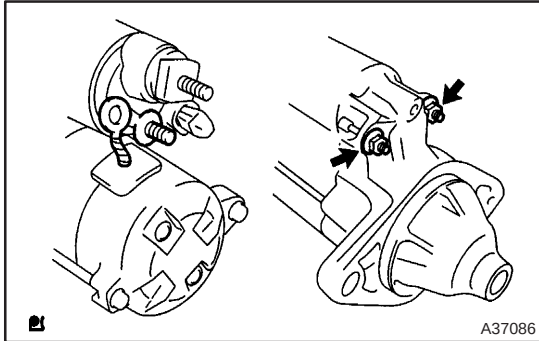
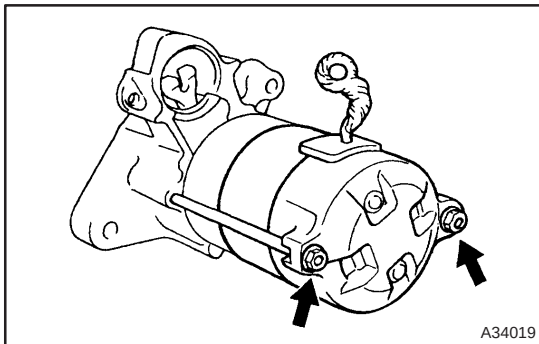


OVERHAUL



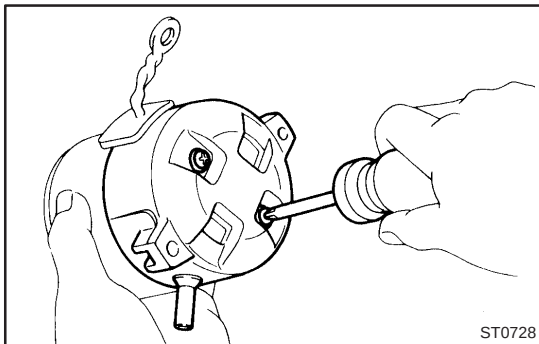
1. REMOVE MAGNET STARTER SWITCH ASSY

- (a) Remove the nut, and disconnect the lead wire from the magnetic switch terminal.
- (b) Loosen the 2 nuts holding the magnetic switch to the starter housing.
- (c) Pull the magnetic switch and while lifting the front part of the magnetic switch, release the plunger hook from the driver lever, then release the magnetic switch.



2. REMOVE STARTER YOKE ASSY

- (a) Remove the 2 through bolts, and pull out the field frame together with the armature.

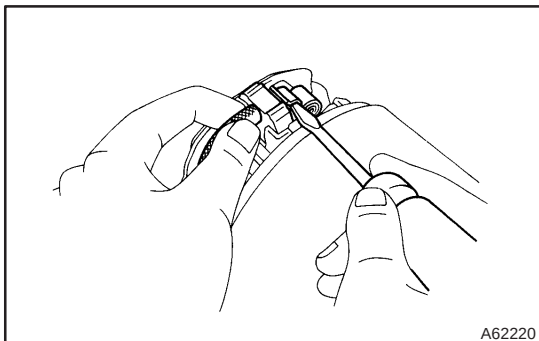


3. REMOVE STARTER BRUSH HOLDER ASSY

- (a) Remove the 2 screws and commutator end frame, and hold down the lead wire while releasing the commutator end frame.

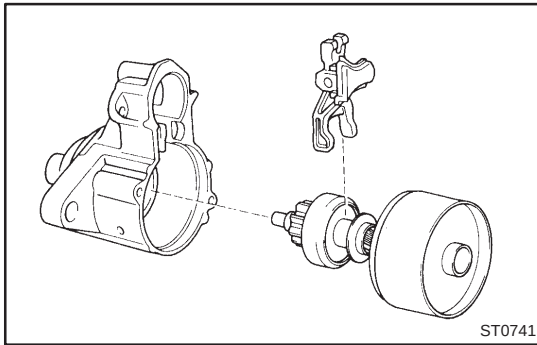
NOTICE:

To avoid interference between the brush holder and the dust protector pull the commutator end frame away at an angle.



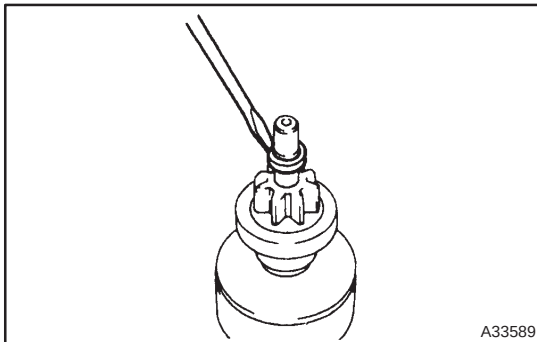
4. REMOVE STARTER ARMATURE ASSY

- (a) Remove the starter armature from the starter yoke.

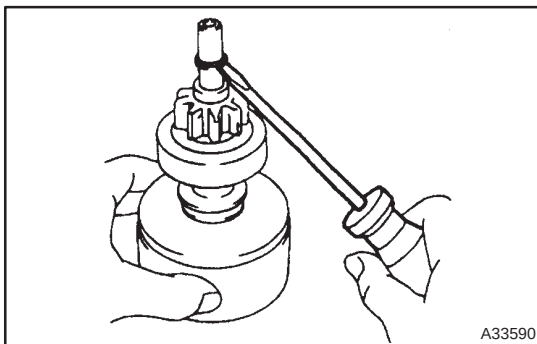


5. REMOVE STARTER CLUTCH SUB-ASSY

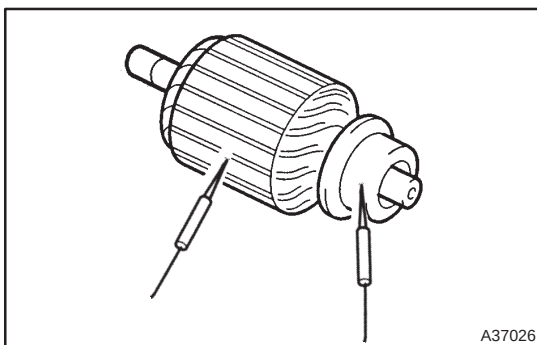
- (a) Remove drive lever and starter clutch with shock absorber from starter housing.



- (b) Using a screwdriver, tap in the stop collar towards the starter clutch.

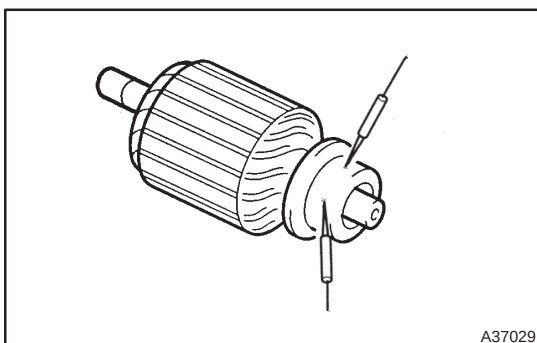


- (c) Using a screwdriver, pry off the snap ring.
(d) Remove the stop collar and starter clutch from the planetary shaft.



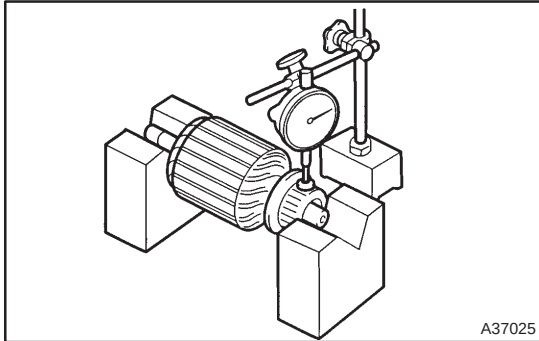
6. INSPECT STARTER ARMATURE ASSY

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

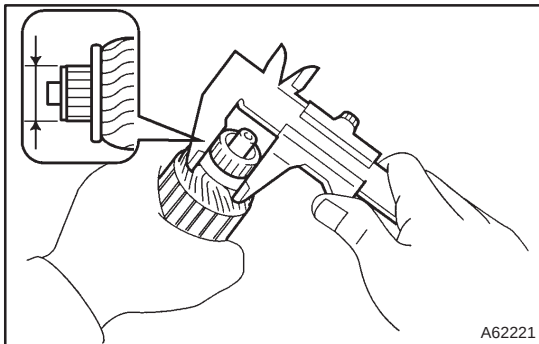


- (b) Using an ohmmeter, check that there is continuity between the segments of the commutator.

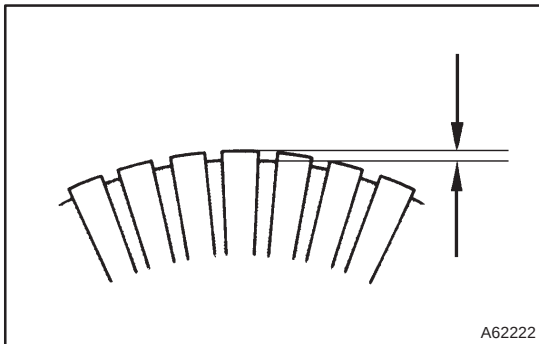
- (c) Check the commutator for dirty and burn on surface. If the surface is dirty or burnt, correct it with sandpaper (No. 400) or a lathe.



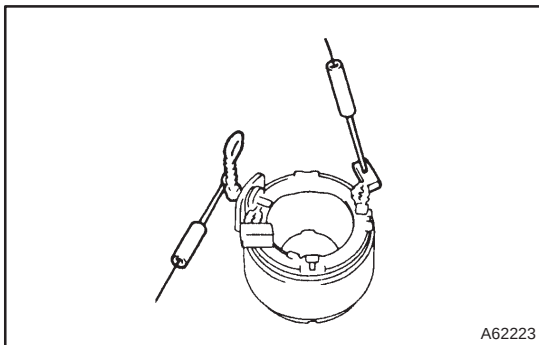
- (d) Place the commutator on V – blocks.
 (e) Using a dial indicator, measure the circle runout.
Maximum circle runout: 0.05 mm (0.0020 in.)



- (f) Using a vernier calipers, measure the commutator diameter.
Standard diameter: 28 mm (1.102 in.)
Minimum diameter: 27 mm (1.063 in.)

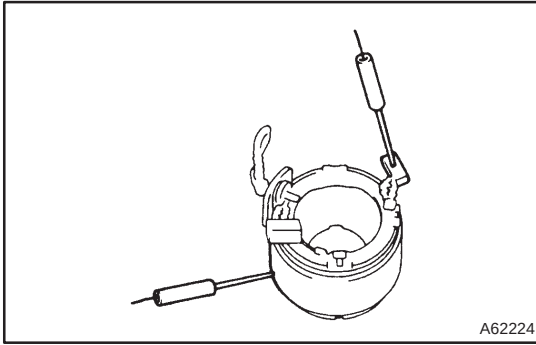


- (g) Check that the undercut depth is clean and free of foreign materials. Smooth out the edge.
Standard undercut depth: 0.6 mm (0.024 in.)
Minimum undercut depth: 0.2 mm (0.008 in.)

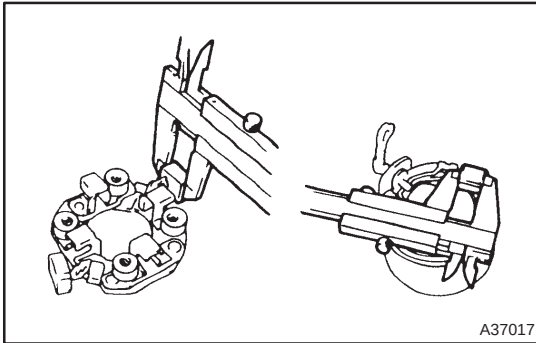


7. INSPECT FIELD COIL

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

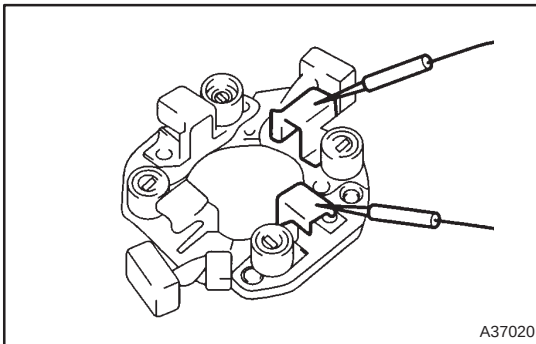


- (b) Using an ohmmeter, check that there is no continuity between the field coil end and field frame.



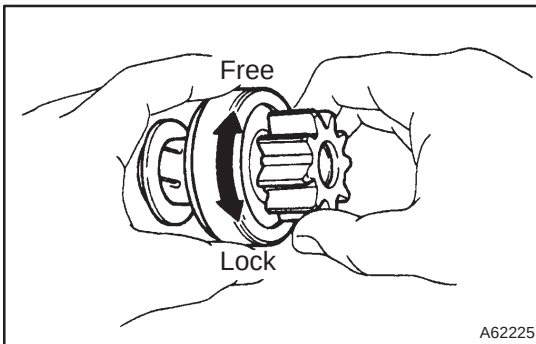
8. INSPECT BRUSH

- (a) Using a vernier calipers, measure the brush length.
Standard length: 14 mm (0.551 in.)
Minimum length: 9 mm (0.354 in.)



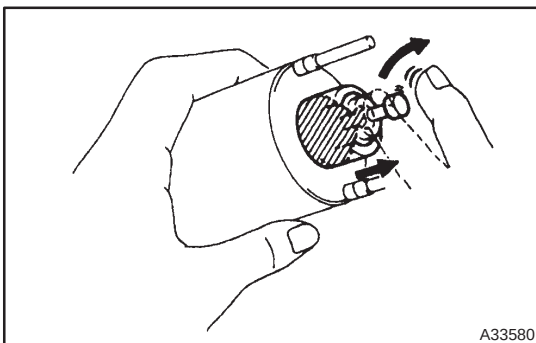
9. INSPECT STARTER BRUSH HOLDER ASSY

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



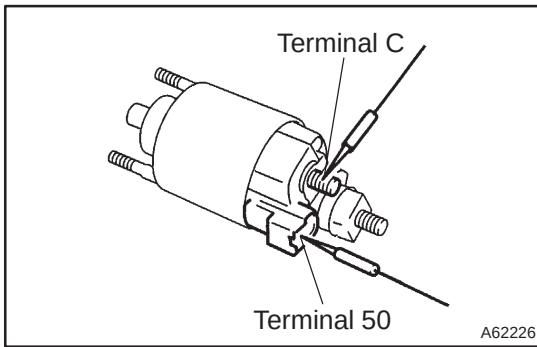
10. INSPECT STARTER CLUTCH SUB-ASSY

- (a) Rotate the clutch pinion gear clockwise and check that it turns freely. Try to rotate the clutch pinion gear counter-clockwise and check that it locks.

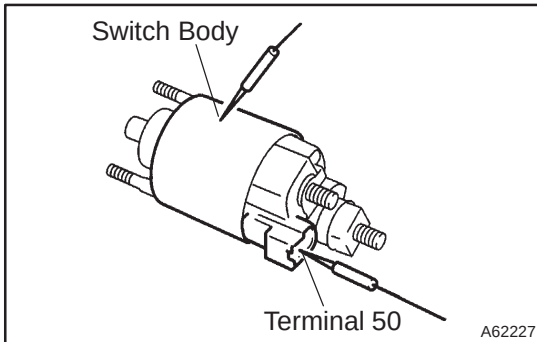


11. INSPECT MAGNET STARTER SWITCH ASSY

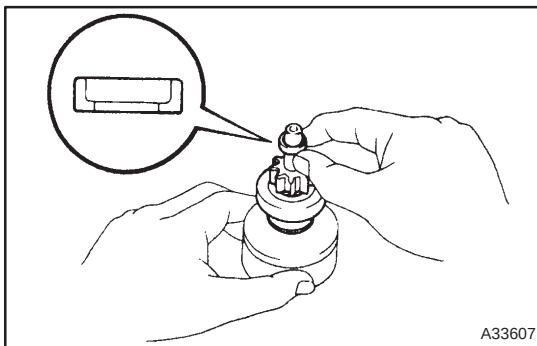
- (a) Push in the plunger and check that it returns quickly to its original position.



- (b) Using an ohmmeter, check that there is continuity between terminals 50 and C.

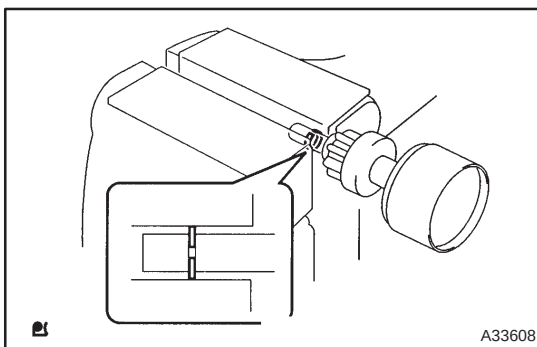


- (c) Using an ohmmeter, check that there is continuity between terminals 50 and the switch body.

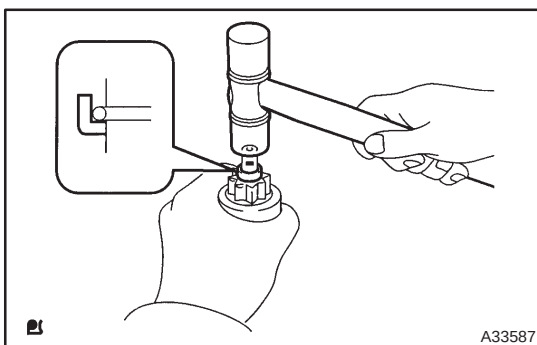


12. INSTALL STARTER CLUTCH SUB-ASSY

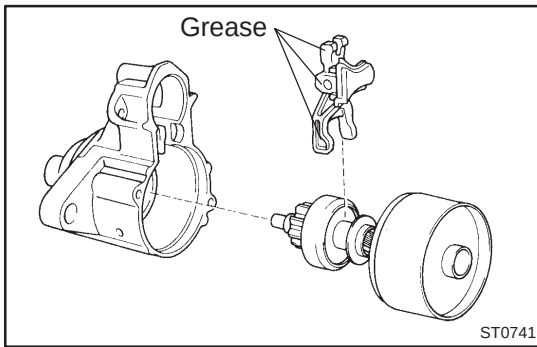
- (a) Apply grease to the bushing and spline of the starter clutch and stop collar.
- (b) Place the starter clutch and stop collar on the planetary shaft.
- (c) Apply grease to the snap ring, and install it to the planetary shaft groove.



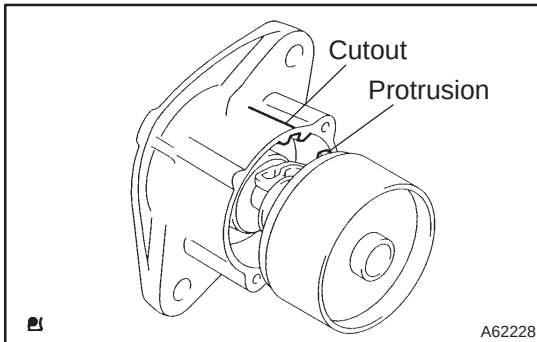
- (d) Using a vise, compress the snap ring.



- (e) Hold the starter clutch, tap the planetary shaft and install the stop collar onto the snap ring with a plastic hammer.



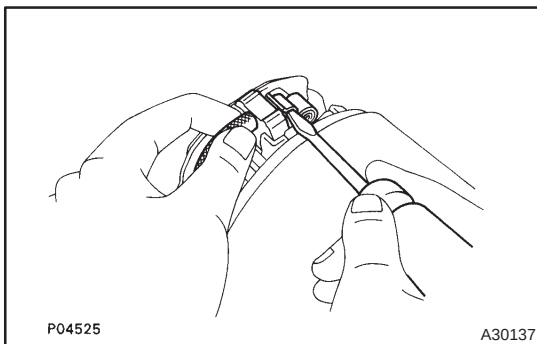
- (f) Apply grease to the drive lever touching the starter pivot part of the drive lever.
- (g) Install the drive lever to the starter clutch.



- (h) Align the protrusion of the shock absorber with the cutout of the starter housing and install them.

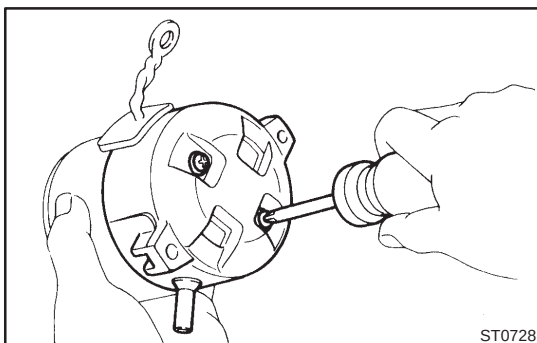
13. INSTALL STARTER ARMATURE ASSY

- (a) Install the starter armature to the starter yoke.



14. INSTALL STARTER BRUSH HOLDER ASSY

- (a) Install the brush holder.
- (b) Using a screwdriver, hold the brush spring back, and connect the brush into the brush holder. Connect the 4 brushes.
- (c) Apply turbine oil with additives to the bearing of the end frame.

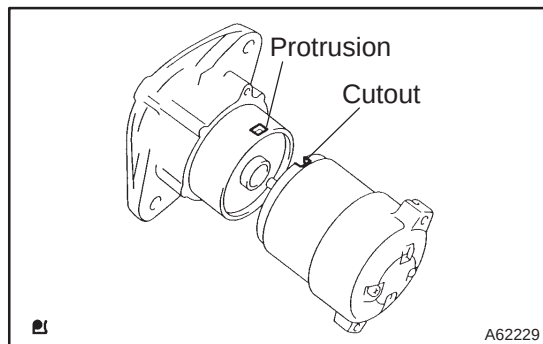


- (d) Install the end frame with 2 new screws.

Torque: 1.5 N·m (15 kgf·cm, 13 in·lbf)

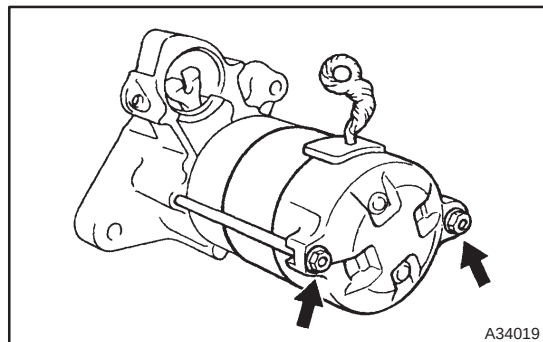
NOTICE:

To avoid interference between the brush holder and the dust protector push the commutator and frame away at an angle.



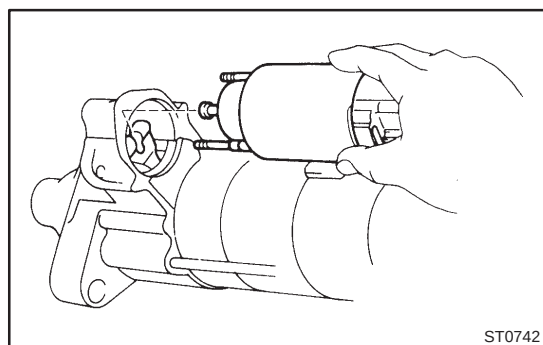
15. INSTALL STARTER YOKE ASSY

- (a) Align the cutout of the field frame with the protrusion of the shock absorber.



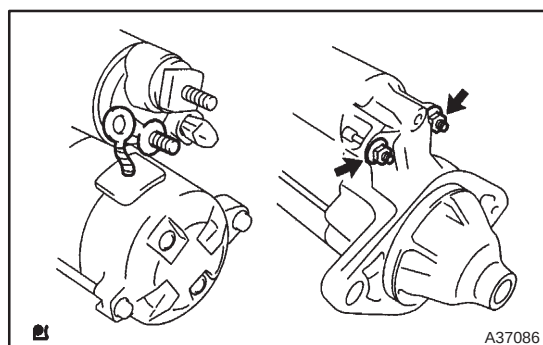
- (b) Install the field frame and armature assembly with the 2 through bolts.

Torque: 5.9 N·m (60 kgf·cm, 52 in·lbf)



16. INSTALL MAGNET STARTER SWITCH ASSY

- (a) Hang the plunger of the magnetic switch to the driver lever from the upper side.



- (b) Install the magnetic switch with the 2 nuts.

Torque: 8.3 N·m (85 kgf·cm, 73 in·lbf)

- (c) Connect the lead wire to the terminal with the nut.

Torque: 9.8 N·m (100 kgf·cm, 7 ft·lbf)