



TClinic

THE LUCAS R.F. 95 CONTROL BOX Part Two: Dynamo Regulation

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In this TClinic we will delve into the mystery of the coils and points inside the RF 95 Control Box in an attempt to simplify the components so you will better understand it and do some tests.

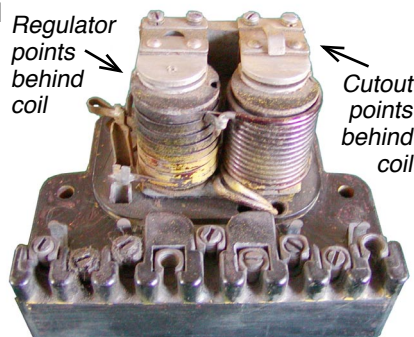
WHAT DO THOSE COILS DO?

Both coils and points control the connection between the dynamo and the battery. First off there needs to be an on and off switch to connect and disconnect the battery from the dynamo. It should be "on" (points closed) when the dynamo is producing enough current to charge the battery. It should be "off" (points open) when the dynamo is at rest or not producing enough current to charge the battery. If the dynamo was connected to the battery when at rest then it would drain the battery.

Secondly there must be some way of controlling the output of the dynamo. If it was not regulated then it could go wild and try to generate too much and burn itself out plus hurt the battery.

COIL IDENTIFICATION

When viewing the coils and contacts (in mounted position with terminal posts below the coils) the coil on the RIGHT side has the CUTOUT points which disconnects the dynamo when the dynamo is not producing current. The LEFT coil is the REGULATOR portion and regulates how much juice the dynamo will put out (assuming the dynamo is in good condition).



Original windings and points

HOW DO I KNOW IF THE CUTOUT IS WORKING?

Two tests here. Test the point contacts first. Disconnect the battery GROUND cable. Using an ohm meter, test reading between terminals A & D (terminals electrically on opposite sides of the points) and you should have nothing as cutout points should be open. Now manually close the points by pushing on them (OK to do with battery disconnected). Good points should read near zero ohms. If not, try making connections closer to the actual points to narrow down where the resistance is. If you do not have an ohm meter connect a test lamp between D and the battery terminal you took the ground strap off. Lamp should not light with points open and should be bright when points are closed. Any excess ohms or dimness in bulb will indicate point corrosion or other problems.

Next you need to test the coils. Reconnect battery and start the engine and idle. With volt meter between terminals D & E you should be getting 6-12 volts (lower at a low idle and higher at a high idle). Rev engine up to 1500 RPM and you should get 13.2-15 plus volts (depending on state of battery charge (lower if battery is fully charged and higher if battery is low)). Do the same test at terminals A & E. A is tied directly to the battery so you should never go below battery voltage. Once dynamo

matches battery and points close then reading at A will go up from battery voltage and increase with dynamo output. If this is not the case then there may be a dynamo problem or a regulator problem.

HOW DO I KNOW IF THE REGULATOR IS WORKING?

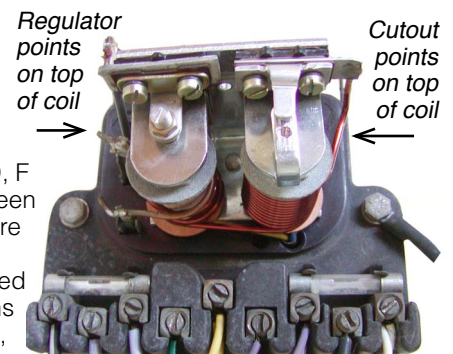
Again there are two tests. To test the actual points you need to disconnect the wire leading to the F terminal. Then put an ohm meter between the terminals F & E. You should get near zero ohms with good points. If it is higher try connections as close to the points as possible to narrow down where the resistance is. Now open the points. It should increase to around 60 ohms as a resistor takes over the circuit.

To test the coils connect a volt meter between F & E and set the engine at idle. At idle you should be seeing the same voltage as at the D & E terminals (probably 6-12 volts). Increase the speed of the engine and voltage between F & E will rise as the dynamo feeds the battery. Increasing the RPMs further, you will see the voltage peek and then start to decline. At about 2500 RPM you may only be seeing 8 or less volts. What should be occurring is the regulator is regulating the dynamo field windings to prevent it from destroying itself. Dynamo output is related to how much voltage is being fed to the dynamo field windings and how fast it is spinning. Put the same voltage to a slow spinning dynamo and a fast spinning one and you will get much greater output at the faster RPMs. So to keep control, and prevent dynamo burnout, the regulator senses output and drops voltage to save the dynamo at speed. If voltage does not follow the above pattern then the regulator needs adjustment or you have a defective dynamo.

WHAT IF IT ISN'T WORKING?

Most of the time just cleaning the points will fix problems. Adjustments can be made to the points but it is too much to go into here. Consult a manual or knowledgeable person. But I'll leave you with a couple ideas. If you suspect replacement is necessary you will find that a 5 post regulator is a fraction of the cost of a 9 post. The guts work identical (although may appear slightly different) and with a little work you can swap the coils and point assembly for terrific savings. And the new points are probably adjusted ready to go (worked on mine).

If you have a good 5 post handy you can temporarily install it to see if the charging system works. The A, A1, D, F and E connections between the two different boxes are the same. You just won't have accessories attached to your fused connections such as the horn, wipers, stop lamps, etc. during the test.



New 5 post windings and points mounted in old 9 post RF 95