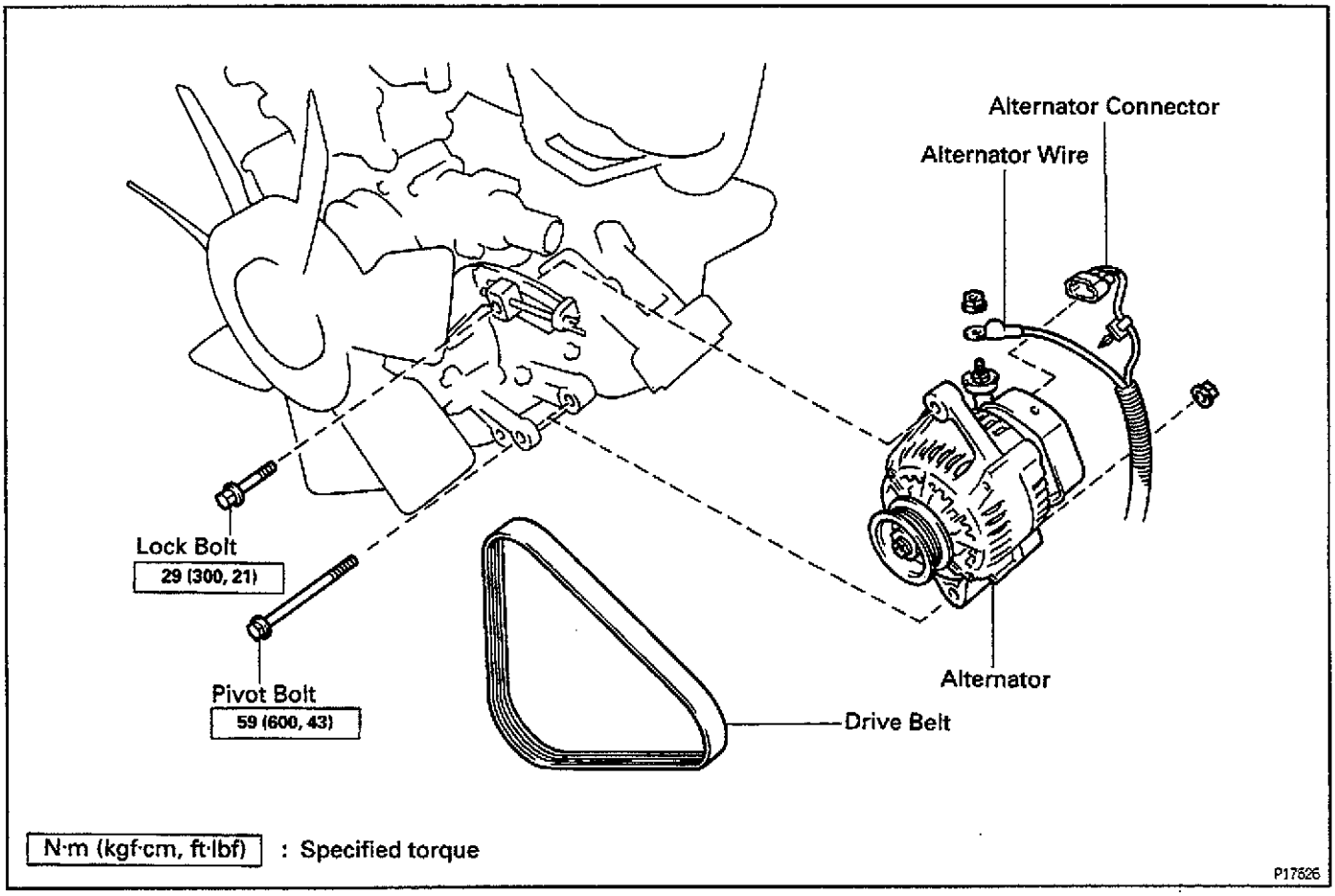
ALTERNATOR

COMPONENTS FOR REMOVAL AND INSTALLATION

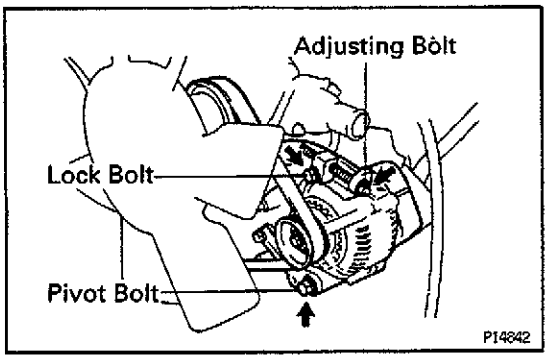
CH030-04



CH070-01

ALTERNATOR REMOVAL

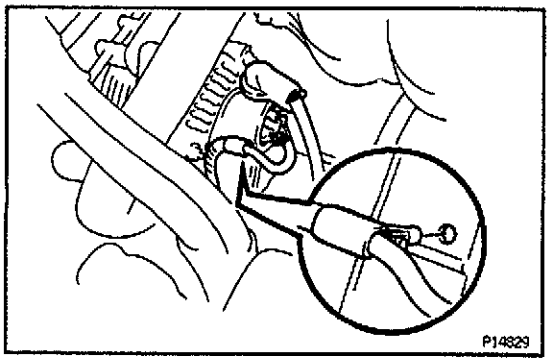
1. DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY



2. REMOVE DRIVE BELT

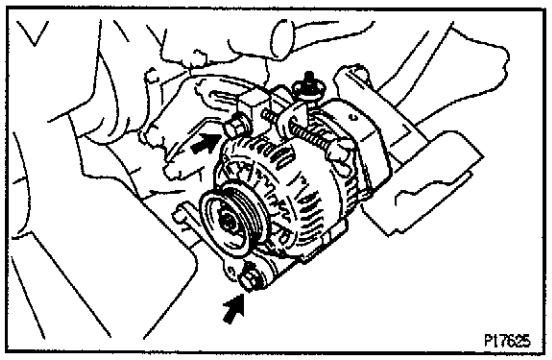
(a) Loosen the lock bolt, pivot bolt, nut and adjusting bolt.

(b) Remove the drive belt.



3. REMOVE ALTERNATOR

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

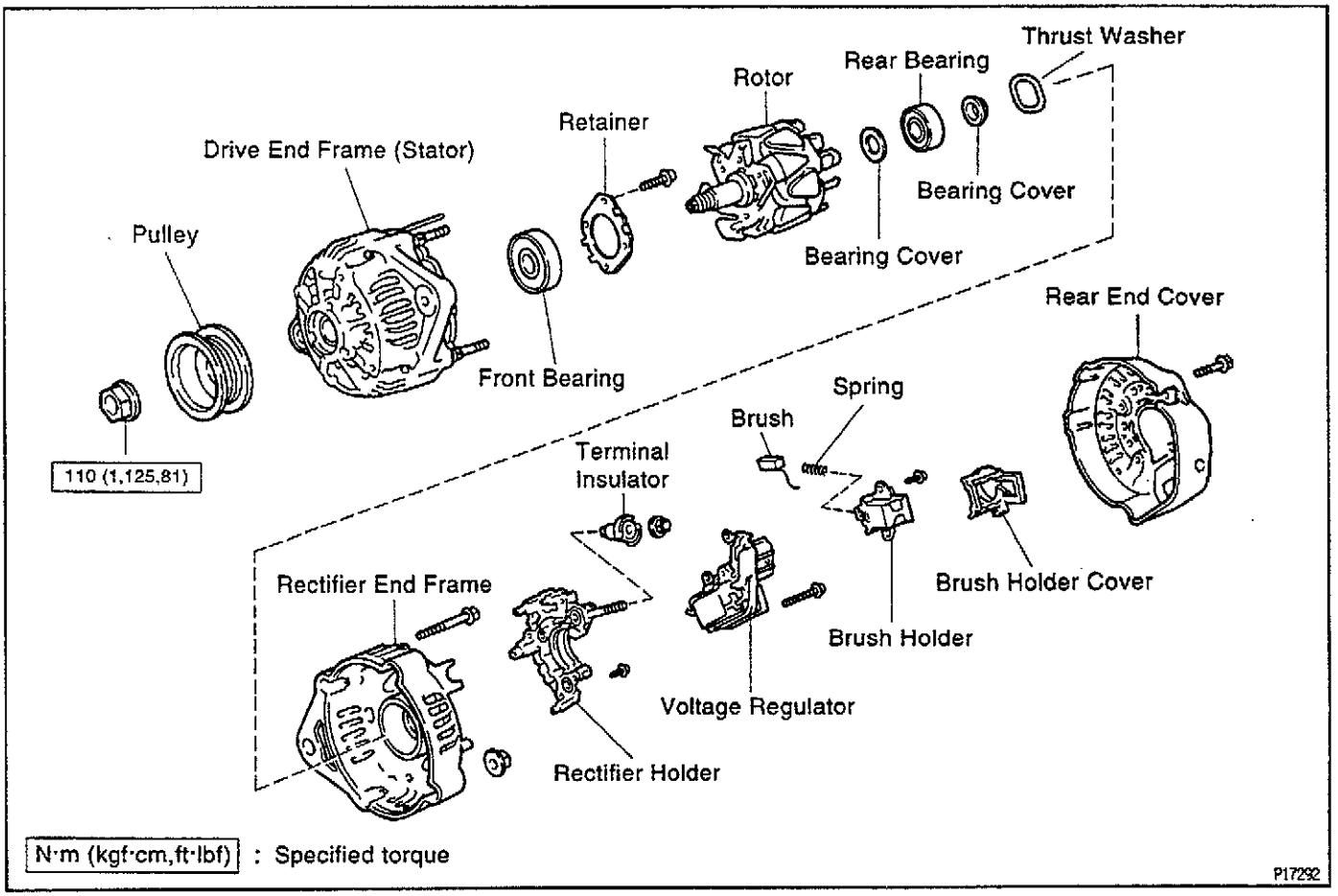


(d) Remove the lock bolt, pivot bolt, nut and alternator.

CH

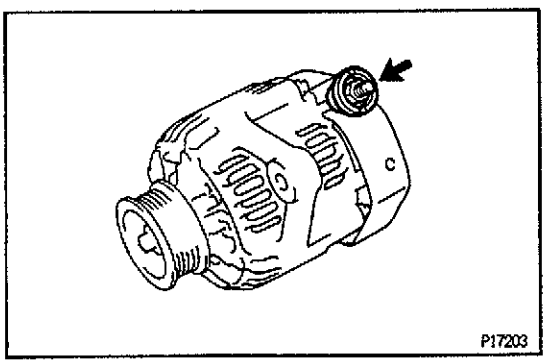
CH011-0F

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY



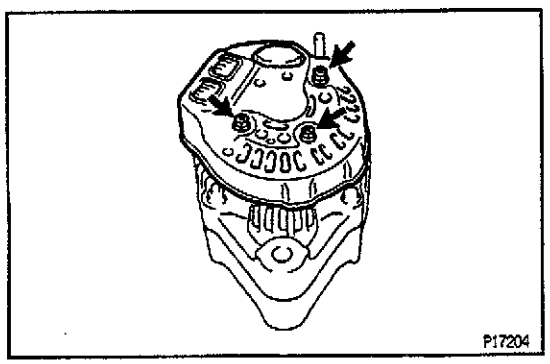
CH06K-02

ALTERNATOR DISASSEMBLY

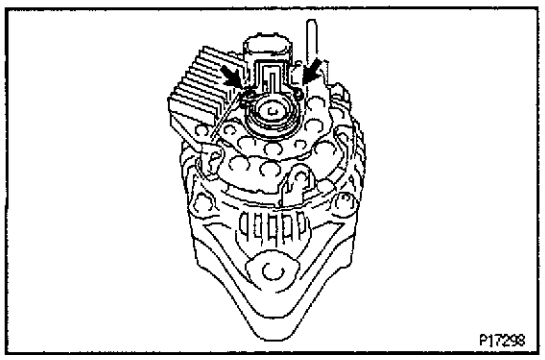


1. REMOVE REAR END COVER

(a) Remove the nut and terminal insulator.



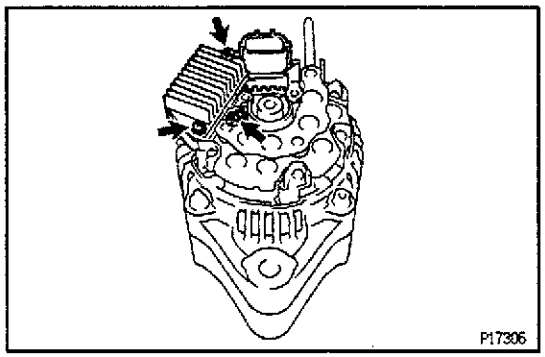
(b) Remove the 3 bolts, and end cover.



2. REMOVE BRUSH HOLDER

(a) Remove the 2 screws and brush holder.

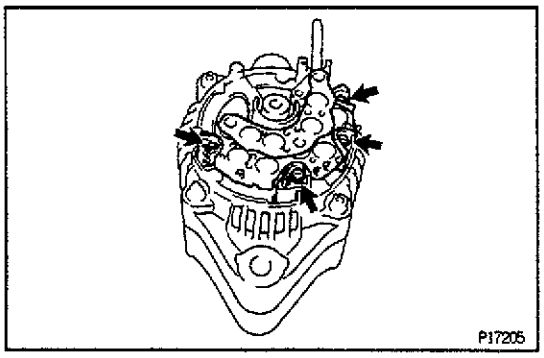
(b) Remove the brush holder cover from the brush holder.



3. REMOVE VOLTAGE REGULATOR

Remove the 3 screws and voltage regulator.

CH

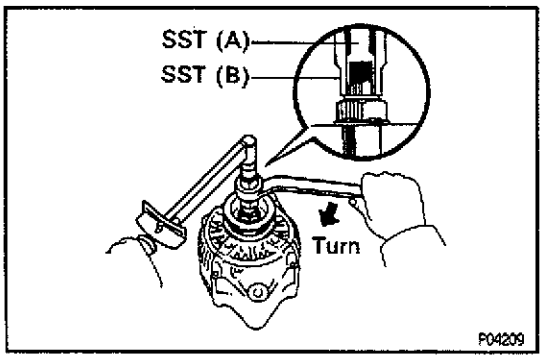


4. REMOVE RECTIFIER HOLDER

(a) Remove the 4 screws.

(b) Using needle–nose pliers, straighten the stator lead wire.

(c) Remove the rectifier holder.



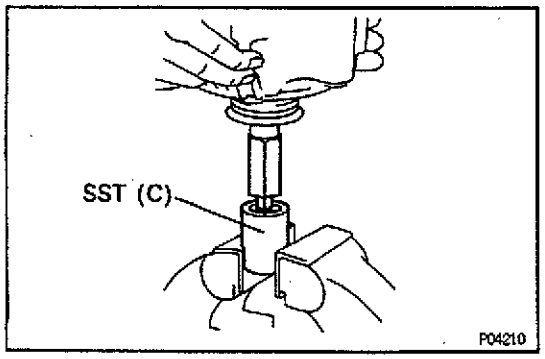
5. REMOVE PULLEY

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

SST 09820–63010

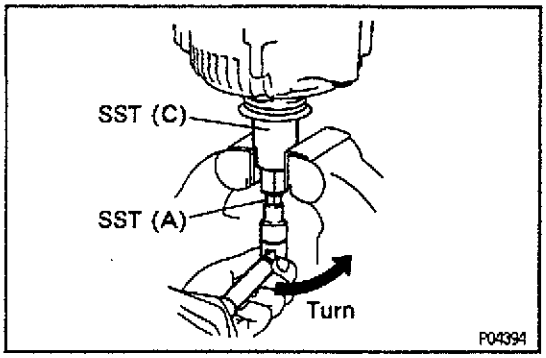
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

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



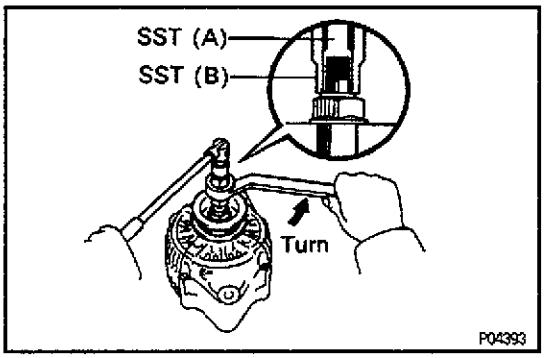
(c) Mount SST (C) in a vise.

(d) Install the alternator to SST (C).



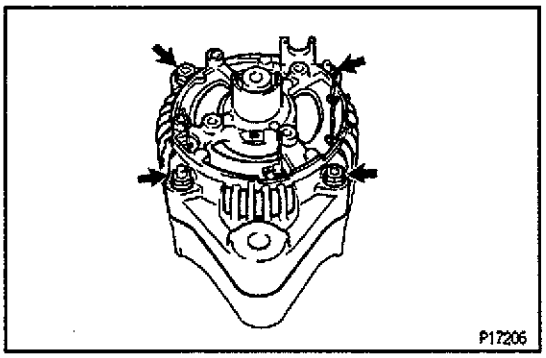
(e) To loosen the pulley nut, turn SST (A) in the direction shown in the illustration.
NOTICE: To prevent damage to the rotor shaft, do not loosen the pulley nut more than one—half of a turn.

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



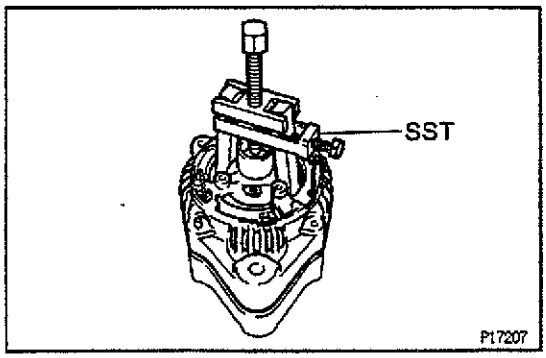
(g) Turn SST (B) and remove SST (A and B).

(h) Remove the pulley nut and pulley.

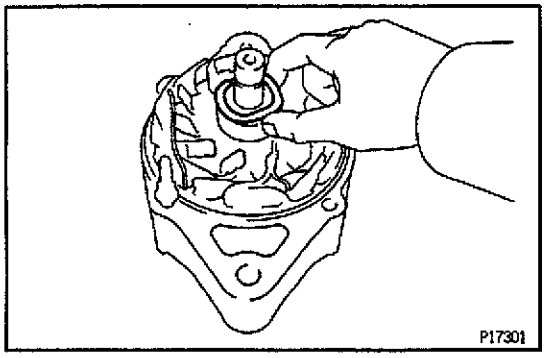


6. REMOVE RECTIFIER END FRAME

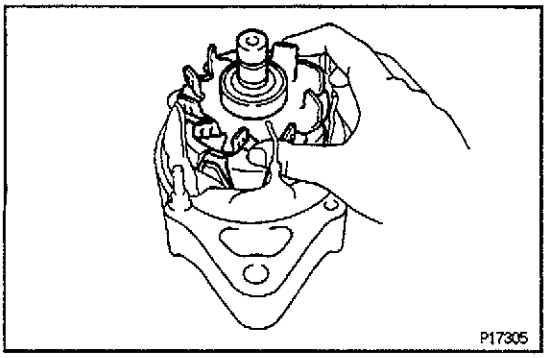
(a) Remove the 2 nuts, and 2 bolts.



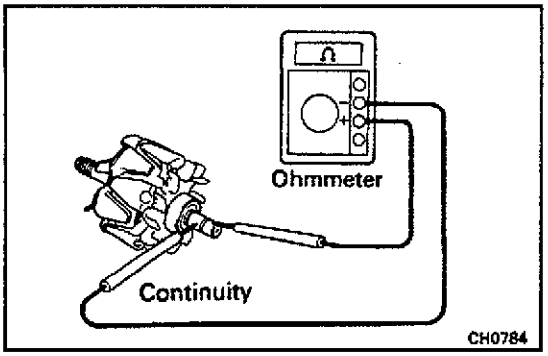
(b) Using SST, remove the rectifier end frame.
SST 09286—46011



(c) Remove the thrust washer.



7. REMOVE ROTOR FROM DRIVE END FRAME



ALTERNATOR INSPECTION AND REPAIR

Rotor

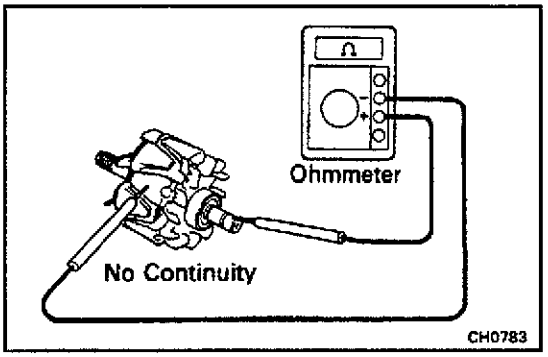
1. INSPECT ROTOR FOR OPEN CIRCUIT

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

Standard resistance (Cold):

2.8 – 3.0 Ω

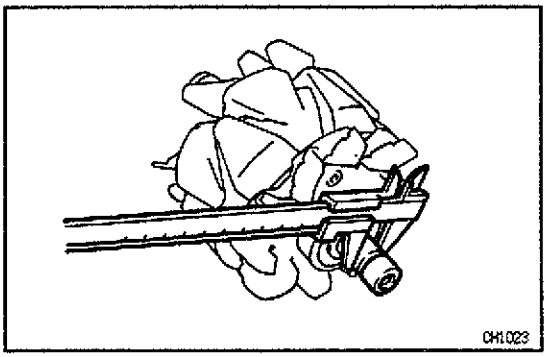
If there is no continuity, replace the rotor.



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:

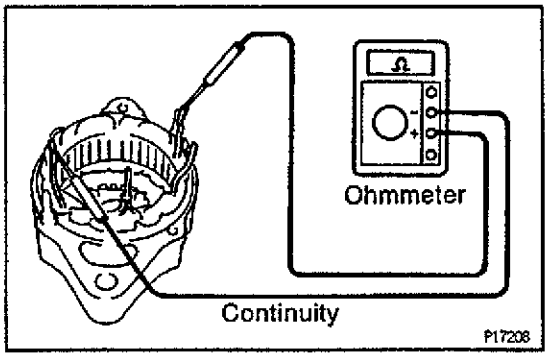
14.2 – 14.4 mm (0.559 – 0.567 in.)

Minimum diameter:

12.8 mm (0.504 in.)

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

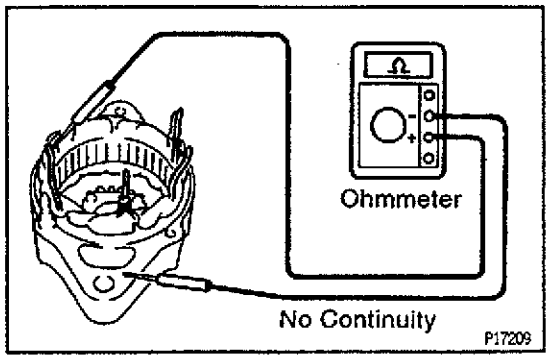
Stator (Drive End Frame)



1. INSPECT STATOR FOR OPEN CIRCUIT

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

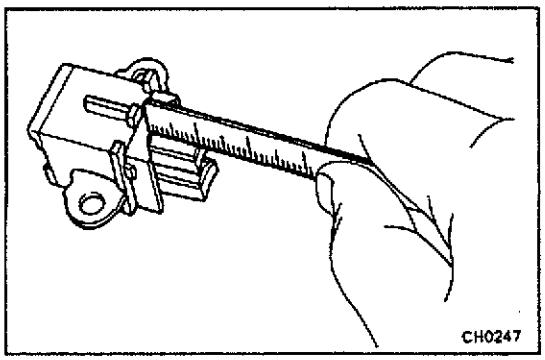
If there is no continuity, replace the drive end frame assembly.



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

1. INSPECT EXPOSED BRUSH LENGTH

Using a scale, measure the exposed brush length.

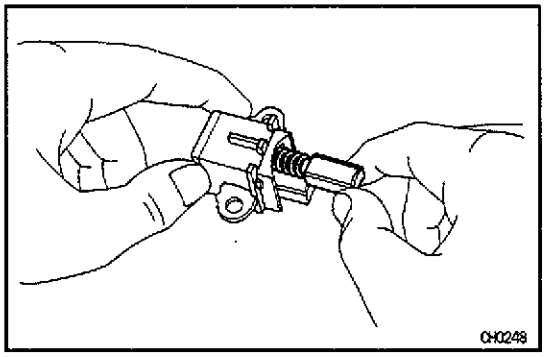
Standard exposed length:

10.5 mm (0.413 in.)

Minimum exposed length:

1.5 mm (0.059 in.)

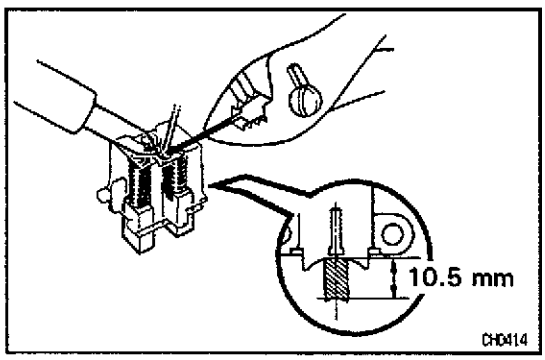
If the exposed length is less than minimum, replace the brushes.



2. IF NECESSARY, REPLACE BRUSHES

(a) Unsolder and remove the brush and spring.

(b) Run the wire of a new brush through the spring and the hole in the brush holder, and insert the spring and brush into the brush holder.



(c) Solder the brush wire to the brush holder at specified exposed length.

Exposed length:

10.5 mm (0.413 in.)

(d) Check that the brush moves smoothly in the brush holder.

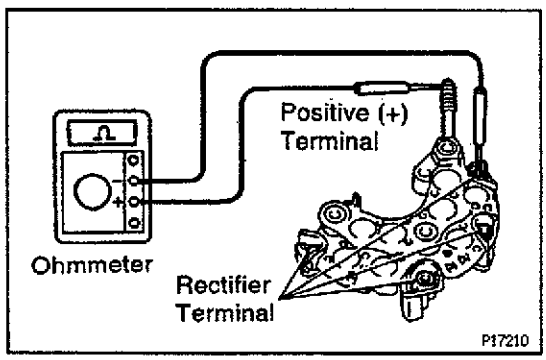
(e) Cut off the excess wire.

(f) Apply insulation paint to the soldered area.

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.



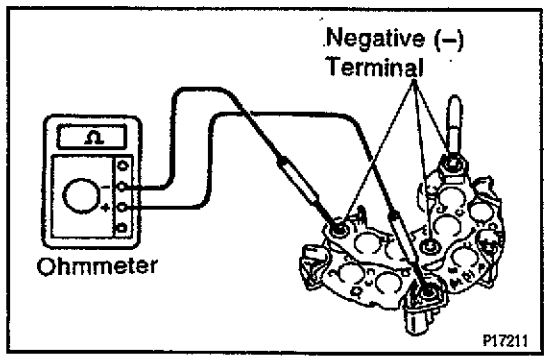
(b) Reverse the polarity of the tester probes and repeat step (a).

(c) Check that one shows continuity and the other shows no continuity.

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

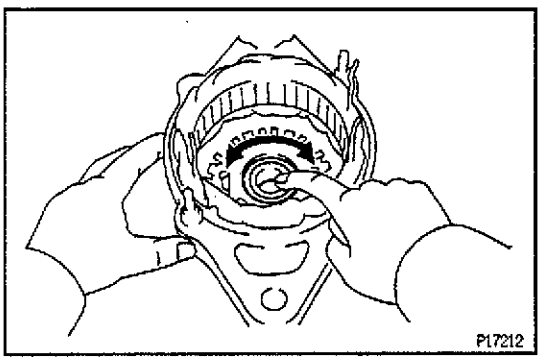
2. INSPECT NEGATIVE RECTIFIER

(a) Using an ohmmeter, connect one tester probe to each negative (−) terminal and the other to each rectifier terminal.



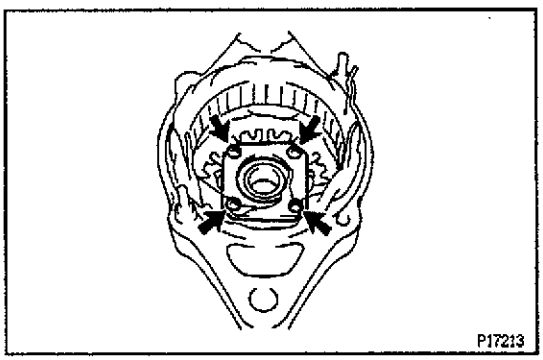
(b) Reverse the polarity of the tester probes and repeat step (a).

(c) Check that one shows continuity and the other shows no continuity.
If continuity is not as specified, replace the rectifier holder.



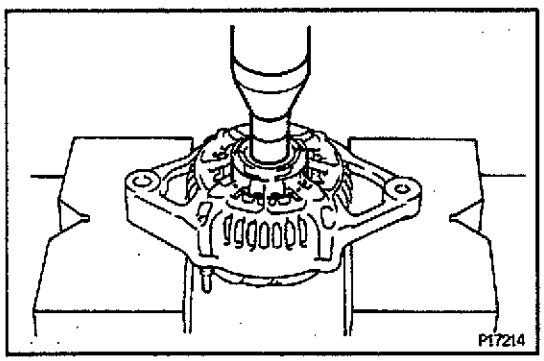
Bearings

1. **INSPECT FRONT BEARING**
Check that the bearing is not rough or worn.

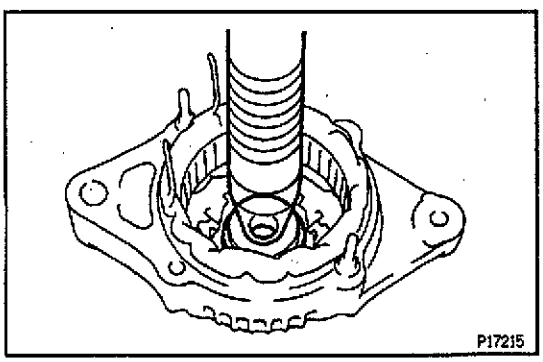


2. **IF NECESSARY, REPLACE FRONT BEARING**

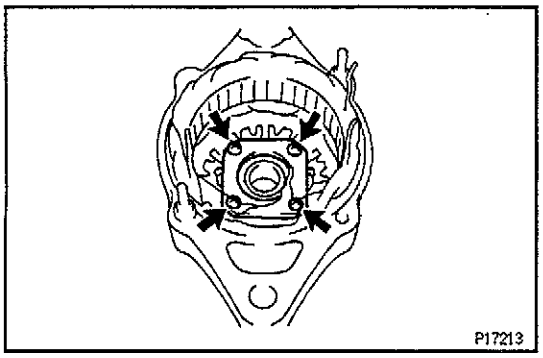
(a) Remove the 4 screws, bearing retainer and bearing.



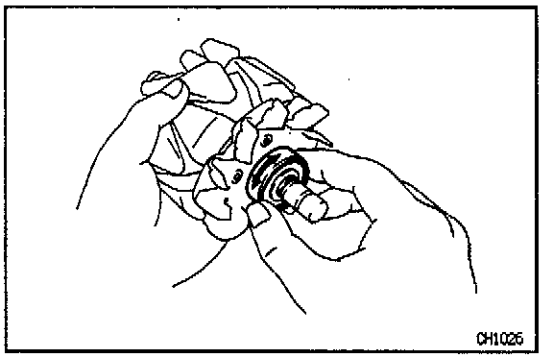
(b) Using a socket wrench and press, press out the bearing.



(c) Using SST and a press, press in a new bearing.
SST 09608−20012(09608−00040)

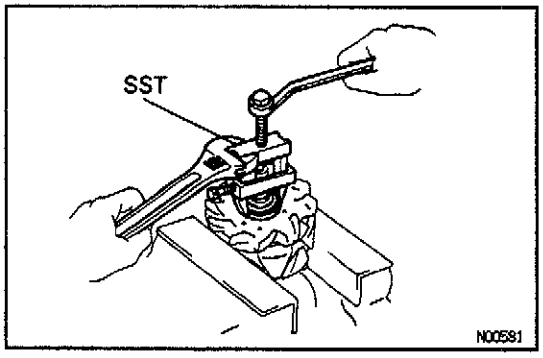


(d) Install the bearing retainer with the 4 screws.



3. INSPECT REAR BEARING

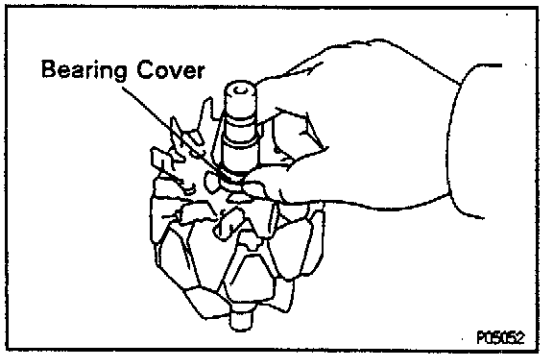
Check that the bearing is not rough or worn.



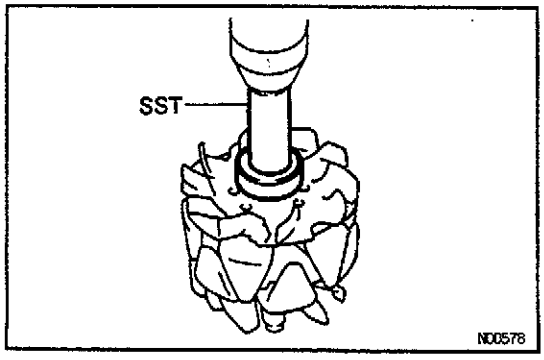
4. IF NECESSARY, REPLACE REAR BEARING

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

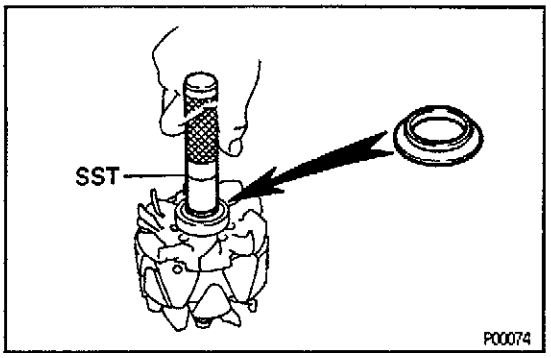
NOTICE: Be careful not to damage the fan.



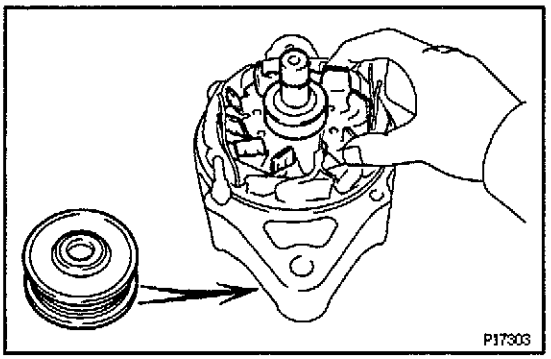
(b) Place the bearing cover on the rotor.



(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

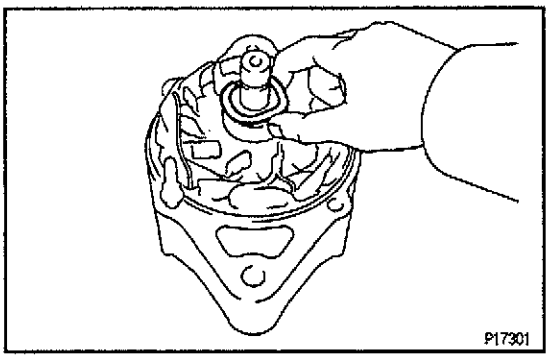


CH07H–01

ALTERNATOR ASSEMBLY

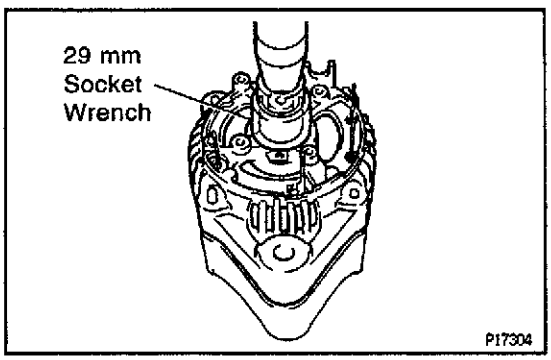
(See Components for Disassembly and Assembly)

1. **PLACE DRIVE END FRAME ON PULLEY**
2. **INSTALL ROTOR TO DRIVE END FRAME**

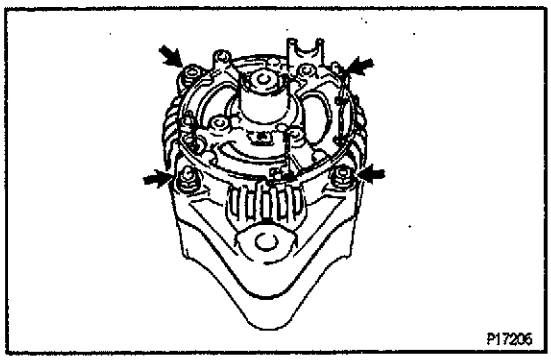


3. **INSTALL RECTIFIER END FRAME**

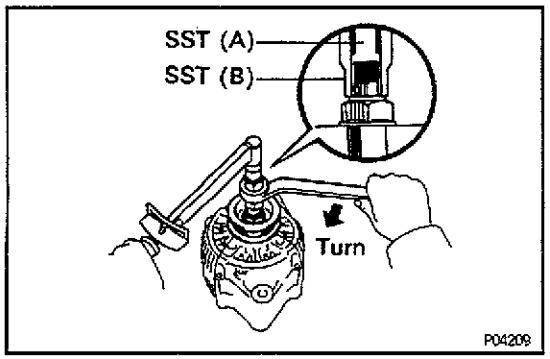
(a) Plase the thrust washer on the rotor.



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



(c) Install the 2 nuts and 2 bolts.
Torque: 4.5 N·m (46 kgf·cm, 40 in.·lbf)

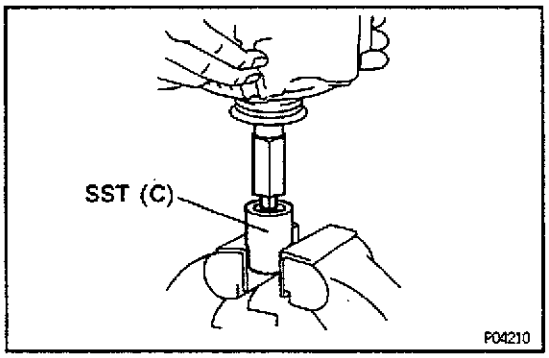


4. INSTALL PULLEY

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

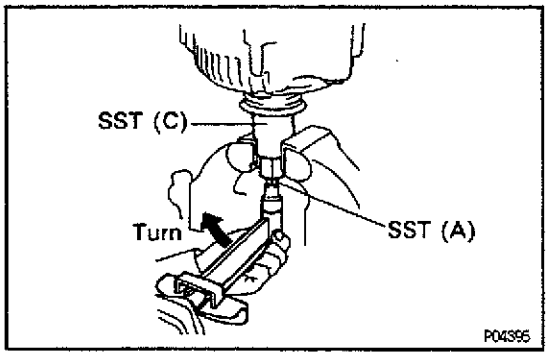
(b) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.
SST 09820–63010
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

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



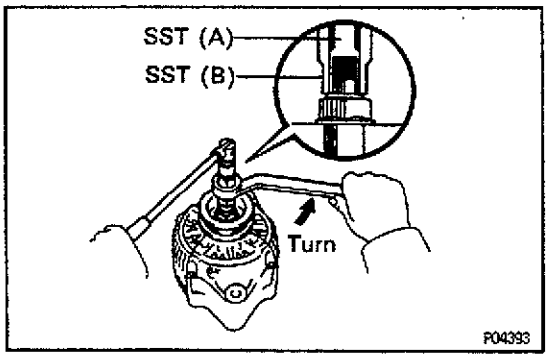
(d) Mount SST (C) in a vise.

(e) Install the generator to SST (C).

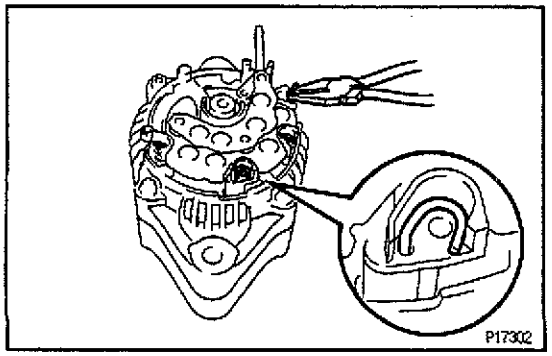


(f) Torque the pulley nut turn SST (A) in the direction shown in the illustration.
Torque: 110 N·m (1,125 kgf·cm, 81 ft·lbf)

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



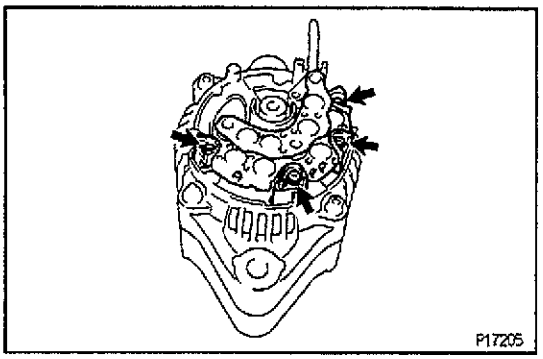
(h) Turn SST (B), and remove SST (A and B).



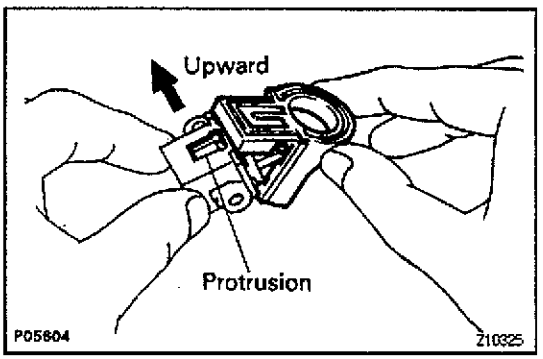
5. INSTALL RECTIFIER HOLDER

(a) Install the rectifier holder.

(b) Bend the 4 stator lead wires as shown in the illustration.

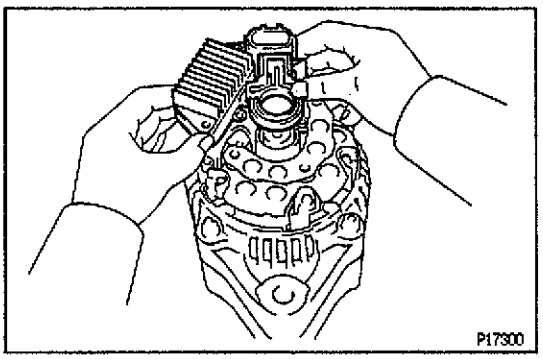


(c) Install the 4 screws.
Torque: 2.9 N·m (30 kgf-cm, 25.7 in.-lbf)

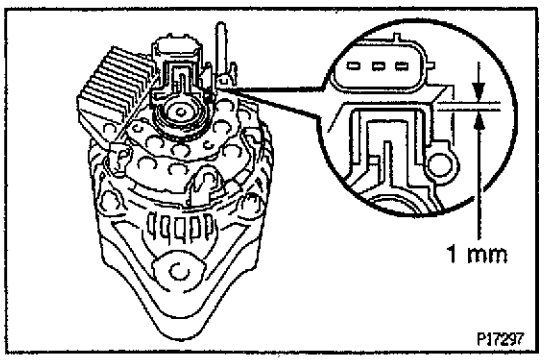


6. INSTALL VOLTAGE REGULATOR AND BRUSH HOLDER

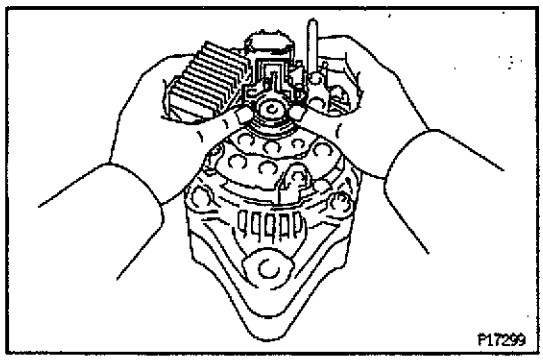
(a) Install the brush holder cover to the brush holder.
NOTICE: Be careful of the holder installation direction.



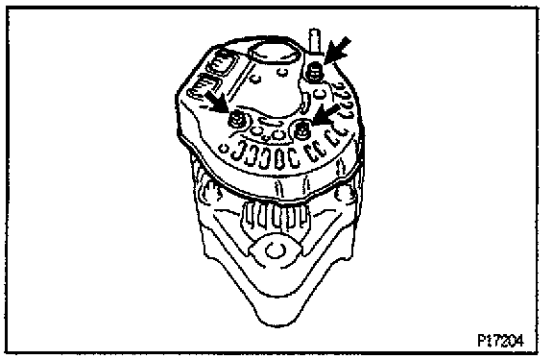
(b) Place the voltage regulator together with the brush holder horizontally on the rectifier end frame.



(c) Install the 5 screws until there is a clearance of approx. 1 mm (0.04 in.) between the brush holder and connector.

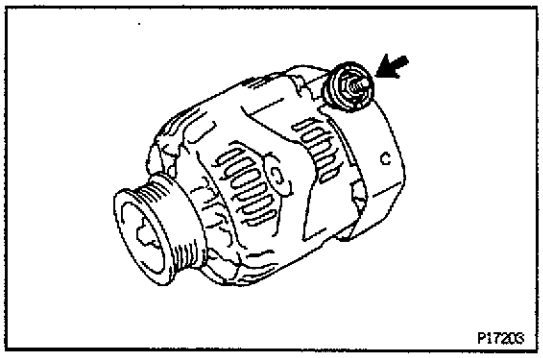


(d) Fit the brush holder cover.

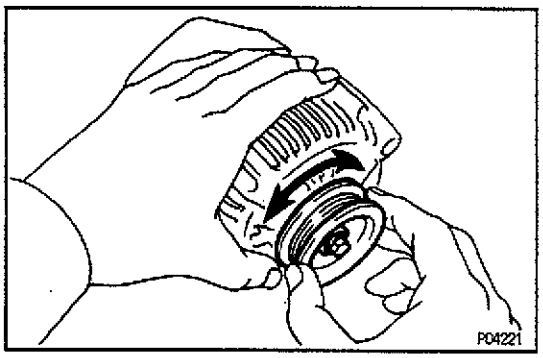


7. INSTALL REAR END COVER

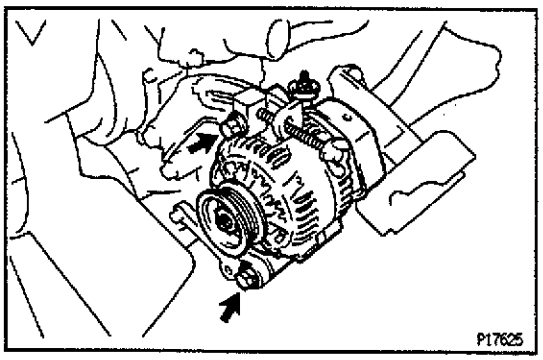
(a) Install the end cover with the 3 bolts.
Torque: 4.5 N·m (46 kgf·cm, 40 in.·lbf)



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



8. CHECK THAT ROTOR ROTATES SMOOTHLY



ALTERNATOR INSTALLATION

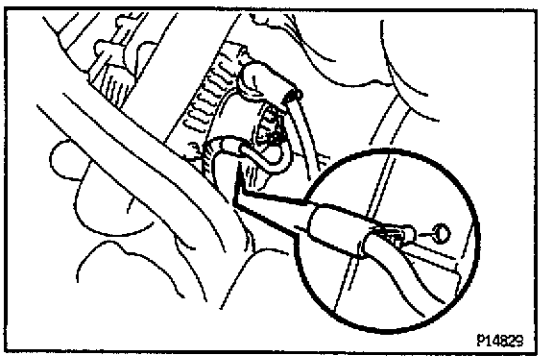
CH07J–01

(See Components for Removal and Installation)

1. INSTALL ALTERNATOR

(a) Mount alternator on the alternator bracket with the pivot bolt and nut. Do not tighten the bolt yet.

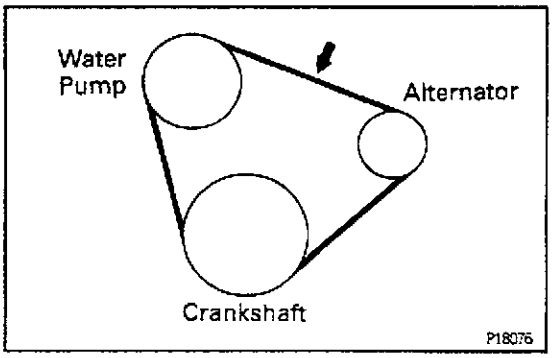
(b) Temporarily install the lock bolt.



(c) Connect the alternator connector.

(d) Connect the alternator wire with the nut.
Torque: 12.7 N·m (130 kgf·cm, 9.4 ft·lbf)

(e) Connect the wire harness and the clip.



2. INSTALL DRIVE BELT

(a) Install the drive belt.

(b) Measure 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.)

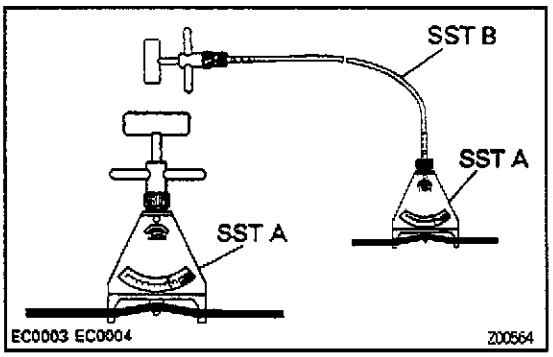
Used belt

7 – 8 mm (0.28 – 0.31 in.)

(c) Tighten the pivot and adjusting lock bolts.

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 deflection.



Reference

Using SST, measure the drive belt tension.

SST A 09216–00021,

SST B 09216–00030

Drive belt tension:

New belt

685 – 785 N (70 – 80 kgf)

Used belt

295 – 440 N (30 – 45 kgf)

3. CONNECT NEGATIVE (–) TERMINAL CABLE TO BATTERY

4. PERFORM ON–VEHICLE INSPECTION

(See page CH–6)