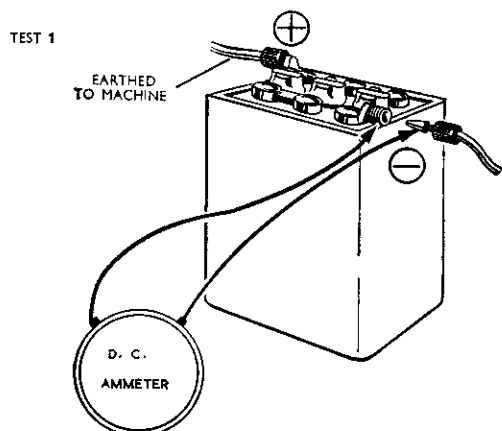
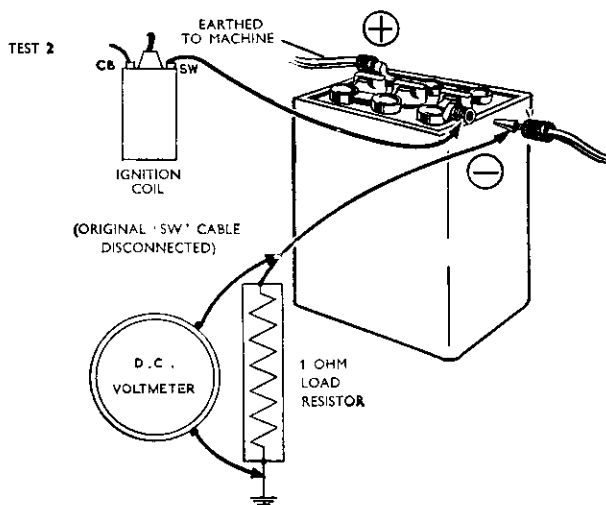


Checking D.C. Input to Battery

TEST 1. Ammeter connected in series with main lead and battery.



TEST 2. Disconnect main lead from battery. Connect 1 ohm resistor in place of battery. Feed ignition coil separately from battery. Turn ignition switch to IGN position.



If battery is in poor condition or low state of charge use TEST 2.

Test	Switch Position	Reading Amps. at 3,000 r.p.m.
1	OFF	3.0 (min.)
	PILOT	5.0 (min.)
	HEAD	2.5 (min.)

Test	Switch Position	Reading Volts at 3,000 r.p.m.
2	OFF	4.5 (min.)
	PILOT	8.0 (min.)
	HEAD	5.5 (min.)

CONCLUSIONS FROM THESE TESTS

Test 1. If meter readings are as stated, the charging circuit and alternator are satisfactory. No reading; check the generator.

A low reading can be caused by a faulty battery. Proceed with Test 2. If readings still low check battery with hydrometer and discharge tester. A high reading, 2 – 3 amps above values given, in the "OFF" position may be due to an open-circuit half-charge resistor, which should be checked, or to one cell of the battery being short-circuited. If Test 2 readings are satisfactory, then check the battery.

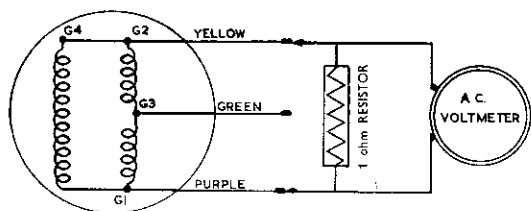
Test 2. If meter readings are lower or higher than values stated, check the generator. No reading on meter, check the rectifier.

IMPORTANT

Inaccurate readings can be due to faulty wiring, bad connections at the snap connectors. Make a quick visual check of all connections before proceeding with the tests.

Remember it is no use carrying out Test 1 if the battery is faulty or in a low state of charge, if in doubt proceed with Test 2.

Testing the IA45 Alternator on the Machine, using an A.C. Voltmeter and 1 Ohm Load Resistor



Test	Voltmeter and Resistor Connected Across	Voltmeter Reading at 4,000 - 5,000 r.p.m.
1	G1 AND G2	4.5 (min.)
2	G1 AND G3	8.5 (min.)
	G2 AND G3	8.5 (min.)

Test	Individual Coil Check (disconnect G2 and G4)	
3	G1 AND G4	2.3 (min.)
	G1 AND G2	2.3 (min.)

Test	NO READING SHOULD BE OBTAINED WITH VOLTMETER CONNECTED ACROSS ANY ONE LEAD AND THE GENERATOR STATOR (EARTH)
4	

Disconnect at the snap connectors the Purple, Green, and Yellow cables, but leave the Blue cable connected for ignition purposes. The above readings should be obtained from a satisfactory alternator.

CONCLUSIONS FROM THESE TESTS

- (a) If a reading is obtained in Test 4, a coil or cable is earthed. Check coil lead and terminal plate.
- (b) If no reading is obtained in Test 4 but very low readings in Tests 1 and 2, a short circuit across an internal connection of a coil can be suspected. Test 3 should then indicate the faulty coil. If very low readings are obtained from both coils in this test the alternator is most probably severely demagnetised.
- (c) A reading of approximately 2.5 to 3.5 volts in Test 1 will normally be obtained if the rotor has been withdrawn and replaced. Remagnetisation is required.

IMPORTANT

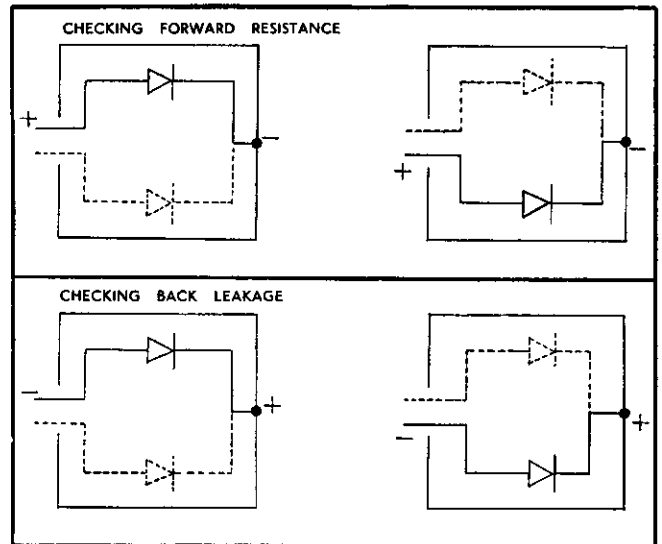
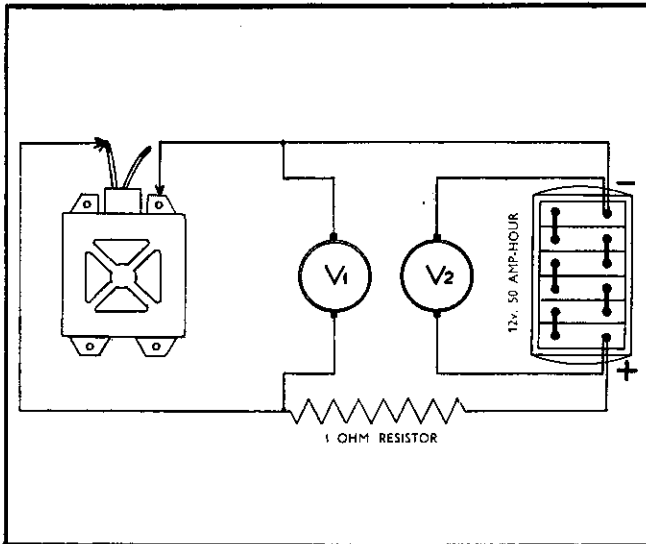
If the alternator voltage is excessive, do not immediately assume it is over-magnetised. First check for poor earths and for badly soldered and loose connections. A badly earthed rectifier will give the same apparent effect as an over-magnetised generator.

As snap connectors are used on the set it is quite possible that they have not been pressed firmly together and it is advisable that these are checked if voltage readings are considerably higher than the values given.

NOTE

When carrying out Test 1, and G4 is brought out as a separate cable, a temporary link should be connected between G4 and G2 on the alternator terminal plate.

Rectifier—Bench Testing



- V1 — will measure the volt drop across the rectifier cell, which should not be greater than 2.5 volts.
- V2 — must be checked when testing the rectifier cell, to make certain the supply voltage is 12 volts on load.

It is essential that the supply is kept at 12 volts for these tests.

FORWARD RESISTANCE TEST

Test 1. Connect negative lead to rectifier case. Connect positive lead to each cable connector in turn; reading on V1 should not be greater than 2.5 volts. Keep the testing time as short as possible to avoid overheating the rectifier cell.

BACK LEAKAGE TEST

Test 2. Connect positive test lead to case; negative test lead to each cable connector in turn. Reading on V1 should not be below 10 volts.

CONCLUSIONS FROM THESE TESTS

If the voltage reading, in Test 1, is exceeded on either rectifier cell, the unit is aged and should be replaced.

If the reading in Test 2 is well below 10 volts, on either or both cells, the rectifier is shorted internally and should be replaced.

DOUBLE BANK RECTIFIER (47094) USED WITH THE RM12 SERIES "A"

The test procedure and figures for this rectifier are as quoted in the above tests. But it will be necessary to disconnect the two leads which are connected to the rectifier fixing bolts, before testing the two units separately.

IMPORTANT

There are two types of Westinghouse rectifiers in service on LUCAS sets. The original having low voltage plates being identified by the figures 2L stamped on the case, the other which has high voltage plates being identified by the figures 12L.

The values quoted in the above tests are for the high voltage rectifiers 12L. When testing a low voltage rectifier 2L the Forward Resistance reading should be the same but the Back Leakage figure can be down to 9 volts.

Circuit Continuity through Switch Positions

TO TEST IGNITION SWITCH

1. (Connecting charging circuit to battery).
Connect red voltmeter test lead to earth.
Connect black voltmeter lead (with 1 ohm load in parallel) to single snap connector containing green cable from alternator.
Switch ignition on when battery volts should register on D.C. voltmeter.

TO TEST HALF-CHARGE SWITCH AND RESISTANCE

2. Disconnect the two cables (purple and yellow) coming from the headlamp into the snap connectors. Temporarily connect the purple cable to the single snap connectors containing green cable.
Connect black voltmeter lead (and 1 ohm load in parallel) to the yellow cable.
Leave ignition switch "ON".
With light switch off, battery volts should register on D.C. meter and zero volts with the light switch in Pilot or Head position.
3. The two remaining cables are from the rectifier which can be tested from this position by carrying out the procedure given in the Rectifier Test.

CONCLUSIONS FROM THESE TESTS

1. No voltage or low voltage in Test 1 indicates open circuit or high resistance connection in switch or wiring from switch to alternator.
2. No reading in "OFF" position indicates open circuit in resistance or switch which would give high charge in off position.
3. Faulty rectifier or rectifier cable connections would result in no charge.