
CHARGING

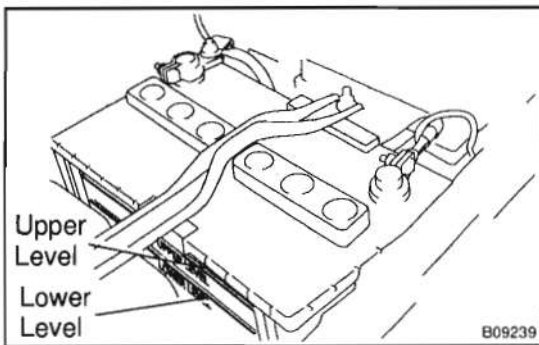
CHARGING SYSTEM	CH-1
ALTERNATOR	CH-5

CHARGING SYSTEM ON-VEHICLE INSPECTION

CH0C4-02

CAUTION:

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



1. CHECK BATTERY ELECTROLYTE LEVEL

Check the electrolyte quantity of each cell.

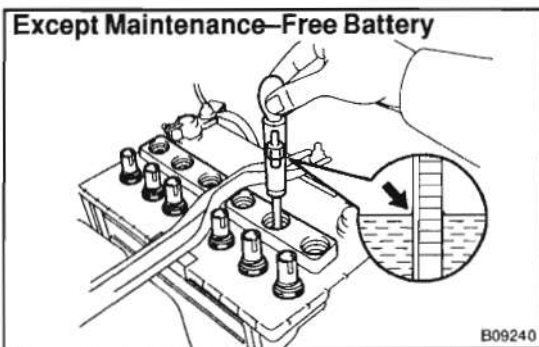
Maintenance-Free Battery:

If under the lower level, replace the battery (or add distilled water if possible). Check the charging system.

Except maintenance-Free Battery:

If under the lower level, add distilled water.

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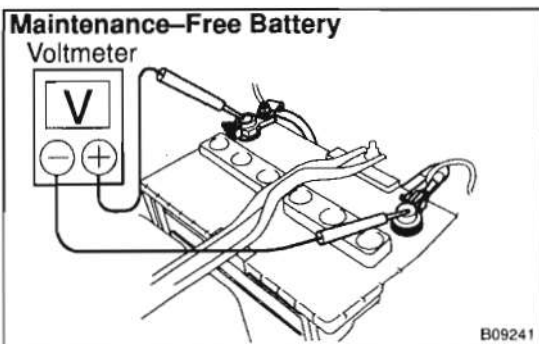
2. Except Maintenance-Free Battery:

CHECK BATTERY SPECIFIC GRAVITY

Check the specific gravity of each cell.

Standard specific gravity: 1.25 – 1.29 at 20°C (68°F)

If the specific gravity is less than specification, charge the battery.



3. Maintenance-Free Battery:

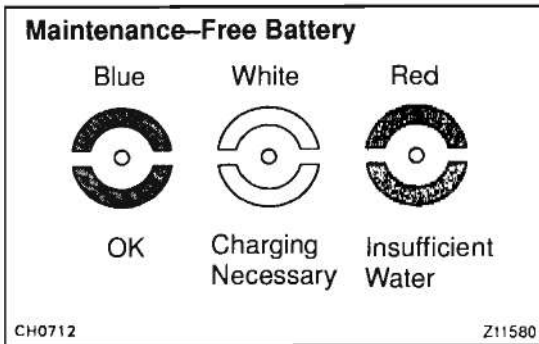
CHECK BATTERY VOLTAGE

- After having driven the vehicle and in the case that 20 minutes have not passed after having stopped the engine, turn the ignition switch ON and turn on the electrical system (headlight, blower motor, rear defogger etc.) for 60 seconds to remove the surface charge.
- Turn the ignition switch OFF and turn off the electrical systems.

- (c) Measure the battery voltage between the negative (-) and positive (+) terminals of the battery.

Standard voltage: 12.5 – 12.9 V at 20°C (68°F)

If the voltage is less than specification, charge the battery.



HINT:

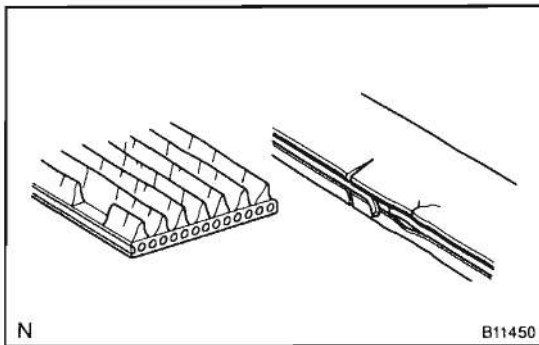
Check the indicator as shown in the illustration.

4. CHECK BATTERY TERMINALS, FUSIBLE LINK AND FUSES

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

If the terminals are corroded, clean the terminals.

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



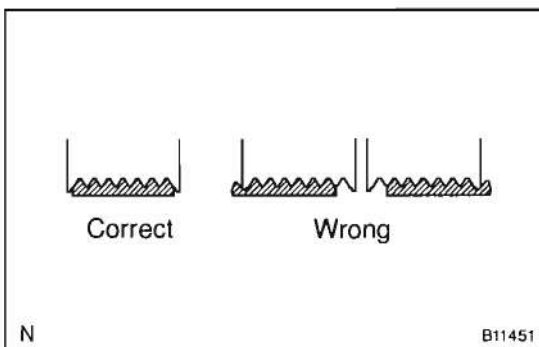
5. INSPECT DRIVE BELT

- (a) Visually check the drive belt for excessive wear, frayed cords etc.

If any defect has been found, replace the drive belt.

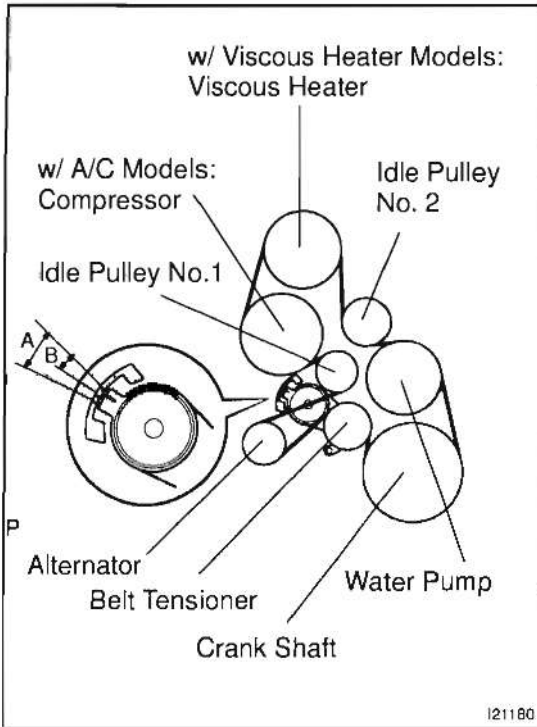
HINT:

Cracks on the rib side of a drive belt are considered acceptable. If the drive belt has chunks missing from the ribs, it should be replaced.



- (b) Check that the drive belt fits properly in the ribbed grooves.

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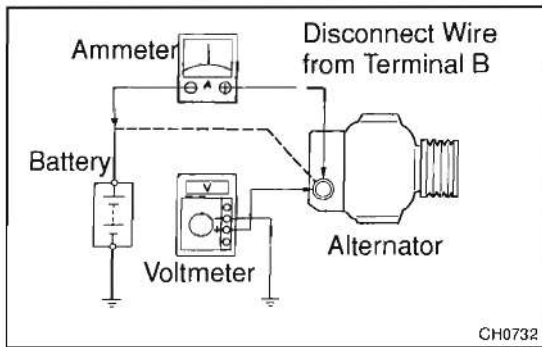
6. INSPECT DRIVE BELT TENSION

Check that the tension is within A range on the auto tensioner scale.

If the tension is not within the A range on the scale, replace the belt with a new one.

HINT:

When replacing the drive belt with a new one, the belt's tension should be within the B range on the belt tensioner scale.



7. INSPECT CHARGING CIRCUIT WITHOUT LOAD

HINT:

If a battery / alternator tester is available, connect the tester to the charging circuit as per 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 it to the negative (–) lead of the ammeter.
- 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 idle to 2,000 rpm, check the reading on the ammeter and voltmeter.

Standard amperage: 10 A or less

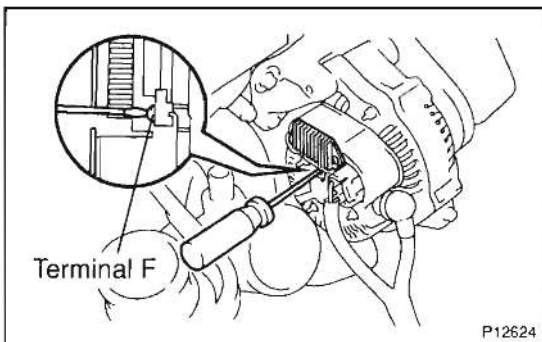
Standard voltage: 13.2 – 14.8 V

If the voltmeter reading is more than standard voltage, replace the IC regulator.

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

- With terminal F grounded, start the engine and check the voltmeter reading of terminal B.
- If the voltmeter reading is more than standard voltage, replace the IC regulator,
- If the voltmeter reading is less than standard voltage, check the alternator.

8. INSPECT CHARGING CIRCUIT WITH LOAD



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

Standard amperage: 30 A or more

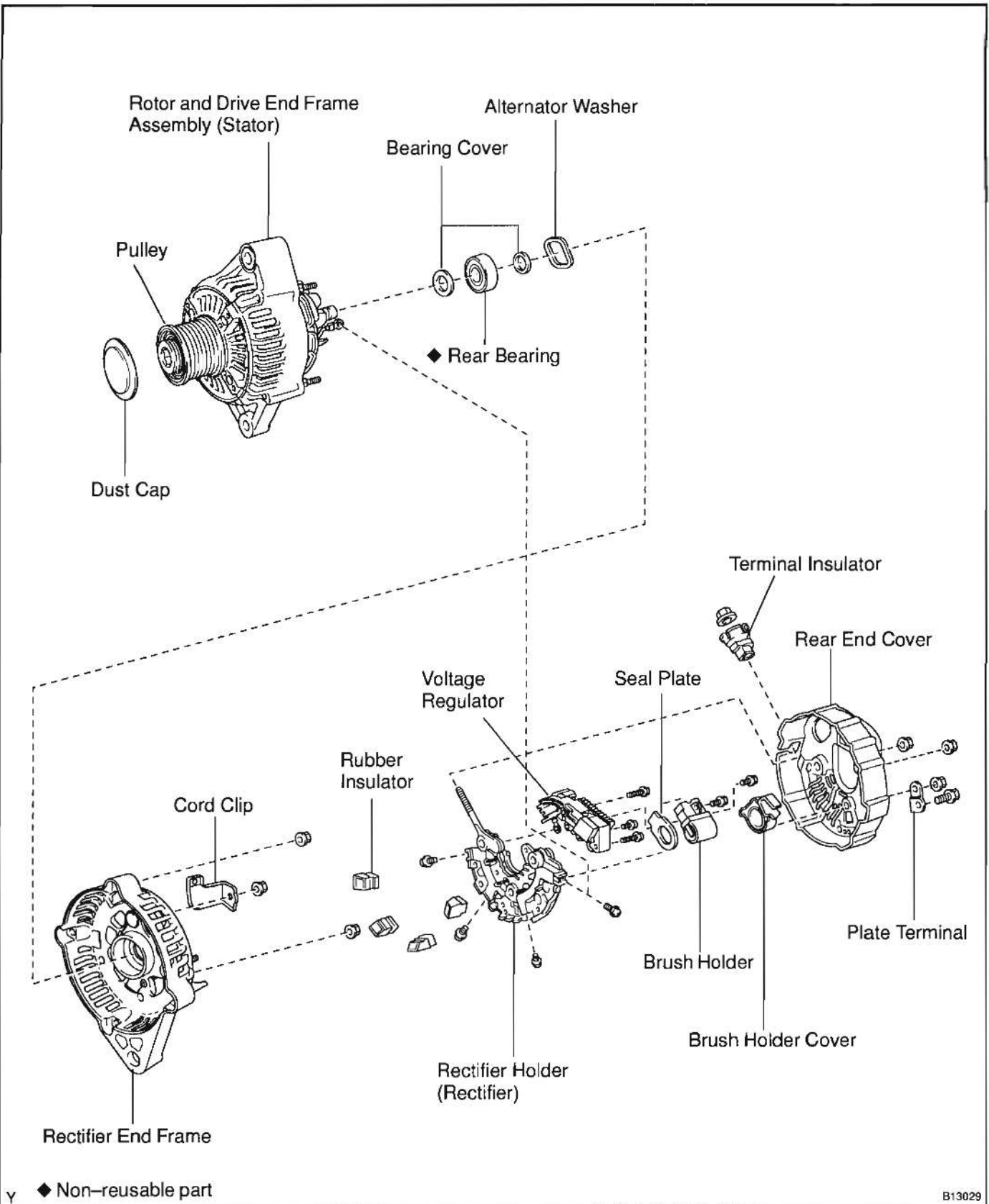
If the ammeter reading is less than standard amperage, repair the alternator.

HINT:

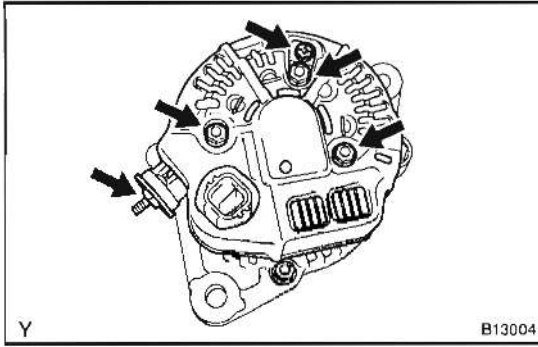
If the battery is fully charged, the indication will sometimes be less than standard amperage.

ALTERNATOR COMPONENTS

CH09N-01



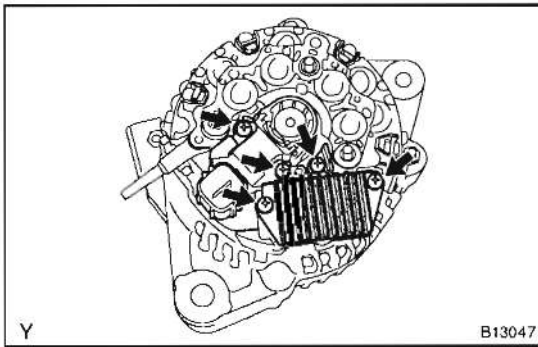
CH



DISASSEMBLY

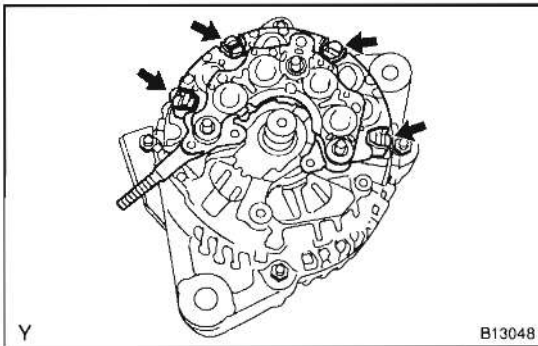
1. REMOVE REAR END COVER

- (a) Remove the nut and terminal insulator.
- (b) Remove the bolt, 3 nuts, plate terminal, end cover and brush holder cover.



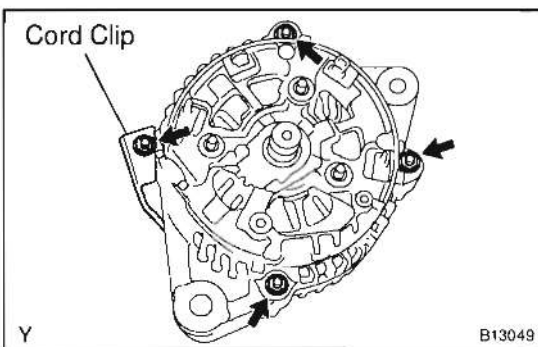
2. REMOVE BRUSH HOLDER AND VOLTAGE REGULATOR

- (a) Remove the 5 screws, brush holder and voltage regulator.
- (b) Remove the seal plate from the rectifier end frame.



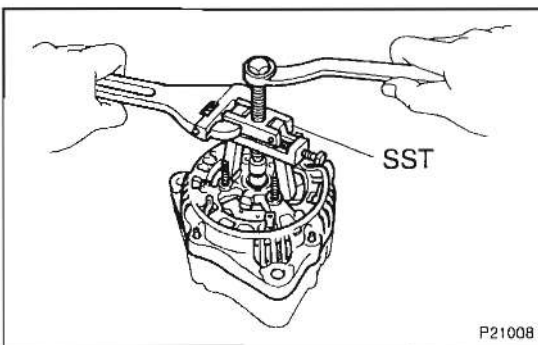
3. REMOVE RECTIFIER HOLDER

- (a) Remove the 4 screws and rectifier holder.
- (b) Remove the 4 rubber insulators.

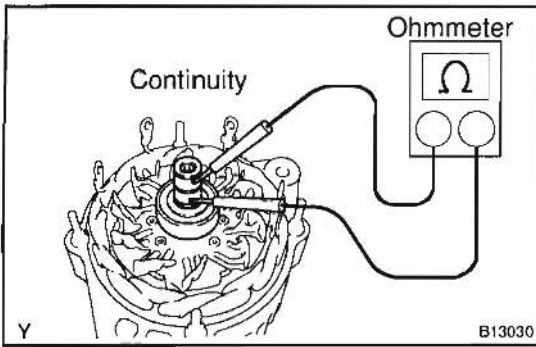


4. REMOVE RECTIFIER END FRAME

- (a) Remove the 4 nuts and cord clip.



- (b) Using SST, remove the rectifier end frame.
SST 09286-46011
- (c) Remove the alternator washer from the rotor.



INSPECTION

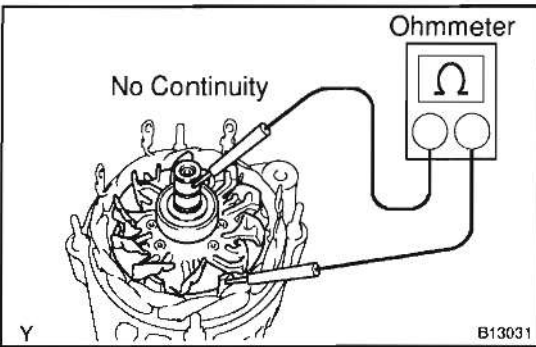
1. INSPECT ROTOR

- (a) Check the rotor for open circuit.

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

Standard resistance: 2.1 – 2.5 Ω at 20°C (68°F)

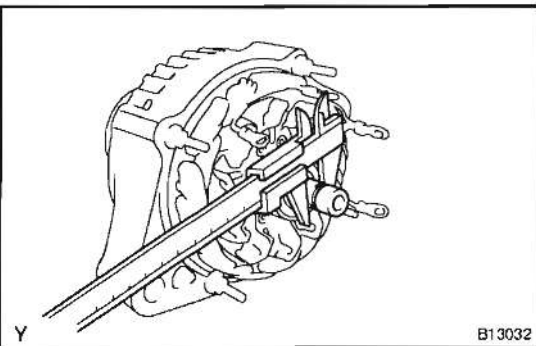
If there is no continuity, replace the alternator assembly.



- (b) Check the rotor for ground.

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

If there is continuity, replace the alternator assembly.



- (c) Check that the slip rings are not rough or scored.

If rough or scored, replace the rotor.

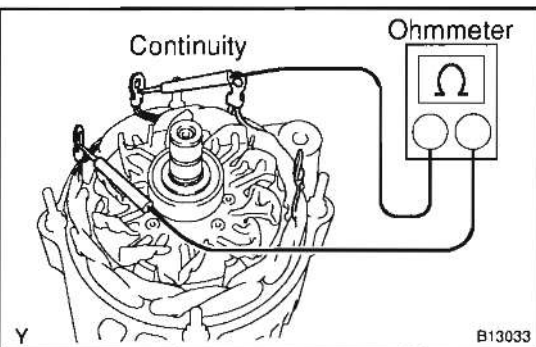
- (d) Using vernier calipers, measure the slip ring diameter.

Standard diameter: 14.2 – 14.4 mm (0.559 – 0.567 in.)

Minimum diameter: 12.8 mm (0.504 in.)

If the diameter is less than minimum, replace the alternator assembly.

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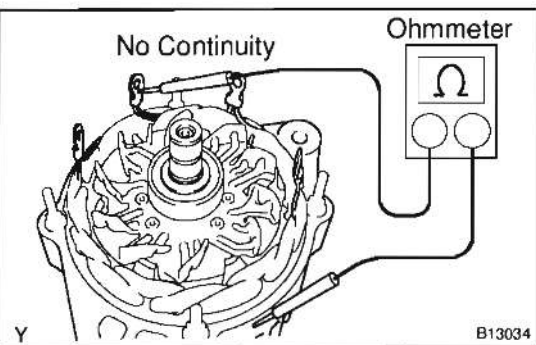


2. INSPECT STATOR (DRIVE END FRAME)

- (a) Check the stator for open circuit.

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

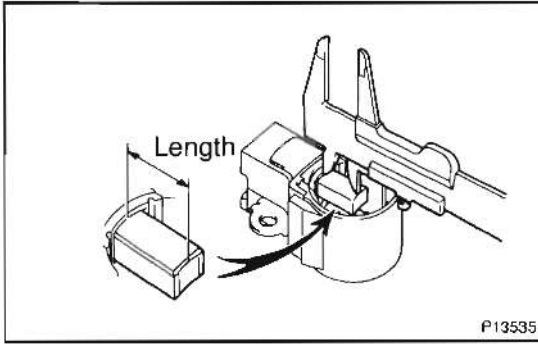
If there is no continuity, replace the alternator assembly.



- (b) Check the stator for ground.

Using an ohmmeter, check that there is no continuity between the coil lead and drive end frame.

If there is continuity, replace the alternator assembly.



3. INSPECT BRUSHES

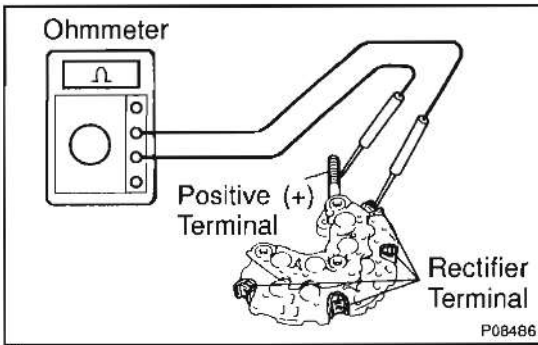
Using vernier calipers, measure the exposed brush length.

Standard exposed length:

9.5 – 11.5 mm (0.374 – 0.453 in.)

Minimum exposed length: 1.5 mm (0.059 in.)

If the exposed length is less than minimum, replace the brush holder assembly.



4. INSPECT RECTIFIERS (RECTIFIER HOLDER)

(a) Check the positive (+) rectifier.

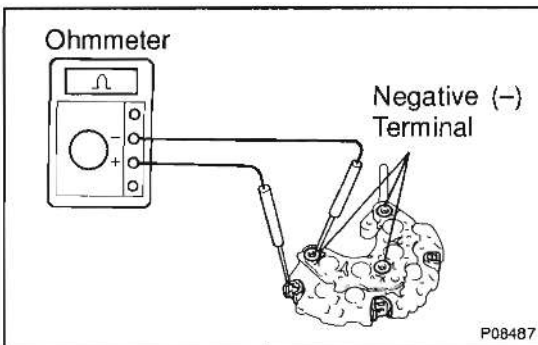
- (1) Using an ohmmeter, connect one tester probe to the positive (+) terminal and the other to each rectifier terminal.
- (2) Reverse the polarity of the tester probes and repeat step (a).
- (3) Check that one shows continuity and the other shows no continuity.

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

(b) Check the negative (-) rectifier.

- (1) Using an ohmmeter, connect one tester probe to each negative (-) terminal and the other to each rectifier terminal.
- (2) Reverse the polarity of the tester probes and repeat step (a).
- (3) Check that one shows continuity and the other shows no continuity.

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



5. INSPECT BEARINGS

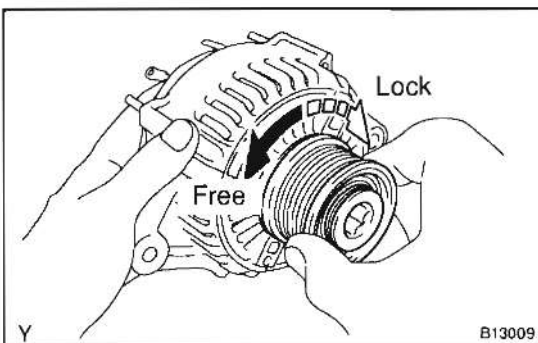
Check the bearing is not rough or worn.

For rear bearing:

If necessary, replace the rear bearing. (See page CH-9)

For front bearing:

If necessary, replace the alternator assembly.



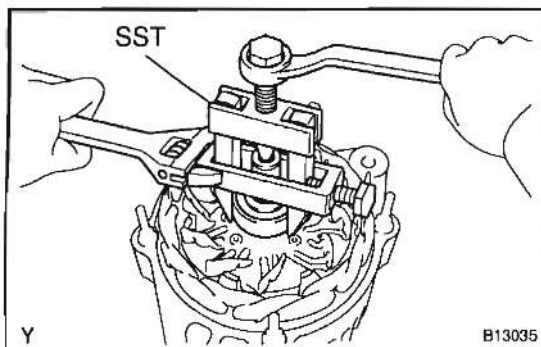
6. INSPECT PULLEY

(a) Temporarily install the rotor and pulley to the drive end frame.

(b) Check the pulley operation.

Hold the rotor and rotate the pulley clockwise, and check that it locks. Try to rotate the pulley counterclockwise and check that it turned freely.

If necessary, replace the alternator assembly.



REPLACEMENT

REPLACE REAR BEARING

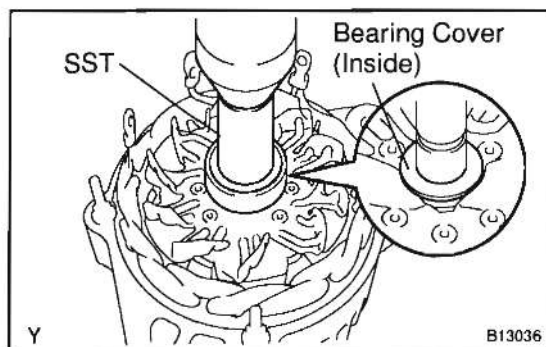
- (a) Using SST, remove the bearing cover (outside) and bearing.

SST 09820-00021

NOTICE:

Be careful not to damage the fan.

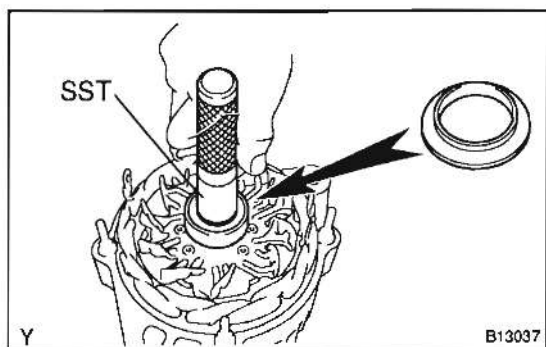
- (b) Remove the bearing cover (inside).



- (c) Place the bearing cover (inside) on the rotor.

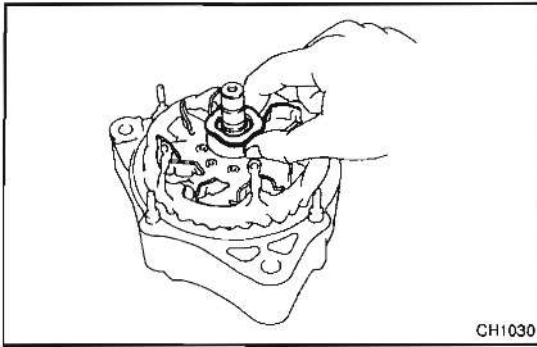
- (d) Using SST and a press, press in a new bearing.

SST 09820-00030



- (e) Using SST, push in the bearing cover (outside).

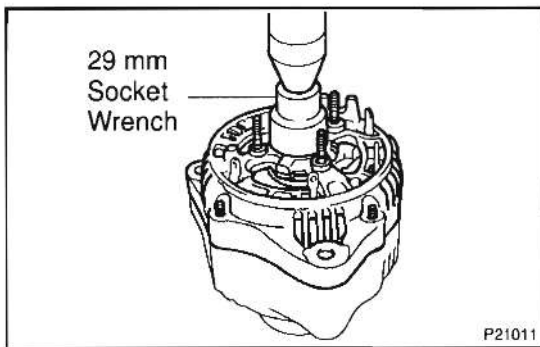
SST 09285-76010



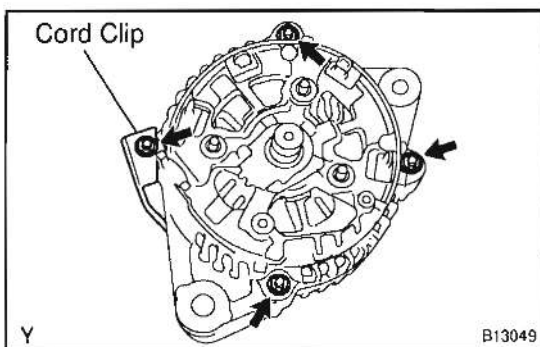
REASSEMBLY

1. INSTALL RECTIFIER END FRAME

- (a) Place the rectifier end frame on the rotor.
- (b) Place the alternator washer on the rotor.

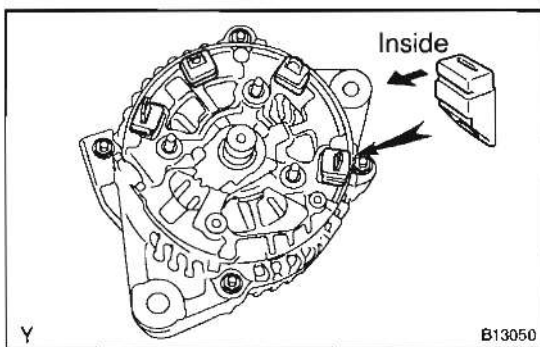


- (c) Using a 29 mm socket wrench and press, slowly press in the rectifier end frame.



- (d) Install the cord clip and 4 nuts, and temporarily tighten the 4 nuts.

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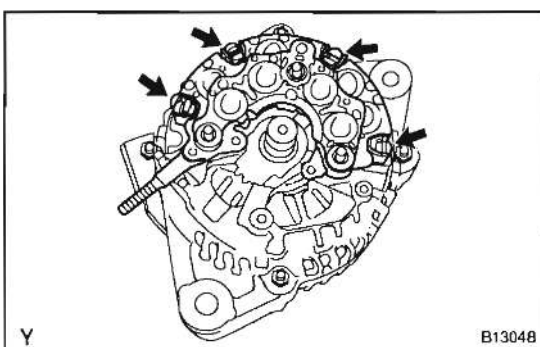


2. INSTALL RECTIFIER HOLDER

- (a) Install the 4 rubber insulators on the lead wires.

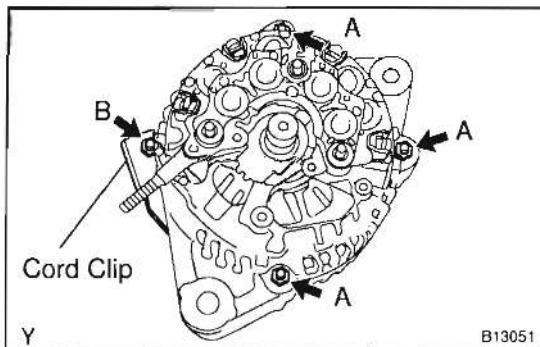
NOTICE:

Be careful of the rubber insulators installation direction.



- (b) Install the rectifier holder while pushing it with the 4 screws.

Torque: 2.94 N·m (30 kgf·cm, 26 in.-lbf)

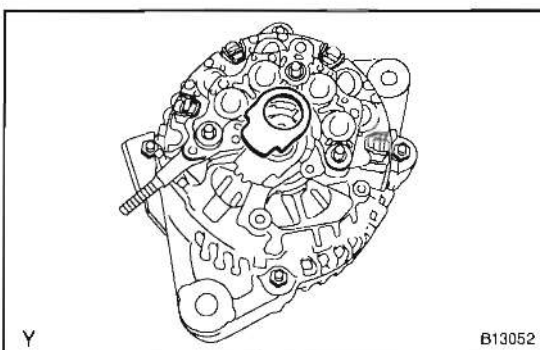


- (c) Tighten the 4 nuts.

Torque:

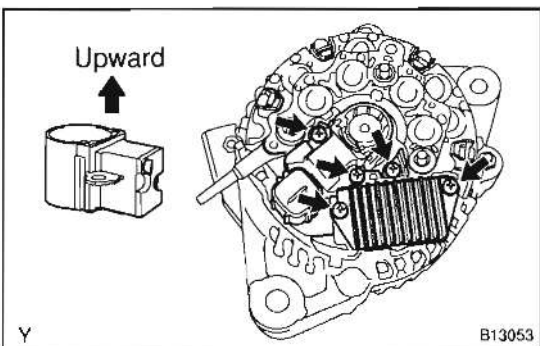
4.5 N·m (46 kgf·cm, 40 in.·lbf) for A

5.4 N·m (55 kgf·cm, 48 in.·lbf) for B



3. INSTALL VOLTAGE REGULATOR AND BRUSH HOLDER

- (a) Place the seal plate on the rectifier end frame.



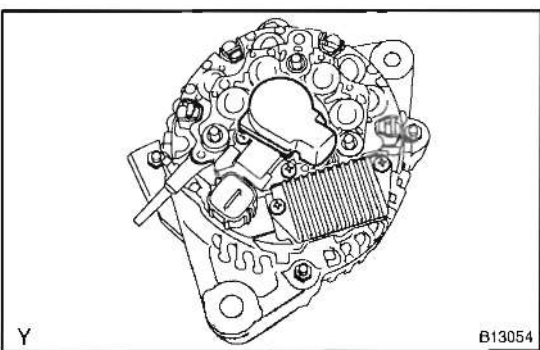
- (b) Place the voltage regulator and brush holder on the rectifier end frame.

NOTICE:

Be careful of the holder installation direction.

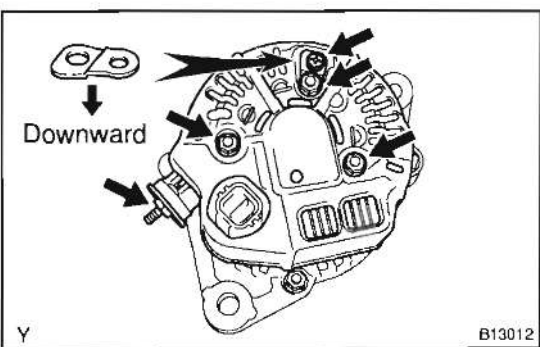
- (c) Install the 5 screws.

Torque: 2.0 N·m (20 kgf·cm, 18 in.·lbf)



4. INSTALL REAR END COVER

- (a) Place the brush holder cover on the brush holder.



- (b) Install the end cover and plate terminal with the bolt and 3 nuts.

Torque:

4.4 N·m (45 kgf·cm, 39 in.·lbf) for nut

3.8 N·m (39 kgf·cm, 34 in.·lbf) for bolt

- (c) Install the terminal insulator with the nut.

Torque: 4.1 N·m (42 kgf·cm, 36 in.·lbf)

5. CHECK THAT ROTOR ROTATES SMOOTHLY

