

# CHAPTER 6. ELECTRICAL

## -1. STARTER

### A. Armature

If the commutator surface is dirty, clean with #600 grit sandpaper as shown in the drawing below.

After sanding, wash thoroughly with electrical contact cleaner and dry with high-pressure air steam.

The mica insulation between commutator segments should be 0.5 ~ 0.8 mm (0.02-0.03 in). below the segment level. If not, scrape to proper limits with appropriately shaped tool. (A hacksaw blade can be ground to fit).

Each commutator segment should show zero ohm resistance to the others and at least  $3M\Omega$  resistance to the core. If there is less than  $3M\Omega$  resistance to the core, or one of segments is open, replace the armature.

In addition, the armature can be placed on a "growler" (testing device) and checked magnetically for internal shorts. Follow manufacturer's test recommendations.

If the commutator surface shows heavy scoring, it can be turned down on a lathe or commutator turning machine. Check the specification chart for minimum allowable commutator diameter. Recut the mica after.

NOTE: \_\_\_\_\_

Should turning be required, check the condition of the cover bearings, armature electrical properties starter amperage draw and rpm and, finally, carbon brushes.

### B. Yoke

If the yoke area is dirty, clean with clean solvent and dry with high-pressure air.

Yoke coil resistance is 0.05 ohm.

The coil should show zero ohm resistance, if it shows more than zero ohm, replace it.

If the yoke shows leakage to ground (re-

sistance is less than  $100 k\Omega$ ) replace it.

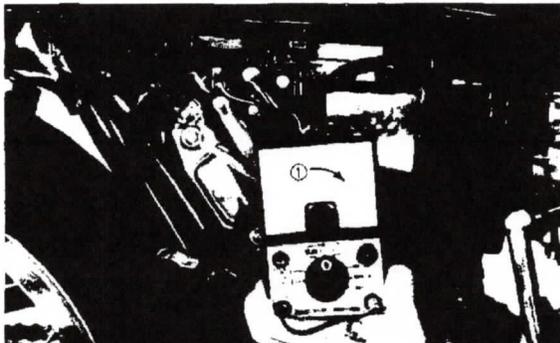
NOTE: \_\_\_\_\_

Immediately after cleaning, the yoke may show some insulation leakage. Wait for it to thoroughly dry before checking or re-installing.

### C. Starter relay switch

#### 1. Inspection

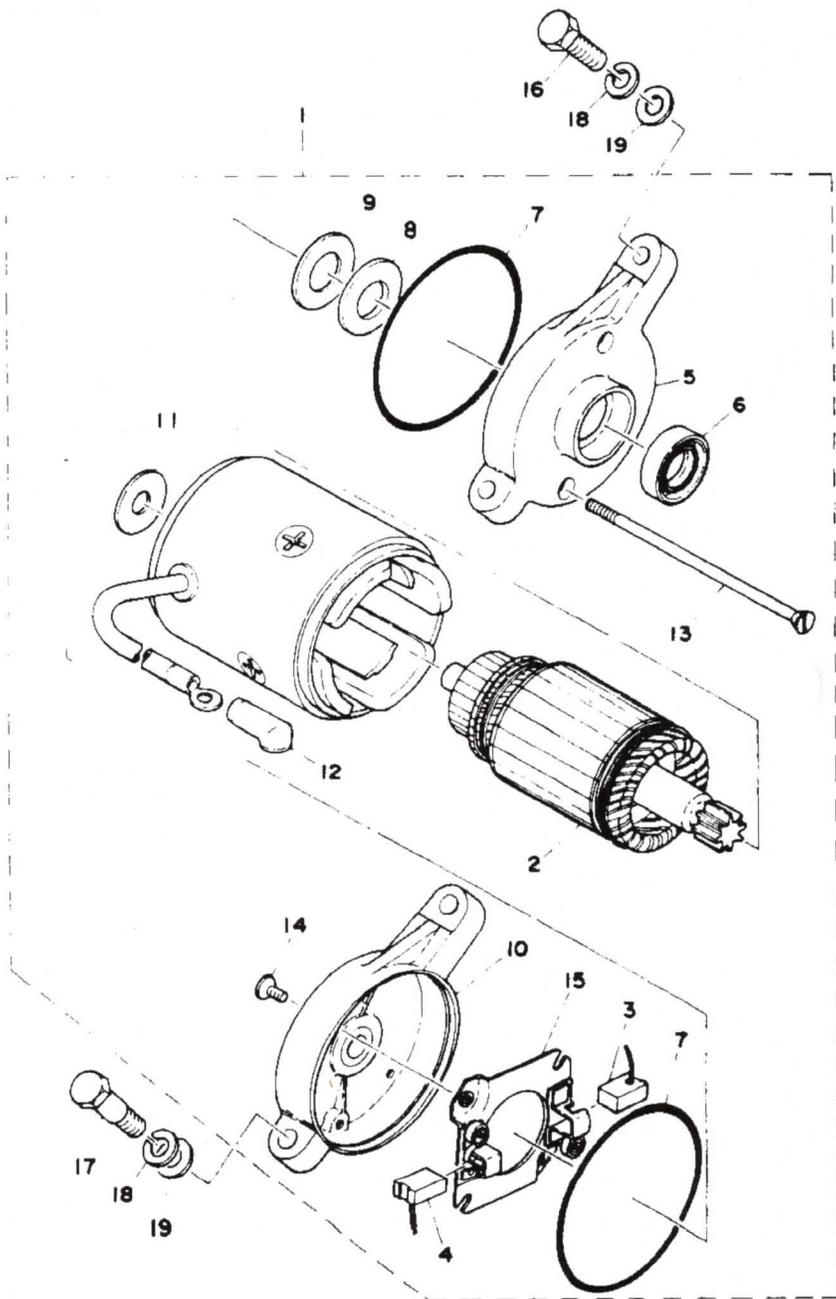
- Disconnect starter relay leads at the relay.
- Connect pocket tester leads to the relay terminals (ohm x 1 scale).
- Turn ignition ON ("1" position) and engine stop switch to "RUN".
- Push starter button. The relay should click once and the scale should read zero ohm. If the relay clicks but the scale does not read zero, the relay must be replaced.



1. Starter button "ON"

- If the relay does not click, check the wires from the starter button and the battery (red/white, blue/white). Turn ignition off. Use (ohm x 1) scale on tester. The resistance between these wires should be no more than  $3.5\Omega$ . If there is more resistance, the relay should be replaced.

# STARTING MOTOR



- |                            |                     |
|----------------------------|---------------------|
| 1. Starting motor Ass'y    | 11. Thrust 2 washer |
| 2. Armature                | 12. Cap             |
| 3. Brush 1                 | 13. Special screw   |
| 4. Brush 2                 | 14. Flathead screw  |
| 5. Starting motor 1 cover  | 15. Brush holder    |
| 6. Oil seal                | 16. Bolt            |
| 7. O-ring                  | 17. Hexagon bolt    |
| 8. Special washer          | 18. Spring washer   |
| 9. Thrust 1 washer         | 19. Plain washer    |
| 10. Starting motor 2 cover |                     |