Transaxle

Automatic Transmission **14-1**

Rear Differential **15-1**

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SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If automatic transmission maintenance is required)

The Acura MDX SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done only by an authorized Acura dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Acura dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, side impact sensors, or roll rate sensor when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



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Automatic Transmission

Automatic Transmission

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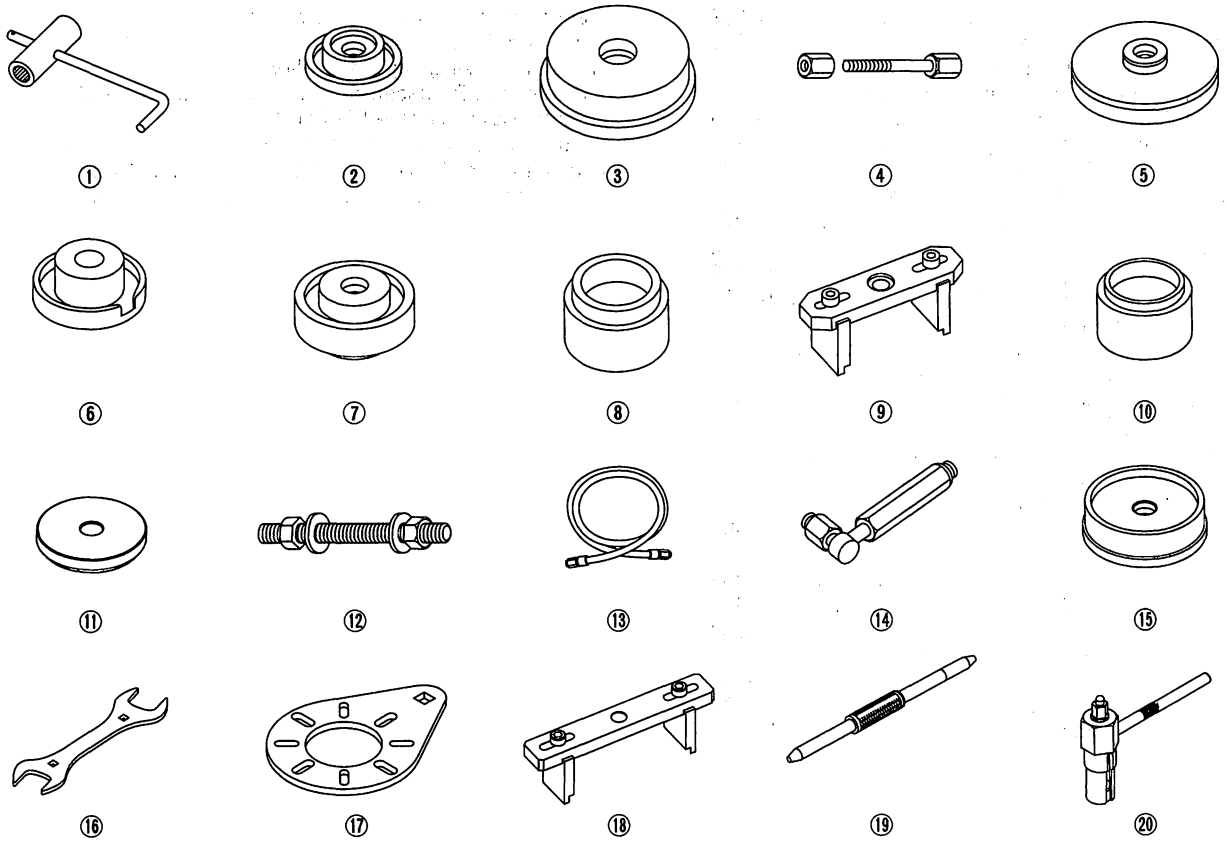
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Special Tools

Ref. No.	Tool Number	Description	Qty
①	07GAB-PF50101	Mainshaft Holder	1
②	07GAD-PG40100	Oil Seal Driver Attachment	1
③	07GAD-SD40101	Attachment, 78 x 90 mm	1
④	07GAE-PG40200 or 07GAE-PG4020A	Clutch Spring Compressor Bolt Assembly	1
⑤	07HAD-SG00100	Attachment, 83 mm	1
⑥	07JAD-PH80101	Oil Seal Driver Attachment	1
⑦	07JAD-SH30100	Attachment, 65 mm	1
⑧	07LAD-PW50601	Attachment, 40 x 50 mm	1
⑨	07LAE-PX40100	Clutch Spring Compressor Attachment	2
⑩	07MAD-PR90100	Attachment, 45 x 55 mm	1
⑪	07MAF-SP0011A	Tapered Bearing Race Installer A	1
⑫	07MAF-SP0013A	Installer Shaft	1
⑬	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	3
⑭	07MAJ-PY40120	A/T Pressure Hose Adapter	3
⑮	07NAD-PX40100	Attachment, 78 x 80 mm	1
⑯	07XAA-002010A	Wrench, 40 x 42 mm	1
⑰	07XAB-0010101	Companion Flange Holder	1
⑱	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑲	070AG-SJAA10S	Frame Positioning Guide Pin	1
⑳	070AJ-0020101	Preload Inspection Tool	1

07HAE-PL50101 may also be used to substitute one of 07LAE-PX40100.

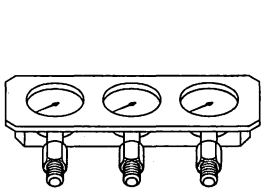


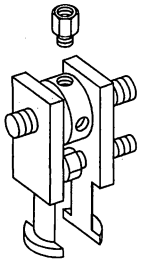
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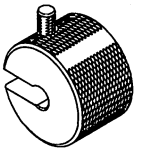
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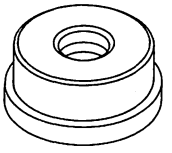
Ref. No.	Tool Number	Description	Qty
㉑	07406-0020400 or 07406-0020401	A/T Clutch Pressure Gauge Set/Panel	1
㉒	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25—40 mm	1
㉓	07741-0010201	Sliding Hammer Weight	1
㉔	07746-0010200	Attachment, 37 x 40 mm	1
㉕	07746-0010300	Attachment, 42 x 47 mm	1
㉖	07746-0010400	Attachment, 52 x 55 mm	1
㉗	07746-0010500	Attachment, 62 x 68 mm	1
㉘	07746-0010600	Attachment, 72 x 75 mm	1
㉙	07746-0010800	Attachment, 22 x 24 mm	1
㉚	07746-0030100	Driver, 40 mm I.D.	1
㉛	07746-0030300	Attachment, 30 mm I.D.	1
㉜	07749-0010000	Driver	1
㉝	07936-1660101	Bearing Remover Shaft Set, 12 mm	1
㉞	07936-3710100	Bearing Remover Shaft Handle	1
㉟	07936-3710600	Bearing Remover Shaft Set, 20 mm	1
㊱	07936-8890300	Bearing Remover Shaft Set, 30 mm	1
㊲	07936-GE00100	Bearing Remover Shaft, 10 mm	1
㊳	07936-GE00200	Bearing Remover Head, 10 mm	1
㊴	07947-6340500	Driver Attachment	1

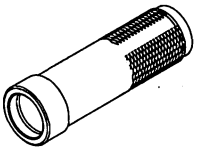
07736-A01000B or 07736-A01000A must be used with commercially available 3/8 ″-16 slide hammer.


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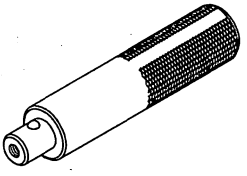

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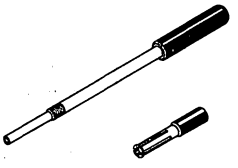

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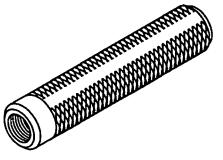

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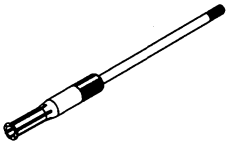

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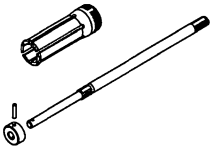

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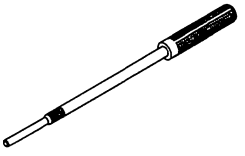

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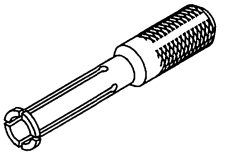

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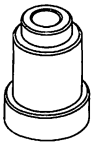

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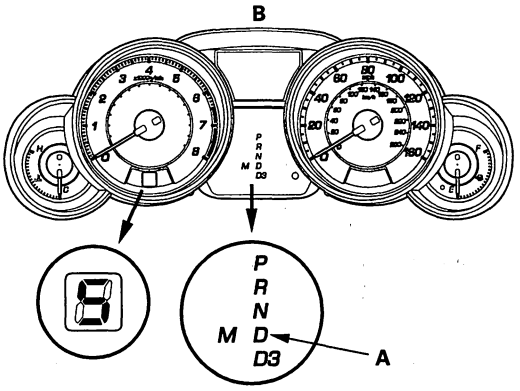

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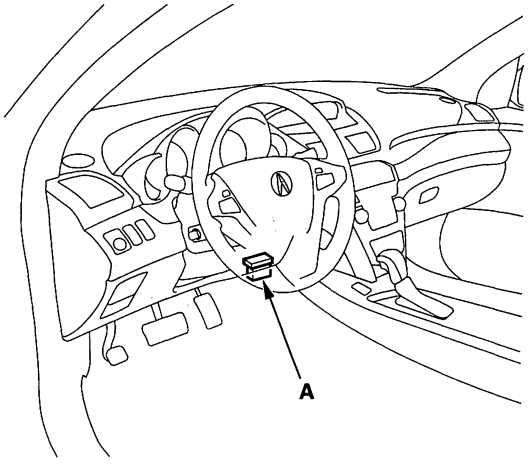
General Troubleshooting Information

How to Check for DTCs with the Honda Diagnostic System (HDS)

When the powertrain control module (PCM) senses an abnormality in the input or output system, the D indicator (A) in the gauge assembly (B) will usually blink.



When the Honda Diagnostic System (HDS) is connected to the data link connector (DLC) (A) (located behind the driver's dashboard lower cover), it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II) and the appropriate menu is selected.



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 HDS screen.
3. Record all fuel and emissions DTCs, and 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 indicated DTC's troubleshooting. 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.

Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will 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 an abnormal symptom, and there are no DTCs stored, do the symptom troubleshooting. Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.

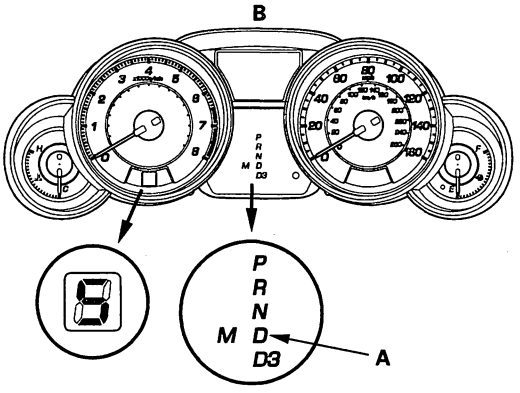
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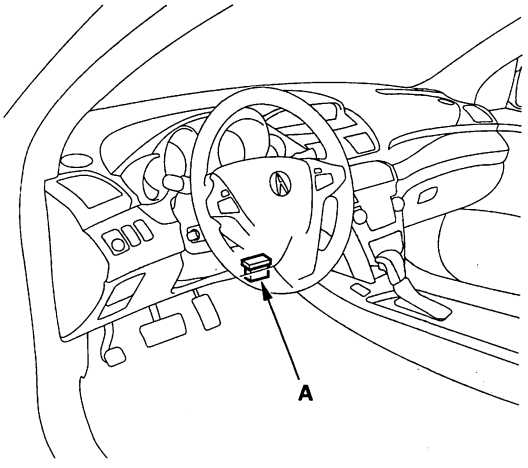
How to Check for DTCs with the SCS Mode (retrieving the flash codes)

NOTE: The preferred method is to use the HDS to retrieve the P-code.

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge assembly (B) will usually blink.



When the D indicator has been reported on, connect the HDS to the DLC (A) (located behind the driver's dashboard lower cover). Turn the ignition switch ON (II), select SCS mode, then the D indicator will indicate flash the DTC.



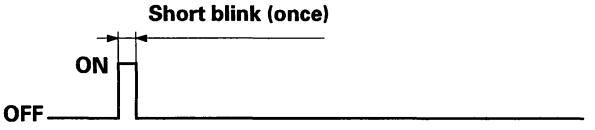
If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)

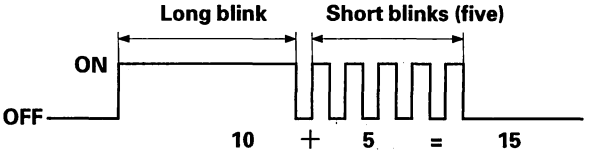
2. Turn the ignition switch ON (II), select SCS mode, then observe the D indicator in the gauge assembly.

   Codes 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.

Example: DTC 1-1



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 indicated DTC's troubleshooting. 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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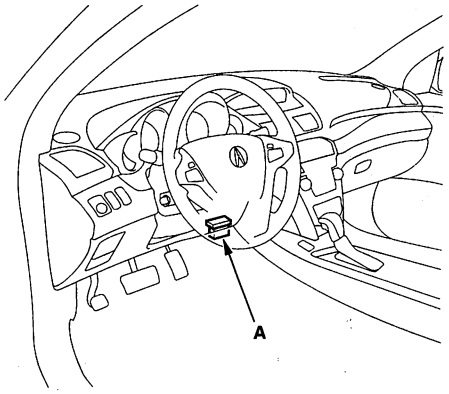
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General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM Connectors

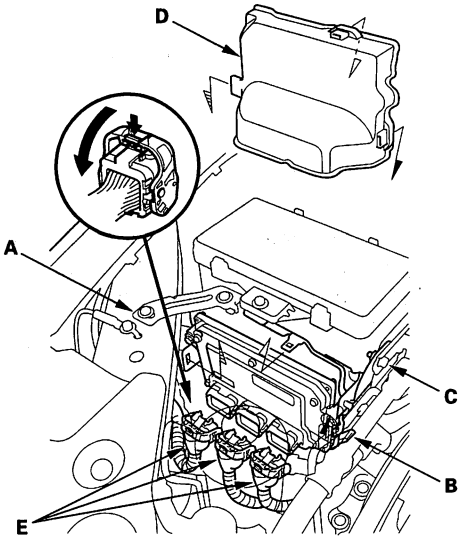
NOTE: The PCM overwrite data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

1. Connect the HDS to the DLC (A), and jump the SCS line with the HDS.

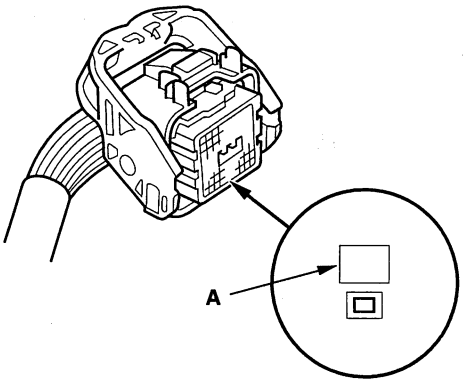


2. Inspect the circuit on the PCM, according to the DTC troubleshooting, with a commercially available digital multimeter, patch cords, and pin probes at PCM harness connectors.

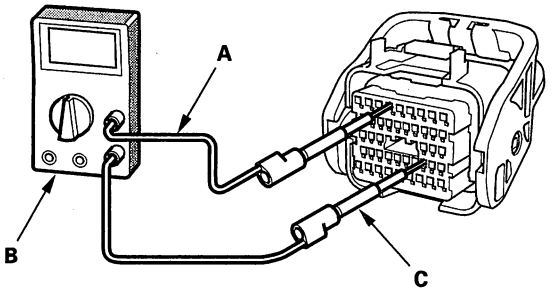
3. Remove the bracket (A), then free the A/C discharge line from the clip (B). Remove the A/C suction line mounting bracket bolt (C), then remove the PCM cover (D) and disconnect PCM connectors (E).



4. Check the connector inspection port (A) size, and select a suitable pin probe.



5. Connect one side of the patch cord (A) terminal to a digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).



6. Gently slide the pin probe into the inspection port at the connector terminal side. Always use the inspection port. Do not slide the probe into the connector terminals.

NOTICE

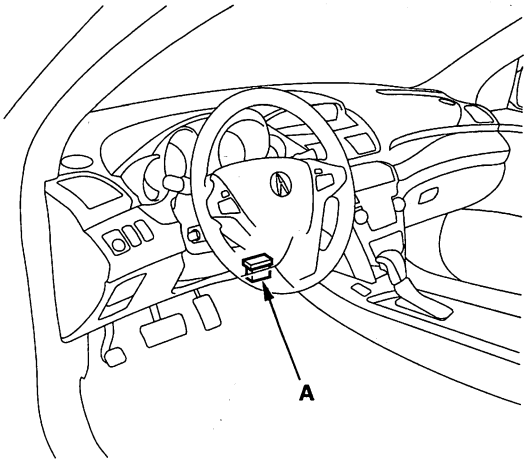
- For accurate result, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

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Clear A/T DTCs Procedures

1. Connect the HDS to the DLC (A).



2. Turn the ignition switch ON (II).

3. Clear the DTC(s) on the HDS screen.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

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.
- NOT COMPLETED: The on board diagnosis was running but is out of the enable conditions of the DTC.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the PCM with the HDS while the engine is stopped.

2. Turn the ignition switch OFF.

3. Turn the ignition switch ON (II), and wait for 30 seconds.

4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

5. Do the PCM idle learn procedure (see page 11-311).

6. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on).

7. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h) or under the same conditions as those indicated by the freeze data.

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General Troubleshooting Information (cont'd)

PCM Updating and Substitution for Testing

Special Tools Required
- Honda diagnosis system (HDS) TDSGD2200
- Honda interface module (HIM) EQS05A35570
- HDS pocket tester TDSS3557011401

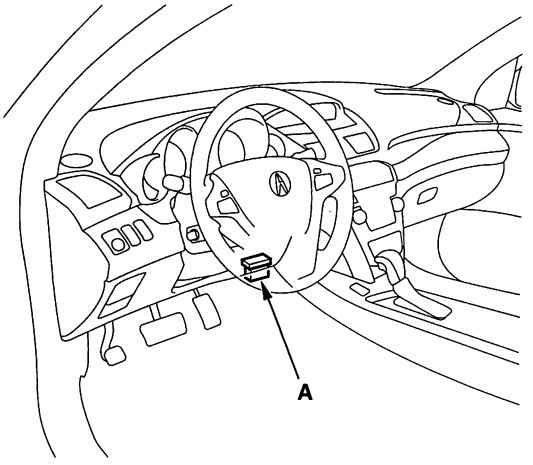
These special tools are available through the American Honda Tool and Equipment Program 1-888-424-6857.

Use this procedure when you have to update the PCM during troubleshooting procedures.

How to Update the PCM

NOTE:
- Make sure the HDS/HIM has the latest software version.
- Before you update the PCM, make sure the battery in the vehicle is fully charged.
- Never turn the ignition switch OFF during the update. If there is a problem with the update, leave the ignition switch ON.
- To prevent PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof, door locks, and whatnot) during the update.
- To ensure the latest program is installed, do a PCM update whenever the PCM is substituted or replaced.
- You cannot update a PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the PCM to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) lamp came on or was flashed 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 PCM damage.

1. Turn the ignition switch ON (II), but do not start the engine.
2. Connect the HDS to the DLC (A).



3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-223). If you are returning from the DLC circuit troubleshooting, skip steps 4 and 5, and clean the throttle body after you update the PCM (see page 11-363).
4. Select the INSPECTION MENU with the HDS.
5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.
6. Exit the HDS diagnosis system, then select the update mode, and follow the screen prompts to update the PCM.

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7. If the software in the PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system, make sure you update both.

   NOTE: If the PCM update system requires you to cool the PCM, follow the instructions on the screen. If you run into a problem during the update procedure (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer light flashes, HDS tablet freezes, and whatnot), follow these steps to minimize the chance of damaging the PCM:

   - Leave the ignition switch in the ON (II) position.
   - Connect a jumper battery (do not connect a battery charger).
   - Shut down the HDS.
   - Disconnect the HDS from the DLC.
   - Reboot the HDS.
   - Reconnect the HDS to the DLC, and try the update procedure again.

8. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts. If the TP POSITION CHECK failed, clean the throttle body (see page 11-363).

9. Do the PCM idle learn procedure (see page 11-311).

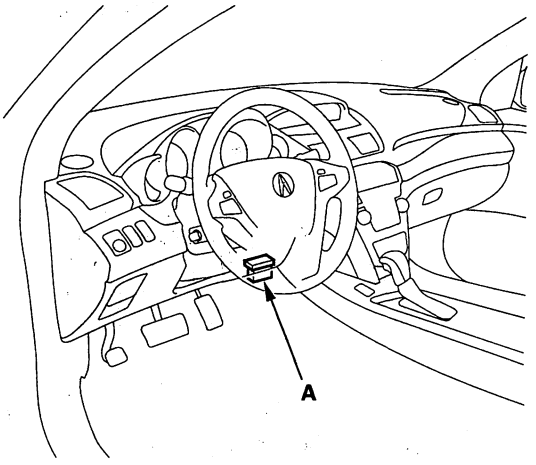
10. Do the CKP learn procedure (see page 11-4).

How to Substitute the PCM

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

2. Turn the ignition switch OFF.

3. Connect the HDS to the DLC (A).



4. Turn the ignition switch ON (II).

5. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-223). If you are returning from the DLC circuit troubleshooting, skip steps 5 to 6, and clean the throttle body after substituting the PCM (see page 11-363).

6. Select the INSPECTION MENU with the HDS.

7. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

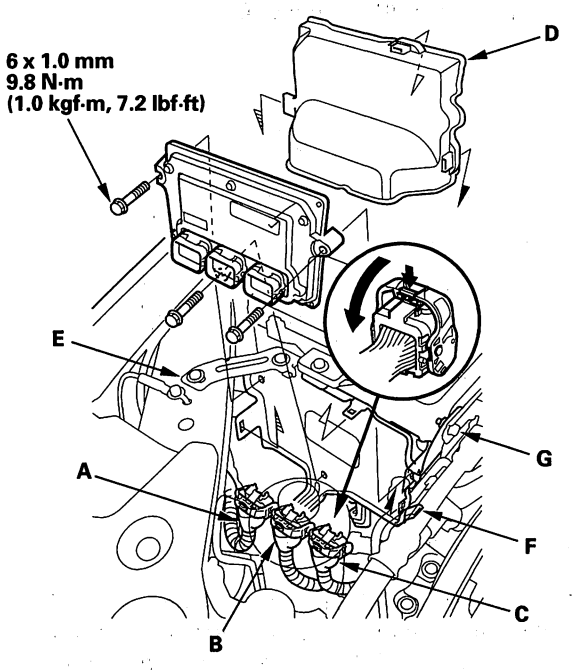
   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

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General Troubleshooting Information (cont'd)

8. Turn the ignition switch OFF.
9. Disconnect the negative cable from the battery, then disconnect the positive cable.
10. Remove the bracket (E), then free the A/C discharge line from the clip (F). Remove the A/C suction line mounting bracket bolt (G).



11. Remove the PCM cover (D), disconnect PCM connectors A, B, and C, and remove the mounting bolts, then remove the PCM.
12. Install the PCM and battery cables in the reverse order of removal.
13. Turn the ignition switch ON (II).

    NOTE: If DTC P0630 "VIN not Programmed or Mismatch" will be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

14. Manually input the VIN to the PCM with the HDS.
15. Update the PCM if it does not have the latest software.
16. Select the IMMOBI SYSTEM with the HDS.
17. Enter the immobilizer code using the PCM replacement procedure in the HDS; this allows you to start the engine.
18. Reset the PCM with the HDS.
19. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts. If the TP POSITION CHECK failed, clean the throttle body (see page 11-363).
20. Do the PCM idle learn procedure (see page 11-311).
21. Do the CKP learn procedure (see page 11-4).
22. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.
23. Do the steering column position memorization (see page 17-28).
24. Do the power window control unit reset procedure (see page 22-259).

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DTC Troubleshooting Index

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC *(1)	D Indicator	MIL	Detection Item	Page
P0107 (12-7)	Blinks	OFF or ON *(3)	Manifold absolute pressure (MAP) sensor circuit low voltage input	(see page 14-84)
P0108 (12-8)	Blinks	OFF or ON *(3)	Manifold absolute pressure (MAP) sensor circuit high voltage input	(see page 14-85)
P0335 (88-2)	Blinks	OFF or ON *(3)	Crankshaft position (CKP) sensor A no signal	(see page 14-86)
P0339 (88-6)	Blinks	OFF or ON *(3)	Crankshaft position (CKP) sensor A intermittent interruption	(see page 14-87)
P0340 (126-2)	Blinks	OFF or ON *(3)	Camshaft position (CMP) sensor no signal	(see page 14-88)
P0344 (126-6)	Blinks	OFF or ON *(3)	Camshaft position (CMP) sensor intermittent interruption	(see page 14-89)
P0385 (125-2)	Blinks	OFF or ON *(3)	Crankshaft position (CMP) sensor B no signal	(see page 14-90)
P0389 (125-6)	Blinks	OFF or ON *(3)	Crankshaft position (CMP) sensor B intermittent interruption	(see page 14-91)
P062F (0-7)	Blinks	OFF or ON *(3)	Powertrain control module (PCM) internal control module keep alive memory (KAM) error	(see page 14-92)
P0705 (5-2) *(2)	Blinks	ON	Transmission range switch (multiple shift-position input)	(see page 14-93)
P0706 (6-2) *(2)	OFF	ON	Transmission range switch (open)	(see page 14-99)
P0711 (28-5) *(2)	Blinks	OFF	ATF temperature sensor (range/performance)	(see page 14-103)
P0712 (28-3) *(2)	Blinks	OFF	ATF temperature sensor (short)	(see page 14-104)
P0713 (28-4) *(2)	Blinks	OFF	ATF temperature sensor (open)	(see page 14-106)
P0716 (15-5) *(2)	Blinks	ON	Input shaft (mainshaft) speed sensor (range/performance)	(see page 14-109)
P0717 (15-3) *(2)	Blinks	ON	Input shaft (mainshaft) speed sensor (no signal input)	(see page 14-109)
P0718 (15-6) *(2)	Blinks	ON	Input shaft (mainshaft) speed sensor (intermittent failure)	(see page 14-115)
P0721 (9-5) *(2)	Blinks	ON	Output shaft (countershaft) speed sensor (range/performance)	(see page 14-120)
P0722 (9-3) *(2)	Blinks	ON	Output shaft (countershaft) speed sensor (no signal input)	(see page 14-120)
P0723 (9-6) *(2)	Blinks	ON	Output shaft (countershaft) speed sensor (intermittent failure)	(see page 14-126)

NOTE:

* (1): The DTC in parentheses is the Honda code that you will see when you use the SCS mode. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (3): The MIL comes on when the PGM-FI control system detects a failure simultaneous with the A/T DTC.

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DTC Troubleshooting Index (cont'd)

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC * (1)	D Indicator	MIL	Detection Item	Page
P0731 (64-1)	Blinks	OFF	1st gear incorrect ratio	(see page 14-131)
P0732 (64-2)	Blinks	OFF	2nd gear incorrect ratio	(see page 14-132)
P0733 (64-3)	Blinks	OFF	3rd gear incorrect ratio	(see page 14-133)
P0734 (64-4)	Blinks	OFF	4th gear incorrect ratio	(see page 14-134)
P0735 (64-5)	Blinks	OFF	5th gear incorrect ratio	(see page 14-135)
P0741 (40-3)	OFF	OFF	Torque converter clutch circuit performance or stuck OFF	(see page 14-136)
P0746 (76-3)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck OFF	(see page 14-137)
P0747 (76-4)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck ON	(see page 14-138)
P0751 (70-3)	Blinks	ON	Shift solenoid valve A stuck OFF	(see page 14-139)
P0752 (70-4)	Blinks	ON	Shift solenoid valve A stuck ON	(see page 14-140)
P0756 (71-3)	Blinks	ON	Shift solenoid valve B stuck OFF	(see page 14-141)
P0757 (71-4)	Blinks	ON	Shift solenoid valve B stuck ON	(see page 14-142)
P0761 (72-3)	Blinks	ON	Shift solenoid valve C stuck OFF	(see page 14-143)
P0762 (72-4)	Blinks	ON	Shift solenoid valve C stuck ON	(see page 14-144)
P0766 (73-3)	Blinks	ON	Shift solenoid valve D stuck OFF	(see page 14-145)
P0767 (73-4)	Blinks	ON	Shift solenoid valve D stuck ON	(see page 14-146)
P0776 (77-3)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck OFF	(see page 14-147)
P0777 (77-4)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck ON	(see page 14-148)
P0796 (78-3)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck OFF	(see page 14-149)
P0797 (78-4)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck ON	(see page 14-150)
P0812 (65-2) * (2)	Blinks	ON	Transmission range switch ATP R switch	(see page 14-151)
P0815 (24-2) * (2)	Blinks	ON	Transmission gear selection switch upshift switch (short or stuck ON)	(see page 14-154)
P0816 (24-6) * (2)	Blinks	ON	Transmission gear selection switch downshift switch (short or stuck ON)	(see page 14-156)

NOTE:

* (1): The DTC in parentheses is the Honda code that you will see when you use the SCS mode. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

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NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC *(1)	D Indicator	MIL	Detection Item	Page
P0842 (25-3) *(2)	Blinks	ON	2nd clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-158)
P0843 (25-4) *(2)	Blinks	ON	2nd clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-160)
P0847 (26-3) *(2)	Blinks	ON	3rd clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-163)
P0848 (26-4) *(2)	Blinks	ON	3rd clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-165)
P0872 (27-3) *(2)	Blinks	OFF	4th clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-168)
P0873 (27-4) *(2)	Blinks	OFF	4th clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-170)
P0957 (27-4) *(2)	Blinks	ON	Transmission gear selection switch (short or stuck ON)	(see page 14-173)
P0958 (24-4) *(2)	Blinks	ON	Transmission gear selection switch (short or stuck OFF)	(see page 14-175)
P0962 (16-3) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve A (open/short)	(see page 14-178)
P0963 (16-4) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve A	(see page 14-182)
P0966 (23-3) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve B (open/short)	(see page 14-184)
P0967 (23-4) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve B	(see page 14-188)
P0970 (29-3) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve C (open/short)	(see page 14-190)
P0971 (29-4) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve C	(see page 14-194)

NOTE:

* (1): The DTC in parentheses is the Honda code that you will see when you use the SCS mode. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

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DTC Troubleshooting Index (cont'd)

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC *(1)	D Indicator	MIL	Detection Item	Page
P0973 (7-3) *(2)	Blinks	ON	Shift solenoid valve A (short)	(see page 14-196)
P0974 (7-4) *(2)	Blinks	ON	Shift solenoid valve A (open)	(see page 14-199)
P0976 (8-3) *(2)	Blinks	ON	Shift solenoid valve B (short)	(see page 14-202)
P0977 (8-4) *(2)	Blinks	ON	Shift solenoid valve B (open)	(see page 14-206)
P0979 (22-3) *(2)	Blinks	ON	Shift solenoid valve C (short)	(see page 14-209)
P0980 (22-4) *(2)	Blinks	ON	Shift solenoid valve C (open)	(see page 14-213)
P0982 (60-3) *(2)	Blinks	ON	Shift solenoid valve D (short)	(see page 14-216)
P0983 (60-4) *(2)	Blinks	ON	Shift solenoid valve D (open)	(see page 14-219)
P16C0 (99-1) *(2)	OFF	ON	PCM A/T control system incomplete update	(see page 14-222)
P1717 (62-1) *(2)	Blinks	ON	Transmission range switch ATP RVS switch (open or short)	(see page 14-223)
P1743 (45-11)	Blinks	OFF	Hydraulic control system (Shift valve E stuck OFF)	(see page 14-226)
P1744 (45-12)	Blinks	OFF	Hydraulic control system (Shift valve E stuck ON)	(see page 14-227)
P1745 (45-13)	Blinks	OFF	Hydraulic control system (Servo control valve or servo valve stuck OFF)	(see page 14-228)
P1780 (49-1)	Blinks	OFF	Shift control system (transmission default mode)	(see page 14-229)
P2122 (20-3)	Blinks	ON	Accelerator pedal position (APP) sensor A (throttle position sensor D) circuit low voltage	(see page 14-230)
P2123 (20-4)	Blinks	ON	Accelerator pedal position (APP) sensor A (throttle position sensor D) circuit high voltage	(see page 14-231)
U0028 (107-1)	Blinks	OFF or ON *(3)	F-CAN malfunction (F-CAN bus OFF)	(see page 14-232)
U0122 (107-4)	Blinks	OFF or ON *(3)	F-CAN malfunction (PCM-to-VSA modulator-control unit)	(see page 14-233)
U0155 (107-3)	Blinks	OFF or ON *(3)	F-CAN malfunction (PCM-to-gauge control module)	(see page 14-234)

NOTE:

* (1): The DTC in parentheses is the Honda code that you will see when you use the SCS mode. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (3): The MIL comes on when the PGM-FI control system detects a failure simultaneous with the A/T DTC.

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Symptom Troubleshooting Index

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 it never comes on at all	• F-CAN communication line error • Gauge control module defective • PCM defective	• Check the F-CAN communication line for a DTC (see page 22-325). • Check the F-CAN communication line by gauge control module self-diagnostic function (see page 22-317). • Check indicator drive circuit in the gauge control module by gauge control module self-diagnostic function (see page 22-315).
A/T gear position indicator does not come on while the shift lever is in that position	• F-CAN communication line error • Gauge control module defective • PCM defective • Transmission range switch defective	• Check the F-CAN communication line for a DTC (see page 22-325). • Check the F-CAN communication line by gauge control module self-diagnostic function (see page 22-317). • Check indicator drive circuit in the gauge control module by gauge control module self-diagnostic function (see page 22-315). • Inspect the transmission range switch (see page 14-315).
M indicator does not come on in M position	• F-CAN communication line error • Gauge control module defective • PCM defective	• Check the F-CAN communication line for a DTC (see page 22-325). • Check the F-CAN communication line by gauge control module self-diagnostic function (see page 22-317). • Check indicator drive circuit in the gauge control module by gauge control module self-diagnostic function (see page 22-315). • Inspect the transmission gear selection switch (see page 14-319).
Shift indicator does not work in sequential sportshift mode	• F-CAN communication line error • Gauge control module defective • PCM defective	• Check the F-CAN communication line for a DTC (see page 22-325). • Check the F-CAN communication line by gauge control module self-diagnostic function (see page 22-317). • Check indicator drive circuit in the gauge control module by gauge control module self-diagnostic function (see page 22-315). • Inspect the transmission gear selection switch (see page 14-319).

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Shift lever cannot be moved from P while you are pressing on the brake pedal	• Accelerator pedal position sensor circuit • Accelerator pedal position sensor defective • Brake pedal position switch circuit • Brake pedal position switch defective • Shift lock solenoid defective • Shift lock solenoid control circuit • Shift lock solenoid mechanism • Throttle body defective • Transmission range switch ATP P switch stuck OFF • Transmission range switch ATP P switch line opened	• Troubleshoot the shift lock system circuit (see page 14-323). • Test the shift lock solenoid (see page 14-330). • Inspect the transmission range switch (see page 14-315).
Ignition switch cannot be moved from ACC (I) to LOCK (0) (key is pushed in, shift lever in P)	• Interlock control system circuit • Key interlock solenoid stuck ON • Park pin switch stuck ON • Transmission range switch ATP P line opened	• Troubleshoot the key interlock system circuit (see page 14-328). • Inspect the transmission range switch (see page 14-315).
HDS does not communicate with the PCM or the vehicle	DLC circuit	Troubleshoot the DLC circuit (see page 11-223).

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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. Connection between shift cable and transmission or body is worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Foreign material in separator plate orifice 8. Mainshaft worn or damaged 9. Countershaft worn or damaged 10. Final gears worn or damaged 11. Park mechanism defective 12. Drive plate worn or damaged 13. Torque converter worn or damaged 14. Transmission-to-engine assembly error 15. Axle disengaged	• Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • 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. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, and thoroughly clean the transmission, and clean the cooler and lines. Replace the torque converter. • 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.
Vehicle moves in R, but not in D, D3, or 1st in M	1. 1st accumulator defective 2. Idler gears worn or damaged 3. 1st clutch defective 4. 5th clutch defective	• Check the 1st and 5th clutch pressures. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in M and R, but not in D or D3	• 1st gear one-way clutch defective • 1st gears worn or damaged • 1st clutch defective	• Check the 1st clutch pressure. • Inspect the 1st gears and one-way clutch for wear and damage. • Inspect the 1st clutch for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Vehicle moves in D, D3, 2nd in M, and R, but not in 1st in M	1st-hold clutch defective	• Check the 1st-hold clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Vehicle moves in D, D3, 1st in M, and R, but not in 2nd in M	1. 2nd accumulator defective 2. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the secondary shaft and 2nd clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

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Symptom	Probable cause(s)	Notes
Vehicle moves in D, D3, and M, but not in R	1. Shift fork shaft stuck 2. 5th accumulator defective 3. 5th clutch defective 4. Reverse gears worn or damaged 5. Reverse idler gear shaft/holder worn or damaged	• Check the 5th clutch pressure. • Check for a missing shift fork bolt on the shift fork shaft. • Inspect the reverse selector gear teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 5th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes clicking, grinding, or whirring noises, also replace the mainshaft 5th gear, reverse idler gear, and countershaft 5th gear. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, D3, and R	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Torque converter one-way clutch defective 4. Stator shaft defective 5. ATF pump worn or binding 6. Regulator valve stuck or spring worn 7. ATF strainer clogged 8. Torque converter check valve defective 9. Shift valve E defective	• Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the line pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptom is 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.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in D and D3	1. 1st accumulator defective 2. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in 1st in M	1st-hold clutch defective	• Check the 1st-hold clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in 2nd in M	• 2nd accumulator defective • 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the secondary shaft and 2nd clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

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Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in R	1. Shift cable broken or out of adjustment 2. 5th accumulator defective 3. 5th clutch defective	• Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, D3, and R; stall speed low	1. Engine output low 2. Torque converter clutch piston defective	Replace the torque converter.
Engine idle vibration	1. Low ATF level 2. Engine output low 3. Torque converter clutch piston defective	• Adjust the engine and transmission mounts. • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Replace the torque converter.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in N	1. Excessive ATF 2. ATF temperature sensor defective 3. Foreign material in separator plate orifice 4. Relief valve defective 5. Lubrication control valve defective 6. 1st-hold clutch defective 7. 1st clutch defective 8. 2nd clutch defective 9. 3rd clutch defective 10. 4th clutch defective 11. 5th clutch defective 12. Clutch end plate clearance incorrect 13. Needle bearing seized up, worn, or damaged	• Check the ATF level, and drain the ATF if necessary. • Check all clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Late shift after shifting from N to D or D3, or excessive shock when shifting	1. Shift solenoid valve A defective 2. Shift solenoid valve B defective 3. Shift solenoid valve C defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Connection between shift cable and transmission or body is worn 7. ATF temperature sensor defective 8. CPC valve C defective 9. Foreign material in separator plate orifice 10. Shift valve A defective 11. Shift valve D defective 12. Shift valve E defective 13. ATF strainer clogged 14. 1st accumulator defective 15. 2nd accumulator defective 16. 1st check ball stuck 17. 1st clutch defective 18. Clutch end plate clearance incorrect	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 1st clutch pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.

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Symptom	Probable cause(s)	Notes
Late shift after shifting from N to R, or excessive shock when shifting	1. A/T clutch pressure control solenoid valve C defective 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body is worn 4. ATF temperature sensor defective 5. Reverse CPC valve defective 6. Foreign material in separator plate orifice 7. ATF strainer clogged 8. 5th clutch defective 9. Clutch end plate clearance incorrect	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Transmission does not shift	1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective	Check for a stored DTC, and check for loose connectors.
Excessive shock or flares on all upshifts and downshifts	1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective 3. ATF temperature sensor defective 4. Foreign material in separator plate orifice	Check for a stored DTC, and check for loose connectors.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 1-2 upshift or 2-1 downshift	1. Shift solenoid valve A defective 2. Shift solenoid valve B defective 3. Shift solenoid valve C defective 4. A/T clutch pressure control solenoid valve A defective 5. A/T clutch pressure control solenoid valve B defective 6. A/T clutch pressure control solenoid valve C defective 7. 2nd clutch transmission fluid pressure switch defective 8. CPC valve A defective 9. CPC valve B defective 10. CPC valve C defective 11. Shift valve C defective 12. Shift valve D defective 13. Foreign material in separator plate orifice 14. 2nd accumulator defective 15. 2nd clutch defective 16. Clutch end plate clearance incorrect	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 1st and 2nd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Excessive shock or flares on 2-3 upshift or 3-2 downshift	1. Shift solenoid valve D 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. 3rd clutch transmission fluid pressure switch defective 6. Shift fork shaft stuck 7. CPC valve A defective 8. CPC valve B defective 9. Foreign material in separator plate orifice 10. Servo control valve defective 11. Lock-up shift valve defective 12. 2nd accumulator defective 13. 3rd accumulator defective 14. 2nd check ball stuck 15. 2nd clutch defective 16. 3rd clutch defective 17. Clutch end plate clearance incorrect	• Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 2nd and 3rd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.

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Symptom	Probable cause(s)	Notes
Excessive shock or flares on 3-4 upshift or 4-3 downshift	1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective 3. A/T clutch pressure control solenoid valve C defective 4. 4th clutch transmission fluid pressure switch defective 5. Shift fork shaft stuck 6. Foreign material in separator plate orifice 7. Servo control valve defective 8. 3rd accumulator defective 9. 4th accumulator defective 10. 3rd clutch defective 11. 4th clutch defective 12. Clutch end plate clearance incorrect	• Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 3rd and 4th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Excessive shock or flares on 4-5 upshift or 5-4 downshift	1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective 3. A/T clutch pressure control solenoid valve C defective 4. Foreign material in separator plate orifice 5. 4th accumulator defective 6. 5th accumulator defective 7. 4th clutch defective 8. 5th clutch defective 9. Clutch end plate clearance incorrect	• Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check the 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer 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, and also inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Noise from transmission in all shift lever positions	1. ATF pump worn or binding 2. ATF strainer clogged 3. Idler gears worn or damaged 4. Bearings on mainshaft, countershaft, secondary shaft, and intermediary shaft worn or damaged 5. Thrust washer seized up, worn, or damaged	• 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 strainer is clogged, find the damaged components that caused the debris. • 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.
Vehicle does not accelerate above 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace torque converter.
Vibration in all shift lever positions	1. ATF pump worn or binding 2. Torque converter worn or damaged 3. Drive plate defective or transmission misassembled	• Adjust the engine and transmission mounts. • Check the stall speed. • 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 the contamination is found, replace the torque converter.
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body is worn 4. Manual valve defective 5. Selector control shaft worn or damaged	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Transmission does not shift into P	1. Shift cable broken or out of adjustment 2. Connection between shift cable and transmission or body is worn 3. Park mechanism defective 4. Secondary shaft 2nd gear worn or damaged	• Check for a loose shift cable at the shift lever and the transmission control lever. • Check the park pawl, control shaft, and park lever link for wear and damage. Check if the control shaft lever pin is disengage from the manual valve guide.
Torque converter clutch does not disengage	1. Torque converter clutch piston defective 2. Lock-up control valve defective 3. Lock-up timing valve defective	• Replace the torque converter. • Check the lock-up control valves.

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Symptom	Probable cause(s)	Notes
Torque converter clutch does not operate smoothly	1. Torque converter clutch piston defective 2. Torque converter check valve defective 3. Lock-up control valve defective 4. Lock-up timing valve defective	• Replace the torque converter. • Check the lock-up control valves.
Torque converter clutch does not engage	1. Shift cable broken or out of adjustment 2. Connection between shift cable and transmission or body is worn 3. Foreign material in separator plate orifice 4. Torque converter clutch piston defective 5. Torque converter check valve defective 6. Lock-up control valve defective 7. Lock-up timing valve defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • Replace the torque converter. • Check the lock-up control valves.
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. Connection between shift cable and transmission or body is worn	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	Check for a stored DTC, and check for loose connectors.
Engine does not rev to high rpm, and the transmission upshifts at low rpm (*engine at normal operating temperature*)	Engine rocker arms defective	Check the engine rocker arms.

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System Description

General Operation

The automatic transmission is a combination of a three-element torque converter and a four-shaft electronically controlled unit which provides five forward speeds and reverse. The entire unit is positioned in line with the engine.

Torque Converter, Shafts, Gears, and 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 turns 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, transmitting power to the transmission mainshaft. The transmission has four parallel shafts: the mainshaft, the countershaft, the secondary shaft, and the intermediary shaft. The mainshaft is in line with the engine crankshaft. The mainshaft includes the 4th and 5th clutches, and gears for 3rd, 4th, 5th, and reverse (reverse gear is integral with the 5th gear). The countershaft includes gears for the final drive, 2nd, idler, 1st, 4th, 5th, and reverse (the final drive gear is integral with the countershaft). The secondary shaft includes the 1st, 1st-hold, and 2nd clutches, and gears for park, 2nd, idler, and 1st. The intermediary shaft includes the 3rd clutch, and gears for 3rd and 4th. The countershaft 5th gear and the countershaft reverse gear can be locked to the countershaft at its left end, providing 5th gear or reverse, depending with which way the selector is moved. The gears on the mainshaft, secondary shaft, and intermediary shaft are in constant mesh with those on the countershaft. When certain conditions of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, and/or to the secondary shaft, intermediary shaft, then to the countershaft to provide drive.

Electronic Control
The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located in the engine compartment.

Hydraulic Control
The valve bodies include the main valve body, the regulator valve body, the secondary valve body, and the accumulator body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the modulator valve, the torque converter check valve, shift valves A, B, E, CPC valve A, the relief valve, the servo control valve, the lock-up shift valve, the lock-up timing valve, the lubrication control valve, the lubrication check valve, and the ATF pump gears. The secondary valve body contains shift valves C, D, CPC valves B and C, the reverse CPC valve, and the reverse control valve. The regulator valve body contains the regulator valve, the cooler check valve, the lock-up control valve, and the 3rd accumulator. The accumulator body contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators, shift solenoid valves A, B, C, and D. Fluid from the regulator valve passes through the manual valve to the various control valves. All the clutch receive fluid from the internal hydraulic circuit.

Shift Control Mechanism
To shift gears, the PCM controls shift solenoid valves A, B, C and D, and automatic transmission (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 to send hydraulic pressure to the clutches. The A/T clutch pressure control solenoid valves A, B, and C control the CPC valves A and B, and reverse CPC valve to shift smoothly between lower and higher gear. This pressurizes a line to one of the clutches, engaging the clutch and its corresponding gear.

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Lock-up Mechanism
The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears in the D position, and in 2nd and 3rd gears in the D3 position. 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 hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When shift solenoid valve D is turned on by the PCM, shift solenoid valve D pressure switches the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve C, the lock-up control valve, and the lock-up timing valve control the amount of the lock-up conditions. Shift solenoid valve D is located on the accumulator body in the transmission, and A/T clutch pressure control solenoid valve C is mounted on the transmission housing.

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 D3: DRIVE 1st through 3rd gear range with automatic shift.

Position		Description
P: PARK		Front wheels locked; park pawl engaged with park gear on secondary shaft. All clutches are released.
R: REVERSE		Reverse; reverse selector engaged with countershaft reverse gear and 5th 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 accelerator pedal 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: Sequential sportshift mode	Manual gear shift driving; vehicle can start off in 1st gear, and does not upshift automatically. Vehicle can also start off in 2nd gear, and does not upshift and downshift automatically. Downshifts automatically to 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears.
D3: DRIVE (1st through 3rd)		Used 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 accelerator pedal position. Downshifts through 2nd and 1st on deceleration to stop. The lock-up mechanism operates in 2nd and 3rd gears.

Starting is possible only in the P and N positions because of a slide-type neutral-safety switch.

Automatic Transmission (A/T) Gear Position Indicator
The A/T gear position indicator in the gauge control module (located between speedometer and tachometer) shows which shift lever position has been selected without having look down at the console.

Shift Indicator and M indicator
When the shift lever is shifted into the M (sequential sportshift mode) position, the M indicator next to the D indicator comes on, and the shift indicator at the bottom of the tachometer displays the gear selected.

Transfer Assembly
The transfer assembly consists of the transfer drive gear on the differential, the transfer output shaft in the transmission, the transfer drive gear (hypoid gear), the transfer shaft, the transfer output shaft (hypoid gear), and the companion flange. The transfer assembly is on the rear side of the transmission, beside the differential. The transfer drive gear on the differential drives the transfer output shaft in the transmission. The transfer output shaft in the transmission is connected to the transfer drive gear (hypoid gear) by splines. Power is transmitted from the transfer drive gear on the differential to the rear differential via the transfer assembly and the propeller shaft.

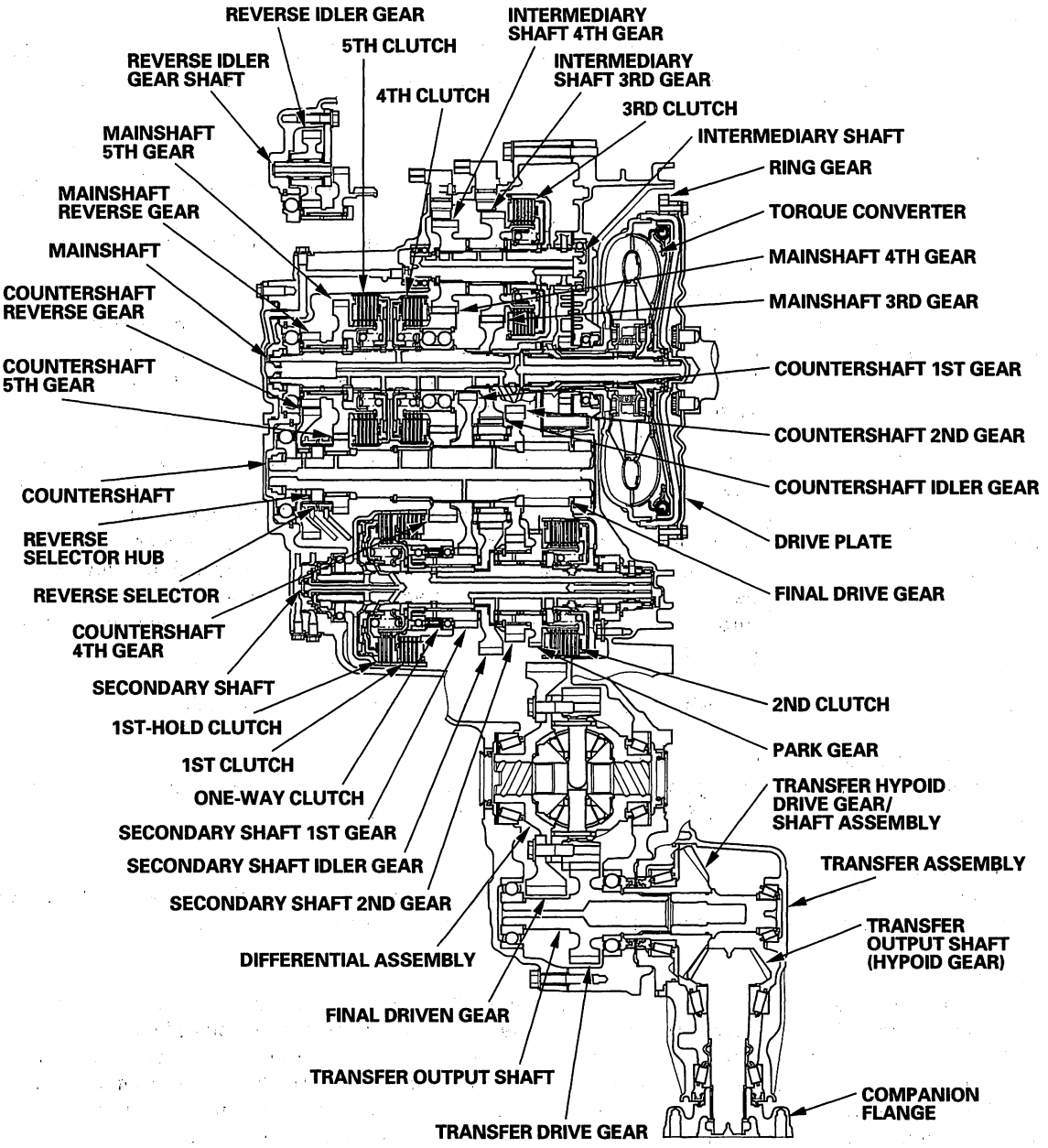
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System Description (cont'd)

Clutches and 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 the steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

Transmission Cutaway View



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1st Clutch
The 1st clutch engages/disengages 1st gear, and is located at the left end of the secondary shaft. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

1st-hold Clutch
The 1st-hold clutch engages/disengages 1st-hold in 1st gear in the M position. The 1st-hold clutch is located in the 1st clutch drum, and 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 right end of the secondary shaft. The 2nd clutch is supplied hydraulic pressure through the secondary shaft by a circuit connected to the internal hydraulic circuit.

3rd Clutch
The 3rd clutch engages/disengages 3rd gear, and is located at the end of the intermediary shaft. The 3rd clutch is supplied hydraulic pressure through the intermediary shaft by a circuit connected to the internal hydraulic circuit.

4th Clutch
The 4th clutch engages/disengages 4th gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

5th Clutch
The 5th clutch engages/disengages 5th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

One-way Clutch
The one-way clutch is positioned between the 1st clutch hub and the secondary shaft 1st gear. The secondary shaft 1st gear is splined to the 1st-hold clutch hub, with the 1st-hold clutch hub splined to the secondary shaft. The secondary shaft 1st gear provides the outer race surface, and the 1st clutch hub provides the inner race surface. The one-way clutch locks when power is transmitted from the secondary shaft 1st gear to the countershaft 1st gear. The 1st clutch and gears remain engaged in the 1st, 2nd, 3rd, 4th, and 5th gear ranges in the D position, and in the 1st, 2nd, and 3rd gear ranges in the D3.
However, the one-way clutch disengages when the 2nd, 3rd, 4th, or 5th clutches and gears are applied in the D or D3 position. This is because the increased rotational speed of the gears on the secondary shaft causes the one-way clutch to free-wheel with the 1st clutch still engaged.

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System Description (cont'd)

Clutches and Gears (cont'd)

Gear operation

Gears on the mainshaft:
- 4th gear is engages/disengaged with the mainshaft by the 4th clutch.
- 5th gear is engaged/disengages with the mainshaft by the 5th clutch.
- Reverse gear is engaged/disengaged with the mainshaft by the 5th clutch.
- 3rd gear is splined with the mainshaft and rotates with the mainshaft.

Gears on the countershaft:
- Final gear is integral with the countershaft.
- 1st gear, 2nd gear, and 4th gear are splined with the countershaft, and rotate with the countershaft.
- 5th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 5th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so 5th gear and reverse gear engage with the countershaft.
- Idler gear is located over the 2nd gear, and rotates freely from the countershaft.

Gears on the secondary shaft:
- 1st gear is engaged with the secondary shaft by the 1st clutch and the one-way clutch when accelerating, and 1st gear is disengaged from the 1st clutch at the one-way clutch when decelerating. 1st gear is engaged with the secondary shaft by the 1st-hold clutch when decelerating for engine braking.
- 2nd gear is engaged/disengaged with the secondary shaft by the 2nd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.
- Park gear is integral with the 2nd gear.

Gears on the intermediary shaft:
- 3rd gear is engaged/disengaged with the intermediary shaft by the 3rd clutch.
- 4th gear is splined with the intermediary shaft.

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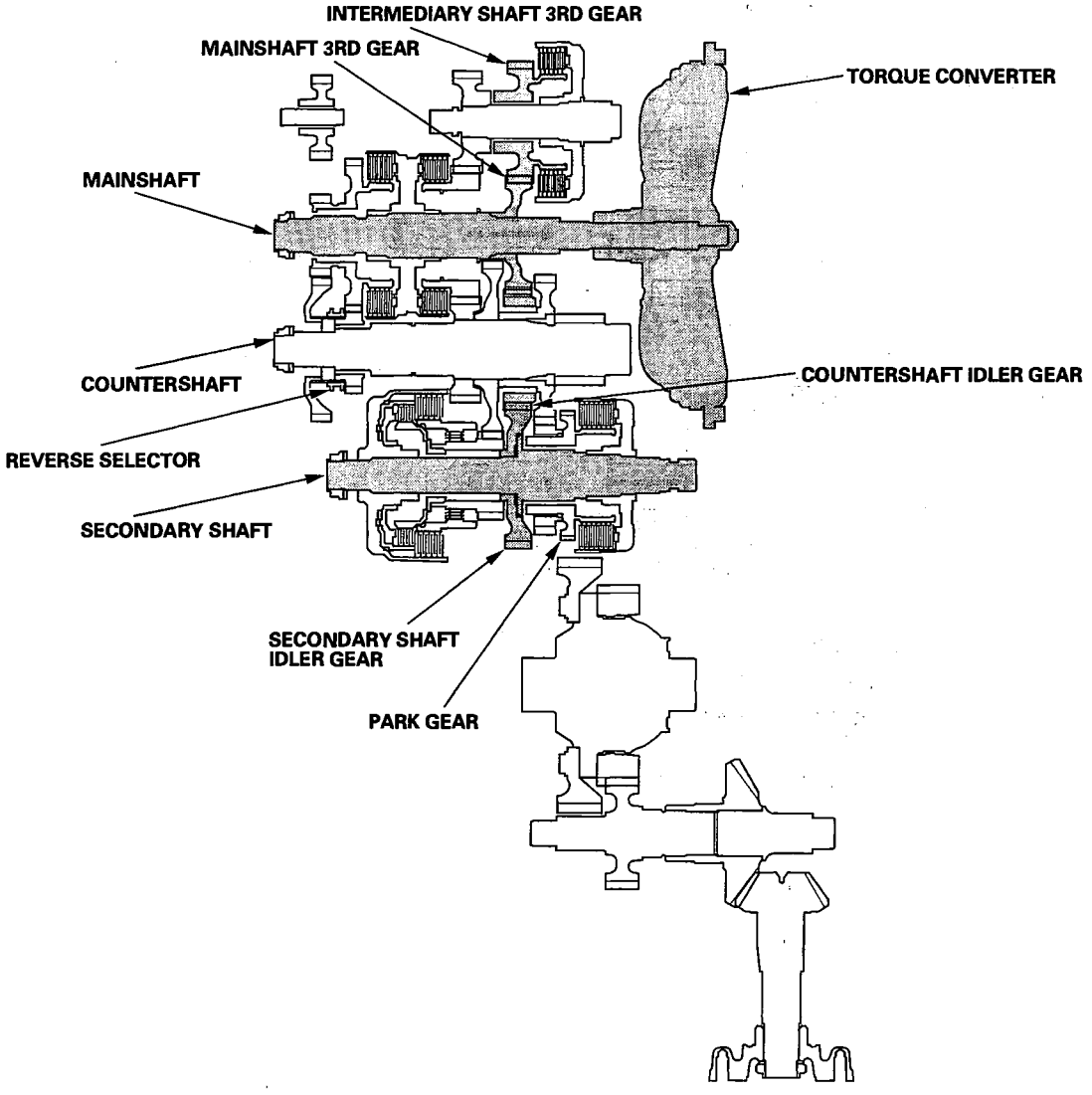
BACK

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, secondary shaft 2nd gear, and countershaft 2nd gear.

N Position
Engine power transmitted from the mainshaft drives the mainshaft 3rd gear, the intermediary shaft 3rd 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 the D or R position:

- When shifted from the D position, the reverse selector engages with the countershaft 5th gear and the reverse selector hub, and the 5th gear engages with the countershaft.
- When shifted from the R position, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.



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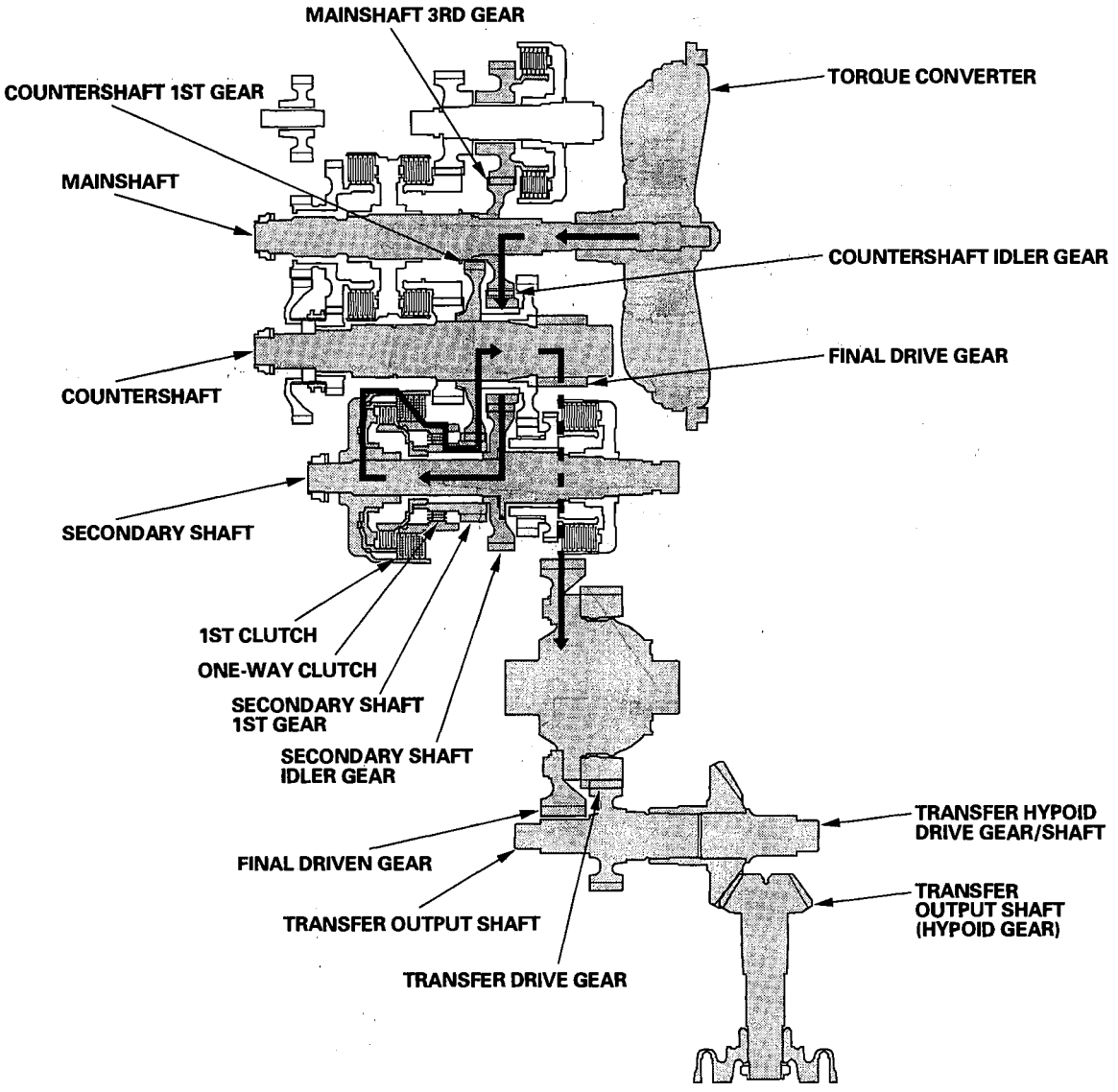
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System Description (cont'd)

Power Flow (cont'd)

D and D3 Positions
In the D and D3 positions, the optimum gear is automatically selected from the 1st, 2nd, 3rd, 4th, and 5th gears in the D position; and 1st, 2nd, and, 3rd gears in the D3 position according to conditions such as the balance between the accelerator pedal opening (engine loading) and vehicle speed.

In 1st gear
- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler 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 and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).

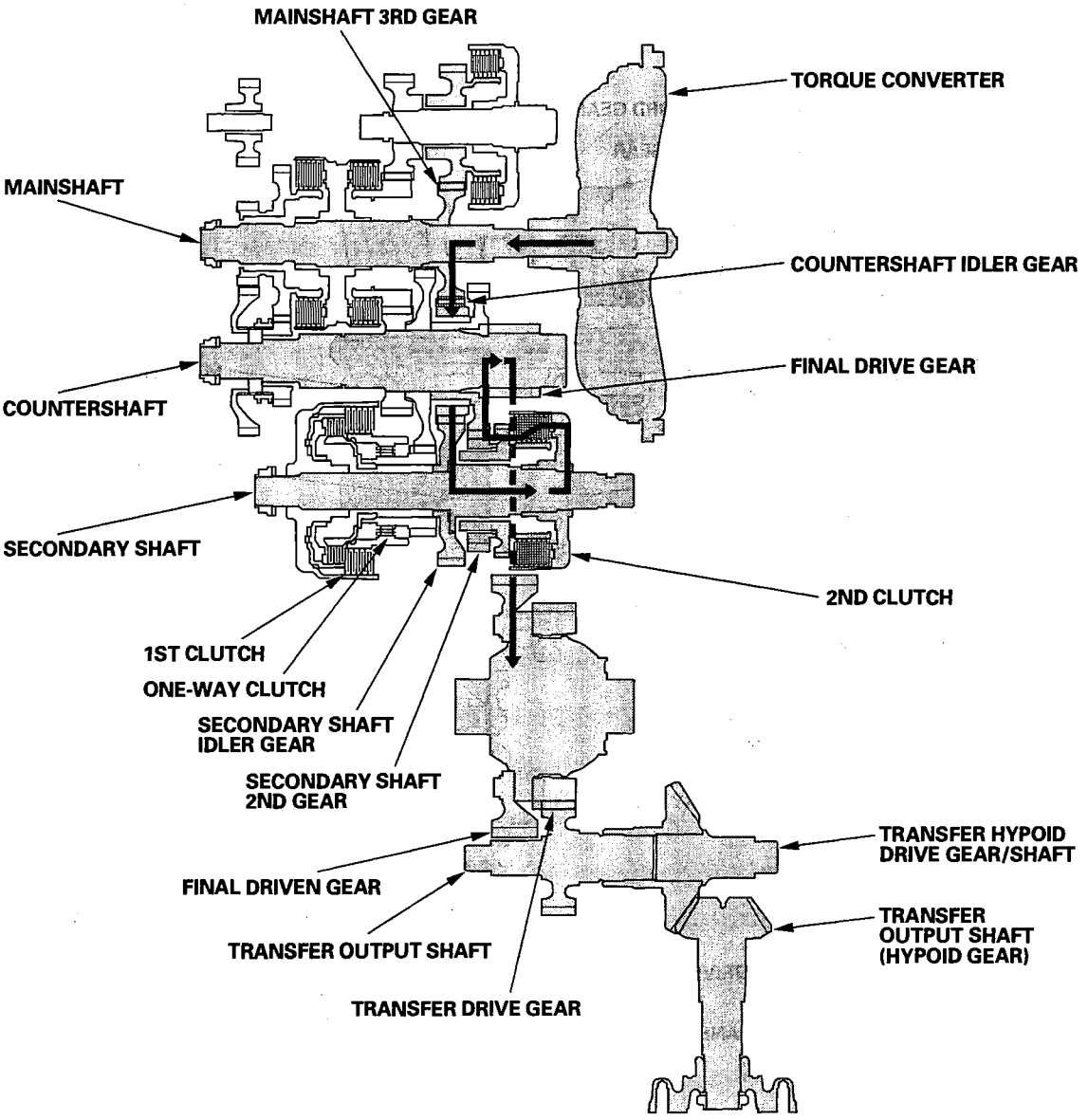


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In 2nd gear

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- 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 and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 2nd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



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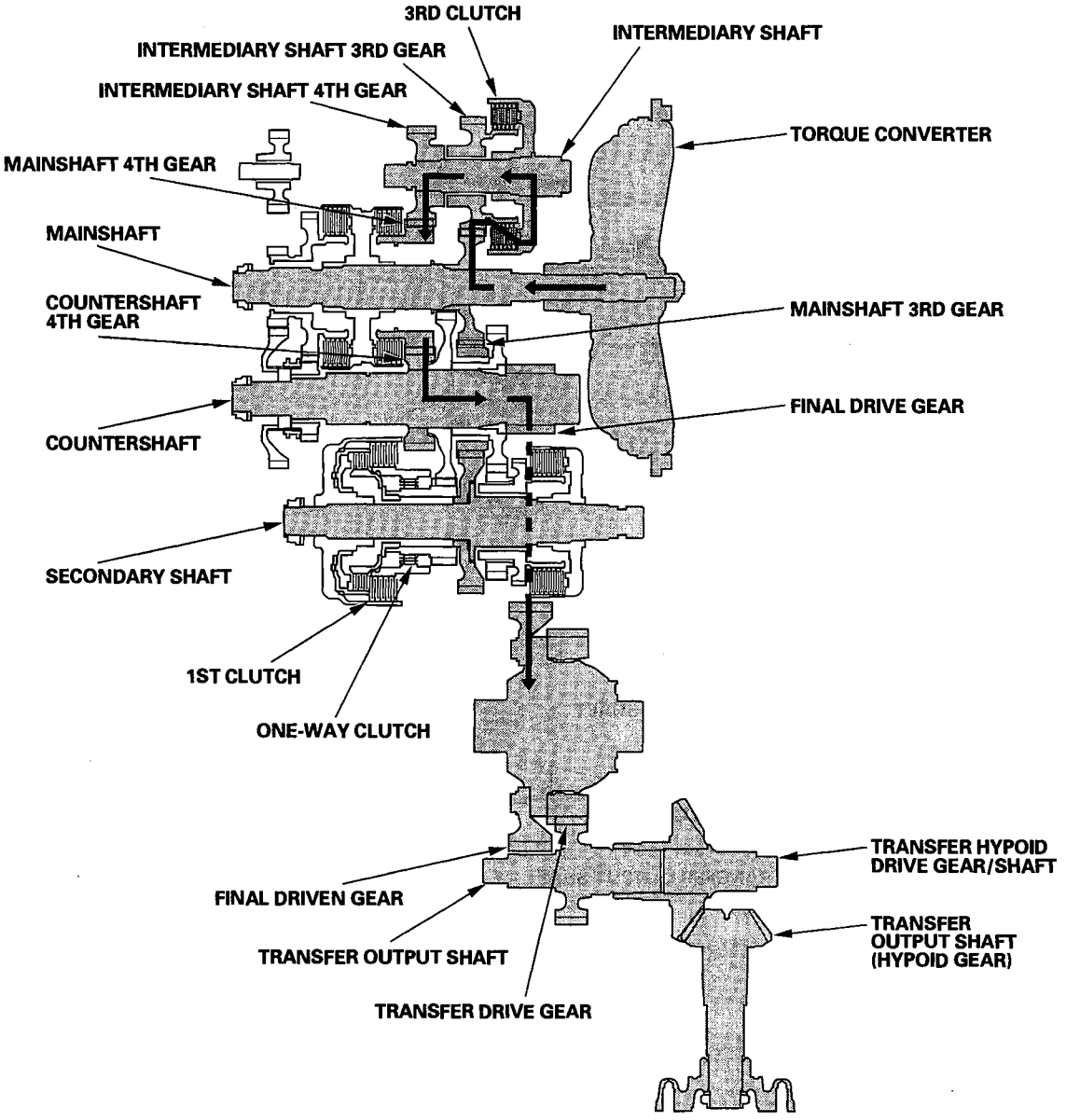
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System Description (cont'd)

Power Flow (cont'd)

In 3rd gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the intermediary shaft 3rd gear with the intermediary shaft.
- The mainshaft 3rd gear drives the intermediary shaft 4th gear via the intermediary shaft 3rd gear and the 3rd clutch.
- The intermediary shaft 4th gear drives the countershaft 4th gear and the countershaft via the mainshaft 4th gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 3rd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.

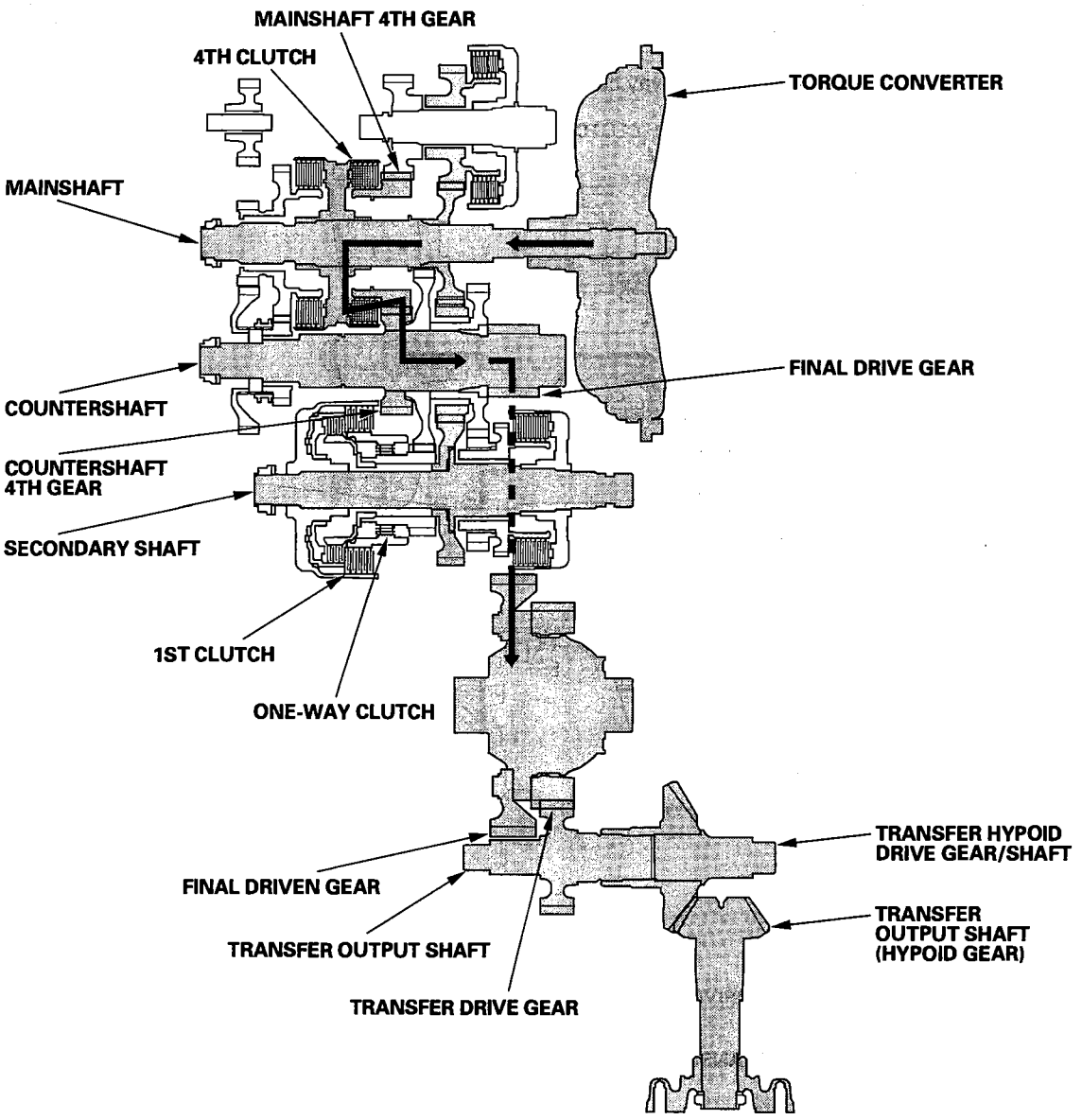


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In 4th gear

- Hydraulic pressure is 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 and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 4th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



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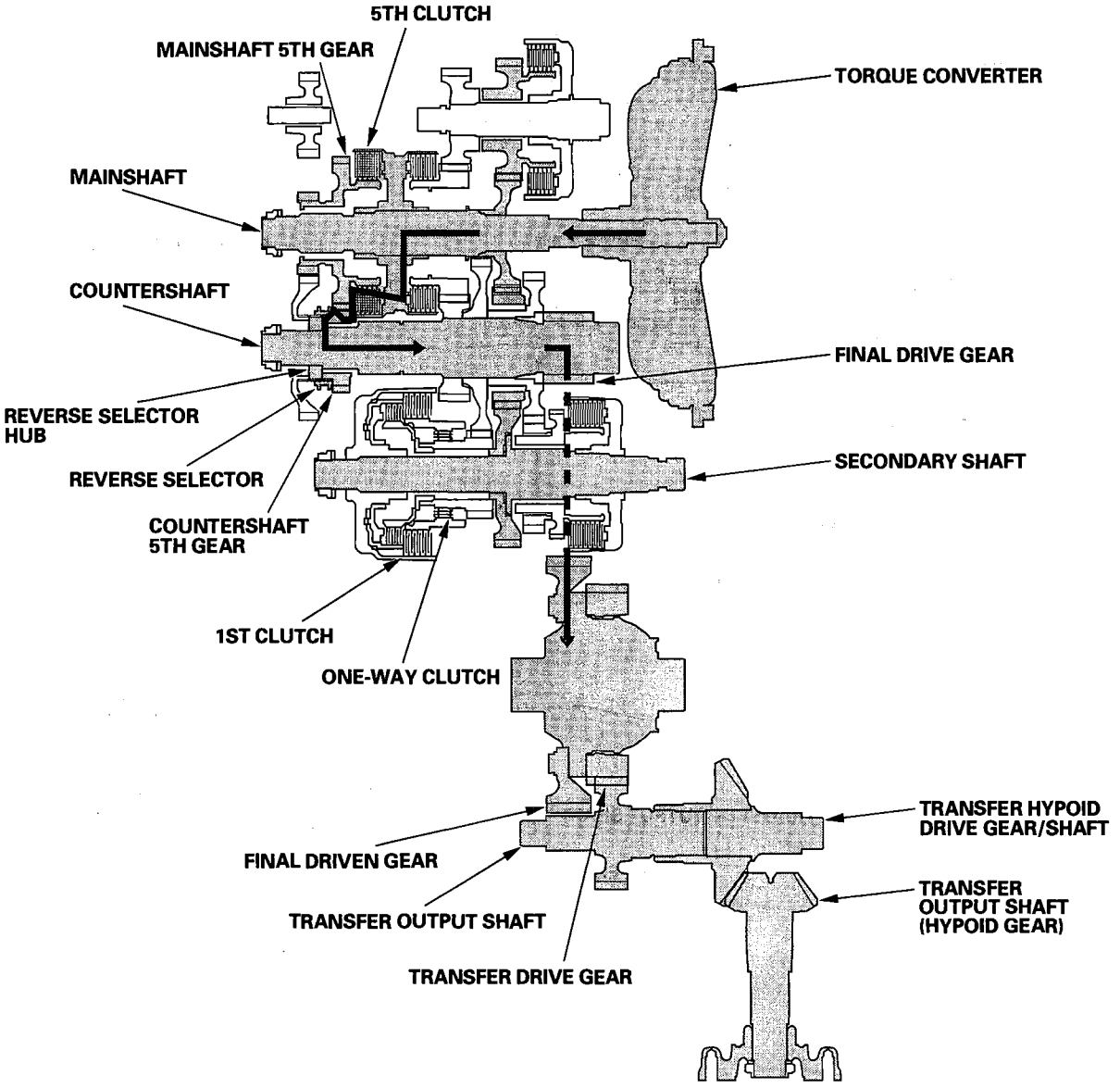
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System Description (cont'd)

Power Flow (cont'd)

In 5th gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 5th gear while the shift lever in the D position.
- 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, which drives the reverse selector hub and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 5th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



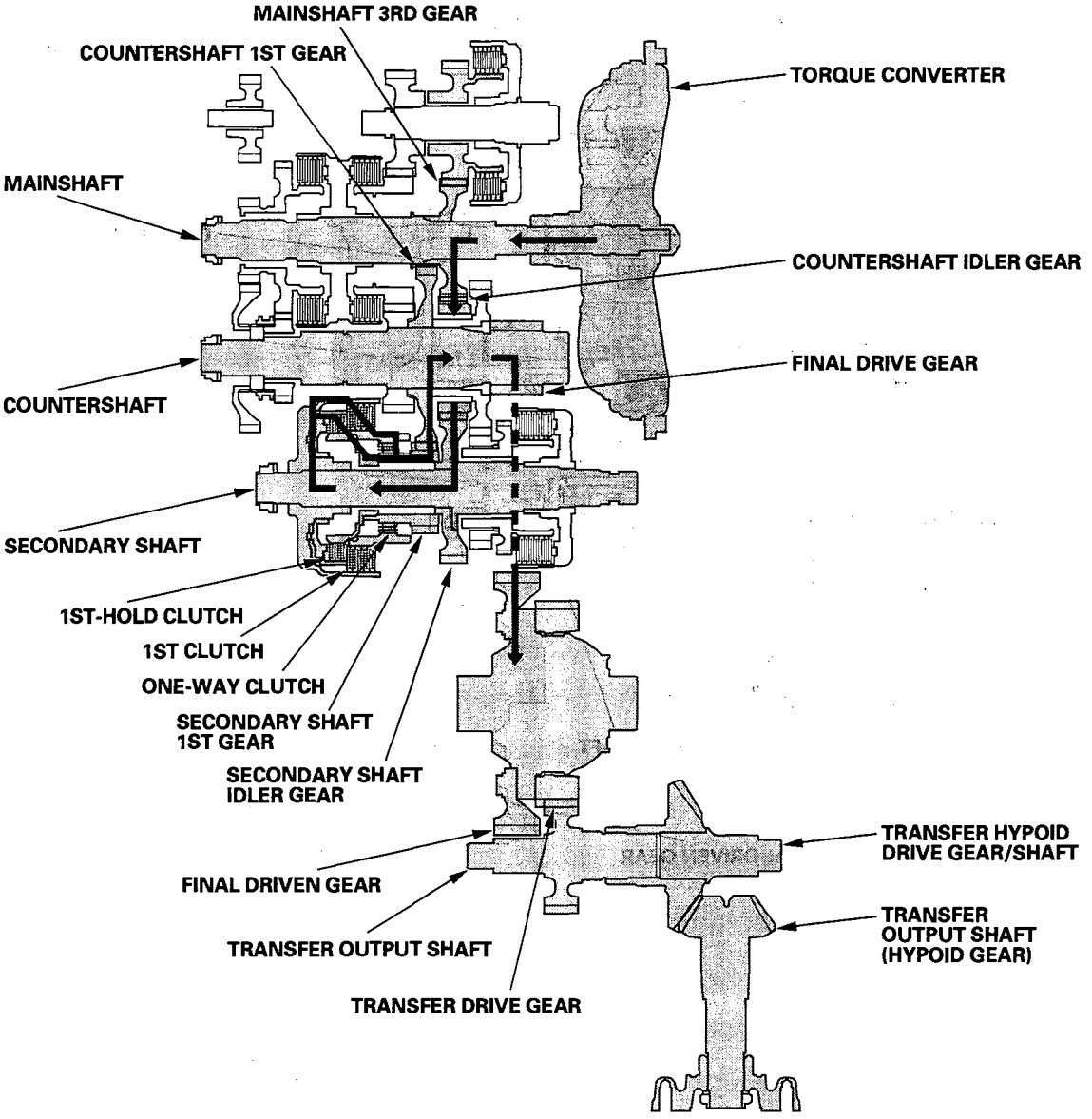
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Acceleration in 1st gear in M (sequential sportshift mode) position

In 1st gear in the M (sequential sportshift mode) position, hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch. The power flow when accelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Hydraulic pressure is also applied to the 1st-hold clutch, and the 1st-hold clutch engages the secondary shaft 1st gear with the secondary shaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).



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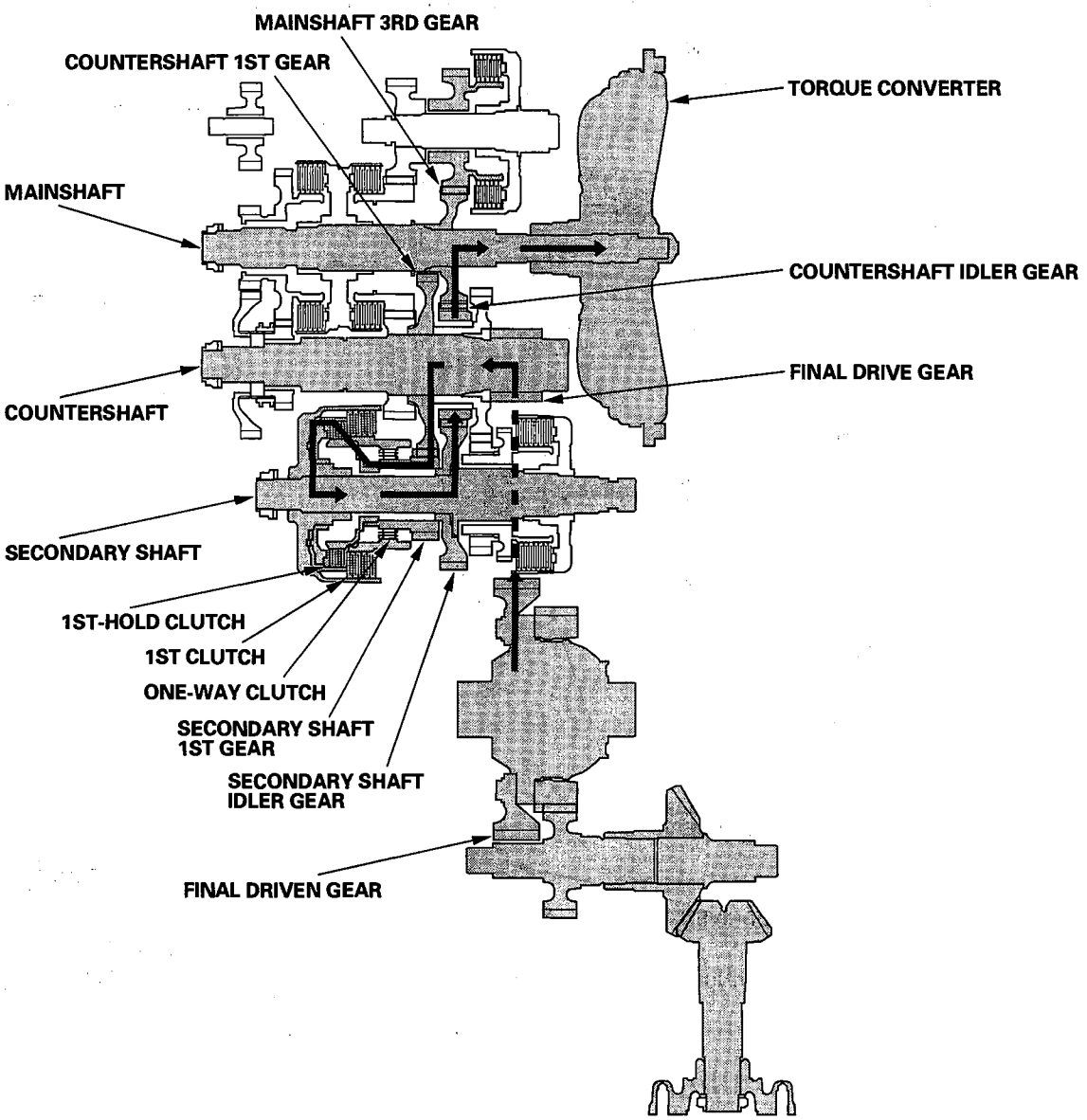
System Description (cont'd)

Power Flow (cont'd)

Deceleration in 1st gear in M (sequential sportshift mode) position

The power flow in 1st gear in the M (sequential sportshift mode) position when decelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch.
- Rolling resistance from the road surface goes through the front wheels to the final driven gear, then to the countershaft idler gear.
- The one-way clutch disengages because the application of torque is reversed.
- The force conveyed to the secondary shaft idler gear turns the mainshaft 3rd gear via the countershaft idler gear. As a result, engine braking can be obtained with 1st gear.

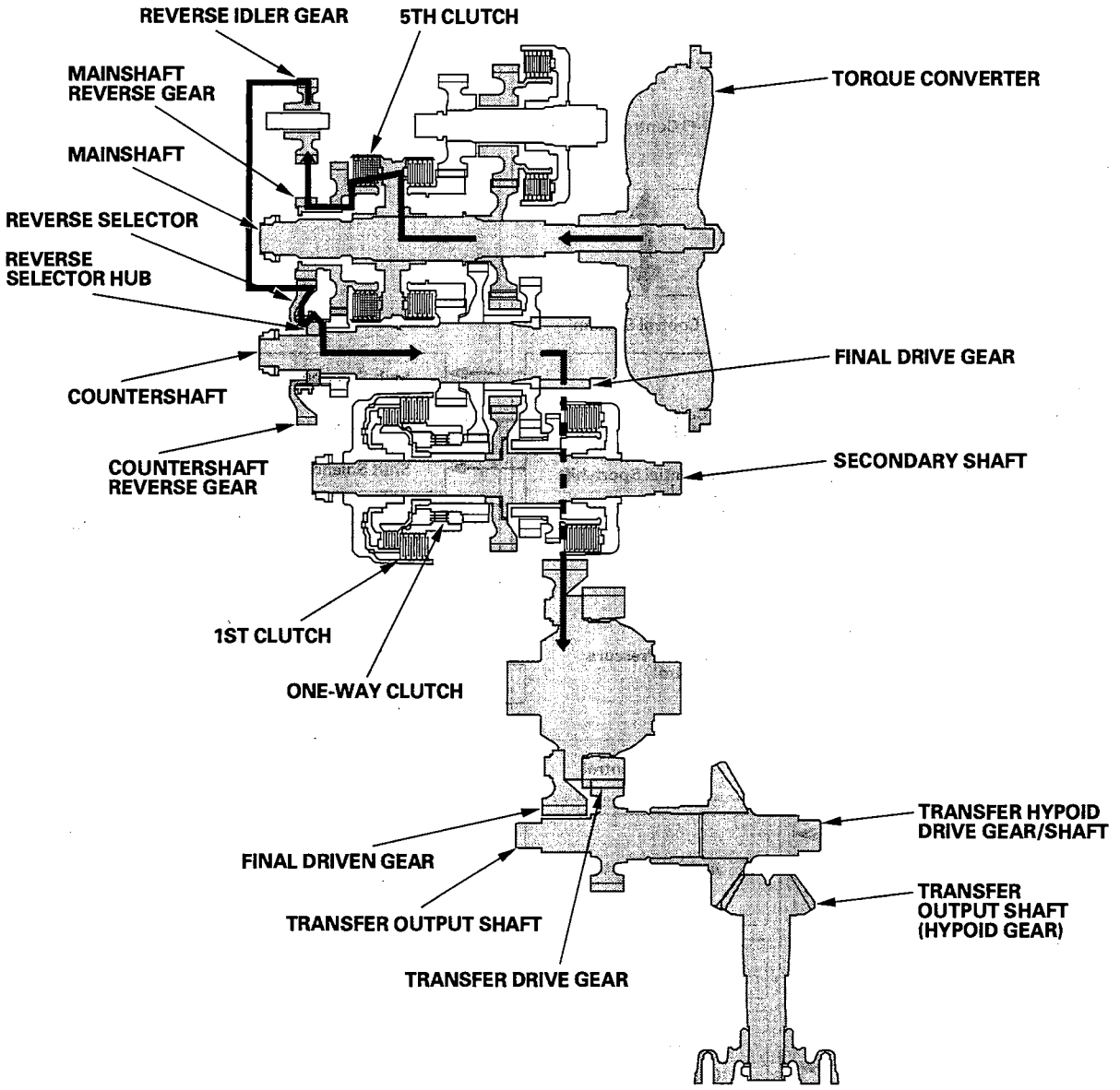


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R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear while the shift lever is in the R position.
- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector which drives the reverse selector hub.
- The rotation direction of the countershaft is changed by the reverse idler gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).



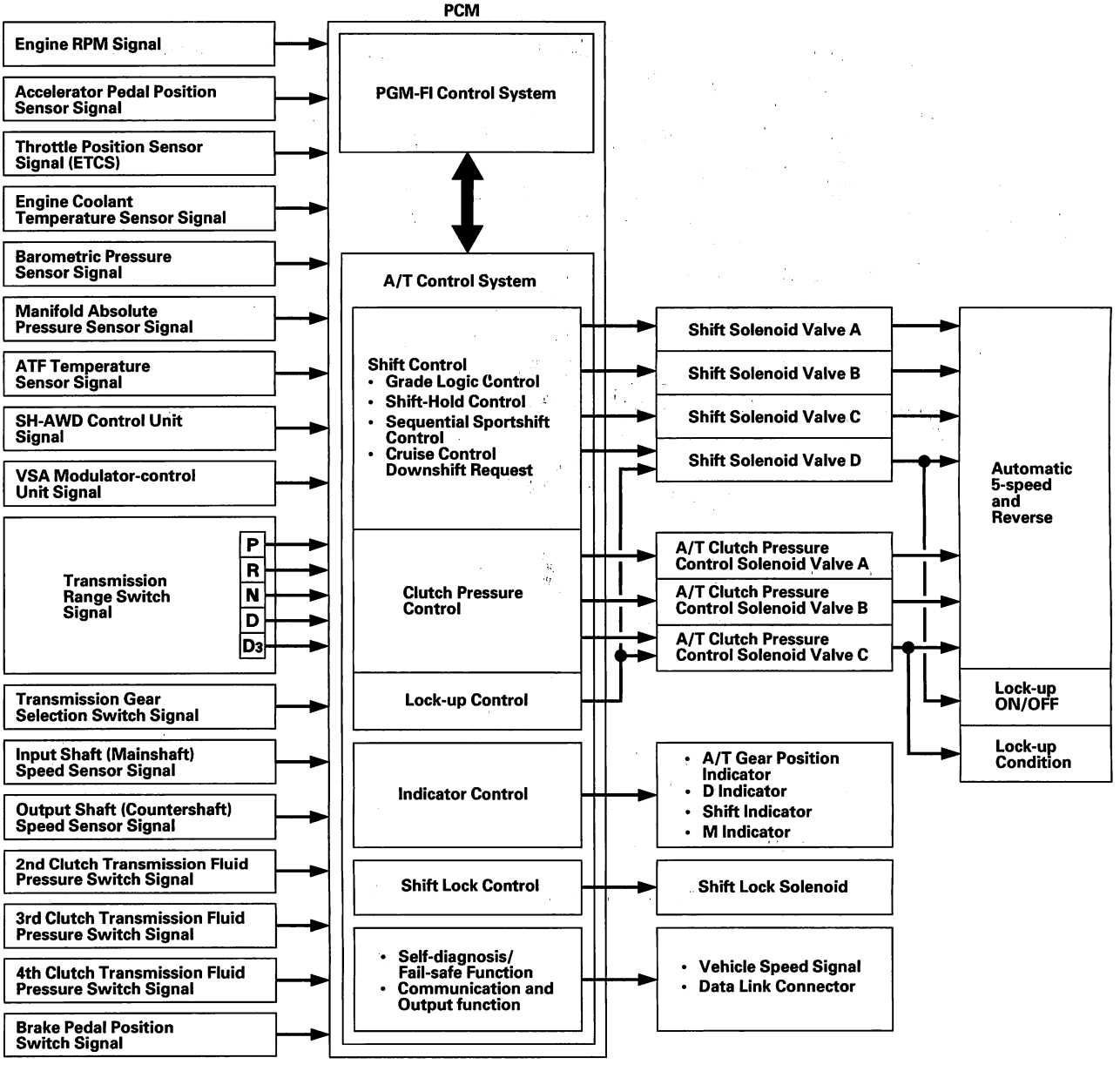
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System Description (cont'd)

Electronic Control System

Electronic Control
The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

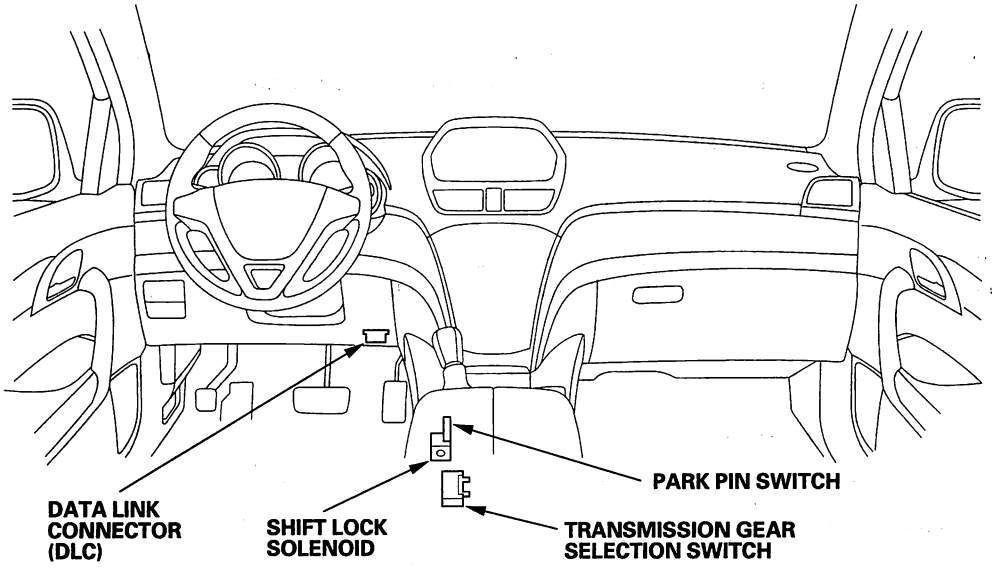
Functional Diagram
The PCM receives input signals from the sensors, switches, and other control units, processes data, and outputs signals for the engine control system and A/T control system. The A/T control system includes shift control, clutch pressure control, and lock-up control. The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.

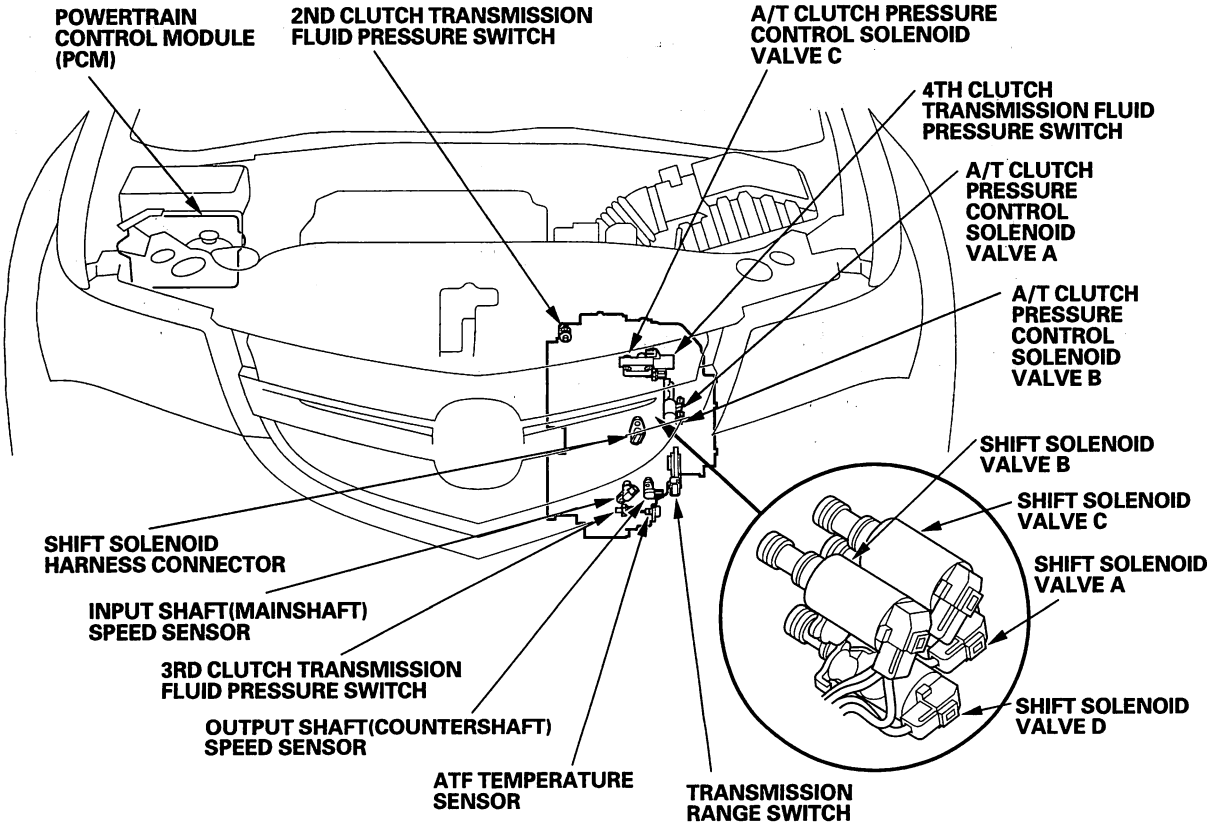


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Electronic Control System Component Locations





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System Description (cont'd)

Electronic Control System (cont'd)

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, and D to control shifting transmission gear.

There are two types of shift solenoid valves:
- Shift solenoid valves A and D use the ON-OPEN/OFF-CLOSE type; the shift solenoid valve opens the port of shift solenoid valve pressure while the shift solenoid valve is turned ON by the PCM, and closes the port when shift solenoid valve is OFF.
- Shift solenoid valves B and C use the ON-CLOSE/OFF-OPEN type; the shift solenoid valve closes the port of shift solenoid valve pressure while the shift solenoid valve is turned ON by the PCM, and opens the port when shift solenoid valve is OFF.

The combination of driving signals to shift solenoid valves A, B, C, and D are shown in the table.

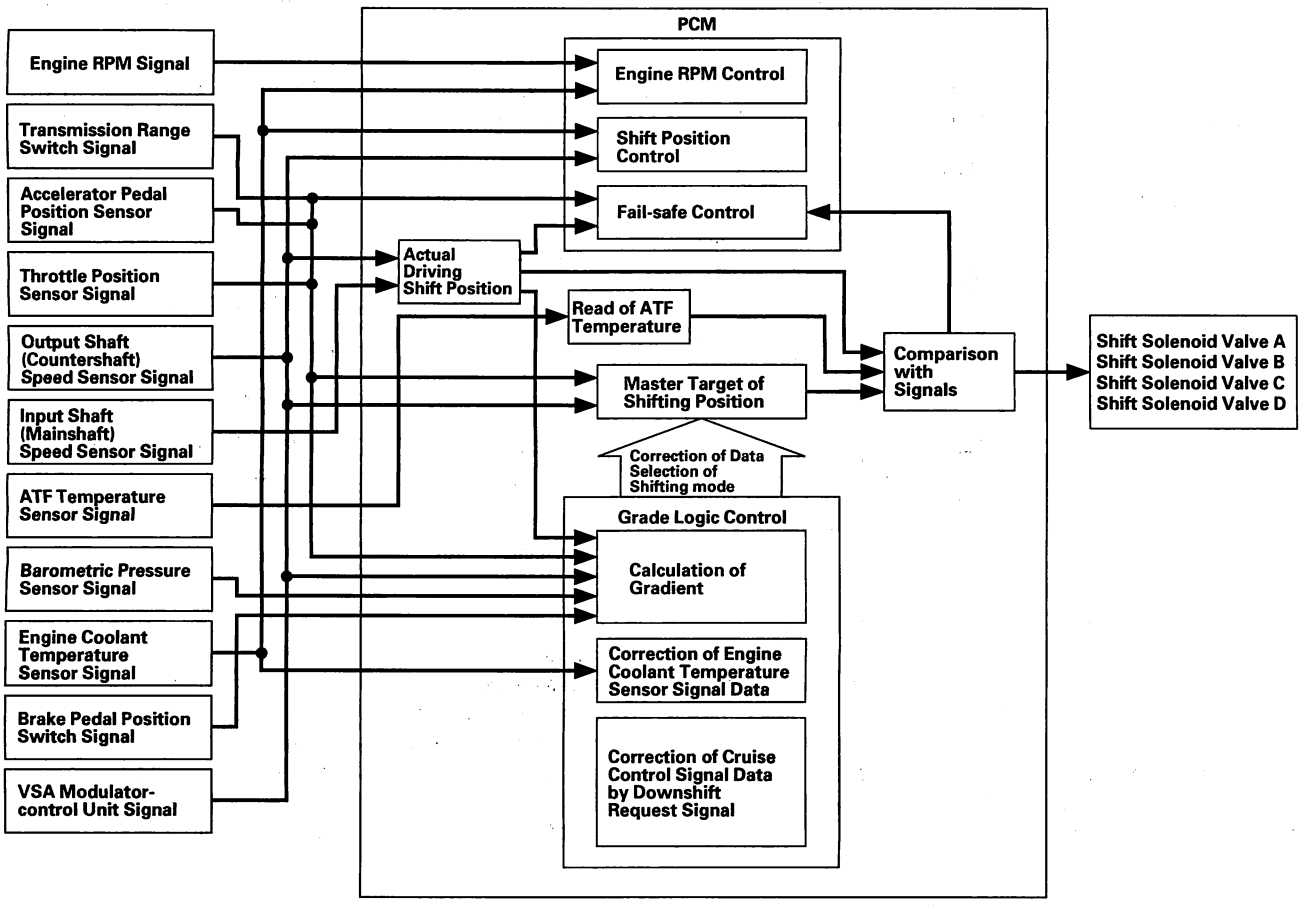
Position	Gear position	Shift solenoid valves			
		A	B	C	D
D and D3	Shifting from the N position	OFF	ON	OFF	OFF
	Stays in 1st	OFF	ON	ON	OFF
	Shifting gears between 1st and 2nd	ON	ON	ON	OFF or ON
	Stays in 2nd	ON	ON	OFF	OFF or ON
	Shifting gears between 2nd and 3rd	ON	ON	ON	OFF or ON
	Stays in 3rd	ON	OFF	ON	OFF or ON
D	Shifting gears between 3rd and 4th	ON	OFF	OFF	OFF or ON
	Stays in 4th	OFF	OFF	OFF	OFF or ON
	Shifting gears between 4th and 5th	OFF	OFF	ON	OFF or ON
	Stays in 5th	OFF	ON	ON	OFF or ON
M	1st	OFF	ON	ON	OFF or ON
	2nd	ON	ON	OFF	OFF or ON
	3rd	ON	OFF	ON	OFF or ON
	4th	OFF	OFF	OFF	OFF or ON
	5th	OFF	ON	ON	OFF or ON
N	Neutral	OFF	ON	OFF	OFF
R	Shifting from the P and N positions	OFF	ON	OFF	ON
	Stays in reverse	ON	ON	OFF	ON
	Reverse inhibit control	OFF	ON	OFF	OFF
P	Park	OFF	ON	OFF	ON

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Shift Control - Grade Logic Control

The grade logic control system has been adopted to control shifting in the D and D3 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 switch signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.



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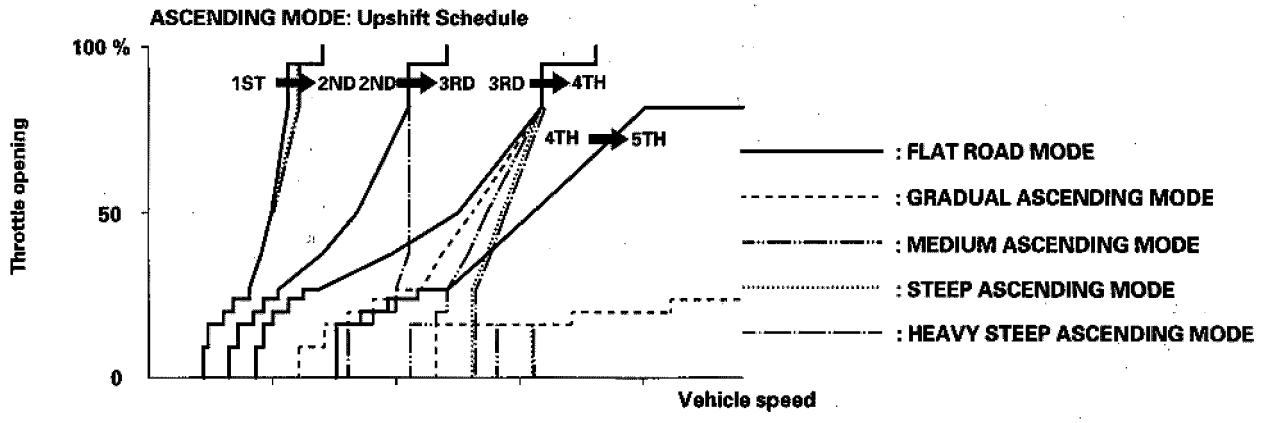
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System Description (cont'd)

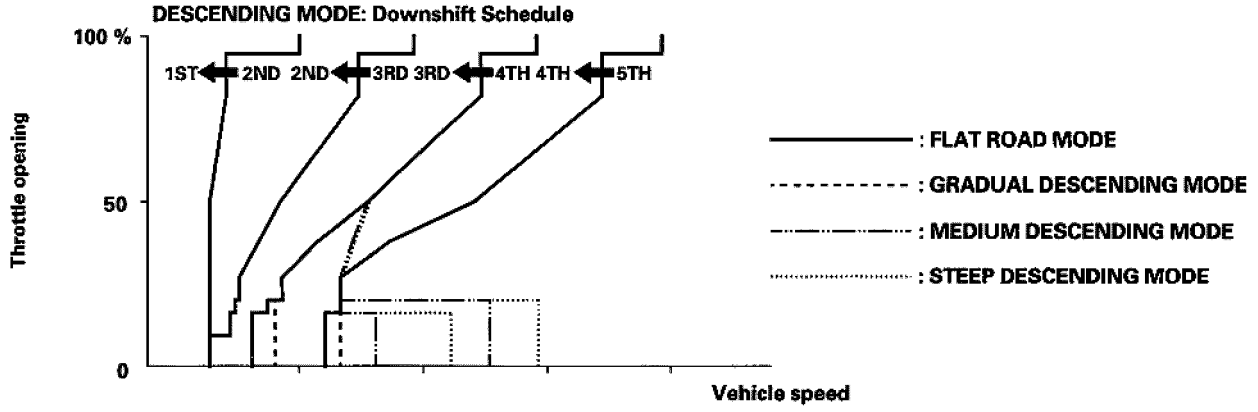
Electronic Control System (cont'd)

Grade Logic Control: Ascending Control
When the PCM determines that the vehicle is climbing a hill in the D and D3 positions, the system extends the engagement area of 2nd gear, 3rd gear, and 4th gear 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.

NOTE: Shift commands stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable the PCM to automatically select the most suitable gear according to the magnitude of a gradient.



Grade Logic Control: Descending Control
When the PCM determines that the vehicle is going down a hill in the D and D3 positions, the shift-up speed from 4th to 5th gear, 3rd to 4th gear, and from 2nd to 3rd (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 areas. 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 or 4th gear and you are decelerating while applying the brakes on a steep hill, the transmission will downshift to a lower gear. When you accelerate, the transmission will then return to a higher gear.

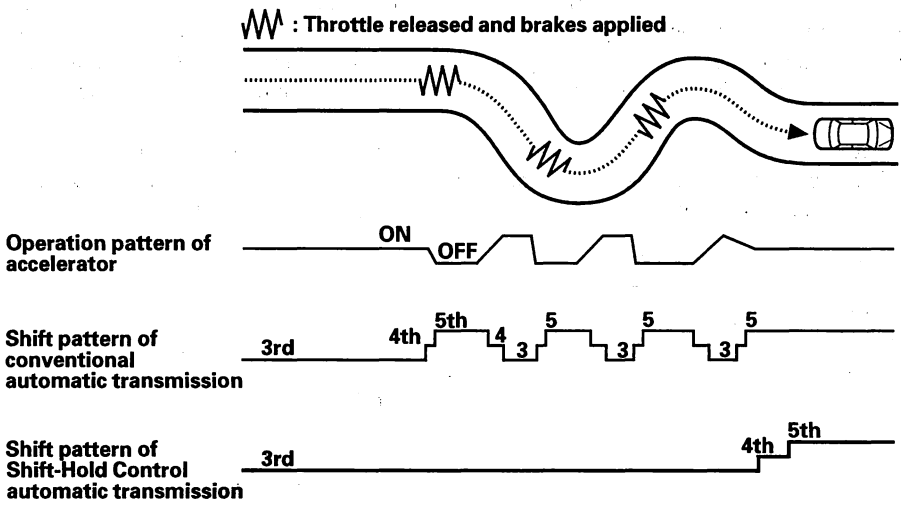


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Deceleration Control
When the vehicle goes around a corner and needs to decelerate first and then accelerate, the PCM sets the data for deceleration control to reduce the number of times the transmission shifts. When the vehicle is decelerating from speeds above 25 mph (40 km/h), the PCM shifts the transmission from 4th to 3rd earlier than normal to cope with upcoming acceleration.

Shift-Hold Control
When negotiating winding roads, the throttle is suddenly released and the brakes are applied, as is the case when decelerating at the entrance of a corner, Shift-Hold Control keeps the transmission in its current (lower) ratio as it negotiates the corner and accelerates out.
When the vehicle is driven aggressively on a winding road, the PCM will extend the engagement time of 3rd gear and 4th gear to prevent the transmission from frequently shifting between 3rd, 4th, and 5th gears. This allows the driver to have more control for both acceleration and deceleration.
The PCM monitors the average change in vehicle speed and throttle over time. When these values exceed those for normal driving conditions, the shift-up from 3rd to 4th gear and 4th to 5th gear is delayed. This gives more control over power, and engine braking when the driver is driving aggressively around winding roads. The transmission will resume the normal shift-up pattern after the PCM determines that normal driving has resumed.



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System Description (cont'd)

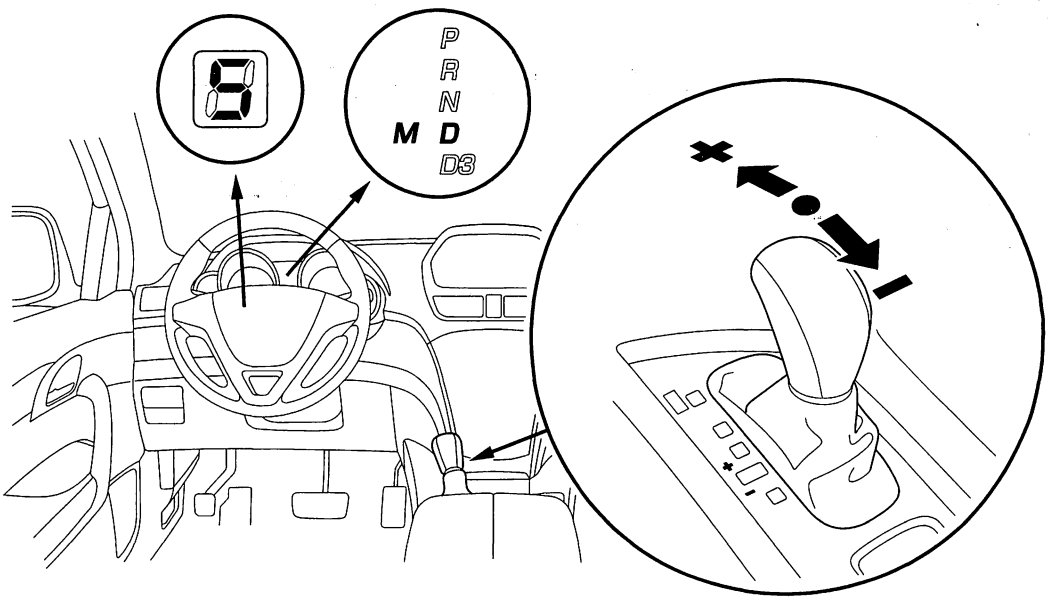
Electronic Control System (cont'd)

Shift Control - Sequential Sportshift Mode

The MDX transmission is provided a sequential sportshift mode in the D position. In the D position, the transmission has two shifting modes; the automatic shift mode and the sequential sportshift mode. In the automatic shift mode used for general driving, the transmission upshifts and downshifts automatically from 1st through 5th gear. In the automatic shift mode, the shift indicator and the M indicator in the gauge control module do not come on.

The transmission is switched to the sequential sportshift mode by moving the shift lever into the M position from the D, the automatic shift mode is canceled and the sequential sportshift mode comes into operation. The shift indicator displays the number of the selected gear, and the M indicator comes on. In the sequential sportshift mode, the driver can shift up and down manually from 1st through 5th gear by using the shift lever, much like a manual transmission, and the transmission must be shifted up and down by using the shift lever. However, the transmission cannot downshift and stays in the current gear if the shift lever is pulled while the vehicle is coasting at a speed that would cause the engine to over-rev by downshifting the transmission, and the shift indicator blinks the number of the selected gear several times, then returns to the number of the current gear. If the vehicle speed reaches an appropriate speed while the shift indicator is blinking the number of the selected gear, the transmission downshifts and the shift indicator displays the selected gear. The transmission also cannot upshift and stays in the current gear if the shift lever is pushed while driving below an appropriate upshifting speed, the shift indicator blinks the number of the selected gear several times, then returns to the number of the current gear. If the vehicle speed reaches the an appropriate upshift speed while the shift indicator is blinking the number of the selected gear, the transmission upshifts and the shift indicator displays the selected gear.

When the transmission decelerates to a stop, the transmission shifts to 1st gear automatically. The transmission can be shifted to 2nd gear by pushing the shift lever while the vehicle is stopped, and the vehicle can start off in 2nd gear. The sequential sportshift mode is canceled when moving the shift lever to any position other than M.



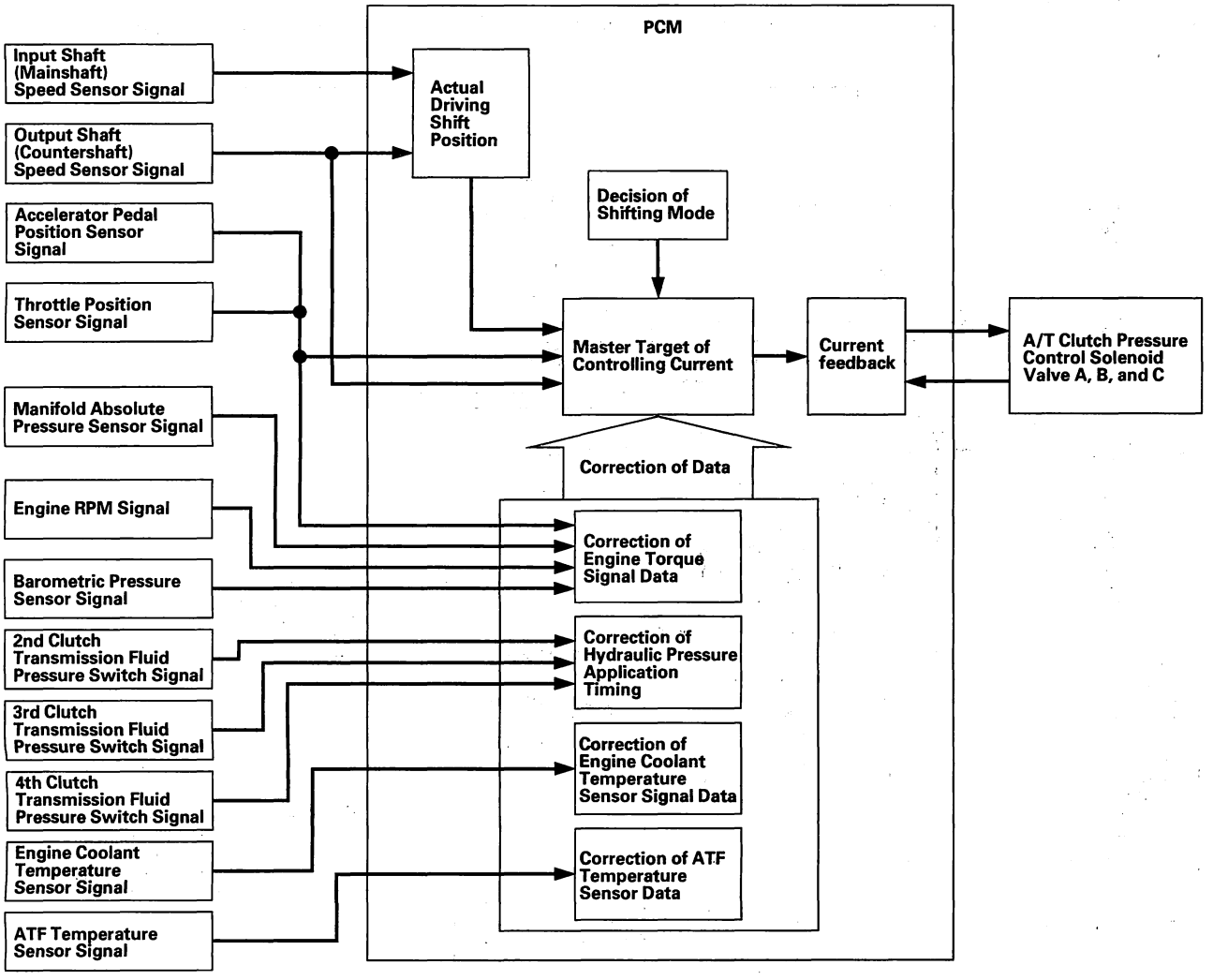
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Clutch Pressure Control

The PCM actuates A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between gears, the clutch pressure regulated by 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 current to A/T clutch pressure control solenoid valves A, B, and C.



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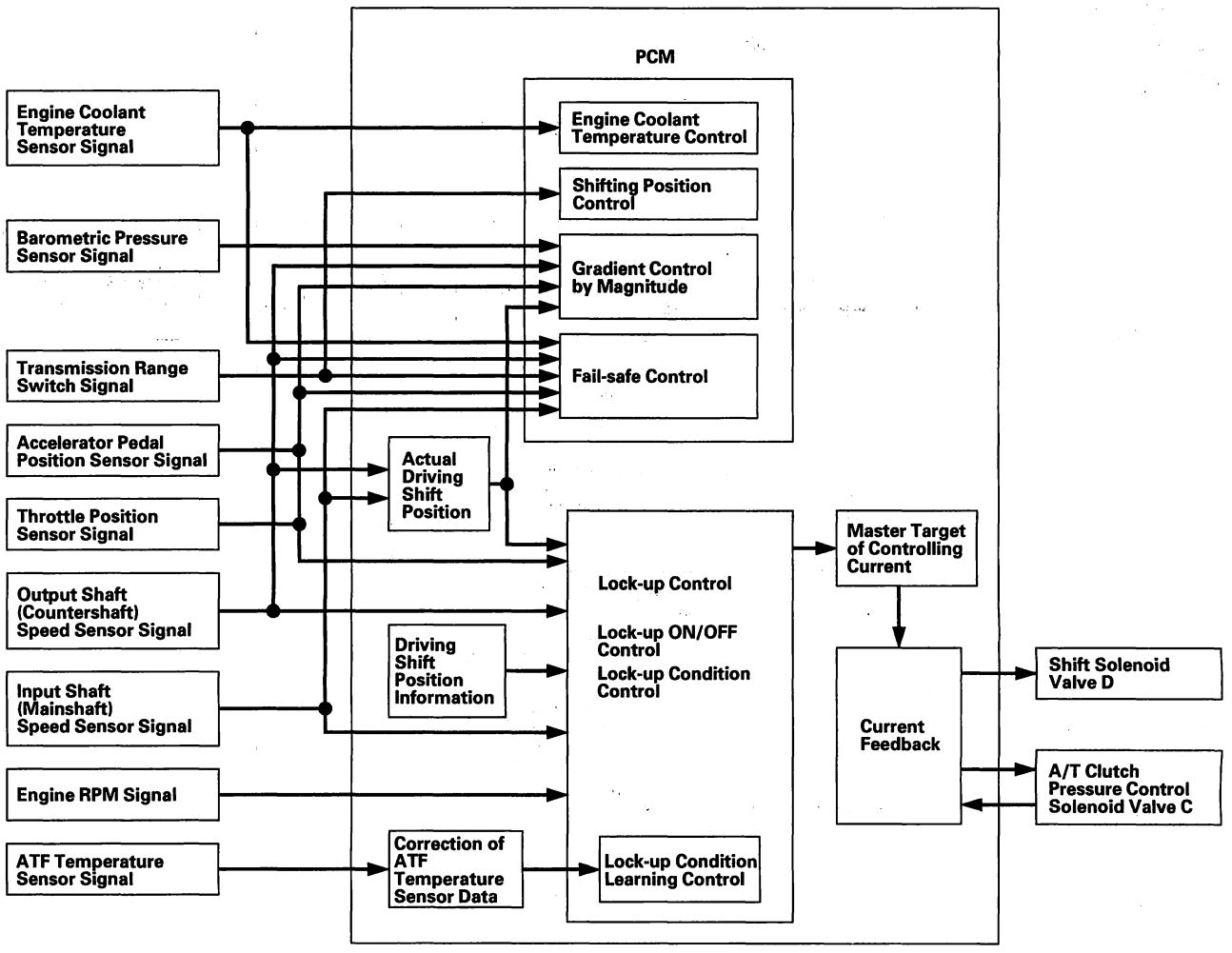
System Description (cont'd)

Electronic Control System (cont'd)

Lock-up Control

The shift solenoid valve D controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates the shift solenoid valve D and the A/T clutch pressure control solenoid valve C ON, the condition of lock-up starts. The A/T clutch pressure control solenoid valve C regulates and applies hydraulic pressure to the lock-up control valve to control the volume of the lock-up.

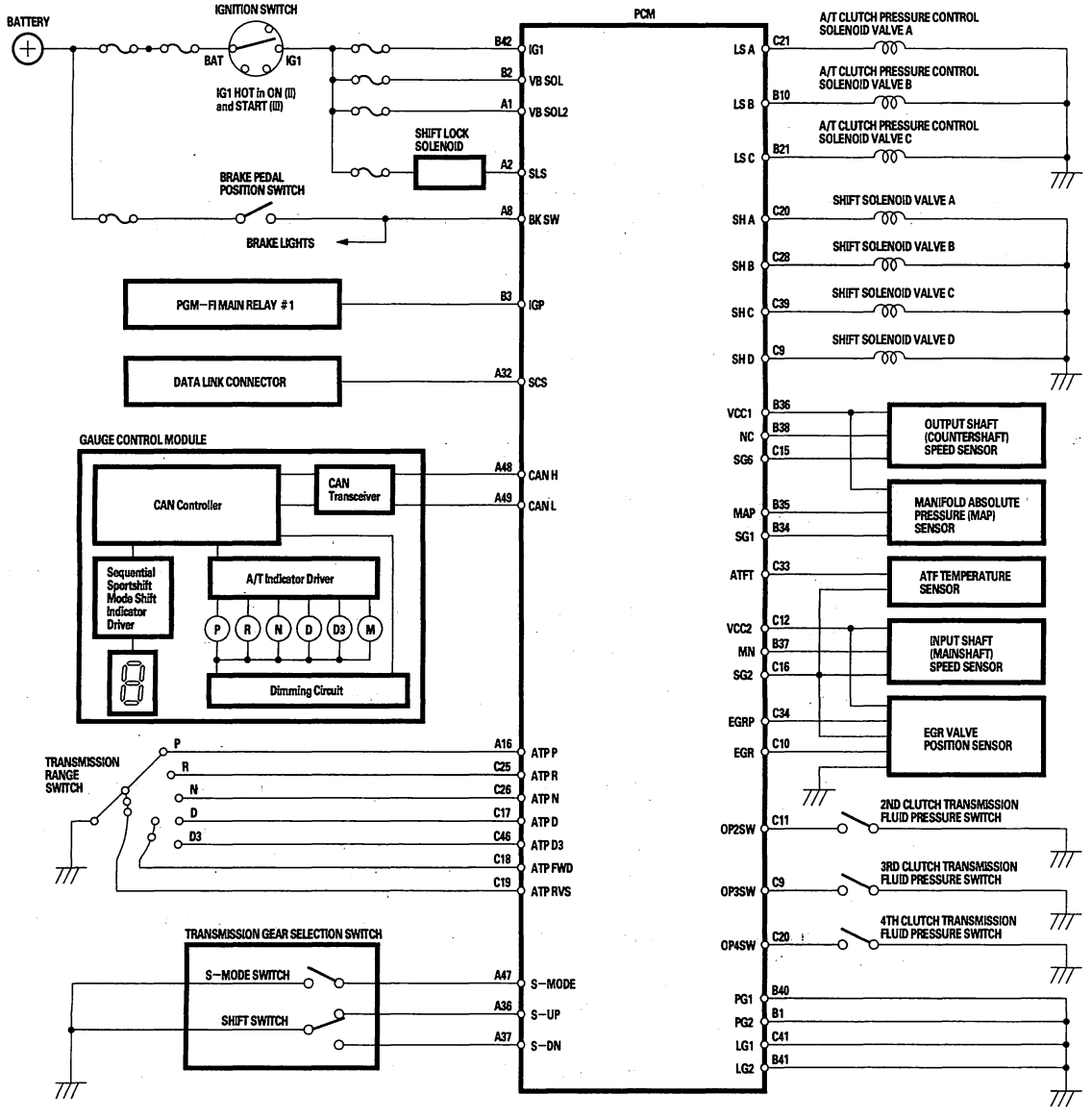
The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears in the D position, and in 2nd and 3rd gears in the D3 position.



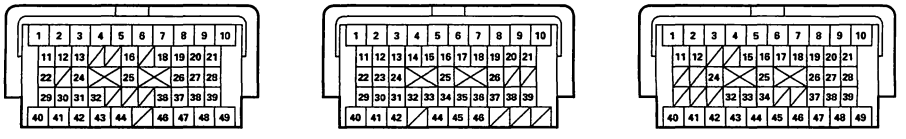
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PCM A/T Control System Electrical Connections



PCM Harness Connector Terminal Locations



A (49P) □ B (49P) △ C (49P) ○

Terminal side of female terminals

(cont'd)

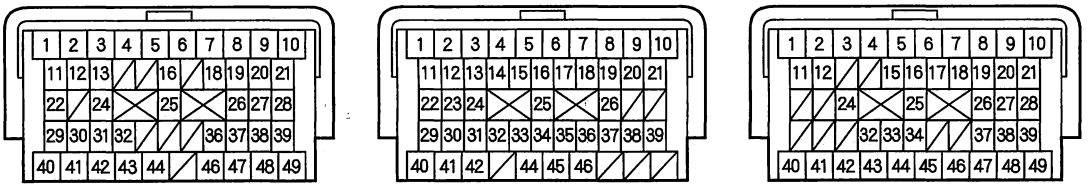
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System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs

PCM Harness Connector Terminal Locations



A (49P) □ **B (49P)** △ **C (49P)** ○

Terminal side of female terminals

PCM CONNECTOR A (49P) □

Terminal number	Wire color	Terminal name	Description	Signal
A1	WHT	VB SOL2 (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valves	With ignition switch ON (II): Battery voltage With ignition switch OFF: About 0 V
A2	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: About 0 V
A8	LT GRN	BK SW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: About 0 V With brake pedal pressed: Battery voltage
A16	GRN	ATP P (TRANSMISSION RANGE SWITCH P POSITION)	Detects transmission range switch P position signal	In the P position: About 0 V In any position other than P: Battery voltage
A32	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted with the HDS: About 0 V With service check signal opened: About 5.0 V
A36	BLU	S-UP (TRANSMISSION GEAR SELECTION SWITCH UPSHIFT SWITCH)	Detects transmission gear selection switch upshift switch signal	In the M position: • Shift lever pushed toward upshift position: About 0 V • Shift lever in neutral position: Battery voltage
A37	GRN	S-DN (TRANSMISSION GEAR SELECTION SWITCH DOWNSHIFT SWITCH)	Detects transmission gear selection switch downshift switch signal	In the M position: • Shift lever pushed toward downshift position: About 0 V • Shift lever in neutral position: Battery voltage
A47	PUR	S-MODE (SEQUENTIAL SPORTSHIFT MODE)	Detects transmission gear selection switch S mode switch signal	In M position: About 0 V In any position other than M: Battery voltage
A48	WHT	CAN H (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): Pulses
A49	RED	CAN L (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): Pulses

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PCM CONNECTOR B (49P) △

Terminal number	Wire color	Terminal name	Description	Signal
B1	BLK	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B2	BLK/YEL	VB SOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valves	With ignition switch ON (II): Battery voltage With ignition switch OFF: About 0 V
B3	YEL/BLK	IGP (POWER SOURCE FOR PCM)	Power source for PCM circuit	With ignition switch ON (II): Battery voltage With ignition switch OFF: About 0 V
B10	BRN/WHT	LS B (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): Pulses
B21	GRN/RED	LS C (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): Pulses
B34	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
B35	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): Battery voltage At idle: About 1.0 V depending on engine speed
B36	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): About 5.0 V With ignition switch OFF: About 0 V
B37	RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): About 0 V or about 5.0 V With engine running in N position: About 2.5 V
B38	BLU	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II): About 0 V or about 5.0 V With driving: Pulses
B40	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B41	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM	Less than 1.0 V at all times
B42	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): Battery voltage With ignition switch OFF: About 0 V

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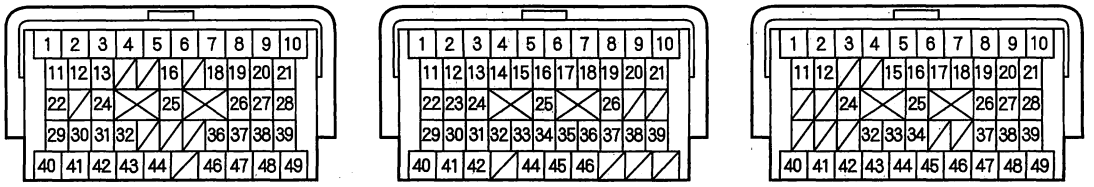
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System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs (cont'd)

PCM Harness Connector Terminal Locations



A (49P) □ **B (49P)** △ **C (49P)** ○

Terminal side of female terminals

PCM CONNECTOR C (49P) ○

Terminal number	Wire color	Terminal name	Description	Signal
C9	GRN/RED	SH D (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	In N position, In D and D3 positions during no lock-up condition: About 0 V In P and R positions, and D and D3 positions during lock-up condition: Battery voltage
C10	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: Duty controlled With EGR not operating: About 0 V
C12	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): About 5.0 V With ignition switch OFF: About 0 V
C16	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
C17	YEL/GRN	ATP D (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal input	In D position: About 0 V In any position other than D: Battery voltage
C18	BLU/YEL	ATP FWD (TRANSMISSION RANGE SWITCH D AND S)	Detects transmission range switch D and D3 signal input	In D and D3 positions: About 0 V In any position other than D and D3: Battery voltage
C19	RED/WHT	ATP RVS (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch P, R, and N position signals	In P, R, and N positions: About 0 V In any position other than P, R, and N: Battery voltage
C20	BLU/YEL	SH A (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	In R position, and 2nd and 3rd in D and D3 positions: Battery voltage In P and N positions, 1st in D and D3 positions, and 4th and 5th in D position: About 0 V
C21	RED	LS A (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): Pulses
C25	WHT	ATP R (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: About 0 V In any position other than R: Battery voltage

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PCM CONNECTOR C (49P) ○

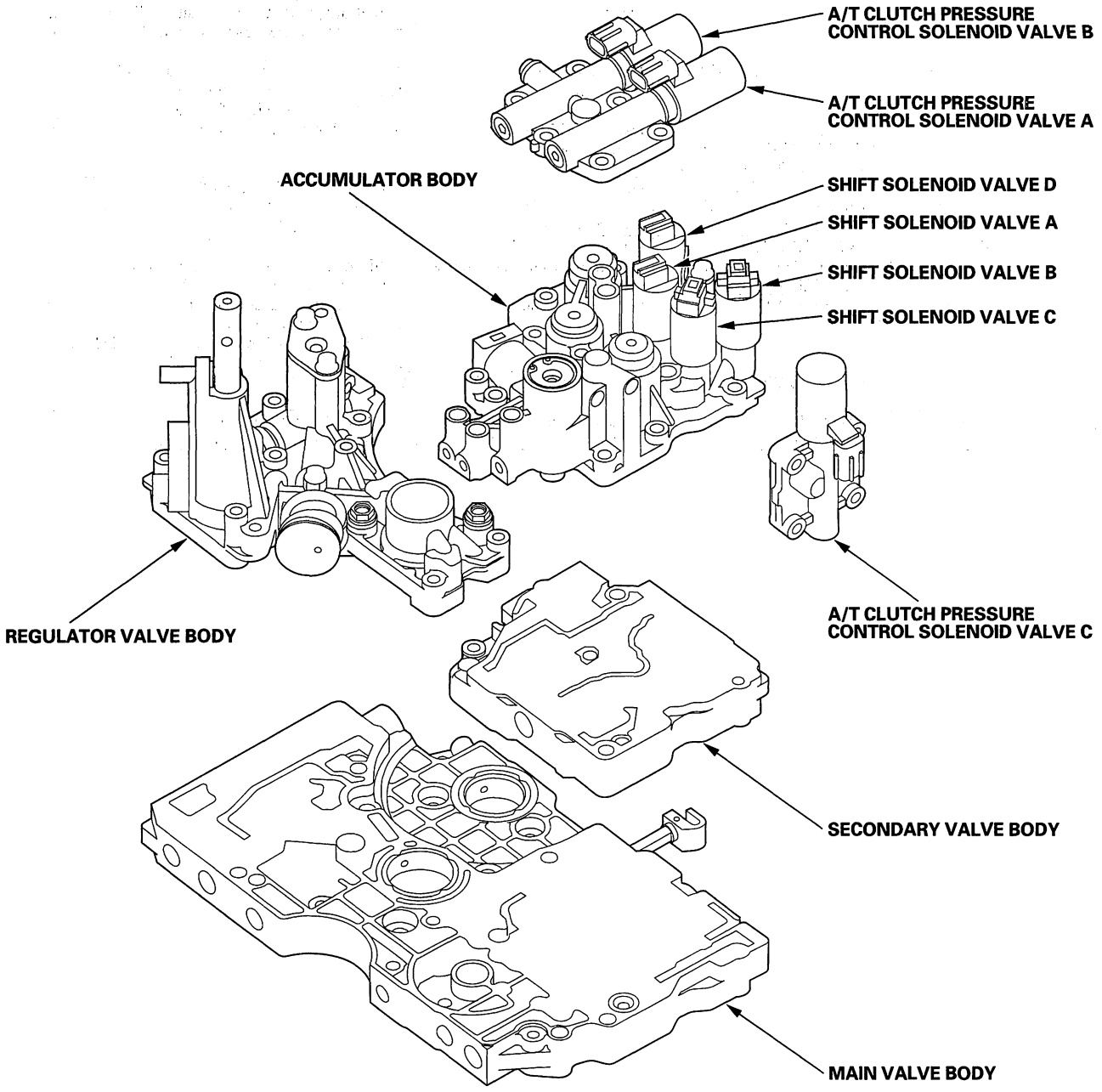
Terminal number	Wire color	Terminal name	Description	Signal
C26	RED/BLK	ATP N (TRANSMISSION RANGE SWITCH N POSITION)	Detects transmission range switch N position signal	In the N position: About 0 V In any position other than N: Battery voltage
C27	BLU/BLK	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 2nd clutch pressure: About 5.0 V • With 2nd clutch pressure: About 0 V
C28	GRN/WHT	SH B (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	In P, R, and N positions, and 1st and 2nd in D and D 3 positions, and 5th in D position: Battery voltage In 3rd in D and D3 positions, and 4th in D position: About 0 V
C33	BLU/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With ignition switch ON (II): About 0.2—4.0 V depending on ATF temperature With ignition switch OFF: About 0 V
C34	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2—3.0 V depending on EGR valve lift
C37	BLU/YEL	OP4SW (4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 4th clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 4th clutch pressure: About 5.0 V • With 4th clutch pressure: About 0 V
C38	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 3rd clutch pressure: About 5.0 V • With 3rd clutch pressure: About 0 V
C39	GRN	SH C (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	In 1st and 3rd in D and D3 positions, and 5th in D position: Battery voltage In P, R, and N positions, 2nd in D and D3 positions, and 4th in D position: About 0 V
C41	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
C46	RED	ATP D3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission range switch D3 signal input	In D3 position: About 0 V In any position other than D3: Battery voltage

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System Description (cont'd)

Hydraulic Controls

The valve body includes the main valve body, the regulator valve body, the secondary valve body, and the accumulator body. The ATF pump is driven by splines on the 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 each of the clutches. Shift solenoid valves A, B, C and D are mounted on the accumulator body. A/T clutch pressure control solenoid valves A, B, and C are mounted on the transmission housing.

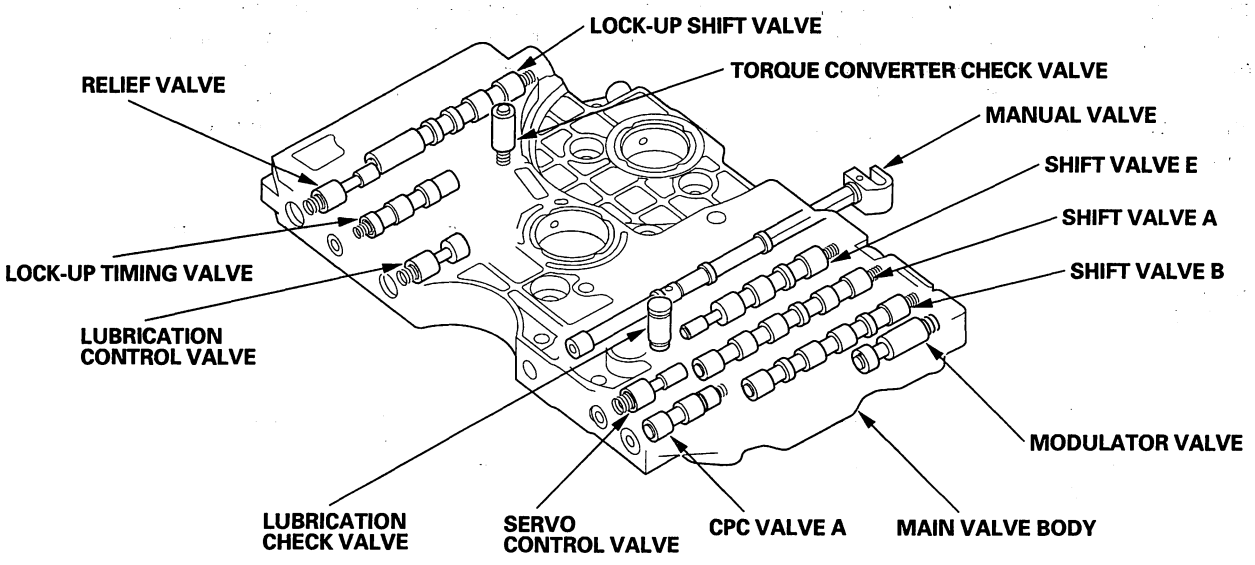


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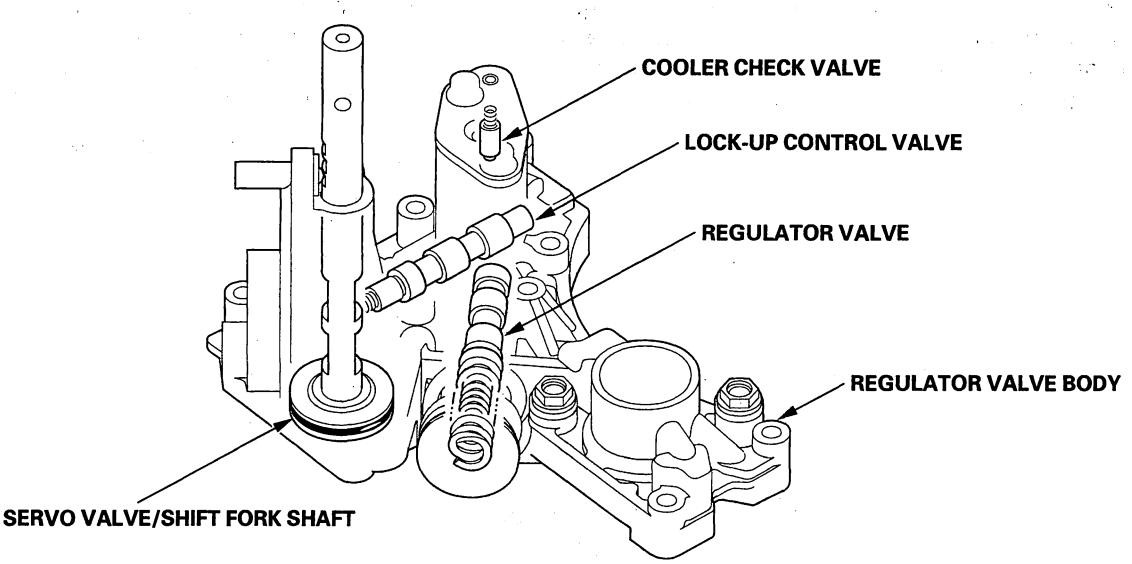
Main Valve Body

The main valve body contains the manual valve, the modulator valve, the torque converter check valve, shift valve A, shift valve B, shift valve D, shift valve E, CPC valve C, the relief valve, the lock-up shift valve, the lock-up timing valve, the lubrication control valve, the lubrication check valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off to control hydraulic pressure going to the hydraulic control system.



Regulator Valve Body

The regulator valve body is located on the main valve body. The regulator valve body contains the regulator valve, the cooler check valve, the lock-up control valve, the servo valve, and the 3rd accumulator.



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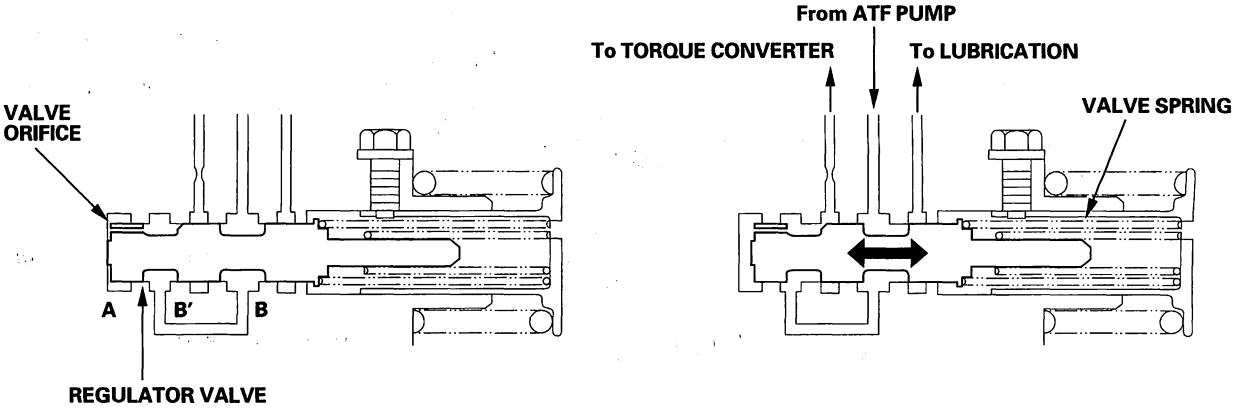
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System Description (cont'd)

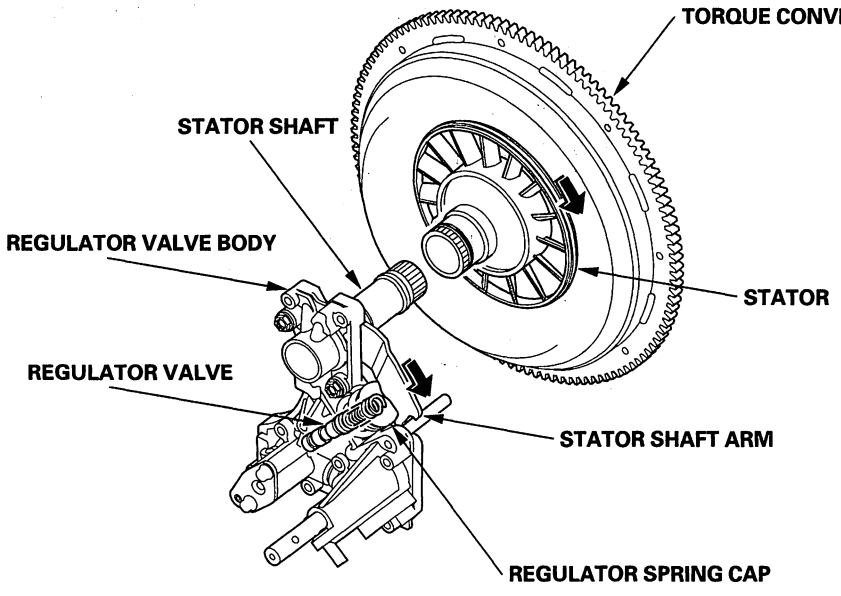
Hydraulic Controls (cont'd)

Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubrication system and torque converter. Fluid from the ATF pump flows through B and B'. 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 spring 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 returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through the torque converter changes. This operation is continued, maintaining the line pressure.



Increases in hydraulic pressure according to torque are provided by the regulator valve using stator torque reaction. The stator shaft is splined to 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.

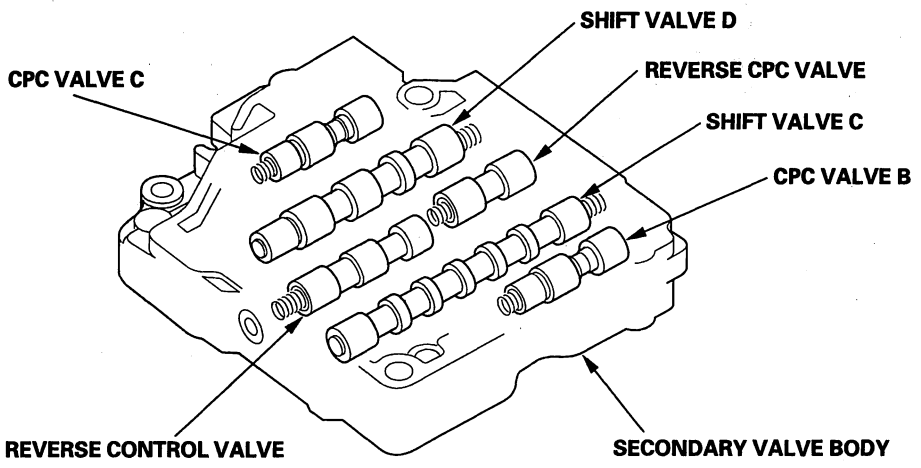


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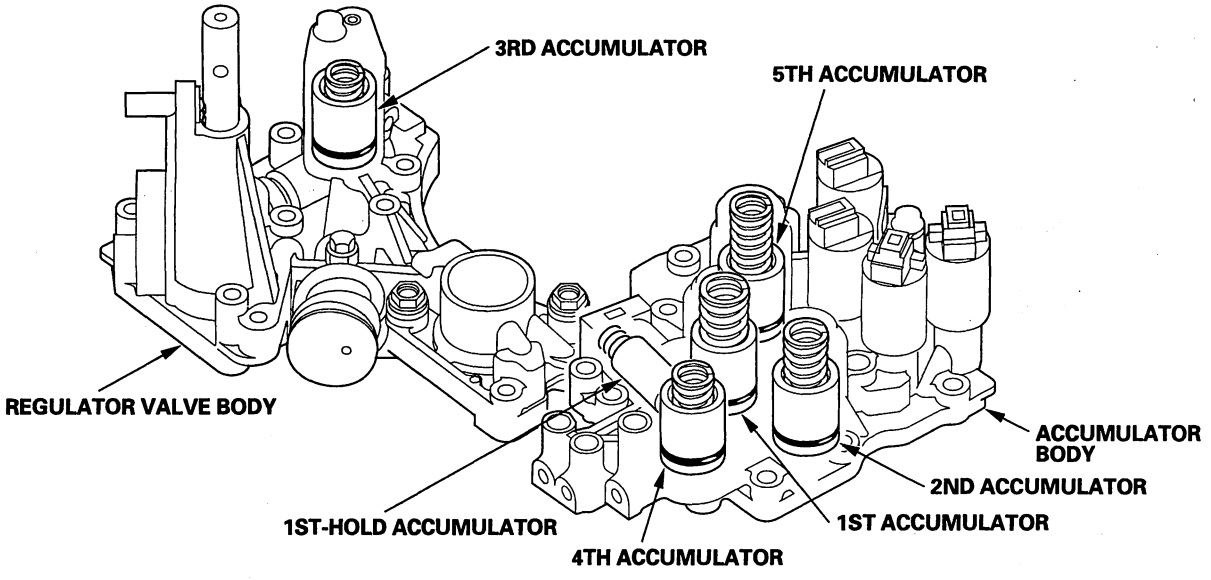
Secondary Valve Body

The secondary valve body is on the main valve body. The secondary valve body contain shift valve C, shift valve D, CPC valve B, CPC valve C, the reverse control valve, and the reverse CPC valve.



Accumulator Body

The accumulator body is on the secondary valve body, and contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators. The 3rd accumulator is in the regulator valve body.



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System Description (cont'd)

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 is regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve and lock-up control valve, and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls shift solenoid valves A, B, C, and D ON and OFF, and the shift solenoid valves control shift solenoid pressure to the shift valves. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of hydraulic pressure. 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 CPC valves A and B, and reverse CPC valve.

When shifting between gears, the clutch is engaged by pressure from the CPC pressure mode. The PCM controls one of the shift solenoid valves to move the position of the shift valve. This movement switches the port of CPC pressure and line pressure. Line pressure is then applied to the clutch, and CPC pressure is released. Engaging the clutch with line pressure mode happens when shifting is completed.

Hydraulic Pressure at the Port for use in the hydraulic circuit

Port	Hydraulic Pressure	Port	Hydraulic Pressure
1	Line	SC	Shift solenoid valve C
2	Line	SC'	Shift solenoid valve C
3	Line	SD	Shift solenoid valve D
3'	Line	10	1st clutch
3''	Reverse CPC or Line	15	1st-hold clutch
3A	Line	20	2nd clutch
3B	Reverse CPC	30	3rd clutch
4	Line	40	4th clutch
4'	Line	50	5th clutch
4''	Line	51	5th clutch
4A	CPC A	56	A/T clutch pressure control solenoid valve A
4B	CPC B	57	A/T clutch pressure control solenoid valve B
4C	CPC C	5R	A/T clutch pressure control solenoid valve B
5A	CPC A	58	A/T clutch pressure control solenoid valve C
5B	CPC A or Line	90	Torque converter
5C	CPC B or Line	90'	Torque converter
5D	CPC B	91	Torque converter
5E	CPC C	91'	Torque converter
5F	CPC C	92	Torque converter
5G	CPC C	93	ATF cooler
5H	CPC B or Line	94	Torque converter
5J	CPC B or Line	95	Lubrication
5K	CPC A or Line	95'	Lubrication
5L	CPC A or Line	96	Torque converter
5M	Line	99	Suction
5N	CPC C	X	Drain
6	Modulator	HX	High position drain
SA	Shift solenoid valve A	AX	Air drain
SB	Shift solenoid valve B	———	———

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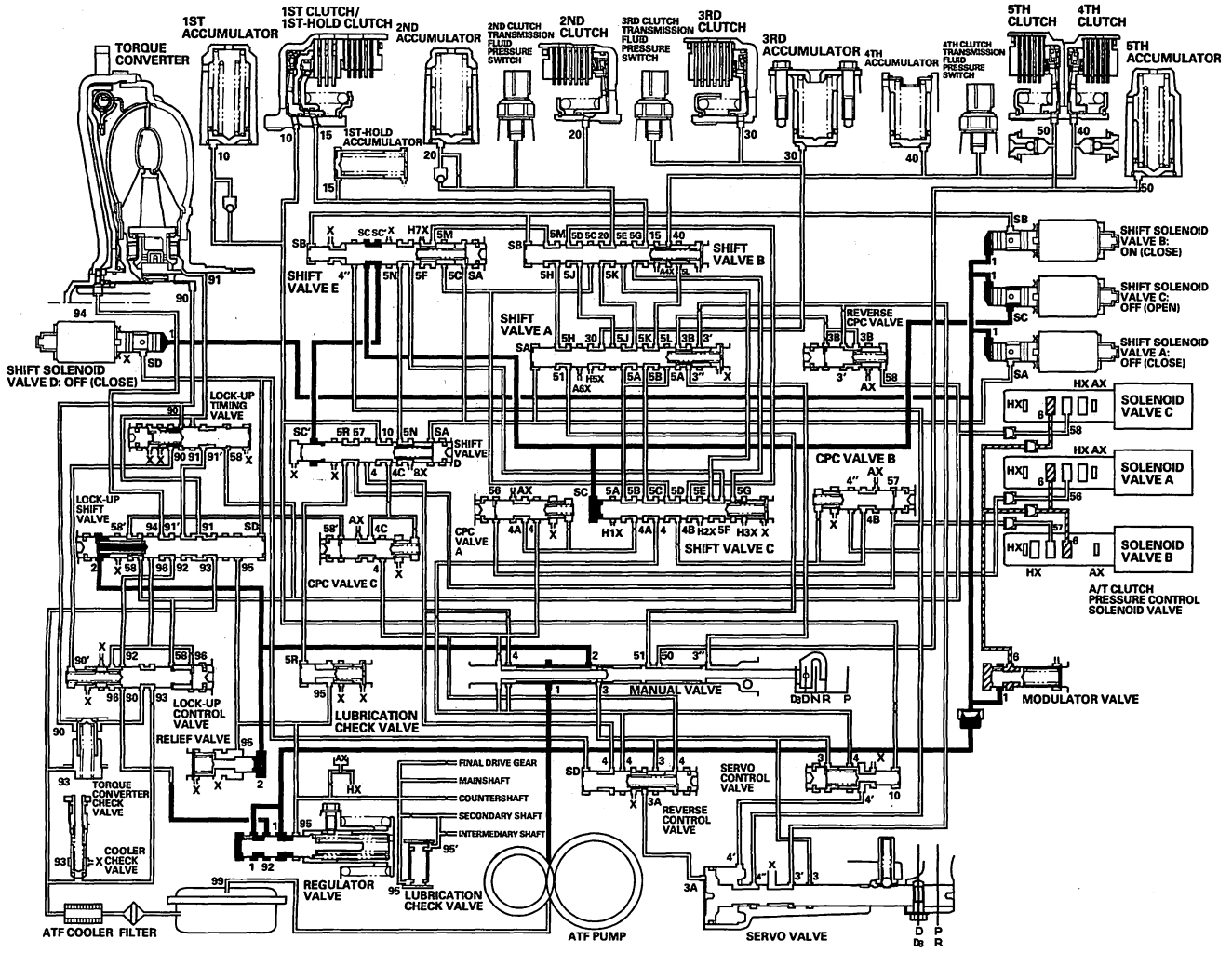
N Position

Line pressure (1) regulated by the regulator valve flows to shift solenoid valves. The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and the positions of the shift valves are as follows:

- Shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- Shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- Shift solenoid valve C is OFF, and opens the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D move to the right side.
- Shift solenoid valve D is OFF, and closes the port of shift solenoid valve D pressure (SD).

Line pressure (1) also flows to the modulator valve and becomes modulator pressure (6). Modulator pressure (6) flows to the A/T clutch pressure control solenoid valves. The manual valve covers the port leading pressure to the clutches, and hydraulic pressure is not applied to the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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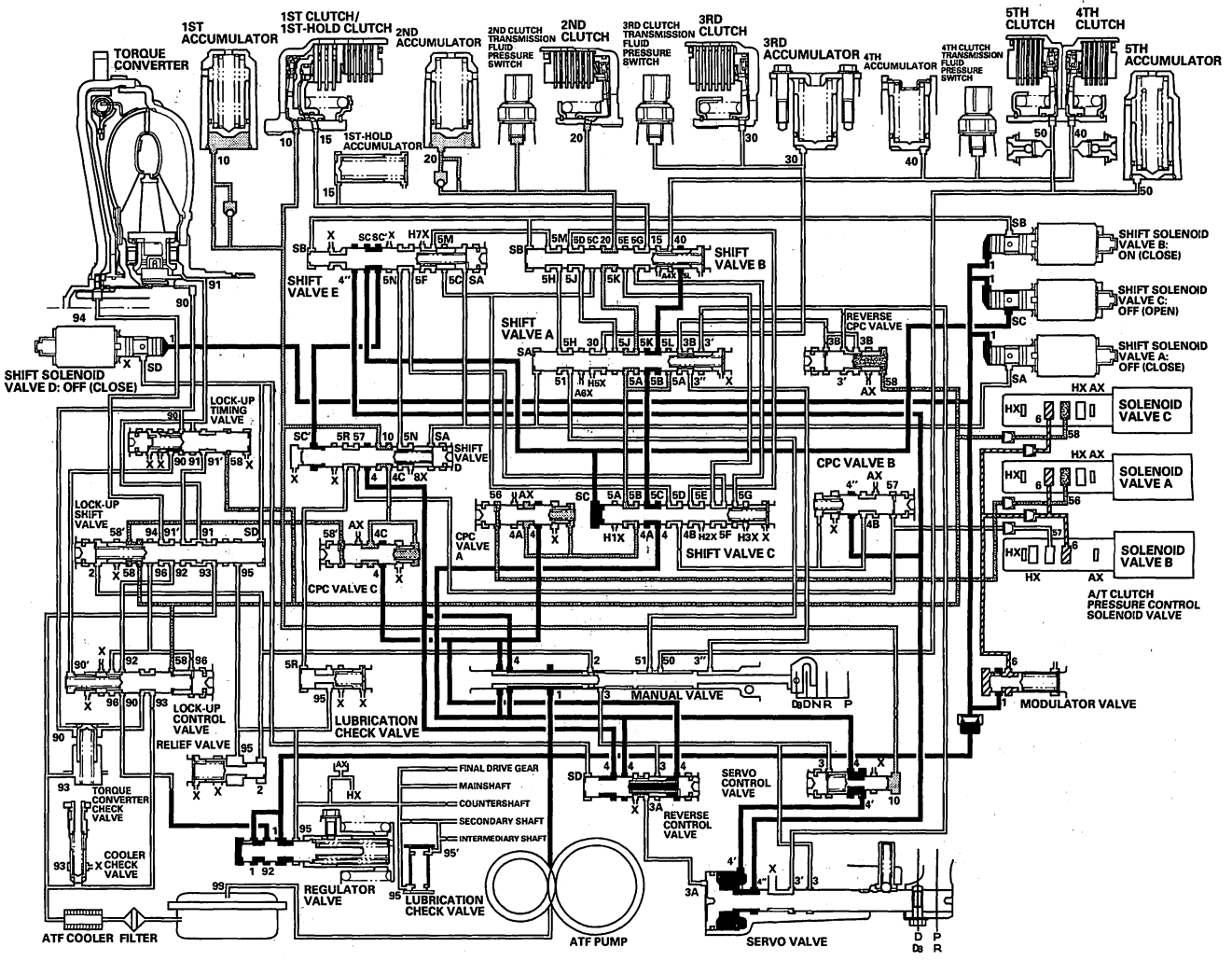
System Description (cont'd)

Hydraulic Flow (cont'd)

D and D3 Positions: 1st gear shifting from the N position

When shifting to the D position or S position from the N position, the condition of the shift solenoid valves remain the same as in the N position. The manual valve is moved to the D position, and uncovers the port of line pressure (4) leading to CPC valves A and C. The PCM controls the A/T clutch pressure control solenoid valves A and C, A/T clutch pressure control solenoid valve A pressure (56) flows to the CPC valve A, and A/T clutch pressure control solenoid valve C pressure (58) flows to the CPC valve C. CPC valves A and C regulate line pressure (4), line pressure (4) becomes CPC C pressure (4C) at the CPC valve C, and becomes CPC A pressure at CPC valve A. CPC C pressure (4C) becomes 1st clutch pressure (10) at shift valve D, and 1st clutch pressure flows to the 1st clutch. CPC A pressure (4A) becomes 2nd clutch pressure (20) at shift valve B via shift valves A and C. The 1st clutch and 2nd clutch engage gently with the CPC pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



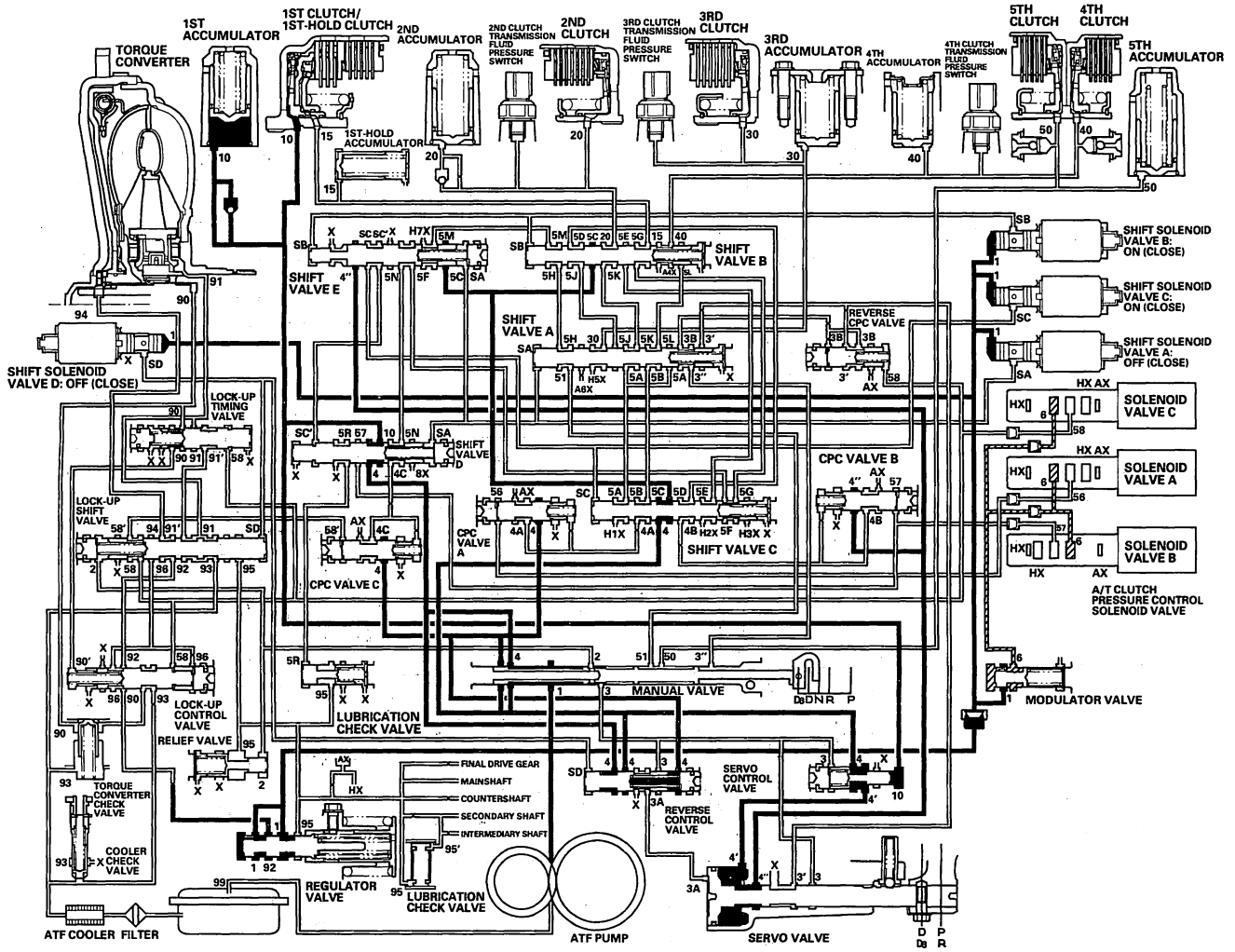
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D and D3 Positions: Driving in 1st gear

The PCM turns shift solenoid valve C ON, and shift solenoid valve C covers the port of shift solenoid valve C pressure (SC) to shift valve C, and shift valve D via shift valve E. Shift solenoid valve A remains OFF, and shift solenoid valve B remains ON. Shift valves C and D are moved to the left side, shift valve D switches the port of line pressure (4) and CPC C pressure (4C) leading to the 1st clutch, and shift valve C switches the port of CPC A pressure (5A) releasing 2nd clutch pressure. Line pressure (4) becomes 1st clutch pressure (10) at shift valve D, and flows to the 1st clutch. The 1st clutch is engaged securely with the line pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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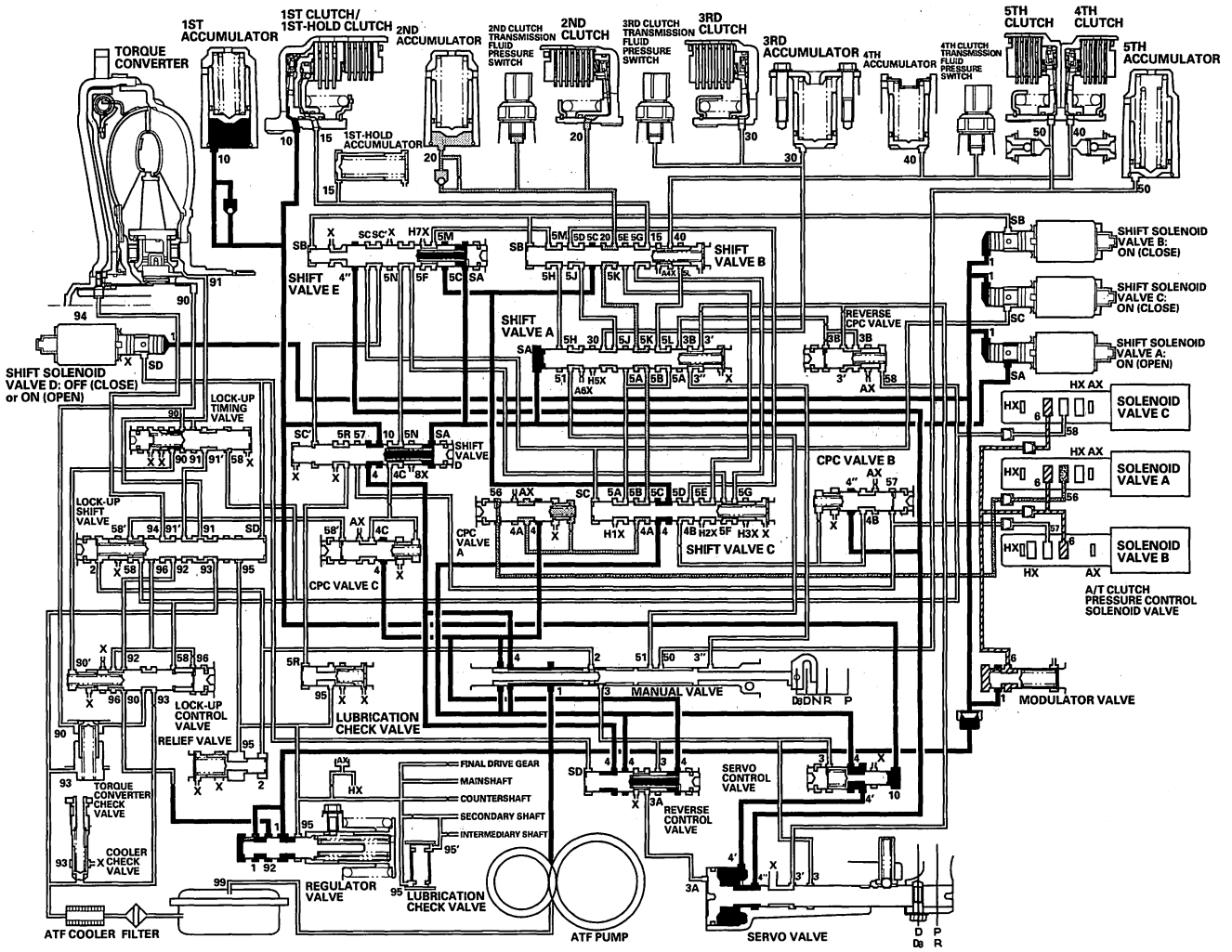
System Description (cont'd)

Hydraulic Flow (cont'd)

D and D3 Positions: Shifting between 1st gear and 2nd gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A ON, and shift solenoid valve A uncovers the port of shift solenoid valve A pressure (SA) to shift valve A. Shift solenoid valves B and C remain ON. Shift valve A is moved to the right side to uncover the port of CPC A pressure (4A) leading to the 2nd clutch. The PCM controls A/T clutch pressure control solenoid valve A, and A/T clutch pressure control solenoid valve A pressure (56) is applied to CPC valve A. CPC valve A regulates line pressure (4), and line pressure (4) becomes CPC A pressure (4A). CPC A pressure (4A) flows to shift valve B via shift valves C and A, and becomes 2nd clutch pressure (20) at shift valve B. The 2nd clutch is engaged in the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



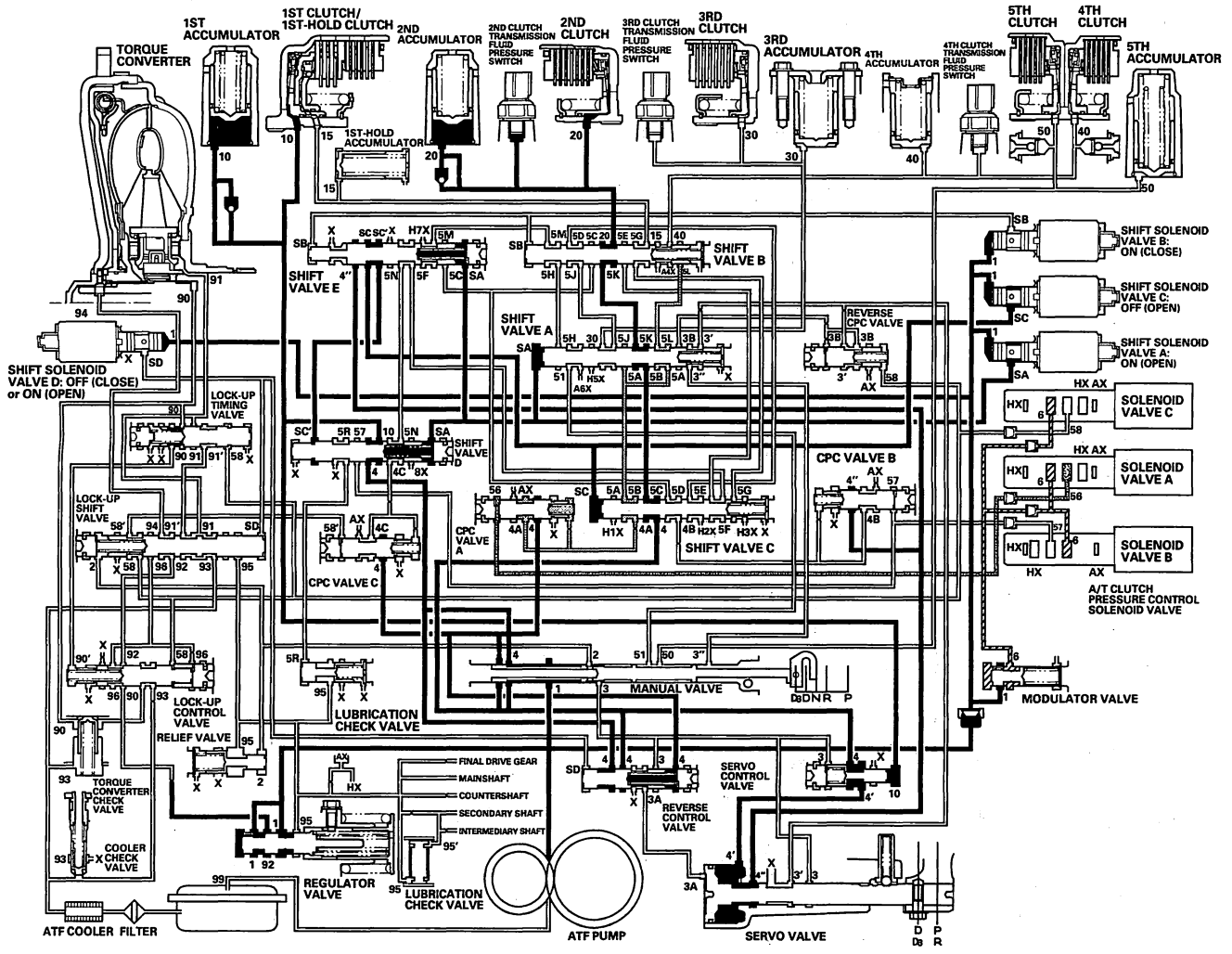
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D and D3 Positions: Driving in 2nd gear

The PCM turns shift solenoid valve C OFF, and shift solenoid valve C uncovers the port of shift solenoid valve C pressure (SC) to shift valve C. Shift solenoid valves A and B remain ON. Shift valve C is moved to the right side to switch the port of line pressure (4) and CPC A pressure (4A) leading to the 2nd clutch. CPC A pressure (5B) (5K) changes to line pressure (5B) (5K) and 2nd clutch pressure (20) is changed to line pressure mode, and the 2nd clutch is engaged in the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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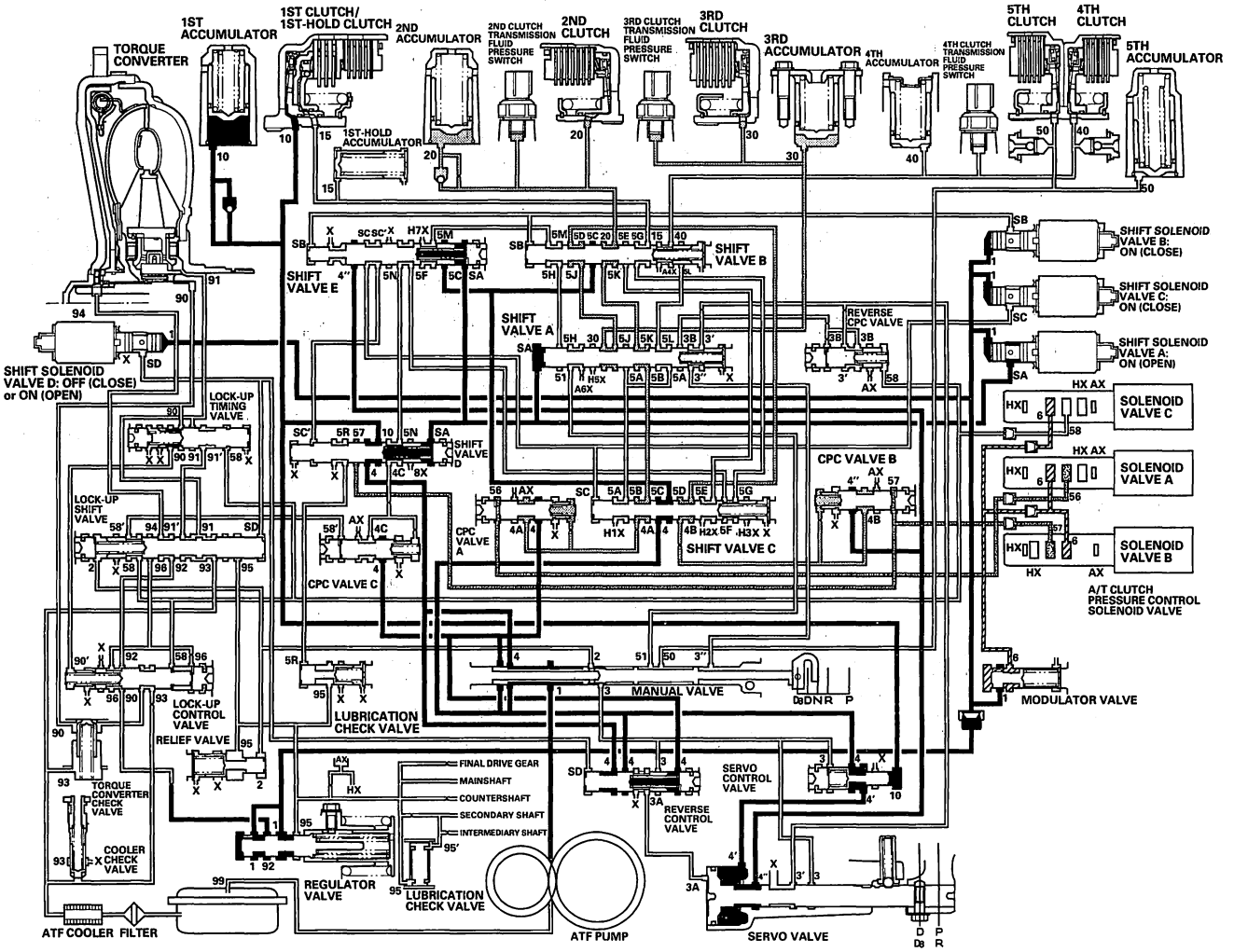
System Description (cont'd)

Hydraulic Flow (cont'd)

D and D3 Positions: Shifting between 2nd gear and 3rd gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C ON, and shift solenoid valve C covers the port of shift solenoid valve C pressure (SC) to shift valve C. Shift solenoid valves A and B remain ON. Shift valve C is moved to the left side to switch the port of line pressure (4) and CPC A pressure (4A) leading to the 2nd clutch. Shift valve C also uncovers the port of CPC B pressure (4B) leading to the 3rd clutch. The PCM controls A/T clutch pressure control solenoid valves A and B. A/T clutch pressure control solenoid valve A pressure (56) is applied to CPC valve A, and A/T clutch pressure control solenoid valve B pressure (57) is applied to CPC valve B. CPC valve B regulates line pressure (4''), and line pressure (4'') becomes CPC B pressure (4B). CPC B pressure flows to shift valve A via shift valves C and B, and becomes 3rd clutch pressure (30) at shift valve A. The 2nd clutch pressure (20) is changed to CPC pressure mode, and the 3rd clutch is engaged with the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



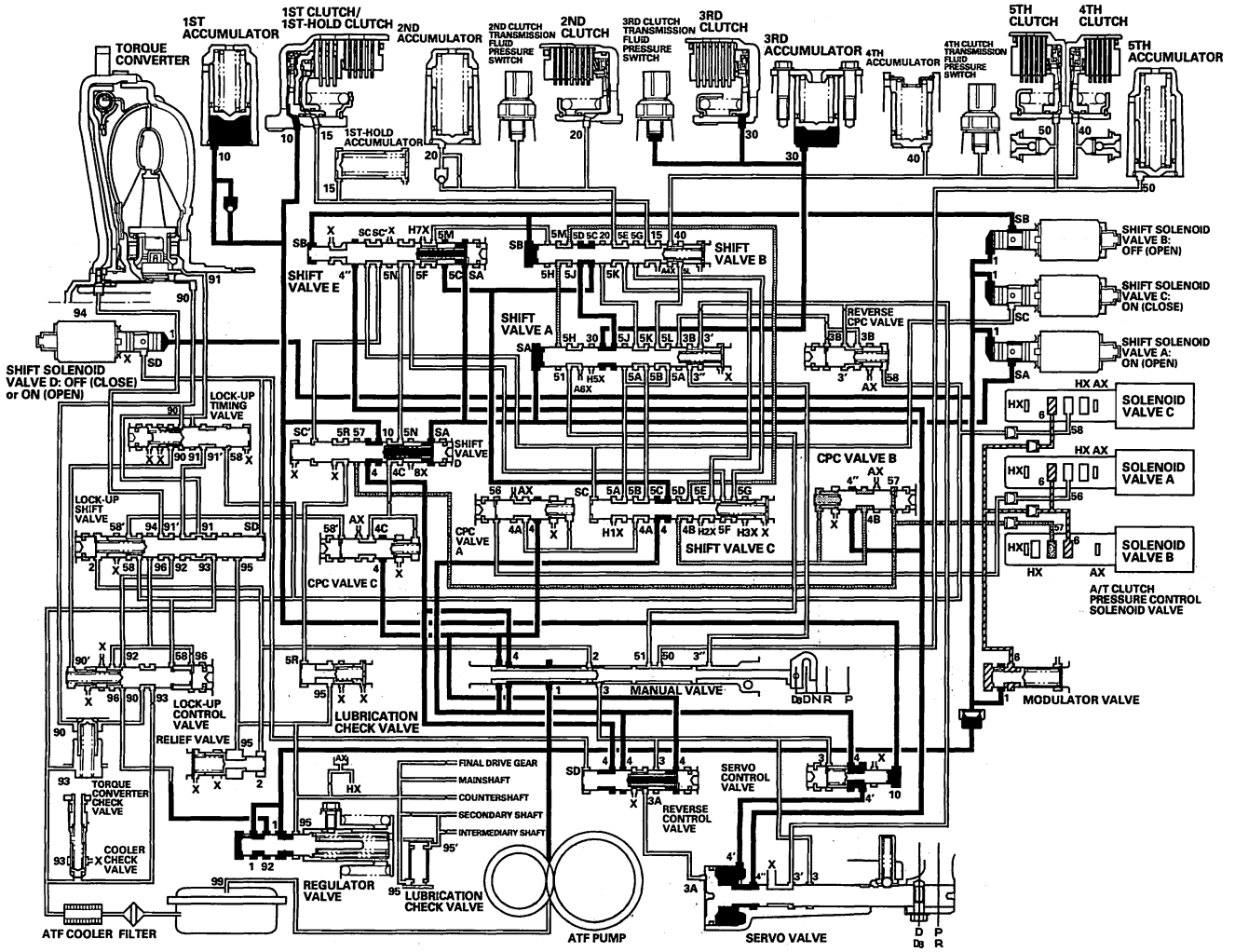
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D and D3 Positions: Driving in 3rd gear

The PCM turns shift solenoid valve B OFF, and shift solenoid valve B uncovers the port of shift solenoid valve B pressure (SB) to shift valve B. Shift solenoid valves A and C remain ON. Shift valve B is moved to the right side to switch the port of line pressure (5C), CPC B pressure (5J) leading to the 3rd clutch, and 2nd clutch pressure (20) releasing 2nd clutch pressure. CPC B pressure (5J) changes to line pressure (5J) and 3rd clutch pressure (30) is changed to line pressure mode, and the 3rd clutch is engaged with the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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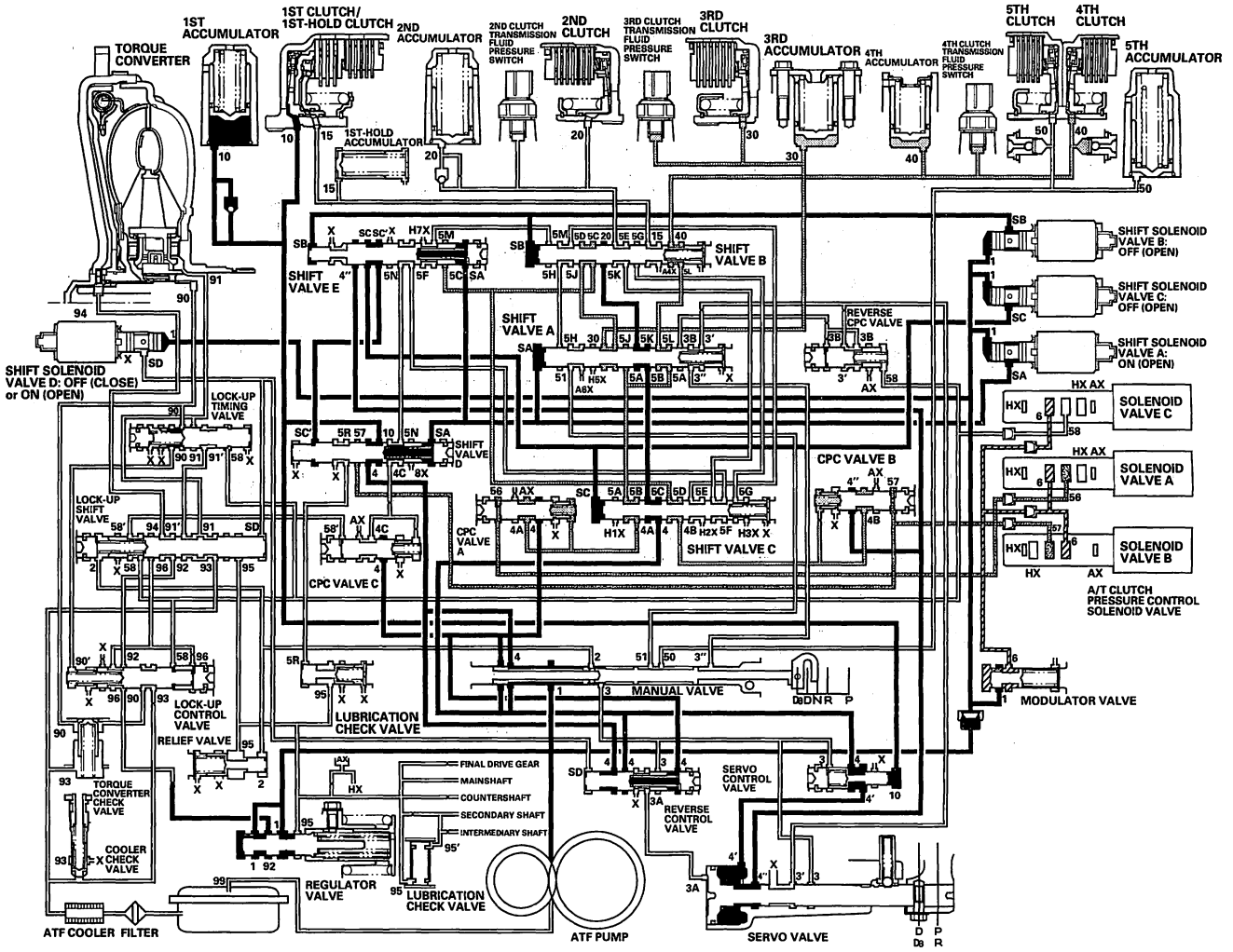
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C OFF, and shift solenoid valve C uncovers the port of shift solenoid valve C pressure (SC) to shift valve C. Shift solenoid valve A remains ON, and shift solenoid valve B remains OFF. Shift valve C is moved to the right side to switch the port of line pressure (4) and CPC B pressure (4B) leading to the 3rd clutch. Shift valve C also uncovers the port of CPC A pressure (4A) leading to the 4th clutch. The PCM controls A/T clutch pressure control solenoid valves A and B. A/T clutch pressure control solenoid valve A pressure (56) is applied to the CPC valve A, and A/T clutch pressure control solenoid valve B pressure (57) is applied to CPC valve B. CPC valve A regulates line pressure (4), and line pressure (4) becomes CPC A pressure (4A). CPC A pressure (4A) flows to shift valve B via shift valves C and A, and becomes 4th clutch pressure (40) at shift valve B. The 3rd clutch pressure (30) is changed to CPC pressure mode, and the 4th clutch is engaged in the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



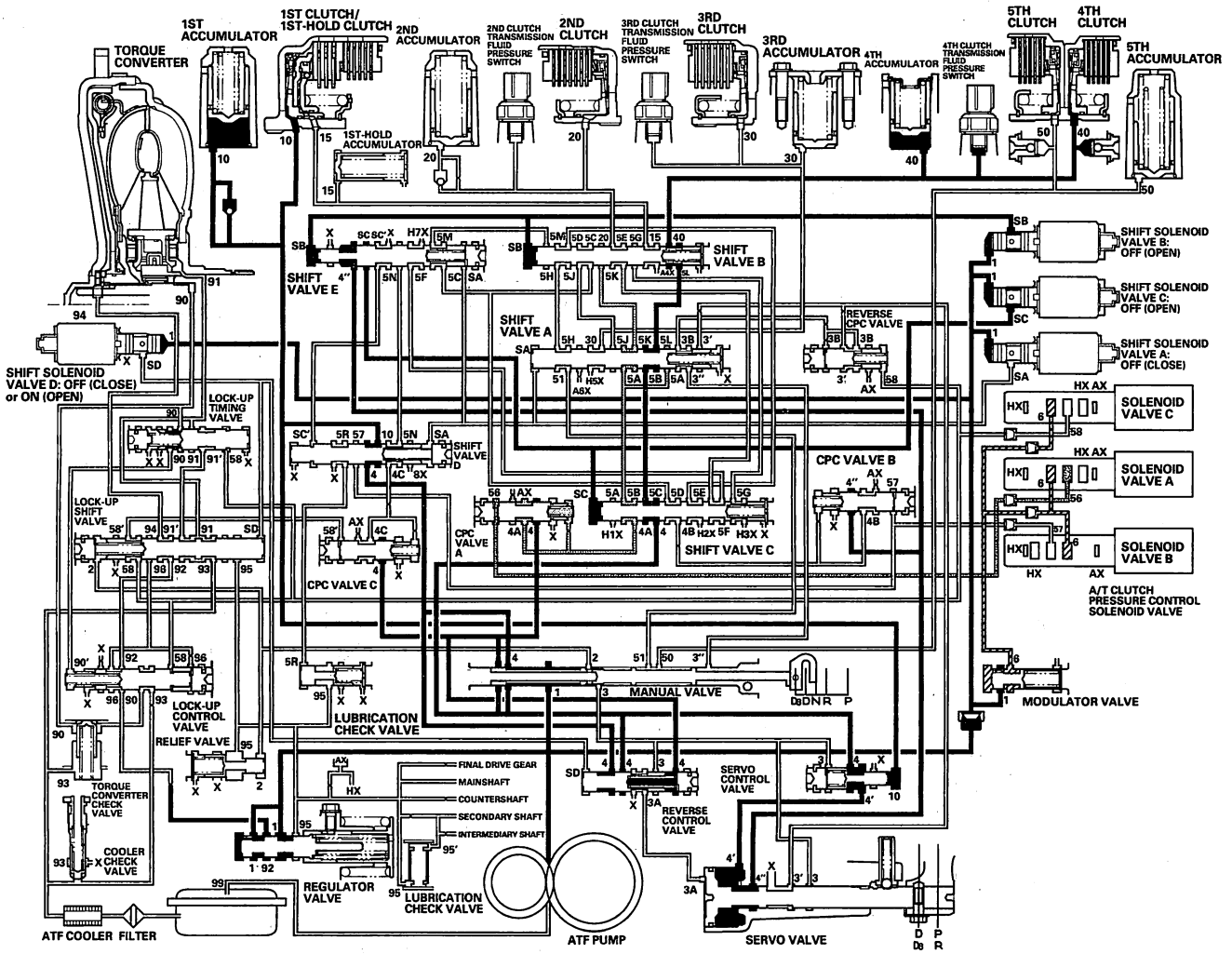
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D Position: Driving in 4th gear

The PCM turns shift solenoid valve A OFF, and shift solenoid valve A covers the port of shift solenoid valve A pressure (SA) to the shift valve A. Shift solenoid valves B and C remain OFF. The shift valve A is moved to the left side to switch the port of pressure (5B), CPC A pressure (5A) (5L) leading to the 4th clutch, and 3rd clutch pressure (30) releasing 3rd clutch pressure. CPC A pressure (5L) changes to line pressure (5L) and 4th clutch pressure (40) is changed to line pressure mode, and the 4th clutch is engaged with the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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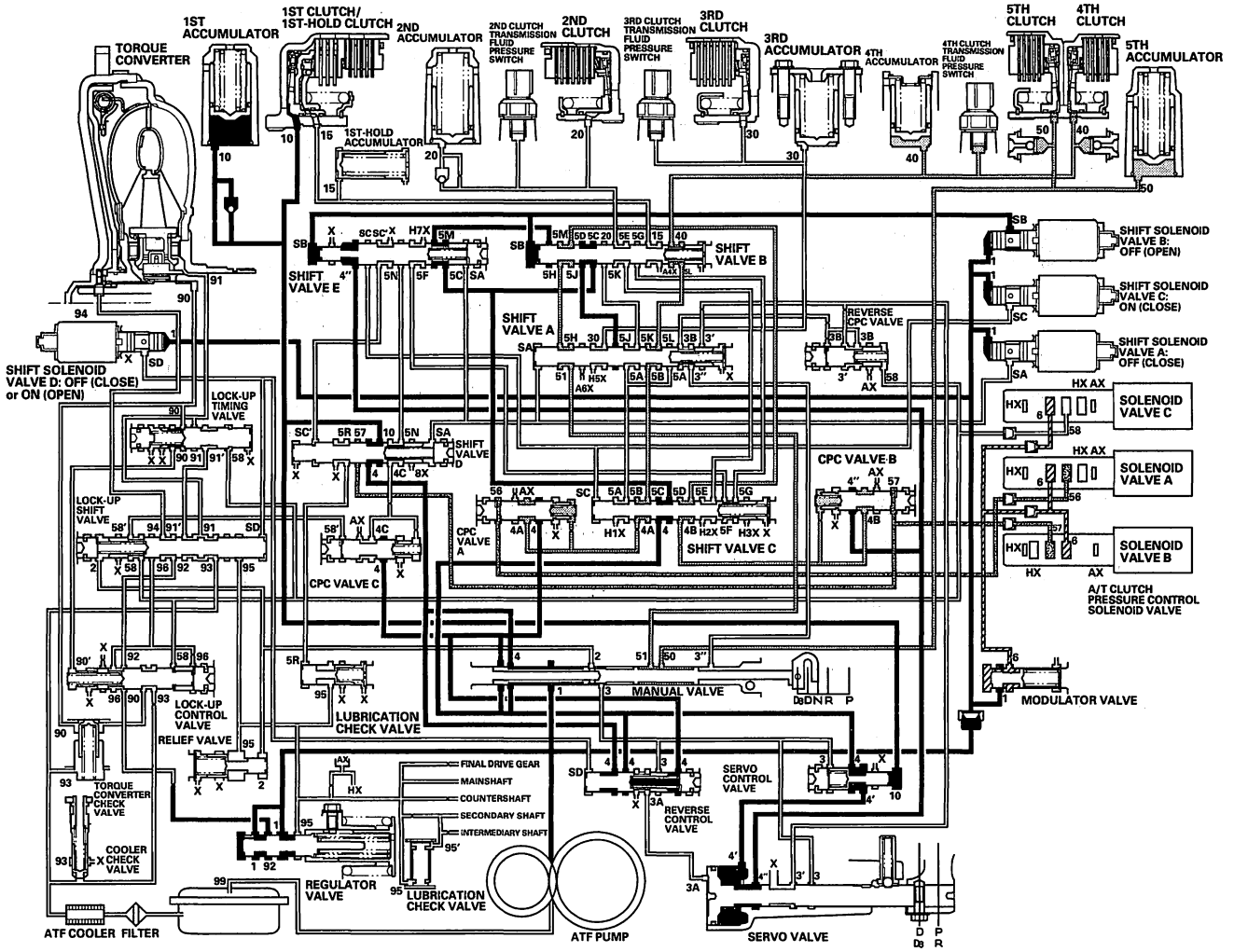
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C ON, and shift solenoid valve C covers the port of shift solenoid valve C pressure (SC) to shift valve C. Shift solenoid valve A remains OFF, and shift solenoid valve B remains OFF. Shift valve C is moved to the left side to switch the port of line pressure (4) and CPC A pressure (4A) leading to the 4th clutch. Shift valve C also uncovers the port of CPC B pressure (4B) leading to the 5th clutch. The PCM controls A/T clutch pressure control solenoid valves A and B. A/T clutch pressure control solenoid valve A pressure (56) is applied to the CPC valve A, and A/T clutch pressure control solenoid valve B pressure (57) is applied to CPC valve B. CPC valve B regulates line pressure (4''), and line pressure (4'') becomes CPC B pressure (4B). CPC B pressure (4B) flows to shift valve A via shift valves C and B, and becomes 5th clutch pressure (51) at shift valve A. The 4th clutch pressure (40) is changed to CPC pressure mode, and the 5th clutch is engaged in the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



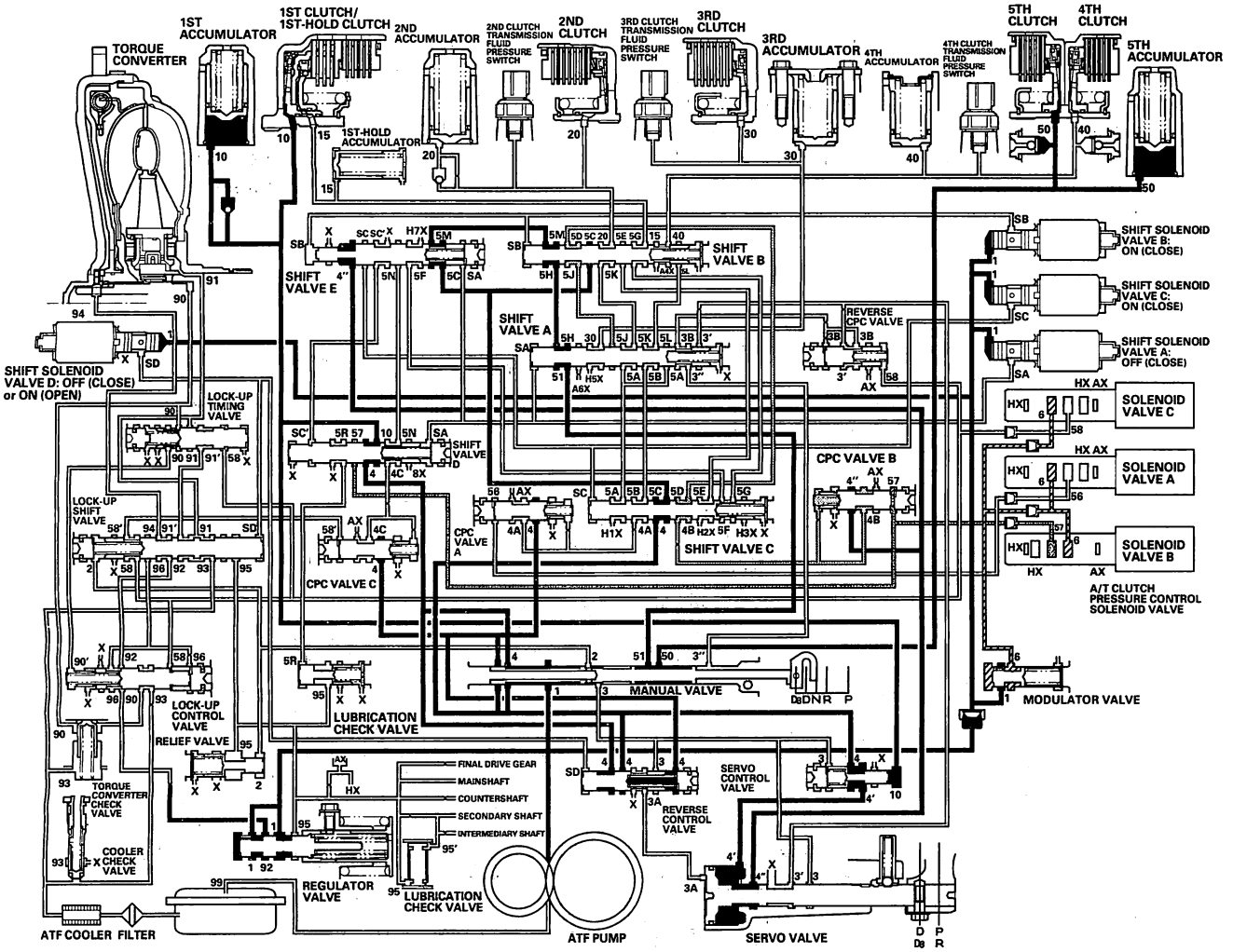
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BACK

D Position: Driving in 5th gear

The PCM turns shift solenoid valve B ON, and shift solenoid valve B covers the port of shift solenoid valve B pressure (SB) to shift valve B. Shift solenoid valve A remains OFF, and shift solenoid valve C remains ON. Shift valve B is moved to the left side to switch the port of line pressure (5H), CPC B pressure (5D) leading to the 5th clutch, and 4th clutch pressure (40) releasing 4th clutch pressure. CPC B pressure (5H) changes to line pressure (5H) and 5th clutch pressure (51) (50) is changed to line pressure mode, and the 5th clutch is engaged in the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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System Description (cont'd)

Hydraulic Flow (cont'd)

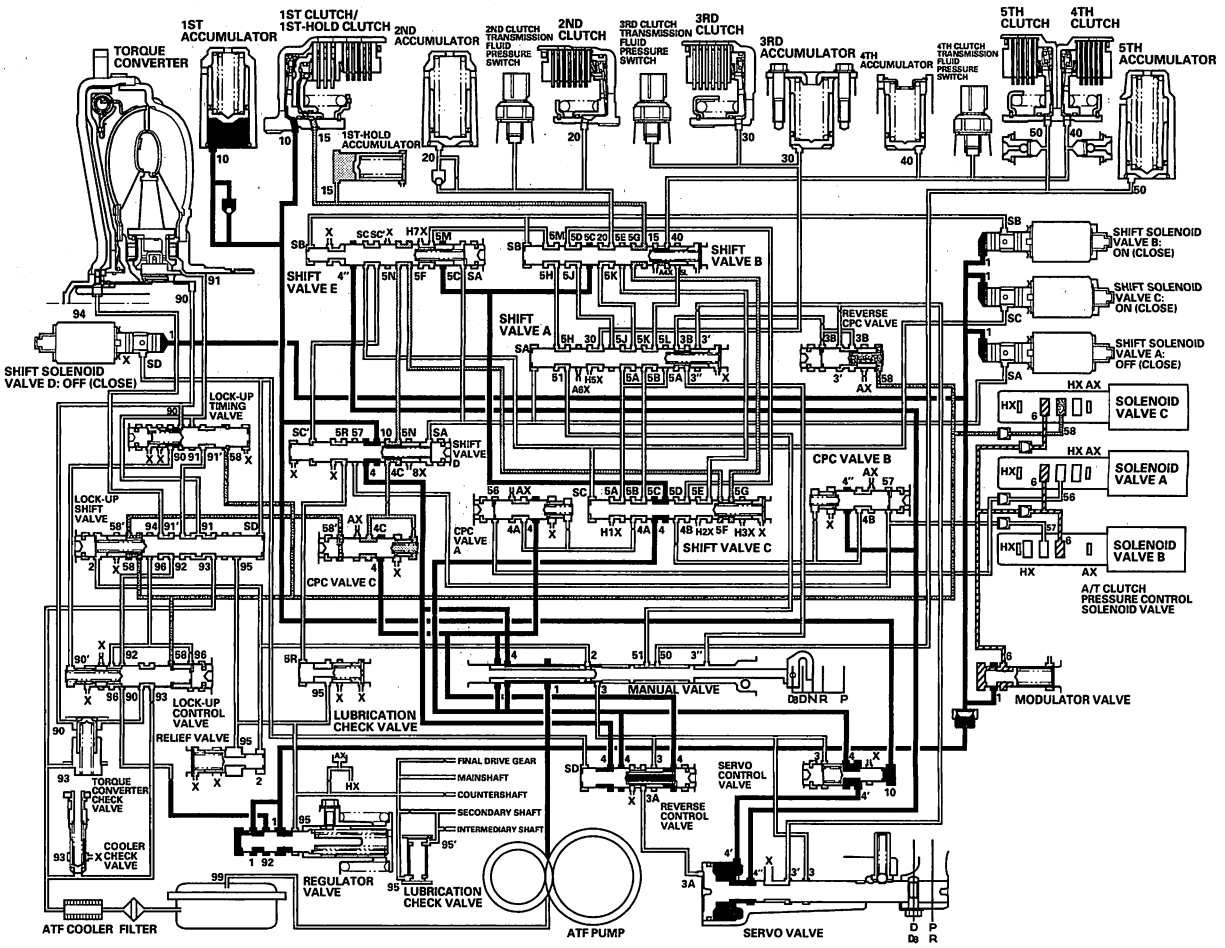
Driving in 1st gear (engaged with 1st and 1st-hold clutches) in the sequential sportshift mode

Line pressure (1) regulated by the regulator valve flows to shift solenoid valves. The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and the positions of the shift valves are as follows:

- Shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- Shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- Shift solenoid valve C is turned ON, and closes the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D stay on the left side.
- Shift solenoid valve D is OFF, and closes the port of shift solenoid valve D pressure (SD).

Line pressure (4) becomes 1st clutch pressure (10) at shift valve D, and flows to the 1st clutch. The 1st clutch is engaged. The PCM controls A/T clutch pressure control solenoid valve C, and A/T clutch pressure control solenoid valve C pressure (58) is applied to CPC valve C via the lock-up shift valve. CPC valve C regulates line pressure (4), and line pressure (4) becomes CPC C pressure (4C). CPC C pressure (4C) flows to shift valve B via shift valves D, E, and C, and becomes 1st-hold clutch pressure (15) at shift valve B. 1st-hold clutch pressure (15) is applied to the 1st-hold clutch, and the 1st-hold clutch is engaged.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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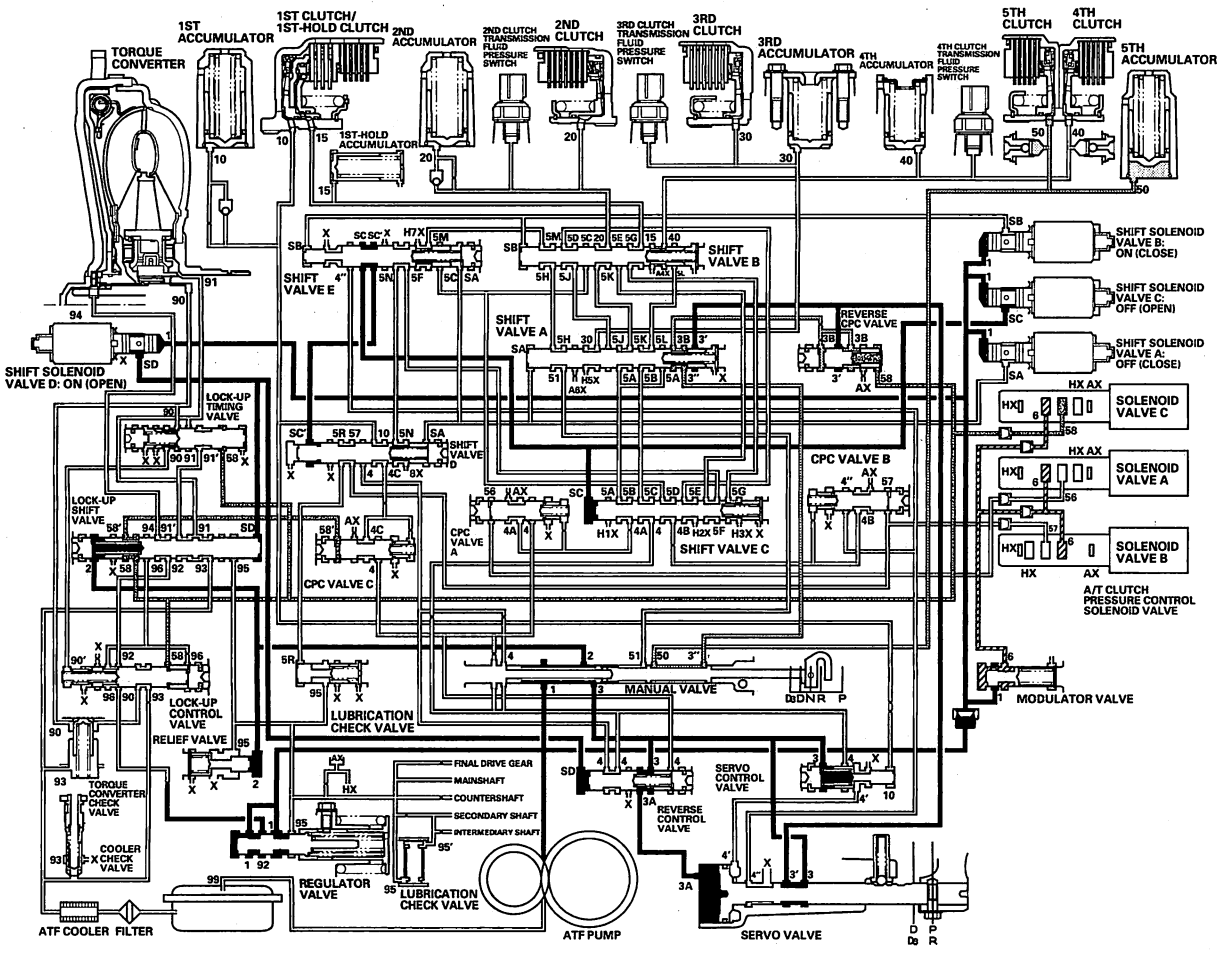
R Position: Shifting to the R position from the P or N position

The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and the positions of the shift valves are as follows:

- Shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- Shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- Shift solenoid valve C is OFF, and opens the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D move to the right side.
- Shift solenoid valve D is turned ON, and opens the port of shift solenoid valve D pressure (SD); reverse control valve moves to the right side.

The manual valve is moved to the R position, and line pressure (1) becomes line pressure (3) at the manual valve. Line pressure (3) passes through the reverse control valve, and becomes line pressure (3A), then flows to the servo valve. Line pressure (3A) pushes the servo valve to the reverse position. Line pressure (3) also flows to the reverse CPC valve, and becomes reverse CPC pressure (3B) (3''). Reverse CPC pressure (3'') becomes 5th clutch pressure (50) at the manual valve, and 5th clutch pressure (50) flows to the 5th clutch. The 5th clutch is engaged with reverse CPC pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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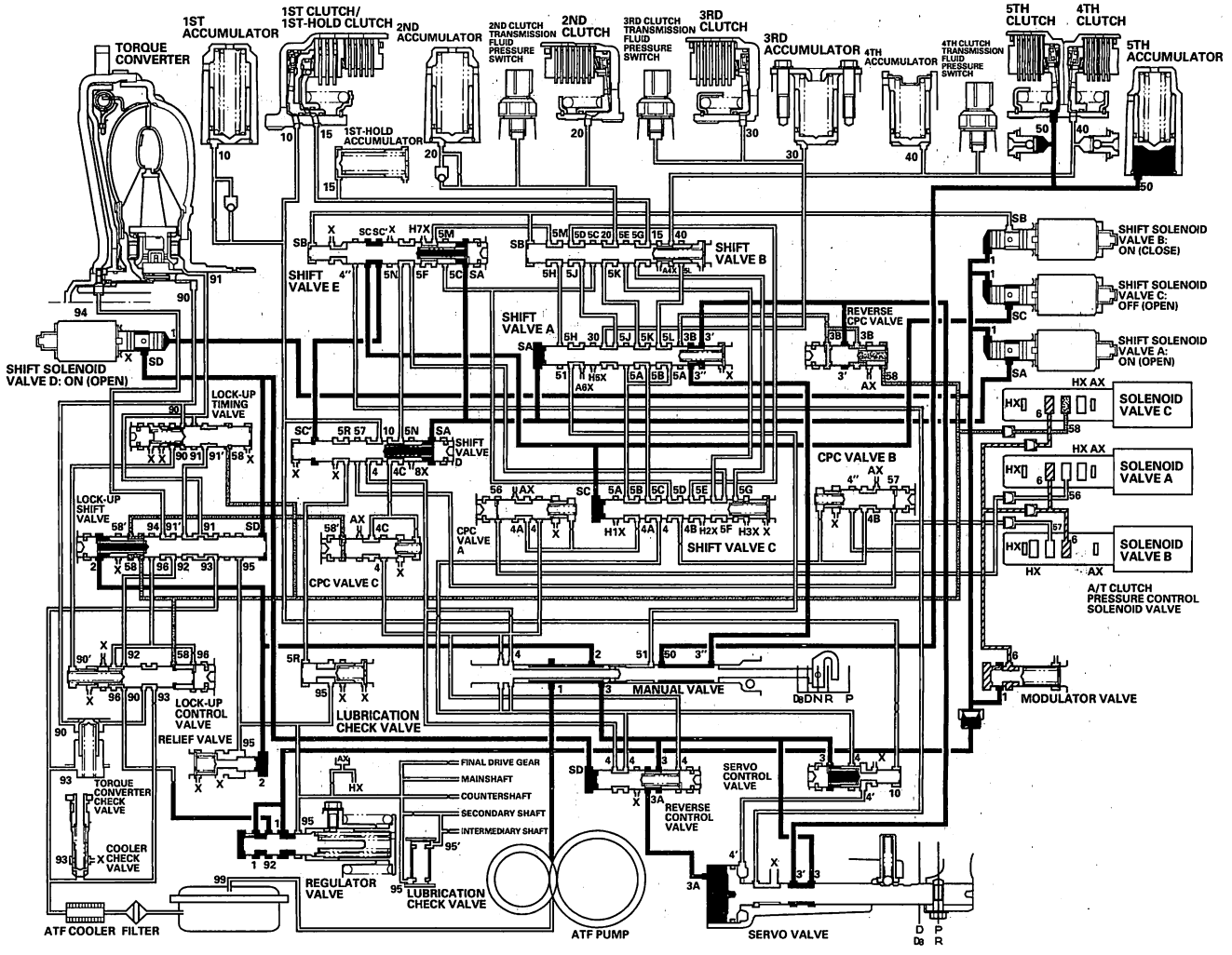
System Description (cont'd)

Hydraulic Flow (cont'd)

R Position: Driving in reverse gear
As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A ON, and shift solenoid valve A uncovers the port of shift solenoid valve A pressure (SA) to shift valve A. Shift valve A is moved to the right side to switch the port of line pressure (3') and reverse CPC pressure (3B) leading to the 5th clutch. Line pressure (3) flows to the manual valve via the servo valve and shift valve A, and becomes 5th clutch pressure (50) at the manual valve. The 5th clutch pressure (50) flows to the 5th clutch, and the 5th clutch is engaged with the line pressure mode.

Reverse Inhibitor Control
When the R position is selected while the vehicle is moving forward at a speed over 6 mph (10 km/h), the PCM commands shift solenoid valve D to remain OFF so that shift solenoid valve D pressure (SD) is not applied to the reverse control valve. Line pressure (3) stops at the reverse control valve, and is not applied to the servo valve. No power is transmitted to the reverse direction.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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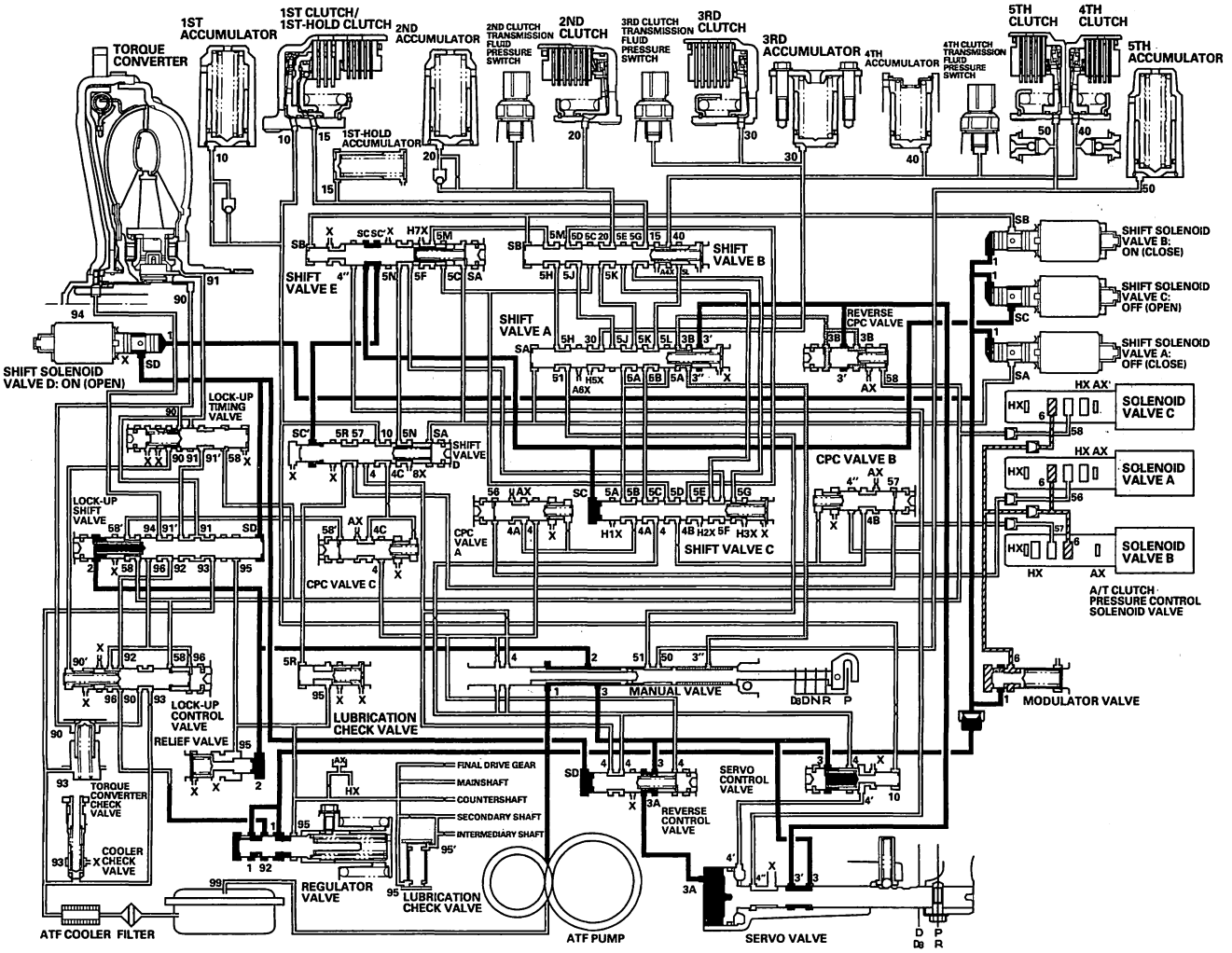
P Position

The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and the positions of the shift valves are as follows:

- Shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- Shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- Shift solenoid valve C is OFF, and opens the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D move to the right side.
- Shift solenoid valve D is turned ON, and opens the port of shift solenoid valve D pressure (SD); reverse control valve moves to the right side.

The manual valve is moved to the P position, and line pressure (1) becomes line pressure (3) at the manual valve. Line pressure (3) passes through the reverse control valve, and becomes line pressure (3A), then flows to the servo valve. Line pressure (3A) pushes the servo valve to the reverse position. Line pressure (3) flows to the manual valve via the reverse CPC valve and shift valve A, and stops at the manual valve. Hydraulic pressure is not applied the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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System Description (cont'd)

Lock-up System

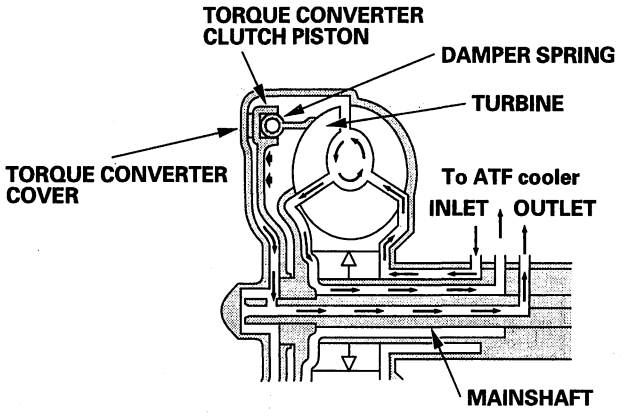
The lock-up mechanism of the torque converter clutch operates in 2nd, 3rd, 4th, and 5th gears in the D position, and in 2nd and 3rd gears in the D3 position. The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be 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 amount of the lock-up mechanism. When shift solenoid valve D is turned on by the PCM, shift solenoid valve D pressure switches the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve C, the lock-up control valve, and lock-up timing valve control the amount of lock-up.

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 engine.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft

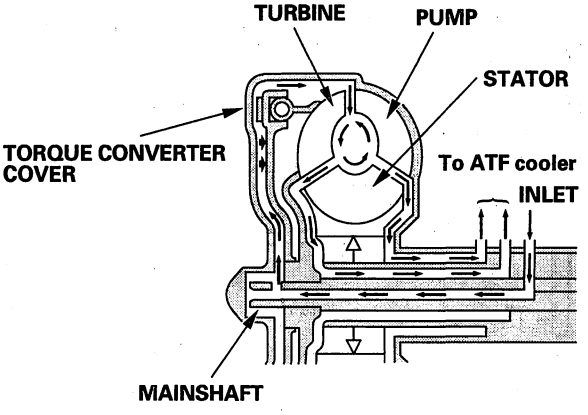


Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)
Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter clutch lock-up is released; the torque converter clutch lock-up is OFF.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



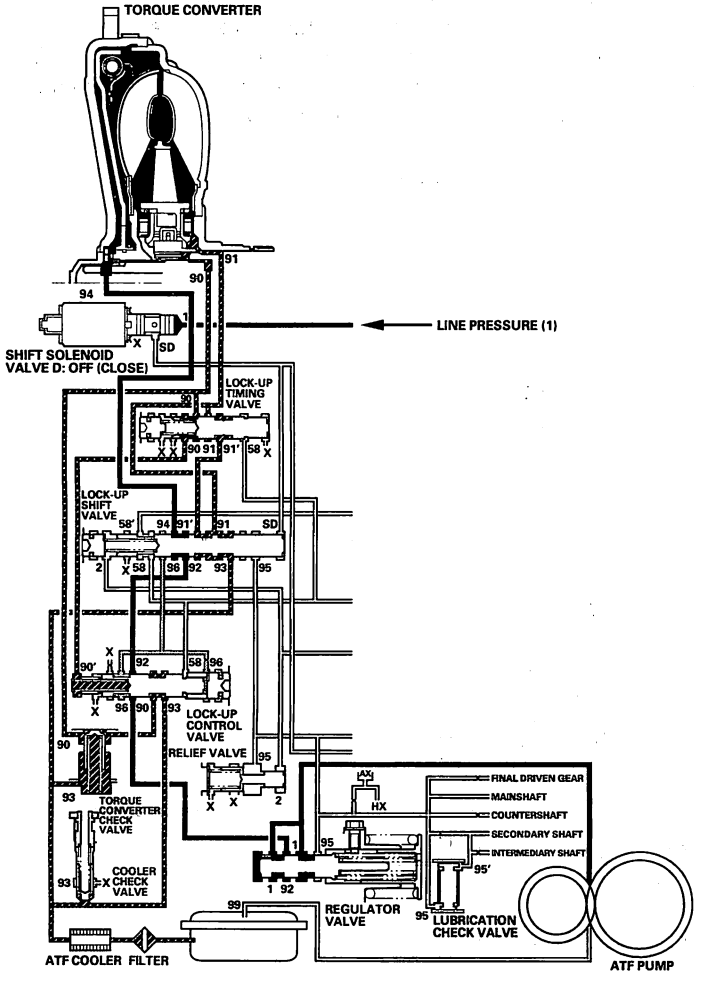
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No Lock-up

The PCM commands shift solenoid valve D to remain OFF, and shift solenoid valve D covers the port of shift solenoid valve D pressure (SD) to the lock-up shift valve. The lock-up shift valve is in the right side, and uncovers the port leading torque converter pressure (92) to the left side of the torque converter. Torque converter pressure (92) from regulator valve becomes torque converter pressure (94) at the lock-up shift valve, and enters into the left side of the torque converter to disengage the torque converter clutch. The torque converter clutch is OFF.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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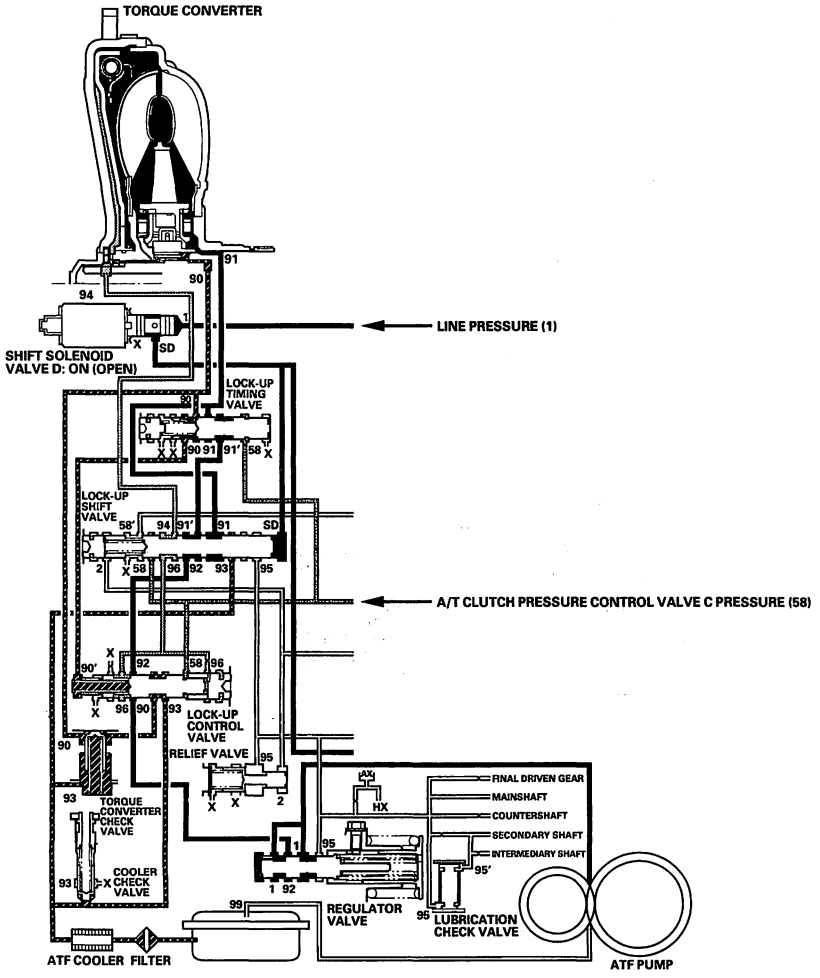
System Description (cont'd)

Lock-up System (cont'd)

Partial Lock-up

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve D ON, and shift solenoid valve D uncovers the port of shift solenoid valve D pressure (SD) to the lock-up shift valve. The lock-up shift valve is moved to the left side to uncover the port of torque converter pressure (91) leading to the right side of the torque converter to engage the torque converter clutch. The PCM also controls A/T clutch pressure control solenoid valve C, and A/T clutch pressure control solenoid valve C pressure (58) is applied to the lock-up control valve and lock-up timing valve. When A/T clutch pressure control solenoid valve C pressure (58) is low, torque converter pressure (91) from the lock-up timing valve is low. The torque converter clutch is engaged partially. A/T clutch pressure control solenoid valve C pressure (58) increases, and the lock-up timing valve is moved to the left side to uncover the port leading torque converter pressure to high. Under this condition, the torque converter clutch is engaged by pressure from the right side of the torque converter; this condition is partial lock-up.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



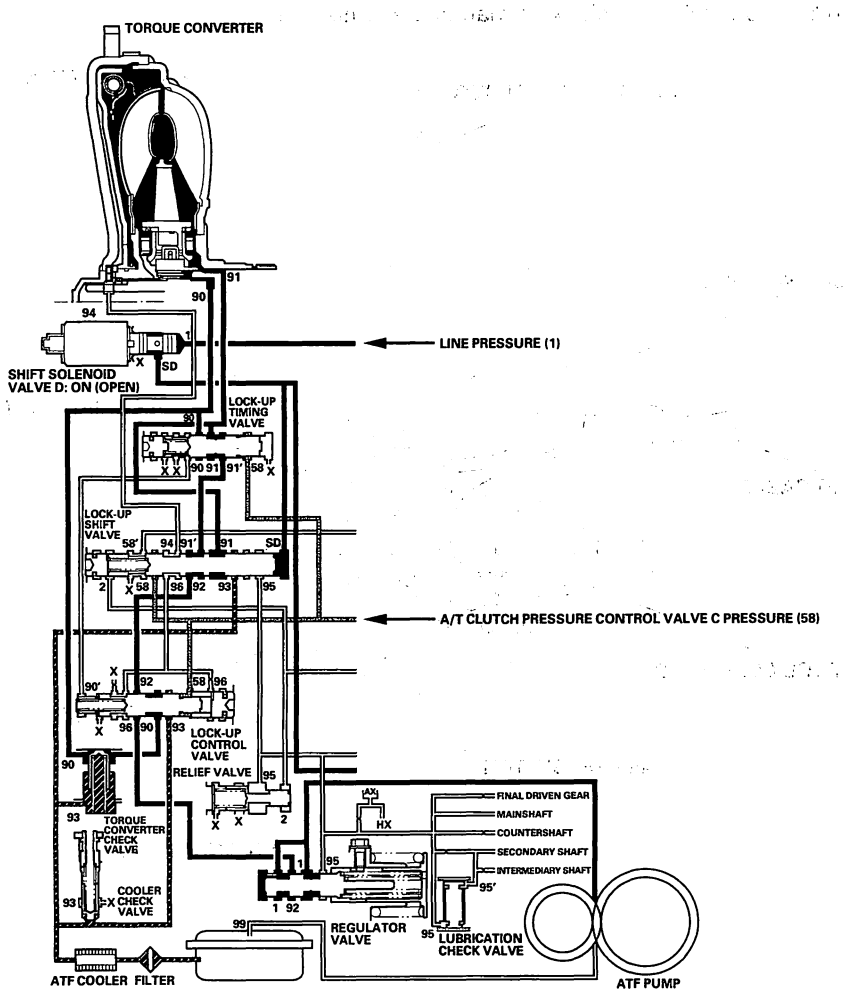
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Full Lock-up

When the vehicle speed further increases, the PCM controls A/T clutch pressure control solenoid valve C to increase A/T clutch pressure control solenoid valve C pressure (58). A/T clutch pressure control solenoid valve C pressure (58) is applied to the lock-up control valve and lock-up timing valve, and the lock-up control valve and lock-up timing valve are moved to the left side. Torque converter pressure (94) from the left side of the torque converter releases at the lock-up control valve, and lock-up timing valve uncovers the port of torque converter pressure (91) leading to the right side of the torque converter. Torque converter back pressure is released fully, and torque converter clutch is engaged fully.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



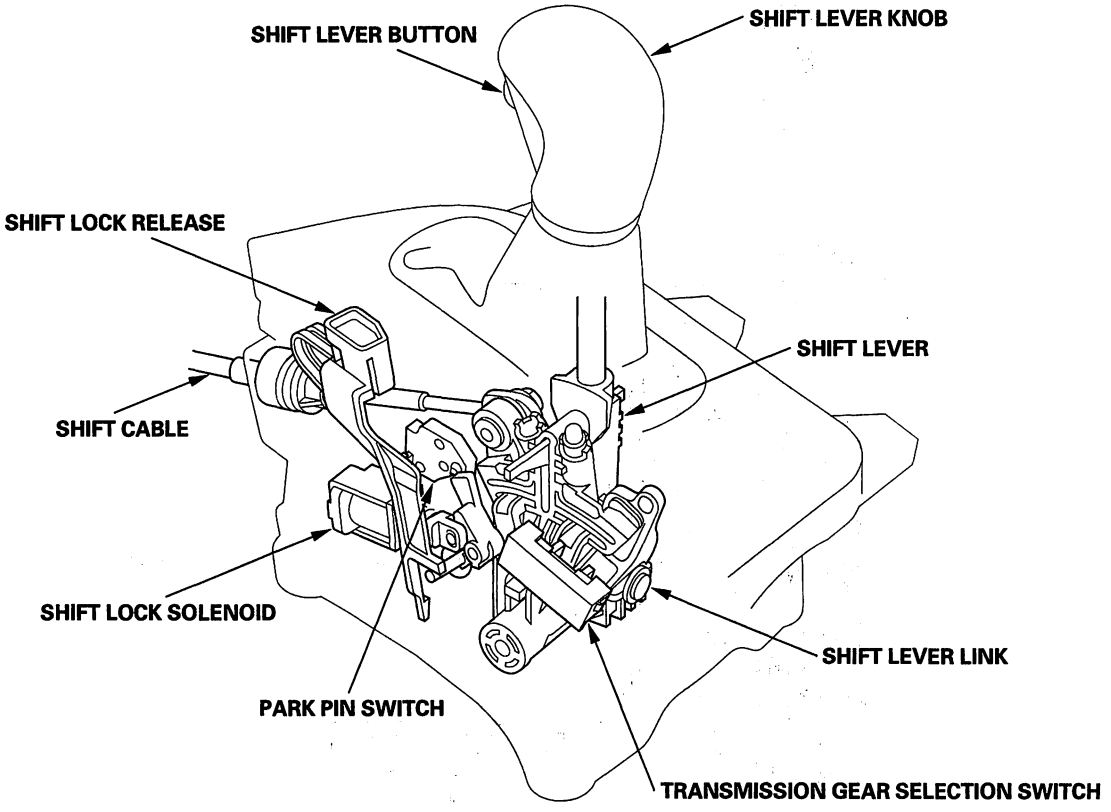
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System Description (cont'd)

Shift Lever Mechanism

The shift lever has five positions; P, R, N, D, and D3 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 shifts out of the P position and into the R position with pressing the shift lever button, and the shift lever shifts into the D3 position from the D with pressing the shift lever button. The shift lever is engaged with the shift lever link in the P, R, N, D, and D3 positions. This unit shifts the transmission using the shift cable connected between the shift lever 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 though 5th, much like a manual transmission.

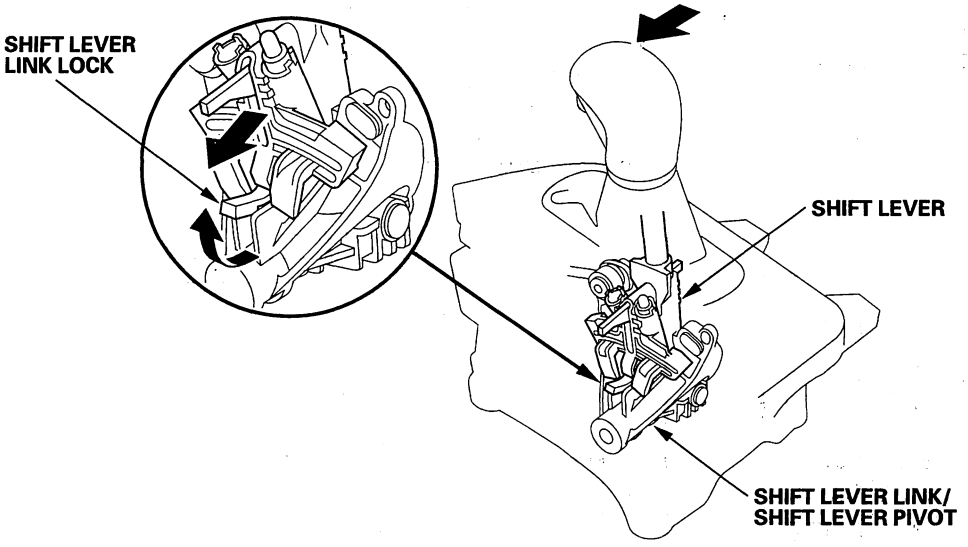


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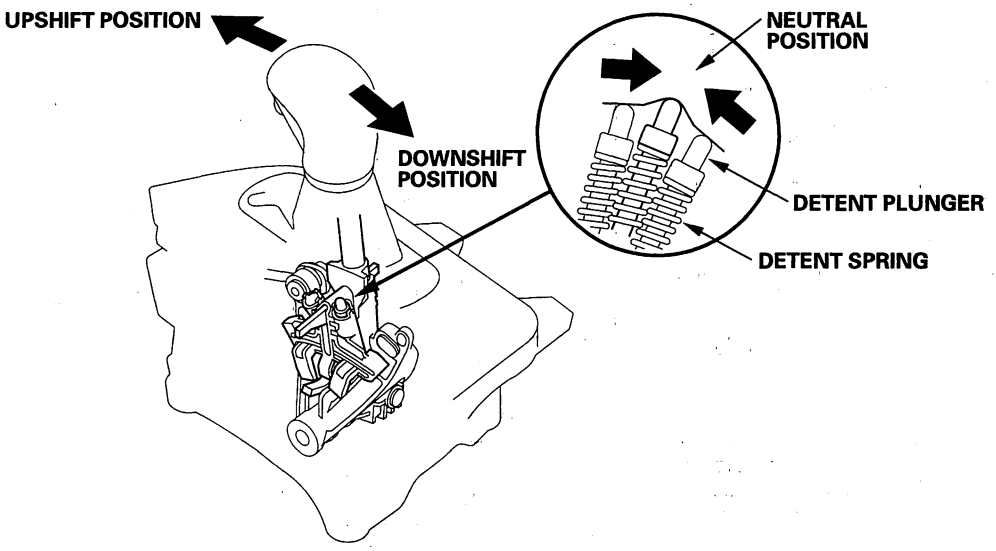
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Shift Lever Mechanism in M Position

When the shift lever shifts to the M position, the shift lever is disengaged from the shift lever link/shift lever pivot, and the shift lever link lock pops up to engage with the shift lever bracket base; the shift lever link 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 in any position except M.



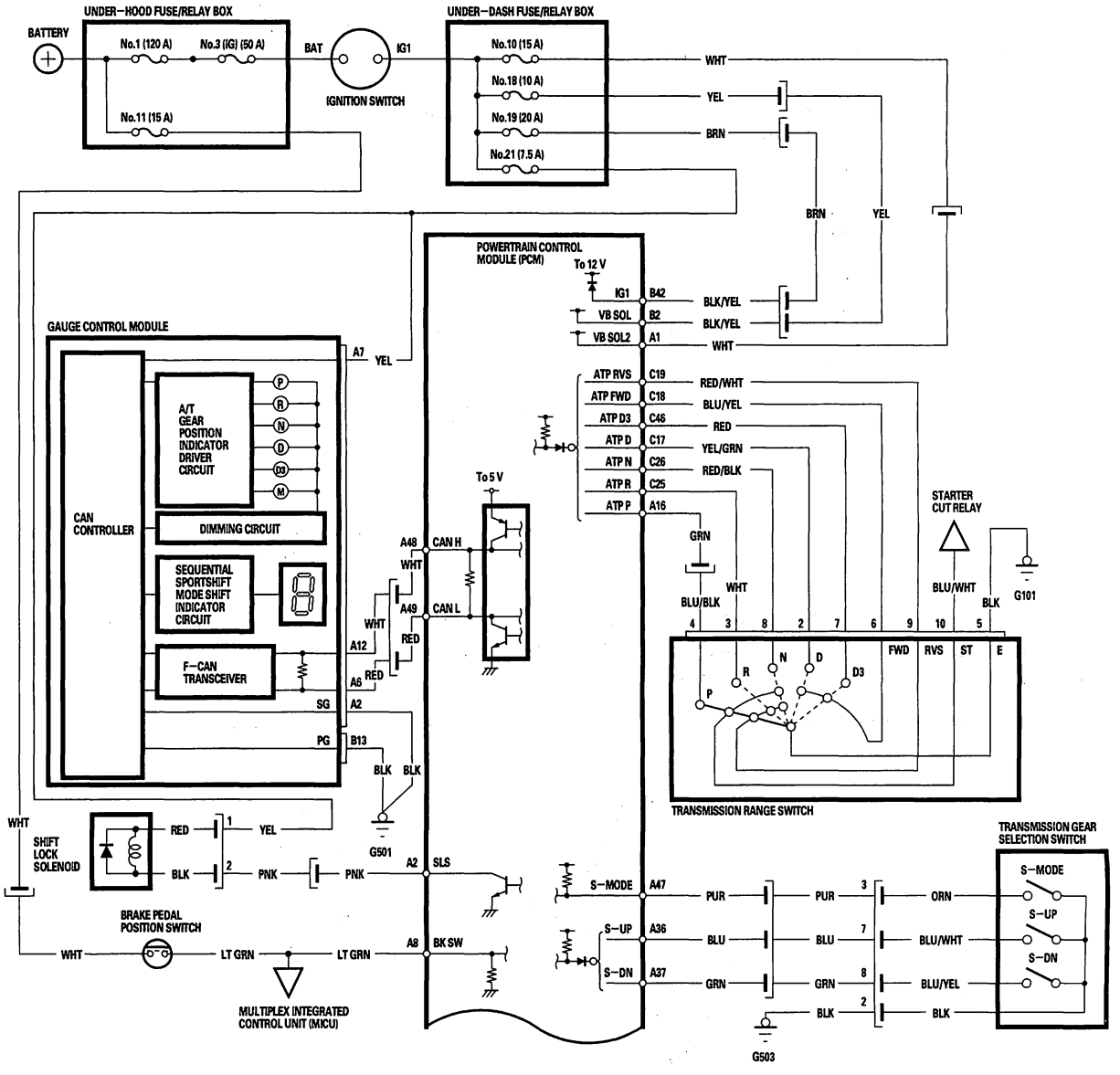
The shift lever fits into the M position by using a detent plunger with a spring. When shifting to upshift and downshift position, the detent plunger is depressed by the detent bracket wall, and detent plunger spring puts the shift lever back into the neutral position. The detent plunger also works in the P position.



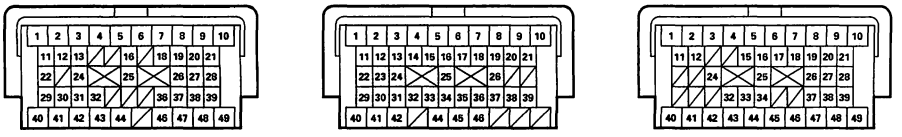
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System Description (cont'd)

Circuit Diagram - PCM A/T Control System



PCM Harness Connector Terminal Locations

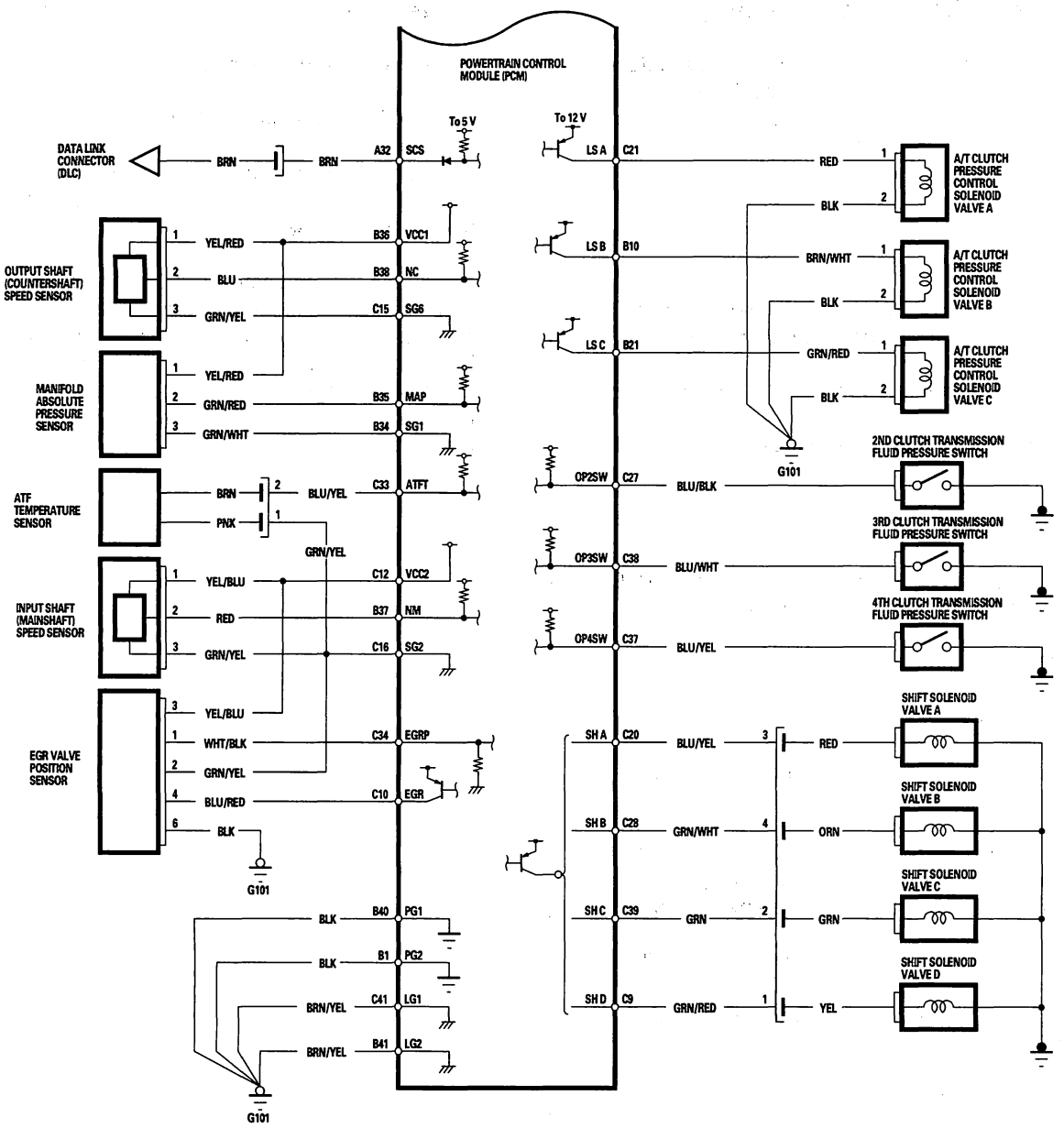


A (49P) □ B (49P) △ C (49P) ○

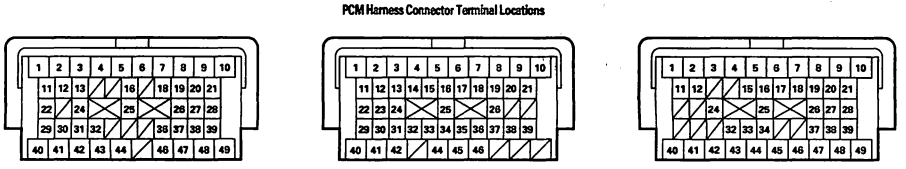
Terminal side of female terminals

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PCM Harness Connector Terminal Locations



A (49P) □ B (49P) △ C (49P) ○

Terminal side of female terminals

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DTC Troubleshooting

DTC P0107: Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch OFF, then turn it ON (II) again.
3. Check whether DTC P0107 is indicated in the DTCs/Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0107 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0107 in the PGM-FI System (see page 11-78).■

   NO—Go to step 4.
4. Check whether DTC P0107 is indicated in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0107 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Turn the ignition switch OFF, then turn it ON (II).
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0107 indicated?

   YES—Check for poor connections and loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0107 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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DTC P0108: Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch OFF, then turn it ON (II) again.
3. Check whether DTC P0108 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0108 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0108 in the PGM-FI System (see page 11-80).■

   NO—Go to step 4.
4. Check whether DTC P0108 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0108 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Turn the ignition switch OFF, then turn it ON (II).
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0108 indicated?

   YES—Check for poor connections and loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0108 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P0335: Crankshaft Position (CKP) Sensor A No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine.
3. Check whether DTC P0335 is indicated in the DTCs/Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0335 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0335 in the PGM-FI System (see page 11-133). ■

   NO—Go to step 4.
4. Check whether DTC P0335 is indicated in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0335 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Start the engine.
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0335 indicated?

   YES—Check for poor connections and loose terminals at the CKP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0335 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the CKP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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BACK

DTC P0339: Crankshaft Position (CKP) Sensor A Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine, and let it idle for 10 seconds.
3. Check whether DTC P0339 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0339 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0339 in the PGM-FI System (see page 11-136). ■

   NO—Go to step 4.
4. Check whether DTC P0339 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0339 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Start the engine, and let it idle for 10 seconds.
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0339 indicated?

   YES—Check for poor connections and loose terminals at the CKP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0339 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the CKP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P0340: Camshaft Position (CMP) Sensor No signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine.
3. Check whether DTC P0340 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0340 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0340 in the PGM-FI System (see page 11-137).■

   NO—Go to step 4.
4. Check whether DTC P0340 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0340 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Start the engine.
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0340 indicated?

   YES—Check for poor connections and loose terminals at the CMP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0340 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the CMP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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BACK

DTC P0344: Camshaft Position (CMP) Sensor Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine, and let it idle for 10 seconds.
3. Check whether DTC P0344 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0344 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0344 in the PGM-FI System (see page 11-140).■

   NO—Go to step 4.
4. Check whether DTC P0344 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0344 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Start the engine, and let it idle for 10 seconds.
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0344 indicated?

   YES—Check for poor connections and loose terminals at the CMP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0344 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the CMP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P0385: Crankshaft Position (CKP) Sensor B No signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine.
3. Check whether DTC P0385 is indicated in the DTCs/Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0385 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0385 in the PGM-FI System (see page 11-133). ■

   NO—Go to step 4.
4. Check whether DTC P0385 is indicated in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0385 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Start the engine.
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0385 indicated?

   YES—Check for poor connections and loose terminals at the CKP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0385 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the CKP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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BACK

DTC P0389: Crankshaft Position (CKP) Sensor B Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine, and let it idle for 10 seconds.
3. Check whether DTC P0389 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P0389 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P0389 in the PGM-FI System (see page 11-136). ■

   NO—Go to step 4.
4. Check whether DTC P0389 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0389 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Start the engine, and let it idle for 10 seconds.
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0389 indicated?

   YES—Check for poor connections and loose terminals at the CKP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P0389 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the CKP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P062F: Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Check whether DTC P062F is indicated in the DTCs/Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P062F indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P062F in the PGM-FI System (see page 11-153).■

   NO—Go to step 3.
3. Check whether DTC P062F is indicated in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P062F indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time.■
4. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
5. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P062F indicated?

   YES—Check for poor connections and loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 6.
6. Monitor the OBD STATUS for P062F in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 5, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, keep idling until a result comes on.

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BACK

DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position, and monitor the OBD STATUS for P0705 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 4.

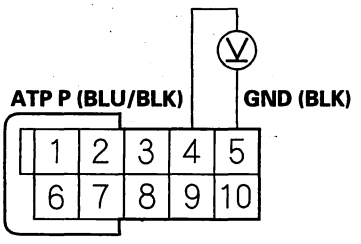
   NO—Intermittent failure, the system is OK at this time. Check for an intermittent short in the wire between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 2 and recheck.
4. Turn the ignition switch OFF.
5. Inspect the transmission range switch (see page 14-315).

   Is the switch OK?

   YES—With the switch connector disconnected, go to step 6.

   NO—Replace the transmission range switch (see page 14-316), then go to step 49.
6. Turn the ignition switch ON (II).
7. Measure the voltage between transmission range switch connector terminals No. 4 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



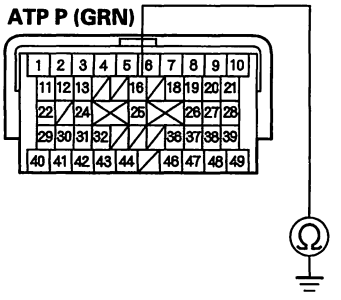
Wire side of female terminals

Is there battery voltage?

YES—Go to step 13.

NO—Go to step 8.
8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).
11. Check for continuity between PCM connector terminal A16 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal A16 and the transmission range switch, then go to step 49.

NO—Go to step 12.

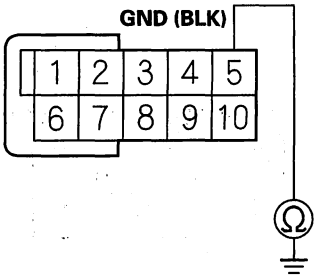
(cont'd)

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DTC Troubleshooting (cont'd)

12. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

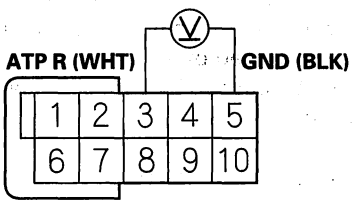
Is there continuity?

YES—Go to step 43.

NO—Repair open in the wire between transmission range switch connector terminal No. 6 and ground (G101), or repair poor ground (G101), then go to step 49.

13. Measure the voltage between transmission range switch connector terminals No. 3 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Go to step 14.

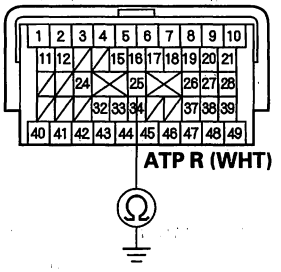
14. Turn the ignition switch OFF.

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector C (49P).

17. Check for continuity between PCM connector terminal C25 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C25 and the transmission range switch, then go to step 49.

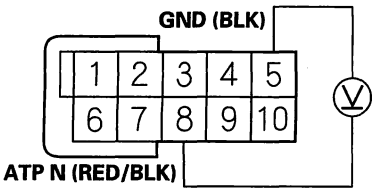
NO—Go to step 43.

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BACK

18. Measure the voltage between transmission range switch connector terminals No. 5 and No. 8.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

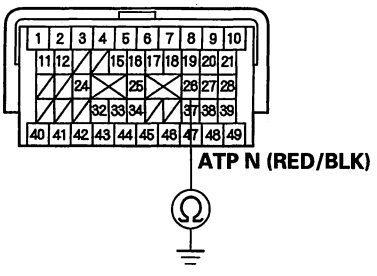
Is there battery voltage?

YES—Go to step 23.

NO—Go to step 19.

19. Turn the ignition switch OFF.
20. Jump the SCS line with the HDS.
21. Disconnect PCM connector C (49P).
22. Check for continuity between PCM connector terminal C26 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

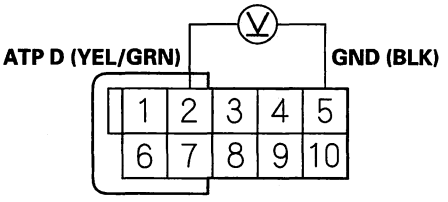
Is there continuity?

YES—Repair short in the wire between PCM connector terminal C26 and the transmission range switch, then go to step 49.

NO—Go to step 43.

23. Measure the voltage between transmission range switch connector terminals No. 2 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

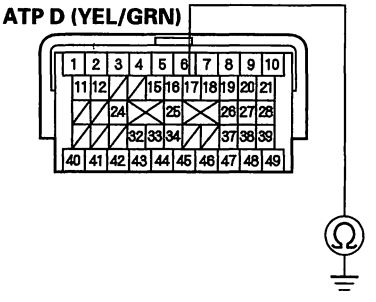
Is there battery voltage?

YES—Go to step 28.

NO—Go to step 24.

24. Turn the ignition switch OFF.
25. Jump the SCS line with the HDS.
26. Disconnect PCM connector C (49P).
27. Check for continuity between PCM connector terminal C17 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

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—Go to step 43.

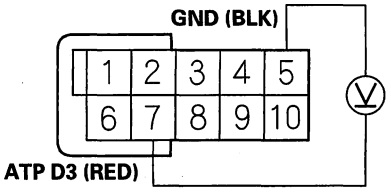
(cont'd)

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DTC Troubleshooting (cont'd)

28. Measure the voltage between transmission range switch connector terminals No. 5 and No. 7.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

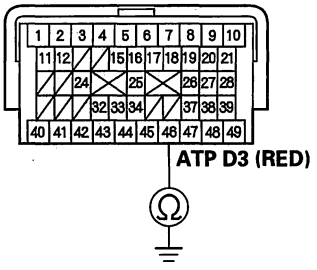
Is there battery voltage?

YES—Go to step 33.

NO—Go to step 29.

29. Turn the ignition switch OFF.
30. Jump the SCS line with the HDS.
31. Disconnect PCM connector C (49P).
32. Check for continuity between PCM connector terminal C46 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

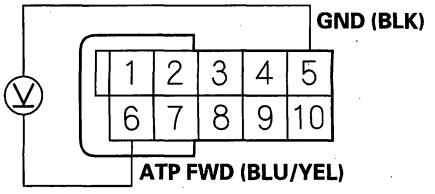
Is there continuity?

YES—Repair short in the wire between PCM connector terminal C46 and the transmission range switch, then go to step 49.

NO—Go to step 43.

33. Measure the voltage between transmission range switch connector terminals No. 5 and No. 6.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

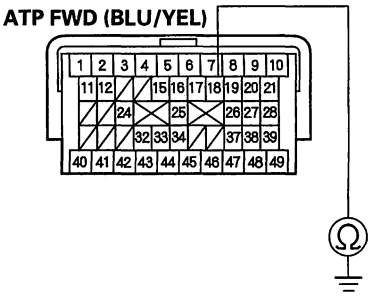
Is there battery voltage?

YES—Go to step 38.

NO—Go to step 34.

34. Turn the ignition switch OFF.
35. Jump the SCS line with the HDS.
36. Disconnect PCM connector C (49P).
37. Check for continuity between PCM connector terminal C18 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C18 and the transmission range switch, then go to step 49.

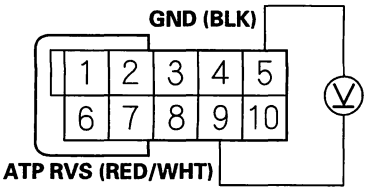
NO—Go to step 43.

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BACK

38. Measure the voltage between transmission range switch connector terminals No. 5 and No. 9.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 43.

NO—Go to step 39.

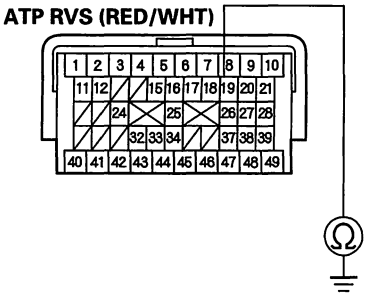
39. Turn the ignition switch OFF.

40. Jump the SCS line with the HDS.

41. Disconnect PCM connector C (49P).

42. Check for continuity between PCM connector terminal C19 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C19 and the transmission range switch, then go to step 49.

NO—Go to step 43.

43. Reconnect all connectors.

44. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

45. Start the engine.

46. With the brake pedal pressed, move the shift lever through all position. Stop for at least 1 second in each position.

47. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

Is DTC P0705 indicated?

YES—Check for poor connections and loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 48.

48. Monitor the OBD STATUS for P0705 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 47, go to the indicated DTC's troubleshooting. ■

NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 45 and recheck.

(cont'd)

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DTC Troubleshooting (cont'd)

49. Clear the DTC with the HDS.

50. Start the engine.

51. With the brake pedal pressed, move the shift lever through all position. Stop for at least 1 second in each position.

52. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0705 indicated?

    YES—Replace the transmission range switch (see page 14-316), then return to step 49 and recheck.

    NO—Go to step 53.

53. Monitor the OBD STATUS for P0705 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 52, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to the step 50 and recheck.

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BACK

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.

3. Start the engine, and turn the VSA off (the light on the VSA OFF switch comes on). Run the engine in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.

4. Monitor the OBD STATUS for P0706 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   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 the PCM. If the HDS indicates NOT COMPLETED, return to step 3 and recheck.

5. Turn the ignition switch OFF.

6. Inspect the transmission range switch (see page 14-315).

   Is the switch OK?

   YES—Go to step 7.

   NO—Replace the transmission range switch (see page 14-316), then go to step 30.

7. Install the transmission range switch correctly, and adjust the shift cable (see page 14-311).

8. Clear the DTC with the HDS.

9. Start the engine, and turn the VSA off (the light on the VSA OFF switch comes on). Run the engine in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.

10. Monitor the OBD STATUS for P0706 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    YES—Go to step 11.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

11. Shift to the D position, and verify the ATP FWD and ATP D inputs with the HDS in the A/T data list.

    Is ATP FWD and ATP D ON?

    YES—Go to step 12.

    NO—Go to step 16.

12. Shift to the D3 position, and verify the ATF FWD and ATP D3 inputs with the HDS in the A/T data list.

    Is ATP FWD and ATP D3 ON?

    YES—Go to step 13.

    NO—Go to step 16.

(cont'd)

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DTC Troubleshooting (cont'd)

13. Clear the DTC with the HDS.

14. Start the engine, and turn the VSA off (the light on the VSA OFF switch comes on). Run the engine in the D position until the vehicle speed reaches 25 mph (46 km/h), then slow down and stop the wheels.

15. Monitor the OBD STATUS for P0706 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

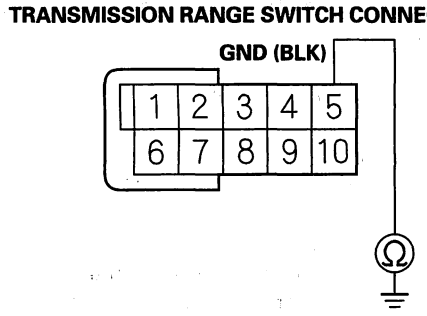
    YES—Go to step 16.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

16. Turn the ignition switch OFF.

17. Disconnect the transmission range switch connector.

18. Check for continuity between transmission range switch connector terminal No. 5 and body ground.



Wire side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the transmission range switch and ground (G101), or repair poor ground (G101), then go to step 30.

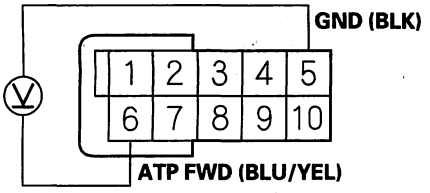
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BACK

19. Turn the ignition switch ON (II).

20. Measure the voltage between transmission range switch connector terminals No. 5 and No. 6.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

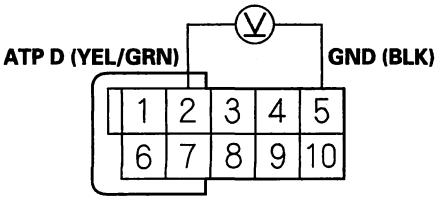
Is there voltage?

YES—Go to step 21.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal C18, then go to step 30.

21. Measure the voltage between transmission range switch connector terminals No. 2 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

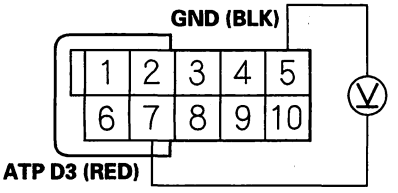
Is there voltage?

YES—Go to step 22.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal C17, then go to step 30.

22. Measure the voltage between transmission range switch connector terminals No. 5 and No. 7.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 23.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal C46, then go to step 30.

(cont'd)

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DTC Troubleshooting (cont'd)

23. Reconnect all connectors.

24. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

25. Turn the ignition switch OFF.

26. Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.

27. Start the engine, and turn the VSA off (the light on the VSA OFF switch comes on). Run the engine in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.

28. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections and loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for P0706 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 28, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 25 and recheck.

30. Clear the DTC with the HDS.

31. Turn the ignition switch OFF.

32. Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.

33. Start the engine, and turn the VSA off (the light on the VSA OFF switch comes on). Run the engine in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.

34. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections and loose terminals at the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for P0706 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 34, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 31 and recheck.

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BACK

DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 in the A/T data list.

   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 page 14-237) three times. Go to step 2 after stall speed testing.

2. Check the ATF temperature with the HDS.

   Does the ATF temperature change?

   YES—Leave the engine off for more than 30 minutes, and go to step 3.

   NO—Replace the ATF temperature sensor (see page 14-264), 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 the ECT SENSOR reads the same as ambient-air temperature, then go to step 4.

4. Check the ATF TEMP SENSOR with the HDS.

   Does the ATF temperature read about the same as the 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 the PCM. ■

   NO—Replace the ATF temperature sensor (see page 14-264), then go to step 5.

5. Clear the DTC with the HDS.

6. Test-drive the vehicle for several minutes in the D position through all five gears.

7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P0711 indicated?

   YES—Check for poor connections and loose terminals at the ATF temperature sensor and the PCM, then go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for P0711 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—Troubleshooting is complete. If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 6 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 sensor voltage with the HDS in the A/T data list.

   Is the ATF TEMP SENSOR voltage 0.07 V or less?

   YES—Go to step 2.

   NO—Intermittent failure, the system is OK at this time. Check for an intermittent short in the ATFT wire between the ATF temperature sensor and the PCM. ■

2. Disconnect the ATF temperature sensor connector at the transmission end cover.

3. Check the ATF TEMP SENSOR voltage with the HDS.

   Is the ATF TEMP SENSOR voltage 0.07 V or less?

   YES—Go to step 4.

   NO—Replace the ATF temperature sensor (see page 14-264), then go to step 13.

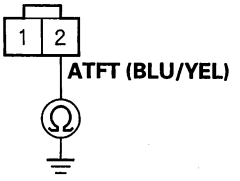
4. Turn the ignition switch OFF.

5. Jump the SCS line with the HDS.

6. Disconnect PCM connector C (49P).

7. Check for continuity between ATF temperature sensor connector terminal No. 2 and body ground.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C33 and ATF temperature sensor connector terminal No. 2, then go to step 13.

NO—Go to step 8.

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8. Reconnect all connectors.

9. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

10. Test-drive the vehicle for several minutes in the D position through all five gears.

11. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0712 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 12.

12. Monitor the OBD STATUS for P0712 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 11, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.

13. Clear the DTC with the HDS.

14. Test-drive the vehicle for several minutes in the D position through all five gears.

15. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0712 indicated?

    YES—Check for poor connections and loose terminals at the ATF temperature sensor and the PCM, then go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for P0712 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 15, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, go to step 1. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF TEMP SENSOR voltage with the HDS in the A/T data list.

   Does the ATF TEMP 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 the PCM. ■

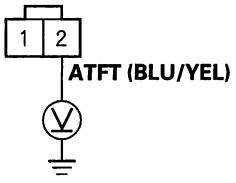
2. Turn the ignition switch OFF.

3. Disconnect the ATF temperature sensor connector at the transmission end cover.

4. Turn the ignition switch ON (II).

5. Measure the voltage between ATF temperature sensor connector terminal No. 2 and body ground.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

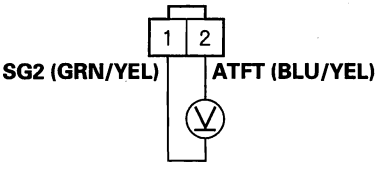
Is there about 5 V?

YES—Go to step 6.

NO—Go to step 7.

6. Measure the voltage between ATF temperature sensor connector terminals No. 1 and No. 2.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the ATF temperature sensor (see page 14-264), then go to step 16.

NO—Repair open in the wire between PCM connector terminal C16 and the ATF temperature sensor connector, then go to step 16.

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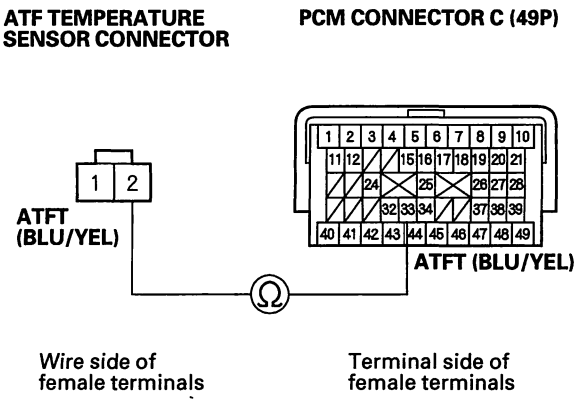
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7. Turn the ignition switch OFF.

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector C (49P).

10. Check for continuity between PCM connector terminal C33 and ATF temperature sensor connector terminal No. 2.



Is there continuity?

YES—Check for poor connections and loose terminals at the ATF temperature sensor and the PCM. If the connections are OK, go to step 11.

NO—Repair open in the wire between PCM connector terminal C33 and the ATF temperature sensor, then go to step 16.

11. Connect all connectors.

12. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

13. Test-drive the vehicle for several minutes in the D position through all five gears.

14. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

Is DTC P0713 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 15.

15. Monitor the OBD STATUS for P0713 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 14, go to the indicated DTC's troubleshooting. ■

NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

(cont'd)

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DTC Troubleshooting (cont'd)

16. Connect the ATF temperature sensor connector.

17. Clear the DTC with the HDS.

18. Test-drive the vehicle for several minutes in the D position through all five gears.

19. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0713 indicated?

    YES—Check for poor connections and loose terminals at the ATF temperature sensor and the PCM, then go to step 1.

    NO—Go to step 20.

20. Monitor the OBD STATUS for P0713 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 19, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 18 and recheck.

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BACK

DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit

DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

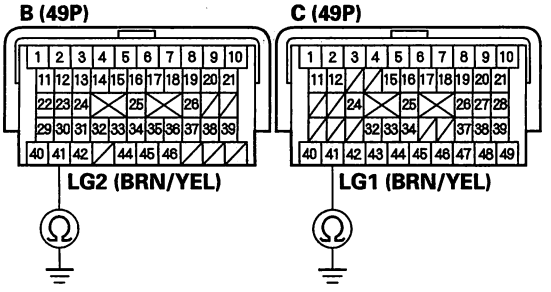
1. Clear the DTC with the HDS.
2. Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.
3. Check for proper input shaft (mainshaft) speed sensor installation (see page 14-259). If the sensor was installed improperly, correct the problem, then go to step 37.
4. Start the engine, and turn the VSA off (the light on the VSA OFF switch comes on). Run the engine 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 wheel.
5. Monitor the OBD STATUS for P0716 or P0717 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and input shaft (mainshaft) speed sensor connectors. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connectors B (49P) and C (49P).
9. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Go to step 10.

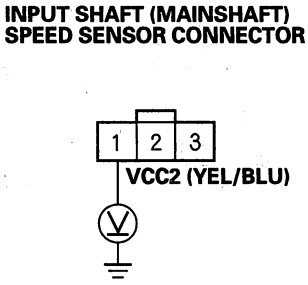
NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 38.

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DTC Troubleshooting (cont'd)

10. Connect PCM connectors B (49P) and C (49P).
11. Disconnect the input shaft (mainshaft) speed sensor connector.
12. Turn the ignition switch ON (II).
13. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.



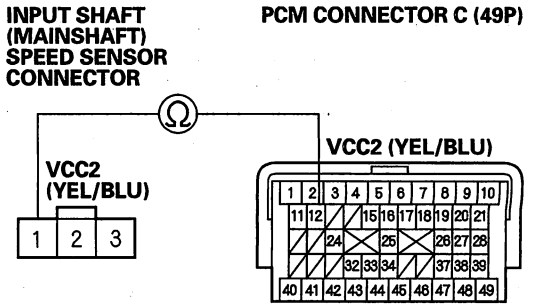
Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

NO—Go to step 14.

14. Turn the ignition switch OFF.
15. Disconnect PCM connector C (49P).
16. Check for continuity between PCM connector terminal C12 and input shaft (mainshaft) speed sensor connector terminal No. 1.



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 17.

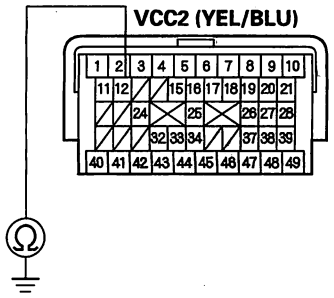
NO—Repair open in the wire between PCM connector terminal C12 and the input shaft (mainshaft) speed sensor, then go to step 38.

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17. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C12 and the input shaft (mainshaft) speed sensor, then go to step 38.

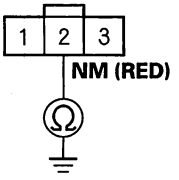
NO—Check for poor connections and loose terminals at the PCM. If the connections are OK, go to step 33.

18. Turn the ignition switch OFF.

19. Disconnect PCM connector B (49P).

20. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal B37 and the input shaft (mainshaft) speed sensor connector, then go to step 38.

NO—Go to step 21.

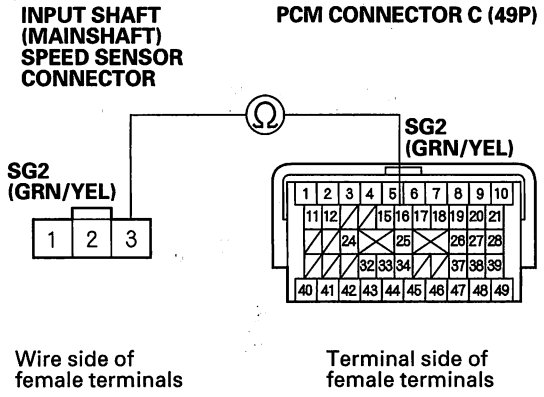
(cont'd)

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DTC Troubleshooting (cont'd)

21. Disconnect PCM connector C (49P).

22. Check for continuity between PCM connector terminal C16 and input shaft (mainshaft) speed sensor connector terminal No. 3.



Is there continuity?

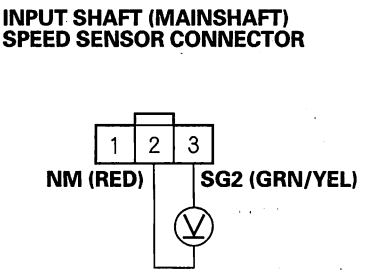
YES—Go to step 23.

NO—Repair open in the wire between the input shaft (mainshaft) speed sensor connector and PCM connector terminal C16, then go to step 38.

23. Connect PCM connectors B (49P) and C (49P).

24. Turn the ignition switch ON (II).

25. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.



Is there about 5 V?

YES—Go to step 29.

NO—Go to step 26.

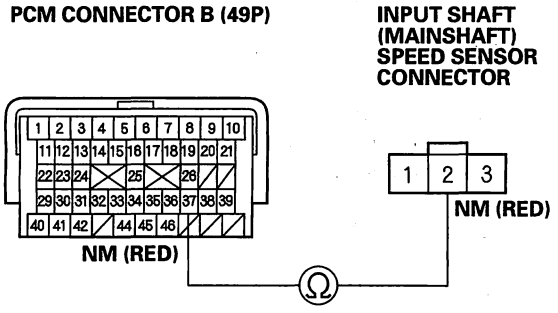
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BACK

26. Turn the ignition switch OFF.

27. Disconnect PCM connector B (49P).

28. Check for continuity between PCM connector terminal B37 and input shaft (mainshaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 33.

NO—Repair open in the wire between PCM connector terminal B37 and the input shaft (mainshaft) speed sensor, then go to step 38.

29. Connect the input shaft (mainshaft) speed sensor connector.

30. Clear the DTC with the HDS.

31. Start the engine, run the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.

32. Monitor the OBD STATUS for P0716 or P717 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate FAILED?

YES—Replace the input shaft (mainshaft) speed sensor (see page 14-259), then go to step 38.

NO—Go to step 33.

(cont'd)

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DTC Troubleshooting (cont'd)

33. Reconnect all connectors.

34. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

35. Start the engine, run the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.

36. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 37.

37. Monitor the OBD STATUS for P0716 or P717 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 36, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 35 and recheck.

38. Clear the DTC with the HDS.

39. Start the engine, run the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.

40. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—Check for poor connections and loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 41.

41. Monitor the OBD STATUS for P0716 or P0717 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 40, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 39 and recheck.

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DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Monitor the OBD STATUS for P0718 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, return to step 2 and recheck.
4. Turn the ignition switch OFF.
5. Disconnect the input shaft (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.

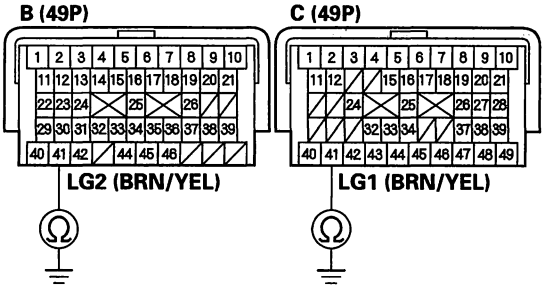
   NO—Repair the connector terminals, then go to step 6.
6. Connect the input shaft (mainshaft) speed sensor connector.
7. Test-drive the vehicle for several minutes in the D position through all five gears.
8. Monitor the OBD STATUS for P0718 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 9.

   NO—Troubleshooting is complete. If the HDS indicates NOT COMPLETED, return to step 7 and recheck.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (49P) and C (49P).
12. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 35.

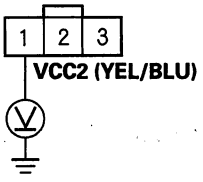
(cont'd)

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DTC Troubleshooting (cont'd)

13. Connect PCM connectors B (49P) C (49P).
14. Disconnect the input shaft (mainshaft) speed sensor connector.
15. Turn the ignition switch ON (II).
16. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

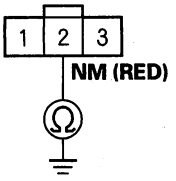
Is there about 5 V?

YES—Go to step 17.

NO—Go to step 26.

17. Turn the ignition switch OFF.
18. Disconnect PCM connector B (49P).
19. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal B37 and the input shaft (mainshaft) speed sensor connector, then go to step 35.

NO—Go to step 20.

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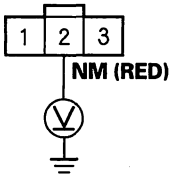
BACK

20. Connect PCM connector B (49P).

21. Turn the ignition switch ON (II).

22. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the input shaft (mainshaft) speed sensor (see page 14-259), then go to step 35.

NO—Go to step 23.

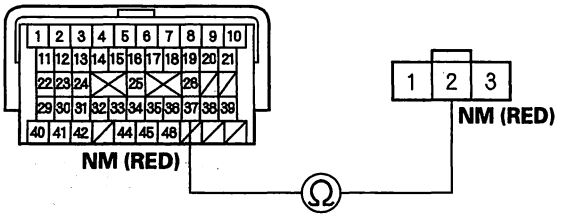
23. Turn the ignition switch OFF.

24. Disconnect PCM connector B (49P).

25. Check for continuity between PCM connector terminal B37 and input shaft (mainshaft) speed sensor connector terminal No. 2.

PCM CONNECTOR B (49P)

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 30.

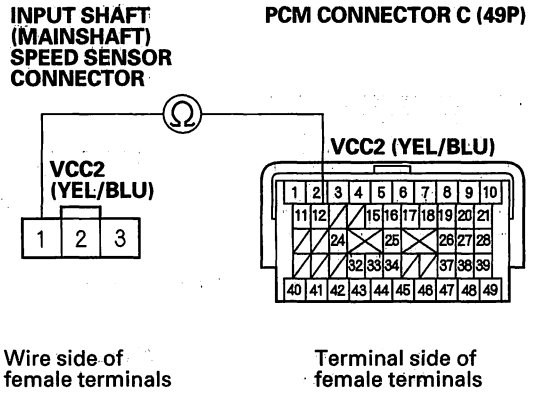
NO—Repair open in the wire between PCM connector terminal B37 and the input shaft (mainshaft) speed sensor, then go to step 35.

(cont'd)

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DTC Troubleshooting (cont'd)

26. Turn the ignition switch OFF.
27. Disconnect PCM connector C (49P).
28. Check for continuity between PCM connector terminal C12 and input shaft (mainshaft) speed sensor connector terminal No. 1.



Wire side of female terminals

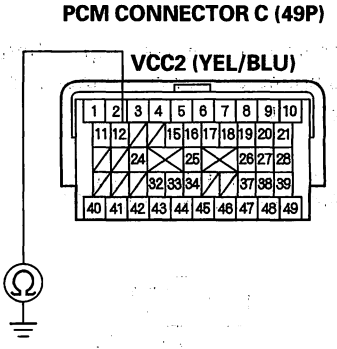
Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between PCM connector terminal C12 and the input shaft (mainshaft) speed sensor, then go to step 35.

29. Check for continuity between PCM connector terminal C12 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C12 and the input shaft (mainshaft) speed sensor, then go to step 30.

NO—Check for poor connections and loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the connections are OK, go to step 30.

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30. Reconnect all connectors.

31. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

32. Test-drive the vehicle for several minutes in the D position through all five gears.

33. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0718 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 34.

34. Monitor the OBD STATUS for P0718 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 33, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 32 and recheck.

35. Clear the DTC with the HDS.

36. Test-drive the vehicle for several minutes in the D position through all five gears.

37. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0718 indicated?

    YES—Check for poor connections and loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 38.

38. Monitor the OBD STATUS for P0718 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 37, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 36 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit

DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

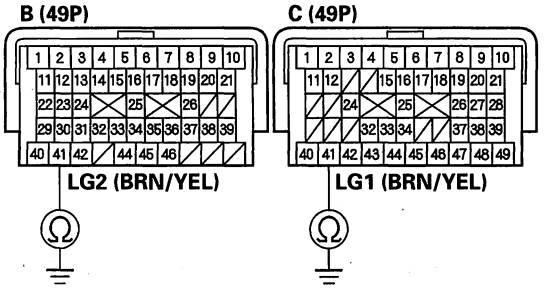
1. Clear the DTC with the HDS.
2. Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.
3. Check for proper output shaft (countershaft) speed sensor installation (see page 14-260). If the sensor is installed improperly, correct problem, then go to step 38.
4. Start the engine, run the vehicle in the D position with engine speed 2,000 rpm or higher for more than 10 seconds. Slow down and stop the wheels.
5. Monitor the OBD STATUS for P0721 or P0722 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and output shaft (countershaft) speed sensor connectors. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connectors B (49P) and C (49P).
9. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 38.

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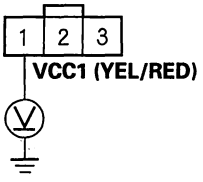
10. Connect PCM connectors B (49P) and C (49P).

11. Disconnect the output shaft (countershaft) speed sensor connector.

12. Turn the ignition switch ON (II).

13. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

NO—Go to step 14.

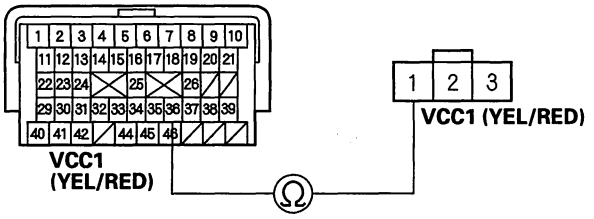
14. Turn the ignition switch OFF.

15. Disconnect PCM connector B (49P).

16. Check for continuity between PCM connector terminal B36 and output shaft (countershaft) speed sensor connector terminal No. 1.

PCM CONNECTOR B (49P)

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between PCM connector terminal B36 and the output shaft (countershaft) speed sensor, then go to step 38.

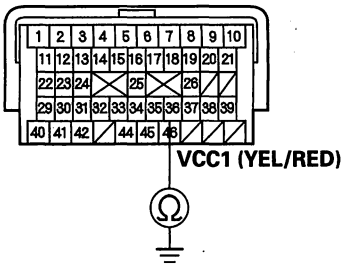
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DTC Troubleshooting (cont'd)

17. Check for continuity between PCM connector terminal B36 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal B36 and the output shaft (countershaft) speed sensor, then go to step 38.

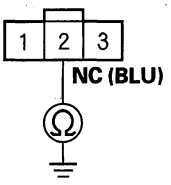
NO—Check for poor connections and loose terminals at the PCM. If the connections are OK, go to step 33.

18. Turn the ignition switch OFF.

19. Disconnect PCM connector B (49P).

20. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal B38 and the output shaft (countershaft) speed sensor connector, then go to step 38.

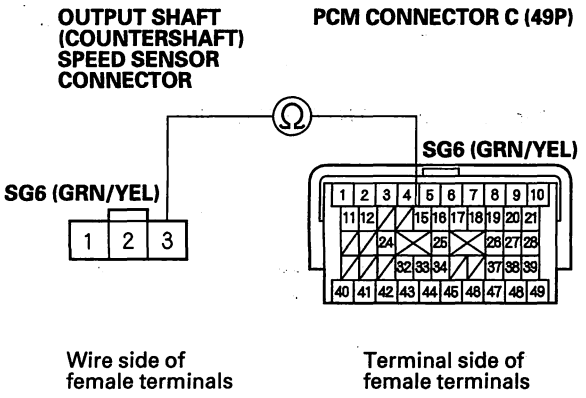
NO—Go to step 21.

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21. Disconnect PCM connector C (49P).

22. Check for continuity between PCM connector terminal C15 and output shaft (countershaft) speed sensor connector terminal No. 3.



Is there continuity?

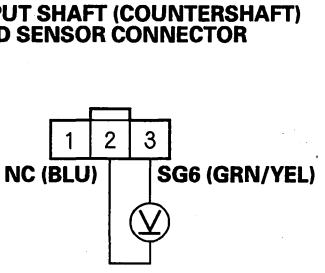
YES—Go to step 23.

NO—Repair open in the wire between the output shaft (countershaft) speed sensor connector and PCM connector terminal C15, then go to step 38.

23. Connect PCM connectors B (49P) and C (49P).

24. Turn the ignition switch ON (II).

25. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.



Is there about 5 V?

YES—Go to step 29.

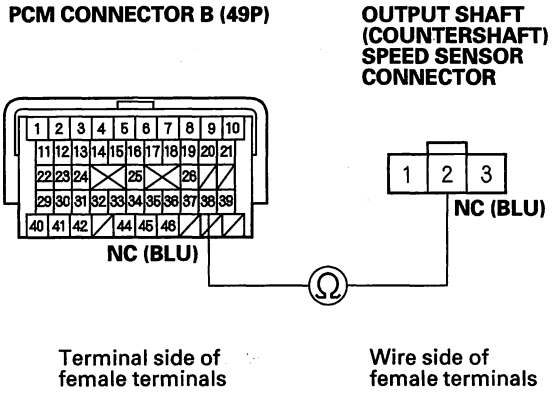
NO—Go to step 26.

(cont'd)

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DTC Troubleshooting (cont'd)

26. Turn the ignition switch OFF.
27. Disconnect PCM connector B (49P).
28. Check for continuity between PCM connector terminal B38 and output shaft (countershaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 33.

NO—Repair open in the wire between PCM connector terminal B38 and the output shaft (countershaft) speed sensor, then go to step 38.

29. Connect the output shaft (countershaft) speed sensor connector.
30. Clear the DTC with the HDS.
31. Start the engine, run the vehicle in the D position with engine speed 2,000 rpm or higher for more than 10 seconds. Slow down and stop the wheels.
32. Monitor the OBD STATUS for P0721 or P0722 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate FAILED?

YES—Replace the output shaft (countershaft) speed sensor (see page 14-260), then go to step 38.

NO—Go to step 33.

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33. Reconnect all connectors.

34. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

35. Start the engine, run the vehicle in the D position with engine speed 2,000 rpm or higher for more than 10 seconds. Slow down and stop the wheels.

36. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 37.

37. Monitor the OBD STATUS for P0721 or P0722 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 36, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 35 and recheck.

38. Clear the DTC with the HDS.

39. Start the engine, run the vehicle in the D position with engine speed 2,000 rpm or higher for more than 10 seconds. Slow down and stop the wheels.

40. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—Check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 41.

41. Monitor the OBD STATUS for P0721 or P0722 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 40, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 39 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Monitor the OBD STATUS for P0723 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, return to step 2 and recheck.
4. Turn the ignition switch OFF.
5. Disconnect the output shaft (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 6.

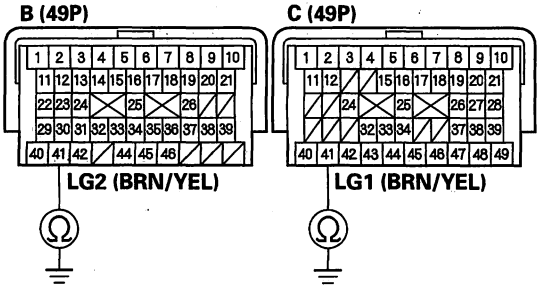
   NO—Repair the connector terminals, then go to step 6.
6. Connect the output shaft (countershaft) speed sensor connector.
7. Test-drive the vehicle for several minutes in the D position through all five gears.
8. Monitor the OBD STATUS for P0723 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 9.

   NO—Troubleshooting is complete. If the HDS indicates NOT COMPLETED, return to step 7 and recheck.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (49P) and C (49P).
12. Check for continuity between PCM connector terminals B41 and body ground, and between C44 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

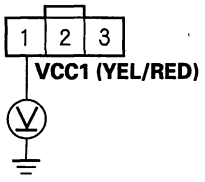
NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 35.

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13. Connect PCM connectors B (49P) and C (49P).
14. Disconnect the output shaft (countershaft) speed sensor connector.
15. Turn the ignition switch ON (II).
16. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

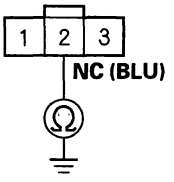
Is there about 5 V?

YES—Go to step 17.

NO—Go to step 26.

17. Turn the ignition switch OFF.
18. Disconnect PCM connector B (49P).
19. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal B38 and the output shaft (countershaft) speed sensor connector, then go to step 35.

NO—Go to step 20.

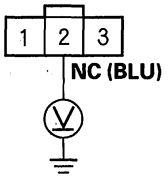
(cont'd)

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DTC Troubleshooting (cont'd)

20. Connect PCM connector B (49P).
21. Turn the ignition switch ON (II).
22. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

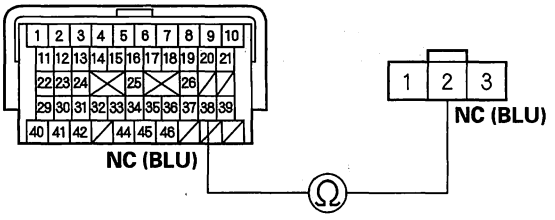
YES—Replace the output shaft (countershaft) speed sensor (see page 14-260), then go to step 35.

NO—Go to step 23.

23. Turn the ignition switch OFF.
24. Disconnect PCM connector B (49P).
25. Check for continuity between PCM connector terminal B38 and output shaft (countershaft) speed sensor connector terminal No. 2.

PCM CONNECTOR B (49P)

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between PCM connector terminal B38 and the output shaft (countershaft) speed sensor, then go to step 35.

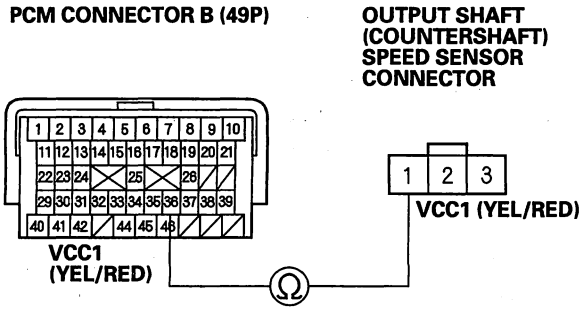
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26. Turn the ignition switch OFF.

27. Disconnect PCM connector B (49P).

28. Check for continuity between PCM connector terminal B36 and output shaft (countershaft) speed sensor connector terminal No. 1.



Terminal side of female terminals

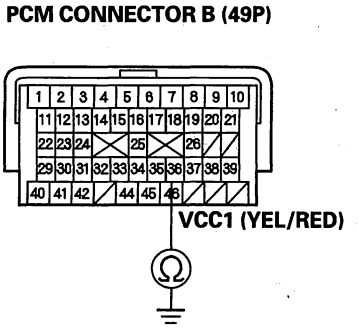
Wire side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between PCM connector terminal B36 and the output shaft (countershaft) speed sensor, then go to step 35.

29. Check for continuity between PCM connector terminal B36 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal B36 and the output shaft (countershaft) speed sensor, then go to step 35.

NO—Check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the connections are OK, go to step 30.

(cont'd)

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DTC Troubleshooting (cont'd)

30. Reconnect all connectors.

31. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

32. Test-drive the vehicle for several minutes in the D position through all five gears.

33. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0723 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 34.

34. Monitor the OBD STATUS for P0723 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 33, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 32 and recheck.

35. Clear the DTC with the HDS.

36. Test-drive the vehicle for several minutes in the D position through all five gears.

37. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0723 indicated?

    YES—Check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 38.

38. Monitor the OBD STATUS for P0723 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 37, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 36 and recheck.

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DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Measure the line pressure (see page 14-238).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 9.
5. Measure the 1st clutch pressure (see page 14-238).

   Is the 1st clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves B and C are stuck. Repair these valves and hydraulic circuit, or replace the transmission, then go to step 9.
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 1st gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.
8. Monitor the OBD STATUS for P0731 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair the 1st clutch, or replace the transmission, then go to step 9.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 7 and recheck.
9. Clear the DTC with the HDS.
10. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 1st gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.
11. Monitor the OBD STATUS for P0731 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.

4. Measure the line pressure (see page 14-238).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 9.

5. Measure the 2nd clutch pressure (see page 14-238).

   Is the 2nd clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A, B, and C are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 9.

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 2nd gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

8. Monitor the OBD STATUS for P0732 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair the 2nd clutch, or replace the transmission, then go to step 9.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 7 and recheck.

9. Clear the DTC with the HDS.

10. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 2nd gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

11. Monitor the OBD STATUS for P0732 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.

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BACK

DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.

4. Measure the line pressure (see page 14-238).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 9.

5. Measure the 3rd clutch pressure (see page 14-238).

   Is the 3rd clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A, B, and C are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 9.

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 3rd gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

8. Monitor the OBD STATUS for P0733 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair the 3rd clutch, or replace the transmission, then go to step 9.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 7 and recheck.

9. Clear the DTC with the HDS.

10. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 3rd gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

11. Monitor the OBD STATUS for P0733 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Measure the line pressure (see page 14-238).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 9.
5. Measure the 4th clutch pressure (see page 14-238).

   Is the 4th clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A, B, C, and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 9.
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 4th gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.
8. Monitor the OBD STATUS for P0734 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair the 4th clutch, or replace the transmission, then go to step 9.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 7 and recheck.
9. Clear the DTC with the HDS.
10. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 4th gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.
11. Monitor the OBD STATUS for P0734 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.

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DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Measure the line pressure (see page 14-238).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 9.
5. Measure the 5th clutch pressure (see page 14-238).

   Is the 5th clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A, B, C, and D are stuck. Repair these valves and the hydraulic circuit, replace the transmission, then go to step 9.
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 5th gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.
8. Monitor the OBD STATUS for P0735 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair the 5th clutch, or replace the transmission, then go to step 9.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 7 and recheck.
9. Clear the DTC with the HDS.
10. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 5th gear in the M position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.
11. Monitor the OBD STATUS for P0735 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Choose Shift Solenoid E in the Miscellaneous Test Menu, and check that shift solenoid valve D operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Replace shift solenoid valve D (see page 14-242), then go to step 11.
6. Run the engine until the engine coolant temperature reaches 176 °F (80 °C).
7. Choose Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Is the result NORMAL?

   YES—Go to step 8.

   NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
8. Test-drive the vehicle on a level road with a steady throttle at 60 mph (100 km/h) for 30 seconds.
9. Monitor the OBD STATUS for P0741 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair the faulty torque converter clutch mechanism, torque converter clutch hydraulic circuit, lock-up shift valve, or lock-up control valve, or replace the transmission, then go to step 11.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 8 and recheck.
10. Inspect A/T clutch pressure control solenoid valve C (see page 14-254).

    Does A/T clutch pressure control solenoid valve C work properly?

    YES—Repair the hydraulic system related to the lock-up shift valve, lock-up control valve, and lock-up timing valve, or replace the transmission, then go to step 11.

    NO—Replace A/T clutch pressure control solenoid valve C (see page 14-257), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
13. Monitor the OBD STATUS for P0741 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

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DTC P0746: A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0746 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Is the result NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

   NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve A (see page 14-246).

    Does A/T clutch pressure control solenoid valve A work properly?

    YES—Repair the hydraulic system related with shift valve A, or replace the transmission, then go to step 11.

    NO—Replace A/T clutch pressure control solenoid valve A (see page 14-252), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD STATUS for P0746 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0747 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Is the result NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

   NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve A (see page 14-246).

    Does A/T clutch pressure control solenoid valve A work properly?

    YES—Repair the hydraulic system related with shift valve A, or replace the transmission, then go to step 11.

    NO—Replace A/T clutch pressure control solenoid valve A (see page 14-252), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD STATUS for P0747 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

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BACK

DTC P0751: Shift Solenoid Valve A Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0751 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Shift Solenoid A in the Miscellaneous Test Menu, and check that shift solenoid valve A operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve A (see page 14-242), then go to step 13.
10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD STATUS for P0751 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    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 HDS indicates NOT COMPLETED, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD STATUS for P0751 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0752 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Shift Solenoid A in the Miscellaneous Test Menu, and check that shift solenoid valve A operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve A (see page 14-242), then go to step 13.
10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD STATUS for P0752 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    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 HDS indicates NOT COMPLETED, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD STATUS for P0752 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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BACK

DTC P0756: Shift Solenoid Valve B Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0756 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Shift Solenoid B in the Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-242), then go to step 13.
10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD STATUS for P0756 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    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 HDS indicates NOT COMPLETED, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD STATUS for P0756 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0757 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Shift Solenoid B in the Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-242), then go to step 13.
10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD STATUS for P0757 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    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 HDS indicates NOT COMPLETED, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD STATUS for P0757 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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BACK

DTC P0761: Shift Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.

4. Clear the DTC with the HDS.

5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

7. Monitor the OBD STATUS for P0761 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid C in the Miscellaneous Test Menu, and check that shift solenoid valve C operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve C (see page 14-242), then go to step 13.

10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

12. Monitor the OBD STATUS for P0761 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    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 HDS indicates NOT COMPLETED, return to step 10 and recheck.

13. Clear the DTC with the HDS.

14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

16. Monitor the OBD STATUS for P0761 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0762: Shift Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0762 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Shift Solenoid C in the Miscellaneous Test Menu, and check that shift solenoid valve C operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve C (see page 14-242), then go to step 13.
10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD STATUS for P0762 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    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 HDS indicates NOT COMPLETED, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD STATUS for P0762 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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BACK

DTC P0766: Shift Solenoid Valve D Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0766 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Shift Solenoid D in the Miscellaneous Test Menu, and check that shift solenoid valve D operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve D (see page 14-242), then go to step 13.
10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD STATUS for P0766 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    YES—Repair shift valve D, or replace the transmission, then go to step 13.

    NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD STATUS for P0766 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0767: Shift Solenoid Valve D Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0767 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Shift Solenoid D in the Miscellaneous Test Menu, and check that shift solenoid valve D operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve D (see page 14-242), then go to step 13.
10. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD STATUS for P0767 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate FAILED?

    YES—Repair shift valve D, or replace the transmission, then go to step 13.

    NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 10 and recheck.
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD STATUS for P0767 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

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BACK

DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0776 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Clutch Pressure Control (Linear) Solenoid B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Is the result NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

   NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve B (see page 14-249).

    Does A/T clutch pressure control solenoid valve B work properly?

    YES—Repair the 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 page 14-252), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD STATUS for P0776 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0777 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Clutch Pressure Control (Linear) Solenoid B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Is the result NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

   NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve B (see page 14-249).

    Does A/T clutch pressure control solenoid valve B work properly?

    YES—Repair the 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 page 14-252), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD STATUS for P0777 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

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DTC P0796: A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0796 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Is the result NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

   NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve C (see page 14-254).

    Does A/T clutch pressure control solenoid valve C work properly?

    YES—Repair the hydraulic system related with shift valve C, or replace the transmission, then go to step 11.

    NO—Replace A/T clutch pressure control solenoid valve C (see page 14-257), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD STATUS for P0796 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0797: A/T Clutch Pressure Control Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD STATUS for P0797 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Choose Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Is the result NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

   NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve C (see page 14-254).

    Does A/T clutch pressure control solenoid valve C work properly?

    YES—Repair the hydraulic system related with shift valve C, or replace the transmission, then go to step 11.

    NO—Replace A/T clutch pressure control solenoid valve C (see page 14-257), then go to step 11.
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Test-drive the vehicle again in the D position through all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD STATUS for P0797 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 1 and recheck. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

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DTC P0812: Open in Transmission Range Switch ATP R Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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.

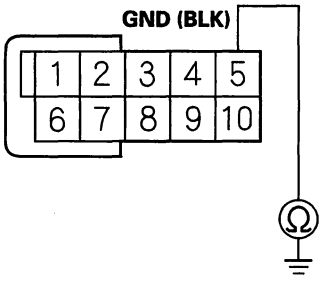
   Is the A/T R SWITCH ON?

   YES—Intermittent failure, the system is OK at this time.■

   NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Disconnect the transmission range switch connector.
5. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 6.

NO—Repair open in the wire between transmission range switch connector terminal No. 5 and ground (G101), or repair poor ground (G101), then go to step 14.

(cont'd)

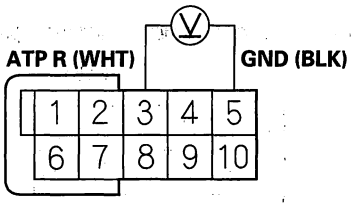
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DTC Troubleshooting (cont'd)

6. Turn the ignition switch ON (II).

7. Measure the voltage between transmission range switch connector terminals No. 3 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

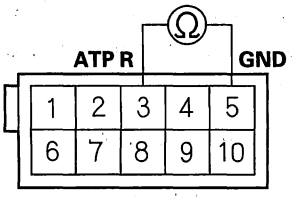
Is there voltage?

YES—Go to step 8.

NO—Repair open in the wire between PCM connector terminal C25 and the transmission range switch, then go to step 14.

8. Check for continuity between transmission range switch connector terminals No. 3 and No. 5 while the shift lever is in each position.

TRANSMISSION RANGE SWITCH CONNECTOR



Terminal side of male terminals

Is there continuity while the shift lever is in the P, R, and N positions, and no continuity while the shift lever is in the D and D3?

YES—Check for poor connections and loose terminals at the transmission range switch and the PCM. If the connections are OK, go to step 9.

NO—Replace the transmission range switch (see page 14-316), then go to step 9.

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9. Reconnect the transmission range switch connector.

10. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

11. Test-drive the vehicle in the R position at speeds below 3 mph (5 km/h) for more than 2 seconds, then increase the speed and test-drive at speeds over 3 mph (5 km/h) for more than 2 seconds. Slow down and stop the wheels.

12. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0812 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 13.

13. Monitor the OBD STATUS for P0812 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 12, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 11 and recheck.

14. Clear the DTC with the HDS.

15. Test-drive the vehicle in the R position at speeds below 3 mph (5 km/h) for more than 2 seconds, then increase the speed and test-drive at speeds over 3 mph (5 km/h) for more than 2 seconds. Slow down and stop the wheels.

16. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0812 indicated?

    YES—Check for poor connections and loose terminals at the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for P0812 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 16, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 15 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0815: Short in Transmission Gear Selection Switch Upshift Switch Circuit, or Transmission Gear Selection Switch Upshift Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 upshift switch signal input with the HDS in the A/T data list.

   Is UPSHIFT SW ON?

   YES—Go to step 4.

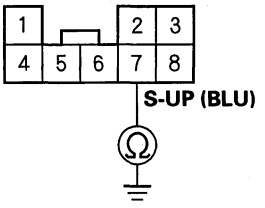
   NO—Intermittent failure, the system is OK at this time. Check the S-UP (BLU) wire for an intermittent short to ground between the transmission gear selection switch and the PCM.■
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector at the shift lever bracket.
6. Turn the ignition switch ON (II).
7. Verify the transmission gear selection switch upshift switch signal input 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 page 14-319), then go to step 19.
8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).
11. Check for continuity between transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector terminal No. 7 and body ground.

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal A36 and the transmission gear selection switch, then go to step 19.

NO—Go to step 12.

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12. Reconnect all connectors.

13. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

14. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

15. Push the shift lever toward the upshift position (+) slowly, and release it; repeat this test 10 times or more.

16. Pull the shift lever toward the downshift position (−) slowly, and release it; repeat this test 10 times or more.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0815 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0815 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

19. Clear the DTC with the HDS.

20. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

21. Push the shift lever toward the upshift position (+) slowly, and release it; repeat this test 10 times or more.

22. Pull the shift lever toward the downshift position (−) slowly, and release it; repeat this test 10 times or more.

23. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0815 indicated?

    YES—Check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1.

    NO—Go to step 24.

24. Monitor the OBD status for P0815 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 23, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0816: Short in Transmission Gear Selection Switch Downshift Switch Circuit, or Transmission Gear Selection Switch Downshift Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 signal input with the HDS in the A/T data list.

   Is DOWNSHIFT SW ON?

   YES—Go to step 4.

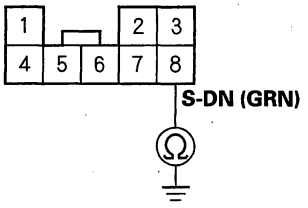
   NO—Intermittent failure, the system is OK at this time. Check the S-DN (GRN) wire for an intermittent short to ground between the transmission gear selection switch and PCM.■
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector at the shift lever bracket.
6. Turn the ignition switch ON (II).
7. Verify the transmission gear selection switch downshift switch signal input 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 page 14-319), then go to step 19.
8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).
11. Check for continuity between transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector terminal No. 8 and body ground.

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal A37 and the transmission gear selection switch, then go to step 19.

NO—Go to step 12.

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12. Reconnect all connectors.

13. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

14. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

15. Push the shift lever toward the upshift position (+) slowly, and release it; repeat this test 10 times or more.

16. Pull the shift lever toward the downshift position (—) slowly, and release it; repeat this test 10 times or more.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0816 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0816 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

19. Clear the DTC with the HDS.

20. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

21. Push the shift lever toward the upshift position (+) slowly, and release it; repeat this test 10 times or more.

22. Pull the shift lever toward the downshift position (—) slowly, and release it; repeat this test 10 times or more.

23. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0816 indicated?

    YES—Check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1.

    NO—Go to step 24.

24. Monitor the OBD status for P0816 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 23, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0842: Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 PRESSURE SWITCH signal with the HDS in the A/T data list when not in 2nd gear.

   Is the 2nd PRESSURE SWITCH OFF?

   YES—Go to step 3.

   NO—Go to step 6.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 2nd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.
5. Monitor the OBD STATUS for P0842 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

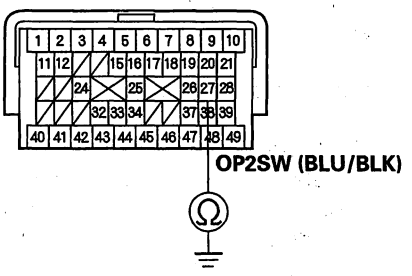
   NO—Intermittent failure, the system is OK at this time. Check the OP2SW wire for an intermittent short to ground between the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the 2nd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Check the 2nd PRESSURE SWITCH signal with the HDS in the A/T data list.

   Is the 2nd PRESSURE SWITCH OFF?

   YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-261), then go to step 19.

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (49P).
13. Check for continuity between PCM connector terminal C27 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C27 and the 2nd clutch transmission fluid pressure switch, then go to step 19.

NO—Go to step 14.

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14. Reconnect all connectors.

15. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

16. Drive the vehicle in 2nd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0842 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0842 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 16 and recheck.

19. Clear the DTC with the HDS.

20. Drive the vehicle in 2nd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.

21. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0842 indicated?

    YES—Check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0842 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 21, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0843: Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE: Before you troubleshoot, record all freeze data freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Shift the shift lever into the M position while pressing the brake pedal, upshift to 2nd gear by pushing the shift lever to upshift position, and verify with the HDS in the A/T data list that the SHIFT COMMAND indicates 2nd.
4. Check the 2nd PRESSURE SWITCH signal with the HDS in the A/T data list.

   Is the 2nd PRESSURE SWITCH ON?

   YES—Go to step 5.

   NO—Go to step 7.

5. Drive the vehicle in 2nd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.
6. Monitor the OBD STATUS for P0843 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.

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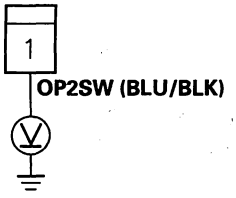
7. Turn the ignition switch OFF.

8. Disconnect the 2nd clutch transmission fluid pressure switch connector.

9. Turn the ignition switch ON (II).

10. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-261), then go to step 20.

NO—Go to step 11.

11. Turn the ignition switch OFF.

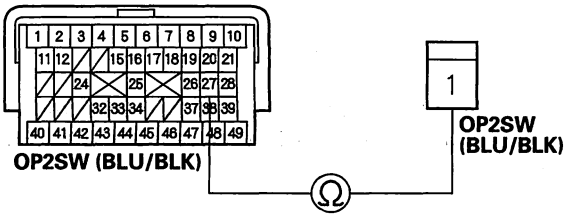
12. Jump the SCS line with the HDS.

13. Disconnect PCM connector C (49P).

14. Check for continuity between PCM connector terminal C27 and the 2nd clutch transmission fluid pressure switch connector terminal.

PCM CONNECTOR C (49P)

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM. If the connections are OK, go to step 15.

NO—Repair open in the wire between PCM connector terminal C27 and the 2nd clutch transmission fluid pressure switch, then go to step 20.

(cont'd)

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DTC Troubleshooting (cont'd)

15. Reconnect all connectors.

16. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

17. Drive the vehicle in 2nd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0843 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0843 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 17 and recheck.

20. Clear the DTC with the HDS.

21. Drive the vehicle in 2nd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0843 indicated?

    YES—Check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0843 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

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DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 PRESSURE SWITCH signal with the HDS in the A/T data list when not in 3rd gear.

   Is the 3rd PRESSURE SWITCH OFF?

   YES—Go to step 3.

   NO—Go to step 6.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
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 and stop the wheels.
5. Monitor the OBD STATUS for P0847 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

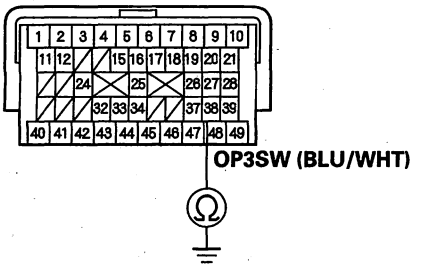
   NO—Intermittent failure, the system is OK at this time. Check the OP3SW wire for an intermittent short to ground between the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the 3rd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Check the 3rd PRESSURE SWITCH signal with the HDS in the A/T data list.

   Is the 3rd PRESSURE SWITCH OFF?

   YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-262), then go to step 19.

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (49P).
13. Check for continuity between PCM connector terminal C38 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C38 and the 3rd clutch transmission fluid pressure switch, then go to step 19.

NO—Go to step 14.

(cont'd)

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DTC Troubleshooting (cont'd)

14. Reconnect all connectors.

15. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

16. 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 and stop the wheels.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0847 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0847 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 16 and recheck.

19. Clear the DTC with the HDS.

20. Drive the vehicle in 3rd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.

21. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0847 indicated?

    YES—Check for poor connections and loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0847 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 21, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Drive the vehicle in 3rd gear in the M position, and verify with the HDS in the A/T data list that the SHIFT COMMAND indicates 3rd.
4. Check the 3rd PRESSURE SWITCH signal with the HDS in the A/T data list.

   Is the 3rd PRESSURE SWITCH ON?

   YES—Go to step 5.

   NO—Go to step 7.

5. 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 and stop the wheels.
6. Monitor the OBD STATUS for P0848 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

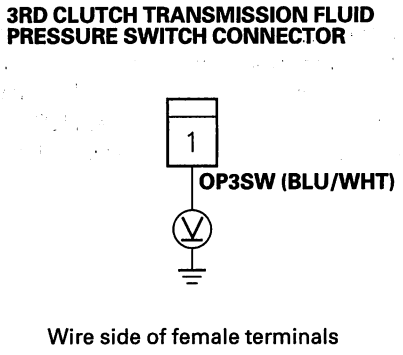
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.

(cont'd)

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DTC Troubleshooting (cont'd)

7. Turn the ignition switch OFF.
8. Disconnect the 3rd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch ON (II).
10. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

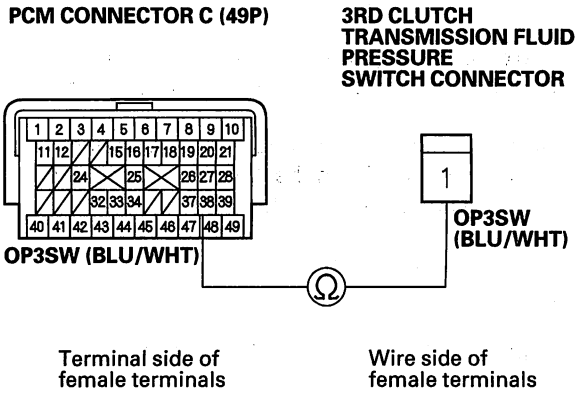


Is there about 5 V?

YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-262), then go to step 20.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector C (49P).
14. Check for continuity between PCM connector terminal C38 and the 3rd clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Check for poor connections and loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the connections are OK, go to step 15.

NO—Repair open in the wire between PCM connector terminal C38 and the 3rd clutch transmission fluid pressure switch, then go to step 20.

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15. Reconnect all connectors.

16. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

17. 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 and stop the wheels.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0848 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0848 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 17 and recheck.

20. Clear the DTC with the HDS.

21. Drive the vehicle in 3rd gear in the M position for more than 5 seconds, then upshift to 3rd gear, and drive in 3rd gear for more than 5 seconds. Slow down and stop the wheels.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0848 indicated?

    YES—Check for poor connections and loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0848 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0872: Short in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 4th PRESSURE SWITCH signal with the HDS in the A/T data list when not in 4th gear.

   Is the 4th PRESSURE SWITCH OFF?

   YES—Go to step 3.

   NO—Go to step 6.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 4th gear in the M position for more than 5 seconds, then upshift to 5th gear, and drive in 5th gear for more than 5 seconds. Slow down and stop the wheels.
5. Monitor the OBD STATUS for P0872 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

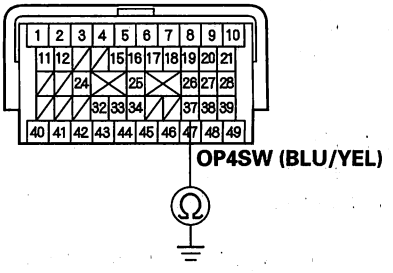
   NO—Intermittent failure, the system is OK at this time. Check the OP4SW wire for an intermittent short to ground between the 4th clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
6. Turn the ignition switch OFF.
7. Disconnect the 4th clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Check the 4th PRESSURE SWITCH signal with the HDS in the A/T data list.

   Is the 4th PRESSURE SWITCH OFF?

   YES—Replace the 4th clutch transmission fluid pressure switch (see page 14-263), then go to step 19.

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (49P).
13. Check for continuity between PCM connector terminal C37 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C37 and the 4th clutch transmission fluid pressure switch, then go to step 19.

NO—Go to step 14.

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14. Reconnect all connectors.

15. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

16. Drive the vehicle in 4th gear in the M position for more than 5 seconds, then upshift to 5th gear, and drive in 5th gear for more than 5 seconds. Slow down and stop the wheels.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0872 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0872 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 16 and recheck.

19. Clear the DTC with the HDS.

20. Drive the vehicle in 4th gear in the M position for more than 5 seconds, then upshift to 5th gear, and drive in 5th gear for more than 5 seconds. Slow down and stop the wheels.

21. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0872 indicated?

    YES—Check for poor connections and loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0872 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 21, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0873: Open in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Drive the vehicle in 4th gear in the M position, and verify with the HDS in the A/T data list that the SHIFT COMMAND indicates 4th.
4. Check the 4th PRESSURE SWITCH signal with the HDS in the A/T data list.

   Is the 4th PRESSURE SWITCH ON?

   YES—Go to step 5.

   NO—Go to step 7.

5. Drive the vehicle in 4th gear in the M position for more than 5 seconds, then upshift to 5th gear, and drive in 5th gear for more than 5 seconds. Slow down and stop the wheels.
6. Monitor the OBD STATUS for P0873 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.

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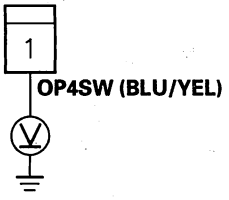
7. Turn the ignition switch OFF.

8. Disconnect the 4th clutch transmission fluid pressure switch connector.

9. Turn the ignition switch ON (II).

10. Measure the voltage between the 4th clutch transmission fluid pressure switch connector terminal and body ground.

4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 4th clutch transmission fluid pressure switch (see page 14-263), then go to step 20.

NO—Go to step 11.

11. Turn the ignition switch OFF.

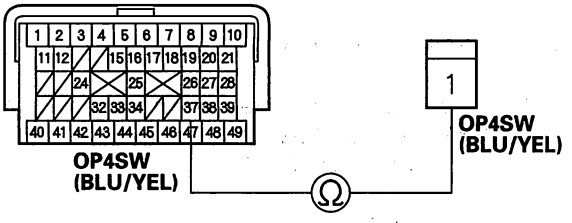
12. Jump the SCS line with the HDS.

13. Disconnect PCM connector C (49P).

14. Check for continuity between PCM connector terminal C37 and the 4th clutch transmission fluid pressure switch connector terminal.

PCM CONNECTOR C (49P)

4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Check for poor connections and loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the connections are OK, go to step 15.

NO—Repair open in the wire between PCM connector terminal C37 and the 4th clutch transmission fluid pressure switch, then go to step 20.

(cont'd)

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DTC Troubleshooting (cont'd)

15. Reconnect all connectors.

16. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

17. Drive the vehicle in 4th gear in the M position for more than 5 seconds, then upshift to 5th gear, and drive in 5th gear for more than 5 seconds. Slow down and stop the wheels.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0873 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0873 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 17 and recheck.

20. Clear the DTC with the HDS.

21. Drive the vehicle in 4th 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 and stop the wheels.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0873 indicated?

    YES—Check for poor connections and loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0873 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

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BACK

DTC P0957: Short in Transmission Gear Selection Switch Circuit, or Transmission Gear Selection Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 signal input with the HDS in the A/T data list.

   Is sequential sportshift mode switch ON?

   YES—Go to step 4.

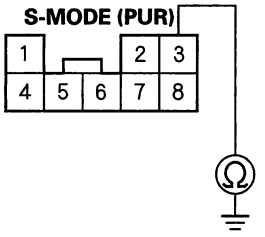
   NO—Intermittent failure, the system is OK at this time. Check the S-MODE wire for an intermittent short to ground between the transmission gear selection switch and the PCM. ■
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector at the shift lever bracket.
6. Turn the ignition switch ON (II).
7. Verify the transmission gear selection switch sequential sportshift mode switch signal input 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 page 14-319), then go to step 19.
8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).
11. Check for continuity between transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector terminal No. 3 and body ground.

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal A47 and the transmission gear selection switch, then go to step 19.

NO—Go to step 12.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Reconnect all connectors.

13. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

14. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

15. Push the shift lever toward upshift position (+) slowly, and release it; repeat this test 10 times or more.

16. Pull the shift lever toward downshift position (−) slowly, and release it; repeat this test 10 times or more.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0957 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0957 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 14 and recheck.

19. Clear the DTC with the HDS.

20. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

21. Push the shift lever toward upshift position (+) slowly, and release it; repeat this test 10 times or more.

22. Pull the shift lever toward downshift position (−) slowly, and release it; repeat this test 10 times or more.

23. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0957 indicated?

    YES—Check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for P0957 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 23, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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BACK

DTC P0958: Open in Transmission Gear Selection Switch Circuit, or Transmission Gear Selection Switch Stuck OFF

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

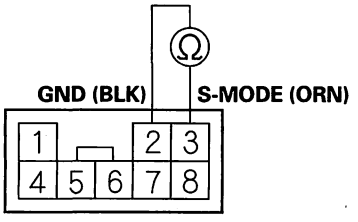
1. Turn the ignition switch ON (II).
2. Shift to the M position.
3. Verify the transmission gear selection switch sequential sportshift mode switch signal input with the HDS in the A/T data list.

   Is sequential sportshift mode switch OFF?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at the transmission gear selection switch and the PCM. ■
4. Turn the ignition switch OFF.
5. Disconnect the transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector at the shift lever bracket.
6. Check for continuity between transmission gear selection switch/park pin switch/A/T gear position indicator light harness connector terminals No. 2 and No. 3.

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Terminal side of female terminals

Is there continuity while the shift lever is in the M position, and no continuity when the shift lever is in any position other than M?

YES—Go to step 7.

NO—Replace the transmission gear selection switch (see page 14-319), then go to step 20.

(cont'd)

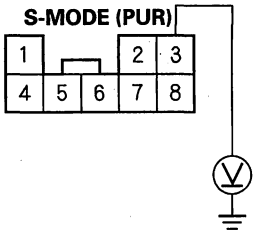
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DTC Troubleshooting (cont'd)

7. Turn the ignition switch ON (II).

8. Measure the voltage between transmission gear selection switch/park pin switch/A/T gear position indicator light connector terminal No. 3 and body ground.

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between transmission gear selection switch/park pin switch/ A/T gear position indicator panel light connector and ground (G503), or repair poor ground (G503), then go to step 20.

NO—Go to step 9.

9. Turn the ignition switch OFF.

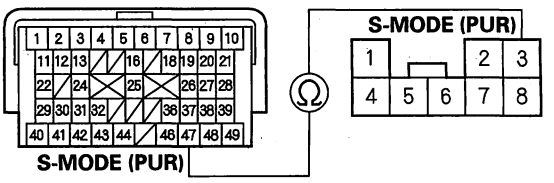
10. Jump the SCS line with the HDS.

11. Disconnect PCM connector A (49P).

12. Check for continuity between PCM connector terminal A47 and transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector terminal No. 3.

PCM CONNECTOR A (49P)

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/ A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Repair open in the wire between PCM connector terminal A47 and the transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector, then go to step 20.

NO—Go to step 13.

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BACK

13. Reconnect all connectors.

14. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

15. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

16. Push the shift lever toward upshift position (+) slowly, and release it; repeat this test 10 times or more.

17. Pull the shift lever toward downshift position (−) slowly, and release it; repeat this test 10 times or more.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0958 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0958 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 15 and recheck.

20. Clear the DTC with the HDS.

21. Start the engine in the P position, wait for more than 10 seconds, then shift to the M position.

22. Push the shift lever toward upshift position (+) slowly, and release it; repeat this test 10 times or more.

23. Pull the shift lever toward downshift position (−) slowly, and release it; repeat this test 10 times or more.

24. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0958 indicated?

    YES—Check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1.

    NO—Go to step 25.

25. Monitor the OBD STATUS for P0958 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 24, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission gear selection switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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. Choose Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Is the result NORMAL?

   YES—Go to step 4.

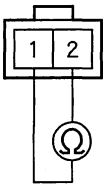
   NO—Go to step 6.
4. Choose Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and command A/T clutch pressure control solenoid valve A at 1.0 A with the HDS.
5. Monitor the OBD STATUS for P0962 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, 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 the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

Is there 3— 10 Ω ?

YES—Go to step 9.

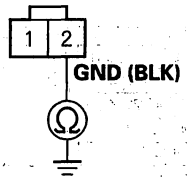
NO—Replace A/T clutch pressure control solenoid valve A (see page 14-252), then go to step 24.

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9. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

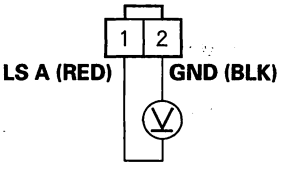
YES—Go to step 10.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101), or repair poor ground (G101), then go to step 24.

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.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there momentarily battery voltage when the ignition switch is turned ON (II)?

YES—Go to step 19.

NO—Check for open or short in the wire between PCM connector terminal C21 and A/T clutch pressure control solenoid valve A, if the wiring is OK, go to step 12.

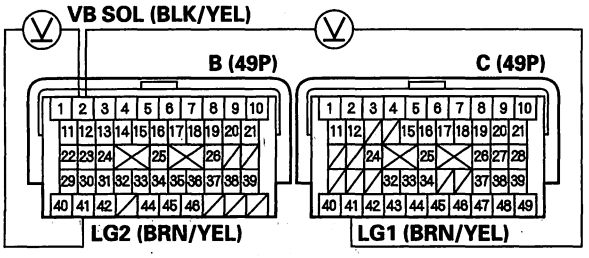
(cont'd)

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connectors B (49P) and C (49P).
15. Turn the ignition switch ON (II).
16. Measure the voltage between PCM connector terminals B2 and B41 or C41.

PCM CONNECTORS



Terminal side of female terminals

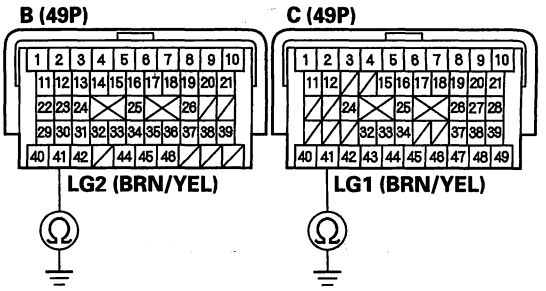
Is there battery voltage?

YES—Go to step 19.

NO—Go to step 17.

17. Turn the ignition switch OFF.
18. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Check for a blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal B2 and the under-dash fuse/relay box, then go to step 24.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 24.

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19. Reconnect all connectors.

20. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0962 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0962 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

24. Clear the DTC with the HDS.

25. Test-drive the vehicle for several minutes in the D position through all five gears.

26. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0962 indicated?

    YES—Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0962 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 26, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 25 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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. Choose Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Is the result NORMAL?

   YES—Go to step 4.

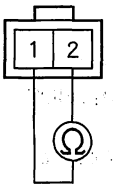
   NO—Go to step 6.
4. Choose Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and command A/T clutch pressure control solenoid valve A at 0.2 A with the HDS.
5. Monitor the OBD STATUS for P0963 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, 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 the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

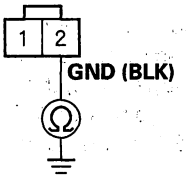
Is there 3— 10 Ω ?

YES—Go to step 9.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-252), then go to step 15.

9. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101), or repair poor ground (G101), then go to step 15.

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10. Reconnect the A/T clutch pressure control solenoid valve A connector.

11. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

12. Test-drive the vehicle for several minutes in the D position through all five gears.

13. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0963 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0963 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 13, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

15. Clear the DTC with the HDS.

16. Test-drive the vehicle for several minutes in the D position through all five gears.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0963 indicated?

    YES—Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0963 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 16 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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. Choose Clutch Pressure Control (Linear) Solenoid B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Is the result NORMAL?

   YES—Go to step 4.

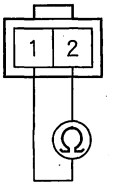
   NO—Go to step 6.
4. Choose Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and command A/T clutch pressure control solenoid valve B at 1.0 A with the HDS.
5. Monitor the OBD STATUS for P0966 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, 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 the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

Is there 3— 10 Ω ?

YES—Go to step 9.

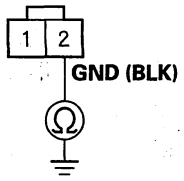
NO—Replace A/T clutch pressure control solenoid valve B (see page 14-252), then go to step 24.

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9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

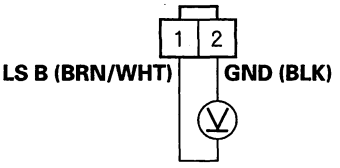
YES—Go to step 10.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101), or repair poor ground (G101), then go to step 24.

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.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there momentarily battery voltage when the ignition switch is turned ON (II)?

YES—Go to step 19.

NO—Check for open or short in the wire between PCM connector terminal B10 and A/T clutch pressure control solenoid valve B, if the wiring is OK, go to step 12.

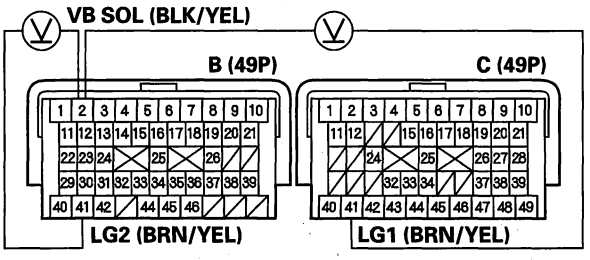
(cont'd)

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connectors B (49P) and C (49P).
15. Turn the ignition switch ON (II).
16. Measure the voltage between PCM connector terminals B2 and B41 or C41.

PCM CONNECTORS



Terminal side of female terminals

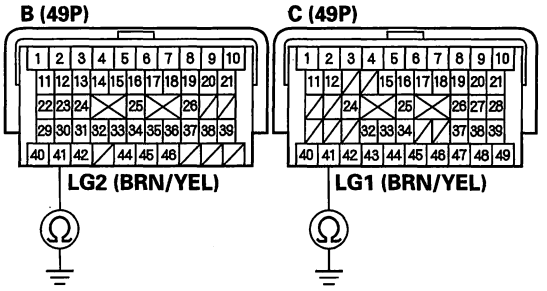
Is there battery voltage?

YES—Go to step 19.

NO—Go to step 17.

17. Turn the ignition switch OFF.
18. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Check for a blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal B2 and the under-dash fuse/relay box, then go to step 24.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 24.

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19. Reconnect all connectors.

20. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0966 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0966 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

24. Clear the DTC with the HDS.

25. Test-drive the vehicle for several minutes in the D position through all five gears.

26. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0966 indicated?

    YES—Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0966 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 26, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 25 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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. Choose Clutch Pressure Control (Linear) Solenoid B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Is the result NORMAL?

   YES—Go to step 4.

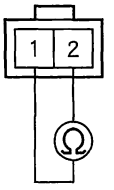
   NO—Go to step 6.
4. Choose Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and command A/T clutch pressure control solenoid valve B at 0.2 A with the HDS.
5. Monitor the OBD STATUS for P0967 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, 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 the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



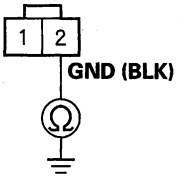
   Terminal side of male terminals

   Is there 3– 10 Ω ?

   YES—Go to step 9.

   NO—Replace A/T clutch pressure control solenoid valve B (see page 14-252), then go to step 15.
9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES—Go to step 10.

   NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101), then go to step 15.

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10. Reconnect the A/T clutch pressure control solenoid valve B connector.

11. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

12. Test-drive the vehicle for several minutes in the D position through all five gears.

13. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0967 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0967 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 13, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

15. Clear the DTC with the HDS.

16. Test-drive the vehicle for several minutes in the D position through all five gears.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0967 indicated?

    YES—Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0967 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 16 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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. Choose Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Is the result NORMAL?

   YES—Go to step 4.

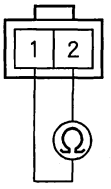
   NO—Go to step 6.
4. Choose Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and command A/T clutch pressure control solenoid valve C at 1.0 A with the HDS.
5. Monitor the OBD STATUS for P0970 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, 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 the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

Is there 3— 10 Ω ?

YES—Go to step 9.

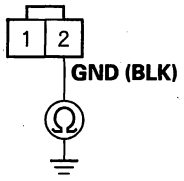
NO—Replace A/T clutch pressure control solenoid valve C (see page 14-257), then go to step 24.

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9. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

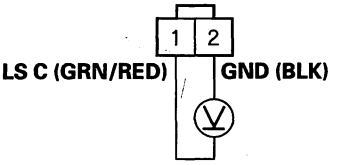
YES—Go to step 10.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101), then go to step 24.

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.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there momentarily battery voltage when the ignition switch is turned ON (II)?

YES—Go to step 19.

NO—Check for open or short in the wire between PCM connector terminal B21 and A/T clutch pressure control solenoid valve C, if the wiring is OK, go to step 12.

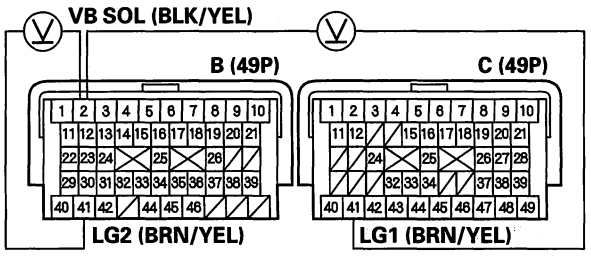
(cont'd)

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connectors B (49P) and C (49P).
15. Turn the ignition switch ON (II).
16. Measure the voltage between PCM connector terminals B2 and B41 or C41.

PCM CONNECTORS



Terminal side of female terminals

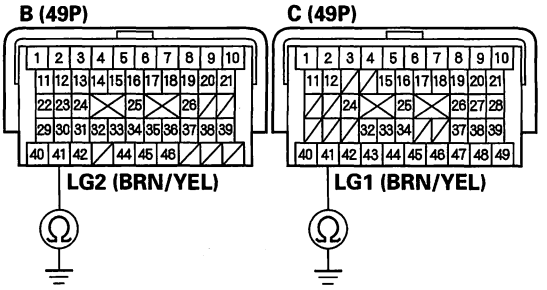
Is there battery voltage?

YES—Go to step 19.

NO—Go to step 17.

17. Turn the ignition switch OFF.
18. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Check for a blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal B2 and the under-dash fuse/relay box, then go to step 24.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 24.

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19. Reconnect all connectors.

20. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0970 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0970 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

24. Clear the DTC with the HDS.

25. Test-drive the vehicle for several minutes in the D position through all five gears.

26. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0970 indicated?

    YES—Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0970 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 26, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 25 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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. Choose Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Is the result NORMAL?

   YES—Go to step 4.

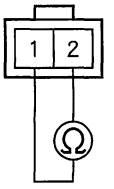
   NO—Go to step 6.
4. Choose Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and command A/T clutch pressure control solenoid valve C at 0.2 A with the HDS.
5. Monitor the OBD STATUS for P0971 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, 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 the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

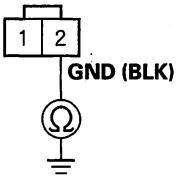
Is there 3— 10 Ω ?

YES—Go to step 9.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-257), then go to step 15.

9. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101), then go to step 15.

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10. Reconnect the A/T clutch pressure control solenoid valve C connector.

11. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

12. Test-drive the vehicle for several minutes in the D position through all five gears.

13. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0971 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0971 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 13, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

15. Clear the DTC with the HDS.

16. Test-drive the vehicle for several minutes in the D position through all five gears.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0971 indicated?

    YES—Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0971 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 16 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0973 recurs.

   Is DTC P0973 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

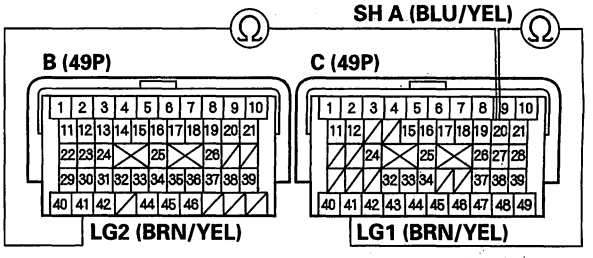
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0973 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check the SH A wire for an intermittent short to ground between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C20 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 11.

NO—Go to step 19.

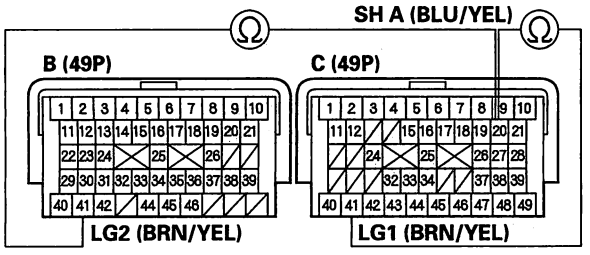
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BACK

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminals C20 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C20 and the shift solenoid harness connector, then go to step 24.

NO—Go to step 13.

13. Inspect shift solenoid valve A (see page 14-242).

Is shift solenoid valve A OK?

YES—Go to step 14.

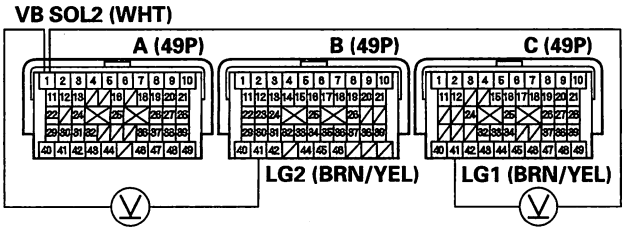
NO—Replace shift solenoid valve A or the shift solenoid harness (see page 14-242), then go to step 18.

14. Disconnect PCM connector A (49P).

15. Turn the ignition switch ON (II).

16. Measure the voltage between PCM connector terminals A1 and B41 or C41.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

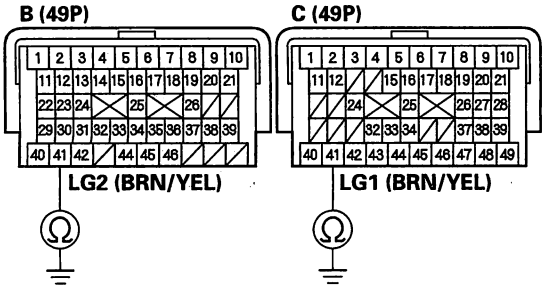
YES—Go to step 19.

NO—Go to step 17.

17. Turn the ignition switch OFF.

18. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Check for a blown No. 10 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal A1 and the under-dash fuse/relay box, then go to step 24.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 24.

(cont'd)

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DTC Troubleshooting (cont'd)

19. Reconnect all connectors.

20. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0973 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0973 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

24. Clear the DTC with the HDS.

25. Test-drive the vehicle for several minutes in the D position through all five gears.

26. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0973 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0973 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 26, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 25 and recheck.

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BACK

DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0974 recurs.

   Is DTC P0974 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

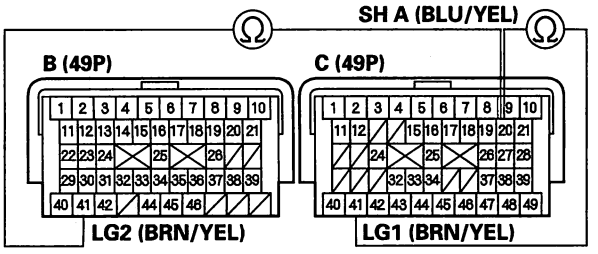
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0974 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C20 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 15.

NO—Go to step 11.

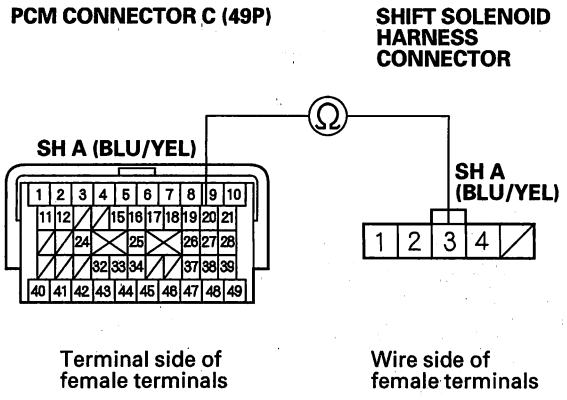
(cont'd)

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DTC Troubleshooting (cont'd)

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminal C20 and shift solenoid harness connector terminal No. 3.



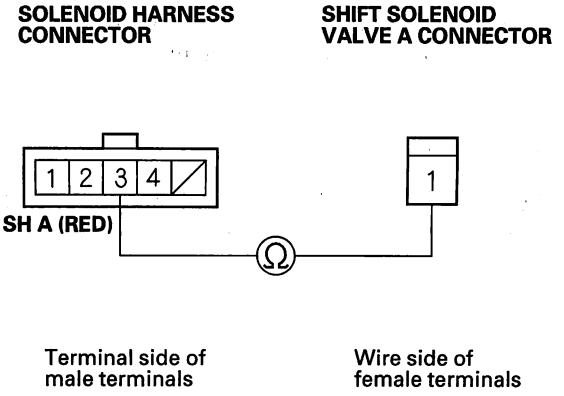
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between PCM connector terminal C20 and the shift solenoid harness connector, then go to step 20.

13. Remove the shift solenoid harness (see page 14-242).

14. Check for continuity between shift solenoid harness connector terminal No. 3 and the shift solenoid valve A connector terminal.



Is there continuity?

YES—Replace shift solenoid valve A (see page 14-242), then go to step 20.

NO—Replace the shift solenoid harness (see page 14-242), then go to step 20.

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BACK

15. Reconnect all connectors.

16. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

17. Test-drive the vehicle for several minutes in the D position through all five gears.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0974 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0974 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 17 and recheck.

20. Clear the DTC with the HDS.

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0974 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0974 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0976 recurs.

   Is DTC P0976 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

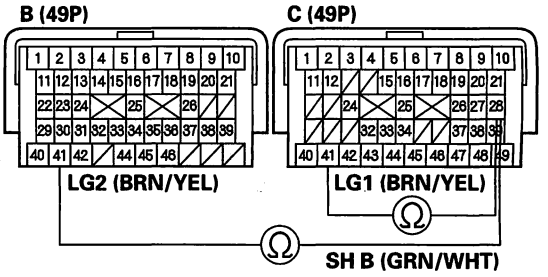
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0976 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check the SH B wire for an intermittent short to ground between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C28 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 11.

NO—Go to step 18.

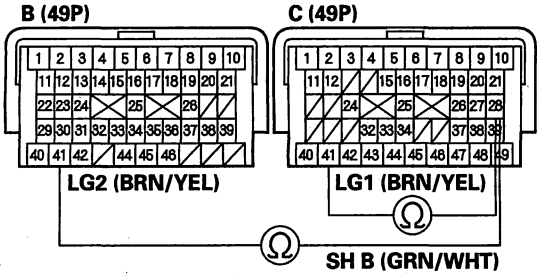
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BACK

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminals C28 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C28 and the shift solenoid harness connector, then go to step 23.

NO—Go to step 13.

13. Inspect shift solenoid valve B (see page 14-242).

Is shift solenoid valve B OK?

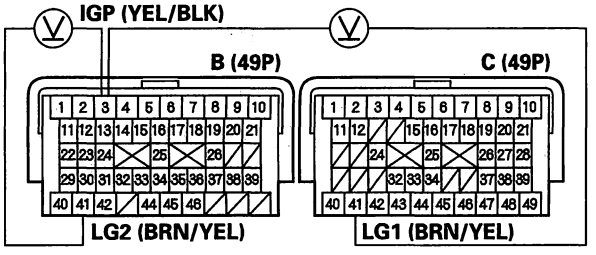
YES—Go to step 14.

NO—Replace shift solenoid valve B or the shift solenoid harness (see page 14-242), then go to step 23.

14. Turn the ignition switch ON (II).

15. Measure the voltage between PCM connector terminals B3 and B41 or C41.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Go to step 16.

(cont'd)

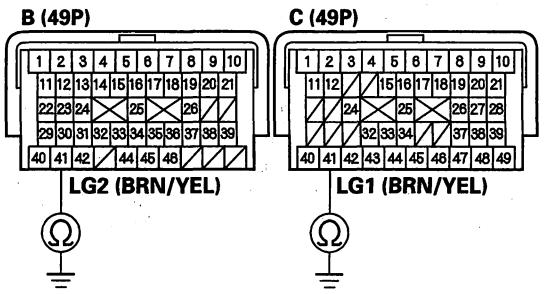
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DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.

17. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Check for a blown No. 19 fuse in the under-dash fuse/relay box, and check the PGM-FI main relay 1. If the fuse and relay are OK, repair open in the wire between PCM connector terminal B3 and the under-dash fuse/relay box via the main relay, then go to step 23.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 23.

18. Reconnect all connectors.

19. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

20. Test-drive the vehicle for several minutes in the D position through all five gears.

21. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

Is DTC P0976 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for P0976 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 21, go to the indicated DTC's troubleshooting. ■

NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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BACK

23. Clear the DTC with the HDS.

24. Test-drive the vehicle for several minutes in the D position through all five gears.

25. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0976 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0976 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 24 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0977 recurs.

   Is DTC P0977 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

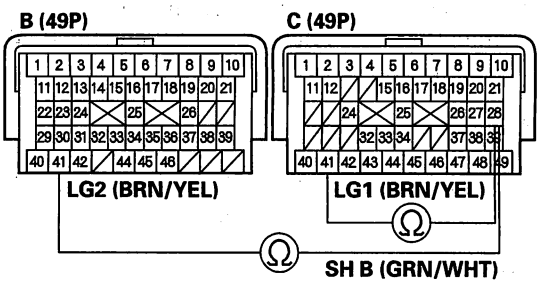
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0977 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C28 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 15.

NO—Go to step 11.

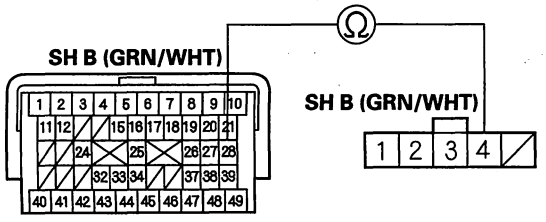
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BACK

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminal C28 and shift solenoid harness connector terminal No. 4.

PCM CONNECTOR C (49P) | **SHIFT SOLENOID HARNESS CONNECTOR**



Terminal side of female terminals | Wire side of female terminals

Is there continuity?

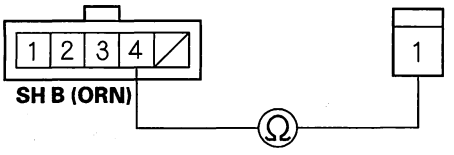
YES—Go to step 13.

NO—Repair open in the wire between PCM connector terminal C28 and the shift solenoid harness connector, then go to step 15.

13. Remove the shift solenoid harness (see page 14-242).

14. Check for continuity between shift solenoid harness connector terminal No. 4 and the shift solenoid valve B connector terminal.

SOLENOID HARNESS CONNECTOR | **SHIFT SOLENOID VALVE B CONNECTOR**



Terminal side of male terminals | Wire side of female terminals

Is there continuity?

YES—Replace shift solenoid valve B (see page 14-242), then go to step 20.

NO—Replace the shift solenoid harness (see page 14-242), then go to step 20.

(cont'd)

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DTC Troubleshooting (cont'd)

15. Reconnect all connectors.

16. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

17. Test-drive the vehicle for several minutes in the D position through all five gears.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0977 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0977 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 17 and recheck.

20. Clear the DTC with the HDS.

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0977 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0977 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

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BACK

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0979 recurs.

   Is DTC P0979 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

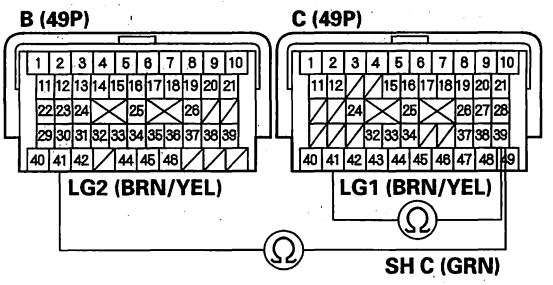
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0979 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check the SH C wire for an intermittent short to ground between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C39 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 11.

NO—Go to step 18.

(cont'd)

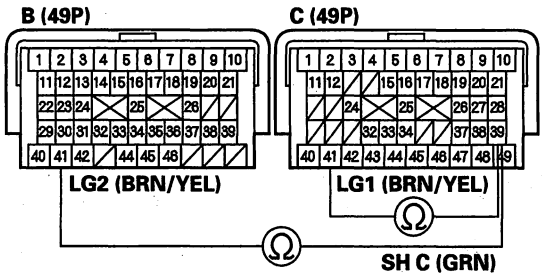
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DTC Troubleshooting (cont'd)

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminals C39 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C39 and the shift solenoid harness connector, then go to step 23.

NO—Go to step 13.

13. Inspect shift solenoid valve C (see page 14-242).

Is shift solenoid valve C OK?

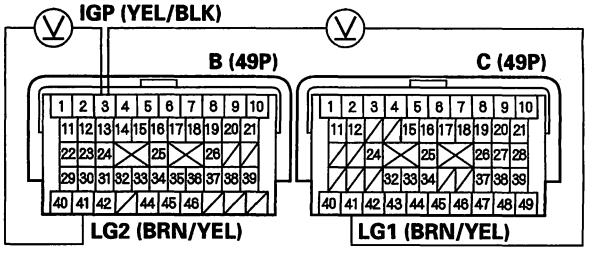
YES—Go to step 14.

NO—Replace shift solenoid valve C or the shift solenoid harness (see page 14-242), then go to step 23.

14. Turn the ignition switch ON (II).

15. Measure the voltage between PCM connector terminals B3 and B41 or C41.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Go to step 16.

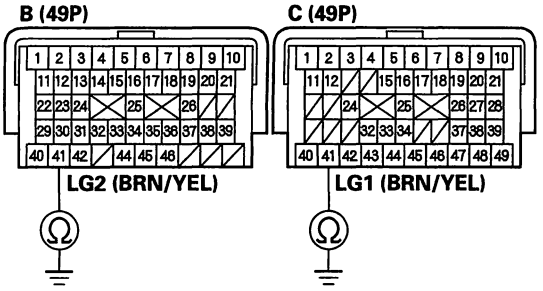
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BACK

16. Turn the ignition switch OFF.

17. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Check for a blown No. 19 fuse in the under-dash fuse/relay box, and check the PGM-FI main relay 1. If the fuse and relay are OK, repair open in the wire between PCM connector terminal B3 and the under-dash fuse/relay box via the main relay, then go to step 23.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 23.

18. Reconnect all connectors.

19. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

20. Test-drive the vehicle for several minutes in the D position through all five gears.

21. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

Is DTC P0979 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for P0979 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 21, go to the indicated DTC's troubleshooting. ■

NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

(cont'd)

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DTC Troubleshooting (cont'd)

23. Clear the DTC with the HDS.

24. Test-drive the vehicle for several minutes in the D position through all five gears.

25. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0979 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0979 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 24 and recheck.

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BACK

DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0980 recurs.

   Is DTC P0980 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

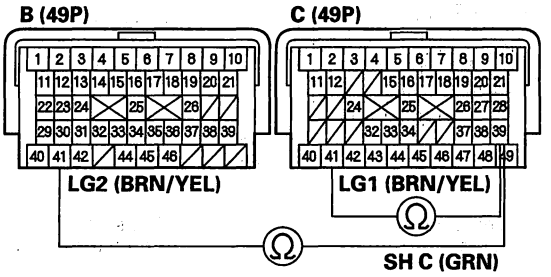
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0980 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C39 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 15.

NO—Go to step 11.

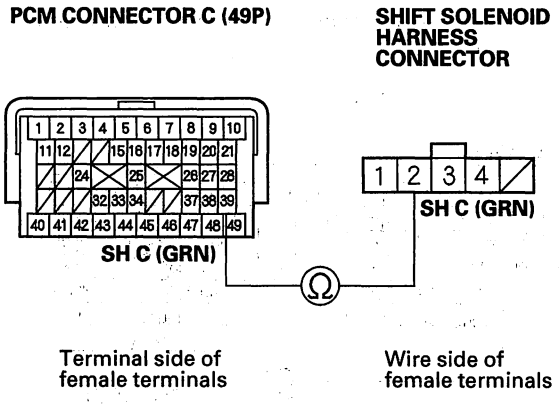
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DTC Troubleshooting (cont'd)

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminal C39 and shift solenoid harness connector terminal No. 2.



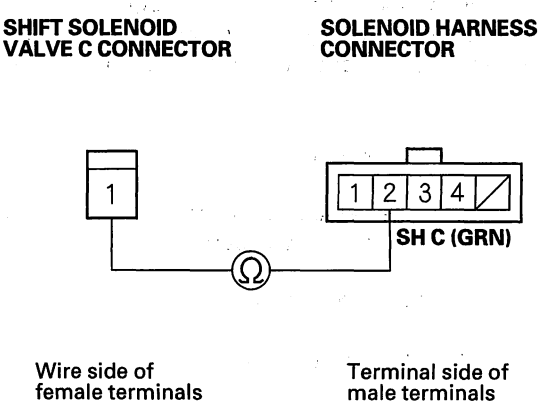
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between PCM connector terminal C39 and the shift solenoid harness connector, then go to step 20.

13. Remove the shift solenoid harness (see page 14-242).

14. Check for continuity between shift solenoid harness connector terminal No. 2 and the shift solenoid valve C connector terminal.



Is there continuity?

YES—Replace shift solenoid valve C (see page 14-242), then go to step 20.

NO—Replace the shift solenoid harness (see page 14-242), then go to step 20.

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15. Reconnect all connectors.

16. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

17. Test-drive the vehicle for several minutes in the D position through all five gears.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0980 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0980 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 17 and recheck.

20. Clear the DTC with the HDS.

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0980 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0980 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

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DTC Troubleshooting (cont'd)

DTC P0982: Short in Shift Solenoid Valve D Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0982 recurs.

   Is DTC P0982 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

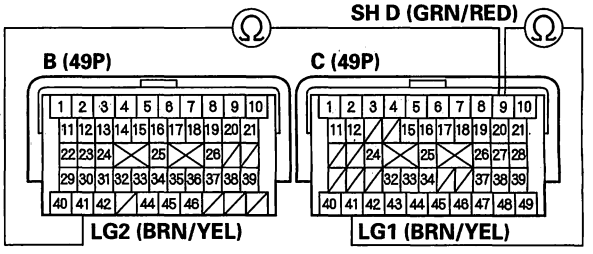
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0982 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check the SH D wire for an intermittent short to ground between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C9 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 11.

NO—Go to step 19.

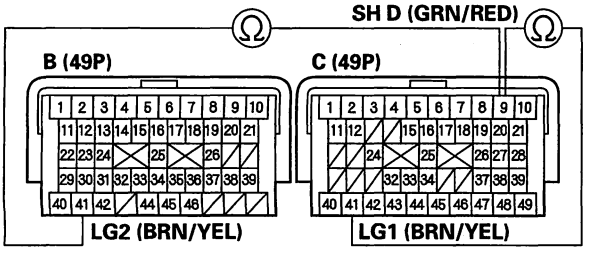
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11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminals C9 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal C9 and the shift solenoid harness connector, then go to step 24.

NO—Go to step 13.

13. Inspect shift solenoid valve D (see page 14-242).

Is shift solenoid valve D OK?

YES—Go to step 14.

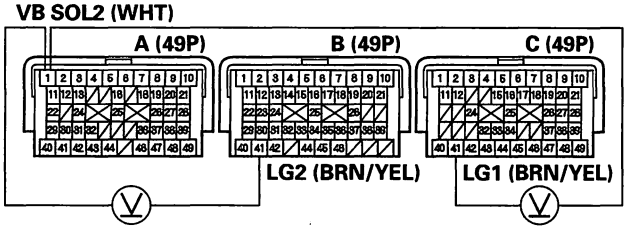
NO—Replace shift solenoid valve D or the shift solenoid harness (see page 14-242), then go to step 24.

14. Disconnect PCM connector A (49P).

15. Turn the ignition switch ON (II).

16. Measure the voltage between PCM connector terminals A1 and B41 or C41.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

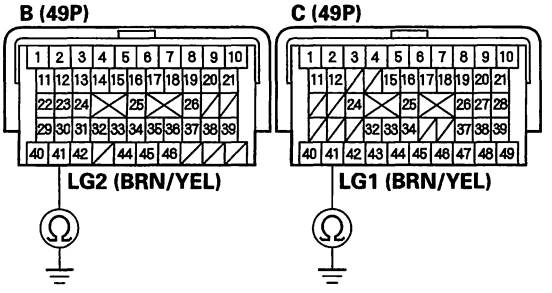
YES—Go to step 19.

NO—Go to step 17.

17. Turn the ignition switch OFF.

18. Check for continuity between PCM connector terminals B41 and body ground, and between C41 and body ground.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Check for a blown No. 10 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal A1 and the under-dash fuse/relay box, then go to step 24.

NO—Repair open in the wires between PCM connector terminals B41, C41 and ground (G101), or repair poor ground (G101), then go to step 24.

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DTC Troubleshooting (cont'd)

19. Reconnect all connectors.

20. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0982 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0982 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

24. Clear the DTC with the HDS.

25. Test-drive the vehicle for several minutes in the D position through all five gears.

26. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0982 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve D and the PCM, then go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0982 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 21, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 20 and recheck.

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DTC P0983: Open in Shift Solenoid Valve D Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 through all five gears.
3. Check that DTC P0983 recurs.

   Is DTC P0983 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Choose Shift Solenoid D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES—Go to step 5.

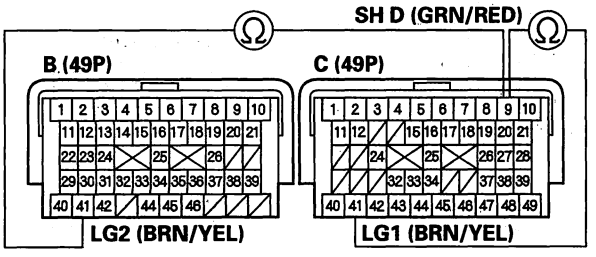
   NO—Go to step 7.
5. Test-drive the vehicle for several minutes in the D position through all five gears.
6. Monitor the OBD STATUS for P0983 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (49P) and C (49P).
10. Measure the resistance between PCM connector terminals C9 and C41 or B41.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 15.

NO—Go to step 11.

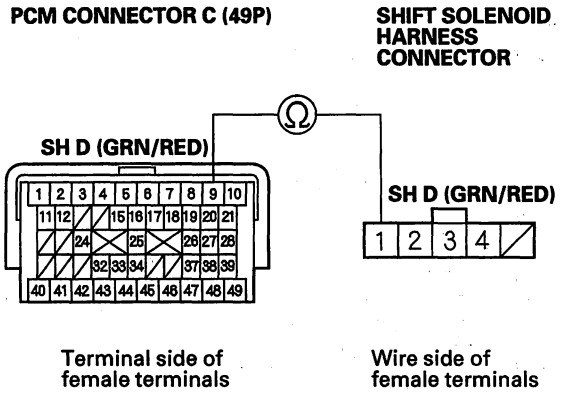
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DTC Troubleshooting (cont'd)

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminal C9 and shift solenoid harness connector terminal No. 1.



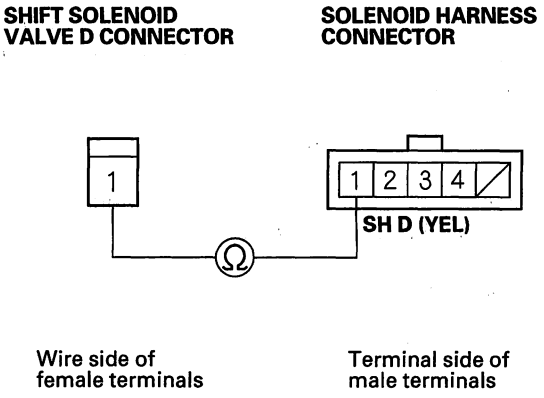
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between PCM connector terminal C9 and the shift solenoid harness connector, then go to step 20.

13. Remove the shift solenoid harness (see page 14-242).

14. Check for continuity between shift solenoid harness connector terminal No. 1 and the shift solenoid valve D connector terminal.



Is there continuity?

YES—Replace shift solenoid valve D (see page 14-242), then go to step 20.

NO—Replace the shift solenoid harness (see page 14-242), then go to step 20.

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BACK

15. Reconnect all connectors.

16. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

17. Test-drive the vehicle for several minutes in the D position through all five gears.

18. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0983 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for P0983 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 18, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 17 and recheck.

20. Clear the DTC with the HDS.

21. Test-drive the vehicle for several minutes in the D position through all five gears.

22. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P0983 indicated?

    YES—Check for poor connections and loose terminals at shift solenoid valve D and the PCM, then go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for P0983 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 22, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 21 and recheck.

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DTC Troubleshooting (cont'd)

DTC P16C0: PCM A/T Control System Incomplete Updated

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is indicated when PCM updating is incomplete.

1. Update the A/T software in the PCM (see page 14-8).

2. Check whether the DTC P16C0 is indicated in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P16C0 indicated?

   YES—Replace the original PCM (see page 11-244). ■

   NO—PCM updating is complete. ■

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BACK

DTC P1717: Open in Transmission Range Switch ATP RVS Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- 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 check 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—Check for proper transmission range switch installation (see page 14-315), adjust the shift cable (see page 14-311), then recheck. ■

3. Check the REVERSE SWITCH signal with the HDS.

   Is the REVERSE SWITCH ON?

   YES—Intermittent failure, the system is OK at this time. ■

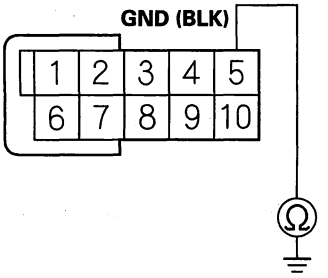
   NO—Go to step 4.

4. Turn the ignition switch OFF.

5. Disconnect the transmission range switch connector.

6. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire between transmission range switch connector terminal No. 5 and ground (G101), or repair poor ground (G101), then go to step 15.

(cont'd)

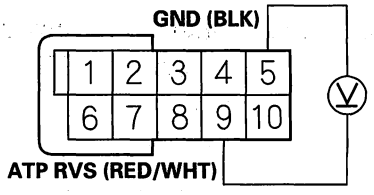
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DTC Troubleshooting (cont'd)

7. Turn the ignition switch ON (II).

8. Measure the voltage between transmission range switch connector terminals No. 5 and No. 9.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

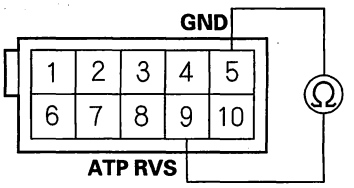
Is there voltage?

YES—Go to step 9.

NO—Repair open in the wire between PCM connector terminal C19 and the transmission range switch, then go to step 15.

9. Check for continuity between the No. 5 and No. 9 terminals at the transmission range switch.

TRANSMISSION RANGE SWITCH CONNECTOR



Terminal side of male terminals

Is there continuity when the shift lever is in the P, R, and N positions, and no continuity when the shift lever is in the D and D3 positions?

YES—Check for poor connections and loose terminals at the transmission range switch and the PCM. If the connections are OK, go to step 10.

NO—Replace the transmission range switch (see page 14-316), then go to step 15.

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BACK

10. Reconnect the transmission range switch connector.

11. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

12. Start the engine, and shift the shift lever slowly into the P and R positions, then into the N position.

13. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P1717 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P1717 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 13, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 12 and recheck.

15. Clear the DTC with the HDS.

16. Start the engine, and shift the shift lever slowly into the P and R positions, then into the N position.

17. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

    Is DTC P1717 indicated?

    YES—Check for poor connections and loose terminals at the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P1717 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. If any other DTCs were indicated on step 17, go to the indicated DTC's troubleshooting.■

    NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, return to step 16 and recheck.

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DTC Troubleshooting (cont'd)

DTC P1743: Problem in Shift Control System; Shift Valve E Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 8.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
6. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
7. Monitor the OBD STATUS for P1743 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair shift valve E in the main valve body (see page 14-347), replace the main valve body, or replace the transmission, then go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
10. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
11. Monitor the OBD STATUS for P1743 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete.■

    NO—If the HDS indicates FAILED, return to step 8 and recheck. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

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BACK

DTC P1744: Problem in Shift Control System; Shift Valve E Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 8.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
6. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
7. Monitor the OBD STATUS for P1744 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair shift valve E in the main valve body (see page 14-347), replace the main valve body, or replace the transmission, then go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
10. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
11. Monitor the OBD STATUS for P1744 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 8 and recheck. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

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DTC Troubleshooting (cont'd)

DTC P1745: Problem in Shift Control System; Servo Control Valve Stuck OFF or Servo Control Valve Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 5 on page 14-266) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 8.

   NO—Replace the ATF (see step 7 on page 14-266), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
6. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
7. Monitor the OBD STATUS for P1745 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate FAILED?

   YES—Repair the servo control valve in the main valve body (see page 14-347), servo valve in the regulator valve body (see page 14-350), or replace the main valve body, regulator valve body, or replace the transmission, then go to step 8.

   NO—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
10. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
11. Monitor the OBD STATUS for P1745 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

    Does the result indicate PASSED?

    YES—Troubleshooting is complete. ■

    NO—If the HDS indicates FAILED, return to step 8 and recheck. If the HDS indicates NOT COMPLETED, return to step 9 and recheck.

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BACK

DTC P1780: Problem in Shift Control System

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
3. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
4. Check for other DTCs indicated simultaneous with the code P1780.

   NOTE: DTC P1780 means there is one or more A/T DTCs about the shift control system.

   Are there other DTCs?

   YES—Troubleshoot a problem as indicated by the DTC.■

   NO—Go to step 5.

5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Test-drive the vehicle for several minutes in the D position through all five gears, then slow down to a stop.
7. Test-drive the vehicle again for several minutes in the D position through all five gears, then slow down to a stop.
8. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P1780 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 9.

9. Monitor the OBD STATUS for P1780 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 8, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 6 and recheck.

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DTC Troubleshooting (cont'd)

DTC P2122: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II).
3. Check whether DTC P2122 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P2122 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P2122 in the PGM-FI System (see page 11-269).■

   NO—Go to step 4.
4. Check whether DTC P2122 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P2122 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Turn the ignition switch ON (II).
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P2122 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P2122 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 6 and recheck.

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DTC P2123: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II).
3. Check whether DTC P2123 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC P2123 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC P2123 in the PGM-FI System (see page 11-272).■

   NO—Go to step 4.

4. Check whether DTC P2123 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P2123 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■

5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Turn the ignition switch ON (II).
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC P2123 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for P2123 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the accelerator pedal position sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 6 and recheck.

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DTC Troubleshooting (cont'd)

DTC U0028: F-CAN Communication Circuit Error (F-CAN Bus OFF)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II).
3. Check whether DTC U0028 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC U0028 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC U0028 in the PGM-FI System (see page 11-199).■

   NO—Go to step 4.
4. Check whether DTC U0028 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC U0028 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Turn the ignition switch ON (II).
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC U0028 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for U0028 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the PCM and the connectors on the F-CAN circuit. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 6 and recheck.

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BACK

DTC U0122: Lost Communication with VSA Modulator-Control Unit

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II).
3. Check whether DTC U0122 is indicated in the DTCs/ Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC U0122 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC U0122 in the PGM-FI System (see page 11-203). ■

   NO—Go to step 4.
4. Check whether DTC U0122 is indicated in the DTCs/ Freeze Data in A/T Mode Menu with the HDS.

   Is DTC U0122 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Turn the ignition switch ON (II).
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC U0122 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for U0122 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the VSA modulator-control unit the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 6 and recheck.
9. Check the communication line between the VSA modulator-control unit and the gauge control module with the HDS.

   Is there malfunction in the F-CAN line between the VSA modulator-control unit and gauge control module?

   YES—Repair open in the wires between the VSA modulator-control unit connector and the CAN communication lines. ■

   NO—Substitute a known-good VSA modulator-control unit (see page 19-102), then recheck. If the symptom/indication goes away with a known-good VSA modulator-control unit, replace the original VSA modulator-control unit. ■

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DTC Troubleshooting (cont'd)

DTC U0155: Lost Communication with Gauge Control Module

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II).
3. Check whether DTC U0155 is indicated in the DTCs/Freeze Data in PGM-FI Mode Menu with the HDS.

   Is DTC U0155 indicated in the PGM-FI system?

   YES—Troubleshoot for DTC U0155 in the PGM-FI System (see page 11-205). ■

   NO—Go to step 4.
4. Check whether the DTC U0155 is indicated in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC U0155 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Update the A/T software in the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
6. Turn the ignition switch ON (II).
7. Check for DTC(s) in the DTCs/Freeze Data in A/T Mode Menu with the HDS.

   Is DTC U0155 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for U0155 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

   Does the result indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other DTCs were indicated on step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections and loose terminals at the gauge control module and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then recheck. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, return to step 6 and recheck.

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BACK

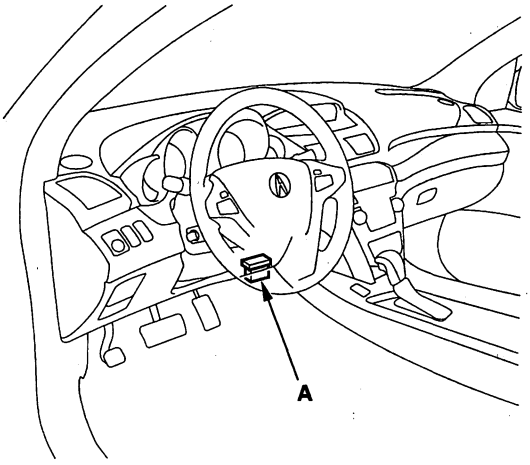
Road Test

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Apply the parking brake, and block all four 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 all shift lever positions.

4. Connect the HDS to the DLC (A), and go to the A/T data list. If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).



5. Prepare the HDS to take a HIGH SPEED SNAPSHOT (refer to the HDS user's guide for more details if needed):

   - Select High Speed icon.
   - Select these parameters:
     - VSS veh speed
     - Output Shaft (Countershaft) Speed
     - Input Shaft (Mainshaft) Speed (rpm)
     - RPM engine speed
     - Relative TP Sensor
     - APP Sensor A
     - ATF Temp sensor
     - Battery voltage
     - Shift control
     - Brake Switch
   - Set the Trigger Type to Parameter.
   - Adjust the Parameter setting to APP Sensor A above 0.8 V.
   - Set the recording time to 60 seconds.
   - Set the trigger point to −30 seconds.

6. Find a suitable level road. When you are ready to do the test, press OK on the HDS.

7. Monitor the HDS and accelerate quickly until the APP Sensor A reads 0.8 V. Maintain a steady throttle until the transmission shifts to 5th gear, then slow the vehicle and come to a stop.

8. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 7.

9. Adjust the parameter setting to 2.25 V. Test-drive the vehicle again. While monitoring the HDS, accelerate quickly until the APP Sensor A reads 2.25 V. Maintain a steady throttle until the transmission shifts to 5th gear (or reasonable speed), then slow the vehicle and come to a stop.

10. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 9.

11. Accelerate quickly until the accelerator pedal is to the floor. Maintain a steady pedal until the transmission shifts to 3rd gear, then slow to a stop, and save the snapshot.

(cont'd)

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Road Test (cont'd)

12. Review each snapshot individually, and compare the Shift Command, the APP Sensor A voltage, and the Vehicle Speed to the table below.

Upshift: D Position

Accelerator pedal position sensor voltage: 0.8 V	
1st→2nd	9—13 mph (14—21 km/h)
2nd→3rd	17—21 mph (27—34 km/h)
3rd→4th	25—31 mph (40—50 km/h)
4th→5th	40—48 mph (64—77 km/h)
Lock-up ON	47—53 mph (76—85 km/h)
Accelerator pedal position sensor voltage: 2.25 V	
1st→2nd	22—26 mph (35—42 km/h)
2nd→3rd	45—53 mph (72—85 km/h)
3rd→4th	70—78 mph (113—126 km/h)
4th→5th	99—109 mph (159—175 km/h)
Lock-up ON	100—110 mph (161—177 km/h)
Fully-opened throttle Accelerator pedal position sensor voltage: 4.5 V	
1st→2nd	36—42 mph (58—68 km/h)
2nd→3rd	65—73 mph (105—117 km/h)
3rd→4th	99—109 mph (159—175 km/h)

Downshift: D Position (reference)

Accelerator pedal position sensor voltage: 0.8 V	
Lock-up OFF	44—50 mph (71—80 km/h)
5th→4th	35—41 mph (56—66 km/h)
4th→3rd	17—21 mph (27—34 km/h)
3rd→2nd	7—11 mph (11—18 km/h)
Accelerator pedal position sensor voltage: 2.25 V	
Lock-up OFF	65—73 mph (105—117 km/h)
Fully-opened throttle Accelerator pedal position sensor voltage: 4.5 V	
5th→4th	128—140 mph (206—225 km/h)
4th→3rd	78—88 mph (126—142 km/h)
3rd→2nd	54—58 mph (87—93 km/h)
3rd→1st	26—32 mph (42—51 km/h)

13. Drive the vehicle in 4th or 5th gear in the sequential sportshift mode in the M position, then downshift to 2nd gear. The vehicle should immediately begin to slow down from engine braking.

14. Shift to the R position, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

15. Park the vehicle on a slope (about 16 degrees), 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.

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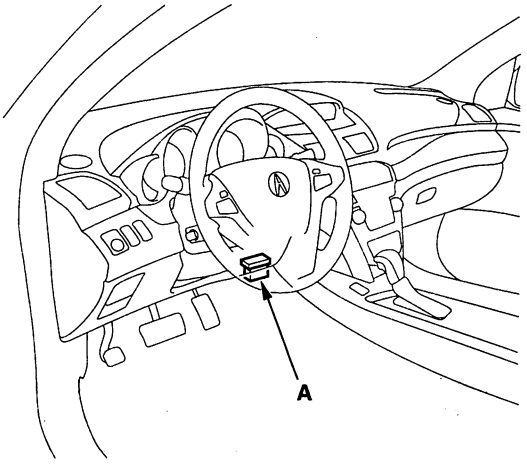
BACK

Stall Speed Test

1. Make sure the transmission fluid is filled to the proper level (see page 14-265).

2. Apply the parking brake, and block all four wheels.

3. Connect the HDS to the DLC (A), and go to the A/T data list. If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).



4. Make sure the A/C switch OFF.

5. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the D position.

6. Firmly press the brake pedal and accelerator pedal for 6 to 8 seconds, and note engine speed. Do not move the shift lever while raising engine speed.

7. 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 the D and R positions.
   - Do not test stall speed with the A/T pressure gauges installed.

   Stall Speed rpm:
   Specification: 1,950 rpm
   Service Limit: 1,800—2,100 rpm

8. If the measurements are out of the service limit, the possible problems and probable causes are listed in the table.

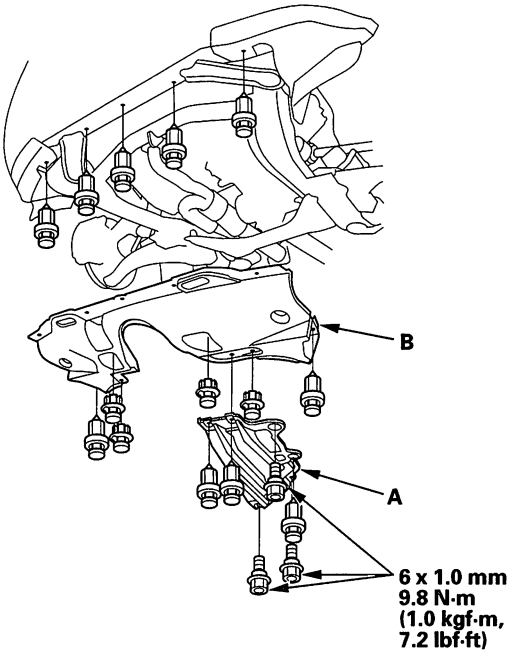
Problem	Probable causes
Stall speed rpm high in the D and R positions	• ATF pump output low • Regulator valve stuck • Slipping clutch
Stall speed rpm high in the R position	Slippage of 5th clutch
Stall speed rpm low in the D and R positions	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

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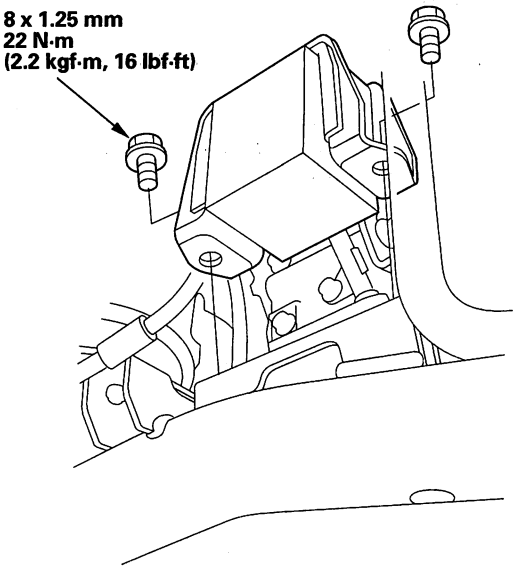
Pressure Test

Special Tools Required
- A/T clutch pressure gauge set 07406-0020400 or 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

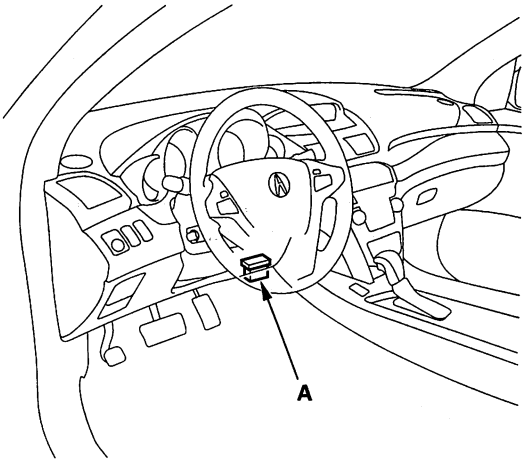
1. Make sure the transmission fluid is filled to the proper level (see page 14-265).
2. Raise the vehicle, and make sure it is securely supported.
3. Allow all four wheels to rotate freely.
4. Remove the transmission undercover (A) and splash shield (B).



5. Remove the damper from the front subframe.



6. Connect the HDS to the DLC (A), and go to the A/T data list. If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

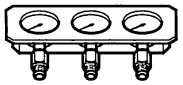


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BACK

7. Connect the oil pressure gauge to the line pressure inspection hole (A). Do not allow dust or other foreign particles to enter the hole while connecting the gauge.

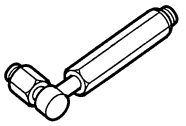
A/T CLUTCH PRESSURE GAUGE SET W/PANEL 07406-0020400 or 07406-0020401

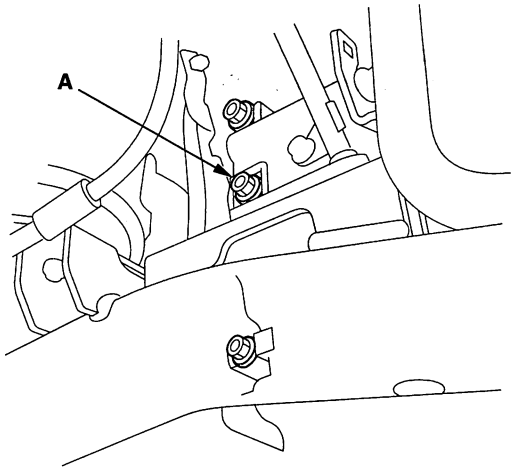


A/T PRESSURE HOSE, 2,210 mm 07MAJ-PY4011A



A/T PRESSURE HOSE ADAPTER 07MAJ-PY40120





8. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

9. Measure the line pressure at the line pressure inspection port (A) in the P or N position while holding the engine speed at 2,000 rpm.

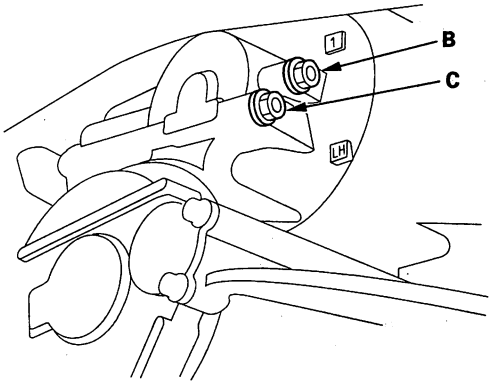
   NOTE: Higher pressure may be indicated if measurements are made in the shift lever position other than P or N.

Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	950—1,010 kPa (9.7—10.3 kgf/cm², 140—146 psi)	900 kPa (9.2 kgf/cm², 130 psi)

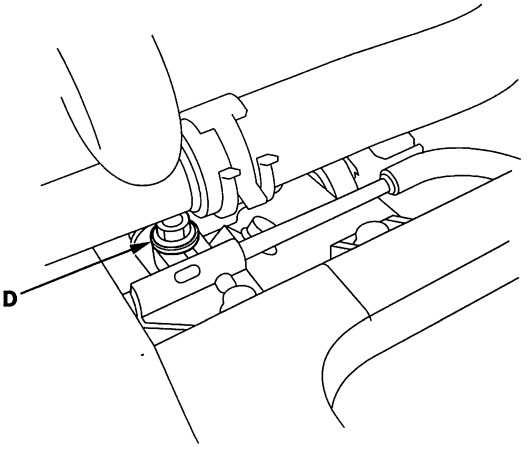
10. Turn the engine off, then disconnect the oil pressure gauge from the line pressure inspection port.

11. Install the sealing bolt to the line pressure inspection port with a new sealing washer, and tighten the bolt to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washer.

12. Connect the oil pressure gauge to the 1st clutch pressure inspection port (B) and the 1st-hold clutch pressure inspection port (C).



13. Remove the air cleaner housing and intake air duct, and connect the oil pressure gauge to the 2nd clutch pressure inspection port (D). Then temporarily install the air cleaner housing and intake air duct.



(cont'd)

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Pressure Test (cont'd)

14. Start the engine, and shift into the M position.

15. Shift into 1st gear, and measure the 1st clutch pressure at the 1st clutch pressure inspection port (B) and 1st-hold clutch pressure at the 1st-hold clutch pressure inspection port (C) while holding the engine speed at 2,000 rpm.

16. Upshift to 2nd gear by pushing the shift lever, and measure the 2nd clutch pressure at the 2nd clutch pressure inspection port (D) while holding the engine speed at 2,000 rpm.

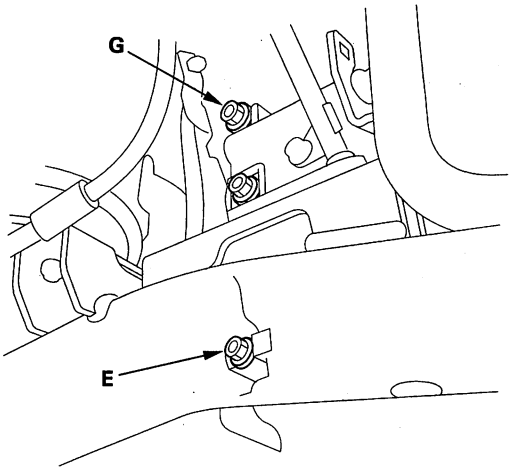
Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (B) 2nd clutch (D)	940—1,020 kPa (9.6—10.4 kgf/cm², 140—148 psi)	890 kPa (9.1 kgf/cm², 130 psi)
1st-hold clutch (C)	680—760 kPa (6.9—7.7 kgf/cm², 98—110 psi)	630 kPa (6.4 kgf/cm², 91 psi)

17. Turn the engine off, remove the air cleaner housing and intake air duct, then disconnect the oil pressure gauges from the 1st clutch pressure, 1st-hold clutch pressure, and 2nd clutch pressure inspection ports.

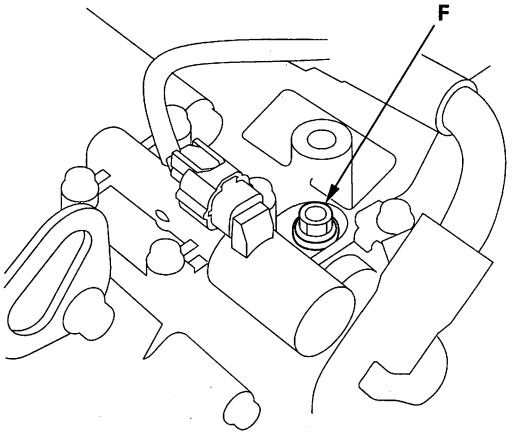
18. Install the sealing bolts in the 1st clutch pressure, 1st-clutch hold clutch pressure, and 2nd clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

19. Install the air cleaner housing and intake air duct.

20. Connect the oil pressure gauge to the 3rd clutch pressure inspection port (E) and the 5th clutch pressure inspection port (G).



21. Connect the oil pressure gauge to the 4th clutch pressure inspection port (F).



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22. Cancel the transmission 2nd-hold control mode with the HDS; choose Pressure Assistance Mode in the Miscellaneous Test Menu of the A/T Mode Menu.

23. Start the engine, and shift to the D3 position.

24. Measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (D) while holding the engine speed at 2,000 rpm.

25. Shift to the D position, and measure the 4th clutch pressure at the 4th clutch pressure inspection port (E) while holding the engine speed at 2,000 rpm.

26. Measure the 5th clutch pressure at the 5th clutch pressure inspection port (F) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (E) 4th clutch (F) 5th clutch (G)	940—1,020 kPa (9.6—10.4 kgf/cm², 140—148 psi)	890 kPa (9.1 kgf/cm², 130 psi)

27. Bring the engine back to an idle, then apply the brake pedal to stop the wheels from rotating.

28. Shift to the R position, then release the brake pedal. Raise the engine speed to 2,000 rpm, and measure the 5th clutch pressure at the 5th clutch pressure inspection port (G).

Pressure	Fluid Pressure	
	Standard	Service Limit
5th clutch (G) in R	940—1,020 kPa (9.6—10.4 kgf/cm², 140—148 psi)	890 kPa (9.1 kgf/cm², 130 psi)

29. Turn the engine off, then disconnect the oil pressure gauges from the 3rd, 4th, and 5th clutch pressure inspection ports.

30. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

31. If the measurements are out of the service limit, the possible problems and probable causes are listed in the table.

Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve • 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 5th clutch pressure in the R position	• Servo valve • 5th clutch • O-rings
No or low 1st-hold clutch pressure	• 1st-hold clutch • O-rings

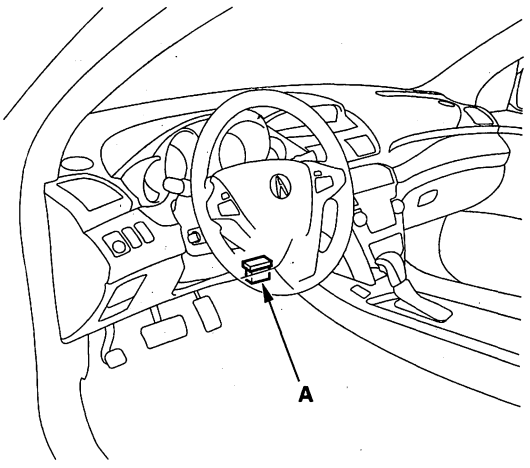
32. Install the damper on the front subframe.

33. Install the splash shield and transmission undercover.

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Shift Solenoid Valve Test, Replacement, and Shift Solenoid Wire Harness Replacement

1. Connect the HDS to the DLC (A).



2. Choose Shift Solenoid A, B, C, and D in the Miscellaneous Test Menu on the HDS.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

3. Check that shift solenoid valves A, B, C, and D operate with the HDS. A clicking sound should be heard.

   - If a clicking sound is heard, the valves are OK. The test is complete, disconnect the HDS.
   - If no clicking sound is heard, go to step 4, and test the solenoid valves.

4. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.

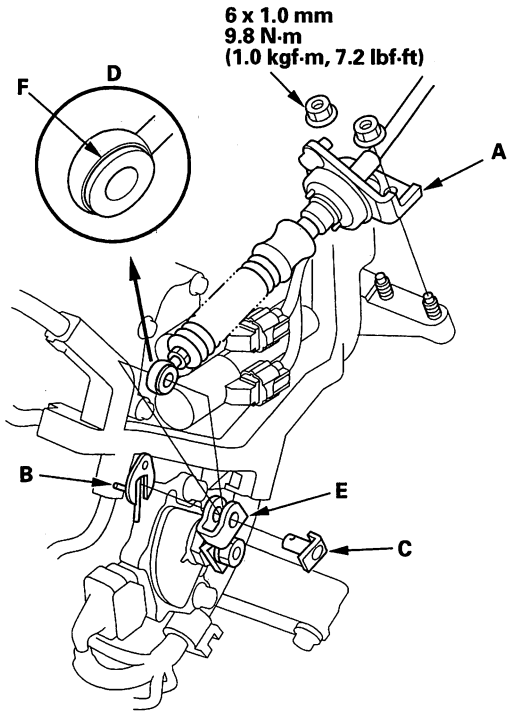
6. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.

7. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.

8. Remove the intake air duct and air cleaner housing.

9. Remove the battery base and battery base bracket.

10. Remove the nuts securing the shift cable bracket (A).



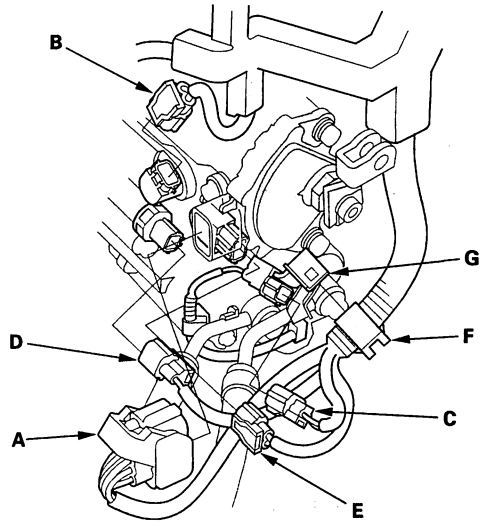
11. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

12. Check the synthetic resin bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-309).

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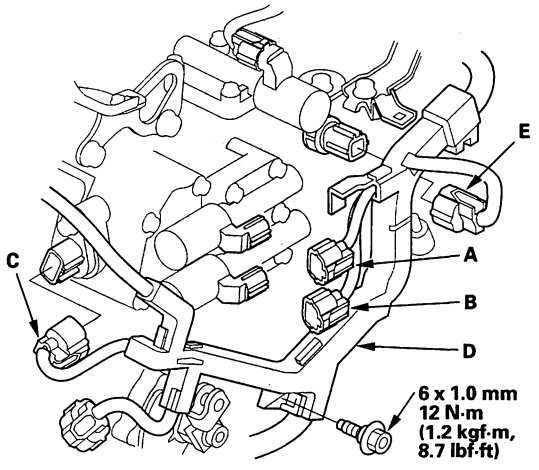
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13. Disconnect the transmission range switch connector (A), input shaft (mainshaft) speed sensor connector (B), output shaft (countershaft) speed sensor connector (C), 3rd clutch transmission fluid pressure switch connector (D), and ATF temperature sensor connector (E).



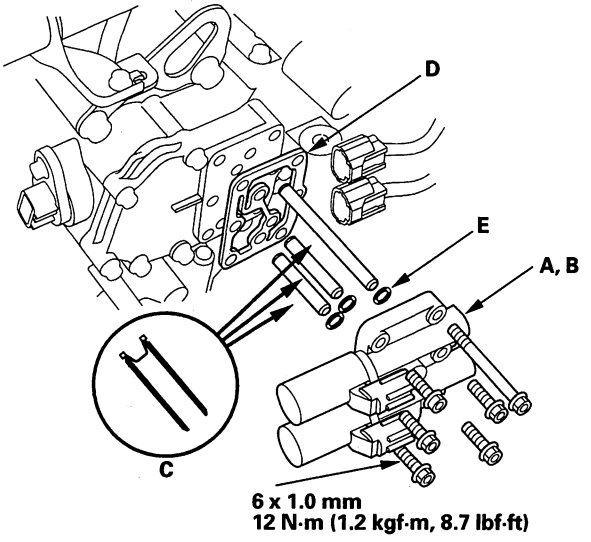
14. Remove the harness clamp (F) from the clamp bracket (G).

15. Disconnect the A/T clutch pressure control solenoid valve A connector (A), A/T clutch pressure control solenoid valve B connector (B), and shift solenoid harness connector (C).



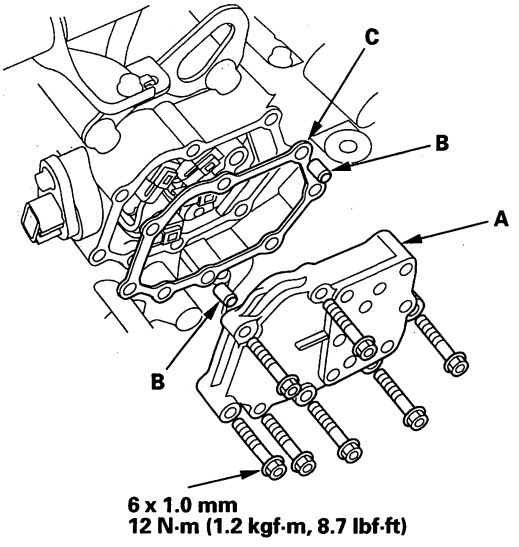
16. Remove the bolt securing the harness cover (D), and disconnect the 4th clutch transmission fluid pressure switch connector (E).

17. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), and gasket (D).



18. Replace the gasket and O-rings (E) with new ones when installing the A/T clutch pressure control solenoid valve A and B.

19. Remove the solenoid valve cover (A), dowel pins (B), and gasket (C).



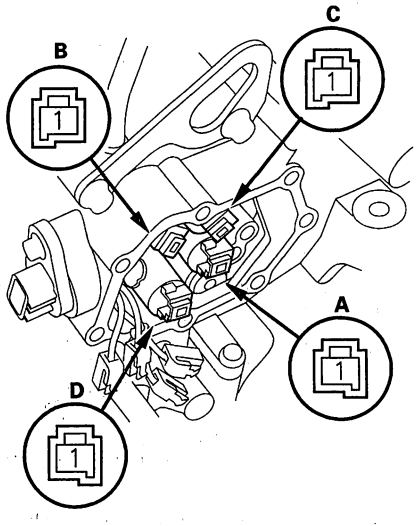
20. Replace the gasket with new one when installing the solenoid valve cover.

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Shift Solenoid Valve Test, Replacement, and Shift Solenoid Wire Harness Replacement (cont'd)

21. Disconnect the connectors from shift solenoid valve A, shift solenoid valve B, shift solenoid valve C, and shift solenoid valve D.



22. Measure the resistance of each shift solenoid valve between the connector terminal and body ground.

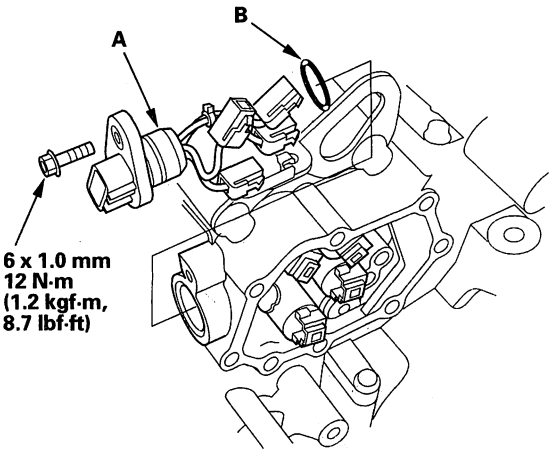
    Standard: 12—25 Ω

    - If the resistance is out of standard, go to step 25 and replace shift solenoid valve.
    - If the resistance is within the standard, go to step 23 and check solenoid valve for a clicking sound.

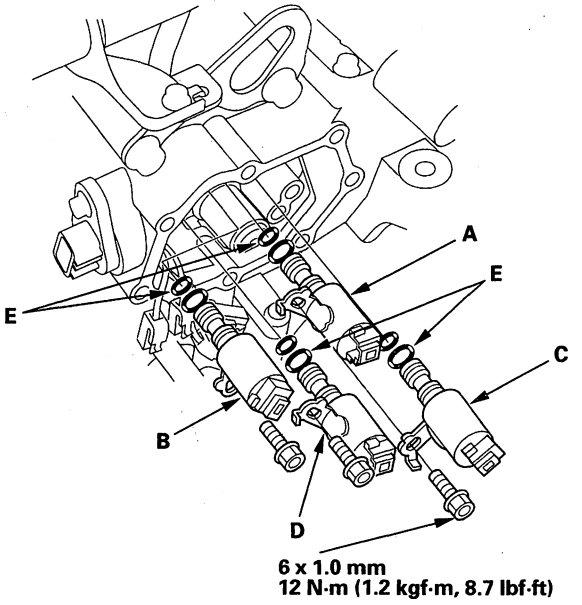
23. Connect a jumper wire from the negative battery terminal to the body ground, and connect another jumper wire from the positive battery terminal to each solenoid valve terminal individually.

    - If a clicking sound is heard, go to step 24 and replace the shift solenoid harness.
    - If no clicking sound is heard, go to step 25 and replace shift solenoid valve.

24. Remove the shift solenoid harness connector (A), and replace it. Install a new O-ring (B) on the shift solenoid harness connector, and install the connector in the transmission housing, then go to step 31.



25. Remove the mounting bolts, then remove the solenoid valves.



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26. Install new O-rings (two O-rings per solenoid valve) (E) on the reused solenoid valves.

    NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.

27. Install shift solenoid valve D (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

    NOTE: Do not hold the solenoid valve by the connector when installing the solenoid valve. Be sure to hold the solenoid valve body.

28. Install shift solenoid valve A (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

29. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve A.

    NOTE: Do not install shift solenoid valve C before installing shift solenoid valve A. If shift solenoid valve C is installed before installing shift solenoid valve A, it may damage the hydraulic control system.

30. Install shift solenoid valve B (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

31. Connect the harness terminals to the solenoids:

    - YEL wire connector to shift solenoid valve A.
    - GRN wire connector to shift solenoid valve C.
    - RED wire connector to shift solenoid valve B.
    - ORN wire connector to shift solenoid valve D.

32. Install the shift solenoid valve cover, dowel pins, and a new gasket.

33. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with their filter side into the transmission housing. Install the new O-rings over the ATF pipes.

34. Install A/T clutch pressure control solenoid valve A and B.

35. Secure the harness cover with the bolt.

36. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

37. Apply molybdenum grease to the bore hole of the synthetic resin bushing in the shift cable end, and attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

38. Secure the shift cable bracket with the nuts.

39. Install the battery base bracket and battery base.

40. Install the air cleaner housing and intake air duct.

41. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.

42. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.

43. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.

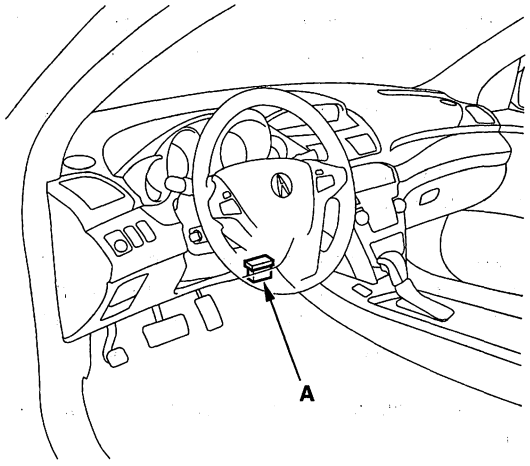
44. Do the steering column position memorization (see page 17-28).

45. Do the power window control unit reset procedure (see page 22-259).

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A/T Clutch Pressure Control Solenoid Valve A Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu on the HDS.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

3. Test A/T clutch pressure control solenoid valve A with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.

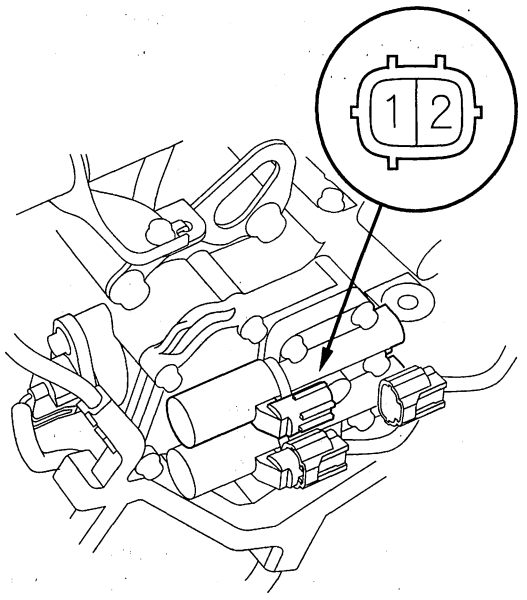
6. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.

7. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.

8. Remove the intake air duct and air cleaner housing.

9. Remove the battery base and battery base bracket.

10. Disconnect the A/T clutch pressure control solenoid valve A connector.



11. Measure A/T clutch pressure control solenoid valve A resistance at the connector terminals.

    Standard: 3—10 Ω

    - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A (see page 14-252).
    - If the resistance is within the standard, go to step 12.

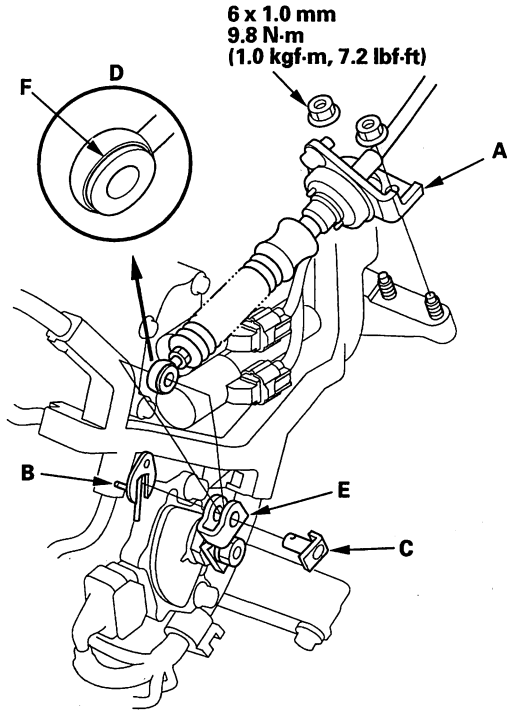
12. Connect a jumper wire from the negative battery terminal to the solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to the connector terminal No. 1.

    - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
    - If no clicking sound is heard, go to step 13.

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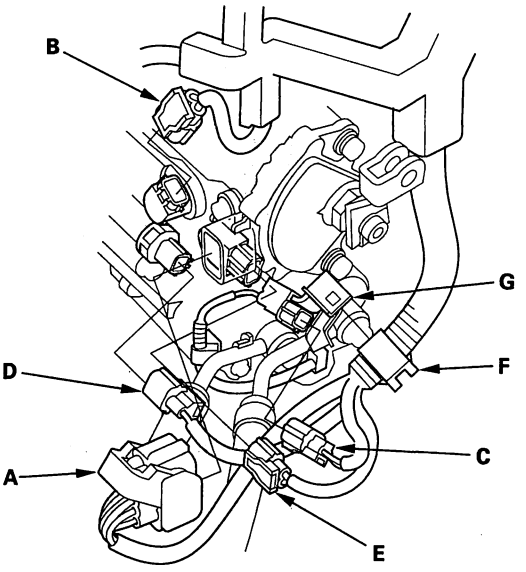
13. Remove the nuts securing the shift cable bracket (A).



14. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

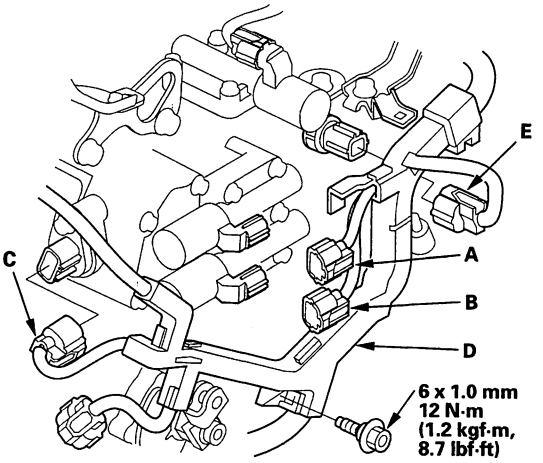
15. Check the synthetic resin bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-309).

16. Disconnect the transmission range switch connector (A), input shaft (mainshaft) speed sensor connector (B), output shaft (countershaft) speed sensor connector (C), 3rd clutch transmission fluid pressure switch connector (D), and ATF temperature sensor connector (E).



17. Remove the harness clamp (F) from the clamp bracket (G).

18. Disconnect the A/T clutch pressure control solenoid valve A connector (A), A/T clutch pressure control solenoid valve B connector (B), and shift solenoid harness connector (C).



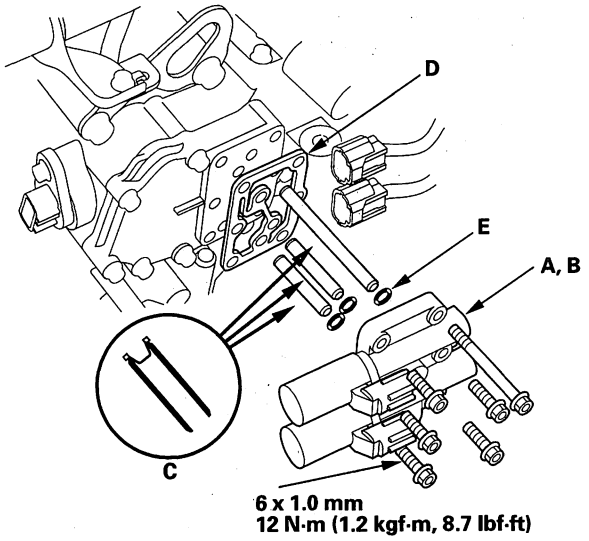
19. Remove the bolt securing the harness cover (D), and disconnect the 4th clutch transmission fluid pressure switch connector (E).

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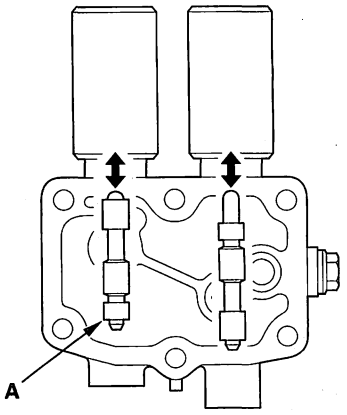
A/T Clutch Pressure Control Solenoid Valve A Test (cont'd)

20. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), gasket (D), and O-rings (E).



21. Check the fluid passage of the solenoid valve for contamination.

22. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to the connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve A moves.



23. Disconnect one of the jumper wires and check valve movement at the fluid passage in valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve A and B.

24. Clean the mounting surface and fluid passage of the solenoid valve body and solenoid valve cover.

25. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install the new O-rings over the ATF pipes.

26. Install A/T clutch pressure control solenoid valve A and B.

27. Secure the harness cover with the bolt.

28. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

29. Apply molybdenum grease to the bore hole of the synthetic resin bushing in the shift cable end, and attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

30. Secure the shift cable bracket with the nuts.

31. Install the battery base bracket and battery base.

32. Install the air cleaner housing and intake air duct.

33. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.

34. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.

35. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.

36. Do the steering column position memorization (see page 17-28).

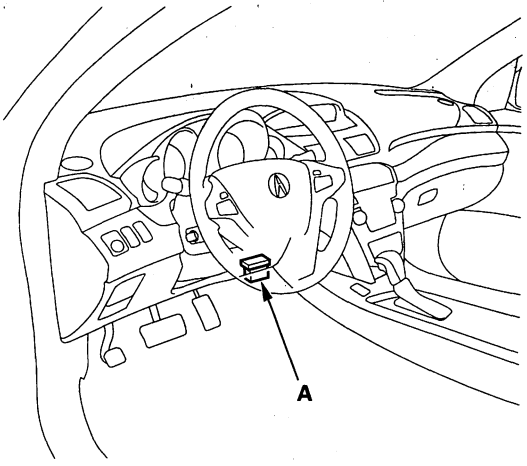
37. Do the power window control unit reset procedure (see page 22-259).

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BACK

A/T Clutch Pressure Control Solenoid Valve B Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid B in the Miscellaneous Test Menu on the HDS.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

3. Test A/T clutch pressure control solenoid valve B with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.

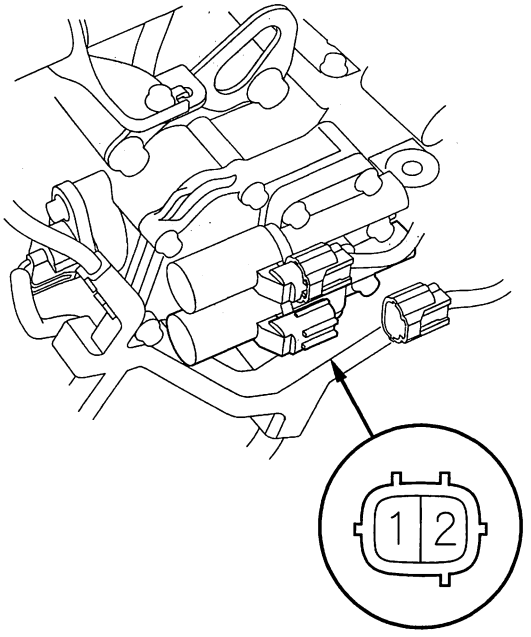
6. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.

7. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.

8. Remove the intake air duct and air cleaner housing.

9. Remove the battery base and battery base bracket.

10. Disconnect the A/T clutch pressure control solenoid valve B connector.



11. Measure A/T clutch pressure control solenoid valve B resistance at the connector terminals.

    Standard: 3—10 Ω

    - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve B (see page 14-252).
    - If the resistance is within the standard, go to step 12.

12. Connect a jumper wire from the negative battery terminal to the solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to the connector terminal No. 1.

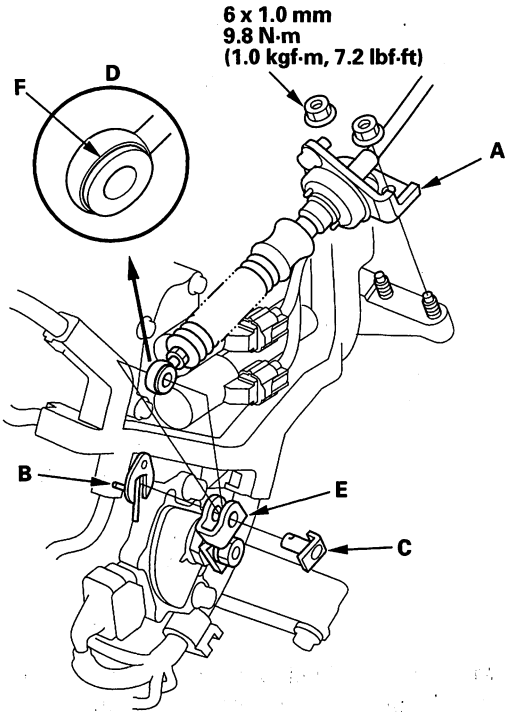
    - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
    - If no clicking sound is heard, go to step 13.

(cont'd)

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A/T Clutch Pressure Control Solenoid Valve B Test (cont'd)

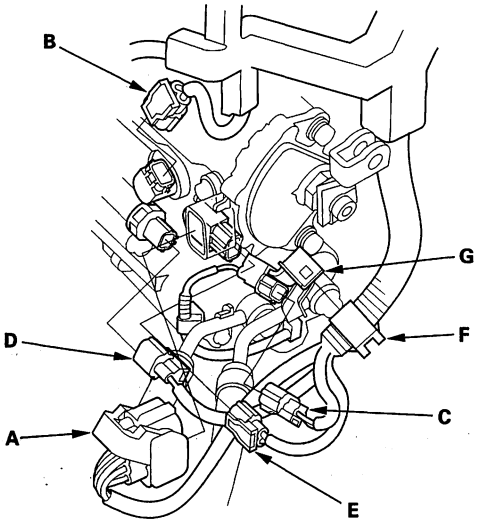
13. Remove the nuts securing the shift cable bracket (A).



14. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

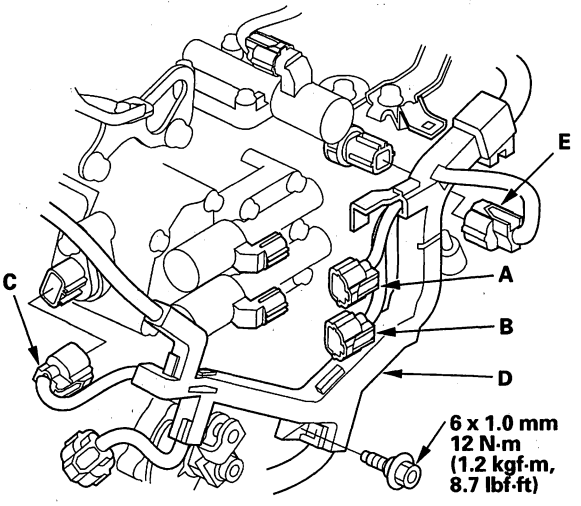
15. Check the synthetic resin bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-309).

16. Disconnect the transmission range switch connector (A), input shaft (mainshaft) speed sensor connector (B), output shaft (countershaft) speed sensor connector (C), 3rd clutch transmission fluid pressure switch connector (D), and ATF temperature sensor connector (E).



17. Remove the harness clamp (F) from the clamp bracket (G).

18. Disconnect the A/T clutch pressure control solenoid valve A connector (A), A/T clutch pressure control solenoid valve B connector (B), and shift solenoid harness connector (C).

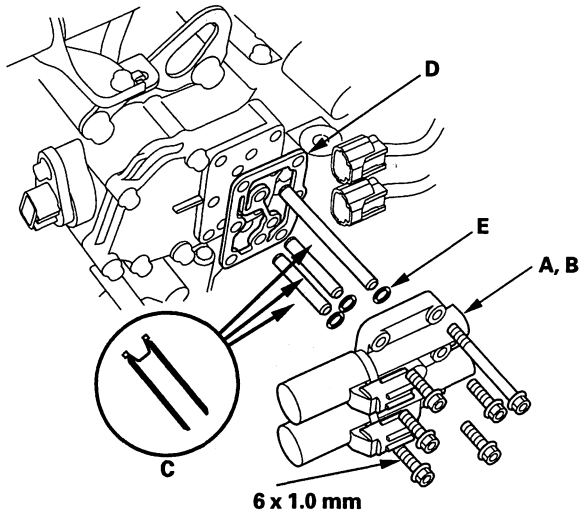


19. Remove the bolt securing the harness cover (D), and disconnect the 4th clutch transmission fluid pressure switch connector (E).

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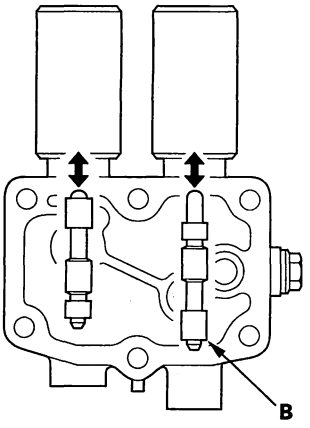
BACK

20. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), gasket (D), and O-rings (E).



21. Check the fluid passage of the solenoid valve for contamination.

22. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to the connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve B moves.



23. Disconnect one of the jumper wires and check valve movement at the fluid passage in valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve A and B.

24. Clean the mounting surface and fluid passage of the solenoid valve body and solenoid valve cover.

25. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install the new O-rings over the ATF pipes.

26. Install A/T clutch pressure control solenoid valve A and B.

27. Secure the harness cover with the bolt.

28. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

29. Apply molybdenum grease to the bore hole of the synthetic resin bushing in the shift cable end, and attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

30. Secure the shift cable bracket with the nuts.

31. Install the battery base bracket and battery base.

32. Install the air cleaner housing and intake air duct.

33. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.

34. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.

35. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.

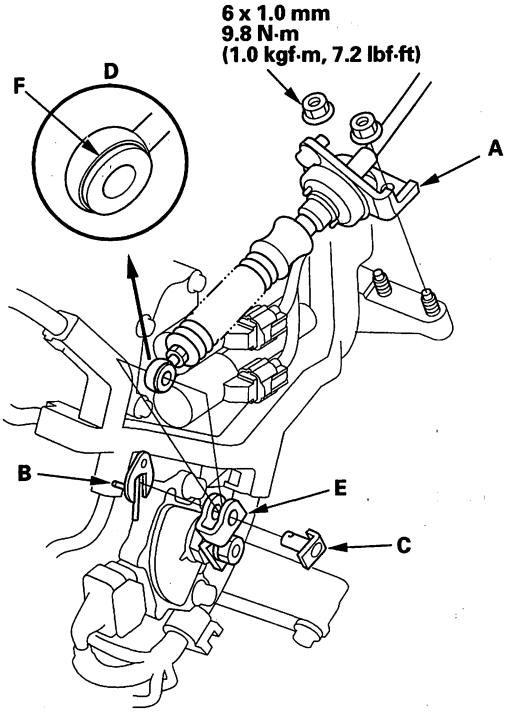
36. Do the steering column position memorization (see page 17-28).

37. Do the power window control unit reset procedure (see page 22-259).

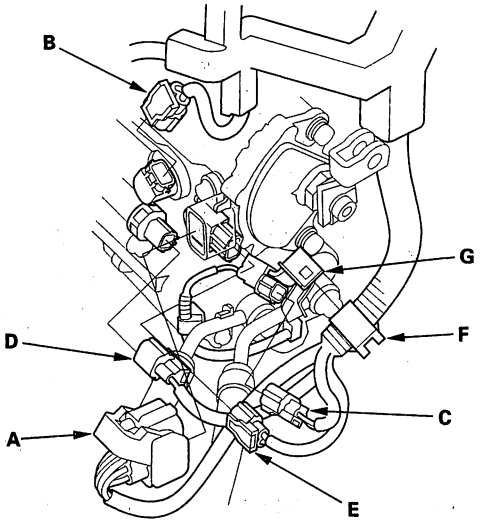
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A/T Clutch Pressure Control Solenoid Valve A and B Replacement

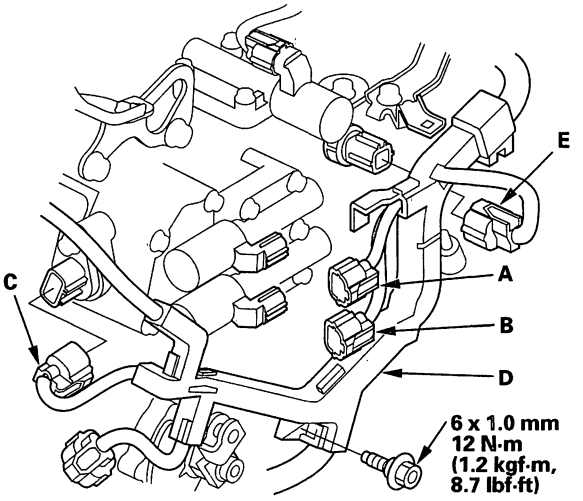
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
4. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
5. Remove the intake air duct and air cleaner housing.
6. Remove the battery base and battery base bracket.
7. Remove the nuts securing the shift cable bracket (A).



8. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
9. Check the synthetic resin bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-309).
10. Disconnect the transmission range switch connector (A), input shaft (mainshaft) speed sensor connector (B), output shaft (countershaft) speed sensor connector (C), 3rd clutch transmission fluid pressure switch connector (D), and ATF temperature sensor connector (E).



11. Remove the harness clamp (F) from the clamp bracket (G).
12. Disconnect the A/T clutch pressure control solenoid valve A connector (A), A/T clutch pressure control solenoid valve B connector (B), and shift solenoid harness connector (C).

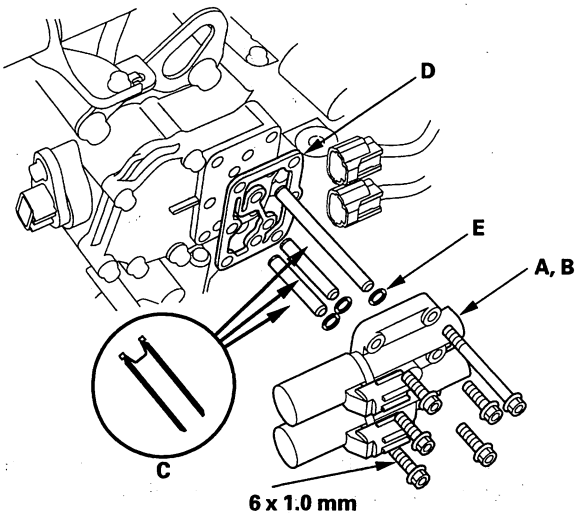


13. Remove the bolt securing the harness cover (D), and disconnect the 4th clutch transmission fluid pressure switch connector (E).

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14. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), gasket (D), and O-rings (E).



15. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust or dirt, and clean the passage.

16. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install the new O-rings over the ATF pipes.

17. Install A/T clutch pressure control solenoid valve A and B.

18. Secure the harness cover with the bolt.

19. Check the connectors for rust, dirt, or oil, clean, then connect the connectors securely.

20. Apply molybdenum grease to the bore hole of the synthetic resin bushing in the shift cable end, and attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

21. Secure the shift cable bracket with the nuts.

22. Install the battery base bracket and battery base.

23. Install the air cleaner housing and intake air duct.

24. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.

25. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.

26. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.

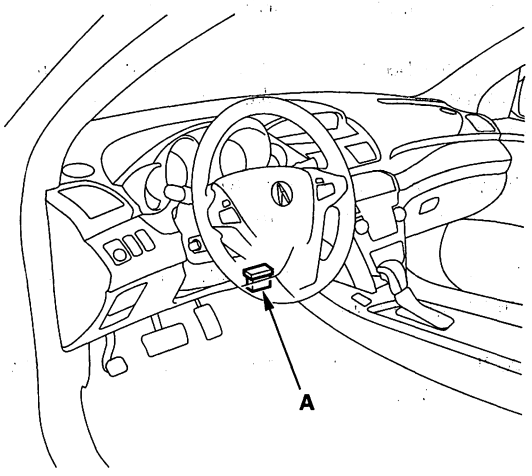
27. Do the steering column position memorization (see page 17-28).

28. Do the power window control unit reset procedure (see page 22-259).

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A/T Clutch Pressure Control Solenoid Valve C Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu on the HDS.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

3. Test A/T clutch pressure control solenoid valve C with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.

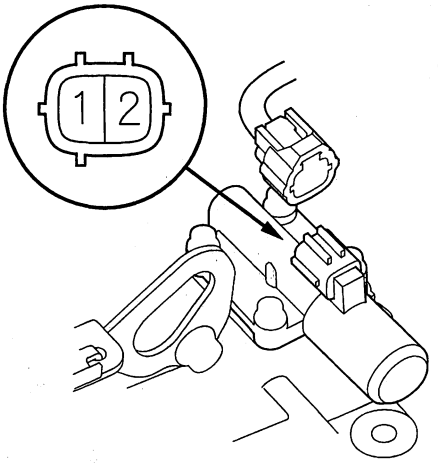
6. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.

7. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.

8. Remove the intake air duct and air cleaner housing.

9. Remove the battery base and battery base bracket.

10. Disconnect the A/T clutch pressure control solenoid valve C connector.



11. Measure A/T clutch pressure control solenoid valve C resistance at the connector terminals.

    Standard: 3—10 Ω

    - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve C (see page 14-257).
    - If the resistance is within the standard, go to step 12.

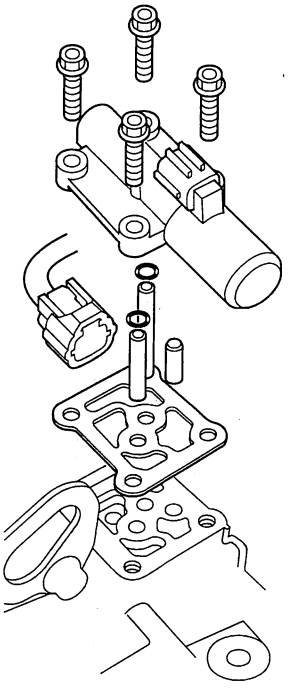
12. Connect a jumper wire from the negative battery terminal to the solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to the connector terminal No. 1.

    - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
    - If no clicking sound is heard, go to step 13.

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BACK

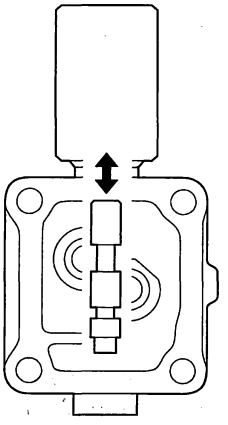
13. Remove A/T clutch pressure control solenoid valve C.



14. Remove the ATF joint pipes, O-rings, ATF pipe, and gasket.

15. Check the fluid passage of the solenoid valve for contamination.

16. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to the connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve C moves.



17. Disconnect one of the jumper wires and check valve movement at the fluid passage in valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve C.

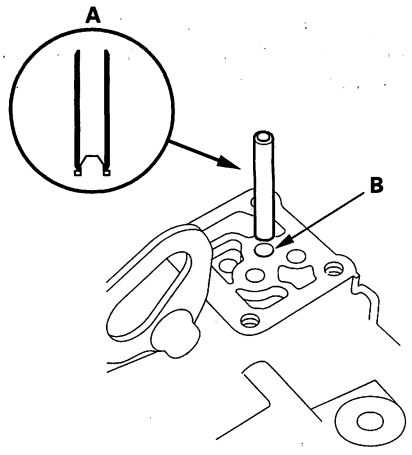
18. Clean the mounting surface and fluid passage of the solenoid valve body and transmission housing.

(cont'd)

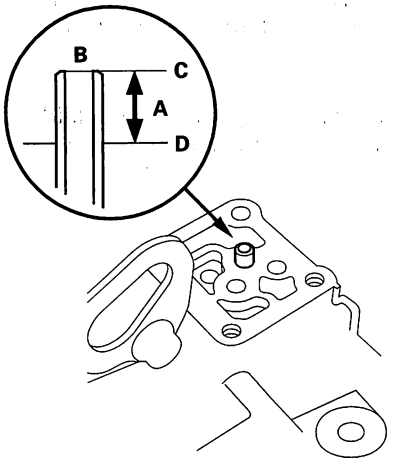
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A/T Clutch Pressure Control Solenoid Valve C Test (cont'd)

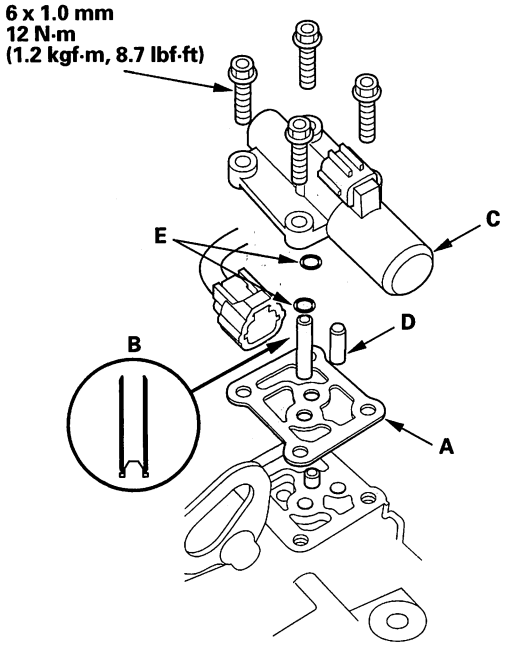
19. Install the 8 x 53 mm ATF joint pipe (A) with the filter end into its mounting hole (B).



20. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.) If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.



21. Install the new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter end into the transmission housing and 8 x 25.2 mm ATF pipe (D).



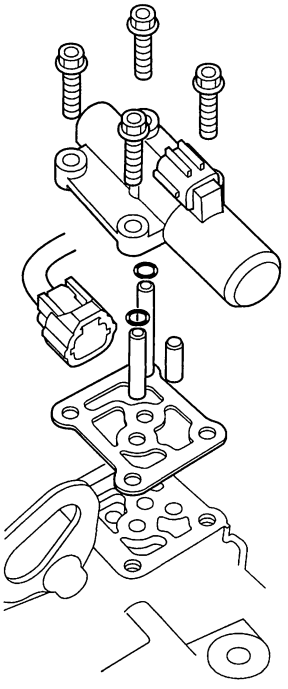
22. Install the new O-rings (E) over the ATF joint pipes.
23. Install A/T clutch pressure control solenoid valve C.
24. Check the connector for rust, dirt, or oil, then connect the connector securely.
25. Install the battery base bracket and battery base.
26. Install the air cleaner housing and intake air duct.
27. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.
28. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.
29. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.
30. Do the steering column position memorization (see page 17-28).
31. Do the power window control unit reset procedure (see page 22-259).

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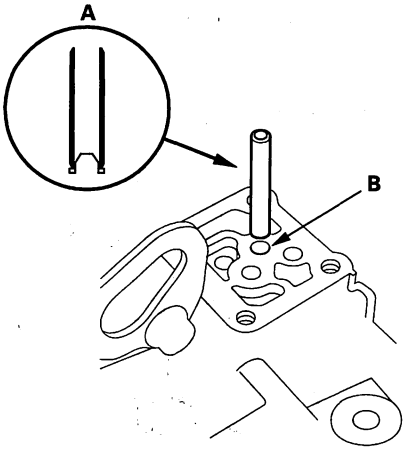
BACK

A/T Clutch Pressure Control Solenoid Valve C Replacement

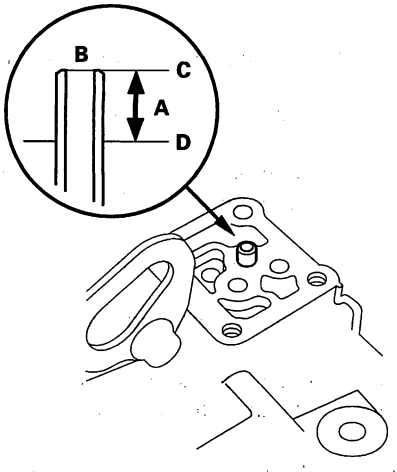
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
4. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
5. Remove the intake air duct and air cleaner housing.
6. Remove the battery base and battery base bracket.
7. Disconnect the A/T clutch pressure control solenoid valve C connector.



8. Remove A/T clutch pressure control solenoid valve C.
9. Remove the ATF joint pipes, O-rings, ATF pipe, and gasket.
10. Clean the mounting surface and the fluid passage of the solenoid valve body and transmission housing.
11. Install the 8 x 53 mm ATF joint pipe (A) with the filter end into its mounting hole (B).



12. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.) If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.

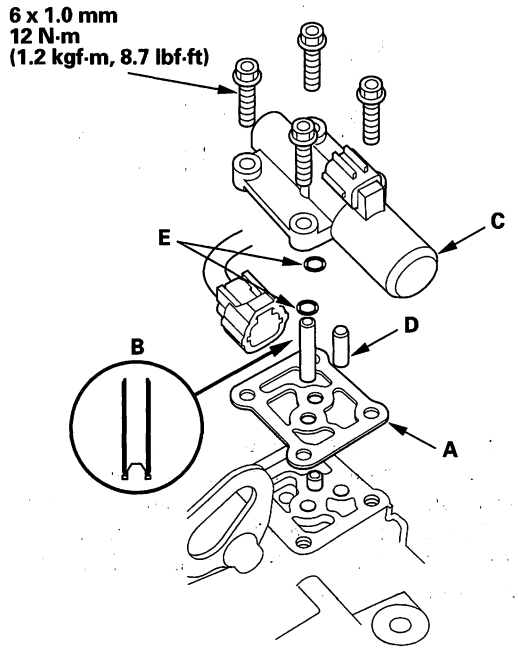


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A/T Clutch Pressure Control Solenoid Valve C Replacement (cont'd)

13. Install the new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter end into the transmission housing and 8 x 25.2 mm ATF pipe (D).



14. Install the new O-rings (E) over the ATF joint pipes.
15. Install A/T clutch pressure control solenoid valve C.
16. Check the connector for rust, dirt, or oil, then connect the connector securely.
17. Install the battery base bracket and battery base.
18. Install the air cleaner housing and intake air duct.
19. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.
20. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.
21. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.
22. Do the steering column position memorization (see page 17-28).
23. Do the power window control unit reset procedure (see page 22-259).

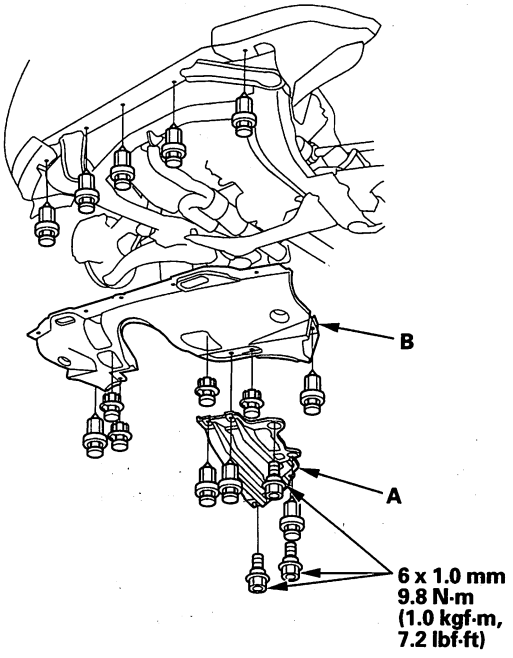
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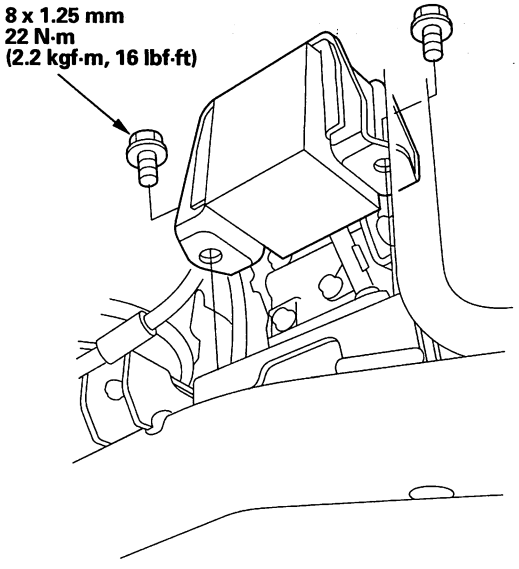
Input Shaft (Mainshaft) Speed Sensor Replacement

1. Raise the vehicle up on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

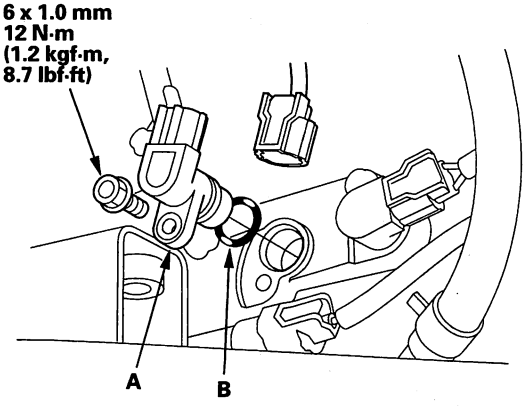
2. Remove the transmission undercover (A) and splash shield (B).



3. Remove the damper from the front subframe.



4. Disconnect the input shaft (mainshaft) speed sensor connector, and remove the input shaft (mainshaft) speed sensor (A).



5. Install the new O-ring (B) on the new input shaft (mainshaft) speed sensor, then install the input shaft (mainshaft) speed sensor.

6. Check the connector for rust, dirt, or oil, then connect the connector securely.

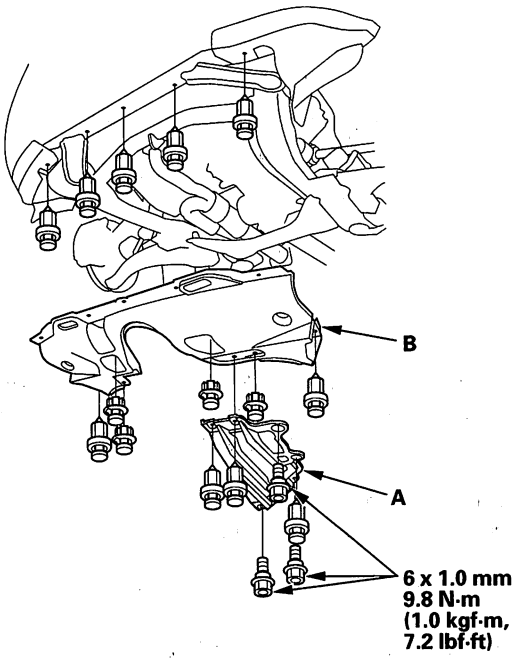
7. Install the damper on the front subframe.

8. Install the splash shield and transmission undercover.

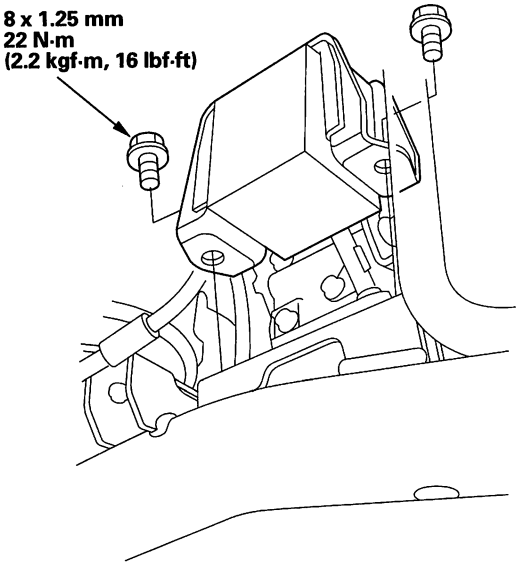
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Output Shaft (Countershaft) Speed Sensor Replacement

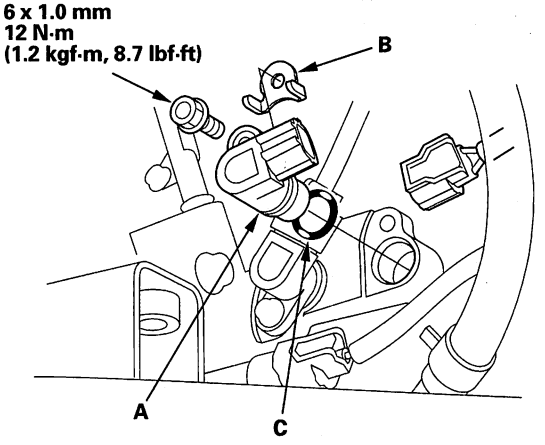
1. Raise the vehicle up on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the transmission undercover (A) and splash shield (B).



3. Remove the damper from the front subframe.



4. Disconnect the output shaft (countershaft) speed sensor connector, and remove the output shaft (countershaft) speed sensor (A) and sensor washer (B).



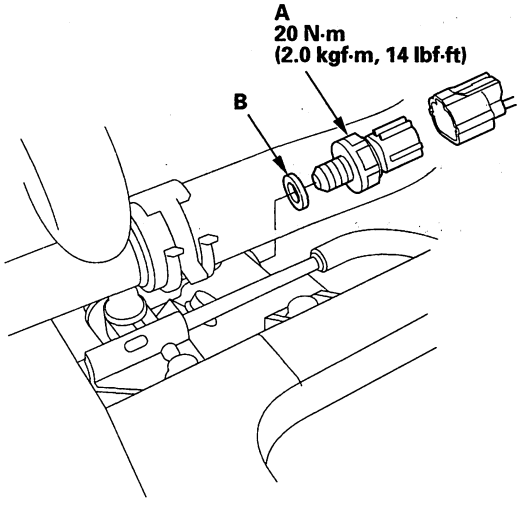
5. Install the new O-ring (C) on the new output shaft (countershaft) speed sensor (B), then install the output shaft (countershaft) speed sensor and sensor washer.
6. Check the connector for rust, dirt, or oil, then connect the connector securely.
7. Install the damper on the front subframe.
8. Install the splash shield and transmission undercover.

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2nd Clutch Transmission Fluid Pressure Switch Replacement

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
4. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
5. Remove the intake air duct and air cleaner housing.
6. Remove the battery base and battery base bracket.
7. Disconnect the 2nd clutch transmission fluid pressure switch connector, and remove the switch.

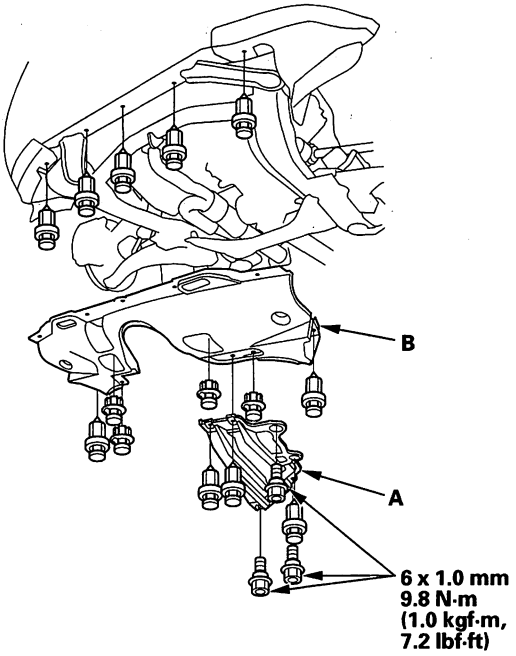


8. Install the new 2nd clutch transmission fluid pressure switch (A) and a new sealing washer (B), and tighten the switch.
9. Make sure there is no water, oil, dust, or foreign particles inside the connector.
10. Connect the connector securely.
11. Install the battery base bracket and battery base.
12. Install the air cleaner housing and intake air duct.
13. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.
14. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.
15. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.
16. Do the steering column position memorization (see page 17-28).
17. Do the power window control unit reset procedure (see page 22-259).

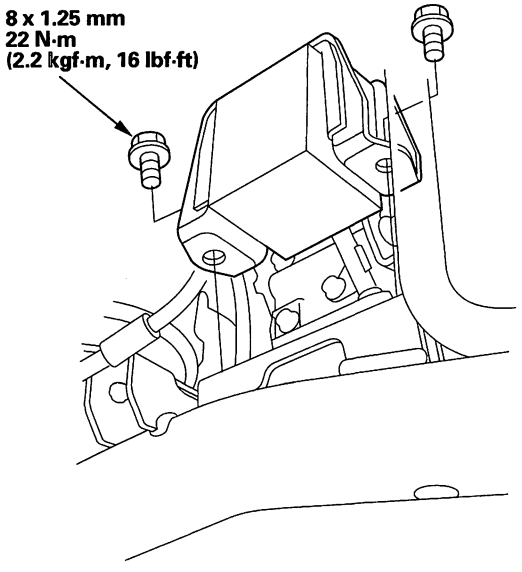
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3rd Clutch Transmission Fluid Pressure Switch Replacement

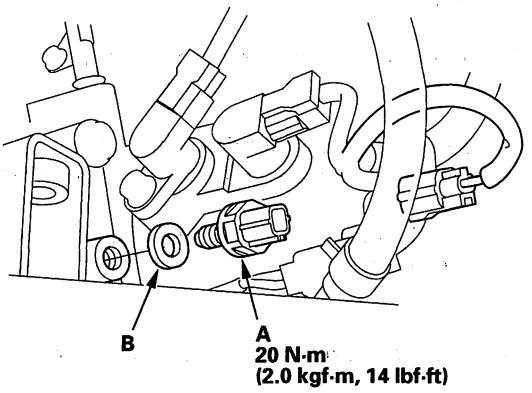
1. Raise the vehicle up on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the transmission undercover (A) and splash shield (B).



3. Remove the damper from the front subframe.



4. Disconnect the 3rd clutch transmission fluid pressure switch connector, and remove the switch.



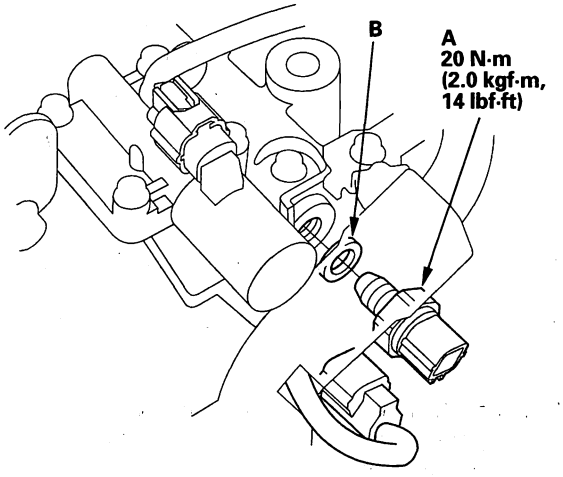
5. Install the new 3rd clutch transmission fluid pressure switch (A) and a new sealing washer (B), and tighten the switch.
6. Make sure there is no water, oil, dust, or foreign particles inside the connector.
7. Connect the connector securely.
8. Install the damper on the front subframe.
9. Install the splash shield and transmission undercover.

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4th Clutch Transmission Fluid Pressure Switch Replacement

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
4. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
5. Remove the intake air duct and air cleaner housing.
6. Remove the battery base and battery base bracket.
7. Disconnect the 4th clutch transmission fluid pressure switch connector, and remove the switch.

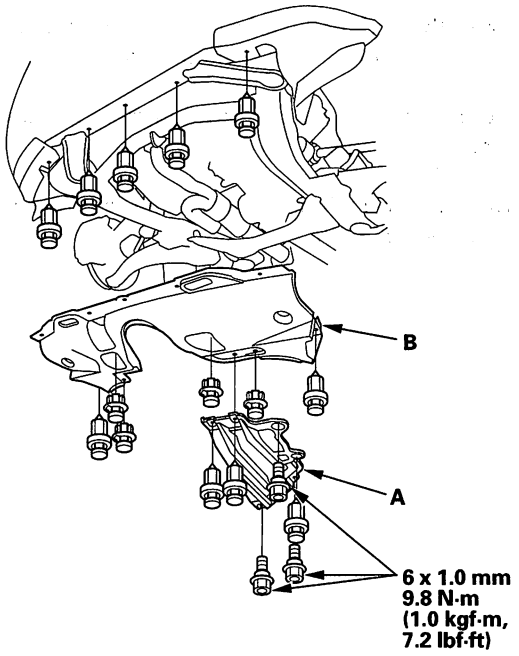


8. Install the new 4th clutch transmission fluid pressure switch (A) and a new sealing washer (B), and tighten the switch.
9. Make sure there is no water, oil, dust, or foreign particles inside the connector.
10. Connect the connector securely.
11. Install the battery base bracket and battery base.
12. Install the air cleaner housing and intake air duct.
13. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.
14. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.
15. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.
16. Do the steering column position memorization (see page 17-28).
17. Do the power window control unit reset procedure (see page 22-259).

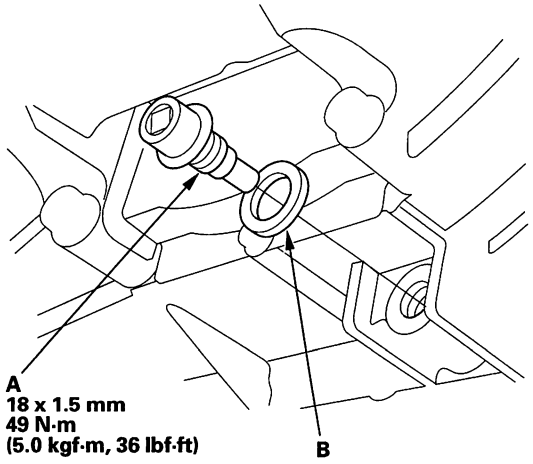
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ATF Temperature Sensor Replacement

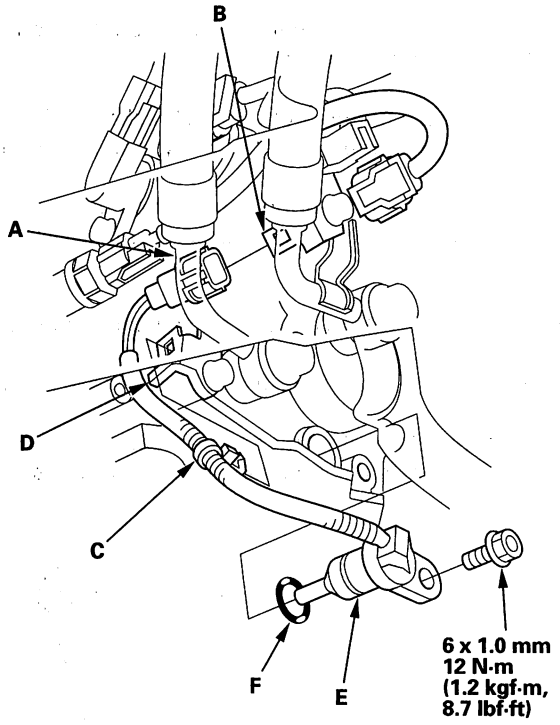
1. Raise the vehicle up on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the transmission undercover (A) and splash shield (B).



3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



4. Reinstall the drain plug with a new sealing washer (B).
5. Disconnect the ATF temperature sensor connector (A), then remove the connector from the connector bracket (B).



6. Remove the harness clamp (C) from its bracket (D).
7. Remove the ATF temperature sensor (E), and replace the sensor.
8. Install the new O-ring (F) on the new ATF temperature sensor, and install the ATF temperature sensor.
9. Check the connector for rust, dirt, or oil. Connect the connector securely, and install it on its bracket.
10. Install the harness clamp on its bracket.
11. Refill the transmission with ATF (see step 7 on page 14-266).
12. Install the splash shield and transmission undercover.

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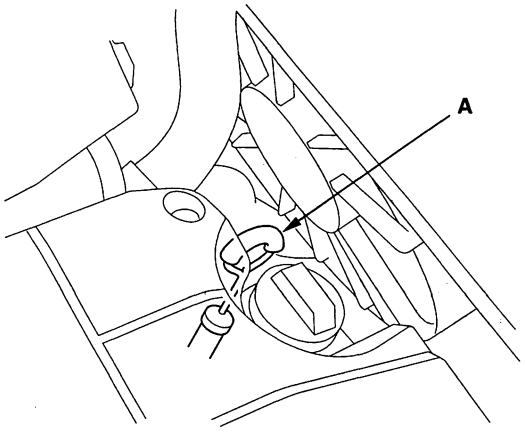
BACK

ATF Level Check

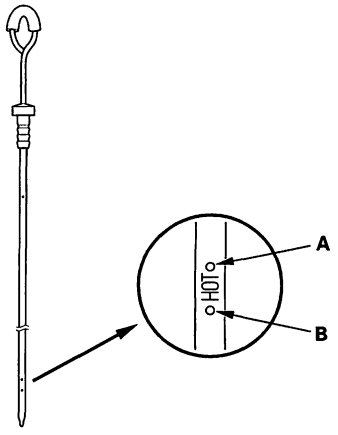
NOTE: Keep all foreign particles out of the transmission.

1. Park the vehicle on the level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off. Do not allow the engine to warm up longer than the time it takes for the radiator fan to come on twice.

   NOTE: Check the fluid level within 60—90 seconds after turning the engine off. Higher fluid level may be indicated if the radiator fan comes on twice or more.
3. Remove the dipstick (yellow loop) (A) from the dipstick guide tube, and wipe it with a clean cloth.



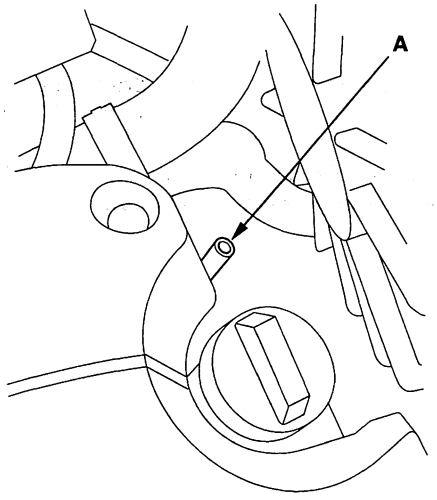
4. Insert the dipstick into the guide tube.
5. Remove the dipstick and check the fluid level. It should be between the upper mark (A) and lower mark (B).



6. If the level is below the lower mark, check for fluid leaks at the transmission, and hose and line joints. If a problem is found, fix it before filling the transmission.

   NOTE: If the vehicle is driven when the ATF level is below the lower mark:
   - Transmission damage will result.
   - Vehicle does not move in any gear.
   - Vehicle accelerates poorly, and flares when starting off in the D and R positions.
   - The engine vibrates at idle.
7. If the level is above the upper mark, drain the ATF to proper level (see step 5 on page 14-266).

   NOTE: If the vehicle is driven when the ATF level is above the upper mark, the vehicle may creep forward while in the N position, or have shifting problems.
8. If necessary, fill the transmission with the ATF through the dipstick guide tube opening (A) to bring the fluid level midway between the upper mark and lower mark of the dipstick. Do not fill past the upper mark. Always use Acura ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Acura ATF can affect shift quality.



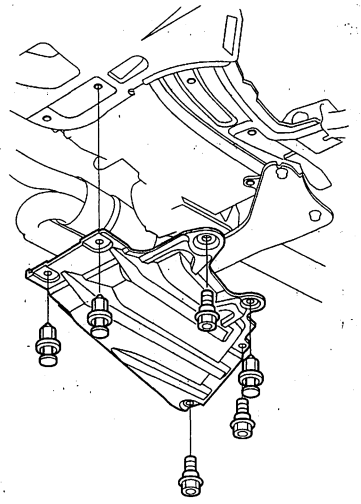
9. Insert the dipstick back into the dipstick guide tube.

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ATF Replacement

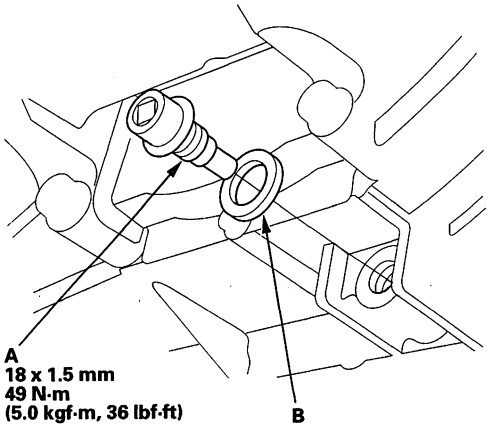
NOTE: Keep all foreign particles out of the transmission.

1. Park the vehicle on the level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off.
3. Raise the vehicle up on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
4. Remove the transmission undercover.



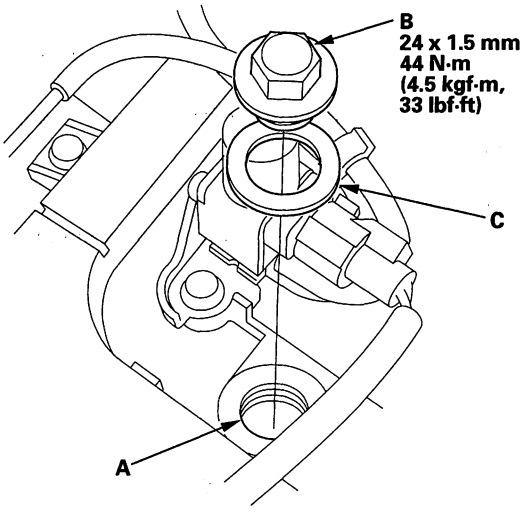
5. Remove the ATF filler bolt and drain plug (A), and drain the automatic transmission fluid (ATF).

   NOTE: If a cooler cleaning is done, refer to ATF Cooler Cleaning (see page 14-300).



6. Reinstall the drain plug with a new sealing washer (B).
7. Refill the transmission with the recommended fluid into the filler hole (A). Always use Acura ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Acura ATF can affect shift quality.

   Automatic Transmission Fluid Capacity:
   2.8 L (3.0 US qt) at change
   7.9 L (8.3 US qt) at overhaul

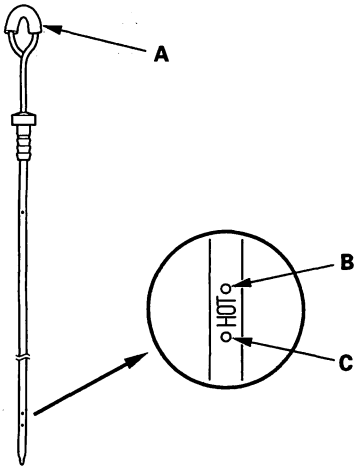


8. Install the ATF filler bolt (B) and a new sealing washer (C).

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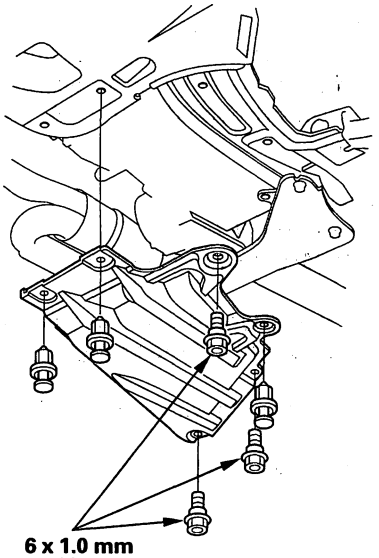
BACK

9. Remove the dipstick (A).



10. Make sure the fluid level is between the upper mark (B) and lower mark (C) on the dipstick.

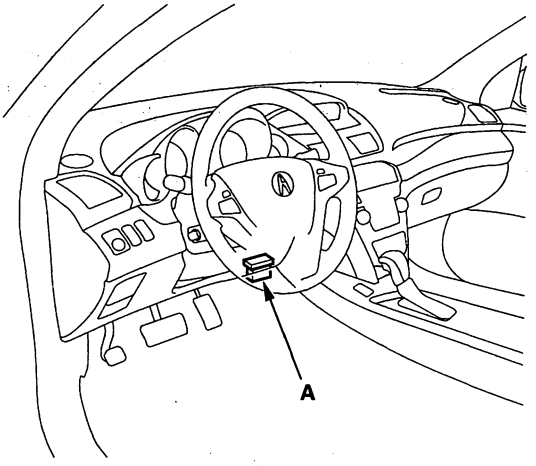
11. Install the transmission undercover.



6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

12. If the maintenance minder required to replace the ATF, reset the maintenance minder (see page 3-6), and this procedure is complete. If the maintenance minder did not require to replace the ATF, go to step 10 and reset the ATF life with the HDS.

13. Connect the HDS to the DLC (A), and go to the BODY ELECTRICAL. If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).



14. Select ADJUSTMENT in the GAUGES MENU with the HDS.

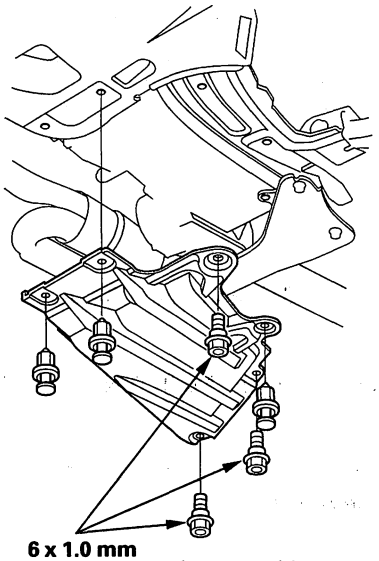
15. Select RESET in the MAINTENANCE MINDER with the HDS.

16. Select MAINTENANCE SUB ITEM 3 RESET, and reset the ATF life with the HDS.

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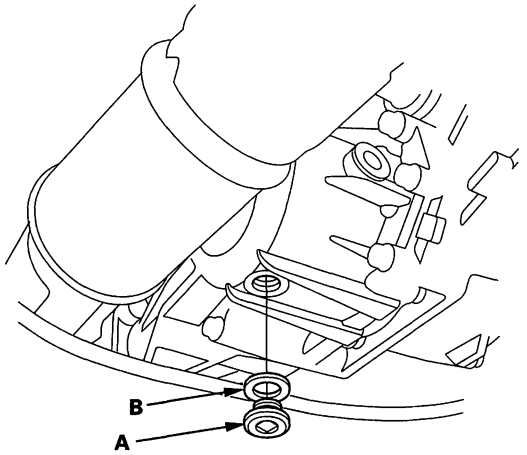
Transfer Assembly Fluid Replacement

1. Bring the transmission up to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.
3. Raise the vehicle up on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
4. Remove the transmission undercover.



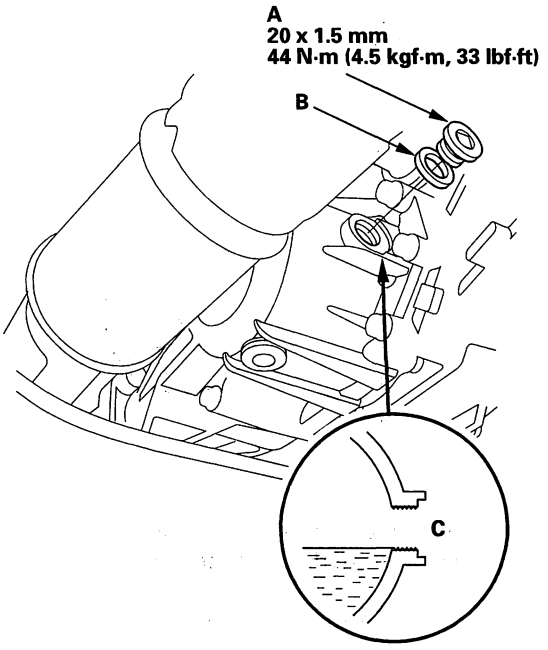
6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

5. Remove the drain plug (A), and drain the transfer fluid (hypoid gear oil).



A
20 x 1.5 mm
44 N·m (4.5 kgf·m, 33 lbf·ft)

6. Reinstall the drain plug with a new sealing washer (B).
7. Remove the filler plug (A) and sealing washer (B).



8. Refill the transfer assembly with the recommended fluid (hypoid gear oil) through the filler hole (C) until the fluid flows out. Use an SAE 90 or SAE 80W-90 viscosity hypoid gear oil, API classified GL4 or GL5 only.

   Viscosity:
   SAE 90: Above 0 °F (−18 °C)
   SAE 80W-90: Below 0 °F (−18 °C)

   Transfer Fluid (Hypoid Gear Oil) Capacity:
   0.43 L (0.45 US qt) at fluid change

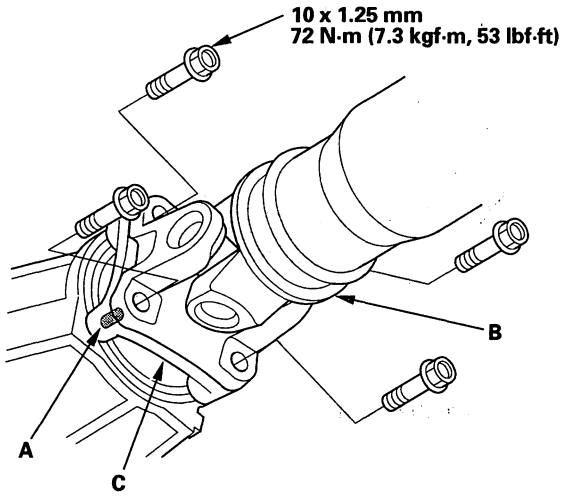
9. Install the filler plug with a new sealing washer.
10. Install the transmission undercover.

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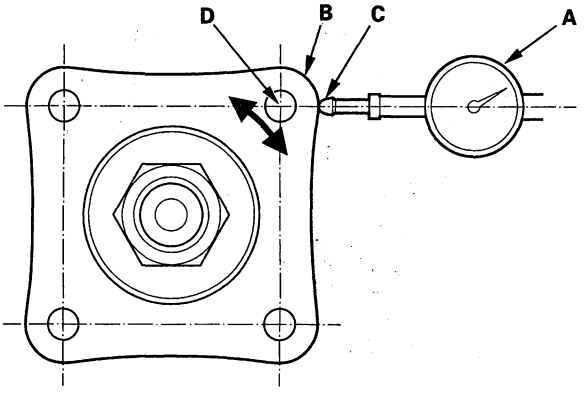
BACK

Transfer Assembly Inspection

1. Raise the vehicle, and make sure it is supported securely.
2. Shift the transmission into the N position.
3. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).



4. separate the propeller shaft from the transfer companion flange.
5. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).



6. Measure the transfer gear backlash.

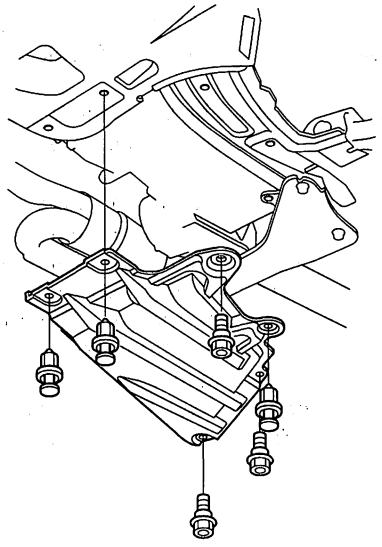
   Standard: 0.06—0.16 mm (0.002—0.006 in.)

7. If the measurement is out of standard, remove the transfer assembly, and adjust the transfer gear backlash (see page 14-435).
8. Check for fluid leaks between the mating faces of the transfer assembly and transmission.
9. If there is leak, remove the transfer assembly, remove the transfer cover, and replace the O-ring.
10. Check for fluid leaks between the transfer companion flange and transfer oil seal.
11. If there is leak, remove the transfer assembly from the transmission, and replace the transfer oil seal and O-ring on the transfer output shaft (hypoid gear). If oil seal and O-ring replacement is required, you will need to check and adjust the transfer gear tooth contact, transfer gear backlash, the tapered roller bearing starting torque, and the total starting torque (see page 14-435). Do not replace the oil seal with the transfer assembly on the transmission.

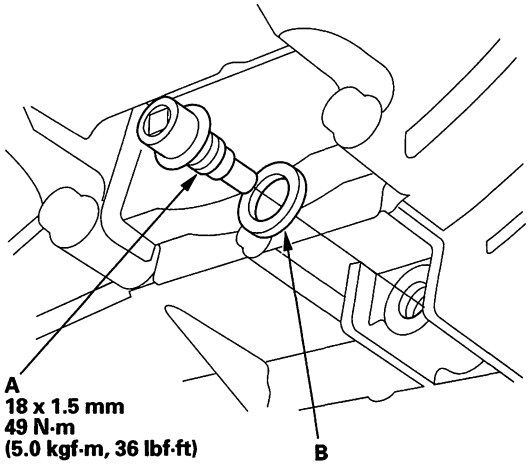
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Transfer Assembly Removal

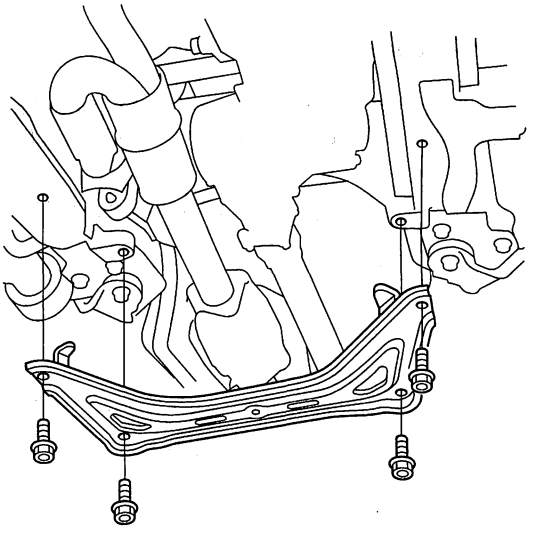
1. Raise the vehicle, and make sure it is supported securely.
2. Shift the transmission into the N position.
3. Remove the transmission undercover.



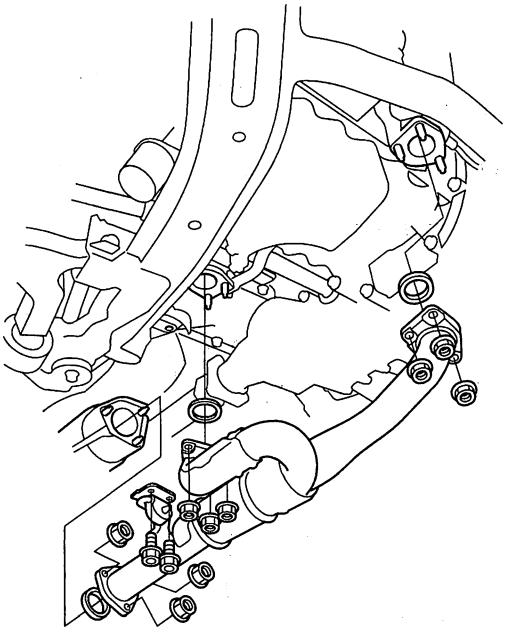
4. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



5. Reinstall the drain plug with a new sealing washer (B).
6. Remove the front subframe stiffener.



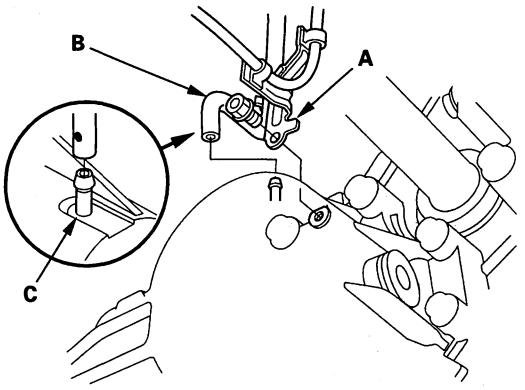
7. Remove the exhaust pipe A.



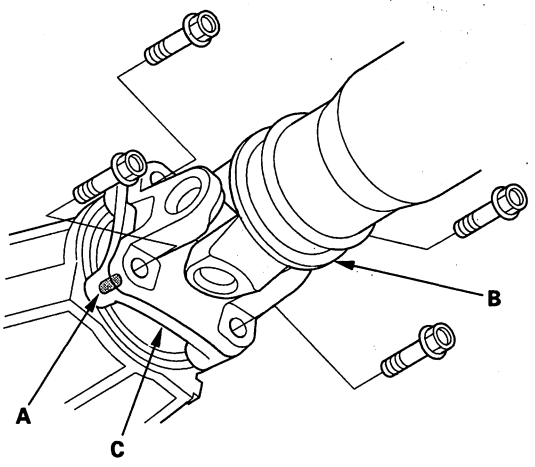
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8. Remove the bolt securing the transfer breather hose bracket (A), and disconnect the breather hose (B) from the breather pipe (C) on the transfer assembly.

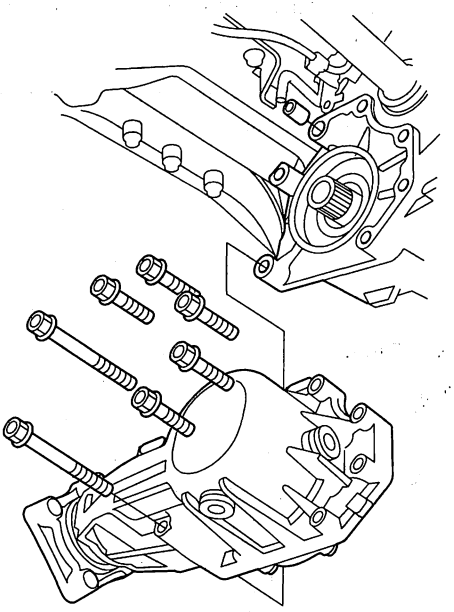


9. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).



10. Separate the propeller shaft from the transfer companion flange.

11. Remove the transfer assembly from the transmission.

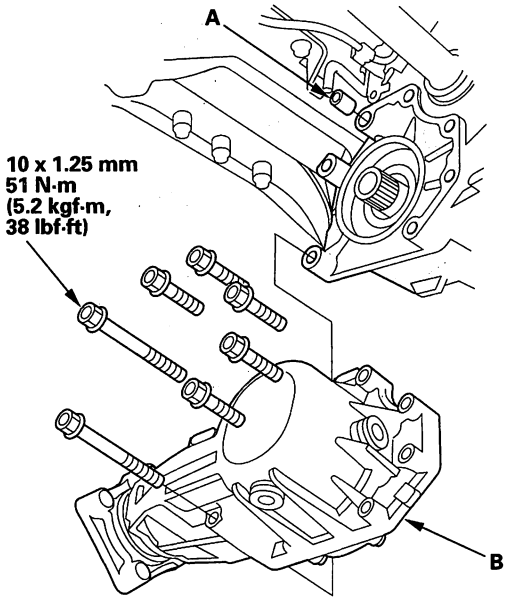


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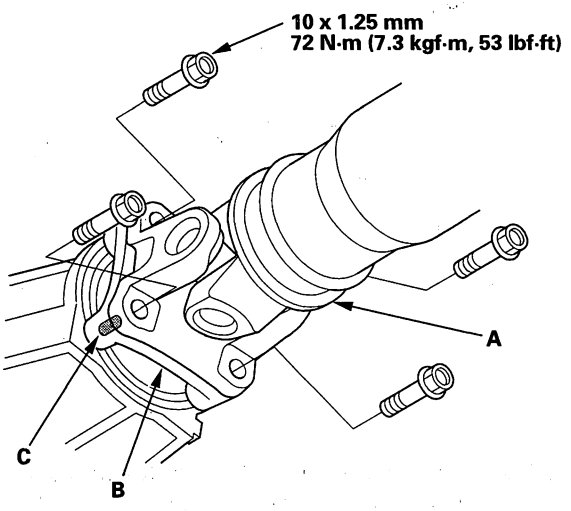
Transfer Assembly Installation

1. Clean the areas where the transfer assembly contacts the transmission with solvent, and dry with compressed air. Then apply transmission fluid to the contact area.

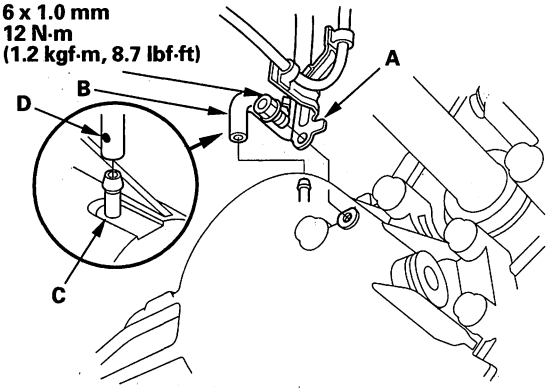
2. Install the dowel pin (A) in the transmission, and install the transfer assembly (B) on the transmission.



3. Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).



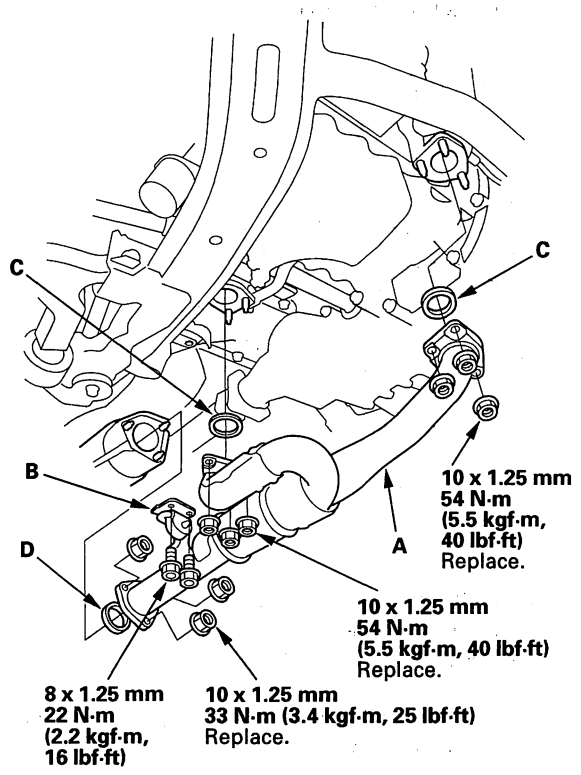
4. Secure the transfer breather hose bracket (A) on the transfer assembly with the bolt, and install the breather hose (B) over the breather pipe (C) with the dot (D) facing out.



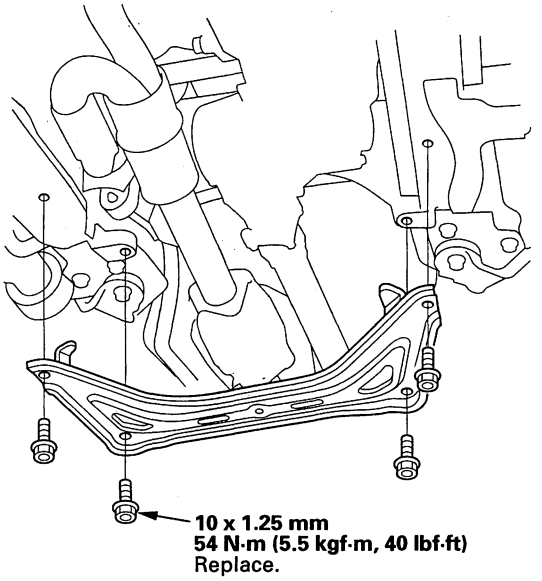
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5. Install the exhaust pipe A with the new self-locking nuts, its mount (B), and new gaskets (C) (D).



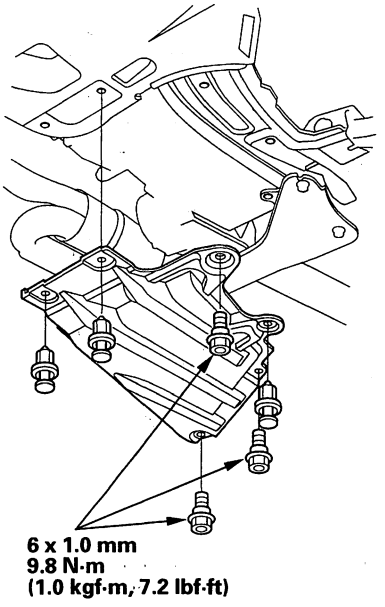
6. Install the front subframe stiffener with the new mounting bolts.



7. Refill the transfer with transfer fluid (hypoid gear oil), if necessary (see page 14-268).

8. Refill the transmission with ATF (see step 7 on page 14-266).

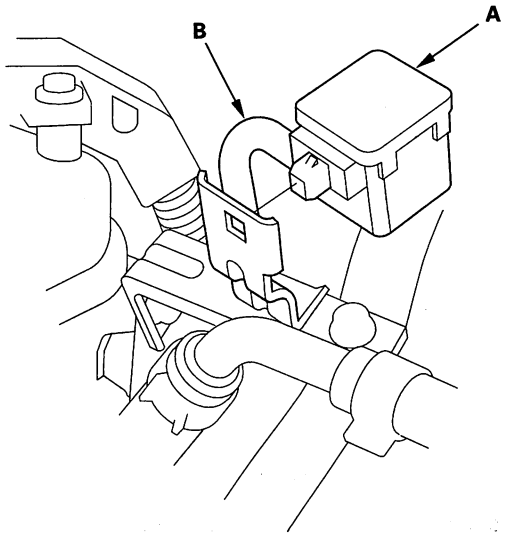
9. Install the transmission undercover.



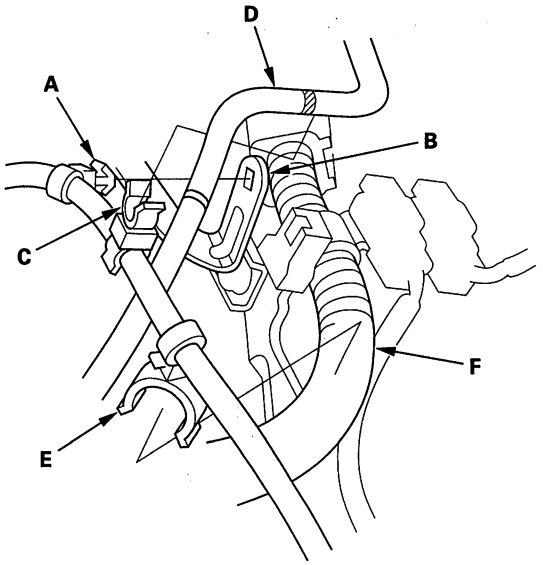
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Transfer Breather Hose Replacement

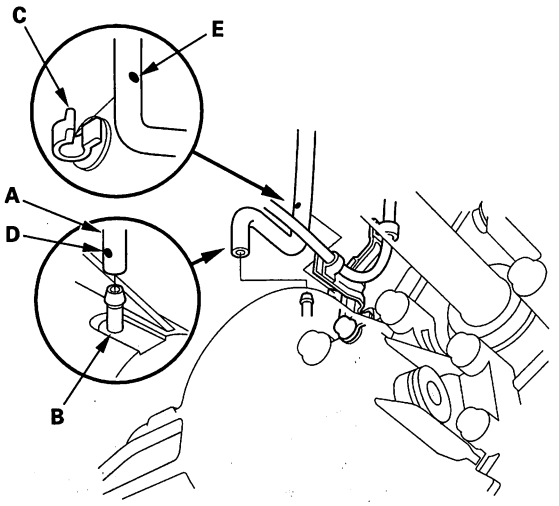
1. Raise the vehicle, and make sure it is supported securely.
2. Remove the transfer breather (A) from its bracket (B).



3. Remove the breather hose clamp (A) from the hose clamp (B), and remove the hose clamp (C) from the vacuum hose (D).



4. Remove the harness clamp (E) on the breather hose from the engine harness (F).
5. Disconnect the breather hose (A) from the transfer breather pipe (B), and remove the breather hose from the hose clamp (C).



6. Install the breather hose over the breather pipe with the dot (D) facing out, and install the hose on the hose clamp at the dot (E).
7. Install the breather hose clamp on the hose clamp, and install the hose clamp on the vacuum hose at the mark.
8. Install the harness clamp on the engine harness.
9. Install the transfer breather on its bracket.

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Transmission Removal

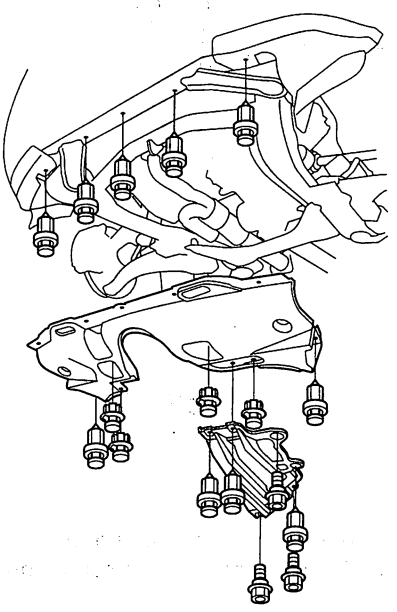
Special Tools Required
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balancer bar VSB02C000019
- Engine hanger adapter set VSB02C000031
- Front subframe adapter EQS02BMDXSB0

These special tools are available through the American Honda Tool and Equipment Program 1-888-424-6857.

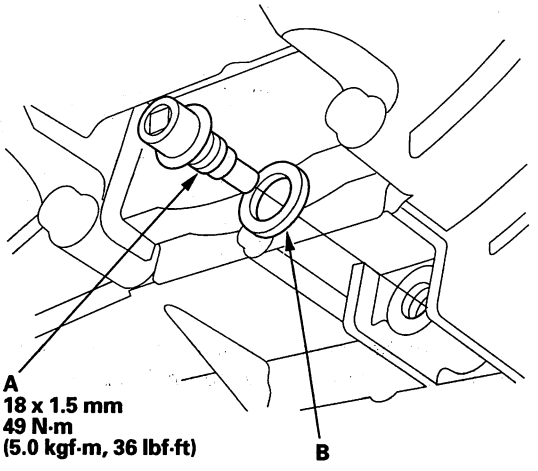
NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Special tool Reds engine support hanger AAR-T12566 must be used with the side engine mount installed.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the support strut from the pivot ball on both sides (bolted to the hood). Raise and secure the hood in a vertical position. Remove the left side pivot ball and install it into the lower threaded hole, then reattach the support strut.

   NOTE: Do not attempt to close the hood with the support strut in the vertical position; it will damage the support strut and the hood.
3. Set the wheels in the straight ahead position, and lock the steering wheel.
4. Drain the power steering system fluid from the reservoir (see page 17-13).
5. Make sure the ignition switch is OFF. Disconnect the negative terminal from the battery, then disconnect the positive terminal from the battery.
6. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
7. Remove the intake manifold cover, intake air duct, and air cleaner housing.
8. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
9. Remove the battery base and battery base bracket.
10. Remove the front bulkhead cover.
11. Raise the vehicle, and make sure it is securely supported.
12. Remove the transmission undercover and splash shield.



13. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



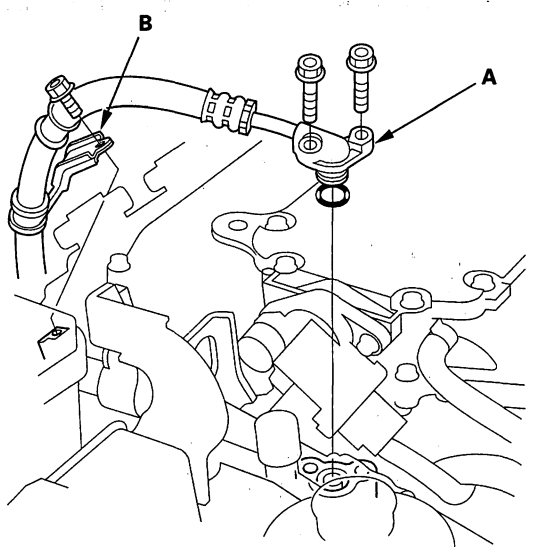
14. Reinstall the drain plug with a new sealing washer (B).
15. Disconnect the steering joint (see page 17-25).

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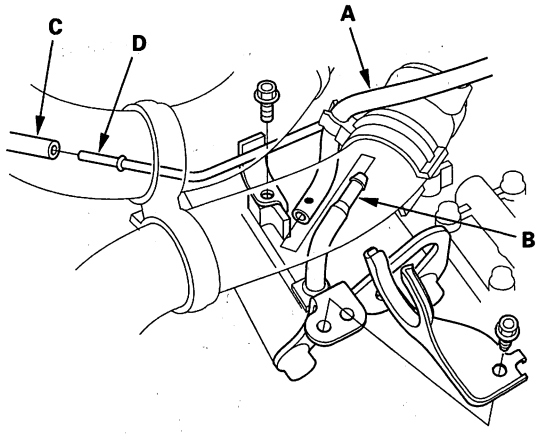
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Transmission Removal (cont'd)

16. Remove the power steering pump outlet line (A) from the power steering pump, and remove the hose clamp bolt (B).

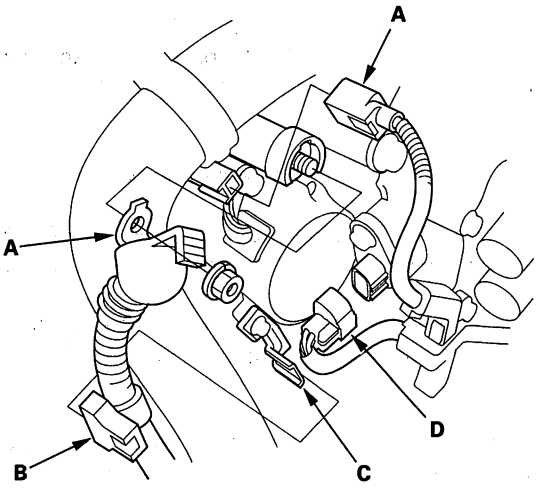


17. Disconnect the transmission breather hose (A) from the breather pipe (B) at the transmission housing.



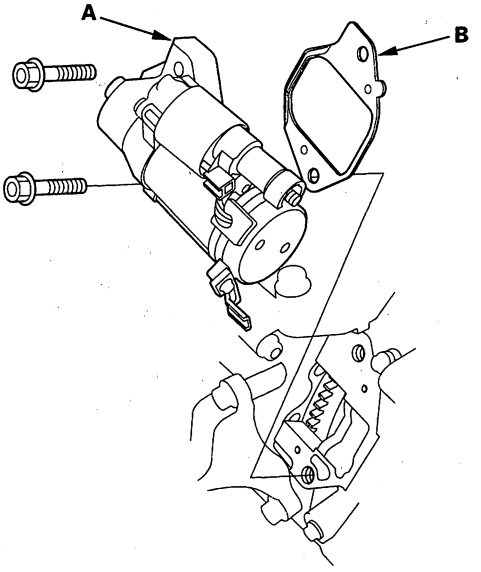
18. Disconnect the vacuum hose (C) from the vacuum line (D), and remove the vacuum line bolt.

19. Disconnect the starter cables (A) from the starter, and remove the harness clamp (B) from the clamp bracket (C).



20. Disconnect the solenoid harness connector (D).

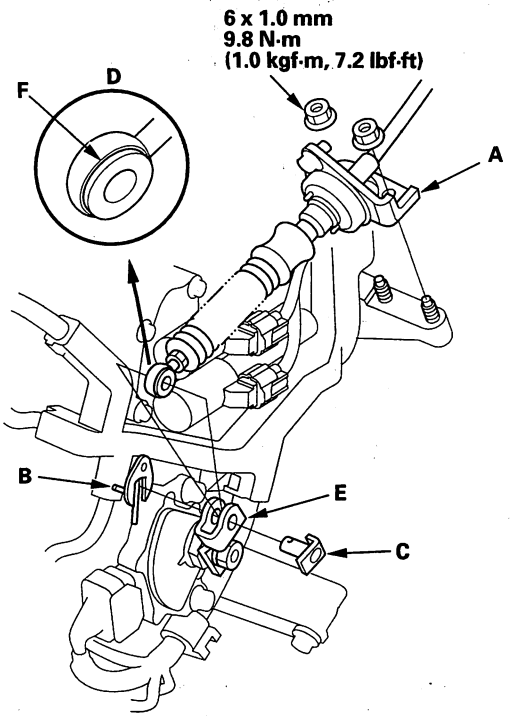
21. Remove the dipstick, then remove the starter (A) and gasket (B).



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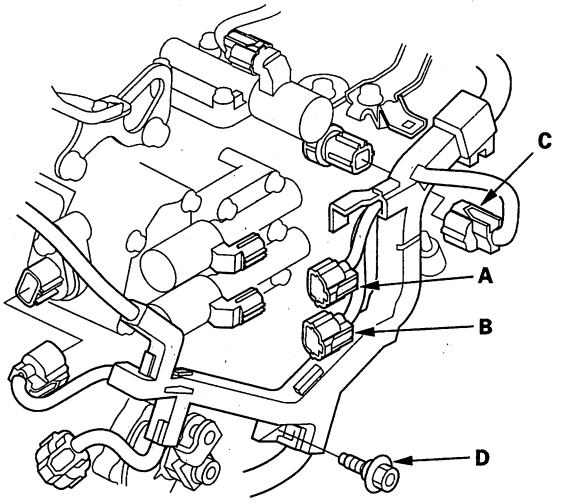
22. Remove the nuts securing the shift cable bracket (A).



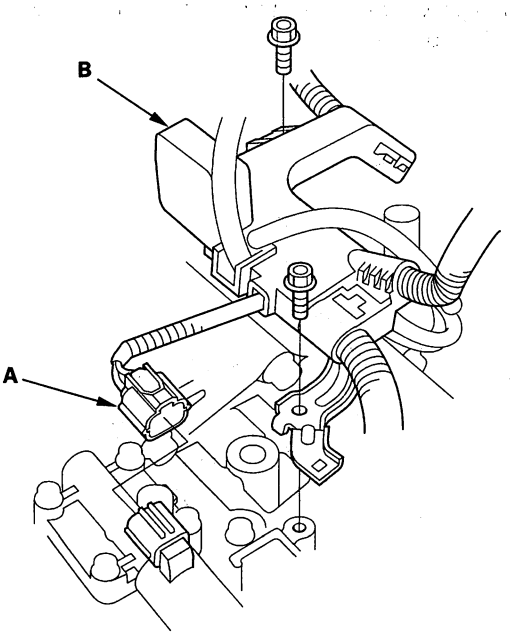
23. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

24. Check the synthetic resin bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-309).

25. Disconnect the A/T clutch pressure control solenoid valve A connector (A), A/T clutch pressure control solenoid valve B connector (B), and 4th clutch transmission fluid pressure switch connector (C), and remove the harness cover mounting bolt (D).



26. Disconnect the A/T clutch pressure control solenoid valve C connector (A).



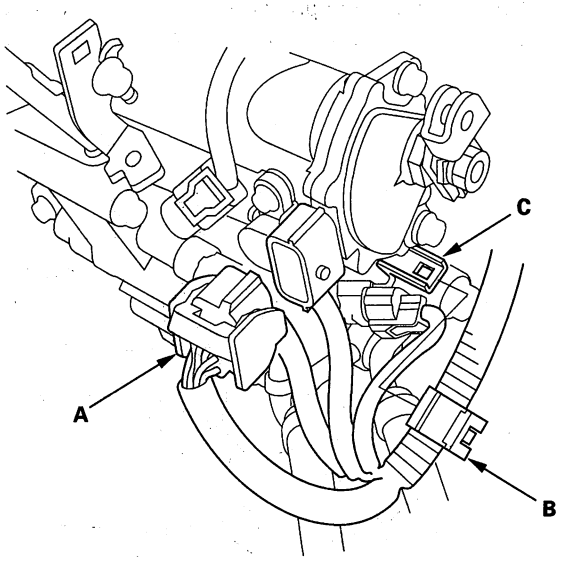
27. Remove the bolts securing the harness cover (B).

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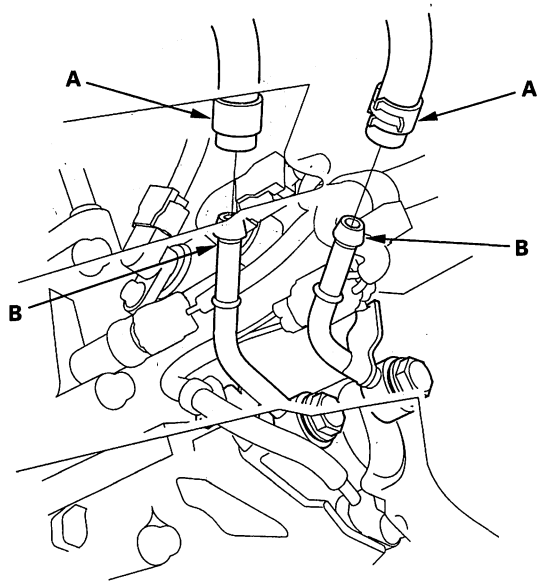
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Transmission Removal (cont'd)

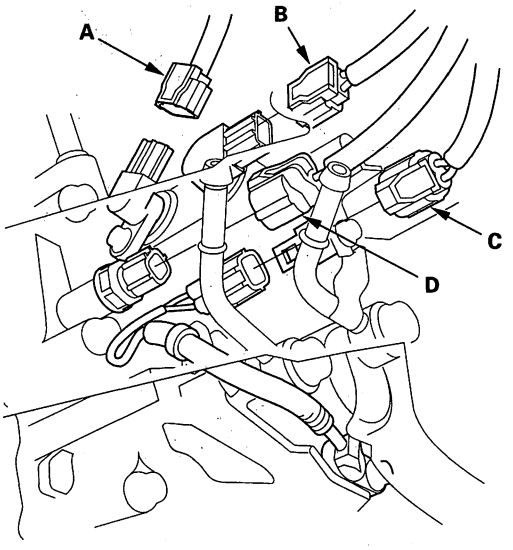
28. Disconnect the transmission range switch connector (A), and remove the harness clamp (B) from the clamp bracket (C).



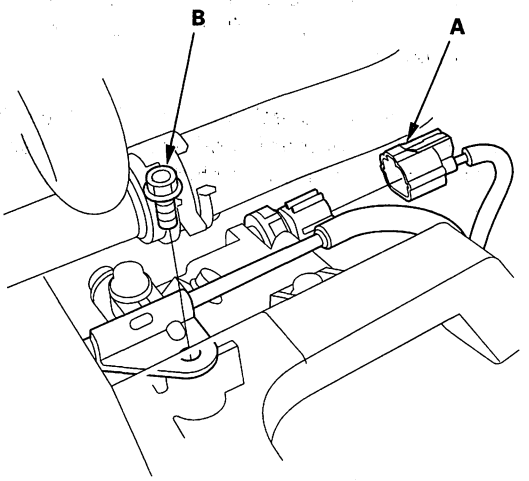
29. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the cooler hoses up to prevent ATF from flowing out, then plug the cooler hoses and lines.



30. Disconnect the input shaft (mainshaft) speed sensor connector (A), output shaft (countershaft) speed sensor connector (B), ATF temperature sensor connector (C), and 3rd clutch transmission fluid pressure switch connector (D).



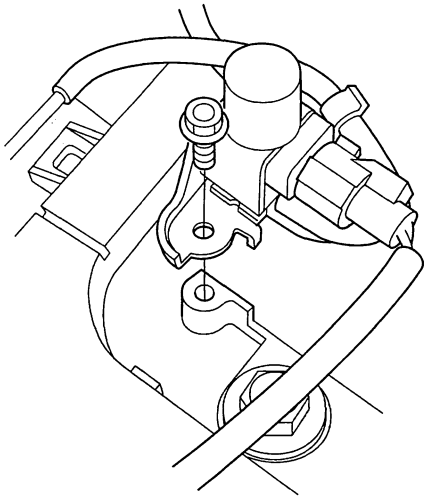
31. Disconnect the 2nd clutch transmission fluid pressure switch connector (A), and remove the vacuum line bolt (B).



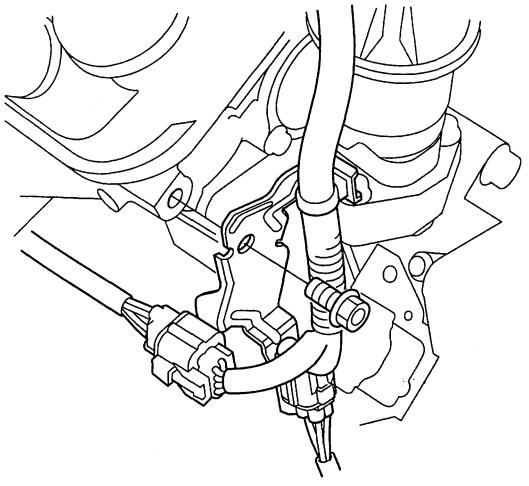
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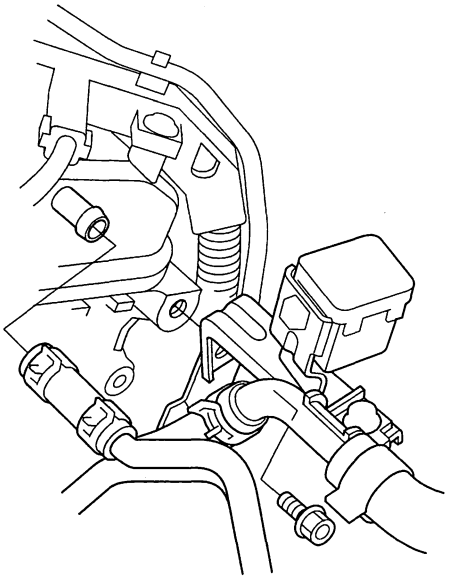
32. Remove the bolt securing the engine mount control solenoid valve mounting bracket.



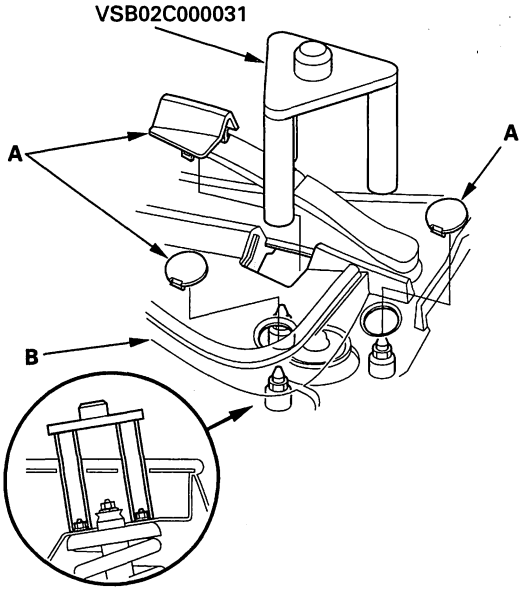
33. Remove the connector bracket from the engine front cylinder head; use the bracket bolt hole to attach engine hanger balancer bar front arm.



34. Remove the transfer breather bracket from the engine rear cylinder head; use the bracket bolt hole to attach engine hanger balancer bar rear arm.



35. Remove the service caps (A) for the front damper flange nuts from the cowl cover (B). Position the engine hanger adapters (VSB02C000031) over the damper flange nuts.

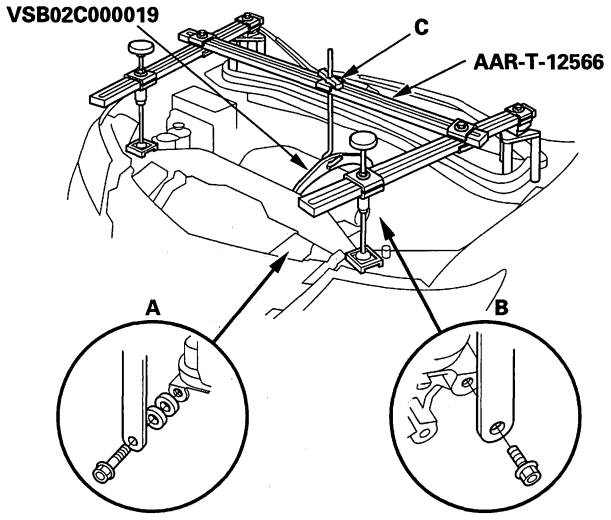


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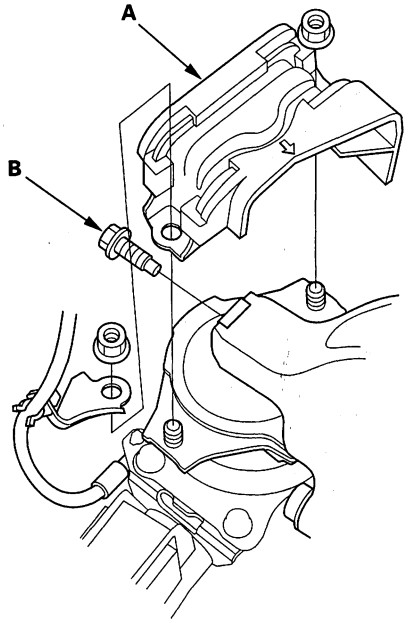
Transmission Removal (cont'd)

36. Install the engine balance bar (VSB02C000019); attach the front arm (A) to the front cylinder head with a spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.

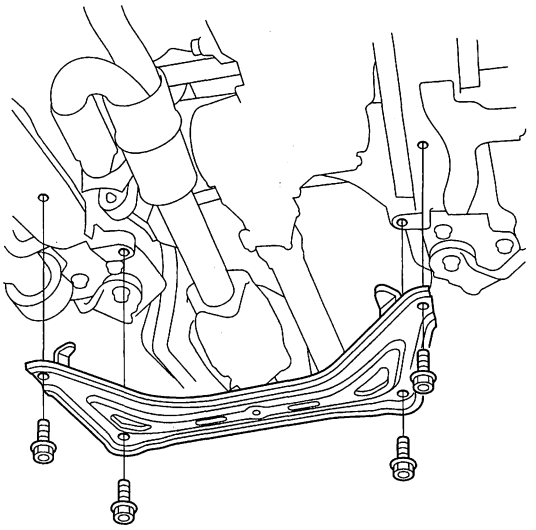


37. Install the engine support hanger (AAR-T12566) to the vehicle, and attach the hook to the slotted hole in the engine balance bar. Tighten the wing nut (C) by hand, and to lift and support the engine.

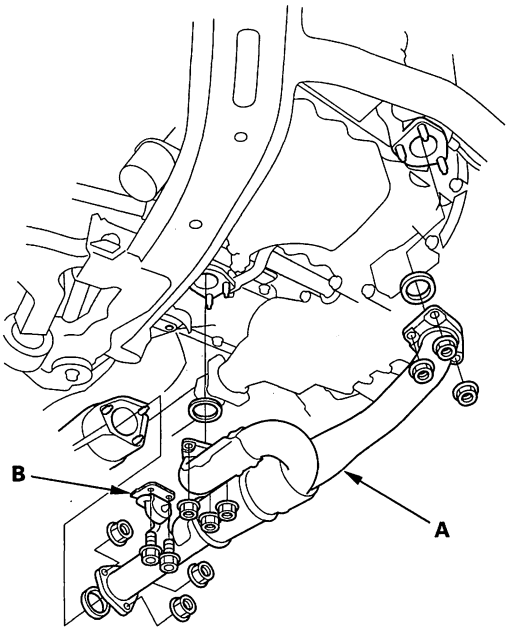
38. Remove the front mount stop (A) and front mount bolt (B).



39. Remove the front subframe stiffener.



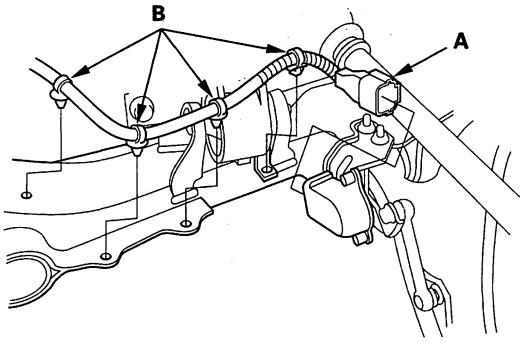
40. Remove the exhaust pipe A and its mount (B).



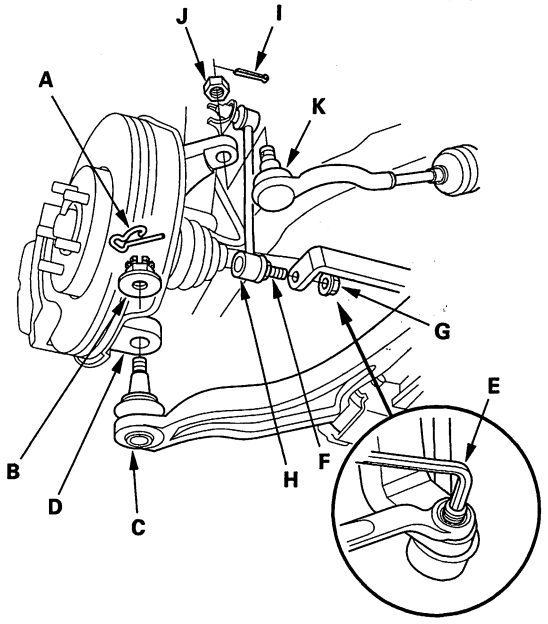
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41. Disconnect the headlight adjuster leveling sensor connector (A) on both lower arms, and remove the harness clamps (B) from the front subframe for model equipped with the headlight adjuster leveling system.



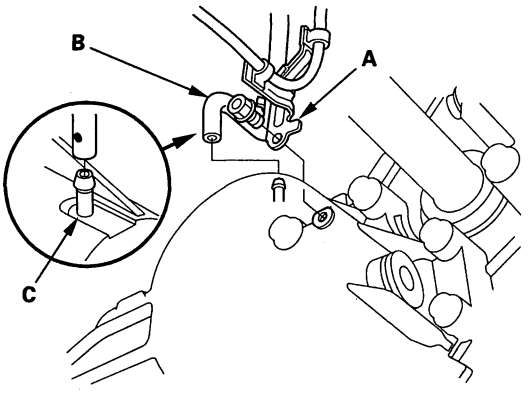
42. Remove the lock pins (A) and castle nuts (B), and separate the lower arms (C) from the knuckles (D) (see step 5 on page 18-15).



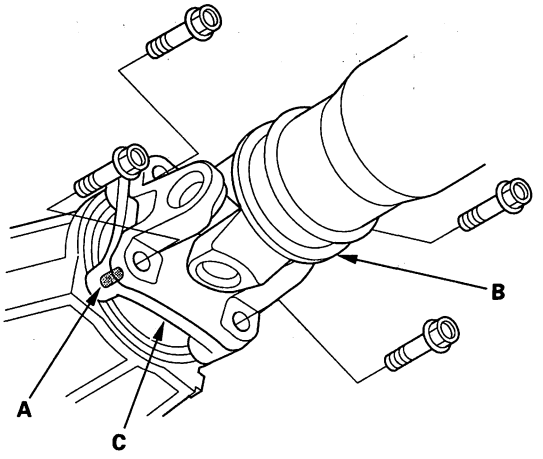
43. Insert a 6 mm Allen wrench (E) in the top of the ball joint pin (F), and remove the nuts (G), then separate the stabilizer link (H).

44. Remove the cotter pins (I) and nuts (J), and separate the tie-rod end ball joints (K) from the knuckles (see step 5 on page 18-15).

45. Remove the bolt securing the transfer breather hose bracket (A), and disconnect the breather hose (B) from the breather pipe (C) on the transfer assembly.



46. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C), and separate the propeller shaft from the transfer companion flange.

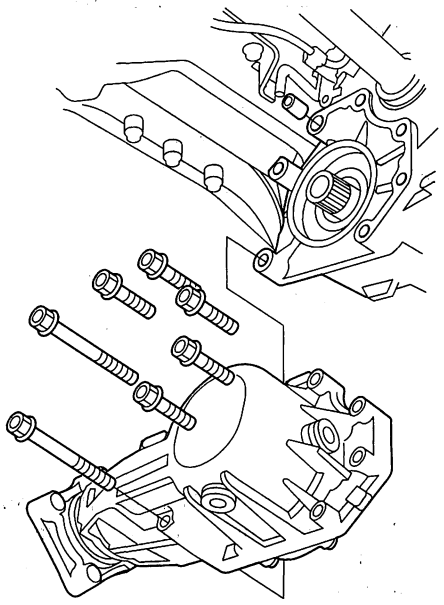


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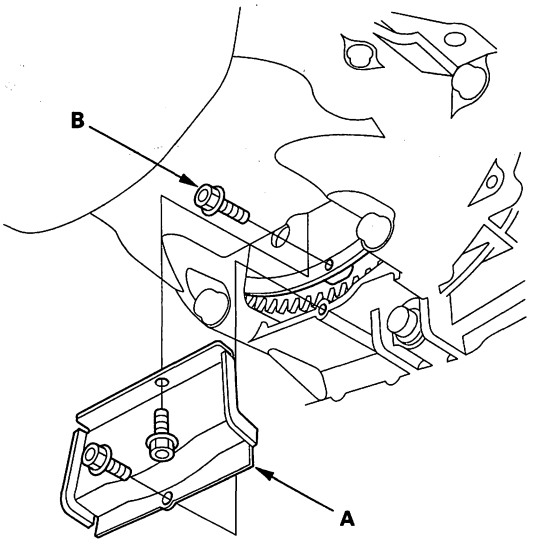
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Transmission Removal (cont'd)

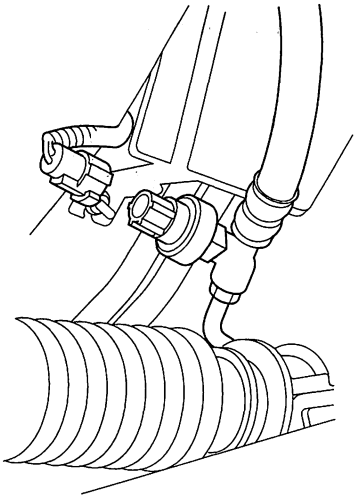
47. Remove the transfer assembly from the transmission.



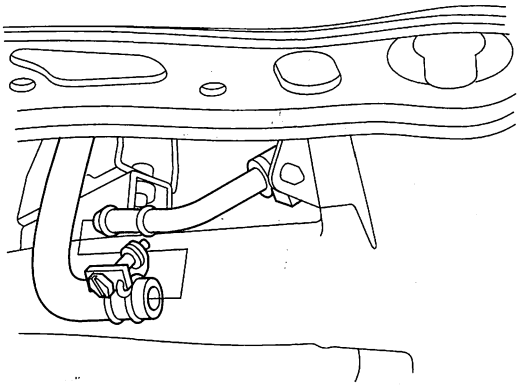
48. Remove the torque converter cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.



49. Disconnect the power steering pressure switch connector.



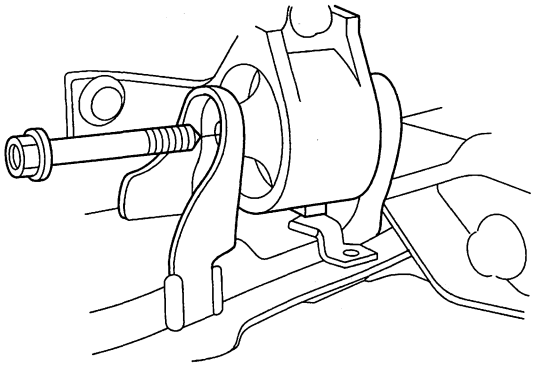
50. Loosen the hose clamp bolt, then disconnect the power steering fluid hose from the fluid line at the left front of the subframe.



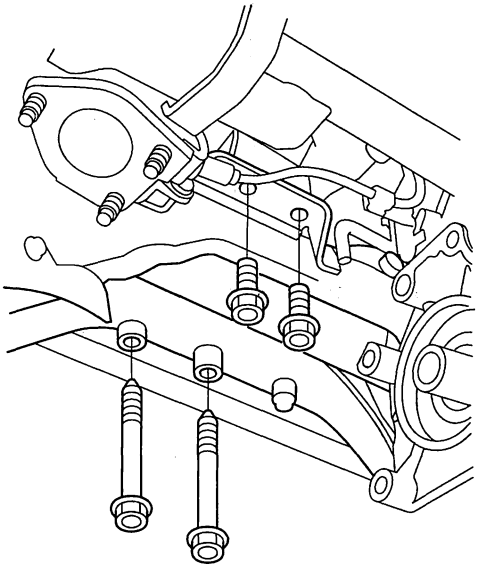
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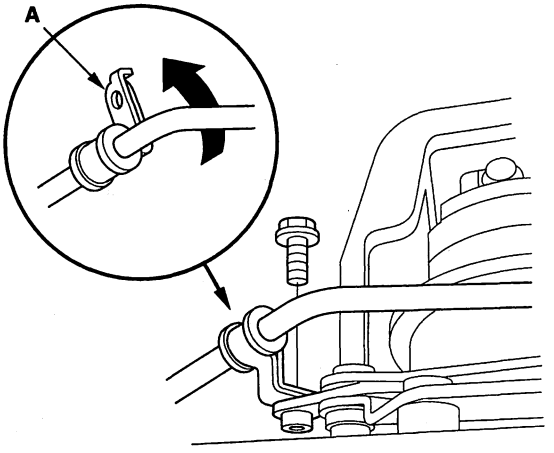
51. Remove the transmission lower mount bolt.



52. Remove the four rear mount bracket bolts.

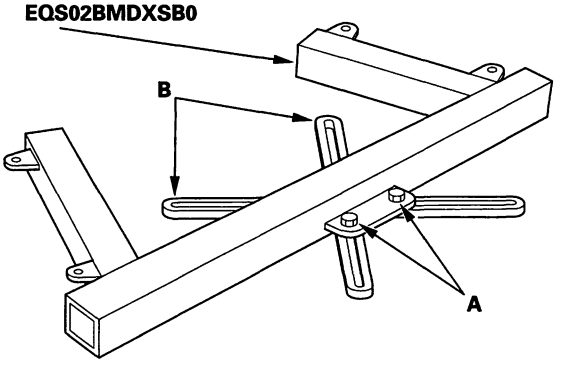


53. Remove the bolt securing the power steering fluid line clamp bracket (A) on the rear mount bracket, and turn the bracket away from the rear mount bracket.



54. Loosen the four bolts (A) holding the adjustable arms (B) of the front subframe adapter (EQS02BMDXSB0) to its center plate.

NOTE: The adapter is designed to be used with a commercially available transmission jack.

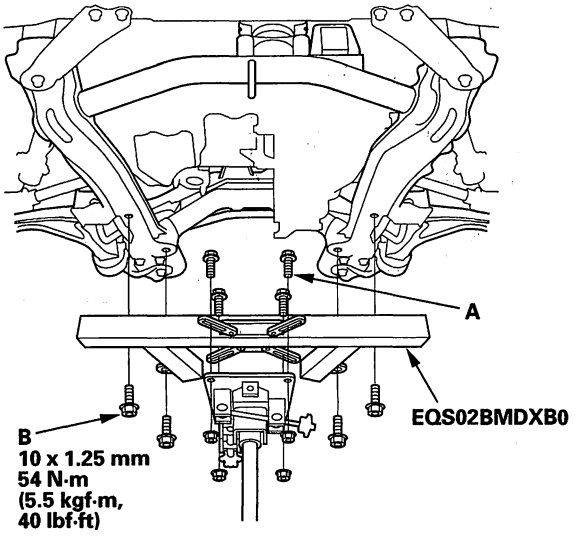


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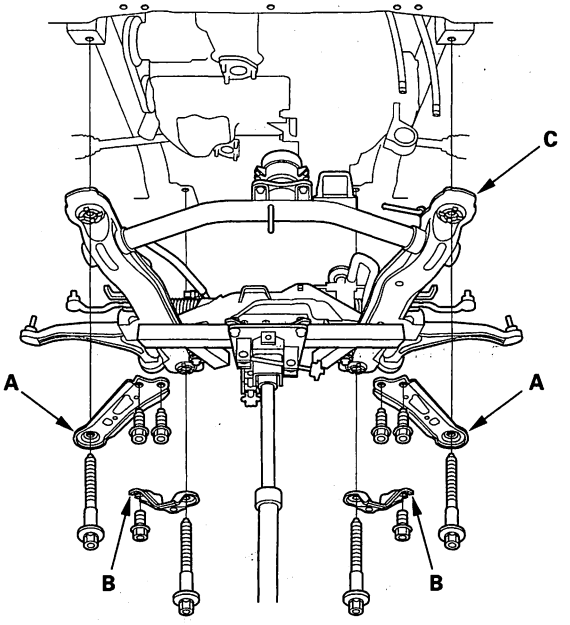
Transmission Removal (cont'd)

55. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the adapter (EQS02BMDXB0) to the jack base with the bolts (A) that came with the jack. Tighten the bolts securely.

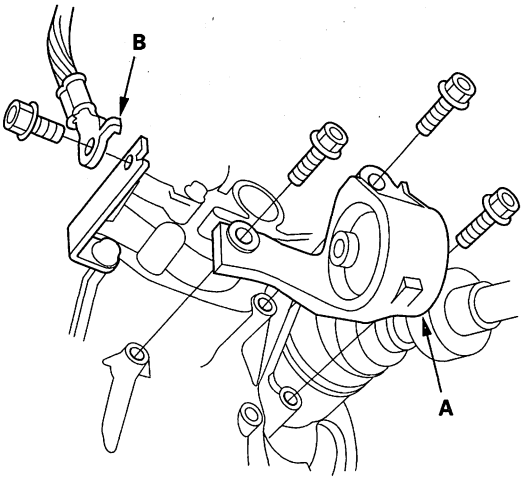


56. Raise the jack to the vehicle height, then attach the adapter to the front subframe using the subframe stiffener mounting bolts (B) and bolt holes.

57. Remove the six bolts securing the front stiffeners (A) and rear stiffeners (B), and four bolts securing the front subframe (C), and lower the front subframe.



58. Remove the transmission lower mount (A).

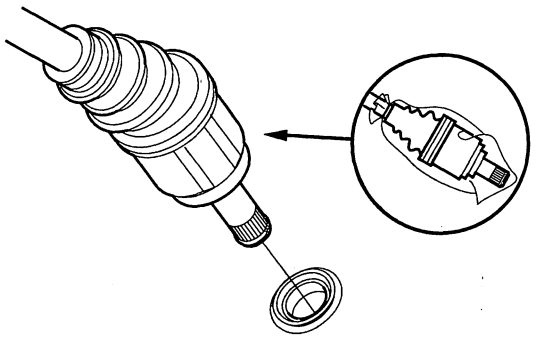


59. Remove the transmission ground terminal (B).

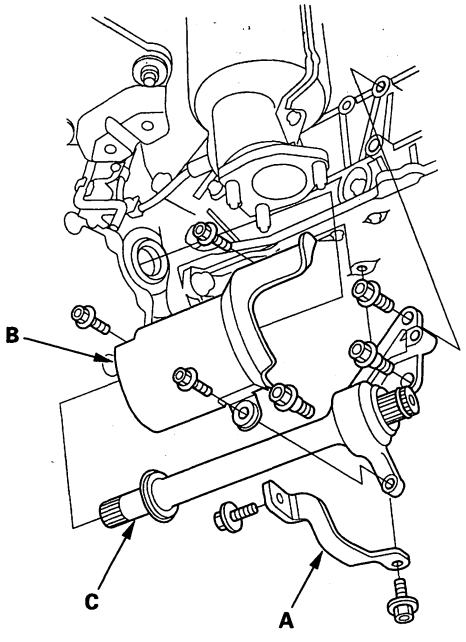
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60. Remove the driveshafts from the differential and the intermediate shaft. Coat all precision machined surfaces with clean engine oil, then put plastic bags over driveshaft ends.

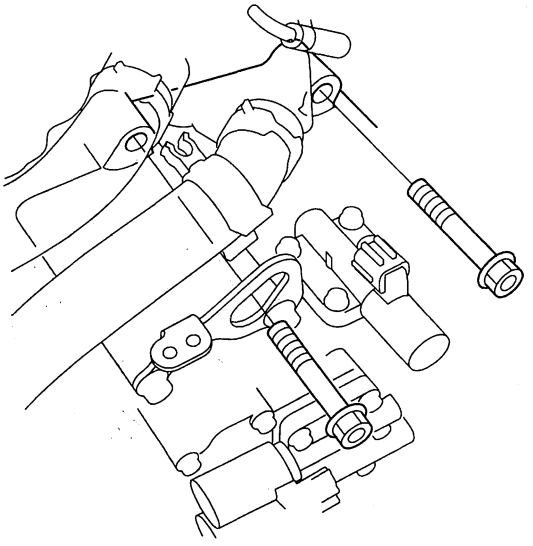


61. Remove the exhaust manifold bracket (A) and heat shield (B).

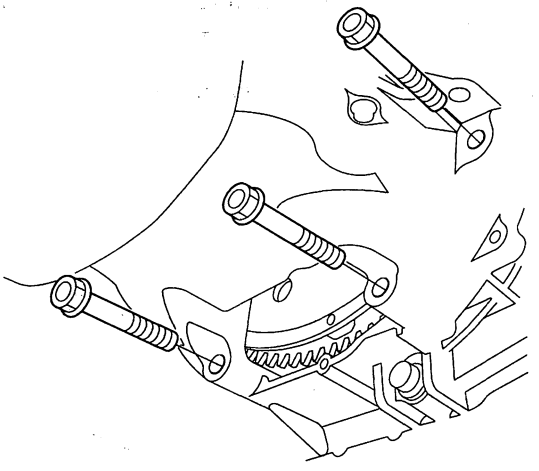


62. Remove the intermediate shaft (C). Coat all precision machined surfaces with clean engine oil, then put the plastic bags over intermediate shaft ends.

63. Remove the upper transmission housing mounting bolts.



64. Remove the lower transmission housing mounting bolts.

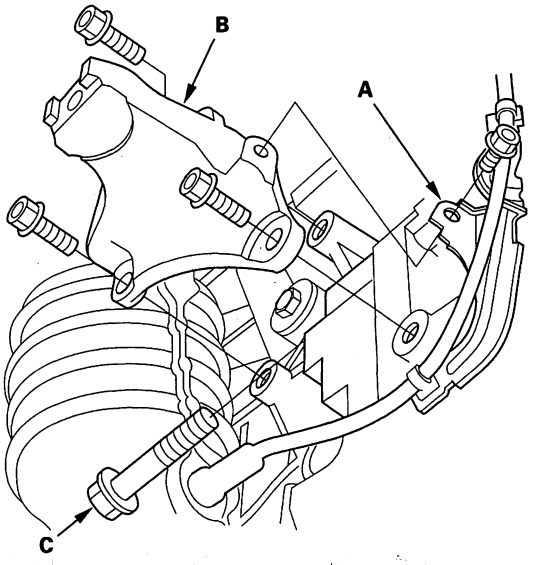


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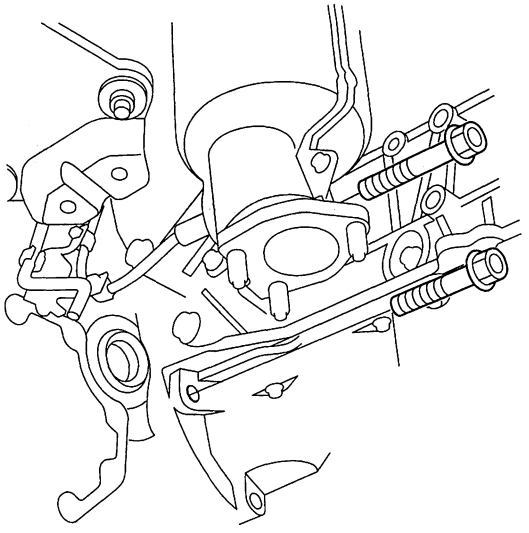
Transmission Removal (cont'd)

65. Remove the harness clamp bracket (A) from the front mount bracket (B), and remove the mount bracket.



66. Remove the transmission housing mounting bolt (C) using a socket 22 mm in length.

67. Remove the rear transmission housing mounting bolts.

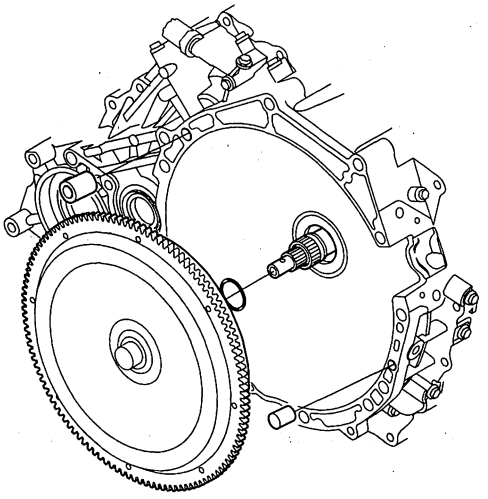


68. Place a jack under the transmission.

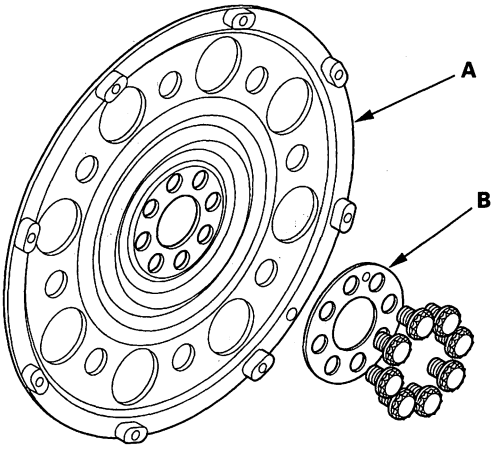
69. Lower the transmission by loosening the wing nut of the engine support hanger, and tilt the engine just enough for the transmission to clear its end from the side frame.

70. Slide the transmission away from the engine to remove it from the vehicle.

71. Remove the torque converter and dowel pins.



72. Remove the drive plate (A) and washer (B) from the engine crankshaft, and replace the drive plate whenever the transmission is removed from the engine.



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Transmission Installation

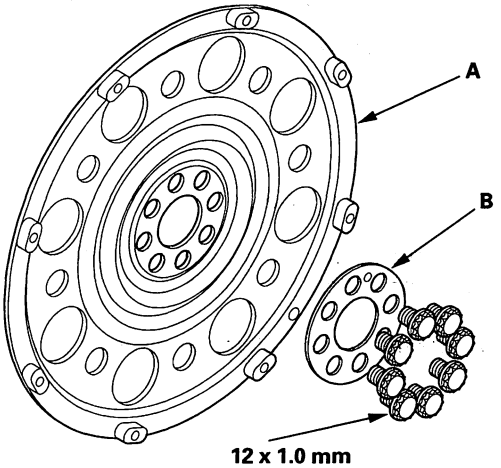
Special Tools Required
- Frame positioning guide pin 070AG-SJAA10S
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balancer bar VSB02C000019
- Engine hanger adapter set VSB02C000031
- Front subframe adapter EQS02BMDXSB0

These special tools are available through the American Honda Tool and Equipment Program 1-888-424-6857.

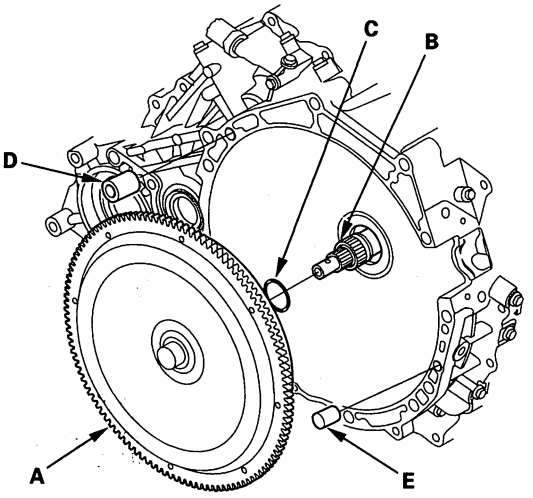
NOTE: Use fender covers to avoid damaging painted surfaces.

1. Clean the ATF cooler (see page 14-300).

2. Install the new drive plate and washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in two or more steps.



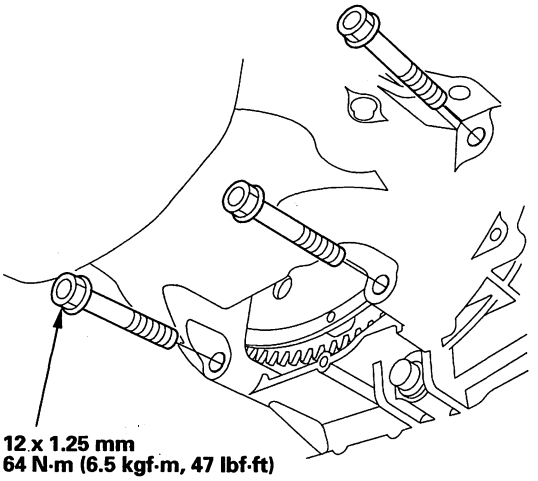
3. Install the torque converter (A) on the mainshaft (B) with the new O-ring (C).



4. Install the 14 mm dowel pin (D) and 10 mm dowel pin (E) in the torque converter housing.

5. Place the transmission on the jack, and raise it to engine level.

6. Attach the transmission to the engine, and install the lower transmission housing mounting bolts.

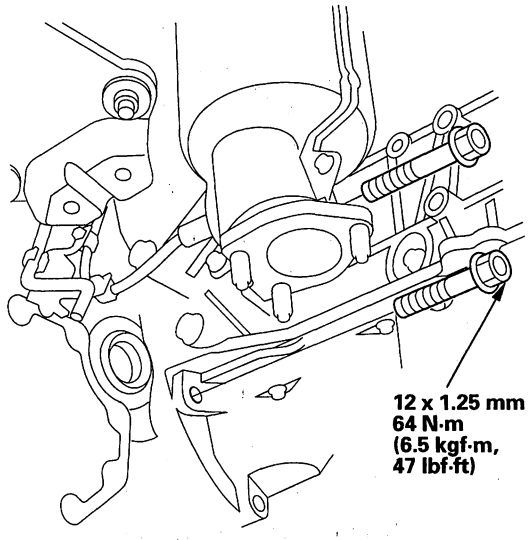


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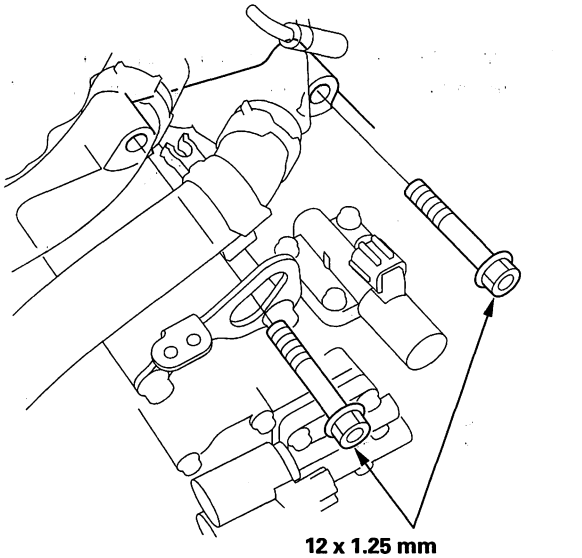
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Transmission Installation (cont'd)

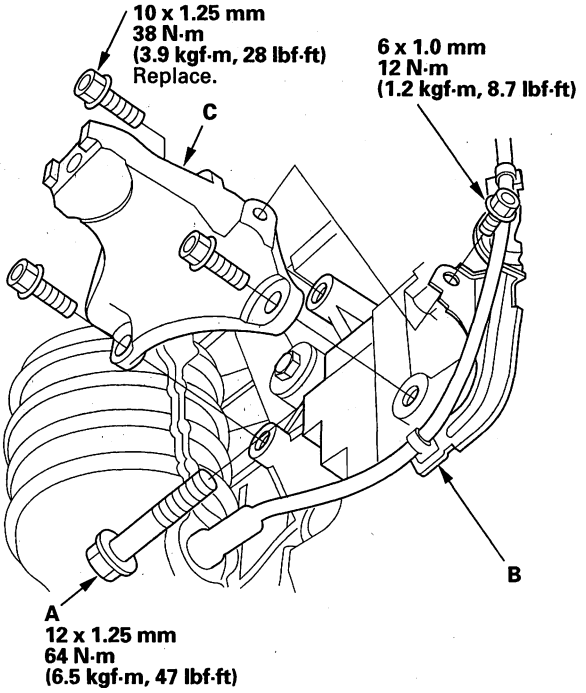
7. Install the rear transmission housing mounting bolts.



8. Install the upper transmission housing mounting bolts.



9. Install the transmission housing mounting bolt (A).



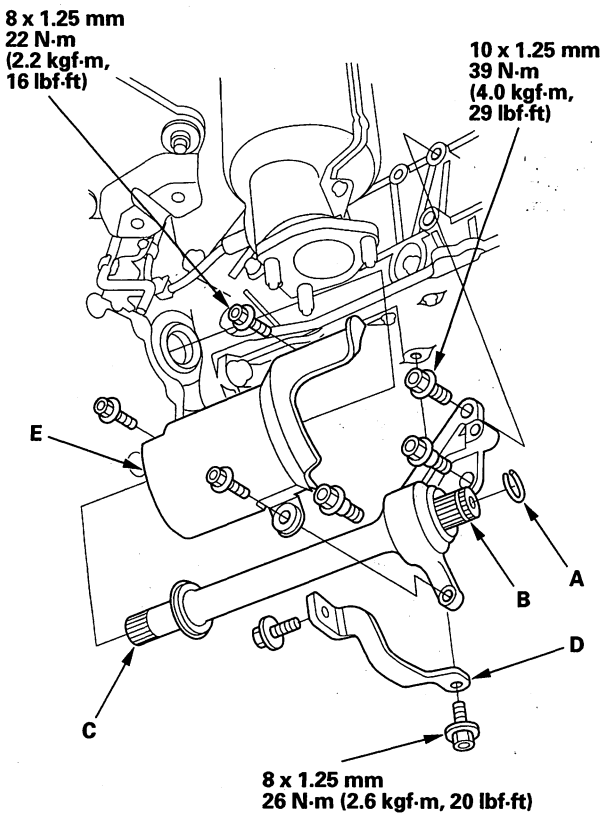
10. Install the front mount bracket (B) with the new mounting bolts.

11. Secure the harness clamp bracket (C) with the bolt.

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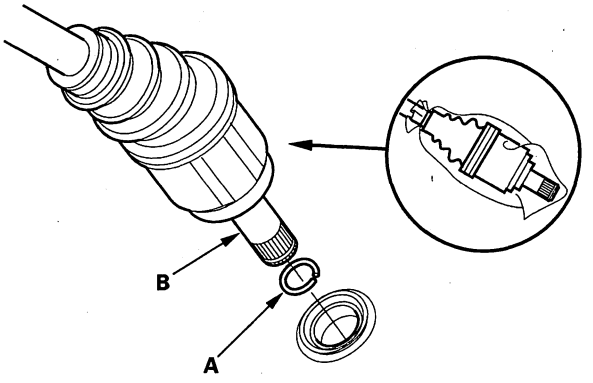
12. Install the new set ring (A) on the intermediate shaft (B).



13. Clean the areas where the intermediate shaft contacts the transmission (differential) with solvent, and dry with compressed air. Apply ATF to intermediate shaft splines (C), then install the intermediate shaft, be sure not to allow dust or other foreign particles to enter the transmission.

14. Install the exhaust manifold bracket (D) and heat shield (E).

15. Install the new set ring (A) on the left driveshaft (B).



16. Clean the areas where the left driveshaft contacts the transmission (differential) with solvent, and dry with compressed air. Then install the left driveshaft, be sure not to allow dust or other foreign particles to enter the transmission. Turn the steering knuckle fully outward, and slide the driveshaft into the differential until you feel its set ring fully engage the side gear.

17. Apply the recommended grease to the right driveshaft inboard-joint splines.

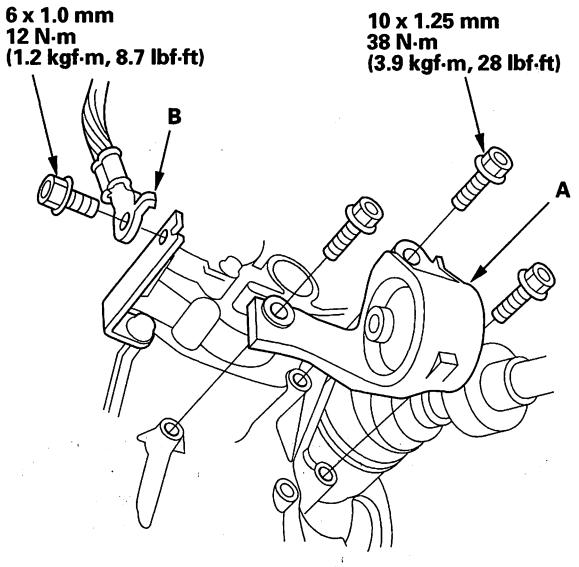
18. Slide the right driveshaft over the intermediate shaft splines until you feel the driveshaft fully engage the intermediate shaft set ring.

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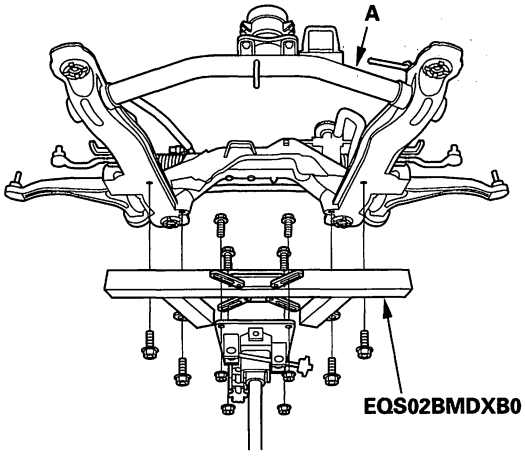
Transmission Installation (cont'd)

19. Install the transmission lower mount (A).

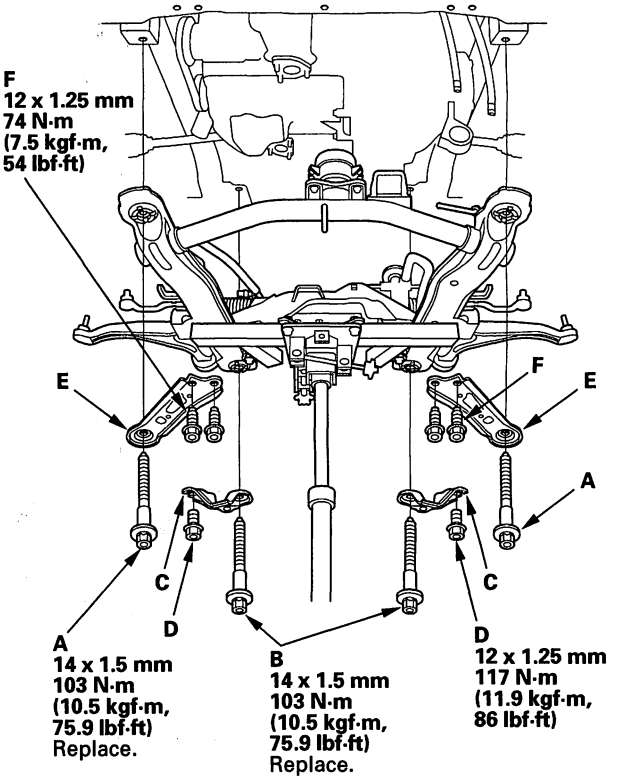


20. Install the transmission ground cable (B).

21. Support the front subframe (A) with the front subframe adapter (EQS02BMDXB0) and a jack, and lift it up to the body.



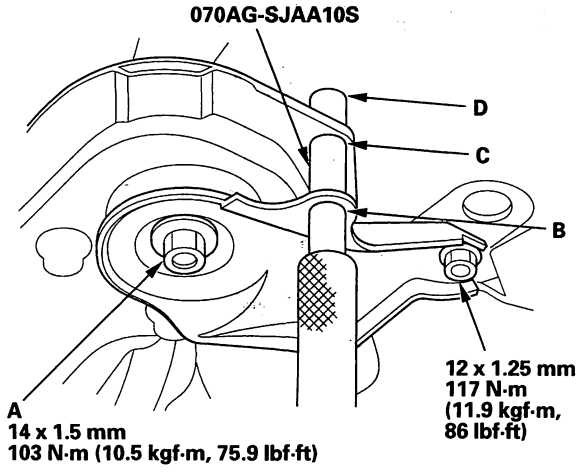
22. Loosely install the new subframe mounting bolts: front (A), rear (B), rear stiffeners (C) and mounting bolts (D), and front stiffeners (E) and mounting bolts (F).



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23. Loosely tighten the right rear subframe mounting bolt (A); insert the frame positioning guide pin (070AG-SJAA10S) through the positioning hole (B) on the rear stiffener, through the positioning hole (C) on the subframe, and into the positioning hole (D) on the body, then tighten the subframe mounting bolt.



24. Loosely tighten the left rear subframe mounting bolt in the same manner in step 23.

25. Loosely tighten the right and left front subframe mounting bolts.

26. Loosen the right rear mounting bolt, then tighten the bolt to the specified torque.

27. Tighten the left rear mounting bolt to the specified torque.

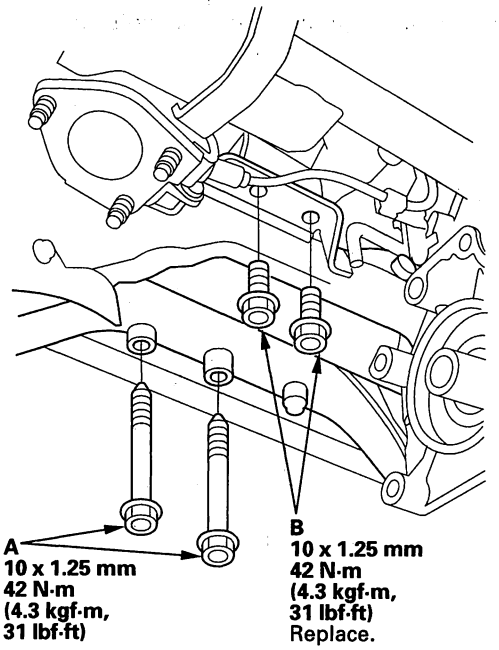
28. Tighten the right and left front mounting bolts to the specified torque.

29. Check that the positioning holes and slot are aligned using the frame positioning guide pin.

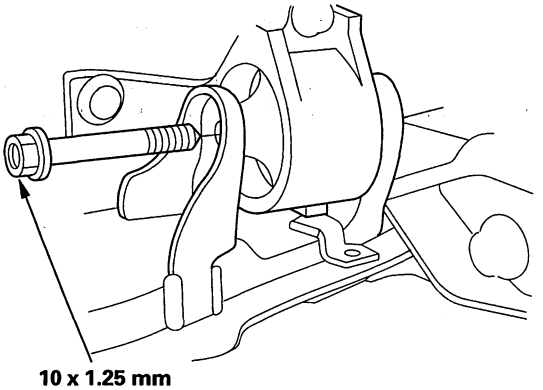
30. Tighten the rear and front stiffener mounting bolts to the specified torque.

31. Remove the jack and front subframe adapter.

32. Install the two mount bracket bolts (A) on the rear of the bracket, and install the new bolts (B) on the front.



33. Install the new transmission lower mount bolt.

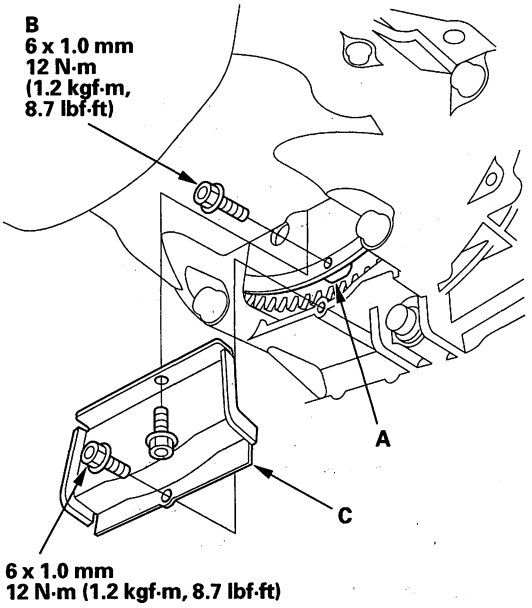


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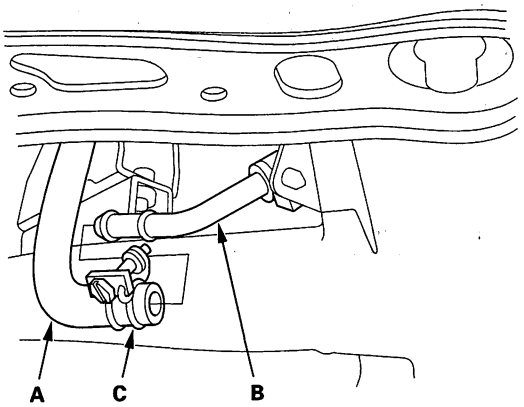
Transmission Installation (cont'd)

34. Attach the torque converter to the drive plate (A) with eight bolts (B). Rotate the crankshaft pulley as necessary to tighten the bolt to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.

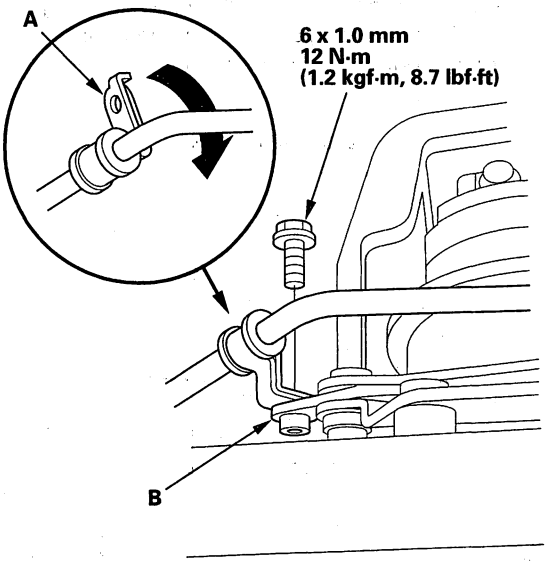


35. Install the torque converter cover (C).

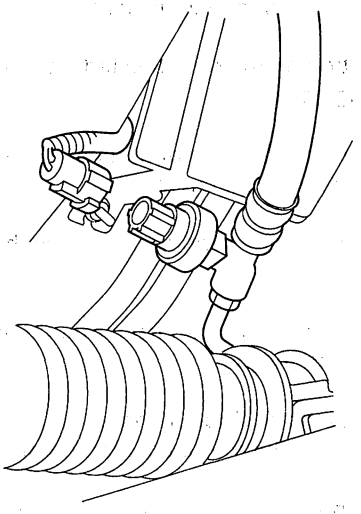
36. Connect the power steering fluid hose (A) to the line (B), and secure the hose with its hose clamp (C).



37. Turn the power steering fluid line clamp bracket (A) to seat on the rear mount bracket (B), and secure the bracket on the rear mount bracket.



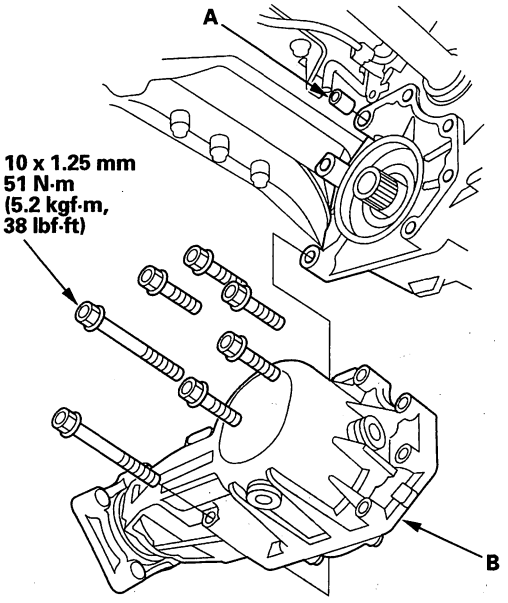
38. Connect the power steering pressure switch connector.



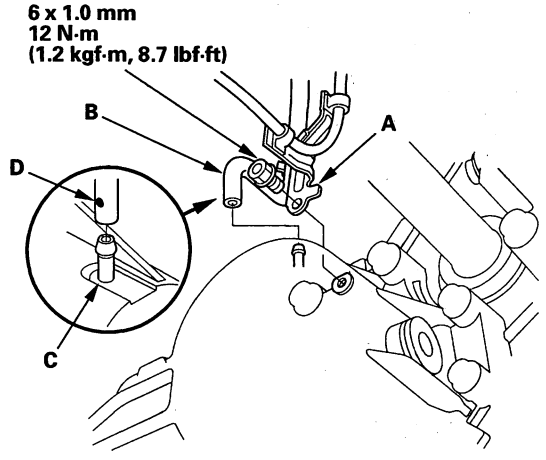
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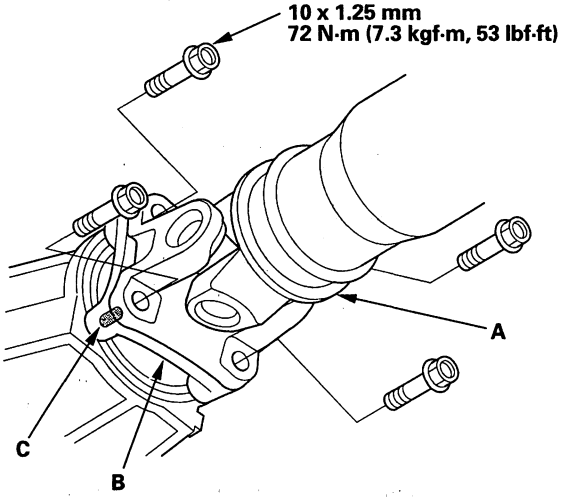
39. Install the dowel pin (A) in the transmission, and install the transfer assembly (B) on the transmission.



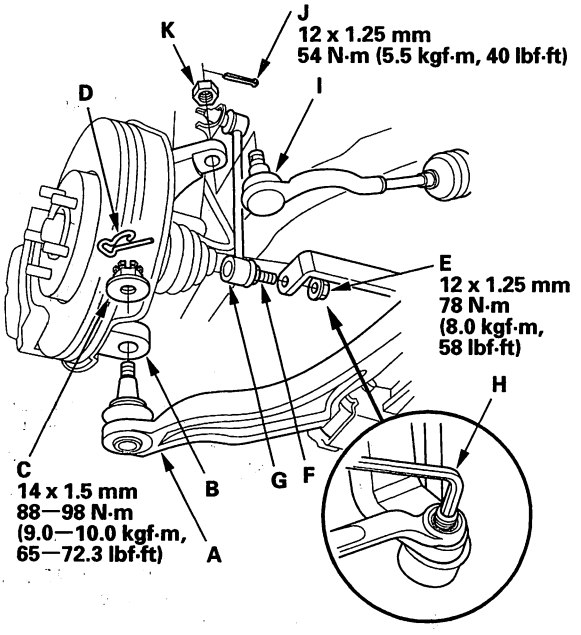
40. Secure the transfer breather hose bracket (A) on the transfer assembly with the bolt, and install the breather hose (B) over the breather pipe (C) with the dot (D) facing out.



41. Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).



42. Install the ball joints on each lower arm (A) to each knuckle (B) with new castle nuts (C), and secure the castle nuts with the lock pins (D).



43. Install the nuts (E) to the ball joint pins (F) on each stabilizer link (G). Insert a 6 mm Allen wrench (H) in the top of the ball joint pins, and tighten the nuts to the specified torque.

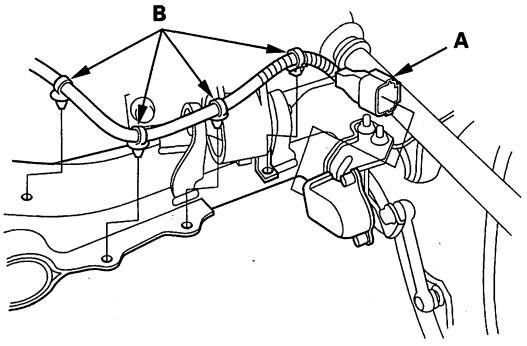
44. Install the tie-rod end ball joints (I) to each knuckle with the nuts (J) and new cotter pins (K).

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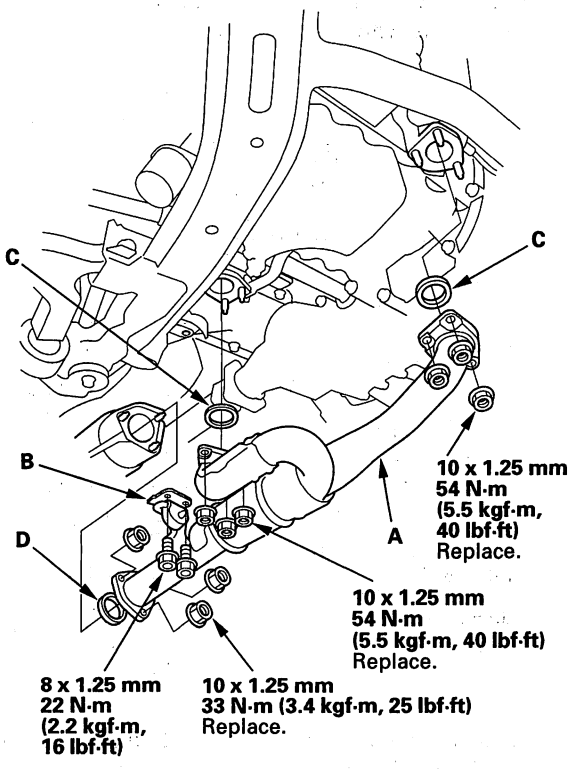
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Transmission Installation (cont'd)

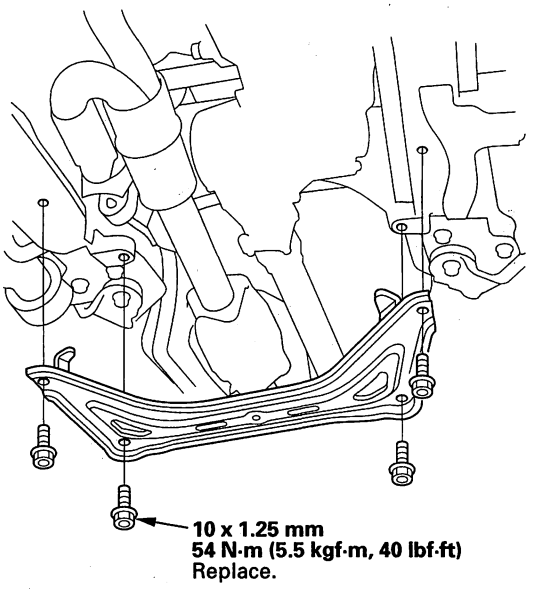
45. Connect the headlight adjuster leveling sensor connector (A) on both lower arms, and install the harness clamps (B) on the front subframe for model equipped with the headlight adjuster leveling system.



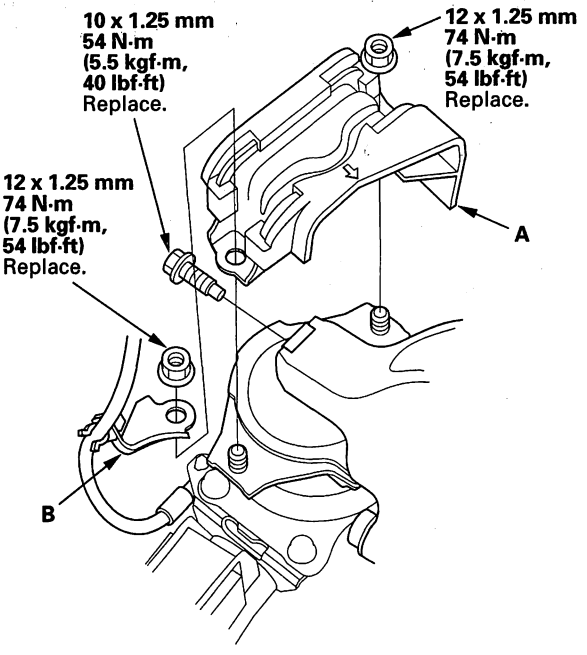
46. Install the exhaust pipe A with the new self-locking nuts, its mount (B), and new gaskets (C) (D).



47. Install the front subframe stiffener with the new mounting bolts.



48. Install the new front mount bolt, and install the front mount stop (A) with new nuts and vacuum hose clamp (B).

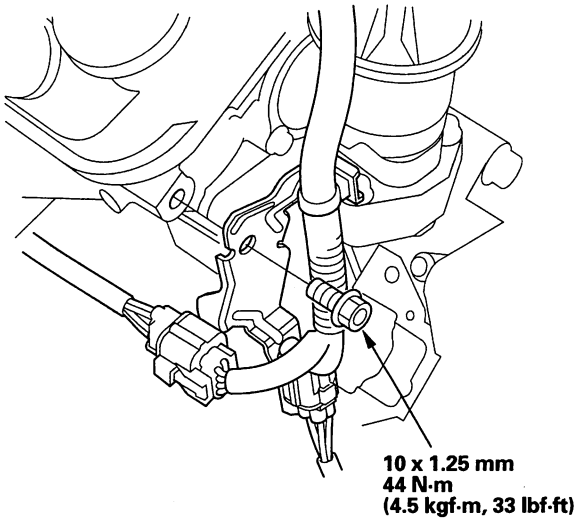


49. Remove the engine support hanger, engine support hanger stands, and engine balancer bar.

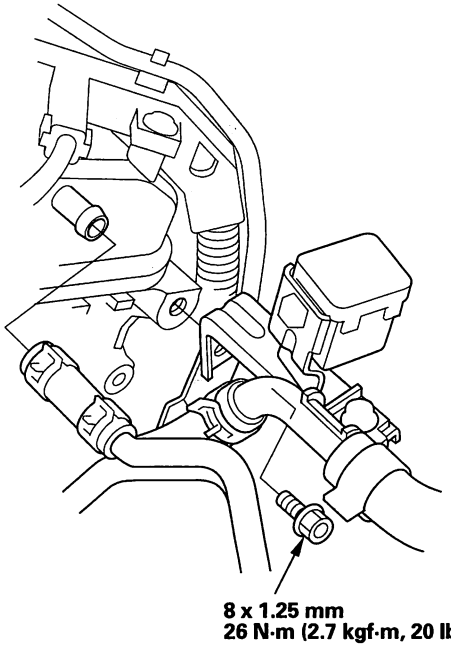
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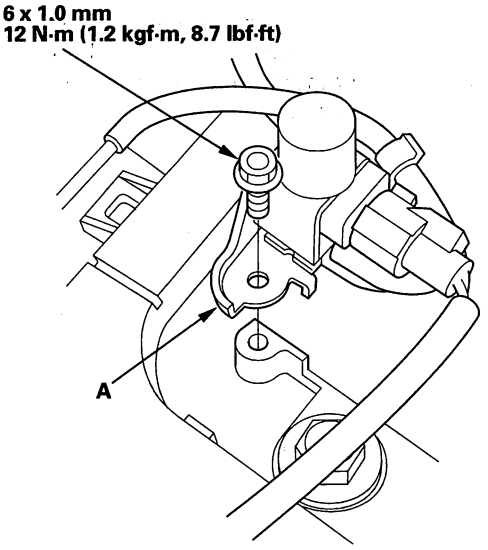
50. Install the connector bracket on the engine front cylinder head.



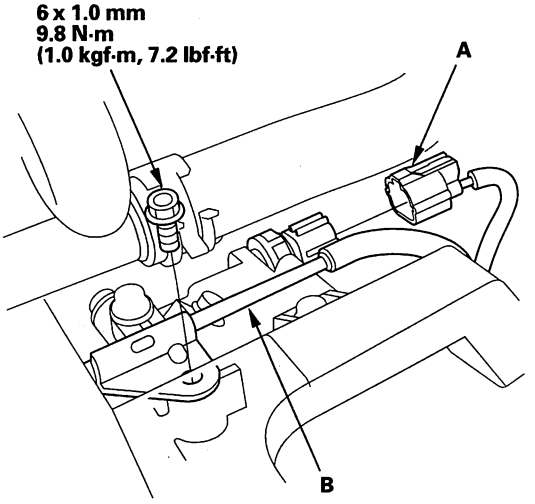
51. Install the transfer breather bracket on the engine rear cylinder head, and connect the breather hose over the breather pipe.



52. Securing the engine mount control solenoid valve mounting bracket (A) with the bolt.



53. Connect the 2nd clutch transmission fluid pressure switch connector (A), and secure the vacuum line (B) with the bolt.

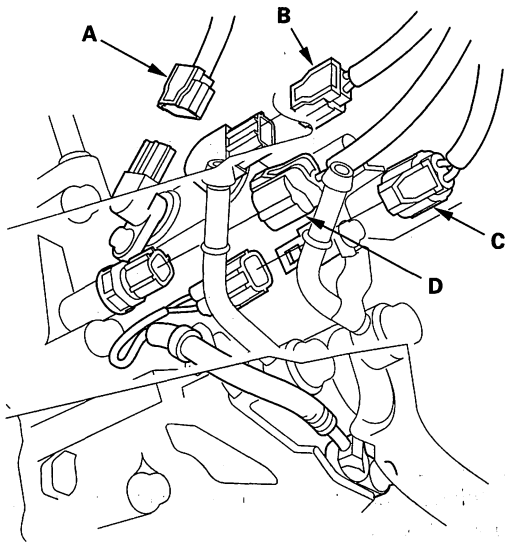


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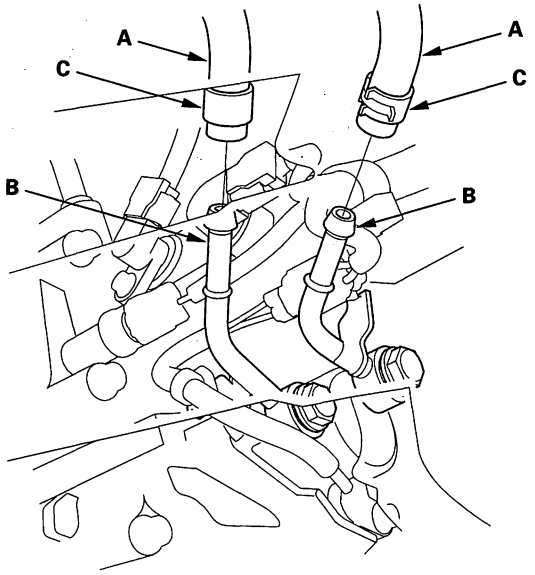
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Transmission Installation (cont'd)

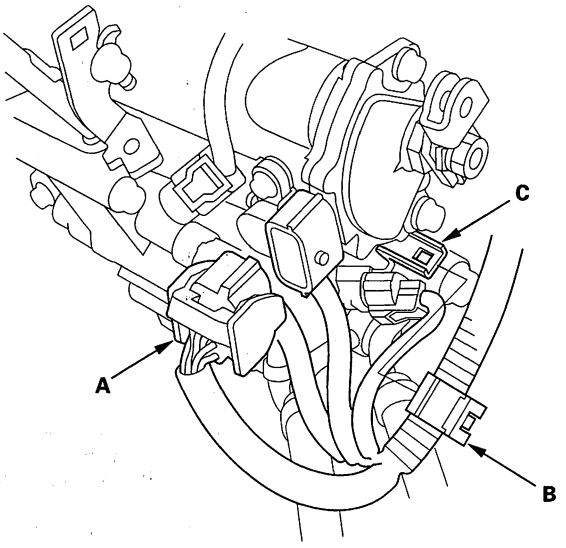
54. Connect the input shaft (mainshaft) speed sensor connector (A), output shaft (countershaft) speed sensor connector (B), ATF temperature sensor connector (C), and 3rd clutch transmission fluid pressure switch connector (D). Do not allow water, fluid, oil, dust, or other foreign particles to enter any of the connectors.



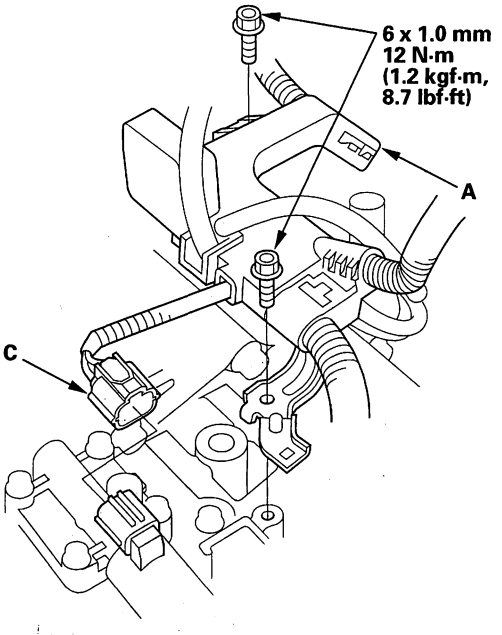
55. Connect the ATF cooler hoses (A) to the ATF cooler lines (B), and secure the hoses with the clips (C) (see page 14-302).



56. Connect the transmission range switch connector (A), and install the harness clamp (B) on the clamp bracket (C).



57. Secure the harness cover (A) with the bolts.

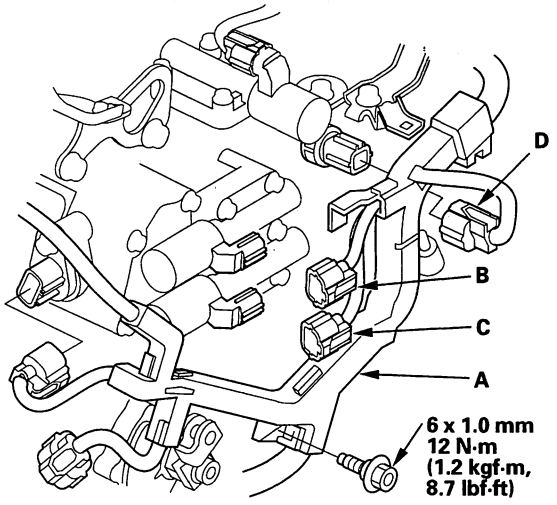


58. Connect the A/T clutch pressure control solenoid valve C connector.

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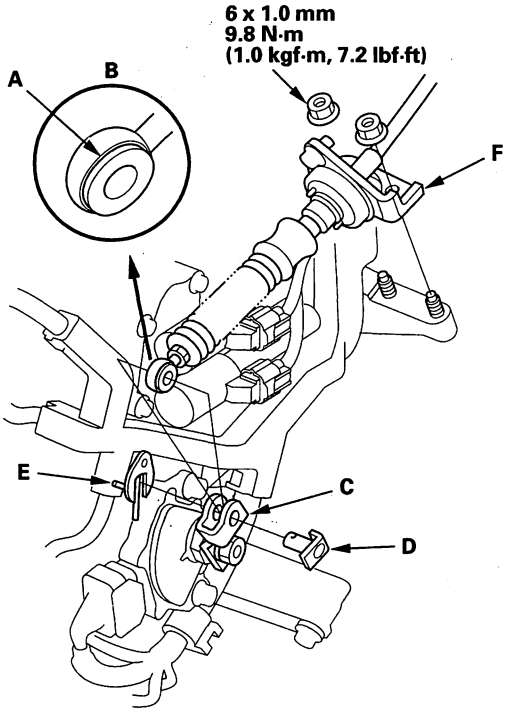
BACK

59. Secure the harness cover (A) with the bolt.



60. Connect the A/T clutch pressure control solenoid valve A connector (B), A/T clutch pressure control solenoid valve B connector (C), and 4th clutch transmission pressure switch connector (D).

61. Apply molybdenum grease to the bore hole of the synthetic resin bushing (A) in the shift cable end (B), and attach the shift cable end to the control lever (C), then insert the control pin (D) into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer (E).



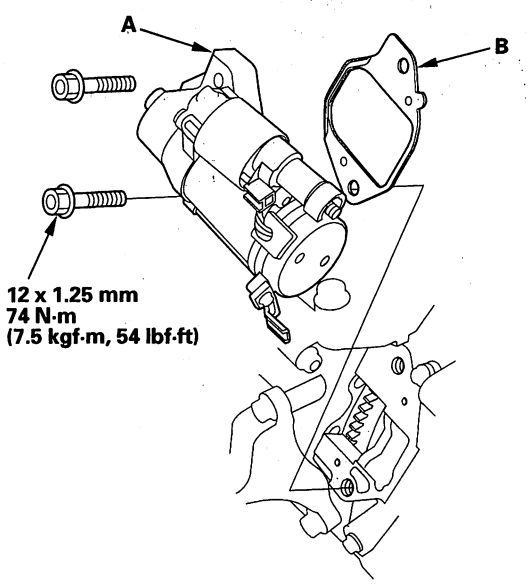
62. Secure the shift cable bracket (F) with the nuts.

(cont'd)

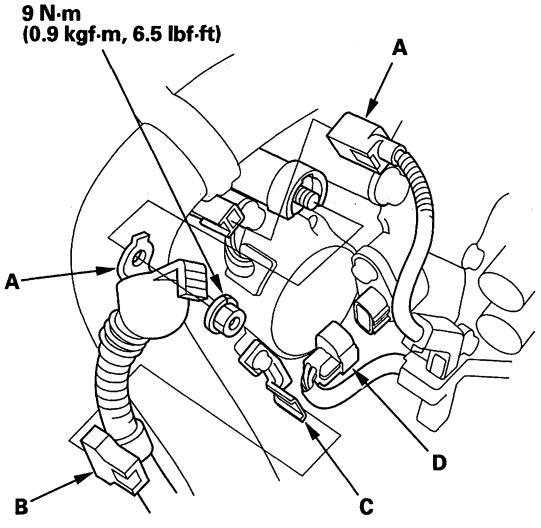
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Transmission Installation (cont'd)

63. Install the starter (A) and new gasket (B) (see page 4-10).

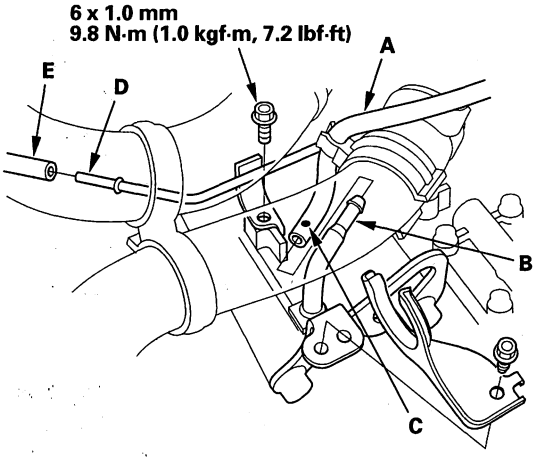


64. Install the starter cables (A), and install the harness clamp (B) on the clamp bracket (C).



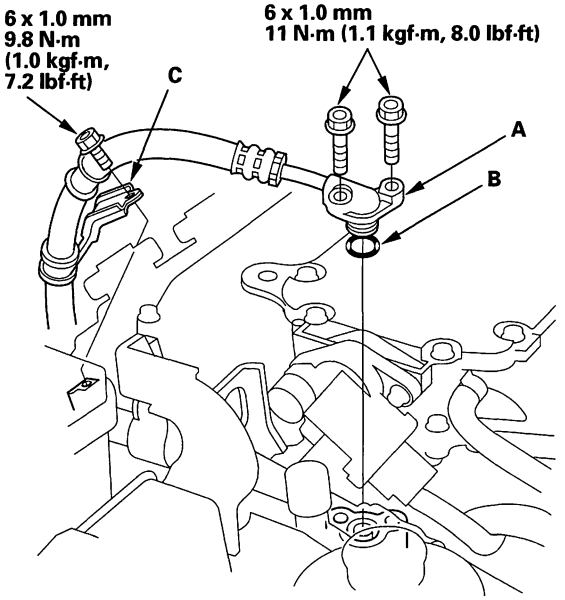
65. Connect the solenoid harness connector (D).

66. Install the transmission breather hose (A) over the breather pipe (B) with the dot (C) facing up.



67. Secure the vacuum line (D) with the bolt, and connect the vacuum hose (E) to the line.

68. Install the power steering pump outlet line (A) with the new O-ring (B) to the pump, and secure the hose clamp (C) with the bolt.



69. Connect the steering joint (see page 17-27).

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70. Refill the power steering fluid reservoir with fluid to the upper level line.

71. Refill the transmission with ATF (see step 7 on page 14-266).

72. Install the battery base bracket and battery base.

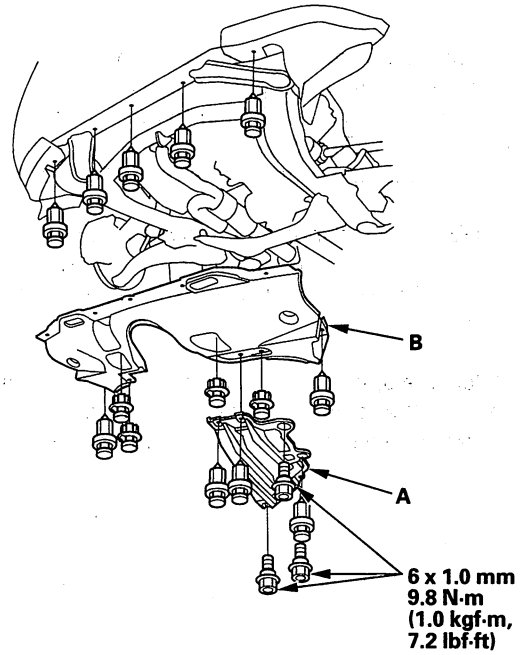
73. Install the air cleaner housing, intake air duct, and intake manifold cover.

74. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.

75. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect the battery terminals.

76. Install the bulkhead cover.

77. Install the splash shield (A) and transmission undercover (B).



78. Install the service caps on the cowl cover.

79. Set the parking brake, run the engine at fast idle, and turn the steering wheel from lock-to-lock several times to bleed air from the system. Recheck the fluid level, and refill if necessary.

80. Set the parking brake. Start the engine, and shift the transmission through all positions three times. Check the shift lever operation, A/T gear position indicator operation, and shift cable adjustment.

81. Check and adjust the front wheel alignment (see page 18-5).

82. Check the ATF level (see page 14-265).

83. Perform the road test (see page 14-235).

84. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.

85. Do the power steering column position memorization (see page 17-28).

86. Do the power window control unit reset procedure (see page 22-259).

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ATF Cooler Cleaning

Special Tools Required
- ATF cooler cleaner GHTTTCF6H
- Magnetic nonbypass spin-on filter GTHGNBP2

These special tools are available through the American Honda Tool and Equipment Program 1-888-424-6857.

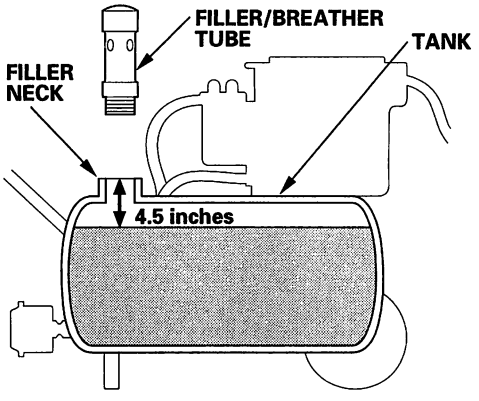
Before installing an overhauled or remanufactured automatic transmission, you must thoroughly clean the ATF cooler to prevent system contamination. Failure to do so could cause a repeat automatic transmission failure.

The cleaning procedure involves heated ATF-Z1 delivered under high pressure (100 psi). Check the security of all hoses and connections. Always wear safety glasses or a face shield, along with gloves and protective clothing. If you get ATF in your eyes or on your skin, rinse with water immediately.

⚠ WARNING

- Improper use of the ATF cooler cleaner can result in burns and other serious injuries.
- Always wear eye protection and protective clothing, and follow all instructions in this manual.

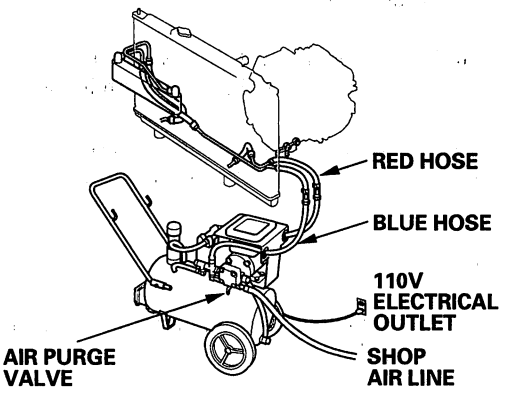
1. Check the fluid in the cooler cleaner tank. (The fluid level should be 4.5 inches from the top of the filler neck.) Adjust the level if needed; do not overfill. Use only Acura ATF-Z1; do not use any additives.



2. Plug the cooler cleaner into a 110 V grounded electrical outlet.

NOTICE

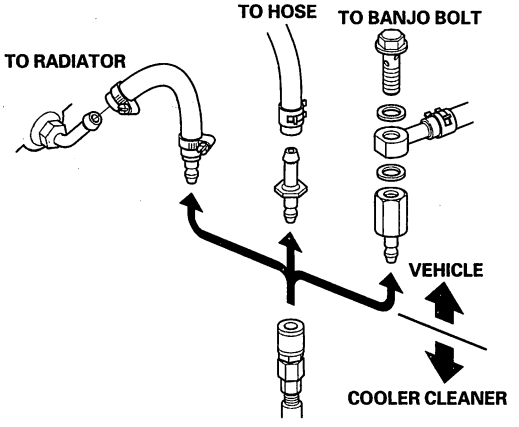
Make sure the outlet has no other appliances (light fixtures, drop lights, extension cords) plugged into it. Also, never plug the cooler cleaner into an extension cord or drop light; you could damage the unit.



3. Flip the HEAT toggle switch to ON; the green indicator above the toggle switch comes on. Wait 1 hour for the cooler cleaner to reach its operating temperature. (The cooler cleaner is ready to use when the temperature gauge reads 140 °to 150 °F.)

   NOTE: If the red indicator above the HEAT toggle switch comes on, the fluid level in the tank is too low for the tank heater to work (see step 1 of this procedure).

4. Select the appropriate pair of fittings, and attach them to the radiator, to the hoses, or to the banjo bolts for flow through the ATF cooler cleaner.



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5. Connect the red hose to the cooler outlet line (the line that normally goes to the external filter on the transmission).

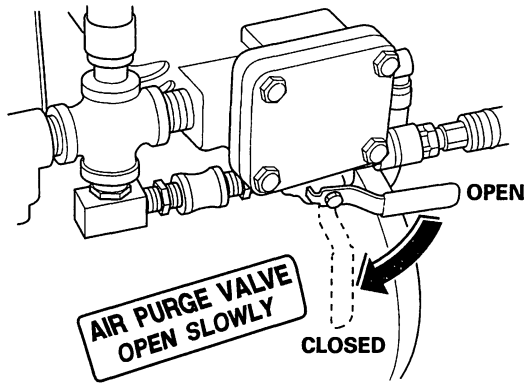
6. Connect the blue hose to the cooler inlet line.

7. Connect a shop air hose (regulated to 100 to 125 psi) to the air purge valve.

   NOTICE
   The quick-connect fitting has a one-way check valve to keep ATF from entering your shop's air system. Do not remove or replace the fitting. Attach the coupler provided with the cooler cleaner to your shop air line if your coupler is not compatible.

8. Flip the MOTOR toggle switch to ON; the green indicator above the toggle switch comes on. Let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically to cause agitation and improve the cleaning process. Always open the valve slowly. At the end of the 5-minutes cleaning period, leave the air purge valve open.

   NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.



9. With the air purge valve open, flip the MOTOR toggle switch to OFF; the green indicator goes off. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.

10. Disconnect the red and blue hoses from the ATF cooler. Now connect the red hose to the cooler inlet line.

11. Now connect the blue hose to the cooler outlet line.

12. Flip the MOTOR toggle switch to ON, and let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically. Always open the valve slowly. At the end of the 5-minutes cleaning period, leave the air purge valve open.

    NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.

13. With the air purge valve open, flip the MOTOR toggle switch to OFF. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.

14. Disconnect the red and blue hoses from the ATF cooler lines.

15. Connect the red and blue hoses to each other.

16. Disconnect the shop air from the air purge valve. Disconnect and stow the coupler if used.

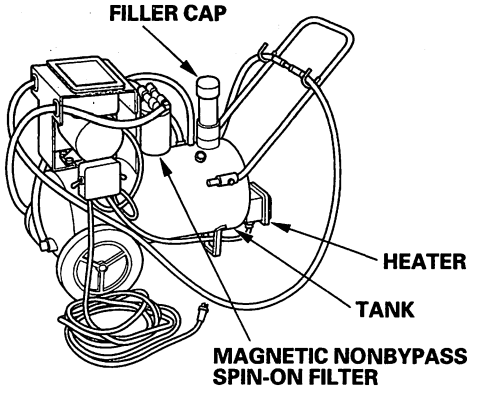
17. Disconnect and stow the fittings from the ATF cooler inlet and outlet lines.

18. Unplug the cooler cleaner from the 110 V outlet.

Tool Maintenance

Follow these instructions to keep the ATF cooler cleaner working properly:

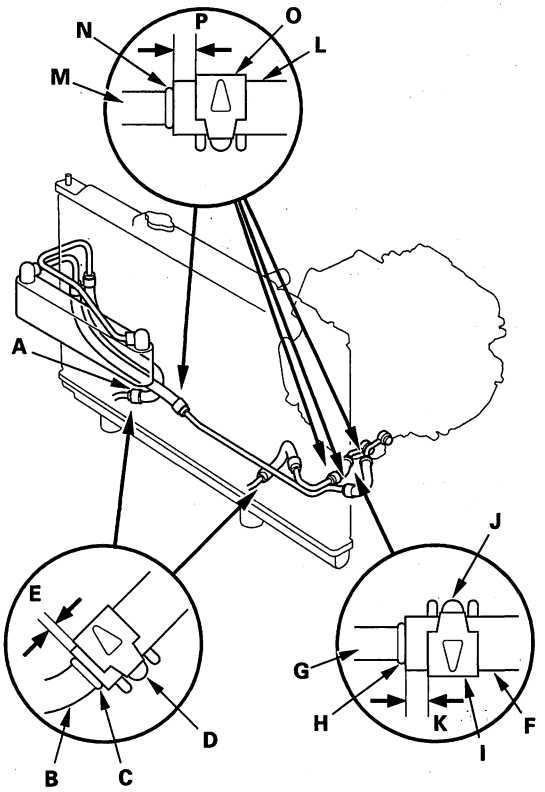
- Replace the two magnetic nonbypass spin-on filters once a year or when you notice a restriction in the ATF flow.
- Check the level and condition of the fluid in the tank before each use.
- Replace the ATF in the tank when it looks dark or dirty.



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ATF Cooler Hose Replacement

1. Slide the ATF cooler hoses (A) over the ATF cooler lines (B) until the hose ends contact with the bulge (C) of the ATF cooler line, and secure the hoses with the clips (D) at 2—4 mm (0.1—0.2 in.) (E) from the hose end.



2. Slide the ATF cooler outlet hose (F) over the ATF cooler outlet line (G) at the transmission until the hose end contacts with the bulge (H) of the ATF cooler line. Secure the hose with the clip (I) facing tab (J) up at 6—8 mm (0.2—0.3 in.) (K) from the hose end.

3. Slide the ATF cooler hoses (L) over the ATF cooler lines (M) until the hose ends contact with the bulge (N) of the ATF cooler line, and secure the hoses with the clips (O) at 6—8 mm (0.2—0.3 in.) (P) from the hose end.

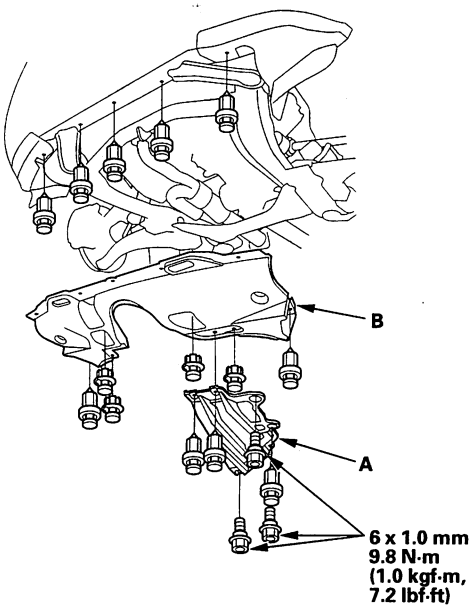
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BACK

ATF Cooler Replacement

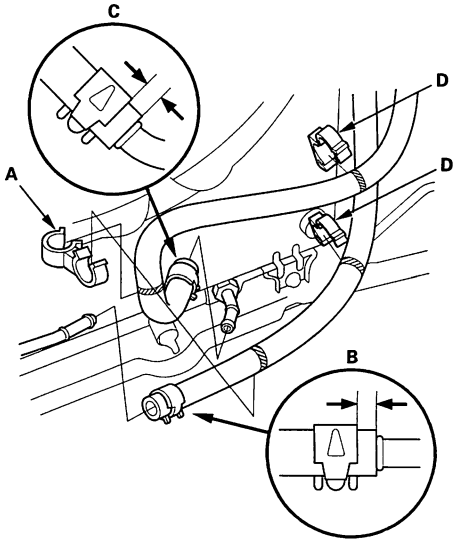
1. Raise the vehicle, and make sure it is supported securely.

2. Remove the transmission undercover (A) and splash shield (B).

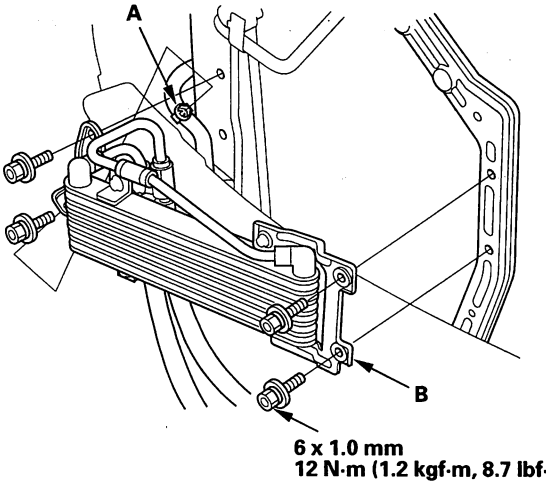


3. Remove the front bulkhead cover, and remove the front bumper (see page 20-188).

4. Remove the hose clamp (A), and remove the ATF cooler inlet hose (B) and outlet hose (C) from the hose clamps (D), then disconnect the hoses from the ATF cooler lines.



5. Remove the power steering fluid hose clamp (A) from the ATF cooler mounting bracket.



6. Remove the ATF cooler (B), and replace it. Install the new ATF cooler.

7. Install the power steering fluid hose clamp on the bracket.

8. Slide the ATF cooler inlet hose over the ATF cooler line until the hose end contacts with the bulge, and secure the hose with the clip at 6—8 mm (0.2—0.3 in.) from the hose end.

9. Slide the ATF cooler outlet hose over the ATF cooler line until the hose end contacts with the bulge, and secure the hose with the clip at 2—4 mm (0.1—0.2 in.) from the hose end.

10. Secure the cooler hoses with the hose clamps at the marks on the hoses.

11. Install the hose clamp at the mark.

12. Install the front bumper (see page 20-188), and install the front bulkhead cover.

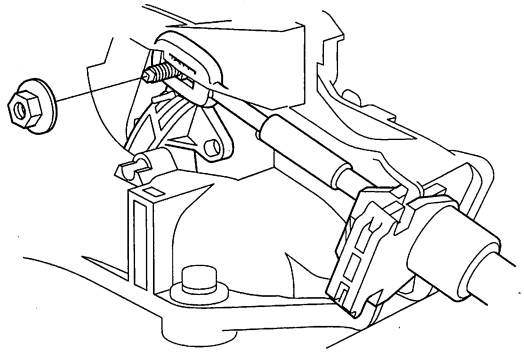
13. Install the splash shield and transmission undercover.

14. Check the ATF level (see page 14-265).

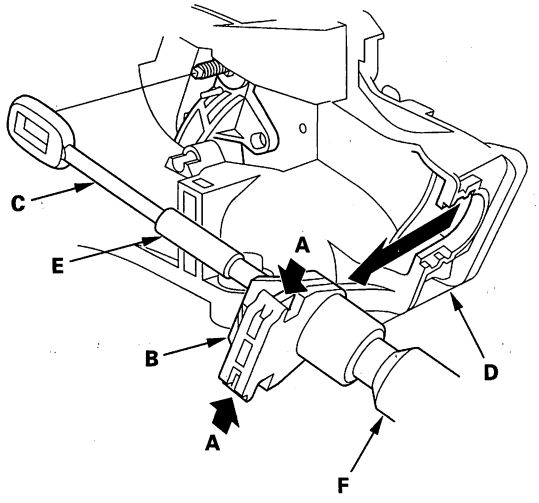
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Shift Lever Removal

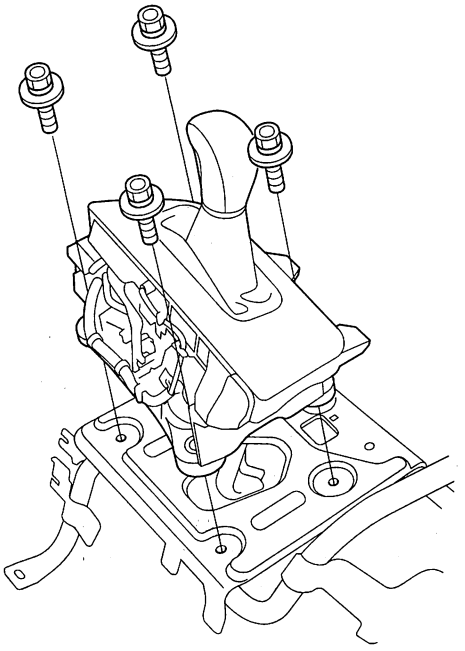
1. Remove passenger's center console trim (see step 6 on page 20-107).
2. Remove the beverage holder inner case (see step 10 on page 20-108).
3. Shift the transmission into the R position.
4. Remove the nut securing the shift cable end.



5. Press the holder lock release (A), and pull out the socket holder (B) to remove the shift cable (C) from the shift lever bracket base (D). Do not remove the shift cable by pulling the shift cable guide (E) and damper (F).



6. Remove the center console (see page 20-107).
7. Disassemble the center console by removing the following:
   - Console armrest (see page 20-112)
   - Center console latch panel (see page 20-113)
   - Center console panel (see page 20-113)
   - Center console beverage holder (see page 20-114)
   - Center console box (see page 20-115)
8. Remove the shift lever assembly from the console frame.

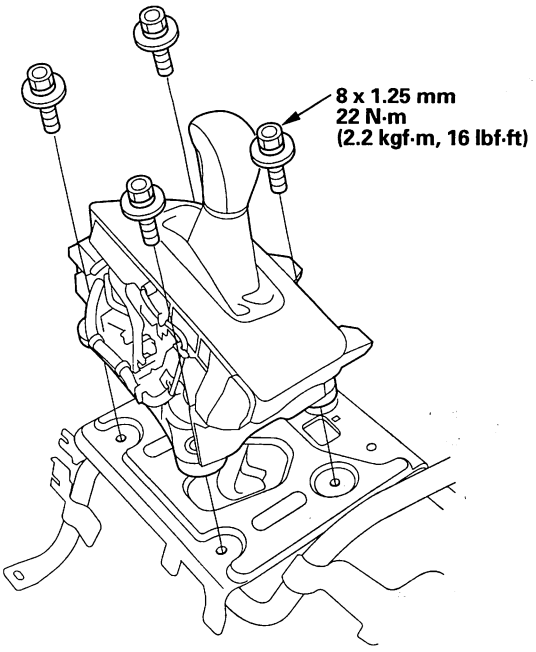


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Shift Lever Installation

1. Install the shift lever assembly on the console frame.



2. Assemble the center console by installing the following:

   - Center console box (see page 20-115)
   - Center console beverage holder (see page 20-114)
   - Center console panel (see page 20-113)
   - Center console latch panel (see page 20-113)
   - Console armrest (see page 20-112)

3. Install the center console (see page 20-107).

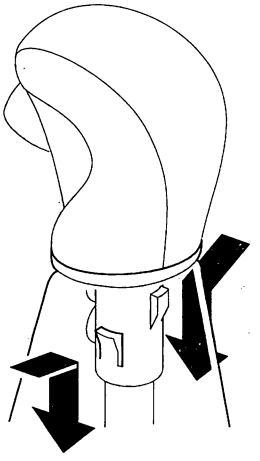
4. Install the shift cable on the shift lever, and adjust the shift cable (see step 6 on page 14-311).

5. Install the beverage holder inner case (see step 10 on page 20-108).

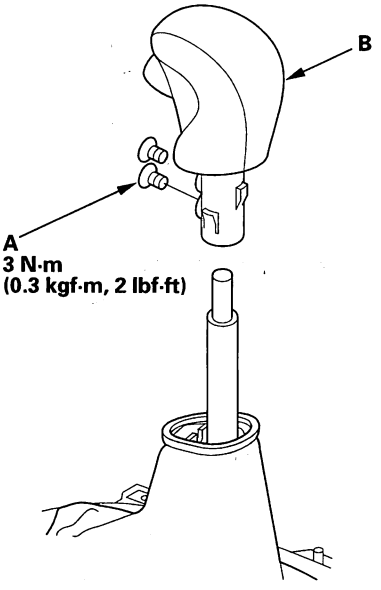
6. Install the passenger's center console trim (see step 6 on page 20-107).

Shift Lever Knob Replacement

1. Grasp the shift lever boot ring, and slip it out of the shift lever knob cover.



2. Remove the screws (A), and remove the shift lever knob (B).



3. Apply non-hardening thread lock sealant to the screw threads.

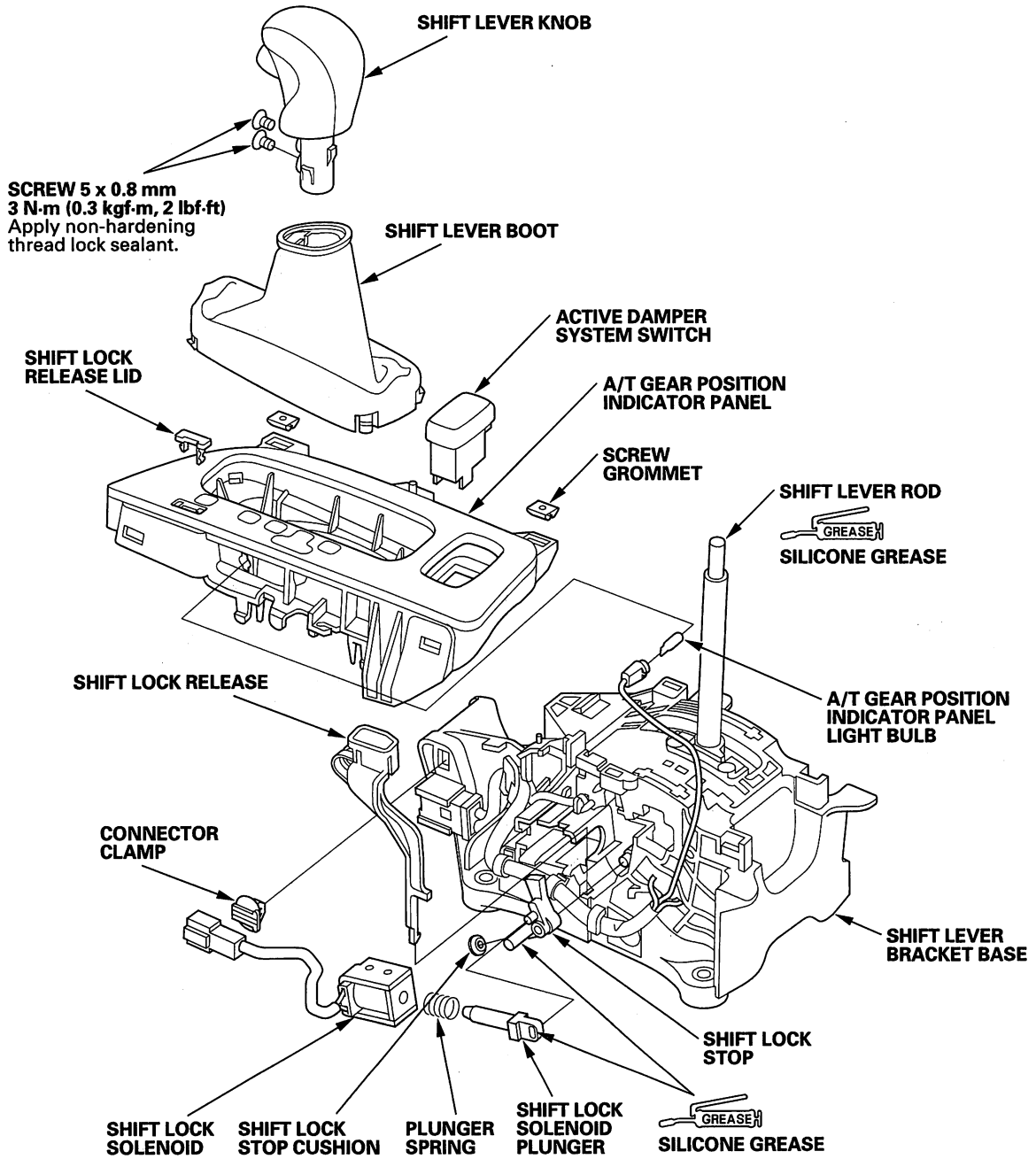
4. Install the new shift lever knob, and secure it with the screws.

5. Slide the shift lever boot ring over the shift lever knob until it snaps on.

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Shift Lever Disassembly/Reassembly

Apply silicon grease to movable joints of the shift lock mechanism and shift lever.



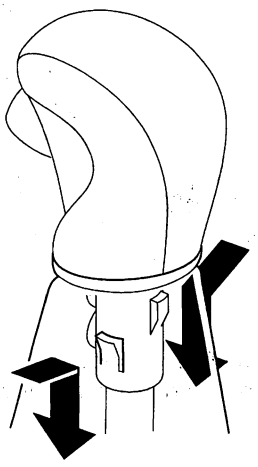
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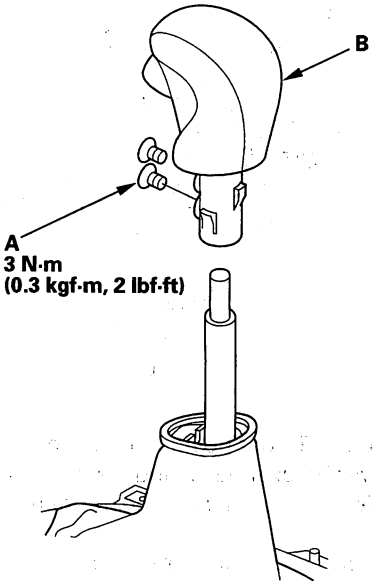
Shift Lever Bracket Base Replacement

NOTE: Refer to the Shift Lever Disassembly/ Reassembly (see page 14-306) during the following procedures.

1. Remove the shift lever (see page 14-304).
2. Grasp the shift lever boot ring, and slip it out of the shift lever knob cover.



3. Remove the screws (A), and remove the shift lever knob (B).

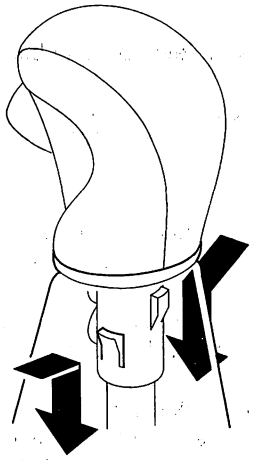


4. Remove the A/T gear position indicator panel light socket from the indicator panel, and remove the indicator panel from the shift lever bracket base.
5. Remove the shift lock release.
6. Remove the shift lock solenoid and harness connector.
7. Remove the shift lock stop and stop cushion as an assembly.
8. Replace the shift lever bracket base.
9. Apply silicone grease to mounting pin of the shift lock stop, and install the shift lock stop and stop cushion over the pin.
10. Apply silicone grease to joint of the shift lock solenoid plunger and shift lock stop.
11. Install the shift lock solenoid plunger and plunger spring in the shift lock solenoid.
12. Install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop, then push the shift lock solenoid into the shift lever securely.
13. Install the shift lock release.
14. Install the A/T gear position indicator panel light bulb in its socket.
15. Install the A/T gear position indicator panel on the shift lever bracket base, and install the indicator panel light socket in the indicator panel.
16. Apply non-hardening thread lock sealant to the screw threads, install the shift lever knob, and secure it with the screws.
17. Slide the shift lever boot ring over the shift lever knob until it snaps on.
18. Install the shift lever (see page 14-305).

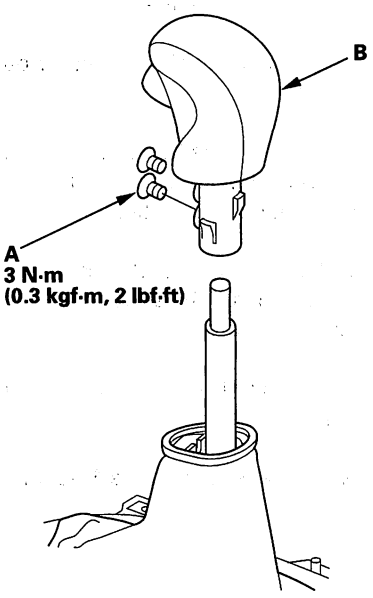
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Shift Lever Boot and A/T Gear Position Indicator Panel Replacement

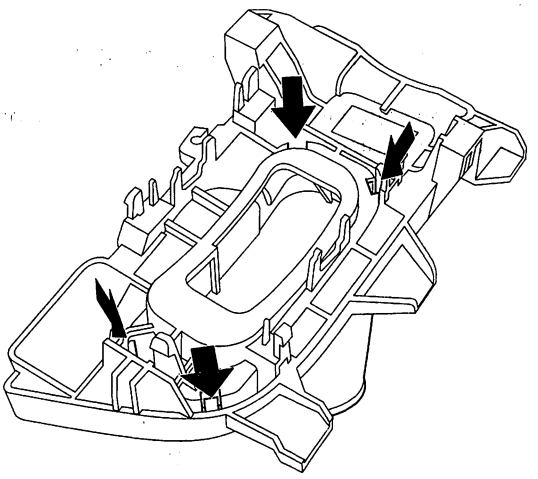
1. Remove the shift lever (see page 14-304).
2. Grasp the shift lever boot ring, and slip it out of the shift lever knob cover.



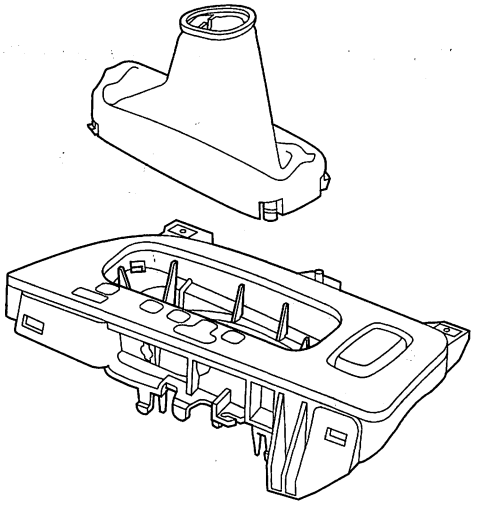
3. Remove the screws (A), and remove the shift lever knob (B).



4. Remove the A/T gear position indicator panel light socket from the indicator panel, and remove the indicator panel from the shift lever bracket base.
5. Release the lock tabs retaining the shift lever boot using a screwdriver.



6. Replace the shift lever boot or A/T gear position indicator panel, and install the boot in the indicator panel.



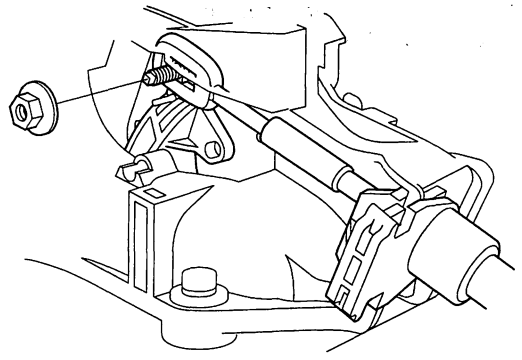
7. Install the A/T gear position indicator panel on the shift lever bracket base, and install the indicator panel light socket in the indicator panel.
8. Apply non-hardening thread lock sealant to the screw threads, install the shift lever knob, and secure it with the screws.
9. Slide the shift lever boot ring over the shift lever knob until it snaps on.
10. Install the shift lever (see page 14-305).

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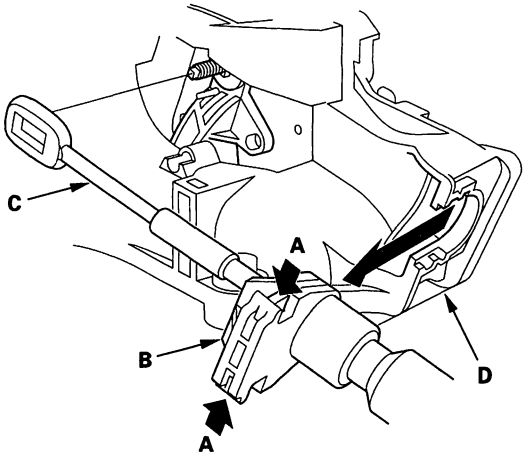
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Shift Cable Replacement

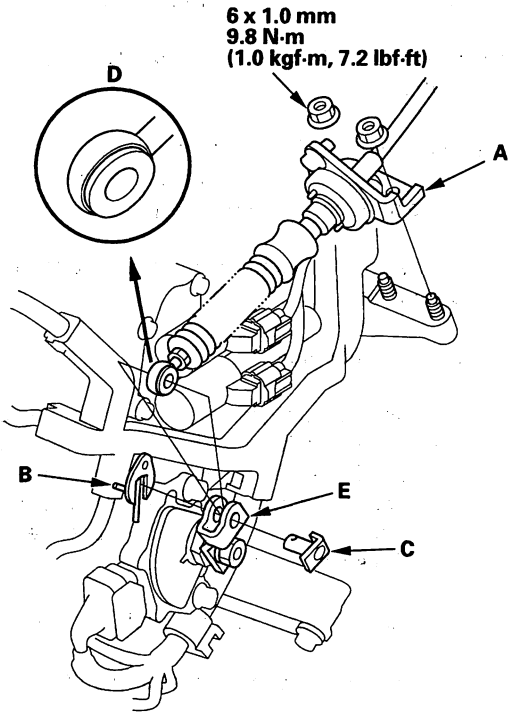
1. Raise the vehicle, and make sure it is supported securely.
2. Remove passenger's center console trim (see step 6 on page 20-107).
3. Remove the beverage holder inner case (see step 10 on page 20-108).
4. Shift the transmission into the R position.
5. Remove the nut securing the shift cable end.



6. Press the holder lock release (A), and pull out the socket holder (B) to remove the shift cable (C) from the shift lever bracket base (D).



7. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
8. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
9. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
10. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
11. Remove the intake air duct and air cleaner housing.
12. Remove the battery base and battery base bracket.
13. Remove the nuts securing the shift cable bracket (A).



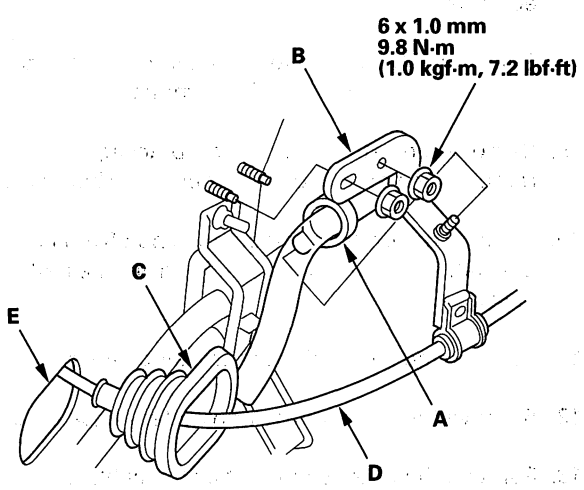
14. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
15. Remove the heat shield under the shift cable grommet.

(cont'd)

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Shift Cable Replacement (cont'd)

16. Remove the drain hose clamp (A) from the shift cable bracket (B).



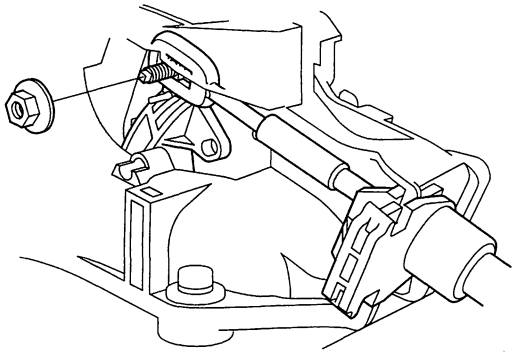
17. Remove the nuts securing the shift cable bracket.
18. Remove the shift cable grommet (C), and pull out the shift cable (D).
19. Insert the new shift cable through the grommet hole (E), and install the grommet in its hole. Do not bend the shift cable excessively.
20. Install the shift cable bracket, and install the drain hose clamp on the bracket.
21. Install the heat shield.
22. Apply molybdenum grease to the bore hole of the synthetic resin bushing in the shift cable end, and attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
23. Secure the shift cable bracket with the nuts.
24. Install the battery base bracket and battery base.
25. Install the air cleaner housing and intake air duct.
26. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.
27. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.
28. Install the shift cable on the shift cable, and adjust the shift cable (see step 6 on page 14-311).
29. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.
30. Do the steering column position memorization (see page 17-28).
31. Do the power window control unit reset procedure (see page 22-259).

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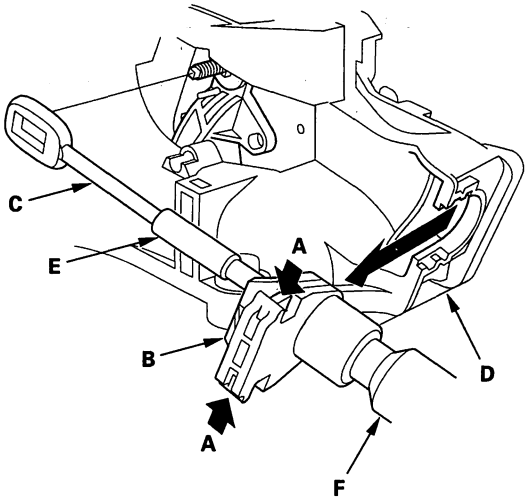
BACK

Shift Cable Adjustment

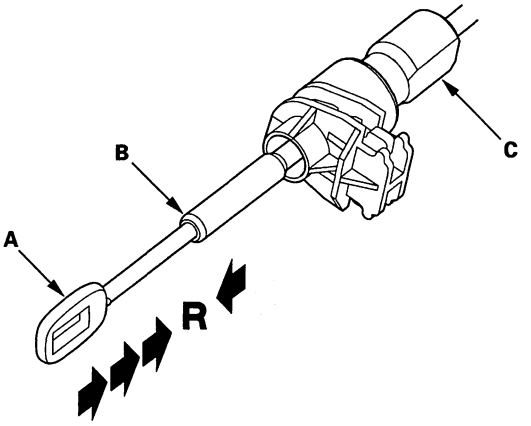
1. Remove passenger's center console trim (see step 6 on page 20-107).
2. Remove the beverage holder inner case (see step 10 on page 20-108).
3. Shift the transmission into the R position.
4. Remove the nut securing the shift cable end.



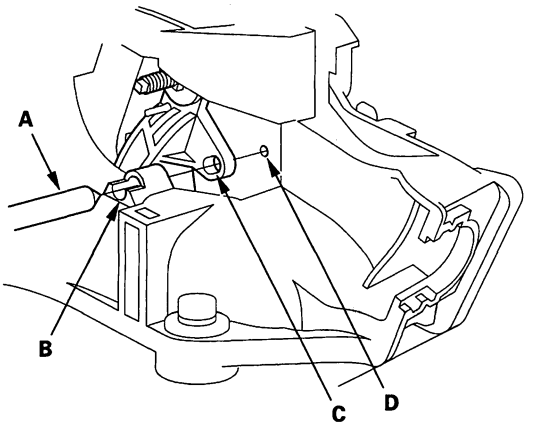
5. Press the holder lock release (A), and pull out the socket holder (B) to remove the shift cable (C) from the shift lever bracket base (D). Do not remove the shift cable by pulling the shift cable guide (E) and damper (F).



6. Push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) and damper (C) to adjust the shift cable.



7. Turn the ignition switch ON (II), and verify that the R position indicator comes on.
8. Turn the ignition switch OFF.
9. Place the shift lever in the R position, then insert tapered tip 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base, through the positioning hole (C) on the shift lever, and into the positioning small hole (D) on the shift lever bracket base. The shift lever is secured in the R position.

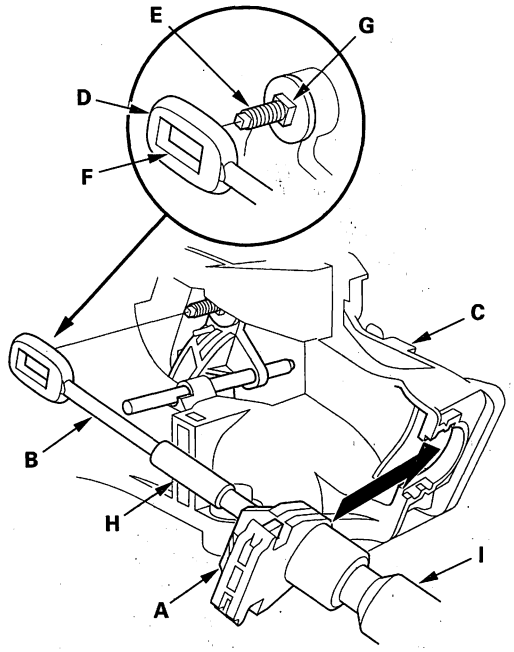


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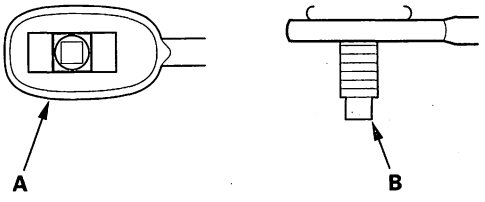
Shift Cable Adjustment (cont'd)

10. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Push the holder until it snaps securely in place. Do not install the shift cable by holding the shift cable guide (H) and damper (I).

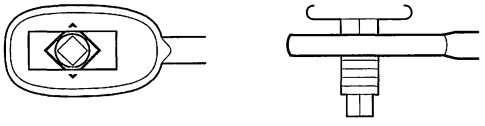


11. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



Improperly Installed:

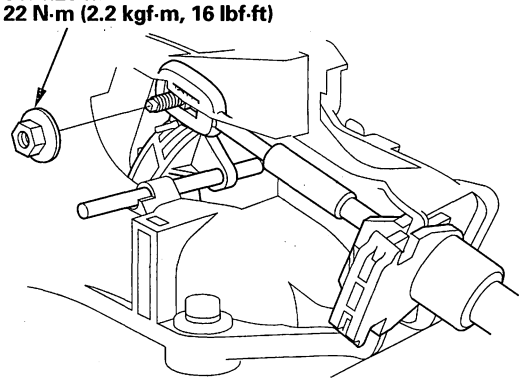


Cable end rides on the bottom of the mounting stud.

12. If improperly installed, remove the shift cable from the bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the bracket base.

13. Install and tighten the nut.

8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)



14. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

15. Turn the ignition switch ON (II). Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.

16. Shift to the P position, and check that the shift lock works properly. Push the shift lock release, and verify that the shift lever releases, and also check that the shift lever locks when it is shifted back to the P position.

17. Install the beverage holder inner case (see step 10 on page 20-108).

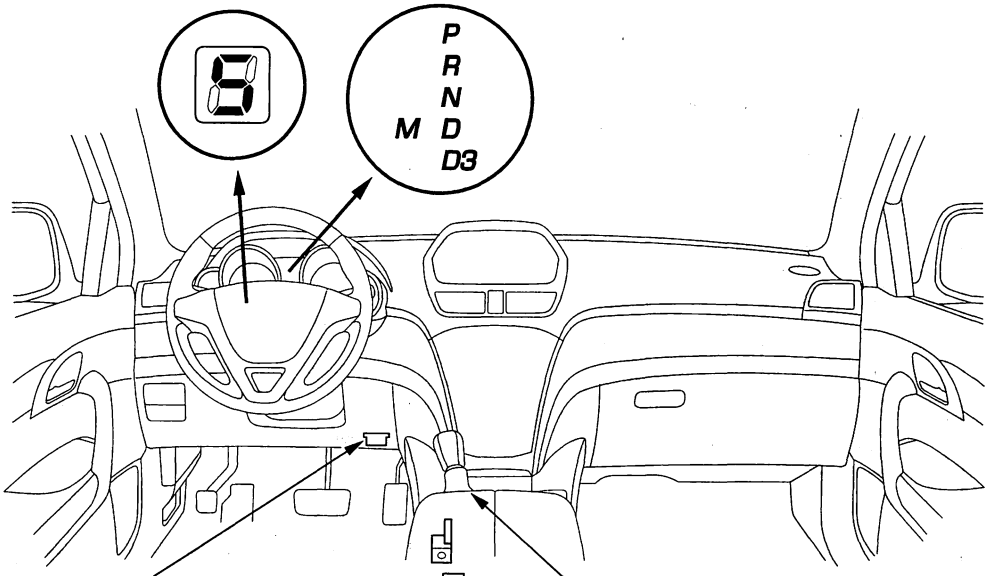
18. Install the passenger's center console trim (see step 6 on page 20-107).

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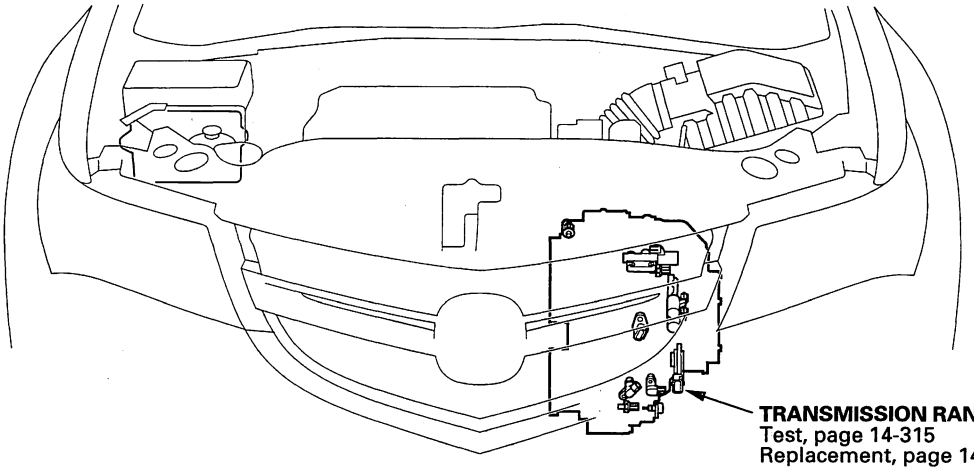
A/T GEAR POSITION INDICATOR
M INDICATOR
SHIFT INDICATOR
F-CAN Communication Circuit Troubleshooting, page 22-325
Gauge Control Module Self-diagnostic Function
Indicator Drive Circuit Check, page 22-315
Communication Line Check, page 22-317



DATA LINK CONNECTOR (DLC)

TRANSMISSION GEAR SELECTION SWITCH
Test, page 14-319
Replacement, page 14-319

A/T GEAR POSITION INDICATOR PANEL LIGHT HARNESS
Replacement, page 14-320
PANEL LIGHT BULB
Replacement, page 14-320

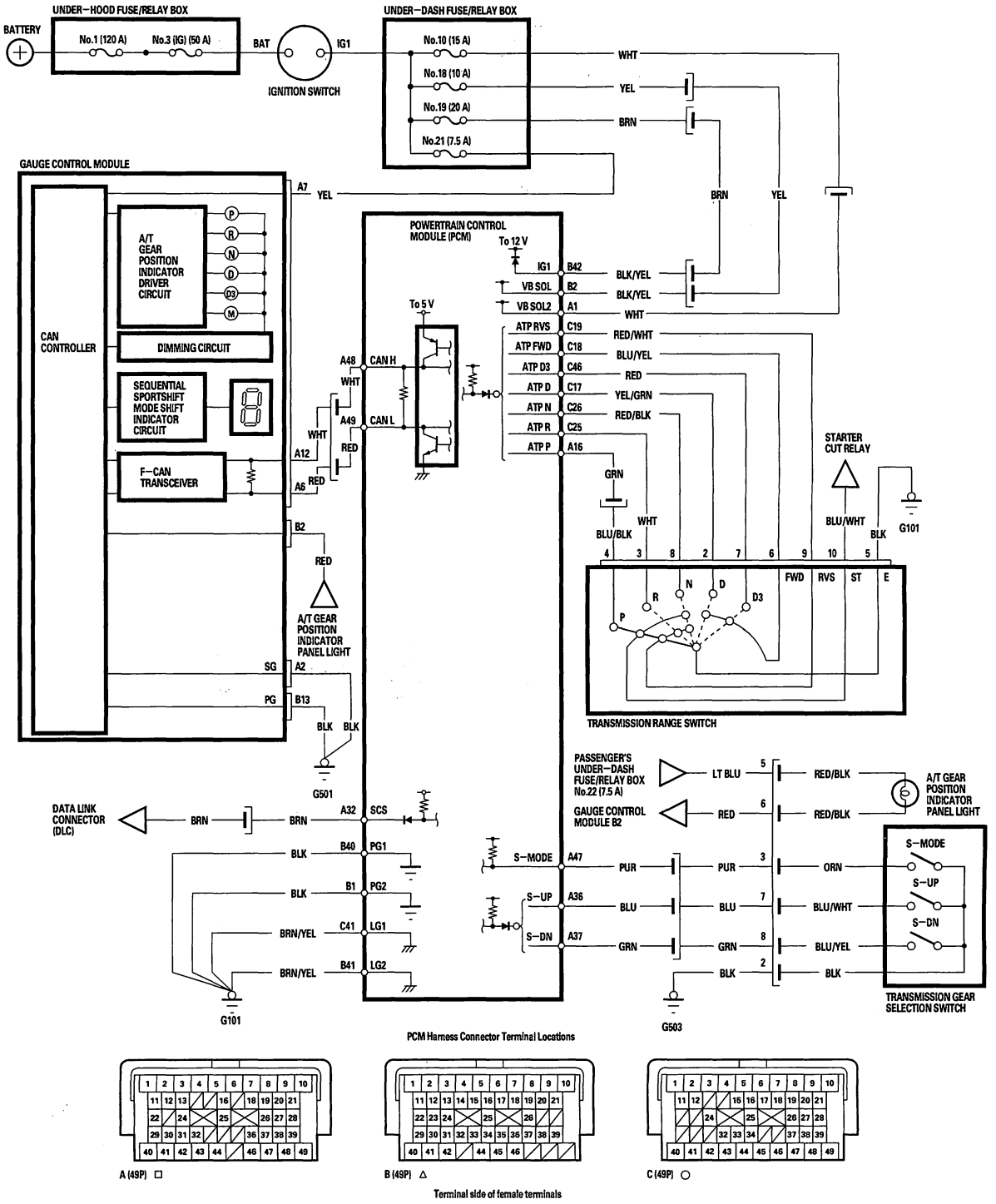


TRANSMISSION RANGE SWITCH
Test, page 14-315
Replacement, page 14-316

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A/T Gear Position Indicator

Circuit Diagram

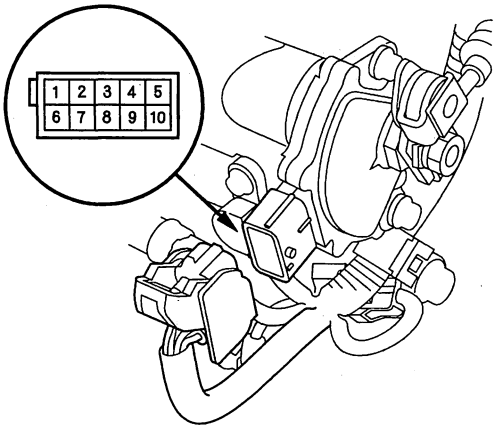


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Transmission Range Switch Test

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
4. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
5. Remove the intake air duct and air cleaner housing.
6. Remove the battery base and battery base bracket.
7. Disconnect the transmission range switch connector.



8. Check for continuity between terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

Transmission Range Switch Connector

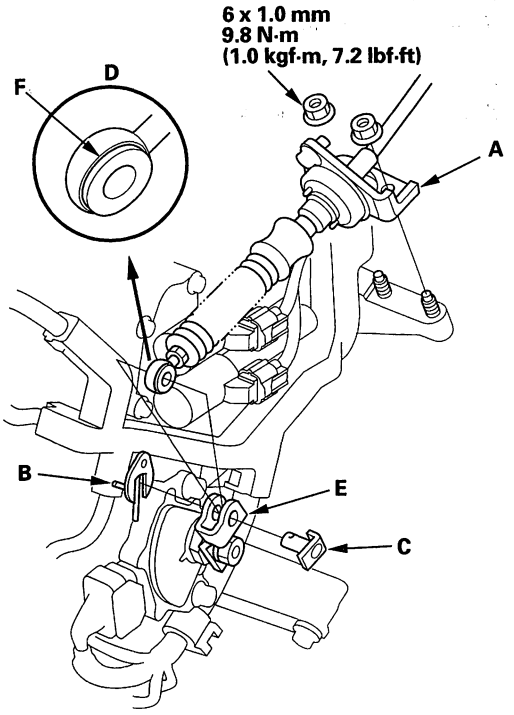
Position/Connector Terminal/Signal Connections										
	1	2	3	4	5	6	7	8	9	10
	-	D	R	P	GND	ATP FWD	D3	N	ATP RVS	ATP NP
P				○	○				○	○
R			○		○				○	
N					○			○	○	○
D		○			○	○				
D3					○	○	○			

9. Transmission range switch test has finished if the test results are OK.
If there is no continuity between any terminals, check that the transmission range switch installation. If the switch installation is OK, replace the switch (see page 14-316).

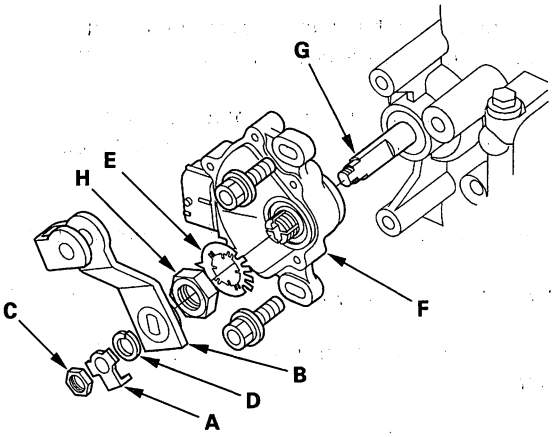
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Transmission Range Switch Replacement

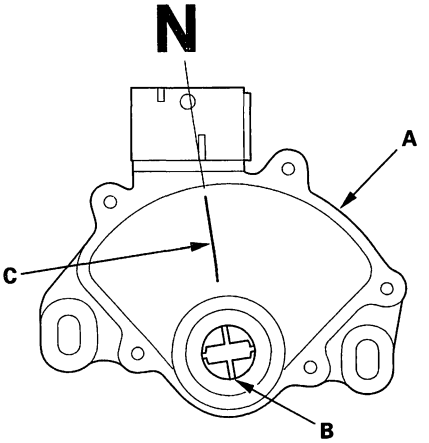
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery cover, battery, and battery tray.
4. Remove the under-hood subfuse box from its bracket, and remove the bracket from the battery base.
5. Remove the intake air duct and air cleaner housing.
6. Remove the battery base and battery base bracket.
7. Remove the nuts securing the shift cable bracket (A).



8. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
9. Check the synthetic resin bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-309).
10. Disconnect the transmission range switch connector.
11. Pry the lock tab of the lock washer (A) on the control lever (B), and remove the nut (C), lock washer, spring washer (D) and control lever.



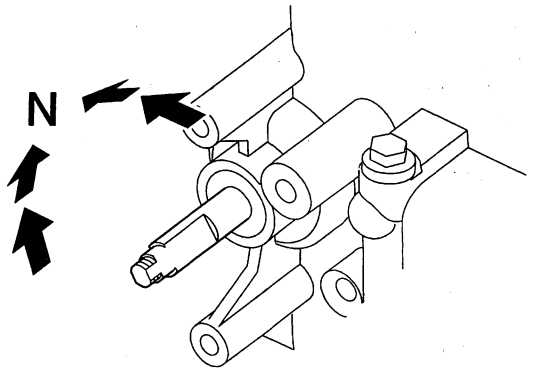
12. Pry the lock tabs of the lock washer (E) on the transmission range switch (F), hold the control shaft (G) with a 6.0 mm wrench, and loosen the locknut (H).
13. Remove the locknut and lock washer, then remove the transmission range switch (two bolts).
14. Set the new transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the control shaft hole (B) aligns with the N position line (C).



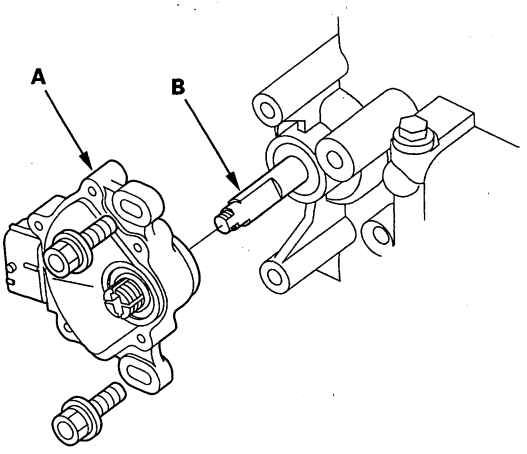
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BACK

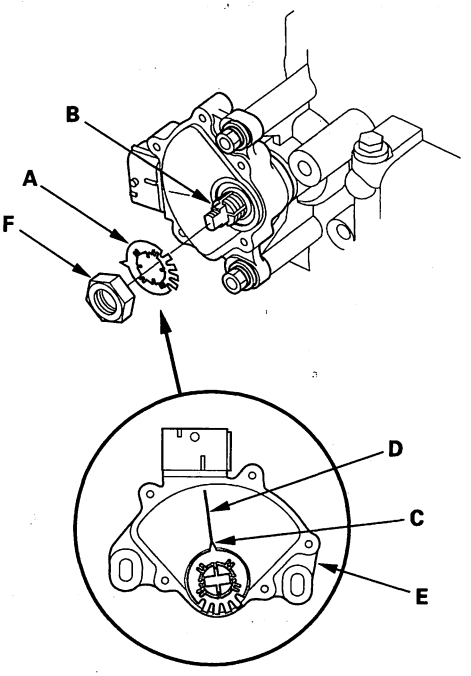
15. Set the control shaft to the N position by turning the control shaft with a 6.0 mm wrench.



16. Install the transmission range switch (A) gently over the control shaft (B), and install the bolts loosely.



17. Install the new lock washer (A) over the control shaft (B) with aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).

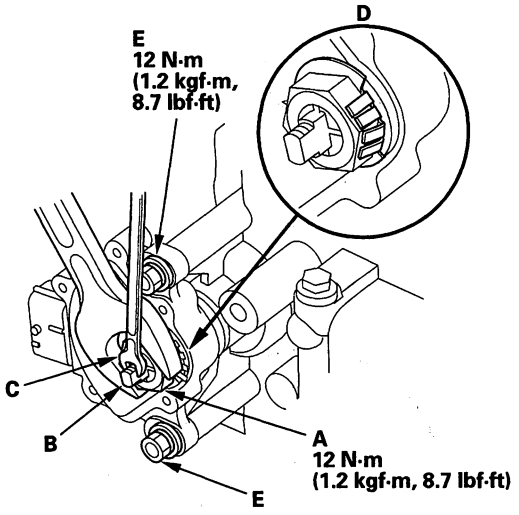


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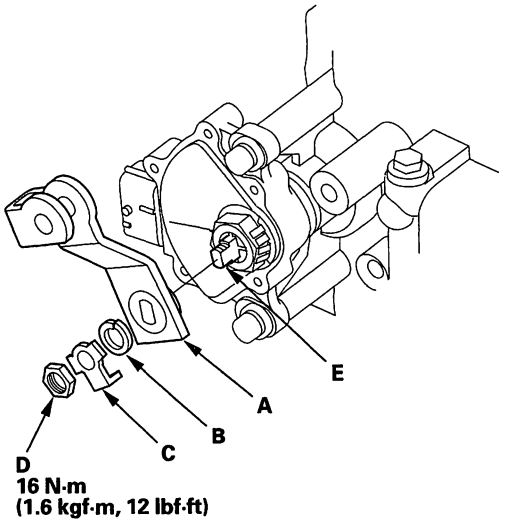
Transmission Range Switch Replacement (cont'd)

18. Push the locknut against the transmission housing to seat the transmission range switch into the control shaft, and tighten the locknut (A) to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the control shaft (B) with a 6.0 mm wrench (C), then bend the lock tabs (D) of the lock washer against the locknut.



19. Tighten the bolts (E) to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) securing the transmission range switch.

20. Install the control lever (A), spring washer (B), lock washer (C), and locknut (D) on the control shaft (E).



21. Check the connectors for rust, dirt, or oil, clean, then connect the connector securely.

22. Apply molybdenum grease to the bore hole of the synthetic resin bushing in the shift cable end, and attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

23. Secure the shift cable bracket with the nuts.

24. Install the battery base bracket and battery base.

25. Install the air cleaner housing and intake air duct.

26. Install the under-hood subfuse box on the battery base, and install the subfuse box on its bracket.

27. Install the battery tray, battery, battery cover, and battery hold-down bracket, then connect battery terminals.

28. 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.

29. Check that the engine will start in the P and N positions, and will not start in any other shift lever position.

30. Check that the back-up lights come on when the shift lever is in the R position.

31. Allow the all four wheels to rotate freely, then start the engine, and check the shift lever operation.

32. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock.

33. Do the steering column position memorization (see page 17-28).

34. Do the power window control unit reset procedure (see page 22-259).

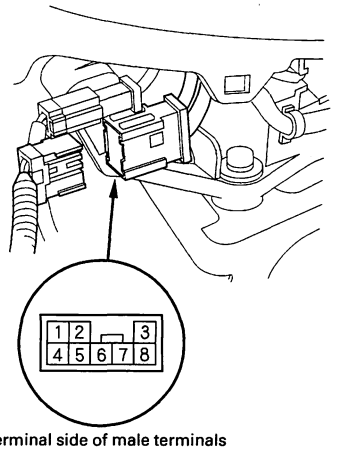
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BACK

Transmission Gear Selection Switch Test

1. Remove the driver's center console trim (see step 5 on page 20-107).

2. Disconnect the transmission gear selection switch/park pin switch/A/T gear position indicator panel light harness connector.



Terminal side of male terminals

3. Check for continuity between connector terminals No. 3 and No. 2.
   There should be continuity when the shift lever is in the M position, and no continuity when the shift lever is in any position other than M.

4. Check for continuity between connector terminals No. 7 and No. 2.
   There should be continuity when the shift lever is pushed toward the upshift position (+), and no continuity with the shift lever released to the neutral position.

5. Check for continuity between connector terminals No. 8 and No. 2.
   There should be continuity when the shift lever is pulled toward the downshift position (−), and no continuity with the shift lever released to the neutral position.

6. If the switch fails to work properly, replace the transmission gear selection switch and shift lever bracket base as an assembly (see page 14-307). The transmission gear selection switch, park pin switch, and A/T gear position indicator panel light harness are not available separately from the shift lever bracket base.

7. Install the driver's center console trim (see step 5 on page 20-107).

Transmission Gear Selection Switch Replacement

NOTE: The transmission gear selection switch is not available separately from the shift lever bracket base; replace the transmission gear selection switch (including park pin switch and A/T gear position indicator panel light harness) and select lever bracket base as an assembly.

Replace the transmission gear selection switch and shift lever bracket base assembly (see page 14-307).

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A/T Gear Position Indicator Panel Light Harness Replacement

NOTE: The A/T gear position indicator panel light harness is not available from separately the shift lever bracket base; replace the A/T gear position indicator panel light harness (including transmission gear selection switch and park pin switch) and select lever bracket base as an assembly.

Replace the A/T gear position indicator panel light harness and shift lever bracket base assembly (see page 14-307).

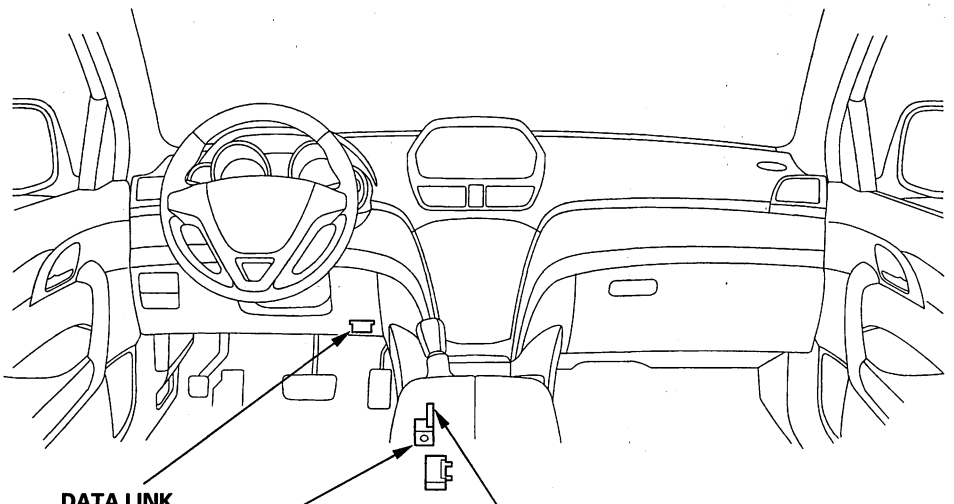
A/T Gear Position Indicator Panel Light Bulb Replacement

1. Remove the shift lever (see page 14-304).
2. Remove the A/T gear position indicator panel light socket from the indicator panel.
3. Remove the indicator panel light bulb from the socket, and replace the bulb with a new one.
4. Install the new bulb in the socket, and install the socket in the indicator panel.
5. Install the shift lever (see page 14-305).

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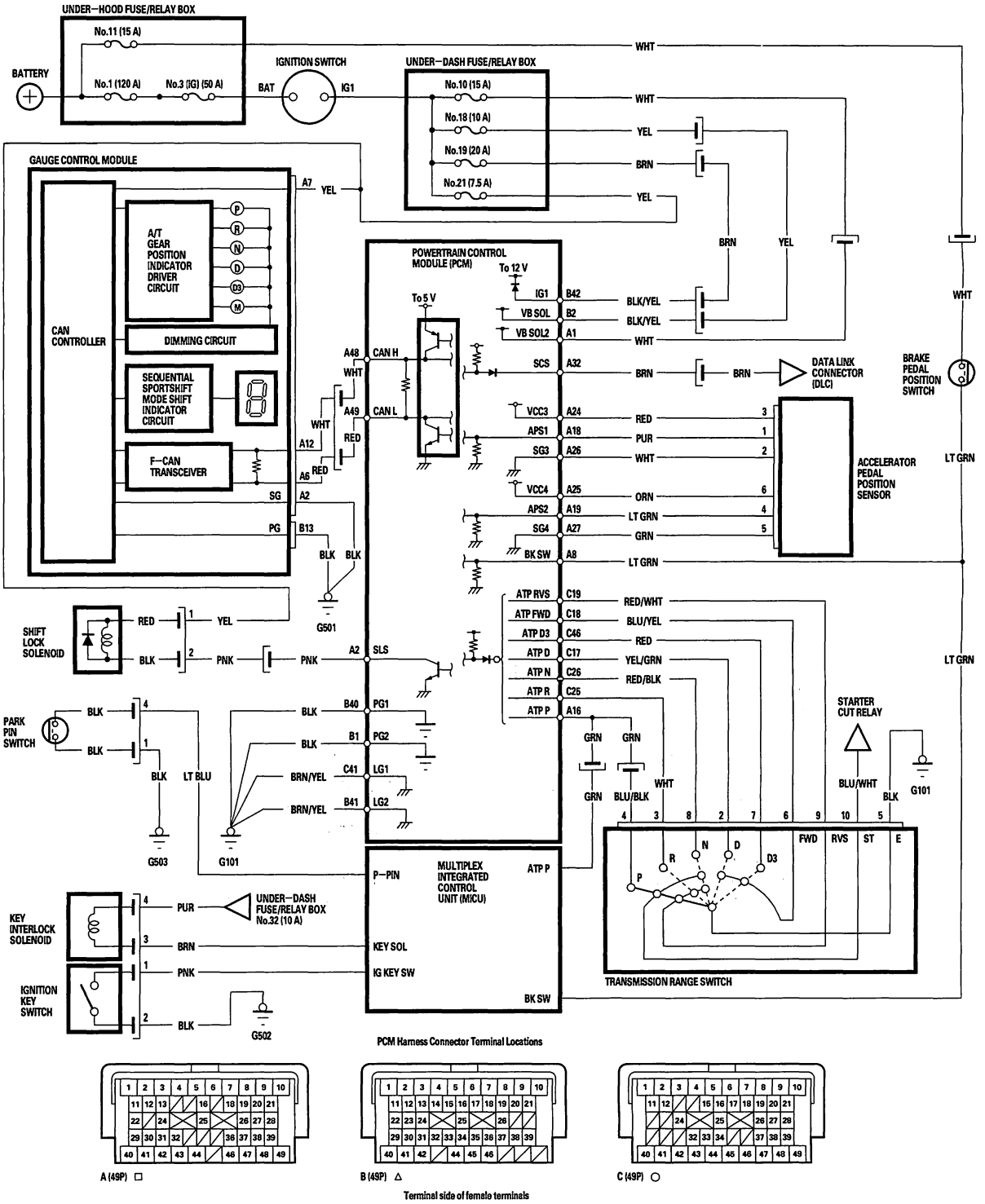
Component Location Index



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A/T Interlock System

Circuit Diagram



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BACK

Shift Lock System Circuit Troubleshooting

1. Connect the HDS to the DLC.
2. Choose Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

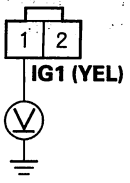
   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

   Does the shift lock solenoid work properly?

   YES—Go to step 14.

   NO—Go to step 3.
3. Remove driver's center console trim (see step 5 on page 20-107).
4. Disconnect the shift lock solenoid connector.
5. Turn the ignition switch ON (II).
6. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

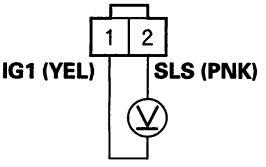
Is there battery voltage?

YES—Go to step 7.

NO—Check for a blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open or short in the wire between the shift lock solenoid connector terminal No. 1 and the under-dash fuse/relay box. ■

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

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 9.

NO—Go to step 10.

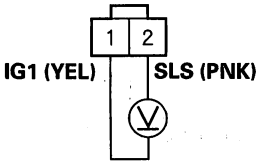
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Shift Lock System Circuit Troubleshooting (cont'd)

9. Release the brake pedal, and measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2. The shift lever must be in the P position.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair short in the wire between PCM connector terminal A2 and the shift lock solenoid. ■

NO—Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see page 14-330). ■

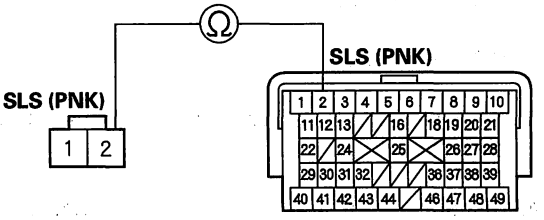
10. Turn the ignition switch OFF.

11. Jump the SCS line with the HDS.

12. Disconnect PCM connector A (49P).

13. Check for continuity between PCM connector terminal A2 and shift lock solenoid connector terminal No. 2.

SHIFT LOCK SOLENOID CONNECTOR **PCM CONNECTOR A (49P)**



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good PCM (see page 14-9) and recheck. ■

NO—Repair open in the wire between PCM connector terminal A2 and the shift lock solenoid. ■

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14. Press the brake pedal.

Are the brake lights ON?

YES—Go to step 15.

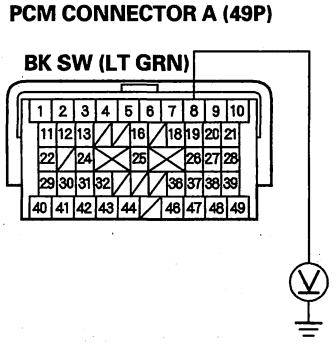
NO—Repair faulty brake light circuit.■

15. Turn the ignition switch OFF.

16. Jump the SCS line with the HDS.

17. Disconnect PCM connector A (49P).

18. Measure the voltage between PCM connector terminal A8 and body ground while pressing the brake pedal and when the brake pedal is released.



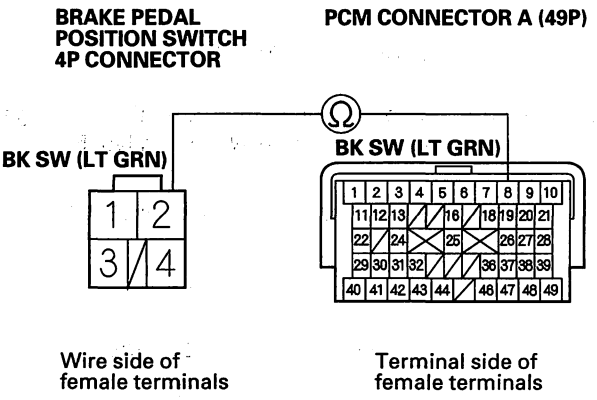
Terminal side of female terminals

Is there battery voltage while the brake pedal is pressed, and no voltage when the pedal is released?

YES—Go to step 20.

NO—Go to step 19.

19. Check for continuity between PCM connector terminal A8 and brake pedal position switch 4P connector terminal No. 2.



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good PCM (see page 14-9) and recheck.■

NO—Repair open in the wire between PCM connector terminal A8 and the brake pedal position switch.■

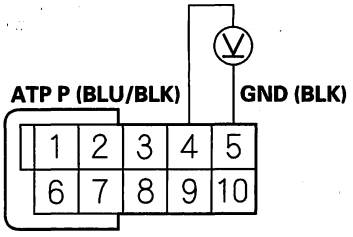
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Shift Lock System Circuit Troubleshooting (cont'd)

20. Connect PCM connector A (49P).
21. Disconnect the transmission range switch connector.
22. Turn the ignition switch ON (II).
23. Measure the voltage between transmission range switch connector terminals No. 4 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

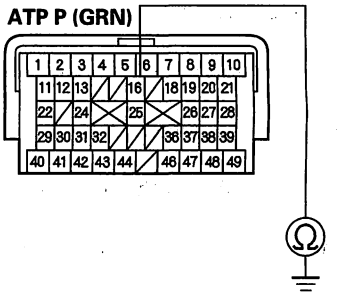
Is there battery voltage?

YES—Go to step 28.

NO—Go to step 24.

24. Turn the ignition switch OFF.
25. Disconnect PCM connector A (49P).
26. Check for continuity between PCM connector terminal A16 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

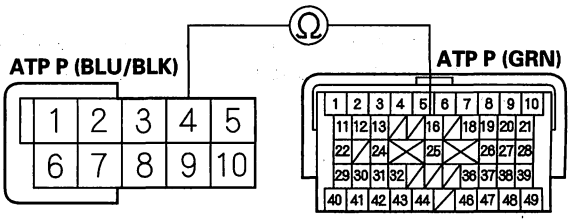
Is there continuity?

YES—Repair short in the wire between PCM connector terminal A16 and the transmission range switch connector. ■

NO—Go to step 27.

27. Check for continuity between PCM connector terminal A16 and transmission range switch connector terminal No. 4.

TRANSMISSION RANGE SWITCH CONNECTOR **PCM CONNECTOR A (49P)**



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 28.

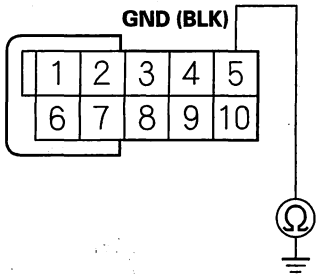
NO—Repair open in the wire between PCM connector terminal A16 and the transmission range switch connector. ■

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28. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good PCM (see page 14-9) and recheck.■

NO—Repair open in the wire between transmission range switch connector terminal No. 5 and ground (G101), or repair poor ground (G101).■

29. Test the transmission range switch (see page 14-315).

Is the switch OK?

YES—Go to step 30.

NO—Replace the transmission range switch (see page 14-316).■

30. Connect the HDS to the DLC.

31. Check the accelerator pedal position sensor 1 in the data list with the HDS. Do not press the accelerator.

Is the accelerator pedal position sensor 1 opening 11 % and above, or the sensor 1 voltage 0.90 V and above?

YES—Check the throttle body (see page 11-362).■

NO—Substitute a known-good PCM (see page 14-9) and recheck.■

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Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-18) and the precautions and procedures (see page 24-20) before doing repair or service.

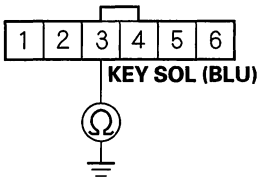
1. Turn the ignition switch to ACC (I). The shift lever must be in the P position.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

   Can the ignition switch be turned the LOCK (0) position?

   YES—Go to step 4.

   NO—Replace the ignition key cylinder/steering lock assembly (see page 17-29).■
4. Turn the ignition switch OFF.
5. Shift the shift lever into any position other than P.
6. Check for continuity between steering lock assembly connector terminal No. 3 and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



Wire side of female terminals

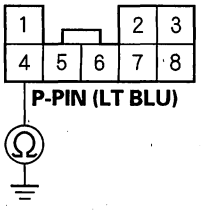
Is there continuity?

YES—Repair a short in the wire between key interlock solenoid and the MICU.■

NO—Go to step 7.

7. Remove driver's center console trim (see step 5 on page 20-107).
8. Disconnect transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector.
9. Check for continuity between transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector terminal No. 4 and body ground.

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between transmission gear selection switch/park pin switch/ A/T gear position indicator panel light connector terminal No. 4 and the MICU.■

NO—Go to step 10.

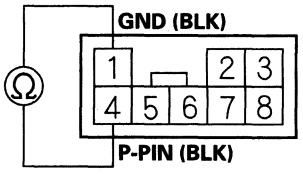
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BACK

10. Shift the shift lever into the P position.

11. Check for continuity between transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector terminals No. 1 and No. 4. Do not push the shift lever button.

TRANSMISSION GEAR SELECTION SWITCH/ PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the park pin switch (see page 14-332) and shift lever bracket base (see page 14-307). The park pin switch, transmission gear selection switch, and A/T gear position indicator panel light harness are not available separately from the shift lever bracket base. ■

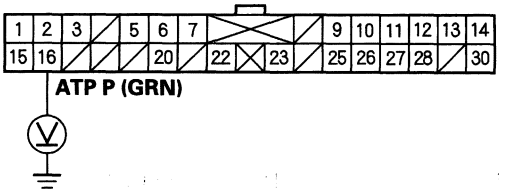
NO—Go to step 12.

12. Disconnect the multiplex integrated control unit 30P connector.

13. Turn the ignition switch ON (II).

14. Measure the voltage between multiplex integrated control unit 30P connector terminal No. 16 and body ground.

MULTIPLEX INTEGRATED CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there battery voltage when the shift lever is in any position other than the P position, and no voltage when the shift lever is in the P position?

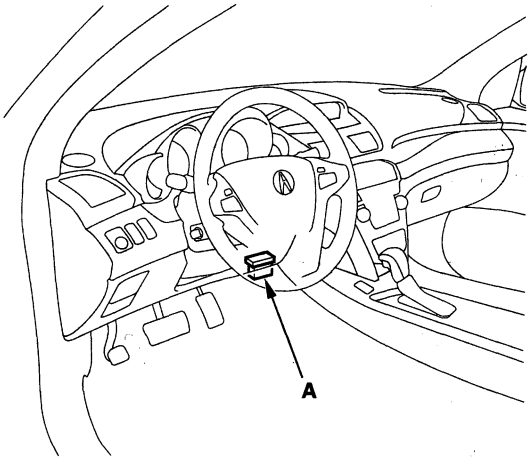
YES—Substitute a known-good multiplex integrated control unit (MICU) and recheck. ■

NO—Repair open or short in the wire between the MICU and the transmission range switch. ■

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Shift Lock Solenoid Test

1. Connect the HDS to the DLC (A).



2. Choose Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-223).

3. Check that the shift lever can be moved out of the P position when Shift Lock Solenoid: ON. Move the shift lever back in the P position, and make sure it locks with Shift Lock Solenoid: OFF.

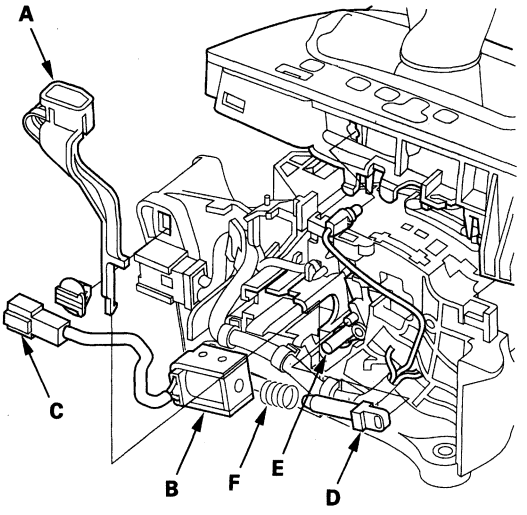
4. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.

5. If the shift lock solenoid does not work properly, perform shift lock system troubleshooting (see page 14-323).

Shift Lock Solenoid Replacement

1. Remove the shift lever (see page 14-304).

2. Remove the shift lock release (A).



3. Remove the shift lock solenoid (B) and harness connector (C), and replace the shift lock solenoid.

4. Apply silicone grease to joint of the new shift lock solenoid plunger (D) and shift lock stop (E).

5. Install the shift lock solenoid plunger and plunger spring (F) in the shift lock solenoid.

6. Install the new shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop, then push the shift lock solenoid into the shift lever bracket base securely.

7. Install the shift lock solenoid connector on the shift lever bracket base.

8. Install the shift lock release.

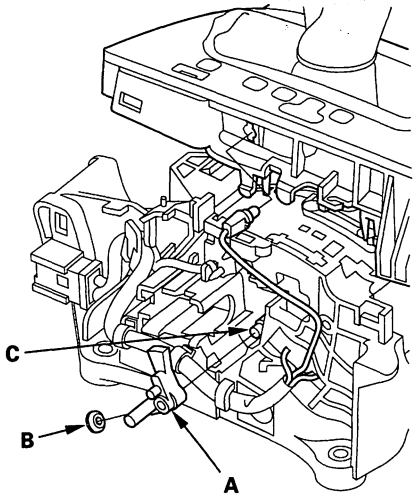
9. Install the shift lever (see page 14-305).

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Shift Lock Stop, Shift Lock Stop Cushion Replacement

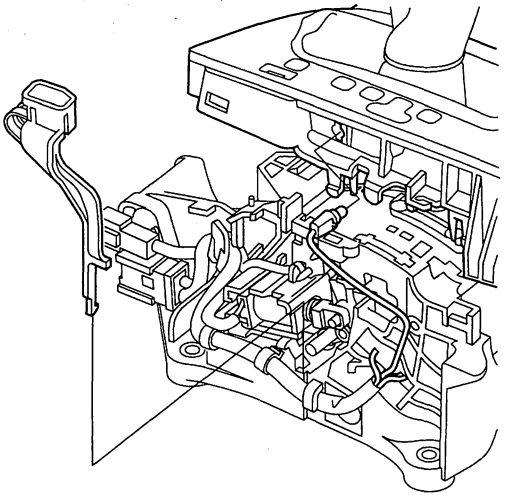
1. Remove the shift lock solenoid (see page 14-330).
2. Remove the shift lock stop (A) and stop cushion (B), and replace the shift lock stop or stop cushion.



3. Install the shift lock stop cushion on the shift lock stop.
4. Apply silicone grease to the pin (C) on the shift lever bracket base, and install the shift lock stop over the pin.
5. Install the shift lock solenoid (see page 14-330).

Shift Lock Release Replacement

1. Remove the shift lever (see page 14-304).
2. Remove the shift lock release, and replace it.

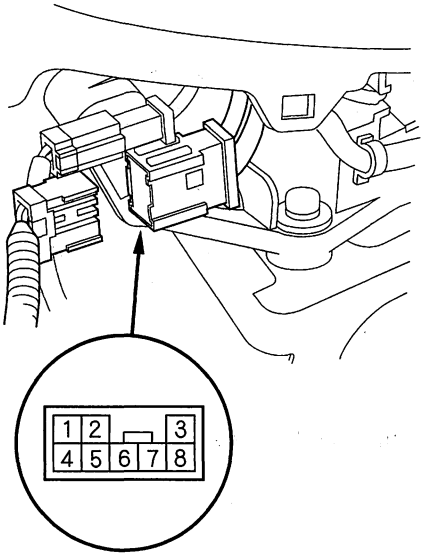


3. Install the shift lock release.
4. Install the shift lever (see page 14-305).

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Park Pin Switch Test

1. Remove the driver's center console trim (see step 5 on page 20-107).
2. Disconnect the transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector.



Terminal side of male terminals

3. Shift the shift lever into the P position, and check for continuity between transmission gear selection switch/park pin switch/A/T gear position indicator panel light connector terminals No. 1 and No. 4. There should be no continuity.
4. Shift out of the P position, and check for continuity between connector terminals No. 1 and No. 4. There should be continuity.
5. If the park pin switch fails the test, replace the park pin switch and shift lever bracket base as an assembly (see page 14-307). The park pin switch, transmission gear selection switch, and A/T gear position indicator panel light harness are not available separately from the shift lever bracket base.
6. Install the driver's center console trim (see step 5 on page 20-107).

Park Pin Switch Replacement

NOTE: The park pin switch is not available separately from the shift lever bracket base; replace the park pin switch (including the transmission gear selection switch and A/T gear position indicator panel light harness) and select lever bracket base as an assembly.

Replace the park pin switch and shift lever bracket base assembly (see page 14-307).

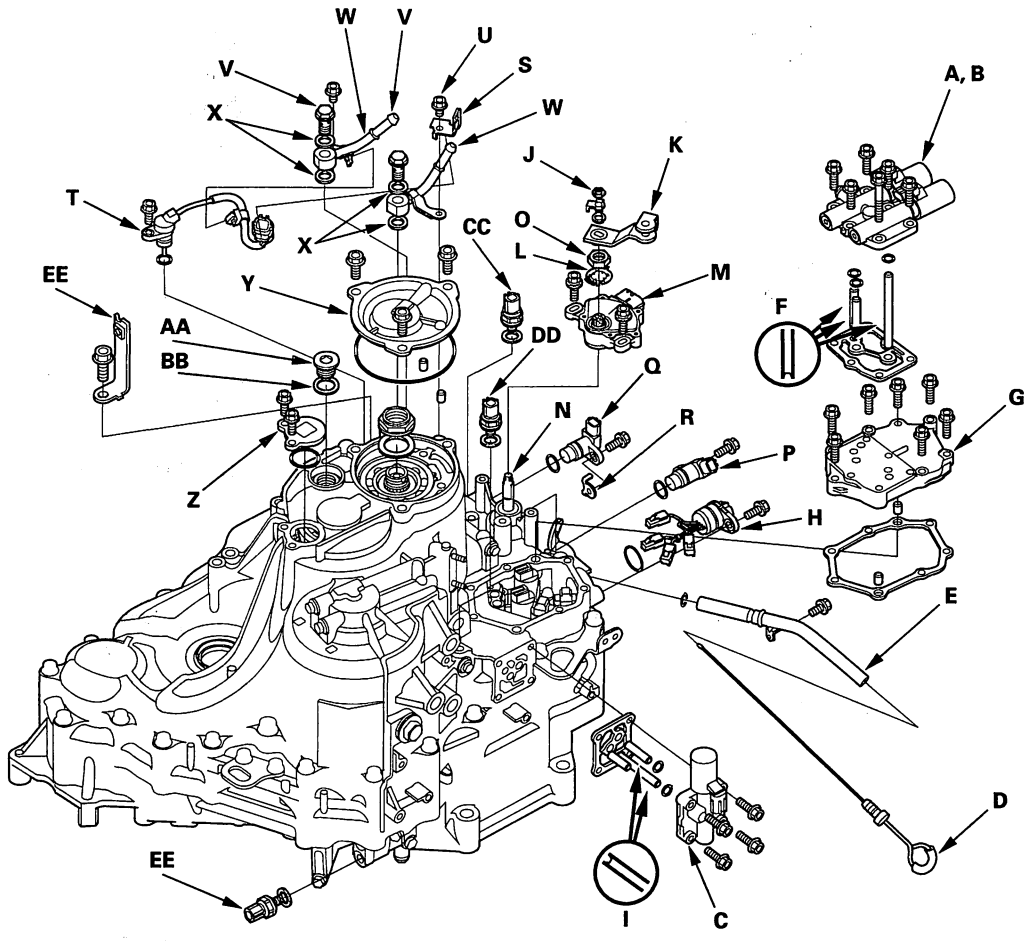
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BACK

Transmission Disassembly

Special Tools Required
Mainshaft holder set 07GAB-PF50101

1. Remove the ATF dipstick (D) and the dipstick tube (E).



2. Remove A/T clutch pressure control solenoid valve A and B (six bolts), ATF feed pipes (F) (three), O-rings (three), and gasket.
3. Remove the solenoid valve cover (G) (seven bolts), dowel pins (two), and gasket.
4. Disconnect the solenoid valve connectors, then remove the solenoid harness connector (H).
5. Remove A/T clutch pressure control solenoid valve C (four bolts), ATF feed pipes (I) (three), O-rings (two), and gasket.
6. Pry the lock tab of the lock washer (J) on the control lever (K), and remove the nut, lock washer, spring washer, and control lever.

(cont'd)

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Transmission Disassembly (cont'd)

7. Pry up the lock tabs of the lock washer (K) on the transmission range switch (L), hold the selector control shaft (M) with a 6.0 mm wrench, and loosen the locknut (N).

8. Remove the locknut and lock washer, then remove the transmission range switch (two bolts).

9. Remove the input shaft (mainshaft) speed sensor (O), output shaft (countershaft) speed sensor (P), and sensor washer (Q).

10. Remove the ATF temperature sensor connector from the connector bracket (R) and the harness clamp from the clamp bracket, then remove the ATF temperature sensor (S).

11. Remove the connector bracket (R) and 6.0 mm bolt (T), then remove the line bolts (U), ATF cooler lines (V), and sealing washers (W).

12. Remove the end cover (X) (three bolts), snap ring cap (Y) (two bolts), sealing plug (Z), and washer (AA).

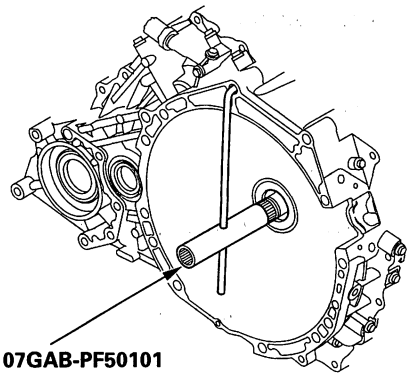
13. Remove the 3rd clutch transmission fluid pressure switch (BB) and sealing washer.

14. Remove the 4th clutch transmission fluid pressure switch (CC) and sealing washer.

15. Remove the 2nd clutch transmission fluid pressure switch (DD) and sealing washer.

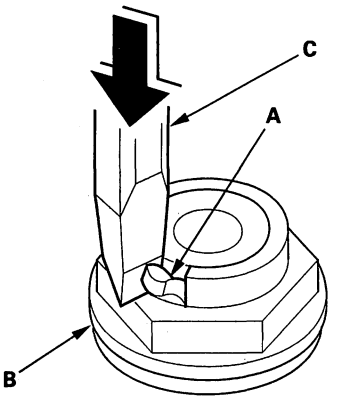
16. Remove the transmission ground terminal (EE).

17. Slip the mainshaft holder onto the mainshaft.

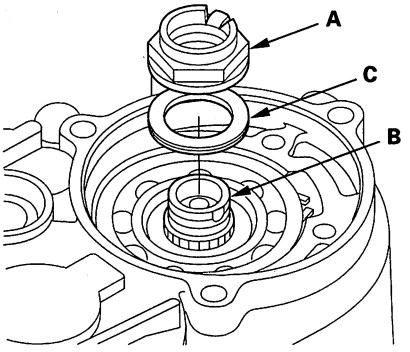


18. Cut the lock tab (A) of the mainshaft locknut (B) using a chisel (C).

    NOTE: Keep all of the chiseled particles out of the transmission.



19. Remove the locknut (A) from the mainshaft (B).

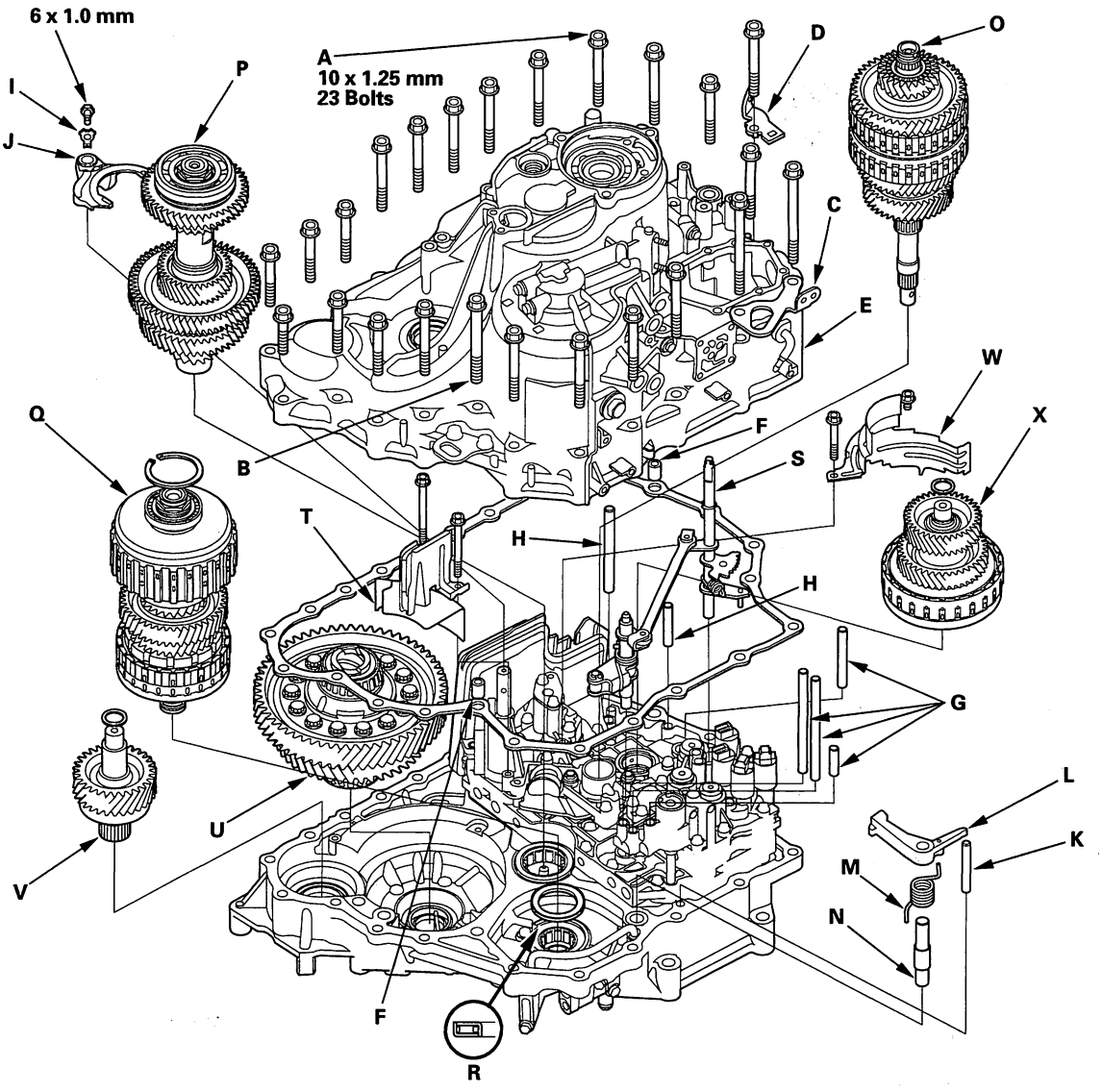


20. Pry the lock washer (C), and remove it.

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BACK

21. Remove the transmission housing mounting bolts (A) (23 bolts), special bolt (B), transmission hanger (C), and ground terminals bracket (D).

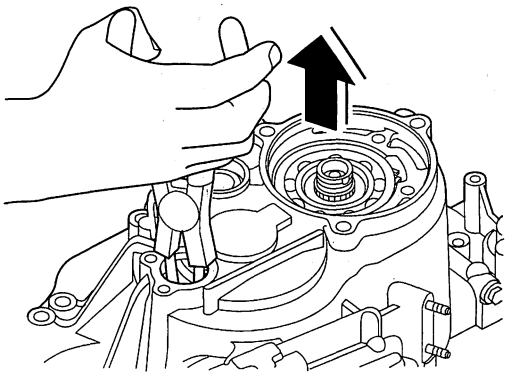


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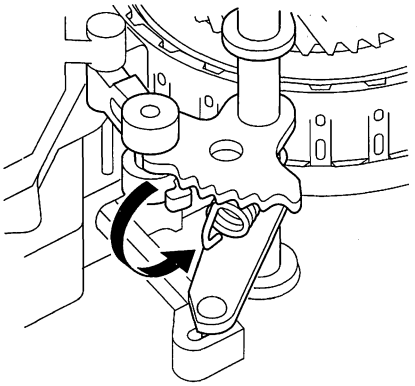
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Transmission Disassembly (cont'd)

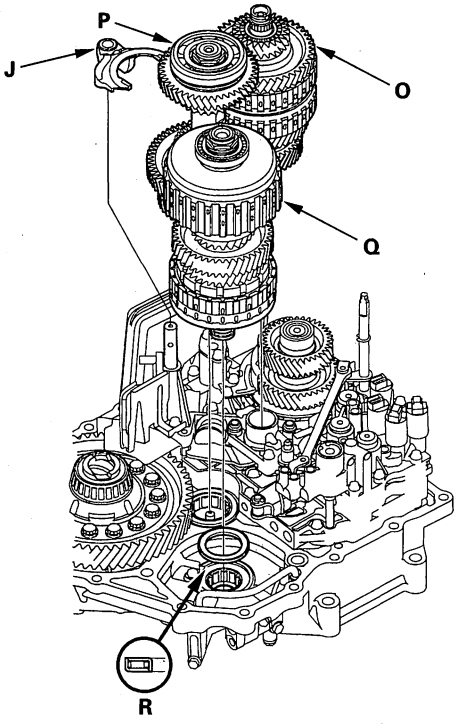
22. While expanding the snap ring of the countershaft bearing using the snap ring pliers, lift the transmission housing.



23. Release the pliers, and remove the transmission housing (E), two dowel pins (F), and gasket.
24. Remove the ATF feed pipes (G) (four) from the accumulator body.
25. Remove the ATF feed pipes (H) (two) from the torque converter housing.
26. Remove the mainshaft holder from the mainshaft.
27. Pry the lock tab of the lock washer (I) on the shift fork (J), then remove the bolt and lock washer.
28. Unlock the detent spring from the detent arm.



29. Remove the park pawl stop (K), park pawl (L), pawl spring (M), and pawl shaft (N).
30. Remove the mainshaft (O), countershaft (P), shift fork (J), and secondary shaft (Q) together, and remove the needle bearing (R) from the torque converter housing.

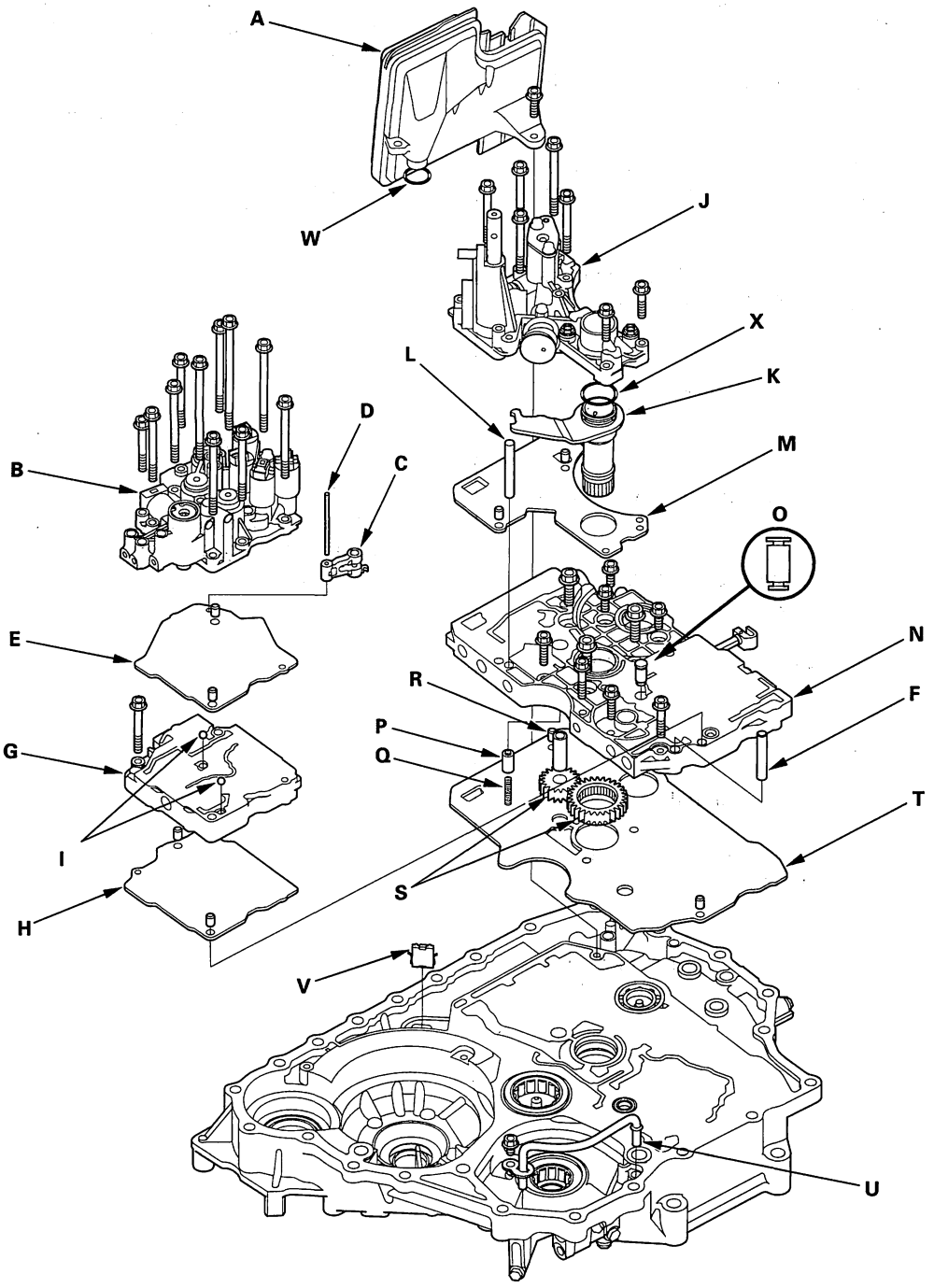


31. Remove the selector control shaft and park lever link (S).
32. Remove the baffle plate (T).
33. Remove the differential assembly (U).
34. Remove the transfer output shaft (V).
35. Remove the baffle plate (W).
36. Remove the intermediary shaft (X).

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37. Remove the ATF strainer (A) (one bolt).



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Transmission Disassembly (cont'd)

38. Remove the accumulator body (B) (11 bolts), dowel pins (two), detent arm (C), arm shaft (D), and separator plate (E).

39. Remove the ATF feed pipe (F) from the main valve body.

40. Remove the secondary valve body (G) (one bolt), dowel pins (two), and separator plate (H). Do not let the check balls (I) (two) fall out.

41. Remove the regulator valve body (J) (seven bolts), stator shaft (K), stator shaft stop (L), dowel pins (two), and separator plate (M).

42. Remove the main valve body (N) (8 mm: three bolts, 6 mm: seven bolts). Do not let the lubrication check valve (O) fall out.

43. Remove the torque converter check valve (P) and valve spring (Q).

44. Remove the ATF pump driven gear shaft (R), then remove the ATF pump gears (S).

45. Remove the dowel pins (two) and main separator plate (T).

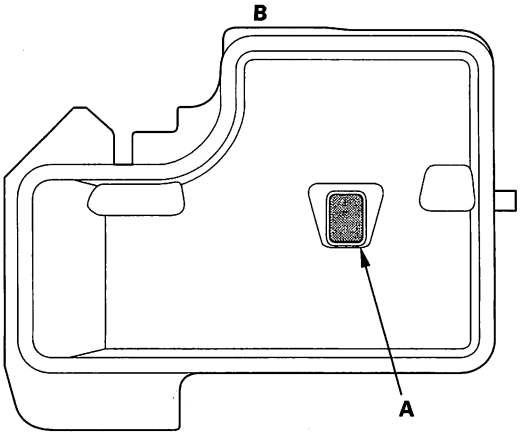
46. Remove the ATF passage pipe (U).

47. Remove the ATF magnet (V), clean it, then reinstall.

48. Remove the O-ring (W) from the ATF strainer, and replace the new O-ring when reassembling the transmission.

49. Remove the O-ring (X) from the stator shaft, and replace the new O-ring when reassembling the transmission.

50. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is good condition and that inlet opening is not clogged.



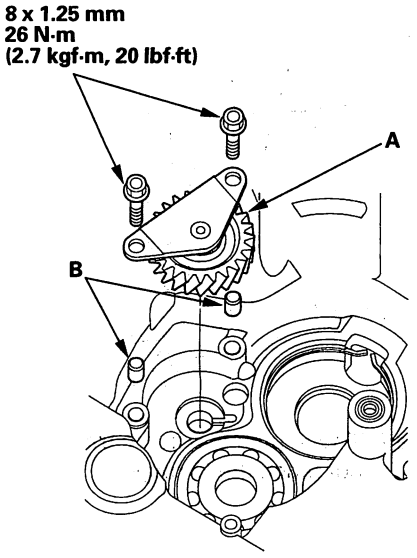
51. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace if it is clogged or damaged.

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Reverse Idler Gear Removal/ Installation

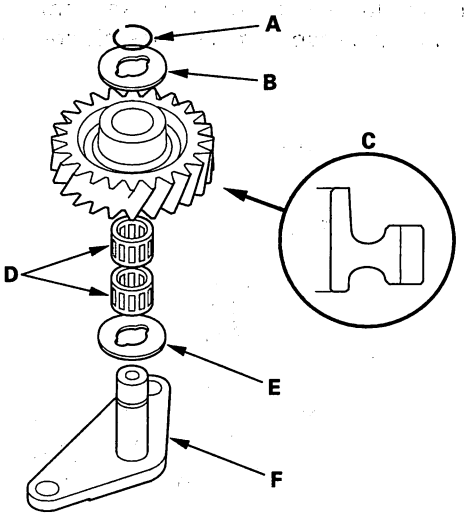
1. Remove the reverse idler gear assembly (A) from the transmission housing.



2. Install the reverse idler gear assembly with the two dowel pins (B) in the transmission housing.

Reverse Idler Gear Disassembly/ Inspection/Reassembly

1. Remove the snap ring (A), then remove the thrust washer (B), reverse idler gear (C), needle bearings (D), and thrust washer (E) from the reverse idler gear shaft/holder (F).

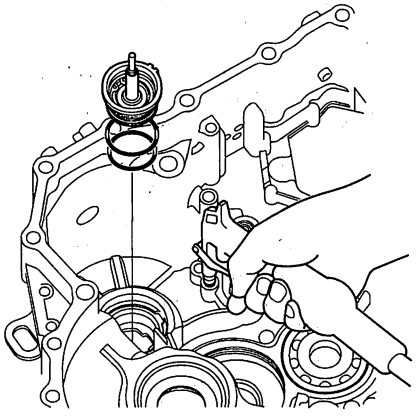


2. Inspect the reverse idler gear and gear shaft for excessive wear and damage.
3. Inspect the needle bearings for galling and rough movement.
4. Install the thrust washer and needle bearings over the gear shaft.
5. Install the reverse idler gear in the direction shown.
6. Install the thrust washer, then install the snap ring to secure the idler gear.

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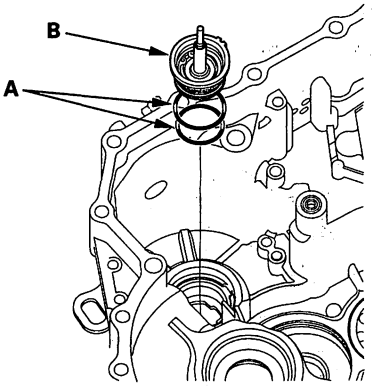
Secondary Shaft ATF Feed Pipe Cap Removal

1. Cover the tip of the 1st-hold clutch ATF feed pipe with a shop rag.
2. Apply air pressure to the ATF feed pipe hole of the 1st-hold clutch pressure circuit, and remove the ATF feed pipe cap from the transmission housing.



Secondary Shaft ATF Feed Pipe Cap Installation

1. Install the new O-rings (A) on the ATF feed pipe cap (B).



2. Install the ATF feed pipe cap in the transmission housing. Do not pinch the O-rings.

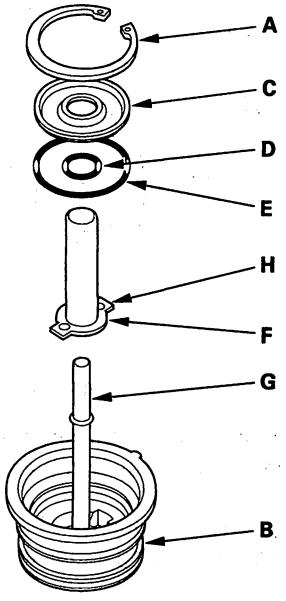
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Secondary Shaft ATF Feed Pipe Cap, Feed Pipe Replacement

1. Remove the ATF feed pipe cap from the transmission housing (see page 14-340).

2. Remove the snap ring (A) from the feed pipe cap (B), then remove the feed pipe guide (C), O-rings (D) (E), and 1st clutch ATF feed pipe (F).



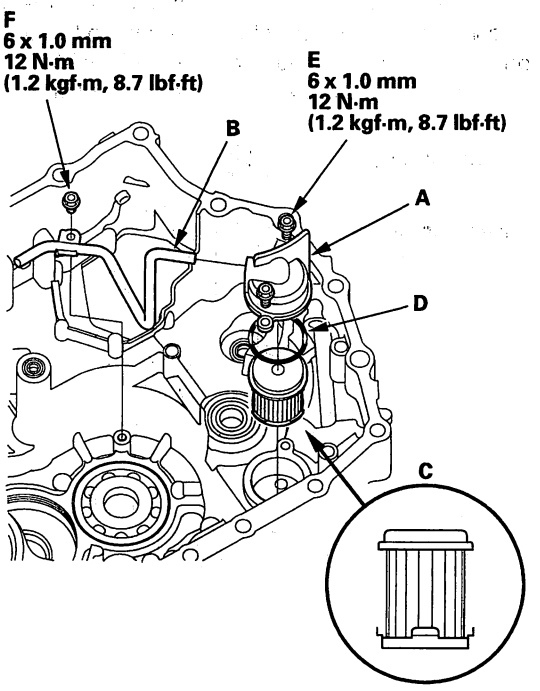
3. Replace the 1st clutch ATF feed pipe or 1st-hold clutch ATF feed pipe/ATF feed pipe cap assembly. The 1st-hold clutch ATF feed pipe/ATF feed pipe cap is not available separately.

4. Install the new O-ring (D) over the 1st clutch ATF feed pipe, then install the feed pipe over the 1st-hold clutch ATF feed pipe (G) while aligning the feed pipe tabs (H) with the guide in the cap.

5. Install the new O-ring (E) in the cap and feed pipe guide, then secure the guide with the snap ring.

ATF Filter Removal/Inspection/ Installation

1. Remove the three 6.0 mm bolts securing the ATF filter cover (A) and ATF pipe (B).



2. Remove the ATF pipe from the ATF filter cover, and remove the ATF filter (C) from the cover.

3. Clean the ATF filter, then check that it is in good condition, and is not clogged. Replace the ATF filter if it is clogged or damaged.

4. Install the ATF filter with the new O-ring (D) in the filter cover, and, install the ATF pipe in the cover, then install them in the transmission housing.

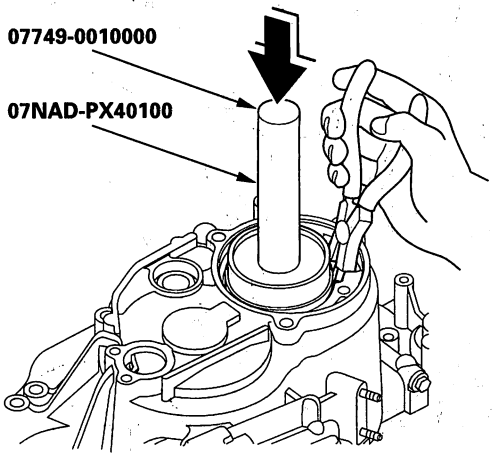
5. Secure the ATF filter cover with the two bolts (E), then secure the ATF pipe with the bolt (F).

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Mainshaft Bearing Removal

Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

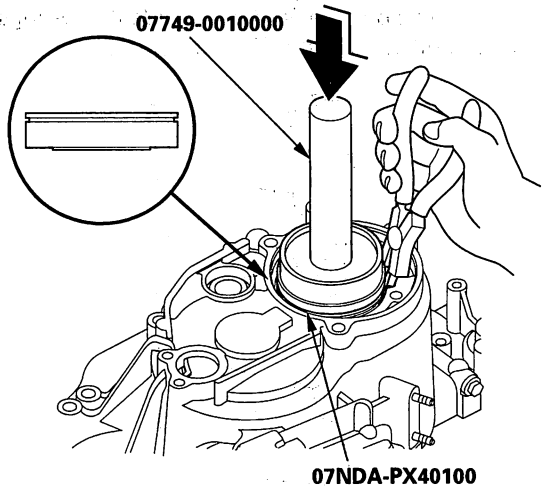
1. To remove the mainshaft bearing, expand the snap ring with the snap ring pliers, then push the bearing out. Do not remove the snap ring unless it's necessary to clean the groove in the housing.



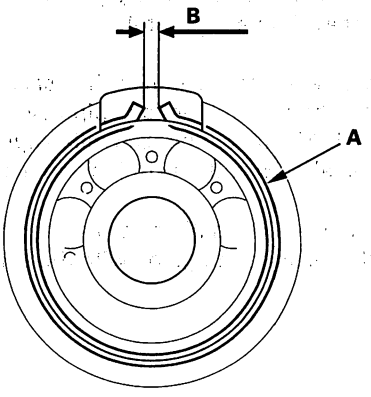
Mainshaft Bearing Installation

Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

1. Install the bearing in the direction shown.



2. Expand the snap ring with the snap ring pliers, and insert the bearing part-way into the housing.
3. Release the pliers, then push the bearing down into housing until the snap ring snaps in place around it.
4. After installing the bearing, verify that the snap ring (A) is seated in the bearing and housing groove, and that the ring end gap (B) is 0—7 mm (0—0.28 in.).



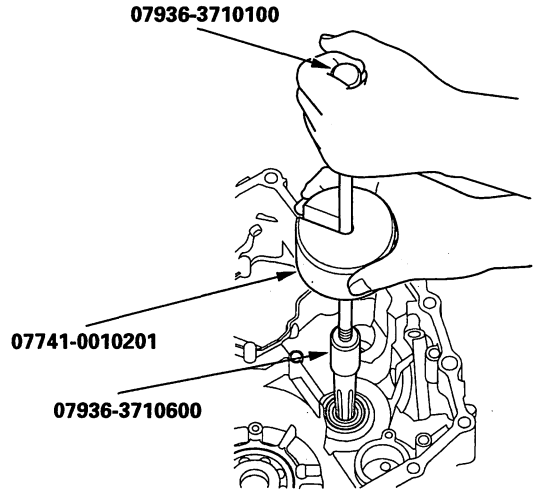
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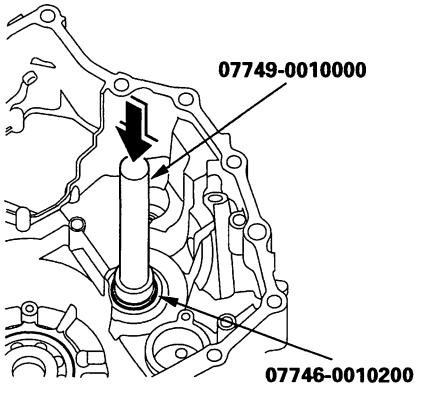
Intermediary Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft set, 20 mm 07936-3710600
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200

1. Remove the intermediary shaft bearing from the transmission housing using the bearing remover shaft set (20 mm), the bearing shaft handle, and the sliding hammer weight.



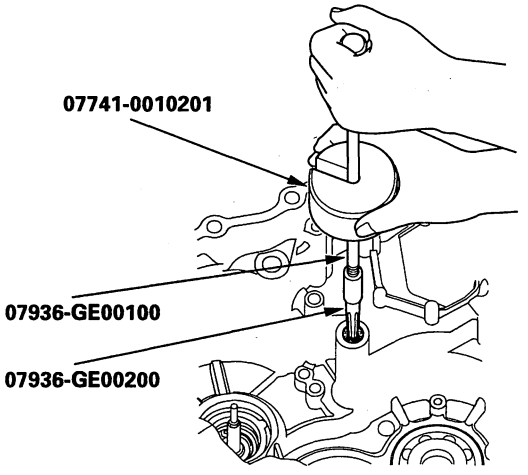
2. Install the new bearing until it bottoms in the transmission housing using the driver and the attachment (37 x 40 mm).



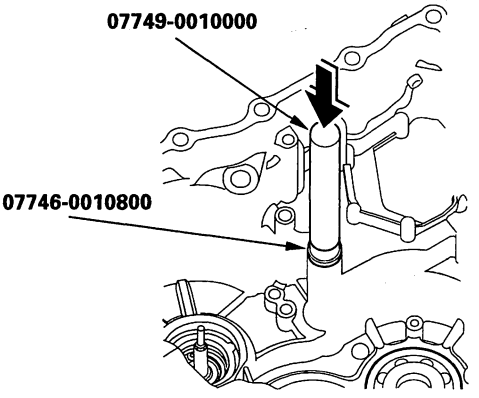
Park Lever Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft, 10 mm 07936-GE00100
- Bearing remover head, 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the transmission housing using the bearing remover head (10 mm), the bearing remover shaft (10 mm), and the sliding hammer weight.



2. Install the new bearing until it bottoms in the transmission housing using the driver and the attachment (22 x 24 mm).

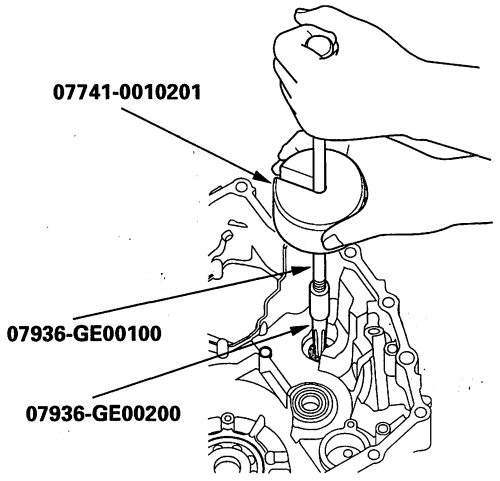


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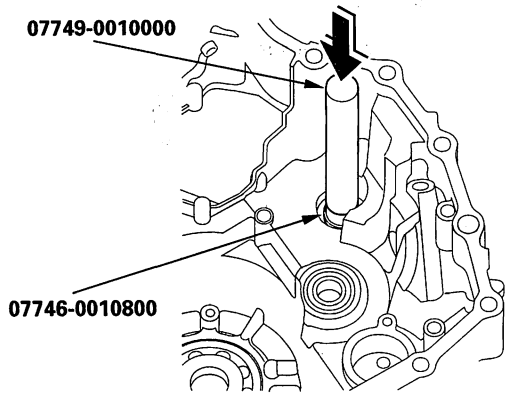
Selector Control Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft, 10 mm 07936-GE00100
- Bearing remover head, 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the control shaft bearing from the transmission housing using the bearing remover head (10 mm), the bearing remover shaft (10 mm), and the sliding hammer weight.



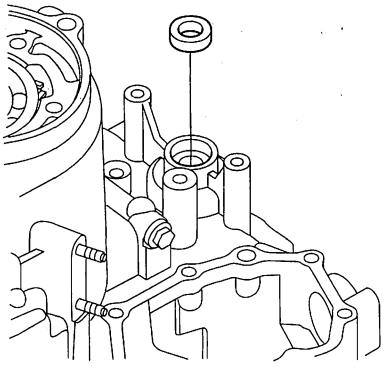
2. Install the new bearing in the transmission housing using the driver and the attachment (22 x 24 mm).



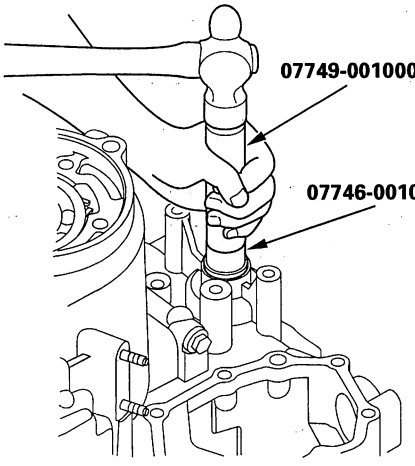
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the transmission housing.



2. Install the new oil seal in the transmission housing using the driver and the attachment (22 x 24 mm).



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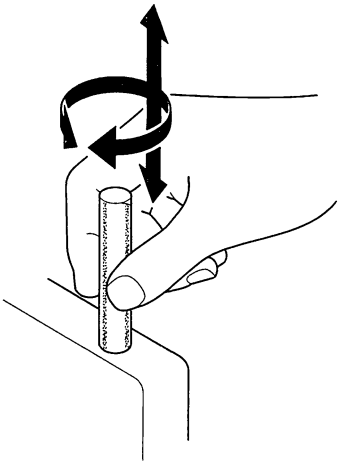
BACK

Valve Body Repair

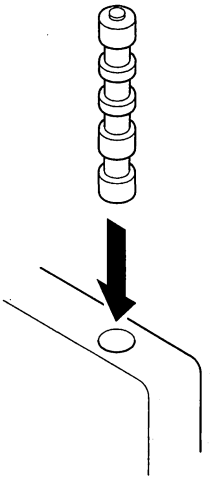
NOTE: Valve body repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
4. Roll up half of the ATF-soaked #600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

   NOTE: The valve body is aluminum and doesn't require much polishing to remove any burrs.



5. Remove the #600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.
6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat steps 4 and 5, then retest. If the valve still sticks, replace the valve body.



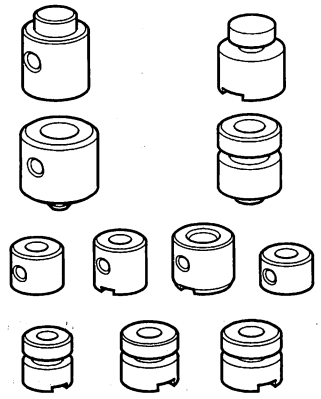
7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

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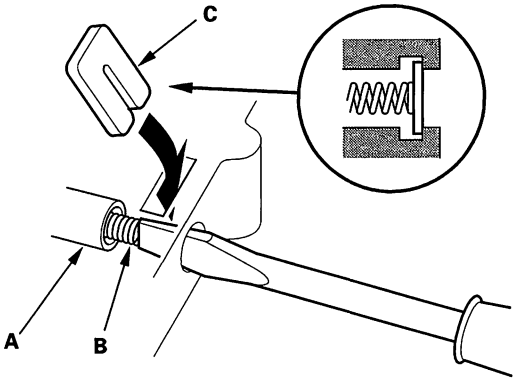
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.

2. Install the valves and springs in the sequence shown for the main valve body (see page 14-347), secondary valve body (see page 14-349), regulator valve body (see page 14-350), and accumulator body (see page 14-351). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body, then secure the valve cap with the valve cap clip.



3. Install the valve (A) and valve spring (B) in the valve body. Push the valve spring in with a screwdriver, then install the spring seat (C).

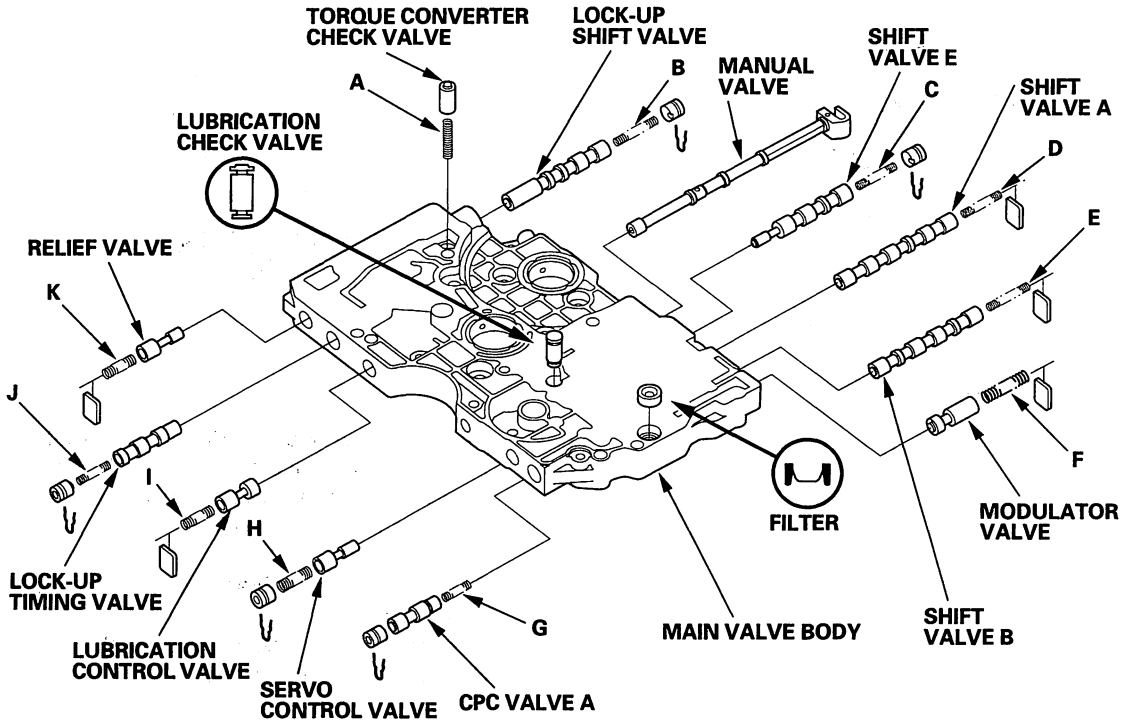


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Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the main valve body for scoring and damage.
3. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-345).
4. Coat all parts with ATF during assembly.
5. Replace the filter with new one, and install it and the lubrication check valve in the direction shown.



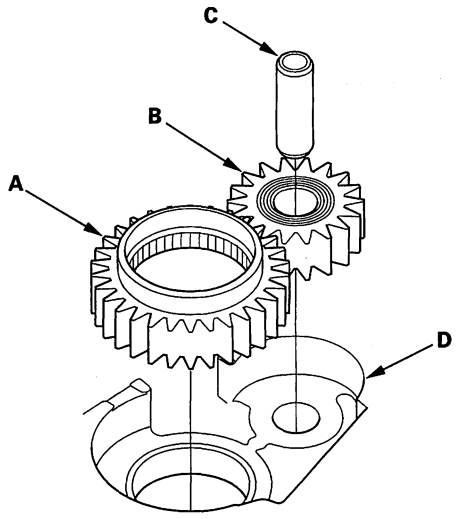
VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Torque converter check valve spring	1.1 (0.043)	8.6 (0.339)	34.3 (1.350)	10.1
B	Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
C	Shift valve E spring	0.7 (0.028)	6.6 (0.260)	42.4 (1.669)	17.6
D	Shift valve A spring	0.9 (0.035)	6.6 (0.260)	50.5 (1.988)	23.3
E	Shift valve B spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
F	Modulator valve spring	1.6 (0.063)	10.4 (0.409)	33.5 (1.319)	9.8
G	CPC valve A spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
H	Servo control valve spring	0.9 (0.035)	9.6 (0.378)	30.2 (1.189)	8.4
I	Lubrication control valve spring	0.9 (0.035)	8.7 (0.343)	25.0 (0.984)	7.2
J	Lock-up timing valve spring	0.6 (0.024)	6.6 (0.260)	30.9 (1.217)	11.1
K	Relief valve spring	1.0 (0.039)	9.6 (0.378)	28.1 (1.106)	7.7

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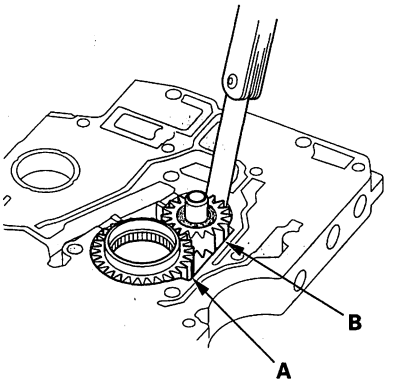
ATF Pump Inspection

1. Install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



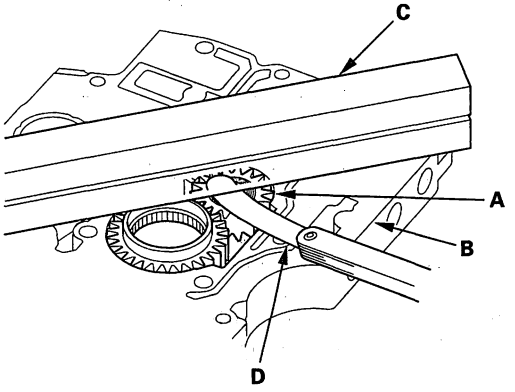
2. Measure the side clearance of the ATF pump drive gear (A) and driven gear (B).

ATF Pump Gears Side (Radial) Clearance
Standard (New):
ATF Pump Drive Gear:
0.210—0.265 mm (0.0083—0.00104 in.)
ATF Pump Driven Gear:
0.070—0.125 mm (0.0028—0.0050 in.)



3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial) Clearance:
Standard (New): 0.03—0.06 mm (0.001—0.002 in.)
Service Limit: 0.07 mm (0.003 in.)

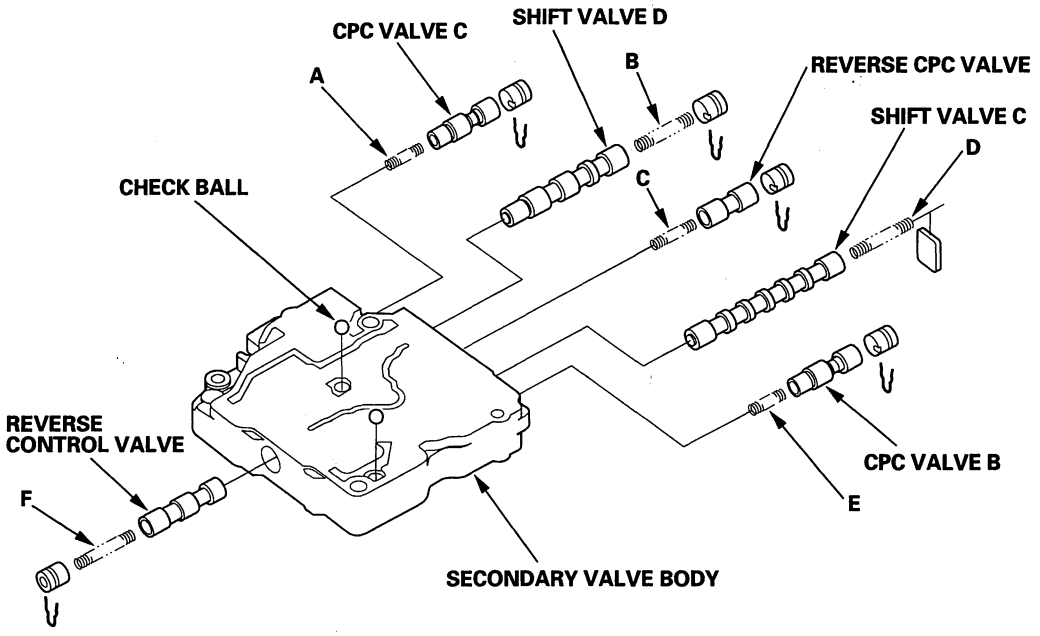


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Secondary Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the check balls.
3. Inspect the secondary valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-345).
5. Coat all parts with ATF during assembly.



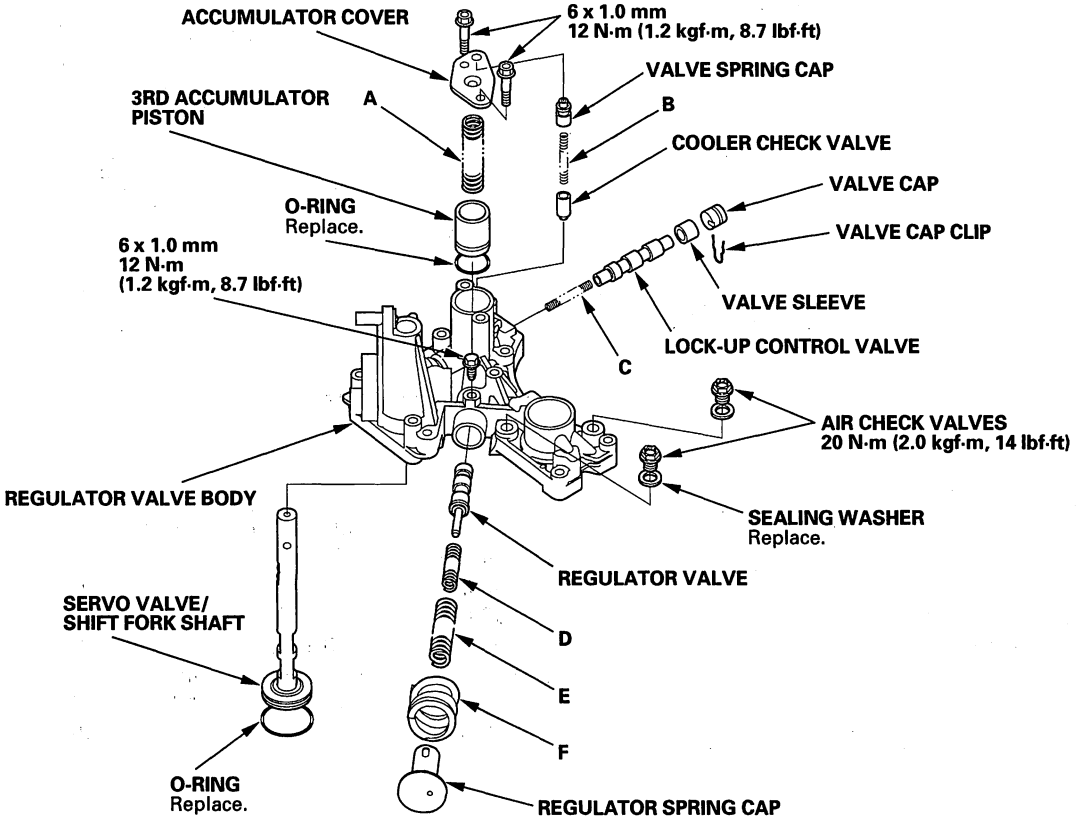
VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	CPC valve C spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	Shift valve D spring	0.7 (0.028)	6.6 (0.260)	42.4 (1.669)	17.6
C	Reverse CPC valve spring	0.8 (0.031)	6.1 (0.240)	24.4 (0.961)	14.6
D	Shift valve C spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
E	CPC valve B spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
F	Reverse control valve spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7

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Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the regulator valve body for scoring and damage.
3. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-345).
5. Coat all parts with ATF during assembly.
6. Align the hole in the regulator spring cap with the stop bolt hole, then press the spring cap into the valve body, and tighten the stop bolt.
7. Install the servo valve with the new O-ring, and 3rd accumulator piston with the new O-ring.



VALVE SPRING SPECIFICATIONS

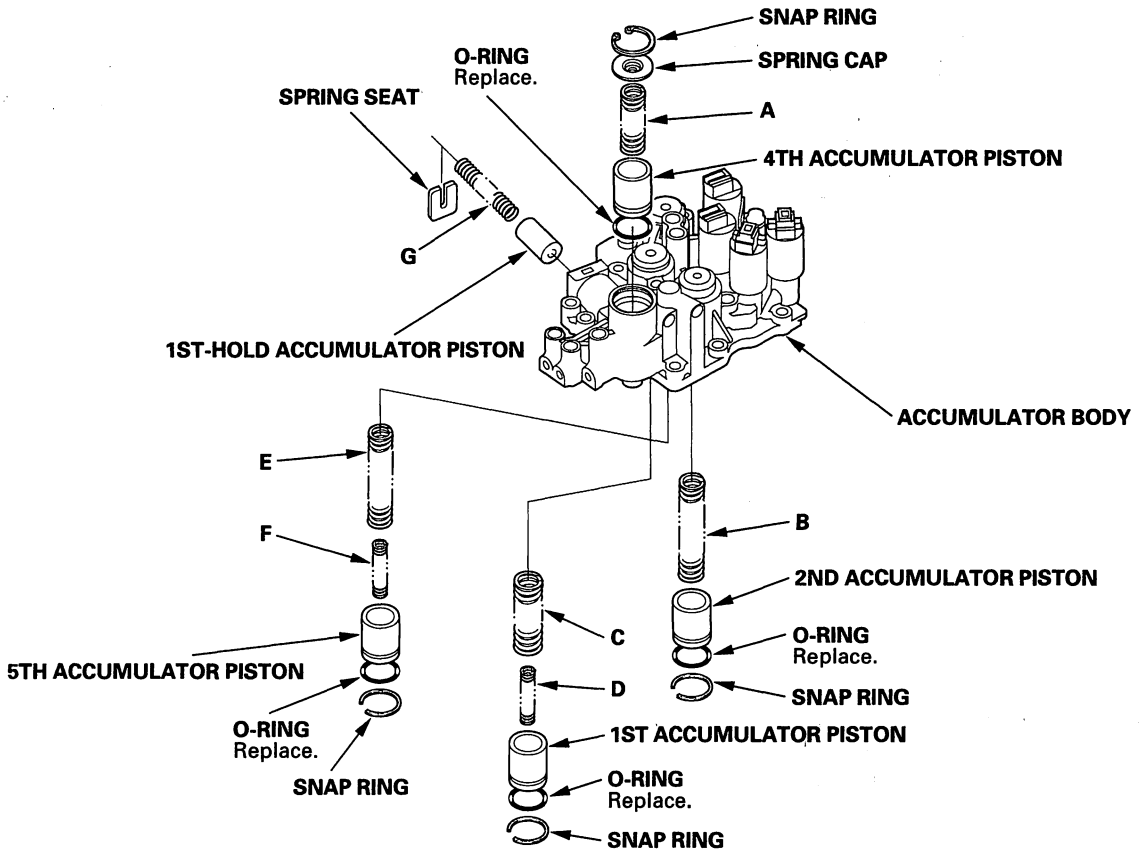
Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	3rd accumulator spring	3.1 (0.122)	19.6 (0.772)	41.4 (1.630)	5.5
B	Cooler check valve spring	0.9 (0.035)	6.7 (0.264)	31.5 (1.240)	14.2
C	Lock-up control valve spring	0.7 (0.028)	6.6 (0.260)	42.9 (1.689)	14.2
		0.8 (0.031)	6.6 (0.260)	44.3 (1.744)	25.5
D	Regulator valve spring B	1.4 (0.055)	8.8 (0.346)	44.0 (1.732)	12.0
E	Regulator valve spring A	1.85 (0.073)	14.7 (0.579)	86.9 (3.421)	16.2
F	Stator reaction spring	5.5 (0.217)	37.4 (1.472)	30.3 (1.193)	2.1

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Accumulator Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the accumulator body for scoring and damage.
3. Coat all parts with ATF during assembly.
4. Replace the O-rings with new ones.



VALVE SPRING SPECIFICATIONS

Valve Springs		Standard: (New)-Unit mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	4th accumulator spring	3.3 (0.130)	19.6 (0.772)	39.1 (1.539)	5.8
B	2nd accumulator spring	3.1 (0.122)	19.6 (0.772)	53.4 (2.102)	7.5
C	1st accumulator spring A	2.3 (0.091)	19.6 (0.772)	60.8 (2.394)	9.5
D	1st accumulator spring B	2.5 (0.098)	12.8 (0.504)	46.0 (1.811)	9.5
E	5th accumulator spring A	2.4 (0.094)	19.6 (0.772)	65.5 (2.579)	12.0
F	5th accumulator spring B	2.6 (0.102)	13.2 (0.520)	50.5 (1.988)	10.1
G	1st-hold accumulator spring	2.0 (0.079)	13.1 (0.516)	42.9 (1.689)	9.8

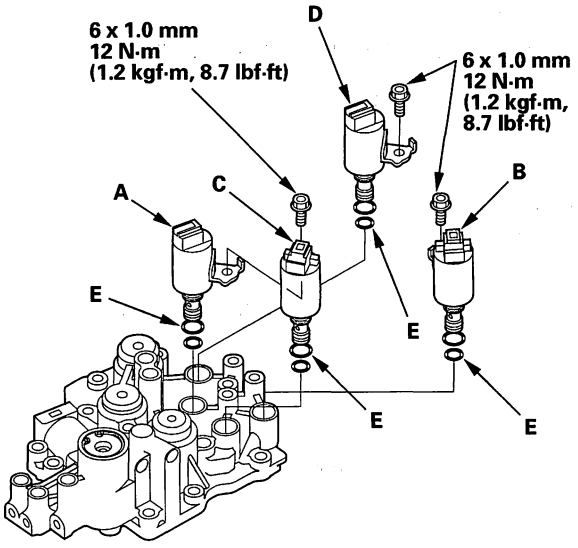
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Shift Solenoid Valve Removal and Installation

NOTE: Do not hold the solenoid valve connector to remove and install the solenoid valve. Be sure to hold the solenoid valve body.

1. Remove the mounting bolts, then remove the solenoid valves by holding the solenoid valve body.
2. Install the new O-rings (E) on each solenoid valves.

   NOTE: If you are installing a new solenoid valve, it comes with new O-rings already installed.



3. Install shift solenoid valve D (black connector) by holding the shift solenoid valve body; be sure to install mounting bracket contacts to the accumulator body.
4. Install shift solenoid valve A (black connector) by holding the shift solenoid valve body; be sure to install mounting bracket contacts to the accumulator body.
5. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; be sure to position the mounting bracket on top of the bracket of shift solenoid valve A.

   NOTE: Do not install shift solenoid valve C before installing shift solenoid valve A. If shift solenoid valve C is installed before installing shift solenoid valve A, it may damage to hydraulic control system.
6. Install shift solenoid valve B (brown connector) by holding the shift solenoid valve body; be sure the mounting bracket contacts the accumulator body.

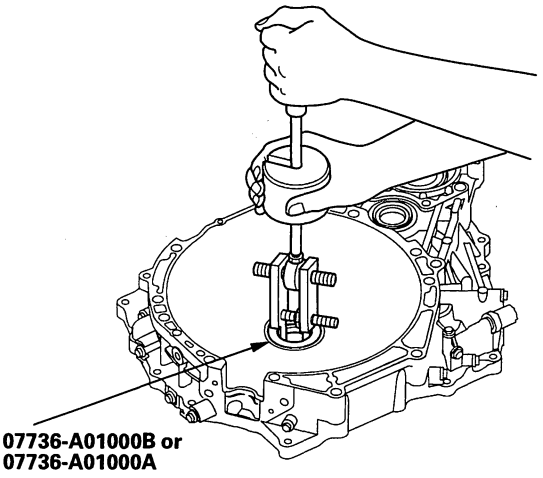
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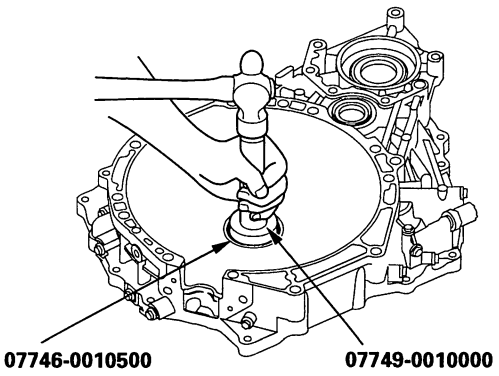
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

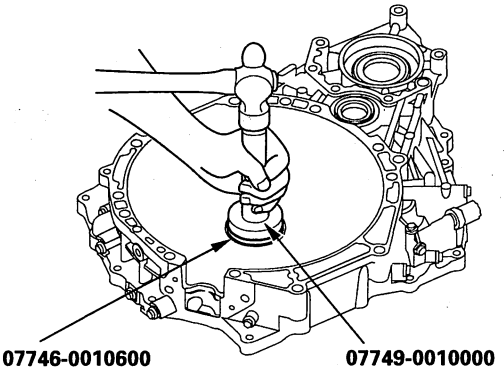
1. Remove the mainshaft bearing and oil seal using the adjustable bearing puller (25—40 mm) and a commercially available 3/8 "-16 slide hammer (A).



2. Install the new mainshaft bearing until it bottoms in the housing using the driver and the attachment (62 x 68 mm).



3. Install the new oil seal flush to the housing using the driver and the attachment (72 x 75 mm).

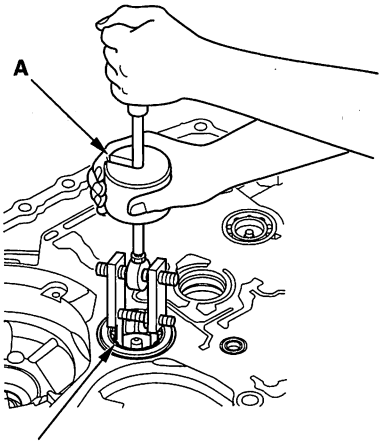


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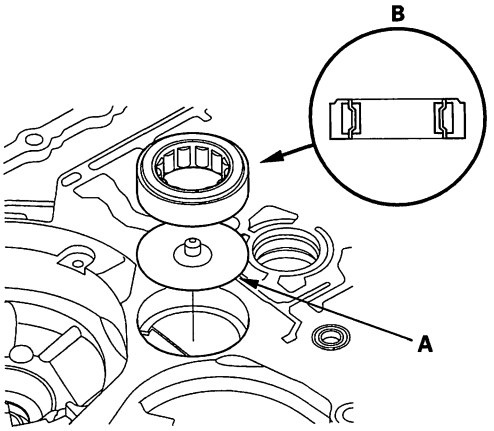
Countershaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

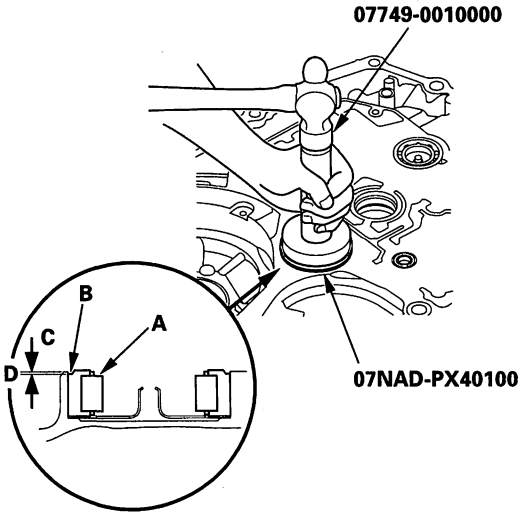
1. Remove the countershaft bearing from the torque converter housing using the adjustable bearing puller (25—40 mm) and a commercially available 3/8 "-16 slide hammer (A).



2. Install the ATF guide plate (A) into the housing, then install the new bearing (B) in the direction shown.



3. Install the bearing (A) in the housing using the driver and the attachment (78 x 80 mm); install bearing outer notch-cut (B) in depth (C) of 0—0.03 mm (0—0.001 in.) below the housing surface (D).



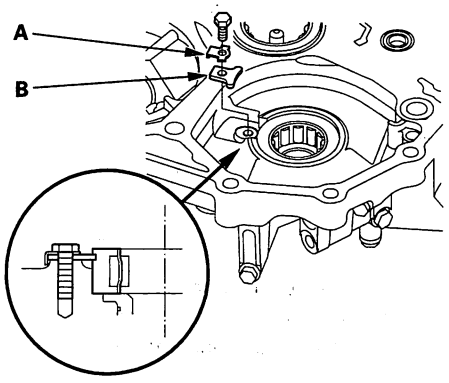
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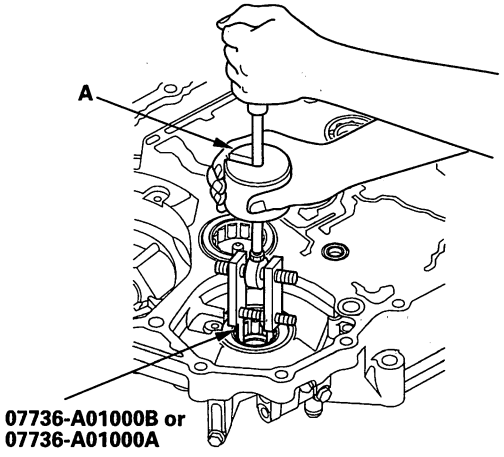
Secondary Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Bearing remover shaft set, 30 mm 07936-8890300
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200
- Attachment, 62 x 68 mm 07746-0010500

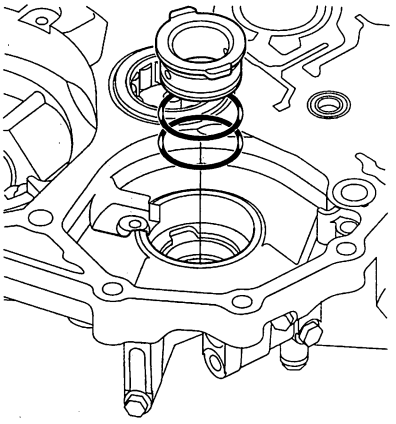
1. Remove the bolt, then remove the lock washer (A) and bearing set plate (B).



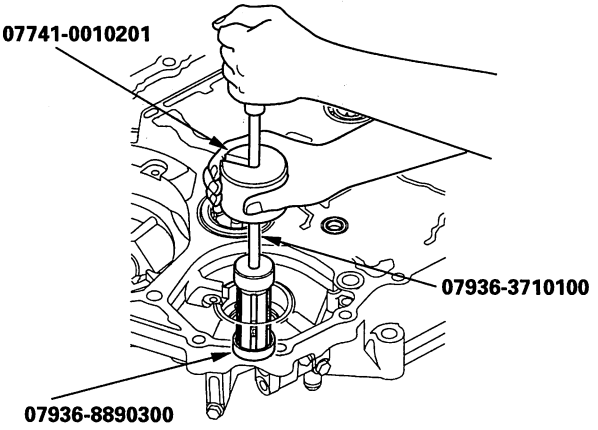
2. Remove the secondary shaft bearing from the torque converter housing using the adjustable bearing puller (25—40 mm) and a commercially available 3/8 ″-16 slide hammer (A).



3. Remove the ATF guide collar from the torque converter housing.



4. Remove the 29 x 39 x 9.5 mm secondary shaft bearing from the torque converter housing using the bearing remover shaft set (30 mm), the bearing remover shaft handle, and the sliding hammer weight.

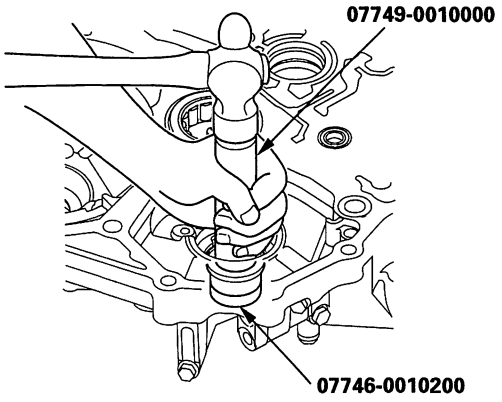


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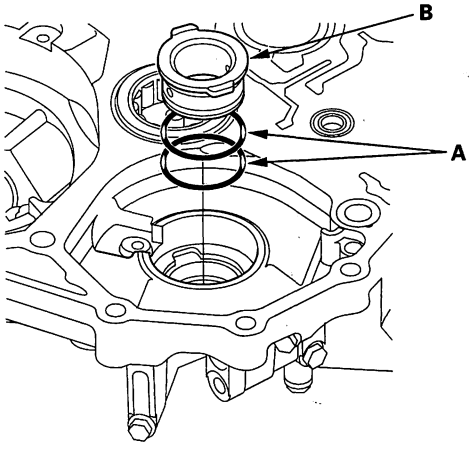
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Secondary Shaft Bearing Replacement (cont'd)

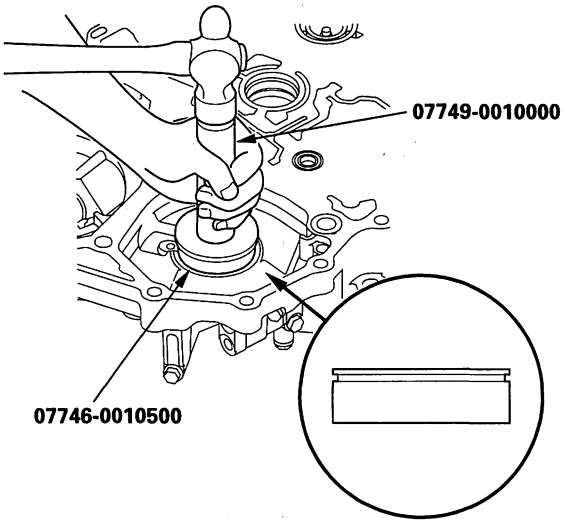
5. Install the 29 x 39 x 9.5 mm bearing into the torque converter housing using the driver and the attachment (37 x 40 mm).



6. Install the new O-rings (A) on the ATF guide collar (B), then install the guide collar in the torque converter housing.

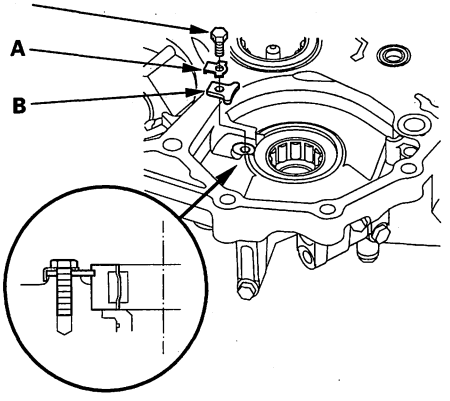


7. Install the bearing in the direction shown in the housing using the driver and the attachment (62 x 68 mm).



8. Check that the bearing groove aligns with the set plate mounting surface, then install the set plate (A) by aligning it with the bearing groove.

6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)



9. Install the new lock washer (B) and bolt, then bend the lock tab of the lock washer against the bolt head.

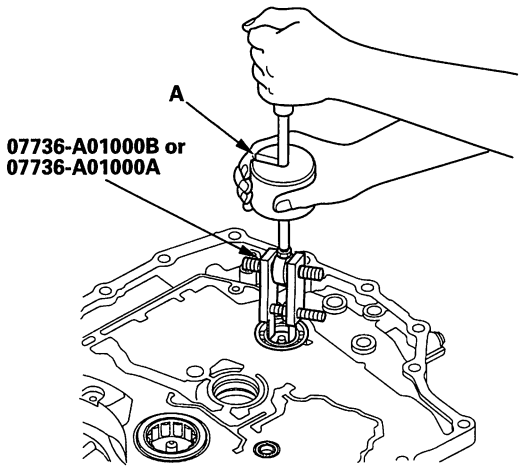
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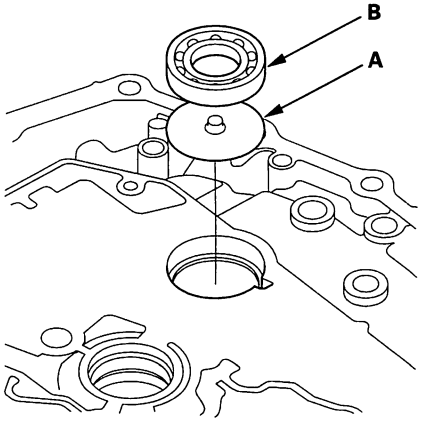
Intermediary Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

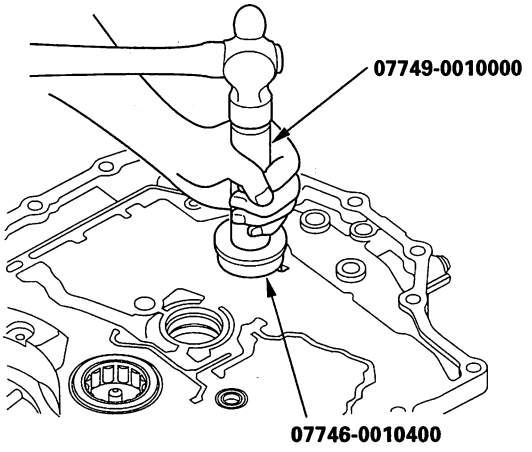
1. Remove the intermediary shaft bearing from the torque converter housing using the adjustable bearing puller (25—40 mm) and a commercially available 3/8 "-16 slide hammer (A).



2. Install the ATF guide plate (A), then install the new bearing (B) in the housing.



3. Drive the bearing into the housing using the driver and the attachment (52 x 55 mm).

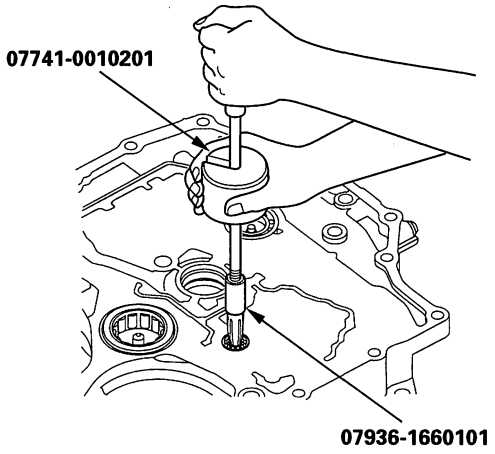


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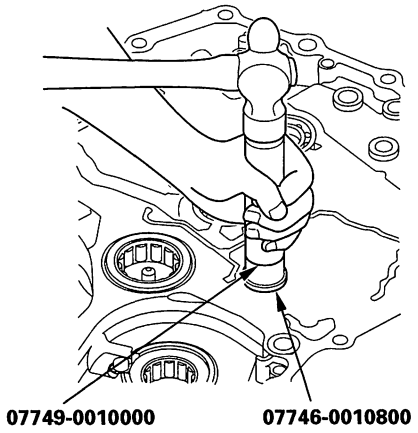
Park Lever Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft set, 12 mm 07936-1660101
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the torque converter housing using the bearing remover shaft set (12 mm) and the sliding hammer weight.



2. Install the new bearing until it bottoms in the housing using the driver and the attachment (22 x 24 mm).

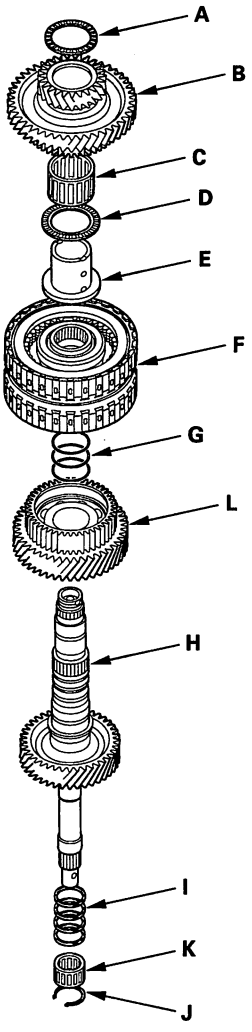


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Mainshaft Disassembly, Inspection, and Reassembly

1. Remove the thrust needle bearing (A), mainshaft 5th gear (B), needle bearing (C), thrust needle bearing (D), mainshaft 5th gear collar (E), 4th/5th clutch (F), and O-rings (G) from the mainshaft (H).



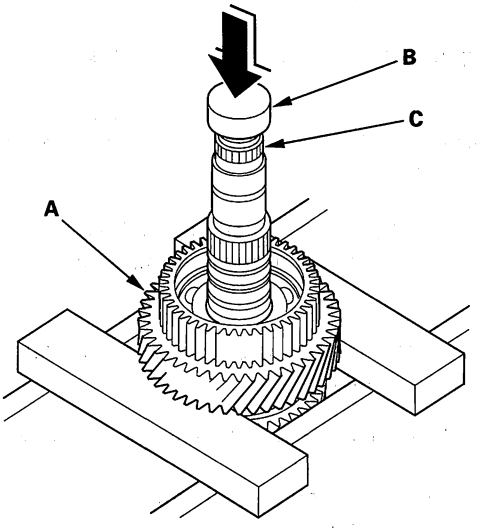
2. Inspect the condition of the sealing rings (I). If the sealing rings are worn, distorted, or damaged, remove the set ring (J) and needle bearing (K), and replace the sealing rings with new ones.
3. Inspect the thrust needle bearing and needle bearing for wear and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Inspect the 4th gear for wear and damage, and inspect the 4th gear bearing for wear and rough rotation.
6. Replace the mainshaft 4th gear (L) if the 4th gear is worn or damaged, or the bearing is worn or damaged.
7. Check the shaft bearing surfaces for scoring and excessive wear.
8. Lubricate all parts with ATF during reassembly.
9. Wrap the shaft splines with tape to prevent O-ring damage, install the new O-rings on the mainshaft, then remove the tape.
10. Install the 4th/5th clutch.
11. Install the mainshaft 5th gear collar, thrust needle bearing, needle bearing, mainshaft 5th gear, and thrust needle bearing.

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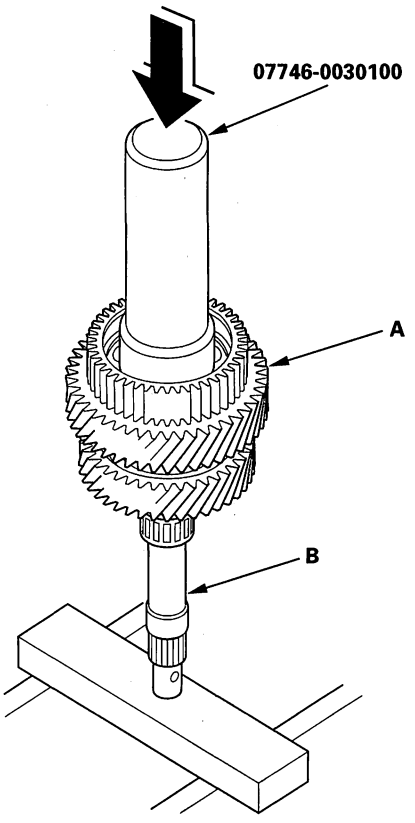
Mainshaft 4th Gear Replacement

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Remove the mainshaft 4th gear (A) with the press. Place a shaft protector (B) between the press and mainshaft (C) to prevent damaging the mainshaft.



2. Slide the new mainshaft 4th gear (A) over the mainshaft (B), then press it into place using the driver (40 mm I.D.) and the press.

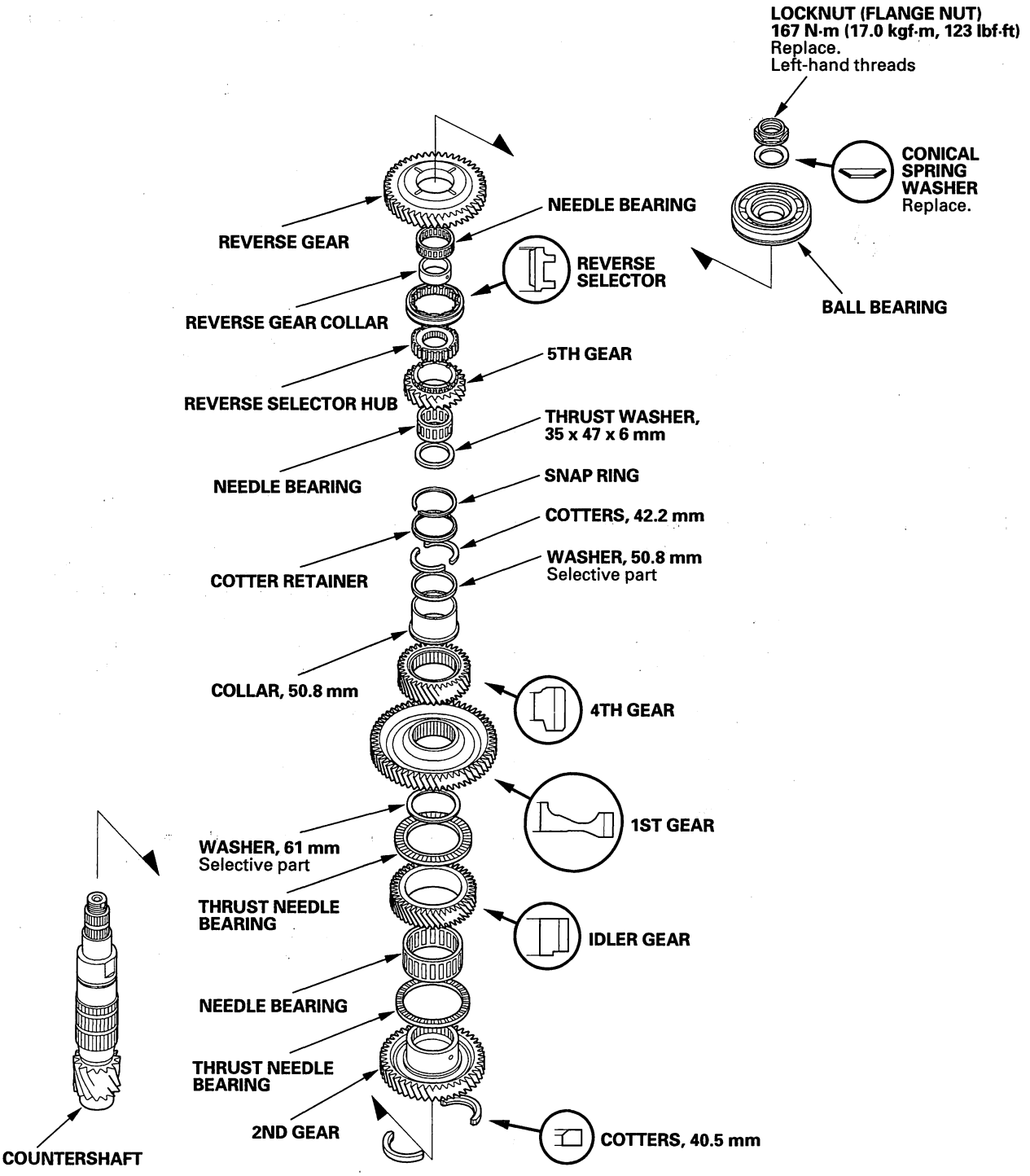


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Countershaft Disassembly

Exploded View



(cont'd)

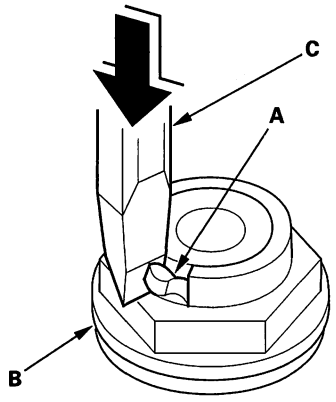
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Countershaft Disassembly (cont'd)

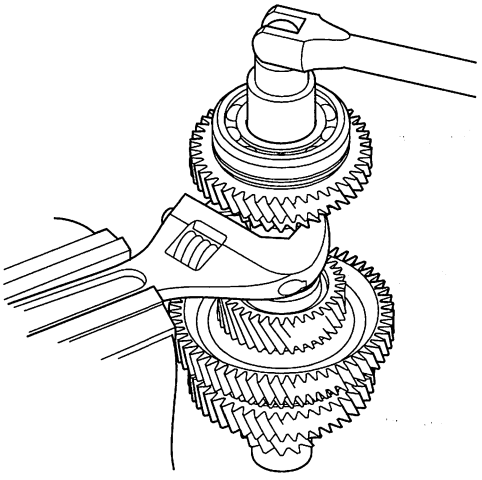
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Cut the lock tab (A) off the countershaft locknut (B) using a chisel (C).

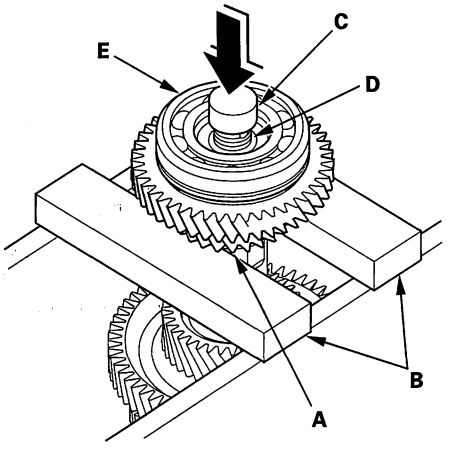
   NOTE: Keep all of the chiseled particles out of the countershaft.



2. Hold the countershaft with a wrench and a vise securely, loosen the locknut, and remove it. The locknut has left-hand threads.



3. Place the countershaft 5th gear (A) on press bases (B), and place a shaft protector (C) between the countershaft (D) and the press to prevent damaging the countershaft.



4. Press the countershaft out of the press-fitted bearing (E) and the press-fitted reverse selector hub, and remove the countershaft while holding the underside of the countershaft. The countershaft falls down when pressing the countershaft out of the press-fitted reverse selector hub. Some reverse selector hubs are not press-fitted, and the countershaft falls down when pressing the countershaft out of press-fitted bearing.

5. Remove the remaining parts from the countershaft.

6. Inspect the bearing for galling and rough movement.

7. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.

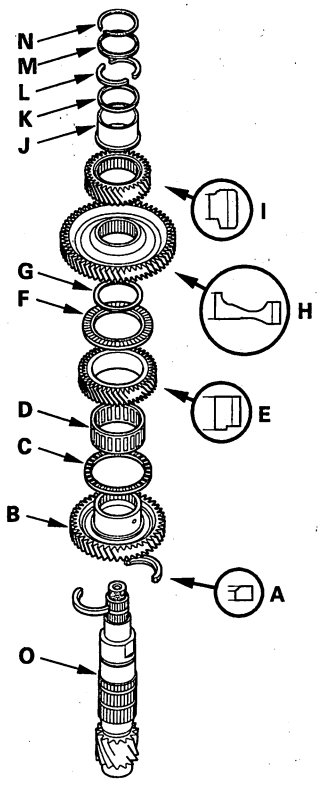
8. Check the idler gear axial clearance and 4th gear axial clearance (see page 14-363).

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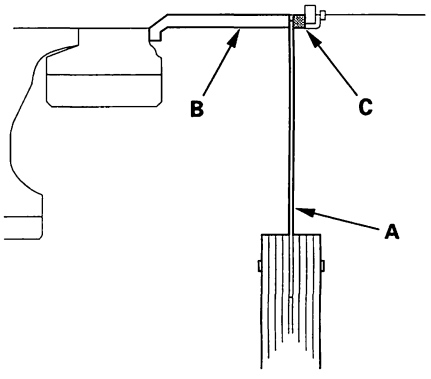
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Countershaft Idler Gear and 4th Gear Axial Clearance Inspection

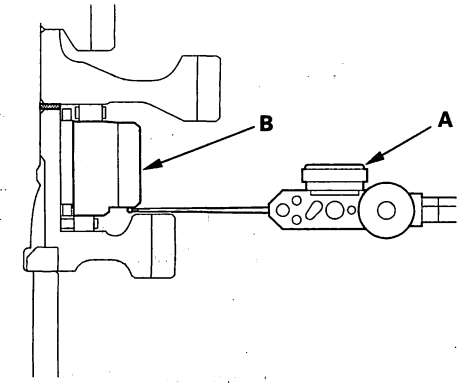
1. Install the 40.5 mm cotters (A), 2nd gear (B), thrust needle bearing (C), needle bearing (D), idler gear (E), thrust needle bearing (F), 61 mm washer (G), 1st gear (H), 4th gear (I), 50.8 mm collar (J), 50.8 mm washer (K), 42.2 mm cotters (L), cotter retainer (M), and snap ring (N) on the countershaft (O). Install the 40.5 mm cotters, idler gear, 1st gear, and 4th gear in the direction shown.



2. Insert a feeler gauge blade (A) as thick as possible between the 50.8 mm collar (B) and 50.8 mm washer (C).

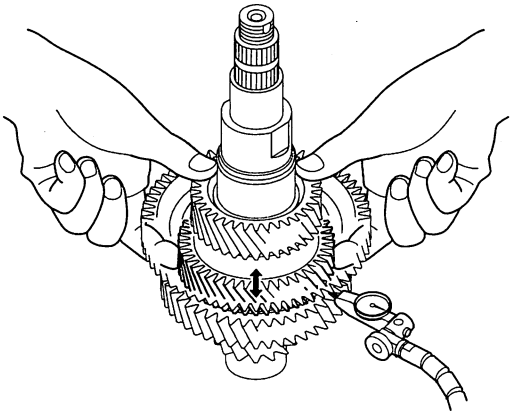


3. Set the dial indicator (A) on the idler gear (B).



4. Measure the idler gear axial clearance in at least three places while moving the idler gear. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



5. If the measurement is out of standard, remove the 61 mm washer and measure its thickness.

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Countershaft Idler Gear and 4th Gear Axial Clearance Inspection (cont'd)

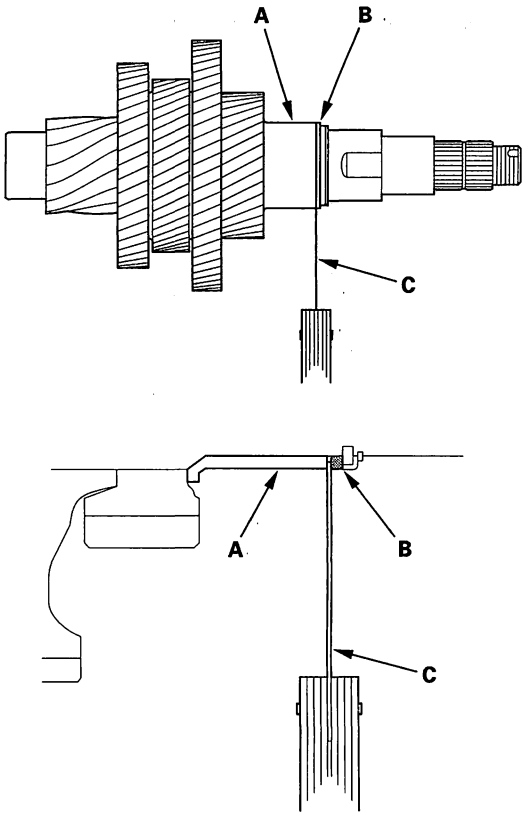
6. Select and install a new washer, then recheck the clearance.

WASHER, 61 mm

No.	Part Number	Thickness
A	90582-RJF-T00	1.525 mm (0.0600 in.)
B	90583-RJF-T00	1.505 mm (0.0593 in.)
C	90584-RJF-T00	1.485 mm (0.0585 in.)
D	90585-RJF-T00	1.465 mm (0.0577 in.)
E	90586-RJF-T00	1.445 mm (0.0569 in.)
F	90587-RJF-T00	1.425 mm (0.0561 in.)
G	90588-RJF-T00	1.405 mm (0.0553 in.)

7. Measure the clearance between the 50.8 mm collar (A) and the 50.8 mm washer (B) with a feeler gauge (C) in at least three places. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



8. If the measurement is out of standard, remove the 50.8 mm washer and measure its thickness.

9. Select and install a new washer, then recheck the clearance.

WASHER, 50.8 mm

No.	Part Number	Thickness
A	90519-RJF-T00	1.91 mm (0.0752 in.)
B	90520-RJF-T00	1.93 mm (0.0760 in.)
C	90521-RJF-T00	1.95 mm (0.0768 in.)
D	90522-RJF-T00	1.97 mm (0.0776 in.)
E	90523-RJF-T00	1.99 mm (0.0783 in.)
F	90524-RJF-T00	2.01 mm (0.0791 in.)
G	90525-RJF-T00	2.03 mm (0.0799 in.)
H	90526-RJF-T00	2.05 mm (0.0807 in.)
I	90527-RJF-T00	2.07 mm (0.0815 in.)
J	90528-RJF-T00	2.09 mm (0.0823 in.)
K	90529-RJF-T00	2.11 mm (0.0831 in.)
L	90530-RJF-T00	2.13 mm (0.0839 in.)
M	90531-RJF-T00	2.15 mm (0.0846 in.)
N	90532-RJF-T00	2.17 mm (0.0854 in.)
O	90533-RJF-T00	2.19 mm (0.0862 in.)
P	90534-RJF-T00	2.21 mm (0.0870 in.)
Q	90535-RJF-T00	2.23 mm (0.0878 in.)
R	90536-RJF-T00	2.25 mm (0.0886 in.)
S	90537-RJF-T00	2.27 mm (0.0894 in.)
T	90538-RJF-T00	2.29 mm (0.0902 in.)
U	90539-RJF-T00	2.31 mm (0.0909 in.)
V	90540-RJF-T00	2.33 mm (0.0917 in.)
W	90541-RJF-T00	2.35 mm (0.0925 in.)
X	90542-RJF-T00	2.37 mm (0.0933 in.)
Y	90543-RJF-T00	2.39 mm (0.0941 in.)
Z	90544-RJF-T00	2.41 mm (0.0949 in.)
AA	90545-RJF-T00	2.43 mm (0.0957 in.)
AB	90546-RJF-T00	2.45 mm (0.0965 in.)

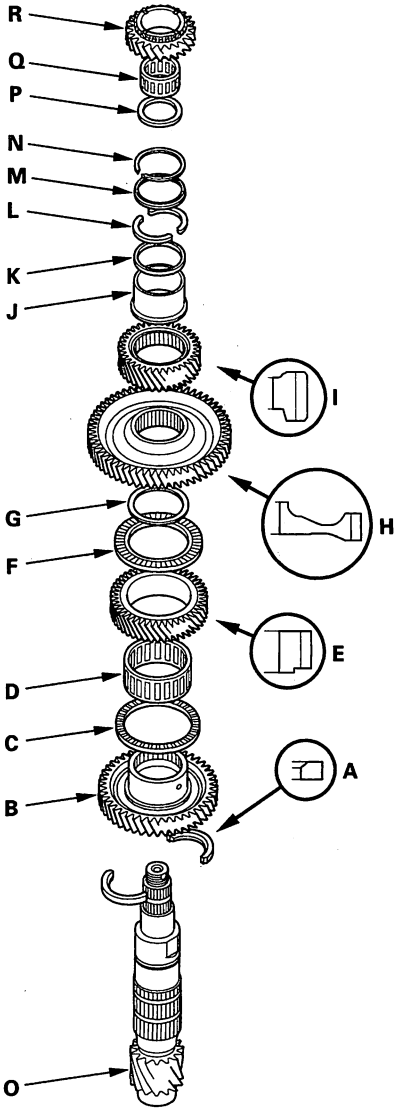
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BACK

Countershaft Reassembly

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

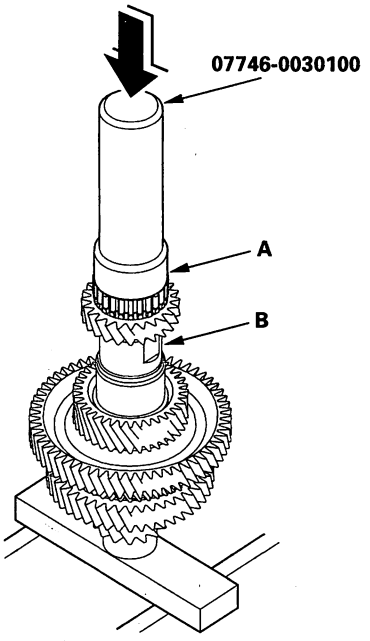
1. Install the 40.5 mm cotters (A), 2nd gear (B), thrust needle bearing (C), needle bearing (D), idler gear (E), thrust needle bearing (F), 61 mm washer (G), 1st gear (H), 4th gear (I), 50.8 mm collar (J), 50.8 mm washer (K), 42.2 mm cotters (L), cotter retainer (M), and snap ring (N) on the countershaft (O). Install the 40.5 mm cotters, idler gear, 1st gear, and 4th gear in the direction shown.



2. Install the thrust washer (P), needle bearing (Q) and 5th gear (R).

3. Slide the reverse selector hub (A) over the countershaft (B), then press it into place using the driver (40 mm I. D.) and the press.

   NOTE: Some reverse selector hubs are not press-fitted, and can be installed without using the special tool and a press.



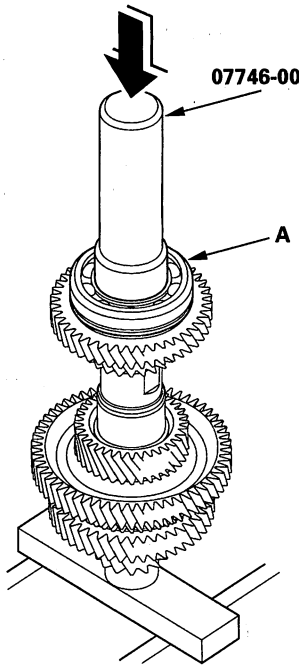
4. Install the reverse selector, reverse gear collar, needle bearing, and reverse gear over the reverse selector hub.

(cont'd)

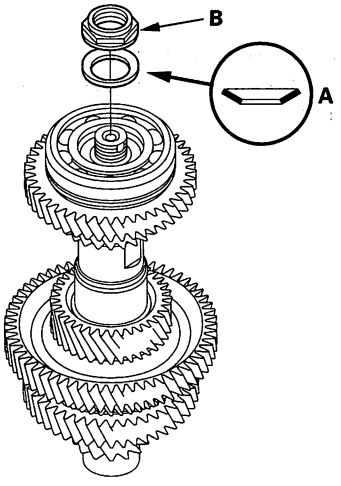
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Countershaft Reassembly (cont'd)

5. Install the ball bearing (A) over the countershaft, then press it into place using the driver (40 mm I.D.) and the press.

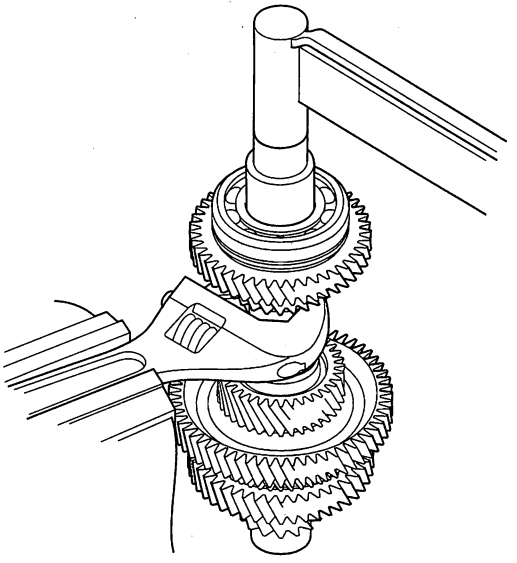


6. Install the conical spring washer (A) in the direction shown, and install the new locknut (B).

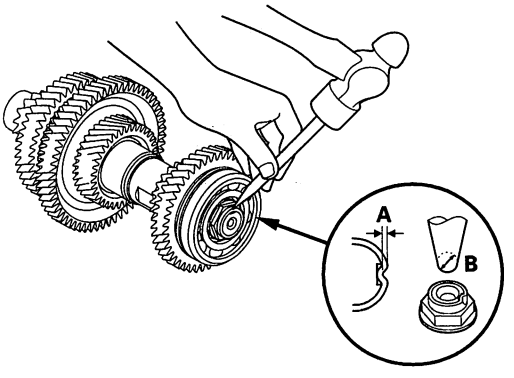


7. Hold the countershaft securely with a wrench and a vise, and tighten the locknut to 167 N·m (17.0 kgf·m, 123 lbf·ft).

NOTE:
- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- The locknut has left-hand threads.



8. Stake the locknut into its shaft in depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).

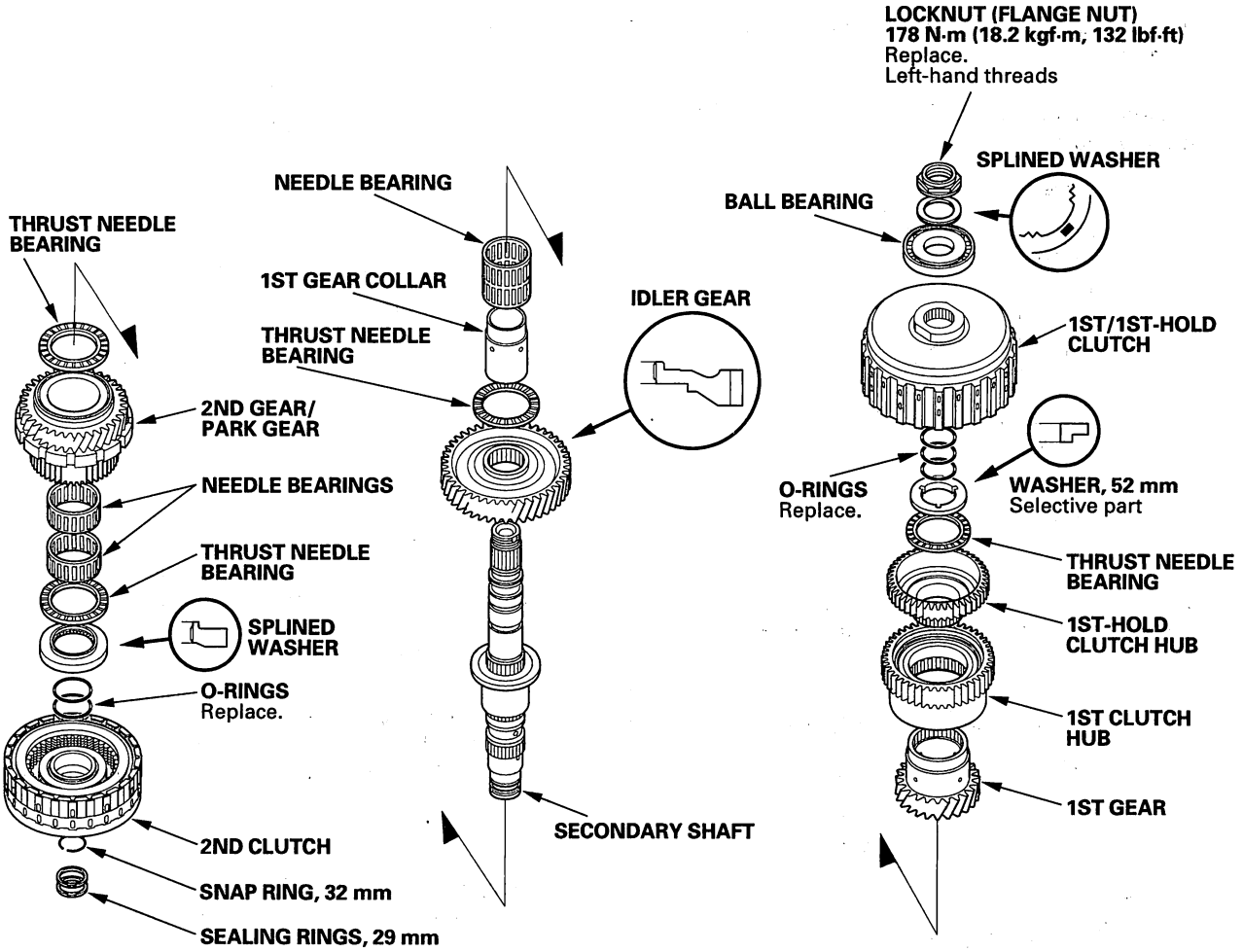


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Secondary Shaft Disassembly

Exploded View



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(cont'd)

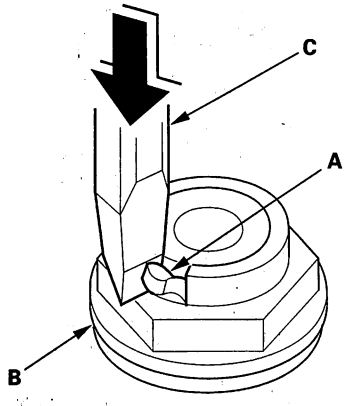
Secondary Shaft Disassembly (cont'd)

Special Tools Required
Wrench, 40 x 42 mm 07XAA-002010A

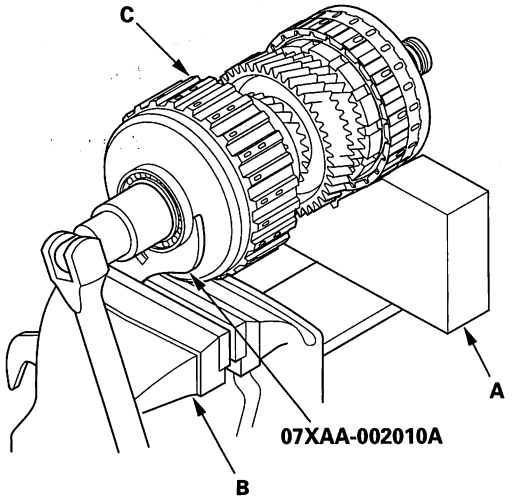
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Cut the lock tab (A) off the secondary shaft locknut (B) using a chisel (C).

   NOTE: Keep all of the chiseled particles out of the secondary shaft.

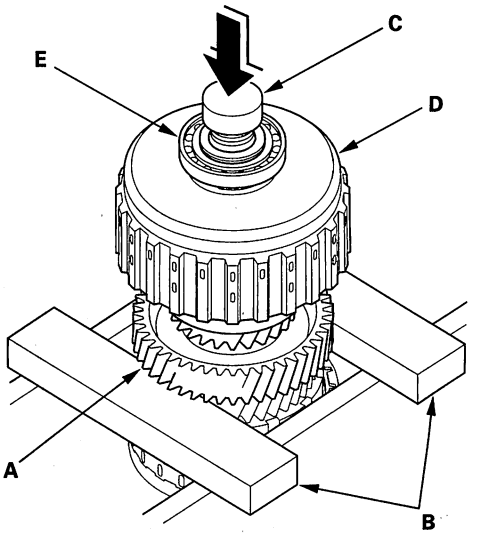


2. Place a V-block (A) on a vise (B), and put the secondary shaft (C) on the V-block and vise.



3. Attach the wrench (40 x 42 mm) onto the 1st clutch guide, and secure the wrench (40 x 42 mm) with the vise to hold the secondary shaft. Loosen the locknut, and remove it. Remove any burrs from splines on the shaft and splined washer.

4. Place the idler gear (A) on press bases (B), and place a shaft protector (C) between the secondary shaft (D) and the press to prevent damaging the secondary shaft.



5. Press the secondary shaft out of the press-fitted bearing (E), and remove the secondary shaft while holding the underside of the secondary shaft. The secondary shaft falls down when pressing the secondary shaft out of the press-fitted bearing.

6. Remove the 1st/1st-hold clutch, 52 mm washer, thrust needle bearing, 1st gear assembly, needle bearings, 1st gear collar, thrust needle bearing, and idler gear.

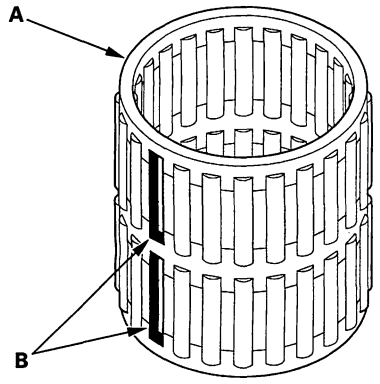
7. Remove the 32 mm snap ring, and remove the 2nd clutch, splined washer, thrust needle bearing, needle bearing, 2nd gear/park gear, and thrust needle bearing.

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8. Inspect the bearings for galling and rough movement.

   NOTE: The needle bearing (A) on the 1st gear collar contains the only two no-roller cavities (B); this is normal.



9. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.

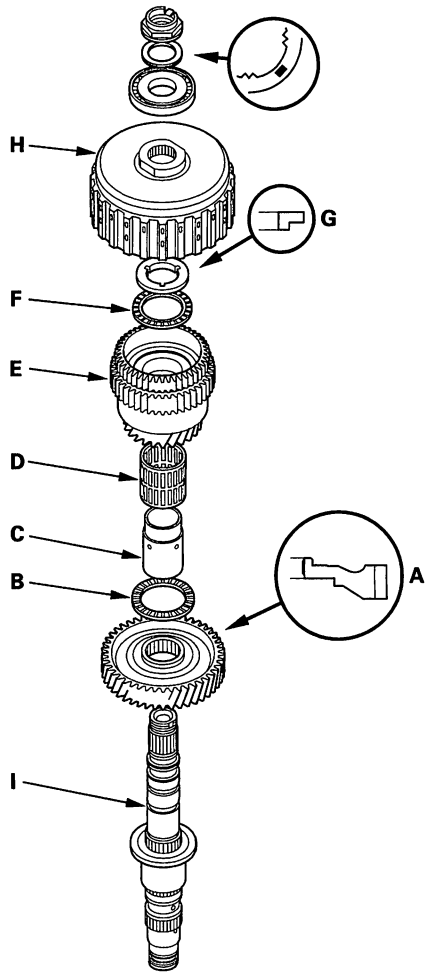
10. Check the 1st gear axial clearance (see page 14-370), 1st gear one-way clutch (see page 14-372), and secondary shaft installation height (see page 14-377).

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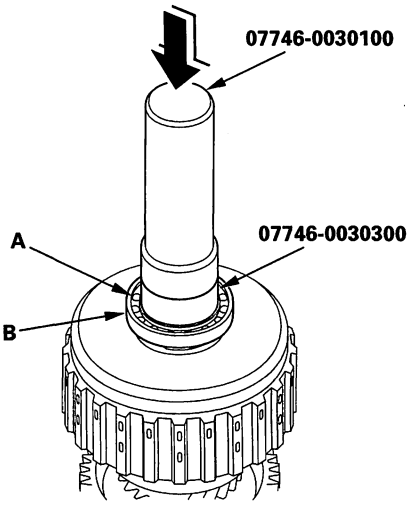
Secondary Shaft 1st Gear Axial Clearance Inspection

Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

1. Install the idler gear (A), thrust needle bearing (B), 1st gear collar (C), needle bearing (D), 1st gear assembly (E), thrust needle bearing (F), 52 mm washer (G), and 1st/1st-hold clutch (H) on the secondary shaft (I). Install the idler gear and 52 mm washer in the direction shown. Do not install the O-rings during inspection.



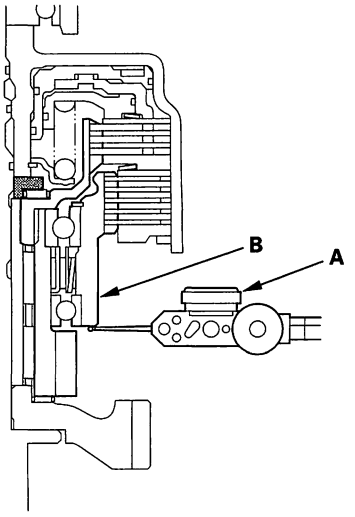
2. Install the ball bearing (A) over the 1st/1st-hold clutch guide using the driver (40 mm I.D.), the attachment (30 mm I.D.), and the press.



3. Install the splined washer with the marked side up over the ball bearing in the same manner as installing the ball bearing using the driver (40 mm I.D.), the attachment (30 mm I.D.), and the press.

4. Install the old locknut and tighten it to 29 N·m (3.0 kgf·m, 22 lbf·ft).

5. Set the dial indicator (A) on the 1st clutch hub (B).

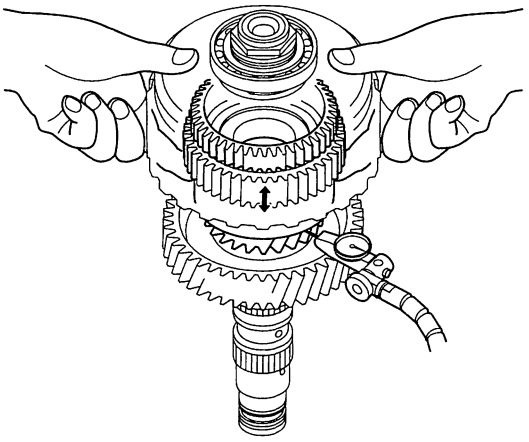


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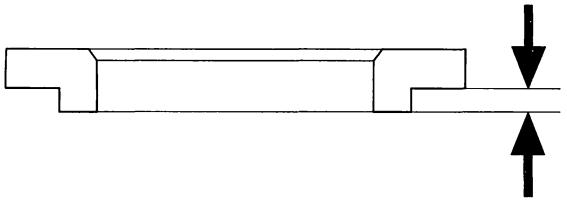
BACK

6. Measure the 1st gear axial clearance in at least three places while moving the 1st gear. Use the average as the actual clearance.

Standard: 0.100—0.145 mm (0.004—0.006 in.)



7. If the measurement is out of standard, remove the washer and measure its difference.



8. Select and install a new washer, then recheck the clearance.

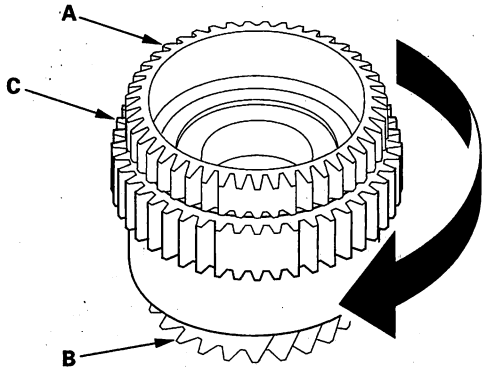
WASHER, 52 mm

No.	Part Number	Thickness
A	90502-RWE-000	2.705 mm (0.107 in.)
B	90503-RWE-000	2.680 mm (0.106 in.)
C	90504-RWE-000	2.655 mm (0.105 in.)
D	90505-RWE-000	2.630 mm (0.104 in.)
E	90506-RWE-000	2.605 mm (0.103 in.)
F	90507-RWE-000	2.580 mm (0.102 in.)
G	90508-RWE-000	2.555 mm (0.101 in.)
H	90509-RWE-000	2.530 mm (0.100 in.)
I	90510-RWE-000	2.505 mm (0.099 in.)
J	90511-RWE-000	2.480 mm (0.098 in.)
K	90512-RWE-000	2.455 mm (0.097 in.)
L	90513-RWE-000	2.430 mm (0.096 in.)
M	90514-RWE-000	2.405 mm (0.095 in.)

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1st Gear One-way Clutch Inspection

1. Hold the 1st-hold clutch hub (A), and turn the 1st gear (B) in the direction shown to be sure it turns freely. Also make sure the 1st gear locks in the opposite direction.



2. If any problem occurs on the 1st gear one-way clutch, replace the 1st clutch hub (C). The 1st gear one-way clutch is not available separately from the 1st clutch hub.

3. Also check the 1st gear and the 1st-hold clutch hub for wear and damage. If the 1st gear and 1st-hold clutch hub are worn or damaged, replace the damaged part, refer to 1st Clutch Hub Replacement (see page 14-373).

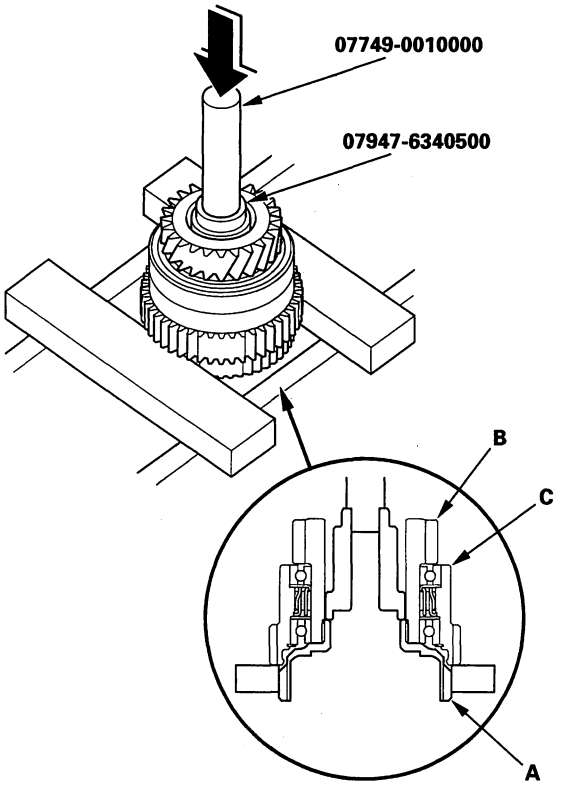
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1st Clutch Hub Replacement

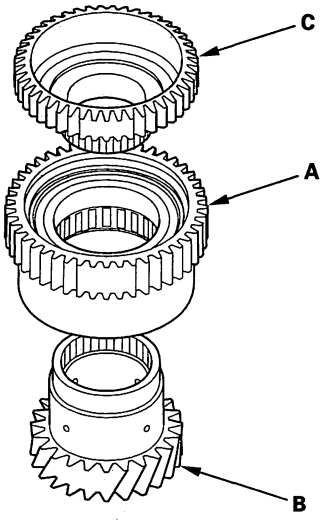
Special Tools Required
- Driver 07749-0010000
- Driver attachment 07947-6340500
- Attachment, 78 x 90 mm 07GAD-SD40101

1. Remove the 1st-hold clutch hub (A) from 1st gear (B) using the driver, the driver attachment, and the press.

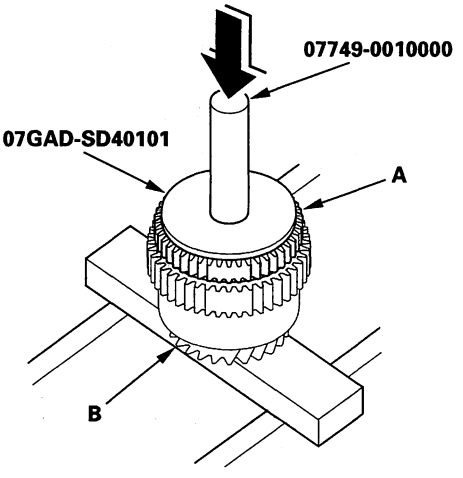


2. Remove the 1st clutch hub (C) from 1st gear.

3. Install the new 1st clutch hub (A) over 1st gear (B), and install the 1st-hold clutch hub (C) in 1st gear.



4. Install the 1st-hold clutch hub (A) in 1st gear (B) using the driver, the attachment (78 x 90 mm), and the press.

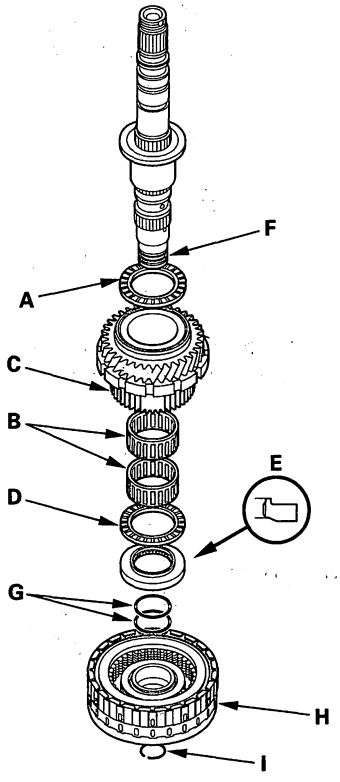


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Secondary Shaft Reassembly

Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Driver attachment, 30 mm I.D. 07746-0030300
- Wrench, 40 x 42 mm 07XAA-002010A

1. Install the thrust needle bearing (A), needle bearings (B), 2nd gear/park gear (C), thrust needle bearing (D), and splined washer (E) in the direction shown on the secondary shaft (F).



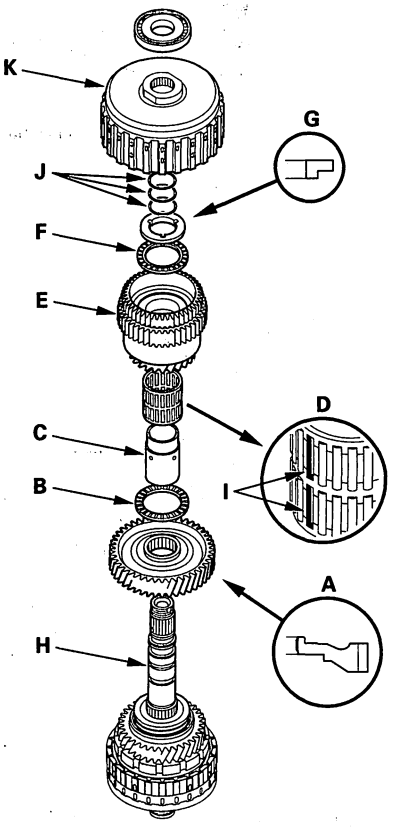
2. Wrap the shaft splines with tape, and install the new O-rings (G) in the 2nd clutch O-ring grooves, then remove the tape.

   NOTE: To prevent damaging to the O-rings, be sure to install the O-rings after installing the splined washer.

3. Install the 2nd clutch (H) on the secondary shaft, and secure the 2nd clutch with the snap ring (I).

4. Install the idler gear (A) in the direction shown, thrust needle bearing (B), 1st gear collar (C), needle bearing (D), 1st gear assembly (E), thrust needle bearing (F), and 52 mm washer (G) in the direction shown on the secondary shaft (H).

   NOTE: The needle bearing contains the only two no-roller cavities (I); this is normal.



5. Wrap the shaft splines with tape, and install the new O-rings (J) in 1st/1st-hold clutch O-ring grooves, then remove the tape.

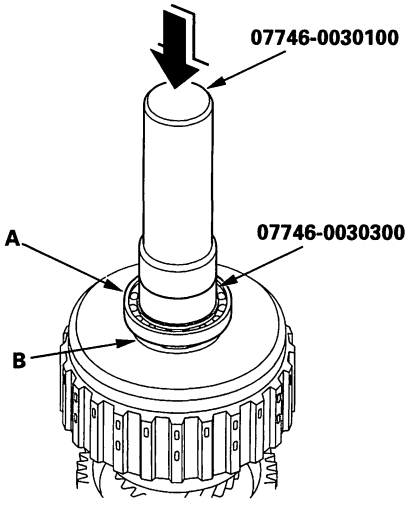
   NOTE: To prevent damaging to the O-rings, be sure to install the O-rings after installing the 1st gear collar and 52 mm washer.

6. Install the 1st/1st-hold clutch (K).

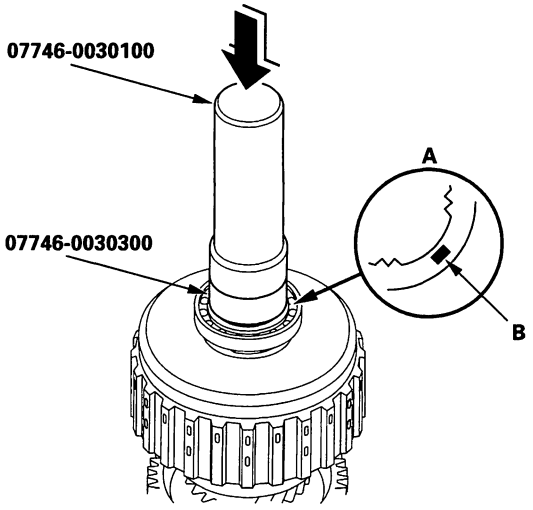
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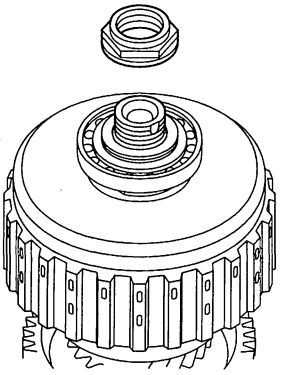
7. Install the ball bearing (A) over the 1st/1st-hold clutch guide (B) using the driver (40 mm I.D.), the driver attachment (30 mm I.D.), and the press.



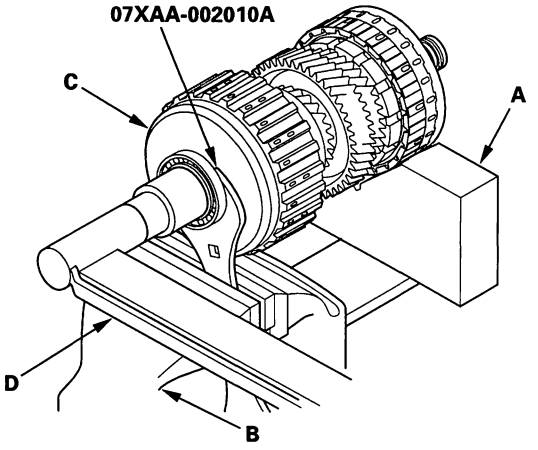
8. Install the new splined washer (A) with the marked side (B) up over the ball bearing using the driver (40 mm I.D.), the driver attachment (30 mm I.D.), and the press.



9. Install the new locknut.



10. Place a V-block (A) on a vise (B), and put the secondary shaft (C) on the V-block and vise.



11. Attach the wrench (40 x 42 mm) onto the top of the 1st clutch guide, and secure the wrench (40 x 42 mm) with the vise to hold the secondary shaft. Tighten the locknut to 178 N·m (18.2 kgf·m, 132 lbf·ft) with the torque wrench (D).

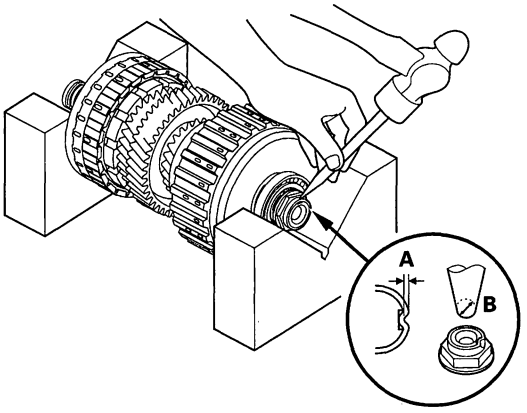
NOTE:
- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- The locknut has left-hand threads.

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Secondary Shaft Reassembly (cont'd)

12. Stake the locknut to a depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).

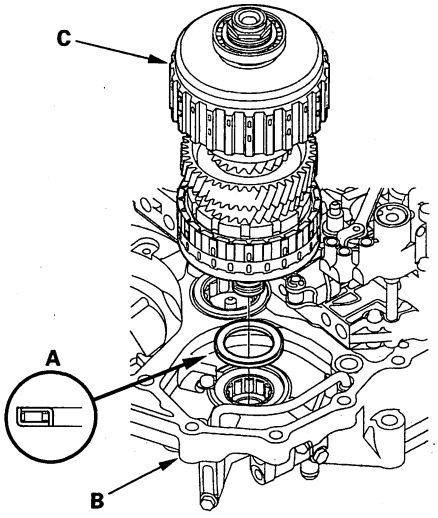


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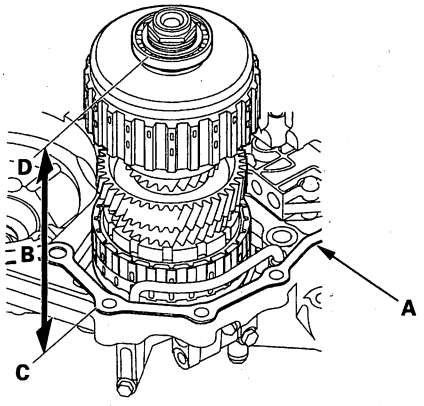
BACK

Secondary Shaft Installation Height Inspection/Adjustment

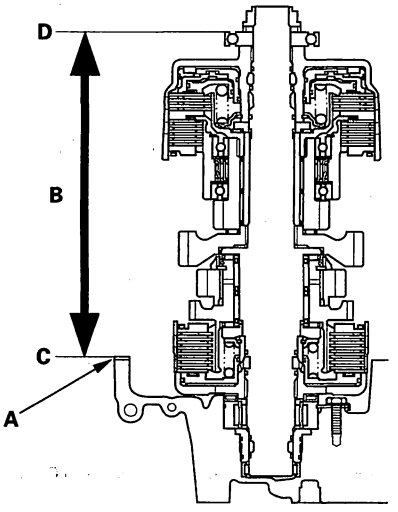
1. Install the thrust needle bearing (A) in the torque converter housing (B) in the direction shown, and install the secondary shaft assembly (C).



2. Install the new gasket (A) on the torque converter housing.



Secondary Shaft Cutaway View



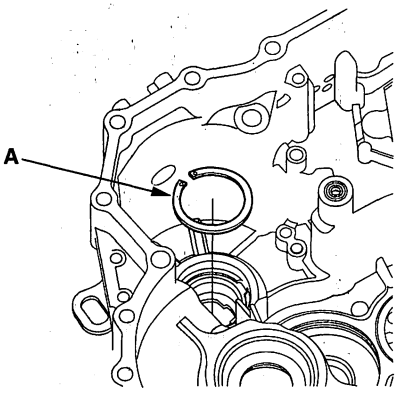
3. Measure the height (B) of the secondary shaft installation between the surface (C) of the gasket and the top of the ball bearing outer race (D), then note the measurement.

(cont'd)

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Secondary Shaft Installation Height Inspection/Adjustment (cont'd)

4. Remove the 65 mm thrust shim (A) from the transmission housing, and measure its thickness.



5. Calculate the thickness of the 65 mm thrust shim using the formula.

Formula:
65 mm Thrust Shim Thickness
= Secondary Shaft Installation Height Standard
— Measurement

Secondary Shaft Installation Height Standard:
228.04—228.13 mm (8.9779—8.9815 in.)

6. Select the 65 mm thrust shim from the following table.

THRUST SHIM, 65 mm

No.	Part Number	Thickness
0A	90460-RDK-000	0.80 mm (0.031 in.)
A	90461-RDK-010	0.84 mm (0.033 in.)
B	90462-RDK-010	0.88 mm (0.035 in.)
C	90463-RDK-010	0.92 mm (0.036 in.)
D	90464-RDK-010	0.96 mm (0.038 in.)
E	90465-RDK-010	1.00 mm (0.039 in.)
F	90466-RDK-010	1.04 mm (0.041 in.)
G	90467-RDK-010	1.08 mm (0.043 in.)
H	90468-RDK-010	1.12 mm (0.044 in.)
I	90469-RDK-010	1.16 mm (0.046 in.)
J	90470-RDK-010	1.20 mm (0.047 in.)
K	90471-RDK-010	1.24 mm (0.049 in.)
L	90472-RDK-010	1.28 mm (0.050 in.)
M	90473-RDK-010	1.32 mm (0.052 in.)
N	90474-RDK-010	1.36 mm (0.054 in.)
O	90475-RDK-010	1.40 mm (0.055 in.)
P	90476-RDK-010	1.44 mm (0.057 in.)
Q	90477-RDK-010	1.48 mm (0.058 in.)
R	90478-RDK-010	1.52 mm (0.060 in.)
S	90479-RDK-010	1.56 mm (0.061 in.)
T	90480-RDK-010	1.60 mm (0.063 in.)
U	90481-RDK-000	1.64 mm (0.065 in.)
V	90482-RDK-000	1.68 mm (0.066 in.)
W	90483-RDK-000	1.72 mm (0.068 in.)
X	90484-RDK-000	1.76 mm (0.069 in.)
Y	90485-RDK-000	1.80 mm (0.071 in.)
Z	90486-RDK-000	1.84 mm (0.072 in.)
AA	90487-RDK-000	1.88 mm (0.074 in.)
AB	90488-RDK-000	1.92 mm (0.076 in.)
AC	90489-RDK-000	1.96 mm (0.077 in.)
AD	90490-RDK-000	2.00 mm (0.079 in.)
AE	90491-RDK-000	2.04 mm (0.080 in.)
AF	90492-RDK-000	2.08 mm (0.082 in.)
AG	90493-RDK-000	2.12 mm (0.083 in.)
AH	90494-RDK-000	2.16 mm (0.085 in.)
AI	90495-RDK-000	2.20 mm (0.087 in.)
AJ	90496-RDK-000	2.24 mm (0.088 in.)
AK	90497-RDK-000	2.28 mm (0.090 in.)
AL	90498-RDK-000	2.32 mm (0.091 in.)

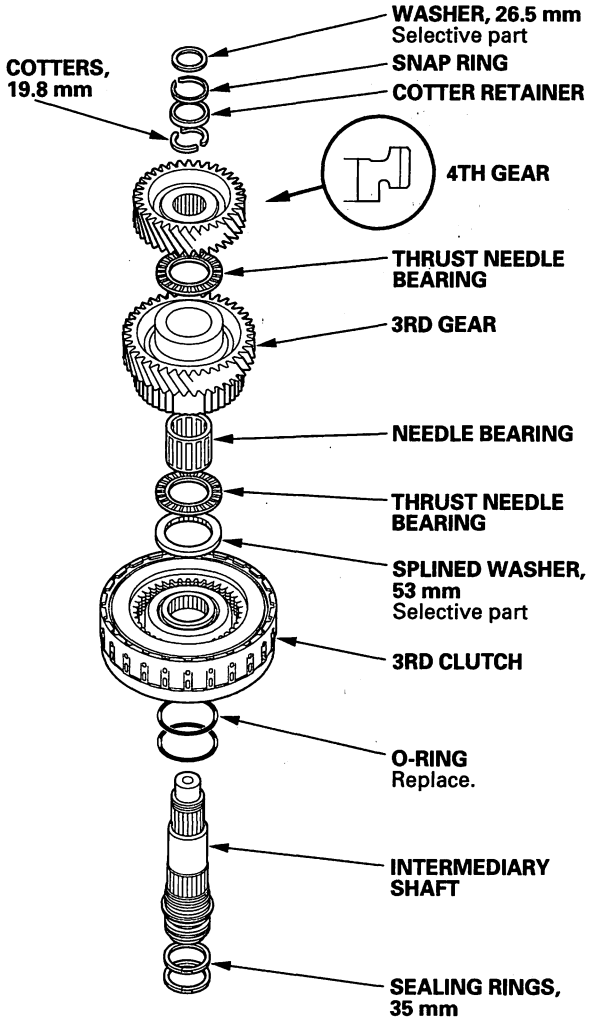
7. Install the thrust shim in the transmission housing.

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Intermediary Shaft Disassembly, Inspection, and Reassembly

1. Remove the 26.5 mm washer, snap ring, cotter retainer, and cotters from the third shaft.



2. Remove the intermediary shaft 4th gear using the press (see page 14-380), and disassemble the shaft and gears.

3. Inspect the bearings for galling and rough movement.

4. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.

5. Check the sealing rings for excessive wear and damage.

6. Check the 3rd gear axial clearance (see page 14-381), and intermediary shaft installation height (see page 14-383).

7. Before installing the O-rings, wrap the shaft splines with tape to prevent damage to the O-rings.

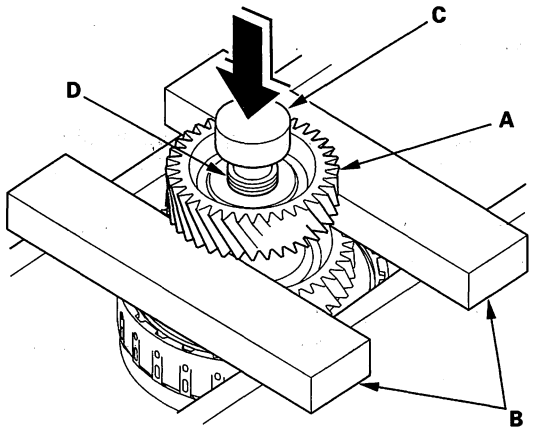
8. Lubricate all parts with ATF, and reassemble the shaft and gears.

9. Install the press-fitted 4th gear using the driver (40 mm I.D.) and the press (see page 14-380) in the direction shown.

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Intermediary Shaft 4th Gear Removal

1. Place 4th gear (A) on press bases (B), and place a shaft protector (C) between the intermediary shaft (D) and the press to prevent damaging the intermediary shaft.



2. Press the intermediary shaft out of the press-fitted 4th gear, and remove of the intermediary shaft while holding the underside the intermediary shaft. The intermediary shaft falls down when pressing the intermediary shaft out of the press-fitted gear.

3. Remove the remaining parts from the intermediary shaft.

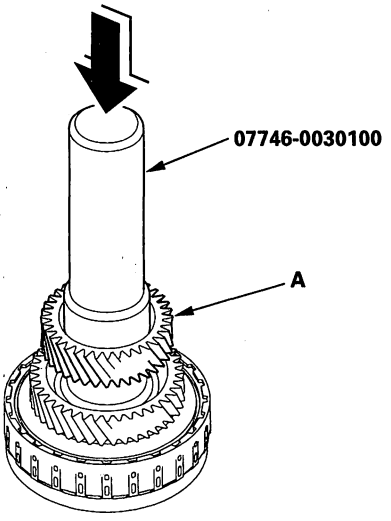
Intermediary Shaft 4th Gear Installation

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Wrap the shaft splines with tape, and install the new O-rings in the 3rd clutch O-ring grooves, then remove the tape.

2. Install the 3rd clutch, 53 mm splined washer, thrust needle bearing, needle bearing, 3rd gear, thrust needle bearing on the intermediary shaft.

3. Install 4th gear (A) using the driver (40 mm I.D.) and the press.



4. Install the 19.8 mm cotters, cotter retainer, and snap ring.

5. Install the 26.5 mm washer on the top of the intermediary shaft.

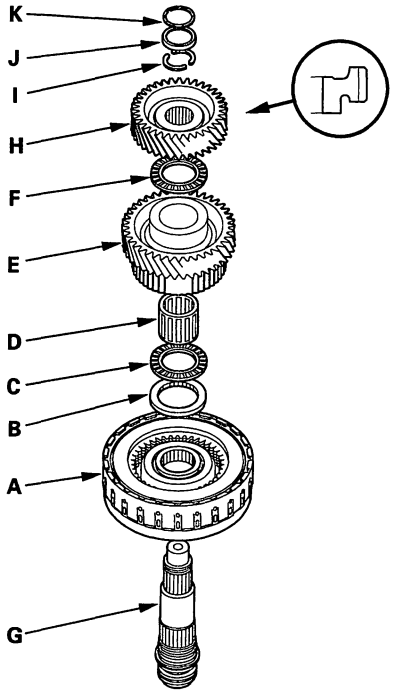
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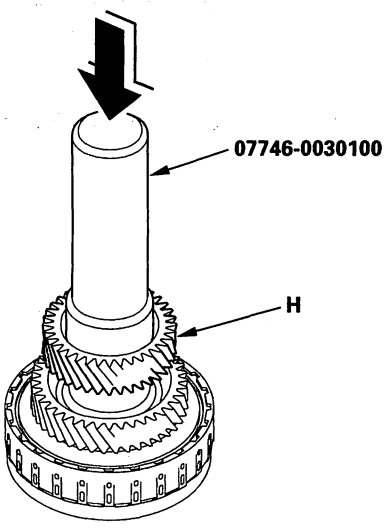
BACK

Intermediary Shaft 3rd Gear Axial Clearance Inspection

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Install the 3rd clutch (A), 53 mm splined washer (B), thrust needle bearing (C), needle bearing (D), 3rd gear (E), and thrust needle bearing (F) on the Intermediary shaft (G). Do not install the O-rings during inspection.

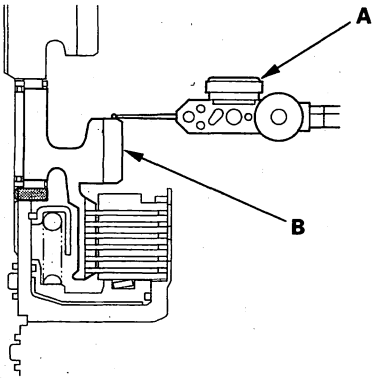




2. Install 4th gear (H) using the driver (40 mm I.D.) and the press.

3. Install the cotters (I), cotter retainer (J), and snap ring (K).

4. Set the dial indicator (A) on 4th gear (B).



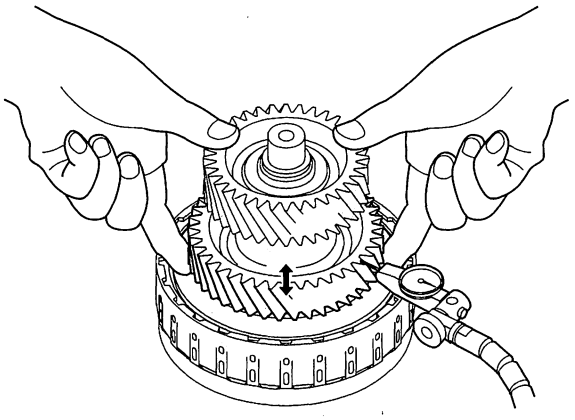
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Intermediary Shaft 3rd Gear Axial Clearance Inspection (cont'd)

5. Measure the 4th gear axial clearance in at least three places while moving 4th gear. Use the average as the actual clearance.

   Standard: 0.005—0.045 mm (0.0002—0.0018 in.)



6. If the measurement is out of standard, remove the splined washer and measure its thickness.

7. Select and install a new splined washer, then recheck the clearance.

SPLINED WASHER, 53 mm

No.	Part Number	Thickness
A	90546-RDK-000	3.995 mm (0.1573 in.)
B	90547-RDK-000	4.015 mm (0.1581 in.)
C	90548-RDK-000	4.035 mm (0.1589 in.)
D	90549-RDK-000	4.055 mm (0.1596 in.)
E	90550-RDK-000	4.075 mm (0.1604 in.)
F	90551-RDK-000	4.095 mm (0.1612 in.)
G	90552-RDK-000	4.115 mm (0.1620 in.)
H	90553-RDK-000	4.135 mm (0.1628 in.)
I	90554-RDK-000	4.155 mm (0.1636 in.)
J	90555-RDK-000	4.175 mm (0.1644 in.)
K	90556-RDK-000	4.195 mm (0.1652 in.)
L	90557-RDK-000	4.215 mm (0.1659 in.)
M	90558-RDK-000	4.235 mm (0.1667 in.)
N	90559-RDK-000	4.255 mm (0.1675 in.)

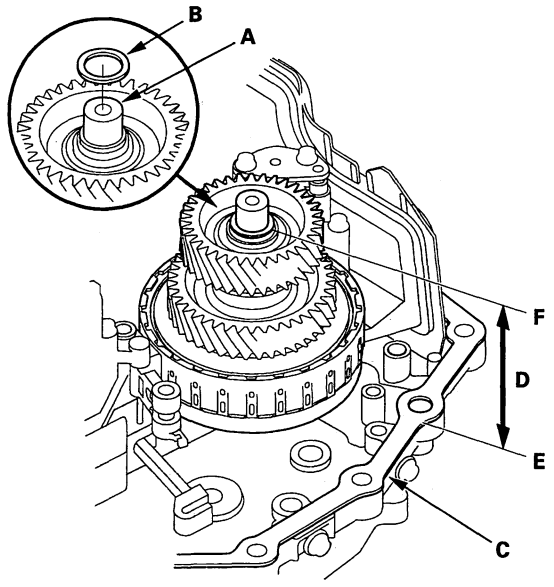
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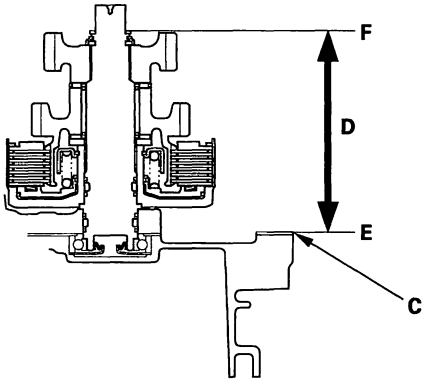
Intermediary Shaft Installation Height Inspection/Adjustment

1. Install the intermediary shaft (A) in the torque converter housing, and install the 26.5 mm washer (B) on the intermediary shaft.

   Intermediary Shaft Installation Height:
   Standard:
   137.285—137.385 mm (5.40491—5.40885 in.)



Intermediary Shaft Cutaway View



2. Install the new gasket (C) on the torque converter housing.

3. Measure the height (D) of the intermediary shaft installation between the surface (E) of the gasket and the surface of the 26.5 mm washer (F).

4. If the measurement is out of standard, remove the 26.5 mm washer and measure its thickness.

5. Select and install a new washer, then recheck the installation height.

WASHER, 26.5 mm

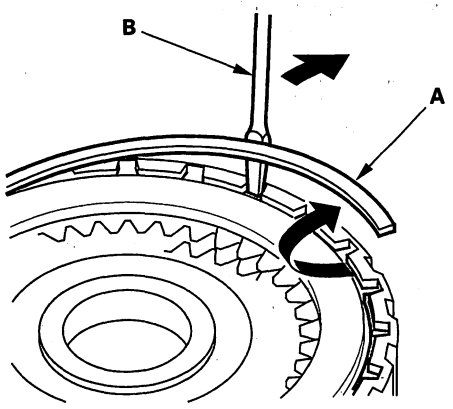
No.	Part Number	Thickness
A	90564-RDK-000	1.05 mm (0.041 in.)
B	90565-RDK-000	1.13 mm (0.044 in.)
C	90566-RDK-000	1.21 mm (0.048 in.)
D	90567-RDK-000	1.29 mm (0.051 in.)
E	90568-RDK-000	1.37 mm (0.054 in.)
F	90569-RDK-000	1.45 mm (0.057 in.)
G	90570-RDK-000	1.53 mm (0.060 in.)
H	90571-RDK-000	1.61 mm (0.063 in.)
I	90572-RDK-000	1.69 mm (0.067 in.)
J	90573-RDK-000	1.77 mm (0.070 in.)
K	90574-RDK-000	1.85 mm (0.073 in.)
L	90575-RDK-000	1.93 mm (0.076 in.)
M	90576-RDK-000	2.01 mm (0.079 in.)
N	90577-RDK-000	2.09 mm (0.082 in.)

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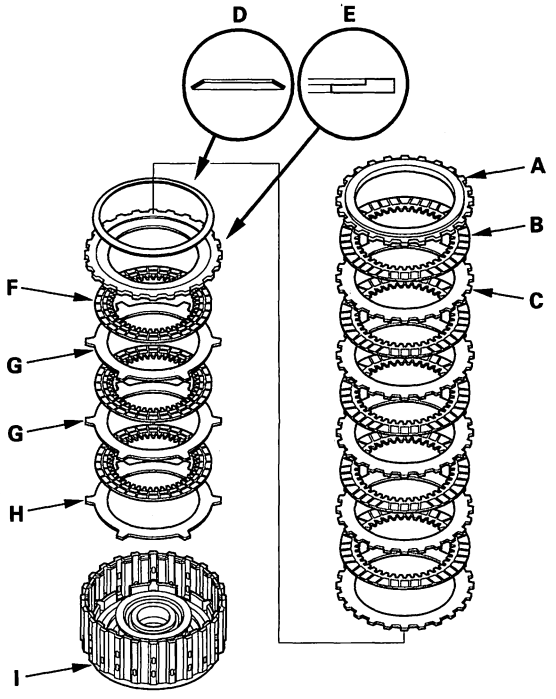
Clutch Disassembly

Special Tools Required
- Clutch spring compressor attachment 07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Remove the snap ring (A) with a screwdriver (B).



2. Remove the 1st clutch end plate (A), 1st clutch discs (B) (5), 1st clutch wave-plates (C) (5), disc spring (D), 1st-hold clutch plate B (E), 1st-hold clutch discs (F) (3), 1st-hold clutch wave-plates (G) (2), and 1st-hold clutch flat-plate (H) from the 1st/1st-hold clutch drum (I).

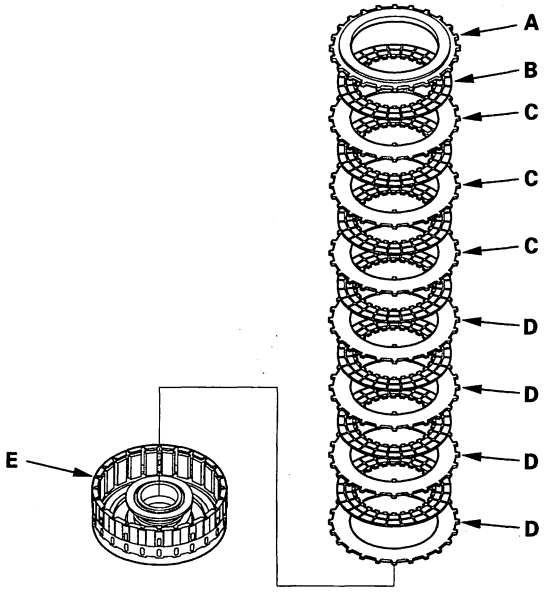


3. Make reference marks on the clutch wave-plates.

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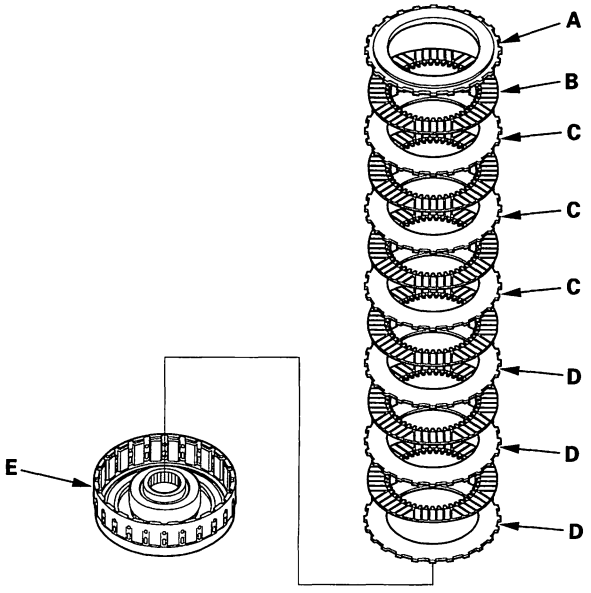
BACK

4. Remove the clutch end plate (A), clutch discs (B) (7), clutch wave-plates (C) (3), and clutch flat-plates (D) (4) from the 2nd clutch drum (E).



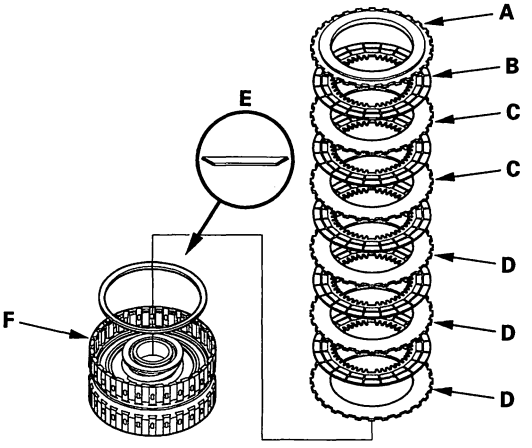
5. Make reference marks on the clutch wave-plates.

6. Remove the clutch end plate (A), clutch discs (B) (6), clutch wave-plates (C) (3), and clutch flat-plates (D) (3) from the 3rd clutch drum (E).



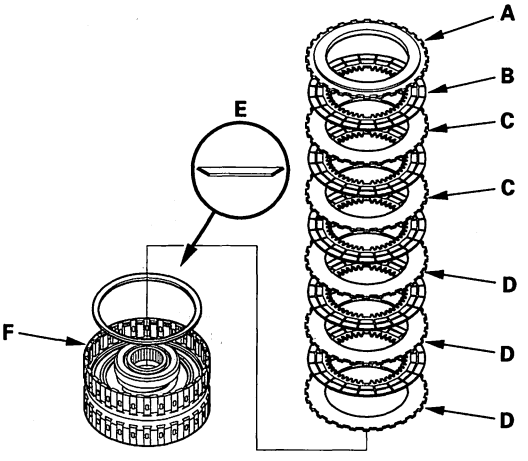
7. Make reference marks on the clutch wave-plates.

8. Remove the clutch end plate (A), clutch discs (B) (5), clutch wave-plates (C) (2), clutch flat-plates (D) (3), and disc spring (E) from the 4th clutch drum (F).



9. Make reference marks on the clutch wave-plates.

10. Remove the clutch end plate (A), clutch discs (B) (5), clutch wave-plates (C) (2), clutch flat-plates (D) (3), and disc spring (E) from the 5th clutch drum (F).



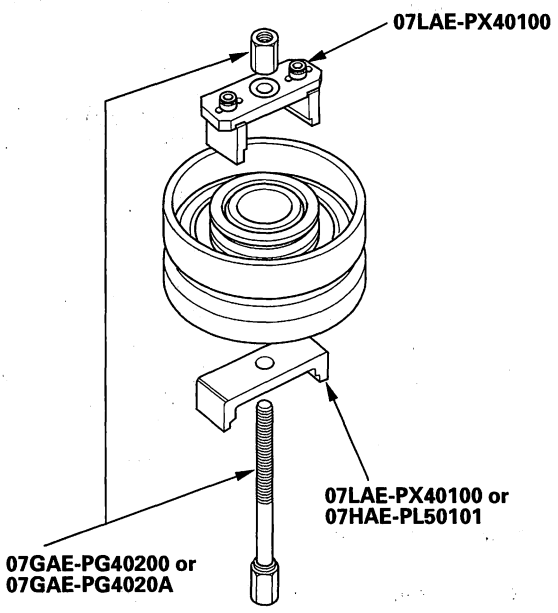
11. Make reference marks on the clutch wave-plates.

(cont'd)

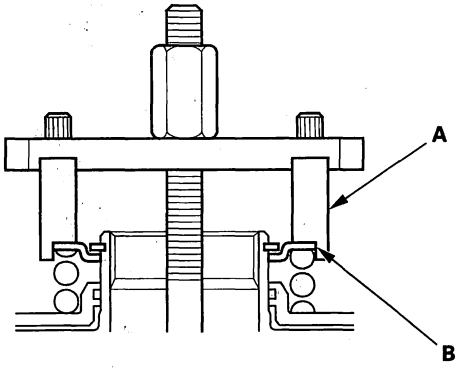
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Clutch Disassembly (cont'd)

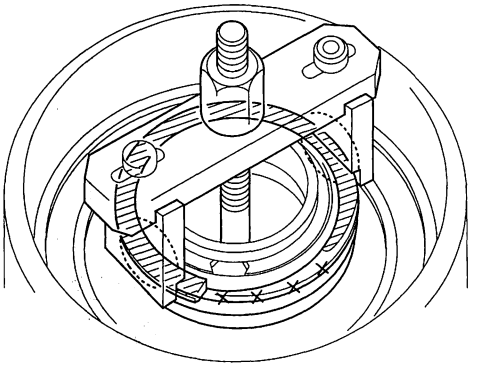
12. Install the clutch spring compressor attachments and the clutch spring compressor bolt assembly.



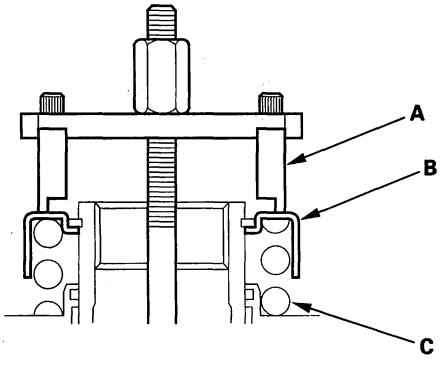
13. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.



14. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.



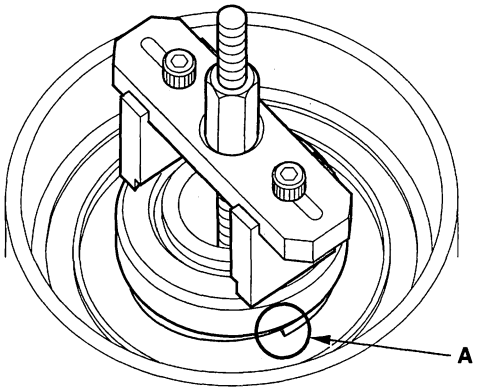
15. Set the clutch spring compressor attachment (A) on the spring retainer (B) of the 3rd and 5th clutches so the clutch spring compressor attachment works on the clutch return spring (C).



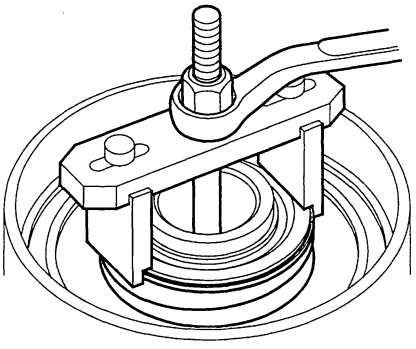
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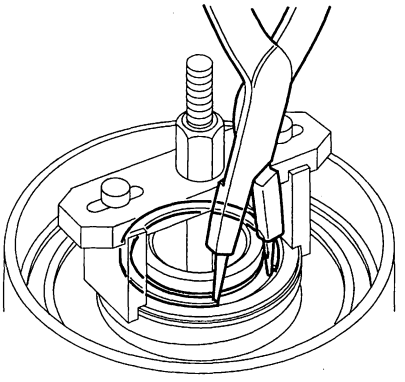
16. If either end of the clutch spring compressor attachment is not set over the clutch return spring end (A), the retainer may be damaged.



17. Compress the return spring until the snap ring can be removed.

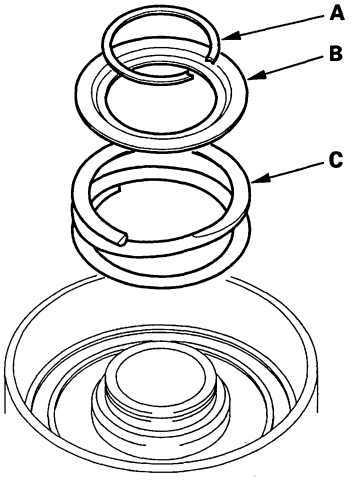


18. Remove the snap ring with the snap ring pliers.



19. Remove the clutch spring compressor attachments and the clutch spring compressor bolt assembly.

20. Remove the snap ring (A), spring retainer (B), and return spring (C).

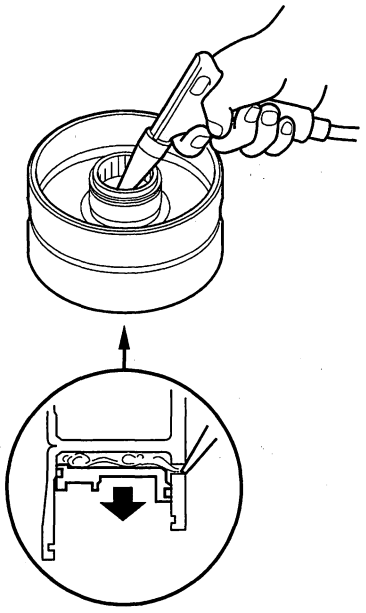


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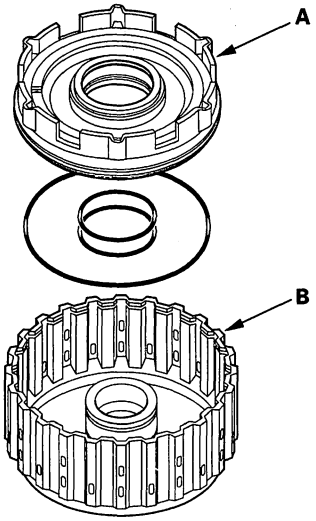
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Clutch Disassembly (cont'd)

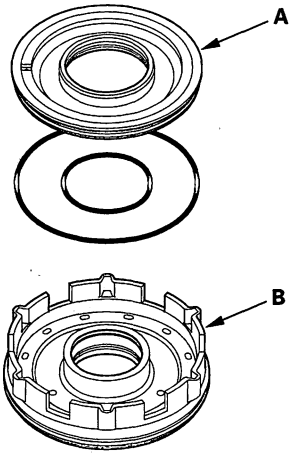
21. Wrap a shop rag around the clutch drum, and apply air pressure to the fluid passage to remove the piston. Place a finger tip on the other passage while applying air pressure.



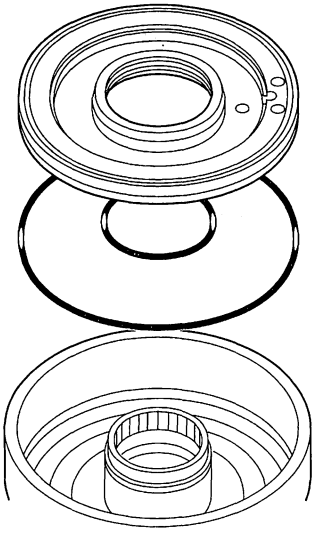
22. Remove the 1st/1st-hold clutch piston (A) from the clutch drum (B), and remove the O-rings from the 1st clutch piston.



23. Remove the 1st-hold clutch piston (A) from the 1st clutch piston (B), and remove the O-rings from the 1st-hold clutch piston.



24. Remove the clutch piston, and remove the O-rings from the 2nd, 3rd, 4th, and 5th clutch pistons.

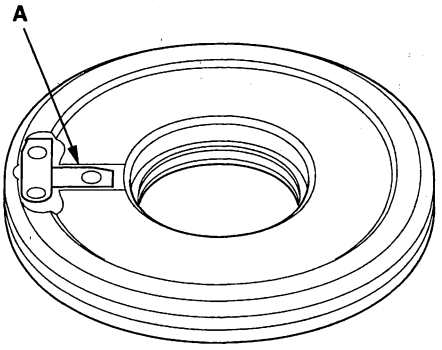


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Clutch Inspection

1. Inspect the clutch pistons and clutch piston check valves (A).



2. If the clutch piston check valve is loose or damaged, replace the clutch piston.
3. Check the spring retainer for wear and damage.
4. If the spring retainer is worn or damaged, replace it.
5. Inspect the clutch discs, clutch plates, and clutch end plate for wear, damage, and discoloration.

Clutch Discs:
Standard Thickness: 1.94 mm (0.076 in.)

Clutch Flat-plates and Clutch Wave-plates
Standard Thickness:

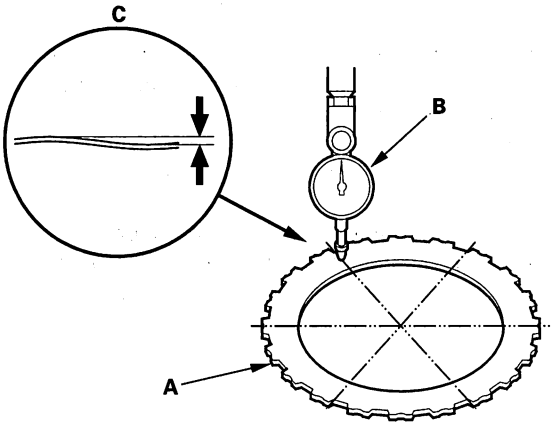
1st clutch:	**1.6 mm (0.063 in.)**
1st-hold clutch:	**1.8 mm (0.071 in.)**
2nd clutch:	**1.8 mm (0.071 in.)**
3rd clutch:	**1.8 mm (0.071 in.)**
4th clutch:	**1.6 mm (0.063 in.)**
5th clutch:	**1.6 mm (0.063 in.)**

6. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clutch end-plate-to-top disc clearance.
7. If any plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other wave-plates for a phase difference. If the clutch plate is replaced, inspect the clutch end-plate-to-top disc clearance.
8. If the clutch end plate is worn, damaged, or discolored, inspect the clutch end-plate-to-top disc clearance, then replace the clutch end plate.

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Clutch Wave-plate Phase Difference Inspection

1. Place the clutch wave-plate (A) on a surface plate, and set a dial indicator (B) on the wave-plate.



2. Find the bottom (C) of a phase difference of the wave-plate, zero the dial indicator and make a reference mark on the bottom of the wave-plate.

3. Measure the phase differences of 1st, 1st-hold, 2nd, and 3rd clutch wave-plates.

   -1 Rotate the clutch wave-plate a bout 60-degrees while holding the wave-plate by its circumference. The dial indicator should be at the top of a phase difference. Do not rotate the wave-plate while holding its surface, always rotate it by holding its circumference.

   -2 Read the dial indicator. The dial indicator reads the phase difference of the wave-plate between the bottom and top.

   Standard Phase Difference:
   1st clutch: 0.17—0.30 mm (0.007—0.012 in.)
   1st-hold clutch: 0.07—0.20 mm (0.003—0.008 in.)
   2nd clutch: 0.07—0.20 mm (0.003—0.008 in.)
   3rd clutch: 0.07—0.20 mm (0.003—0.008 in.)

   -3 Rotate the wave-plate a bout 60-degrees. The dial indicator should be at the bottom of a phase difference, and zero the dial indicator.

   -4 Measure the phase difference at the other two tops of the wave-plate by following steps -1 thru -3.

4. Measure the phase differences of 4th and 5th clutch wave-plates.

   -1 Rotate the clutch wave-plate 5-tooth or 4-tooth while holding the wave-plate by its circumference. The dial indicator should be at the top of a phase difference. Do not rotate the wave-plate while holding its surface, always rotate it by holding its circumference.

   -2 Read the dial indicator. The dial indicator reads the phase difference of the wave-plate between the bottom and top.

   Standard Phase Difference:
   4th clutch: 0.07—0.20 mm (0.003—0.008 in.)
   5th clutch: 0.07—0.20 mm (0.003—0.008 in.)

   -3 Rotate the wave-plate 5-tooth or 4-tooth. The dial indicator should be at the bottom of a phase difference, and zero the dial indicator.

   -4 Measure the phase difference at the other two tops of the wave-plate by following steps -1 thru -3.

5. If the two values of the three measurements are within the standard, the wave-plate is OK. If the two values of the three measurements are out of the standard, replace the wave-plate.

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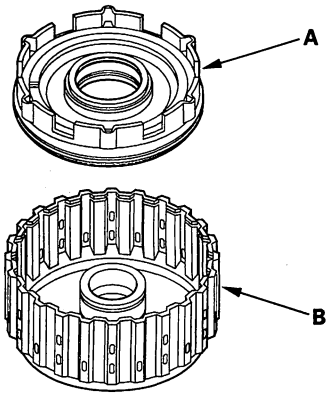
BACK

Clutch Clearance Inspection

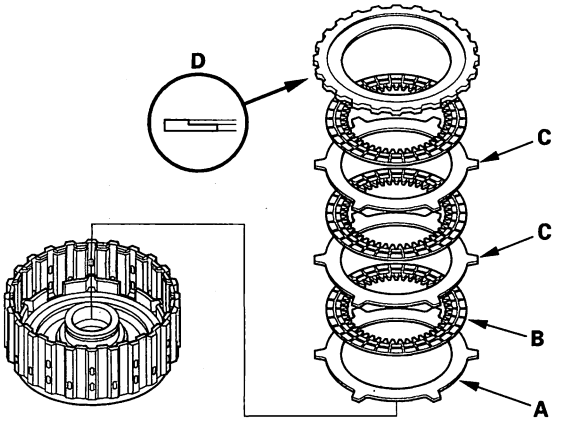
Special Tools Required
Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, discs, plates, and end plate for wear and damage (see page 14-389), and inspect the clutch wave-plate phase difference (see page 14-390), if necessary.

2. Install the 1st-hold clutch piston in the 1st clutch piston, and install the 1st/1st-hold clutch piston (A) in the 1st/1st-hold clutch drum (B). Do not install the O-rings on the clutch pistons during inspection.

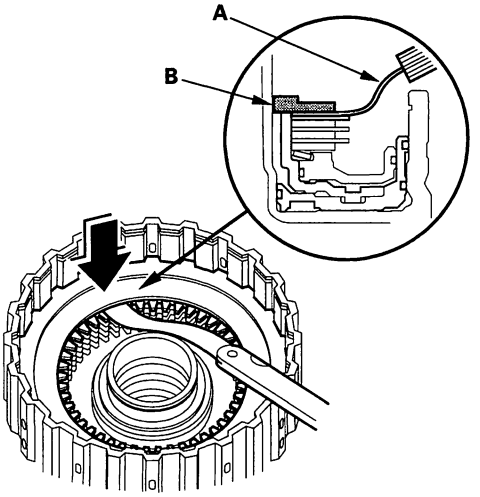


3. Install the 1st-hold clutch flat-plate (A), alternately install the clutch discs (B) (3) and the 1st-hold clutch wave-plates (C) (2), then install the 1st-hold clutch plate B (D) with the flat side down in the direction shown.



4. Measure the 1st-hold clutch plate B-to-top-disc clearance with a feeler gauge (A) while pressing the 1st-hold clutch plate B down. Take measurements in at least three places, and use the average as the actual clearance.

1st-hold Clutch Plate B-to-Top-Disc Clearance:
Service Limit: 0.6—1.0 mm (0.024—0.039 in.)



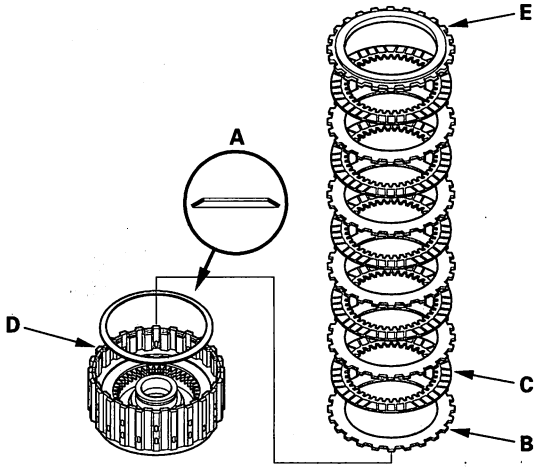
5. If the clearance is out of standard, replace the 1st-hold clutch plates and discs as a set, and recheck.

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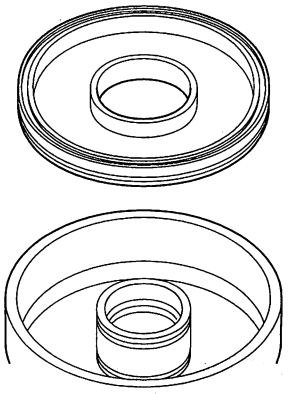
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Clutch Clearance Inspection (cont'd)

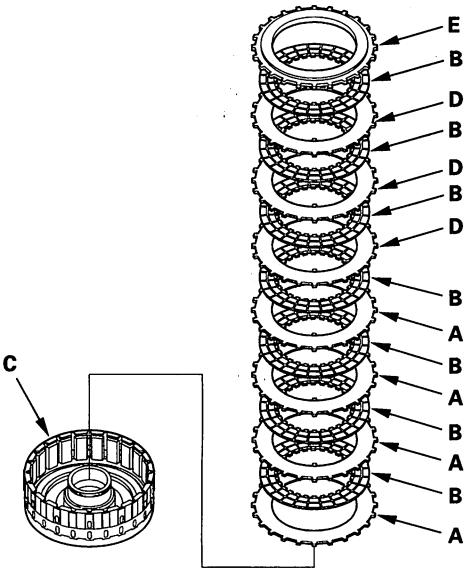
6. Install the disc spring (A) on the 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch wave-plate, alternately install the wave-plates (B) (5) and discs (C) (5) in the 1st clutch drum (D), then install the clutch-end-plate (E) with the flat side down.



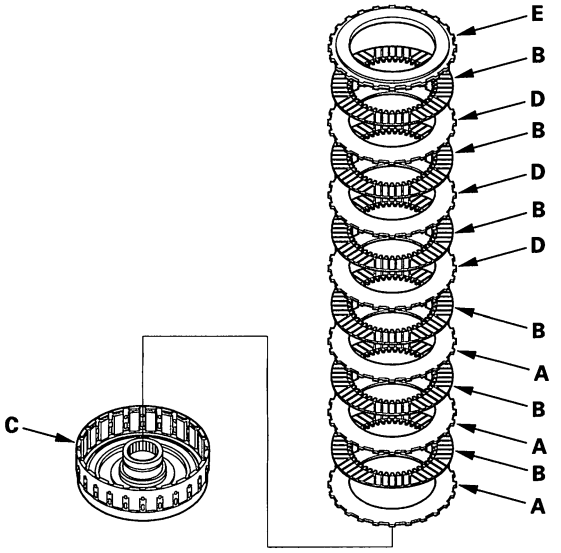
7. Install the clutch pistons in the 2nd, 3rd, 4th, and 5th clutch drums. Do not install the O-rings on the clutch pistons during inspection.



8. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4) in the 2nd clutch drum (C), and alternately install the wave-plates (D) (3) and discs (B) (3). Install the clutch-end-plate (E) with the flat side down on the top disc.



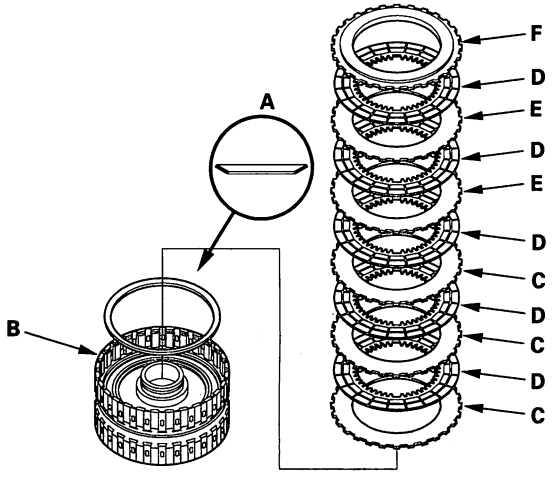
9. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (A) (3) and discs (B) (3) in the 3rd clutch drim (C), and alternately install the wave-plates (D) (3) and discs (B) (3). Install the clutch-end-plate (E) with the flat side down on the top disc.



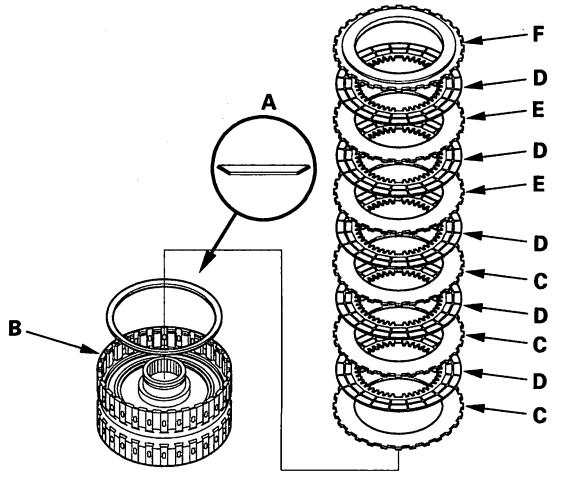
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BACK

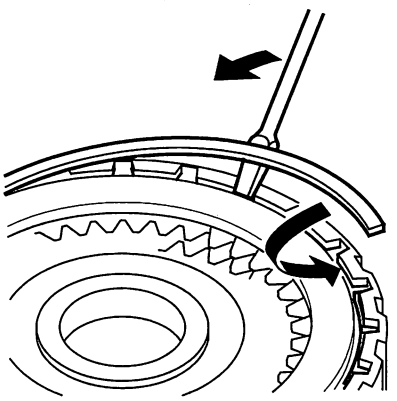
10. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Starting with the 4th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch-end-plate (F) with the flat side down on the top disc.



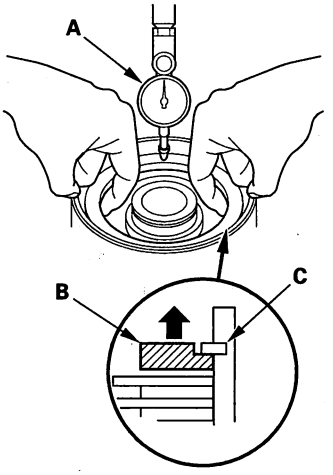
11. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Starting with the 5th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch-end-plate (F) with the flat side down on the top disc.



12. Install the snap ring with a screwdriver to secure the clutch-end-plate.



13. Set a dial indicator (A) on the clutch-end-plate (B).



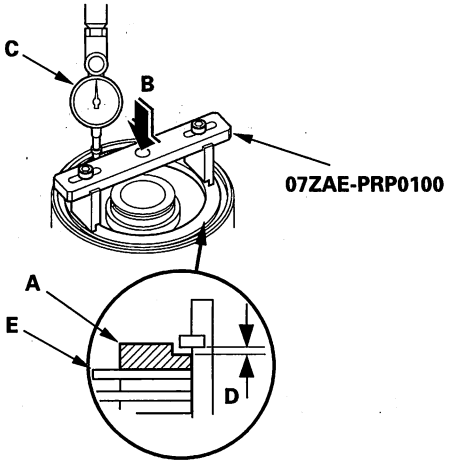
14. Zero the dial indicator with the clutch-end-plate lifted up to the snap ring (C).

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Clutch Clearance Inspection (cont'd)

15. Release the clutch-end-plate to lower the clutch-end-plate, then put the clutch compressor attachment on the end-plate (A).

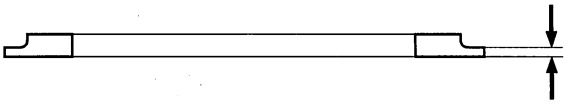


16. Press the clutch compressor attachment down with 150—160 N (15—16 kgf, 33—35 lbf) (B) using a force gauge, and read the dial indicator (C).

17. The dial indicator reads the clearance (D) between the clutch-end-plate and top disc (E). Take measurements in at least three places, and use the average as the actual clearance.

Clutch End-Plate-to-Top Disc Clearance:
Service Limit:
1st clutch: 1.15—1.35 mm (0.045—0.053 in.)
2nd clutch: 1.05—1.25 mm (0.041—0.049 in.)
3rd clutch: 0.9—1.1 mm (0.035—0.043 in.)
4th clutch: 0.75—0.95 mm (0.030—0.037 in.)
5th clutch: 0.75—0.95 mm (0.030—0.037 in.)

18. If the clearance is out of the service limit, select a new clutch-end-plate from the following table.



1ST CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22551-RDK-003	3.1 mm (0.122 in.)
2	22552-RDK-003	3.2 mm (0.126 in.)
3	22553-RDK-003	3.3 mm (0.130 in.)
4	22554-RDK-003	3.4 mm (0.134 in.)
5	22555-RDK-003	3.5 mm (0.138 in.)
6	22556-RDK-003	3.6 mm (0.142 in.)
7	22557-RDK-003	3.7 mm (0.146 in.)
8	22558-RDK-003	3.8 mm (0.150 in.)
9	22559-RDK-003	3.9 mm (0.154 in.)

2ND CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22561-RDK-003	2.1 mm (0.083 in.)
2	22562-RDK-003	2.2 mm (0.087 in.)
3	22563-RDK-003	2.3 mm (0.091 in.)
4	22564-RDK-003	2.4 mm (0.094 in.)
5	22565-RDK-003	2.5 mm (0.098 in.)
6	22566-RDK-003	2.6 mm (0.102 in.)
7	22567-RDK-003	2.7 mm (0.106 in.)
8	22568-RDK-003	2.8 mm (0.110 in.)
9	22569-RDK-003	2.9 mm (0.114 in.)

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3RD CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22591-RYF-003	2.1 mm (0.083 in.)
2	22592-RYF-003	2.2 mm (0.087 in.)
3	22593-RYF-003	2.3 mm (0.091 in.)
4	22594-RYF-003	2.4 mm (0.094 in.)
5	22595-RYF-003	2.5 mm (0.098 in.)
6	22596-RYF-003	2.6 mm (0.102 in.)
7	22597-RYF-003	2.7 mm (0.106 in.)
8	22598-RYF-003	2.8 mm (0.110 in.)
9	22599-RYF-003	2.9 mm (0.114 in.)

4TH and 5TH CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22571-RYF-003	2.1 mm (0.083 in.)
2	22572-RYF-003	2.2 mm (0.087 in.)
3	22573-RYF-003	2.3 mm (0.091 in.)
4	22574-RYF-003	2.4 mm (0.094 in.)
5	22575-RYF-003	2.5 mm (0.098 in.)
6	22576-RYF-003	2.6 mm (0.102 in.)
7	22577-RYF-003	2.7 mm (0.106 in.)
8	22578-RYF-003	2.8 mm (0.110 in.)
9	22579-RYF-003	2.9 mm (0.114 in.)

19. Install the new clutch-end-plate, and recheck the clearance. If the thickest clutch-end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.

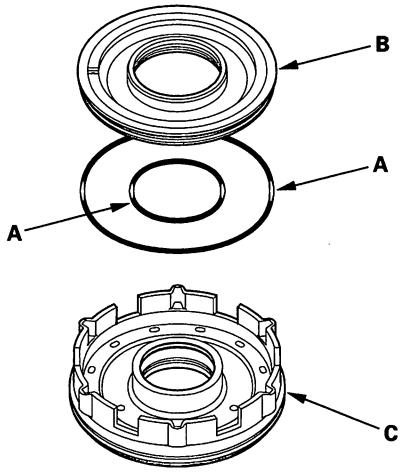
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Clutch Reassembly

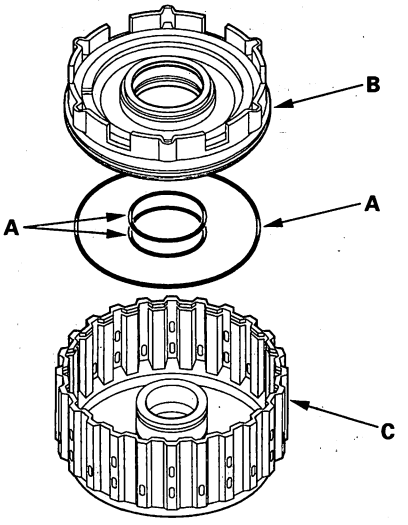
Special Tools Required
- Clutch spring compressor attachment 07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.

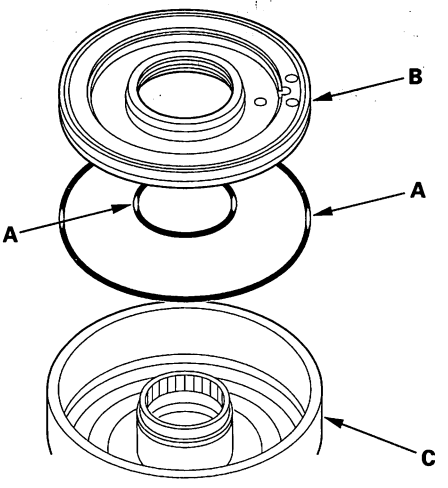
2. Install the new O-rings (A) on the 1st-hold clutch piston (B), and install the 1st-hold clutch piston in the 1st clutch piston (C).



3. Install the new O-rings (A) on the 1st clutch piston (B), and install the 1st/1st-hold clutch piston in the 1st/1st-hold clutch drum (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



4. Install the O-rings (A) on the 2nd, 3rd, 4th and 5th clutch piston (B).

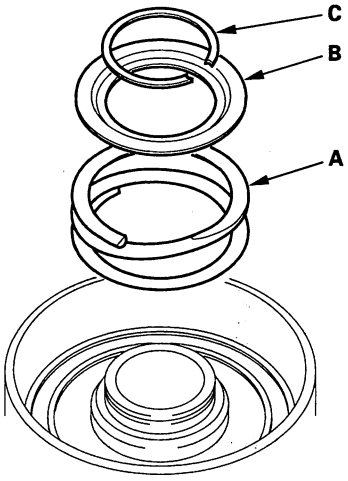


5. Install the clutch pistons in the clutch drums (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.

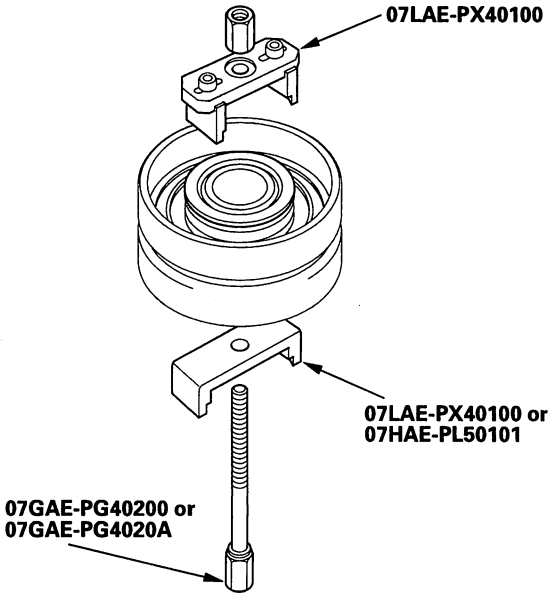
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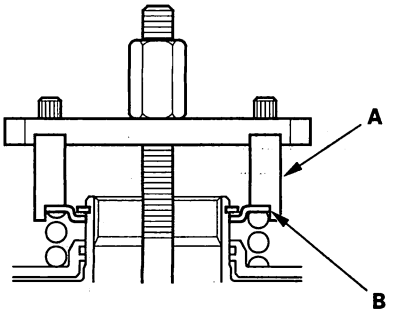
6. Install the return spring (A) and spring retainer (B), and position the snap ring (C) on the spring retainer.



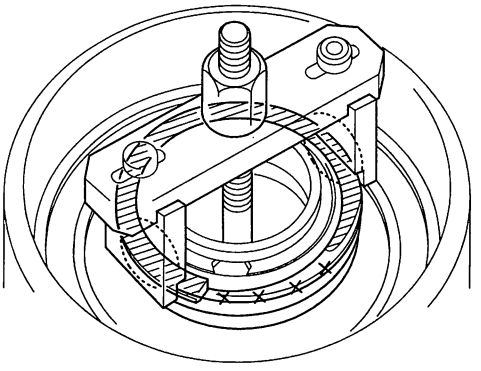
7. Install the clutch spring compressor attachments and the clutch spring compressor bolt assembly.



8. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.



9. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.

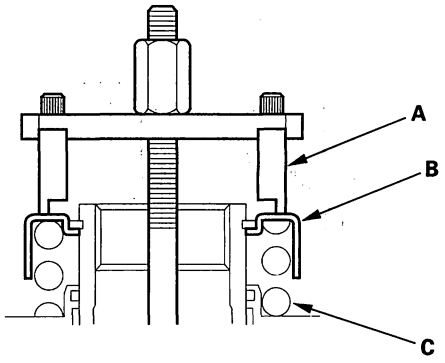


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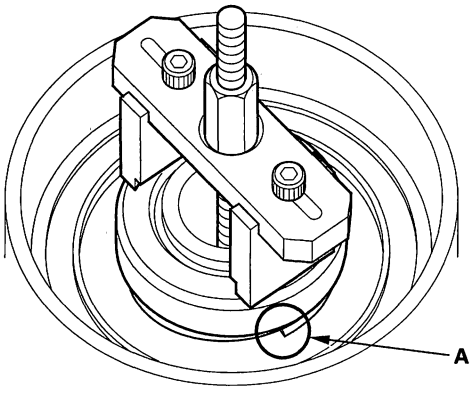
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Clutch Reassembly (cont'd)

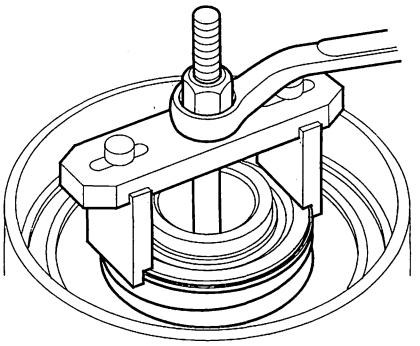
10. Set the clutch spring compressor attachment (A) on the spring retainer (B) of the 3rd and 5th clutches so the clutch spring compressor attachment works on the clutch return spring (C).



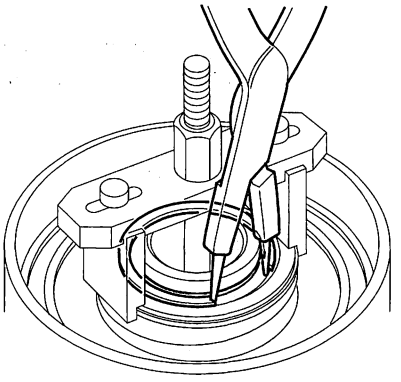
11. If either end of the clutch spring compressor attachment is not set over the clutch return spring end (A), the retainer may be damaged.



12. Compress the return spring until the snap ring can be installed.



13. Install the snap ring with the snap ring pliers.

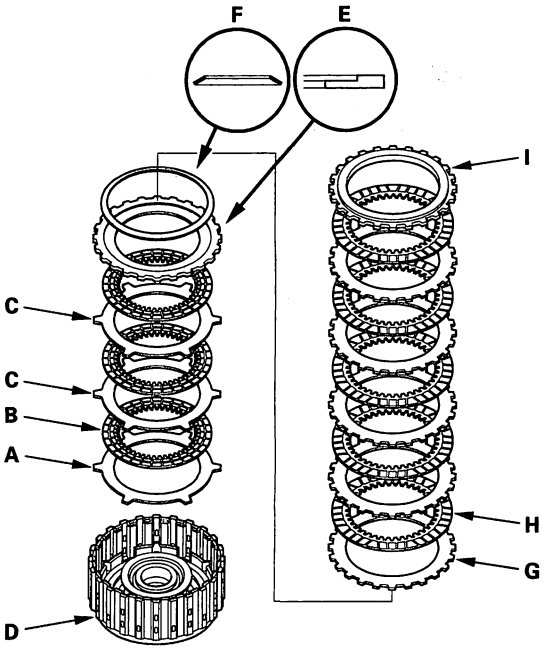


14. Remove the clutch spring compressor attachments and the clutch spring compressor bolt assembly.

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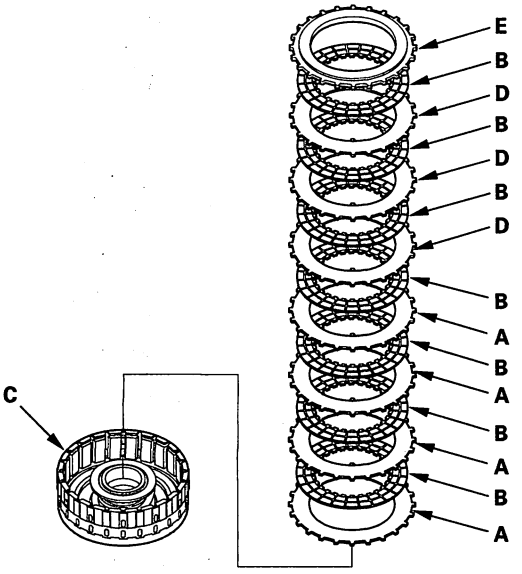
BACK

15. Install the 1st-hold clutch flat-plate (A), alternately install the clutch discs (B) (3) and the 1st-hold clutch wave-plates (C) (2) in the 1st/1st-hold clutch drum (D), then install the 1st-hold clutch plate B (E) with the flat side down in the direction shown.

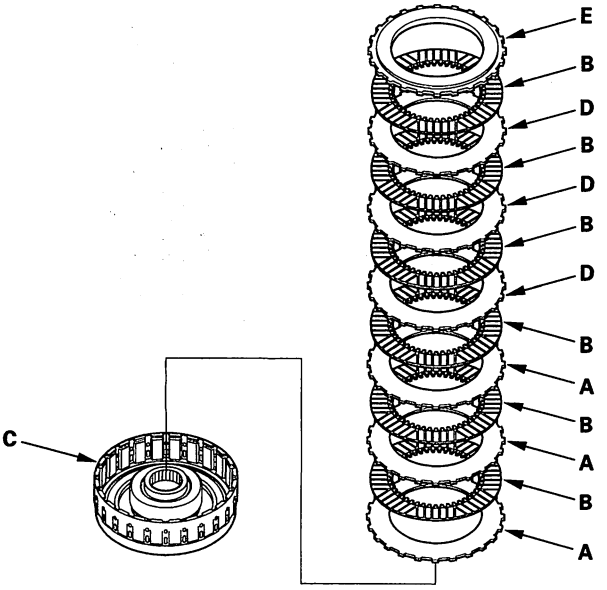


16. Install the disc spring (F) on the 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch wave-plate, alternately install the wave-plates (G) (5) and discs (H) (5), then install the clutch-end-plate (I) with the flat side down on the top disc.

17. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4) in the 2nd clutch drum (C), and alternately install the wave-plates (D) (3) and discs (B) (3). Install the clutch-end-plate (E) with the flat side down on the top disc.



18. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (A) (3) and discs (B) (3) in the 3rd clutch drum (C), and alternately install the wave-plates (D) (3) and discs (B) (3). Install the clutch-end-plate (E) with the flat side down on the top disc.

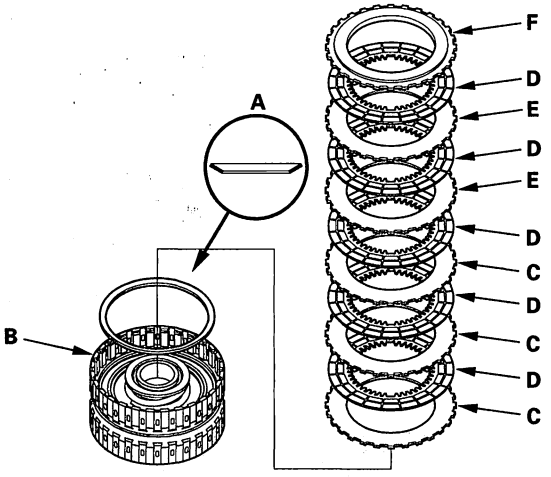


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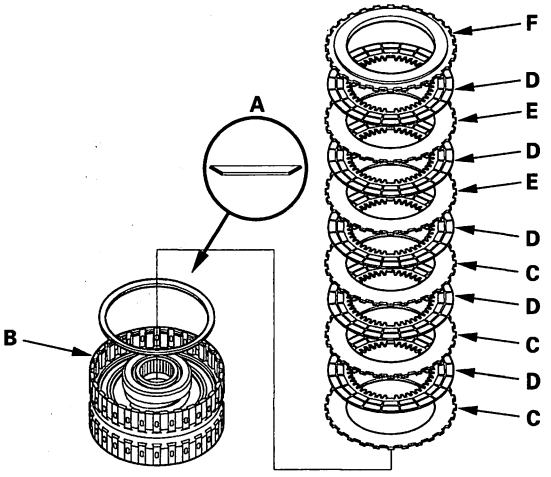
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Clutch Reassembly (cont'd)

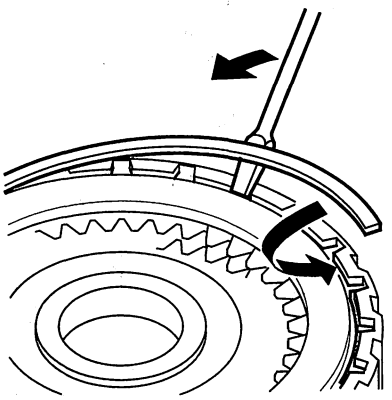
19. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Starting with the 4th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch-end-plate (F) with the flat side down on the top disc.



20. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Starting with the 5th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch-end-plate (F) with the flat side down on the top disc.



21. Install the snap ring with a screwdriver to secure the clutch-end-plate.



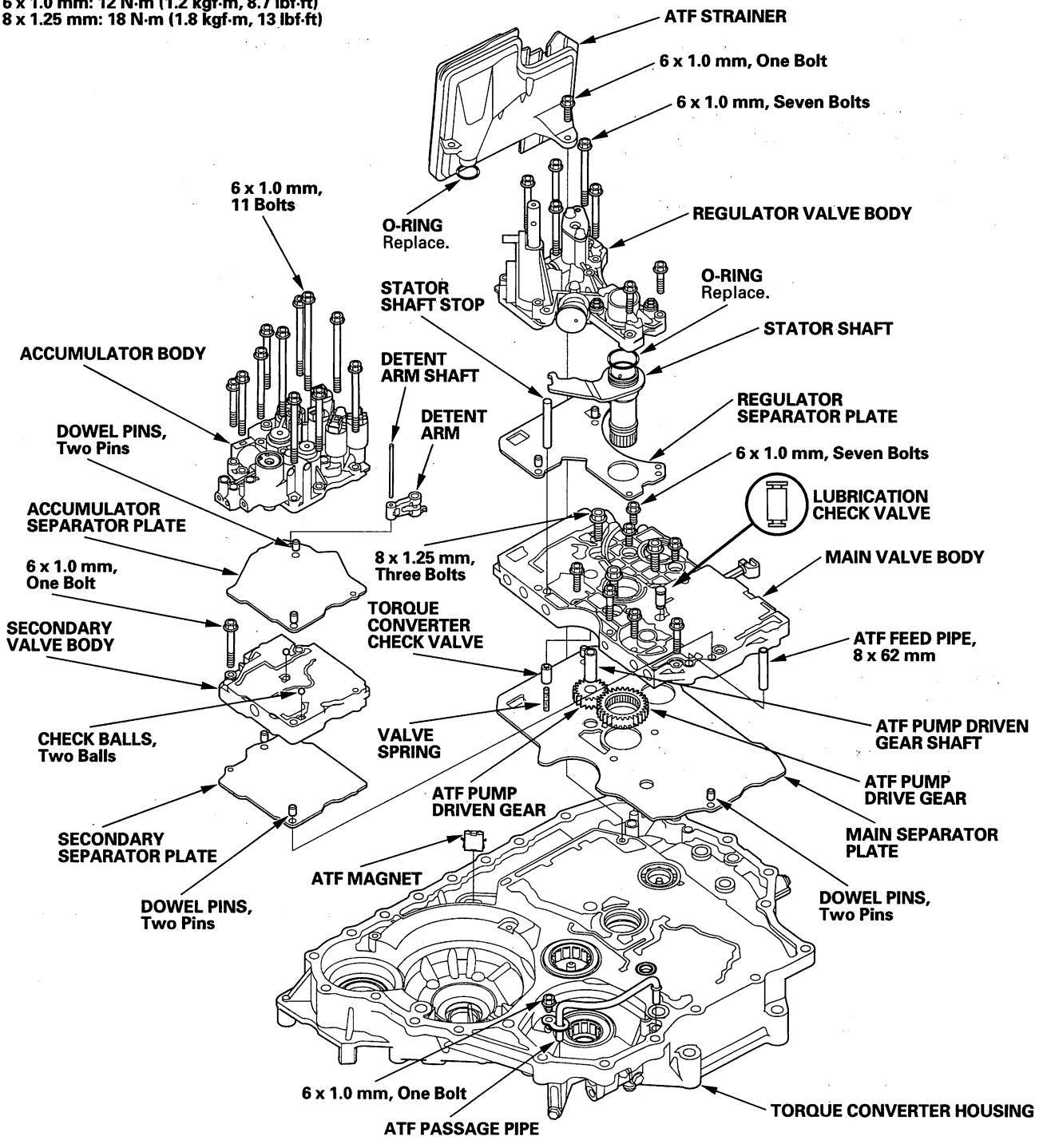
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BACK

Transmission Reassembly

Exploded View

Bolt Tightening Torque
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)



(cont'd)

BACK

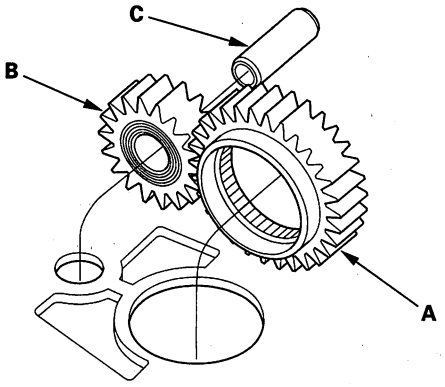
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Transmission Reassembly (cont'd)

Special Tool Required
Mainshaft holder 07GAB-PF50101

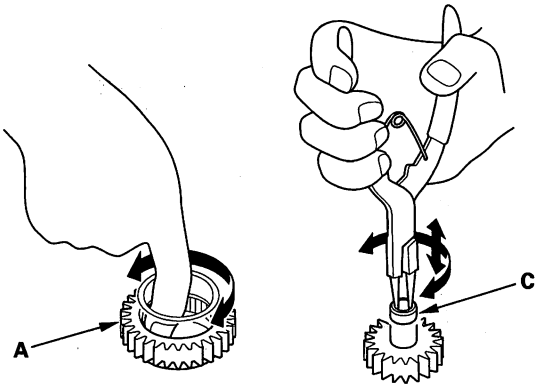
1. Make sure that the ATF magnet is cleaned and installed in the torque converter housing. Clean and install the ATF magnet, if necessary.

2. Install the main separator plate and the two dowel pins on the torque converter housing. Then install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C). Install the ATF pump driven gear with its grooved and chamfered side facing down.



3. Install the torque converter check valve spring and valve in the torque converter housing.

4. Install the main valve body (seven 6 mm bolts and three 8 mm bolts). Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (C) moves smoothly in the axial and normal operating direction.



5. If the ATF pump drive gear and ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torques, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.

6. Install the lubrication check valve, cooler check valve and cooler check valve spring in the main valve body. Install the lubrication check valve in the direction shown in the exploded view.

7. Install the secondary separator plate and the two dowel pins on the main valve body, and install the secondary valve body (one bolt).

8. Install the two check balls in the secondary valve body.

9. Install the accumulator separator plate and the two dowel pins on the secondary valve body.

10. Position the detent arm on the accumulator separator plate, and install the detent arm shaft into the detent arm through the separator plates to the main valve body.

11. Install the 8 x 62 mm ATF feed pipes in the main valve body, and install the accumulator body (11 bolts).

12. Install the regulator separator plate and the two dowel pins on the main valve body.

13. Install the stator shaft with the new O-ring, and install the regulator valve body (eight bolts).

14. Install the stator shaft stop in the main valve body.

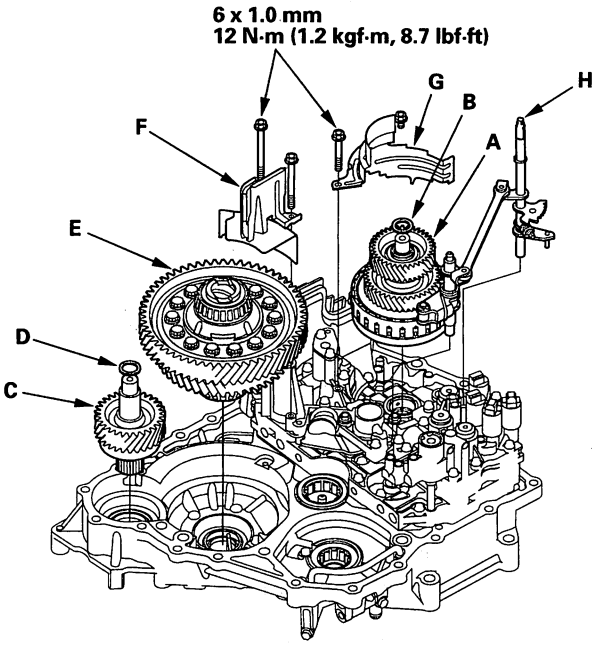
15. Install the ATF strainer with the new O-ring (two bolts).

16. Install the ATF passage pipe (one bolt) in the torque converter housing.

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17. Install the intermediary shaft (A) into the main valve body, and install the 26.5 mm washer (B) on the top of the intermediary shaft.



18. Install the transfer output shaft (C) in the torque converter housing, and install the thrust shim (D) on the top of the transfer output shaft.

19. Install the differential assembly (E) in the torque converter housing.

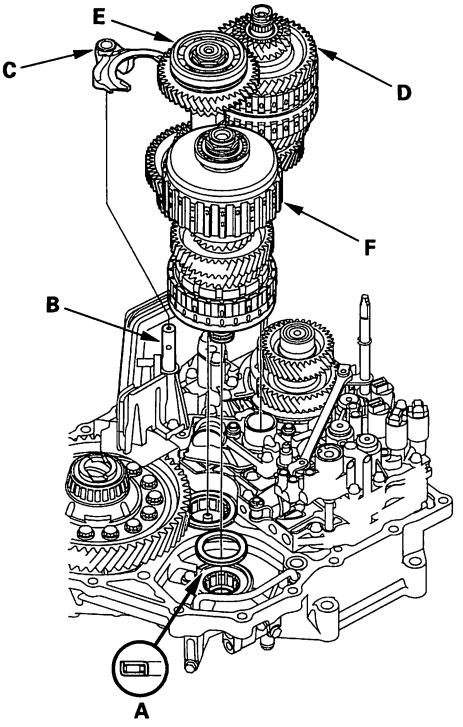
20. Install the baffle plate (F), and make sure the differential is clear of the baffle plate.

21. Install the baffle plate (G), and make sure the intermediary shaft is clear of the baffle plate.

22. Install the selector control shaft and the park lever link (H).

23. Assemble the mainshaft, countershaft, and secondary shaft.

24. Install the needle bearing (A) on the secondary shaft roller bearing in the torque converter housing.



25. Turn the shift fork shaft (B) so the large chamfered hole is facing the fork bolt hole of the shift fork.

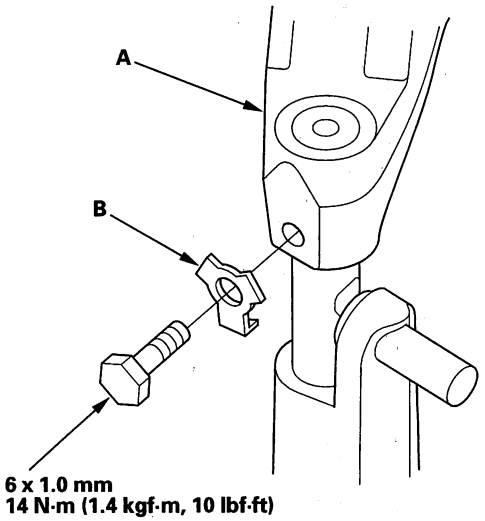
26. Engage the shift fork (C) with the reverse selector on the countershaft, and join the mainshaft (D), countershaft (E), and secondary shaft (F), then install them in the torque converter housing and shift fork on the shift fork shaft.

(cont'd)

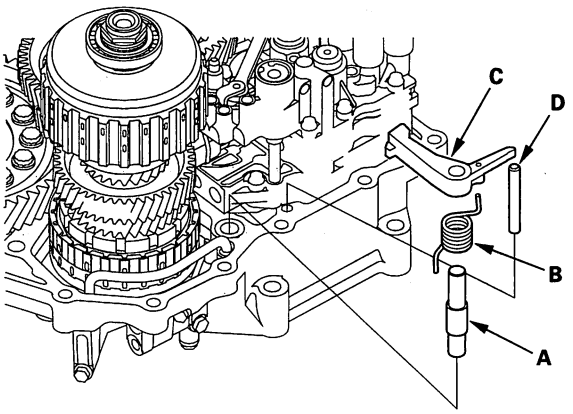
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Transmission Reassembly (cont'd)

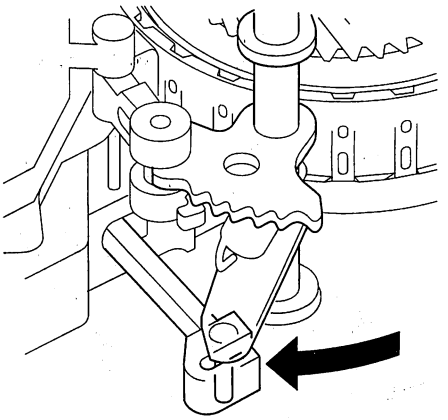
27. Secure the shift fork (A) to the shift fork shaft with the lock bolt and the new lock washer (B), then bend the lock tab of the lock washer against the bolt head.



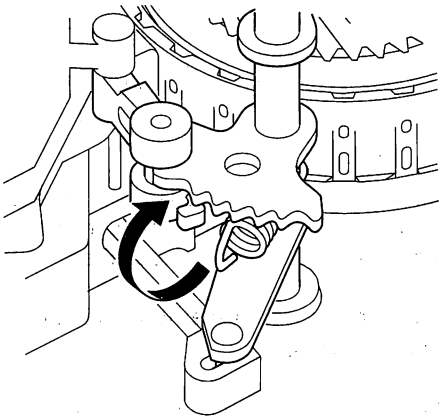
28. Install the park pawl shaft (A), pawl spring (B), park pawl (C), and park pawl stop (D).



29. Align the control lever pin with the manual valve guide.



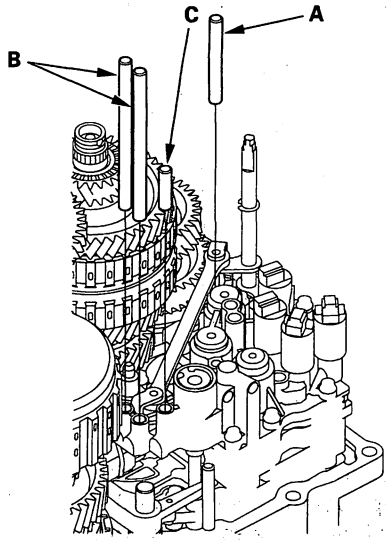
30. Hook the detent arm spring to the detent arm.



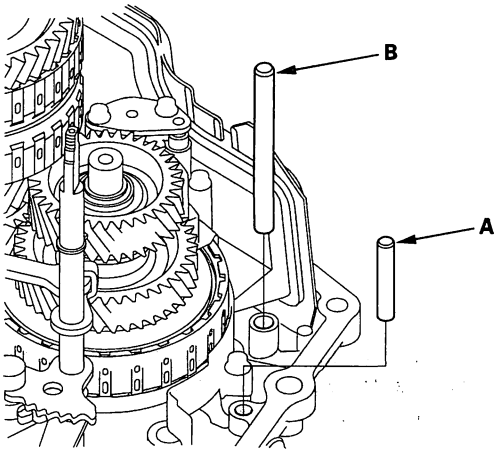
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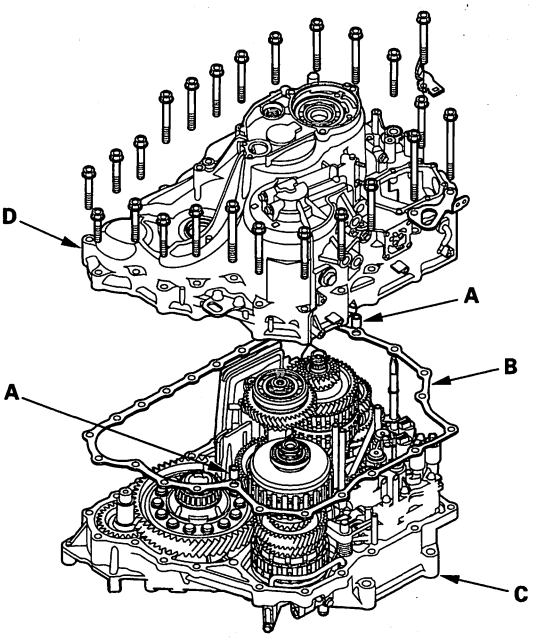
31. Install the 8 x 85 mm ATF feed pipe (A), the 8 x 151.5 mm pipes (B), and the 8 x 40 mm pipe (C) in the accumulator body.



32. Install the 8 x 57.5 mm ATF feed pipe (A) and the 10 x 123 mm pipe (B) in the torque converter housing.

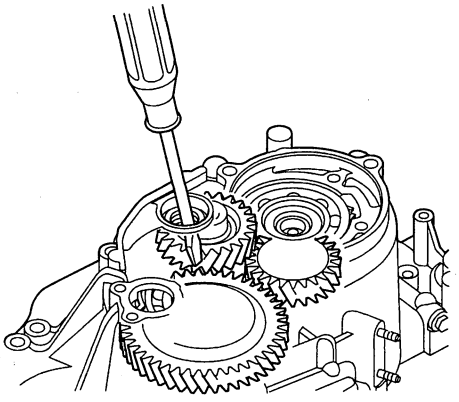


33. Install the two dowel pins (A) and the new gasket (B) on the torque converter housing (C).



34. Place the transmission housing (D) on the torque converter housing.

35. Wrap a screwdriver tip with tape to prevent damage to the reverse idler gear teeth. Engage the reverse idler gear with reverse gears by rotating the idler gear using the screwdriver.

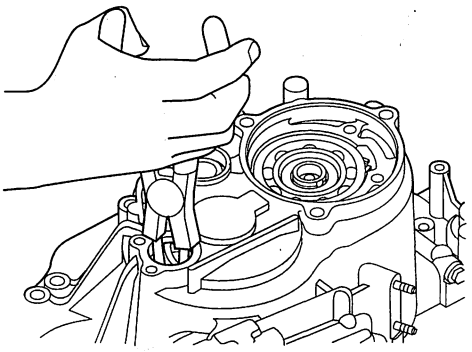


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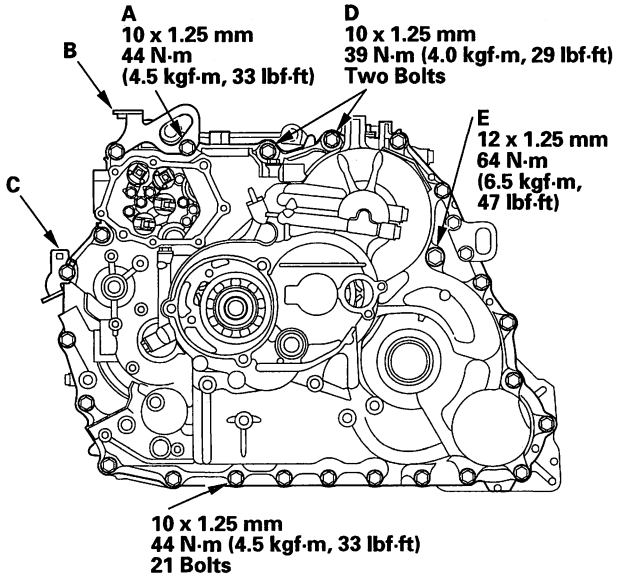
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Transmission Reassembly (cont'd)

36. While expanding the snap ring of the countershaft bearing using snap ring pliers, install the transmission housing onto the bearing part-way. Then release the snap ring pliers, and push down on the housing until it bottoms and the snap ring snaps into place in the transmission housing snap ring groove.



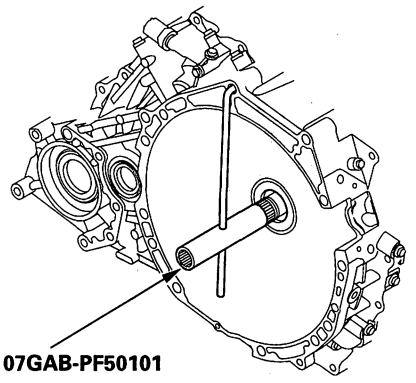
37. Install the transmission housing mounting bolts (21 bolts) and the bolt (A) along with the transmission hanger (B) and the transmission ground terminal bracket (C), and tighten the bolts in two or more steps in a criss-cross pattern to 44 N·m (4.5 kgf·m, 33 lbf·ft).



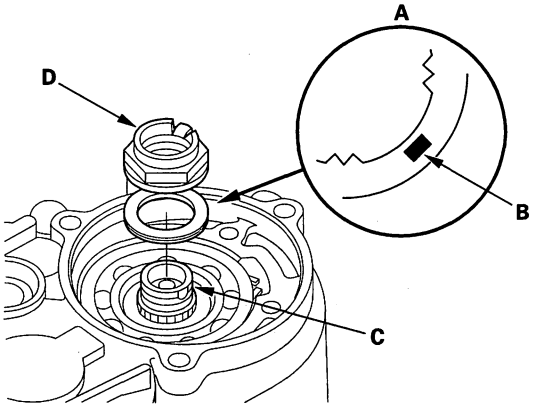
38. Install and tighten the two mounting bolts (D) to 39 N·m (4.0 kgf·m, 29 lbf·ft). Keep the mounting bolts free of grease or oil.

39. Install and tighten the special bolt (E) to 64 N·m (6.5 kgf·m, 47 lbf·ft).

40. Install the mainshaft holder onto the mainshaft.



41. Install the new lock washer (A) with the marked side (B) up over the mainshaft (C), and apply ATF to surfaces of the lock washer and old locknut (D).

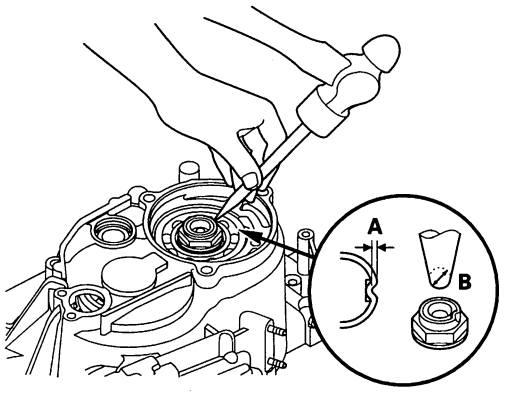


42. Install the old locknut, and tighten it to seat the lock washer to 178 N·m (18.2 kgf·m, 132 lbf·ft), then remove the old locknut.

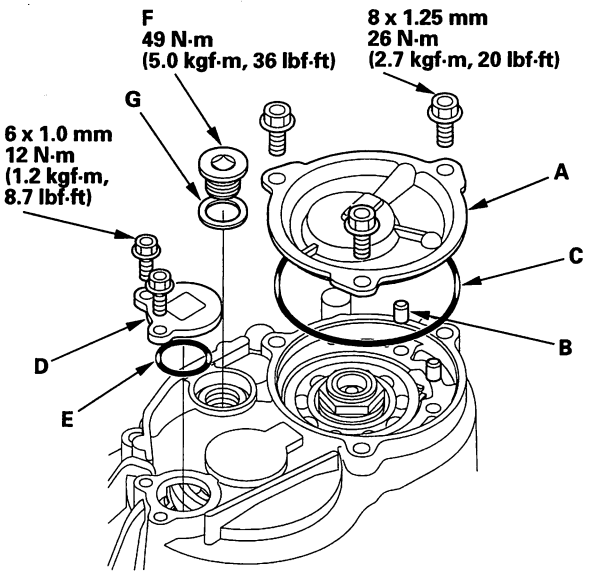
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43. Install the new locknut and tighten it to 176 N·m (18.2 kgf·m, 132 lbf·ft), then stake the locknut to a depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



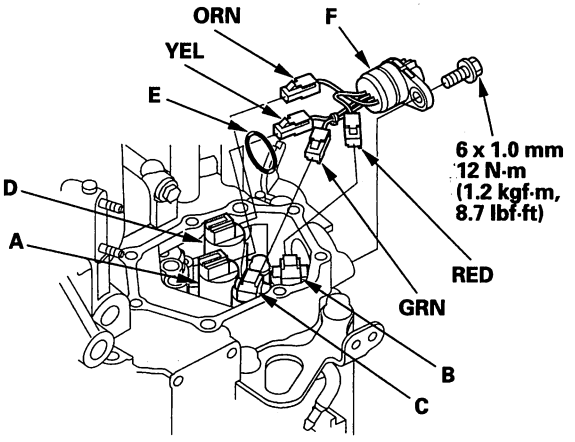
44. Install the end cover (A), dowel pin (B), and new O-ring (C).



45. Install the snap ring cap (D) with the new O-ring (E).

46. Apply thread lock sealant to the threads of the sealing plug (F), and install the sealing plug and the new sealing washer (G).

47. Install the new O-ring (E) on the solenoid harness connector (F).



48. Route the solenoid harness through the transmission housing, and install the solenoid harness connector.

49. Connect the harness terminals to the solenoids:

- YEL wire connector to shift solenoid valve A.
- GRN wire connector to shift solenoid valve C.
- RED wire connector to shift solenoid valve B.
- ORN wire connector to shift solenoid valve D.

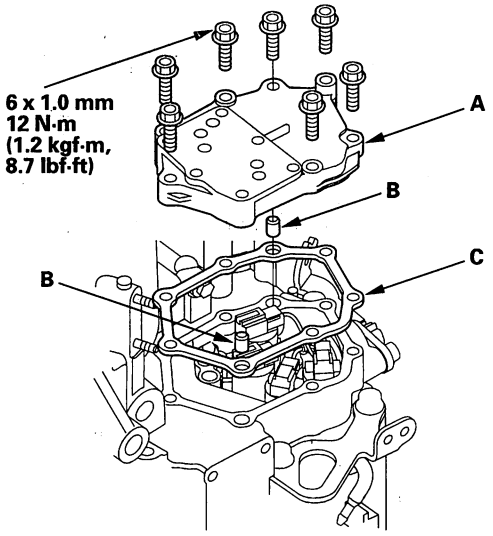
50. Secure the solenoid harness connector with the bolt on the transmission housing.

(cont'd)

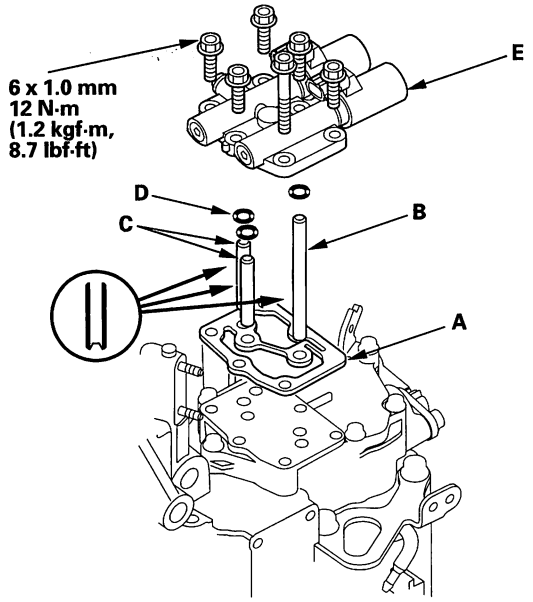
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Transmission Reassembly (cont'd)

51. Install the solenoid valve cover (A) with the two dowel pins (B) and the new gasket (C), and secure it with the seven bolts.

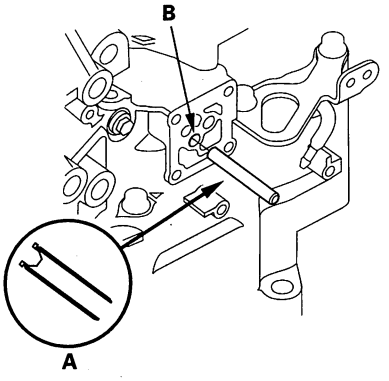


52. Place the new gasket (A) on the solenoid valve cover, then install the 8 x 105.8 mm ATF feed pipes (B) and the 8 x 58.3 mm pipes (C) with their filter side into the transmission housing.

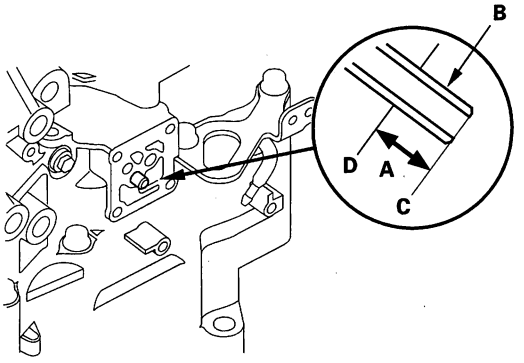


53. Install the new O-rings (D) over the ATF feed pipes, and install the A/T clutch pressure control solenoid valves A and B (E).

54. Install the 8 x 53 mm ATF joint pipe (A) with the filter side into its mounting hole (B).



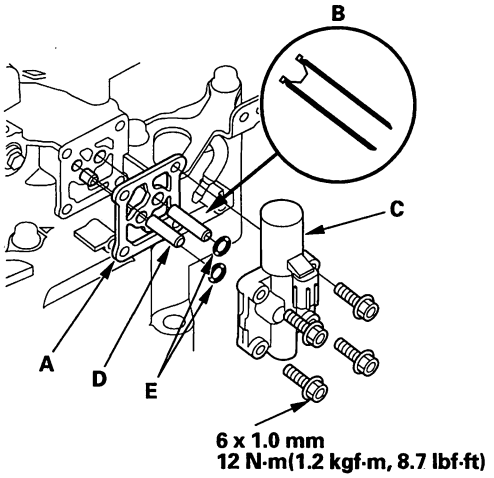
55. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.) If the height is over 7 mm (0.3 in.), install the pipe securely until it stops the accumulator body.



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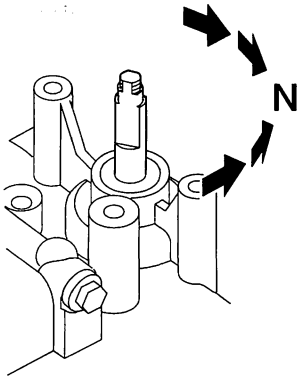
56. Install the new gasket (A) on the transmission housing. Install the 8 x 34.5 mm ATF pipe (B) with the filter end in the transmission housing, and install the 8 x 25.5 mm ATF pipe (D).



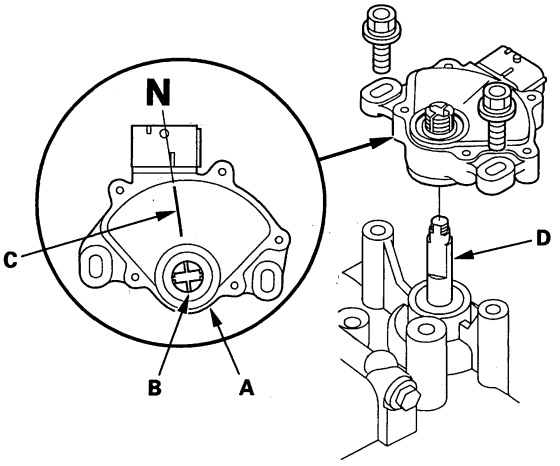
57. Install new O-rings (E) over the ATF joint pipes.

58. Install the A/T clutch pressure control solenoid valve C.

59. Set the control shaft to the N position by turning the selector control shaft with a 6.0 mm wrench.

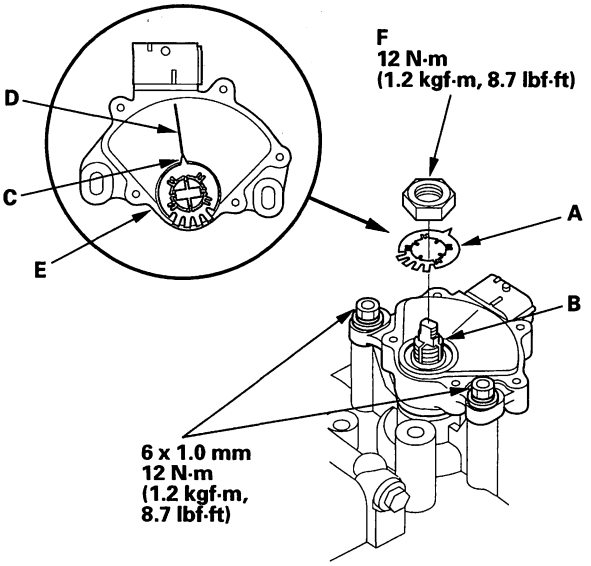


60. Set the transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the selector control shaft hole (B) aligns with the N positioning line (C).



61. Install the transmission range switch gently over the selector control shaft (D), and install the bolts loosely.

62. Install the new lock washer (A) over the selector control shaft (B) by aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).

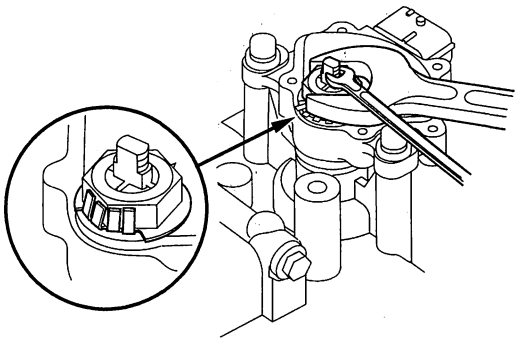


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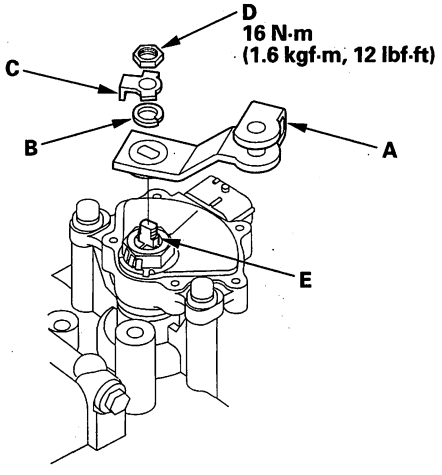
Transmission Reassembly (cont'd)

63. Push the locknut against the transmission housing to seat the range switch into the selector control shaft, and tighten the locknut to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the selector control shaft with a 6 mm wrench, then bend the lock tabs against the locknut.

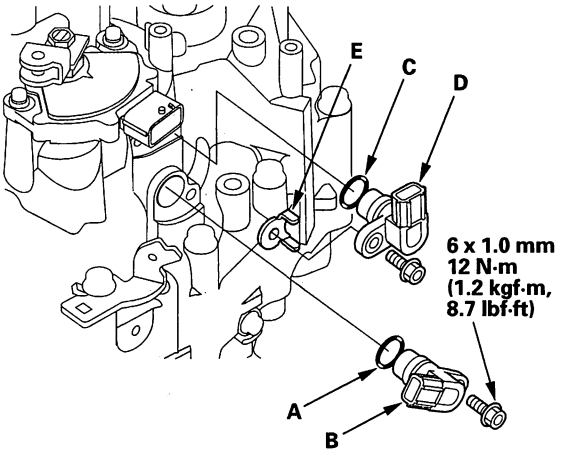


64. Tighten the range switch mounting bolts to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).

65. Install the control lever (A), spring washer (B), lock washer (C), and locknut (D) on the selector control shaft (E).

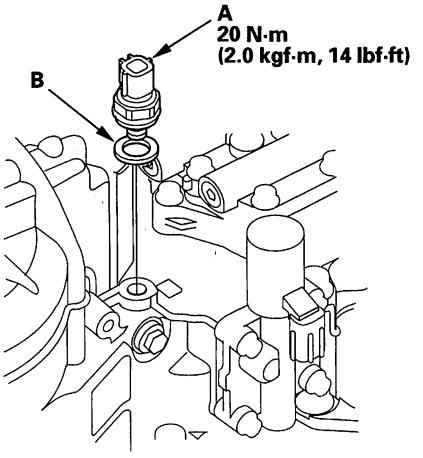


66. Install the new O-ring (A) on the input shaft (mainshaft) speed sensor (B), and install the input shaft (mainshaft) speed sensor.



67. Install the new O-ring (C) on the output shaft (countershaft) speed sensor (D), and install the output shaft (countershaft) speed sensor and the sensor washer (E).

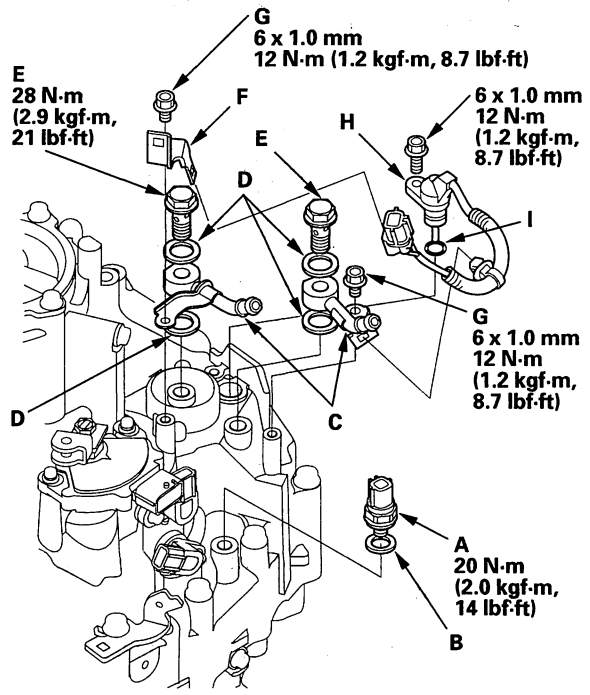
68. Install the 4th clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch with the metal part.



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69. Install the 3rd clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch with the metal part.

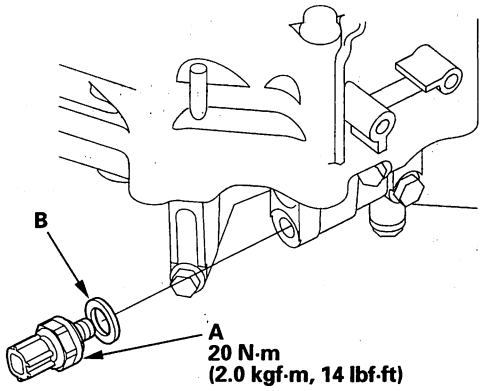


70. Install the ATF cooler lines (C) with the new sealing washers (D) and the line bolts (E).

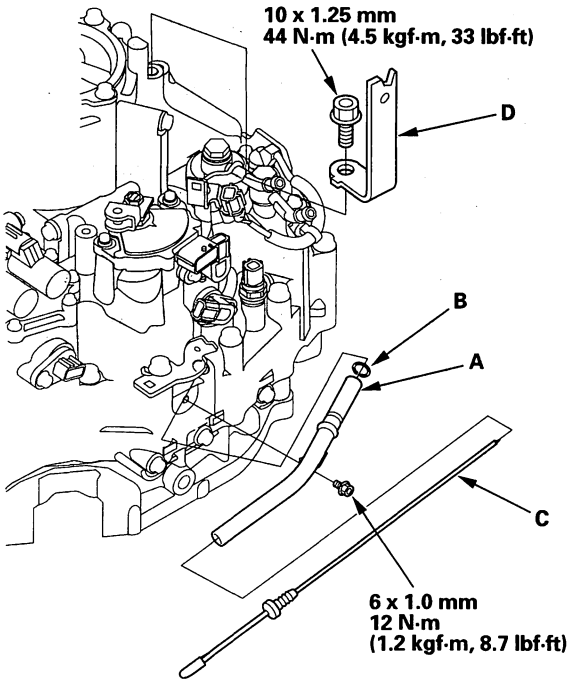
71. Install the connector bracket (F), and secure the ATF lines with the 6.0 mm bolts (G) on the transmission housing.

72. Install the ATF temperature sensor (H) with the new O-ring (I). Install the connector on the connector bracket and the harness clamp on the bracket.

73. Install the 2nd clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch by the metal part.



74. Install the ATF dipstick tube (A) with the new O-ring (B).

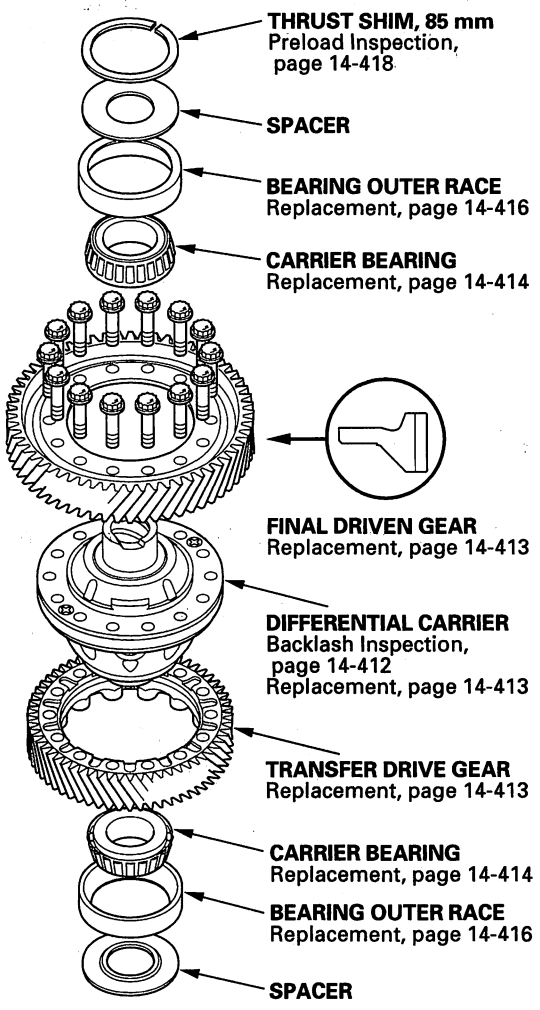


75. Install the ATF dipstick (C) in its tube.

76. Install the transmission ground terminal (D).

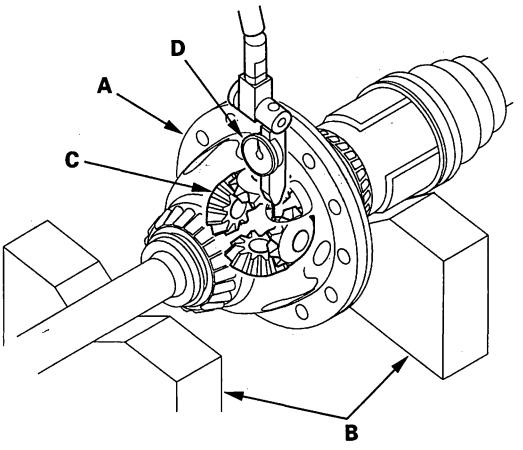
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Component Location Index



Backlash Inspection

1. Remove the final driven gear and transfer drive gear from the differential carrier.
2. Install both axles into the differential assembly (A) and place the axles on V-blocks (B).



3. Measure the backlash of the pinion gears (C) with a dial indicator (D).

   Standard (New): 0.05—0.15 mm (0.002—0.006 in.)

4. If the backlash is out of standard, replace the differential carrier.
5. Install the final driven gear and transfer drive gear on the differential carrier (see page 14-413).

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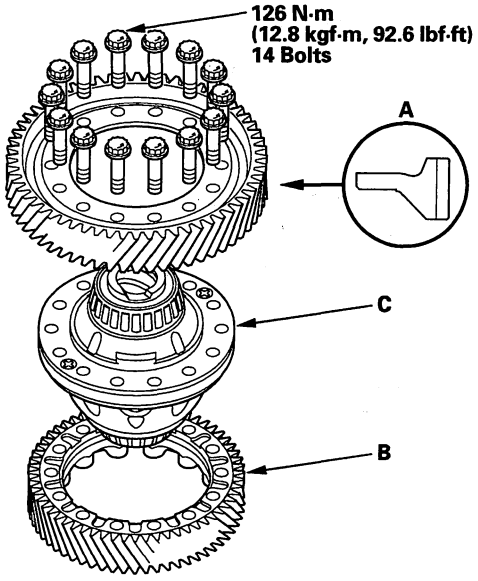
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Differential Carrier, Final Driven Gear, and Transfer Drive Gear Replacement

NOTE: Inspect and adjust the bearing preload whenever the carrier is replaced.

1. Remove the final driven gear (A) and transfer drive gear (B) from the differential carrier (C).

   NOTE: The final driven gear bolts have left-hand threads.



2. Install the final driven gear with the chamfered side on the inner bore facing the differential carrier.
3. Install the bolts through the differential carrier to the transfer drive gear.
4. Tighten the bolts to the specified torque in a crisscross pattern.

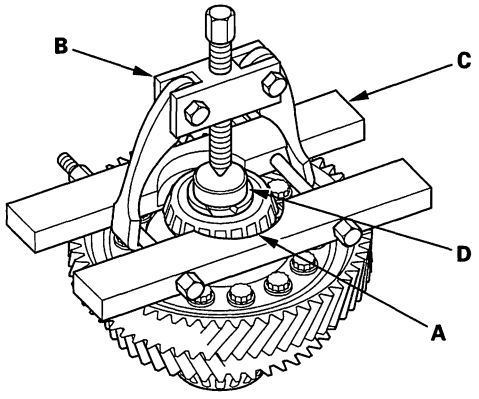
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Carrier Bearing Replacement

Special Tools Required
Attachment, 45 x 55 mm 07MAD-PR90100

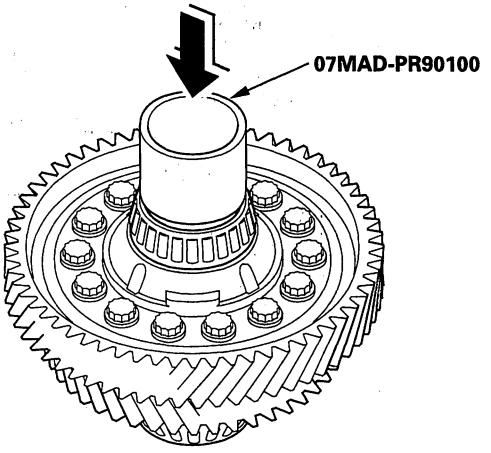
NOTE:
- The bearing and outer race should be replaced as a set.
- Inspect and adjust the bearing preload whenever the bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

1. Remove the carrier bearing (A) with a commercially available bearing puller (B), bearing separator (C), and stepper adapter (D).



2. Install the new carrier bearing using the attachment (45 x 55 mm) and the press.

NOTE:
- Press the bearing on until it bottoms.
- Use the small end of the attachment (45 x 55 mm) to install the bearings.
- Press the bearing on securely so there is no clearance between the bearing and the differential carrier.



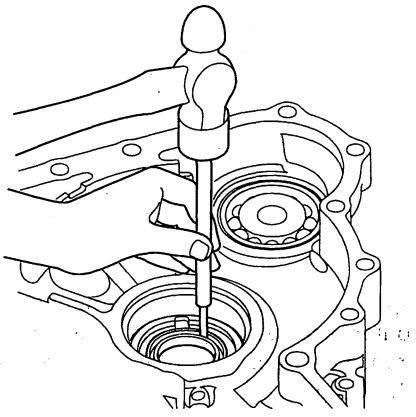
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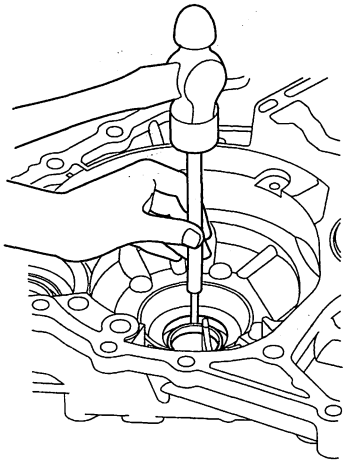
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07GAD-PG40100
- Oil seal driver attachment 07JAD-PH80101

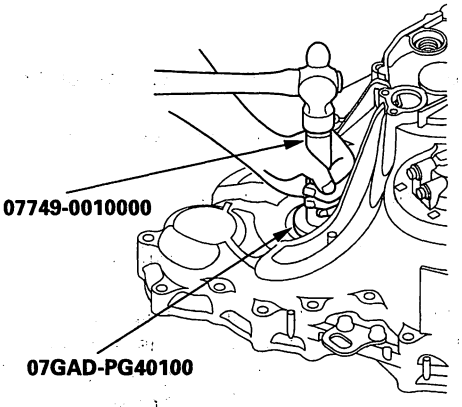
1. Remove the oil seal from the transmission housing.



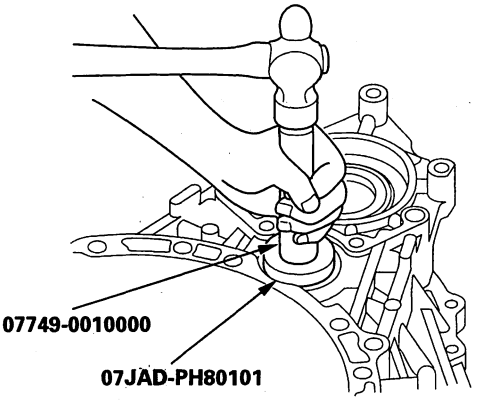
2. Remove the oil seal from the torque converter housing.



3. Install the new oil seal flush to the transmission housing using the drive and the oil seal driver attachment.



4. Install the new oil seal to the torque converter housing using the drive and the oil seal driver attachment.



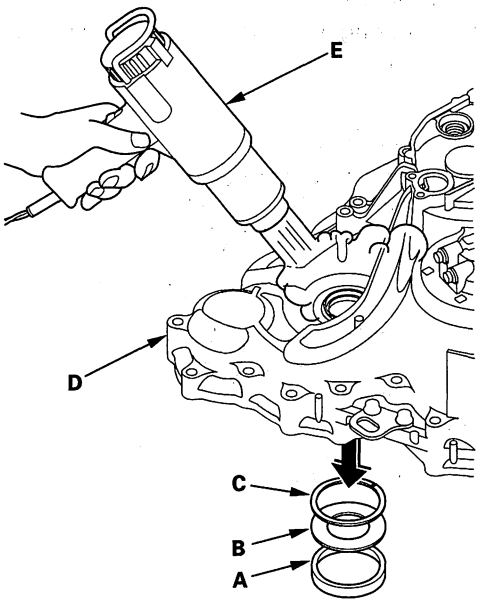
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Carrier Bearing Outer Race Replacement

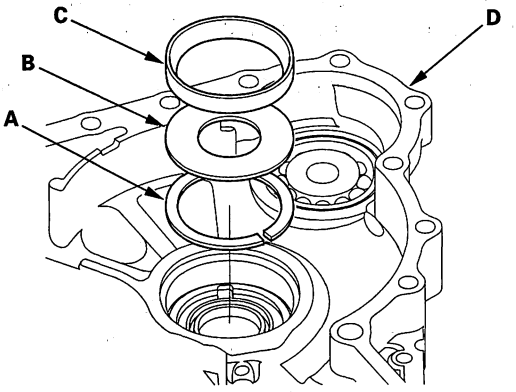
Special Tools Required
- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Attachment, 78 x 80 mm 07NAD-PX40100

NOTE:
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use shim(s) on the torque converter housing side.
- Adjust the preload after replacing the bearing and the outer race.
- Coat all parts with ATF during installation.

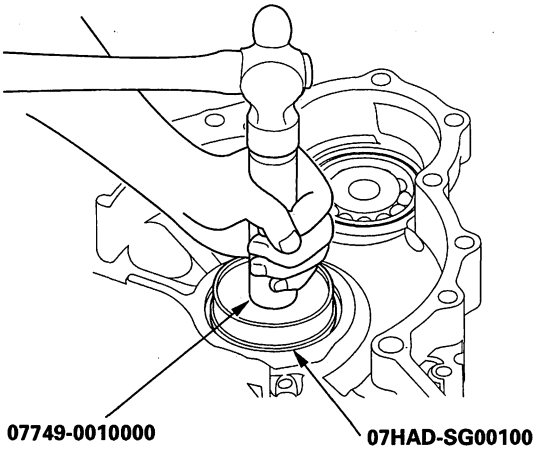
1. Remove the bearing outer race (A), spacer (B), and 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).



2. Install the 85 mm thrust shim (A), spacer (B), and outer race (C) in the transmission housing (D).



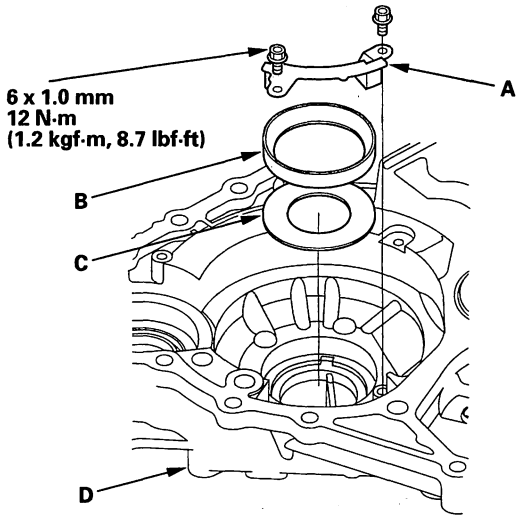
3. Using the driver and the attachment (83 mm), drive the outer race securely in the housing so there is no clearance between the outer race, spacer, shim, and housing.



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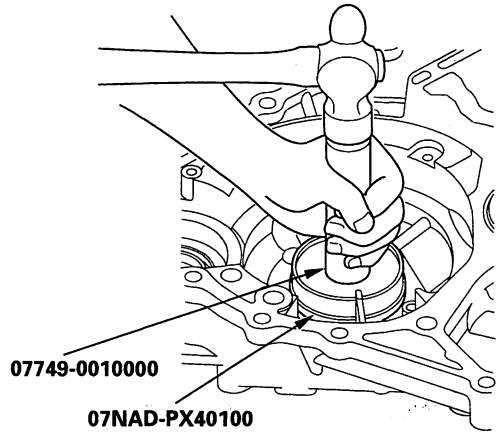
BACK

4. Remove the plate (A), and remove the bearing outer race (B) and spacer (C) from the torque converter housing (D).



5. Install the spacer and the new outer race in the torque converter housing.

6. Drive the bearing outer race securely in the housing using the driver and the attachment (78 x 80 mm).



7. Install the plate over the outer race in the torque converter housing.

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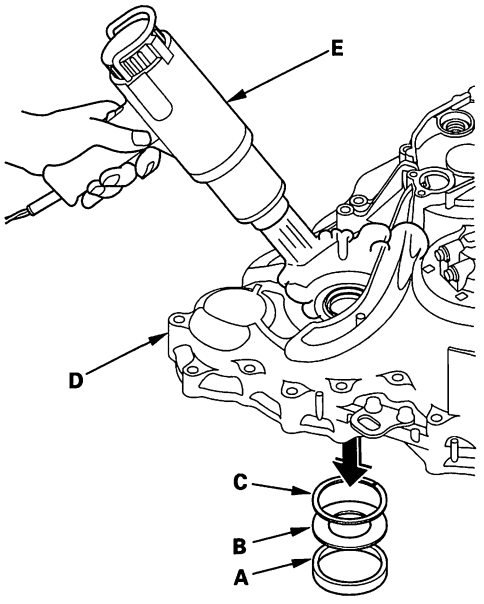
Carrier Bearing Preload Inspection

Special Tools Required
- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Preload inspection tool 070AJ-0020101

NOTE: If the transmission housing, torque converter housing, differential carrier, tapered roller bearing, bearing outer race, or thrust shim were replaced, the bearing preload must be adjusted.

1. Remove the bearing outer race (A), spacer (B), and 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).

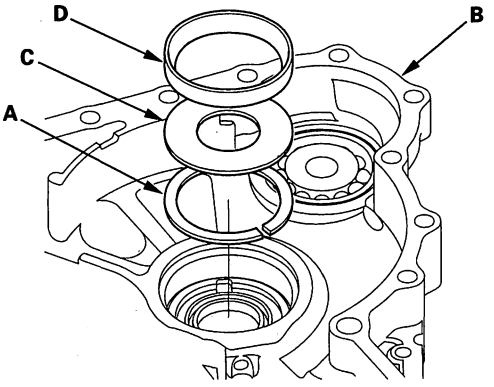
   NOTE: Let the transmission housing cool to room temperature before adjusting the bearing preload.



2. Replace the tapered roller bearing when the outer race is to be replaced.

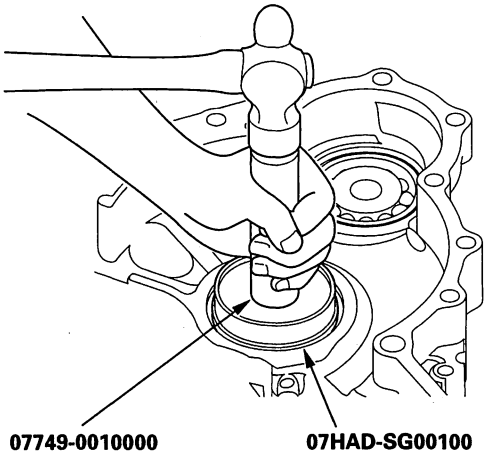
3. Do not use a shim on the torque converter housing side.

4. Install the 85 mm thrust shim (A) in the transmission housing (B). If you replace the 85 mm thrust shim with a new one, use the same thickness shim as the old one.



5. Install the spacer (C), and the bearing outer race (D) in the transmission housing.

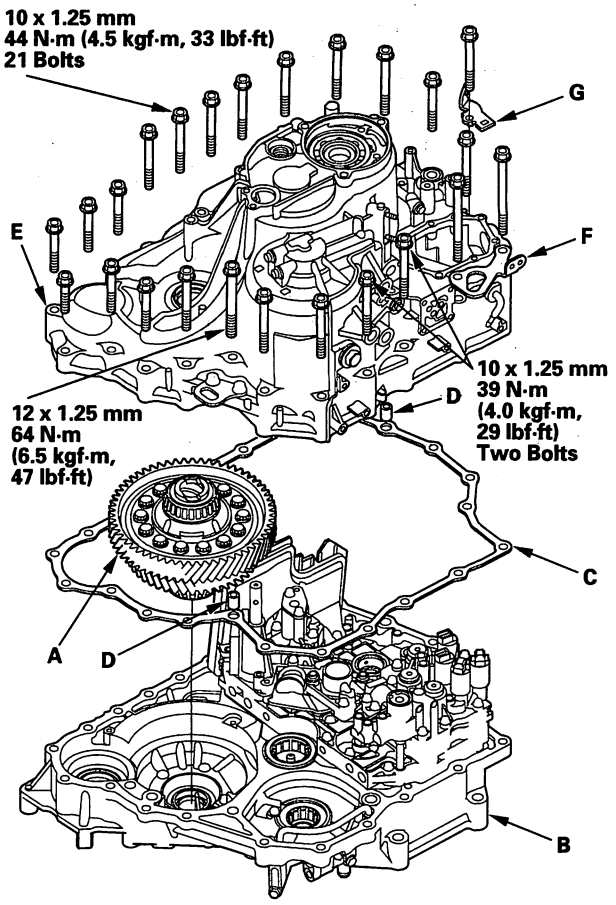
6. Drive the outer race securely in the housing using the driver and the attachment (83 mm) so there is no clearance between the outer race, spacer, shim, and housing.



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7. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and the two dowel pins (D) on the housing.

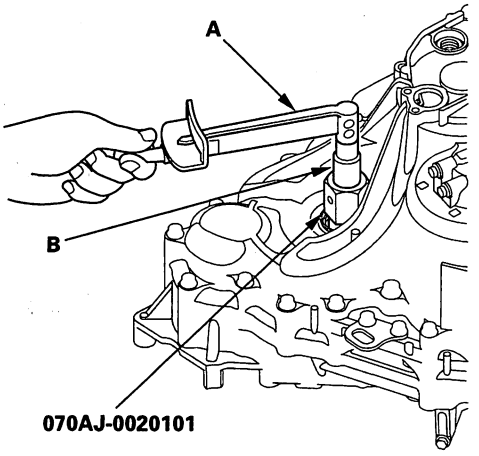


8. Install the transmission housing (E), and install the mounting bolts (24 bolts) with the transmission hangers (F) and the ground terminal bracket (G), then tighten the bolts.

9. Rotate the differential assembly in both directions to seat the bearings.

10. Measure the starting torque of the differential assembly with the preload inspection tool, a torque wrench (A), and a socket (B). Measure the starting torque at normal room temperature in both directions.

Standard
New bearings:
3.9—5.1 N·m (40—52 kgf·cm, 35—45 lbf·in.)
Reused bearings:
3.6—4.8 N·m (37—49 kgf·cm, 32—43 lbf·in.)



11. If the measurement is out of standard, remove the thrust shim and measure its thickness.

(cont'd)

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Carrier Bearing Preload Inspection (cont'd)

12. Select a new thrust shim. To increase the starting torque, increase thickness of the thrust shim. To decrease the starting torque, decrease the thickness of the thrust shim.
Changing the shim to the next size will increase or decrease the starting torque about 0.5—0.6 N·m (5—6 kgf·cm, 4—5 lbf·in.).

THRUST SHIM, 85 mm

No.	Part Number	Thickness
A	41440-RGR-000	1.350 mm (0.0531 in.)
B	41441-RGR-000	1.375 mm (0.0541 in.)
C	41442-RGR-000	1.400 mm (0.0551 in.)
D	41443-RGR-000	1.425 mm (0.0561 in.)
E	41444-RGR-000	1.450 mm (0.0571 in.)
F	41445-RGR-000	1.475 mm (0.0581 in.)
G	41446-RGR-000	1.500 mm (0.0591 in.)
H	41447-RGR-000	1.525 mm (0.0600 in.)
I	41448-RGR-000	1.550 mm (0.0610 in.)
J	41449-RGR-000	1.575 mm (0.0620 in.)
K	41450-RGR-000	1.600 mm (0.0630 in.)
L	41451-RGR-000	1.625 mm (0.0640 in.)
M	41452-RGR-000	1.650 mm (0.0650 in.)
N	41453-RGR-000	1.675 mm (0.0659 in.)
O	41454-RGR-000	1.700 mm (0.0669 in.)
P	41455-RGR-000	1.725 mm (0.0679 in.)
Q	41456-RGR-000	1.750 mm (0.0689 in.)
R	41457-RGR-000	1.775 mm (0.0699 in.)
S	41458-RGR-000	1.800 mm (0.0709 in.)
T	41459-RGR-000	1.825 mm (0.0719 in.)
U	41460-RGR-000	1.850 mm (0.0728 in.)
V	41461-RGR-000	1.875 mm (0.0738 in.)
W	41462-RGR-000	1.900 mm (0.0748 in.)
X	41463-RGR-000	1.925 mm (0.0758 in.)
Y	41464-RGR-000	1.950 mm (0.0768 in.)
Z	41465-RGR-000	1.975 mm (0.0778 in.)

THRUST SHIM, 85 mm (cont'd)

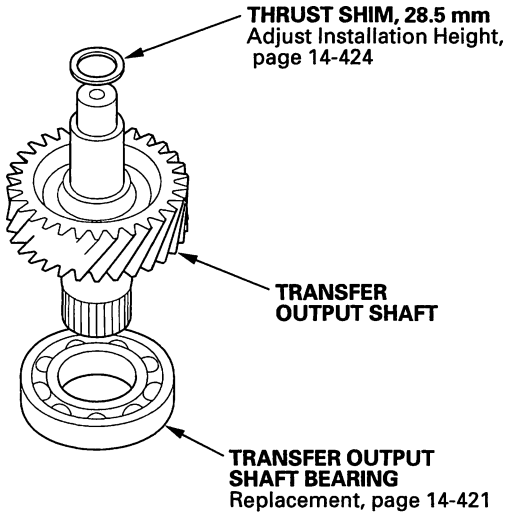
No.	Part Number	Thickness
AA	41466-RGR-000	2.000 mm (0.0787 in.)
AB	41467-RGR-000	2.025 mm (0.0797 in.)
AC	41468-RGR-000	2.050 mm (0.0807 in.)
AD	41469-RGR-000	2.075 mm (0.0817 in.)
AE	41470-RGR-000	2.100 mm (0.0827 in.)
AF	41471-RGR-000	2.125 mm (0.0837 in.)
AG	41472-RGR-000	2.150 mm (0.0846 in.)
AH	41473-RGR-000	2.175 mm (0.0856 in.)
AI	41474-RGR-000	2.200 mm (0.0866 in.)
AJ	41475-RGR-000	2.225 mm (0.0876 in.)
AK	41476-RGR-000	2.250 mm (0.0886 in.)
AL	41477-RGR-000	2.275 mm (0.0896 in.)
AM	41478-RGR-000	2.300 mm (0.0906 in.)
AN	41479-RGR-000	2.325 mm (0.0915 in.)
AO	41480-RGR-000	2.350 mm (0.0925 in.)

13. Install the new thrust shim, then recheck the starting torque.

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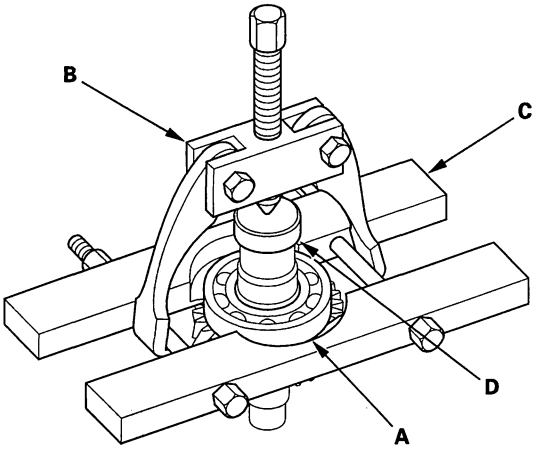
Component Location Index



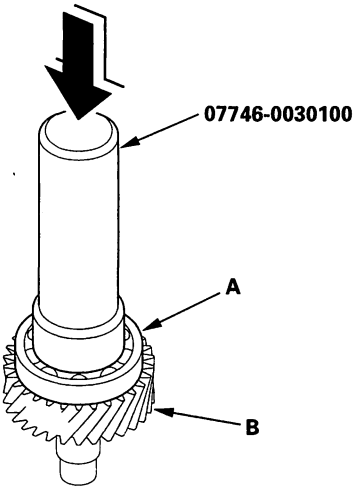
Transfer Output Shaft Bearing Replacement

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Remove the transfer output shaft bearing (A) with a commercially available puller (B), bearing separator (C), and shaft protector (D). Place a shaft protector between the transfer output shaft and the puller to prevent damaging the shaft.



2. Install the new bearing on the transfer output shaft with the using the driver (40 mm I.D.) and the press.

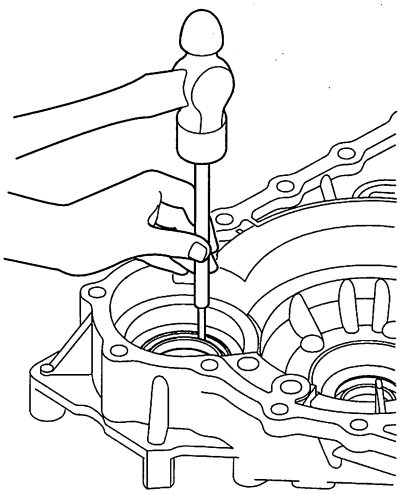


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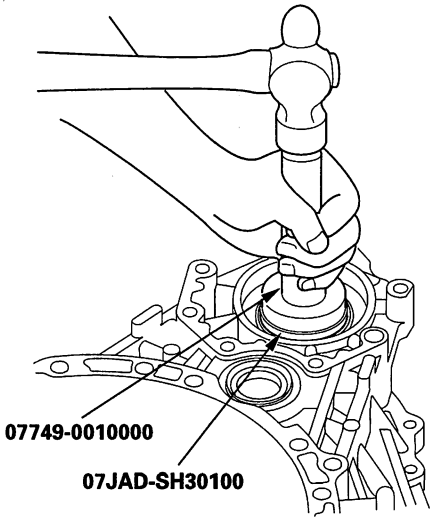
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 65 mm 07JAD-SH30100

1. Remove the oil seal from the torque converter housing.



2. Install the new oil seal flush to the torque converter housing using the driver and the attachment (65 mm).



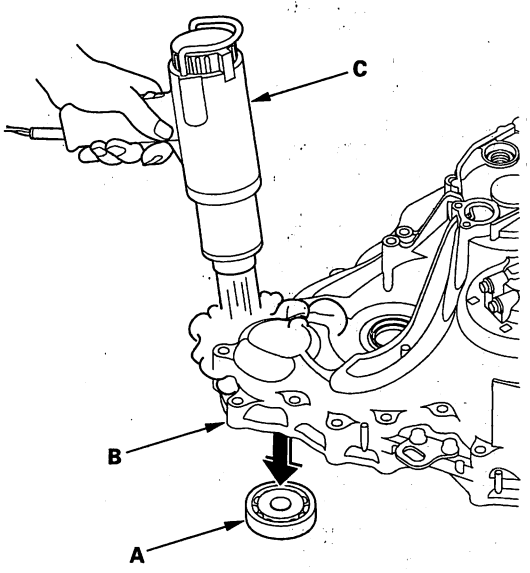
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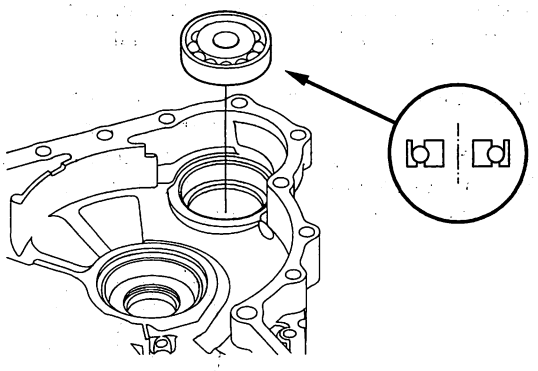
Transmission Housing Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600

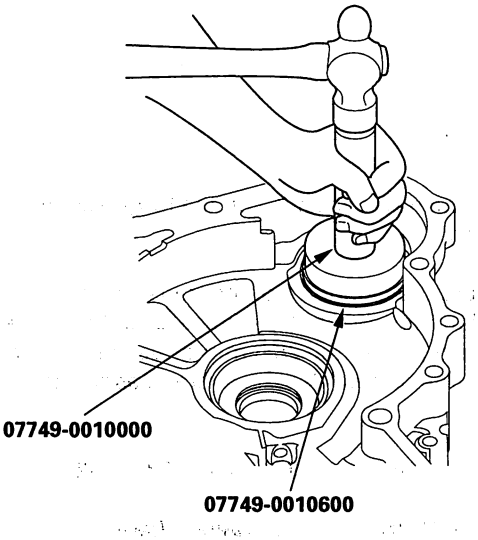
1. Remove the transfer output shaft bearing (A) from the transmission housing (B) by heating the housing to about 212 °F (100 °C) with a heat gun (C). Do not heat the housing more than 212 °F (100 °C).



2. Install the new bearing in the housing in the direction shown.



3. Drive the new bearing until it bottoms in the housing using the driver and the attachment (72 x 75 mm).

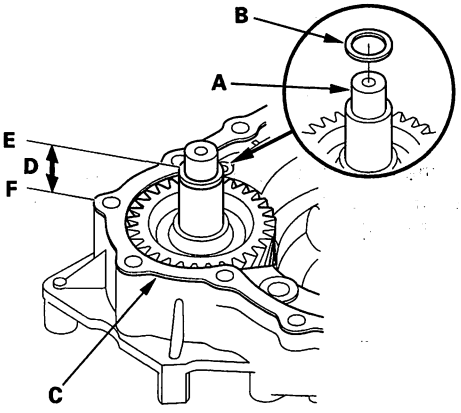


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Transfer Output Shaft Installation Height Inspection/Adjustment

NOTE: If the transfer output shaft, transfer output shaft bearing, transfer output shaft transmission housing bearing, transmission housing, or torque converter housing were replaced, adjust the transfer output shaft installation height with the 28.5 mm thrust shim.

1. Install the transfer output shaft (A) in the torque converter housing, and install the 28.5 mm thrust shim (B) on the top of the shaft. If you replace the 28.5 mm thrust shim with a new one, use the same thickness shim as the old one.

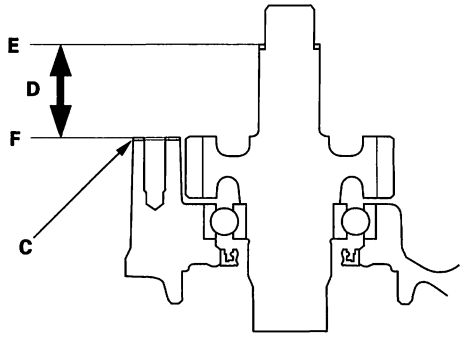


2. Install the new gasket (C) on the torque converter housing.

3. Measure the height (D) of the transfer output shaft installation between the surface (E) of the gasket and the top (F) of the 28.5 mm thrust shim in at least three places. Use the average as the actual height.

Standard: 46.31—46.35 mm (1.823—1.825 in.)

Transfer Output Shaft Cutaway View



4. If the measurement is out of standard, remove the 28.5 mm thrust shim and measure its thickness.

5. Select and install a new thrust shim, then recheck the installation height.

THRUST SHIM, 28.5 mm

No.	Part Number	Thickness
A	29031-RDK-000	1.82 mm (0.0717 in.)
B	29032-RDK-000	1.84 mm (0.0724 in.)
C	29033-RDK-000	1.86 mm (0.0732 in.)
D	29034-RDK-000	1.88 mm (0.0740 in.)
E	29035-RDK-000	1.90 mm (0.0748 in.)
F	29036-RDK-000	1.92 mm (0.0756 in.)
G	29037-RDK-000	1.94 mm (0.0764 in.)
H	29038-RDK-000	1.96 mm (0.0772 in.)
I	29039-RDK-000	1.98 mm (0.0780 in.)
J	29040-RDK-000	2.00 mm (0.0787 in.)
K	29041-RDK-000	2.02 mm (0.0795 in.)
L	29042-RDK-000	2.04 mm (0.0803 in.)
M	29043-RDK-000	2.06 mm (0.0811 in.)
N	29044-RDK-000	2.08 mm (0.0819 in.)
O	29045-RDK-000	2.10 mm (0.0827 in.)
P	29046-RDK-000	2.12 mm (0.0835 in.)
Q	29047-RDK-000	2.14 mm (0.0843 in.)
R	29048-RDK-000	2.16 mm (0.0850 in.)
S	29049-RDK-000	2.18 mm (0.0858 in.)
T	29050-RDK-000	2.20 mm (0.0866 in.)
U	29051-RDK-000	2.22 mm (0.0874 in.)
V	29052-RDK-000	2.24 mm (0.0882 in.)
W	29053-RDK-000	2.26 mm (0.0890 in.)
X	29054-RDK-000	2.28 mm (0.0898 in.)
Y	29055-RDK-000	2.30 mm (0.0906 in.)
Z	29056-RDK-000	2.32 mm (0.0913 in.)
AA	29057-RDK-000	2.34 mm (0.0921 in.)

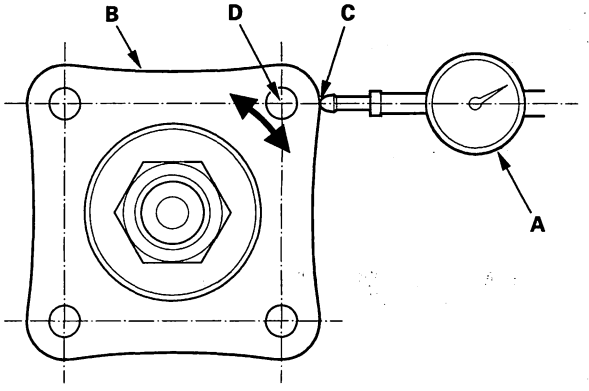
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Inspection

Transfer Gear Backlash Measurement

1. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).

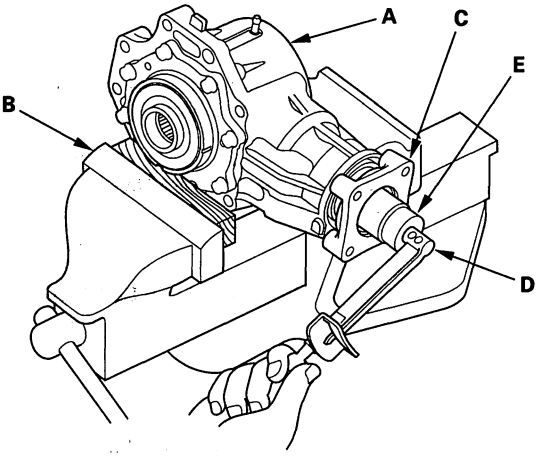


2. Measure the transfer gear backlash.

   Standard: 0.06—0.16 mm (0.02—0.06 in.)

Total Starting Torque Measurement

3. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



4. Rotate the companion flange several turns to seat the tapered roller bearings.

5. Measure the starting torque at the companion flange (C) with a torque wrench (D) and a socket (E).

   Standard: 2.64—4.23 N·m
   (26.9—43.1 kgf·cm, 23.3—37.4 lbf·in.)

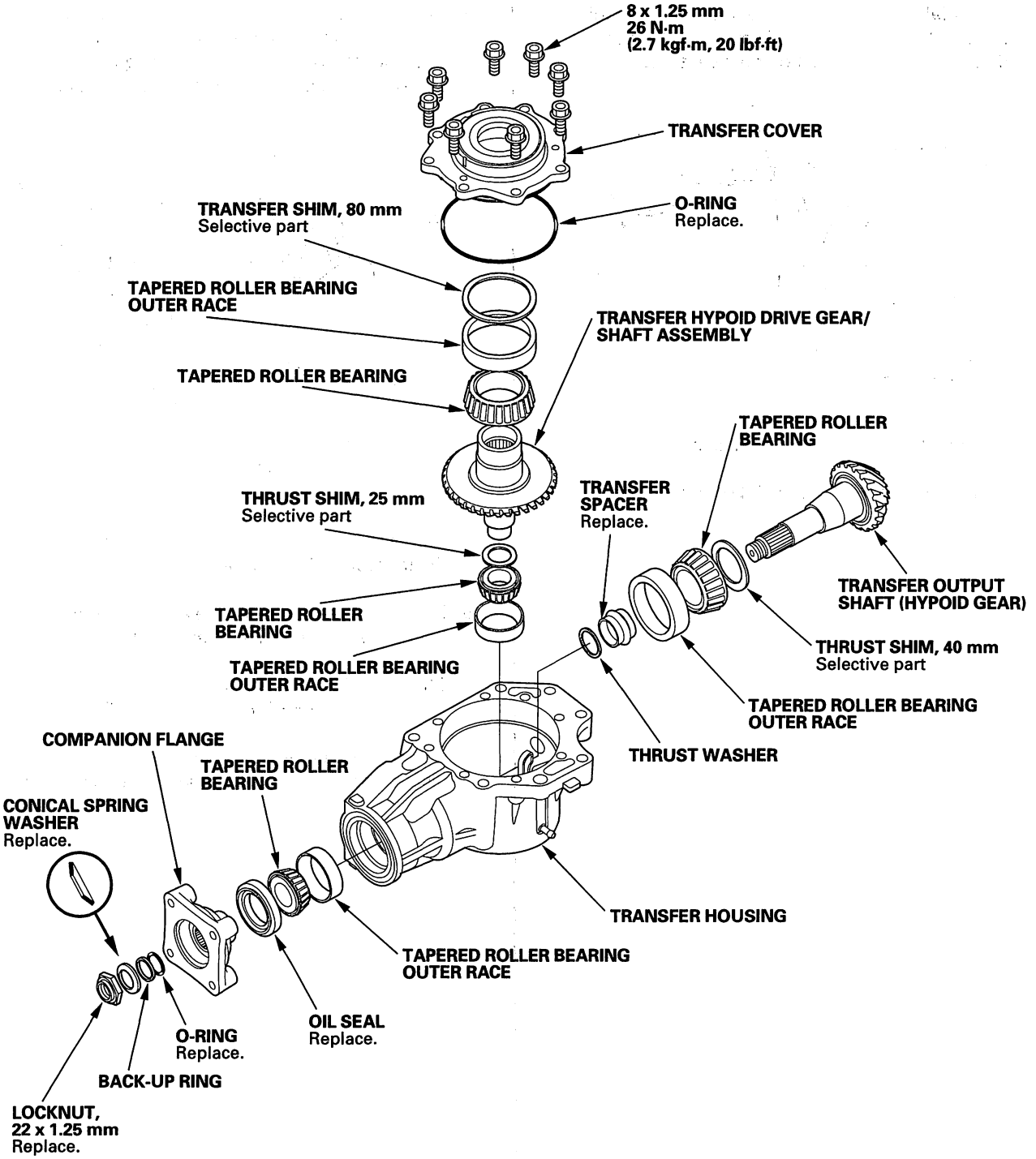
6. If the measurements are out of standard, disassemble the transfer assembly and repair it.

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Transfer Assembly

Disassembly

Exploded View



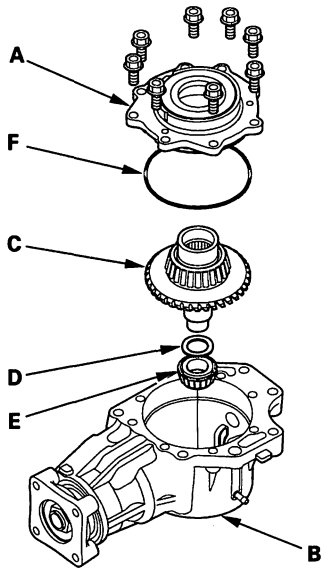
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Special Tools Required
Companion flange holder 07XAB-0010101

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the transfer cover (A) from the transfer housing (B).

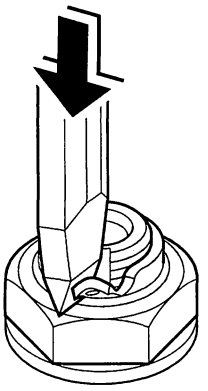


2. Remove the transfer hypoid drive gear/shaft assembly (C), 25 mm thrust shim (D), and tapered roller bearing (E).

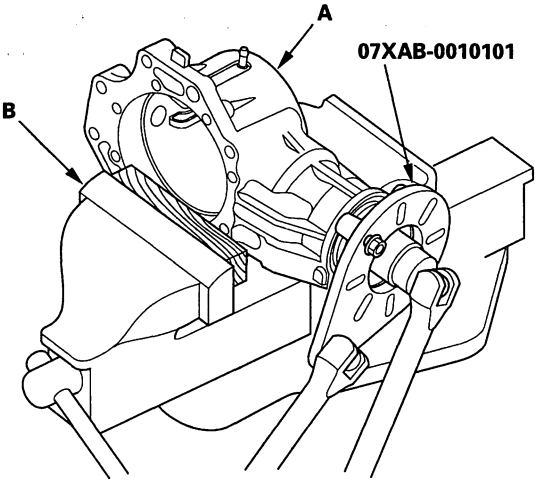
3. Remove the O-ring (F) from the cover.

4. Drain the transfer fluid (hypoid gear oil) from the transfer housing.

5. Cut the lock tab on the locknut using a chisel.



6. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



7. Install the companion flange holder on the companion flange, then loose the locknut.

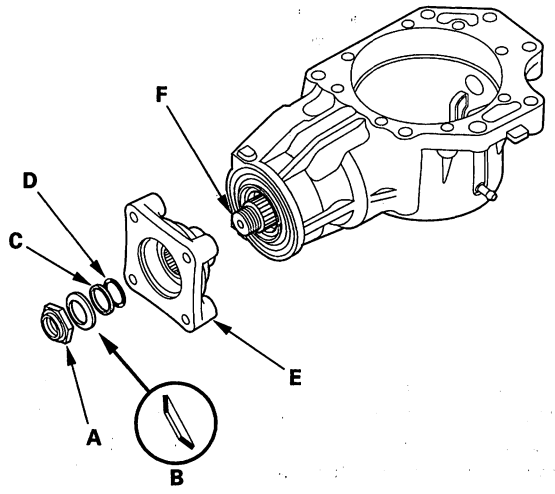
8. Remove the companion flange holder.

(cont'd)

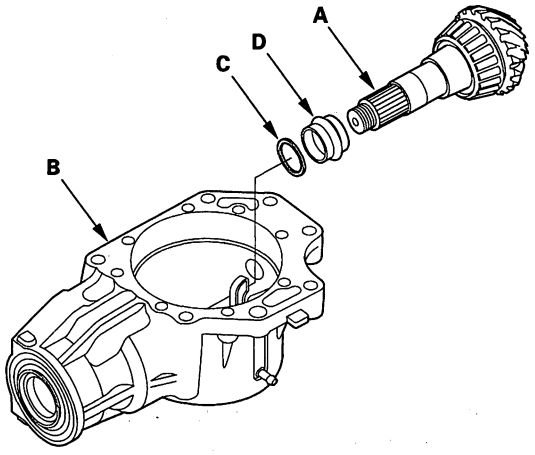
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Disassembly (cont'd)

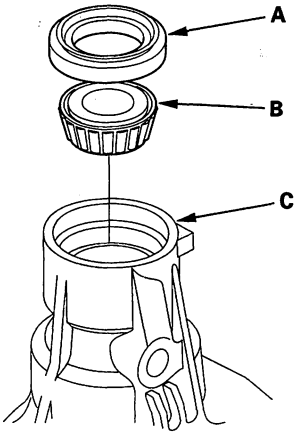
9. Remove the locknut (A), conical spring washer (B), back-up ring (C), O-ring (D), and companion flange (E) from the transfer output shaft (hypoid gear) (F).



10. Remove the transfer output shaft (hypoid gear) (A) from the transfer housing (B), then remove the thrust washer (C) and transfer spacer (D) from the transfer output shaft (hypoid gear).



11. Remove the oil seal (A) and tapered roller bearing (B) from the transfer housing (C).



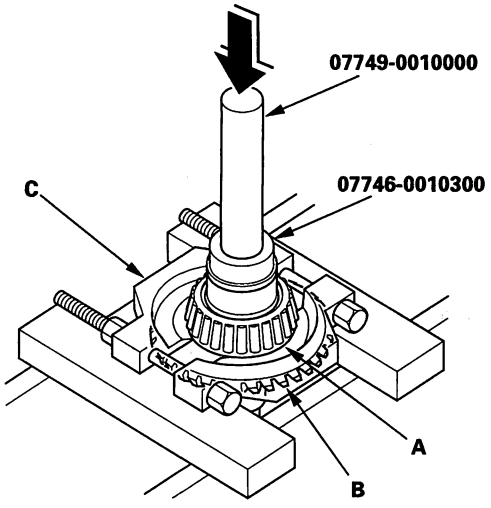
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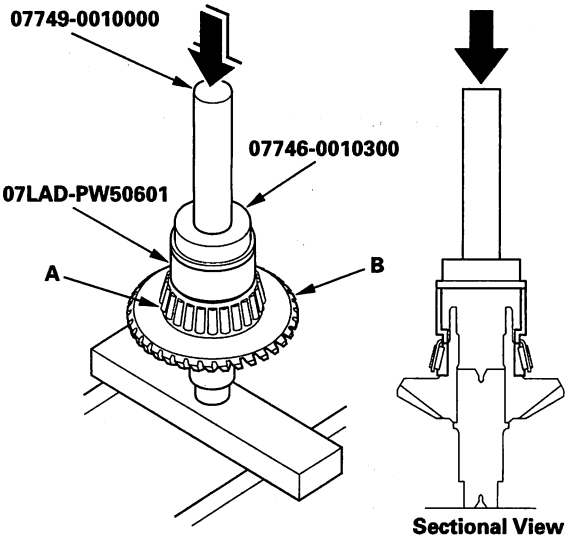
Transfer Hypoid Drive Gear Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300
- Attachment, 40 x 50 mm 07LAD-PW50601

1. Remove the tapered roller bearing (A) from the transfer hypoid drive gear (B) using the driver, the attachment (42 x 47 mm), bearing separator (C) and the press.



2. Install the new tapered roller bearing (A) on the transfer hypoid drive gear (B) using the driver, the attachment (42 x 47 mm), the attachment (40 x 50 mm), and the press.

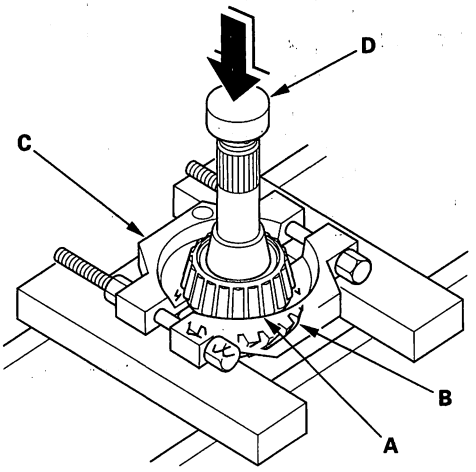


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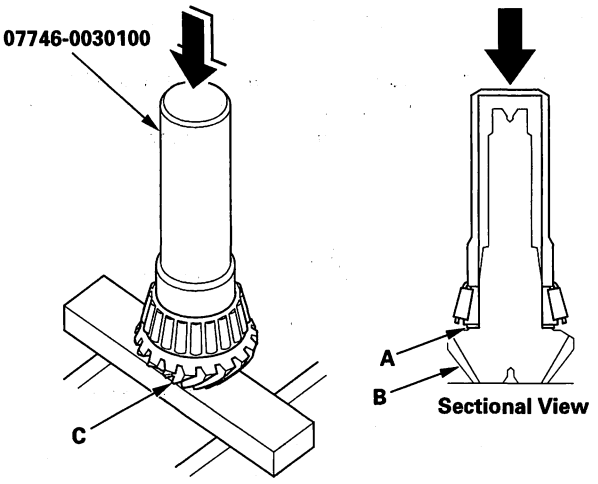
Transfer Output Shaft (Hypoid Gear) Bearing Removal/Installation

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Remove the tapered roller bearing (A) from the transfer output shaft (hypoid gear) (B) with a bearing separator (C) and the press. Place a shaft protector (D) between the transfer output shaft (hypoid gear) and the press to prevent damaging the transfer output shaft (hypoid gear).



2. Install the 40 mm thrust shim (A) over the transfer output shaft (hypoid gear) (B).



3. Install the tapered roller bearing (C) over the transfer output shaft (hypoid gear) using the driver (40 mm I. D.) and the press.

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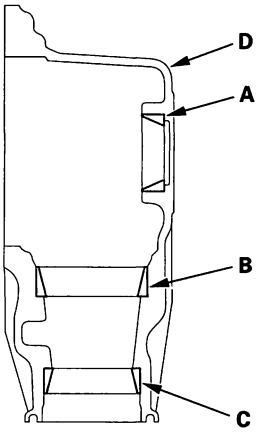
Transfer Housing Tapered Roller Bearing Outer Race Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400
- Attachment, 65 mm 07JAD-SH30100
- Tapered bearing race installer A 07MAF-SP0011A
- Installer shaft 07MAF-SP0013A

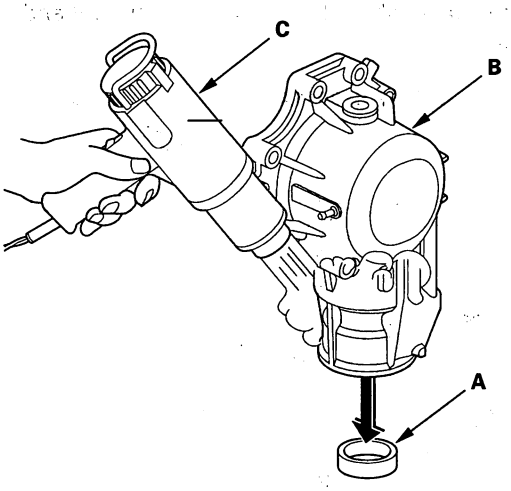
NOTE: Replace the bearing with a new one whenever the outer race is replaced.

1. Remove the 52 mm bearing outer race (A), 75 mm outer race (B), and 65 mm outer race (C) from the transfer housing (D).

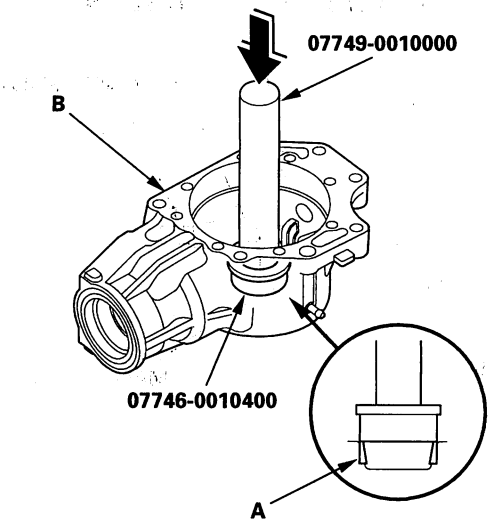
   NOTE: Some bearing outer races (52 mm, 65 mm, and 75 mm) are press-fitted in the housing and must be removed by heating the housing.



2. Remove the press-fitted bearing outer race (A) from the transfer housing (B) by heating the housing to about 212 °F (100 °C) with a heat gun (C). Do not heat the housing more than 212 °F (100 °C).



3. Install the 52 mm bearing outer race (A) until it bottoms in the transfer housing (B) using the driver and the attachment (52 x 55 mm).

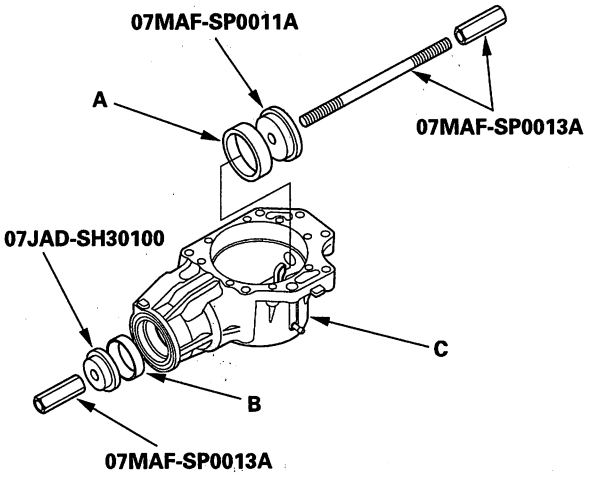


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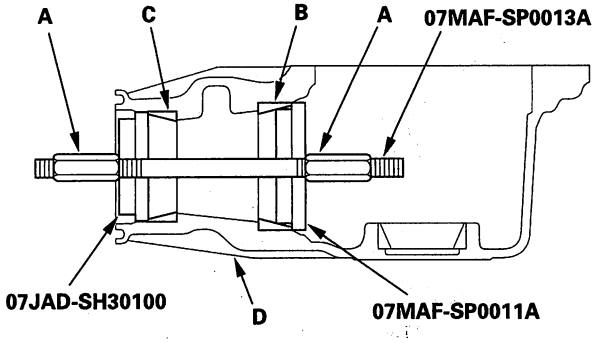
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Transfer Housing Tapered Roller Bearing Outer Race Replacement (cont'd)

4. Install the 75 mm bearing outer race (A) and 65 mm bearing outer race (B) in the transfer housing (C), set the attachment (65 mm) and the tapered bearing race installer A over the races, and install the installer shaft through the attachment and installer.



5. Tighten the installer shaft nut (A) to install the races (B) (C) into the transfer housing (D) securely.



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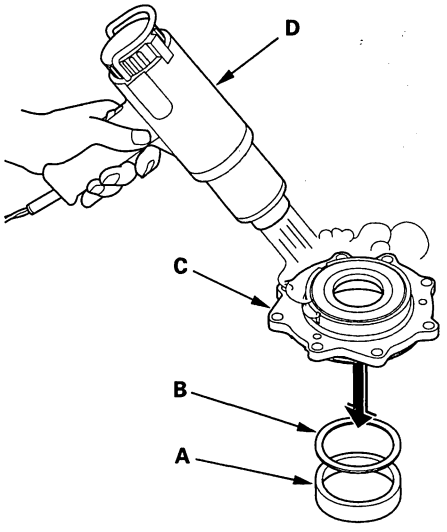
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Transfer Cover Tapered Roller Bearing Outer Race Removal/Installation

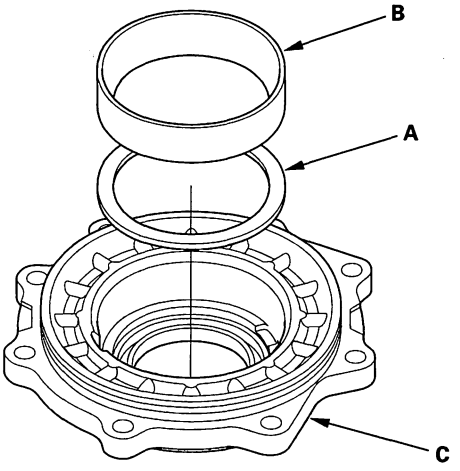
Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

NOTE: Replace the bearing with a new one whenever the outer race is replaced.

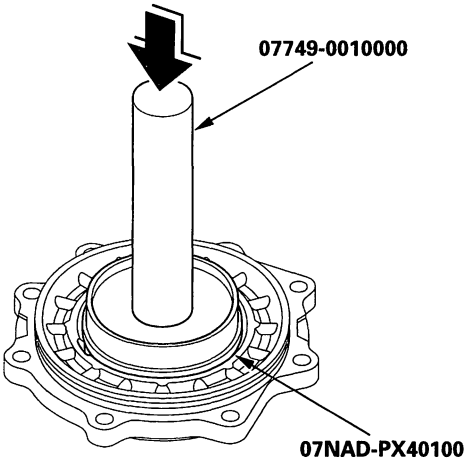
1. Remove the bearing outer race (A) and 80 mm thrust shim (B) from the transfer cover (C). If the bearing outer race is press-fitted, remove the outer race by heating the cover to about 212 °F (100 °C) with a heat gun (D). Do not heat the housing more than 212 °F (100 °C).



2. Install the 80 mm thrust shim (A) and bearing outer race (B) in the transfer cover (C).



3. Drive the outer race securely in the cover using the driver and the attachment (78 x 80 mm) so there is no clearance between the outer race, thrust shim, and cover.

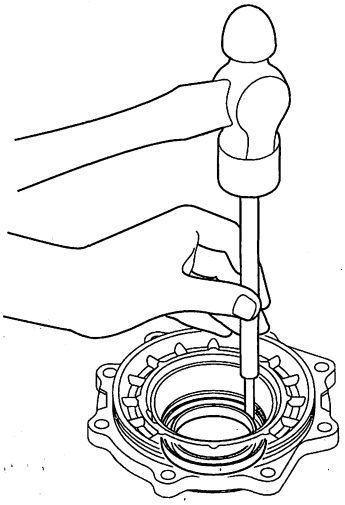


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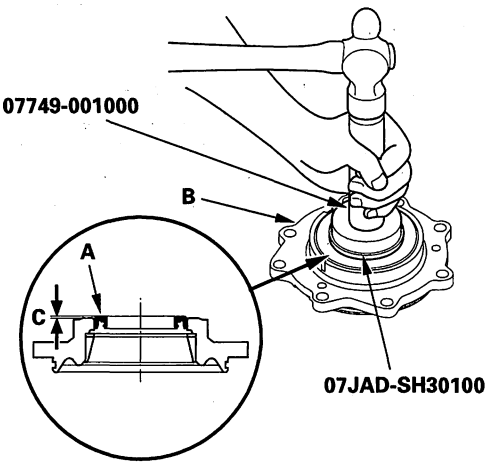
Transfer Cover Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 65 mm 07JAD-SH30100

1. Remove the oil seal from the transfer cover.



2. Install the new oil seal (A) in the transfer cover (B) in height (C) of 0—1 mm (0—0.04 in.) above the cover surface using the driver and attachment (65 mm).



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Reassembly

Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Driver 07749-0010000
- Attachment, 65 mm 07JAD-SH30100
- Companion flange holder 07XAB-0010101
- Attachment, 78 x 80 mm 07NAD-PX40100

NOTE:
- While reassembling the transfer assembly:
  - Check and adjust the transfer gear tooth contact.
  - Measure and adjust the transfer gear backlash.
  - Check and adjust the tapered roller bearing starting torque.
- Coat all parts with transfer fluid (hypoid gear oil) during reassembly.
- Replace the tapered roller bearing and the bearing outer race as a set if either part is replaced.
- Replace the transfer hypoid drive gear and the transfer output shaft (hypoid gear) as a set if either part is replaced.

1. Select the 40 mm thrust shim if the transfer output shaft (hypoid gear) is replaced. Calculate the thickness of the 40 mm thrust shim using the formula below, and select the shim from the following table.

   FORMULA: A/100−B/100+C = X

   A: Number on the existing transfer output shaft (hypoid gear)

   B: Number on the replacement transfer output shaft (hypoid gear)

   C: Thickness of the existing 40 mm thrust shim

   X: Thickness needed for the replacement 40 mm thrust shim

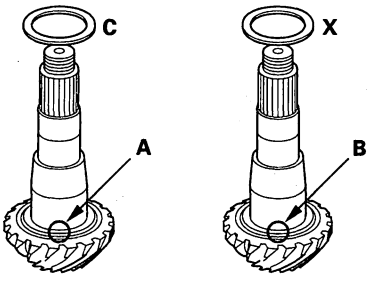
   NOTE: The number on the transfer output shaft (hypoid gear) is shown in 1/100 mm.

EXAMPLE

A: Existing transfer output shaft (hypoid gear) Number = +2
B: Replacement transfer output shaft (hypoid gear) Number = −1
C: Existing 40 mm thrust shim thickness = 1.05 mm
X: Replacement 40 mm thrust shim thickness

X = A/100−B/100+C
= 2/100−(−1)/100+1.05
= 0.02+0.01+1.05 = 1.08 (mm)

Select No. M 40 mm thrust shim of 1.08 mm (0.043 in.)



THRUST SHIM, 40 mm

Shim No.	Part Number	Thickness
A	29361-RDK-000	0.72 mm (0.028 in.)
B	29362-RDK-000	0.75 mm (0.030 in.)
C	29363-RDK-000	0.78 mm (0.031 in.)
D	29364-RDK-000	0.81 mm (0.032 in.)
E	29365-RDK-000	0.84 mm (0.033 in.)
F	29366-RDK-000	0.87 mm (0.034 in.)
G	29367-RDK-000	0.90 mm (0.035 in.)
H	29368-RDK-000	0.93 mm (0.037 in.)
I	29369-RDK-000	0.96 mm (0.038 in.)
J	29370-RDK-000	0.99 mm (0.039 in.)
K	29371-RDK-000	1.02 mm (0.040 in.)
L	29372-RDK-000	1.05 mm (0.041 in.)
M	29373-RDK-000	1.08 mm (0.043 in.)
N	29374-RDK-000	1.11 mm (0.044 in.)
O	29375-RDK-000	1.14 mm (0.045 in.)

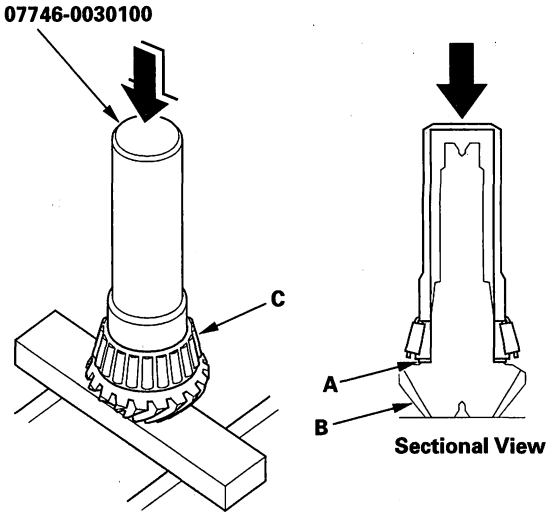
2. Select the 40 mm thrust shim if the tapered roller bearing on the transfer output shaft (hypoid gear) is replaced. Measure the thickness of the replacement bearing and the existing bearing, and calculate the difference of the bearing thickness. Adjust the thickness of the existing 40 mm thrust shim by the amount of difference in bearing thickness, and select the replacement 40 mm thrust shim.

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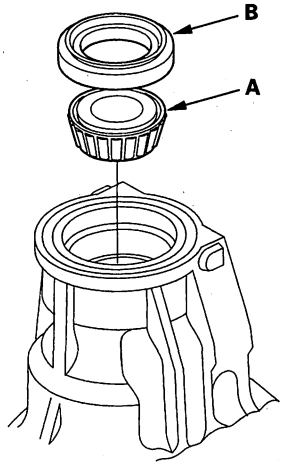
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Reassembly (cont'd)

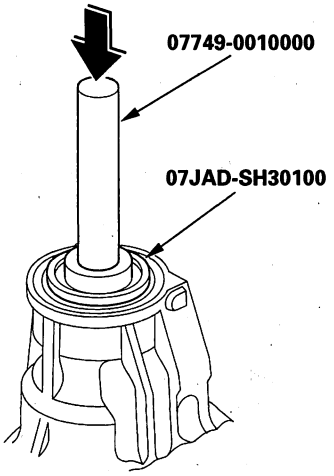
3. Install the 40 mm thrust shim (A) on the transfer output shaft (hypoid gear) (B), then install the tapered roller bearing (C) using the driver (40 mm I.D.) and the press.



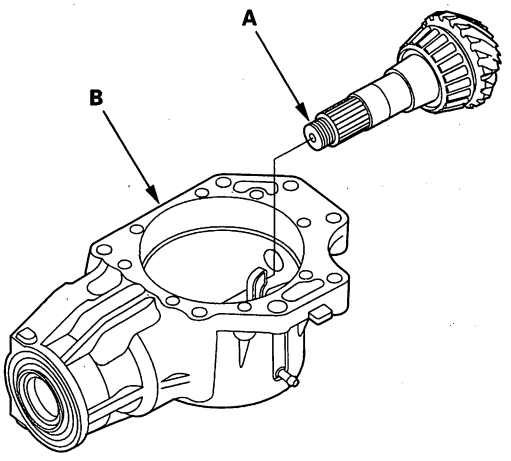
4. Place the tapered roller bearing (A) on the bearing outer race of the companion flange side of the transfer housing, and install the new oil seal (B).



5. Drive the oil seal securely in the transfer housing using the driver and the attachment (65 mm).



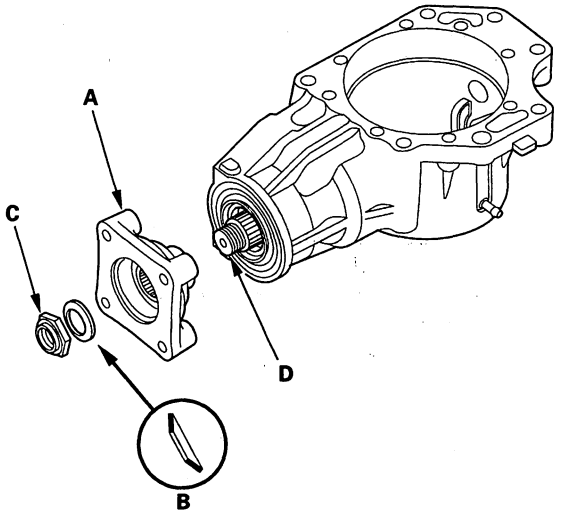
6. Install the transfer output shaft (hypoid gear) (A) in the transfer housing (B). Do not install the transfer spacer and thrust washer on the transfer output shaft (hypoid gear).



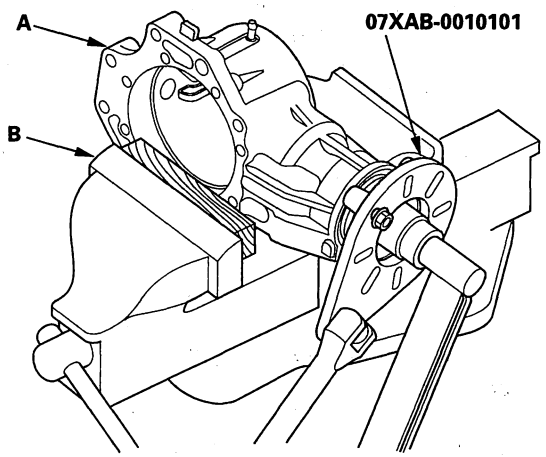
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7. Install the companion flange (A), conical spring washer (B) in the direction shown, and locknut (C) on the transfer output shaft (hypoid gear) (D). Do not install the O-ring and back-up ring.



8. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



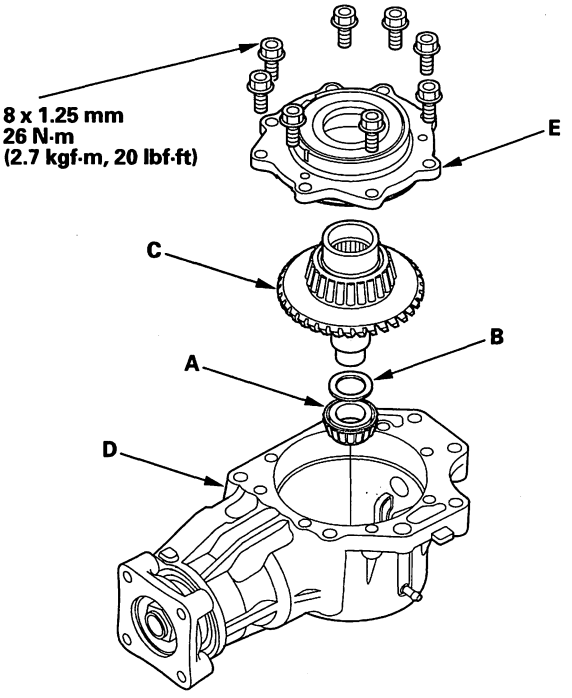
9. Install the companion flange holder on the companion flange.

10. Tighten the locknut while measuring the starting torque of the transfer output shaft (hypoid gear) so the starting torque is within 1.15—1.71 N·m (11.7—17.4 kgf·cm, 10.2—15.1 lbf·in.). Do not stake the locknut in this step.

11. Remove the companion flange holder.

12. Apply Prussian Blue to both sides of the transfer hypoid drive gear teeth lightly and evenly.

13. Install the tapered roller bearing (A), 25 mm thrust shim (B), and transfer drive gear/shaft assembly (C) in the transfer housing (D).



14. Install the transfer cover (E) and secure the cover with the bolts. Do not install the O-ring on the transfer cover.

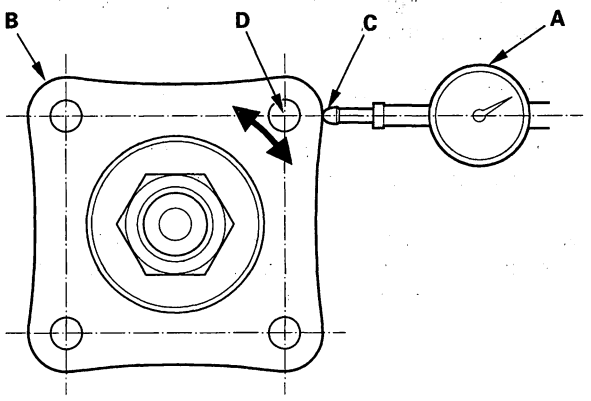
15. Rotate the companion flange in both directions until the transfer gears rotate one full turn in both directions.

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Reassembly (cont'd)

16. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).

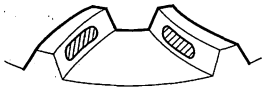


17. Measure the transfer gear backlash.

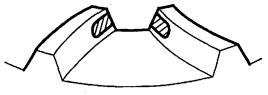
    Standard: 0.06—0.16 mm (0.02—0.06 in.)

18. Remove the transfer cover, transfer hypoid drive gear/shaft assembly, and check the transfer hypoid drive gear tooth contact pattern.

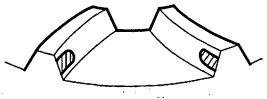
CORRECT TOOTH CONTACT PATTERN



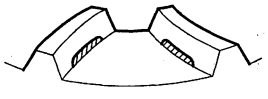
INCORRECT TOOTH CONTACT PATTERN



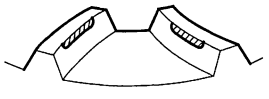
TOE CONTACT



HEEL CONTACT



FLANK CONTACT



FACE CONTACT

19. If the backlash measurement is out of standard, adjust the backlash with the 40 mm thrust shim and recheck. Do not use more than two 40 mm thrust shims to adjust the backlash.

20. If the transfer gear tooth contact is incorrect, adjust the tooth contact with the 25 mm, 40 mm, or 80 mm thrust shim. Do not use more than two of each thrust shim to adjust the tooth contact.

- Toe Contact
  Use a thicker 40 mm thrust shim to move the transfer output shaft (hypoid gear) away from the transfer hypoid drive gear. Because this movement causes the transfer gear backlash to change, move the transfer hypoid drive gear toward the transfer output shaft (hypoid gear) to adjust the transfer gear backlash as follows:
  – Reduce the thickness of the 25 mm thrust shim.
  – Increase the thickness of the 80 mm thrust shim by the amount you reduced the thickness of the 25 mm thrust shim.

- Heel Contact
  Use a thicker 40 mm thrust shim to move the transfer output shaft (hypoid gear) toward the transfer hypoid drive gear. Because this movement causes the transfer gear backlash to change, move the transfer hypoid drive gear away from the transfer output shaft (hypoid gear) to adjust the transfer gear backlash as follows:
  – Increase the thickness of the 25 mm thrust shim.
  – Reduce the thickness of the 80 mm thrust shim by the amount you increased the thickness of the 25 mm thrust shim.

- Flank Contact
  Use a thicker 25 mm thrust shim to move the transfer hypoid drive gear away from the transfer output shaft (hypoid gear). Flank contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Heel Contact.

- Face Contact
  Use a thinner 25 mm thrust shim to move the transfer hypoid drive gear toward the transfer output shaft (hypoid gear). Face contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Toe Contact.

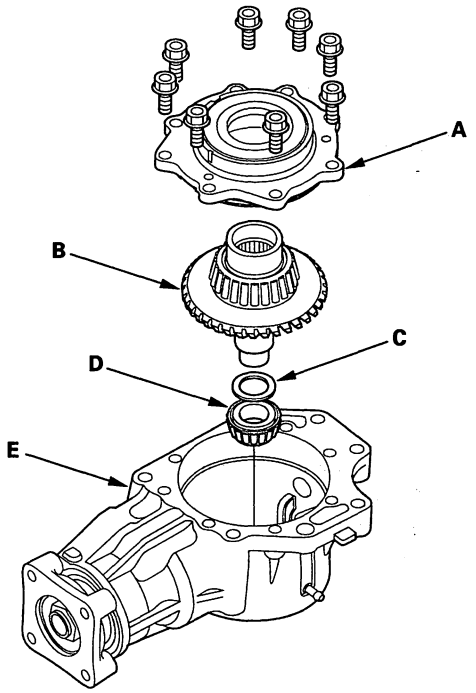
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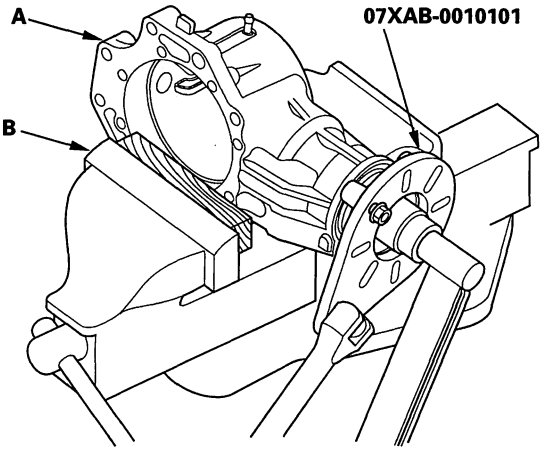
THRUST SHIM, 25 mm

Shim No.	Part Number	Thickness
1.70	29411-P1C-000	1.70 mm (0.067 in.)
1.73	29412-P1C-000	1.73 mm (0.068 in.)
1.76	29413-P1C-000	1.76 mm (0.069 in.)
1.79	29414-P1C-000	1.79 mm (0.070 in.)
1.82	29415-P1C-000	1.82 mm (0.072 in.)
1.85	29416-P1C-000	1.85 mm (0.073 in.)
1.88	29417-P1C-000	1.88 mm (0.074 in.)
1.91	29418-P1C-000	1.91 mm (0.075 in.)
1.94	29419-P1C-000	1.94 mm (0.076 in.)
1.97	29420-P1C-000	1.97 mm (0.078 in.)
2.00	29421-P1C-000	2.00 mm (0.079 in.)
2.03	29422-P1C-000	2.03 mm (0.080 in.)
2.06	29423-P1C-000	2.06 mm (0.081 in.)
2.09	29424-P1C-000	2.09 mm (0.082 in.)
2.12	29425-P1C-000	2.12 mm (0.083 in.)
2.15	29426-P1C-000	2.15 mm (0.085 in.)
2.18	29427-P1C-000	2.18 mm (0.086 in.)
2.21	29428-P1C-000	2.21 mm (0.087 in.)
2.24	29429-P1C-000	2.24 mm (0.088 in.)

21. Remove the transfer cover (A), transfer hypoid drive gear/shaft assembly (B), 25 mm thrust shim (C), and tapered roller bearing (D) from the transfer housing (E) after adjusting the transfer gear backlash or transfer gear tooth contact.



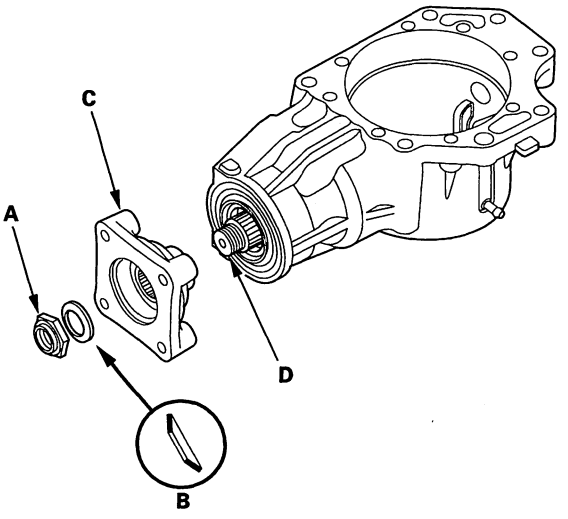
22. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



23. Install the companion flange holder on the companion flange, then loose the locknut.

24. Remove the companion flange holder.

25. Remove the locknut (A), conical spring washer (B), and companion flange (C) from the transfer output shaft (hypoid gear) (D).



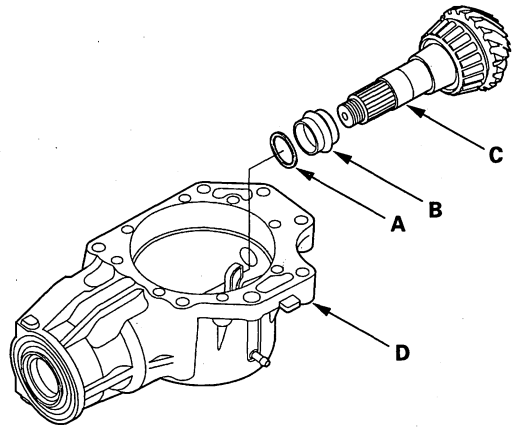
26. Remove the transfer output shaft (hypoid gear) from the transfer housing.

(cont'd)

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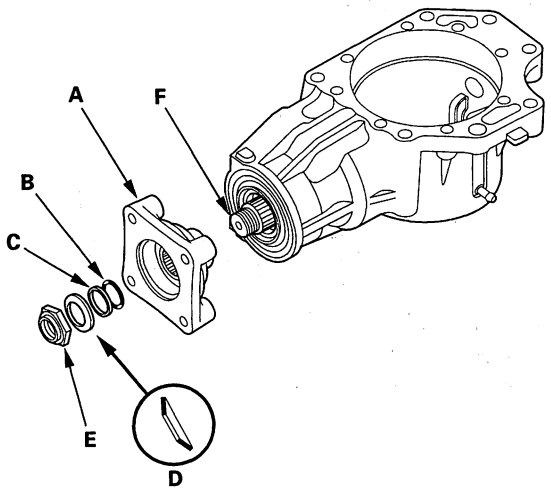
Reassembly (cont'd)

27. Install the thrust washer (A) and the new transfer spacer (B) on the transfer output shaft (hypoid gear) (C) in the direction shown, and install them in the transfer housing (D).

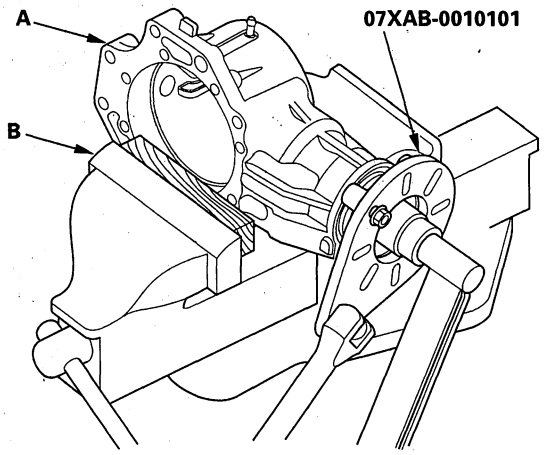


28. Coat the threads of the locknut and transfer output shaft (hypoid gear) with transfer fluid (hypoid gear oil).

29. Install the companion flange (A), new O-ring (B), back-up ring (C), new conical spring washer (D), and new locknut (E) on the transfer output shaft (hypoid gear) (F). Install the conical spring washer in the direction shown.



30. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



31. Install the companion flange holder on the companion flange.

32. Tighten the locknut while measuring the starting torque of the transfer output shaft (hypoid gear) so the starting torque is within 1.15—1.71 N·m (11.7—17.4 kgf·cm, 10.2—15.1 lbf·in.).

Tightening Torque:
108—294 N·m
(11.0—30.0 kgf·m, 79.6—217 lbf·ft)
Starting Torque:
1.15—1.71 N·m
(11.7—17.4 kgf·cm, 10.2—15.1 lbf·in.)

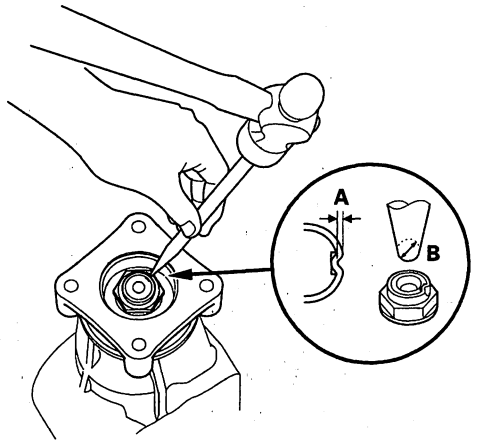
NOTE:
- Rotate the companion flange several turns to seat the tapered roller bearings, then measure the starting torque.
- If the starting torque exceeds 1.71 N·m (17.4 kgf·cm, 15.1 lbf·in), replace the transfer spacer and reassemble the parts. Do not adjust the torque with the locknut loose.
- If the tightening torque exceeds 294 N·m (30.0 kgf·m, 217 lbf·ft), replace the transfer spacer and reassemble the parts.

33. Remove the companion flange holder.

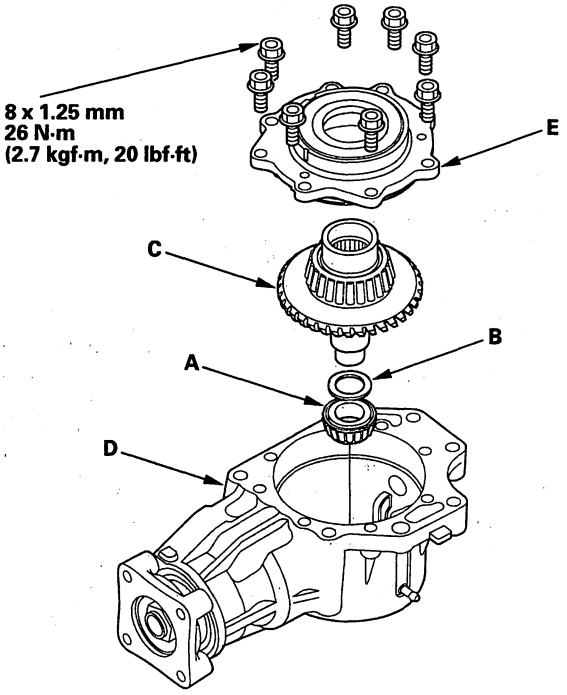
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BACK

34. Stake the locknut into the transfer output shaft (hypoid gear) in depth (A) of 0.7—1.2 mm (0.03—0.05 in.) using a 3.5 mm punch (B).

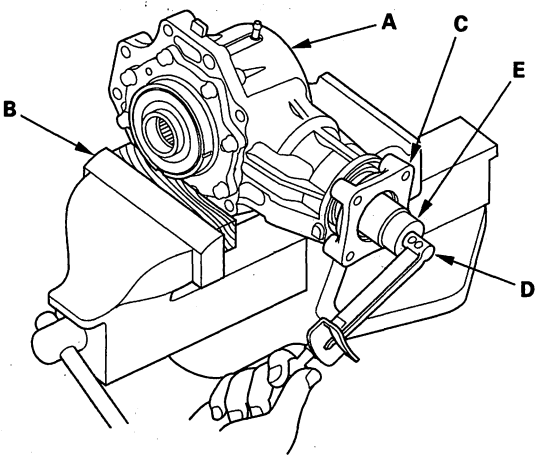


35. Install the tapered roller bearing (A), 25 mm thrust shim (B), and transfer hypoid drive gear/shaft assembly (C) in the transfer housing (D).



36. Temporarily install the transfer cover (E) without the O-ring, and secure the cover with the bolts.

37. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



38. Rotate the companion flange several turns to seat the tapered roller bearings.

39. Measure the starting torque at the companion flange (C) with a torque wrench (D) and a socket (E).

Standard: 2.64—4.23 N·m
(26.9—43.1 kgf·cm, 23.3—37.4 lbf·in.)

40. Remove the transfer cover from the transfer housing.

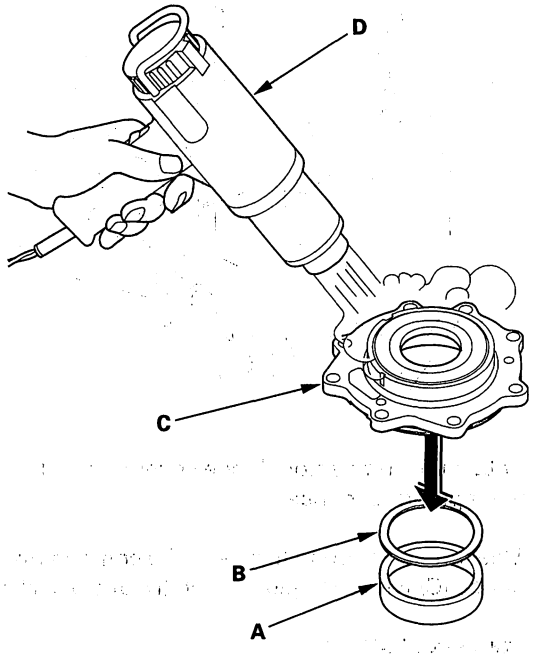
41. If the measurement is within the standard, go to step 47.

(cont'd)

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Reassembly (cont'd)

42. If the measurement is out of standard, remove the bearing outer race (A) and 80 mm thrust shim (B) from the transfer cover (C). If the bearing outer race is press-fitted, remove the outer race by heating the cover to about 212 °F (100 °C) with a heat gun (D). Do not heat the housing more than 212 °F (100 °C).



43. Measure the thickness of the 75 mm thrust shim, and select the new 75 mm thrust shim.

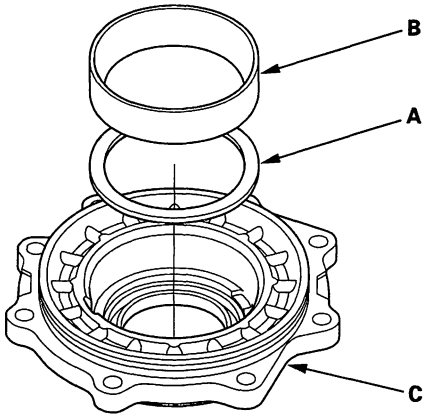
THRUST SHIM, 80 mm

Shim No.	Part Number	Thickness
A	41401-RDK-000	1.52 mm (0.060 in.)
B	41402-RDK-000	1.55 mm (0.061 in.)
C	41403-RDK-000	1.58 mm (0.062 in.)
D	41404-RDK-000	1.61 mm (0.063 in.)
E	41405-RDK-000	1.64 mm (0.065 in.)
F	41406-RDK-000	1.67 mm (0.066 in.)
G	41407-RDK-000	1.70 mm (0.067 in.)
H	41408-RDK-000	1.73 mm (0.068 in.)
I	41409-RDK-000	1.76 mm (0.069 in.)
J	41410-RDK-000	1.79 mm (0.070 in.)
K	41411-RDK-000	1.82 mm (0.072 in.)
L	41412-RDK-000	1.85 mm (0.073 in.)
M	41413-RDK-000	1.88 mm (0.074 in.)
N	41414-RDK-000	1.91 mm (0.075 in.)
O	41415-RDK-000	1.94 mm (0.076 in.)
P	41416-RDK-000	1.97 mm (0.078 in.)
Q	41417-RDK-000	2.00 mm (0.079 in.)
R	41418-RDK-000	2.03 mm (0.080 in.)
S	41419-RDK-000	2.06 mm (0.081 in.)
T	41420-RDK-000	2.09 mm (0.082 in.)
U	41421-RDK-000	2.12 mm (0.083 in.)
V	41422-RDK-000	2.15 mm (0.085 in.)
W	41423-RDK-000	2.18 mm (0.086 in.)
X	41424-RDK-000	2.21 mm (0.087 in.)
Y	41425-RDK-000	2.24 mm (0.088 in.)
Z	41426-RDK-000	2.27 mm (0.089 in.)
AA	41427-RDK-000	2.30 mm (0.091 in.)
AB	41428-RDK-000	2.33 mm (0.092 in.)
AC	41429-RDK-000	2.36 mm (0.093 in.)
AD	41430-RDK-000	2.39 mm (0.094 in.)
AE	41431-RDK-000	2.42 mm (0.095 in.)
AF	41432-RDK-000	2.45 mm (0.096 in.)
AG	41433-RDK-000	2.48 mm (0.098 in.)
AH	41434-RDK-000	2.51 mm (0.099 in.)
AI	41435-RDK-000	2.54 mm (0.100 in.)
AJ	41436-RDK-000	2.57 mm (0.101 in.)
AK	41437-RDK-000	2.60 mm (0.102 in.)
AL	41438-RDK-000	2.63 mm (0.104 in.)
AM	41439-RDK-000	2.66 mm (0.105 in.)

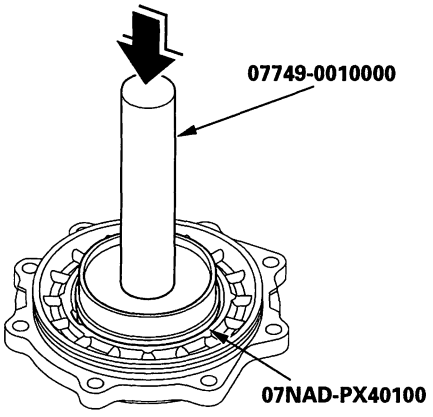
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44. Install the 80 mm thrust shim (A) and bearing outer race (B) in the transfer cover (C). If you heated the cover, let it cool to room temperature before installing the thrust shim.

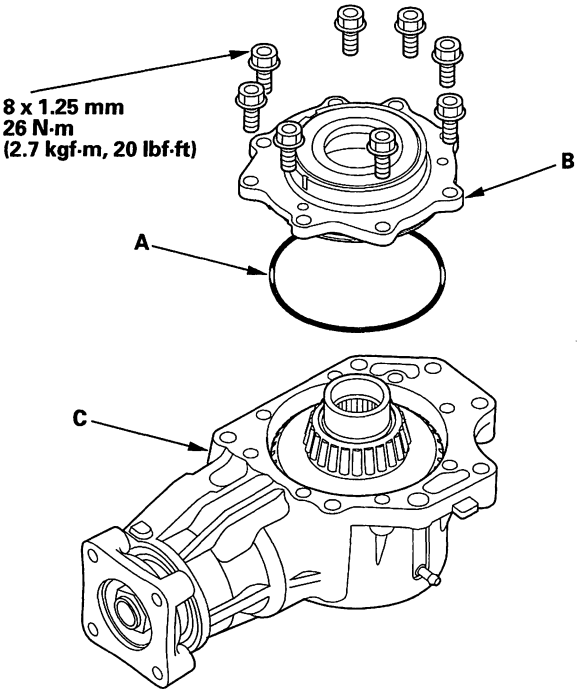


45. Drive the outer race securely in the cover using the driver and the attachment (78 x 80 mm) so there is no clearance between the outer race, thrust shim, and cover.



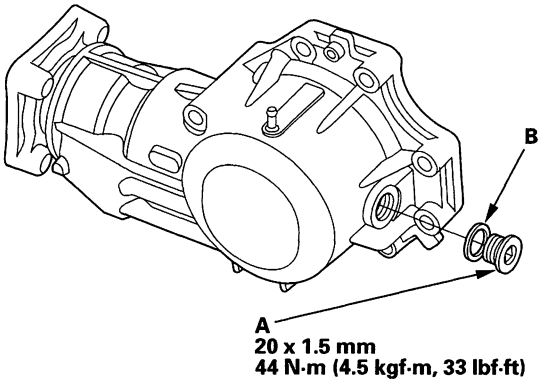
46. After replacing the 80 mm thrust shim, recheck and make sure that the total staring torque is within the specification.

47. Install the new O-ring (A) on the transfer cover (B), then install the transfer cover on the transfer housing (C).



48. Remove the filler plug (A), then refill the transfer assembly with transfer fluid (hypoid gear oil). Use a SAE 90 or SAE 80W-90 viscosity hypoid gear oil, API classified GL4 or GL5 only.

Viscosity:
SAE 90: Above 0 °F (−18 °C)
SAE 80W-90: Below 0 °F (−18 °C)
Hypoid Gear Oil Capacity: 0.45 L (0.48 US qt)



49. Install the filler plug with the new sealing washer (B).

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Rear Differential

Rear Differential

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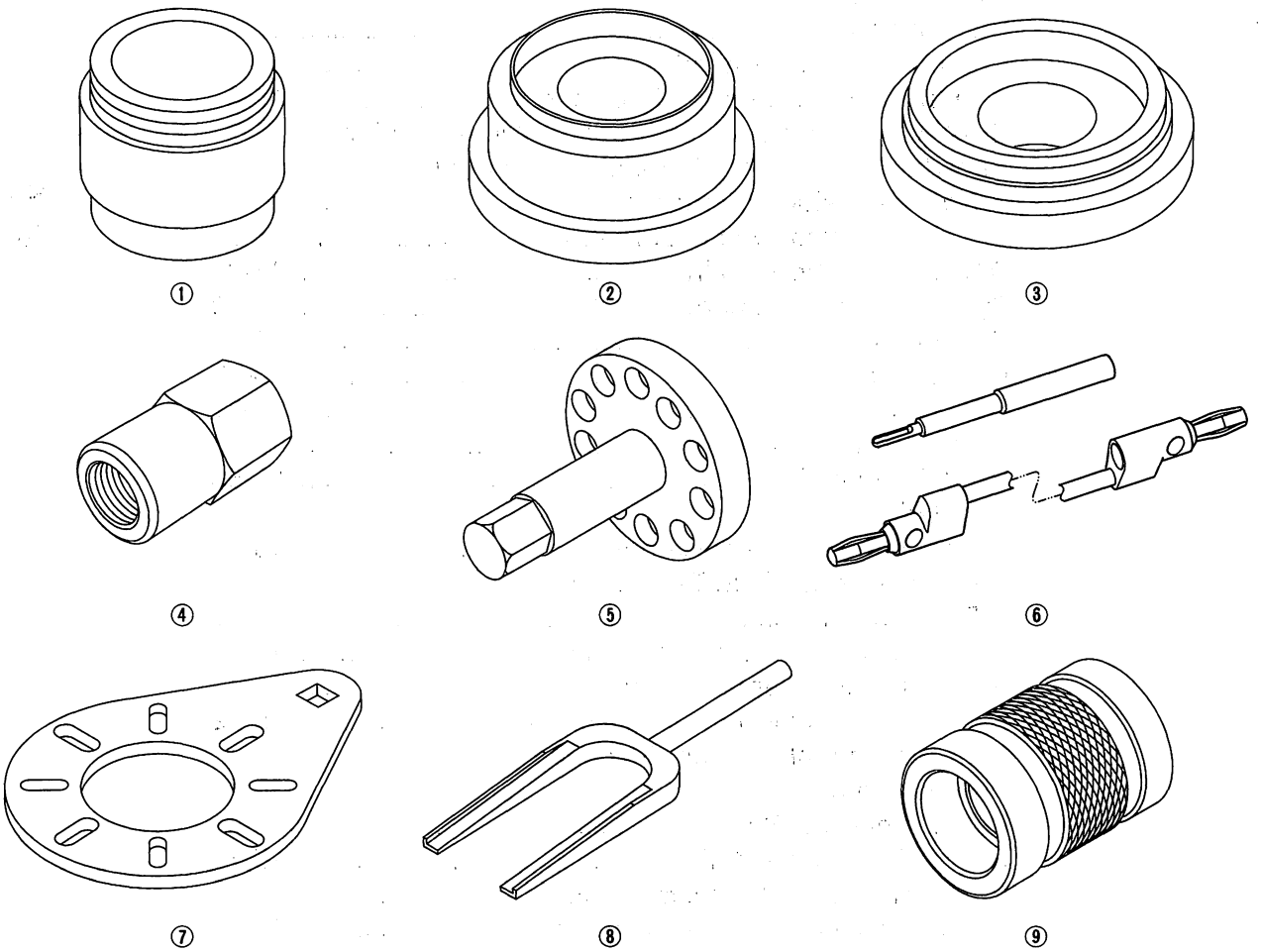
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Special Tools

Ref. No.	Tool Number	Description	Qty
①	070AD-STK0110	Oil Seal Driver A	1
②	070AD-STK0120	Oil Seal Driver B	1
③	070AD-STK0130	Oil Seal Driver C	1
④	070AJ-SJAA130*	Nut, 14 x 1.5 mm	5
⑤	070AJ-SJAA112*	Adapter, Torque Wrench	1
⑥	07SAZ-001000A	Backprove set	2
⑦	07XAB-001A101	Companion Flange Holder	1
⑧	07AAD-S3VA100	Driveshaft remover	1
⑨	07747-0010100	Fork Seal Driver Weight	1

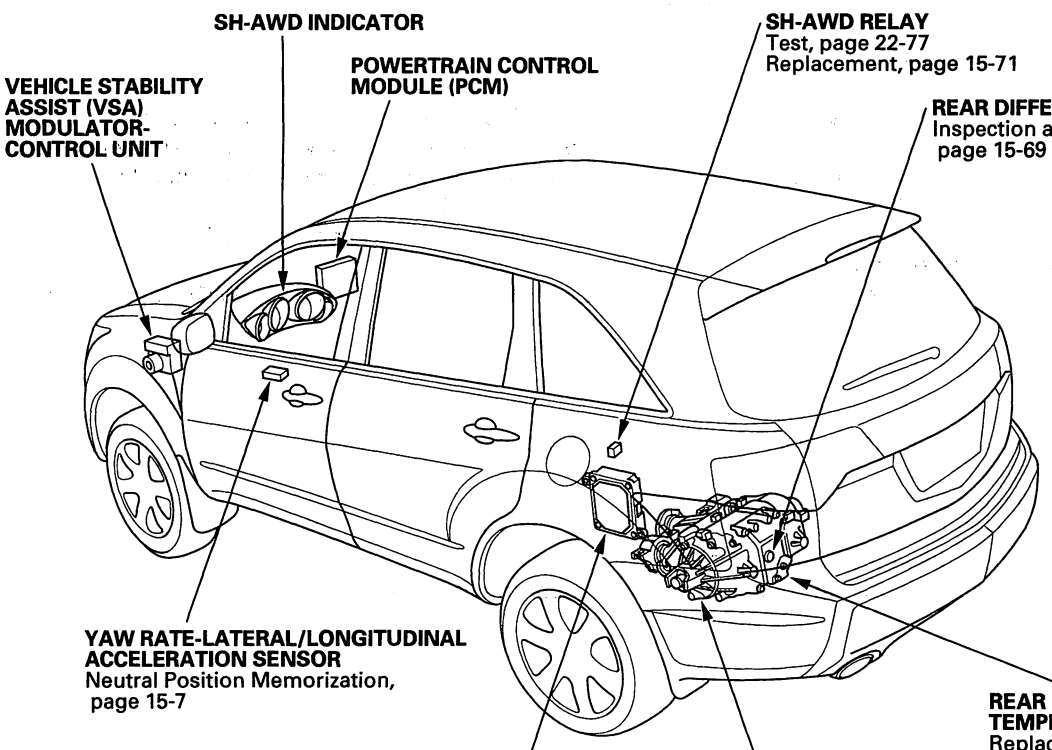
* Part of Adapter, Torque Wrench Set, 070AJ-SJAA102



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Component Location Index



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General Troubleshooting Information

SH-AWD Indicator

The SH-AWD indicator comes on under certain conditions even if the AWD system is working normally. Here are some examples:

- When you use high-powered wireless equipment such as a CB or Ham radio in the vehicle.
- When you keep spinning the rear wheels while the vehicle is stuck in sand, mud, snow, etc.
- When the battery voltage suddenly drops below 10 volt.

After the SH-AWD indicator comes on, it stays on until you turn the ignition switch off.

Diagnostic Trouble Code (DTC)

- The SH-AWD control unit can memorize up to eight different DTCs. The system displays the DTCs by blinking the SH-AWD indicator. Multiple DTCs are displayed in the order they occurred, beginning with the most recent.
- If the same DTC is detected more than once, the most recent DTC is written over the earlier one. Therefore, when the same problem is detected more than once, it is memorized as a single DTC.
- The DTCs are memorized in the EEPROM (non-volatile memory). Therefore, the memorized DTCs are not cleared when the battery is disconnected or the SH-AWD control unit is disconnected.
- If there is a problem in the central processing unit (CPU) of the SH-AWD control unit, the SH-AWD indicator comes on, but no DTC is memorized.

Self-diagnosis

When a problem is detected by self-diagnosis, the system does the following:

- Turns the SH-AWD indicator on.
- Memorizes the DTC.
- Stops AWD control and puts the vehicle back in FWD.
- Reduces engine torque to suit the driving conditions when the abnormality was detected.

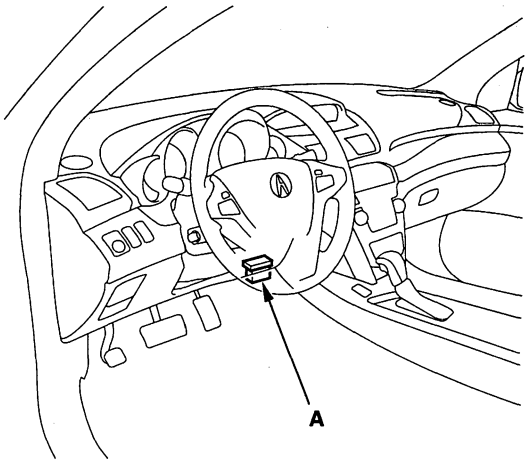
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How to Check for Diagnostic Trouble Codes (DTCs)

When the SH-AWD control unit senses an abnormality in the input or output systems, the SH-AWD indicator in the gauge assembly will usually come on, and the malfunction indicator lamp (MIL), the D5 indicator, and/or the ABS indicator may also come on.

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) behind the driver's dashboard lower cover.



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(s), refer to the DTC Troubleshooting.

   NOTE: See the HDS help menu for specific instruction.

3. If there are fuel and emission DTCs, A/T DTCs, and VSA system DTC's at the same time, troubleshoot the fuel and emission DTCs first.

4. After recording the DTCs, clear all DTCs.

5. Test-drive the vehicle for several minutes in AWD mode, and check for DTCs. If the DTC returns, refer to the DTC Troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all connectors and terminals in the circuit are tight.

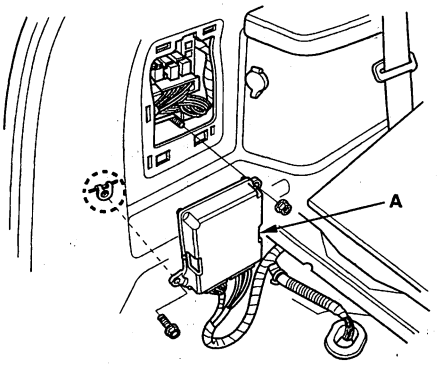
How to Troubleshoot Circuits at the SH-AWD Control Unit

Special Tools Required
Backprobe set 07SAZ-001000A (two required)

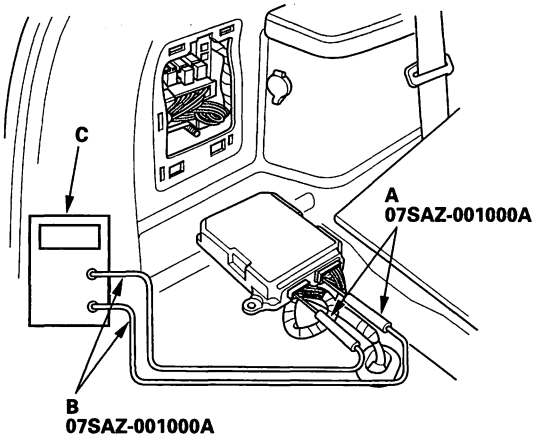
1. Remove the left side trim panel cover (see page 20-92).

2. Remove the cargo floor lid and the cargo box (see page 20-90).

3. Remove the SH-AWD control unit (A).



4. Inspect the circuit on the SH-AWD control unit according to the DTC Troubleshooting using the special tools and a digital multimeter or an analog circuit tester.



5. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to the multimeter or an analog circuit tester (C). Using the wire insulator as a guide for the contoured-tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it comes in contact with the terminal end of the wires.

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General Troubleshooting Information (cont'd)

Updating the SH-AWD Control Unit

Special Tools Required
- Honda diagnostic system (HDS)
- Honda interface module (HIM)
- HDS pocket tester

NOTE:
- Use this procedure when you need to update the SH-AWD control unit in a troubleshooting procedure.
- Make sure the HDS/HIM has the latest software version.
- Before you update the SH-AWD control unit, make sure the battery in the vehicle is fully charged.
- Never turn the ignition switch OFF during the update. If there is a problem with the update, leave the ignition switch ON.
- To prevent SH-AWD control unit damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof, door locks, etc.) during the update.
- To ensure the latest program is installed, do an SH-AWD control unit update whenever the SH-AWD control unit is substituted or replaced.
- You cannot update an SH-AWD control unit with a program it already has. It will only accept a new program.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) lamp came on or was flashed 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 SH-AWD control unit damage.

1. Select the update program, and follow the screen prompts to update the SH-AWD control unit.
2. If the software in the SH-AWD control unit is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the SH-AWD control unit is not the latest, follow the instructions on the screen.
3. Do the SH-AWD control unit initialization (see page 15-8).
4. Do the SH-AWD differential clutch torque memorization (see page 15-7).
5. Do the yaw rate - lateral/longitudinal acceleration neutral position memorization (see page 15-7).

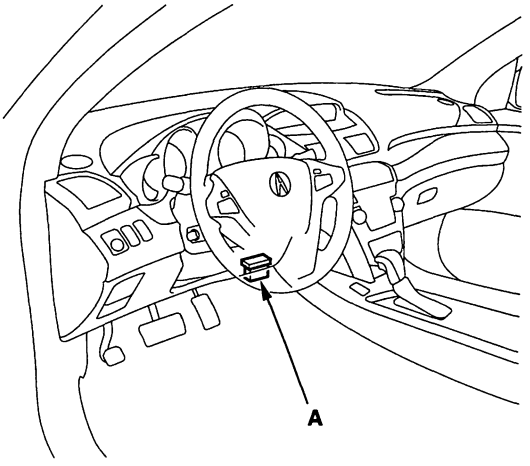
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SH-AWD Differential Clutch Torque Memorization

Whenever the side clutch set is replaced, the differential clutch torque memorization must be done.

1. With the ignition switch OFF, connect the HDS to the 16P DLC (A) behind the driver's dashboard lower cover.



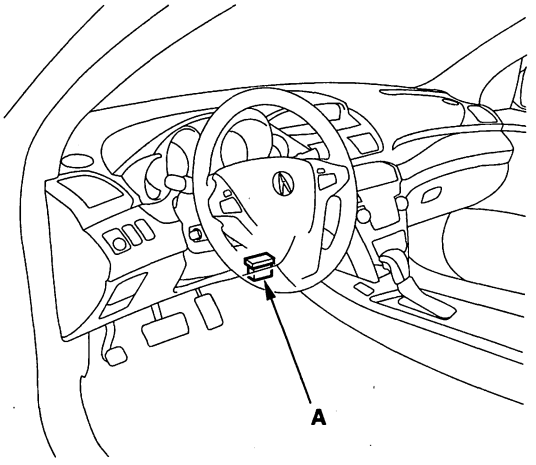
2. Turn the ignition switch ON (II), go to the miscellaneous test menu/neutral menu/differential torque and follow the prompts on the HDS screen.

   NOTE: See the HDS help menu for specific instructions.

Yaw Rate-Lateral/Longitudinal Acceleration Neutral Position Memorization

Whenever the yaw rate sensor or the lateral acceleration sensor is replaced, its neutral position memorization must be done.

1. With the ignition switch OFF, connect the HDS to the 16P DLC (A) behind the driver's dashboard lower cover.



2. Turn the ignition switch ON (II), go to the miscellaneous test menu/neutral menu/all sensor and follow the prompts on the HDS screen.

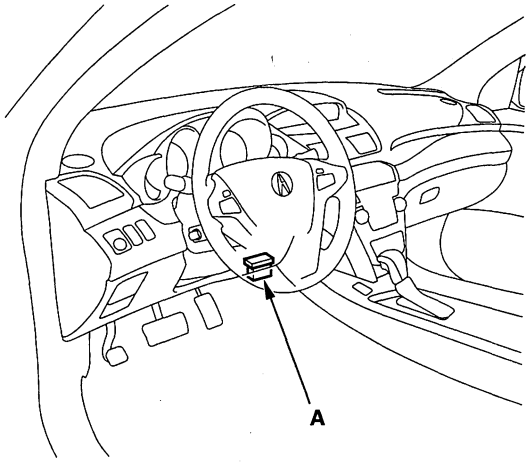
   NOTE: See the HDS help menu for specific instructions.

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SH-AWD Control Unit Initialization

Whenever the SH-AWD control unit is replaced, it must initialized.

1. With the ignition switch OFF, connect the HDS to the 16P DLC (A) behind the driver's dashboard lower cover.



2. Turn the ignition switch ON (II), go to the miscellaneous test menu/neutral menu/all sensor and follow the prompts on the HDS screen.

   NOTE: See the HDS help menu for specific instructions.

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DTC Troubleshooting Index

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12-3	ON	Lateral Acceleration Sensor Malfunction	(see page 15-22)
15-1	ON	Longitudinal Acceleration Sensor Malfunction	(see page 15-22)
16-3	ON	Steering Angle Sensor Neutral Position Incorrect	(see page 15-23)
33-2	ON	Yaw Rate Sensor Malfunction	(see page 15-24)
33-3	ON	Yaw Rate Sensor Malfunction	(see page 15-24)
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42-2	ON	Differential Fluid Temperature Sensor (Open/GND Short)	(see page 15-32)
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44-11	ON	SH-AWD Control Unit	(see page 15-36)
44-12	ON	SH-AWD Relay Stuck ON	(see page 15-37)
44-32	ON	SH-AWD Control Unit Power Supply Stuck ON	(see page 15-38)
44-41	ON	SH-AWD Control Unit Power Supply Stuck OFF	(see page 15-38)
44-50	ON	SH-AWD Control Unit Power Supply Stuck Voltage Low	(see page 15-39)
49-1	ON	SH-AWD Control Unit (PG Line Open)	(see page 15-41)
52-3	ON	Left Clutch Electromagnetic Coil Current Malfunction	(see page 15-42)
53-1	ON	Left Clutch Electromagnetic Coil Malfunction	(see page 15-45)
53-2	ON	Left Clutch Electromagnetic Coil (Short)	(see page 15-47)
53-3	ON	Left Clutch Electromagnetic Coil Malfunction	(see page 15-45)
56-3	ON	Right Clutch Electromagnetic Coil Current Malfunction	(see page 15-49)
57-1	ON	Right Clutch Electromagnetic Coil Malfunction	(see page 15-52)
57-2	ON	Right Clutch Electromagnetic Coil (Short)	(see page 15-54)
57-3	ON	Right Clutch Electromagnetic Coil Malfunction	(see page 15-52)
76-1	ON	Rear Differential Fluid Overheats	(see page 15-56)
77-1	ON	Communication Error with the Power Control Module (PCM)	(see page 15-57)
77-2	ON	Communication Error with the VSA Modulator-Control Unit	(see page 15-57)
77-4	ON	Communication Error with the Automatic-Transmission Control Unit	(see page 15-58)
77-5	ON	Yaw Rate-Lateral/Longitudinal Acceleration Sensor Malfunction	(see page 15-59)
77-6	ON	Steering Angle Sensor Malfunction	(see page 15-59)
78-xx	ON	SH-AWD Control Unit Self-diagnostic Malfunction	(see page 15-60)
81-1	ON	Left Search Coil Sensor Malfunction	(see page 15-60)
82-1	ON	Right Search Coil Sensor Malfunction	(see page 15-63)
91-1	ON	SH-AWD Control Unit Programming Error	(see page 15-65)

*: DTCs are indicated by the SH-AWD indicator when the 16P data link connector (DLC) is connected to the HDS.

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Symptom Troubleshooting Index

NOTE: Most problems in the unit are to be diagnosed by identifying noises from the gears or bearings. Care should be taken during diagnosis not to confuse differential noises with those from other drivetrain components.

Symptom	Diagnostic Procedure	Also check for
The SH-AWD indicator does not go off, and no DTCs are stored	Symptom troubleshooting (see page 15-66).	
The SH-AWD indicator does not come on	Symptom troubleshooting (see page 15-67).	
Gear or bearing noises	• Fluid level too low. • Incorrect or worn out fluid • Damaged or chipped gears. • Side case clearance incorrect. • Incorrect tire size (rolling circumference).	• Add fluid • Drain and fill the differential • Replace the differential carrier assembly • Side case clearance adjustment
Rear differential overheats	• Fluid level too low. • Incorrect fluid type.	• Add fluid • Drain and fill the differential
Rear differential leaks fluid	• Fluid level too high. • Clogged breather hose. • Worn or damaged oil seal. • Damaged sealing washer. • Loose mounting bolts or inadequate sealing.	• Lower to proper level • Clean or replace • Replace the sealing washer • Replace the oil seal • Recheck torque or apply sealant
Rear differential screeches, whines, moans, or squeaks	• Fluid level too low. • Incorrect or worn out fluid • Incorrect tire rolling circumference. • Damaged oil pump.	• Add fluid • Drain and fill the differential • Adjust tire pressure or replace tires • Replace the differential carrier assembly
Noise during acceleration, or when accelerating from a full stop	• Incorrect of side case clearance. • Incorrect of pre-load. • Incorrect of backlash of hypoid gear. • Damaged or chipped gears. • Incorrect tire size (rolling circumference).	• Pre-load adjustment. • Side case clearance adjustment • Replace the differential carrier assembly
HDS does not communicate with the SH-AWD control unit or the vehicle	Troubleshooting DLC circuit (see page 11-223).	

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BACK

System Description

SH-AWD System

Outline

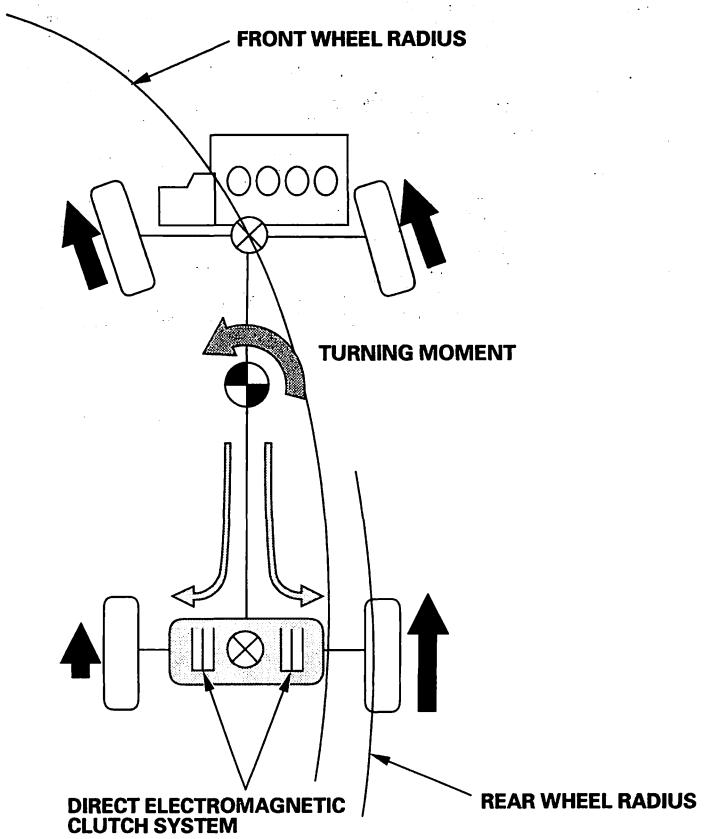
This vehicle is equipped with a Super Handling All-wheel Drive (SH-AWD) rear differential system. This system uses electromagnetic clutches and the SH-AWD control unit to control front to rear torque distribution and independent left to right rear torque distribution. This allows the system to function as a limited slip differential and as a torque distribution system to improve standing start performance, straight-line stability, climbing, and cornering ability.

SH-AWD features include

- Independent torque distribution to the front and rear wheels, and to the left and right wheels for neutral handling when cornering.
- Controls differential (inside/outside) wheel speed in a turn to increase cornering stability.
- Limited slip differential function for better acceleration.

Operation

When driving in a straight line, the front and rear wheels are traveling at the same speed. In a normal turn, the distance traveled by the front wheels is longer than that of the rear wheels. The SH-AWD system monitors the speed of the front wheels, and increases torque to the outside rear wheel proportionally. This improves stability and steering response, and on slippery surfaces it provides improved traction of the 4-wheel drive system.



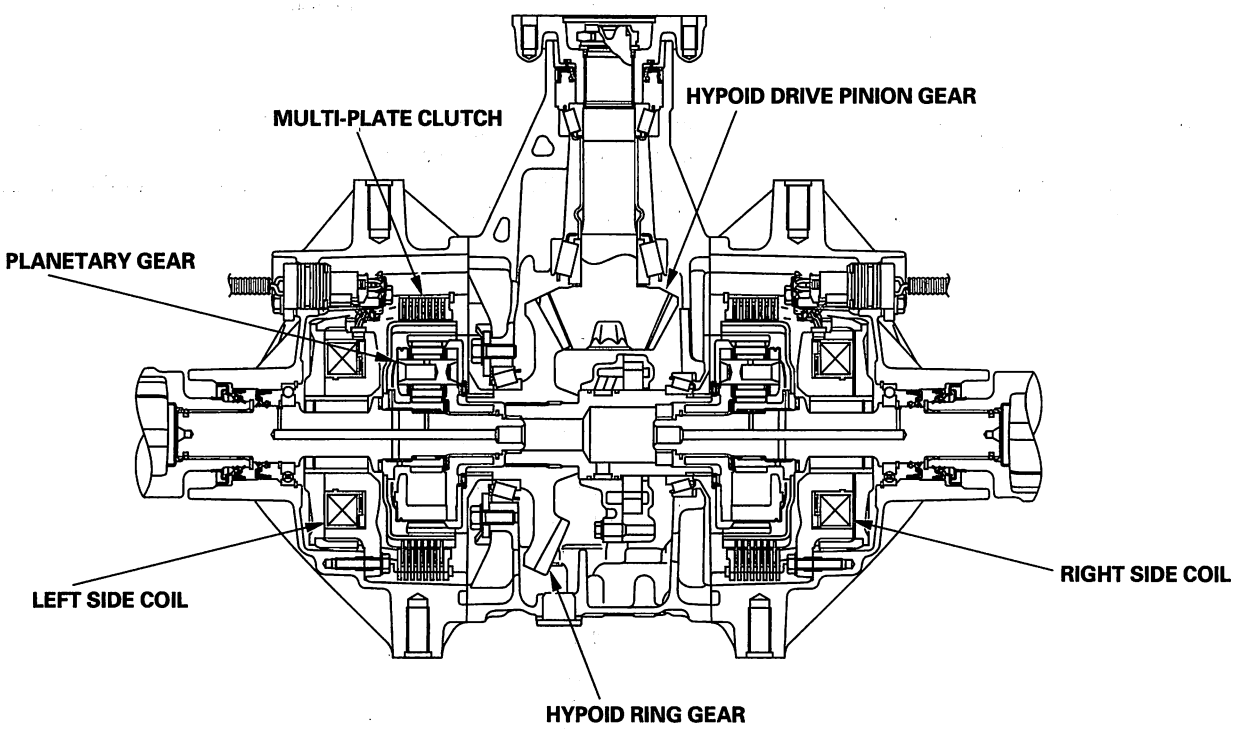
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System Description (cont'd)

Construction

1. The differential assembly has a conventional hypoid ring and pinion gear set.
2. The direct electromagnetic clutch system consists of the coils, the planetary gear sets, and the multi-plate clutches that are installed in the side cases on either side of the differential carrier. When driving straight ahead, both rear wheels rotate at the same speed. When turning, current is applied to the appropriate outside wheel main coil to engage the clutch. The amount of current passed through the electromagnetic clutch controls the amount of driving force to the outside wheel.



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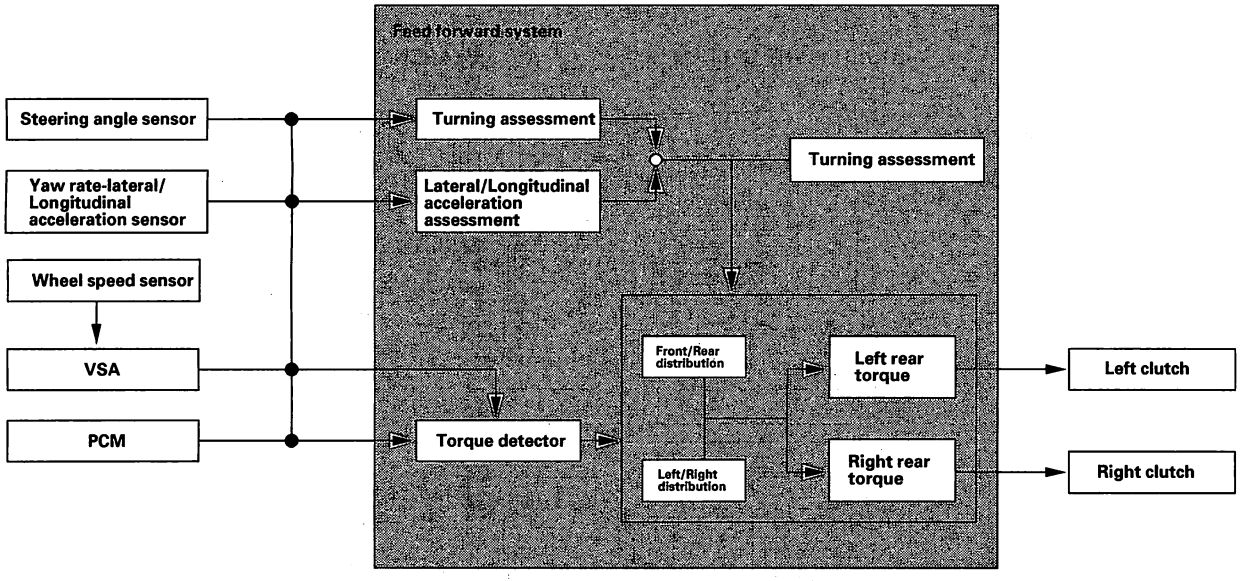
SH-AWD 4WD Control System

Control System

The SH-AWD control system consists of a SH-AWD control unit, the PCM, the VSA modulator-control unit, along with various sensors and switches that detect the steering angle, the lateral G force, the yaw, and the vehicle speed. A fluid temperature sensor is located on in the rear differential. The control units exchange information via the F-CAN communication lines. The SH-AWD control unit has a self-diagnostic function. If a malfunction is detected, the SH-AWD control unit turns on the SH-AWD indicator in the gauge assembly and the system goes into fail-safe mode. When in fail-safe mode, the vehicle disables the SH-AWD differential. The vehicle defaults to front wheel drive, reduces engine torque to suit the driving conditions.

Driving Force Control

The driving force control distributes the power based on the driver's inputs. It distributes torque to the front and rear wheels based on the throttle opening and the available engine torque output. When turning, torque is applied to the rear wheels independently based on the lateral G input and the direction of the turn. This generates an inward yaw movement to help steer the vehicle around the turn.



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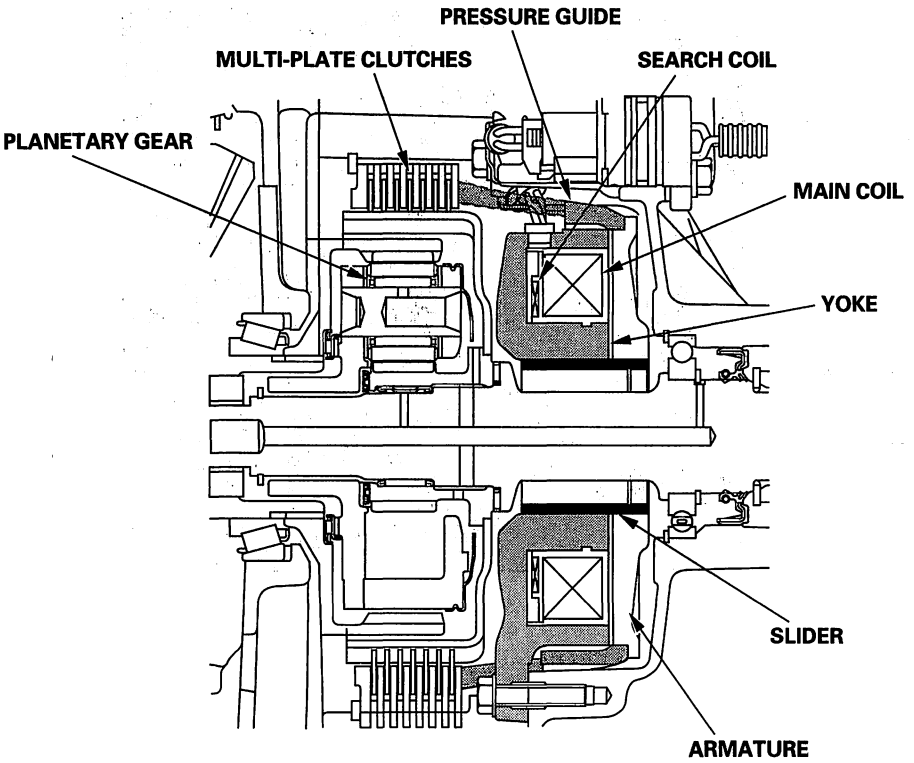
System Description (cont'd)

Electromagnetic Clutch System

Construction

The electromagnetic clutch system is incorporated into the side case assemblies on both sides of the differential case. The system consists of the multi-plate clutches, the planetary gears, the pressure guides, the solenoid coil assembly (the search coil and the main coil), the armature assembly (the slider and the armature), and the yoke.

Components	Purpose
Multi-plate clutches	Convert thrust into torque, absorb wheel speed differences
Planetary gears	Magnify and convey clutch torque
Pressure guides	Reduce fluctuations in pressure
Search coils	Detect magnetic flux
Main coils	Generates magnetic fields
Slider	Centers the armature
Armature	Generates magnetic flux to generate thrust
Yoke	Generates magnetic flux to clamping force

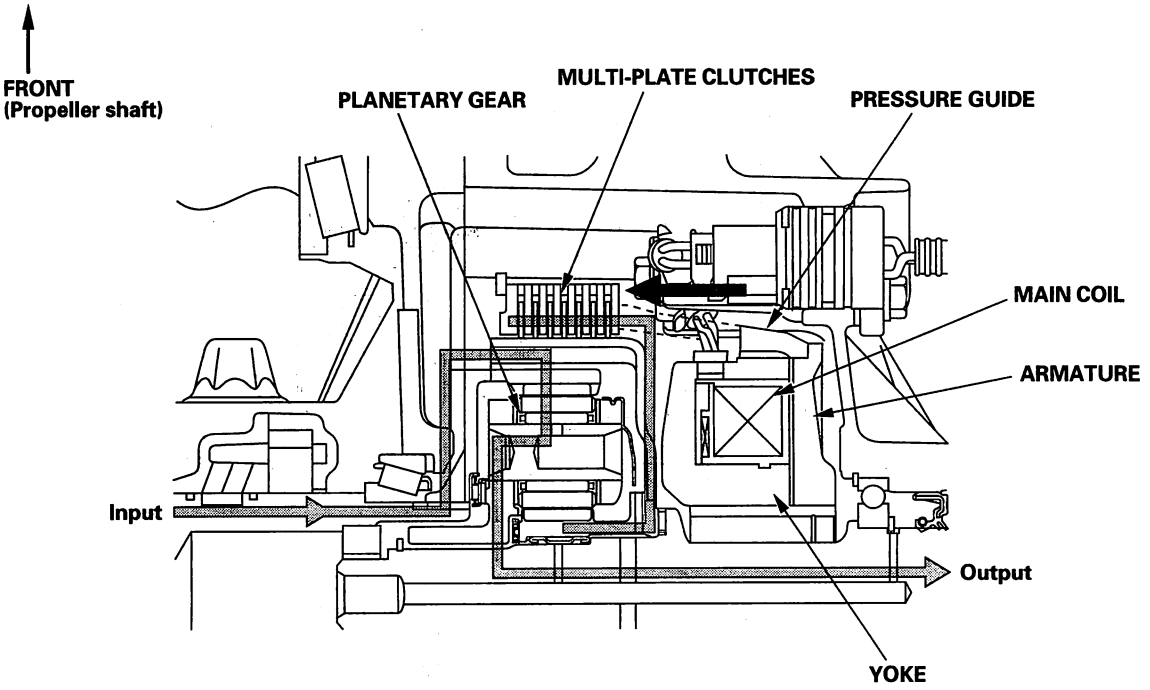


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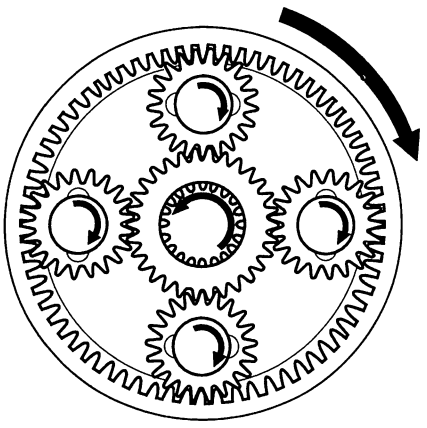
BACK

Operation

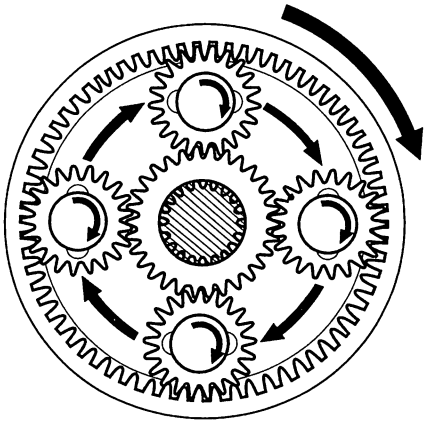
The SH-AWD control unit receives inputs from the PCM and the VSA modulator-control unit on the driving conditions via the F-CAN. The SH-AWD control unit sends signals to the main coils, which engage the electromagnetic clutches that connect the planetary gear set. This increases the torque applied to the rear wheels. The amount of current sent to the clutch is continuously varied as driving conditions change.



WHEN THERE IS NO THRUST



WHEN THRUST IS GENERATED



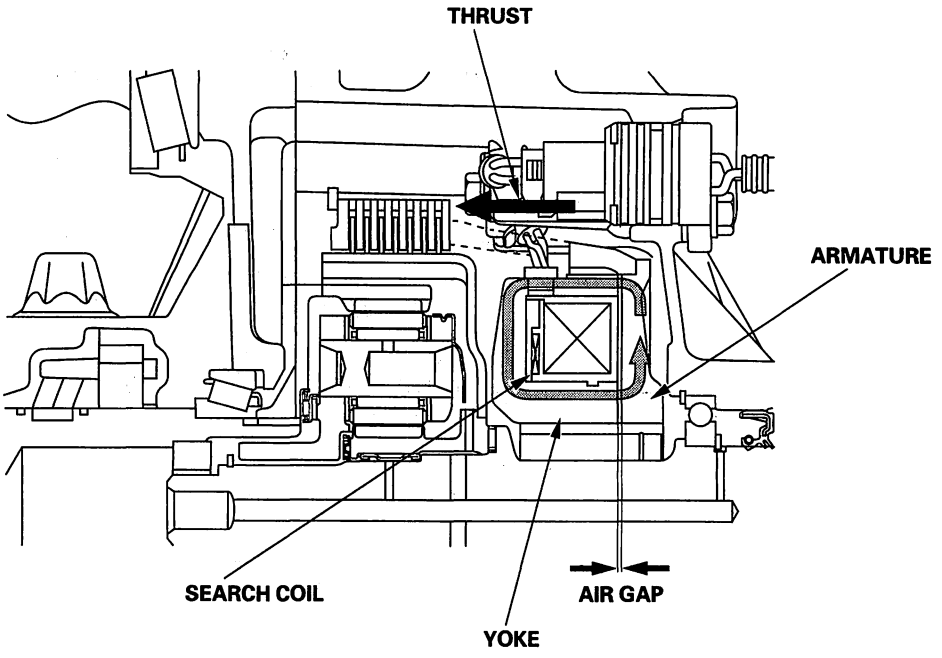
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(cont'd)

System Description (cont'd)

Search Coil Detection System

As the clutch discs wear, the air gap between the pressure guides and the multi-plate clutches increases. The increase in air gap changes the magnetic field generated by the main coil and the yoke. The search coil detects these changes in the magnetic field. The SH-AWD control unit uses predetermined maps to compensate for the changes to maintain precise control and smooth clutch engagement.

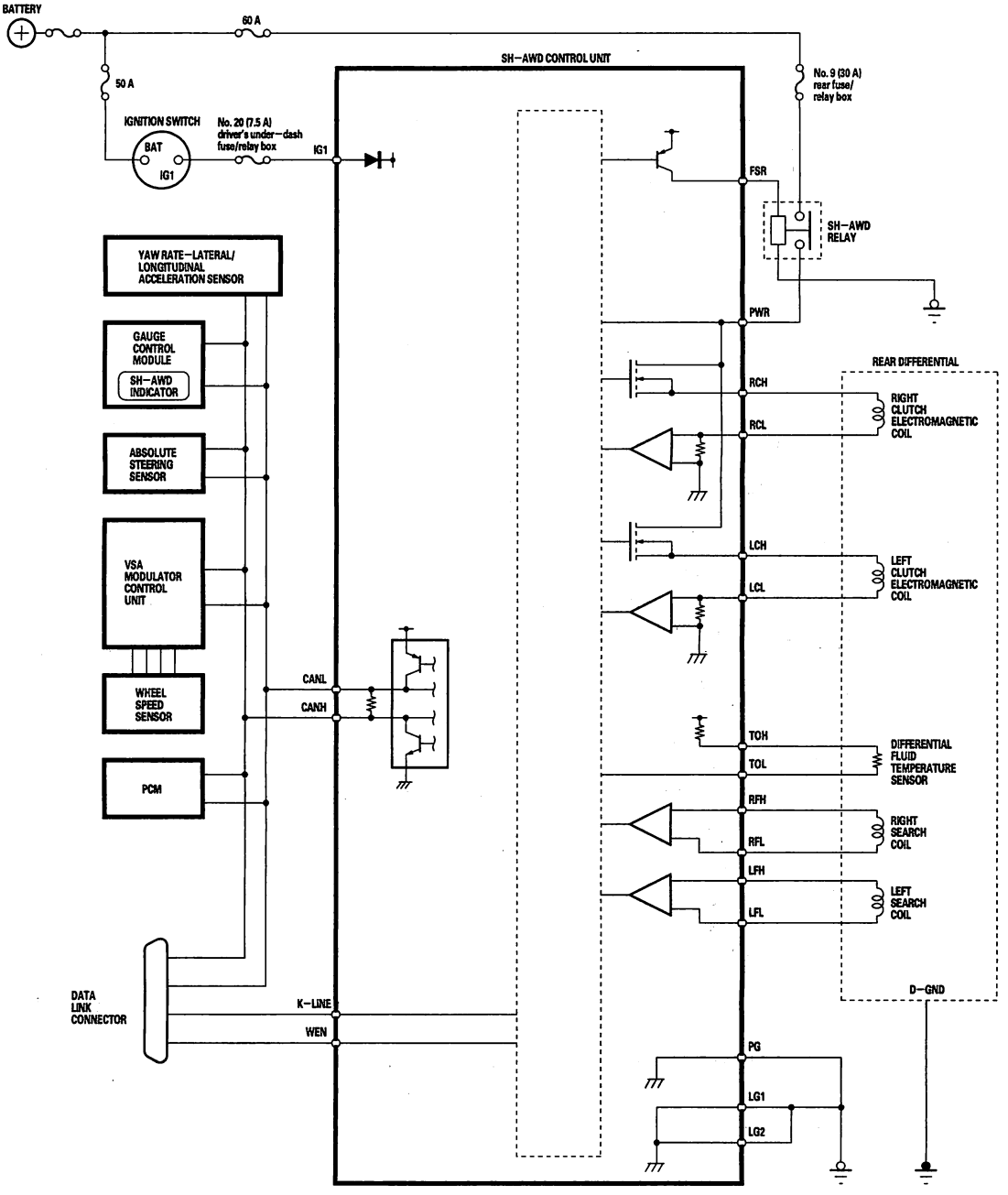


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Electric Control System

SH-AWD Control Unit Electrical Connections



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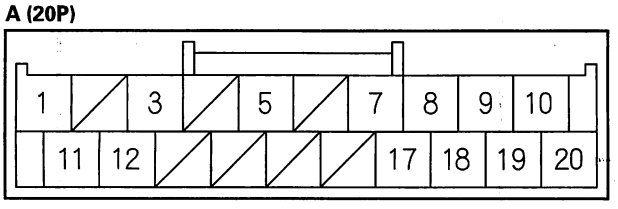
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System Description (cont'd)

SH-AWD Control Unit Inputs and Outputs

The SH-AWD control unit terminal voltages and the measuring conditions for the SH-AWD control system. Do the SH-AWD inputs and outputs test with the SH-AWD connectors connected.

SH-AWD Control Unit Connector Terminal Locations



Terminal side of male terminals

Terminal number	Wire color	Signal	Description	Measuring Conditions/Terminal Voltage
A1	BLK	LFH	Detects left search coil signal (positive)	With ignition switch ON (II): about 2.5 V
A3	BLU	RFH	Detects right search coil signal (positive)	With ignition switch ON (II): about 2.5 V
A5	LT BLU	K-LINE	Communication line SH-AWD control unit-to-DLC	With ignition switch ON (II): 0 V or battery voltage
A7	GRN	IG1	Power supply for SH-AWD control unit	With ignition switch ON (II): battery voltage
A8	GRN	TOL	Detects differential fluid temperature sensor (negative)	With ignition switch ON (II): about 0.2 V to 4.7 V (Depending on ATF temperature)
A9	BLK	LG1	Unit ground	With ignition switch ON (II):0 V
A10	WHT	CANH	F-CAN communication signal	With ignition switch ON (II): about 2.5 V or 3.5 V
A11	RED	LFL	Detects left search coil signal (negative)	With ignition switch ON (II): about 2.5 V
A12	RED	RFL	Detects right search coil signal (negative)	With ignition switch ON (II): about 2.5 V
A17	ORN	FSR	Drives SH-AWD relay	With ignition switch ON (II): 0 V or battery voltage
A18	WHT	TOH	Power supply for differential fluid temperature sensor	With ignition switch ON (II): about 4.7 V to 5 V
A19	GRY	WEN	Detects write enable signal	With ignition switch ON (II): about 0 V
A20	RED	CANL	F-CAN Communication signal	With ignition switch ON (II): about 2.5 V or 1.5 V

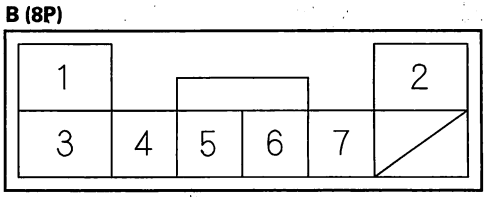
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BACK

SH-AWD Control Unit Inputs and Outputs

The SH-AWD control unit terminal voltages and the measuring conditions for the SH-AWD control system. Do the SH-AWD inputs and outputs test with the SH-AWD connectors connected.

SH-AWD Control Unit Connector Terminal Locations

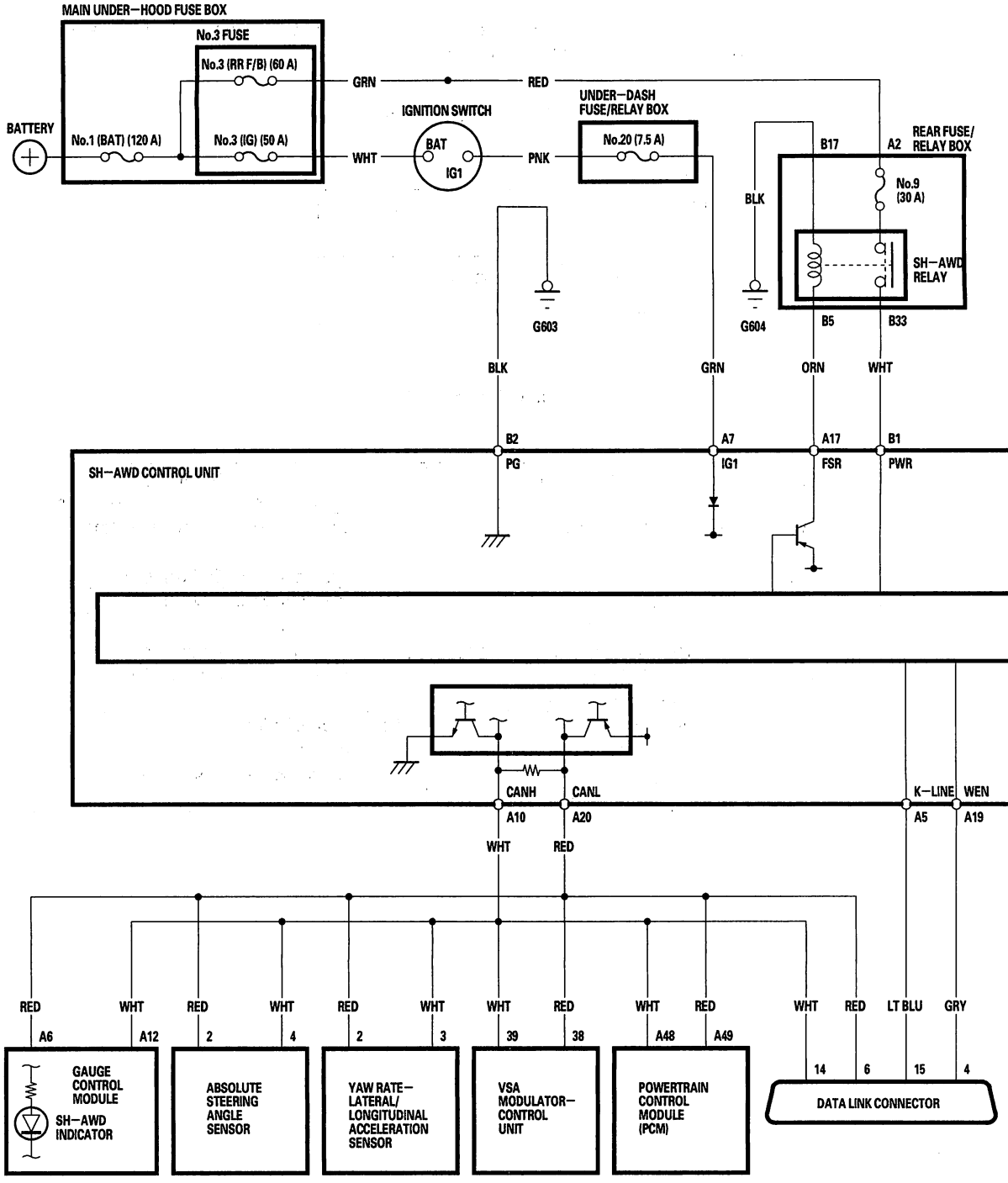


Terminal side of male terminals

Terminal number	Wire color	Signal	Description	Measuring Conditions/Terminal Voltage
B1	WHT	PWR	Power supply for SH-AWD actuator	With engine running: battery voltage
B2	BLK	PG	Actuator ground	With ignition switch ON (II): 0 V
B3	BLK	LG2	Unit ground	With ignition switch ON (II): 0 V
B4	RED	LCH	Drives left clutch electromagnetic coil (positive)	With clutch off: 0 V With clutch on: battery voltage
B5	BLU	LCL	Drives left clutch electromagnetic coil (negative)	With ignition switch ON (II): 0 V
B6	ORN	RCH	Drives right clutch electromagnetic coil (positive)	With clutch off: 0 V With clutch on: battery voltage
B7	GRY	RCL	Drives right clutch electromagnetic coil (negative)	With ignition switch ON (II): 0 V

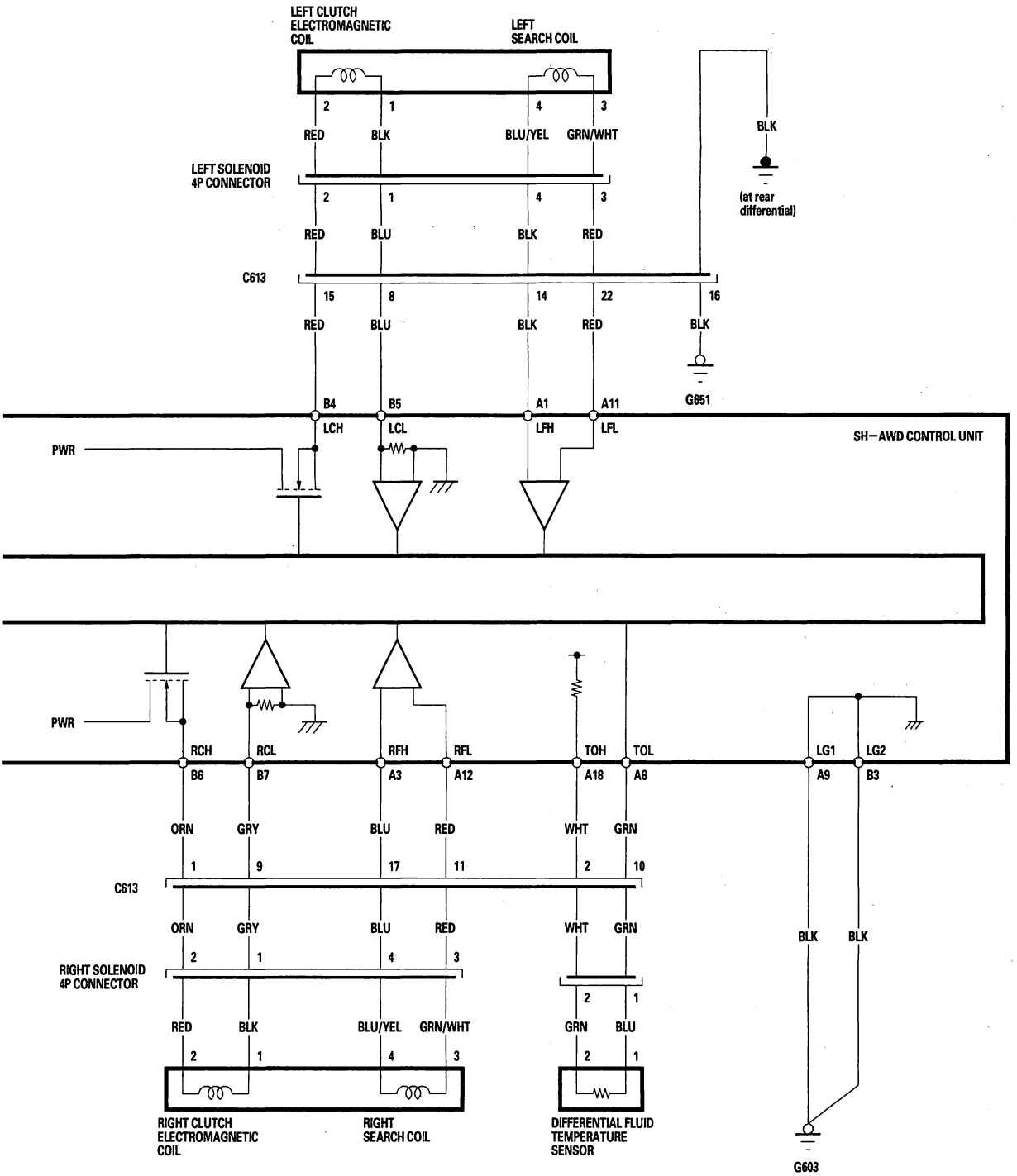
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Circuit Diagram



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DTC Troubleshooting

DTC 12-1, 12-2, 12-3: Lateral Acceleration Sensor Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for DTCs in the VSA system with the HDS.

   Are any Lateral acceleration sensor DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Test-drive the vehicle with an assistant. Drive in a left and right zig-zag pattern at about 13 mph (20 km/h) and check the LATERAL ACCELERATION SENSOR in the DATA LIST with the HDS.

   Does the sensor value change when turning?

   YES—Go to step 4.

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■
4. Park the vehicle on a level surface.
5. Check the LATERAL ACCELERATION SENSOR in the DATA LIST with the HDS.

   Is there 0.1G or less?

   YES—Intermittent failure, the system is OK at this time. If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■

   NO—Do the yaw rate-lateral/longitudinal acceleration neutral position memorization (see page 15-7). If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■

DTC 15-1: Longitudinal Acceleration Sensor Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with an assistant. When accelerating, check the LONGITUDINAL ACCELERATION SENSOR in the DATA LIST with the HDS.

   Does the sensor value change when acceleration?

   YES—Go to step 4.

   NO—Replace the yaw rate-lateral/longitudinal acceleration sensor (see page 19-100). ■
4. Park the vehicle on a level surface.
5. Check the LONGITUDINAL ACCELERATION SENSOR in the DATA LIST with the HDS.

   Is there 0.1 G or less?

   YES—Go to step 6.

   NO—Do the yaw rate-lateral/longitudinal acceleration neutral position memorization (see page 15-7). If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■
6. Test-drive the vehicle for 2 minutes in a vehicle speed is kept constant at 19 mph (30 km/h).
7. Check for DTCs with the HDS.

   Is DTC 15-1 indicated?

   YES—Replace the yaw rate-lateral/longitudinal acceleration sensor (see page 19-100). ■

   NO—Intermittent failure, the system is OK at this time. If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■

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DTC 16-3: Steering Angle Sensor Neutral Position Incorrect

NOTE:
- Before you troubleshoot, review the general troubleshooting information (see page 15-4).
- Check the wheel alignment (see page 18-5).
- Check for installation of the steering angle sensor.

1. Turn the ignition switch ON (II).

2. Check for DTCs in the VSA system with the HDS.

   Are any steering angle sensor DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.

3. Start the engine.

4. Check the STEERING ANGLE SENSOR in the DATA LIST with the HDS.

   When the steering wheels is turned slowly, does the value change?

   YES—Go to step 5.

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

5. Test-drive the vehicle in a straight line at 19 mph (30 km/h) or more.

6. Park the vehicle on a level surface, and center the steering wheel.

7. Check the STEERING ANGLE SENSOR in the DATA LIST with the HDS.

   It is Within ±25 deg of center?

   YES—Intermittent failure, the system is OK at this time. If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■

   NO—Do the steering angle sensor center point writing (see page 19-100). If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■

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DTC Troubleshooting (cont'd)

DTC 33-2, 33-3: Yaw Rate Sensor Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for DTCs in the VSA system with the HDS.

   Are any yaw rate sensor DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Test-drive the vehicle with an assistant. Drive in a left and right zig-zag pattern at about 13 mph (20 km/h) and check the YAW RATE SENSOR in the DATA LIST with the HDS.

   Does the sensor value change when turning?

   YES—Go to step 4.

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■
4. Park the vehicle on a level surface.
5. Check the YAW RATE SENSOR in the DATA LIST with the HDS.

   Is there 3.5 degls or less?

   YES—Intermittent failure, the system is OK at this time. If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■

   NO—Do the yaw rate-lateral/longitudinal acceleration neutral position memorization (see page 15-7). If the DTC returns, replace the SH-AWD control unit (see page 15-71). ■

DTC 41-1: F-CAN Malfunction (Lost Communication With Power Control Module (PCM))

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for DTCs in the PGM-FI system with the HDS.

   Are there any PGM-FI DTC's indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check for DTCs with the HDS.

   Is DTC 41-1 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for intermittent open between the SH-AWD control unit connector terminals A10 and A20 and the PCM connector terminals A48 and A49. ■
6. Turn the ignition switch OFF.

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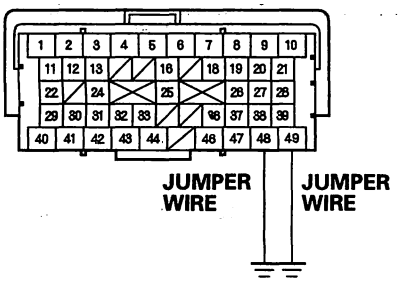
7. Jump the SCS line with the HDS.

   NOTE: This step must be done to prevent PCM damage.

8. Disconnect PCM connector A (49P).

9. Connect PCM connector terminals A 48 and A 49 to body ground with jumper wires.

PCM CONNECTOR A (49P)

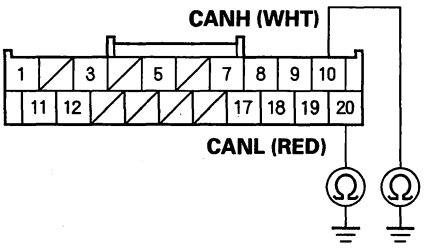


Terminal side of female terminals

10. Disconnect SH-AWD control unit connector A (20P).

11. Check for continuity between SH-AWD control unit connector terminals A10 and A20 to body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

NO—Repair open in the wires between the SH-AWD control unit and the PCM. ■

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DTC Troubleshooting (cont'd)

DTC 41-2: F-CAN Malfunction (Lost Communication with VSA)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for PGM-FI DTC's with the HDS.

   Are there any PGM-FI DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check for DTCs with the HDS.

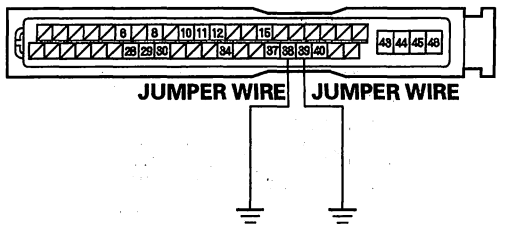
   Is DTC 41-2 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for intermittent open between SH-AWD control unit connector terminals A10 and A20 and VSA modulator-control unit 46P connector terminals No. 38 and No. 39. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.

   NOTE: This step must be done to prevent PCM damage.
8. Disconnect the VSA modulator-control unit 46P connector.
9. Connect VSA modulator-control unit 46P connector terminals No. 38 and No. 39 to body ground with jumper wires.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

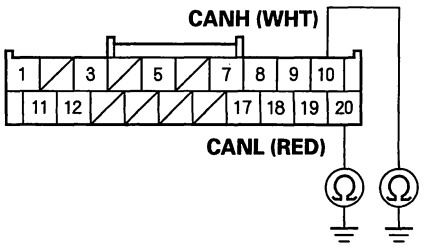
10. Disconnect SH-AWD control unit connector A (20P).

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11. Check for continuity between SH-AWD control unit connector terminals A10 and A20 to body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

NO—Repair an open in the wires between the SH-AWD control unit and the VSA modulator-control unit. ■

DTC 41-4: F-CAN Malfunction (Lost Communication With A/T Control Unit)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for DTCs in the PGM-FI system with the HDS.

   Are there any PGM-FI DTC's indicated?

   YES—Go to the indicated DTC troubleshooting. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check for DTCs with the HDS.

   Is DTC 41-4 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for intermittent open between the SH-AWD control unit connector terminals No. A10 and A20 and the PCM (49P) connector terminals No. A48 and A49.
6. Turn the ignition switch OFF.

(cont'd)

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DTC Troubleshooting (cont'd)

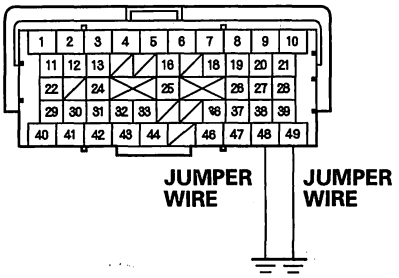
7. Jump the SCS line with the HDS.

   NOTE: This step must be done to prevent PCM damage.

8. Disconnect the PCM connector A (49P).

9. Connect PCM connector terminals A 48 and A 49 to body ground with a jumper wires.

PCM CONNECTOR A (49P)

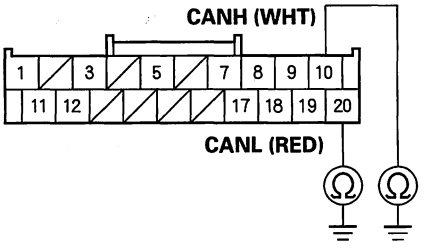


Terminal side of female terminals

10. Disconnect the SH-AWD control unit connector A (20P).

11. Check for continuity between SH-AWD control unit connector terminals A10 and A20 to body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

NO—Repair an open in the wires between the SH-AWD control unit and PCM.■

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BACK

DTC 41-5: F-CAN Malfunction (Lost Communication With Yaw Rate-Lateral/ Longitudinal Acceleration Sensor)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for DTCs in the VSA system with the HDS.

   Are any yaw rate rate-lateral/longitudinal acceleration sensor DTCs or F-CAN indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check for DTCs with the HDS.

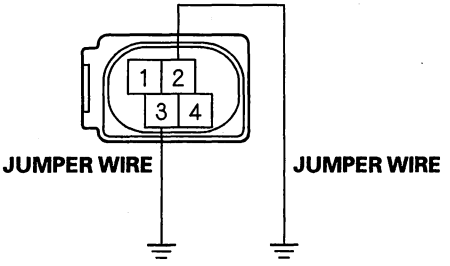
   Is DTC 41-5 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for intermittent open between the SH-AWD control unit connector terminals A10 and A20 and the yaw rate-lateral/longitudinal acceleration sensor (4P) connector terminals No. 3 and No. 2. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.

   NOTE: This step must be done to prevent PCM damage.
8. Disconnect the yaw rate-lateral/longitudinal acceleration sensor 4P connector.
9. Connect yaw rate-lateral/longitudinal acceleration sensor 4P connector terminals No. 3 and No. 2 to body ground with jumper wires.

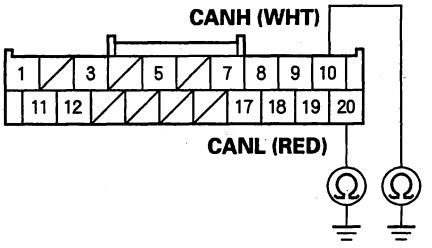
YAW RATE-LATERAL/LONGITUDINAL ACCELERATION SENSOR 4P CONNECTOR



Wire side of female terminals

10. Disconnect the SH-AWD control unit connector A (20P).
11. Check for continuity between SH-AWD control unit connector terminals A10 and A20 to body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/ indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

NO—Repair an open in the wire between the SH-AWD control unit and the yaw rate-lateral/ longitudinal acceleration sensor. ■

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DTC Troubleshooting (cont'd)

DTC 41-6: F-CAN Malfunction (Lost Communication with Steering Angle Sensor)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for DTCs in the VSA system with the HDS.

   Are any steering angle sensor DTCs of F-CAN indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check for DTCs with the HDS.

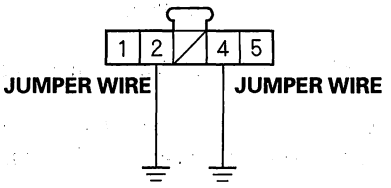
   Is DTC 41-6 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.

   NOTE: This step must be done to prevent PCM damage.
8. Disconnect the steering angle sensor 5P connector.
9. Connect steering angle sensor 5P connector terminals No. 4 and No. 2 to body ground with a jumper wires.

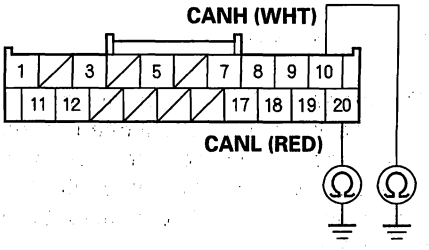
STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

10. Disconnect SH-AWD control unit connector A (20P).
11. Check for continuity between SH-AWD control unit connector terminals A10 and A20 to body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

NO—Repair open in the wires between the SH-AWD control unit and the steering angle sensor. ■

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BACK

DTC 42-1: Differential Fluid Temperature Sensor (Short to Power)

NOTE:
- Before you troubleshoot, review the general troubleshooting information (see page 15-4).
- If the vehicle has been driven, allow the rear differential to cool for about an hour or more before doing this troubleshooting procedure.

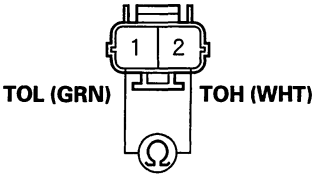
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for DTCs with the HDS.

   Is DTC 42-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Turn the ignition switch OFF.
5. Disconnect the rear differential fluid temperature sensor 2P connector and SH-AWD control unit connector A (20P).
6. Check for continuity between rear differential fluid temperature sensor 2P connector terminals No. 1 and No. 2.

REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR 2P CONNECTOR



Wire side of male terminals

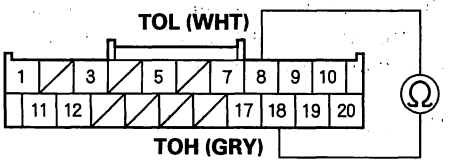
Is there continuity?

YES—Repair short in the wire between rear differential fluid temperature sensor 2P connector terminals No. 1 and No. 2.

NO—Go to step 7.

7. Connect the rear differential fluid temperature sensor 2P connector.
8. Measure the differential housing temperature with an infrared temperature gauge near the mounting location of the rear differential fluid temperature sensor. The temperature should be below 176 °F (80°C) before proceeding to the next step.
9. Measure resistance between SH-AWD control unit connector terminals and A8 and A18.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there 260 Ω or more?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

NO—Replace the rear differential temperature sensor (see page 15-70). ■

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DTC Troubleshooting (cont'd)

DTC 42-2: Differential Fluid Temperature Sensor (Open/GND Short)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

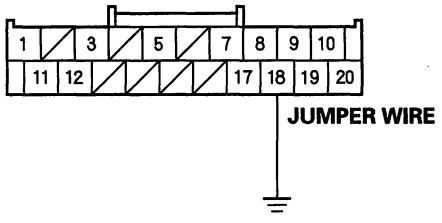
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.
4. Start the engine and turn the VSA off (the light on the VSA OFF switch comes on). Run the engine in the D position until the vehicle speed reaches 35 mph (56 km/h) and keep running for 10 minutes, then slow down and stop the wheels.
5. Check for DTCs with the HDS.

   Is DTC 42-2 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. ■
6. Turn the ignition switch OFF.
7. Disconnect SH-AWD control unit connector A (20P).
8. Connect SH-AWD control unit connector terminal A18 to body ground with jumper wire.

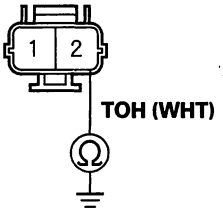
SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

9. Disconnect the rear differential fluid temperature sensor 2P connector.
10. Check for continuity between rear differential fluid temperature sensor 2P connector terminal No. 2 to body ground.

REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR 2P CONNECTOR



Wire side of male terminals

Is there continuity?

YES—Go to step 11.

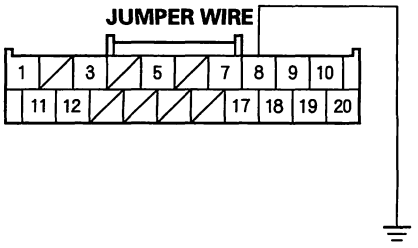
NO—Repair open in the wire between SH-AWD control unit connector A and the rear differential fluid temperature sensor connector. ■

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BACK

11. Connect SH-AWD control unit connector terminal A8 to body ground with jumper wire.

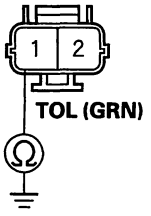
SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

12. Check for continuity between rear differential fluid temperature sensor 2P connector No. 1 to body ground.

REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR 2P CONNECTOR



Wire side of male terminals

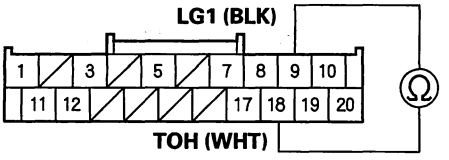
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between SH-AWD control unit connector A and the rear differential fluid temperature sensor connector.■

13. Check for continuity between SH-AWD control unit connector terminals A9 and A18.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

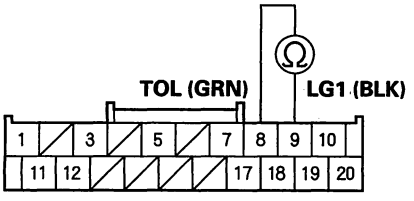
Is there continuity?

YES—Repair short in the wire between SH-AWD control unit connector A and the rear differential fluid temperature sensor connector.■

NO—Go to step 14.

14. Check for continuity between SH-AWD control unit connector terminals A8 and A9.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between SH-AWD control unit connector A and the rear differential fluid temperature sensor connector.■

NO—Go to step 15.

(cont'd)

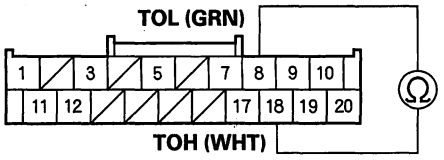
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DTC Troubleshooting (cont'd)

15. Reconnect the rear differential fluid temperature sensor 2P connector and SH-AWD control unit connector A (20P).

16. Measure resistance between SH-AWD control unit connector terminals A8 and A18.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there 12.67 kΩ or less?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

NO—Replace the rear differential fluid temperature sensor (see page 15-70).■

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BACK

DTC 43-1: Differential Fluid Temperature Sensor Circuit Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check for DTCs with the HDS.

   Is DTC 42-1 or 42-2 indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

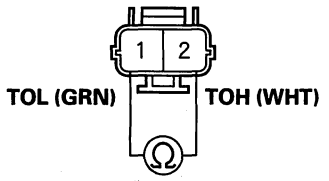
   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Let the engine idle 1 minutes.
6. Test-drive the vehicle for 5 minute.
7. Check for DTCs with the HDS.

   Is DTC 43-1 indicated?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. ■
8. Turn the ignition switch OFF.
9. Disconnect SH-AWD control unit connector A (20P).
10. Disconnect the rear differential fluid temperature sensor 2P connector.
11. Check for continuity between rear differential fluid temperature sensor 2P connector terminals No. 1 and No. 2.

REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR 2P CONNECTOR



Wire side of male terminals

Is there continuity?

YES—Repair short in the wire between rear differential fluid temperature sensor 2P connector terminals No. 1 and No. 2. ■

NO—Go to step 12.

12. Reconnect all connectors.
13. Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit (see page 15-71).
14. Start the engine.
15. Let the engine idle 1.
16. Check for DTCs with the HDS.

    Is DTC 43-1 indicated?

    YES—Replace the rear differential fluid temperature sensor (see page 15-70). ■

    NO—Replace the original SH-AWD control unit (see page 15-71). ■

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DTC Troubleshooting (cont'd)

DTC 44-11: SH-AWD Control Unit

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for DTCs with the HDS.

   Is DTC 44-11 indicated?

   YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

   NO—Intermittent failure, the system is OK at this time. ■

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BACK

DTC 44-12: SH-AWD Relay Stuck ON

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

   Is DTC 44-12 indicated?

   YES—Go to step 5.

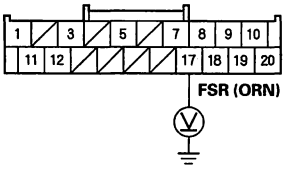
   NO—Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch OFF.
6. Remove the SH-AWD relay (see page 15-71), then test the SH-AWD relay (see page 22-77).■

   Is the SH-AWD relay OK?

   YES—Go to step 7.

   NO—Replace the SH-AWD relay (see page 15-71).■
7. Disconnect SH-AWD control unit connector A (20P).
8. Turn the ignition switch ON (II).
9. Measure voltage between SH-AWD control unit connector terminal A17 and body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

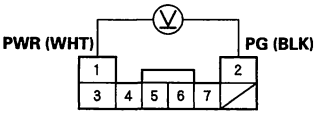
Is there battery voltage?

YES—Repair short to power in the wire between the SH-AWD control unit and SH-AWD relay (FSR line).■

NO—Go to step 10.

10. Disconnect SH-AWD control unit connector B (8P).
11. Measure voltage between SH-AWD control unit connector terminals B1 and B2.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the SH-AWD control unit and SH-AWD relay (PWR line).■

NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

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DTC Troubleshooting (cont'd)

DTC 44-32: SH-AWD Control Unit Power Supply Stuck ON

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

Is DTC 44-32 indicated?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

NO—Intermittent failure, the system is OK at this time.■

DTC 44-41: SH-AWD Control Unit Power Supply Stuck OFF

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

Is DTC 44-41 indicated?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

NO—Intermittent failure, the system is OK at this time.■

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BACK

DTC 44-50: SH-AWD Control Unit Power Supply Voltage Low

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Make sure the battery is fully changed and the charging system is working properly.
2. Turn the ignition switch OFF.
3. Check these fuse:
   - No. 3 (RR F/B) (60 A) fuse in the main under-hood fuse/relay box.
   - No. 9 (30 A) fuse in the rear fuse/relay box.

   Are the fuses OK?

   YES—Go to step 4.

   NO—Replace the blown fuses and recheck. If the No. 3 (60 A) and No. 9 (30 A) fuses blows again, repair short to ground in the wire between the fuse and the SH-AWD relay, then replace the fuse and recheck.■
4. Clear the DTC with the HDS.
5. Start the engine.
6. Check for DTCs with the HDS.

   Is DTC 44-50 indicated?

   YES—Go to step 7.

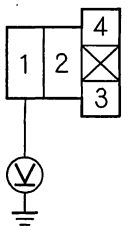
   NO—Intermittent failure, the system is OK at this time.■
7. Turn the ignition switch OFF.
8. Remove the SH-AWD relay (see page 15-71), then test the SH-AWD relay (see page 22-77).■

   Is the SH-AWD relay OK?

   YES—Go to step 9.

   NO—Replace the SH-AWD relay (see page 15-71).■
9. Measure voltage between SH-AWD relay 4P connector terminal No. 1 and body ground.

SH-AWD RELAY 4P CONNECTOR



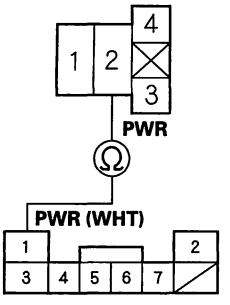
Wire side of female terminals

Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the No. 1 fuse in the under-hood fuse relay box and the SH-AWD relay.■
10. Disconnect SH-AWD control unit connector A (20P) and connector B (8P).
11. Check for continuity between SH-AWD control unit connector terminal B1 and SH-AWD relay 4P connector terminal No. 2.

SH-AWD RELAY 4P CONNECTOR
Wire side of female terminals



SH-AWD CONTROL UNIT CONNECTOR B (8P)
Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between SH-AWD control unit connector B and the SH-AWD relay connector.■

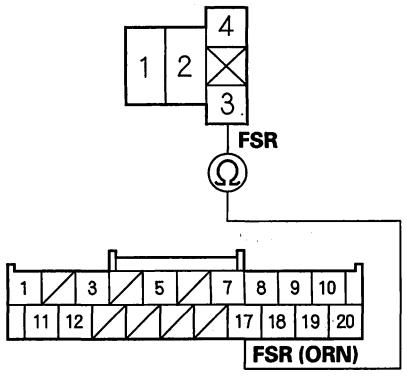
(cont'd)

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DTC Troubleshooting (cont'd)

12. Check for continuity between SH-AWD control unit connector terminal A17 and SH-AWD relay 4P connector terminal No. 3.

SH-AWD RELAY 4P CONNECTOR
Wire side of female terminals



SH-AWD CONTROL UNIT CONNECTOR A (20P)
Wire side of female terminals

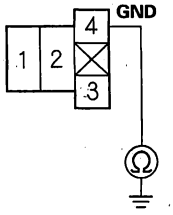
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between SH-AWD control unit connector A and the SH-AWD relay connector.■

13. Check for continuity between SH-AWD relay 4P connector terminal No. 4 and body ground.

SH-AWD RELAY 4P CONNECTOR



Wire side of female terminals

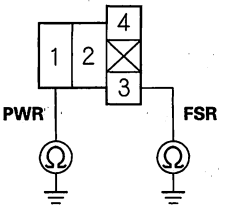
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the SH-AWD relay and body ground.■

14. Check for continuity between SH-AWD relay 4P connector terminals No. 1 and No. 3 to body ground (G604).

SH-AWD RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery continuity?

YES—Repair short in the wire between SH-AWD relay and body ground.■

NO—Check for loose connector terminals at the SH-AWD control unit. If the connections are OK, update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

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BACK

DTC 49-1: SH-AWD Control Unit (PG Line Open)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for DTCs with the HDS.

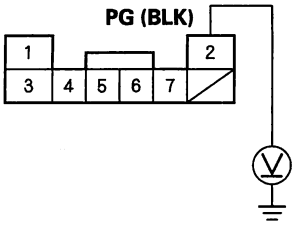
   Is DTC 49-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time.■

4. Check for voltage between SH-AWD control unit connector terminal B2 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there less than 0.5 V?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

NO—Repair open in the wire between SH-AWD control unit connector B and body ground or poor ground (G603).■

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DTC Troubleshooting (cont'd)

DTC 52-3: Left Clutch Electromagnetic Coil Current Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

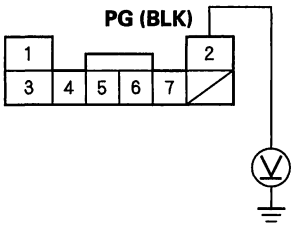
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the clutch function test with the HDS (see page 15-68).
4. Check for DTCs with the HDS.

   Is DTC 52-3 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Check for voltage between SH-AWD control unit connector terminal B2 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

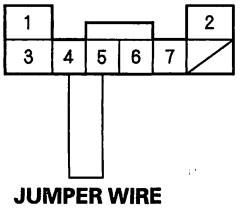
Is there less than 0.5 V?

YES—Go to step 6.

NO—Repair open in the wire between SH-AWD control unit connector B and body ground or poor ground (G603). ■

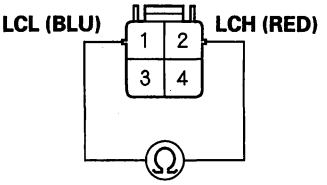
6. Turn the ignition switch OFF.
7. Disconnect SH-AWD control unit connector B (8P).
8. Connect a jumper wire between SH-AWD control unit connector terminals B4 and B5. Disconnect the left solenoid 4P connector, then check for continuity between left solenoid 4P connector terminals No. 1 and No. 2.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

LEFT SOLENOID 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair open in the wires between the SH-AWD control unit and the left clutch electromagnetic coil. ■

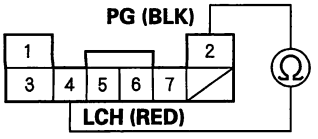
9. Remove the jumper wire from the SH-AWD control unit connector terminals B4 and B5.

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BACK

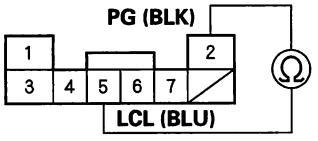
10. Check for continuity between SH-AWD control unit connector terminals B2 and B4, then check for continuity between SH-AWD control unit connector terminals B2 and B5.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

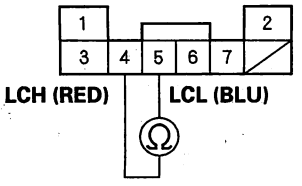
Is there continuity?

YES—Repair short to ground or short to the ground wire between the SH-AWD control unit and the left clutch electromagnetic coil. ■

NO—Go to step 12.

11. Check for continuity between SH-AWD control unit connector terminals B4 and B5.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there continuity?

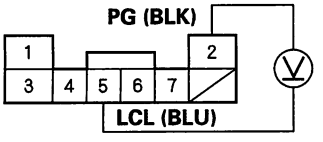
YES—Repair short in the wires between the SH-AWD control unit and the left clutch electromagnetic. ■

NO—Go to step 12.

12. Turn the ignition switch ON (II).

13. Measure voltage between SH-AWD control unit connector terminals B2 and B5.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wires between the SH-AWD control unit and the left clutch electromagnetic. ■

NO—Go to step 14.

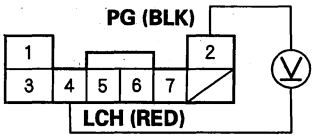
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DTC Troubleshooting (cont'd)

14. Measure voltage between SH-AWD control unit connector terminals B2 and B4.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wire between the SH-AWD control unit connector terminal B4 and left clutch electromagnetic coil. ■

NO—Substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, replace the rear differential left side case. ■

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BACK

DTC 53-1, 53-3: Left Clutch Electromagnetic Coil Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

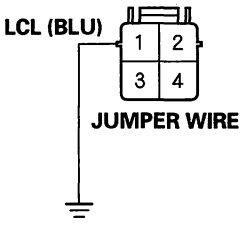
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the clutch function test with the HDS (see page 15-68).
4. Check for DTCs with the HDS.

   Is DTC 53-1 or 53-3 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch OFF.
6. Disconnect SH-AWD control unit connector B (8P) and the left solenoid 4P connector.
7. Connect a jumper wire between left solenoid 4P connector terminal No. 1.

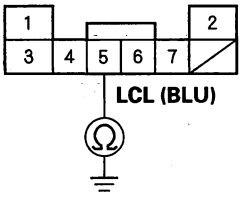
LEFT SOLENOID 4P CONNECTOR



Wire side of female terminals

8. Check for continuity between SH-AWD control unit connector terminal B5 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

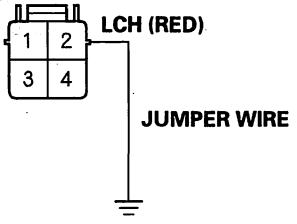
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wires between the SH-AWD control unit and the left clutch electromagnetic coil.■

9. Remove the jumper wire from the left solenoid 4P connector terminal No. 1.
10. Connect a jumper wire between left solenoid 4P connector terminal No. 2.

LEFT SOLENOID 4P CONNECTOR



Wire side of female terminals

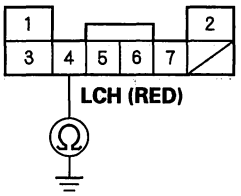
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DTC Troubleshooting (cont'd)

11. Check for continuity between SH-AWD control unit connector terminal B4 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wires between the SH-AWD control unit and the left clutch electromagnetic coil. ■

12. Remove the jumper wire from the left solenoid 4P connector terminal No. 1.

13. Reconnect all connectors.

14. Turn the ignition switch ON (II).

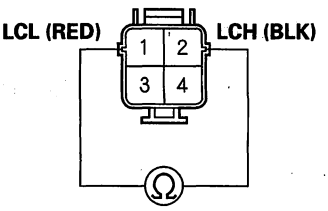
15. Check the REAR DIFFERENTIAL FLUID TEMPERATURE in the DATA LIST is above 68 °F (20 °C) with the HDS before proceeding to the next step. If the temperature is below 68 °F (20 °C), drive the vehicle to warm up the rear differential until the fluid temperature becomes above 68 °F (20 °C).

16. Turn the ignition switch OFF.

17. Disconnect the left solenoid 4P connector.

18. Measure the resistance between left solenoid 4P connector terminals No. 1 and No. 2.

LEFT SOLENOID 4P CONNECTOR



Wire side of male terminals

Is there 1.8 Ω or more?

YES—Replace the rear differential left side case (see page 15-89). ■

NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

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BACK

DTC 53-2: Left Clutch Electromagnetic Coil (Short)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the clutch function test with the HDS (see page 15-68).
4. Check for DTCs with the HDS.

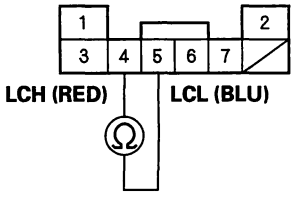
   Is DTC 53-2 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■

5. Turn the ignition switch OFF.
6. Disconnect SH-AWD control unit connector B (8P) and the left solenoid 4P connector.
7. Check for continuity between SH-AWD control unit connector terminals B4 and B5.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

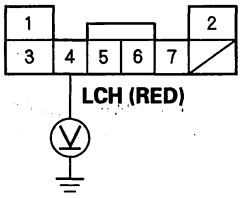
Is there continuity?

YES—Repair short in the wires between SH-AWD control unit connector terminals B4 and B5.■

NO—Go to step 8.

8. Turn the ignition switch ON (II).
9. Measure voltage between SH-AWD control unit connector terminal B4 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wires between SH-AWD control unit connector terminal B4 and left clutch electromagnetic coil.■

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).

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DTC Troubleshooting (cont'd)

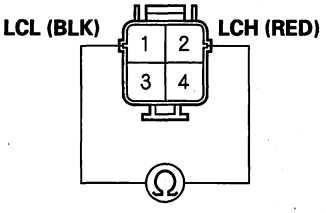
13. Check the REAR DIFFERENTIAL FLUID TEMPERATURE in the DATA LIST is above 68 °F (20 °C) with the HDS before proceeding to the next step. If the temperature is below 68 °F (20 °C), drive the vehicle to warm up the rear differential until the fluid temperature becomes above 68 °F (20 °C).

14. Turn the ignition switch OFF.

15. Disconnect the left solenoid 4P connector.

16. Measure resistance between left solenoid 4P connector terminals No. 1 and No. 2.

LEFT SOLENOID 4P CONNECTOR



Wire side of male terminals

Is there 0.45 Ω or less?

YES—Replace the rear differential left side case (see page 15-89). ■

NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

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BACK

DTC 56-3: Right Clutch Electromagnetic Coil Current Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the clutch function test with the HDS (see page 15-68).
4. Check for DTCs with the HDS.

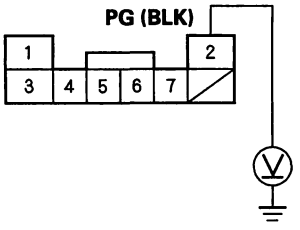
   Is DTC 56-3 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■

5. Check for voltage between SH-AWD control unit connector terminals B2 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

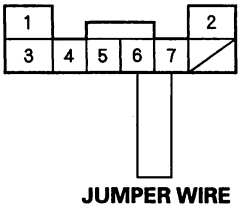
Is there less than 0.5 V?

YES—Go to step 6.

NO—Repair open in the wire between SH-AWD control unit connector B and body ground or poor ground (G603).■

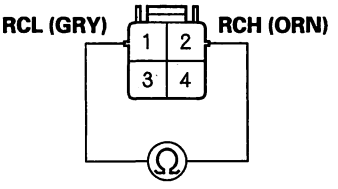
6. Turn the ignition switch OFF.
7. Disconnect SH-AWD control unit connector B (8P).
8. Connect a jumper wire between SH-AWD control unit connector terminals B6 and B7. Disconnect the right solenoid 4P connector, then check for continuity between right solenoid 4P connector terminals No. 1 and No. 2.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

RIGHT SOLENOID 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the SH-AWD control unit and the right clutch electromagnetic coil.■

9. Remove the jumper wire from SH-AWD control unit connector terminals B6 and B7.

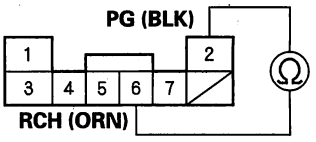
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DTC Troubleshooting (cont'd)

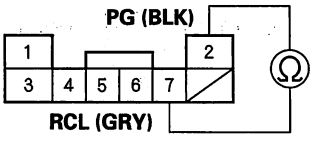
10. Check for continuity between SH-AWD control unit connector terminals B2 and B6, then check for continuity between SH-AWD control unit connector terminals B2 and B7.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

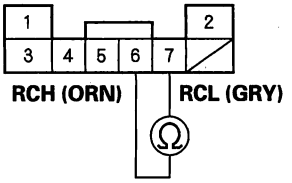
Is there continuity?

YES—Repair short to ground or short to the ground wire between the SH-AWD control unit and the right clutch electromagnetic coil. ■

NO—Go to step 11.

11. Check for continuity between SH-AWD control unit connector terminals B6 and B7.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the SH-AWD control unit and the right clutch electromagnetic coil. ■

NO—Go to step 12.

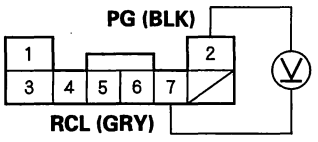
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BACK

12. Turn the ignition switch ON (II).

13. Measure voltage between SH-AWD control unit connector terminals B2 and B7.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

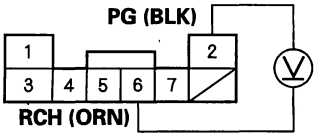
Is there more than 0.5 V?

YES—Repair short to power in the wire between SH-AWD control unit and the right clutch electromagnetic coil. ■

NO—Go to step 14.

14. Measure voltage between SH-AWD control unit connector terminals B2 and B6.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wire between the SH-AWD control unit connector terminal B6 and right clutch electromagnetic coil. ■

NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

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DTC Troubleshooting (cont'd)

DTC 57-1, 57-3: Right Clutch Electromagnetic Coil Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

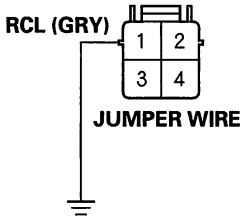
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the clutch function test with the HDS (see page 15-68).
4. Check for DTCs with the HDS.

   Is DTC 57-1 or 57-3 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch OFF.
6. Disconnect SH-AWD control unit connector B (8P) and the right solenoid 4P connector.
7. Connect a jumper wire between right solenoid 4P connector terminal No. 1.

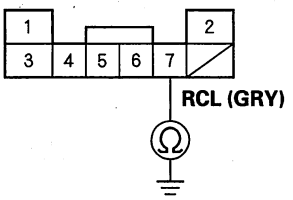
RIGHT SOLENOID 4P CONNECTOR



Wire side of female terminals

8. Check for continuity between SH-AWD control unit connector terminal B7 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

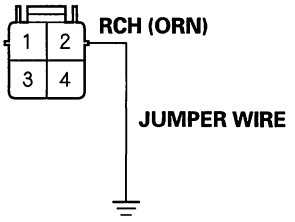
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wires between the SH-AWD control unit and the right clutch electromagnetic coil.■

9. Remove the jumper wire from the right solenoid 4P connector terminal No. 1.
10. Connect a jumper wire between right solenoid 4P connector terminal No. 2.

RIGHT SOLENOID 4P CONNECTOR



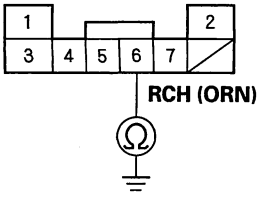
Wire side of female terminals

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11. Check for continuity between SH-AWD control unit connector terminal B6 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wires between the SH-AWD control unit and the right clutch electromagnetic coil.■

12. Remove the jumper wire from the right solenoid 4P connector terminal No. 1.

13. Reconnect all connectors.

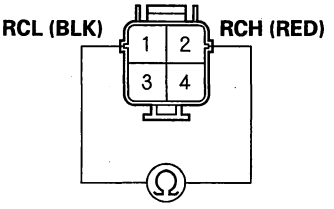
14. Turn the ignition switch ON (II).

15. Check the REAR DIFFERENTIAL FLUID TEMPERATURE in the DATA LIST is above 68 °F (20 °C) with the HDS before proceeding to the next step. If the temperature is below 68 °F (20 °C), drive the vehicle to warm up the rear differential until the fluid temperature becomes above 68 °F (20 °C).

16. Disconnect the right solenoid 4P connector.

17. Measure resistance between right solenoid 4P connector terminals No. 1 and No. 2.

RIGHT SOLENOID 4P CONNECTOR



Wire side of male terminals

Is there 1.8 Ω or more?

YES—Replace the rear differential right side case (see page 15-89).■

NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

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DTC Troubleshooting (cont'd)

DTC 57-2: Right Clutch Electromagnetic Coil (Short)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

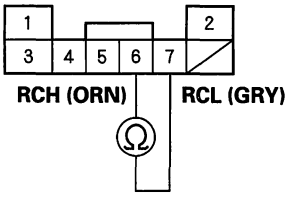
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the clutch function test with the HDS (see page 15-68).
4. Check for DTCs with the HDS.

   Is DTC 57-2 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch OFF.
6. Disconnect SH-AWD control unit connector B (8P) and the right solenoid 4P connector.
7. Check for continuity between SH-AWD control unit connector terminals B6 and B7.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

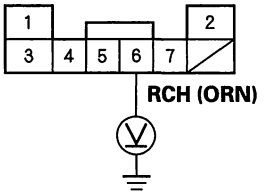
Is there continuity?

YES—Repair short in the wires between SH-AWD control unit connector terminals B6 and B7.■

NO—Go to step 8.

8. Turn the ignition switch ON (II).
9. Measure voltage between SH-AWD control unit connector terminal B6 and body ground.

SH-AWD CONTROL UNIT CONNECTOR B (8P)



Wire side of female terminals

Is there more than 0.5 V?

YES—Repair short to power in the wires between the SH-AWD control unit connector terminal B6 and right clutch electromagnetic coil.■

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).

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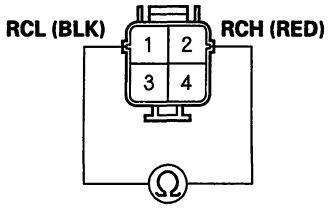
13. Check the REAR DIFFERENTIAL FLUID TEMPERATURE in the DATA LIST is above 68 °F (20 °C) with the HDS before proceeding to the next step. If the temperature is below 68 °F (20 °C), drive the vehicle to warm up the rear differential until the fluid temperature becomes above 68 °F (20 °C).

14. Turn the ignition switch OFF.

15. Disconnect the right solenoid 4P connector.

16. Measure resistance between right solenoid 4P connector terminals No. 1 and No. 2.

RIGHT SOLENOID 4P CONNECTOR



Wire side of male terminals

Is there 0.45 Ω or less?

YES—Replace the rear differential right side case (see page 15-89). ■

NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

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DTC Troubleshooting (cont'd)

DTC 76-1: Rear Differential Fluid Overheats

NOTE:
- Before you troubleshoot, review the general troubleshooting information (see page 15-4).
- When the temperature of the rear differential fluid is abnormally high, the SH-AWD indicator comes on. This is not necessarily a problem, but DTC 76-1 will be stored.
- Check the rear differential fluid level (see page 15-69). If it's low, refill it, clear the DTC, and recheck.

1. Turn the ignition switch ON (II).
2. Check for DTCs in the VSA system with the HDS.

   Are any VSA System DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Test-drive the vehicle at 10 mph (15 km/h).
6. Check for WHEEL SPEED in the DATA LIST with the HDS.

   Are all wheel speed the same?

   YES—Intermittent failure, the system is OK at this time.■

   NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Check for rear brake drag.

   Are the rear brakes OK?

   YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

   NO—Repair the rear brakes (see page 19-4).■

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DTC 77-1: Communication Error with the Power Control Module (PCM)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

   Is DTC 77-1 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Check for DTCs in the PGM-FI system with the HDS.

   Are any PGM-F I system DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.■

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

DTC 77-2: Communication Error with the VSA Modulator-Control Unit

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

   Is DTC 77-2 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Check for DTCs in the VSA system with the HDS.

   Are any VSA system DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.■

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

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DTC Troubleshooting (cont'd)

77-4: Communication Error with the Automatic-Transmission Control Unit

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

   Is DTC 77-4 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Check for DTCs in the A/T system with the HDS.

   Are any A/T system DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

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DTC 77-5: Yaw Rate-Lateral/Longitudinal Acceleration Sensor Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

   Is DTC 77-5 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Check for DTCs in the VSA system with the HDS.

   Are any yaw rate-lateral acceleration sensor DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.■

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

DTC 77-6: Steering Angle Sensor Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for DTCs with the HDS.

   Is DTC 77-6 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Check for DTCs in the VSA system with the HDS.

   Are any steering angle sensor DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.■

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

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DTC Troubleshooting (cont'd)

DTC 78-xx: SH-AWD Control Unit Self-Diagnostic Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II).
3. Check for DTCs with the HDS.

Is DTC 78-xx indicated?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

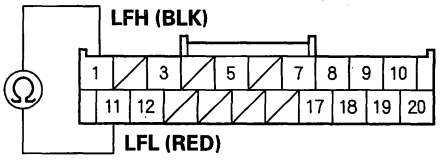
NO—Intermittent failure, the system is OK at this time. ■

DTC 81-1: Left Search Coil Sensor Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Disconnect SH-AWD control unit connector A (20P).
2. Check for continuity between SH-AWD control unit connector terminals A1 and A11.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Go to step 3.

NO—Go to step 6.

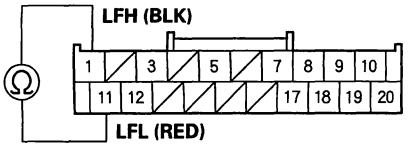
3. Check the REAR DIFFERENTIAL FLUID TEMPERATURE in the DATA LIST is above 68 °F (20 °C) with the HDS before proceeding to the next step. If the temperature is below 68 °F (20 °C), drive the vehicle to warm up the rear differential until the fluid temperature becomes above 68 °F (20 °C).

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4. Measure resistance between SH-AWD control unit connector terminals A1 and A11.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

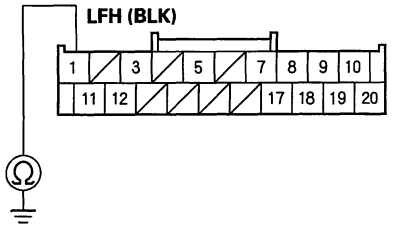
Is there 2.0 Ω or more?

YES—Go to step 5.

NO—Go to step 7.

5. Check for continuity between SH-AWD control unit connector terminal A1 and body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

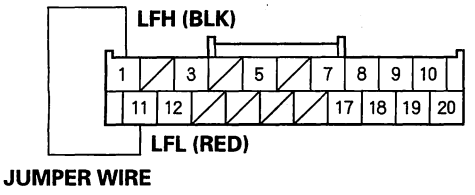
Is there continuity?

YES—Repair short in the wire between SH-AWD control unit connector terminal A1 and body ground. ■

NO—Check for loose connector terminals at the SH-AWD control unit and repair if necessary. If the connections are OK, update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

6. Connect a jumper wire between SH-AWD control unit connector terminals A1 and A11. Disconnect the left solenoid 4P connector, then check for continuity between left solenoid 4P connector terminals No. 3 and No. 4.

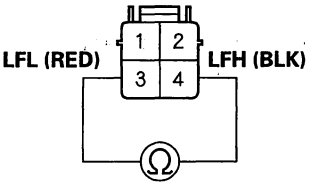
SH-AWD CONTROL UNIT CONNECTOR A (20P)



JUMPER WIRE

Wire side of female terminals

LEFT SOLENOID 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the rear differential left side case (see page 15-89). ■

NO—Repair open in the wire between left solenoid 4P connector terminals No. 3 and No. 4. ■

(cont'd)

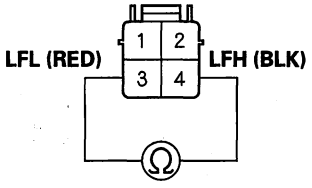
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DTC Troubleshooting (cont'd)

7. Disconnect the left solenoid 4P connector.

8. Check for continuity between left solenoid 4P connector terminals No. 3 and No. 4.

LEFT SOLENOID 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between SH-AWD control unit connector A and the left search coil connector. ■

NO—Replace the rear differential left side case (see page 15-89). ■

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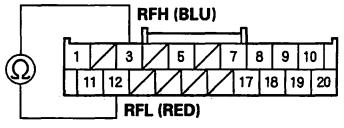
BACK

DTC 82-1: Right Search Coil Sensor Malfunction

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Disconnect SH-AWD control unit connector A (20P).
2. Check for continuity between SH-AWD control unit connector terminals A3 and A12.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

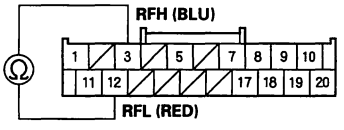
Is there continuity?

YES—Go to step 3.

NO—Go to step 6.

3. Check the REAR DIFFERENTIAL FLUID TEMPERATURE in the DATA LIST is above 68 °F (20 °C) with the HDS before proceeding to the next step. If the temperature is below 68 °F (20 °C), drive the vehicle to warm up the rear differential until the fluid temperature becomes above 68 °F (20 °C).
4. Measure resistance between SH-AWD control unit connector terminals A3 and A12.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

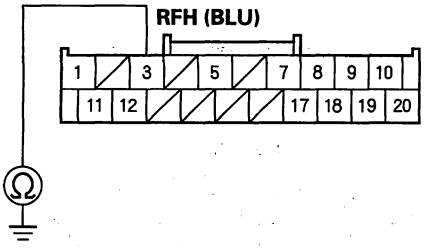
Is there 2.0 Ω or more?

YES—Go to step 5.

NO—Go to step 7.

5. Check for continuity between SH-AWD control unit connector terminal A3 and body ground.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between SH-AWD control unit connector terminal A3 and body ground. ■

NO—Check for loose connector terminals at the SH-AWD control unit and repair if necessary. If the connections are OK, update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

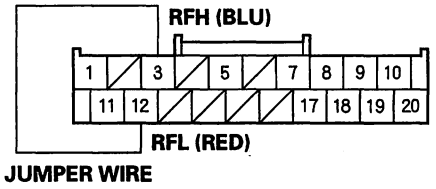
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DTC Troubleshooting (cont'd)

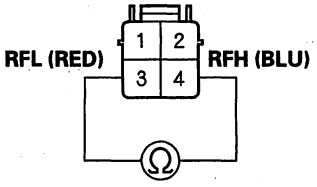
6. Connect a jumper wire between SH-AWD control unit connector terminals A3 and A12. Disconnect the right solenoid 4P connector, then check for continuity between right solenoid 4P connector terminals No. 3 and No. 4.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

RIGHT SOLENOID 4P CONNECTOR



Wire side of female terminals

Is there continuity?

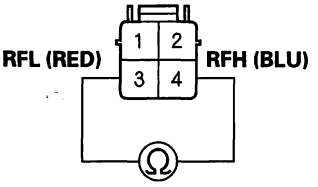
YES—Replace the rear differential right side case (see page 15-89). ■

NO—Repair open in the wires between right solenoid 4P connector terminals No. 3 and No. 4. ■

7. Disconnect the right solenoid 4P connector.

8. Check for continuity between right solenoid 4P connector terminals No. 3 and No. 4.

RIGHT SOLENOID 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wires between SH-AWD control unit connector A and the right search coil sensor connector. ■

NO—Replace the rear differential right side case (see page 15-89). ■

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BACK

DTC 91-1: SH-AWD Control Unit Programming Error

NOTE:
- Before you troubleshoot, review the general troubleshooting information (see page 15-4).
- DTC 91-1 is stored when the SH-AWD system update is not completed.
- Do not turn the ignition switch OFF while updating the SH-AWD system. If you turn the ignition switch OFF before completion, the SH-AWD system can be damaged.

1. Do the SH-AWD system update procedure (see page 15-6).

2. Check for DTCs with the HDS.

   Is DTC 91-1 indicated?

   YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71). ■

   NO—Update is complete.

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Symptom Troubleshooting

The SH-AWD indicator does not go off, and no DTCs are stored

NOTE:
- Before you troubleshoot, review the general troubleshooting information (see page 15-4).
- Make sure the No. 3 (RR F/B) (60A) fuse in the main under-hood fuse box is OK.
- Make sure the No. 9 (30A) fuse in the rear fuse/relay box is OK.
- Make sure there are on loose connector terminals at the SH-AWD control unit.
- Make sure charging system is OK.
- Make sure the PGM-FI system and the A/T system is not in the middle of updating.

1. Test the battery (see page 22-76). Charge or replace the battery if necessary.

2. Check the COMPLETE MEMORIZATION in the DATA LIST with the HDS.

   Does the data list show ''complete''?

   YES—Go to step 3.

   NO—Do the SH-AWD system memorization procedure (see page 15-7), then go to step 3.

3. Check for DTCs in the VSA system with the HDS.

   Are any steering angle sensor DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.■

   NO—Go to step 4.

4. Start the engine.

5. Check the SH-AWD indicator value with the HDS.

   Is the SH-AWD indicator value OFF?

   YES—Go to the gauge control system DTC troubleshooting (see page 22-322).■

   NO—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

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The SH-AWD indicator does not come on

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Check the SH-AWD indicator.

   Does the SH-AWD indicator come on and go off?

   YES—Intermittent failure, the system is OK at this time.■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Disconnect SH-AWD control unit connector A (20P) and B (8P).
5. Turn the ignition switch ON (II).
6. Check the SH-AWD indicator.

   Does the SH-AWD indicator come on?

   YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-6), or substitute a known-good SH-AWD control unit and recheck (see page 15-71). If the symptom/indication goes away with the updated SH-AWD control unit, troubleshooting is complete. If the symptom/indication goes away with a known-good SH-AWD control unit, replace the original SH-AWD control unit (see page 15-71).■

   NO—Go to the gauge control system troubleshooting (see page 22-322).■

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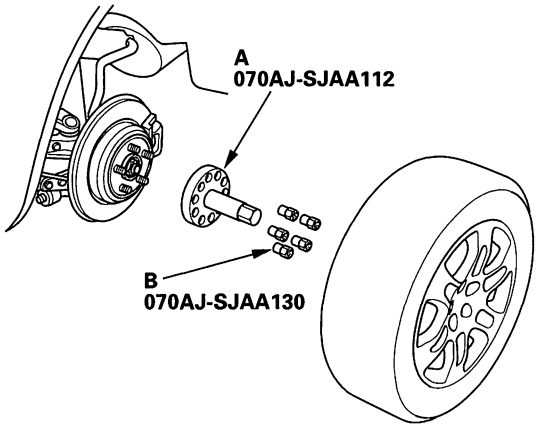
SH-AWD Function Test

Special Tools Required
- Adapter, torque wrench 070AJ-SJAA112
- Nut, 14 x 1.5 mm 070AJ-SJAA130

Direct Electromagnetic Clutch Test

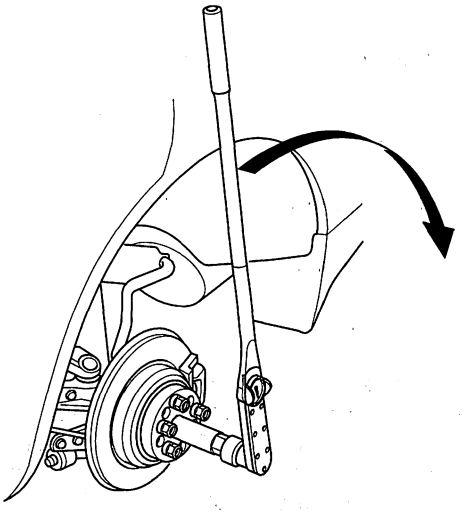
NOTE:
- No DTC was detected.
- The shift lever is in N.
- The SH-AWD control unit had been initialized.
- The tire pressures are at the specified value.
- Tire size and were are the same between the left and right tires.

1. Connect the HDS to the DLC.
2. Check that the differential fluid temperature is over 68 °F (20 °C) with the HDS. If it is below 68 °F (20 °C), raise the temperature by driving the vehicle in circles or by constantly turning.
3. Raise the vehicle, and make sure it is securely supported.
4. Remove the rear wheels.
5. Install the adapter, torque wrench (A) and the nut (B) on the rear wheel hub.



6. Do the direct electromagnetic clutch test with the HDS. Go to Miscellaneous test menu/functional, select tests/direct electromagnetic clutch test, then follow the screen prompts.
7. Install a torque wrench on the special tool as shown on the HDS. Write down the torque value while slowly rotating the rear hub with the torque wrench as shown. (Turn the hub no more than 90 degrees in 7 to 10 seconds).

   NOTE: Use a torque wrench capable of measuring up to 80 kg·m (580 lbf·ft) such as a commercially available Snap-on torque wrench TE352FUE.



8. Enter the torque value into the HDS, and wait for the test to finish.

   - If the result shows the clutch driving force is normal, the clutch assembly is OK.
   - If the result shows the clutch driving force is abnormal, replace the differential fluid, and retest. If the result still shows the clutch driving force is abnormal, replace the right and left differential side case (see page 15-89).

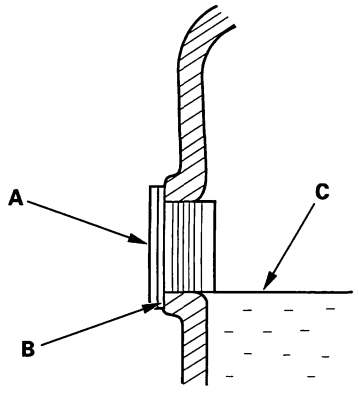
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Rear Differential Fluid Inspection and Replacement

Inspection

1. Park the vehicle on level ground, and turn the ignition switch to LOCK (0).
2. Use solvent and a brush to wash any oil and dirt off the differential fluid inspection oil filter plugs.
3. Remove the filler plug (A) and the sealing washer (B), then check the condition of the fluid, and make sure the fluid is at the proper level (C).



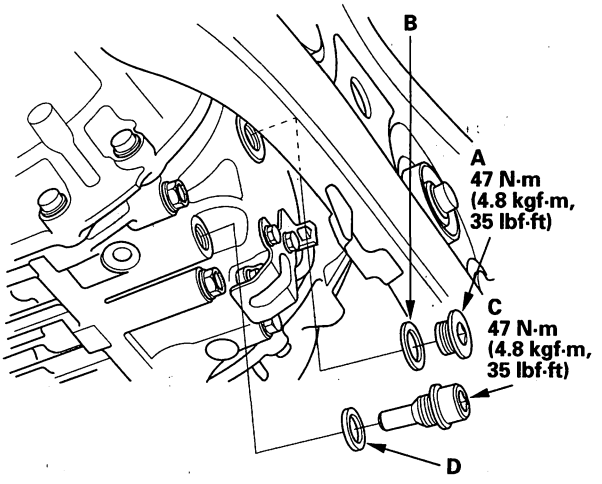
4. The fluid level must reach up the bottom of the filler plug hole. If it is below the hole, add the recommended fluid until it runs out, then reinstall the filler plug with a new sealing washer.

Replacement

1. Park the vehicle on level ground, and turn the ignition switch to LOCK (0).
2. Remove the filler plug (A) and the sealing washer (B).

Fluid Capacity
2.53 L (2.67 US qt) at fluid change
2.77 L (2.93 US qt) at overhaul

Recommended fluid: Honda ATF-Z1



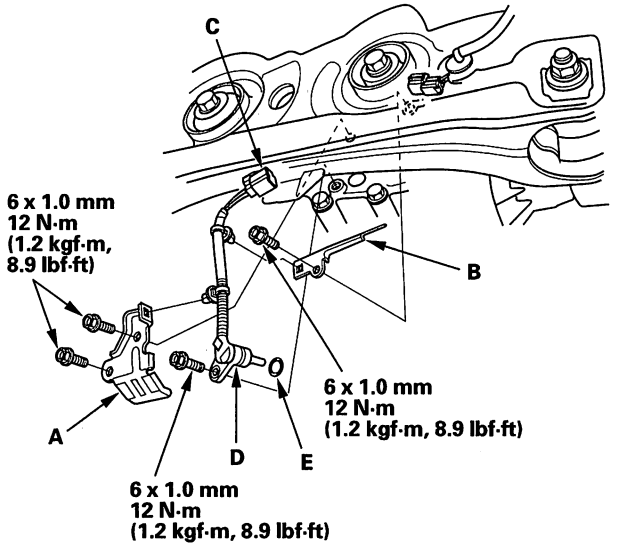
3. Remove the drain plug (C) and the sealing washer (D), and drain the fluid.
4. Reinstall the drain plug with a new sealing washer (D).
5. Add fluid until it reaches the bottom of the filler plug hole.
6. Reinstall the filler plug with a new sealing washer.

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Rear Differential Fluid Temperature Sensor Replacement

1. Drain the differential fluid (see page 15-69).

2. Remove the differential fluid temperature sensor cover (A) and the differential fluid temperature sensor harness stay (B), then disconnect the differential fluid temperature sensor connector (C).



3. Remove the differential fluid temperature sensor (D).

4. Install the differential fluid temperature sensor with a new O-ring (E) in the reverse order of removal.

5. Refill the differential fluid (see page 15-69).

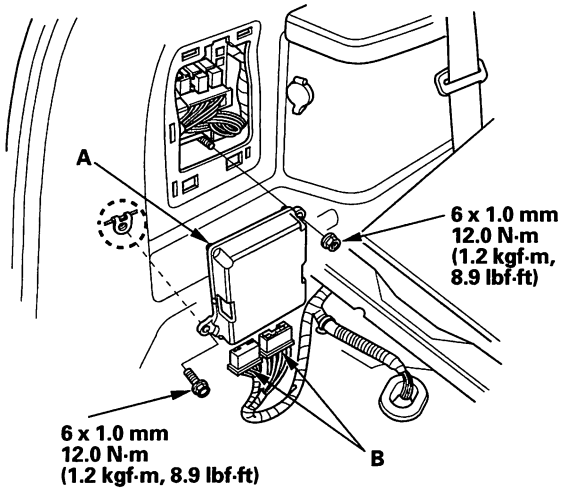
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BACK

SH-AWD Control Unit Replacement

NOTE: The SH-AWD control unit must be initialized (see page 15-8). after replacement, other wise the SH-AWD system will not function.

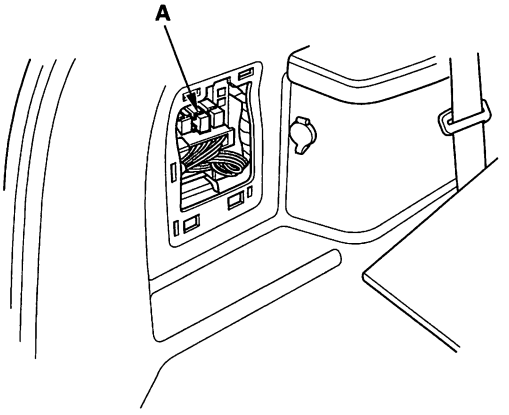
1. Remove the rear left side trim panel cover (see page 20-92).
2. Remove the cargo floor lid and the cargo box (see page 20-90).
3. Remove the SH-AWD control unit (A).



4. Disconnect the SH-AWD control unit connectors (B).
5. Install the SH-AWD control unit in the reverse order of removal.

SH-AWD Relay Replacement

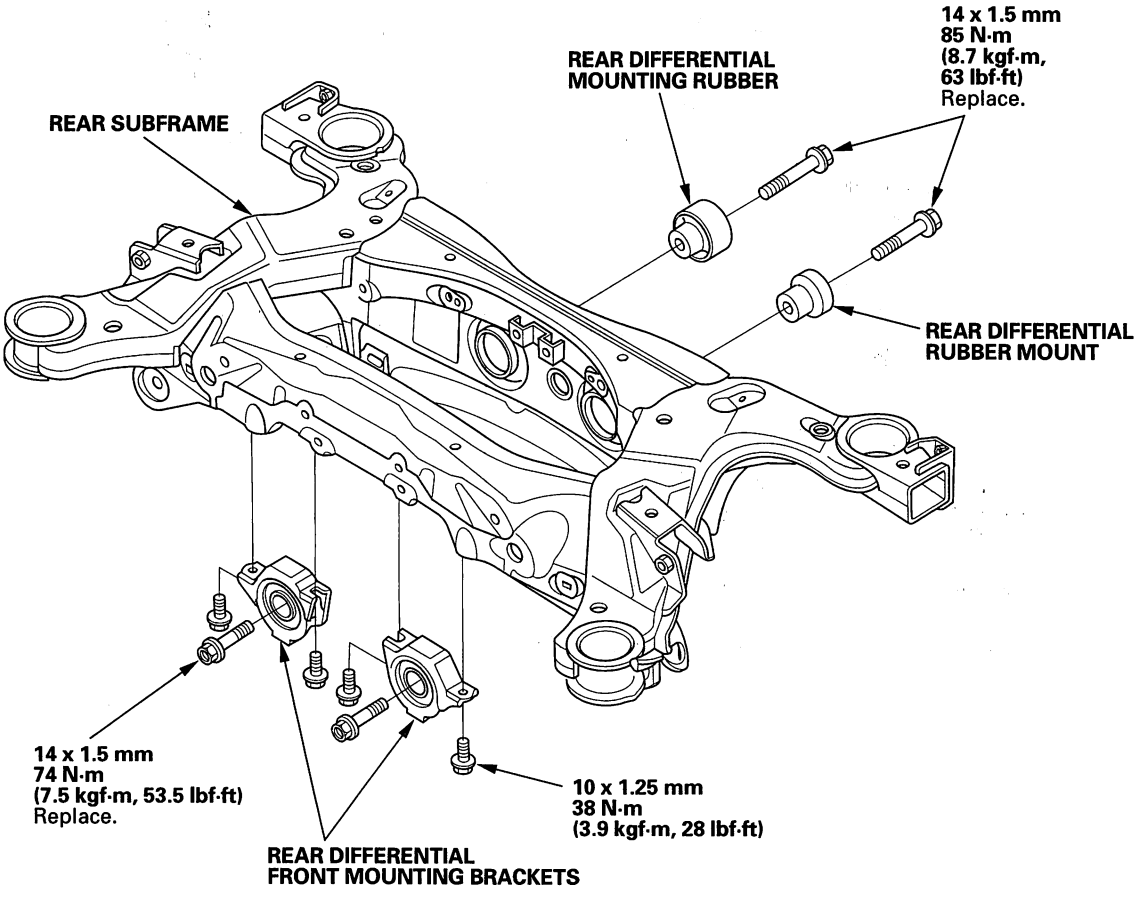
1. Remove the rear left side trim panel cover (see page 20-92).
2. Remove the SH-AWD relay (A).



3. Install the SH-AWD relay in the reverse order of removal.

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Rear Differential Mount Replacement

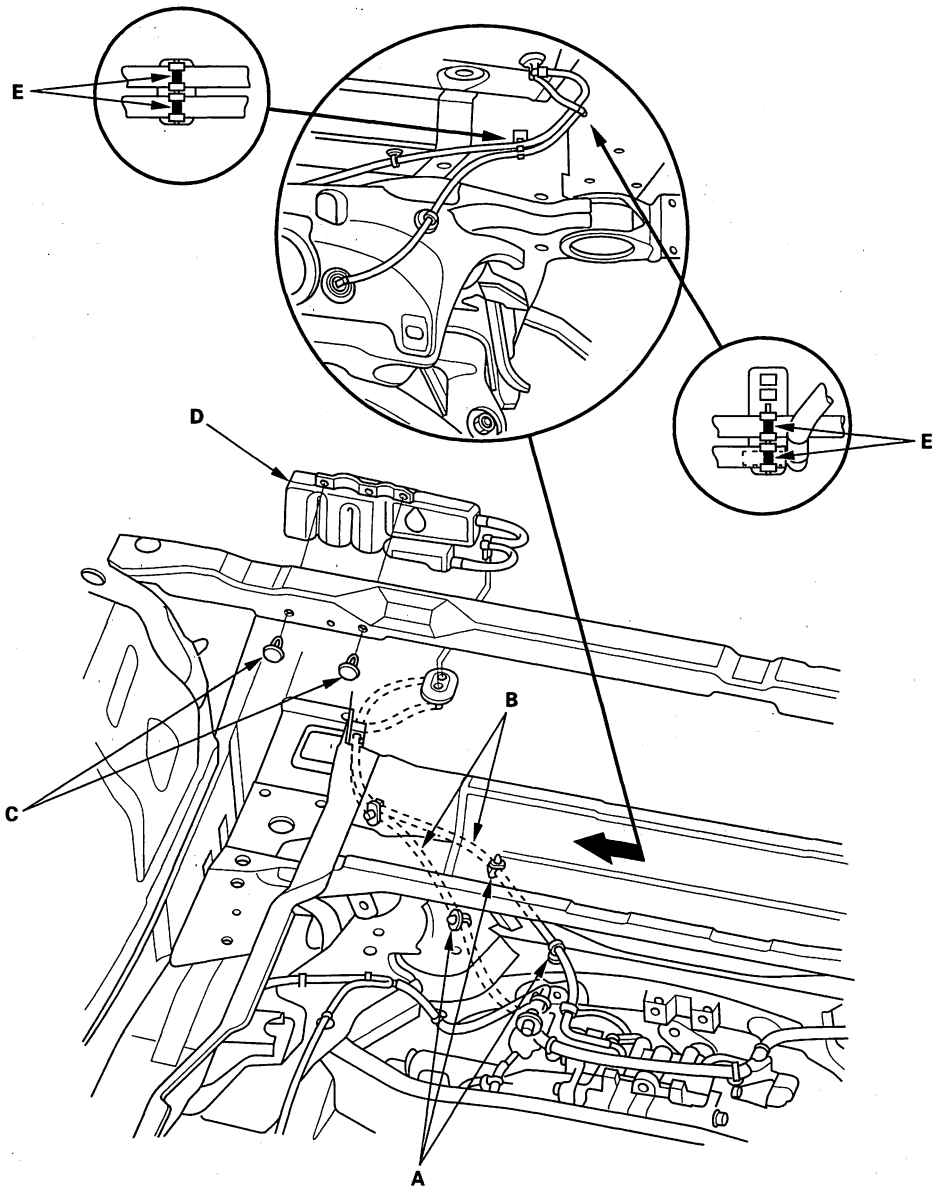


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Rear Differential Breather Box and Hose Replacement

1. Remove the cargo floor lid and the cargo box (see page 20-90).
2. Remove the breather hose clips (A), then disconnect the breather hose (B).



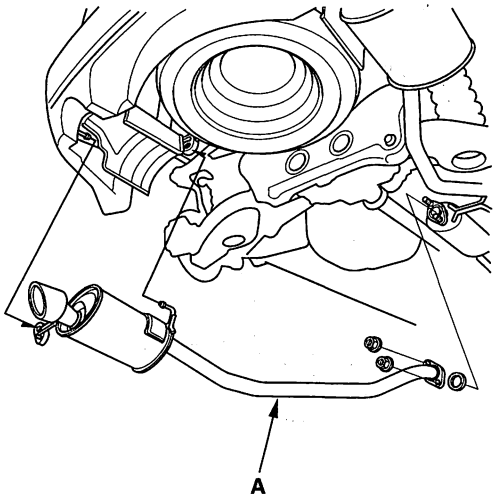
3. Remove the breather box clips (C) and the breather box (D).
4. Install the breather box then connect the breather hose and the breather hose clips.
5. Align the point mark (E) on the breather hose as shown.
6. Make sure that all the hoses are properly routed, clipped into place, and not pinched.
7. Install the cargo floor lid and the cargo box (see page 20-90).

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Rear Differential Removal

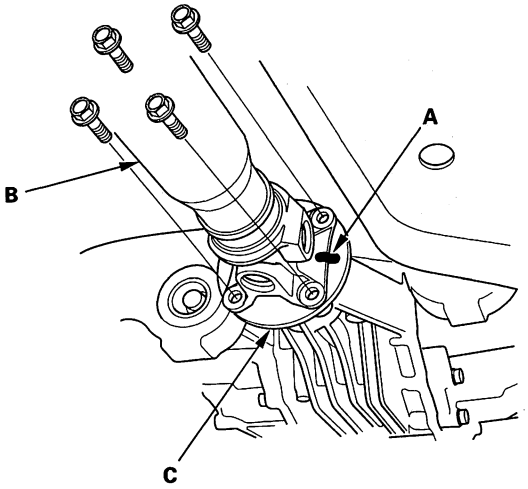
Special Tools Required
Driveshaft remover 07AAD-S3VA000

1. Drain the differential fluid (see page 15-69).
2. Remove the exhaust pipe (A).

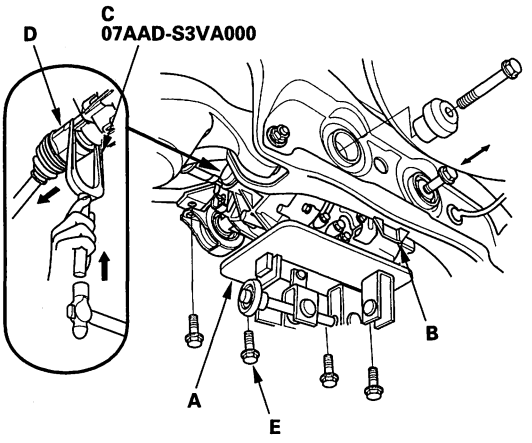


3. Remove the right rear driveshaft (see page 16-26).
4. Make a reference mark (A) across the propeller shaft (B) and rear differential companion flange (C). Separate the propeller shaft from the rear differential.

   NOTE: Suspend the propeller shaft with an appropriate size wire.



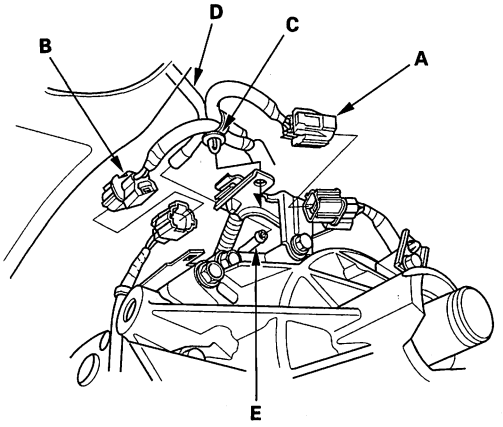
5. Place the transmission jack (A) under the rear differential (B).
6. Using the driveshaft remover (C) and the hammer, and disconnect the left rear inboard joint (D) from the rear differential.



7. Remove the rear differential mounting bolts (E).
8. Lower the rear differential a little on the transmission jack, then remove the left rear driveshaft inboard joint from the rear differential.

   NOTE: Make sure not to over extend the harness and the tube.

9. Disconnect the right clutch solenoid 4P connector (A) and the rear differential fluid temperature sensor 2P connector (B), then remove the harness clip (C).



10. Disconnect the breather tube (D) from the breather pipe (E).

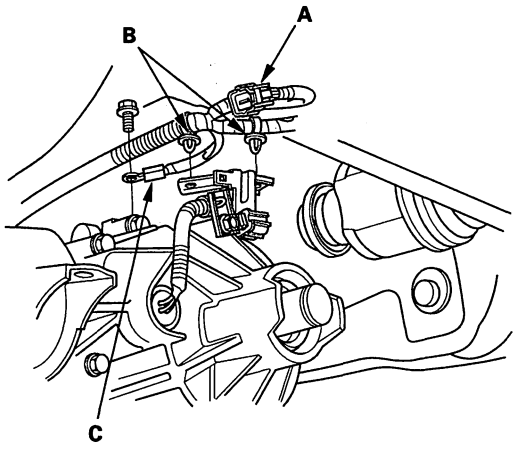
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11. Slowly lower the rear differential a little on the transmission jack.

    NOTE: Make sure not to over extend the harness.

12. Disconnect the left clutch solenoid 4P connector (A), then remove the harness clips (B).



13. Disconnect the ground cable (C) from the rear differential.

14. Lower the rear differential on the transmission jack.

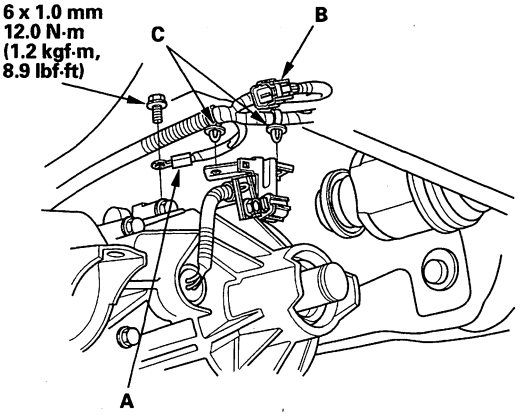
Rear Differential Installation

1. Raise the rear differential with the transmission jack.

2. If the original differential is being reinstalled, replace the set rings.

3. Raise the rear differential a little on the transmission jack.

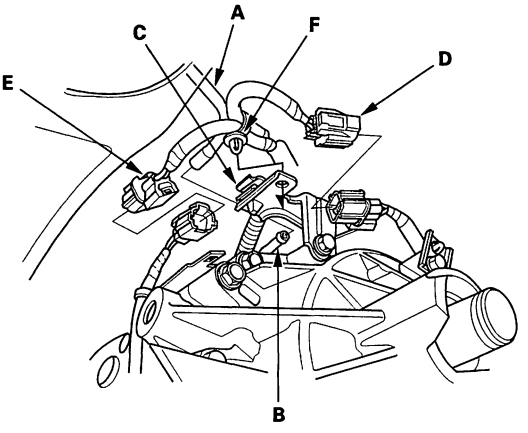
4. Connect the ground cable (A) to the rear differential.



5. Connect the left clutch solenoid 4P connector (B), then install the harness clips (C).

6. Raise the rear differential a little on the transmission jack.

7. Connect the breather tube (A) to the breather pipe (B) and the clip (C).



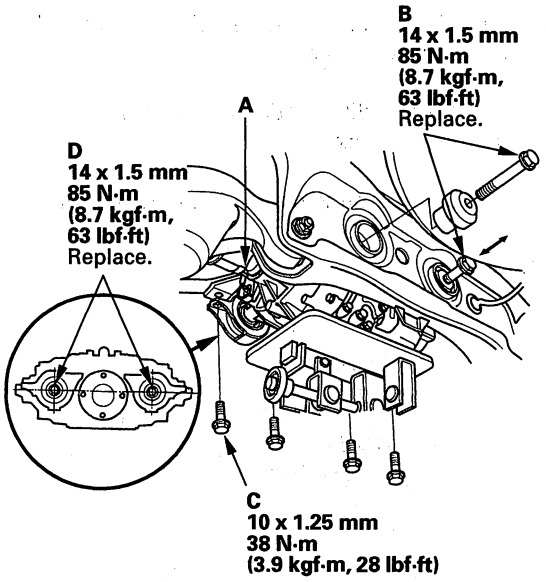
8. Connect the right clutch solenoid 4P connector (D) and the rear differential fluid temperature sensor 2P connector (E), then install the harness clip (F).

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Rear Differential Installation (cont'd)

9. Install the left rear driveshaft inboard joint (A) to the rear differential.



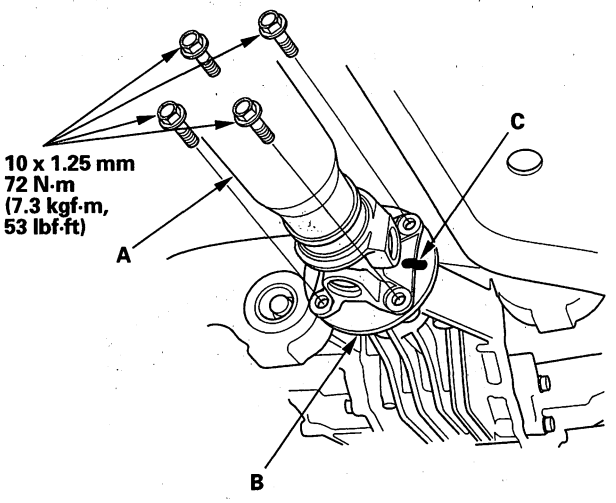
10. Raise the rear differential to the mounting level, then hand tighten the new rear differential rear mounting bolts (B) and rear differential front mounting bracket bolts (C).

11. Loosen the differential front mounting bolts (D).

12. Tighten the new rear differential rear mounting bolt then tighten the rear differential front mounting bracket bolts.

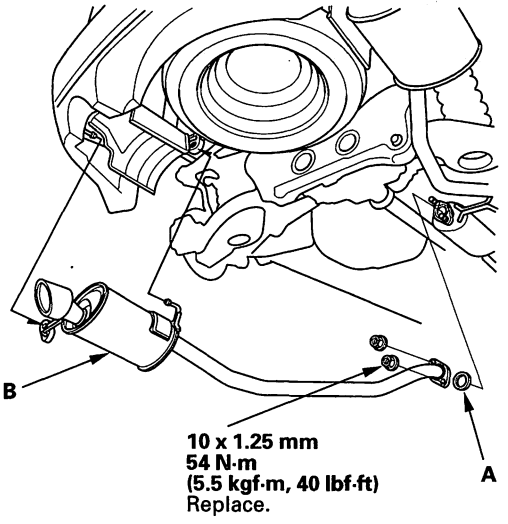
13. Tighten the rear differential front mounting bolts.

14. Attach the propeller shaft (A) to the rear differential (B) by aligning the reference marks (C) you made during the removal procedure.



15. Install the right rear driveshaft (see page 16-26).

16. Install the new exhaust pipe gasket (A) and exhaust pipe (B).



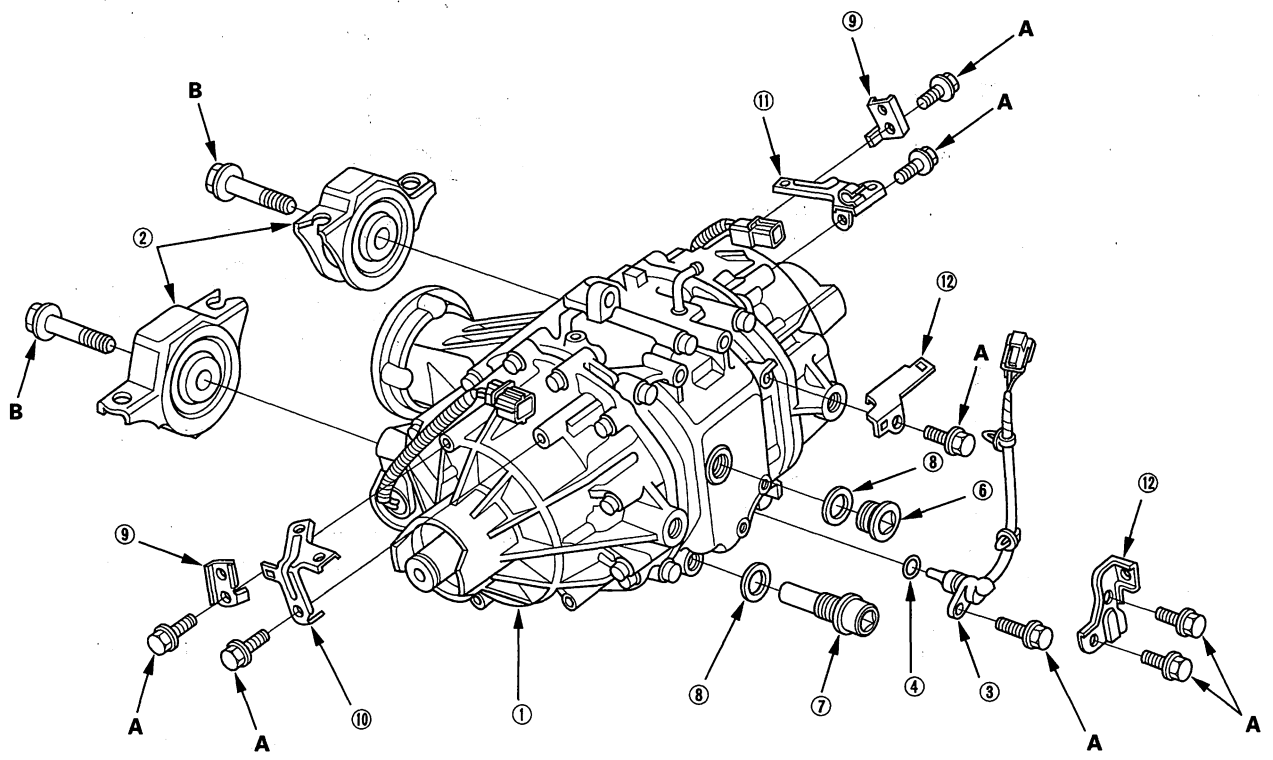
17. Refill the differential fluid (see page 15-69).

18. Check the wheel alignment, and adjust it if necessary (see page 18-5).

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Rear Differential Disassembly/Reassembly



① REAR DIFFERENTIAL CARRIER ASSEMBLY
② REAR DIFFERENTIAL FRONT MOUNTING BRACKETS
③ DIFFERENTIAL FLUID TEMPERATURE SENSOR
④ O-RING
Replace.
⑤ DIFFERENTIAL FLUID TEMPERATURE SENSOR COVER
⑥ FILLER PLUG
47 N·m (4.8 kgf·m, 35 lbf·ft)
⑦ DRAIN PLUG
47 N·m (4.8 kgf·m, 35 lbf·ft)
⑧ SEALING WASHER
Replace.
⑨ REAR DIFFERENTIAL HARNESS BRACKET A
⑩ REAR DIFFERENTIAL HARNESS BRACKET B
⑪ REAR DIFFERENTIAL HARNESS BRACKET C
⑫ REAR DIFFERENTIAL HARNESS BRACKET D

A: 6 x 1.0 mm
12.0 N·m (1.2 kgf·m, 8.9 lbf·ft)
B: 14 x 1.5 mm
85 N·m (8.7 kgf·m, 63 lbf·ft)
Replace.

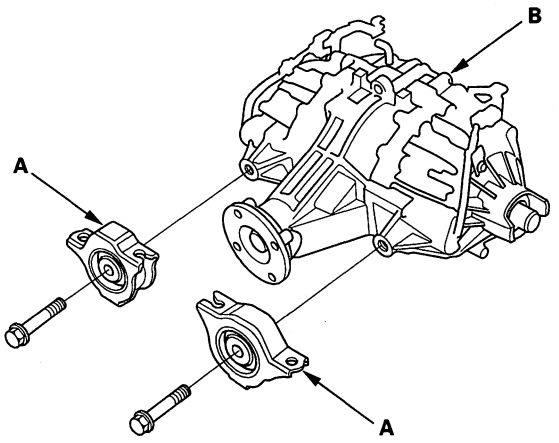
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Center Case Oil Seal Replacement

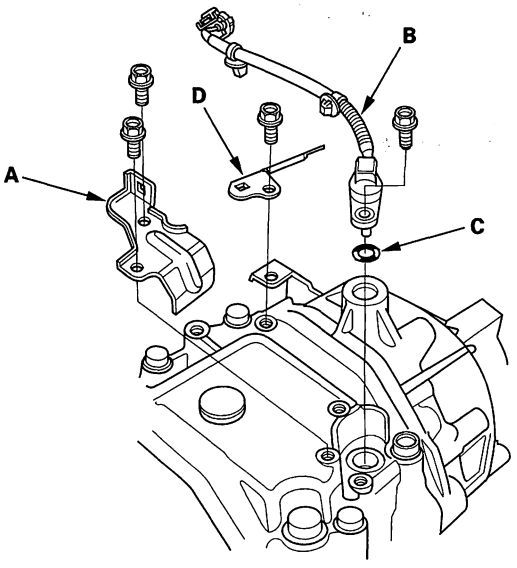
Special Tools Required
- Companion flange holder 07XAB-001A101
- Oil seal driver C 070AD-STK0130
- Fork seal driver weight 07747-0010100

1. Remove the rear differential (see page 15-74).

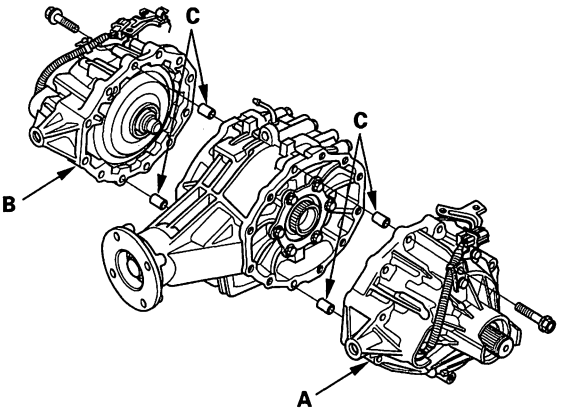
2. Remove the rear differential front mounting brackets (A) from the rear differential (B).



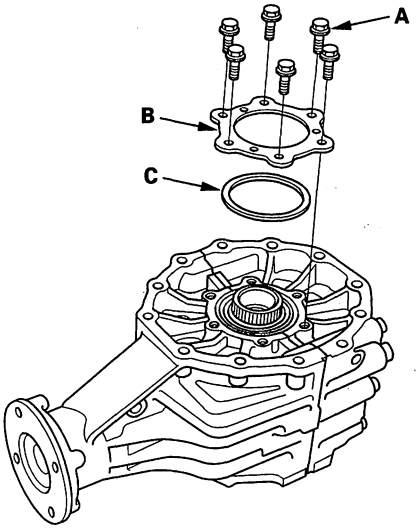
3. Remove the differential oil temperature sensor cover (A), differential fluid temperature (B), O-ring (C), and rear differential harness bracket (D).



4. Remove the left side case (A), the right side case (B), the four 10 x 12 mm dowel pins (C).



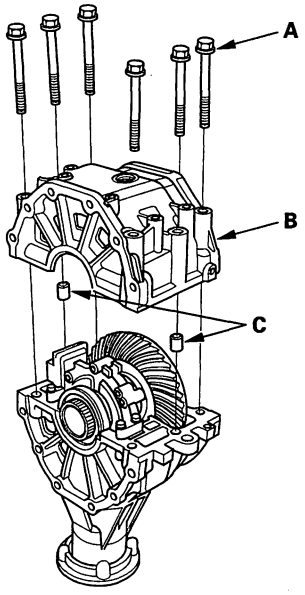
5. Remove the mounting bolts (A) in a crisscross pattern in several steps, then remove the bearing set plate (B) and the 83 mm shim (C).



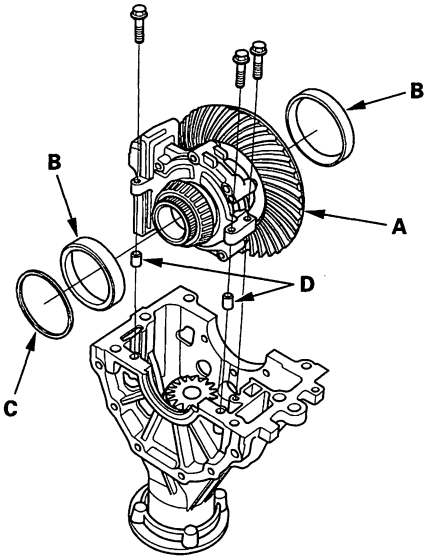
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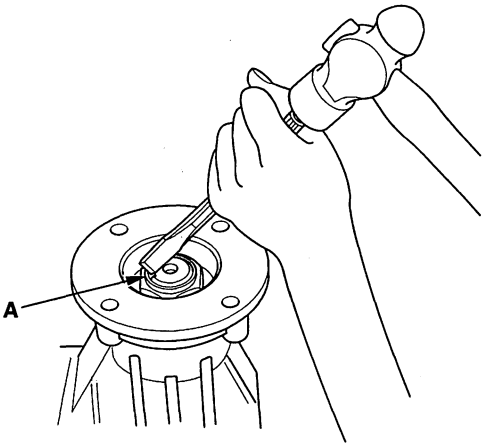
6. Remove the six mounting bolts (A) in a crisscross pattern in several steps, then remove the differential housing assembly (B) and dowel pins (C).



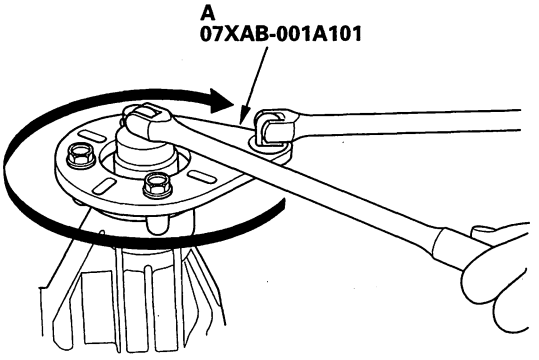
7. Remove the ring gear assembly (A), bearing outer races (B), 75 mm shim (C), and the 8 x 14 mm dowel pins (D).



8. Raise the locknut tab (A) from the groove of the input shaft, making sure that the tab completely clears the groove to prevent damaging the input shaft.



9. Install the companion flange holder (A) on the companion flange. Loosen the 27 mm locknut (left-hand threads).

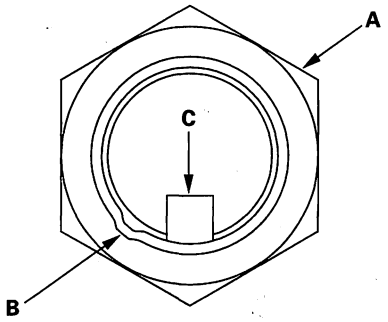


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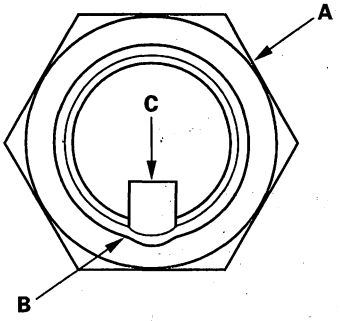
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Center Case Oil Seal Replacement (cont'd)

10. Loosen the locknut (A) clockwise so that its tab (B) comes out from the groove (C) in the input shaft.

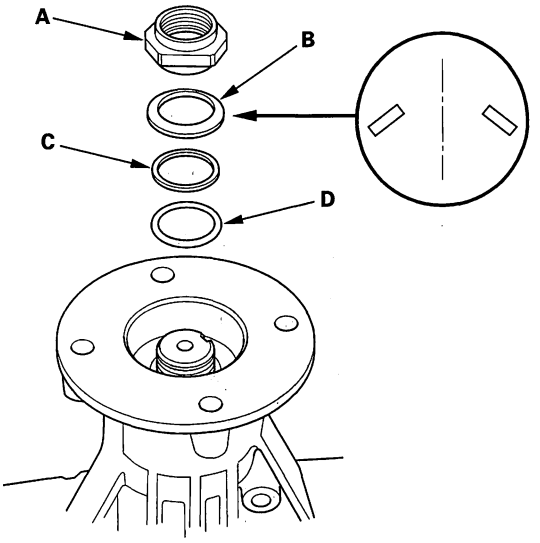


11. Tighten the locknut (A) until its tab (B) aligns with the groove (C).

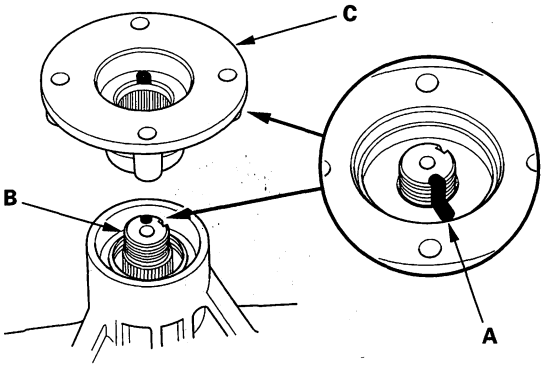


12. Remove any dirt from inside of the groove in the input shaft, then loosen the locknut.

13. Remove the 27 mm locknut (A), the 27 mm spring washer (B), the 28 mm back-up ring (C), and the 28 mm O-ring (D).



14. Make a reference mark (A) across the input shaft (B) and companion flange (C), then remove the companion flange.

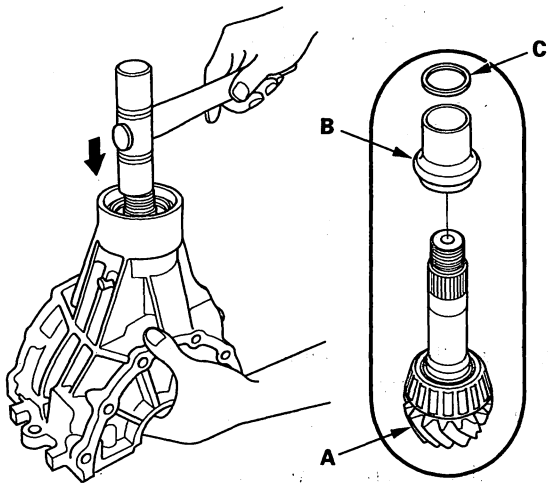


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BACK

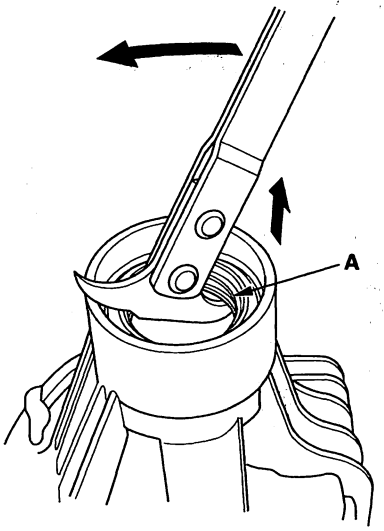
15. Remove the drive pinion (A), pinion spacer (B) and the thrust washer (C) by tapping on the drive pinion with a plastic hammer.

NOTE: Support it by hand not to damage the drive pinion.

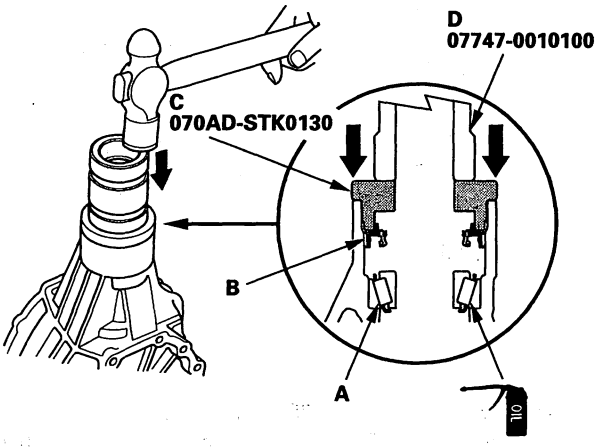


16. Remove the front case oil seal (A) with a commercially available tool.

NOTE: Remove the oil seal with care so you do not damage the inside surface of the differential carrier seal surface.

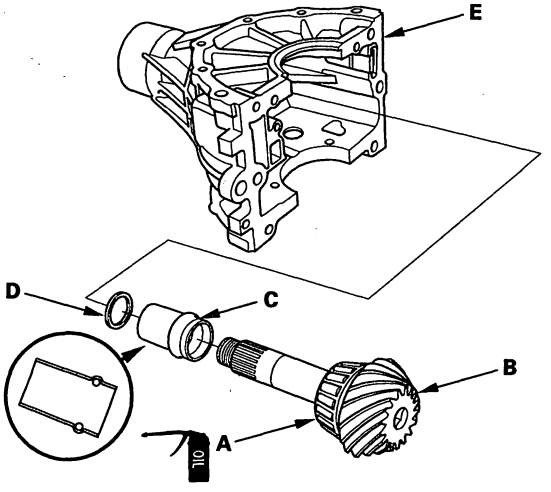


17. Apply ATF to the tapered roller bearing (A), then install the new front case oil seal (B) with the oil seal driver C and fork seal driver weight (D).



18. Apply ATF to the tapered roller bearing (A), then install the drive pinion (B), pinion spacer (C) and the thrust washer (D) into the differential carrier (E).

NOTE: Be sure to install the pinion spacer in the direction shown.

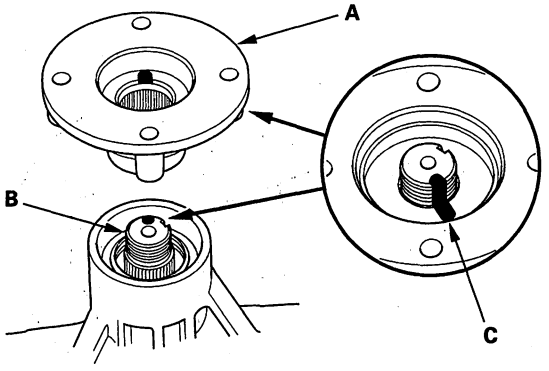


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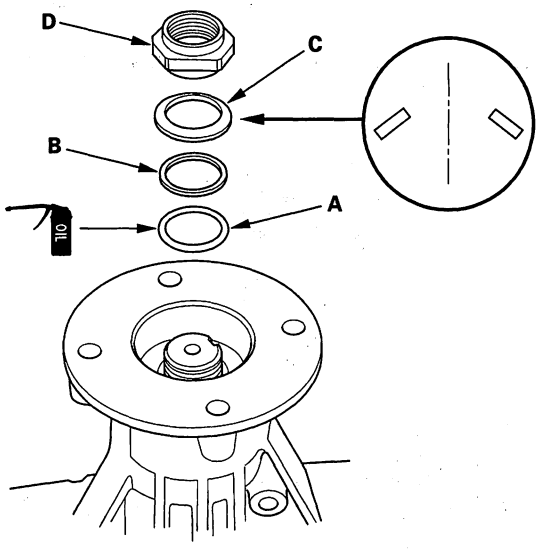
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Center Case Oil Seal Replacement (cont'd)

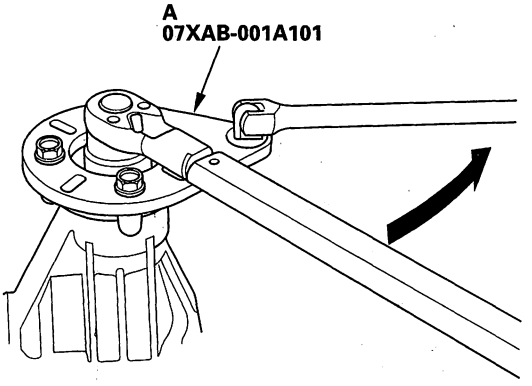
19. Install the companion flange (A) on the input shaft (B) by aligning the reference mark (C).



20. Apply ATF to the new 28 mm O-ring (A), then install the new 28 mm O-ring, the 28 mm backup ring (B), the 27 mm spring washer (C), and the new 27 mm locknut (D).



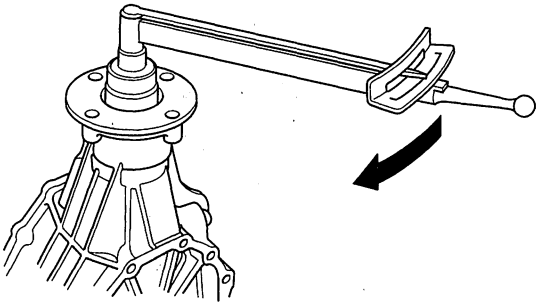
21. Install the companion flange holder (A) to the companion flange, then tighten the locknut (left-hand threads).



22. Rotate the drive pinion several times to assure proper tapered roller bearing contact. Measure the drive pinion turning torque.

- If the drive pinion turning torque exceeds the standard, replace the pinion spacer.
- If the drive pinion turning torque is less than the standard, adjust by tightening the locknut a little at a time, but keep the torque within 186—353 N·m (19.0—36.0 kgf·m, 137—260 lbf·ft). If this is not possible, replace the pinion spacer.

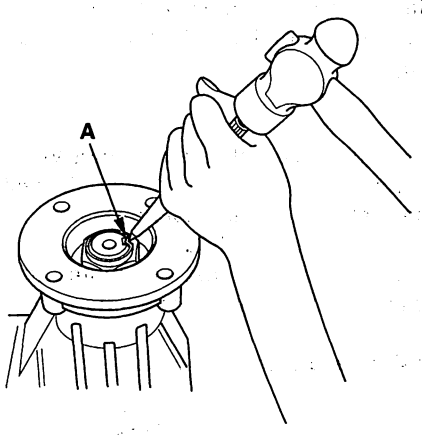
Turning Torque:
93.2—181.4 N·m
(9.5—18.5 kgf·cm, 69.0—134.0 lbf·in)



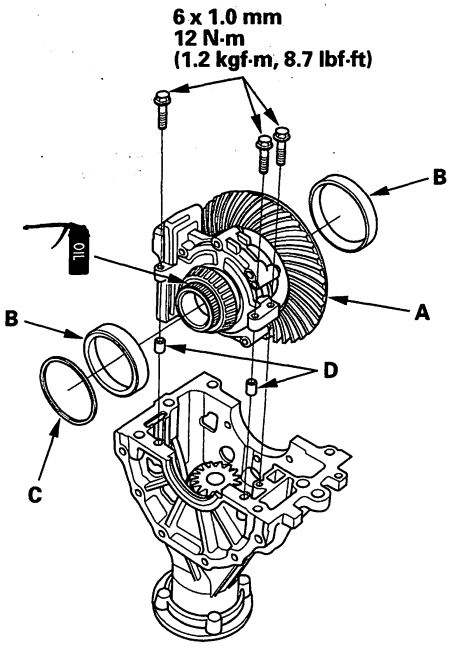
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BACK

23. Stake the locknut tab (A) into the groove in the input shaft.

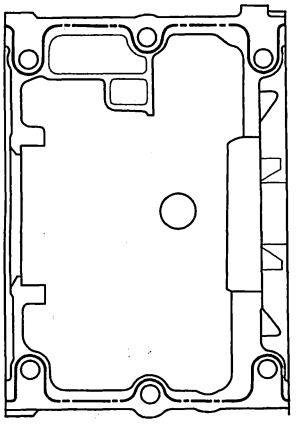


24. Apply ATF to the tapered roller bearings, then Install the ring gear assembly (A), bearing outer races (B), 75 mm shim (C) and the 8 x 14 mm dowel pins (D).



25. Remove the dirt and oil from the sealing surfaces. Apply liquid gasket (P/N08718-0001) to the sealing surface. Make sure you seal the entire circumference of the bolt holes to prevent oil leakage.

NOTE:
- You must assemble the housings within do in 5 minutes after applying the liquid gasket. If not, the sealing surface must be cleaned, and the liquid gasket reapplied.
- Allow it to cure at least 30 minutes after assembly before filling the differential with fluid.
- Remove the overflowing liquid gasket, when joining side case.



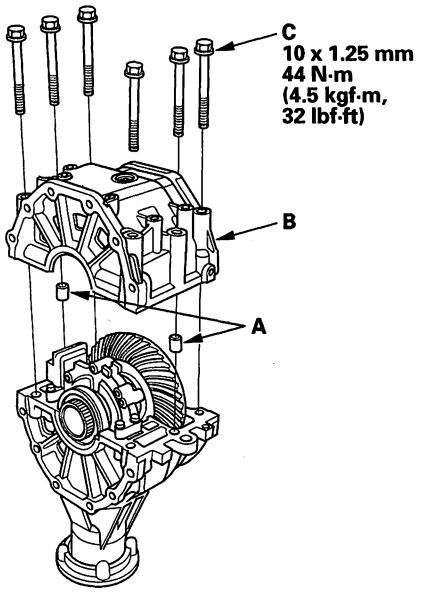
——·——·—— Apply liquid gasket along the broken line and around all bolt holes.

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Center Case Oil Seal Replacement (cont'd)

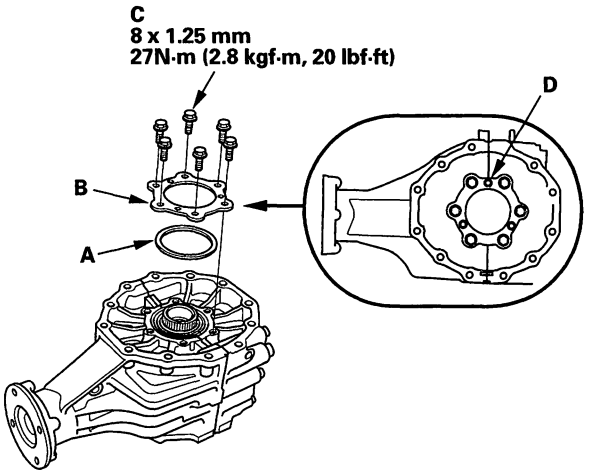
26. Install the dowel pins (A), the differential housing assembly (B) and the six mounting bolts (C).



27. Tighten the six mounting bolts in a crisscross pattern in several steps.

28. Install the 83 mm shim (A), the bearing set plate (B) and the six mounting bolts (C).

    NOTE: Install the bearing set plate, check to identification marks (D).

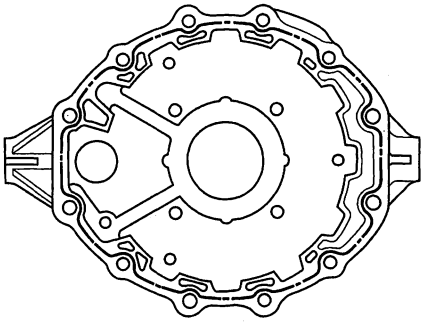


29. Tighten the six mounting bolts in a crisscross pattern in several steps.

30. Remove the dirt and oil from the sealing surfaces. Apply liquid gasket (P/N 08718-0001) to the sealing surface. Make sure you seal the entire circumference of the bolt holes to prevent oil leakage.

    NOTE:
    - You must assemble the housings with you do in 5 minutes after applying the liquid gasket. If not, the sealing surface must be cleaned, and the liquid gasket reapplied.
    - Allow it to cure at least 30 minutes after assembly before filling the differential with fluid.

Left side case/right side case

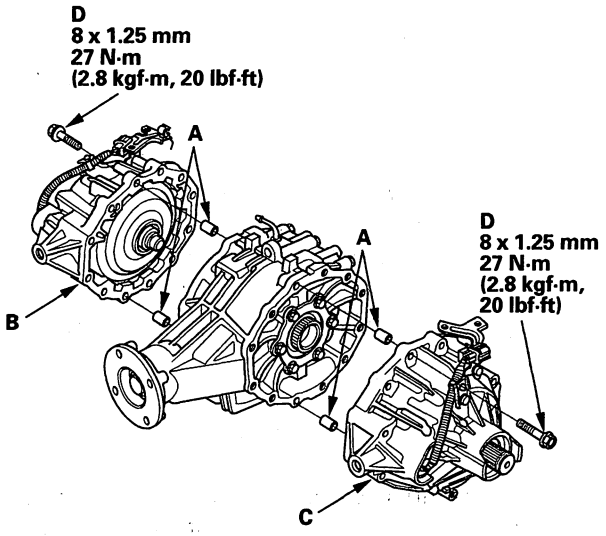


—·—·—·— Apply liquid gasket along the broken line and around all bolt holes.

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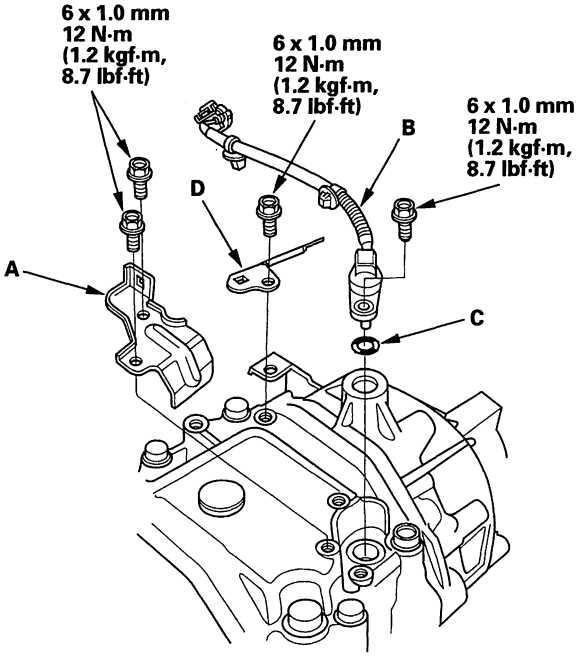
BACK

31. Install the 8 x 12 mm dowel pins (A), the rear differential right side case (B), the rear differential left side case (C) and the mounting bolts (D).



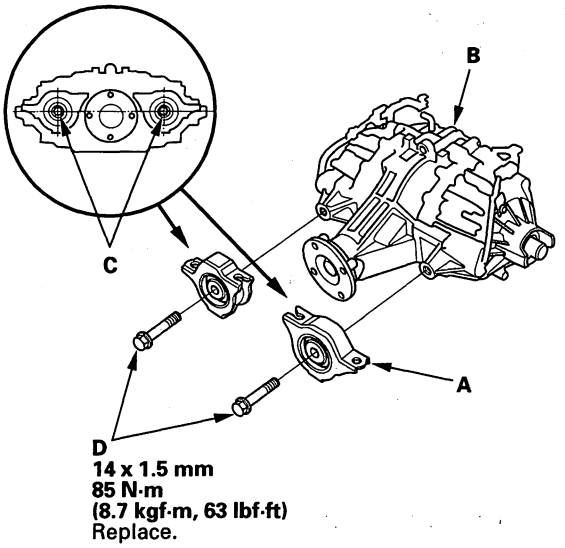
32. Tighten the mounting bolts in a crisscross pattern in several steps.

33. Install the differential fluid temperature sensor cover (A), rear differential fluid temperature sensor (B), new O-ring (C), and rear differential harness bracket (D).



34. Install the rear differential front mounting brackets (A) from the rear differential (B).

NOTE: Install a lower surface of the guide (C) horizontally as shown, then tighten the rear differential front mounting bracket bolts (D).



35. Install the rear differential (see page 15-75).

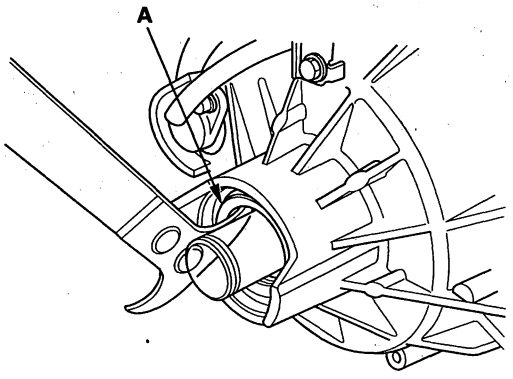
36. Refill the differential fluid (see page 15-69).

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Side Case Oil Seal Replacement

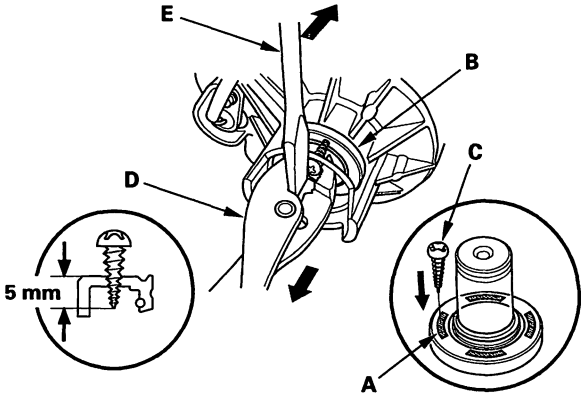
Special Tools Required
- Oil seal driver A 070AD-STK0110
- Oil seal driver B 070AD-STK0120
- Fork seal driver weight 07747-0010100

1. Remove the rear differential (see page 15-74).
2. Remove the 40 x 55 x 7.5 mm dust seal (A) with a commercially available tool.

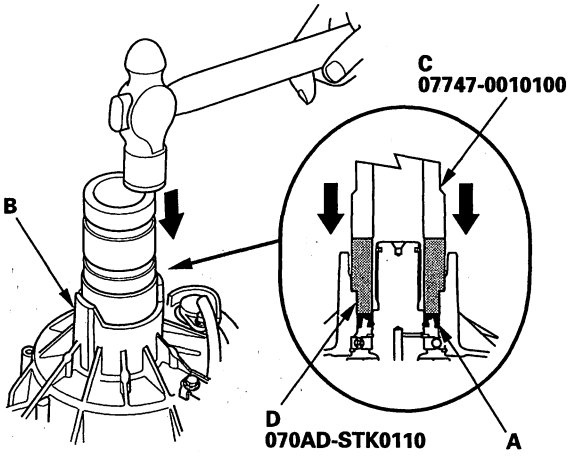


3. Remove the thrust washer.
4. Cut a slit at each position (4 place, 90 degrees apart) (A) on the 34.7 x 54 x 9 mm oil seal (B), then install 6 mm screw (C) (P/N 93901-16580) into the oil seal at each location. Remove the oil seal with pliers (D) and screw driver (E) as shown.

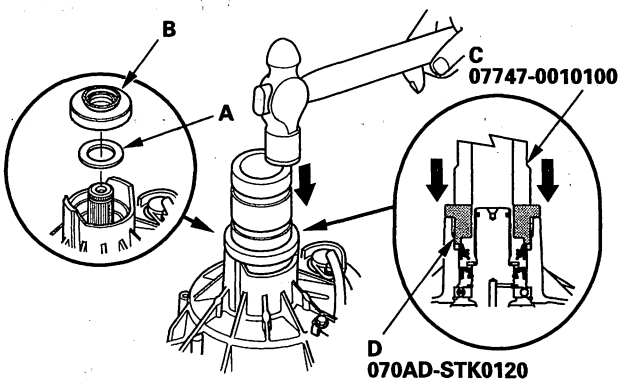
   NOTE: Do not thread the 6 mm screws into the oil seal more than 5 mm (0.197 in.)



5. Install the new 34.7 x 54 x 9 mm oil seal (A) into the rear differential side case (B) with the fork seal driver weight (C) and oil seal driver A (D).



6. Install the thrust washer (A), then install the new 40 x 55 x 7.5 mm dust seal (B) with the fork seal driver weight (C) and oil seal driver B (D).



7. Install the rear differential (see page 15-75).

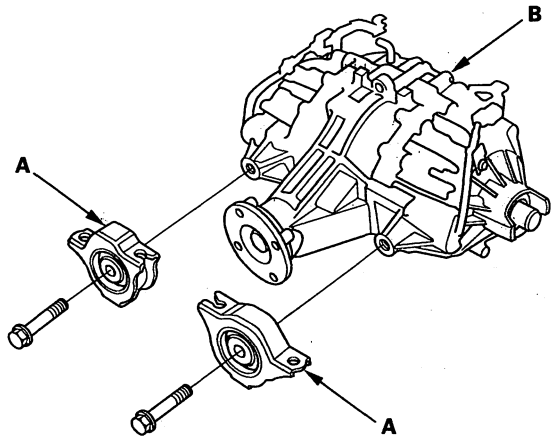
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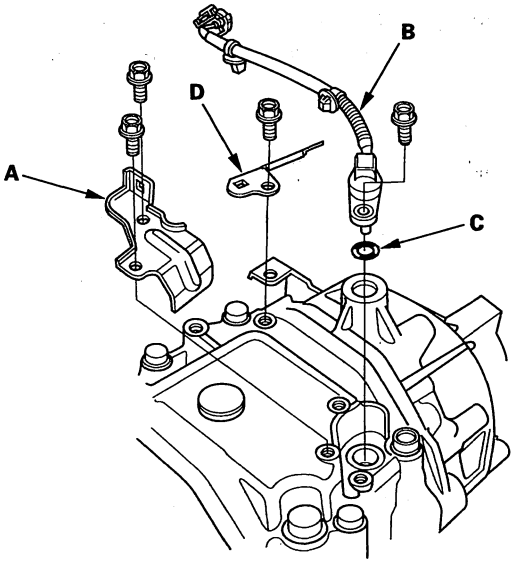
Center Case Replacement

1. Remove the rear differential (see page 15-74).

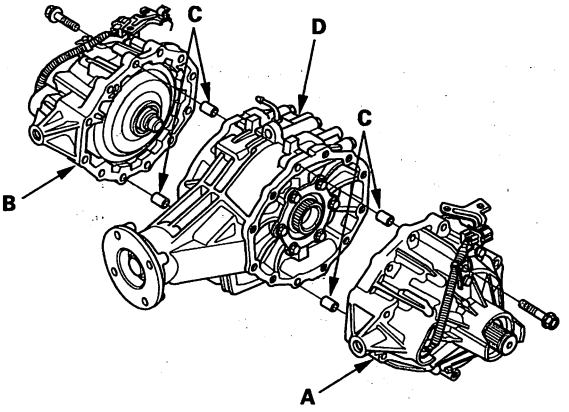
2. Remove the rear differential front mounting brackets (A) from the rear differential (B).



3. Remove the differential fluid temperature sensor cover (A), rear differential fluid temperature sensor (B), O-ring (C), and rear differential harness bracket (D).



4. Remove the rear differential left side case (A), the rear differential right side case (B), the 10 x 12 mm dowel pins (C) from the rear differential center case (D).



5. Replace the rear differential center case.

(cont'd)

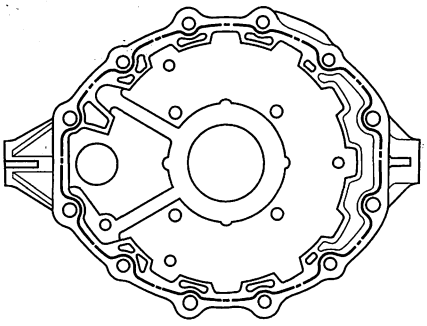
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Center Case Replacement (cont'd)

6. Remove the dirt and oil from the sealing surfaces. Apply liquid gasket (P/N08718-0001) to the sealing surface. Make sure you seal the entire circumference of the bolt holes to prevent oil leakage.

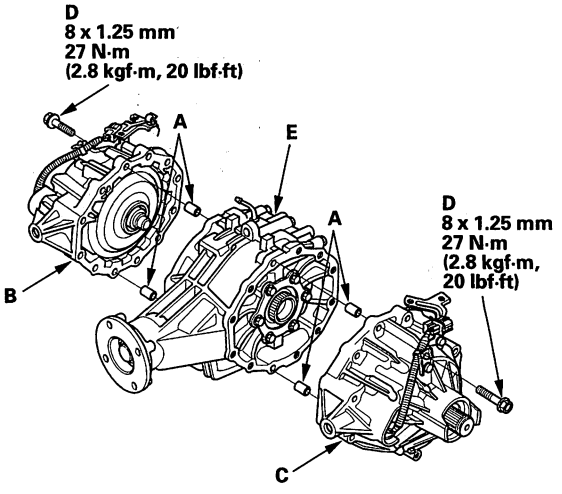
   NOTE:
   - You must assemble the housings with you do in 5 minutes after applying the liquid gasket. If not, the sealing surface must be cleaned, and the liquid gasket reapplied.
   - Allow it to cure at least 30 minutes after assembly before filling the differential with fluid.

Left side case/right side case



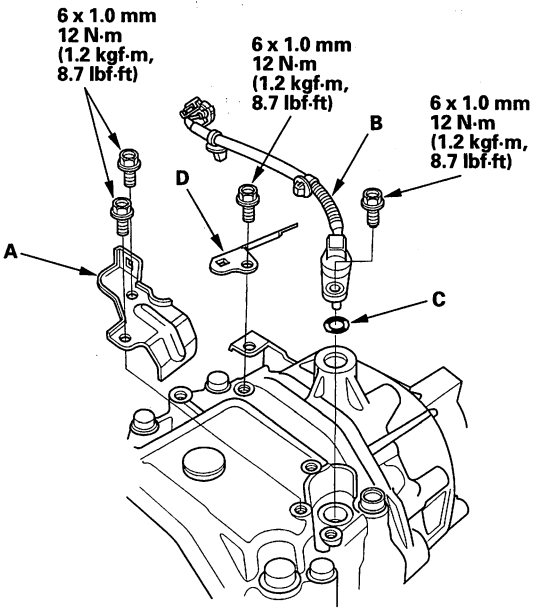
-·—·—·—·- Apply liquid gasket along the broken line and around all bolt holes.

7. Install the 8 x 12 mm dowel pins (A), the rear differential right side case (B), the rear differential left side case (C) and the mounting bolts (D) on to the rear differential center case (E).



8. Tighten the mounting bolts in a crisscross pattern in several steps.

9. Install the differential fluid temperature sensor cover (A), rear differential fluid temperature sensor (B), new O-ring (C), and rear differential harness bracket (D).

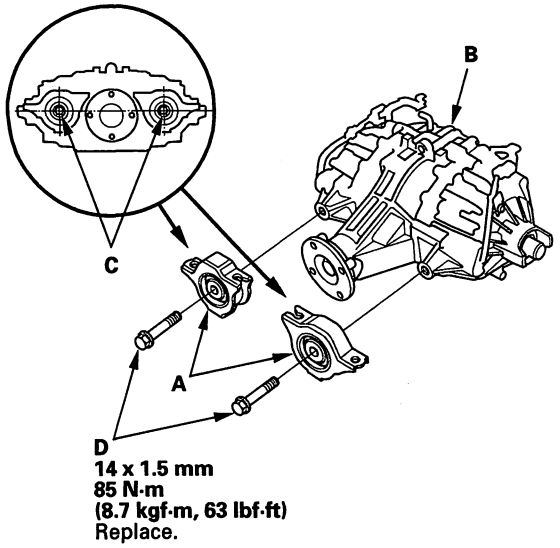


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BACK

10. Install the rear differential front mounting brackets (A) from the rear differential (B).

    NOTE: Install a lower surface of the guide (C) horizontally as shown, then tighten the rear differential front mounting bracket bolts (D).



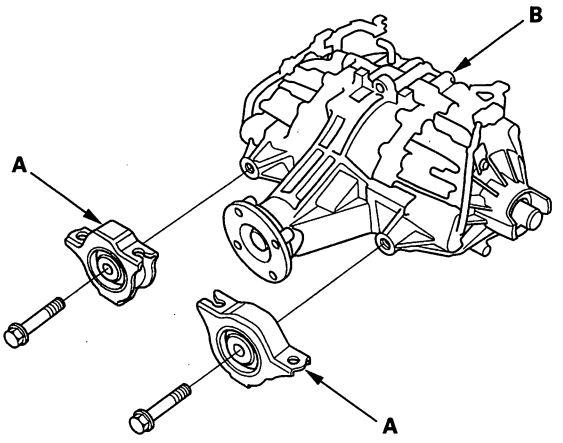
11. Install the rear differential (see page 15-75).

12. Refill the differential fluid (see page 15-69).

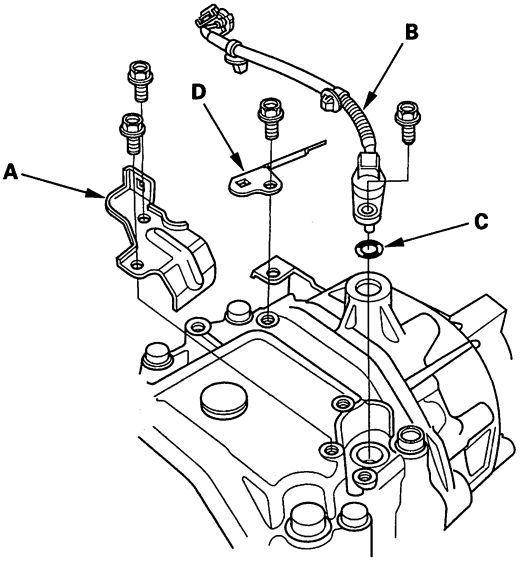
Side Case Replacement

1. Remove the rear differential (see page 15-74).

2. Remove the rear differential front mounting brackets (A) from the rear differential (B).



3. Remove the differential fluid temperature sensor cover (A), rear differential fluid temperature sensor (B), O-ring (C), and rear differential harness bracket (D).

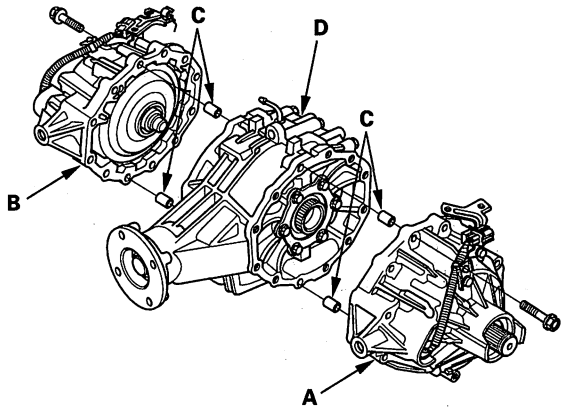


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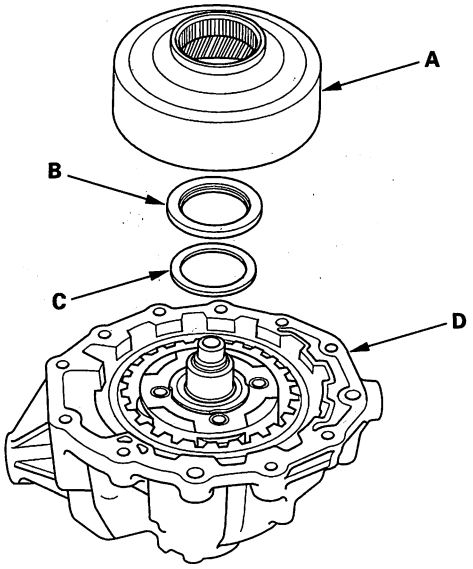
Side Case Replacement (cont'd)

4. Remove the rear differential left side case (A) or the rear differential right side case (B), the 10 x 12 mm dowel pins (C) from the rear differential center case (D).



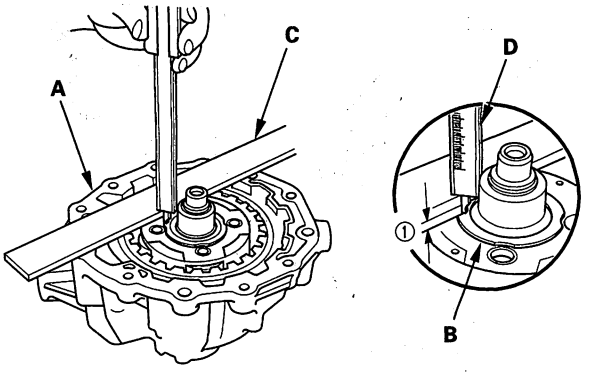
5. Replace the rear differential left side case or the differential right side case.

6. Remove the ring gear (A), needle bearing (B), and the 60.2 mm shim (C) from the rear differential side case (D).



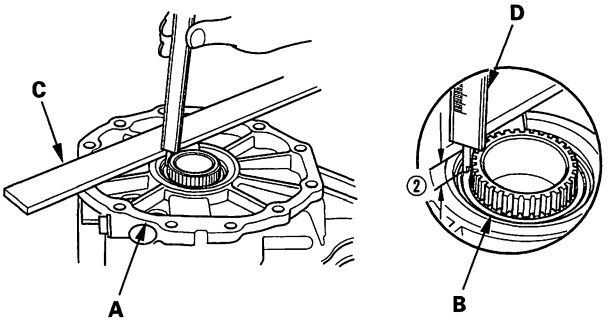
7. Measure distance ① between the end of the rear differential side case (A) and 60.2 mm shim contact area of planetary gear (B) with a straight edge (C) and depth gauge (D). Measure at three locations, and average the reading.

NOTE:
- Carry out the measurement at normal room temperature.
- Clean all the parts thoroughly before measure.



8. Measure distance ② between the end of the rear differential center case (A) and ring gear contact area of taper roller bearing (B) with a straight edge (C) and depth gauge (D). Measure at three locations, and average the reading.

NOTE:
- Carry out the measurement at normal room temperature.
- Clean all the parts thoroughly before measure.

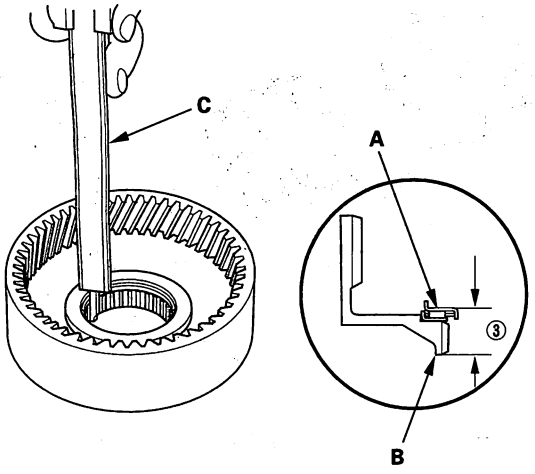


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9. Measure the distance ③ between the needle bearing (A) and tapper roller bearing contact area of ring gear (B) with a depth gauge (C). Measure at three locations, and average the reading.

NOTE:
- Carry out the measurement at normal room temperature.
- Clean all the parts thoroughly before measure.



Shim Selection Formula

10. Select the proper 60.2 mm shim from the table. Follow the example below, and use the measurements you made in steps 7 to 9.

(Basic Formula)
①+②−(③+0.19) = shim thickness

0.19 mm (0.007 in.):
middle of the clearance standard.

Clearance Standard:
0.14−0.24 mm (0.006−0.009 in.)

(For example)
① = 6.12 mm (0.241 in.)
② = 15.3 mm (0.602 in.)
③ = 19.5 mm (0.770 in.)

6.12+15.3−(19.5+0.19) = 1.73 mm

Select the 1.70 mm shim from the table.

60.2 mm Shim

	Part Number	Thickness
A	48701-RWG-000	1.10 mm (0.043 in.)
B	48702-RWG-000	1.20 mm (0.047 in.)
C	48703-RWG-000	1.30 mm (0.051 in.)
D	48704-RWG-000	1.40 mm (0.055 in.)
E	48705-RWG-000	1.50 mm (0.059 in.)
F	48706-RWG-000	1.60 mm (0.063 in.)
G	48707-RWG-000	1.70 mm (0.067 in.)
H	48708-RWG-000	1.80 mm (0.071 in.)
I	48709-RWG-000	1.90 mm (0.075 in.)
J	48710-RWG-000	2.00 mm (0.079 in.)
K	48711-RWG-000	2.10 mm (0.083 in.)
L	48712-RWG-000	2.20 mm (0.087 in.)

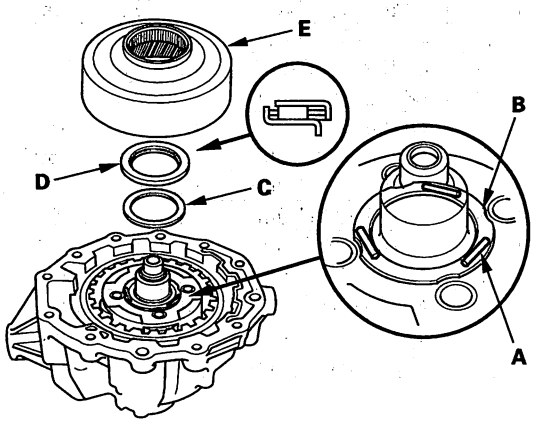
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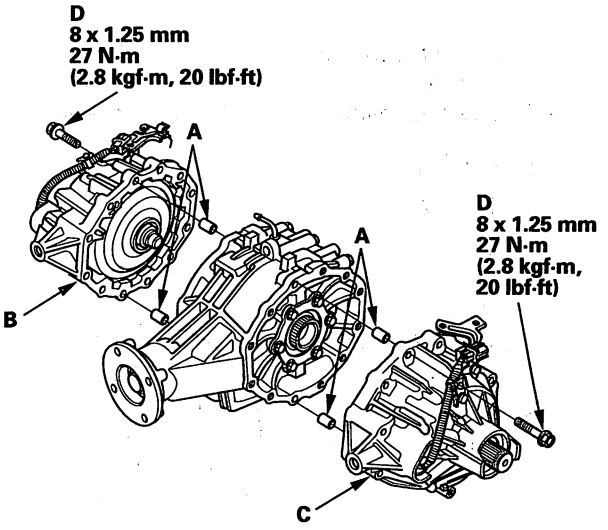
Side Case Replacement (cont'd)

11. Place one strip of plastigage (A) on 60.2 mm shim contact area of planetary gear (B). Install the 60.2 mm shim (C), needle bearing (D) and the ring gear (E). Measure at three locations, and average the reading.

    NOTE:
    - Carry out the measurement at normal room temperature.
    - Clean all the parts thoroughly before measure.

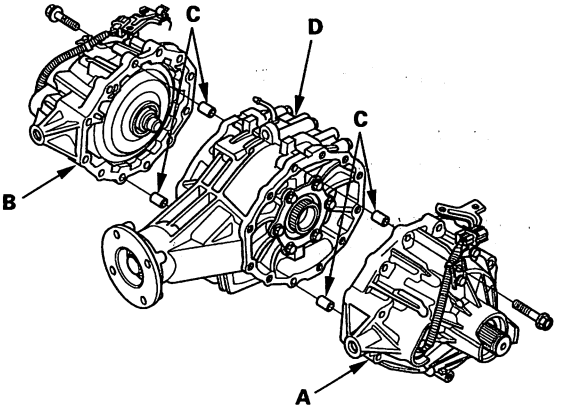


12. Install the 8 x 12 mm dowel pins (A), the rear differential right side case (B) or the rear differential left side case (C) and the mounting bolts (D).



13. Tighten the mounting bolts in a crisscross pattern in several steps.

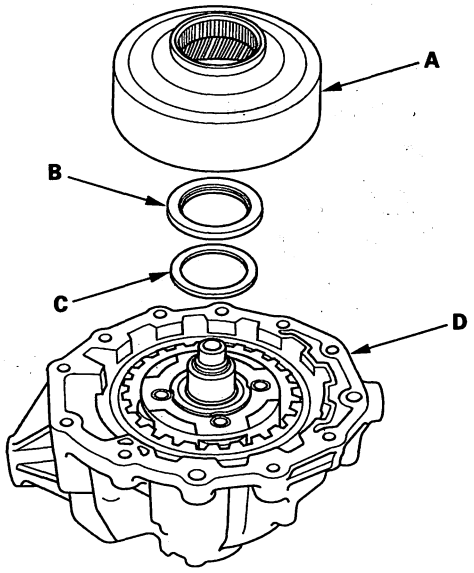
14. Remove the rear differential left side case (A) or the rear differential right side case (B), the 10 x 12 mm dowel pins (C) from the rear differential center case (D).



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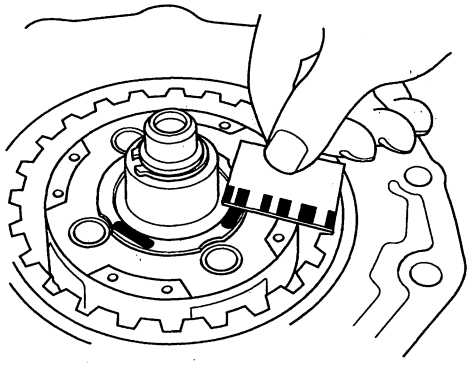
BACK

15. Remove the ring gear (A), needle bearing (B), and the 60.2 mm shim (C) from the rear differential side case (D).



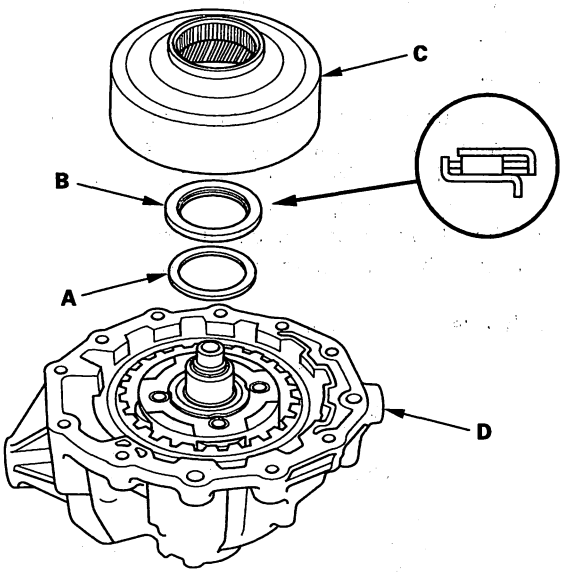
16. Measure the widest part of the plastigage.

Clearance Standard:
0.14—0.24 mm (0.006—0.009 in.)



17. If the clearance is more than the standard, go to step 7. If the clearance measured in step 16 is within the standard, go to step 18.

18. Install the 60.2 mm shim (A), needle bearing (B) and the ring gear (C) onto the rear differential side case (D).



(cont'd)

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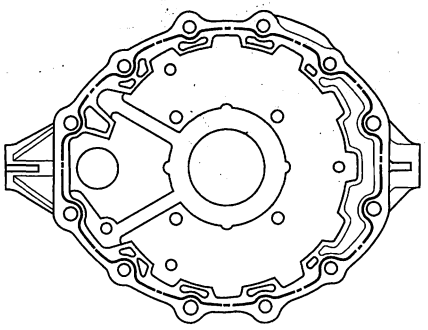
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Side Case Replacement (cont'd)

19. Remove the dirt and oil from the sealing surfaces. Apply liquid gasket (P/N 08718-0001) to the sealing surface. Make sure you seal the entire circumference of the bolt holes to prevent oil leakage.

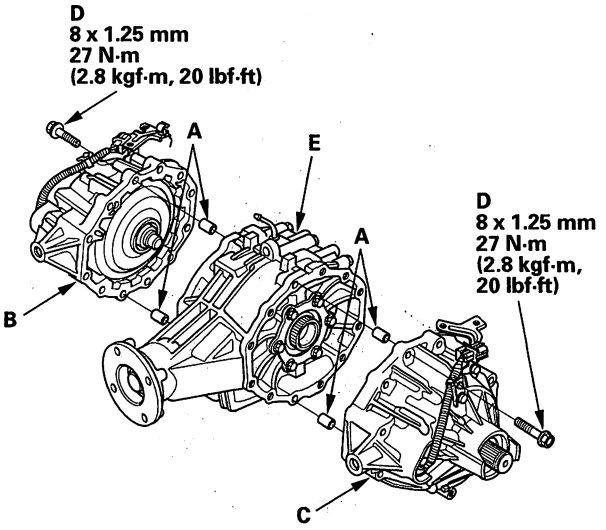
    NOTE:
    - You must assemble the housings within do in 5 minutes after applying the liquid gasket. If not, the sealing surface must be cleaned, and the liquid gasket reapplied.
    - Allow it to cure at least 30 minutes after assembly before filling the differential with fluid.

Left side case/right side case



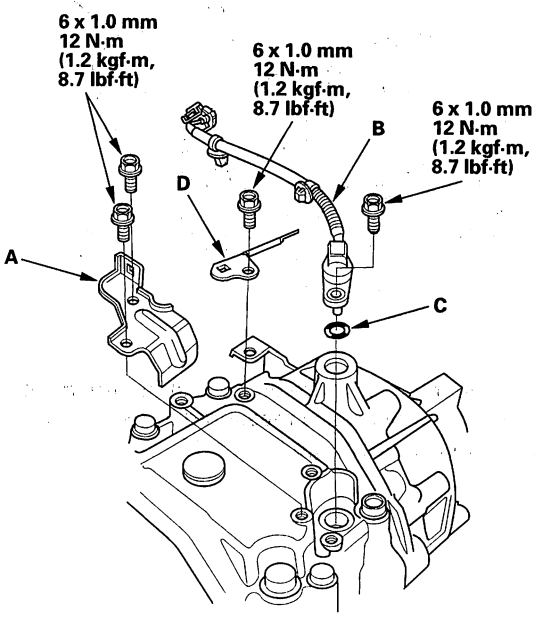
——·——·—— Apply liquid gasket along the broken line and around all bolt holes.

20. Install the 8 x 12 mm dowel pins (A), the rear differential right side case (B) or the rear differential left side case (C) and the mounting bolts (D) onto the rear differential center case (E).



21. Tighten the mounting bolts in a crisscross pattern in several steps.

22. Install the differential fluid temperature sensor cover (A), rear differential fluid temperature sensor (B), new O-ring (C), and rear differential harness bracket (D).

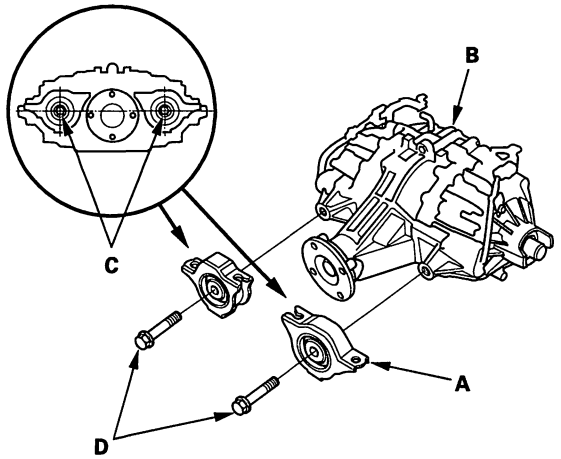


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23. Install the rear differential front mounting brackets (A) from the rear differential (B).

    NOTE: Install a lower surface of the guide (C) horizontally as shown, then tighten the rear differential front mounting bracket bolts (D).



24. Install the rear differential (see page 15-75).

25. Refill the differential fluid (see page 15-69).

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Driveline/Axle

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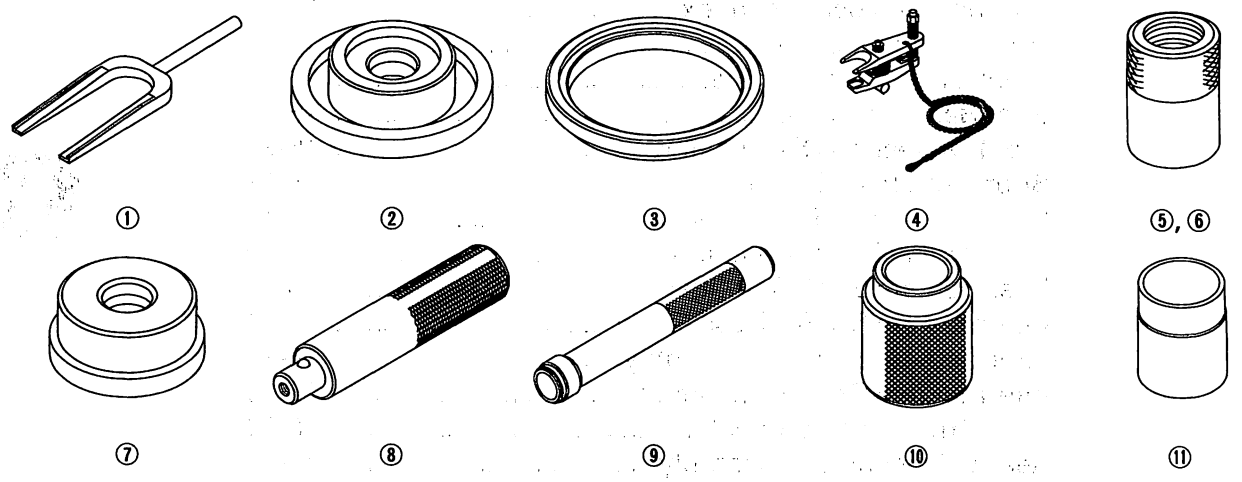


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Special Tools

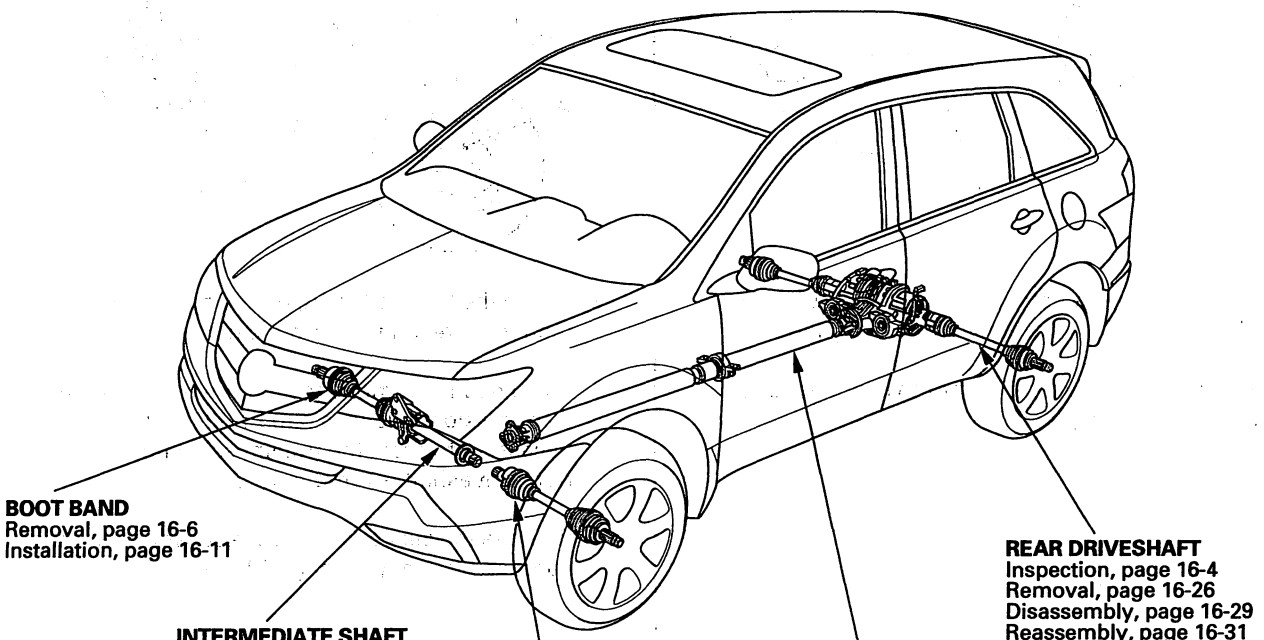
Ref. No.	Tool Number	Description	Qty
①	07AAD-S3VA000	Driveshaft Remover	1
②	07JAD-PH80101	Oil Seal Driver Attachment	1
③	07LAF-SM40300	Support Base Attachment	1
④	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑤	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑥	07XAC-001030A	Threaded Adapter, 26 x 1.5 mm	1
⑦	07746-0010300	Attachment, 42 x 47 mm	1
⑧	07749-0010000	Driver	1
⑨	07946-MB00000	Inner Handle, 30 mm	1
⑩	07947-4630100	Fork Seal Driver, 39.2 x 49.5 x 15 mm	1
⑪	07965-SD90100	Support Base	1



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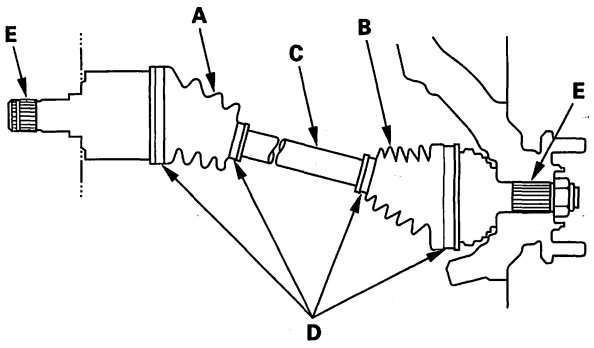
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Driveshaft Inspection

1. Check the inboard boot (A) and the outboard boot (B) on the driveshaft (C) for cracks, damage, leaking grease, and loose boot bands (D). If any damage is found, replace the boot and boot bands.

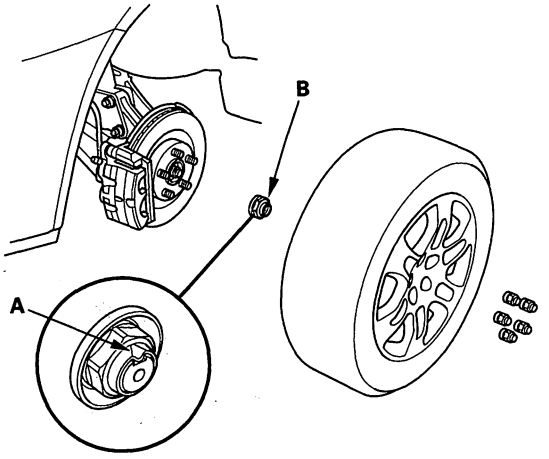


2. Turn the driveshaft by hand, and make sure the splines (E) and joint are not excessively loose.

3. Make sure the driveshaft is not twisted, bent, or cracked; if it is, replace it.

Front Driveshaft Removal

1. Raise the vehicle on a lift, and remove the front wheels (see page 1-7).



2. Lift up the locking tab (A) on the spindle nut (B), then remove, and discard the nut.

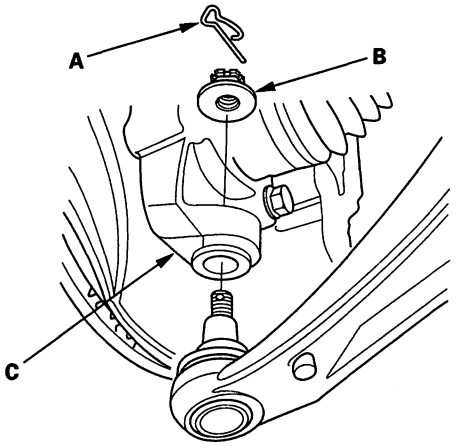
3. If you need to remove the left driveshaft, drain the transmission fluid (see page 14-266). It is not necessary to drain the transmission fluid when the right driveshaft is removed.

4. Remove the suspension stroke sensor (with active damper system) (see page 22-229).

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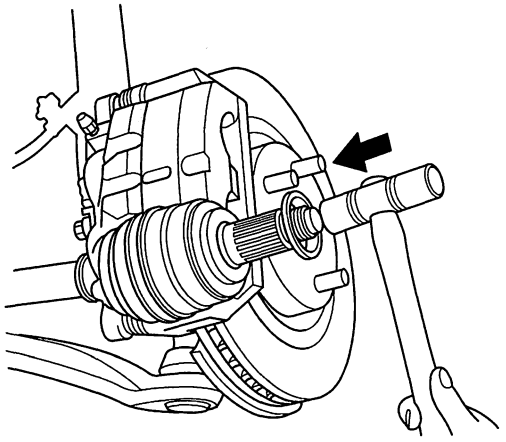
5. Remove the lock pin (A) from the lower arm ball joint castle nut (B), and remove the nut.



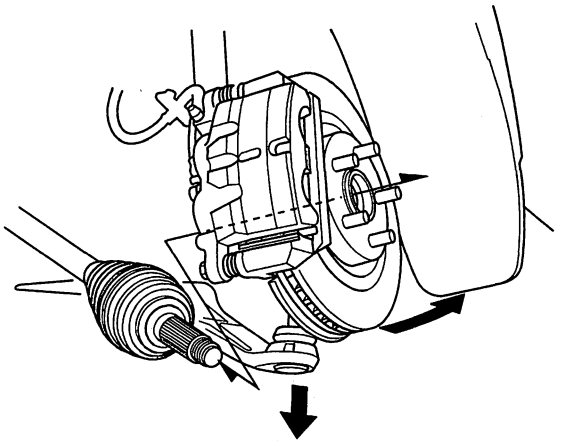
6. Separate the ball joint from the knuckle (C) with the special tool (see page 18-11).

   NOTE:
   - To avoid damaging the ball joint, install the ball joint thread protector onto the threads of the ball joint.
   - Be careful not to damage the ball joint boot when installing the remover.

7. Disconnect the driveshaft outboard joint from the front wheel hub using a plastic hammer.



8. Pull the knuckle outward, and remove the driveshaft outboard joint from the front wheel hub.



9. Remove the splash shield (see step 31 on page 5-5).

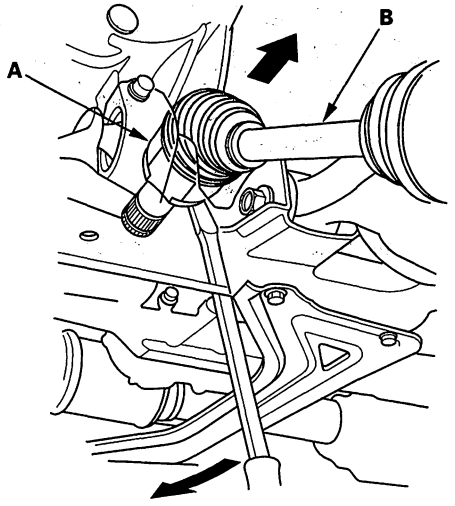
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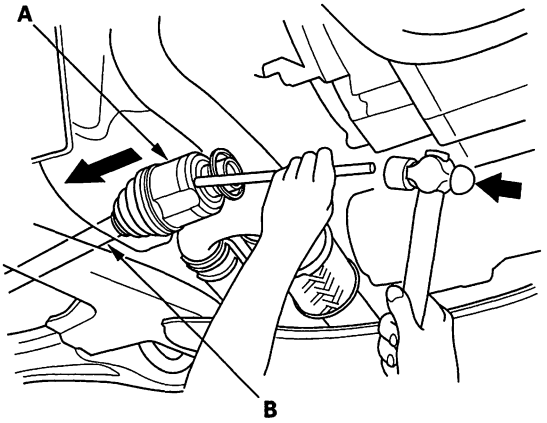
Front Driveshaft Removal (cont'd)

10. Pry (left driveshaft)/tap (right driveshaft) the inboard joint (A), and remove the driveshaft from the differential case or bearing support as an assembly. Do not pull on the driveshaft (B); the inboard joint may come apart. Pull the driveshaft straight out to avoid damaging the differential oil seal or the intermediate shaft outer seal.

Left driveshaft



Right driveshaft

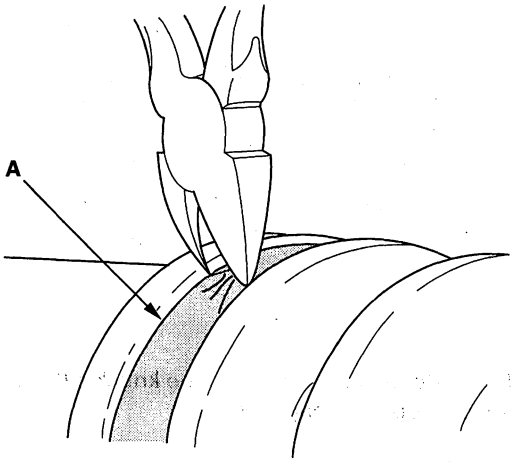


Boot Band Removal

NOTE: When removing the boot bands, be careful not to damage the boot and dynamic damper.

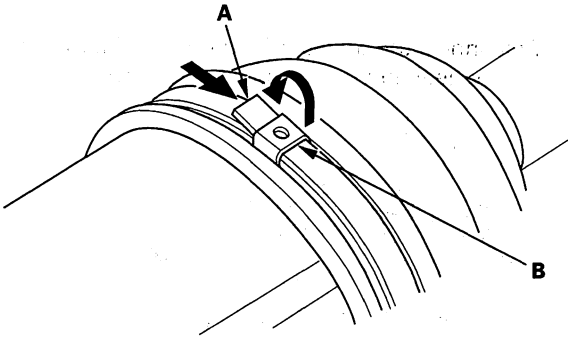
Welded Type

1. Cut the boot band (A), then remove the boot band.



Double Loop Type

1. Lift up the band end (A), then push it into the clip (B), then remove the boot band.

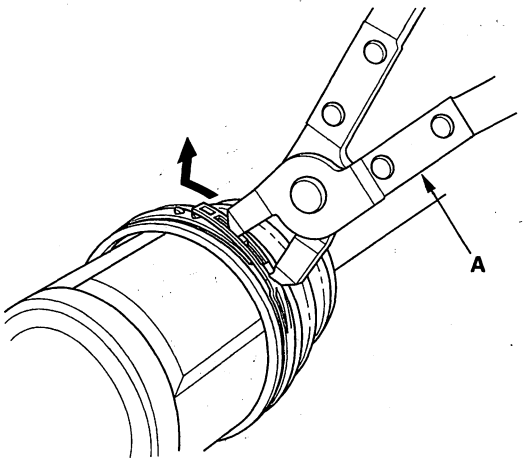


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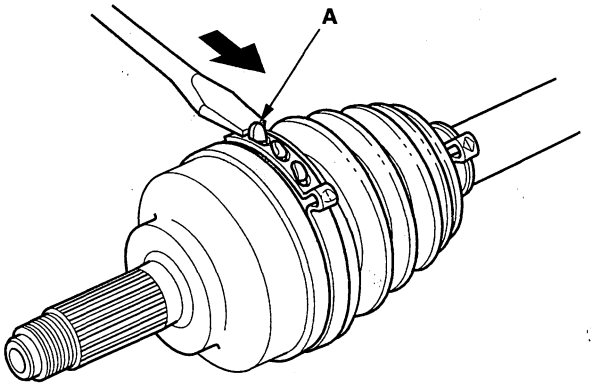
Low Profile Type

1. Pinch the boot band using a commercially available boot band pliers (A), then remove the boot band.



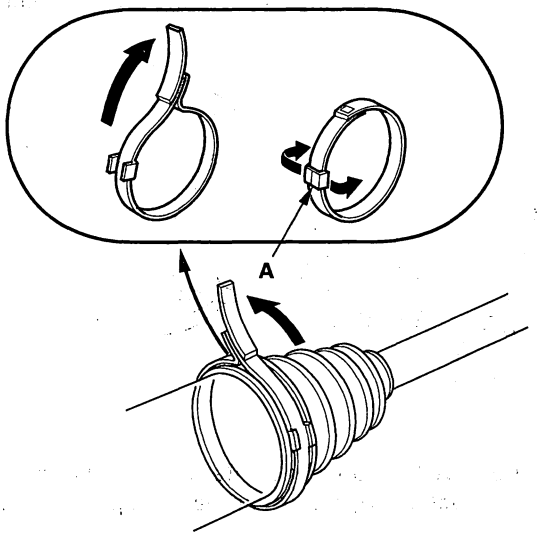
Ear Clamp Type

1. Lift up the three tabs (A) with a screwdriver, then remove the boot band.



Locking Tab Type

1. Pry up the locking tab (A) with a screwdriver, and lift up the end of the band, then remove the boot band.



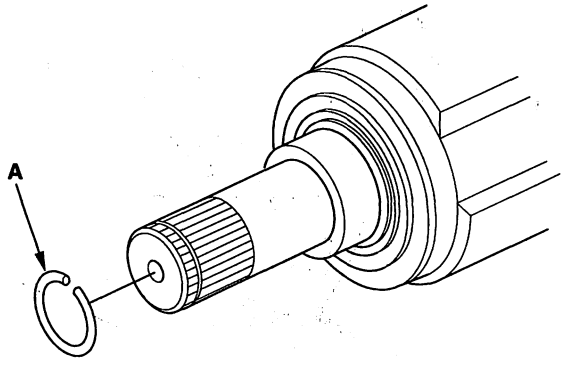
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Front Driveshaft Disassembly

Special Tools Required
Threaded adapter, 26 x 1.5 mm 07XAC-001030A

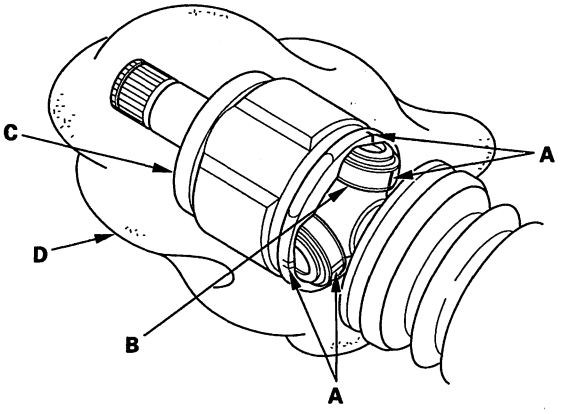
Inboard Joint Side

1. Remove the set ring (A) from the inboard joint.

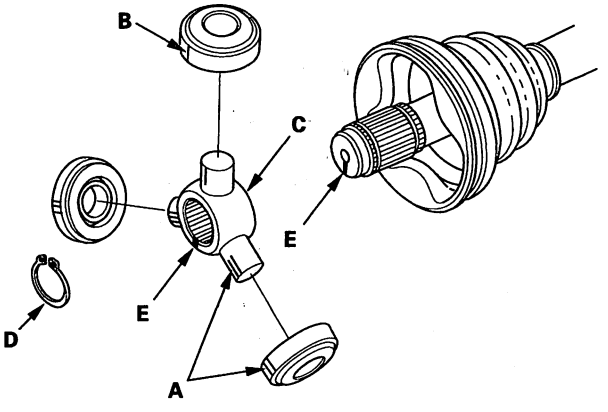


2. Remove the boot bands. Be careful not to damage the boot and dynamic damper (see page 16-6).

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 and place the inboard joint on a shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.



4. Make marks (A) on the rollers (B) and spider (C) to identify the locations of the rollers on the spider, then remove the rollers.



5. Remove the circlip (D).

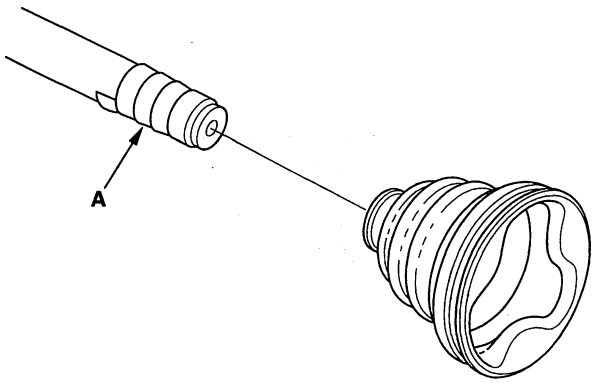
6. Mark the spider and driveshaft (E) to identify the position of the spider on the shaft.

7. Remove the spider.

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8. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.



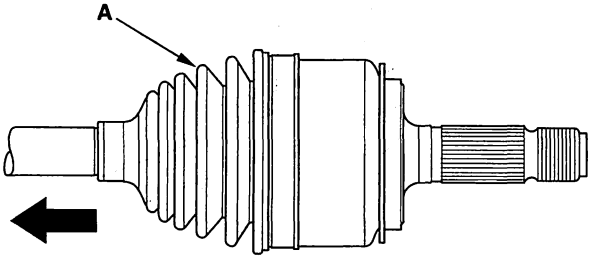
9. Remove the inboard boot. Be careful not to damage the boot.

10. Remove the vinyl tape.

Outboard Joint Side

1. Remove the boot bands. Be careful not to damage the boot and dynamic damper (see page 16-6).

2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.

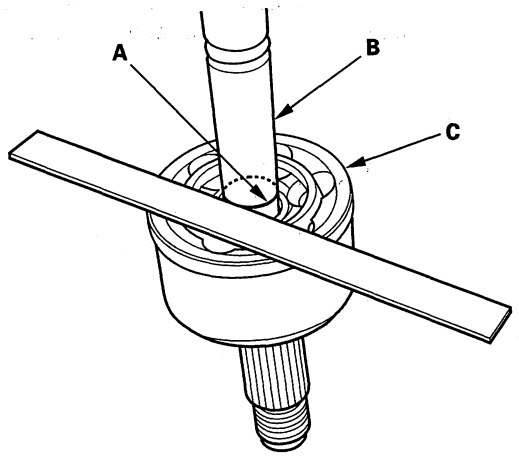


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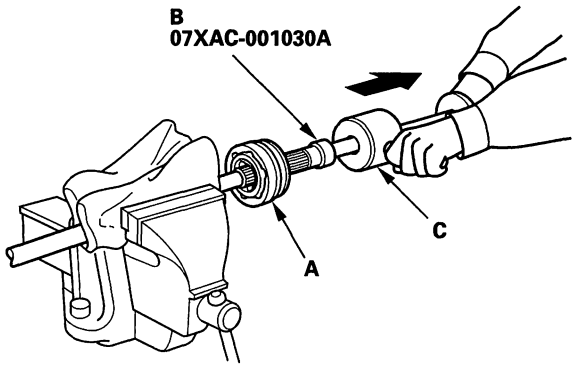
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Front Driveshaft Disassembly (cont'd)

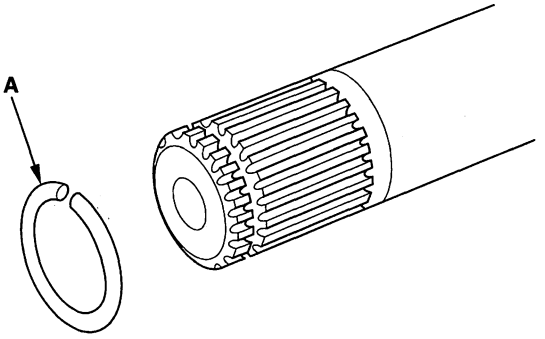
3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.
4. Make a mark (A) on the driveshaft (B) at the same level as of the outboard joint rim (C).



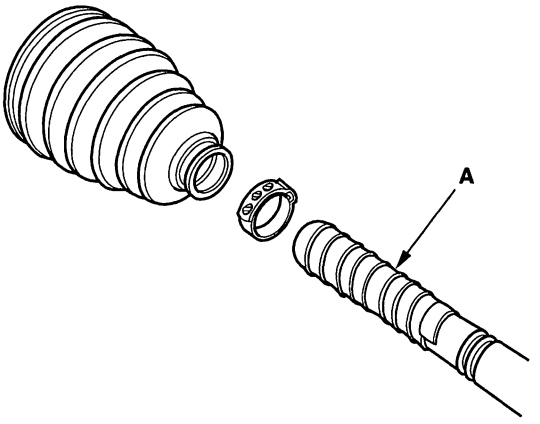
5. Securely clamp the driveshaft in a bench vise with a shop towel.
6. Remove the outboard joint (A) using the threaded adapter (B) and a commercially available 5/8"-18 UNF slide hammer (C).



7. Remove the driveshaft from the vise.
8. Remove the stop ring (A) from the driveshaft.



9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.



10. Remove the outboard boot. Be careful not to damage the boot.
11. Remove the vinyl tape.

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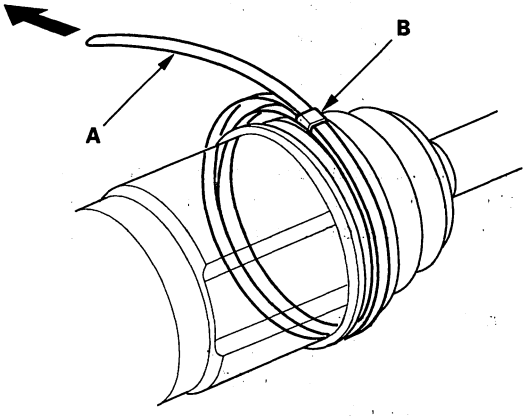
Boot Band Installation

Special Tools Required
- Boot band tool, KD-3191 or equivalent, commercially available
- Boot band pliers, Kent-Moore J-35910 or equivalent, commercially available

Double Loop Type

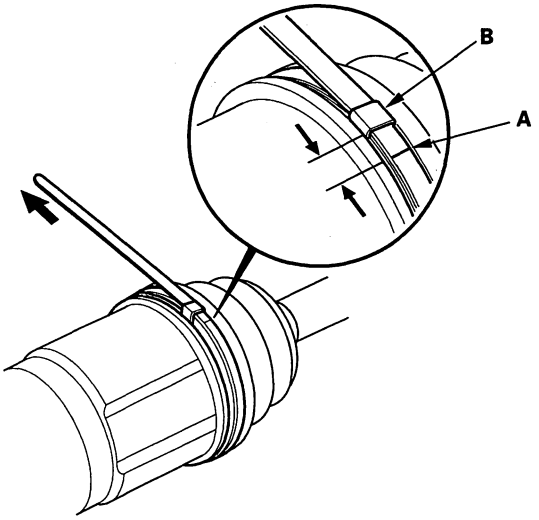
1. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot.

   NOTE: Pass the end of the new double loop band through the clip (B) twice. Make sure the loop faces forwards on the driveshaft, towards the front of the vehicle.

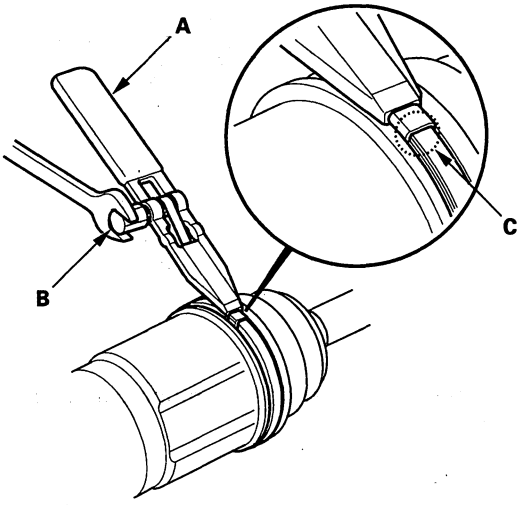


2. Pull up the slack in the band by hand.

3. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).

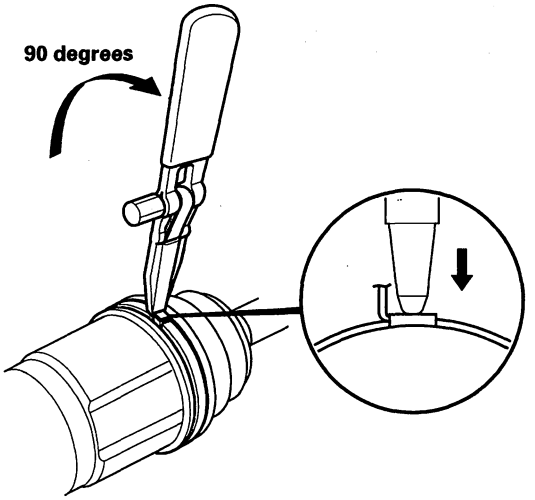


4. Thread the free end of the band through the nose section of a commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).



5. Using a wrench on the winding mandrel of the boot band tool, tighten the band until the marked spot (C) on the band meets the edge of the clip.

6. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.

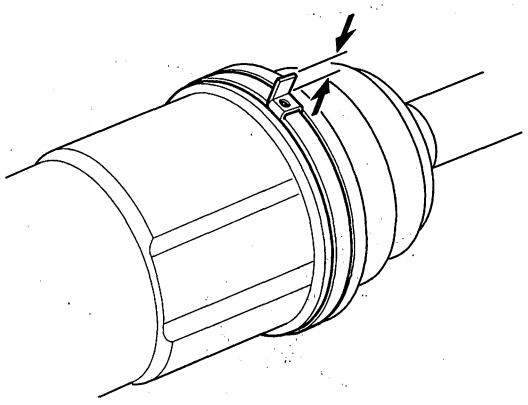


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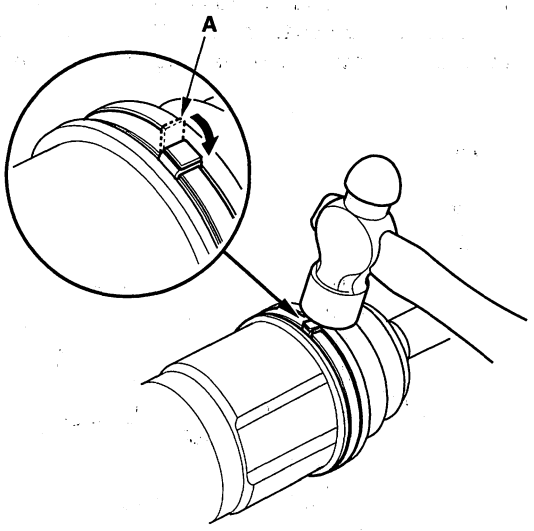
Boot Band Installation (cont'd)

7. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5—10 mm (0.2—0.4 in.) tail protruding from the clip.



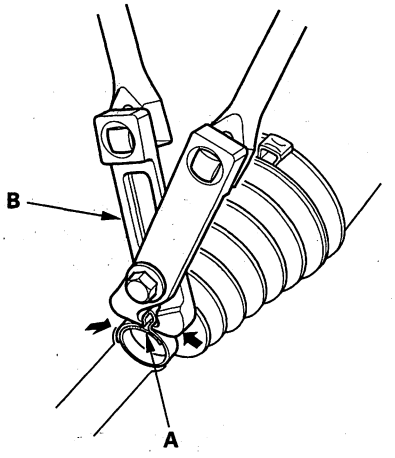
8. Bend the band end (A) by tapping it down with a hammer.

NOTE:
- Make sure the band and clip do not interfere with anything on the vehicle and that the band does not move.
- Clean any grease remaining on the surrounding surfaces.



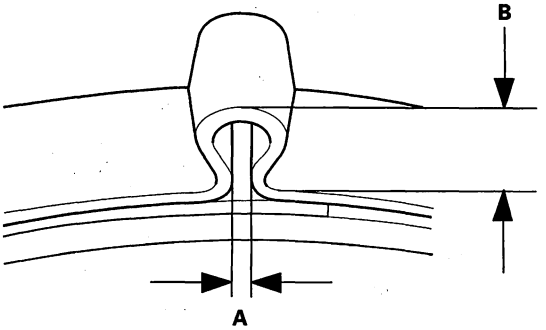
Ear Clamp Type

1. Close the ear portion (A) of the band with commercially available boot band pliers Kent-Moore J-35910 or equivalent (B).



2. Check the clearance between the closed ear portion of the band. If the clearance is not within specifications, close the ear portion of the band tighter.

Front Driveshaft
A: 3.0 mm (0.12 in.) MAX.
B: 6.0 mm (0.24 in.) MAX.
Rear Driveshaft
A: 3.0 mm (0.12 in.) MAX.
B: 6.0 mm (0.24 in.) MAX.

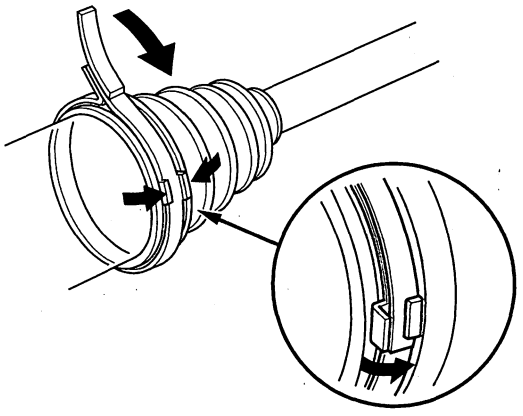


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Locking Tab Type

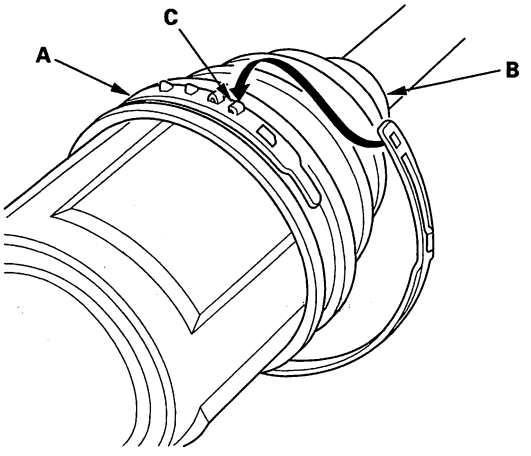
1. Install a new locking tab type boot band on the inboard joint side of the inboard boot. Fold down the locking tabs.



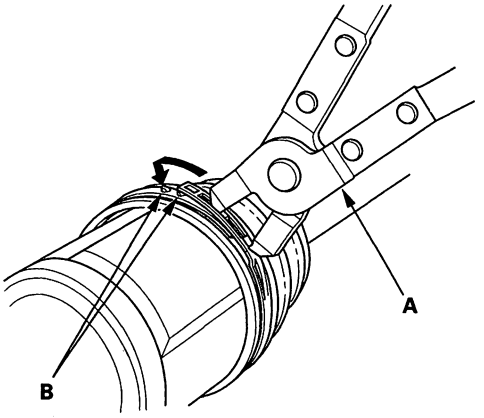
2. Lightly tap on the doubled-over portions to flatten them.

Low Profile Type

1. Install the new low profile band (A) onto the boot (B), then hook the tab portion (C) of the band.



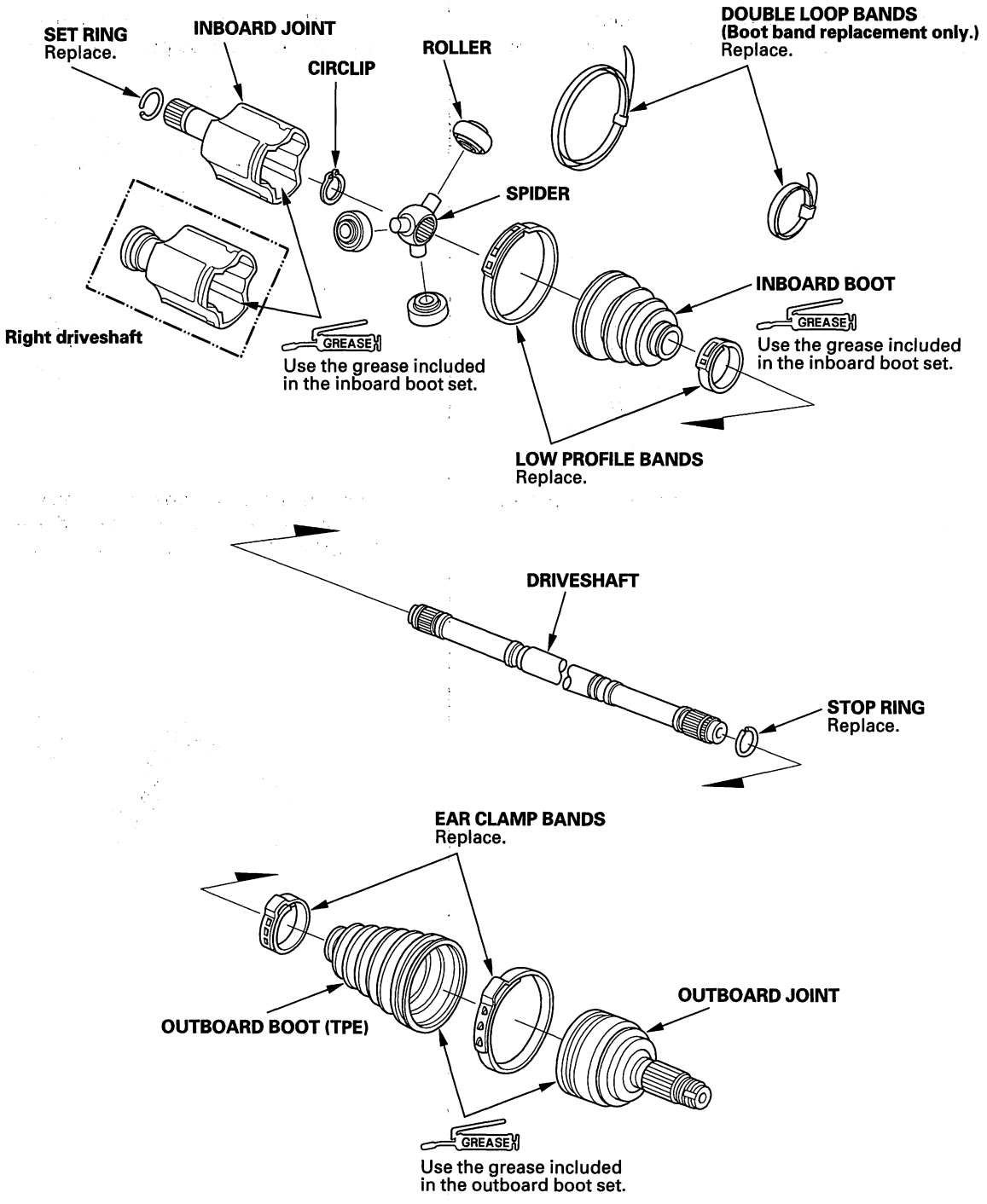
2. Close the hook portion of the band with commercially available boot band pliers (A), then hook the tabs portion (B) of the band.



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Front Driveshaft Reassembly

Exploded View



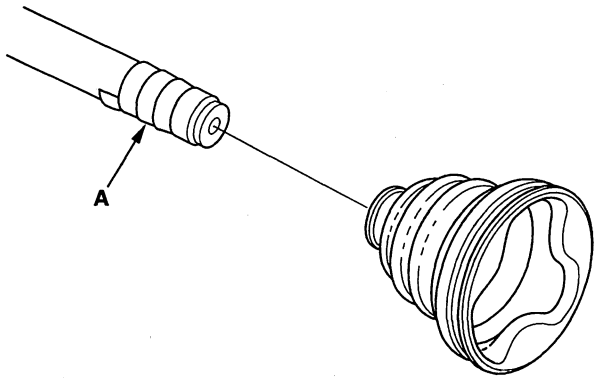
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BACK

NOTE: Refer to the Exploded View as needed during this procedure.

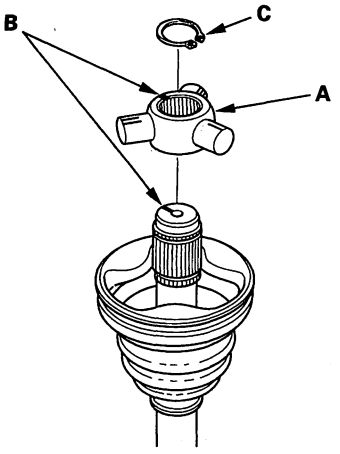
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging to the inboard boot.



2. Install the inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

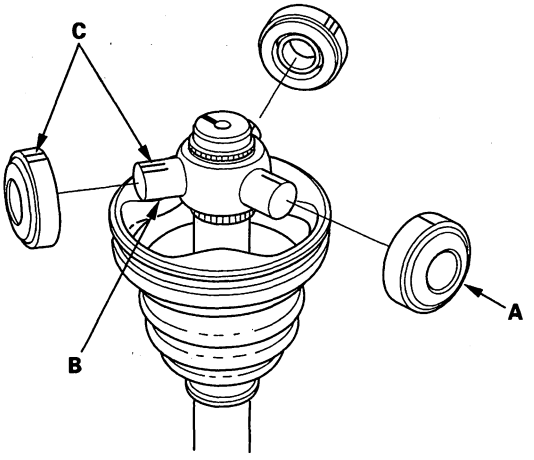
3. Install the spider (A) onto the driveshaft by aligning the marks (B) you made on the spider and the end of the driveshaft.



4. Install the circlip (C) into the driveshaft groove. 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, and note these items:

   - Reinstall the rollers in their original positions on the spider by aligning the marks (C) you made.
   - Hold the driveshaft pointed up to prevent the rollers from falling off.



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Front Driveshaft Reassembly (cont'd)

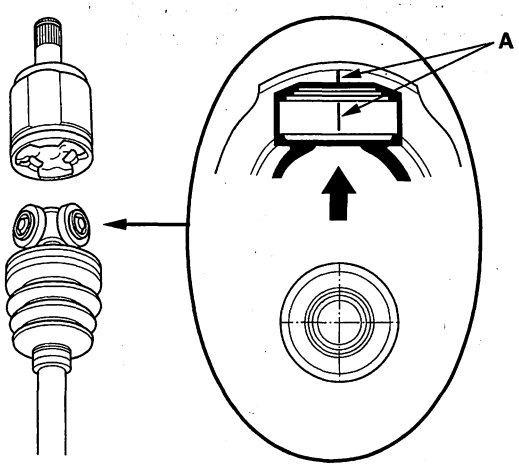
6. Pack the inboard joint with the joint grease included in the new inboard boot set.

Grease quantity
Inboard joint: 190—210 g (6.7—7.4 oz)



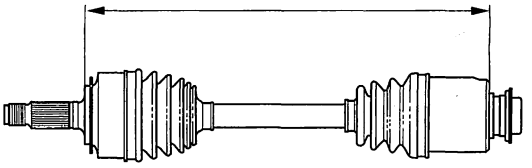
7. Fit the inboard joint onto the driveshaft, and note these items:

- Reinstall the inboard joint onto the driveshaft by aligning the marks (A) you made on the inboard joint and the rollers.
- Hold the driveshaft so the inboard joint is pointing up to prevent it from falling off.

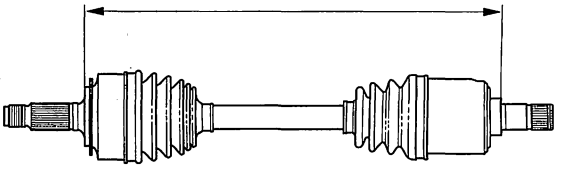


8. Adjust the inboard joint so the rollers are in the middle of the joint, bleed the excess air from the boot, then adjust the driveshaft length to the figure as shown. Doing this prevents a vacuum or too much air in the boot, preventing it from compressing or extending properly.

Right driveshaft: 570—575 mm (22.44—22.64 in.)



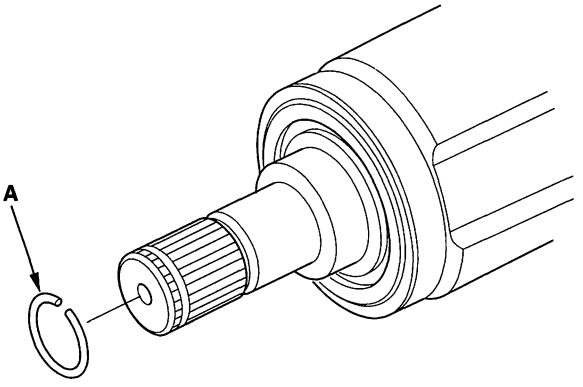
Left driveshaft: 571—576 mm (22.48—22.68 in.)



9. Fit the boot ends onto the driveshaft and the inboard joint, then install the new low profile band or the new double loop band onto the boot (see page 16-11).

10. Repeat step 9 for the band on the other end of the boot, then go to step 11.

11. Install the new set ring (A).

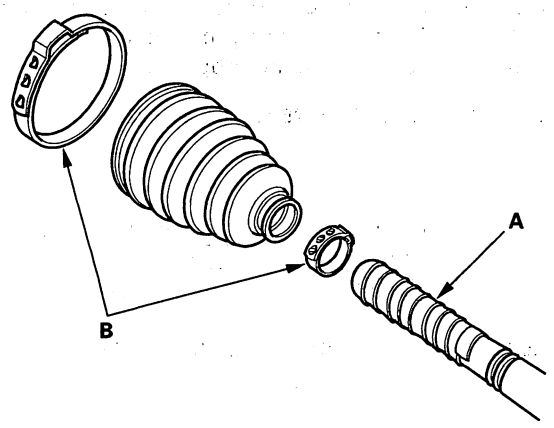


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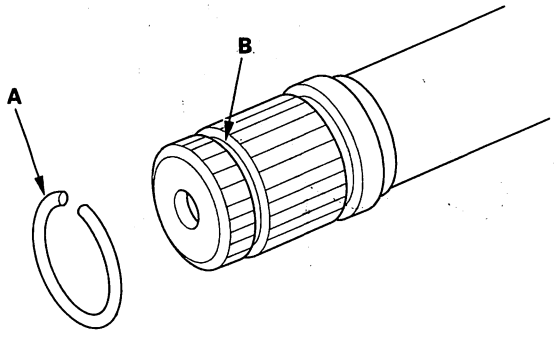
Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging to the outboard boot.

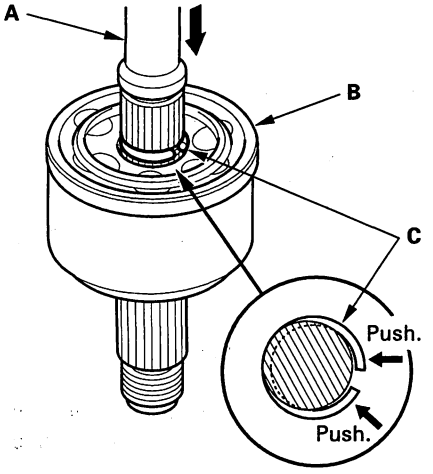


2. Install the new ear clamp bands (B) and outboard boot, then remove the vinyl tape. Be careful not to damage the outboard boot.

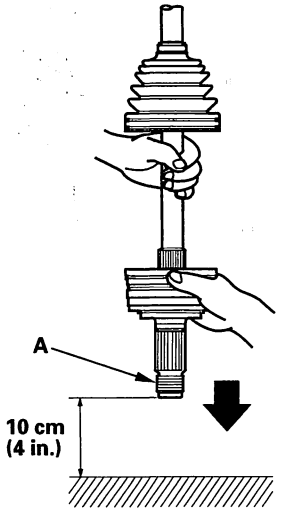
3. Install the new stop ring (A) in the driveshaft groove (B).



4. Pack about half of the grease included in the new outboard boot set into the driveshaft hole in the outboard joint. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.



5. To completely seat the outboard joint, pick up the driveshaft and joint, and tap or hit them from a height of about 10 cm (4 in.) onto a hard surface. Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.

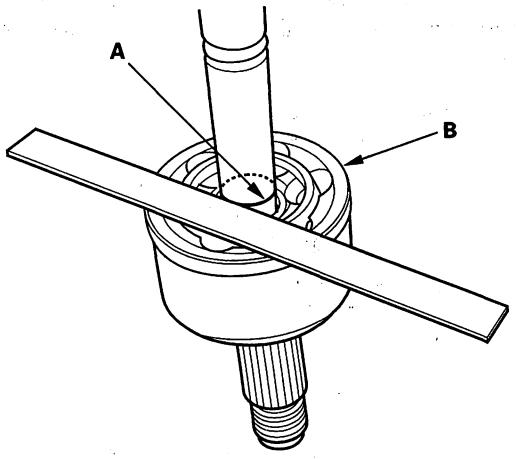


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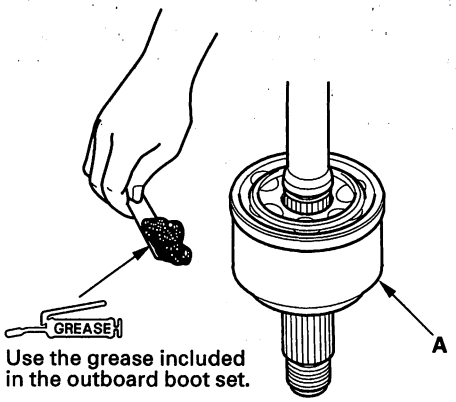
Front Driveshaft Reassembly (cont'd)

6. Check the alignment of the paint mark (A) you made with the outboard joint end (B).



7. Pack the outboard joint (A) with the remaining joint grease included in the new outboard boot set.

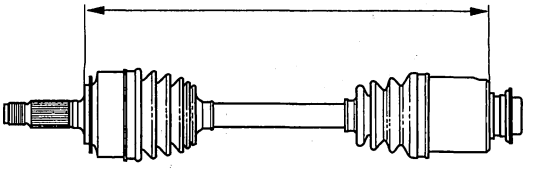
Grease quantity (total)
Outboard joint: 115—135 g (4.0—4.7 oz)



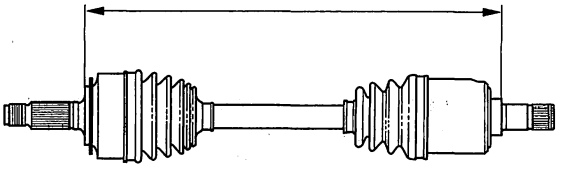
Use the grease included in the outboard boot set.

8. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the groove of the driveshaft and joint. Doing this prevents a vacuum or too much air in the boot, preventing it from compressing or extending properly.

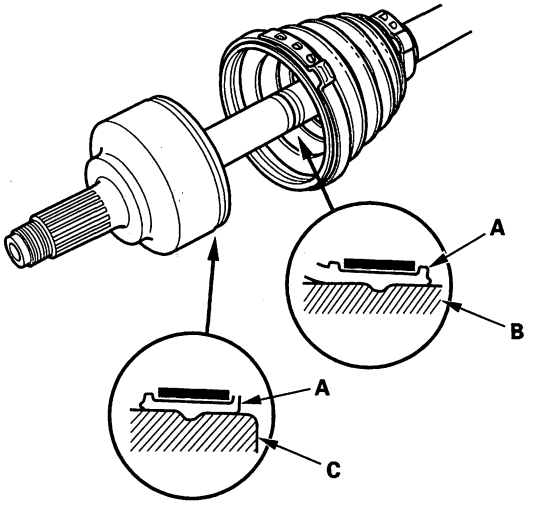
Right driveshaft: 570—575 mm (22.44—22.64 in.)



Left driveshaft: 571—576 mm (22.48—22.68 in.)



9. Fit the boot (A) ends onto the driveshaft (B) and outboard joint (C).



10. Install the new ear clamp band onto the boot (see page 16-11).

11. Repeat step 10 for the band on the other end of the boot.

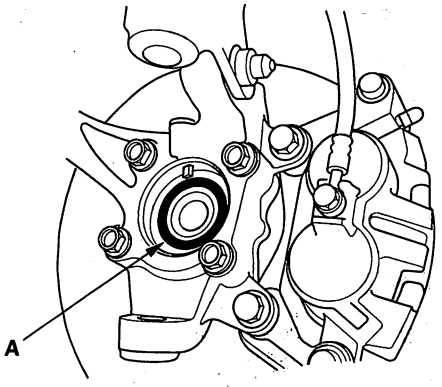
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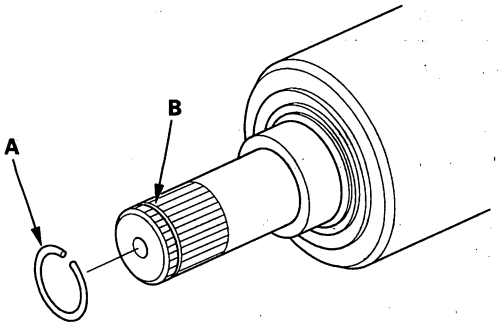
Front Driveshaft Installation

1. Apply grease to the contact area (A) of the outboard joint and front wheel bearing.

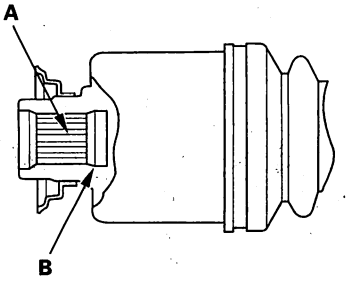
   NOTE: Failing to apply grease may cause excessive noise and vibration.



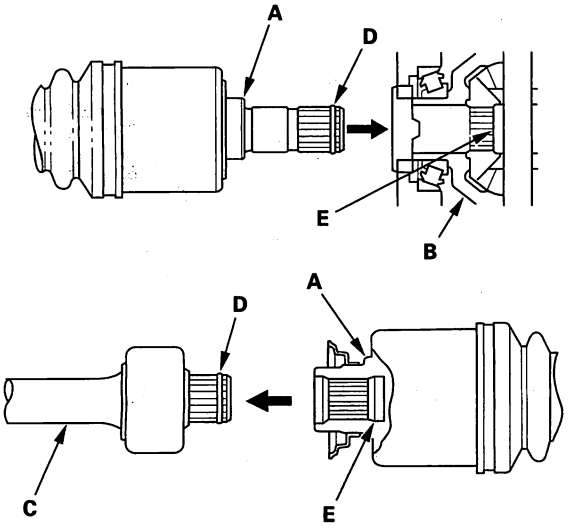
2. Install a new set ring (A) in the set ring groove (B) of the driveshaft (left driveshaft).



3. Apply 2.0—3.0 g (0.07—0.10 oz) of grease to the entire splined surface (A) of the right driveshaft. 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.



4. Clean the areas where the driveshaft contacts the differential thoroughly with brake cleaner, and dry with compressed air. Do not wash the rubber parts with solvent. Insert the inboard end (A) of the driveshaft into the differential (B) or intermediate shaft (C) until the set ring (D) locks in the groove (E).



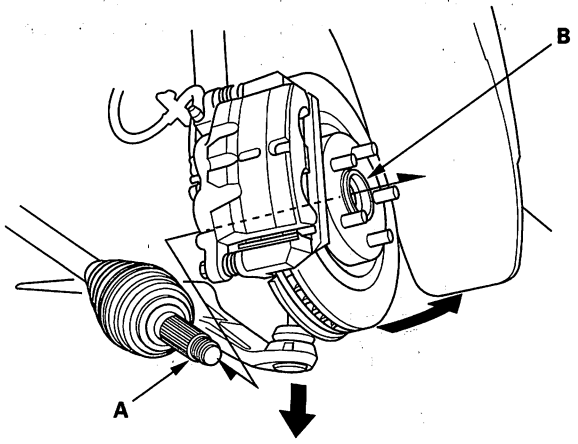
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Front Driveshaft Installation (cont'd)

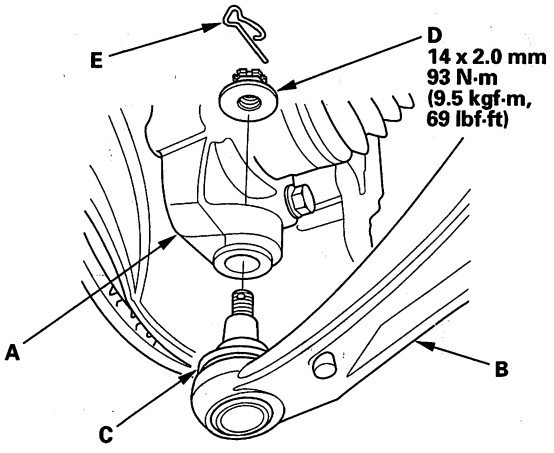
5. Install the splash shield (see step 32 on page 5-17).

6. Install the outboard joint (A) into the front hub (B).



7. 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. Torque the new castle nut (D) 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 nut by loosening it.

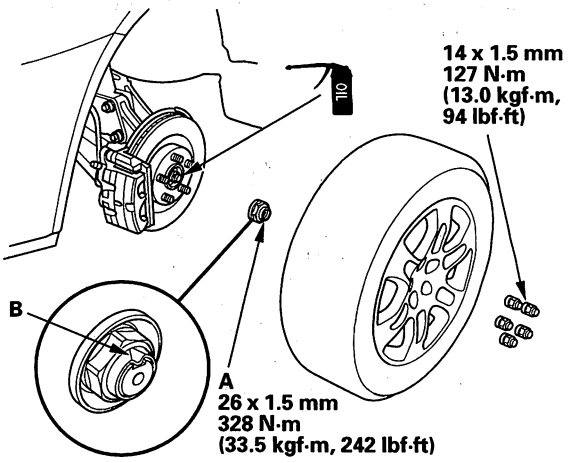
   NOTE: Make sure the ball joint boot is not damaged or cracked.



8. Install the new lock pin (E) into the pin hole as shown.

9. Install the suspension stroke sensor (with active damper system) (see page 22-229).

10. Install a new spindle nut (A), then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.



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 driveshaft and surrounding parts.

13. Tighten the flange bolts and the self-locking nut with the vehicle's weight on the damper.

14. Refill the transmission with recommended fluid (see page 14-266).

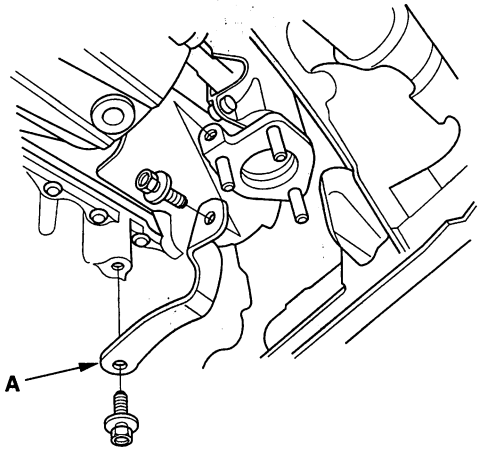
15. Check the front wheel alignment, and adjust it if necessary (see page 18-5).

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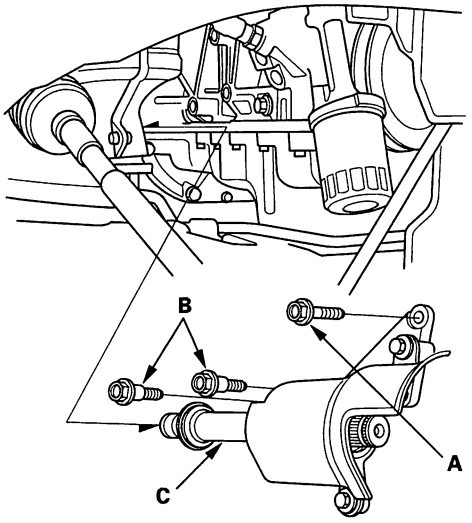
BACK

Intermediate Shaft Removal

1. Drain the transmission fluid (see page 14-266).
2. Remove the right driveshaft (see page 16-4).
3. Remove the exhaust pipe A (see step 7 on page 14-270).
4. Remove the exhaust pipe bracket (A).



5. Remove the flange bolt (A), and two dowel bolts (B).

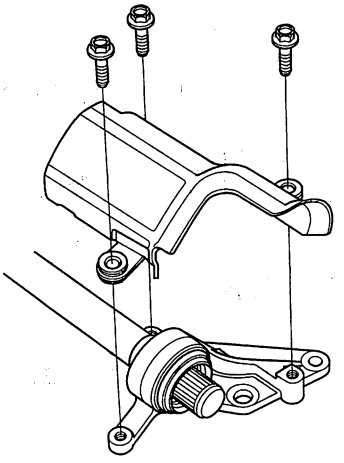


6. Remove the intermediate shaft (C) from the differential. Hold the intermediate shaft horizontally until it is clear of the differential to prevent damaging to the differential oil seal.

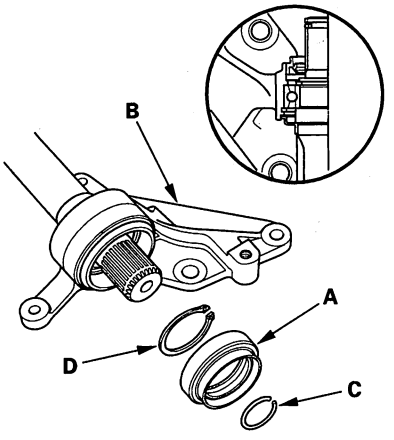
Intermediate Shaft Disassembly

Special Tools Required
- Driver 07749-0010000
- Support base attachment 07LAF-SM40300
- Support base 07965-SD90100
- Attachment, 42 x 47 mm 07746-0010300

1. Remove the heat shield.



2. Remove the intermediate shaft outer seal (A) from the bearing support (B).



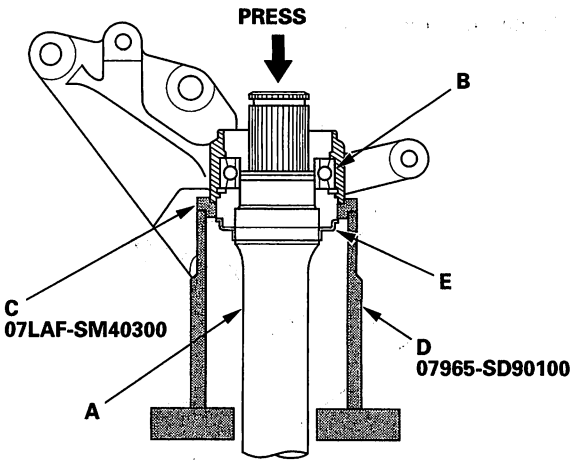
3. Remove the set ring (C) and external snap ring (D).

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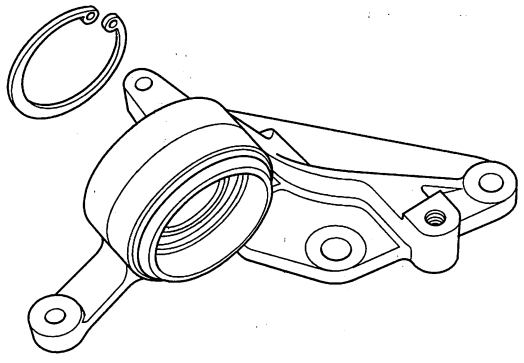
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Intermediate Shaft Disassembly (cont'd)

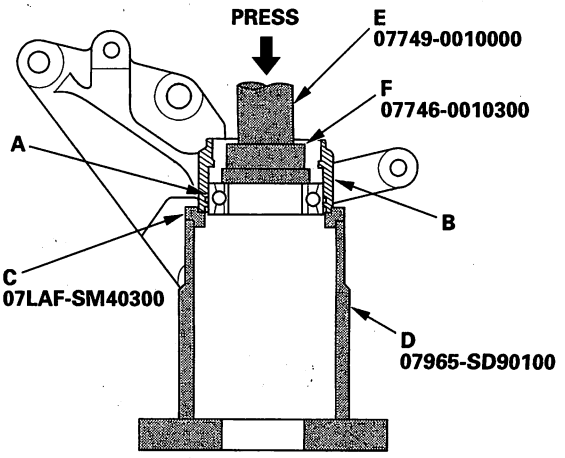
4. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using the support base attachment (C), support base (D) and a press. Be careful not to damage the bearing support ring (E) on the intermediate shaft during disassembly.



5. Remove the internal snap ring.



6. Press the intermediate shaft bearing (A) out of the bearing support (B) using the support base attachment (C), support base (D), driver (E), attachment (F) and a press.

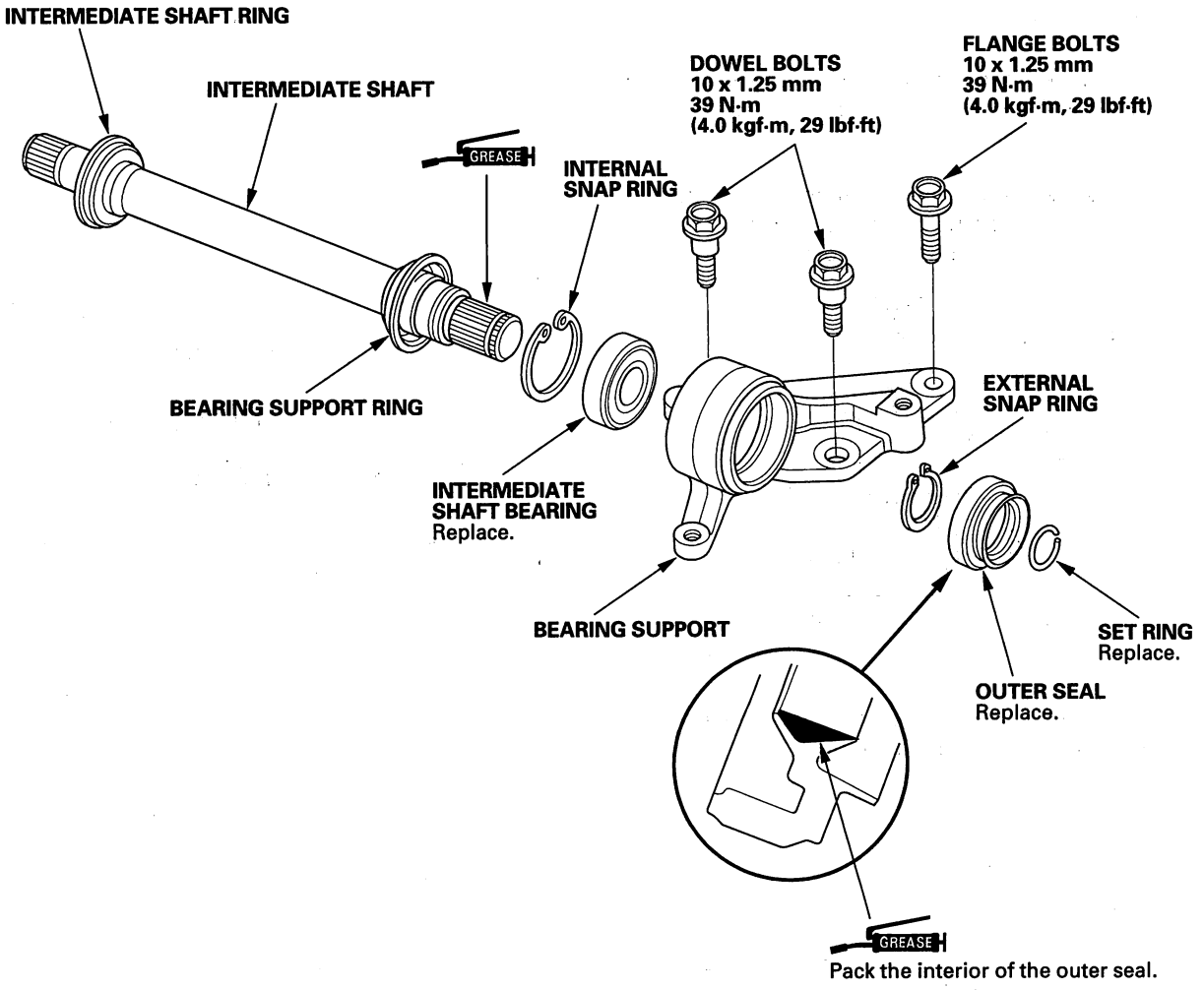


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BACK

Intermediate Shaft Reassembly

Exploded View



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(cont'd)

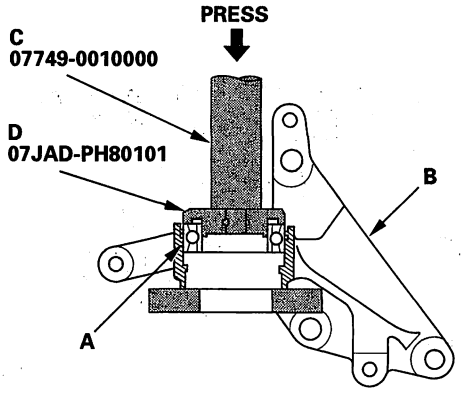
Intermediate Shaft Reassembly (cont'd)

Special Tools Required
- Driver 07749-0010000
- Support base attachment 07LAF-SM40300
- Support base 07965-SD90100
- Oil seal driver attachment 07JAD-PH80101
- Fork seal driver, 39.2 x 49.5 x 15 mm 07947-4630100

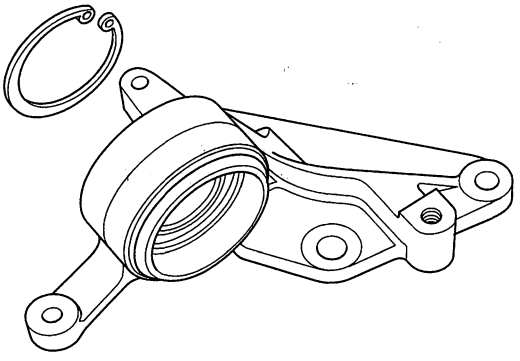
NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean the disassembled parts with solvent, and dry them with compressed air. Do not wash the rubber parts with solvent.

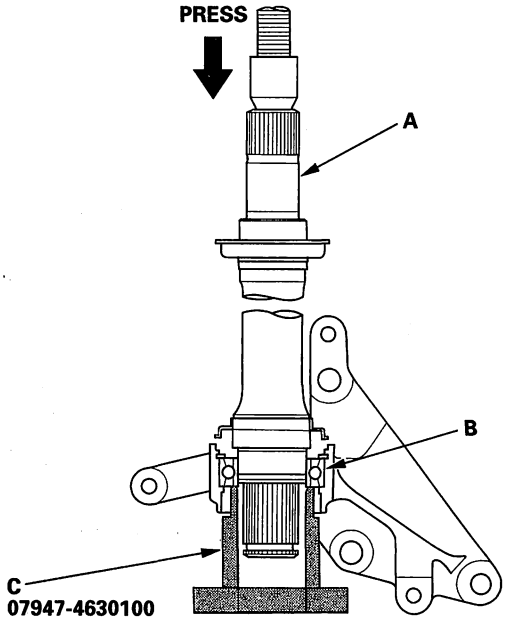
2. Press the intermediate shaft bearing (A) into the bearing support (B) using the driver (C), oil seal driver attachment (D) and a press.



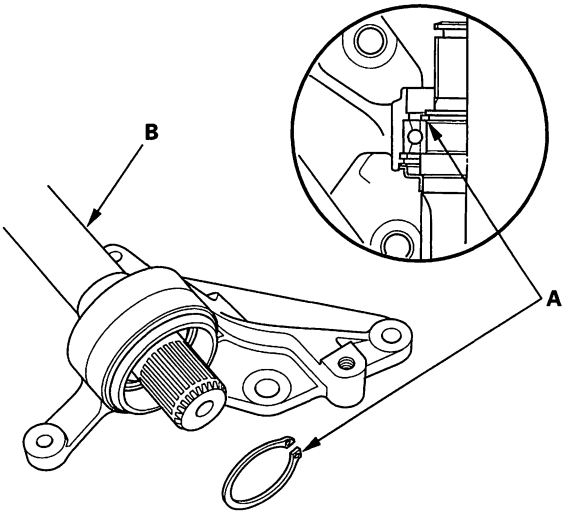
3. Install, then seat the internal snap ring in the groove of the bearing support.



4. Press the intermediate shaft (A) into the shaft bearing (B) using the fork seal driver (C) and a press.



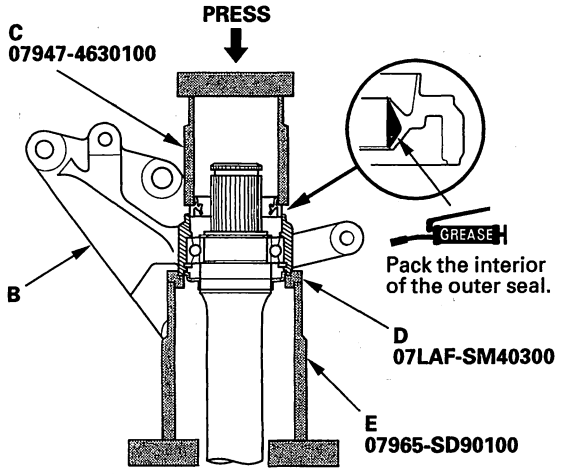
5. Install, then seat the external snap ring (A) in the groove of the intermediate shaft (B).



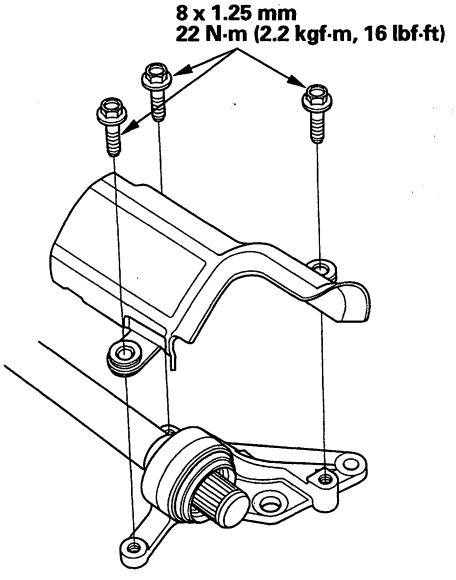
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BACK

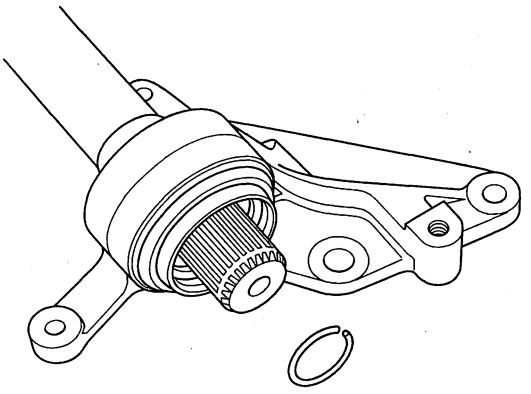
6. Install the outer seal (A) into the bearing support (B) using the fork seal driver (C), support base attachment (D), support base (E) and a press.



7. Install the heat shield onto the bearing support.



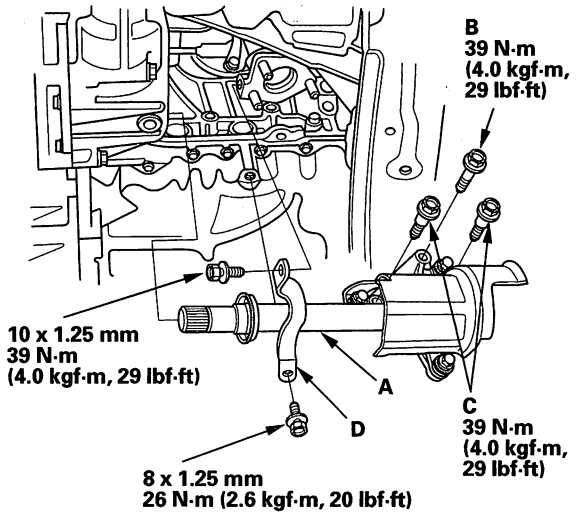
8. Install the set ring.



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Intermediate Shaft Installation

1. Use solvent or brake cleaner to thoroughly clean the areas where the intermediate shaft (A) contacts the transmission (differential) and dry with compressed air. Insert the intermediate shaft assembly into the differential. Hold the intermediate shaft horizontally to prevent damage to the differential oil seal.

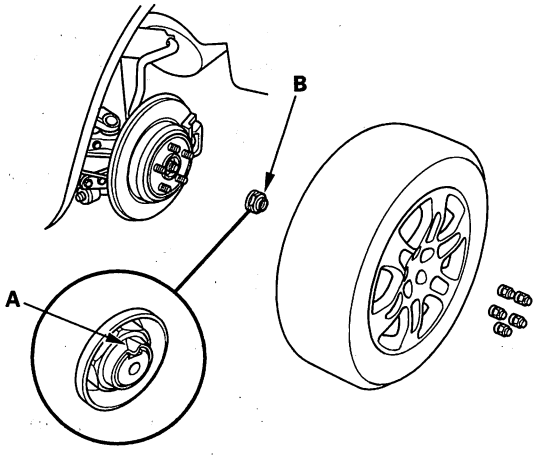


2. Install the flange bolt (B), two dowel bolts (C), and exhaust pipe bracket (D).
3. Install the exhaust pipe A (see step 5 on page 14-273).
4. Install the right driveshaft (see page 16-19).
5. Refill the transmission with recommended fluid (see page 14-266).

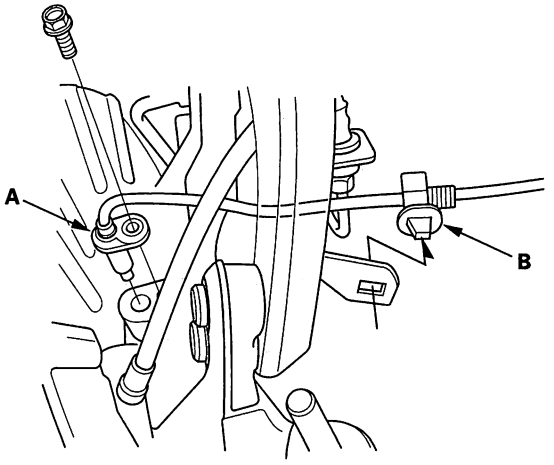
Rear Driveshaft Removal

Special Tools Required
- Driveshaft remover 07AAD-S3VA000
- Ball joint remover, 28 mm 07MAC-SL0A202

1. Raise the vehicle on a lift, and remove the rear wheels.
2. Lift up the locking tab (A) on the spindle nut (B), then remove and discard the nut.



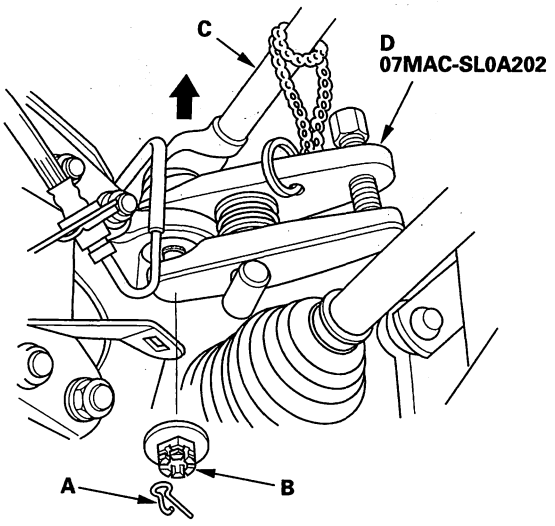
3. Remove the VSA rear wheel sensor (A) and harness clip (B).



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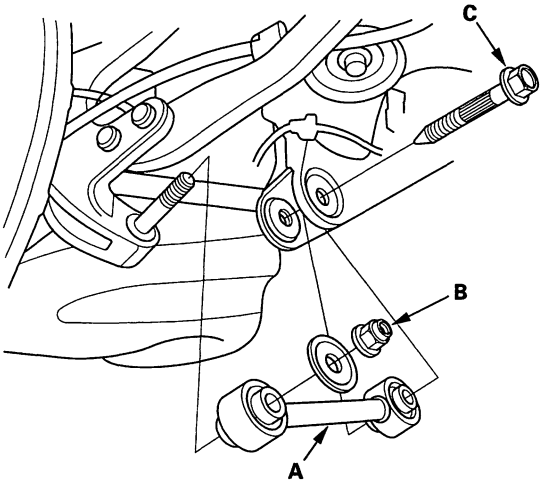
BACK

4. Remove the lock pin (A) from the upper arm ball joint castle nut (B), and remove the nut.

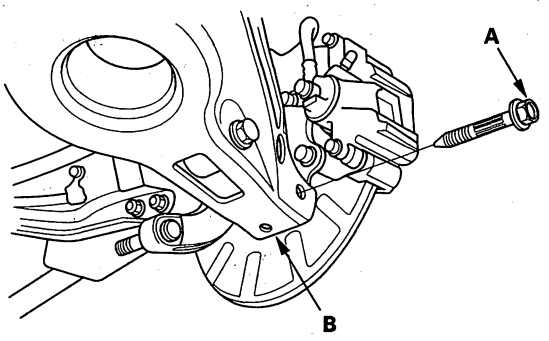


5. Separate the ball joint from the upper arm (C) with the ball joint remover (D) (see page 18-11).

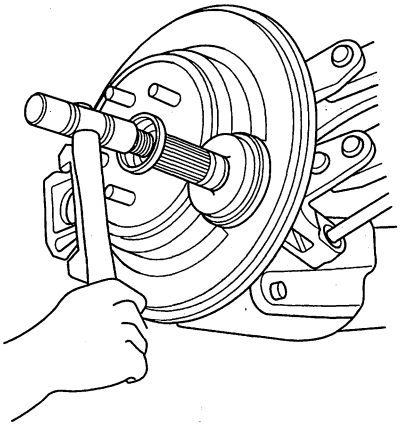
6. Remove the special self-locking nut (B), washer and flange bolt (C), then remove the lower arm A.



7. Place a transmission jack under lower arm B and remove the flange bolt (A).



8. While pulling the knuckle outward, use a plastic hammer to lightly tap on the rear driveshaft outboard joint disconnecting it from the rear wheel hub.



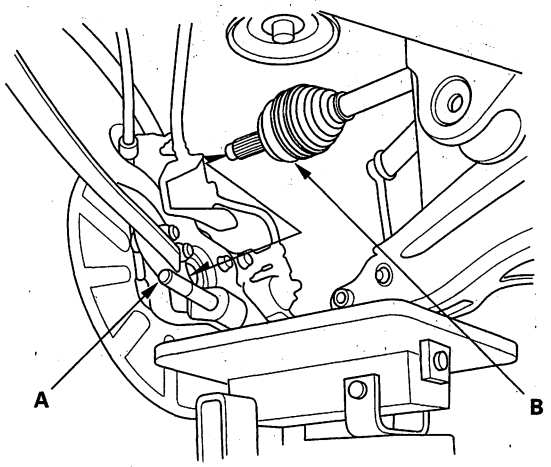
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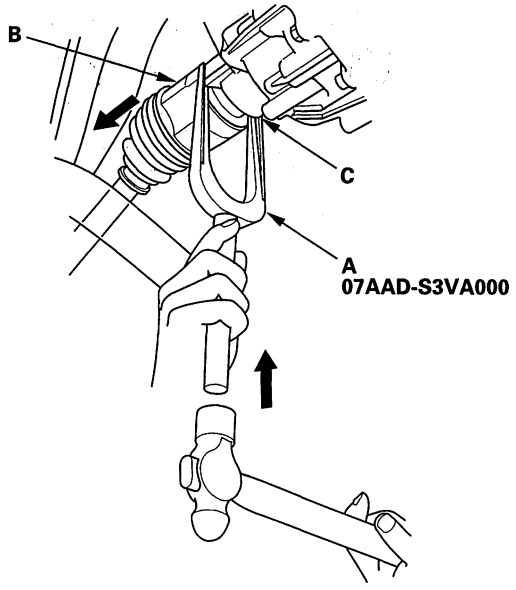
Rear Driveshaft Removal (cont'd)

9. Pull the knuckle (A) outward, then remove the rear driveshaft outboard joint (B).

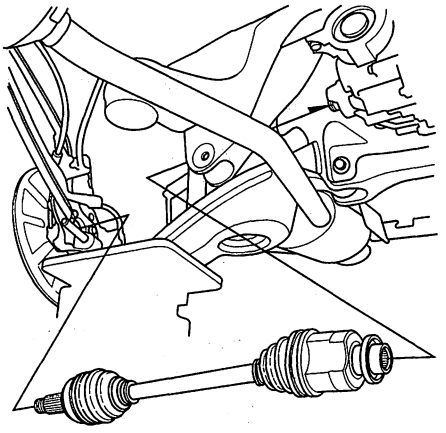
   NOTE: When removing the outboard joint, continue supporting both the knuckle and lower arm with the transmission jack. Make sure not to over extend the brake hose.



10. Using the driveshaft remover (A) and the hammer, pry out the inboard joint (B) from the rear differential (C).



11. Remove the rear driveshaft.



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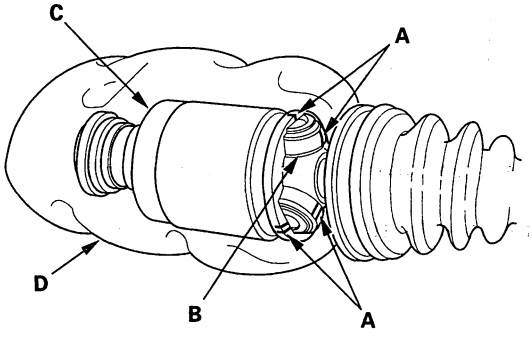
Rear Driveshaft Disassembly

Special Tools Required
Threaded adapter, 24 x 1.5 mm 07XAC-001020A

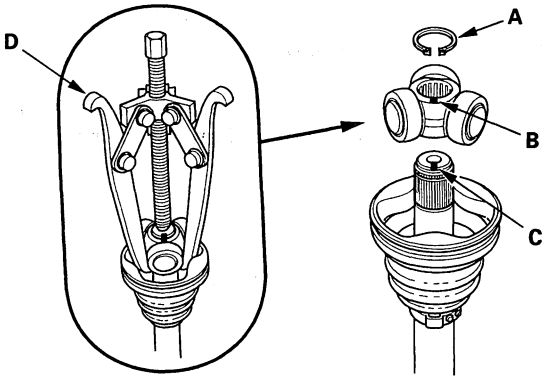
Inboard Joint Side

1. Remove the boot bands. Be careful not to damage the boot (see page 16-6).

2. Make a mark (A) on each roller (B) and inboard joint (C) to identify the locations of the rollers and the grooves in the inboard joint. Then remove the inboard joint and place it on a shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.



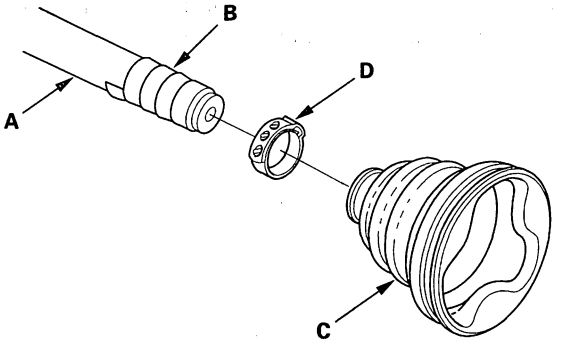
3. Remove the circlip (A).



4. Make a mark on the spider (B) and driveshaft (C) to identify the position of the spider on the shaft.

5. Remove the spider and rollers using a commercially available bearing remover (D).

6. Wrap the splines on the driveshaft (A) with vinyl tape (B) to prevent damaging to the boot.



7. Remove the inboard boot (C) and ear clamp type boot band (D). Be careful not to damage the boot (see page 16-6).

8. Remove the vinyl tape.

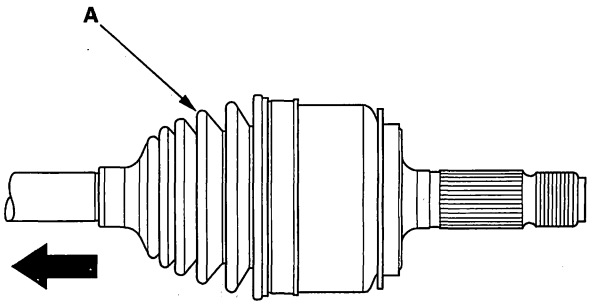
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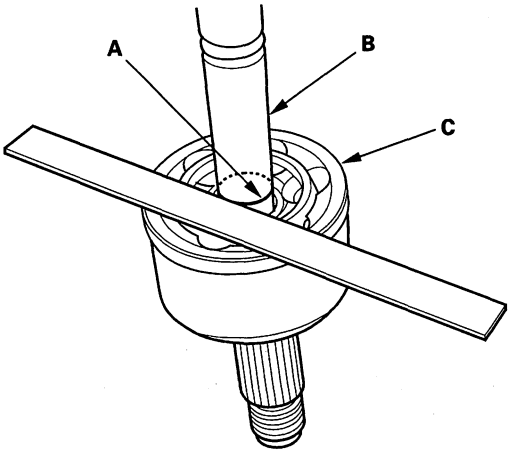
Rear Driveshaft Disassembly (cont'd)

Outboard Joint Side

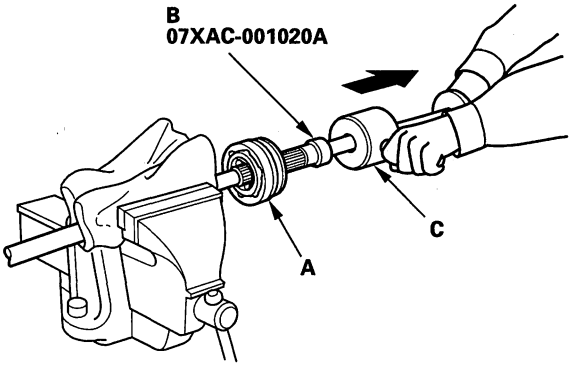
1. Remove the boot bands. Be careful not to damage the boot (see page 16-6).
2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.



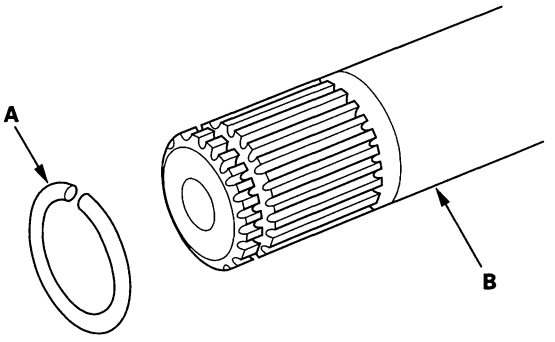
3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.
4. Make a mark (A) on the driveshaft (B) at the same level as the outboard joint end (C).



5. Carefully clamp the driveshaft in a vise with a shop towel.
6. Remove the outboard joint (A) using the threaded adapter (B) and a commercially available 5/8"-18 UNF slide hammer (C).



7. Remove the driveshaft from the bench vise.
8. Remove the stop ring (A) from the driveshaft (B).

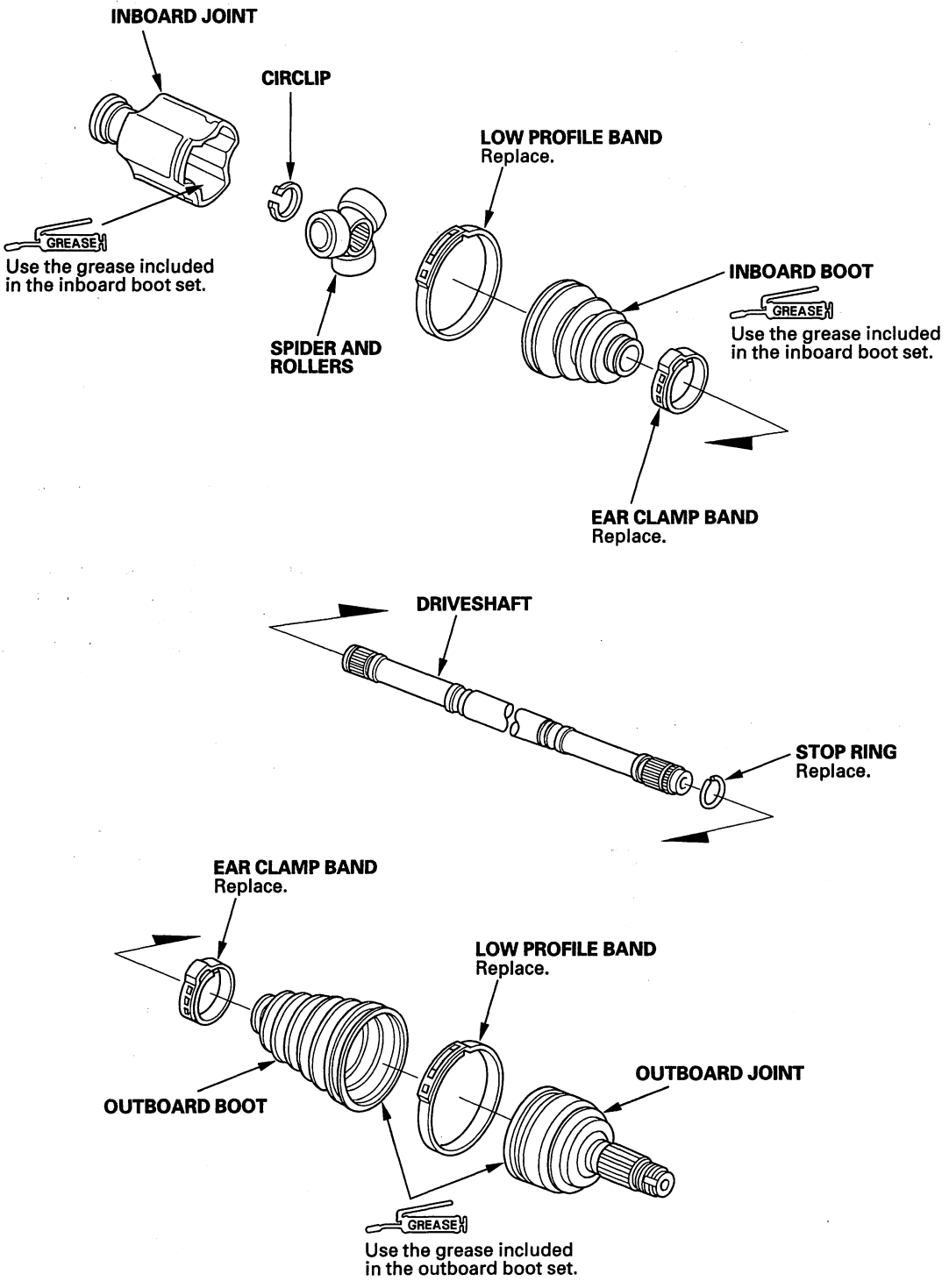


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BACK

Rear Driveshaft Reassembly

Exploded View



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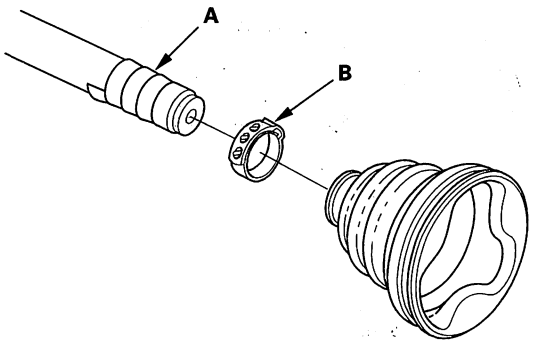
Rear Driveshaft Reassembly (cont'd)

Special Tools Required
Inner handle, 30 mm 07946-MB00000

NOTE: Refer to the Exploded View as needed during this procedure.

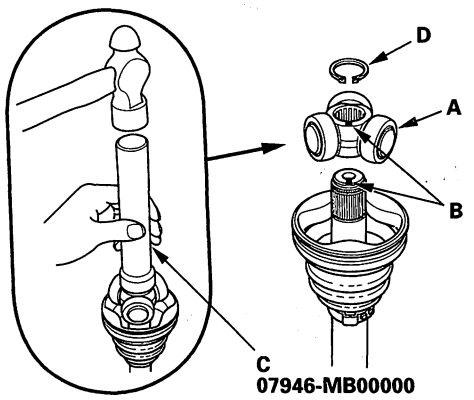
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damage to the inboard boot.



2. Install the new ear clamp bands (B) and inboard boot, then remove the vinyl tape. Be careful not to damage the inboard boot.

3. Install the spider and rollers (A) onto the driveshaft by aligning the marks (B) you made, install it using the inner handle (C).



4. Install the circlip (D) into the driveshaft groove. Rotate the circlip in its groove to make sure it is fully seated.

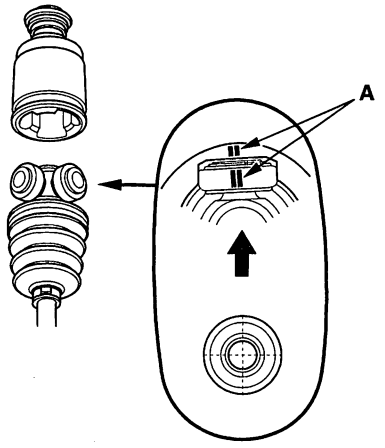
5. Pack the inboard joint with the joint grease included in the new inboard boot set.

Grease quantity
Inboard joint: 120—140 g (4.2—4.9 oz)



6. Fit the inboard joint onto the driveshaft, and note these items:

   - Reinstall the inboard joint onto the driveshaft by aligning the marks (A) you made on the inboard joint and the rollers.
   - Hold the driveshaft so the inboard joint is pointing up to prevent it from falling off.



7. Fit the boot ends onto the driveshaft and the inboard joint, then install the new boot band onto the boot (see page 16-11).

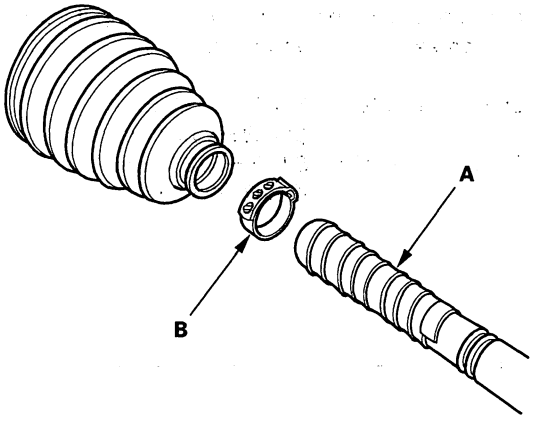
8. Repeat step 8 for the band on the other end of the boot.

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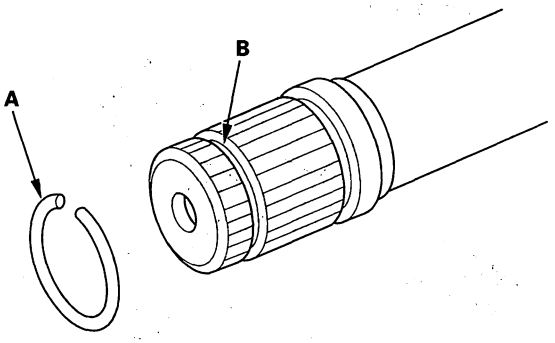
Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging to the outboard boot.

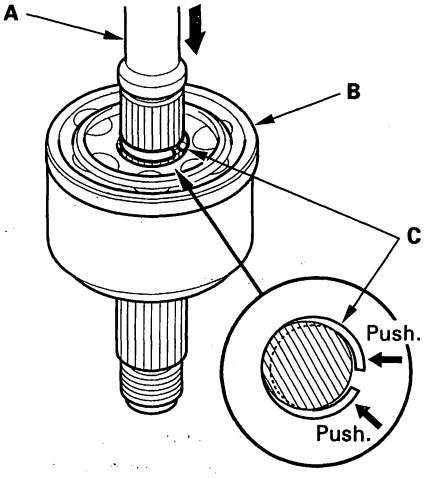


2. Install a new ear clamp band (B) and the outboard boot, then remove the vinyl tape. Be careful not to damage the outboard boot.

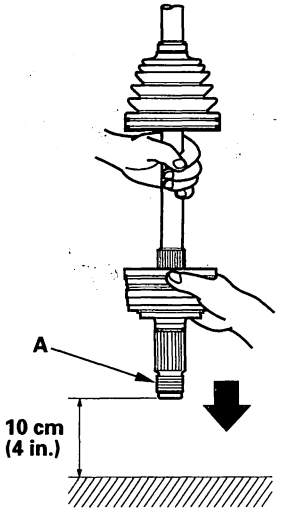
3. Install a new stop ring (A) in the driveshaft groove (B).



4. Pack about half of the grease included in the new joint boot set into the driveshaft hole in outboard joint. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is closed.



5. To completely seat the outboard joint, pick up the driveshaft and joint, and tap them on a hard surface. Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.

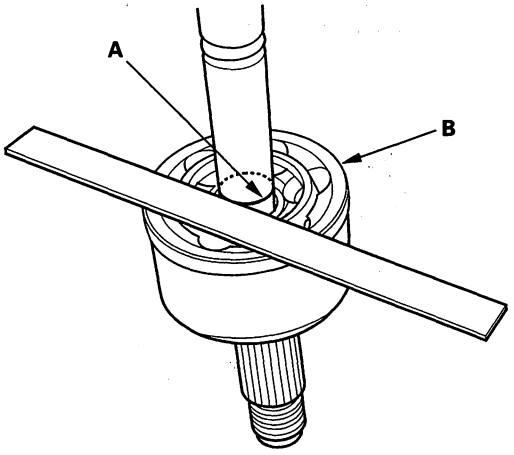


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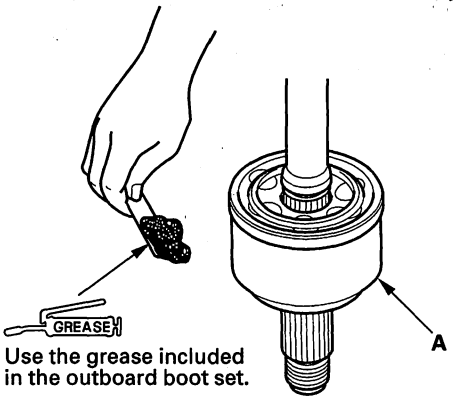
Rear Driveshaft Reassembly (cont'd)

6. Check the alignment of the paint mark (A) you made with the outboard joint end (B).



7. Pack the outboard joint (A) with the remaining joint grease included in the new outboard boot set.

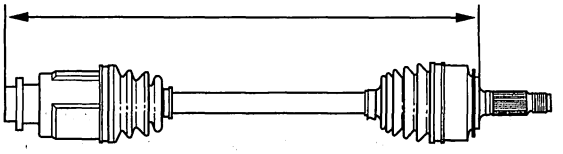
Grease quantity (total)
Outboard joint: 85—105 g (3.0—3.7 oz)



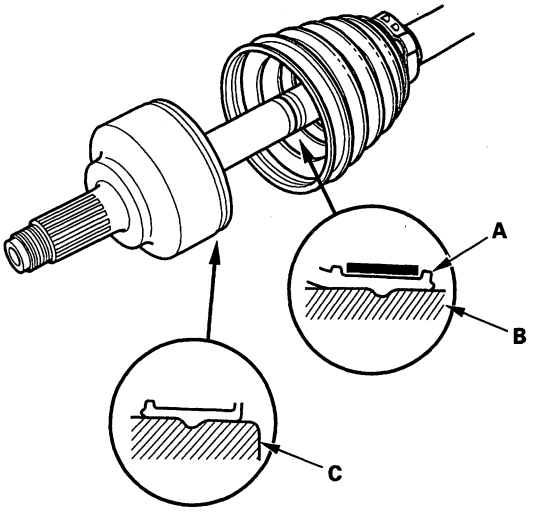
Use the grease included in the outboard boot set.

8. Adjust the length of the driveshafts to the figure as shown, then adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the groove of the driveshaft and joint. Doing this prevents a vacuum or too much air in the boot, preventing it from compressing or extending properly.

Left driveshaft: 592.5—593.5 mm (23.33—23.37 in.)
Right driveshaft: 621.5—622.5 mm (24.47—24.51 in.)



9. Fit the boot (A) ends onto the driveshaft (B) and outboard joint (C).



10. Install the new low profile band and ear clamp band onto the boot (see page 16-11).

11. Install the boot band on the other end of the boot, and repeat step 10.

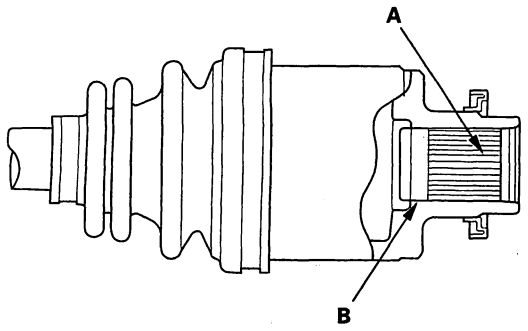
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Rear Driveshaft Installation

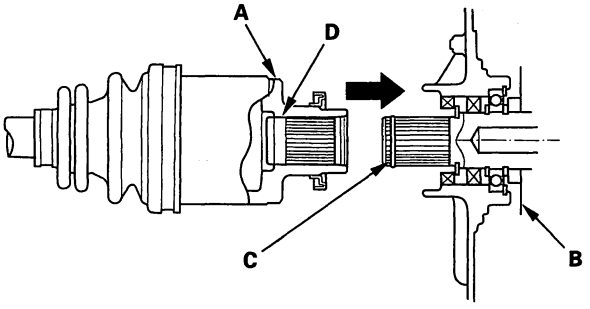
NOTE: Before starting installation, make sure the mating surfaces of the joint and the splined section are free from dirt or dust.

1. Apply 1.5—2.0 g (0.05—0.07 oz) of grease to the whole splined surface (A). 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 differential.



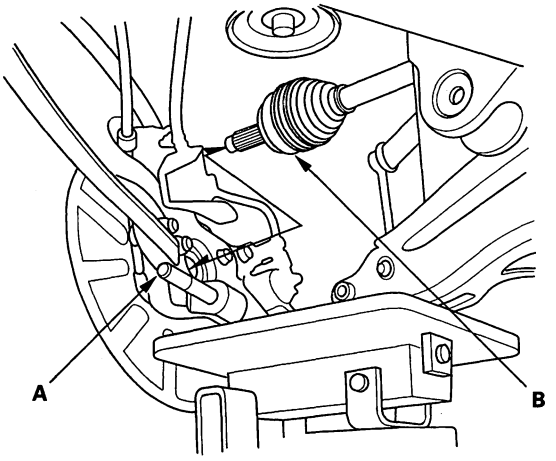
2. Seat a new set ring in the set ring groove of the differential.

3. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air. Insert the inboard end (A) of the driveshaft into the differential (B) until the set ring (C) locks in the groove (D).

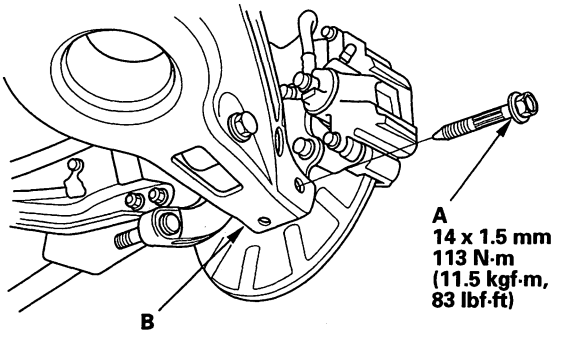


4. Pull the knuckle (A) outward, and install the rear driveshaft outboard joint (B) into the rear hub.

NOTE: When installing the outboard joint continue supporting both the knuckle and lower arm with the transmission jack. Make sure not to over extend the brake hose.



5. Install the flange bolt (A) onto lower arm (B).

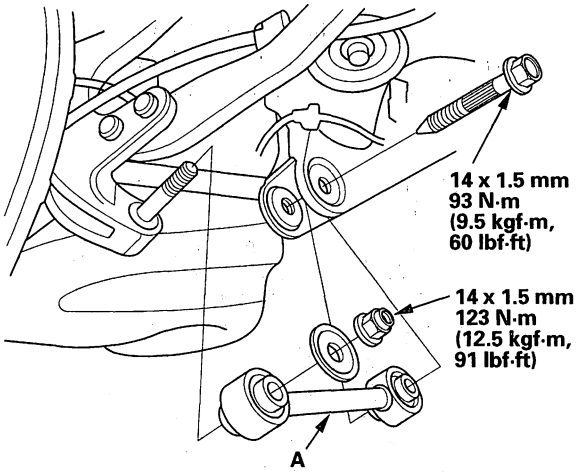


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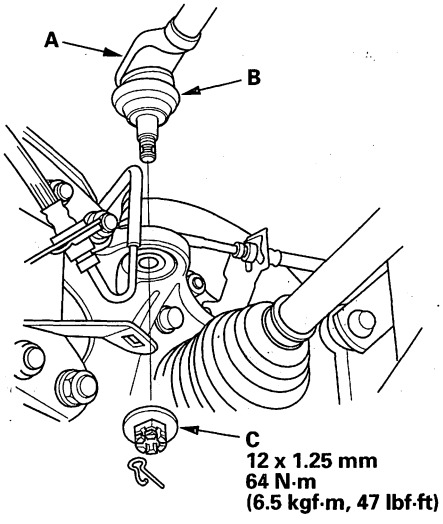
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Rear Driveshaft Installation (cont'd)

6. Install the lower arm A.



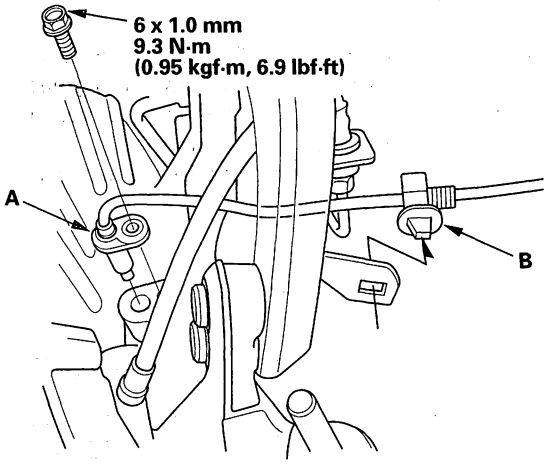
7. Install the upper arm (A). Be careful not to damage the ball joint boot (B). Wipe off the grease before tightening the nut at the ball joint.



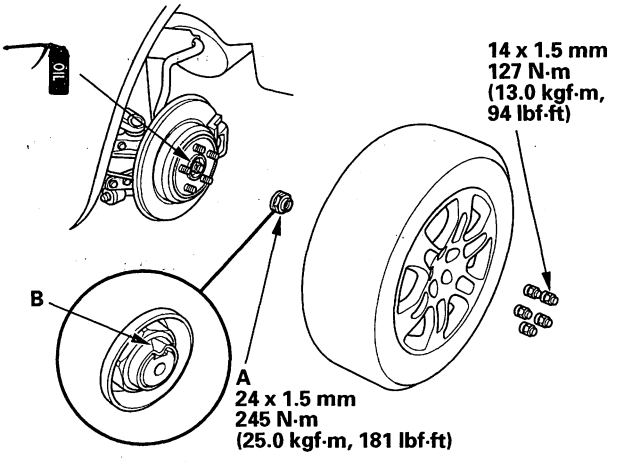
8. Torque the new castle nut (C) to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the nut by loosening it.

   NOTE: Make sure the ball joint boot is not damaged or cracked.

9. Install the VSA rear wheel sensor (A) and harness clip (B).



10. Install a new spindle nut (A), then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.



11. Clean the mating surfaces of the brake disc and the rear wheel, then install the rear wheel with the wheel nuts.

12. Turn the rear wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.

13. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

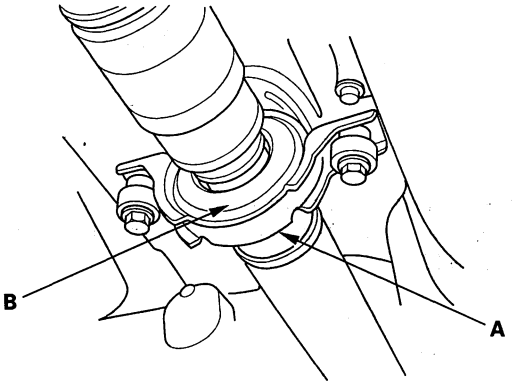
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Propeller Shaft Inspection

Universal Joint and Boots

1. Shift the transmission to the N position.
2. Raise the vehicle on a lift (see page 1-7).
3. Check the center support bearing (A) for excessive play or rattle. If the center support has excessive play or rattle, replace the propeller shaft assembly.

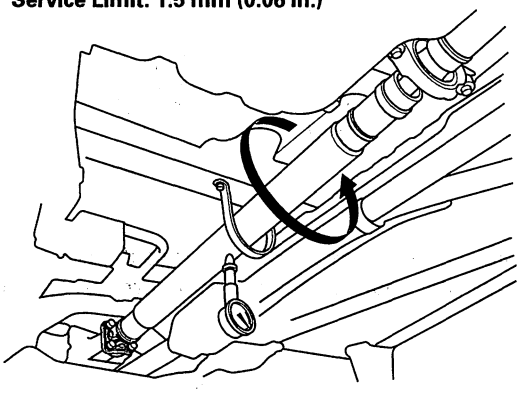


4. Check the rubber portion of the mount (B) for damage and deterioration. If the rubber portion is damaged or deteriorated, replace the propeller shaft assembly.
5. Check the universal joints for excessive play or rattle. If the universal joints have excessive play or rattle, replace the propeller shaft assembly.

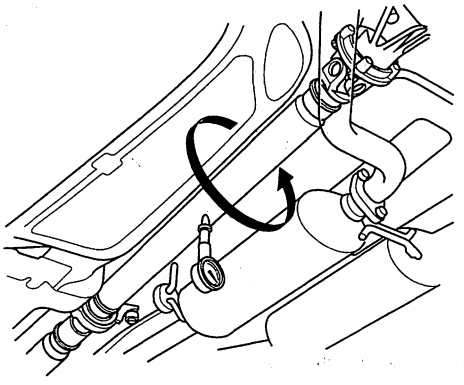
Propeller Shaft Runout

6. Install a dial indicator with its needle on the center of No. 1 propeller shaft or No. 2 propeller shaft.
7. Turn the other propeller shaft slowly and check the runout. Repeat this procedure for the other propeller shaft.

No. 1 Propeller Shaft Runout
Service Limit: 1.5 mm (0.06 in.)



No. 2 Propeller Shaft Runout
Service Limit: 1.5 mm (0.06 in.)

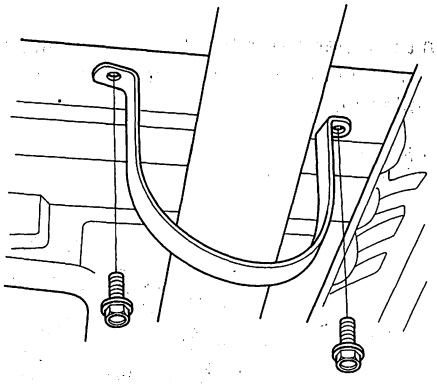


8. If the runout on either propeller shaft exceeds the service limit, replace the propeller shaft assembly.

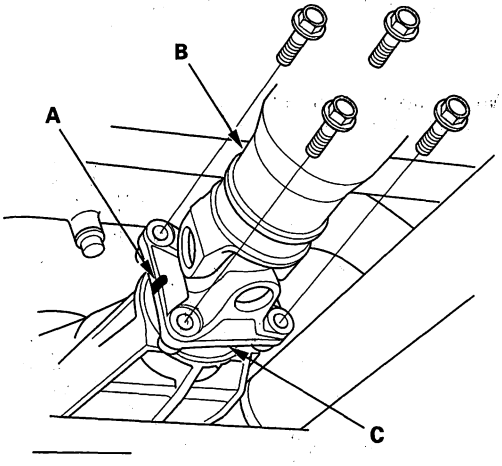
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Propeller Shaft Removal

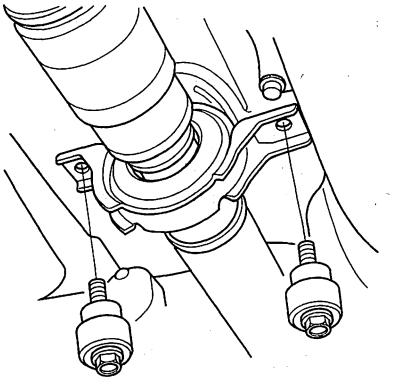
1. Raise the vehicle on a lift (see page 1-7).
2. Remove the propeller shaft protector.



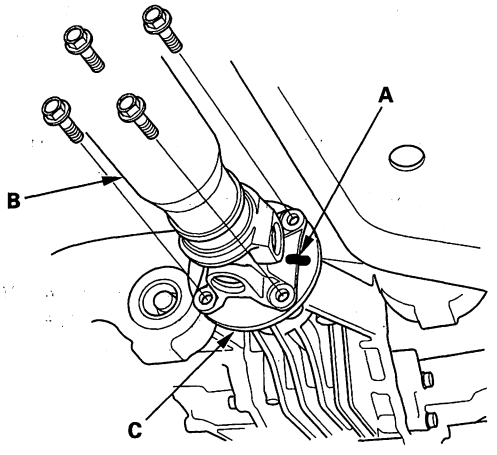
3. Make a reference mark (A) across the No. 1 propeller shaft (B) and transfer companion flange (C).



4. Separate the No. 1 propeller shaft from the transfer assembly.
5. Remove the center support bearing mounting bolts.



6. Make a reference mark (A) across the No. 2 propeller shaft (B) and rear differential companion flange (C).



7. Separate the No. 2 propeller shaft from the rear differential, then remove the propeller shaft.

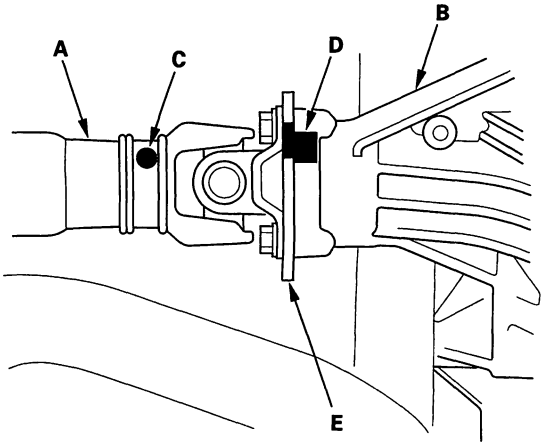
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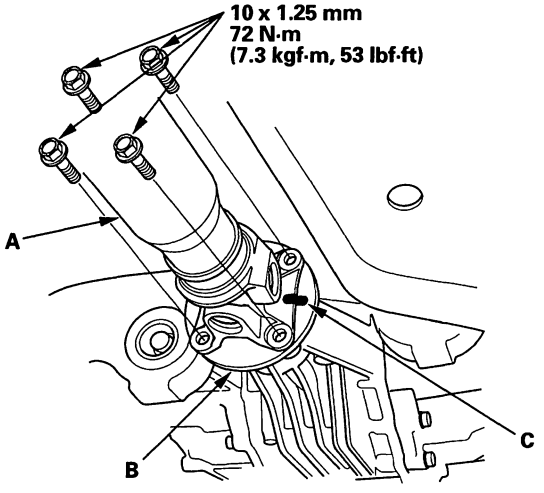
Propeller Shaft Installation

1. If you are installing a new propeller shaft, go to step 2.
   If you reinstalling the original propeller shaft, go to step 3.

2. Install the new propeller shaft (A) onto the rear differential (B), by aligning the reference mark (C) on the new propeller shaft with the factory reference mark (D) on the companion flange (E). Do not use the marks you made on the companion from the removal procedure. If there are no factory marks on the companion flange, go to step 4.

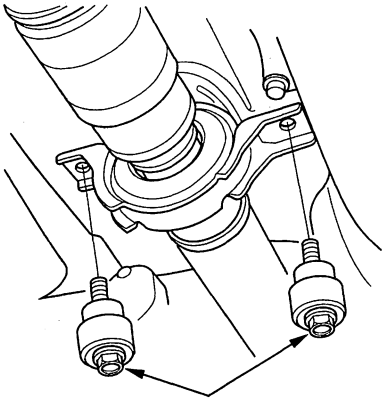


3. Reinstall the No. 2 propeller shaft (A) to the rear differential (B) by aligning the reference marks (C) you made during the removal procedure.

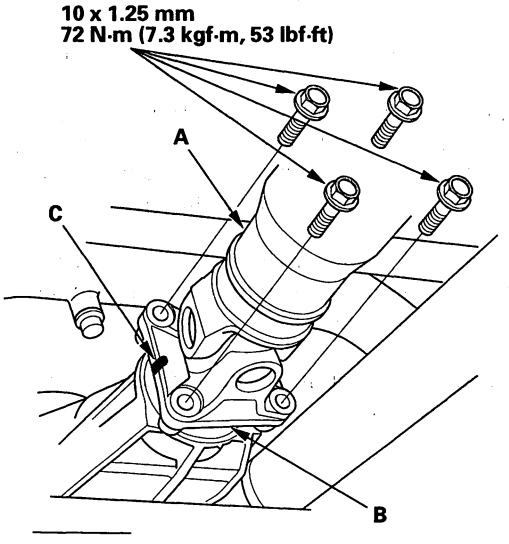


4. Attach the No. 2 propeller shaft to the rear differential with new mounting bolts. Tighten the bolt to the specified torque.

5. Install the center support bearing mounting bolts. Make sure you use new bolts.



6. Install the No. 1 propeller shaft (A) onto the transfer companion flange (B) by aligning the reference mark (C). Make sure you use new mounting bolts.

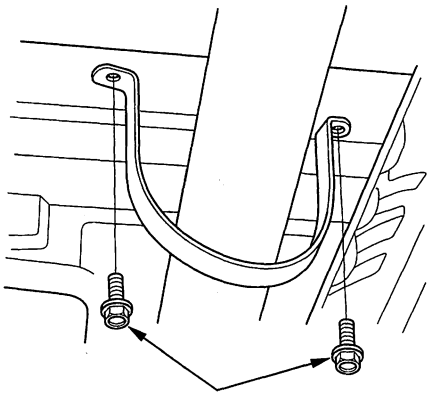


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Propeller Shaft Installation (cont'd)

7. Install the propeller shaft protector.



8. If you installed a new propeller shaft, test drive the vehicle at 55 mph (88 kph) and check for noise or vibration.
   - If there is no noise or vibration, the repair is complete.
   - If there is a noise or vibration, go to step 9.
9. Remove the mounting bolts from the propeller shaft at the rear differential companion flange. Note the current alignment of the propeller shaft to rear differential companion flange.
10. Rotate the propeller shaft 180 degrees from its current alignment with the rear differential companion flange.
11. Install new mounting bolts and tighten them to the specified torque.

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