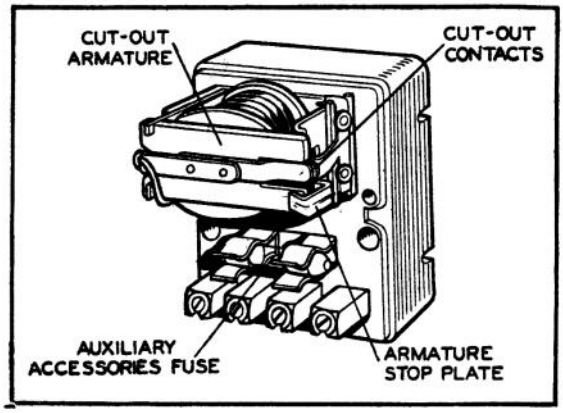
CUT-OUT AND FUSE UNIT

MODEL CF3

This unit houses the cut-out and a fuse protecting the auxiliary accessories, e.g., the electric horn. A spare fuse is provided.



THE CUT-OUT

The cut-out is an automatic switch connected between the dynamo and the battery. It acts as a valve, allowing the flow of current from the dynamo to the battery only. It closes when the dynamo is running fast enough to charge the battery and opens when the speed is low or the engine is stationary, thus preventing current flowing from the battery through the dynamo windings.

The switch consists of a pair of contacts which are held open by a spring and closed magnetically. When the engine is stationary or running slowly the contacts should be open.

There are two windings on the cut-out core—a shunt winding of many turns of fine wire, and a series winding of a comparatively few turns of thicker wire. Whenever current flows in either winding, the core becomes a magnet, the strength of which depends upon the amount of current flowing.

The shunt coil is connected across the dynamo terminals. When the vehicle is starting, the dynamo voltage rises with the engine speed, until the electromagnet is strong enough to overcome the spring tension and close the contacts. Current from the dynamo will now flow through the series coil to the battery. The series coil also causes a magnetic pull which adds to that of the shunt coil, so that the contacts are firmly closed and cannot be separated by vibration.

When the vehicle slows down the dynamo voltage decreases until it is lower than that of the battery, i.e., below either 12 or 6 volts according to the voltage of the equipment. Current will now pass through the series winding in the reverse direction, i.e., from the battery to the dynamo. This will cause the partial demagnetisation of the cut-out core, allowing the spring to separate the contacts and so open the charging circuit.

(I) HOW TO LOCATE AND REMEDY CUT-OUT TROUBLE

When troubles such as intermittent output, no output, or high cutting-in-speed are experienced, check possible causes as given in dynamo fault finding table (Section A) before suspecting the cut-out.

Connect together the terminals marked "A" and "D" on the cut-out unit—this short circuits the cut-out unit. If a dynamo output is then shown, it is probable that either the shunt or the series winding is open circuited or the contacts are burnt or dirty.

CLEANING CONTACTS

To clean the contacts, remove the cut-out cover, place a strip of fine glass paper between the contacts, and then closing the contacts by hand, draw the paper through. This should be done two or three times, with the rough side towards each contact.

EARTHING OF CUT-OUT

See that the terminal marked "E" in the cut-out unit is connected to an earthing point on the chassis. Check by means of a circuit tester (see N1).

If after carrying out the preceding examination the cut-out is still unsatisfactory, it is probable that the fault lies in the windings and a replacement cut-out must be fitted.

ADJUSTMENT OF SETTING

If it is suspected that the cutting-in-speed of the dynamo is too high (see Section P), connect a suitable voltmeter between the terminals marked "D" and "E" on the cut-out unit and slowly raise the engine speed. When the voltmeter reading rises to about 13·7—14·3 the cut-out contacts should close. If the cut-out has become out of adjustment and operates at a voltage outside these limits it must be reset. To alter the cut-out setting, the air gap between the cut-out armature and the pole face must be adjusted by bending the armature stop plate. To lower the operating voltage the air gap must be reduced, and to raise the operating voltage, the air gap must be increased. The adjustment is very sensitive, and the air gap must be altered by only a small amount.

(2) ACCESSORIES FUSE

A blown fuse indicates a fault in the unit it protects or in the wiring, and the trouble must be rectified before the fuse is replaced. Do not try to rectify the fault by fitting a fuse of higher value or by wrapping a length of copper wire round the fuse clips—this may cause serious trouble. Carefully check the wiring and tape any lead which is badly worn or chafed. If the fault is found to be in the accessory itself this must be remedied.

REPLACEMENT INSTRUCTIONS FOR LUCAS CUT-OUT AND FUSE UNIT TYPE CF3.

The Lucas CF3 cut-out will replace the earlier type CF1. also the Rotax FN and MF types.

The following four diagrams illustrate the connections when replacing : Fig. 1 Rotax FN, Fig. 2 Rotax MF.

The Lucas CF1 had a main dynamo fuse which although expedient in a few cases, generally proves unnecessary. Fig. 3 shows the connections using such a fuse, while wiring up as Fig. 4 includes the fuse in the auxiliary circuit.

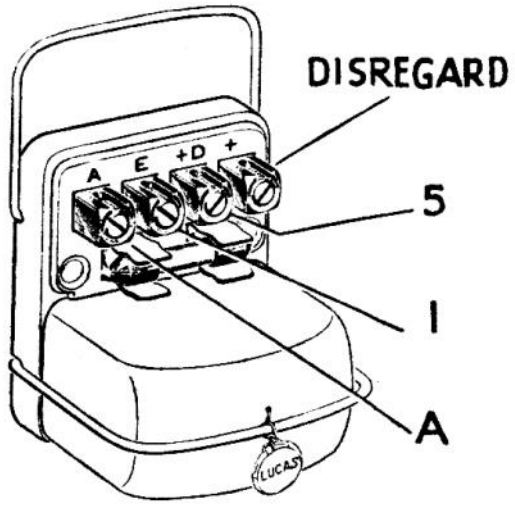


FIG. 1
ROTAX FN

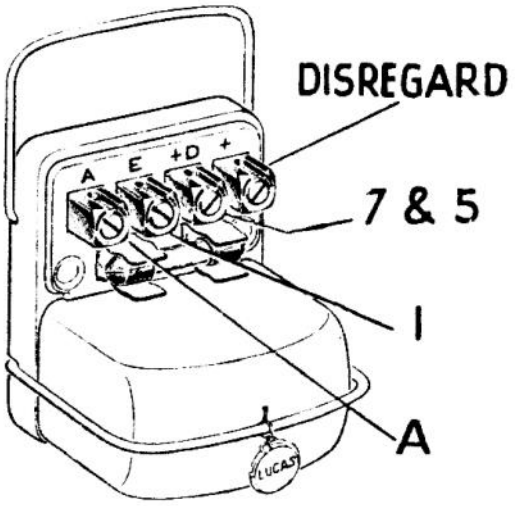


FIG. 2
ROTAX MF

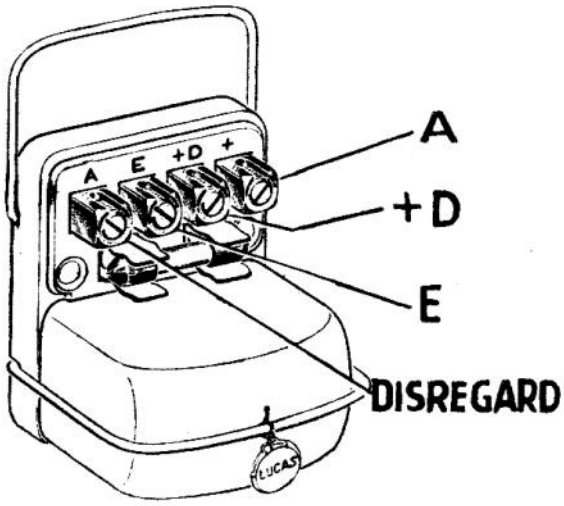


FIG. 3
LUCAS CF1
WITH DYNAMO FUSE

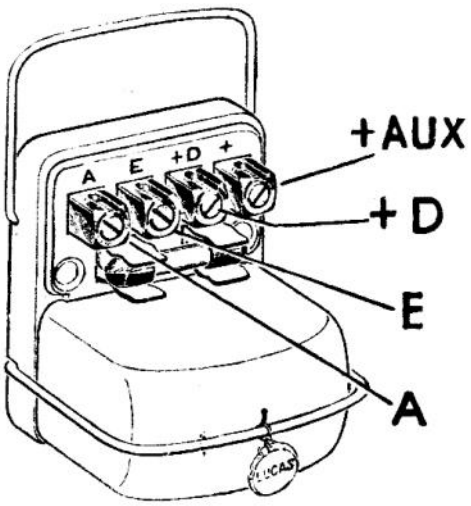


FIG. 4
LUCAS CF1
WITH AUX. FUSE

JOSEPH LUCAS LIMITED, BIRMINGHAM, ENGLAND.

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