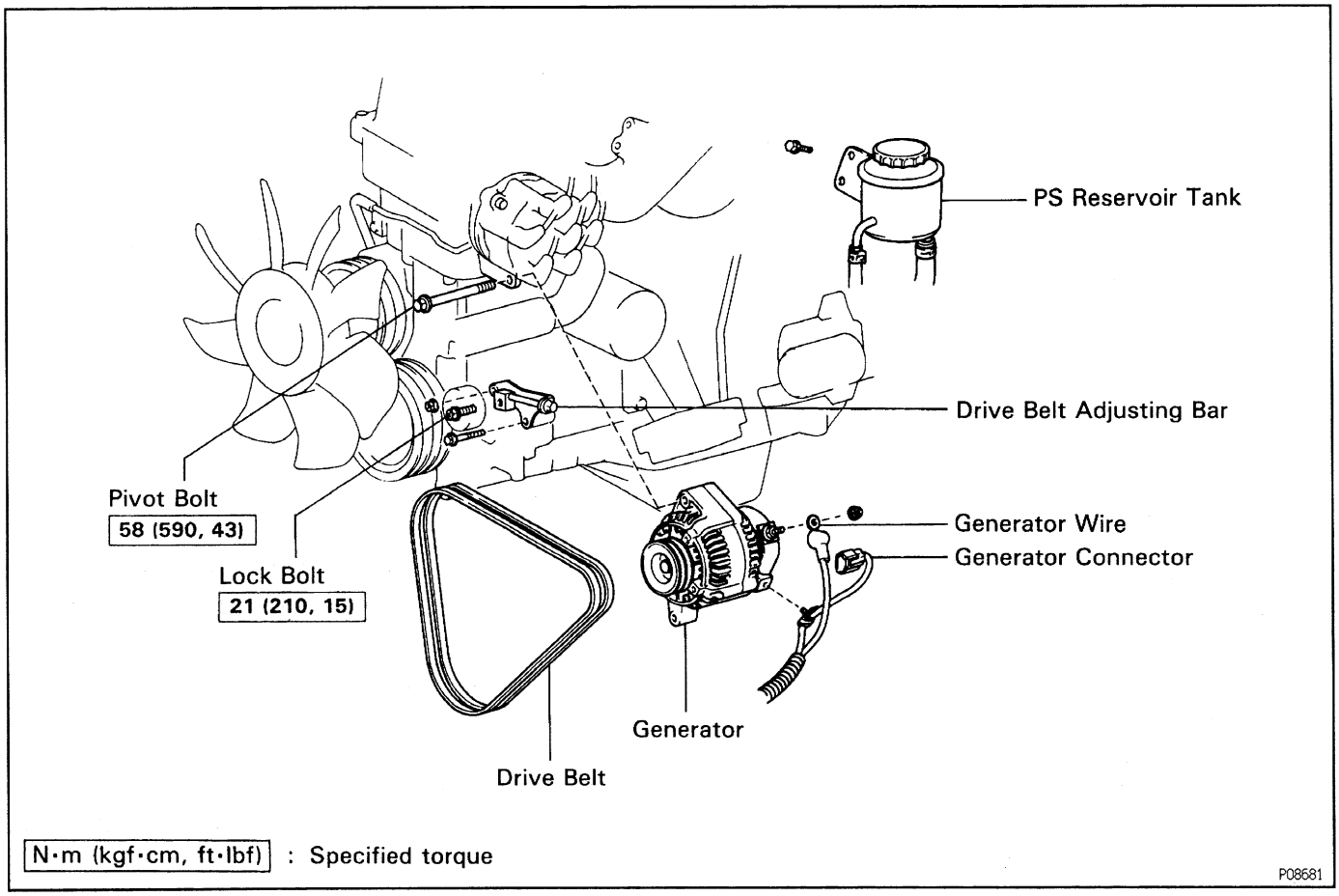
GENERATOR

CH03G-01

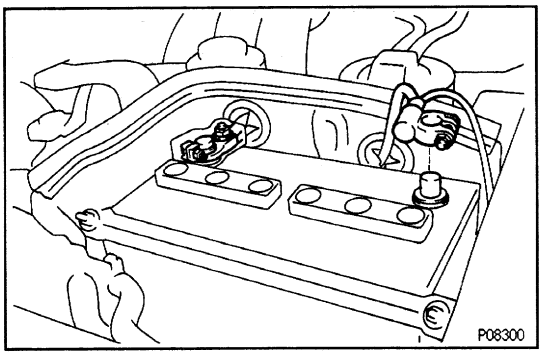
COMPONENTS FOR REMOVAL AND INSTALLATION



CH00Z-05

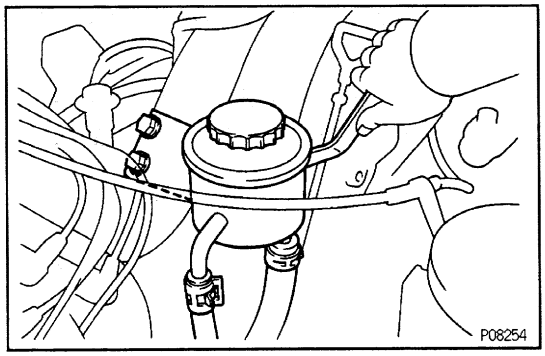
GENERATOR REMOVAL

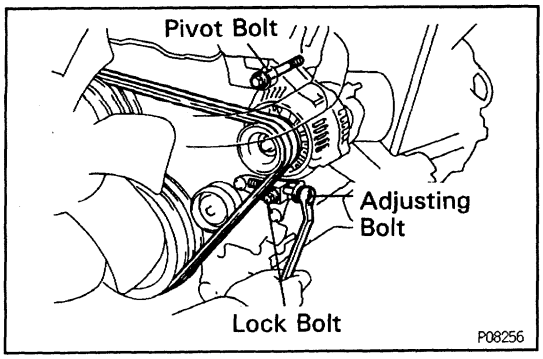
1. DISCONNECT NEGATIVE TERMINAL CABLE FROM BATTERY



2. DISCONNECT PS RESERVOIR TANK

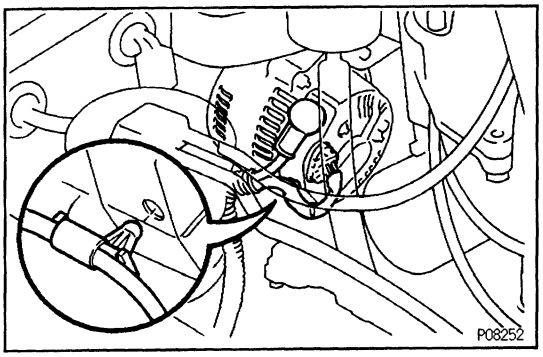
Remove the 3 bolts, and disconnect the reservoir tank.





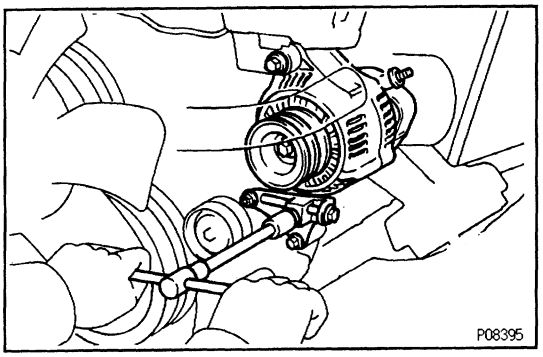
3. REMOVE DRIVE BELTS

(a) Loosen the lock bolt, pivot bolt and adjusting bolt.
(b) Remove the 2 drive belts.



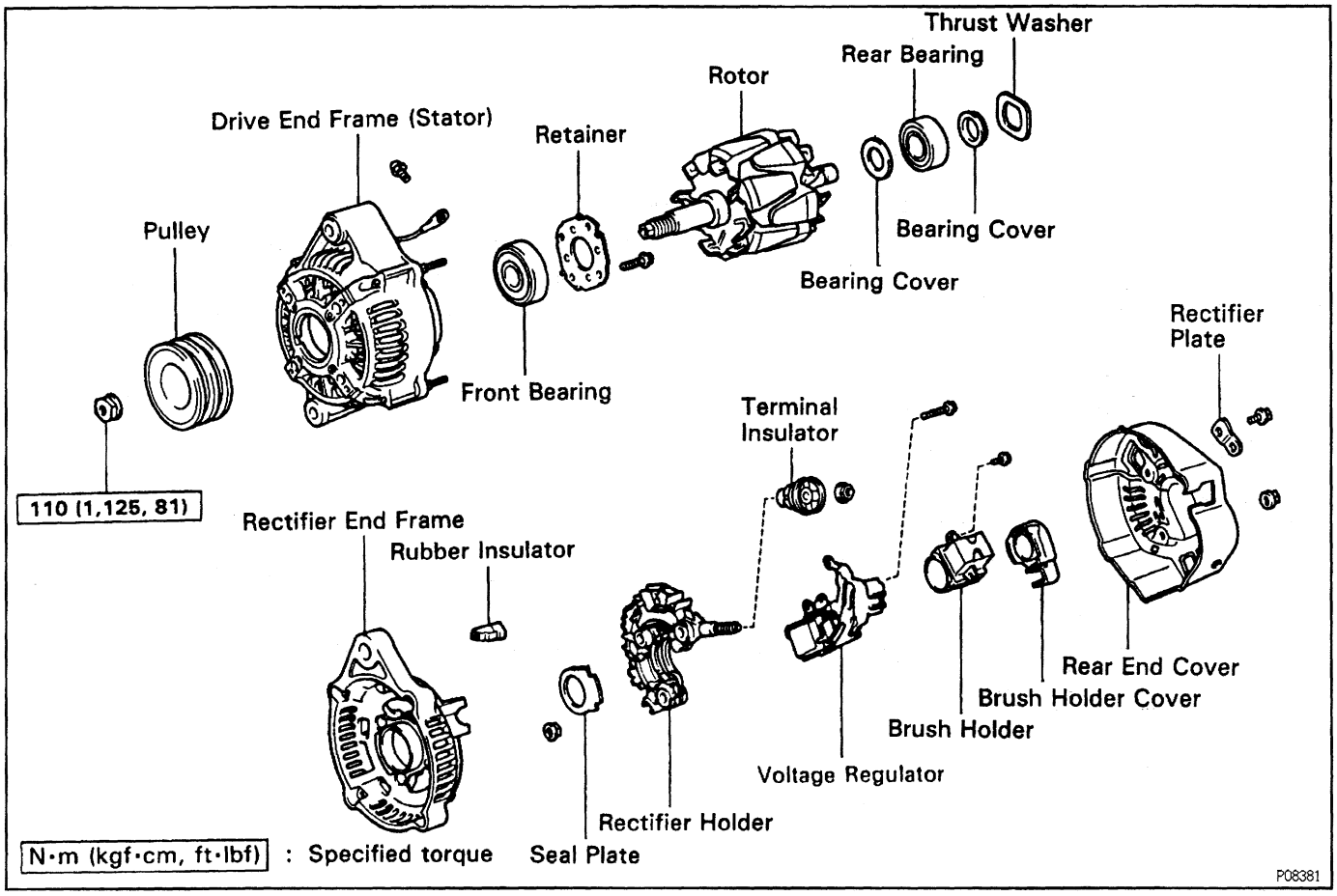
4. REMOVE GENERATOR

(a) Disconnect the generator connector.
(b) Remove the nut, and disconnect the generator wire.
(c) Disconnect the wire harness from the clip.

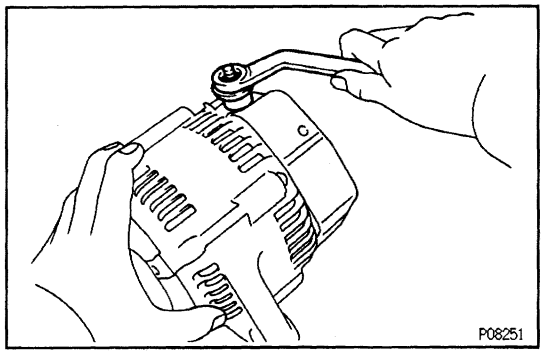


(d) Remove the lock bolt, bolt, nut and drive belt adjusting bar.
(e) Remove the pivot bolt and generator.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY



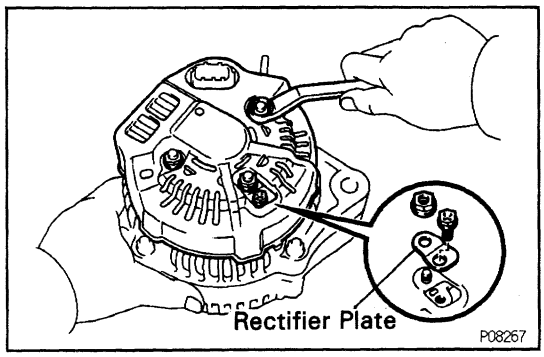
CH03H–03



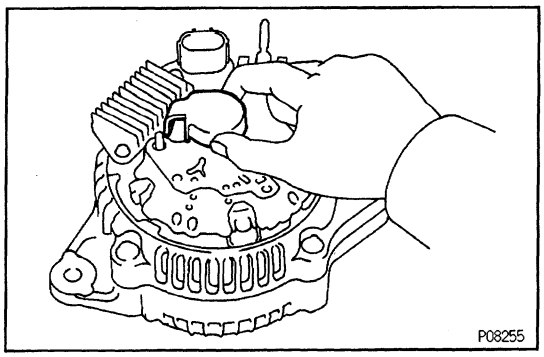
GENERATOR DISASSEMBLY

1. REMOVE REAR END COVER

(a) Remove the nut and terminal insulator.

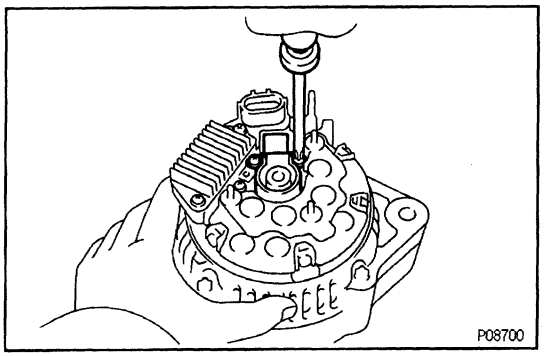


(b) Remove the 3 nuts, screw, rectifier plate and end cover.

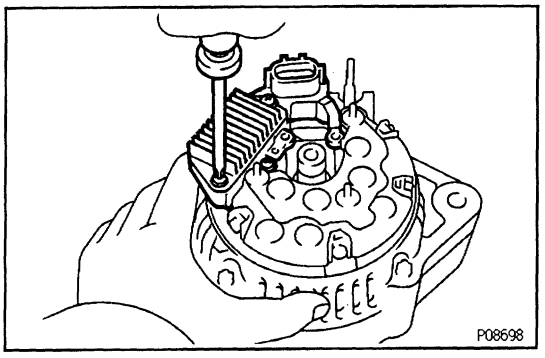


2. REMOVE BRUSH HOLDER

(a) Remove the brush holder cover from the brush holder.

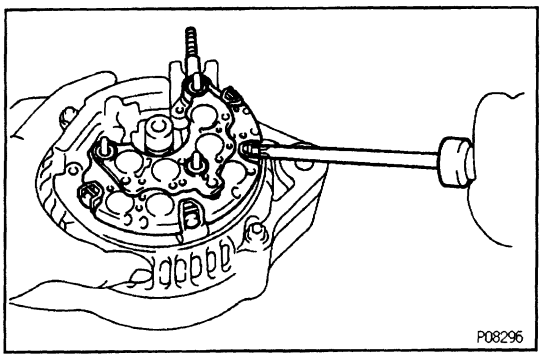


(b) Remove the 2 screws and brush holder.



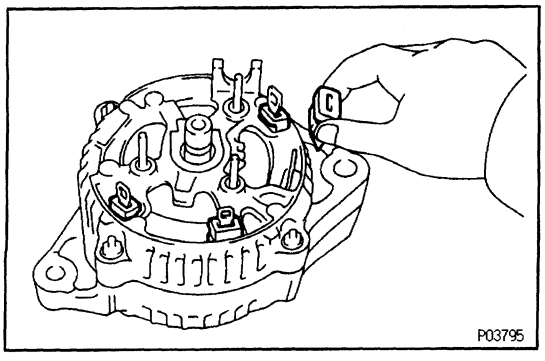
3. REMOVE VOLTAGE REGULATOR

Remove the 3 screws and voltage regulator.

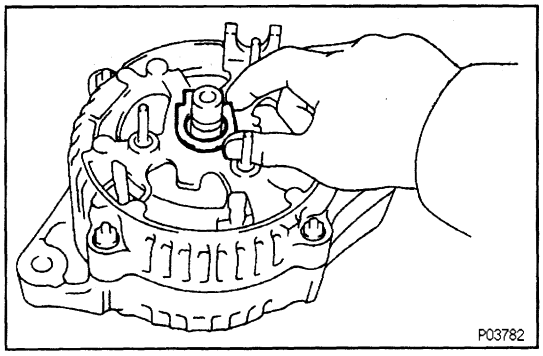


4. REMOVE RECTIFIER HOLDER

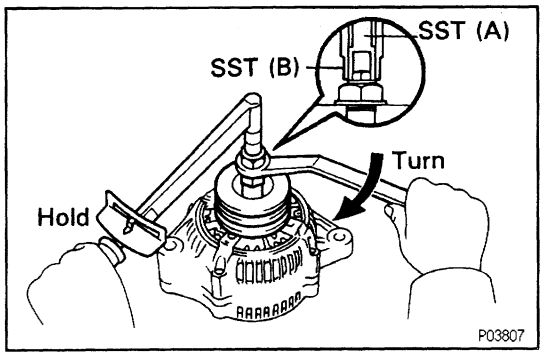
(a) Remove the 4 screws and rectifier holder.



(b) Remove the 4 rubber insulators.



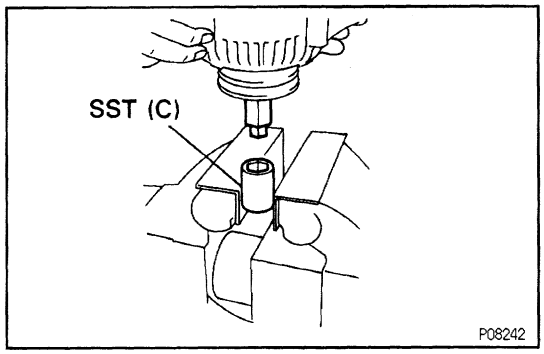
(c) Remove the seal plate.



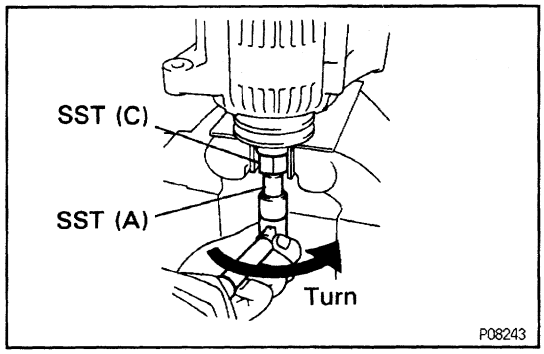
5. REMOVE PULLEY

(a) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.
SST 09820–63010
Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)

(b) Check that SST (A) is secured to the rotor shaft.



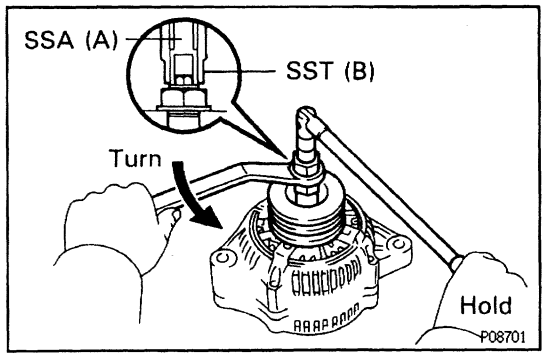
(c) Mount SST (C) in a vise.
(d) Install the generator to SST(C).



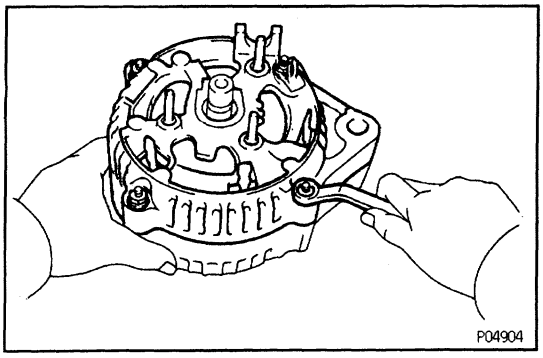
(e) To loosen the pulley nut, turn SST (A) in the direction shown in the illustration.

NOTICE: To prevent damage to the rotor shaft, do not loosen the pulley nut more than one–half of a turn.

(f) Remove the generator from SST (C).

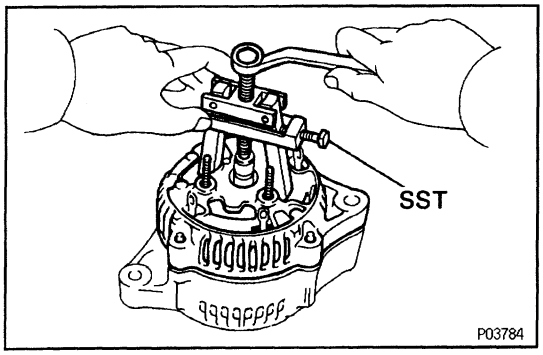


(g) Turn SST (B) and remove SST (A and B).
(h) Remove the pulley nut and pulley.

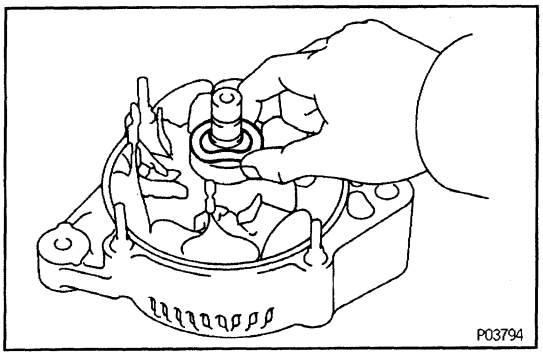


6. REMOVE RECTIFIER END FRAME

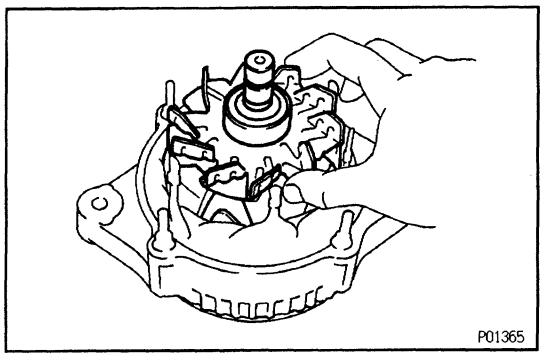
(a) Remove the 4 nuts.



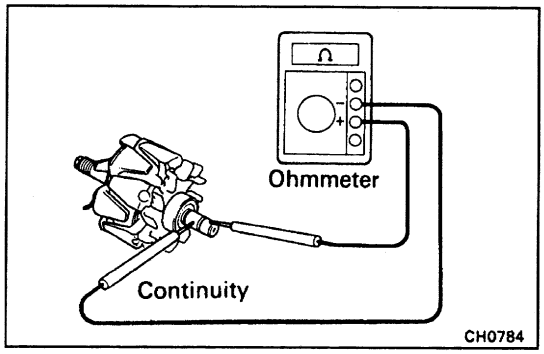
(b) Using SST, remove the rectifier end frame.
SST 09286–46011



(c) Remove the thrust washer.



7. REMOVE ROTOR FROM DRIVE END FRAME



GENERATOR INSPECTION AND REPAIR

Rotor

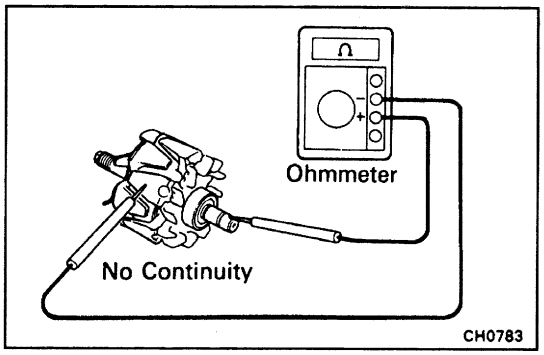
1. INSPECT ROTOR FOR OPEN CIRCUIT

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

Standard resistance (Cold):

2.8–3.00Ω

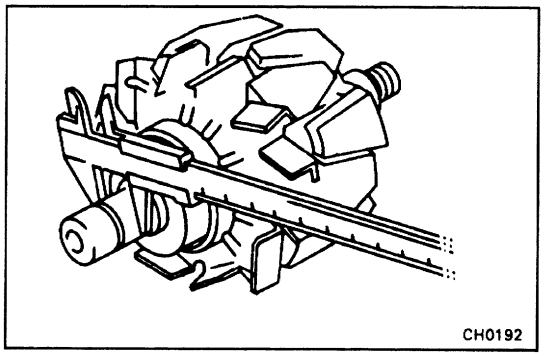
If there is no continuity, replace the rotor.



2. INSPECT ROTOR FOR GROUND

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

If there is continuity, replace the rotor.



3. INSPECT SLIP RINGS

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

If rough or scored, replace the rotor.

(b) Using a vernier caliper, 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.)

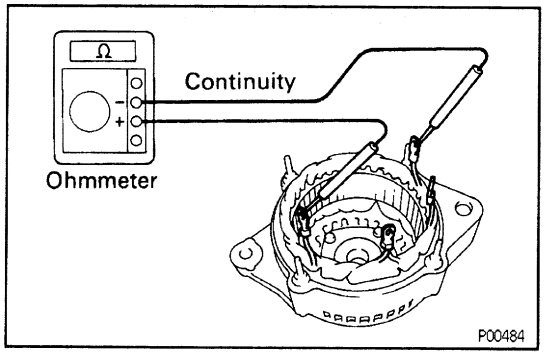
if the diameter is less than minimum, replace the rotor.

Stator (Drive End Frame)

1. INSPECT STATOR FOR OPEN CIRCUIT

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

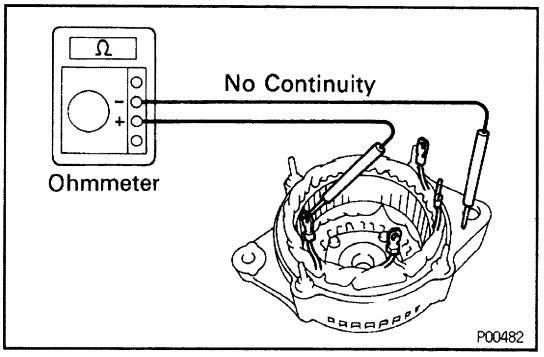
If there is no continuity, replace the drive end frame assembly.

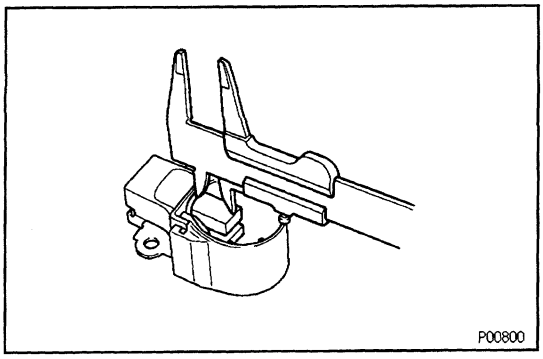


2. INSPECT STATOR FOR GROUND

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

If there is continuity, replace the drive end frame assembly.





Brushes

INSPECT EXPOSED BRUSH LENGTH

Using a vernier caliper, measure the exposed brush length.

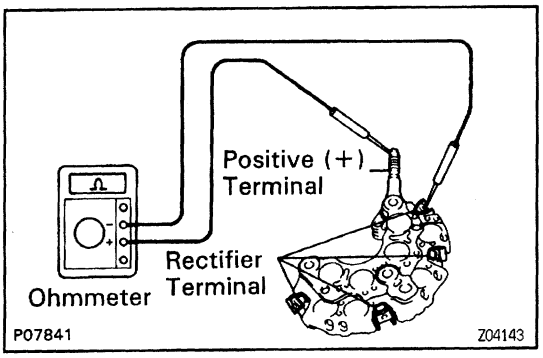
Standard exposed length:

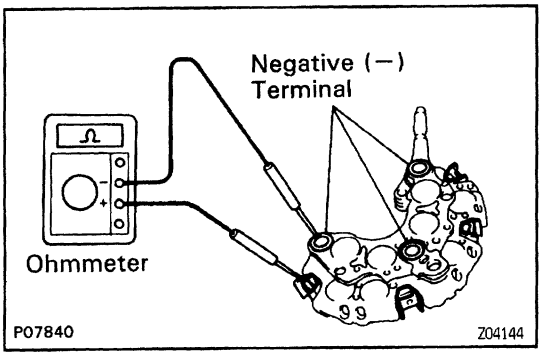
10.5 mm (0–413 in.)

Minimum exposed length:

1.5 mm (0.059 in.)

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





Rectifiers (Rectifier Holder)

1. INSPECT POSITIVE 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 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.

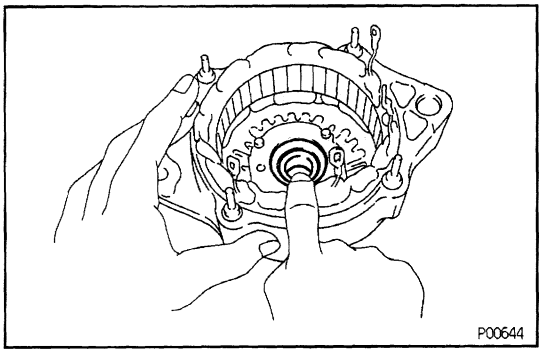
2. INSPECT NEGATIVE RECTIFIER

(a) Using an ohmmeter, connect one tester probe to each 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.

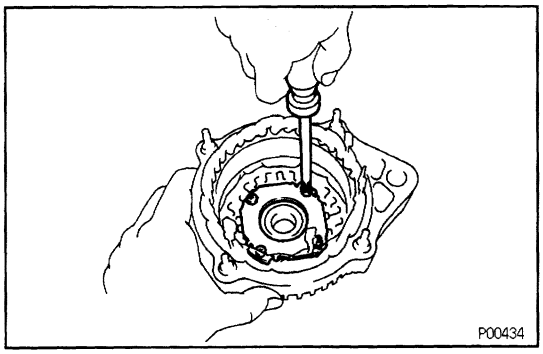
If continuity is not as specified, replace the rectifier holder.



Bearings

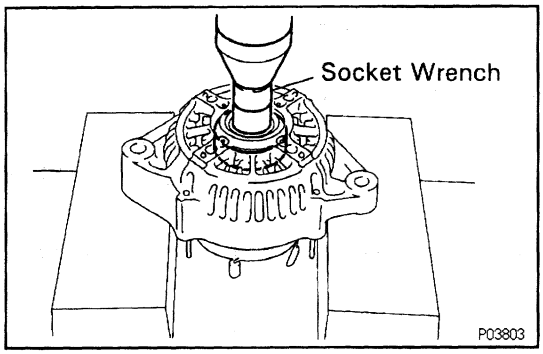
1. INSPECT FRONT BEARING

Check that the bearing is not rough or worn.

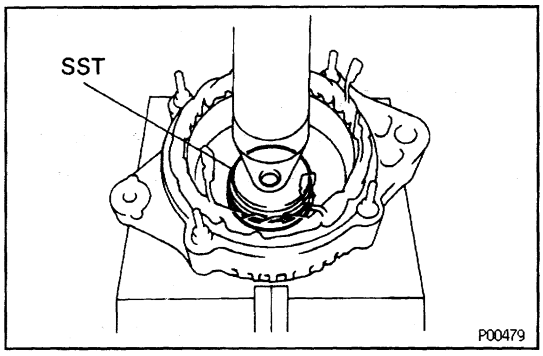


2. IF NECESSARY, REPLACE FRONT BEARING

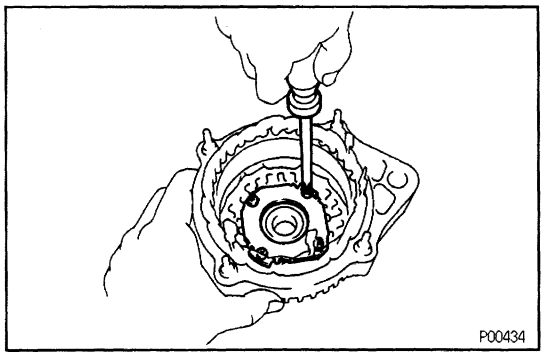
(a) Remove the 4 screws, bearing retainer and bearing.



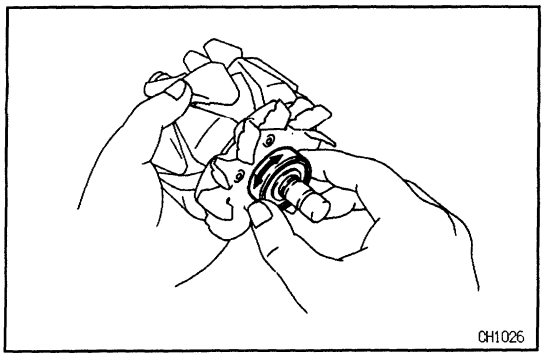
(b) Using a socket wrench and press, press out the bearing.



(c) Using SST and a press, press in a new bearing.
SST 09608–20012 (09608–00030)

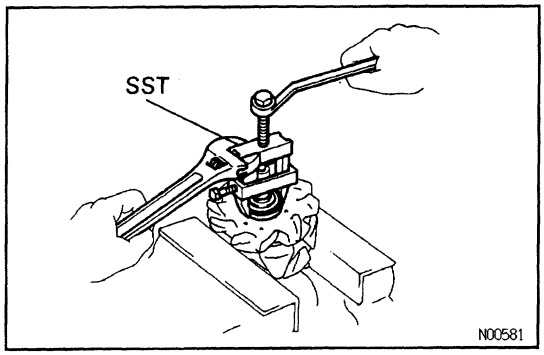


(d) Install the bearing retainer with the 4 screws.



3. INSPECT REAR BEARING

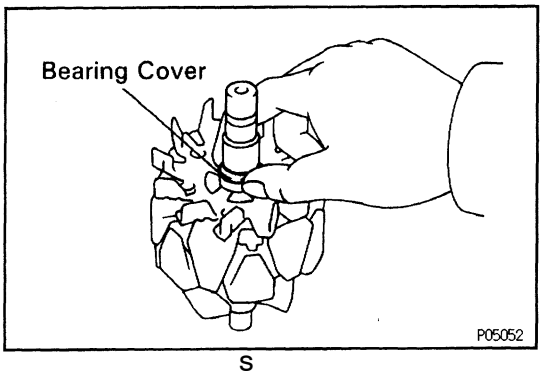
Check that the bearing is not rough or worn.



4. IF NECESSARY, REPLACE REAR BEARING

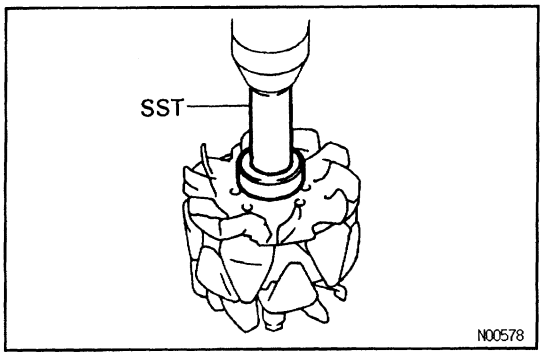
(a) Using SST, remove the bearing covers and bearing.
SST 09820–00021

NOTICE: Be careful not to damage the fan.

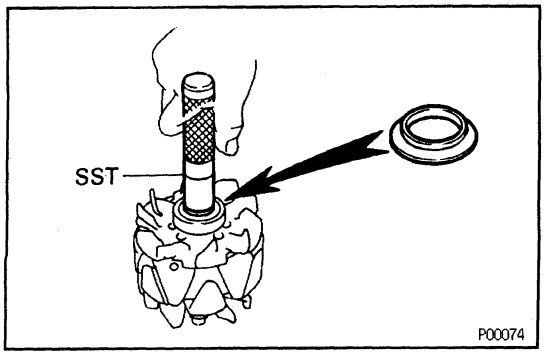


(b) Place the bearing cover on the rotor.

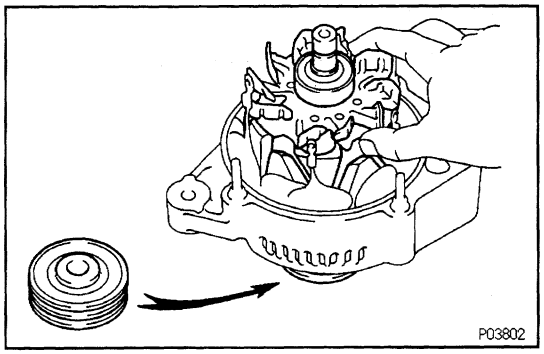
S



(c) Using SST and a press, press in a new bearing.
SST 09820–00030



(d) Using SST, push in the bearing cover.
SST 09285–76010

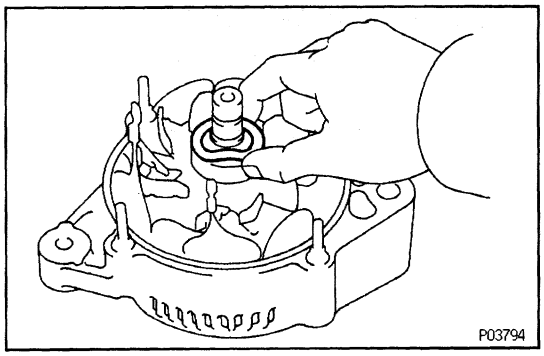


GENERATOR ASSEMBLY

(See Components for Disassembly and Assembly)

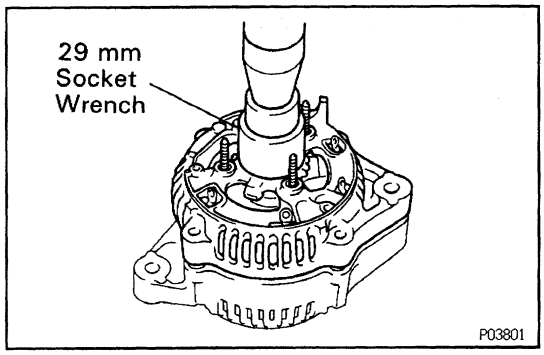
1. PLACE RECTIFIER END FRAME ON PULLEY

2. INSTALL ROTOR TO DRIVE END FRAME

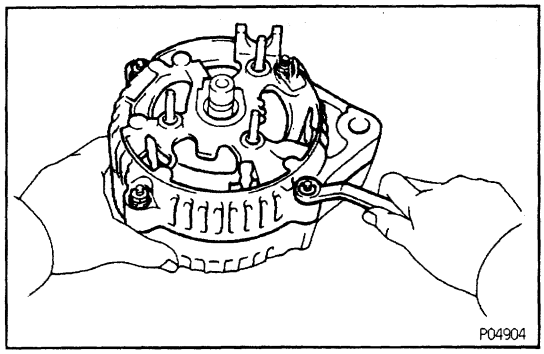


3. INSTALL RECTIFIER END FRAME

(a) Place the thrust washer on the rotor.

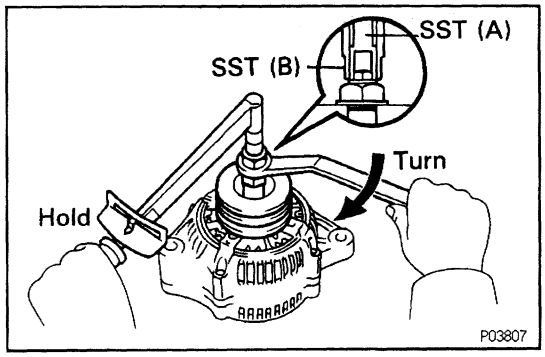


(b) Using a 29 mm socket wrench and press, slowly press in the rectifier end frame.



(c) Install the 4 nuts.

Torque: 4.5 N–m (46 kg–cm, 40 in.–lbf)



4. INSTALL PULLEY

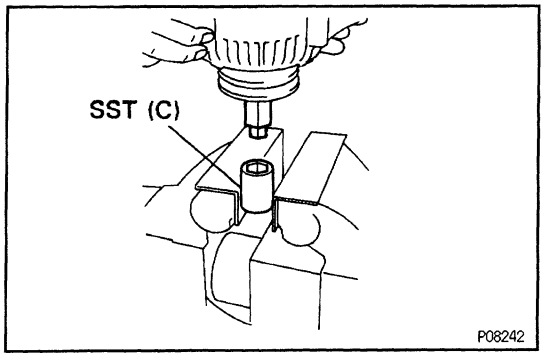
(a) Install the pulley to the rotor shaft by tightening the pulley nut by hand.

(b) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.

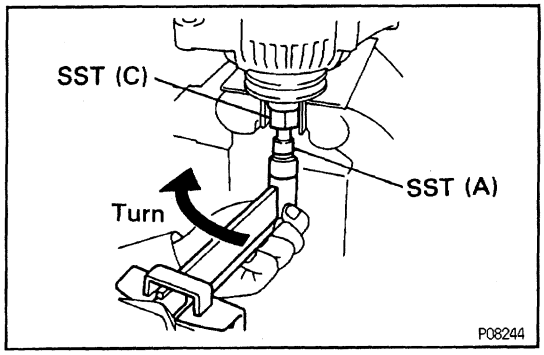
SST 09820–63010

Torque: 39 N–m (400 kgf–cm, 29 ft–lbf)

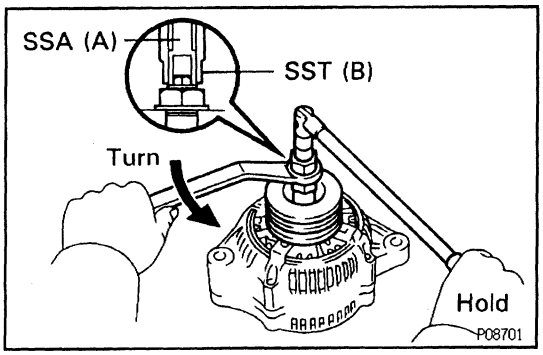
(c) Check that SST (A) is secured to the pulley shaft.



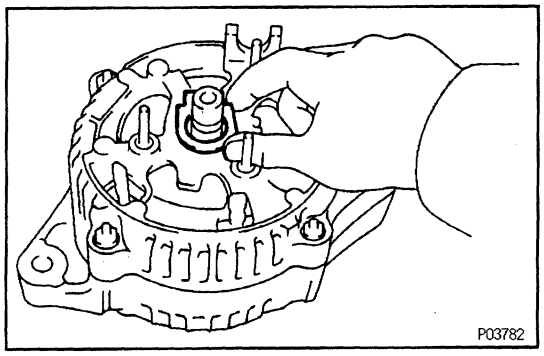
(d) Mount SST (C) in a vise.
(e) Install the generator to SST (C).



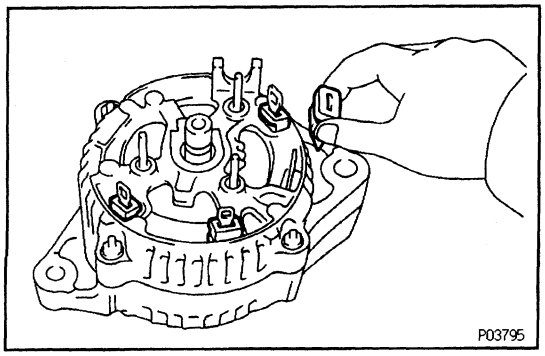
(f) To torque the pulley nut turn SST (A) in the direction shown in the illustration.
Torque: 110 N–m (1,125 kgf–cm, 81 ft–lbf)
(g) Remove the generator from SST(C).



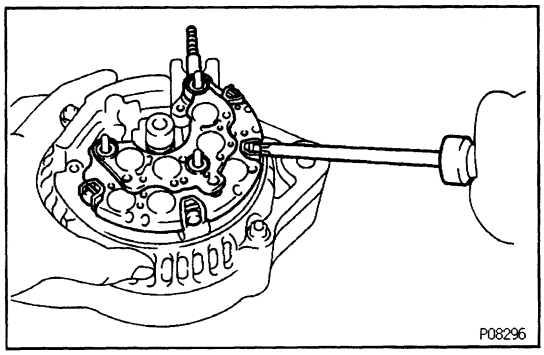
(h) Turn SST (B), and remove SST (A and B).



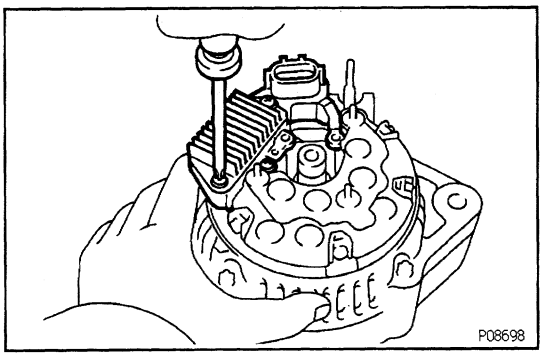
5. INSTALL RECTIFIER HOLDER
(a) Place the seal plate on the rectifier end frame.



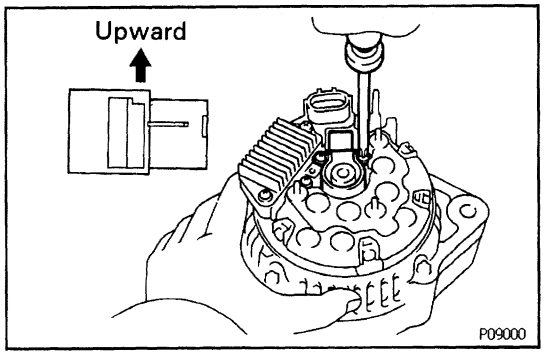
(b) Install the 4 rubber insulators on the lead wires.



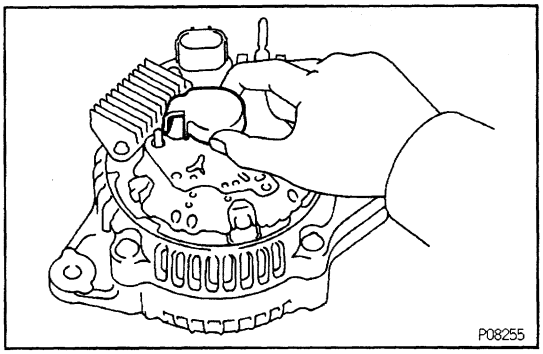
(c) Install the rectifier holder with the 4 screws.
Torque: 2.94 N–m (29 kgf–cm, 26 in.–lbf)



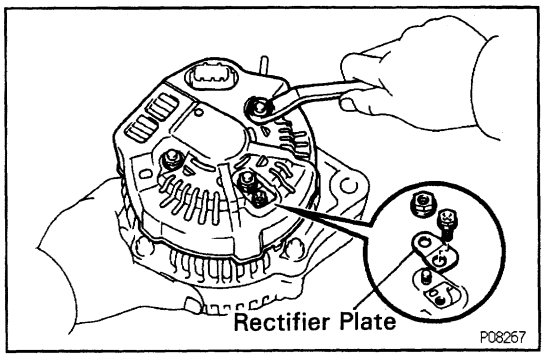
6. INSTALL VOLTAGE REGULATOR
Install the voltage regulator on the rectifier end frame with the 3 screws.



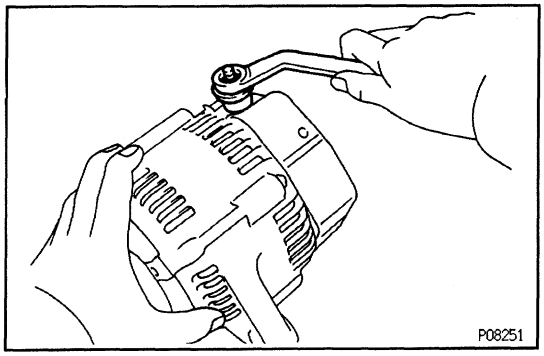
7. INSTALL BRUSH HOLDER
(a) Install the brush holder on the rectifier end frame with the 2 screws.
NOTICE: Be careful of the holder installation direction.



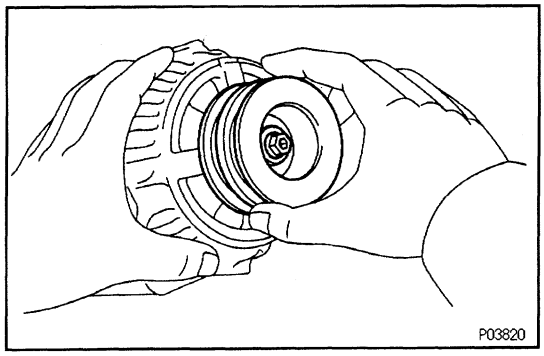
(b) Place the brush holder cover on the brush holder.



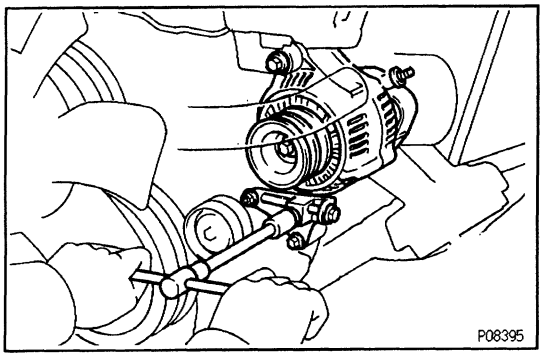
8. INSTALL REAR END COVER
(a) Install the end cover together with the rectifier plate. Hand tighten the screw first for positioning the plate. Tighten the 3 nuts and retighten the screw.
Torque:
4.5 N–m (46 kgf–cm, 40 in.–lbf) for nut
3.82 N–m (38 kgf–cm, 34 in.–lbf) for screw



(b) Install the terminal insulator with the nut.
Torque: 4.1 N–m (42 kgf–cm, 36 in.–lbf)



9. CHECK THAT ROTOR ROTATES SMOOTHLY

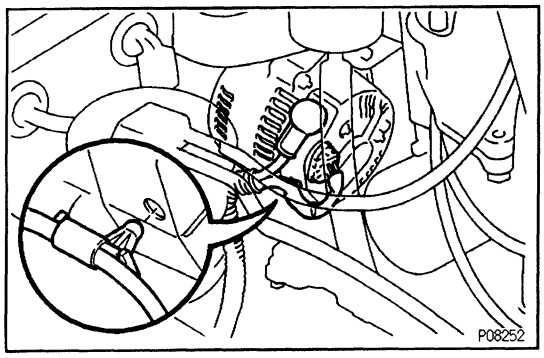


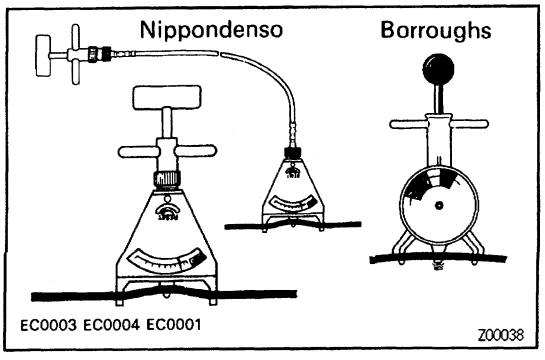
GENERATOR INSTALLATION

(See Components for Removal and Installation)

1. INSTALL GENERATOR

(a) Mount generator on the generator bracket with the pivot bolt. Do not tighten the bolt yet.
(b) Install the drive belt adjusting bar with the bolt and nut.
Torque: 21 N–m (210 kgf–cm, 15 ft–lbf)
(c) Temporarily install the lock bolt.
(d) Connect the generator connector.
(e) Connect the generator wire with the nut.
(f) Connect the wire harness to the clip.



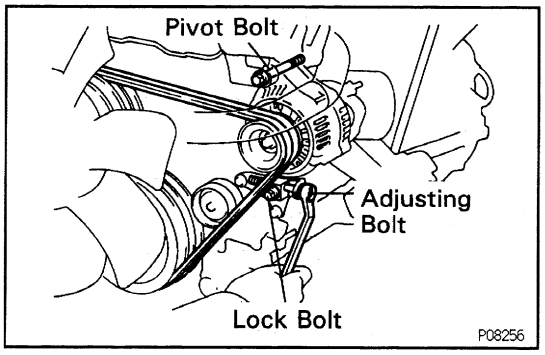


2. INSTALL DRIVE BELTS

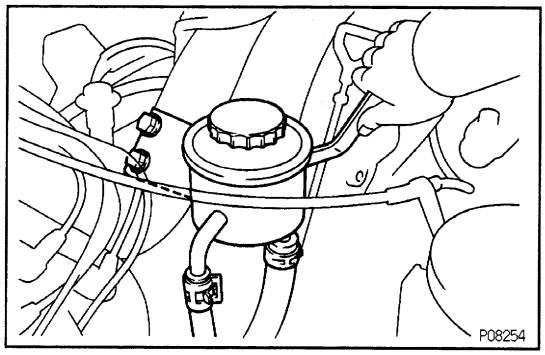
(a) Install the drive belts.
(b) Using a belt tension gauge, measure the drive belt tension.
Belt tension gauge:
Nippondenso BTG–20 (95506–00020)
Borroughts No. BT–33–73F

Drive belt tension:
New belt
125 ± 25 lbf
Used belt
80 ± 20 lbf

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 new belt, run the engine for about 5 minutes and recheck the belt tension.



(c) Tighten the pivot and adjusting lock bolts.
Torque:
59 N–m (600 kgf–cm, 43 ft–lbf) for Pivot bolt
21 N–m (210 kgf–cm, 15 ft–lbf) for Lock bolt



3. CONNECT PS RESERVOIR TANK
Connect the reservoir tank with the 3 bolts.

4. CONNECT NEGATIVE TERMINAL CABLE TO BATTERY
5. PERFORM ON–VEHICLE INSPECTION
(SEE STEPS 5 TO 7 on pages CH–6 and 7)