

## Alternator 6V to 12V

We started having Alternators on our British Motorcycles in the 1950s with 6V, Selenium rectifiers and regulation control via switching of the alternator. The alternator numbers were RM 13 (or less) up to RM18, these all had 70mm stators, had outputs below 80W (even when new). If these work [see [Alternator Testing Colours](#) elsewhere] then you can continue to use them at 12V but there is no new parts available for smaller (70mm) rotors and I do not know of any company that can rewire the stators. So if you want to retain 6V your only option is to use the RM19 with the 74mm rotor and retain the alternator switching for regulation.

If you are using the earlier (6v) stator or RM19 then converting to 12V is very straight forward but several decisions to make. The three wires are connected into two by the GREEN/BLACK connecting to the GREEN/YELLOW (there is other options see [Alternator Testing Colours](#). You now have a two wire alternator.

In the olden days....you would then connect these two wires direct to a Bridge Rectifier which would then feed the battery and the bike BUT you would need a regulator –enter the Lucas Zener Diode. A perfectly good system, long term reliable even if there was several items to wire up and a heat sink to provide. Unfortunately the Lucas (100W) Zener is no longer available. (There are some similar devices, mostly from the far east that purport to do the job, but they will let you down.)

So where do we go now? We have the Regulator/Rectifier. There are quite a few of these on the market, USA, China, and Gt Britain have all built them. In my case I can supply the A Reg 1 (for 12V). The A Reg 6 will hold the alternator down to charge the 6V battery if you want to.

Some points for information-

**Bridge Rectifiers-** The early 3 inch round or square rectifiers, often duck egg green or metallic green with rubber edge protectors, all with bolts through the middle were Selenium-throw them away. The very common 1 1/2in black painted with three Luca terminals (fourth connection is the centre bolt) is Silicon which if in good order, unbent, clean terminals etc is worth keeping. The modern alternative for all these is the 1in square with 4 terminals (3 one way 1the other) this again is a Bridge Rectifier from the electronic world and provided it has the correct specification and is bolted down (as a heat sink) seems to last forever, you do need to supply an earth lead to the appropriate terminal but the metal body does not need earthing.

Any of these silicon rectifiers can be used for 6V in fact there is no 6V rectifier all rectifiers we use must stand up to ignition spikes.

All of these rectifiers are ‘solid state’ the term is related to mechanical regulators (dynamos) which are not solid state.

**Condensers-**again no such thing as a 6V, the ignition condenser has to withstand the high voltage of ignition so should withstand 12V, of course if it

does fail then fit another but keep it by the points, try not to fit it alongside the ignition coil, this helps to reduce the points sparking.

**Horns 6V**-these will often work at 12V but might need adjustment if not change them to 12V.

**Batteries and bulbs** of course are always straight forward. Batteries-I have always recommended 5Ahr being the minimum on a British bike, try to avoid the very square ones with Luca terminals that originate from the alarm world, they will soon overcharge and dry out.

An oft thought point is 'my lights are inadequate as I am on 6V-The battery is not charging well as I am on 6V' neither statement is totally true. 6V can be made very good see [6V-12V](#) also your battery charging is down to the correct working of your wiring/rectifier and alternator quantity output, if it is inadequate at 6v then it will not convert to 12V adequately.

**Electronic ignition**-although there are some systems on the market for 6V I have always recommended going to 12V for electronic certainly on the British Twin, coil and ignition systems have much more choice.

**Fuse**-as soon as you go to 12V then the extra power in the battery is capable of starting a fire so a fuse becomes essential 25A or 35A will suffice and one directly at the battery is quite adequate.