

Fig. 6. Fabricated and moulded commutator types

Fabricated commutator

To remedy a badly worn fabricated commutator, undercut the insulators between the segments to a depth of $\frac{1}{32}$ in. (.79 mm.), then take a light skim cut with a very sharp tool (preferably diamond tipped).

If a non-diamond tipped tool is used for machining, the commutator should afterwards be lightly polished using a very fine glass-paper, NEVER emery cloth.

Armature

The troubles which may develop in armatures in service may be classified as short circuits, open circuits, and earthed circuits. The usual causes of these troubles and the methods of testing the armature are described in the following paragraphs.

Before proceeding with any test, clean the armature and remove the drive end bracket by pressing the shaft out of the end bracket bearing.

Short circuit test:

Discolouration of any one or two coils, and blackening of two or more commutator segments is a sign of a short circuit. The usual causes are as follows:—

1. Carbon or copper dust having become lodged between the commutator segments.
2. Solder particles getting behind the commutator.
3. An overload, resulting in excessive heating, causing the insulation to break down.
4. The insulation becoming damaged.

Place the armature in a Growler as shown in Fig. 7. Energise the Growler and hold a narrow piece of steel

strip over the top of the armature in line with the shaft. Slowly revolve the armature, keeping the steel strip in the same position.

If a short circuit exists, the steel strip will be heavily attracted towards the slot containing the faulty coil. If the attraction is particularly heavy, switch off the Growler quickly, otherwise the coil may be entirely burnt out.

Remember that a coil is wound in two slots, so that on turning the armature further, a second faulty slot will be found.

Open circuit test:

An open circuit as the term implies, is a break in the armature windings. This defect is characterised by violent sparking at the commutator segments between which the open circuit occurs. Open circuits can occur at the commutator segments or in the armature winding, the more usual causes being:—

1. Overloading, causing excessive heating and melting out of the solder from the commutator risers.
2. Vibration sufficient to break the commutator connections.
3. Poor connections which have become oxidised.
4. An earth or short circuit burning open the winding.
5. A mechanical defect causing the armature to rub on some inside part of machine.

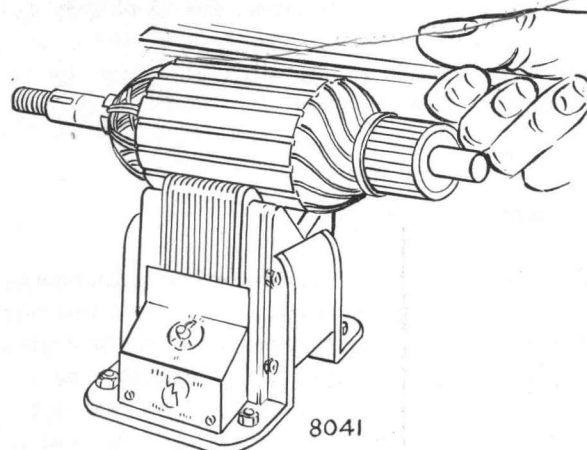


Fig. 7. Armature short circuit test in Growler