BSA SERVICE SHEET No. 814

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Model C10L

WIPAC LIGHTING

The lighting circuit is supplied by an A.C. generator through a bridge type rectifier, so that, except when the headlamp switch is in the "Emergency" position, the coil, battery and lights are supplied with direct current in the normal way.

The generator output is automatically controlled by means of the headlamp switching to match the demands of the circuit and the characteristic of the generator prevents over-charging.

Alternator

The general arrangement of the alternator is as shown in Fig. Y45 and its dismantling entails removing the primary chaincase (See Service Sheet No. 409). No keeper is required for the magnets when dismantling.

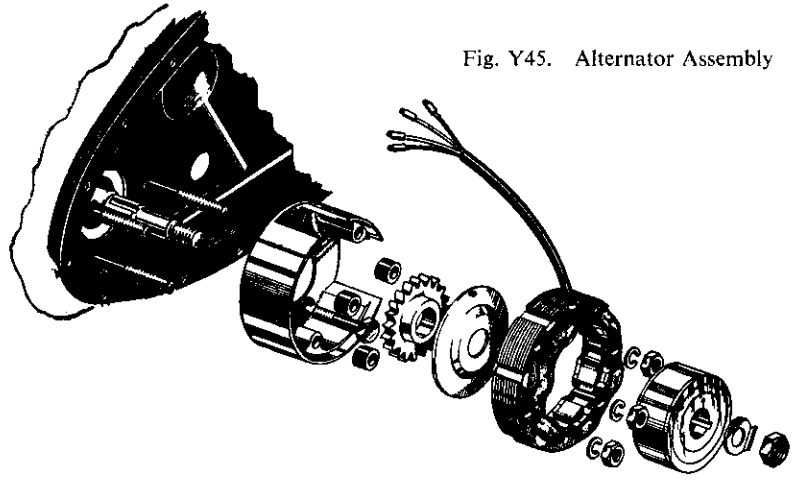


Fig. Y45. Alternator Assembly

The alternator employs six permanent magnets set in a central rotor and six output coils mounted on a surrounding stator. Two of the coils are connected in parallel within the generator and their output is brought out through the green and white leads. These two coils are permanently connected to the rectifier and supply current to the battery in all switch positions.

The remaining four coils are also connected in parallel (terminating in the orange and yellow leads) and are employed only when the headlight is on or when the headlamp switch is in the emergency start position.

Note: When replacing the stator, the bracket securing the output leads should be on the side of the stator facing away from the machine.

Fault Finding

As the lighting circuit operates on the D.C. system, all bulb and electric horn connections can be checked by normal continuity tests with a D.C. Voltmeter or a spare bulb. Note that the system is positive earth.

The charging circuit can only be checked when the engine is running and for test purposes the engine speed should be not less than 2,200 r.p.m.

A suitable ammeter should be placed in series with the battery feed wire to check that the charging rate in each switch position agrees approximately with the following table.

Position 1. All Lights Off.	2.0 amps.
Position 2. Lights on Low ("L") (Pilot, Rear and Speedo Bulbs on)	.5 amp.
Position 3. Lights on High ("H") (Main, Rear and Speedo Bulbs on)	5 amp.

Failure to attain the listed rate in position 1 or 2 may indicate that the green or white lead is earthed at some point, or that one or both coils are earthed internally or are on open circuit.

Less than the correct charge in position 3 when correct charge is obtained in position 1 and 2, may indicate that the yellow or orange leads or any of the four coils are earthed, or are on open circuit.

Unsatisfactory performance in all switch positions is likely to be due to a faulty rectifier but may indicate any of the faults listed above.

Note: If a faulty rectifier is found, the tests should be repeated after replacement to ensure that the alternator has not been damaged. Alternatively, a burnt out alternator may be due to a faulty rectifier and the tests should again be repeated, taking care to ensure that the alternator is not again damaged if the rectifier or any other part of the circuit is shorting.

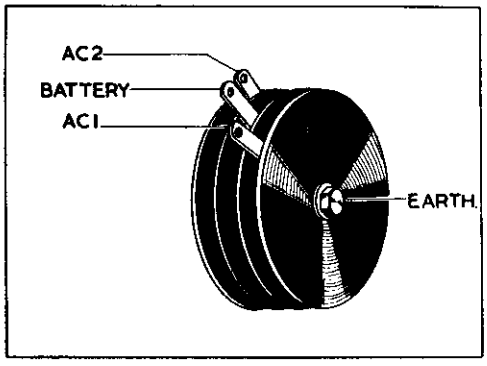
Checking the Rectifier

Detach the rectifier from the machine and using a 6v. battery in series with a 6v. 3 watt bulb apply the test leads to the rectifier in the following sequence. The rectifier terminals are illustrated in Fig. 46.

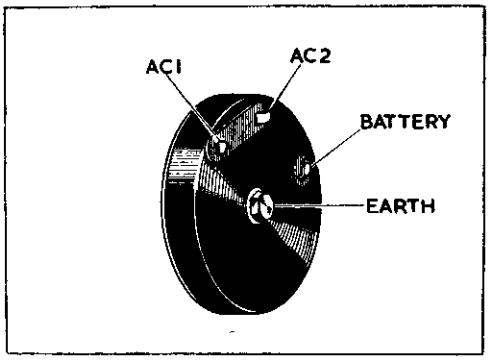
1. Positive lead to leg A.C.1, Negative to EARTH rectifier terminal.
1a. Reverse test leads and repeat above.
2. Positive lead to leg A.C.2, Negative to EARTH rectifier terminal.
2a. Reverse test leads and repeat above.
3. Positive lead to BATTERY rectifier terminal. Negative to leg A.C.1.
3a. Reverse test leads and repeat above.
4. Positive lead to BATTERY rectifier terminal. Negative to leg A.C.2.
4a. Reverse test leads and repeat above.

The bulb should light on the first of each pair of tests and not on the other, e.g. it should light on No. 1 test and not on 1a, and so on.

If the bulb lights in both directions on one or more of the four tests, the plate or plates have shorted.



Rectifier, Finned Type



Rectifier, Pancake Type

Fig. Y46

If the bulb does not light in either direction on one or more of the four tests the plate or plates are in open circuit.

These tests will only check whether the rectifier is on open or short circuit, and will not provide any indication of a partial breakdown, which can only be detected by special equipment.

The rectifier must always be in a position where it can be adequately cooled by the air flow or a major failure may occur due to overheating.

The Headlamp Switch

In the event of trouble with this unit it should be inspected carefully for a dry soldered joint or a detached wire. Should neither of these be apparent the fault may be that the spring loaded ball contact of the switch does not make proper contact between two of the switch posts. Rapidly switching on and off several times may overcome this fault but otherwise the complete switch should be replaced.

The Emergency Start

If the machine fails to start owing to a flat battery the headlamp switch should be turned to the Emergency Start position "EMG". The machine can then be started in the normal way and when the engine is running at a reasonable speed the switch should be rapidly rotated to the normal running position.

If the battery is badly damaged or missing, the machine may be run with the switch in the "EMG" position but the live battery wire from the rectifier must be connected to earth or the rectifier will be seriously damaged.

When the machine is being run with the switch in the "EMG" position it may be found that its performance is adversely affected. This is due to the affect of phase shift and the symptons will disappear when the switch is returned to its normal position.

Ignition Coil

The ignition coil is of the oil filled type and should not require any attention whatsoever. Removal of the two slotted screws will permit the cap to be removed for inspection of the top connections and the suppressor, when fitted.

Note: Burning out of bulbs is often due to an imperfect connection between the rectifier and battery or the battery and earth. Check the battery terminals regularly for corrosion, as a faulty connection at these points will cause trouble.

The double connectors used on the lighting system are internally connected so that all four plug-in sockets are interconnected.

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