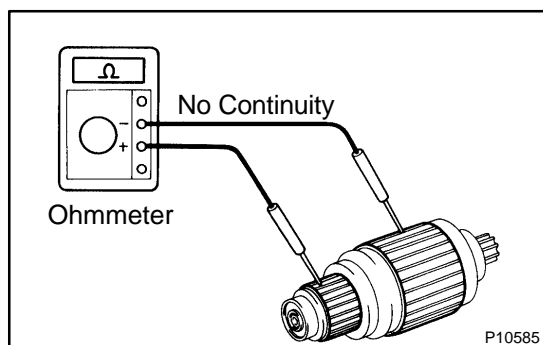


INSPECTION

1. INSPECT ARMATURE COIL 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.



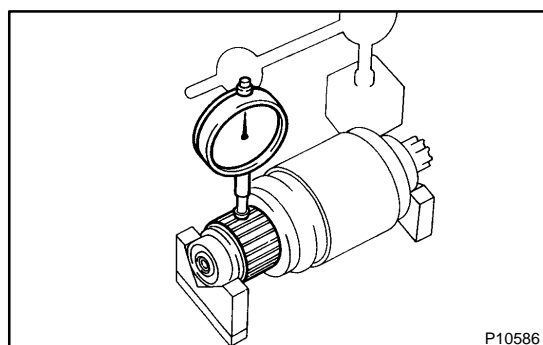
2. INSPECT ARMATURE COIL FOR GROUNDED

Using an ohmmeter, check that there is no continuity between the commutator and armature coil core.

If there is continuity, replace the armature.

3. INSPECT COMMUTATOR FOR DIRTY AND BURNT SURFACES

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



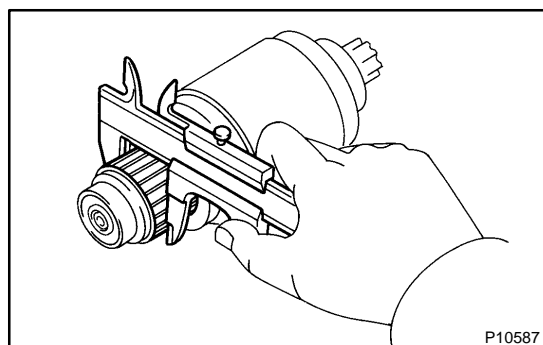
4. INSPECT COMMUTATOR CIRCLE RUNOUT

(a) Place the commutator on V-blocks.

(b) Using a dial indicator, 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.



5. INSPECT COMMUTATOR DIAMETER

Using vernier calipers, measure the commutator diameter.

Standard diameter:

1.4 kW type: 30 mm (1.180 in.)

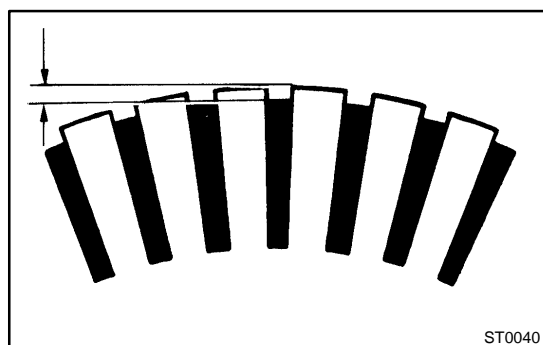
1.8 kW type: 35 mm (1.378 in.)

Minimum diameter:

1.4 kW type: 29 mm (1.140 in.)

1.8 KW type: 34 mm (1.339 in.)

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



6. INSPECT UNDERCUT DEPTH OF SEGMENT

Check that the undercut depth is clean and free of foreign material. Smooth out the edge.

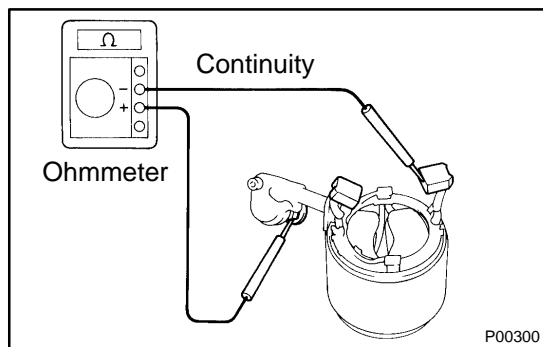
Standard undercut depth:

1.4 kW type: 0.6 mm (0.024 in.)

1.8 kW type: 0.7 mm (0.028 in.)

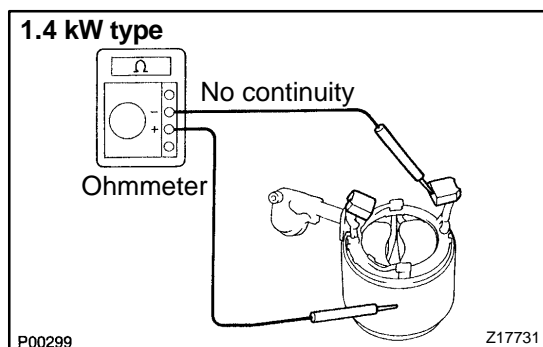
Minimum undercut depth: 0.2 mm (0.008 in.)

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

**7. INSPECT FIELD COIL FOR OPEN CIRCUIT**

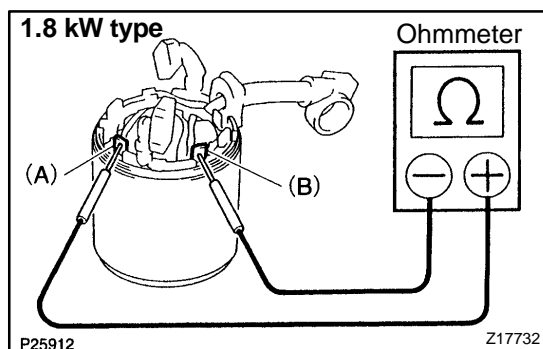
Using an ohmmeter, check that there is continuity between the lead wire and field coil brush lead.

If there is no continuity, replace the field frame.

**8. (1.4 kW type)****INSPECT THAT FIELD COIL IS NOT GROUNDED**

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

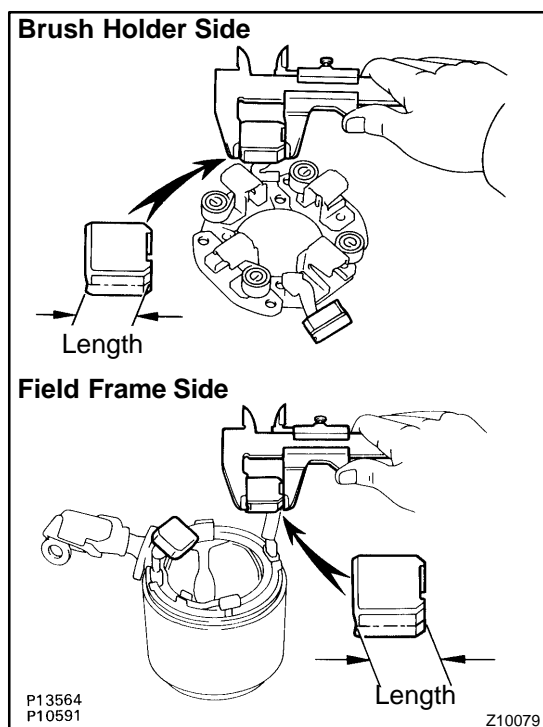
If there is continuity, repair or replace the field frame.

**9. (1.8 kW type)****INSPECT SHUNT COIL FOR OPEN CIRCUIT**

Using an ohmmeter, check that there is continuity between terminal (A) and (B).

Standard resistance: At 20°C (68°F): 1.4 - 1.9 Ω

If the resistance is not as specified, repair or replace the field frame.

**10. INSPECT BRUSH LENGTH**

Using vernier calipers, measure the brush length.

Standard length:

1.4 kW type: 15.5 mm (0.610 in.)

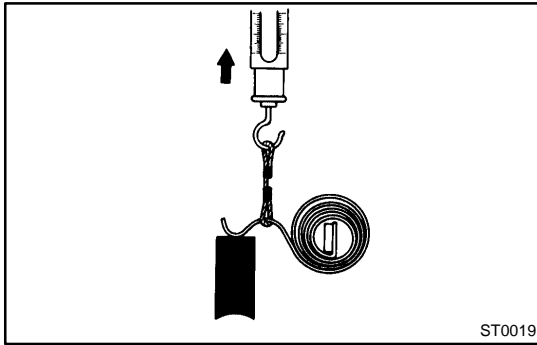
1.8 kW type: 15.0 mm (0.591 in.)

Minimum length:

1.4 kW type: 10.0 mm (0.394 in.)

1.8 kW type: 9.0 mm (0.354 in.)

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



11. INSPECT BRUSH SPRING LOAD

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

Standard installed load:

1.4 kW type: 17.6 - 23.5 N (1.80 - 2.40 kgf, 4.0 - 5.3 lbf)

1.8 kW type: 21.5 - 27.5 N (2.20 - 2.80 kgf, 4.9 - 6.2 lbf)

Minimum installed load:

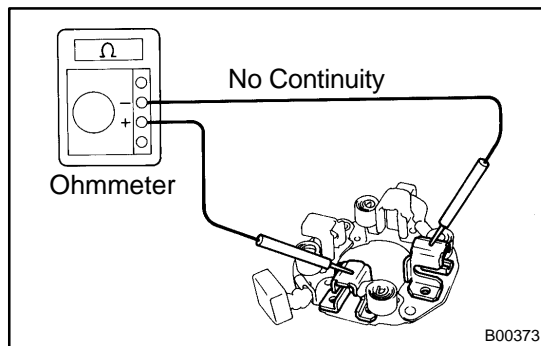
1.4 kW type: 11.8 N (1.20 kgf, 2.6 lbf)

1.8 kW type: 12.7 N (1.30 kgf, 2.7 lbf)

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

HINT:

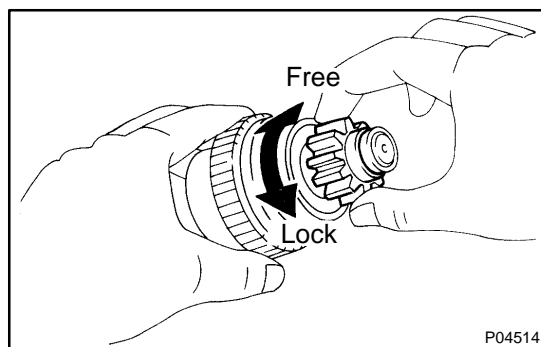
Take the pull scale reading the instant the brush spring separates from the brush.



12. INSPECT INSULATION OF BRUSH HOLDER

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.



13. INSPECT GEAR TEETH

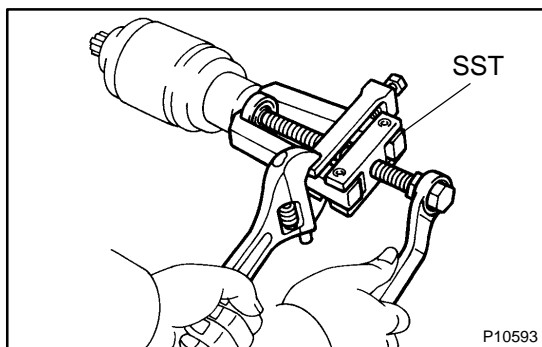
Check the gear teeth on the pinion gear, idler gear and clutch assembly for wear or damage.

If damaged, replace the gear or clutch assembly.

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

14. INSPECT CLUTCH

Hold the starter clutch and rotate the clutch pinion gear clockwise and check that it turns freely. Try to rotate the clutch pinion counterclockwise and check that it locks. If necessary, replace the clutch assembly.

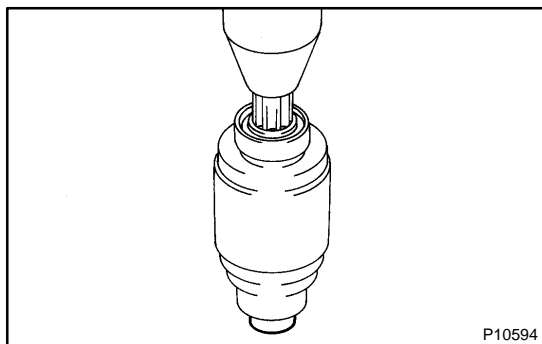
**15. INSPECT FRONT BEARING**

Turn the bearing by hand while applying inward force. If resistance is felt or the bearing sticks, replace the bearing.

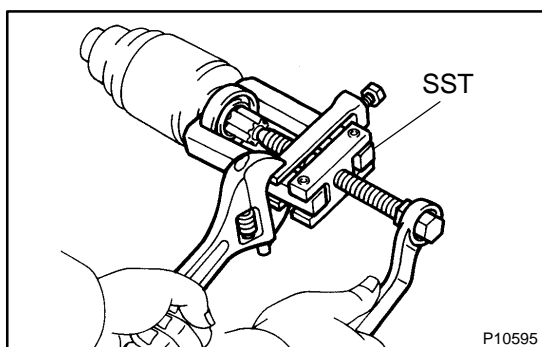
16. IF NECESSARY, REPLACE FRONT BEARING

- (a) Using SST, remove the bearing.

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- (b) Using a press, press in a new front bearing.

**17. INSPECT REAR BEARING**

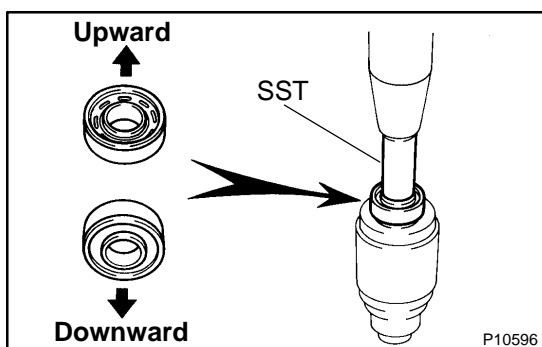
Turn the bearing by hand while applying inward force.

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

18. IF NECESSARY, REPLACE REAR BEARING

- (a) Using SST, remove the bearing.

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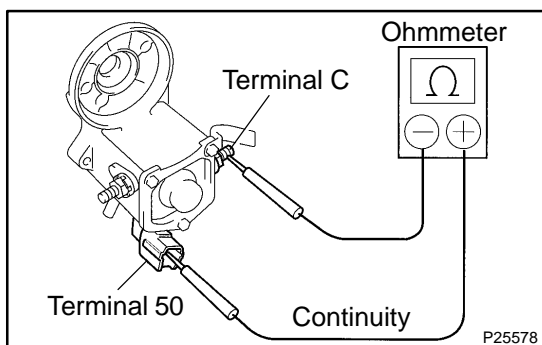


- (b) Using SST and a press, press in a new rear bearing.

NOTICE:

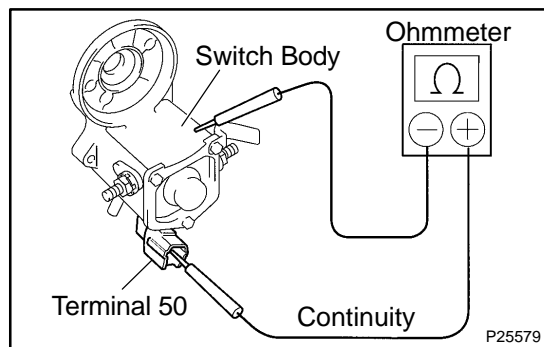
Be careful of the bearing installation direction.

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**19. DO PULL-IN COIL OPEN CIRCUIT TEST**

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

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

**20. DO HOLD-IN COIL CIRCUIT TEST**

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

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