

2007-08 ELECTRICAL
Charging System - TL

COMPONENT LOCATION INDEX

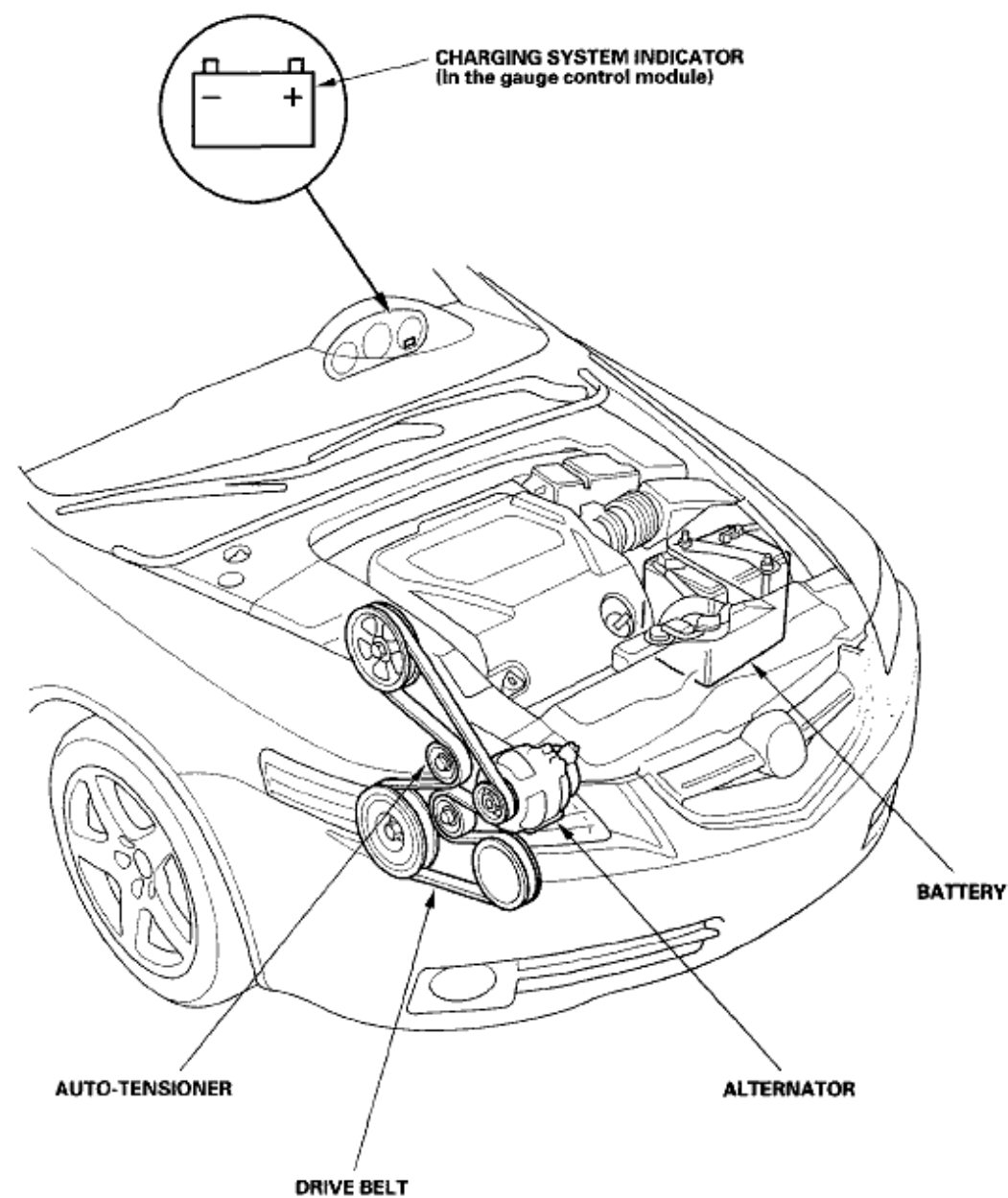


Fig. 1: Identifying Charging System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

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		Also
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Symptom	Diagnostic procedure	check for
Charging system indicator does not come on with the ignition switch ON (II)	Troubleshoot the charging system indicator circuit (see <u>CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING</u>).	
Charging system indicator stays on	1. Check for PGM-FI DTCs (see <u>GENERAL TROUBLESHOOTING INFORMATION</u>). 2. Troubleshoot the charging system indicator circuit (see <u>CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING</u>). 3. Check for a broken drive belt (see <u>DRIVE BELT INSPECTION</u>). 4. Check the drive belt auto-tensioner (see <u>DRIVE BELT AUTO-TENSIONER INSPECTION</u>).	
Battery discharged	1. Check for excessive parasitic electrical current, draw with the ignition switch OFF, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models. 2. Check for a broken drive belt (see <u>DRIVE BELT INSPECTION</u>). 3. Check the drive belt auto-tensioner (see <u>DRIVE BELT AUTO-TENSIONER INSPECTION</u>). 4. Troubleshoot the alternator and regulator circuit (see <u>ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING</u>). 5. Check for a poor connection at the battery terminal. 6. Test the battery (see <u>BATTERY TEST</u>).	
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see <u>ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING</u>). 2. Test the battery (see <u>BATTERY TEST</u>).	

CIRCUIT DIAGRAM



1. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES --Go to step 2.

NO -Go to step 14.

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

Does the charging system indicator go off?

YES -Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).

NO -Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

Does the charging system indicator flash?

YES -Go to step 4.

NO -Replace the gauge control module (see **GAUGE CONTROL MODULE REPLACEMENT**).

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

Does the charging system indicator go off?

YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO -Go to step 7.

7. Turn the ignition switch OFF.
8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
9. Turn the ignition switch ON (II).
10. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't communicate, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)**).
11. Jump the SCS line with the HDS, then turn the ignition switch OFF.

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

12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A11 and body ground.

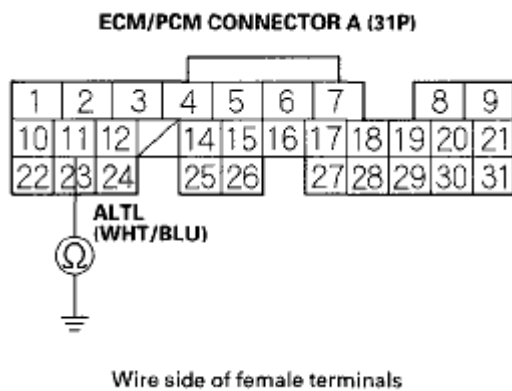


Fig. 3: Checking Continuity Between ECM/PCM Connector Terminal And Body Ground
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the alternator and the ECM/PCM

NO -Update the ECM/PCM if it does not have the latest software (see UPDATING THE ECM/PCM), or substitute a known-good ECM/PCM (see SUBSTITUTING THE ECM/PCM), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see ECM/PCM REPLACEMENT).

14. Do the gauge control module self-diagnostic function procedure (see SELF-DIAGNOSTIC FUNCTION).

Does the charging system indicator flash?

YES -Go to step 15.

NO -Replace the gauge control module (see GAUGE CONTROL MODULE REPLACEMENT).

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

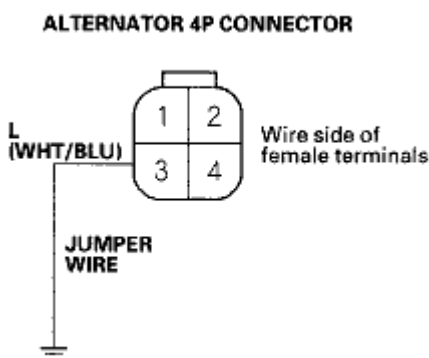


Fig. 4: Connecting Alternator 4P Connector Terminal No. 3 And Body Ground With Jumper Wire
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO -Disconnect the jumper wire, then go to step 19.

19. Turn the ignition switch OFF.
20. Connect the HDS to the DLC (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
21. Turn the ignition switch ON (II).
22. 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)**).
23. Jump the SCS line with the HDS, then turn the ignition switch OFF.

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

24. Disconnect ECM/PCM connector A (31P).
25. Check for continuity between ECM/PCM connector terminal A11 and the alternator 4P connector terminal No. 3.

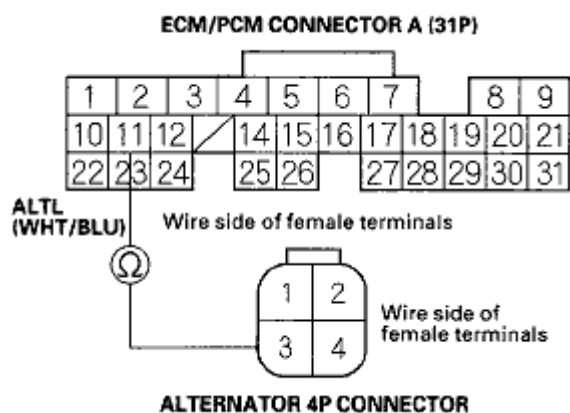


Fig. 5: Checking Continuity Between ECM/PCM Connector Terminal And Alternator 4P Connector Terminal No. 3

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Update the ECM/PCM if it does not have the latest software (see **UPDATING THE ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO -Repair open in the wire between the alternator and the ECM/PCM (A11).

ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING

1. Make sure the battery connections are good and the battery is sufficiently charged (see **BATTERY TEST**).
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).

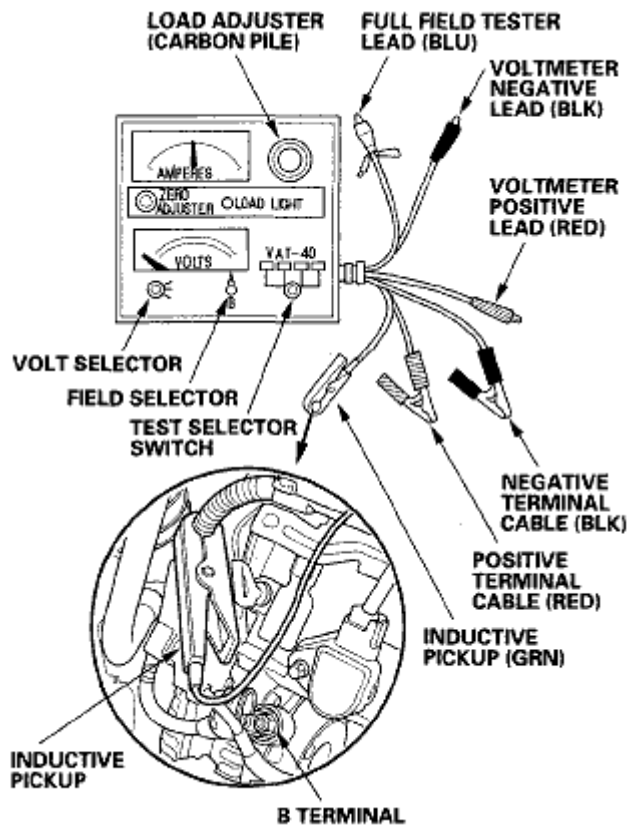


Fig. 6: Connecting VAT-40

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Is the voltage over 15.1 V?

YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) or rear housing assembly (see **ALTERNATOR OVERHAUL**).

NO -Go to step 5.

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

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

Is the voltage less than 13.5 V?

YES -Go to alternator control circuit troubleshooting (see **ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING**).

NO -Go to step 10.

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

Is the amperage 87.5 A or more?

YES -The charging system is OK.

NOTE: If the charging system indicator is still on, replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).

NO -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) or repair the alternator (see **ALTERNATOR OVERHAUL**).

ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING

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

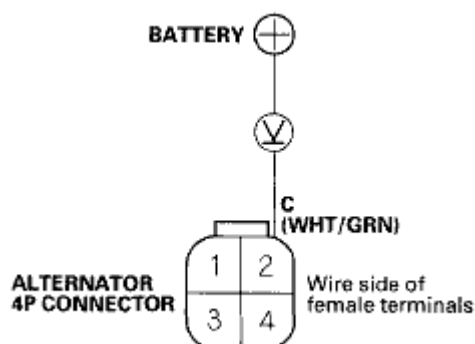


Fig. 7: Measuring Voltage Between Alternator 4P Connector Terminal No. 2 And Positive Terminal Of Battery

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 1 V or less?

YES -Go to step 11.

NO -Go to step 8.

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

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

9. Disconnect ECM/PCM connector A (31P).
10. Check for continuity between ECM/PCM connector terminal A24 and body ground.

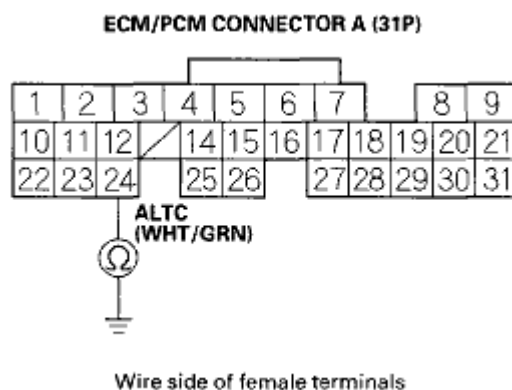


Fig. 8: Checking Continuity Between ECM/PCM Connector Terminal A24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the alternator and the ECM/PCM (A24).

NO -Update the ECM/PCM if it does not have the latest software (see **UPDATING THE ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

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

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

12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A24 and alternator 4P connector terminal No. 2.

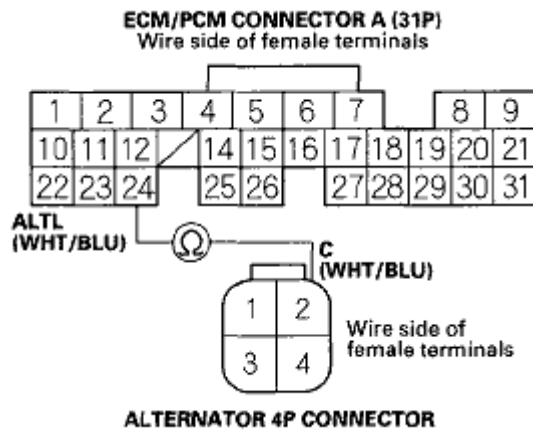


Fig. 9: Checking Continuity Between ECM/PCM Connector Terminal A24 And Alternator 4P Connector Terminal No. 2

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the alternator (see ALTERNATOR REMOVAL AND INSTALLATION) or repair the alternator (see ALTERNATOR OVERHAUL).

NO -Repair open in the wire between the alternator and the ECM/PCM (A24).

DRIVE BELT INSPECTION

1. Remove the right side engine compartment cover.

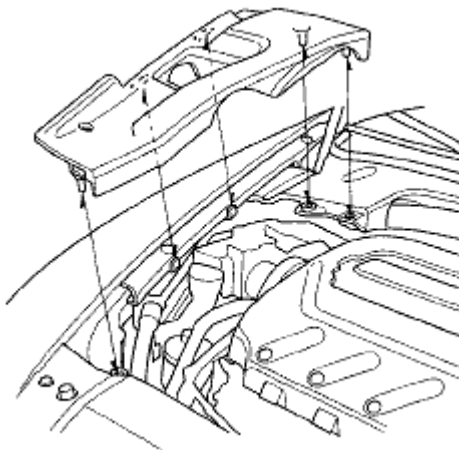


Fig. 10: Identifying Right Side Engine Compartment Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the belt for cracks or damage. If the belt is cracked or damaged, replace it.
3. 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 DRIVE BELT INSPECTION).

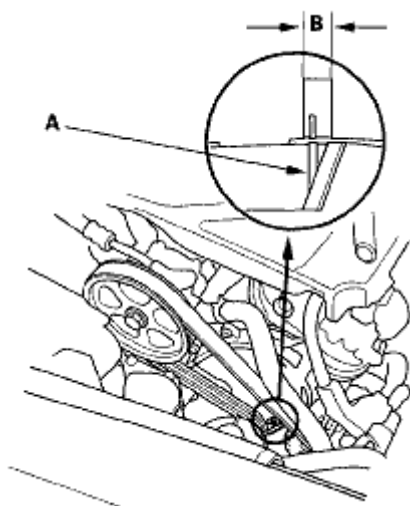


Fig. 11: Identifying Auto-Tensioner Indicator
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVE BELT REPLACEMENT

Special Tools Required

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

1. Remove the right side engine compartment cover.

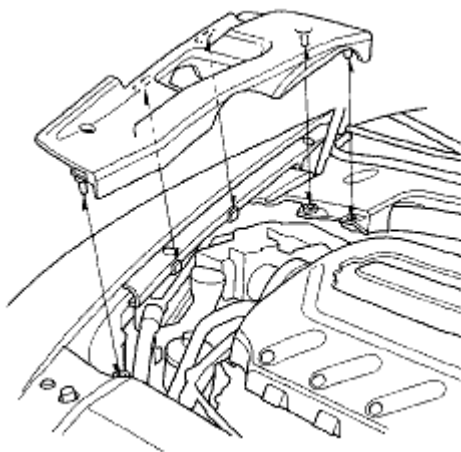


Fig. 12: Identifying Right Side Engine Compartment Cover
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

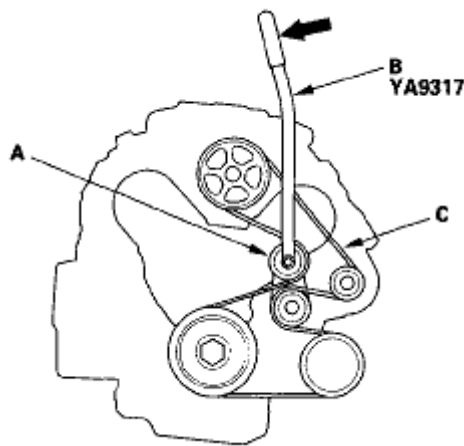


Fig. 13: Moving Auto-Tensioner

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

DRIVE BELT AUTO-TENSIONER INSPECTION

Special Tools Required

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

1. Remove the right side engine compartment cover (see step 1 on **DRIVE BELT INSPECTION**).
2. Check the position of the auto-tensioner indicator's pointer (A), start the engine, then check the position of the pointer again. If the position changes, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REPLACEMENT**).

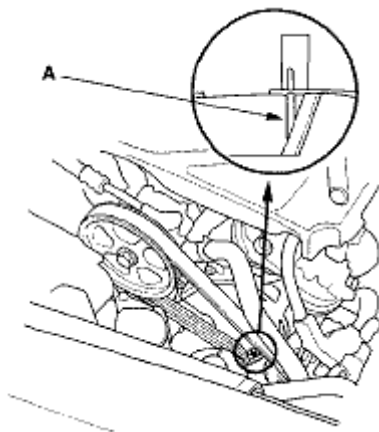


Fig. 14: Identifying Right Side Engine Compartment Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner pulley (see **DRIVE BELT AUTO-TENSIONER REPLACEMENT**).
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Move the auto-tensioner within its limit using the belt tension release tool in the direction shown.

Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or if you hear abnormal noise, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REPLACEMENT**).

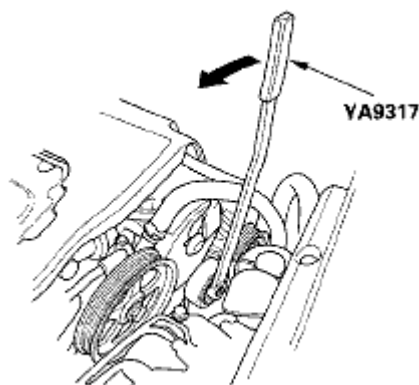


Fig. 15: Moving Auto-Tensioner

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REPLACEMENT**).
7. Clamp the auto-tensioner (A) by using a 10 mm bolt (B), 8 mm bolt (C) and a vise (D) as shown. Do not clamp the auto-tensioner itself.

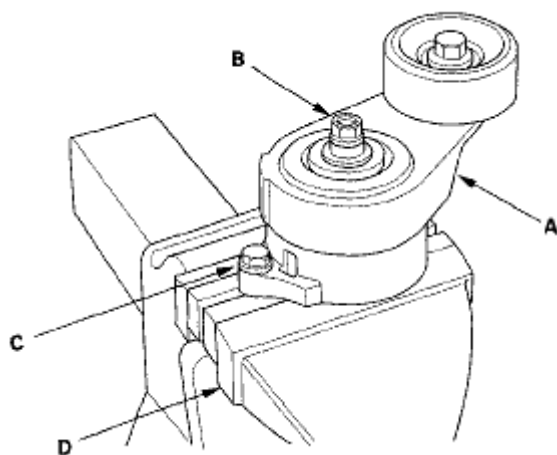


Fig. 16: Identifying Auto-Tensioner Bolt

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Attach a torque wrench (A) to the pulley bolt. Measure the torque when the tensioner is turned counterclockwise and begin to move. If the torque is less than the specified value, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REPLACEMENT**).

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

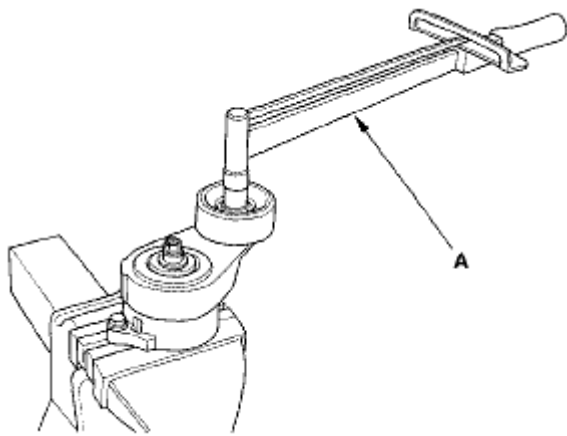


Fig. 17: Attaching Torque Wrench To Pulley Bolt
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVE BELT AUTO-TENSIONER REPLACEMENT

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Remove the splash shield (see step 33 on **ENGINE REMOVAL**).
3. Remove the auto-tensioner.

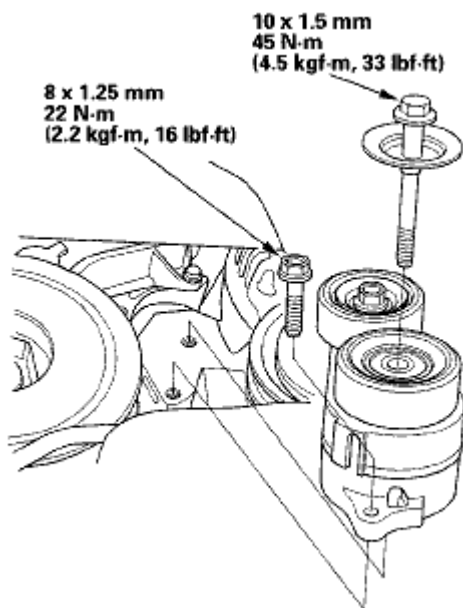


Fig. 18: Identifying Auto-Tensioner Bolt With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

TENSIONER PULLEY REPLACEMENT

1. Remove the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REPLACEMENT**).
2. Remove the pulley bolt (A) (left-hand threads), and remove the tensioner pulley (B).

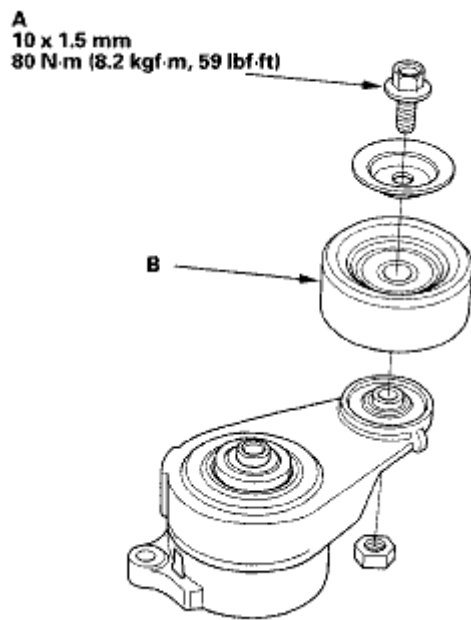


Fig. 19: Identifying Pulley Bolt And Tensioner Pulley With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

ALTERNATOR REMOVAL AND INSTALLATION

REMOVAL

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative cable from the battery.
3. Disconnect the A/C condenser fan motor connector (A) and the A/C compressor clutch connector (B), then remove the coolant reservoir (C).

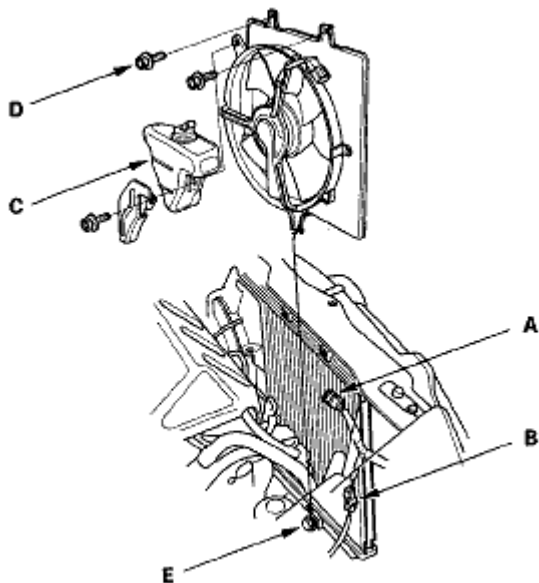


Fig. 20: Identifying A/C Condenser Fan Motor Connector And A/C Compressor Clutch

Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the two upper bolts (D), loosen the lower bolt (E), then remove the A/C condenser fan shroud assembly.
5. Remove the drive belt (see **DRIVE BELT INSPECTION**).
6. Disconnect the alternator connector (A) and the BLK wire (B) from the alternator.

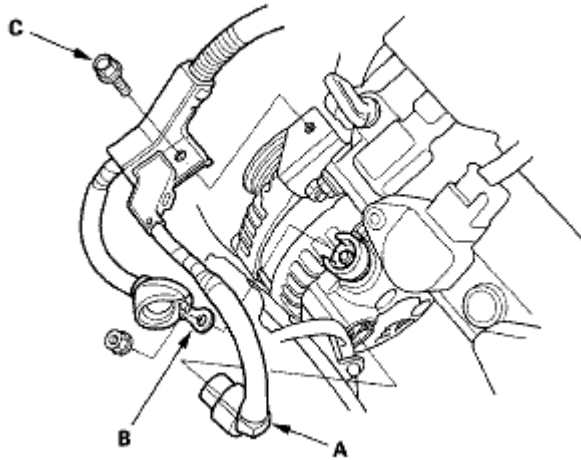


Fig. 21: Identifying Alternator Connector And BLK Wire From Alternator
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the bolt (C) securing the harness bracket.
8. Remove the mounting bolt (A) and alternator bracket mounting bolt (B), then remove the alternator.

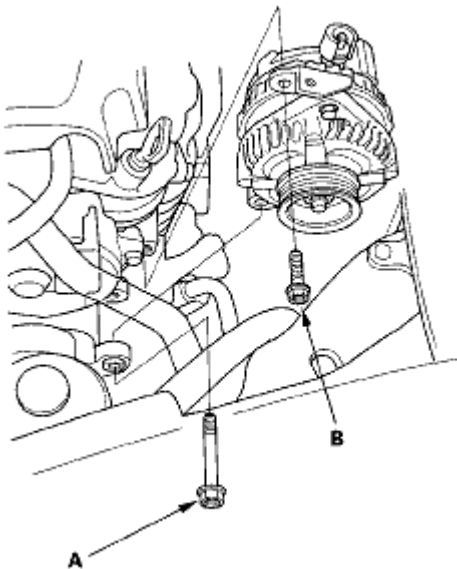


Fig. 22: Identifying Mounting Bolt And Alternator Bracket Mounting Bolt
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

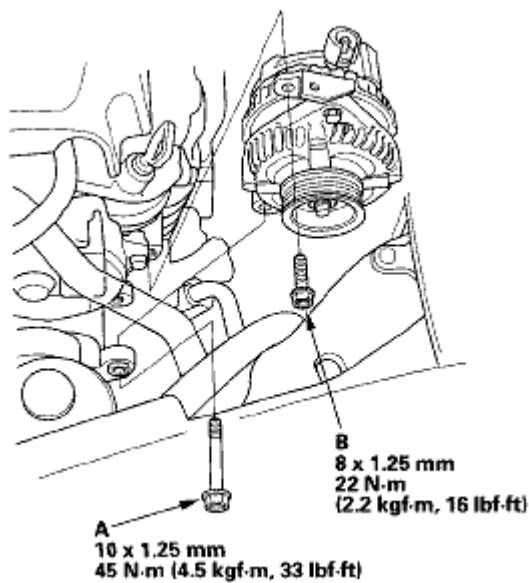


Fig. 23: Identifying Alternator Bracket Mounting Bolt With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Connect the alternator connector (A) and the BLK wire (B) to the alternator. Make sure the crimped side of the ring terminal faces away from the alternator when you connect it.

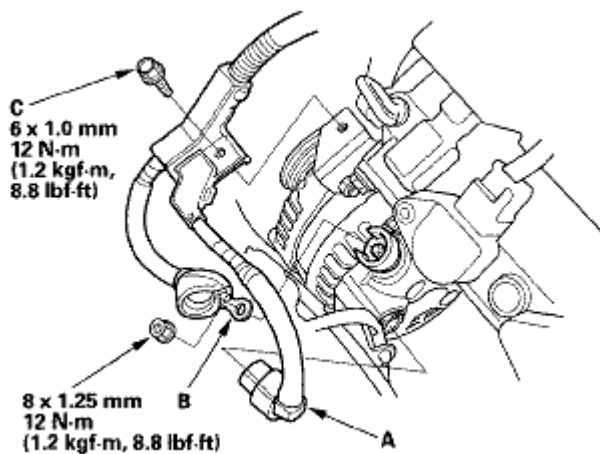


Fig. 24: Identifying Alternator Connector And BLK Wire With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the bolt (C) securing the harness bracket.
4. Install the drive belt (see **DRIVE BELT INSPECTION**).
5. Install the A/C condenser fan shroud assembly.

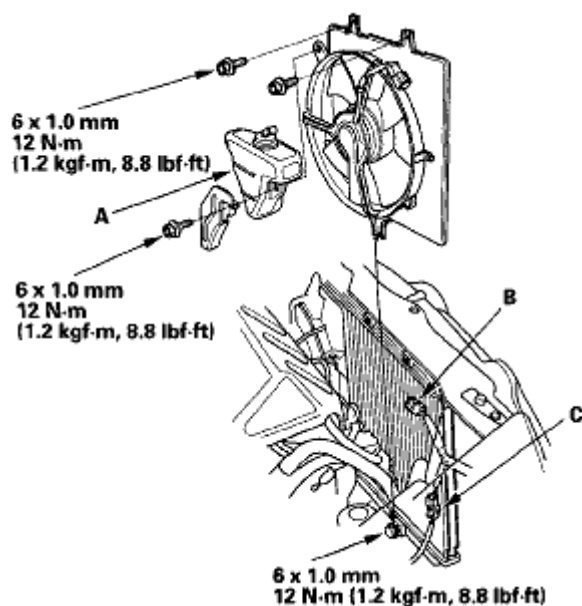


Fig. 25: Identifying A/C Condenser Fan Shroud Assembly With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the coolant reservoir (A), and connect the A/C condenser fan motor connector (B) and the A/C compressor clutch connector (C).
7. Connect the negative cable to the battery.
8. Enter the anti-theft codes for the audio system and the navigation system (if equipped).
9. Set the clock (on vehicles without navigation).

ALTERNATOR OVERHAUL

EXPLODED VIEW

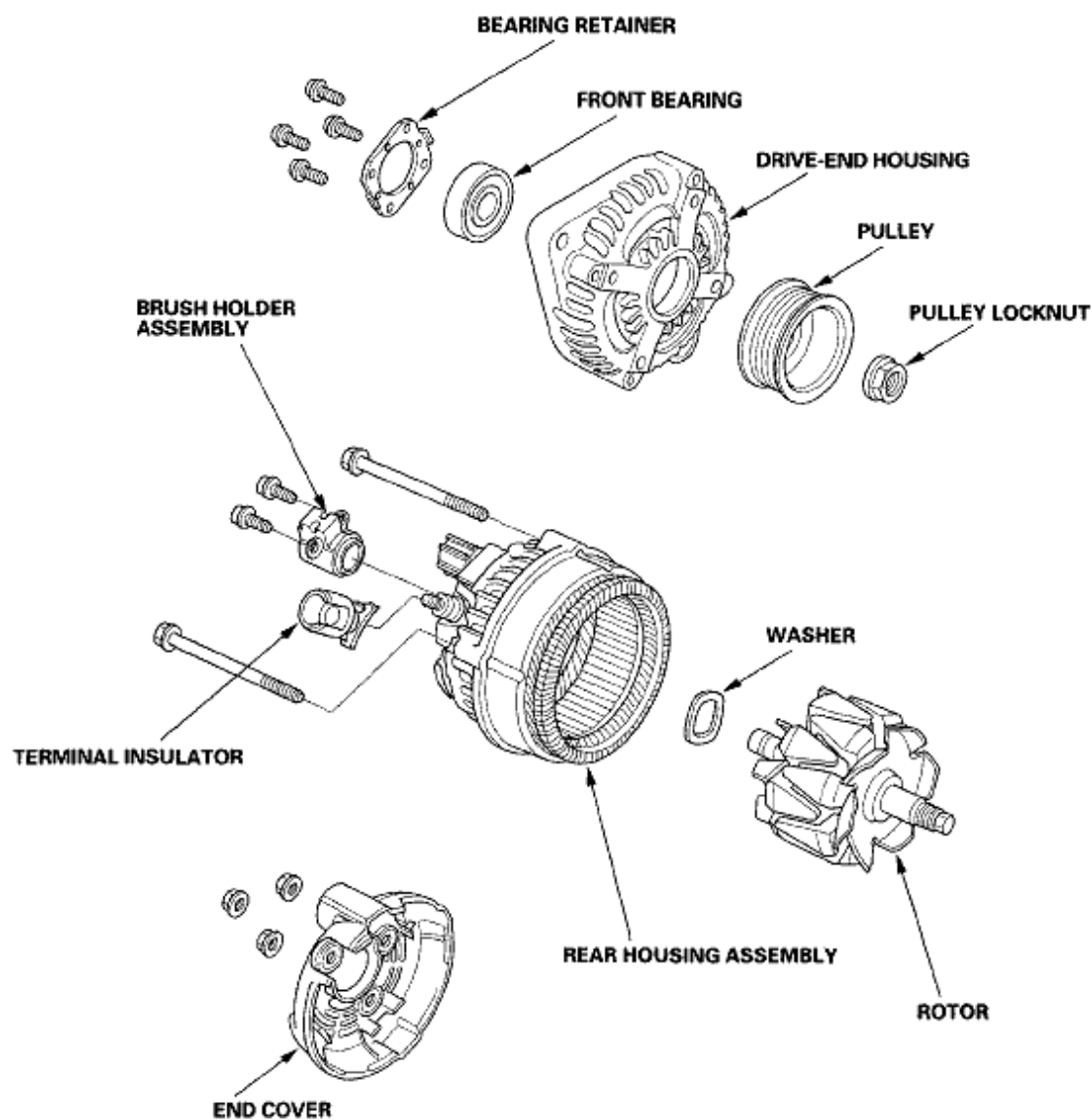


Fig. 26: Exploded View Of Alternator
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

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

NOTE: Refer to the exploded view as needed during this procedure.

1. Test the alternator and regulator before you remove them (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).
2. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
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.

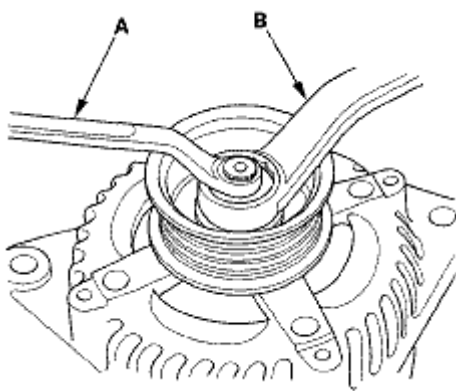


Fig. 27: Identifying Pulley Locknut

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the three flange nuts.

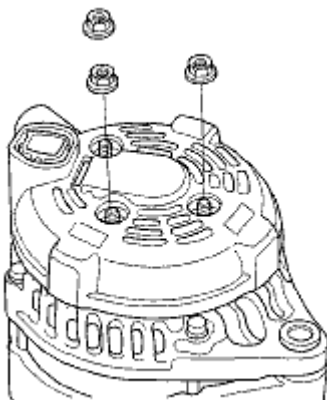


Fig. 28: Identifying Flange Nuts

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

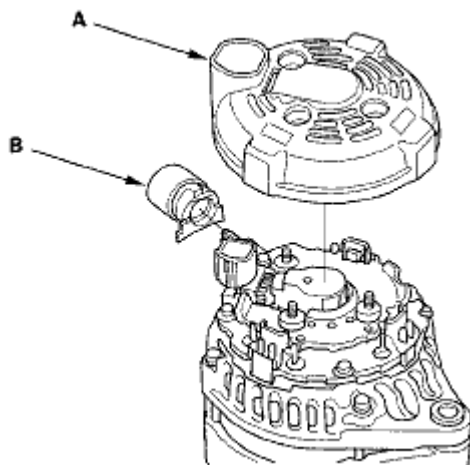


Fig. 29: Identifying End Cover And Terminal Insulator

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the brush holder (A).

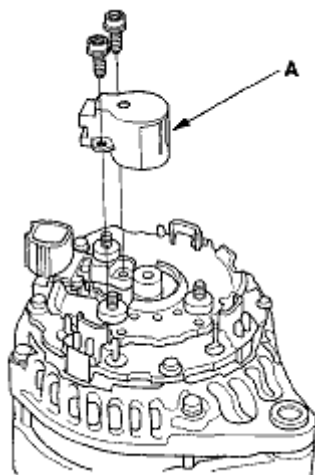


Fig. 30: Identifying Brush Holder

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

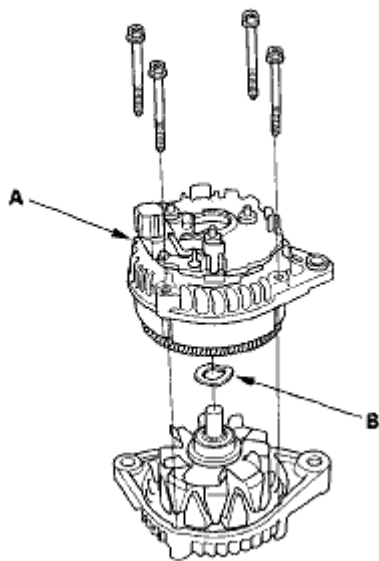


Fig. 31: Identifying Rear Housing Assembly And Washer Bolts

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

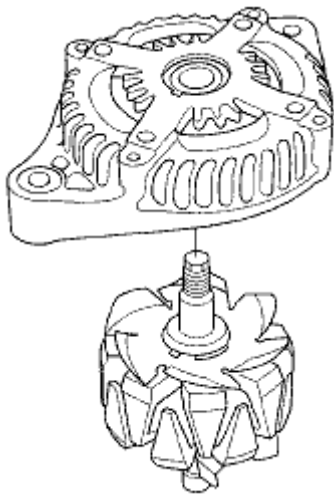


Fig. 32: Identifying Drive-End Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.
 - If the rotor is damaged, replace the rotor assembly.
 - If the rotor is OK, go to step 10.
10. Remove the front bearing retainer.

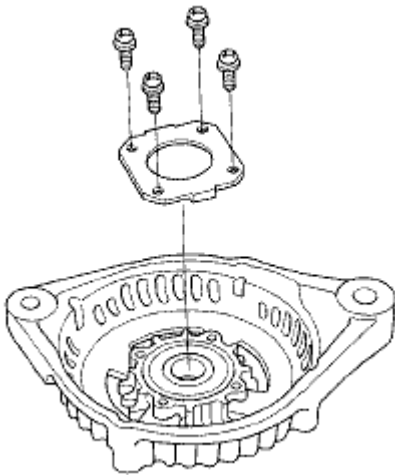


Fig. 33: Identifying Front Bearing Retainer Bolts

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

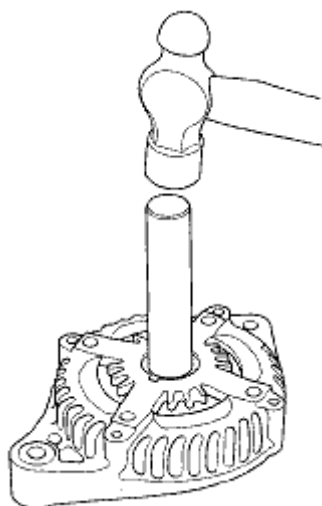


Fig. 34: Driving Out Front Bearing With Brass Drift And Hammer
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install a new front bearing in the drive end housing with a hammer, the handle driver, and attachment.

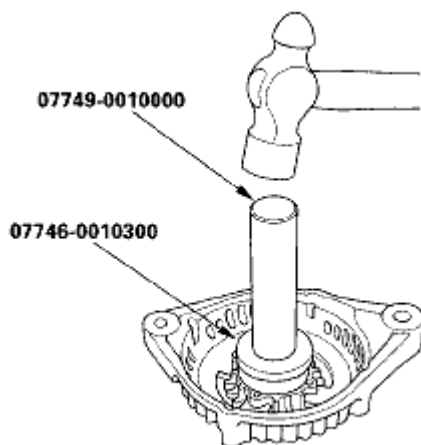


Fig. 35: Installing Front Bearing In Drive End Housing
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Alternator Brush Inspection

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

Alternator Brush Length

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

Service Limit: 1.5 mm (0.06 in.)

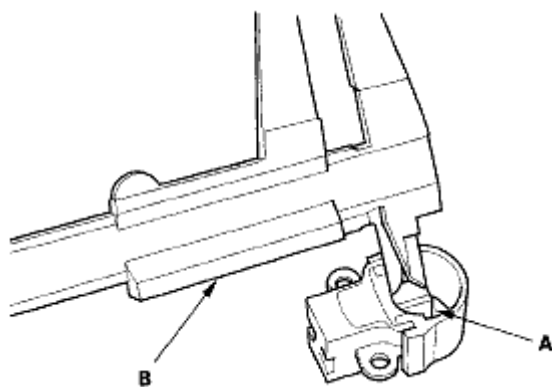


Fig. 36: Measuring Length Of Brushes
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rotor Slip Ring Test

14. Check for continuity between the slip rings (A).
 - If there is continuity, go to step 15.
 - If there is no continuity, replace the rotor assembly.

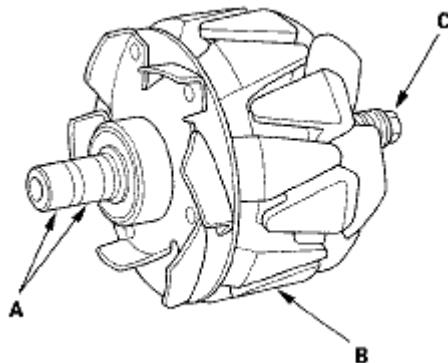


Fig. 37: Checking Continuity Between Slip Rings
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).
 - If there is no continuity, replace the rear housing assembly, and go to step 16.
 - If there is continuity, replace the rotor assembly.

Alternator Reassembly

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

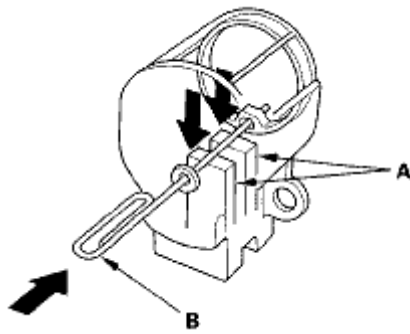


Fig. 38: Pushing Brushes

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

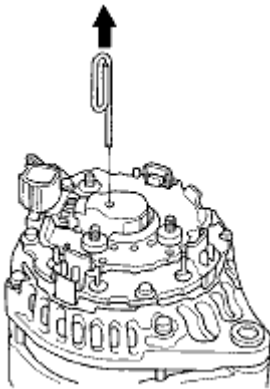


Fig. 39: Pulling Out Pin

Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the end cover.
22. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.
23. Install the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) and drive belt (see **DRIVE BELT INSPECTION**).