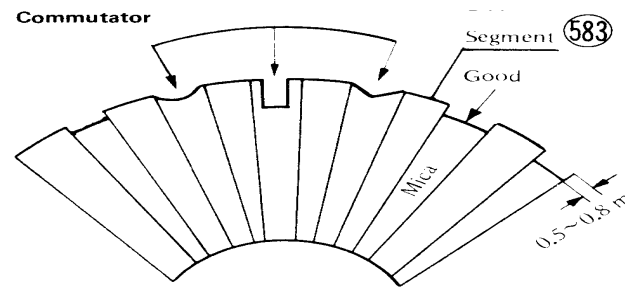


- |                         |                   |               |                            |
|-------------------------|-------------------|---------------|----------------------------|
| 1. Output Shaft         | 7. Internal Gear  | 13. Armature  | 19. Commutator             |
| 2. Ball Bearing         | 8. Planet Pinion  | 14. Armature  | 20. Screw                  |
| 3. Grease Seal          | 9. LJO Gear       | 15. Field C21 | 21. End Cover              |
| 4. O Ring               | 10. End Plate     | 16. Brush     | 22. Starter Motor Sprocket |
| 5. Plate Spring         | 11. Yoke Assembly | 17. Carbor    | 23. End Cover              |
| 6. Internal Gear Holder | 12. Cores         | 18. Spring    |                            |

**Commutator**

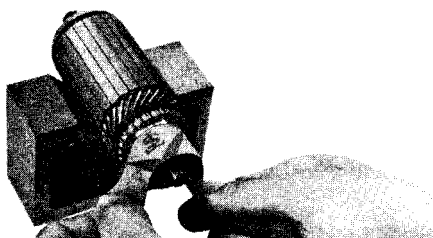
A dirty or damaged commutator will result in poor



brush contact and cause the brushes to wear down quickly. In addition, particles from brush wear accumulating between commutator segments may cause partial shorts.

Correct the commutator surface if necessary with fine emery cloth, and clean out the grooves as illustrated. Determine as accurately as possible the depth of the grooves between commutator segments. Replace the armature with a new one if the groove depth is less than the service limit.

Using the R x 1 ohmmeter range, measure the resistance between any two commutator segments. If there is a high resistance or no reading between any two segments, a winding is open and the armature must be replaced.



Standard	Service Limit
0.5-0.8 mm	0.2 mm

