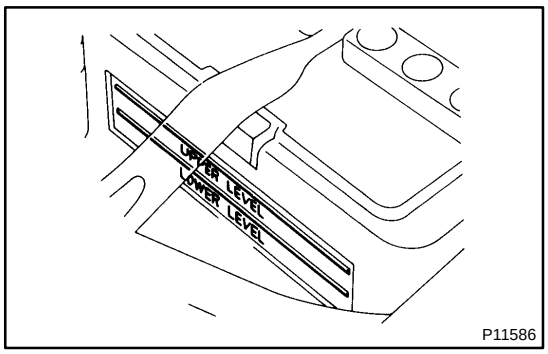
CH03L-01

ON-VEHICLE INSPECTION



1. CHECK BATTERY ELECTROLYTE LEVEL

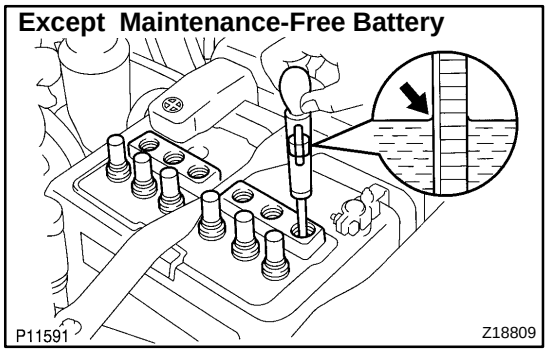
Check the electrolyte quantity of each cell.

Maintenance-Free Battery:

If under the lower level, replace the battery (or add distilled water if possible). Check the charging system.

Except Maintenance-Free Battery:

If under the lower level, add distilled water.

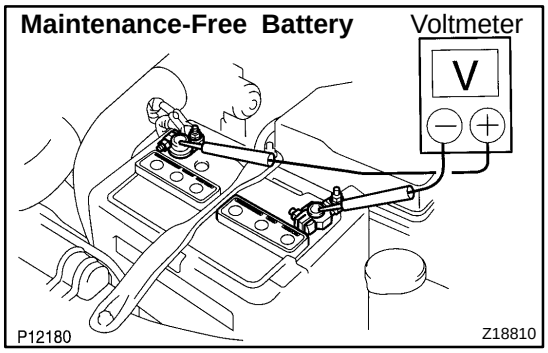


2. Except Maintenance-Free Battery: CHECK BATTERY SPECIFIC GRAVITY

Check the specific gravity of each cell.

Standard specific gravity: 1.25 - 1.29 at 20˚C (68˚F)

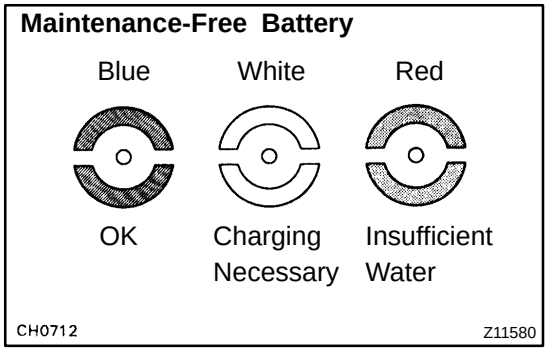
If the specific gravity is less than specification, charge the battery.



3. Maintenance-Free Battery: CHECK BATTERY POSITIVE VOLTAGE

(a) After having driven the vehicle and in the case that 20 minutes have not passed after having stopped the engine, turn the ignition switch ON and turn on the electrical system (headlight, blower motor, rear defogger etc.) for 60 seconds to remove the surface charge.

(b) Turn the ignition switch OFF and turn off the electrical systems.



(c) Measure the battery positive voltage between the negative (-) and positive (+) terminals of the battery.

Standard voltage: 12.5 - 12.9 V at 20˚C (68˚F)

If the voltage is less than specification, charge the battery.

HINT:

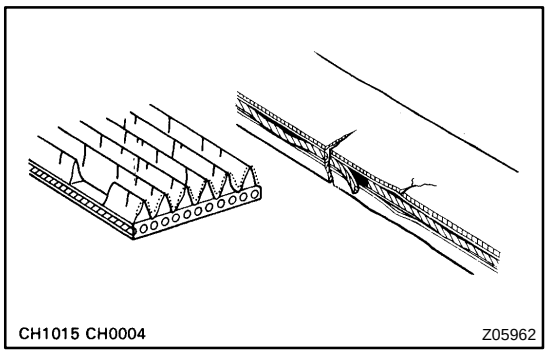
Check the indicator as shown in the illustration.

4. CHECK BATTERY TERMINALS AND FUSES

(a) Check that the battery terminals are not loose or corroded.

If the terminals are corroded, clean the terminals.

(b) Check the fuses for continuity.



5. INSPECT DRIVE BELT

HINT:

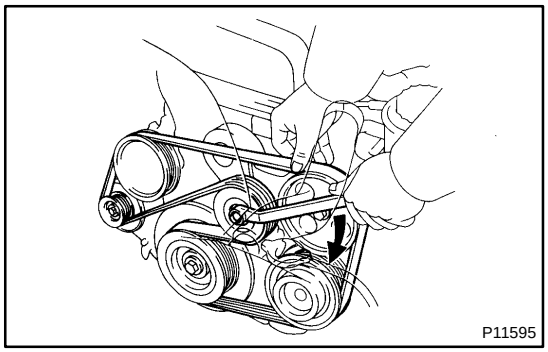
A belt tensioner is used, so checking the belt tension is not necessary.

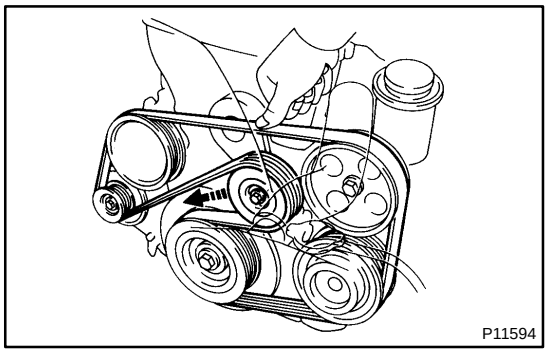
(a) Visually check the drive belt for excessive wear, frayed cords, etc.

If necessary, replace the drive belt.

HINT:

- Cracks on the rib side of a drive belt are considered acceptable. If the drive belt has chunks missing from the ribs, it should be replaced.
- The drive belt tension can be released by turning the belt tensioner clockwise.

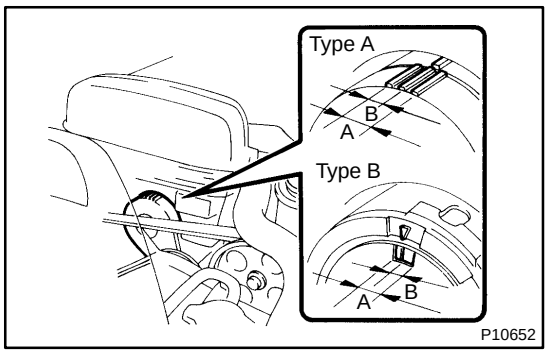




(b) Check the belt tensioner operation.

- Check that the belt tensioner moves downward when the drive belt is pressed down at the points indicated in the illustration with approx. 98 N (10 kgf, 22.0 lbf) of force.
- Check the alignment of the belt tensioner pulley to make sure the drive belt will not slip off the pulley.

If necessary, replace the belt tensioner.

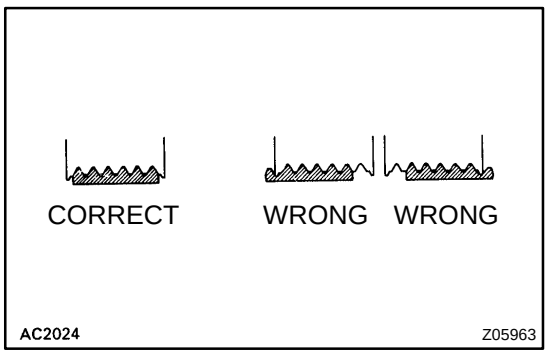


- Check that the arrow mark on the belt tensioner falls within area A of the scale.

If it is outside area A, replace the drive belt.

HINT:

- When a new belt is installed, it should lie within area B. If not, the drive belt is not correct.



- After installing a drive belt, check that it fits properly in the ribbed grooves.
- Check by hand to confirm that the belt has not slipped out of the groove on the bottom of the pulley.

6. REMOVE ENGINE UNDER COVER

7. VISUALLY CHECK GENERATOR WIRING AND LISTEN FOR ABNORMAL NOISES

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

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

8. CHECK CHARGE WARNING LIGHT CIRCUIT

(a) Warm up the engine and then turn it off.

(b) Turn off all accessories.

(c) Turn the ignition switch "ON". Check that the charge warning light is lit.

(d) Start the engine. Check that the light goes off.

If the light does not go off as specified, troubleshoot the charge light circuit.

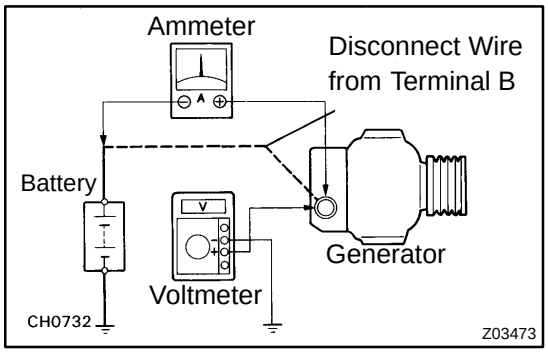
9. INSPECT CHARGING CIRCUIT WITHOUT LOAD

HINT:

If a battery/generator tester is available, connect the tester to the charging circuit as per manufacturer's instructions.

(a) If a tester is not available, connect a voltmeter and ammeter to the charging circuit as follows:

- Disconnect the wire from terminal B of the generator, and connect it to the negative (-) probe of the ammeter.
- Connect the positive (+) probe of the ammeter to terminal B of the generator.
- Connect the positive (+) probe of the voltmeter to terminal B of the generator.
- Ground the negative (-) probe of the voltmeter.



(b) Check the charging circuit as follows:

With the engine running from idling to 2,000 rpm, check the reading on the ammeter and voltmeter.

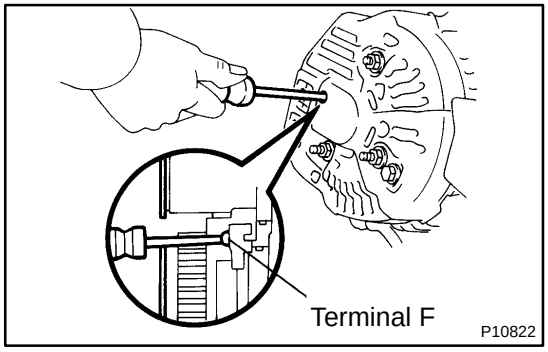
Standard amperage: 10 A or less

Standard voltage: 13.2 - 14.8 V

If the voltmeter reading is more than standard voltage, replace the voltage regulator.

If the voltmeter reading is less than standard voltage, check the voltage regulator and generator as follows:

- With terminal F grounded, start the engine and check the voltmeter reading of terminal B.
- If the voltmeter reading is more than standard voltage, replace the voltage regulator.
- If the voltmeter reading is less than standard voltage, check the generator.



10. 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: 30 A or more

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

HINT:

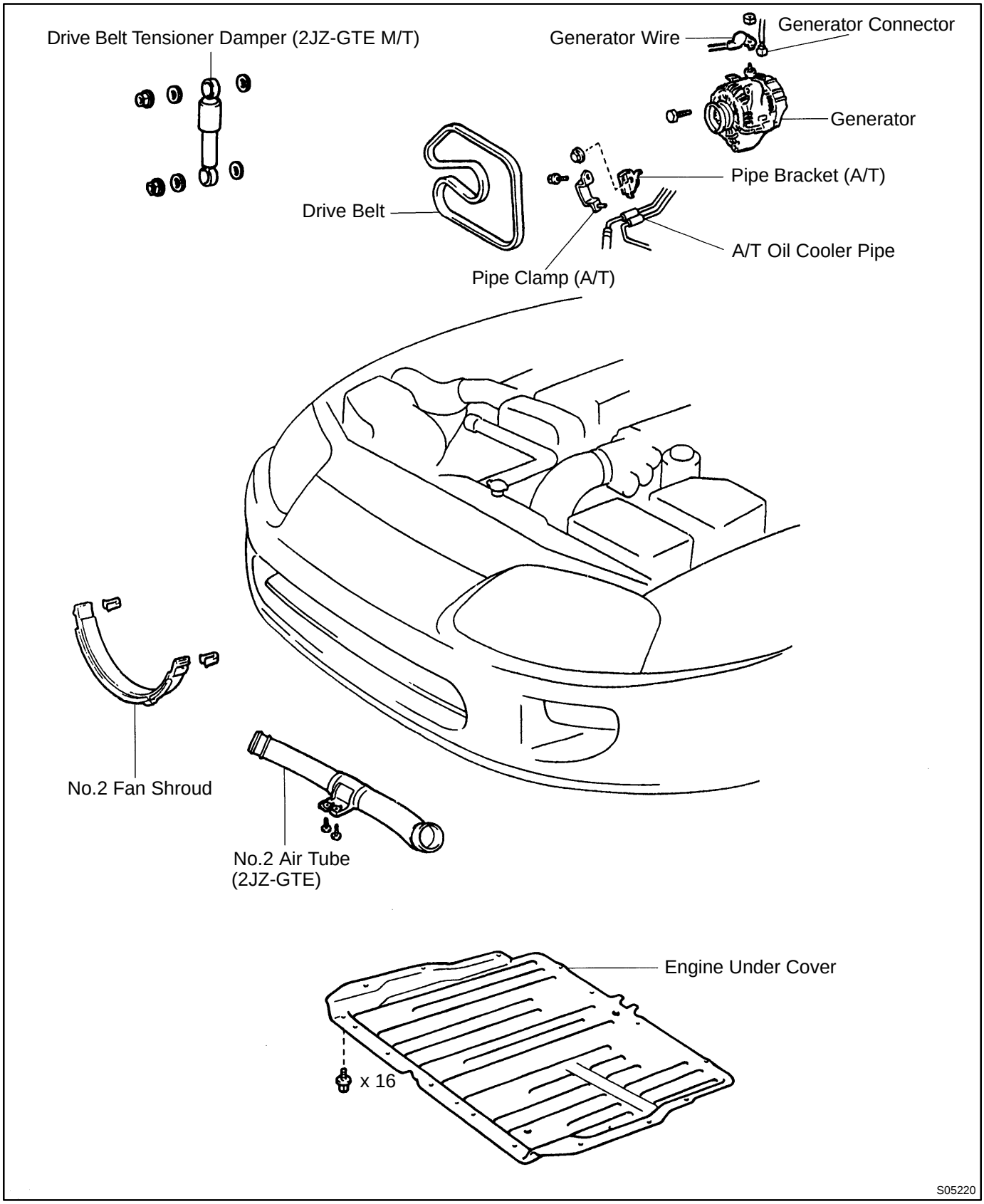
If the battery is fully charged the indication will sometimes be less than standard amperage.

11. REINSTALL ENGINE UNDER COVER

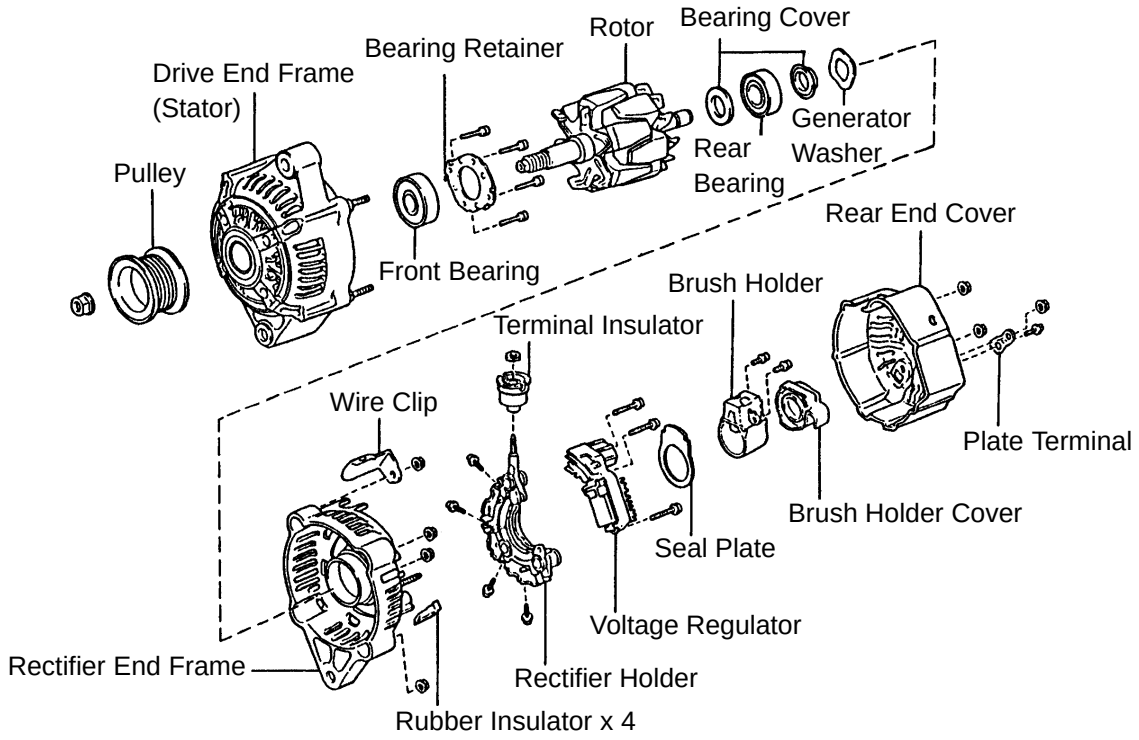
GENERATOR

COMPONENTS

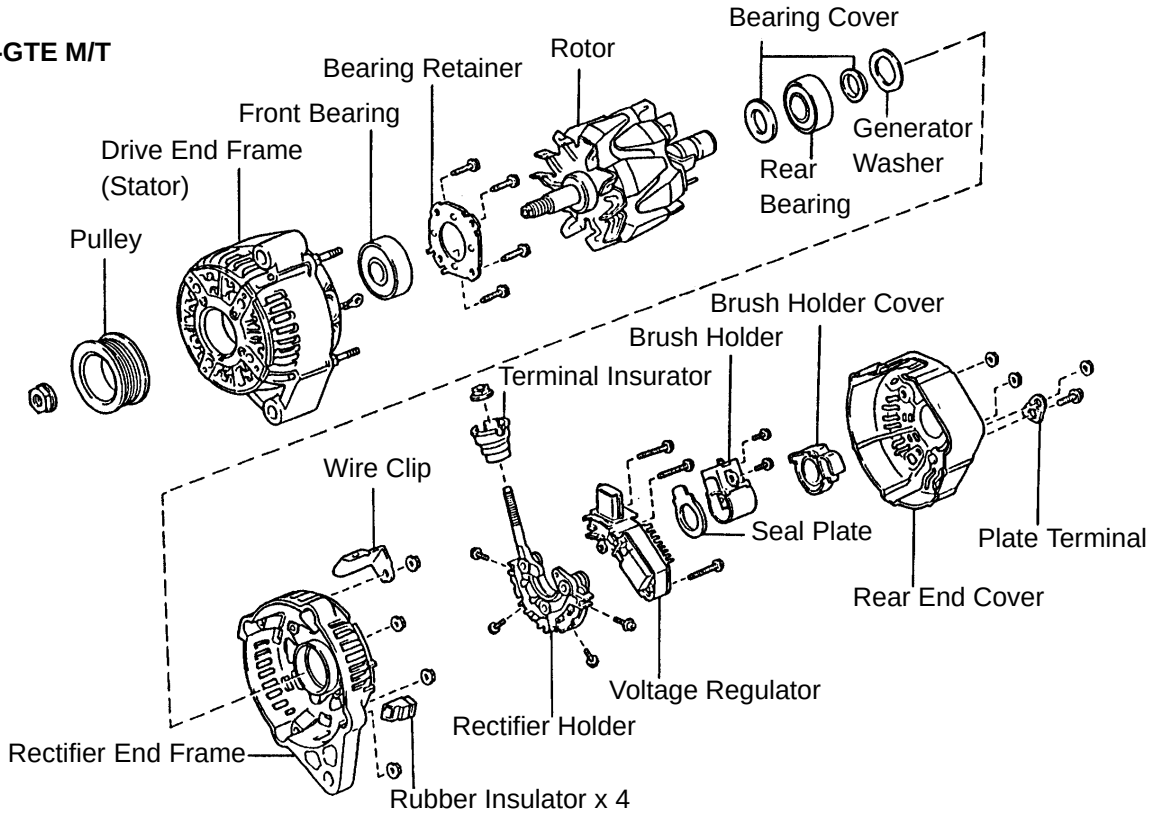
CH03M-01



2JZ-GTE M/T



Except 2JZ-GTE M/T



P19044

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CH03N-01

REMOVAL

1. REMOVE ENGINE UNDER COVER

2. 2JZ-GTE:
REMOVE NO.2 AIR TUBE FOR CAC

3. REMOVE NO.2 FAN SHROUD

4. 2JZ-GTE M/T:
REMOVE DRIVE BELT TENSIONER DAMPER
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

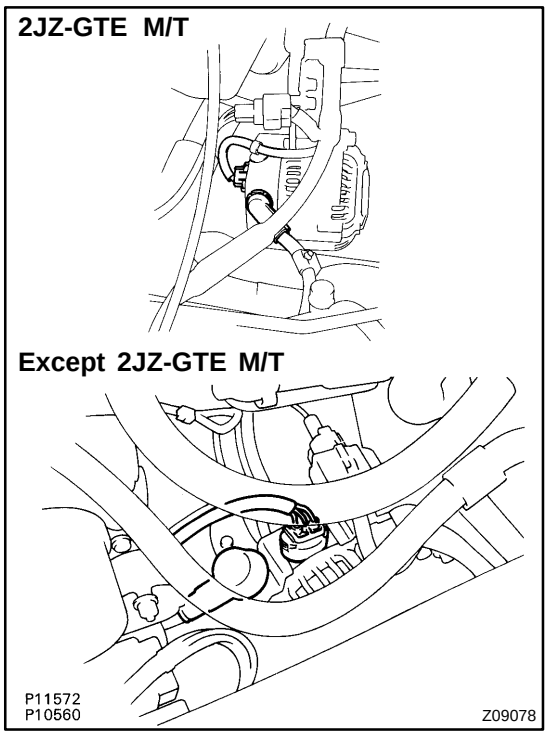
5. REMOVE DRIVE BELT

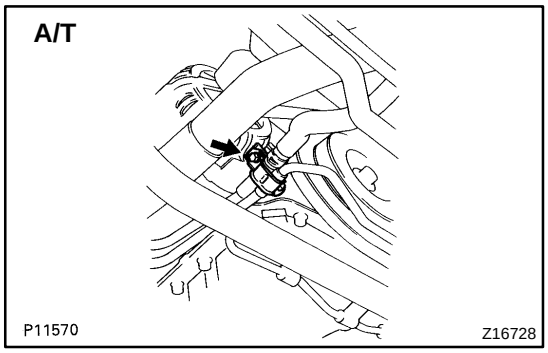
6. REMOVE GENERATOR

(a) Disconnect the generator connector.

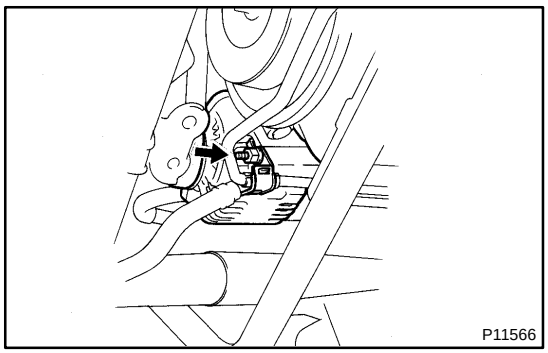
(b) Remove the rubber cap and nut, and disconnect the generator wire.

(c) Disconnect the generator wire clamp from the wire clip on the generator.





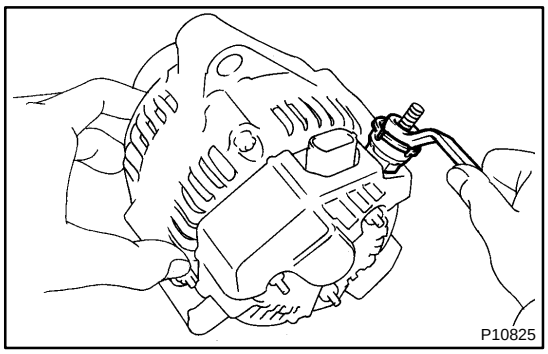
(d) A/T:
Remove the bolt and pipe clamp, and disconnect the 2 oil cooler pipes from the generator.



(e) Remove the bolt, nut, pipe bracket and generator.
Torque: 40 N·m (400 kgf·cm, 30 ft·lbf)

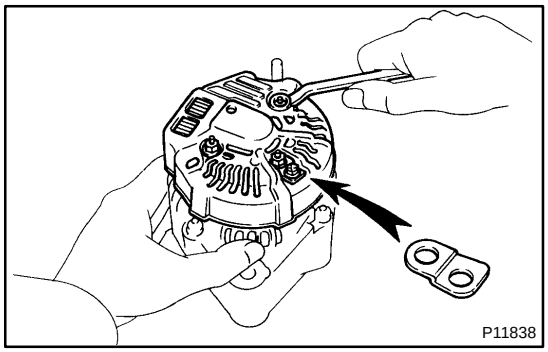
CH03S-01

DISASSEMBLY

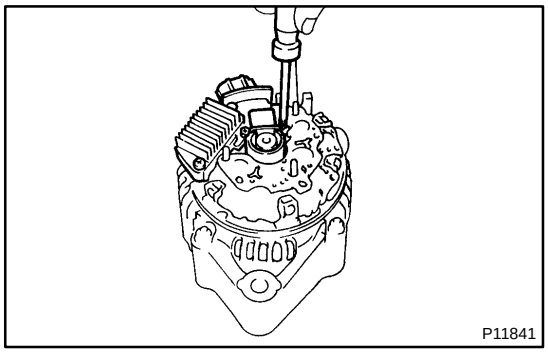


1. REMOVE REAR END COVER

(a) Remove the nut and terminal insulator.

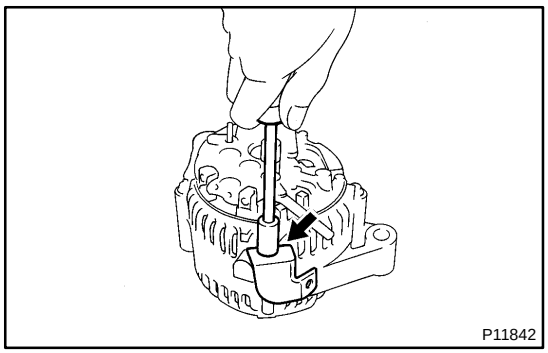


(b) Remove the bolt, 3 nuts, plate terminal and end cover.



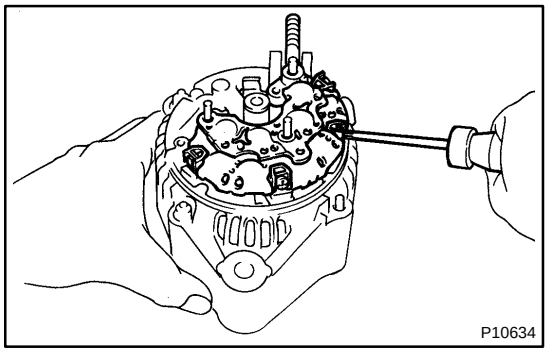
2. REMOVE BRUSH HOLDER AND VOLTAGE REGULATOR

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



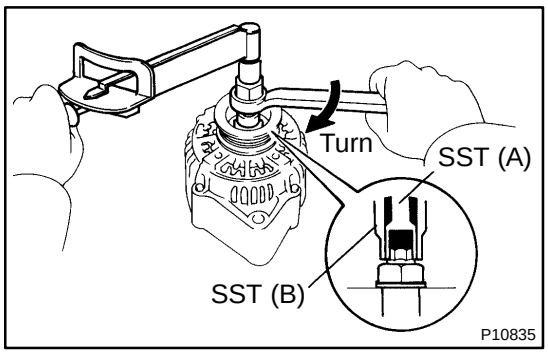
3. REMOVE WIRE CLIP

Remove the nut and wire clip.



4. REMOVE RECTIFIER HOLDER

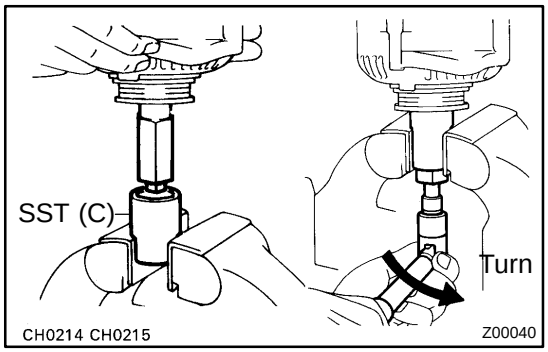
(a) Remove the 4 screws and rectifier holder.
(b) Remove the 4 rubber insulators.



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.

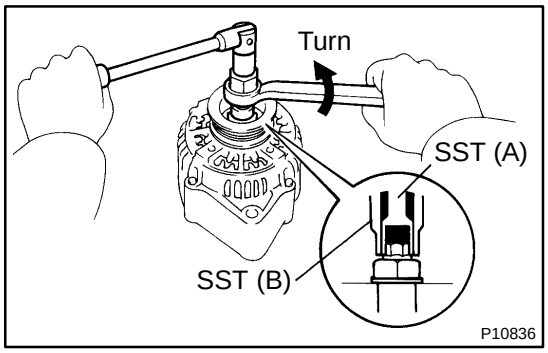
(d) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).

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

NOTICE:

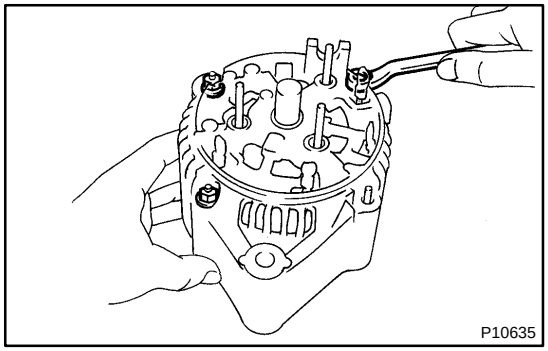
To prevent damage to the rotor shaft, do not loosen the pulley nut more than one-half of a turn.

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



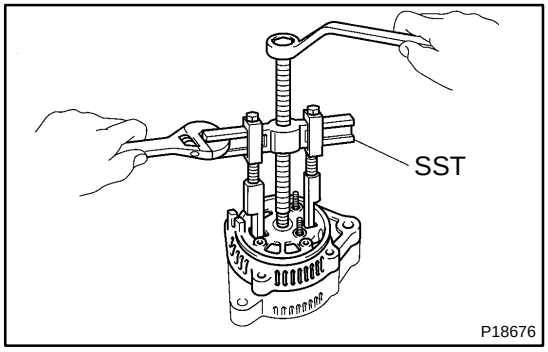
(g) Turn SST (B), and remove SST (A and B).

(h) Remove the pulley nut and pulley.



6. REMOVE RECTIFIER END FRAME

(a) Remove the 3 nuts.



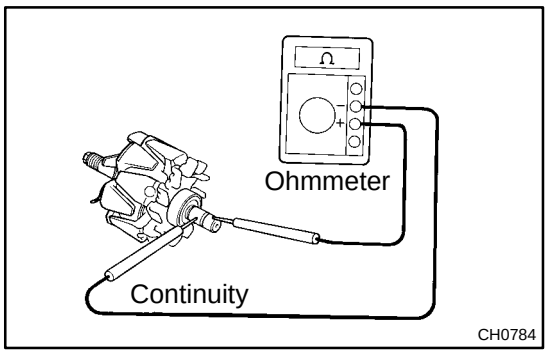
(b) Using SST, remove the rectifier end frame.
SST 09950-40010

(c) Remove the generator washer.

7. REMOVE ROTOR FROM DRIVE END FRAME

CH03O-01

INSPECTION

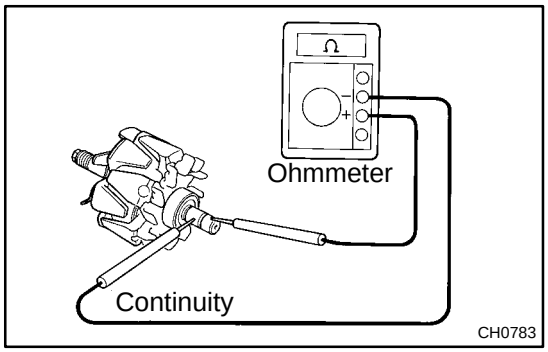


1. INSPECT ROTOR FOR OPEN CIRCUIT

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

Standard resistance: 2.7 - 3.1 Ω at 20˚C (68˚F)

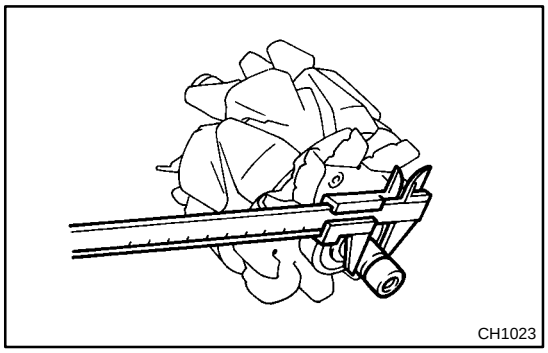
If there is no continuity, replace the rotor.



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

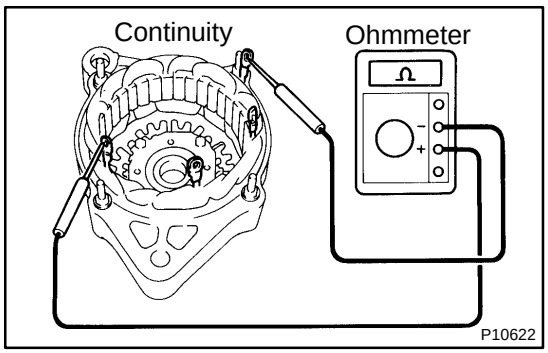
(a) Check that the slip rings are not rough or scored.

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.)

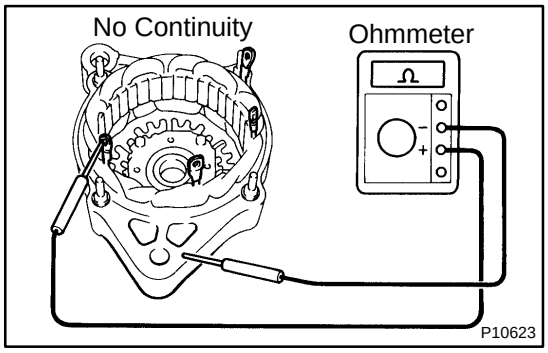
If the diameter is less than minimum, replace the rotor.



4. INSPECT STATOR FOR OPEN CIRCUIT

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

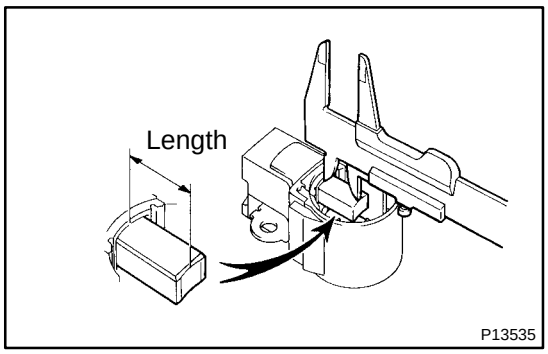
If there is no continuity, replace the drive end frame assembly.



5. 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.

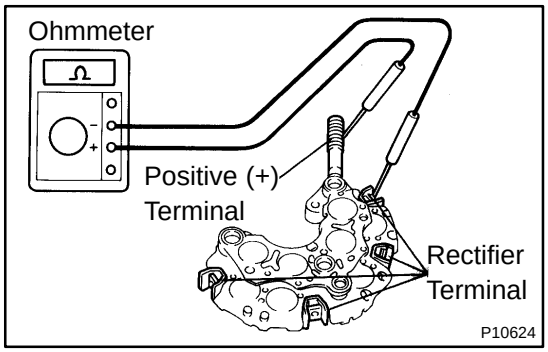


6. INSPECT EXPOSED BRUSH LENGTH

Using a vernier caliper, measure the exposed length.

Standard exposed length:
9.5 - 11.5 mm (0.347 - 0.453 in.)
Minimum exposed length:
1.5 mm (0.059 in.)

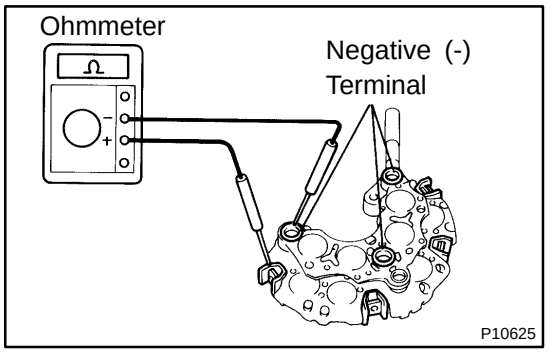
If the exposed length is less than minimum, replace the brush holder.



7. 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.



8. 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.

9. INSPECT FRONT BEARING

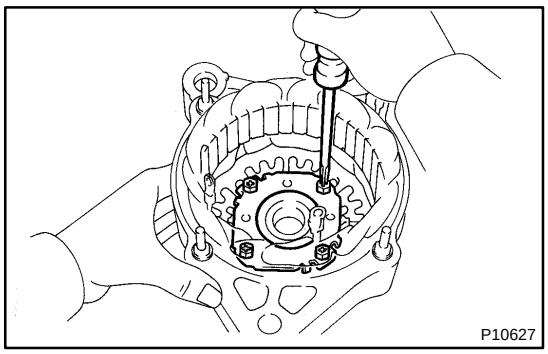
Check that the bearing is not rough or worn.

10. INSPECT REAR BEARING

Check that the bearing is not rough or worn.

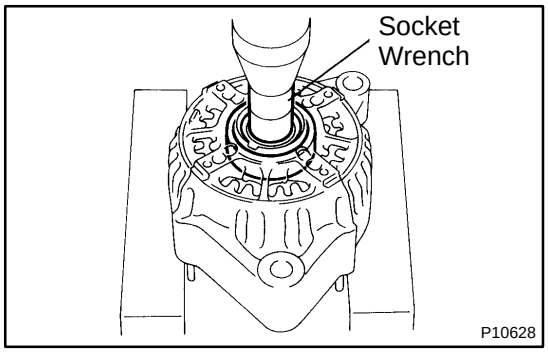
CH03P-02

REPLACEMENT


P10627

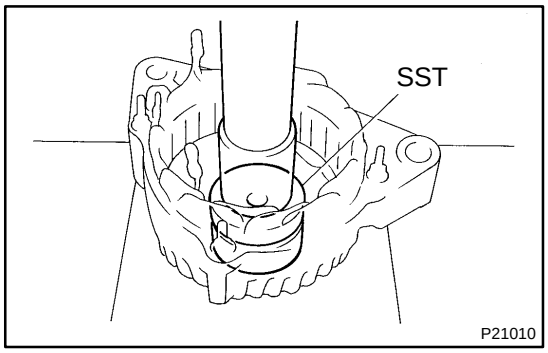
1. REPLACE FRONT BEARING

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



P10628

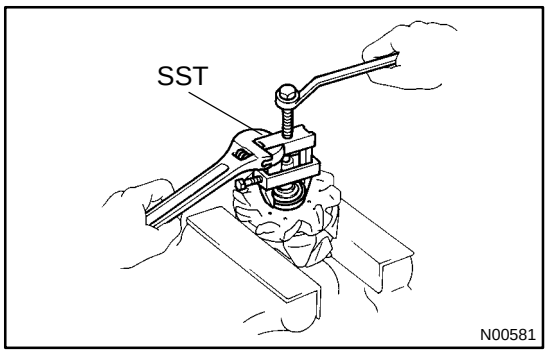
(b) Using a socket wrench and press, press out the bearing.



P21010

(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: 3.0 N·m (31 kgf·cm, 27 in.·lbf)



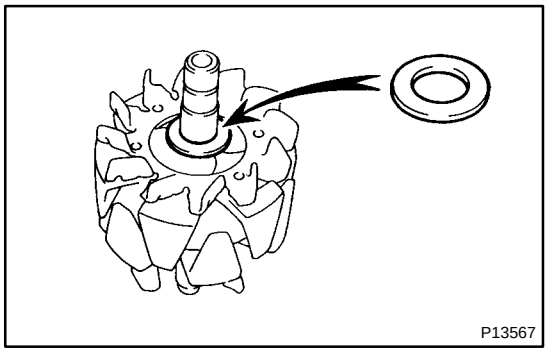
N00581

2. REPLACE REAR BEARING

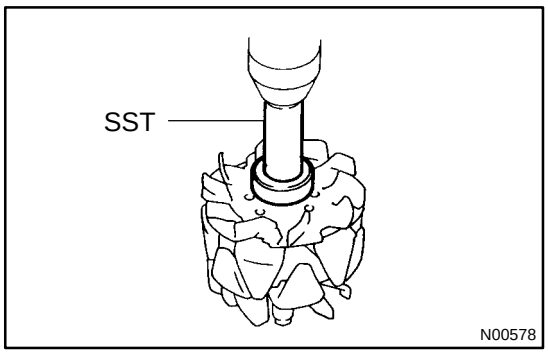
(a) Using SST, remove the bearing cover (outside) and bearing.
SST 09820-00021

NOTICE:
Be careful not to damage the fan.

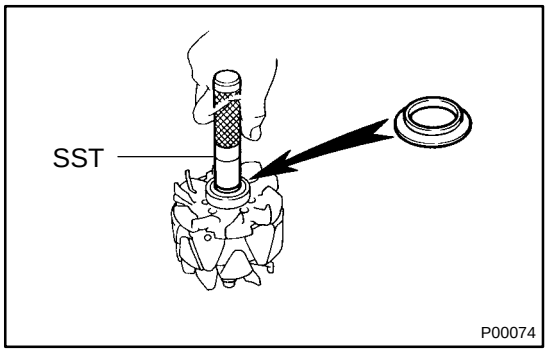
(b) Remove the beating cover (inside).


P13567

(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

CH03Q-01

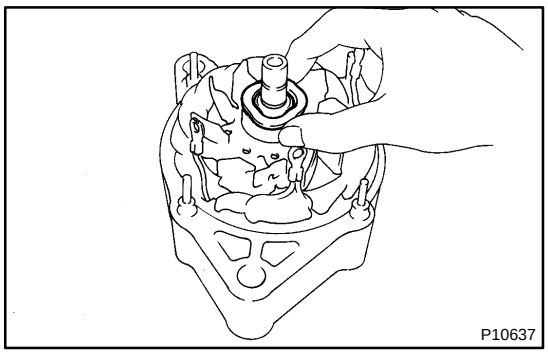
REASSEMBLY

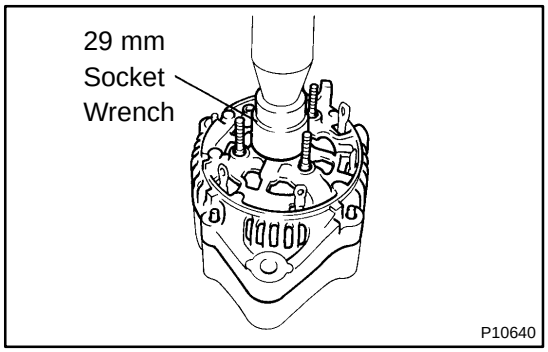
1. PLACE DRIVE END FRAME ON PULLEY

2. INSTALL ROTOR TO DRIVE END FRAME

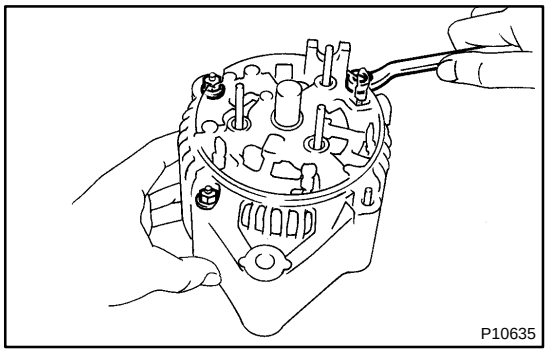
3. INSTALL RECTIFIER END FRAME

(a) Place the generator washer on the rotor.

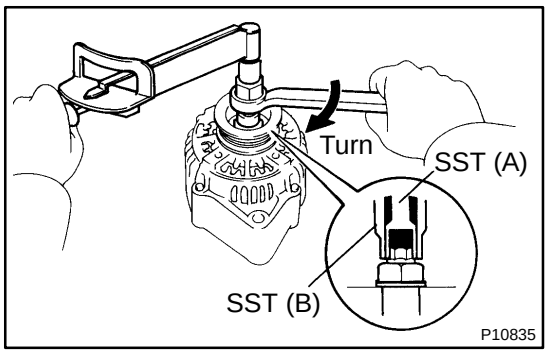




(b) Using a 29 mm socket wrench and press, slowly press in the rectifier end frame.



(c) Install the 3 nuts.
Torque: 4.5 N·m (46 kgf·cm, 40 in.·lbf)

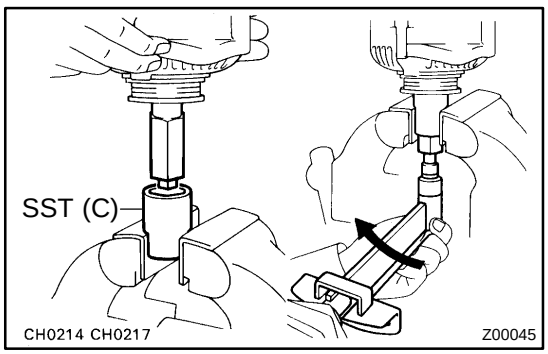


4. INSTALL PULLEY

(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.

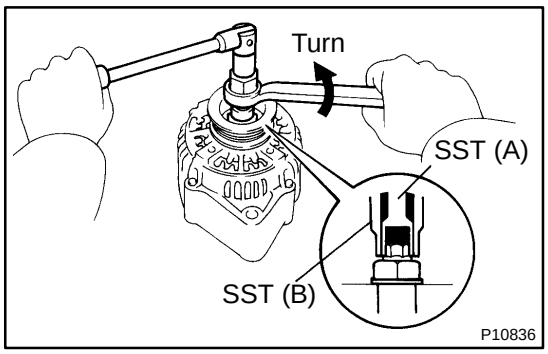


(d) Mount SST (C) in a vise.

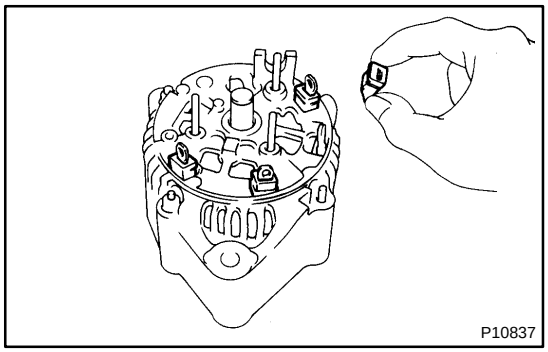
(e) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).

(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, 81 ft·lbf)

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

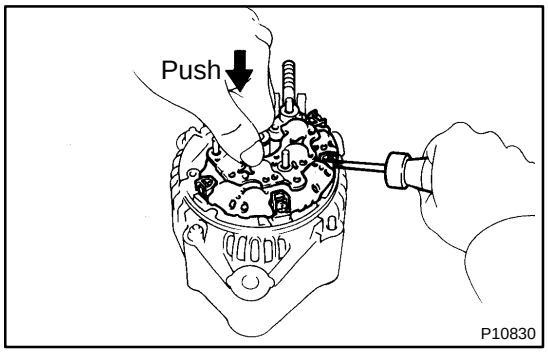


(h) Turn SST (B), and remove SST (A and B).



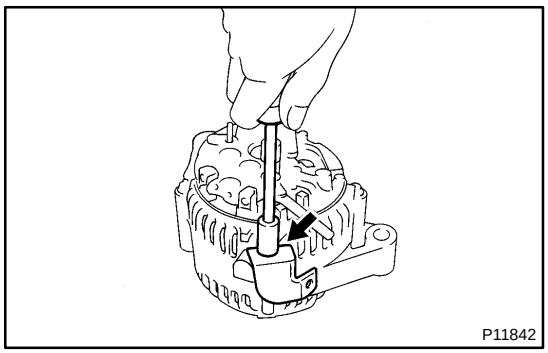
5. INSTALL RECTIFIER HOLDER

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



(b) Install the rectifier holder while pushing it with the 4 screws.

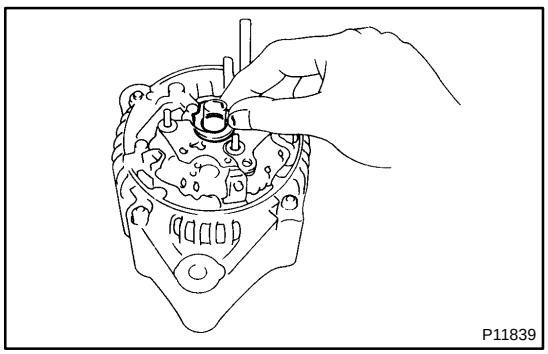
Torque: 2.9 N·m (30 kgf·cm, 26 in.·lbf)



6. INSTALL WIRE CLIP

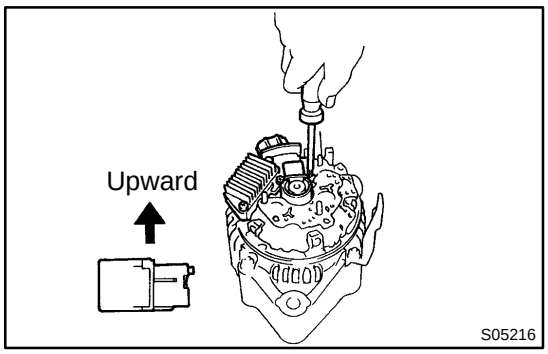
Install the wire clip with the nut.

Torque: 5.4 N·m (55 kgf·cm, 48 in.·lbf)



7. INSTALL VOLTAGE REGULATOR AND BRUSH HOLDER

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

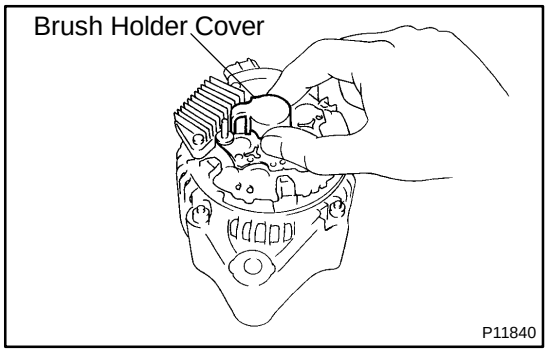


(b) Place the voltage regulator and brush holder on the rectifier end frame.

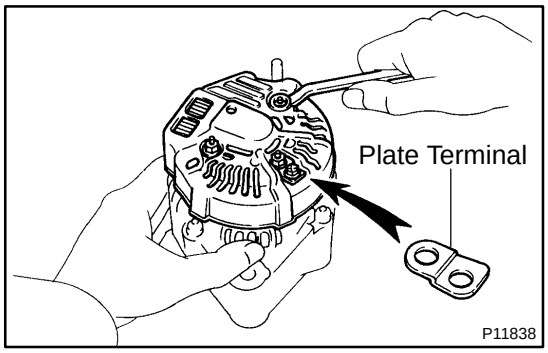
NOTICE:

Be careful of the holder installation direction.

(c) Install the 5 screws.
Torque: 2.0 N·m (20 kgf·cm, 18 in.·lbf)



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



8. INSTALL REAR END COVER

(a) Install the end cover and plate terminal with the bolt and 3 nuts.
Torque:
Nut 4.4 N·m (45 kgf·cm, 39 in.·lbf)
Bolt 3.9 N·m (40 kgf·cm, 35 in.·lbf)

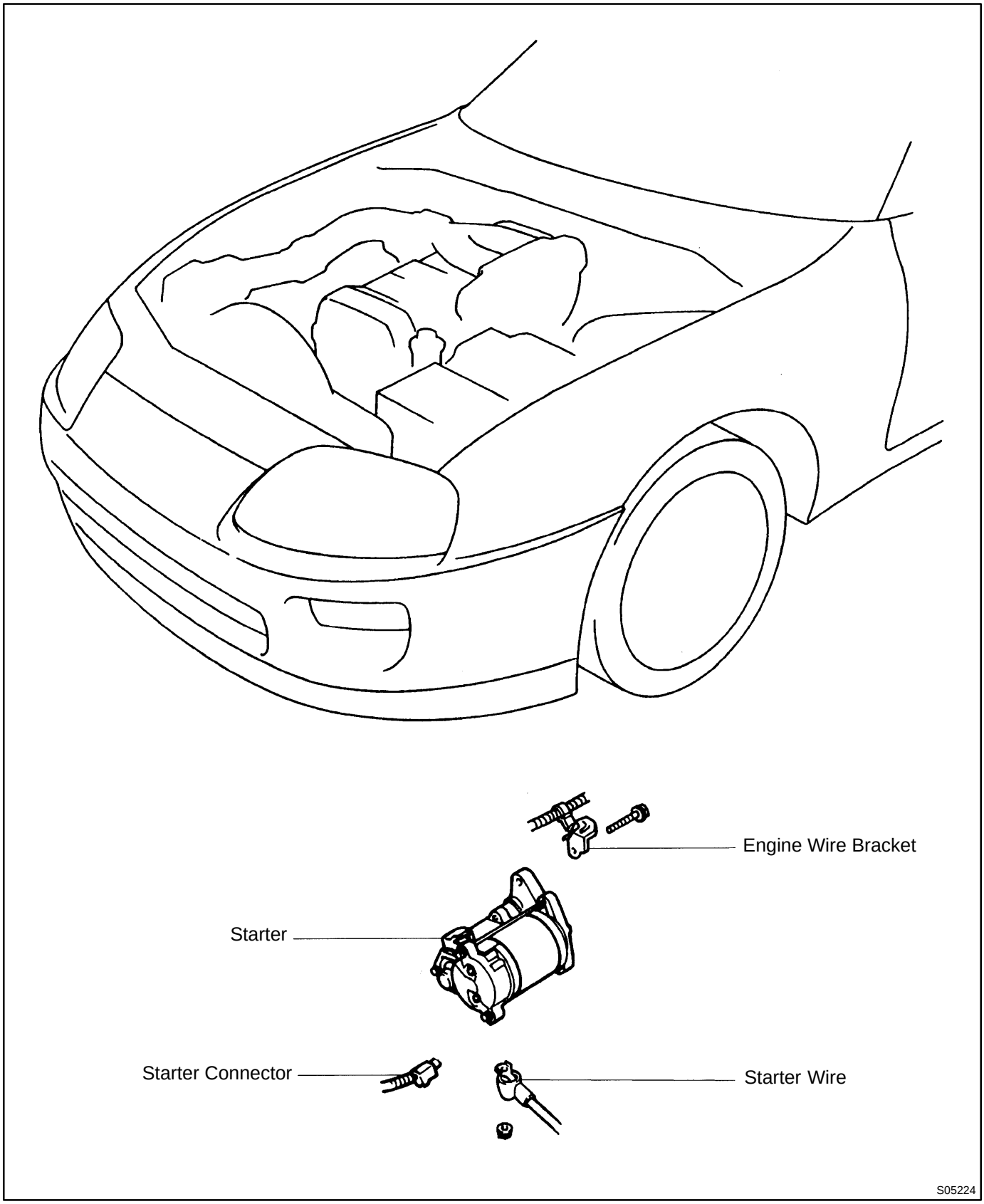
(b) Install the terminal insulator with the nut.
Torque: 6.5 N·m (67 kgf·cm, 58 in.·lbf)

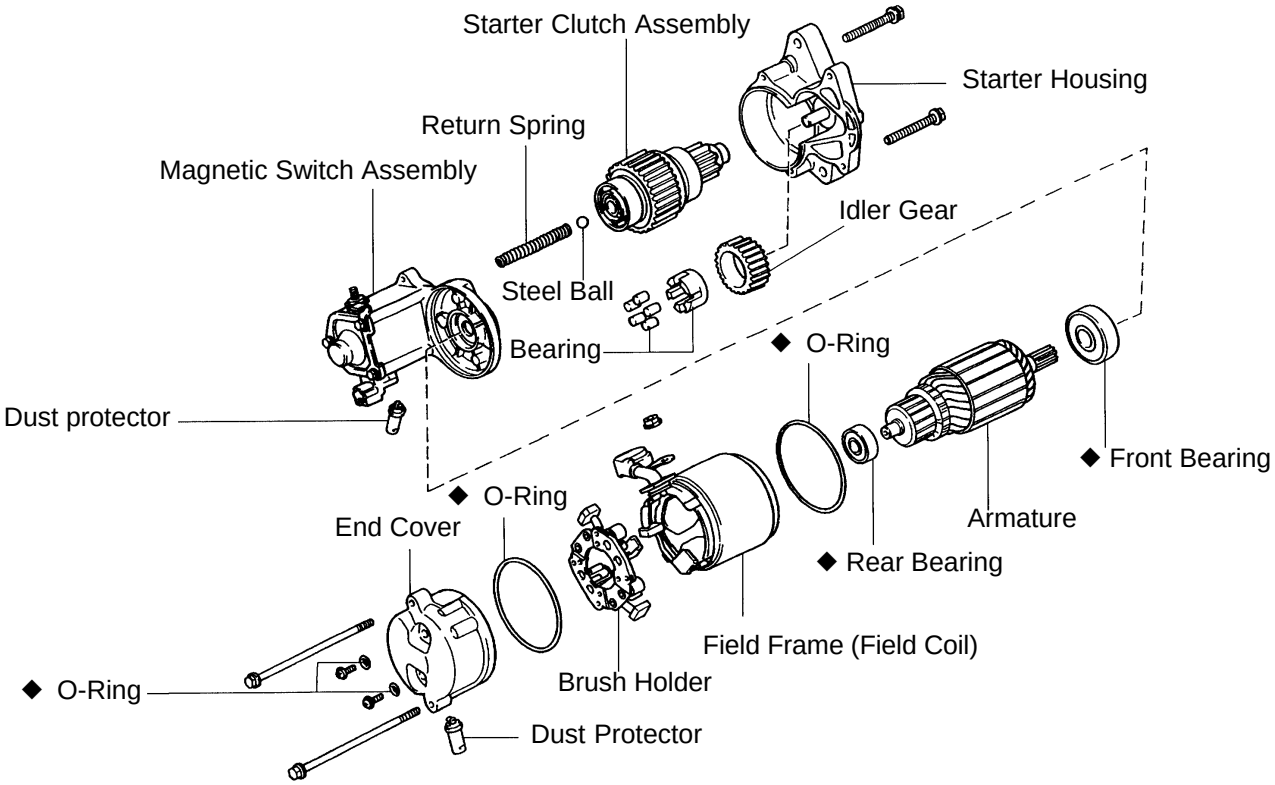
9. CHECK THAT ROTOR ROTATES SMOOTHLY

STARTER

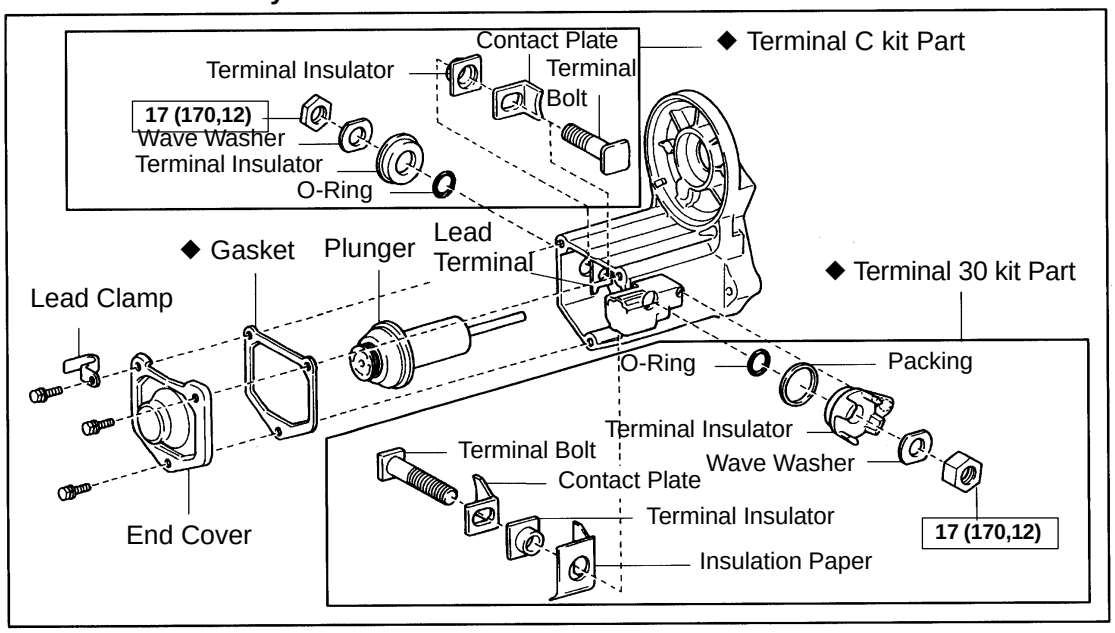
COMPONENTS

ST04C-02





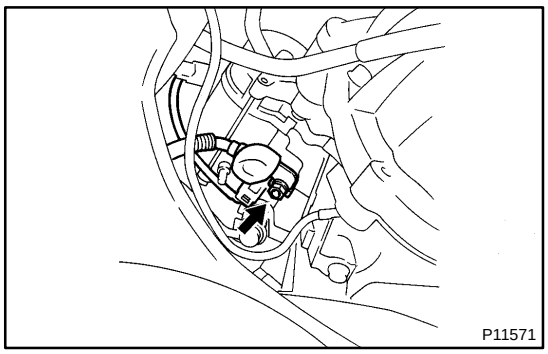
Magnetic Switch Assembly



N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part

Z18832

ST04D-01

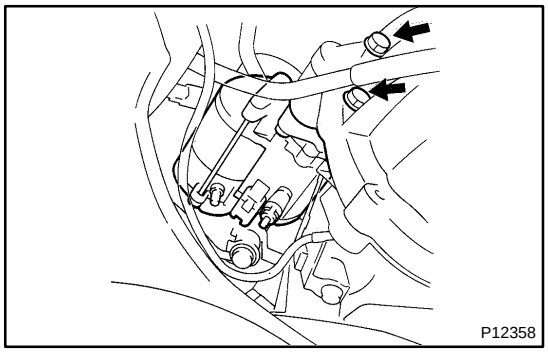


REMOVAL

REMOVE STARTER

(a) Remove the rubber cap and nut, and disconnect the starter wire.

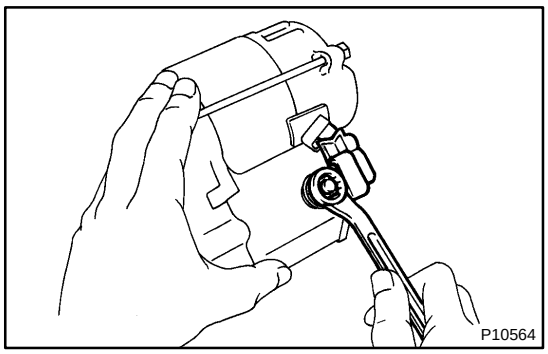
(b) Disconnect the starter connector.



(c) Remove the 2 bolts and starter.
Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

ST04E-01

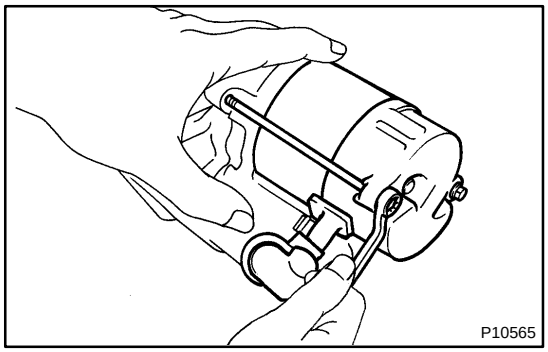
DISASSEMBLY



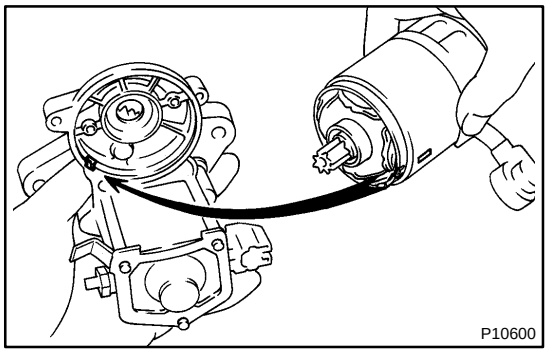
1. REMOVE DUST PROTECTOR

2. REMOVE FIELD FRAME AND ARMATURE

(a) Remove the nut, and disconnect the lead wire from the magnetic switch terminal.
Torque: 5.9 N·m (60 kgf·cm, 52 in.·lbf)



(b) Remove the 2 through bolts.
Torque: 5.9 N·m (60 kgf·cm, 52 in.·lbf)



(c) Pull out the field frame together with the armature.

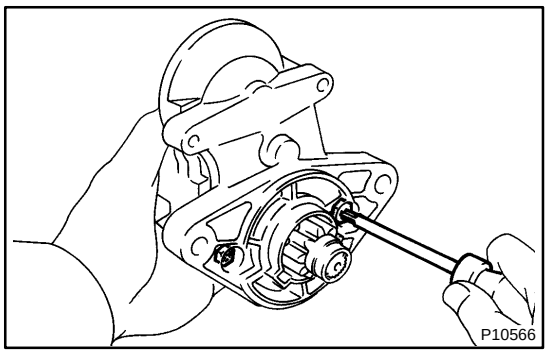
HINT:

Align the protrusion of the field frame with the groove of the magnetic switch.

(d) Remove the O-ring from the field frame.

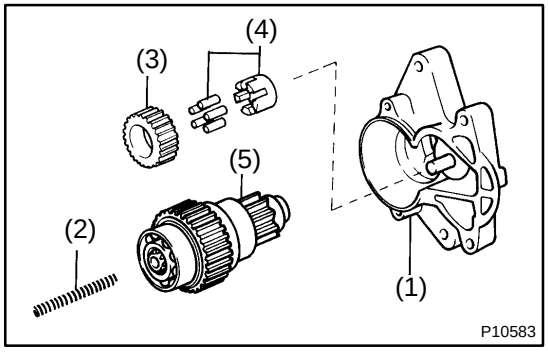
HINT:

At the time of installation, please refer to the following items. Use a new O-ring.

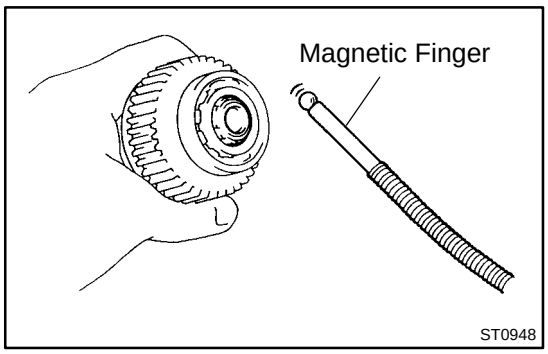


3. REMOVE STARTER HOUSING, CLUTCH ASSEMBLY AND GEAR

(a) Remove the 2 bolts.
Torque: 5.9 N·m (60 kgf·cm, 52 in.·lbf)

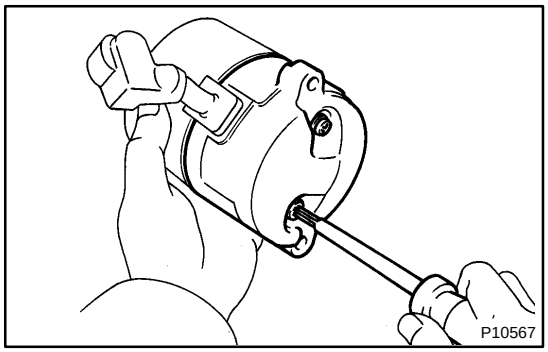


(b) Remove these parts from the magnetic switch:
(1) Starter housing
(2) Return spring
(3) Idler gear
(4) Bearing
(5) Clutch assembly



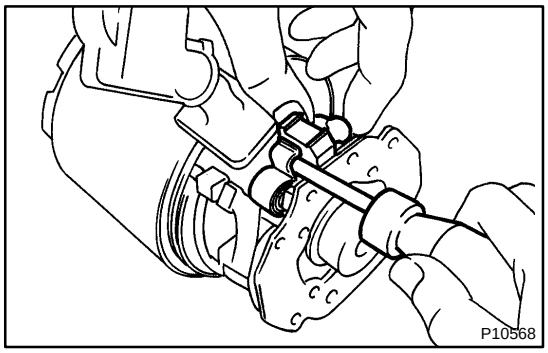
4. REMOVE STEEL BALL

Using a magnetic finger, remove the steel ball from the clutch shaft hole.



5. REMOVE BRUSH HOLDER

(a) Remove the 2 screws and end cover from the field frame.
Torque: 1.5 N·m (15 kgf·cm, 13 in.·lbf)



(b) Using a screwdriver, hold the spring back and disconnect the brush from the brush holder. Disconnect the 4 brushes, and remove the brush holder.

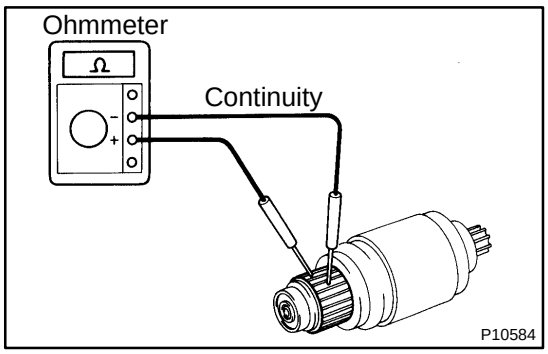
NOTICE:

Check that the positive (+) lead wires are not grounded.

6. REMOVE ARMATURE FROM FIELD FRAME

ST04F-01

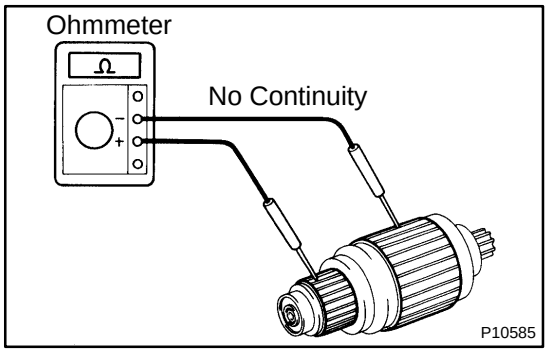
INSPECTION



1. INSPECT ARMATURE COIL

(a) Check the commutator for open circuit.
Using an ohmmeter, check that there is continuity between the segments of the commutator.

If there is no continuity between any segment, replace the armature.



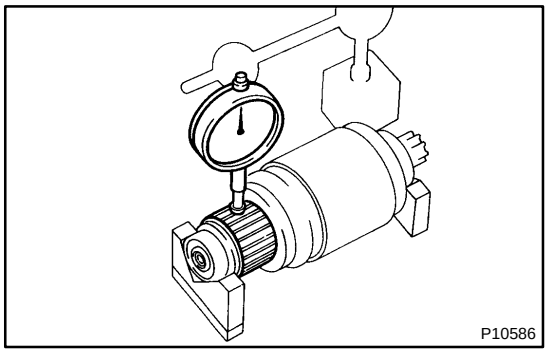
(b) Check the commutator for ground.
Using an ohmmeter, check that there is no continuity between the commutator and armature coil core.

If there is no continuity, replace the armature.

2. INSPECT COMMUTATOR

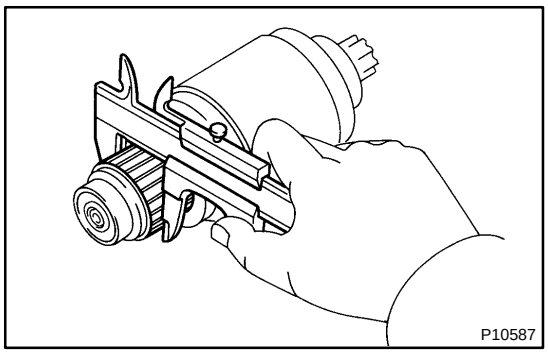
(a) Check the commutator for the dirty and burnt surfaces.

If the surface is dirty or burnt, correct it with sandpaper (No.400) or on a table.



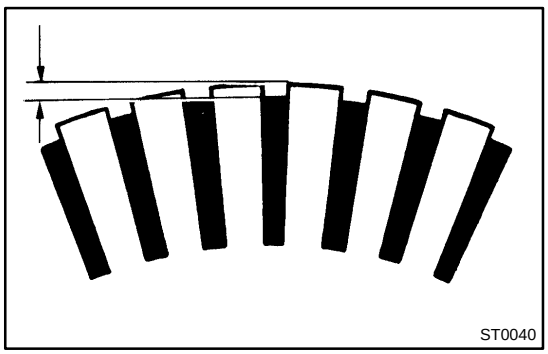
(b) Check for the commutator circle runout.
(1) Place the commutator on V-blocks.
(2) Using a dial gauge, measure the circle runout.
Maximum circle runout: 0.05 mm (0.0020 in.)

If the circle runout is greater than maximum, correct it on a lathe.



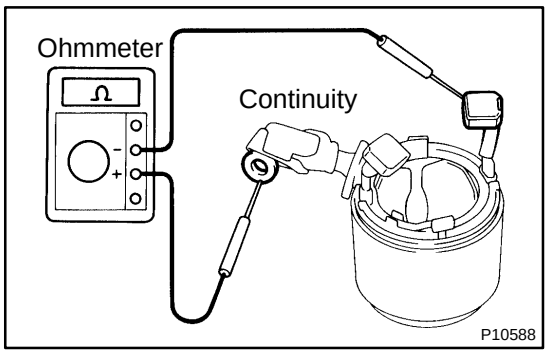
(c) Using a vernier caliper, measure the commutator diameter.
Standard diameter: 30.0 mm (1.181 in.)
Minimum diameter: 29.0 mm (1.412 in.)

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



(d) Check that the undercut depth is clean and free of foreign materials. Smooth out the edge.
Standard undercut depth: 0.6 mm (0.024 in.)
Minimum undercut depth: 0.2 mm (0.008 in.)

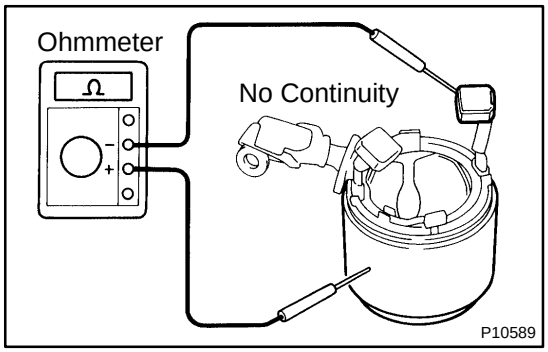
If the undercut depth is less than minimum, correct it with a hacksaw blade.



3. INSPECT FIELD COIL

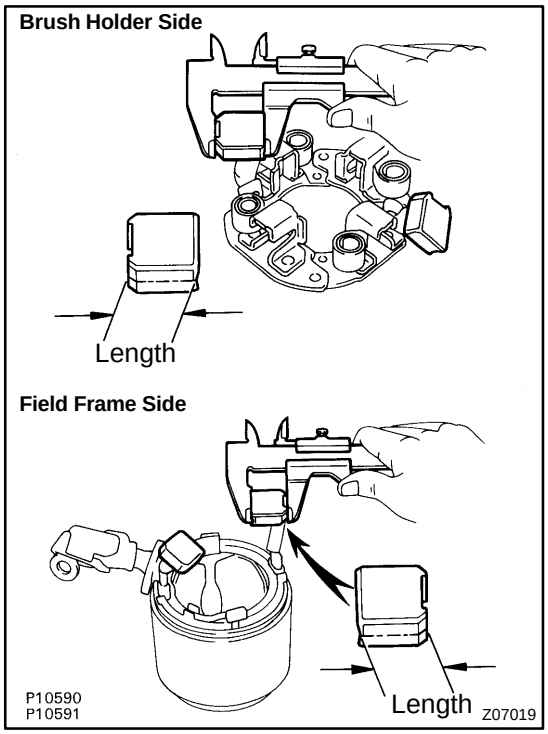
(a) Check the field coil for open circuit.
Using an ohmmeter, check that there is continuity between the lead wire and field coil brush lead.

If there is no continuity, replace the field frame.



(b) Check the field coil for ground.
Using an ohmmeter, check that there is no continuity between the field coil end and field frame.

If there is continuity, replace the field frame.

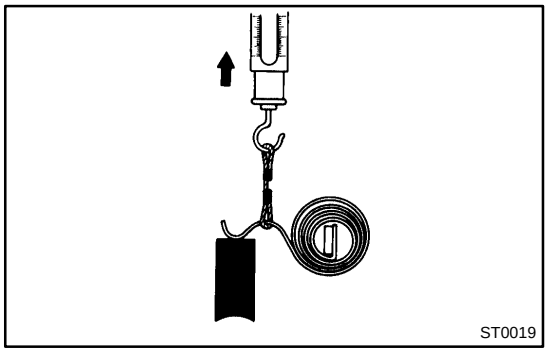


4. INSPECT BRUSHES

Using a vernier caliper, measure the brush length.

Standard length: 15.5 mm (0.610 in.)
Minimum length: 10.0 mm (0.394 in.)

If the length is less than minimum, replace the brush holder and field frame.

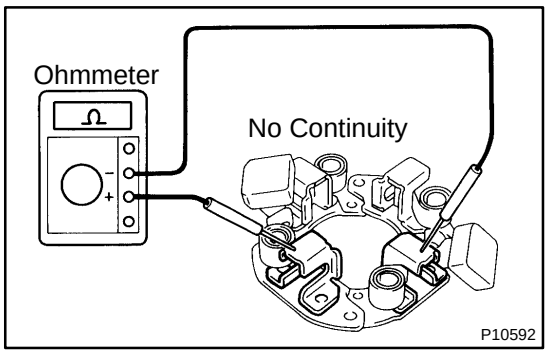


5. INSPECT BRUSH SPRINGS

Check the brush spring load. Take the pull scale reading the instant the brush spring separates from the brush.

Standard spring installed load:
17.6 - 23.5 N (1.8 - 2.4 kgf, 3.9 - 5.3 lbf)
Minimum spring installed load:
11.8 N (1.2 kgf, 2.6 lbf)

If the installed load is less than minimum, replace the brush springs.



6. INSPECT BRUSH HOLDER

Check the brush holder insulator. Using an ohmmeter, check that there is no continuity between the positive (+) and negative (-) brush holders.

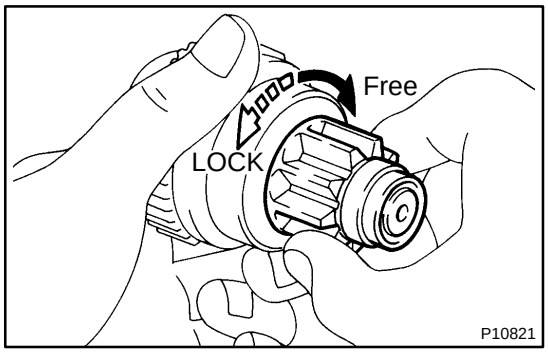
If there is continuity, repair or replace the brush holder.

7. INSPECT CLUTCH AND GEAR

(a) Check the gear teeth on the pinion gear, idle gear and the clutch assembly for wear or damage.

If damaged, replace the gear or clutch assembly.

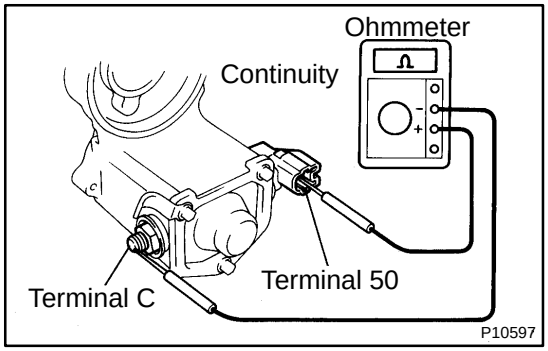
If damaged, also check the drive plate ring gear for wear or damage.



(b) Check the clutch pinion gear.

Rotate the pinion gear counterclockwise, and check that it turns freely. Try to rotate the pinion gear clockwise and check that it locks.

If necessary, replace the clutch assembly.

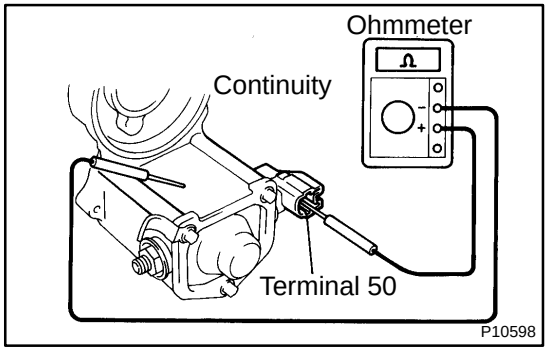


8. INSPECT MAGNETIC SWITCH

(a) Check the pull -in coil for open circuit.

Using an ohmmeter, check that there is continuity between terminals 50 and C.

If there is no continuity, check and replace the magnetic switch.



(b) Check the hold-in coil for open circuit.

Using an ohmmeter, check that there is continuity between terminal 50 and the switch body.

If there is no continuity, replace the magnetic switch.

9. INSPECT BEARING

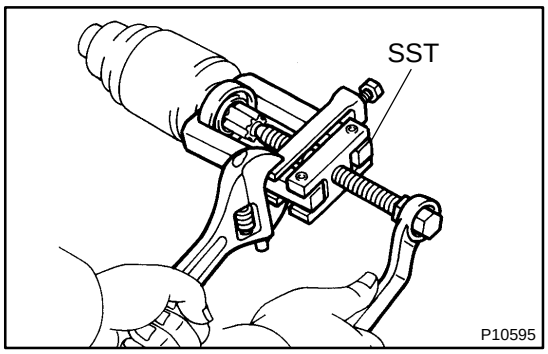
Turn the bearing by hand and while apply inward force.

If resistance is felt or bearing sticks, replace the bearing.

(See page ST-10)

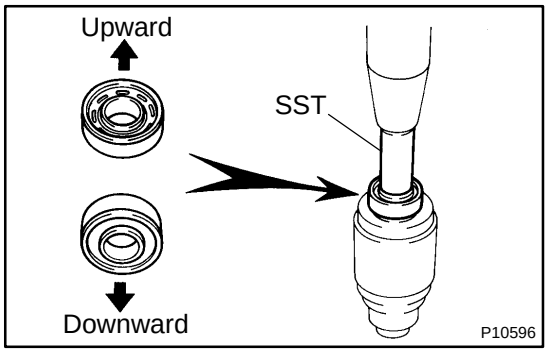
ST04G-01

REPLACEMENT



1. REPLACE FRONT BEARING

(a) Using SST, remove the bearing.
SST 09286-4601 1

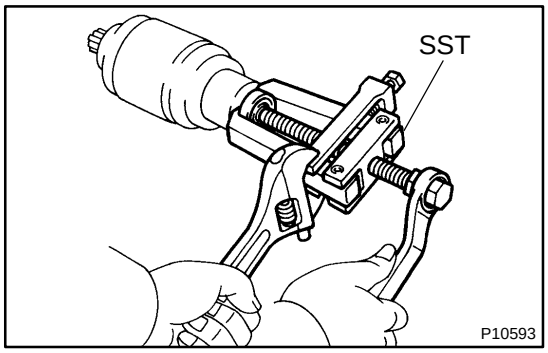


(b) Using SST and a press, press in a new bearing.

NOTICE:

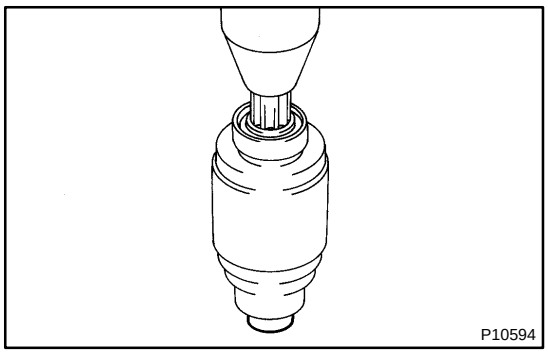
Be careful of the bearing installation direction.

SST 09820-00030

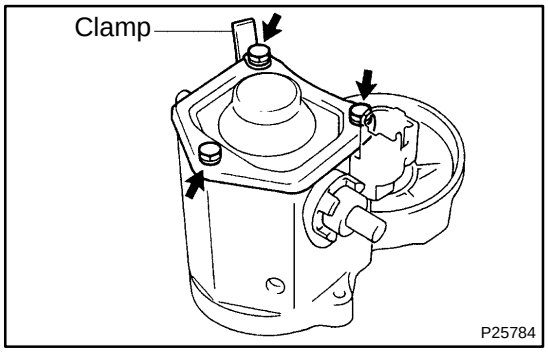


2. REPLACE REAR BEARING

(a) Using SST, remove the bearing.
SST 09286-4601 1

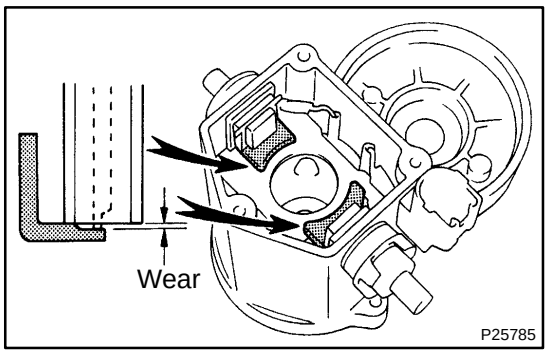


(b) Using a press, press in a new rear bearing.



3. REPLACE MAGNETIC SWITCH TERMINAL KIT PARTS

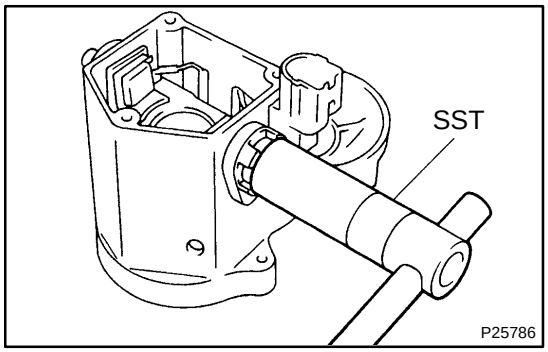
(a) Remove the 3 bolts, clamp, end cover, gasket and plunger.



(b) Using vernier calipers, measure the contact plate for depth of wear.

Maximum wear: 0.9 mm (0.035 in.)

If the depth of wear is greater than the maximum, replace the contact plate.



(c) Remove the terminal kit parts.

(1) Using SST, loosen the terminal nuts.

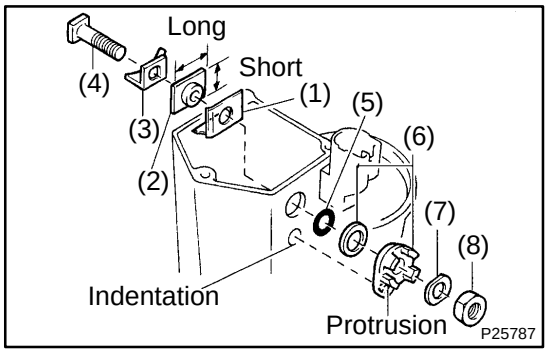
SST 09810-38140

(2) Terminal C:

Remove the terminal nut, wave washer, terminal insulator (outside), O- ring, terminal bolt, contact plate and terminal insulator (inside).

(3) Terminal 30:

Remove the terminal nut, wave washer, terminal insulator (outside), packing, O-ring, terminal bolt, contact plate, terminal insulator (inside) and insulation paper.



(d) Temporarily install these new terminal 30 kit parts:

(1) Insulation paper
(2) Terminal insulator (inside)
(3) Contact plate
(4) Terminal bolt
(5) O-ring
(6) Packing and terminal insulator (outside)

Install the packing to the terminal insulator, and install them.

HINT:

Match the protrusion of the insulator with the indentation of the housing.

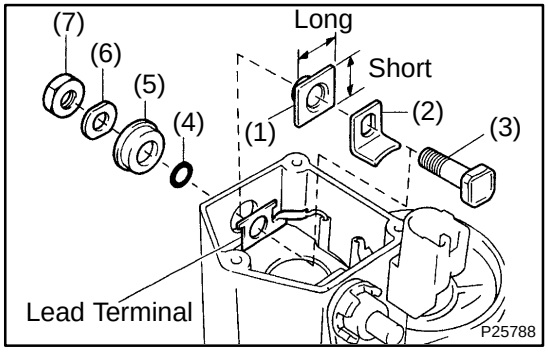
(7) Wave washer
(8) Terminal nut

NOTICE:

Be careful to install the terminal insulators in the correct direction.

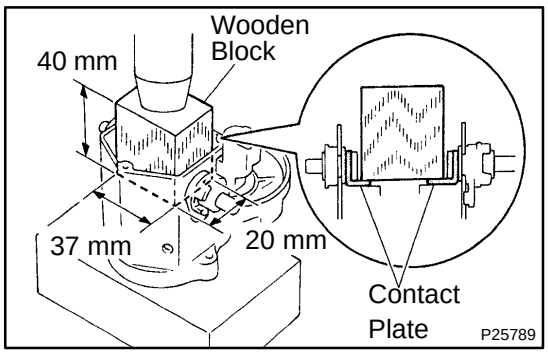
(e) Temporarily install these new terminal C kit parts:

(1) Terminal insulator (inside)
(2) Contact plate
(3) Terminal bolt
(4) O-ring
(5) Terminal insulator (outside)
(6) Wave washer
(7) Terminal nut



NOTICE:

Be careful to install the terminal insulators in the correct direction.



(f) Temporarily tighten the terminal nuts.

(g) Tighten the terminal nut

(1) Put a wooden block on the contact plate and press it down with a hand press.

Dimensions of wooden block:
20 x 37 x 40 mm (0.79 x 1.46 x 1.57 in.)
Press force:
981 N (100 kgf, 221 lbf)

NOTICE:

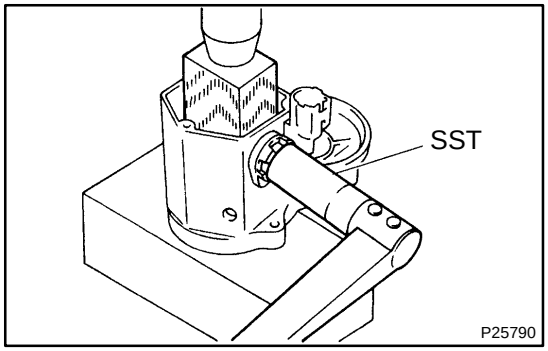
- **Check the diameter of the hand press ram. Then calculate the gauge pressure of the press when 981 N (100 kgf, 221 lbf) of force is applied.**
  Gauge pressure:

$$(kgf/cm^2) = \frac{100\ kgf}{\left(\frac{\text{Ram diameter (cm)}}{2}\right)^2 \times 3.14\ (\pi)}$$

$$(psi) = \frac{221\ lbf}{\left(\frac{\text{Ram diameter (in.)}}{2}\right)^2 \times 3.14\ (\pi)}$$

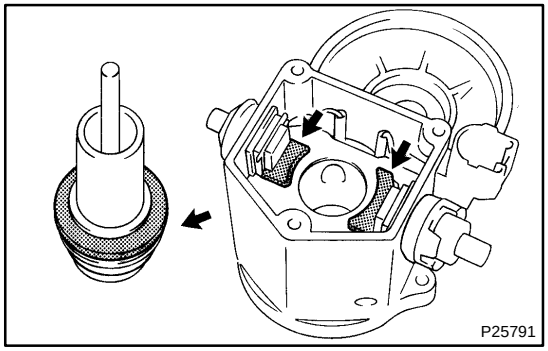
(kPa) = (kgf/cm^2) x 98.1
(kPa) = (psi) x 6.9

- **If the contact plate is not pressed down with the specified pressure, the contact plate may tilt due to coil deformation or the tightening of the nut.**



(2) Using SST, tighten the nuts to the specified torque.
SST 09810-38140
Torque: 17 N·m (173 kgf·cm, 13 ft·lbf)

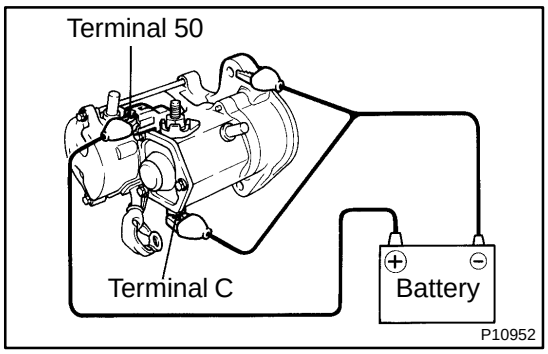
NOTICE:
If the nut is over tightened, it may cause cracks on the inside of the insulator.



(h) Clean the contact surfaces of the remaining contact plate and plunger with a dry shop rag.

(i) Reinstall the plunger, new gasket, end cover and lead clamp with the 3 bolts.
Torque: 2.5 N·m (26 kgf·cm, 22 in.·lbf)

ST04I-01



TEST

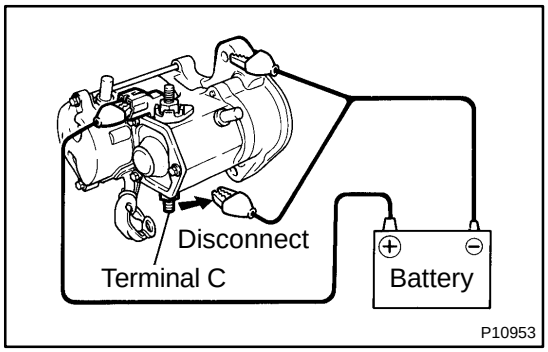
NOTICE:

These tests must be done within 3 to 5 seconds to avoid burning out the coil.

1. PERFORM PULL-IN TEST

(a) Disconnect the field coil lead wire from terminal C.

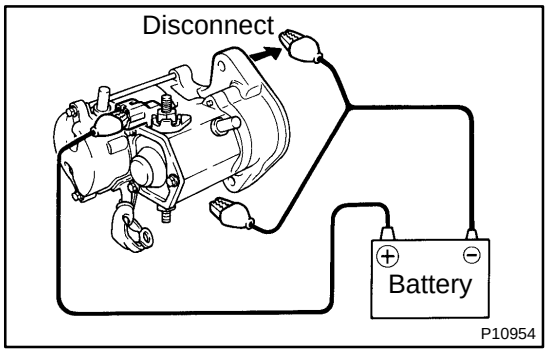
(b) Connect the battery to the magnetic switch as shown. Check that the pinion gear moves outward.



2. PERFORM HOLD-IN TEST

While connected as above with the pinion gear out, disconnect the negative (-) lead from terminal C.

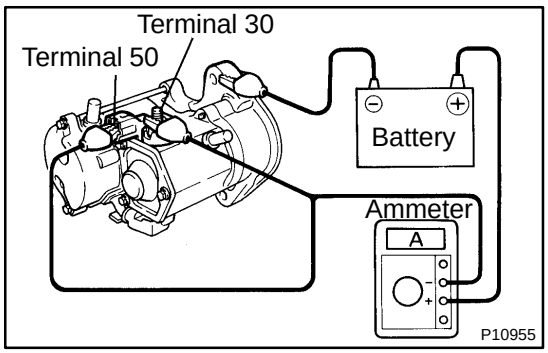
Check that the pinion gear remains out.



3. INSPECT CLUTCH PINION GEAR RETURN

Disconnect the negative (-) lead from the starter body.

Check that the pinion gear returns inward.

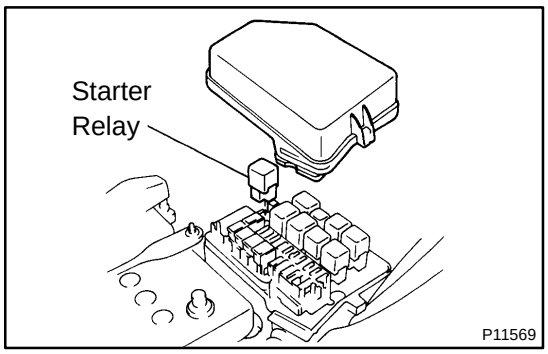


4. PERFORM NO-LOAD PERFORMANCE TEST

(a) Connect the battery and ammeter to the starter as shown.

(b) Check that the starter rotates smoothly and steadily with the pinion gear moving out. Check that the ammeter shows the specified current.

Specified current: 90 A or less at 11.5 V



STARTER RELAY

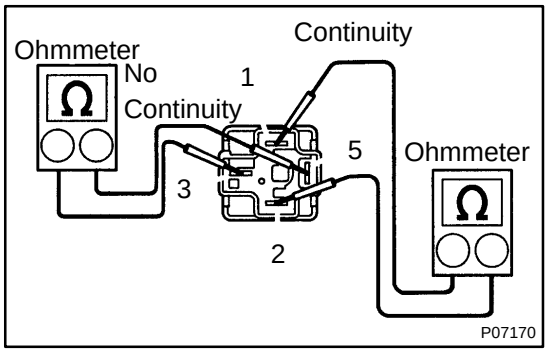
ST04K-01

INSPECTION

1. REMOVE STARTER RELAY (Marking: ST)

LOCATION: In the engine compartment relay box.

Remove the relay box cover and starter relay.



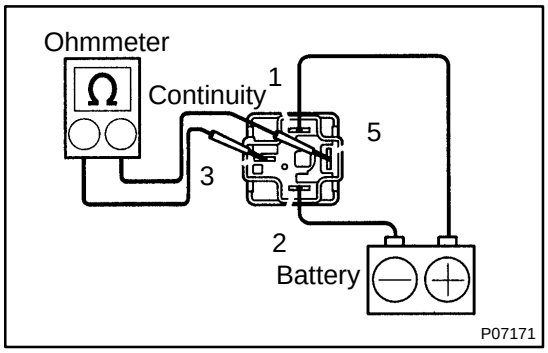
2. INSPECT STARTER RELAY CONTINUITY

(a) Using an ohmmeter, check that there is continuity between terminals 1 and 2.

If there is no continuity, replace the relay.

(b) Check that there is no continuity between terminals 3 and 5.

If there is continuity, replace the relay.



3. INSPECT STARTER RELAY OPERATION

(a) Apply battery positive voltage across terminals 1 and 2.

(b) Using an ohmmeter, check that there is continuity between terminals 3 and 5.

If there is no continuity, replace the relay.

4. REINSTALL STARTER RELAY