Adapting 1937 MGVA Generator LUCAS C45 for Powerlite RAC006T Alternator (-ve earth, 40A)

I wanted to convert my Lucas C45 generator to an alternator because the generator will charge above 12.8V and this is not enough to charge a modern battery which I believe requires 13.4V. I also wanted to convert from earlier +ve to the modern -ve earth so I could use LEDs for indicators, ancillary devices and lights. (Not main driving lights). Of course 40A will not be required but then nor is the fuse and relay box ☺. They will be installed for show.

The SVW Review had an advertisement from Power-Lite in Birmingham and after a good deal of correspondence, I bought the RAC006T unit. They were great to work with.

The unit arrived and at the time of purchase, I knew there needed to be a 'slight' change as the shaft was thinner, the original being 15mm diameter but the fan in the generator is based on a 17mm shaft. On offering up the fan, I then found the shaft on my existing C45 type generator is longer than the new unit which is based on the C40 type generator. I was offered a refund…. but Kiwis do not give up!

It was a lot more of an exercise that I first thought but I had a good engineer who did the work. The solution was as follows:

1. As supplied, remove inner washer and nut – throw away!

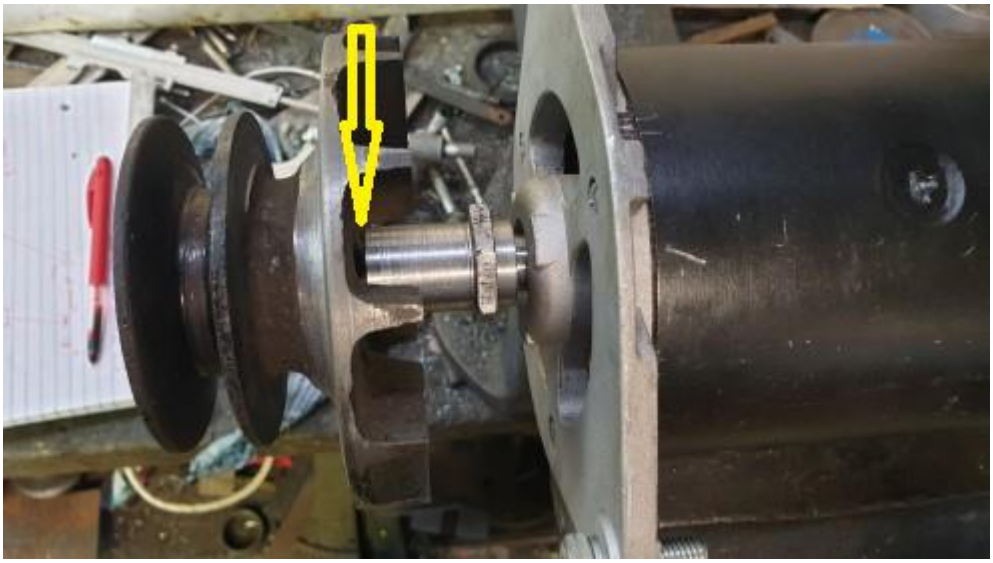
2. Make an extension piece using hex material and use the original screw thread on the Powerlite shaft to accept the new <u>threaded</u> fitting (after the removing inner washer as this is now part of the extension). Also the other end of the extension has a thread to take the pulley bolt – read on.

3. The front of the extension incorporating the thickness of the original washer – allows for a longer extension and a better strength longitudinally.

4. The other end, threaded for the pulley bolt

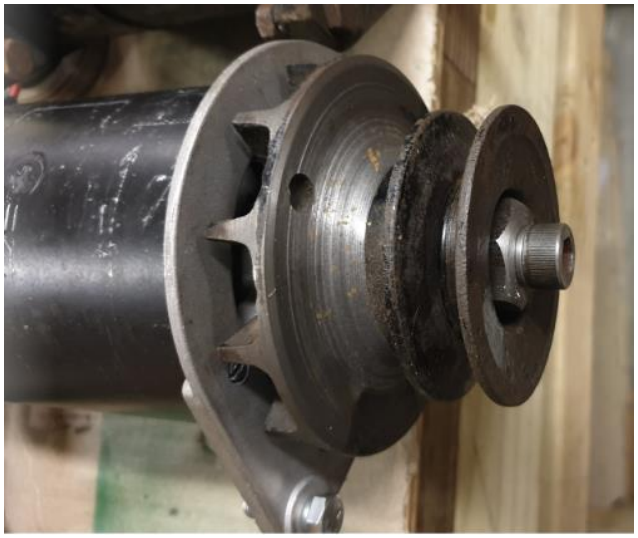
5. Make a new hex pulley ‘nut’, the photo below has the longer version, we lathed it down to reduce how much it protruded from the pulley (see on) and used the same hex material as the extension tube.

6. Clean up the pulley on the lathe and remove a few mm from the inner fan hole. There are a few mm protruding from the casting which can be skimmed off allowing the pulley fan to be closer to the body. In the photo below, the extension has not been fully inserted into the alternator. During final assembly – screw in the extension onto the original axle thread using the hex pattern on the extension to take a large spanner, stop the alternator spinning by carefully placing a large pin in the space at the front being careful not to damage any components.



7. Lightly apply Locktite to the outside of the extension and push on the pulley.

8. Using the new hex packing piece, bolt on the pulley – it screws into the new main extension.



9. Finished Assembly – all looks good and almost ‘original’.

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10. The new and the old side by side.

I am told the alternator runs a lot cooler than a generator so it would have been possible to install a lighter aluminium fan however I wanted the finished unit to look as close as possible to the original. The engineer found the casting of the pulley to be very bad and the pulley way out of balance. He cleaned it up on the lathe.

I have a hand drawing of what is required, it took the engineer a while to work it all out but he has done a great job and the fitting is very robust and strong. So, you need to make the extension and a nut spacer to make it all work. Nothing on the new alternator was altered. Just needs light heating to loosen up the Locktite to take it apart.

PS I have not tried it out on my VA yet as I am in rebuild mode but am very confident in the conversion.

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