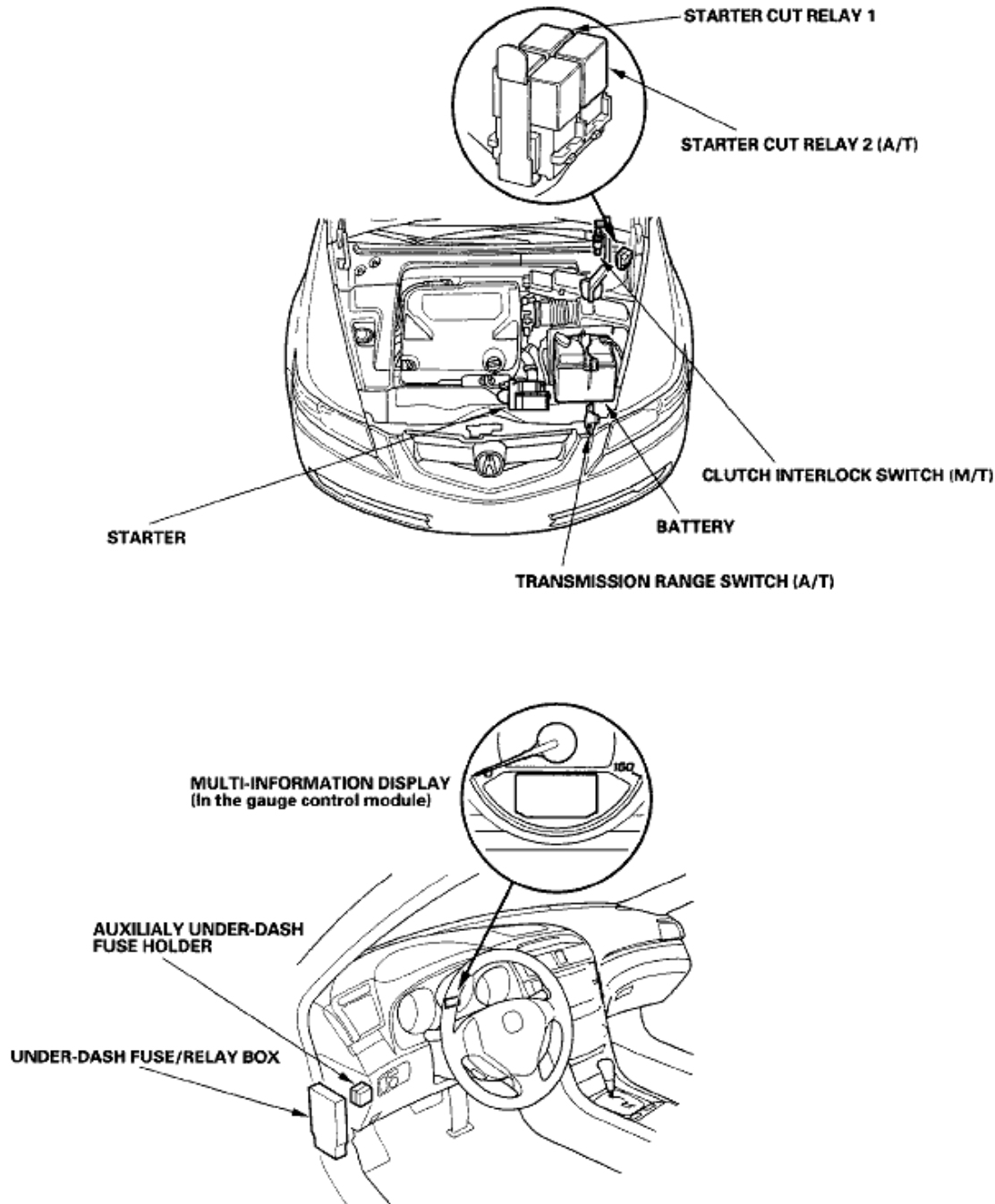


**2007-08 ENGINE****Starting System - TL****COMPONENT LOCATION INDEX**

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

**SYMPTOM TROUBLESHOOTING INDEX****SYMPTOM TROUBLESHOOTING INDEX**

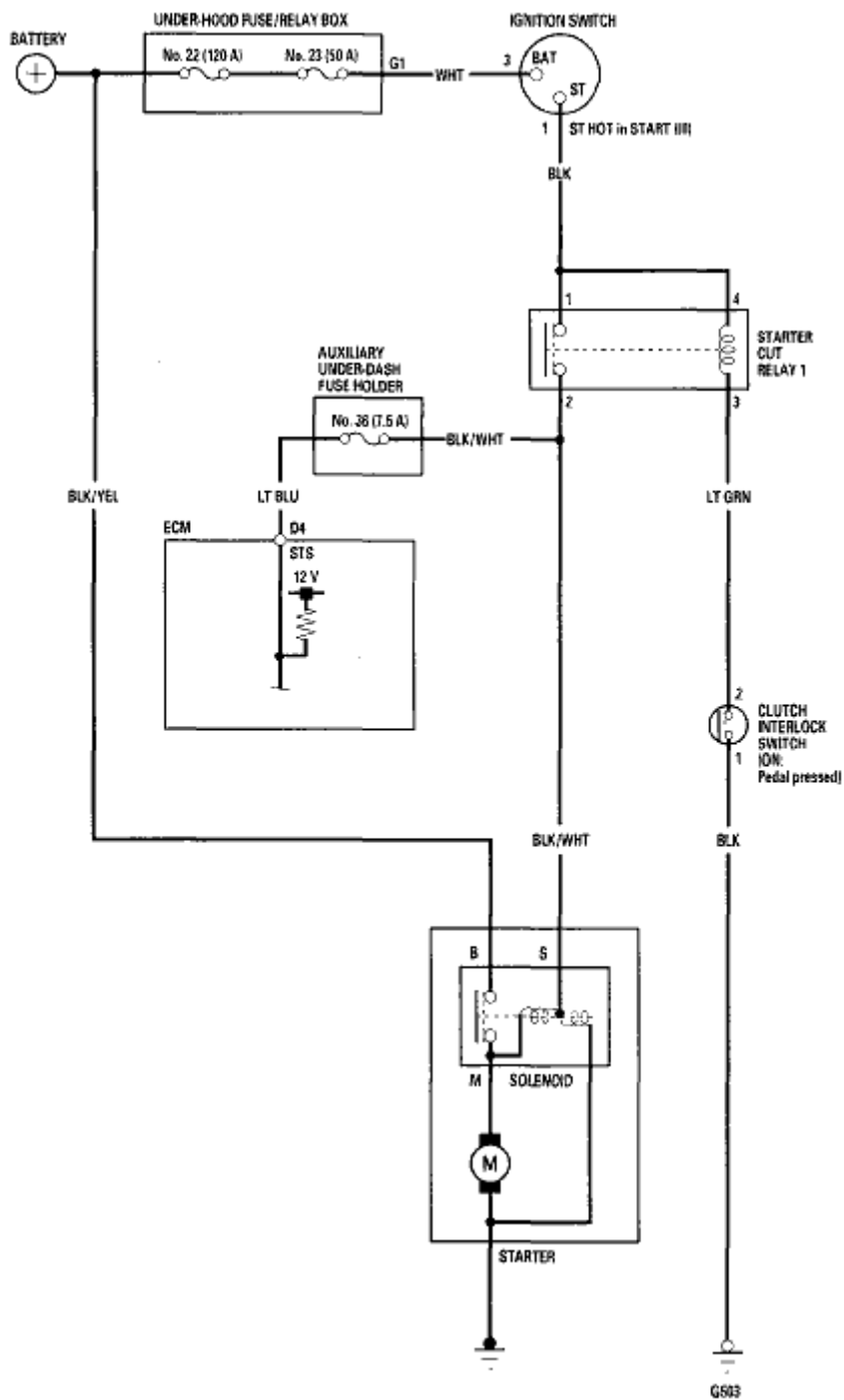
| Symptom                                | Diagnostic procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Also check for                                |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Engine does not start (does not crank) | <ol style="list-style-type: none"> <li>1. Check for loose battery terminals or connections.</li> <li>2. Test the battery for a low state of charge (see <b><u>BATTERY TEST</u></b> ).</li> <li>3. Check the starter (see <b><u>STARTER SYSTEM CIRCUIT TROUBLESHOOTING</u></b> ).</li> <li>4. Check the starter cut relay 1 and starter cut relay 2 (see <b><u>POWER RELAY TEST</u></b> ).</li> <li>5. Check the transmission range switch (A/T) (see <b><u>TRANSMISSION RANGE SWITCH TEST</u></b> ).</li> <li>6. Check the clutch interlock switch (M/T) (see <b><u>CLUTCH INTERLOCK SWITCH TEST</u></b> ).</li> <li>7. Check the ignition switch or wire (see <b><u>TEST</u></b> ).</li> </ol> | Poor ground at G101, G102 (A/T) or G503 (M/T) |
| Engine cranks, but does not start      | <ol style="list-style-type: none"> <li>1. Check for PGM-FI DTCs (see <b><u>GENERAL TROUBLESHOOTING INFORMATION</u></b> ).</li> <li>2. Check the fuel pressure (see <b><u>FUEL PRESSURE TEST</u></b> ).</li> <li>3. Check for a plugged or damaged fuel line (see <b><u>FUEL LINE INSPECTION</u></b> ).</li> <li>4. Check for a plugged fuel filter (see <b><u>FUEL FILTER REPLACEMENT</u></b> ).</li> <li>5. Check the throttle body (see <b><u>THROTTLE BODY TEST</u></b> ).</li> <li>6. Check for low engine compression (see <b><u>ENGINE COMPRESSION INSPECTION</u></b> ).</li> <li>7. Check for a damaged or broken timing belt.</li> </ol>                                                |                                               |
| Engine is hard to start                | <ol style="list-style-type: none"> <li>1. Check for PGM-FI DTCs (see <b><u>GENERAL TROUBLESHOOTING INFORMATION</u></b> ).</li> <li>2. Check the fuel pressure (see <b><u>FUEL PRESSURE TEST</u></b> ).</li> <li>3. Check for a plugged or damaged fuel line (see <b><u>FUEL LINE INSPECTION</u></b> ).</li> <li>4. Check for a plugged fuel filter (see <b><u>FUEL FILTER REPLACEMENT</u></b> ).</li> </ol>                                                                                                                                                                                                                                                                                     |                                               |
| Engine cranks slowly                   | <ol style="list-style-type: none"> <li>1. Check for loose battery terminals or connections.</li> <li>2. Test the battery for a low state of charge (see <b><u>BATTERY TEST</u></b> ).</li> <li>3. Check the starter for binding (see <b><u>STARTER OVERHAUL</u></b> ).</li> <li>4. Check for excessive drag in the engine.</li> </ol>                                                                                                                                                                                                                                                                                                                                                           |                                               |
| Multi-information display              | Check for PGM-FI DTCs (see <b><u>GENERAL</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |

Warning CHECK  
STARTING SYSTEM

**TROUBLESHOOTING INFORMATION** ).

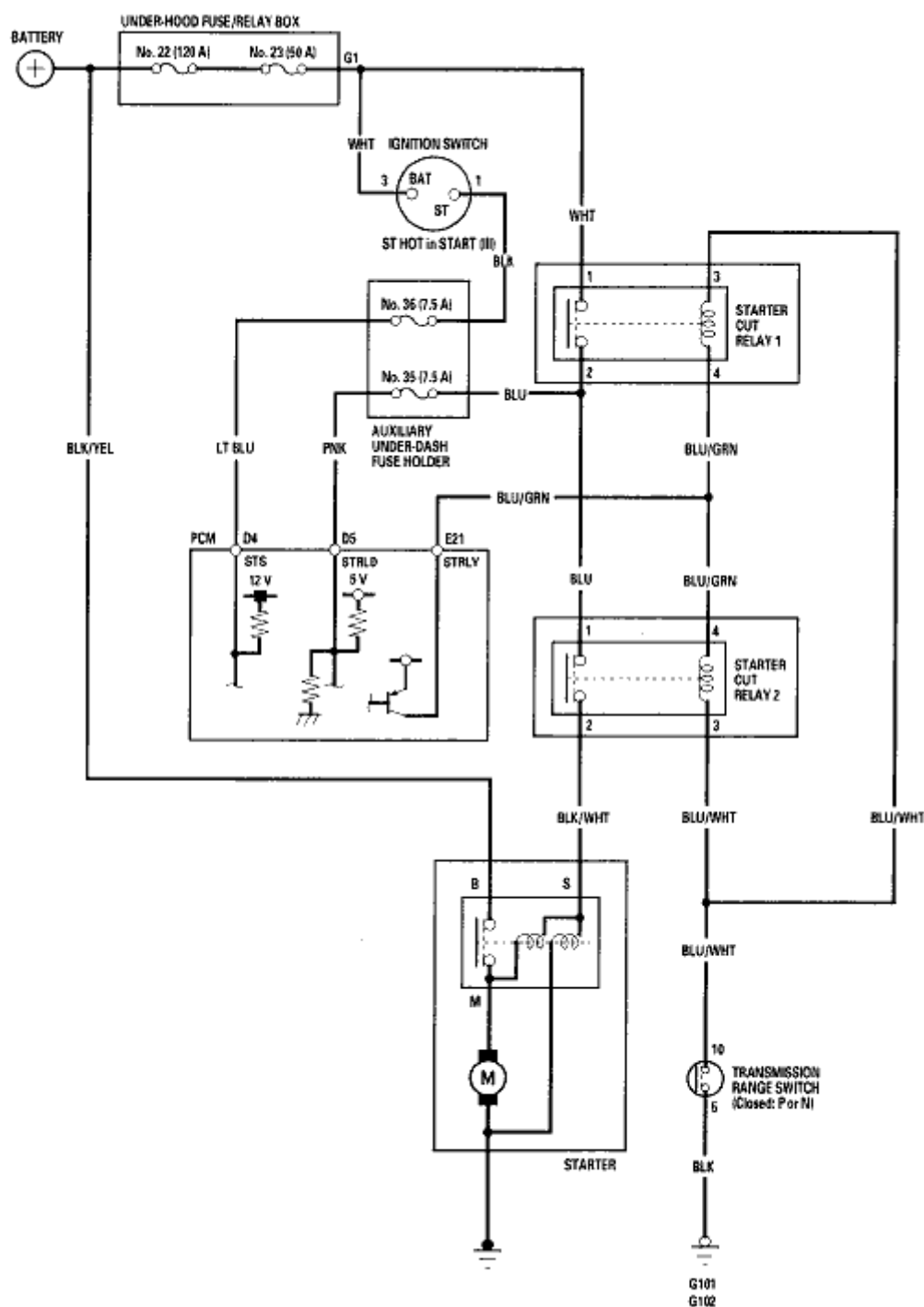
## CIRCUIT DIAGRAM

### M/T MODEL



**Fig. 2: Starting System - Circuit Diagram (M/T Model)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

## A/T MODEL



**Fig. 3: Starting System - Circuit Diagram (A/T Model)**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

## STARTER SYSTEM CIRCUIT TROUBLESHOOTING

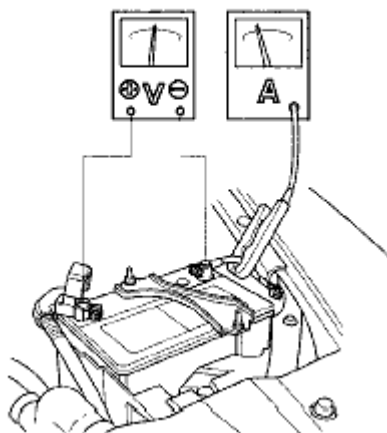
## NOTE:

- Air temperature must be between 59 and 100°F (15 and 38°C) during this procedure.

- After the inspection, you must reset the engine control module (ECM)/powertrain control module (PCM). Otherwise, the ECM/PCM will continue to stop the fuel injectors from operating.
- The battery must be in good condition and fully charged.

1. Remove the left side engine compartment cover (see step 3 on page 5-2).
2. Hook up this equipment:
  - Ammeter, 0-400 A
  - Voltmeter, 0-20 V (accurate within 0.1 V)

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



**Fig. 4: Hooking Up Equipment**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
4. Turn the ignition switch ON (II).
5. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't communicate, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)** ).
6. Select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.
7. Set the parking brake, then with the shift lever in the N or P position (A/T) or the clutch pedal pressed (M/T), turn the ignition switch to START (III).

*Does the starter crank the engine normally?*

**YES** -The starting system is OK. Go to step 12.

**NO** -Go to step 8.

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

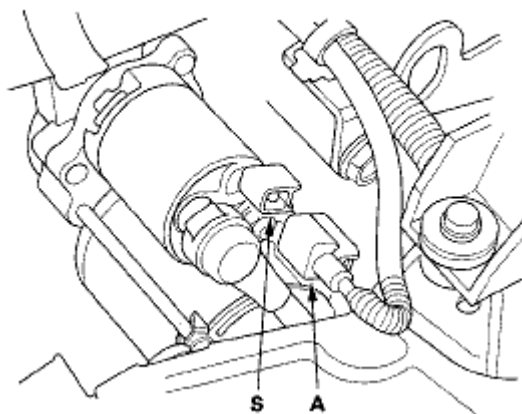
*Does the starter crank the engine?*

**YES** -Repairing the loose connection corrected the problem. The starting system is OK. Go to step 12.

**NO** -Based on the following symptoms, take the appropriate action:

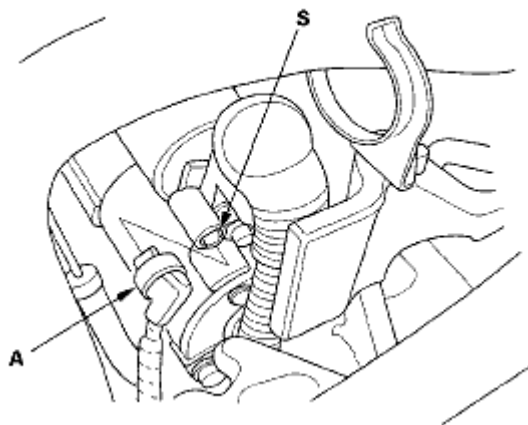
- If the starter will not crank the engine at all, go to step 9.
  - If the starter cranks the engine erratically or too slowly, go to step 10.
  - If the starter will not disengage from the flywheel or torque converter ring gear when you release the key, replace the starter, or remove and disassemble it, and check for the following:
    - Starter solenoid and switch malfunction
    - Dirty drive gear or damaged overrunning clutch
9. Make sure the shift lever is in the N or P position (A/T) or neutral (M/T), then disconnect the BLK/WHT wire (A) from the solenoid S terminal. Connect a jumper wire from the battery positive terminal to the solenoid S terminal.

**M/T**



**Fig. 5: Locating BLK/WHT Wire From Solenoid S Terminal - M/T Model**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**A/T**



**Fig. 6: Locating BLK/WHT Wire From Solenoid S Terminal - A/T Model**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Does the starter crank the engine?*

**YES** -Check the following items in the order listed until you find the open circuit or high resistance in the circuit:

- M/T model: The BLK wire and connectors between starter cut relay 1 and the ignition switch
- M/T model: The BLK/WHT wire and connectors between starter cut relay 1 and the starter
- A/T model: The WHT wire and connectors between starter cut relay 1 and the under-hood fuse/relay box
- A/T model: The BLU wire and connectors between starter cut relay 1 and starter cut relay 2
- A/T model: The BLK/WHT wire and connectors between starter cut relay 2 and the starter
- The ignition switch (see **TEST** )
- The transmission range switch and connector (A/T) (see **TRANSMISSION RANGE SWITCH TEST** ) or the clutch interlock switch and connector (M/T) (see **CLUTCH INTERLOCK SWITCH TEST** )
- The starter cut relays (see **POWER RELAY TEST** )

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

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 (M/T)/7.7 V (A/T) and is the current draw less than or equal to 380 A (M/T)/400 A (A/T)?*

**YES** -Go to step 11.

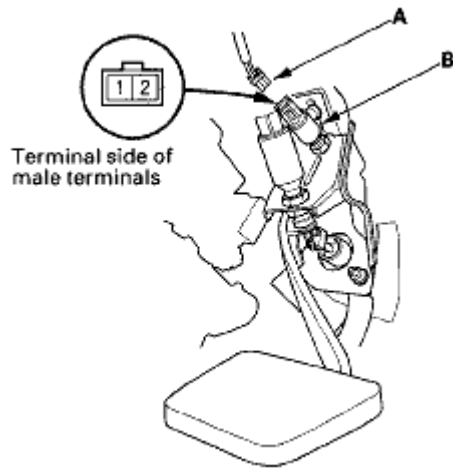
**NO** -Replace the starter, or remove and disassemble it, and check for these problems:

- Drag in the starter armature
  - Short in the armature winding
  - Excessive drag in the engine
  - Open circuit in starter armature commutator segments
  - Excessively worn starter brushes
  - Open circuit in the starter brushes
  - Dirty or damaged helical splines or drive gear
  - Faulty drive gear clutch
11. Remove the starter, and inspect its drive gear and the flywheel or torque converter ring gear for damage. Replace any damaged parts.
  12. Select ECM/PCM reset (see **ECM/PCM RESET** ) to cancel the ALL INJECTORS OFF on the HDS.
  13. Reinstall the left side engine compartment cover (see step 82 on page 5-24).

## **CLUTCH INTERLOCK SWITCH TEST**

**M/T MODEL**

1. Disconnect the clutch interlock switch 2P connector (A).



**Fig. 7: Identifying Clutch Interlock Switch 2P Connector**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the clutch interlock switch (B).
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 the clutch interlock switch and adjust the pedal height (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT** ).

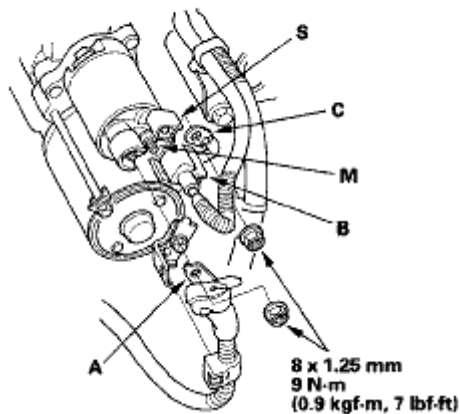
| Terminal                | 1     | 2 |
|-------------------------|-------|---|
| Clutch Interlock Switch |       |   |
| PRESSED                 | ○ — ○ |   |
| RELEASED                |       |   |

**Fig. 8: Clutch Interlock Switch Continuity Reference Chart**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**STARTER SOLENOID TEST**

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Remove the left side engine compartment cover (see step 3 on page 5-2).
3. Disconnect the negative cable from the battery.
4. Disconnect the starter cable (A), BLK/WHT wire (B), and motor cable (C).

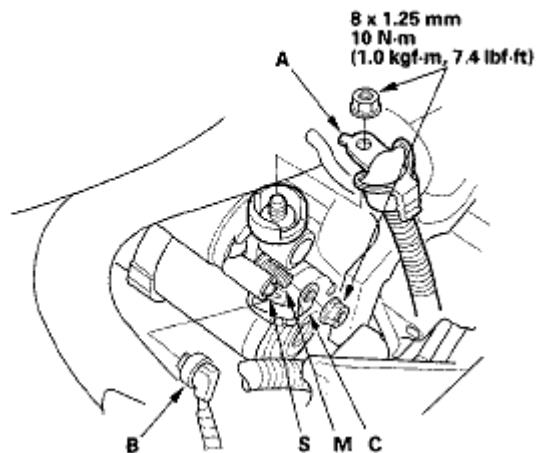
**M/T**



**Fig. 9: Identifying Starter Cable, BLK/WHT Wire And Motor Cable - M/T Model With Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

A/T



**Fig. 10: Identifying Starter Cable, BLK/WHT Wire And Motor Cable - A/T Model With Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

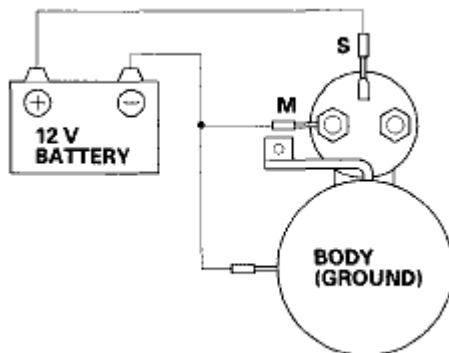
5. Check the hold-in coil for continuity between the S terminal and the armature housing (ground). There should be continuity.
  - If there is continuity, go to step 6.
  - If there is no continuity, replace the solenoid.
6. Check the pull-in coil for continuity between the S terminal and the M terminal. There should be continuity.
  - If there is continuity, the solenoid is OK.
  - If there is no continuity, replace the solenoid.
7. Connect the cables and wire in the reverse order of removal.
8. Connect the negative cable to the battery.

9. Reinstall the left side engine compartment cover (see step 82 on page 5-24).
10. Enter the anti-theft codes for the audio system and the navigation system (if equipped).
11. Set the clock (on vehicles without navigation).

## STARTER PERFORMANCE TEST

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

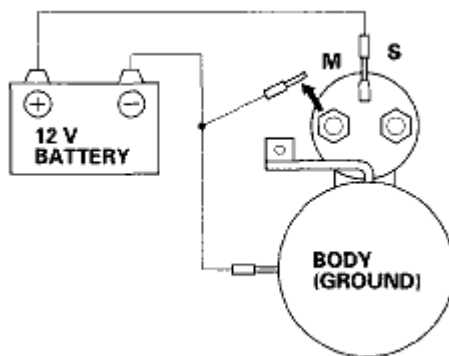
**NOTE:** To avoid damaging the starter, never leave the battery connected for more than 10 seconds.



**Fig. 11: Testing Starter Performance**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

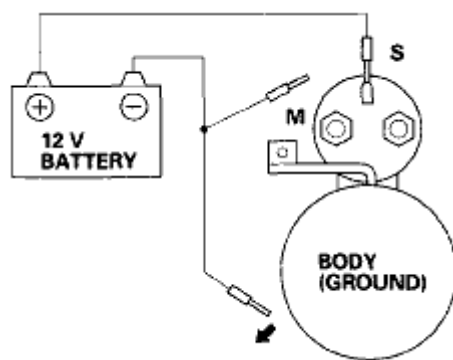
3. Connect the battery as shown. Make sure you disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil of the solenoid is working properly.



**Fig. 12: Disconnecting Battery From M Terminal**

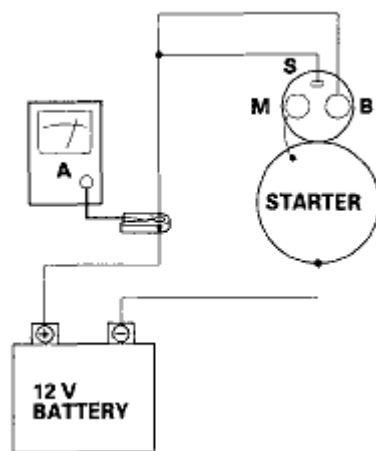
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



**Fig. 13: Disconnecting Battery From Starter Body**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



**Fig. 14: Connecting Starter To Battery**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If the electric current meets the specification when the battery voltage is at 11.5 V (M/T)/11 V (A/T), the starter is working properly.

### Specification

**Electric Current: 80 A (M/T)/90 A (A/T) or less**

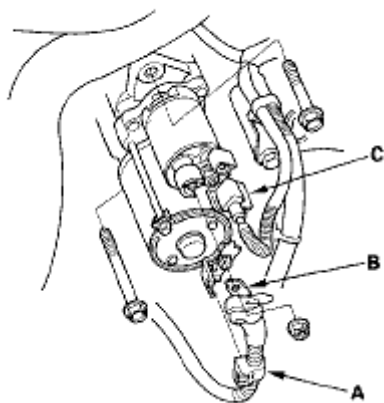
## STARTER REMOVAL AND INSTALLATION

### REMOVAL

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.
2. Remove the left side engine compartment cover (see step 3 on page 5-2).
3. Disconnect the negative cable from the battery, then disconnect the positive cable.

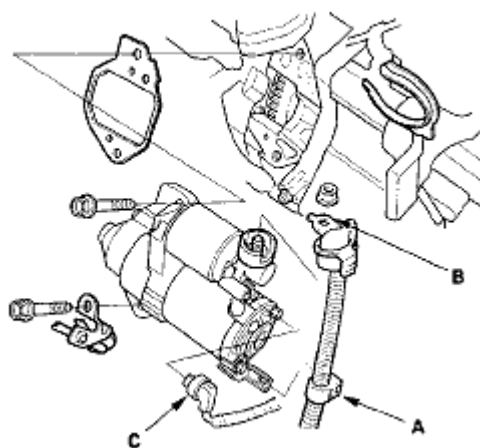
4. Remove the battery and the battery tray.
5. Remove the harness clamp (A).

**M/T**



**Fig. 15: Identifying Harness Clamp And Starter Cable - M/T Model**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**A/T**



**Fig. 16: Identifying Harness Clamp And Starter Cable - A/T Model**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

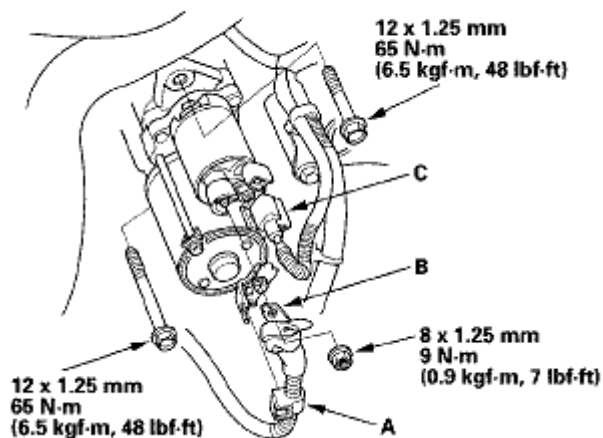
6. Disconnect the starter cable (B) from the B terminal, then disconnect the BLK/WHT wire (C) from the S terminal.
7. Remove the two bolts holding the starter, then remove the starter.

## INSTALLATION

1. Install the starter, then install the harness clamp (A), connect the starter cable (B) to the B terminal and the BLK/WHT wire (C) to the S terminal. Make sure the crimped side of the ring terminal faces away from the starter when you connect it.

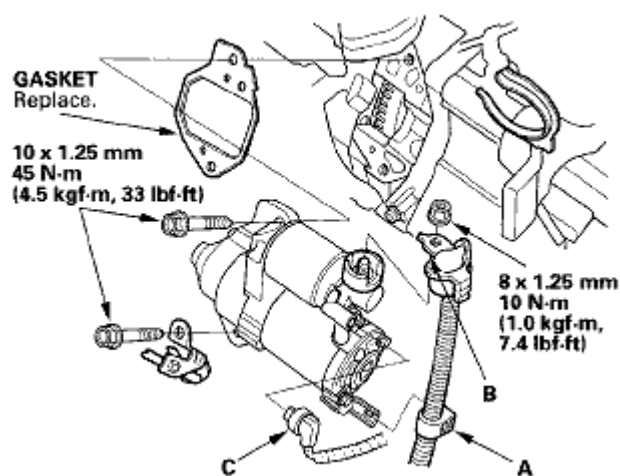
**NOTE:** Always use a new gasket (A/T model).

**M/T**



**Fig. 17: Identifying Harness Clamp And Starter Cable - M/T Model With Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**A/T**



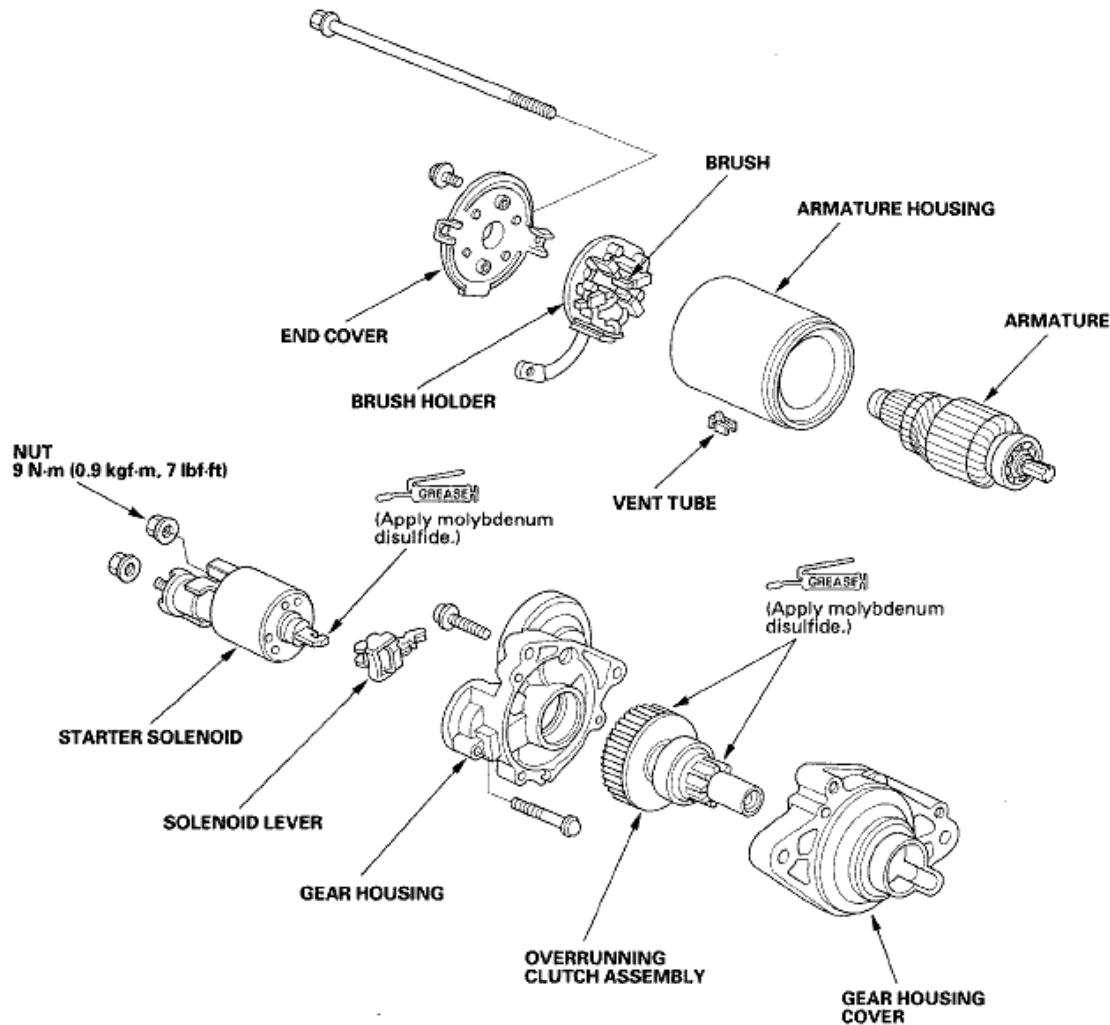
**Fig. 18: Identifying Harness Clamp And Starter Cable - A/T Model With Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the battery tray and the battery.
3. Connect the positive cable to the battery, then connect the negative cable.
4. Start the engine to make sure the starter works properly.
5. Reinstall the left side engine compartment cover (see step 82 on **ENGINE INSTALLATION**).
6. Enter the anti-theft codes for the audio system and the navigation system (if equipped).
7. Set the clock (on vehicles without navigation).

# STARTER OVERHAUL

## M/T MODEL

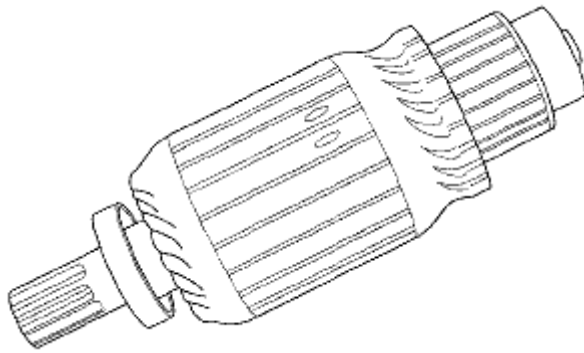
### Disassembly/Reassembly



**Fig. 19: Identifying Starting System Components - M/T Models With Torque Specifications**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

### Armature Inspection and Test

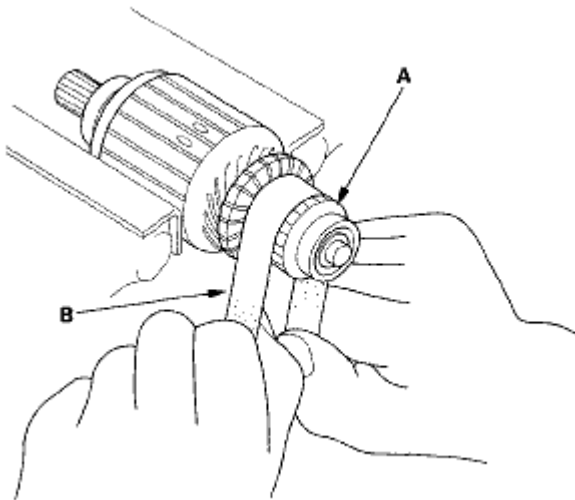
1. Remove the starter (see **STARTER REMOVAL AND INSTALLATION** ).
2. Disassemble the starter as shown at the beginning of this procedure.
3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.



**Fig. 20: Identifying Armature**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface it with an emery cloth or a lathe to the specifications in step 5, or recondition with #500 or #600 sandpaper (B).



**Fig. 21: Checking Commutator Surface**

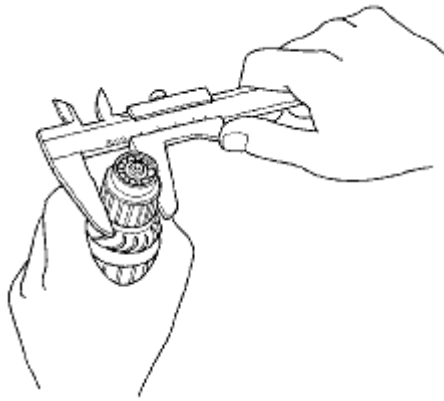
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.)**



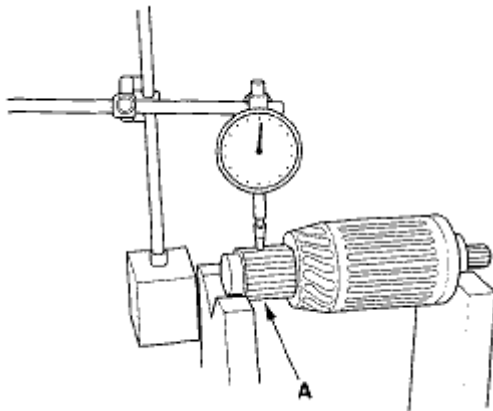
**Fig. 22: Checking Commutator Diameter**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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.)**



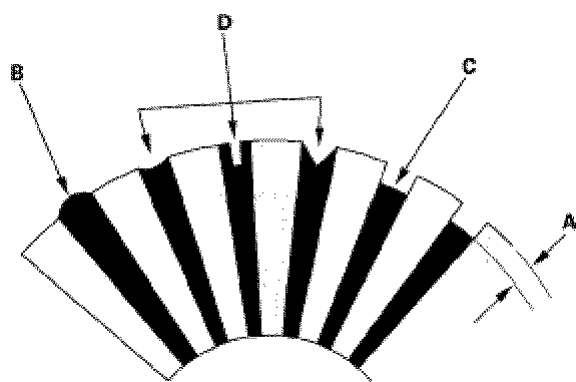
**Fig. 23: Measuring Commutator Runout**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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.)**

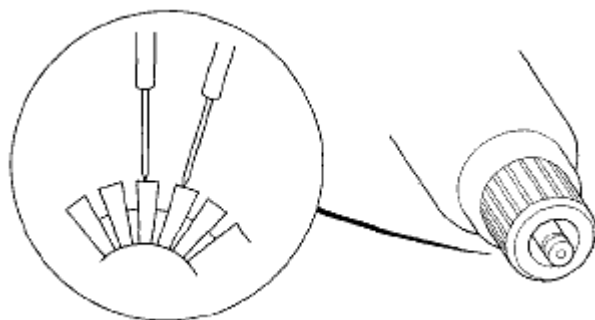
**Service Limit: 0.15 mm (0.006 in.)**



**Fig. 24: Identifying Mica Depth**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

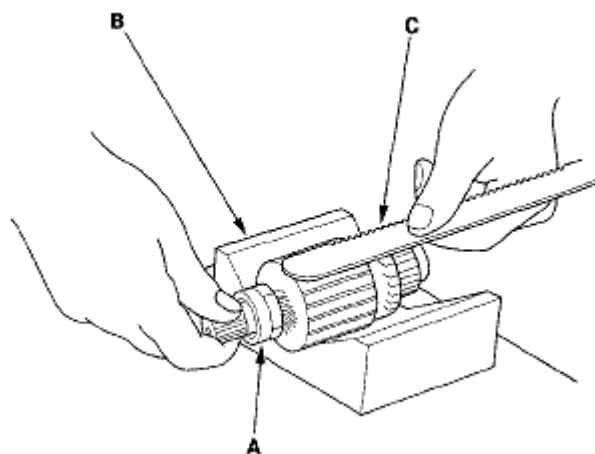
8. Check for continuity between the segments of the commutator. If there is an open circuit between any segments, replace the armature.



**Fig. 25: Checking Continuity Between Segments Of Commutator**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

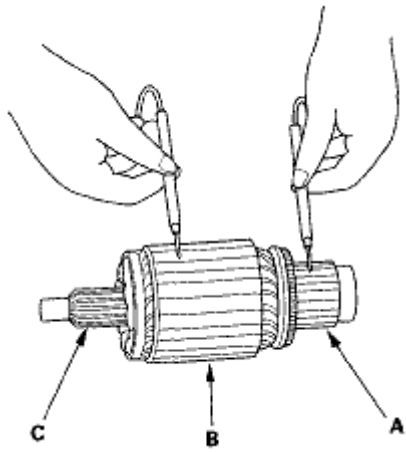
9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



**Fig. 26: Placing Armature On Armature Tester**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



**Fig. 27: Checking Continuity Between Commutator And Armature Coil Core**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

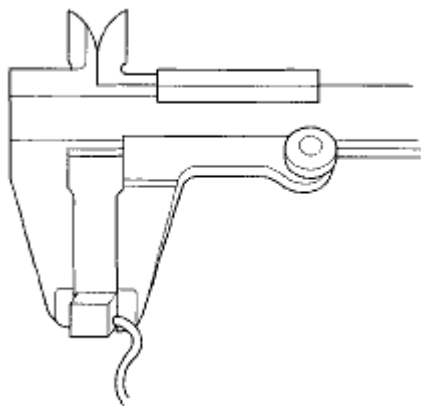
### Starter Brush Inspection

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

### Brush Length

**Standard (New): 15.8-16.2 mm (0.62-0.64 in.)**

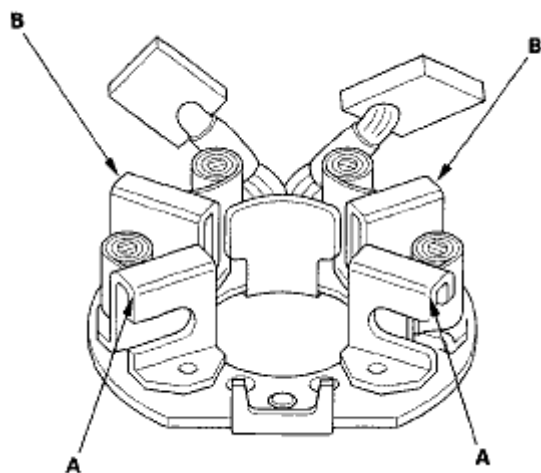
**Service Limit: 11.0 mm (0.43 in.)**



**Fig. 28: Measuring Brush Length**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

### Starter Brush Holder Test

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



**Fig. 29: Identifying Brush Holder**

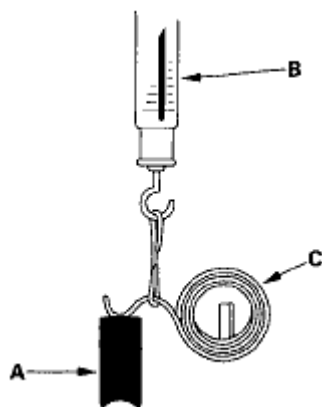
Courtesy of AMERICAN HONDA MOTOR CO., INC.

### Brush Spring Inspection

13. 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:

15.7-17.7 N (1.60-1.80 kgf, 3.53-3.97 lbf)

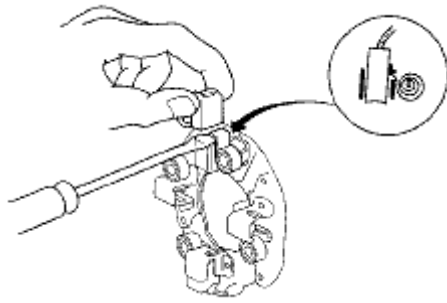


**Fig. 30: Measuring Spring Tension**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

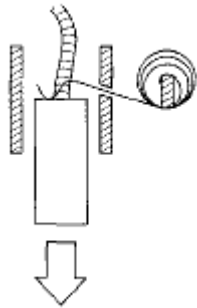
14. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder. Release the spring to hold in place.

**NOTE:** To seat 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.



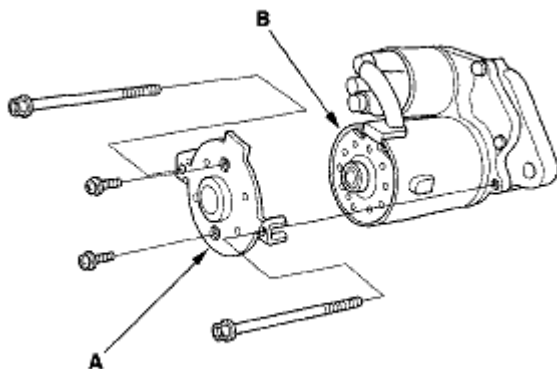
**Fig. 31: Prying Back Brush Spring With Screwdriver**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



**Fig. 32: Installing Armature In Housings**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the starter end cover (A) to retain the brush holder (B).



**Fig. 33: Identifying Starter End Cover And Brush Holder**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

### Overrunning Clutch Inspection

17. Slide the overrunning clutch along the shaft. Replace it if it does not slide smoothly.
18. Rotate the overrunning clutch (A) both ways. If it does not lock in either direction, or it locks in both directions, replace it.



**Fig. 34: Rotating Overrunning Clutch**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

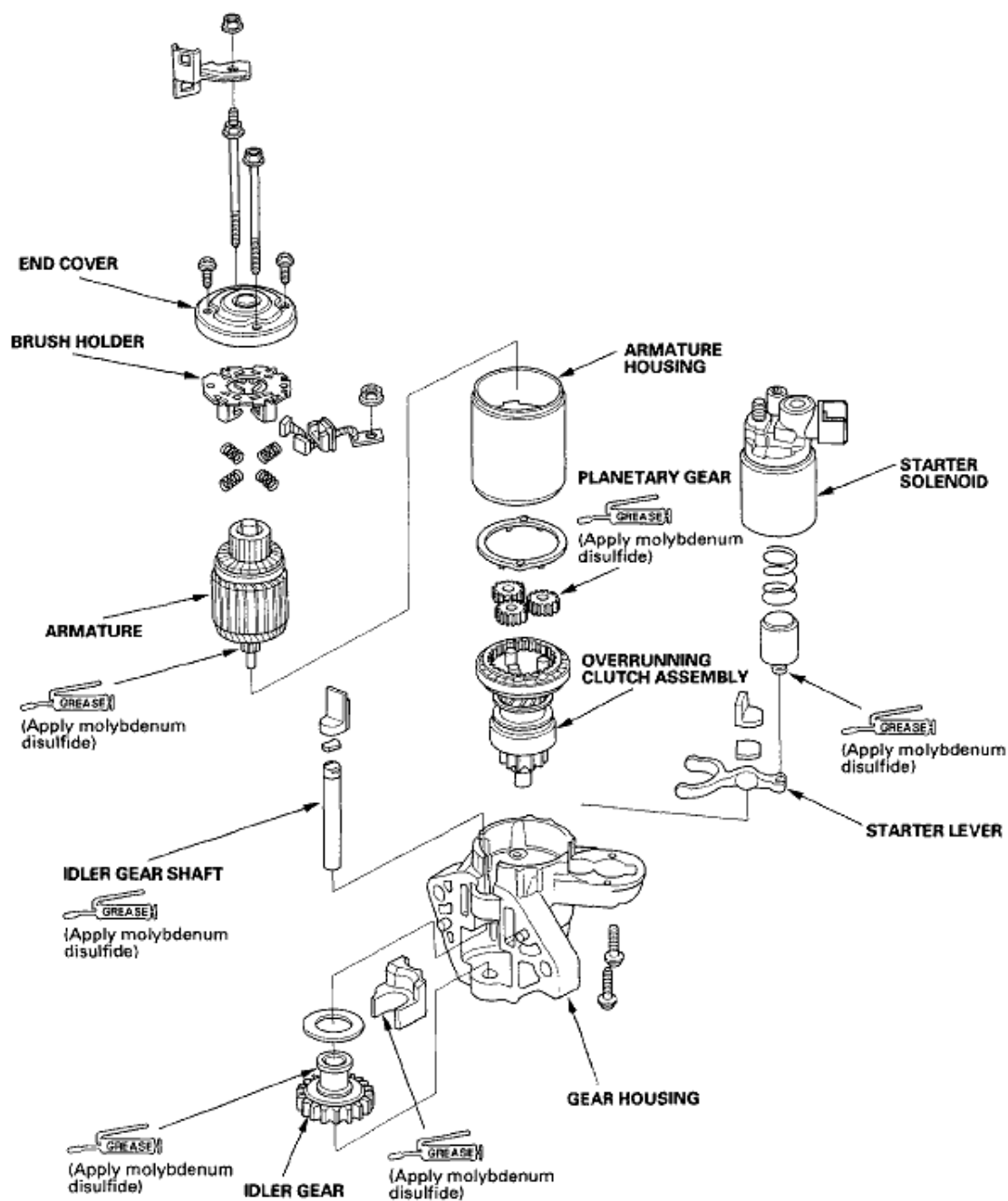
19. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

**NOTE:** Check the condition of the flywheel ring gear to see if the teeth are damaged.

20. Reassemble the starter in the reverse order of disassembly.

## **A/T MODEL**

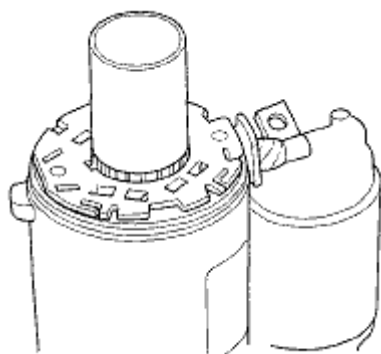
### **Disassembly/Reassembly**



**Fig. 35: Identifying Starting System Components - A/T Model**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

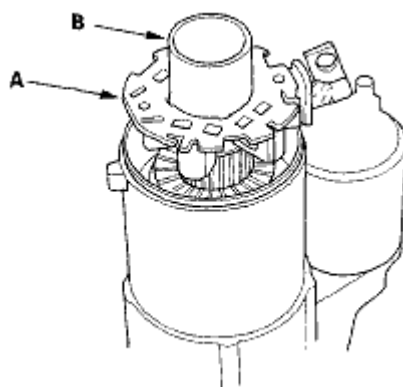
#### Brush Holder Removal

1. Remove the starter (see **STARTER REMOVAL AND INSTALLATION** ).
2. Disconnect the wire from the M terminal, and remove the end cover.
3. Place a plastic pipe with an outside diameter of 29.4 mm (1.16 in.) on the armature.



**Fig. 36: Placing Plastic Pipe With Outside Diameter On Armature**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

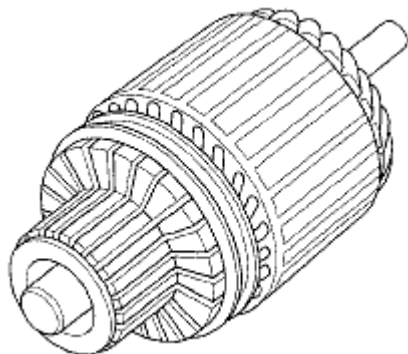
4. Move the brush holder (A) up to the pipe (B) while holding the pipe so the brushes do not pop out from the holder.



**Fig. 37: Identifying Brush Holder And Pipe**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

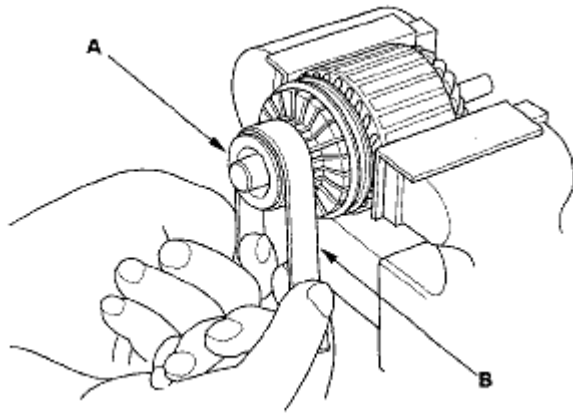
### **Armature Inspection and Test**

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



**Fig. 38: Identifying Armature**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Check the commutator (A) surface. If the surface is dirty or burnt, resurface it with an emery cloth or a lathe to the specifications in step 8, or recondition with #500 or #600 sandpaper (B).



**Fig. 39: Checking Commutator Surface**

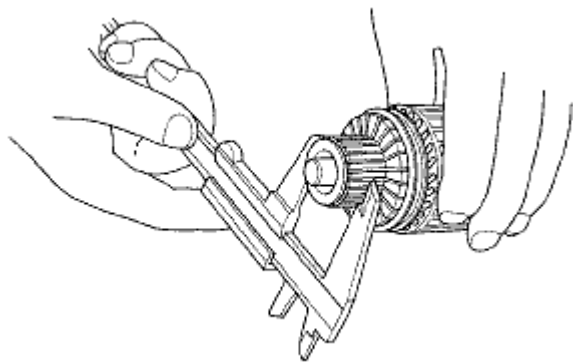
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

#### **Commutator Diameter**

**Standard (New): 29.3-29.5 mm (1.154-1.161 in.)**

**Service Limit: 28.8 mm (1.134 in.)**



**Fig. 40: Checking Commutator Diameter**

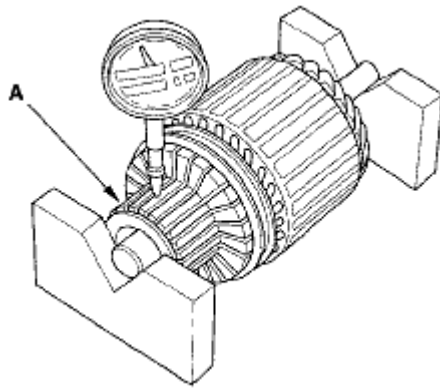
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

#### **Commutator Runout**

**Standard (New): 0.05 mm (0.002 in.) max.**

**Service Limit: 0.1 mm (0.004 in.)**



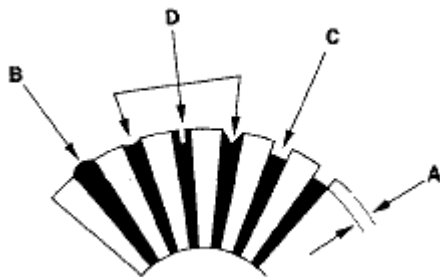
**Fig. 41: Measuring Commutator Runout**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

### **Commutator Mica Depth**

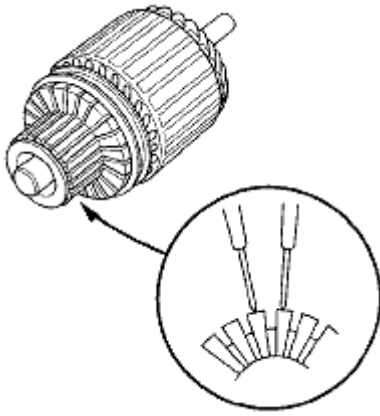
**Standard (New): 0.40-0.50 mm (0.016-0.020 in.)**

**Service Limit: 0.20 mm (0.008 in.)**



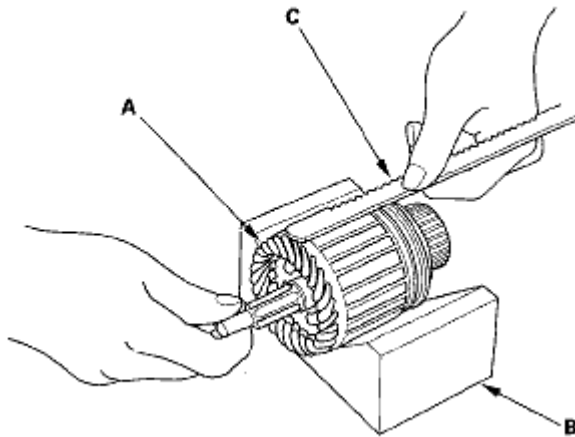
**Fig. 42: Identifying Mica Depth**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



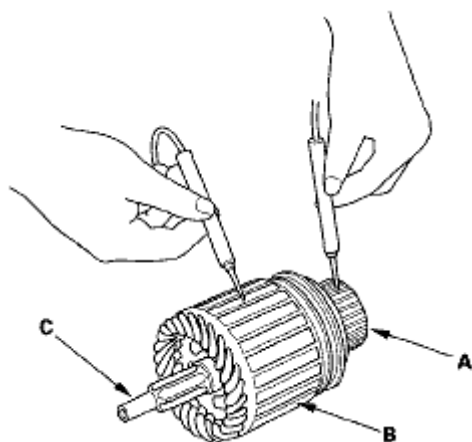
**Fig. 43: Checking Continuity Between Segments Of Commutator**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



**Fig. 44: Placing Armature On Armature Tester**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



**Fig. 45: Checking Continuity Between Commutator And Armature Coil Core, And Commutator And Armature Shaft**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

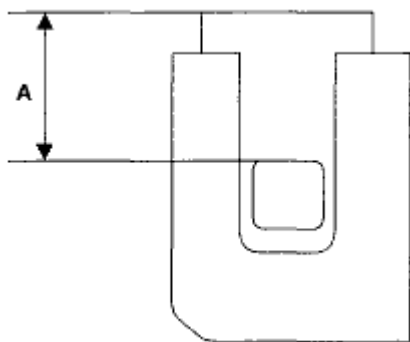
### Starter Brush Inspection

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

#### Brush Length

**Standard (New): 7.7-8.0 mm (0.30-0.31 in.)**

**Service Limit: 0.9 mm (0.04 in.)**

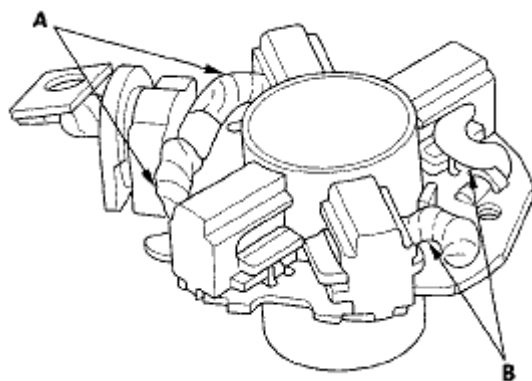


**Fig. 46: Measuring Brush Length**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

### Starter Brush Holder Test

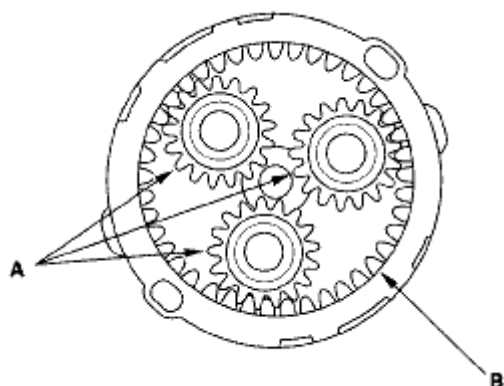
15. Check for continuity between the (+) brush (A) and (-) brush (B). If there is continuity, replace the brush holder assembly.



**Fig. 47: Checking Continuity Between (+) Brush (A) And (-) Brush (B)**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

### **Planetary Gear Inspection**

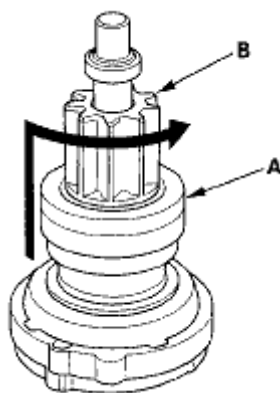
16. Check the planetary gears (A) and internal ring gear (B). Replace them if they are worn or damaged.



**Fig. 48: Identifying Planetary Gears And Internal Ring Gear**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

### **Overrunning Clutch Inspection**

17. Slide the overrunning clutch along the shaft. Replace it if it does not slide smoothly.
18. Rotate the overrunning clutch (A) in both directions. It should lock and move upward in one direction and rotate smoothly in the other direction. If it does not lock in either direction, or if it locks both directions, then replace it.



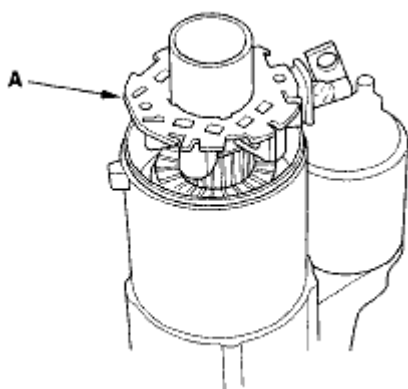
**Fig. 49: Rotating Overrunning Clutch**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. 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 idler gear and torque converter ring gear to see if the starter drive gear teeth are damaged.

#### **Starter Reassembly**

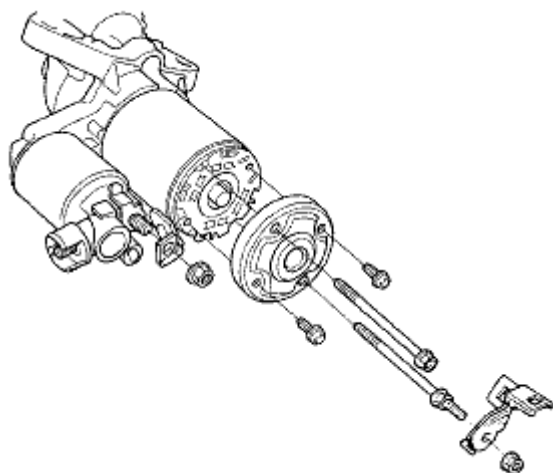
20. Install the armature into the housing.
21. Place the brush holder assembly on the armature, then move the brush holder (A) down to the armature.



**Fig. 50: Identifying Brush Holder**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



**Fig. 51: Identifying End Cover**

Courtesy of AMERICAN HONDA MOTOR CO., INC.