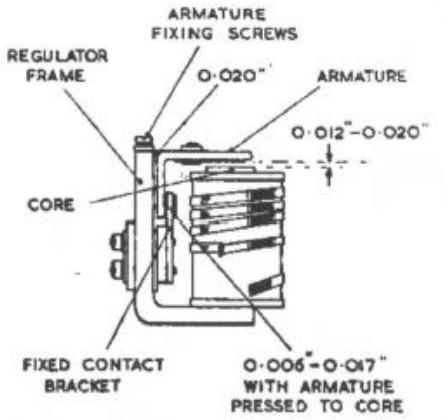
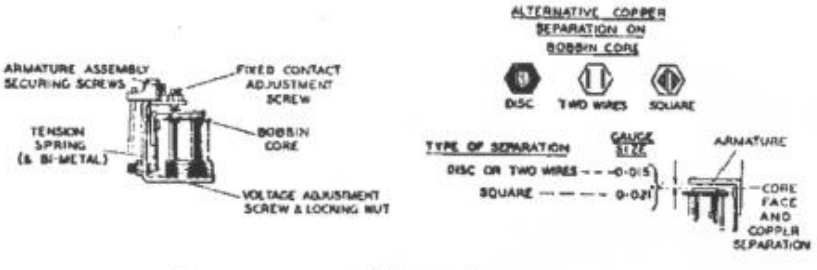
Lucas Control Box Tests

MODEL LRT9 REGULATOR--SINGLE CONTACT 2 BOBBIN TYPE
(Used with RF95, 96, RB106/1, MCR2, etc)

COMPENSATED VOLTAGE CONTROL TESTS WITH UNIT IN POSITION

On no account must these tests be made with the battery in circuit. To isolate the battery from the generator put a piece of dry card between the cut-out points. Remember the output of the generator, that is the current in amps, flowing from the generator to the battery is dependent on the state of charge of the battery. The generator will give a high output when the battery is in a low state of charge and a low output when the battery Is fully charged. Regulators must therefore always be set on open-circuit, a condition which is most easily obtained by inserting the piece of dry card as described above, alternatively, withdraw cables from 'A' and A1 terminals and join together temporarily.

Voltmeter Connection	**Reading**	**Action**
TEST 5, Reconnect generator leads to control box terminals D and F. Connect one lead of voltmeter to terminal A, the other to terminal E on the control box. Engine stationary.	A. Battery voltage	Regulator ground connection In good order. Proceed to Test 6.
	B. Less than battery voltage, or zero reading	Rectify bad ground or broken ground wire between terminal E and chassis
Test 6. Proceed to check regulator setting. Remove control box cover. Isolate the battery by placing a piece of dry card between cut-out contacts, alternatively, remove 'A' and A1 cables from terminals and join together temporarily. Connect one lead of voltmeter to terminal D (or frame of regulator) and the other lead to a good ground.	A. With generator running at approx. 3,000 rev/min voltage should remain constant within the following limits : ***Ambient Temp. 6 volt Equip. 12 volt Equip.*** 10°C 50°F} 8.0 – 8.5 16.0 – 16.5 20°C 68°F} 30°C 86°F } 8.0 15.5 –16.0 40°C 104°F}	Regulator in order. Proceed to Test 7
	B. Voltage remains constant, but outside the given limits.	Adjust regulator by turning the adjusting screw clockwise to increase or counter-clockwise to lower the setting. Check setting by raising speed from zero.
	C. Rising volts with rising engine speed up to 3,000 rev/min and beyond.	Check ' D ' and ' F ' leads for short circuit, if O.K. suspect broken shunt winding in regulator bobbin. The ground lead from control box terminal E is common to both shunt windings (regulator and cut-out). Hold a screwdriver near top of the bobbins and test for magnetic pull. If there Is pull on the one bobbin core and not on the other suspect open circuit on the latter. If no pull on either check for open circuited ground lead. Replace defective regulator.

Test 6 (continued)  Diagram 1.	D. Reading approx. Half setting	Suspect regulator contacts not passing current causing the contacts resistor to be In circuit the whole time. To test, bridge the contacts with screwdriver. This closes the circuit between D and F and we should get rising volts with rising speed, thus proving the contacts are burnt or corroded.
	E. Voltage does not rise with engine speed, or is erratic	Check air-gap Settings Types MCR1, MCR2, RF95, 96, 97, RB106/1. Insert a 0.020" feeler gauge between the crank of the armature and the L- shaped frame, and 0.012-0.020" gauge between the top of the core and the underside of the brass shim on the armature. Loosen the screws holding the regulator armature to the top of the L-shaped frame. Press downwards and backwards. Tighten the screws and check that clearances are as shown in diagram 1.
 Diagram 2.		Types RF95/3, RBI 06/2, RB107 and RB10e. Slacken the fixed contact screw and unlock armature securing screws. Insert appropriate feeler gauge between armature and core face. Press armature down squarely against the gauge and re-tighten securing screws. With gauge In position, screw the fixed contact down until it just touches the moving contact and tighten lock nut, see diagram 2. Reset the voltage adjusting screw as described under 6B.
TEST 7. Remove card from between cut-out contacts. Connect voltmeter to terminal A on control box and a good ground. Engine stationary.	Battery voltage	Proving that circuit from battery through ammeter to A terminal is O.K. Proceed to Test 8.
TEST 8. Leaving voltmeter connected as for Test 7. Start engine and watch voltmeter.	A. As cut-out closes the reading should increase 0.5 to 1 volt above battery voltage, and increase to the regulator setting in Test 6.	Cut-out is in order. Proceed to Test 9
	B. No voltage or very low voltage Is recorded when cut-out points close	Clean and adjust cut-out contacts so that they meet correctly.

Test 9. Connect one lead of voltmeter to D terminal of regulator or to the regulator frame Itself. Other voltmeter lead to a good ground	A. Cut-out points close when voltage is within the following limits : 6 volt 12 volt 6.3-6.7 12.7-13.3	Cut-out is in good order
	B. Cut-out points close outside above limits.	Adjust by turning adjusting screw in to increase or out to decrease the setting. Re-test with voltage rising from zero.
	C. Cut-out does not close.	Fit replacement unit.

THE FUNCTION OF THE FUSES IN THE AUXILIARY CIRCUITS IN 12 VOLT SYSTEMS

Two fuses are incorporated in RP95 control boxes. The main feed is via the ammeter to the A terminal of the control box, then through the series winding in the box to A1 terminal. Terminal A1 is also the feed to the ignition switch and from there to A3 via internal connections In the control box through the fuse to A4 terminal. Any accessories connected to A2 will work irrespective of the Ignition switch position. Accessories connected to A4 will operate only when the Ignition is switched on.

The system is similar on RF96, RB106 and RB106/2 control boxes, but the fuses are mounted on a separate base.