

Brush springs

The brush springs are captive in the brush box and are renewed with the brush box and end bracket assembly.

Insert a NEW brush into each brush box in turn. Depress it against the spring with a push type spring gauge until the brush is protruding only $\frac{1}{16}$ in. (1.5 mm.) from the box. Check the spring pressure against that given in "General Data".

Check the insulation of the brush box, brush springs and terminal post with an armature tester or 110 volt A.C. 15 watt test lamp. If the lamp lights the insulation is faulty.

Commutator

The commutator can be examined whilst the commutator end bracket is removed.

A commutator in good condition will be burnished to a dark chocolate colour and be free from pits and burned spots. The surface can be cleaned with a petrol moistened cloth.

Refacing of the commutator should not normally be required. If the surface becomes badly worn the armature must be removed and the commutator serviced. See "Armature".

Commutator end bracket—to refit

Fit the brushes in the correct guide of the brush box and position the flexible leads as shown in Fig. 55.

Refit the thrust washer.

Refit the end bracket to the yoke and tighten the screws.

Armature—to remove

Remove the bolts from the drive end bracket.

Note that they are of different lengths.

Withdraw the armature complete with the drive assembly and end bracket.

Armature—inspection and test

If the commutator is pitted or burned it can be skimmed to a minimum thickness of .080 in. (2.05 mm.). The commutator surface should finally be polished with very fine glass paper. **DO NOT UNDERCUT THE INSULATION SLOTS.**

Check that the armature shows no signs of fouling the pole shoes. If rubbing marks are seen, check the armature shaft for eccentricity. A bent armature shaft cannot be satisfactorily straightened.

If the armature shaft is satisfactory, renew the bushes in each end bracket.

The armature should be tested with an armature tester ("growler"). If this equipment is not available test the insulation with a 110 volt A.C. 15 watt test lamp.

Field winding—inspection and test

Examine the inside of the yoke and field windings for obvious signs of insulation breakdown. Check the insulating piece between the field winding brush joint and the yoke.

The riveted connection of field winding to yoke must be disconnected before a positive test of insulation can be done.

This insulation test is essential if bench tests show high current consumption with slow speed or low torque.