



## SERVICE OF A LUCAS GENERATOR

Extracts from a 1938 Lucas service manual, courtesy of Roger Brundle.

### BRUSHGEAR

#### 1. Sticking Brush

Test by holding back the brush spring and moving the brush in its holder. If the brush tends to stick, remove it and clean it with petrol.

#### 2. Brush spring weak

If the tension is low, fit a new spring.

#### 3. Brushes worn

If the brushes have worn to such an extent that they do not bear properly on the commutator they must be replaced:

Remove dynamo from engine, withdraw cover band, remove screw securing eyelet on end of lead from brush. Hold back brush spring and remove brush from its holder. Place new brush in holder and gently lower spring. Secure eyelet on end of brush lead in original position. Bed the brushes to the commutator.

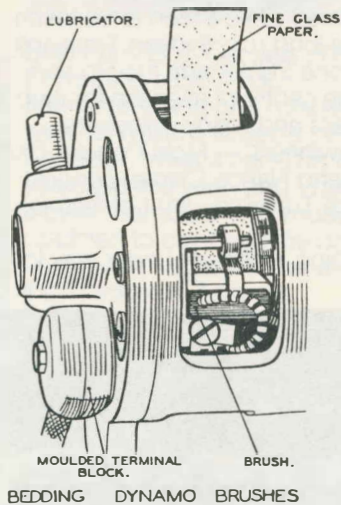
#### 4. Bedding brushes to commutator

The surface of the brush in contact with the commutator must present a uniformly polished appearance. Brushes must be bedded to the commutator as follows:

Pass a thin strip of very fine glass paper between the commutator and each of the brushes so that the abrasive surface is towards the brush faces. Turn the armature in its normal direction of rotation for a few minutes and then remove the glass paper. Wipe away carbon or sand paper dust after the operation. It is best removed by blowing the dynamo out with a pump or compressed air with the machine in

SYMPTOMS.	POSSIBLE CAUSES.	
BATTERY IN LOW STATE OF CHARGE	Dynamo giving low or intermittent output indicated by ammeter giving low or intermittent charge reading when car is running steadily in top gear with no lights on.	Broken or loose connection in charging circuit. Battery needs attention. Commutator dirty. Commutator worn. Brushes sticking. Brushes worn. Brush springs weak. Brushes not bedding. Regulator out of adjustment.
	Dynamo not charging indicated by ammeter not showing charge reading when running steadily in top gear with no lights in use.	Broken or loose connection in charging circuit. Battery needs attention. Commutator dirty. Brushes worn. Brush lead broken. Regulator out of adjustment. Cut-out damaged. Cut-out contacts dirty. Dynamo Field coils damaged. Armature damaged.
BATTERY OVERCHARGED SHOWN BY BURNT-OUT BULBS AND VERY FREQUENT NEED FOR "TOPPING UP"	Dynamo giving high output indicated by ammeter giving high charge reading.	Regulator out of adjustment.

### HOW TO LOCATE AND REMEDY CHARGING TROUBLES.



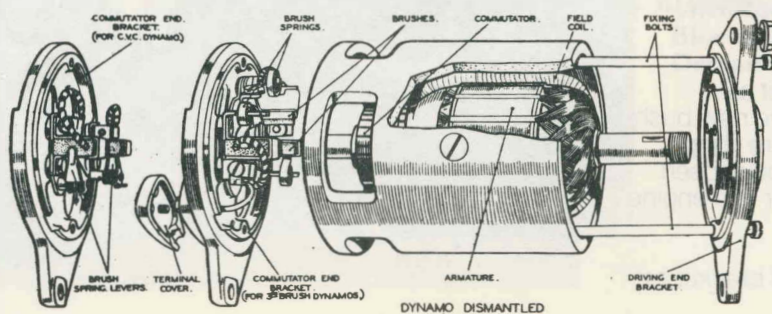
motion.

After several days running, the brushgear should be again examined; and any carbon dust wiped away. At the same time, the dynamo output should be checked.

#### 5. Dirty or greasy commutator

A commutator in good condition will be smooth and free of pits or burned spots.

Clean the commutator with a cloth moistened with petrol. If this is ineffective, carefully polish with a fine glass paper. Pass the strip of glass paper around the commutator and draw it backwards and forwards while the armature is slowly rotated.



## **6. Commutator badly worn or grooved**

To withdraw armature from dynamo:

Remove driving pulley by unscrewing the fising nut and carefully levering the pulley off the shaft with a sprocket extractor or similar tool. Unscrew the through bolts passing from the commutator end bracket to the driving end bracket.

Lift the brushes from their holders and disconnect field leads from brushgear and leads from the moulded terminal block.

Pull the two end brackets from the yoke. Finally remove the driving end bracket and bearing from the armature by means of a bearing puller.

Turn down the commutator in lathe. Rotate the armature at high speed and take a very light cut with a sharp tool. Do not remove any more metal than is necessary. Polish the commutator with a strip of fine glass paper. Now, undercut the mica as follows:

The mica insulation must be below the surface of the commutator segments. If necessary, it must be undercut to a depth of 1/32". A hacksaw blade, ground down until it is only slightly thicker than the mica, forms a suitable tool. This is drawn backwards and forwards along the mica until the latter is undercut to the proper depth

## **REPLACEMENT OF ARMATURE**

Remove armature as described in (6). The testing of the armature requires the use of a voltdrop tester, or a growler. If these are not available, the component should be checked by substitution or sent to a Lucas agent for testing. After fitting a replacement armature, the brushes must be re-bedded as the new commutator may not have the same curvature as the old one.

## **REPLACEMENT OF FIELD COILS**

The fitting of field coils requires the use of a pole shoe expander. If one of these tools is not available, do not attempt this operation, but send the dynamo to the nearest Lucas agent.

## **REPLACEMENT OF BEARINGS**

Whenever possible, ball bearings should be removed and refitted by means of a press

### **Bearing bush**

Remove the end bracket as described in (6). Press the new bush in the end bracket. Before fitting, make sure the bushes have been soaked in machine oil or thin engine oil.

### **Ball bearings**

Remove the driving end bracket as

described in (6). Remove the plate covering the bearing by withdrawing the three securing screws. Fit the new bearing using a suitable tool. See that the bearing is packed with a good quality high melting point ball bearing grease