

## ON-VEHICLE INSPECTION

### 1. Except Delco Battery. CHECK BATTERY ELECTROLYTE LEVEL AND VOLTAGE

(a) Check the electrolyte quantity of each cell. If under the lower level, replace the battery (or add distilled water if possible.). Need to check the charging system.

(b) Measure the battery voltage between the terminals negative (–) and positive (+) of the battery.

#### Standard voltage:

At 20° C (68° F) 12.7 – 12.8 V

#### HINT:

- Before measuring the voltage, turn the ignition switch OFF and turn off the electrical systems (headlight, blower motor, rear defogger etc.) for 60 seconds to remove the surface charge.
- If the vehicle has been running, wait 5 minutes or more after the vehicle stops before measuring the battery voltage.

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

HINT: Check the indicator as shown in the illustration.

### 2. Delco Battery: CHECK HYDROMETER

Green Dot visible:

Battery is adequately charged.

Dark (Green Dot not visible):

Battery must be charged.

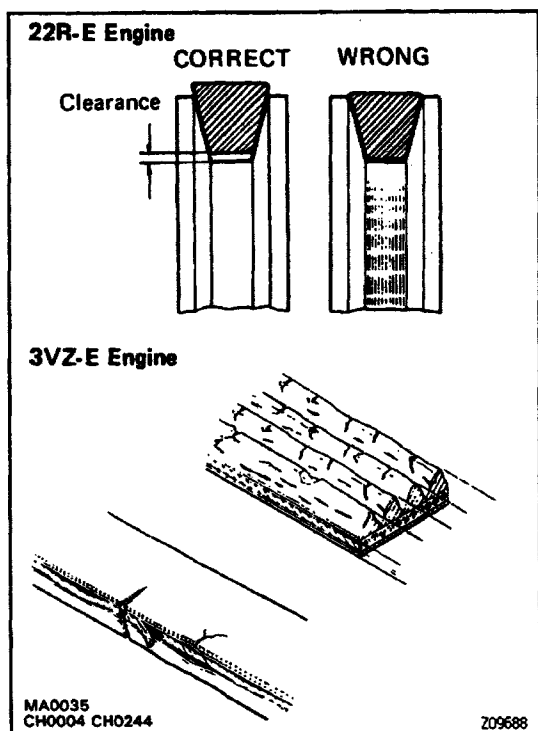
Clear or Light Yellow:

Replace battery.

HINT: There is no need to add water during the entire service life of the battery.

### 3. CHECK BATTERY TERMINALS, FUSIBLE LINK AND FUSES

- Check that the battery terminals are not loose or corroded.
- Check the fusible link and fuses for continuity.



#### 4. INSPECT DRIVE BELT

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

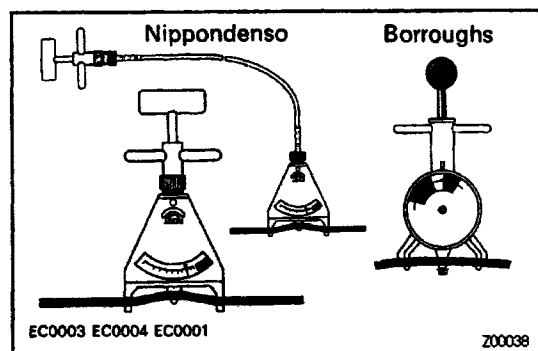
HINT:

22 R – E: Check that the belt does not touch the bottom of the pulley groove.

If defect has been found, replace the drive belt.

3VZ – E: Cracks on the ribbed side of the belt are considered acceptable.

If the belt has chunks missing from the ribs, it should be replaced.



- (b) Using a belt tension gauge, check the drive belt tension.

**Belt tension gauge:**

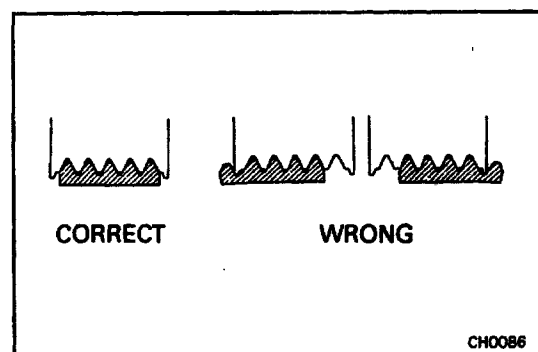
**Nippondenso BTG 20 (95506-00020) or  
Borroughs No. BT-33-73F**

Drive belt tension	22R-E	3VZ-E
<b>New belt</b>	<b>125 ± 25 lbf</b>	<b>160 ± 20 lbf</b>
<b>Used Belt</b>	<b>80 ± 20 lbf</b>	<b>100 ± 20 lbf</b>

If necessary, adjust the drive belt tension.

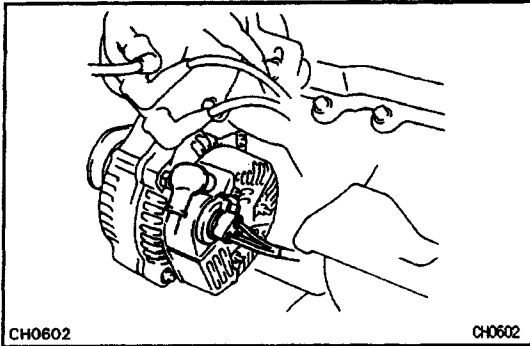
HINT:

- "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 the drive 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 crank pulley.
- After installing a new belt, run the engine for approx. 5 minutes and then recheck the tension.



**5. INSPECT FUSES FOR CONTINUITY**

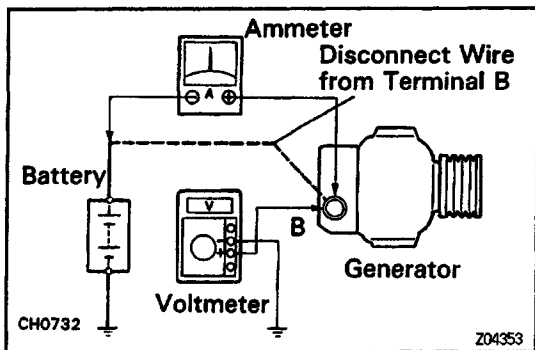
- ENGINE 10A
- CHARGE 7.5A
- IGN 7.5A

**6. VISUALLY CHECK GENERATOR WIRING AND LISTEN FOR ABNORMAL NOISES**

- Check that the wiring is in good condition.
- Check that there is no abnormal noise from the generator while the engine is running.

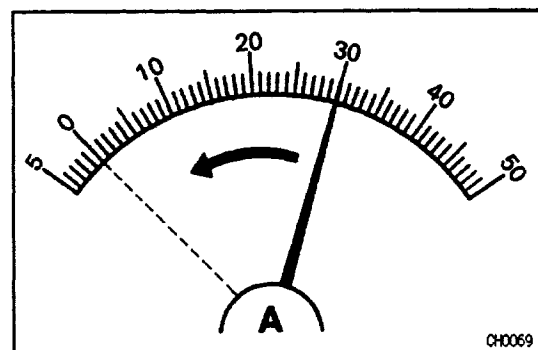
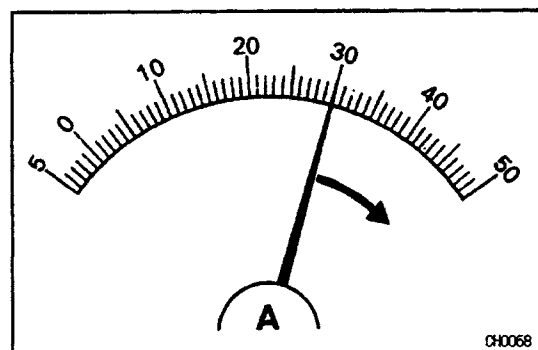
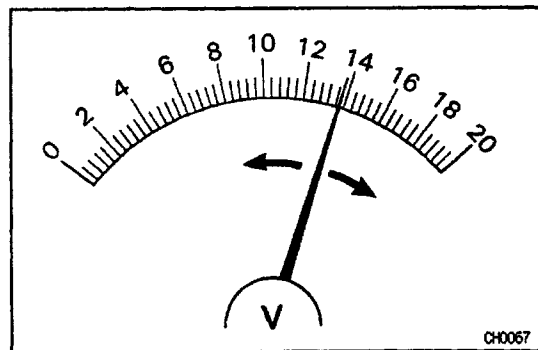
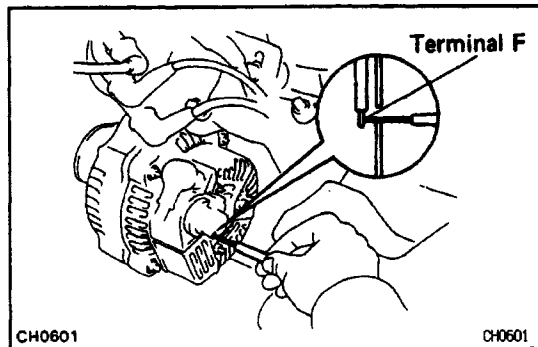
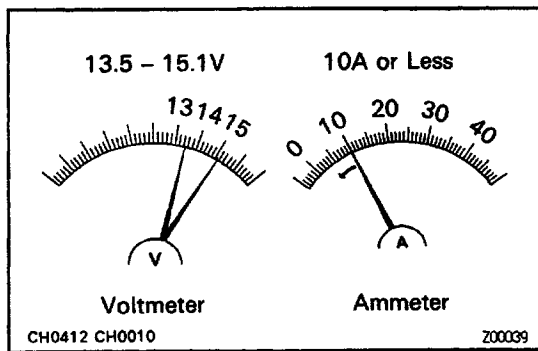
**7. INSPECT DISCHARGE WARNING LIGHT CIRCUIT**

- Turn the ignition switch ON. Check that the discharge warning light comes on.
  - Start the engine. Check that the light goes off.
- If the light does not operate as specified, troubleshoot the discharge warning light circuit.

**8. CHECK CHARGING CIRCUIT WITHOUT LOAD**

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

- 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 generator and connect the wire to the negative (–) terminal of the ammeter.
  - Connect the test lead from the positive (+) terminal of the ammeter to terminal B of the generator.
  - Connect the positive (+) lead of the voltmeter to terminal B of the generator.
  - 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:**

**At 25 ° C (77 ° F): 13.9 – 15.1 V**

**At 115 ° C (239 ° F): 13.5 – 14.3 V**

If the voltage reading is greater than standard voltage, replace the voltage regulator.

If the voltage reading is less than standard voltage, check the voltage regulator and generator as follows:  
With terminal F grounded, start the engine and check the voltage reading of terminal 6.

- If the voltage reading is higher than standard voltage, replace the voltage regulator.
- If the voltage reading is less than standard voltage, repair the generator.

**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 fan control switch to HI.
- (b) Check the reading on the ammeter.  
Standard amperage:  
30 A or more

If the ammeter reading is less than 30 A, repair the generator. (See page [CH-10](#))

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