



Figure 12-306. *Controlling the speed of a series DC motor.*

thinner the laminations, the more effectively this method reduces eddy current losses.

Inspection and Maintenance of DC Motors

Use the following procedures to make inspection and maintenance checks:

1. Check the operation of the unit driven by the motor in accordance with the instructions covering the specific installation.
2. Check all wiring, connections, terminals, fuses, and switches for general condition and security.
3. Keep motors clean and mounting bolts tight.
4. Check brushes for condition, length, and spring tension. Minimum brush lengths, correct spring tension, and procedures for replacing brushes are given in the applicable manufacturer's instructions.
5. Inspect commutator for cleanness, pitting, scoring, roughness, corrosion, or burning. Check for high mica (IF the copper wears down below the mica, the mica insulates the brushes from the commutator.) Clean dirty commutators with a cloth moistened with the recommended cleaning solvent. Polish rough or corroded commutators with fine sandpaper (000 or finer) and blow out with compressed air. Never use emery paper since it contains metallic particles that may cause shorts. Replace the motor if the commutator is burned, badly pitted, grooved, or worn

to the extent that the mica insulation is flush with the commutator surface.

6. Inspect all exposed wiring for evidence of overheating. Replace the motor if the insulation on leads or windings is burned, cracked, or brittle.
7. Lubricate only if called for by the manufacturer's instructions covering the motor. Most motors used in today's airplanes require no lubrication between overhauls.
8. Adjust and lubricate the gearbox, or unit which the motor drives, in accordance with the applicable manufacturer's instructions covering the unit.

When trouble develops in a DC motor system, check first to determine the source of the trouble. Replace the motor only when the trouble is due to a defect in the motor itself. In most cases, the failure of a motor to operate is caused by a defect in the external electrical circuit or by mechanical failure in the mechanism driven by the motor.

Check the external electrical circuit for loose or dirty connections and for improper connection of wiring. Look for open circuits, grounds, and shorts by following the applicable manufacturer's circuit testing procedure. If the fuse is not blown, failure of the motor to operate is usually due to an open circuit. A blown fuse usually indicates an accidental ground or short circuit. A low battery usually causes the chattering of the relay switch, which controls the