

Engine Electrical

Engine Electrical

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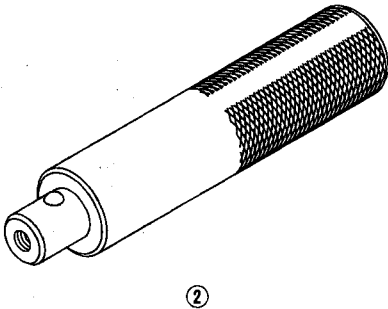
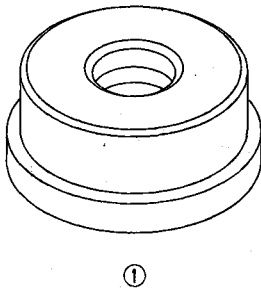
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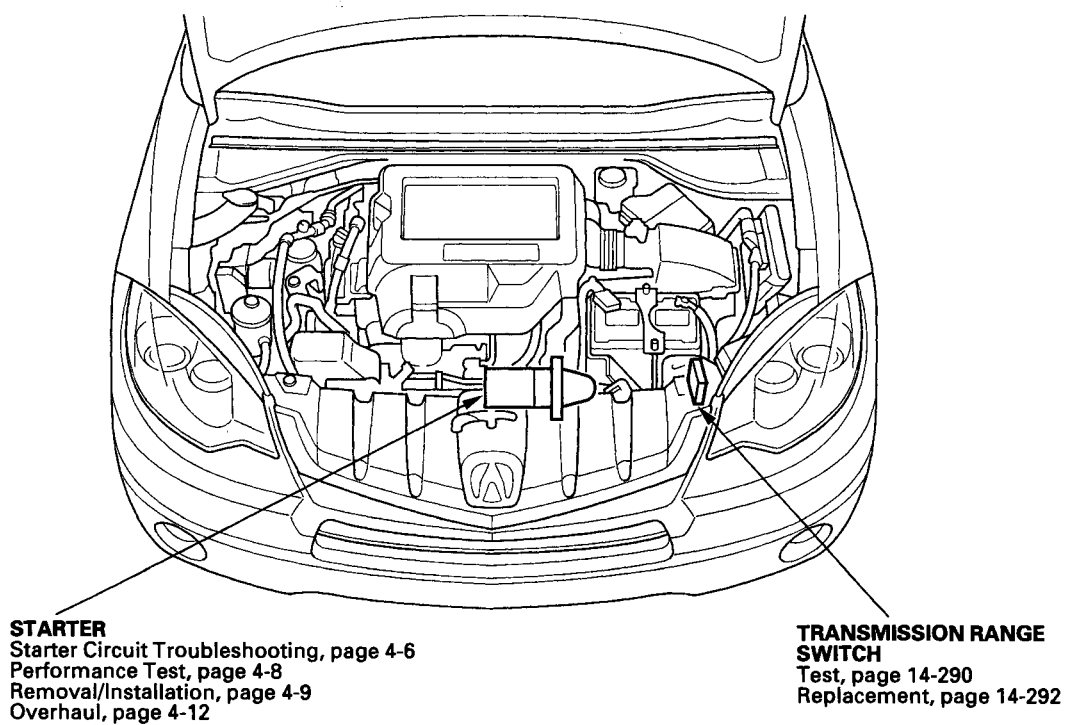
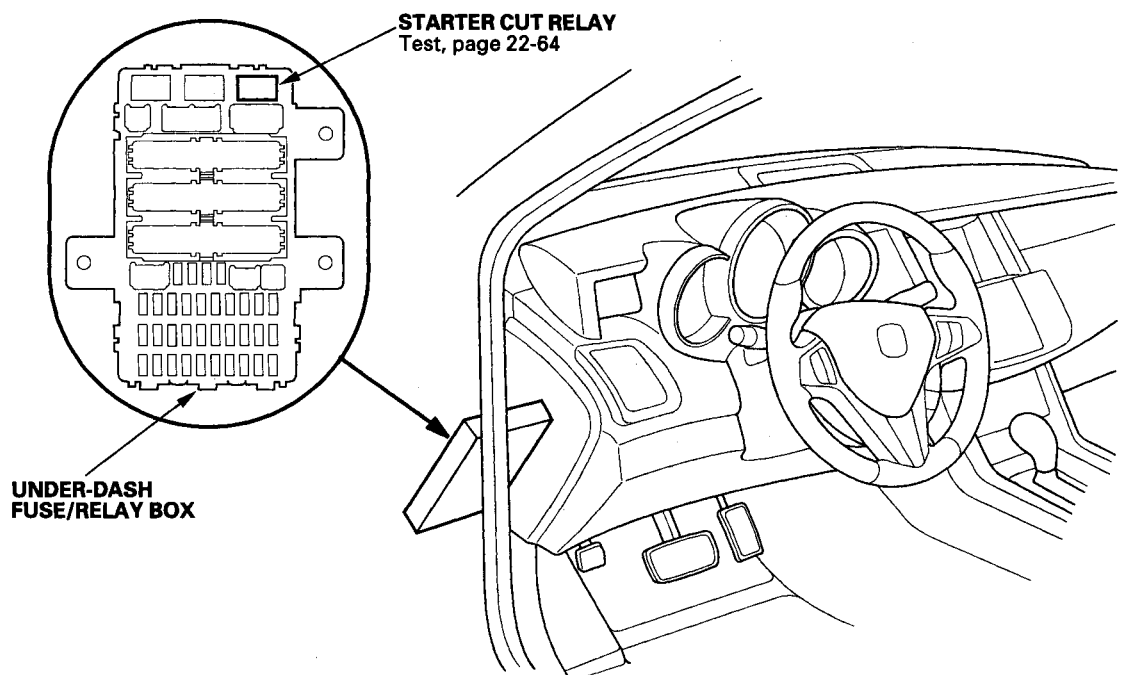
Engine Electrical

Special Tools

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



Component Location Index



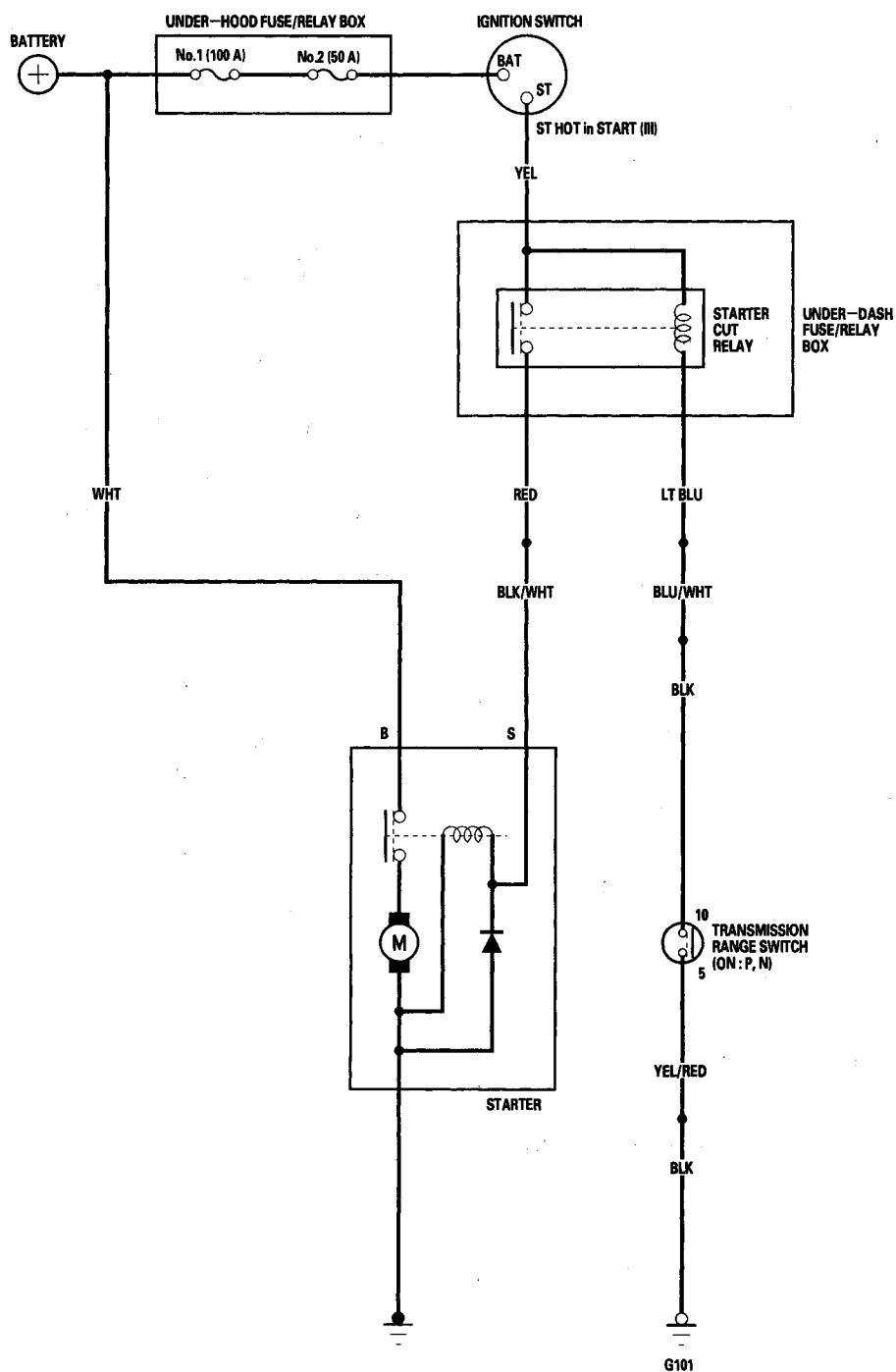
Starting System

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 22-63). 3. Check the starter (see page 4-6). 4. Check the starter cut relay (see page 22-64). 5. Check the transmission range switch (see page 14-290). 6. Check the ignition switch or wire (see page 22-66).	Poor ground at G101
Engine cranks, but does not start	1. Check for PGM-FI DTCs (see page 11-3). 2. Check PGM-FI main relays (see page 22-64). 3. Check for IMMOBI status and function (see page 22-333). 4. Check the fuel pressure (see page 11-365). 5. Check for a plugged or damaged fuel line (see page 11-368). 6. Check for a plugged fuel filter (see page 11-382). 7. Check the throttle body (see page 11-393). 8. Check for low engine compression (see page 6-6). 9. Check for a damage or broken cam chain.	
Engine is hard to start	1. Check for PGM-FI DTCs (see page 11-3). 2. Check for IMMOBI status and function (see page 22-333). 3. Check the fuel pressure (see page 11-365). 4. Check for a plugged or damaged fuel line (see page 11-368). 5. Check for a plugged fuel filter (see page 11-382).	
Engine cranks slowly	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see page 22-63). 3. Check the starter for binding (see page 4-12). 4. Check for excessive drag in the engine.	



Circuit Diagram



Starting System

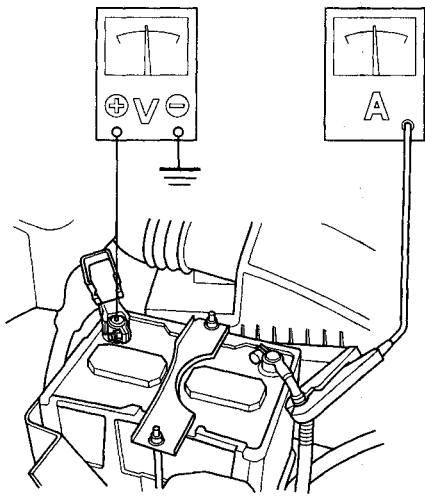
Starter Circuit Troubleshooting

NOTE:

- Air temperature must be between 59 and 100 °F (15 and 38 °C) during this procedure.
- After this inspection, you must reset the powertrain control module (PCM), otherwise the PCM will continue to stop the fuel injectors from functions.
- 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 V)



2. Connect the 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, troubleshoot the DLC circuit (see page 11-229).
5. Select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.

6. Set the parking brake, then with the shift lever in P or N 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 (see page 22-63). Check electrical connections at the battery, the negative battery cable to body, the engine ground cables, and the starter for looseness and corrosion. Then try cranking the engine again.

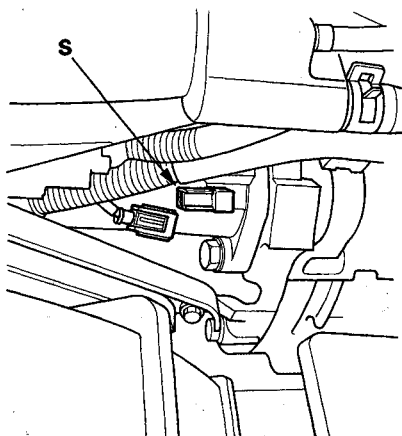
Does the starter crank the engine?

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

NO—Check the following:

- 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:
 - Solenoid plunger and switch malfunction
 - Dirty drive gear or damaged overrunning clutch

8. Make sure the transmission is in Park or neutral, and set the parking brake. Disconnect the connector from the starter solenoid S terminal. Connect a jumper wire from the battery positive terminal to the solenoid terminal.



Does the starter crank the engine?

YES—Go to step 9.

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

9. Check the following items in the order listed until you find the open circuit:
- The YEL wire and connectors between the under-dash fuse/relay box and the ignition switch.
 - The RED and BLK/WHT wire and connectors between the under-dash fuse/relay box and the starter.
 - The ignition switch (see page 22-66).
 - The transmission range switch and connector.
 - The starter cut relay (see page 22-64).

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

Is the cranking voltage greater than or equal to 8.5 V and is the current draw less than or equal to 380 A?

YES—Go to step 11.

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

- Open circuit in the starter armature commutator segments
- Excessively worn starter brushes
- Open circuit in the commutator 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.

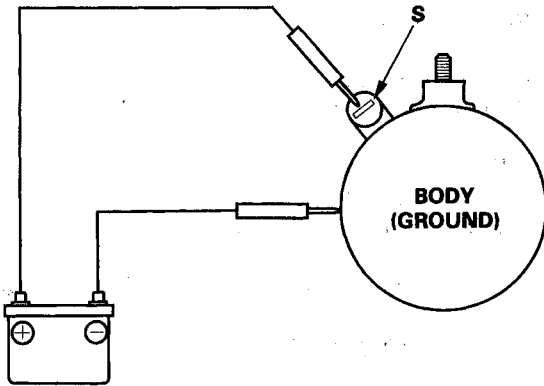
13. Select PCM reset (see page 11-4) to cancel ALL INJECTORS OFF on the HDS.

Starting System

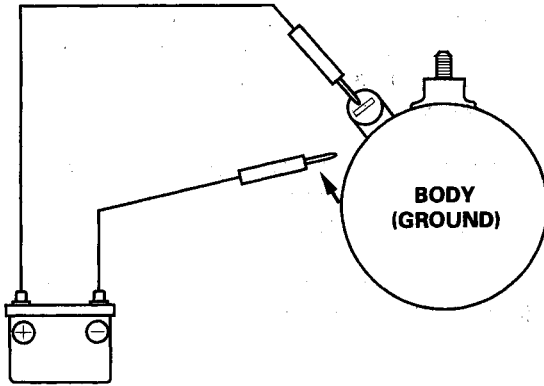
Starter Performance Test

1. Connect the battery to the starter for this test using the thickest (gauge) wire possible (preferably the same gauge as used on the vehicle).

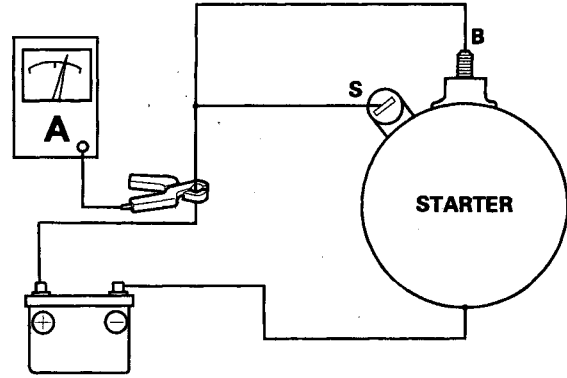
NOTE: To avoid damaging the starter, never leave the battery connected for more than 10 seconds.



2. Connect the battery as shown. If the starter pinion moves out, it is working properly.
3. Disconnect the battery from the body. If the pinion retracts immediately, it is working properly.



4. Firmly clamp the starter in a vise.
5. Connect the starter to the battery as shown, and check that the motor turns and keeps rotating.



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

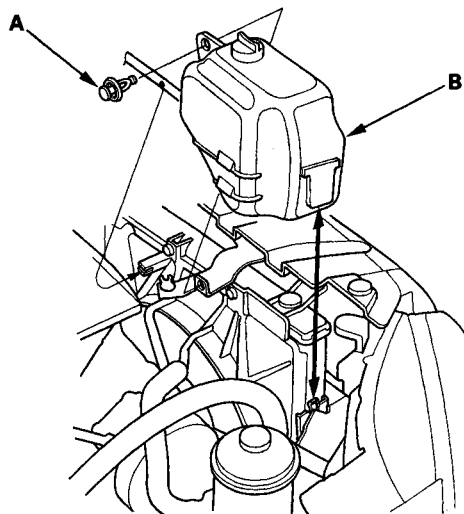
Specification
Electric Current: 80 A or less



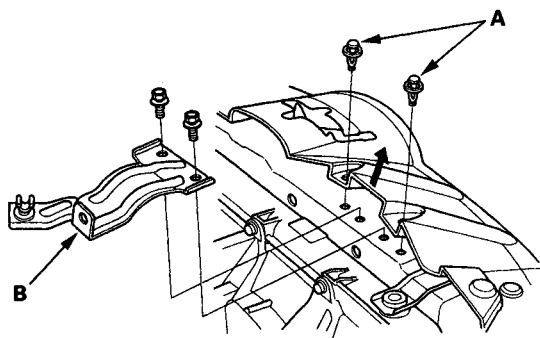
Starter Removal and Installation

Removal

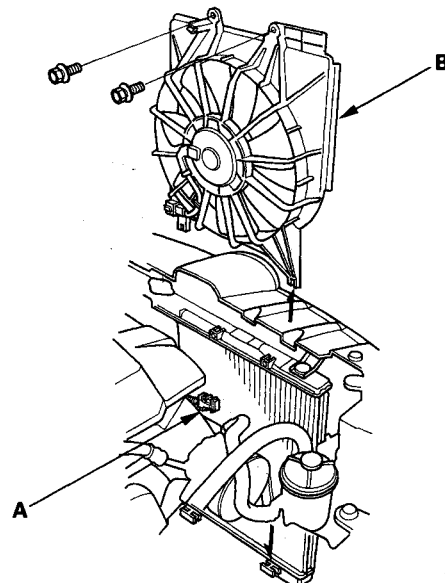
1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the clip (A), then remove the coolant reservoir (B) from the holder.



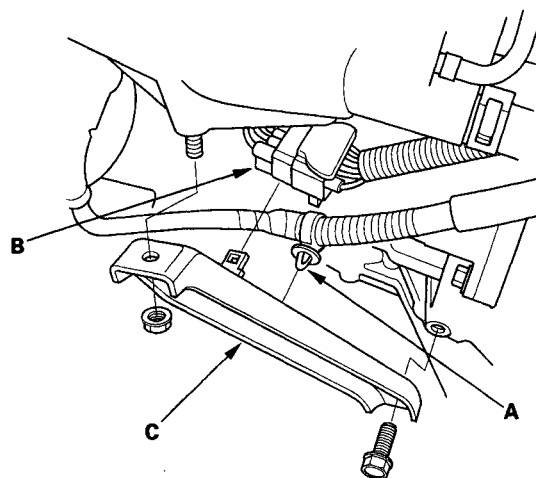
4. Remove the clips (A), then remove the support rod clamp bracket (B).



5. Disconnect the A/C condenser fan motor connector (A), then remove the A/C condenser fan shroud assembly (B).



6. Remove the harness clamp (A) and connector (B), then remove the intake manifold bracket (C).

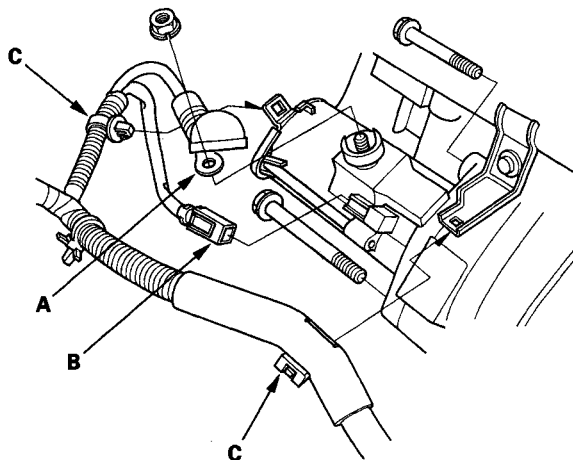


(cont'd)

Starting System

Starter Removal and Installation (cont'd)

7. Disconnect the starter cable (A) from the B terminal, then disconnect the connector (B) from the S terminal.



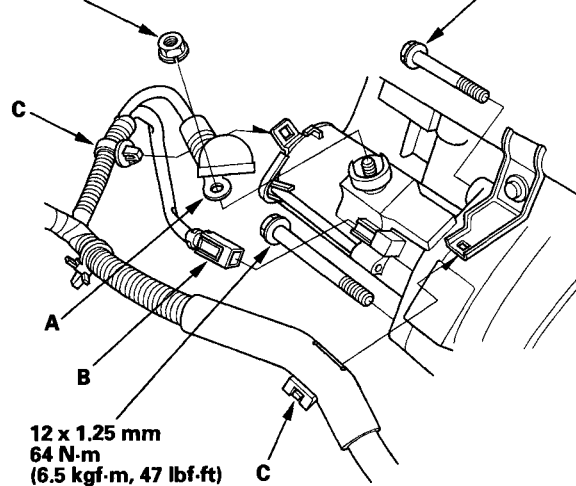
8. Remove the harness clamps (C), then remove the starter.

Installation

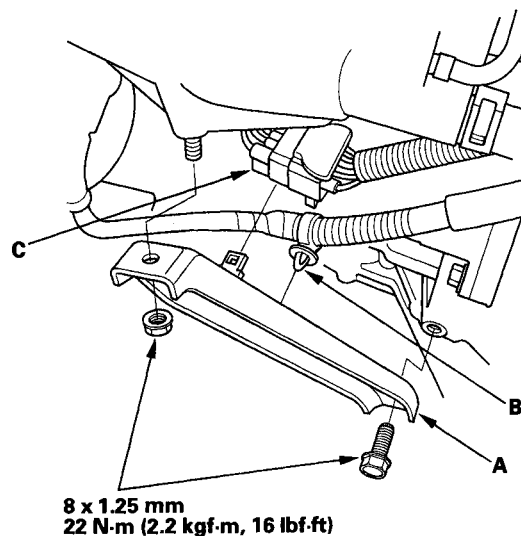
1. Install the starter, then install the starter cable (A) and connector (B). Make sure the starter cable crimped side of the ring terminal is facing out.

8 x 1.25 mm
9 N·m
(0.9 kgf-m, 7 lbf-ft)

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

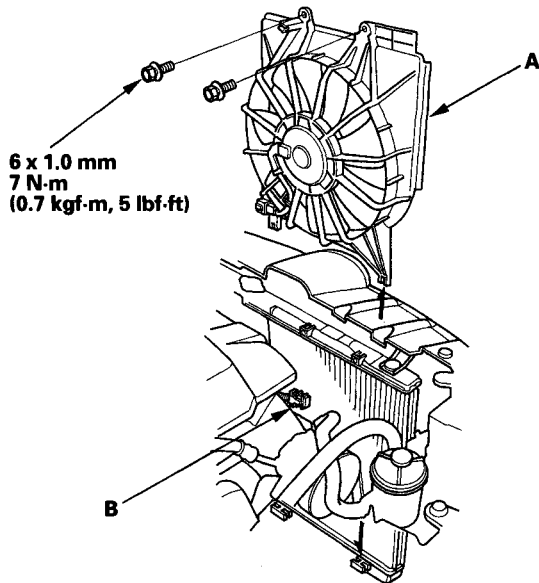


2. Install the harness clamps (C).
3. Install the intake manifold bracket (A), then install the harness clamp (B) and connector (C).

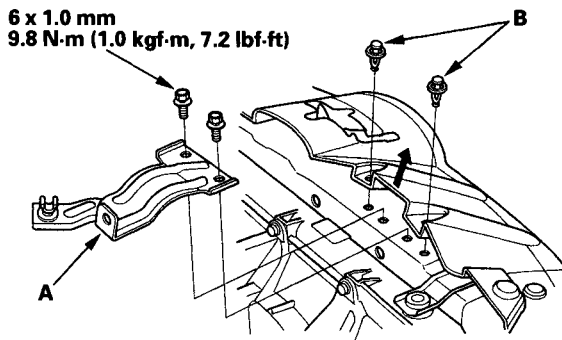


8 x 1.25 mm
22 N·m (2.2 kgf-m, 16 lbf-ft)

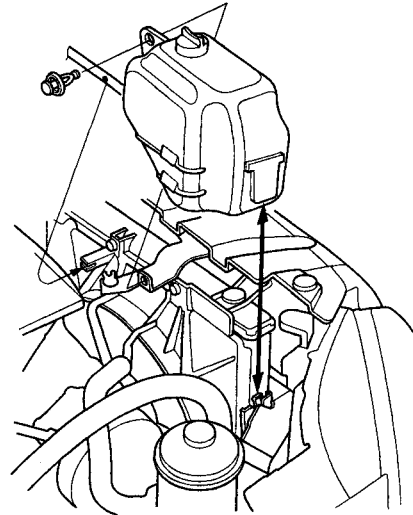
4. Install the A/C condenser fan shroud assembly (A), then connect the A/C condenser fan motor connector (B).



5. Install the support rod clamp bracket (A), then install the clips (B).



6. Install the coolant reservoir.

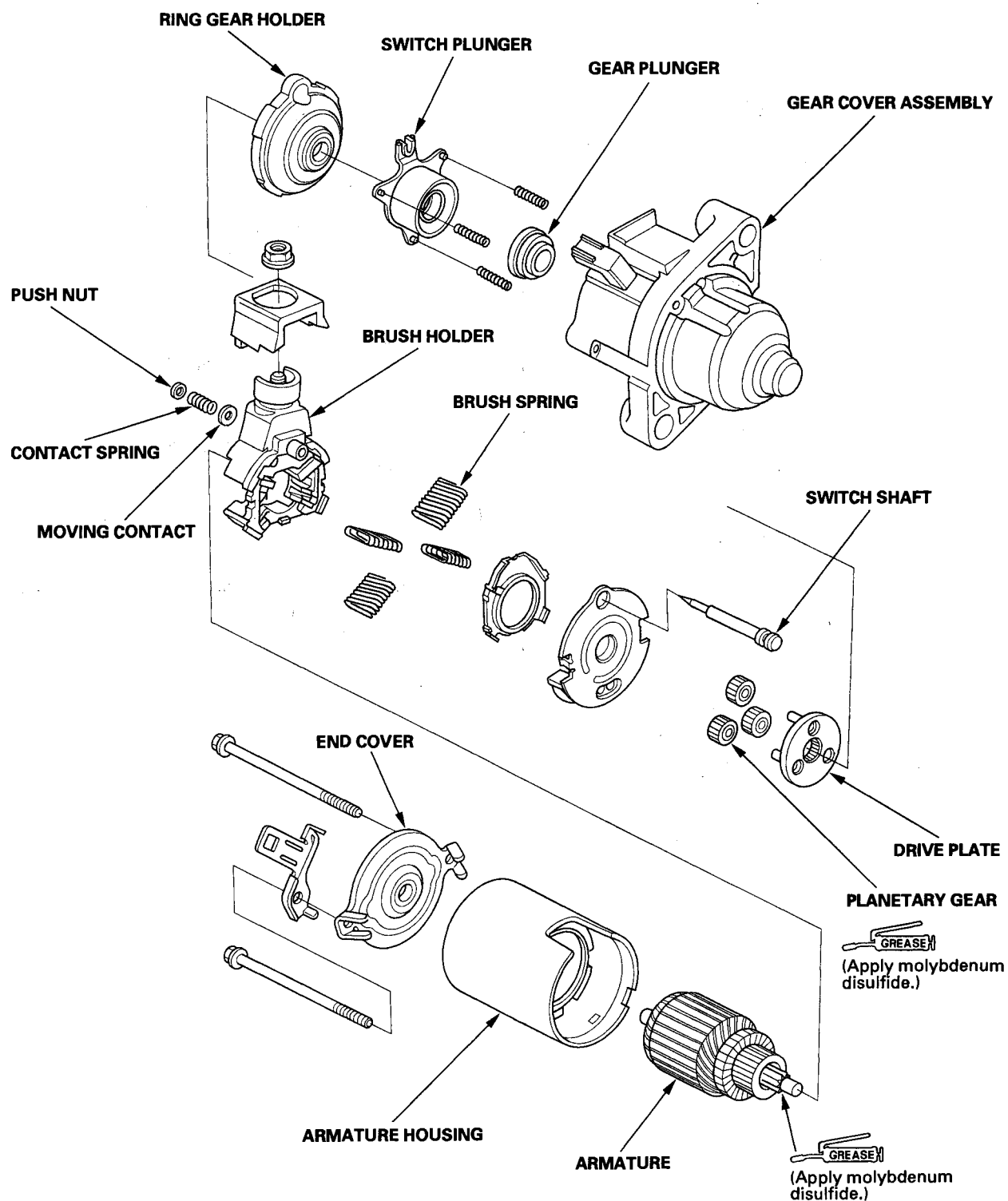


7. Connect the positive cable to the battery first, then connect the negative cable.
8. Start the engine to make sure the starter works properly.
9. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.
10. Set the clock.

Starting System

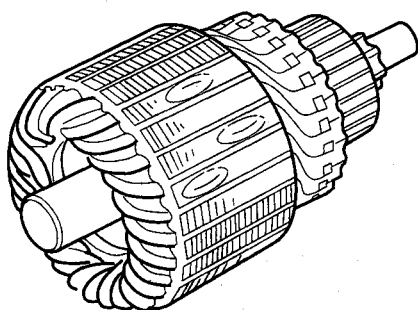
Starter Overhaul

Disassembly/Reassembly

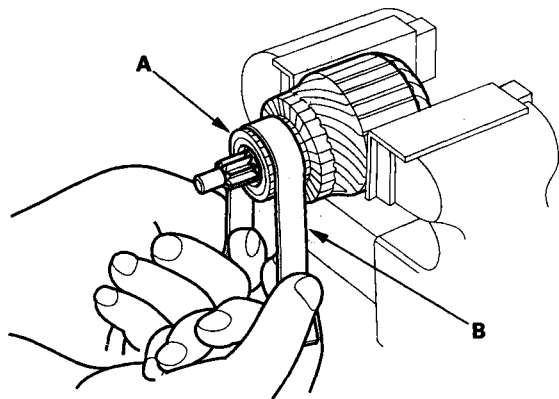


Armature Inspection and Test

1. Remove the starter (see page 4-9).
2. Disassemble the starter as shown at the beginning of this procedure.
3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.



4. 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).

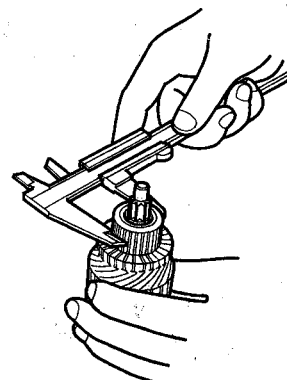


5. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

Commutator Diameter

Standard (New): 28.0—28.1 mm (1.102—1.106 in.)

Service Limit: 27.5 mm (1.083 in.)



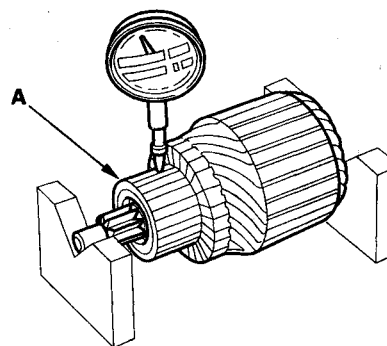
6. Measure the commutator (A) runout.

- 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 (0.001 in.) max.

Service Limit: 0.05 mm (0.002 in.)



(cont'd)

Starting System

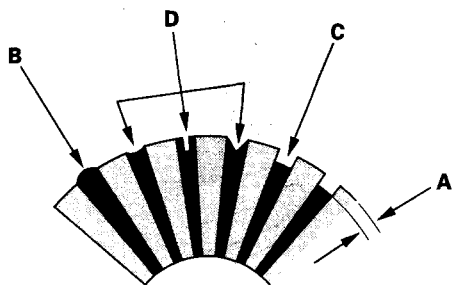
Starter Overhaul (cont'd)

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

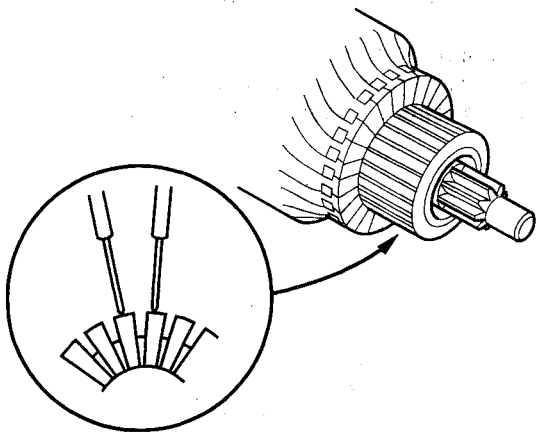
Commutator Mica Depth

Standard (New): 0.40—0.50 mm (0.016—0.020 in.)

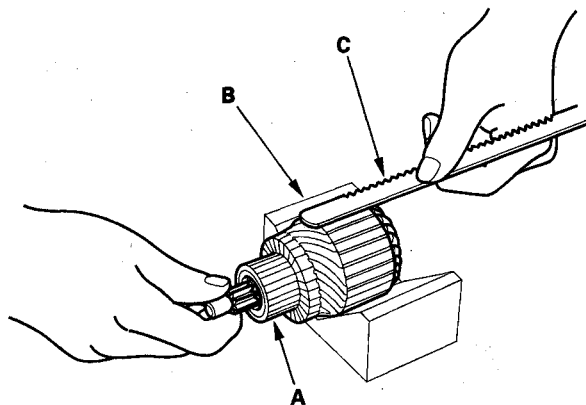
Service Limit: 0.15 mm (0.006 in.)



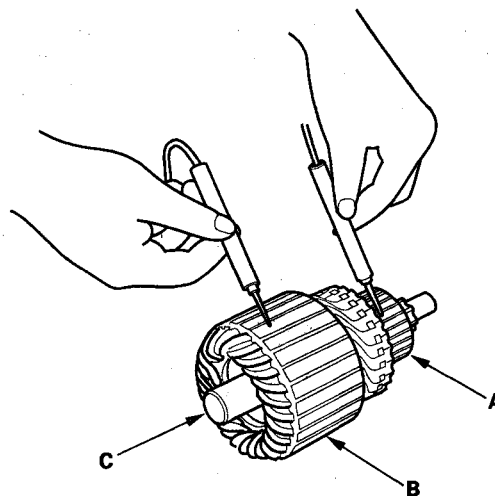
8. Check for continuity between the segments of the commutator. If there is an open circuit between any of the segments, replace the armature.



9. 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.



10. Check with an ohmmeter for continuity between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If there is continuity, replace the armature.



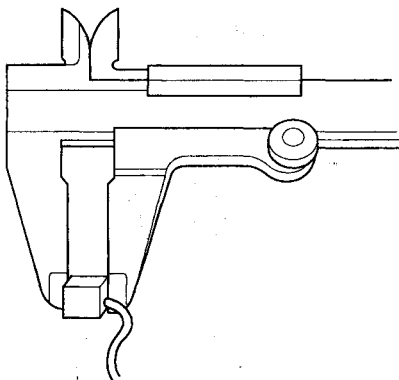
Starter Brush Inspection

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

Brush Length

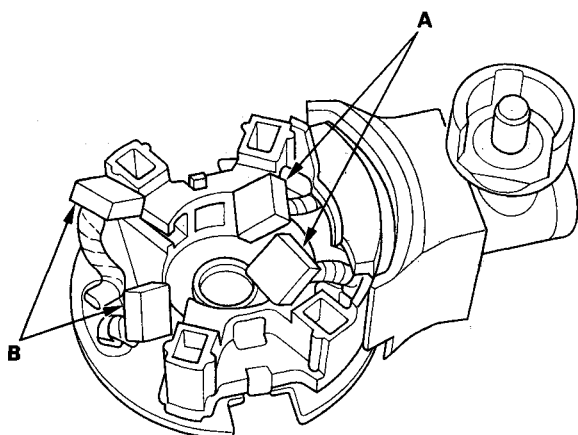
Standard (New): 11.1–11.5 mm (0.44–0.45 in.)

Service Limit: 4.3 mm (0.17 in.)



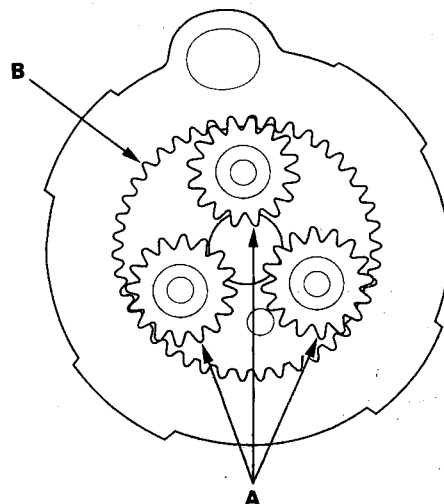
Starter Brush Holder Test

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



Planetary Gear Inspection

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



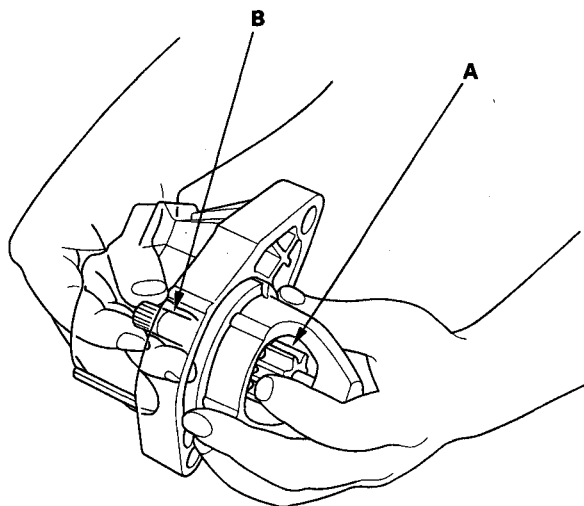
(cont'd)

Starting System

Starter Overhaul (cont'd)

Overrunning Clutch Inspection

14. While holding the drive gear (A), turn the gear shaft (B) counterclockwise. Check that the drive gear comes out to the other end. If the drive gear does not move smoothly, replace the gear cover assembly.

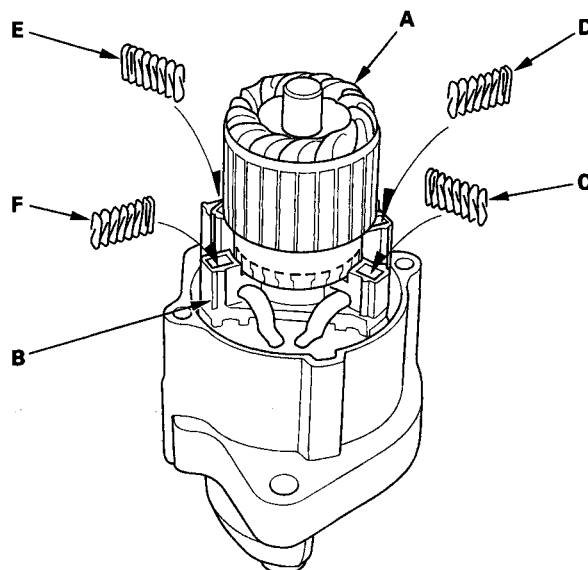


15. While holding the drive gear, turn the gear shaft clockwise. The gear shaft should turn freely. If the gear shaft does not turn freely, replace the gear cover assembly.
16. If the starter drive gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the torque converter ring gear to see if the starter drive gear teeth are damaged.

Starter Reassembly

17. Install the brush into the brush holder, and set the armature (A) in the brush holder (B).

NOTE: To seat the new brushes, slip a strip of # 500 or # 600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly turn the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.

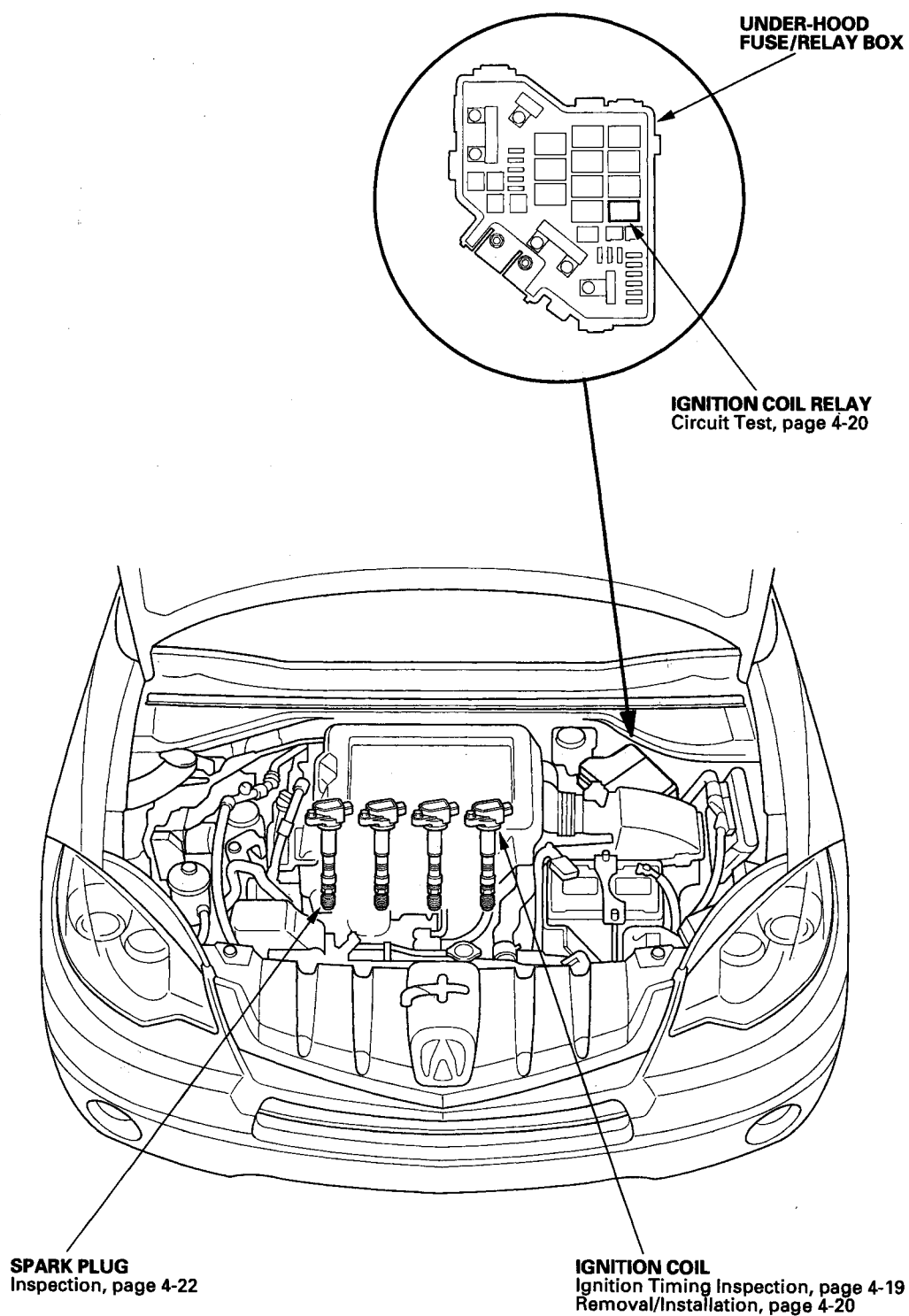


18. While squeezing a spring (C), insert it in the hole on the brush holder, and push it until it bottoms. Repeat this for the other three springs (D, E, and F).
19. Install the armature and brush holder assembly into the housing.

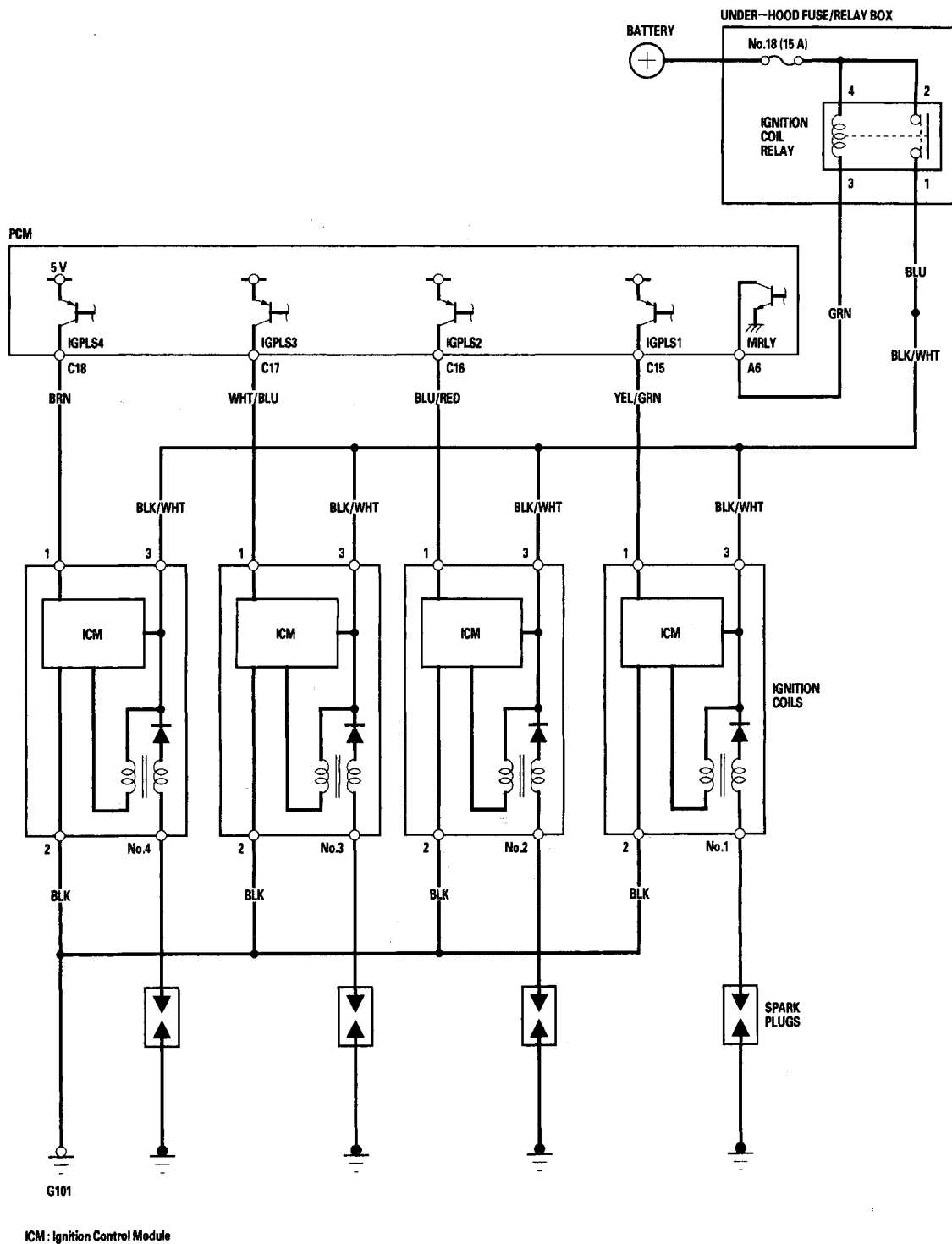
NOTE: Make sure the armature stays in the holder.



Component Location Index

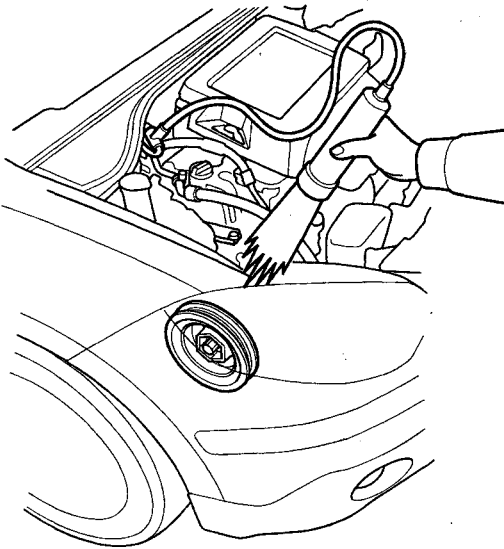


Circuit Diagram



Ignition Timing Inspection

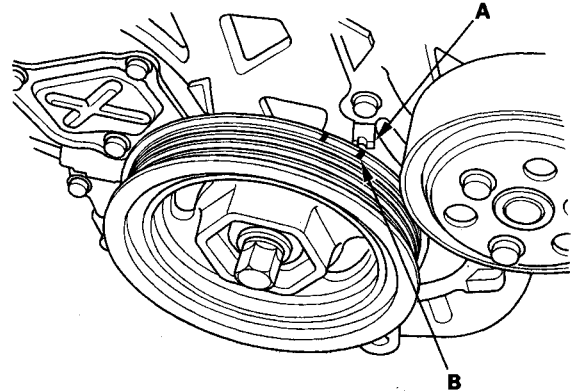
1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see page 11-229).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check the idle speed (see page 11-338).
6. Jump the SCS line with the HDS.
7. Connect the timing light to the service loop (white tape).



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

Ignition Timing:

14° ± 2° BTDC (RED mark (B)) at idle in P or N position



9. 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 system work properly, and the PCM was substituted, replace the original PCM (see page 11-252).
10. Disconnect the HDS and the timing light.

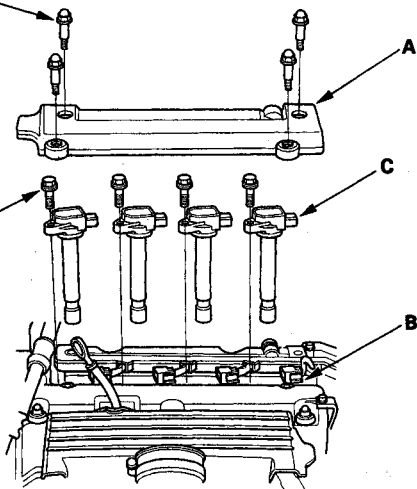
Ignition System

Ignition Coil Removal/Installation

1. Remove the charge air cooler (see page 9-8).
2. Remove the ignition coil cover (A), disconnect the ignition coil connectors (B), then remove the ignition coils (C).

6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

6 x 1.0 mm
12 N·m
(1.2 kgf·m,
8.7 lbf·ft)



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

Ignition Coil Relay Circuit Troubleshooting

1. Check the No. 18 (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse. ■

2. Remove the ignition coil relay from the under-hood fuse/relay box, and test it (see page 22-64).

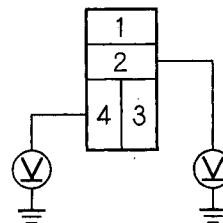
Is the relay OK?

YES—Go to step 3.

NO—Replace the ignition coil relay. ■

3. Measure the voltage between ignition coil relay 4P socket terminal No. 2 and body ground, then terminal No. 4 and body ground.

IGNITION COIL RELAY 4P SOCKET



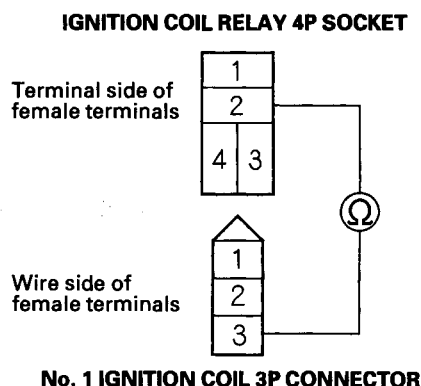
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 4.

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

4. Check for continuity between ignition coil relay 4P socket terminal No. 2 and the No. 1 ignition coil 3P connector terminal No. 3.



Is there continuity?

YES—Go to step 5.

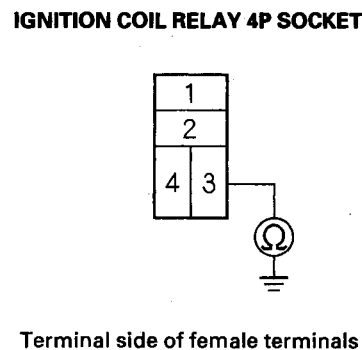
NO—Repair open in the wire between ignition coil relay 4P socket terminal No. 2 and ignition coil 3P connector terminal No. 3. ■

5. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
6. Turn the ignition switch ON (II).
7. Make sure the HDS communicates with the vehicle and the powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see page 11-229).
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 A (44P).

10. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

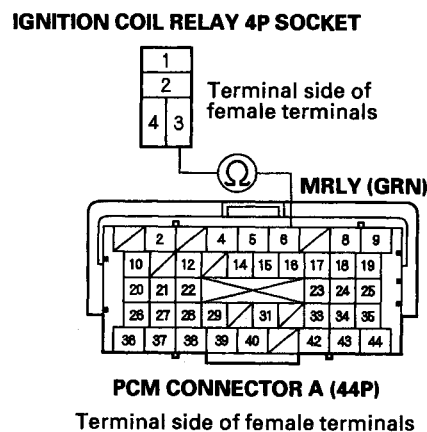


Is there continuity?

YES—Repair short in the wire between ignition coil relay 4P socket terminal No. 3 and PCM (A6). ■

NO—Go to step 11.

11. Check for continuity between ignition coil relay 4P socket terminal No. 3 and PCM connector terminal A6.



Is there continuity?

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

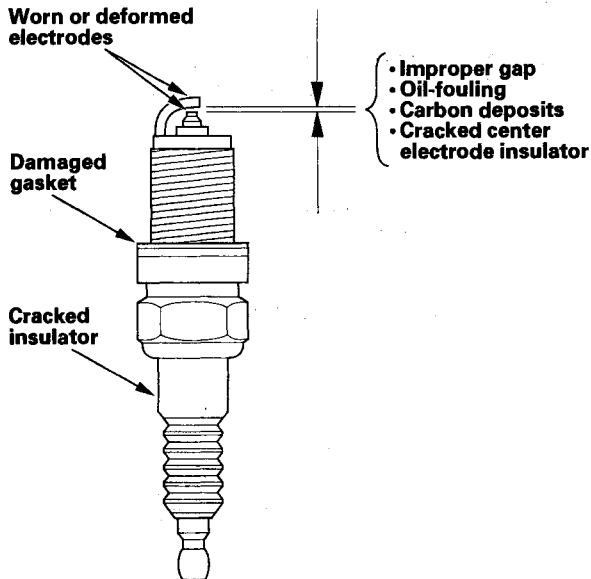
NO—Repair open in the wire between ignition coil relay 4P socket terminal No. 3 and the PCM (A6). ■

Ignition System

Spark Plug Inspection

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

- Burned or worn electrodes may be caused by:
 - Advanced ignition timing
 - Loose spark plug
 - Plug heat range too hot
 - 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. Replace the plug at the specified interval, or if the center electrode is rounded (A), or if the spark plug gap (B) is out of specification. Use only the listed spark plugs.

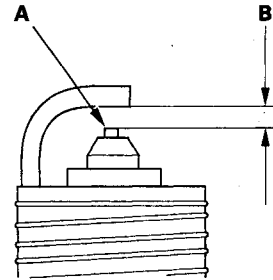
NOTE: Do not adjust the gap of iridium tip plugs.

Spark Plugs

NGK: SILKR8A-S

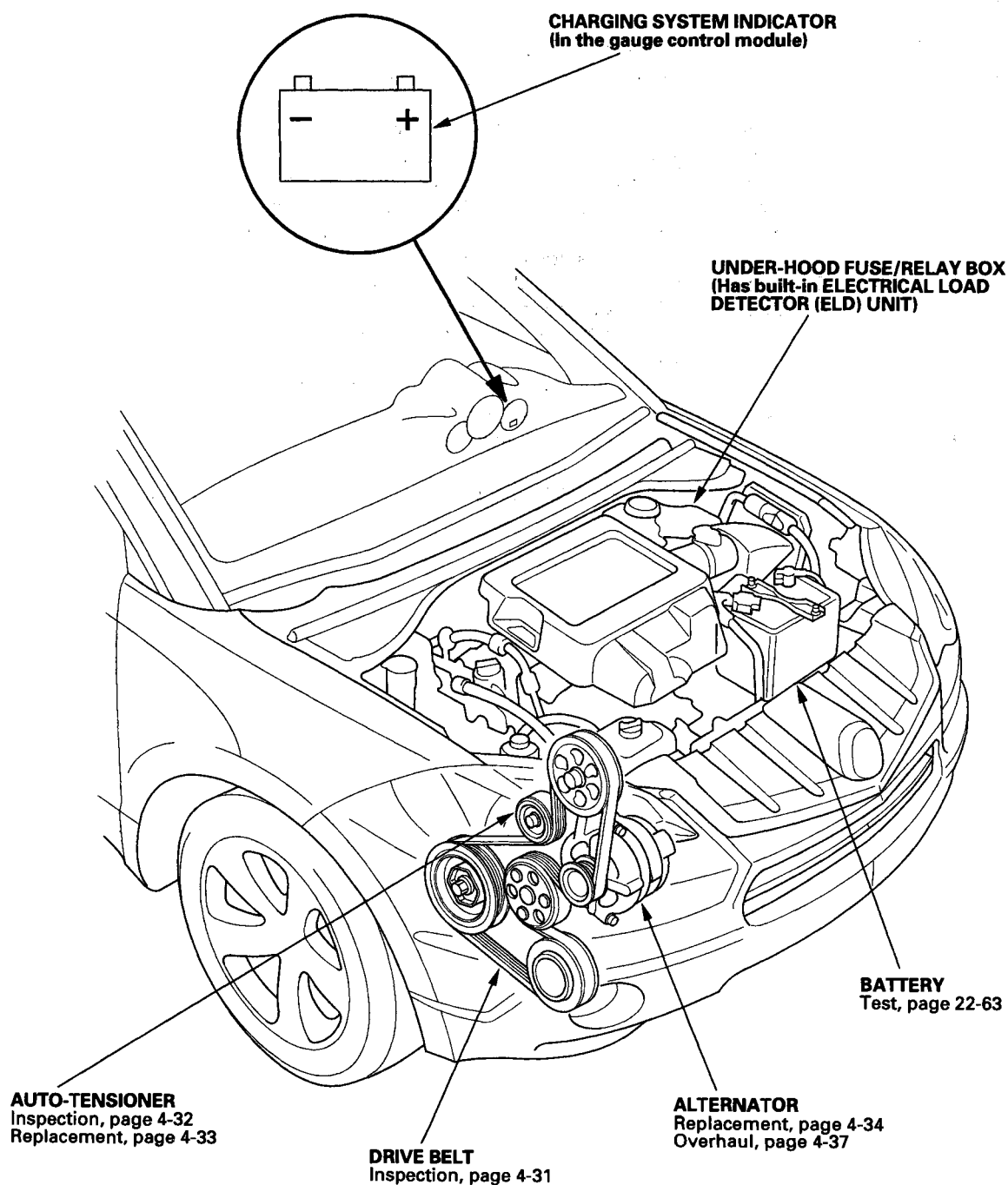
Electrode Gap

Standard (New): 0.7—0.8 mm (0.028—0.031 in.)



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

Component Location Index



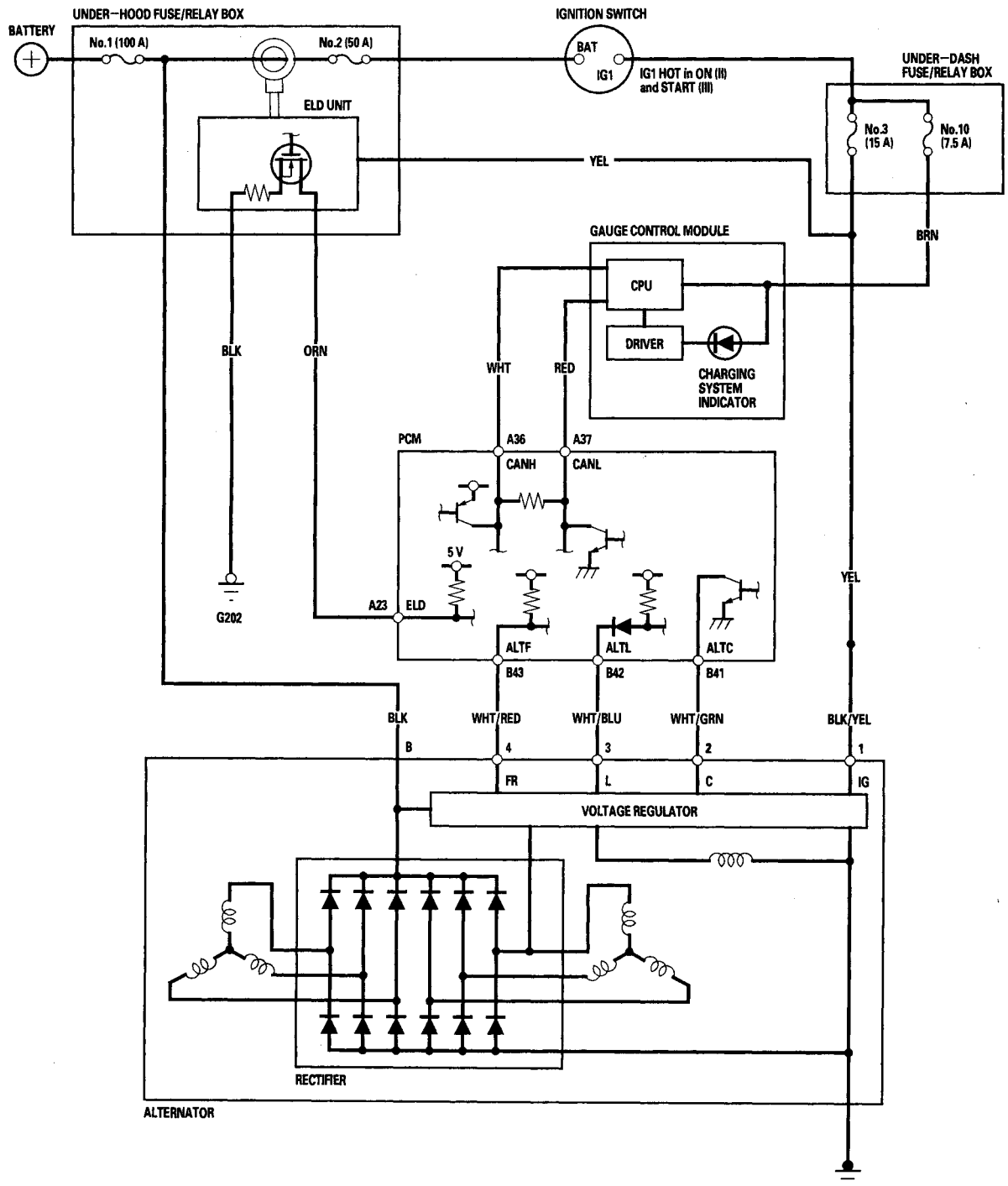
Charging System

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 4-26).	
Charging system indicator stays on	1. Check for PGM-FI DTCs (see page 11-3). 2. Troubleshoot the charging system indicator circuit (see page 4-26). 3. Check for a broken drive belt (see page 4-31). 4. Check the drive belt auto-tensioner (see page 4-32).	
Battery discharged	1. 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. 2. Check for a broken drive belt (see page 4-31). 3. Check the drive belt auto-tensioner (see page 4-32). 4. Troubleshoot the alternator and regulator circuit (see page 4-28). 5. Check for a poor connection at the battery terminal. 6. Test the battery (see page 22-63).	
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see page 4-28). 2. Test the battery (see page 22-63).	



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.

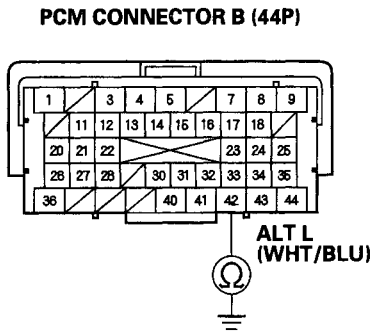
2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.
Does the charging system indicator go off?
YES—Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see page 4-28). ■
NO—Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see page 22-258).
Does the charging system indicator flash?
YES—Go to step 4.
NO—Replace the gauge control module (see page 22-284). ■

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 4-34), or repair the alternator (see page 4-37). ■
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 (III).
10. Make sure the HDS communicates with the vehicle and the powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see page 11-229).
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 B (44P).
13. Check for continuity between PCM connector terminal B42 and body ground.



Terminal side of female terminals

- 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 11-252). ■



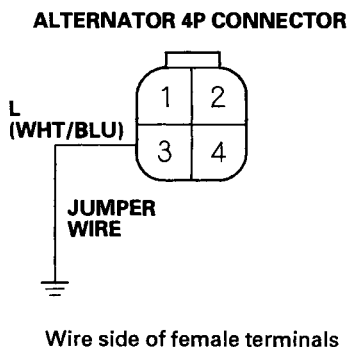
14. Do the gauge control module self-diagnostic function procedure (see page 22-258).

Does the charging system indicator flash?

YES—Go to step 15.

NO—Replace the gauge control module (see page 22-284). ■

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.



18. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES—Replace the alternator (see page 4-34), or repair the alternator (see page 4-37). ■

NO—Leave the jumper from step 17 connected and go to step 19.

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

20. Turn the ignition switch ON (II).

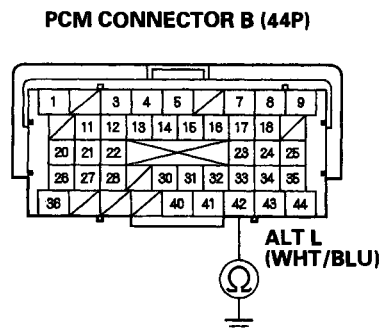
21. Make sure the HDS communicates with the vehicle and the powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see page 11-229).

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 B (44P).

24. Check for continuity between PCM connector terminal B42 and body ground.



Is there continuity?

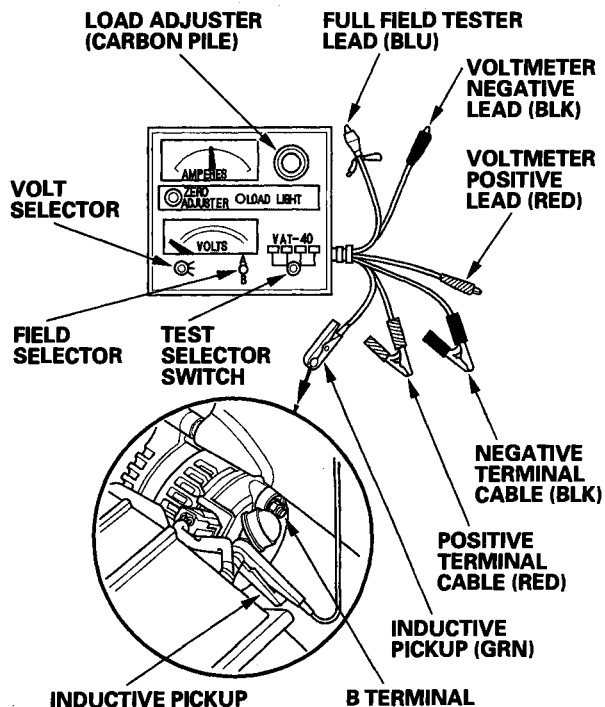
YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-252). ■

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 sufficiently charged.
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).



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

Is the voltage over 15.1 V?

YES—Replace the alternator (see page 4-34), or rear housing assembly (see page 4-37). ■

NO—Go to step 5.

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

Is the voltage less than 13.5 V?

YES—Go to alternator control circuit troubleshooting (see page 4-29). ■

NO—Go to step 10.

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

Is the amperage 90.0 A or more?

YES—The charging system is OK. ■

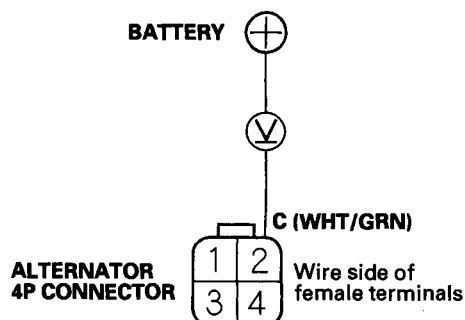
NOTE: If the charging system indicator is still on, replace the alternator (see page 4-34).

NO—Replace the alternator (see page 4-34), or repair the alternator (see page 4-37). ■



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, troubleshoot the DLC circuit (see page 11-229).
4. Check for DTCs (see page 11-3). 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 1 V or less?

YES—Go to step 11.

NO—Go to step 8.

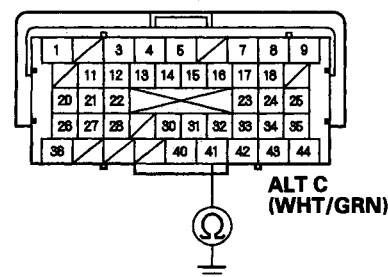
8. Jump the SCS line with the HDS, then turn the ignition switch OFF.

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

9. Disconnect PCM connector B (44P).

10. Check for continuity between PCM connector terminal B41 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

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 11-252). ■

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.

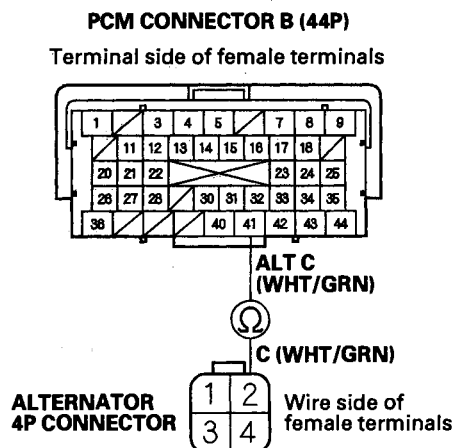
12. Disconnect PCM connector B (44P).

(cont'd)

Charging System

Alternator Control Circuit Troubleshooting (cont'd)

13. Check for continuity between PCM connector terminal B41 and alternator 4P connector terminal No. 2.



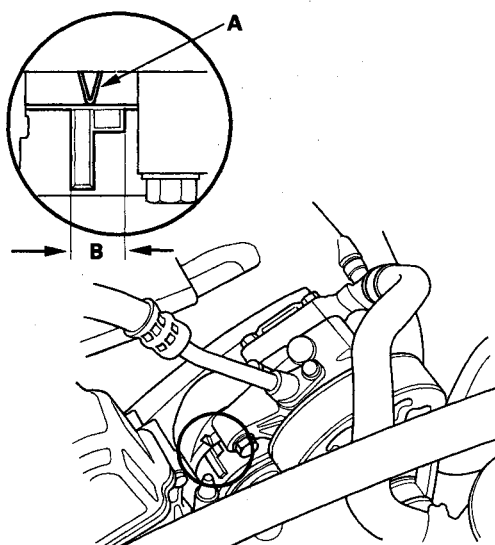
Is there continuity?

YES—Replace the alternator (see page 4-34), or repair the alternator (see page 4-37). ■

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 4-31).

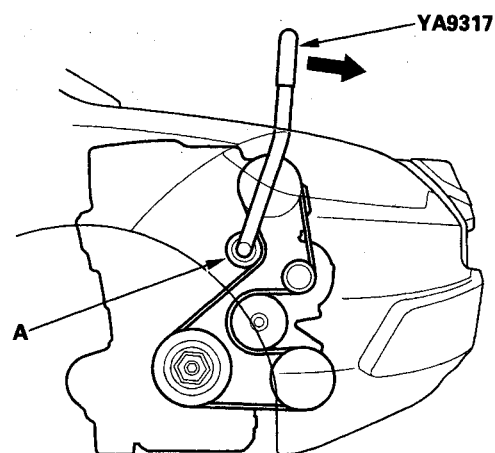


Drive Belt Removal/Installation

Special Tools Required

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

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



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

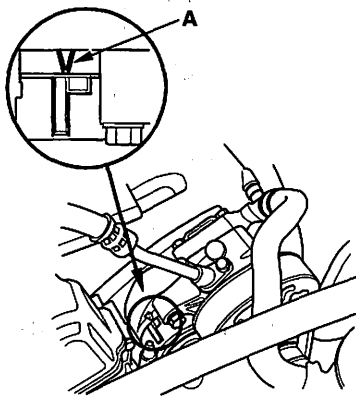
Charging System

Drive Belt Auto-tensioner Inspection

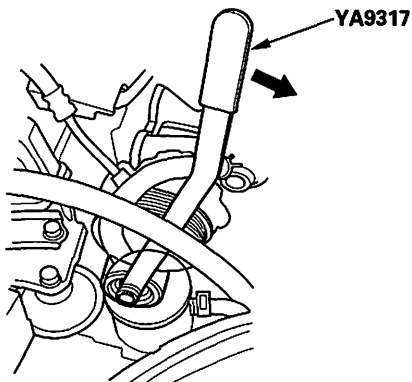
Special Tools Required

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

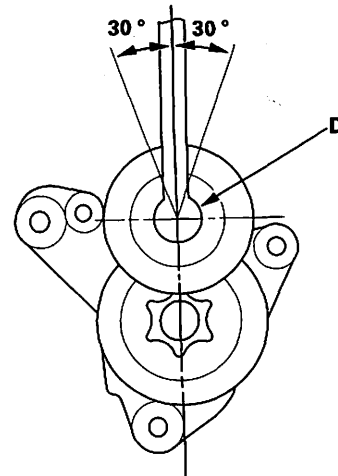
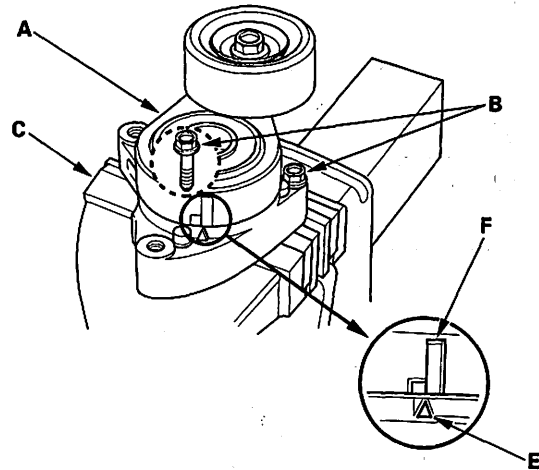
1. Turn the ignition switch ON (II), and make sure to turn the A/C switch OFF. Turn the ignition switch OFF.
2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine then check the position again with the engine idling. If the position of the indicator moves or fluctuates very much, replace the auto-tensioner (see page 4-33).



3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the tensioner pulley.
4. Remove the drive belt (see page 4-31).
5. Move the auto-tensioner within its limit with 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 4-33).
7. Clamp the auto-tensioner (A) by using two 8 mm bolts (B) and a vise (C) as shown. Do not clamp the auto-tensioner itself.



8. Set the torque wrench (D) in the pulley bolt in the direction shown.
9. Align the indicator (E) on the tensioner base with center mark (F) on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.

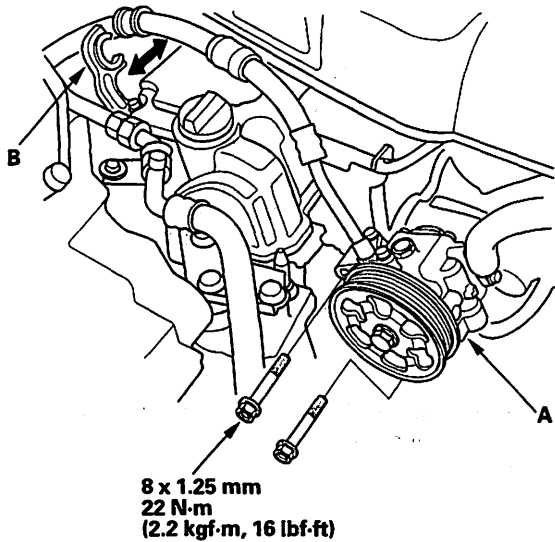
NOTE: If the indicator exceeds the center mark, recheck the torque.

Auto-tensioner Spring Torque:

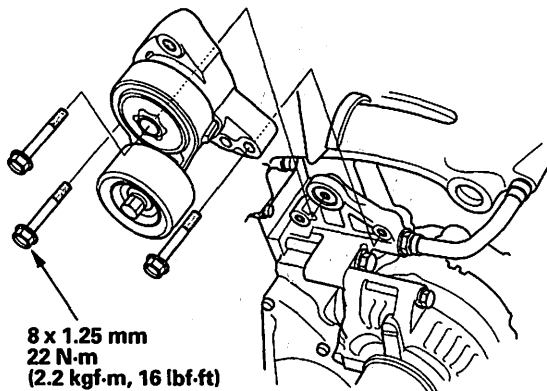
32.5—39.7 N·m (3.31—4.05 kgf·m, 23.9—29.3 lbf·ft)

Drive Belt Auto-tensioner Removal/Installation

1. Remove the drive belt (see page 4-31).
2. Remove the power steering (P/S) fluid reservoir from the holder.
3. Remove the P/S pump (A) without disconnecting the P/S hoses, then remove the P/S hose from the clamp (B).



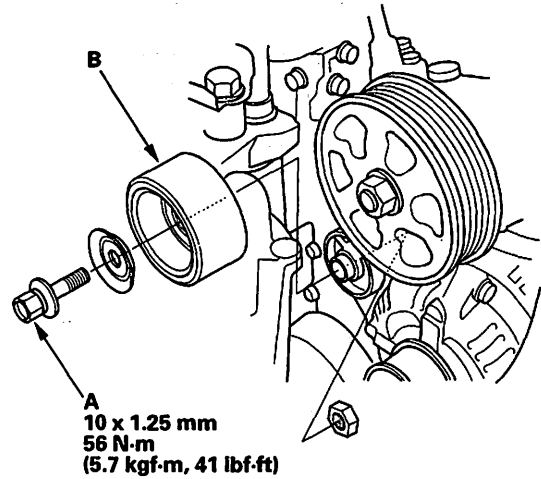
4. Remove the auto-tensioner.



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

Tensioner Pulley Replacement

1. Remove the drive belt (see page 4-31).
2. Remove the tensioner pulley bolt (A), then remove the tensioner pulley (B).



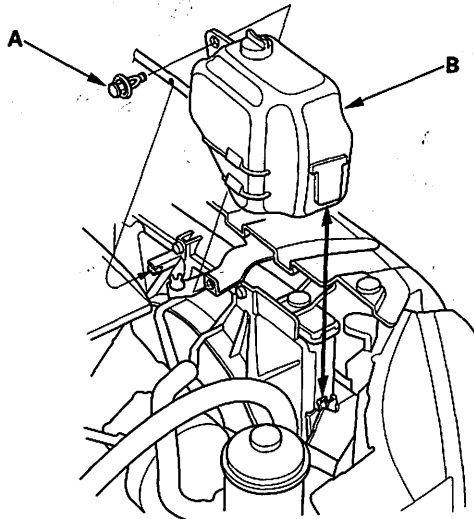
3. Install the tensioner pulley in the reverse order of removal.

Charging System

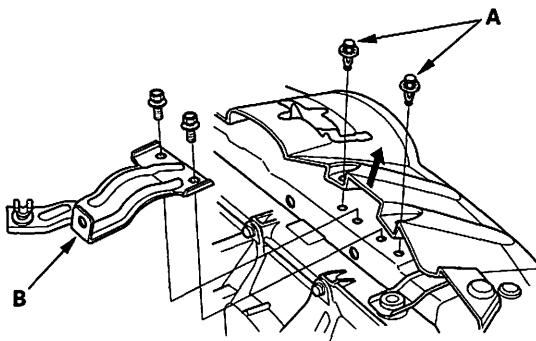
Alternator Removal and Installation

Removal

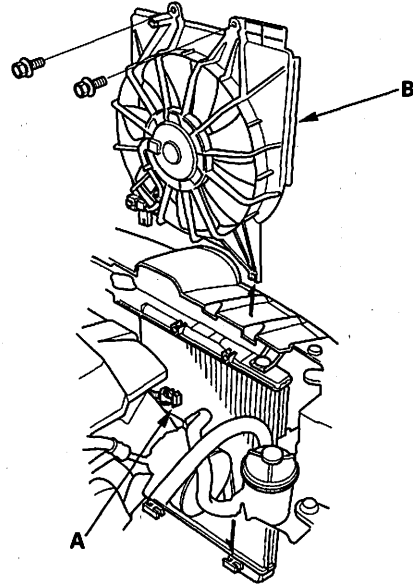
1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the drive belt (see page 4-31).
4. Remove the clip (A), then remove the coolant reservoir (B) from the holder.



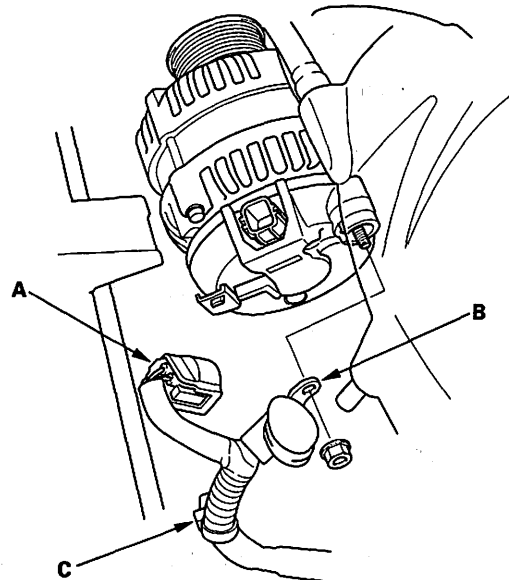
5. Remove the clips (A), then remove the support rod clamp bracket (B).



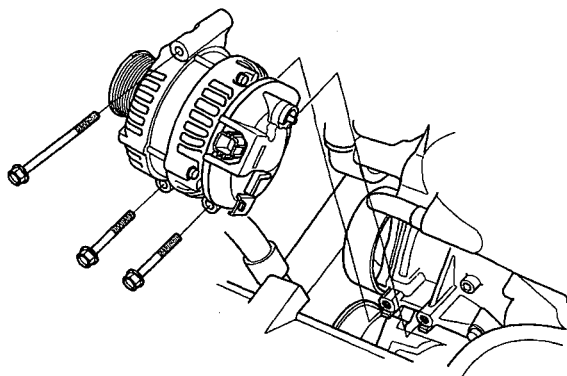
6. Disconnect the A/C condenser fan motor connector (A), then remove the A/C condenser fan shroud assembly (B).



7. Disconnect the alternator connector (A) and BLK wire (B), then remove the harness clamp (C) from the alternator.

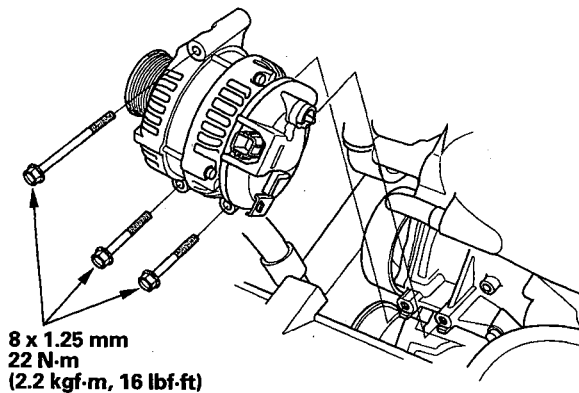


8. Remove the alternator.

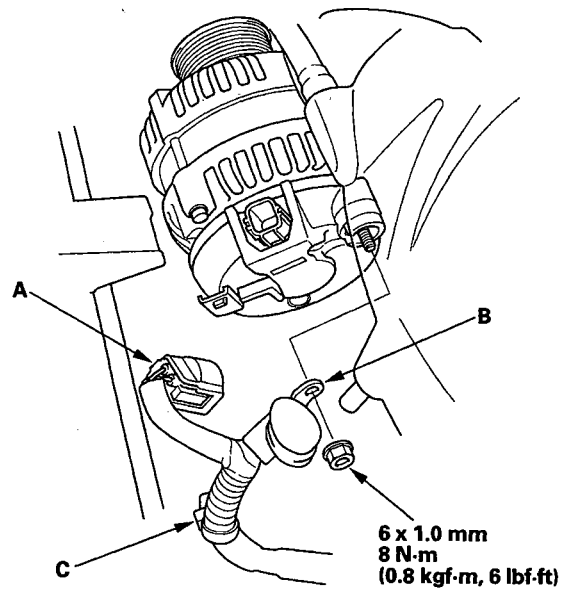


Installation

1. Install the alternator.



2. Connect the alternator connector (A) and BLK wire (B), then install the harness clamp (C) to the alternator.

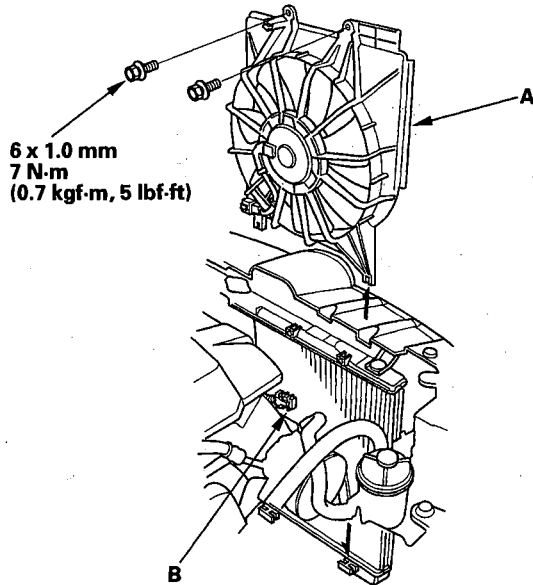


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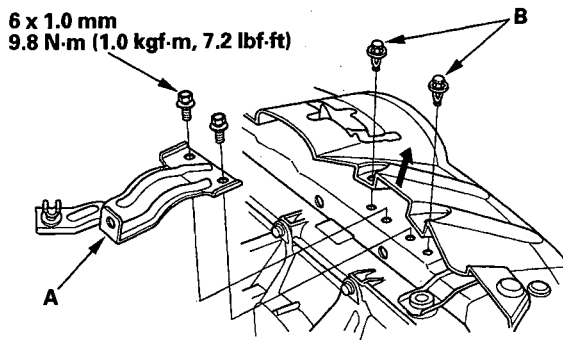
Charging System

Alternator Removal and Installation (cont'd)

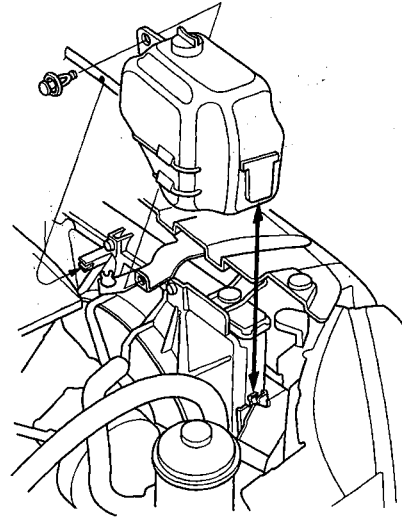
3. Install the A/C condenser fan shroud assembly (A), then connect the A/C condenser fan motor connector (B).



4. Install the support rod clamp bracket (A), then install the clips (B).



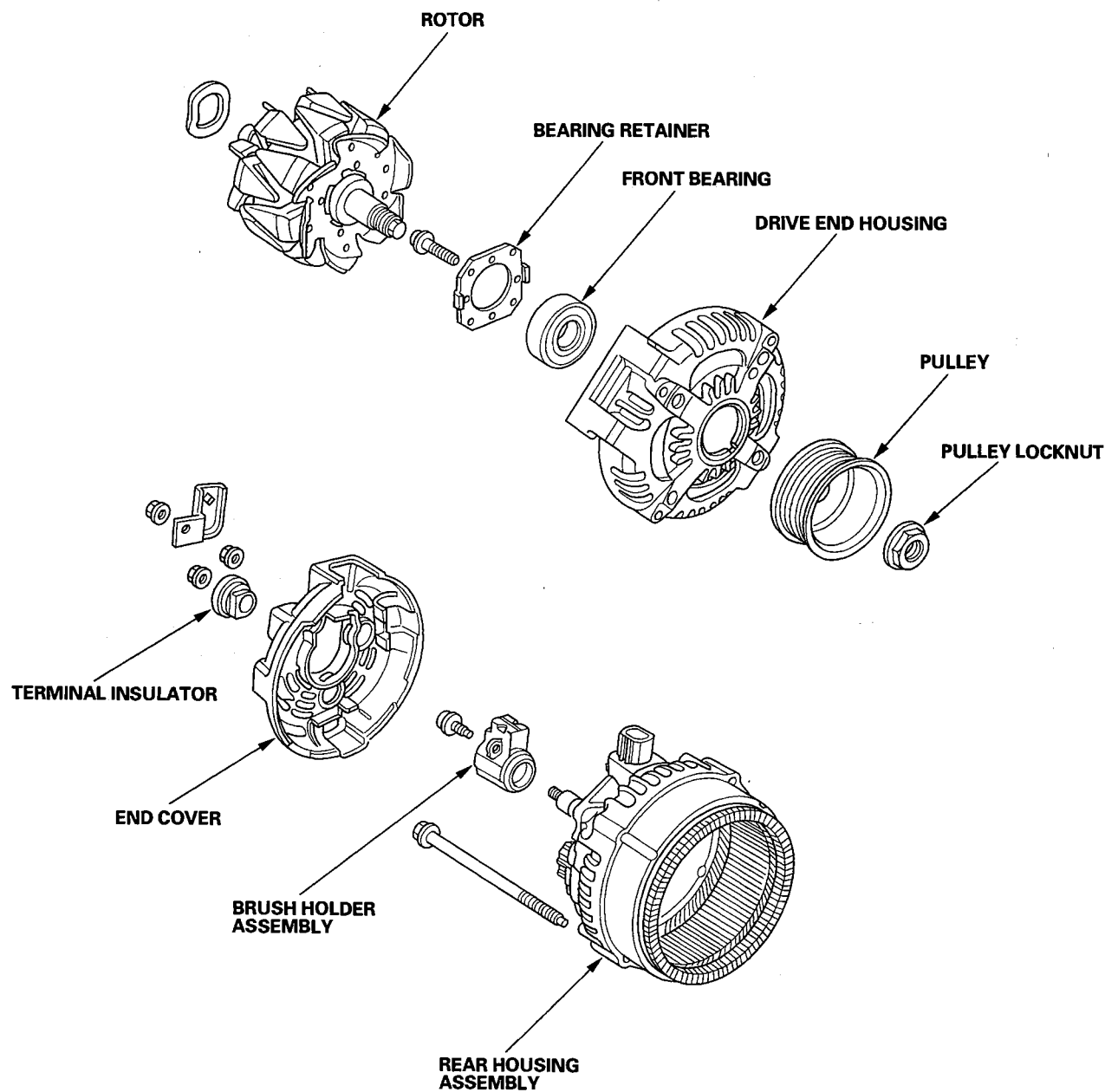
5. Install the coolant reservoir.



6. Install the drive belt (see page 4-31).
7. Connect the positive cable to the battery first, then connect the negative cable.
8. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.
9. Set the clock.

Alternator Overhaul

Exploded View



(cont'd)

Charging System

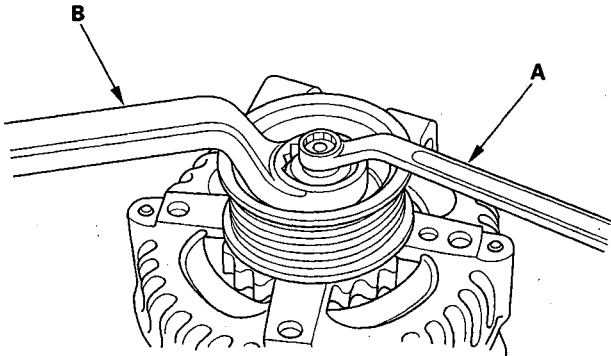
Alternator Overhaul (cont'd)

Special Tools Required

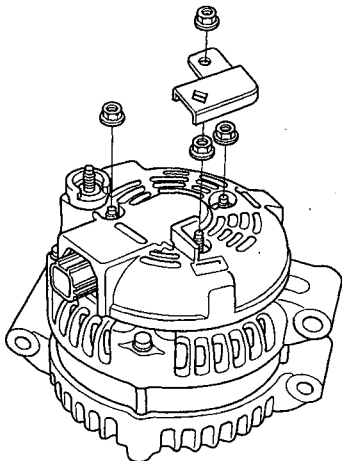
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

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

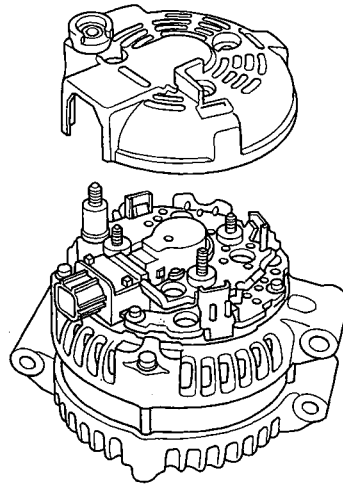
1. Test the alternator and regulator before you remove them (see page 4-28).
2. Remove the alternator (see page 4-34).
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



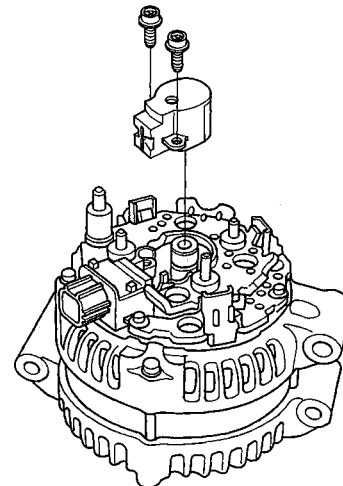
4. Remove the harness stay and the three flange nuts from the alternator.



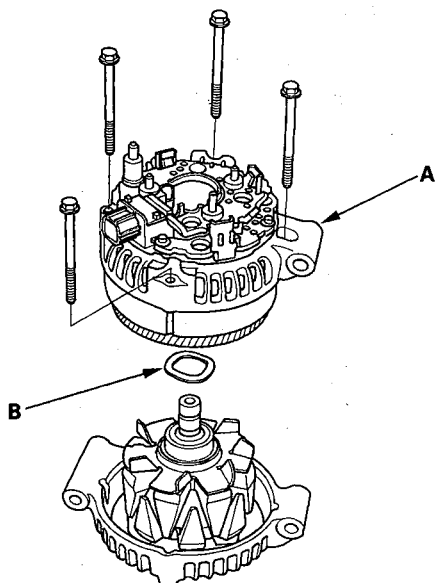
5. Remove the end cover.



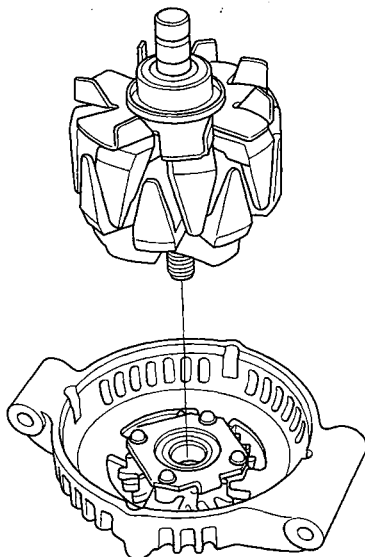
6. Remove the brush holder.



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



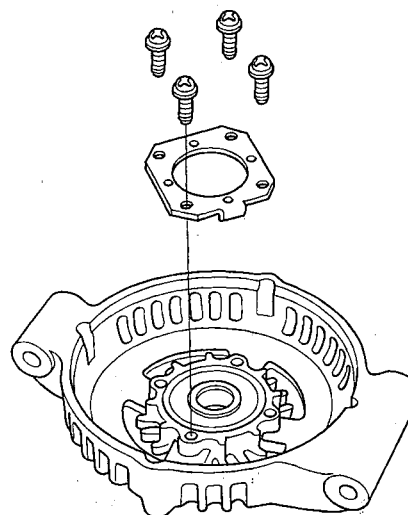
8. If you are not replacing the front bearing, go to step 13. Remove the rotor from the drive end housing.



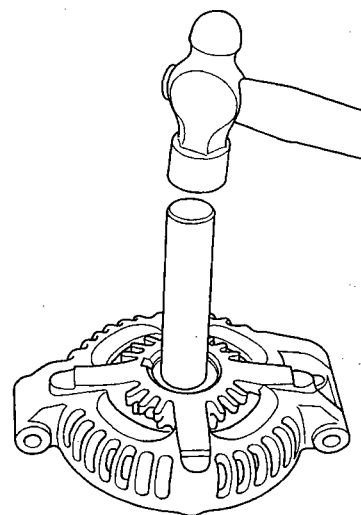
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.

- 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.

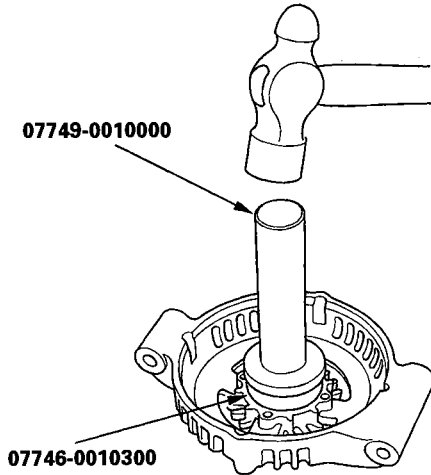


(cont'd)

Charging System

Alternator Overhaul (cont'd)

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



Alternator Brush Inspection

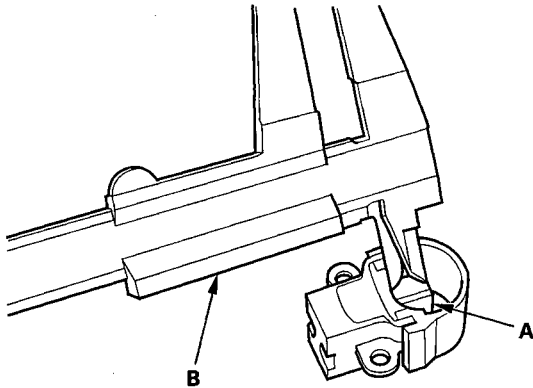
13. Measure the length of both brushes (A) with vernier calipers (B).

- If either brush is shorter than the service limit, replace the brush holder assembly.
- If brush length is OK, go to step 14.

Alternator Brush Length

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

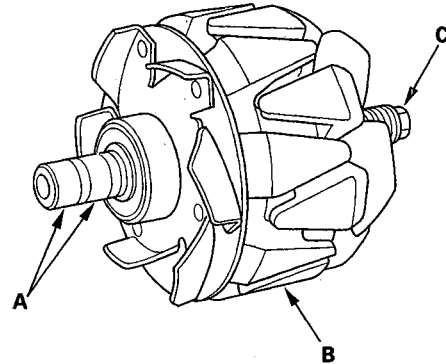
Service Limit: 1.5 mm (0.06 in.)



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.

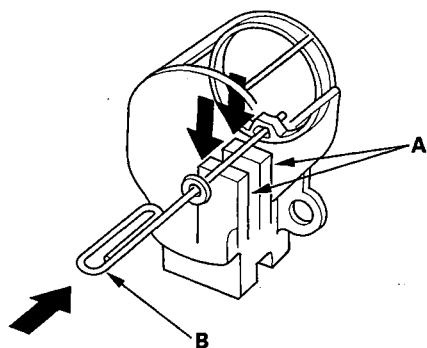


15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).

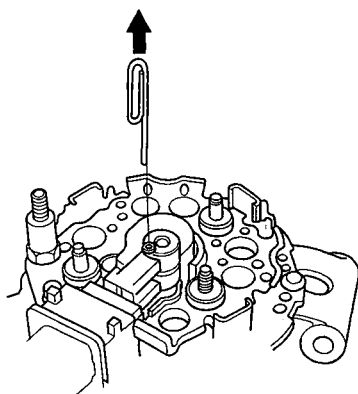
- If there is no continuity, replace the rear housing assembly, and go to step 16.
- If there is continuity, replace the rotor assembly.

Alternator Reassembly

16. If you removed the pulley, put the rotor in the drive end housing, then tighten its locknut to 110 N·m (11.2 kgf·m, 81.0 lbf·ft).
17. Remove any grease or any oil from the slip rings.
18. Put the rear housing assembly and drive end housing/rotor assembly together, tighten the four through bolts.
19. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.6 mm (0.06 in.) diameter) to hold them there.



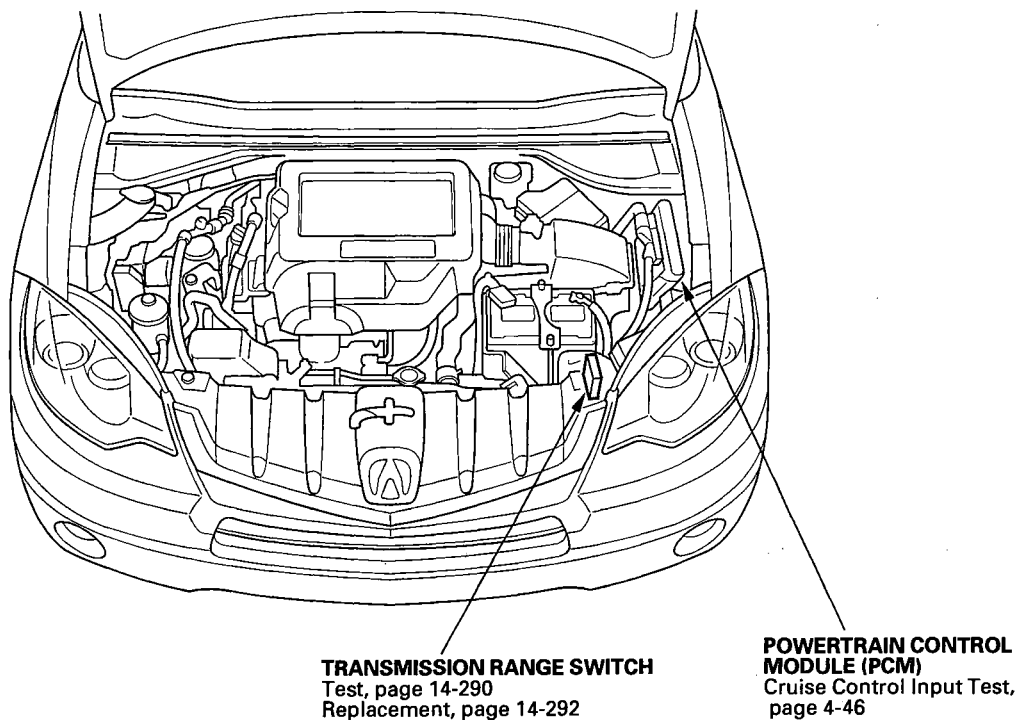
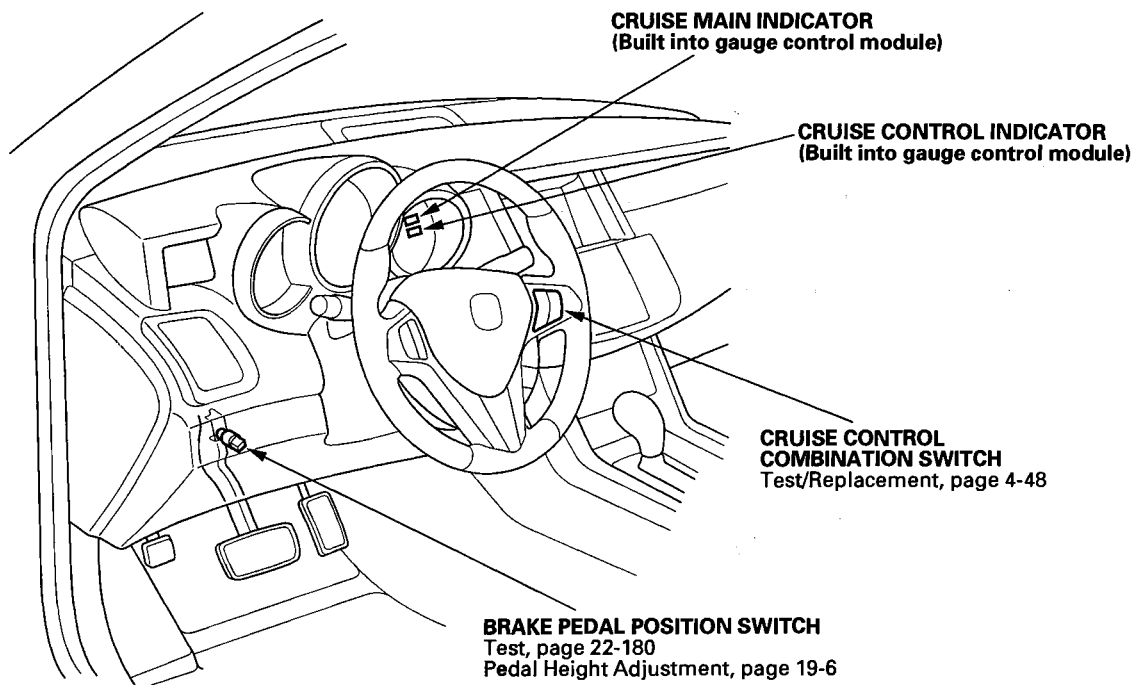
20. Install the brush holder, and pull out the pin.



21. Install the end cover.
22. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.
23. Install the alternator (see page 4-34) and drive belt (see page 4-31).

Cruise Control

Component Location Index





Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check for PGM-FI DTCs (see page 11-3). 2. Check the No. 3 (15 A) fuse in the under-dash fuse/relay box. 3. Do the cruise control input test (see page 4-46). 4. Do the cruise control combination switch test (see page 4-48).	
Cruise control can be set, but the cruise main indicator does not come on	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the gauge control module self-diagnostic function procedure (see page 22-258). 3. Do the cruise control input test (see page 4-46). Test the cruise control main switch signal input.	Faulty gauge control module
Cruise control can be set, but the cruise control indicator does not come on	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the gauge control module self-diagnostic function (see page 22-258). 3. Do the cruise control input test (see page 4-46). Test the cruise control indicator signal input.	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 DTCs (see page 11-3). 2. Do the cruise control input test (see page 4-46). Test the cruise control set/decel, resume/accel switch signal input. 3. Do the cruise control combination switch test (see page 4-48).	Open circuit, loose or disconnected terminals: GRY or LT BLU
Set speed does not cancel when the brake pedal is pressed	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the cruise control input test (see page 4-46). Test the brake pedal position switch signal input. 3. Do the brake pedal position switch test (see page 19-6).	• Short to power on the BRN wire • Faulty brake pedal position switch
Set speed does not cancel when the cruise control main switch is pressed	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the cruise control input test (see page 4-46). Test the cruise control main switch signal input. 3. Do the cruise control combination switch test (see page 4-48).	Short to power on the LT GRN wire
Set speed does not cancel when the cancel switch is pressed	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the cruise control input test (see page 4-46). Test the cruise control cancel switch signal input. 3. Do the cruise control combination switch test (see page 4-48).	Open circuit, loose or disconnected terminals: GRY or LT BLU

(cont'd)

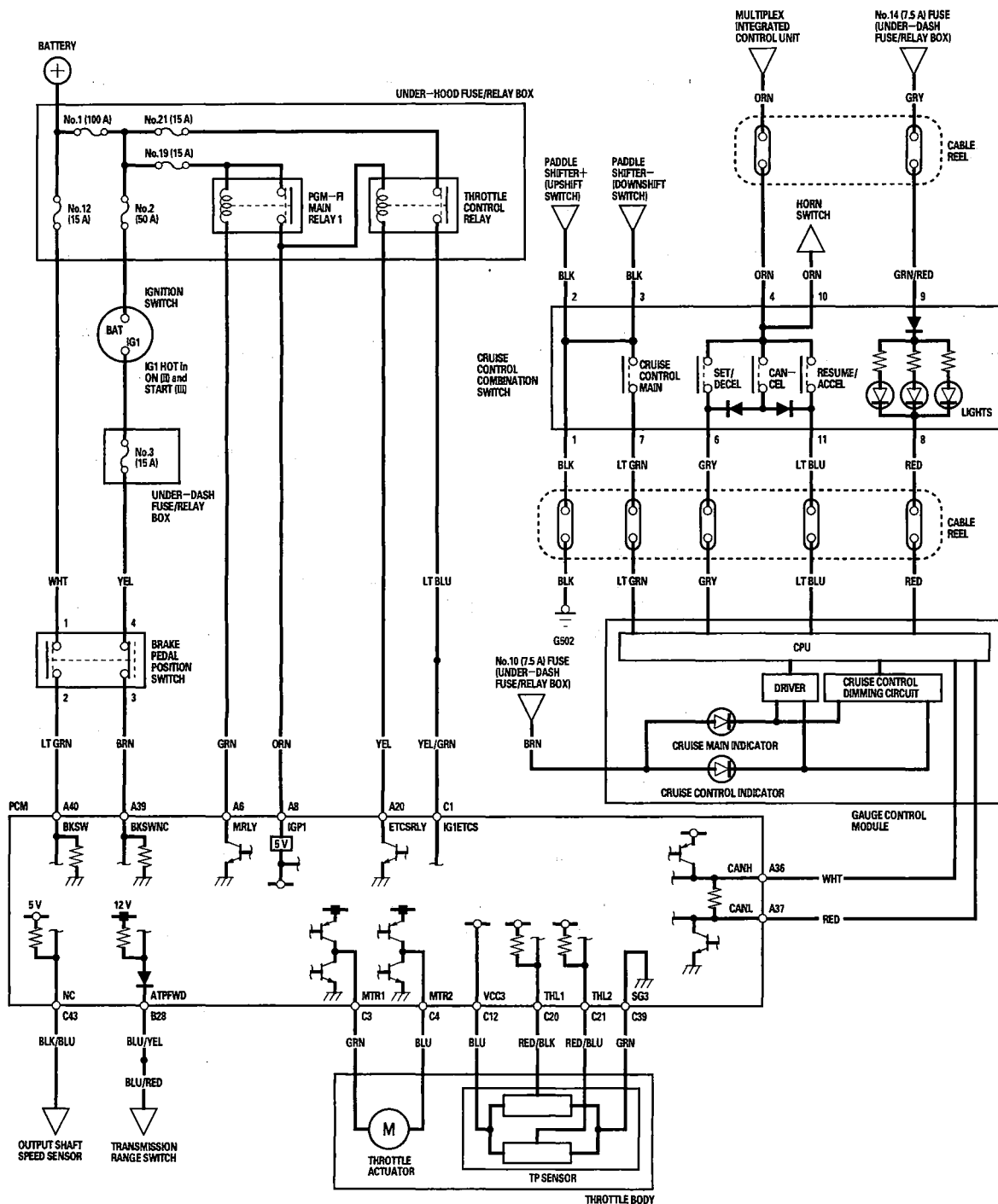
Cruise Control

Symptom Troubleshooting Index (cont'd)

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 DTCs (see page 11-3). 2. Check the brake pedal position switch adjustment (see page 19-6). 3. Check the No. 3 (15 A) fuse in the under-dash fuse/relay box. 4. Do the cruise control input test (see page 4-46). Test the cruise control resume/accel switch signal input. Test the brake pedal position switch signal input. 5. Do the cruise control combination switch test (see page 4-48).	• Faulty brake pedal position switch • Open circuit, loose or disconnected terminals: LT BLU
With the ignition switch ON (II), and the lighting switch turned on, the cruise control combination switch illumination does not come on	Replace the cruise control combination switch (see page 4-48).	



Circuit Diagram



Cruise Control

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, troubleshoot the DLC circuit (see page 11-229).
4. Go to PGM-FI, and check for DTCs.
5. 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
Brake switch signal	Brake pedal pressed, then released	CRUISE BRAKE.SW should indicate OFF when the brake pedal is pressed and ON when the brake pedal is released.	• Faulty brake pedal position switch • Blown No. 3 (15 A) fuse in the under-dash fuse/relay box • An open in the wire between the powertrain control module (PCM) and the brake pedal position switch • A wire shorted to ground between the PCM and the brake pedal position switch
Transmission range switch signal	Shift lever in D and S	SHIFT/CLUTCH SW should indicate ON in P, R and N and OFF in D and S.	• 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 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 main switch • An open in the wire between the gauge control module and the cruise control main switch • A wire shorted to ground between the gauge control module and the cruise control main 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

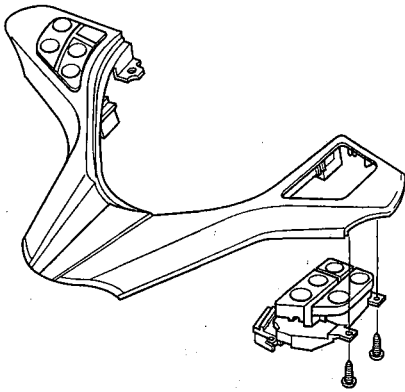


Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Resume switch signal	Resume/accel switch pressed and released	CRUISE CONTROL RESUME SW should indicate ON when the resume/accel switch is pressed and OFF when the resume/accel switch is released.	• Faulty 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
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 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 combination switch • An open in the wire between the cruise control combination switch and ground
Cruise control indicator signal	Start the engine, turn the cruise control main switch on, and drive the vehicle to speeds over 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 canceled.	Faulty gauge control module

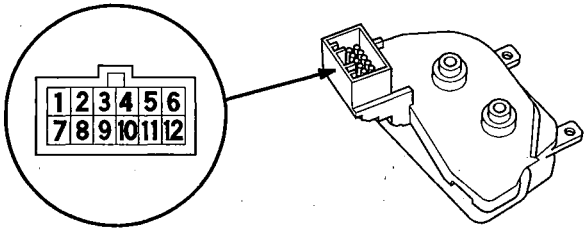
Cruise Control Combination Switch Test/Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-12), and the precautions and procedures (see page 24-14), in the SRS before doing repairs or service.

- 1. Remove the driver’s airbag (see page 24-146).
- 2. Remove the steering wheel trim (see page 17-22).
- 3. 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 more positions, replace the switch.



Terminal side of male terminals

Terminal Position	1	7	4	11	6
Cruise control main switch (ON)	○	○			
Cruise control main switch (OFF)					
Set/decel (PRESSED)			○	○	○
Resume/accel (PRESSED)			○	○	
Cancel (PRESSED)			○	○	○

- 5. Check for continuity between terminals No. 1, No. 2, and No. 3 on the switch. There should be continuity. If a failure occurs between terminals No. 1, No. 2, and No. 3, replace the cruise control combination switch.
- 6. Check for continuity between terminals No. 4 and No. 10 on the switch. There should be continuity. If a failure occurs between terminals No. 4 and No. 10, replace the cruise control combination switch.