- If the voltmeter reading is more than standard voltage, replace the IC regulator.
- If the voltmeter reading is less than standard voltage, check the alternator.

7. **INSPECT CHARGING CIRCUIT WITH LOAD**

(a) With the engine running at 2,000 rpm, turn on the high beam headlights and place the heater blower switch at HI.

(b) Check the reading on the ammeter.

Standard amperage:

12 V type
30A or more

24 V type
15A or more

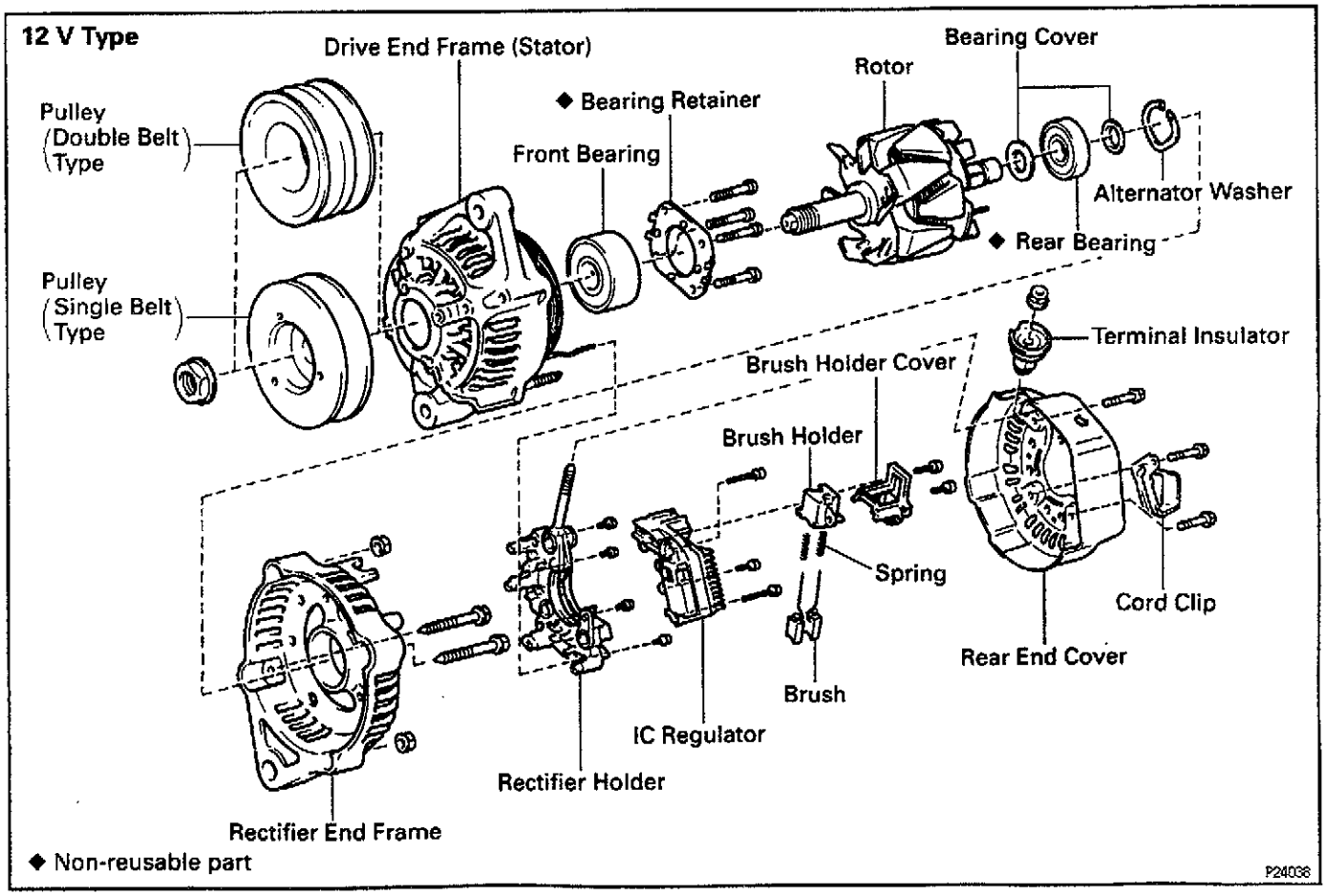
If the ammeter reading is less than the standard amperage, repair the alternator.

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

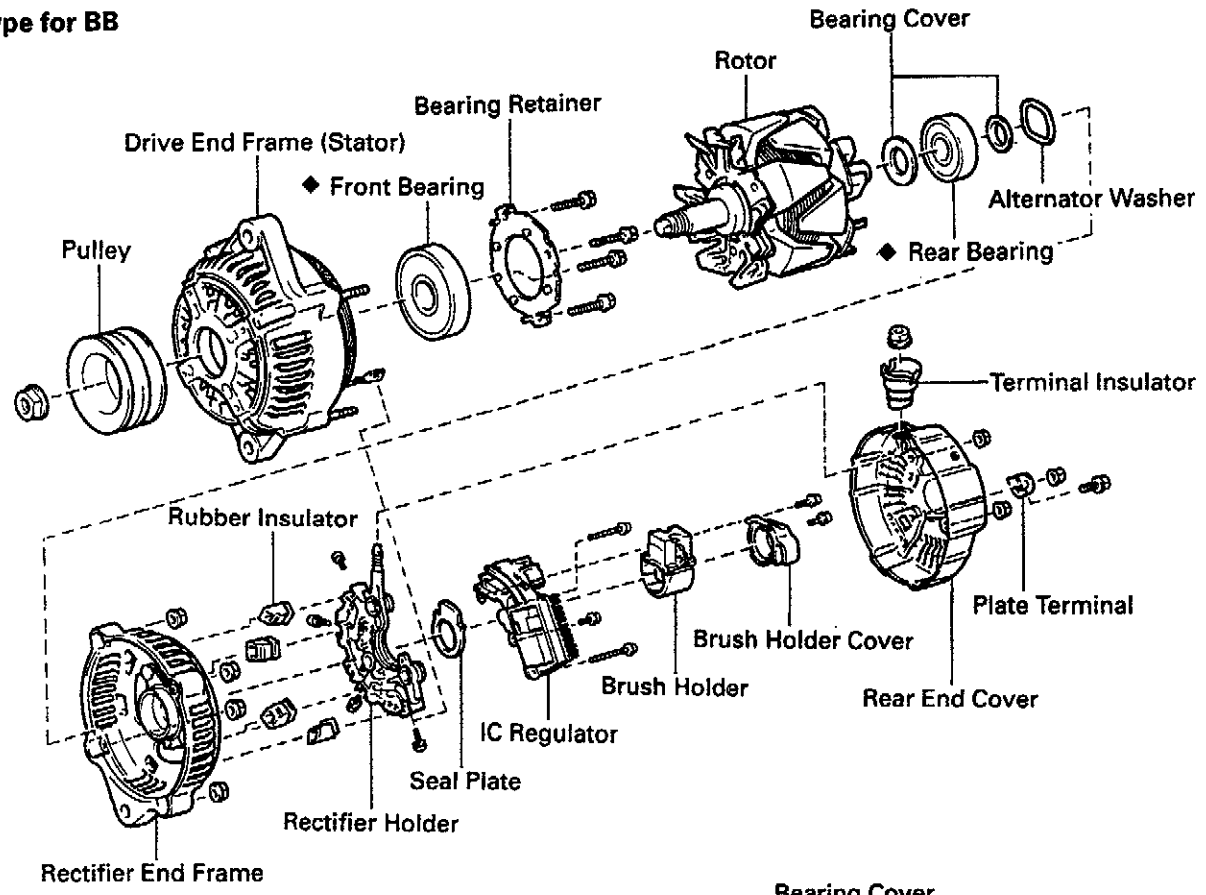
ALTERNATOR

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

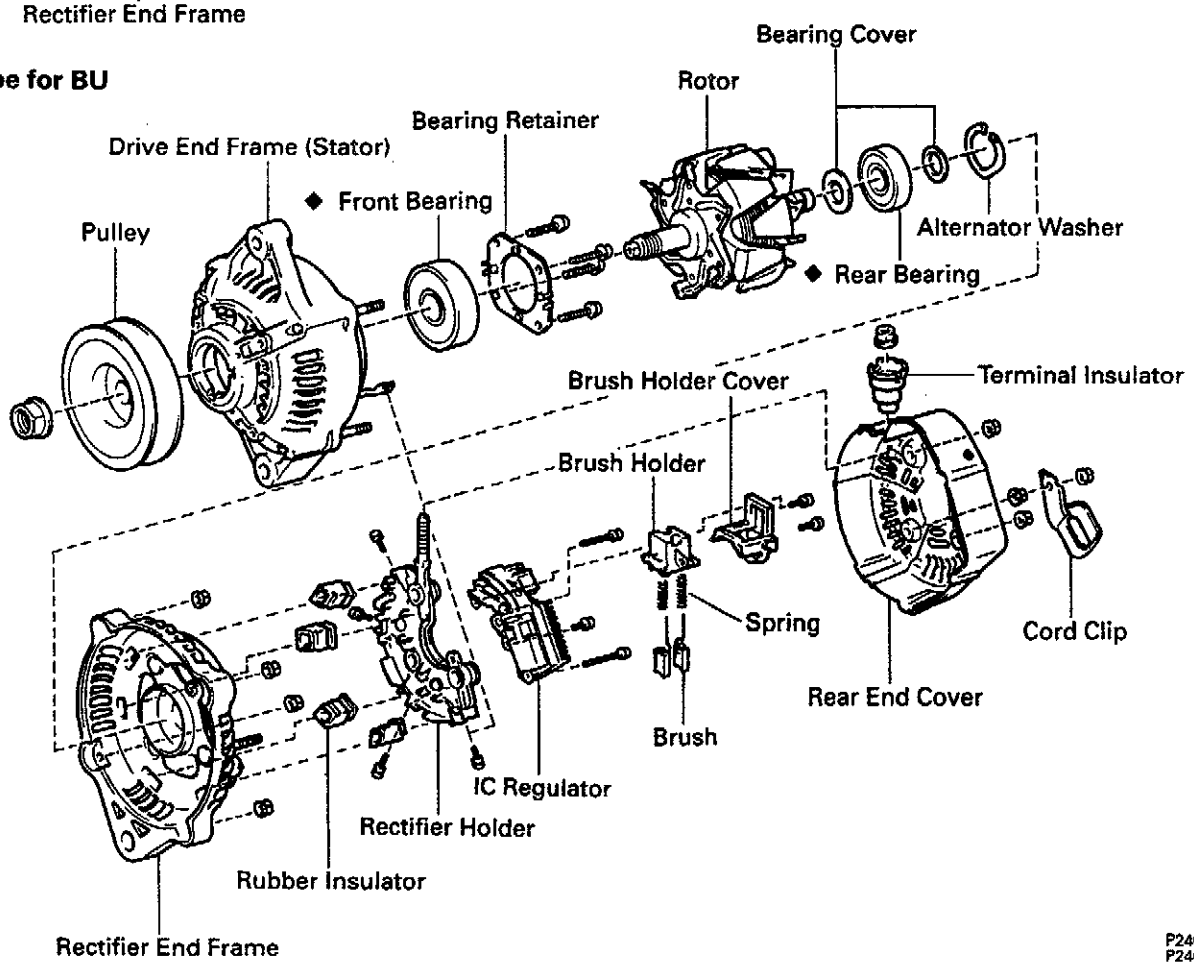
CH03G-01



24 V Type for BB



24 V Type for BU

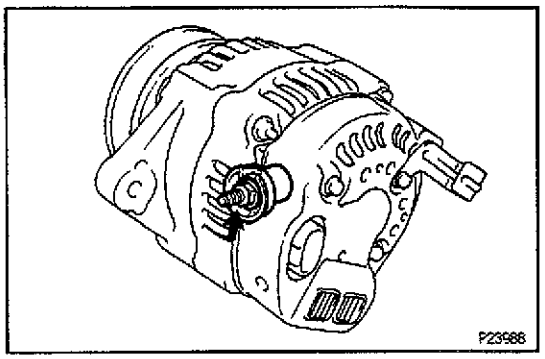


P24039
P24040

◆ Non-reusable part

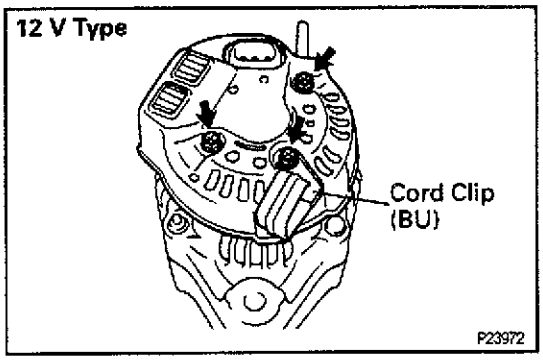
Z16043

ALTERNATOR DISASSEMBLY



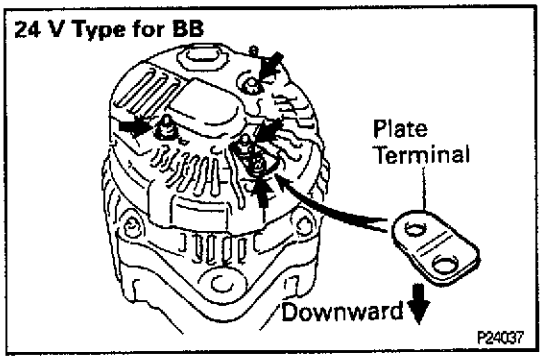
1. REMOVE REAR END COVER

(a) Remove the nut and terminal insulator.

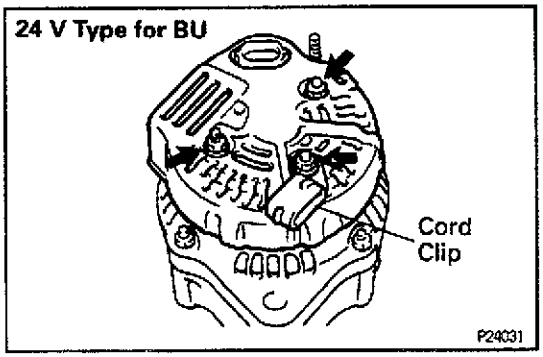


(b) 12 V Type for BB:
Remove the 3 bolts and rear end cover.

(c) 12 V Type for BU:
Remove the 3 bolts, cord clip and rear end cover.

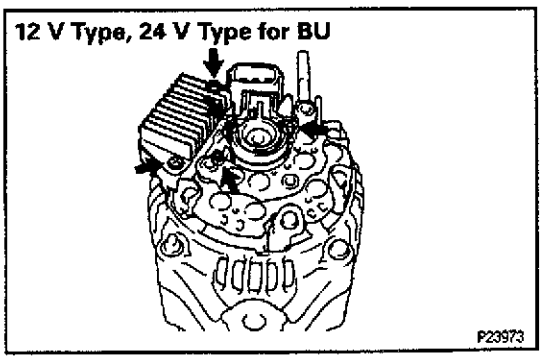


(d) 24 V Type for BB:
Remove the bolt, 3 nuts, plate terminal and rear end cover.



(e) 24 V Type for BU:
Remove the nut and cord clip.

(f) 24 V Type for BU:
Remove the 3 nuts and rear end cover.

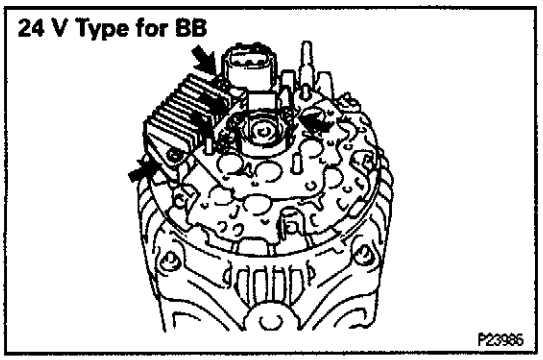


3. REMOVE BRUSH HOLDER AND IC REGULATOR

12 V Type, 24 Type for BU:

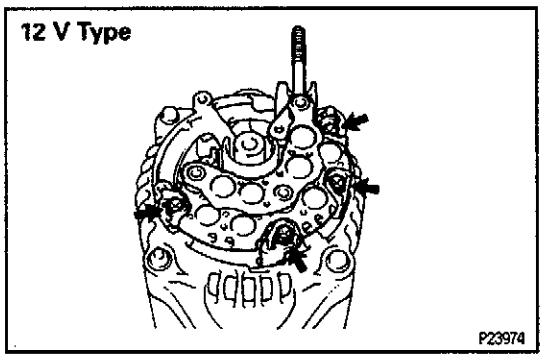
(a) Remove the 5 screws, brush holder and IC regulator.

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



24 V Type for BB:

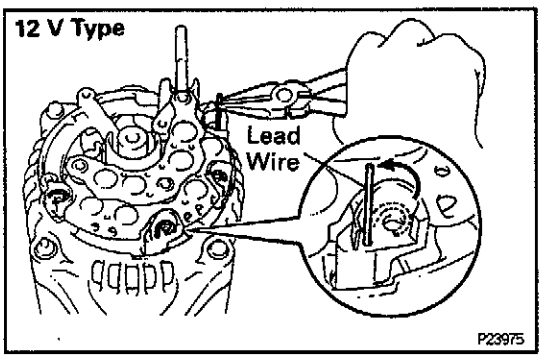
(a) Remove the brush holder cover from the brush holder.
(b) Remove the 5 screws, brush holder and IC regulator.
(c) Remove the seal plate from the rectifier end frame.



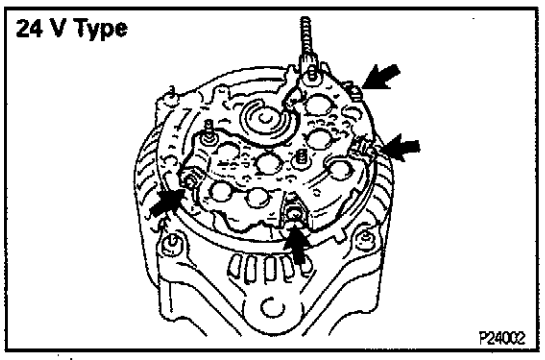
4. REMOVE RECTIFIER HOLDER

12 V Type:

(a) Remove the 4 screws.

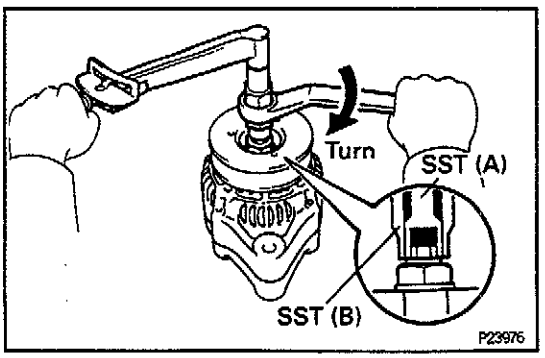


(b) Using needle–nose pliers, straighten the 4 stator lead wires.
(c) Remove the rectifier holder.



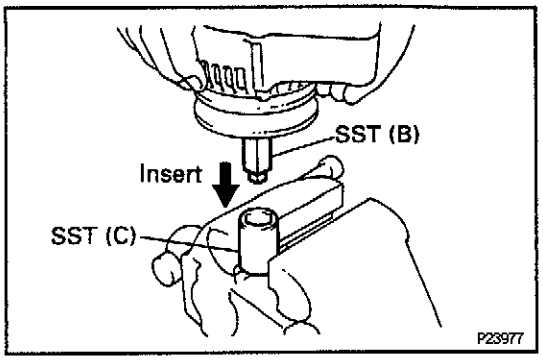
24 V Type:

(a) Remove the 4 screws and rectifier holder.
(b) Remove the 4 rubber insulators.

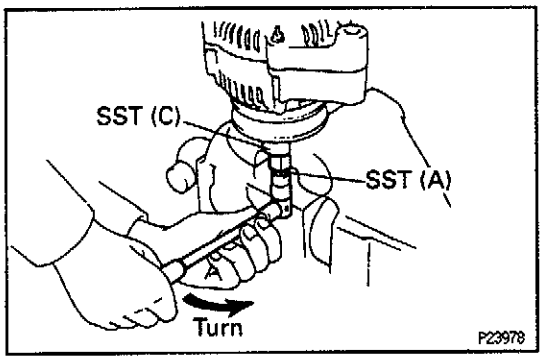


5. REMOVE PULLEY

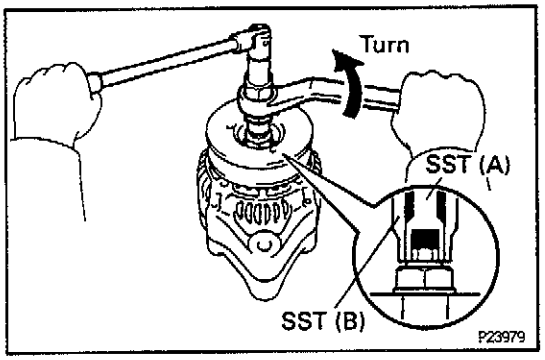
(a) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.
SST 09820–63010
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
(b) Check that SST (A) is secured to the rotor shaft.



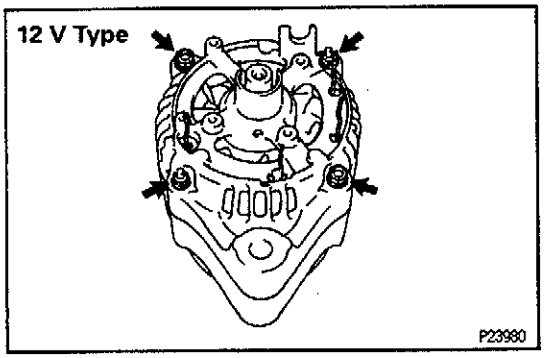
(c) Mount SST (C) in a vise.
(d) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).



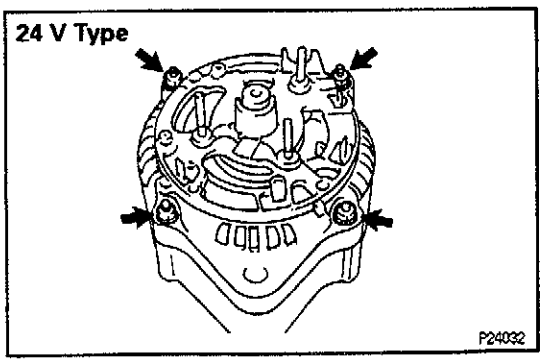
(e) To loosen the pulley nut, turn SST (A) in the direction shown in the illustration.
NOTICE: To prevent damage to the rotor shaft, do not loosen the pulley nut more than one–half of a turn.
(f) Remove the alternator from SST (C).



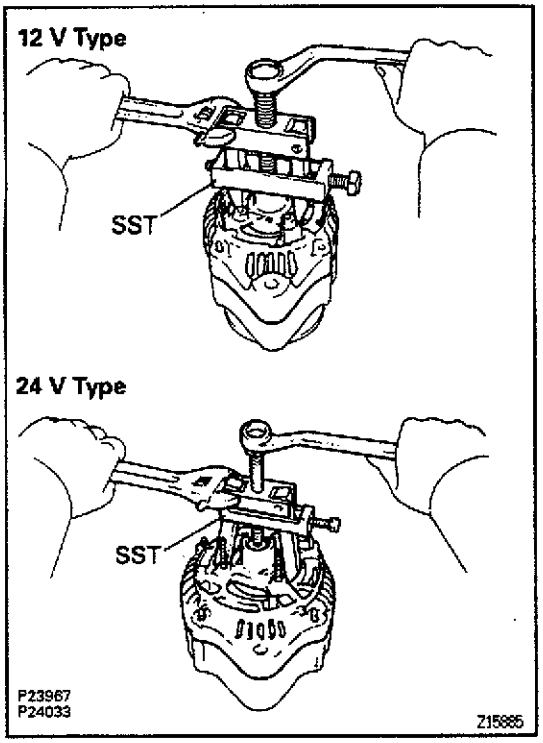
(g) Turn SST (B), and remove SST (A and B).
(h) Remove the pulley nut and pulley.



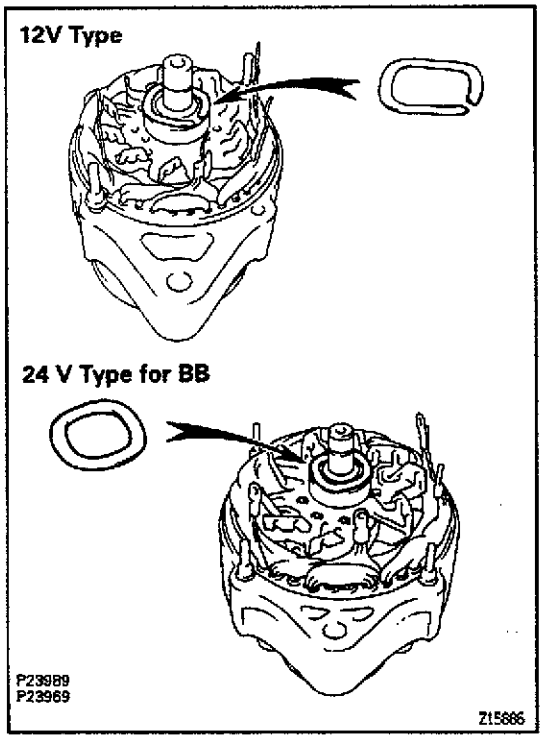
6. REMOVE RECTIFIER END FRAME
(a) 12 V Type:
Remove the 2 bolts and 2 nuts.



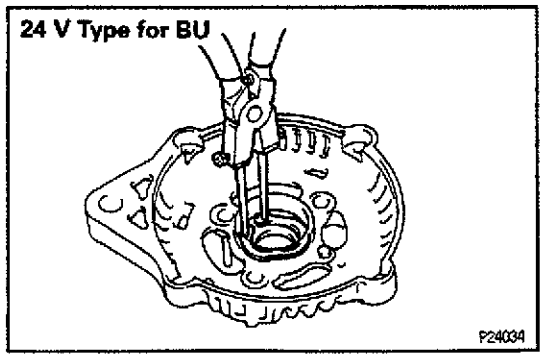
(b) 24 V Type:
Remove the 4 nuts.



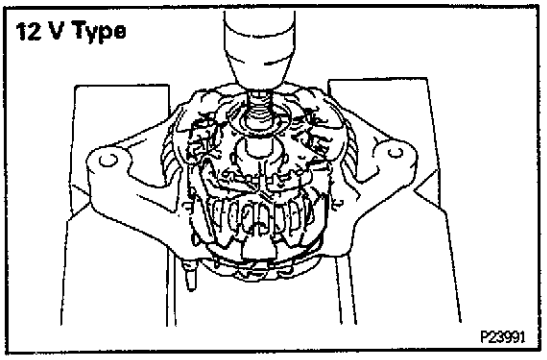
(c) Using SST, remove the rectifier end frame.
SST 09286–46011 for 12 V type
09820–00021 for 24 V type



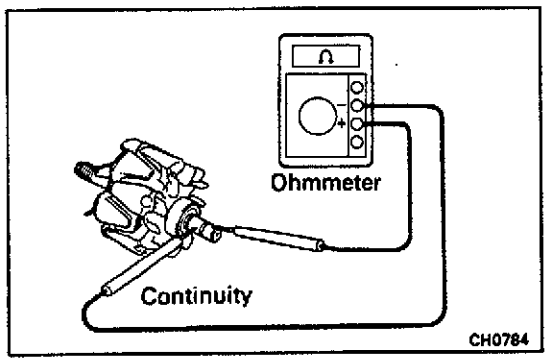
(d) 12 V Type, 24 V Type for BB:
Remove the alternator washer from the rotor.



(e) 24 V Type for BU:
Using snap ring pliers, remove the alternator washer from the rectifier end frame.



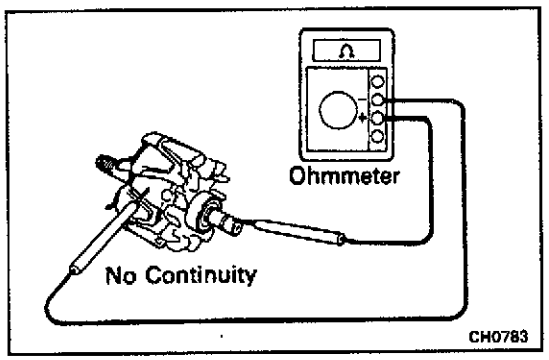
7. **REMOVE ROTOR FROM DRIVE END FRAME**
12 V Type:
If the rotor cannot be removed by hand use a press.



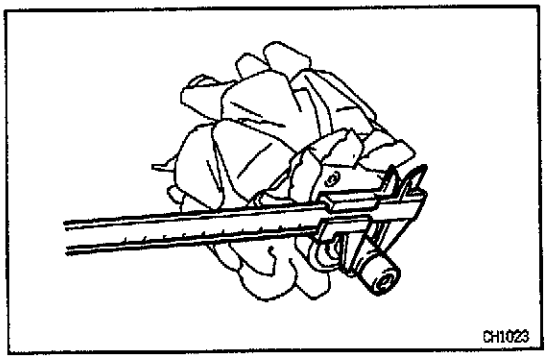
ALTERNATOR INSPECTION AND REPAIR CH05J-01

Rotor

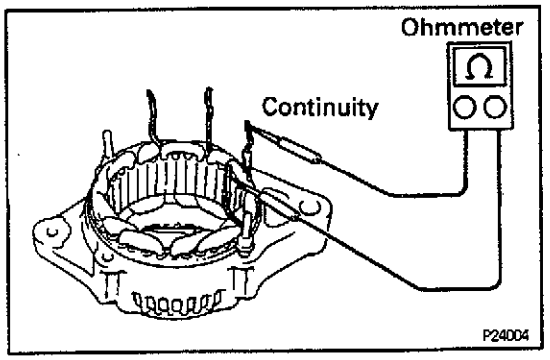
1. **INSPECT ROTOR FOR OPEN CIRCUIT**
Using an ohmmeter, check that there is continuity between the slip rings.
Standard resistance:
At 20°C (68°F)
12 V type
2.7 – 3.1 Ω
24 V type
10 – 14 Ω
If there is no continuity, replace the rotor.



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.

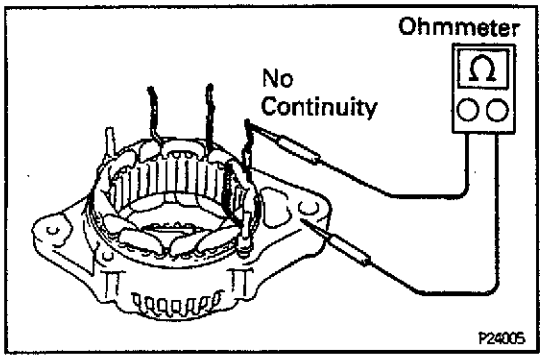


3. **INSPECT SLIP RINGS**
(a) Check that the slip rings are not rough or scored.
If rough or scored, replace the rotor.
(b) Using vernier calipers, measure the slip ring diameter.
Standard diameter:
14.2 – 14.4 mm (0.559 – 0.567 in.)
Minimum diameter:
14.0 mm (0.551 in.)
If the diameter is less than 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.

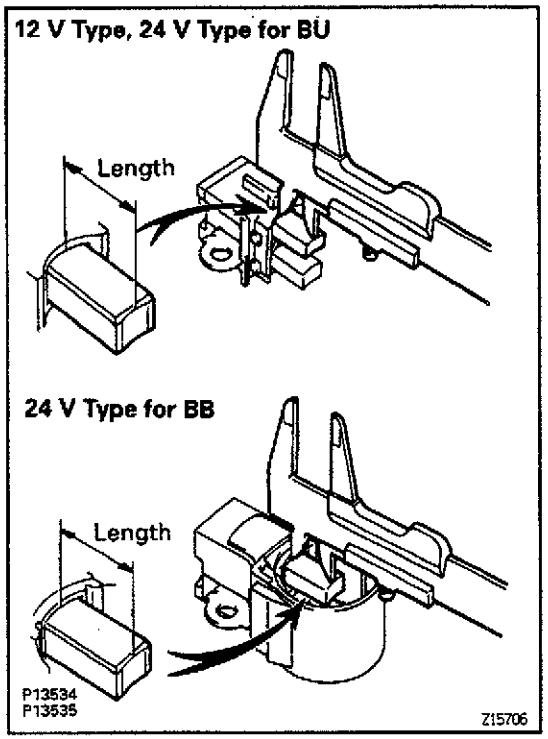


2. INSPECT STATOR FOR GROUND

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 vernier calipers, measure the exposed brush length.

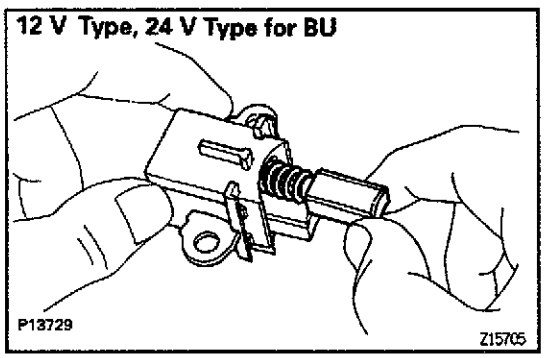
Standard exposed length:

10.5 mm (0.413 in.)

Minimum exposed length:

4.5 mm (0.177 in.)

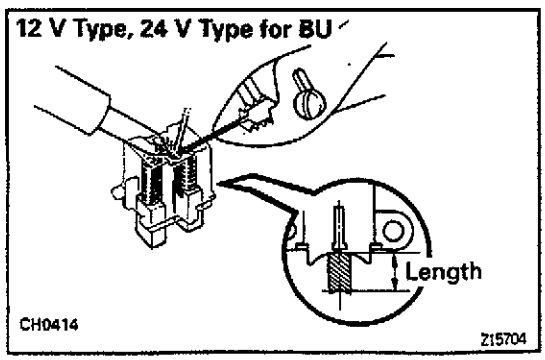
If the exposed length is less than minimum, replace the brushes (12 V type, 24 V type for BU) or brush holder assembly (24 V type for BB).



2. 12 V Type, 24 V Type for BU:
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.

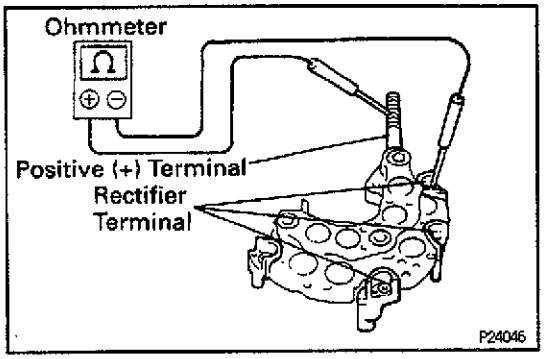
Exposed length:

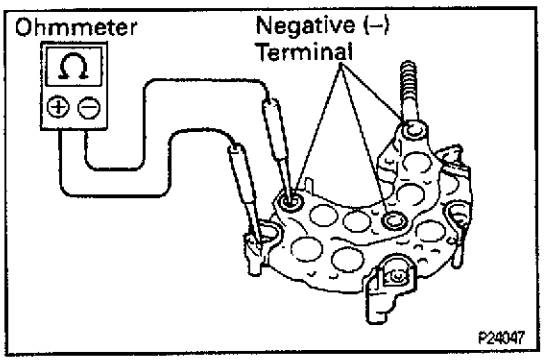
10.5 mm (0.413 in.)

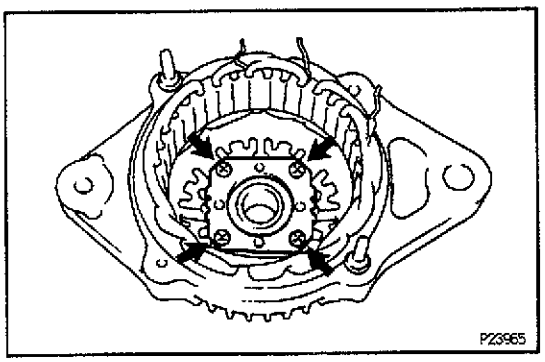
(d) Check that the brush moves smoothly in the brush holder.

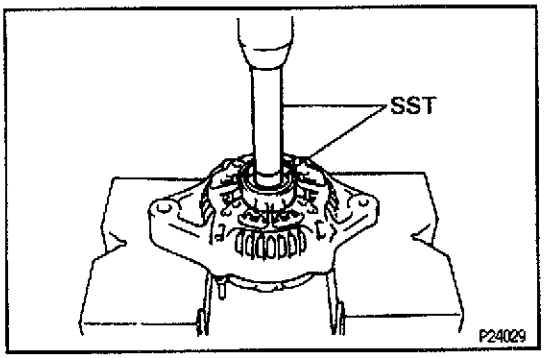
(e) Cut off the excess wire.

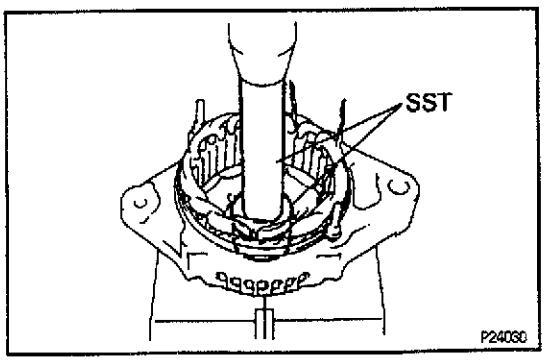
(f) Apply insulation paint to the soldered area.











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 SST and a press, press out the bearing.

SST 09950–60010 (09951–00220, 09951–00270), 09950–70010 (09951–07100)

12 V Type, 24 V Type for BU:

Use SST 09951–00220.

24 V Type for BB:

Use SST 09951–00270.

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

SST 09950–60010 (09951–00380, 09951–00520), 09950–70010 (09951–07100)

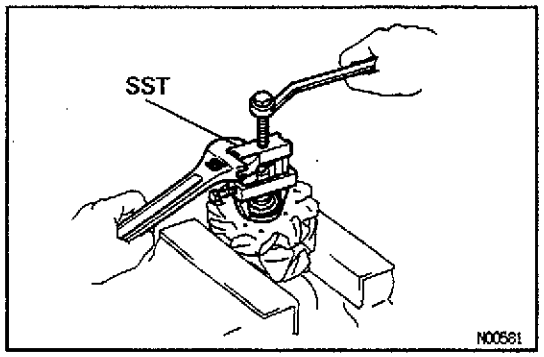
12 V Type:

Use SST 09951–00380.

24 V Type:

Use SST 09951–00520.

(d) Install the bearing retainer with the 4 screws.
Torque:
12 V type
2.6 N·m (26.5 kgf·cm, 23 in.·lbf)
24 V type
2.95 N·m (30 kgf·cm, 26 in.·lbf)

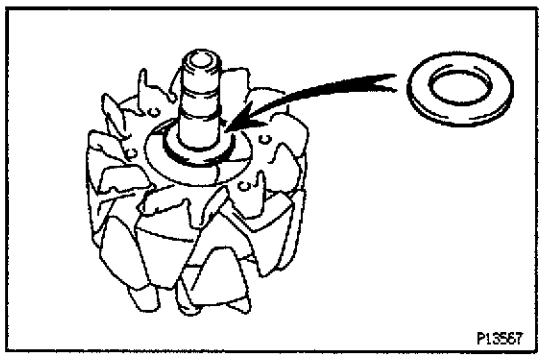


3. INSPECT REAR BEARING
Check that the bearing is not rough or worn.

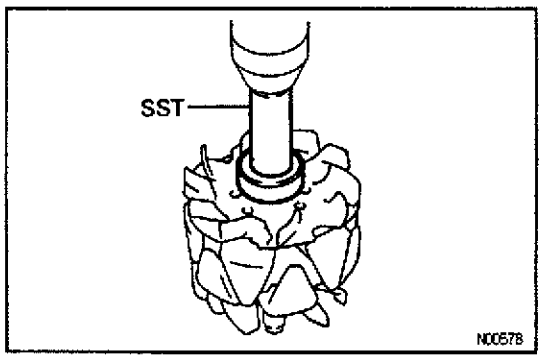
4. IF NECESSARY, REPLACE REAR BEARING

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

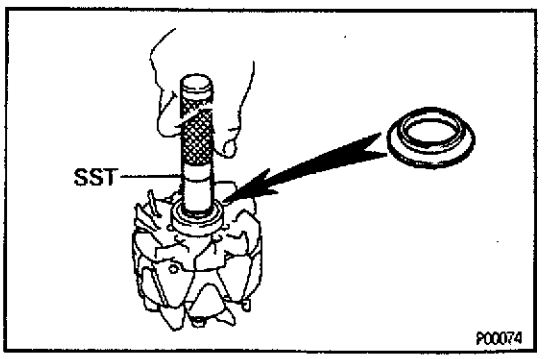
(b) Remove the bearing cover (inside).



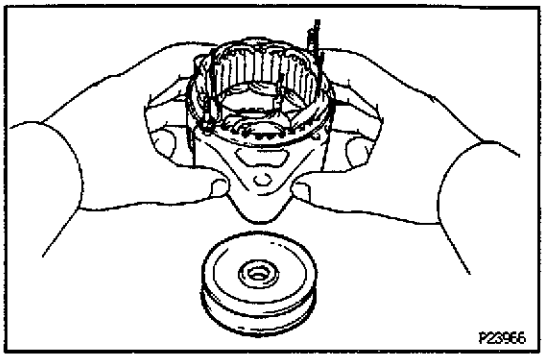
(c) Place the bearing cover (inside) on the rotor.



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

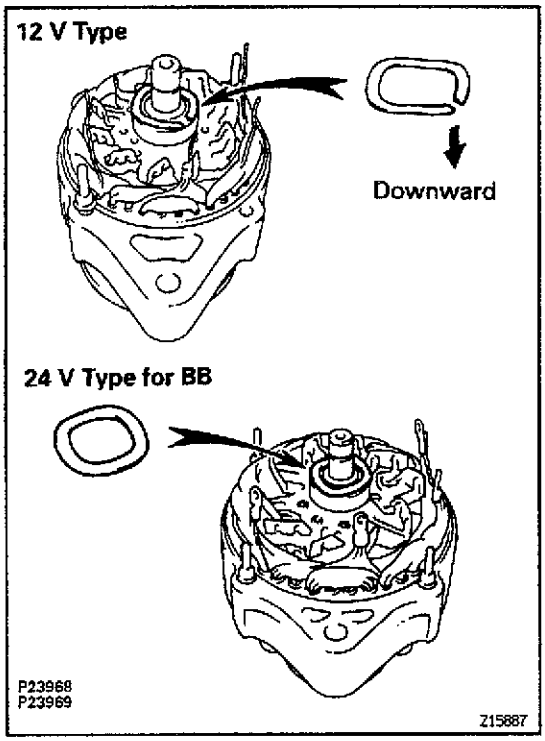


(e) Using SST, push in the bearing cover (outside).
SST 09285—76010



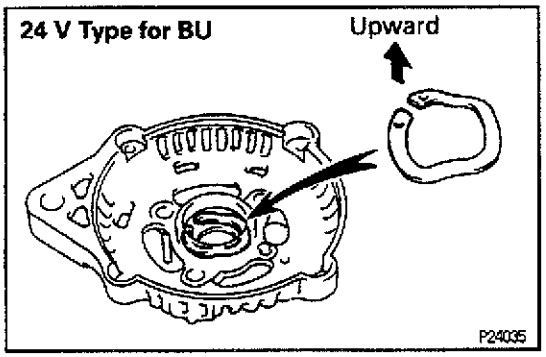
ALTERNATOR ASSEMBLY

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

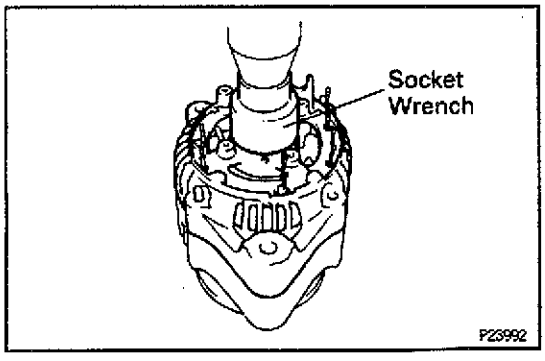


3. **INSTALL RECTIFIER END FRAME**

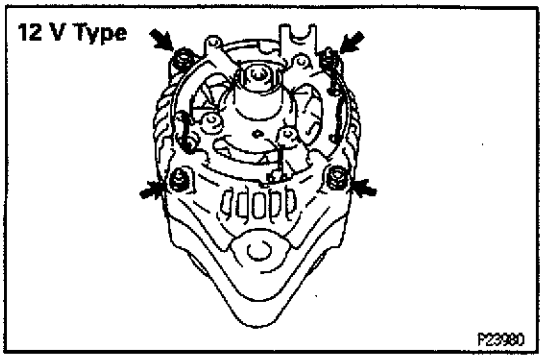
(a) 12 V Type, 24 V Type for BB:
Place the alternator washer on the rotor.
NOTICE (12 V Type): Be careful of the alternator washer installation direction.



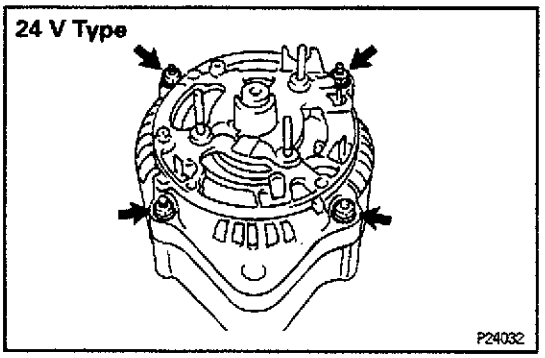
(b) 24 V Type for BU:
Install the alternator washer to the rectifier end frame.
NOTICE: Be careful of the alternator washer installation direction.



(c) Using a 27 mm (24 V type for BB) or 32 mm (12 V type, 24 V type for BU) socket wrench and press, slowly press in the rectifier end frame.

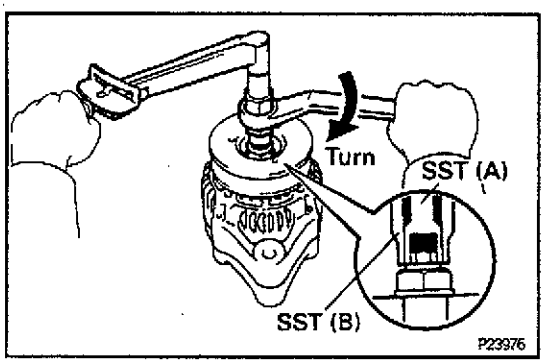


(d) 12 V Type:
Install the 2 bolts and 2 nuts.
Torque: 4.5 N·m (46 kgf·cm, 40 in.·lbf)



(e) 24 V Type:
Install the 4 nuts.
Torque: 4.5 N·m (46 kgf·cm, 40 in.·lbf)

CH

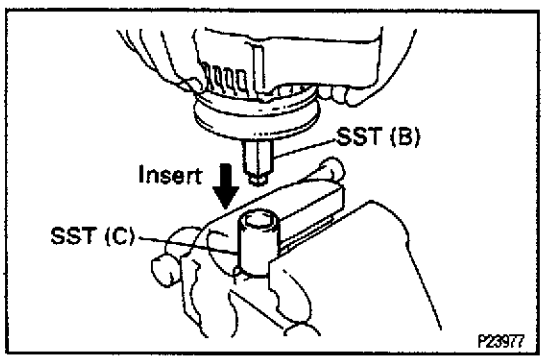


4. INSTALL PULLEY

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

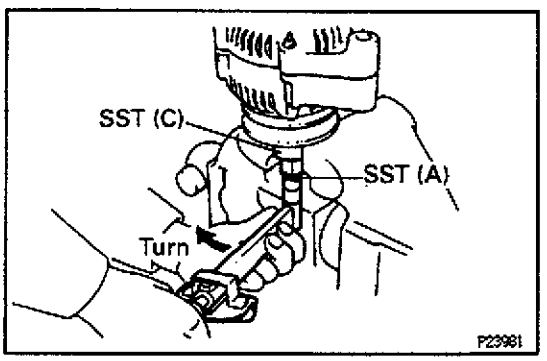
(b) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.
SST 09820–63010
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

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



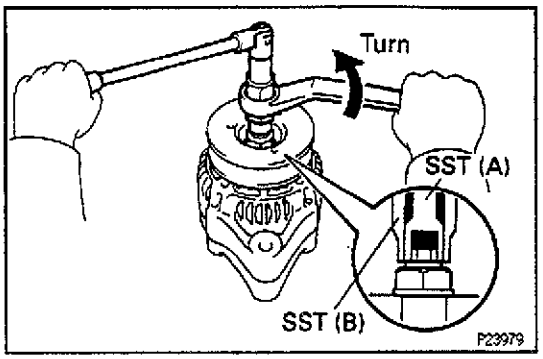
(d) Mount SST (C) in a vise.

(e) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).



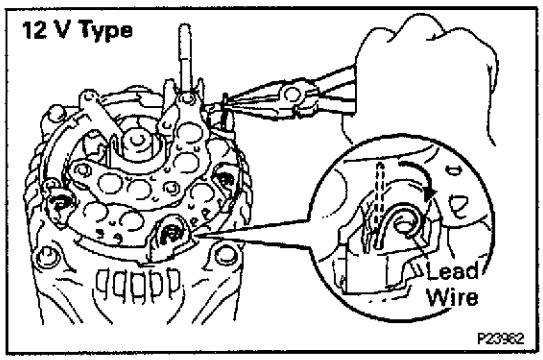
(f) To torque the pulley nut, turn SST (A) in the direction shown in the illustration.
Torque:
110.5 N·m (1,125 kgf·cm, 82 ft·lbf)

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



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

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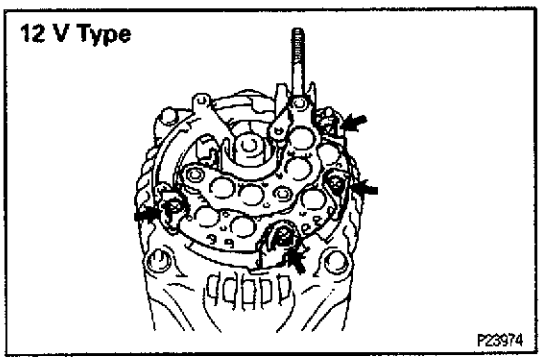


5. INSTALL RECTIFIER HOLDER

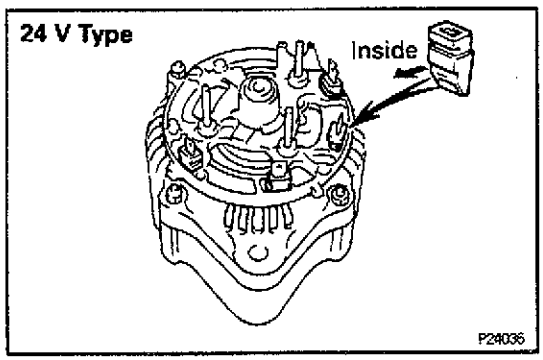
12 V Type:

(a) Run the 4 stator lead wires through the rectifier holder holes, and place the rectifier holder on the rectifier end frame.

(b) Using needle–nose pliers, bend the 4 stator lead wires as shown in the illustration.

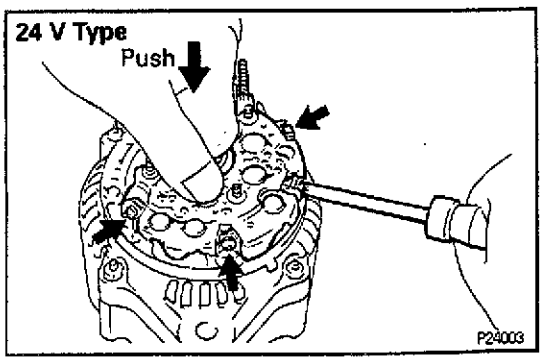


(c) Install the 4 screws.
Torque: 1.96 N·m (20 kgf·cm, 17 in.·lbf)

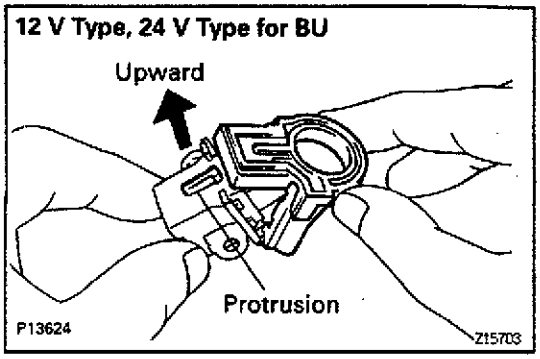


24 V Type:

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



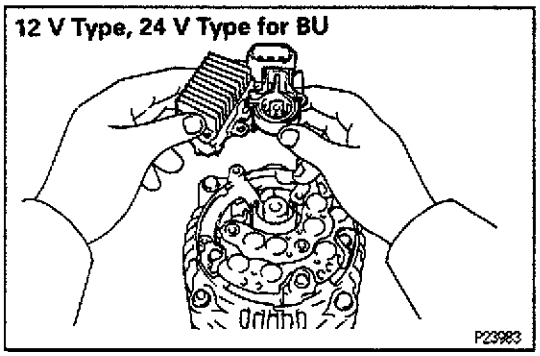
(b) Install the rectifier holder while pushing it with the 4 screws.
Torque:
BB
2.94 N·m (30 kgf·cm, 26 in.·lbf)
BU
1.96 N·m (20 kgf·cm, 17 in.·lbf)



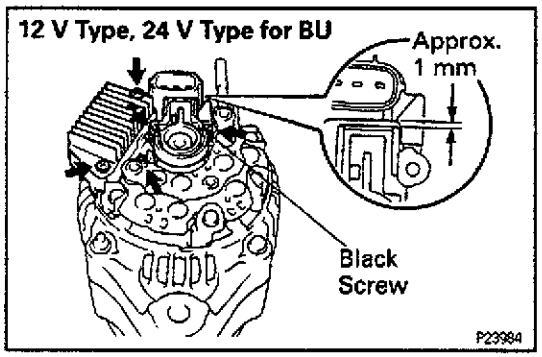
6. INSTALL IC REGULATOR AND BRUSH HOLDER

12 V Type, 24 V Type for BU:

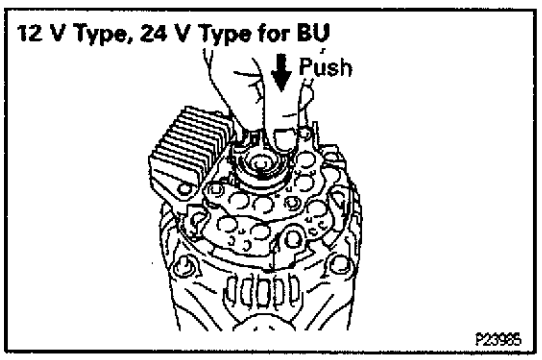
(a) Install the brush holder cover to the brush holder.
NOTICE: Be careful of the holder installation direction.



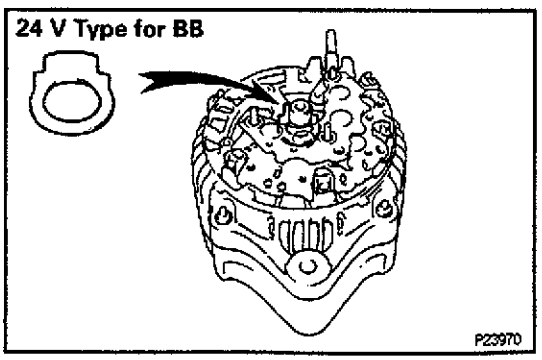
(b) Place the IC regulator together with the brush holder horizontally on the rectifier end frame.



(c) Install the 5 screws until there is a clearance of approx. 1 mm (0.04 in.) between the brush holder and IC regulator.
HINT (12 Type): Install the black screw to the position as shown in the illustration.
Torque: 1.96 N·m (20 kgf·cm, 17 in.·lbf)

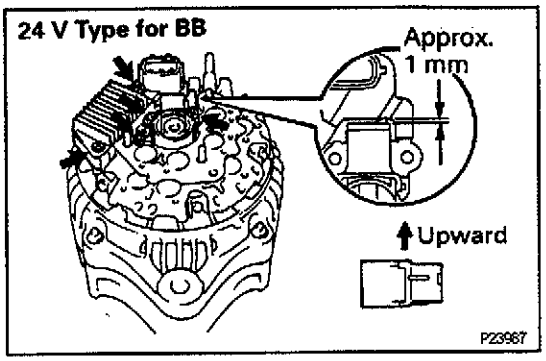


(d) Fit the brush holder cover.



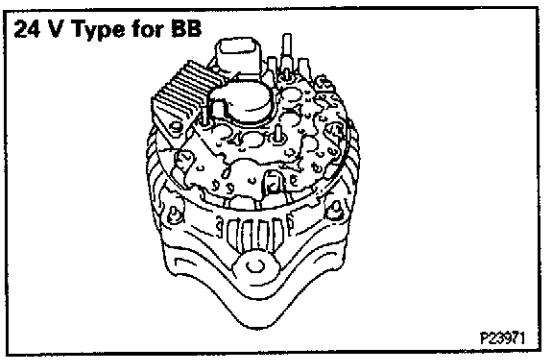
24 V Type for BB:

(a) Place the seal plate on the rectifier end frame.

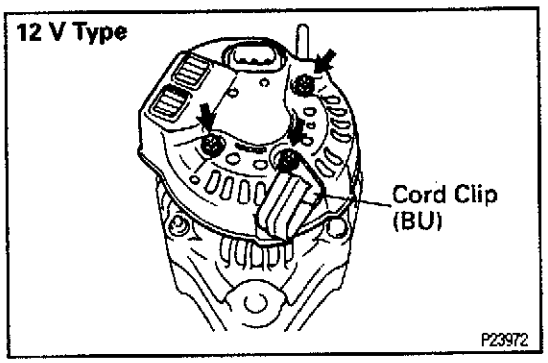


(b) Place the IC regulator and brush holder on the rectifier end frame.
NOTICE: Be careful of the holder installation direction.

(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: 1.96 N·m (20 kgf·cm, 17 in.·lbf)



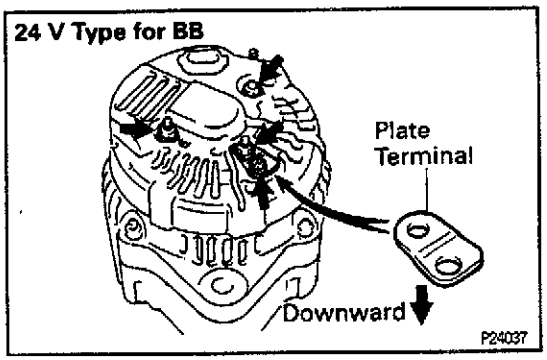
(d) Place the brush holder cover on the brush holder.



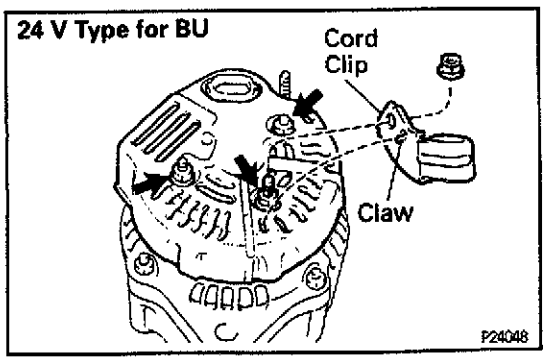
7. INSTALL REAR END COVERS

(a) 12 V Type for BB:
Install the rear end cover with the 3 bolts.
Torque: 2.6 N·m (26.5 kgf·cm, 23 in.·lbf)

(b) 12 V Type for BU:
Install the rear end cover and cord clip with the 3 bolts.
Torque: 2.6 N·m (26.5 kgf·cm, 23 in.·lbf)



(c) 24 V Type for BB:
Install the rear end cover and plate terminal with the bolt and 3 nuts.
Torque:
Nut
4.4 N·m (45 kgf·cm, 39 in.·lbf)
Bolt
3.85 N·m (39 kgf·cm, 34 in.·lbf)



(d) 24 V Type for BU:
Install the rear end cover with the 3 nuts.
Torque: 4.4 N·m (45 kgf·cm, 39 in.·lbf)

(e) 24 V Type for BU:
Align the cord clip claw with position A of the end cover hole, and install the cord clip with the nut.
Torque: 6.1 N·m (62.5 kgf·cm, 54 in.·lbf)