

CHARGING SYSTEM

PRECAUTION

CAUTION:

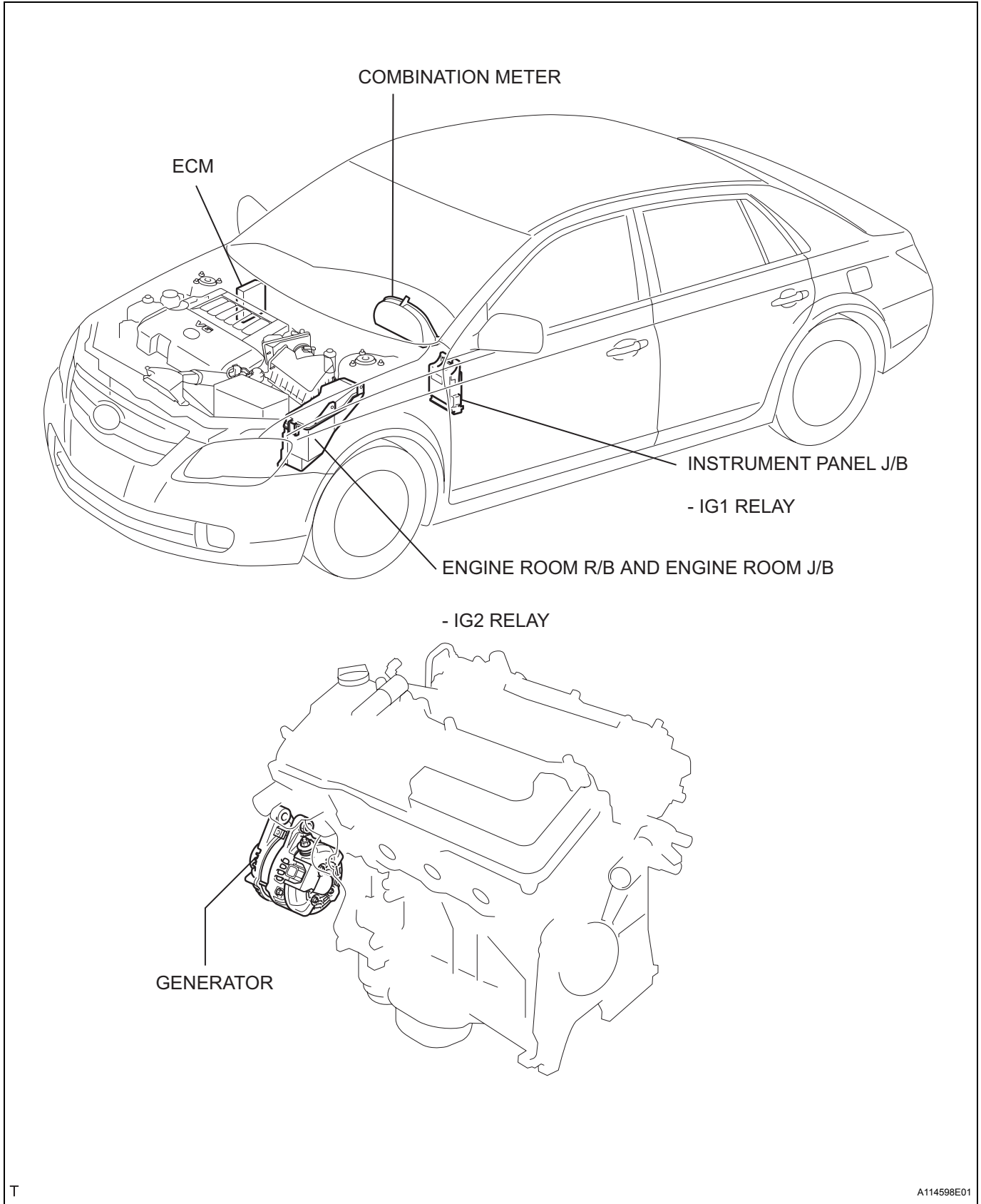
- Check that the battery cables are connected to the correct terminals.
- Disconnect the battery cables when the battery is charged quickly.
- Do not perform tests with a high voltage insulation resistance tester.
- Never disconnect the battery while the engine is running.
- Check that the charging cable is connected to terminal B of the generator and the fuse box.
- Do not perform inspection of the generator in which terminal F is connected to the other terminal.

1. EXPRESSIONS OF IGNITION SWITCH

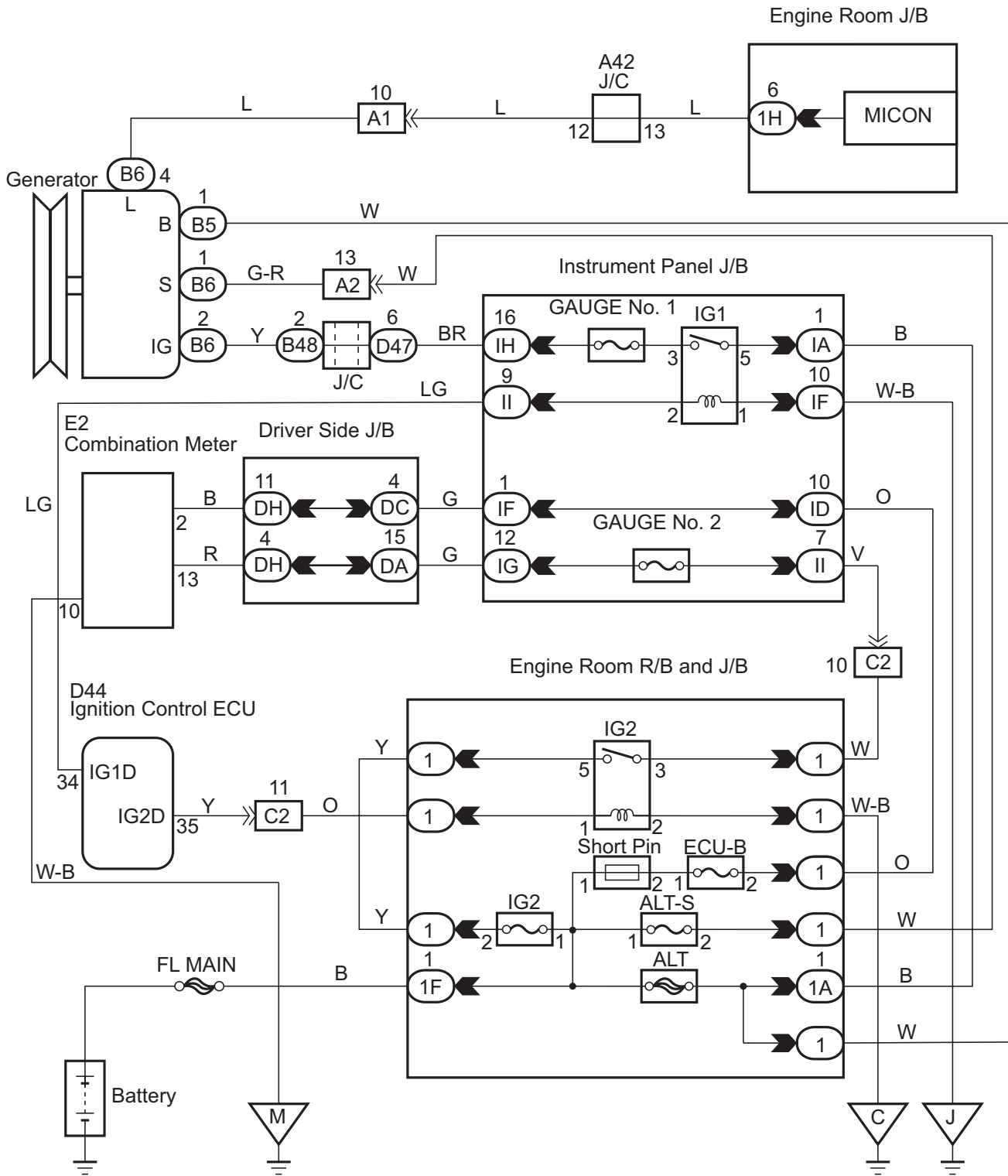
- (a) The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

Switch Type		Ignition Switch (position)	Engine Switch (condition)
Expression	Ignition Switch off	LOCK	Off
	Ignition Switch on (IG)	ON	On (IG)
	Ignition Switch on (ACC)	ACC	On (ACC)
	Engine Start	START	Start

PARTS LOCATION



w/ Smart Key System:



CH

ON-VEHICLE INSPECTION

CAUTION:

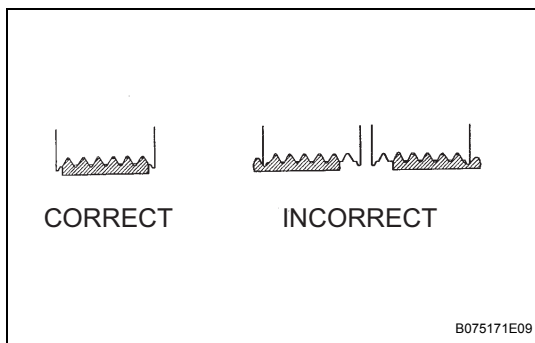
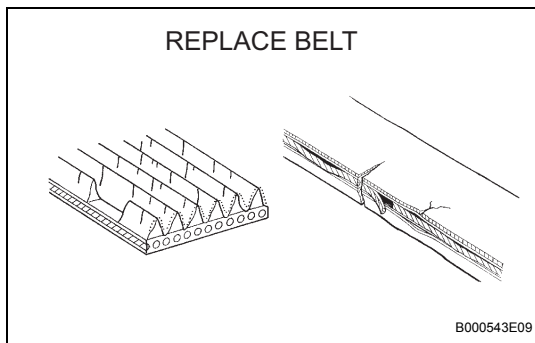
If the battery is weak or if the engine is difficult to start, recharge the battery and perform inspections again before returning the vehicle to the customer.

1. CHECK BATTERY CONDITION

- (a) Check the battery for damage and deformation. If severe damage, deformation or leakage is found, replace the battery.
- (b) Check the electrolyte quantity of each cell.
 - For batteries that are maintenance-free:
 - If the electrolyte quantity is below the recommended amount, replace the battery.
 - For batteries that are not maintenance-free:
 - If the electrolyte quantity is below the recommended amount, add distilled water.

2. 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 that the resistance of the fusible link, H-fuse and fuses is below 1 Ω .
 - If the fusible link or fuses are not as specified, replace the part.



3. INSPECT DRIVE BELT

- (a) Check the belt for wear, cracks and other signs of damage.
 - If any defect is found, replace the drive belt.
 - HINT:
 - Replace the drive belt if any of the following defects are found:
 - The belt has worn out until the wire can be seen.
 - The cracks reach the wire in more than one place.
 - The belt has chunks missing from the ribs.
- (b) Check that the belt fits properly in the ribbed grooves.
 - HINT:
 - Confirm that the belt has not slipped out of the groove on the bottom of the pulley by hand.

4. VISUALLY CHECK GENERATOR WIRING

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

5. CHECK FOR ABNORMAL NOISES FROM GENERATOR

- (a) Check that there is no abnormal noise from the generator while the engine is running.

6. INSPECT CHARGE WARNING LIGHT CIRCUIT

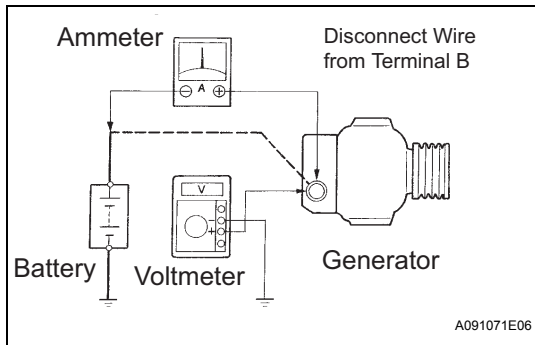
- (a) Turn the ignition switch on (IG). Check that the charge warning light comes on.

- (b) Start the engine and check that the light goes off. If the light does not operate as specified, troubleshoot the charge warning light circuit.

7. INSPECT 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.



- (a) If a tester is not available, connect a voltmeter and ammeter to the charging circuit as follows:
- (1) Disconnect the wire from terminal B of the generator and connect it to the negative (-) lead of the ammeter.
 - (2) Connect the ammeter's positive (+) lead to terminal B of the generator.
 - (3) Connect the voltmeter's positive (+) lead to terminal B of the generator.
 - (4) Ground the voltmeter's negative (-) lead.
- (b) Check the charging circuit.
- (1) Keep the engine speed at 2,000 rpm. Check the reading on the ammeter and voltmeter.

Standard amperage:
10 A or less

Standard voltage:
13.2 to 14.8 V

If the result is not as specified, replace the generator.

8. INSPECT CHARGING CIRCUIT WITH LOAD

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

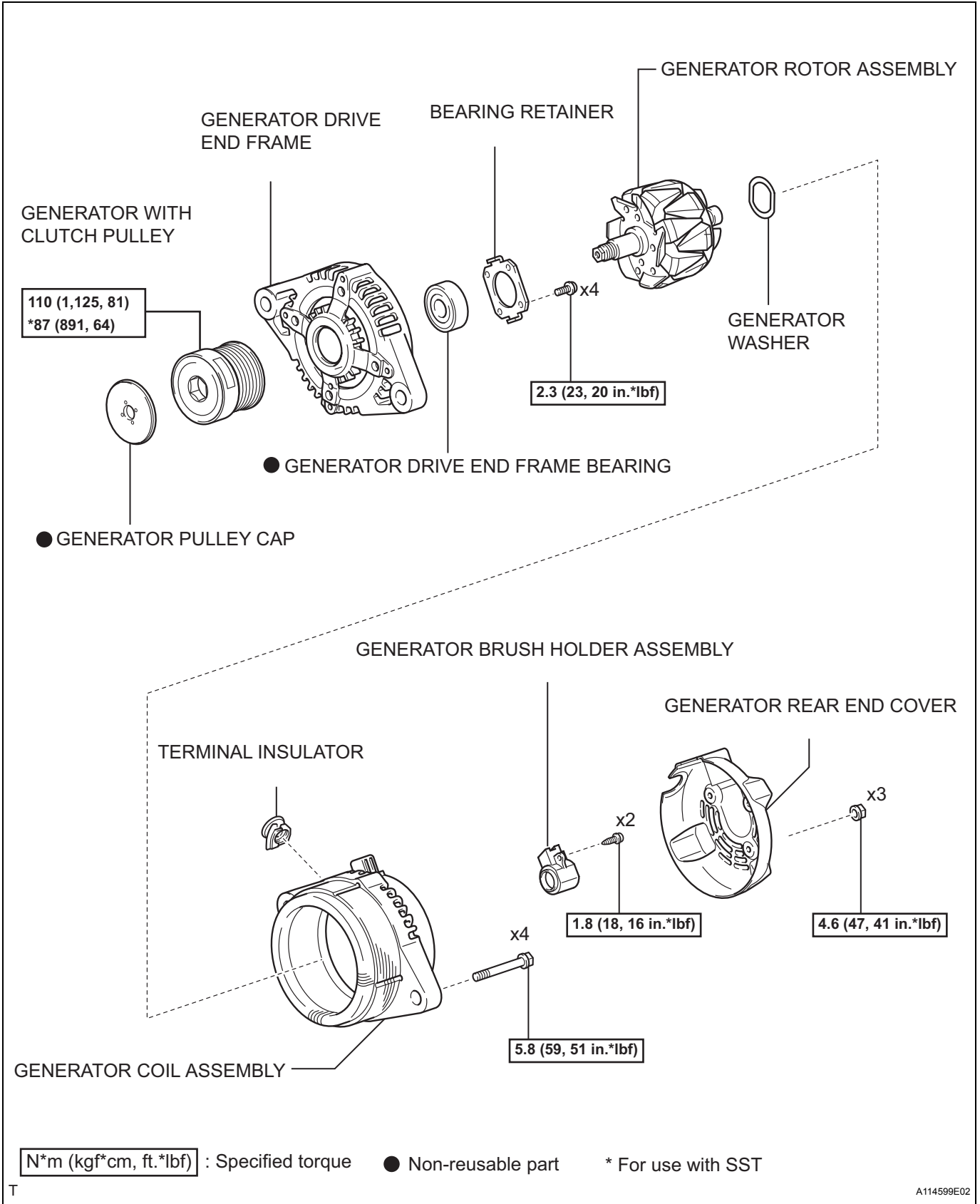
Standard amperage:

30 A or more

HINT:

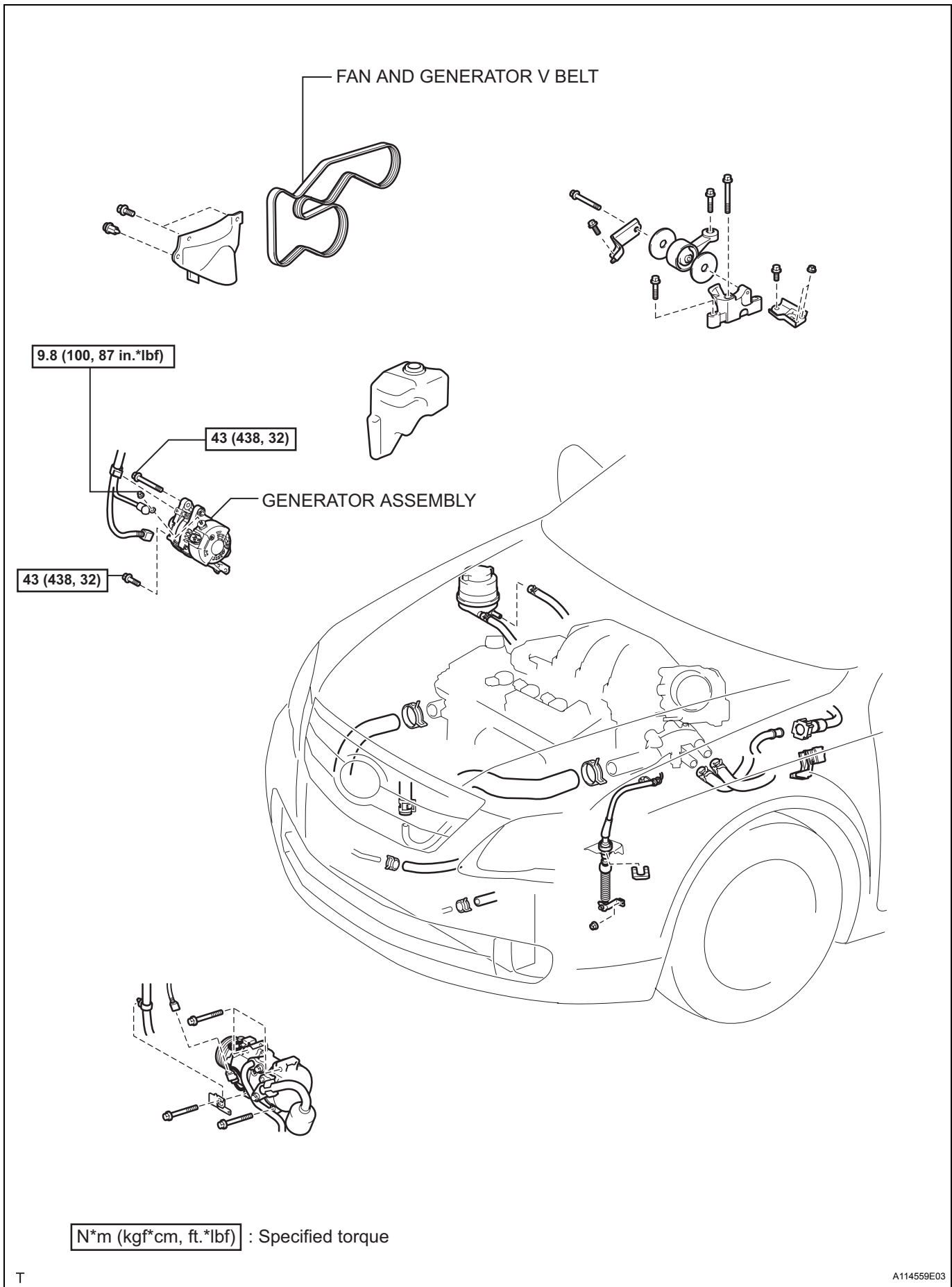
- If the ammeter reading is less than the standard amperage, repair the generator.
- If the battery is fully charged, the ammeter reading will sometimes be less than the standard amperage.

GENERATOR COMPONENTS



CH

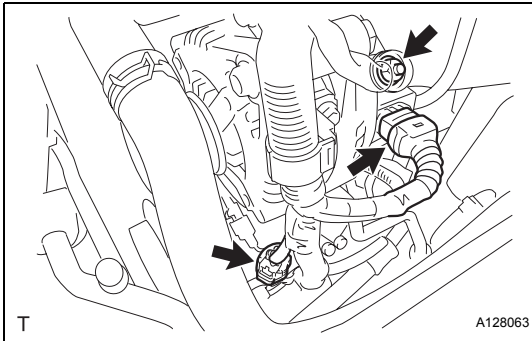
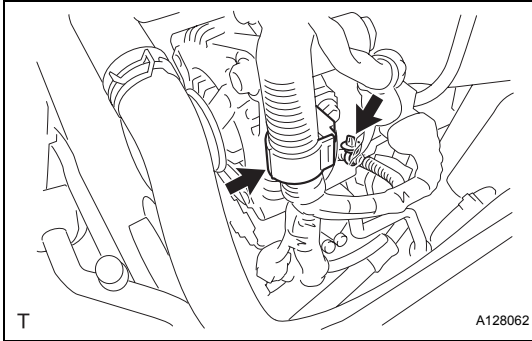
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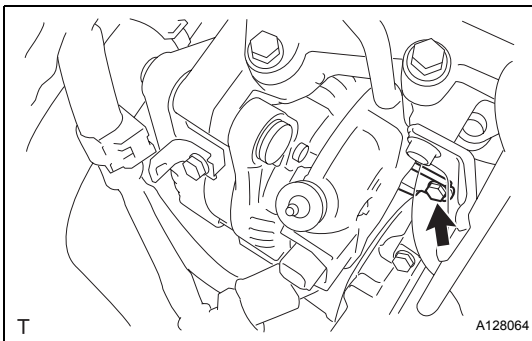
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REMOVAL

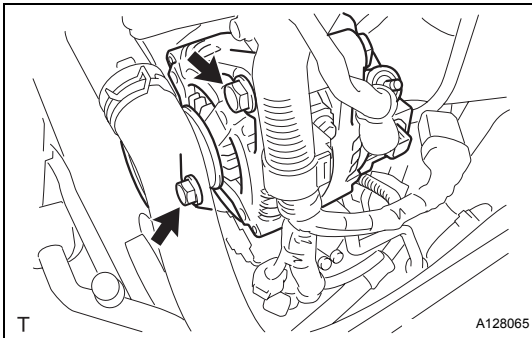
1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
2. REMOVE V-BANK COVER SUB-ASSEMBLY (See page [FU-12](#))
3. REMOVE FAN AND GENERATOR V BELT (See page [EM-28](#))
4. REMOVE GENERATOR ASSEMBLY
 - (a) Disconnect the wire harness clamp.



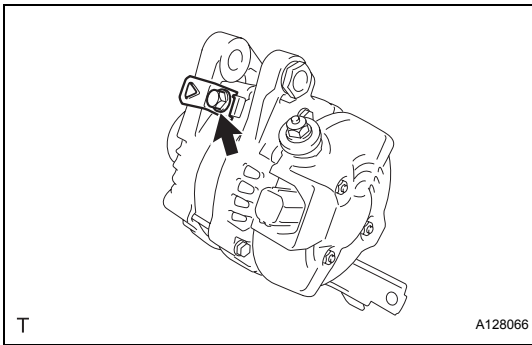
- (b) Remove the terminal cap.
- (c) Remove the nut and disconnect the wire harness from terminal B.
- (d) Disconnect the generator connector from the generator assembly.



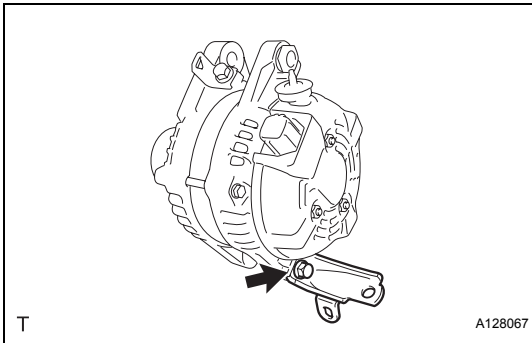
- (e) Remove the nut from the cylinder block.



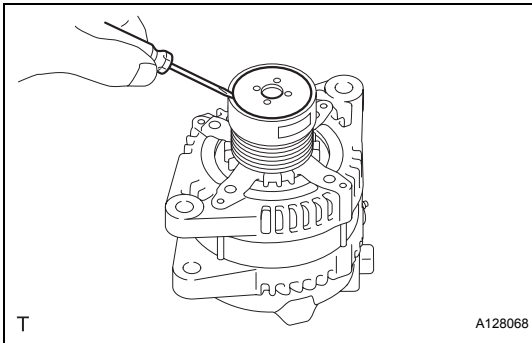
- (f) Remove the 2 bolts and generator assembly.



(g) Remove the bolt and wire harness clamp stay.



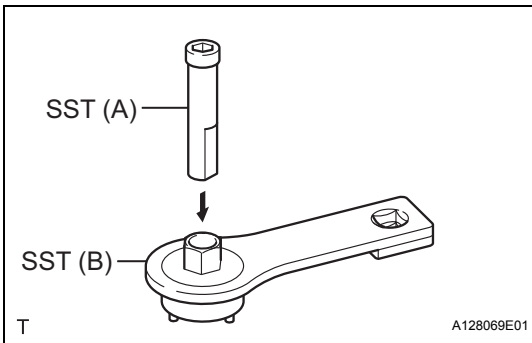
(h) Remove the bolt and bracket.



DISASSEMBLY

1. REMOVE GENERATOR WITH CLUTCH PULLEY

(a) Using a screwdriver, remove the generator pulley cap.

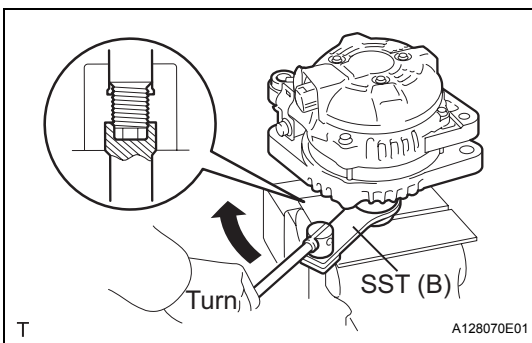


(b) Set SST (A) and (B).

SST 09820-63020

(1) Set the rotor shaft to SST (A).

(2) Mount SST (A) in a vise.

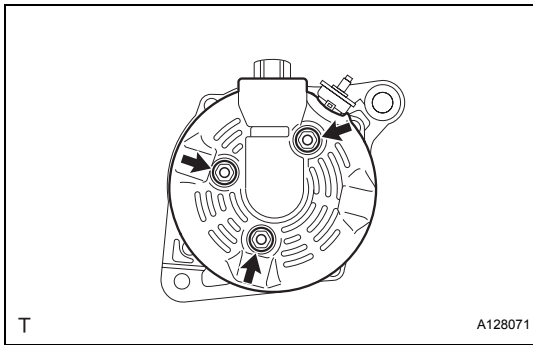


(c) Install the generator with the SST as shown in the illustration.

(d) Turn SST (B) clockwise, and loosen the generator pulley.

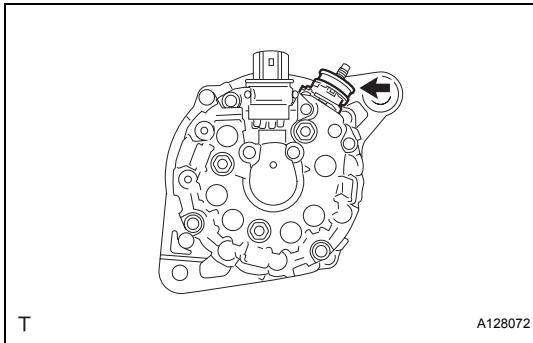
(e) Remove the generator from SST.

(f) Remove the pulley from the rotor shaft.



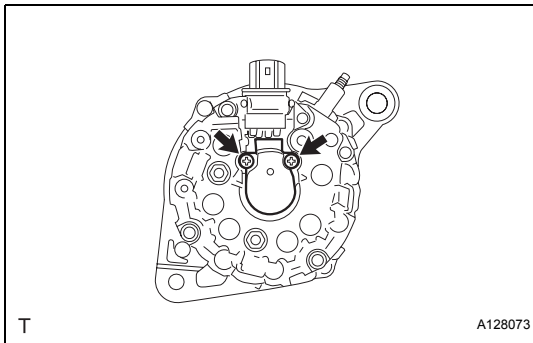
2. REMOVE GENERATOR REAR END COVER

- (a) Remove the 3 nuts and generator rear end cover.



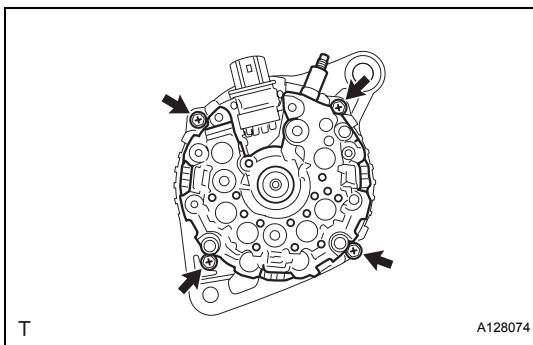
3. REMOVE TERMINAL INSULATOR

- (a) Remove the terminal insulator.



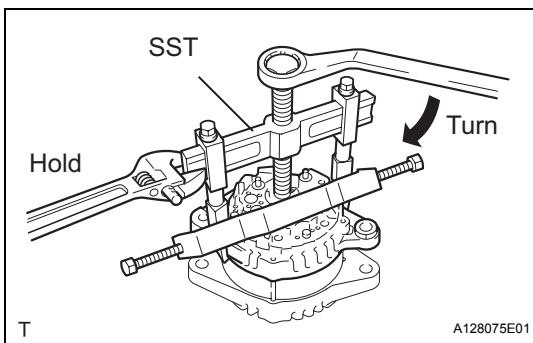
4. REMOVE GENERATOR BRUSH HOLDER ASSEMBLY

- (a) Remove the 2 screws and generator brush holder assembly.



5. REMOVE GENERATOR COIL ASSEMBLY

- (a) Remove the 4 bolts.

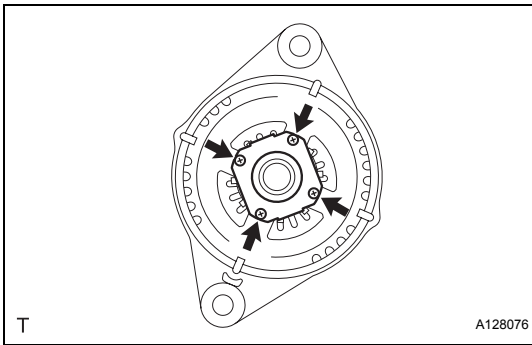


- (b) Using SST, remove the generator coil assembly.
SST 09950-40011 (09951-04020, 09952-04010, 09953-04020, 09954-04010, 09955-04071, 09957-04010, 09958-04011)

- (c) Remove the generator washer.

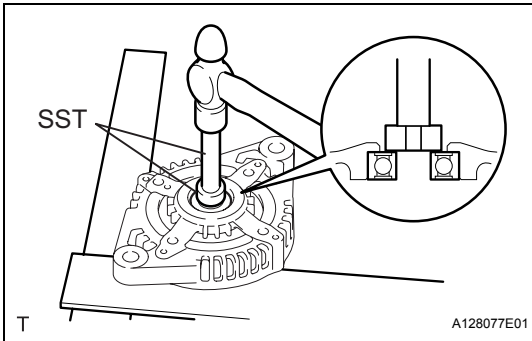
6. REMOVE GENERATOR ROTOR ASSEMBLY

- (a) Remove the generator rotor assembly.



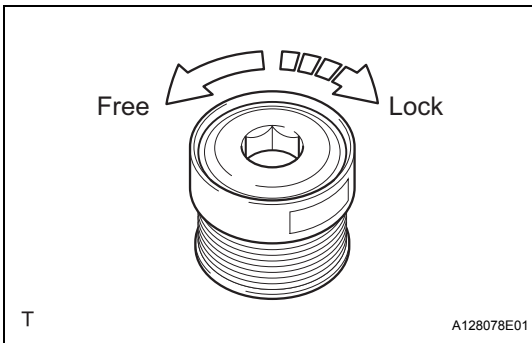
7. REMOVE GENERATOR DRIVE END FRAME BEARING

(a) Remove the 4 screws and bearing retainer.



(b) Using SST and a hammer, tap out the generator drive end frame bearing.

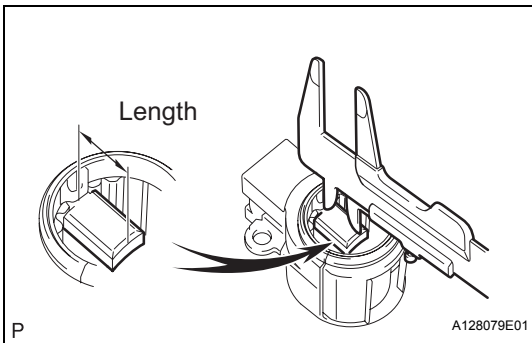
SST 09950-60010 (09951-00250), 09950-70010 (09951-07100)



INSPECTION

1. INSPECT GENERATOR WITH CLUTCH PULLEY

(a) When rotating the generator pulley, check that it turns counterclockwise and does not turn clockwise.



2. INSPECT GENERATOR BRUSH HOLDER ASSEMBLY

(a) Using vernier calipers, measure the exposed brush length.

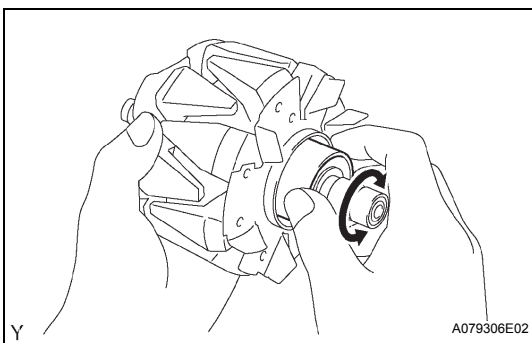
Standard exposed length:

10.5 mm (0.413 in.)

Minimum exposed length:

4.5 mm (0.177 in.)

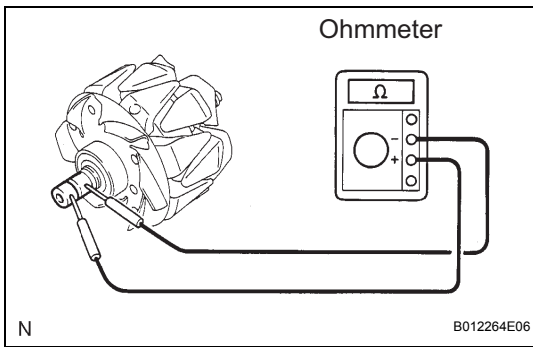
If the exposed length is less than the minimum, replace the generator brush holder assembly.



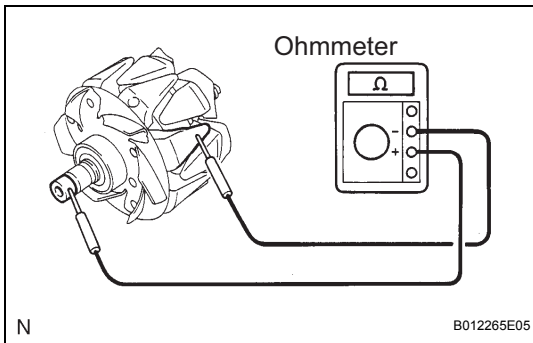
3. INSPECT GENERATOR ROTOR ASSEMBLY

(a) Check that the generator rotor bearing is not rough or worn.

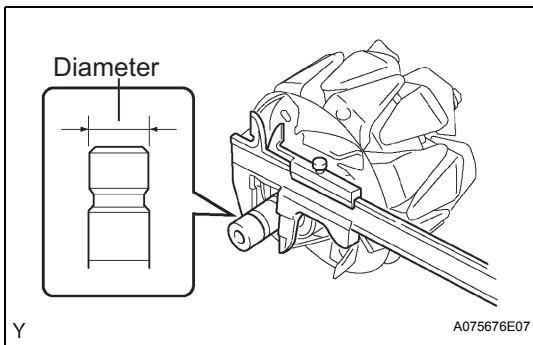
If necessary, replace the generator rotor.



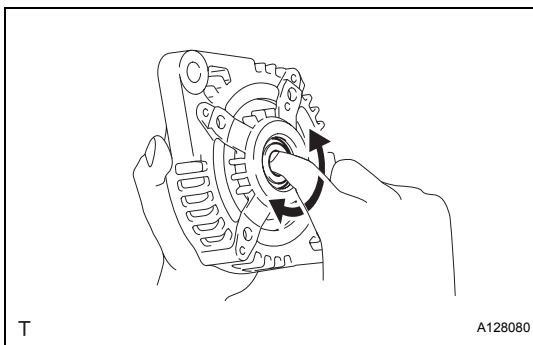
- (b) Check the generator rotor for an open circuit.
- (1) Using an ohmmeter, measure the resistance between the slip rings.
Standard resistance:
2.3 to 2.7 Ω at 20°C (68°F)
 If the result is not as specified, replace the generator rotor assembly.



- (c) Check the generator rotor for a short circuit.
- (1) Using an ohmmeter, measure the resistance between the each slip ring and rotor.
Standard resistance:
1 M Ω or higher
 If the result is not as specified, replace the generator rotor assembly.

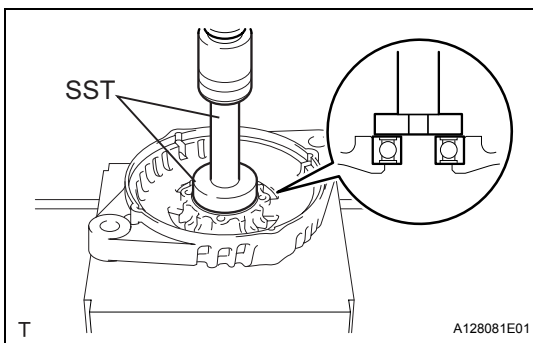


- (d) Using vernier calipers, measure the slip ring diameter.
Standard diameter:
14.2 to 14.4 mm (0.559 to 0.567 in.)
Minimum diameter:
14.0 mm (0.551 in.)
 If the diameter is less than the minimum, replace the generator rotor assembly.



4. INSPECT GENERATOR DRIVE END FRAME BEARING

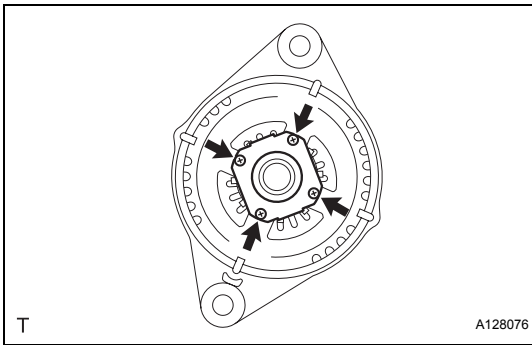
- (a) Check the generator drive end frame bearing is not rough or worn.
 If necessary, replace the generator drive end frame bearing.



REASSEMBLY

1. INSTALL GENERATOR DRIVE END FRAME BEARING

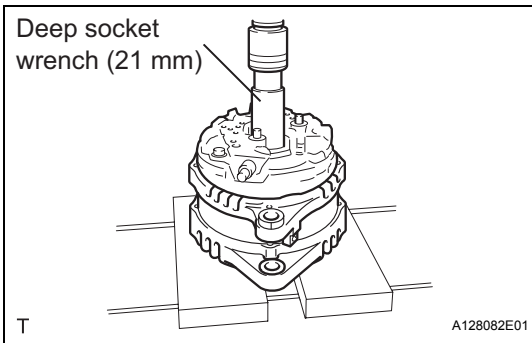
- (a) Using SST and a press, press in a new generator drive end frame bearing.
SST 09950-60010 (09951-00470), 09950-70010 (09951-07100)



- (b) Install the bearing retainer with the 4 screws.
Torque: 2.3 N*m (23 kgf*cm, 20 in.*lbf)

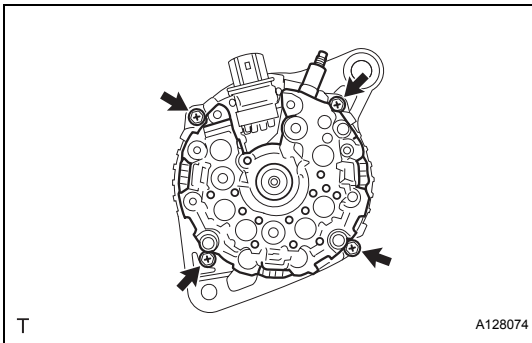
2. INSTALL GENERATOR ROTOR ASSEMBLY

- (a) Install the generator rotor assembly and generator washer to the drive end frame.

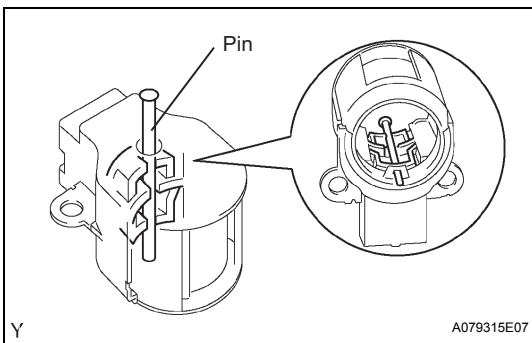


3. INSTALL GENERATOR COIL ASSEMBLY

- (a) Using deep socket wrench (21 mm) and a press, slowly press in the generator coil assembly.

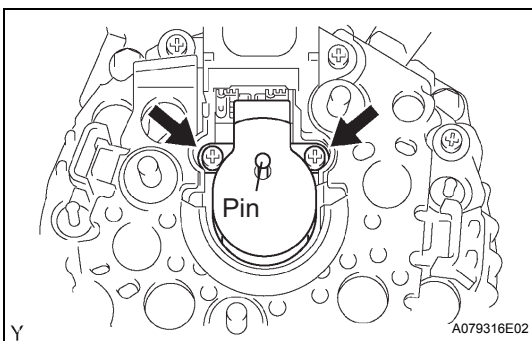


- (b) Install the 4 bolts.
Torque: 5.8 N*m (59 kgf*cm, 51 in.*lbf)

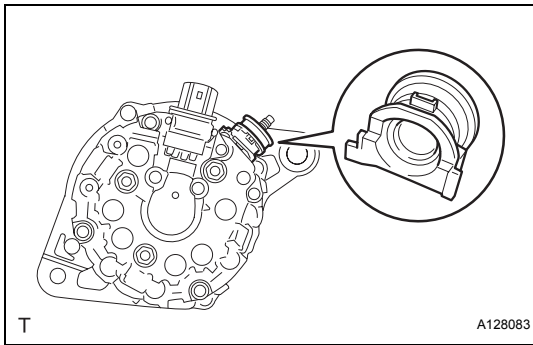


4. INSTALL GENERATOR BRUSH HOLDER ASSEMBLY

- (a) While pushing the 2 brushes to the inside of the generator brush holder assembly, insert a $\phi 1.0$ mm (0.039 in.) pin into the generator brush holder hole.



- (b) Install the brush holder assembly with the 2 screws.
Torque: 1.8 N*m (18 kgf*cm, 16 in.*lbf)
- (c) Remove the pin from the brush holder assembly.

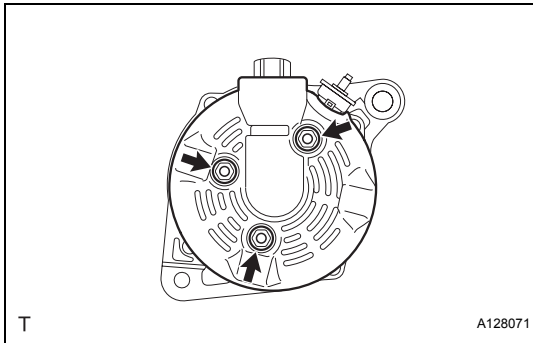


5. INSTALL TERMINAL INSULATOR

- (a) Install the terminal insulator.

NOTICE:

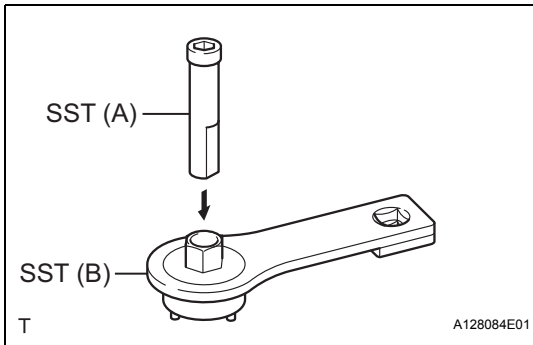
Pay attention to installation direction of the terminal insulator.



6. INSTALL GENERATOR REAR END COVER

- (a) Install the end cover with the 3 nuts.

Torque: 4.6 N*m (47 kgf*cm, 41 in.*lbf)

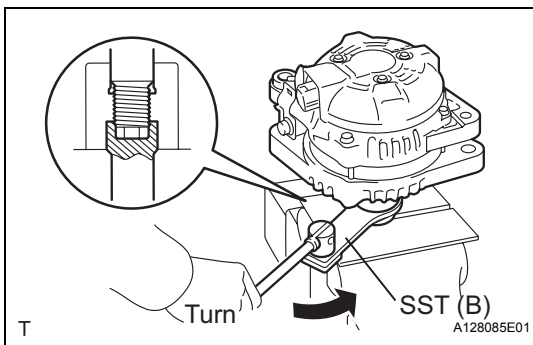


7. REMOVE GENERATOR WITH CLUTCH PULLEY

- (a) Set SST (A) and (B).

SST 09820-63020

- (1) Set the rotor shaft to SST (A).
 (2) Mount SST (A) in a vise.



- (b) Install the generator with the SST as shown in the illustration.

- (c) Turn SST (B) counterclockwise, and tighten the generator pulley.

SST 09820-63020

Torque: 87 N*m (891 kgf*cm, 64 ft.*lbf)

NOTICE:

Use a torque wrench with a fulcrum length of 380 mm (14.96 in.).

- (d) Remove the generator from the SST.

NOTICE:

Check that the generator pulley rotates smoothly.

- (e) Install a new generator pulley cap.

INSTALLATION

1. INSTALL GENERATOR ASSEMBLY

- (a) Install the bracket with the bolt.
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)
- (b) Install the wire harness clamp stay.
Torque: 8.4 N*m (86 kgf*cm, 74 in.*lbf)
- (c) Install the generator assembly with the 2 bolts.
Torque: 43 N*m (438 kgf*cm, 32 ft.*lbf)
- (d) Install the nut to the cylinder block.
Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)
- (e) Connect the generator connector to the generator assembly.
- (f) Install the generator wire with the nut.
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)
- (g) Install the terminal cap.
- (h) Connect the wire harness clamp.

2. INSTALL FAN AND GENERATOR V BELT (See page [EM-46](#))

3. INSTALL V-BANK COVER SUB-ASSEMBLY (See page [FU-19](#))

4. CONNECT BATTERY NEGATIVE TERMINAL

5. PERFORM INITIALIZATION

- (a) Some systems need initialization when disconnecting the battery terminal.