How to access the brushes/installing alternator regulator on the VP D2-40, D1-30 etc 115 amp alternators.

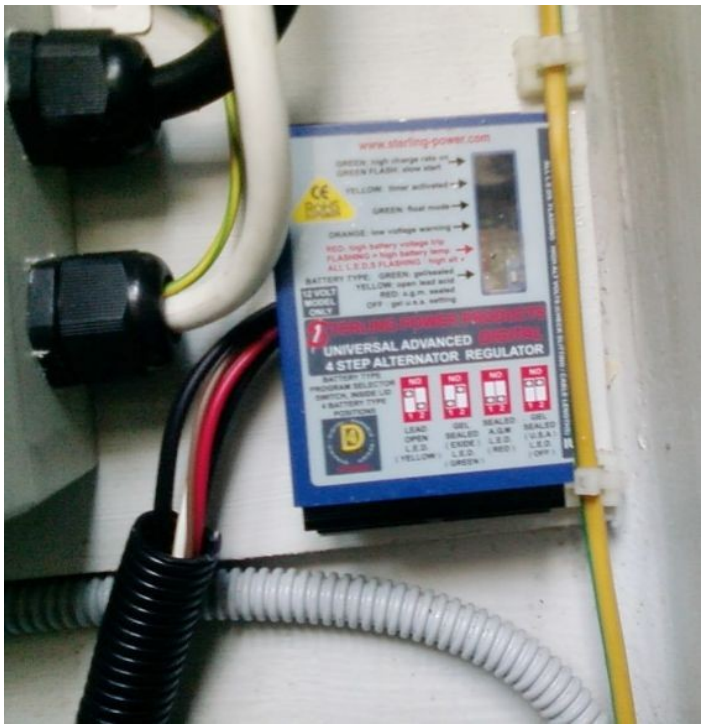
Warning: This guide needs to be utilised in conjunction with the manufacturer's installation instructions particularly with regard to confirming the type of alternator field control – see later. Connecting to the brushes requires a soldering iron with a 3/4mm bit, connecting up male and female spades or other similar connectors and using heat shrink. I suggest if you have never soldered before looking at the many helpful guides on the internet (google it) and practice with the ¼ inch spade connectors that you also can solder to complete the installation.

Tools: Soldering Iron, solder, pliers, screwdriver, heat shrink spade & ring connections.

I fitted the standard Sterling Power digital alternator regulators on my FP Orana, they are available for about 100 UK pounds (inc. 17.5% tax) in the UK and are readily available in Europe, the US and Australia – check the website for distributors. This regulator is cheaper and has more features than most of the other types. The regulator has 4 profiles which are selected for the type of battery e.g. flooded lead acid, gel. Agm etc. Each profile is NOT fixed but is varied continuously by the microprocessor according to the charge available, the size of the battery etc. In addition it has many safety features - read the web links below which give full details. If you are still not convinced then email Charles Sterling with you questions. Sterling are a small company which produces very innovative products – but are prepared to supply all the technical details if you want to know them. If you feel that installing the alternator regulator is too complex then look at the alternator to battery regulators which are more expensive but achieve almost the same improvement in charging rate/times by fooling the alternator regulator. Please choose whichever regulator you decide is the best, I have no vested interest in Sterling Power.

Web links:

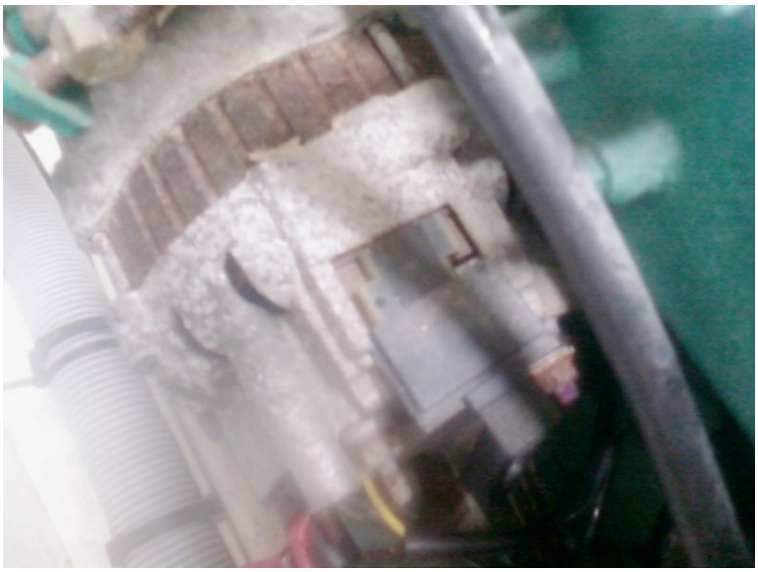
http://www.sterling-power.com/products-altreg.htm
http://www.sterling-power.com/products-altreg-info.htm



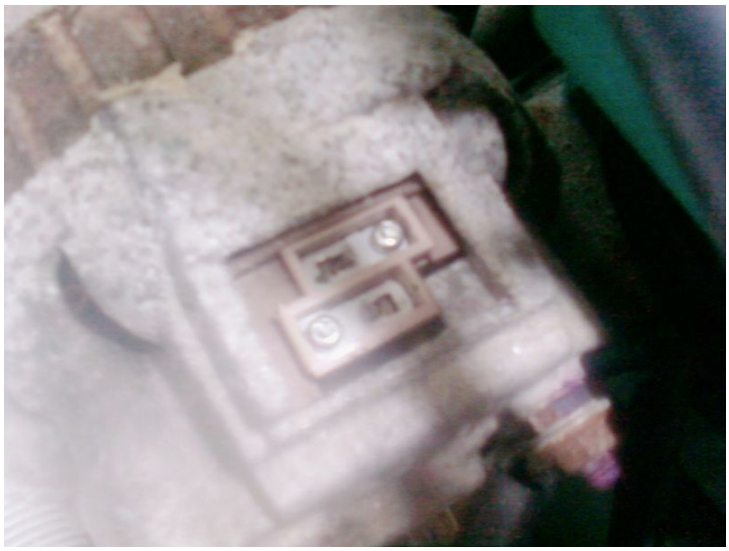
In order in understand the process download the sterling regulator installation instructions at

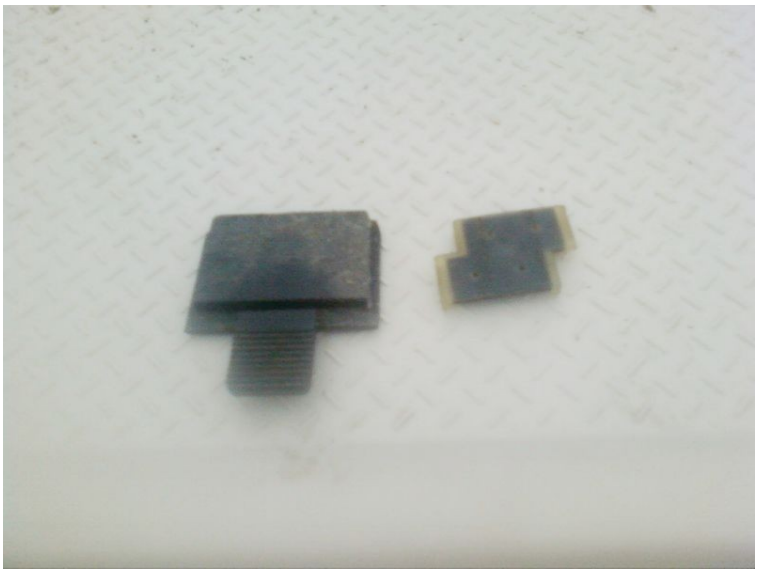
http://www.sterling-power.com/images/downloads/alt%20regulators/ProDigital%20advanced%20regulator%20instruction.pdf.

In the instructions are the background details that are necessary to understand what we are doing. This alternator, a Mitsubishi A003TR0091ZT on my D2-40 has negative field control. **IMPORTANT –please follow the instructions supplied with the regulator to confirm the field control polarity. Failure to do this will result in damage to both regulators.**



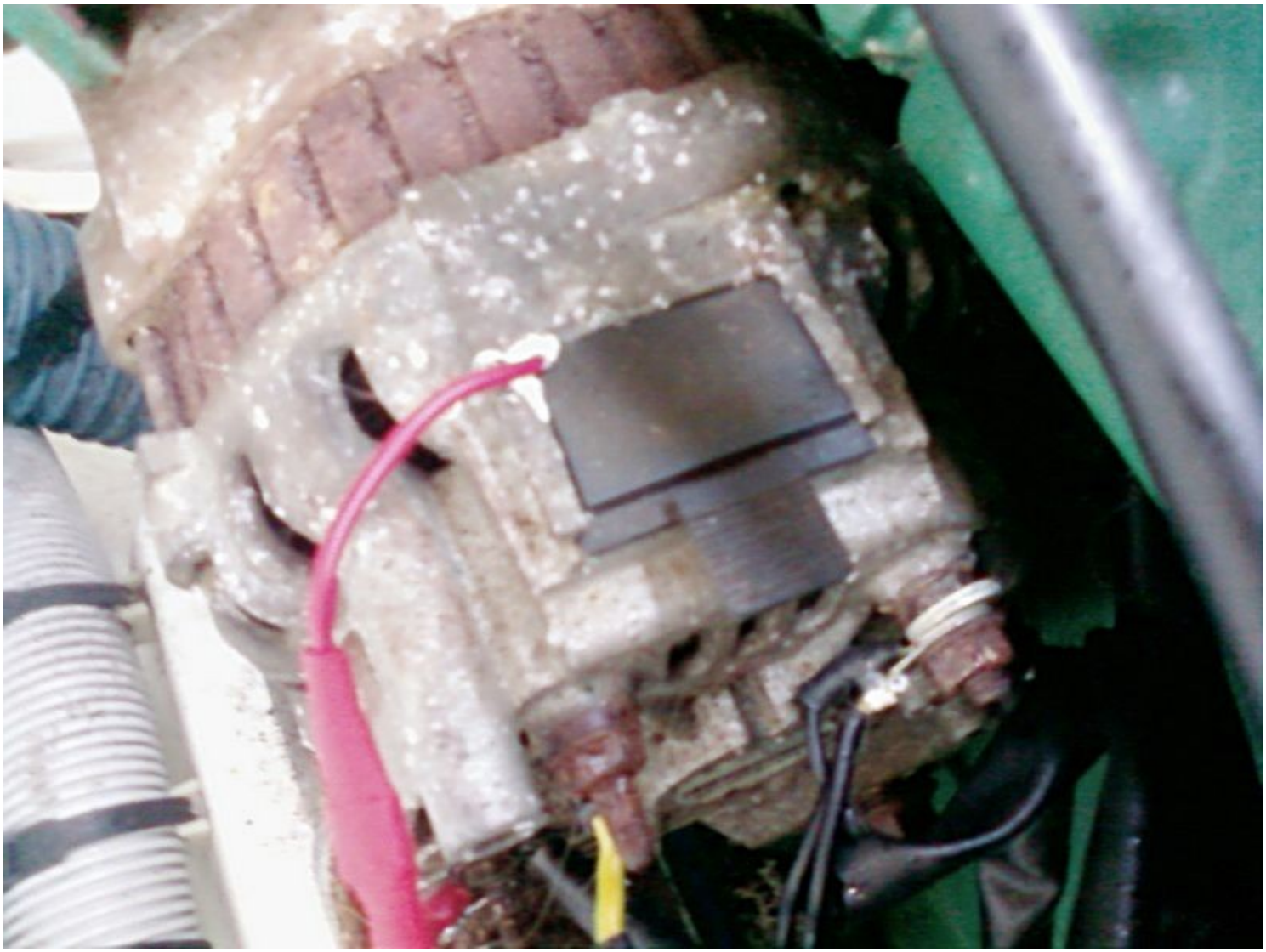
It is not necessary to remove the alternator in order to connect the brush wires. The brushes are accessed easily by sliding back the access panel (photos) by means of the serrated "pull tag". This may be stuck so a careful firm pull with a pair of long nose pliers may be necessary. Underneath there are two covers which unclip – now both brushes and connections are available (photos). NB The screw enables the brush to be removed.





Following the Sterling instructions regarding the field polarity test solder carefully 2 wires (0.75 -1.5mm) about 150mm long to each brush and with the engine running using a digital voltmeter measure the voltage on each wire. On my Orana the front brush (the one closest to the front of the boat) measures 9v and the back wire 14v. So the back brush is connected to the supply connection and the front is connected to the existing regulator and is thus negative control. **Again very important to read the instructions**.

So on my Orana the front brush (the one closest to the front of the boat) is the connection needed. So desolder/remove the other wire. Now it's necessary to route the cable through the two covers whilst ensuring it can't break or short to the alternator case. First I drilled a small hole 2mm through the side of the inner cover, carefully file it out then bend the wire to pass through this gap. Clip the cover on. Now bend the wire to pass out near the corner of the outer cover. Cut off this cover diagonally. In order to ensure it doesn't chafe against the alternator case carefully put a small blob of silicon sealer or sikaflex around the cable – let it dry. Then slide the outer cover on and check the cable is not touching the case – this all sounds tricky but it's really straightforward.



Now follow the Sterling instructions regarding the rest of the installation –setting up the digital regulator etc.. **VERY IMPORTANT Set up/check the type of field control – negative in this case.** Set up the type of battery (flooded) and connect the battery temperature sensor cables. I screwed the unit close to the alternator and ran all the connections in conduit (protection from oil etc.). I used male and female ¼ spades to join all the cables to the alternator connections in order to be able to remove the regulator easily. Test the regulator using the LED indicators etc. – see Sterling instructions. Then heat shrink all the "cable connection spades".