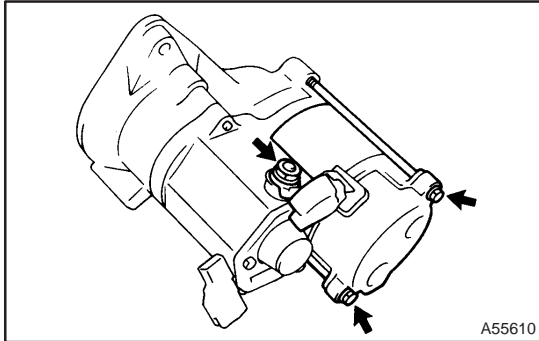
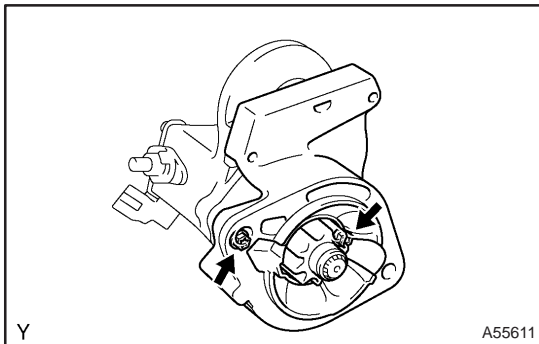


# OVERHAUL



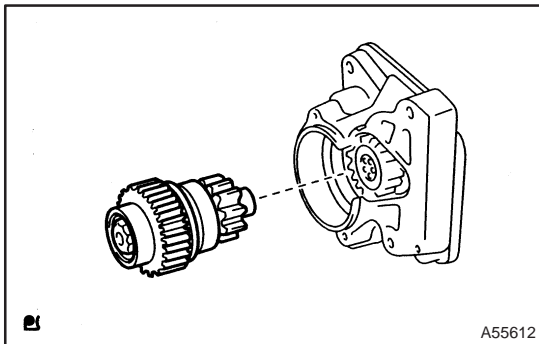
## 1. REMOVE STARTER YOKE ASSY

- (a) Remove the nut, and disconnect the lead wire from the magnetic switch terminal.
- (b) Remove the 2 through bolts.
- (c) Pull out the yoke together with the armature from the magnetic switch.

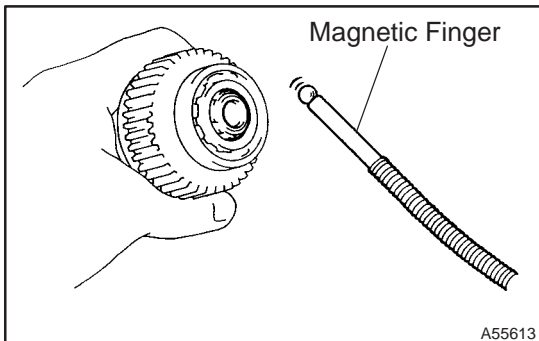


## 2. REMOVE STARTER CLUTCH SUB-ASSY

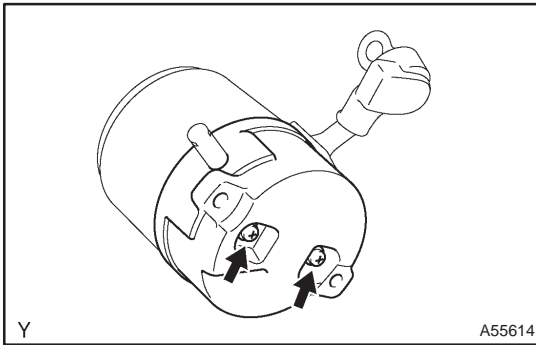
- (a) Remove the 2 bolts and drive housing.



- (b) Remove the clutch from the drive housing.

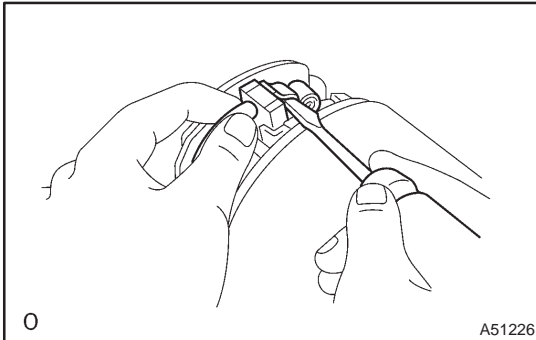


- (c) Using a magnetic finger, remove the ball from the clutch shaft hole.



### 3. REMOVE STARTER BRUSH HOLDER ASSY

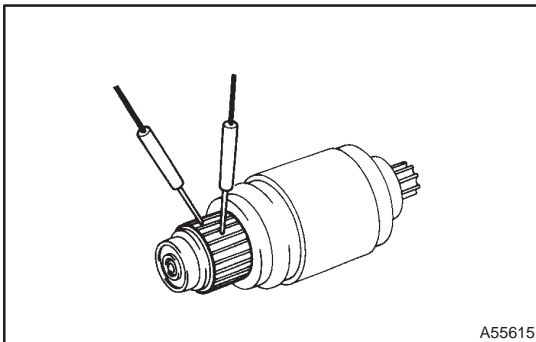
- (a) Remove the 2 screws and end frame from the yoke.



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

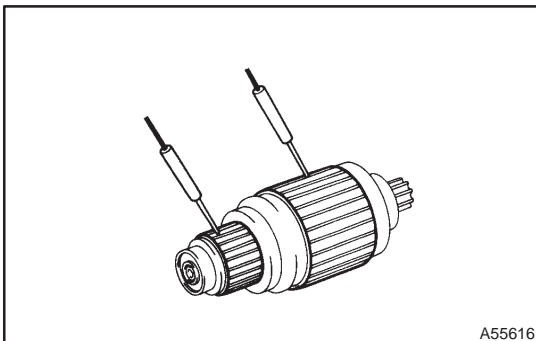
### 4. REMOVE STARTER ARMATURE ASSY

- (a) Remove the armature from the yoke.

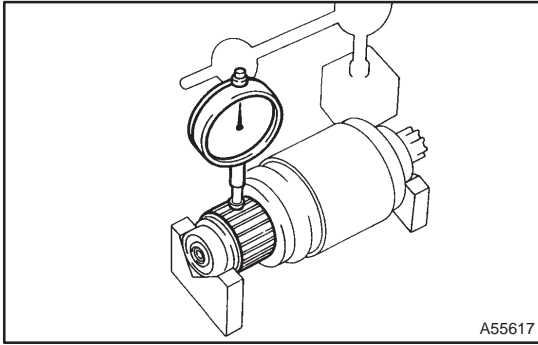


### 5. INSPECT STARTER ARMATURE ASSY

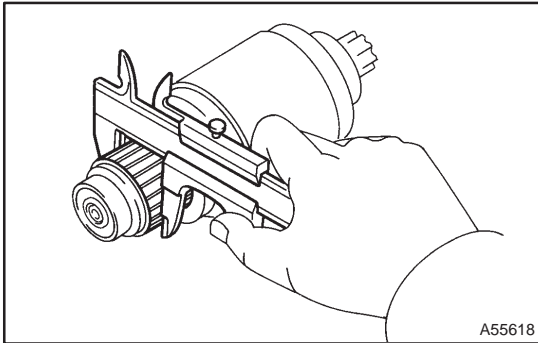
- (a) Using an ohmmeter, check that there is continuity between the segments of the commutator.



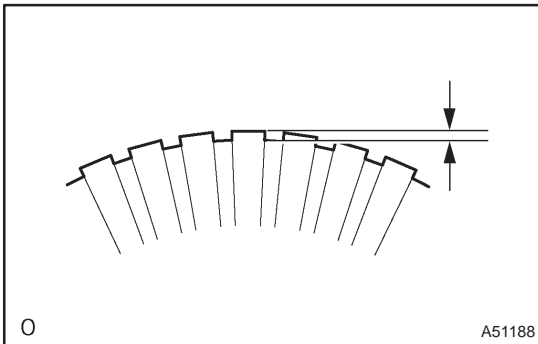
- (b) Using an ohmmeter, check that there is no continuity between the commutator and armature coil core.



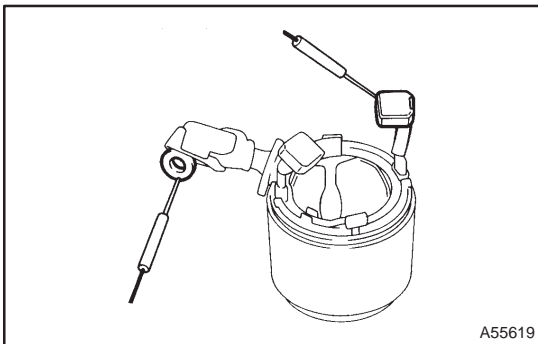
- (c) Place the commutator on V-blocks.
- (d) Using a dial gauge, measure the circle runout.  
**Maximum circle runout: 0.05 mm (0.002 in.)**



- (e) Using vernier calipers, measure the commutator diameter.  
**Standard diameter: 30 mm (1.1811 in.)**  
**Minimum diameter: 29 mm (1.1417 in.)**

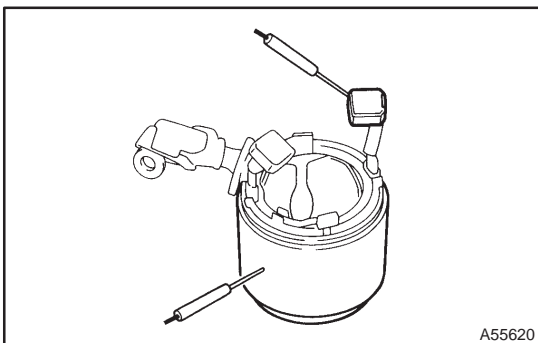


- (f) Check that the undercut depth is clean and free of foreign materials. Smooth out the edge.  
**Standard undercut depth: 0.6 mm (0.024 in.)**  
**Minimum undercut depth: 0.2 mm (0.008 in.)**

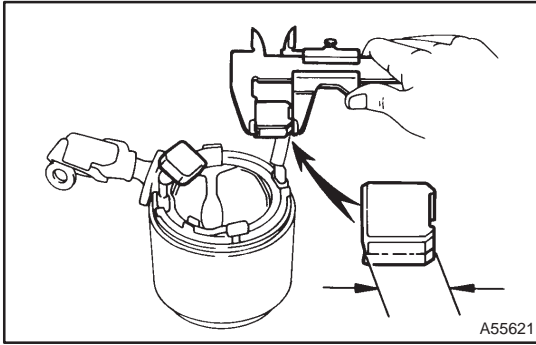


## 6. INSPECT STARTER YOKE ASSY

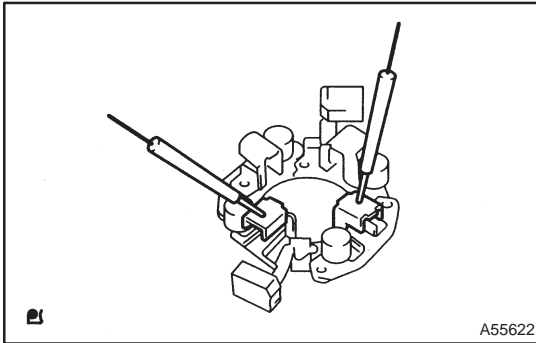
- (a) Using an ohmmeter, check that there is continuity between the lead wire and field coil brush lead.



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

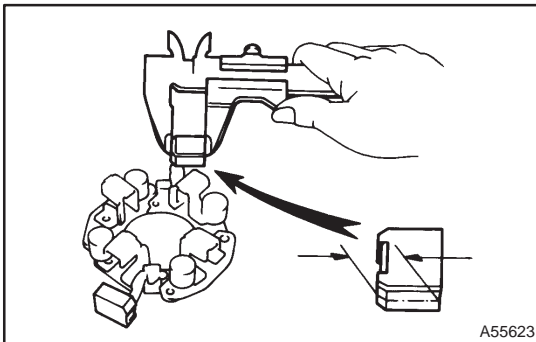


- (c) Using vernier calipers, measure the brush length.  
**Standard length: 15.5 mm (0.6102 in.)**  
**Minimum length: 8.5 mm (0.3346 in.)**

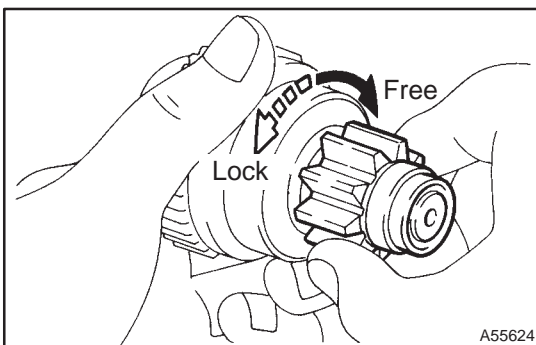


## 7. INSPECT STARTER BRUSH HOLDER ASSY

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

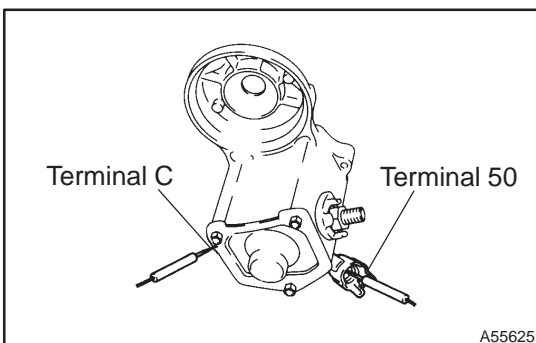


- (b) Using vernier calipers, measure the brush length.  
**Standard length: 15.5 mm (0.6102 in.)**  
**Minimum length: 8.5 mm (0.3346 in.)**



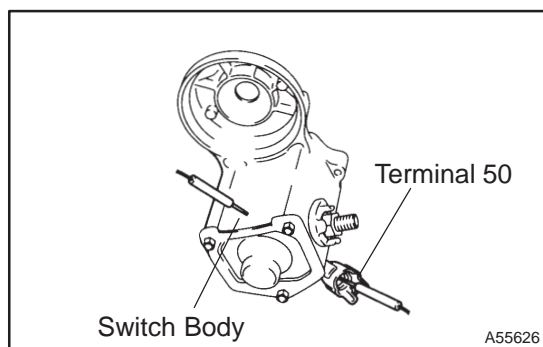
## 8. INSPECT STARTER CLUTCH SUB-ASSY

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



## 9. INSPECT MAGNET STARTER SWITCH ASSY

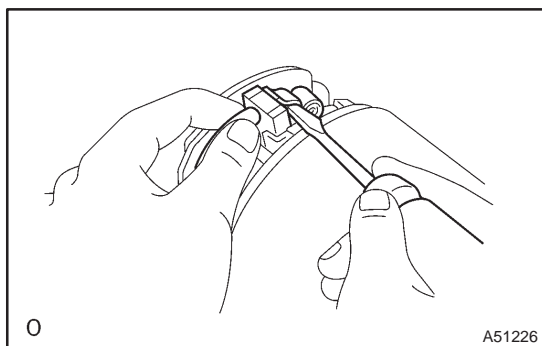
- (a) Using an ohmmeter, check that there is continuity between terminal 50 and C.



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

## 10. INSTALL STARTER ARMATURE ASSY

- (a) Apply grease to the armature bearings and insert the armature into the yoke.

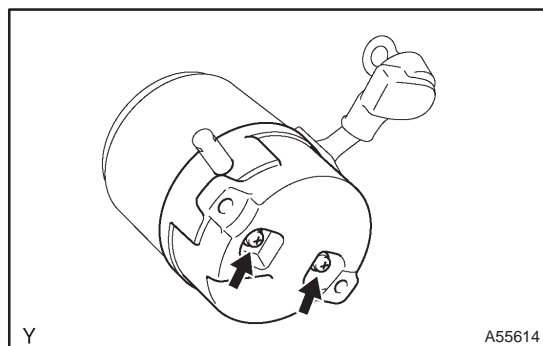


## 11. INSTALL STARTER BRUSH HOLDER ASSY

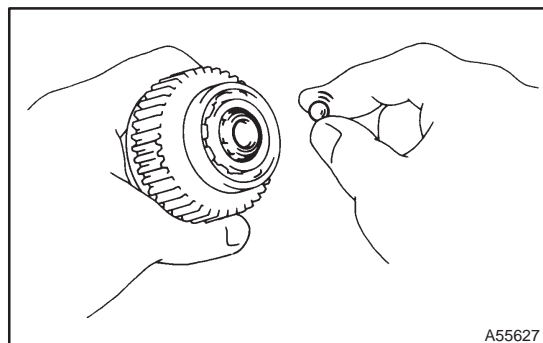
- (a) Place the brush holder on the armature.  
 (b) Using a screwdriver, hold the brush spring back and connect the brush into the brush holder. Connect the 4 brushes.

### NOTICE:

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

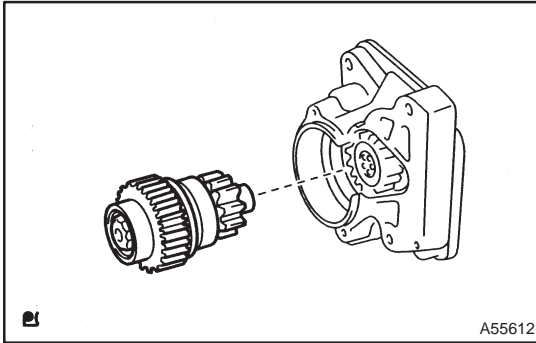


- (c) Install the end frame to the yoke with the 2 screws.  
**Torque: 1.5 N·m (15 kgf·cm, 13 in·lbf)**

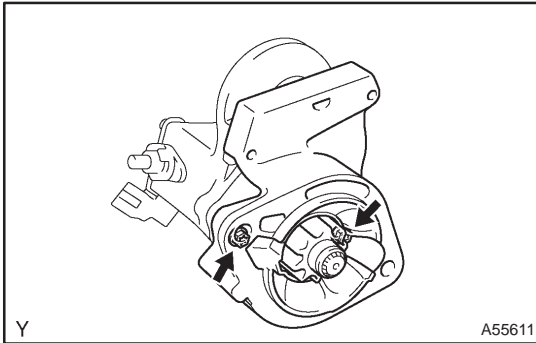


## 12. INSTALL STARTER CLUTCH SUB-ASSY

- (a) Apply grease to the ball.  
 (b) Insert the ball into the clutch shaft hole.

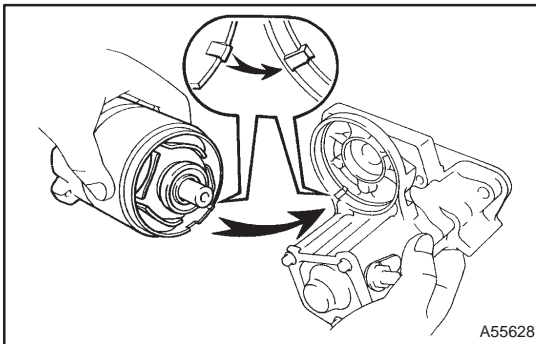


- (c) Place the clutch on the drive housing.



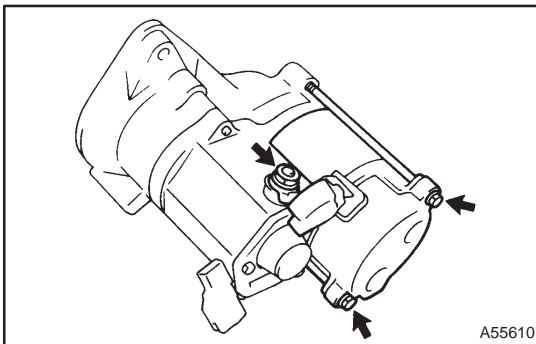
- (d) Install the drive housing to the magnetic switch with the 2 bolts.

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



### 13. INSTALL STARTER YOKE ASSY

- (a) Align the protrusion of the yoke with the cutout of the magnetic switch.



- (b) Install the yoke and armature with the 2 through bolts.

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

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

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