ALTERNATOR OVERHAUL — Lucas A115-3 and A115-45

DISMANTLE

1. Remove the alternator from the engine.
2. Remove the cover retaining screws and lift off the cover.

Removing the surge protection diode

3. Withdraw the screw securing the diode to the slip ring end bracket.
4. Disconnect the lead from the rectifier assembly and remove the diode.

Removing the regulator (Note arrangement of the brush box connections)

5. Disconnect the regulator leads.
6. Remove the screw securing the regulator to the brush box and withdraw the regulator. Note that this screw also secures the inner brush mounting plate in position.

Removing brush box assembly

7. Remove the screw retaining the outer brush mounting plate.
8. Withdraw both brushes.
9. Remove the two screws securing the brush box to the slip ring end bracket and lift off the brush box.

Removing the rectifier assembly

10. Securely clamp the alternator and release the stator winding cable ends from the rectifier by applying a hot soldering iron to the terminal tags of the rectifier. When the solder melts prise out the cable end.
11. Remove the two remaining screws securing the rectifier assembly to the slip ring end bracket and lift off the rectifier.

NOTE: Further dismantling of the rectifier is not required.

Removing the slip ring end bracket

12. Securely clamp the alternator and remove the three fixing bolts.
13. Lift off the bracket. If necessary tap under each fixing bolt with a soft mallet.

Removing stator assembly

14. Note the position of the stator output leads relative to the alternator fixing lugs and then lift the stator from the drive end bracket.

Separating drive end bracket and rotor

15. Remove the shaft nut washers from the pulley, woodruff key and spacers.
16. Use a press to remove the rotor shaft from the drive end bearing.
    Check all components as detailed under bench testing and renew any parts that are unsatisfactory.
    If necessary the slip rings and or the slip ring end bearing on the rotor shaft can be replaced. To renew the bearing, both slip rings must be removed as follows:
17. Unsolder outer slip ring connection and gently prise the slip ring off the shaft.
18. Unsolder inner slip ring connection and gently prise the slip ring off the shaft.

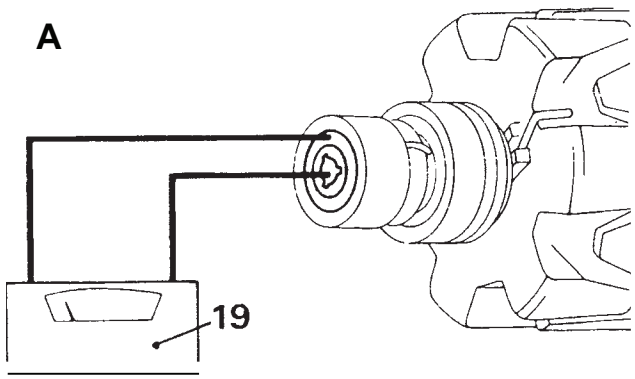
Whilst carrying out the above two instructions take care not to damage the insulation covering the winding leads.

ELECTRICAL TEST OF COMPONENTS

The illustrations for the following tests show the Components separated from the alternator, for clarity.

Rotor field winding

19. Check field winding continuity and resistance simultaneously, by connecting either a battery-operated ohmmeter (illustration **A)** or a 12 volt battery and moving coil ammeter (illustration B) between the slip rings. The ohmmeter should indicate the appropriate resistance given in the data, or it should indicate a current approximate to the figure obtained by dividing the appropriate resistance of the rotor into the battery voltage.



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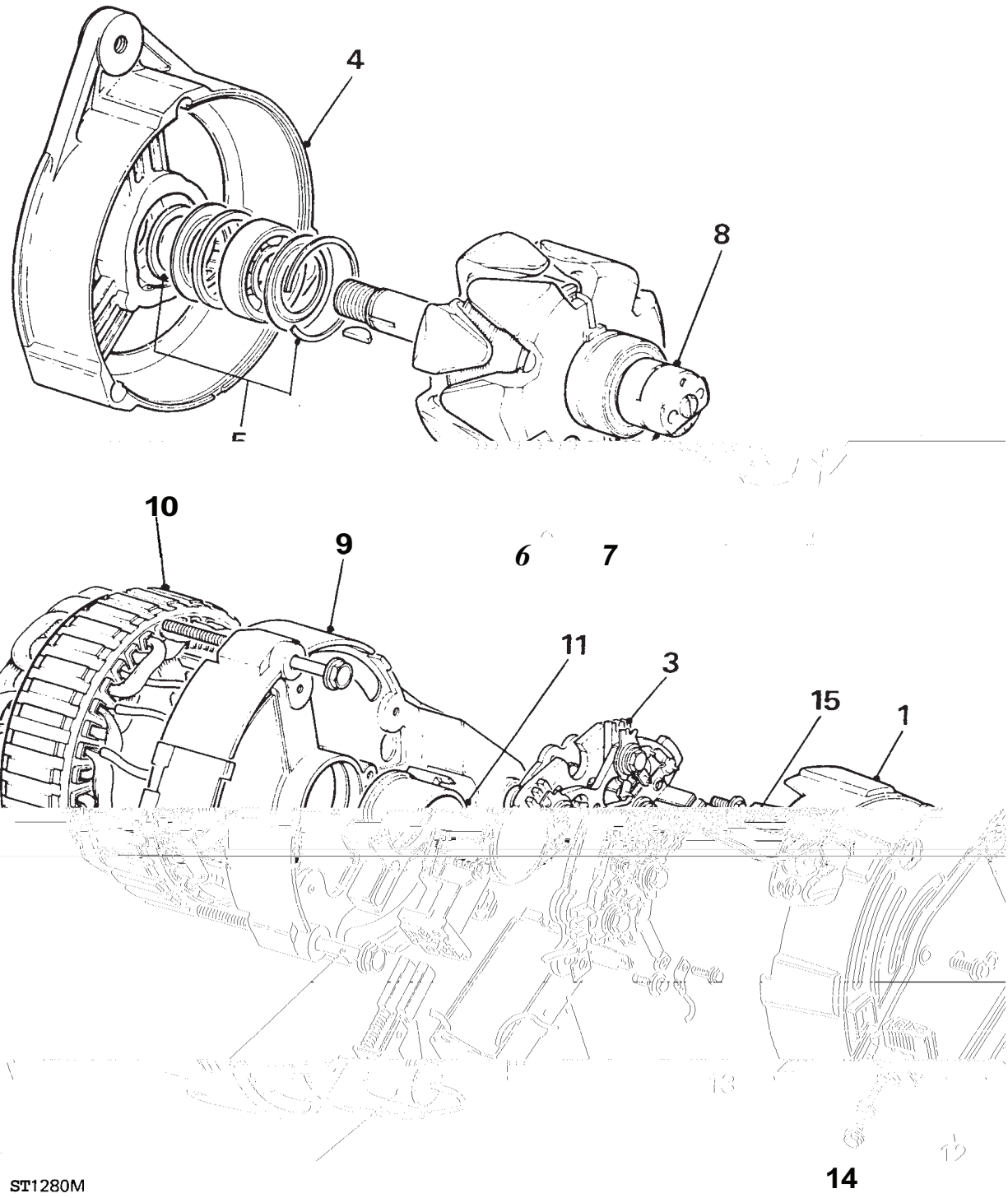
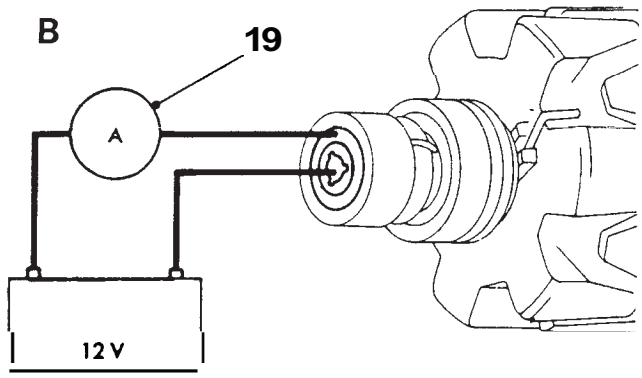


KEY TO ALTERNATOR

1. Cover
2. Regulator
3. Rectifier
4. Drive-end bracket
5. End bearing kit
6. Rotor assembly
7. Slip ring end bearing
8. Slip rings
9. Slip ring end bracket
10. Stator
11. Brush box
12. Brush set
13. Fixing bolt — slip ring end bracket to drive-end bracket
14. Suppression capacitor
15. Surge protection diode



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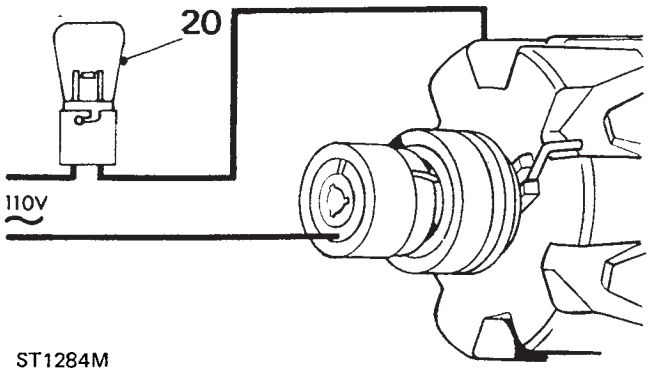
20. Check for satisfactory field winding insulation by connecting a 110 V A.C. 15-watt test lamp between either of the slip rings and the rotor body. The lamp should not light.



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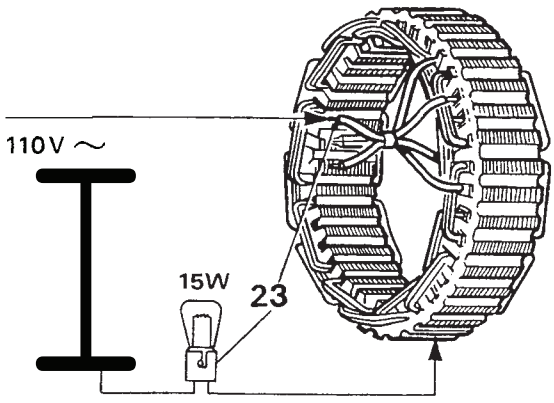
Stator winding

21. Due to the very low resistance of the stator windings, a practical test to determine the presence of short-circuited turns cannot be carried out without the use of special instruments. However, in practice inter-winding short-circuiting is usually indicated by obvious signs of burning of the insulating varnish covering the windings. If this is the case, renew the stator assembly without the need for further testing.
22. Check continuity of stator windings, by first connecting any two of the three stator winding connecting cables in series with a 12 V battery-operated test lamp, of not less than 36 watts. The test lamp should light. If not, renew the stator assembly. Providing the first part of the test is satisfactory, transfer one of the test lamp leads to the other (third) cable. Again the test lamp should light. If so, proceed to insulation test.
23. Check insulation of stator windings, by connecting a 110 V A.C. 15-watt test lamp between the stator laminations and any one of the three connecting cables. The lamp should not light.



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Rectifier diodes

24. Test each of the nine diodes separately, as follows. Connect a 12 V battery and a 1.5 watt bulb in series with one of the diodes, one test lead being applied to the diode connecting pin and the other to the particular heat sink plate in which the diode undergoing test is soldered. Note whether lamp lights, then reverse the test lead connections. The lamp should light during one half of the test only. If any one diode test is unsatisfactory, renew the rectifier assembly.

Regulator

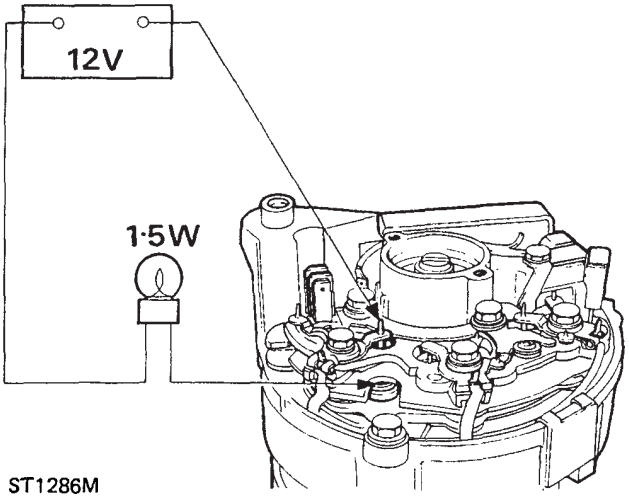
25. Individual testing of the regulator can only be carried out with special test equipment and unless this is available the regulator must be proved by substitution.

ASSEMBLE

Reassembly of the alternator is a reversal of the dismantling procedure. However the following points should be observed.

26. Take care not to damage the insulation covering the winding leads when renewing the slip rings.
27. A build up of solder must not occur on the upper face of the inner slip ring.
28. Use resin cored solder only.
29. Pack the bearings with a suitable high melting point grease.
30. Ensure that the brushes move freely in the brush box.
31. If the slip rings are not renewed the existing ones must be clean and smooth.
32. Tighten fixings to the torque figures quoted.

continued



TIGHTENING TORQUES

Through bolts	4.5 - 6.2 Nm (3.3 - 4.6 lbf ft)
Shaft nut	27.2 - 47.5 Nm (20.0 - 35.0 lbf ft)
Rectifier fixing bolts	3.4 - 3.96 Nm (2.5 - 2.9 lbf ft)
Sundry screws:	
SRE Cover	1.7 - 2.25 Nm (1.3 - 1.7 lbf ft)
Brush Box	3.4 - 3.96 Nm (2.5 - 2.9 lbf ft)
Surge Diode	3.4 - 3.96 Nm (2.5 - 2.9 lbf ft)
Capacitor..	3.61 - 4.74 Nm (2.7 - 3.5 lbf ft)
Brush and Regulator fixing	1.7 - 2.25 Nm (1.3 - 1.7 lbf ft)
D/E Bearing Plate	4.7 - 5.7 Nm (3.5 - 4.2 lbf ft)
Reg 'IND' Lead	1.1 - 1.36 Nm (9.7 - 12.0 lbf in)
NUTS:	
Main output terminal..	3.96 - 5.08 Nm (2.9 - 3.7 lbf ft)
'IND' terminal nuts	3.61 - 4.74 Nm (2.7 - 3.5 lbf ft)