CHARGING SYSTEM

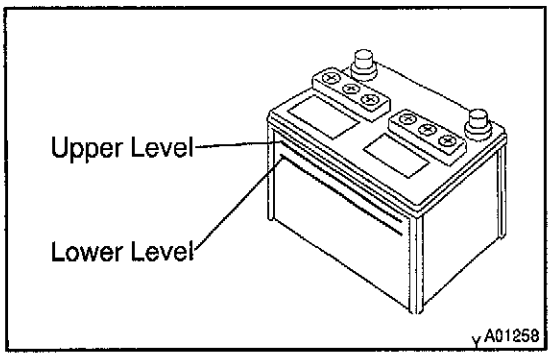
CH003-01

PRECAUTION

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

CH034-01

ON–VEHICLE INSPECTION



1. CHECK BATTERY ELECTROLYTE LEVEL

Check the electrolyte quantity of each cell.

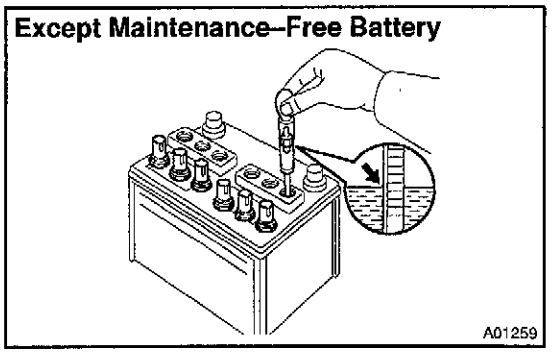
Maintenance–Free Battery:

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.

Except Maintenance–Free Battery



2. Except Maintenance–Free Battery: CHECK BATTERY SPECIFIC GRAVITY

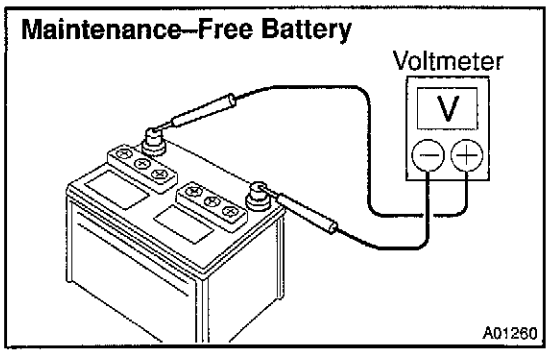
Check the specific gravity of each cell.

Standard specific gravity:

1.25 – 1.29 at 20°C (68°F)

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

Maintenance–Free Battery

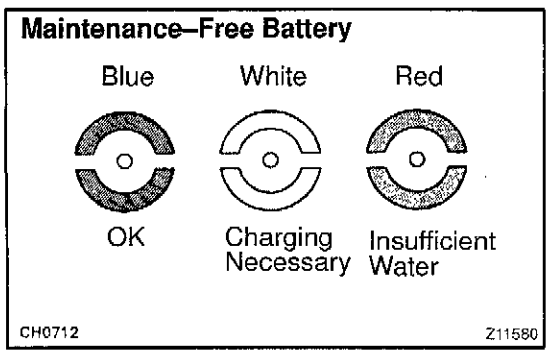


3. Maintenance–Free Battery: CHECK BATTERY VOLTAGE

(a) 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.

(b) Turn the ignition switch OFF and turn off the electrical systems.

Maintenance–Free Battery



(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.

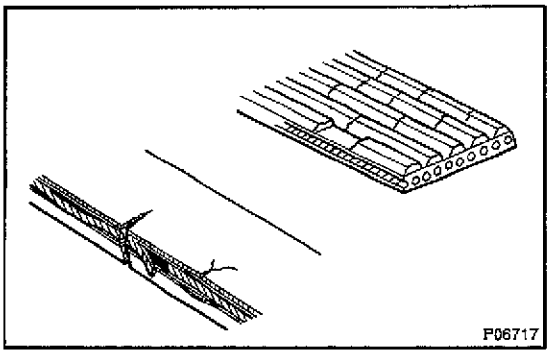
4. CHECK BATTERY TERMINALS, FUSIBLE LINK AND FUSES

(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.

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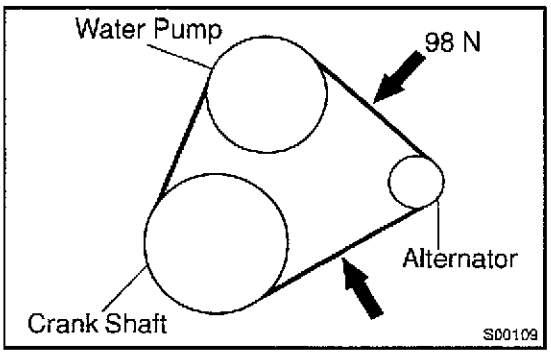
5. INSPECT DRIVE BELT

(a) Visually check the 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 belt are considered acceptable. If the belt has chunks missing from the ribs, it should be replaced.



(b) Check the drive belt deflection by pressing on the belt at the points indicated in the illustration with 98 N (10 kgf, 22 lbf) of pressure.

Drive belt deflection:
New belt 5 – 7 mm (0.20 – 0.28 in.)
Used belt 7 – 8 mm (0.28 – 0.31 in)

If necessary, adjust the drive belt deflection.

Reference

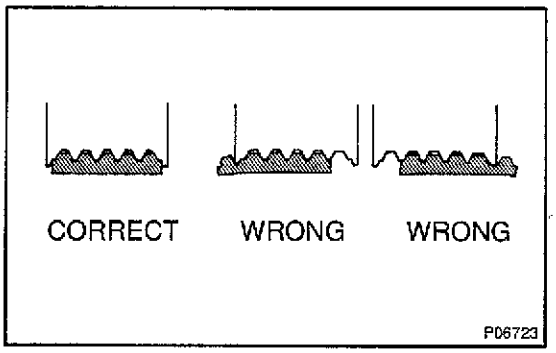
(c) Using a belt tension gauge, measure the belt tension.

Belt tension gauge:
Denso BTG–20 (95506–00020)
Borroughs No. BT–33–73F
Drive belt tension:
New belt 520 – 750 N (53 – 77 kgf)
Used belt 295 – 392 N (30 – 40 kgf)

If the belt tension is not as specified, adjust it.

HINT:

- "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 a belt, check that it fits properly in the ribbed grooves.
- Check with your hand to confirm that the belt has not slipped out of the groove on the bottom of the pulley.
- After installing a new belt, run the engine for about 5 minutes and recheck the belt tension.



6. VISUALLY CHECK ALTERNATOR WIRING AND LISTEN FOR ABNORMAL NOISES

(a) Check that the wiring is in good condition.

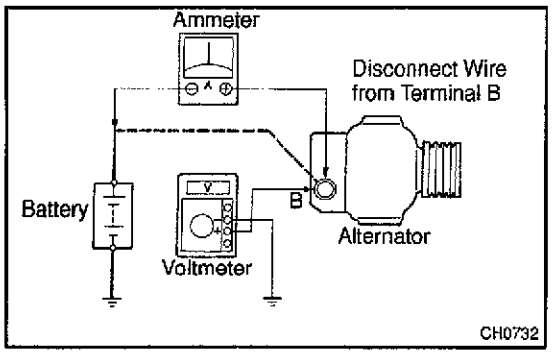
(b) Check that there is no abnormal noise from the alternator while the engine is running.

7. INSPECT DISCHARGE WARNING LIGHT CIRCUIT

(a) Turn the ignition switch "ON". Check that the discharge warning light comes on.

(b) Start the engine. Check that the light goes off.

If the light does not operate as specified, troubleshoot the discharge warning light circuit.



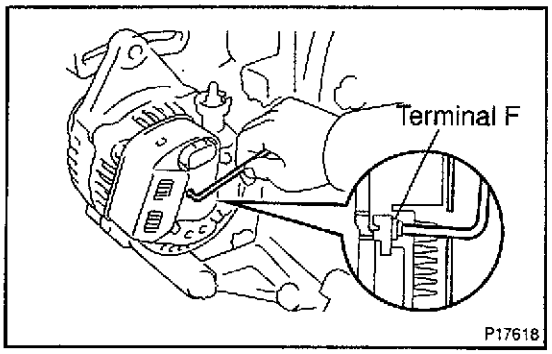
8. INSPECT CHARGING CIRCUIT WITHOUT LOAD

HINT:

If a battery/alternator tester is available, connect the tester to the charging circuit as per 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 ammeter to terminal B of the generator.
- 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:
13.8 – 14.7 V at 25°C (77°F)



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

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

9. 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 the standard amperage, repair the alternator.

HINT:

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

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