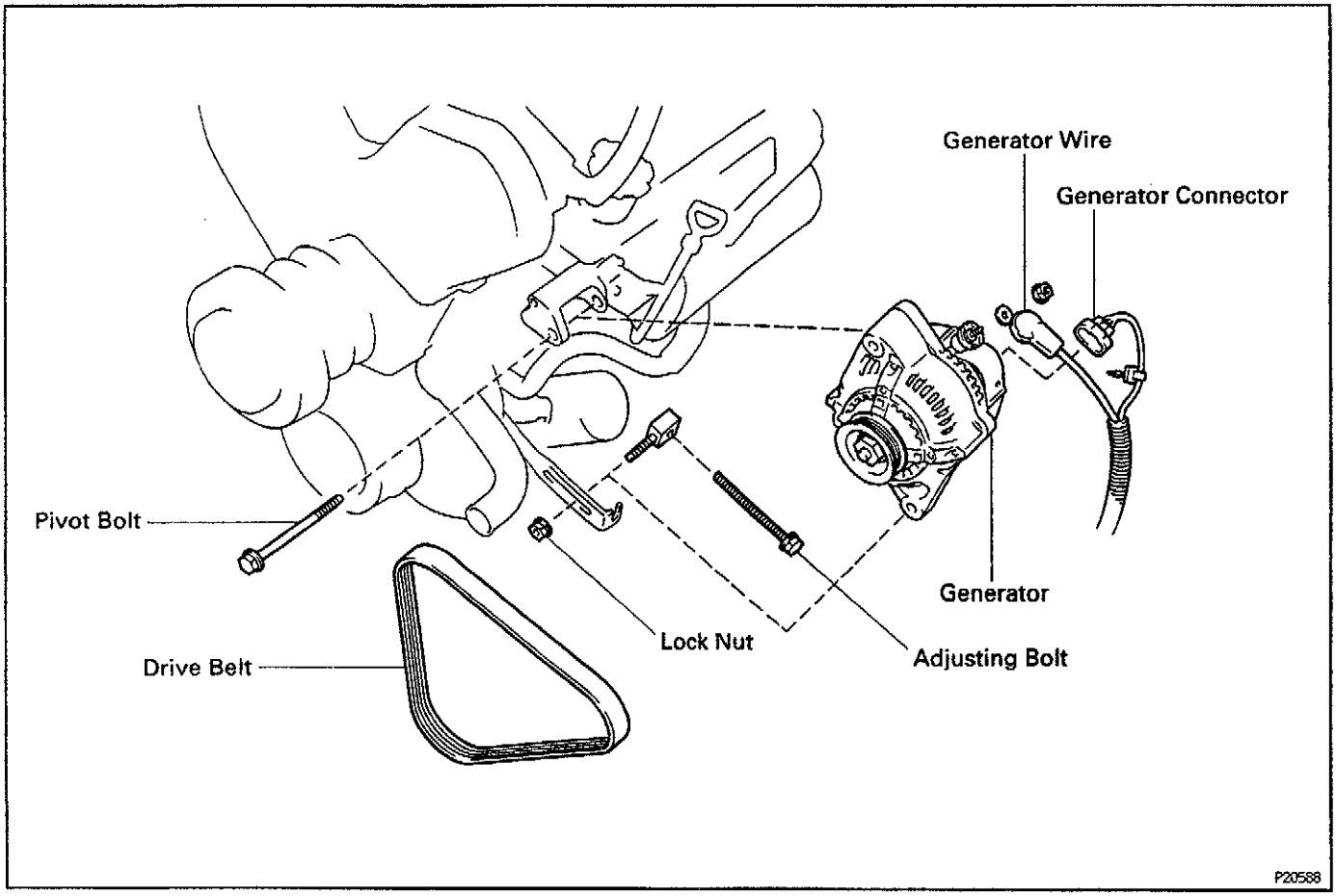
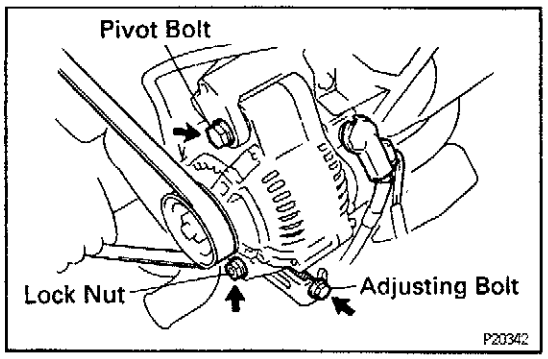
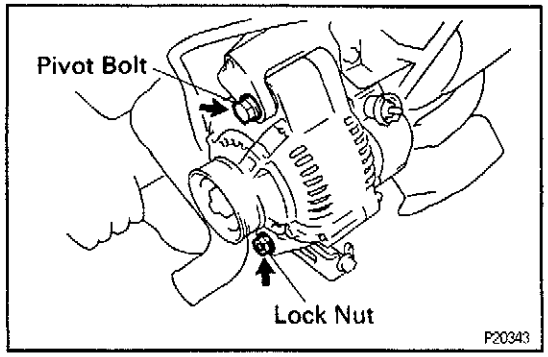
ALTERNATOR

COMPONENTS FOR REMOVAL AND INSTALLATION

CH011-1F







CH006E-05

ALTERNATOR REMOVAL

1. DISCONNECT WIRING FROM ALTERNATOR

(a) Disconnect the connector from the alternator.

(b) Remove the nut and disconnect the wire from the alternator.

2. REMOVE ALTERNATOR DRIVE BELT

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

(b) Remove the drive belt.

3. REMOVE ALTERNATOR

(a) Remove the pivot bolt and adjusting lock nut.

(b) Remove the alternator.

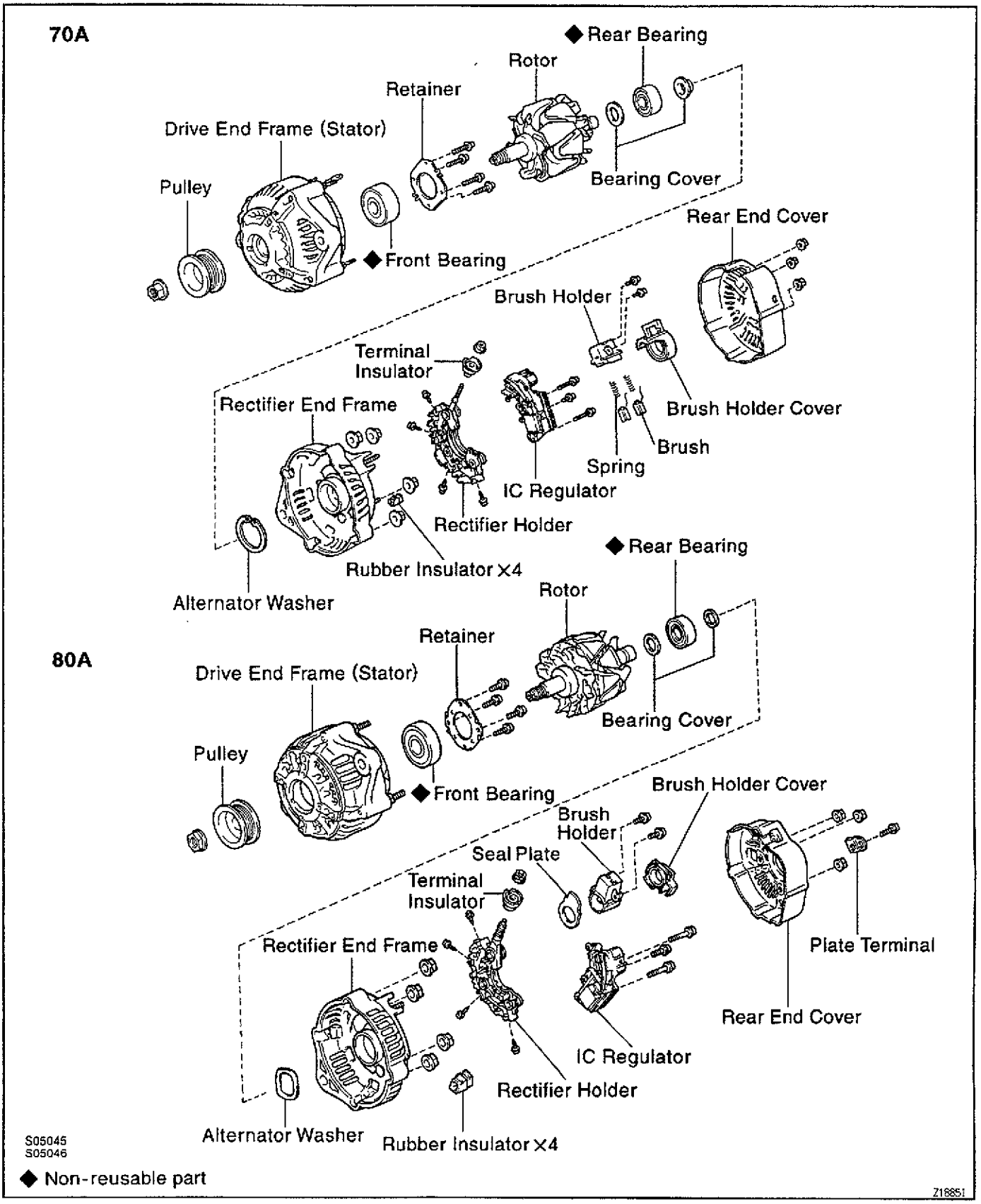
Torque:

Pivot bolt: 51 N·m (520kgf·cm, 38 ft·lbf)

Lock Nut: 18.5 N·m (185kgf·cm, 14 ft·lbf)

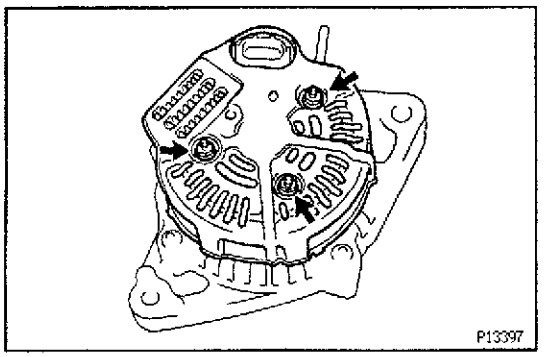
COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

CH039–08



CH0EA–01

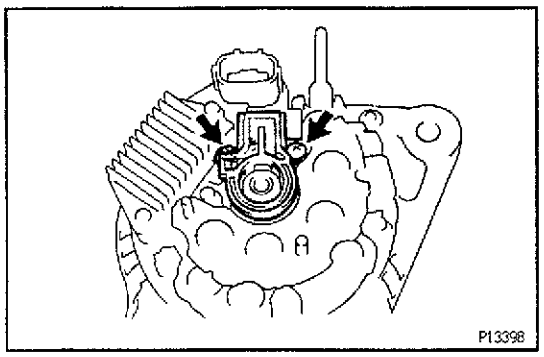
ALTERNATOR DISASSEMBLY



1. REMOVE REAR END COVER

(a) Remove the nut and terminal insulator.

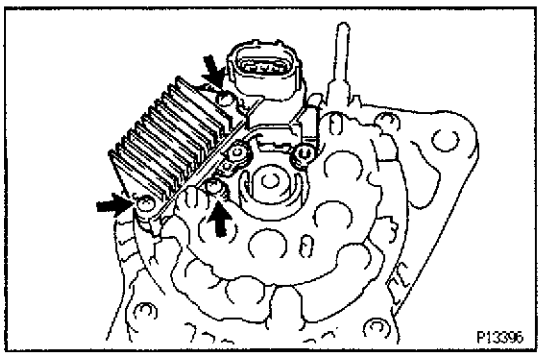
(b) 70 A:
Remove the 3 nuts and end cover.
80 A:
Remove the bolt, 3 nuts, plate terminal and end cover.



2. 70 A:
REMOVE BRUSH HOLDER

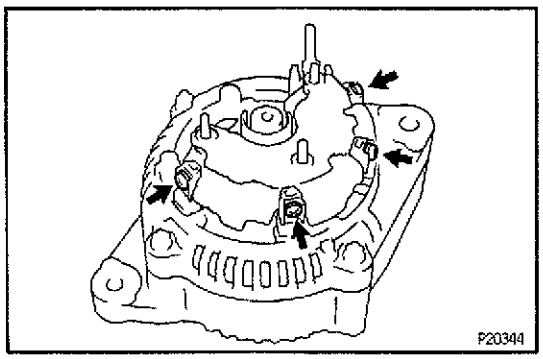
(a) Remove the 2 screws, brush holder and cover.

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



3. REMOVE IC REGULATOR

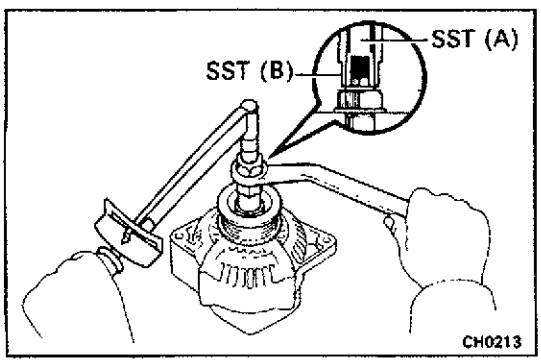
Remove the 3 screws and IC regulator.



4. REMOVE RECTIFIER HOLDER

(a) Remove the 4 screws and rectifier holder.

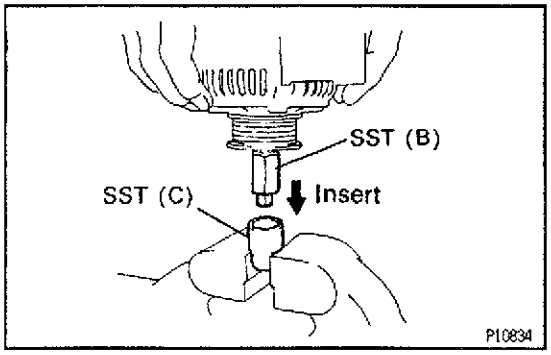
(b) Remove the 4 rubber insulators.



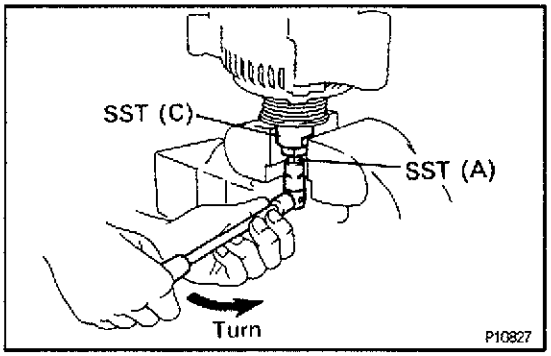
5. REMOVE PULLEY

(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)

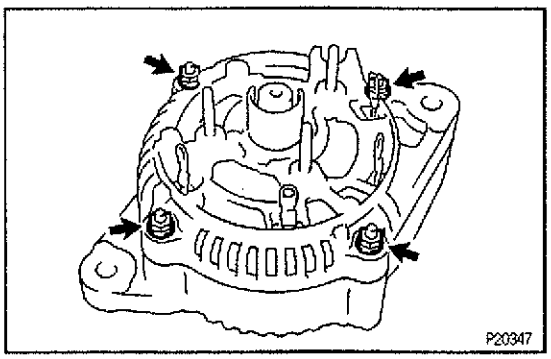
(b) Check that SST (A) is secured to the rotor shaft.



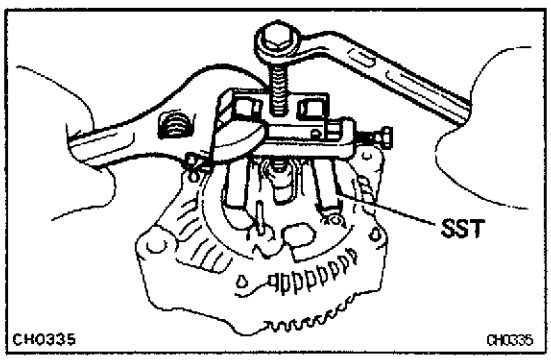
(c) Mount SST (C) in a vise.
(d) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).



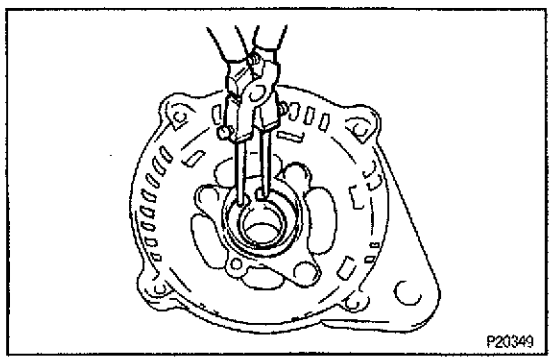
(e) To loosen the pulley nut, turn SST (A) in the direction shown in the illustration.
NOTICE: To prevent damage to the rotor shaft, do not loosen the pulley nut more than one–half of a turn.
(f) Remove the alternator from SST (C).
(g) Turn SST (B), and remove SST (A and B).
(h) Remove the pulley nut and pulley.



6. REMOVE RECTIFIER END FRAME
(a) Remove the 4 nuts.

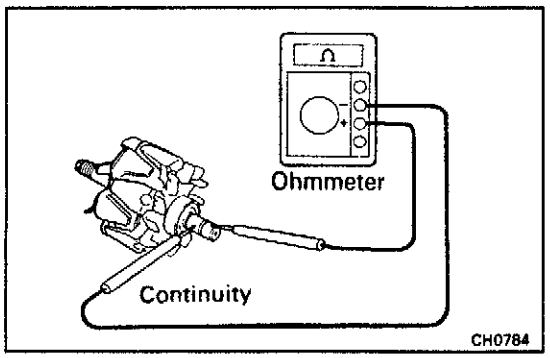


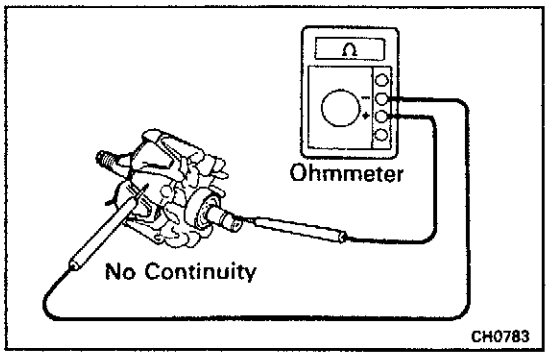
(b) Using SST, remove the rectifier end frame.
SST 09286–46011

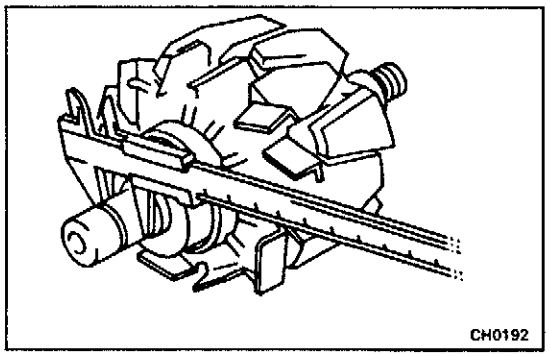


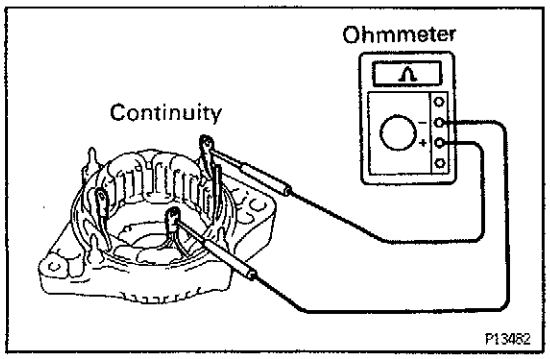
(c) 70 A:
Using snap ring pliers, remove the alternator washer from the rectifier end frame.
80 A:
Remove the alternator washer from the rotor.

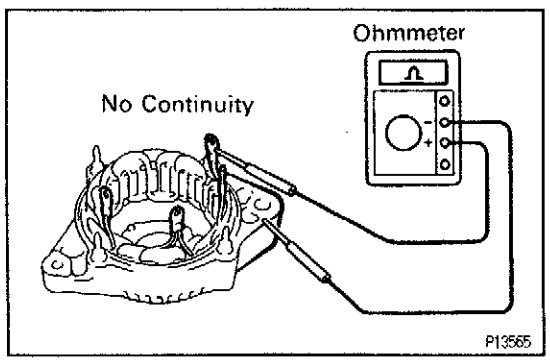
7. REMOVE ROTOR FROM DRIVE END FRAME











ALTERNATOR INSPECTION AND REPAIR CH0EB-01

Rotor

1. **INSPECT ROTOR FOR OPEN CIRCUIT**

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

Standard resistance:

70 A: 2.8 – 3.0 Ω

80 A: 2.1 – 2.5 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 vernier calipers, measure the slip ring diameters.

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**

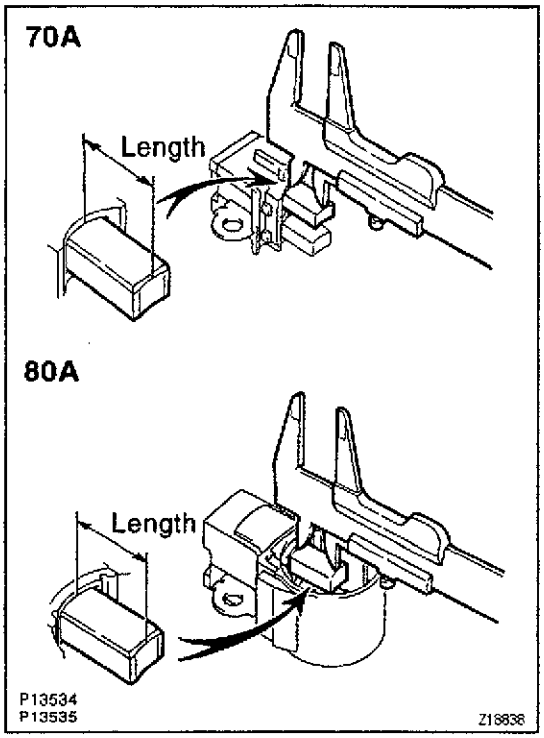
Using an ohmmeter, check that there is continuity between the coil leads.

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

2. **INSPECT STATOR FOR GROUND**

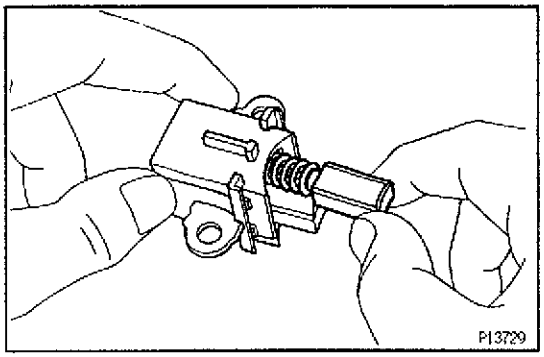
Using an ohmmeter, check that there is no continuity between the coil leads and drive end frame.

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

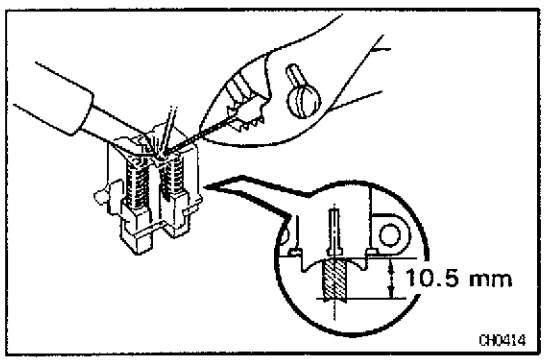


Brushes

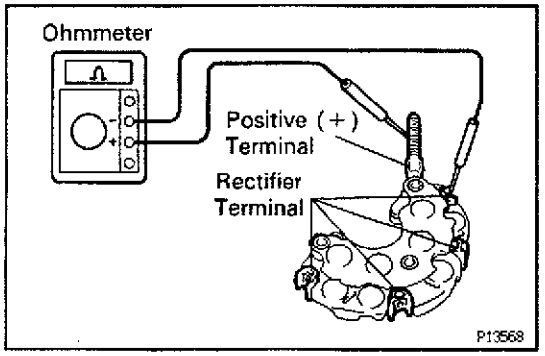
1. **INSPECT EXPOSED BRUSH LENGTH**
   Using vernier calipers, measure the exposed brush length.
   Standard exposed length:
   10.5 mm (0.413 in.)
   Minimum exposed length:
   1.5 mm (0.059 in.)
   If the exposed length is less than minimum, replace the brushes (70 A) or brush holder assembly (80 A).

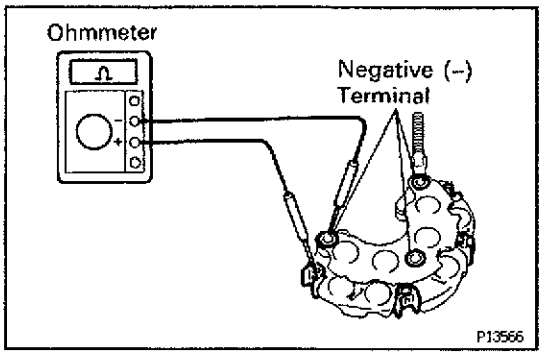


2. **70 A:**
   IF NECESSARY, REPLACE BRUSHES
   (a) Unsolder and remove the brush and spring.
   (b) Run the wire of the brush through the hole in the brush holder, and insert the spring and brush into the brush holder.



   (c) Solder the brush wire to the brush holder at the 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 point.





Rectifier (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.

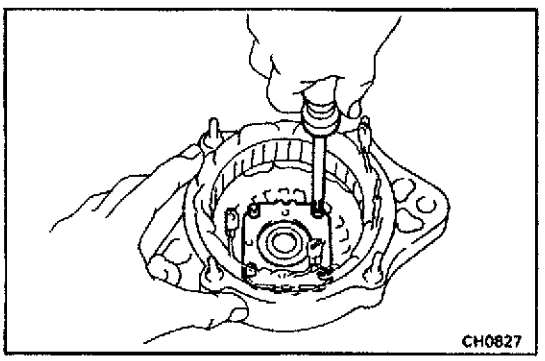
2. **INSPECT NEGATIVE RECTIFIER**

(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.



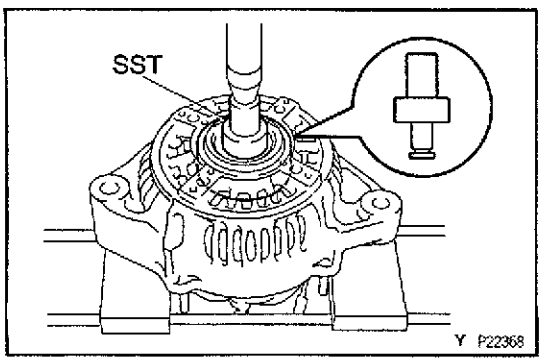
Bearings

1. **INSPECT FRONT BEARING**

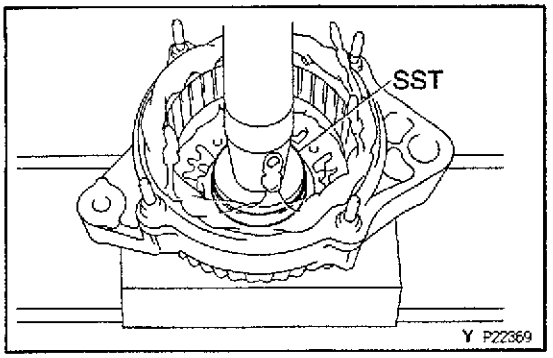
Check that the bearing is not rough or worn.

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

(a) Remove the 4 screws and bearing retainer.



(b) Using SST and a press, press out the bearing.
SST 09950–60010 (09951–00260, 09952–06010)

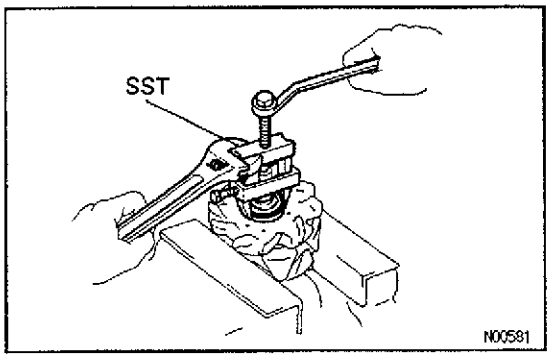


(c) Using SST and a press, press in a new bearing.
SST 09950–60010 (09951–00500)

(d) Install the bearing retainer with the 4 screws.
Torque:
70 A: 2.6 N·m (27 kgf·cm, 23 in.·lbf)
80 A: 2.9 N·m (30 kgf·cm, 25 in.·lbf)

3. INSPECT REAR BEARING

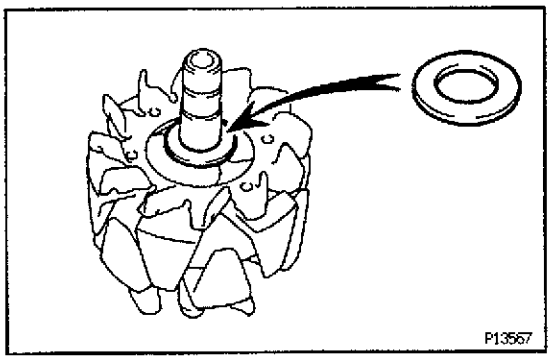
Check that the bearing is not rough or worn.



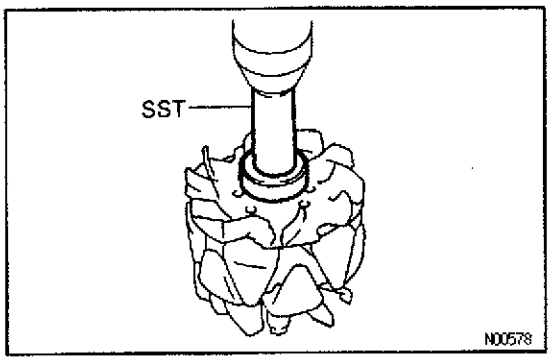
4. IF NECESSARY, REPLACE REAR BEARING

(a) Using SST, remove the bearing cover and bearing.
SST 09820–00021
NOTICE: Be careful not to damage the fan.

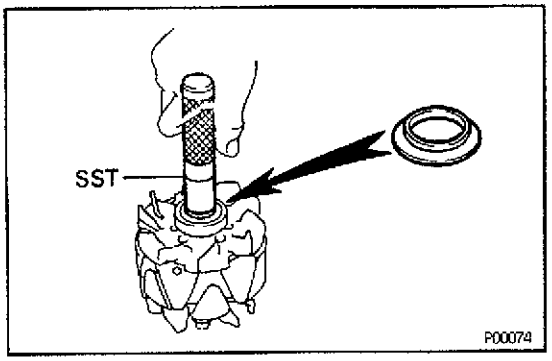
(b) Remove the bearing cover (inside).



(c) Place the bearing cover (inside) on the rotor.



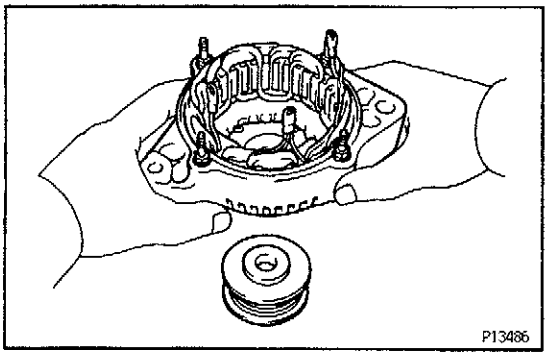
(d) Using SST and a press, press in a new bearing.
SST 09820–00030



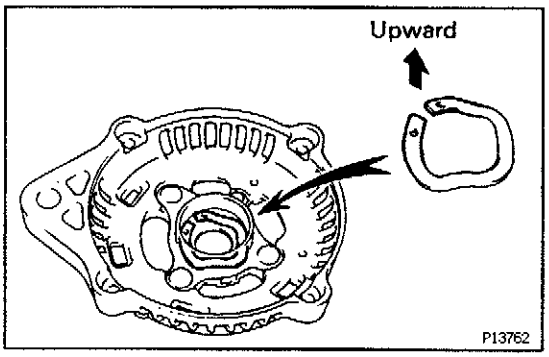
(e) Using SST, push in the bearing cover (outside).
SST 09285–76010

CH0CG–01

ALTERNATOR ASSEMBLY

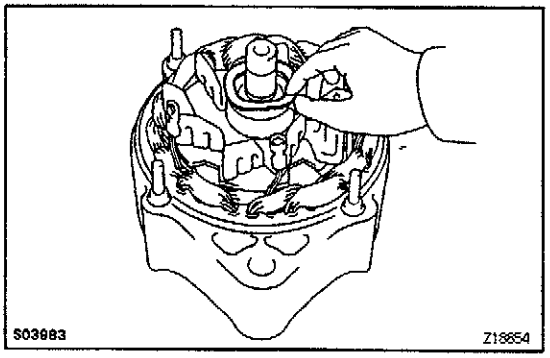


1. **PLACE RECTIFIER END FRAME ON PULLEY**
2. **INSTALL ROTOR TO DRIVE END FRAME**

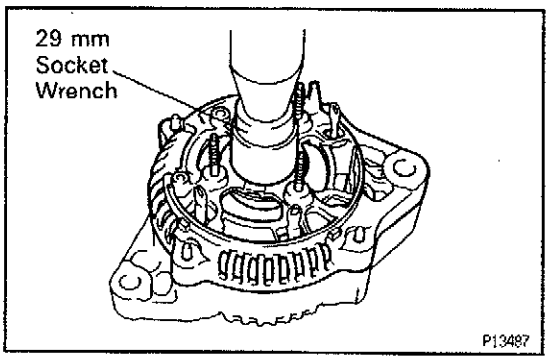


3. **INSTALL RECTIFIER END FRAME**

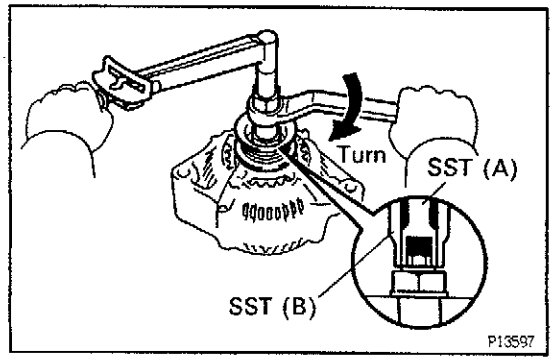
(a) 70 A:
Install the alternator washer to the rectifier end frame.
NOTICE: Be careful of the alternator washer installation direction.



80 A:
Install the alternator washer on the rotor.

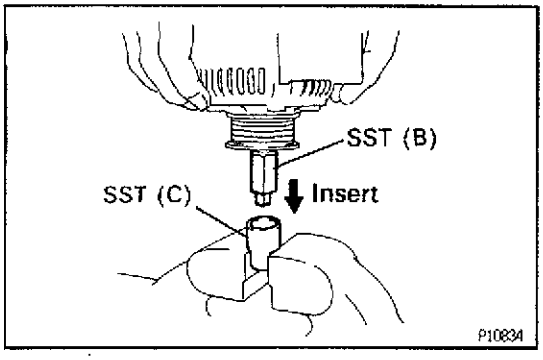


(b) Using a 29 mm socket wrench and press, slowly press in the rectifier end frame.
(c) Install the 4 nuts.
Torque: 4.5 N·m (46 kgf·cm, 39 in.·lbf)

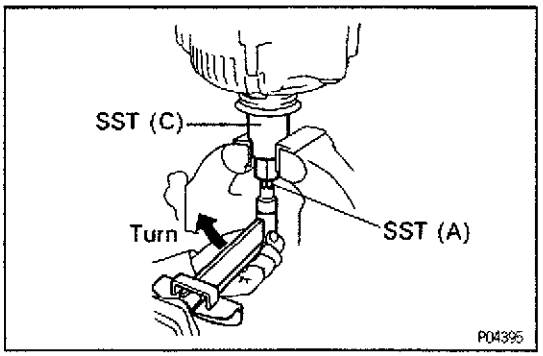


4. **INSTALL PULLEY**

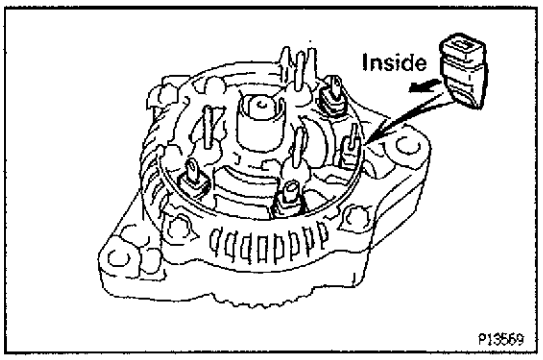
(a) Install the pulley to the rotor shaft by tightening the pulley nut by hand.
(b) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.
SST 09820–63010
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
(c) Check that SST (A) is secured to the pulley shaft.



(d) Mount SST (C) in a vise.
(e) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).

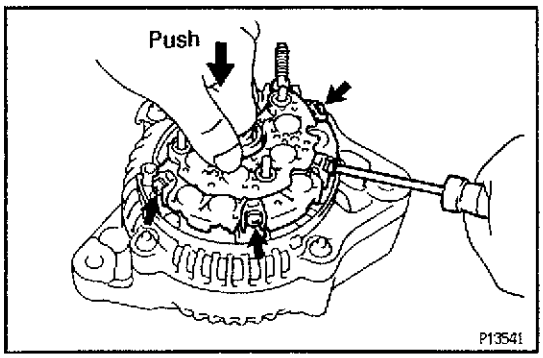


(f) To torque the pulley nut, turn SST (A) in the direction shown in the illustration.
Torque: 110 N·m (1,125 kgf·cm, 81 ft·lbf)
(g) Remove the alternator from SST (C).
(h) Turn SST (B), and remove SST (A and B).

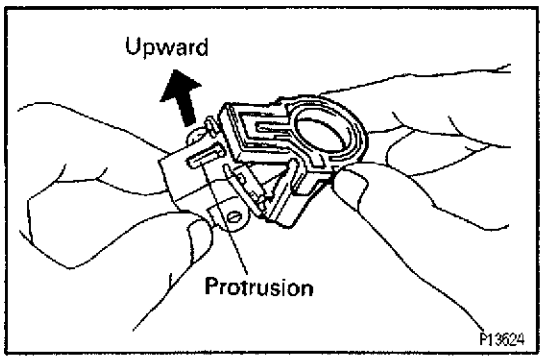


5. INSTALL RECTIFIER HOLDER

(a) Install the 4 rubber insulators on the lead wires.
NOTICE: Be careful of the rubber insulators installation direction.

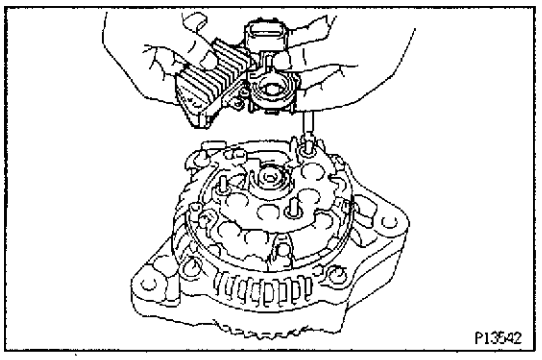


(b) Install the rectifier with the 4 screws.
Torque:
70 A: 2.0 N·m (20 kgf·cm, 18 in.·lbf)
80 A: 2.9 N·m (30 kgf·cm, 25 in.·lbf)

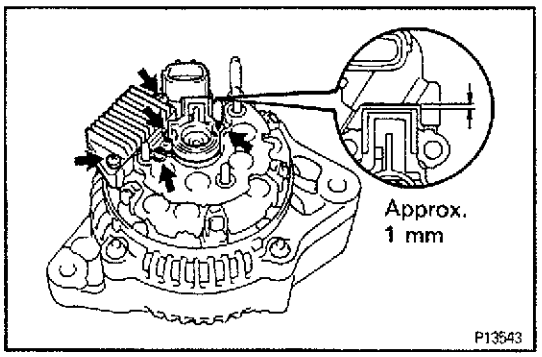


6. INSTALL BRUSH HOLDER AND IC REGULATOR

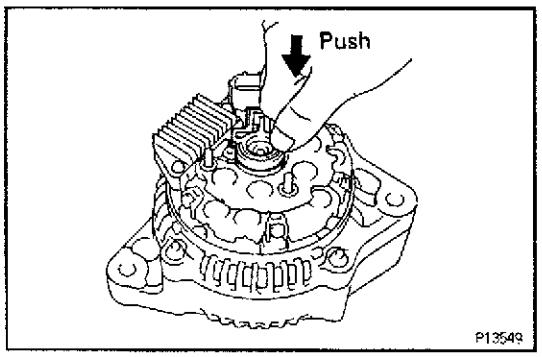
(a) Install the brush holder cover to the brush holder.
NOTICE: Be careful of the holder installation direction.



(b) Place the IC 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 IC regulator.
Torque: 2.0 N·m (20 kgf·cm, 18 in.·lbf)



(d) Fit the brush holder cover.

7. INSTALL REAR END COVER

(a) 70 A:
Install the end cover with the 3 nuts.
Torque: 4.5 N·m (46 kgf·cm, 40 in.·lbf)
80 A:
Install the end cover and plate terminal with the bolt and 3 nuts.
Torque:
Nut: 4.5 N·m (46 kgf·cm, 40 in.·lbf)
Bolt: 3.8 N·m (39 kgf·cm, 34 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

CH0AX–02

Installation is in the reverse order of removal.