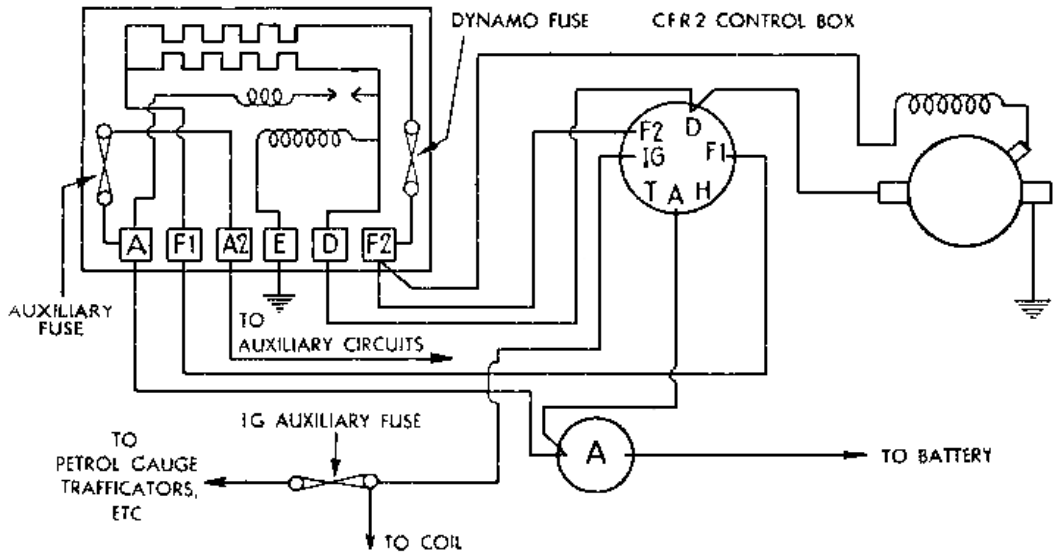
# Connecting a DVR3 for use with modified 3 brush dynamos

The 3 brush method of dynamo charge control became obsolete during the 1930's as auto-electrical technology advanced. Compensated Voltage Control (CVC) regulator cut-out units then came in offering automatic charge control using 2 brush dynamos. Modern electronic regulators represent the latest stage of development, the best of which bring low maintenance reliable charging for classic vehicles used in the modern world.

It is quite easy to incorporate the modern DVR3 Voltage Regulator with Current limiting, in an updated charging set-up with a 3 brush dynamo simple reconfigured for 2 brush operation. As an we take a circuit employing the Lucas CFR2 control box. This was used on many popular cars of the '30's including for example Morris and Austin 8's, Alvis and MG models.




*Typical Lucas 3 Brush dynamo with CFR2 circuit*

The CFR2 contains a Cut-out which prevents reverse current flow into the dynamo at low speeds, 2 field Resistors giving different current levels to the dynamo field winding and a pair of fuses protecting the field circuit and auxiliary circuits. Charge levels are controlled by the 4 way rotary ignition and charge switch.

These instructions allow for the shell of the CFR2 unit to be retained for original appearance. The DVR3 is compact enough to be hidden under the shell of the CFR2 so that only the most eagle eyed could see any change.

***Important:***

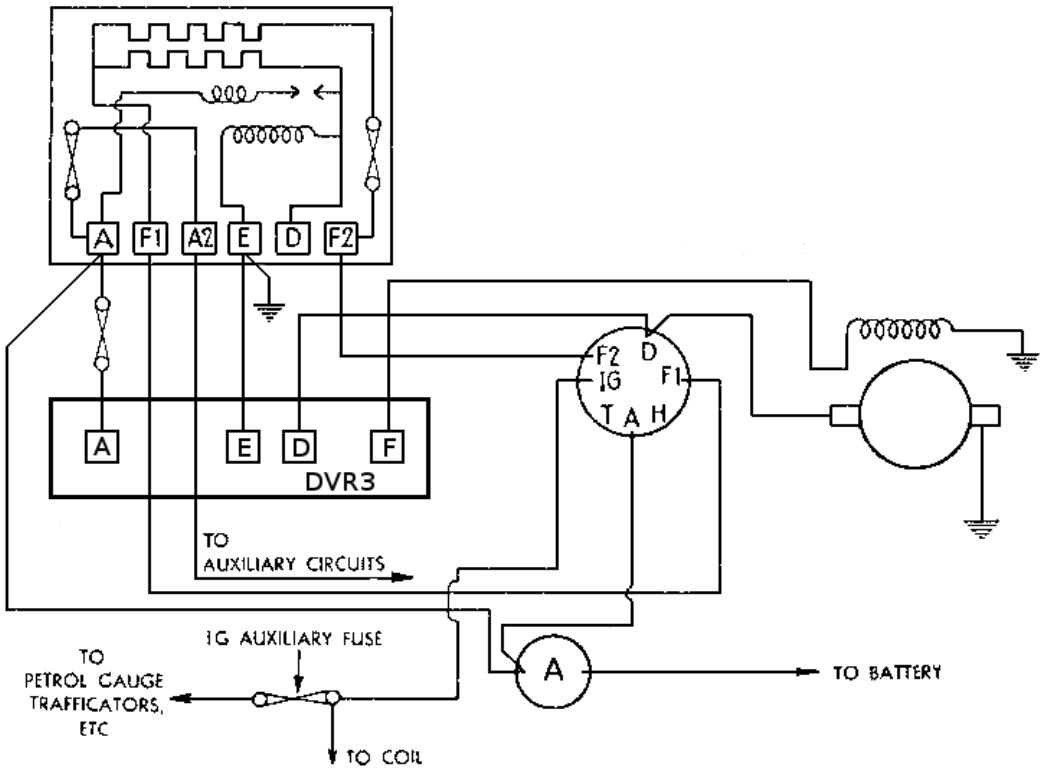
*With the DVR3 the dynamo field winding resistance must be greater than 2.5 ohms. This may not be the case with some 6 v dynamos especially. The field coils must be rewound to benefit from using the DVR3 in this case.*

*The DVR3 uses efficient electronic circuitry but inevitably produces some heat which must have a clear path to prevent high temperature building up (e.g. on a long summer night run). The unit is usually supplied with a thermal bonding pad on its lower surface designed to firmly attached to unit to a metal surface to act as a heat-sink. If this is not convenient DRL can supply an adhesive finned heat-sink which must be mounted in a cooling airflow to take away the heat.*

*Continued . . . .*

## . . . . Connecting a DVR3 for use with modified 3 brush dynamos *(continued)*

1. Remove the dynamo Field brush (the slimmer one to one side of the earthed brush). Take the end of the field wire that was to the 3rd brush to earth.
2. Unscrew the wire on the CFR2-F2 terminal from the dynamo field winding (often green/yellow or just green) and connect it instead to the DVR3-F wire (green). *The DVR3-F must be connected to the dynamo field winding only and to no other point or too high a charge could result.*
3. Move the Dynamo Output wire (yellow) for the CFR2-D terminal and connect to the DVR2-D wire. The D connection to the rotary switch remains in place so that the ignition/charge warning light still works.
4. Earth the DVR3-E lead (Back or red for Negative or Positive earth units respectively), conveniently at the CFR2-E screw terminal.
5. Connect the DVR3-A terminal via a fuse of suitable rating to the CFR2-A terminal post. This fuse protects the regulator and other components should the battery be connected in reverse. The fuse rating is ideally the next value above the current limit rating of the DVR3 used, i.e. 8, 11, 16 or 22 Amps. (DRL can supply a convenient in-line fuse holder.)




*DVR3 electronic regulator with converted 3-Brush dynamo*

Note: in the modified circuit the CFR2 houses the auxiliary circuit fuse and provides convenient screw terminals for connections. The wires from F1 & F2 to the charge switch are redundant and may be removed if preferred.