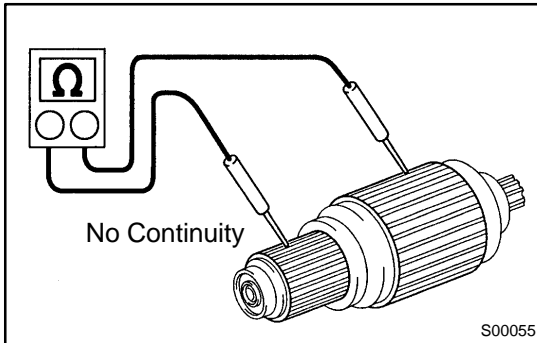


INSPECTION

1. INSPECT 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.

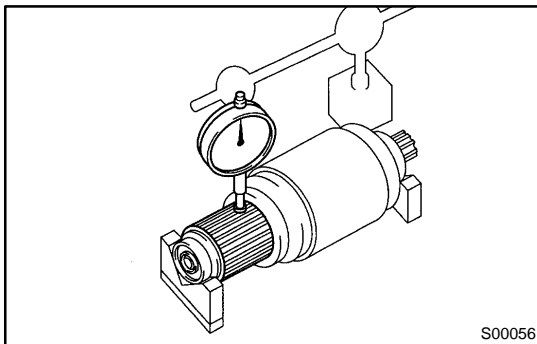


2. INSPECT COMMUTATOR FOR GROUND

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

If there is continuity, replace the armature.

(b) Check that the commutator for dirty and burn on surface. If the surface is dirty or burnt, correct it with sandpaper (No.400) or on a lathe.



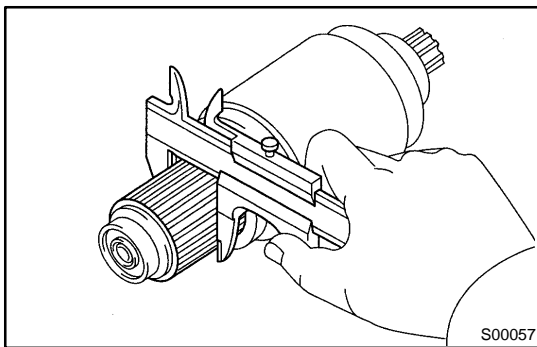
3. INSPECT COMMUTATOR CIRCLE RUNOUT

(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.



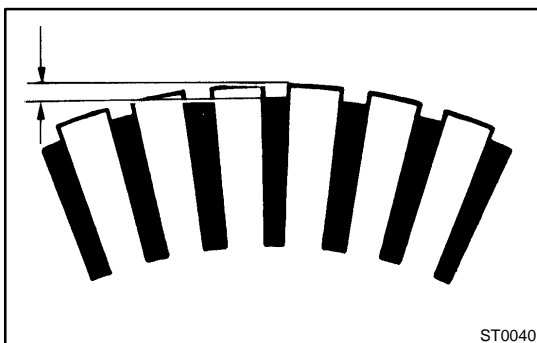
4. INSPECT COMMUTATOR DIAMETER

Using vernier calipers, measure the commutator diameter.

Standard diameter: 35.0 mm (1.378 in.)

Minimum diameter: 34.0 mm (1.339 in.)

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



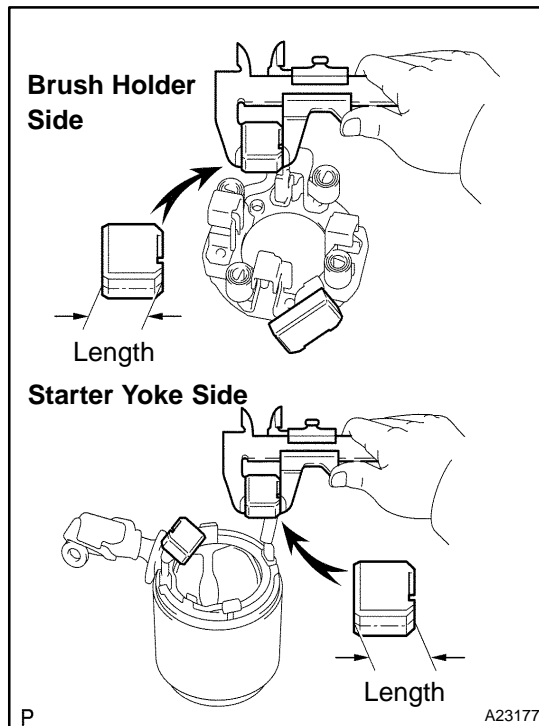
5. INSPECT UNDERCUT DEPTH

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

Standard undercut depth: 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.



6. INSPECT BRUSH

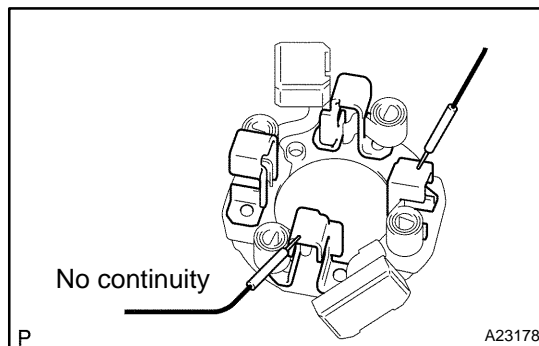
- (a) Check the brushes length

(1) Using vernier calipers, measure the brush length.

Standard length: 15.0 mm (0.591 in.)

Minimum length: 9.0 mm (0.354 in.)

If the length is less than minimum, replace the brush holder and starter yoke.

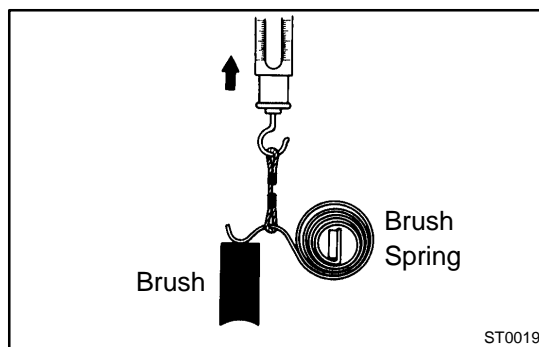


7. INSPECT STARTER BRUSH HOLDER ASSY

- (a) Check the brush holder insulation

(1) 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.



- (b) Check the brush spring load.

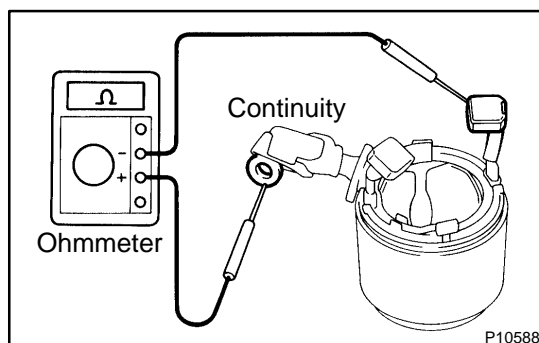
(1) Take a pull scale reading at the instant the brush spring separates from the brush.

Standard spring load:

21.5 to 27.5 N (2.2 to 2.8 kgf, 4.8 to 6.2 lbf)

Minimum spring load: 12.7 N (1.3 kgf, 2.9 lbf)

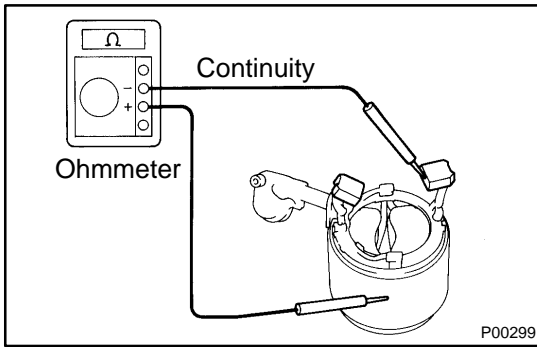
If the spring load is less than the minimum, replace the brush holder.



8. INSPECT FIELD COIL FOR OPEN CIRCUIT

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

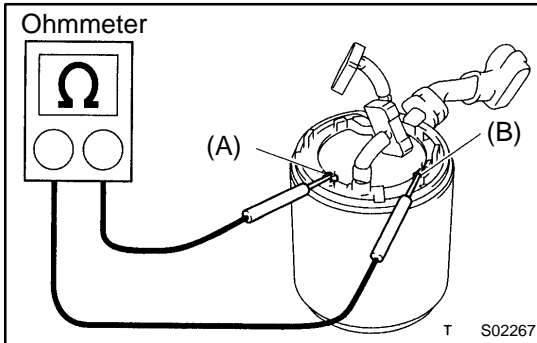
If there is no continuity, replace the field frame.



9. INSPECT SHUNT COIL FOR OPEN CIRCUIT

Using an ohmmeter, check that there is continuity between the field coil end and field frame.

If there is no continuity, repair or replace the field frame.

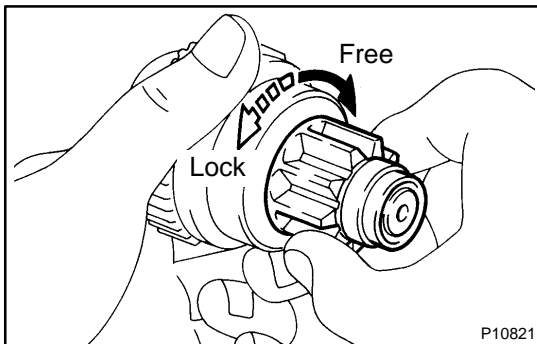


10. INSPECT SHUNT COIL FOR OPEN CIRCUIT

Using an ohmmeter, measure the resistance between shunt coil terminals (A) and (B).

Resistance: 1.5 to 1.9 Ω at 20 °C (68 °F)

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

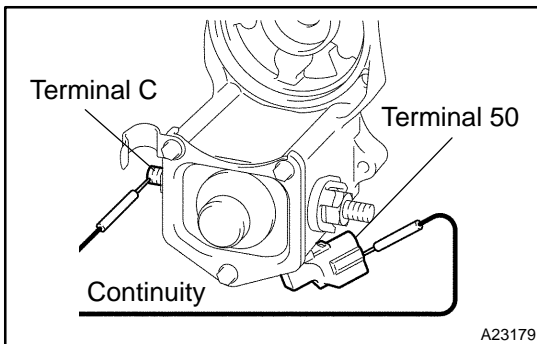


11. INSPECT CLUTCH PINION GEAR

Rotate the pinion gear clockwise, and check that it turns freely.

Check that it locks by rotating the pinion gear counterclockwise.

If necessary, replace the clutch assembly.

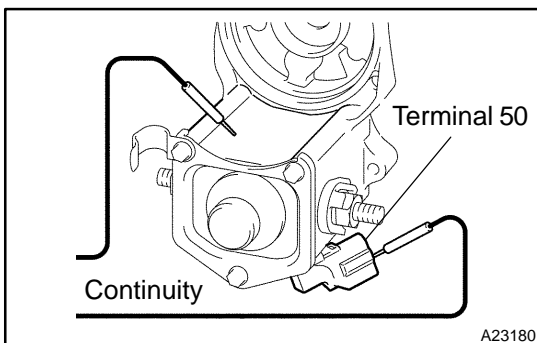


12. INSPECT MAGNET STATER SWITCH

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

(1) Using an ohmmeter, check that there is continuity between terminal 50 and C.

If there is no continuity, replace the magnet starter switch.



(b) Check whether or not the hold-in coil has an open circuit.

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

If there is no continuity, replace the magnet starter switch.