

Engine Electrical

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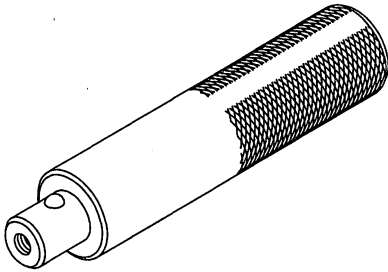
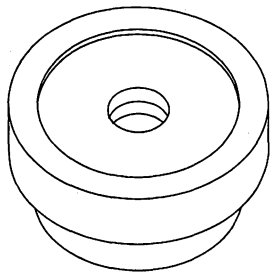
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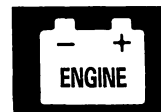


Engine Electrical

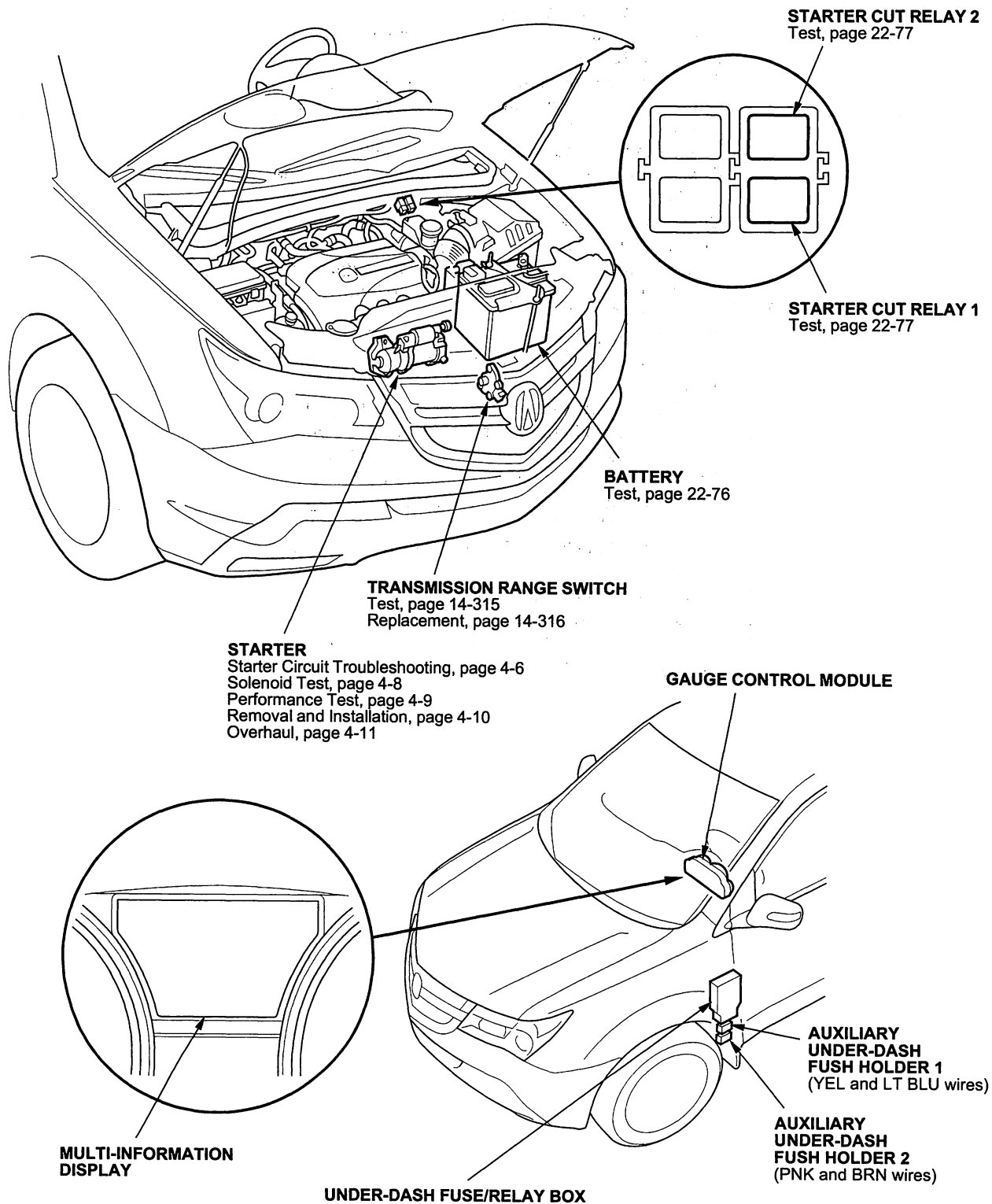
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07746-0010300	Attachment, 42 x 47 mm	1
②	07749-0010000	Handle driver	1





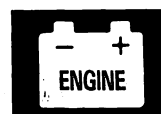
Component Location Index



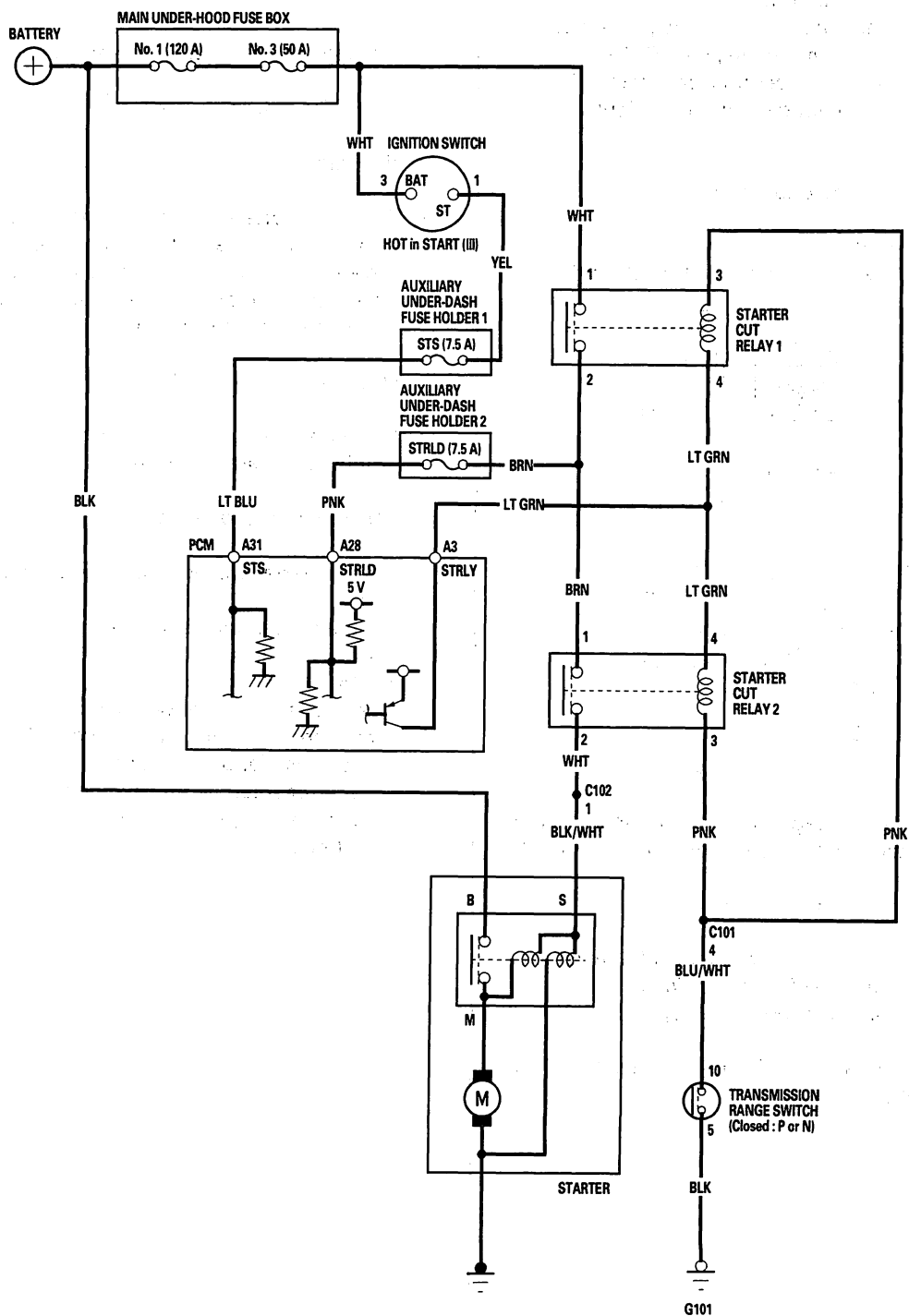
Starting System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Engine does not start (does not crank)	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see page 22-76). 3. Check the starter (see page 4-6). 4. Check starter cut relay 1 and starter cut relay 2 (see page 22-77). 5. Check the transmission range switch (see page 14-315). 6. Check the ignition switch or wire (see page 22-79).	Poor ground at G101
Engine cranks, but does not start	1. Check for PGM-FI DTCs. 2. Check the fuel pressure (see page 11-333). 3. Check for a plugged or damaged fuel line (see page 11-334). 4. Check for a plugged fuel filter (see page 11-345). 5. Check the throttle body (see page 11-362). 6. Check for low engine compression (see page 6-6). 7. Check for a damaged or broken timing belt.	
Engine is hard to start	1. Check for PGM-FI DTCs. 2. Check the fuel pressure (see page 11-333). 3. Check for a plugged or damaged fuel line (see page 11-334). 4. Check for a plugged fuel filter (see page 11-345).	
Engine cranks slowly	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see page 22-76). 3. Check the starter for binding (see page 4-11). 4. Check for excessive drag in the engine.	
MID message check starting system	1. Check for a blown STRLD (7.5 A) fuse in the auxiliary under-dash fuse holder 2 below the driver's under-dash fuse/relay box. 2. Check for a faulty starter cut relay 1. 3. Check for a faulty starter cut relay 2. 4. Check for open in the BRN wire between starter cut relay 1 and starter cut relay 2.	



Circuit Diagram



Starting System

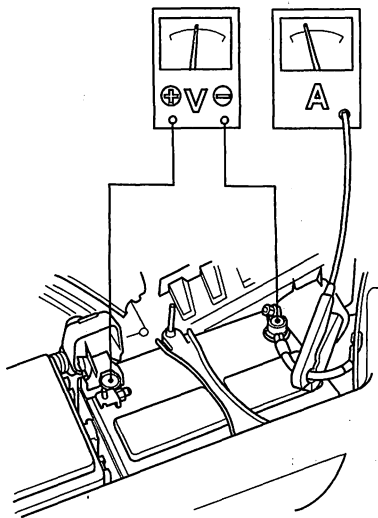
Starter System Circuit Troubleshooting

NOTE:

- Air temperature must be between 59 and 100 °F (15 and 38 °C) during this procedure.
- After the inspection, you must reset the powertrain control module (PCM). Otherwise, the PCM will continue to stop the fuel injectors from functioning.
- The battery must be in good condition and fully charged.

1. Hook up the following equipment:

- Ammeter, 0–400 A
- Voltmeter, 0–20 V (accurate within 0.1 volt)



2. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the vehicle and the PCM. If it doesn't communicate troubleshoot the DLC circuit (see page 11-223).
5. Select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.

6. Set the parking brake, then with the shift lever in the N or P position, turn the ignition switch to START (III).

Does the starter crank the engine normally?

YES—The starting system is OK. Go to step 13.

NO—Go to step 7.

7. Check the battery condition. Check the electrical connections at the battery, the negative battery cable to the body, the engine ground cables, and the starter for looseness and corrosion. Then try cranking the engine again.

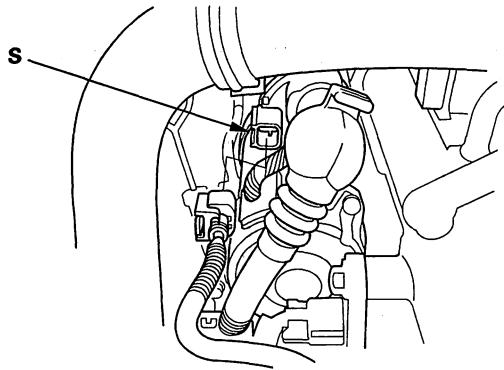
Does the starter crank the engine?

YES—Repairing the loose connection corrected the problem. The starting system is OK. Go to step 13.

NO—Check these items:

- If the starter will not crank the engine at all, go to step 8.
- If the starter cranks the engine erratically or too slowly, go to step 10.
- If the starter does not disengage from the torque converter ring gear when you release the key, replace the starter, or remove and disassemble it, and check for the following:
 - Starter solenoid and switch malfunction
 - Dirty drive gear or damaged overrunning clutch

8. Make sure the shift lever is in the N or P position, then disconnect the connector from the starter solenoid S terminal. Connect a jumper from the battery positive terminal to the solenoid S terminal.



Does the starter crank the engine?

YES—Go to step 9.

NO—Remove the starter, and repair or replace it as necessary. ■

9. Check the following items in the order listed until you find the problem:
- A blown STS (7.5 A) fuse in the auxiliary under-dash fuse holder 1 located below the driver's under-dash fuse/relay box.
 - A blown STRLD (7.5 A) fuse in the auxiliary under-dash fuse holder 2 located below the driver's under-dash fuse/relay box.
 - Check for an open or short in the WHT wire and connectors between the starter cut relay 1 and the main under-hood fuse box.
 - Check for an open or short in the BRN wire and connectors between the starter cut relay 2, the PCM and the starter cut relay 1.
 - Check for an open or short in the WHT wire, BLK/ WHT wire, and connectors between the starter cut relay 2 and the starter.
 - Check for a faulty ignition switch (see page 22-79).
 - Check for a faulty transmission range switch and connector (see page 14-315).
 - Check for a faulty starter cut relay 1 and the starter cut relay 2 (see page 22-77).

10. While cranking the engine, check the cranking voltage and the current draw.

Is the cranking voltage greater than or equal to 8.0 V and is the current draw less than or equal to 375 A?

YES—Go to step 11.

NO—Replace the starter, or remove and disassemble it, and check for the following:

- Drag in the starter armature
- Shorted armature winding
- Excessive drag in the engine

11. Check the engine speed while cranking the engine.

Is the engine speed above 100 rpm?

YES—Go to step 12.

NO—Replace the starter, or remove and disassemble it, and check for the following:

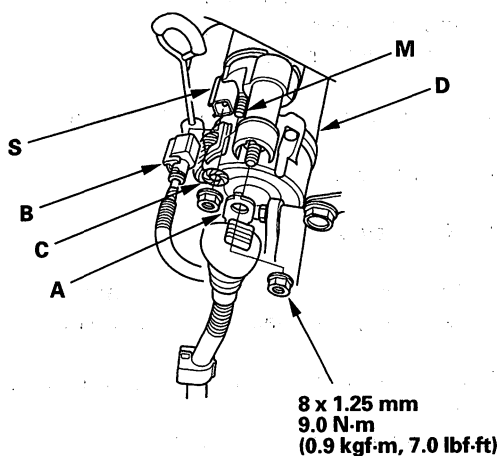
- Open circuit in starter armature commutator segments
- Excessively worn starter brushes
- Open circuit in the starter brushes
- Dirty or damaged helical splines or drive gear
- Faulty drive gear clutch

12. Remove the starter, and inspect its drive gear and the torque converter ring gear for damage. Replace any damaged parts.
13. Select PCM reset (see page 11-4) to cancel ALL INJECTORS OFF on the HDS.

Starting System

Starter Solenoid Test

1. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped). Make sure the ignition switch is OFF.
2. Remove the battery and battery base (see step 12 on page 5-3).
3. Disconnect the negative cable from the battery first, then disconnect the positive cable.
4. Disconnect the positive starter cable (A), S terminal connector (B), and motor cable (C).



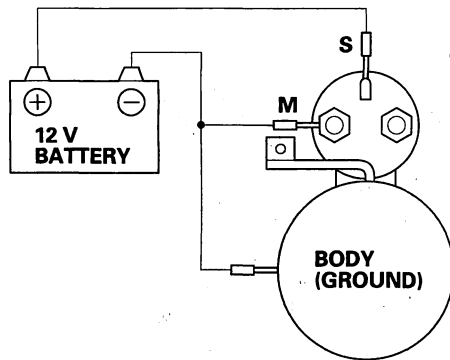
5. Check the hold-in coil for continuity between the S terminal and the armature housing (ground) (D). There should be continuity.
 - If there is continuity, go to step 6.
 - If there is no continuity, replace the solenoid.
6. Check the pull-in coil for continuity between the S terminal and the M terminal. There should be continuity.
 - If there is continuity, the solenoid is OK.
 - If there is no continuity, replace the solenoid.

7. Reconnect the starter cable, S terminal connector, and motor cable.
8. Connect the positive cable to the battery first, then connect the negative cable.
9. Install the battery and battery base (see step 56 on page 5-21).
10. Do the steering column position memorization (see page 17-28).
11. Enter the anti-theft codes for the audio system and navigation system (if equipped).
12. Set the clock.

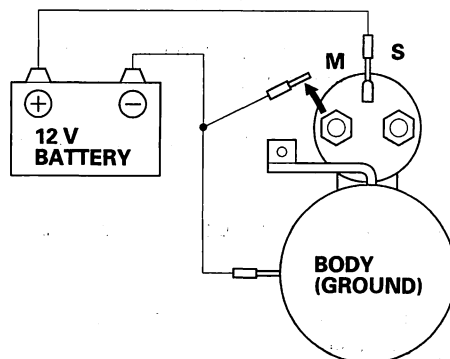
Starter Performance Test

1. Disconnect the wire from the M terminal.
2. Make a connection for this test using the thickest (gauge) wire possible (preferably the same gauge as used on the vehicle).

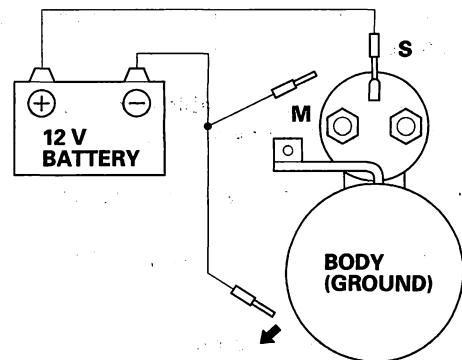
NOTE: To avoid damaging the starter, never leave the battery connected for more than 10 seconds.



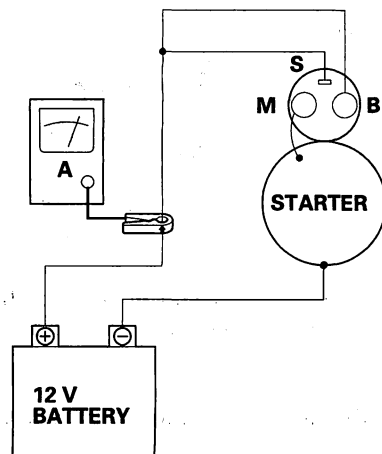
3. Connect the battery as shown. Make sure you disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil of the solenoid is working properly.



5. Disconnect the battery from the starter body. If the pinion retracts immediately, it is working properly.



6. Clamp the starter firmly in a vise.
7. Reconnect the wire to the M terminal.
8. Connect the starter to the battery as shown in the diagram, and confirm that the motor starts and keeps rotating.



9. If the electric current meets the specification when the battery voltage is at 11.5 V, the starter is working properly.

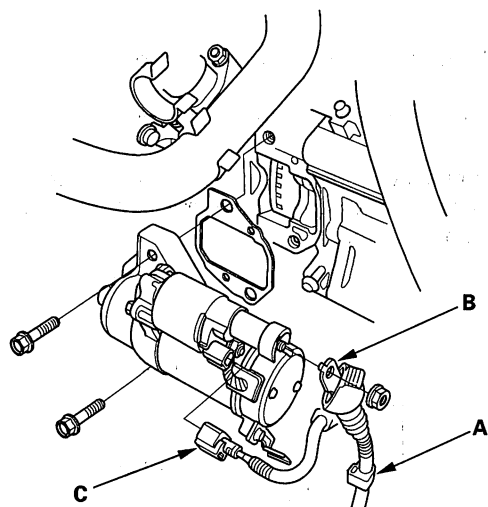
Specification
Electric Current: 90 A or less

Starting System

Starter Removal and Installation

Removal

1. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped). Make sure the ignition switch is OFF.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the air cleaner assembly (see page 11-363).
4. Remove the battery and battery base (see step 12 on page 5-3).
5. Remove the harness clamp (A).

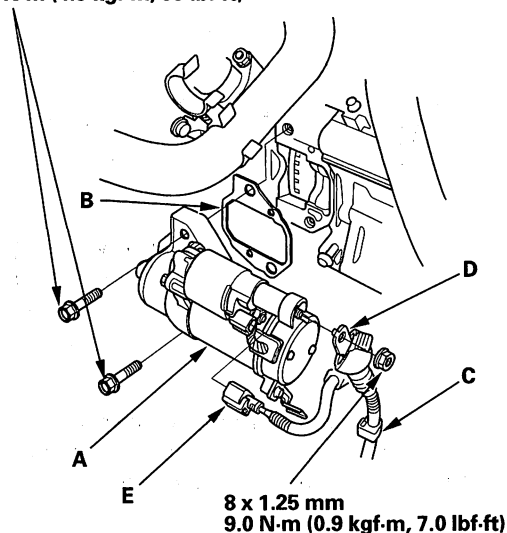


6. Disconnect the positive starter cable (B) from the B terminal, then disconnect the connector (C) from the S terminal.
7. Remove the two bolts holding the starter.

Installation

1. Install the starter (A) using a new gasket (B), then install the harness clamp (C), and positive starter cable (D) and S terminal connector (E). Make sure the crimped side of the B terminal is facing out, away from the starter.

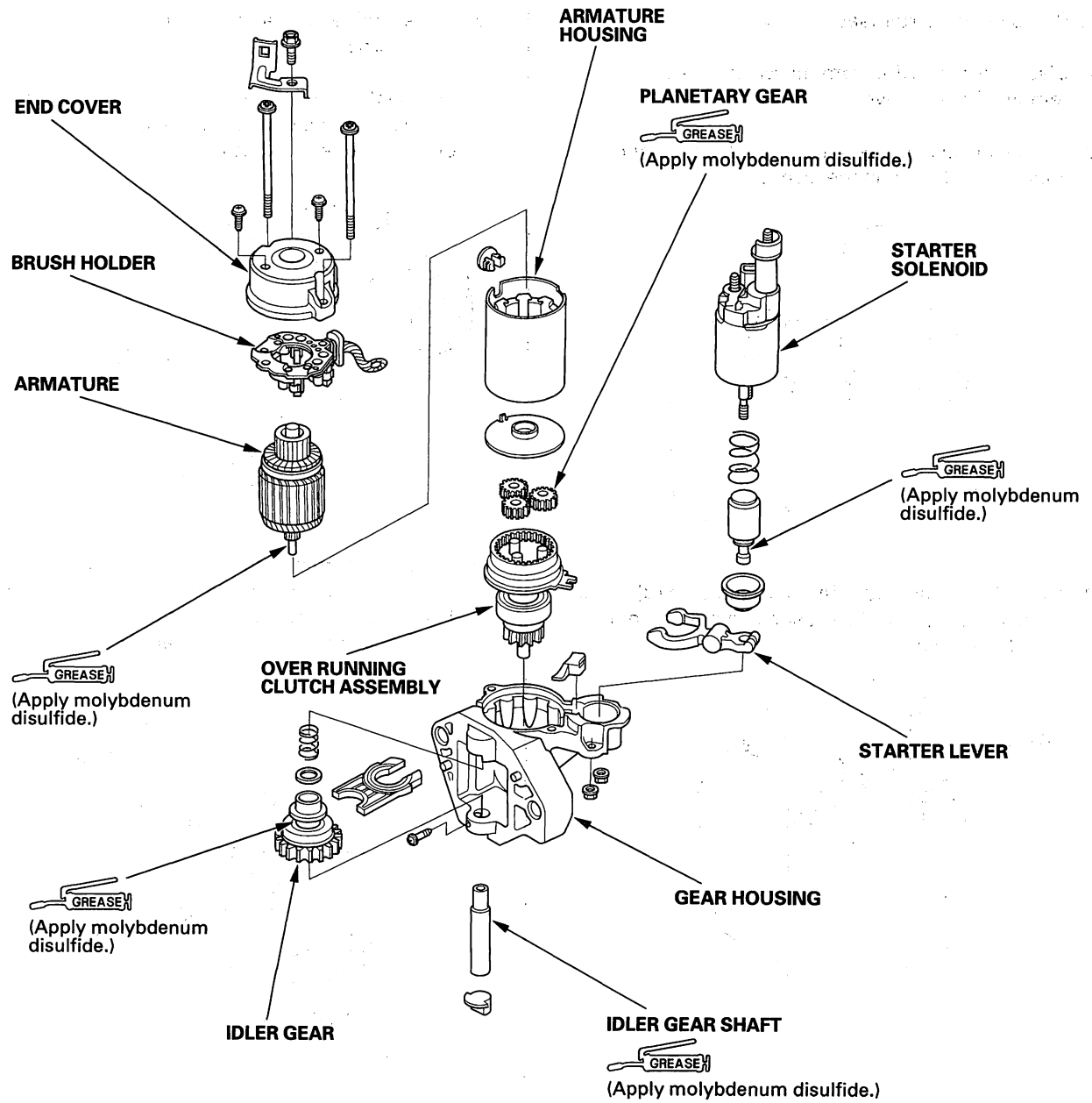
10 x 1.25 mm
44 N·m (4.5 kgf·m, 33 lbf·ft)



2. Install the battery base and battery (see step 56 on page 5-21).
3. Install the air cleaner assembly (see page 11-363).
4. Connect the positive cable to the battery first, then connect the negative cable.
5. Start the engine to make sure the starter works properly.
6. Do the steering column position memorization (see page 17-28).
7. Enter the anti-theft codes for the audio system and navigation system (if equipped).
8. Set the clock.

Starter Overhaul

Disassembly/Reassembly



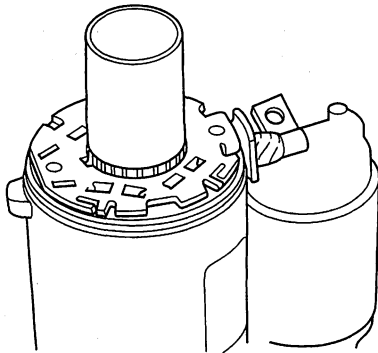
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Starting System

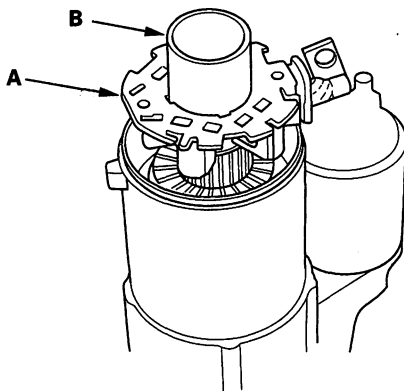
Starter Overhaul (cont'd)

Brush Holder Removal

1. Remove the starter (see page 4-10).
2. Disconnect the wire from the M terminal, and remove the end cover.
3. Place a plastic pipe with an outside diameter of 29.4 mm (1.16 in.) on the armature.

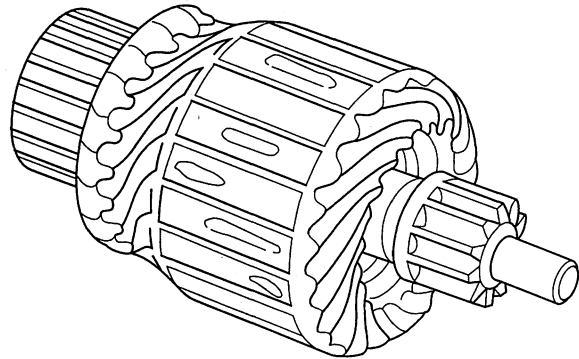


4. Move the brush holder (A) up to the pipe (B) while holding the pipe so the brushes do not pop out from the holder.

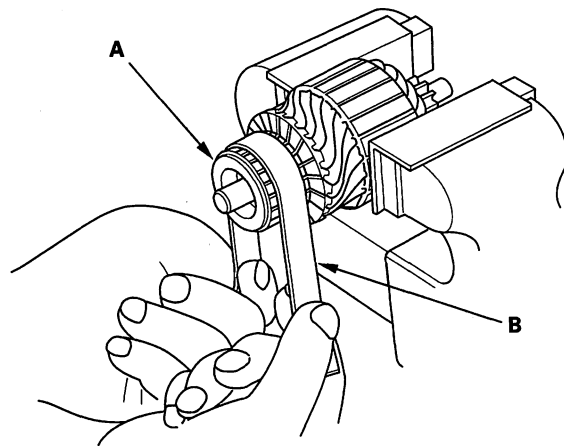


Armature Inspection and Test

5. Disassemble the starter as shown at the beginning of this procedure.
6. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.



7. Check the commutator (A) surface. If the surface is dirty or burnt, resurface it with an emery cloth or a lathe to the following specifications, or recondition with #500 or #600 sandpaper (B).

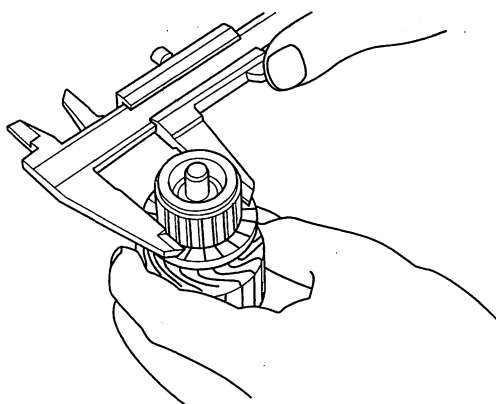


8. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

Commutator Diameter

Standard (New): 28.90—29.00 mm (1.138—1.142 in.)

Service Limit: 28.00 mm (1.102 in.)



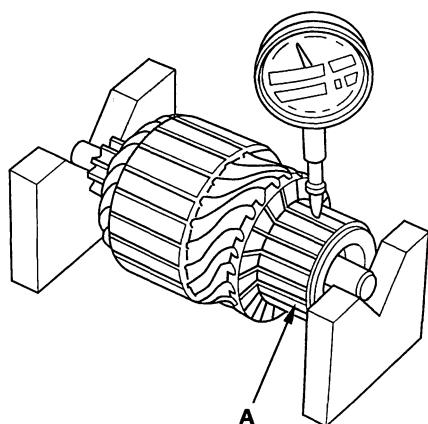
9. Measure the commutator (A) runout.

- If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
- If the commutator runout is not within the service limit, replace the armature.

Commutator Runout

Standard (New): 0.02 mm (0.0008 in.) max.

Service Limit: 0.05 mm (0.002 in.)

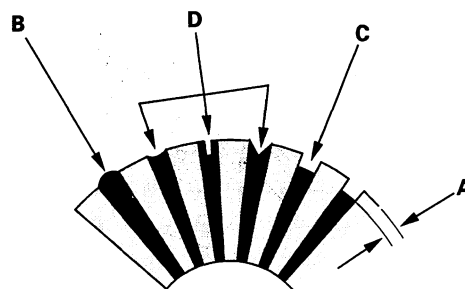


10. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

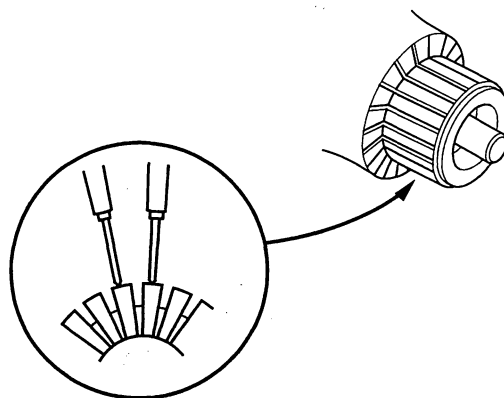
Commutator Mica Depth

Standard (New): 0.50—0.90 mm (0.020—0.035 in.)

Service Limit: 0.20 mm (0.008 in.)



11. Check for continuity between the segments of the commutator. If there is an open circuit between any segments, replace the armature.

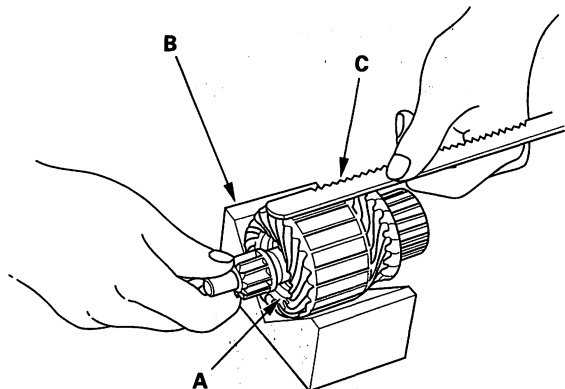


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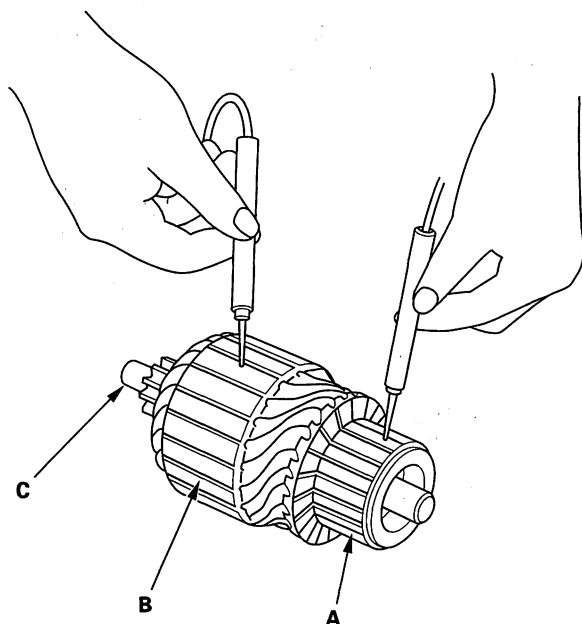
Starting System

Starter Overhaul (cont'd)

12. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



13. Use an ohmmeter to check for continuity between the commutator (A) and the armature coil core (B), and between the commutator and the armature shaft (C). If there is continuity, replace the armature.



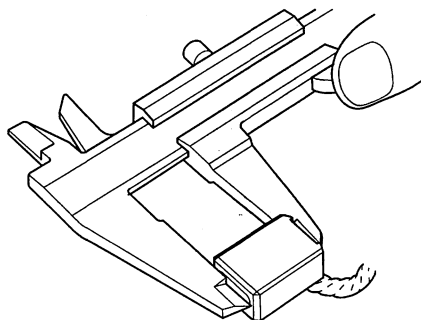
Starter Brush Inspection

14. Measure the brush length. If it is shorter than the service limit, replace the brush holder assembly.

Brush Length

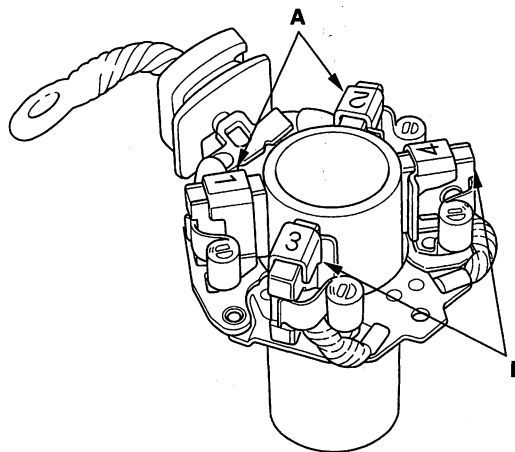
Standard (New): 15.0—16.0 mm (0.59—0.63 in.)

Service Limit: 9.0 mm (0.35 in.)



Starter Brush Holder Test

15. Check for continuity between the (+) brush (A) and (−) brush (B). If there is continuity, replace the brush holder assembly.



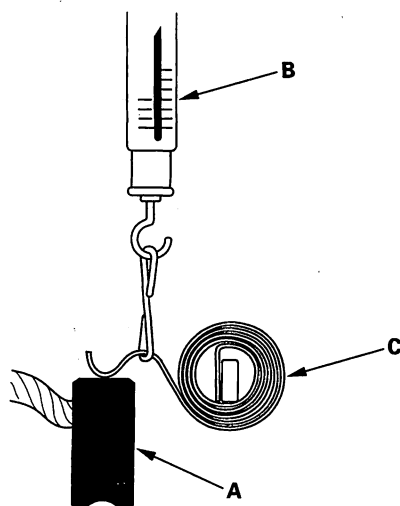
Brush Spring Inspection

16. Insert the brush (A) into the brush holder, and bring the brush into contact with the commutator, then attach a spring scale (B) to the spring (C). Measure the spring tension at the moment the spring lifts off the brush. If it is not within the standard, replace the brush holder assembly.

Spring Tension

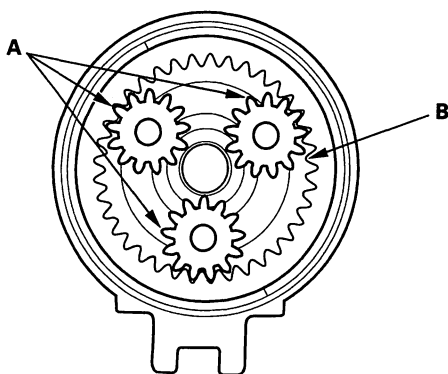
Standard (New): 22.3—27.3 N

(2.27—2.78 kgf, 5.00—6.13 lbf)



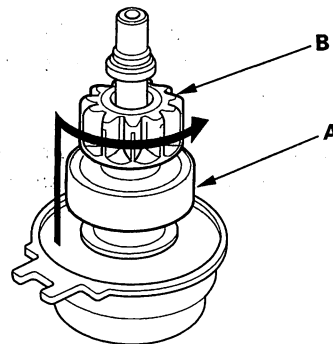
Planetary Gear Inspection

17. Check the planetary gears (A) and internal gear (B). Replace them if they are worn or damaged.



Overrunning Clutch Inspection

18. Slide the overrunning clutch (A) along the shaft. Replace it, if it does not slide smoothly.



19. Hold the drive gear (B), and turn the overrunning clutch in the direction shown to make sure it turns freely. Also make sure the overrunning clutch locks in the opposite direction. If it does not lock, replace the overrunning clutch assembly.
20. If the starter drive gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the torque converter ring gear. Replace it if the starter drive gear teeth are damaged.

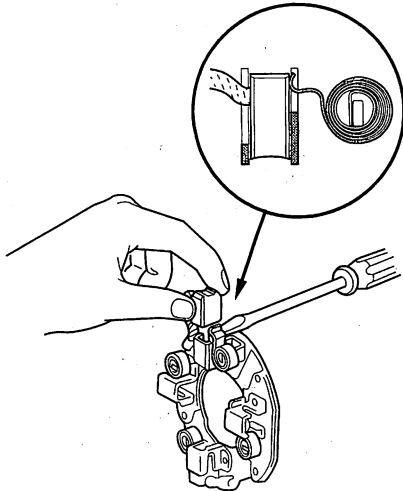
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Starting System

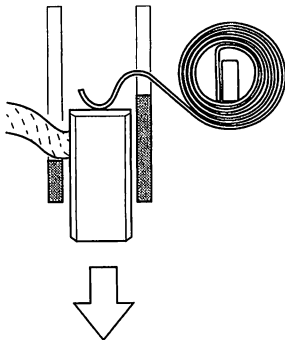
Starter Overhaul (cont'd)

Starter Reassembly

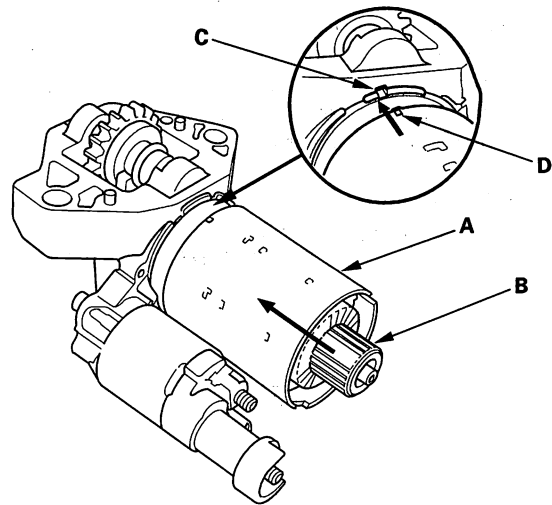
21. When you replace the brush holder or the armature housing, you need to seat the new brushes. Slip a strip of #500 or #600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly turn the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.
22. Pry back each brush spring with a screwdriver, then position the brush on the brush holder about halfway out of its holder. Release the spring to hold it in place.



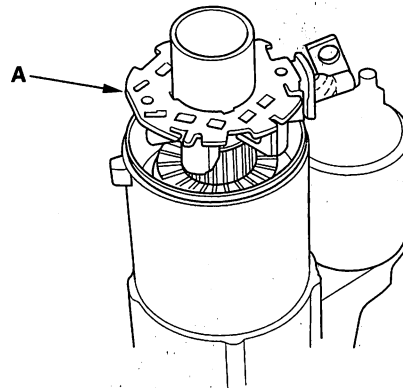
23. Push each brush down until it seats against the commutator, then release the spring against the end of the brush.



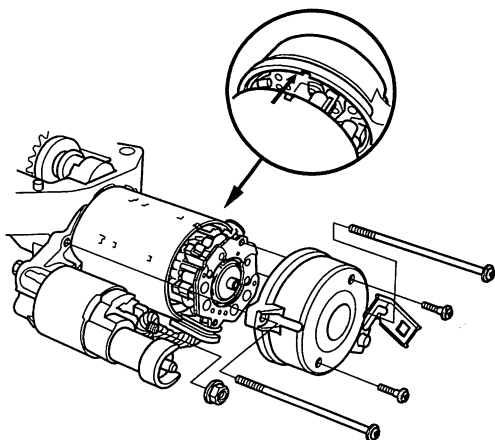
24. Install the armature housing (A) and armature (B) by aligning the slotted point (C) to the projection (D).



25. Install the armature into the housing.
26. Place the brush holder assembly on the armature, then move the brush holder (A) down to the armature.

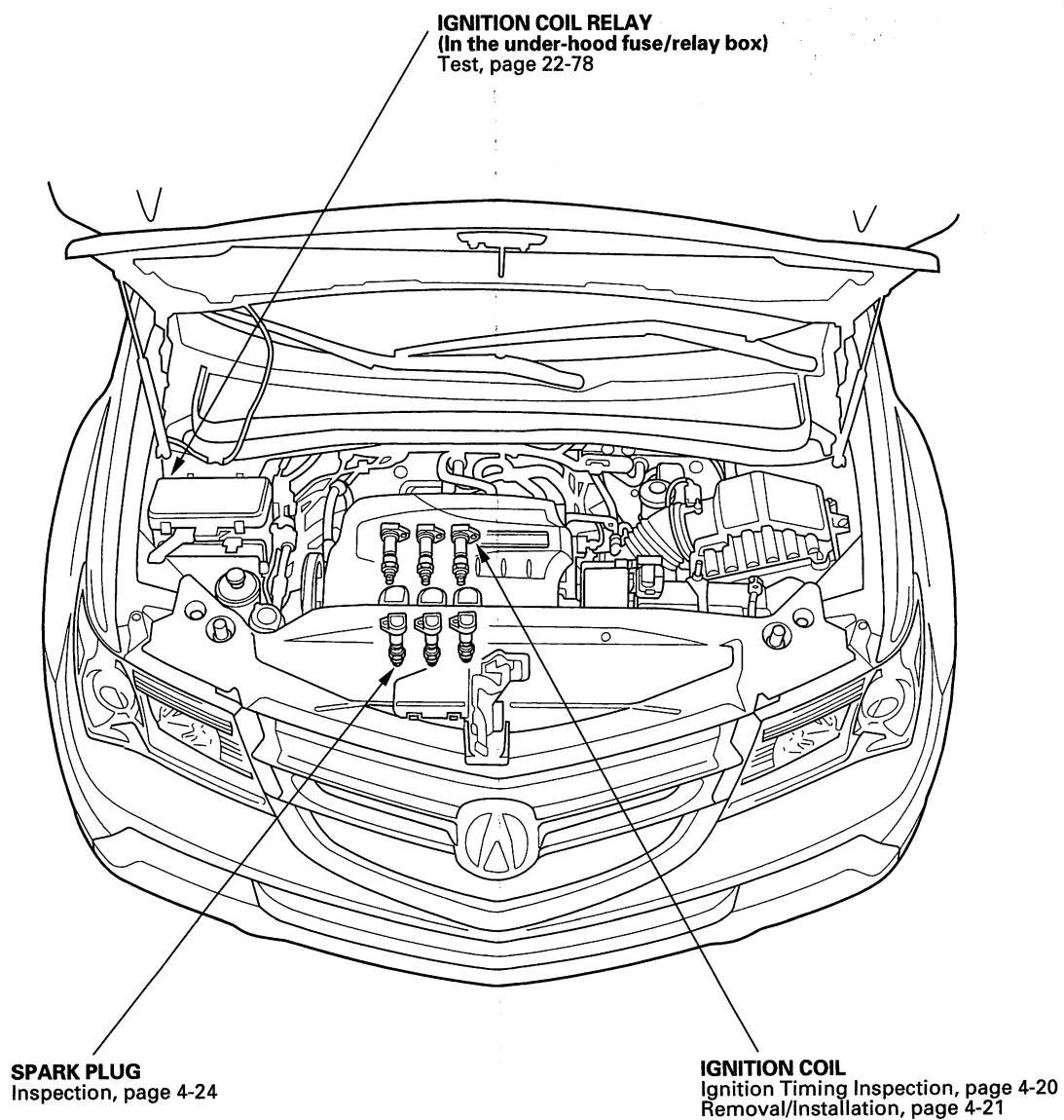


27. Install the end cover to retain the brush holder.



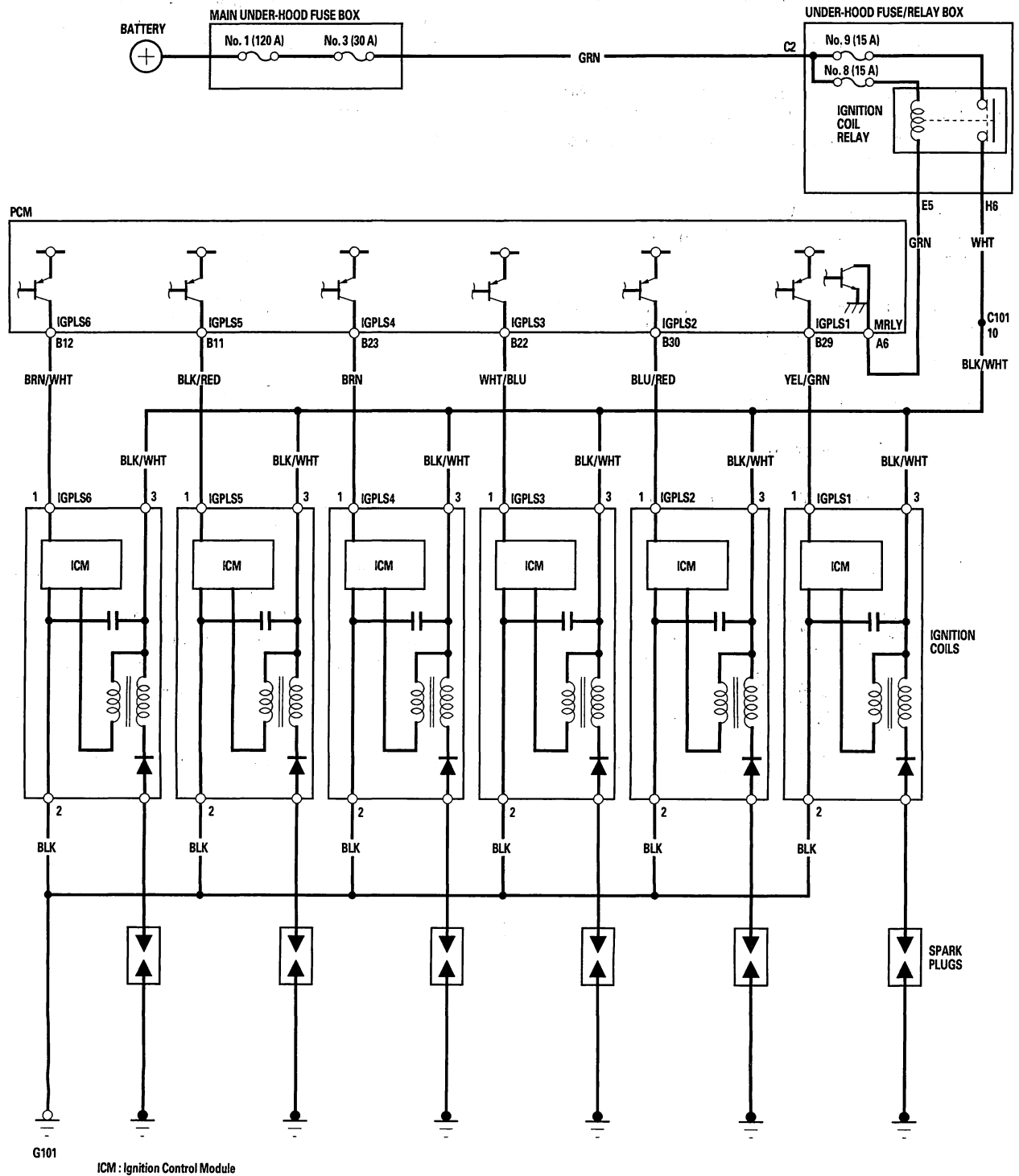
Ignition System

Component Location Index





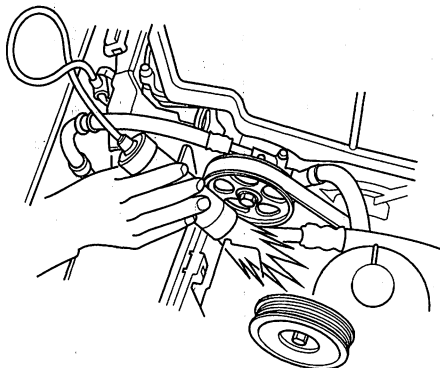
Circuit Diagram



Ignition System

Ignition Timing Inspection

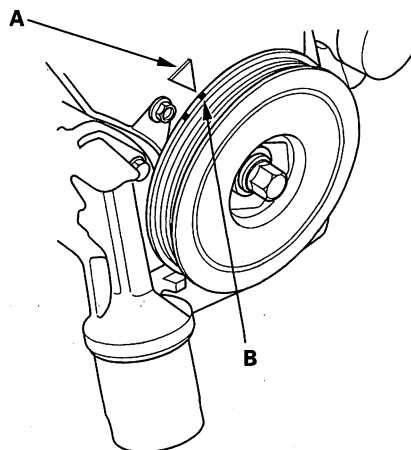
1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the powertrain control module (PCM). If it doesn't communicate, troubleshoot the DLC circuit (see page 11-223).
4. Check for DTCs. If a DTC is present, diagnose and repair the cause before inspecting the ignition timing.
5. Start the engine. Hold the engine at 3,000 rpm with no load (in park or Neutral) until the radiator fan comes on, then let it idle.
6. Check the idle speed (see page 11-310).
7. Jump the SCS line with the HDS.
8. Connect the timing light to the service loop.



9. Aim the light toward the pointer (A) on the timing belt cover. Check the ignition timing under a no load condition (headlights, blower fan, rear window defogger, and air conditioner are turned off).

Ignition Timing:

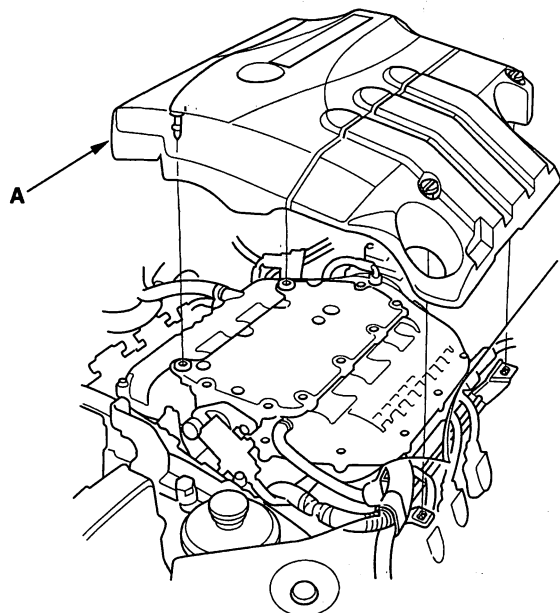
10° ± 2° BTDC (RED mark (B)) at idle in Park or Neutral



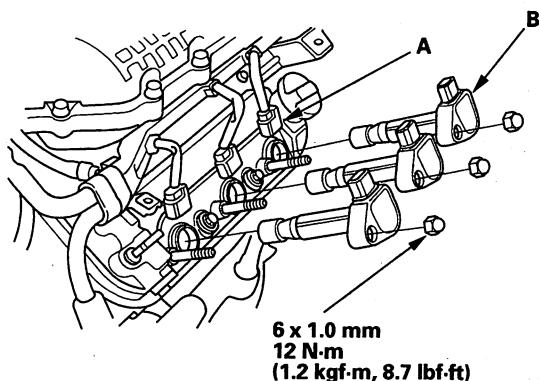
10. If the ignition timing differs from the specification, check the cam timing. If the cam timing is OK, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the ignition system works properly, replace the original PCM (see page 11-244).
11. Disconnect the HDS and the timing light.

Ignition Coil Removal/Installation

1. Remove the engine cover (A).



2. Disconnect the ignition coil connector (A), then remove the ignition coils (B).



3. Install the ignition coils in the reverse order of removal.

Ignition Coil Relay Circuit Troubleshooting

1. Check the No. 8 (15 A) fuse and No. 9 (15 A) fuse in the under-hood fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse. If the fuse continues to blow, locate and repair the short in the circuit between the under-hood fuse/relay box and the ignition coils. ■

2. Remove the relay control module from the under-hood fuse/relay box, and test it (see page 22-78).

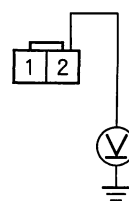
Is the relay OK?

YES—Go to step 3.

NO—Replace the relay control module in the under-hood fuse/relay box. ■

3. Measure the voltage between the relay control module connector C terminal No. 2 and body ground.

RELAY CONTROL MODULE 2P CONNECTOR C



Wire side of female terminals

Is there battery voltage?

YES—Go to step 4.

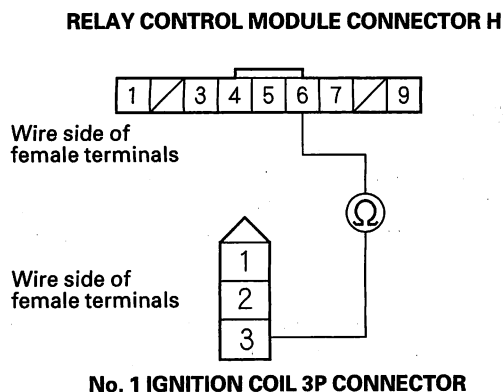
NO—Repair open in the wire between relay control module connector C terminal No. 2 and the main under-hood fuse box. ■

(cont'd)

Ignition System

Ignition Coil Relay Circuit Troubleshooting (cont'd)

4. Check for continuity between the relay control module connector H terminal No. 6 and No. 1 ignition coil 3P connector terminal No. 3.

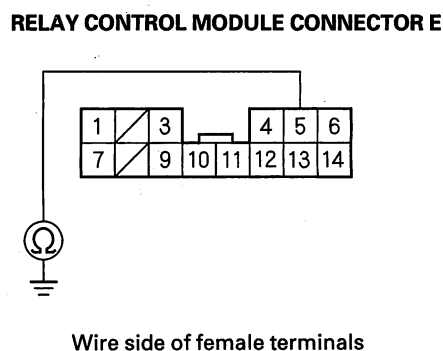


Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the relay control module connector H terminal No. 6 and ignition coil 3P connector terminal No. 3. ■

5. Check for continuity between the relay control module connector E terminal No. 5 and body ground.



Is there continuity?

YES—Repair short in the wire between the relay control module connector E terminal No. 5 and the powertrain control module (PCM) (A6). ■

NO—Go to step 6.

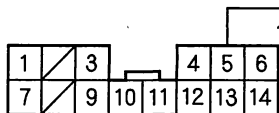
6. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
7. Turn the ignition switch ON (II).
8. Make sure the HDS communicates with the vehicle and the PCM. If it doesn't communicate, troubleshoot the DLC circuit (see page 11-223).
9. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the PCM from damage.

10. Disconnect PCM connector A (49P).

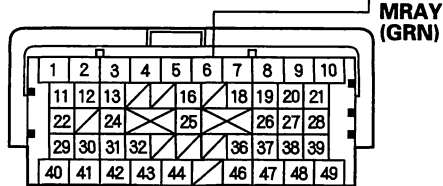
11. Check for continuity between relay control module connector E terminal No. 5 and PCM connector terminal A6.

RELAY CONTROL MODULE CONNECTOR E



Wire side of female terminals

PCM CONNECTOR A (49P)



Terminal side of male terminals

Is there continuity?

YES—The system is OK at this time. Check for loose or poor connections at the relay control module connector E and the PCM (A6). ■

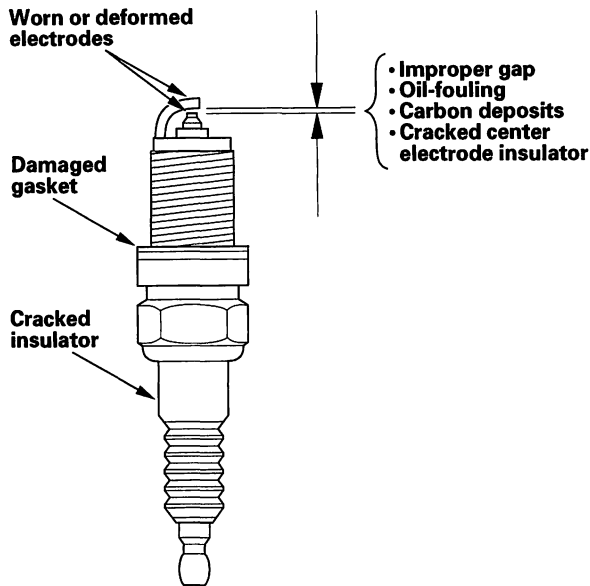
NO—Repair open in the wire between the relay control module connector E terminal No. 5 and the PCM (A6). ■

Ignition System

Spark Plug Inspection

1. Remove the spark plugs and inspect the electrodes and the ceramic insulator.

- Burned or worn electrodes may be caused by:
 - Advanced ignition timing
 - Loose spark plug
 - Plug heat range too hot
 - Insufficient cooling
- Fouled plugs may be caused by:
 - Retarded ignition timing
 - Oil in combustion chamber
 - Incorrect spark plug gap
 - Plug heat range too cold
 - Excessive idling/low speed running
 - Clogged air cleaner element
 - Deteriorated ignition coils



2. If the spark plug electrode is dirty or contaminated, clean the electrode with a plug cleaner.

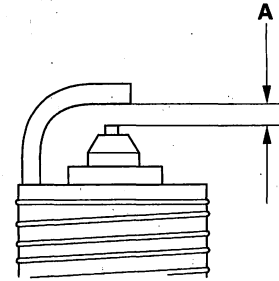
NOTE:

- Do not use a wire brush or scrape the iridium electrode since this will damage the electrode.
- When using a sand blaster spark plug cleaner, do not clean for more than 20 seconds to avoid damaging the electrode.

3. Do not adjust the gap (A) of iridium tip plugs; replace the spark plug if the gap is out of specification.

Electrode Gap

Standard (New): 1.0—1.1 mm (0.039—0.043 in.)

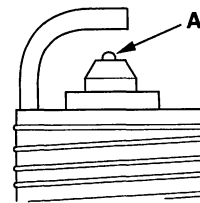


4. Replace the plug at the specified interval, if the center electrode is rounded (A). Use only the listed spark plugs.

Spark Plugs

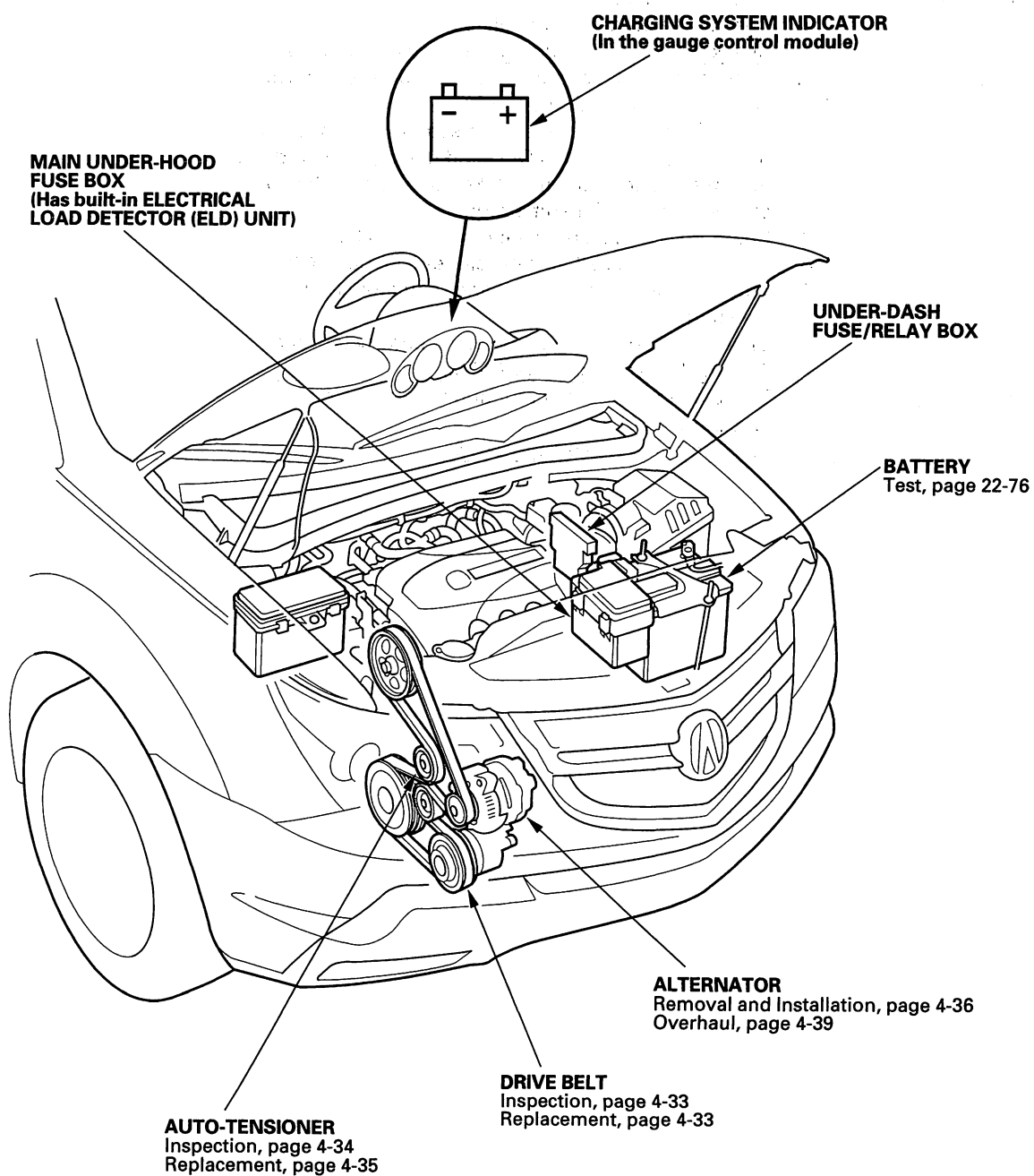
NGK: IZFR6K11

DENSO: SKJ20DR-M11



5. Apply a small amount of anti-seize compound to the plug threads, and screw the plugs into the cylinder head, finger-tight. Torque them to 18 N·m (1.8 kgf·m, 13 lbf·ft).

Component Location Index



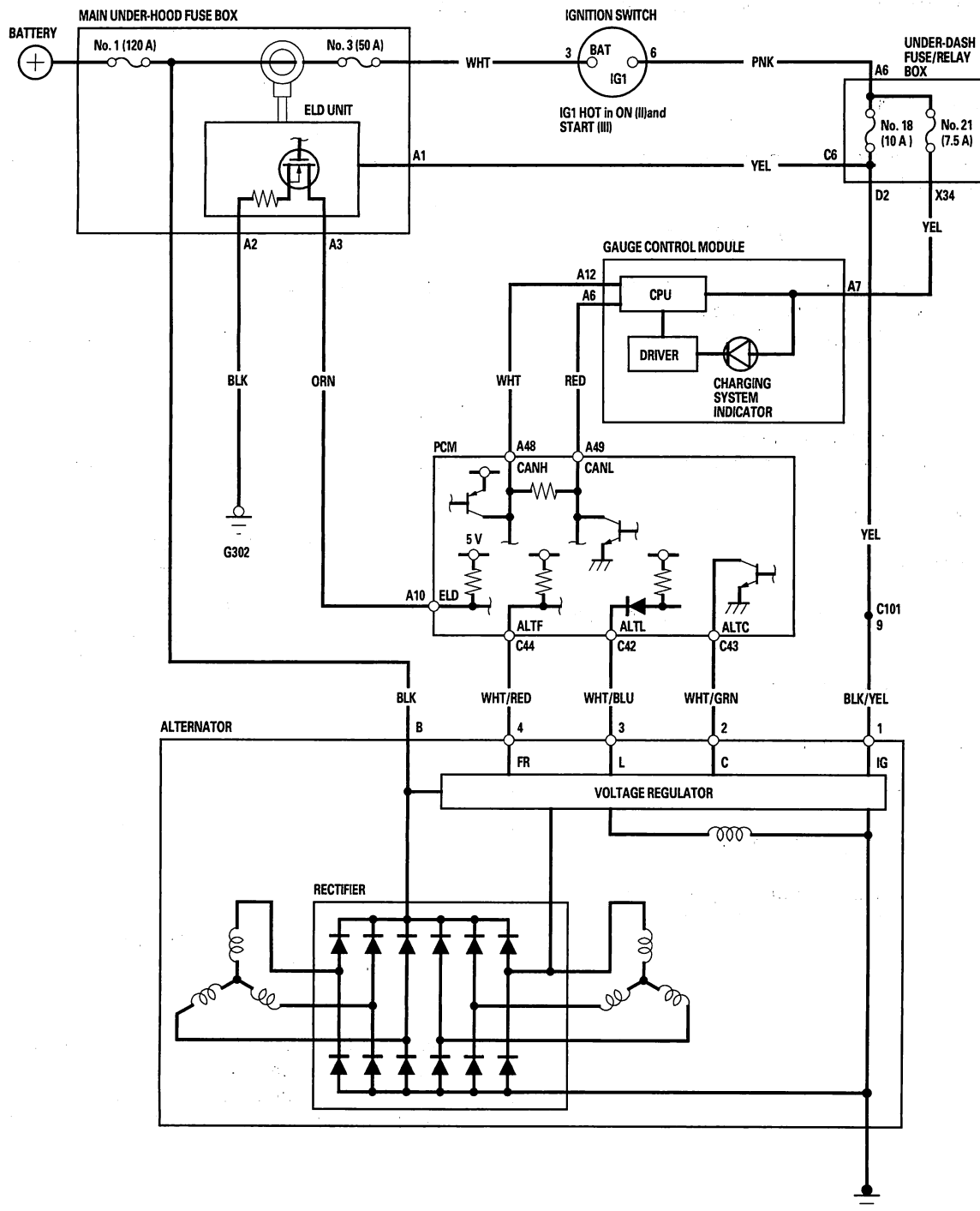
Charging System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Charging system indicator does not come on with the ignition switch ON (II)	Troubleshoot the charging system indicator circuit (see page 4-28).	
Charging system indicator stays on	1. Troubleshoot the charging system indicator circuit (see page 4-28). 2. Check for a broken drive belt (see page 4-33). 3. Check the drive belt auto-tensioner (see page 4-34).	
Battery discharged	1. Check for a poor connection and for open or shorted wire(s) in the charging system. 2. Check for excessive parasitic electrical current draw with the ignition switch OFF, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models. 3. Check for a broken drive belt (see page 4-33). 4. Check the drive belt auto-tensioner (see page 4-34). 5. Troubleshoot the alternator and regulator circuit (see page 4-30). 6. Check for a poor connection at the battery terminal. 7. Test the battery (see page 22-76).	
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see page 4-30). 2. Test the battery (see page 22-76).	



Circuit Diagram



Charging System

Charging System Indicator Circuit Troubleshooting

1. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES—Go to step 2.

NO—Go to step 14.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

Does the charging system indicator go off?

YES—Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see page 4-30). ■

NO—Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see page 22-315).

Does the charging system indicator flash?

YES—Go to step 4.

NO—Replace the gauge control module (see page 22-337). ■

4. Turn the ignition switch OFF.
5. Disconnect the alternator 4P connector.
6. Turn the ignition switch ON (II).

Does the charging system indicator go off?

YES—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■

NO—Go to step 7.

7. Turn the ignition switch OFF.

8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

9. Turn the ignition switch ON (II).

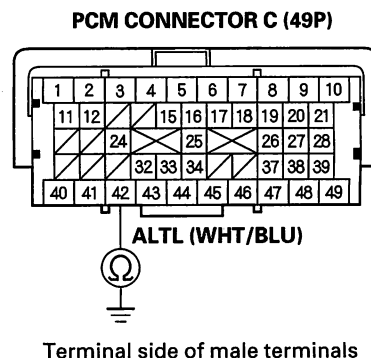
10. Make sure the HDS communicates with the vehicle and the powertrain control module (PCM). If it doesn't communicate, troubleshoot the DLC circuit (see page 11-223).

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

NOTE: This step must be done to protect the PCM from damage.

12. Disconnect PCM connector C (49P).

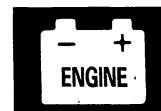
13. Check for continuity between PCM connector terminal C42 and body ground.



Is there continuity?

YES—Repair short in the wire between the alternator and the PCM. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). ■



14. Do the gauge control module self-diagnostic function procedure (see page 22-315).

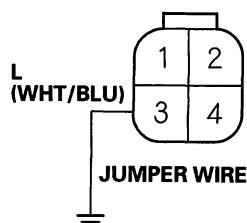
Does the charging system indicator flash?

YES—Go to step 15.

NO—Replace the gauge control module (see page 22-337). ■

15. Turn the ignition switch OFF.
16. Disconnect the alternator 4P connector.
17. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

18. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■

NO—Go to step 19.

19. Connect the HDS to the DLC (see step 2 on page 11-3).

20. Turn the ignition switch ON (II).

21. Make sure the HDS communicates with the vehicle and the PCM. If it doesn't communicate, troubleshoot the DLC circuit (see page 11-223).

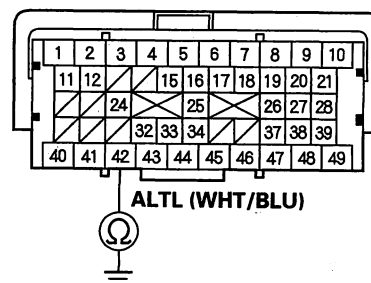
22. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the PCM from damage.

23. Disconnect PCM connector C (49P).

24. Check for continuity between PCM connector terminal C42 and body ground.

PCM CONNECTOR C (49P)



Terminal side of male terminals

Is there continuity?

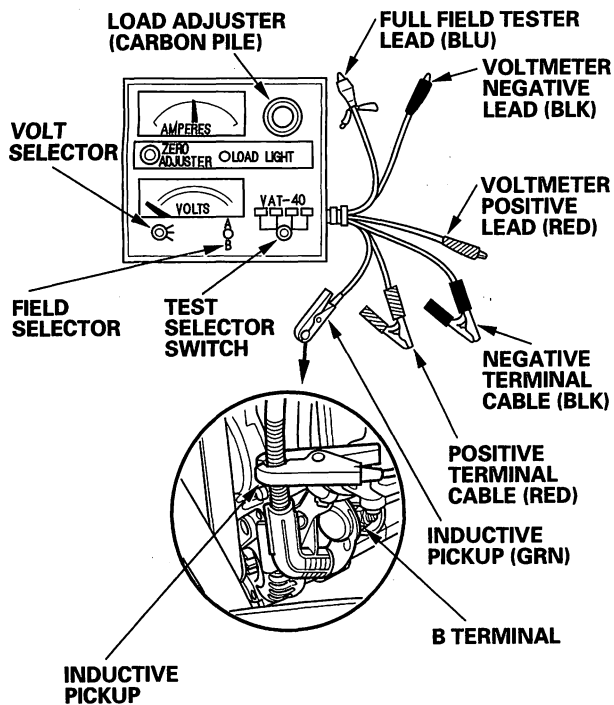
YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). ■

NO—Repair open in the wire between the alternator and the PCM. ■

Charging System

Alternator and Regulator Circuit Troubleshooting

1. Make sure the battery connections are good and the battery is fully charged (see page 22-76).
2. Remove the engine cover (see step 1 on page 4-21).
3. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).



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

Is the voltage over 15.1 V?

YES—Replace the alternator (see page 4-36) or rear housing assembly (see page 4-39). ■

NO—Go to step 6.

6. Release the accelerator pedal, and let the engine idle.
7. Turn off all the accessories. Select the charging test on the tester.
8. Remove the inductive pickup, and zero the ammeter.
9. Place the inductive pickup over the B terminal wire of the alternator so the arrow points away from the alternator.
10. Raise the engine speed to 2,000 rpm, and hold it there.

Is the voltage less than 13.5 V?

YES—Go to alternator control circuit troubleshooting (see page 4-31). ■

NO—Go to step 11.

11. Apply a load with the VAT-40 until the battery voltage drops between 12—13.5 V.

Is the amperage 87.5 A or more?

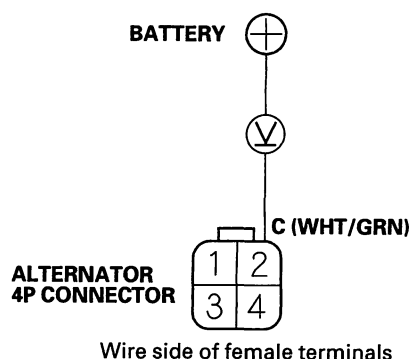
YES—The charging system is OK. ■

NOTE: If the charging system indicator is still on, replace the alternator (see page 4-36).

NO—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■

Alternator Control Circuit Troubleshooting

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the powertrain control module (PCM). If it doesn't communicate, troubleshoot the DLC circuit (see page 11-223).
4. Check for DTCs. If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Disconnect the alternator 4P connector from the alternator.
6. Start the engine, and turn on the headlights to high beam.
7. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.



Is there less than 1 V?

YES—Go to step 8.

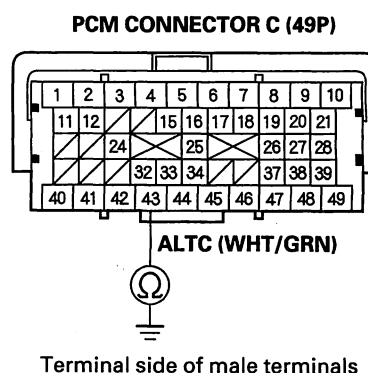
NO—Go to step 11.

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

NOTE: This step must be done to protect the PCM from damage.

9. Disconnect PCM connector C (49P).

10. Check for continuity between PCM connector terminal C43 and body ground.



Is there continuity?

YES—Repair short in the wire between the alternator and the PCM. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). ■

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

NOTE: This step must be done to protect the PCM from damage.

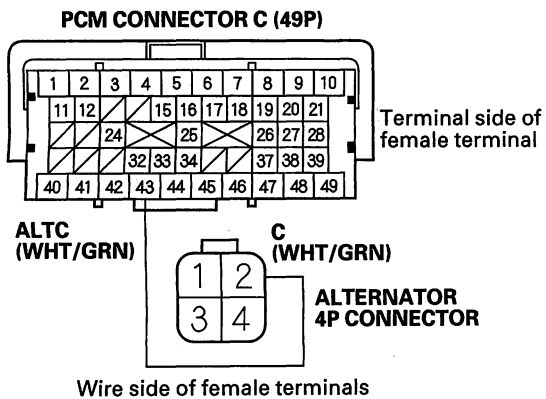
12. Disconnect PCM connector C (49P).

(cont'd)

Charging System

Alternator Control Circuit Troubleshooting (cont'd)

13. Check for continuity between PCM connector terminal C43 and alternator 4P connector terminal No. 2.



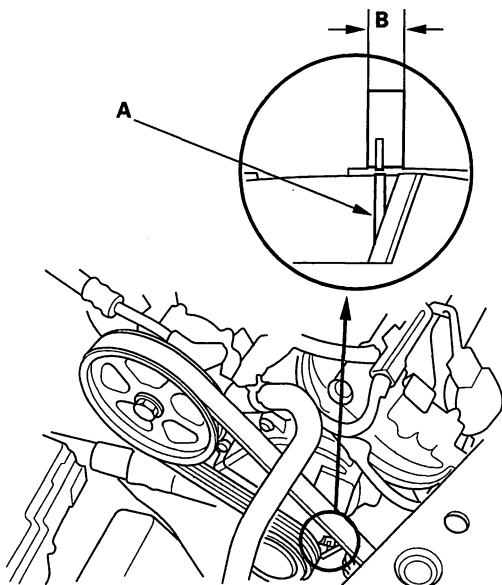
Is there continuity?

YES—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■

NO—Repair open in the wire between the alternator and the PCM. ■

Drive Belt Inspection

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see page 4-33).

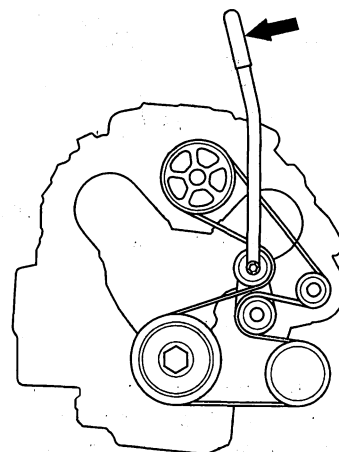
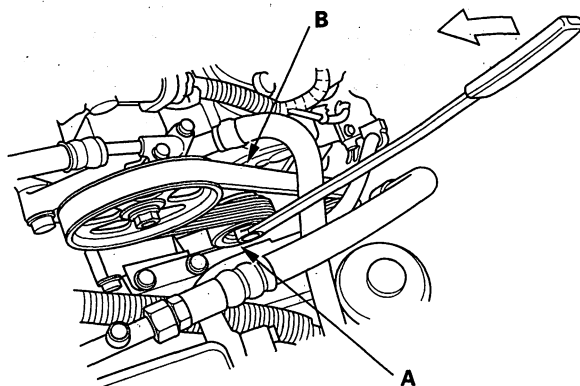


Drive Belt Replacement

Special Tools Required

Belt tension release tool Snap-on YA9317 or equivalent, commercially available

1. Move the auto-tensioner (A) using the belt tension release tool to relieve tension from the drive belt (B), then remove the drive belt.



2. Install the new belt in the reverse order of removal.

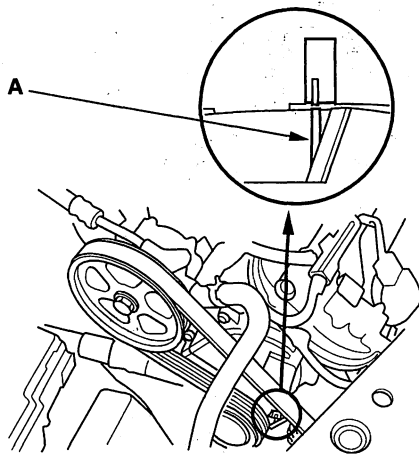
Charging System

Drive Belt Auto-tensioner Inspection

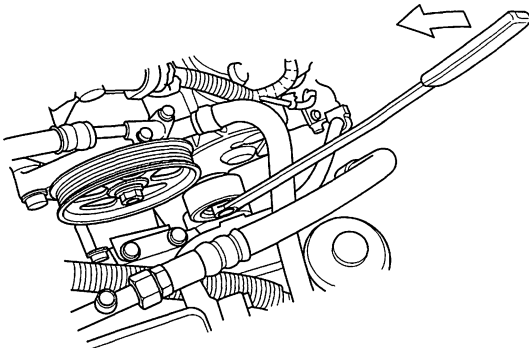
Special Tools Required

Belt tension release tool Snap-on YA9317 or equivalent, commercially available

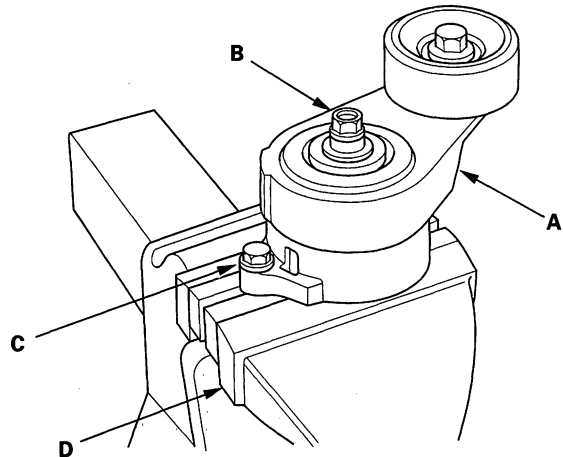
1. Turn the ignition switch ON (II), then make sure to turn the A/C switch OFF.
2. With the engine OFF, check the position of the auto-tensioner indicator's pointer (A). Start the engine, then check the position again with the engine idling. If the position of the indicator moves or fluctuates a lot, replace the auto-tensioner (see page 4-35).



3. Check for abnormal noise from the tensioner pulley. If you hear any abnormal noise, replace the auto-tensioner pulley.
4. Remove the drive belt (see page 4-33).
5. Move the auto-tensioner within its limit using the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly or you hear abnormal noise, replace the auto-tensioner.

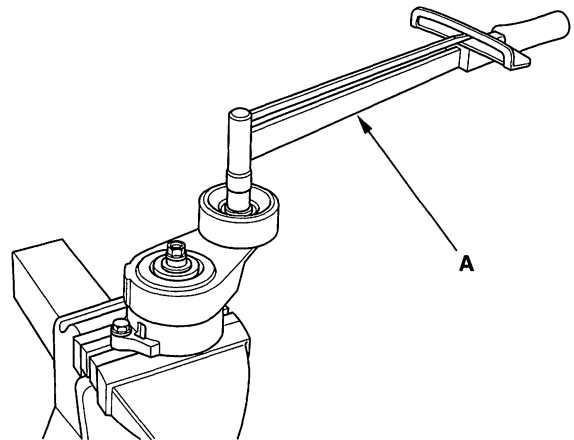


6. Remove the auto-tensioner (see page 4-35).
7. Clamp the auto-tensioner (A) by using a 10 mm bolt (B), 8 mm bolt (C), and a vise (D) as shown. Do not clamp the auto-tensioner itself.



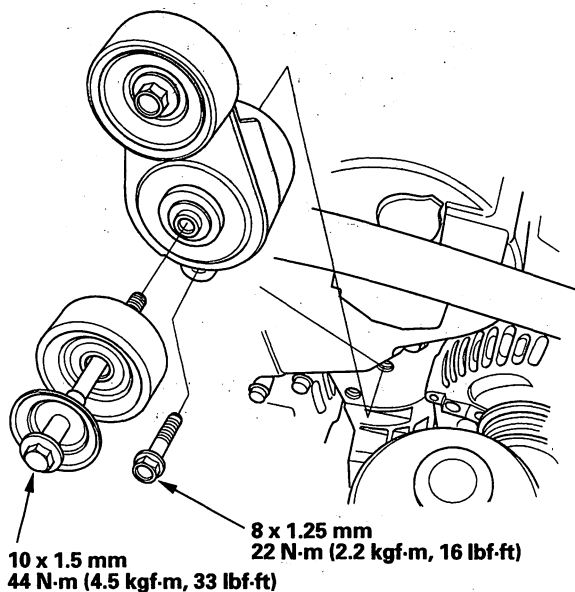
8. Attach a torque wrench (A) to the pulley bolt. Measure the torque when the tensioner is turned counterclockwise. If the torque is less than the specified value, replace the auto-tensioner.

Auto-tensioner Spring Torque:
50.5 N·m (5.15 kgf·m, 37.2 lbf·ft)



Drive Belt Auto-tensioner Replacement

1. Remove the drive belt (see page 4-33).
2. Remove the splash shield (see step 31 on page 5-5).
3. Remove the auto-tensioner.

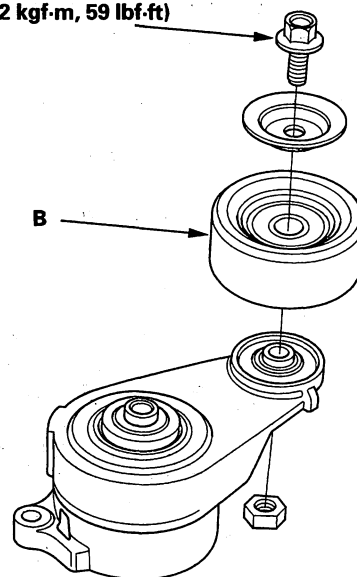


4. Install the auto-tensioner in the reverse order of removal.

Tensioner Pulley Replacement

1. Remove the auto-tensioner (see page 4-35).
2. Remove the pulley bolt (A) (left-hand threads), and remove the tensioner pulley (B).

A
10 x 1.5 mm
80 N-m (8.2 kgf-m, 59 lbf-ft)



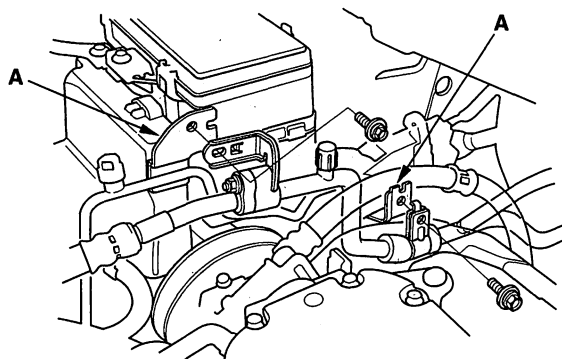
3. Install the tensioner pulley in the reverse order of removal.

Charging System

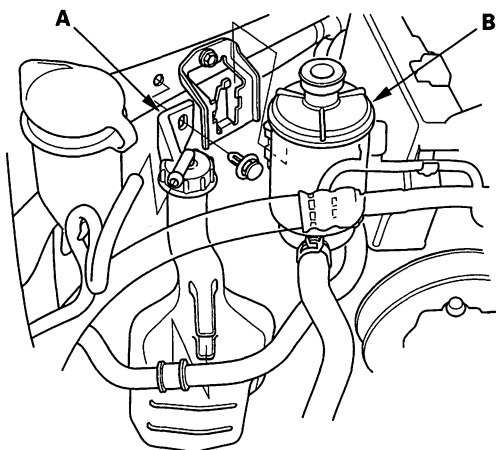
Alternator Removal and Installation

Removal

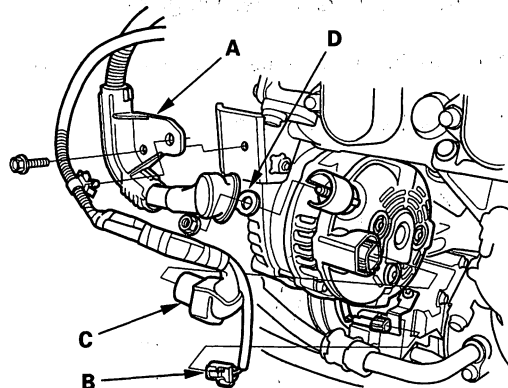
1. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped). Make sure the ignition switch is OFF.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the engine cover (see step 1 on page 4-21).
4. Remove the drive belt (see page 4-33).
5. Remove the A/C suction line from brackets (A).



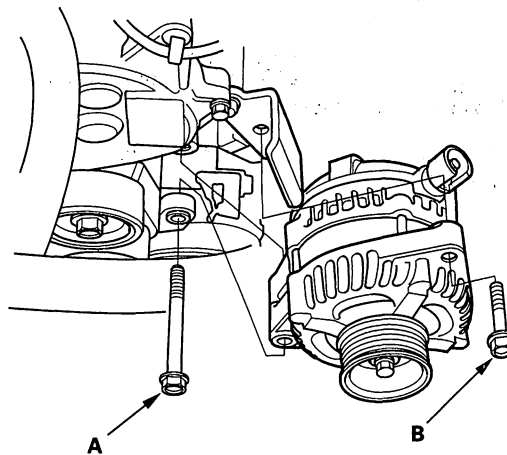
6. Remove the coolant reservoir (A), then remove power steering fluid reservoir (B) from the bracket.



7. Remove the harness bracket (A), then disconnect the A/C compressor clutch connector (B).

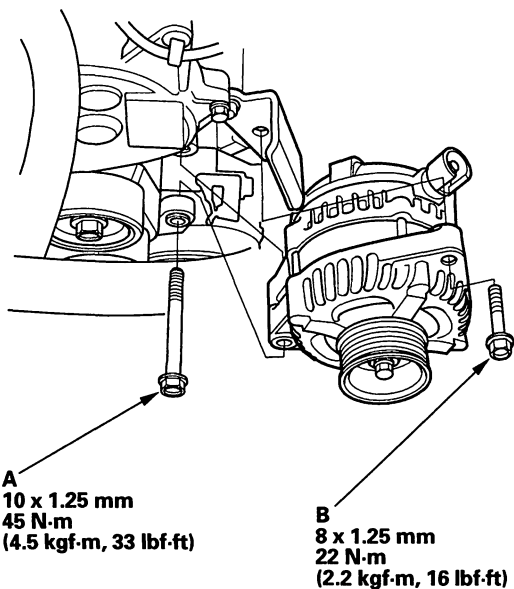


8. Disconnect the alternator connector (C) and the BLK wire (D) from the alternator.
9. Remove the mounting bolt (A) and alternator bracket mounting bolt (B), then remove the alternator.

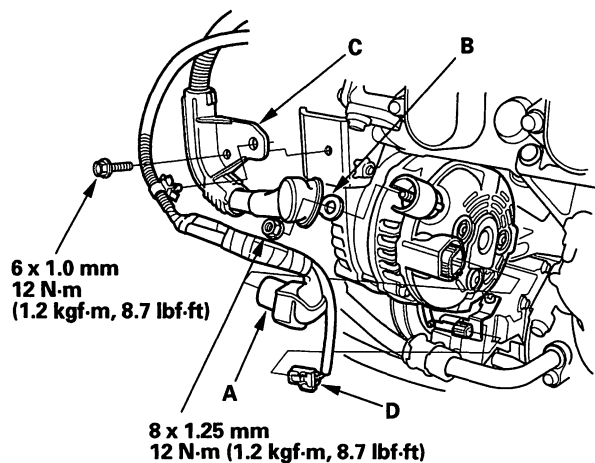


Installation

1. Install the alternator, and tighten the mounting bolt (A) and bracket mounting bolt (B).

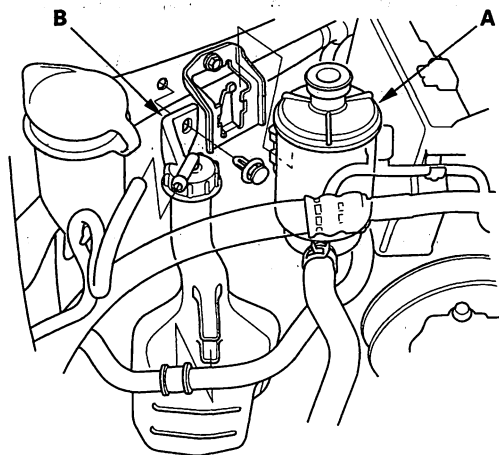


2. Connect the alternator connector (A), BLK wire (B) to the alternator.

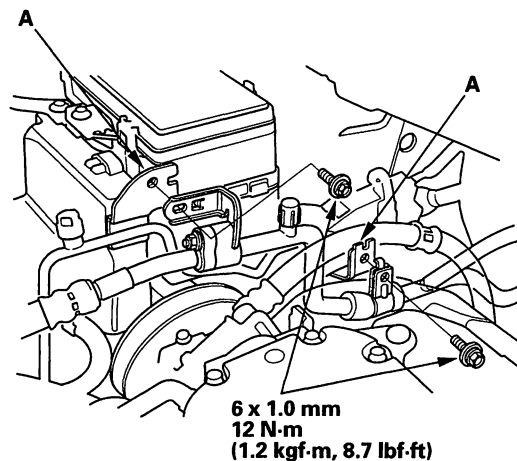


3. Install the harness bracket (C), then connect the A/C compressor clutch connector (D).

4. Install the power steering fluid reservoir (A) to the bracket, then install the coolant reservoir (B).



5. Install the A/C suction line to the brackets (A).



(cont'd)

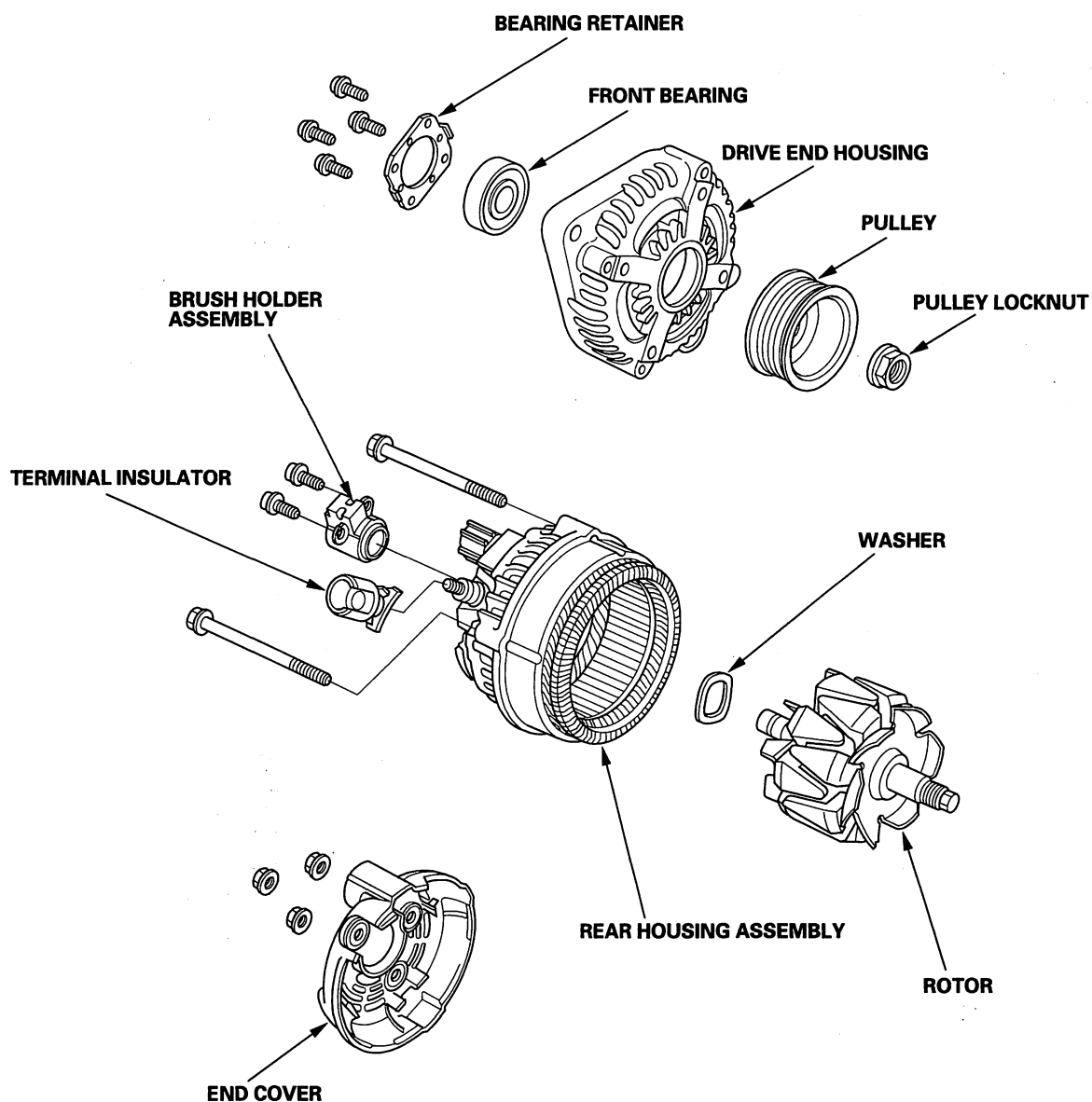
Charging System

Alternator Removal and Installation (cont'd)

6. Install the drive belt (see page 4-33).
7. Install the engine cover (see step 1 on page 4-21).
8. Connect the positive cable to the battery first, then connect the negative cable.
9. Do the steering column position memorization (see page 17-28).
10. Enter the anti-theft codes for the audio system and navigation system (if equipped).
11. Set the clock.

Alternator Overhaul

Exploded View



(cont'd)

BACK

Charging System

Alternator Overhaul (cont'd)

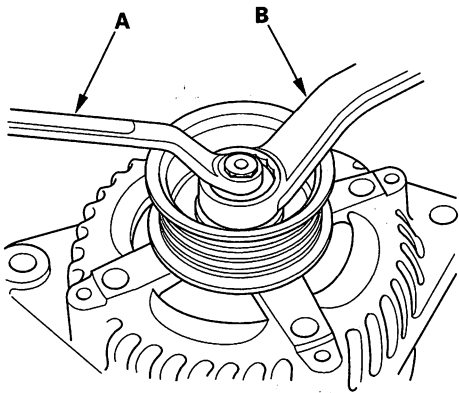
Special Tools Required

- Handle driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

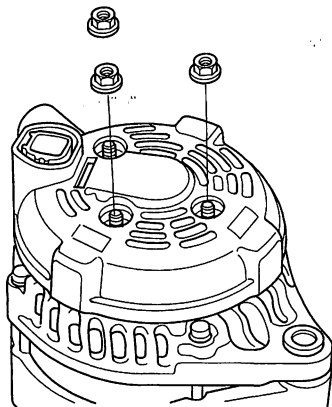
NOTE: Refer to the Exploded View as needed during this procedure.

Alternator Disassembly

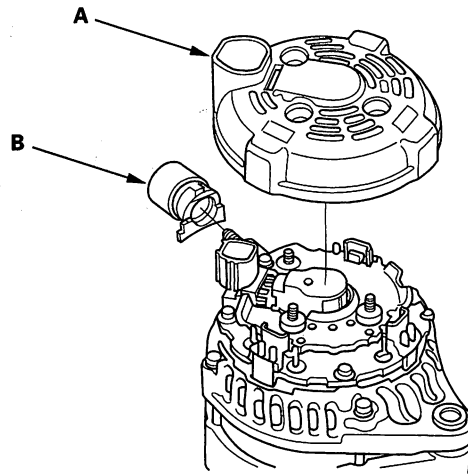
1. Test the alternator and regulator before you remove them (see page 4-28).
2. Remove the alternator (see page 4-36).
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



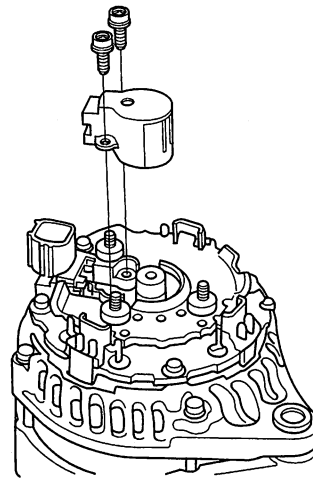
4. Remove the three flange nuts.



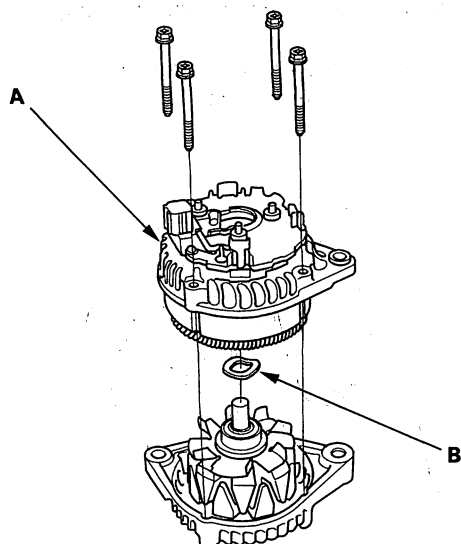
5. Remove the end cover (A) and the insulator (B).



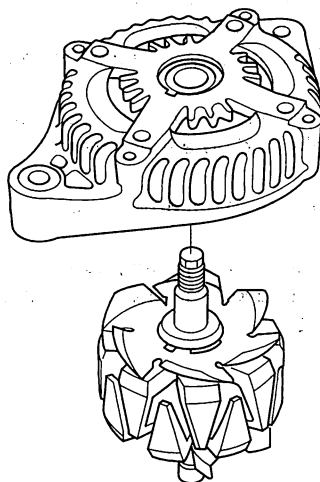
6. Remove the brush holder.



7. Remove the four bolts, then remove the rear housing assembly (A) and washer (B).



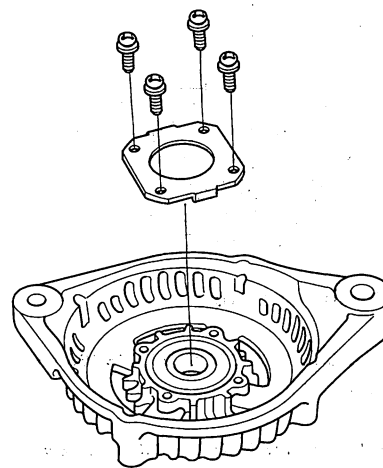
8. If you are not replacing the front bearing, go to step 13. Remove the rotor from the drive end housing.



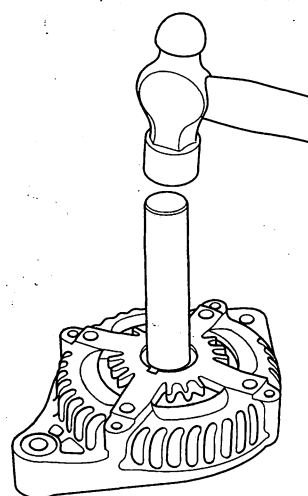
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.

- If the rotor is damaged, replace the rotor assembly.
- If the rotor is OK, go to step 10.

10. Remove the front bearing retainer plate.



11. Drive out the front bearing with a brass drift and hammer.

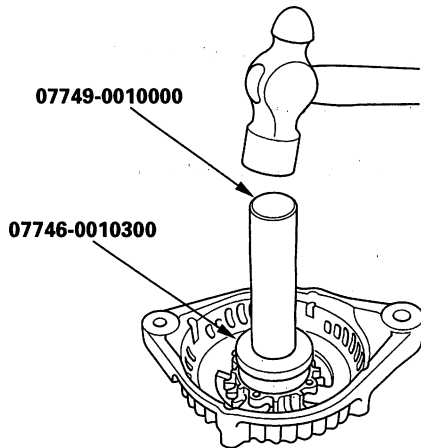


(cont'd)

Charging System

Alternator Overhaul (cont'd)

12. With a hammer, driver handle, and attachment, install a new front bearing in the drive-end housing.



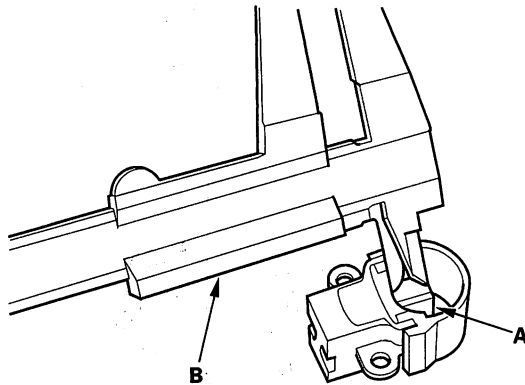
Alternator Brush Inspection

13. Measure the length of both brushes (A) with a vernier caliper (B).
- If either brush is shorter than the service limit, replace the brush holder assembly.
 - If the brush length is OK, go to step 14.

Alternator Brush Length

Standard (New): 10.5 mm (0.41 in.)

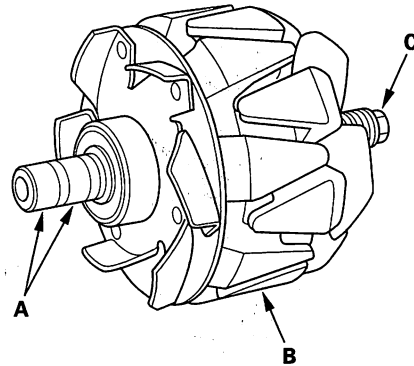
Service Limit: 1.5 mm (0.06 in.)



Rotor Slip Ring Test

14. Check for continuity between the slip rings (A).

- If there is continuity, go to step 15.
- If there is no continuity, replace the rotor assembly.



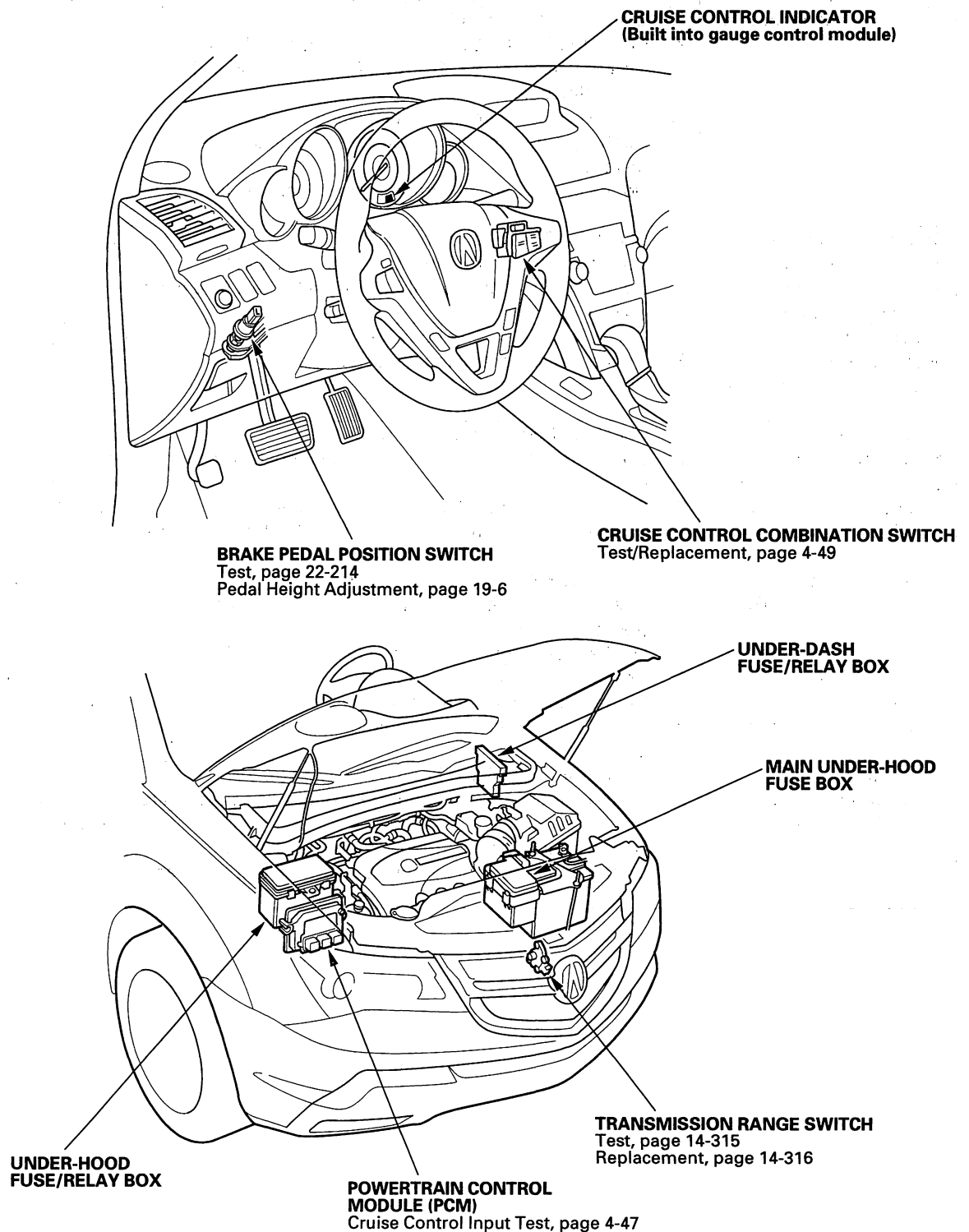
15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).

- If there is no continuity, replace the rear housing assembly, and go to step 16.
- If there is continuity, replace the rotor assembly.

16. Assemble the alternator in the reverse order of disassembly, and note these items:

- Be careful not to get any grease or oil on the slip rings.
- If you removed the pulley, tighten its locknut to 110 N·m (11.2 kgf·m, 81.0 lbf·ft) when you reinstall it.

Component Location Index



Cruise Control

Symptom Troubleshooting Index

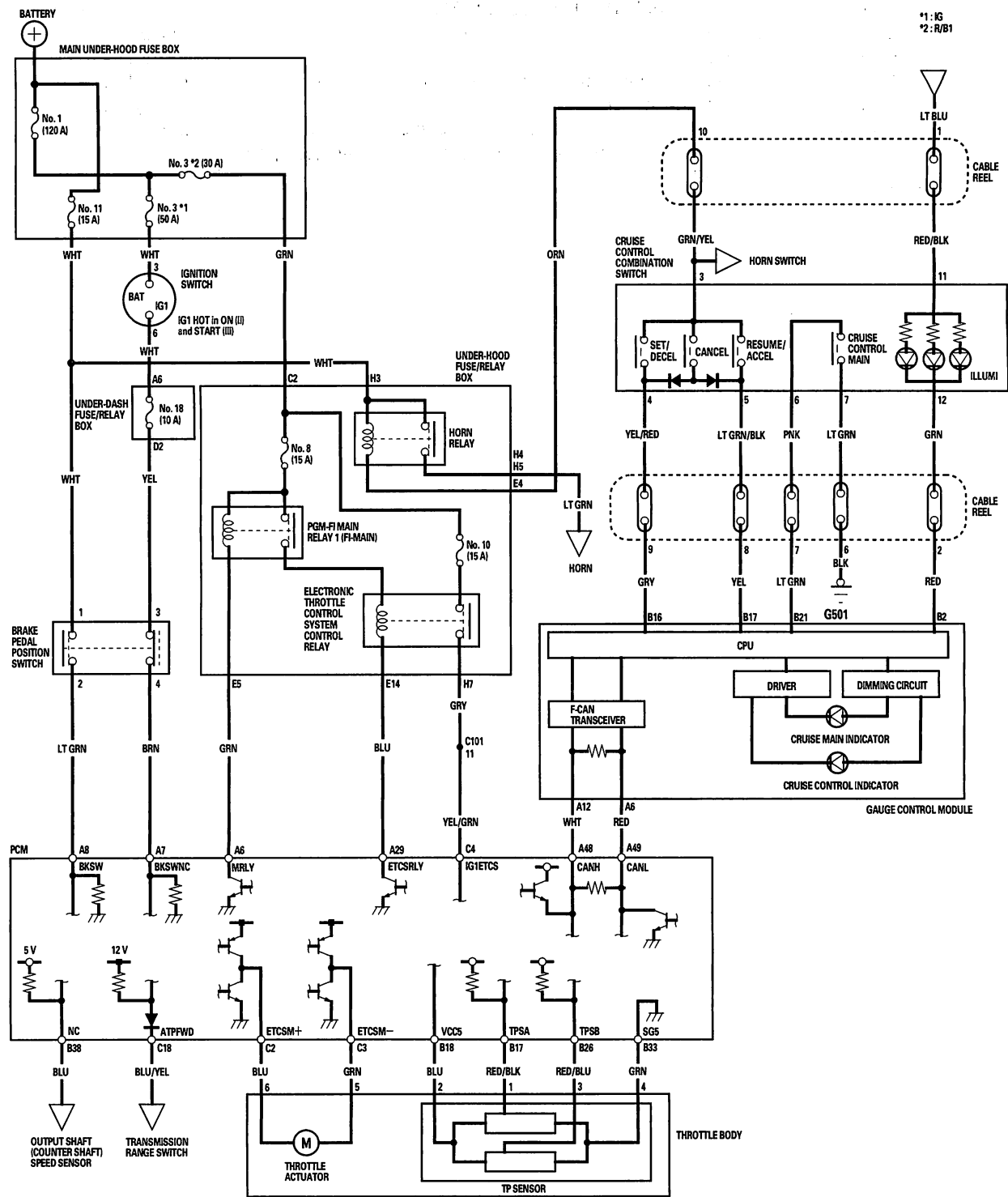
Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check for PGM-FI and body DTCs. 2. Check the No. 11 (15 A) fuse in the main under-hood fuse box, and the No. 18 (10 A) fuse in the under-dash fuse/relay box. 3. Do the cruise control input test (see page 4-47). 4. Do the gauge control module self-diagnostic function to test the switch. 5. Do the cruise control combination switch test (see page 4-49).	
Cruise control can be set, but the cruise control main switch indicator does not come on	1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-47). 3. Do the cruise control combination switch test (see page 4-49).	Faulty gauge control module
Cruise control can be set, but the cruise control indicator does not come on	1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-47).	Faulty gauge control module
Vehicle does not decelerate or accelerate accordingly when the set/decel or resume/accel switch is pressed	1. Check for PGM-FI and body DTCs. 2. Do the gauge control module self-diagnostic function to test the switch. 3. Do the cruise control input test (see page 4-47). 4. Do the cruise control combination switch test (see page 4-49).	Open circuit, loose or disconnected terminals: YEL/RED or LT GRN/BLK wire
Set speed does not cancel when the brake pedal is pressed	1. Check for PGM-FI and body DTCs. 2. Check the brake pedal position switch adjustment (see page 19-6). 3. Do the cruise control input test (see page 4-47).	Short to power in BRN wire
Set speed does not cancel when the cruise control main switch is turned off	1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-47). 3. Do the cruise control combination switch test (see page 4-49).	Short to ground in PNK wire
Set speed does not cancel when the cancel switch is pressed	1. Check for PGM-FI and body DTCs. 2. Do the gauge control module self-diagnostic function to test the switch. 3. Do the cruise control input test (see page 4-47). 4. Do the cruise control combination switch test (see page 4-49).	Open circuit, loose or disconnected terminals: YEL/RED or LT GRN/BLK wire

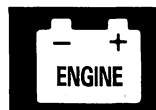


Symptom	Diagnostic procedure	Also check for
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the brake pedal)	1. Check for PGM-FI and body DTCs. 2. Check the brake pedal position switch adjustment (see page 19-6). 3. Do the gauge control module self-diagnostic function to test the switch. 4. Do the cruise control input test (see page 4-47). 5. Do the cruise control combination switch test (see page 4-49).	• Open circuit, loose or disconnected terminals: LT GRN/BLK wire • Faulty brake pedal position switch

Cruise Control

Circuit Diagram





Cruise Control Input Test

1. Connect the Honda Diagnostic System (HDS) to the Data Link Connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the PCM. If it doesn't communicate, troubleshoot the DLC circuit (see page 11-223).
4. Do the following tests while monitoring parameters in the PGM-FI DATA LIST with the HDS.

NOTE: Intermittent failures are often caused by loose circuit connections. While monitoring cruise control inputs, flex their circuits, and note if any of the test results change.

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Cruise control main switch signal	Cruise control main switch ON and OFF	CRUISE CONTROL MAIN SW should indicate ON when the cruise control main switch is turned on and OFF when the cruise control main switch is turned off.	• Faulty cruise control combination switch • An open in the wire between the gauge control module and the cruise control combination switch • A wire shorted to ground between the gauge control module and the cruise control main switch • An open in the wire between the cruise control combination switch and the ground
Brake switch signal	Cruise control main switch ON, brake pedal pressed, then released	CRUISE BRAKE SW should indicate OFF when the brake pedal is pressed and ON should be indicated when the brake pedal is released.	• Faulty brake pedal position switch • Blown No. 10 (18 A) fuse in the under-dash fuse/relay box • An open in the wire between the PCM and the brake pedal position switch • A wire shorted to ground between the PCM and the brake pedal position switch
Set switch signal	Set/decel switch pressed and released	CRUISE CONTROL SET SW should indicate ON when the set/decel switch is pressed and OFF when the set/decel switch is released.	• Faulty cruise control combination switch • An open in the wire between the gauge control module and the cruise control combination switch • A wire shorted to ground between the gauge control module and the cruise control combination switch • An open in the wire between the cruise control combination switch and ground
Resume switch signal	Resume/accel switch pressed and released	CRUISE CONTROL RESUME SW should indicate ON when the resume switch is pressed and OFF when the resume switch is released.	• Faulty cruise control combination switch • An open in the wire between the gauge control module and the cruise control combination switch • A wire shorted to ground between the gauge control module and the cruise control combination switch

(cont'd)

Cruise Control

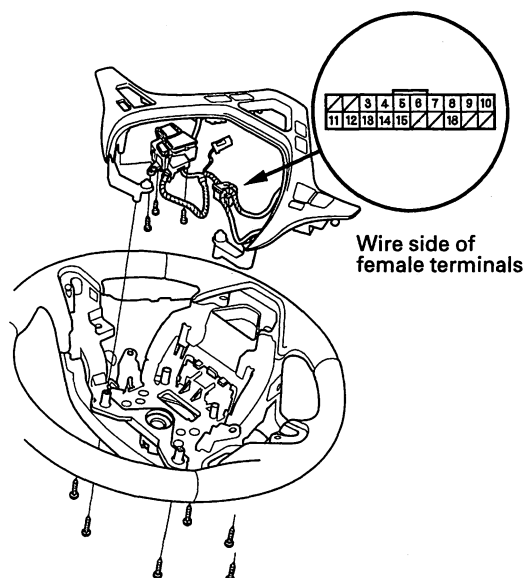
Cruise Control Input Test (cont'd)

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Cancel switch signal	Cancel switch pressed and released	CRUISE CONTROL CANCEL SW should indicate ON when the cancel switch is pressed and OFF when the cancel switch is released.	Faulty cruise control combination switch
Cruise control indicator signal	Start the engine, turn the cruise control main switch on, and drive the vehicle to above 25 mph (40 km/h). Set and cancel the cruise control	CRUISE INDICATOR should indicate ON when the cruise control is set and OFF when the cruise control is cancelled.	Faulty gauge control module
Transmission range switch signal	Shift in D position	SHIFT/TRANS RANGE SW should indicate ON in D, D3 and OFF in P, R, N.	• Faulty transmission range switch • An open in the wire between the PCM and the transmission range switch • A wire shorted to ground between the PCM and the transmission range switch • Poor ground G101

Cruise Control Combination Switch Test/Replacement

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) in the SRS before doing repairs or service.

1. Remove the driver's airbag (see page 24-137).
2. Remove the steering wheel (see page 17-22).
3. Remove the six screws, then remove the cruise control combination switch.



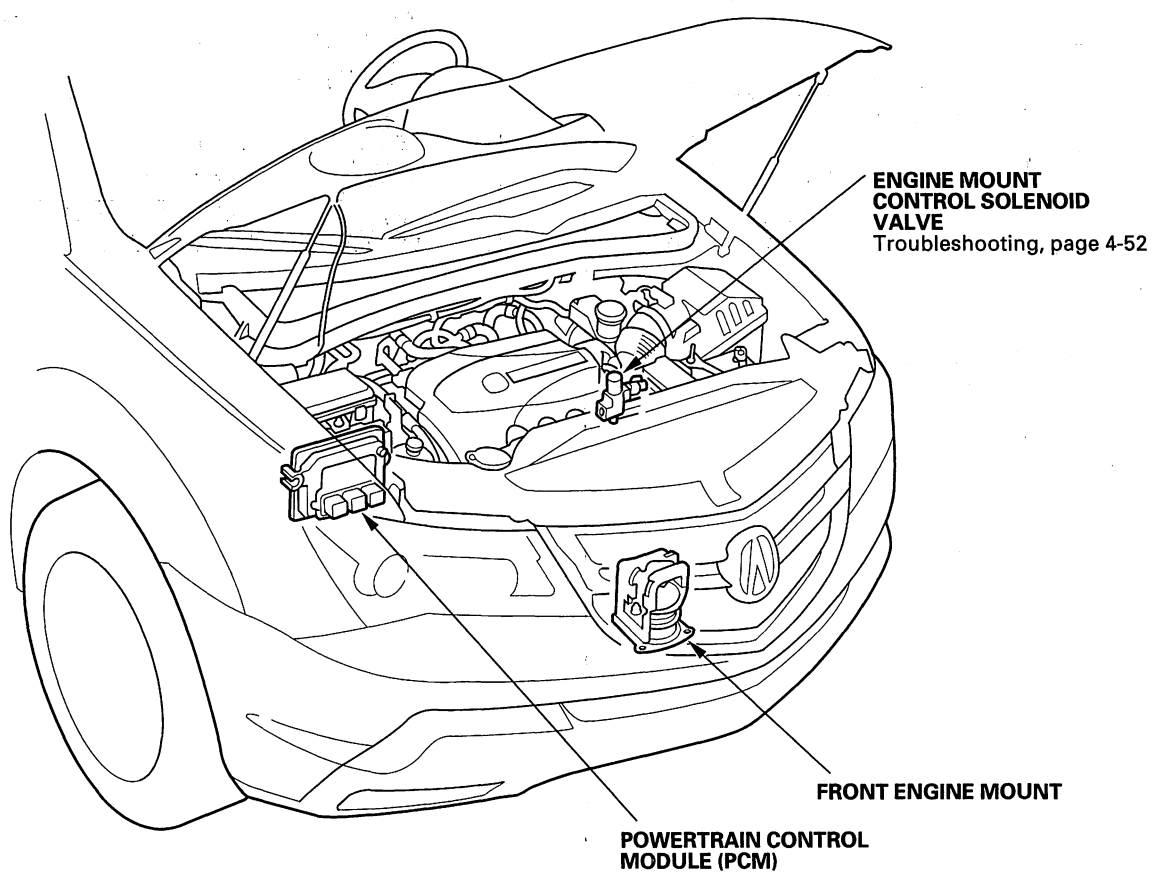
4. Check for continuity between the terminals in each switch position according to the table.

- If there is continuity, and it matches the table, but switch failure occurred on the cruise control input test, check and repair the wire harness on the switch circuit.
- If there is no continuity in one or both positions, replace the switch.

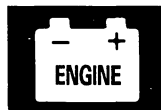
Terminal	3	4	5	6	7
Position					
Cruise control main switch (ON)				○—○	
Cruise control main switch (OFF)					
Set/decel (PRESSED)	○—○				
Resume/accel (PRESSED)	○—○				
Cancel (PRESSED)	○—○	○—○			

Engine Mount Control System

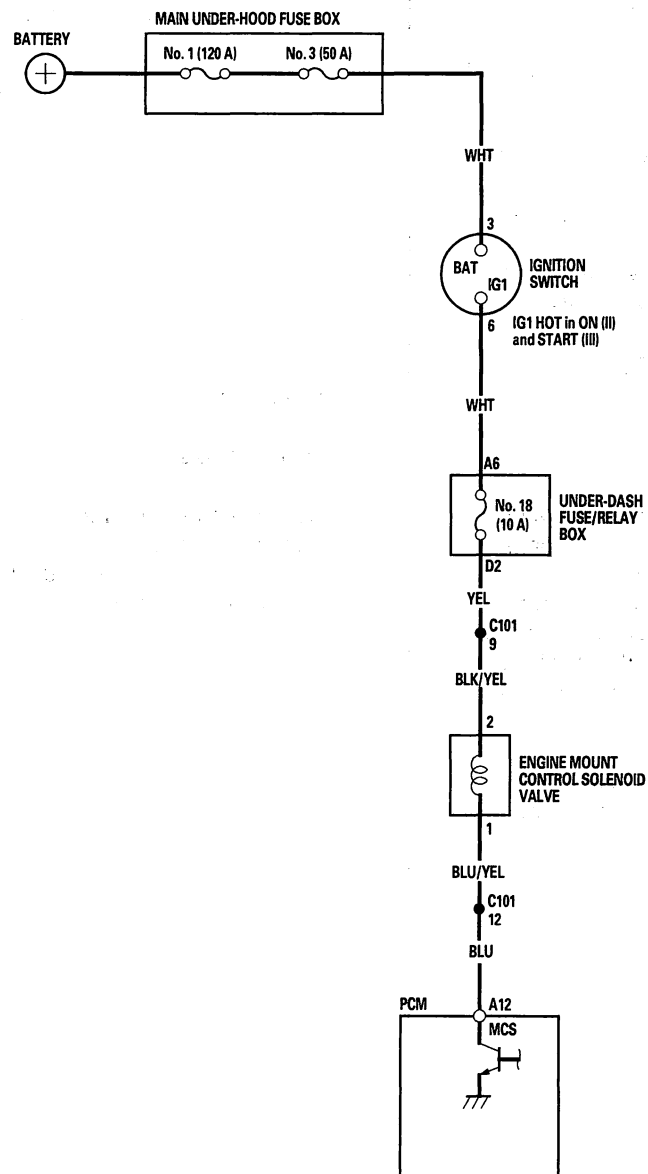
Component Location Index



cardiagn.com



Circuit Diagram



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Engine Mount Control System

Troubleshooting

Special Tools Required

Vacuum pump/gauge, 0–30 in.Hg Snap-on YA4000A or equivalent, commercially available

NOTE: Check the vacuum hoses and lines for damage and proper connections before troubleshooting.

Follow this procedure if the engine vibrates excessively when idling.

1. Start the engine, and let it idle (see page 11-310).
2. Raise the engine speed from idling to 2,000 rpm.
3. Check the MOUNT CTRL SOL in the PGM-FI DATA LIST with the Honda Diagnostic System (HDS).

Is ON indicated at idling and OFF indicated at 2,000 rpm?

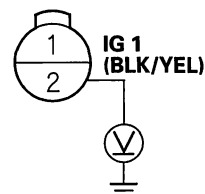
YES—Go to step 4.

NO—Update the powertrain control module (PCM) if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the engine mount control system works properly, and the PCM was updated, the troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). ■

4. Disconnect the engine mount control solenoid valve 2P connector from the engine mount control solenoid valve.
5. Turn the ignition switch ON (II).

6. Measure the voltage between engine mount control solenoid valve 2P connector terminal No. 2 and body ground.

ENGINE MOUNT CONTROL SOLENOID VALVE 2P CONNECTOR

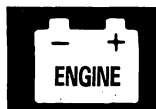


Wire side of female terminals

Is there battery voltage?

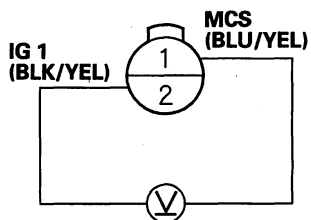
YES—Go to step 7.

NO—Repair open in the wire between engine mount control solenoid valve 2P connector terminal No. 2 and No. 18 (10 A) fuse in the under-dash fuse/relay box. ■



7. Measure the voltage between engine mount control solenoid valve 2P connector terminals No. 1 and No. 2, with the engine at idle.

**ENGINE MOUNT CONTROL
SOLENOID VALVE 2P CONNECTOR**



Wire side of female terminals

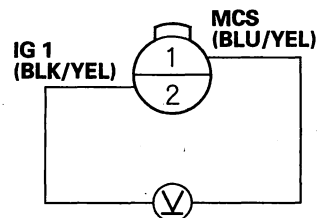
Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire between PCM (A12) and the engine mount control solenoid valve 2P connector. If the wire is OK, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), and recheck. If the engine mount control system works properly, and the PCM was updated, the troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). ■

8. Raise the engine speed above 1,000 rpm.
9. Measure the voltage between engine mount control solenoid valve 2P connector terminals No. 1 and No. 2.

**ENGINE MOUNT CONTROL
SOLENOID VALVE 2P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Repair short to body ground in the wire between PCM (A12) and the engine mount control solenoid valve. If the wire is OK, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), and recheck. If the engine mount control system works properly, and the PCM was updated, the troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). ■

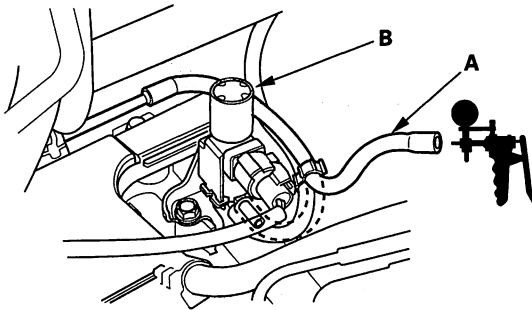
NO—Go to step 10.

(cont'd)

Engine Mount Control System

Troubleshooting (cont'd)

10. Disconnect the vacuum hose (A) that is closest to the solenoid connector from the engine mount control solenoid valve (B), and connect a commercially available vacuum pump/gauge, 0–30 in.Hg, to the hose. Apply about 20 in.Hg of vacuum, and wait for 20 seconds.



Do the engine mount hold vacuum?

YES—Go to step 11.

NO—Either the vacuum hose or one of the engine mount has a vacuum leak. Repair as needed. ■

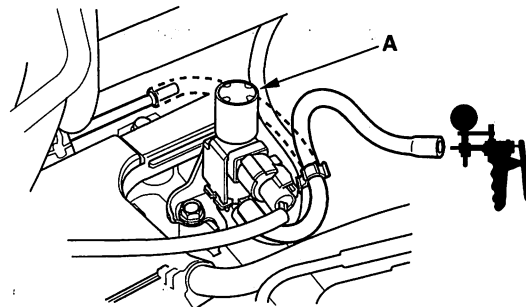
11. Release the vacuum, then apply vacuum again.

Is there a noticeable change in idle smoothness with and without vacuum applied?

YES—Go to step 12.

NO—Replace the front engine mount. ■

12. Connect a commercially available vacuum pump/gauge, 0–30 in.Hg, to the engine mount control solenoid valve (A) that is closest to the solenoid connector.



Is there manifold vacuum at idle, and a decrease in manifold vacuum when you raise the engine speed above 1,000 rpm?

YES—The system is OK. ■

NO—Replace the engine mount control solenoid valve. ■