

REFITTING THE RECTIFIER

Fig. 29

95. Testing the Rectifier

For test purposes disregard the end earth (ground) terminal.

To test the rectifier, first disconnect the brown/white lead from the rectifier centre terminal and insulate the end of the lead to prevent any possibility of a short circuit occurring, and then connect a D.C. voltmeter (with 1 ohm load resistor in parallel) between the rectifier centre terminal and earth.

Note—Voltmeter positive terminal to frame earth (ground) and negative terminal to centre terminal on rectifier.

With the engine running at approximately 3,000 r.p.m. observe the voltmeter reading. The reading obtained should be at least 7.5V minimum.

(1) If the reading is equal to or slightly greater than that quoted, then the rectifier elements in the forward direction are satisfactory.

(2) If the reading is excessively higher than the figures given, then check the rectifier earthing bolt connection. If the connection is good then a replacement rectifier should be fitted.

(3) If the reading is lower than the figure quoted or zero readings are obtained, then the rectifier or the charging circuit wiring is faulty and the rectifier should be disconnected and bench tested so that the fault can be located.

Note that all of the above conclusions assume that the alternator A.C. output figures were satisfactory. Any fault at the alternator will, of course, reflect on the rectifier test results. Similarly any fault in the charging circuit wiring may indicate that the rectifier is faulty. The best method of locating a fault is to disconnect the rectifier and bench-test it as shown below:

96. Bench Testing the Rectifier

For this test the rectifier should be disconnected and removed. Before removing the rectifier, disconnect the leads from the battery terminals to avoid the possibility of a short circuit occurring.

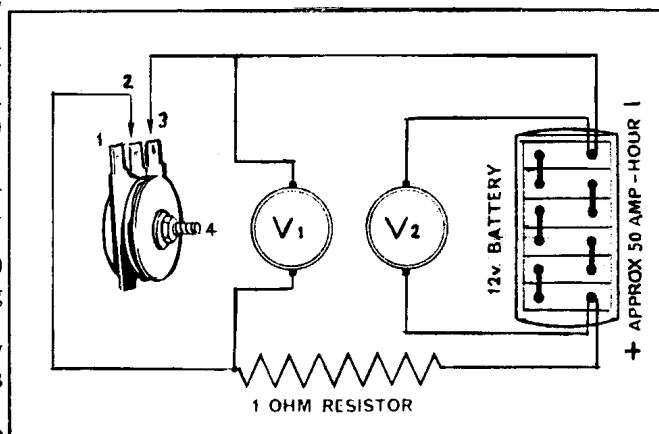
Connect the rectifier to a 12 volt battery and 1 ohm load resistor, and then connect the D.C. voltmeter in the V2 position, as shown in Fig. 30. Note the battery voltage (should be 12V) and then connect the voltmeter in V1 position whilst the following tests are conducted.

A voltmeter in position V1 will measure the volt drop across the rectifier plate. In position V2 it will measure the supply voltage to check that it is the recommended 12 volts on load.

Test 1. With the test leads, make the following connectings but keep the testing time as short as possible to avoid overheating the rectifier cell: (a) 1 and 2, (b) 1 and 4, (c) 3 and 4, (d) 3 and 2. Each reading should not be greater than 2.5 volts with the battery polarity as shown.

Test 2. Reverse the leads or battery polarity and repeat Test 1. The readings obtained should not be more than 1.5 volts below battery voltage (V2) (i.e. 10.5 volts minimum).

If the readings obtained are not within the figures given, then the rectifier internal connections are shorting or aged and the rectifier should be renewed.



BENCH TESTING THE RECTIFIER

Fig. 30

97. Checking the Charging Circuit for Continuity

First check that there is voltage at the battery and that it is correctly connected into the circuit +ve earth (ground). Ensure that the fuse has not blown in the negative line.

(1) First, check that there is voltage at the rectifier centre terminal by connecting a D.C. voltmeter, with 1 ohm load resistor in parallel, between the rectifier centre terminal (not the end terminal on latest rectifiers) and earth (remember (+ve) positive earth (ground)). The voltmeter should read battery volts. If it does not, disconnect the alternator leads (green/white and green/yellow) at the snap connectors.

(a) Fit a jumper lead across the brown/white and green/yellow connections at the rectifier, and check the voltage at the snap connector. This test will indicate whether the harness alternator lead is open circuit.