

ALTERNATOR TESTING: STATORS and ROTORS

The Lucas alternator has been with us since the late '50s with only one major change.....In the early '60s the rotor went to 74mm outside diameter whilst the centre crank hole standardised at 19mm Early RMs had 70mm rotors and these parts are not interchangeable for any worthwhile results.... In the early '70s the welded rotor (commonly 54212298) was introduced which overcame the earlier problem of rotors (commonly 54212006) which simply came apart through vibration and heat

Check points for a good rotor:

Is the centre steel tube coming loose? Is there 'throw' of grey powder from the centre? Are the magnets coming proud? How is the fit on the crank / woodruff key?

Finally, what state are the magnets in?Without a specific magnetism measuring device there is a crude rule of thumb that you can apply.....Does the magnet hold the rotors weight on a moderate steel sized spanner or screwdriver held horizontally? If this test fails, it's time for a new rotor

Age and use contribute towards any loss of magnetism but in some cases it might be worth considering re-magnetising

The Stator:

These are basically interchangeable with the same three studs fixing but with differing outputs..... The RM 18s and earlier had outputs of 60 – 80 watts while the RM 19 (47204) produced in the order of 100 watts

The RM19 (47204) is the only currently available 6v unit which will convert to 12v

The most common RM21 (47205) produces at least 110 watts, the RM23 has a high output 180 watts, while the RM24 moves to 3 phase

To Test the Stator:

The same basic tests cover the whole range and using a multimeter set to resistance (Ohms) and with the alternator wires disconnected from any wires on the bike there should be a very low resistance, (i.e. less than 1 Ohm) between any and all the wires

Between any wire and the metalwork of the stator or the engine if still fitted in the bike there should be NO circuit (i.e. test on high Ohms)

If you haven't got a multimeter and the alternator is still in the bike then disconnect ALL wires from the bike and then connect a headlamp bulb across any 2 wires.....start the engine and let it tickover and the bulb should glow brightly.....WARNING if you blip the throttle you might blow the bulb.....

....try all combinations of wires as there should be output on all but giving different levels of brightness....then connect the lamp between any / all wires and the metalwork where there should be no illumination

This test will sort out the basic function, if you suspect a low output problem you will have to use a meter to test for full output as follows (note that there is no need to find 100 watt resistors or to attempt to measure the AC output from the stator)

Output Test:

Disconnect the output terminal of the rectifier (i.e. negative, if positive earth) which is often BROWN or BROWN/BLUE.....connect a multimeter with a 10 Amp DC range between the rectifier terminal and the previously removed connector.....try the lights and there should be no current flowing

Start the bike and you should now register current being generated.....switch on all the lights and rev the engine to approximately 3000 rpm when you should see 9 Amps (RM19/21) if all is well, any lower figure could be failed stator windings or low rotor magnetism

High output alternators should pass 10 Amps before 3000 rpm

NB: Whenever fitting rotors and stators there **MUST** always be a **MINIMUM** of 0.008 (8 thou) clearance between the two **AT ALL POINTS**.....failure to comply with this rule causes damage and expense

