

CHARGING SYSTEM

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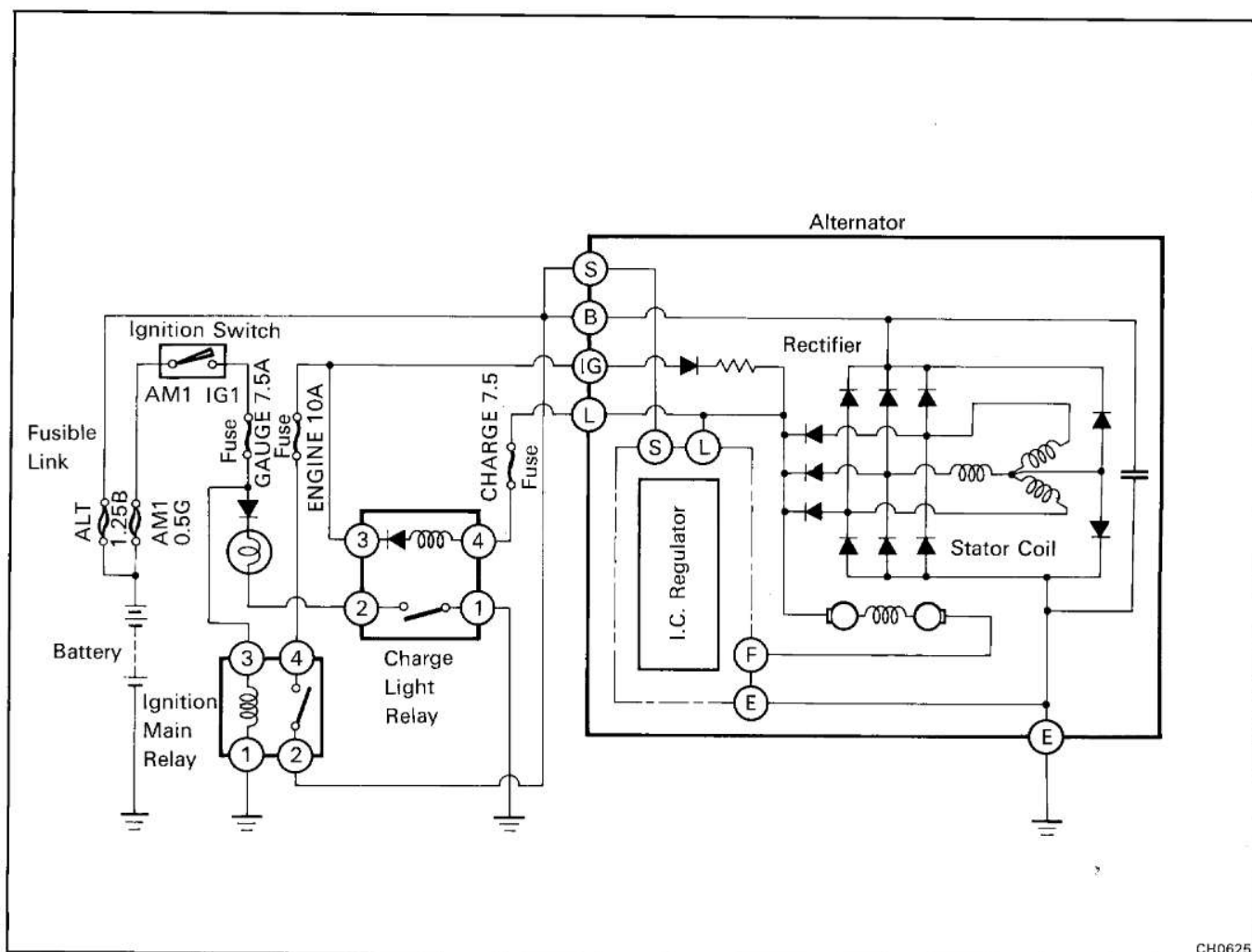
PRECAUTIONS

1. Check that the battery cables are connected to the correct terminals.
2. Disconnect the battery cables when the battery is given a quick charge.
3. Do not perform tests with a high voltage insulation resistance tester.
4. Never disconnect the battery while the engine is running.

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Discharge warning light does not light with ignition ON and engine not running	Fuse blown Light burned out Wiring connections loose IC regulator faulty	Check "CHARGE" and "GAUGE" fuses Replace light Tighten loose connections Replace IC regulator	CH-8
Discharge warning light does not go out with engine running (battery requires frequent recharging)	Drive belt loose or worn Battery cables loose, corroded or worn Fuse blown Fusible link blown IC regulator or alternator faulty Wiring faulty	Adjust or replace drive belt Repair or replace cables Check "ENGINE" fuse Replace fusible link Check charging system Repair wiring	CH-4 CH-5

CHARGING SYSTEM CIRCUIT



CH0625

ON-VEHICLE INSPECTION

1. CHECK BATTERY SPECIFIC GRAVITY

- (a) Check the specific gravity of each cell.

Standard specific gravity

When fully charged at 20°C (68°F): 1.25 – 1.27

If not within specification, charge the battery.

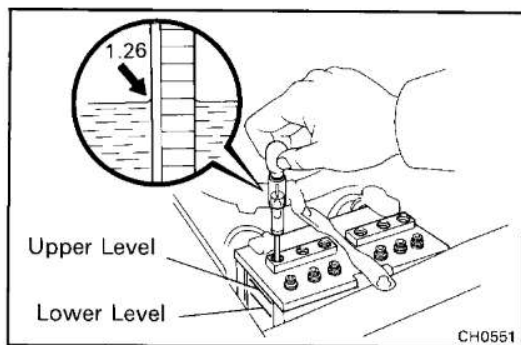
- (b) Check the electrolyte quantity of each cell.

If insufficient, refill with distilled (or purified) water.

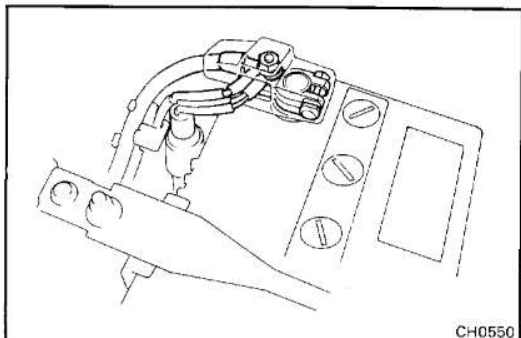
2. CHECK BATTERY TERMINALS, FUSIBLE LINKS AND FUSES

- (a) Check that the battery terminals are not loose or corroded.

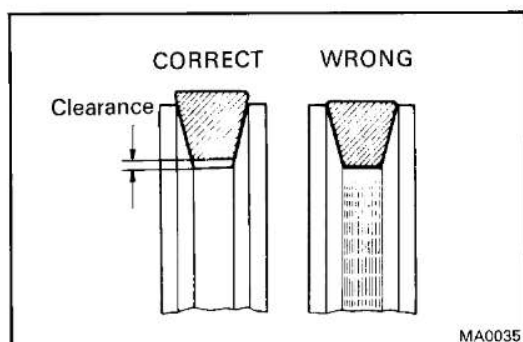
- (b) Check the fusible links and fuses for continuity.



CH0551



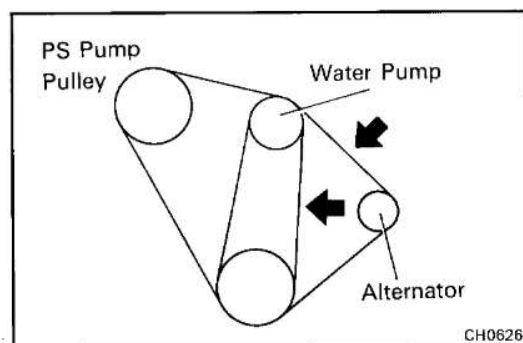
CH0550



3. INSPECT DRIVE BELT

- (a) Visually check the drive belt for cracks, oiliness or wear. Check that the belt does not touch the bottom of the pulley groove.

If necessary, replace the drive belt.



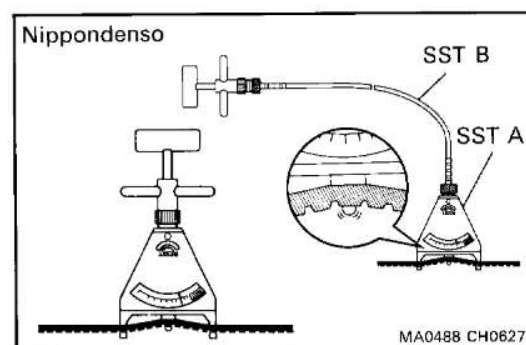
- (b) Check the drive belt deflection by pressing on the belt at the points indicated in the figure with 10 kg (22.0 lb, 98 N) of pressure.

Drive belt deflection:

New belt 7.0 – 9.0 mm (0.278 – 0.354 in.)

Used belt 9.0 – 12.0 mm (0.354 – 0.472 in.)

If the belt deflection is not within specification, adjust it.



(Reference)

Using SST, check the drive belt tension.

SST A 09216-00020

SST B 09216-00030

Drive belt tension:

New belt 55 – 65 kg

Used belt 30 – 45 kg

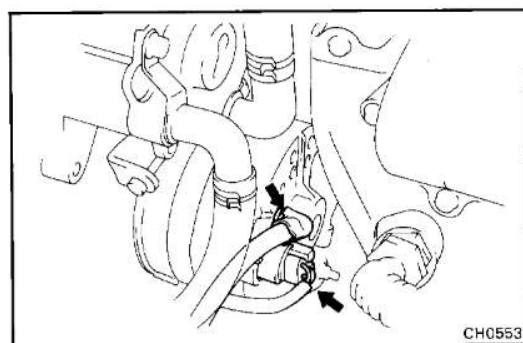
If necessary, adjust the drive belt tension.

HINT:

- When checking the tension, be sure the gauge is on the belt protrusion.
- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing the belt, run the engine for about 5 minutes and recheck the tension.

4. VISUALLY CHECK ALTERNATOR WIRING AND LISTEN FOR ABNORMAL NOISES

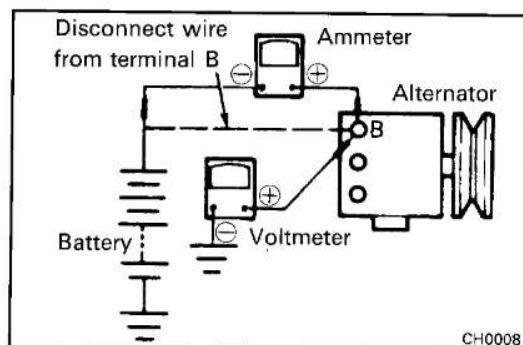
- (a) Check that the wiring is in good condition.
- (b) Check that there are no abnormal noises from the alternator while the engine is running.



5. CHECK DISCHARGE WARNING LIGHT CIRCUIT

- (a) Warm up the engine and turn it off.
- (b) Turn off all accessories.
- (c) Turn the ignition switch to "ON". Check that the charge light is lit.
- (d) Start the engine. Check that the light goes out.

If the light does come on and go off as specified, troubleshoot the discharge light circuit.

**6. INSPECT CHARGING CIRCUIT WITHOUT LOAD**

HINT: If a battery/alternator tester is available, connect the tester to the charging circuit according to the manufacturer's instructions.

- (a) If a tester is not available, connect a voltmeter and ammeter to the charging circuit as follows:
 - Disconnect the wire from terminal B of the alternator and connect the wire to the negative (-) terminal of the ammeter.
 - Connect the test lead from the position (+) terminal of the ammeter to terminal B of the alternator.
 - Connect the positive (+) lead of the voltmeter to terminal B of the alternator.
 - Ground the negative (-) lead of the voltmeter.

- (b) Check the charging circuit as follows:
With the engine running from idling to 2,000 rpm, check the reading on the ammeter and voltmeter.

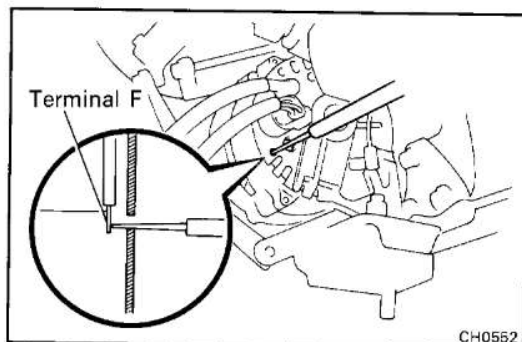
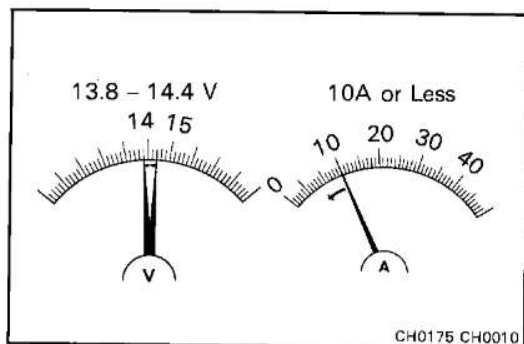
Standard amperage: 10 A or less

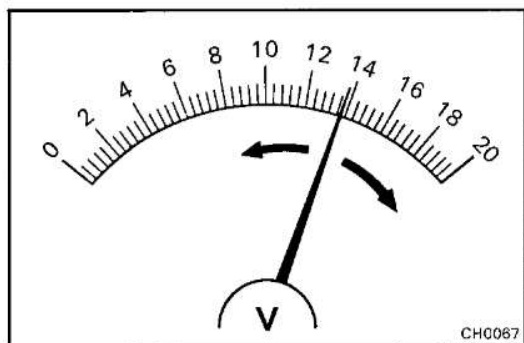
Standard voltage: 13.8 – 14.4 V at 25°C (77°F)

If the voltage reading is not within standard voltage, replace the IC regulator.

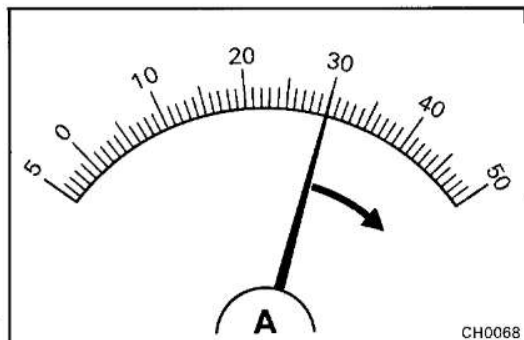
If the voltage reading is less than standard voltage, check the IC regulator and alternator as follows:

- With terminal F grounded, start the engine and check the voltage reading of terminal B.





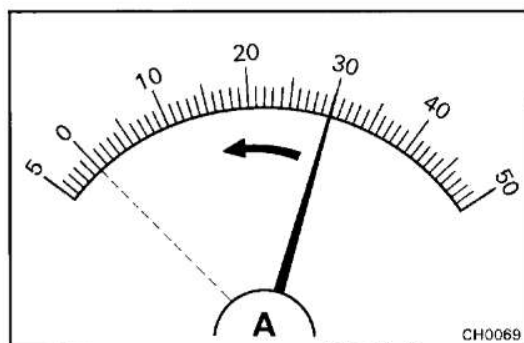
- If the voltage reading is more than standard voltage, replace the IC regulator.
- If the voltage reading is less than standard voltage, check the alternator.



7. INSPECT CHARGING CIRCUIT WITH LOAD

- With the engine running at 2,000 rpm, turn on the high beam headlights and place the heater blower switch at "HI".
- Check the reading on the ammeter.

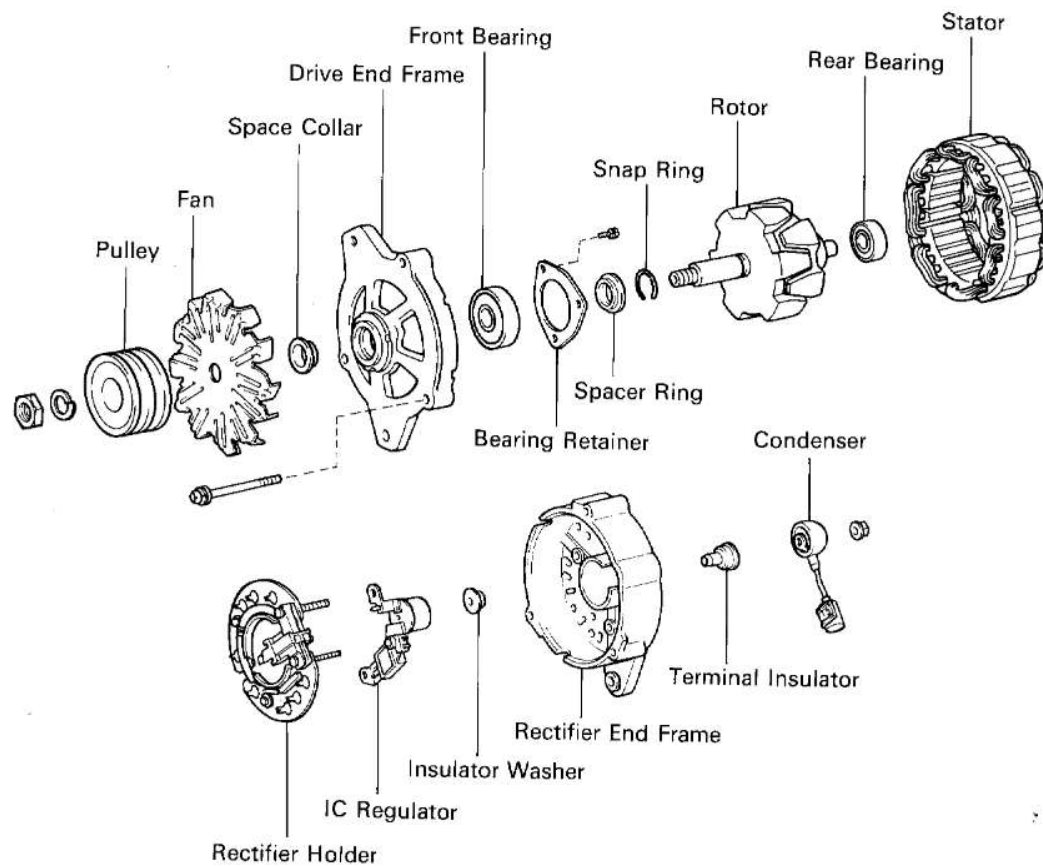
Standard amperage: 30 A or more



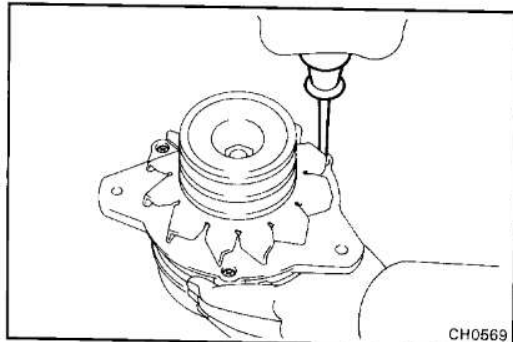
If the ammeter reading is less than 30 A, repair the alternator. (See page CH-7)

HINT: When the battery is fully charged, the indication will sometimes be less than 30 A.

ALTERNATOR COMPONENTS



CH0586



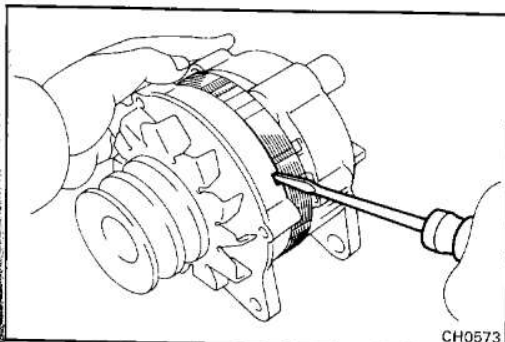
DISASSEMBLY OF ALTERNATOR

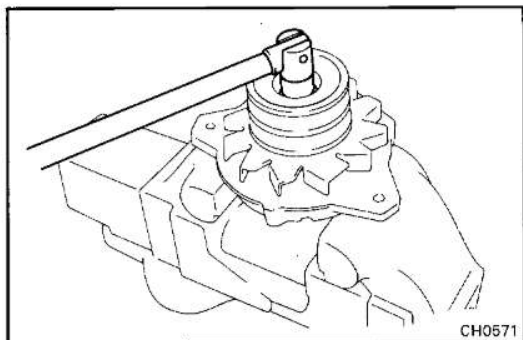
1. REMOVE DRIVE END FRAME AND ROTOR ASSEMBLY FROM STATOR

(a) Remove the three through screws.

(b) Using a screwdriver, pry the end frame and remove it together with the rotor.

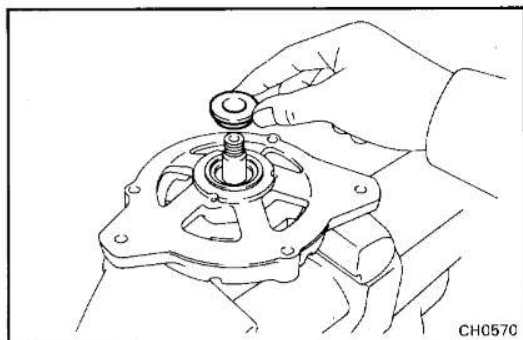
NOTICE: Do not pry the coil wires.



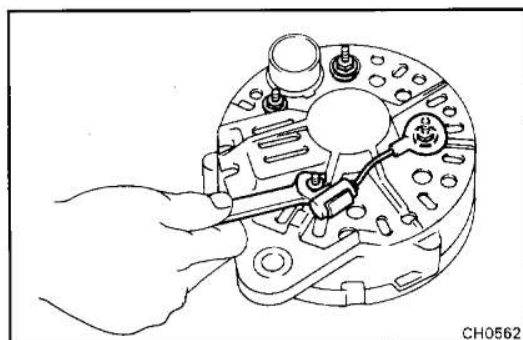


2. REMOVE PULLEY, FAN AND DRIVE END FRAME FROM ROTOR

- (a) Mount the rotor in a soft jaw vise.
- (b) Remove the pulley nut, spring washer, pulley and fan.

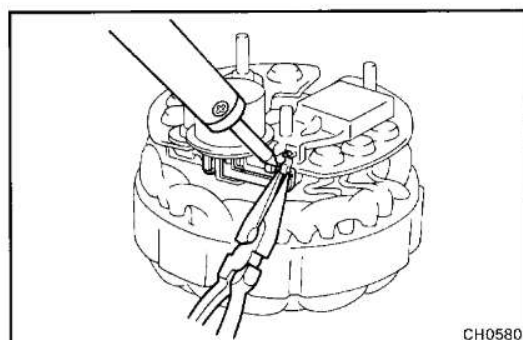


- (c) Remove the spacer collar and drive end frame.
- (d) Remove the spacer ring and snap ring.



3. REMOVE RECTIFIER END FRAME

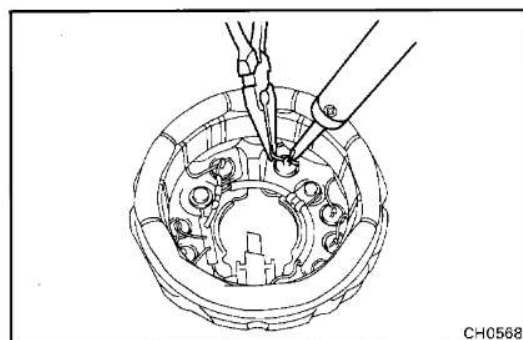
- (a) Remove the four nuts, condenser and two terminal insulators.
- (b) Remove the rectifier end frame.
- (c) Remove the insulator washer from the rectifier holder stud.



4. REMOVE IC REGULATOR

Hold the IC regulator terminal with needle-nose pliers, and unsolder the terminals.

NOTICE: Protect the rectifiers from heat.



5. REMOVE RECTIFIER HOLDER

Hold the stator coil lead with needle-nose pliers, and unsolder the leads.

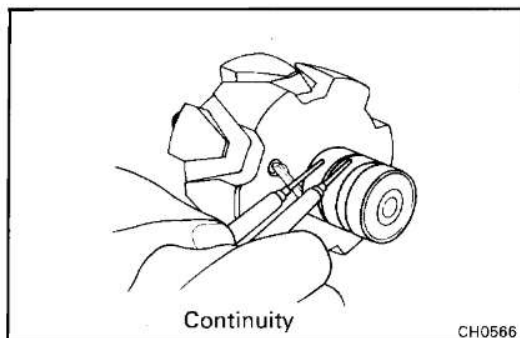
NOTICE: Protect the rectifiers from heat.

INSPECTION AND REPAIR OF ALTERNATOR**Rotor****1. INSPECT ROTOR FOR OPEN CIRCUIT**

Using an ohmmeter, check that there is continuity between the slip rings.

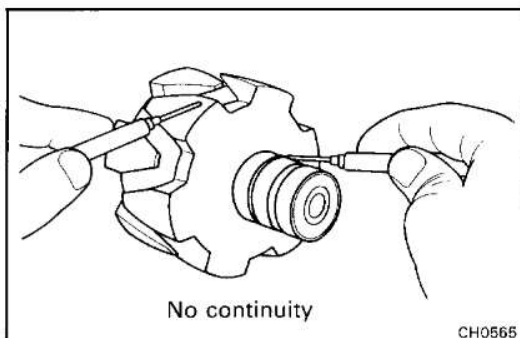
Standard resistance: 2.8 – 3.0 Ω

If there is no continuity, replace the rotor.

**2. INSPECT ROTOR FOR GROUND**

Using an ohmmeter, check that there is no continuity between the slip ring and the rotor.

If there is continuity, replace the rotor.

**3. INSPECT SLIP RINGS**

(a) Check the slip rings are not rough or scored.

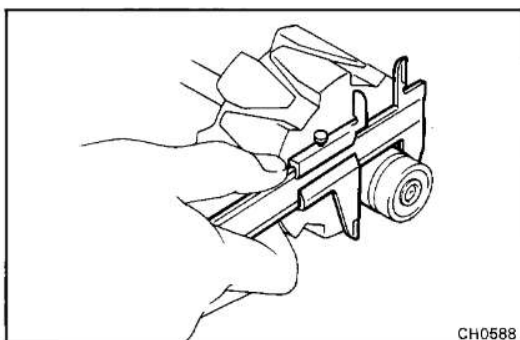
If rough or scored, replace the rotor.

(b) Using calipers, measure the slip ring diameters.

Standard diameter: 32.3 – 32.5 mm
(1.272 – 1.280 in.)

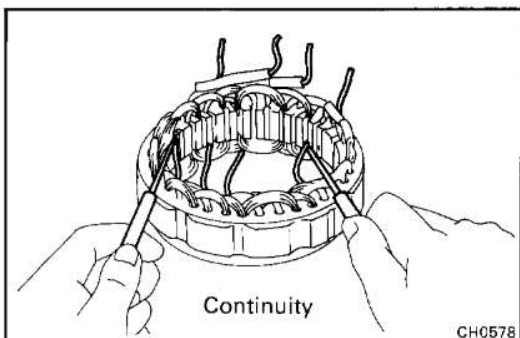
Minimum diameter: 32.1 mm (1.264 in.)

If the diameter is less than minimum, replace the rotor.

**Stator****1. INSPECT STATOR FOR OPEN CIRCUIT**

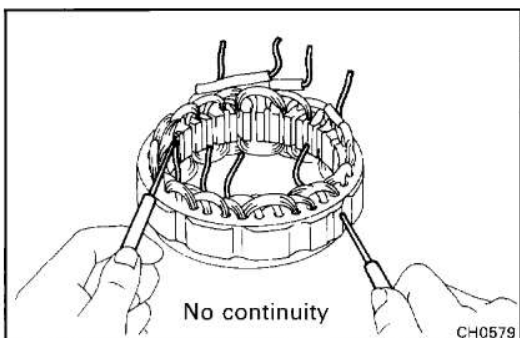
Using an ohmmeter, check that there is continuity between the coil leads.

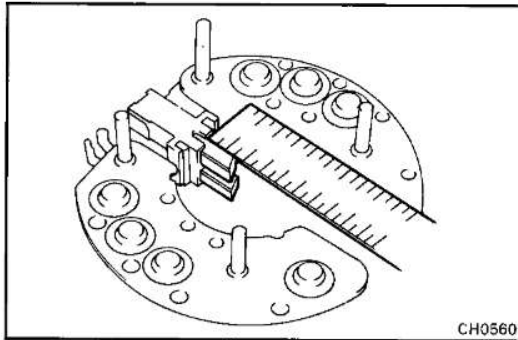
If there is no continuity, replace the stator.

**2. INSPECT STATOR FOR GROUND**

Using an ohmmeter, check that there is no continuity between the coil leads and stator core.

If there is continuity, replace the stator.





Brushes

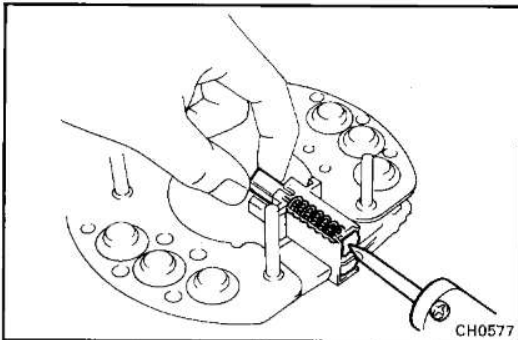
1. INSPECT EXPOSED BRUSH LENGTH

Using a scale, measure the exposed brush length.

Standard exposed length: 20.0 mm (0.787 in.)

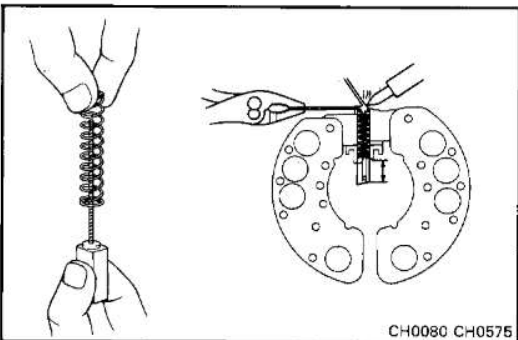
Minimum exposed length: 5.5 mm (0.217 in.)

If the length is less than minimum, replace the brushes.



2. IF NECESSARY, REPLACE BRUSHES

(a) Unsolder and remove the brush and spring.



(b) Insert the brush wire through the spring.

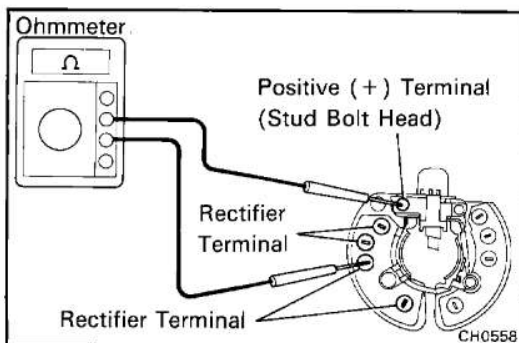
(c) Install the brush in the brush holder.

(d) Solder the wire to the brush holder at specified exposed length.

Exposed length: 20.0 mm (0.787 in.)

(e) Check that the brush moves smoothly in the brush holder.

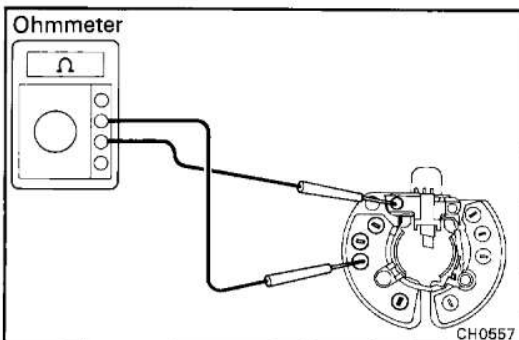
(f) Cut off any excess wire.



Rectifiers (Rectifier Holder)

1. INSPECT POSITIVE SIDE RECTIFIER

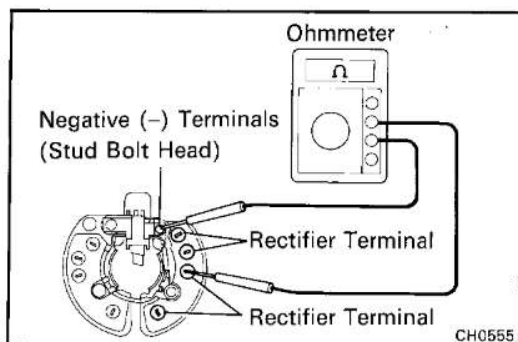
(a) Using an ohmmeter, connect one tester probe to the positive (+) terminal and the other to each rectifier terminal.



(b) Reverse the polarity of the tester and repeat step (a).

(c) Check that one shows continuity and the other shows no continuity.

If continuity is not as specified, replace the rectifier holder.



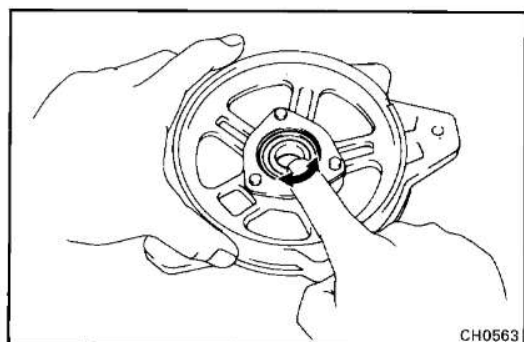
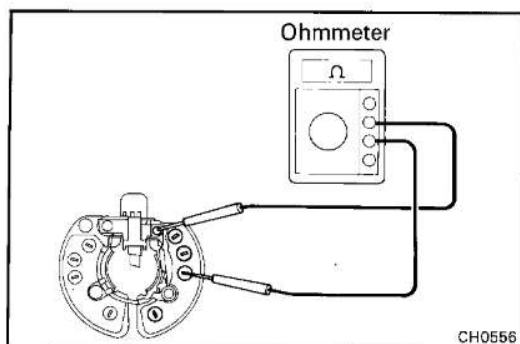
2. INSPECT NEGATIVE SIDE RECTIFIER

- (a) Using an ohmmeter, connect one tester probe to the negative (-) terminal and the other to each rectifier terminal.

- (b) Reverse the polarity of the tester probes and repeat step (a).

- (c) Check that one shows continuity and the other shows no continuity.

If continuity is not as specified, replace the rectifier holder.



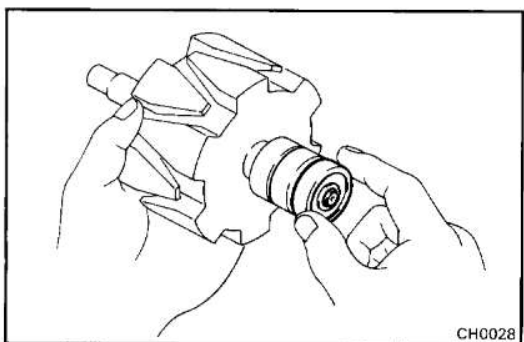
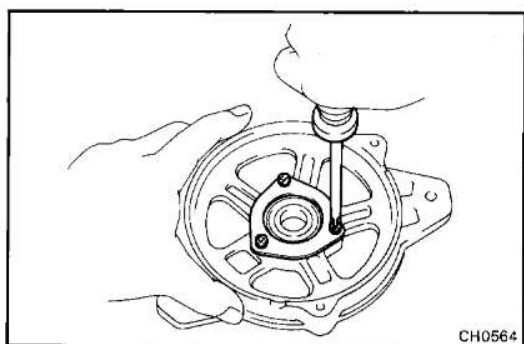
Bearings

1. INSPECT FRONT BEARING

Check that the bearing is not rough or worn.

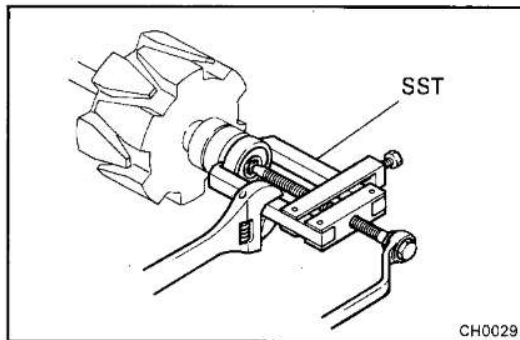
2. IF NECESSARY, REPLACE FRONT BEARING

Remove the three screws and bearing retainer, and replace the bearing.

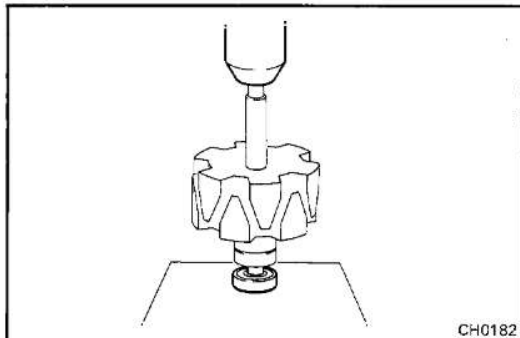


3. INSPECT REAR BEARING

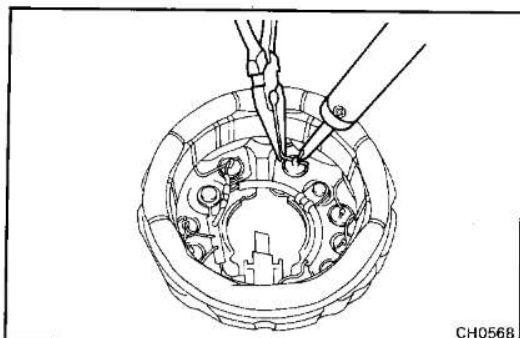
Check that the bearing is not rough or worn.

**4. IF NECESSARY, REPLACE REAR BEARING**

- (a) Using SST, remove the bearing from the rotor shaft.
SST 09286-46011



- (b) Using a press, press in a new rear bearing onto the rotor shaft.



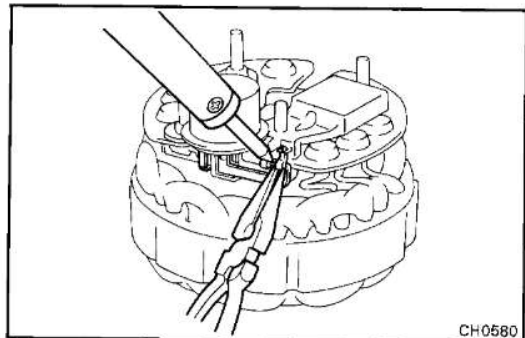
ASSEMBLY OF ALTERNATOR

(See page CH-7)

1. INSTALL RECTIFIER HOLDER TO STATOR

Hold the stator coil lead with needle-nose pliers while soldering the leads.

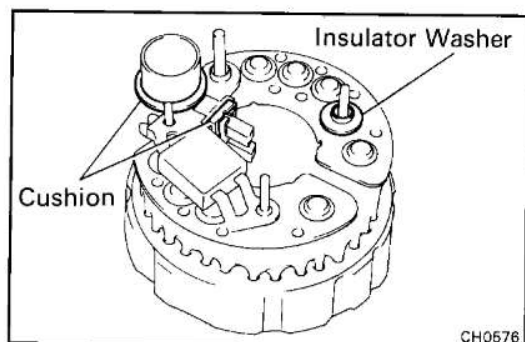
NOTICE: Protect the rectifiers from heat.



2. INSTALL IC REGULATOR

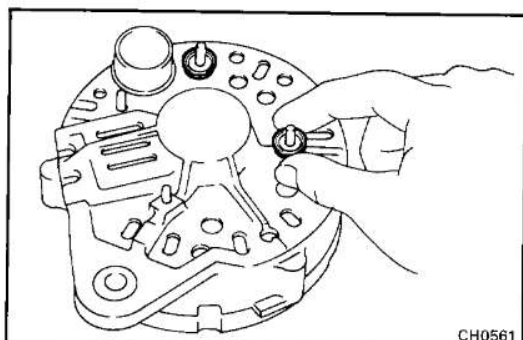
Hold the IC regulator terminal with needle-nose pliers while soldering the terminals.

NOTICE: Protect the rectifiers from heat.

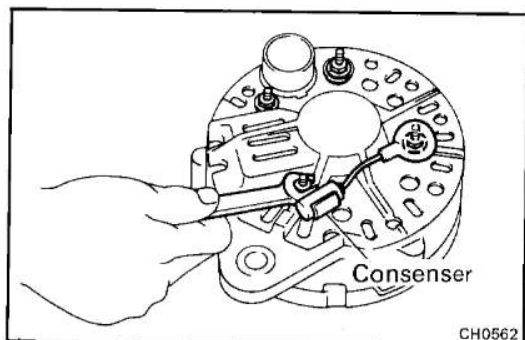


3. INSTALL RECTIFIER END FRAME TO RECTIFIER HOLDER

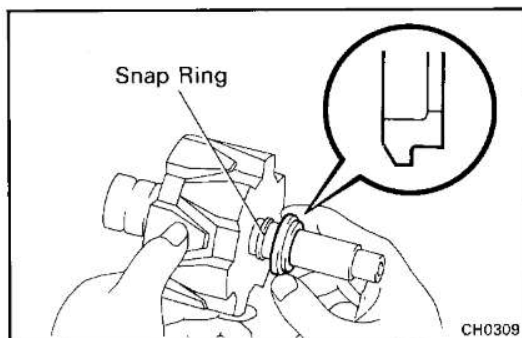
- (a) Place the insulator washer on the positive (+) stud of the rectifier holder.
- (b) Place the two cushions on the brush holder and alternator terminal.
- (c) Place the rectifier end frame on the rectifier holder.
- (d) Check that the wires are not touching the rectifier end frame.



- (e) Place the two terminal insulators on the positive (+) studs of the rectifier holder.

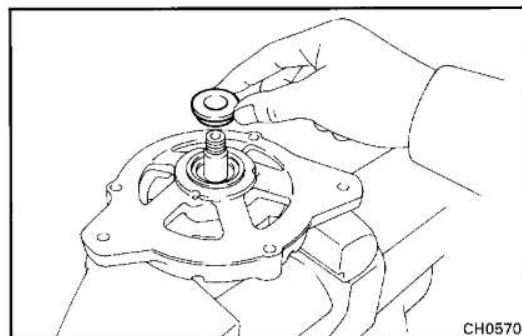


- (f) Install the condenser and four nuts.

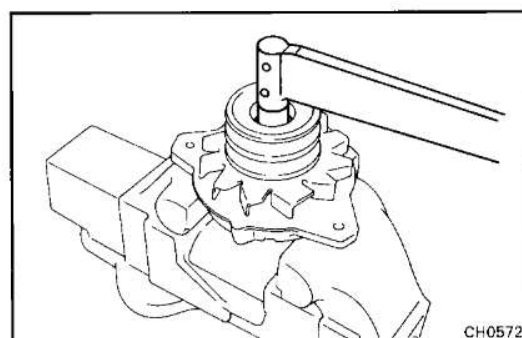


4. INSTALL DRIVE END FRAME, FAN AND PULLEY TO ROTOR

- (a) Slide the snap ring and spacer ring onto the rotor shaft.



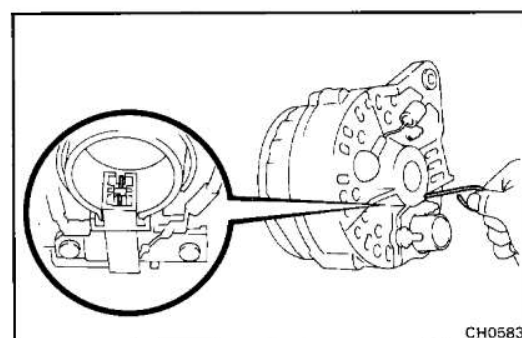
- (b) Mount the rotor in a soft jaw vise.
(c) Slide the drive end frame and spacer collar.



- (d) Slide the fan, pulley and spring washer onto the rotor shaft.

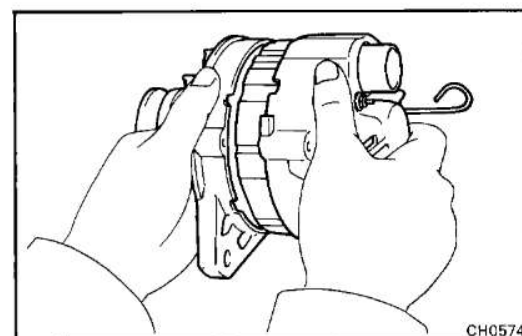
- (e) Install and torque the nut.

Torque: 900 kg-cm (65 ft-lb, 88 N·m)

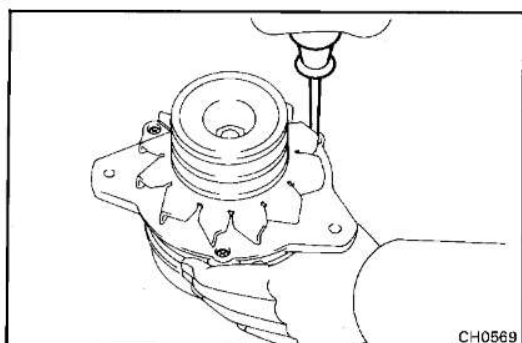


5. ASSEMBLE DRIVE END FRAME AND RECTIFIER END FRAME

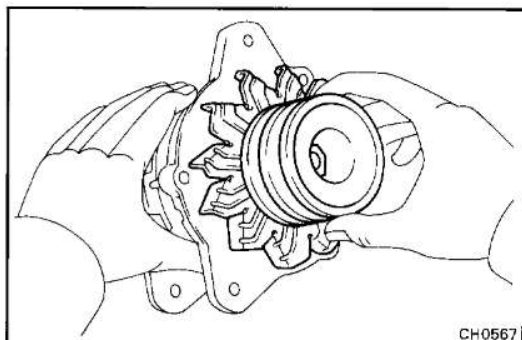
- (a) Bend the rectifier lead wires back to clear the rotor.
(b) Using a curved tool, push the brushes in as far as they will go and hold them in place by inserting a stiff wire through the access hole in the rectifier end frame.



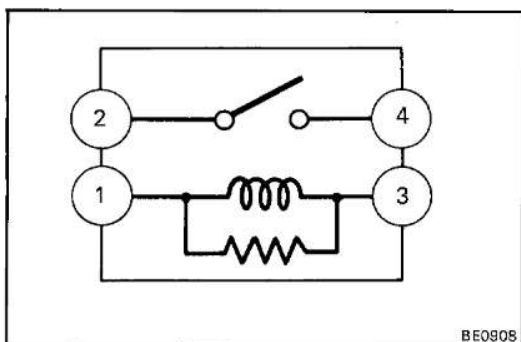
- (c) Assemble the drive end frame and the rectifier end frame by inserting the rear bearing on the rotor shaft into the rectifier end frame.



- (d) Install the three through screws.
- (e) Remove the stiff wire from the access hole.



- (f) Check that the rotor rotates smoothly.
- (g) Seal the access hole.



IGNITION MAIN RELAY

INSPECTION OF IGNITION MAIN RELAY

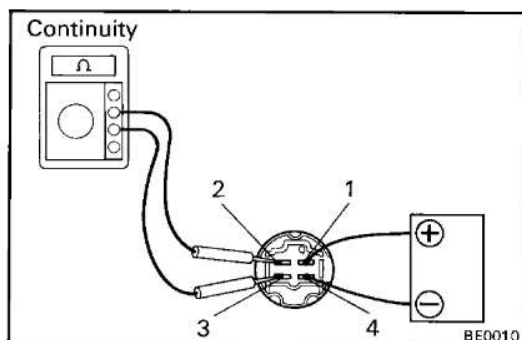
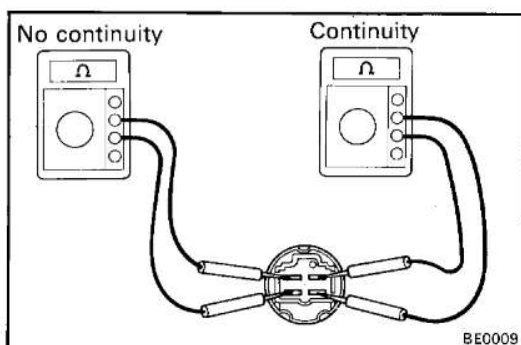
1. INSPECT IGNITION MAIN RELAY

HINT: The relay located in relay block of the left cowl side.

2. INSPECT RELAY CONTINUITY

- (a) Check that there is continuity between terminals 1 and 3.
- (b) Check that there is no continuity between terminals 2 and 4.
- (c) Check that there is no continuity between terminals 3 and 4.

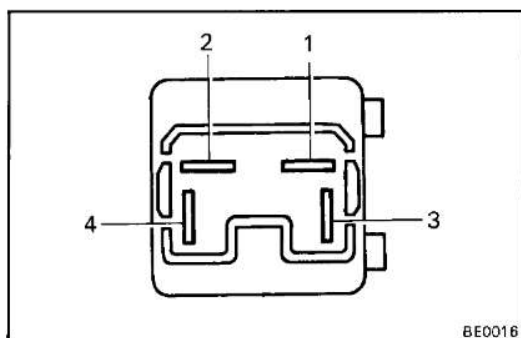
If continuity is not as specified, replace the relay.



3. INSPECT RELAY OPERATION

- (a) Apply battery voltage across terminals 1 and 3.
- (b) Check that there is continuity between terminals 2 and 4.
- (c) Check that there is no continuity between terminals 3 and 4.

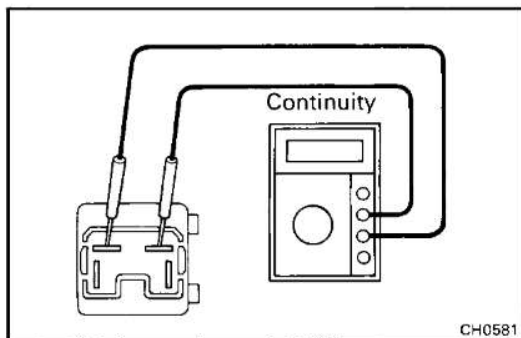
If operation is not as described, replace the relay.



CHARGE LIGHT RELAY

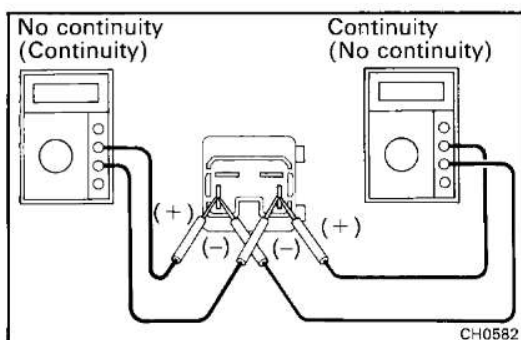
INSPECTION OF CHARGE LIGHT RELAY

LOCATION: Inside of the passenger's cowl side trim.



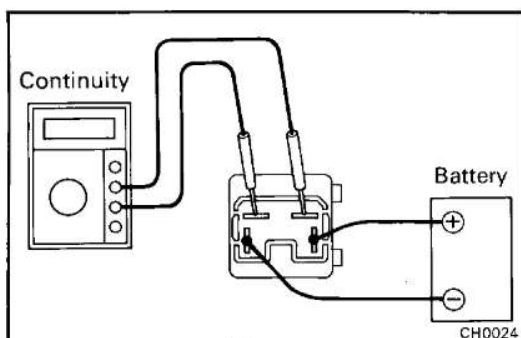
1. INSPECT RELAY CONTINUITY

- (a) Using an ohmmeter, check that there is no continuity between terminals 1 and 2.



- (b) Connect the one test probe to terminal 3 and the other to terminal 4.
- (c) Reverse the polarity of test probes, and repeat step (b).
- (d) Check that one shows continuity and other shows no continuity.

If continuity is not as specified, replace the relay.



2. INSPECT RELAY OPERATION

- (a) Connect a positive (+) lead from the battery to terminal 3.
- (b) Connect a negative (-) lead from the battery to terminal 4.
- (c) Using an ohmmeter, check for continuity between terminals 1 and 2.

If operation is not as specified, replace the relay.

