

Engine Electrical

Special Tools 4-2

Starting System

Component Location Index 4-3

Circuit Diagram 4-4

Starter Circuit Troubleshooting 4-5

Clutch Interlock Switch Test 4-6

Starter Solenoid Test 4-7

Starter Performance Test 4-8

Starter Replacement 4-10

Starter Overhaul 4-12

Ignition System

Component Location Index 4-20

Circuit Diagram 4-21

Ignition Timing Inspection 4-22

Ignition Coil Removal/Installation 4-23

Spark Plug Inspection 4-24

Charging System

Component Location Index 4-25

Circuit Diagram 4-26

Charging Circuit Troubleshooting 4-27

Drive Belt Inspection 4-32

Drive Belt Replacement 4-32

Drive Belt Auto-tensioner Inspection 4-33

Drive Belt Auto-tensioner Replacement 4-34

Alternator Replacement 4-35

Alternator Overhaul 4-36

Cruise Control

Component Location Index 4-47

Circuit Diagram 4-48

Symptom Troubleshooting Index 4-49

Cruise Control Communication Circuit

 Troubleshooting (A/T) 4-51

Cruise Control Unit Input Test 4-52

Main Switch Test/Replacement 4-54

Set/Resume/Cancel Switch Test/Replacement .. 4-54

Cruise Control Actuator Test 4-55

Cruise Control Actuator/Cable Replacement 4-56

Actuator Cable Adjustment 4-57

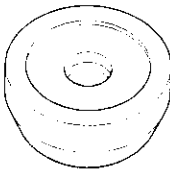
Clutch Pedal Position Switch Test 4-58



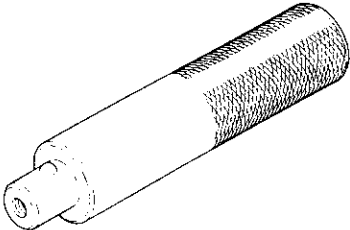
Engine Electrical

Special Tools

Number	Tool Number	Description	Qty
①	07746-0010400	Attachment, 52 x 55 mm	1
②	07749-0010000	Driver	1



①

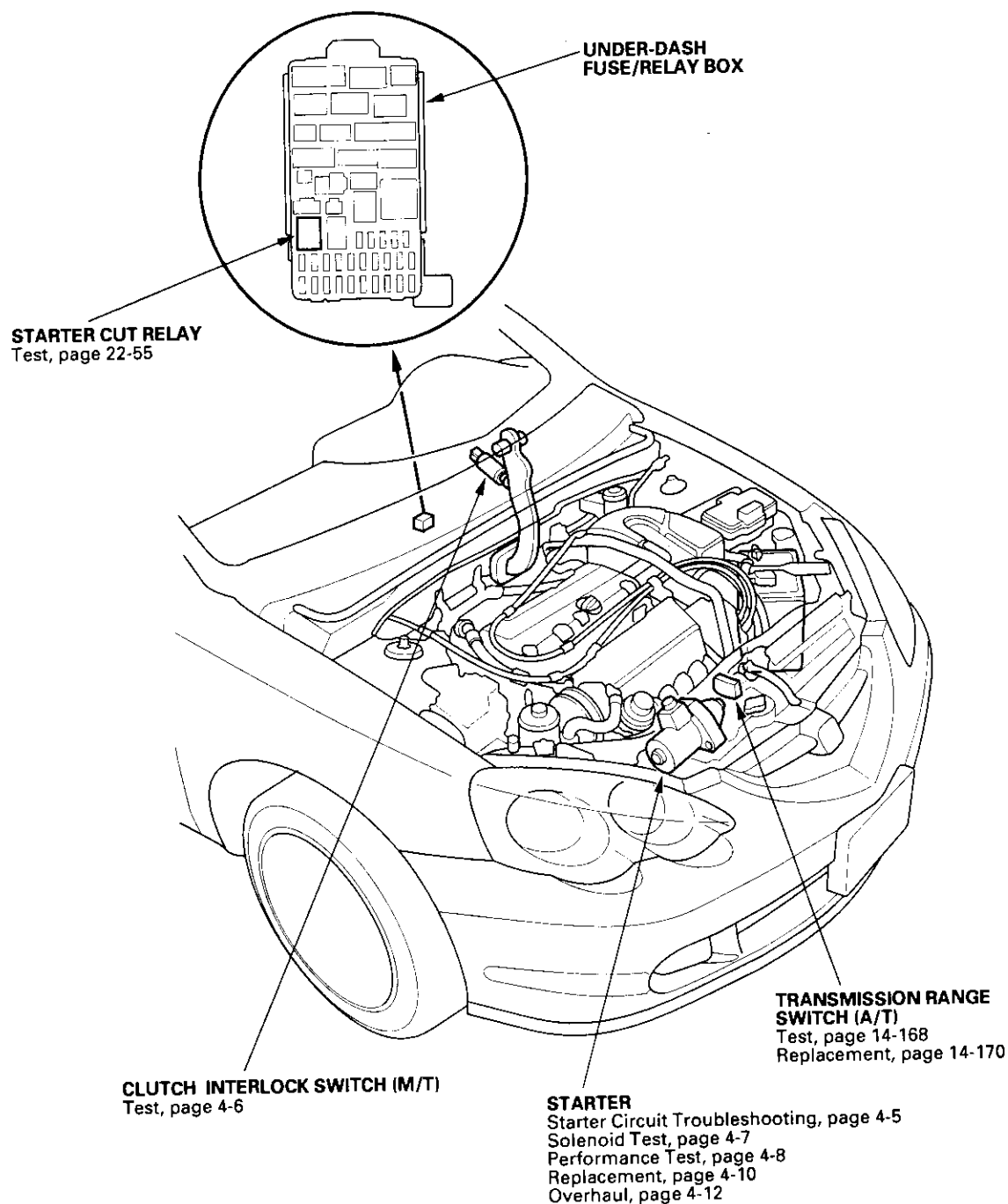


②

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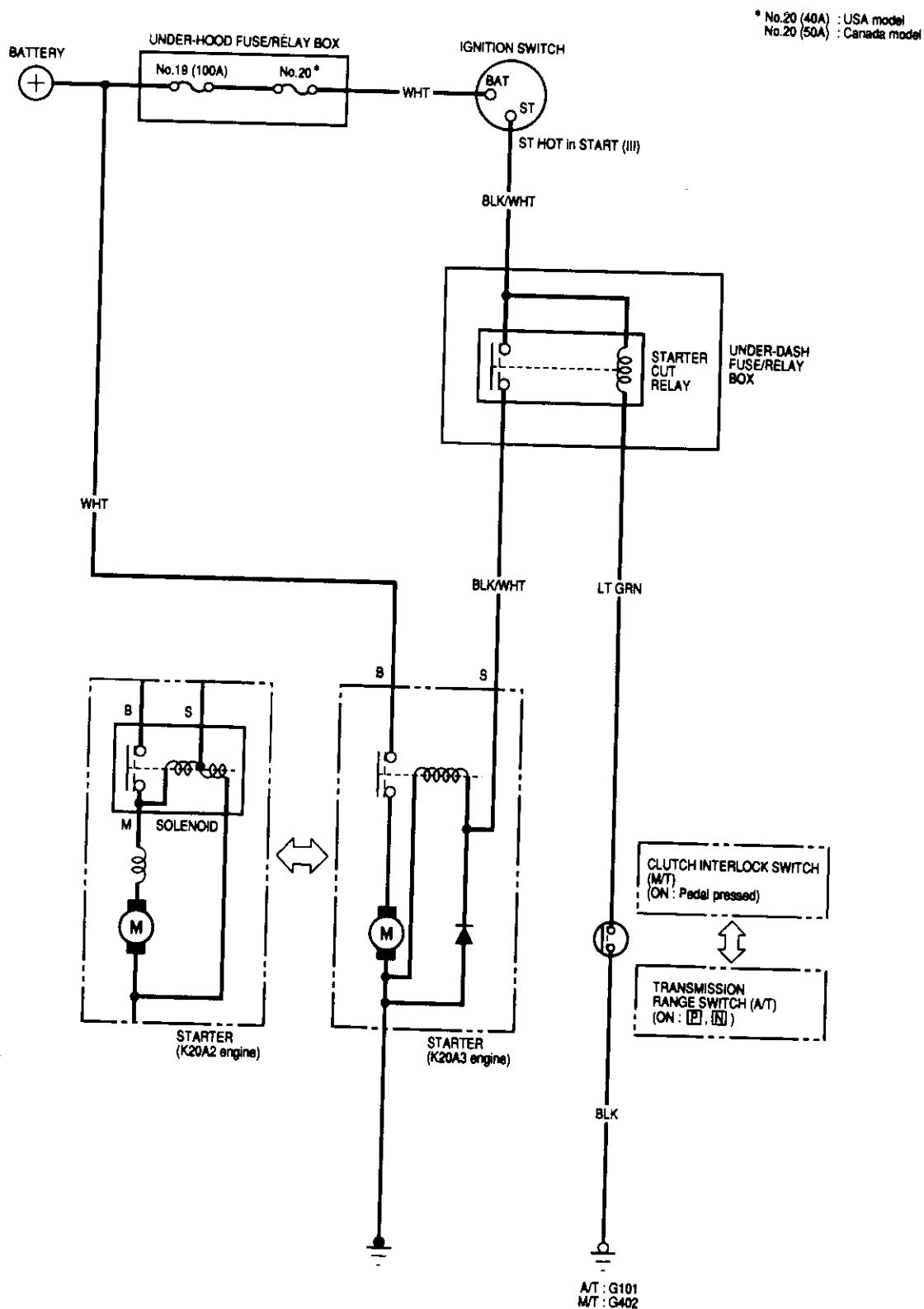
Component Location Index



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Starting System

Circuit Diagram



Starter Circuit Troubleshooting

NOTE:

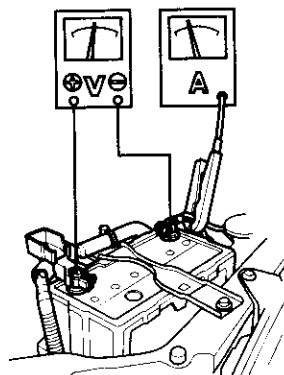
- Air temperature must be between 59° and 100°F (15° and 38°C) during this procedure.
- After this test, or any subsequent repair, reset the Engine Control Module (ECM)/Powertrain Control Module (PCM) to clear any Diagnostic Trouble Codes (DTCs) (see page 11-4).
- The battery must be in good condition and fully charged.
- If you disconnect the battery, do the ECM/PCM idle learn procedure (see page 11-149).

Recommended Procedure:

- Use a starter system tester.
- Connect and operate the equipment in accordance with the manufacturer's instructions.

Alternate Procedure

- Hook up the following equipment:
 - Ammeter, 0–400 A
 - Voltmeter, 0–20 V (accurate within 0.1 volt)
 - Tachometer, 0–1200 rpm



- Remove the No. 17 (15A) fuse from the under-dash fuse/relay box.
- With the shift lever in **N** or **P** (A/T) or clutch pedal pressed (M/T), turn the ignition switch to start (III).

Did the starter crank the engine normally?

YES—The starting system is OK. ■

NO—Go to step 4.

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

Did the starter crank the engine?

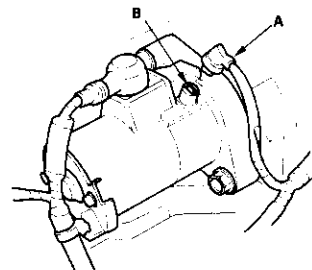
YES—Repairing the loose connection fixed the problem. The starting system is now OK. ■

NO—If starter will not crank the engine at all, go to step 5. If it cranks the engine erratically or too slowly, go to step 7. If it won't disengage from the flywheel or torque converter ring gear when you release the key, check for the following until you find the cause.

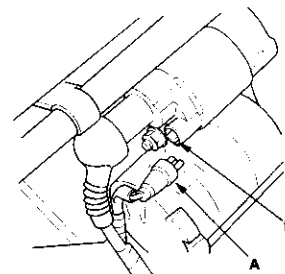
- Solenoid plunger and switch malfunction
- Dirty drive gear or damaged overrunning clutch

- Make sure the transmission is in neutral, then disconnect the BLK/WHT wire (A) from the starter solenoid (B). Connect a jumper wire from the battery positive terminal to the solenoid terminal.

K20A3 engine:



K20A2 engine:



Did the starter crank the engine?

YES—Go to step 6.

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

(cont'd)

Starting System

Starter Circuit Troubleshooting (cont'd)

6. Check the following items in the order listed until you find the open circuit.
 - Check the BLK/WHT wire and connectors between the under-dash fuse/relay box and the ignition switch, and between the under-dash fuse/relay box and the starter.
 - Check the ignition switch (see page 22-93).
 - Check the transmission range switch and connector (A/T) or the clutch interlock switch and connector (M/T).
 - Check the starter cut relay.
 - Check the BLK wire between the clutch interlock switch and G101(A/T) or G402(M/T).

7. Check the cranking voltage and current draw.

Is cranking voltage greater than or equal to 8.5 V (K20A3 engine)/8.7 V (K20A2 engine) and current draw less than or equal to 350 A (K20A3 engine)/230 A (K20A2 engine)?

YES—Go to step 8.

NO—Replace the starter, or remove and disassemble it, and check for the following until you find the cause.

- Starter armature dragging
- Shorted armature winding
- Excessive drag in engine

8. Check the engine speed while cranking the engine.

Is the engine speed above 100 rpm?

YES—Go to step 9.

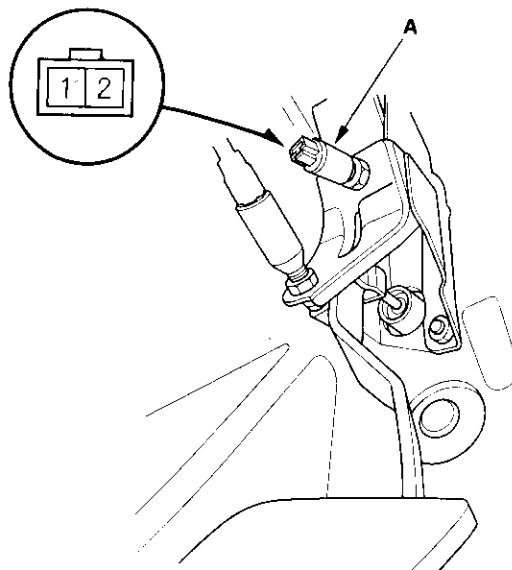
NO—Replace the starter, or remove and disassemble it, and check for the following until you find the cause.

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

9. Remove the starter, and inspect its drive gear and the flywheel or torque converter ring gear for damage. Replace any damaged parts. ■

Clutch Interlock Switch Test

1. Disconnect the clutch interlock switch 2P connector.



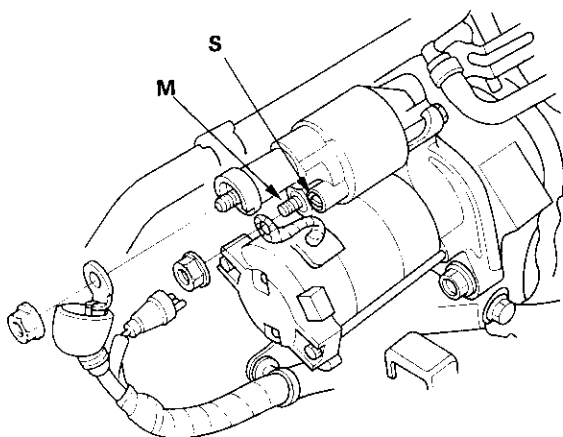
2. Remove the clutch interlock switch (A).
3. Check for continuity between the terminals according to the table.
 - If the continuity is not as specified, replace the clutch interlock switch.
 - If OK, install clutch interlock switch and adjust the clutch pedal height (see page 12-4).

Terminal	1	2
Clutch Interlock Switch		
PRESSED	○	○
RELEASED		

Starter Solenoid Test

K20A2 engine

1. Disconnect the S and M connectors from the starter solenoid.
2. Check the hold-in coil for continuity between the S terminal and the armature housing (ground). There should be continuity.
 - If there is continuity, go to step 3.
 - If there is no continuity, replace the solenoid.



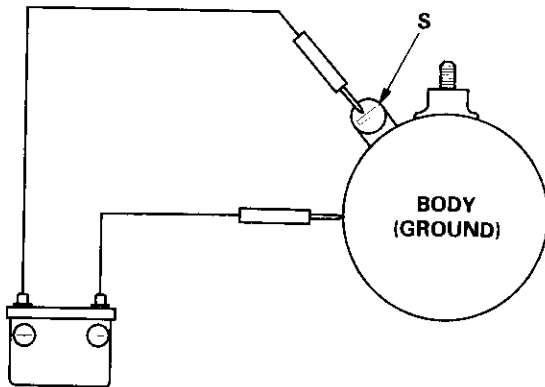
3. Check the pull-in coil for continuity between the S terminal and M terminal . There should be continuity.
 - If there is continuity, the solenoid is OK.
 - If there is no continuity, replace the solenoid.

Starting System

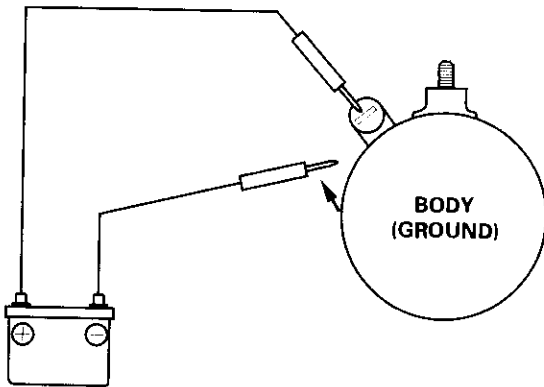
Starter Performance Test

K20A3 engine

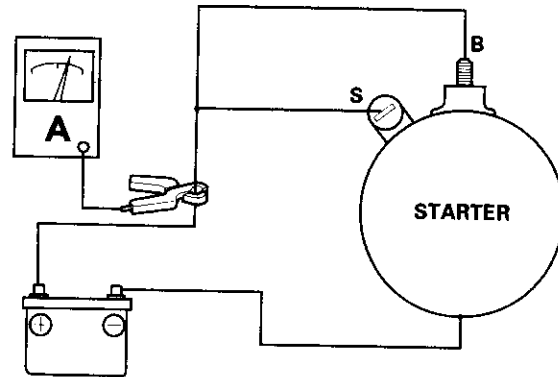
1. Disconnect the wire from the S terminal.
2. Make the connections as described below using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds.
3. Connect the battery as shown. If the starter pinion moves out, it is working properly.



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



5. Clamp the starter firmly in a vise.
6. Connect the starter to the battery as described in the diagram below, and confirm that the motor starts and keeps rotating.



7. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly.

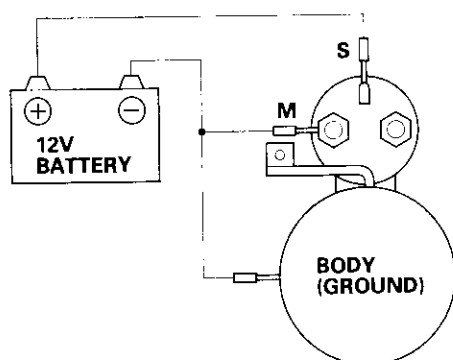
Specifications:

Electric current: 80 A or less

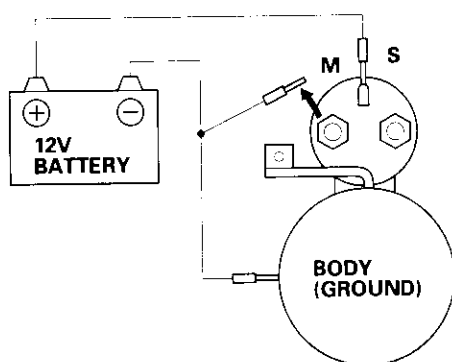
Motor speed: 2,600 rpm or more

K20A2 engine

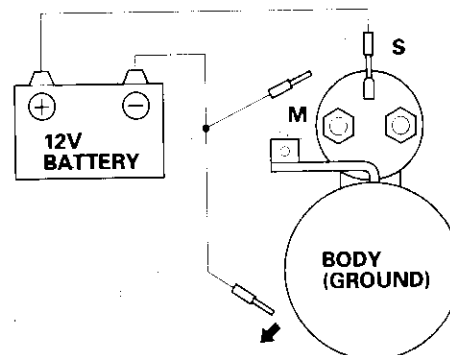
1. Disconnect the wires from the S terminal and the M terminal.
2. Make the connections as described below using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds.
3. Connect the battery as shown. Be sure to disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.



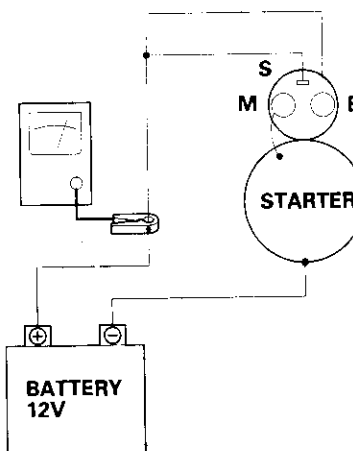
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil is working properly.



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



6. Clamp the starter firmly in a vise.
7. Connect the starter to the battery as described in the diagram below, and confirm that the motor starts and keeps rotating.



8. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly.

Specifications:

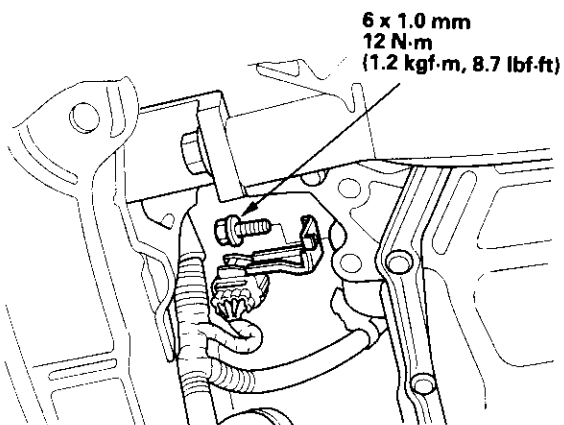
Electric current: 90 A or less

Motor speed: 3,000 rpm or more

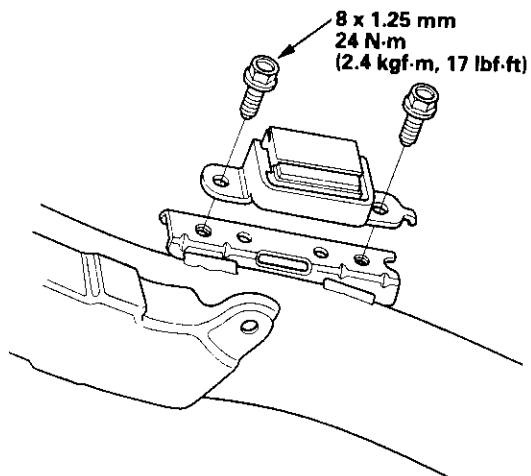
Starting System

Starter Replacement

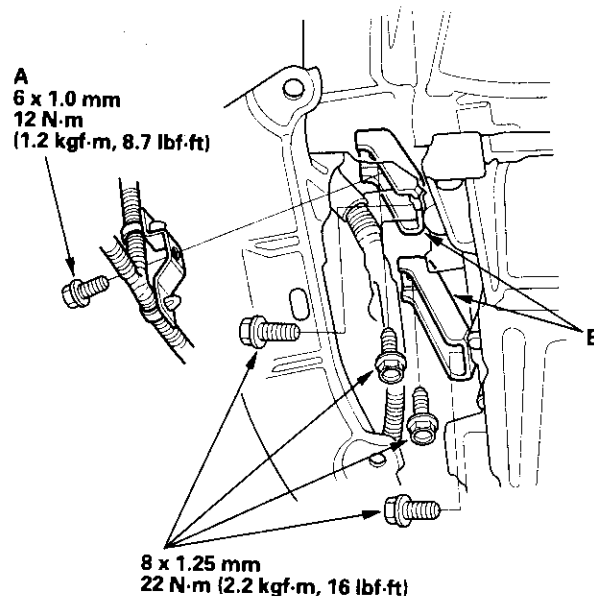
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Disconnect the knock sensor connector.
4. Disconnect the bolt securing the harness bracket (K20A3 engine).



5. Remove the front subframe damper (K20A2 engine).

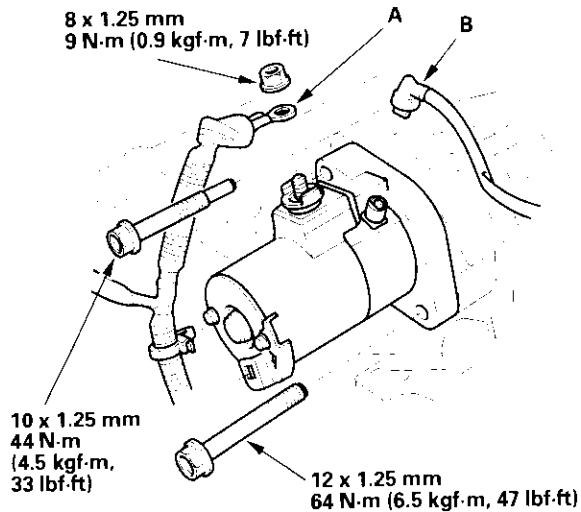


6. Remove the bolt (A) securing the harness bracket, then remove the intake manifold brackets (B) (K20A2 engine).

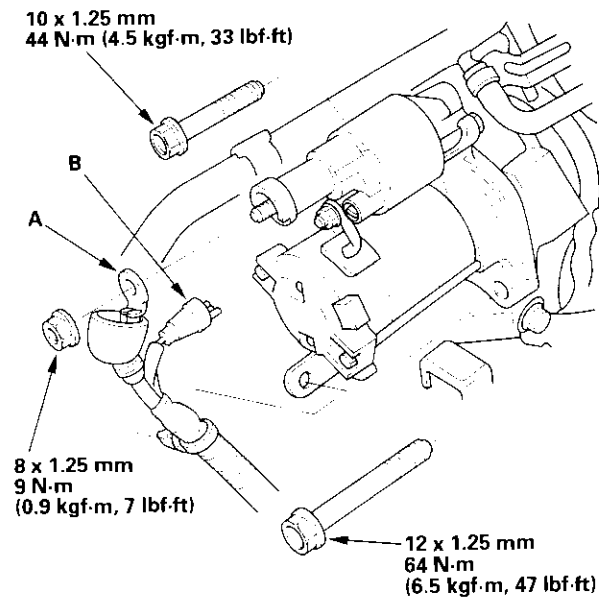


7. Disconnect the starter cable (A) from the B terminal on the solenoid, then disconnect the BLK/WHT wire (B) from the S terminal.

K20A3 engine:

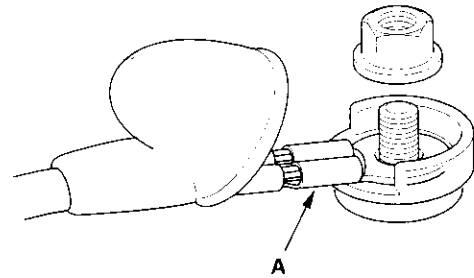


K20A2 engine:



8. Remove the two bolts holding the starter, then remove the starter.

9. Install the starter in the reverse order of removal. Make sure the crimped side of the ring terminal (A) is facing out.

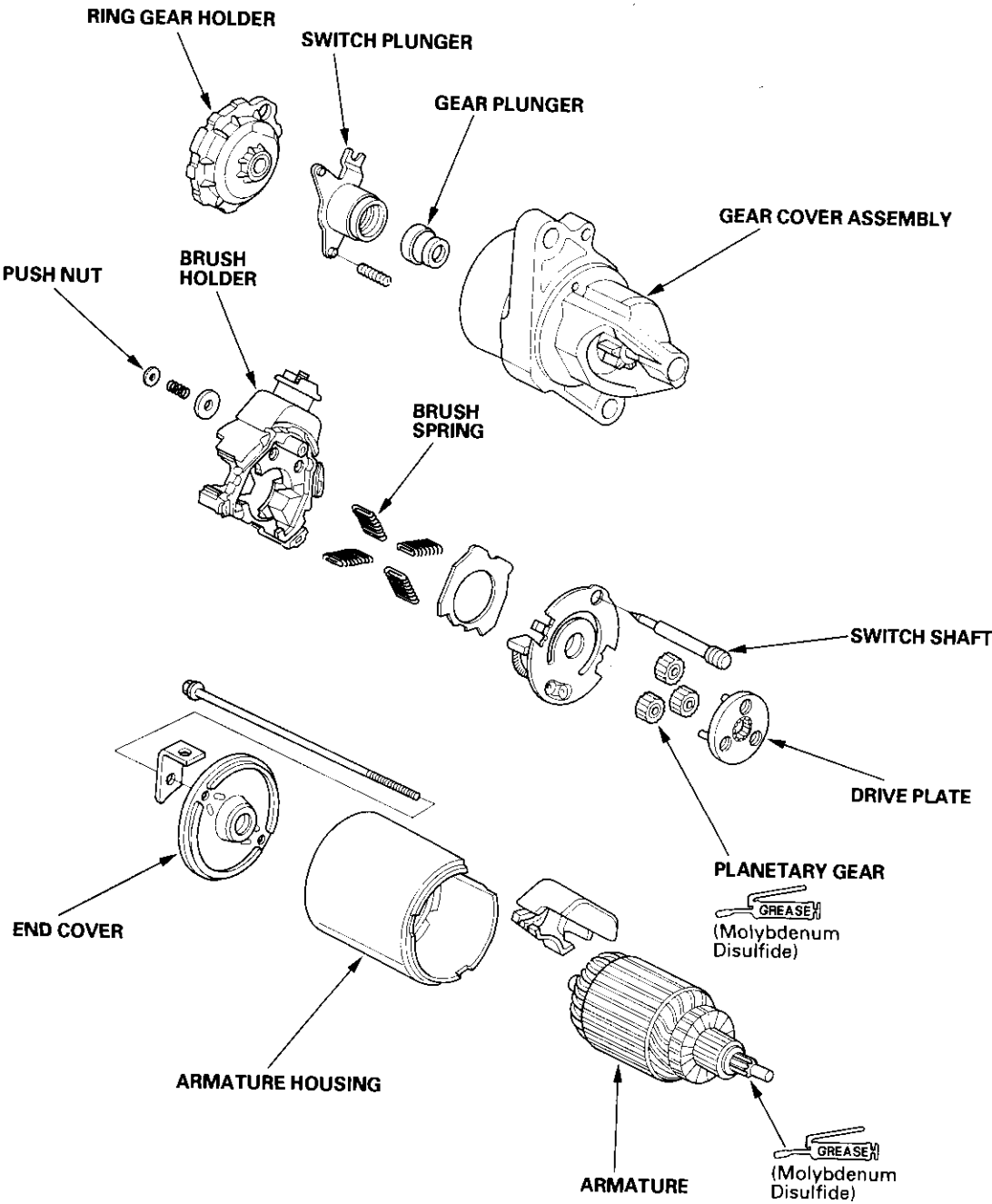


10. Connect the positive cable and negative cable to the battery.
11. Start the engine to make sure the starter operates properly.
12. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
13. Set the clock.
14. Perform the engine control module (ECM) / powertrain control module (PCM) idle learn procedure (see page 11-149), and power window control unit reset procedure (see page 22-139).

Starting System

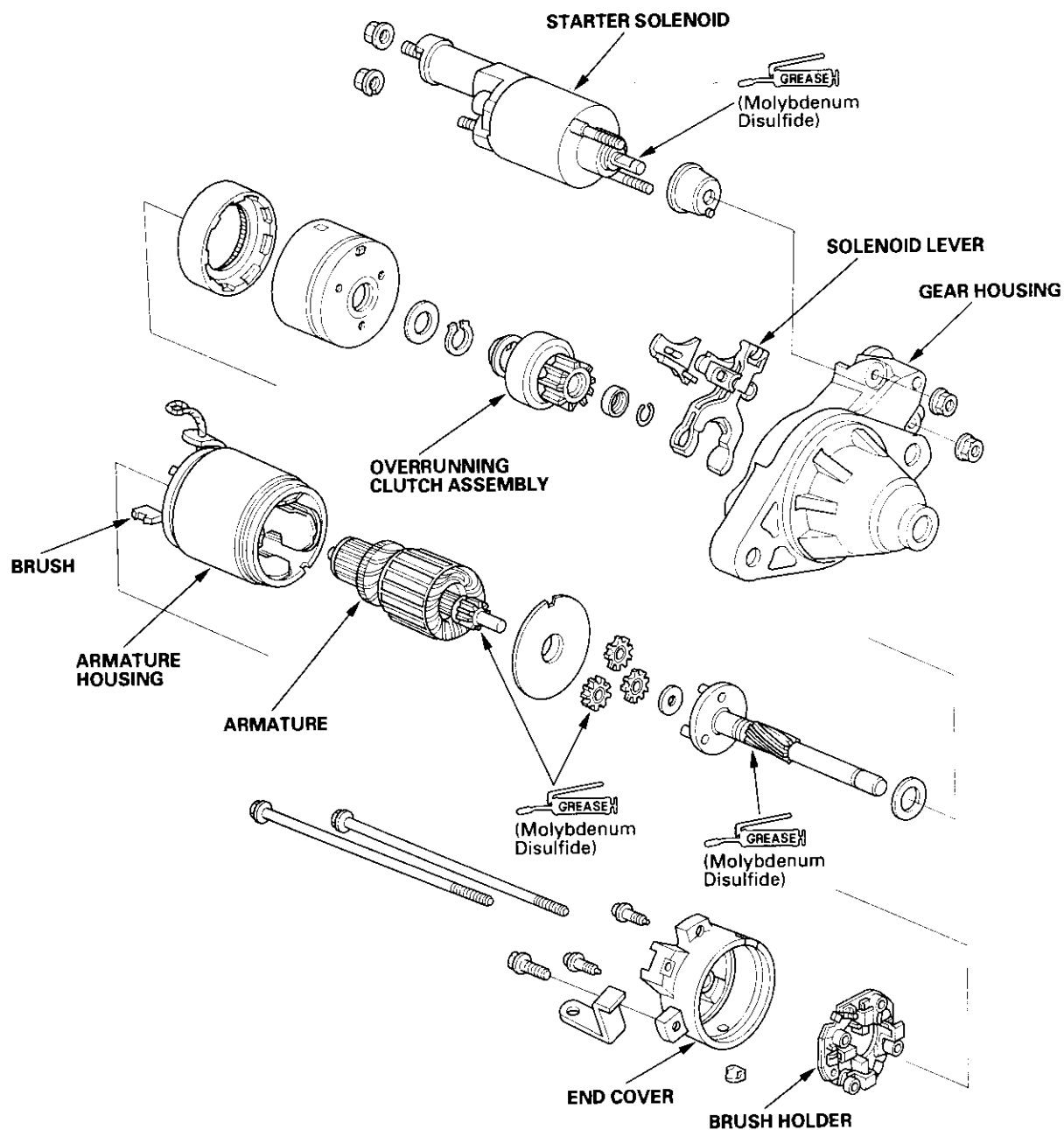
Starter Overhaul

Disassembly/Reassembly-K20A3 engine



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Disassembly/Reassembly-K20A2 engine



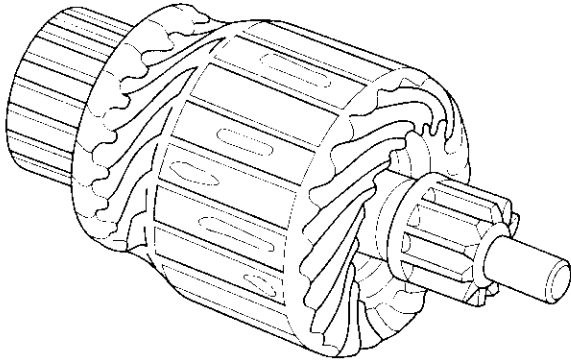
(cont'd)

Starting System

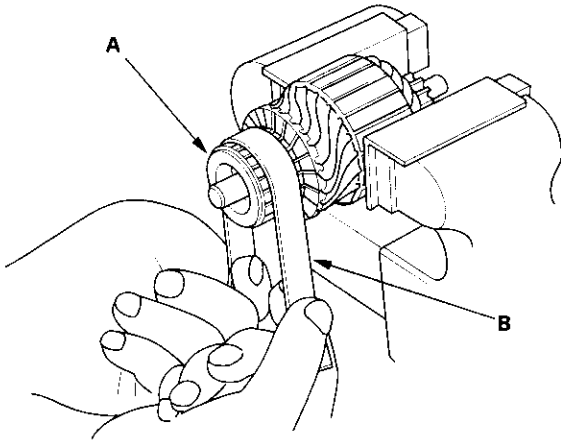
Starter Overhaul (cont'd)

Armature Inspection and Test

1. Remove the starter (see page 4-10).
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 with emery cloth or a lathe within 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

K20A3 engine:

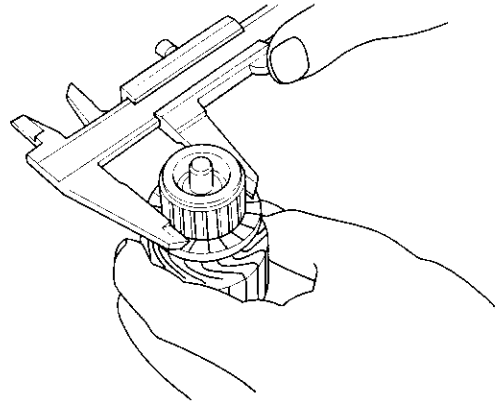
Standard (New): 28.0 – 28.1 mm
(1.102 – 1.106 in.)

Service Limit: 27.5 mm (1.083 in.)

K20A2 engine:

Standard (New): 28.0 mm (1.10 in.)

Service Limit: 27.0 mm (1.06 in.)



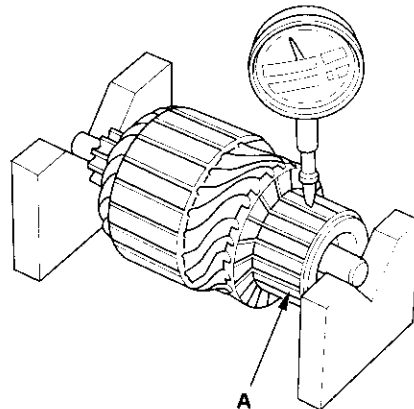
6. Measure the commutator (A) runout.

- 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.)



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

K20A3 engine:

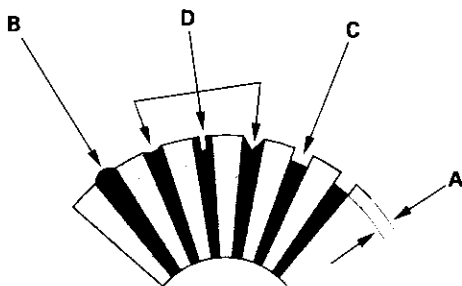
Standard (New): 0.40–0.50 mm (0.016–0.020 in.)

Service Limit: 0.15 mm (0.006 in.)

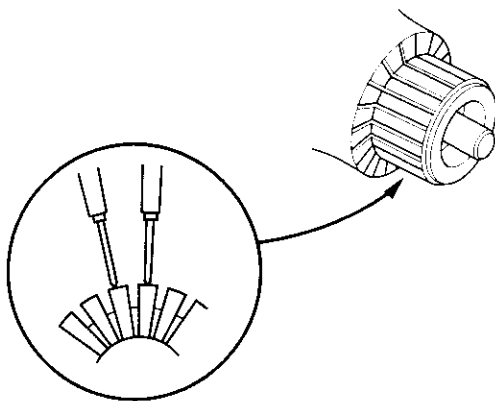
K20A2 engine:

Standard (New): 0.50–0.80 mm (0.020–0.031 in.)

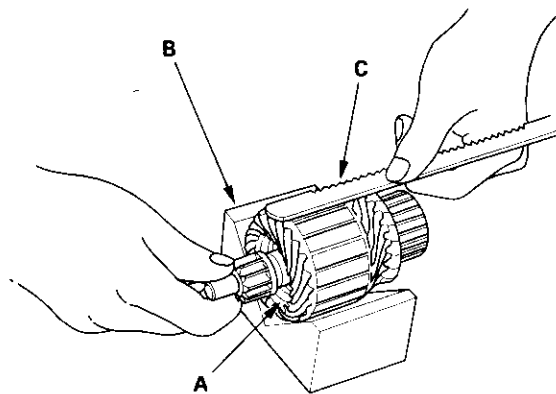
Service Limit: 0.20 mm (0.008 in.)



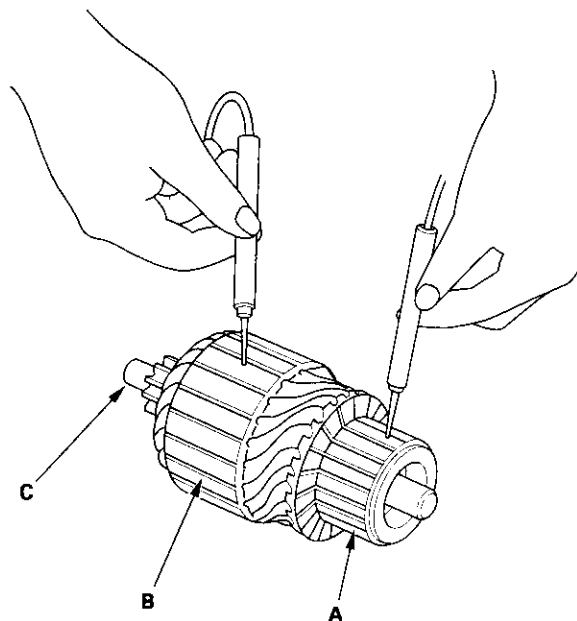
8. Check for continuity between the segments of the commutator. If an open circuit exists between any segments, replace the armature.



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



10. Check with an ohmmeter that no continuity exists between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If continuity exists, replace the armature.



(cont'd)

Starting System

Starter Overhaul (cont'd)

Starter Brush Inspection

11. Measure the brush length. If it is not within the service limit, replace the brush holder assembly.

Brush Length

K20A3 engine:

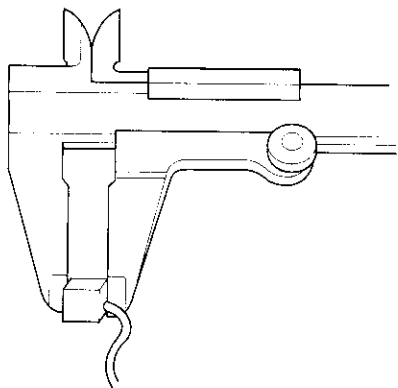
Standard (New): 11.1 – 11.5 mm (0.44 – 0.45 in.)

Service Limit: 4.3 mm (0.17 in.)

K20A2 engine:

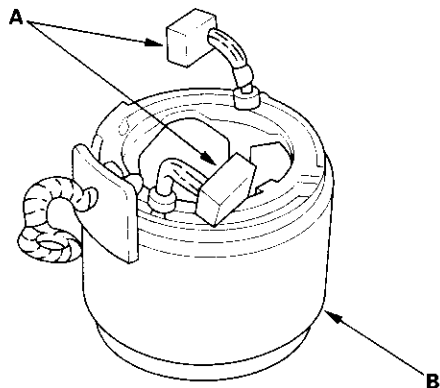
Standard (New): 14.0 – 14.5 mm (0.55 – 0.57 in.)

Service Limit: 9.0 mm (0.35 in.)



Starter Field Winding Test (K20A2 engine)

12. Check for continuity between the brushes (A) and the armature housing (B). If there is no continuity, replace the armature housing (B).

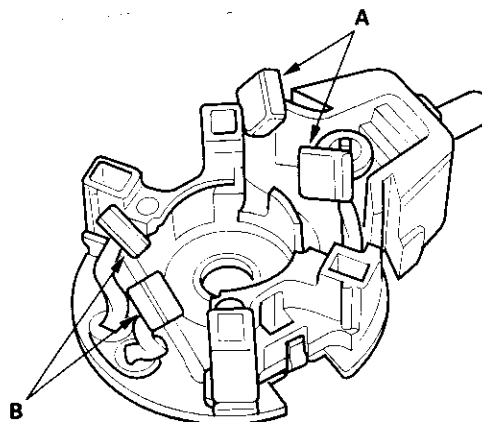


13. Check for continuity between each brush (A) and the armature housing (B). If there is continuity, replace the armature housing.

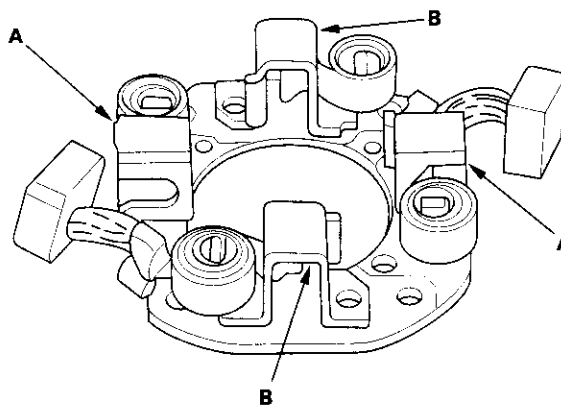
Starter Brush Holder Test

14. Check that there is no continuity between the (+) brush holder (A) and (-) brush holder (B). If there is continuity, replace the brush holder assembly.

K20A3 engine:



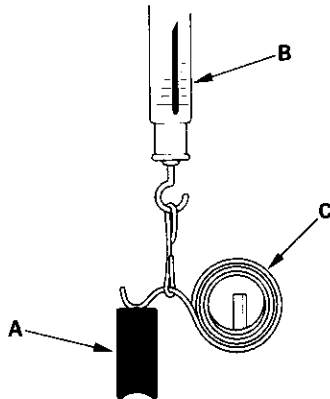
K20A2 engine:



Brush Spring Inspection (K20A2 engine)

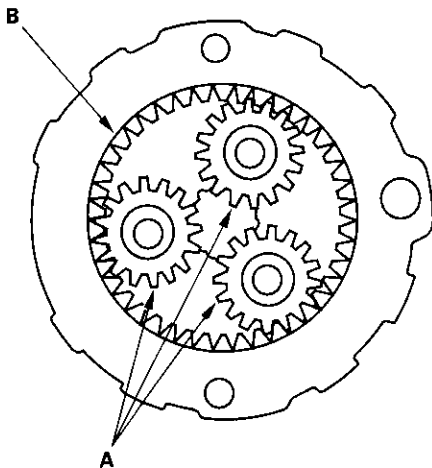
15. Insert the brush (A) into the brush holder, and bring the brush into contact with the commutator, then attach a spring scale (B) to the spring (C). Measure the spring tension at the moment the spring lifts off the brush. If the spring tension is not within specification, replace the spring.

Spring Tension: 13.7 – 17.7 N (1.40 – 1.80 kgf,
3.09 – 3.97 lbf)



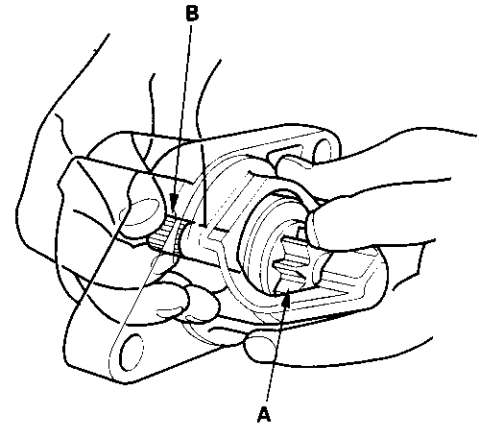
Planetary Gear Inspection

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



Overrunning Clutch Inspection (K20A3 engine)

17. Holding the drive gear (A), turn the gear shaft (B) clockwise. Check that the drive gear comes out to the other end. If the drive gear does not move smoothly, replace the gear cover assembly.



18. Holding the drive gear, turn the gear shaft counterclockwise. The gear shaft should rotate freely. If the gear shaft does not rotate smoothly, replace the gear cover assembly.
19. 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 flywheel or torque converter ring gear. Replace it if the starter drive gear teeth are damaged.

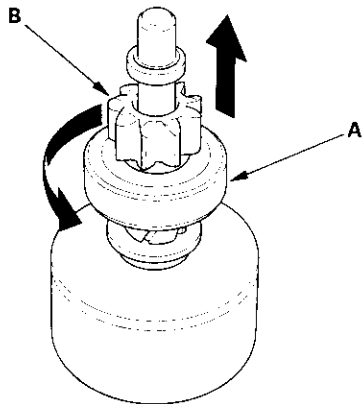
(cont'd)

Starting System

Starter Overhaul (cont'd)

Overrunning Clutch Inspection (K20A2 engine)

20. Slide the overrunning clutch along the shaft. Replace it if it does not slide smoothly.
21. Rotate the overrunning clutch (A) both ways. Does it lock in one direction and rotate smoothly in reverse? If it does not lock in either direction or it locks in both directions, replace it.

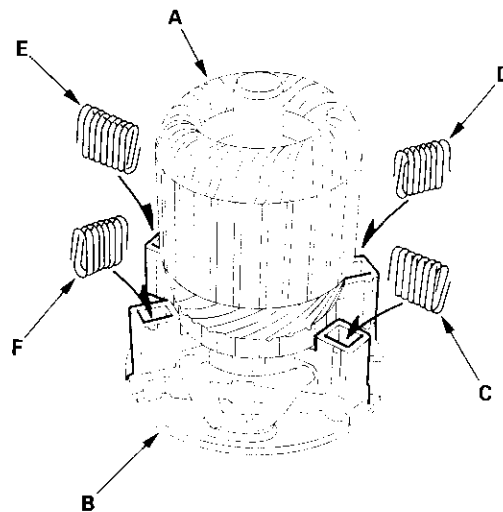


22. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the flywheel ring gear. Replace it if the starter drive gear teeth are damaged.

Starter Reassembly (K20A3 engine)

23. 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 rotate the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.



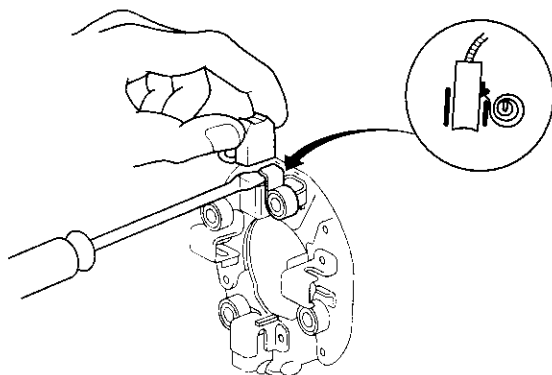
24. Squeezing a spring (C), insert it in the hole on the brush holder, and push it until it bottoms. Repeat this for the other three springs (D, E and F).
25. Install the armature and brush holder assembly into the housing.

NOTE: Make sure the armature stays in the holder.

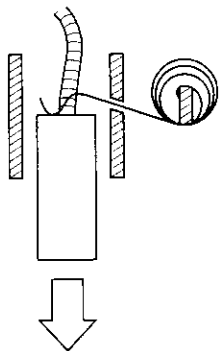
Starter Reassembly (K20A2 engine)

26. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.

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



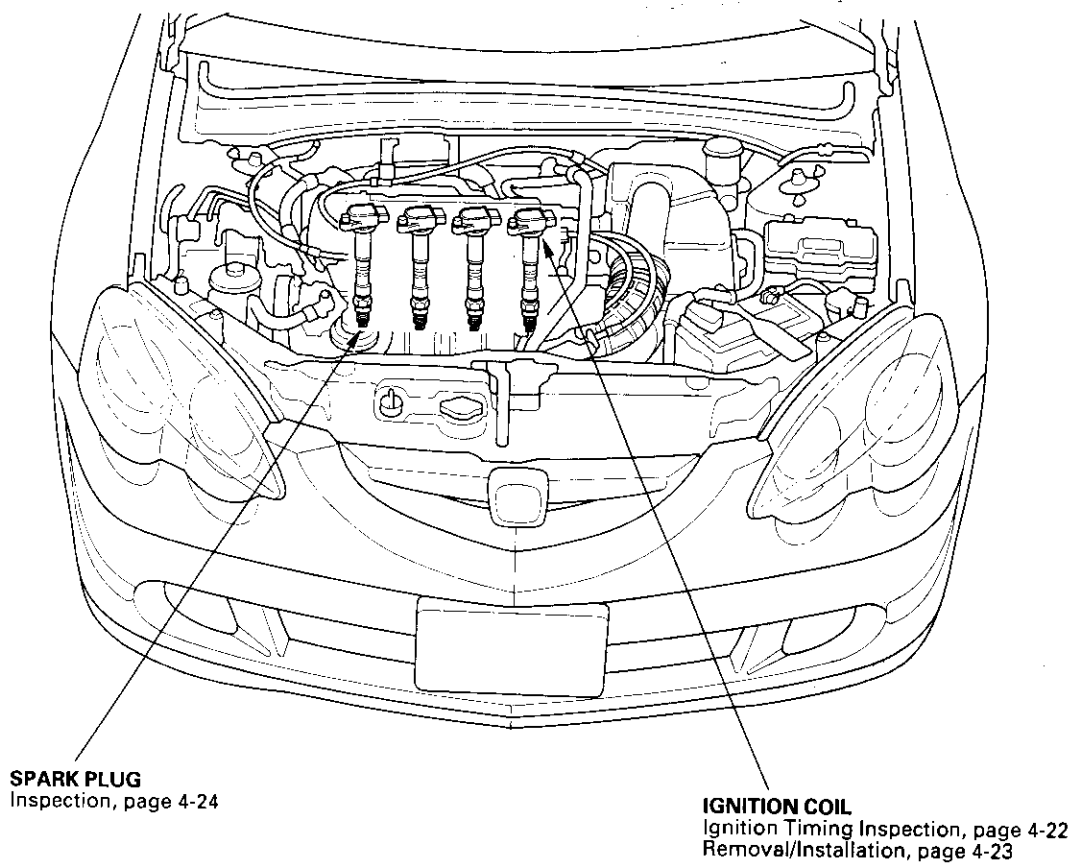
27. Install the armature in the housing, and install the brush holder. Next, pry back each brush spring again, and push the brush down until it seats against the commutator, then release the spring against the end of the brush.



28. Install the starter end cover to retain the brush holder.

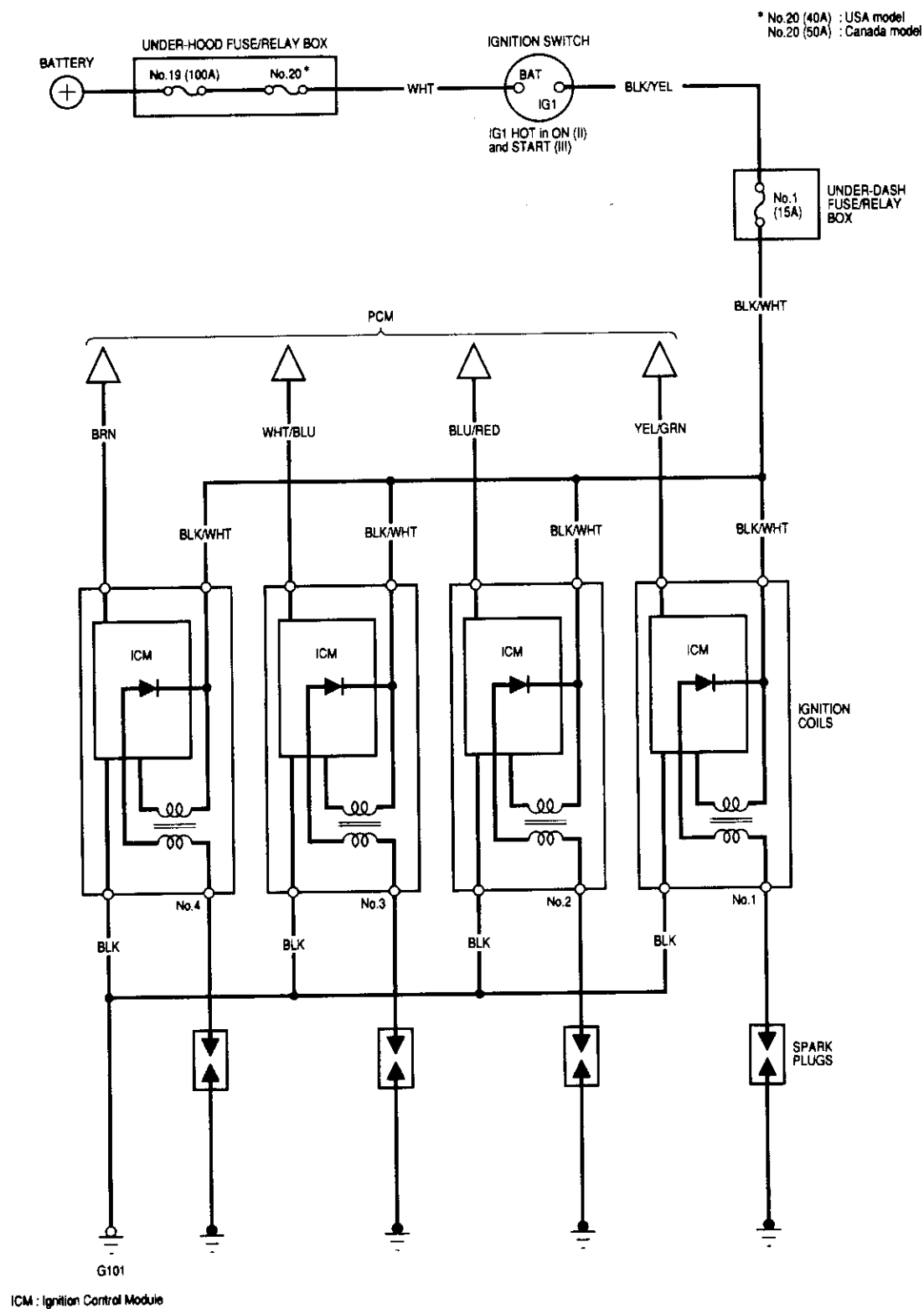
Ignition System

Component Location Index





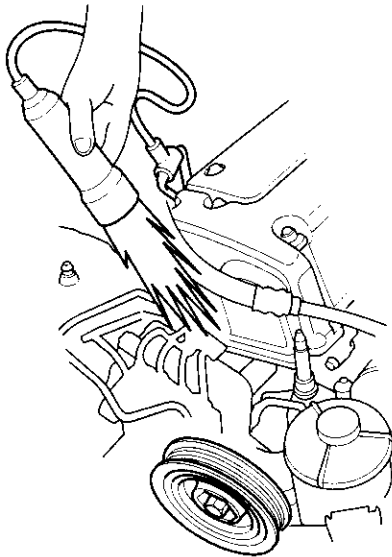
Circuit Diagram



Ignition System

Ignition Timing Inspection

1. Connect the Honda PGM Tester to the data link connector (DLC), and check for DTC's. If a DTC is present, diagnose and repair the cause before inspecting the ignition timing.
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or Neutral) until the radiator fan comes on, then let it idle.
3. Check the idle speed (see page 11-148).
4. Follow the tester's prompts in the "SCS" menu (see the tester operator's manual).
5. Connect the timing light to the service loop.

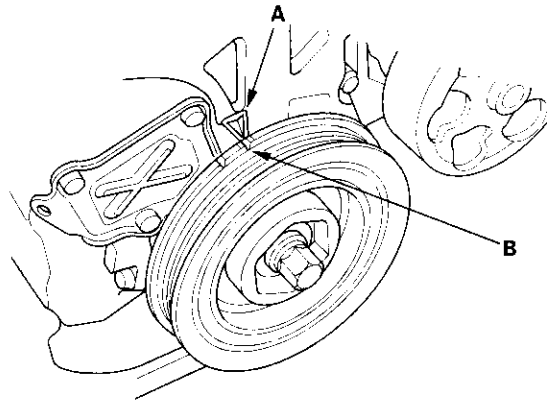


6. Point the light toward the pointers (A) on the timing belt cover. Check the ignition timing under no load conditions: headlights, blower fan, rear window defogger, and air conditioner are not operating. If the ignition timing differs from the specification, and there are no engine control module (ECM)/powertrain control module (PCM) DTC's, replace the ECM/PCM (see page 11-4).

Ignition Timing:

M/T: $8^{\circ} \pm 2^{\circ}$ BTDC (RED mark (B)) during idling in neutral

A/T: $8^{\circ} \pm 2^{\circ}$ BTDC (RED mark (B)) during idling in **P** or **N**

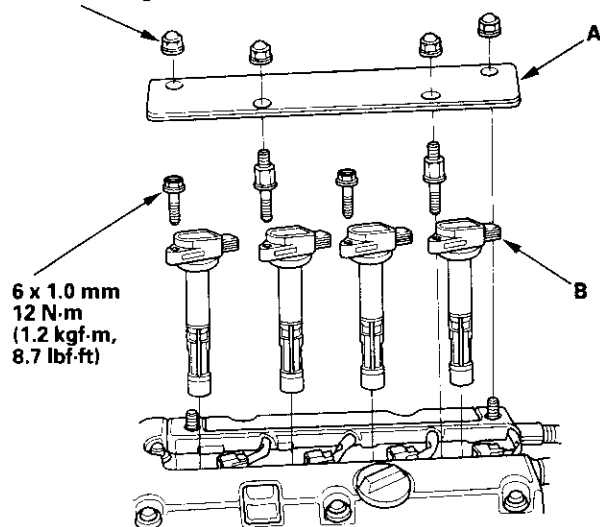


7. Turn the ignition switch OFF.
8. Disconnect the Honda PGM Tester and the timing light.

Ignition Coil Removal/Installation

1. Remove the ignition coil cover (A), then remove the ignition coils (B).

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



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

Spark Plug Inspection

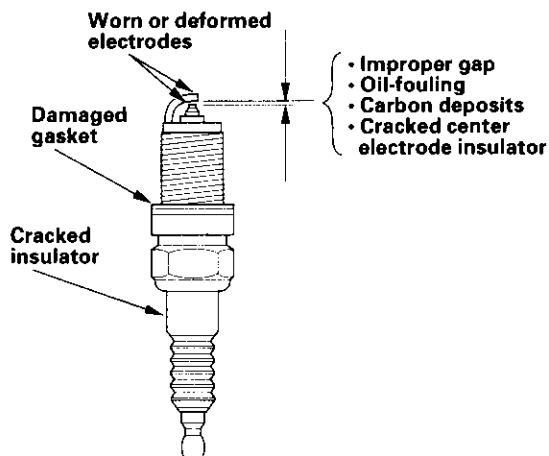
1. Inspect the electrodes and ceramic insulator.

Burned or worn electrodes may be caused by:

- Advanced ignition timing
- Loose spark plug
- Plug heat range too hot
- Insufficient cooling

Fouled plug may be caused by:

- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too cold
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coils

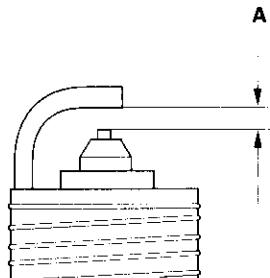


2. Do not adjust the gap of iridium tip plugs (A); replace the spark plug if the gap is out of specification.

Electrode Gap:

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

Service Limit: 1.3 mm (0.051 in.)

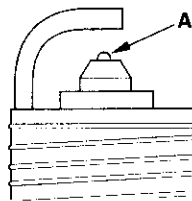


3. Replace the plug at the specified interval, or if the center electrode is rounded (A). Use only the spark plugs listed below.

Spark Plugs:

K20A3 engine: IZFR6K11 (NGK)
SKJ20DR-M11 (DENSO)

K20A2 engine: IFR7G-11K (NGK)
IFR7G-11KS (NGK)
SK22PR-M11 (DENSO)
SK22PR-M11S (DENSO)



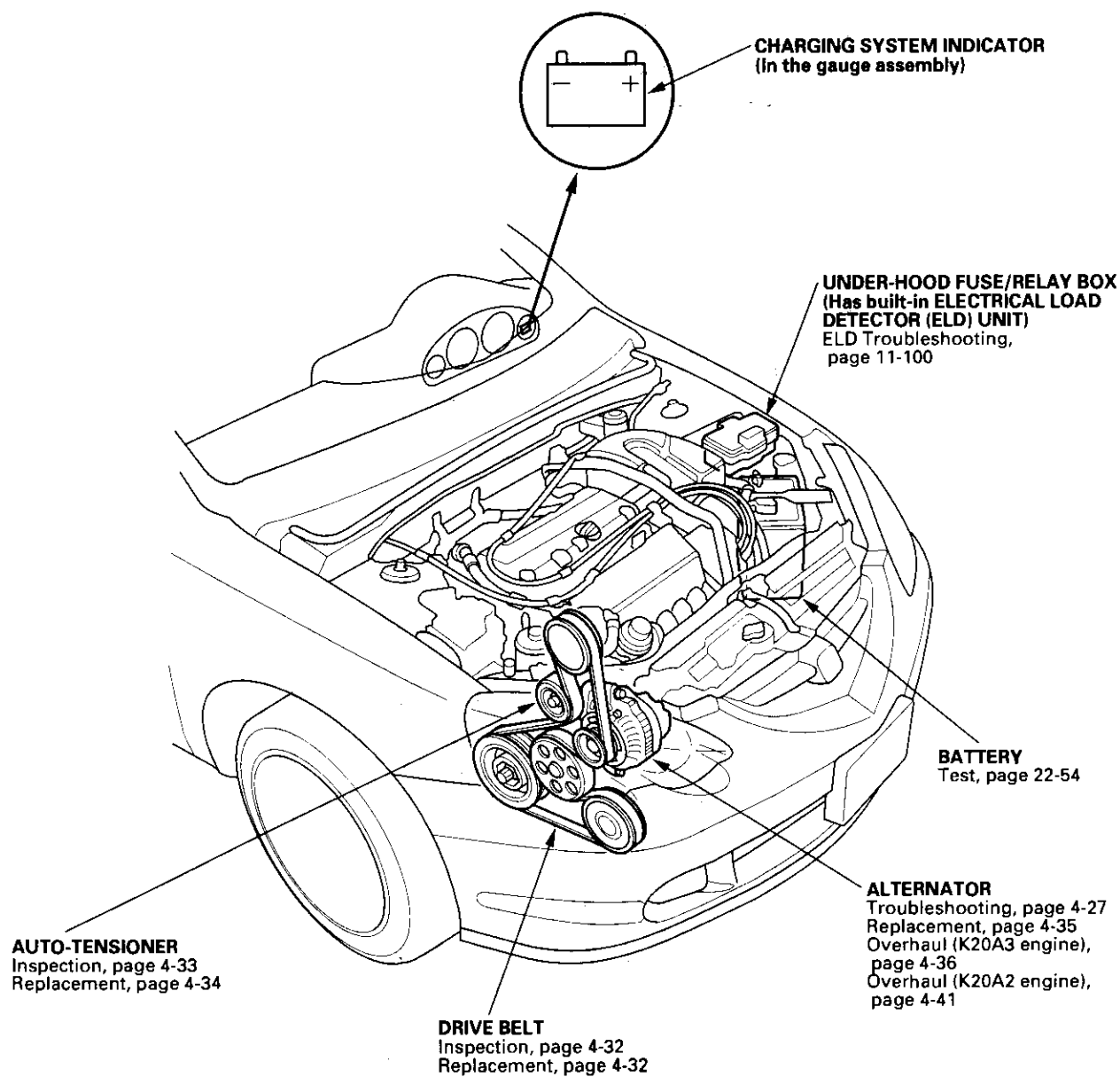
4. Apply a small quantity of anti-seize compound to the plug threads, and screw the plugs into the cylinder head finger-tight. Then torque them.

Specified torque:

IFR7G-11KS (NGK), SK22PR-M11S (DENSO):
25N·m (25kgf·m, 18lbf·ft)

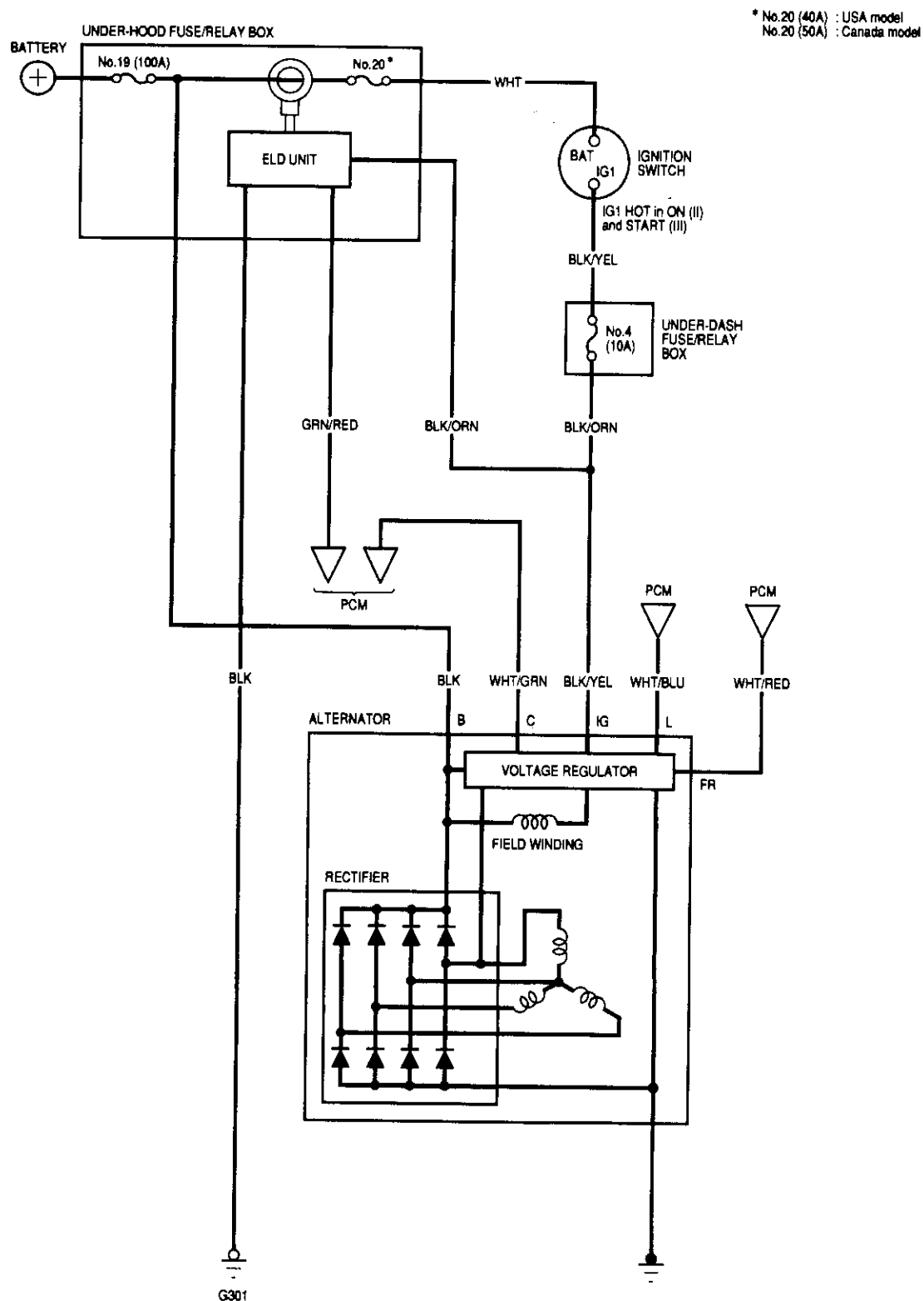
Except IFR7G-11KS (NGK), SK22PR-M11S (DENSO):
18N·m (1,8kgf·m, 1316lbf·ft)

Component Location Index



Charging System

Circuit Diagram



Charging Circuit Troubleshooting

If the charging system indicator does not come on or does not go off, or the battery is dead or low, test the following items in the order listed below:

Battery (see page 22-54)
Charging system indicator
Alternator and regulator circuit
Alternator control system

Charging System Indicator Test (K20A3 engine)

1. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES—Go to step 2.

NO—Go to step 3.

2. Start the engine.

Does the charging system indicator go off?

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

NO—Go to step 3.

3. Turn the ignition switch OFF.

4. Troubleshoot the multiplex control system (see page 22-175).

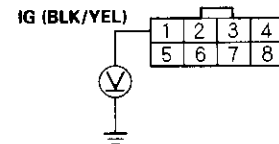
Is the multiplex control system OK?

YES—Go to step 5.

NO—Check the multiplex control system as indicated by the DTC (see step 8 on page 22-175). ■

5. Disconnect the starter subharness 8P connector.
6. Measure the voltage at the No. 1 terminal of the starter subharness 8P connector with the ignition switch ON (II).

STARTER SUB-HARNESS 8P CONNECTOR



Wire side of female terminals

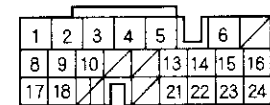
Is there battery voltage?

YES—Go to step 7.

NO—Check for a blown No.4 (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between the alternator and the under-dash fuse/relay box. ■

7. Turn the ignition switch OFF.
8. Disconnect engine control module (ECM)/ powertrain control module (PCM)/ connector B (24P).
9. Check continuity between the ECM/PCM connector terminal B10 and starter subharness 8P connector terminal No. 5.

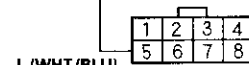
ECM/PCM CONNECTOR B (24P)



ACGL (WHT/BLU)



STARTER SUB-HARNESS 8P CONNECTOR



L (WHT/BLU)

Wire side of female terminals

Is there continuity?

YES—Go to step 10.

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

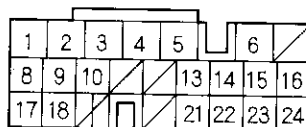
(cont'd)

Charging System

Charging Circuit Troubleshooting (cont'd)

10. Check continuity between the ECM/PCM connector terminal B10 and body ground.

ECM/PCM CONNECTOR B (24P)



ACGL (WHT/BLU)



Wire side of female terminals

Is there continuity?

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

NO — Go to alternator and regulator test.

Charging System Indicator Test (K20A2 engine)

1. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES — Go to step 2.

NO — Go to step 3.

2. Start the engine.

Does the charging system indicator go off?

YES — Charging system indicator circuit is OK. ■

NO — Go to step 3.

3. Turn the ignition switch OFF.

4. Troubleshoot the multiplex control system (see page 22-175).

Is the multiplex control system OK?

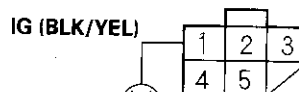
YES — Go to step 5.

NO — Check the multiplex control system as indicated by the DTC (see step 8 on page 22-175). ■

5. Disconnect the starter subharness 6P connector.

6. Measure the voltage at the No. 1 terminal of the starter subharness 6P connector with the ignition switch ON (II).

STARTER SUB-HARNESS 6P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES — Go to step 7.

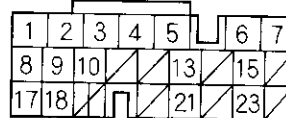
NO — Check for a blown No.4 (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between the alternator and the under-dash fuse/relay box. ■

7. Turn the ignition switch OFF.

8. Disconnect ECM connector B (24P).

9. Check continuity between the ECM connector terminal B10 and starter subharness 6P connector terminal No. 4.

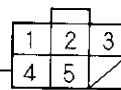
ECM CONNECTOR B (24P)



ACGL (WHT/BLU)



STARTER SUB-HARNESS 6P CONNECTOR



L (WHT/BLU)

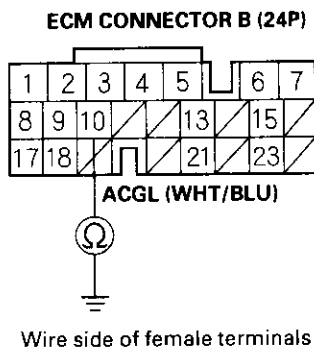
Wire side of female terminals

Is there continuity?

YES — Go to step 10.

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

10. Check continuity between the ECM connector terminal B10 and body ground.



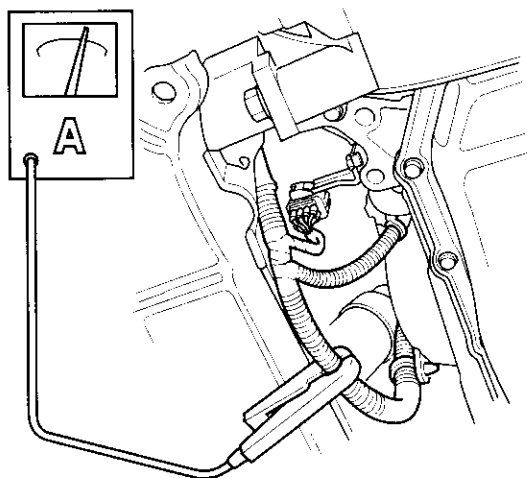
Is there continuity?

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

NO — Go to alternator and regulator test.

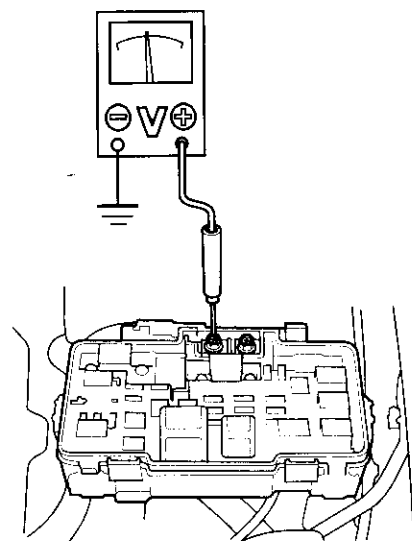
Alternator and Regulator Circuit Test

1. Be sure the battery is sufficiently charged (see page 22-54).
2. Raise the hoist to full height.
3. Hook up the ammeter, 0 — 400 A, to the starter sub-harness.



4. Lower the hoist.

5. Hook up the voltmeter, 0 — 20 V (accurate within 0.1 V), to T101.



6. 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.

7. Raise the engine speed to 2,000 rpm and hold it there.

8. Turn the headlights (high beam) on, and measure voltage at the under-hood fuse/relay box terminal.

Is the voltage between 13.9 and 15.1 V?

YES — Go to step 9.

NO — Repair the alternator components:

- K20A3 engine (see page 4-36). ■
- K20A2 engine (see page 4-41). ■

9. Read the amperage at 13.5 V.

NOTE: Adjust the voltage by turning the blower motor, rear window defogger, brake lights, etc. ON.

Is the amperage 60A or more?

YES — Alternator/regulator operation is OK. ■

NO — Repair the alternator components:

- K20A3 engine (see page 4-36). ■
- K20A2 engine (see page 4-41). ■

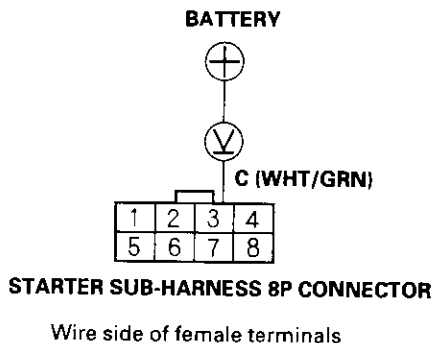
(cont'd)

Charging System

Charging Circuit Troubleshooting (cont'd)

Alternator Control System Test (K20A3 engine)

1. Check for proper operation of the ELD by checking the MIL (see page 11-3).
2. Disconnect the starter subharness 8P connector.
3. Start the engine, and turn the headlights (high beam) ON.
4. Measure voltage between the starter subharness 8P connector terminal No. 3 and the positive terminal of the battery.



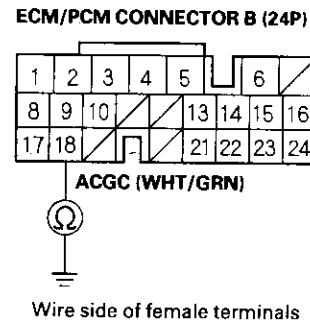
Is there 1 V or less?

YES— Go to step 8.

NO— Go to step 5.

5. Turn the headlights and ignition switch OFF.
6. Disconnect ECM/PCM connector B (24P).

7. Check for continuity between ECM/PCM connector terminal B18 and body ground.



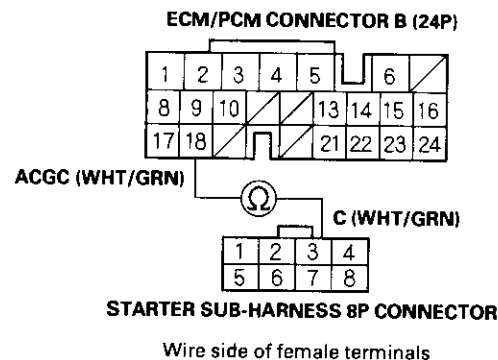
Is there continuity?

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

NO— Substitute a known-good ECM/PCM, and recheck (see page 11-6).

If prescribed voltage is now available, replace the original ECM/PCM. ■

8. Turn the headlights and ignition switch OFF.
9. Disconnect ECM/PCM connector B (24P).
10. Check for continuity between ECM/PCM connector terminal B18 and starter subharness 8P connector terminal No. 3.



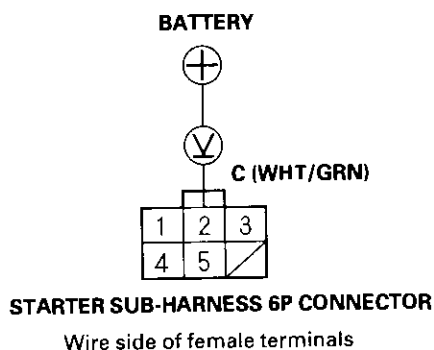
Is there continuity?

YES— Repair the alternator (see page 4-36). ■

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

Alternator Control System Test (K20A2 engine)

1. Check for proper operation of the ELD by checking the MIL (see page 11-3).
2. Disconnect the starter subharness 6P connector.
3. Start the engine, and turn the headlights (high beam) ON.
4. Measure voltage between the starter subharness 6P connector terminal No. 2 and the positive terminal of the battery.



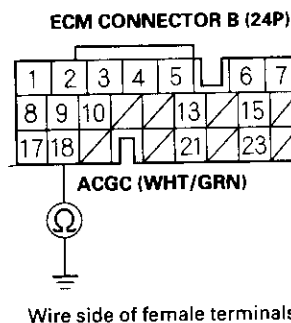
Is there 1 V or less?

YES – Go to step 8.

NO – Go to step 5.

5. Turn the headlights and ignition switch OFF.
6. Disconnect ECM connector B (24P).

7. Check for continuity between ECM connector terminal B18 and body ground.



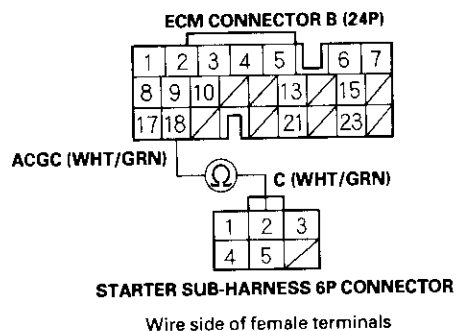
Is there continuity?

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

NO – Substitute a known-good ECM, and recheck (see page 11-6).

If prescribed voltage is now available, replace the original ECM. ■

8. Turn the headlights and ignition switch OFF.
9. Disconnect ECM connector B (24P).
10. Check for continuity between ECM connector terminal B18 and starter subharness 6P connector terminal No. 2.



Is there continuity?

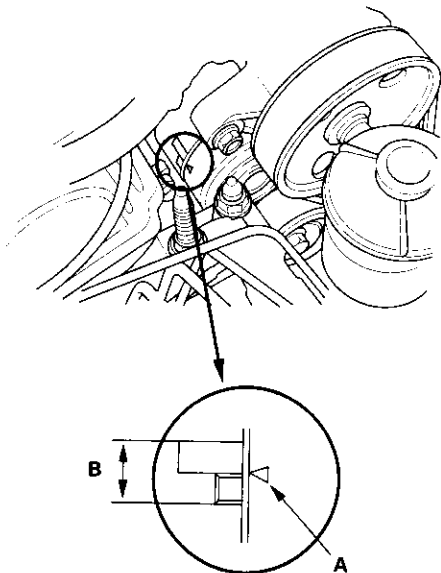
YES – Repair the alternator (see page 4-41). ■

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

Charging System

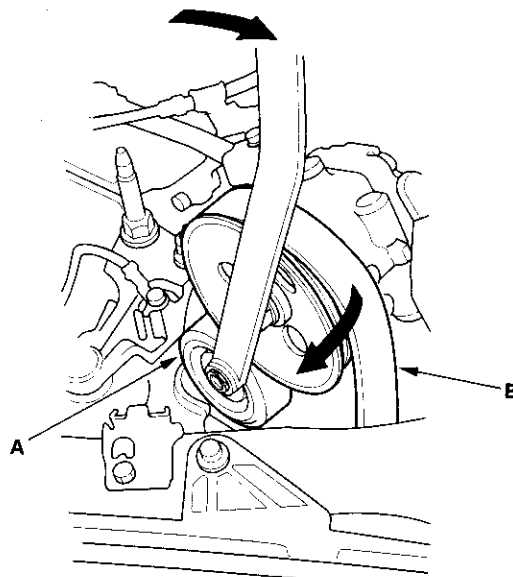
Drive Belt Inspection

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 4-32).



Drive Belt Replacement

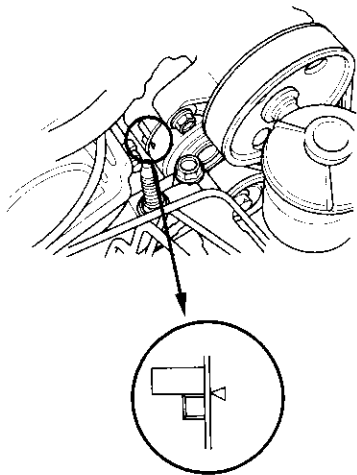
1. Unclip the power steering reservoir.
2. Move the auto-tensioner (A) to relieve tension from the drive belt (B), and remove the drive belt.



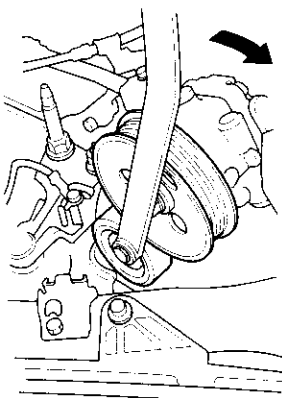
3. Install the new belt in the reverse order of removal.

Drive Belt Auto-tensioner Inspection

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



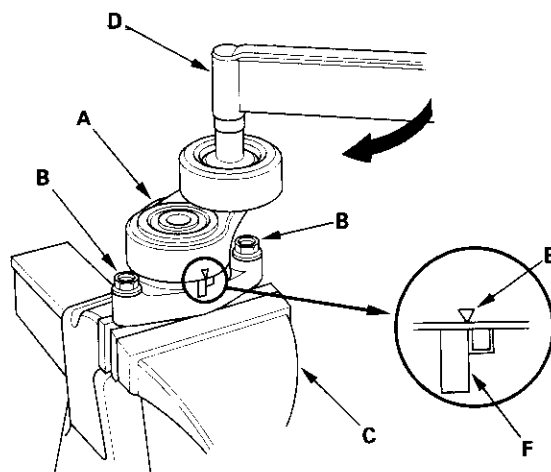
2. Check for abnormal noise from the tensioner pulley. If abnormal noise is heard, replace the tensioner pulley.
3. Remove the drive belt (see page 4-32).
4. Move the auto-tensioner within its limit with the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly or there is abnormal noise, replace the auto-tensioner.



5. Remove the auto-tensioner (see page 4-34).

6. Install the tensioner pulley.

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

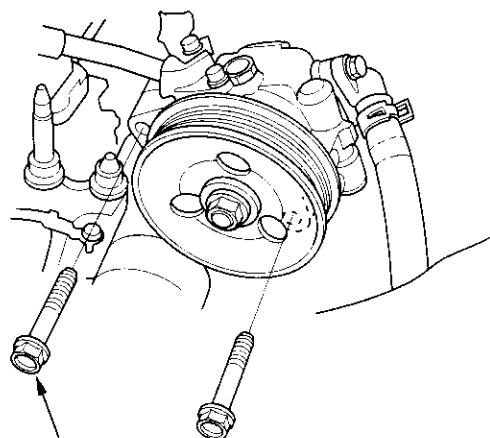
NOTE: If the indicator exceeds the center mark, recheck the torque.

26.5 – 36.3 N·m (2.7 – 3.7 kg·m, 19.5 – 26.8 lbf·ft)

Charging System

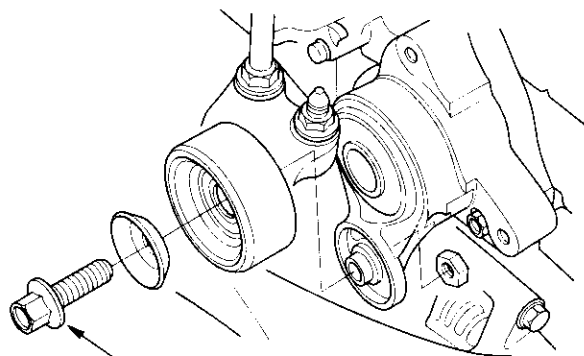
Drive Belt Auto-tensioner Replacement

1. Remove the drive belt (see page 4-32).
2. Remove the power steering (P/S) pump without disconnecting the P/S hoses.



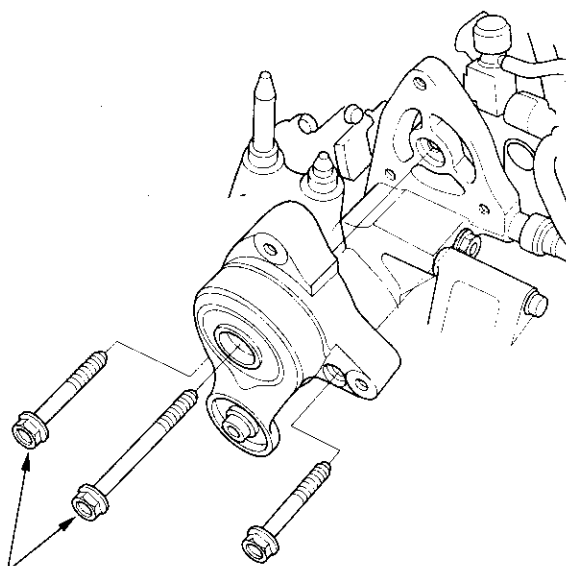
8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

3. Remove the tensioner pulley.



55 N·m (5.6 kgf·m, 41 lbf·ft)

4. Remove the auto-tensioner.

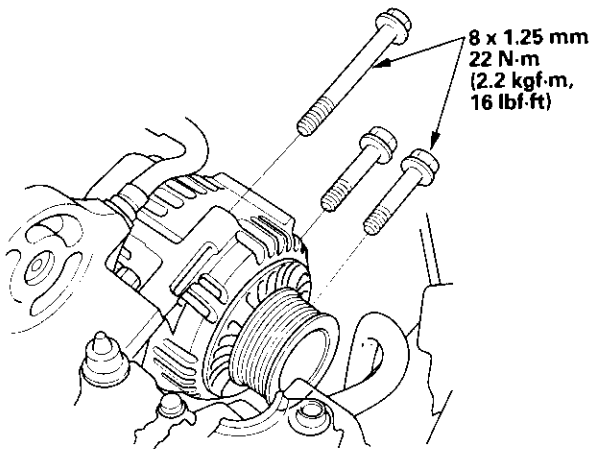


8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

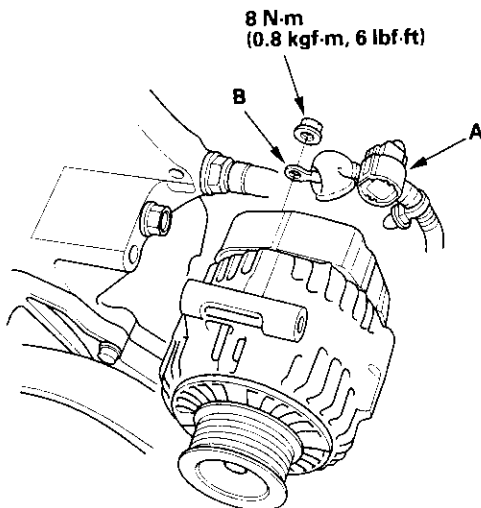
5. Install in the reverse order of removal.

Alternator Replacement

1. Make sure you have the anti-theft code the radio, then write down the frequencies for radio's preset buttons.
2. Disconnect the negative cable, from the battery first, disconnect the positive cable.
3. Remove the drive belt (see page 4-32).
4. Remove the auto-tensioner (see page 4-34).
5. Remove the three bolts securing the alternator.



6. Disconnect the alternator connector (A) and BLK wire (B) from the alternator.



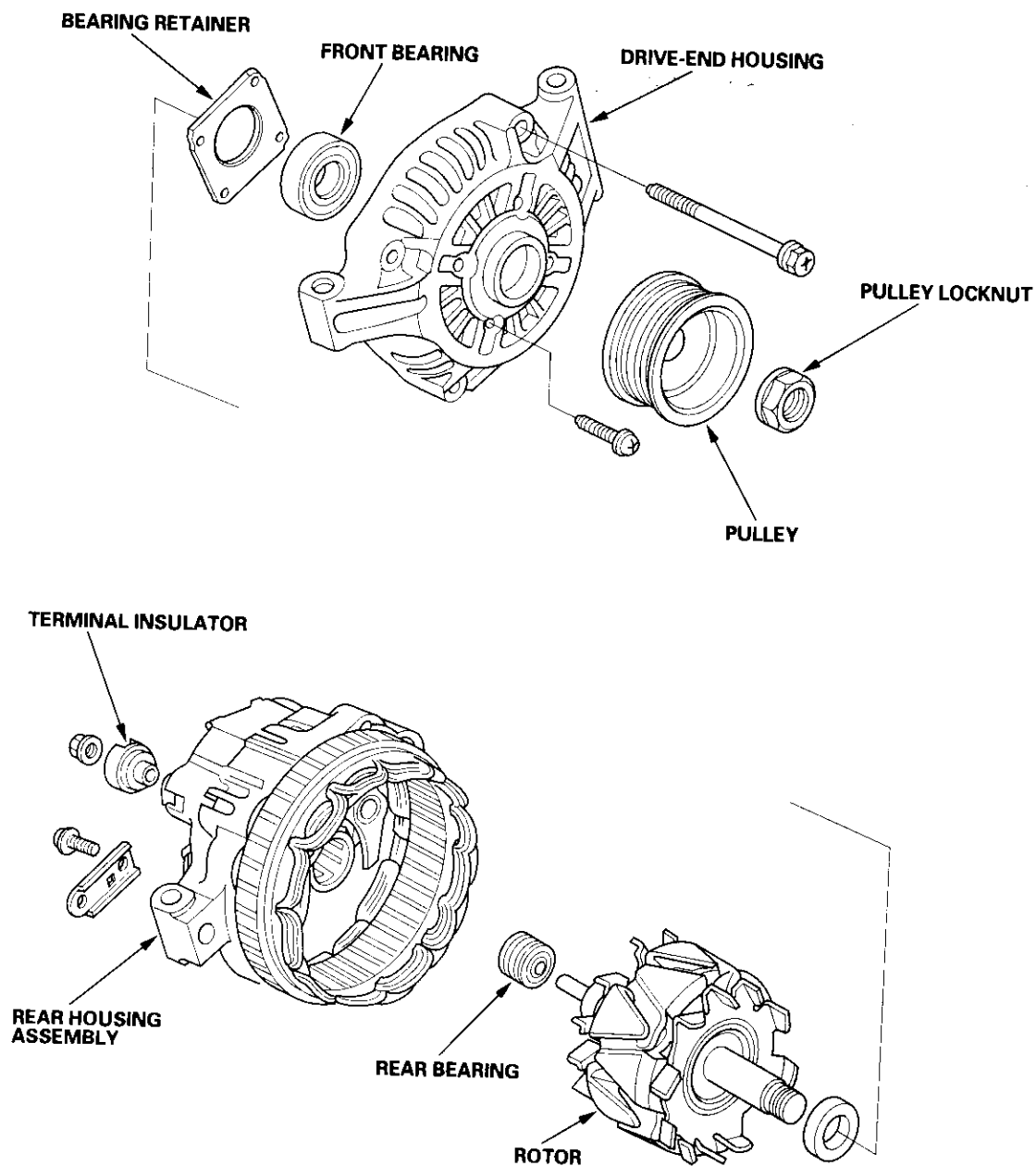
7. Remove the alternator.

8. Install the alternator and drive belt in the reverse order of removal.
9. Connect the positive cable and negative cable to the battery.
10. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
11. Set the clock.
12. Perform the engine control module (ECM)/ powertrain control (PCM) idle learn procedure (see page 11-149), and the power window control unit reset procedure (see page 22-139).

Charging System

Alternator Overhaul

K20A3 engine
Exploded View

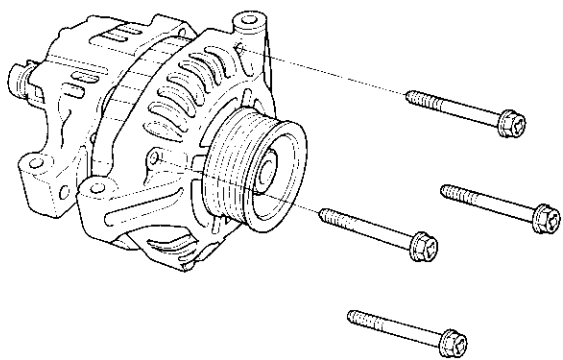


Special Tools Required

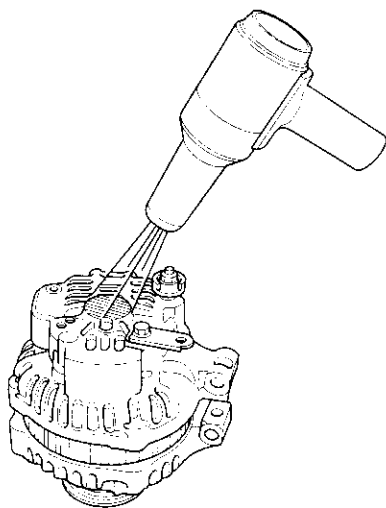
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

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

1. Test the alternator and regulator before you remove them (see page 4-27).
2. Remove the alternator (see page 4-35).
3. Remove the four through bolts.

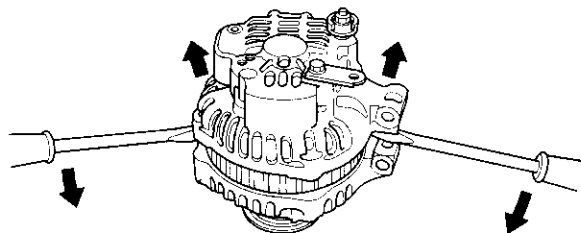


4. Heat the rear bearing seat with a 1,000 W hair drier for about 5 minutes (129 – 140°F, 50 – 60°C).

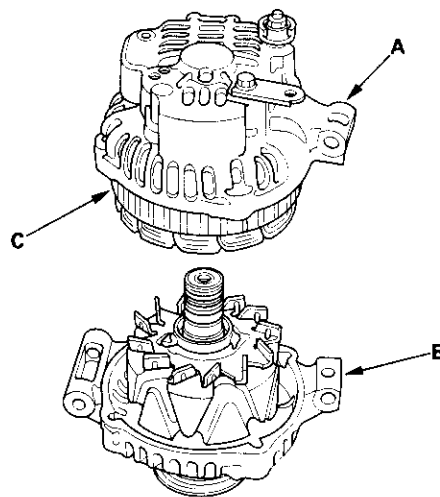


5. Separate the rear housing from the drive-end housing by inserting a flat tip screwdriver into the openings and prying them apart.

NOTE: Be careful not to damage the stator with the tip of the screwdriver.



6. Separate the rear housing (A) and drive-end housing (B) with the stator (C) attached to the rear housing.

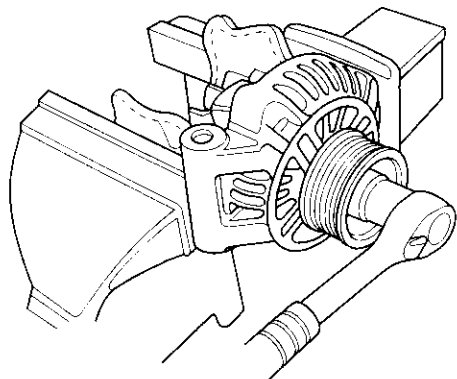


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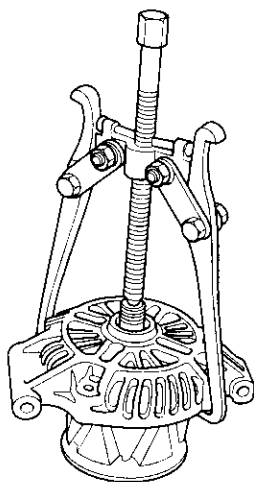
Charging System

Alternator Overhaul (cont'd)

7. If you are not replacing the front bearing and/or rear bearing, go to step 15. Clamp the rotor in a soft-jawed vise, then remove the pulley locknut.



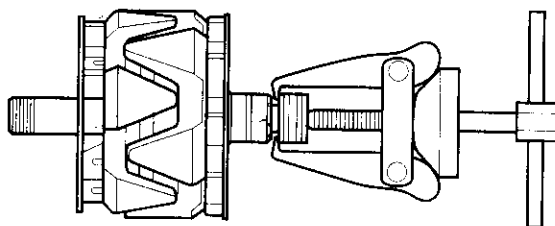
8. Remove the rotor using a puller as shown.



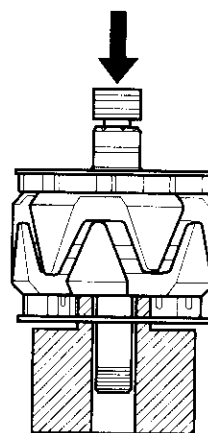
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive-end housing for seizure marks.

- If either the rotor or drive-end housing is damaged, replace the alternator.
- If both the rotor and the drive-end housing are OK, go to step 10.

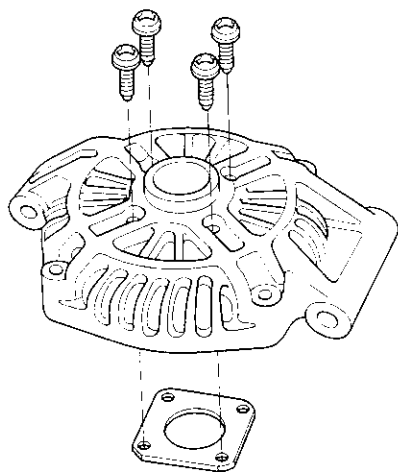
10. Remove the rear bearing using the puller as shown.



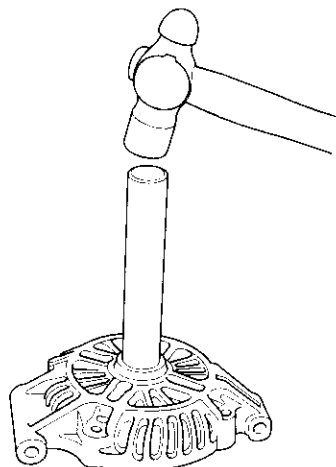
11. Use a hand press to install the new rear bearing. Apply pressure only on the inner race to avoid damaging the bearing.



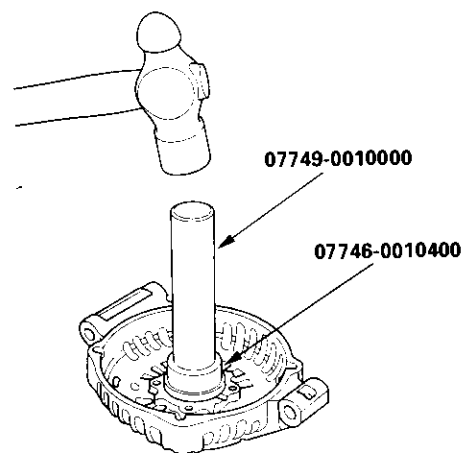
12. Remove the front bearing retainer plate.



13. Support the drive-end housing in a vise, and drive out the front bearing with a brass drift and hammer.



14. With a hammer and the special tools, install a new front bearing in the drive-end housing.



Alternator Brush Inspection

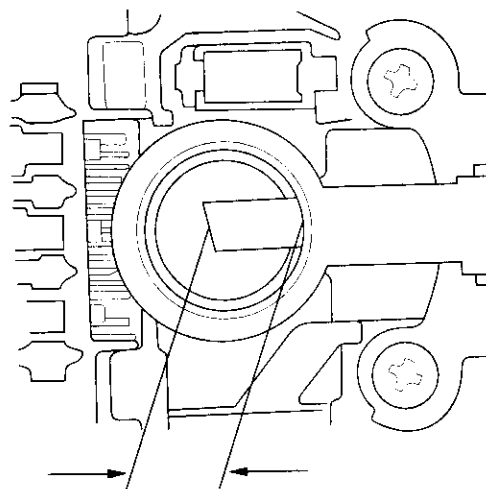
15. Measure the length of both brushes with a vernier caliper.

- If either brush is shorter than the service limit, replace the rear housing assembly.
- If brush length is OK, go to step 16.

Alternator Brush Length:

Standard (New): 19.0 mm (0.75 in.)

Service Limit: 5.0 mm (0.2 in.)



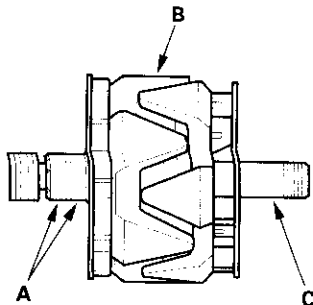
(cont'd)

Charging System

Alternator Overhaul (cont'd)

Rotor Slip Ring Test

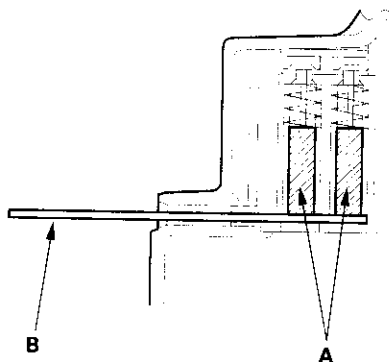
16. Check that there is continuity between the slip rings (A).
- If there is continuity, go to step 17.
 - If there is no continuity, replace the rotor assembly.



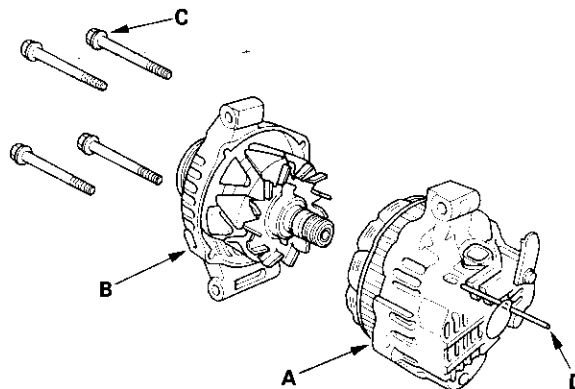
17. Check that there is no continuity between each slip ring (A) and the rotor (B) and the rotor shaft (C).
- If there is no continuity, replace the rear housing assembly, go to step 18.
 - If there is continuity, replace the rotor assembly.

Alternator Reassembly

18. If you removed the pulley, put the rotor in the drive-end housing, then tighten its locknut to 111 N·m (11.3 kgf·m, 81.7 lbf·ft).
19. Remove any grease or any oil from the slip rings.
20. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.8 mm (0.77 in.) diameter) to hold them there.

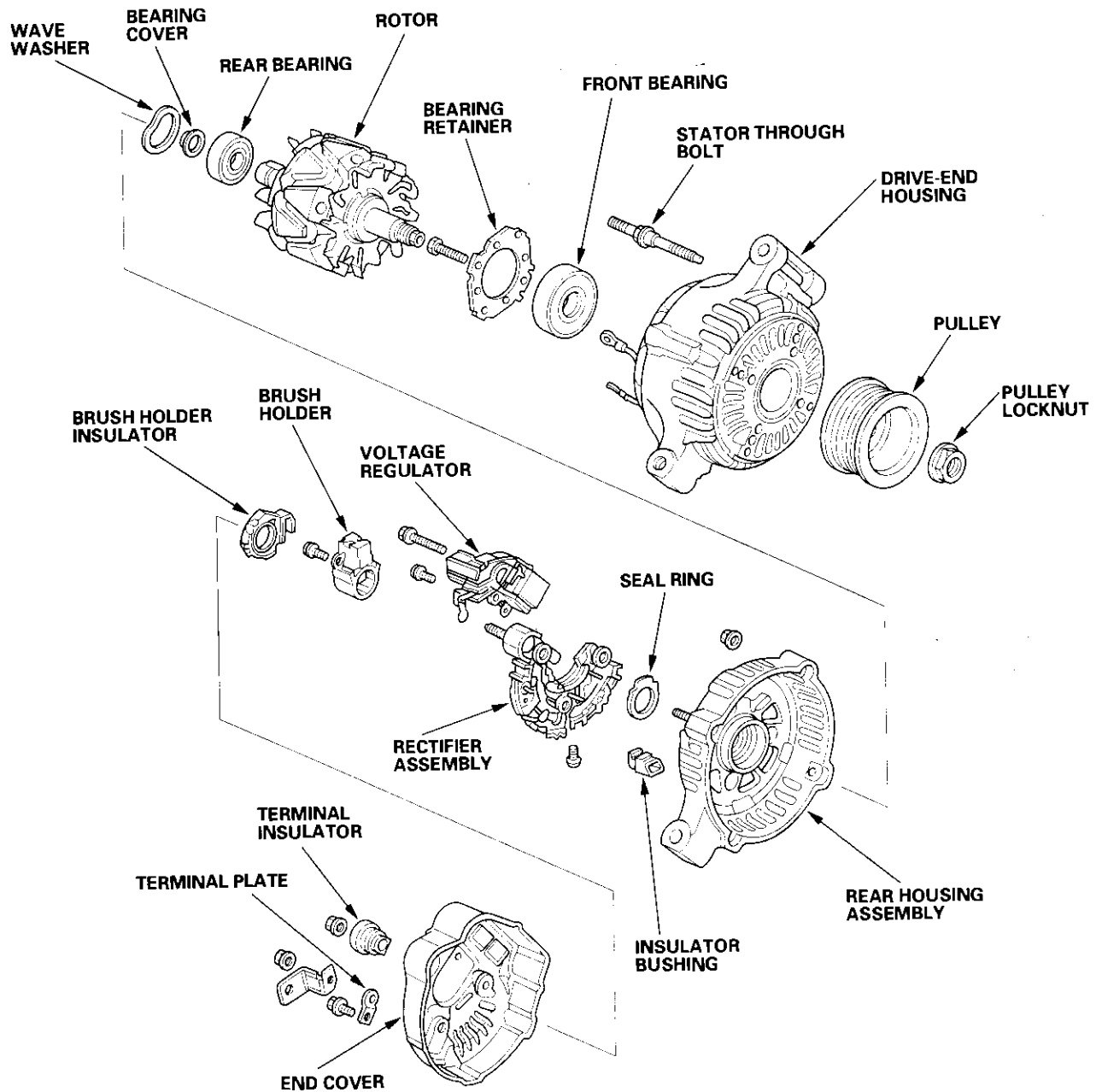


21. Heat the rear bearing seat with a 1,000 W hair drier for about 5 minutes (129 – 140°F, 50 – 60°C).
22. Put the rear housing assembly (A) and drive-end housing/rotor assembly (B) together, tighten the four through bolts (C) and pull out the pin (D).



23. After assembling the alternator, turn the pulley by hand to make sure the rotor rotates smoothly and without noise.
24. Install the alternator and drive belt (see page 4-35).

K20A2 engine Exploded View



(cont'd)

Charging System

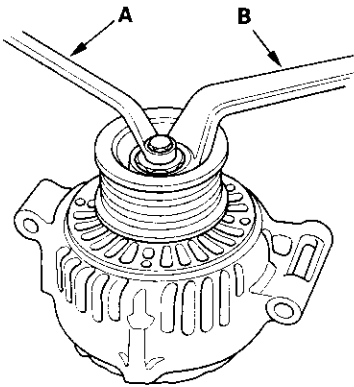
Alternator Overhaul (cont'd)

Special Tools Required

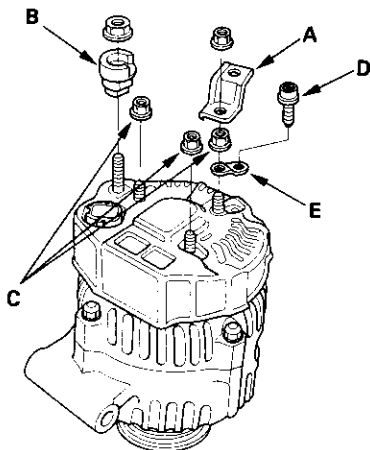
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

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

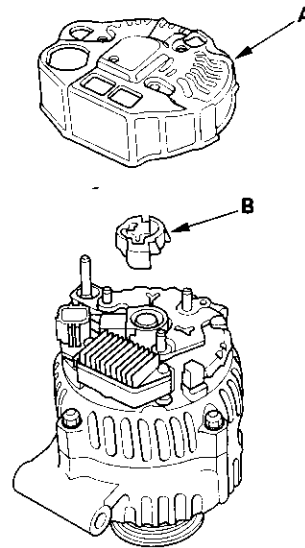
1. Test the alternator and regulator before you remove them (see step 1 on page 4-28).
2. Remove the alternator (see page 4-35).
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



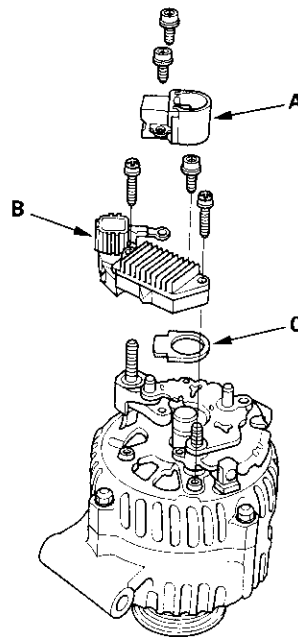
4. Remove the harness bracket (A), insulator (B), three flange nuts (C) and the screw (D), then remove the plate terminal (E).



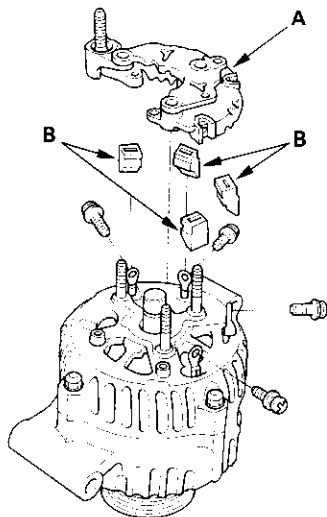
5. Remove the end cover (A) and dust seal (B).



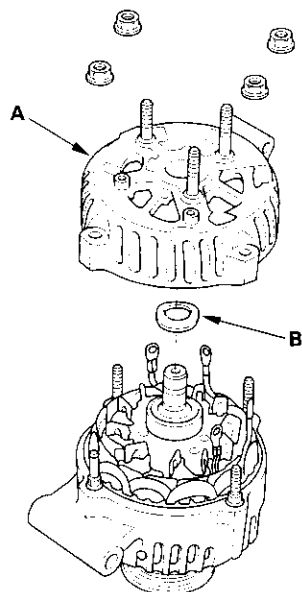
6. Remove the brush holder (A), voltage regulator (B) and the rubber seal (C).



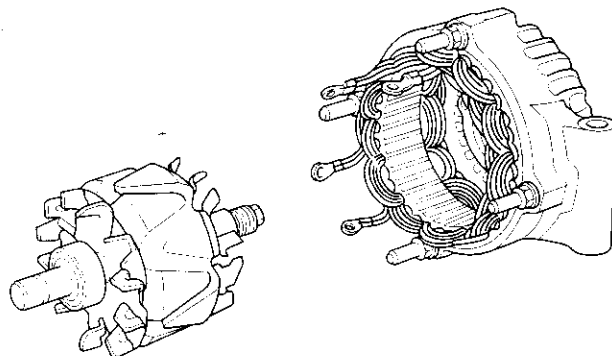
7. Remove the four screws, then remove the rectifier (A) and four insulators (B).



8. Remove the four flange nuts, then remove the rear housing (A) and washer (B).



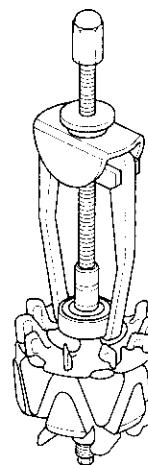
9. If you are not replacing the front bearing and/or rear bearing, go to step 16. Remove the rotor from the stator drive end housing.



10. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the stator housing for seizure marks.

- If either the rotor or stator housing is damaged, replace the alternator.
- If both the rotor and the stator housing are OK, go to step 11.

11. Remove the rear bearing using a puller as shown.

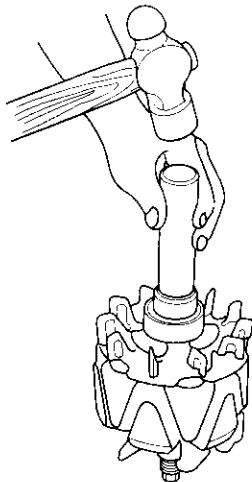


(cont'd)

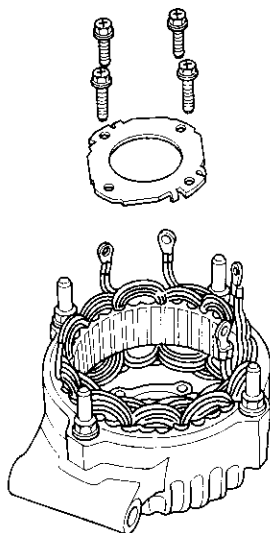
Charging System

Alternator Overhaul (cont'd)

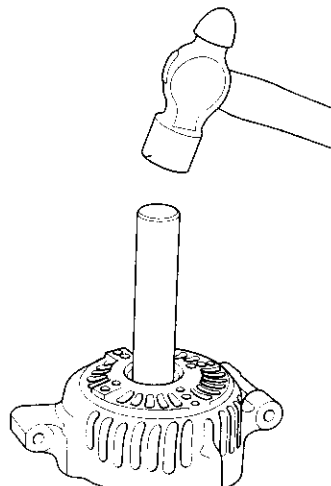
12. With a hammer and commercially available tools shown, install a new rear bearing on the rotor shaft.



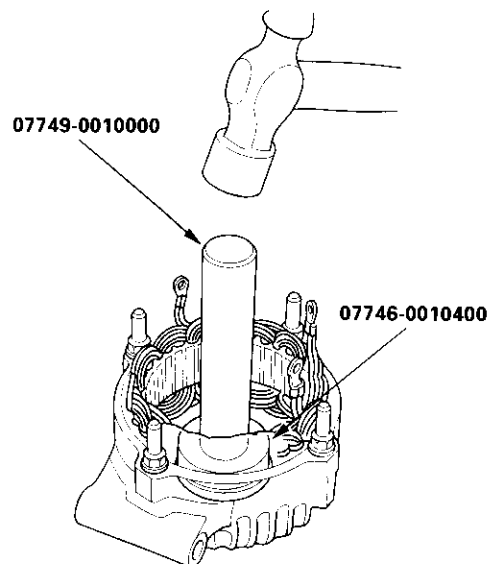
13. Remove the front bearing retainer plate.



14. Support the stator housing in a vise, and drive out the front bearing with a brass drift and hammer.



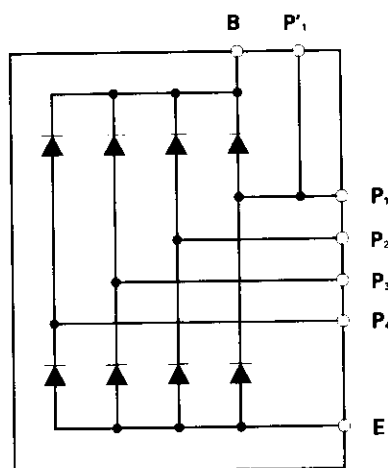
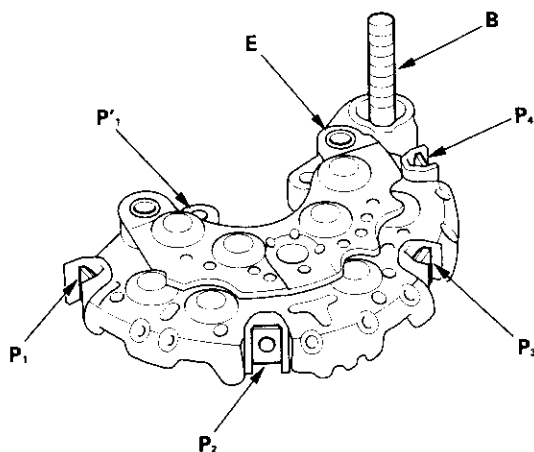
15. With a hammer and the special tools, install a new front bearing in the stator housing.



Rectifier Test

16. Check for continuity in each direction, between the B terminal and P terminals, and between the E terminal and P terminals of each diode pair. All diodes should have continuity in only one direction. Because the rectifier diodes are designed to allow current to pass in one direction, and the rectifier is made up of eight diodes (four pairs), you must test each diode in both directions for continuity with an ohmmeter that has diode checking capability: a total of 16 checks.

- If any diode is faulty, replace the rectifier assembly. (Diodes are not available separately.)
- If all the diodes are OK, go to step 17.



Alternator Brush Inspection

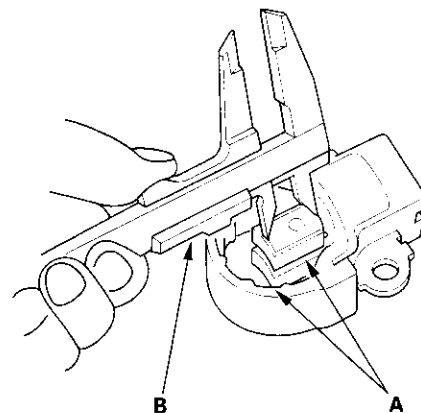
17. Measure the length of both brushes (A) with a vernier caliper (B).

- If either brush is shorter than the service limit, replace the brush assembly.
- If brush length is OK, go to step 18.

Alternator Brush Length:

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

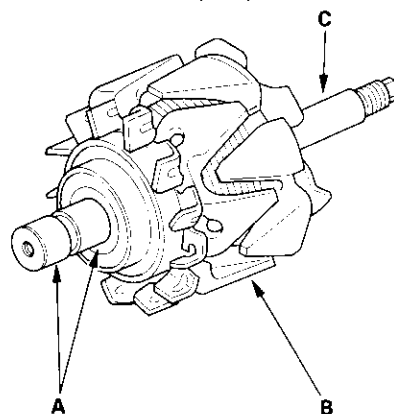
Service Limit: 1.5 mm (0.06 in.)



Rotor Slip Ring test

18. Check that there is continuity between the slip rings (A).

- If there is continuity, go to step 19.
- If there is no continuity, replace the alternator.



19. Check that there is no continuity between each slip ring and the rotor (B) and the rotor shaft (C).

- If there is no continuity, go to step 20.
- If there is continuity, replace the alternator.

(cont'd)

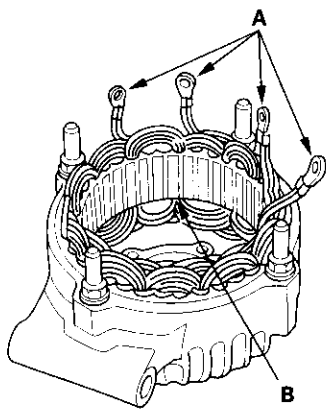
Charging System

Alternator Overhaul (cont'd)

Stator Test

20. Check that there is continuity between each pair of leads (A).

- If there is continuity, go to step 21.
- If there is no continuity, replace the alternator.



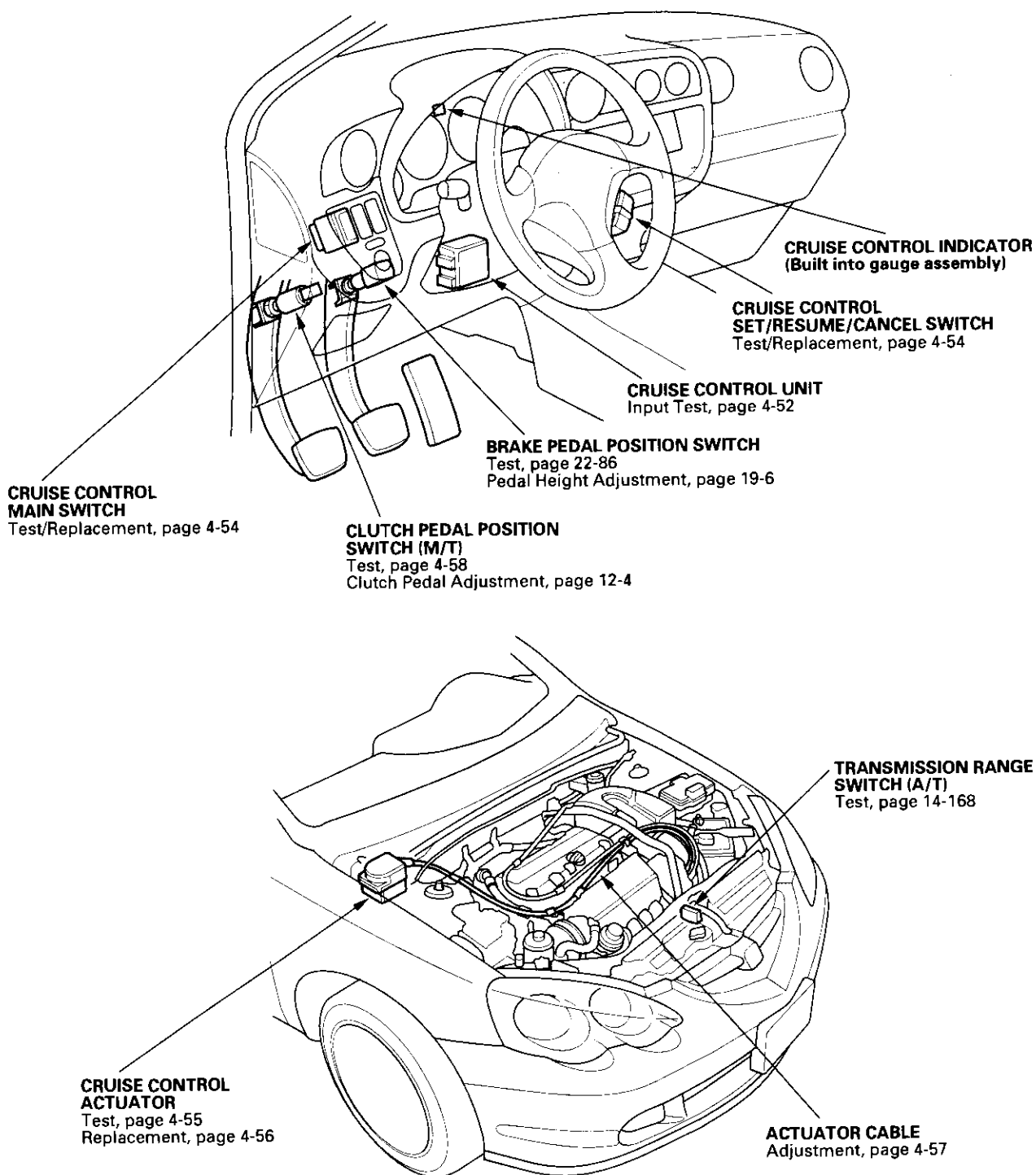
21. Check for no continuity between each lead and the coil core (B).

- If there is no continuity, go to step 22.
- If there is continuity, replace the alternator.

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

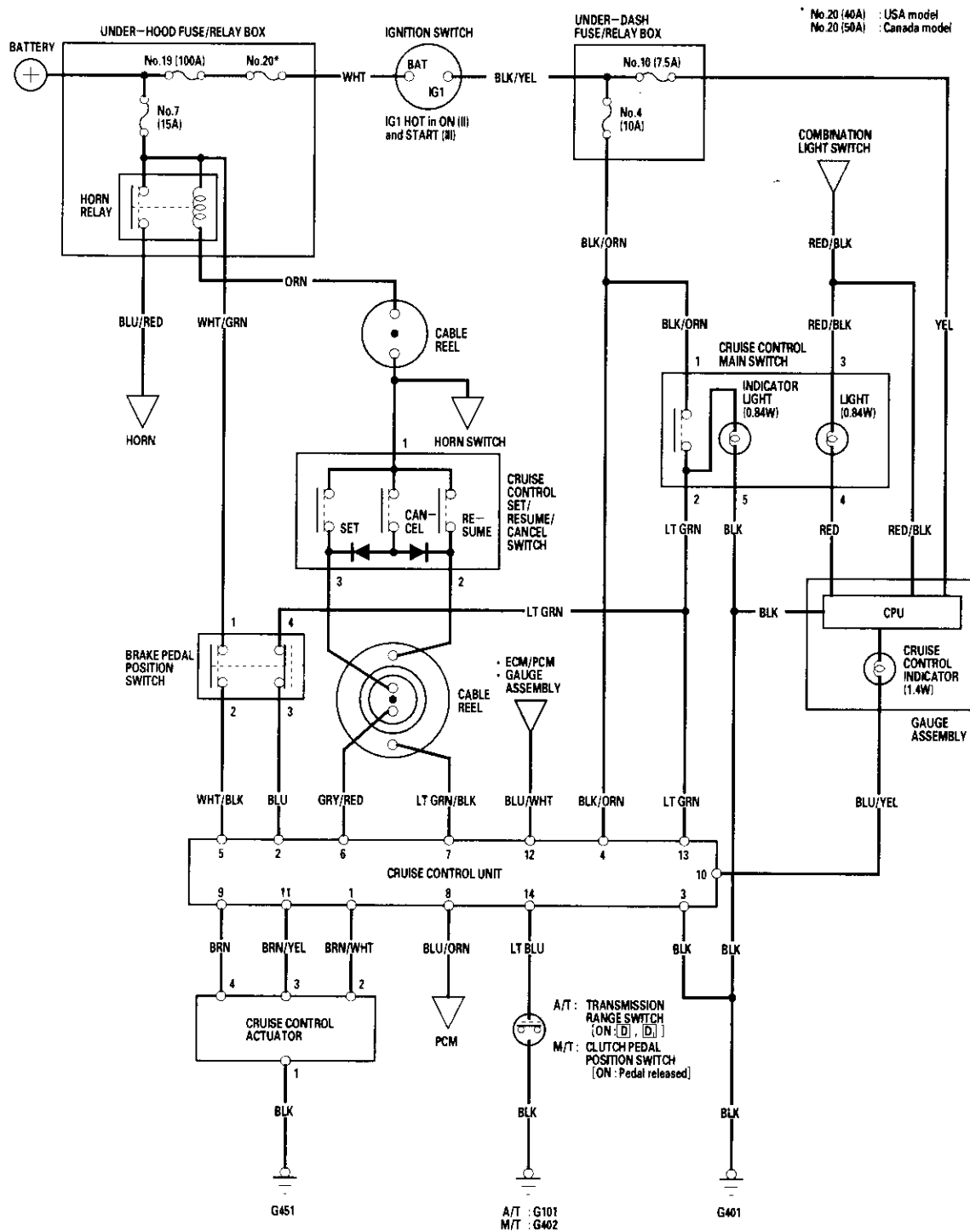
- Be careful not to get any grease or oil on the slip rings.
- If you removed the pulley, tighten its locknut to 111 N·m (11.3 kgf·m, 81.7 lbf·ft) when you install it.

Component Location Index



Cruise Control

Circuit Diagram





Symptom Troubleshooting Index

NOTE:

- The numbers in the table show the troubleshooting sequence.
- Before troubleshooting.
 - check the No. 10 (7.5 A) and No. 4 (10 A) fuses in the under-dash fuse/relay box, and the No. 7 (15 A) fuse in the under-hood fuse/relay box.
 - check that the horn sounds.
 - check the tachometer to see if it works properly.

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check main switch (see page 4-54) 2. Check SET/RESUME/CANCEL switch (see page 4-54) 3. Test brake pedal position switch and check its adjustment (see page 19-6) 4. Test clutch pedal position switch (see page 4-58) and check its adjustment (M/T) (see page 12-4) 5. Check transmission range switch (A/T) (see page 14-168) 6. Check cruise control unit (see page 4-52)	• Poor ground: G101(A/T), G402(M/T), G401 • Open circuit, loose or disconnected terminals: LT GRN, BLK/ORN, GRY/RED, BLU, LT BLU, BLU/WHT
Cruise control can be set but indicator light does not go on	Check cruise control unit (see page 4-52)	• Poor ground: G401 • Open circuit, loose or disconnected terminals: YEL, BLU/YEL
Cruise speed is noticeably higher or lower than what was set	1. Check vehicle speed sensor (VSS) (see page 22-67) 2. Check cruise control actuator (see page 4-55) 3. Check cruise control unit (see page 4-52)	
Excessive overshooting or undershooting when trying to set speed	1. Check cruise control actuator (see page 4-55) 2. Check vehicle speed sensor (VSS) (see page 22-67) 3. Check cruise control unit (see page 4-52)	
Speed fluctuation on a flat road with cruise control set	1. Check vehicle speed sensor (VSS) (see page 22-67) 2. Check cruise control actuator (see page 4-55) 3. Check cruise control unit (see page 4-52)	
Vehicle does not decelerate or accelerate accordingly when SET/RESUME/CANCEL button is pushed	1. Check SET/RESUME/CANCEL switch (see page 4-54) 2. Check cruise control unit (see page 4-52)	Open circuit, loose or disconnected terminals: GRY/RED, LT GRN/BLK
Set speed does not cancel (engine rpm stays high) when clutch pedal is pushed (M/T)	1. Test clutch pedal position switch and check its adjustment (see page 4-58) 2. Check cruise control unit (see page 4-52)	Short to ground in the LT BLU wire
Set speed does not cancel when shift lever is moved to Neutral position (A/T)	1. Check transmission range switch (see page 14-168) 2. Check cruise control unit (see page 4-52)	Short to ground in the LT BLU wire
Set speed does not cancel when brake pedal is pushed	1. Test brake pedal position switch and check its adjustment (see page 19-6) 2. Test cruise control unit (see page 4-52)	Open circuit, loose or disconnected terminals: WHT/BLK

(cont'd)

Cruise Control

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Set speed does not cancel when main switch is pushed OFF	1. Check main switch (see page 4-54) 2. Check cruise control unit (see page 4-52)	Short to power in the LT GRN wire.
Set speed does not cancel when CANCEL button is pushed	1. Check SET/RESUME/CANCEL switch (see page 4-54) 2. Check cruise control unit (see page 4-52)	Open circuit, loose or disconnected terminals: GRY/RED, LT GRN/BLK
Set speed will not resume when RESUME button is pushed (with main switch on, and set speed temporarily cancelled by pressing the brake pedal)	1. Check SET/RESUME/CANCEL switch (see page 4-54) 2. Check cruise control unit (see page 4-52)	Open circuit, loose or disconnected terminals: LT GRN/BLK
The transmission shifts down slower than normal when going up a hill with the cruise control on (A/T)	1. Troubleshoot the cruise control communication circuit (see page 4-51)	

Cruise Control Communication Circuit Troubleshooting (A/T)

1. Start the engine.
2. Turn on the cruise control main switch, then drive the vehicle to speeds over 25 mph (40 km/h) with the cruise control.

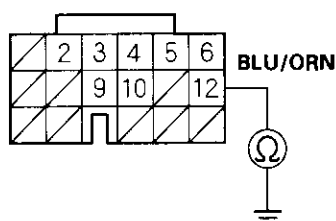
Does the cruise control operate?

YES—Go to step 3.

NO—Check the cruise control unit (see page 4-52) or cruise control actuator. ■

3. Turn the ignition switch OFF.
4. Disconnect PCM connector D (17P) and cruise control unit 14P connector.
5. Check for continuity between PCM connector terminal D12 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there continuity?

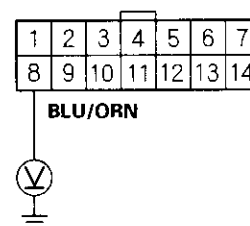
YES—Repair a short to ground in the wire between PCM connector terminal D12 and the cruise control unit 14P connector terminal No. 8. ■

NO—Go to step 6.

6. Reconnect PCM connector D (17P) and the cruise control unit 14P connector.

7. Connect a voltmeter between cruise control unit 14P connector terminal No. 8 and body ground. Test-drive the vehicle at speeds over 25 mph (40 km/h) with the cruise control set, and watch the voltmeter.

CRUISE CONTROL UNIT 14P CONNECTOR



Wire side of female terminals

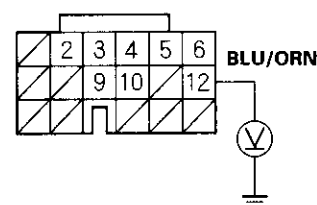
Is there about 1 V?

YES—Go to step 8.

NO—Replace the cruise control unit. ■

8. Connect a voltmeter between PCM connector terminal D12 and body ground. Drive the vehicle at speeds over 25 mph (40 km/h) with the cruise control set, and watch the voltmeter.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 1 V?

YES—Check for loose connectors. If necessary replace the PCM and recheck (see page 11-4). ■

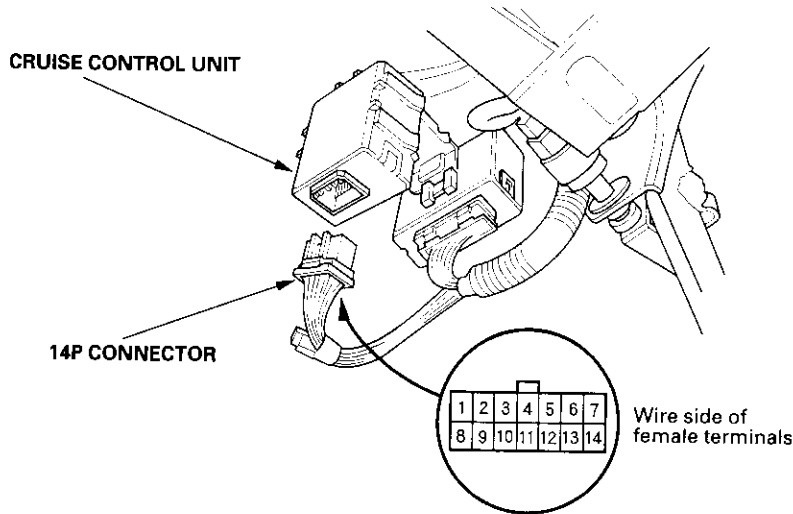
NO—Repair an open in the wire between PCM connector terminal D12 and the control unit 14P connector terminal No. 8. ■

Cruise Control

Cruise Control Unit Input Test

SRS components are located in this area. Review the SRS component locations (see page 23-11) and precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

1. Disconnect the 14P connector from the cruise control unit.
2. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 3.



3. With the 14P connector disconnected, make these input tests.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BRN/WHT	Connect battery power	Check the operation of the magnetic clutch: Clutch should click and output link should be locked.	• Faulty actuator • Poor ground (G451) • An open in the wire
2	BLU	Ignition switch ON (II), main switch ON and brake pedal pressed, then released	Check for voltage to ground: There should be 0 V with the pedal pressed and battery voltage with the pedal released.	• Faulty brake pedal position switch • An open in the wire
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G401) • An open in the wire
4	BLK/ORN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 4 (10 A) fuse in the under-dash fuse/relay box • An open in the wire
5	WHT/BLK	Brake pedal pressed, then released	Check for voltage to ground: There should be battery voltage with the pedal pressed, and 0 V with the pedal released.	• Blown No. 7 (15 A) fuse in the under-hood fuse/relay box • Faulty brake pedal position switch • An open in the wire



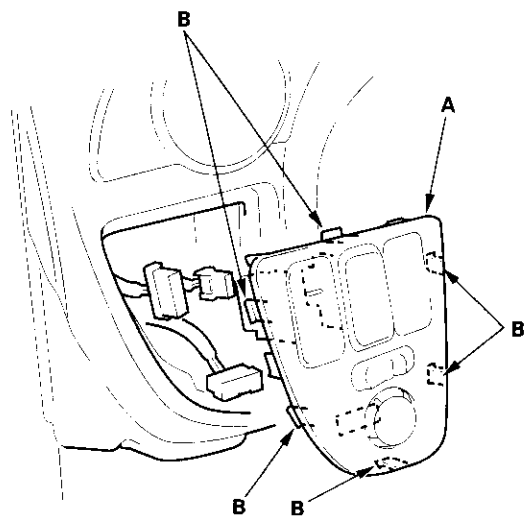
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	GRY/RED	Set button pushed	Check for voltage to ground: There should be battery voltage. When testing terminal No. 6, there should be no voltage on terminal No. 7.	• Blown No. 7 (15 A) fuse in the under-hood fuse/relay box • Faulty horn relay • Faulty set/resume/cancel switch • Faulty cable reel • An open in the wire
7	LT GRN/BLK	Resume button pushed	Check for voltage to ground: There should be battery voltage. When testing terminal No. 7, there should be no voltage on terminal No. 6.	
9	BRN	Connect battery power to the BRN terminal and ground to the BRN/YEL terminal	Check the operation of the actuator motor: You should be able to hear the motor.	• Faulty actuator • An open in the wire
11	BRN/YEL			
10	BLU/YEL	Ignition switch ON (II)	Attach to ground: Cruise indicator light in the gauge assembly should come on.	• Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • Faulty gauge assembly • An open in the wire
12	BLU/WHT	Ignition switch ON (II) and main switch ON; raise the front of the vehicle, and rotate one wheel slowly while holding the other wheel	Check for voltage between the BLU/WHT (+) and BLK (−) terminals: There should be 0 – 5 V or more repeatedly.	• Faulty ECM/PCM • An open in the wire
13	LT GRN	Ignition switch ON (II) and main switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 4 (10 A) fuse in the under-dash fuse/relay box • Faulty main switch • An open in the wire
14	LT BLU	A/T: Shift lever in D or D₂ M/T: Clutch pedal released	Check for continuity to ground: There should be continuity. NOTE: There should be no continuity when the clutch pedal is pressed or when the shift lever is in other positions.	• Faulty transmission range switch • Faulty clutch pedal position switch • Poor ground (M/T: G402, A/T: G101) • An open in the wire
8	BLU/ORN	Reconnect the cruise control unit 14P connector, start the engine, turn the main switch ON and drive the vehicle to speeds over 25 mph (40 km/h) with the cruise control set.	Check for voltage to ground: There should be about 1V	• Faulty cruise control unit • Short to ground

4. If any test indicates a problem, find and correct the cause, then recheck the system. If all the input tests prove OK, the cruise control unit must be faulty; replace it.

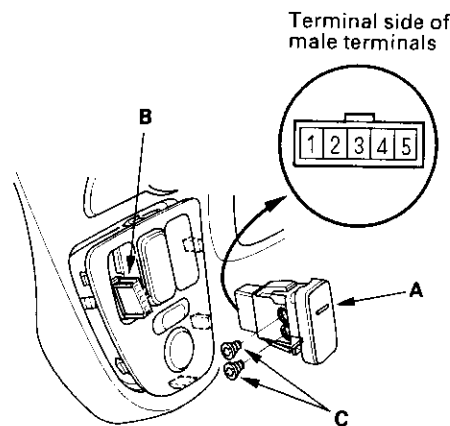
Cruise Control

Main Switch Test/Replacement

1. Gently pry up on the driver's switch panel (A) to release the hooks (B), then pull out the panel.



2. Release the clips, and push the main switch (A) out of the panel, then disconnect the 5P connector (B) from the main switch.

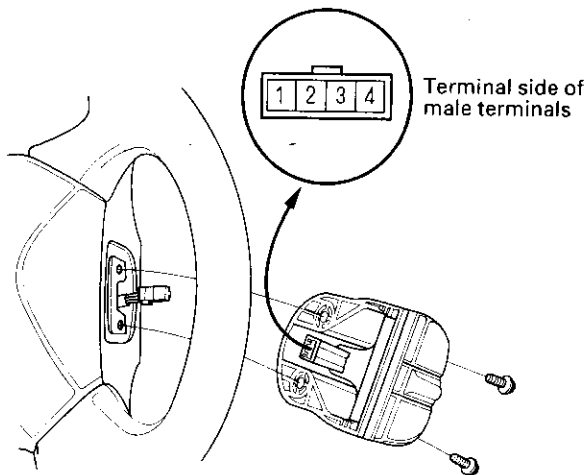


3. Check for continuity between the terminals in each switch position according to the table. If the continuity is not as specified, replace the illumination bulbs (C) or the switch.

Terminal Position	2	5	1	3	4
OFF	○	○	○	○	○
ON	○	○	○	○	○

Set/Resume/Cancel Switch Test/Replacement

1. Remove the two screws, then remove the switch.



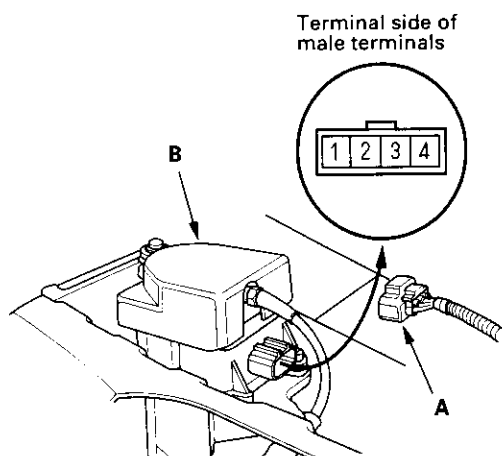
2. Check for continuity between the terminals in switch position according to the table.

- If there is continuity, and it matches the table, but switch failure occurred on the cruise control unit 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.

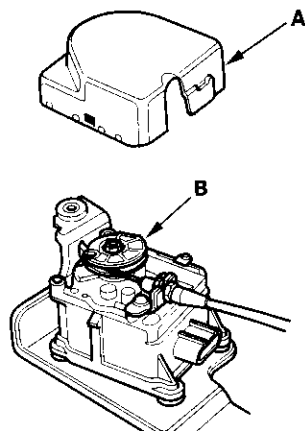
Terminal Position	1	2	3
SET (ON)	○	○	○
RESUME (ON)	○	○	○
CANCEL (ON)	○	○	○

Cruise Control Actuator Test

1. Disconnect the 4P connector (A) from the cruise control actuator (B).



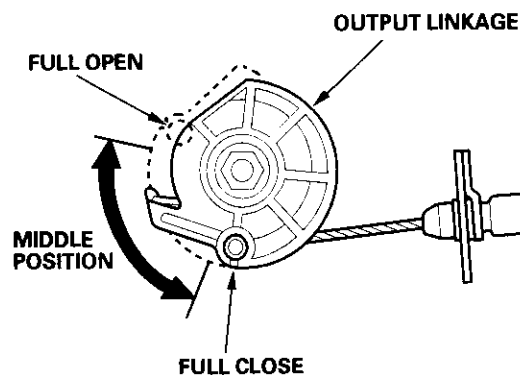
2. Remove the cover (A), and check the output linkage (B) for smooth movement.



3. Connect the battery power to the No. 2 terminal and ground to the No. 1 terminal.
4. Check for a clicking sound from the magnetic clutch. The output linkage should be locked.
5. If the output linkage is not locked, replace the cruise control actuator assembly.

6. Check the operation of the actuator motor in each output linkage position according to the table. You should be able to hear the motor.

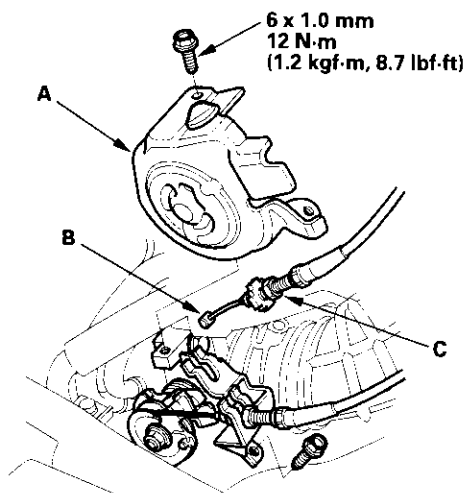
Battery power polarities		Output linkage position		
(+)	(-)	FULL CLOSE	MIDDLE POSITION	FULL OPEN
No. 4 Terminal	No. 3 Terminal	The motor runs.	The motor runs.	The motor stops.
No. 3 Terminal	No. 4 Terminal	The motor stops.	The motor runs.	The motor runs.



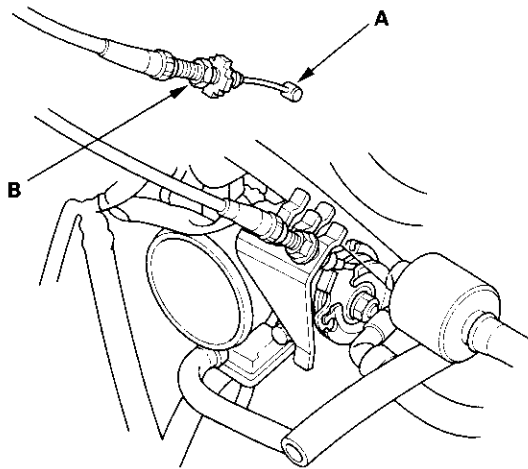
Cruise Control

Cruise Control Actuator/Cable Replacement

1. K20A3 engine: Remove the throttle cover (A), fully open the cruise control link by hand, then remove the cruise control cable (B) from link. Loosen the locknut (C), and remove the cable from the bracket.

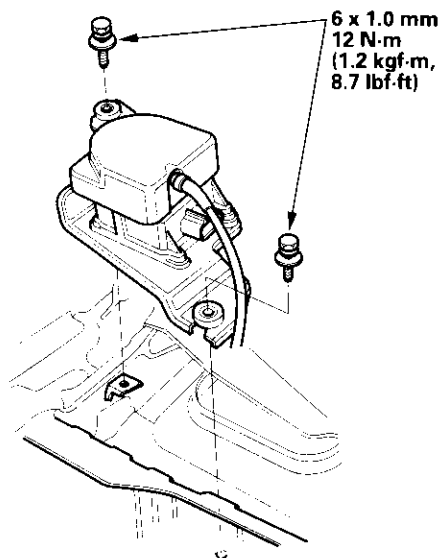


2. K20A2 engine: Fully open the cruise control link by hand, then remove the cruise control cable (A) from link. Loosen the locknut (B), and remove the cable from the bracket.

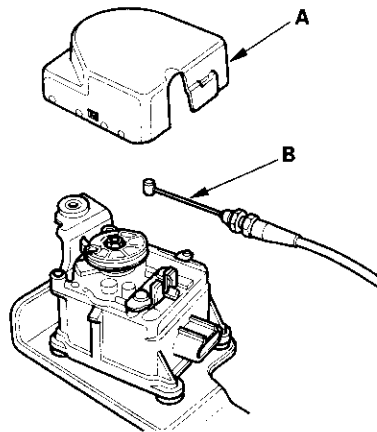


3. Remove the cowl cover (see page 20-98).

4. Disconnect the 4P connector, and remove the two bolts securing the cruise control actuator.

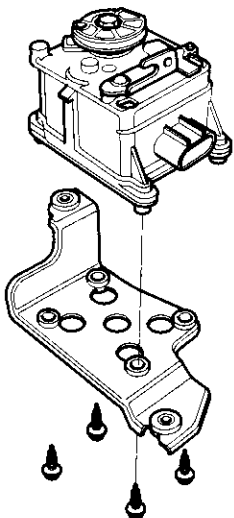


5. Remove the actuator cover (A), then remove the actuator cable (B) from the cruise control actuator.



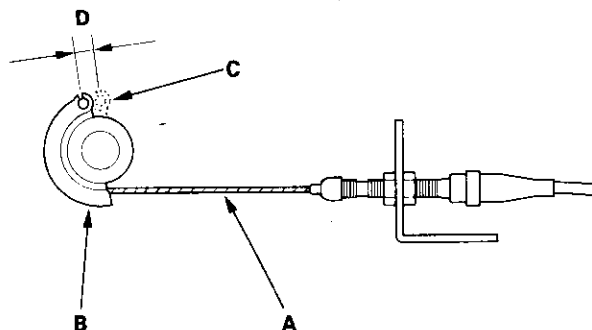
Actuator Cable Adjustment

6. Remove the bracket from the cruise control actuator.



7. Install in the reverse order of removal, and adjust the free play at the throttle linkage after connecting the actuator cable.

1. Check that the actuator cable (A) moves smoothly with no binding or sticking.



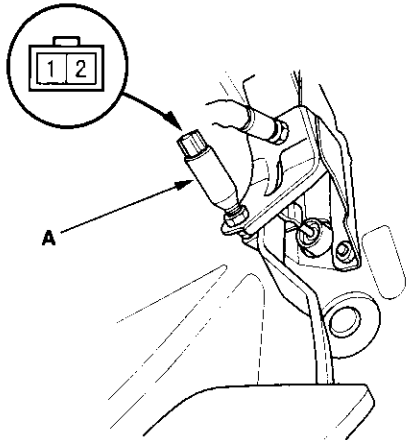
2. Measure the amount of movement of the output linkage (B) until the engine speed starts to increase. At first, the output linkage should be located at the fully closed position (C). The free play (D) should be 3.75 ± 0.5 mm (0.15 ± 0.02 in.).
3. If the free play is not within specs, loosen the locknut, and turn the adjusting nut until the free play is as specified, then retighten the locknut.

Clutch Pedal Position Switch Test

- 1. Disconnect the 2P connector from the clutch pedal position switch (A).

CLUTCH PEDAL POSITION SWITCH 2P CONNECTOR

Terminal side of male terminals



- 2. Remove the clutch pedal position switch.
- 3. Check for continuity between the terminals according to the table.
 - If the continuity is not as specified, replace the clutch pedal position switch.
 - If OK, install the clutch pedal position switch and adjust the pedal height (see page 12-4).

Terminal	1	2
Clutch Pedal Position Switch		
PRESSED		
RELEASED		