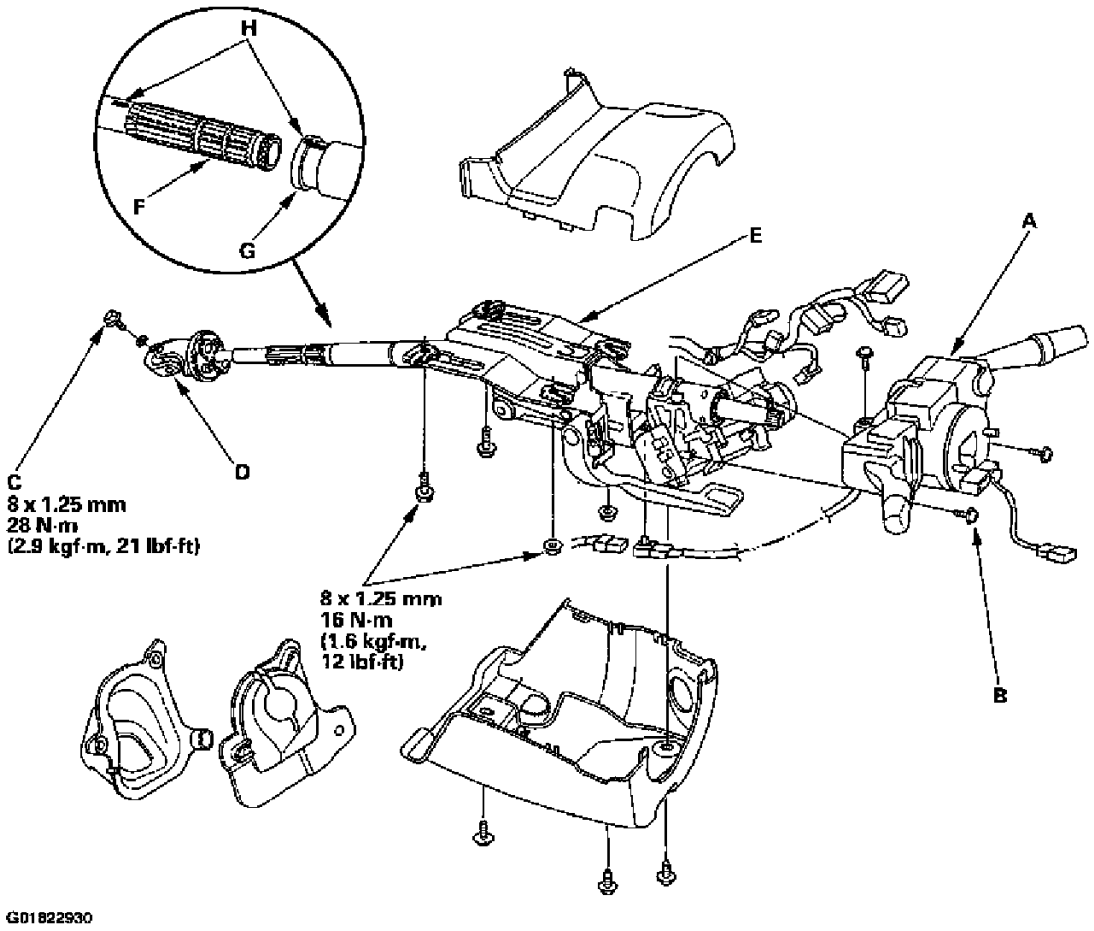


Fig. 48: Removing The Combination Switch Assembly & Steering Column

11. Remove the combination switch assembly from the steering column shaft by removing the screws (B).
12. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.
13. Remove the steering joint bolt (C), then disconnect the steering joint (D) from the pinion shaft.
14. Remove the steering column (E) by removing the attaching nuts and bolts. If the lower slide shaft (F) is removed, slip it into the upper shaft (G) by aligning the paint marks (H).

INSTALLATION

1. Install the steering column in the reverse order of removal, and note these items:
   - Make sure the wires are not caught or pinched by any parts.
   - Take care not to let the sliding capsules fall out of position during column installation.
2. Steering joint connection; center the steering rack within its stroke.
3. Install the steering joint (A) aligning the slit (B) of the steering joint with the tab (C) of the center guide. Position the angle of center guide as shown if necessary.

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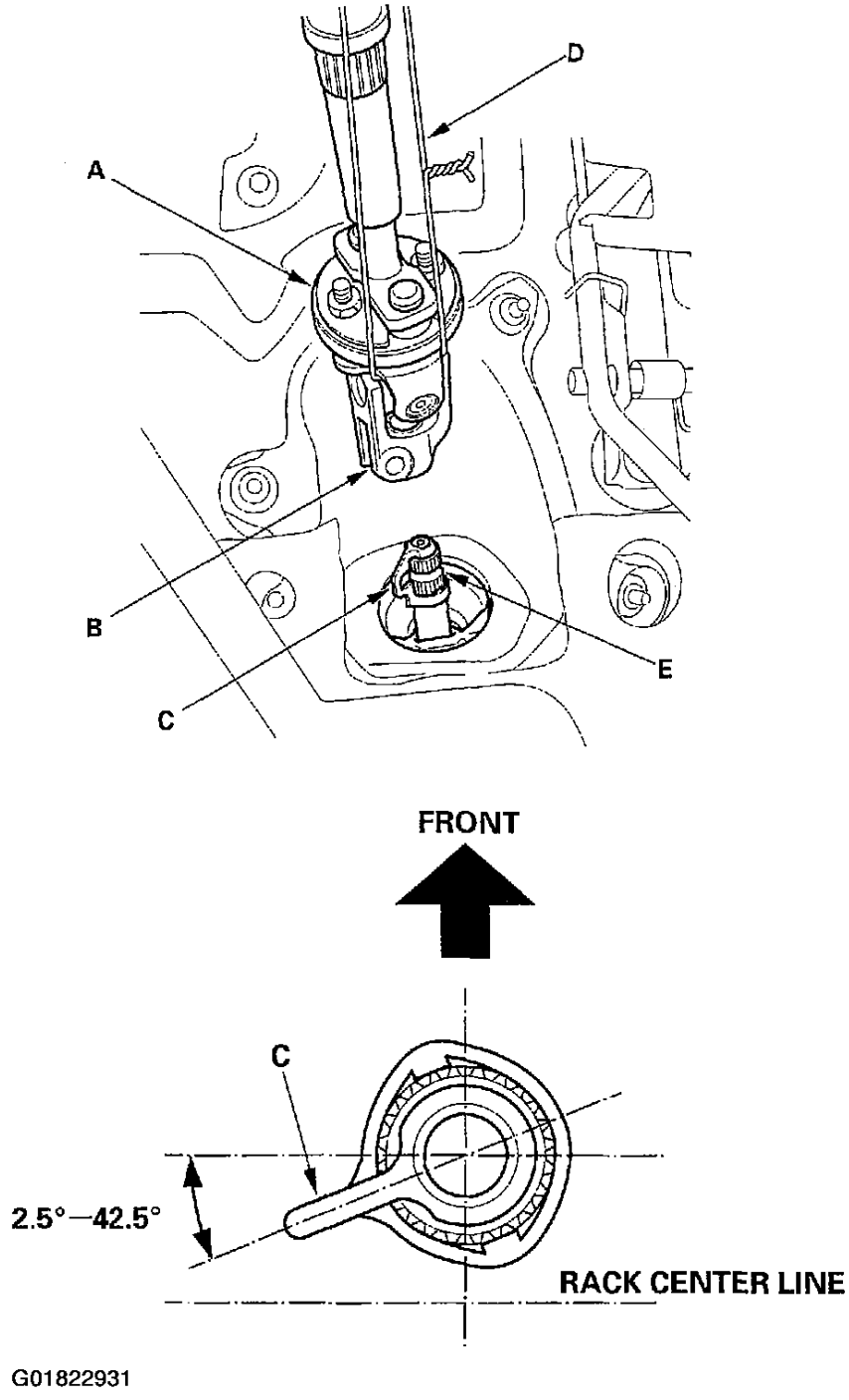
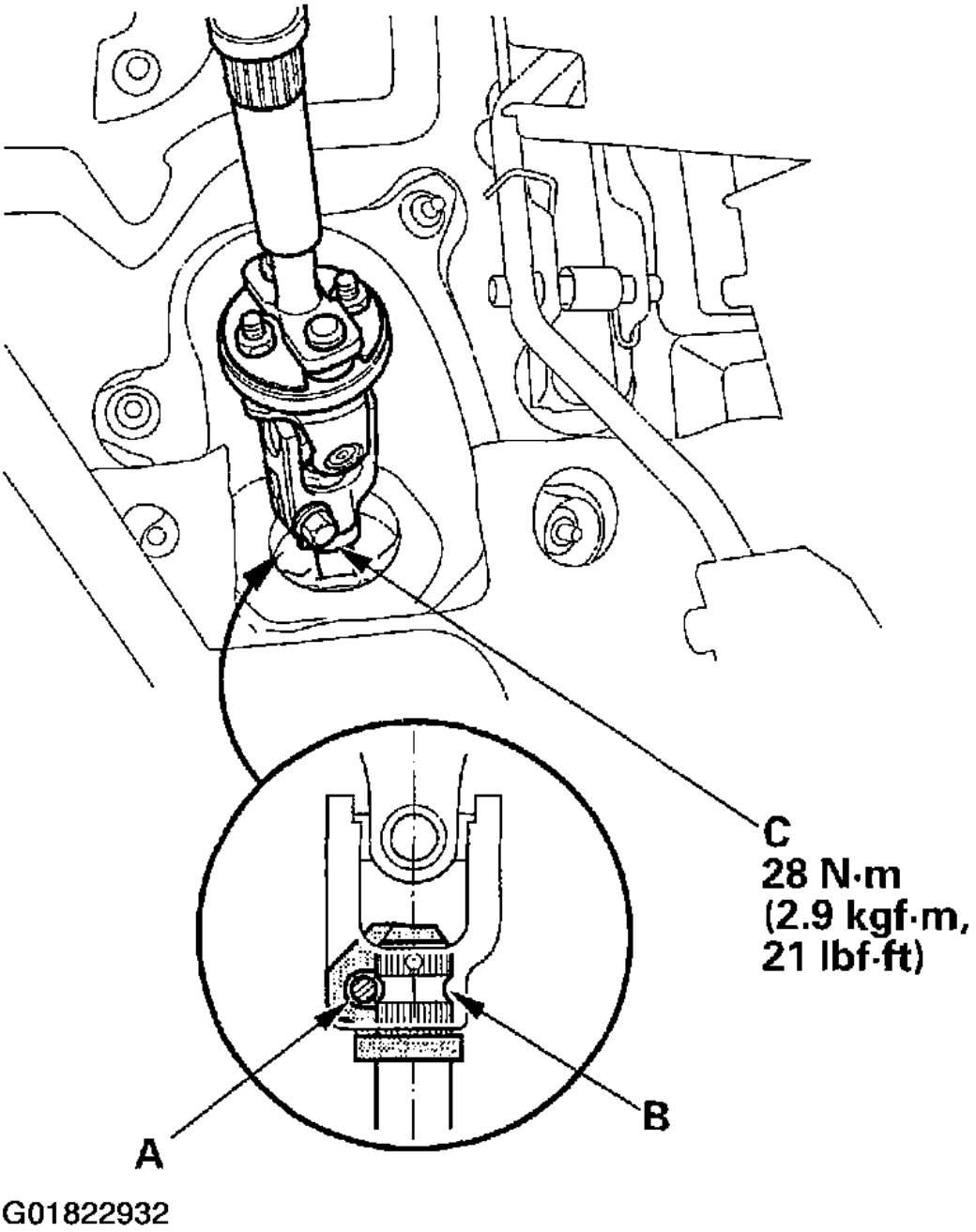


Fig. 49: Installing The Steering Joint Aligning The Slit Of The Steering Joint With The Tab Of The Center Guide

4. With the rack in the straight ahead driving position, cut the wire (D) and slip the lower end of the steering joint on to the pinion shaft (E).

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5. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to specified torque.



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Fig. 50: Slipping The Lower End Of The Steering Joint On To The Pinion Shaft

6. Finish the installation, and note these items:
   - Make sure the connectors are properly connected.
   - Reinstall the steering wheel (see **STEERING WHEEL INSTALLATION**).
   - Reconnect the battery.
   - Enter the anti-theft codes for the radio and the navigation system, then the customer's radio station presets.
   - Set the clock.
   - Verify cruise control, audio remote, navigation guide and turn signal switch operation.
   - Make sure the steering wheel is centered.

STEERING COLUMN/TILT/TELESCOPIC INSPECTION

1. Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
2. Check the lower side shaft (C) for smooth movement in and out. If the lower slide shaft is removed, slip it into the upper shaft by aligning the paint marks (D). If it sticks or binds, replace the steering column as an assembly.
3. Check the sliding capsules (E) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.
4. Check the tilt mechanism and telescopic mechanism for movement and damage.

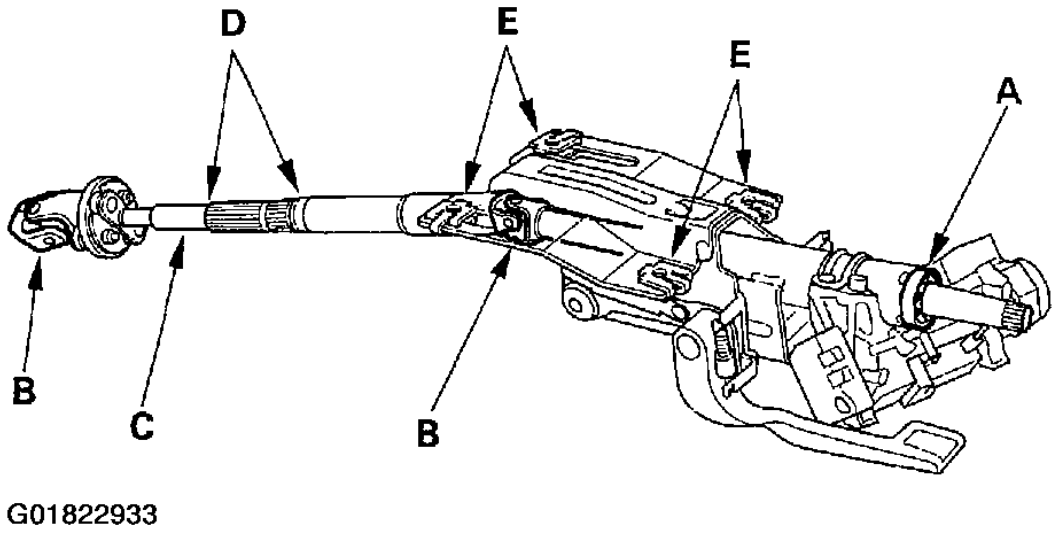


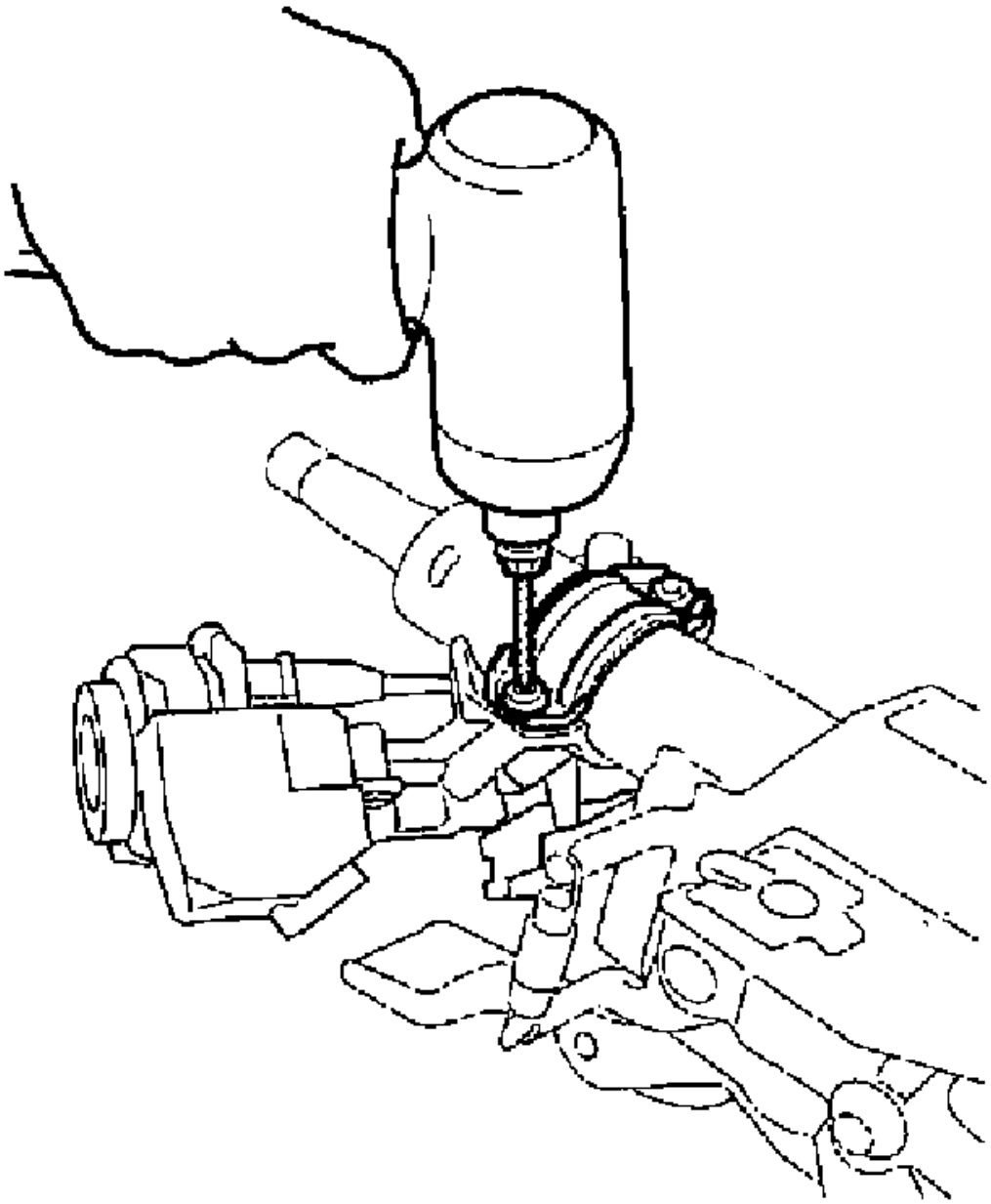
Fig. 51: Inspecting Steering Column/Tilt/Telescopic Components

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STEERING LOCK REPLACEMENT

1. Remove the steering column (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Center-punch each of the two shear bolts, and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.

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Fig. 52: Drilling Shear Bolt Heads

3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.

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5. Loosely tighten the NEW shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.

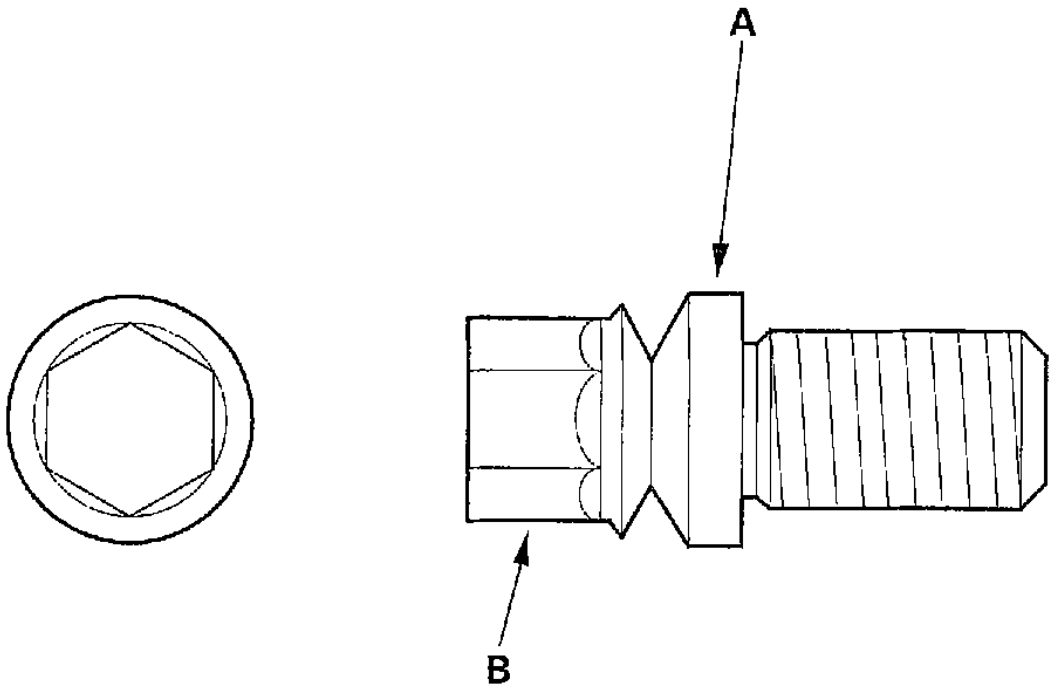


Fig. 53: Identifying The Shear Bolts With The Hex Heads

RACK GUIDE ADJUSTMENT

Special Tools Required: Locknut wrench, 40 mm, 07916-SA50001

1. Set the wheels in the straight ahead position.
2. Loosen the rack guide screw locknut (A) with the special tool, then remove the rack guide screw (B).

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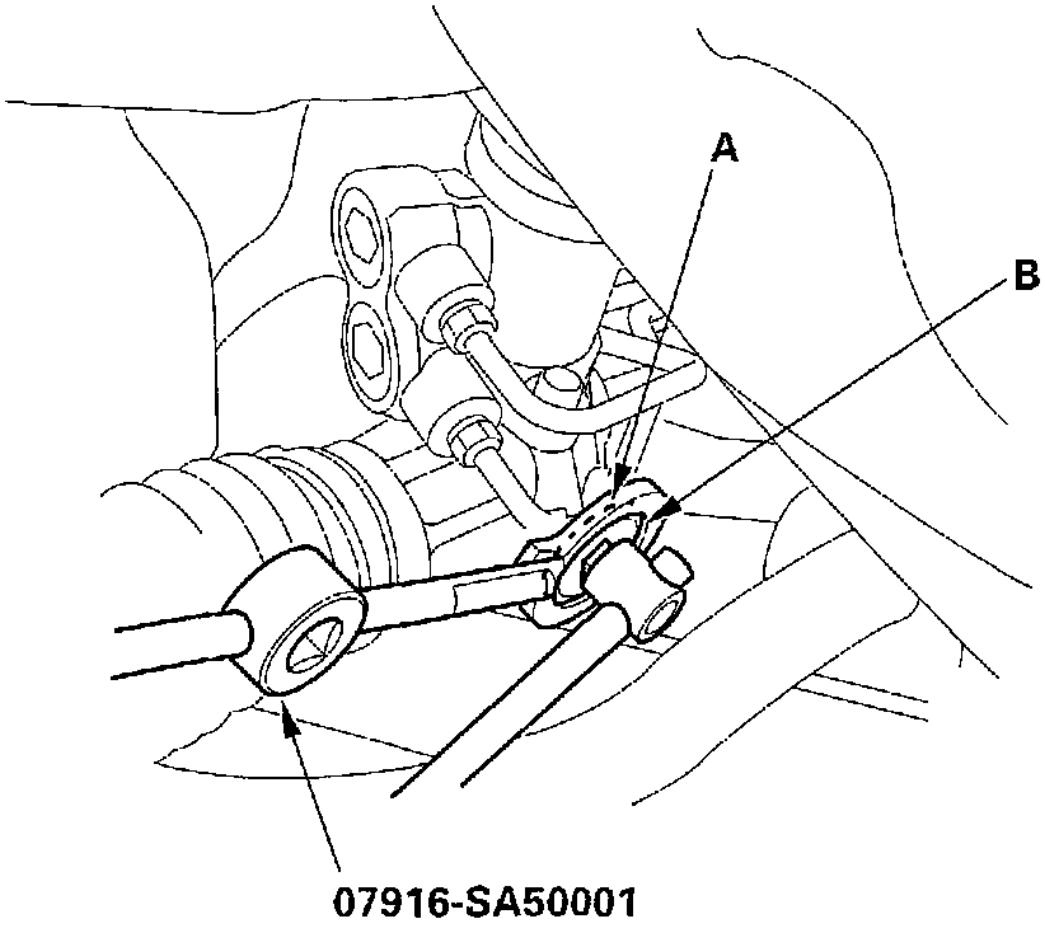


Fig. 54: Loosening The Rack Guide Screw Locknut

3. Remove the old sealant from the rack guide screw, and apply NEW sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads. Loosely install the rack guide screw on the steering gearbox.

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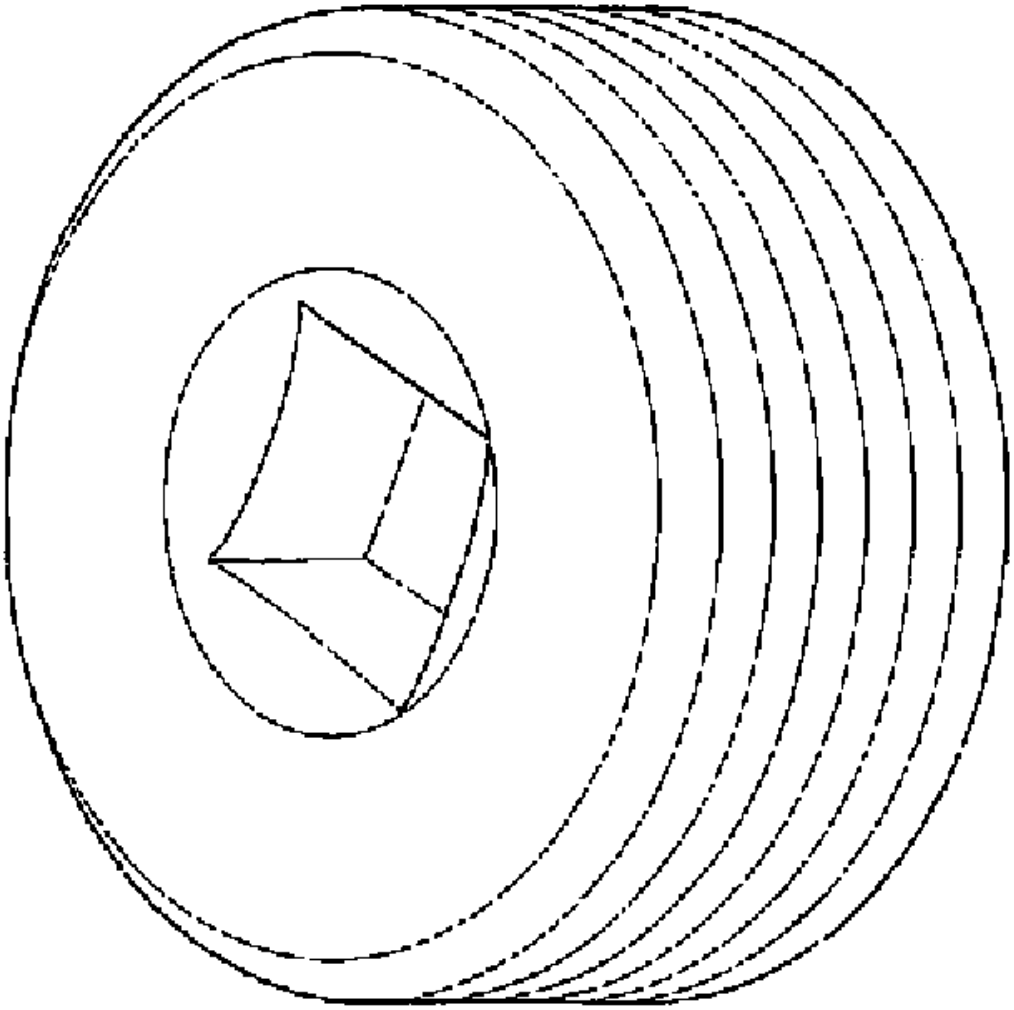


Fig. 55: Identifying Rack Guide Screw

4. Tighten the rack guide screw (A) to 25 N.m (2.5 kgf.m, 18 lbf.ft), then loosen it.

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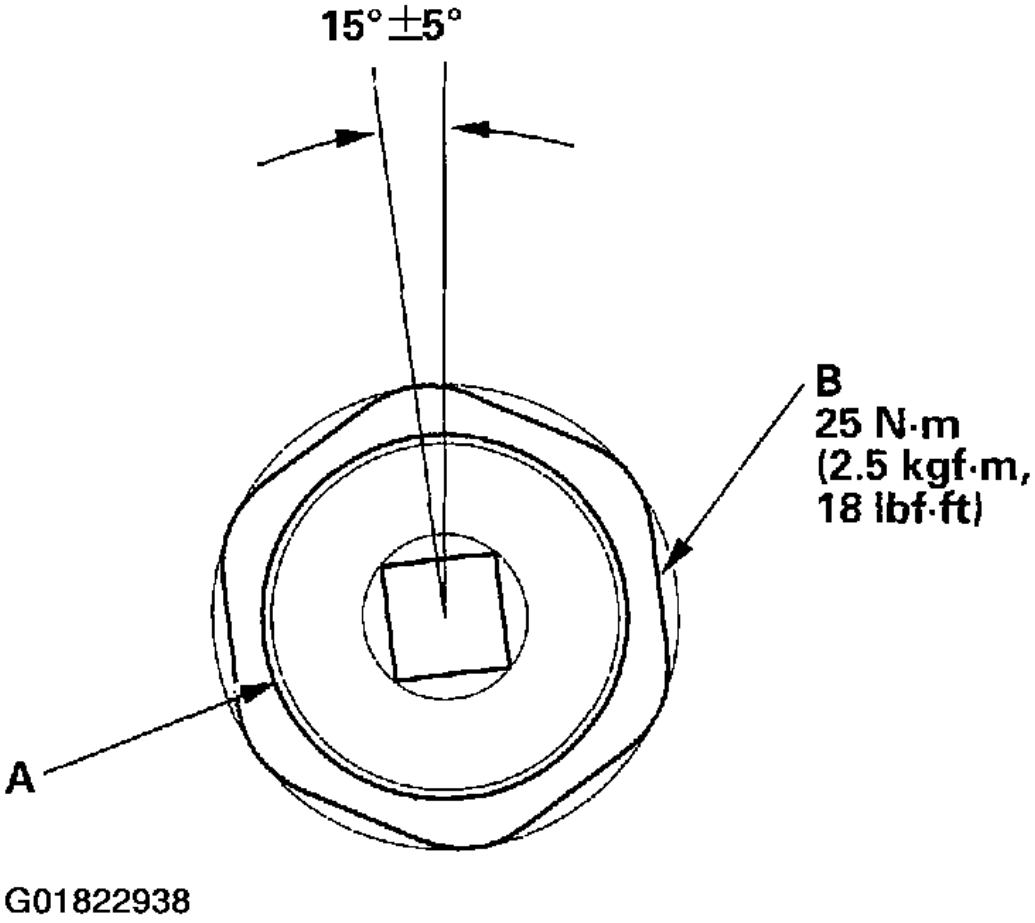


Fig. 56: Tightening The Rack Guide Screw

5. Retighten the rack guide screw to 3.9 N.m (0.4 kgf.m, 4 lbf.ft), then back it off to the specified angle.
   Specified Return Angle: 15° +/- 5°
6. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.
7. Install the special tool on the locknut (B), and hold the rack guide screw stationary with a wrench. Tighten the locknut an additional 30° with the special tool.
8. Check for unusual steering effort through the complete turning range.
9. Check the steering wheel rotation play and the power assist (see **POWER ASSIST CHECK**).

STEERING GEARBOX REMOVAL

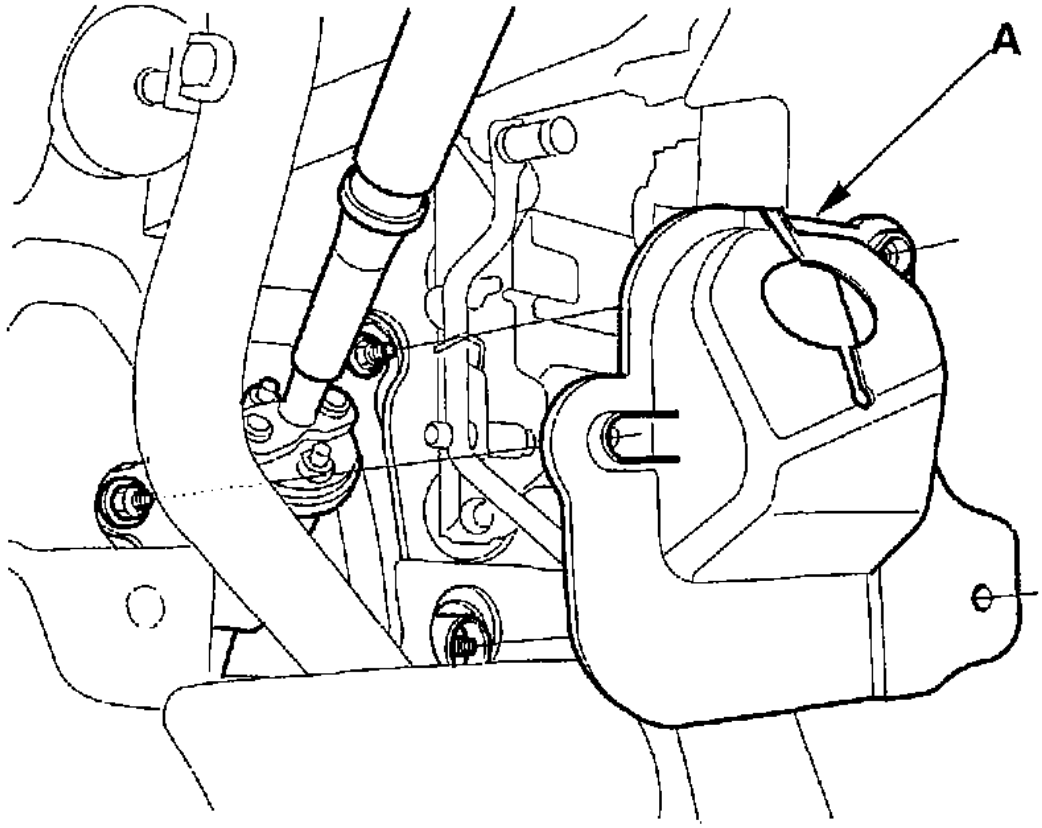
Special Tools Required: Ball joint remover, 28 mm 07MAC-SL00200

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Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit, its lines, and the end of the gearbox. Blow dry with compressed air.
- Make sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.

1. Drain the power steering fluid. (see **FLUID REPLACEMENT**).
2. Raise the front of vehicle, and support it with safety stands in the proper locations .
3. Remove the front wheels.
4. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
5. Remove the steering joint cover A.



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Fig. 57: Removing The Steering Joint Cover A

6. Remove the steering joint bolt (A), and disconnect the steering joint by moving the steering joint (B)

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toward the column. Hold the slider shaft (C) on the column with a piece of wire (D) between the joint yoke (E) on the slider shaft to the joint yoke on the upper shaft (see **STEERING COLUMN REMOVAL AND INSTALLATION**).

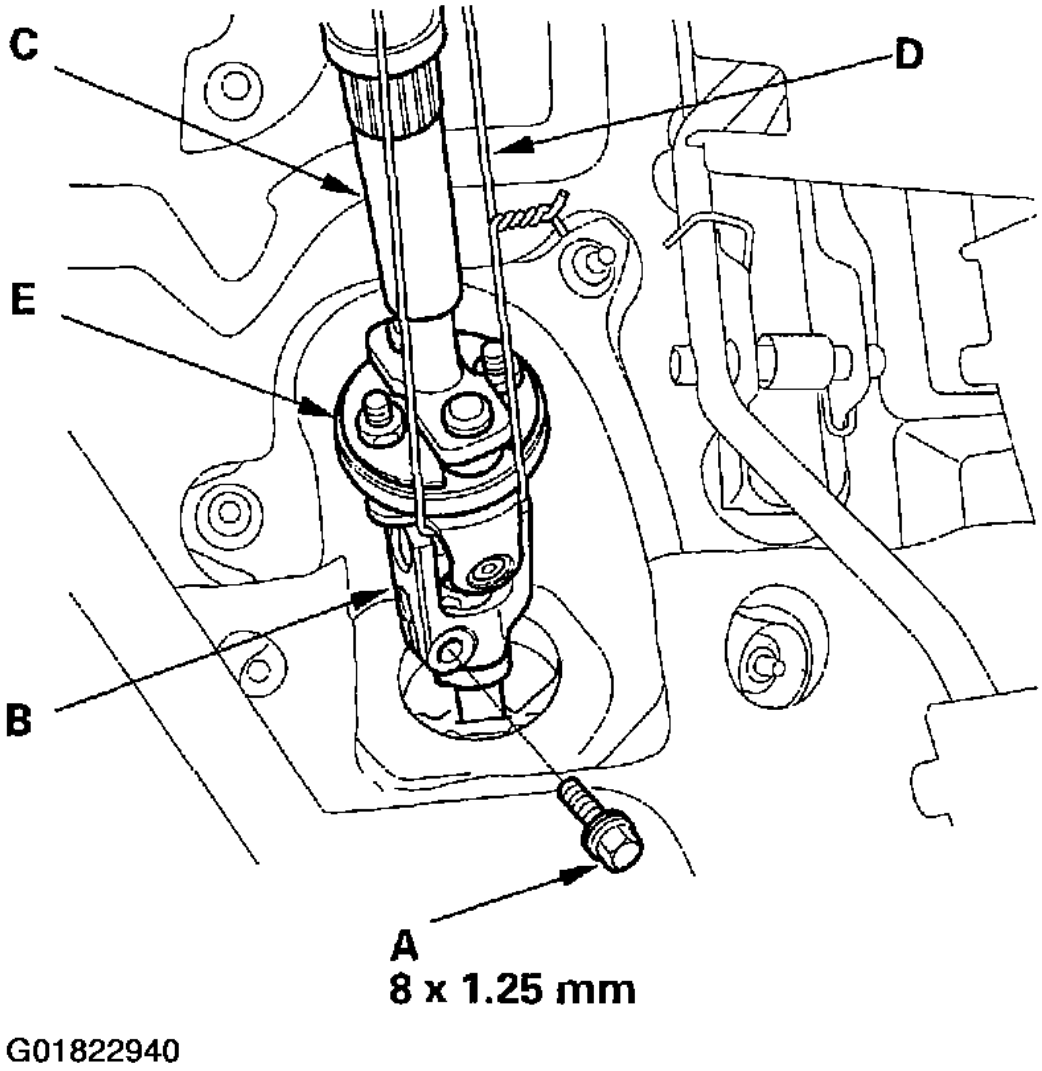


Fig. 58: Holding The Slider Shaft On The Column With A Piece Of Wire

7. Remove the center guide (A), and discard it.

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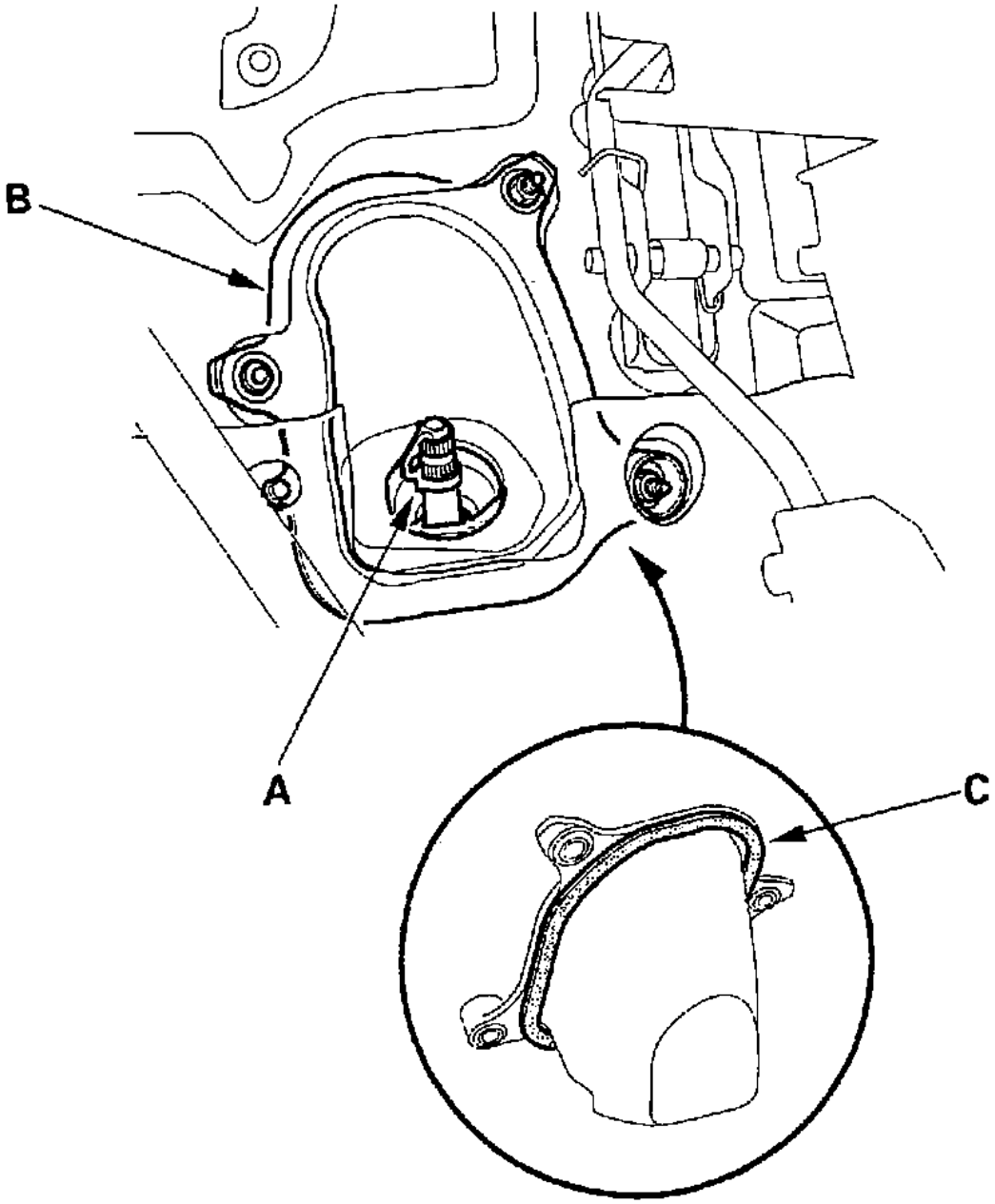


Fig. 59: Removing The Center Guide

8. Remove the steering joint cover B. Be careful not to damage the mating surface on the joint cover B and pinion shaft grommet. Replace the cover seal (C) if necessary.
9. Remove and discard the cotter pin (A) from the tie rod ball joint nut (B), then loosen the nut.

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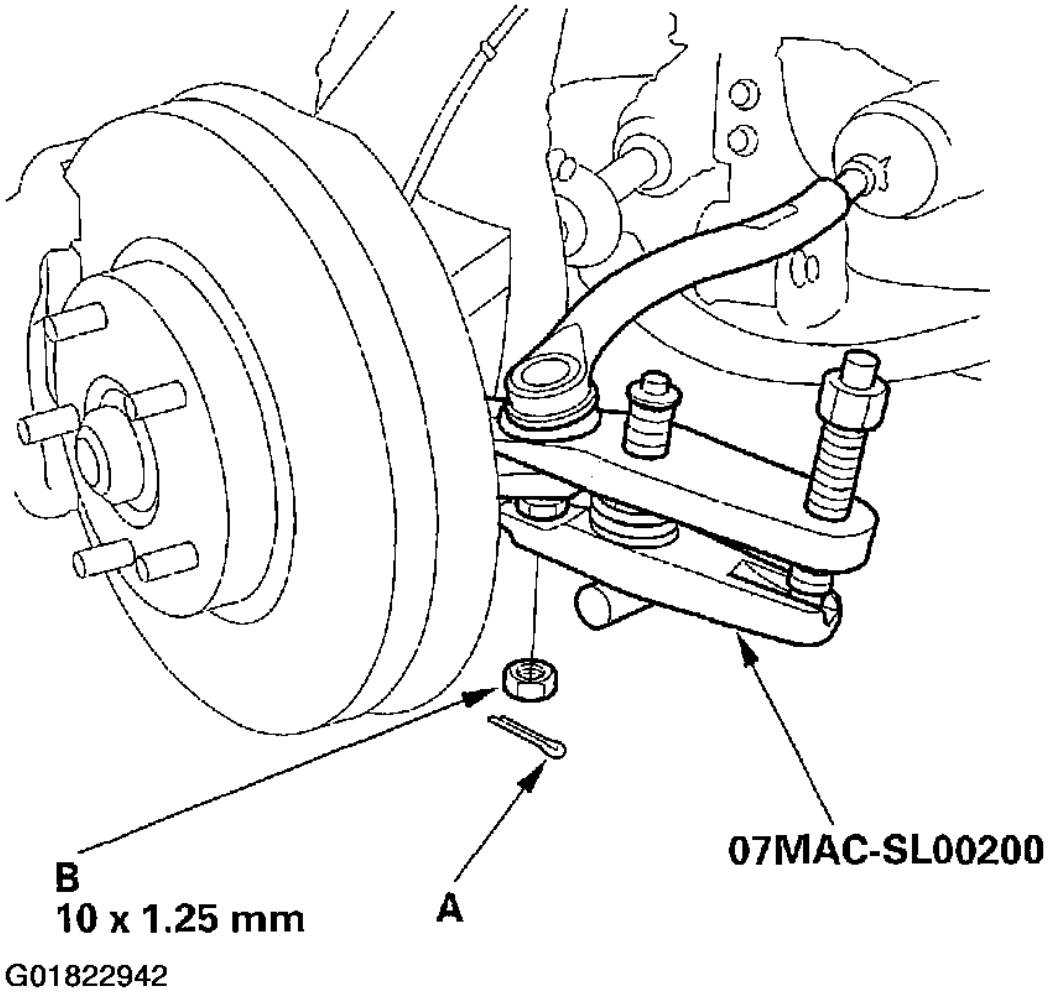
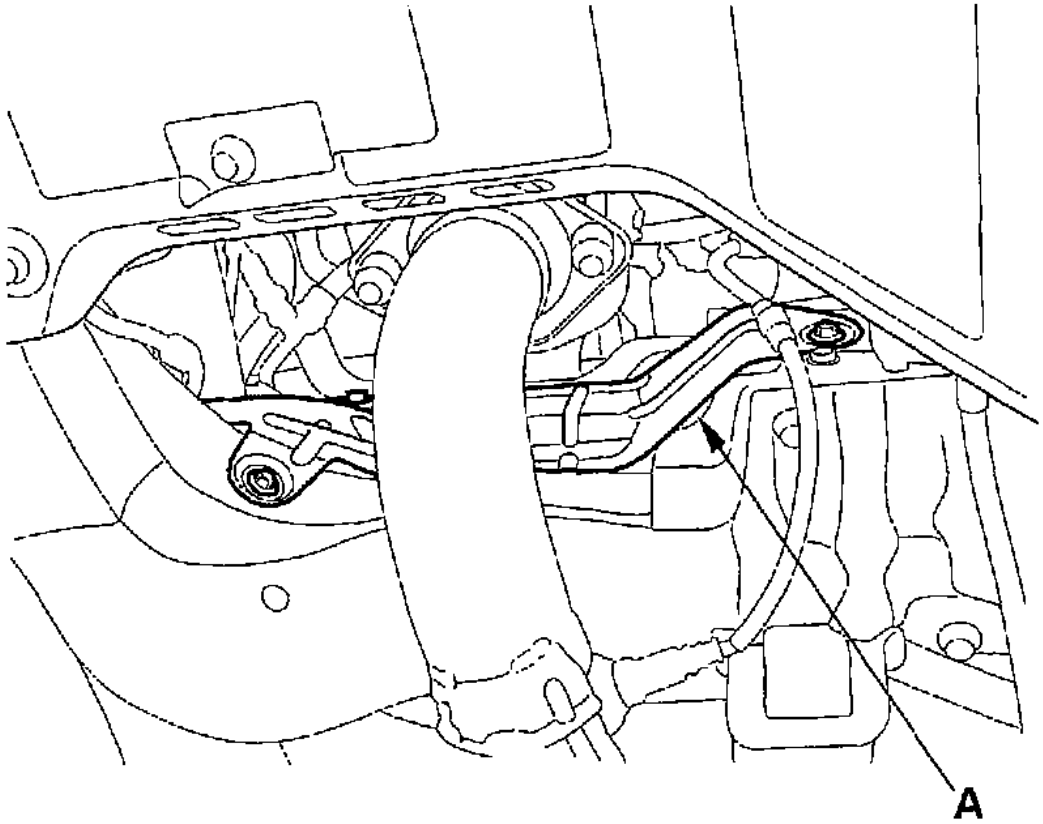


Fig. 60: Separating The Tie-Rod Ball Joint

10. Separate the tie-rod ball joint and knuckle using the special tool (see **BALL JOINT**).
11. Remove the P/S heat baffle plate (A).

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Fig. 61: Removing The P/S Heat Baffle Plate

12. Remove the feed line holder mounting bolt (A) on the front suspension subframe.

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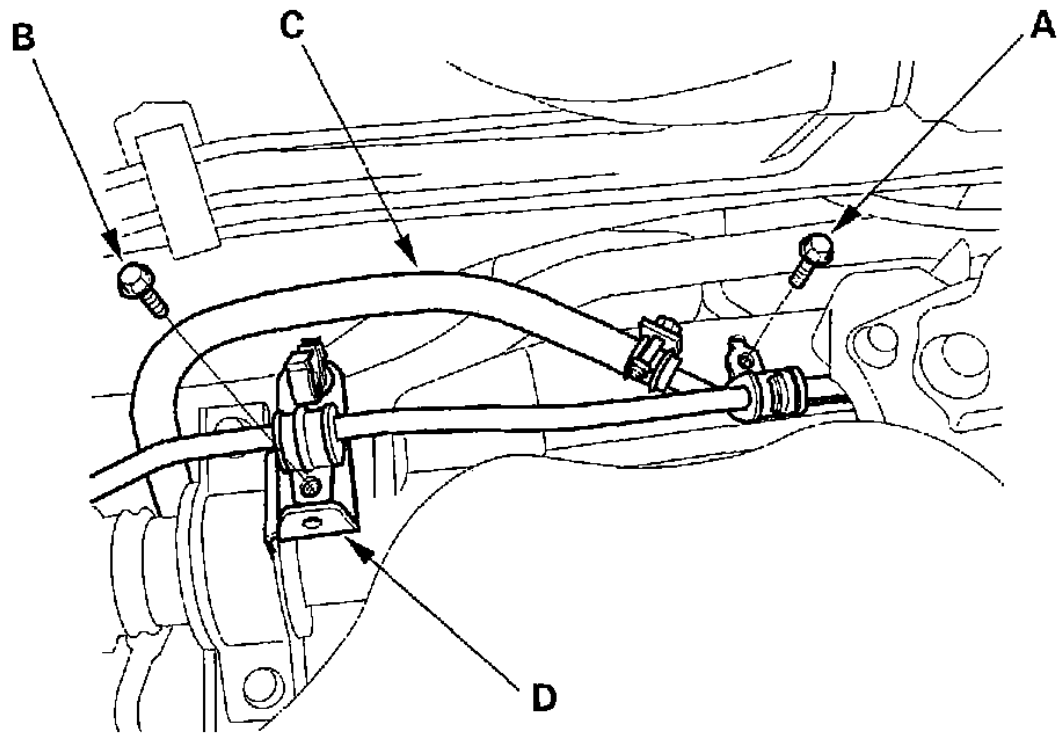


Fig. 62: Removing The Feed Line Holder Mounting Bolt

13. Remove the feed line holder mounting bolt (B) and return hose (C) from the gearbox mounting bracket (D).
14. Place several shop towels under the line connections, and cover the gearbox mounting part to protect it from the power steering fluid. Loosen the flare nut (A), and disconnect the feed line (B).

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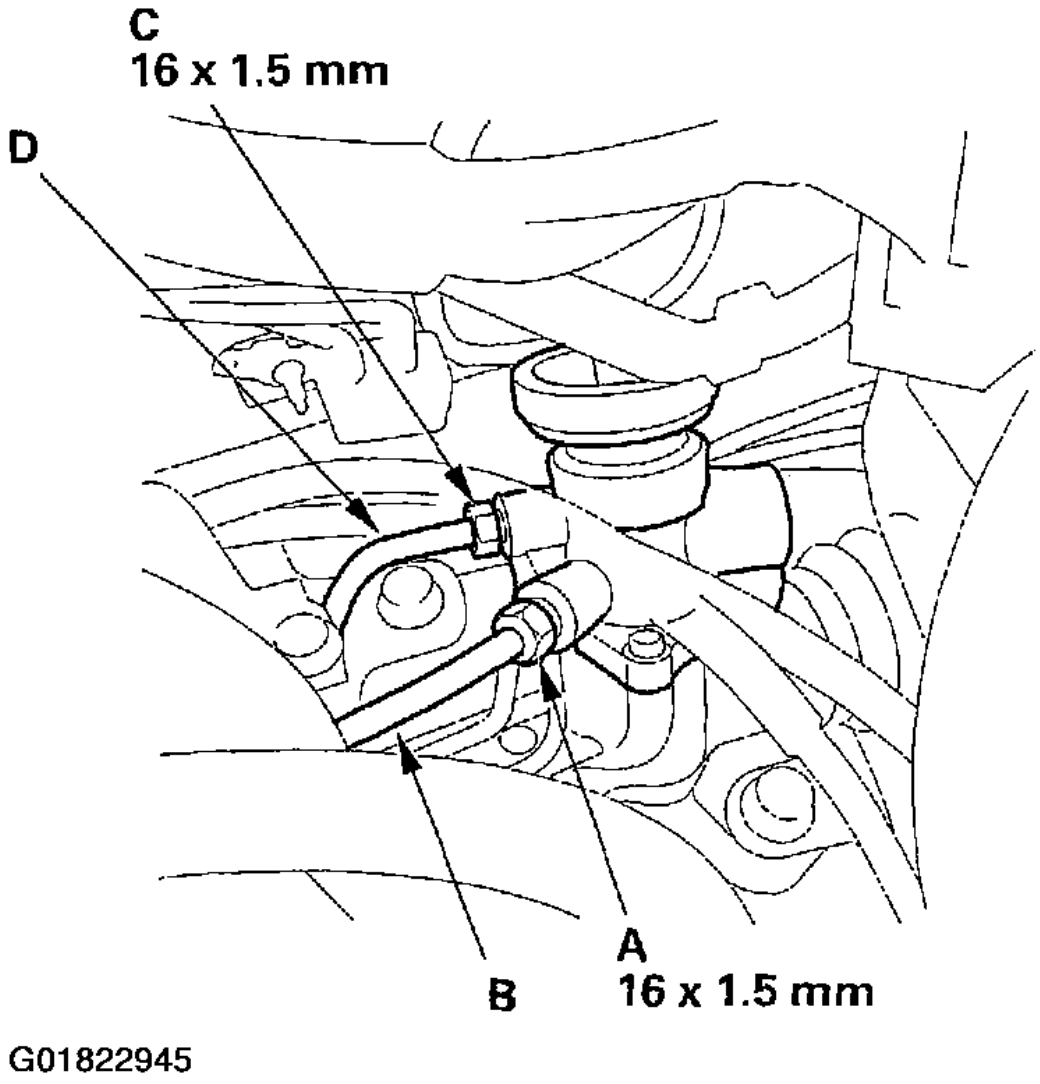


Fig. 63: Disconnecting The Feed & Return Lines

15. Loosen the flare nut (C), and disconnect the return line (D).
16. After disconnecting the lines, plug or seal them with a piece of tape or equivalent to prevent foreign materials from entering.

NOTE: Do not loosen the cylinder line A and B between the valve body unit and the cylinder.

17. Remove the front suspension subframe left mid and mount (A).

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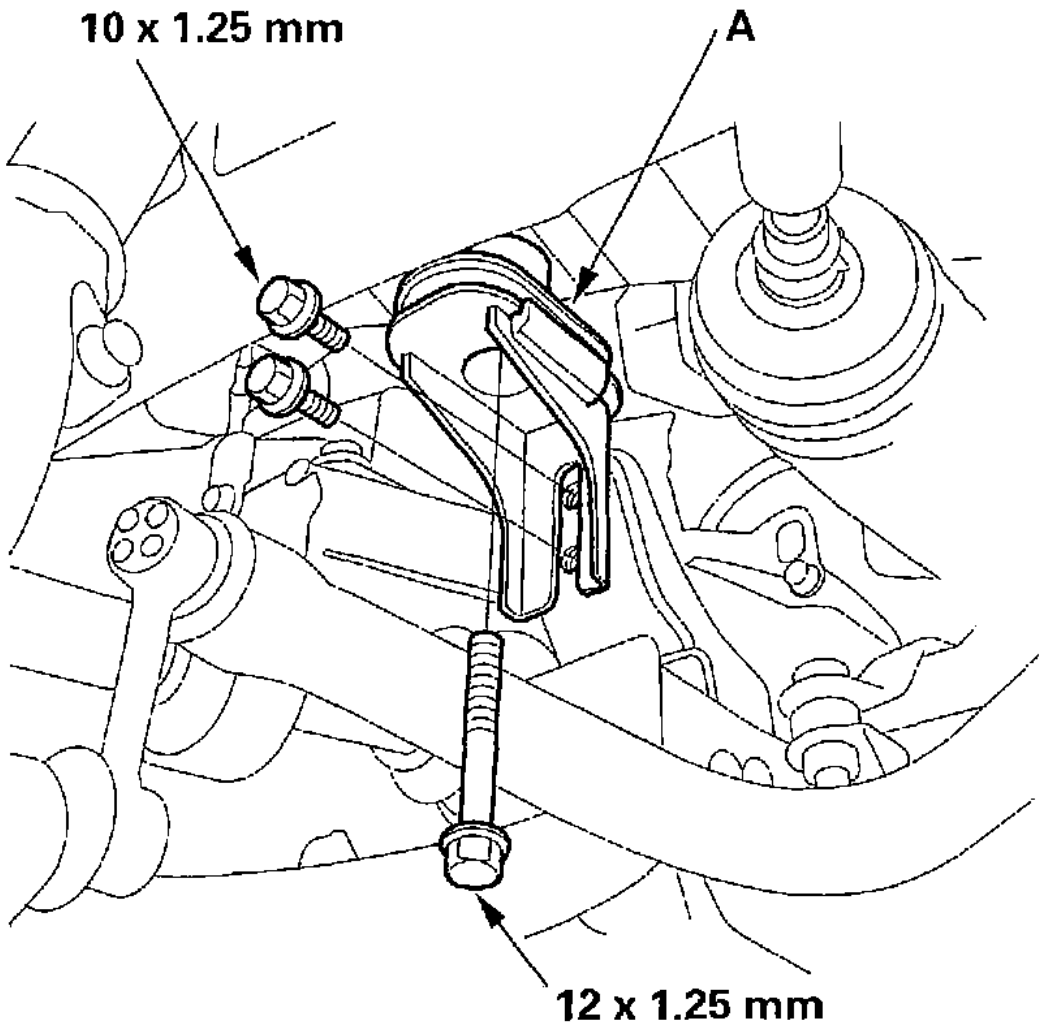


Fig. 64: Removing The Front Suspension Subframe Left Mid & Mount

18. Remove the steering gearbox mounting bolts on the left gearbox mount, and remove the steering stiffener plate (A).

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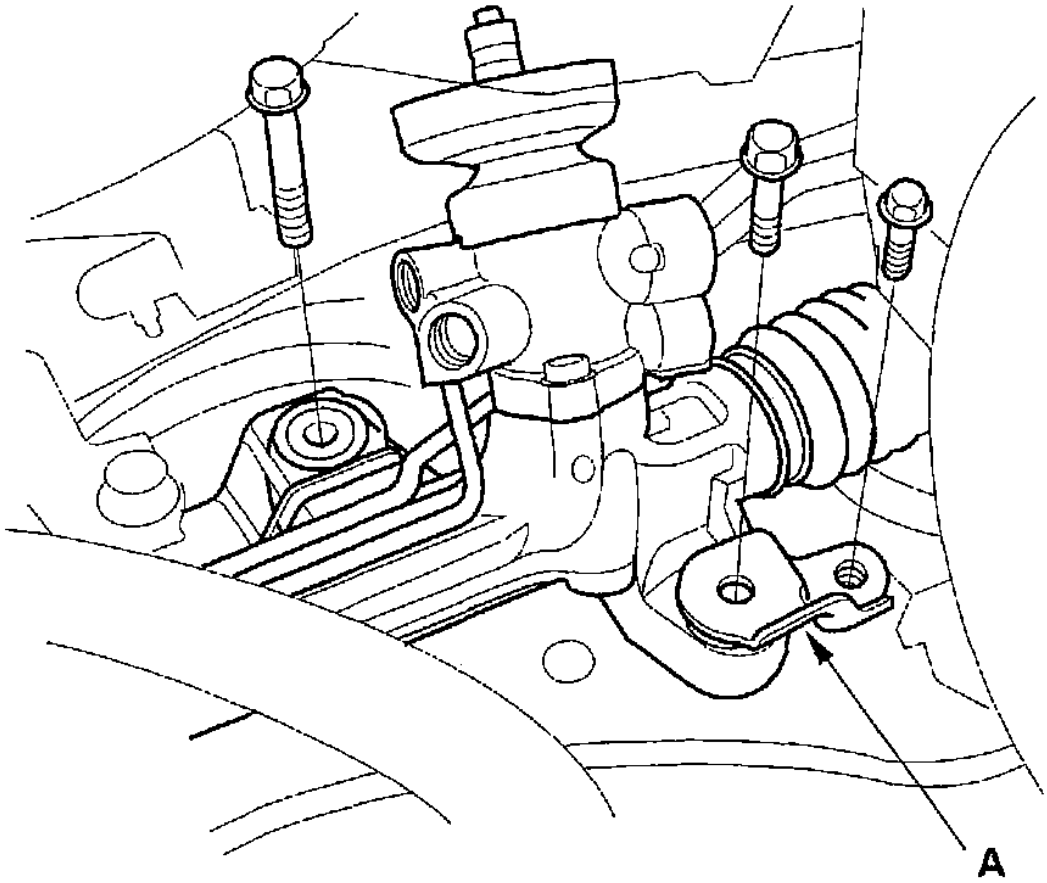


Fig. 65: Removing The Steering Gearbox Mounting Bolts

19. Remove the two flange bolts from the right side of the gearbox, then remove the gearbox mounting bracket (A) and cushion (B).

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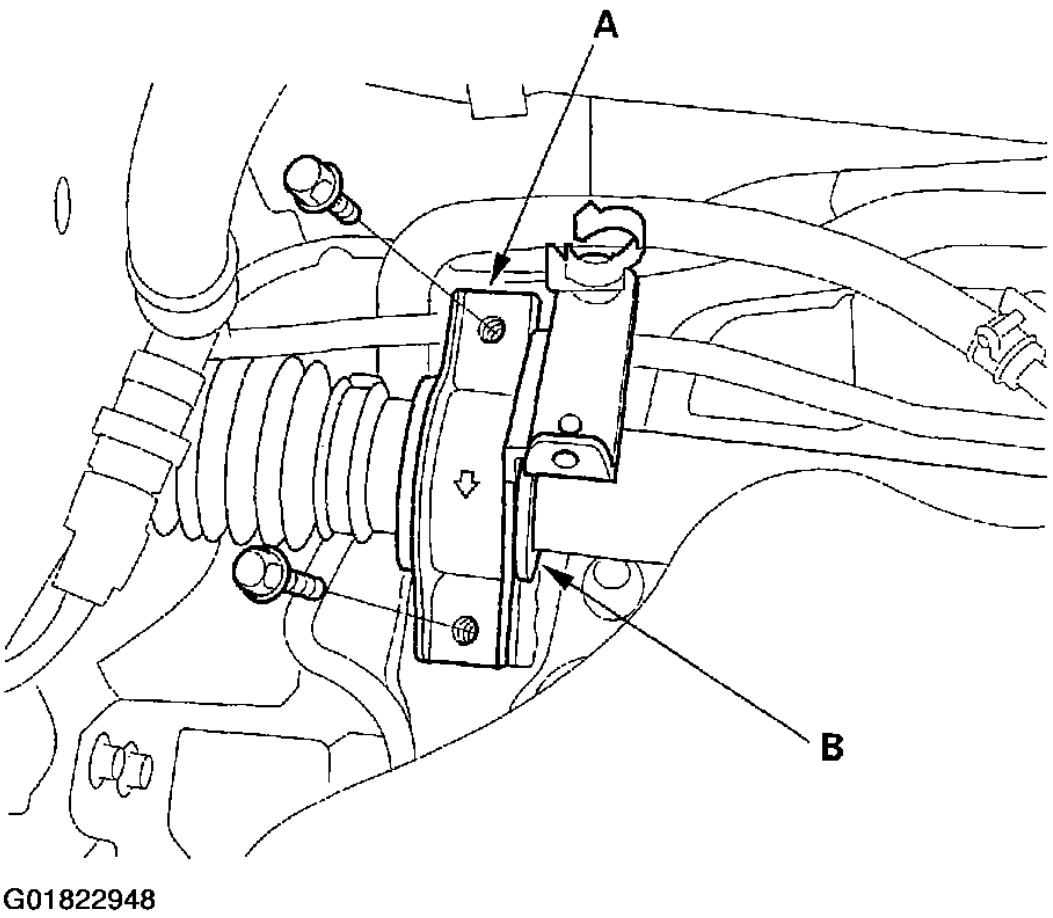
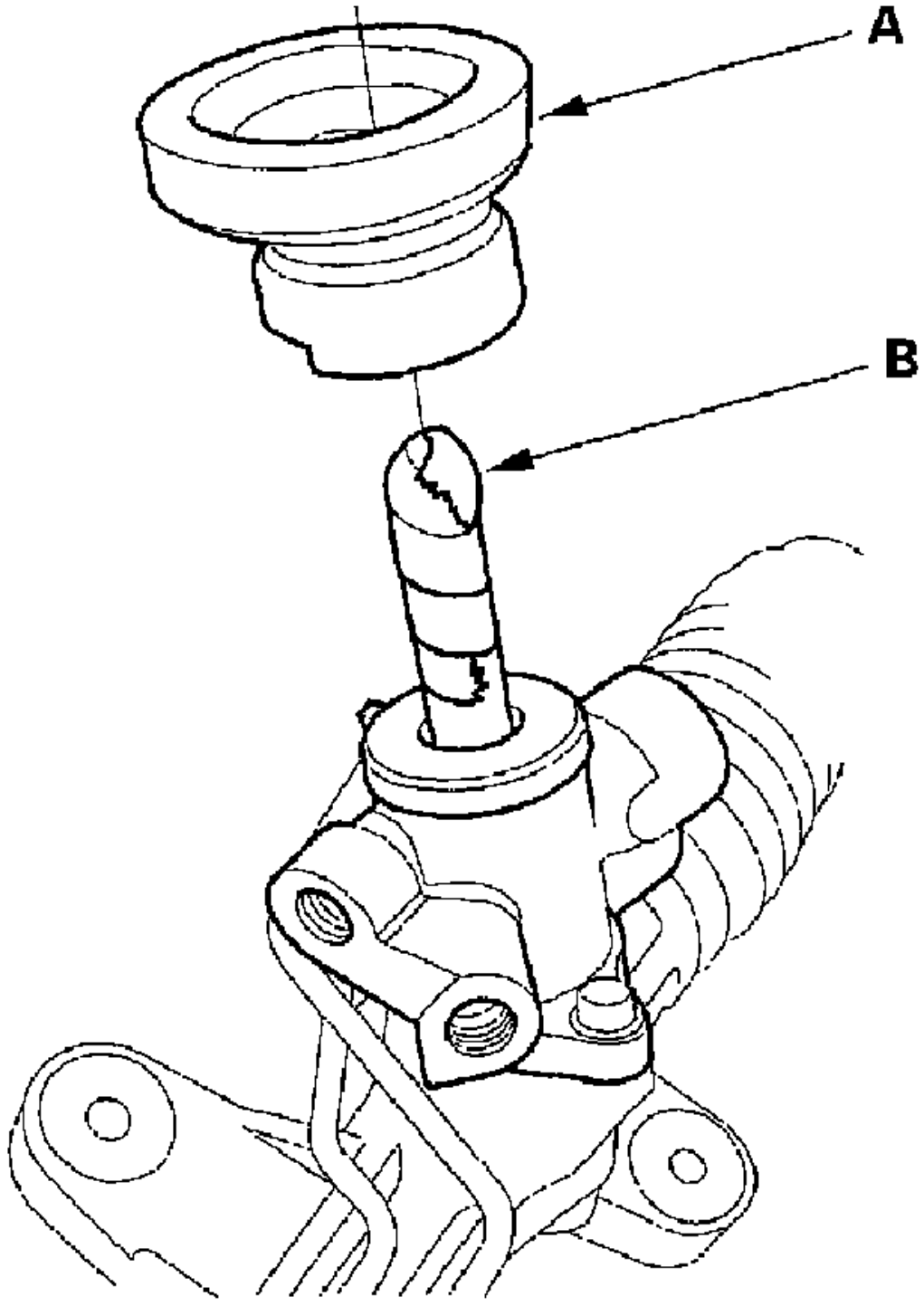


Fig. 66: Removing The Two Flange Bolts

20. Move the steering gearbox toward the front, and remove the pinion shaft grommet (A) from the top of the valve body unit.

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Fig. 67: Removing The Pinion Shaft Grommet

21. Apply vinyl tape (B) to the splines on the pinion shaft.
22. Apply vinyl tape or equivalent material (A) to the brake lines to protect them from the pinion shaft.

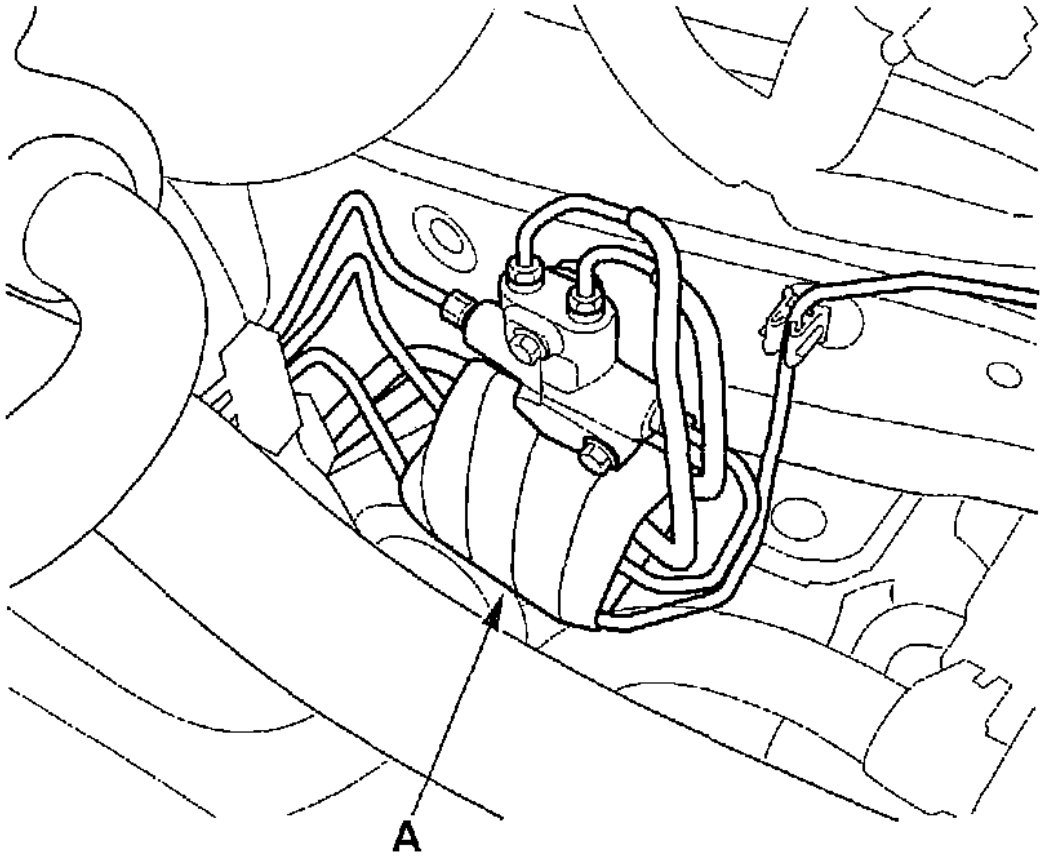


Fig. 68: Applying Vinyl Tape To The Brake Lines

23. Move the steering gearbox to the driver's side, and rotate it so the pinion shaft points toward the front of the vehicle.
24. Carefully move the steering gearbox as an assembly toward the driver's side of the vehicle until the pinion shaft clears the wheelwell opening. Be careful not to damage the brake lines with the pinion shaft.

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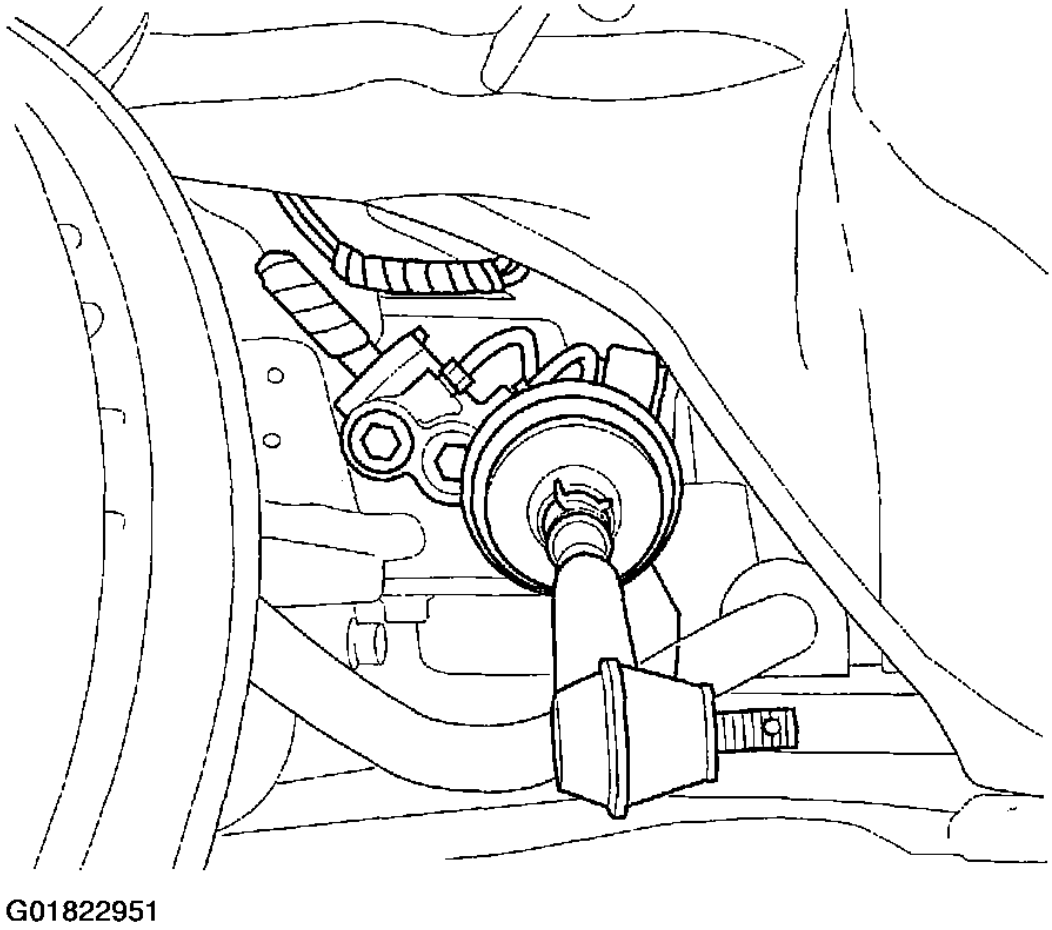


Fig. 69: Rotating Steering Gearbox So The Pinion Shaft Points Toward The Front Of The Vehicle

25. Remove the steering gearbox through the wheelwell opening on the driver's side.

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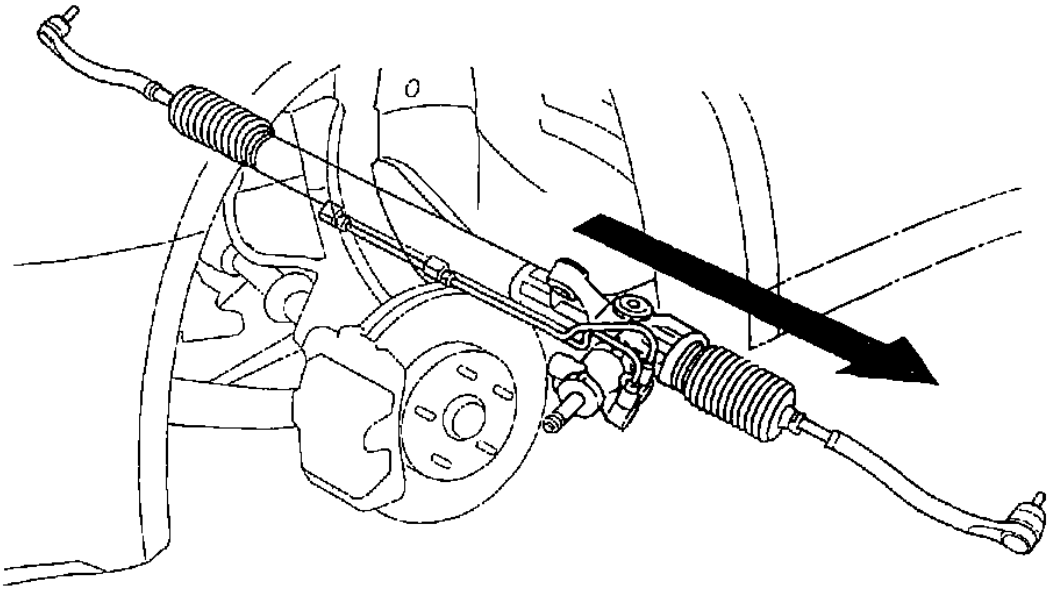


Fig. 70: Removing The Steering Gearbox

26. After removing the steering gearbox, make sure that no power steering fluid gets on the gearbox mount cushions, gearbox housing, surface of the subframe and stiffener. Wipe off any spilled fluid at once.

STEERING GEARBOX OVERHAUL

EXPLODED VIEW

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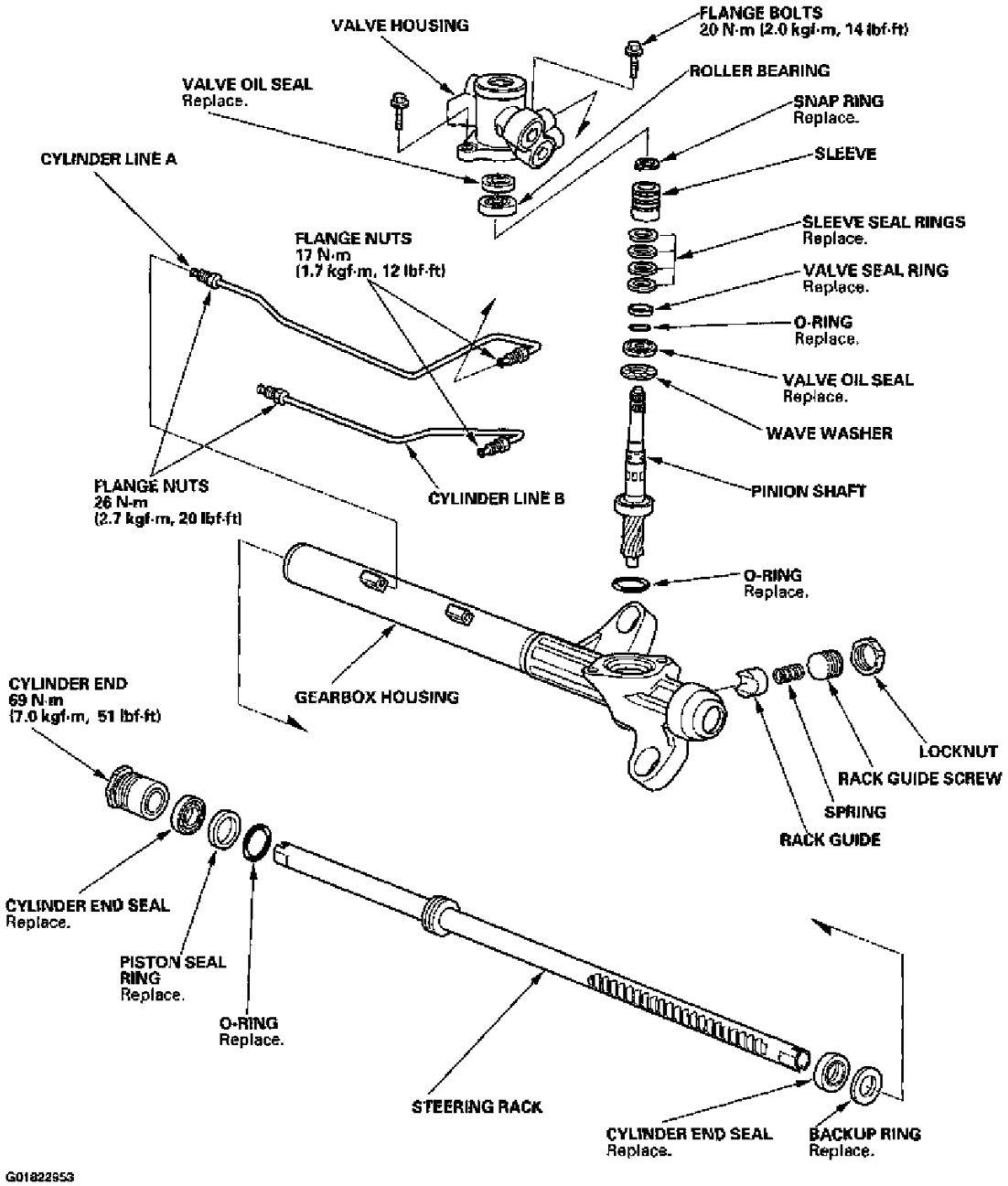


Fig. 71: Exploded View Of Steering Gearbox Components

Special Tools Required:

- Cylinder end seal remover attachment 07NAD-SR3020A
- Pilot collar 07GAF-PH70100
- Valve seal ring sizing tool 07NAG-SR3090A
- Ball joint boot clip guide 07974-SA50800

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- Sleeve seal ring sizing tool 07974-SA5020A or 07974-SA50200
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Piston seal ring guide 07HAG-SF10100
- Piston seal ring sizing tool 07HAG-SF1020A or 07HAG-SF10200
- Cylinder end seal slider 07ZAG-S5A0300
- Pincers Oetiker 1098 or equivalent, commercially available.

NOTE: Refer to the Exploded View as needed during this procedure.

Removal

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL**).

Disassembly

2. Remove the boot bands (A) and tie-rod clips (B). Pull the boot away from the ends of the steering gearbox.

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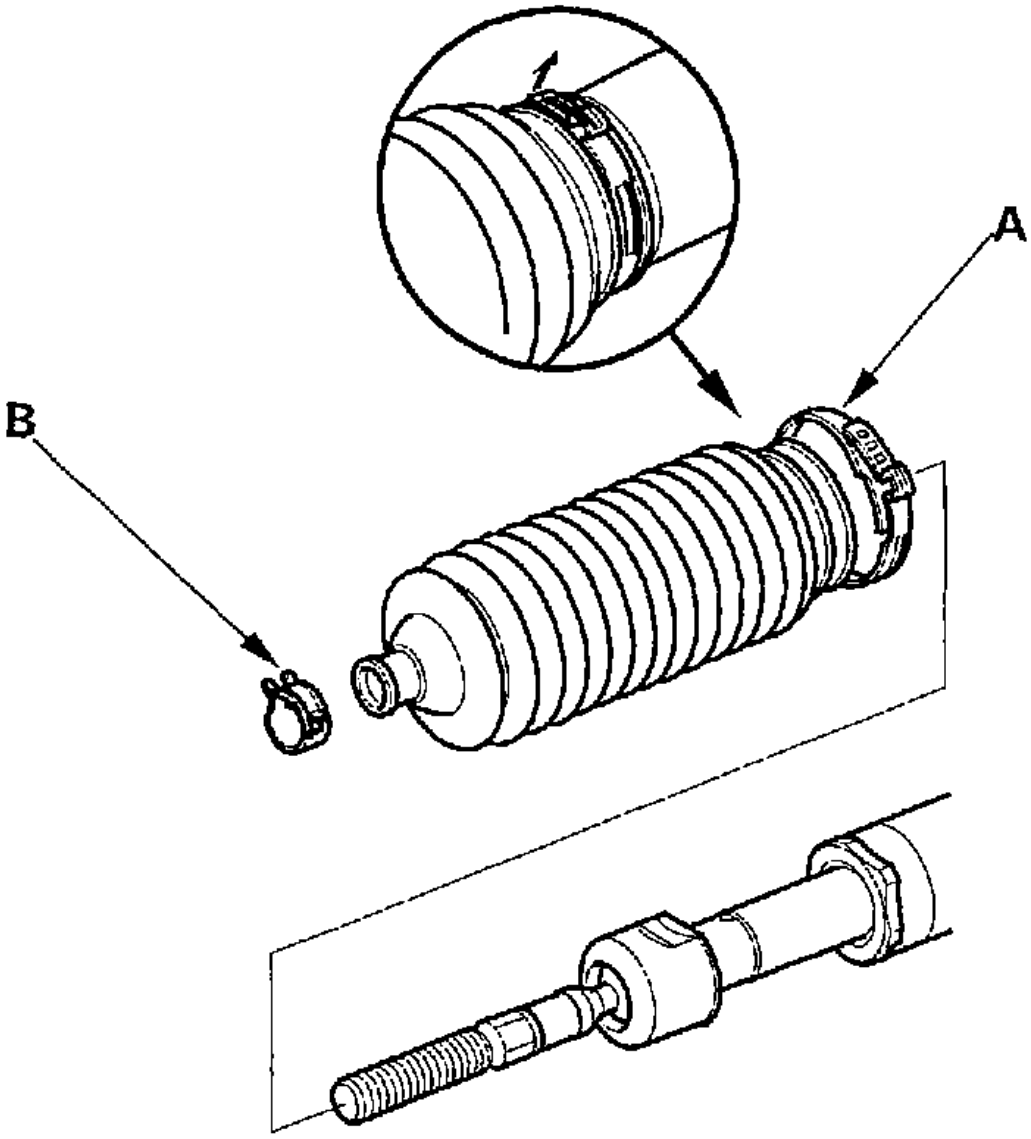


Fig. 72: Removing The Boot Bands & Tie-Rod Clips

3. Unbend the lock washers (A).

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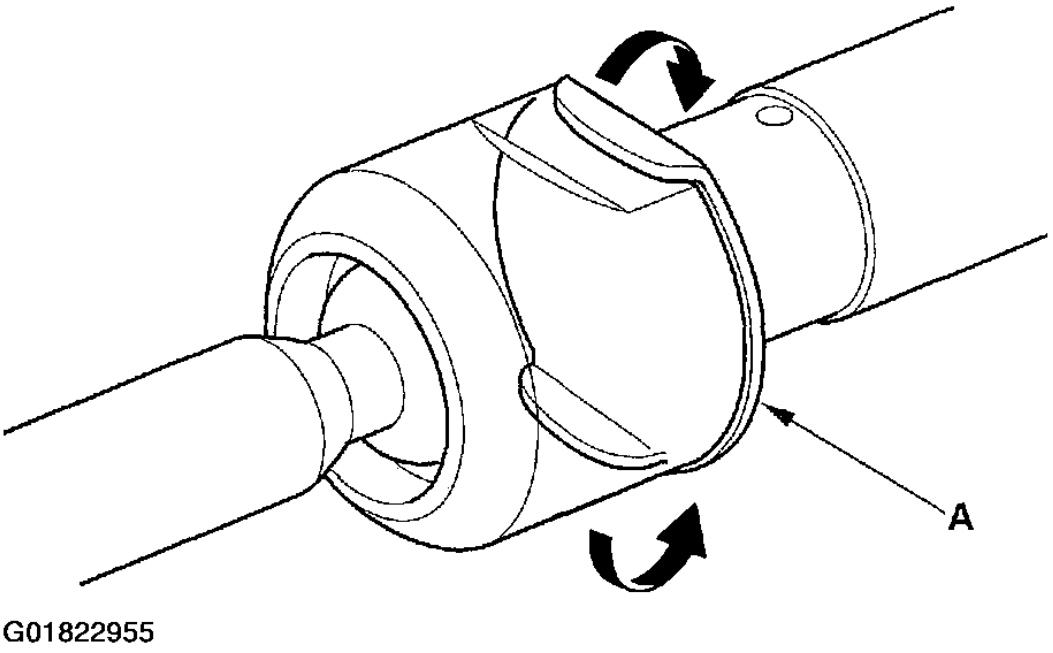


Fig. 73: Unbending The Lock Washers

4. Hold the flat surface sections (A) of the steering rack with a wrench (B), and unscrew both rack ends (C) with a wrench (D). Be careful not to damage the rack surface with the wrench.

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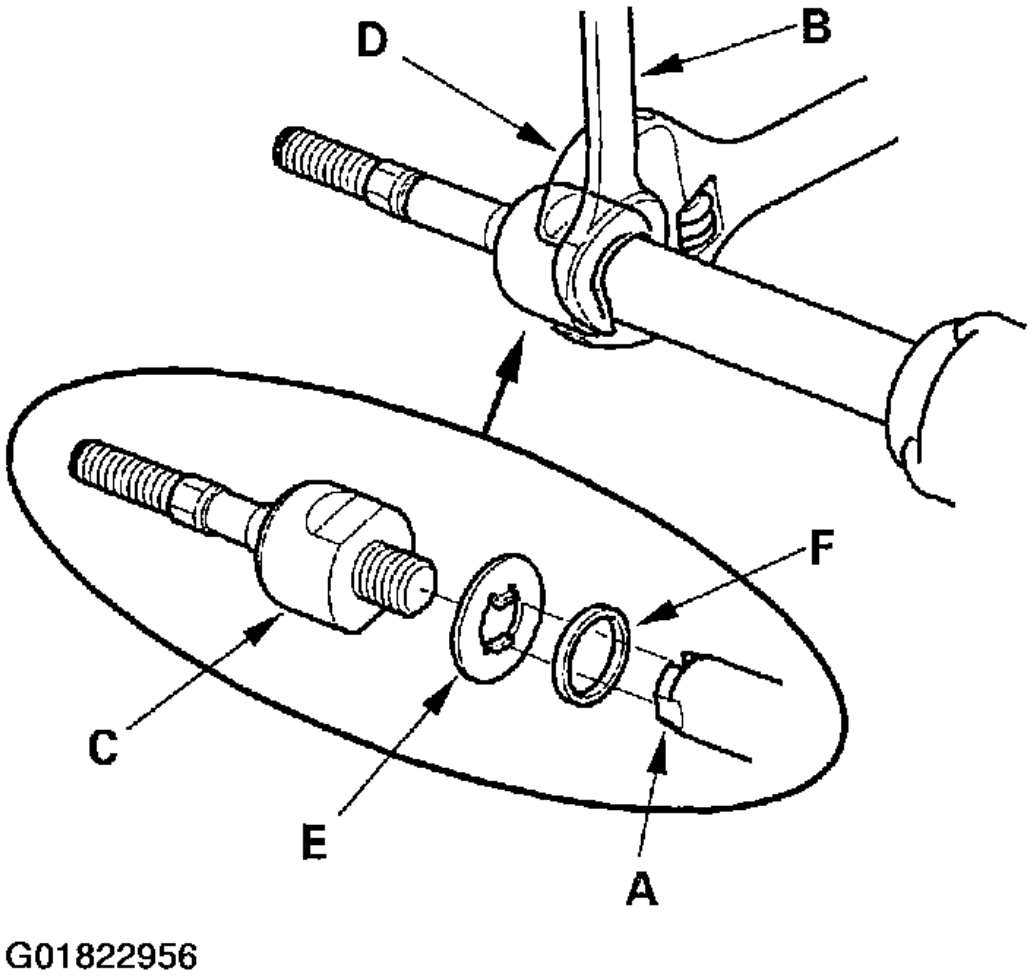


Fig. 74: Unscrewing Both Rack Ends

5. Remove the lock washer (E) and stop rubber (F).
6. Loosen the locknut (A), then remove the rack guide screw (B).

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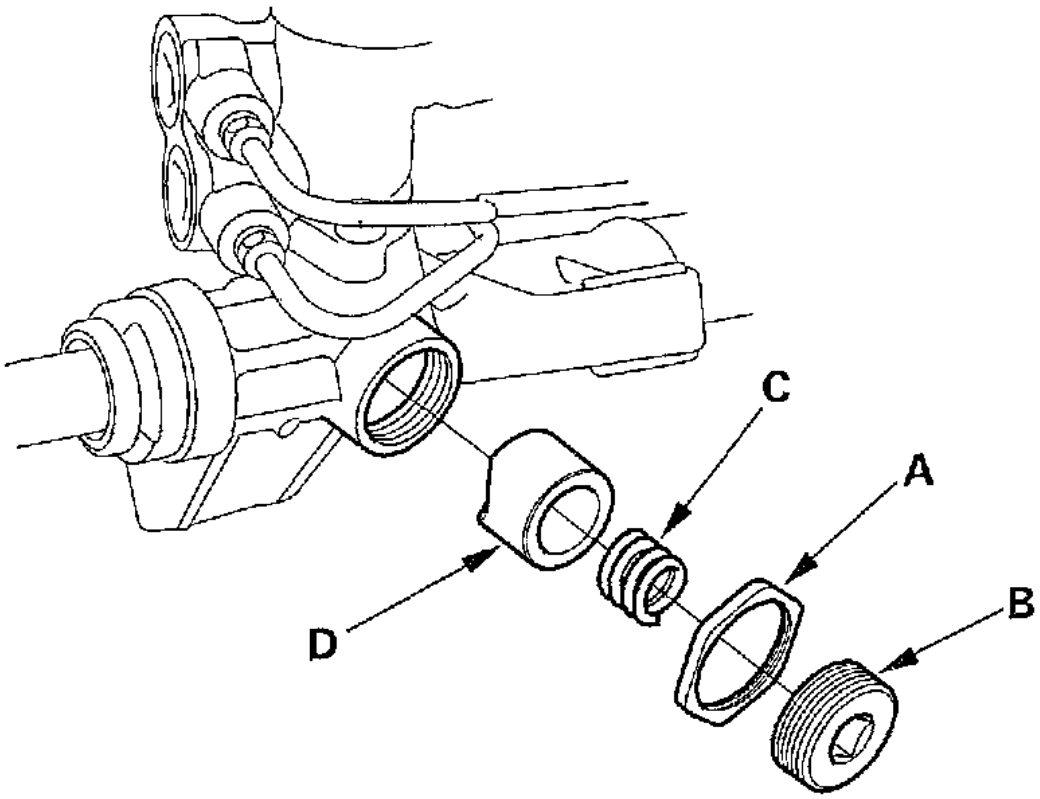


Fig. 75: Loosening The Locknut, Then Removing The Rack Guide Screw

7. Remove the spring (C) and the rack guide (D) from the gearbox housing.
8. Remove the cylinder lines from the gearbox.

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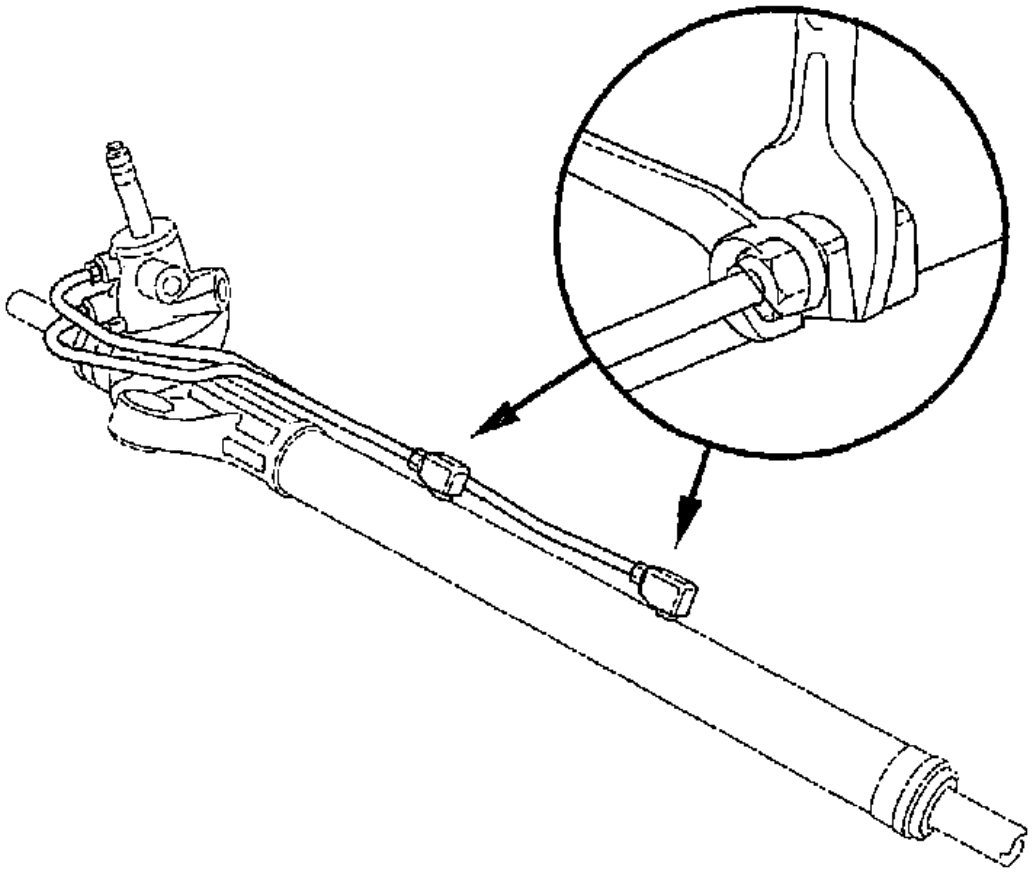


Fig. 76: Removing The Cylinder Lines From The Gearbox

9. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.
10. Remove the two flange bolts, then remove the valve body unit (A) from the gearbox (B). Remove the O-ring (C), and discard it.

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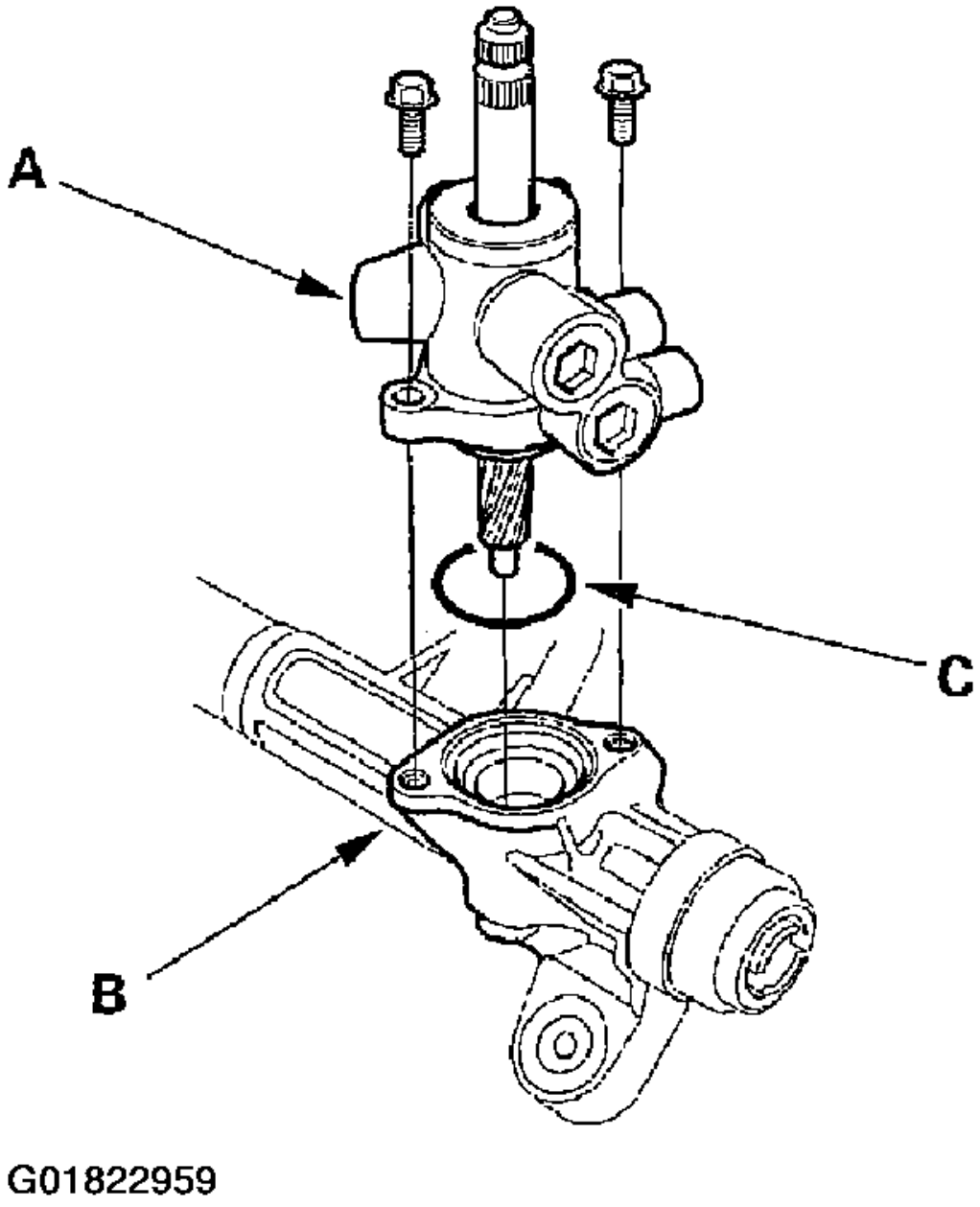


Fig. 77: Removing The Valve Body Unit From The Gearbox

11. Drill a 3 mm (0.12 in.) diameter hole about 2.5-3.0 mm (0.10-0.12 in.) in depth in the staked point (A) on the cylinder. Do not allow metal shavings to enter the cylinder side on the gearbox housing. After removing the cylinder end (B), remove any burrs at the staked point.

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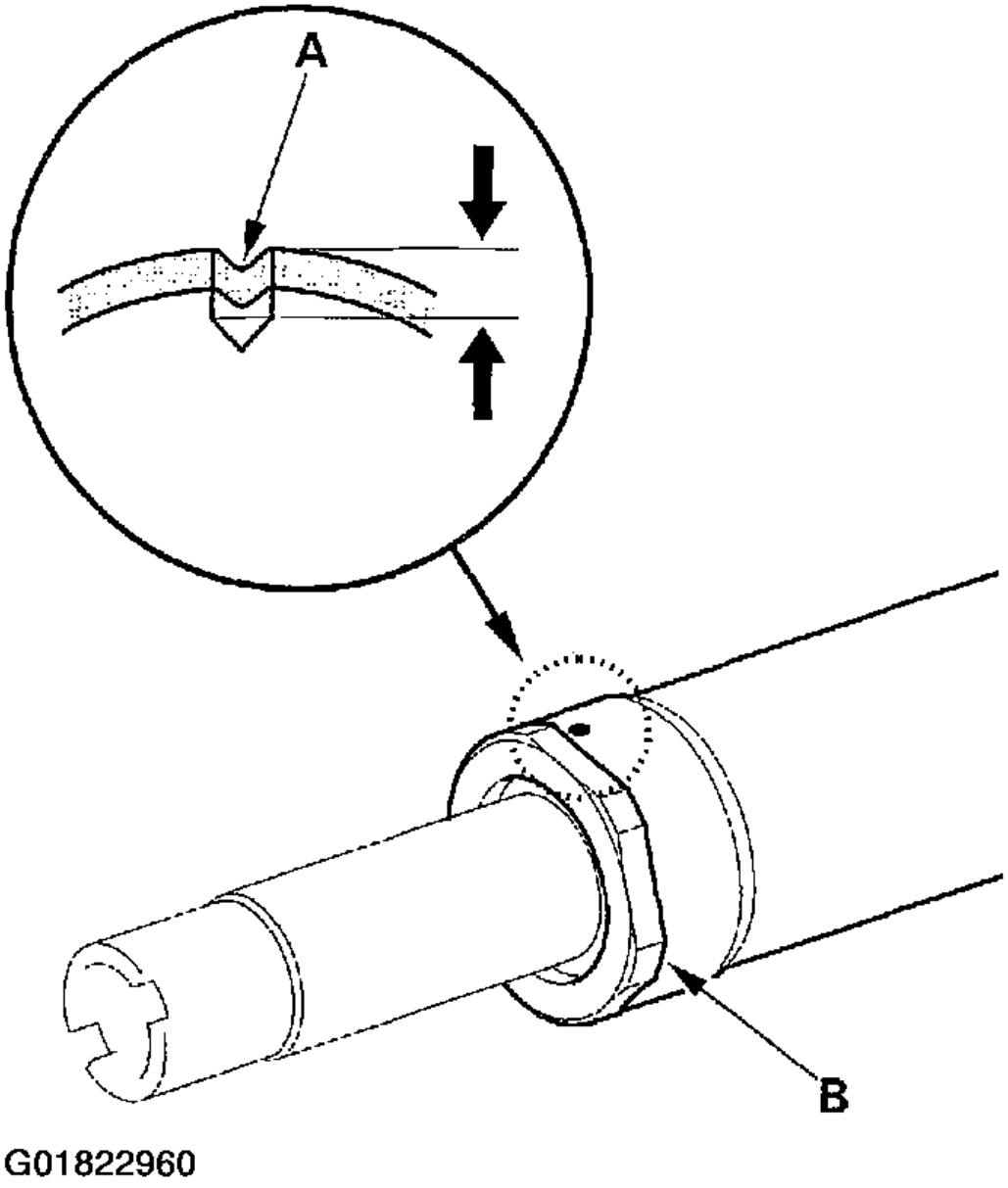


Fig. 78: Drilling A Hole In The Staked Point On The Cylinder

12. Hold the gearbox housing using a C-clamp (commercially available) (A) and the wooden blocks (B) as shown. Do not clamp the cylinder part of the gearbox housing in the vise. Then remove the cylinder end (C).

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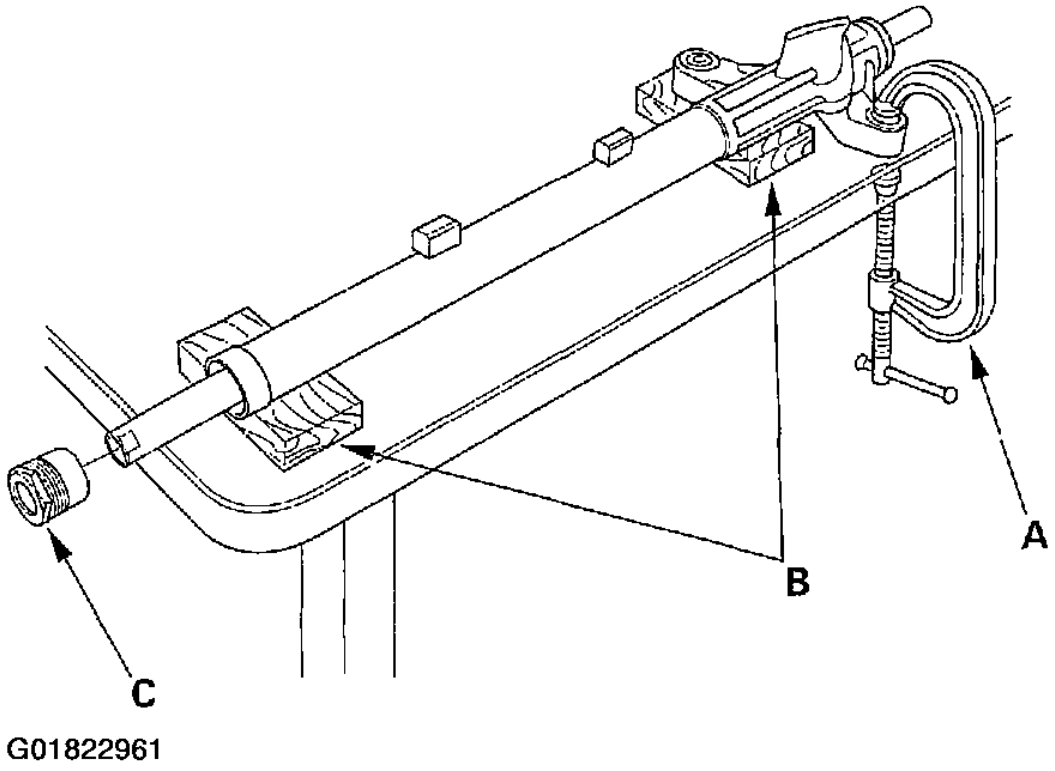


Fig. 79: Holding The Gearbox Housing Using A C-Clamp & The Wooden Blocks

13. Install a commercially available bearing separator (A) in the gearbox housing as shown.

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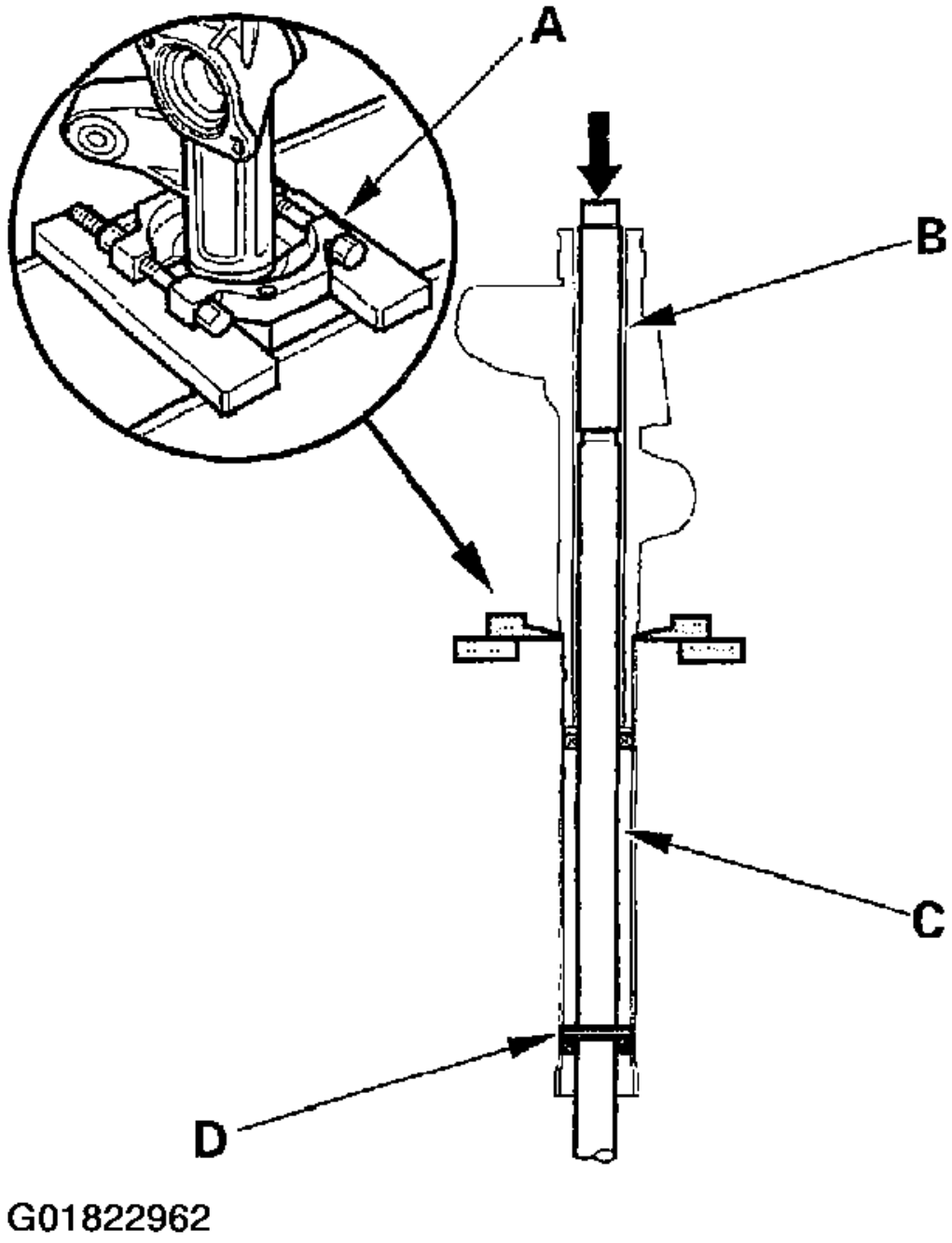


Fig. 80: Installing A Bearing Separator

14. Place an appropriate size deep socket wrench (B) on the steering rack (C).
15. Set the steering gearbox in a press so the gearbox housing side points upward, then press the cylinder end

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seal (D) and steering rack out of the gearbox. Hold the steering rack to keep it from falling when pressed clear. Be careful not to damage the inner surface of the cylinder side on the gearbox housing with the tool.

16. Install the special tool so it will fit through the rack guide hole of the gearbox housing. Insert a 24" long, 3/8" drive extension (A), and install it on the special tool. Make sure the special tool is securely positioned on the backup ring edges. Be careful not to damage the inner surface of the cylinder with the special tool.

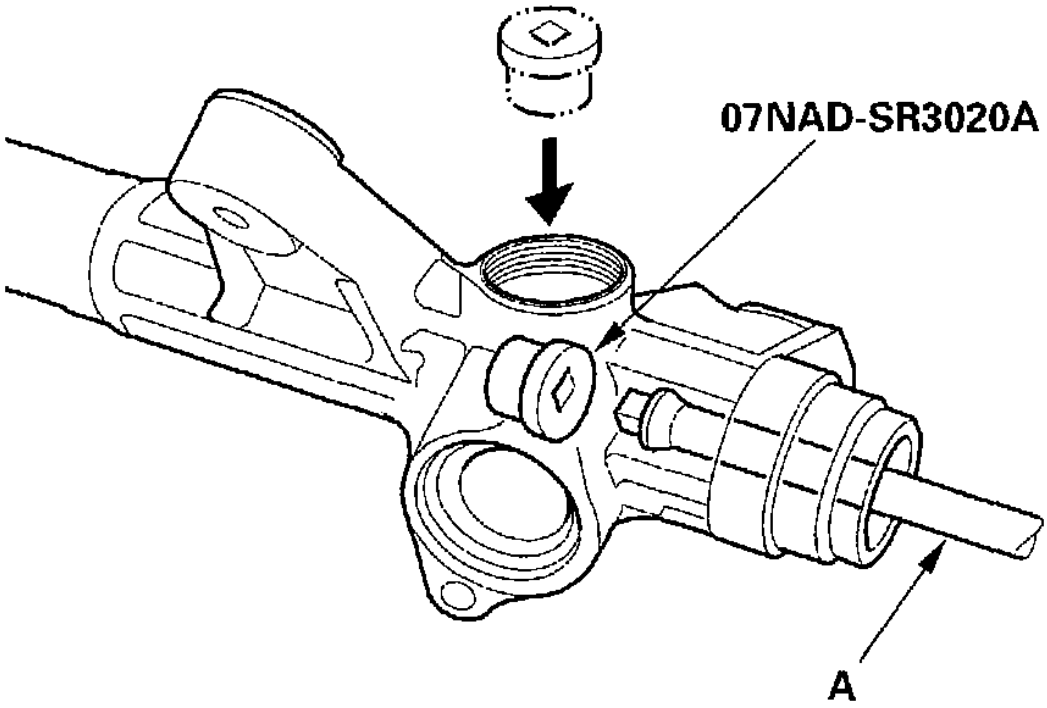


Fig. 81: Installing The Special Tool

17. Place the steering gearbox in a press, then remove the cylinder end seal (A) and backup ring (B) from the gearbox by pressing on the 24" long, 3/8" drive extension. Note these items when pressing the cylinder end seal:
    - Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
    - Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would brake the backup ring, and the cylinder end seal would remain in the gearbox.

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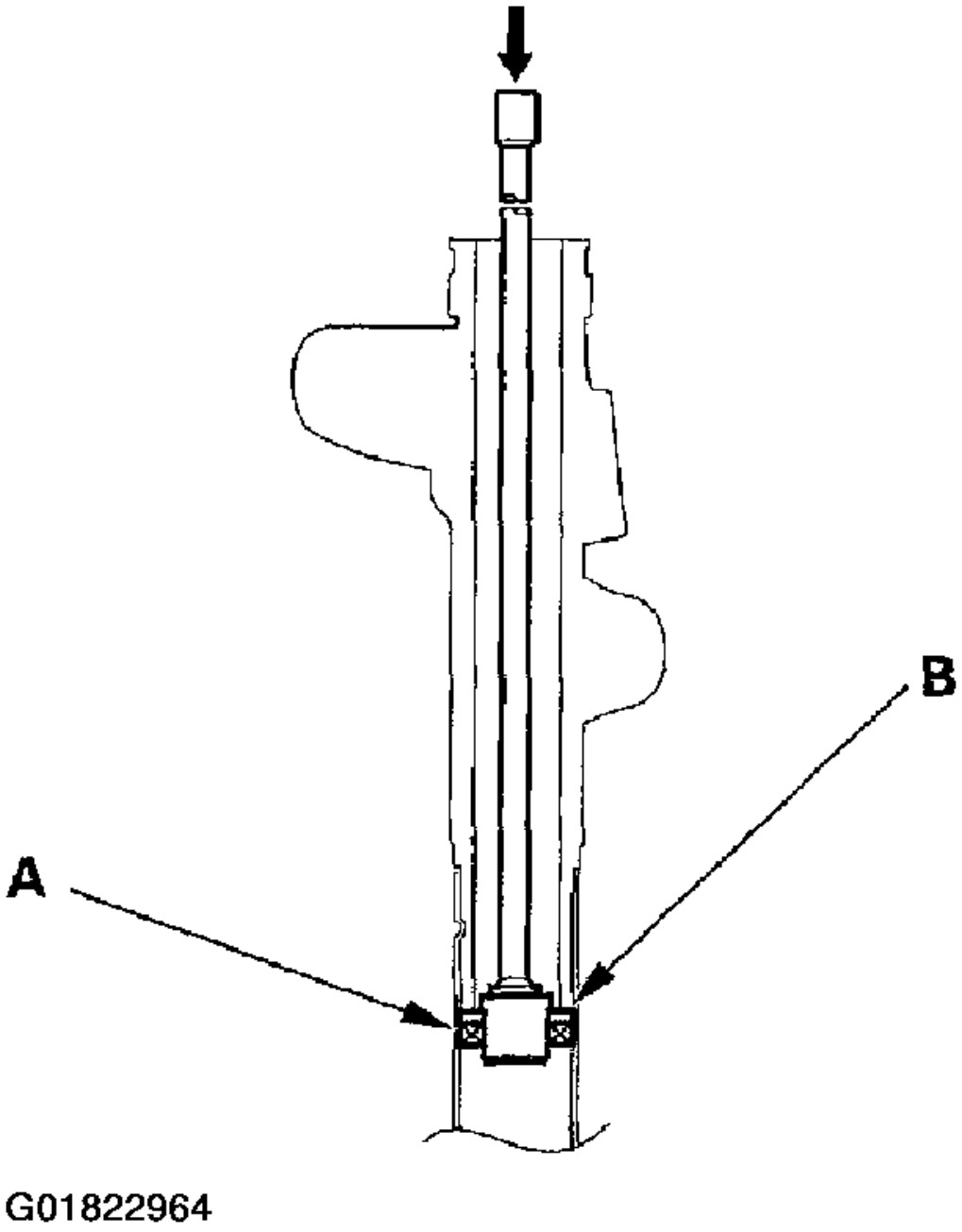


Fig. 82: Pressing The Cylinder End Seal & Backup Ring From The Gearbox

18. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.

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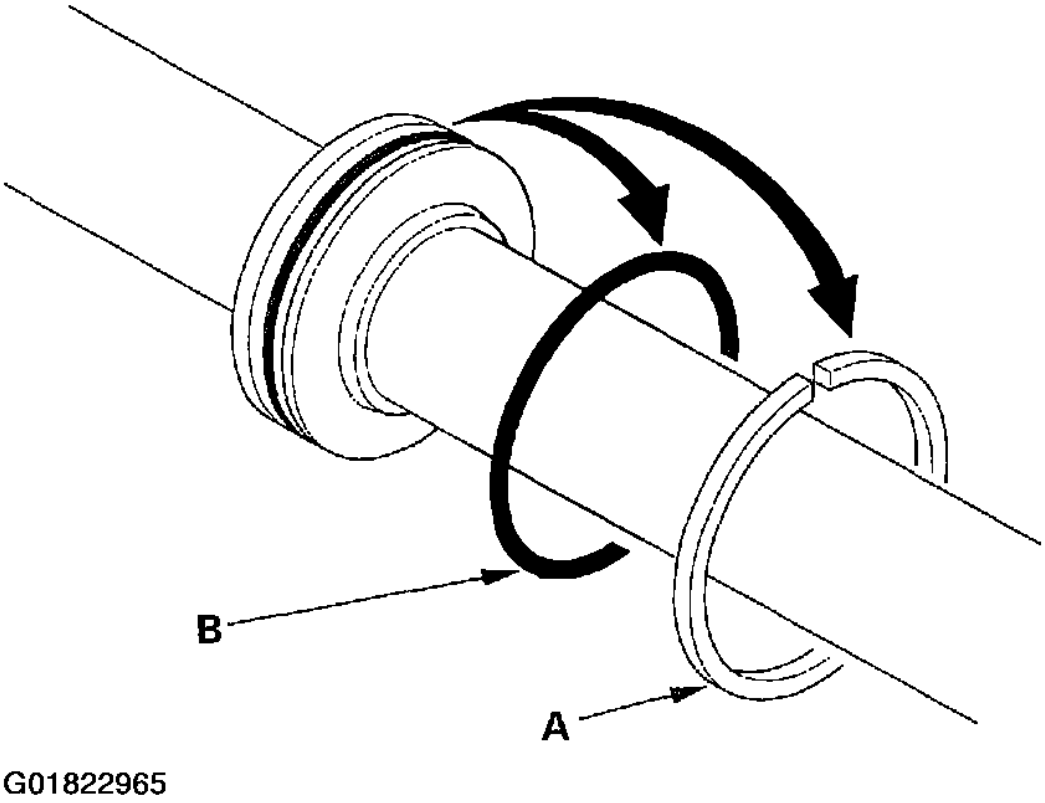


Fig. 83: Prying The Piston Seal Ring & O-Ring Off The Rack Piston

19. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft.

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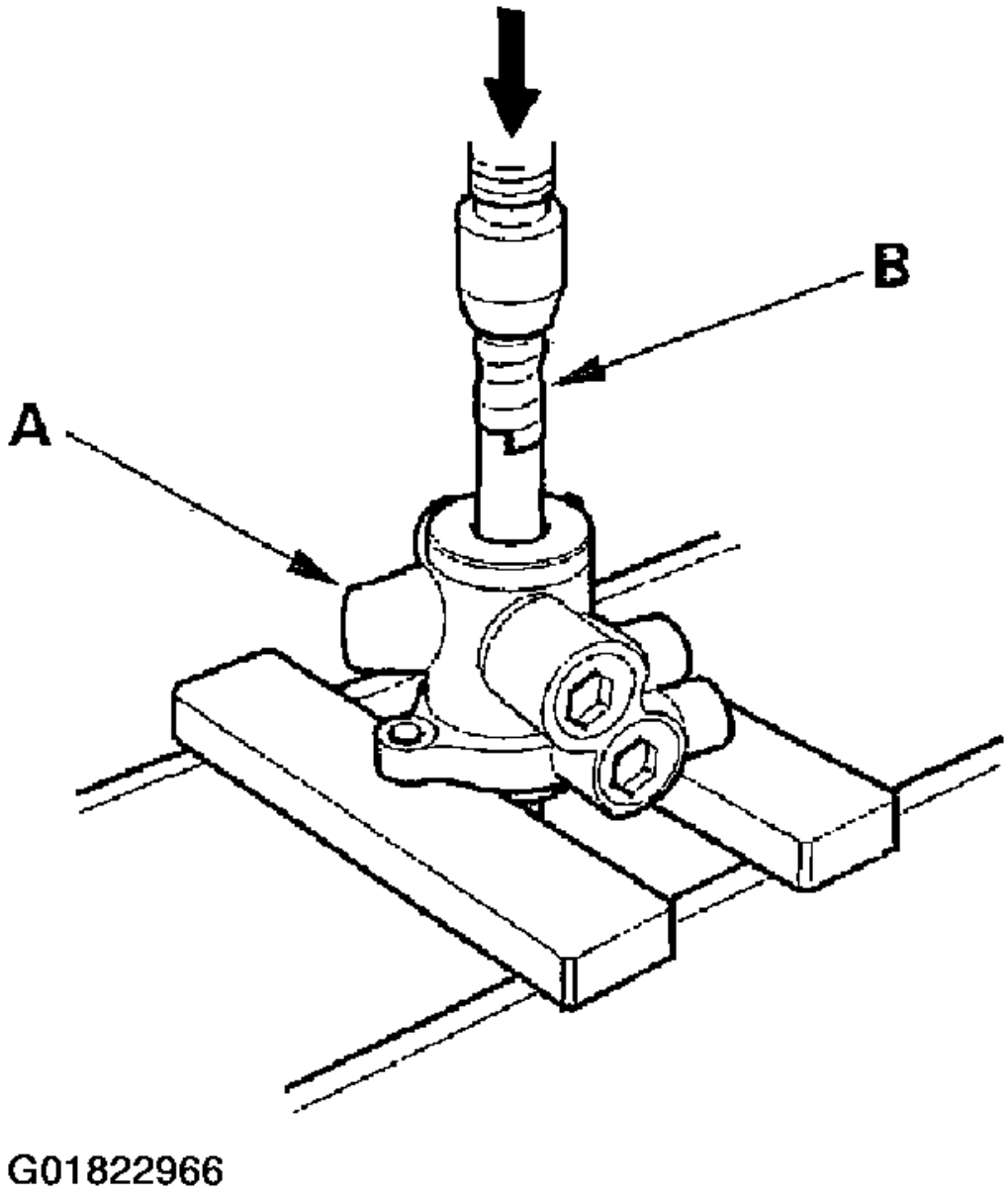


Fig. 84: Pressing Valve Housing From The Pinion Shaft/Valve

20. Separate the valve housing from the pinion shaft/valve using a press.
21. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

NOTE: There may be sliding marks from the seal ring on the wall of the valve

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housing. Replace the valve housing only if the wall is stepped.

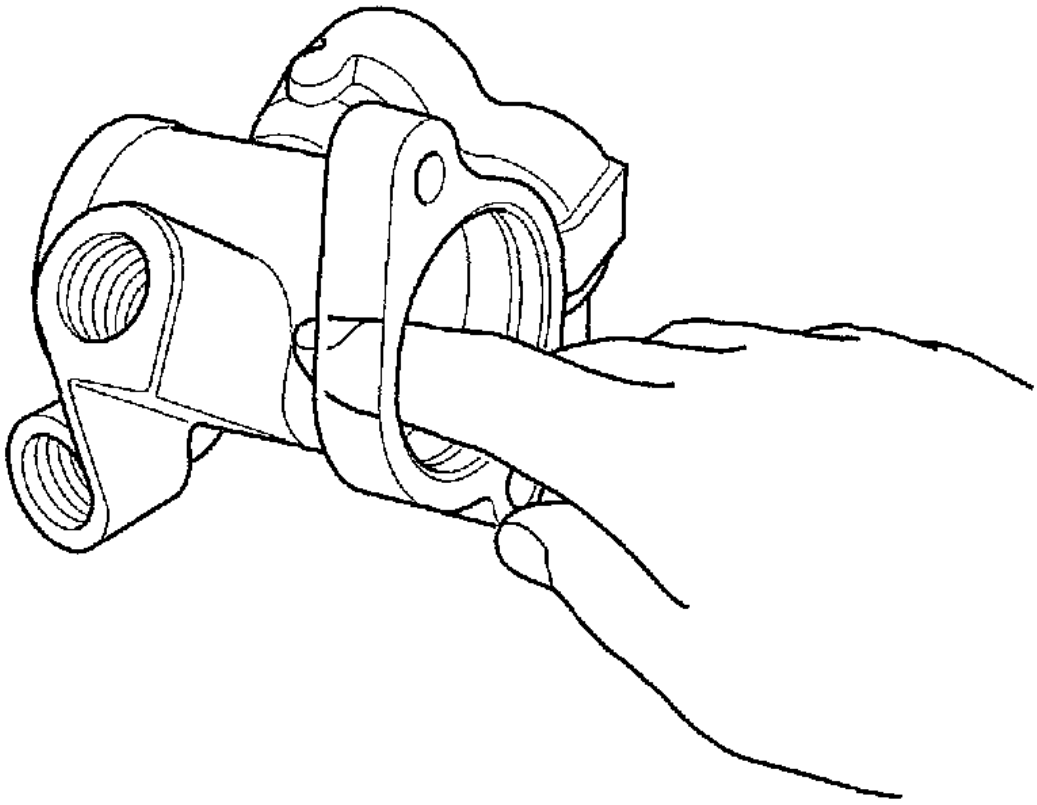


Fig. 85: Checking The Inner Wall Of The Valve Housing

22. Check for wear, burrs, and other damage to the edges of the grooves in the sleeve.

NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.

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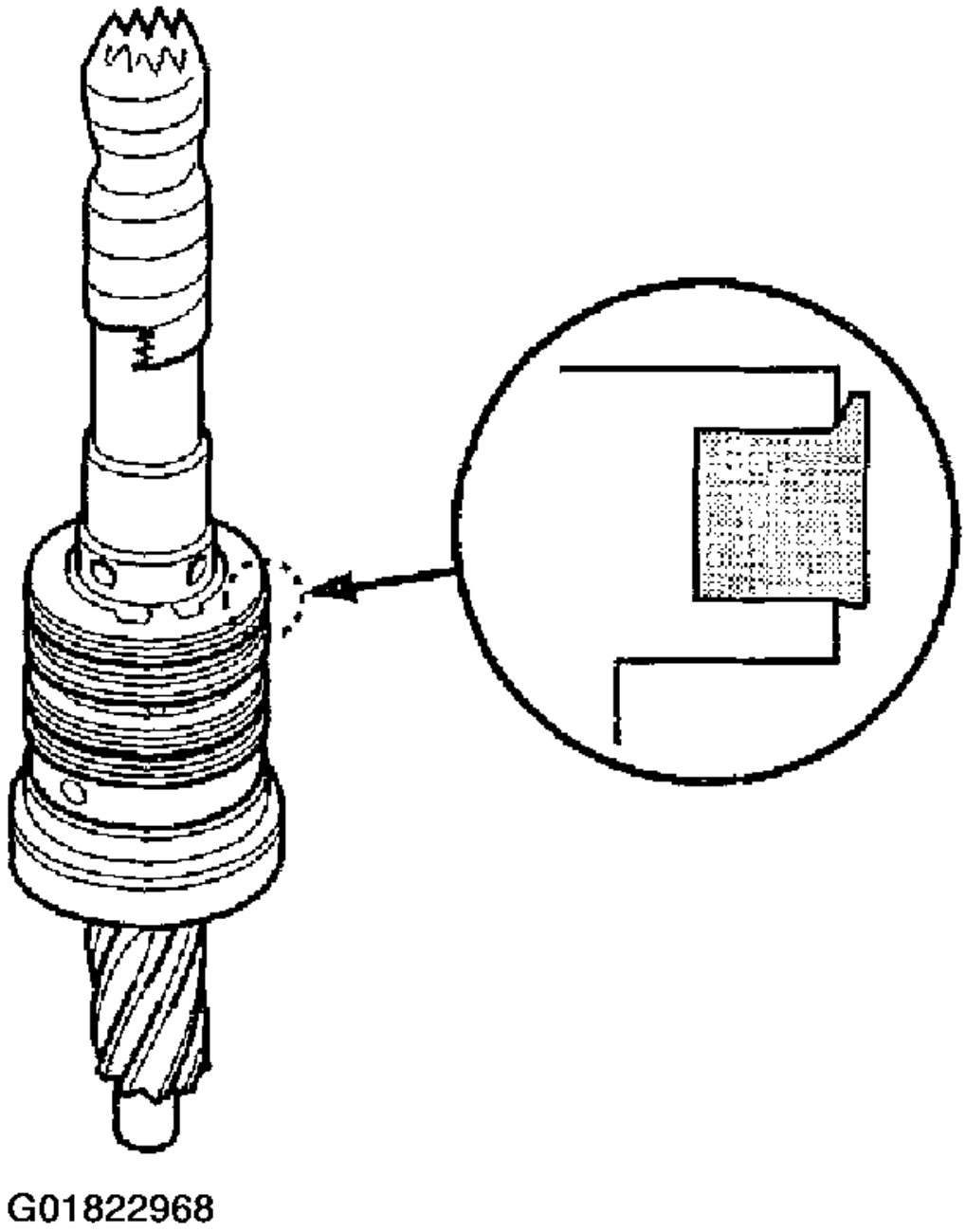


Fig. 86: Checking The Edges Of The Grooves In The Sleeve

23. Remove the snap ring (A) and sleeve (B) from the pinion shaft.

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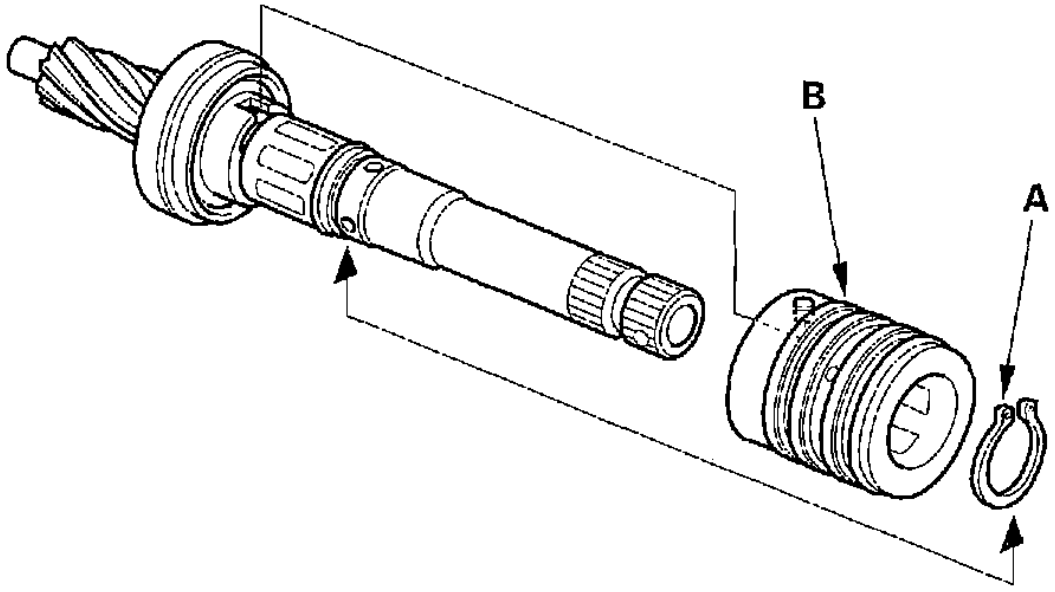


Fig. 87: Removing The Snap Ring & Sleeve From The Pinion Shaft

24. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.

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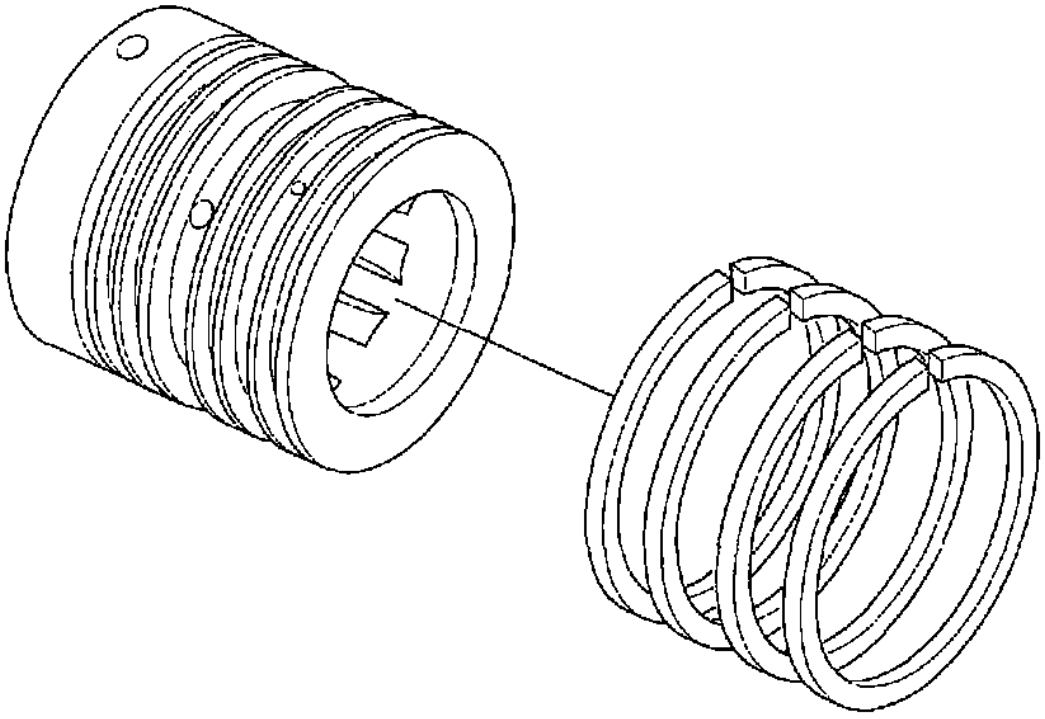


Fig. 88: Removing The Four Seal Rings From The Sleeve

25. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the cutting groove position (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.

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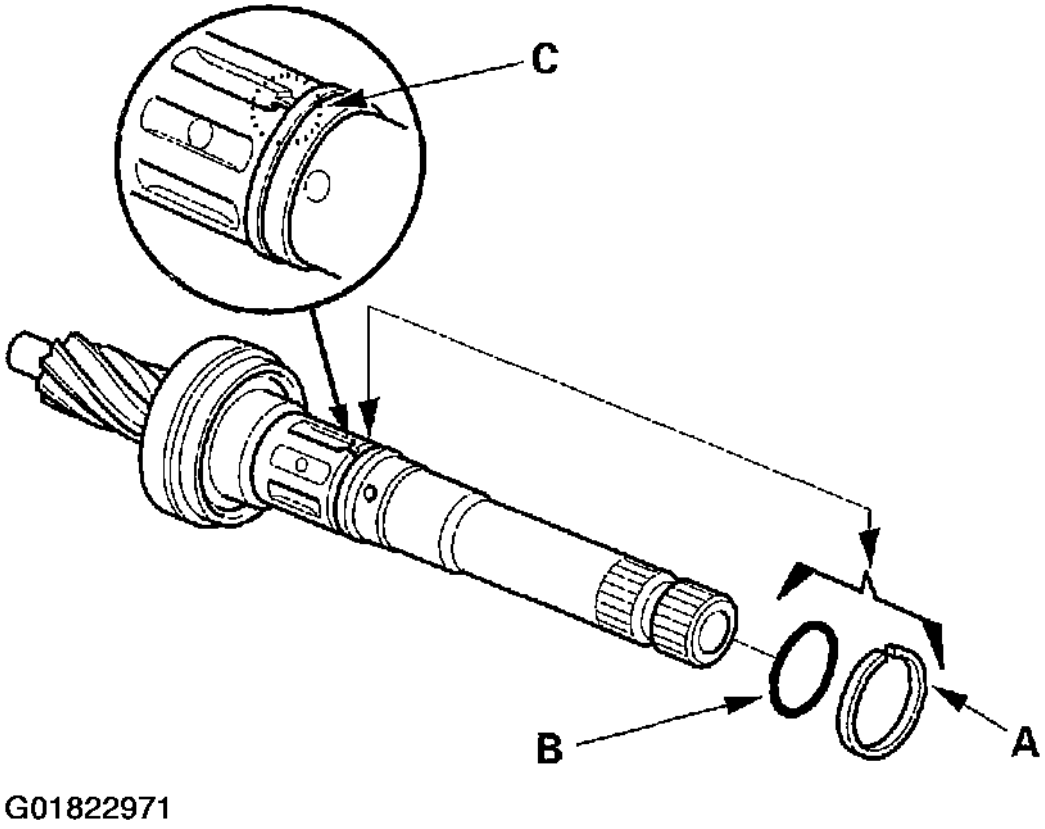


Fig. 89: Removing The Valve Seal Ring & O-Ring

26. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft. Note these items during disassembly:
    - Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play or wear, replace the pinion shaft and sleeve as an assembly.
    - The pinion shaft and sleeve are a precise fit; do not intermix old and NEW pinion shafts and sleeves.

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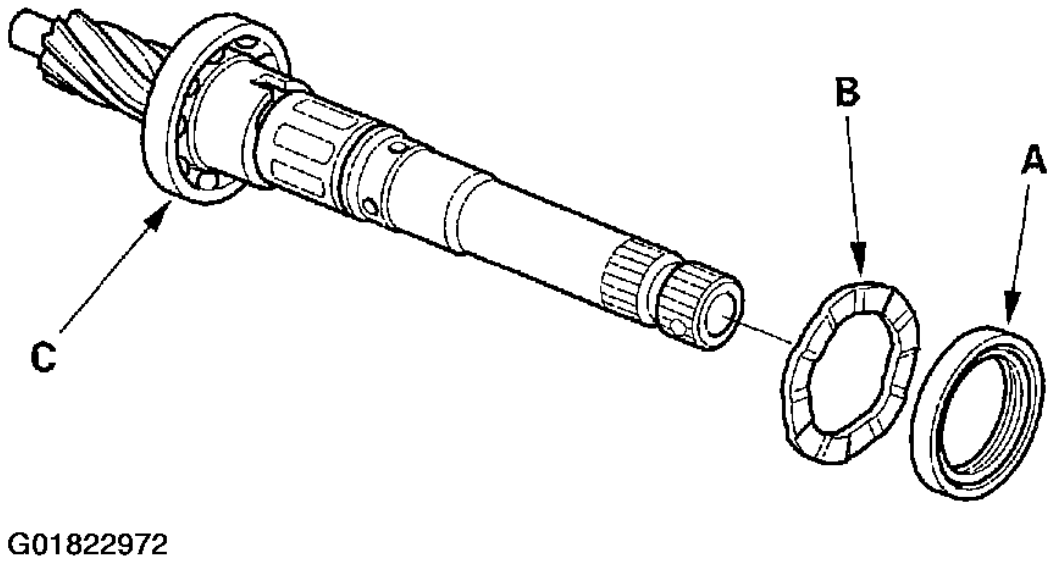


Fig. 90: Removing The Valve Oil Seal And Wave Washer From The Pinion Shaft

27. Press the valve oil seal (A) and roller bearing (B) out of the valve housing using a hydraulic press and special tool.

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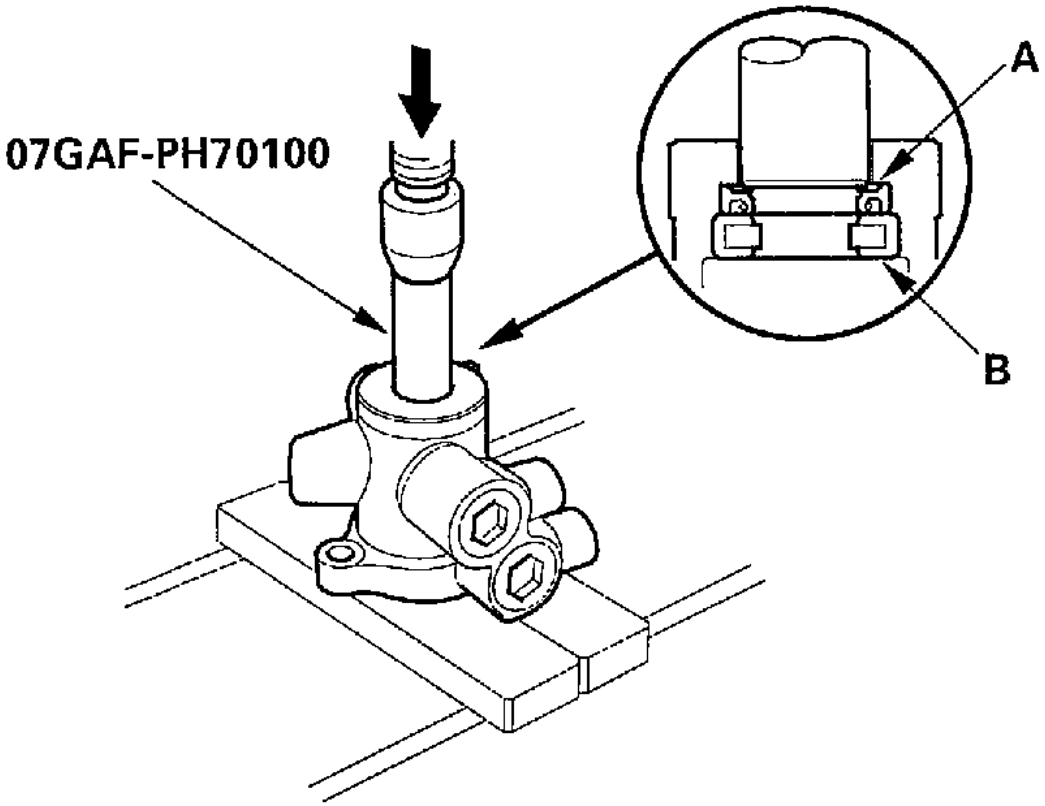


Fig. 91: Pressing The Valve Oil Seal And Roller Bearing Out Of The Valve Housing

28. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in the solvent.

Reassembly

29. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with power steering fluid.

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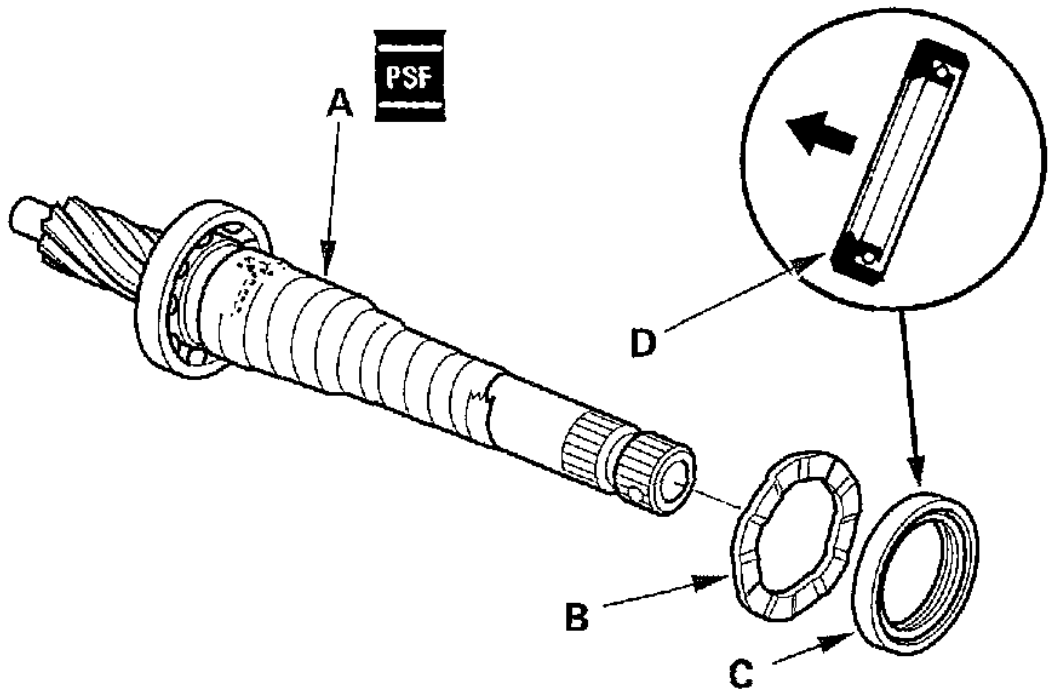


Fig. 92: Applying Vinyl Tape To The Stepped Portion Of The Pinion Shaft

30. Install the wave washer (B).
31. Coat the inside surface of the NEW valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D).
32. Apply vinyl tape (A) to the splines and stepped portion of the shaft, and coat the surface of the vinyl tape with power steering fluid.

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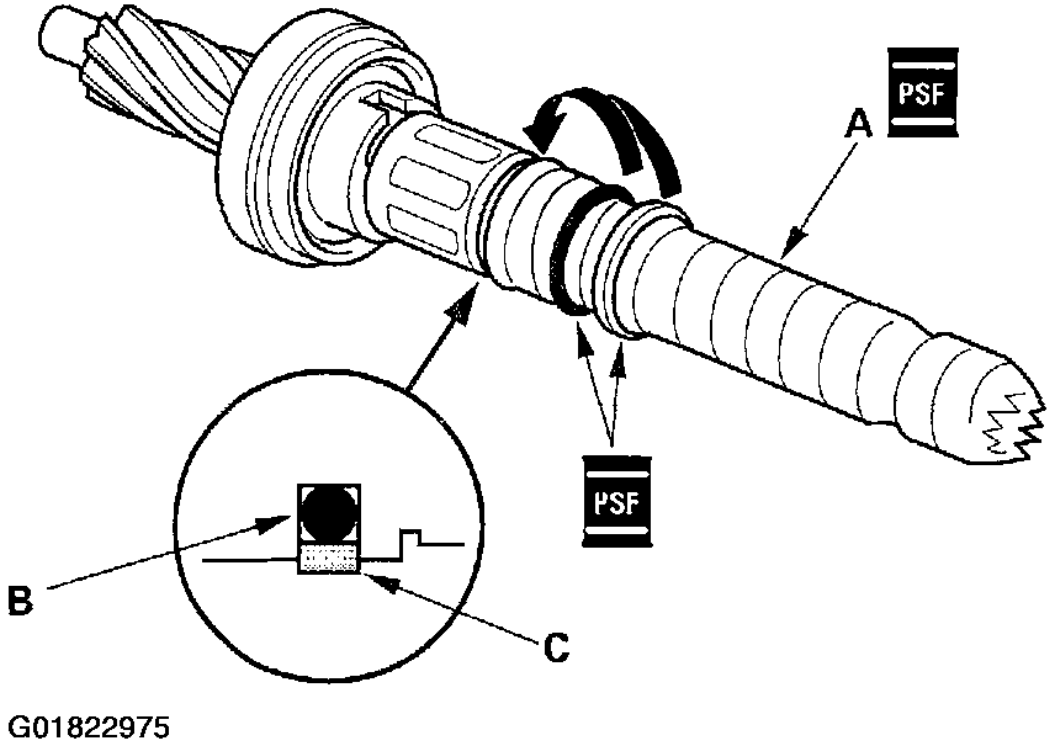


Fig. 93: Fitting The NEW O-Ring & The NEW Valve Seal Ring On The Pinion Shaft

33. Fit the NEW O-ring (B) in the groove of the pinion shaft. Then slide the NEW valve seal ring (C) over the shaft and in the groove on the pinion shaft.
34. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).

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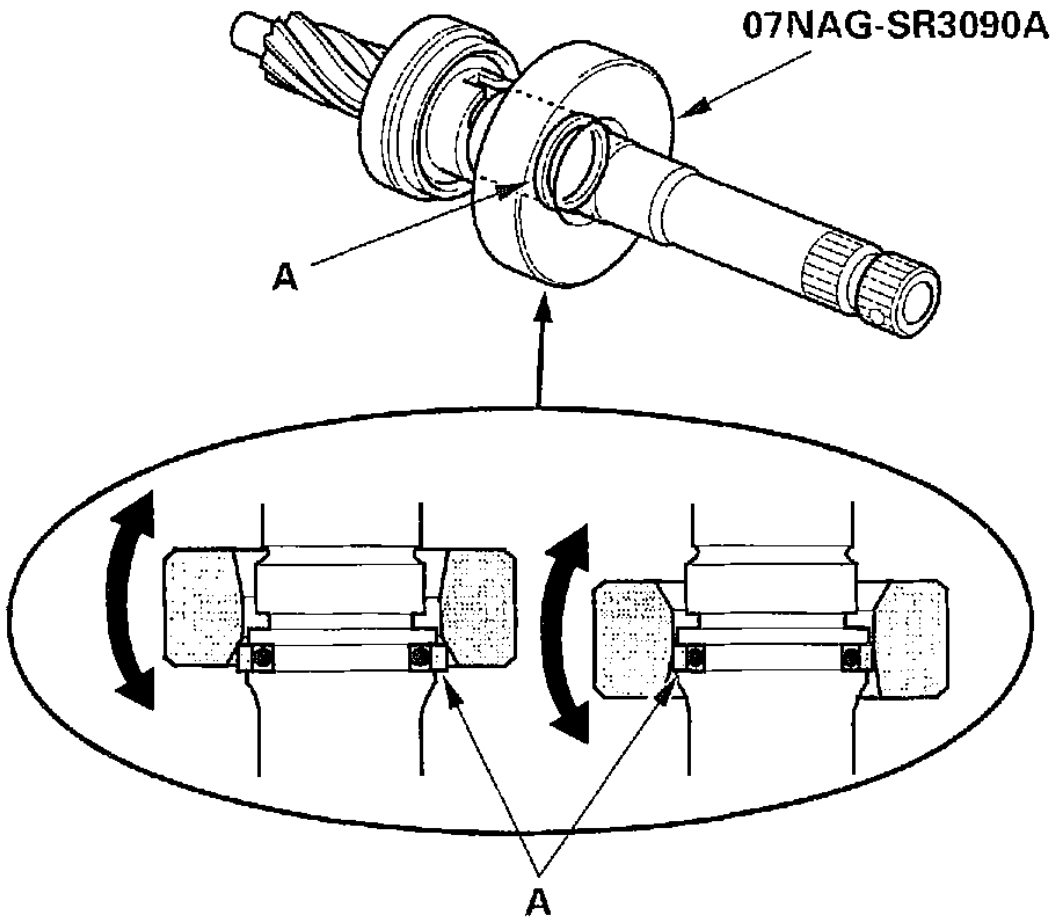


Fig. 94: Fitting Valve Seal Ring In The Pinion Shaft

35. Apply power steering fluid to the inside of the special tool. Set the larger diameter end of the special tool over the valve seal ring, and move the special tool up and down several times to make the valve seal ring fit in the pinion shaft groove.
36. Remove the special tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make the valve seal ring fits snugly in the pinion shaft groove.
37. Apply power steering fluid to the surface of the special tool. Slip two NEW seal rings (A) over the special tool from the smaller diameter end, and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B). Note these items when installing the seal ring:
    - Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal rings using the special tool (sizing tool).
    - There are two types of sleeve seal rings: black and brown. Do not mix the different types of rings as they are not compatible.

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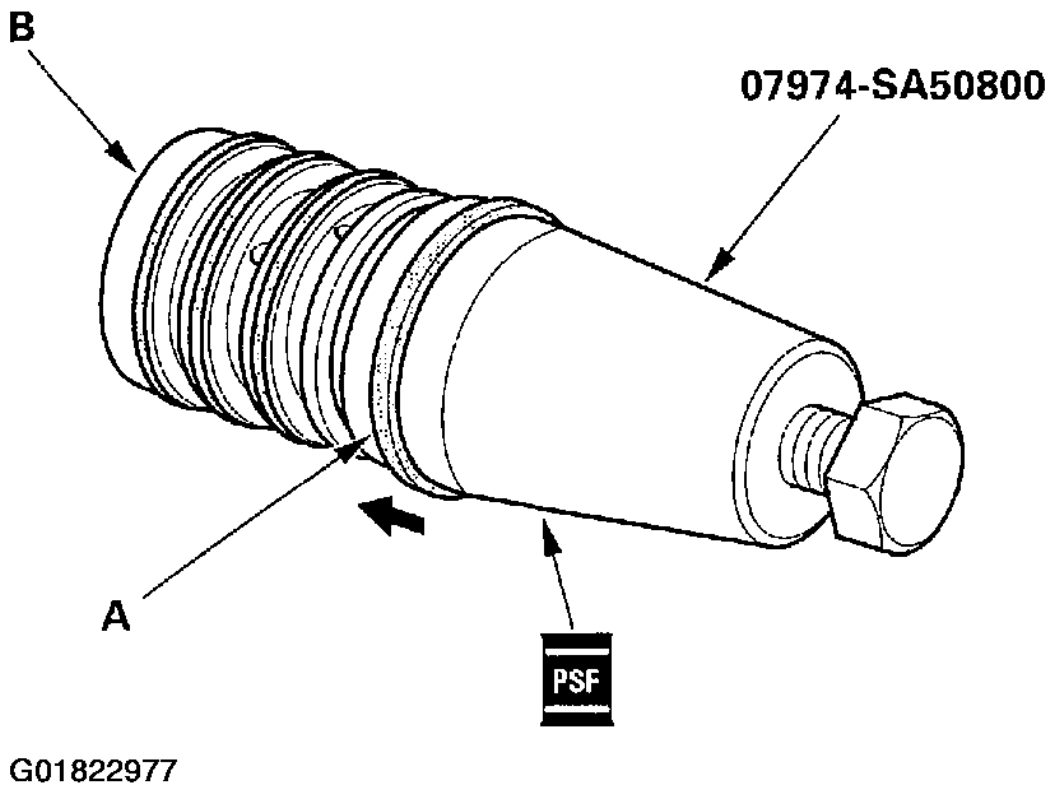


Fig. 95: Slipping NEW Seal Rings Over The Special Tool

38. Align the special tool with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.
39. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the special tool, then slowly insert the sleeve into the special tool.

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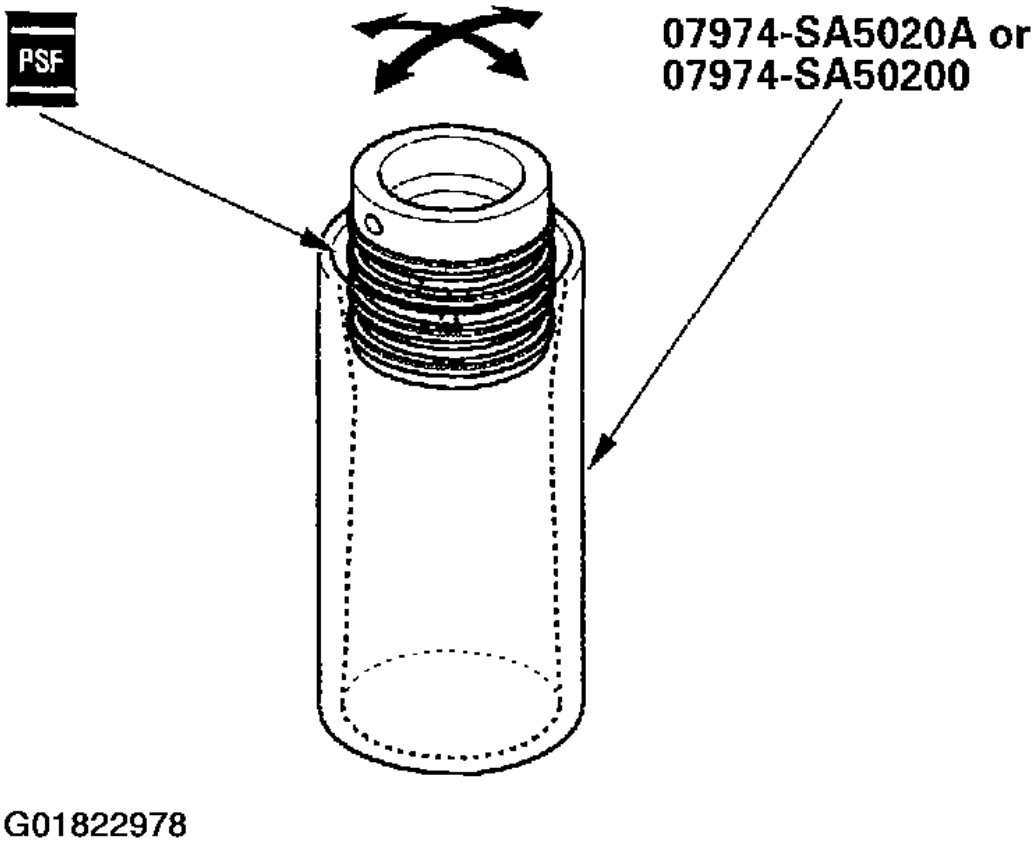


Fig. 96: Seating Seal Rings

40. Move the sleeve back and forth several times to make the seal rings snugly fit in the sleeve. Make sure the seal rings are not twisted.
41. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the NEW snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.

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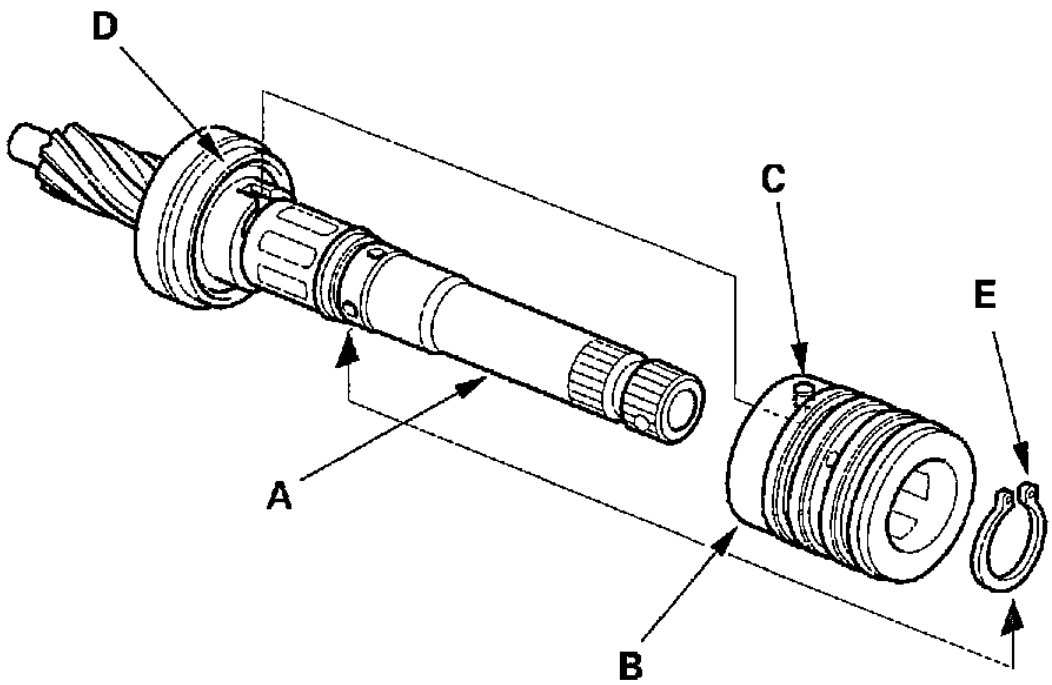


Fig. 97: Sliding The Sleeve Onto The Pinion Shaft

42. Apply power steering fluid to the seal ring lip of the NEW valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press and special tools. Install the seal with its grooved side facing the tool.

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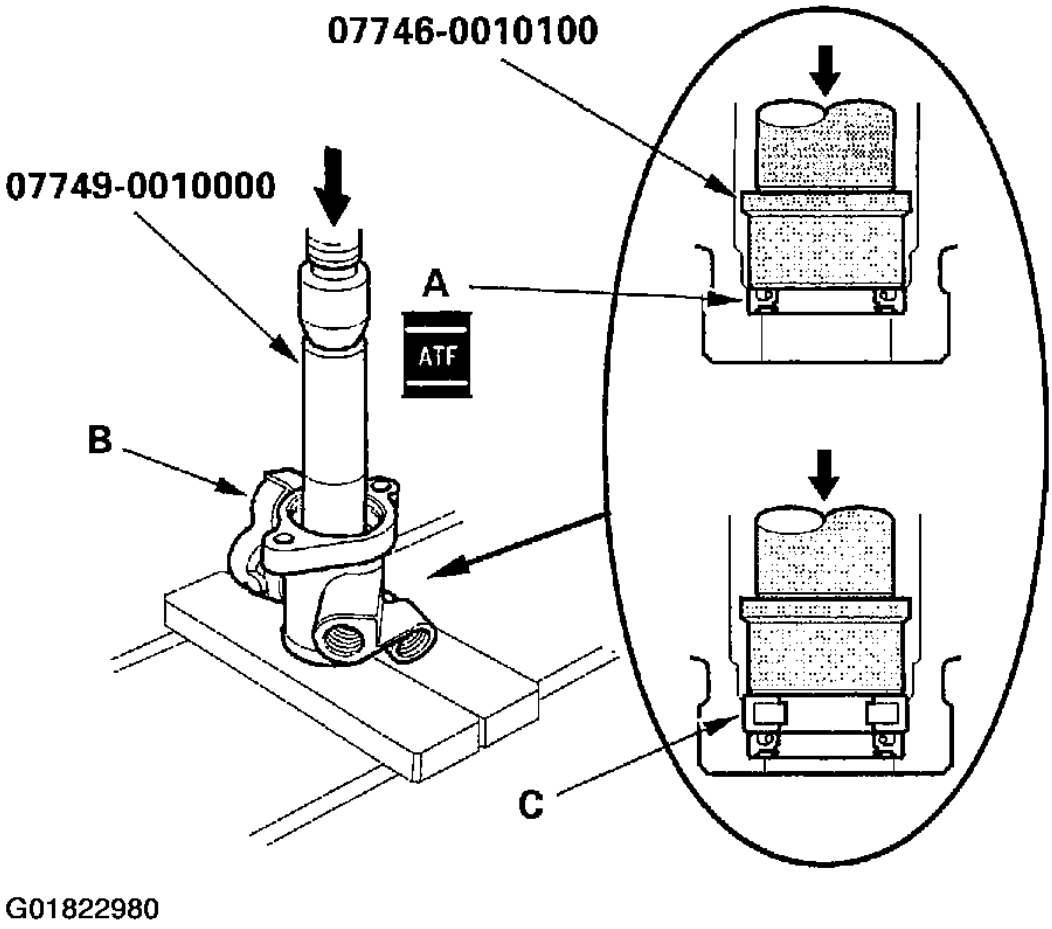


Fig. 98: Installing The Seal In The Valve Housing

43. Press the roller bearing (C) into the valve housing with a hydraulic press and special tool.
44. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.

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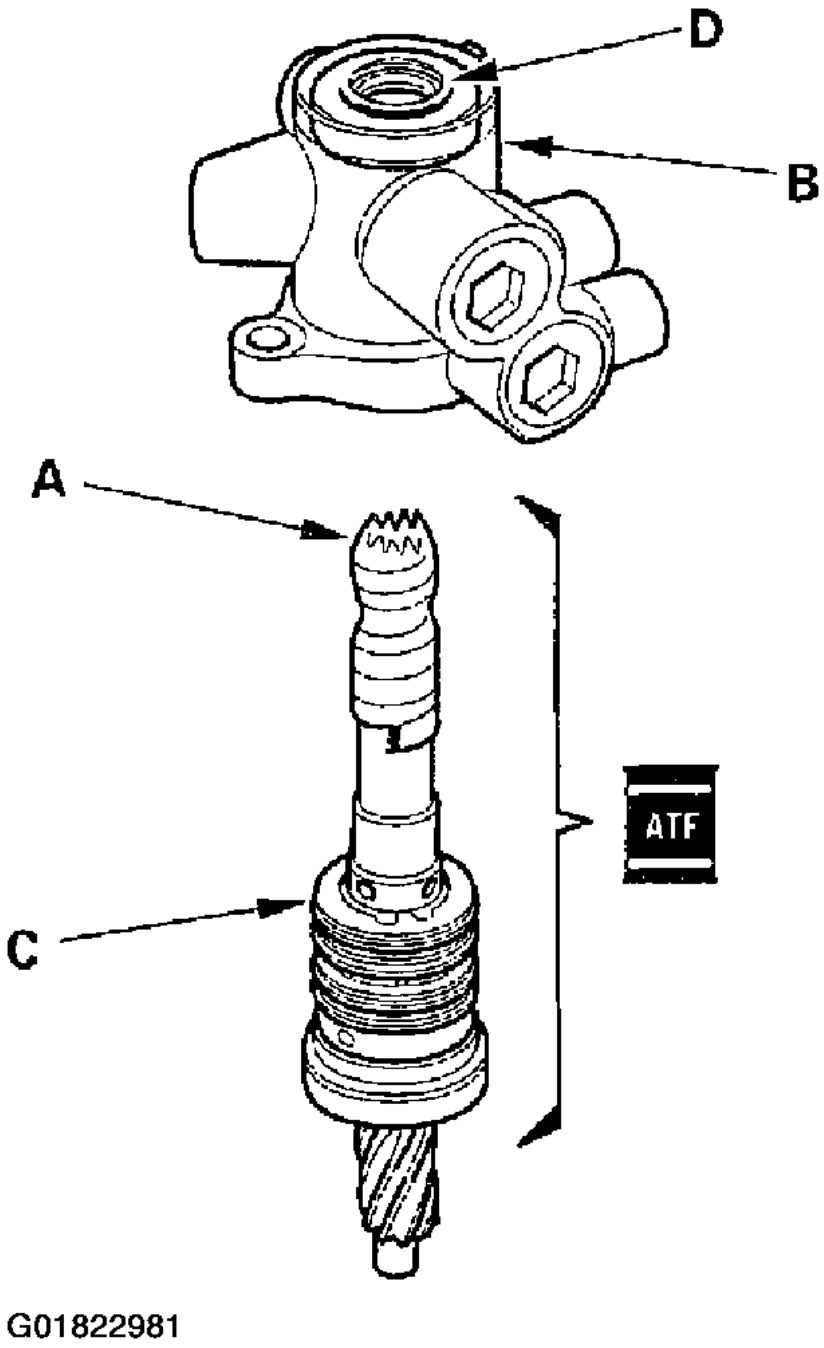


Fig. 99: Inserting The Pinion Shaft Into The Valve Housing

45. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C) and valve oil seal sealing lip (D).

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46. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.
47. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.

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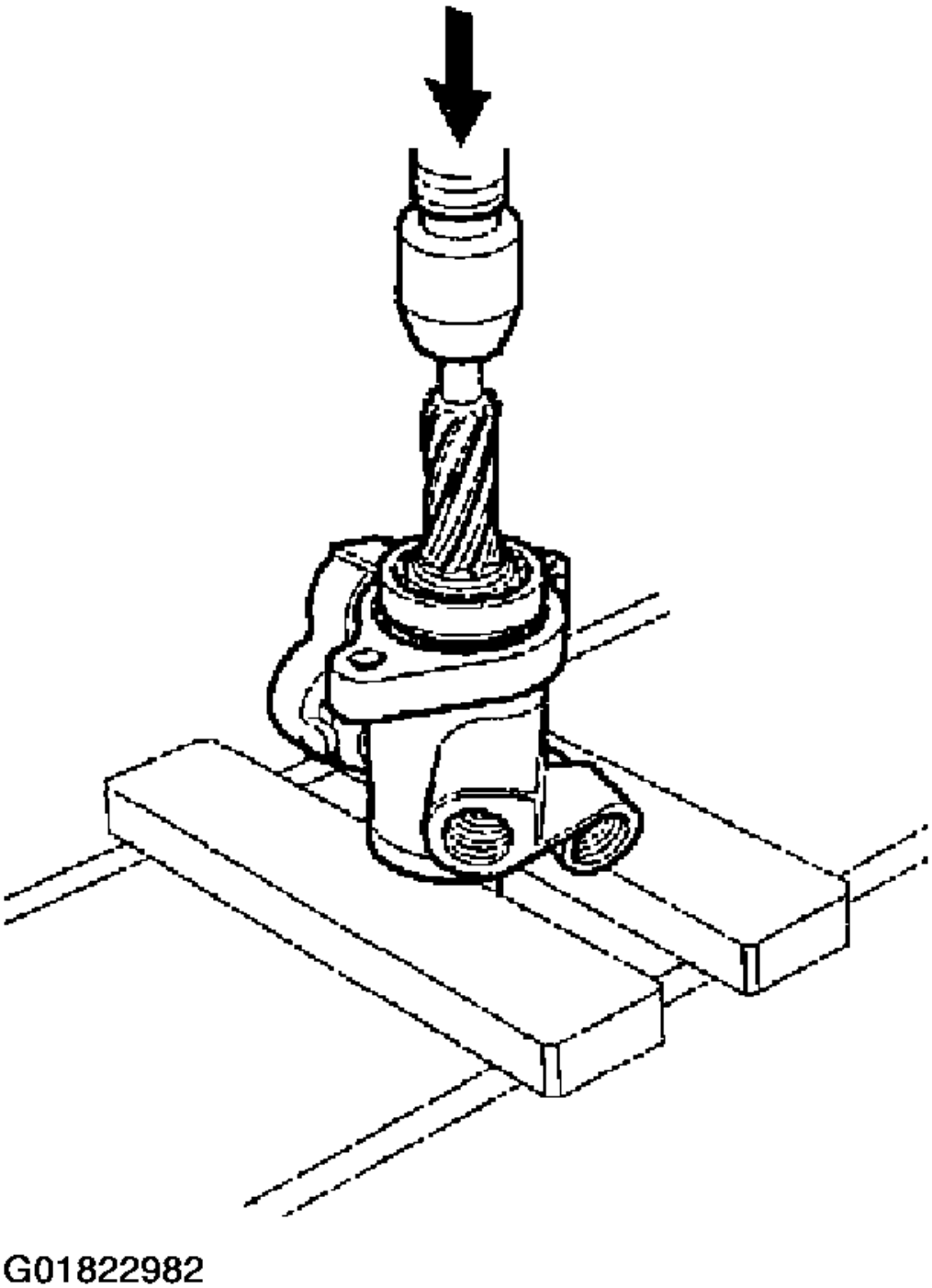


Fig. 100: Pressing The Pinion Shaft/Sleeve Into The Valve Housing

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48. Coat the special tool with power steering fluid, then slide it onto the rack, big end first.
49. Position the NEW O-ring (A) and NEW piston seal ring (B) on the special tool, then slide them down toward the big end of the tool. Note these items during reassembly:
    - Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal ring using the special tool (sizing tool).
    - Replace piston's O-ring and seal ring as a set.

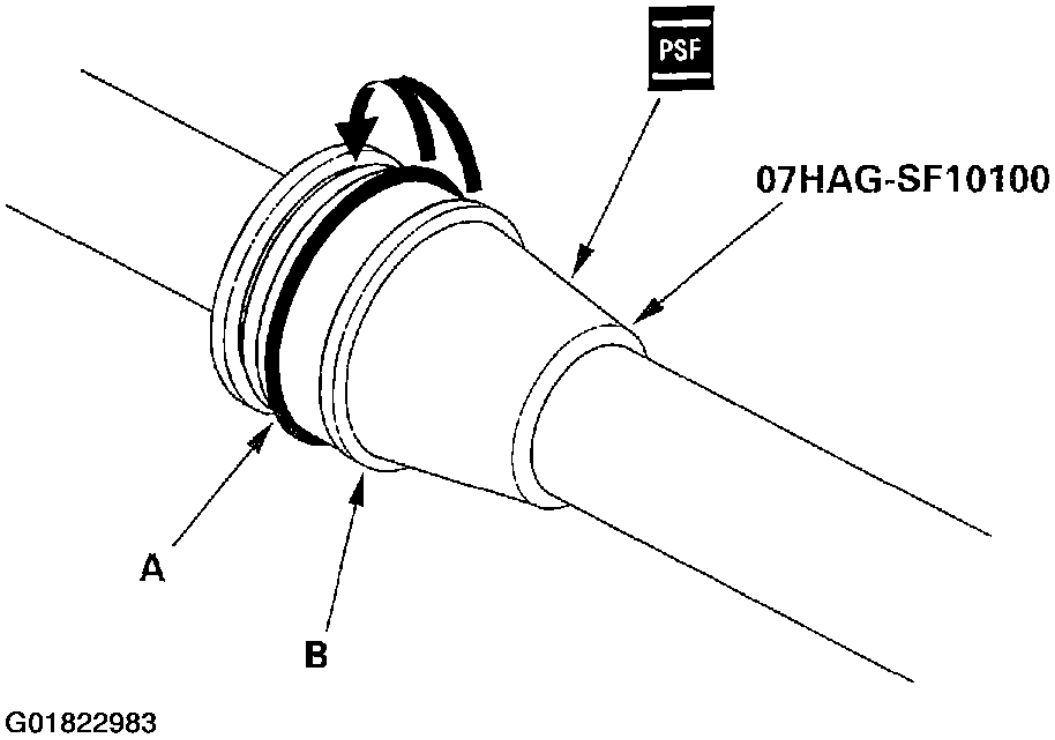


Fig. 101: Positioning The NEW O-Ring & NEW Piston Seal Ring On The Special Tool

50. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.
51. Coat the piston seal ring (A) and the inside of the special tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.
52. Move the special tool back and forth several times to make the piston seal ring fits snugly in the piston.

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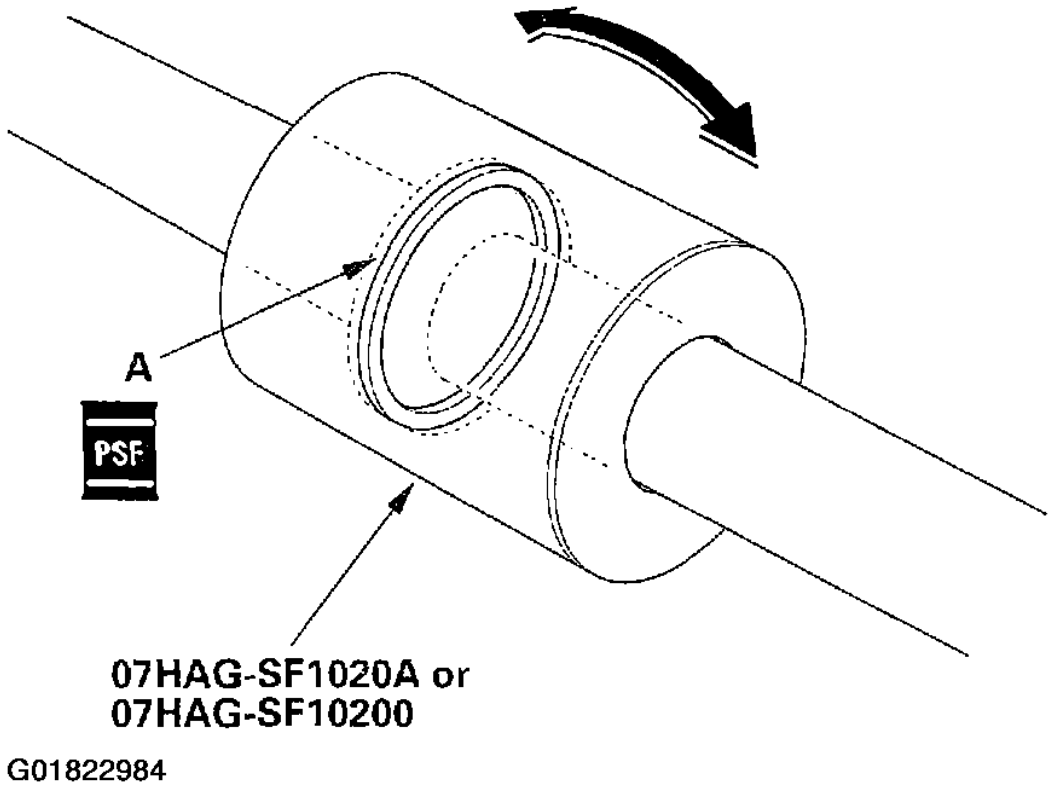


Fig. 102: Seating Piston Seal

53. Coat the sliding surface of the special tool (A) and NEW cylinder end seal (B) with power steering fluid. Place the seal on the special tool with its grooved side (C) facing opposite the special tool.

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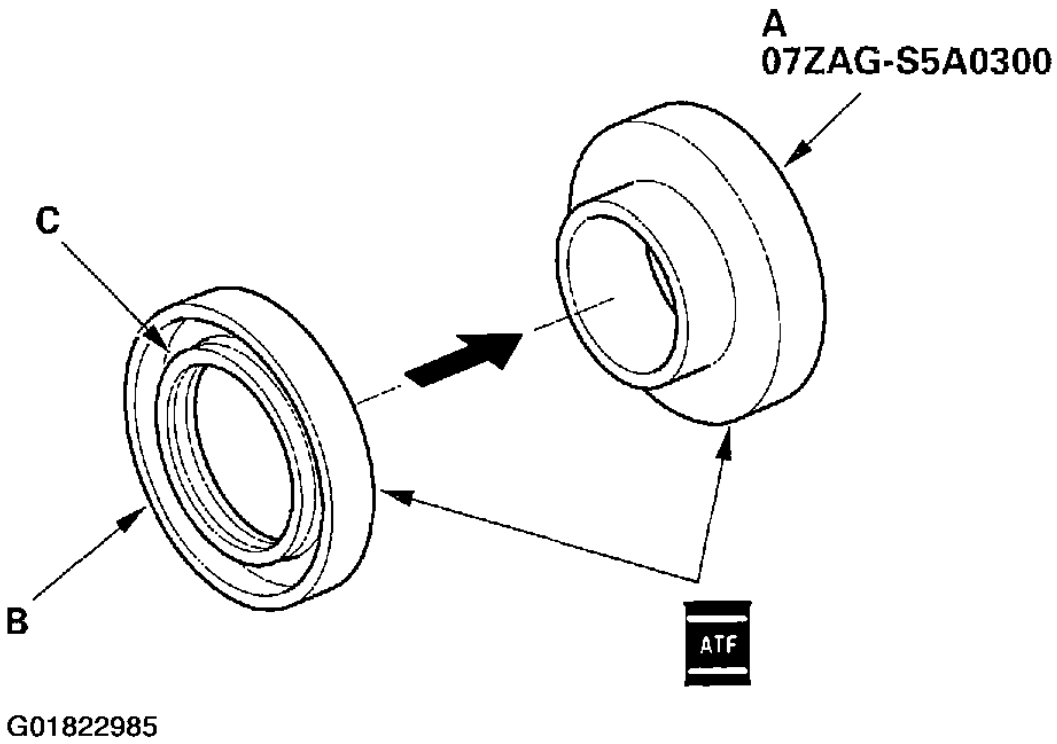


Fig. 103: Placing The Seal On The Special Tool

54. Coat the surface of the steering rack (A) with power steering fluid.

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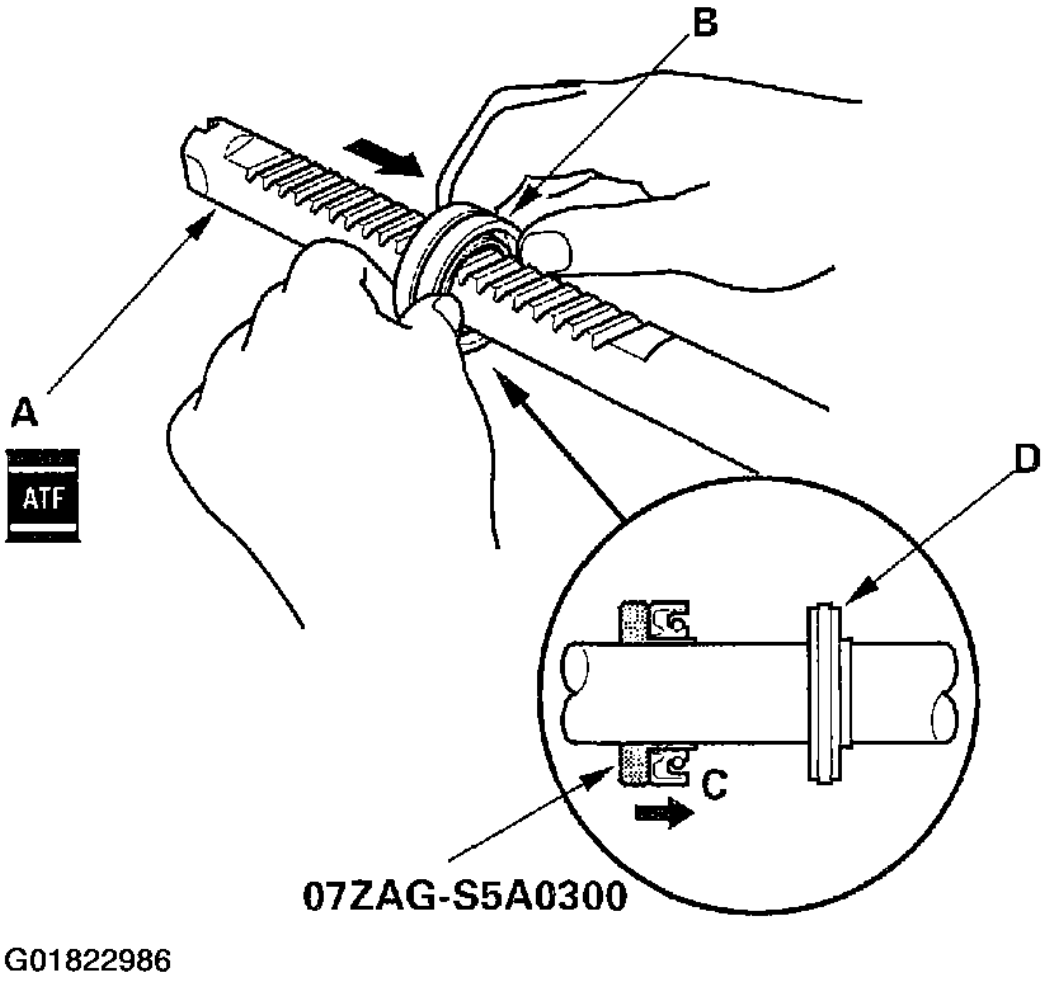


Fig. 104: Installing The Cylinder End Seal Onto The Steering Rack

55. Install the cylinder end seal (B) onto the steering rack with its grooved side (C) toward the piston (D).
56. Separate the cylinder end seal from the special tool, then remove the special tool.
57. Install the NEW backup ring (A) on the steering rack, then place the backup ring and cylinder end seal (B) against the piston (C).

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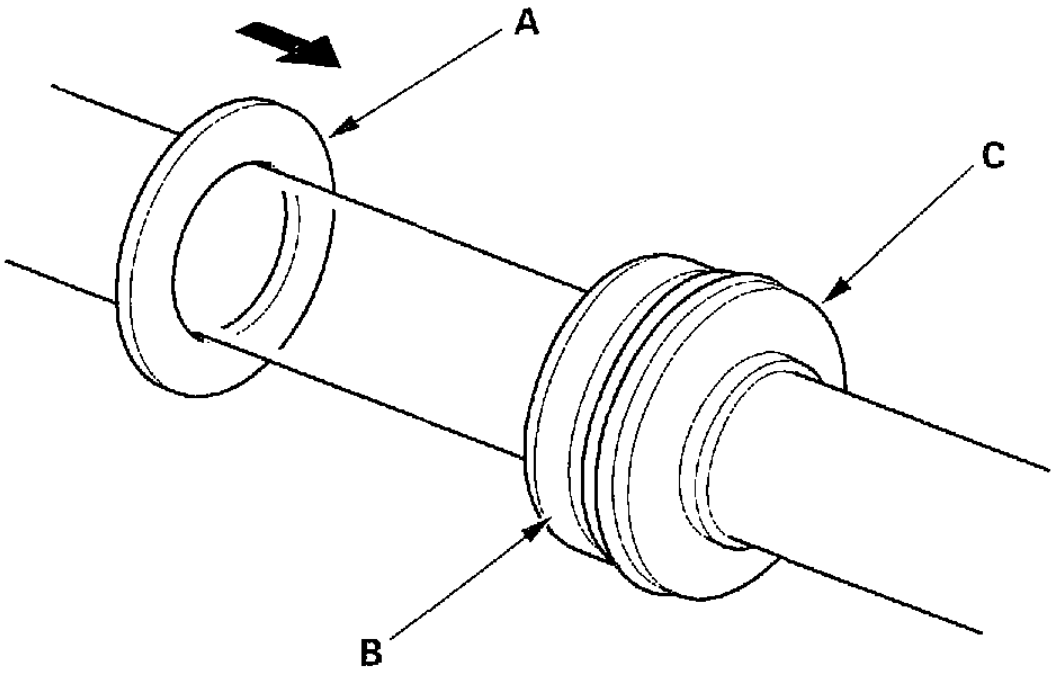


Fig. 105: Installing The NEW Backup Ring On The Steering Rack

58. Apply multipurpose grease to the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.

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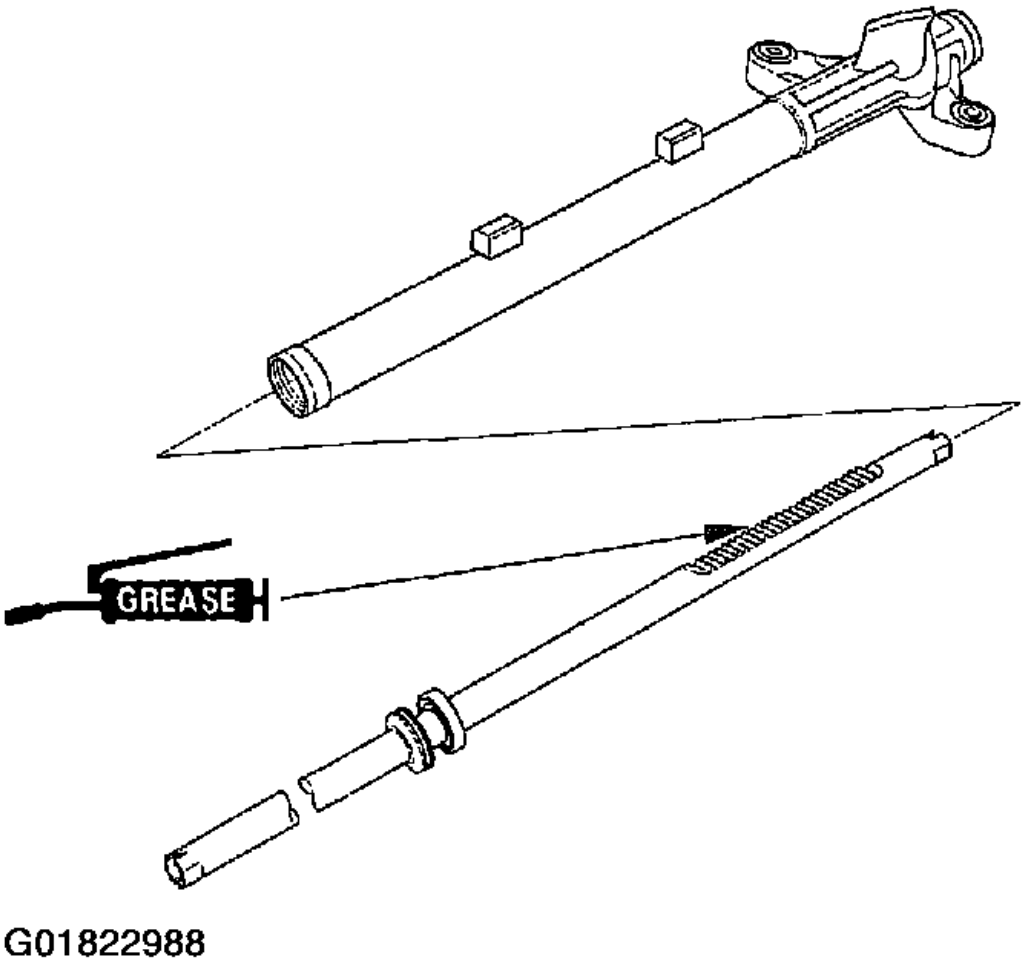


Fig. 106: Inserting The Steering Rack Into The Gearbox Housing

59. Insert an appropriate size deep socket wrench (A) onto the steering rack as shown.

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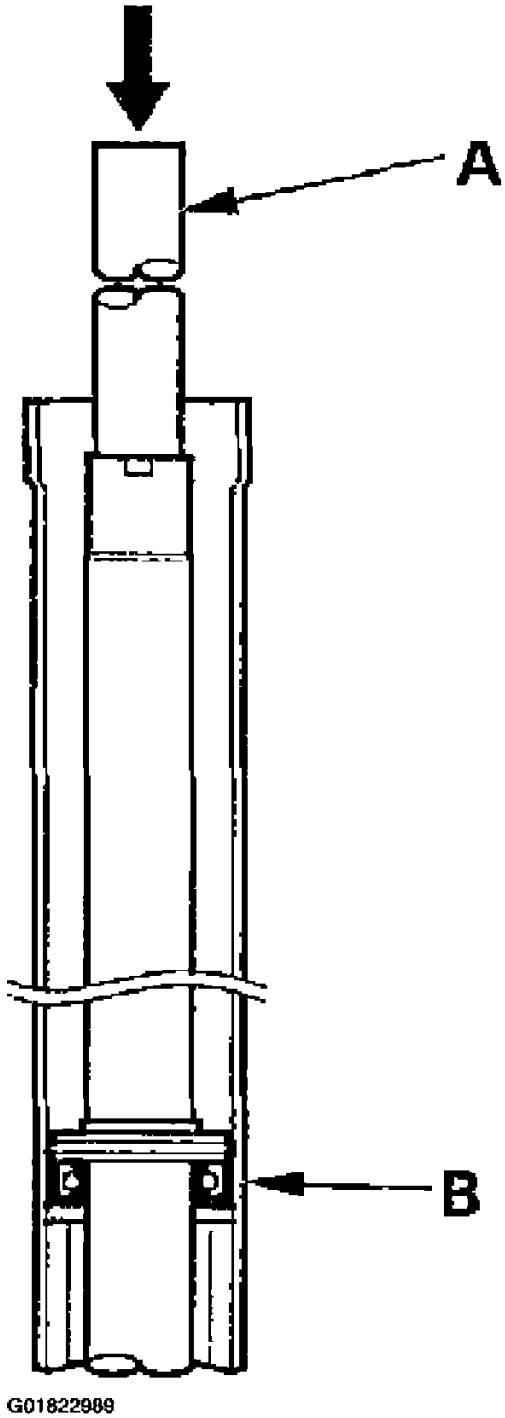


Fig. 107: Inserting An Appropriate Size Deep Socket Wrench Onto The Steering Rack

60. Install the cylinder end seal (B) into the bottom of the cylinder by pressing on the tool with a press. Do not push on the tool with excessive force as it may damage the cylinder end seal.
61. Remove the tool, and center the steering rack.

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62. Coat the sliding surface of the special tool (A) and NEW cylinder end seal (B) with power steering fluid. Place the seal on the special tool with its grooved side (C) facing opposite the special tool.

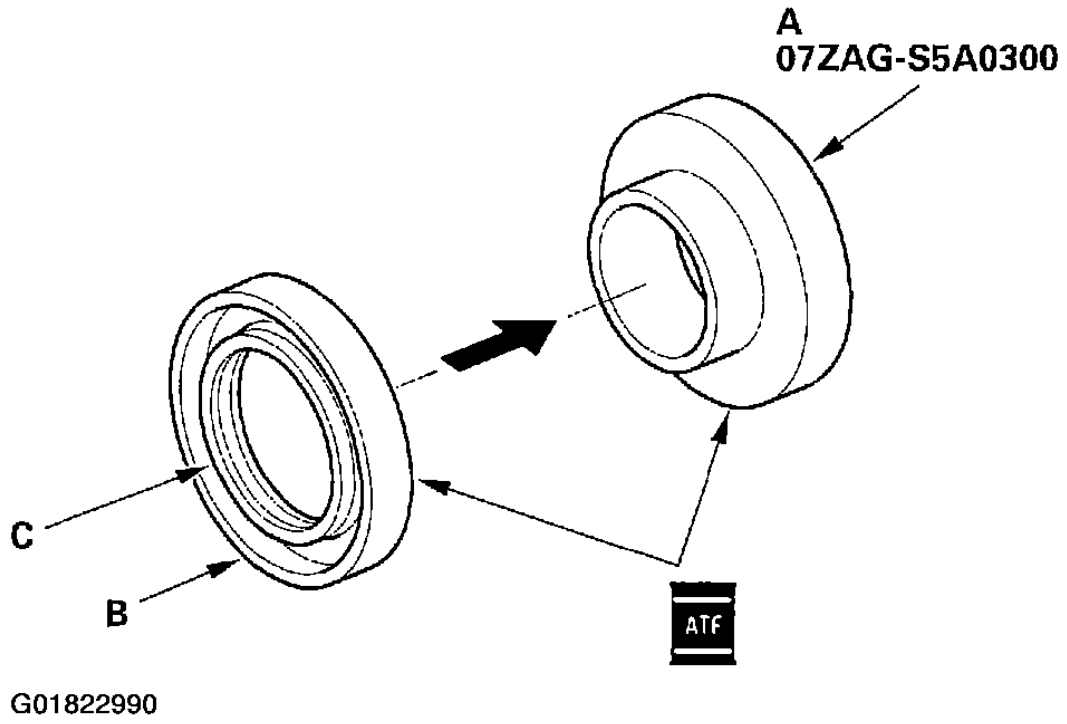


Fig. 108: Placing The Seal On The Special Tool

63. Coat the inside surface of the special tool and steering rack with power steering fluid, then install the cylinder end seal (A) onto the steering rack with its grooved side toward the cylinder.

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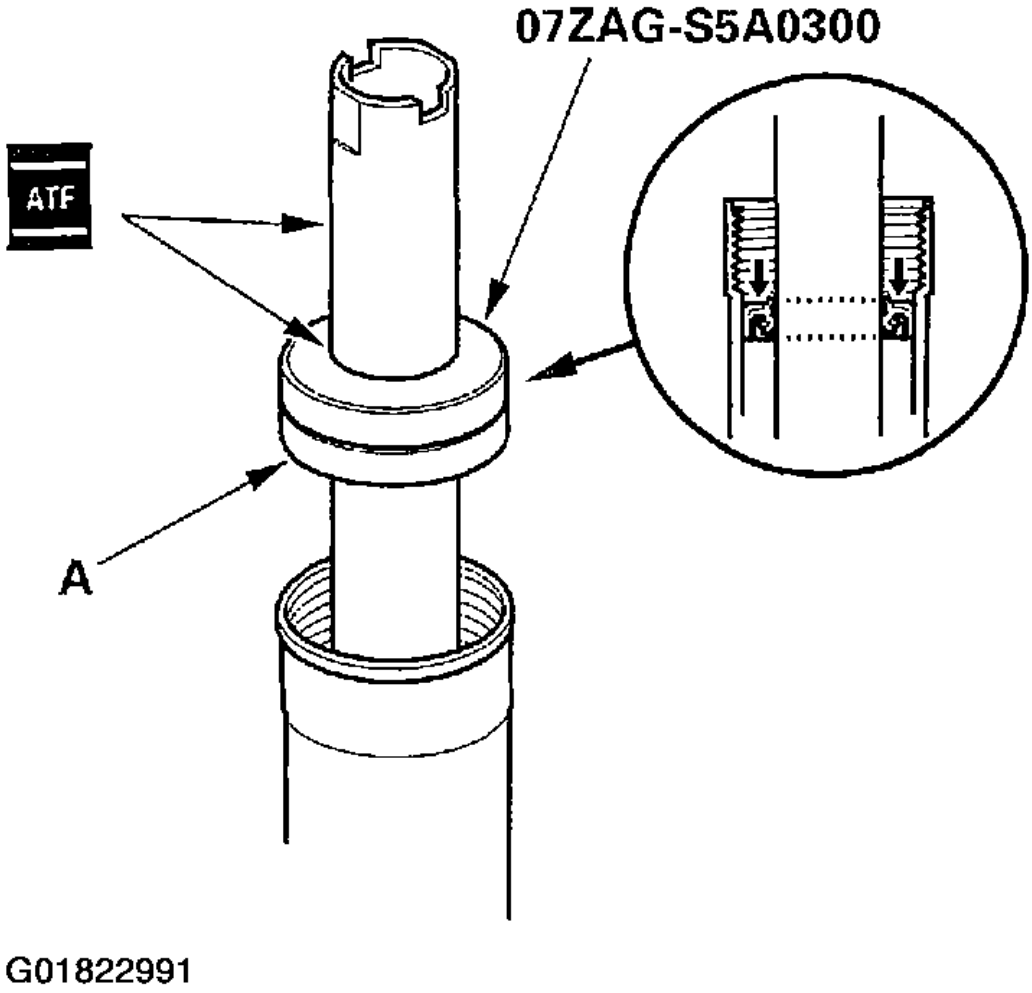


Fig. 109: Installing The Cylinder End Seal Onto The Steering Rack

64. Separate the cylinder end seal from the special tool, then remove the special tool.
65. Push in the cylinder end seal with your finger. Be careful not to damage the face of the seal with the threads and burrs at the staked position of the cylinder housing.
66. Hold the gearbox housing using a C-clamp (commercially available) (A) and wooden blocks (B). Do not clamp the cylinder part of the gearbox housing in the vise.

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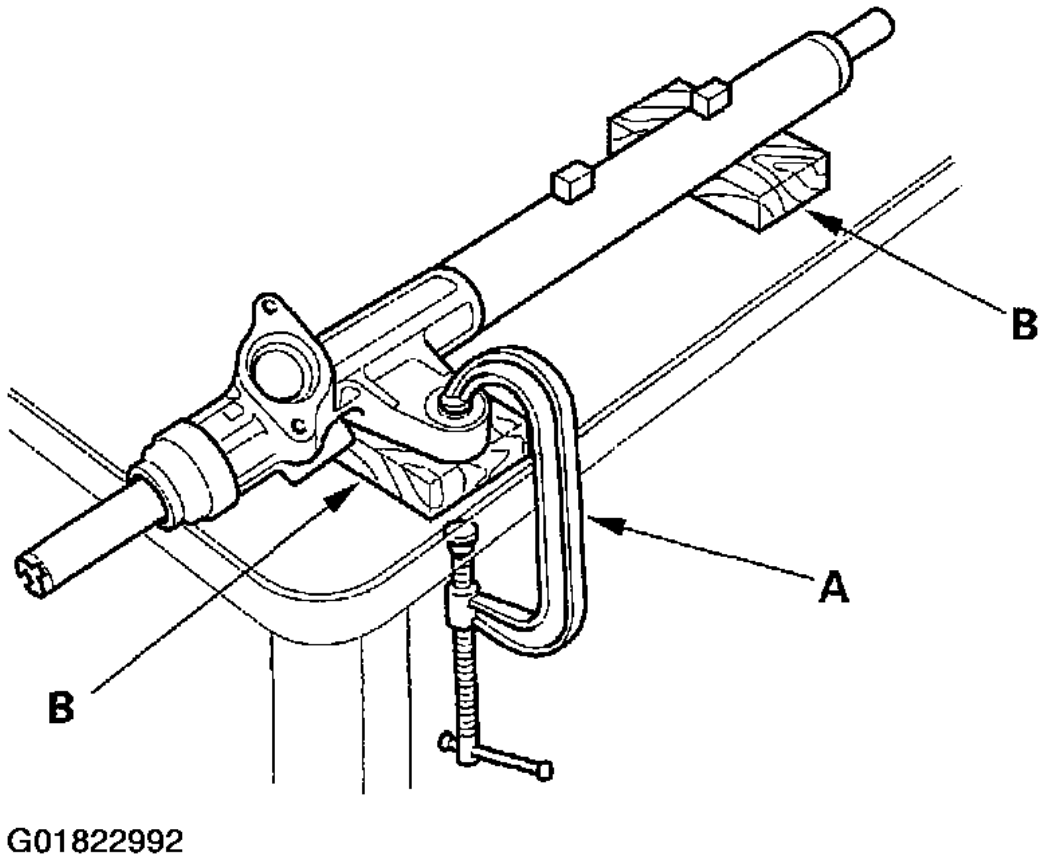


Fig. 110: Holding The Gearbox Housing Using A C-Clamp & Wooden Blocks

67. Coat the inside surface of the cylinder end (A) with power steering fluid, then install the cylinder end by screwing it into the cylinder (B). Tighten the cylinder end to the specified torque.

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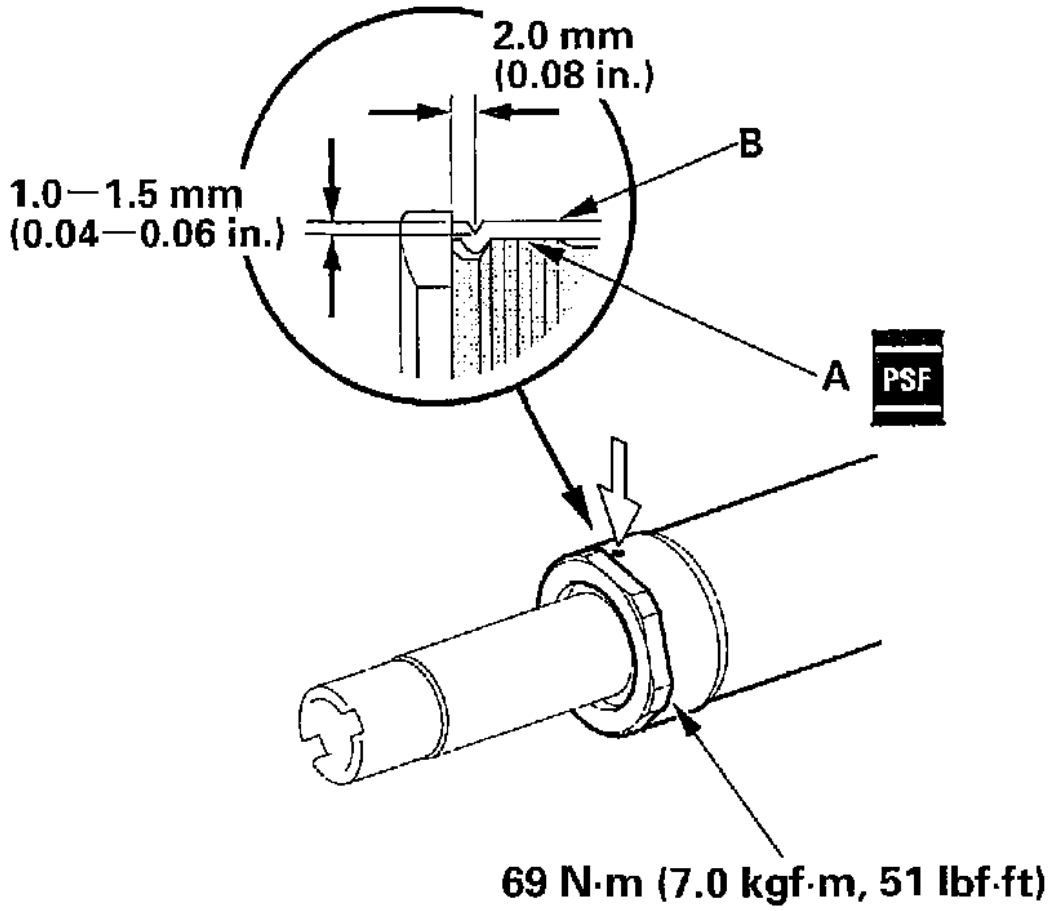


Fig. 111: Installing The Cylinder End By Screwing It Into The Cylinder & Staking

68. Stake the point of the cylinder shown (opposite from where the stake was removed during disassembly).
69. Coat the NEW O-ring (A) with multipurpose grease, and carefully fit it on the valve housing.

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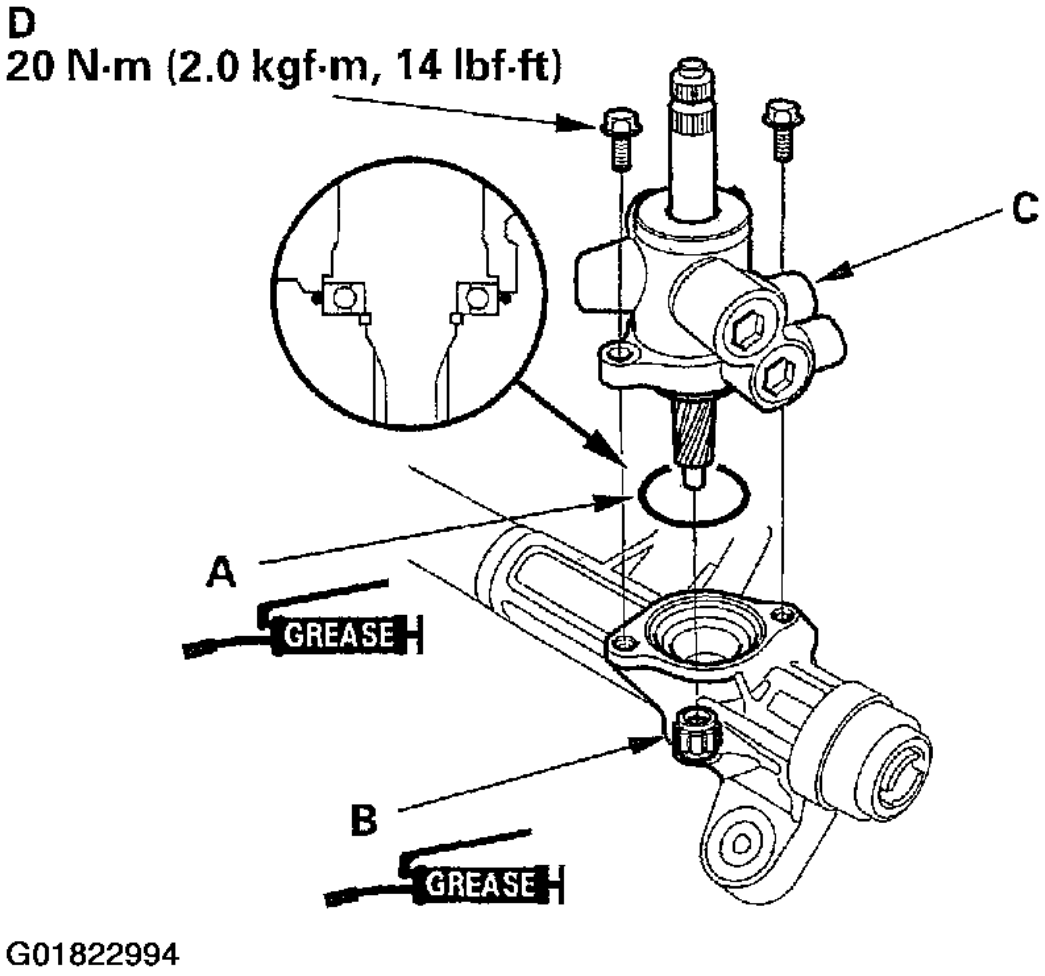


Fig. 112: Installing The Valve Body Unit By Engaging The Gears

70. Apply multipurpose grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).
71. Tighten the flange bolts (D) to the specified torque.
72. Install the cylinder lines. Note these items during reassembly:
    - Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
    - Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.

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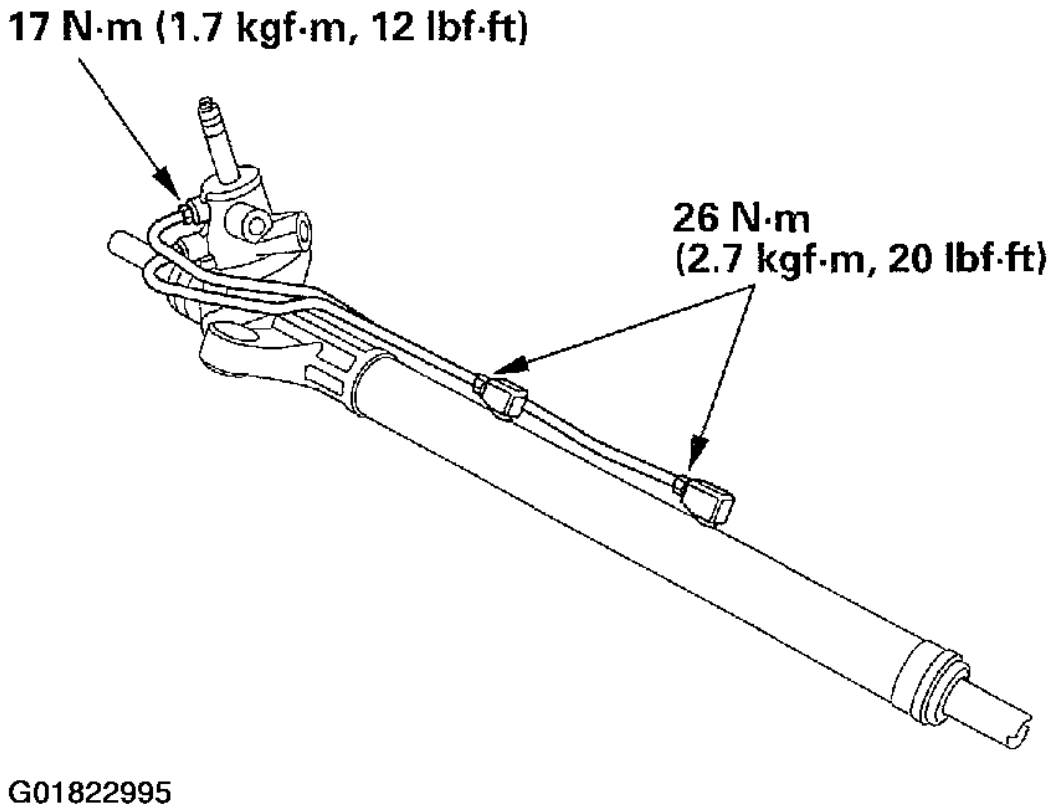


Fig. 113: Installing The Cylinder Lines

73. Apply multipurpose grease to the sliding surface and circumference of the rack guide (A), and install it onto the gearbox housing.

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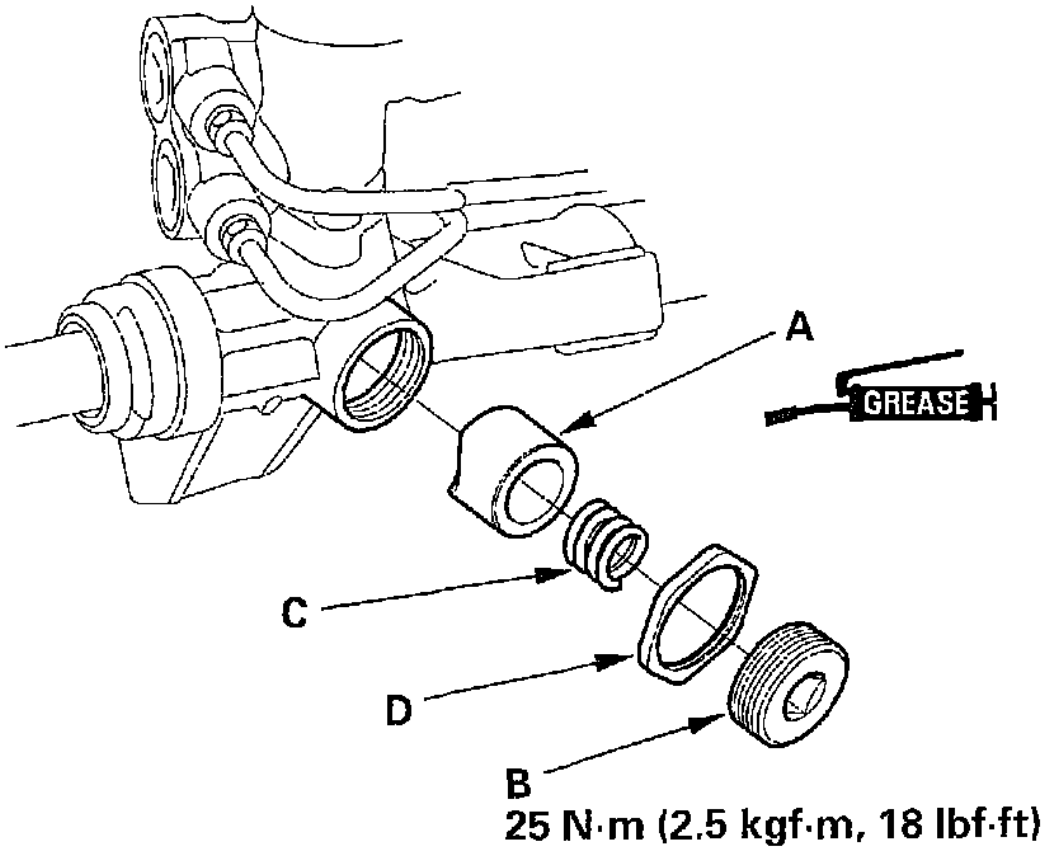


Fig. 114: Installing The Spring, Rack Guide Screw & Locknut

74. Apply NEW sealant (Three Bond 1215 or Loctite 5699) to middle of the threads on the rack guide screw (B), then install the spring (C) and rack guide screw.
75. Tighten the rack guide screw, and loosely install the locknut (D).
76. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.
77. Install a NEW stop rubber (A) and a NEW lock washer (B). Align the lock washer tabs (D) with the slots (E) on the rack end (C) while holding the lock washer in place. Repeat this step for the other side of the rack.

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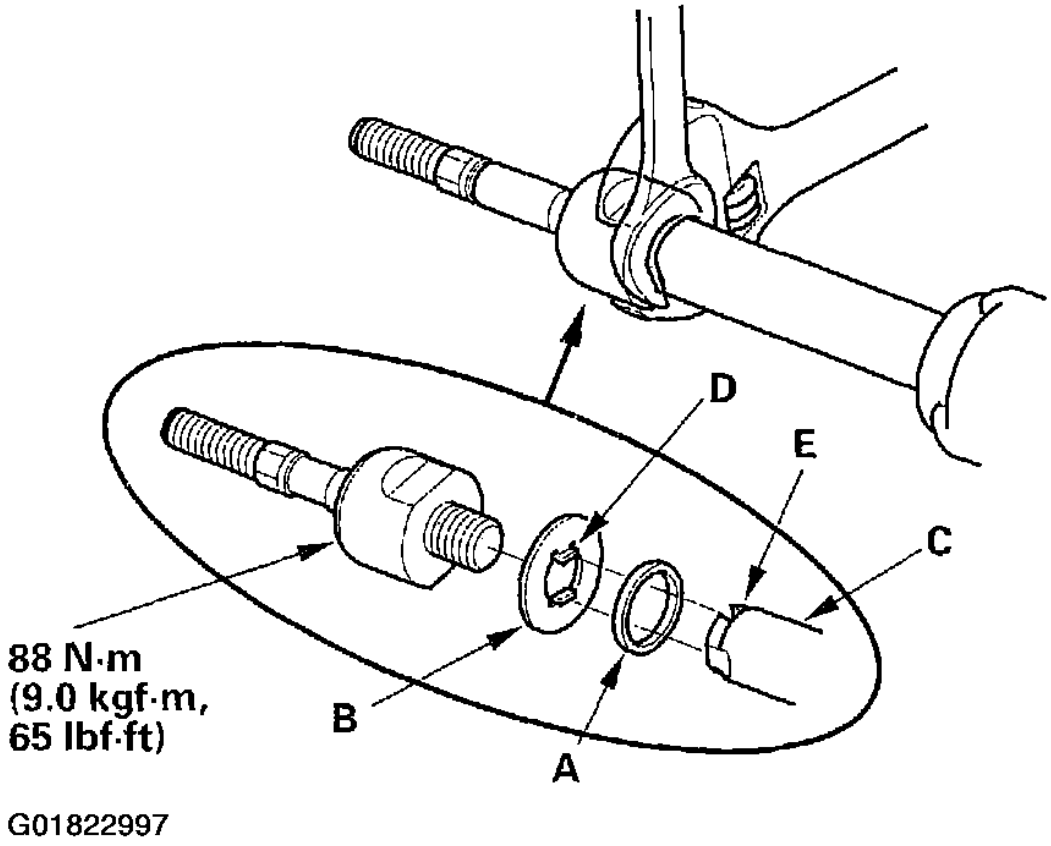


Fig. 115: Installing A NEW Stop Rubber & A NEW Lock Washer

78. Hold the flat surface sections of the steering rack with a wrench, and tighten both rack ends. Be careful not to damages the rack surface with the wrench.
79. Bend the lock washer (A) back against the flat spots on the rack end joint housing.

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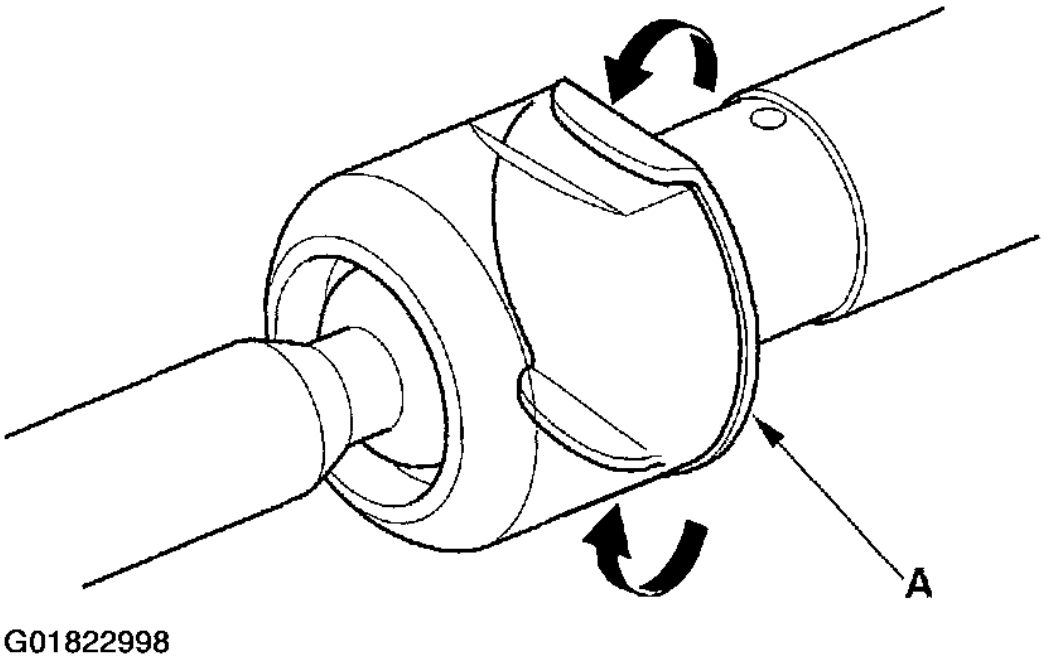


Fig. 116: Bending The Lock Washer Back Against The Flat Spots On The Rack End Joint Housing

80. Apply multipurpose grease to the circumference of the rack end joint housing (A).

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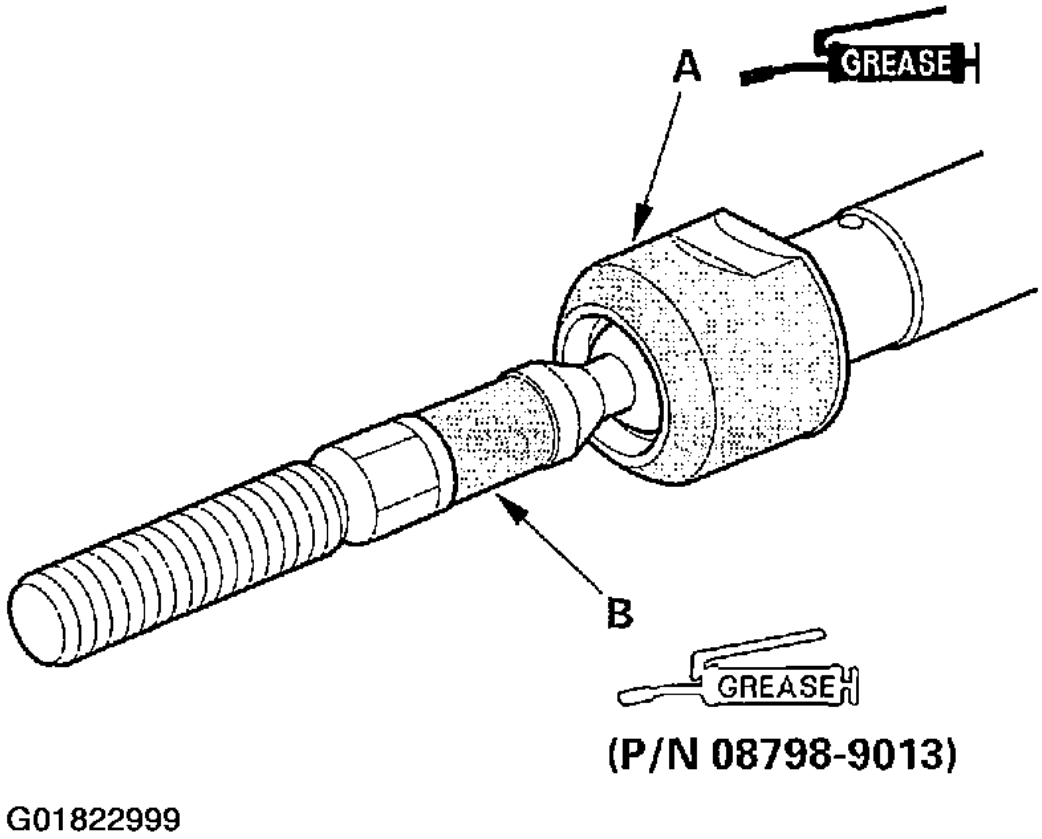


Fig. 117: Applying Multipurpose Grease To The Circumference Of The Rack End Joint Housing & Boot Grooves On The Rack Ends

81. Apply a light coat of silicone grease to the boot grooves (B) on the rack ends.
82. Center the steering rack within its stroke.
83. Clean off the any grease or contamination from the boot installation grooves (A) around on the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.

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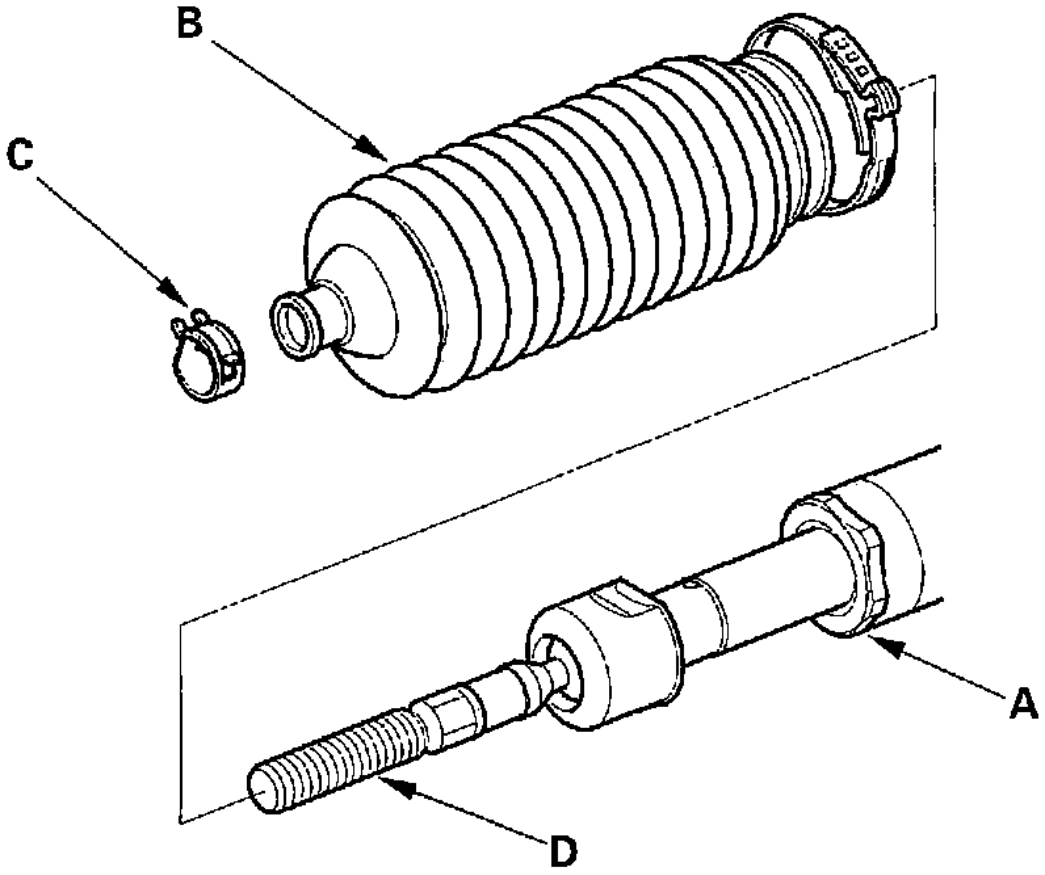


Fig. 118: Installing The Boots

84. After installing the boots, wipe the grease off the threaded section (D) of the rack end.
85. Install the NEW boot bands by aligning the tabs (A) with the holes (B) of the band.

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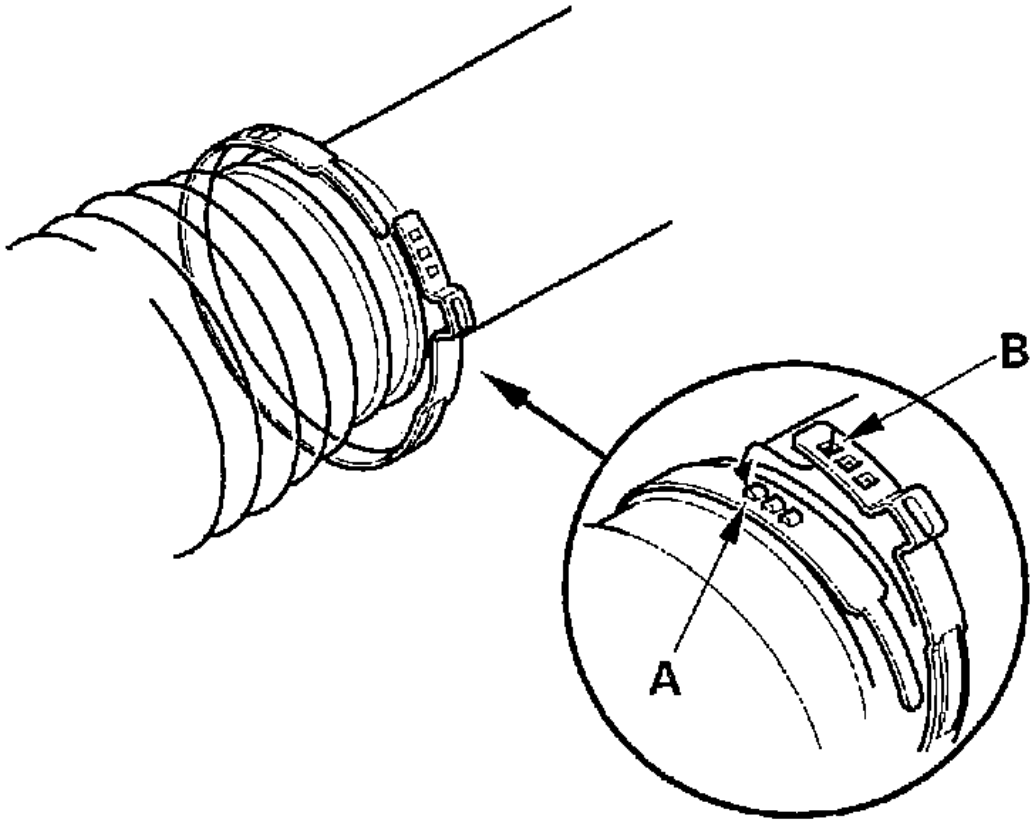


Fig. 119: Installing The NEW Boot Bands

86. Close the ear portion (A) of the band (B) with commercially available pincers, Oetiker 1098 or equivalent (C).

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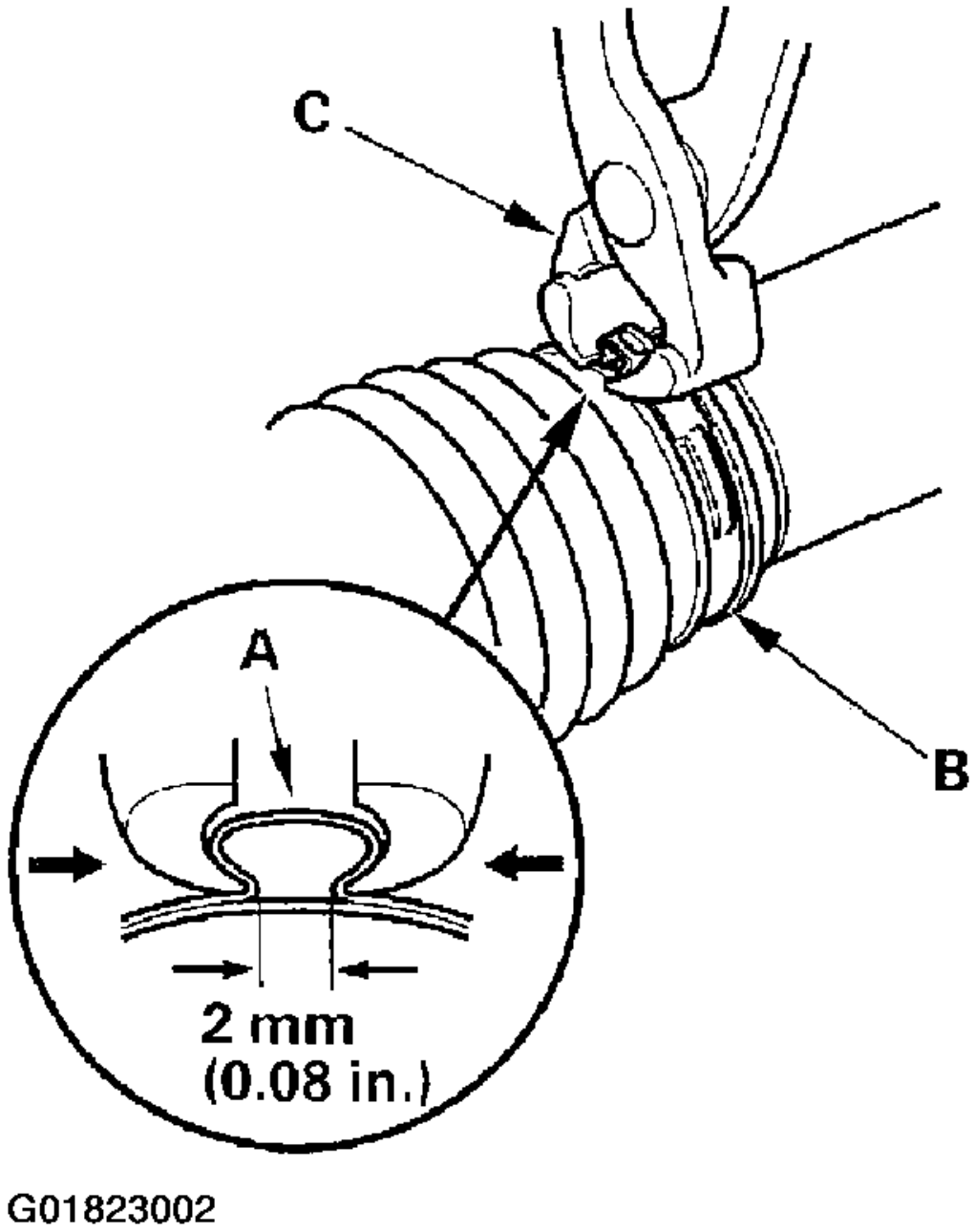


Fig. 120: Closing The Ear Portion Of The Band

87. Slide the rack right and left to be certain that the boots are not deformed or twisted.

STEERING GEARBOX INSTALLATION

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1. Before installing the steering gearbox, make sure that no power steering fluid is on the mating surface of the gearbox and a front suspension subframe. To prevent the gearbox mounting bolts from loosening after the installation, remove the power steering fluid from the mount cushions and bolt holes.
2. Apply a mild soap and water solution to both side of the mount cushion mating surfaces (A).

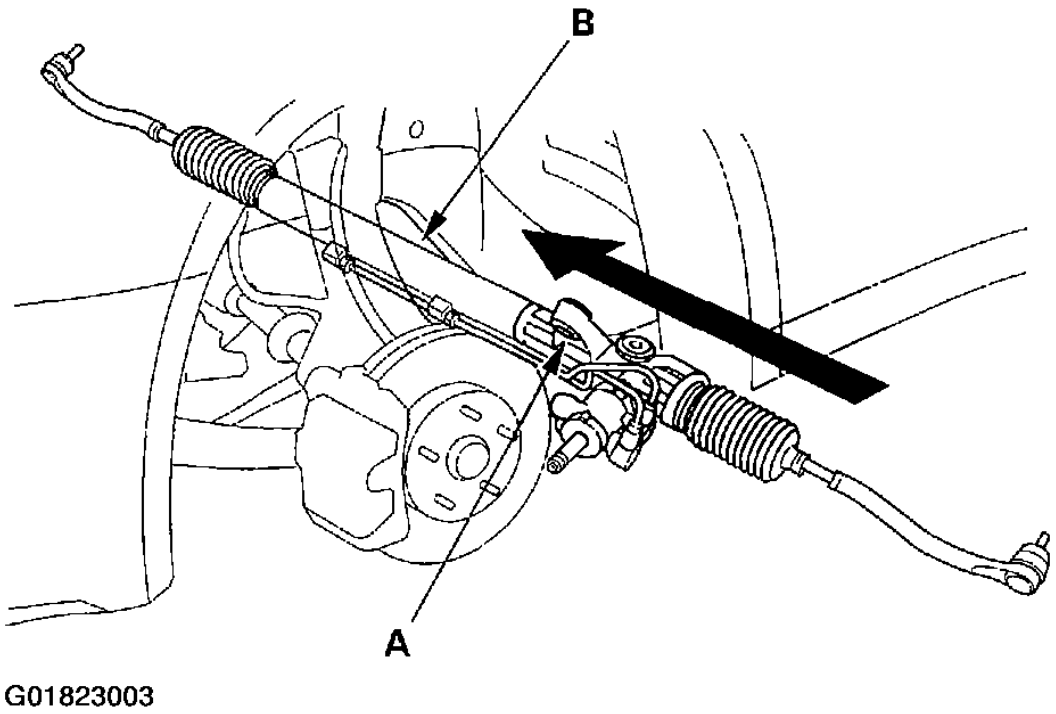


Fig. 121: Apply A Mild Soap & Water Solution To Both Sides Of The Mount Cushion Mating Surfaces & Pass The Steering Gearbox Through The Wheelwell Opening On The Driver's Side

3. Pass the cylinder of the steering gearbox (B) through the wheelwell opening on the driver's side.
4. Carefully move the steering gearbox toward the passenger's side until the pinion shaft clears the wheelwell opening on the body.
5. Rotate the steering gearbox so the pinion shaft (A) points upward.

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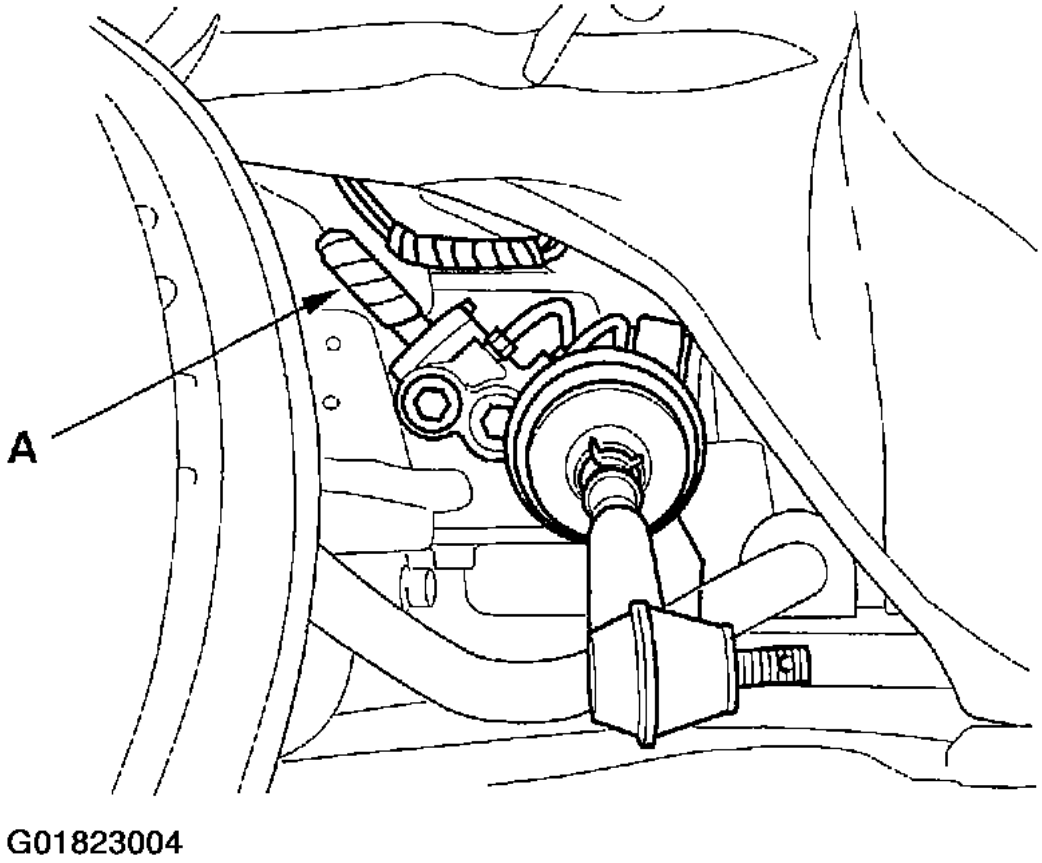


Fig. 122: Rotating The Steering Gearbox So The Pinion Shaft Points Upward

6. Continue moving the gearbox toward the passenger's side until the steering gearbox is in position. Make sure the power steering return line and feed line are routed above the gearbox.
7. Remove the vinyl tape from the pinion shaft, and install the pinion shaft grommet (A). Align the slot in the pinion shaft grommet with the lug portion (B) on the valve housing.

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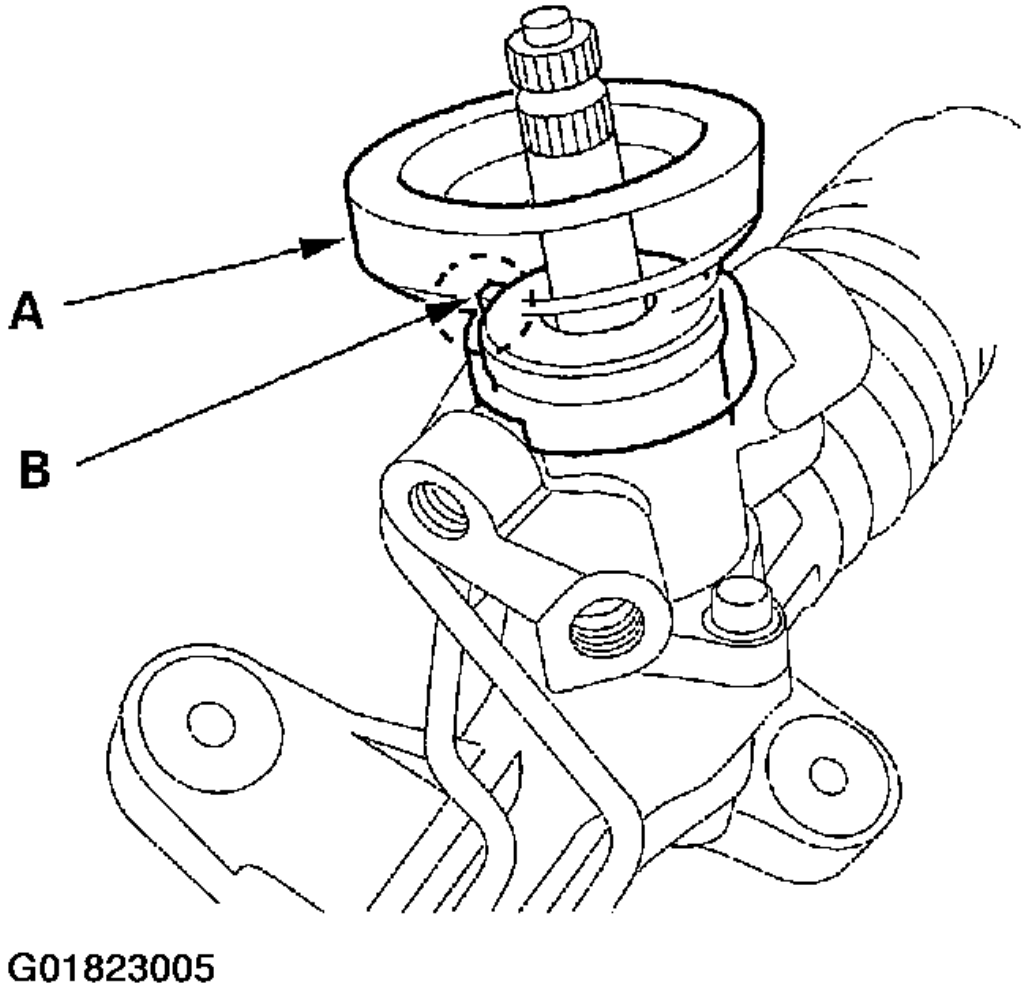


Fig. 123: Installing The Pinion Shaft Grommet

8. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the cylinder of the gearbox securely.

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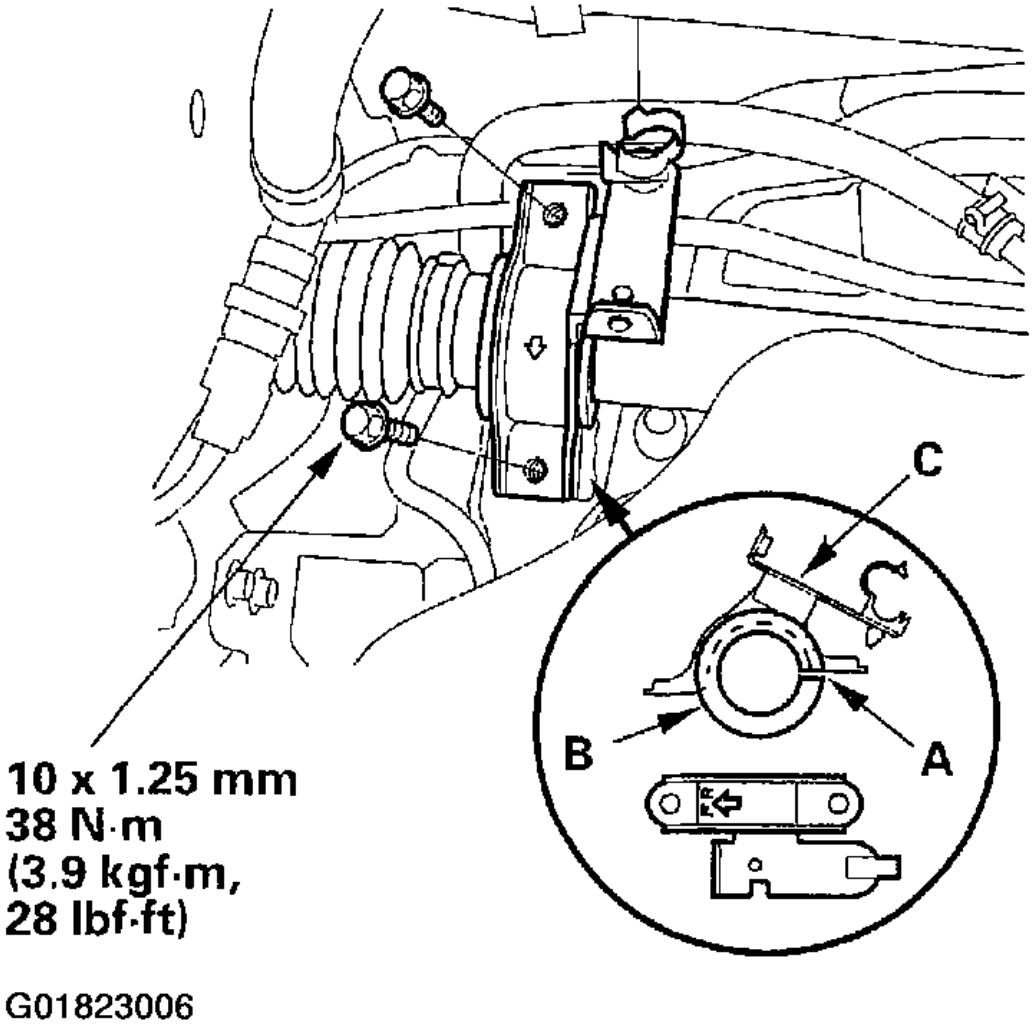


Fig. 124: Installing Mounting Cushion On The Cylinder Of The Gearbox

9. Install the gearbox mounting bracket (C) over the mounting cushion, and loosely install the two flange bolts.
10. Install the steering stiffener plate (A) and gearbox mounting bolts on the left side of the gearbox, then tighten them to the specified torque.

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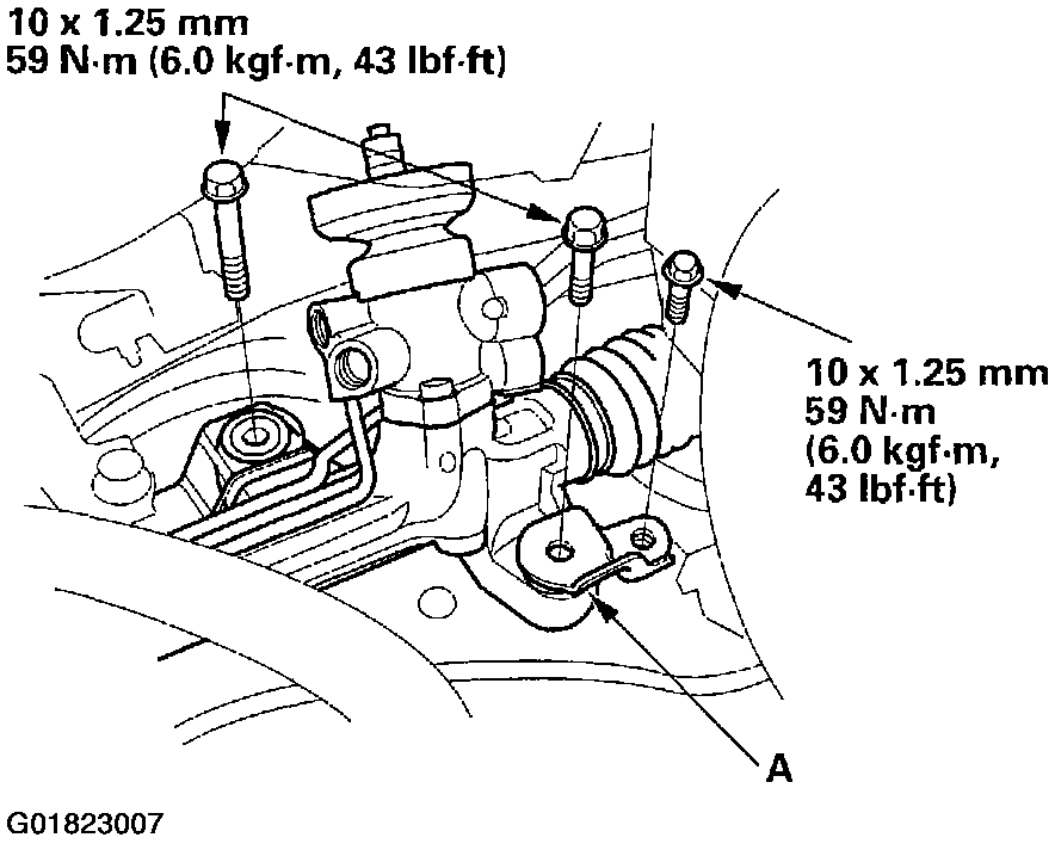


Fig. 125: Installing The Steering Stiffener Plate & Gearbox Mounting Bolts

11. Tighten the flange bolts on the right side of the gearbox to specified torque alternately in two or more steps.
12. Loosely connect the return line and feed line by hand securely.
13. Install the feed line holder (A) and return hose (B) on the gearbox mounting bracket (C)

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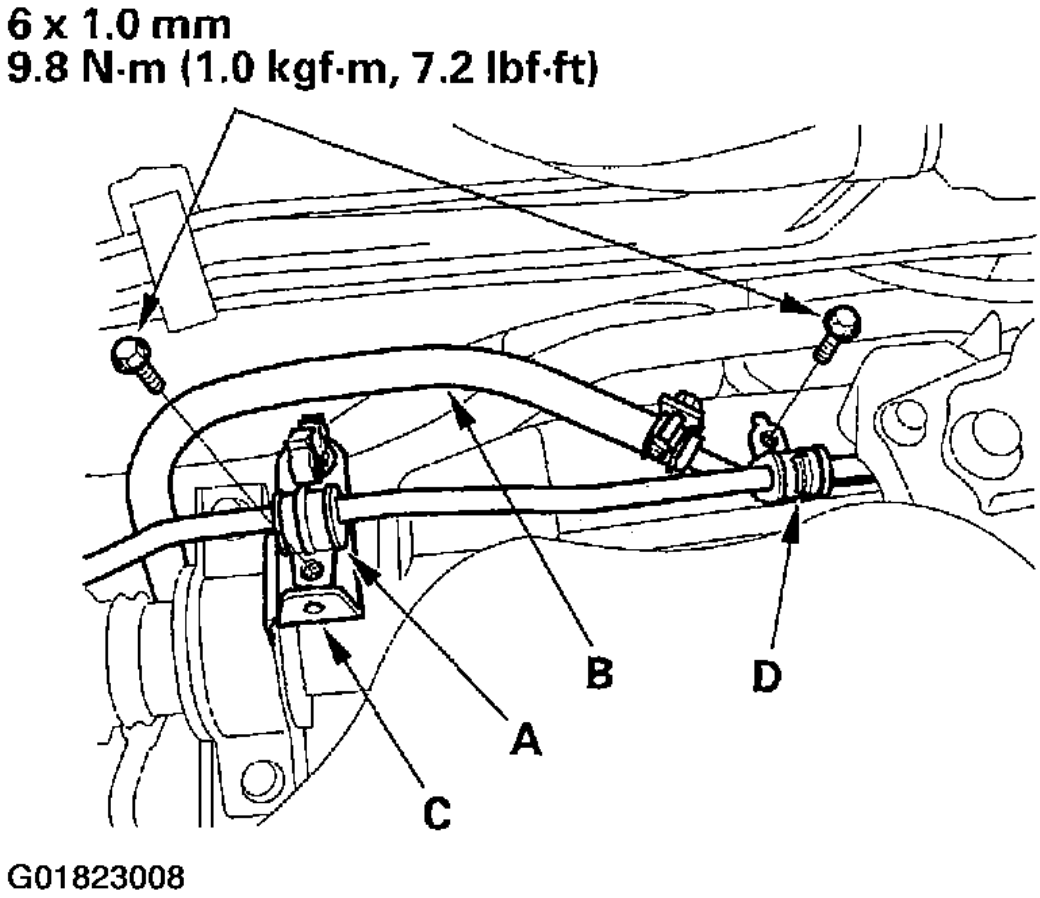


Fig. 126: Installing The Feed Line & Return Line

14. Install the feed line holder (D) on the front suspension subframe. Make sure that there is no interference between the feed and return lines and any other parts.
15. Retighten the return line flare nut (A) to the specified torque.

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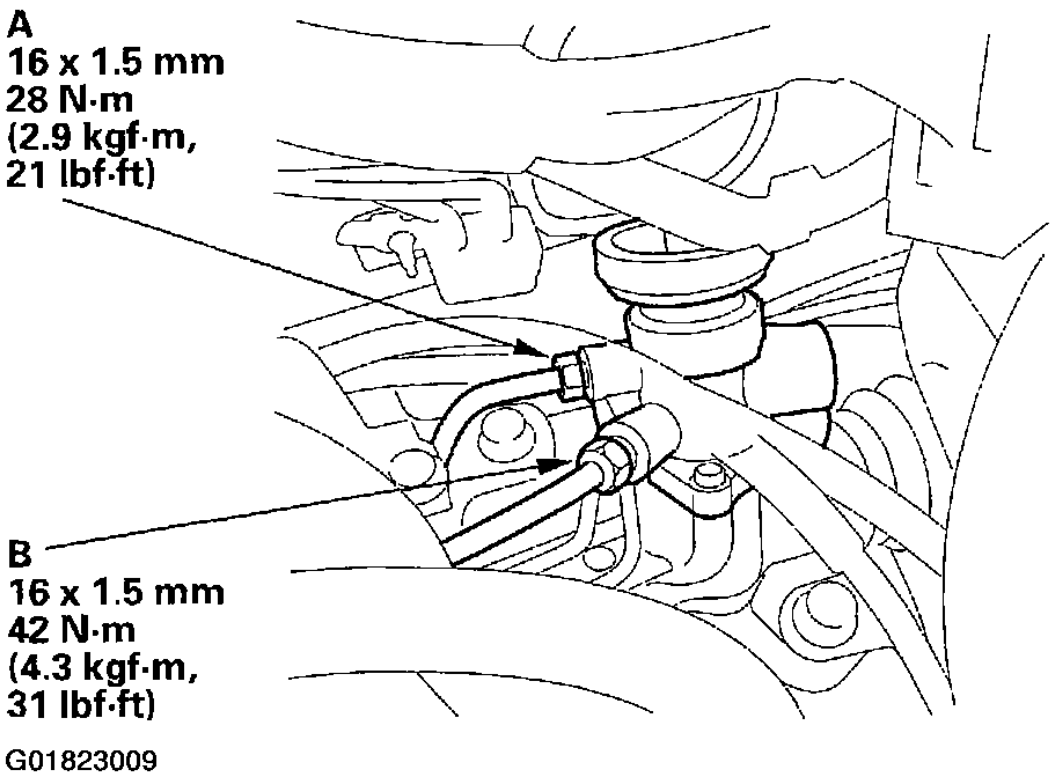


Fig. 127: Tightening The Feed Line & Return Line Flare Nuts

16. Retighten the feed line flare nut (B) to the specified torque.
17. Install the front suspension subframe left mid mount (A).

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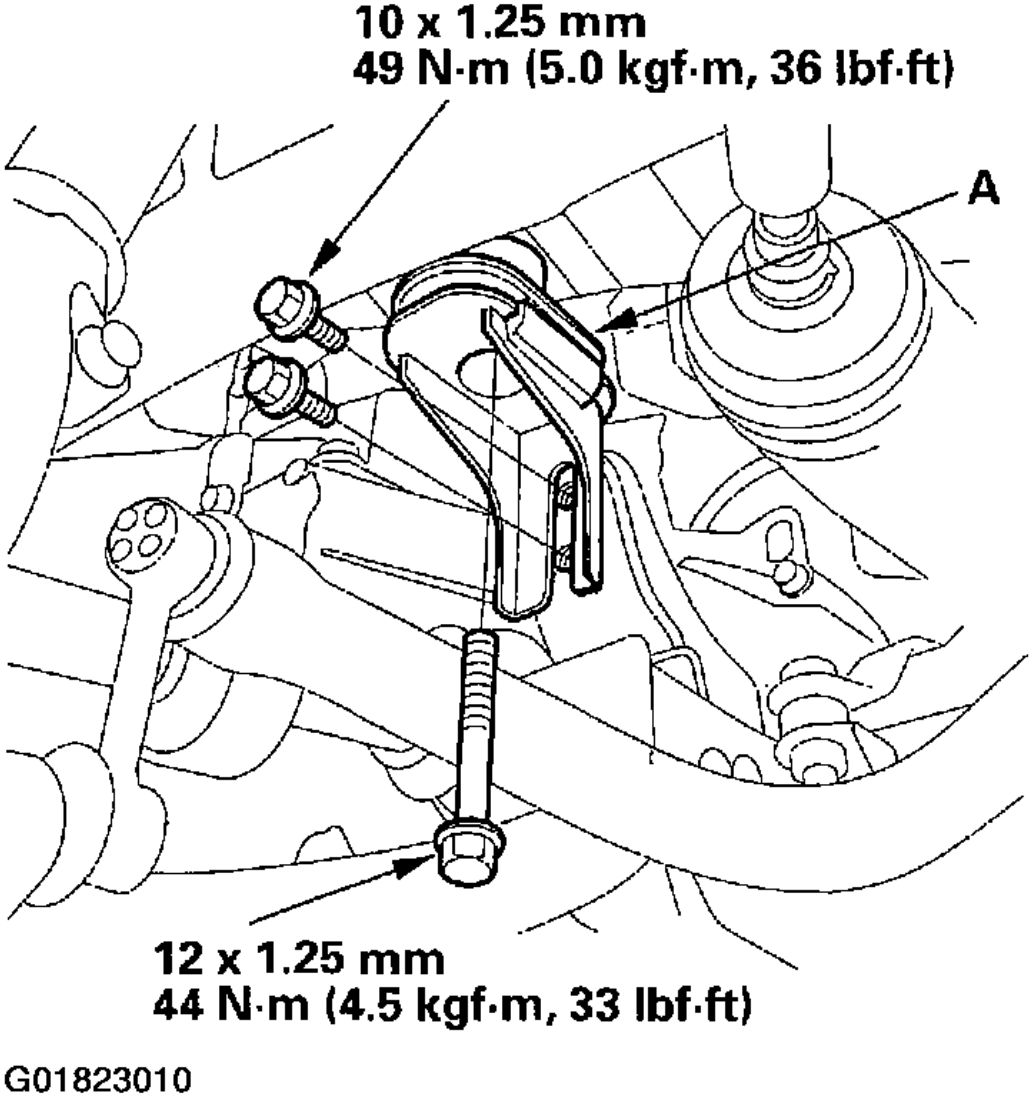


Fig. 128: Installing Front Suspension Subframe Left Mid Mount

18. Install the P/S heat baffle plate (A).

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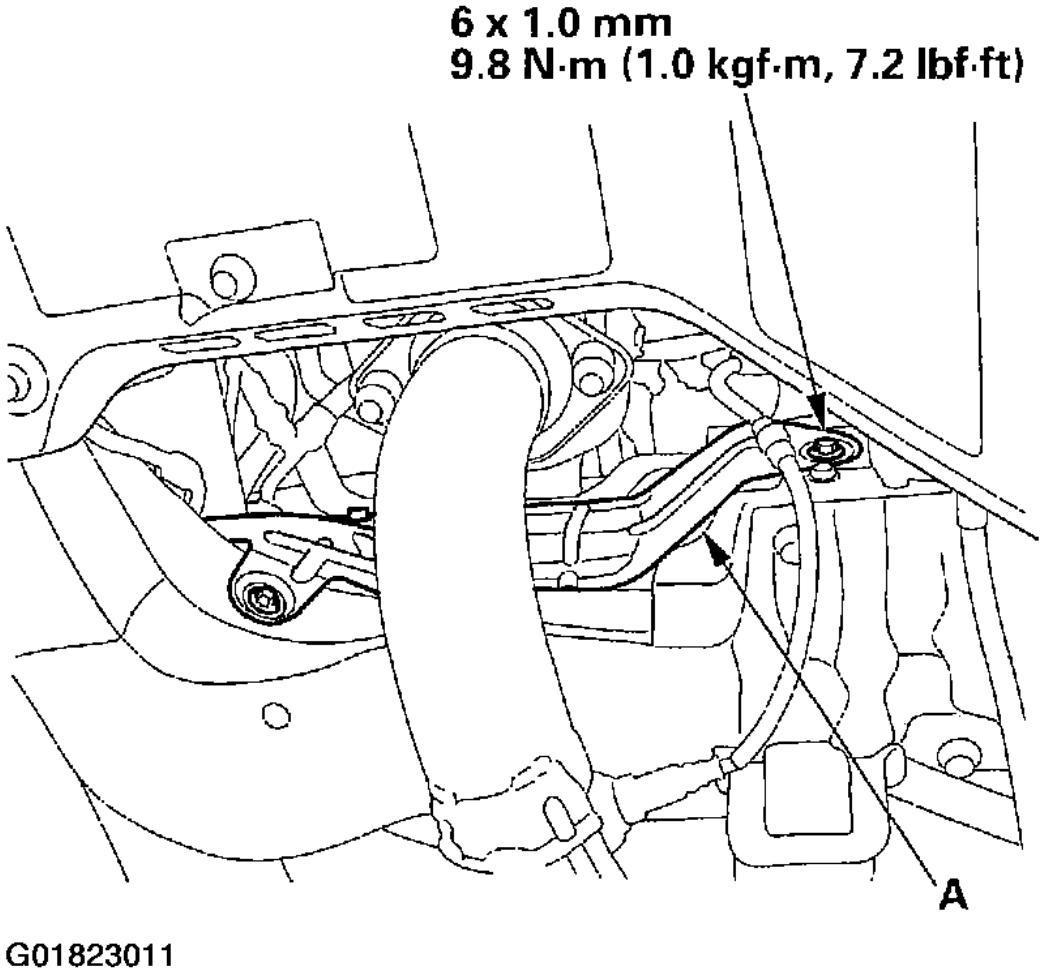


Fig. 129: Installing The P/S Heat Baffle Plate

19. Wipe off any grease contamination from the ball joint tapered section and threads. Then reconnect the tie-rod end (A) to the knuckle arms.

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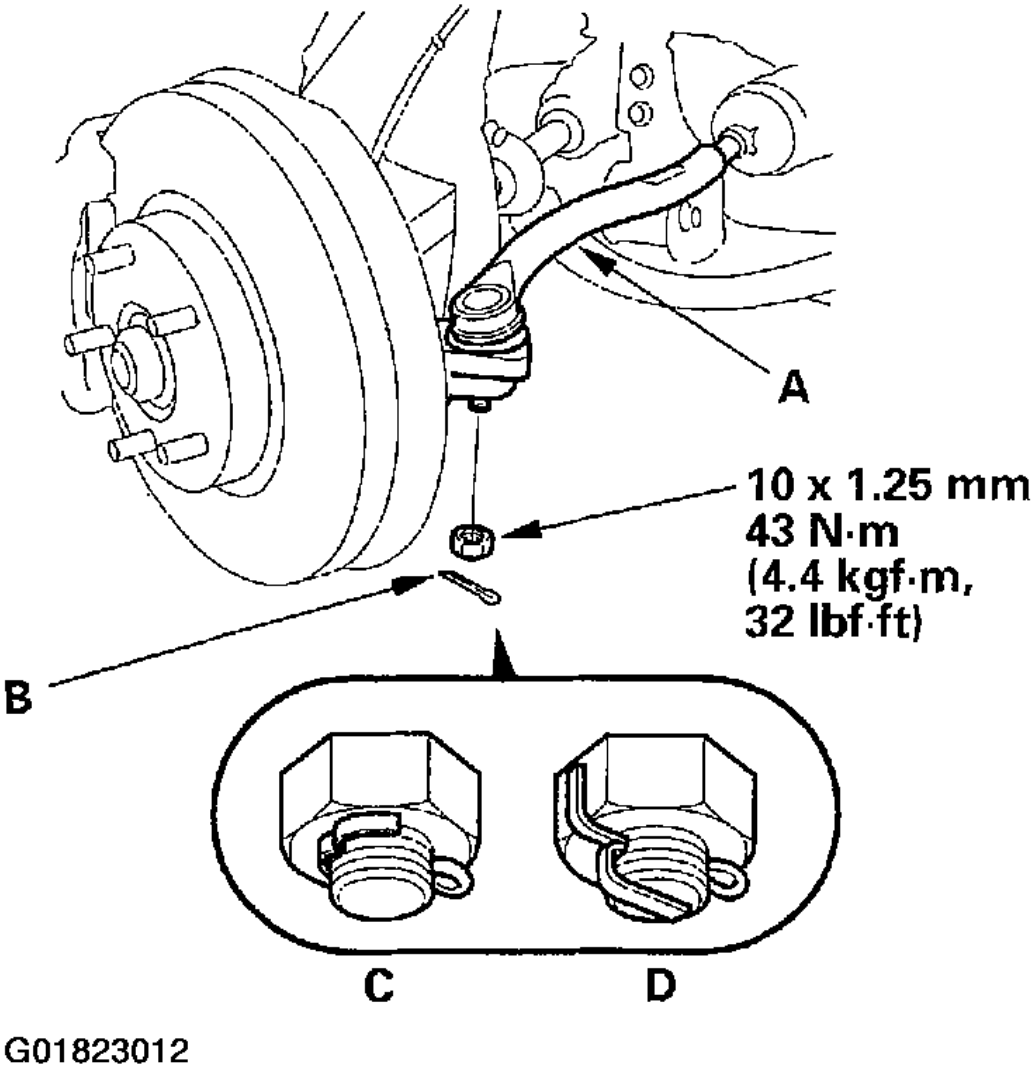


Fig. 130: Connecting Tie-Rod Ends To The Knuckle Arms

20. Install the tie-rod end ball joint nut, and tighten it to the specified torque. Then install the NEW cotter pin (B), and bend it as shown (C) or (D).
21. Install the NEW cover seal (A) all the way around in the steering joint cover B. Make sure there are no wrinkles in the seal, then install the steering joint cover B.

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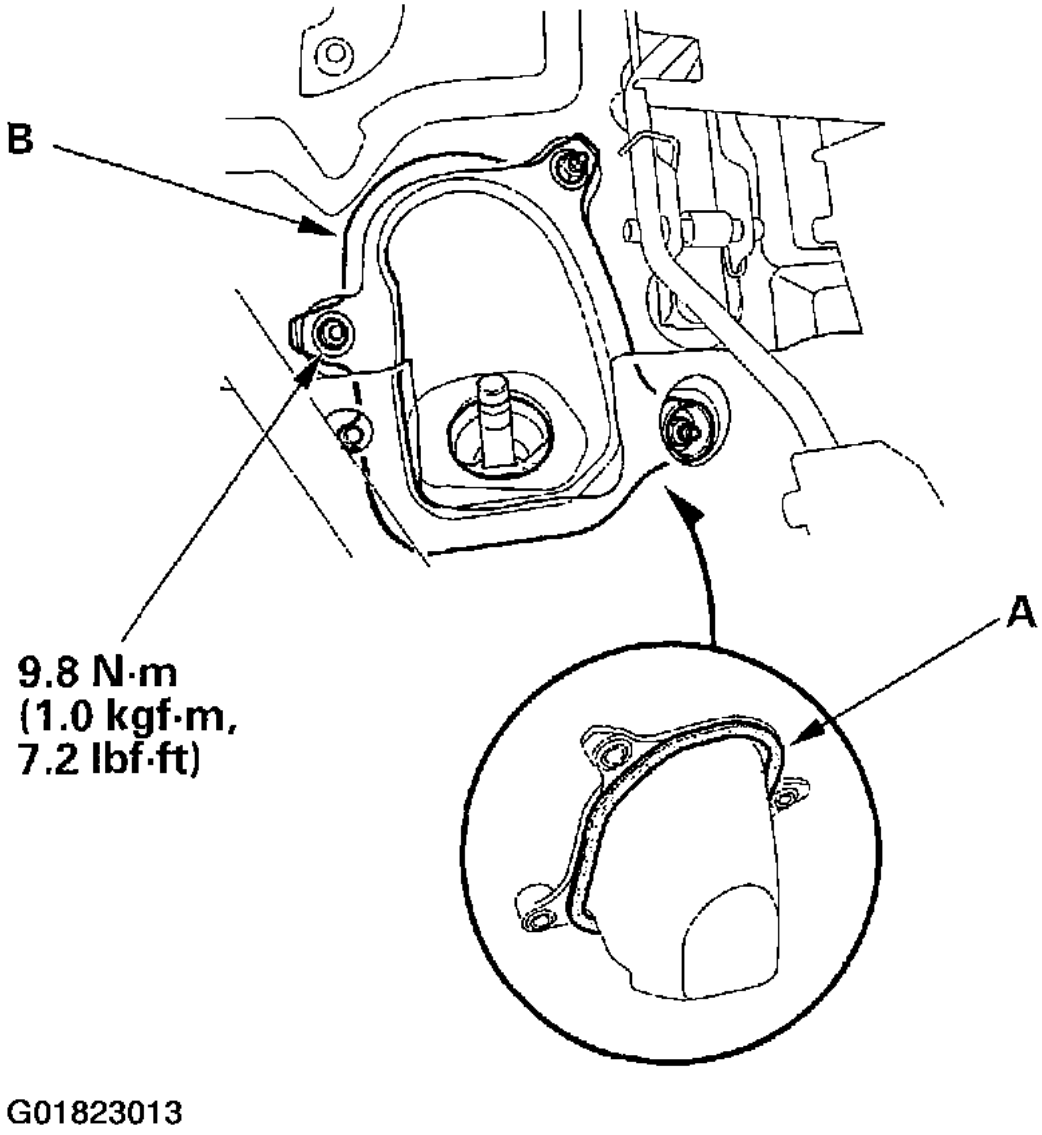


Fig. 131: Installing NEW Cover Seal & Steering Joint Cover B

22. Center the steering rack within its stroke.
23. Position the steering column joint (A) so the bolt (B) opposite to the notch (C) is within the range shown.

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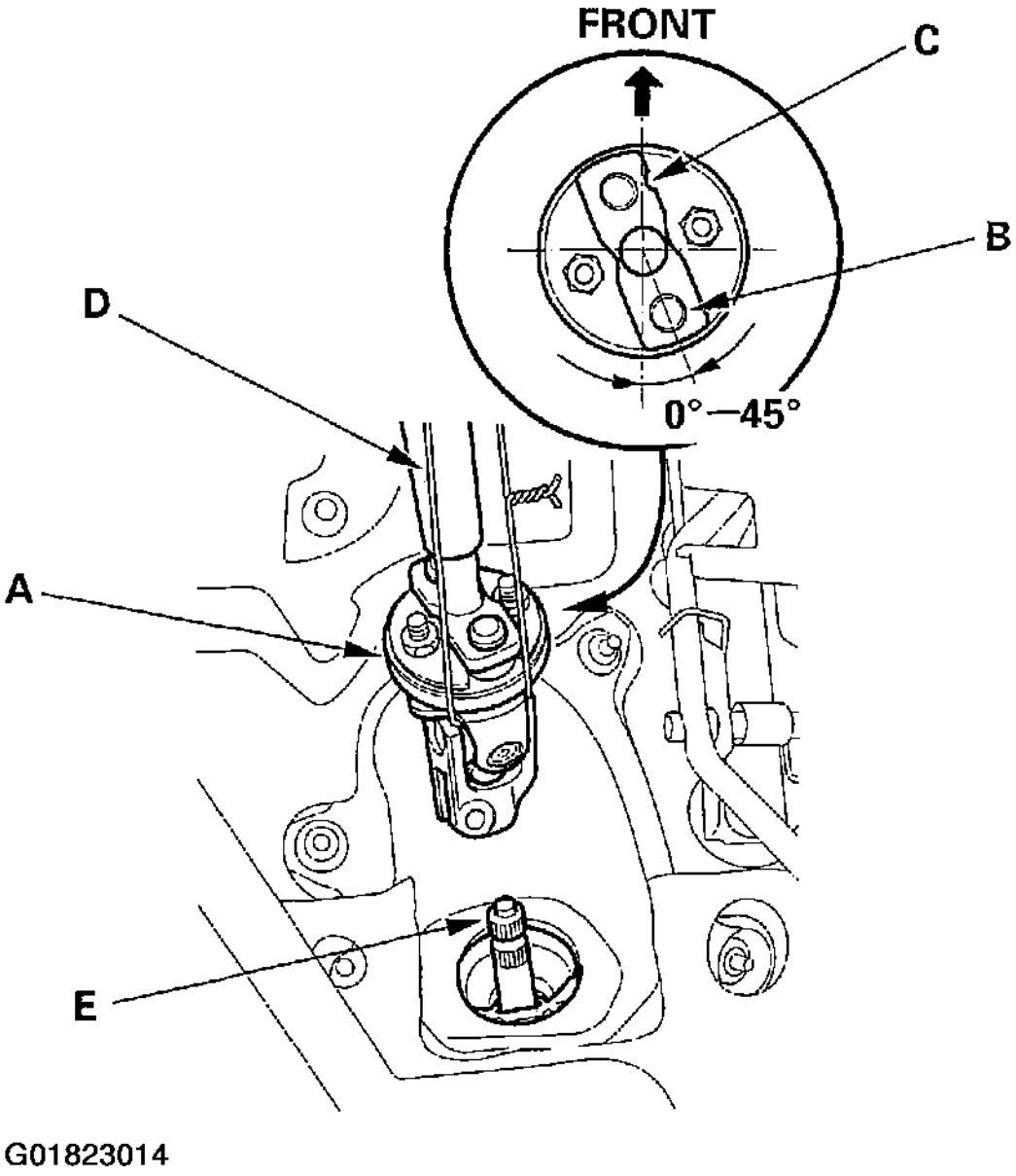


Fig. 132: Positioning The Steering Column Joint

24. With the rack in the straight ahead driving position, cut the wire (D) and slip the lower end of the steering joint on to pinion shaft (E).
25. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Make sure the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure the steering joint is fully seated.

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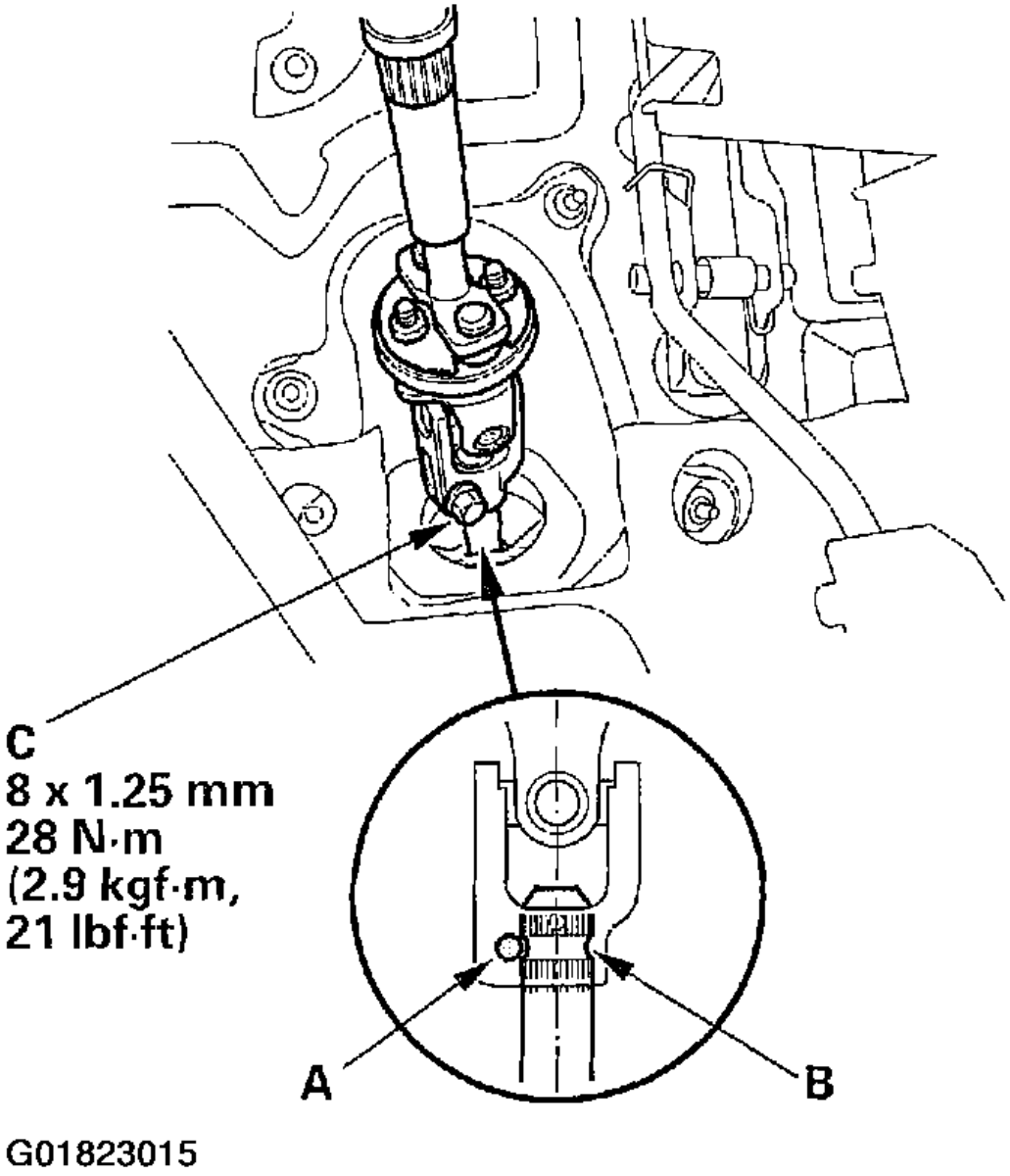


Fig. 133: Installing Steering Joint To The Pinion Shaft

26. Tighten the steering joint bolt to the specified torque.
27. Install the steering joint cover A.

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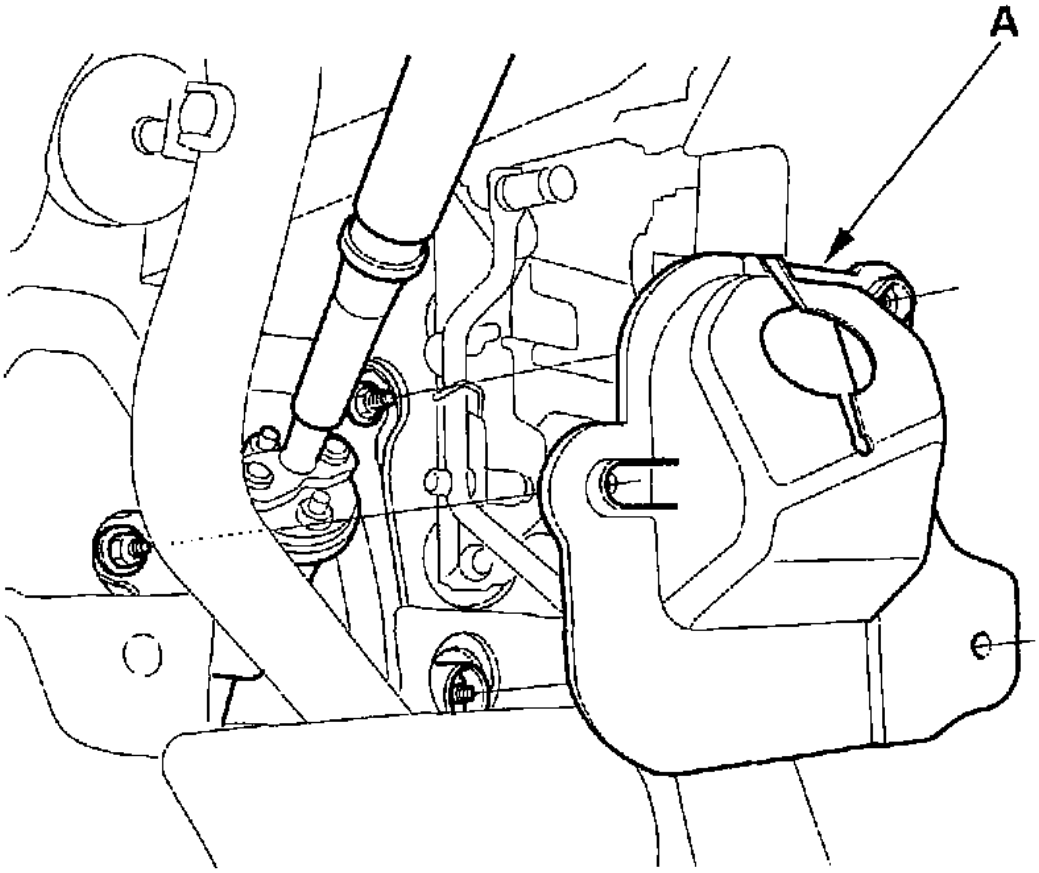


Fig. 134: Installing The Steering Joint Cover A

28. Install the front wheel, then set the wheels in the straight ahead position.
29. Center the cable reel by first rotating it clockwise until it stops. Then rotate it counterclockwise (about three full turns) until the arrow mark on the label points straight up. Reinstall the steering wheel (see **STEERING WHEEL INSTALLATION**).
30. Fill the system with power steering fluid, and bleed air from the system (see **FLUID REPLACEMENT**).
31. After installation, do the following checks:
    - Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up to the fluid. Check the gearbox for leaks (see **FLUID LEAKAGE INSPECTION**).
    - Do the front toe inspection (see **WHEEL ALIGNMENT**).
    - Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steeling wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.

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TIE-ROD BALL JOINT BOOT REPLACEMENT

Special Tools Required: Front hub dis/assembly tool, 07965-SA50500

1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

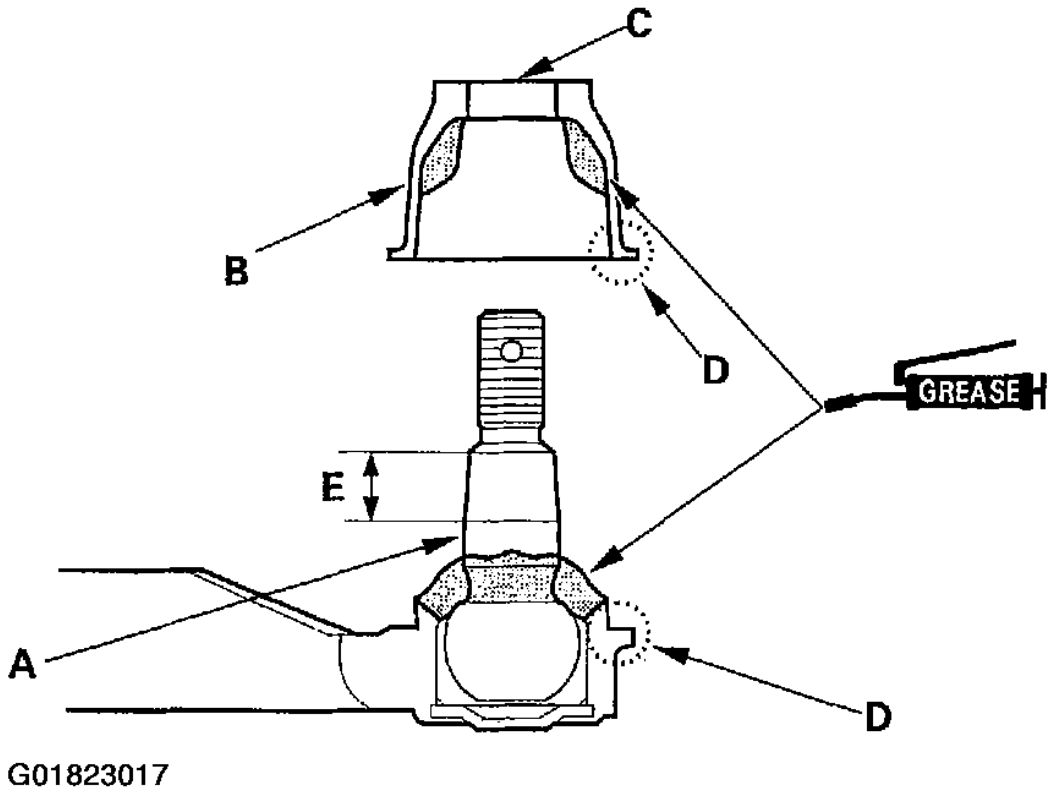


Fig. 135: Packing The Lower Area Of The Ball Pin With Fresh Multipurpose Grease

3. Pack the interior of the NEW boot (B) and lip (C) with fresh multipurpose grease. Note these items when installing NEW grease:
   - Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.
4. Install the NEW boot (A) using the special tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

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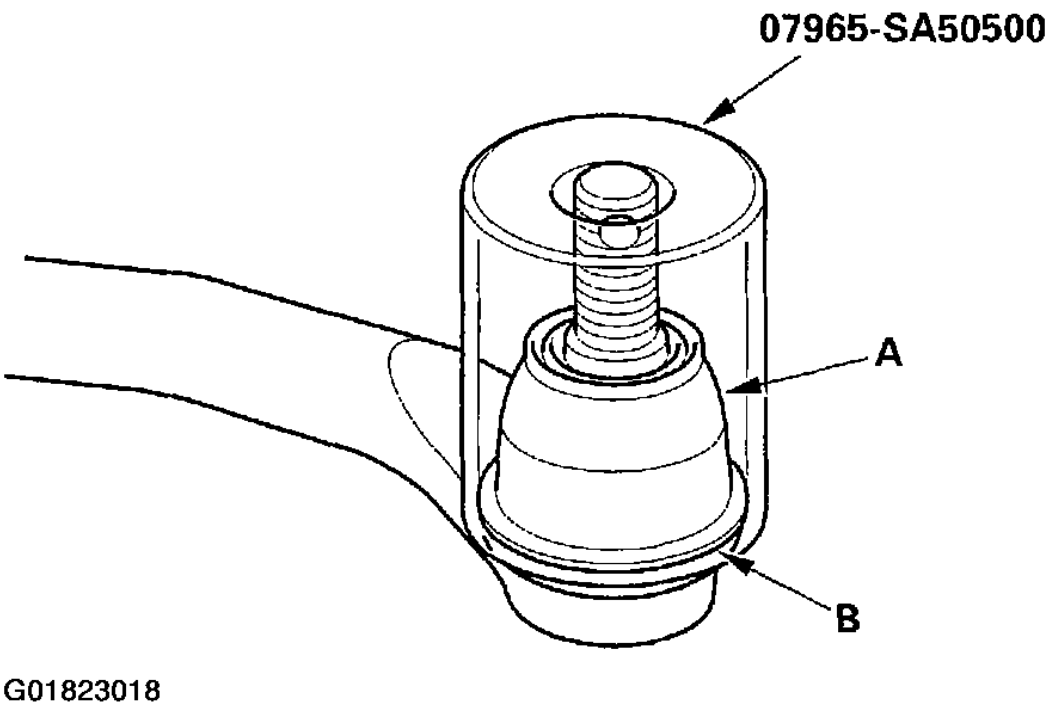


Fig. 136: Installing The NEW Boot Using The Special Tool

GEARBOX MOUNT CUSHION REPLACEMENT

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL**).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.

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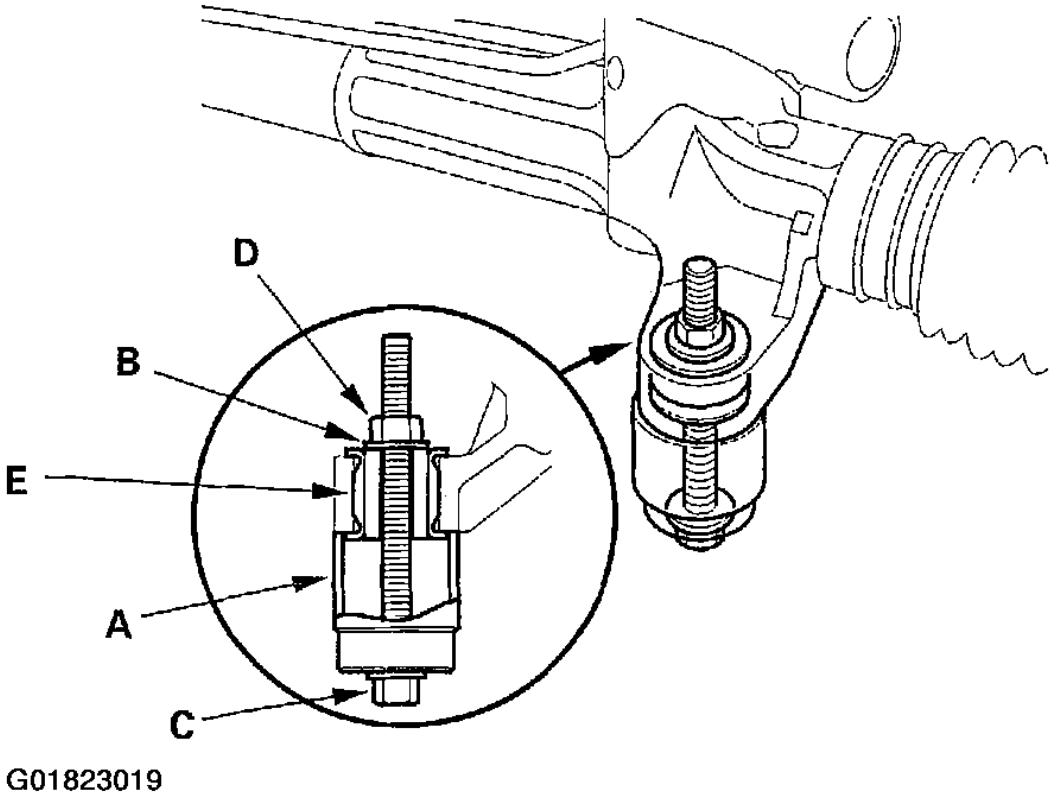


Fig. 137: Positioning The 34 mm Socket Wrench On The Flange Part Of The Gearbox Housing With A Washer, 10 X 105 mm Flange Bolt & The 10 mm Nut

3. Hold the flange bolt with a wrench, and tighten the nut with a wrench. Remove the gearbox mount cushion (E).
4. Apply a mild soap and water solution to the NEW gearbox mount cushion surface (A), then place it on the gearbox mounting cushion hole.

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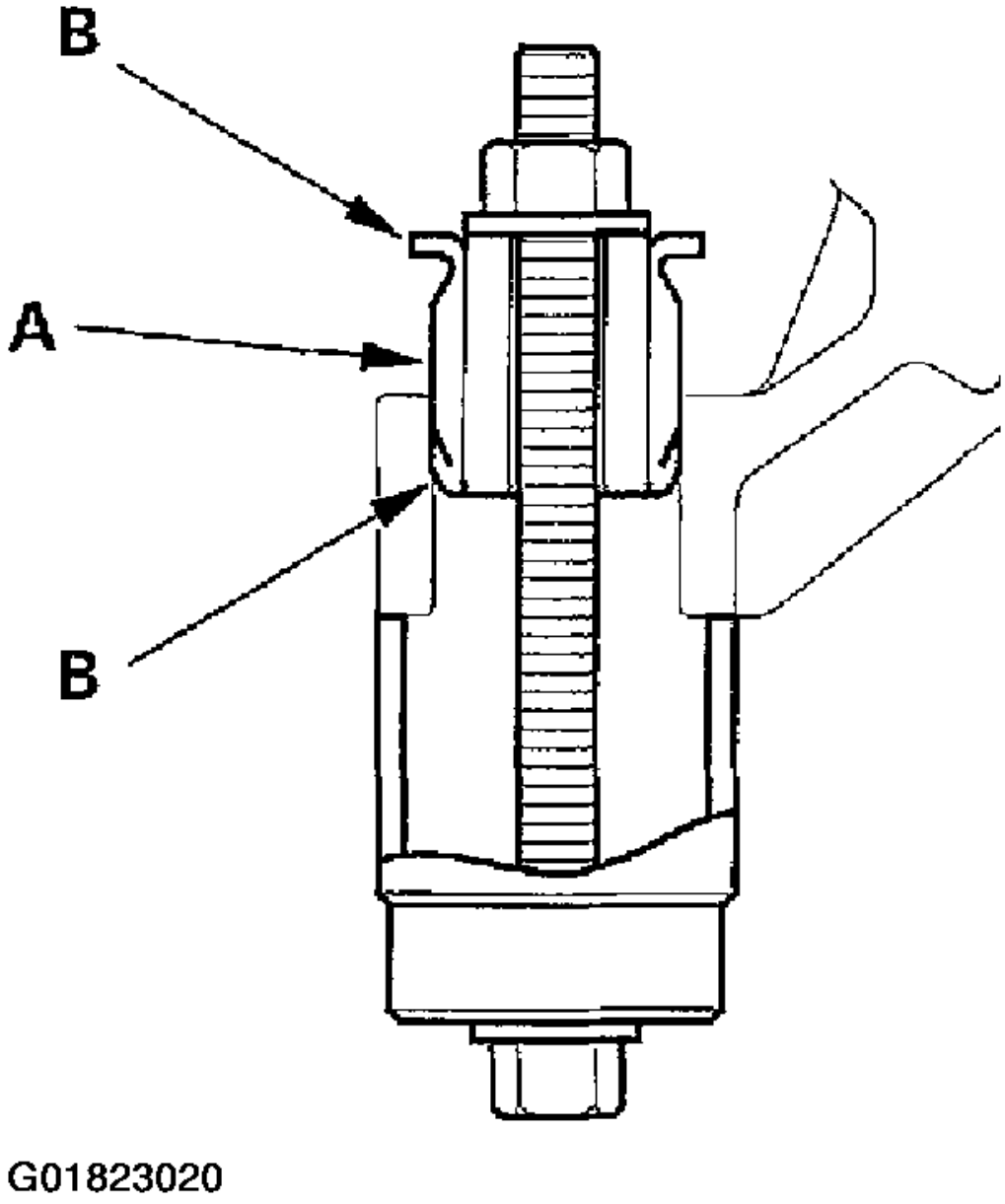


Fig. 138: Installing The NEW Gearbox Mount Cushion

5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) properly fit on the gearbox flange surface.

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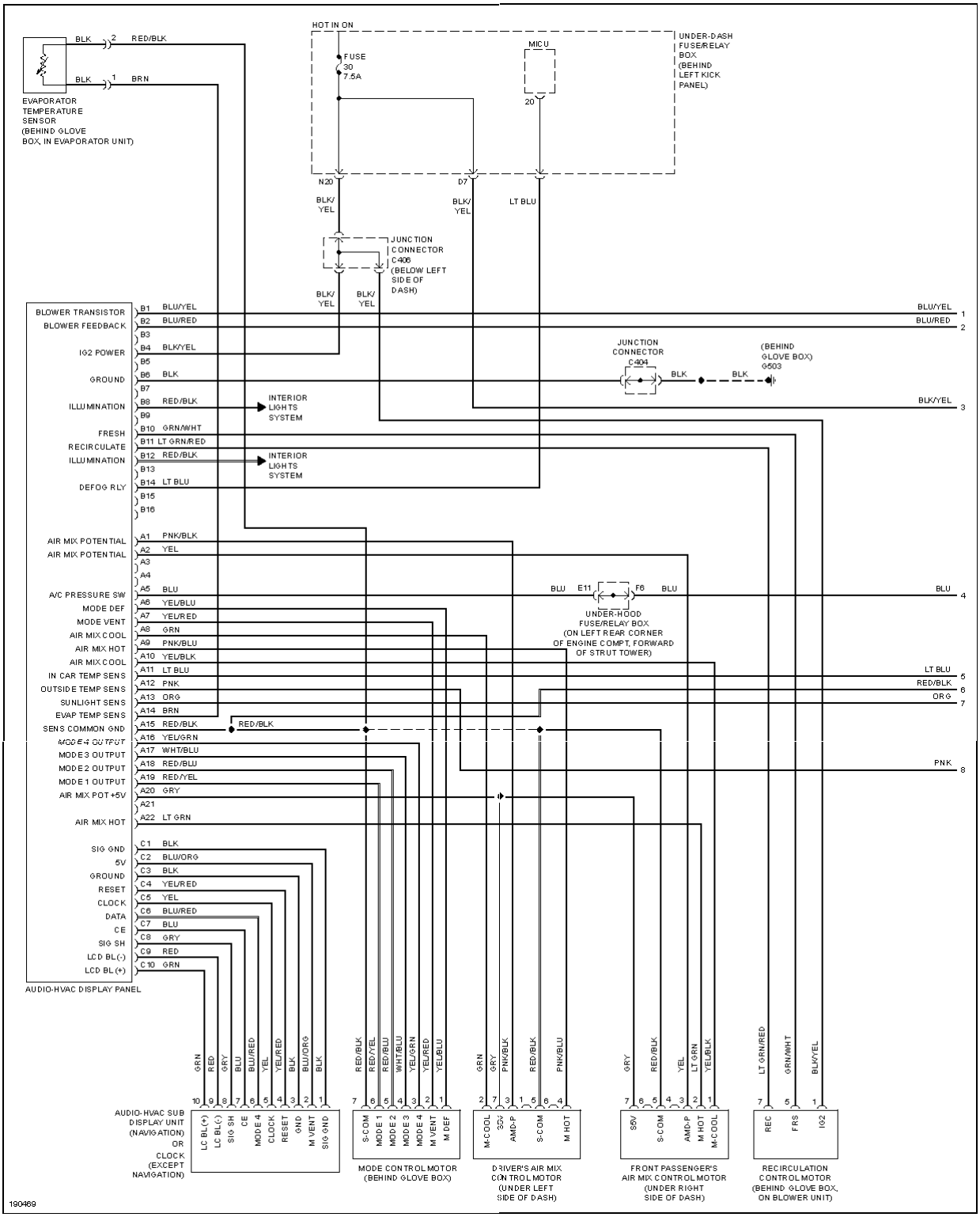


Fig. 1: Air Conditioning Circuit (1 of 3)

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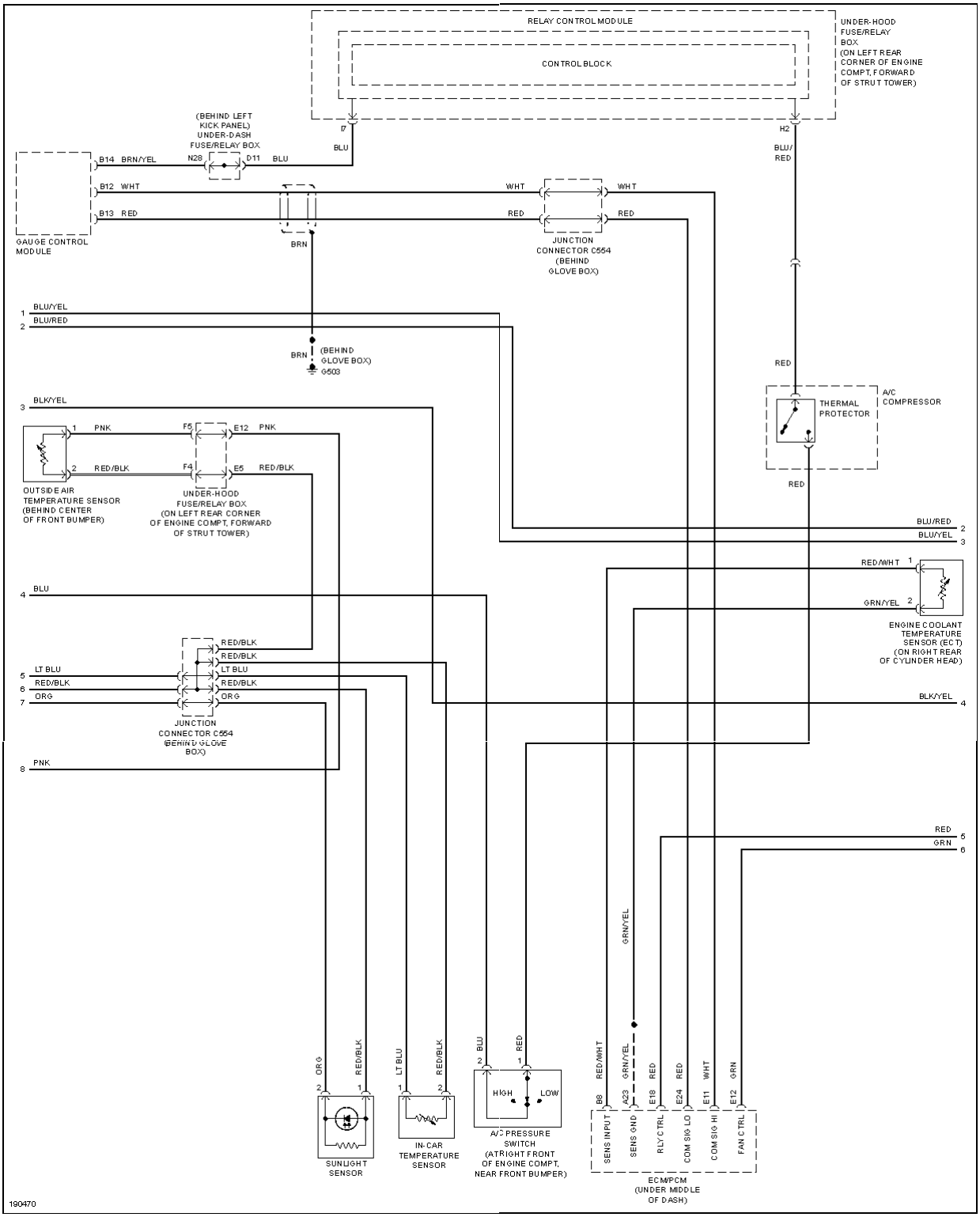


Fig. 2: Air Conditioning Circuit (2 of 3)

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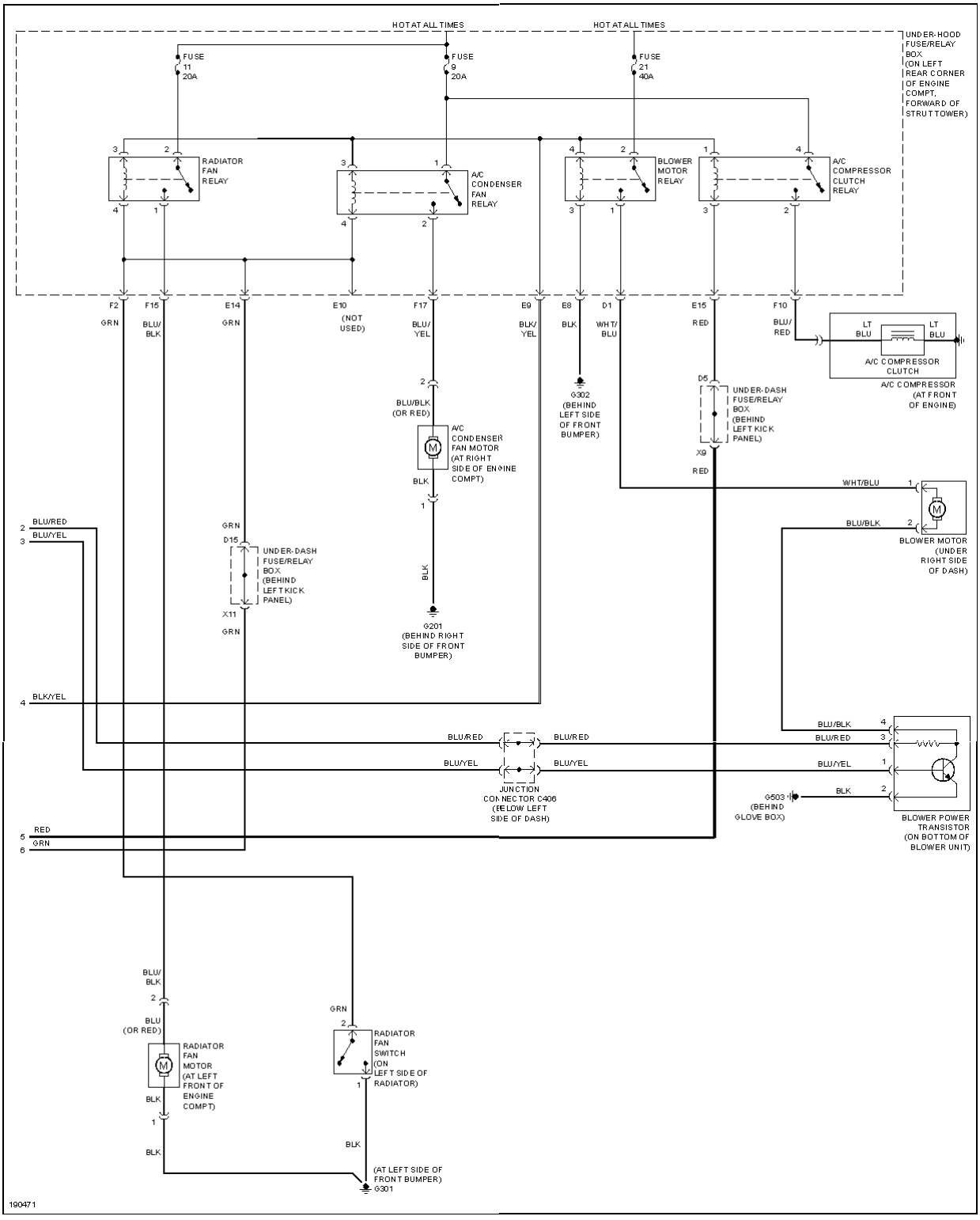


Fig. 3: Air Conditioning Circuit (3 of 3)

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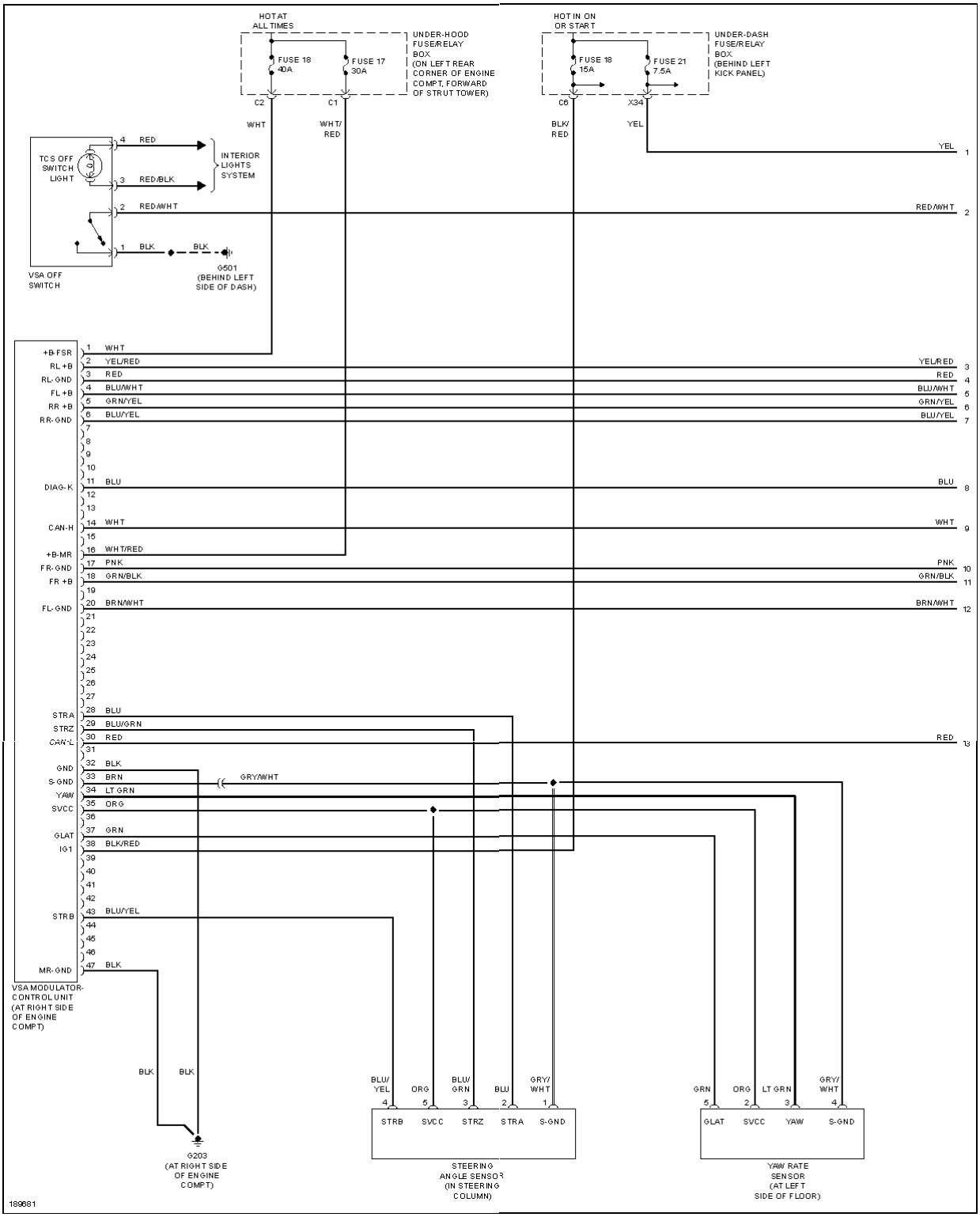


Fig. 4: Anti-lock Brakes Circuit (1 of 2)

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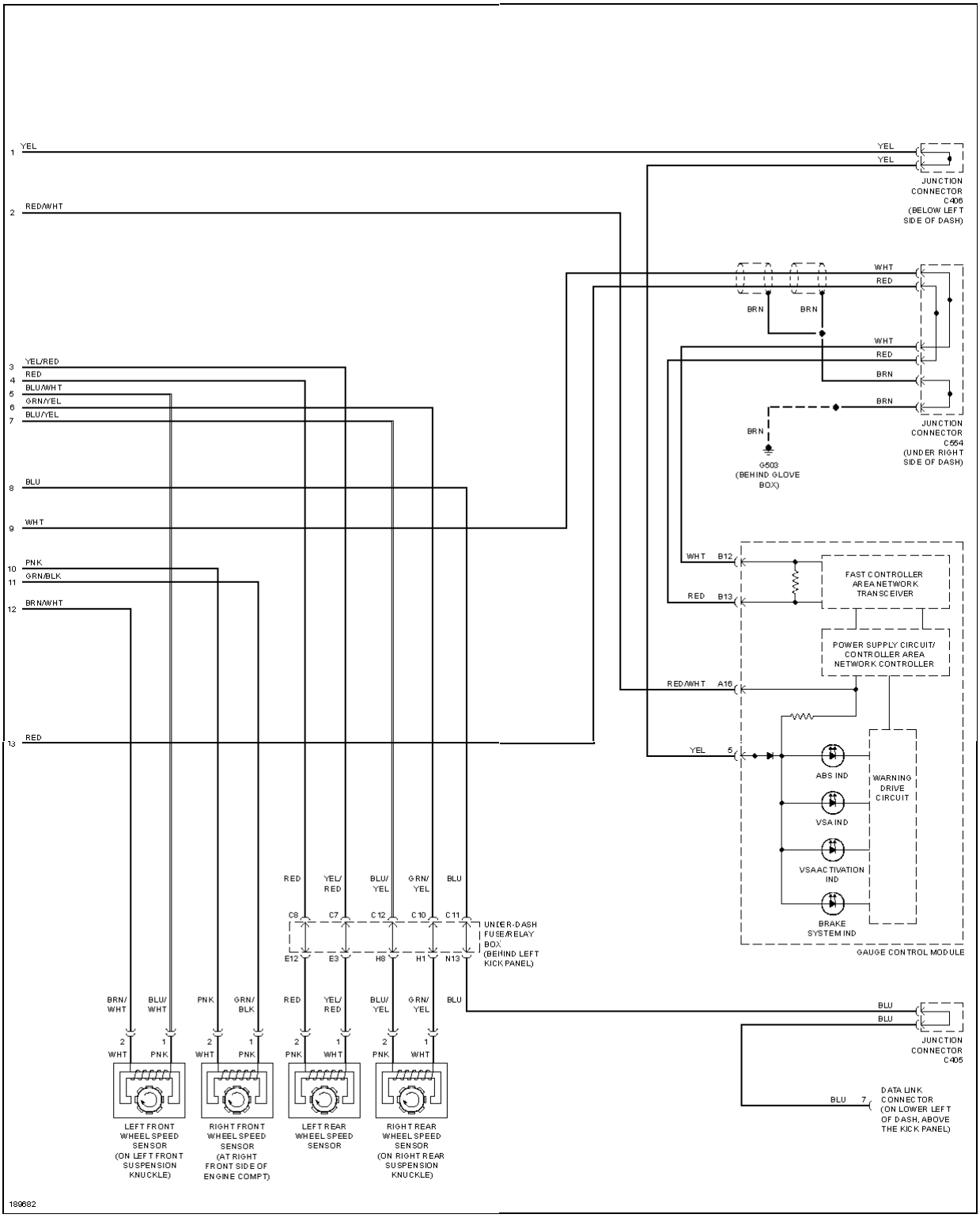


Fig. 5: Anti-lock Brakes Circuit (2 of 2)

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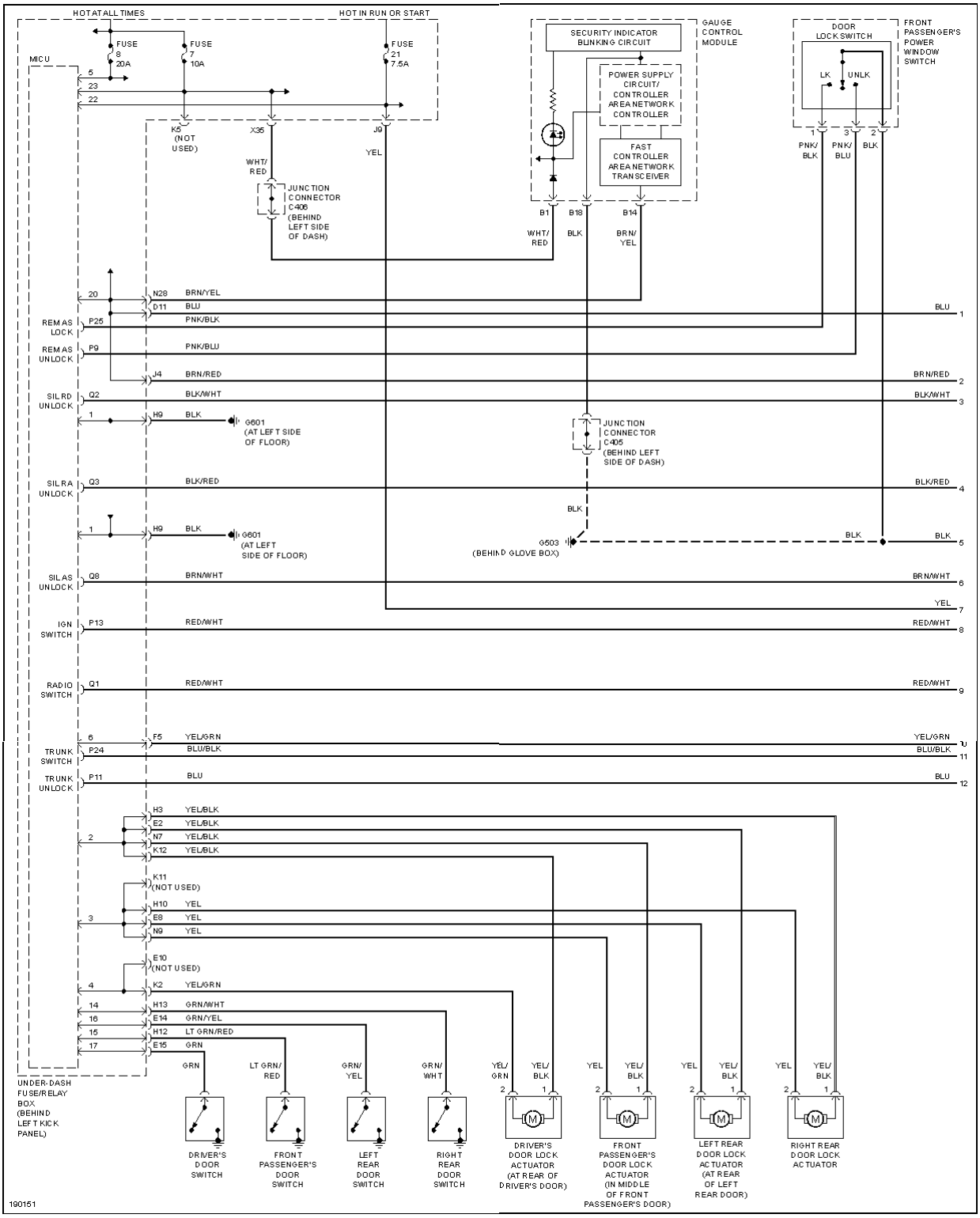


Fig. 6: Forced Entry Circuit (1 of 2)

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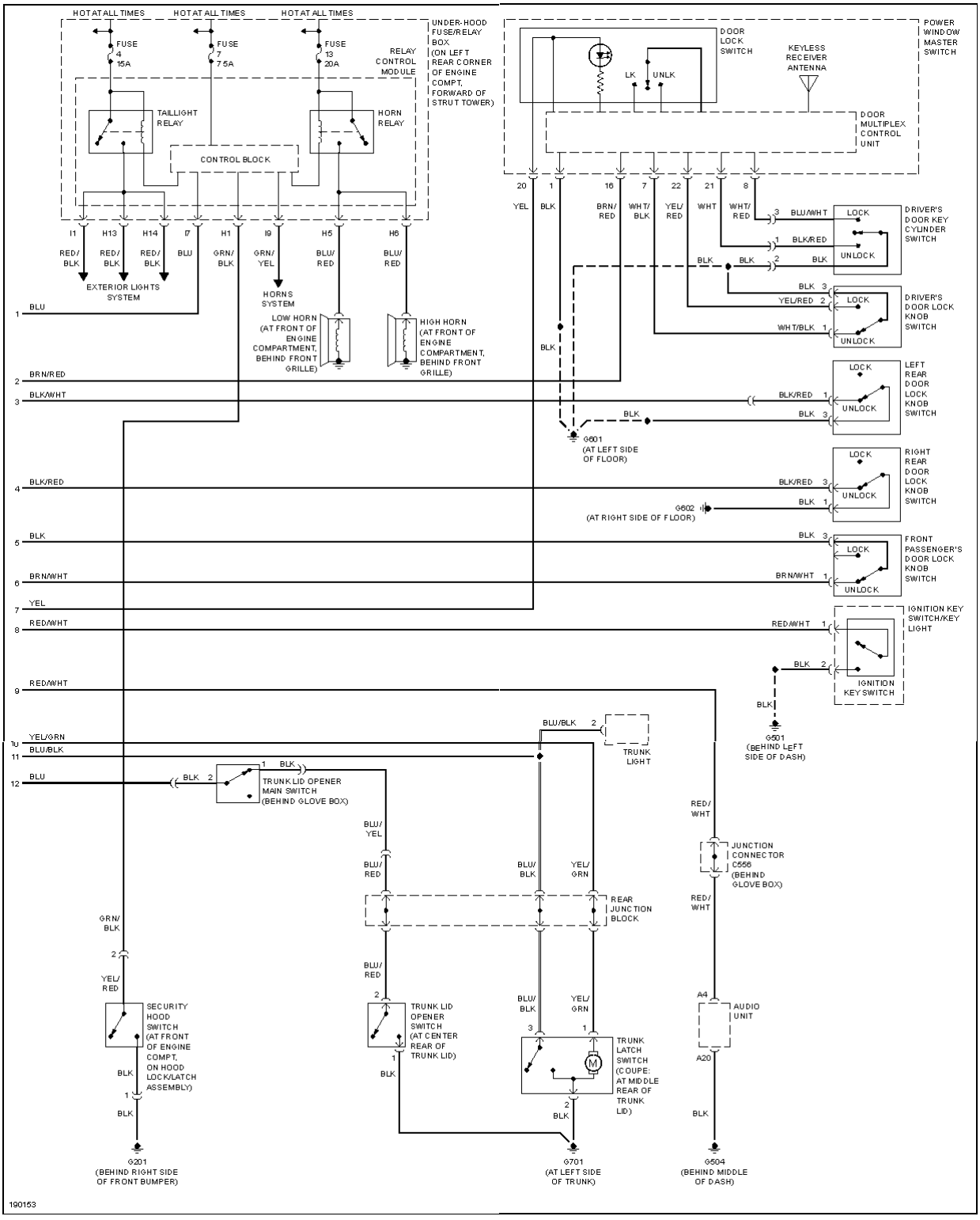


Fig. 7: Forced Entry Circuit (2 of 2)

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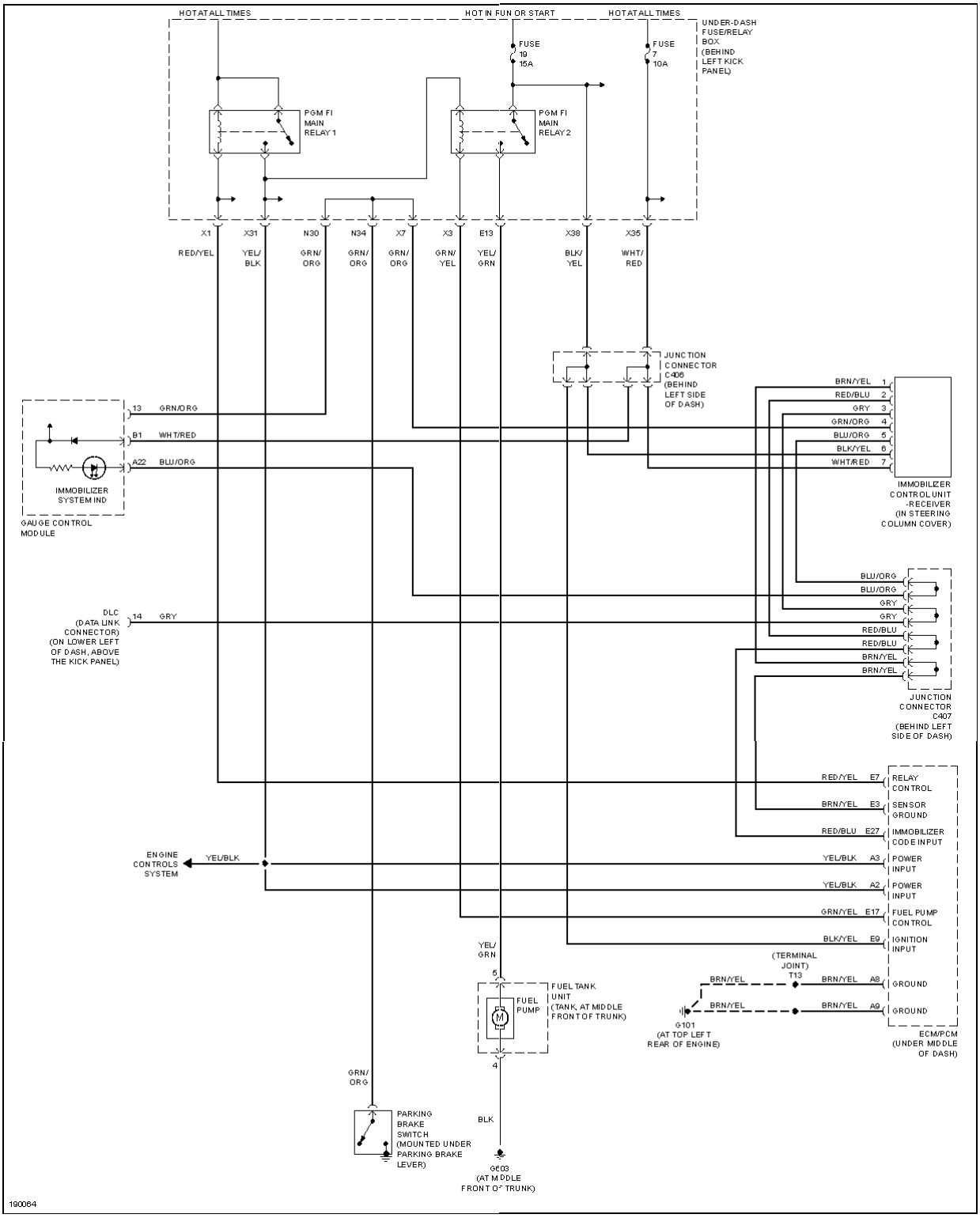


Fig. 8: Immobilizer Circuit

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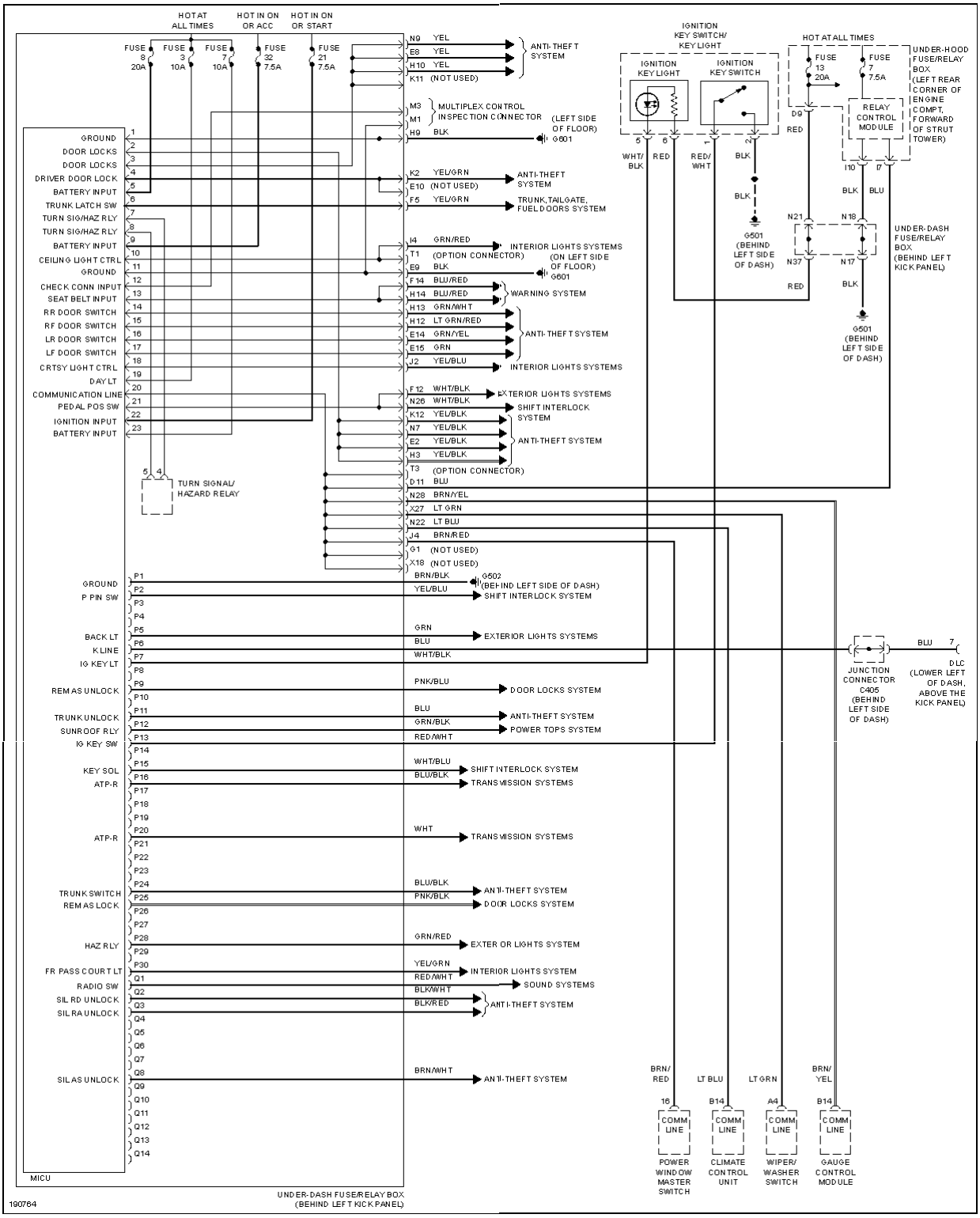


Fig. 9: Body Control Modules Circuit

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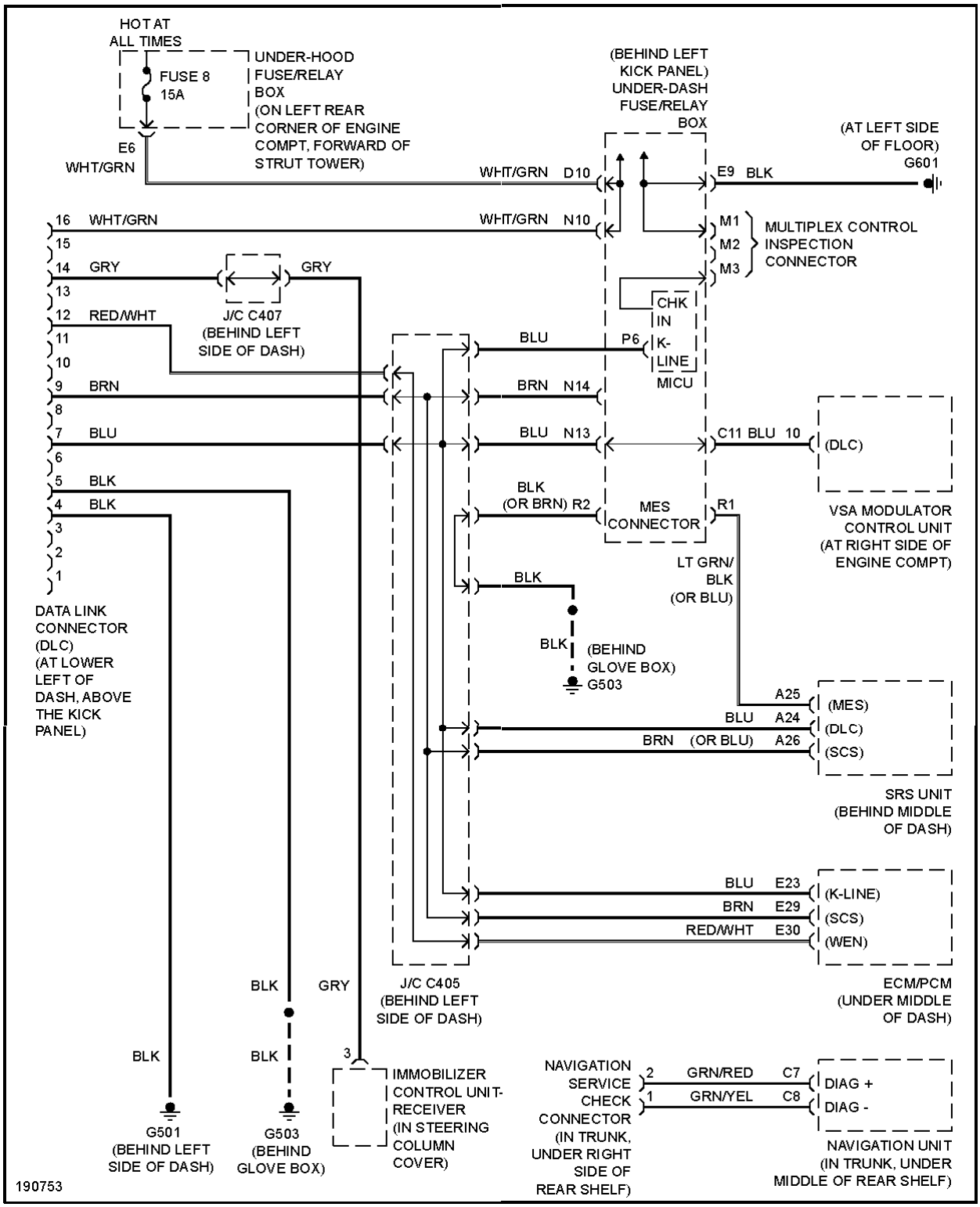


Fig. 10: Data Link Connector Circuit

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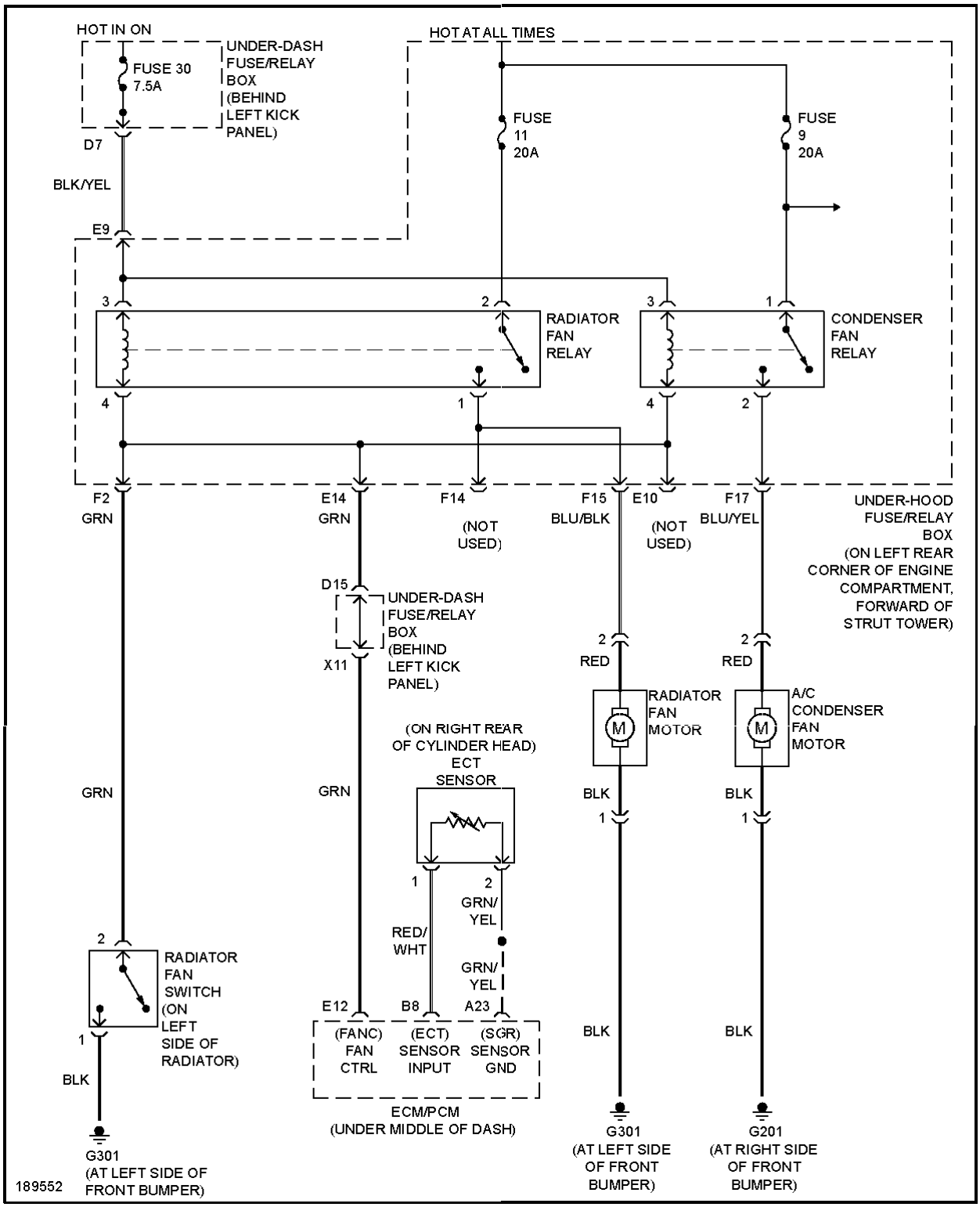


Fig. 11: Cooling Fan Circuit

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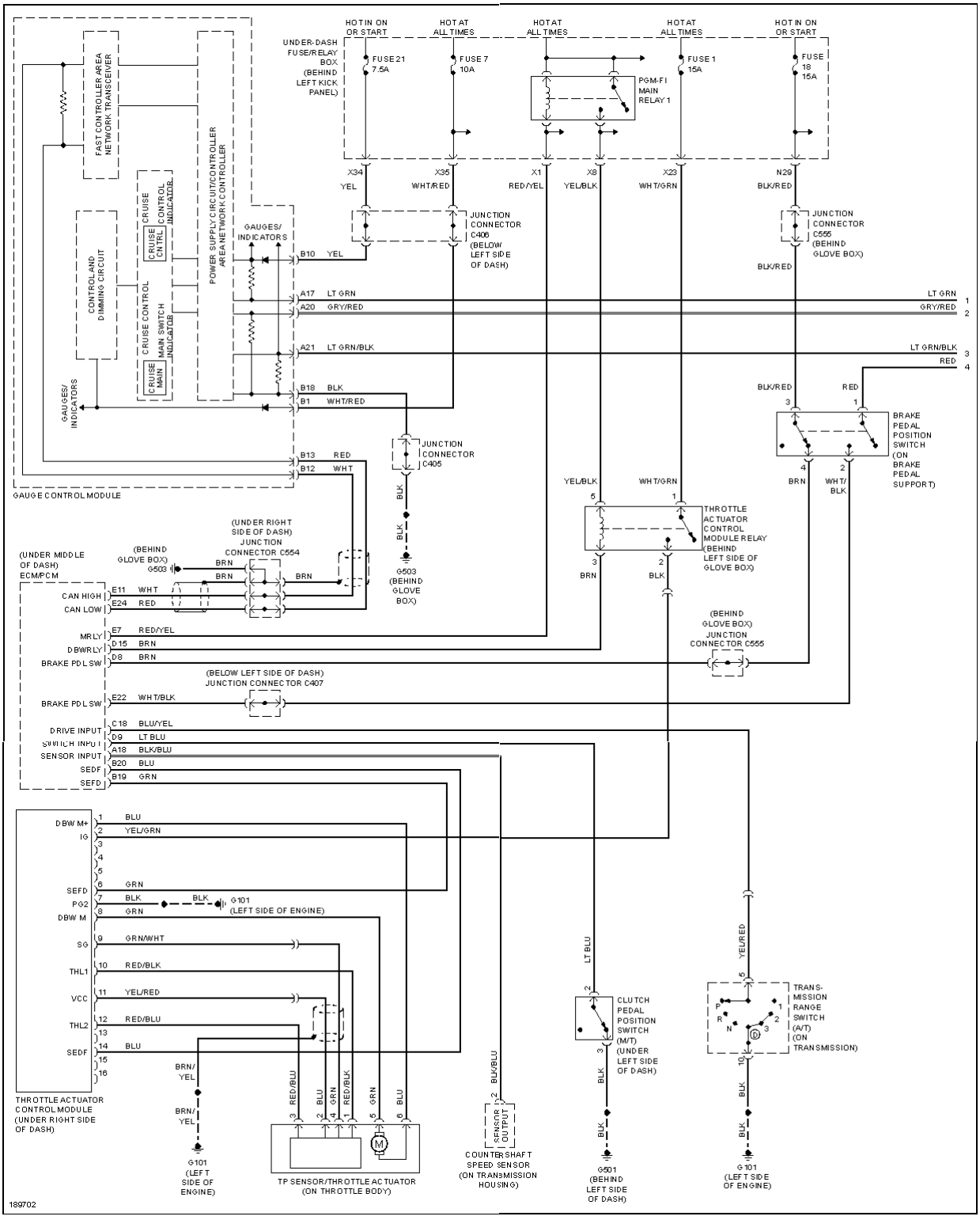


Fig. 12: Cruise Control Circuit (1 of 2)

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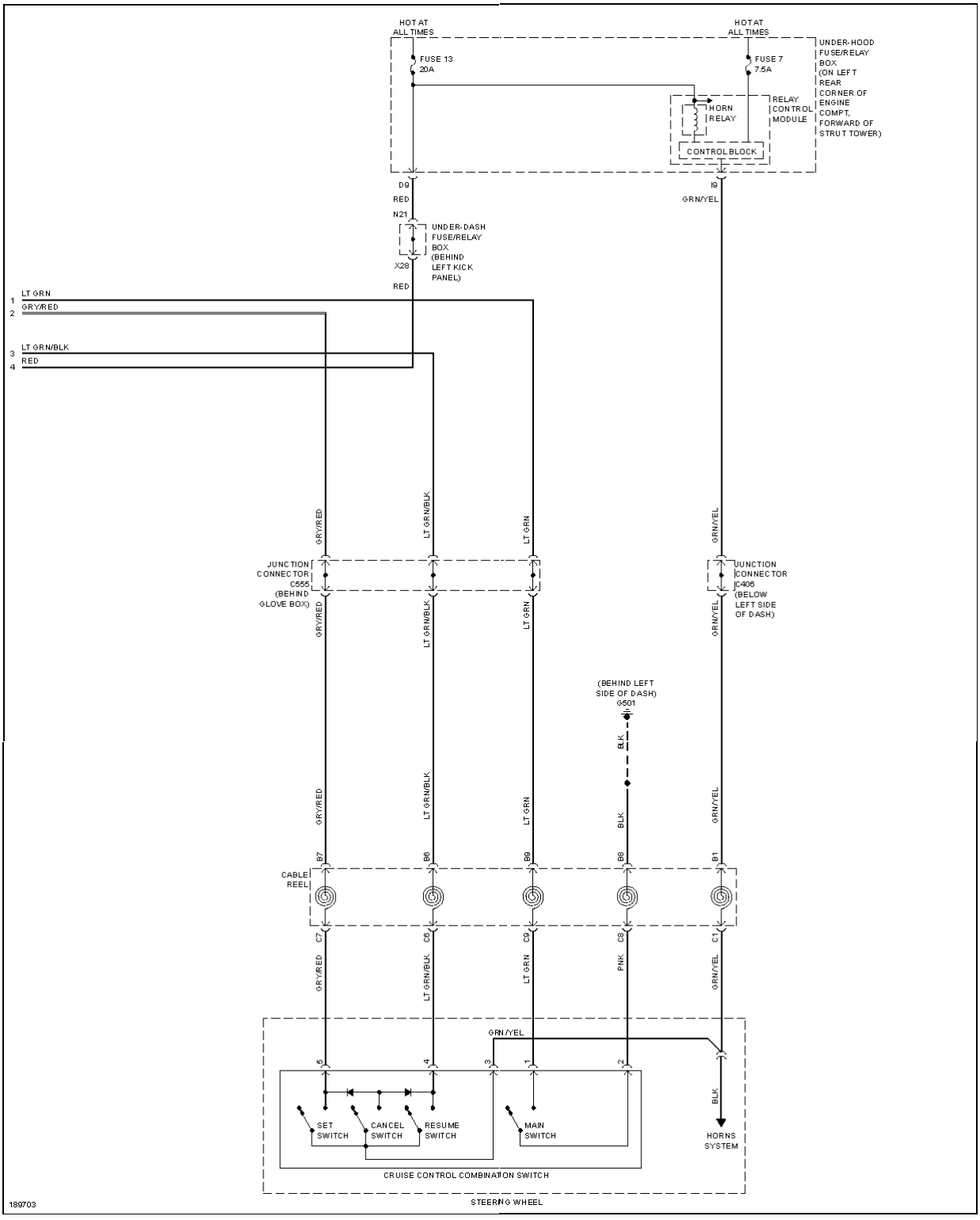


Fig. 13: Cruise Control Circuit (2 of 2)

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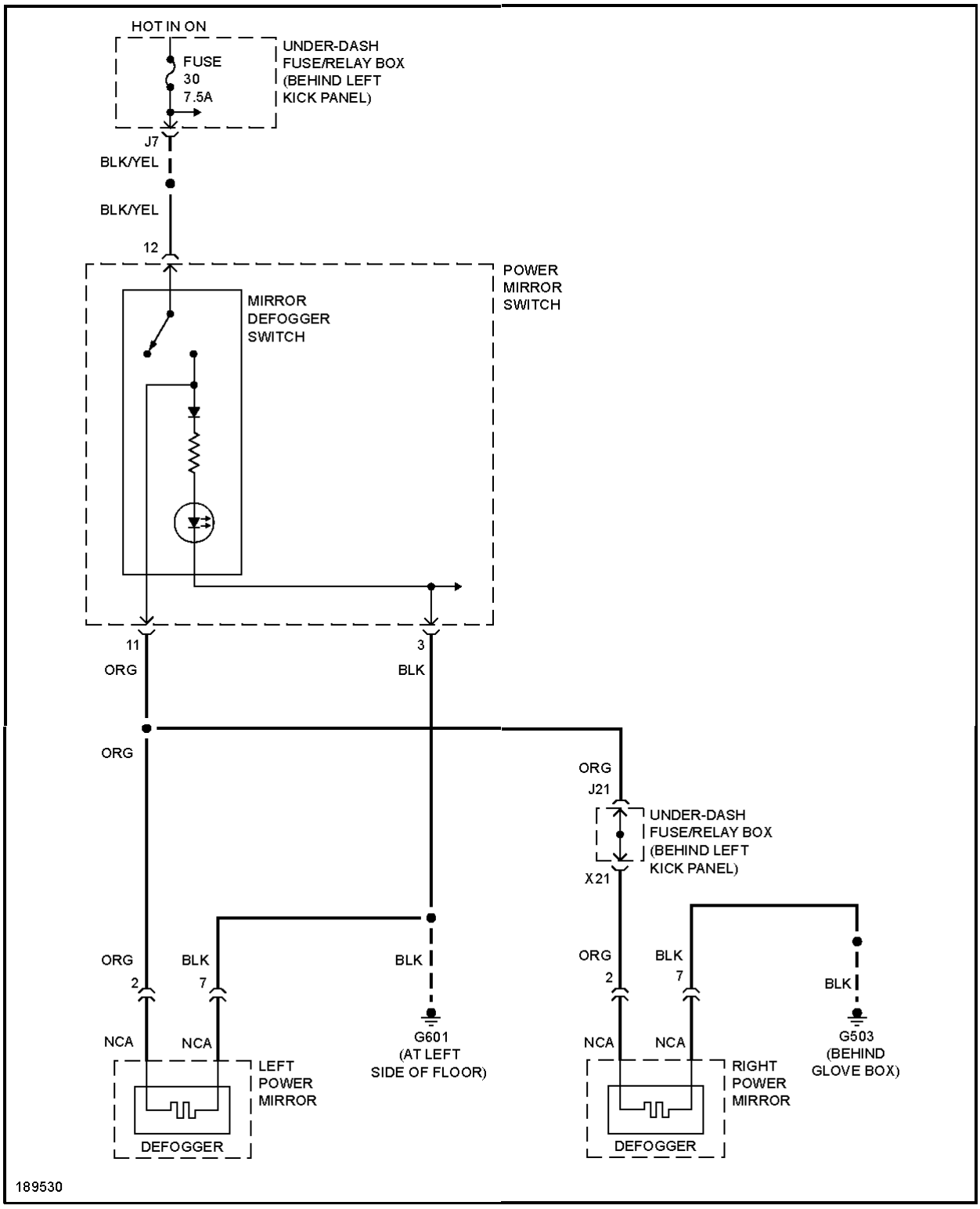


Fig. 14: Heated Mirrors Circuit

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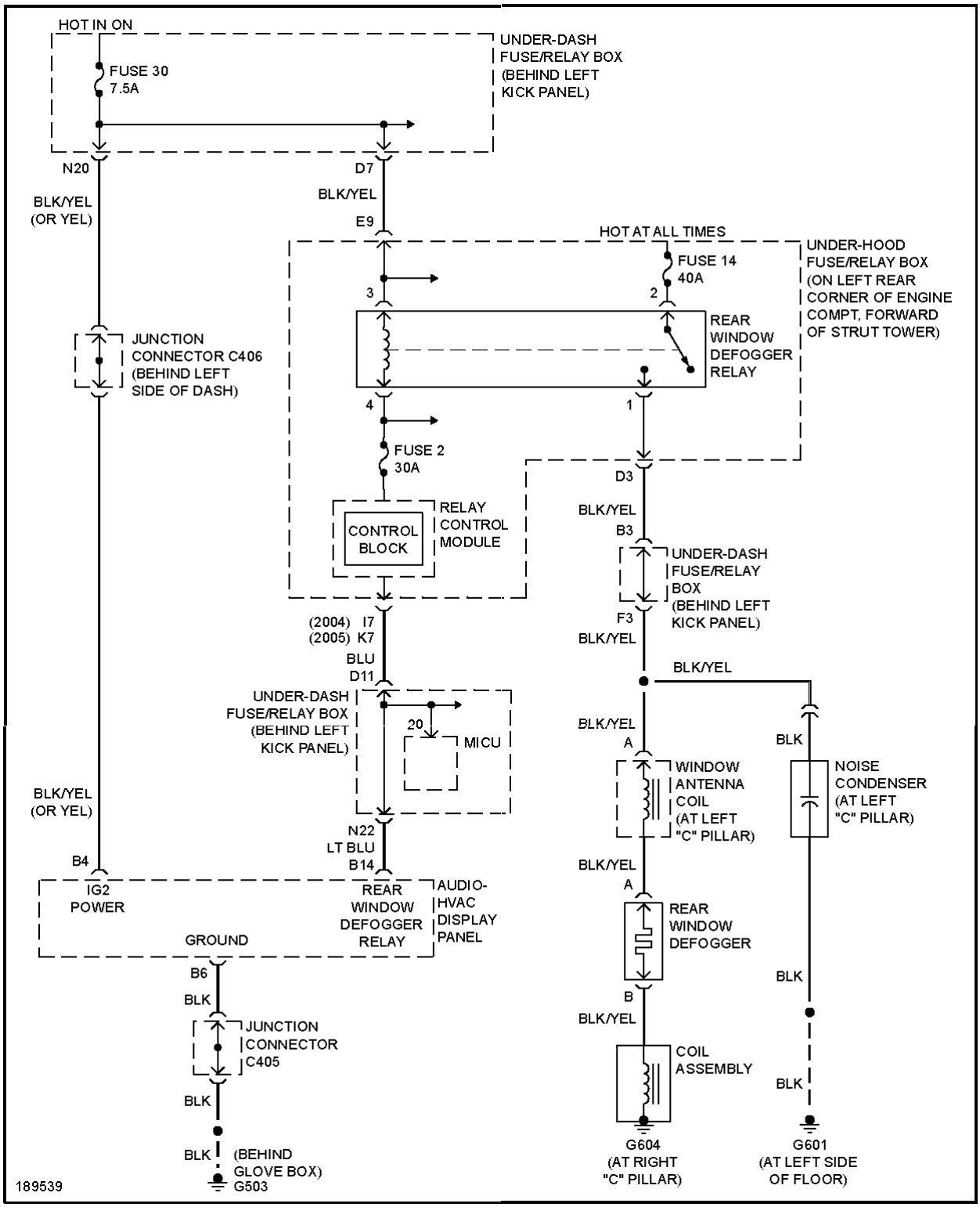


Fig. 15: Rear Defogger Circuit

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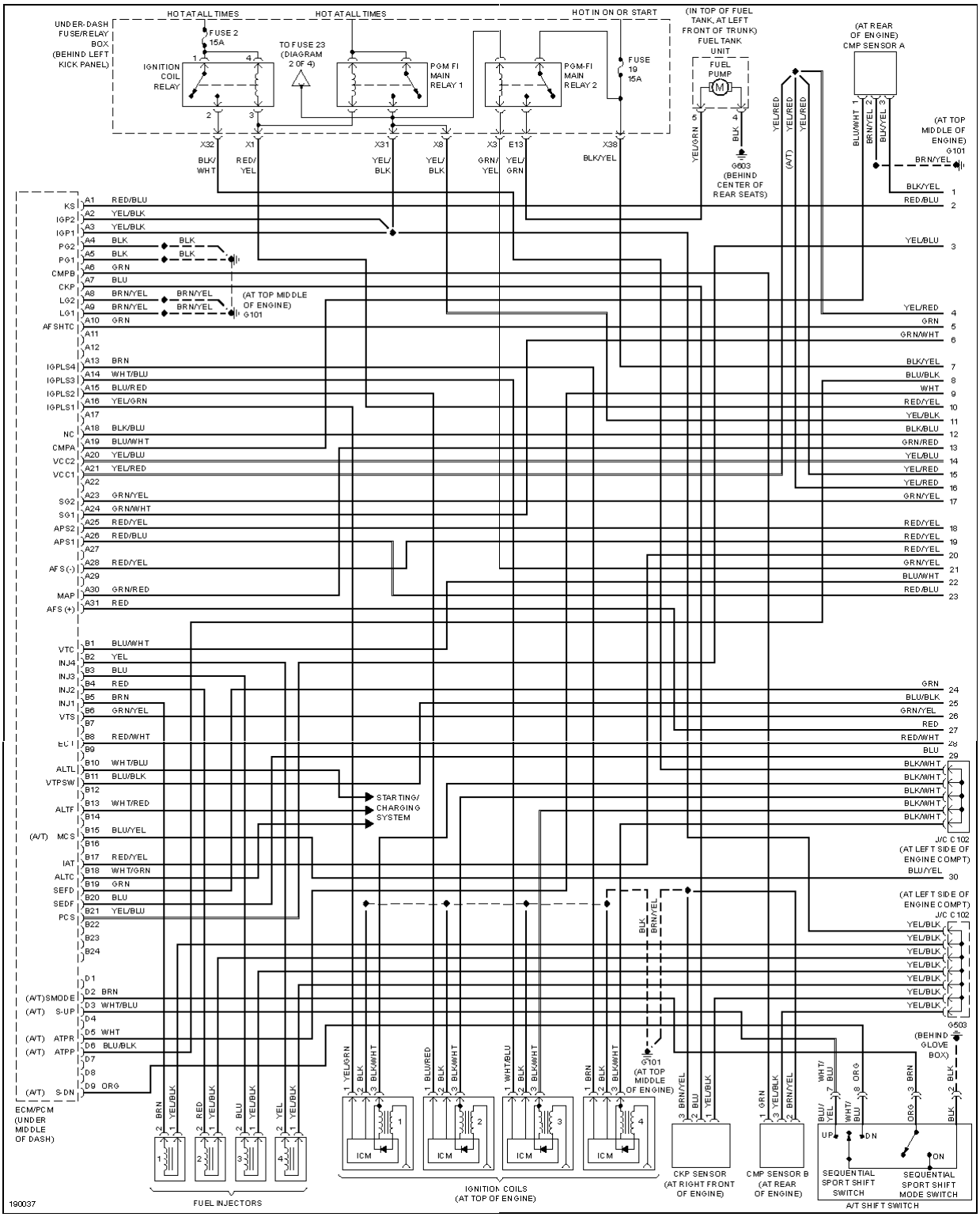


Fig. 16: 2.4L, Engine Performance Circuit (1 of 4)

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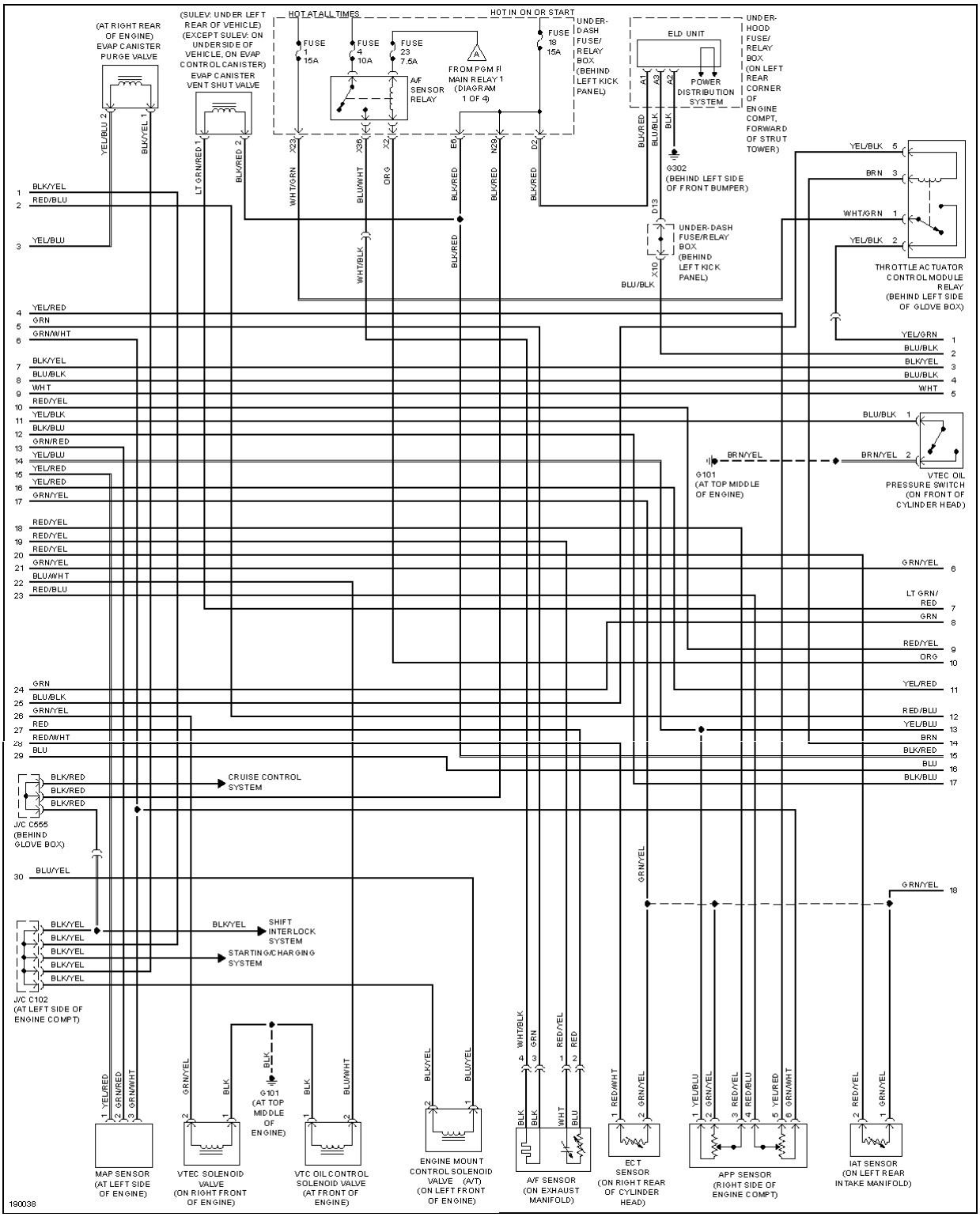


Fig. 17: 2.4L, Engine Performance Circuit (2 of 4)

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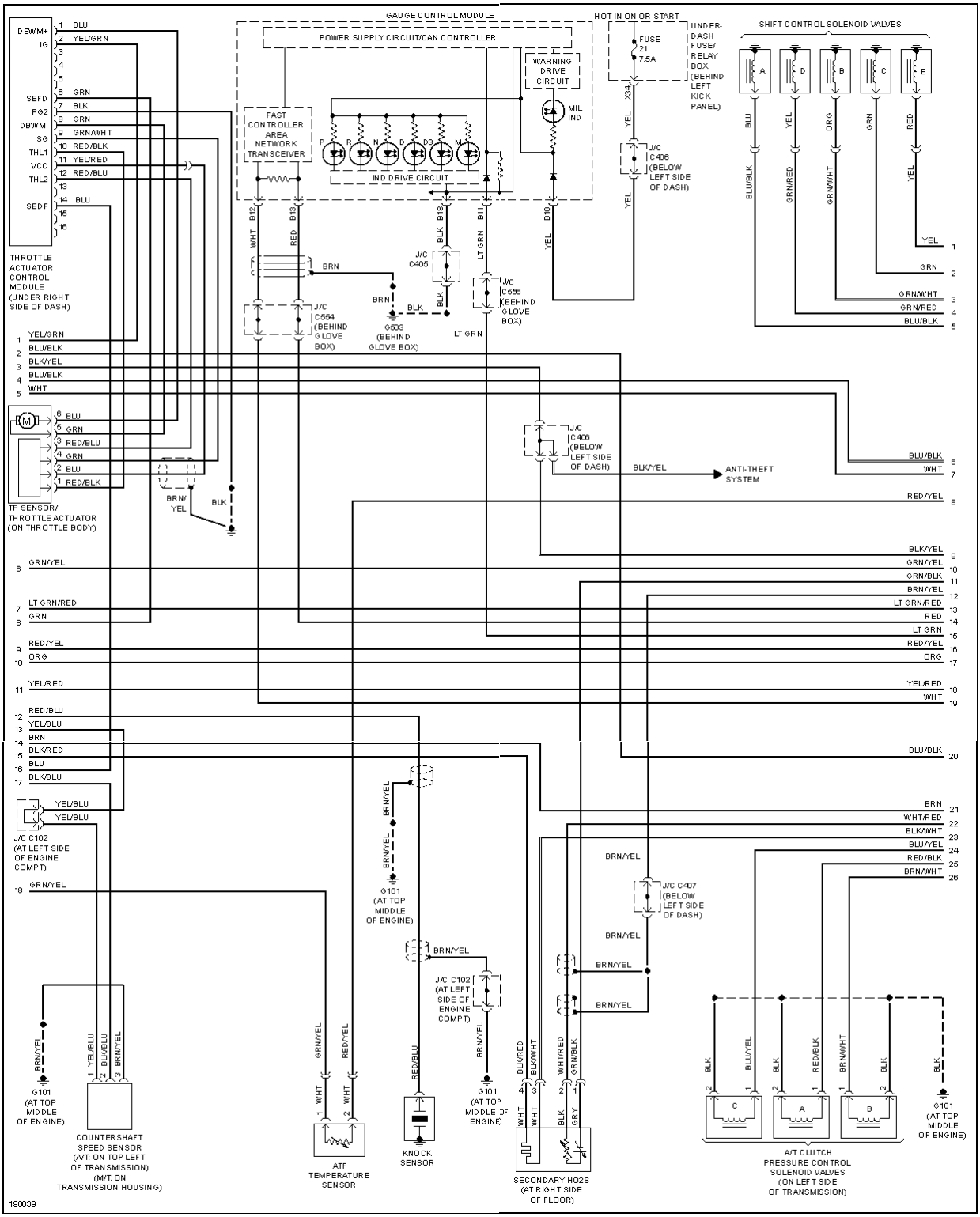


Fig. 18: 2.4L, Engine Performance Circuit (3 of 4)

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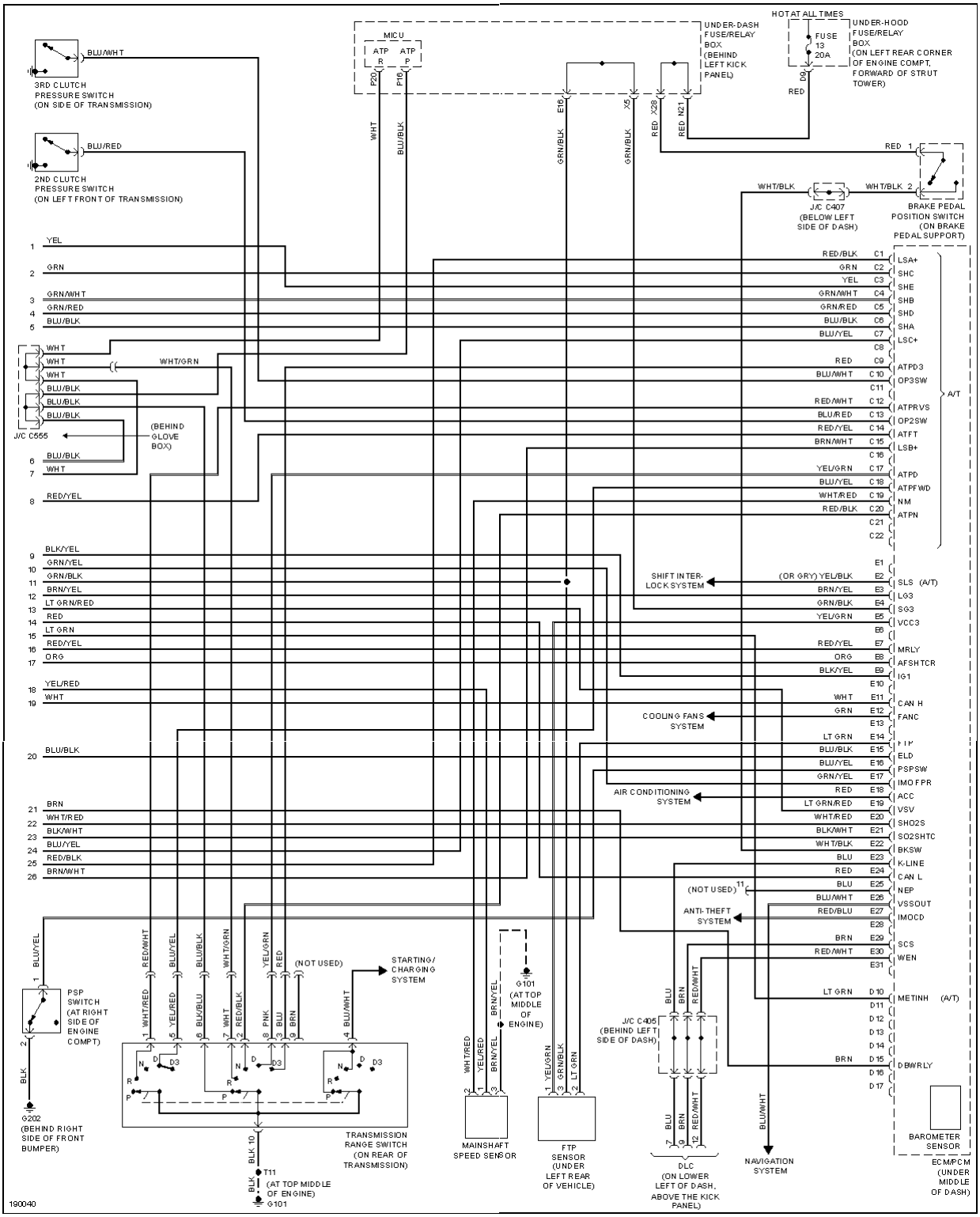


Fig. 19: 2.4L, Engine Performance Circuit (4 of 4)

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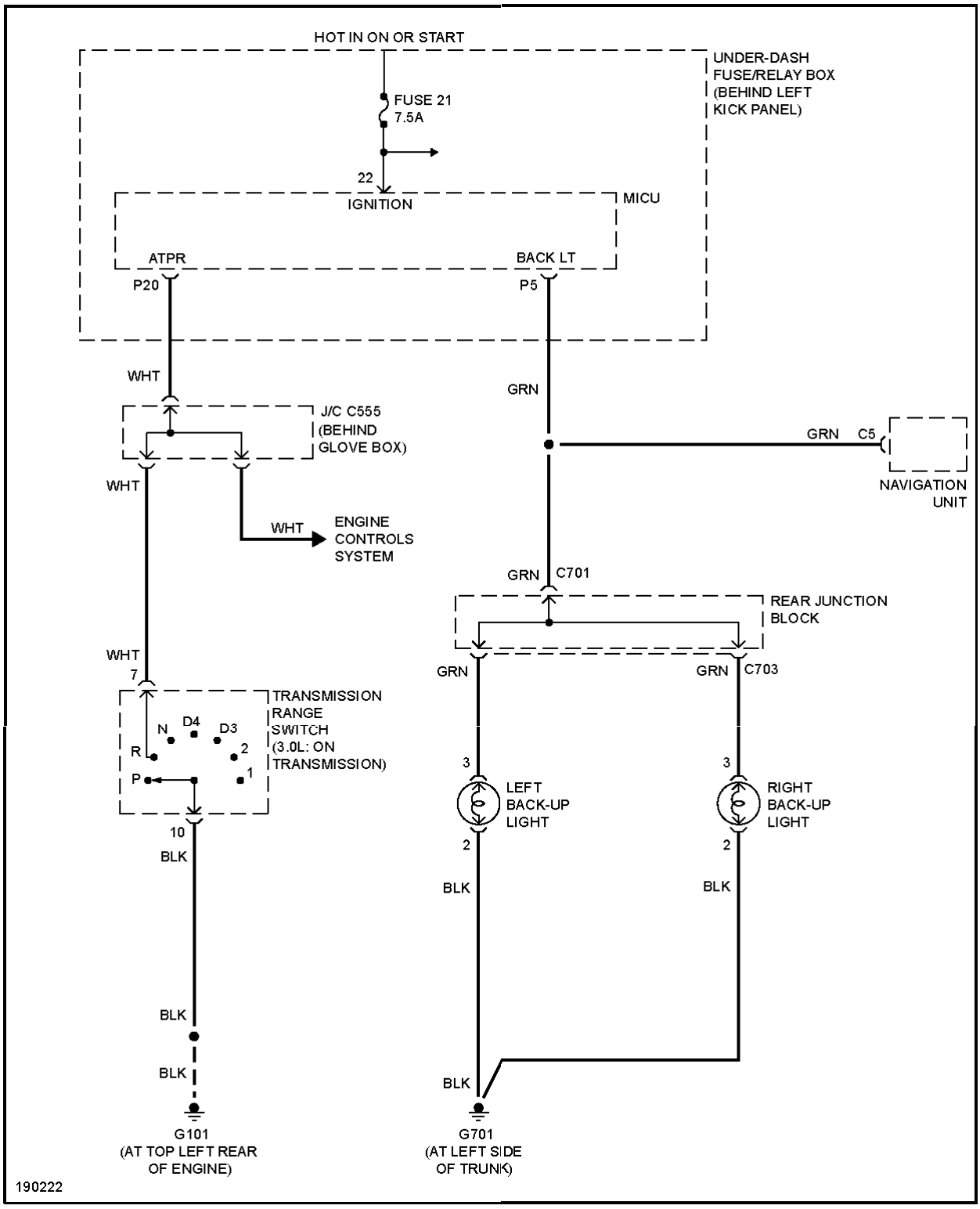


Fig. 20: Back-up Lamps Circuit, A/T

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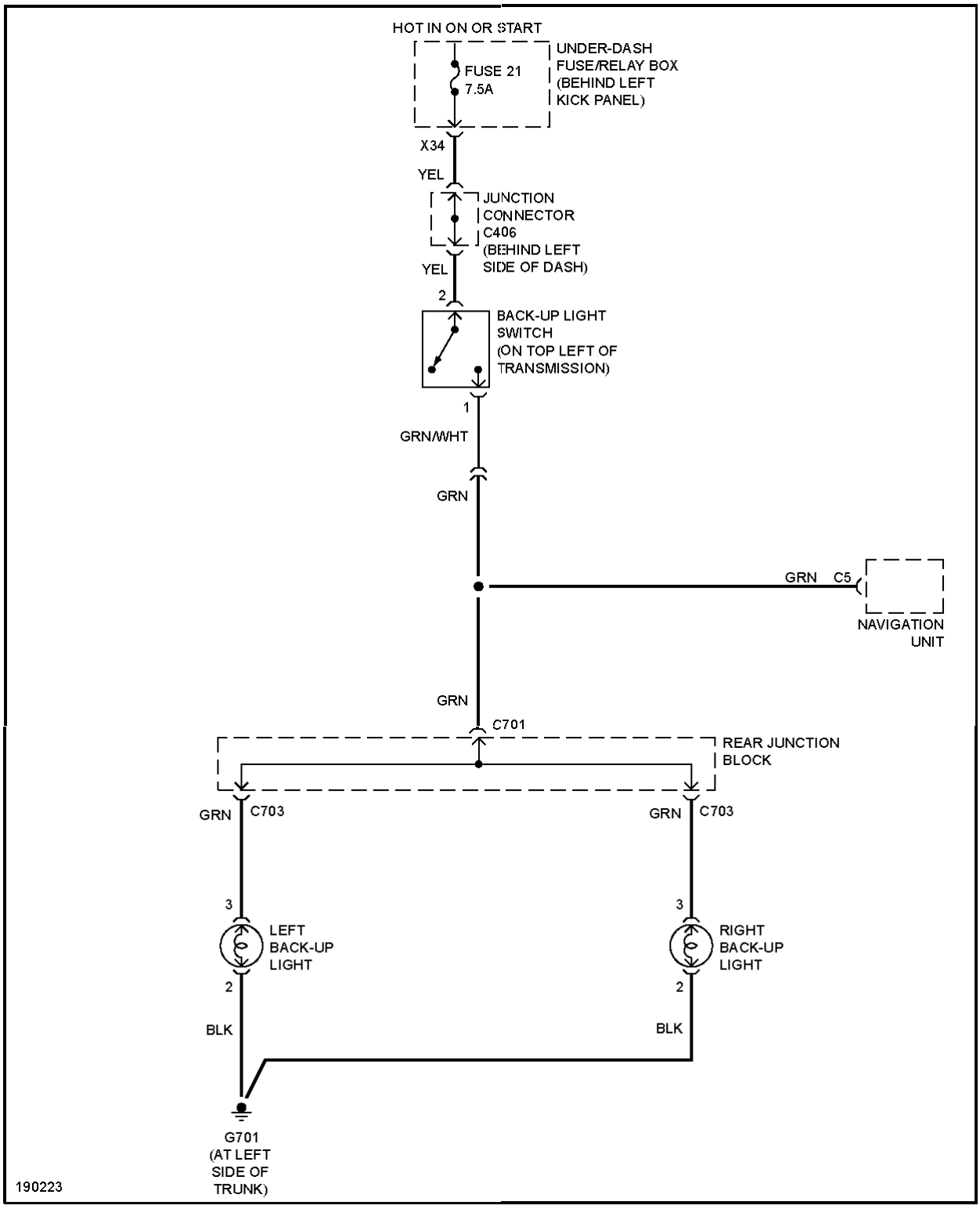


Fig. 21: Back-up Lamps Circuit, M/T

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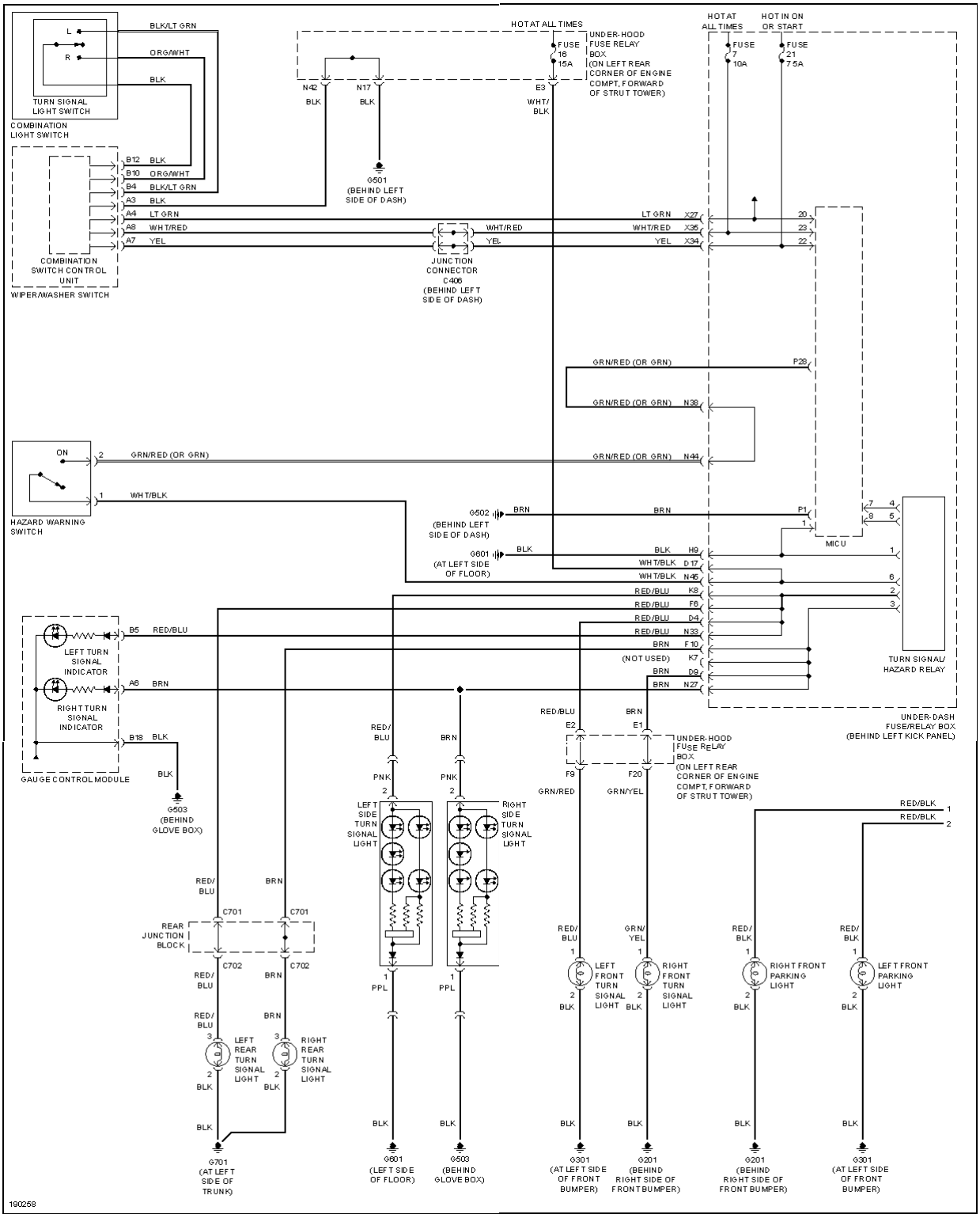


Fig. 22: Exterior Lamps Circuit (1 of 2)

cardiagn.com

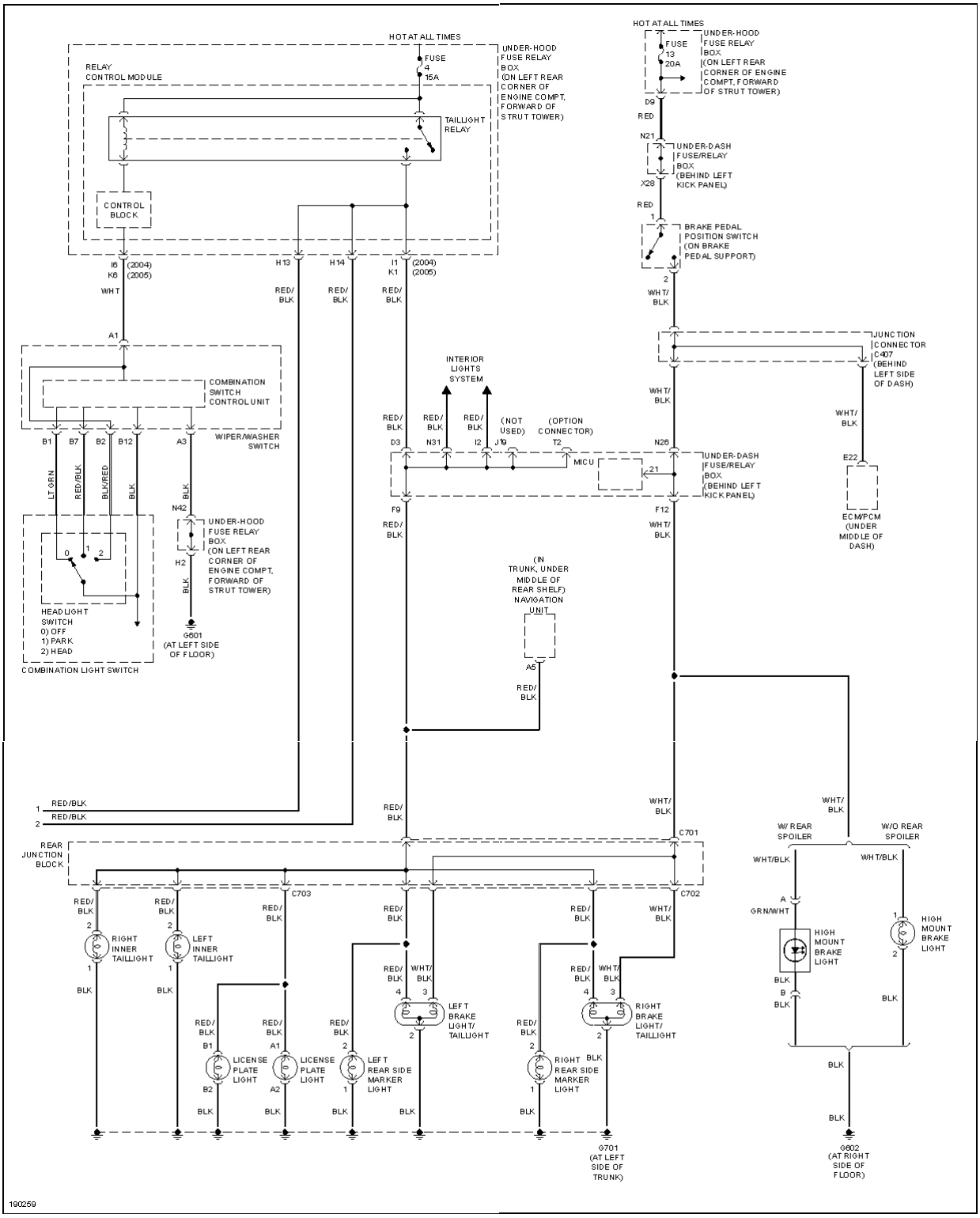


Fig. 23: Exterior Lamps Circuit (2 of 2)

cardiagn.com

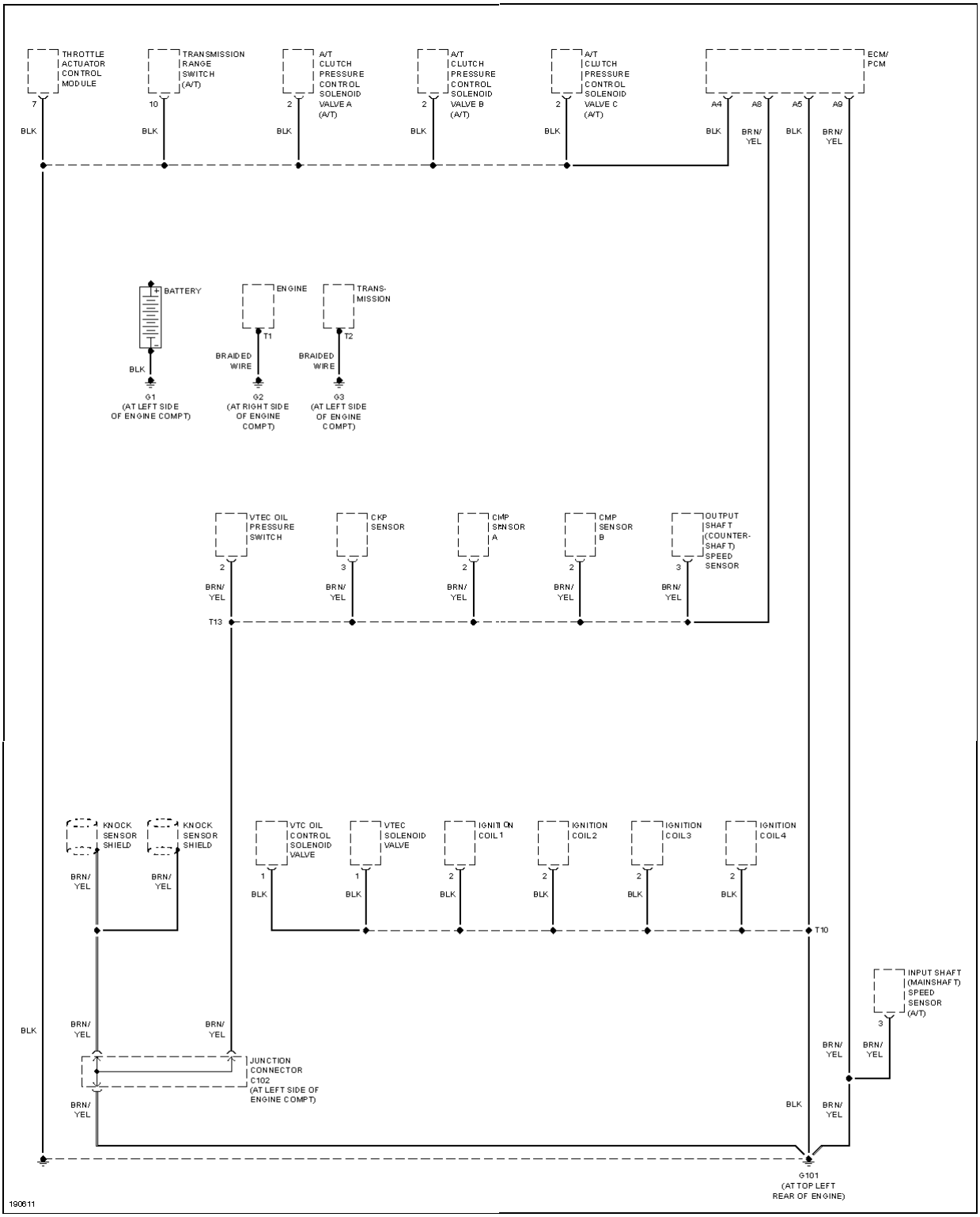


Fig. 24: Ground Distribution Circuit (1 of 4)

cardiagn.com

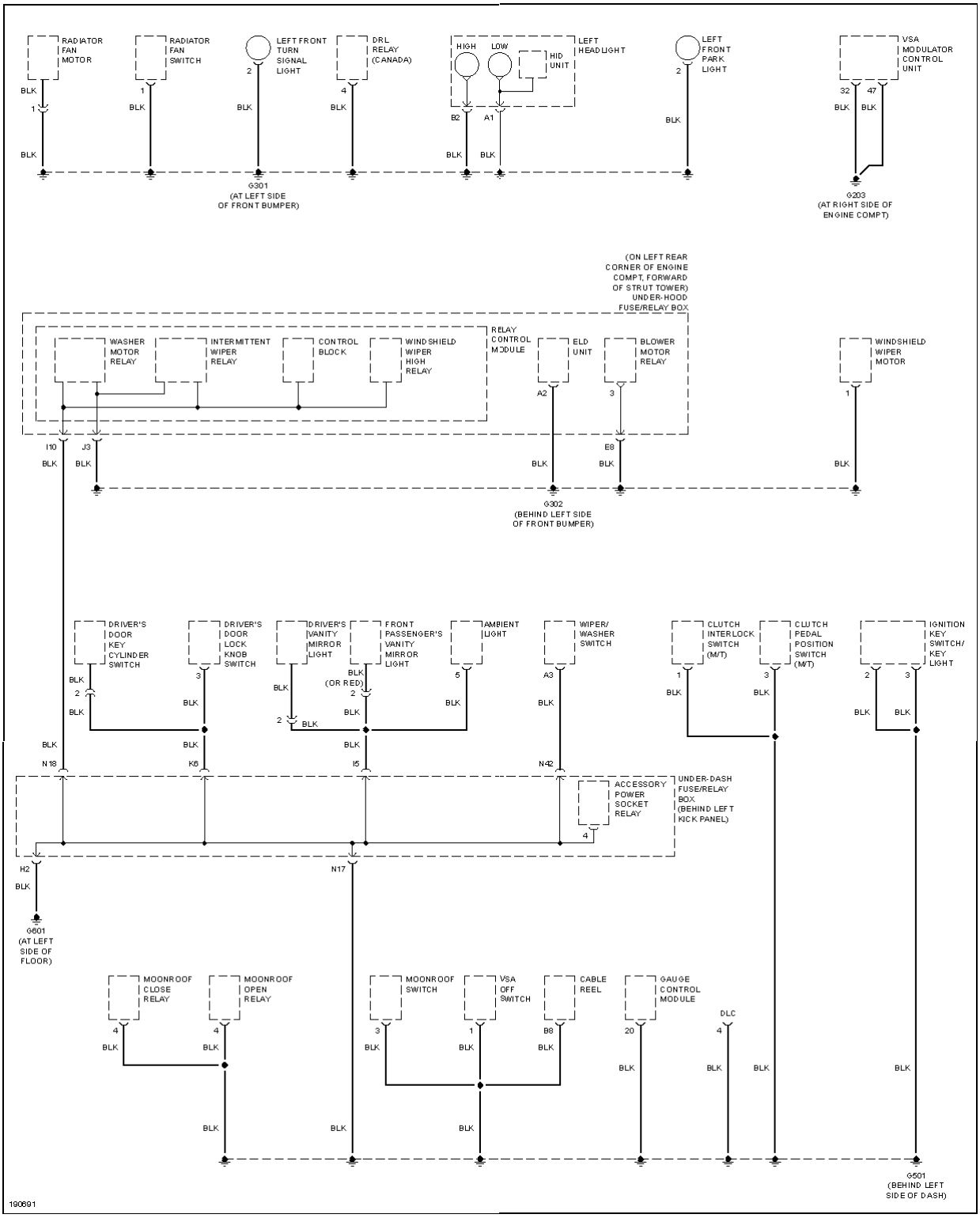


Fig. 25: Ground Distribution Circuit (2 of 4)

cardiagn.com

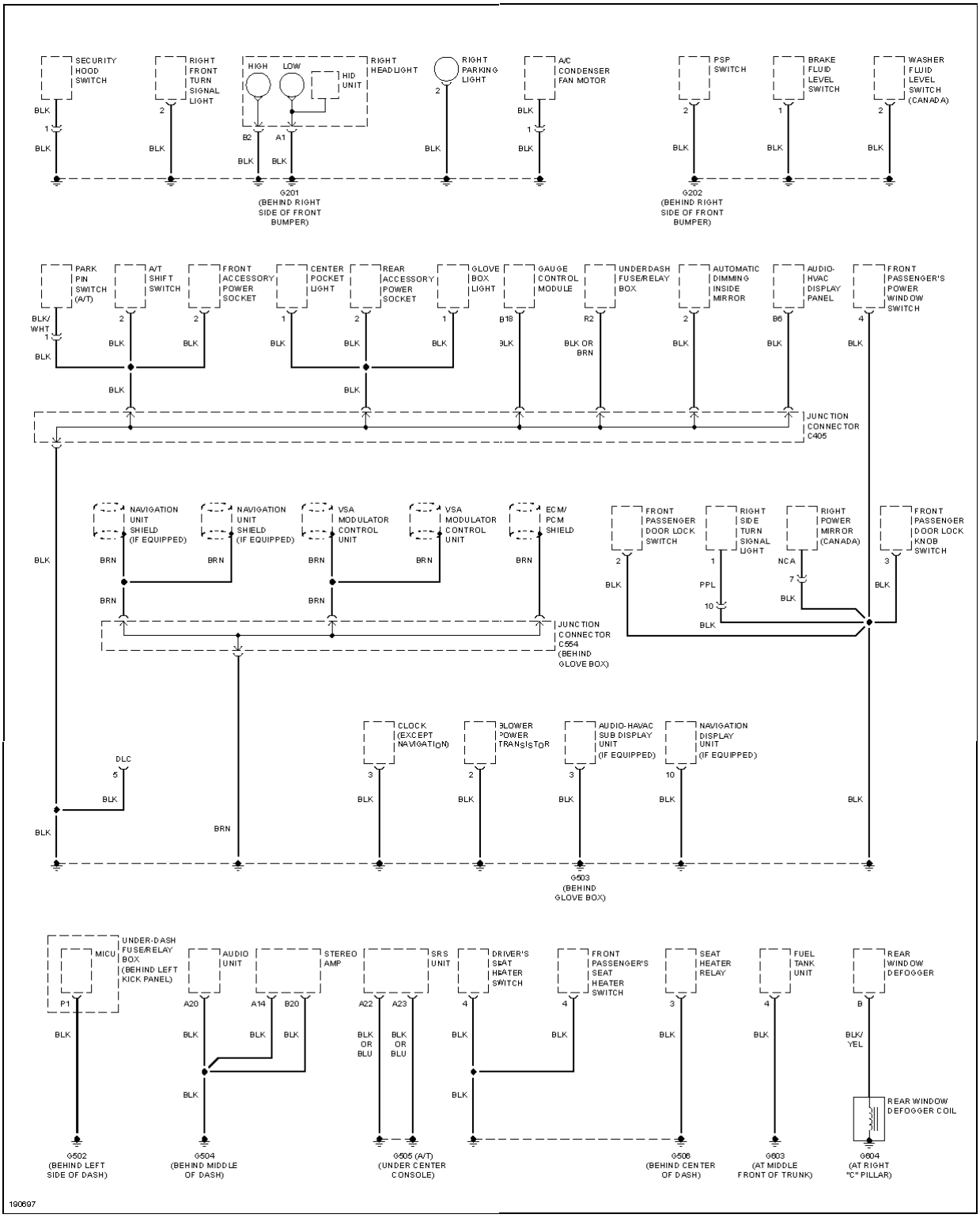


Fig. 26: Ground Distribution Circuit (3 of 4)

cardiagn.com

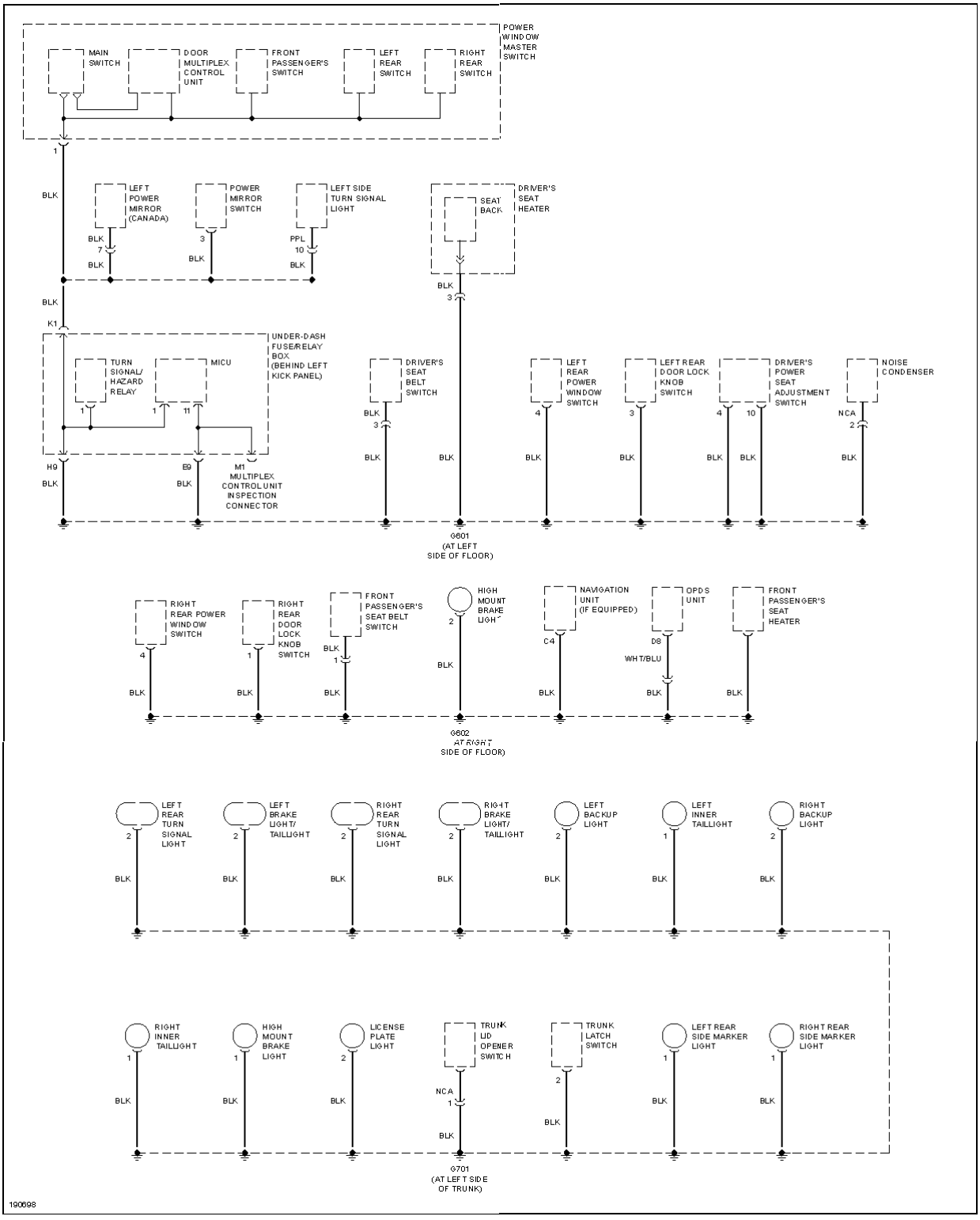


Fig. 27: Ground Distribution Circuit (4 of 4)

cardiagn.com

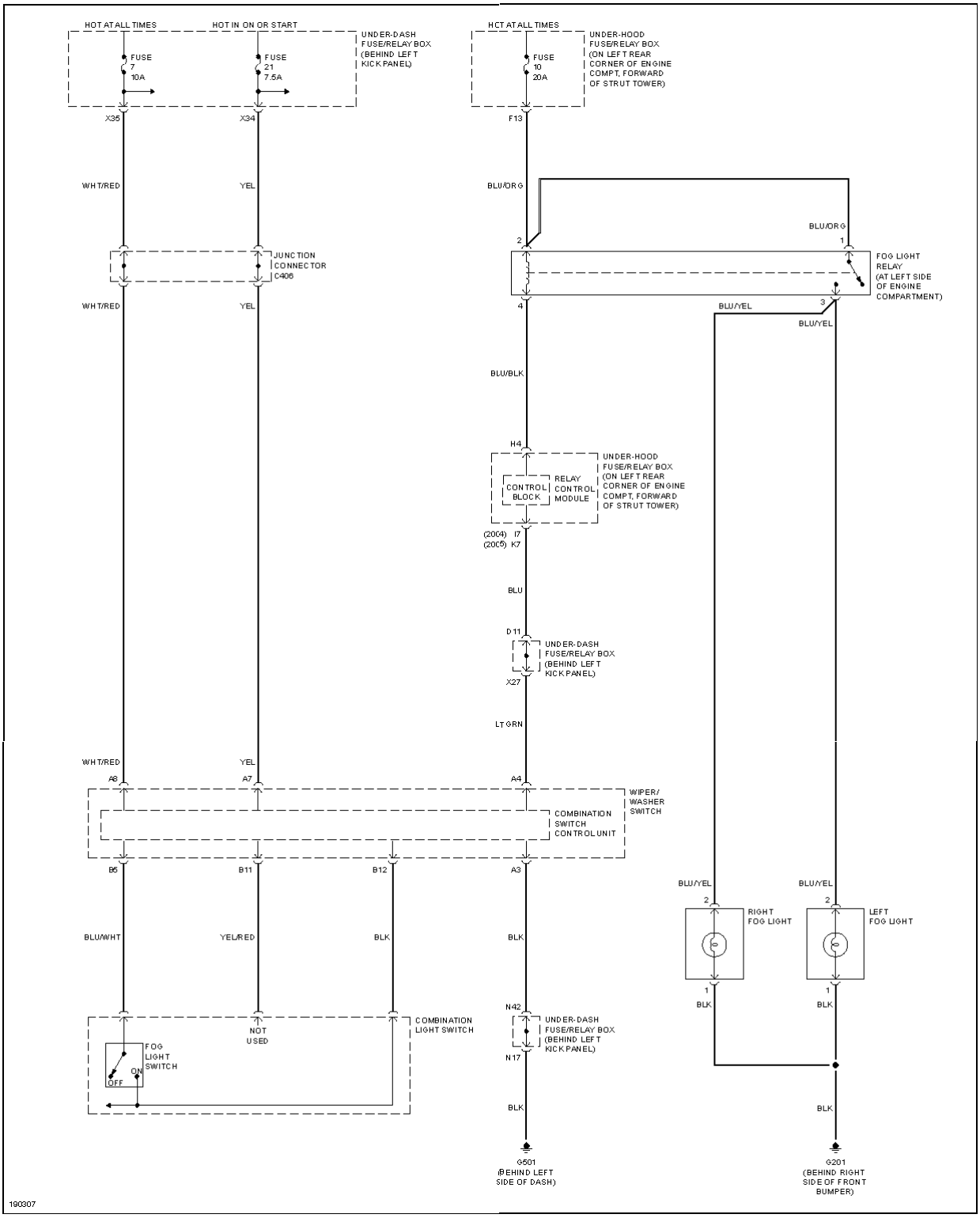


Fig. 28: Fog Lamp Circuit, Accessory

cardiagn.com

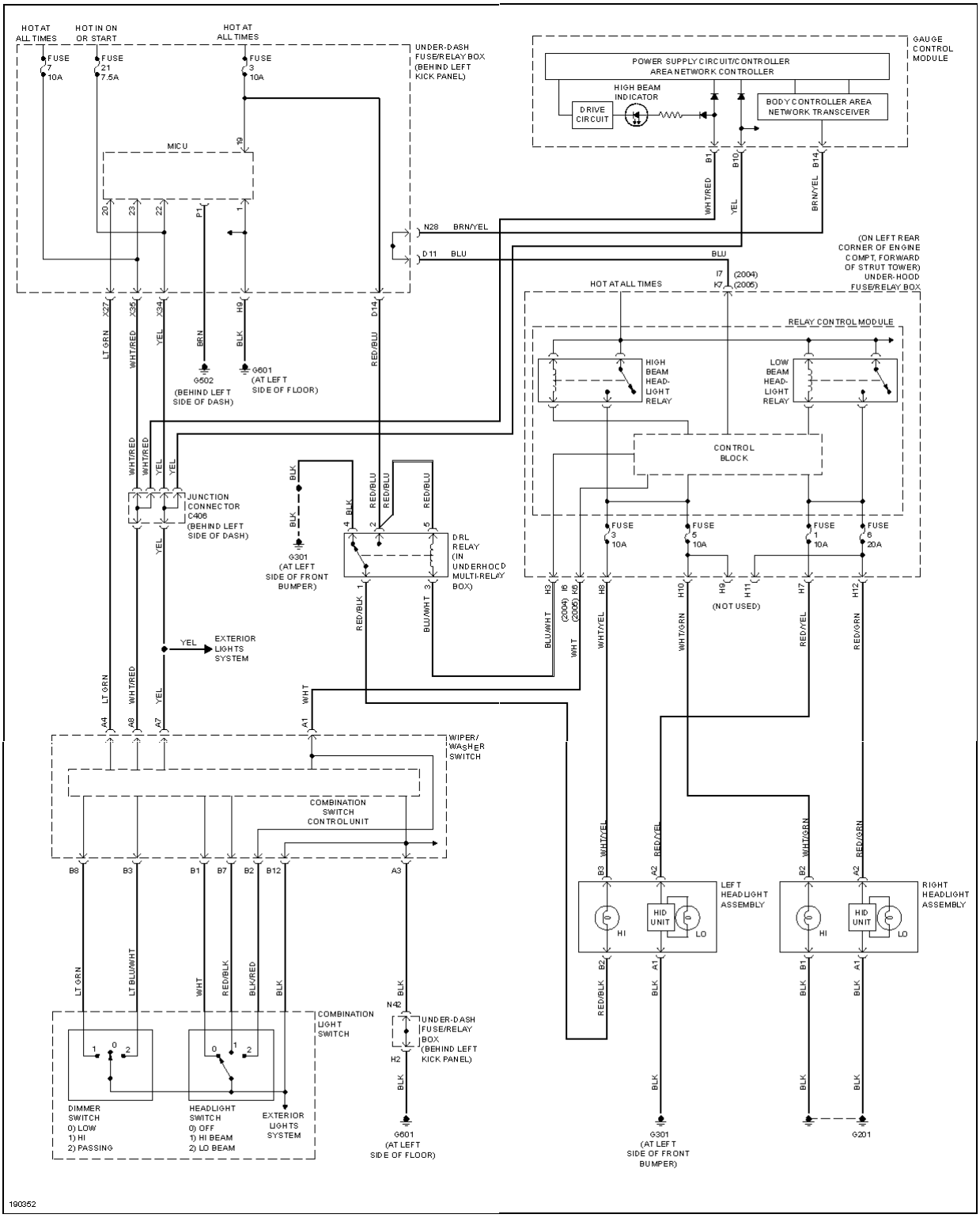


Fig. 29: Headlamps Circuit, W/ DRL

cardiagn.com

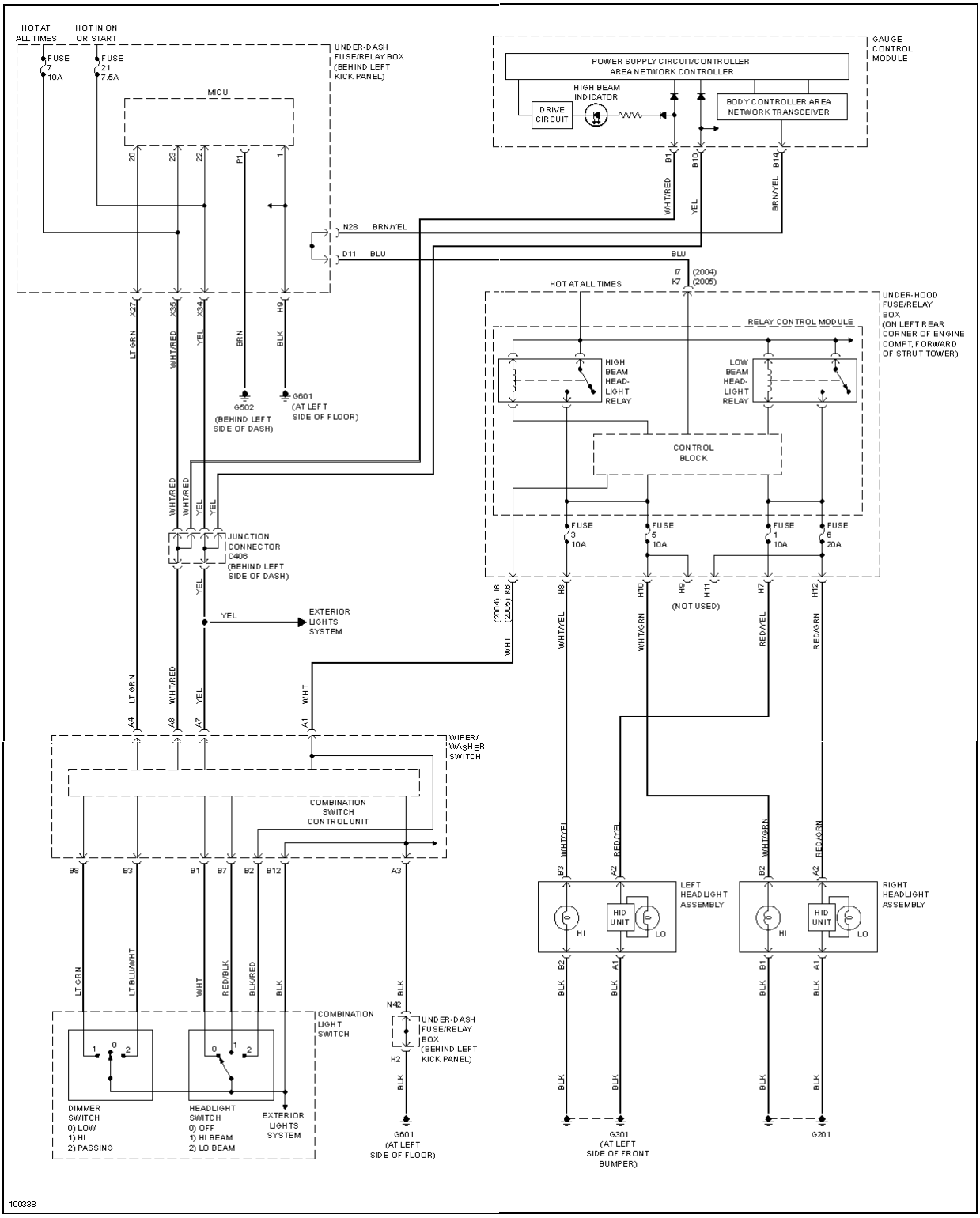


Fig. 30: Headlamps Circuit, W/O DRL

cardiagn.com

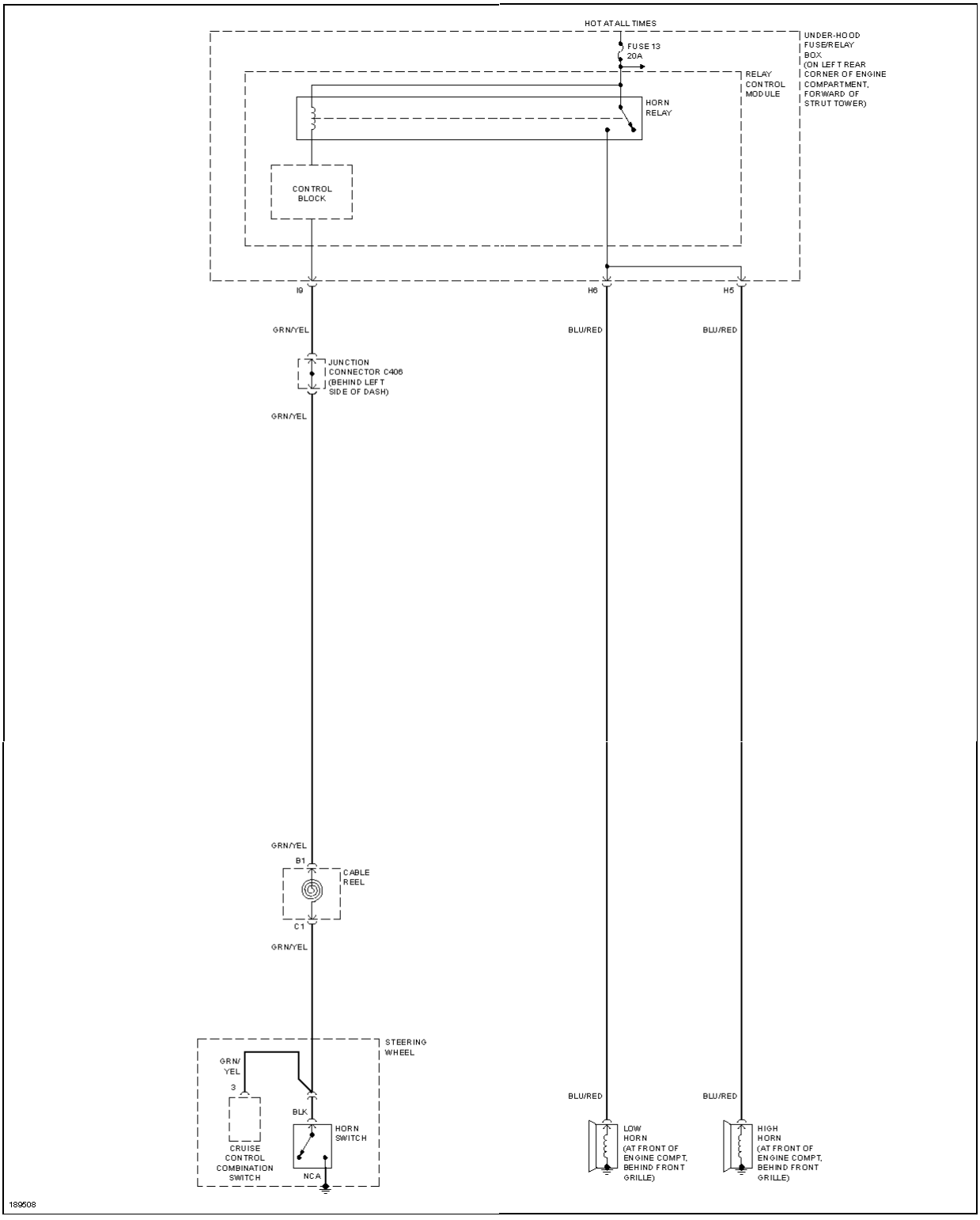


Fig. 31: Horn Circuit

cardiagn.com

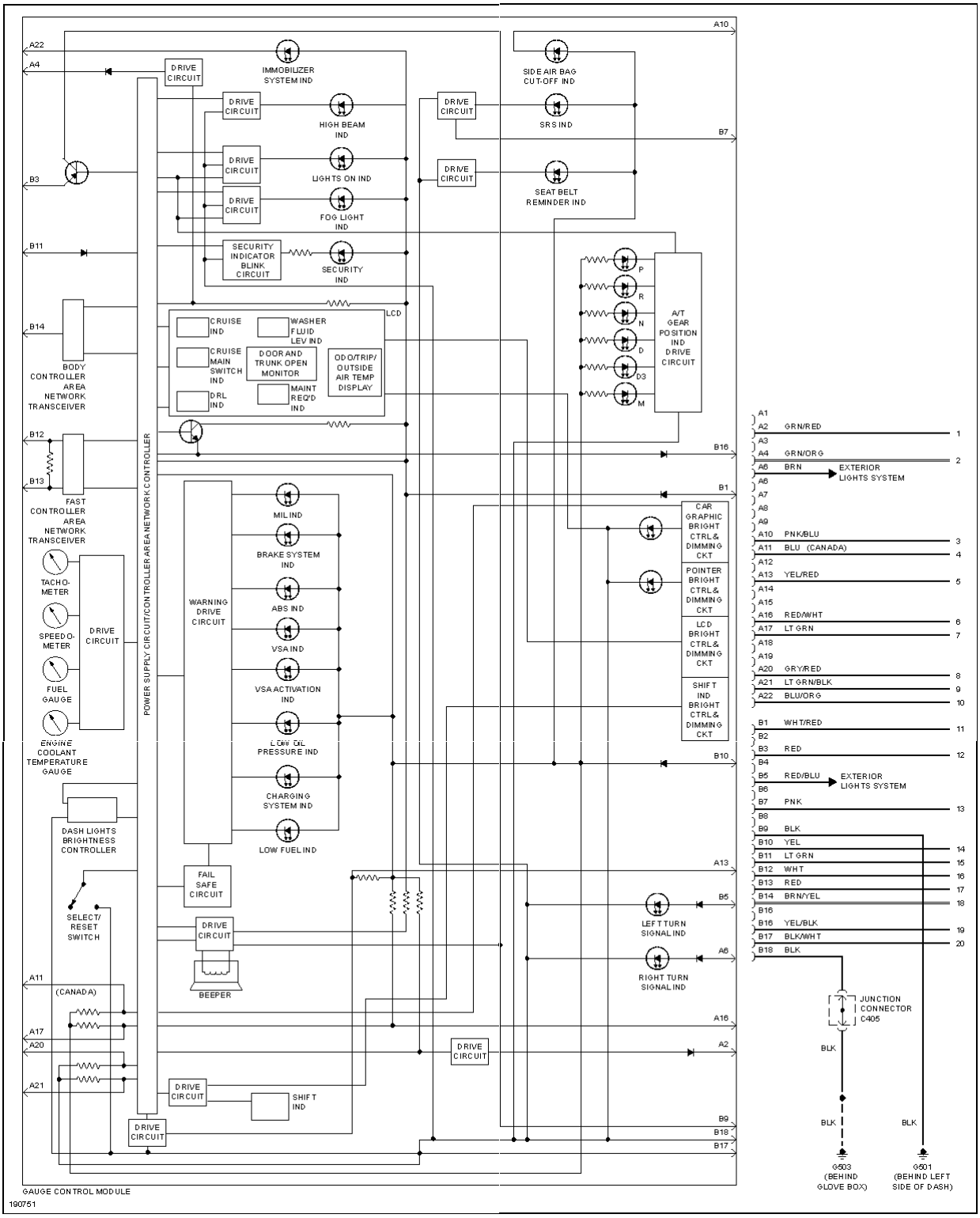


Fig. 32: Instrument Cluster Circuit (1 of 2)

cardiagn.com

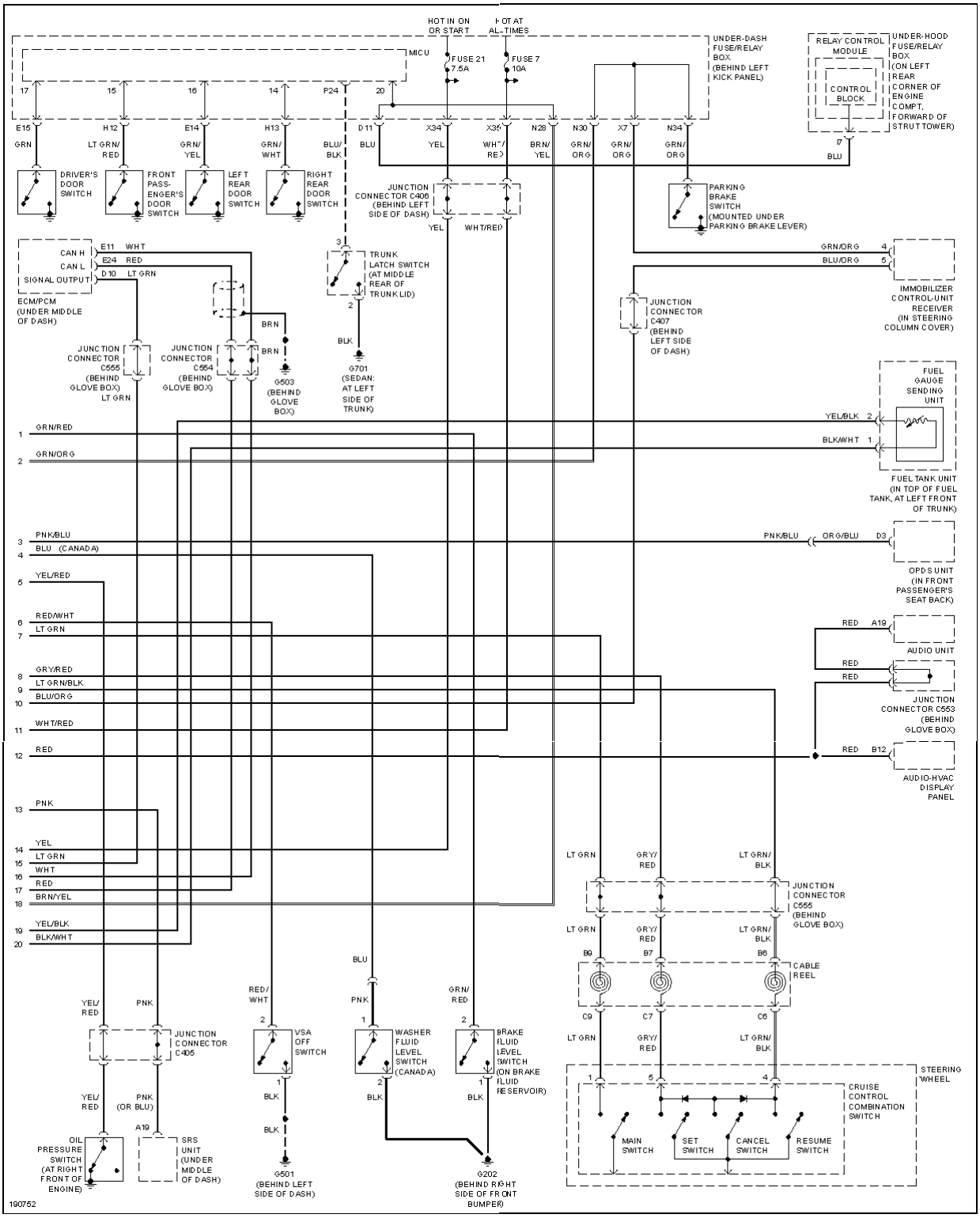


Fig. 33: Instrument Cluster Circuit (2 of 2)

cardiagn.com

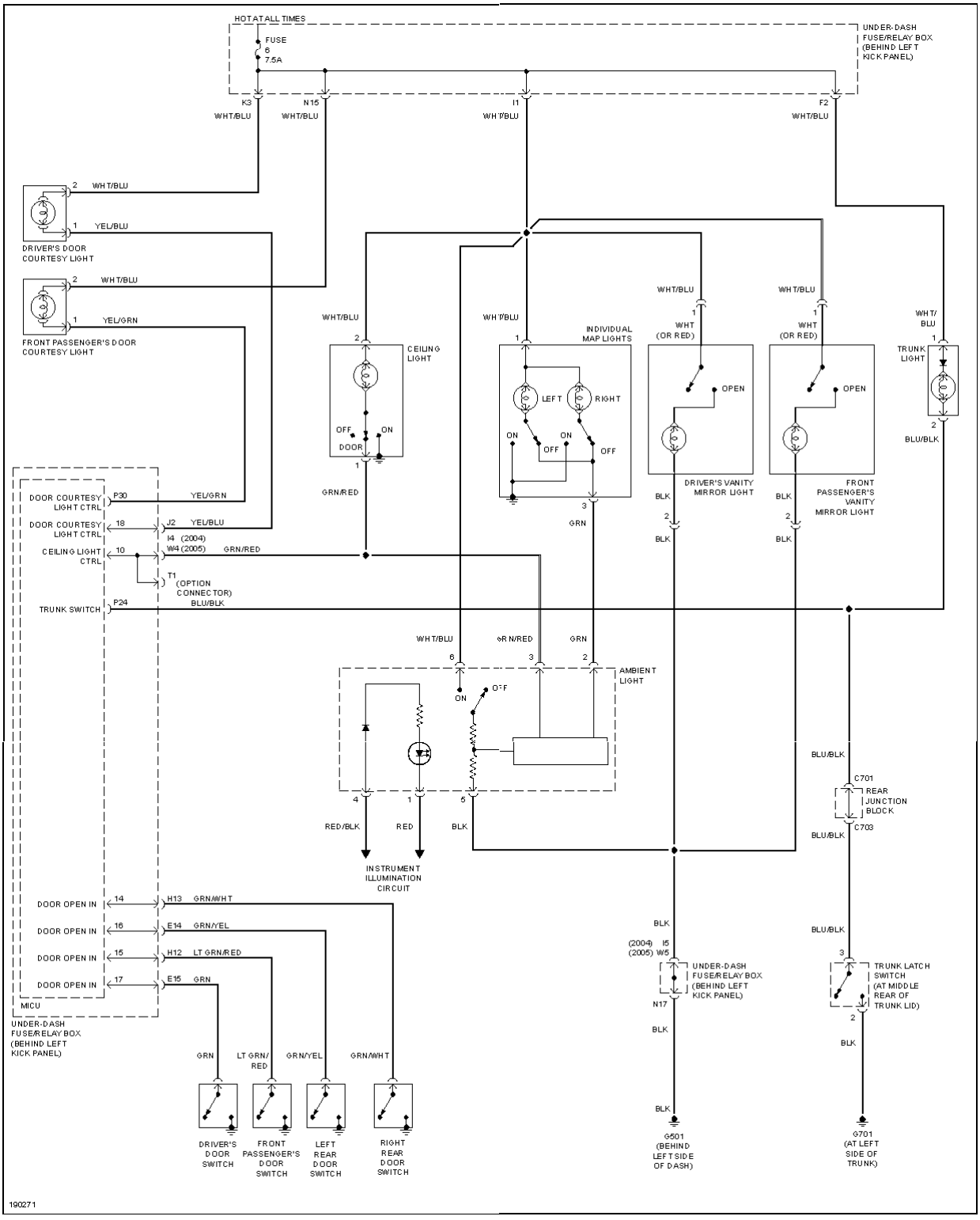


Fig. 34: Courtesy Lamps Circuit

cardiagn.com

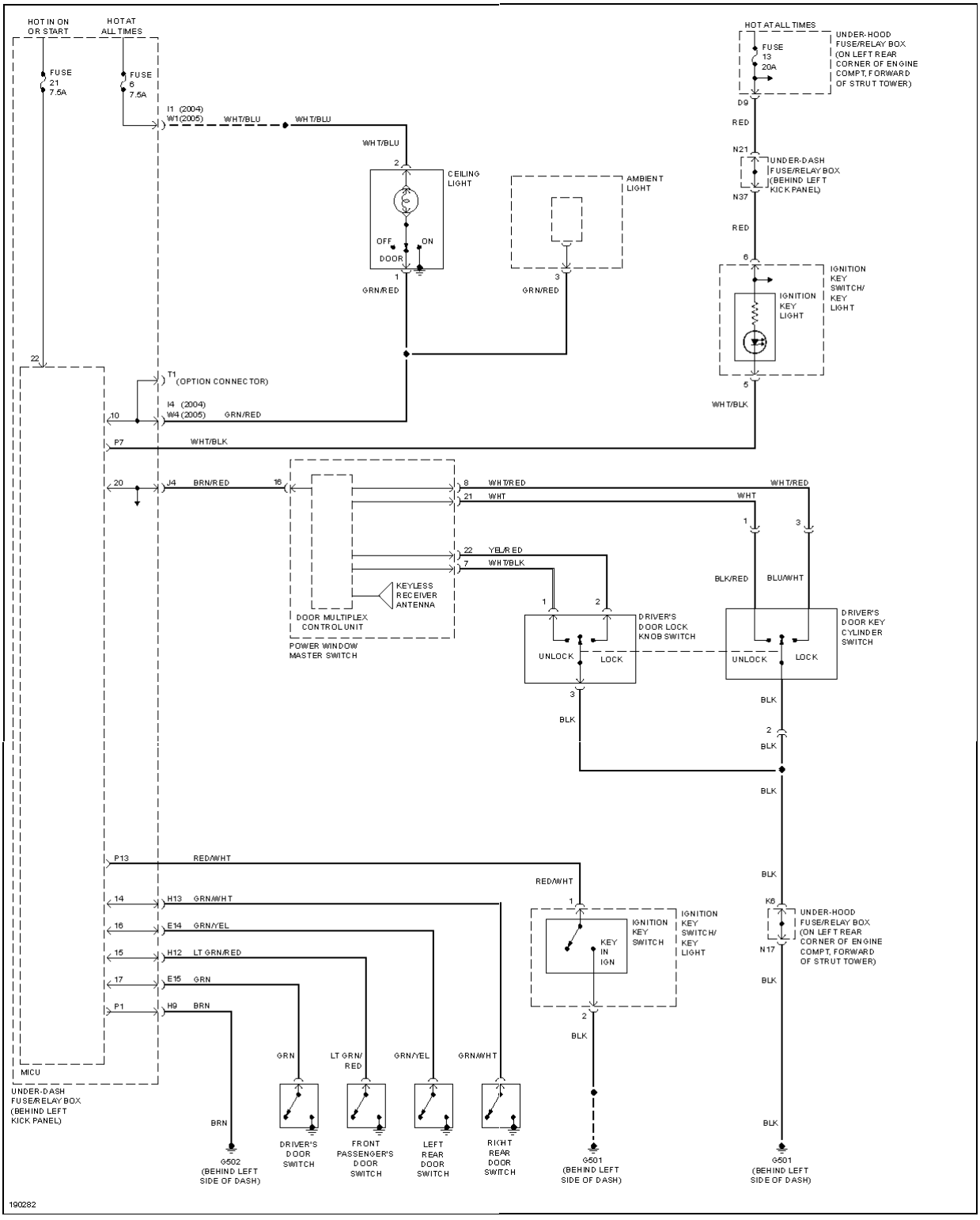


Fig. 35: Entry Light Timer Circuit

cardiagn.com

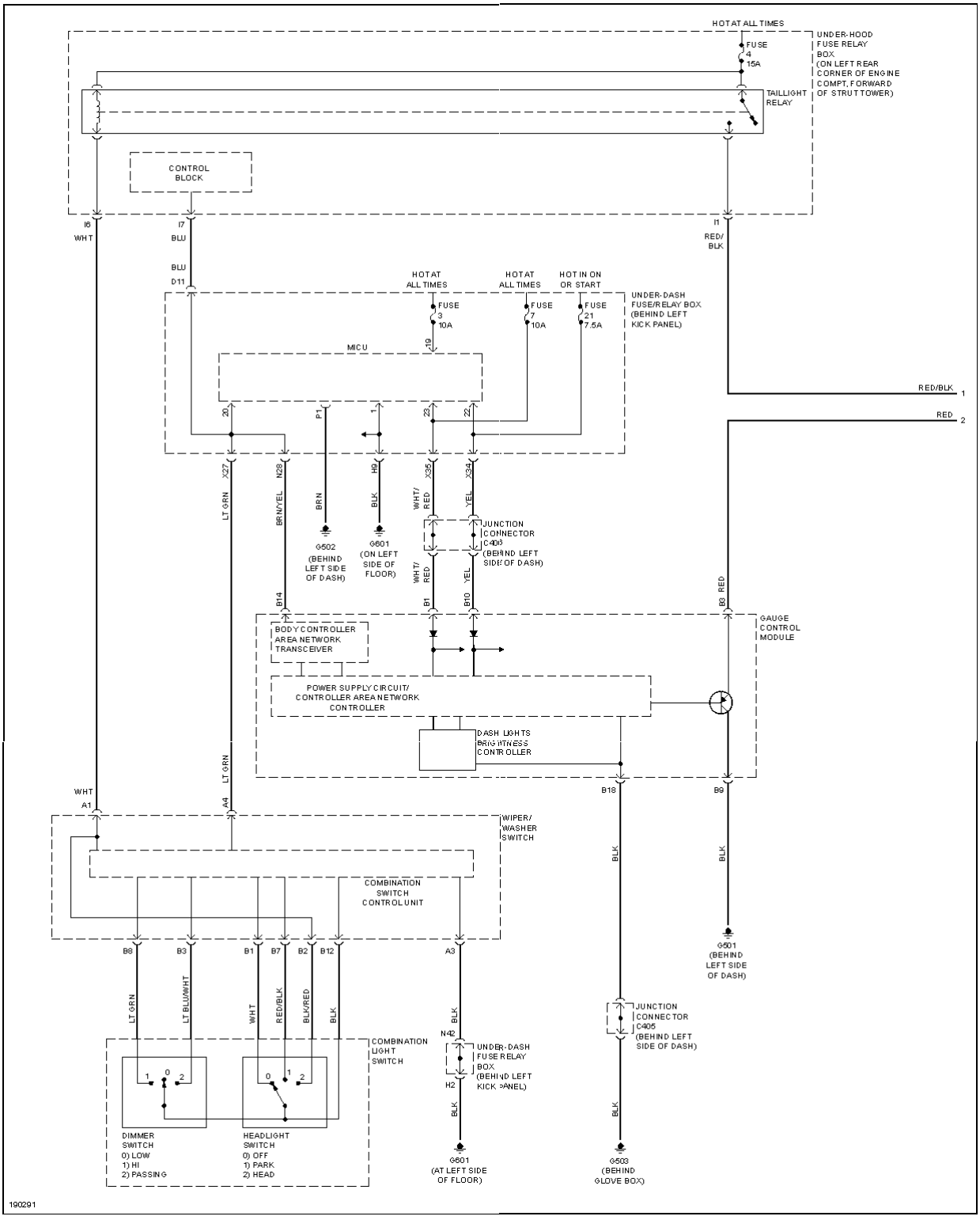


Fig. 36: Instrument Illumination Circuit (1 of 2)

cardiagn.com

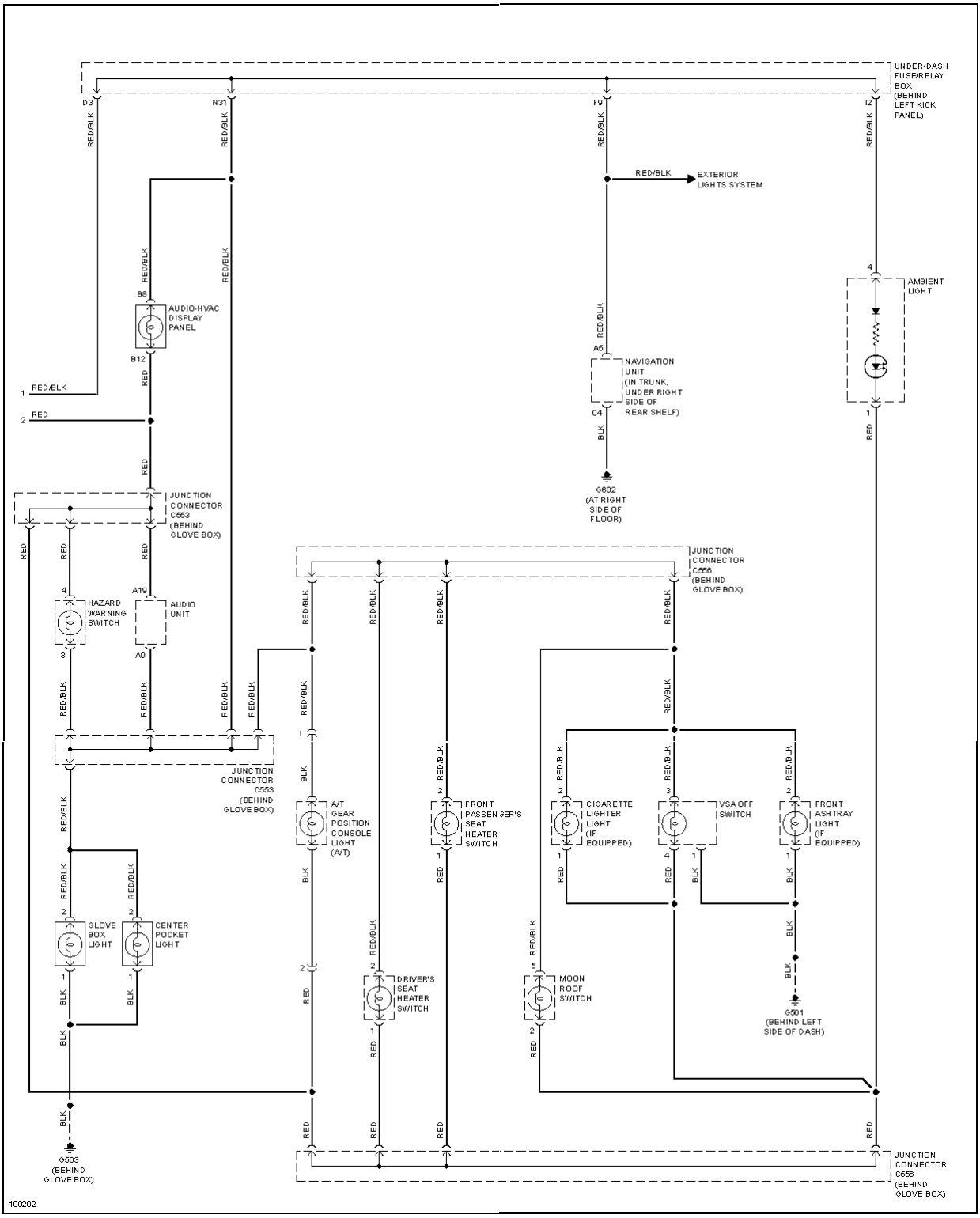


Fig. 37: Instrument Illumination Circuit (2 of 2)

cardiagn.com

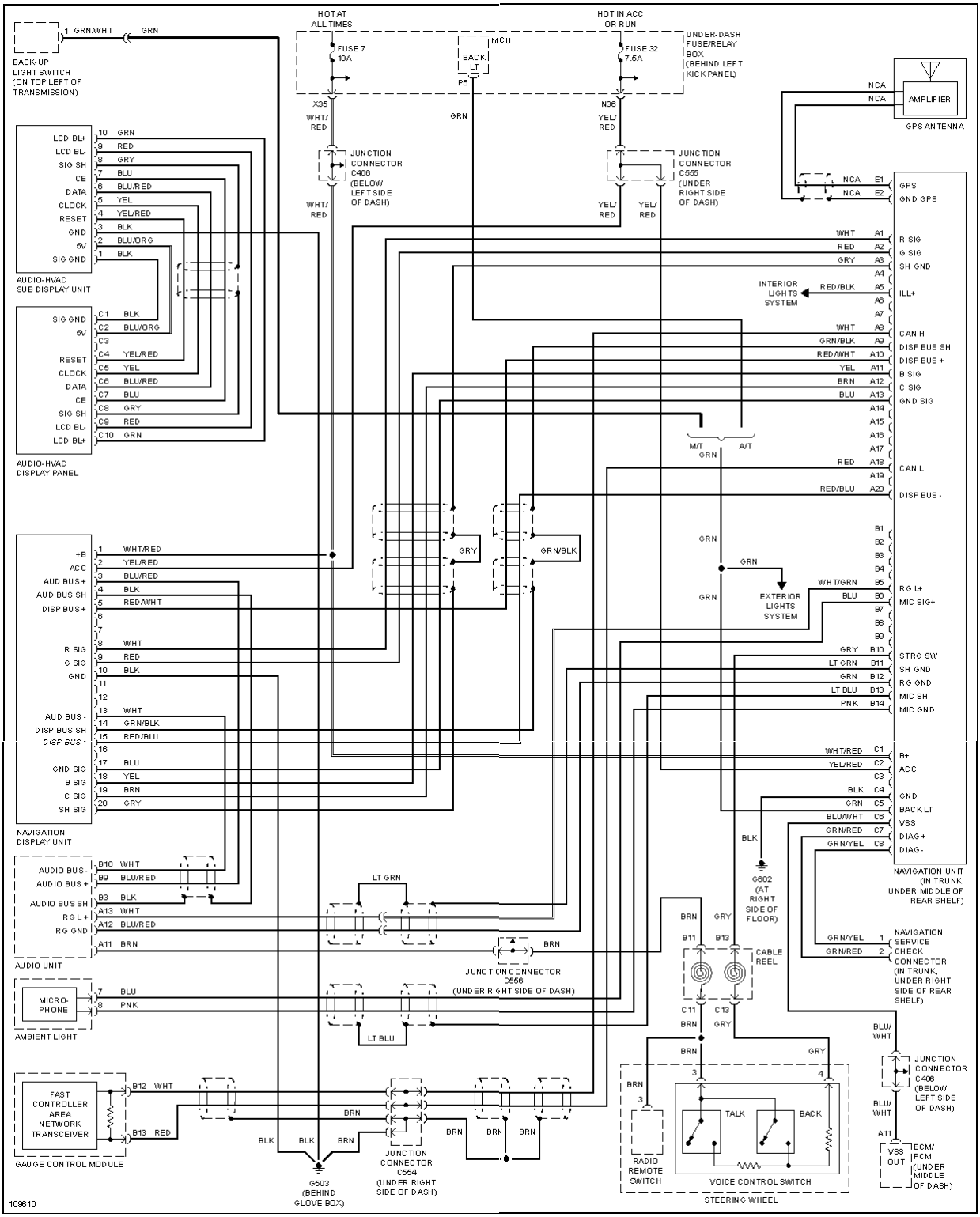


Fig. 38: Navigation Circuit

cardiagn.com

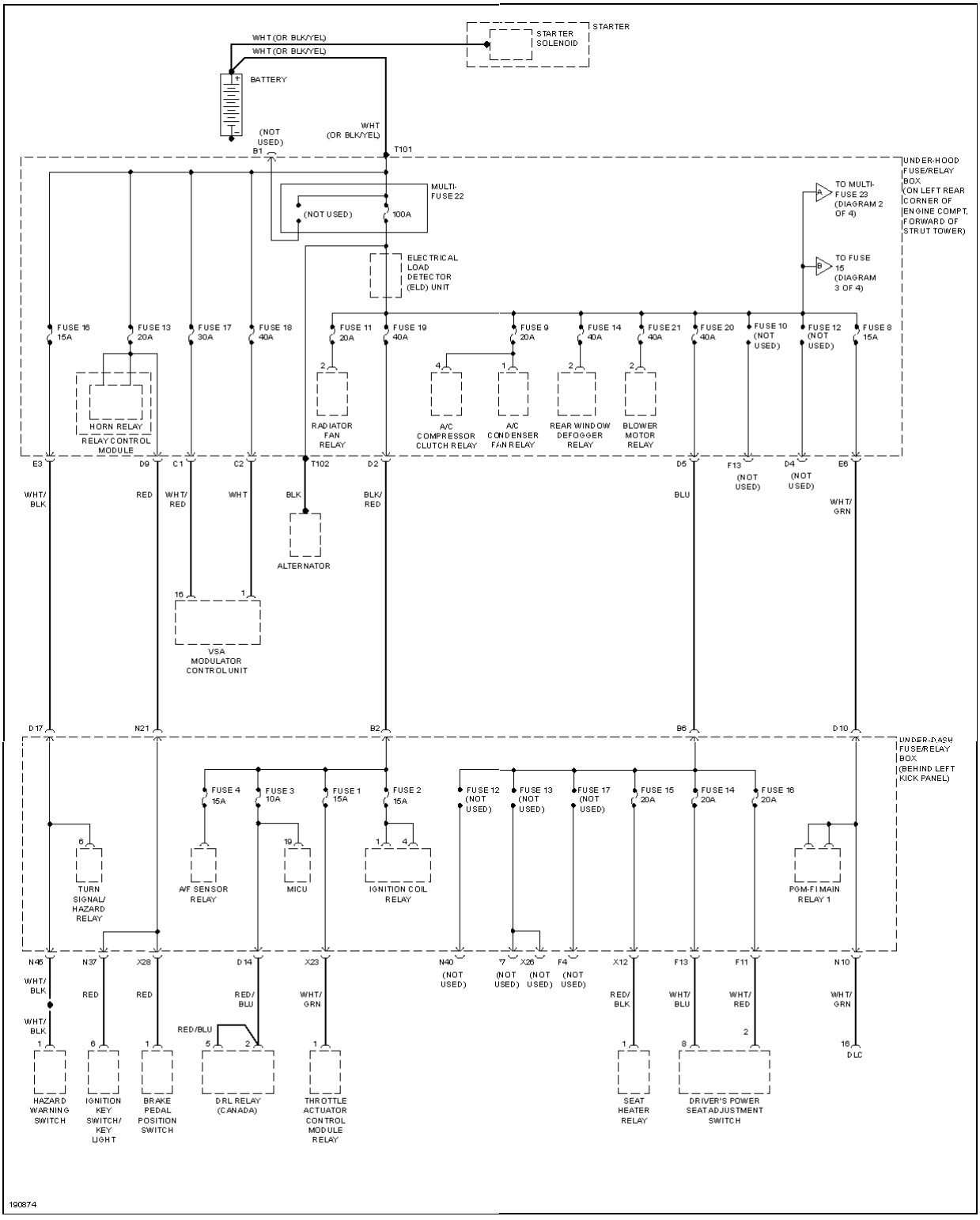


Fig. 39: Power Distribution Circuit (1 of 4)

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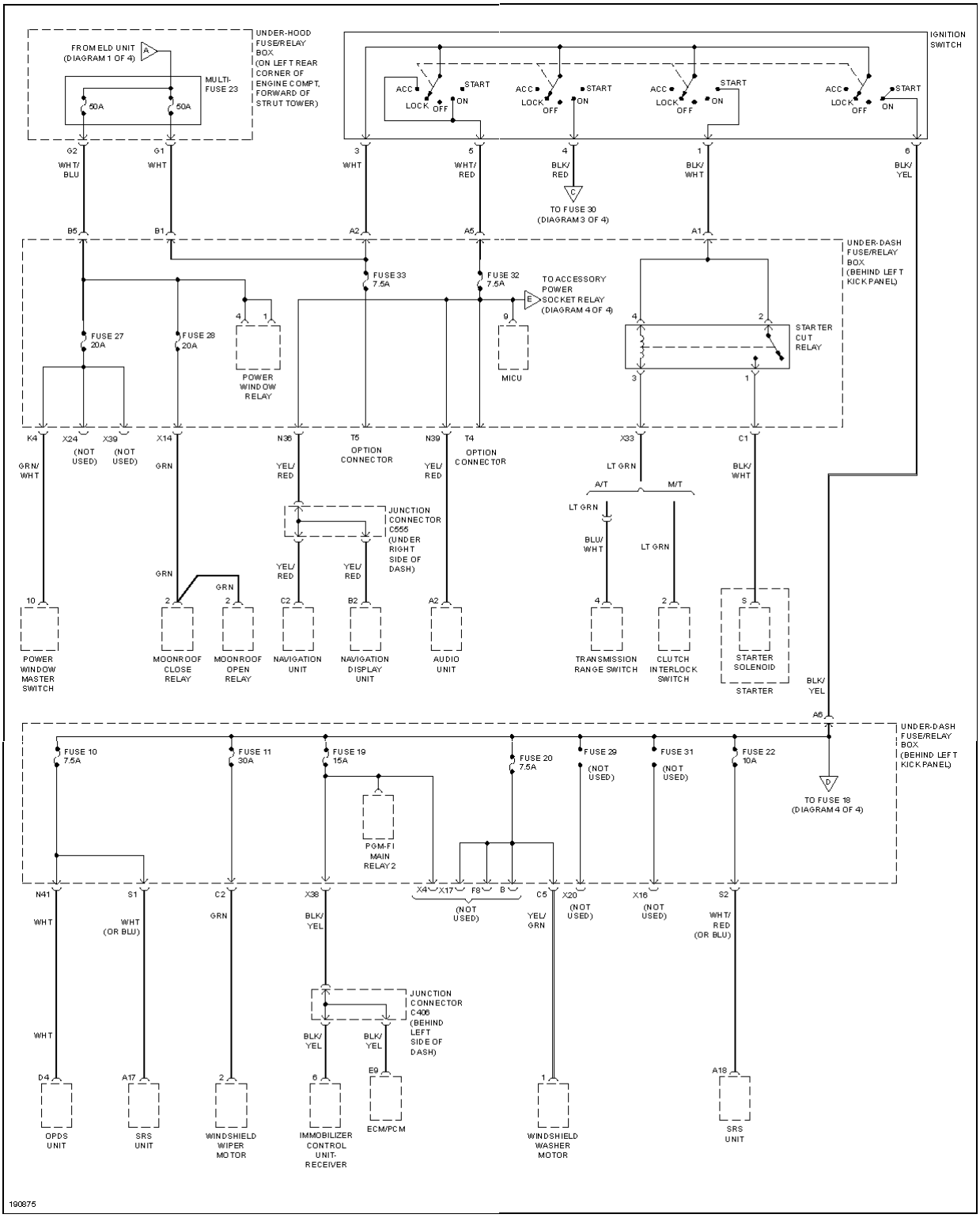


Fig. 40: Power Distribution Circuit (2 of 4)

cardiagn.com

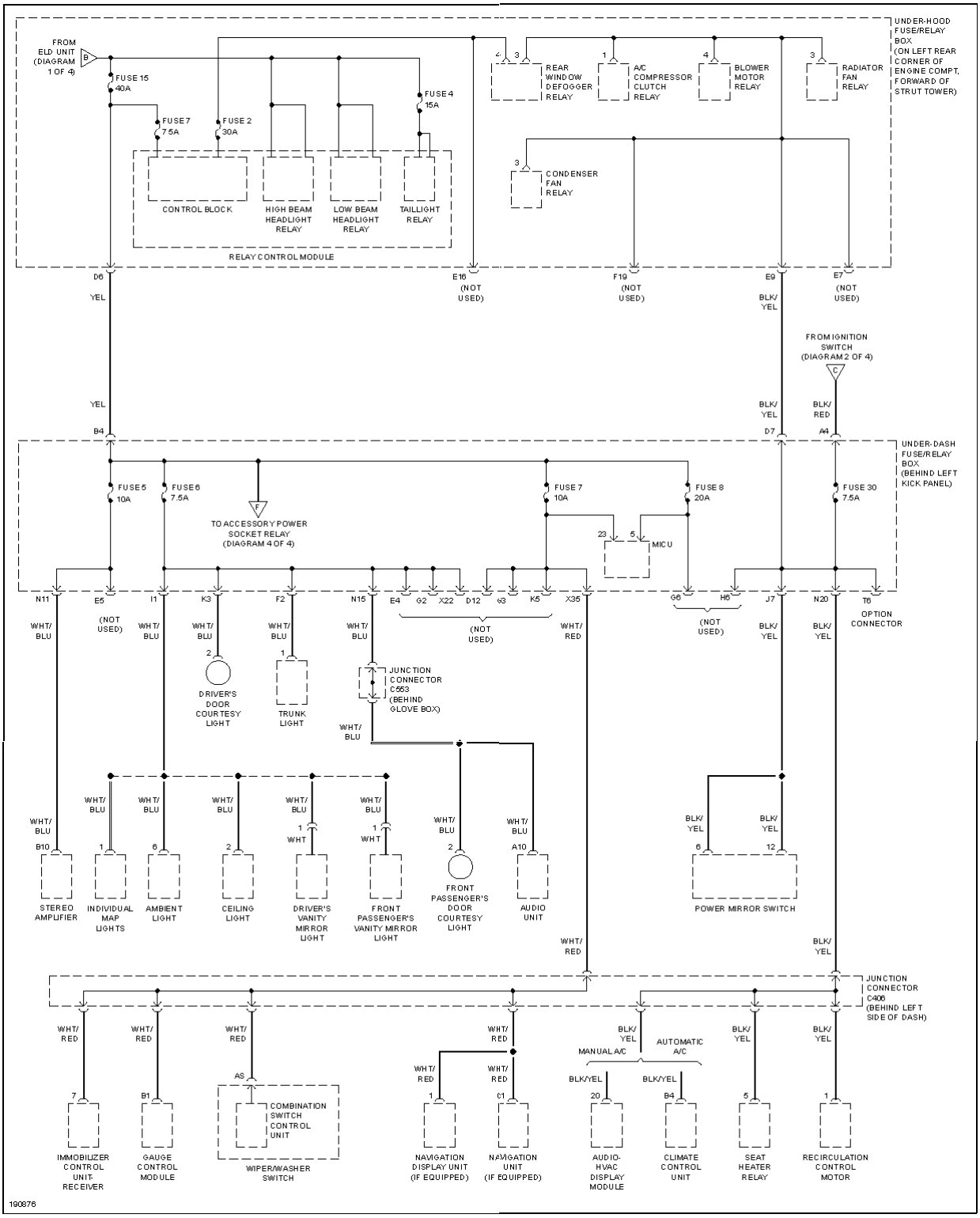


Fig. 41: Power Distribution Circuit (3 of 4)

cardiagn.com

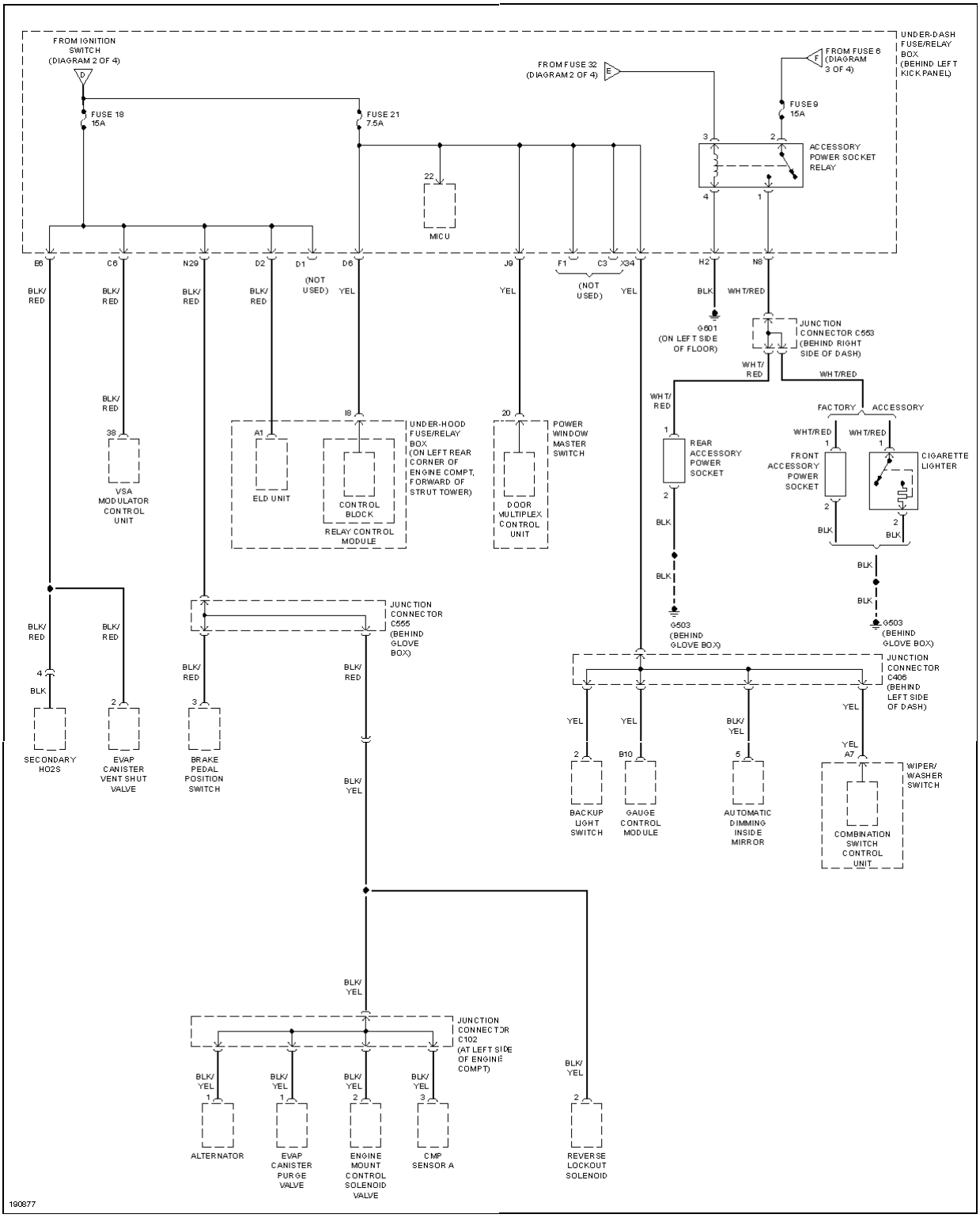


Fig. 42: Power Distribution Circuit (4 of 4)

cardiagn.com

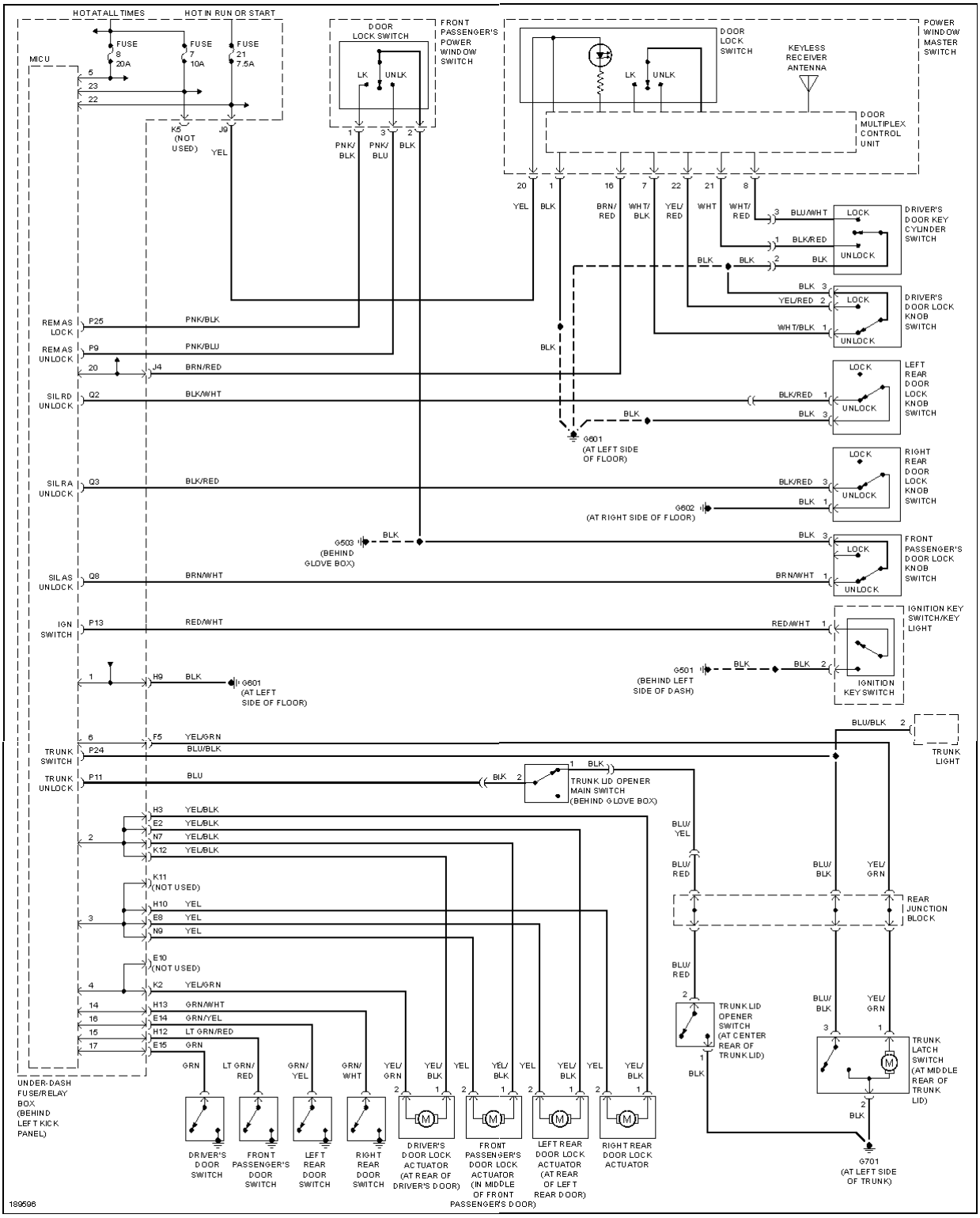


Fig. 43: Power Door Locks Circuit

cardiagn.com

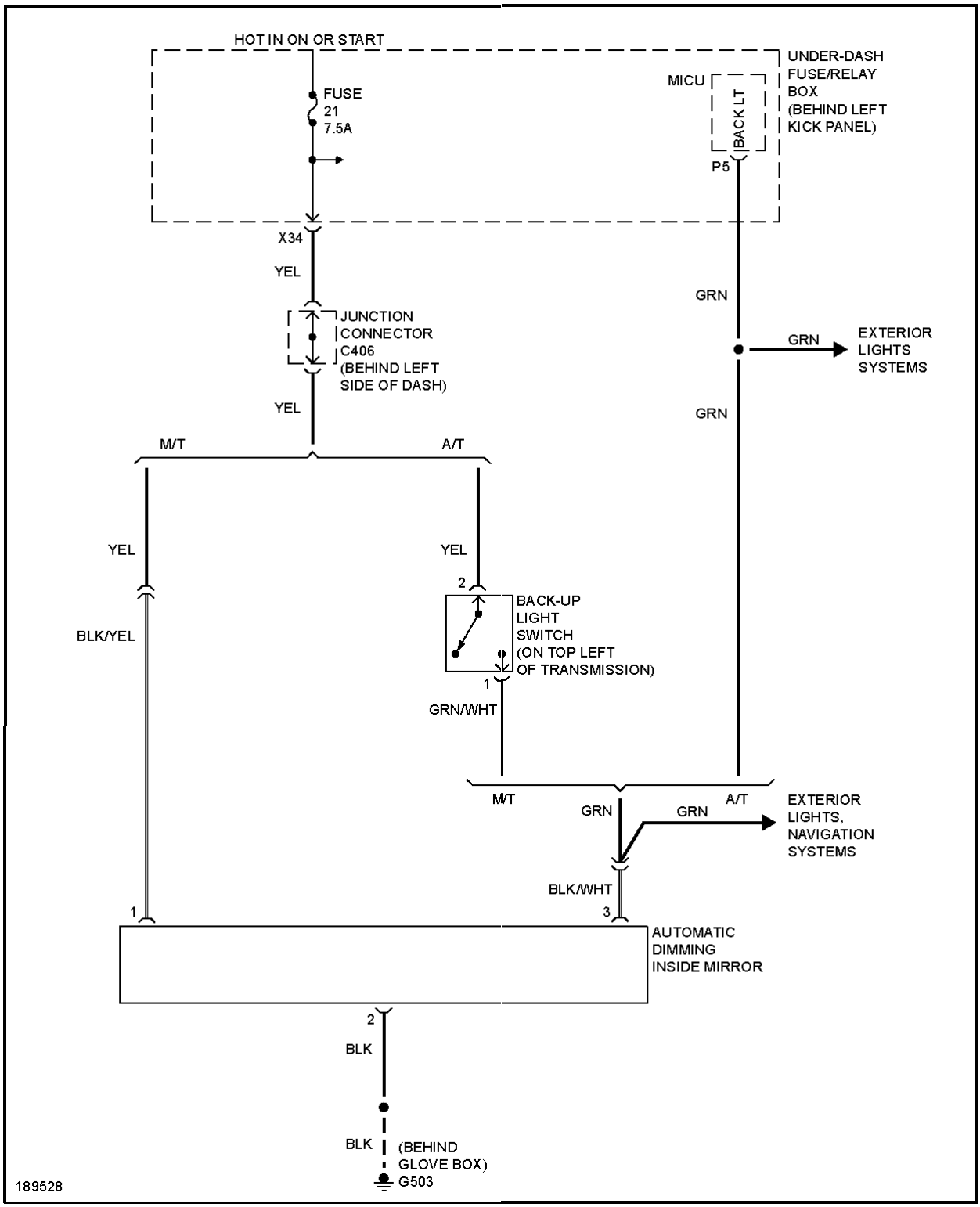


Fig. 44: Automatic Day/Night Mirror Circuit

cardiagn.com

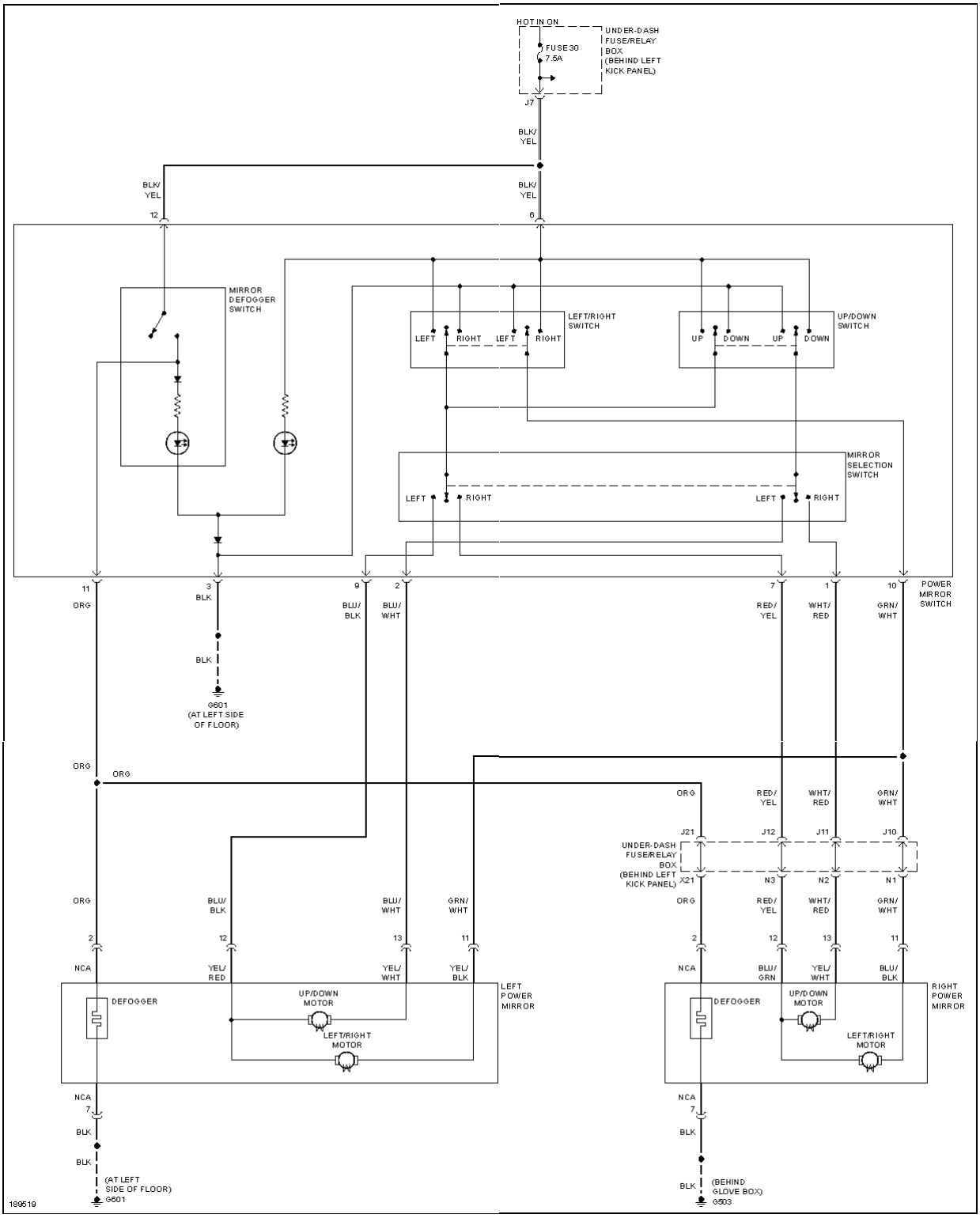


Fig. 45: Power Mirrors Circuit

cardiagn.com

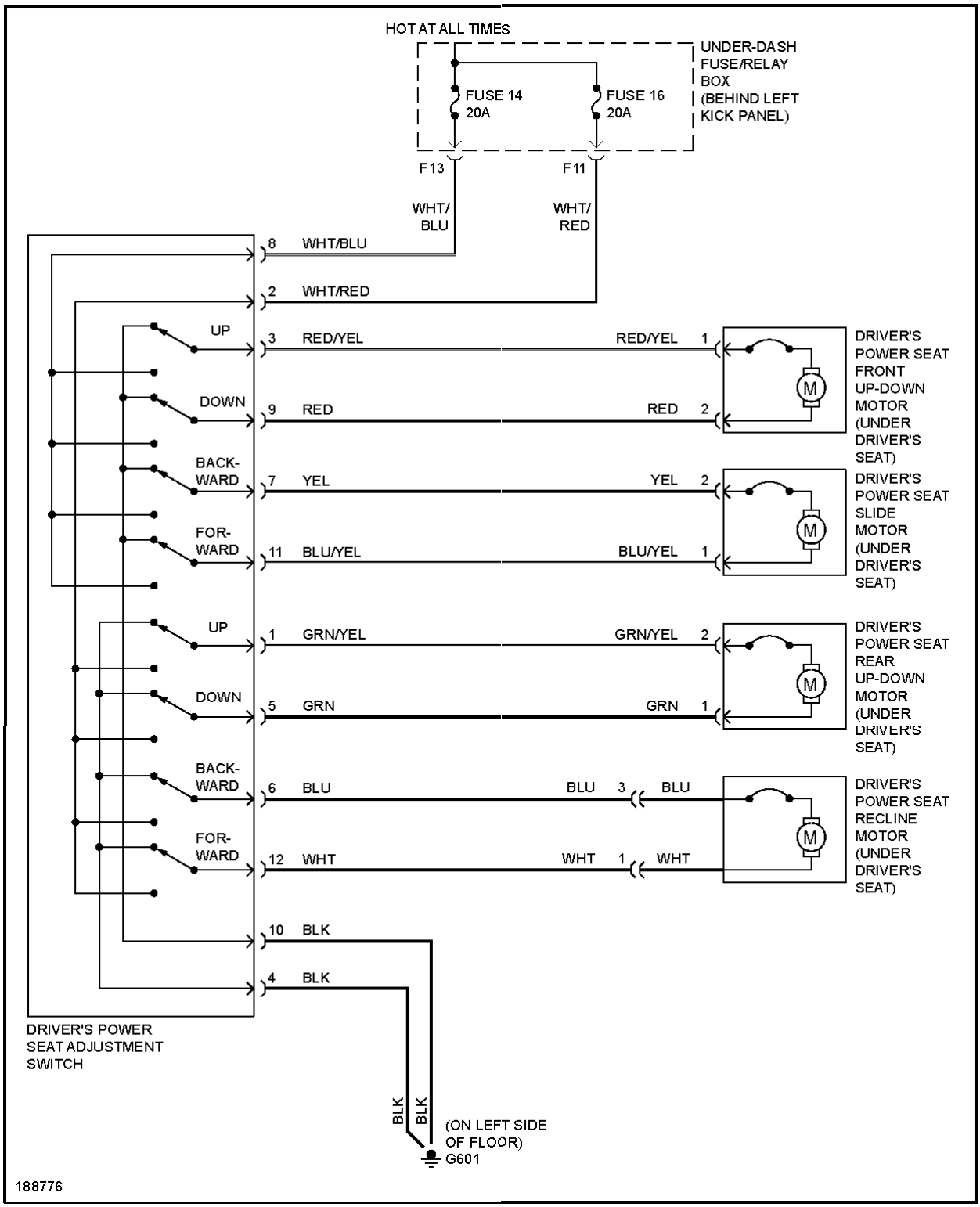


Fig. 46: Driver Power Seat Circuit

cardiagn.com

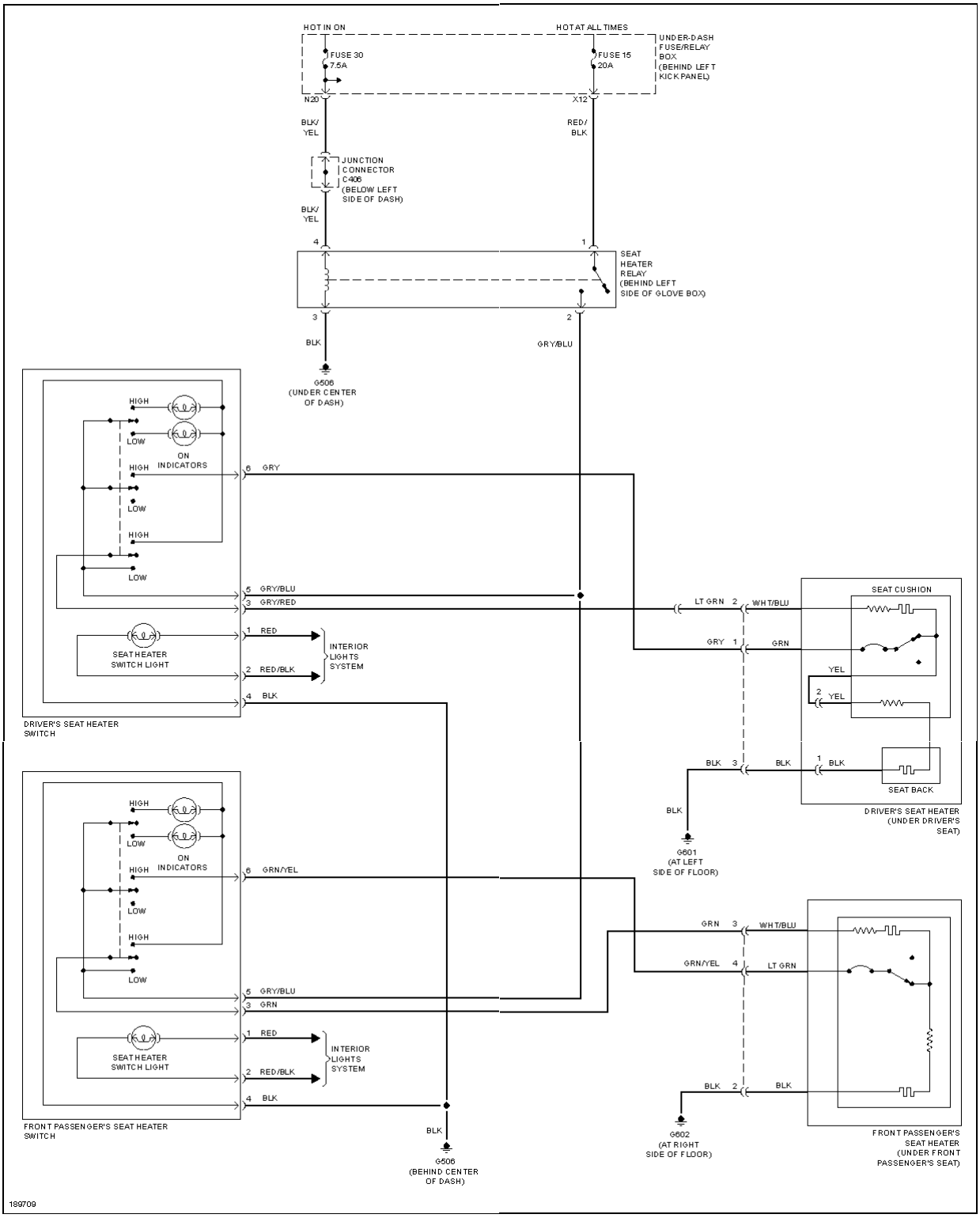


Fig. 47: Heated Seats Circuit

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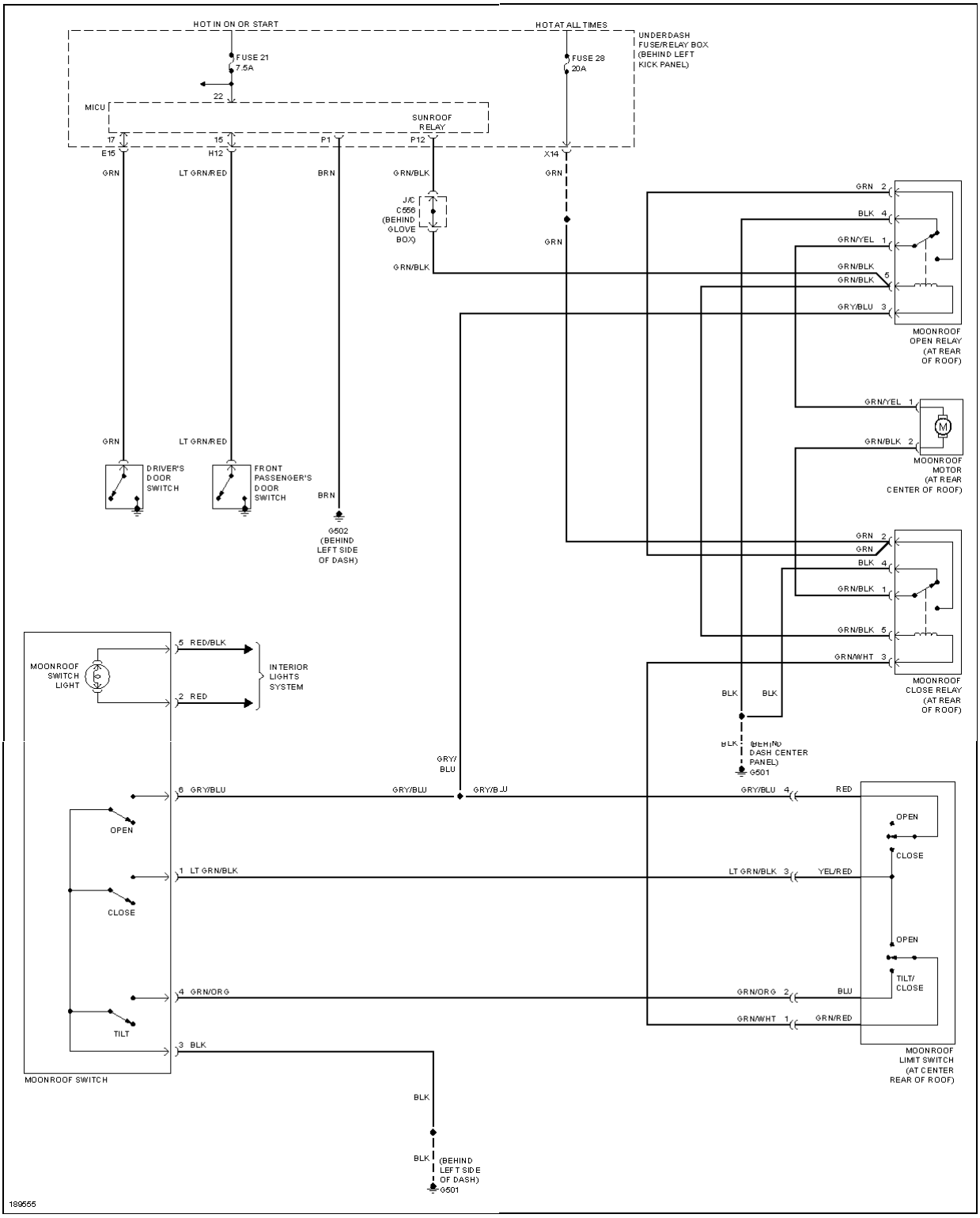


Fig. 48: Power Top/Sunroof Circuit

cardiagn.com

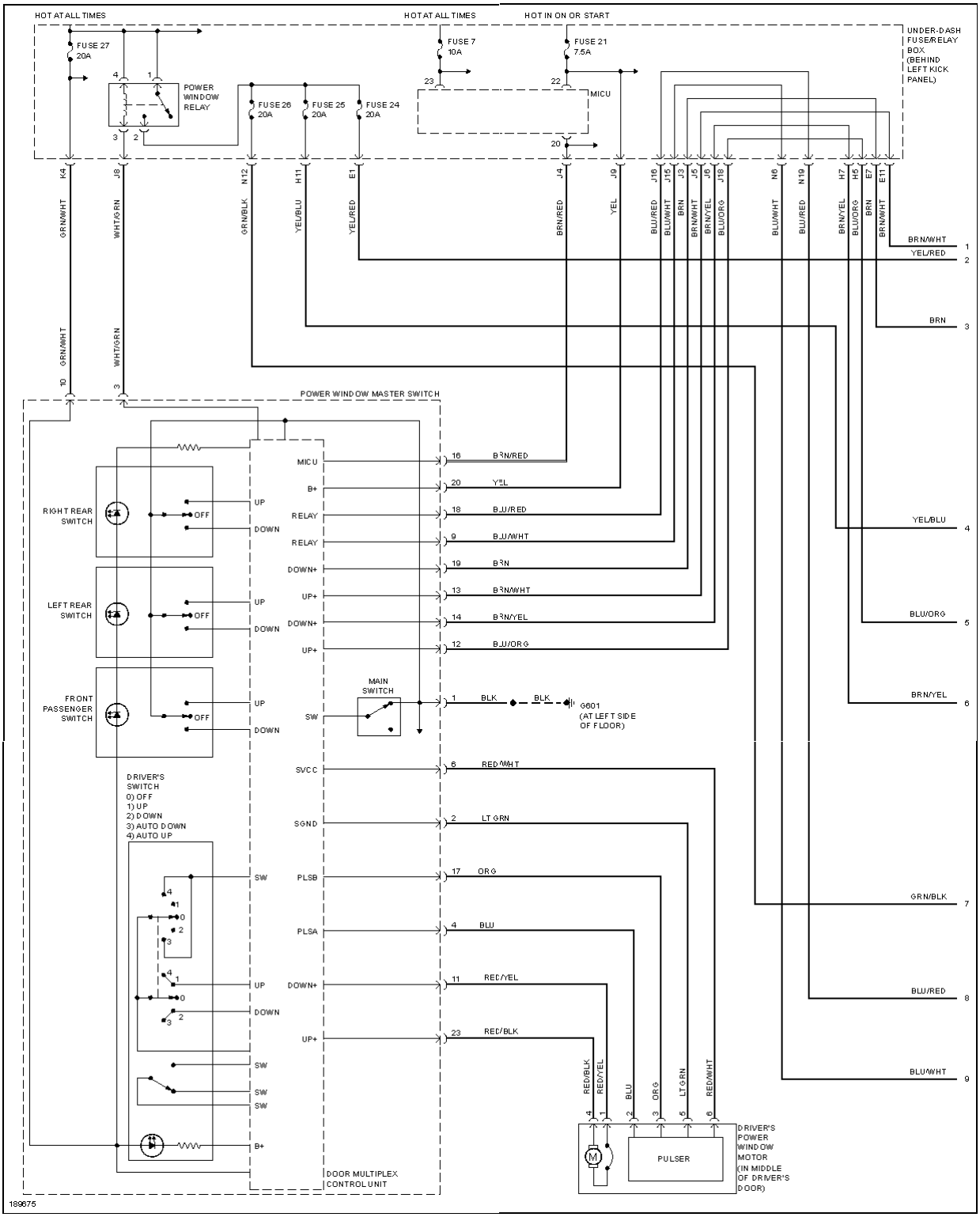


Fig. 49: Power Windows Circuit (1 of 2)

cardiagn.com

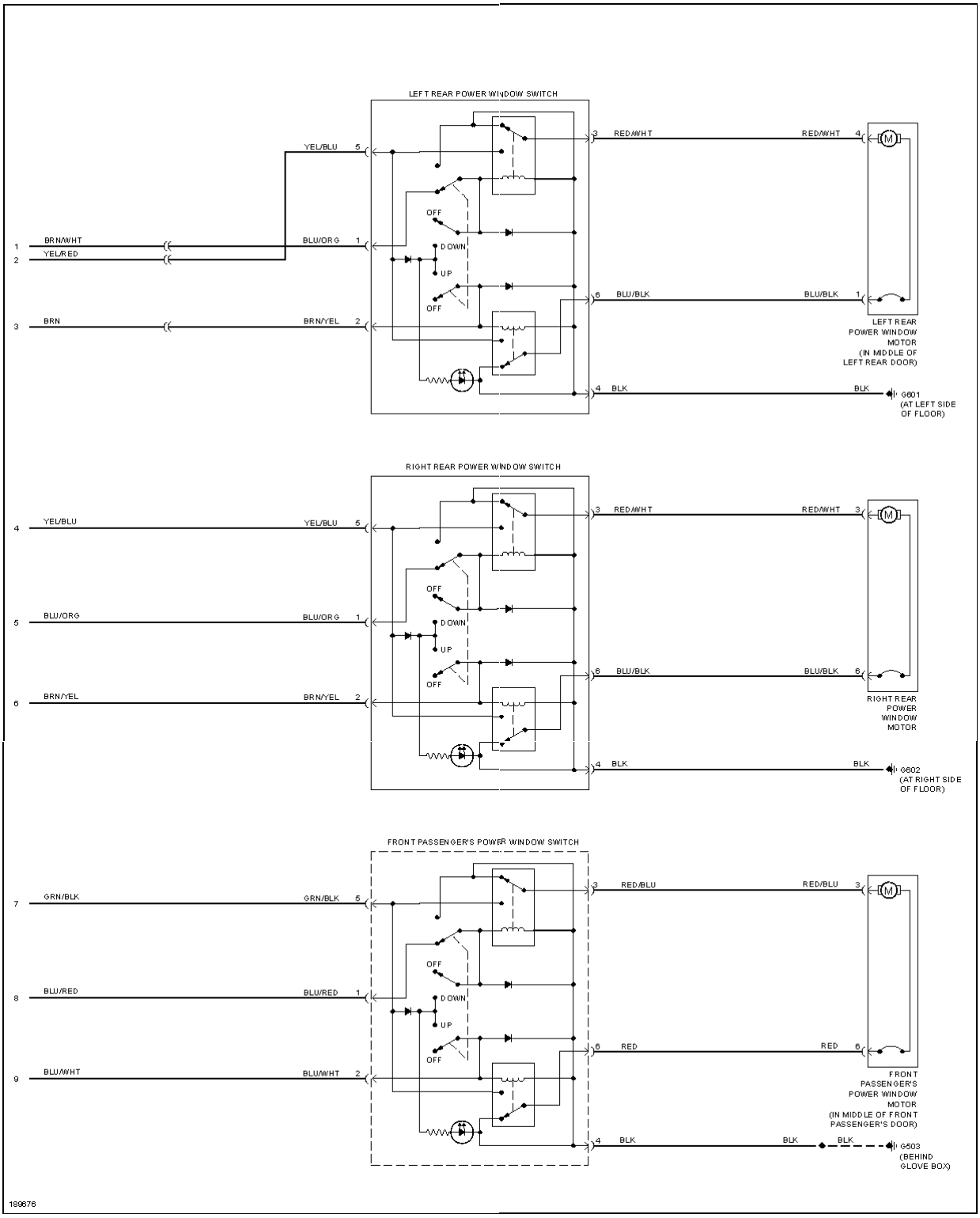


Fig. 50: Power Windows Circuit (2 of 2)

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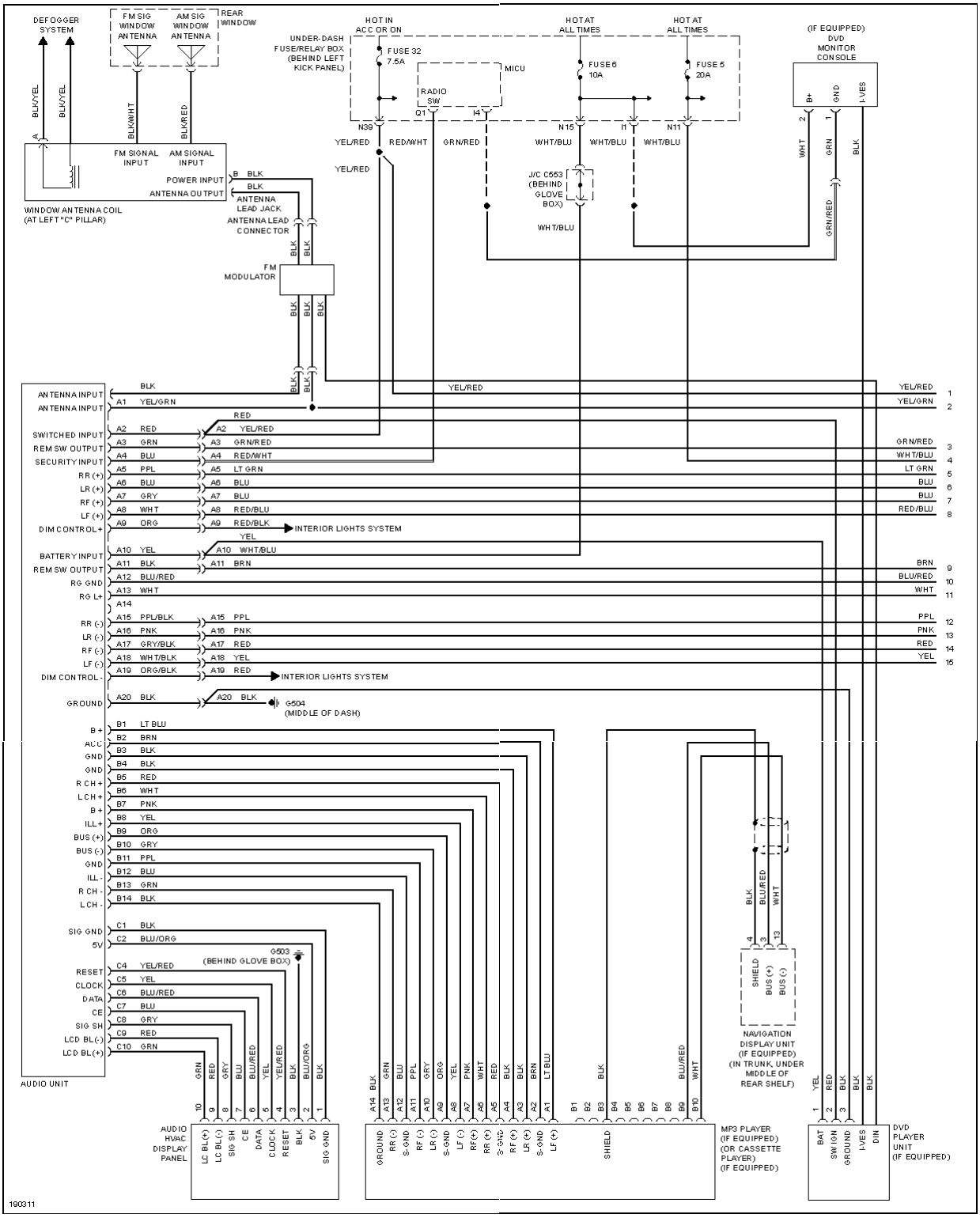


Fig. 51: DVD Player Circuit, W/ Cassette or MP3 Player (1 of 3)

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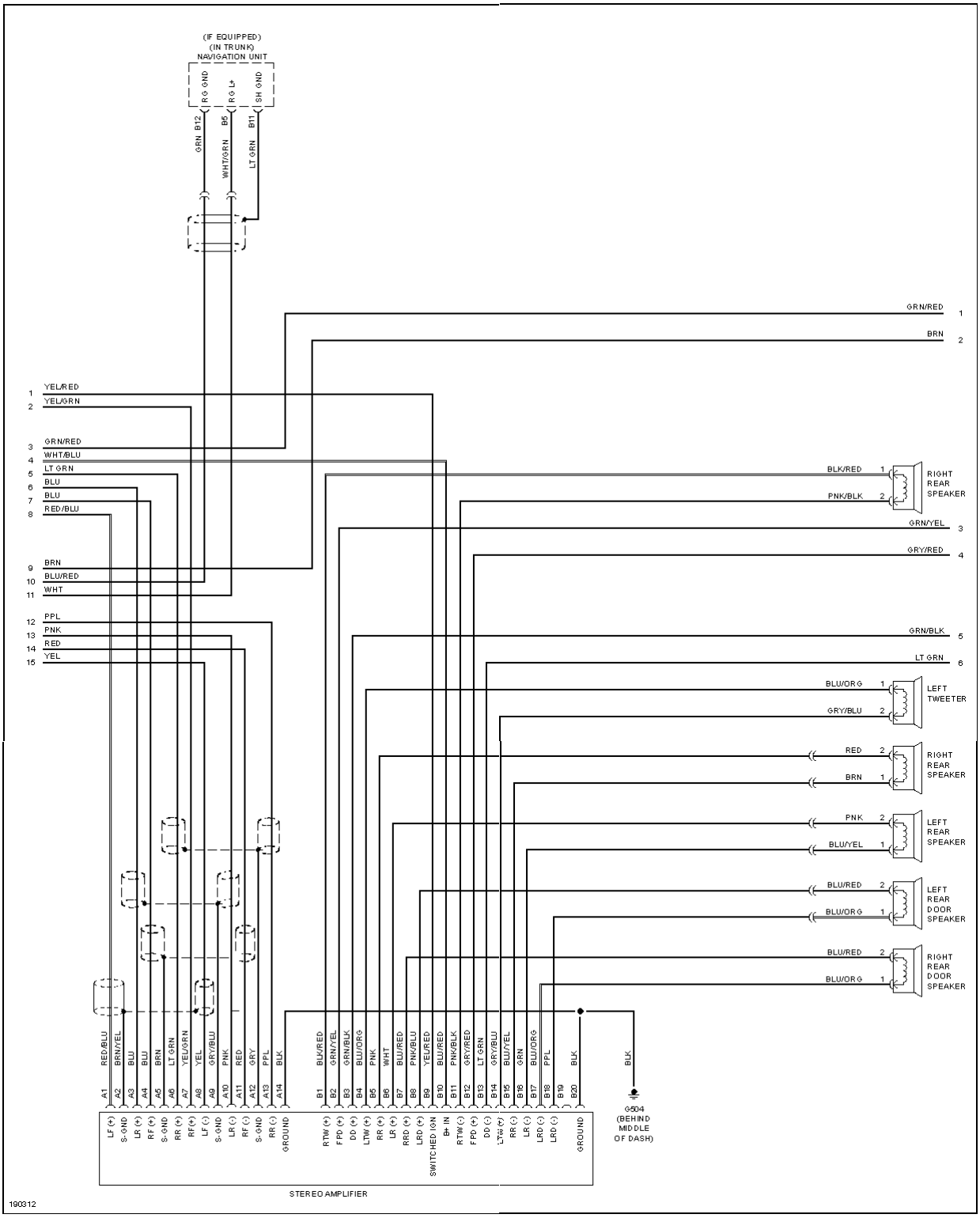


Fig. 52: DVD Player Circuit, W/ Cassette or MP3 Player (2 of 3)

cardiagn.com

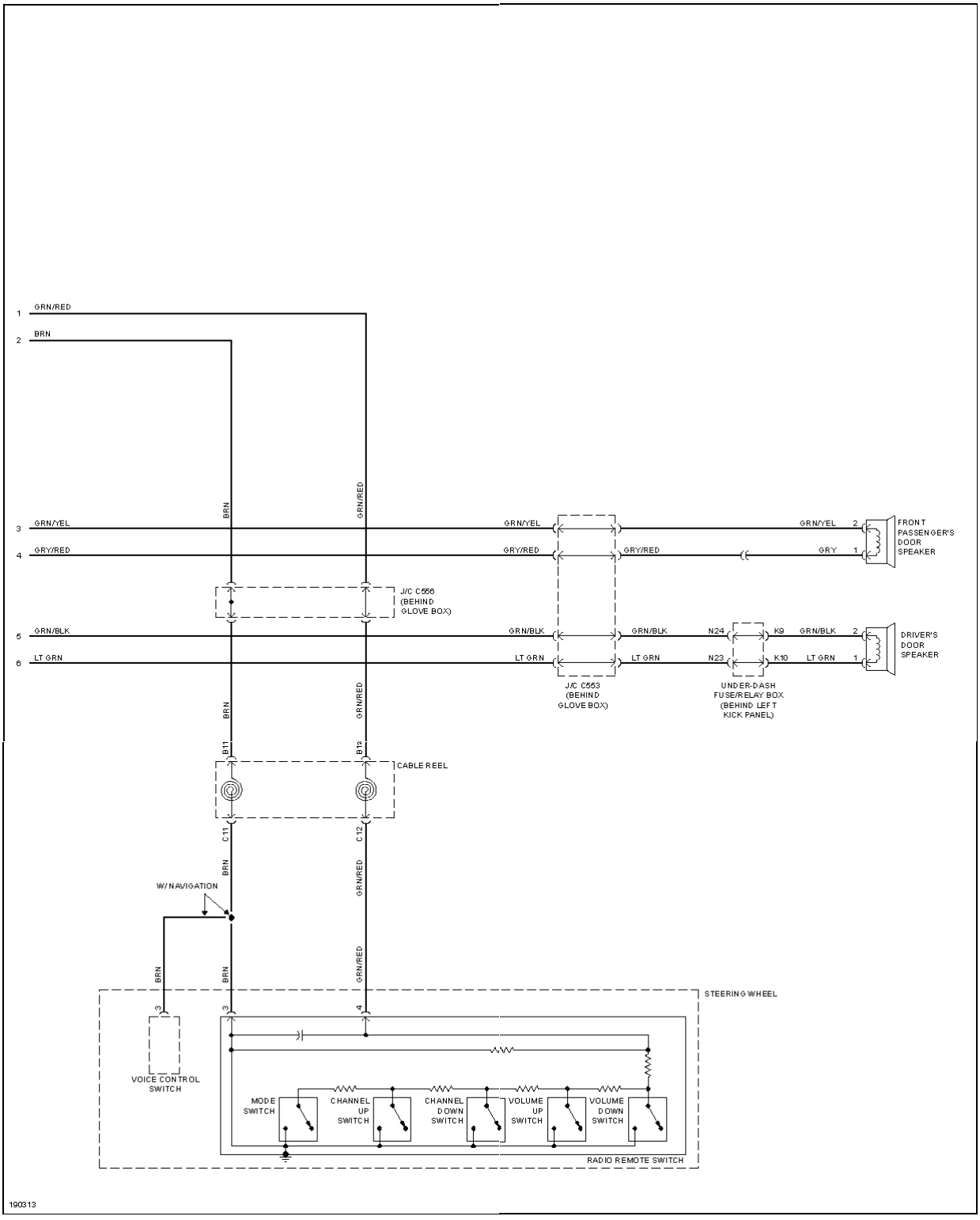


Fig. 53: DVD Player Circuit, W/ Cassette or MP3 Player (3 of 3)

cardiagn.com

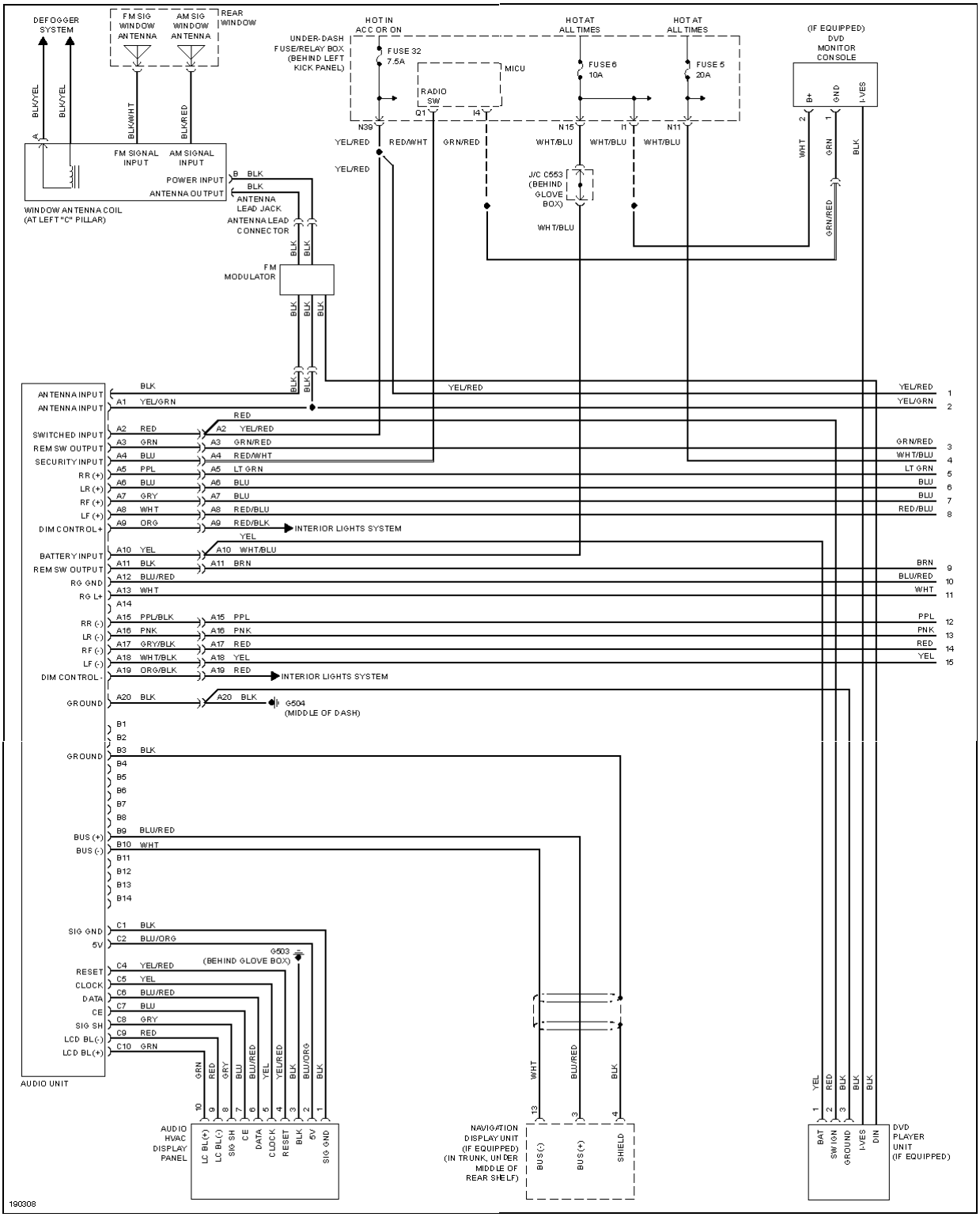


Fig. 54: DVD Player Circuit, W/O Cassette or MP3 Player (1 of 3)

cardiagn.com

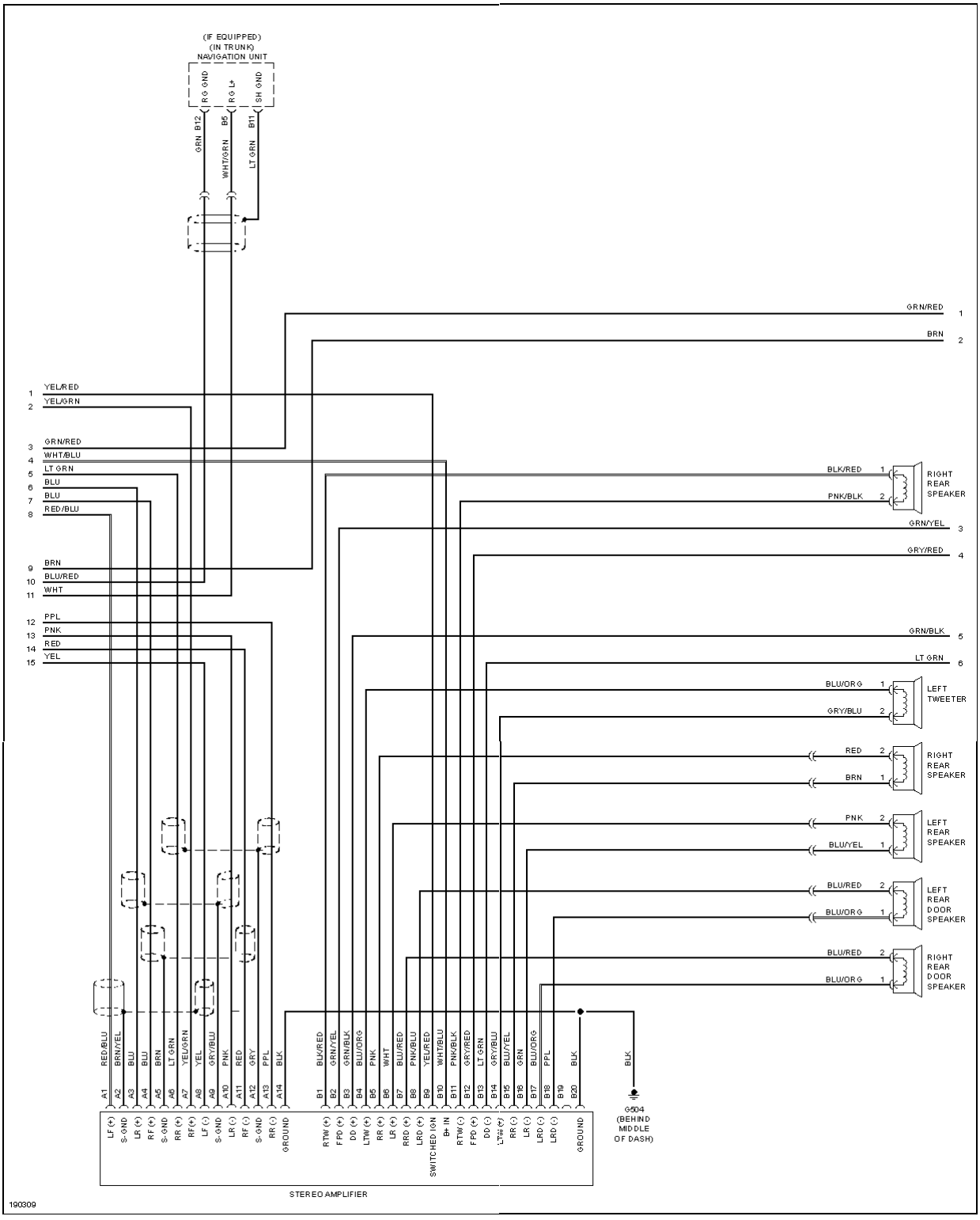


Fig. 55: DVD Player Circuit, W/O Cassette or MP3 Player (2 of 3)

cardiagn.com

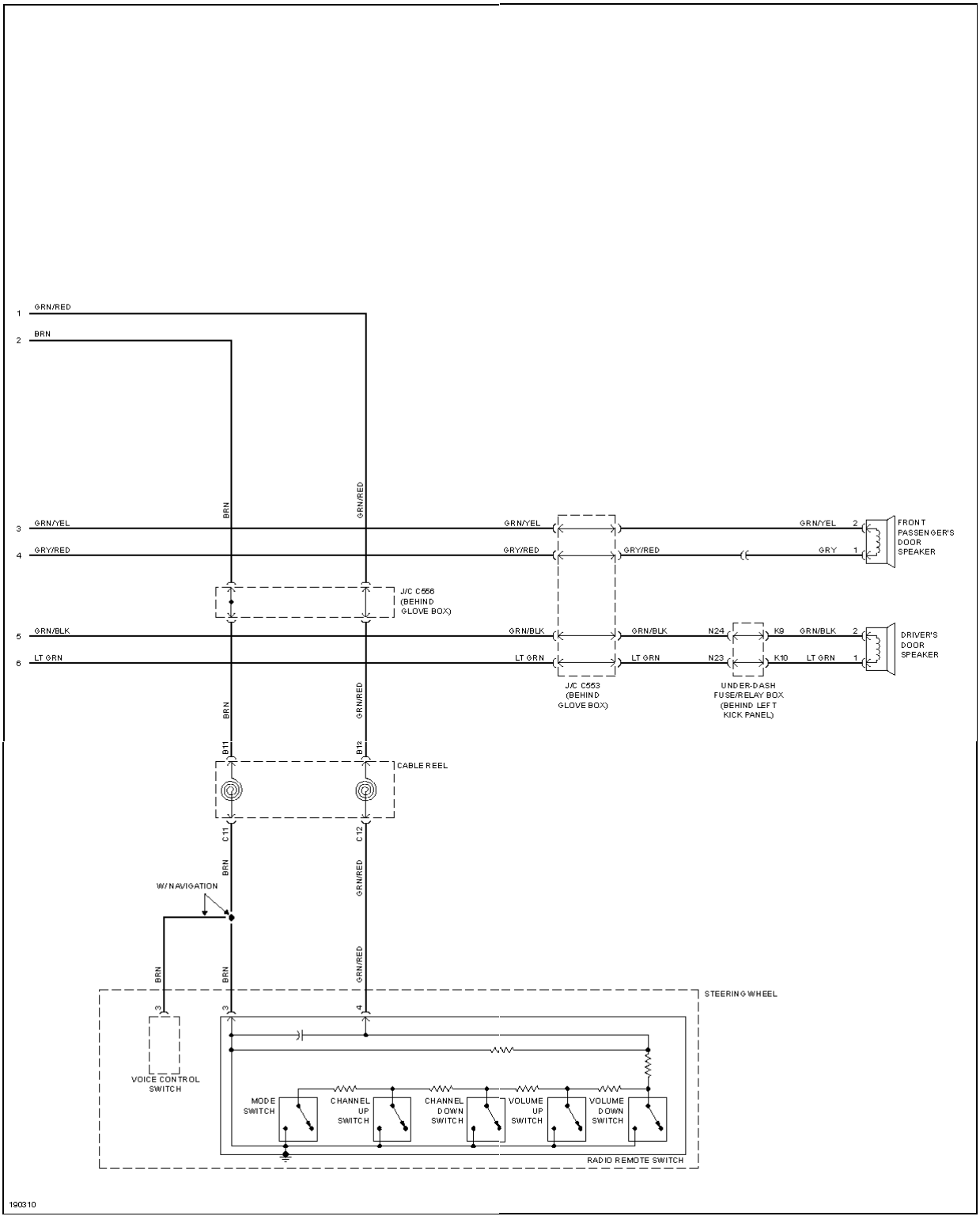


Fig. 56: DVD Player Circuit, W/O Cassette or MP3 Player (3 of 3)

cardiagn.com

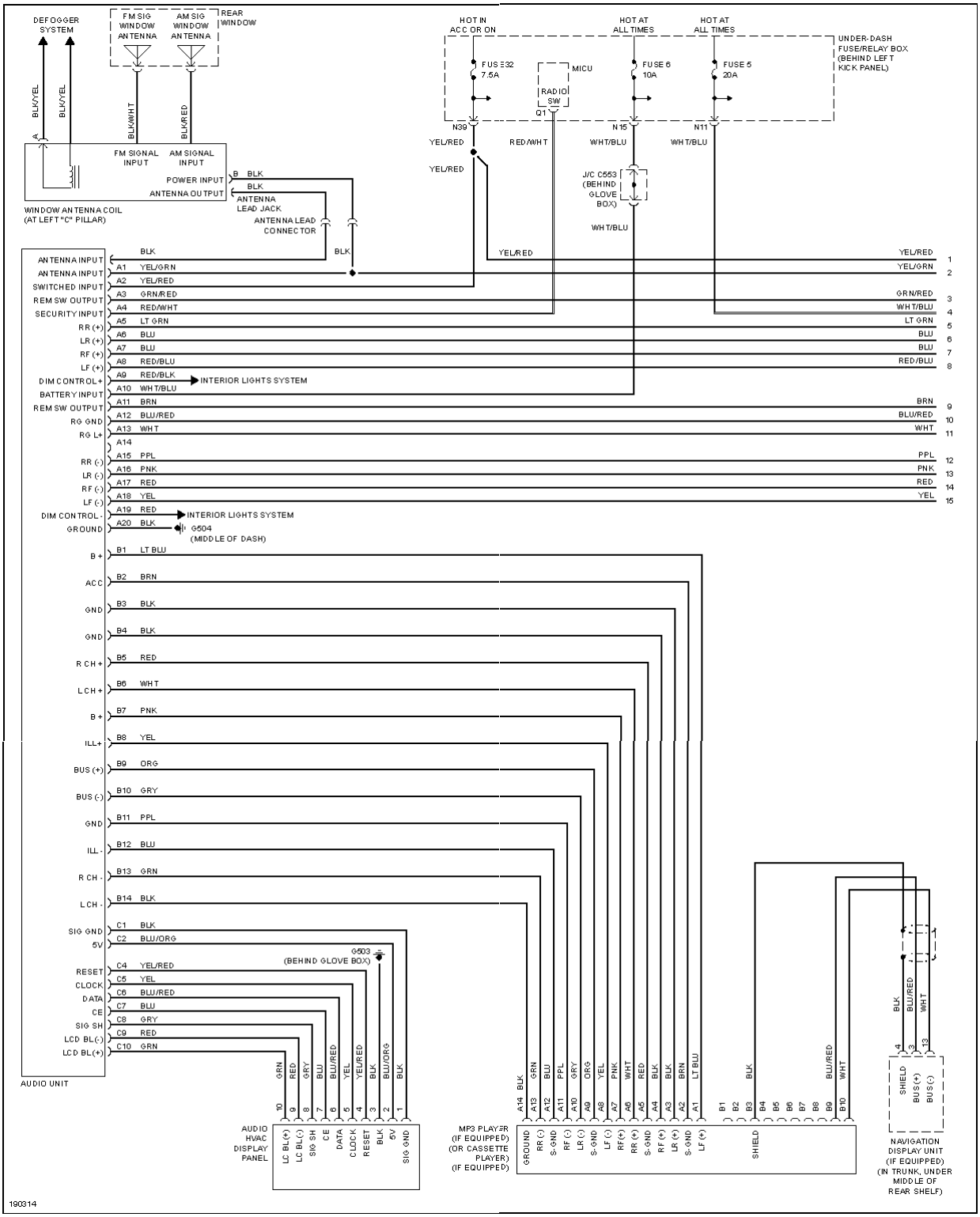


Fig. 57: Radio Circuit, W/ Cassette or MP3 Player (1 of 3)

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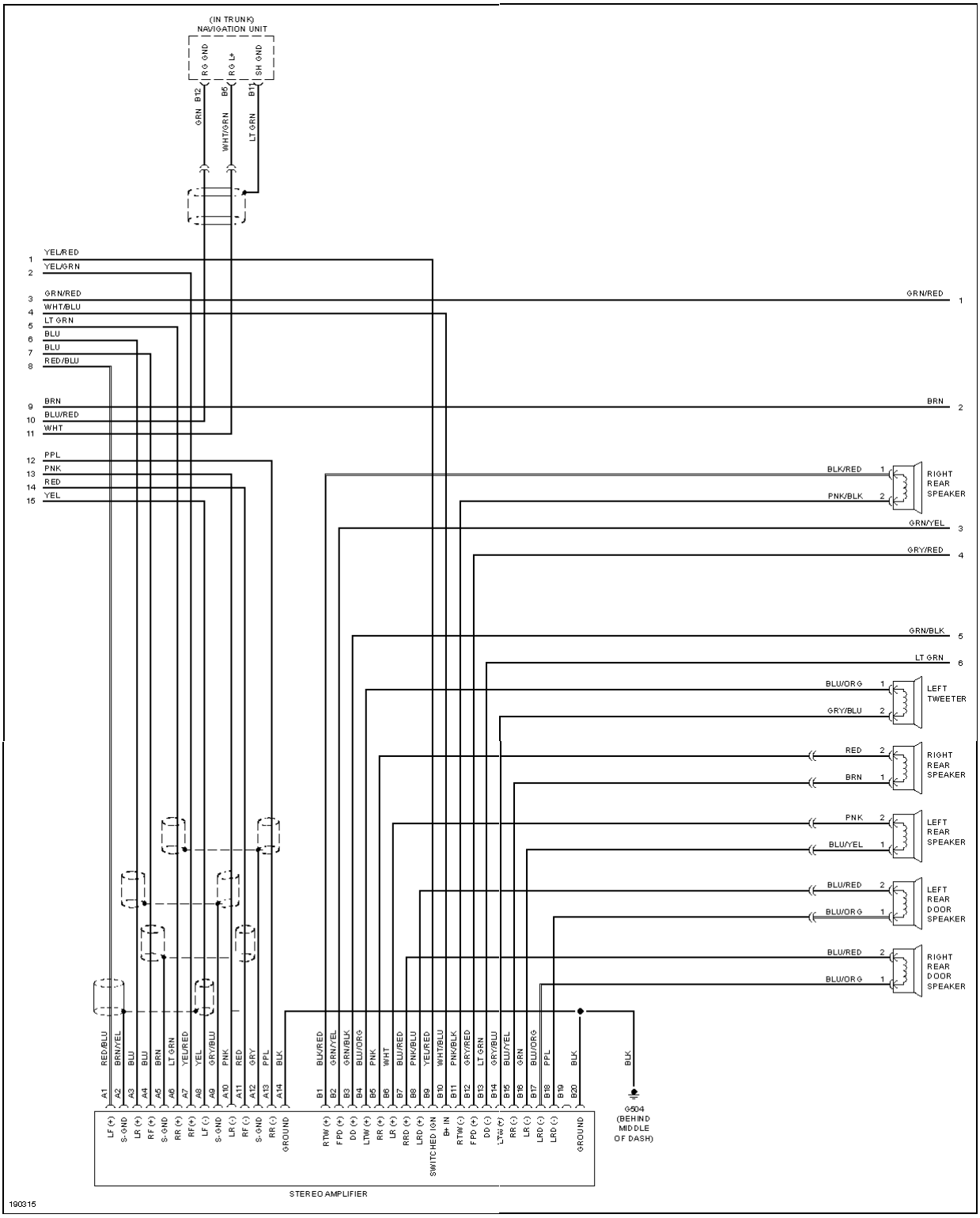


Fig. 58: Radio Circuit, W/ Cassette or MP3 Player (2 of 3)

cardiagn.com

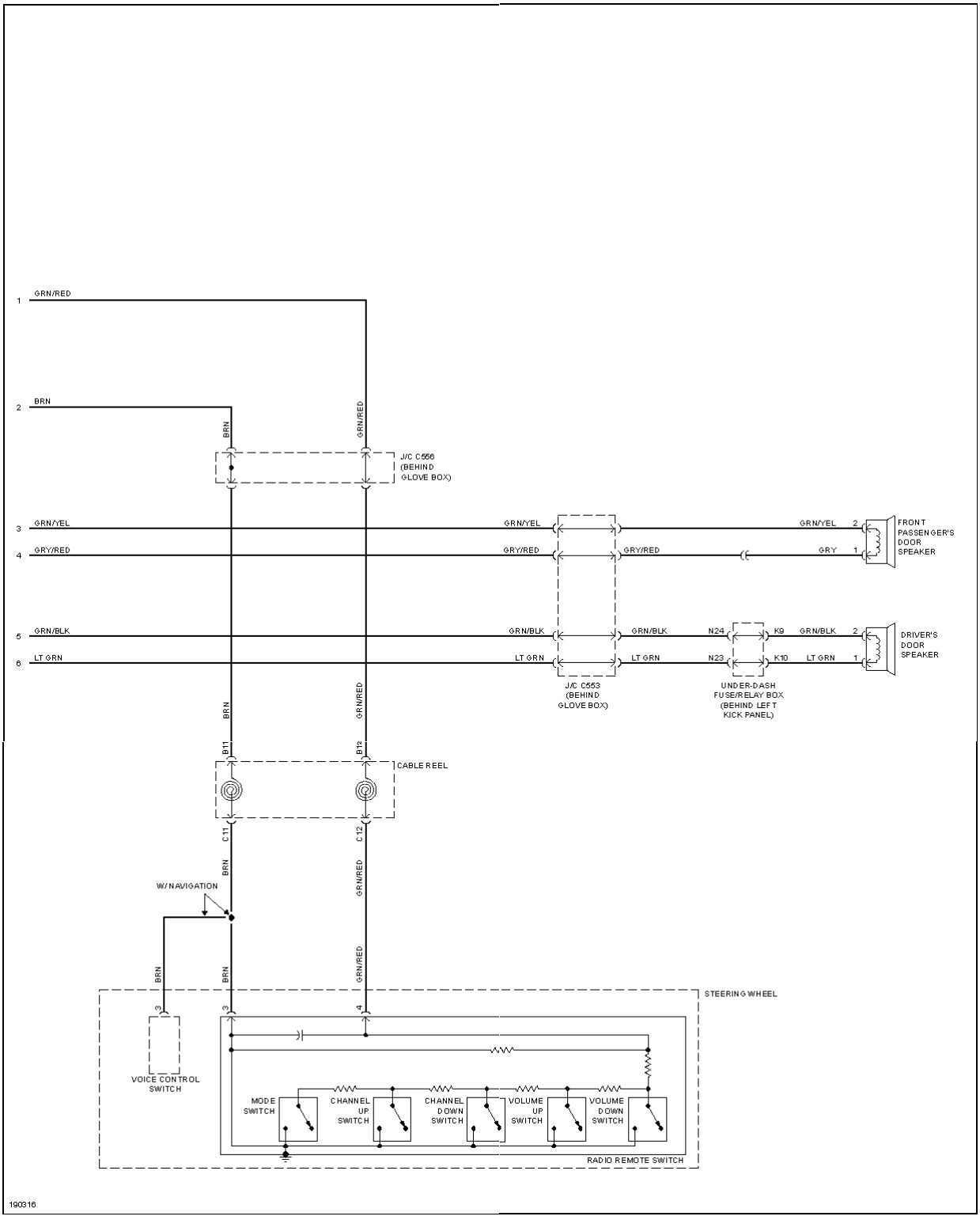


Fig. 59: Radio Circuit, W/ Cassette or MP3 Player (3 of 3)

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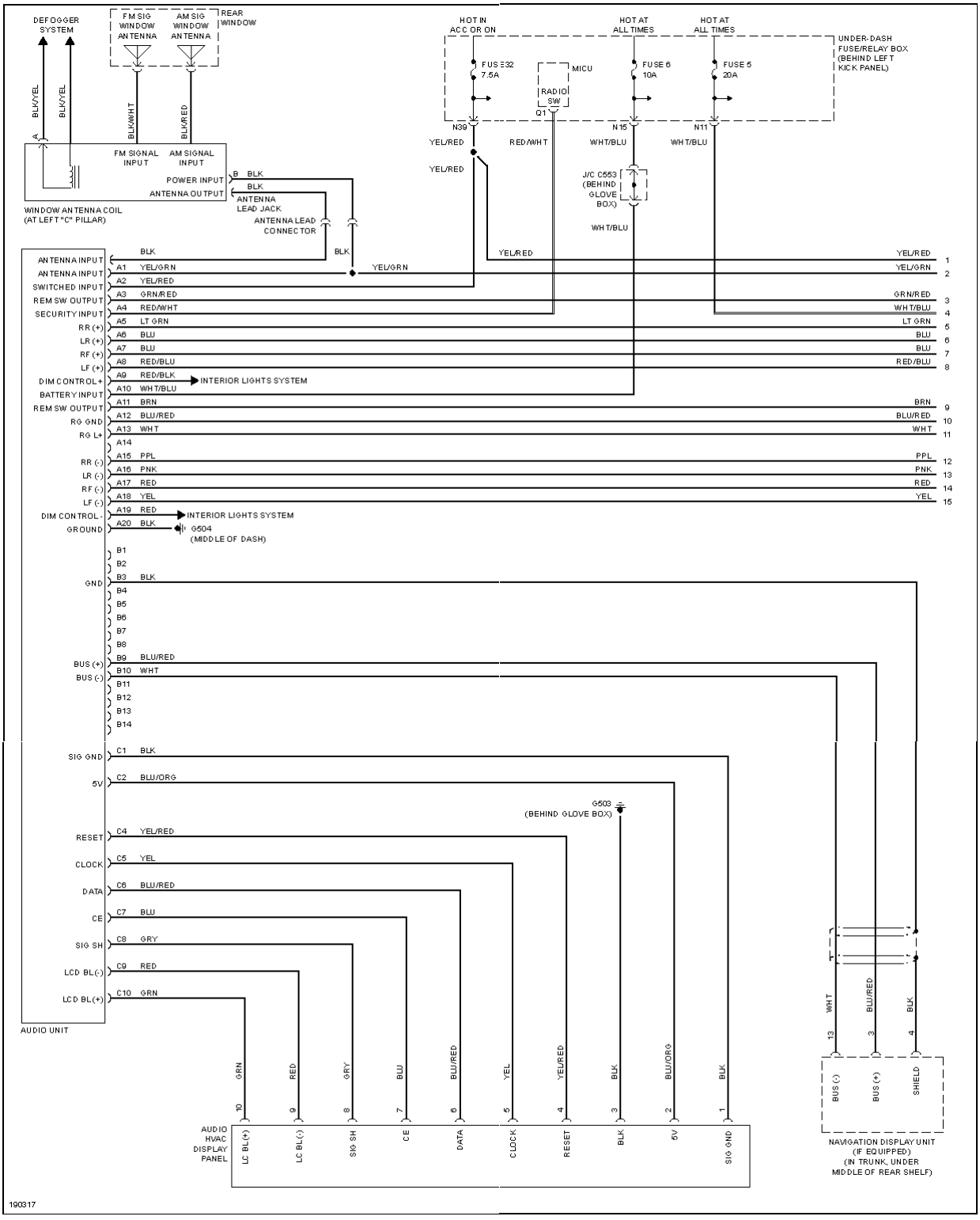


Fig. 60: Radio Circuit, W/O Cassette or MP3 Player (1 of 3)

cardiagn.com

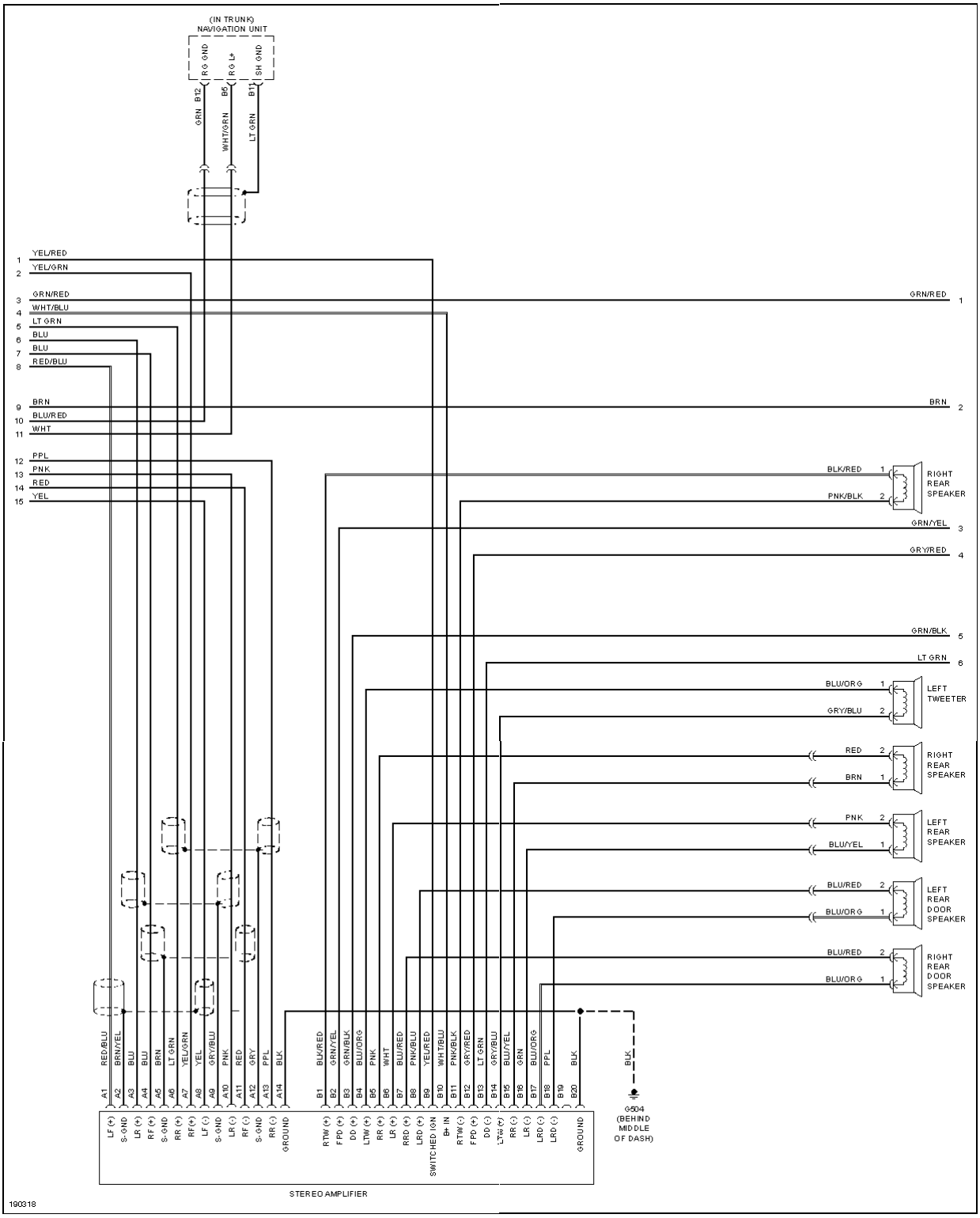


Fig. 61: Radio Circuit, W/O Cassette or MP3 Player (2 of 3)

cardiagn.com

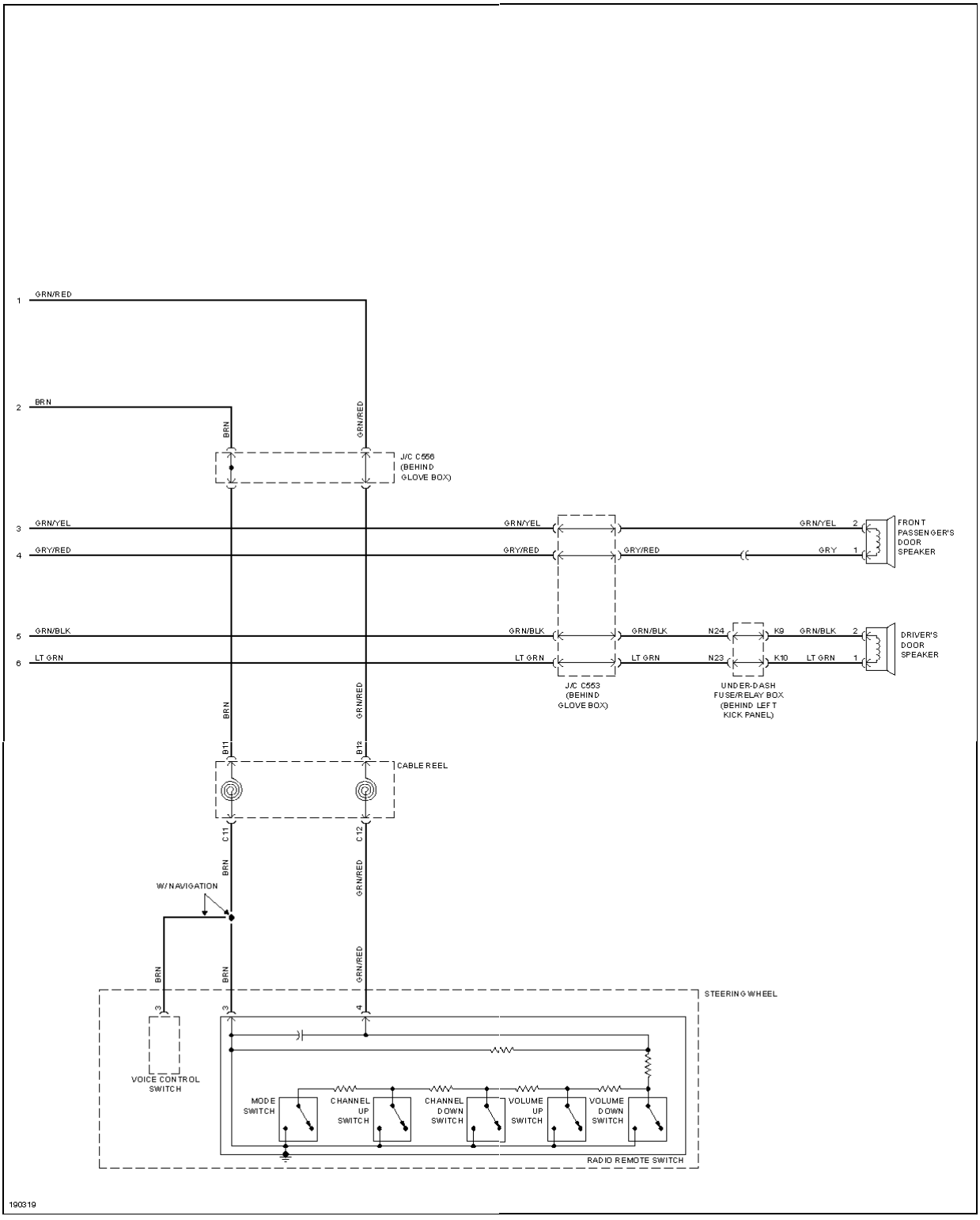


Fig. 62: Radio Circuit, W/O Cassette or MP3 Player (3 of 3)

cardiagn.com

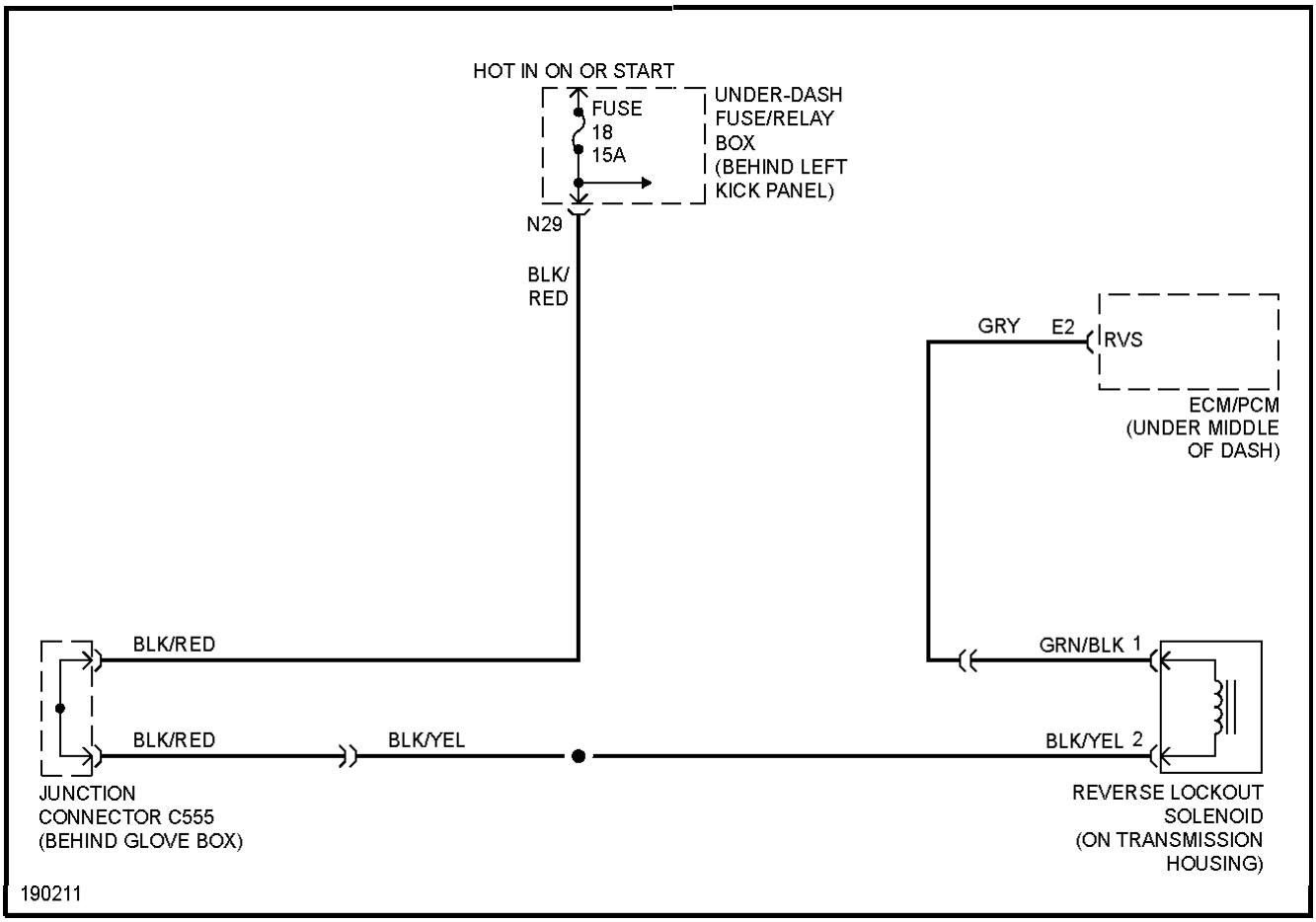


Fig. 63: Reverse Lockout Circuit

cardiagn.com

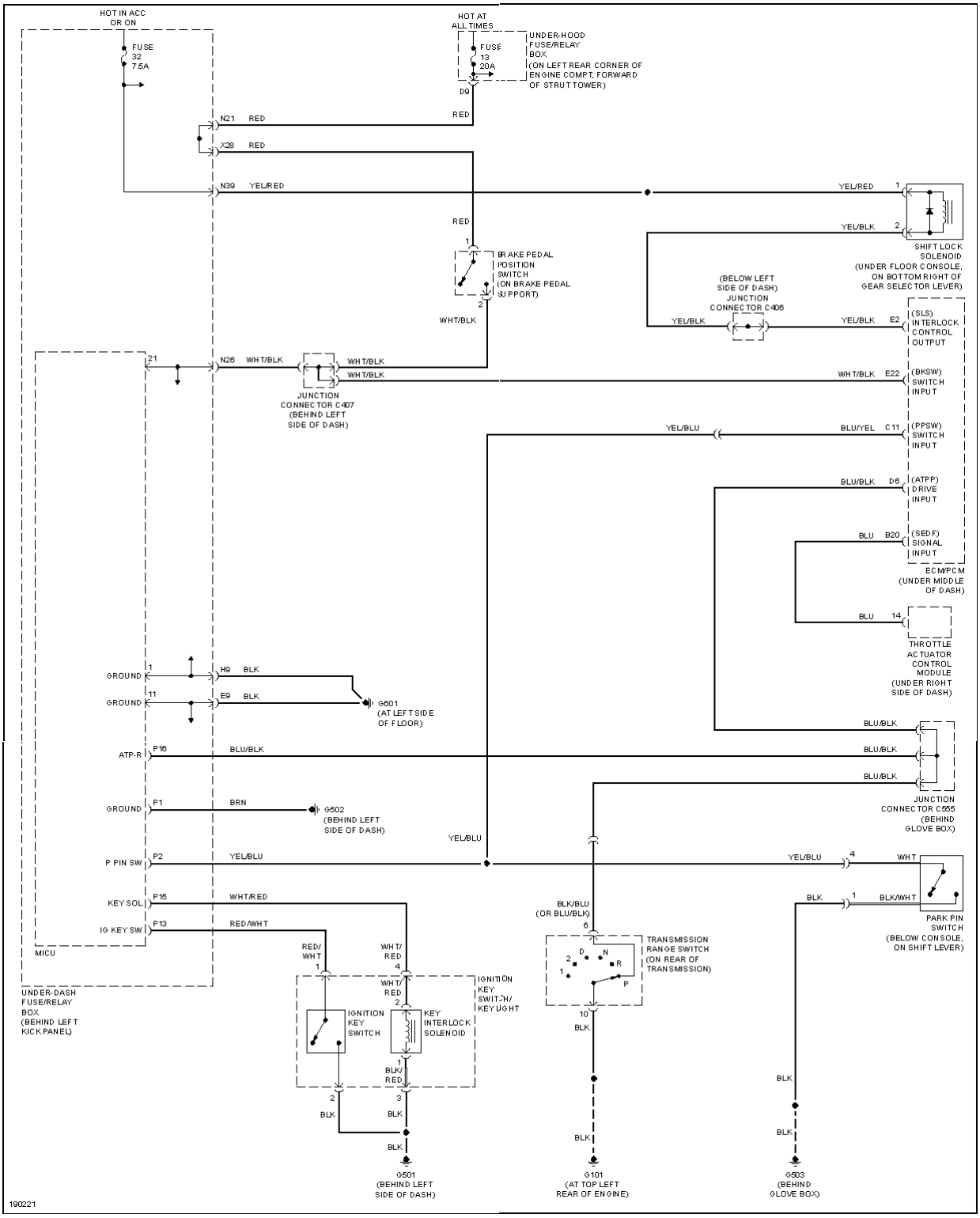


Fig. 64: Shift Interlock Circuit

cardiagn.com

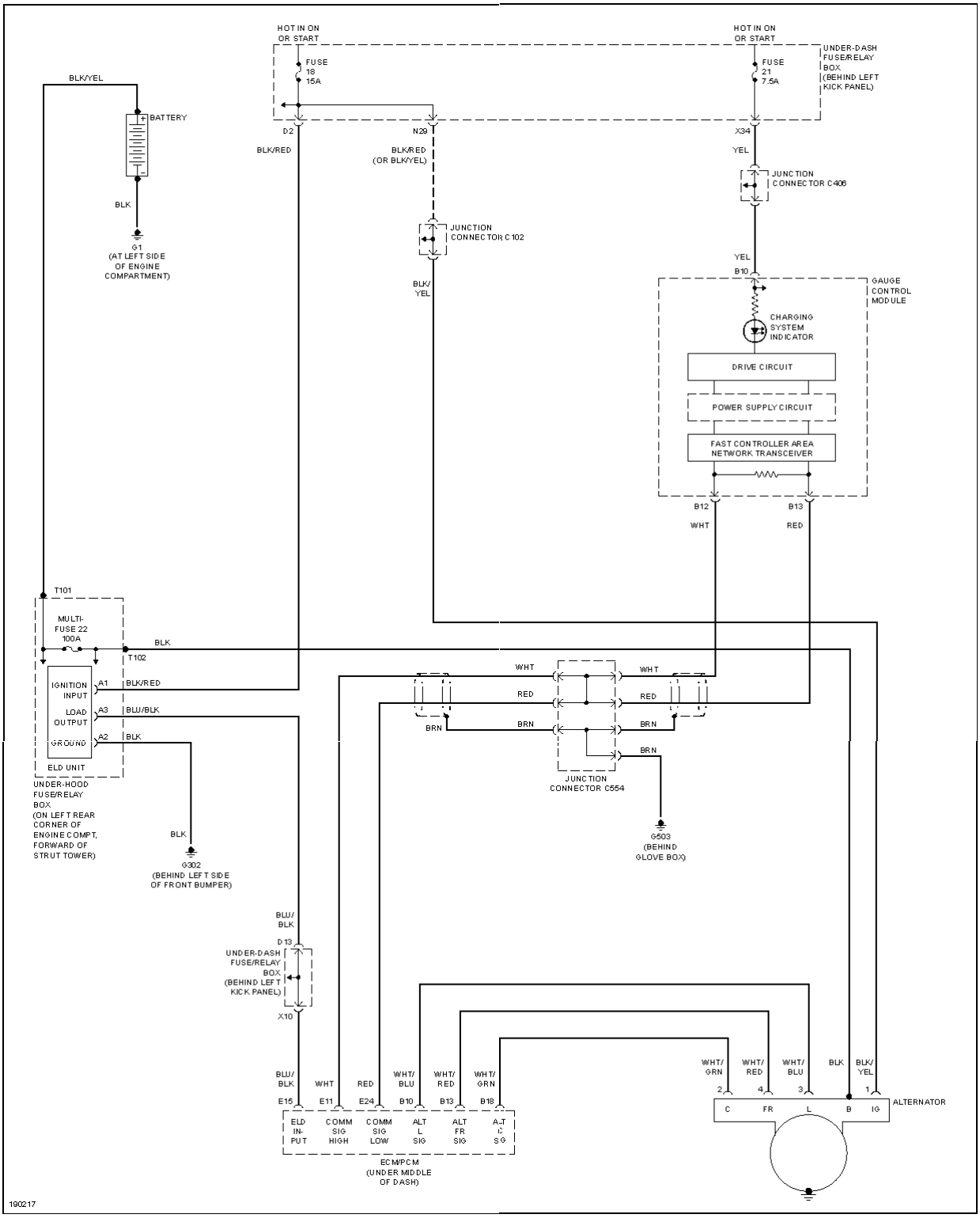


Fig. 65: Charging Circuit

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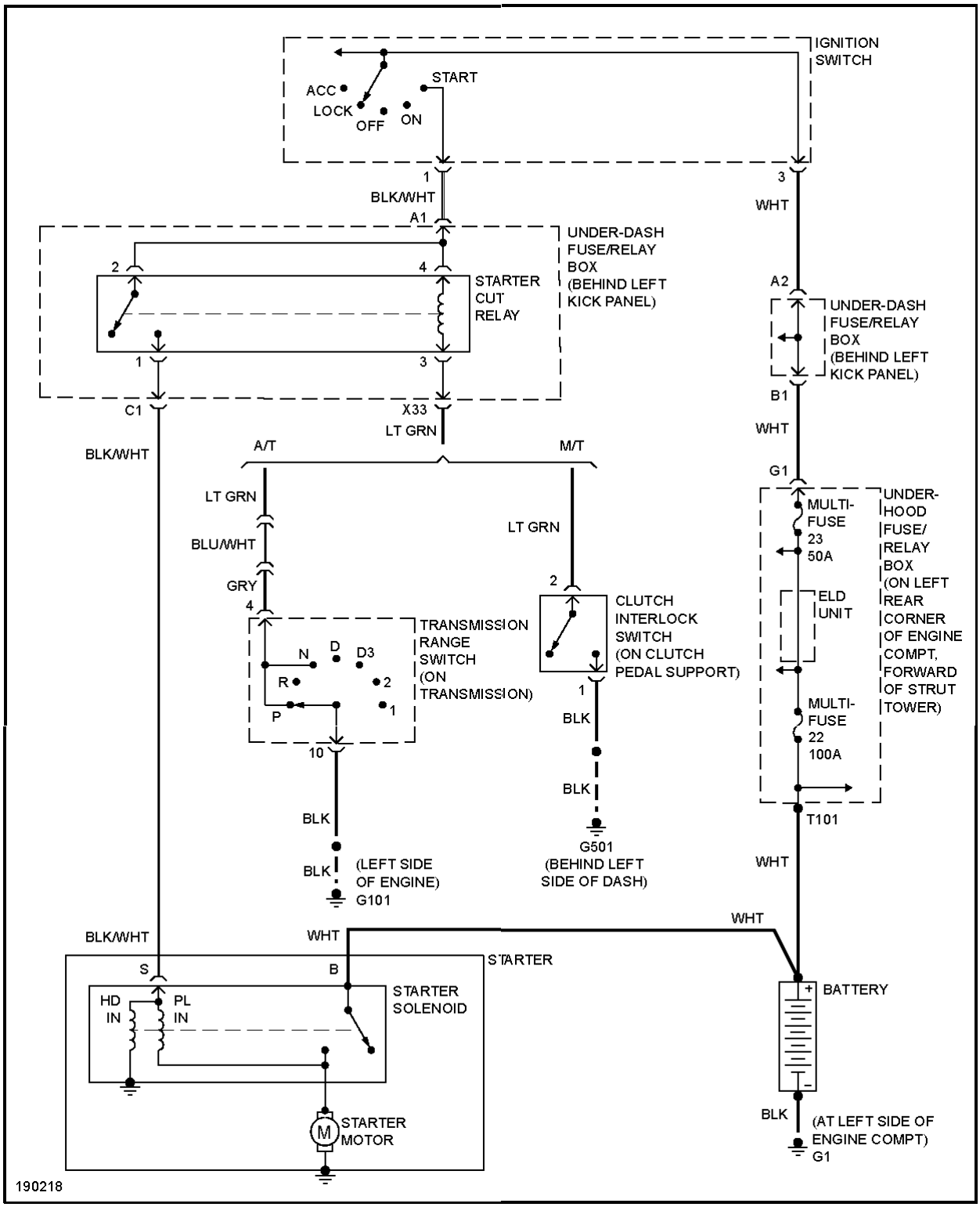


Fig. 66: Starting Circuit

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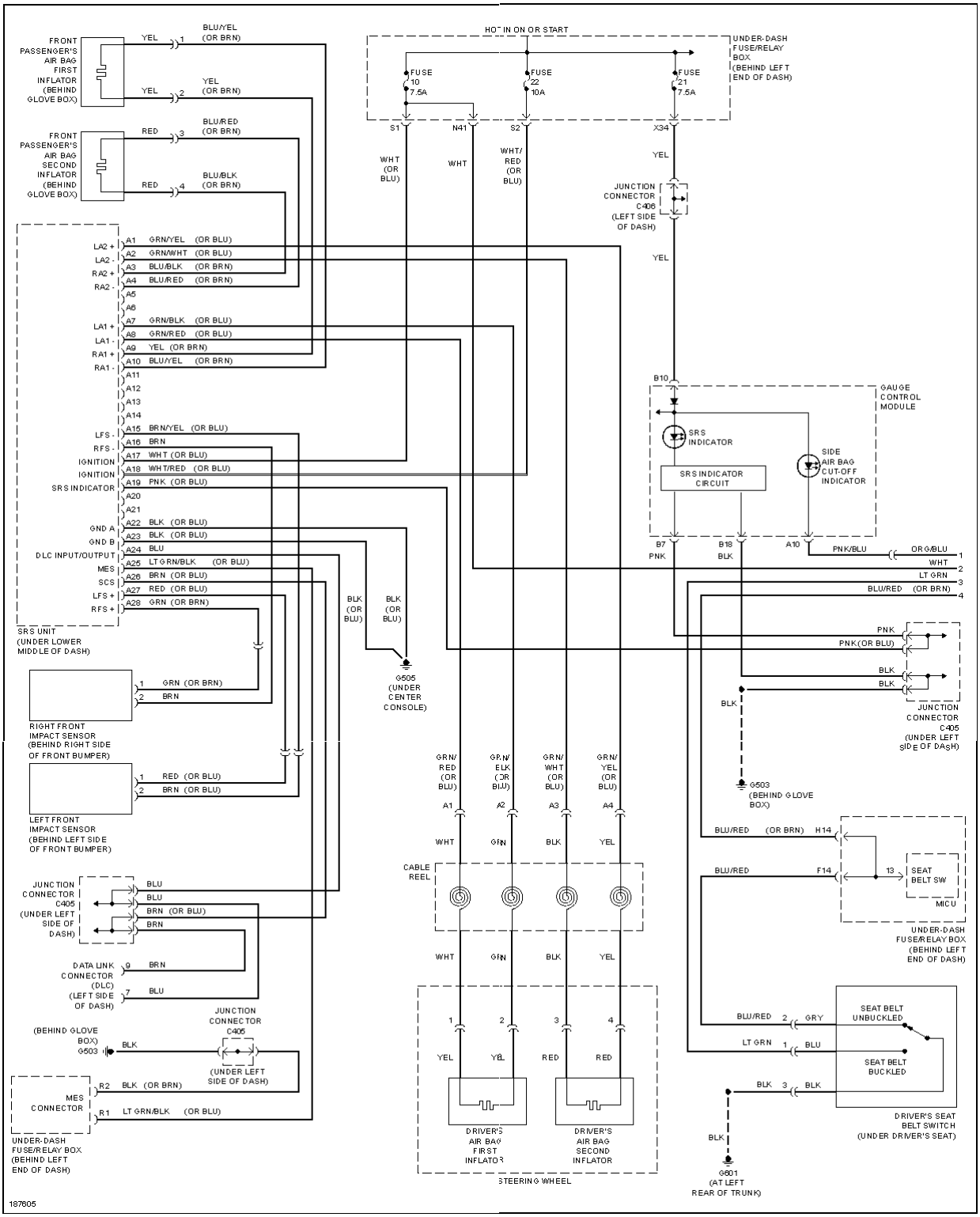


Fig. 67: Supplemental Restraints Circuit (1 of 2)

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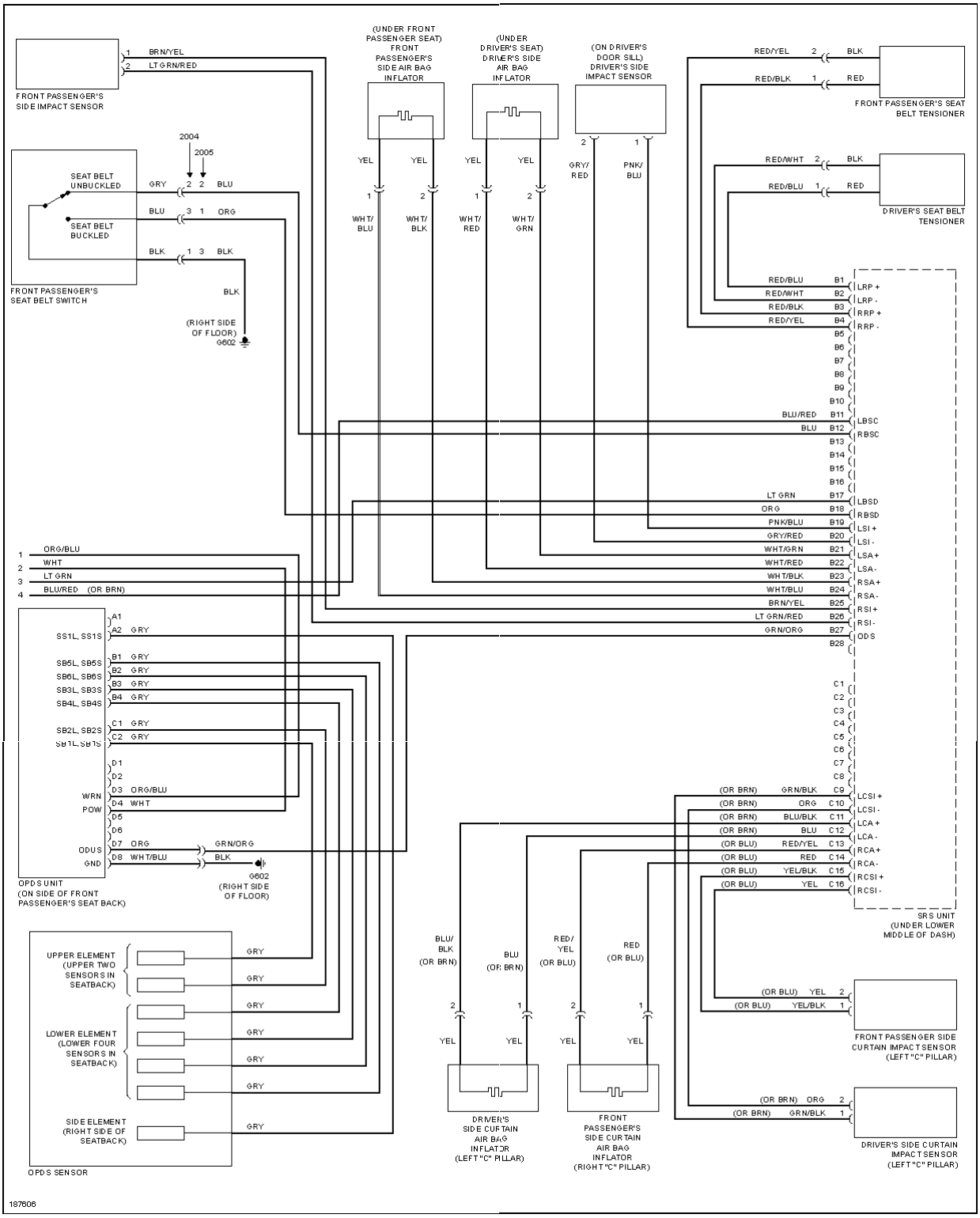


Fig. 68: Supplemental Restraints Circuit (2 of 2)

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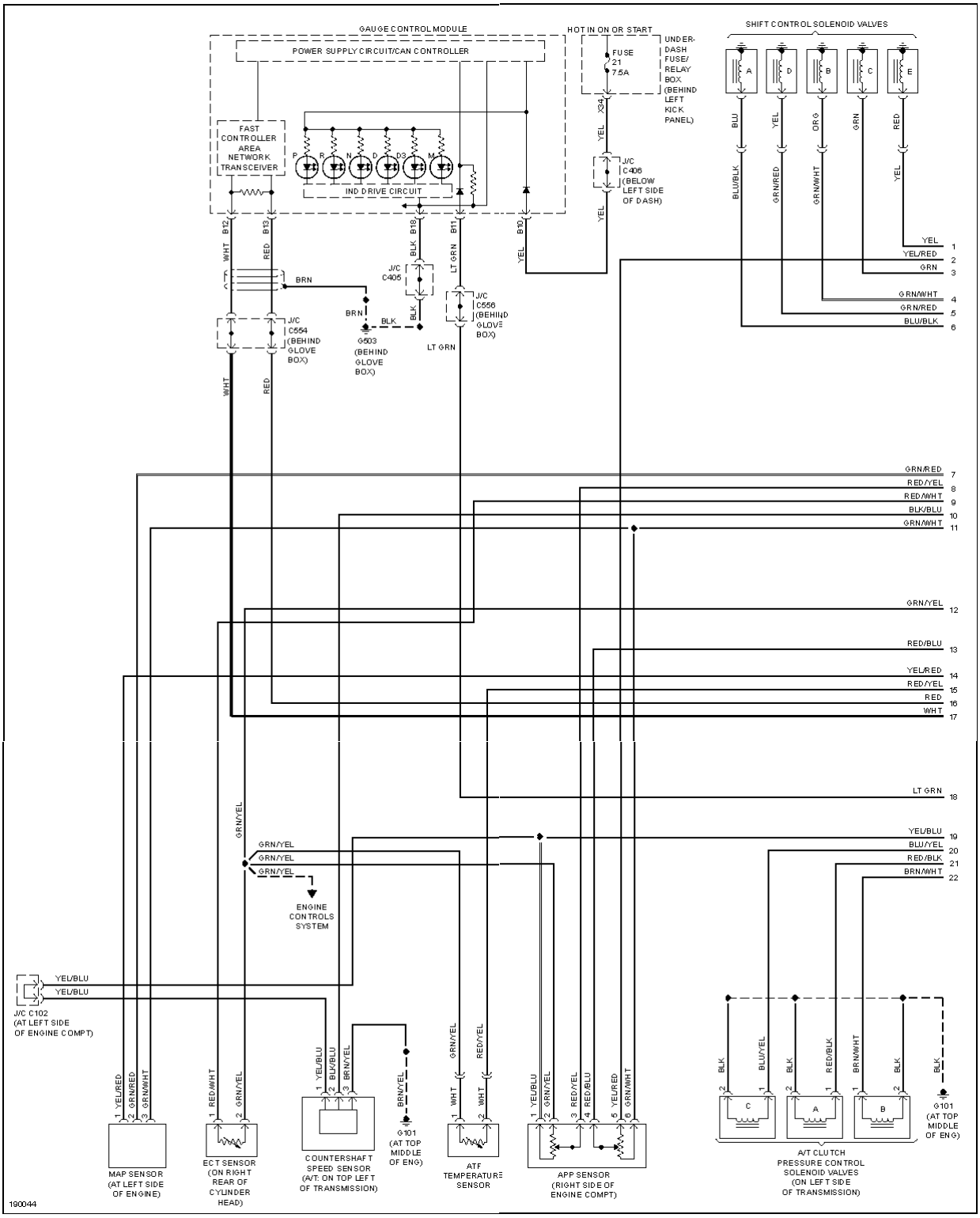


Fig. 69: Transmission Circuit (1 of 2)

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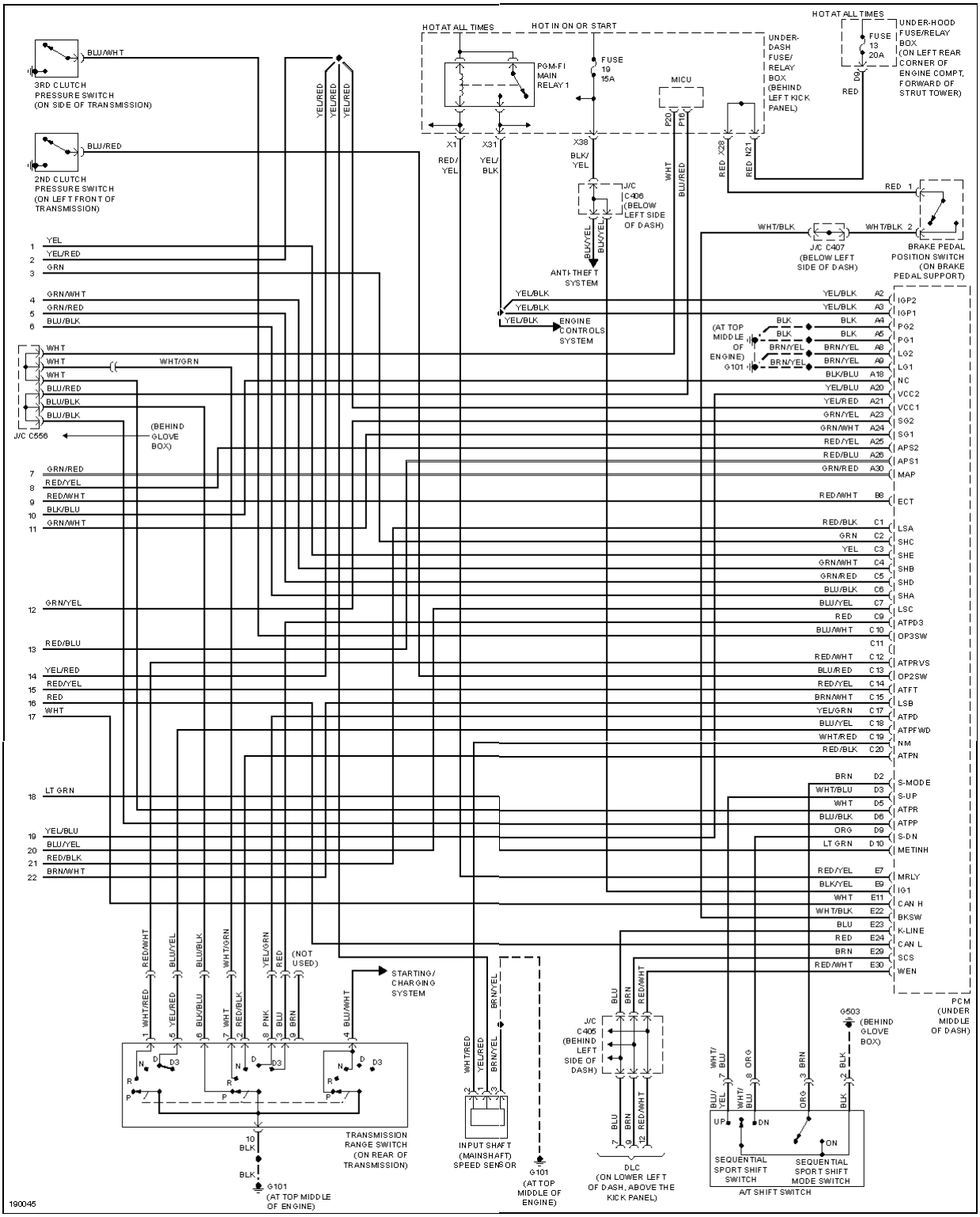


Fig. 70: Transmission Circuit (2 of 2)

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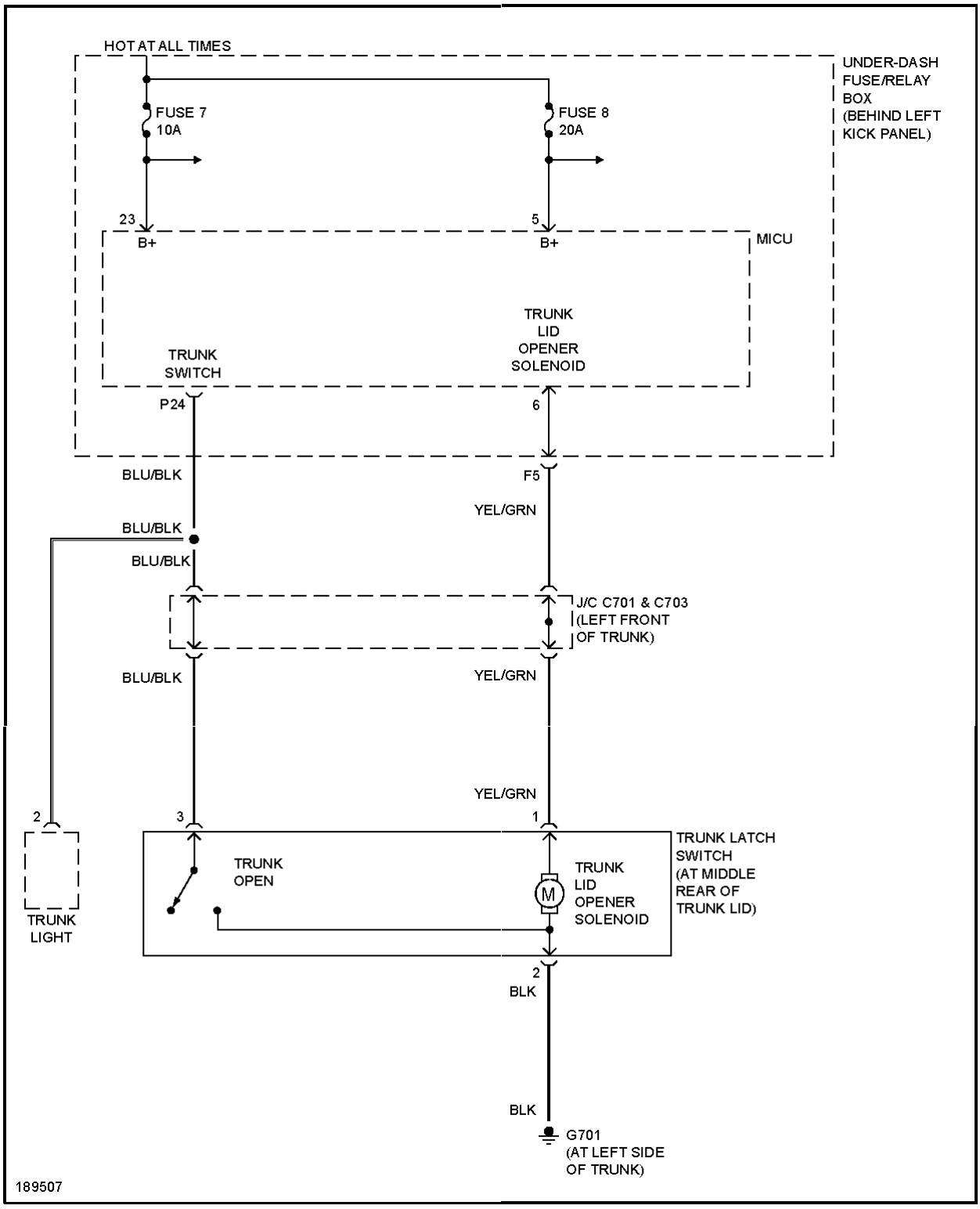


Fig. 71: Trunk, Tailgate, Fuel Door Circuit

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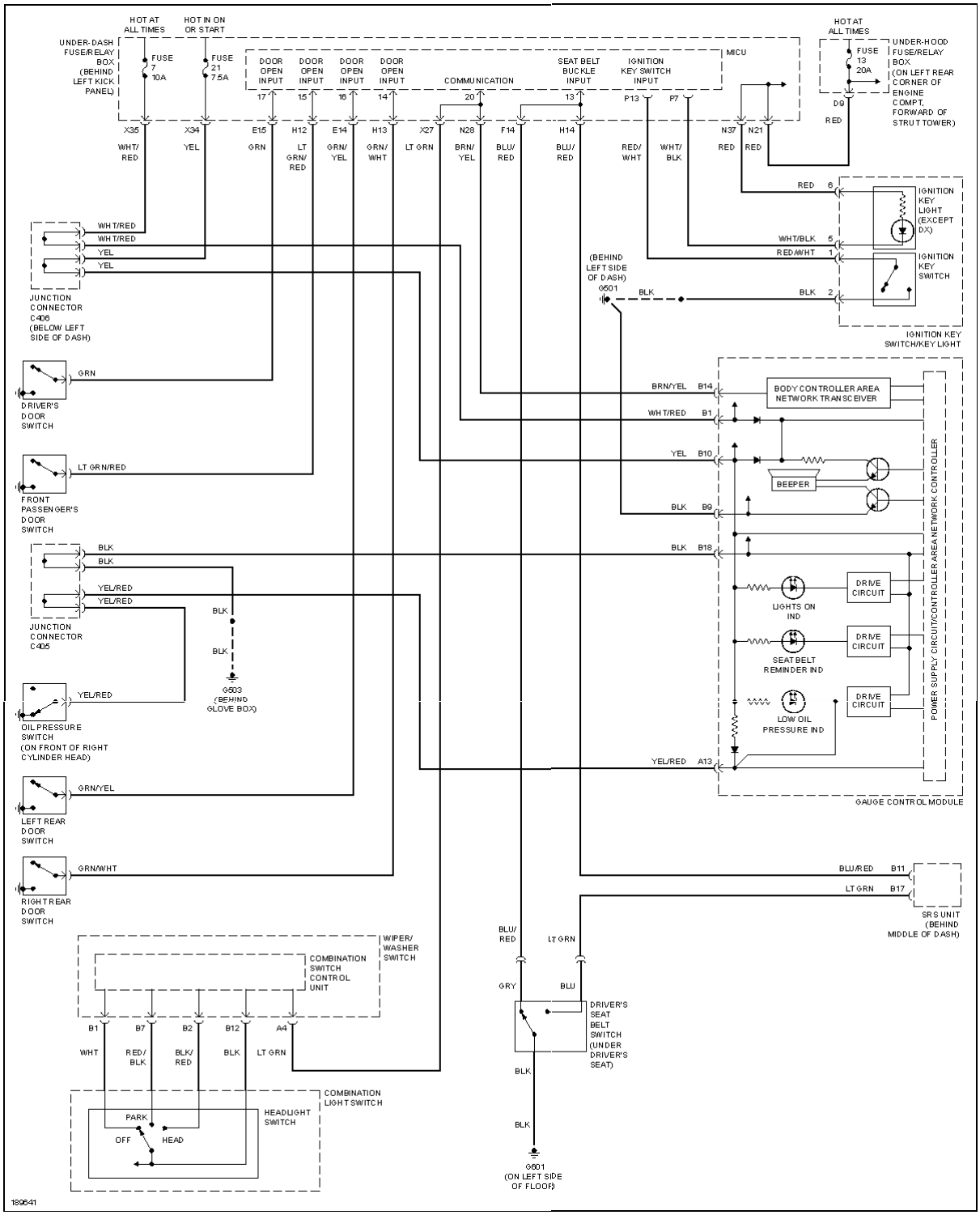


Fig. 72: Warning Systems Circuit

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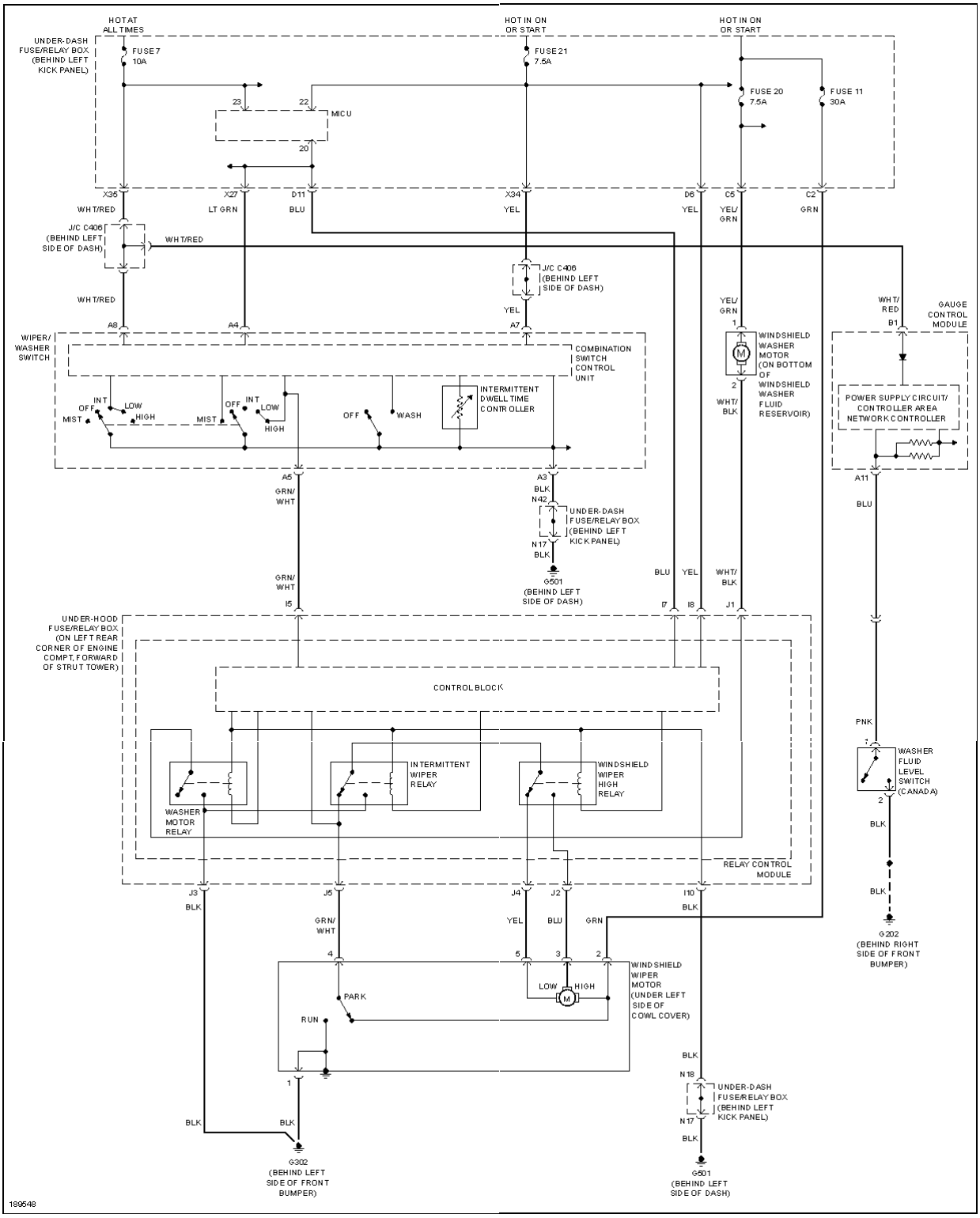


Fig. 73: Wiper/Washer Circuit

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2004 ENGINE PERFORMANCE

VTEC/VTC - TSX

COMPONENT LOCATION INDEX

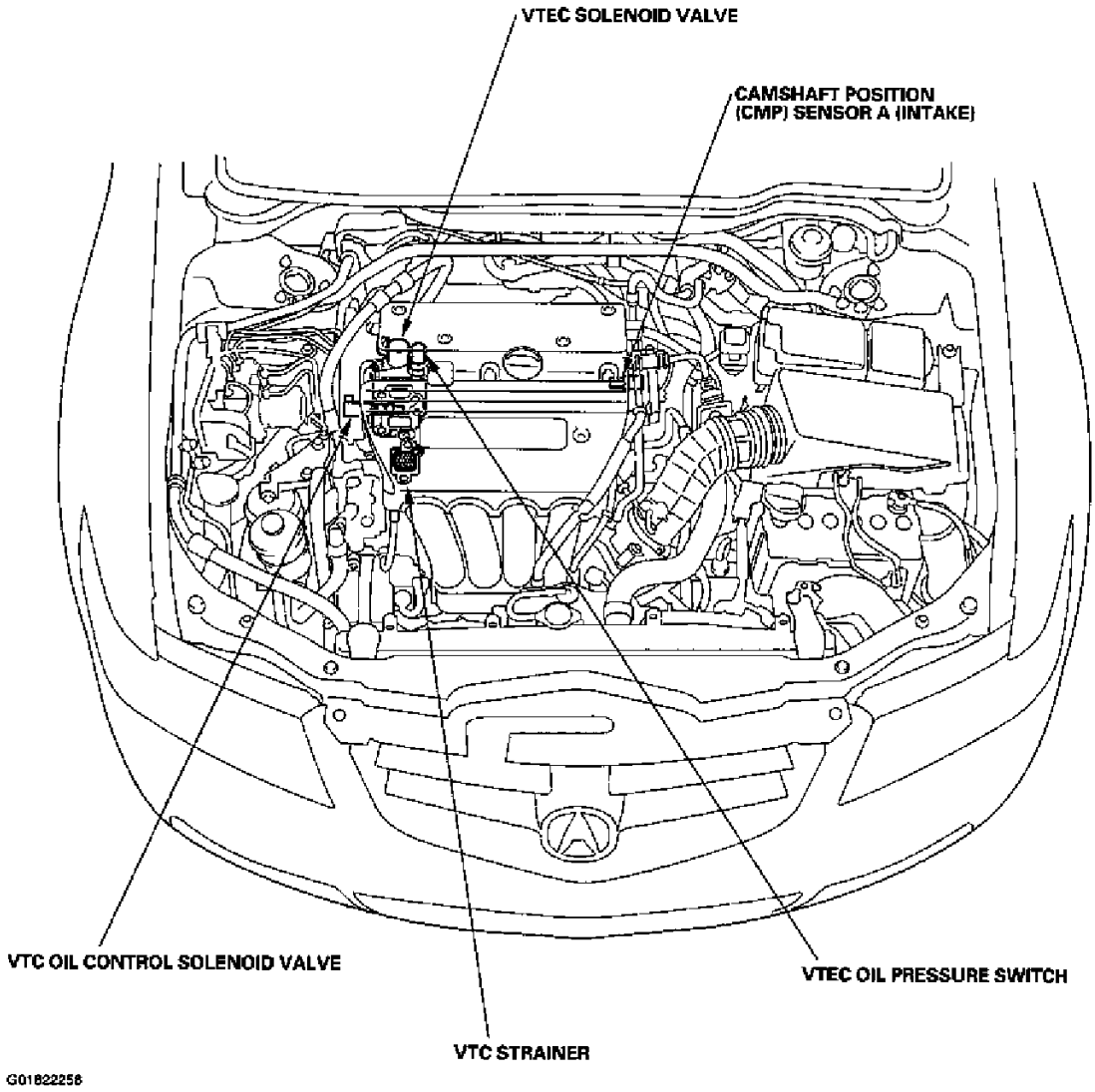


Fig. 1: Locating VTEC/VTC Components

DTC TROUBLESHOOTING

DTC TROUBLESHOOTING INDEX

DTC	Description
DTC P0010	VTC Oil Control Solenoid Valve Malfunction
DTC P0011	VTC System Malfunction

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DTC P0340	CMP Sensor A No Signal
DTC P0341	CMP Sensor & CKP Sensor Incorrect Phase Detected
DTC P0344	CMP Sensor A Intermittent Interruption
DTC P2646	Oil Pressure Switch Circuit Low Voltage
DTC P2647	VTEC Oil Pressure Switch Circuit High Voltage
DTC P2648	VTEC Solenoid Valve Circuit Low Voltage
DTC P2649	VTEC Solenoid Valve Circuit High Voltage

DTC P0010: VTC OIL CONTROL SOLENOID VALVE MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the VTC TEST in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0010 indicated?

   YES: Go to step 6.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM.
6. Turn the ignition switch OFF.
7. Disconnect the VTC oil control solenoid valve 2P connector.
8. Measure resistance between VTC oil control solenoid valve 2P connector terminals No. 1 and No. 2.

   Is there 6.75-8.25 ohm?

   YES: Go to step 9.

   NO: Go to step 15 .

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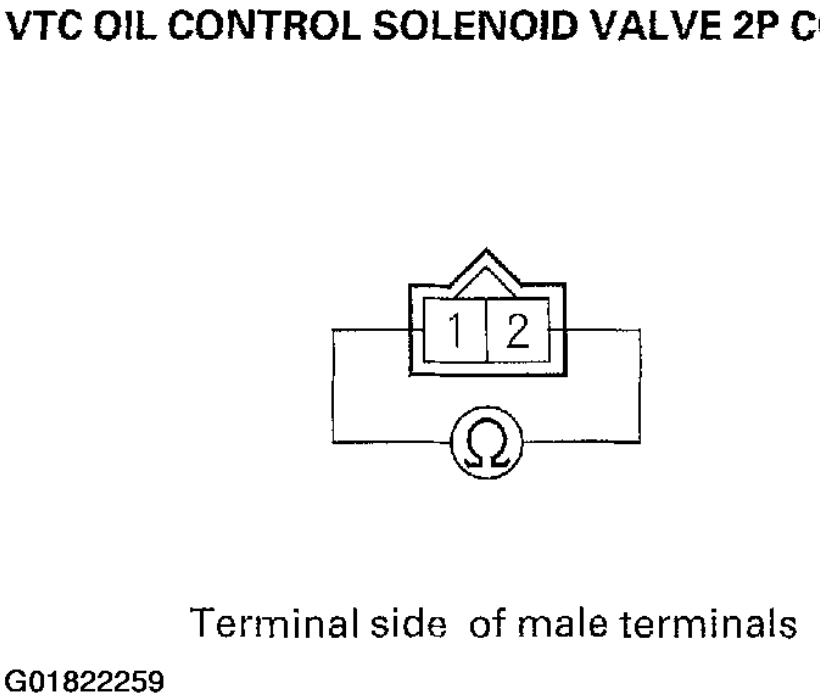


Fig. 2: Measuring Resistance Between VTC Oil Control Solenoid Valve 2P Connector Terminals No. 1 & No. 2

9. Check for continuity between VTC oil control solenoid valve terminal No. 1 and body ground.

   Is there continuity?

   YES: Go to step 10.

   NO: Repair open in the wire between the VTC oil control solenoid valve and G101, then go to step 16 .

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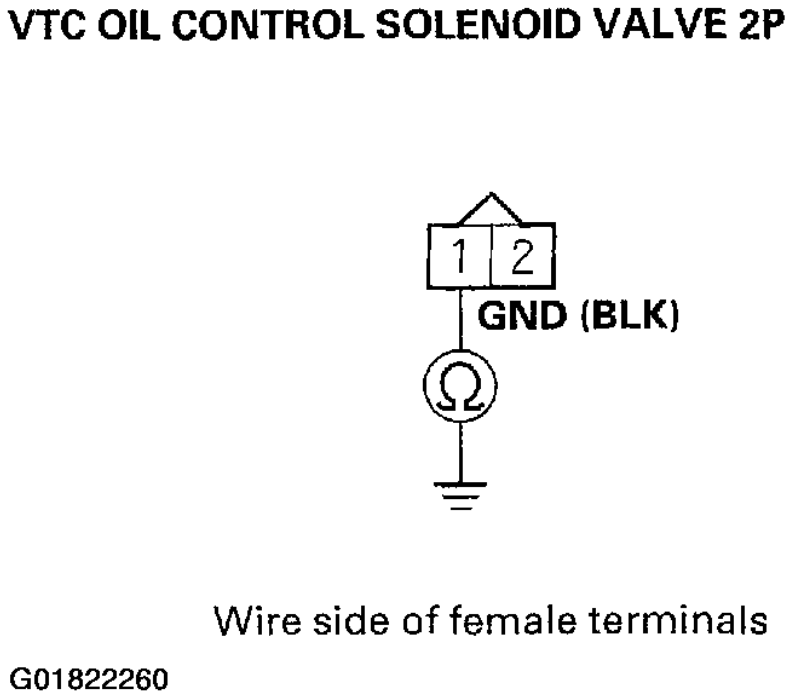


Fig. 3: Checking For Continuity Between VTC Oil Control Solenoid Valve Terminal No. 1 & Body Ground

10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector B (24P).
12. Check for continuity between ECM/PCM connector terminal B1 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (B1) and the VTC oil control solenoid valve, then go to step 16 .

NO: Go to step 13.

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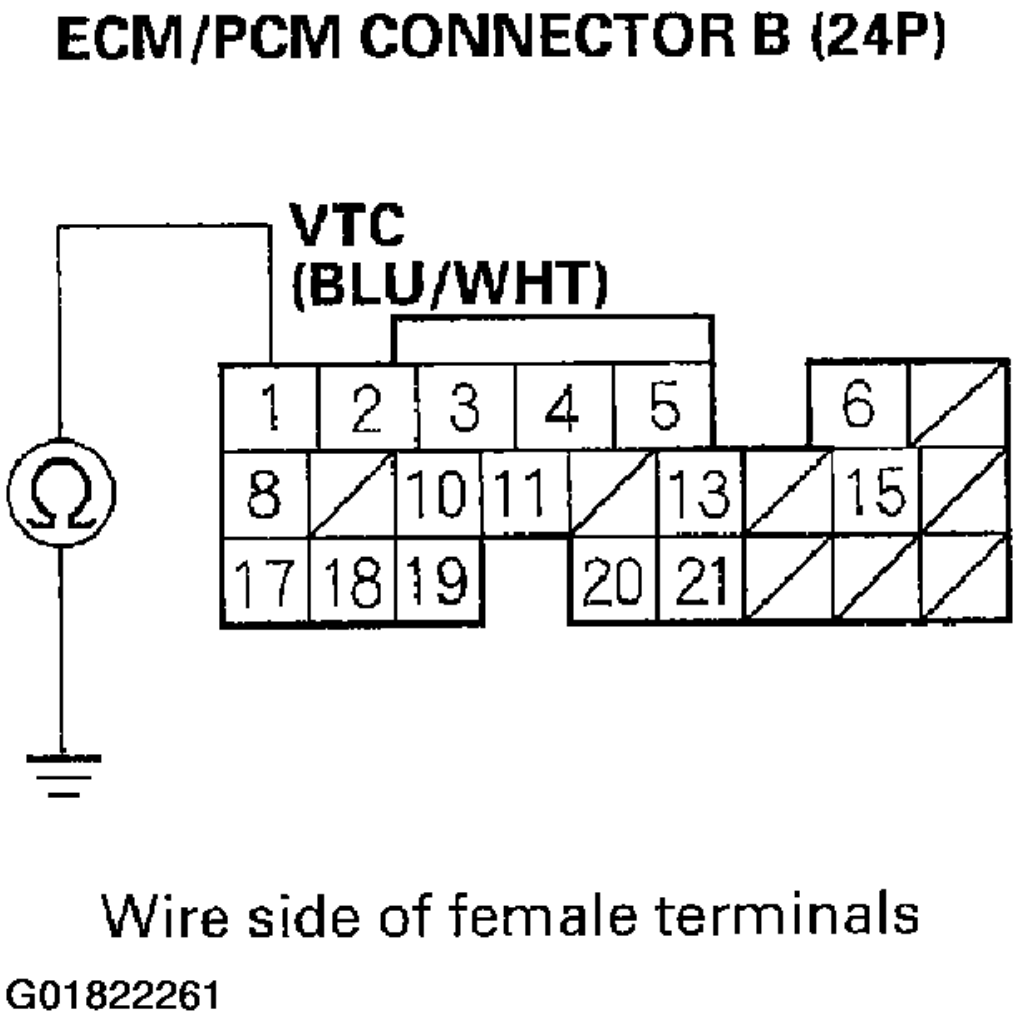


Fig. 4: Checking For Continuity Between ECM/PCM Connector Terminal B1 & Body Ground

13. Connect VTC oil control solenoid valve 2P connector terminal No. 2 to body ground with a jumper wire.

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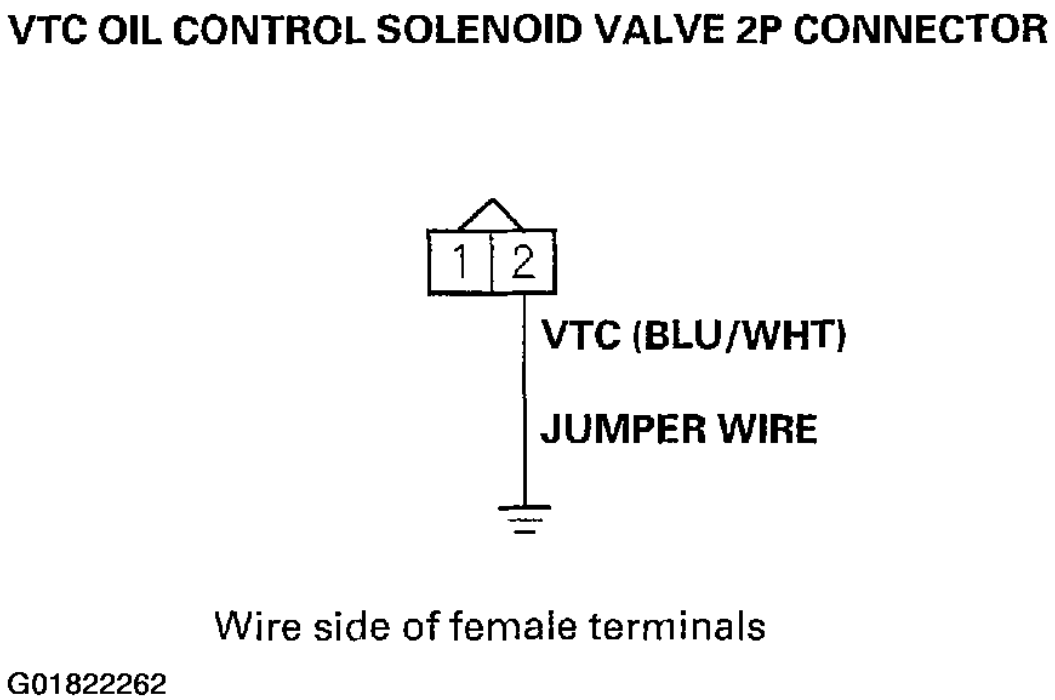


Fig. 5: Connecting VTC Oil Control Solenoid Valve 2P Connector Terminal No. 2 To Body Ground With A Jumper Wire

14. Check for continuity between ECM/PCM connector terminal B1 and body ground.

    Is there continuity?

    YES: Go to step 23 .

    NO: Repair open in the wire between the ECM/PCM (B1) and the VTC oil control solenoid valve, then go to step 16 .

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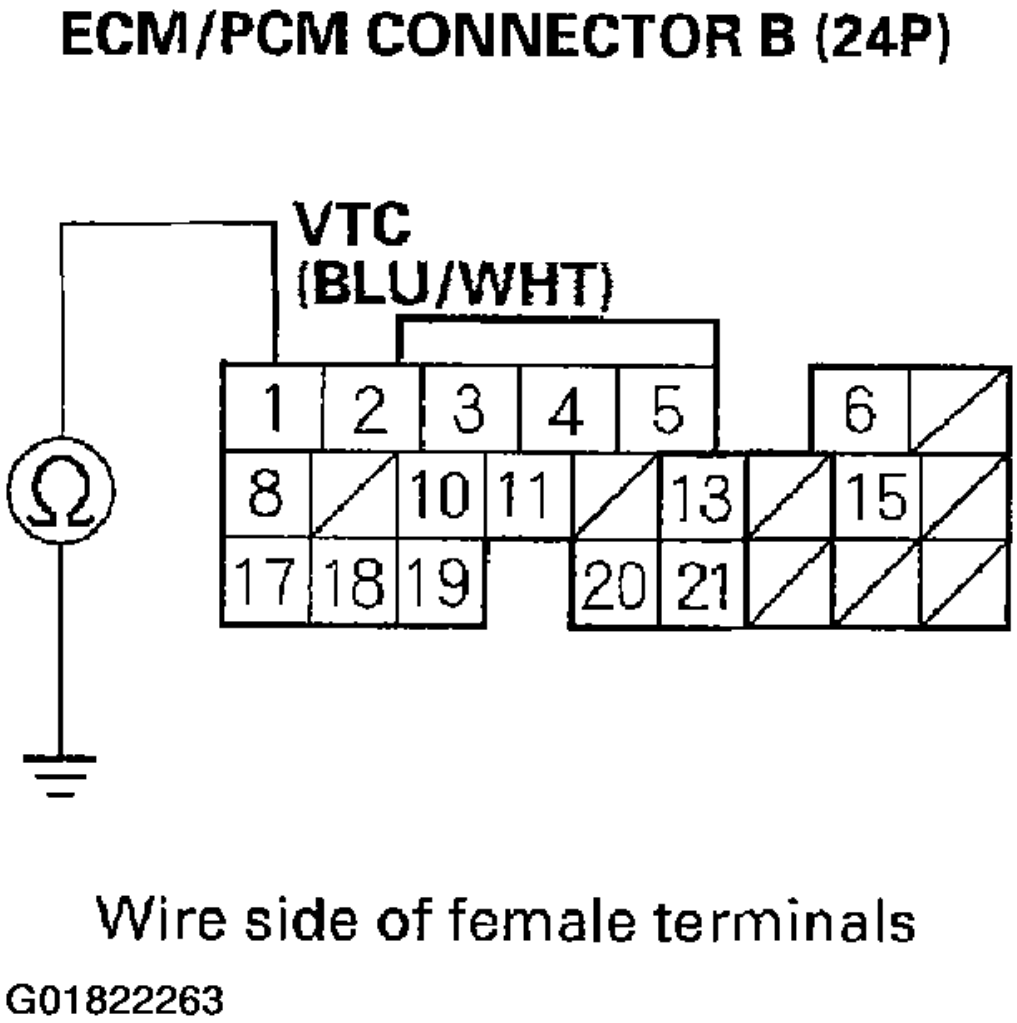


Fig. 6: Checking For Continuity Between ECM/PCM Connector Terminal B1 & Body Ground

15. Replace the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
20. Do the VTC TEST in the INSPECTION MENU with the HDS.
21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

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Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0010 is indicated, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 22.

22. Monitor the OBD STATUS for DTC P0010 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 20 and recheck.

23. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**).
24. Do the VTC TEST in the INSPECTION MENU with the HDS.
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0010 indicated, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0011: VTC SYSTEM MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Watch the low oil pressure light with the engine running.

Is the low oil pressure light on?

YES: Check the oil pressure (see **OIL PRESSURE TEST**), then go to step 15 .

NO: Go to step 5.

5. Do the VTC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Go to step 6.

NO: Go to step 9 .

6. Test-drive at a steady speed between 19-38 MPH (30-60 km/h) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

Does it indicate ON?

YES: Go to step 8.

NO: Go to step 6 and recheck.

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8. Monitor the OBD STATUS for DTC P0011 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 9.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

9. Turn the ignition switch OFF.
10. Remove the power steering pump and the autotensioner (see **DRIVE BELT AUTO-TENSIONER**).
11. Remove the VTC strainer (A), and check it for clogging.

    Is the strainer OK?

    YES: Go to step 12.

    NO: Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 14 .

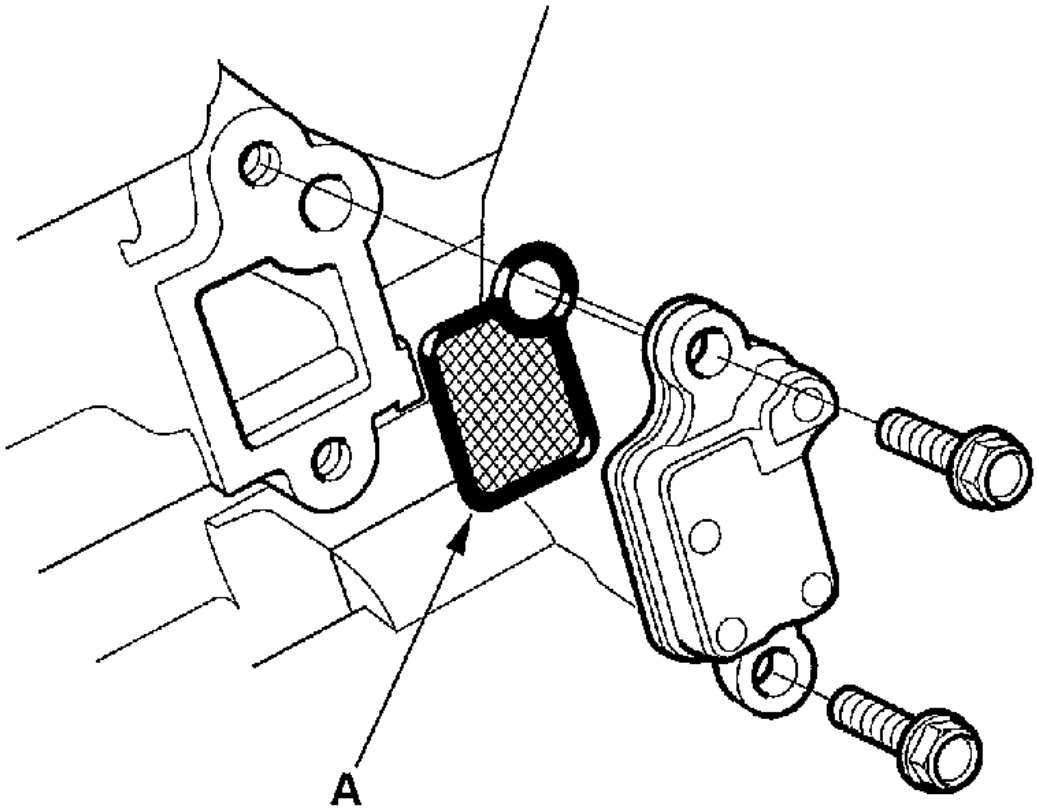


Fig. 7: Removing The VTC Strainer & Checking It For Clogging

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12. Test the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).

    Is the VTC oil control solenoid valve OK?

    YES: Go to step 13.

    NO: Replace the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**), then go to step 14 .

13. Inspect the VTC actuator (see **VTC ACTUATOR INSPECTION**).

    Is the VTC actuator OK?

    YES: Go to step 14.

    NO: Replace the VTC actuator (see **VTC ACTUATOR, EXHAUST CAMSHAFT SPROCKET REPLACEMENT**), then go to step 14.

14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Clear the CKP pattern with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Do the CKP pattern learn procedure (see **CKP PATTERN CLEAR/CKP PATTERN LEARN PROCEDURE**).
19. Do the VTC TEST in the INSPECTION MENU with the HDS.
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0011 is indicated, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 21.

21. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 19 and recheck.

DTC P0340: CMP SENSOR A NO SIGNAL

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0340 indicated?

   YES: Go to step 5.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose

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terminals at CMP Sensor A and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the CMP Sensor A 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP Sensor A 3P connector terminal No. 3 and body ground.

Is there battery voltage?

YES: Go to step 9.

NO: Repair open in the wire between the No. 18 ACG (15A) fuse in the under-dash fuse/relay box and CMP Sensor A, then go to step 19 .

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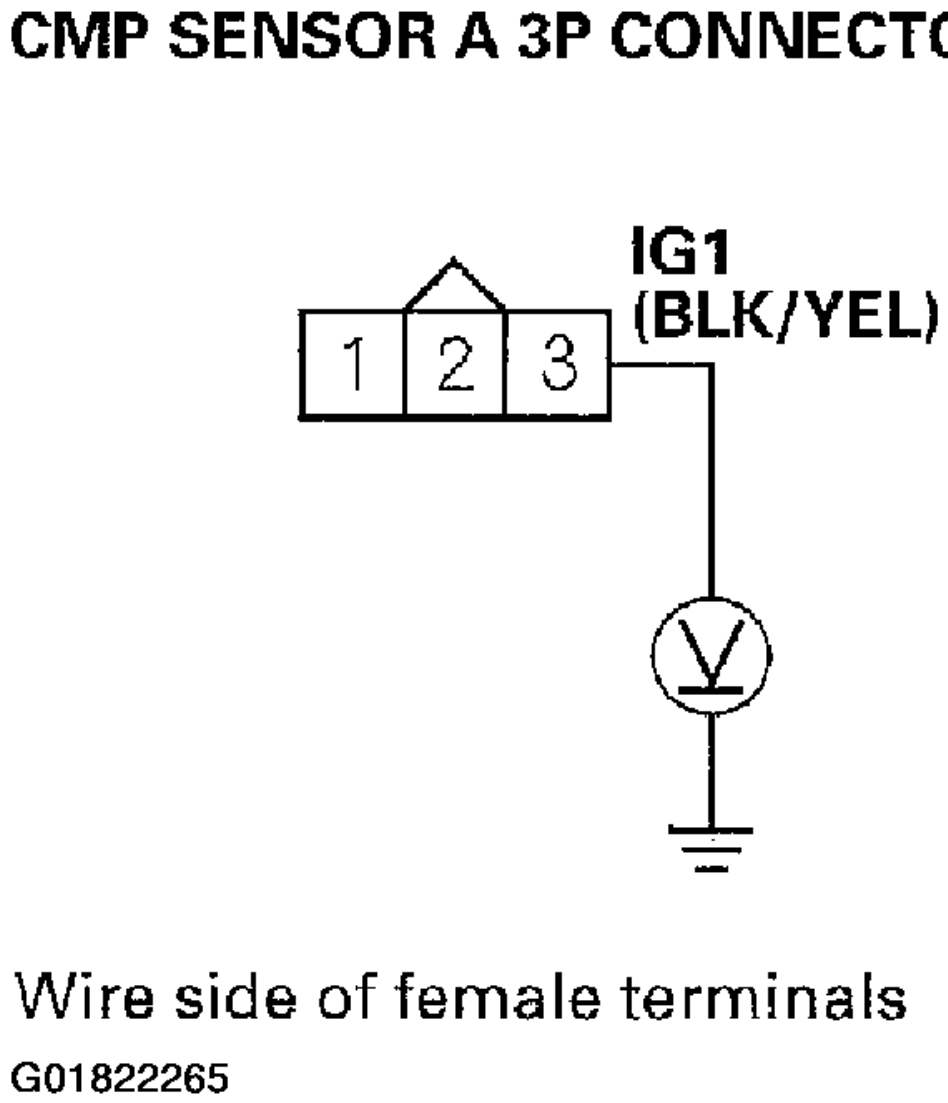


Fig. 8: Measuring Voltage Between CMP Sensor A 3P Connector Terminal No. 3 & Body Ground

9. Measure voltage between CMP Sensor A 3P connector terminal No. 1 and body ground.

   Is there about 5 V?

   YES: Go to step 10.

   NO: Go to step 11 .

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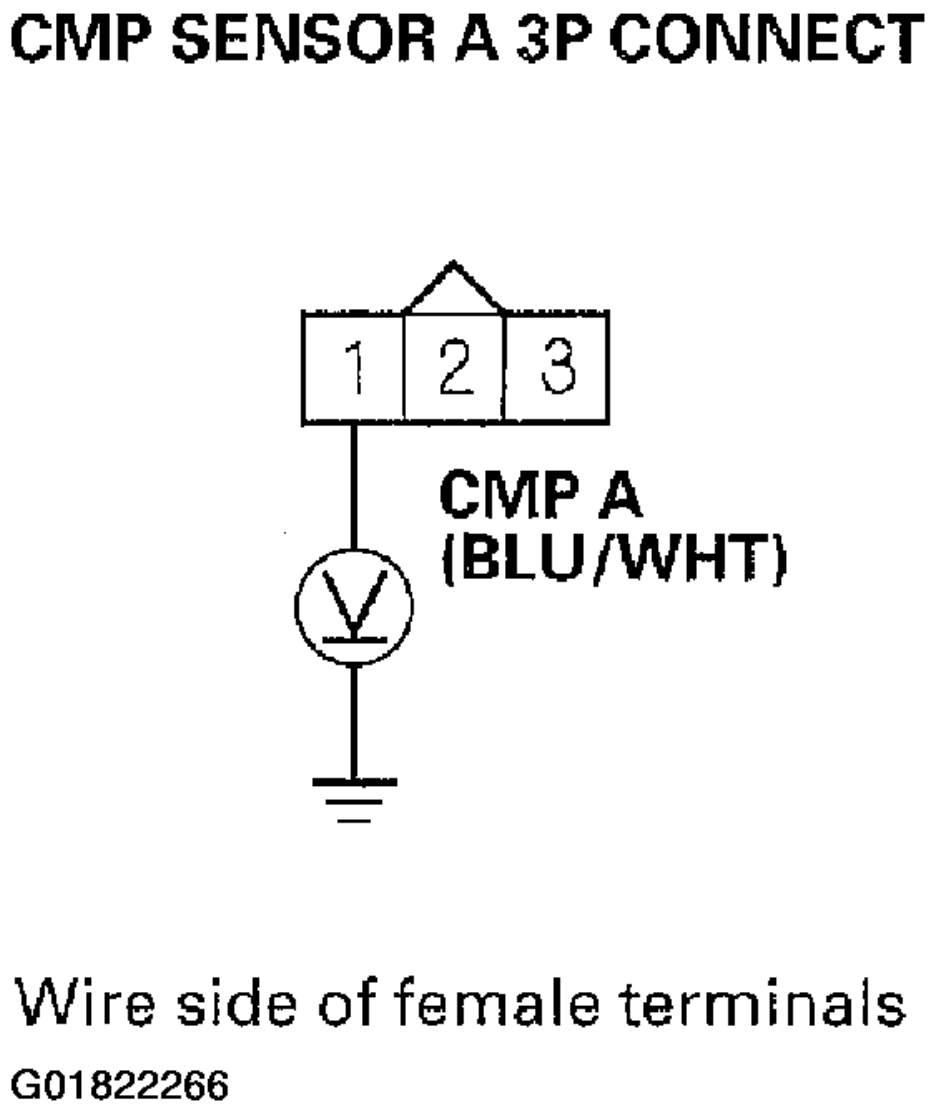


Fig. 9: Measuring Voltage Between CMP Sensor A 3P Connector Terminal No. 1 & Body Ground

10. Measure voltage between CMP Sensor A 3P connector terminals No. 2 and No. 3.

    Is there battery voltage?

    YES: Go to step 16 .

    NO: Repair open in the wire between CMP Sensor A and G101, then go to step 19 .

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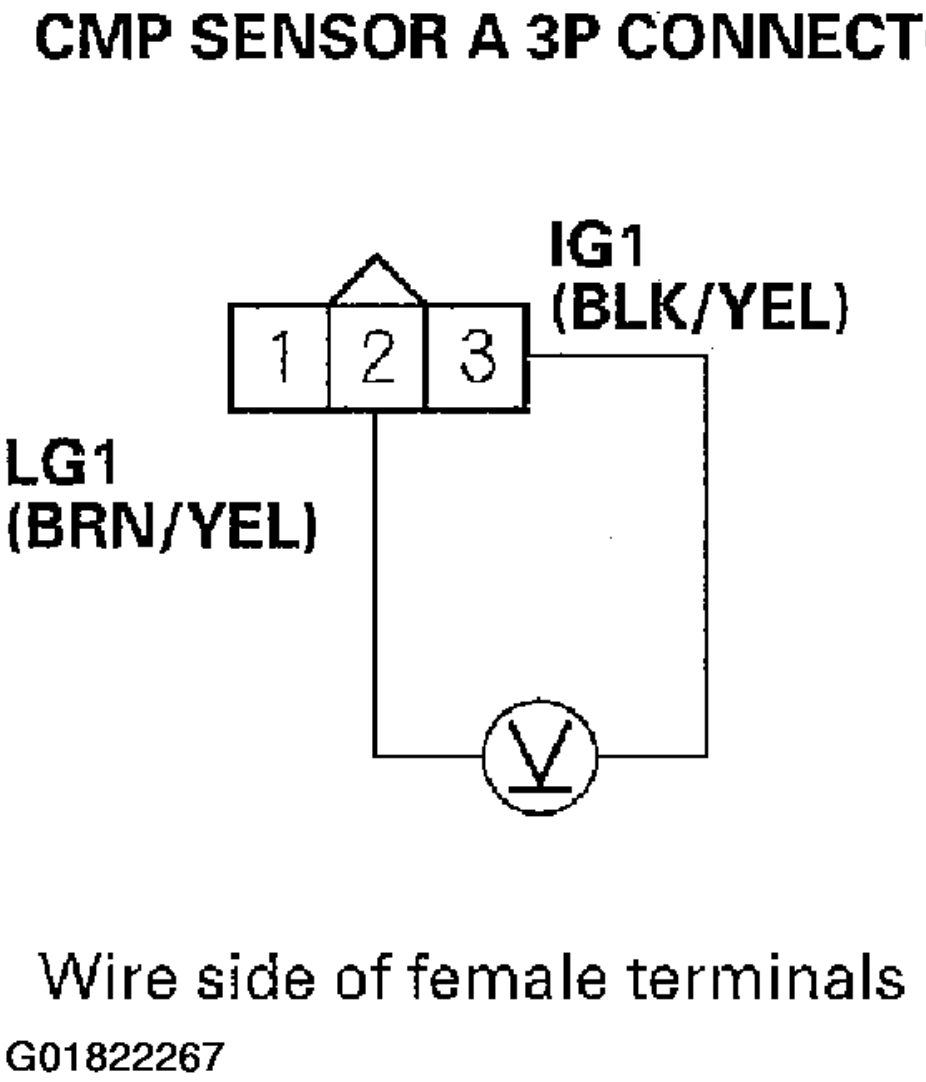


Fig. 10: Measuring Voltage Between CMP Sensor A 3P Connector Terminals No. 2 & No. 3

11. Measure voltage between ECM/PCM connector terminal A19 and body ground.

    Is there about 5 V?

    YES: Repair open in the wire between the ECM/PCM (A19) and CMP Sensor A, then go to step 19 .

    NO: Go to step 12.

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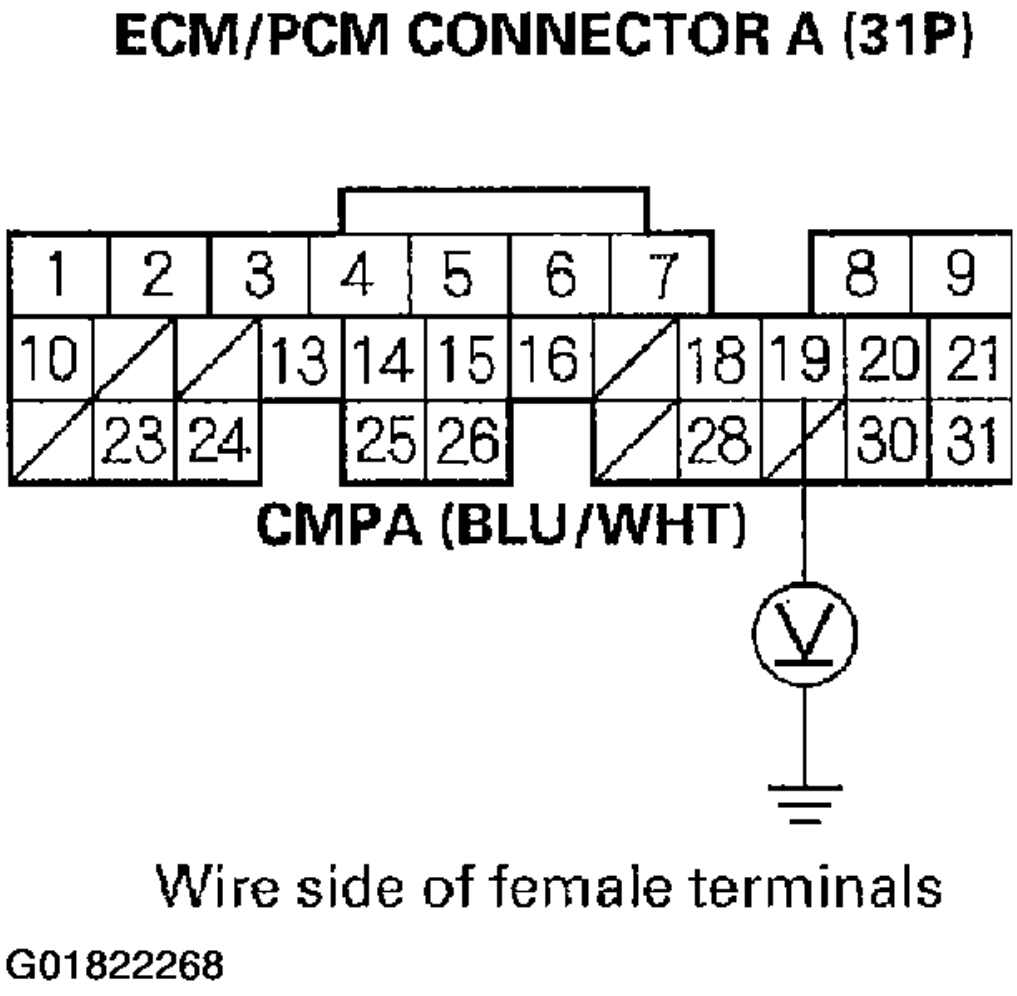


Fig. 11: Measuring Voltage Between ECM/PCM Connector Terminal A19 & Body Ground

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (31P).
15. Check for continuity between ECM/PCM connector terminal A19 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (A19) and CMP Sensor A, then go to step 18 .

NO: Go to step 23 .

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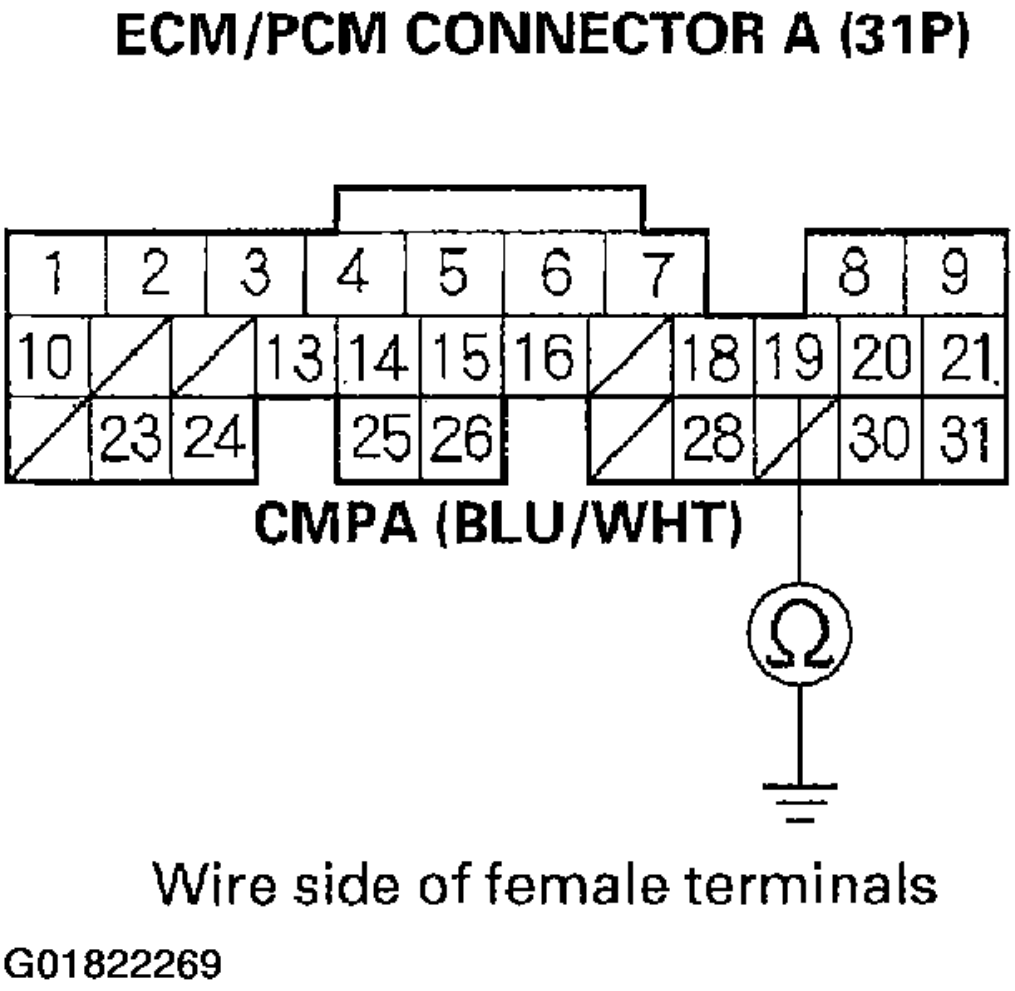


Fig. 12: Checking For Continuity Between ECM/PCM Connector Terminal A19 & Body Ground

16. Turn the ignition switch OFF.
17. Replace CMP Sensor A (see **CMP SENSOR A REPLACEMENT**).
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Start the engine.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0340 is indicated, check for poor connections or loose terminals at CMP

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Sensor A and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

23. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**).
24. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0340 is indicated, check for poor connections or loose terminals at CMP Sensor A and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0341: CMP SENSOR & CKP SENSOR INCORRECT PHASE DETECTED

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive at a steady speed between 19-38 MPH (30-60 km/h) for 10 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0341 indicated?

   YES: Go to step 9 .

   NO: Go to step 5.
5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Go to step 6.

   NO: Go to step 9 .
6. Test-drive at a steady speed between 19-38 MPH (30-60 km/h) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES: Go to step 8.

   NO: Go to step 6 and recheck.
8. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 9.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 6 and recheck.
9. Turn the ignition switch OFF.
10. Test the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).

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Is the VTC oil control solenoid valve OK?

YES: Go to step 11.

NO: Replace the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**), then go to step 14 .

11. Check the camshaft timing (see step 1 of **CAM CHAIN INSTALLATION**).

Is the camshaft timing OK?

YES: Go to step 12.

NO: Reset the camshaft timing (see **CAM CHAIN INSTALLATION**), then go to step 14 .

12. Check for damage to the cam chain (see **COMPONENT LOCATION INDEX**).

Is the cam chain damaged?

YES: Replace the cam chain (see **CAM CHAIN INSTALLATION**), then go to step 14 .

NO: Go to step 13.

13. Inspect the VTC actuator (see **VTC ACTUATOR INSPECTION**).

Is the actuator OK?

YES: Go to step 14.

NO: Replace the VTC actuator (see **VTC ACTUATOR, EXHAUST CAMSHAFT SPROCKET REPLACEMENT**), then go to step 14.

14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Clear the CKP pattern with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Do the CKP pattern learn procedure (see **CKP PATTERN CLEAR/CKP PATTERN LEARN PROCEDURE**).
19. Test-drive at a steady speed between 19-38 MPH (30-60 km/h) for 10 minutes.
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0341 is indicated, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 21.

21. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 19 and recheck.

DTC P0344: CMP SENSOR A INTERMITTENT INTERRUPTION

1. Note the following freeze data.

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- Engine speed
- Vehicle speed

2. Clear the DTC with the HDS.
3. Start engine, and let it idle for 10 seconds.
4. Check the CMP NOISE A COUNT in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES: Go to step 7 .

   NO: Go to step 5.
5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
6. Check the CMP NOISE A COUNT in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES: Go to step 7.

   NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at CMP Sensor A and the ECM/PCM.
7. Check for poor or loose connections and terminals at these locations:
   - CMP sensor A
   - ECM/PCM
   - Engine ground
   - Body ground

   Are the connections and terminals OK?

   YES: Go to step 8.

   NO: Repair the connectors or terminals, then go to step 11 .
8. Check for damage on the CMP sensor A pulse plate (see **CMP PULSE PLATE A REPLACEMENT**).

   Is the pulse plate damaged?

   YES: Replace the CMP sensor A pulse plate (see **CMP PULSE PLATE A REPLACEMENT**), then go to step 11 .

   NO: Go to step 9.
9. Turn the ignition switch OFF.
10. Replace CMP sensor A (see **CMP SENSOR A REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
14. Start the engine, and let it idle for 10 seconds.
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0344 is indicated, check for poor connections or loose terminals at CMP Sensor A and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

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NO: Troubleshooting is complete.

DTC P2646: OIL PRESSURE SWITCH CIRCUIT LOW VOLTAGE

Special Tools Required:

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070300
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

1. Check the engine oil level.

   Is the level OK?

   YES: Go to step 2.

   NO: Adjust the engine oil to the proper level, then go to step 21 .
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Intermittent failure, system in OK at this time. Check for poor connections or loose terminals at the VTEC oil pressure switch, the VTEC solenoid valve, and the ECM/PCM.

   NO: Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the VTEC oil pressure switch 2P connector.
7. Turn the ignition switch ON (II).
8. Check the VTEC PRES SW in the DATA LIST with the HDS.

   Is SWITCH ON indicated?

   YES: Go to step 9.

   NO: Replace the VTEC oil pressure switch (see **VTEC OIL PRESSURE SWITCH REPLACEMENT**), then go to step 21 .
9. Turn the ignition switch OFF.
10. Remove the VTEC oil pressure switch (A) and install the special tools as shown, then install the VTEC oil pressure switch (A) to the oil pressure gauge adapter (B).

NOTE: Install the switch in the reverse order of removal with a new O-ring.

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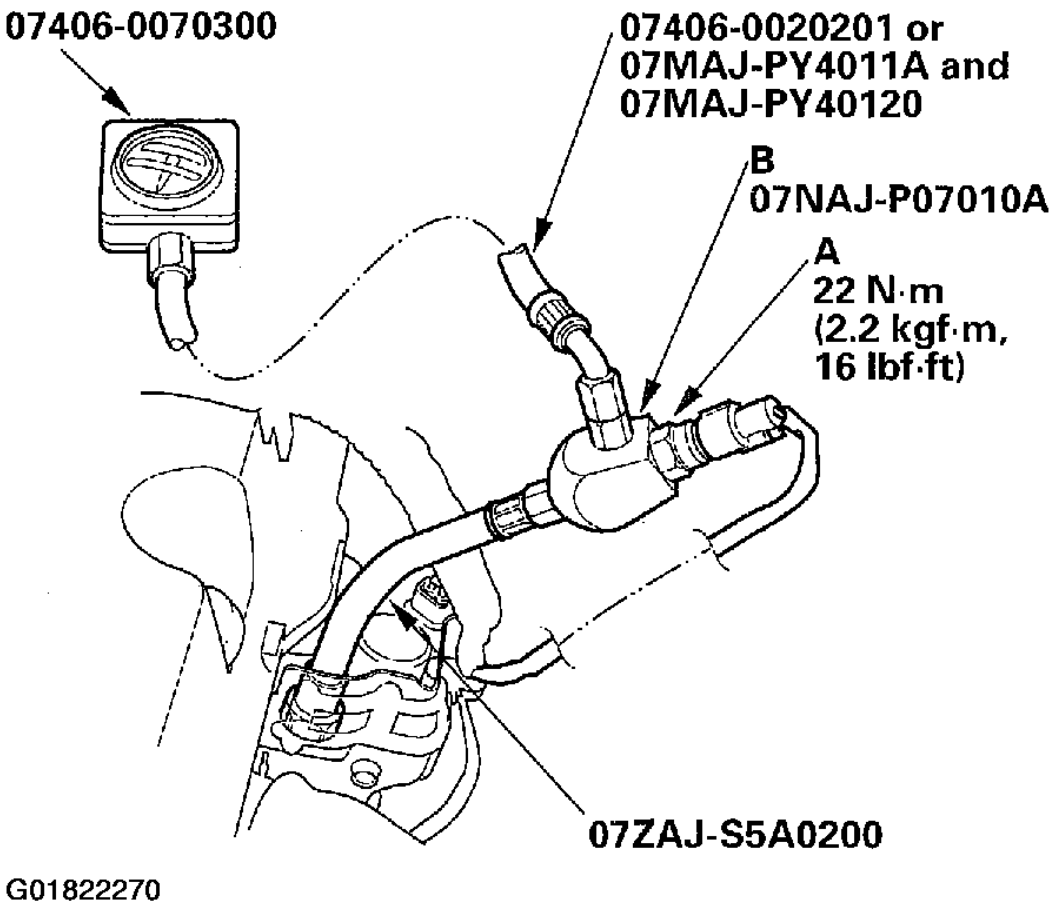


Fig. 13: Removing The VTEC Oil Pressure Switch & Installing The Special Tools & Installing The VTEC Oil Pressure Switch To The Oil Pressure Gauge Adapter

11. Turn the ignition switch ON (II).
12. Do the VTEC TEST in the INSPECTION MENU with the HDS.
13. Check the oil pressure.

    Is the oil pressure below 49 kPa (0.5 kgf/cm^2 , 7 psi)?

    YES: Inspect the VTEC system. If it is OK, replace the VTEC solenoid valve (see **VTEC SOLENOID VALVE REMOVAL/INSTALLATION**), then go to step 21 .

    NO: Go to step 14.
14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect the VTEC oil pressure switch 2P connector.
17. Disconnect ECM/PCM connector B (24P).
18. Check for continuity between ECM/PCM connector terminal B11 and body ground.

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Is there continuity?

YES: Repair short in the wire between the ECM/PCM (B11) and the VTEC oil pressure switch, then go to step 19.

NO: Go to step 27 .

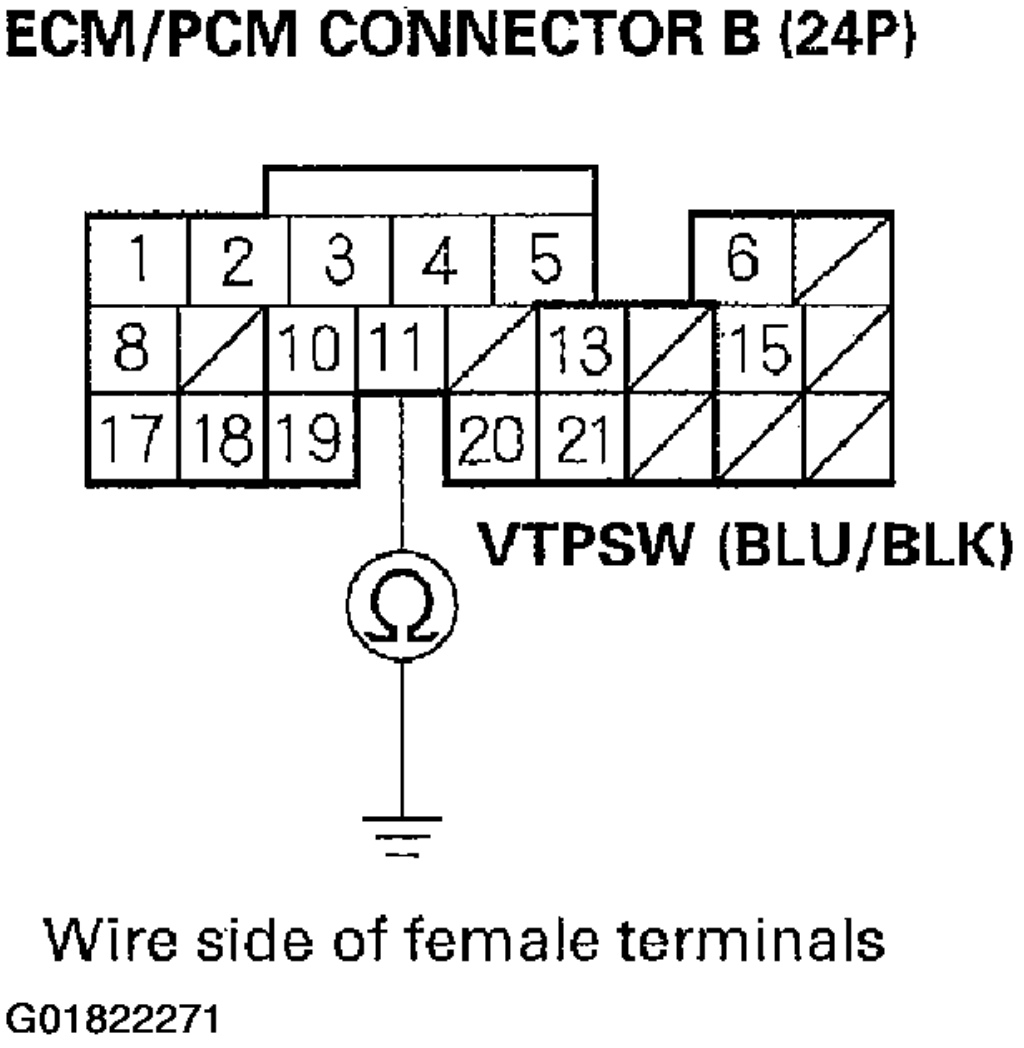


Fig. 14: Checking For Continuity Between ECM/PCM Connector Terminal B11 & Body Ground

19. Reconnect the VTEC oil pressure switch 2P connector.
20. Reconnect ECM/PCM connector B (24P).

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21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Do the VTEC TEST in the INSPECTION MENU with the HDS.
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2646 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch, the VTEC solenoid valve, and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 26.
26. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 24 and recheck.
27. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**).
28. Do the VTEC TEST in the INSPECTION MENU with the HDS.
29. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2646 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch, the VTEC solenoid valve, and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2647: VTEC OIL PRESSURE SWITCH CIRCUIT HIGH VOLTAGE

1. Check the engine oil level.

   Is the level OK?

   YES: Go to step 2.

   NO: Adjust the engine oil to the proper level, then go to step 14 .
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC oil pressure switch and the ECM/PCM.

   NO: Go to step 5.

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5. Check the result of step 4.

   Does the test result indicate one of the following failures?

   - VTEC Switch Failure
   - VTEC Switch Open
   - VTEC Switch SIG Line Open
   - VTEC Switch GND Line Open

   YES: Go to step 6.

   NO: Check for poor connections or loose terminals at the VTEC oil pressure switch. If it is OK, replace the VTEC solenoid valve (see **VTEC SOLENOID VALVE REMOVAL/INSTALLATION**), then, go to step 14 .

6. Turn the ignition switch OFF.
7. Disconnect the VTEC oil pressure switch 2P connector.
8. At the VTEC oil pressure switch, check for continuity between terminals No. 1 and No. 2.

   Is there continuity?

   YES: Go to step 9.

   NO: Replace the VTEC oil pressure switch (see **VTEC OIL PRESSURE SWITCH REPLACEMENT**), then go to step 13 .

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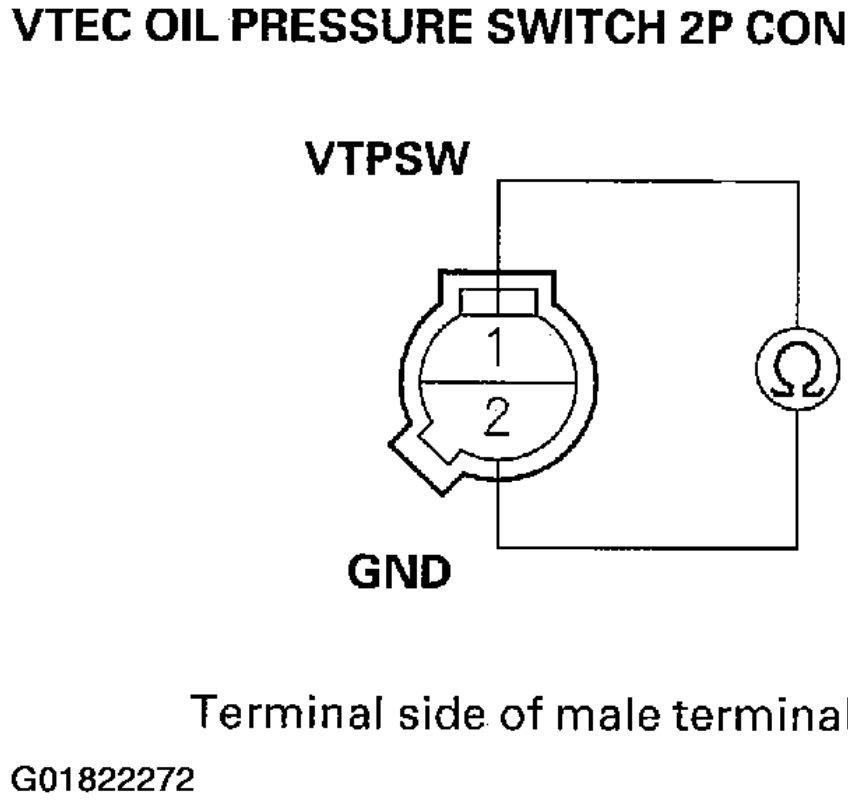


Fig. 15: Checking For Continuity Between VTEC Oil Pressure Switch Terminals No. 1 & No. 2

9. Turn the ignition switch ON (II).
10. Measure voltage between VTEC oil pressure switch terminal No. 1 and body ground.

Is there battery voltage?

YES: Repair open in the wire between the VTEC oil pressure switch and G101, then go to step 13 .

NO: Go to step 11.

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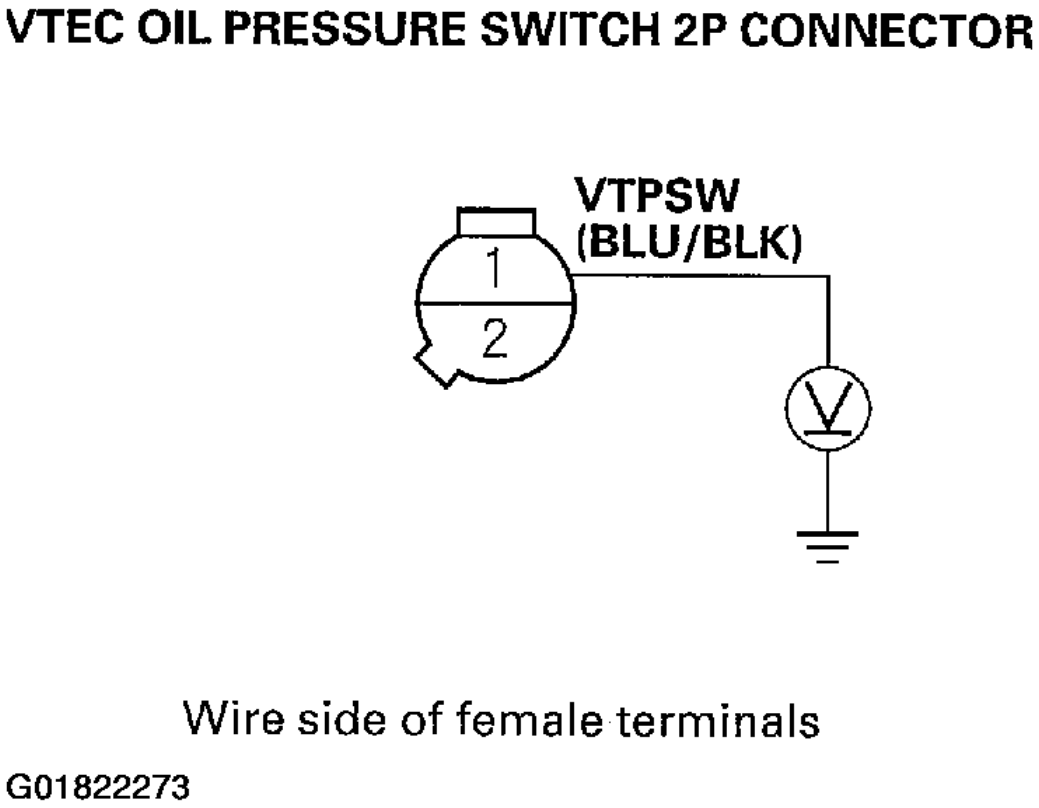


Fig. 16: Measuring Voltage Between VTEC Oil Pressure Switch Terminal No. 1 & Body Ground

11. Measure voltage between ECM/PCM connector terminal B11 and body ground.

    Is there battery voltage?

    YES: Repair open in the wire between the ECM/PCM (B11) and the VTEC oil pressure switch, then go to step 12.

    NO: Go to step 19 .

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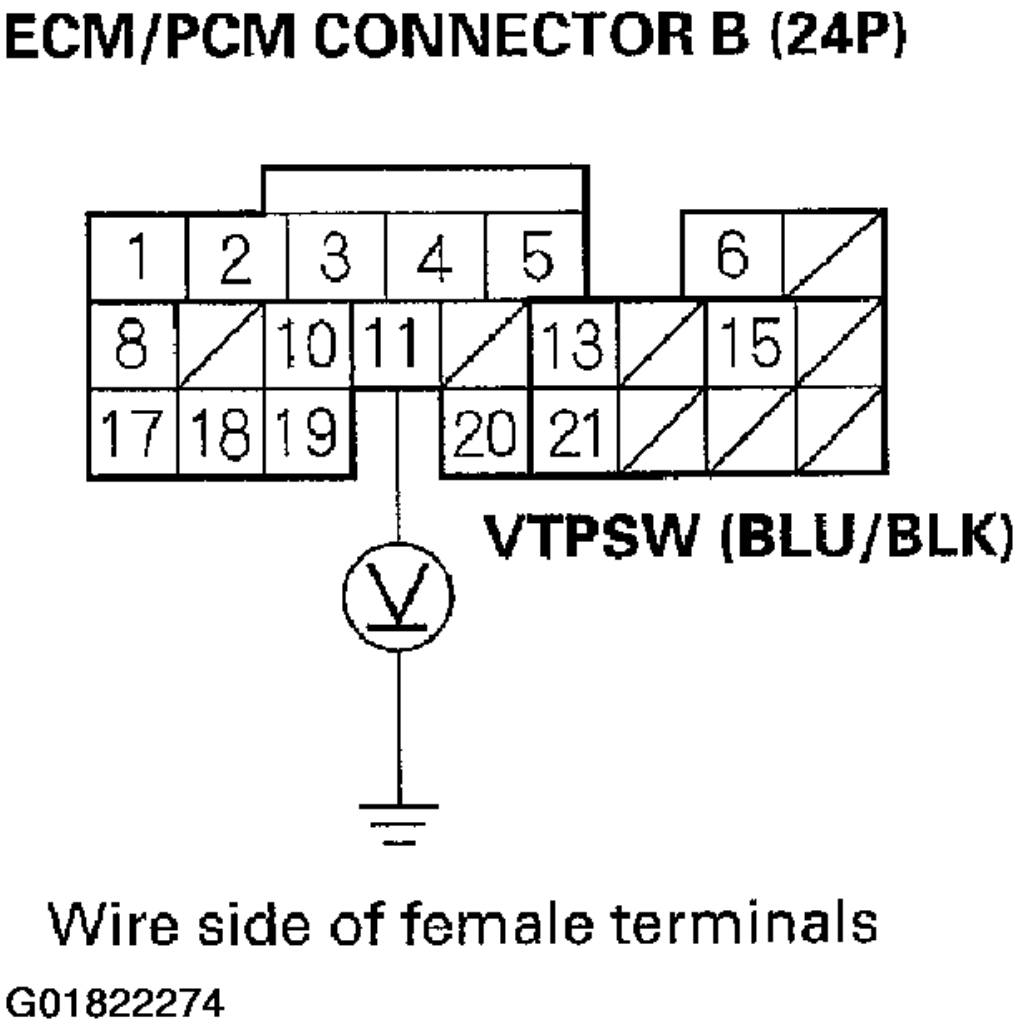


Fig. 17: Measuring Voltage Between ECM/PCM Connector Terminal B11 & Body Ground

12. Turn the ignition switch OFF.
13. Reconnect the VTEC oil pressure switch 2P connector.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2647 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or

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DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 18.

18. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, then go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 16 and recheck.

19. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2647 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2648: VTEC SOLENOID VALVE CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC solenoid valve and the ECM/PCM.

   NO: Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the VTEC solenoid valve 2P connector.
6. Measure resistance between VTEC solenoid valve 2P connector terminals No. 1 and No. 2.

   Is there 14-30 ohm?

   YES: Go to step 7.

   NO: Go to step 10 .

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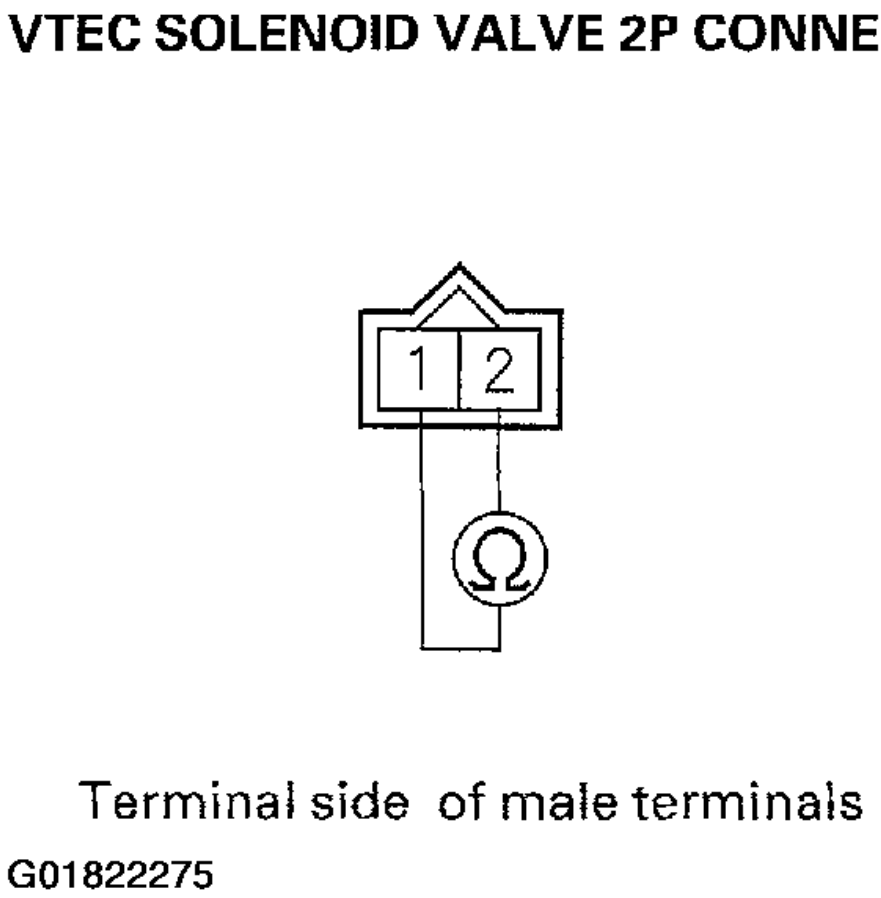


Fig. 18: Measuring Resistance Between VTEC Solenoid Valve 2P Connector Terminals No. 1 & No. 2

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector B (24P).
9. Check for continuity between ECM/PCM connector terminal B6 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (B6) and the VTEC solenoid valve, then go to step 11 .

NO: Go to step 18 .

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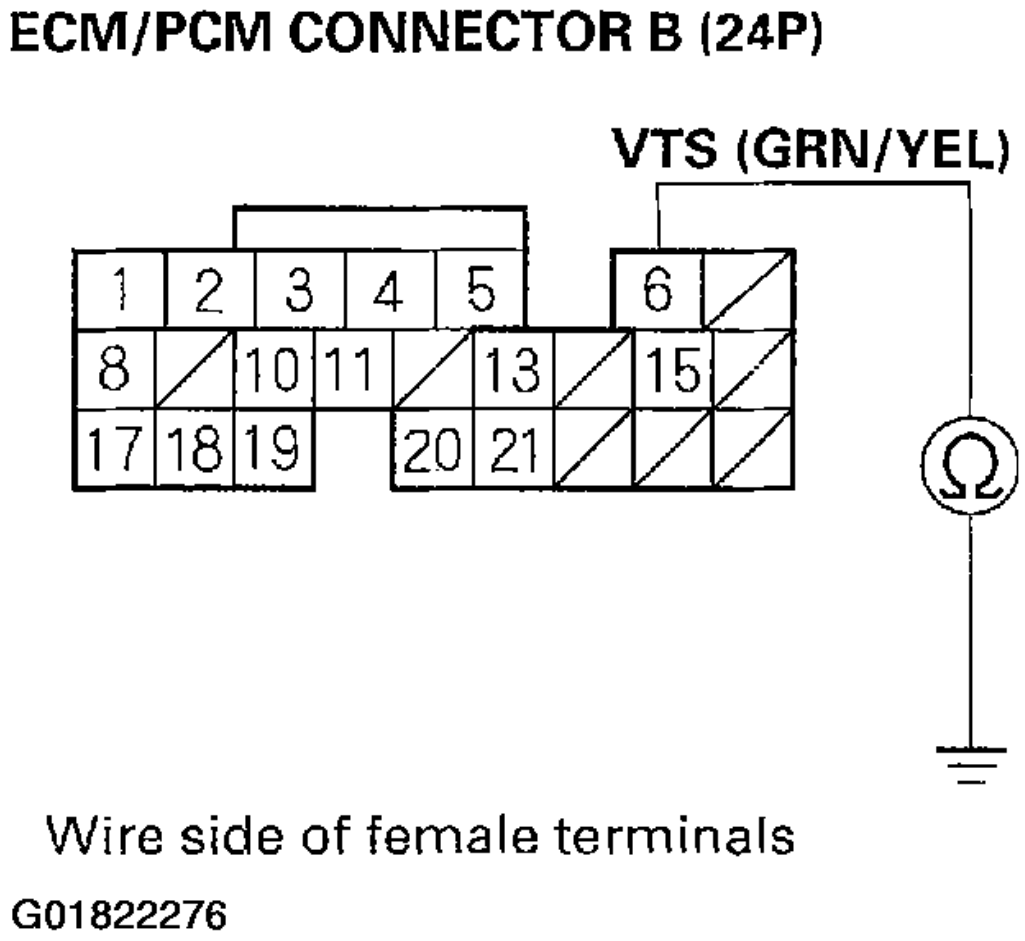


Fig. 19: Checking For Continuity Between ECM/PCM Connector Terminal B6 & Body Ground

10. Replace the VTEC solenoid valve (see **VTEC SOLENOID VALVE REMOVAL/INSTALLATION**).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2648 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs

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are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 15 and recheck.

18. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**).
19. Do the VTEC TEST in the INSPECTION MENU with the HDS.
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2648 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P2649: VTEC SOLENOID VALVE CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P2649 indicated?

    YES: Go to step 5.

    NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC solenoid valve and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the VTEC solenoid valve 2P connector.
7. Measure resistance between VTEC solenoid valve 2P connector terminals No. 1 and No. 2.

    Is there 14-30 ohm?

    YES: Go to step 8.

    NO: Go to step 13 .

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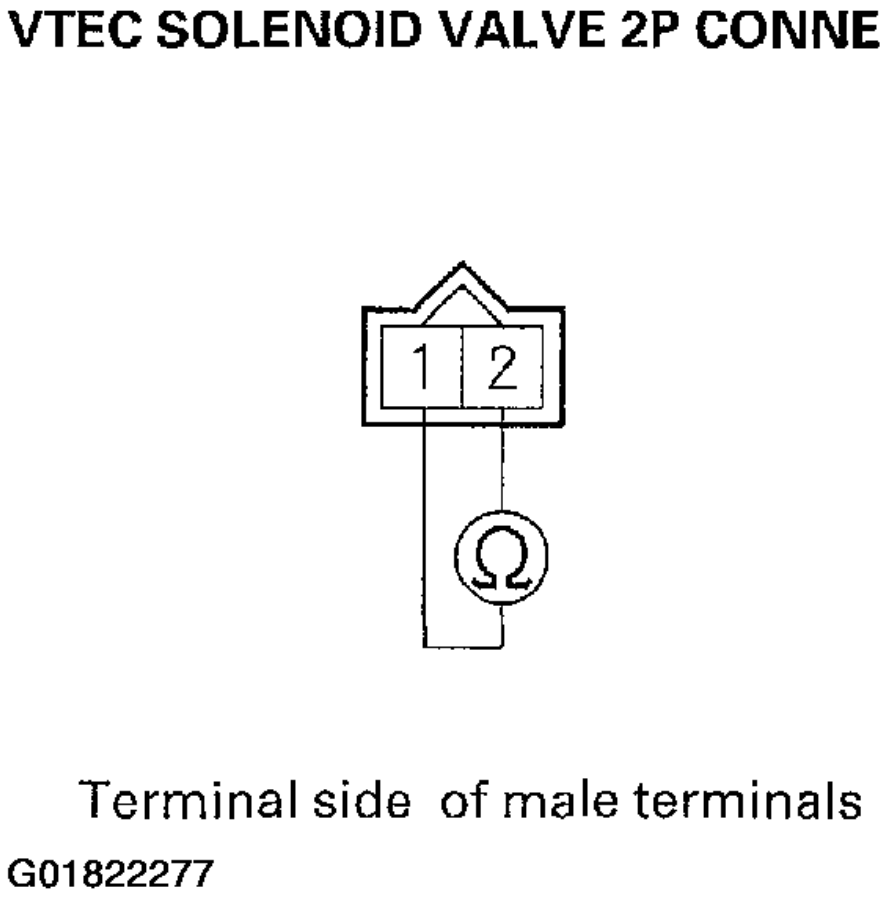


Fig. 20: Measuring Resistance Between VTEC Solenoid Valve 2P Connector Terminals No. 1 & No. 2

8. Check for continuity between VTEC solenoid valve terminal No. 2 and body ground.

   Is there continuity?

   YES: Go to step 9.

   NO: Repair open in the wire between the VTEC solenoid valve and G101, then go to step 14 .

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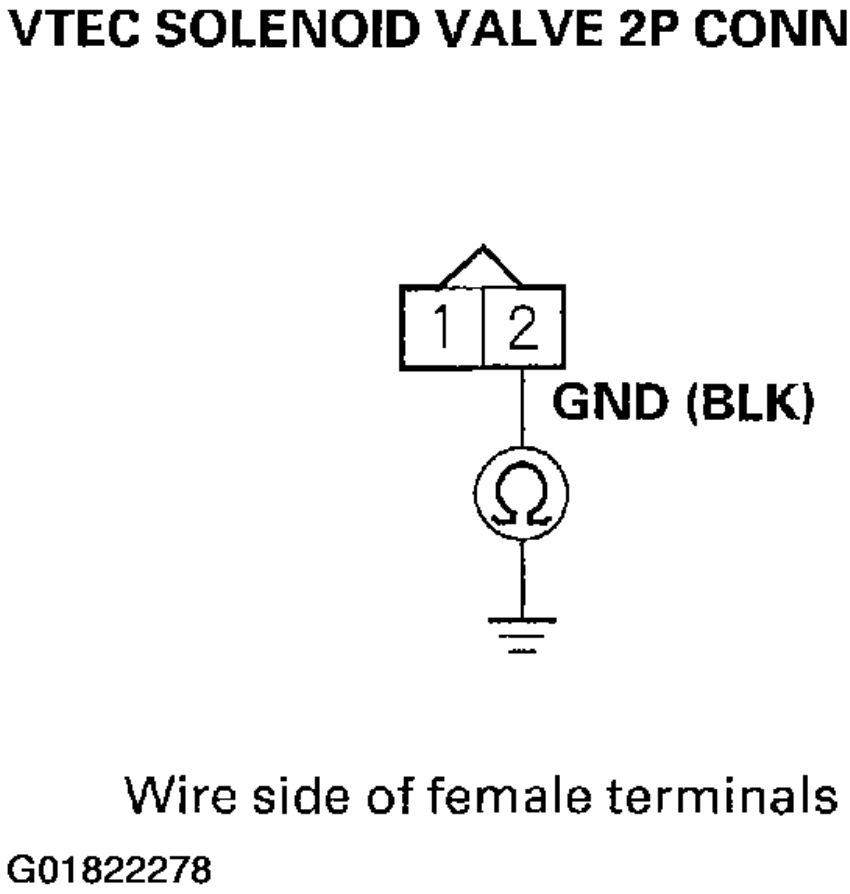


Fig. 21: Checking For Continuity Between VTEC Solenoid Valve Terminal No. 2 & Body Ground

9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (24P).
11. Connect VTEC solenoid valve 2P connector terminal No. 1 to body ground with a jumper wire.

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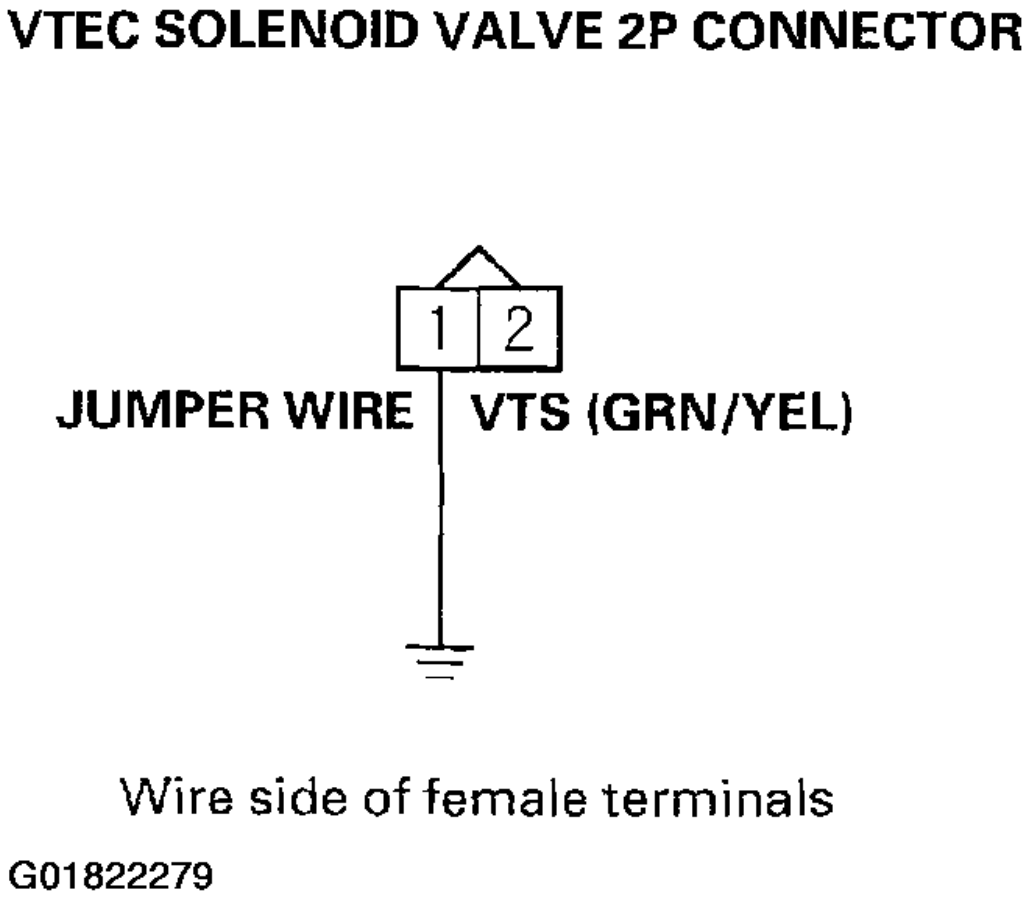


Fig. 22: Connecting VTEC Solenoid Valve 2P Connector Terminal No. 1 To Body Ground With A Jumper Wire

12. Check for continuity between ECM/PCM connector terminal B6 and body ground.

    Is there continuity?

    YES: Go to step 20 .

    NO: Repair open in the wire between the ECM/PCM (B6) and the VTEC solenoid valve, then go to step 14 .

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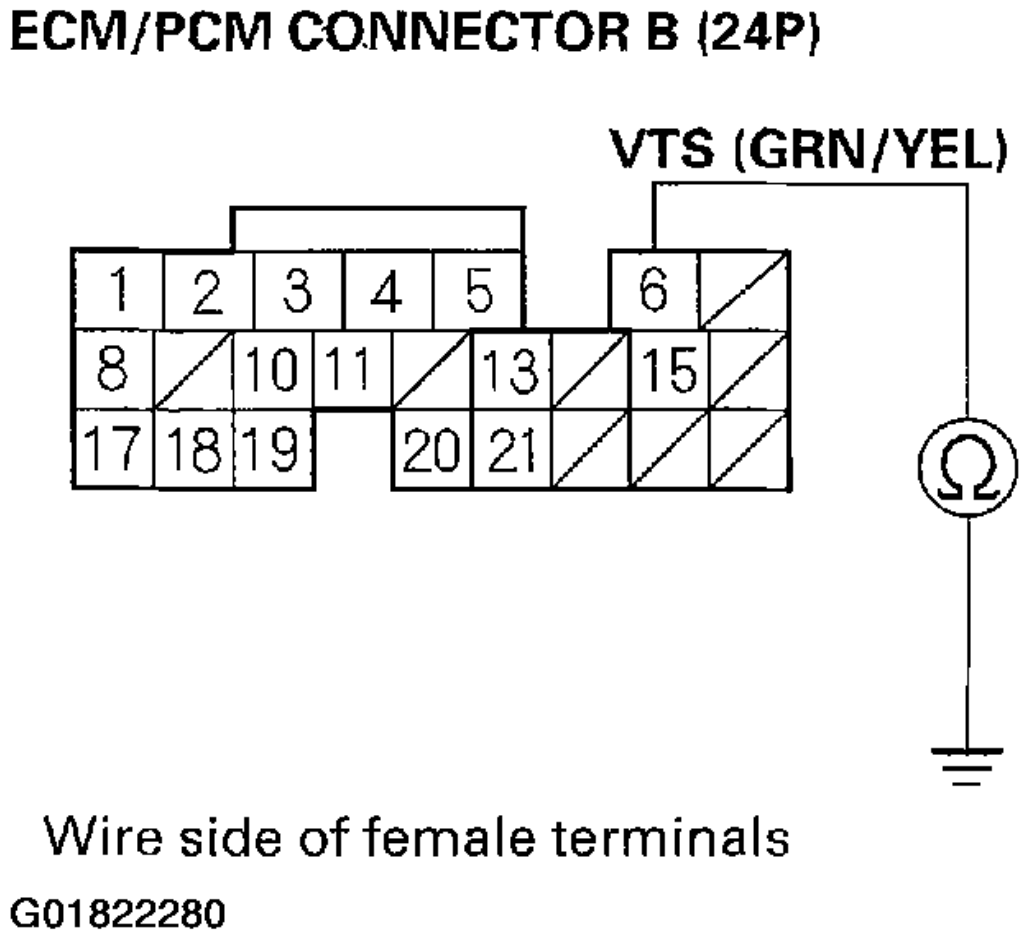


Fig. 23: Checking For Continuity Between ECM/PCM Connector Terminal B6 & Body Ground

13. Replace the VTEC solenoid valve (see **VTEC SOLENOID VALVE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P2649 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

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NO: Go to step 19.

19. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicated FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 17 and recheck.

20. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **ECM/PCM UPDATING AND SUBSTITUTION FOR TESTING**).

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2647 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION

1. Disconnect the VTC oil control solenoid valve connector (A).

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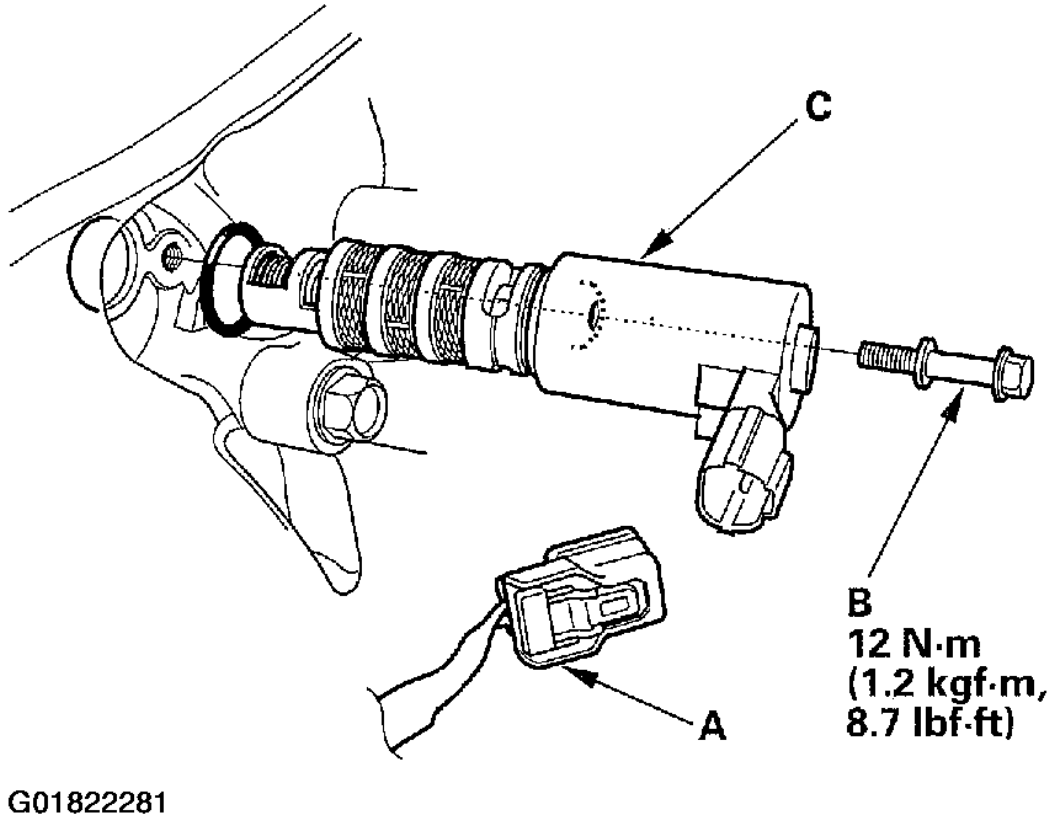


Fig. 24: Disconnecting The VTC Oil Control Solenoid Valve Connector

2. Remove the bolt (B) and VTC oil control solenoid valve (C).
3. Check the VTC oil control solenoid valve for sticking and the solenoid valve filter for clogging. If the valve is stuck or clogged, replace the VTC oil control solenoid valve.
4. Check clearance between the port (advance side) and the valve. Make sure the valve (A) closes fully.

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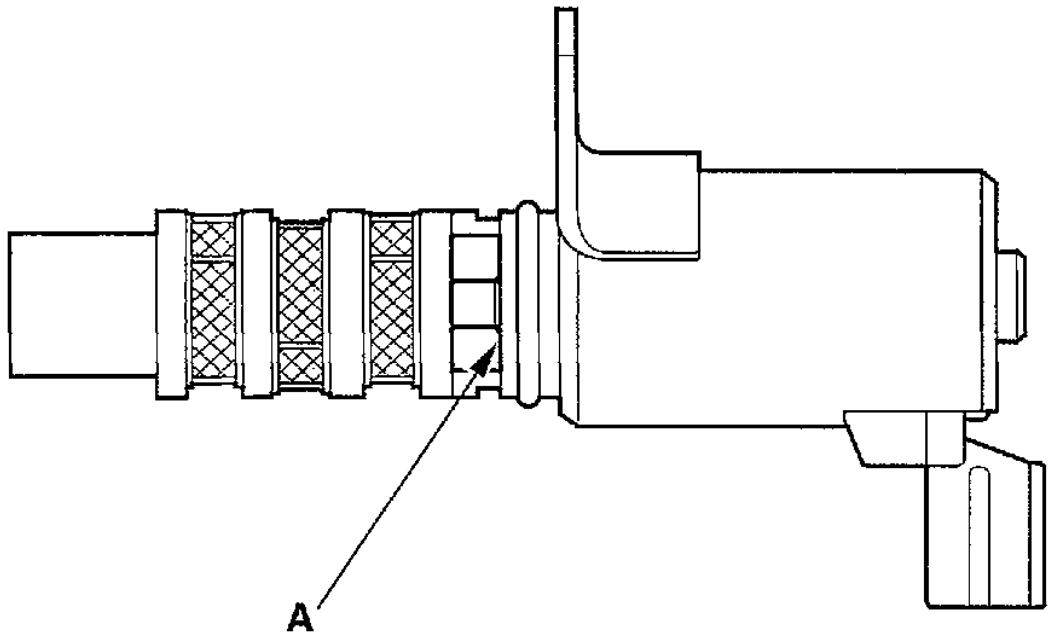


Fig. 25: Checking Clearance Between The Port & The Valve

5. Connect the battery positive terminal to VTC oil control solenoid valve 2P connector terminal No. 2.

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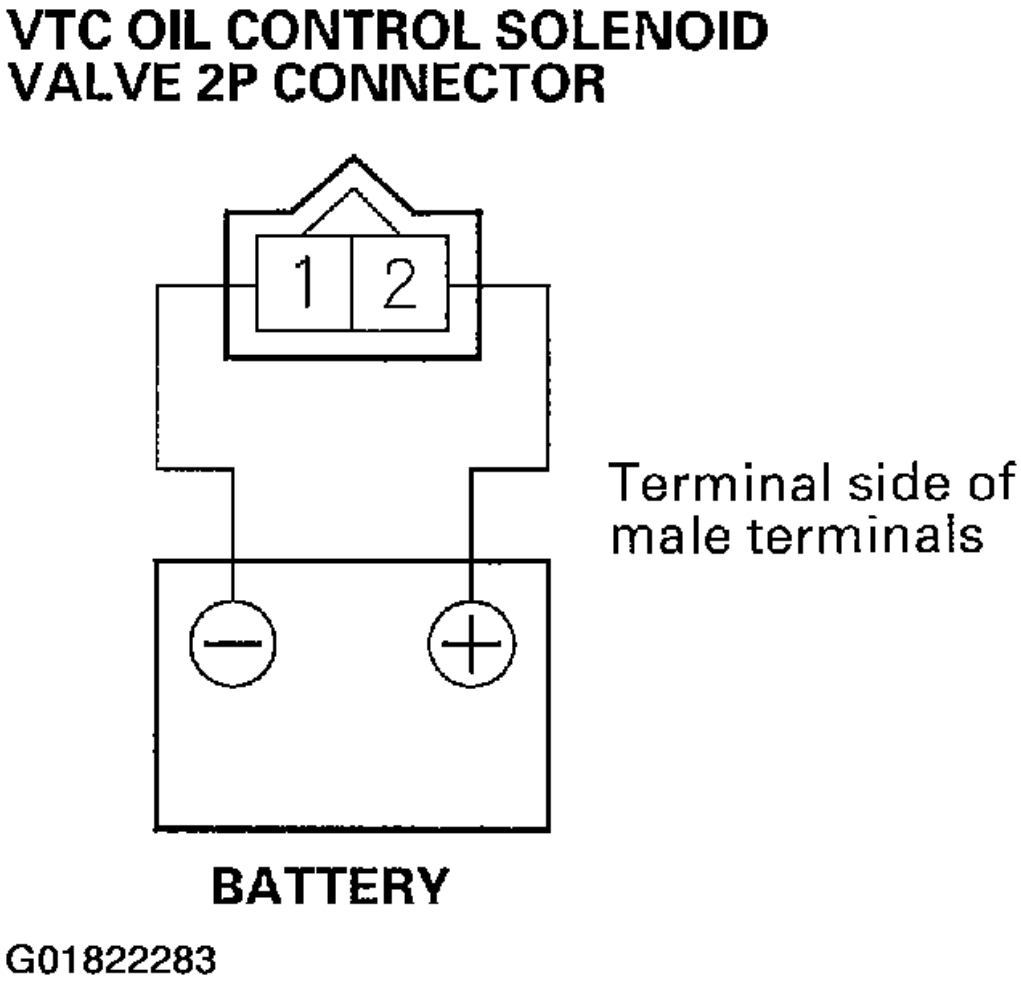


Fig. 26: Connecting Battery To VTC Oil Control Solenoid Valve 2P Connector

6. Connect the battery negative terminal to VTC oil control solenoid valve 2P connector terminal No. 1. Clearance (A) should be at least 1.2 mm (1/16 in.). If the valve does not open, replace it, then go to step 7.

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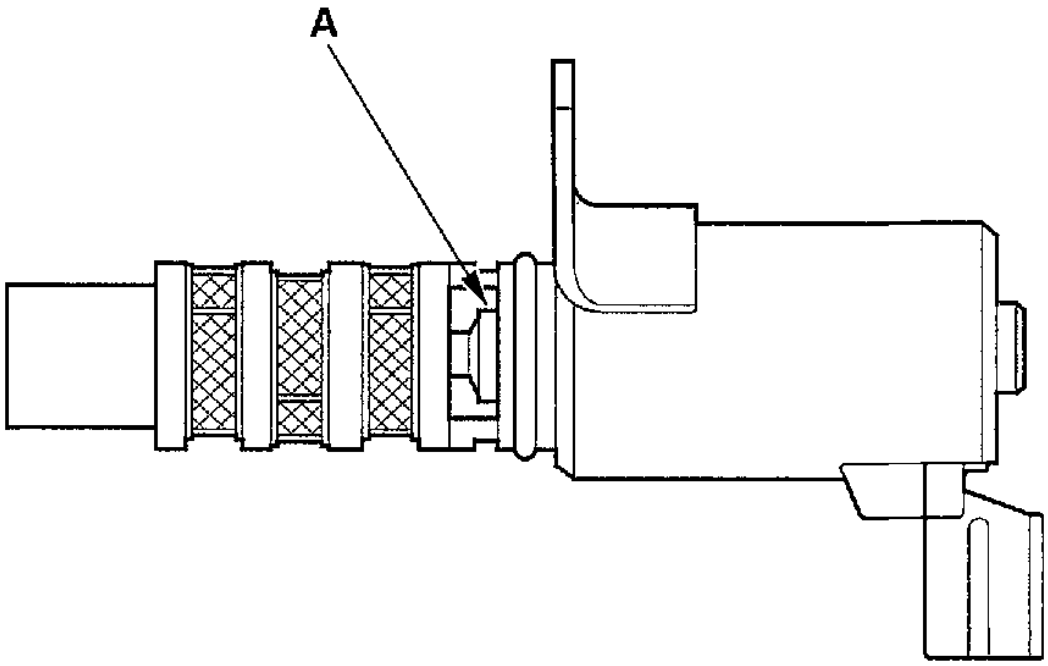


Fig. 27: Checking VTC Oil Control Solenoid Valve Clearance

7. Remove the VTC valve O-ring (A).

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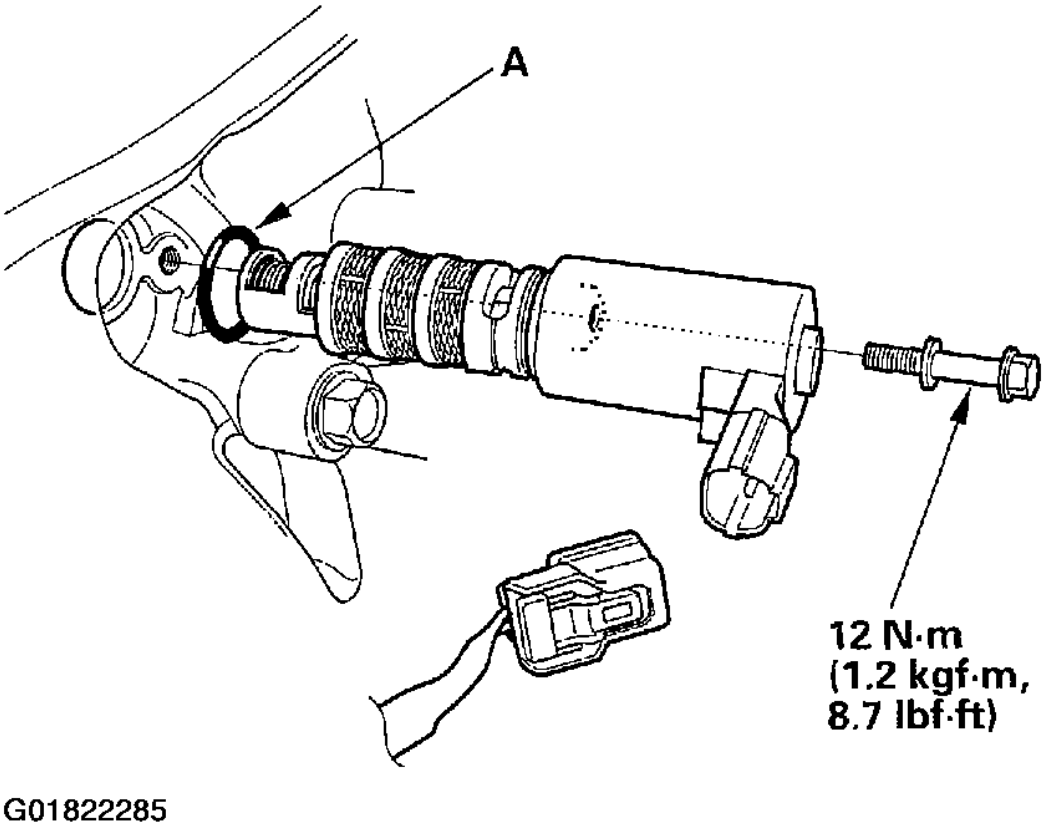


Fig. 28: Installing VTC Oil Control Solenoid Valve

8. Coat a new O-ring with engine oil, then install it.
9. Clean and dry the mating surface of the valve.
10. Install the valve.

NOTE: Do not install the valve while wearing fiberous cloth gloves. Be careful not to contaminate the cylinder head opening.

VTEC SOLENOID VALVE INSPECTION

1. Disconnect the VTEC solenoid valve connector and the VTEC oil pressure switch connector.
2. Remove the VTEC solenoid valve assembly from the cylinder head (see **VTEC SOLENOID VALVE REMOVAL/INSTALLATION**).
3. Measure resistance between VTEC solenoid valve connector terminals No. 1 and No. 2.

   Resistance: 14-30 ohm

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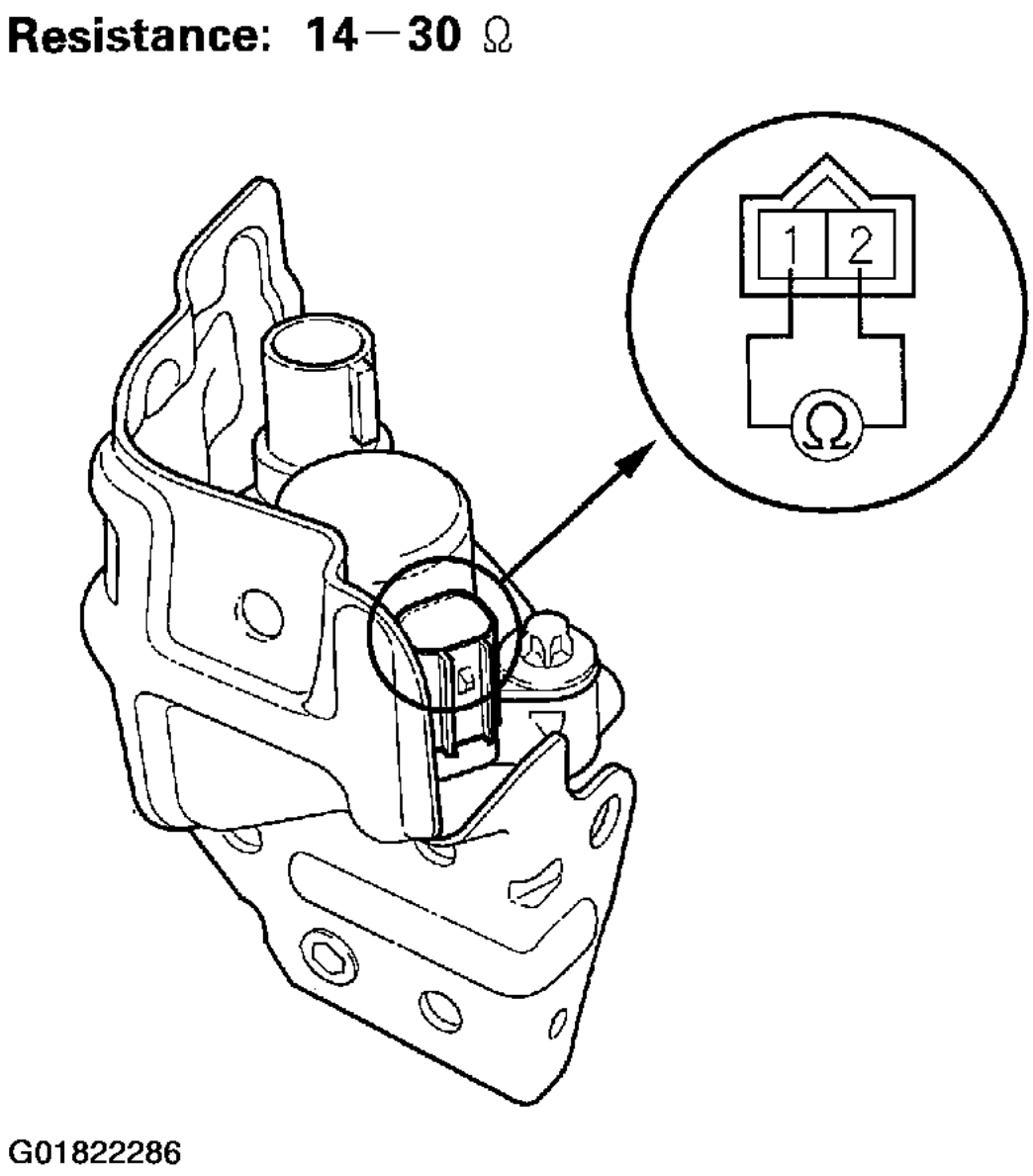
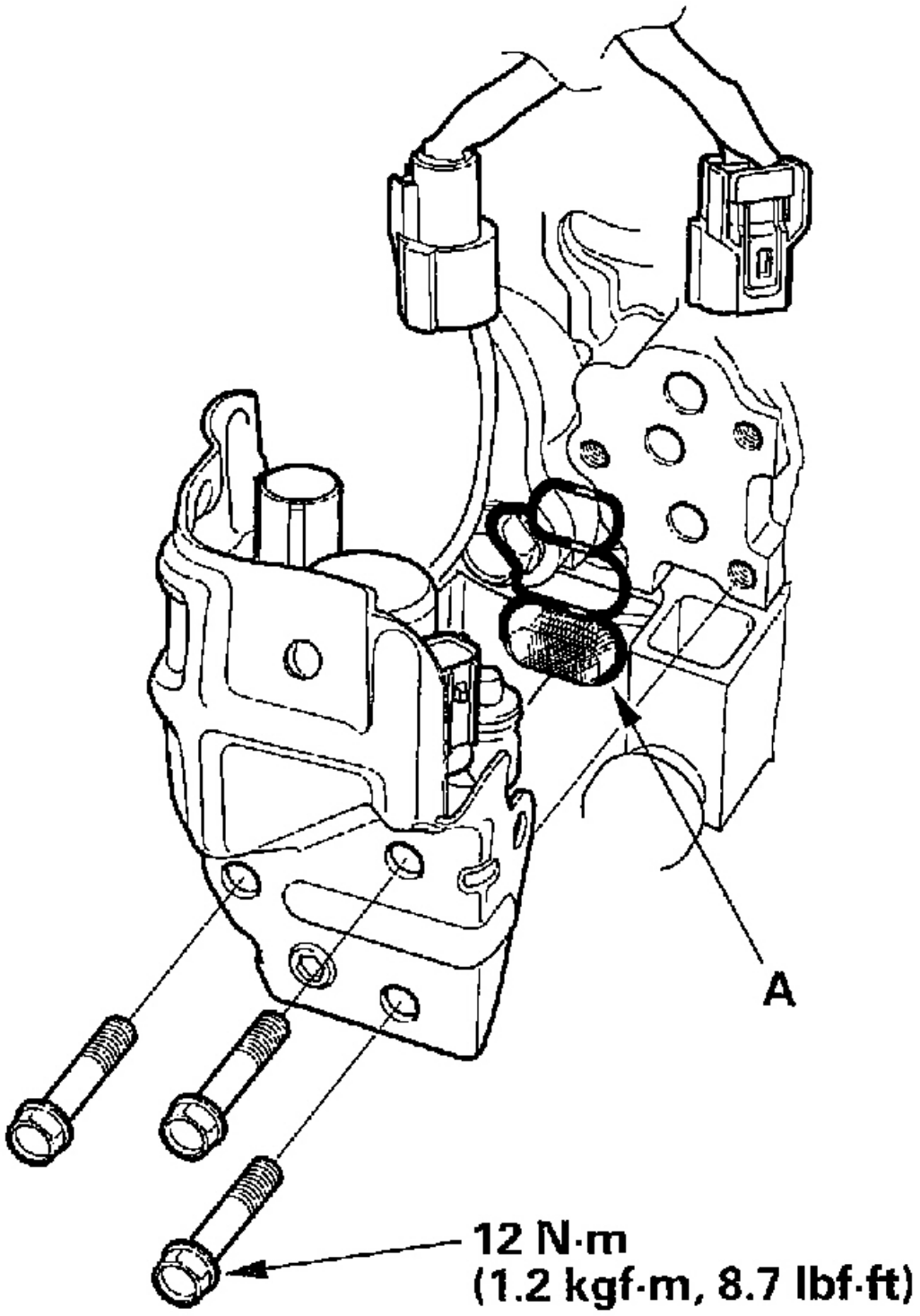


Fig. 29: Measuring Resistance Between VTEC Solenoid Valve Connector Terminals No. 1 & No. 2

4. If the resistance is within specifications, check the solenoid valve filter (A) for clogging. If it is clogged, replace the solenoid valve filter, the engine oil filter, and the engine oil.

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Fig. 30: Replacing The Solenoid Valve Filter

REMOVAL & INSTALLATION

CMP SENSOR A REPLACEMENT

1. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Disconnect the CMP sensor A connector (A).

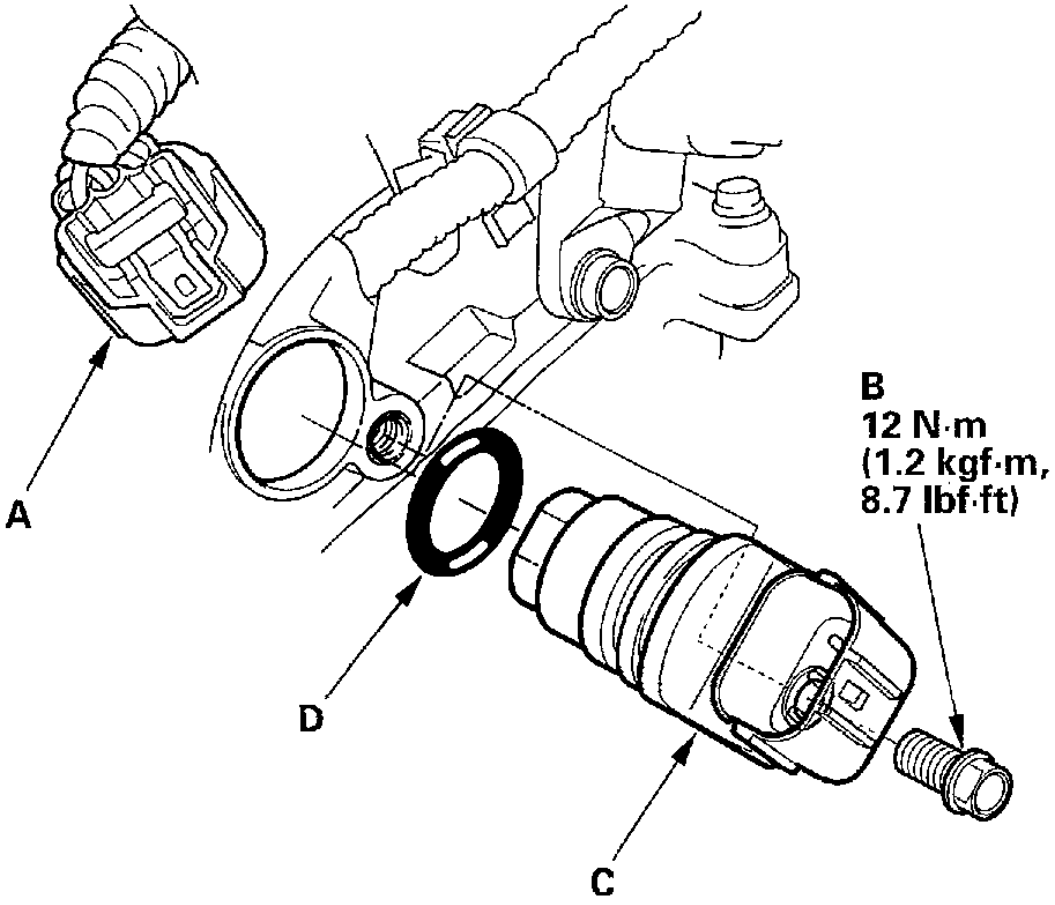


Fig. 31: Removing CMP Sensor A

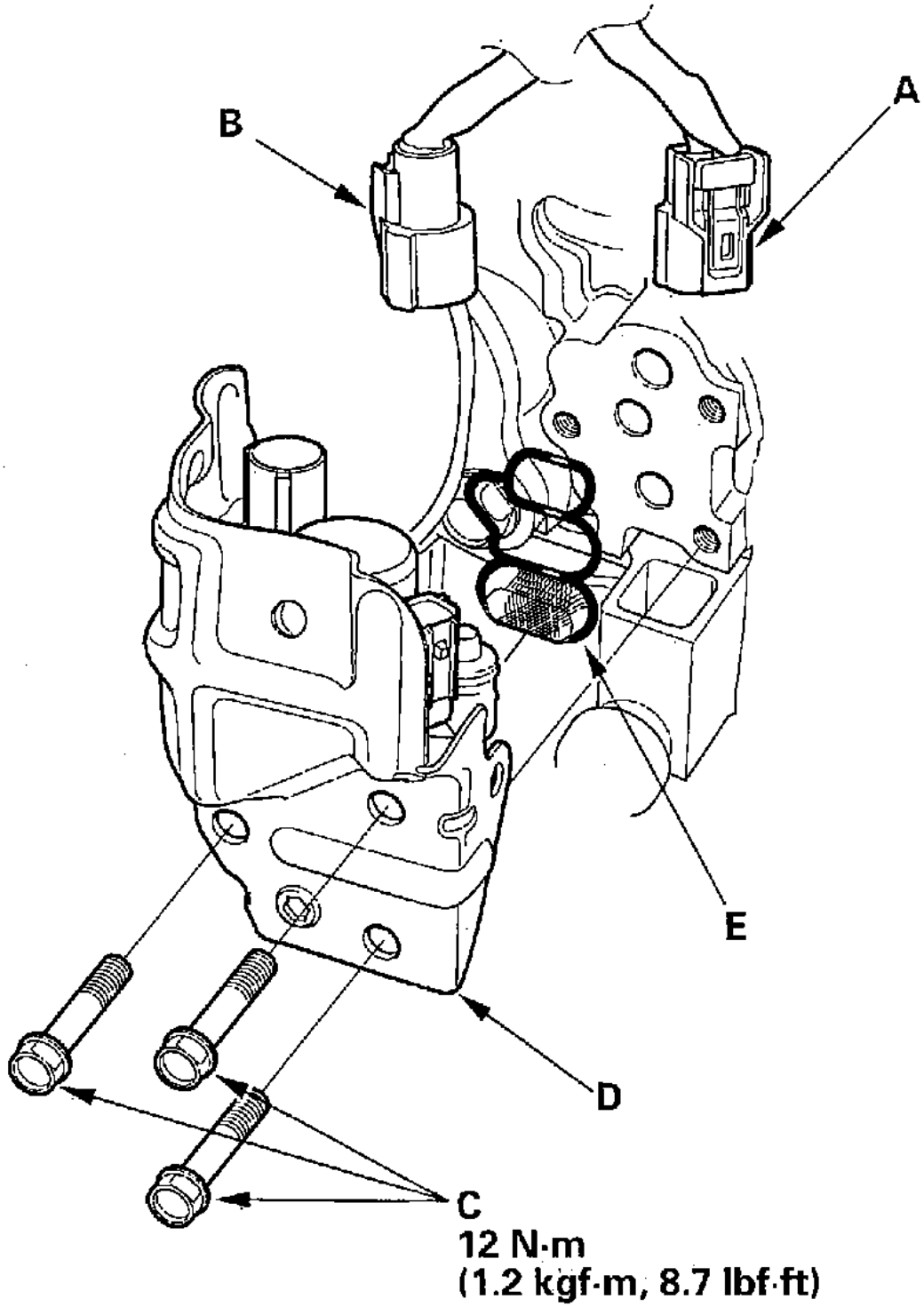
3. Remove the bolt (B).
4. Remove CMP sensor A (C).
5. Install the sensor in the reverse order of removal with a new O-ring (D).

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VTEC SOLENOID VALVE REMOVAL/INSTALLATION

1. Disconnect the VTEC solenoid valve connector (A) and the VTEC oil pressure switch connector (B).

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Fig. 32: Removing VTEC Solenoid Valve

2. Remove the bolts (C).
3. Remove the VTEC solenoid valve (D).
4. Install the valve in the reverse order of removal with a new solenoid valve filter (E).

VTEC OIL PRESSURE SWITCH REPLACEMENT

1. Remove the VTEC solenoid valve assembly (see **VTEC SOLENOID VALVE REMOVAL/INSTALLATION**).
2. Remove the cover (A).

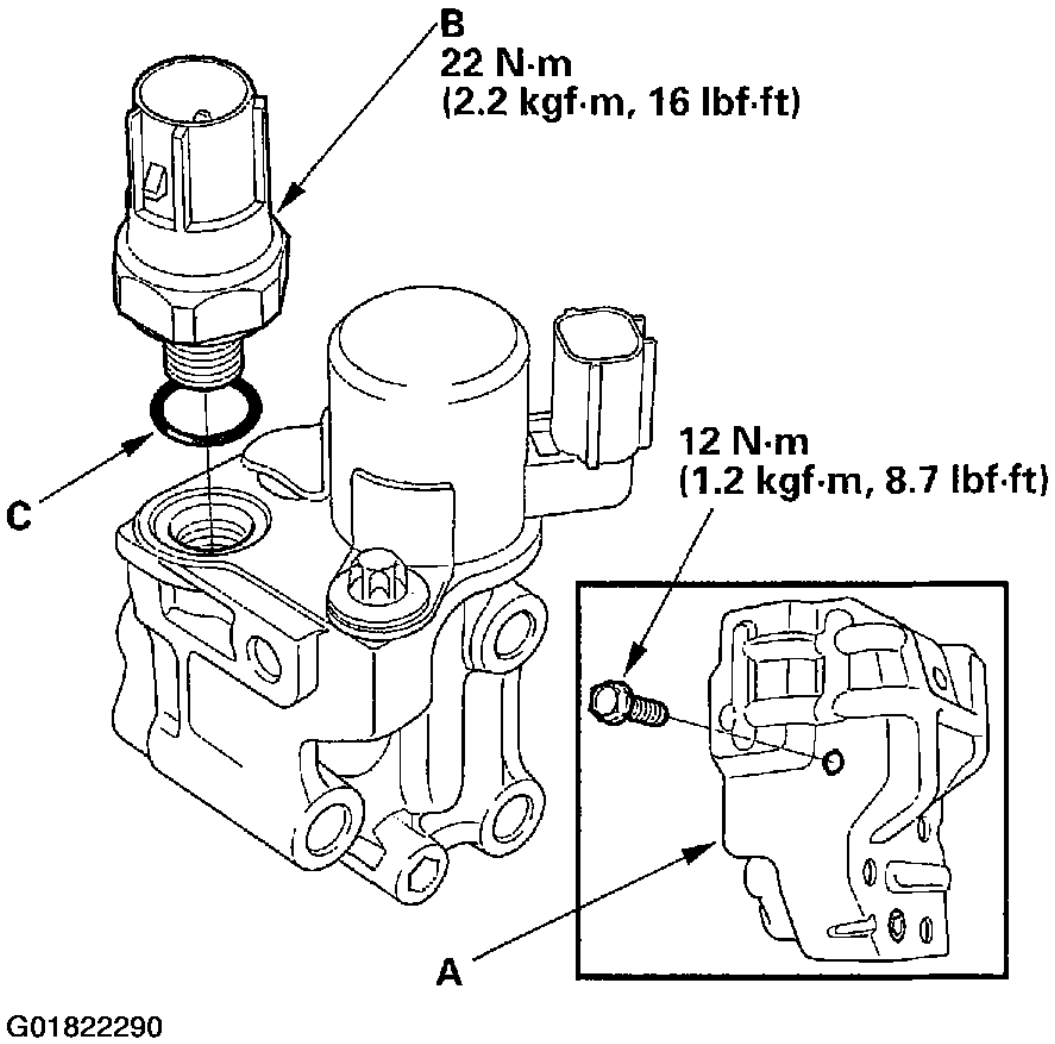


Fig. 33: Removing VTEC Oil Pressure Switch

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3. Remove the VTEC oil pressure switch (B).
4. Install the switch in the reverse order of removal with a new O-ring (C).

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2004 BRAKES

Vehicle Stability Assist System - TSX

COMPONENT LOCATION INDEX

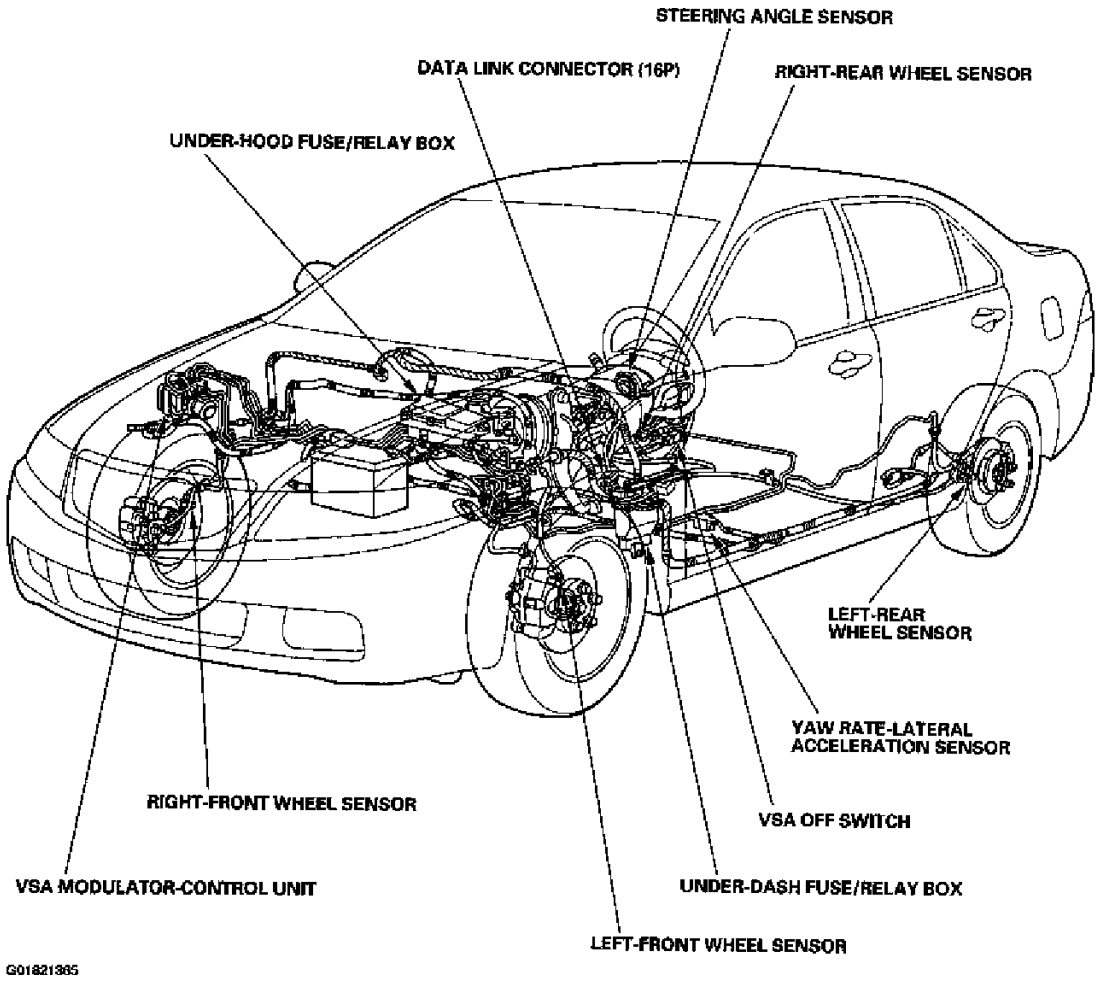


Fig. 1: Locating Vehicle Stability Assist System Components

GENERAL TROUBLESHOOTING INFORMATION

SYSTEM INDICATOR

This system has four indicators: ABS indicator (A), VSA indicator (B), VSA activation indicator (C) and brake system indicator (D). When the system detects a problem, it illuminates the appropriate indicators. Depending on the failure, the control unit determines which indicators are turned on.

When ABS Function Is Lost:

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- ABS indicator, VSA indicator and VSA activation indicator turn on.

When VSA Function Is Lost:

- VSA indicator and VSA activation indicator turn on.

When All Functions Are Lost:

- All four indicators turn on.

When The Gauge Assembly Detects F-CAN Circuit Problem:

- ABS indicator, VSA indicator and brake system indicator turn on.

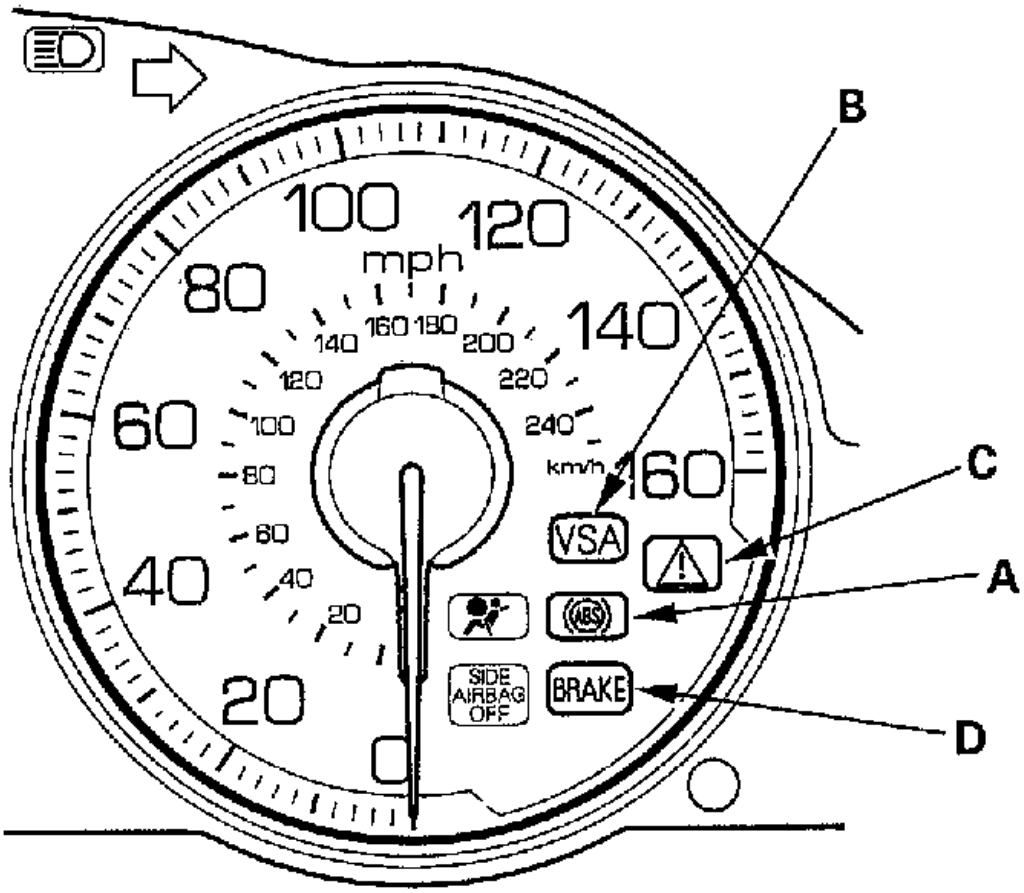


Fig. 2: Identifying Vehicle Stability Assist System Indicators

ABS/VSA INDICATOR

If the system is OK, the ABS and VSA indicators go off 2 seconds after turning the ignition switch ON (II).

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The ABS and VSA indicators come on when the control unit detects a problem in the system. However, even though the system is operating properly, the indicator may come on under these conditions:

- Only the drive wheel rotates
- One drive wheel is stuck
- The vehicle goes into a spin
- The ABS or VSA continues to operate for a long time
- The vehicle is subjected to an electrical signal disturbance

To determine the actual cause of the problem, question the customer about the problem, taking the above conditions into consideration.

When a problem is detected and the ABS indicator comes on, but not the VSA indicator, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system returns to normal:

DTC 61 Or 62:

- The ABS and VSA indicators go off automatically when the system returns to normal.

DTC 11, 13, 15, 17, 31, 32, 33, 34, 35, 36, 37, 38, 53, 54, 71, 81, 112, 121, 122, 123 Or 124:

- The ABS and VSA indicators stay on until the ignition switch is turned OFF whether or not the system returns to normal.

DTC 12, 14, 16, 18, 21, 22, 23, 24, 41, 42, 43, 44, 51 Or 52:

- The ABS and VSA indicators stay on until the system returns to normal after the vehicle is driven.

DTC 64, 65, 66, 68, 83, 84 Or 86:

- The VSA indicator stays on until the ignition switch is turned OFF whether or not the system returns to normal.

DIAGNOSTIC TROUBLE CODE (DTC)

The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.

The DTCs are indicated in ascending number order, not in the order they occur.

The DTCs are memorized in the EEPROM (non-volatile memory). Therefore, the memorized DTCs cannot be canceled by disconnecting the battery. Do the specified procedures to clear the DTCs (see **HOW TO CLEAR DTCS**).

SELF-DIAGNOSIS

Self-diagnosis can be classified into two categories:

- **Initial Diagnosis:** Done right after the ignition switch turned ON (II) and until the ABS or VSA

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indicators go off.

- **Regular Diagnosis:** Done right after the initial diagnosis until the ignition switch is turned OFF.

When the system detects a problem, the VSA control unit shifts to fail-safe mode.

KICKBACK

The pump motor operates when the ABS or VSA is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

PUMP MOTOR

The pump motor operates when the ABS or VSA is functioning.

The VSA control unit checks the pump motor operating during initial diagnosis when the vehicle is driven over 10 mph (15 km/h) the first time after the ignition switch is turned ON (II). You may hear the motor operate at this time, but it is normal.

BRAKE FLUID REPLACEMENT/AIR BLEEDING

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles not equipped with VSA. To ease bleeding, start with the front wheels.

HOW TO TROUBLESHOOT DTCS

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the ABS and/or VSA indicator is still on. Following the flowchart when the ABS and/or VSA indicator does not come on can result in incorrect diagnosis.

The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or VSA indicator came on, such as during ABS control, after ABS control, when the vehicle was travelling at a certain speed, etc.
2. When the ABS or VSA indicator does not come on during the test drive, but troubleshooting is done based on the DTC, check for loose connectors, poor contact of the terminals, etc. before you start troubleshooting.
3. After troubleshooting, or repairs are done, clear the DTCs, and test-drive the vehicle. Make sure the ABS and VSA indicators do not come on.

HOW TO RETRIEVE DTCS

1. With the ignition switch OFF, connect the HDS to the 16P Data Link Connector (DLC) (A) under the left side of the dashboard.

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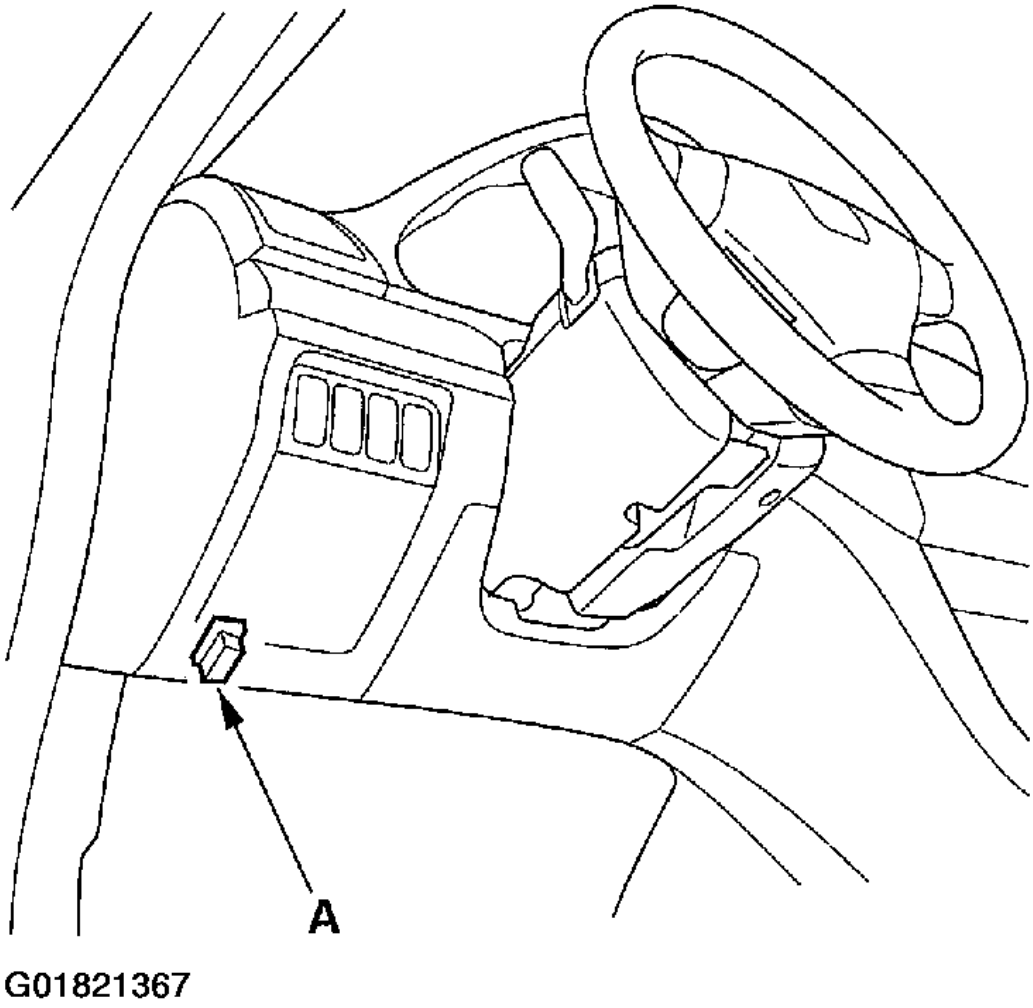


Fig. 3: Connecting The HDS To The 16P Data Link Connector (DLC) Under The Left Side Of The Dashboard

2. Turn the ignition switch ON (II), and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting Index.

NOTE: See the HDS help menu for specific instructions.

HOW TO CLEAR DTCS

NOTE: You cannot clear the DTCs manually.

1. With the ignition switch OFF, connect the HDS to the 16P Data Link Connector (DLC) (A) under the left

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side of the dashboard.

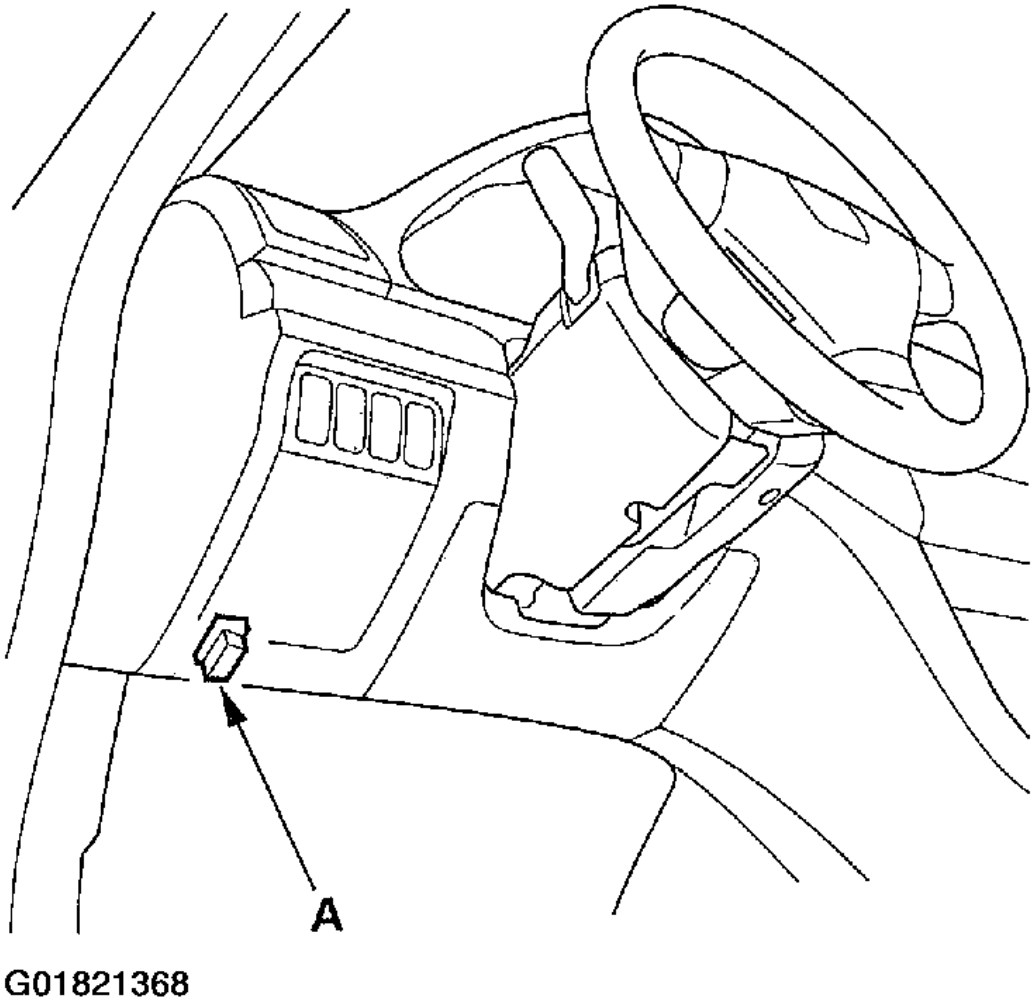


Fig. 4: Connecting The HDS To The 16P Data Link Connector (DLC) Under The Left Side Of The Dashboard

2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the HDS.

   NOTE: See the HDS help menu for specific instructions.

3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).

DTC TROUBLESHOOTING INDEX

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DTC TROUBLESHOOTING INDEX

DTC	Description
11, 13, 15, 17	Wheel Sensor (Open/Short To Body Ground/Short To Power)
12, 14, 16, 18	Wheel Sensor (Electrical Noise/Intermittent Interruption)
21, 22, 23, 24	Magnetic Encoder
25	Yaw Rate Sensor
26	Lateral Acceleration Sensor
27	Steering Angle Sensor
31, 32, 33, 34, 35, 36, 37, 38	ABS Solenoid
41, 42, 43, 44	Wheel Lock
51	Motor Lock
52	Motor Stuck OFF
53	Motor Stuck ON
54	Fail-Safe Relay
61, 62	High/Low Voltage
64	Sensor Power Voltage
65	Brake Fluid Level
66	VSA Pressure Sensor (Inside Of VSA Modulator-Control Unit)
68	Brake Pedal Position Switch
71	Different Diameter Tire
81	Central Processing Unit (CPU)
83	ECM/PCM
84	VSA Sensor Neutral Position
86	F-CAN Communication
107	TCS Operation
108	VSA Operation
112	Internal Power Source Stuck OFF
121, 122, 123, 124	VSA Solenoid

SYMPTOM TROUBLESHOOTING INDEX

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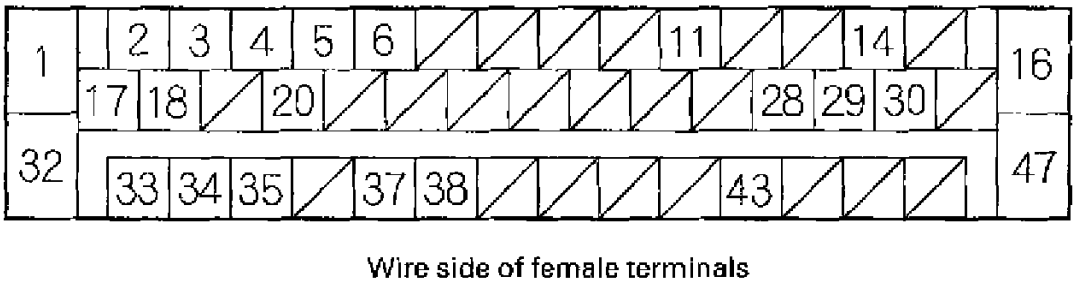
Symptom	Diagnostic procedure
ABS indicator does not come on	ABS Indicator Circuit Troubleshooting
ABS indicator does not go off, and no DTCs are stored	ABS Indicator Circuit Troubleshooting
Brake system indicator does not come on (check bulb operation with parking brake)	Brake System Indicator Circuit Troubleshooting
Brake system indicator does not go off	Brake System Indicator Circuit Troubleshooting
VSA indicator does not come on	VSA Indicator Circuit Troubleshooting
VSA indicator does not go off, and no DTCs are stored	VSA Indicator Circuit Troubleshooting
VSA activation indicator does not come on	VSA Activation Indicator Circuit Troubleshooting
VSA activation indicator does not go off, and no DTCs are stored	VSA Activation Indicator Circuit Troubleshooting

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Fig. 5: Symptom Troubleshooting Index

SYSTEM DESCRIPTION

VSA CONTROL UNIT INPUTS & OUTPUTS FOR 47P CONNECTOR



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Fig. 6: Identifying VSA Control Unit 47P Connector Terminals

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Terminal number	Wire color	Terminal sign	Description	Measurement (VSA control unit 47P connector connected)		
				Terminal	Conditions	Voltage
1	WHT	+B-FSR	Power source for the fail-safe relay	1—GND	At all times	Battery voltage
2	YEL/ RED	RL+B	Detects left-rear wheel sensor signal	2—3	Ignition switch ON (II)	About 12 V
3	RED	RL—GND				
4	BLU/ WHT	FL+B	Detects left-front wheel sensor signal	4—20		
5	GRN/ YEL	RR+B	Detects right-rear wheel sensor signal	5—6		
6	BLU/ YEL	RR—GND				
11	BLU	DIAG-K	Communications with HDS	11—GND	Ignition switch ON (II)	Battery voltage
14	WHT	CAN-H	F-CAN communication circuit	14—GND	Ignition switch ON (II)	About 2.5 V
16	WHT/ RED	+B-MR	Power souce for the motor relay	16—GND	At all times	Battery votage

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Fig. 7: VSA Control Unit Pin Voltage Chart (1 Of 3)

Terminal number	Wire color	Terminal sign	Description	Measurement (VSA control unit 47P connector connected)		
				Terminal	Conditions	Voltage
17	PNK	FR—GND	Detects right-front wheel sensor signal	17—18	Ignition switch ON (II)	About 12 V
18	GRN/ BLK	FR+B				
20	BRN/ WHT	FL—GND	Detects left-front wheel sensor signal	4—20		
28	BLU	STR-A	Detects steering angle sensor signal	28—GND	Ignition switch ON (II)	1 V—5 V alternately
29	BLU/ GRN	STR-D	Detects steering angle sensor signal	29—GND	Ignition switch ON (II) Steering wheel in straight ahead position, then turned off of center	1 V on center 4 V off center
30	RED	CAN-L	F-CAN communication circuit	30—GND	Ignition switch ON (II)	2.3 V

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Fig. 8: VSA Control Unit Pin Voltage Chart (2 Of 3)

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Terminal number	Wire color	Terminal sign	Description	Measurement (VSA control unit 47P connector connected)		
				Terminal	Conditions	Voltage
32	BLK	GND	Ground for the VSA modulator-control unit	32 – GND	Under all conditions	0 V
33	BRN	SGND	Ground for the sensors	33 – GND	Ignition switch ON (II)	0 V
34	LT GRN	YAW	Detects YAW rate sensor signal	34 – GND	Ignition switch ON (II)	2.5 V
35	ORN	SVCC	Power source for the sensors	35 – GND	Ignition switch ON (II)	5 V
37	GRN	GLAT	Detects lateral acceleration sensor signal	37 – GND	Ignition switch ON (II)	2.5 V
38	BLK/ RED	IG1	Power source for activating the system	38 – GND	Ignition switch ON (II)	Battery voltage
43	BUL/ YEL	STR-B	Detects steering angle sensor signal	43 – GND	Ignition switch ON (II) Turn steering wheel very slowly	1 – 4 V
47	BLK	MR-GND	Ground for the pump motor	47 – GND	Under all conditions	0 V

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Fig. 9: VSA Control Unit Pin Voltage Chart (3 Of 3)

ABS FEATURES

When the brake pedal is pressed while driving, the wheels can lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. The ABS precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle.

The ABS calculates the slip rate of the wheels based on the vehicle speed and the wheel speed, then it controls the brake fluid pressure to reach the target slip rate.

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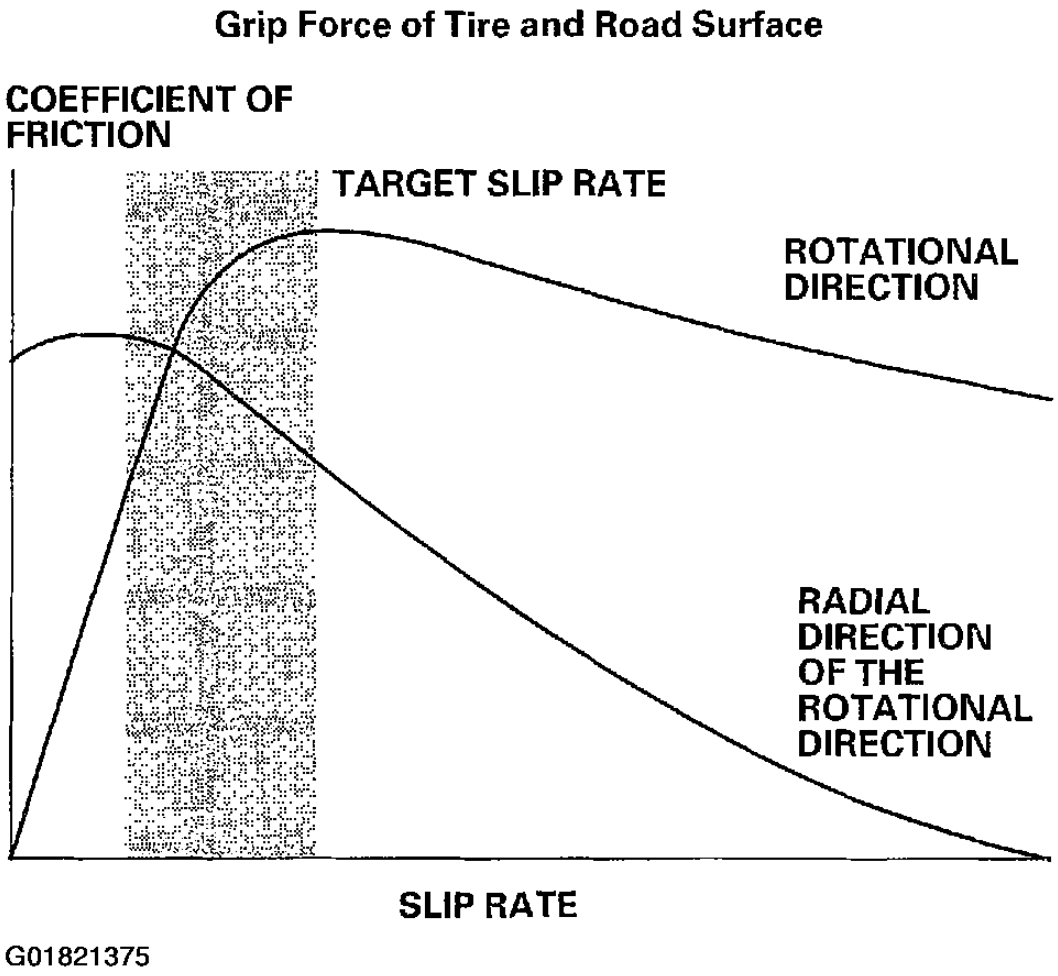


Fig. 10: Grip Force Of Tire & Road Surface

TCS FEATURES

The TCS provides low-speed traction. When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to slow the spinning wheel. At that time, the VSA control unit sends a traction control signal to the ECM/PCM to reduce engine power.

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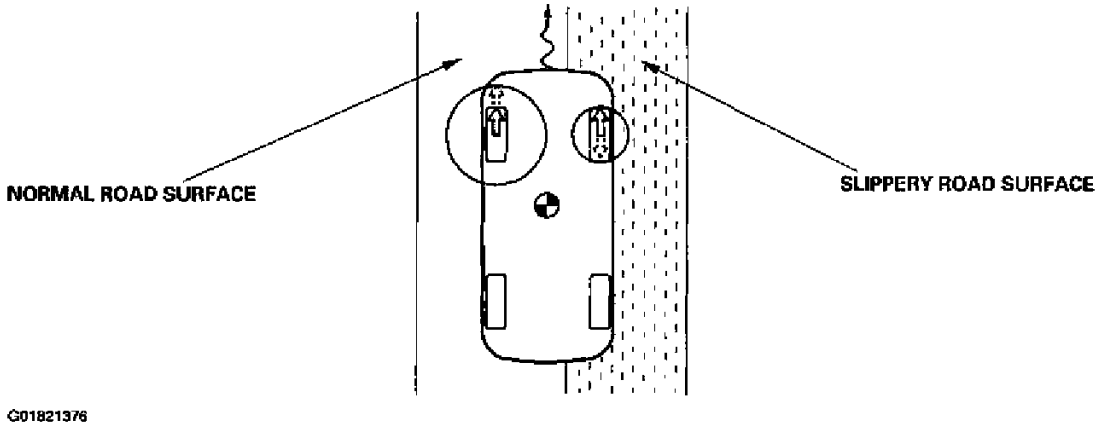


Fig. 11: TCS Operation

VSA SYSTEM FEATURES

Oversteer Control

- Applies the brake to the front and rear outside wheels

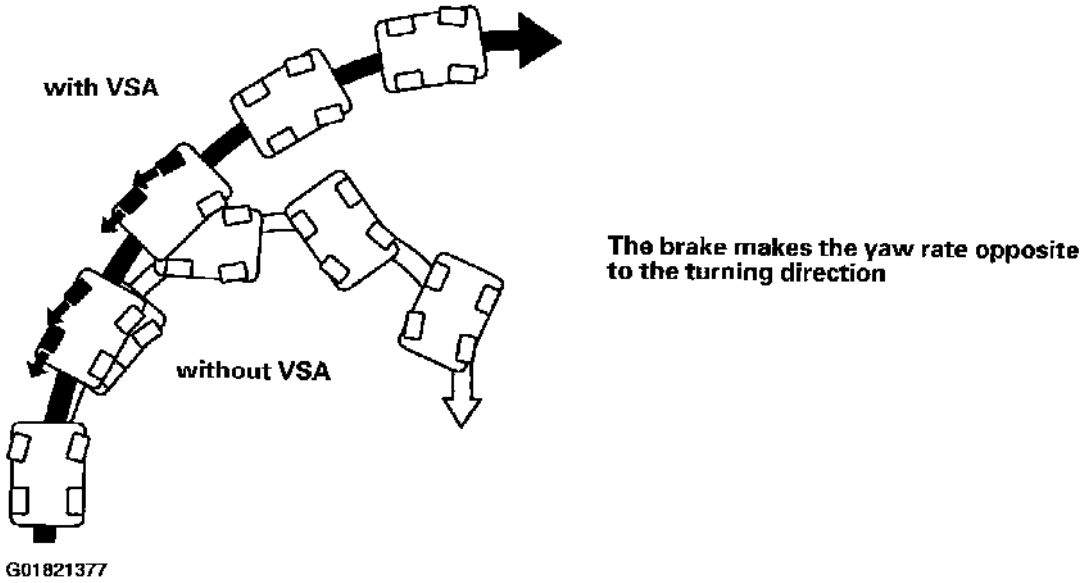


Fig. 12: VSA Oversteer Control

Understeer Control (In Acceleration)

- Applies the brake to the front and rear inside wheels
- Cuts the engine torque by controlling the sub throttle

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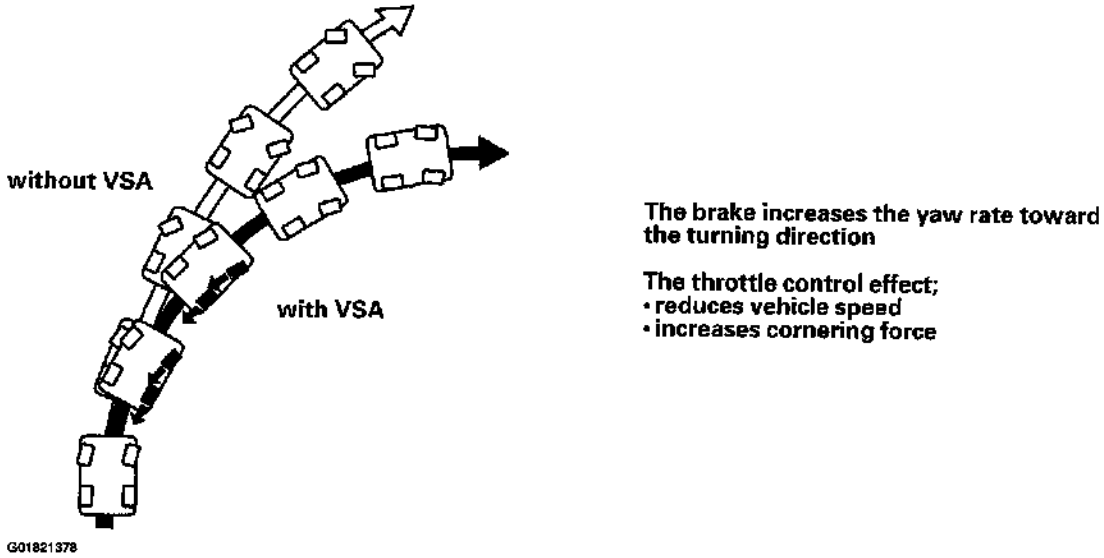


Fig. 13: VSA Understeer Control (In Acceleration)

MODULATOR UNIT

The modulator unit consists of the inlet solenoid valve, outlet solenoid valve, VSA normally open (NO) solenoid valve, VSA normally closed (NC) solenoid valve, reservoir, pump, pump motor, and the damping chamber.

The modulator controls the caliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the caliper, the reservoir, and the master cylinder.

The hydraulic control has three modes: pressure intensifying, pressure retaining, and pressure reducing.

The hydraulic circuit is an independent four channel type, one channel for each wheel.

ABS Control

Pressure Intensifying Mode

VSA NO valve open, VSA NC valve closed, inlet valve open, outlet valve closed. Master cylinder fluid is pumped out to the caliper.

Pump Motor

When starting the pressure reducing mode, the pump motor is ON. When stopping ABS operation, the pump motor is OFF. The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.

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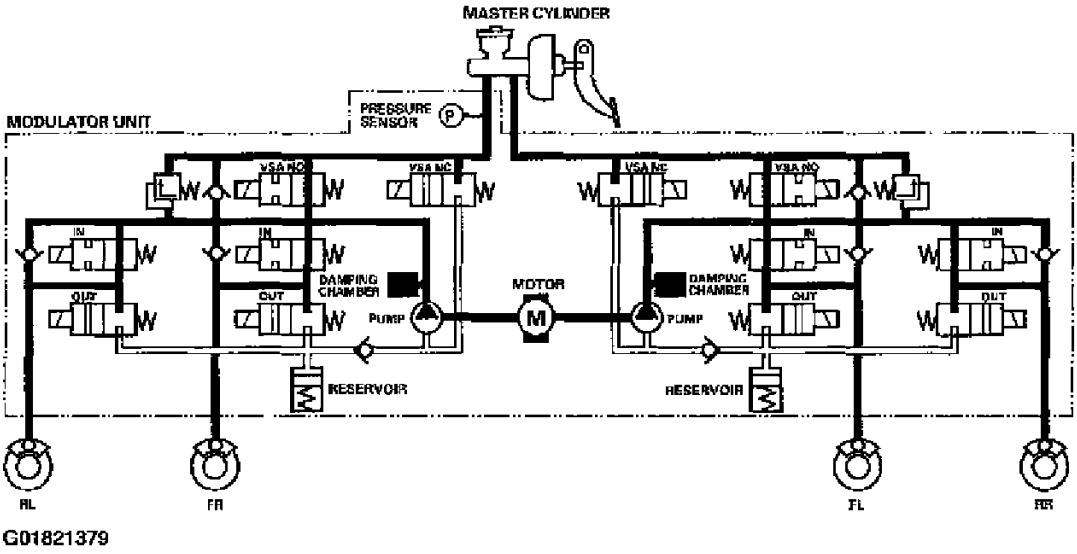


Fig. 14: ABS Control Pump Motor Schematic

Pressure Retaining Mode

VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve closed. Caliper fluid is retained by the inlet valve and outlet valve.

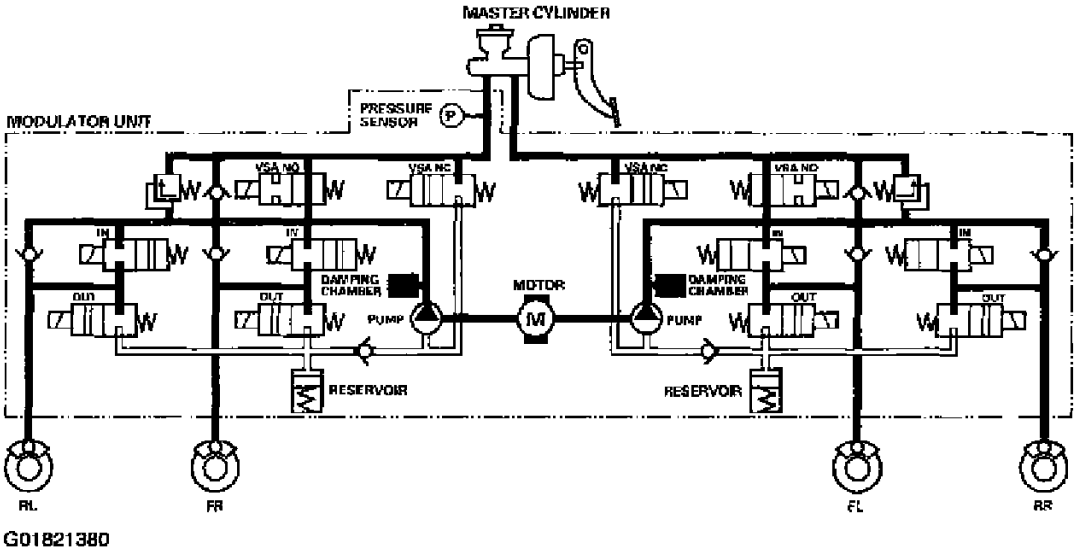


Fig. 15: ABS Control Pressure Retaining Mode Schematic

Pressure Reducing Mode

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VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve open. Caliper fluid flows through the outlet valve to the reservoir.

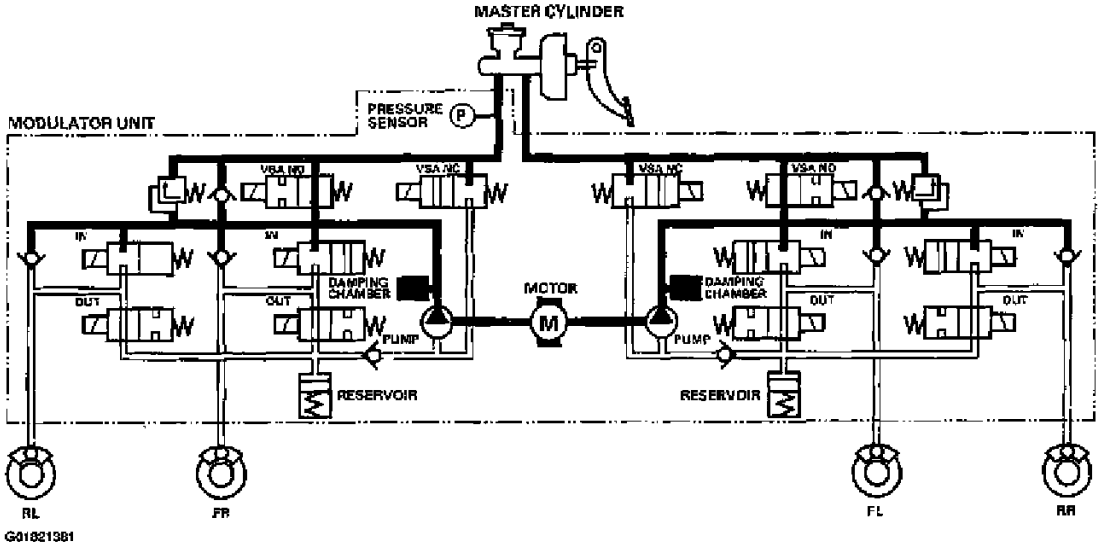
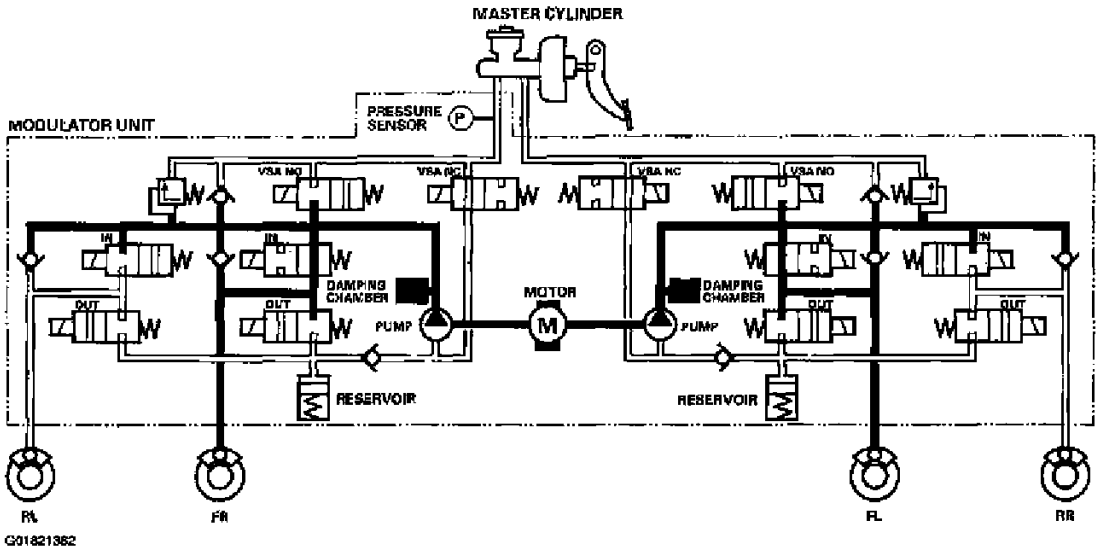


Fig. 16: ABS Control Pressure Reducing Mode Schematic

TCS Control

Pressure Intensifying Mode

VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON. The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front caliper.



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Fig. 17: TCS Control Pressure Intensifying Mode Schematic

Pressure Retaining Mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve closed, pump motor ON. Front caliper fluid is retained by the inlet valve and outlet valve.

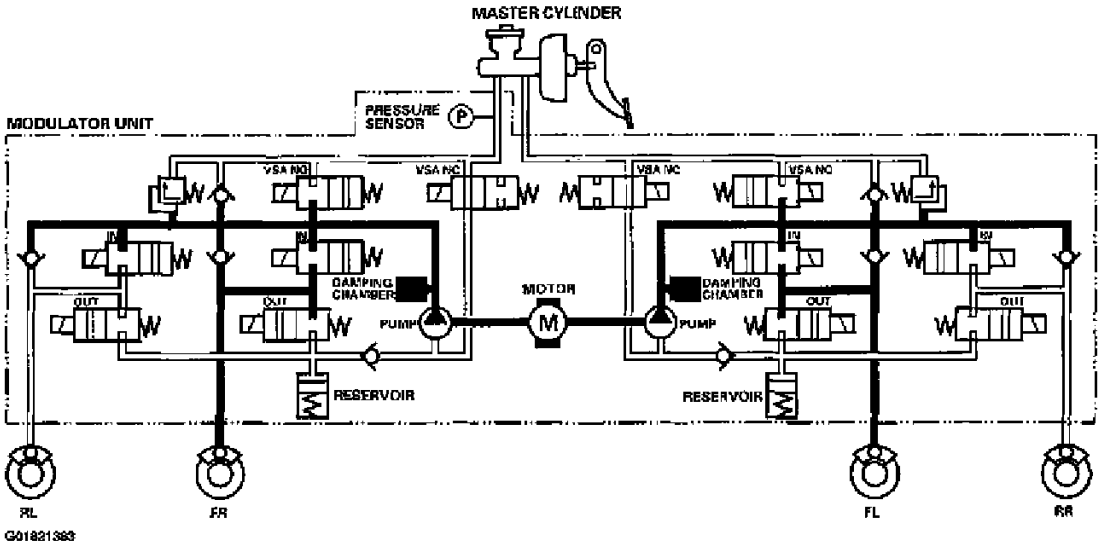


Fig. 18: TCS Control Pressure Retaining Mode Schematic

Pressure Reducing Mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, front outlet valve open, pump motor ON. Caliper fluid flows through the outlet valve to the reservoir.

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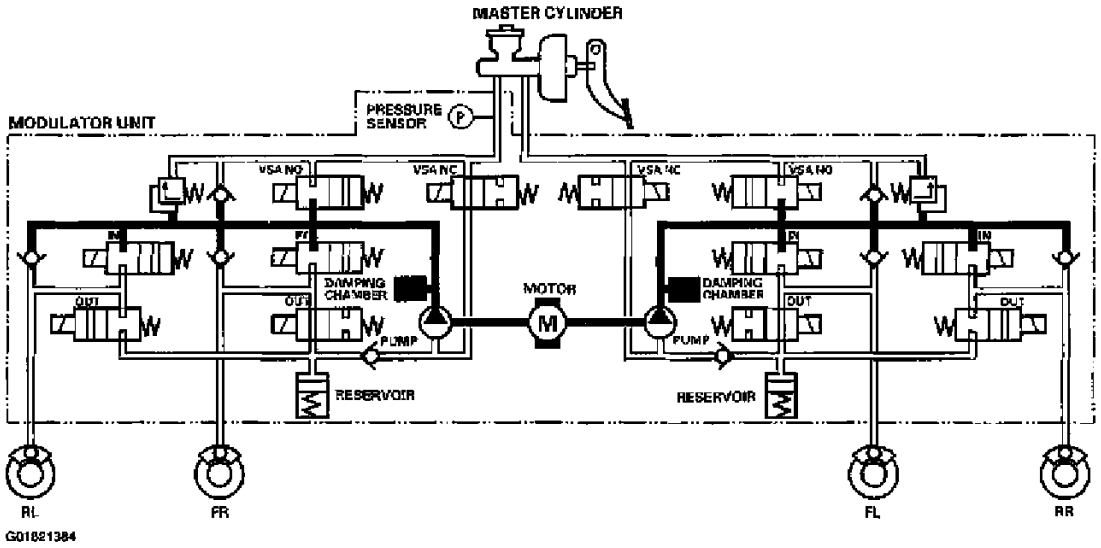


Fig. 19: TCS Control Pressure Reducing Mode Schematic

VSA Control

Pressure Intensifying Mode

VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON. The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front and rear calipers.

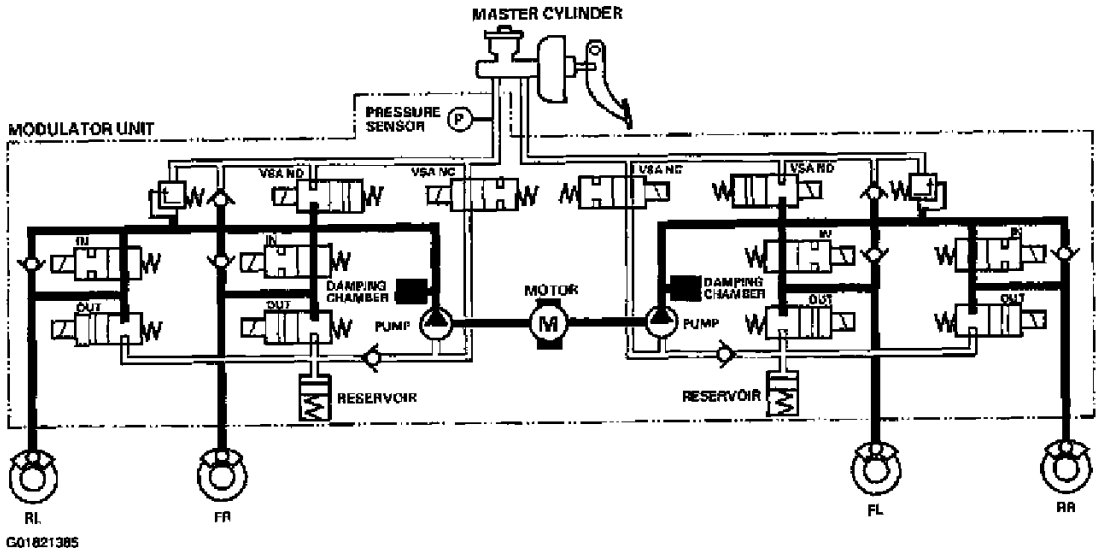


Fig. 20: VSA Control Pressure Intensifying Mode Schematic

Pressure Retaining Mode

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VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve closed, pump motor ON. Front and rear caliper fluid is retained by the inlet valve and outlet valve.

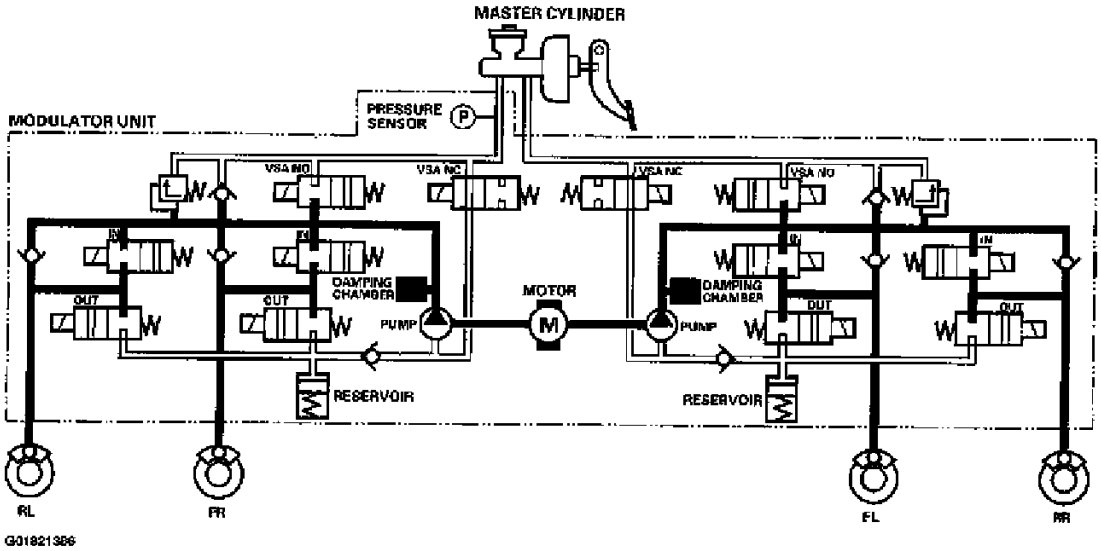


Fig. 21: VSA Control Pressure Retaining Mode Schematic

Pressure Reducing Mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve open, pump motor ON. Caliper fluid flows through the outlet valve to the reservoir.

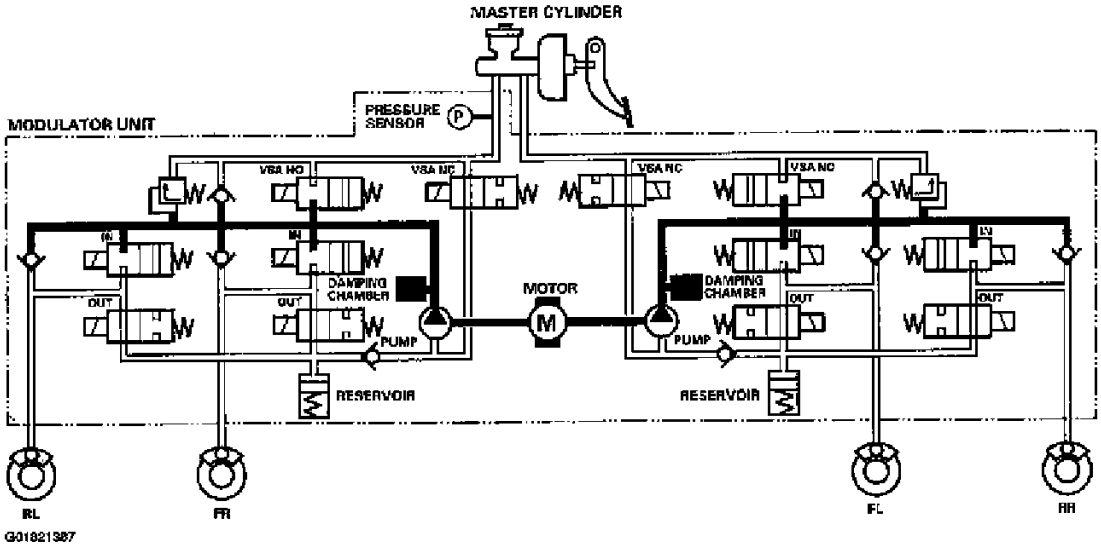


Fig. 22: VSA Control Pressure Reducing Mode Schematic

CIRCUIT DIAGRAM

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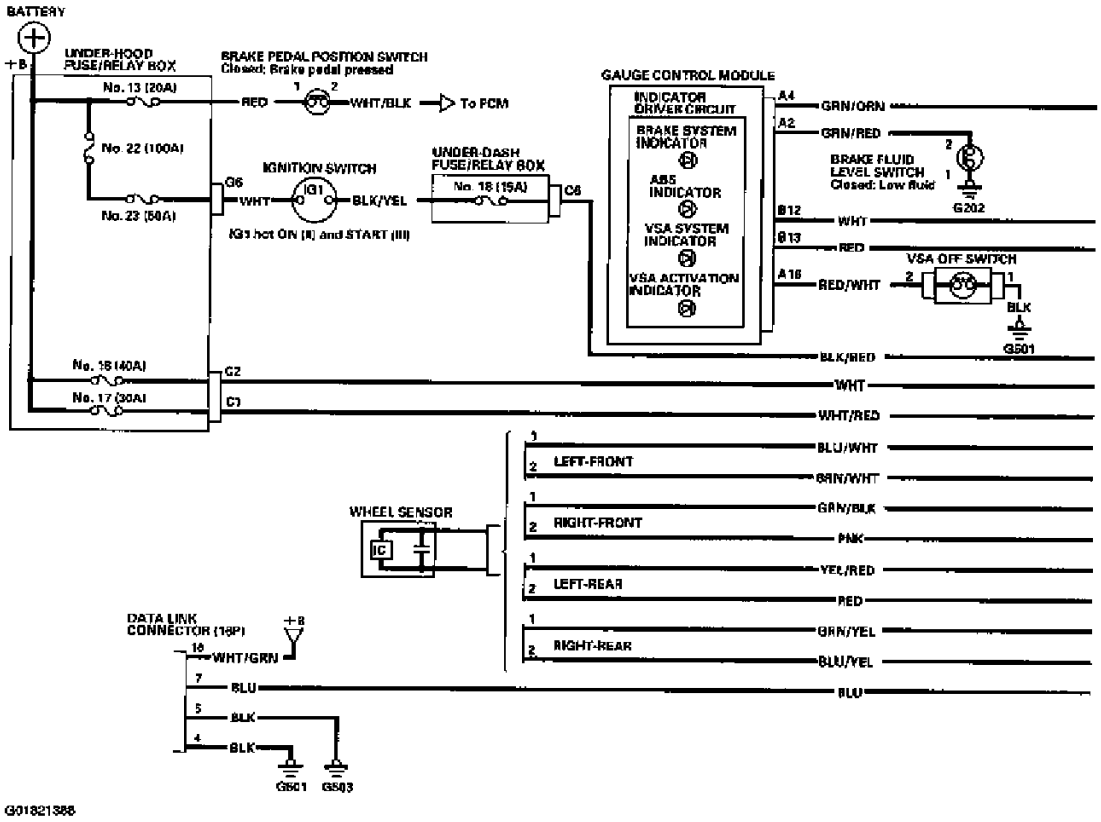


Fig. 23: Vehicle Stability Assist System Wiring Diagram (1 Of 2)

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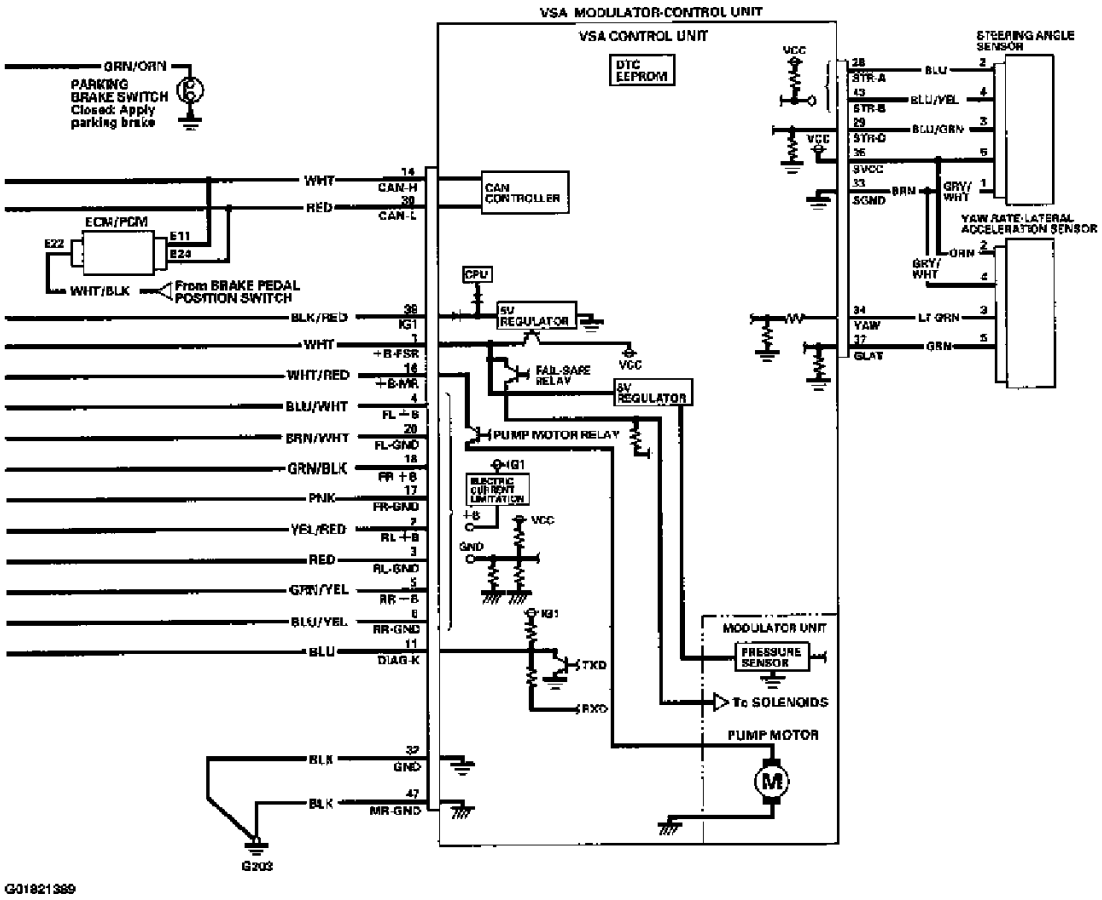


Fig. 24: Vehicle Stability Assist System Wiring Diagram (2 Of 2)

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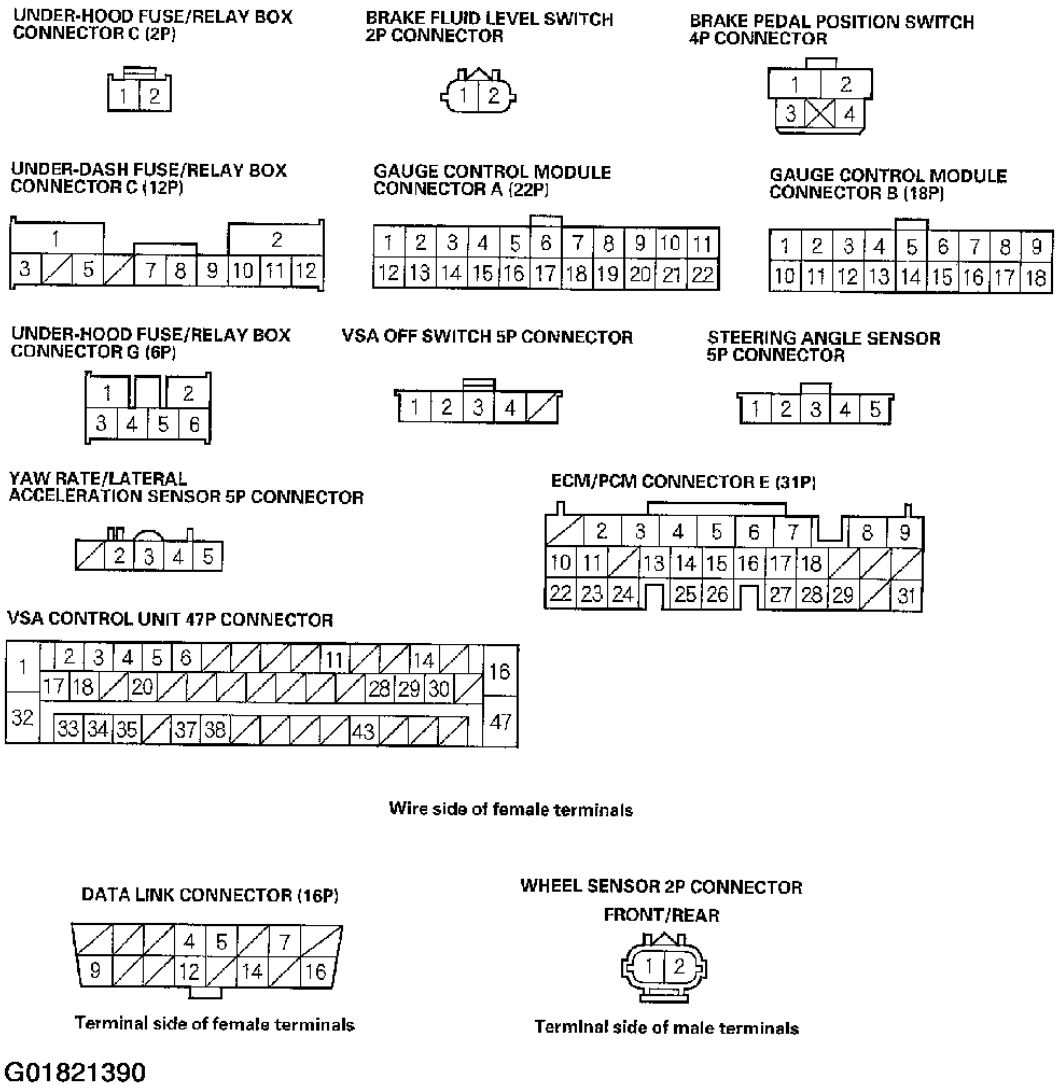


Fig. 25: Identifying Vehicle Stability Assist System Connector Terminals

DTC TROUBLESHOOTING

DTC 11, 13, 15, 17: WHEEL SENSOR (OPEN/SHORT TO BODY GROUND/SHORT TO POWER)

1. Disconnect the VSA control unit 47P connector.
2. Start the engine.
3. Measure the voltage between body ground and the appropriate wheel sensor + B and GND terminals of the VSA control unit 47P connector individually (see **Fig. 26** and **Fig. 27**).

   Is there 1 V or more?

   YES: Repair short to power in the wire between the VSA modulator-control unit and the

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appropriate wheel sensor.

NO: Go to step 4.

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR −GND: No. 17
13 (Left-front)	FL +B: No. 4	FL −GND No. 20
15 (Right-rear)	RR +B: No. 5	RR −GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL −GND: No. 3

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Fig. 26: Wheel Sensor DTC Table

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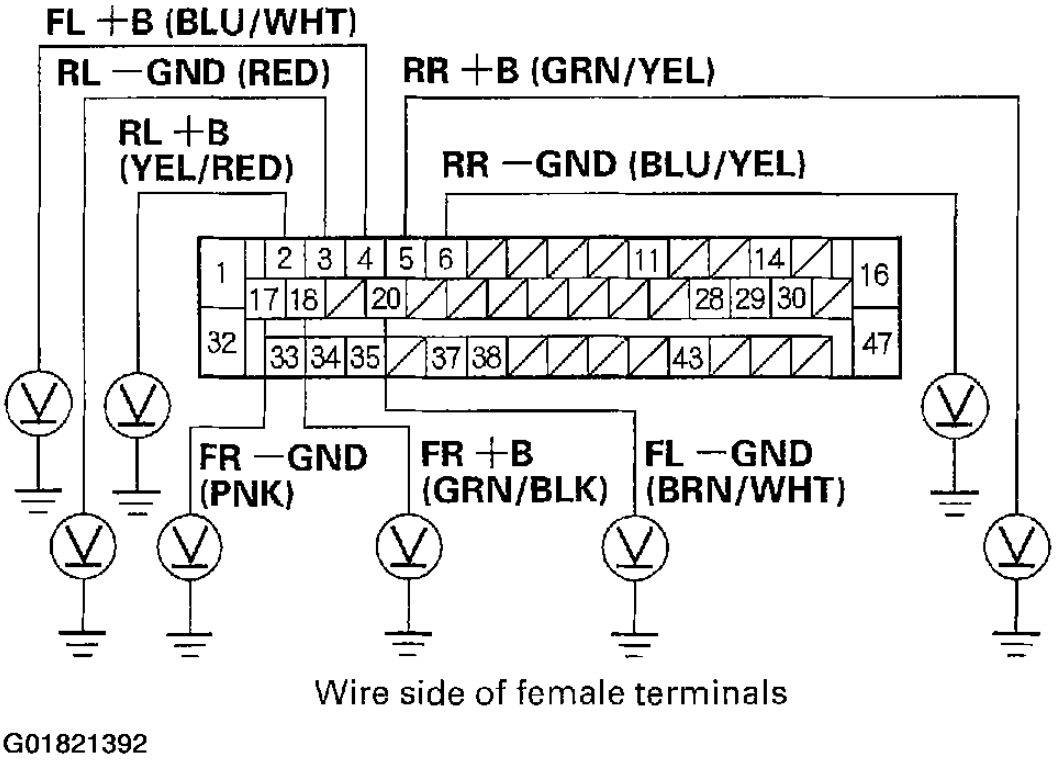


Fig. 27: Measuring The Voltage Between Body Ground & The Appropriate Wheel Sensor + B & Gnd Terminals Of The VSA Control Unit 47P Connector

4. Turn the ignition switch OFF.
5. Check for continuity between body ground and the appropriate wheel sensor + B and GND terminals of the VSA control unit 47P connector individually (see **Fig. 28** and **Fig. 29**).

Is there continuity?

YES: Go to step 6.

NO: Go to step 8 .

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DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR−GND: No. 17
13 (Left-front)	FL +B: No. 4	FL−GND: No. 20
15 (Right-rear)	RR +B: No. 5	RR−GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL−GND: No. 3

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Fig. 28: Wheel Sensor DTC Table

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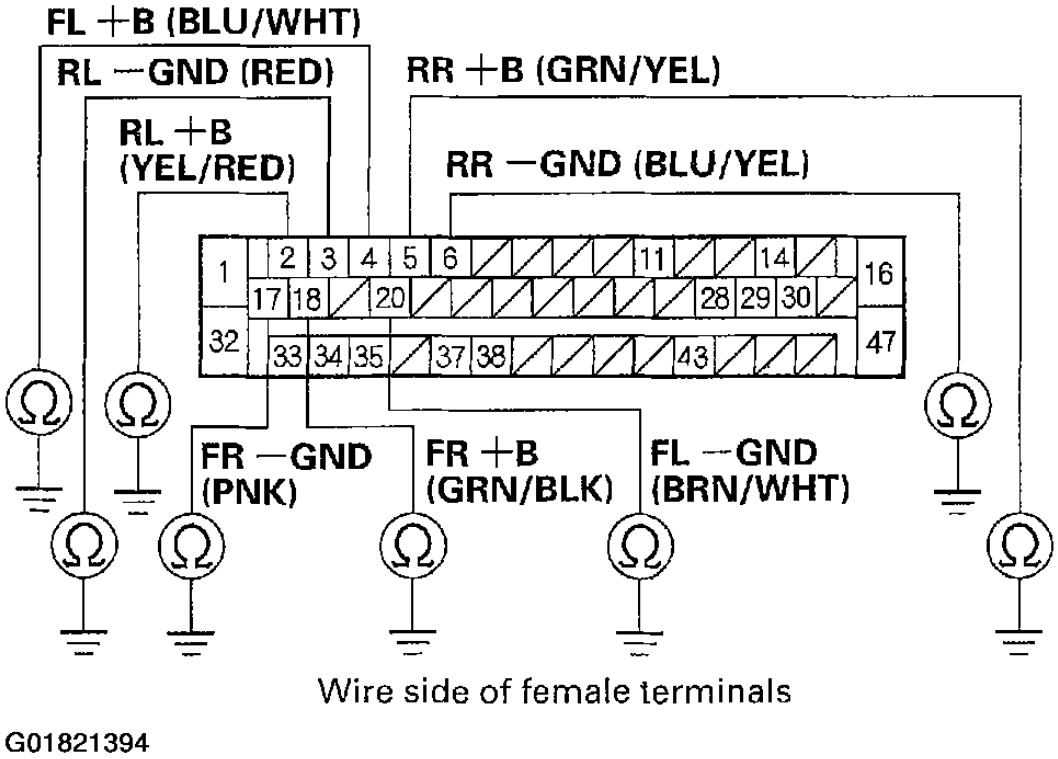


Fig. 29: Checking For Continuity Between Body Ground & The Appropriate Wheel Sensor + B & Gnd Terminals Of The VSA Control Unit 47P Connector

6. Disconnect the appropriate wheel sensor 2P connector.
7. Check for continuity between body ground and the appropriate wheel sensor + B and GND terminals of the VSA control unit 47P connector individually (see **Fig. 30** and **Fig. 31**).

Is there continuity?

YES: Repair short to body ground in the wire between the VSA modulator-control unit and the wheel sensor.

NO: Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

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DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR−GND: No. 17
13 (Left-front)	FL +B: No. 4	FL−GND: No. 20
15 (Right-rear)	RR +B: No. 5	RR−GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL−GND: No. 3

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Fig. 30: Wheel Sensor DTC Table

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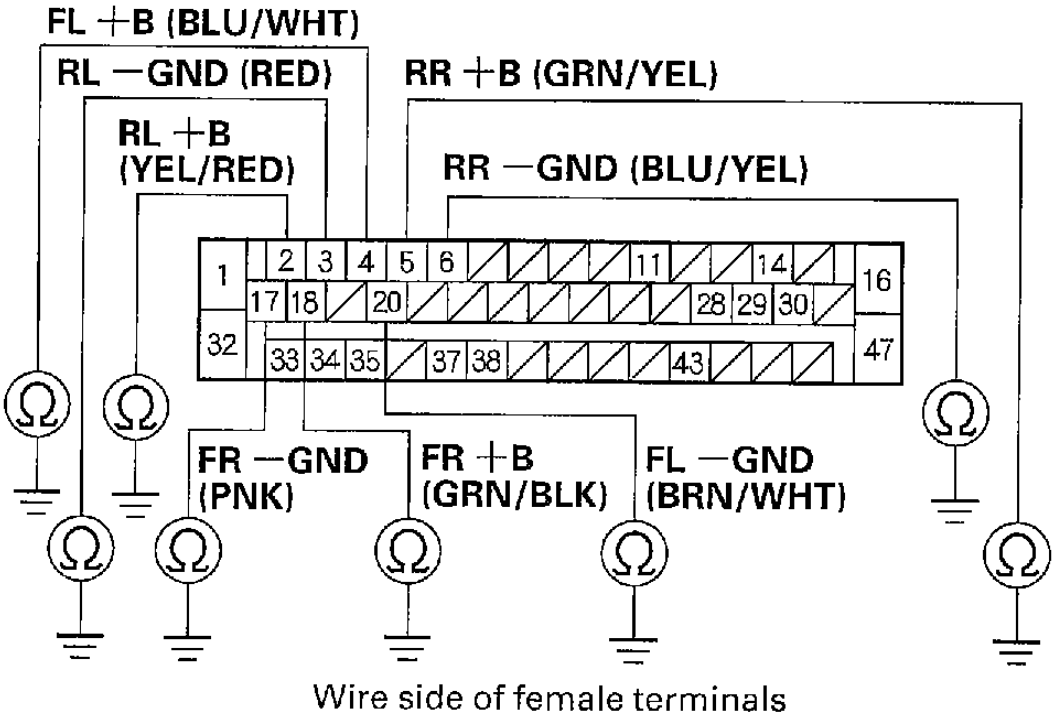


Fig. 31: Checking For Continuity Between Body Ground & The Appropriate Wheel Sensor + B & Gnd Terminals Of The VSA Control Unit 47P Connector

8. Disconnect the appropriate wheel sensor 2P connector.
9. Check for continuity between the appropriate wheel sensor + B and GND terminals of the VSA control unit 47P connector (see **Fig. 32** and **Fig. 33**).

   Is there continuity?

   YES: Repair short in the wires between the VSA control unit and the wheel sensor.

   NO: Go to step 10.

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DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR−GND: No. 17
13 (Left-front)	FL +B: No. 4	FL−GND: No. 20
15 (Right-rear)	RR +B: No. 5	RR−GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL−GND: No. 3

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Fig. 32: Wheel Sensor DTC Table

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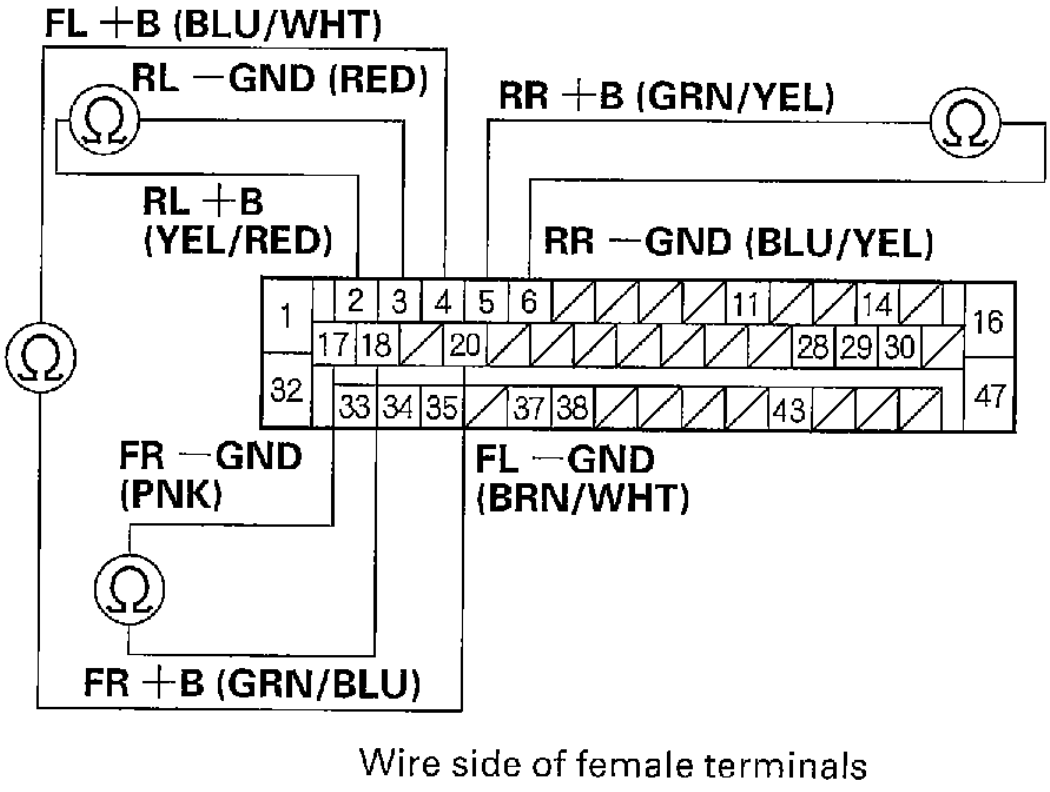


Fig. 33: Checking For Continuity Between The Appropriate Wheel Sensor + B & Gnd Terminals Of The VSA Control Unit 47P Connector

10. Substitute a known-good wheel sensor for the appropriate wheel sensor (see **Fig. 34**).

DTC	Appropriate Wheel Sensor
11	Right-front
13	Left-front
15	Right-rear
17	Left-rear

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Fig. 34: Wheel Sensor DTC Table

11. Clear the DTCs using the HDS (see **HOW TO CLEAR DTCS**).
12. Disconnect the HDS from the 16P DLC.
13. Turn the ignition switch OFF, then turn it ON (II) again. Test-drive the vehicle at speeds above 19 mph (30 km/h).

Does the ABS indicator come on?

YES: Check for a loose VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit, and recheck.

NO: Replace the original wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

DTC 12, 14, 16, 18: WHEEL SENSOR (ELECTRICAL NOISE/INTERMITTENT INTERRUPTION)

NOTE: If the ABS indicator comes on because of electrical noise, the indicator goes off when you test-drive the vehicle at 19 mph (30 km/h).

1. Check the appropriate wheel sensor and magnetic encoder (see **Fig. 35**) (see **WHEEL SENSOR INSPECTION**).

Are they OK?

YES: Go to step 2.

NO: Clean and reinstall or replace the appropriate wheel sensor or magnetic encoder.

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

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Fig. 35: Wheel Sensor DTC Table

2. Disconnect the VSA control unit 47P connector.
3. Check for continuity between the appropriate wheel sensor + B terminal and other wheel sensor + B terminals (see **Fig. 36** and **Fig. 37**).

Is there continuity?

YES: Repair short in the wire between the appropriate wheel sensor and the other wheel sensor.

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NO: Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**). Disconnect the HDS from the 16P DLC. Turn the ignition switch OFF, then turn it ON (II) again. Test-drive the vehicle. If the ABS indicator comes on and the same DTC is indicated, replace the appropriate wheel sensor. If after clearing the DTC and test driving the vehicle, the ABS indicator comes on and the same DTC is indicated, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NOTE: Disconnect the HDS from the 16P DLC while driving.

DTC	Appropriate Terminal	Other Terminals		
12	FR +B: No. 18	No. 4	No. 5	No. 2
14	FL +B: No. 4	No. 18	No. 5	No. 2
16	RR +B: No. 5	No. 18	No. 4	No. 2
18	RL +B: No. 2	No. 18	No. 4	No. 5

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Fig. 36: Wheel Sensor DTC Table

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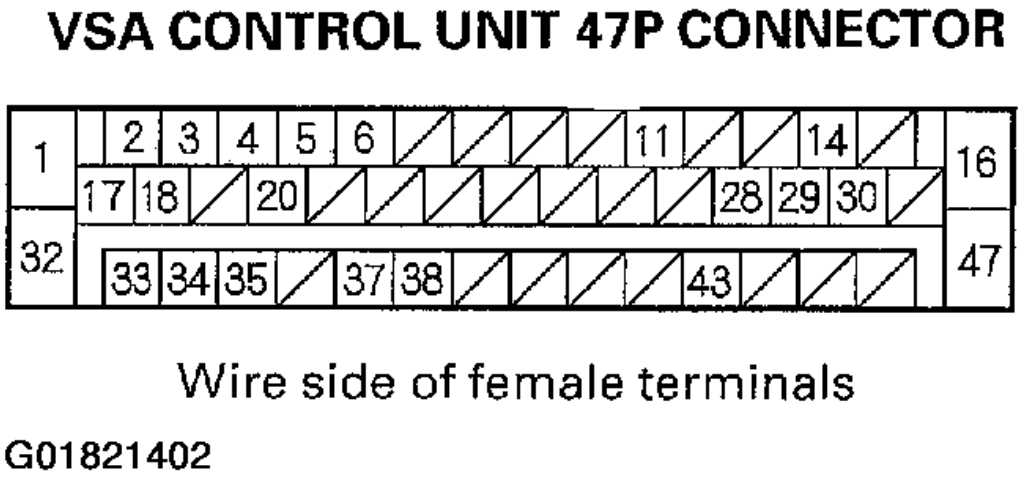


Fig. 37: Checking For Continuity Between The Appropriate Wheel Sensor + B Terminal & Other Wheel Sensor + B Terminals

DTC 21, 22, 23, 24: MAGNETIC ENCODER

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Test-drive the vehicle at 19 mph (30 km/h) or more.

   Does the ABS indicator come on, and are DTCs 21, 22, 23 and/or 24 indicated?

   YES: Go to step 3.

   NO: The system is OK at this time.
4. Check the appropriate wheel sensor/encoder (see **Fig. 38**) (see **WHEEL SENSOR INSPECTION**).

   Are the sensor and encoder OK?

   YES: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit, and recheck.

   NO: Clean and reinstall or replace the magnetic encoder.

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DTC	Appropriate Wheel Sensor
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

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Fig. 38: Wheel Sensor DTC Table

DTC 25: YAW RATE SENSOR

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle around a number of corners.
5. Verify the DTC.

   Is DTC 27 or 64 indicated?

   YES: Do the appropriate troubleshooting for the DTC.

   NO: Go to step 6.
6. Turn the ignition switch OFF.
7. Disconnect the VSA control unit 47P connector, steering angle sensor 5P connector and yaw rate-lateral acceleration sensor 5P connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between body ground and the VSA control unit 47P connector terminals No. 33, No. 34 and No. 35 individually.

   Is there 1 V or more?

   YES: Repair short to power in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

   NO: Go to step 10.

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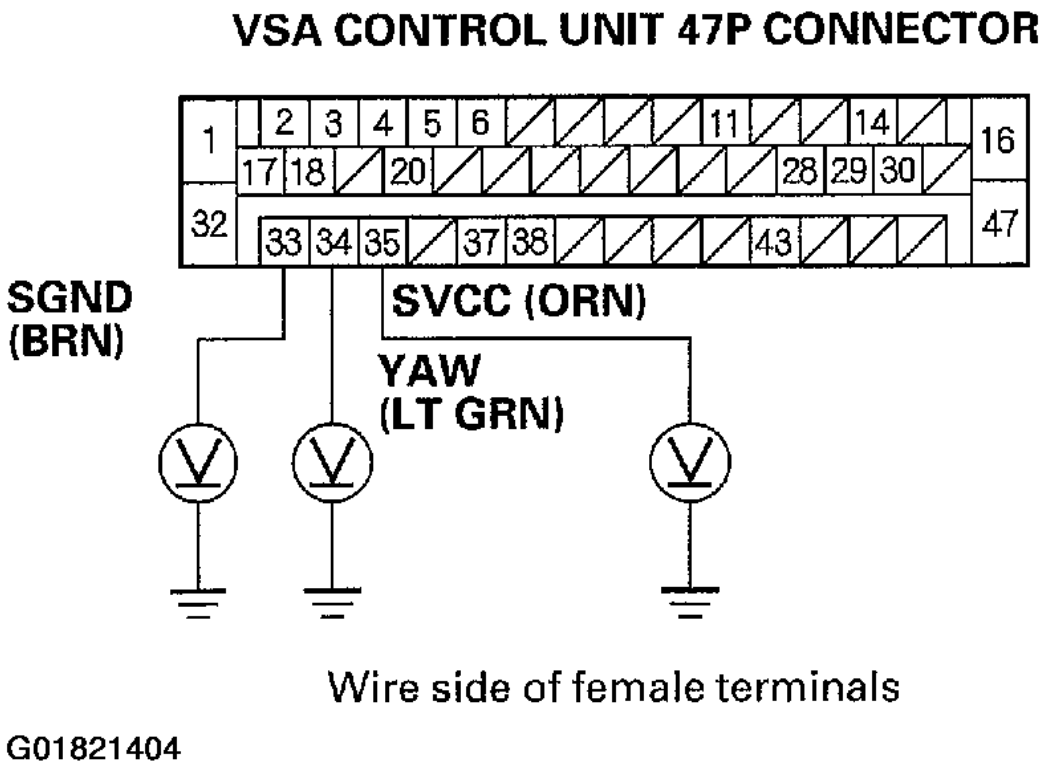


Fig. 39: Measuring The Voltage Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 33, No. 34 & No. 35

10. Turn the ignition switch OFF.
11. Check for continuity between body ground and the VSA control unit 47P connector terminals No. 33, No. 34 and No. 35 individually.

    Is there continuity?

    YES: Repair short to body ground in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

    NO: Go to step 12.

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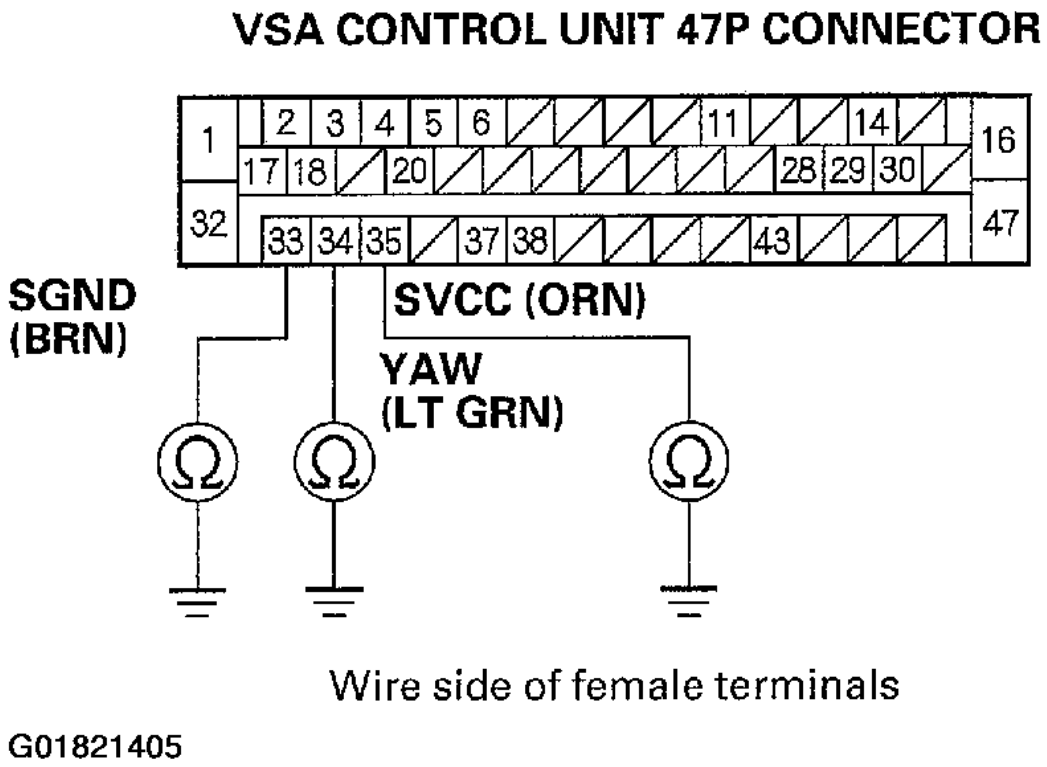


Fig. 40: Checking For Continuity Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 33, No. 34 & No. 35

12. Check for continuity between the VSA control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

    Is there continuity?

    YES: Go to step 13.

    NO: Repair open in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

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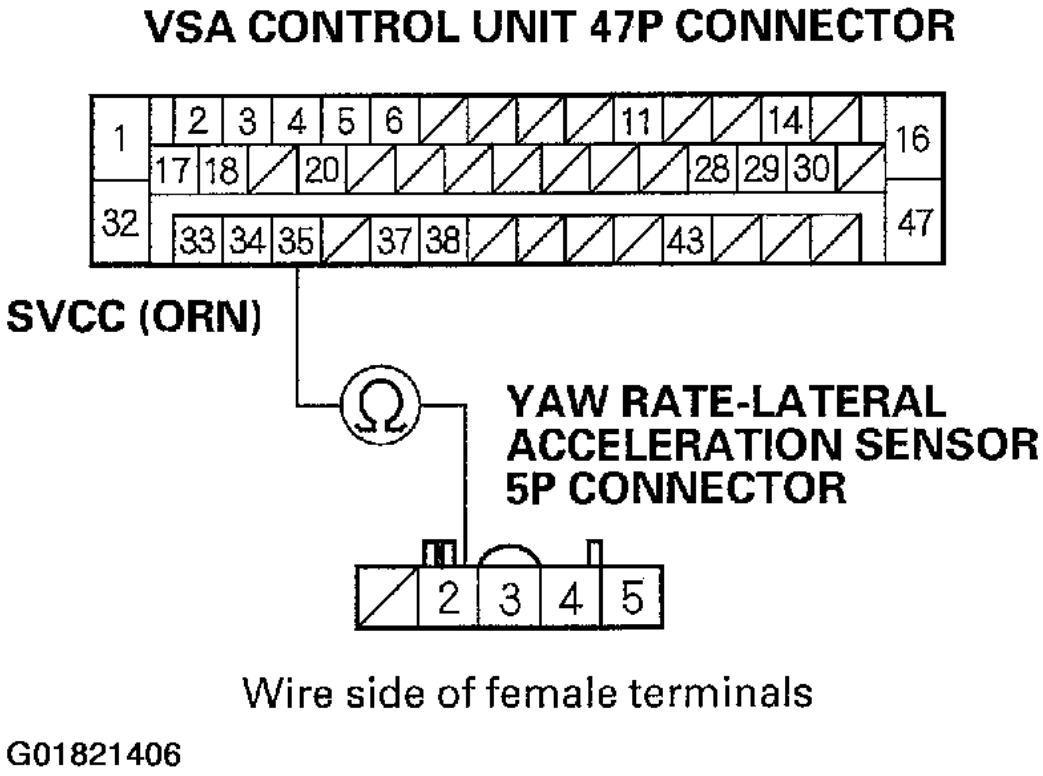


Fig. 41: Checking For Continuity Between The VSA Control Unit 47P Connector & Yaw Rate-Lateral Acceleration Sensor 5P Connector

13. Check for continuity between the VSA control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

    Is there continuity?

    YES: Go to step 14.

    NO: Repair open in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

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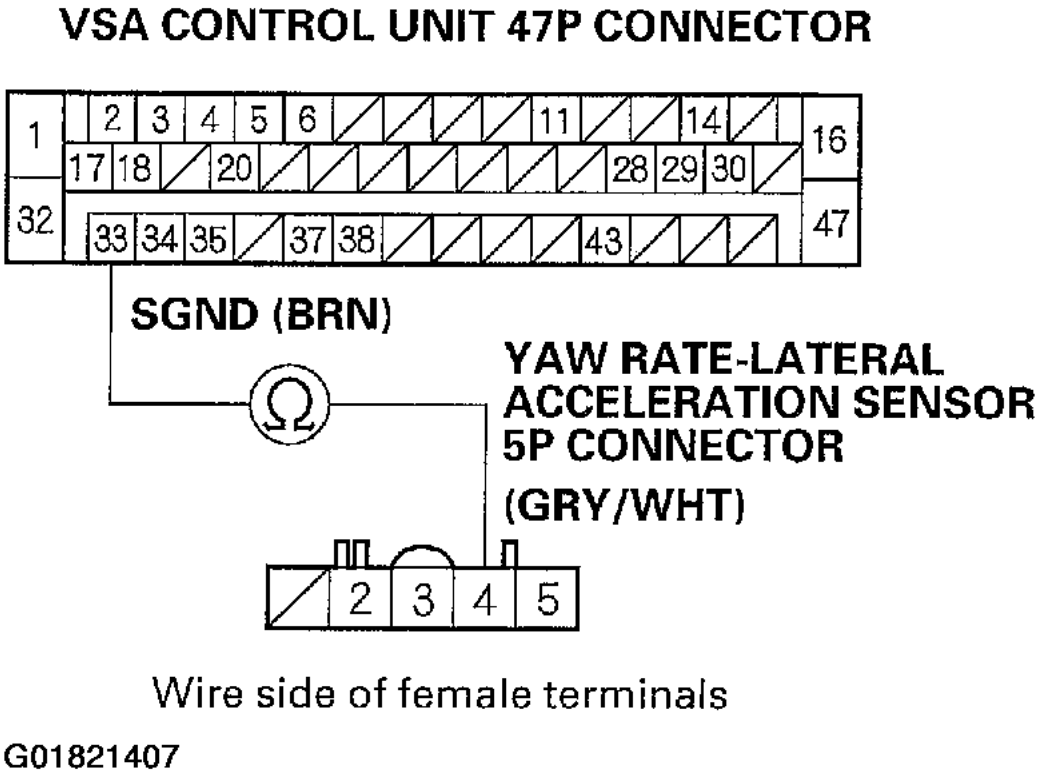


Fig. 42: Checking For Continuity Between The VSA Control Unit 47P Connector & Yaw Rate-Lateral Acceleration Sensor 5P Connector

14. Check for continuity between the VSA control unit 47P connector terminal No. 34 and yaw rate-lateral acceleration sensor 5P connector terminal No. 3.

    Is there continuity?

    YES: Go to step 15.

    NO: Repair open in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

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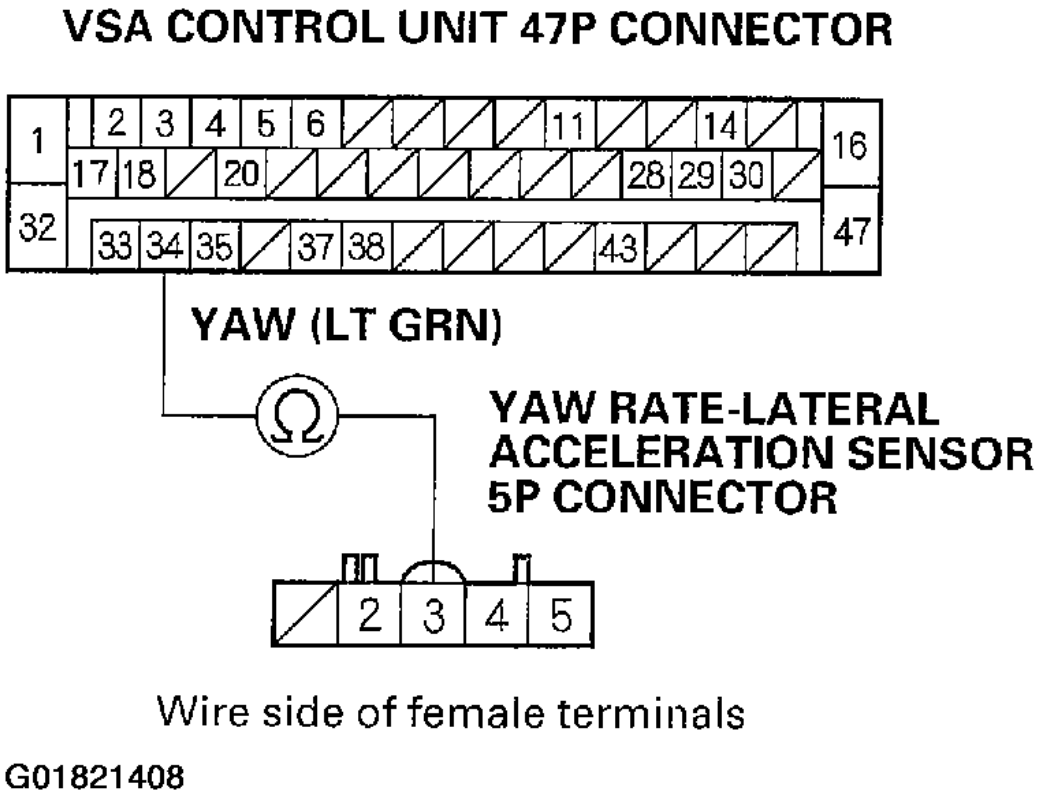


Fig. 43: Checking For Continuity Between The VSA Control Unit 47P Connector & Yaw Rate-Lateral Acceleration Sensor 5P Connector

15. Substitute a known-good yaw rate-lateral acceleration sensor.
16. Reconnect all of the disconnected connectors.
17. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
18. Disconnect the HDS from the 16P DLC.
19. Turn the ignition switch OFF, then turn it ON (II) again.
20. Test-drive the vehicle around a number of corners.
21. Verify the DTC.

Is DTC 25 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: Replace the original yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

DTC 26: LATERAL ACCELERATION SENSOR

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1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle around a number of corners.
5. Verify the DTC.

   Is DTC 64 indicated?

   YES: Do the appropriate troubleshooting for the DTC.

   NO: Go to step 6.
6. Turn the ignition switch OFF.
7. Disconnect the VSA control unit 47P connector, steering angle sensor 5P connector and yaw rate-lateral acceleration sensor 5P connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between body ground and the VSA control unit 47P connector terminals No. 33, No. 35 and No. 37 individually.

   Is there 1 V or more?

   YES: Repair short to power in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

   NO: Go to step 10.

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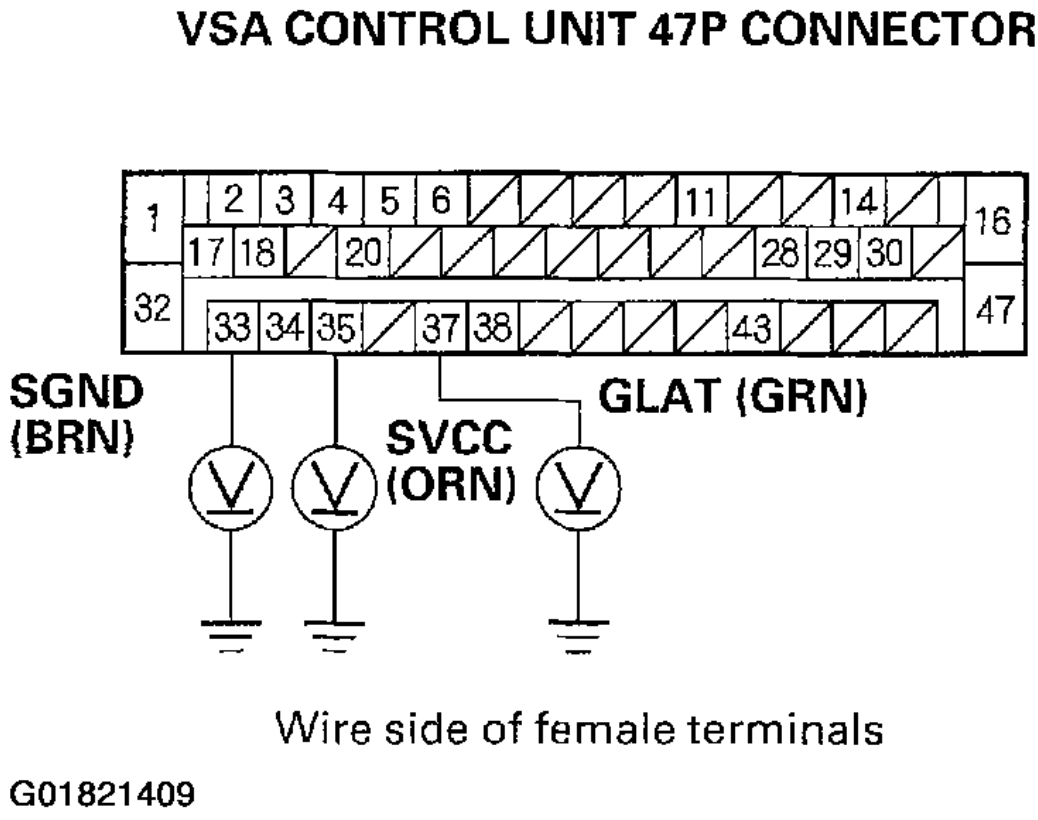


Fig. 44: Measuring The Voltage Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 33, No. 35 & No. 37

10. Turn the ignition switch OFF.
11. Check for continuity between body ground and the VSA control unit 47P connector terminals No. 33, No. 35 and No. 37 individually.

    Is there continuity?

    YES: Repair short to body ground in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

    NO: Go to step 12.

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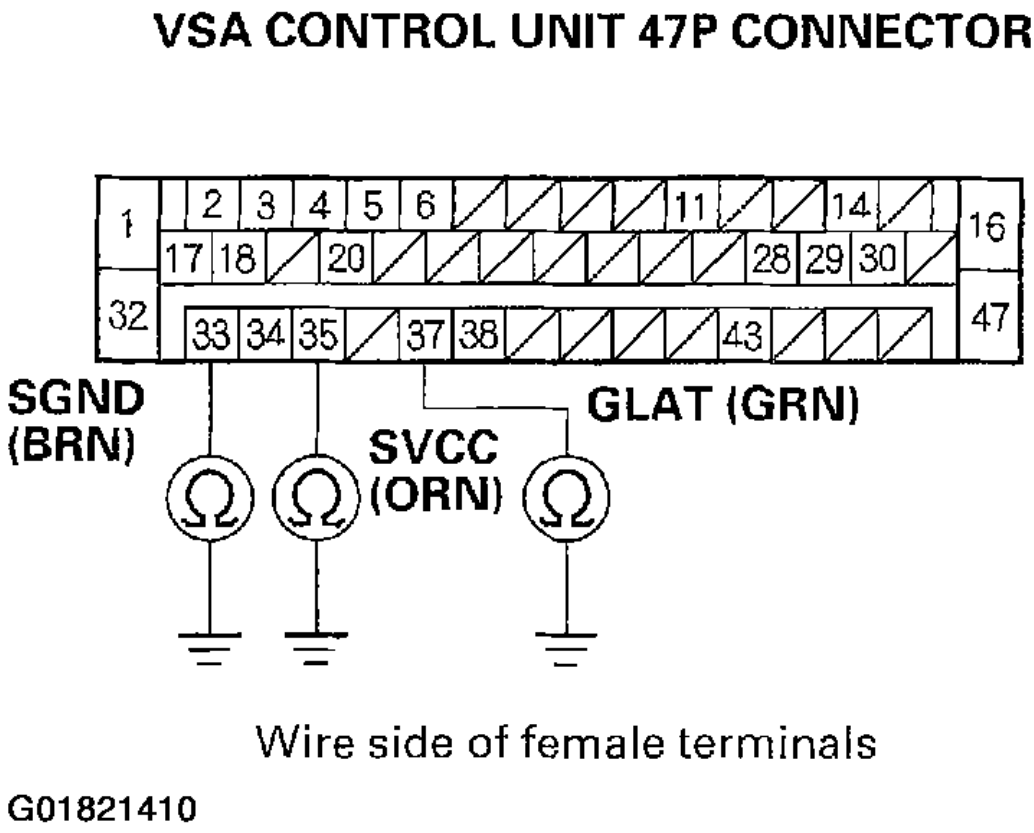


Fig. 45: Checking For Continuity Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 33, No. 35 & No. 37

12. Check for continuity between the VSA control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

    Is there continuity?

    YES: Go to step 13.

    NO: Repair open in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

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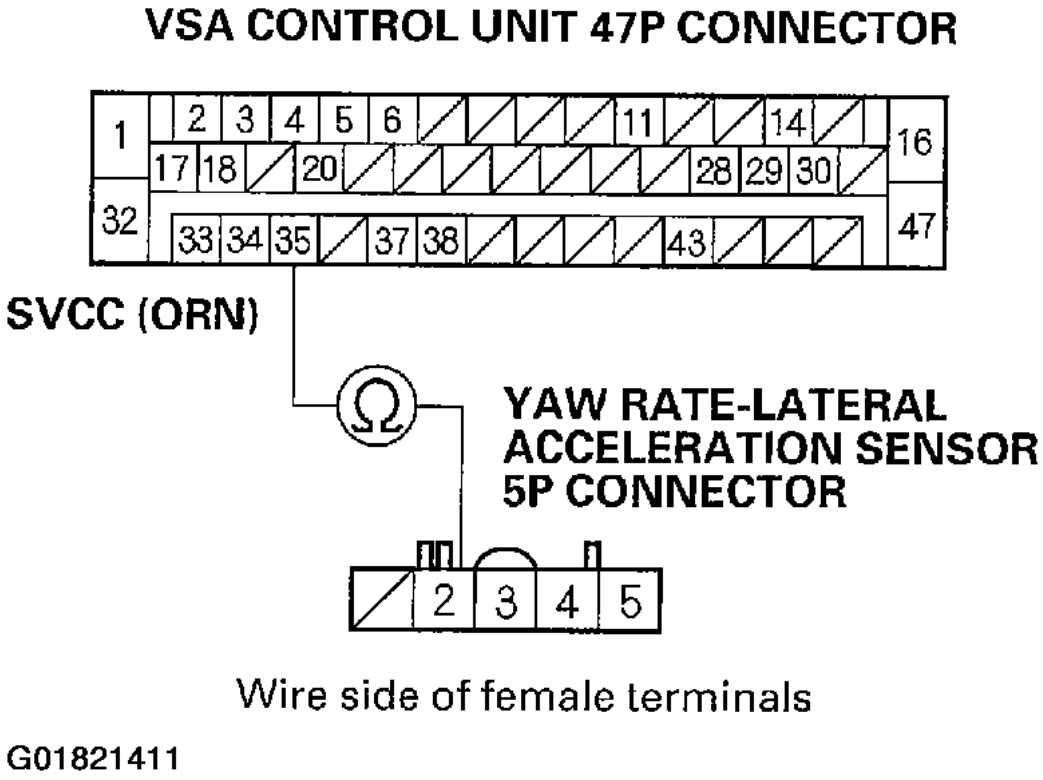


Fig. 46: Checking For Continuity Between The VSA Control Unit 47P Connector & Yaw Rate-Lateral Acceleration Sensor 5P Connector

13. Check for continuity between the VSA control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

    Is there continuity?

    YES: Go to step 14.

    NO: Repair open in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

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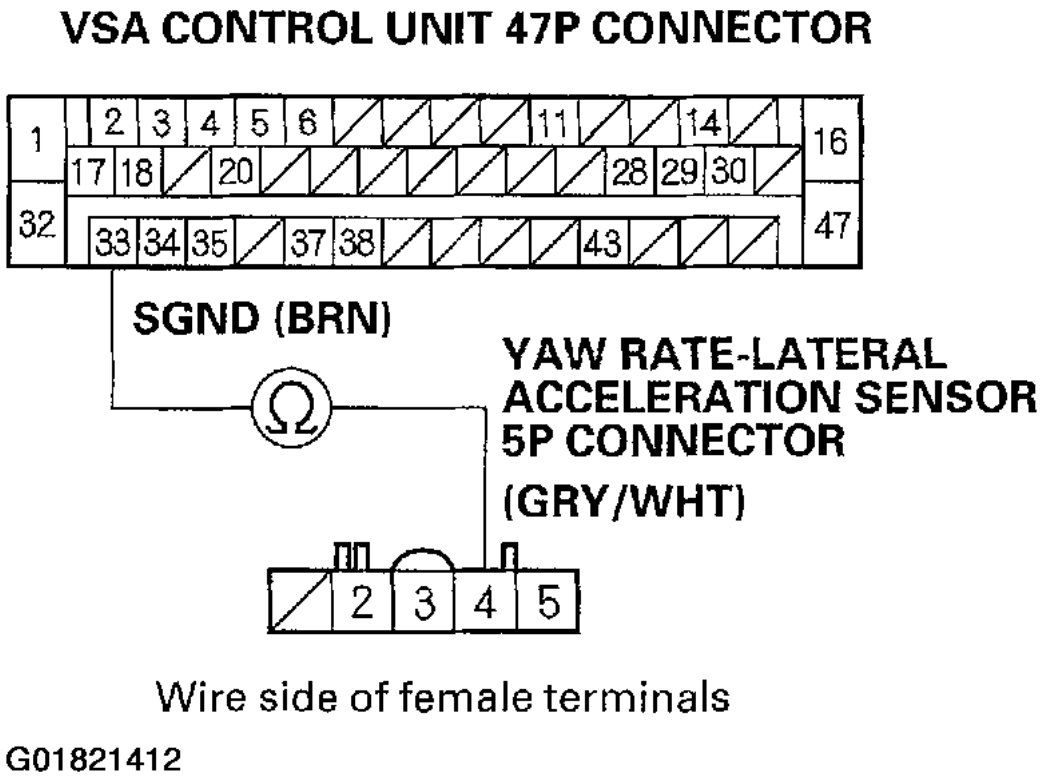


Fig. 47: Checking For Continuity Between The VSA Control Unit 47P Connector & Yaw Rate-Lateral Acceleration Sensor 5P Connector

14. Check for continuity between the VSA control unit 47P connector terminal No. 37 and yaw rate-lateral acceleration sensor 5P connector terminal No. 5.

    Is there continuity?

    YES: Go to step 15.

    NO: Repair open in the wire between the VSA control unit and the yaw rate-lateral acceleration sensor.

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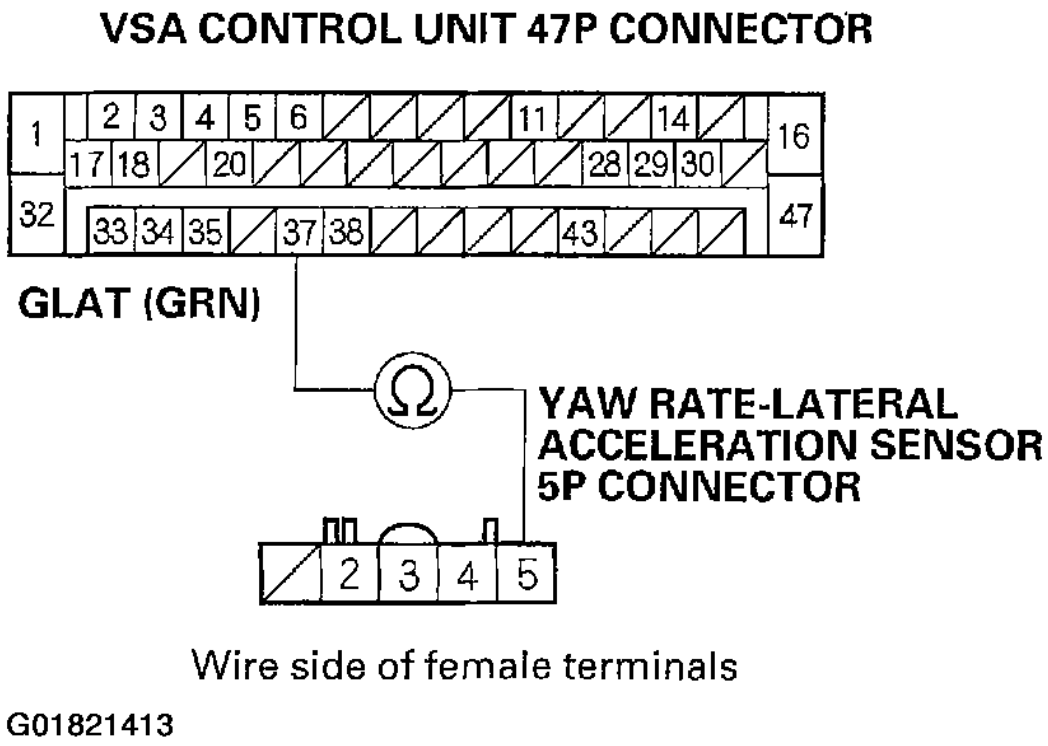


Fig. 48: Checking For Continuity Between The VSA Control Unit 47P Connector & Yaw Rate-Lateral Acceleration Sensor 5P Connector

15. Substitute a known-good yaw rate-lateral acceleration sensor.
16. Reconnect all of the disconnected connectors.
17. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
18. Disconnect the HDS from the 16P DLC.
19. Turn the ignition switch OFF, then turn it ON (II) again.
20. Test-drive the vehicle around a number of corners.
21. Verify the DTC.

Is DTC 25 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: Replace the original yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

DTC 27: STEERING ANGLE SENSOR

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).

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2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle around a number of corners.
5. Verify the DTC.

   Is DTC 64 indicated?

   YES: Do the appropriate troubleshooting for the DTC.

   NO: Go to step 6.
6. Turn the ignition switch OFF.
7. Disconnect the VSA control unit 47P connector, steering angle sensor 5P connector and yaw rate-lateral acceleration sensor 5P connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between body ground and the VSA control unit 47P connector terminals No. 33 and No. 35 individually.

   Is there 1 V or more?

   YES: Repair short to power in the wire between the VSA control unit and the steering angle sensor.

   NO: Go to step 10.

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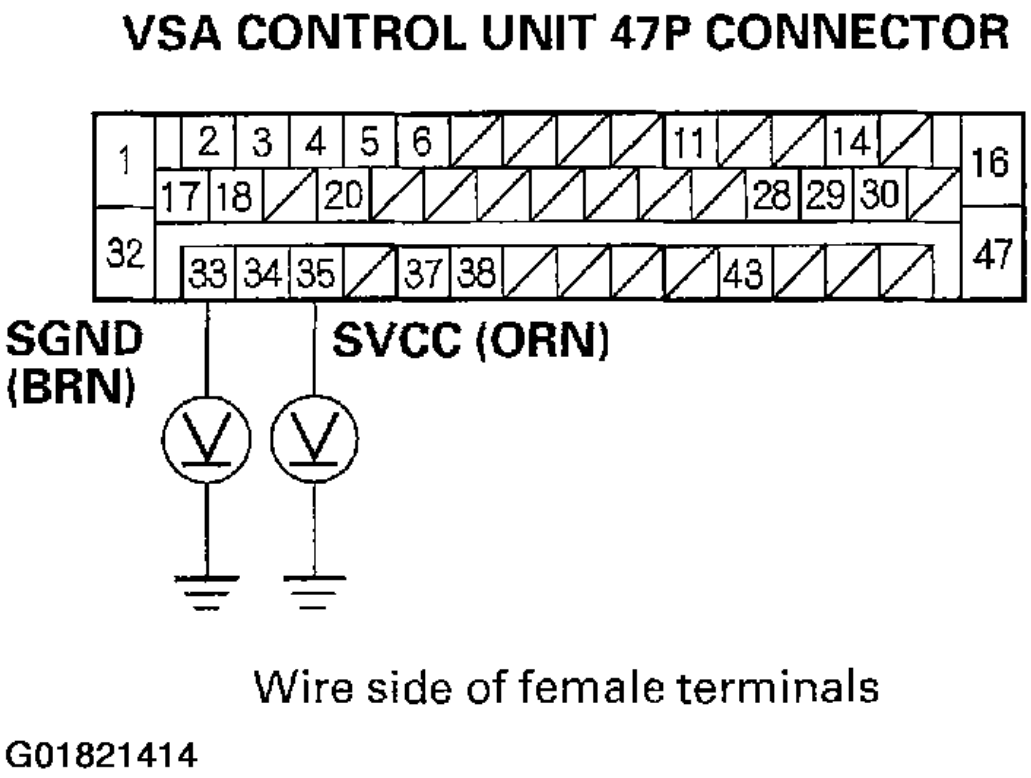


Fig. 49: Measuring The Voltage Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 33 & No. 35

10. Measure the voltage between body ground and the VSA control unit 47P connector terminals No. 28, No. 29 and No. 43 individually.

    Is there 1 V or more?

    YES: Repair short to power in the wire between the VSA control unit and the steering angle sensor.

    NO: Go to step 11.

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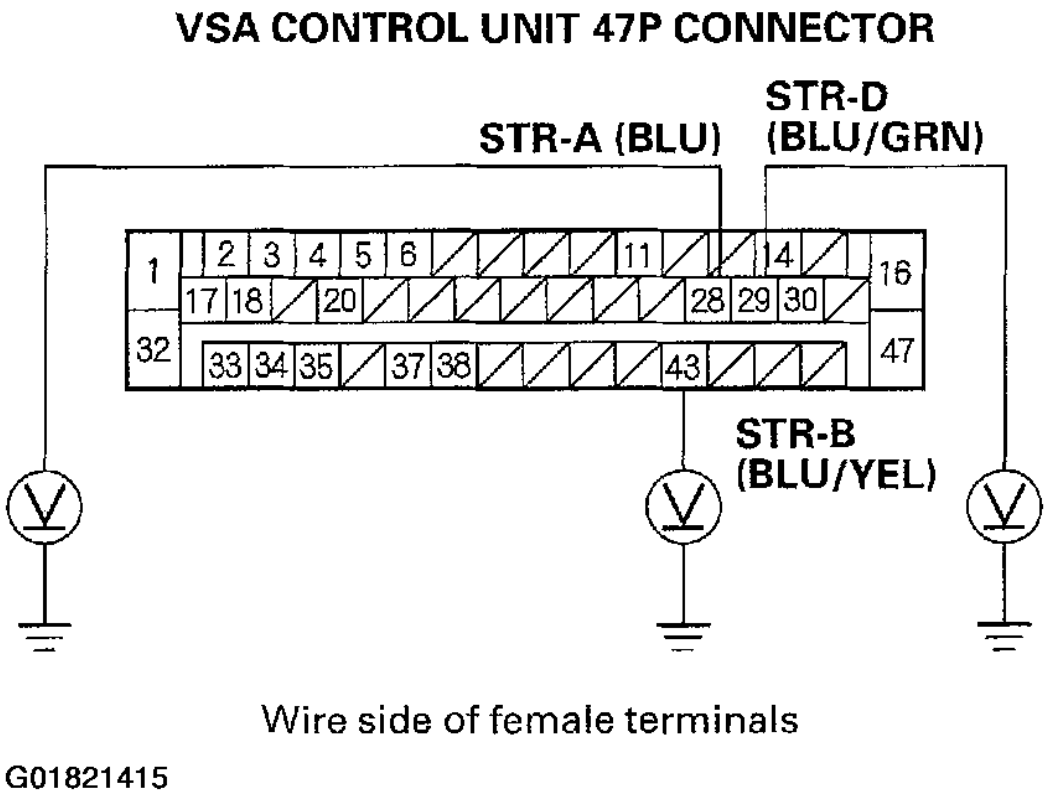


Fig. 50: Measuring The Voltage Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 28, No. 29 & No. 43

11. Turn the ignition switch OFF.
12. Check for continuity between body ground and the VSA control unit 47P connector terminals No. 33 and No. 35 individually.

Is there continuity?

YES: Repair short to body ground in the wire between the VSA control unit and the steering angle sensor.

NO: Go to step 13.

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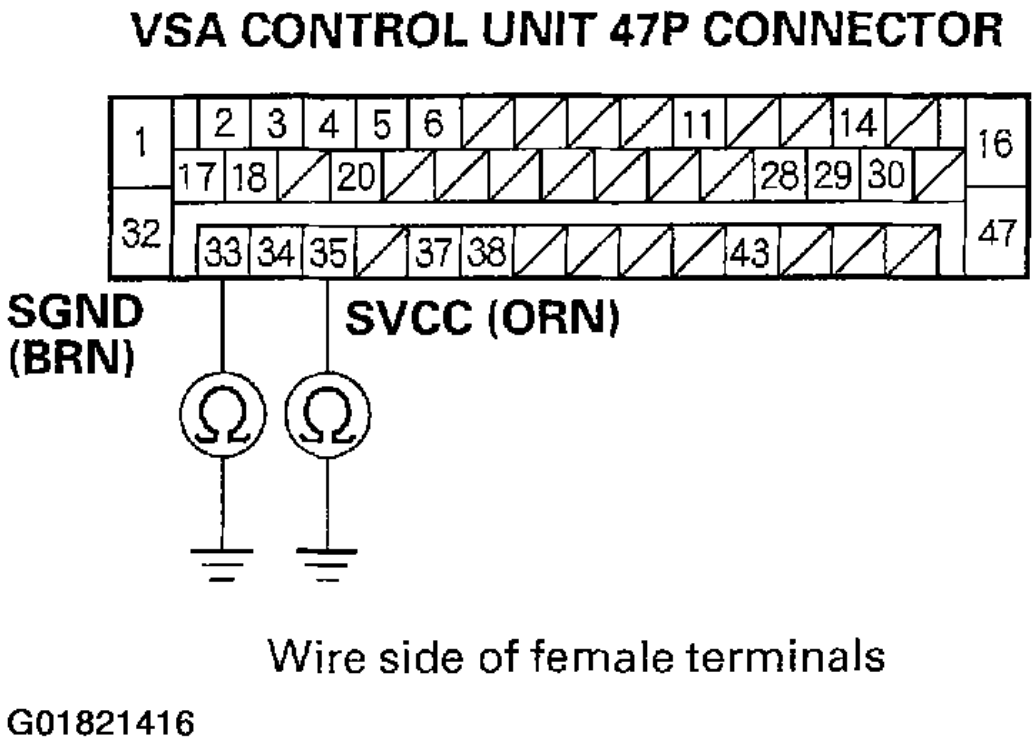


Fig. 51: Checking For Continuity Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 33 & No. 35

13. Check for continuity between body ground and the VSA control unit 47P connector terminals No. 28, No. 29 and No. 43 individually.

    Is there continuity?

    YES: Repair short to body ground in the wire between the VSA control unit and the steering angle sensor.

    NO: Go to step 14.

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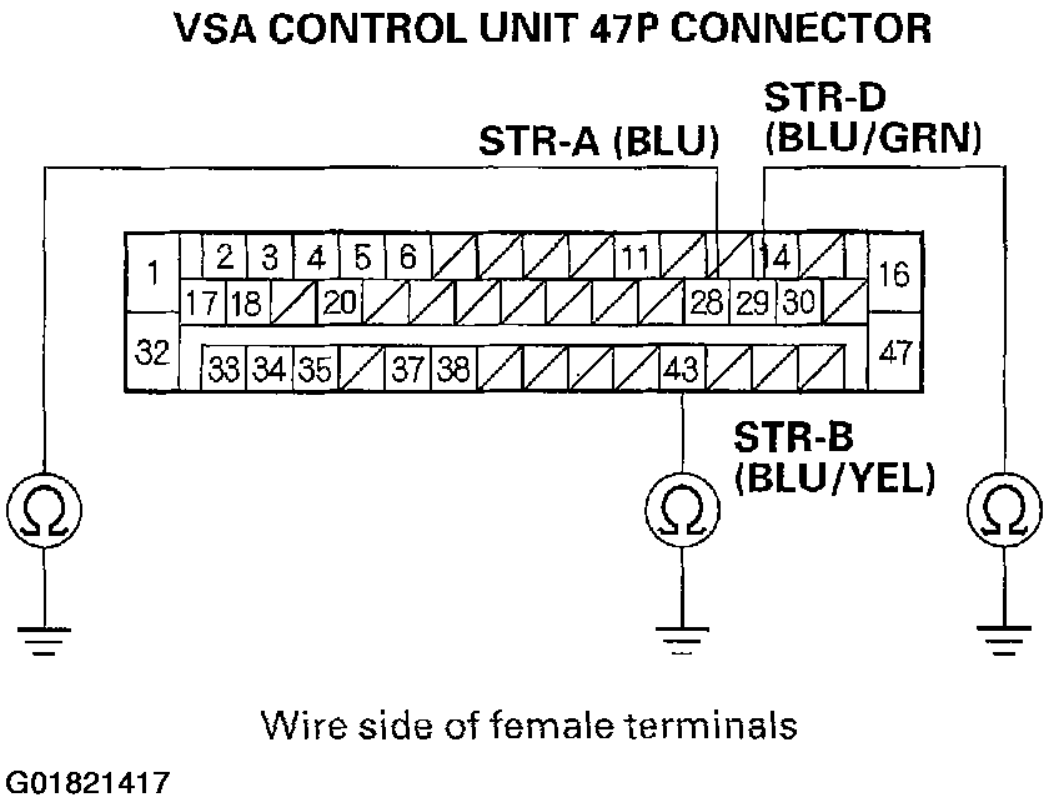


Fig. 52: Checking For Continuity Between Body Ground & The VSA Control Unit 47P Connector Terminals No. 28, No. 29 & No. 43

14. Check for continuity between the VSA control unit 47P connector terminals No. 33 and No. 35 and steering angle sensor 5P connector terminals No. 1 and No. 5 individually.

    Is there continuity?

    YES: Go to step 15.

    NO: Repair open in the wire between the VSA control unit and the steering angle sensor.

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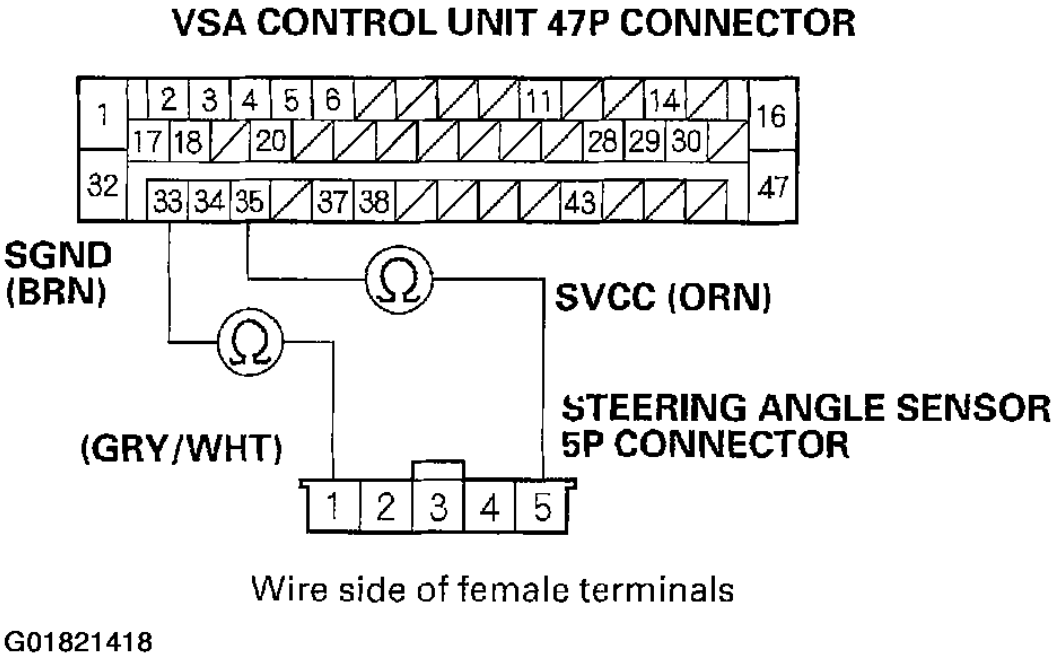


Fig. 53: Checking For Continuity Between The VSA Control Unit 47P Connector & Steering Angle Sensor 5P Connector

15. Check for continuity between the VSA control unit 47P connector terminals No. 28, No. 29, No. 43 and steering angle sensor 5P connector terminals No. 2, No. 3 and No. 4 individually.

    Is there continuity?

    YES: Go to step 16.

    NO: Repair open in the wire between the VSA control unit and the steering angle sensor.

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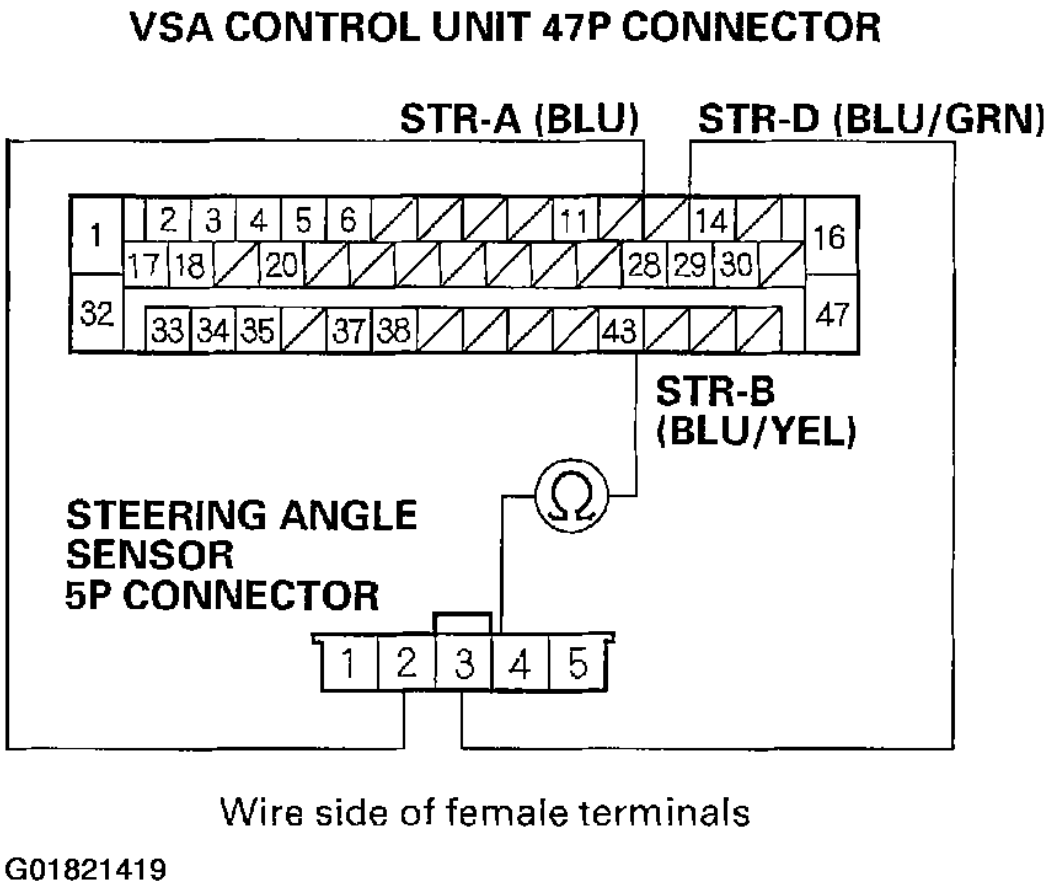


Fig. 54: Checking For Continuity Between The VSA Control Unit 47P Connector & Steering Angle Sensor 5P Connector

16. Substitute a known-good steering angle sensor.
17. Reconnect all of the disconnected connectors.
18. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
19. Disconnect the HDS from the 16P DLC.
20. Turn the ignition switch OFF, then turn it ON (II) again.
21. Test-drive the vehicle around a number of corners.
22. Verify the DTC.

Is DTC 27 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: Replace the original steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

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DTC 31, 32, 33, 34, 35, 36, 37, 38: ABS SOLENOID

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch ON (II).
3. Verify the DTC.

Does the ABS indicator come on, and are DTCs 31, 32, 33, 34, 35, 36, 37, and/or 38 indicated?

YES: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit, and recheck.

NO: The system is OK at this time.

DTC 41, 42, 43, 44: WHEEL LOCK

1. Test-drive the vehicle, and check for brake drag by duplicating city driving at speeds over 30 mph (50 km/h). Use the brakes often.

Do the brakes drag?

YES: Repair the brake drag.

NO: Go to step 2.

2. Check the installation of the appropriate wheel sensor (see **Fig. 55**) (see **WHEEL SENSOR INSPECTION**).

Is it correct?

YES: If the DTC does not reappear, the most probable cause for the DTC is that the vehicle might have lost traction in poor weather and spun around.

NO: Reinstall or replace the wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

DTC	Appropriate Wheel Sensor
41	Right-front
42	Left-front
43	Right-rear
44	Left-rear

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Fig. 55: Wheel Sensor DTC Table

DTC 51: MOTOR LOCK; DTC 52: MOTOR STUCK OFF

1. Check the No. 17 (30A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

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YES: Reinstall the fuse, and go to step 2.

NO: Replace the fuse, and recheck.

2. Disconnect the VSA control unit 47P connector.
3. Measure the voltage between the VSA control unit 47P connector terminal No. 16 and body ground.

Is there battery voltage?

YES: Go to step 4.

NO: Repair open in the wire between the No. 17 (30A) fuse and the VSA modulator-control unit.

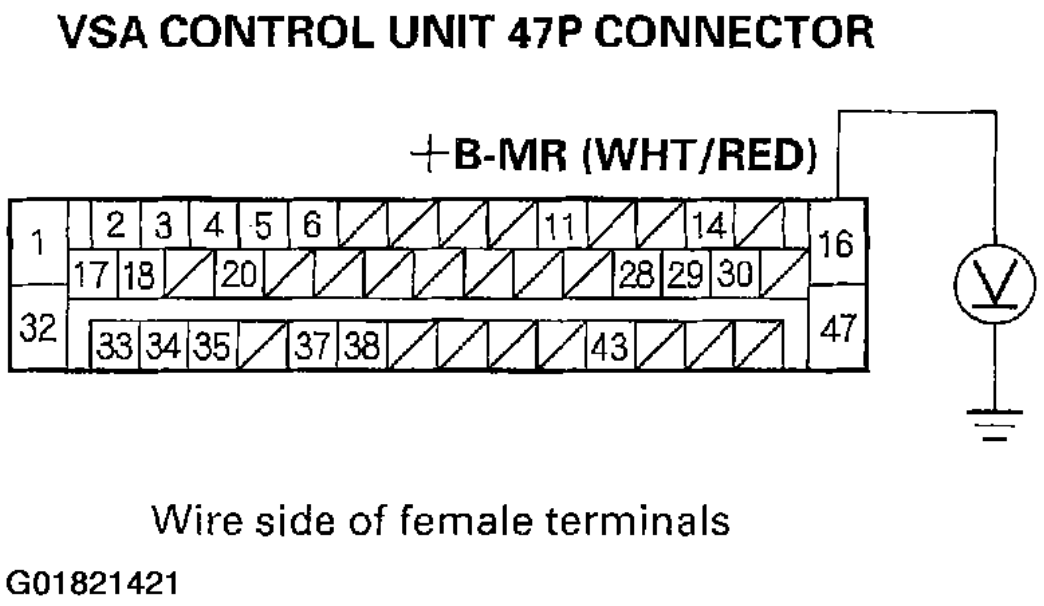


Fig. 56: Measuring The Voltage Between The VSA Control Unit 47P Connector Terminal No. 16 & Body Ground

4. Measure resistance between the VSA control unit 47P connector terminal No. 47 and body ground.

Is there less than 1 ohm ?

YES: Go to step 5.

NO: Repair open or high resistance in the wire between the VSA modulator-control unit and body ground (G203).

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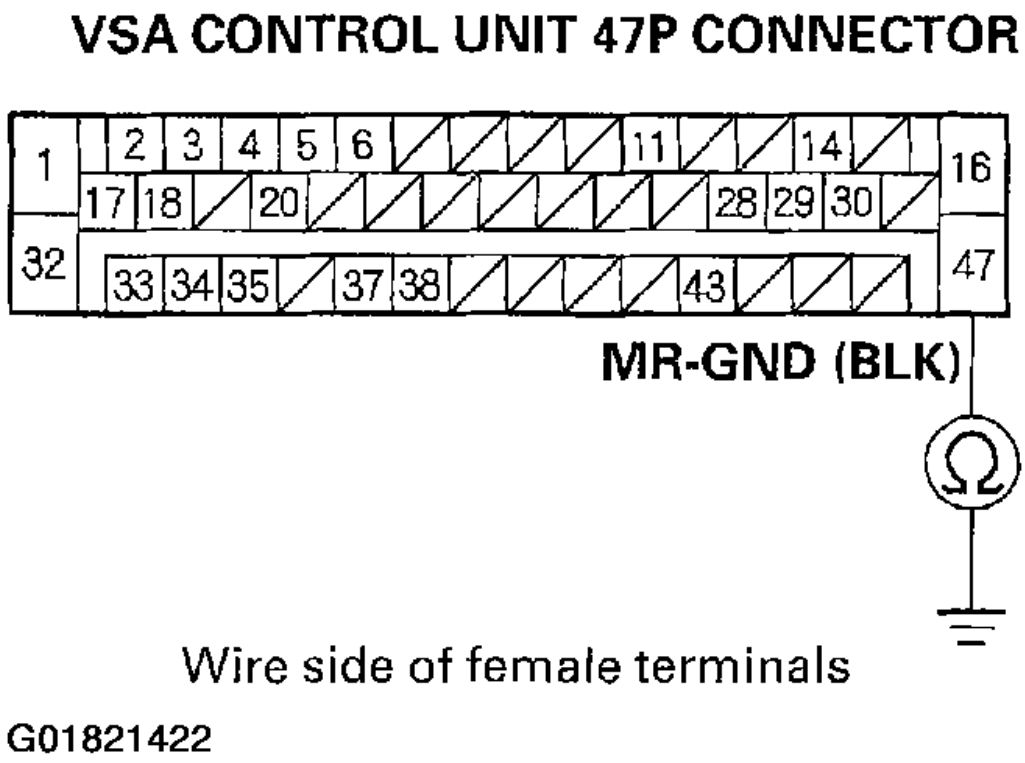


Fig. 57: Measuring Resistance Between The VSA Control Unit 47P Connector Terminal No. 47 & Body Ground

5. Reconnect the VSA control unit 47P connector.
6. Clear the DTC using the DTC (see **HOW TO CLEAR DTCS**).
7. Disconnect the HDS from the 16P DLC.
8. Turn the ignition switch OFF, then turn it ON again.
9. Test-drive the vehicle at 10 mph (15 km/h) or more.

Does the ABS indicator come on, and is DTC 51 or 52 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: The system is OK at this time.

DTC 53: MOTOR STUCK ON

1. Disconnect the VSA control unit 47P connector.
2. Measure resistance between the VSA control unit 47P connector terminal No. 47 and body ground.

Is there less than 1 ohm ?

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YES: Go to step 3.

NO: Repair open or high resistance in the wire between the VSA modulator-control unit and body ground (G203).

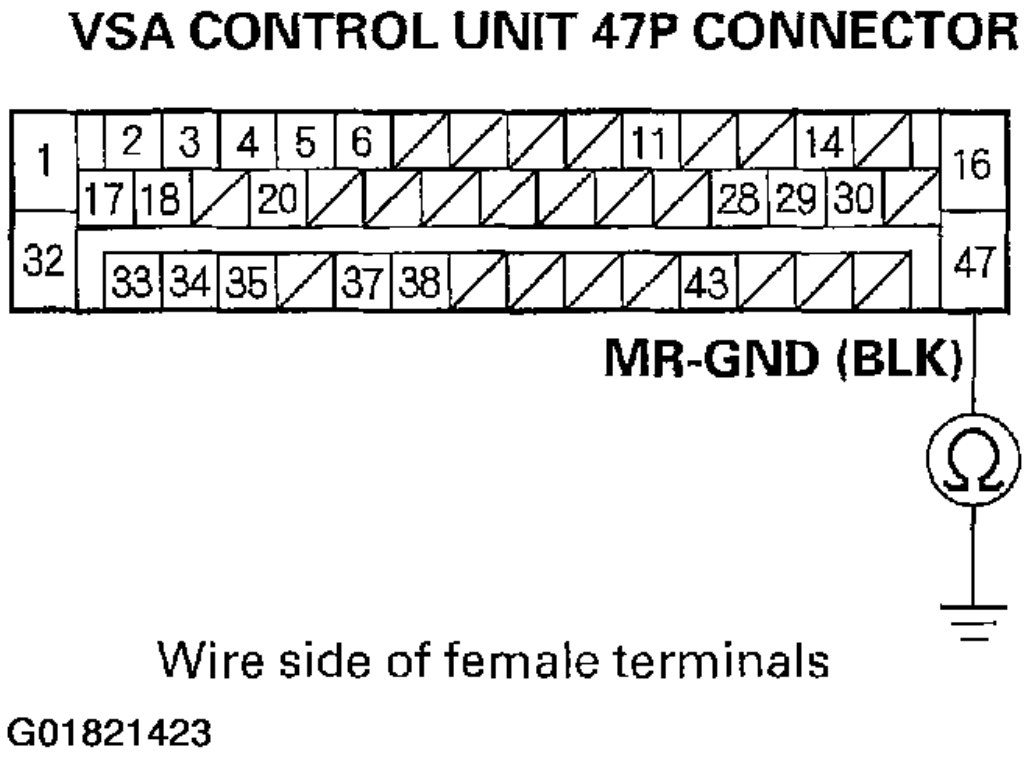


Fig. 58: Measuring Resistance Between The VSA Control Unit 47P Connector Terminal No. 47 & Body Ground

3. Reconnect the VSA control unit 47P connector.
4. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
5. Disconnect the HDS from the 16P DLC.
6. Turn the ignition switch OFF, then turn it ON again.
7. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 53 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: The system is OK at this time.

DTC 54: FAIL-SAFE RELAY

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1. Disconnect the VSA control unit 47P connector.
2. Measure resistance between the VSA control unit 47P connector terminal No. 47 and body ground.

Is there less than 1 ohm ?

YES: Go to step 3.

NO: Repair open or high resistance in the wire between the VSA modulator-control unit and body ground (G203).

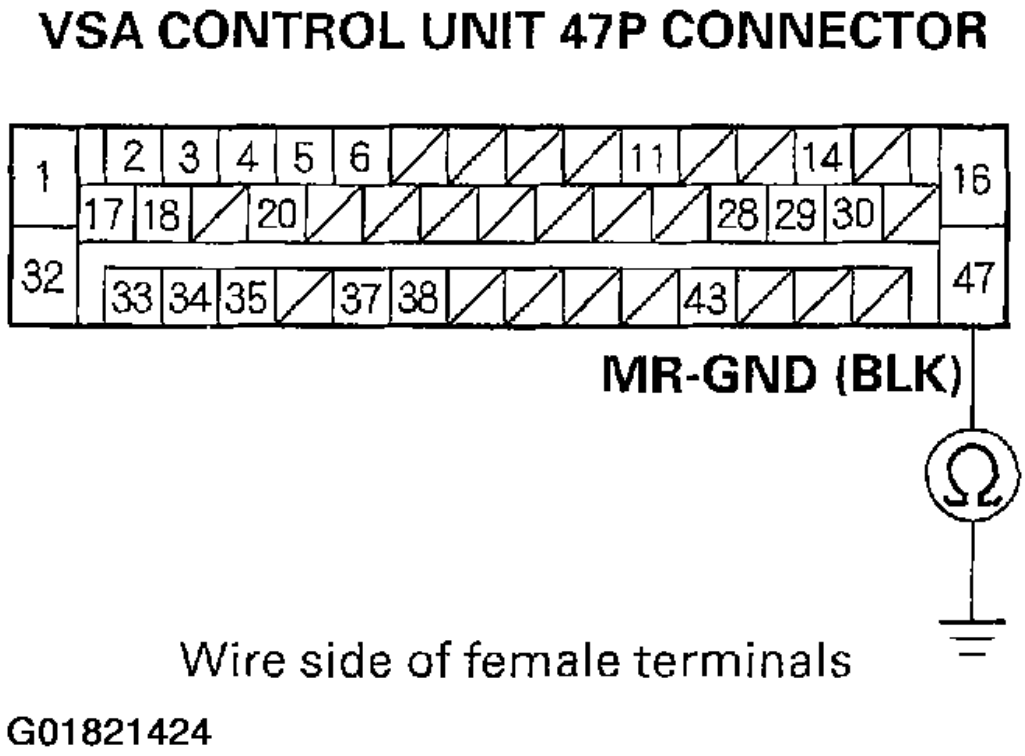


Fig. 59: Measuring Resistance Between The VSA Control Unit 47P Connector Terminal No. 47 & Body Ground

3. Reconnect the VSA control unit 47P connector.
4. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
5. Disconnect the HDS from the 16P DLC.
6. Turn the ignition switch OFF, then turn it ON again.
7. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 54 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL**

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UNIT REMOVAL & INSTALLATION).

NO: The system is OK at this time.

DTC 61, 62: HIGH/LOW VOLTAGE

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Turn the ignition switch ON (II).

   Does the ABS indicator come on?

   YES: Go to step 3.

   NO: The system is OK at this time.
3. Verify the DTC.

   Is DTC 61 or 62 indicated?

   YES: Check the battery and the charging system. See **GENERATORS & REGULATORS** .

   NO: Do the appropriate troubleshooting for the DTC indicated.

DTC 64: SENSOR POWER VOLTAGE

1. Disconnect the VSA control unit 47P connector.
2. Start the engine.
3. Measure the voltage between the VSA control unit 47P connector terminal No. 35 and body ground.

   Is there 1 V or more?

   YES: Repair short to power in the wire between the VSA modulator-control unit and yaw rate-lateral acceleration sensor and steering angle sensor.

   NO: Go to step 4.

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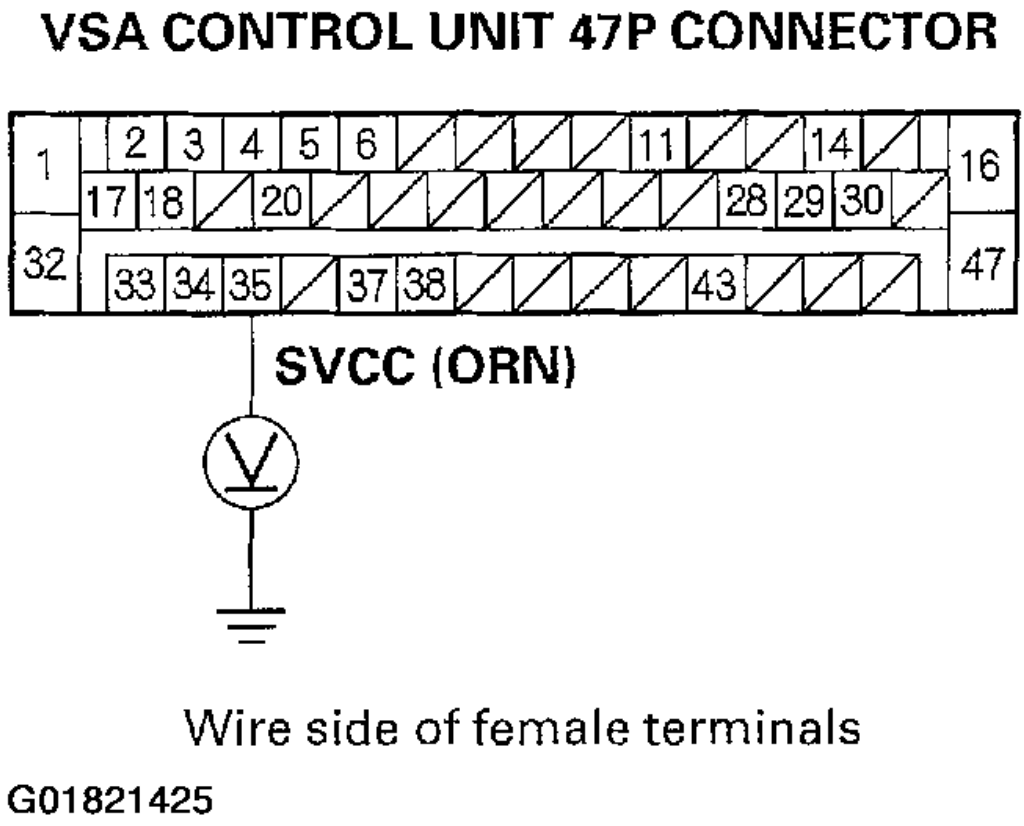


Fig. 60: Measuring The Voltage Between The VSA Control Unit 47P Connector Terminal No. 35 & Body Ground

4. Check for continuity between the VSA control unit 47P connector terminal No. 35 and body ground.

   Is there continuity?

   YES: Repair short to ground in the wire between the VSA modulator-control unit and yaw rate-lateral acceleration sensor and steering angle sensor.

   NO: Go to step 5.

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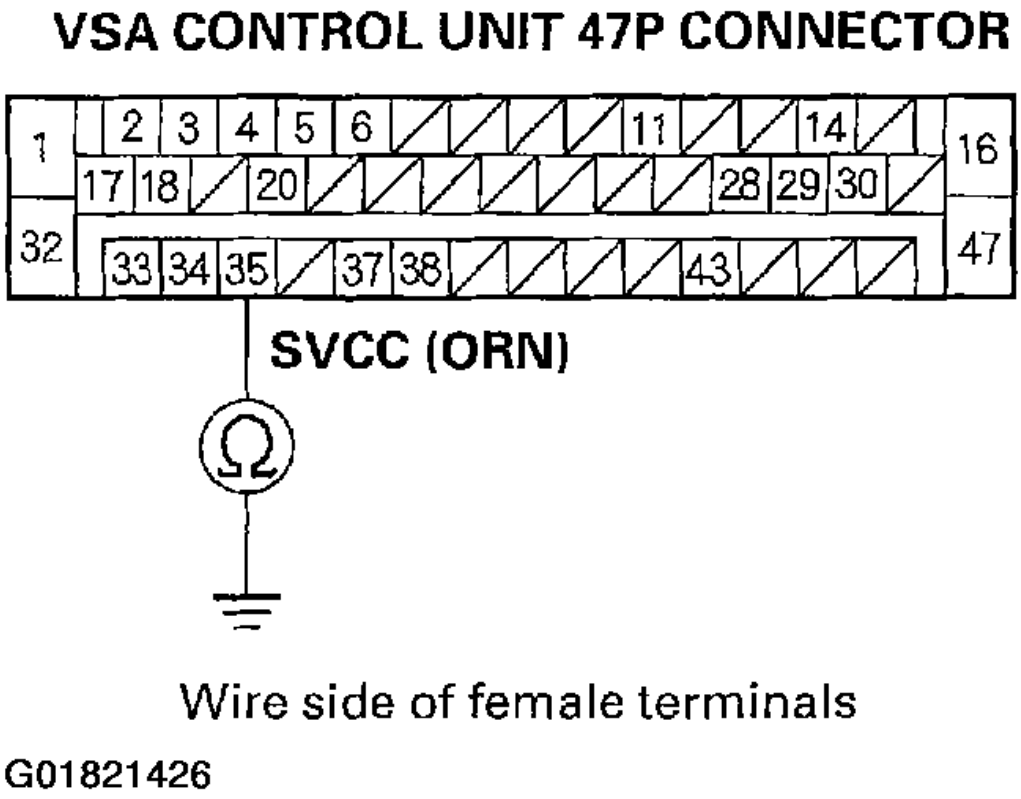


Fig. 61: Checking For Continuity Between The VSA Control Unit 47P Connector Terminal No. 35 & Body Ground

5. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
6. Disconnect the HDS from the 16P DLC.
7. Turn the ignition switch OFF, then turn it ON again.
8. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 64 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: Intermittent failure, the system is OK at this time. Check connections at the VSA control unit 47P connector and G203.

DTC 65: BRAKE FLUID LEVEL

1. Check the brake fluid level.

Is the level correct?

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YES: Go to step 2.

NO: Refill the brake fluid, and recheck.

2. Check for short in the GRN/RED wire between the gauge control module and the brake fluid level switch. If OK, check the brake fluid level switch.

Is the switch OK?

YES: Do the troubleshooting for the gauge control module (see **SELF-DIAGNOSTIC PROCEDURE**).

NO: Replace the brake fluid level switch.

DTC 66: VSA PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT)

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 66 indicated?

YES: Go to step 5.

NO: The system is OK at this time.

5. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
6. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
7. Disconnect the HDS from the 16P DLC.
8. Turn the ignition switch OFF, then turn it ON (II) again.
9. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 66 indicated?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: The system is OK at this time.

DTC 68: BRAKE PEDAL POSITION SWITCH

1. Check for other DTCs.

Is another DTC indicated?

YES: Do the appropriate troubleshooting for the DTC.

NO: Go to step 2.

2. Check the brake pedal position switch.

Is the switch OK?

YES: Go to step 3.

NO: Replace the brake pedal position switch (see **BRAKE PEDAL**).

3. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).

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4. Disconnect the HDS from the 16P DLC.
5. Turn the ignition switch OFF, then turn it ON (II) again.
6. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 68 indicated?

   YES: Go to step 7.

   NO: The system is OK at this time.
7. Troubleshoot the brake pedal position switch circuit (see **CRUISE CONTROL INPUT TEST**).

   Is the brake pedal position switch circuit OK?

   YES: Substitute a known-good ECM/PCM, and recheck.

   - If the problem is gone, replace the original ECM/PCM.
   - If the problem continues, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

   NO: Repair the brake pedal position switch circuit.

DTC 71: DIFFERENT DIAMETER TIRE

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 71 indicated?

   YES: Go to step 5.

   NO: Intermittent failure; confirm that tire inflation is set to spec. The vehicle is OK at this time.
5. Check that all four tires are the specified size and are inflated to the proper specification.

   Are all four tires the correct size and properly inflated?

   YES: Go to step 6.

   NO: Install the correct tires or set the tires to the correct inflation, and retest.
6. With the vehicle on level ground, mark each tire with a small spot of grease. Roll the vehicle until each of the tires makes two grease spots on the floor.
7. Measure and record the distance between the two grease spots.

   Is the distance between the shortest and the longest measurement more than 10 %?

   YES: Replace the tire/tires that is smaller or larger than the others.

   NO: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

DTC 81: CENTRAL PROCESSING UNIT (CPU)

1. Check for other DTCs.

   Is another DTC indicated?

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YES: Do the appropriate troubleshooting for the DTC.

NO: Go to step 2

2. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
3. Disconnect the HDS from the 16P DLC.
4. Turn the ignition switch OFF, then turn it ON again.
5. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 81 indicated?

YES: Go to step 6.

NO: Intermittent failure; the vehicle is OK at this time.

6. Disconnect the VSA control unit 47P connector.
7. Start the engine.
8. Measure the voltage between the VSA control unit 47P connector terminal No. 35 and body ground.

Is there 1 V or more?

YES: Repair short to power in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, and the steering angle sensor.

NO: Go to step 9.

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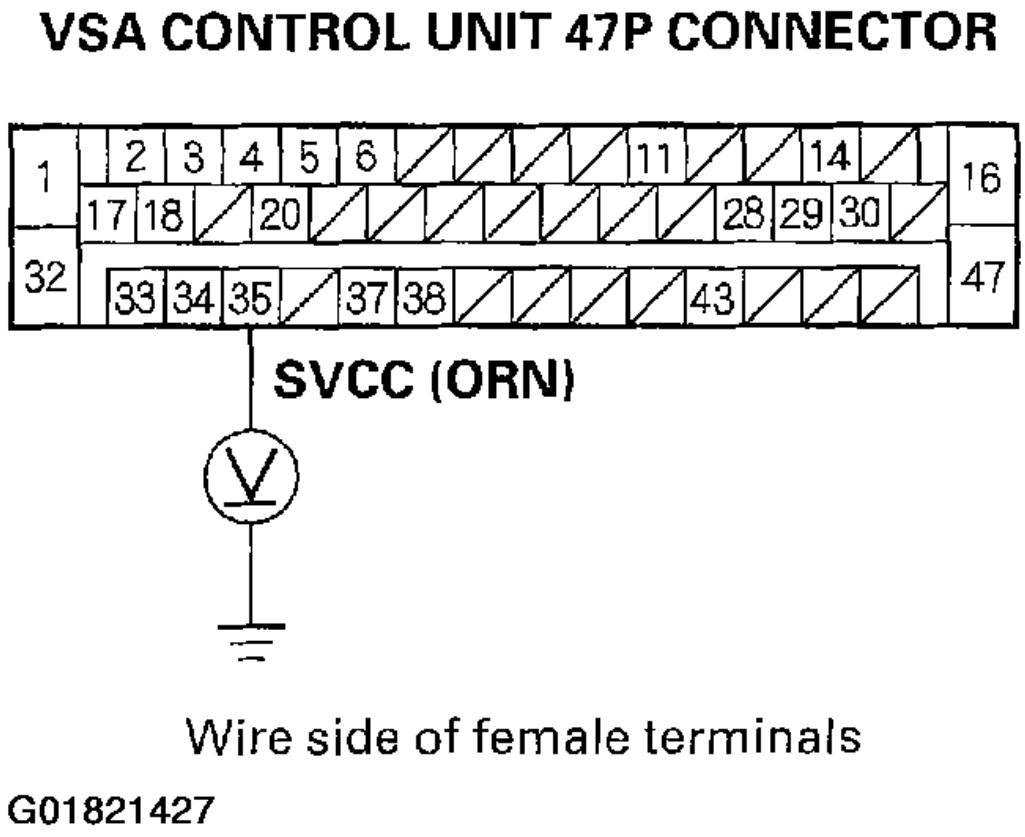


Fig. 62: Measuring The Voltage Between The VSA Control Unit 47P Connector Terminal No. 35 & Body Ground

9. Check for continuity between the VSA control unit 47P connector terminal No. 35 and body ground.

   Is there continuity?

   YES: Repair short to body ground in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, and the steering angle sensor.

   NO: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit, and recheck (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

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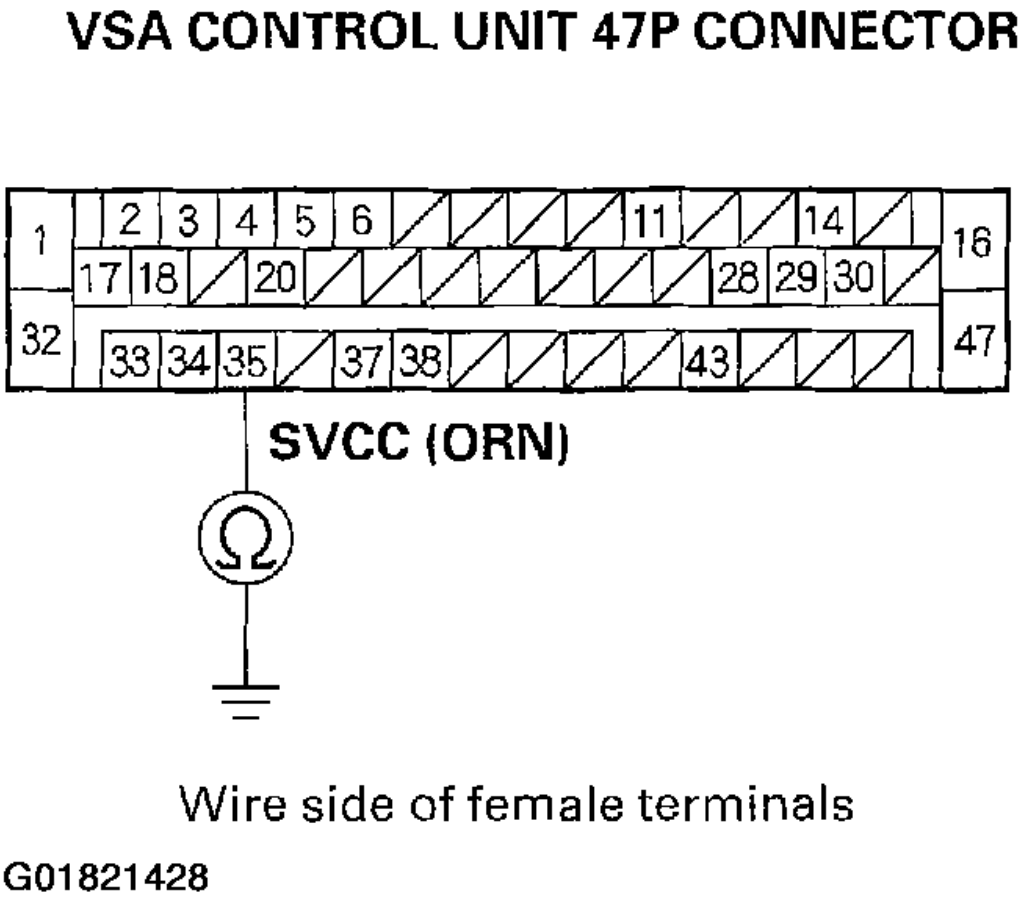


Fig. 63: Checking For Continuity Between The VSA Control Unit 47P Connector Terminal No. 35 & Body Ground

DTC 83: ECM/PCM

1. Check the DTC.

   Is DTC 86 indicated?

   YES: Do the troubleshooting for DTC 86.

   NO: Go to step 2.
2. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
3. Disconnect the HDS from the 16P DLC.
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Test-drive the vehicle.

   Do the VSA and VSA activation indicators come on, and is DTC 83 indicated?

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YES: Go to step 6.

NO: The system is OK at this time.

6. Check the PGM-FI system.

   Does the MIL indicator come on or is the ECM/PCM's DTC indicated?

   YES: Do the applicable troubleshooting for the ECM/PCM.

   NO: Go to step 7.

7. Check the gear position.

   Does the D4 indicator come on while neutral position (N) is selected or is the ECM/PCM's DTC indicated?

   YES: Do the applicable troubleshooting for the ECM/PCM.

   NO: Check for loose terminals at the ECM/PCM connectors, and go to step 8.

8. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
9. Disconnect the HDS from the 16P DLC.
10. Turn the ignition switch OFF, then turn it ON again.
11. Test-drive the vehicle.

    Is DTC 83 indicated and no ECM/PCM's DTC?

    YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

    NO: The system is OK at this time.

DTC 84: VSA SENSOR NEUTRAL POSITION

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

   Does the VSA indicator come on, and is DTC 84 indicated?

   YES: Go to step 5.

   NO: The system is OK at this time.

5. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
6. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
7. Disconnect the HDS from the 16P DLC.
8. Turn the ignition switch OFF, then turn it ON (II) again.
9. Test-drive the vehicle.

   Does the VSA indicator come on, and is DTC 84 indicated?

   YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

   NO: The system is OK at this time.

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DTC 86: F-CAN COMMUNICATION

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Start and run the engine for at least 5 seconds then turn the engine off.
3. Check for DTCs using the HDS.

   Is DTC 86 indicated?

   YES: Go to step 4.

   NO: Intermittent failure, the F-CAN communication line is OK at this time.
4. Check for DTCs in the ECM/PCM.

   Are any DTCs indicated?

   YES: Troubleshoot the ECM/PCM DTCs.

   NO: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

DTC 107: TCS OPERATION; DTC 108: VSA OPERATION

NOTE: The ABS/VSA indicators do not come on by memorizing the DTC 107 or 108.

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

   Is DTC 107 or DTC 108 indicated?

   YES: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**), and recheck.

   NO: Intermittent failure; the system is OK at this time.

DTC 112: INTERNAL POWER SOURCE STUCK OFF

NOTE: If the battery cable was disconnected three times with the ignition switch ON (II), this DTC may be stored.

1. Check for other DTCs.

   Is another DTC indicated?

   YES: Do the appropriate troubleshooting for the DTC.

   NO: Go to step 2.
2. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
3. Disconnect the HDS from the 16P DLC.
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Test-drive the vehicle.

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Does the ABS indicator come on, and is DTC 112 indicated?

YES: Go to step 6.

NO: Intermittent failure; the vehicle is OK at this time.

6. Inspect G203 for a clean and tight connection.

Is G203 clean and properly connected?

YES: Go to step 7.

NO: Repair the connection at G203.

7. Disconnect the VSA control unit 47P connector.
8. Check for continuity between body ground and VSA control unit 47P connector terminals No. 32 and No. 47 individually.

Is there continuity?

YES: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**), and recheck.

NO: Repair open in the wire between the VSA modulator-control unit and G203.

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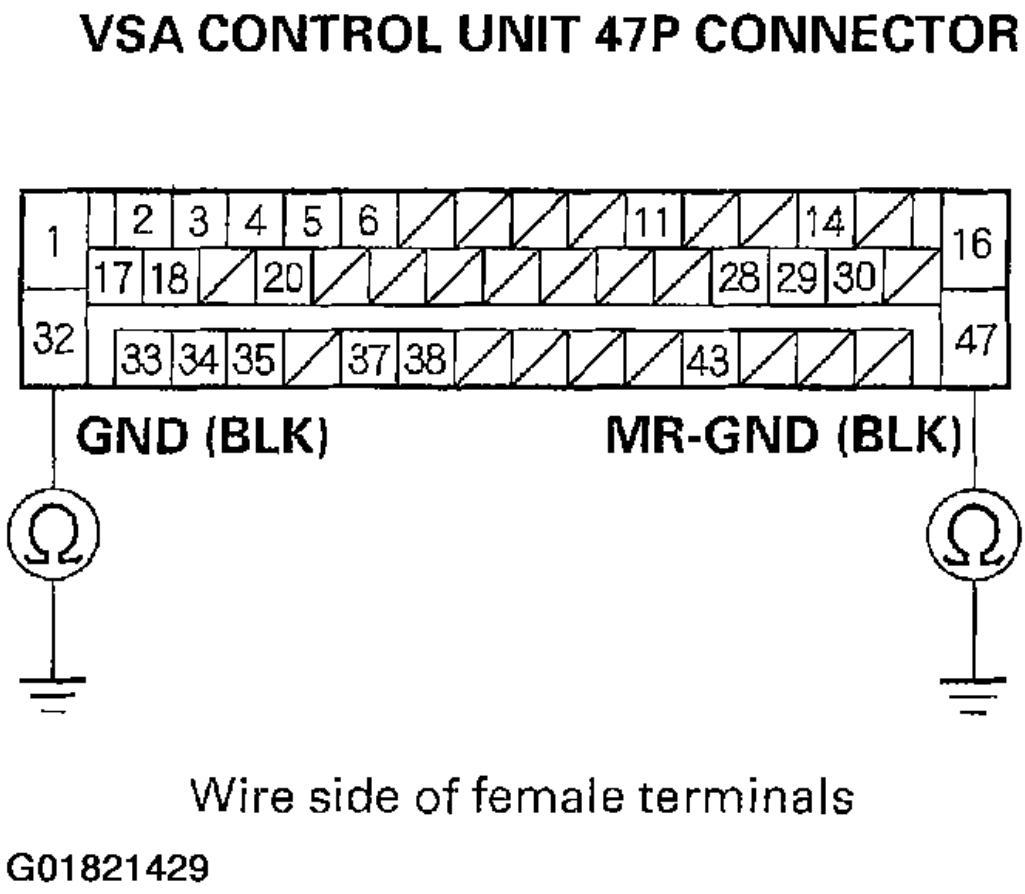


Fig. 64: Checking For Continuity Between Body Ground And VSA Control Unit 47P Connector Terminals No. 32 & No. 47

DTC 121, 122, 123, 124: VSA SOLENOID

1. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the VSA indicator come on, and is DTC 121, 122, 123 or 124 indicated?

YES: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**), and recheck.

NO: Intermittent failure; the system is OK at this time.

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ABS INDICATOR CIRCUIT TROUBLESHOOTING

ABS INDICATOR DOES NOT COME ON

1. Turn the ignition switch ON (II), and watch the ABS indicator.

   Does the ABS indicator come on for several seconds?

   YES: The system is OK at this time.

   NO: Go to step 2.
2. Apply the parking brake.

   Does the brake system indicator come?

   YES: Go to step 3.

   NO: Repair open in the indicator power source circuit.
3. Turn the ignition switch OFF.
4. Substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).
5. Turn the ignition switch ON (II).

   Does ABS indicator come on?

   YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

   NO: Do the troubleshooting for the gauge control module (see **SELF-DIAGNOSTIC PROCEDURE**).

ABS INDICATOR DOES NOT GO OFF & NO DTCS ARE STORED

1. Check the No. 18 (40A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES: Reinstall the fuse, and go to step 2.

   NO: Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).
2. Check the No. 18 (15A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES: Reinstall the fuse, and go to step 3.

   NO: Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).
3. Turn the ignition switch OFF.
4. Disconnect the VSA control unit 47P connector.
5. Measure the voltage between the VSA control unit 47P connector terminal No. 1 and body ground.

   Is there battery voltage?

   YES: Go to step 6.

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NO: Repair open in the wire between the No. 18 (40A) fuse and the VSA control unit.

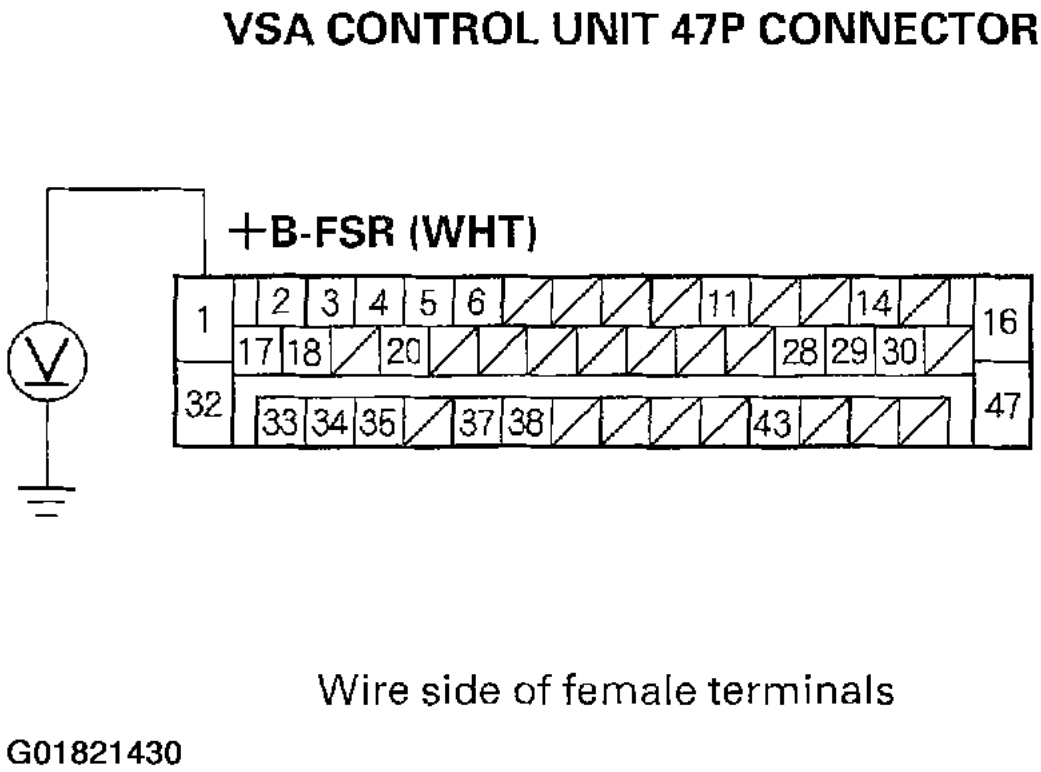


Fig. 65: Measuring The Voltage Between The VSA Control Unit 47P Connector Terminal No. 1 & Body Ground

6. Turn the ignition switch ON (II).
7. Measure the voltage between the VSA control unit 47P connector terminal No. 38 and body ground.

Is there battery voltage?

YES: Go to step 8.

NO: Repair open in the wire between the No. 18 (15A) fuse and the VSA control unit.

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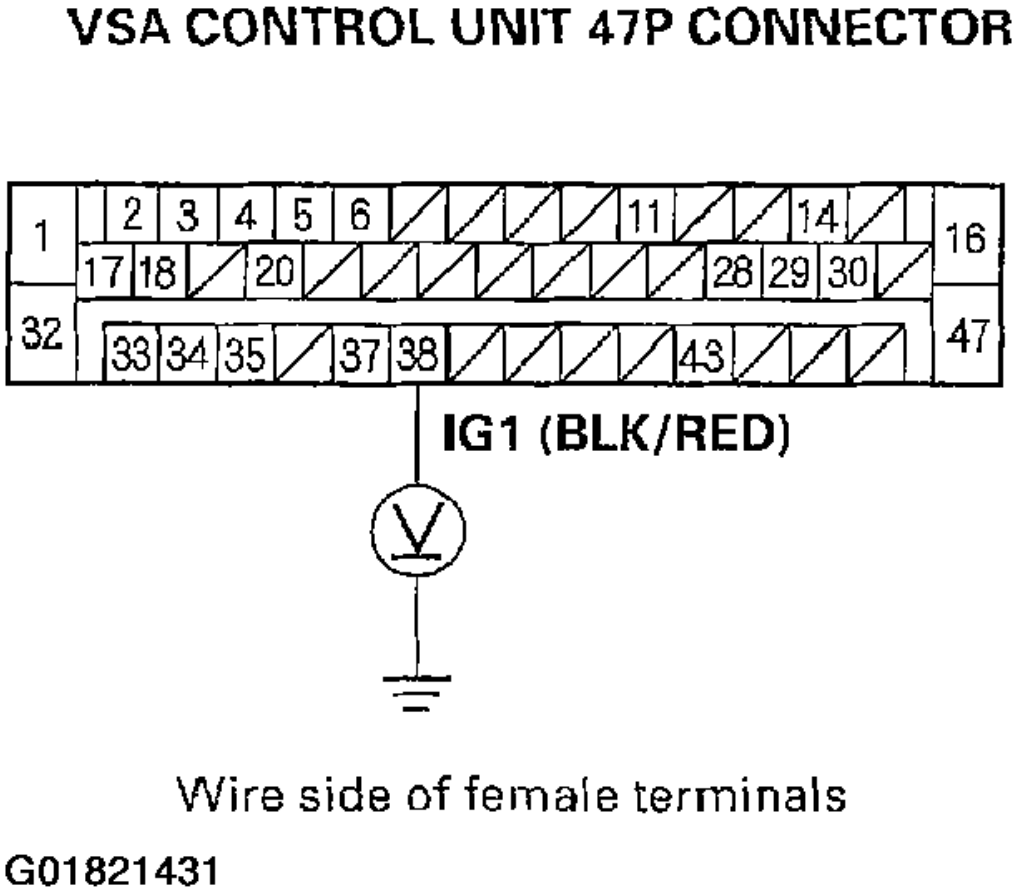


Fig. 66: Measuring The Voltage Between The VSA Control Unit 47P Connector Terminal No. 38 & Body Ground

8. Turn the ignition switch OFF.
9. Check for continuity between the VSA control unit 47P connector terminal No. 32 and body ground.

Is there continuity?

YES: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**), and recheck.

NO: Repair open in the wire between the VSA control unit and body ground (G203).

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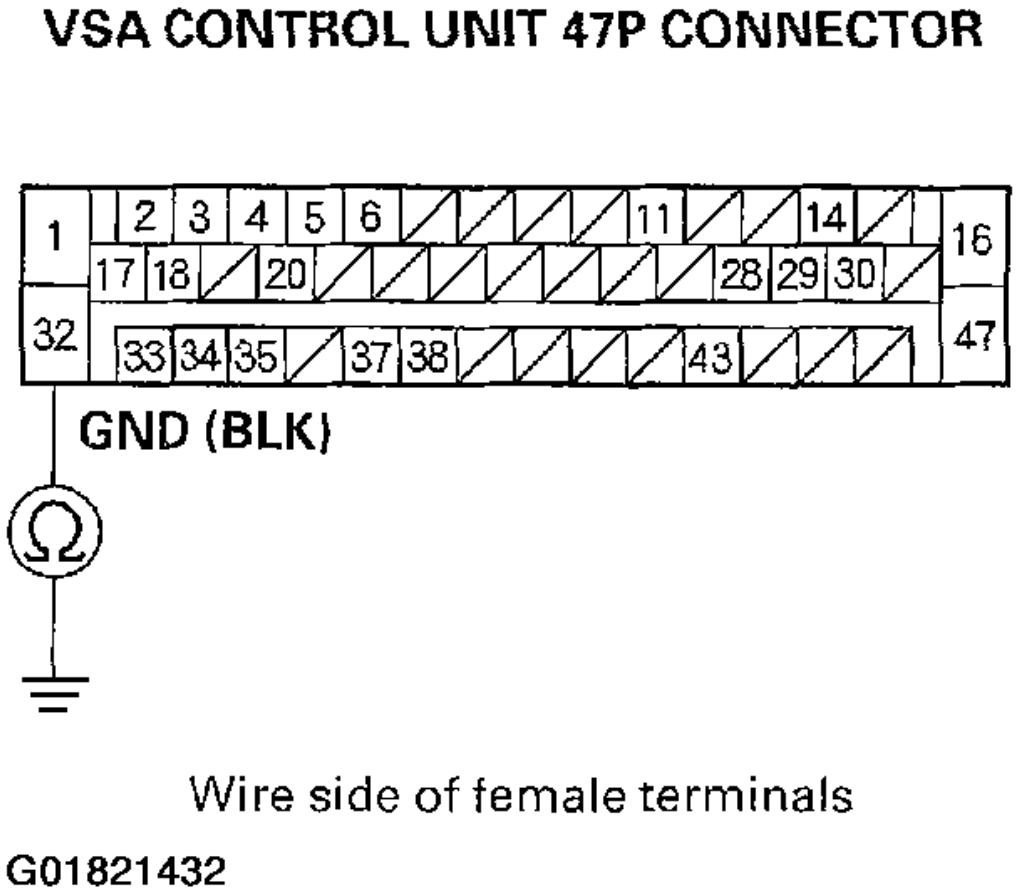


Fig. 67: Checking For Continuity Between The VSA Control Unit 47P Connector Terminal No. 32 & Body Ground

BRAKE SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING

BRAKE SYSTEM INDICATOR DOES NOT COME ON

1. With the parking brake applied, turn the ignition switch ON (II), and watch the brake system indicator.
   Does the brake system indicator come on?
   YES: Go to step 3 .
   NO: Go to step 2.
2. Turn the ignition switch OFF then ON (II) again.
   Does the ABS indicator come on for several seconds?
   YES: Replace the gauge control module (see page **GAUGE CONTROL MODULE**

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REPLACEMENT).

NO: Repair open in the indicator power source circuit, if necessary, substitute a known-good gauge control module, and recheck.

3. Turn the ignition switch OFF.
4. Release the parking brake.
5. Turn the ignition switch ON (II).

Does the brake system indicator come on for several seconds?

YES: Go to step 6.

NO: Check for loose terminals in the gauge control module connectors. If necessary, substitute a known-good gauge control module, and recheck.

6. Apply the parking brake.

Does the brake system indicator come on?

YES: The system is OK at this time.

NO: Go to step 7.

7. Turn the ignition switch OFF.
8. Disconnect the parking brake switch connector (see **PARKING BRAKE SWITCH**).
9. Turn the ignition switch ON (II).
10. Measure the voltage between the parking brake switch connector terminal and body ground.

Is there battery voltage?

YES: Replace the parking brake switch (see **PARKING BRAKE SWITCH**).

NO: Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the gauge control module (see page **GAUGE CONTROL MODULE REPLACEMENT**).
13. Connect gauge control module connector A (22P) terminal No. 4 and body ground with a jumper wire.

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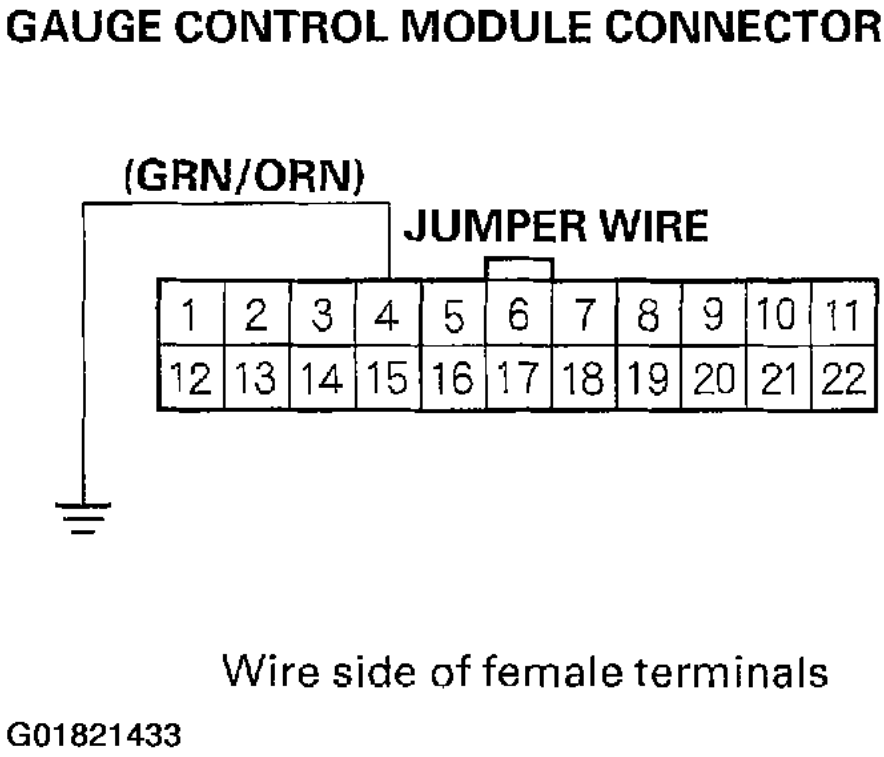


Fig. 68: Connecting Gauge Control Module Connector A (22P) Terminal No. 4 & Body Ground With A Jumper Wire

14. Turn the ignition switch ON (II).

    Does the brake system indicator come on and stay on?

    YES: Repair open in the wire between the gauge control module, and the parking brake switch.

    NO: Replace the gauge control module (see page **GAUGE CONTROL MODULE REPLACEMENT**).

BRAKE SYSTEM INDICATOR DOES NOT GO OFF

1. Turn the ignition switch ON (II).
2. Release the parking brake.

   Does the brake system indicator go off after several seconds?

   YES: The system is OK at this time.

   NO: Go to step 3.
3. Check the brake fluid level (see **BLEEDING BRAKE SYSTEM**).

   Is the level OK?

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YES: Go to step 4.

NO: Refill the brake fluid, and recheck.

4. Check the ABS indicator.

Does the ABS indicator stay on?

YES: Read the DTC (see **General Troubleshooting Information**), and do the applicable troubleshooting for the DTC.

NO: Check the brake system indicator circuit:

- Short to body ground between the gauge control module and the parking brake switch.
- Short to body ground between the gauge control module and the brake fluid level switch.
- Parking brake switch stuck ON.
- Brake fluid level switch stuck ON.
- Faulty gauge control module.

VSA INDICATOR CIRCUIT TROUBLESHOOTING

VSA INDICATOR DOES NOT COME ON

1. Turn the ignition switch ON (II), and watch the VSA indicator.

Does the VSA indicator come on for several seconds?

YES: The system is OK at this time.

NO: Go to step 2.

2. Apply the parking brake.

Does the brake system indicator come on?

YES: Go to step 3.

NO: Repair open in the indicator power source circuit.

3. Turn the ignition switch OFF.
4. Substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).
5. Turn the ignition switch ON (II).

Does the VSA indicator come on?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: Do the troubleshooting for the gauge control module (see **SELF-DIAGNOSTIC PROCEDURE**).

VSA INDICATOR DOES NOT GO OFF & NO DTCS ARE STORED

1. Check the No. 18 (40A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

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YES: Reinstall the fuse, and go to step 2.

NO: Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

2. Check the No. 18 (15A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES: Reinstall the fuse, and go to step 3.

NO: Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

3. Turn the ignition switch OFF.
4. Disconnect the VSA control unit 47P connector.
5. Measure the voltage between the VSA control unit 47P connector terminal No. 1 and body ground.

Is there battery voltage?

YES: Go to step 6.

NO: Repair open in the wire between the No. 18 (40A) fuse and the VSA control unit.

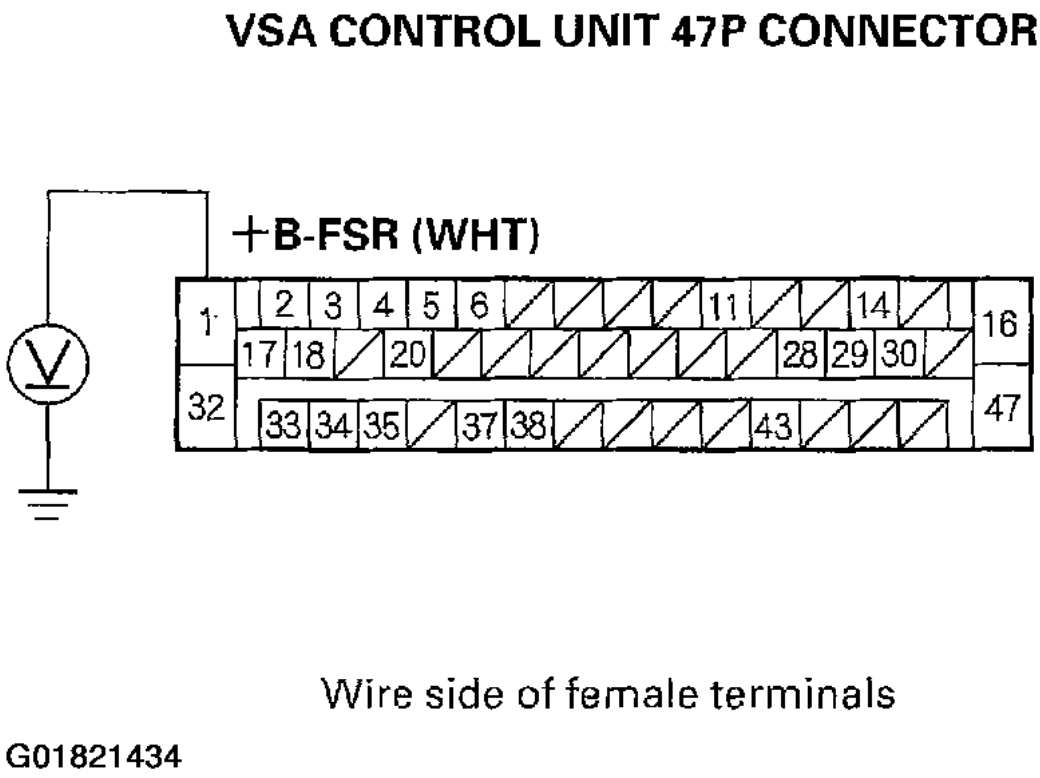


Fig. 69: Measuring The Voltage Between The VSA Control Unit 47P Connector Terminal No.

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1 & Body Ground

6. Turn the ignition switch ON (II).
7. Measure the voltage between the VSA control unit 47P connector terminal No. 38 and body ground.

   Is there battery voltage?

   YES: Go to step 8.

   NO: Repair open in the wire between the No. 18 (15A) fuse and the VSA control unit.

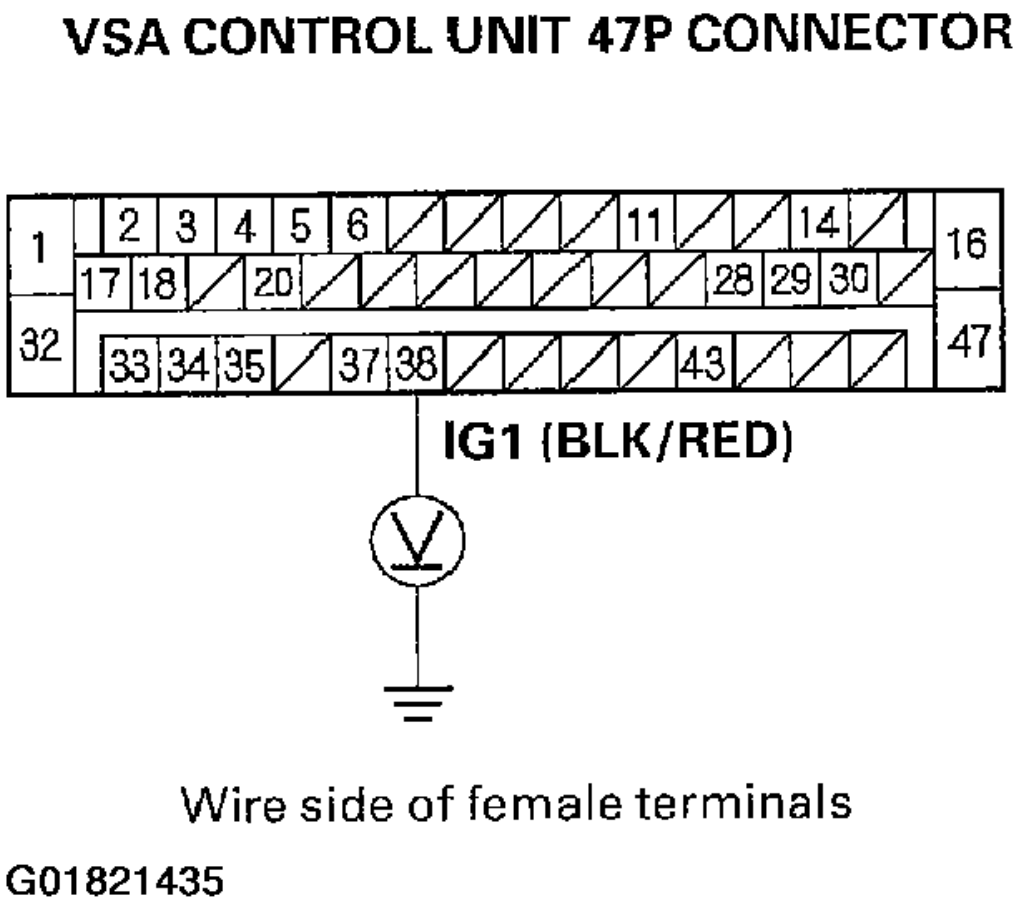


Fig. 70: Measuring The Voltage Between The VSA Control Unit 47P Connector Terminal No. 38 & Body Ground

8. Turn the ignition switch OFF.
9. Check for continuity between the VSA control unit 47P connector terminal No. 32 and body ground.

   Is there continuity?

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YES: Check for loose terminals in the VSA control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit and recheck.

NO: Repair open in the wire between the VSA control unit and body ground (G203).

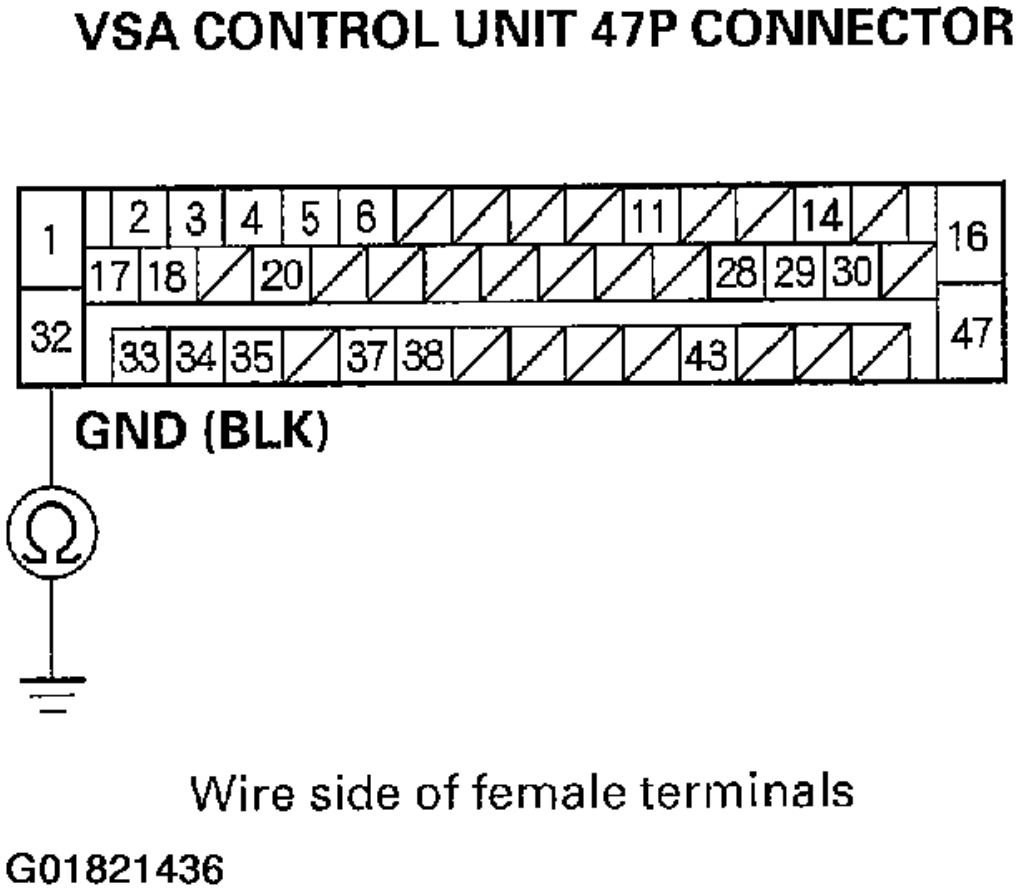


Fig. 71: Checking For Continuity Between The VSA Control Unit 47P Connector Terminal No. 32 & Body Ground

VSA ACTIVATION INDICATOR CIRCUIT TROUBLESHOOTING

VSA ACTIVATION INDICATOR DOES NOT COME ON

1. Turn the ignition switch ON (II), and watch the VSA activation indicator.

   Does the VSA activation indicator come on for several seconds?

   YES: The system is OK at this time.

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NO: Go to step 2.

2. Apply the parking brake.

   Does the brake system indicator come on?

   YES: Go to step 3.

   NO: Repair open in the indicator power source circuit.

3. Turn the ignition switch OFF.
4. Substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).
5. Turn the ignition switch ON (II).

   Does the VSA activation indicator come on?

   YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

   NO: Do the troubleshooting for the gauge control module (see **SELF-DIAGNOSTIC PROCEDURE**).

VSA ACTIVATION INDICATOR DOES NOT GO OFF & NO DTCS ARE STORED

1. Turn the ignition switch ON (II), and watch the VSA indicator.

   Does the VSA indicator go off?

   YES: Go to step 2.

   NO: Do the appropriate troubleshooting for the VSA indicator.

2. Turn the ignition switch OFF.
3. Check the VSA OFF switch (see **VSA OFF SWITCH TEST**).

   Is the switch OK?

   YES: Go to step 4.

   NO: Replace the VSA OFF switch (see **VSA OFF SWITCH TEST**).

4. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).

   Does the VSA activation indicator go off?

   YES: The system is OK at this time.

   NO: Go to step 5.

5. Do the VSA sensor neutral memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
6. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).

   Does the VSA activation indicator go off?

   YES: The system is OK at this time.

   NO: Go to step 7.

7. Remove the gauge control module (see page **GAUGE CONTROL MODULE REPLACEMENT**).
8. Check for continuity between the VSA OFF switch 5P connector terminal No. 2 and body ground.

   Is there continuity?

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YES: Repair short to body ground in the wire between the gauge control module and the VSA OFF switch.

NO: Go to step 9.

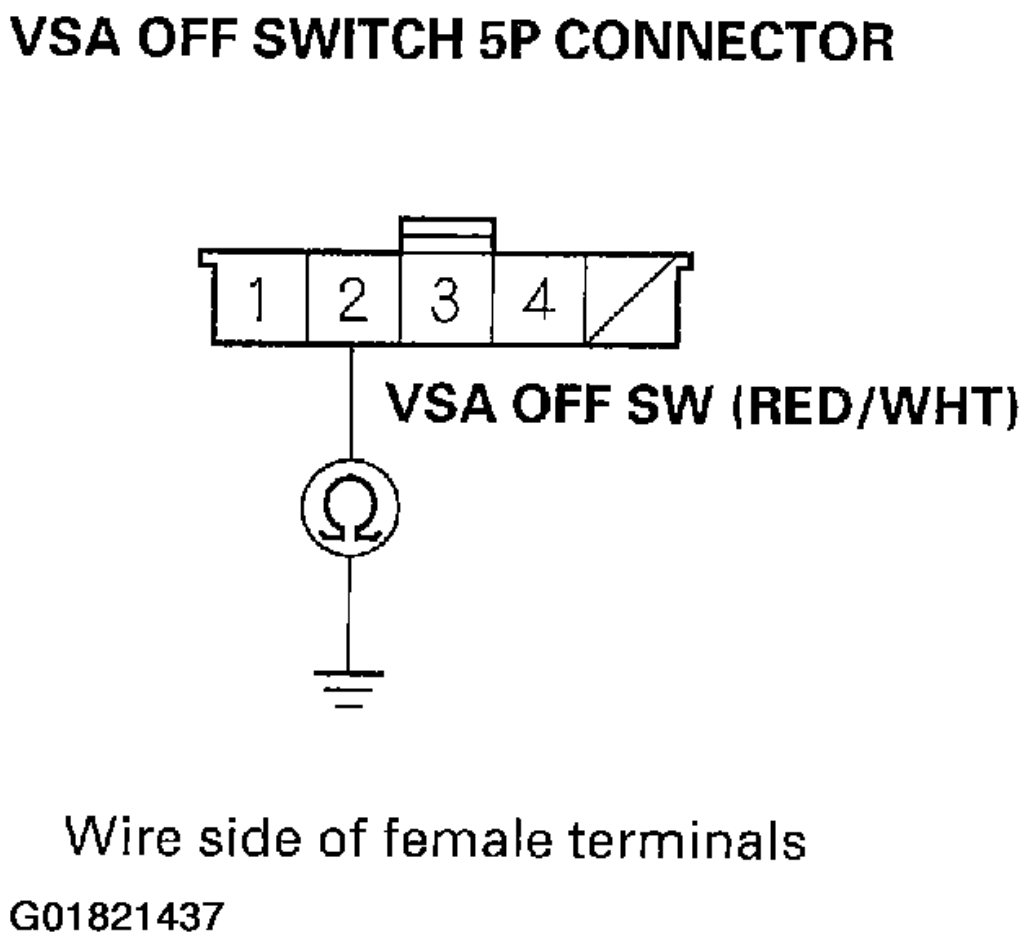


Fig. 72: Checking For Continuity Between The VSA OFF Switch 5P Connector Terminal No. 2 & Body Ground

9. Check for continuity between the VSA OFF switch 5P connector terminal No. 1 and body ground.

   Is there continuity?

   YES: Go to step 10.

   NO: Repair open in the wire between the VSA OFF switch and body ground (G501).

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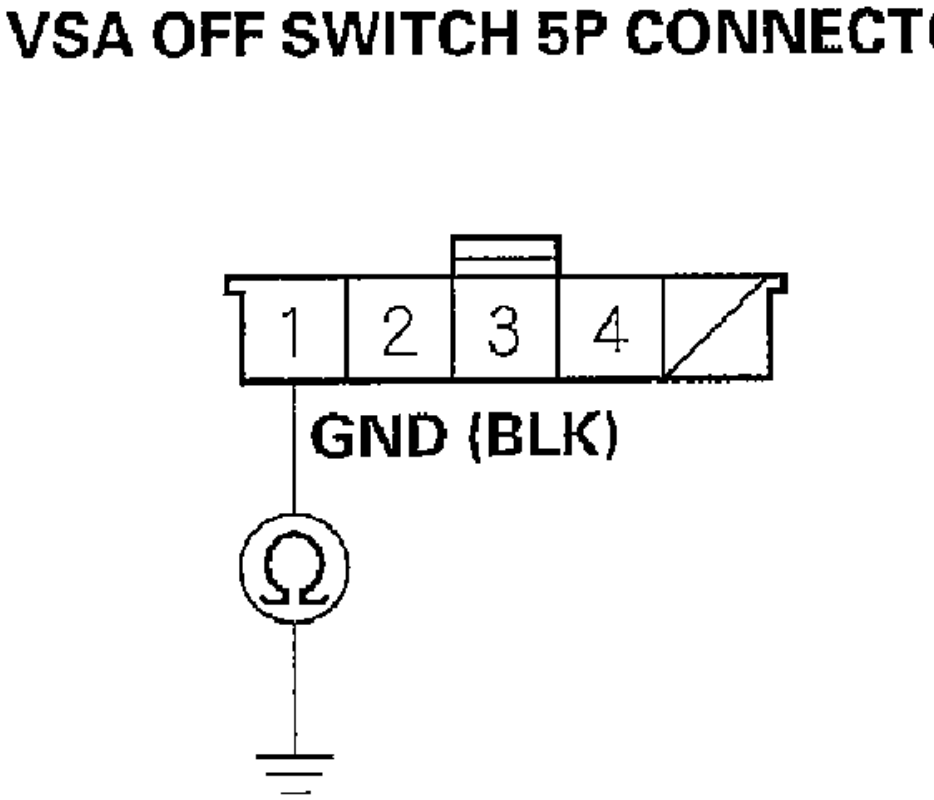


Fig. 73: Checking For Continuity Between The VSA OFF Switch 5P Connector Terminal No. 1 & Body Ground

10. Substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).
11. Reconnect all of the disconnected connectors.
12. Clear the DTC using the HDS (see **HOW TO CLEAR DTCS**).
13. Disconnect the HDS from the 16P DLC.
14. Turn the ignition switch OFF, then turn it ON (II) again.
15. Test-drive the vehicle.

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Does the VSA activation indicator go off?

YES: Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION**).

NO: Check for loose terminals in the gauge control module connectors. If necessary, substitute a known-good gauge control module, and recheck.

STEERING ANGLE SENSOR REPLACEMENT

NOTE: Do not damage or drop the combination switch as the steering angle sensor is sensitive to shock and vibration.

1. Remove the steering wheel (see **STEERING WHEEL REMOVAL**), and steering column cover (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Remove the combination switch assembly (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Remove the combination light switch (A) and the wiper/washer switch (B).

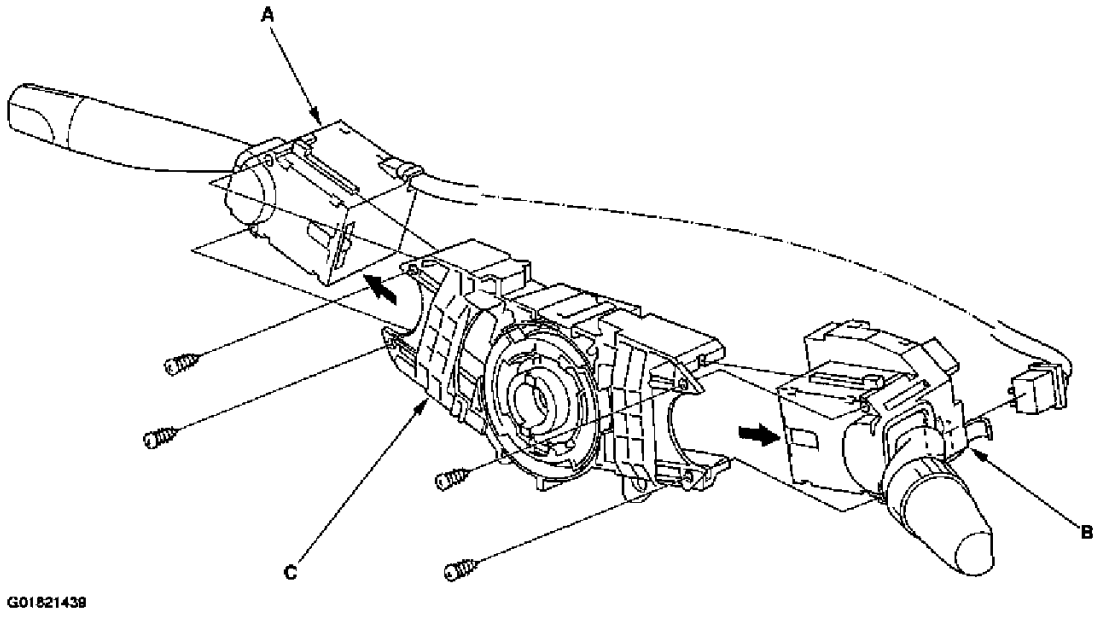


Fig. 74: Removing The Combination Light Switch & The Wiper/Washer Switch

4. Replace the combination switch body complete (C).
5. Install the combination switch in the reverse order of removal.

NOTE: Do not remove the steering angle sensor from the combination switch body.

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6. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).

YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT

NOTE:

- **Do not damage or drop the sensor as it is sensitive.**
- **Do not use an impact wrench.**

1. Remove the driver's seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Lift up the floor carpet (A).

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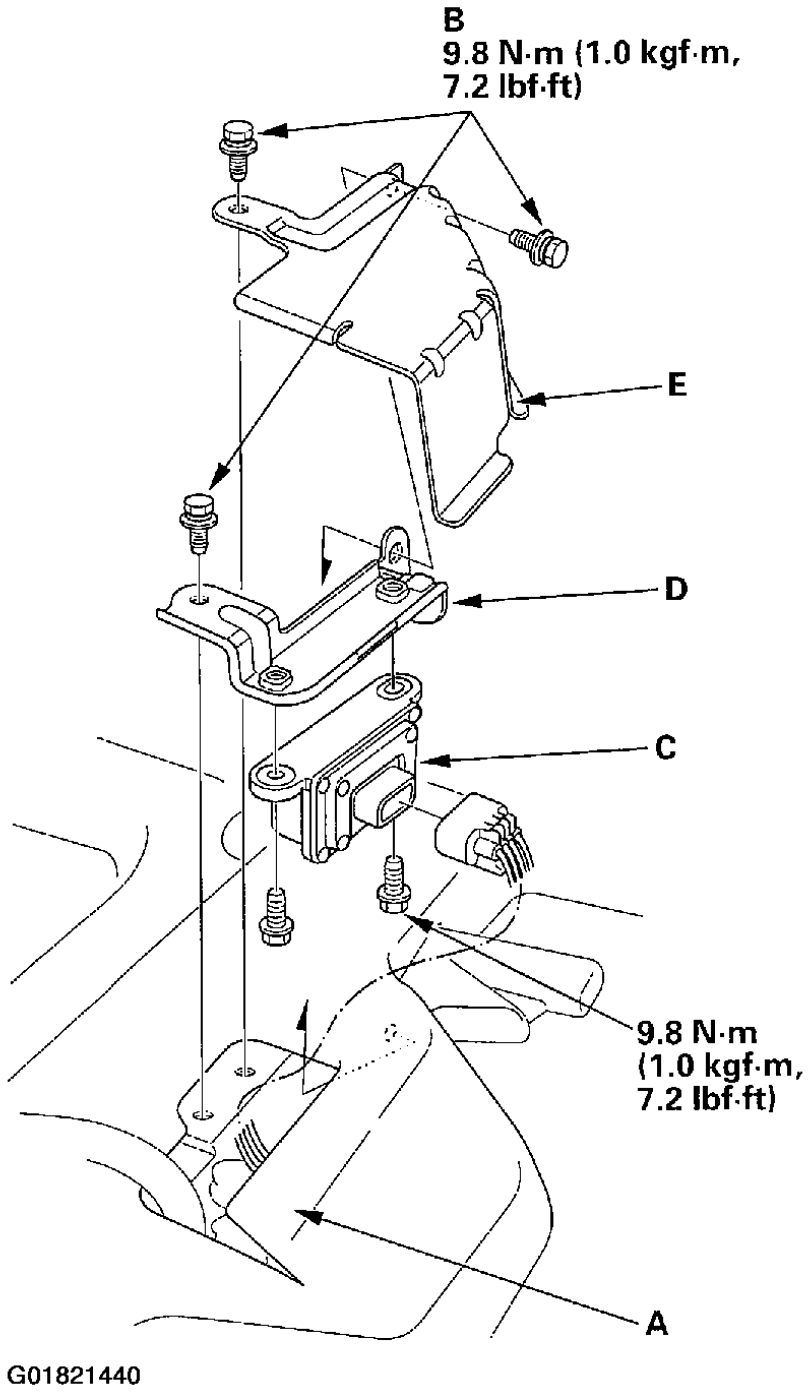


Fig. 75: Removing The Yaw Rate-Lateral Acceleration Sensor

3. Remove the sensor cover mounting bolts (B).
4. Remove the sensor cover (E).

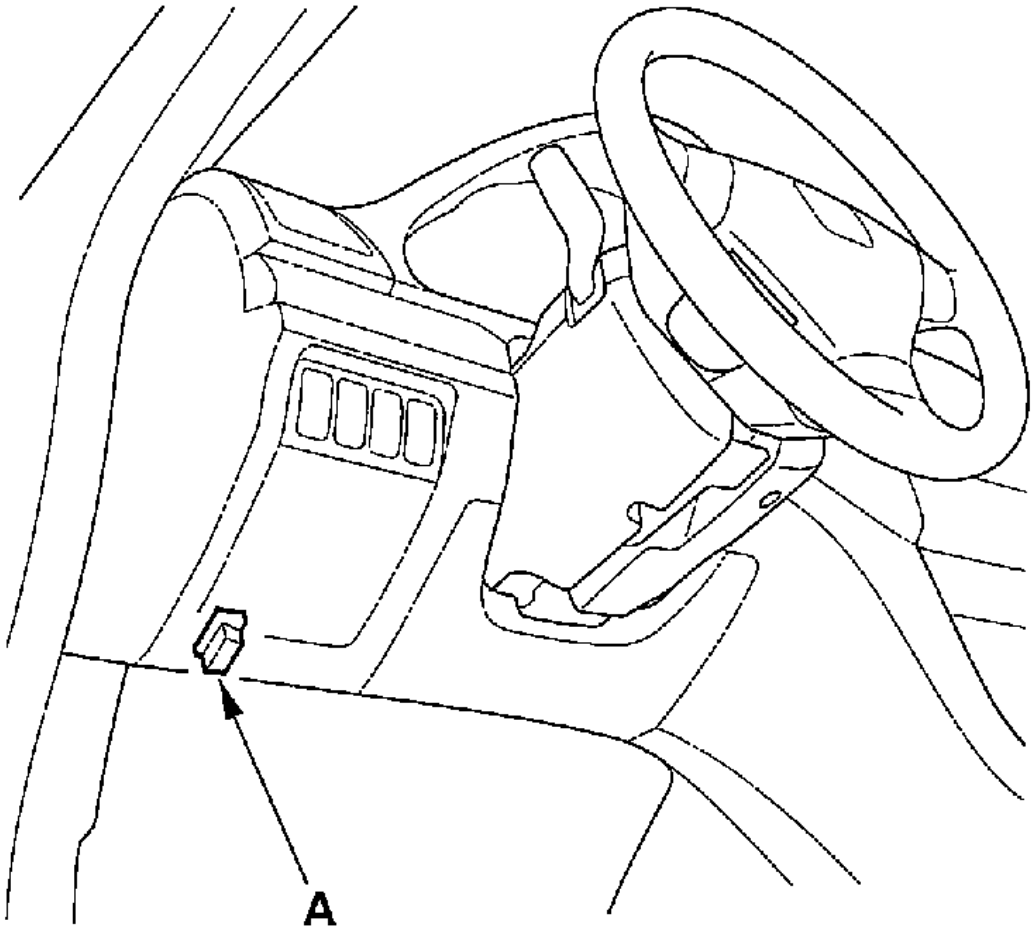
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5. Remove the yaw rate-lateral acceleration sensor (C) with the bracket (D).
6. Remove the bracket.
7. Install the sensor in the reverse order of removal.

VSA SENSOR NEUTRAL POSITION MEMORIZATION

NOTE: Do not press the brake pedal during this procedure.

1. Park the vehicle on a flat and level surface.
2. With the ignition switch OFF, connect the HDS to the 16P date link connector (DLC) (A) under the driver's side of the dashboard.



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Fig. 76: Connecting The HDS To The 16P Data Link Connector (DLC) Under The Left Side Of The Dashboard

3. Short the SCS circuit to body ground using the HDS.
4. Turn the ignition switch ON (II) with the brake pedal position switch released.
5. The ABS indicator comes on for 2 seconds and goes off.
6. After the ABS indicator goes off, press and release the VSA OFF switch once within 0.5 seconds.
7. After the ABS indicator comes on, press and release the VSA OFF switch once within 0.5 seconds.
8. The VSA activation indicator blinks two times and goes off in one second, then the system completes the VSA sensor neutral position memorization.
9. When the ABS indicator, VSA indicator and VSA activation indicator go off, the memorizing is done. If the indicators do not go off, retry these steps.
10. Turn the ignition switch OFF, and disconnect the HDS from the 16P DLC.

VSA OFF SWITCH TEST

1. Remove the VSA OFF switch (A) from the switch panel.

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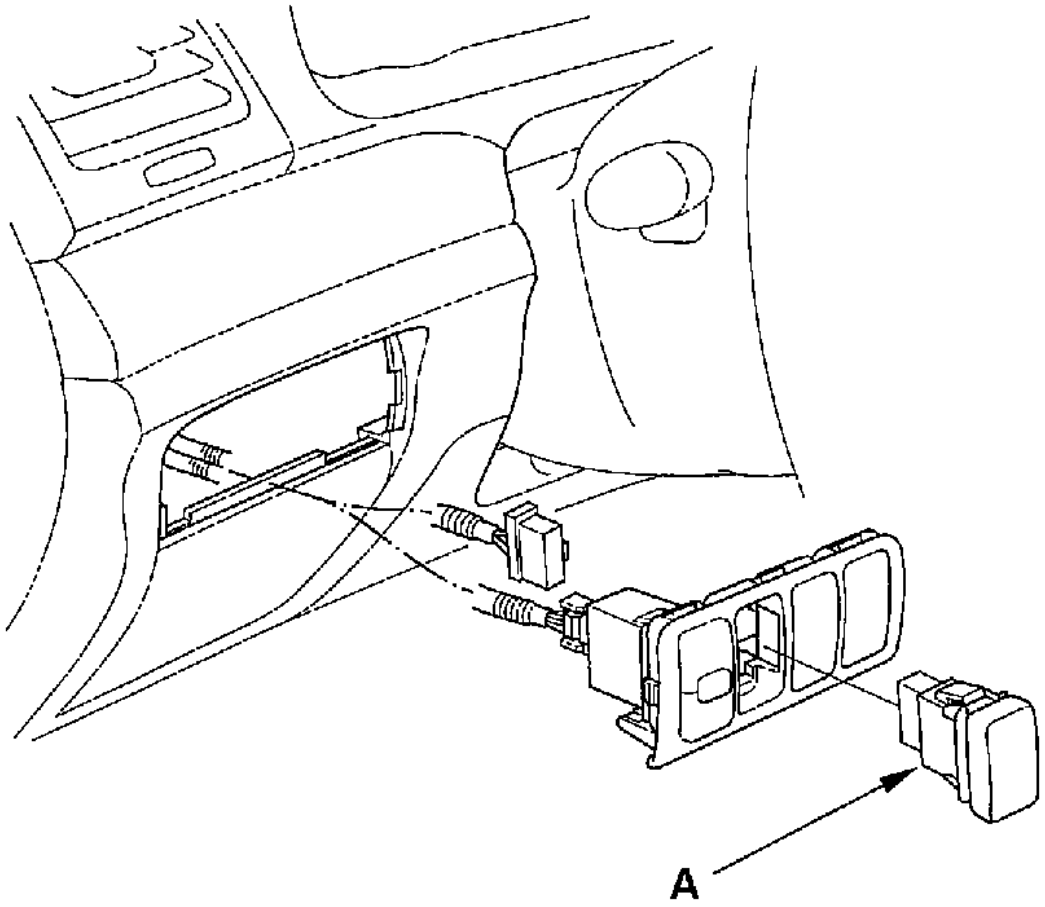


Fig. 77: Removing The VSA OFF Switch

2. Disconnect the VSA OFF switch 5P connector.
3. Check for continuity between the VSA OFF switch connector terminal No. 1 and No. 2. There should be continuity when the switch is pressed, and no continuity when the switch is released.

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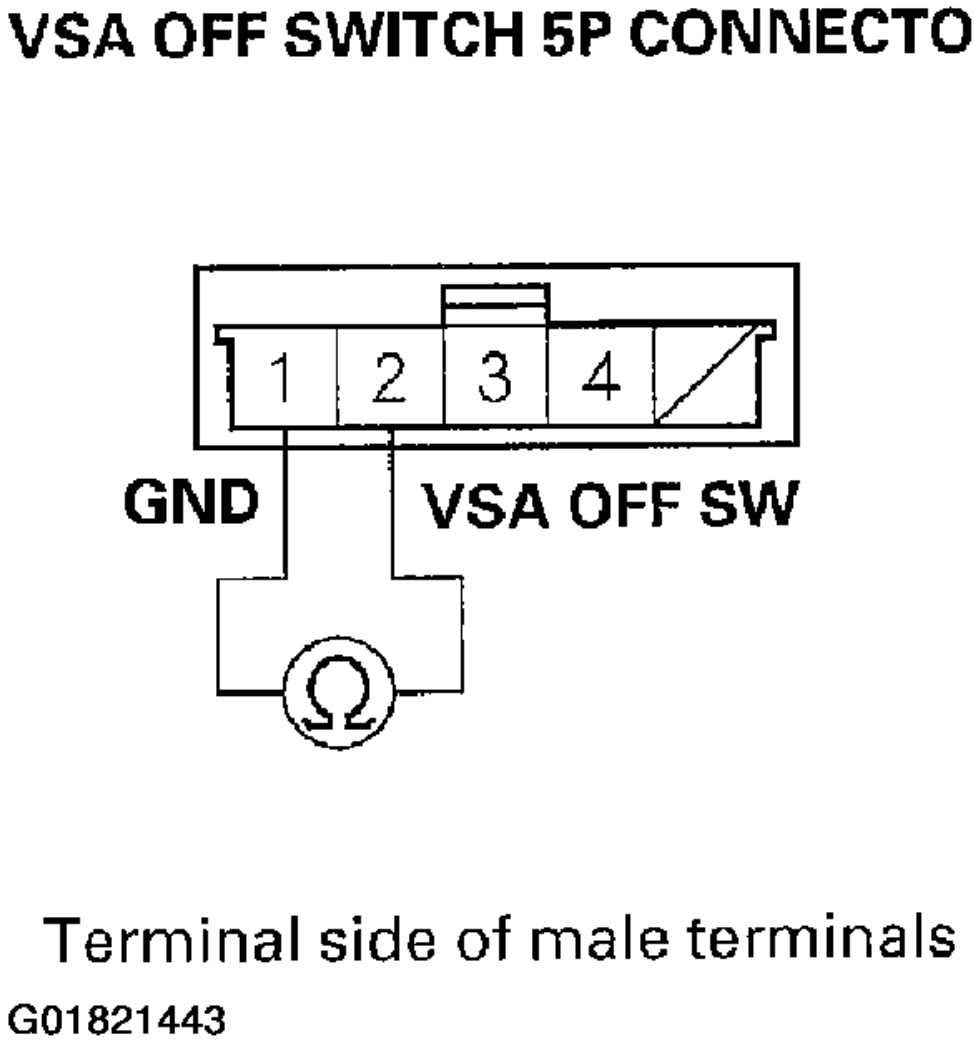


Fig. 78: Checking For Continuity Between The VSA OFF Switch Connector Terminals No. 1 & No. 2

4. Check for continuity between the VSA OFF switch connector terminal No. 3 and No. 4. There should be continuity at all times.

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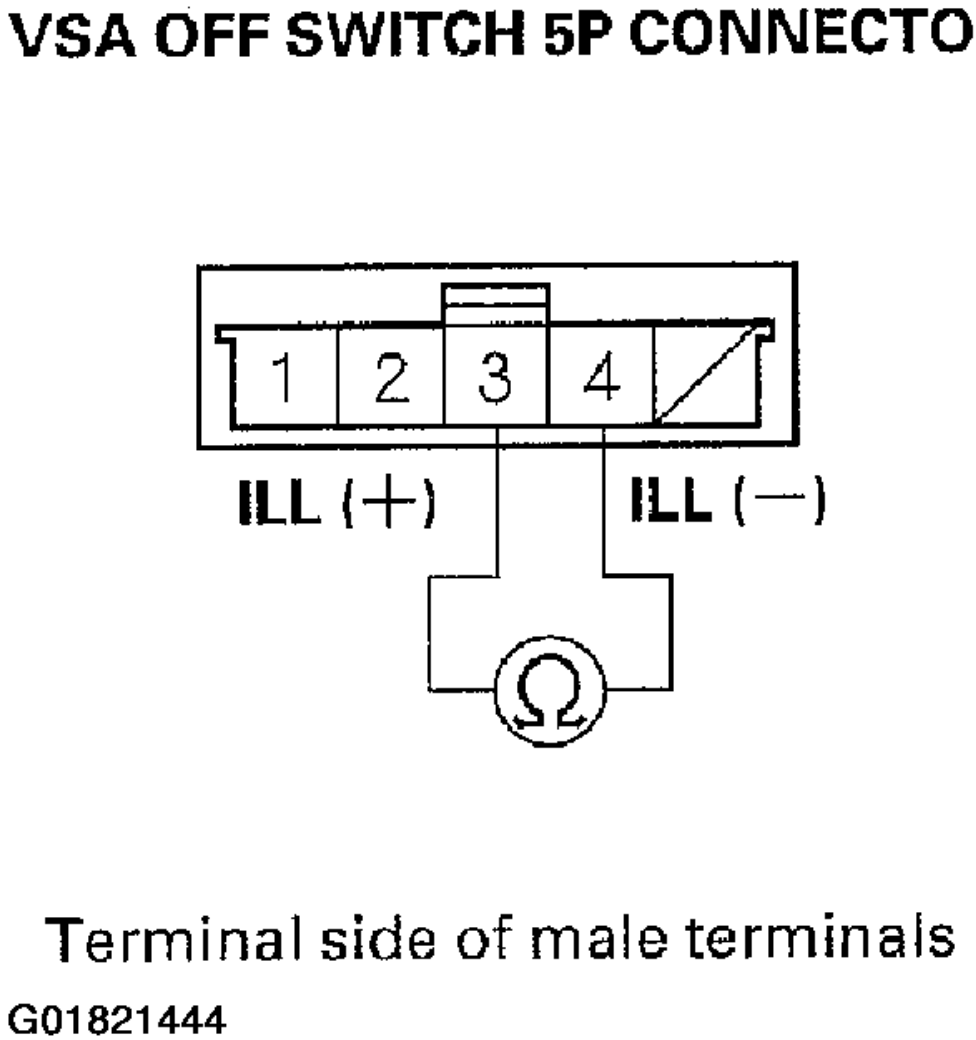


Fig. 79: Checking For Continuity Between The VSA OFF Switch Connector Terminals No. 3 & No. 4

VSA MODULATOR-CONTROL UNIT REMOVAL & INSTALLATION

NOTE:

- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.**
- **Be careful not to damage or deform the brake lines during removal and installation.**
- **To prevent the brake fluid from flowing, plug and cover the hose ends and**

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joints with a shop towel or equivalent material.

REMOVAL

1. Pull up the lock (A) of the VSA control unit 47P connector (B), and the connector disconnects itself.

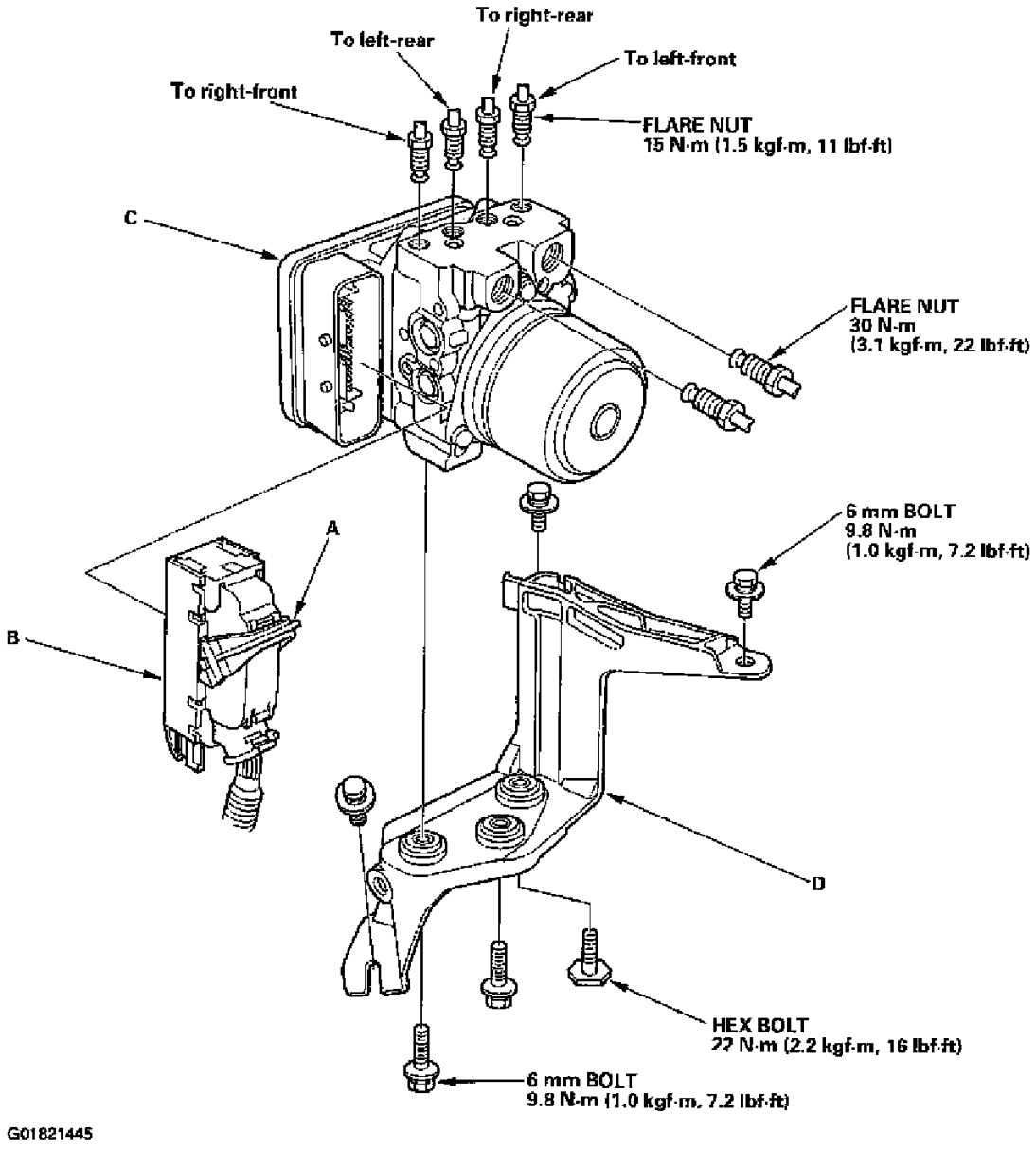


Fig. 80: Removing VSA Modulator-Control Unit

2. Disconnect the six brake lines.
3. Remove the three 6 mm bolts, then remove the VSA modulator-control unit/bracket (C/D) from the body.

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4. Remove the two 6 mm bolts and the hex bolt, then remove the VSA modulator-control unit from the bracket.

INSTALLATION

1. Install the VSA modulator-control unit on the bracket, then tighten the two 6 mm bolts and the hex bolt.
2. Install the VSA modulator-control unit/bracket on the body, then tighten the three 6 mm bolts.
3. Reconnect the six brake lines, then tighten the nuts.
4. Align the connecting surface of the VSA control unit 47P connector.
5. Carefully push in the lock of the VSA control unit 47P connector until you hear it click into place, then confirm the connector is fully seated.
6. Bleed the brake system, starting with the front wheels (see **BLEEDING BRAKE SYSTEM**).
7. Start the engine, and check that the ABS and VSA indicators go off.
8. Test-drive the vehicle, and check that the ABS and VSA indicators do not come on.

WHEEL SENSOR INSPECTION

1. Clean the encoder, and make sure no metal is stuck to the encoder surface.
2. Check the magnetic encoder (A) for damage. If cracked or damaged, replace the encoder.

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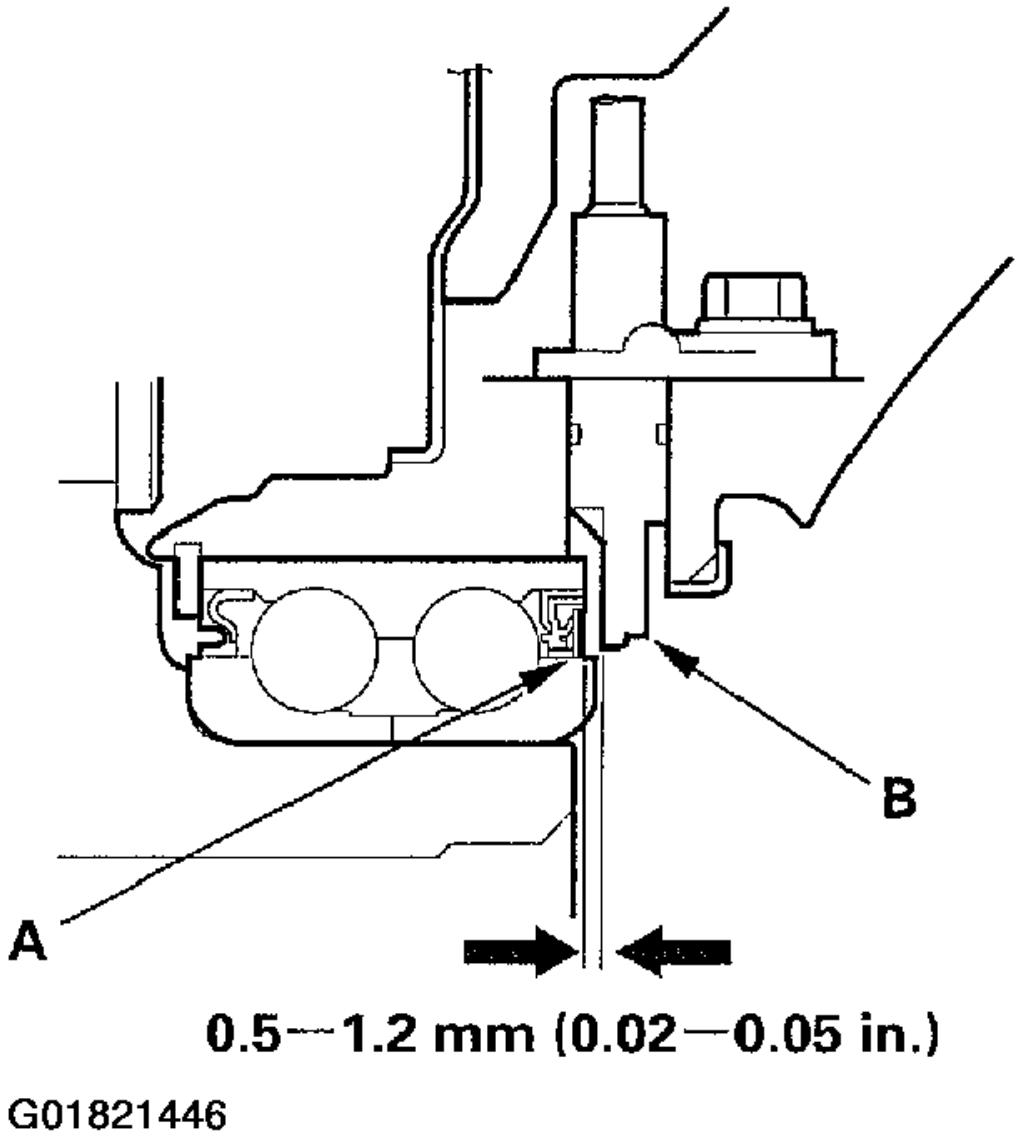


Fig. 81: Measuring The Air Gap Between The Wheel Sensor & The Magnetic Encoder (Front)

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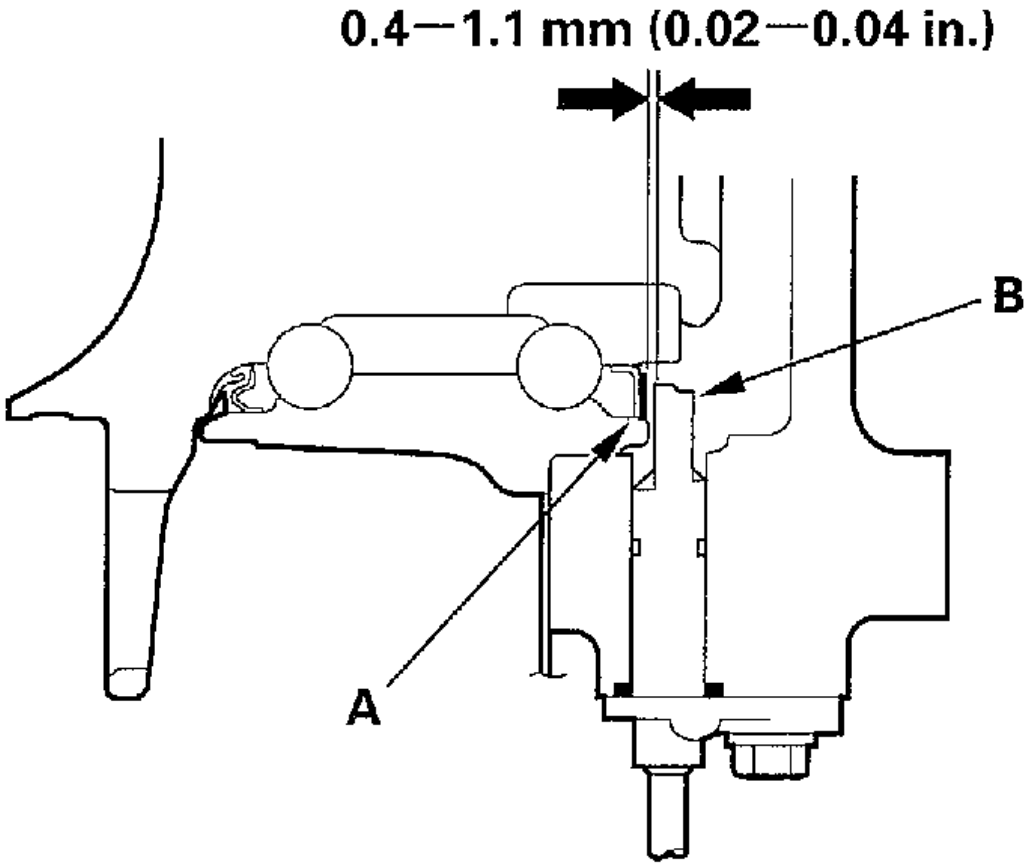


Fig. 82: Measuring The Air Gap Between The Wheel Sensor & The Magnetic Encoder (Rear)

3. Measure the air gap between the wheel sensor (B) and the magnetic encoder all the way around while rotating the encoder.

   Standard:

   Front: 0.5-1.2 mm (0.02-0.05 in.)

   Rear: 0.4-1.1 mm (0.02-0.04 in.)

WHEEL SENSOR REPLACEMENT

NOTE: Install the sensor carefully to avoid twisting the wires.

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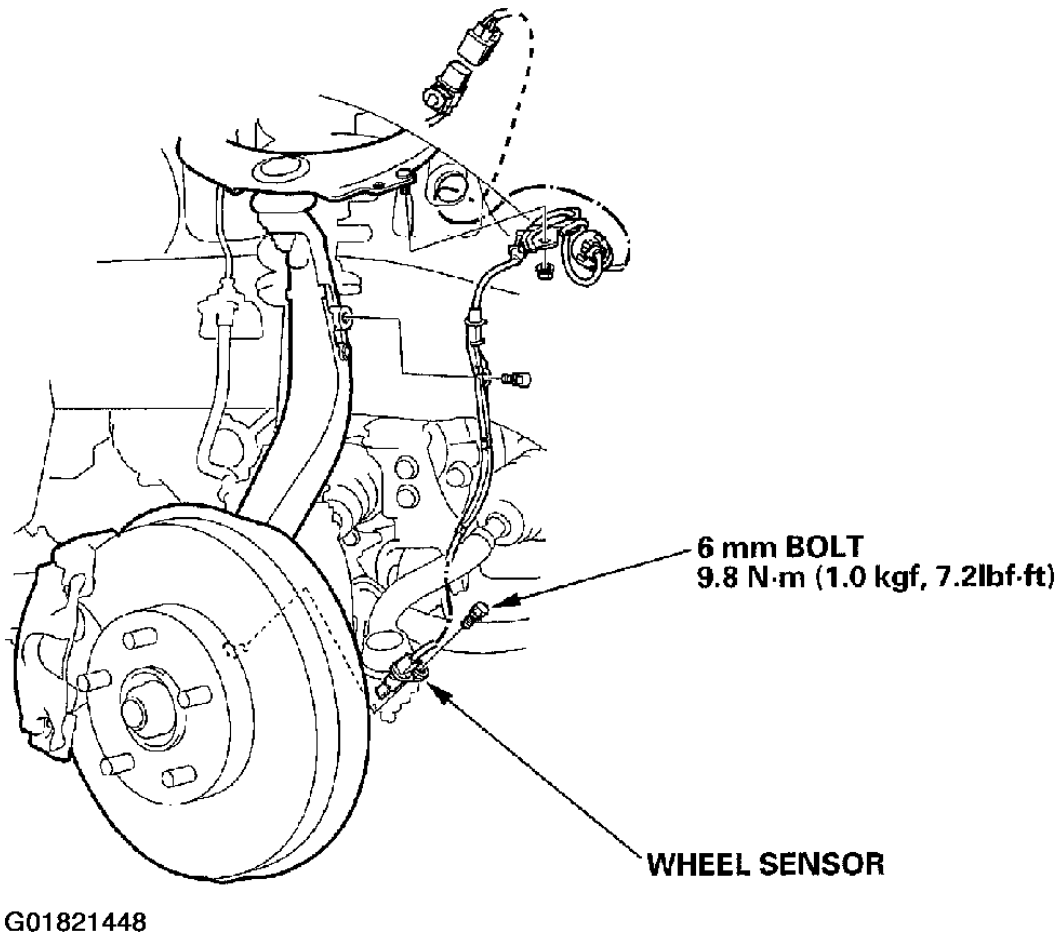


Fig. 83: Replacing Wheel Sensor (Front)

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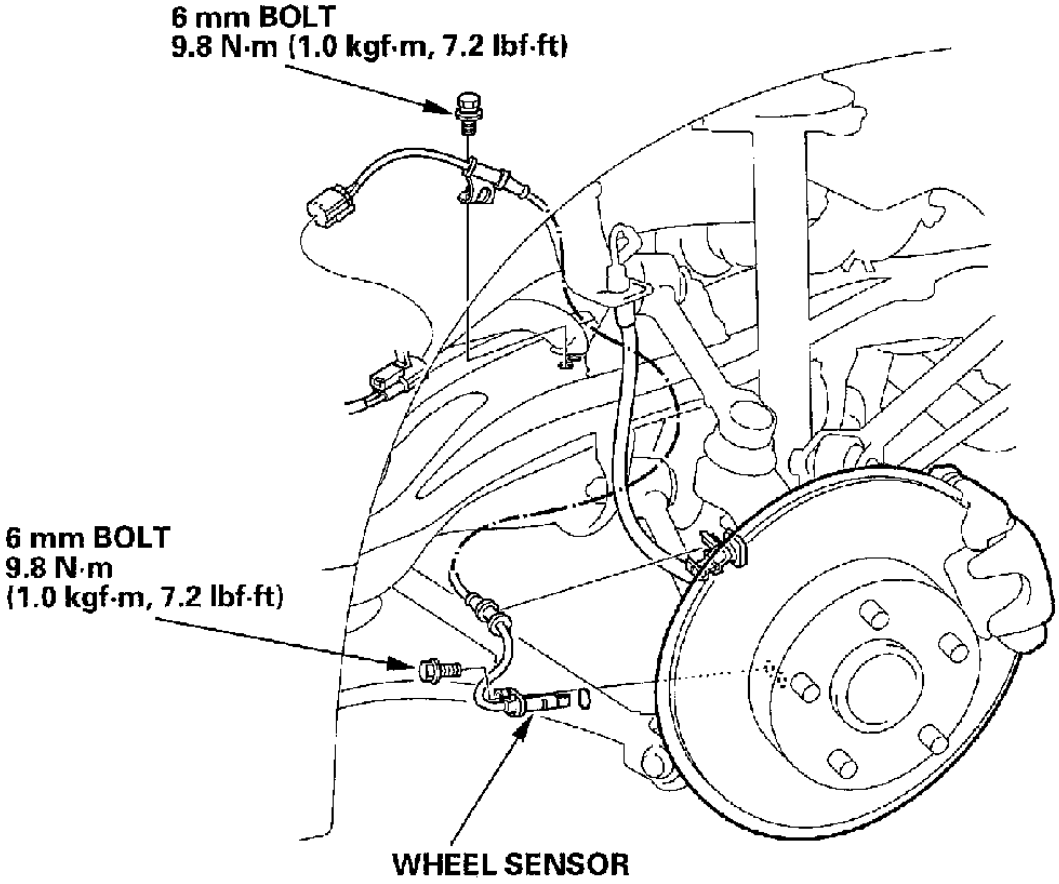


Fig. 84: Replacing Wheel Sensor (Rear)

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2004 WHEEL ALIGNMENT

Specifications & Procedures - TSX

JACKING & HOISTING

NOTE: Prior to performing wheel alignment, perform preliminary visual and mechanical inspection of wheels, tires and suspension components. See PRE-ALIGNMENT INSTRUCTIONS in WHEEL ALIGNMENT THEORY & OPERATION article in STEERING in GENERAL INFORMATION.

WARNING: Never use a bumper jack for lifting or supporting vehicle.

FLOOR JACK

Set parking brake. Block wheels not being lifted. When lifting rear of vehicle, set manual transmission into Reverse, or automatic transmission into Park. Lift vehicle at indicated points. See **Fig. 1** .

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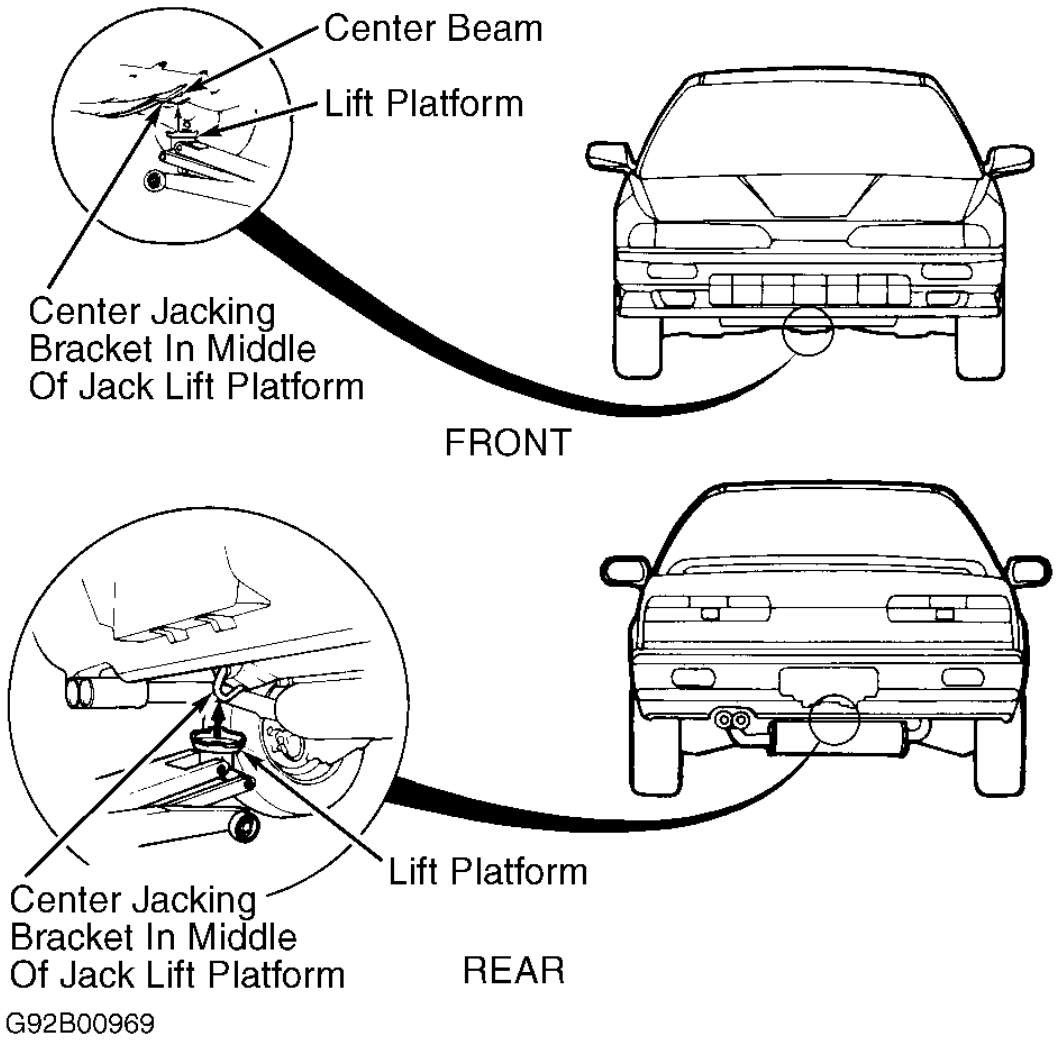


Fig. 1: Identifying Floor Jack Lifting Points (Typical)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HOIST

Position lift blocks as shown. See **Fig. 2** . Raise hoist a few inches. Rock vehicle to ensure it is firmly supported. Raise hoist to full height. Inspect lift points for solid support.

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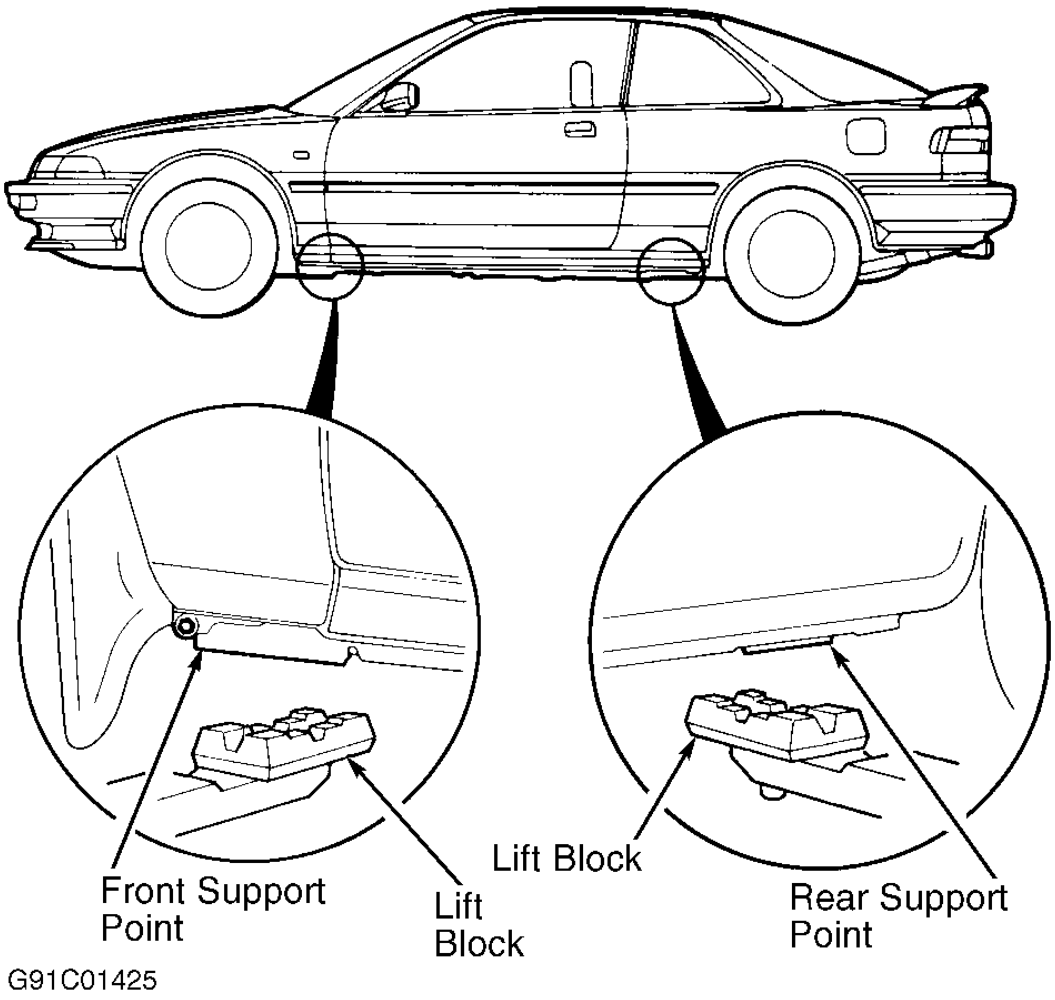


Fig. 2: Identifying Hoist Lifting Points (Typical)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WHEEL ALIGNMENT PROCEDURES

NOTE: Manufacturer recommends using commercially-available computerized 4-wheel alignment equipment to measure vehicle alignment.

CAMBER INSPECTION

1. Ensure suspension has not been modified. Ensure tire size and pressures are correct. Check wheel and tire runout. Check suspension ball joints for looseness or wobbling.
2. Read camber according to manufacturer instructions. If camber is not within specification, check for bent or damaged suspension components. See **WHEEL ALIGNMENT SPECIFICATIONS** .

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CASTER INSPECTION

1. Ensure suspension has not been modified. Ensure tire size and pressures are correct. Check wheel and tire runout. Check suspension ball joints for looseness or wobbling. Check the steering wheel angle. If steering wheel is significantly off center, it may be necessary to remove the steering wheel and reposition it on the spline.
2. Read caster according to manufacturer instructions. If caster is not within specification, check for bent or damaged suspension components. See **WHEEL ALIGNMENT SPECIFICATIONS** .

TOE-IN ADJUSTMENT

NOTE: Measure toe-in with wheels facing straight ahead.

Front

1. Center steering wheel. Measure toe-in. Adjust toe-in if not within specification. See **WHEEL ALIGNMENT SPECIFICATIONS** . If adjustment is necessary, go to next step.
2. Loosen tie rod lock nuts. Adjust both the right and left wheels at the same time, by the same amount in opposite directions to obtain the correct toe-in and to keep the steering wheel straight. Tighten tie rod lock nuts while holding the tie-rod arm. Make sure the toe-in setting does not change. See **TORQUE SPECIFICATIONS** . Re-position tie rod boot if twisted or moved out of place.

Rear

1. Release parking brake. If parking brake is engaged, toe-in measurement may be incorrect. Check the toe-in. See **WHEEL ALIGNMENT SPECIFICATIONS** . If no adjustment is required, remove the alignment equipment. If adjustment is required, go to next step.
2. Hold adjusting bolt on lower control arm, and loosen lock nut. See **Fig. 3** . Turn adjuster bolt until toe-in is as specified. See **WHEEL ALIGNMENT SPECIFICATIONS** . Tighten self locking nut to specification while holding the adjusting bolt. See **TORQUE SPECIFICATIONS** .

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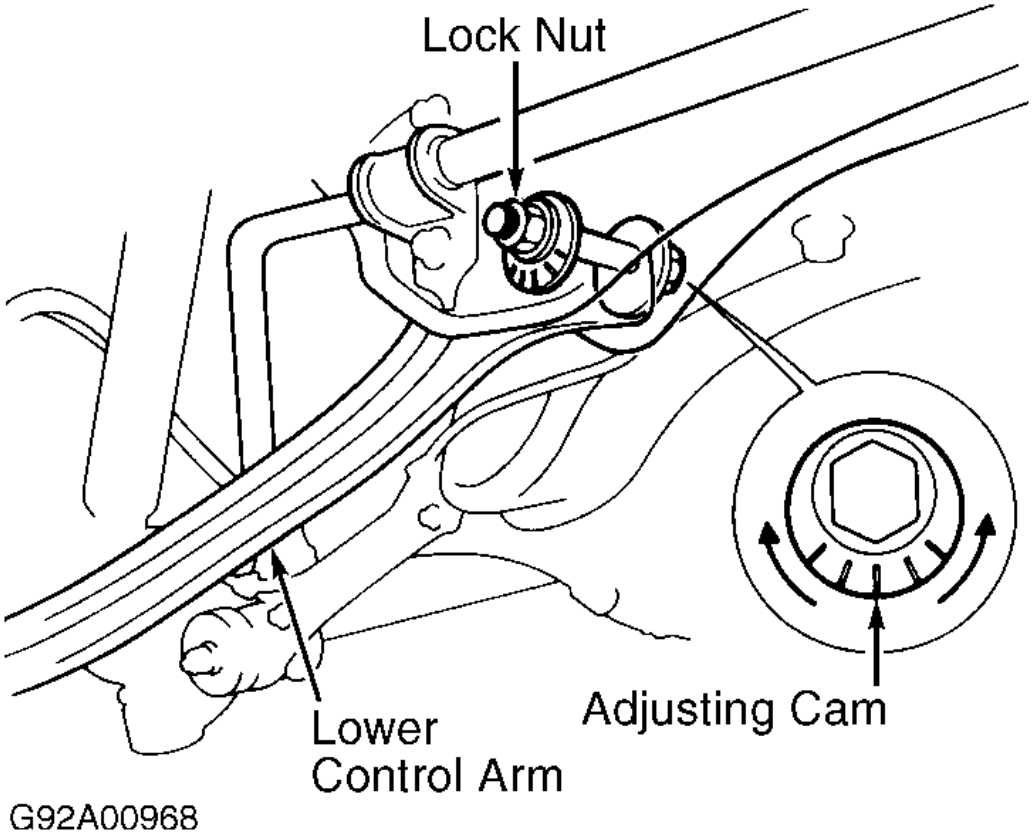


Fig. 3: Adjusting Rear Toe-In (Typical)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TURNING ANGLE INSPECTION

Turn the steering wheel fully to the right and left while applying the brake, and check the turning angles of both front wheels. See **WHEEL ALIGNMENT SPECIFICATIONS** . If the turning angle is not within the specification or the inward turning angles differ between the right and left side, check for bent or damaged suspension components.

RIDING HEIGHT ADJUSTMENT

NOTE: Riding height specification is not available from manufacturer. Ensure riding height between left and right side of vehicle does not differ by more than 1" (25 mm).

TORQUE SPECIFICATIONS

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TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Rear Control Arm Self-Locking Nut	40 (54)
Spindle Nut	181 (245)
Tie Rod Lock Nut	33 (44)
Wheel Lug Nut	80 (108)

WHEEL ALIGNMENT SPECIFICATIONS

WHEEL ALIGNMENT SPECIFICATIONS

Application	Preferred	Range
Camber (1)		
Front	0	-.75 To .75
Rear	-1	-1.5 To -.5
Caster (1)		
Front	3.22	2.47 To 3.97
Toe-In (2)		
Front	0	-.08 To .08 (-2 To 2)
Rear	.08 (2)	0 To .16 (0 To 4)
Toe-Out On Turns (1)		
Inner	35.25	N/A
Outer	29.63	N/A
Turning Angle (1)		
Inward Wheel	35.25	33.25 To 37.25
Outward Wheel (Reference)	29.63	N/A

(1) Measurements are in degrees.

(2) Measurements are in inches (mm).

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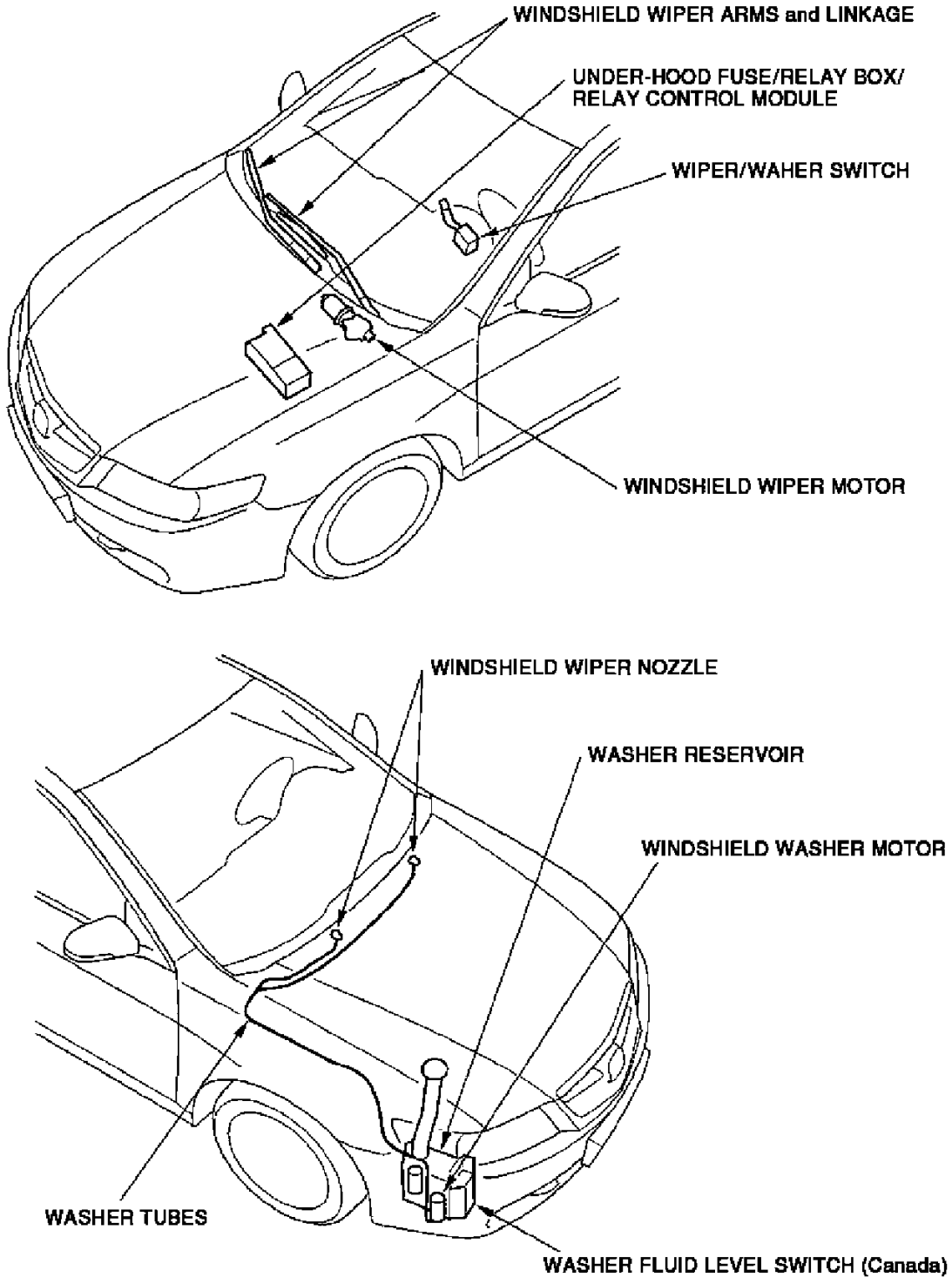


Fig. 1: Locating Wipers/Washers Components

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CIRCUIT DIAGRAM

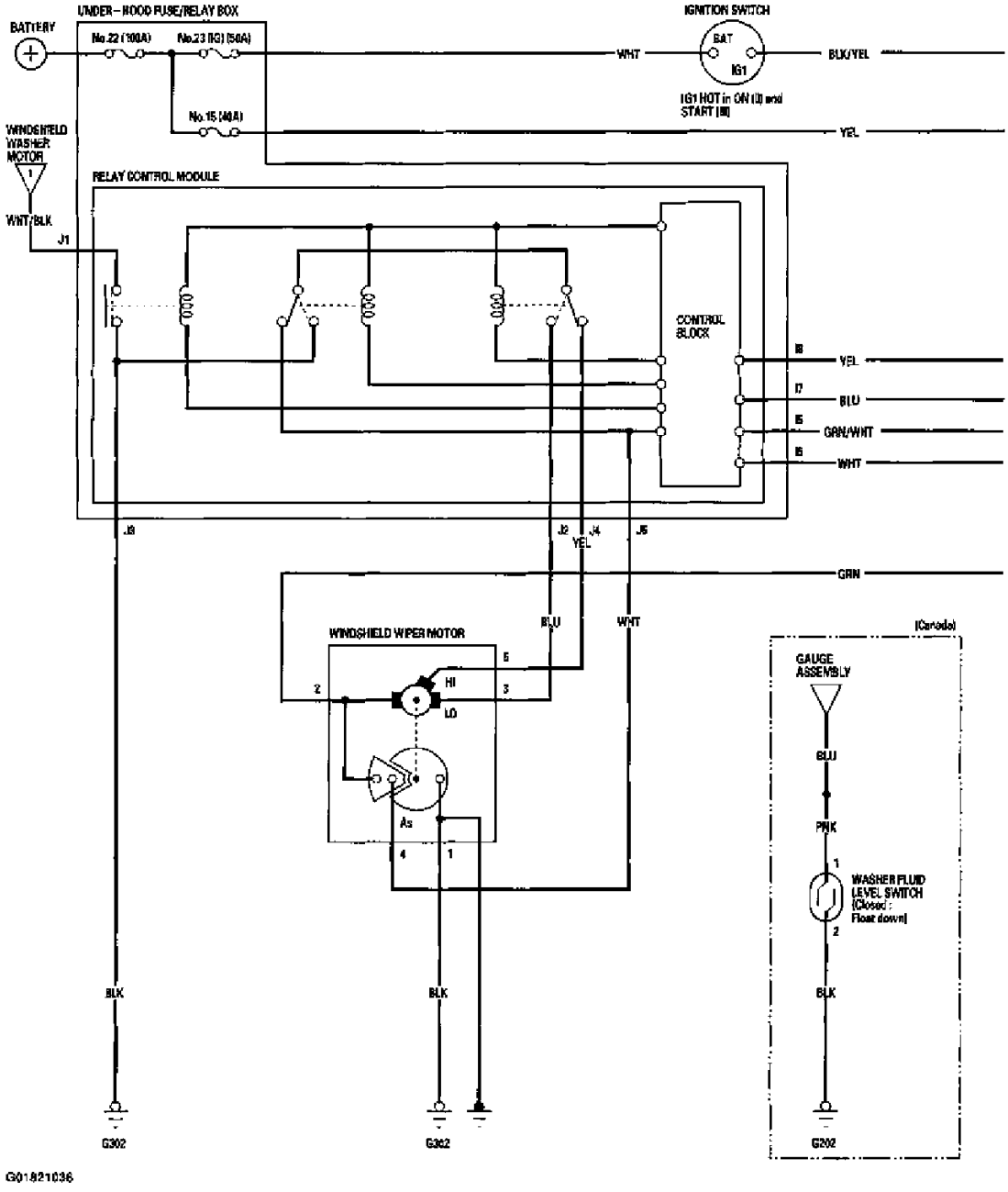


Fig. 2: Wipers/Washers Wiring Diagram (1 Of 2)

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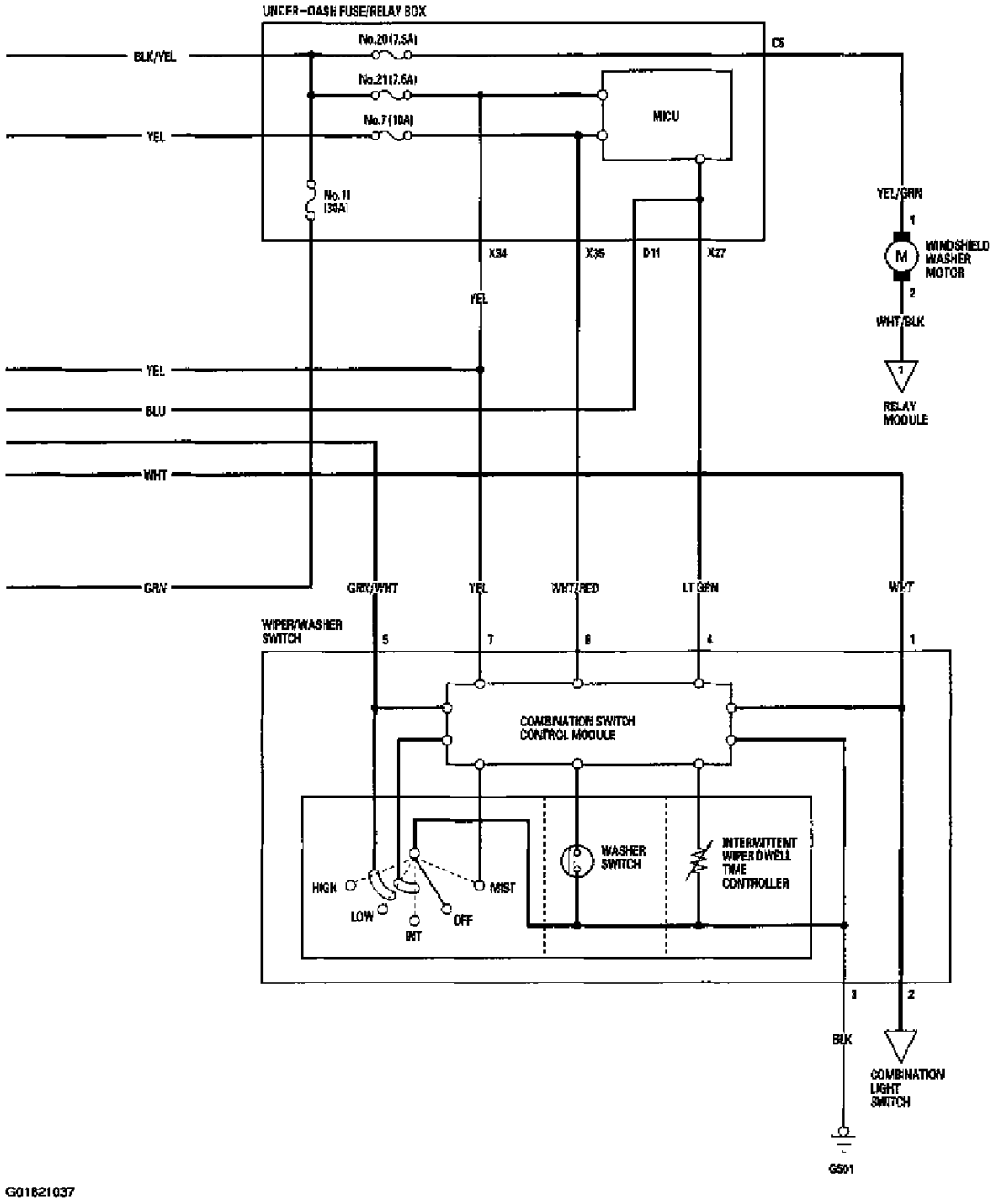


Fig. 3: Wipers/Washers Wiring Diagram (2 Of 2)

DTC TROUBLESHOOTING

DTC B1076: WINDSHIELD WIPER SIGNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).

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3. Turn the wiper switch to INT, LOW, then HIGH for at least 2 seconds each.
4. Check for DTCs using the HDS.

   Is DTC B1076 indicated?

   YES - Go to step 5.

   NO - Intermittent failure. The windshield wiper system is OK at this time. Check pinfits and connections.

5. With the wiper/washer switch OFF, select WINDSHIELD WIPERS from the HDS, and enter the DATA LIST.
6. Check the ON/OFF information of the Windshield Wiper Switch (BACK-UP) in the DATA LIST.

   Is the information indicator OFF?

   YES - Go to step 7.

   NO - Go to step 11.

7. Turn the wiper switch ON (low or high).
8. Check the ON/OFF information of the Windshield Wiper Switch (BACK-UP) in the DATA LIST.

   Is the information indicator ON?

   YES - Faulty relay control module; replace the under-hood fuse/relay box.

   NO - Go to step 9.

9. Disconnect the relay control module 10P connector and the wiper/washer switch 8P connector.
10. Check for continuity between the No. 5 terminal of the relay control module 10P connector and the No. 5 terminal of the wiper/washer switch (combination switch control unit) 8P connector.

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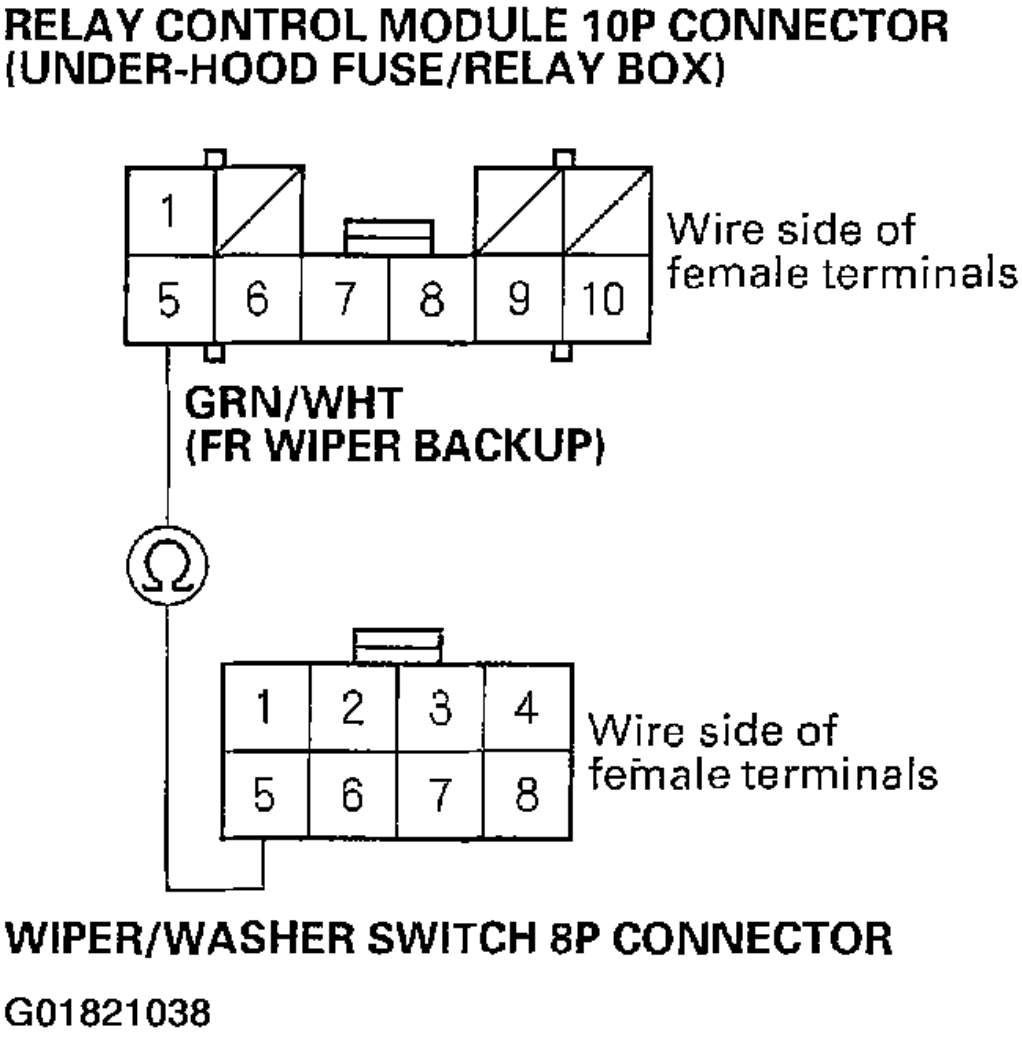


Fig. 4: Checking For Continuity Between The Relay Control Module 10P Connector And The Wiper/Washer Switch 8P Connector

Is there continuity?

YES - Faulty combination switch control unit; replace the wiper/washer switch.

NO - Repair an open in the GRN/WHT wire.

11. Disconnect the relay control module 10P connector and the wiper/washer switch 8P connector.
12. Check for continuity between the No. 5 terminal of the relay control module 10P connector and body ground.

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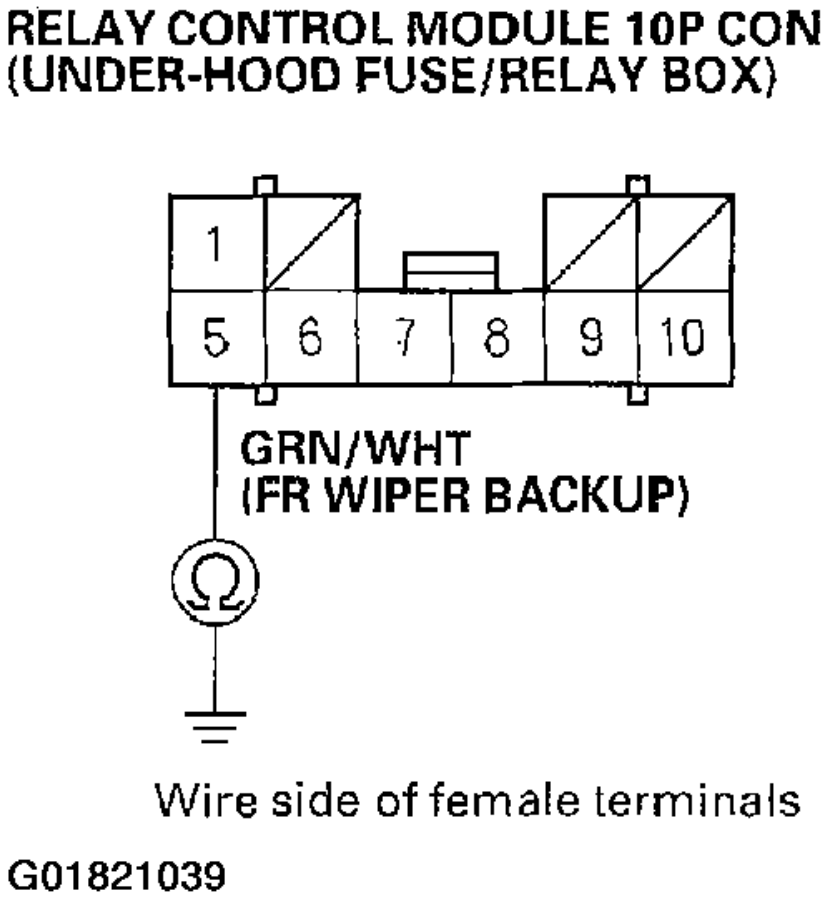


Fig. 5: Checking For Continuity Between The No. 5 Terminal Of The Relay Control Module 10P Connector And Body Ground

Is there continuity?

YES - Repair a short in the GRN/WHT wire.

NO - Faulty relay control module; replace the under-hood fuse/relay box.

DTC B1077: WINDSHIELD WIPER (AS) SIGNAL ERROR

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).
3. Turn the wiper switch to INT, LOW, then HIGH for at least 2 seconds each.
4. Check for DTCs using the HDS.

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Is DTC B1077 indicated?

YES - Go to step 5.

NO - Intermittent failure. The windshield wiper system is OK at this time. Check pinfits and connections.

5. Turn the ignition switch ON (II).
6. Select WINDSHIELD WIPERS from the HDS and enter the DATA LIST.
7. Turn the windshield wiper switch ON.
8. Check the ON/OFF information of the Windshield Wiper Switch (INTERMITTENT), Windshield Wiper Switch (LOW), and Windshield Wiper Switch (HIGH) in the DATA LIST at each wiper switch position.

Is the information indicator ON at each switch position?

YES - Go to step 9.

NO - Go to step 17.

9. Select FUNCTIONAL. TEST from the TEST MODE MENU, and operate the windshield wiper motor with Windshield Wiper Switch (LOW) and Windshield Wiper Switch (HIGH).

Does the windshield wiper motor run?

YES - Go to step 10.

NO - Go to step 18.

10. Turn the windshield wiper switch OFF, and stop the wiper arms at the park position. (If the wiper arms do not stop at the park position, turn the ignition switch OFF and stop them at the park position correctly.)
11. Turn the ignition switch ON (II).

Do the wipers begin to run as soon as the ignition switch is cycled ON?

YES - Go to step 16.

NO - Go to step 12.

12. Check the ON/OFF information of the Windshield Wiper Motor PARK Switch in the DATA LIST.

Is the information indicator OFF?

YES - Go to step 13.

NO - Faulty relay control module; replace the under-hood fuse/relay box.

13. Turn the ignition switch ON (II), and turn the windshield wiper switch ON at low speed.

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14. Check the ON/OFF information of the Windshield Wiper Motor PARK Switch in the DATA LIST.

    Does the DATA LIST information indicate ON and OFF alternately as the wipers pass the PARK position?

    YES - Intermittent failure, the windshield wiper system is OK at this time. Check pinfits and connections.

    NO - Go to step 15.

15. Check for continuity between the No. 4 terminal of the windshield wiper motor 5P connector and No. 5 terminal of the under-hood fuse/relay box 5P connector J.

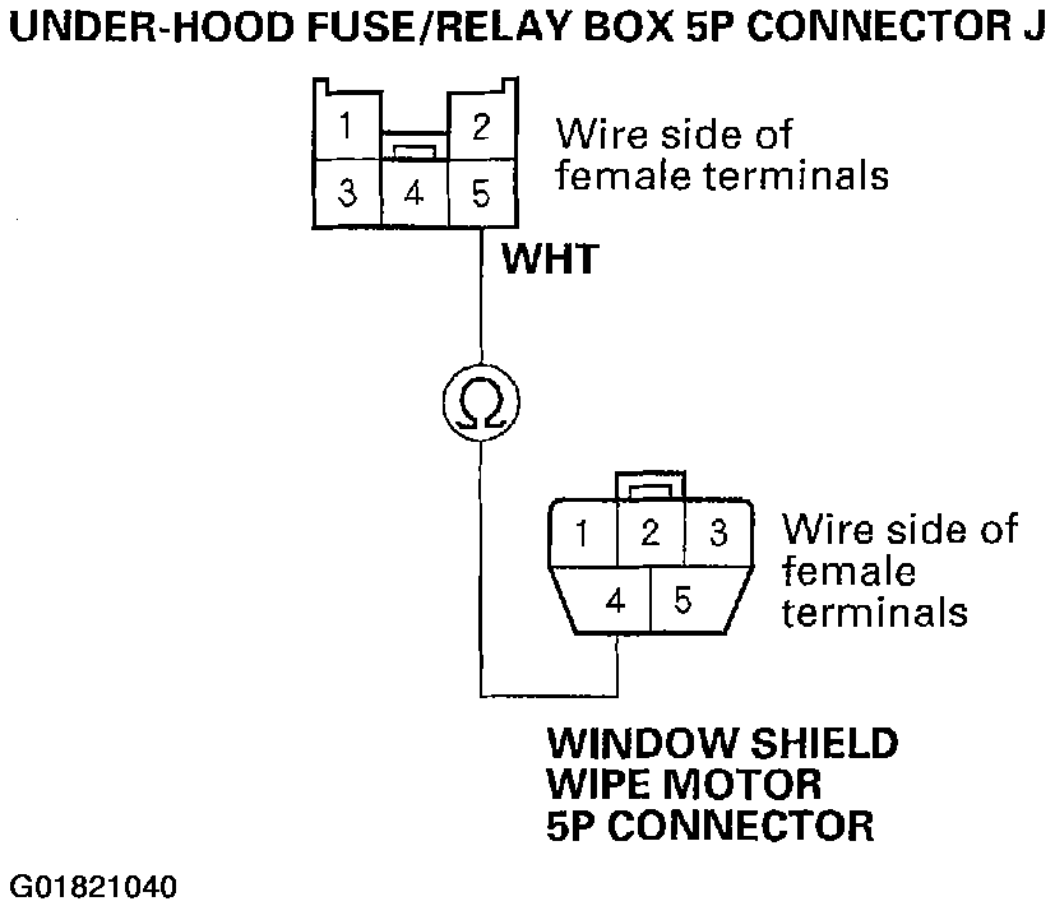


Fig. 6: Checking For Continuity Between The Windshield Wiper Motor 5P Connector And The Under-Hood Fuse/Relay Box 5P Connector J

Is there continuity?

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YES - Faulty windshield wiper motor; replace it.

NO - Repair an open in the WHT wire.

16. Check for continuity between the No. 5 terminal of the under-hood fuse/relay box 5P connector J and body ground.

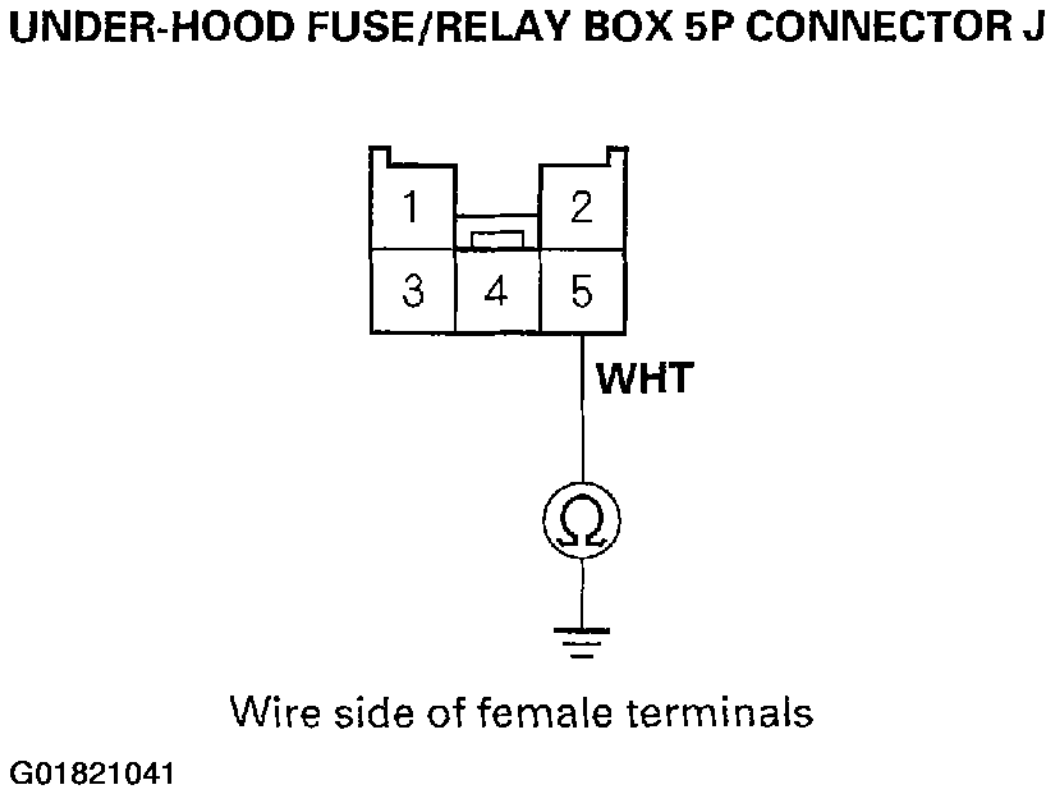


Fig. 7: Checking For Continuity Between The No. 5 Terminal Of The Under-Hood Fuse/Relay Box 5P Connector J And Body Ground

Is there continuity?

YES - Repair a short in the WHT wire.

NO - Faulty windshield wiper motor; replace it.

17. Check the No. 7 (10A), No. 11 (30A) and No. 21 (7.5A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

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YES - Faulty relay control module; replace the under-hood fuse/relay box.

NO - Replace the blown fuse and recheck the system.

18. Turn the ignition switch OFF, and check the No. 11 (30A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

    YES - Go to step 19.

    NO - Replace the blown fuse and recheck the system.

19. Turn the ignition switch ON (II).
20. Check for voltage between the No. 2 terminal of the windshield wiper motor 5P connector and body ground.

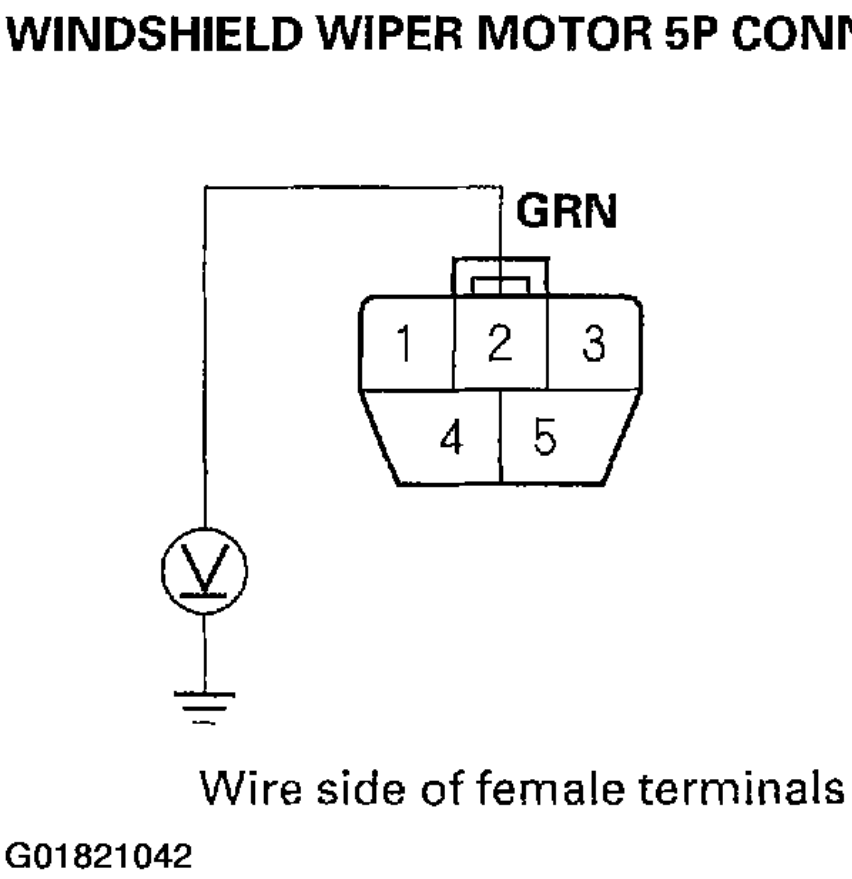


Fig. 8: Checking For Voltage Between The No. 2 Terminal Of The Windshield Wiper Motor 5P

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Connector And Body Ground

Is there battery voltage?

YES - Go to step 21.

NO - Repair an open in the GRN wire.

21. Check for continuity between the No. 3 and No. 5 terminals of the windshield wiper motor 5P connector and the No. 2 and No. 4 terminals of the under-hood fuse/relay box 5P connector J.

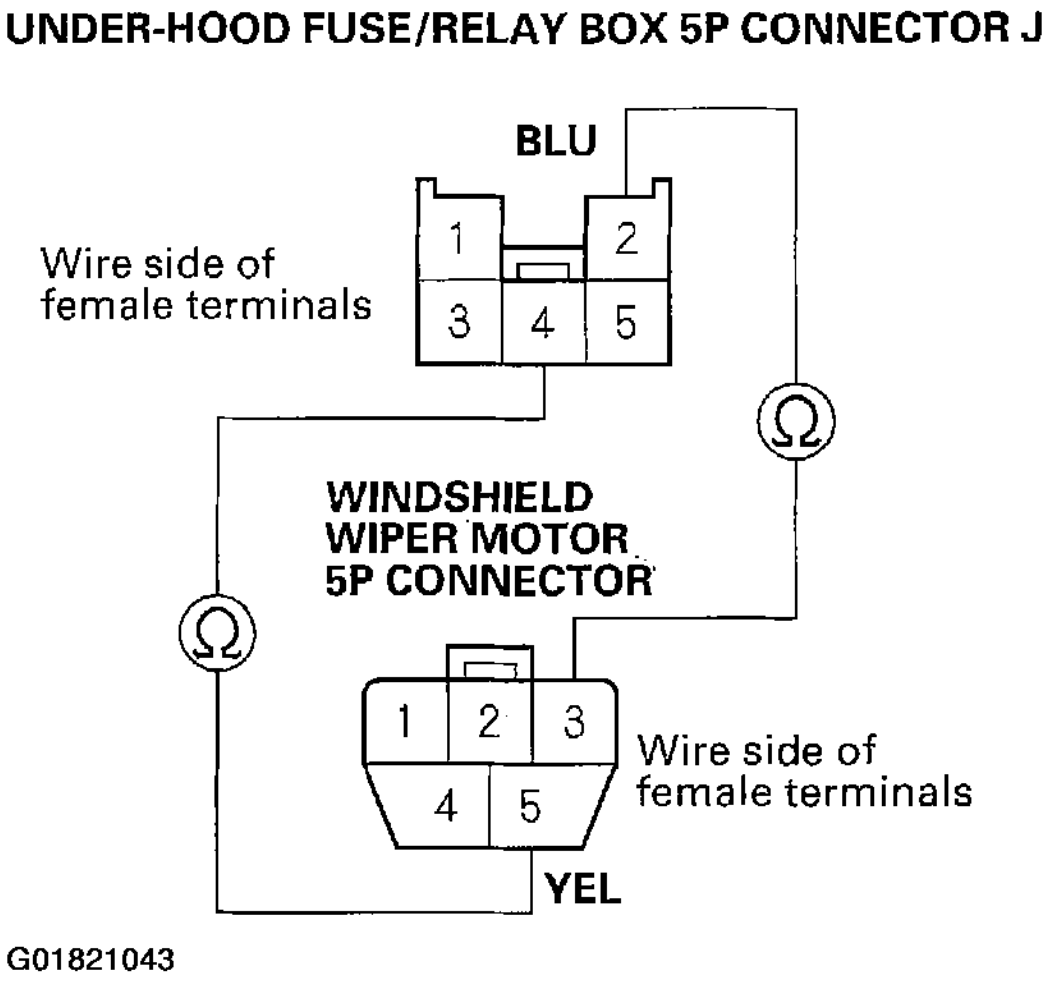


Fig. 9: Checking For Continuity Between The Windshield Wiper Motor 5P Connector And The Under-Hood Fuse/Relay Box 5P Connector J

Is there continuity?

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YES - Repair an open in the BLU or YEL wire.

NO - Go to step 22.

22. Perform the wiper motor test (see **WIPER MOTOR TEST**).

    Does the wiper motor operate correctly?

    YES - Faulty relay control module; replace the under-hood fuse/relay box.

    NO - Replace the windshield wiper motor.

DTC B1281: WINDSHIELD WIPER SWITCH MIST POSITION CIRCUIT MALFUNCTION, DTC B1282: WINDSHIELD WIPER SWITCH INT (AUTO) POSITION CIRCUIT MALFUNCTION, DTC B1283: WINDSHIELD WIPER SWITCH LOW POSITION CIRCUIT MALFUNCTION, DTC B1284: WINDSHIELD WIPER SWITCH HIGH POSITION CIRCUIT MALFUNCTION

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).
3. Turn the windshield wiper switch in MIST and wait for 2 seconds.
4. Turn the windshield wiper switch OFF and wait for 2 seconds.
5. Turn the windshield wiper switch in INT (AUTO) and wait for 2 seconds.
6. Turn the windshield wiper switch in LOW and wait for 2 seconds.
7. Turn the windshield wiper switch in HIGH and wait for 2 seconds.
8. Check for DTCs using the HDS.

   Is DTC B1281, B1282, B1283, or B1284 indicated?

   YES - Replace the windshield wiper/washer switch.

   NO - Intermittent failure, the windshield wiper/washer switch and the combination switch control unit are OK at this time. Check pin fits and connections.

WIPER/WASHER SWITCH TEST/REPLACEMENT

NOTE: The wiper/washer switch is built into the combination switch control unit. For the wiper/washer test, refer to the combination switch control unit input test (see WIPER/WASHER SWITCH INPUT TEST).

1. Remove the dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Disconnect the combination light switch 12P connector (A) and dashboard wire harness 8P connector (B)

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from the wiper/washer switch (C).

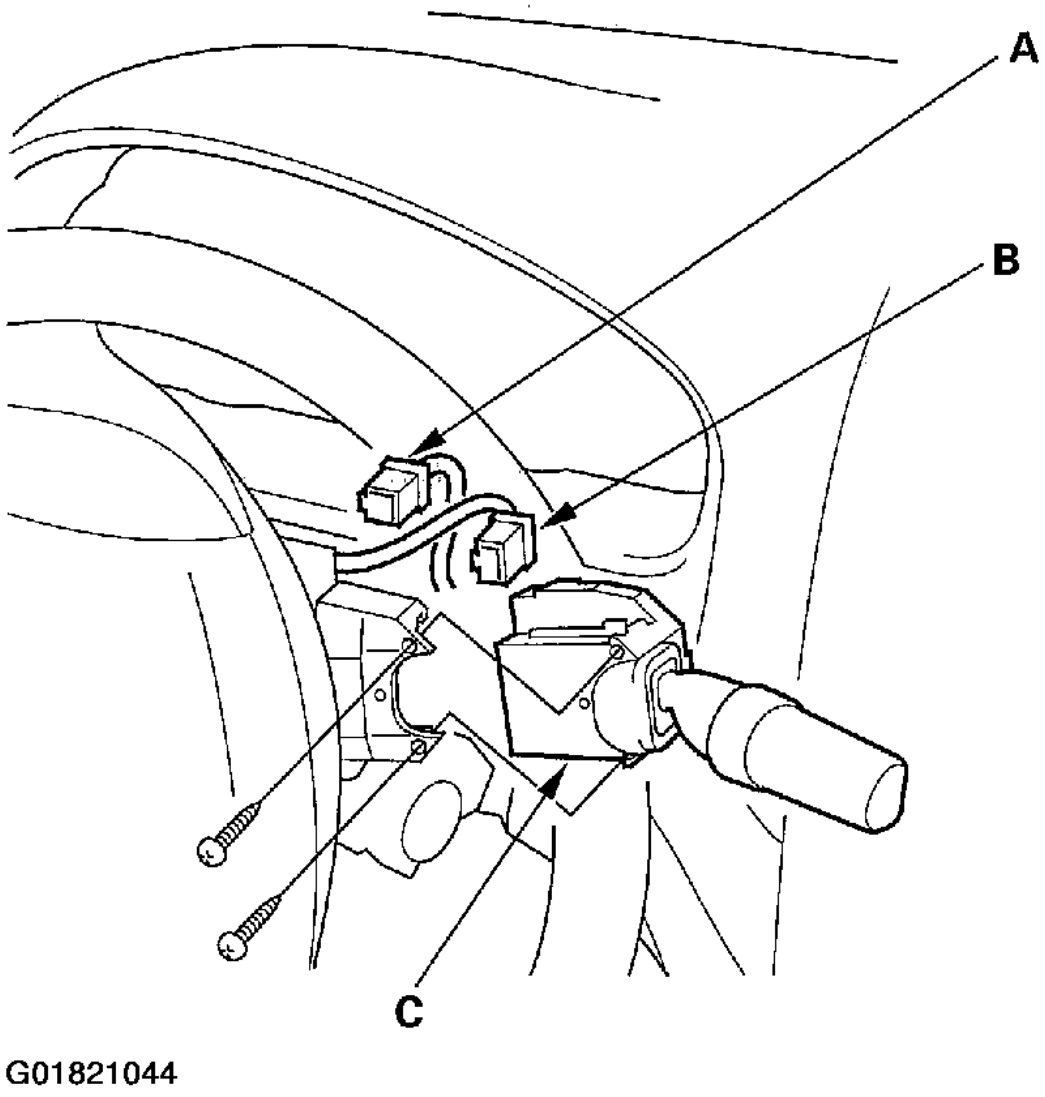


Fig. 10: Removing Wiper/Washer Switch

4. Remove the two screws, then slide out the wiper/washer switch.

WIPER/WASHER SWITCH INPUT TEST

1. Before troubleshooting the wiper/washer system, troubleshoot the B-CAN System Diagnosis Test Mode A (see page 22-77).
2. Remove the dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER**

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REMOVAL/INSTALLATION).

3. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
4. Disconnect the 8P connector (A) from the wiper/washer switch (B).

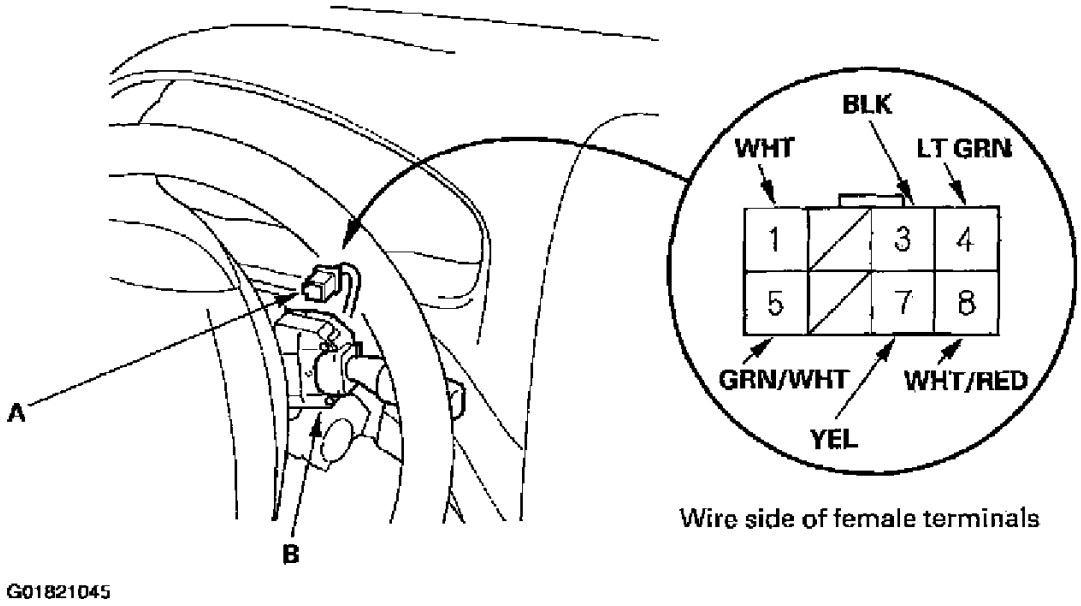


Fig. 11: Disconnecting The 8P Connector From The Wiper/Washer Switch

5. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 6.
6. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, replace the wiper/washer switch (combination switch control unit).

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Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
8	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 15 (40A) fuse in the under-hood fuse/relay box • Blown No. 7 (10A) fuse in the under-dash fuse/relay box • An open in the wire
7	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
5	GRN/WHT	Under all conditions	Check for continuity between the No. 5 terminal and under-hood fuse/relay box 10P connector No. 5 terminal: There should be continuity.	• An open in the wire
4	LT GRN	Under all conditions	Check for continuity between the No. 4 terminal and under-dash fuse/relay box X connector No. 27 terminal: There should be continuity.	• An open in the wire
1	WHT	Under all conditions	Check for continuity bwtween the No. 1 terminal and under-hood fuse/relay box 10P connector No.6 terminal: There should be continuity.	• An open in the wire

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Fig. 12: Wiper/Washer Switch Input Test

WIPER MOTOR TEST

1. Open the hood, and remove the wiper arms.

NOTE: Carefully remove the wiper arms, so that they do not touch the hood.

2. Remove the hood seal and cowl cover.
3. Disconnect the 5P connector (A) from the wiper motor (B).

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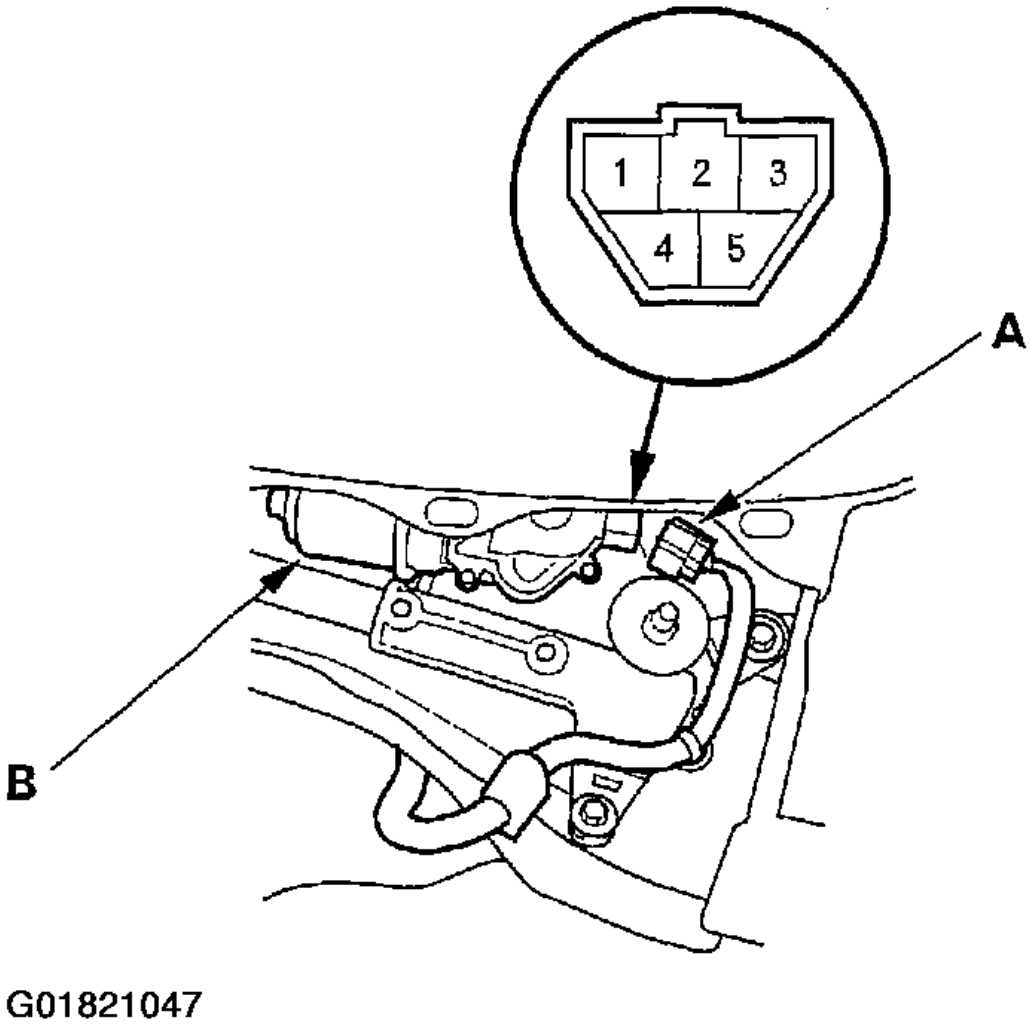


Fig. 13: Disconnecting The 5P Connector From The Wiper Motor

4. Test the motor by connecting battery power to the No.2 terminal and ground the No. 3 terminal of the wiper motor 5P connector. The motor should run at low speed. If the motor does not run or fails to run smoothly, replace the motor.
5. Test the motor by connecting battery power to the No. 2 terminal and ground the No. 5 terminal of the wiper motor 5P connector. The motor should run at high speed. If the motor does not run or fails to run smoothly, replace the motor.
6. Connect an analog voltmeter between the No. 4 (+) and No. 1 (-) terminals, and run the motor at low or high speed. The voltmeter should indicate 12 V and 4 V or less alternately. If it does not, replace the motor.

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WASHER MOTOR TEST

1. Remove the right inner fender (see **FRONT INNER FENDER REPLACEMENT**).
2. Disconnect the 2P connector (A) from the washer motor (B).

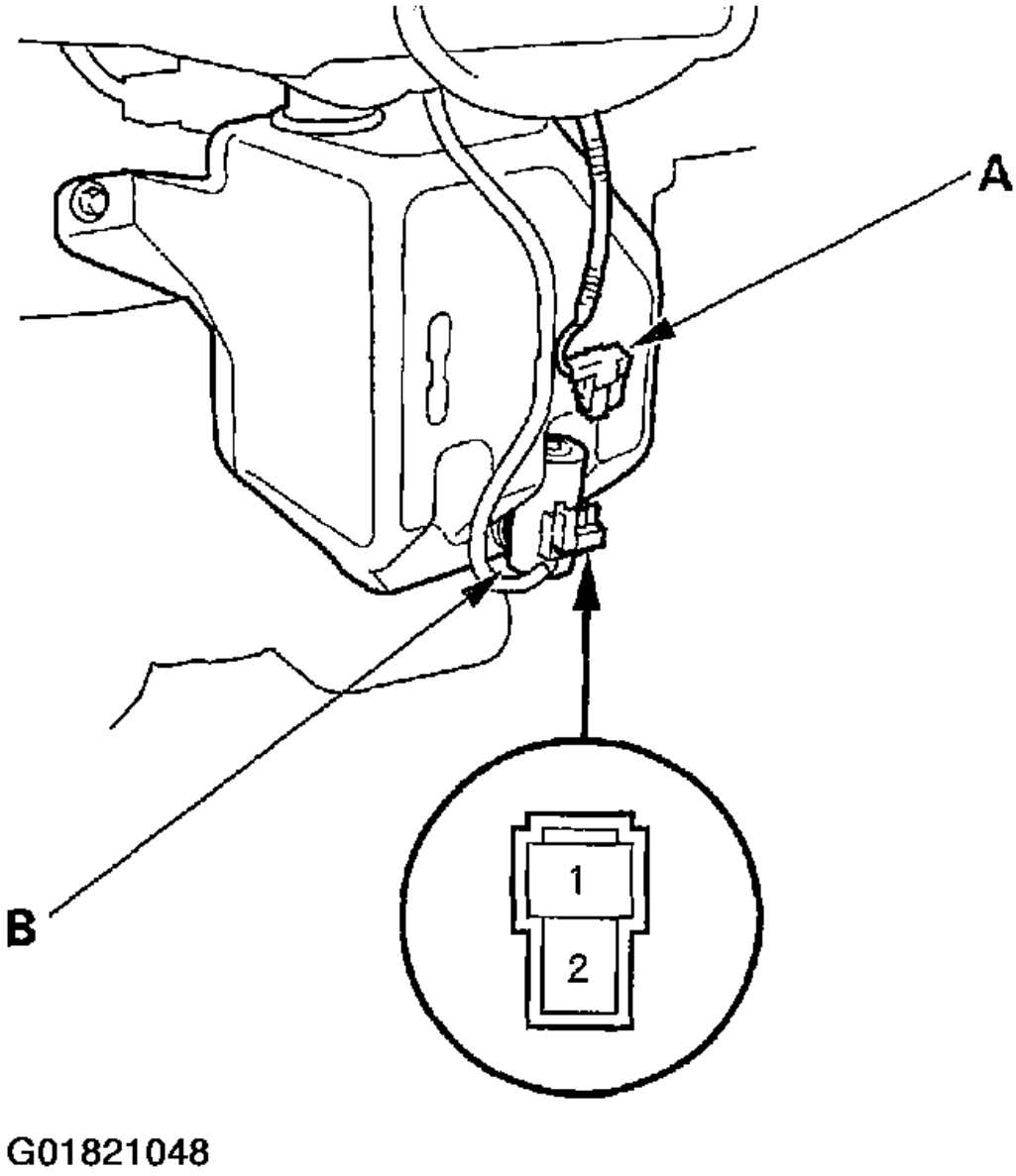


Fig. 14: Disconnecting The 2P Connector From The Washer Motor

3. Test the motor by connecting battery power to the No. 1 terminal and ground to the No. 2 terminal of the

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washer motor. The motor should run.

- If the motor does not run or fails to run smoothly, replace it.
- If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged washer motor outlet.

WIPER MOTOR REPLACEMENT

1. Open the hood. Remove the caps, nuts (A), and the windshield wiper arms (B).

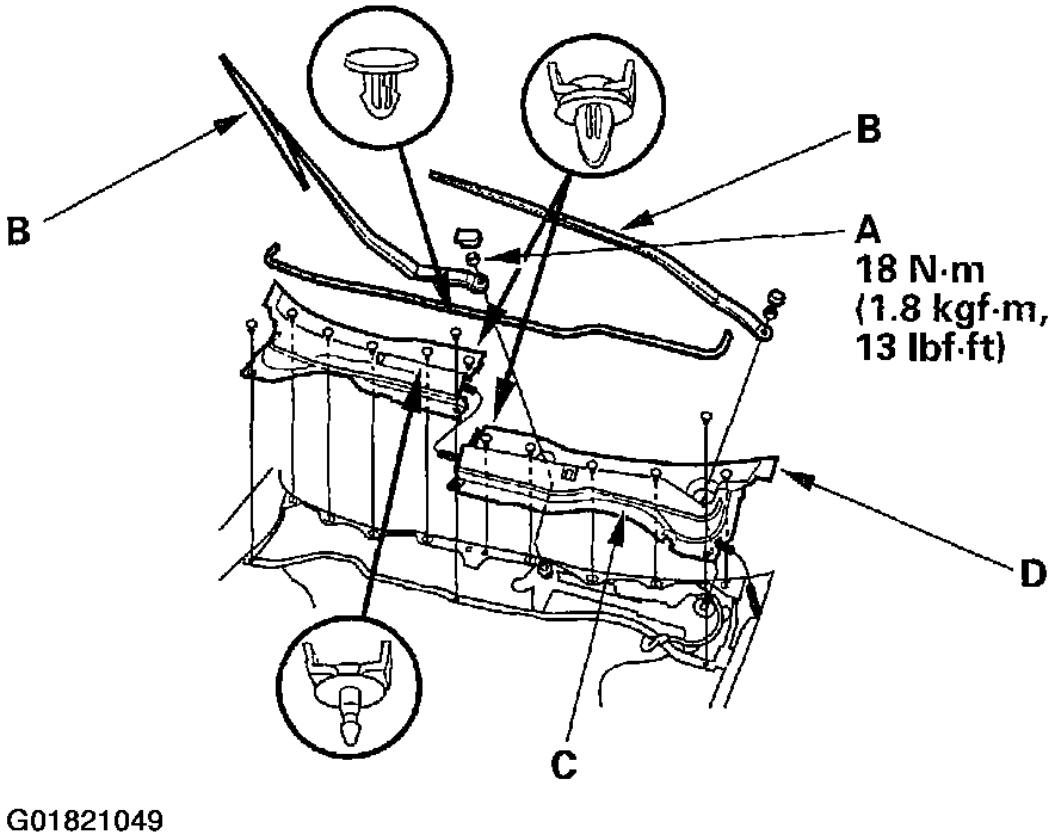


Fig. 15: Removing The Caps, Nuts, And The Windshield Wiper Arms

2. Remove the hood seals (C) and cowl covers (D).
3. Disconnect the 5P connector (A) from the wiper motor.

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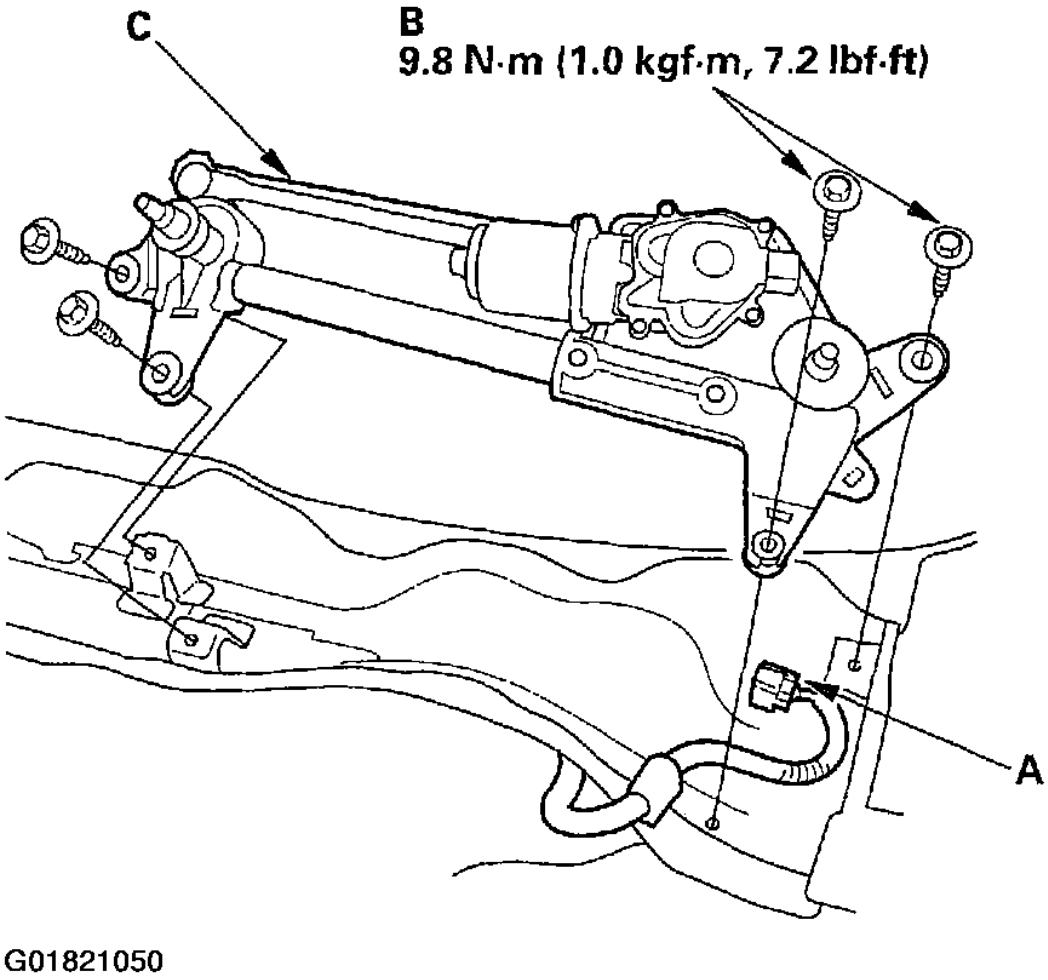


Fig. 16: Removing The Wiper Linkage Assembly

4. Remove the four bolts (B) and wiper linkage assembly (C).
5. Scribe a line (A) across the link and windshield wiper linkage to show the original adjutment. Separate the windshield wiper linkage (B) from the wiper motor (C).

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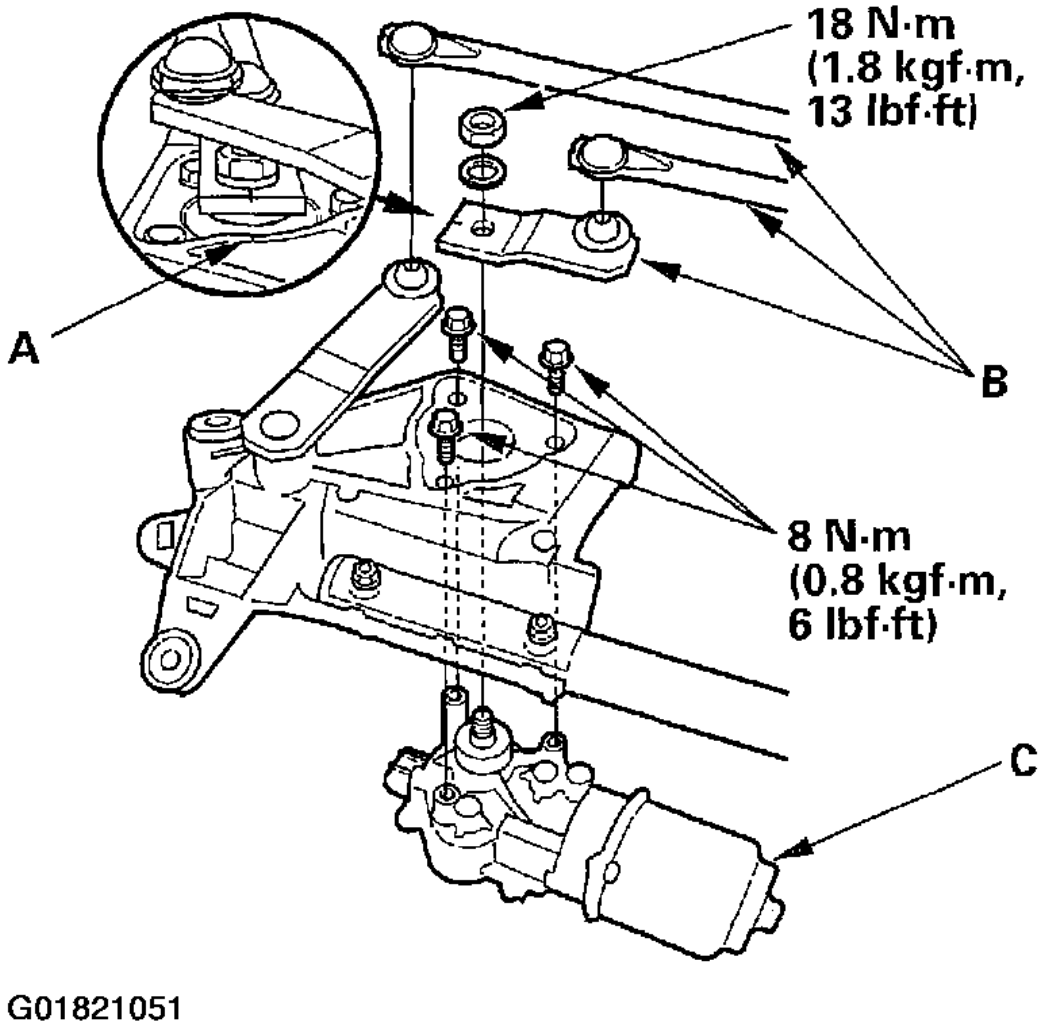


Fig. 17: Separating The Windshield Wiper Linkage From The Wiper Motor

6. Install in the reverse order to removal, and note these items:
   - Apply multipurpose grease to the moving parts.
   - Before reinstalling the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
   - If necessary, replace any damaged clips.
   - Check the wiper motor operation.

WASHER RESERVOIR REPLACEMENT

1. Remove the right inner fender (see **FRONT INNER FENDER REPLACEMENT**).

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2. Disconnect the washer tube (A) and washer motor 2P connector (B).

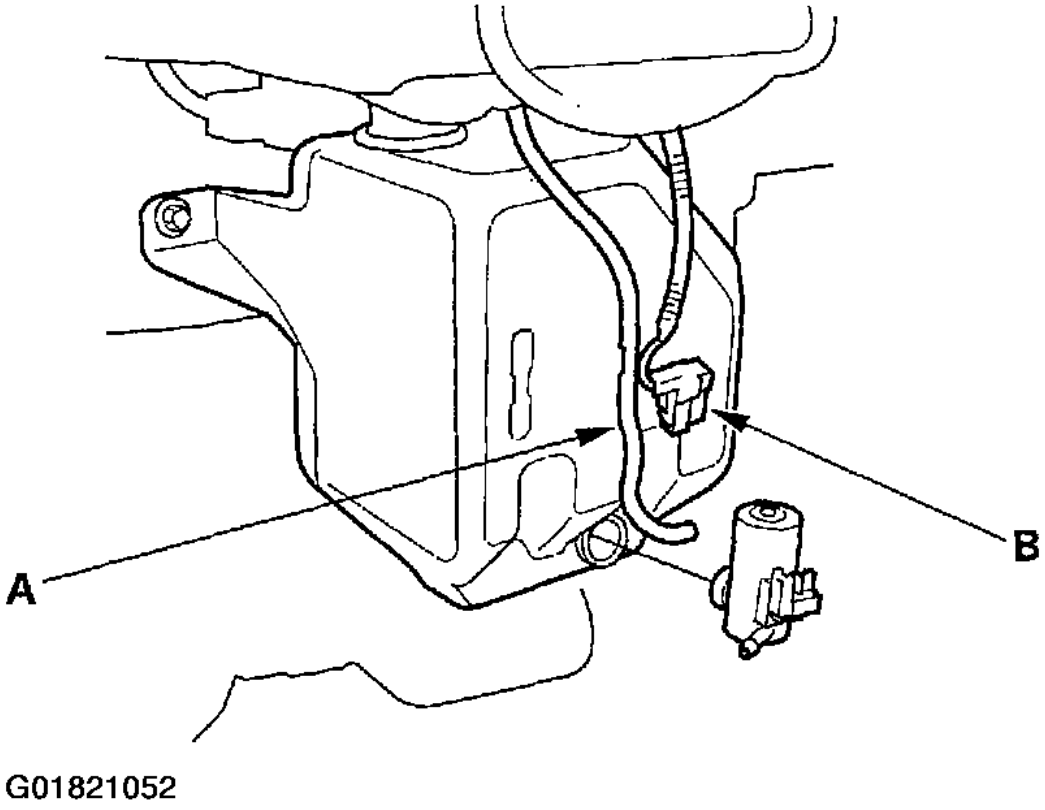


Fig. 18: Disconnecting The Washer Tube And Washer Motor 2P Connector

3. Remove the three bolts (A), then remove the washer reservoir (B).

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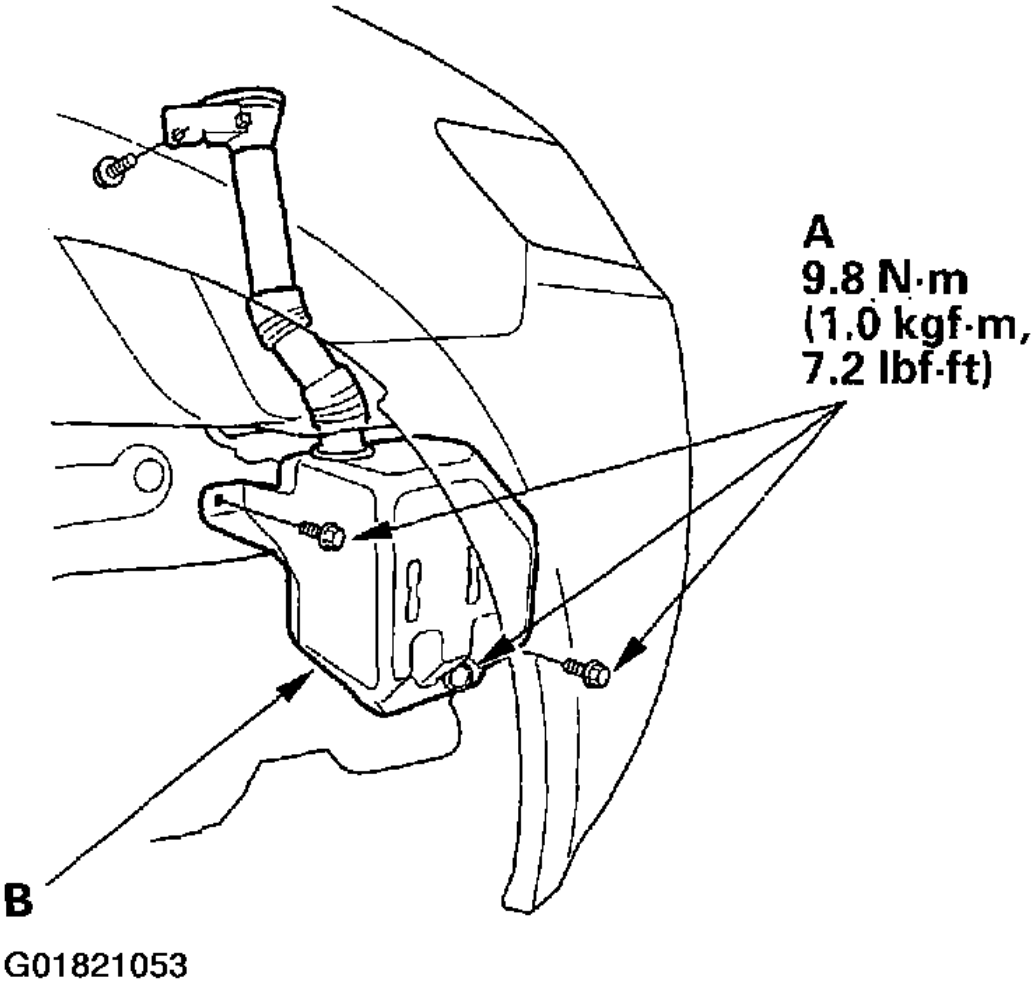


Fig. 19: Removing The Washer Reservoir

4. Install the reservoir in the reverse order of removal.

WASHER FLUID LEVEL SWITCH TEST

CANADA

1. Remove the right inner fender (see **FRONT INNER FENDER REPLACEMENT**).
2. Disconnect the 2P connector (A) from the washer fluid level switch (B).

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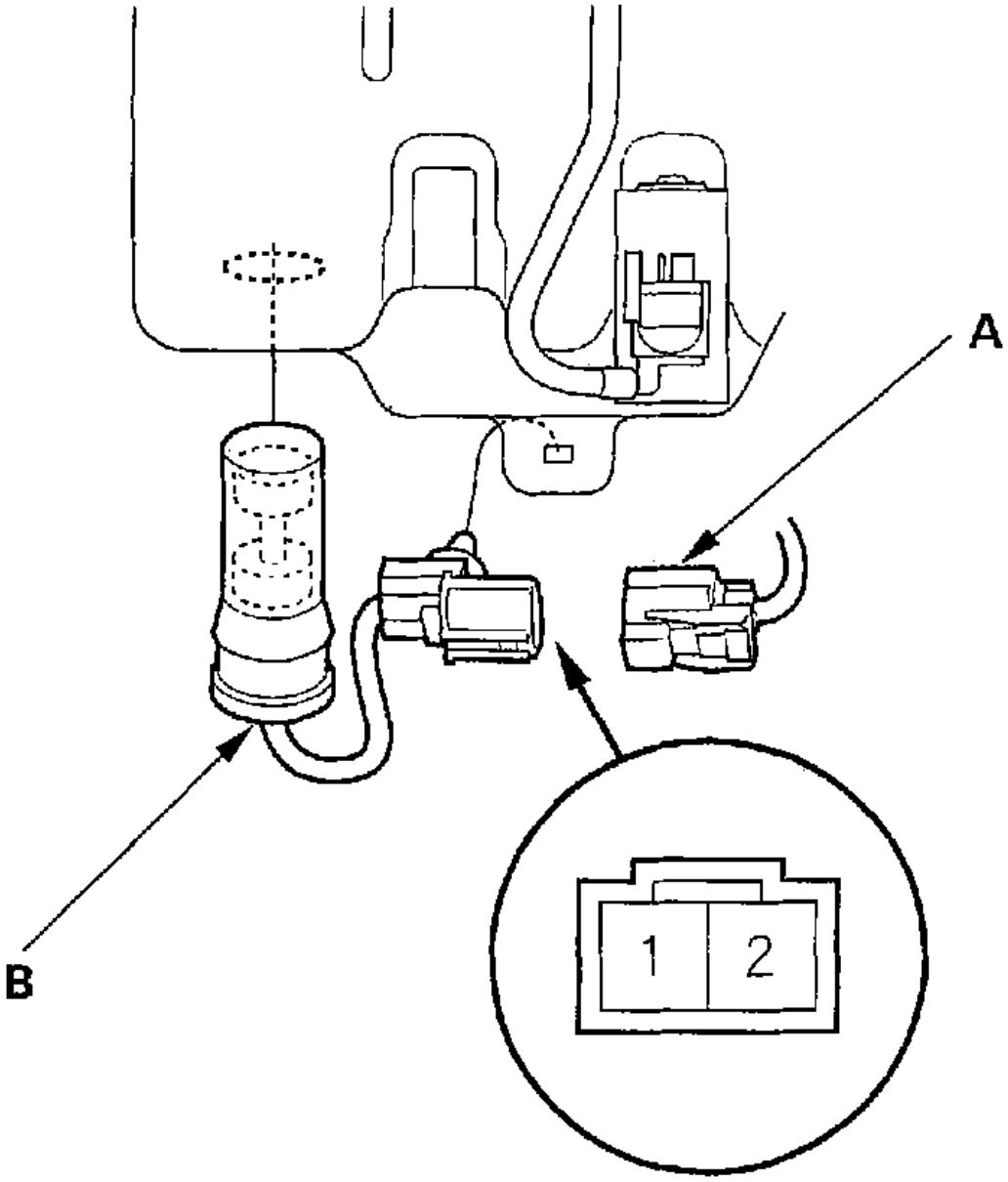


Fig. 20: Disconnecting The 2P Connector From The Washer Fluid Level Switch

3. Remove the washer fluid level switch from the reservoir.

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NOTE: Fluid may flow out of the opening.

4. Check for continuity between the No. 1 and No. 2 terminals in each float position (C).
   - There should be continuity when the float is down.
   - There should be no continuity when the float is up.

WASHER TUBE REPLACEMENT

1. Remove the right inner fender (see **FRONT INNER FENDER REPLACEMENT**).
2. Remove the windshield washer nozzles and clips, then remove the tube.

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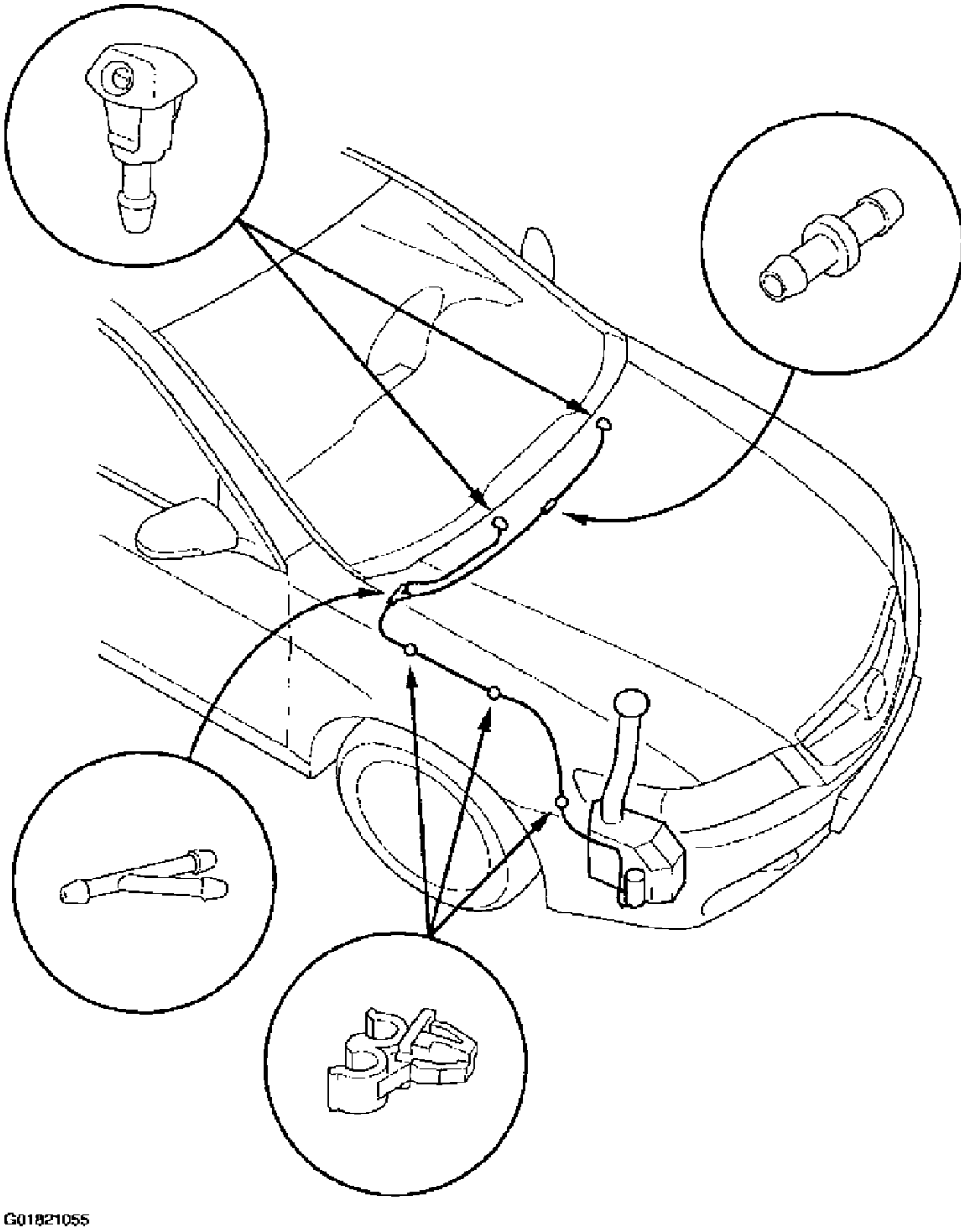


Fig. 21: Removing The Windshield Washer Nozzles, Clips, And Then The Tube

3. Install in the reverse order of removal. Take care not to pinch the washer tube. Check the windshield washer operation.

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