

Europa Alternators Lucas 17ACR & A127

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Alternator Conversion

The alternator on HTU35K was the original unit and no doubt has long since ceased production, but the Elan has a 16ACR unit which works fine and the 17ACR units are available for around £50 brand new.

The OEM wiring needs modification as the loom has 4 connections, one each for the charge/warning light, +12v supply, +12v charge output & the negative earth lead. It appears the OEM unit requires a separate earth lead whereas modern alternators earth through the body.

Later alternators have fewer connectors, the modern 17ACR needs only the warning light & +12v charge output, the earth return going through the alternator body.

So on HTU the wiring no longer conforms to the original diagrams as the heavy black earth lead & smaller +12v feed from the solenoid are no longer required. To tidy things up and make sure I don't inadvertently fit the -12v earth lead in place of the +12v charge lead in the future, I stripped the extra wiring out of the loom. It's all very tight clearance once the luggage bin is installed, but it does fit.

The 17ACR unit seems slightly longer than the OEM unit and required some minor mods to the adjustable bracket before it's aligned & fitting perfectly albeit with very tight clearances between the output connector and rear boot tray

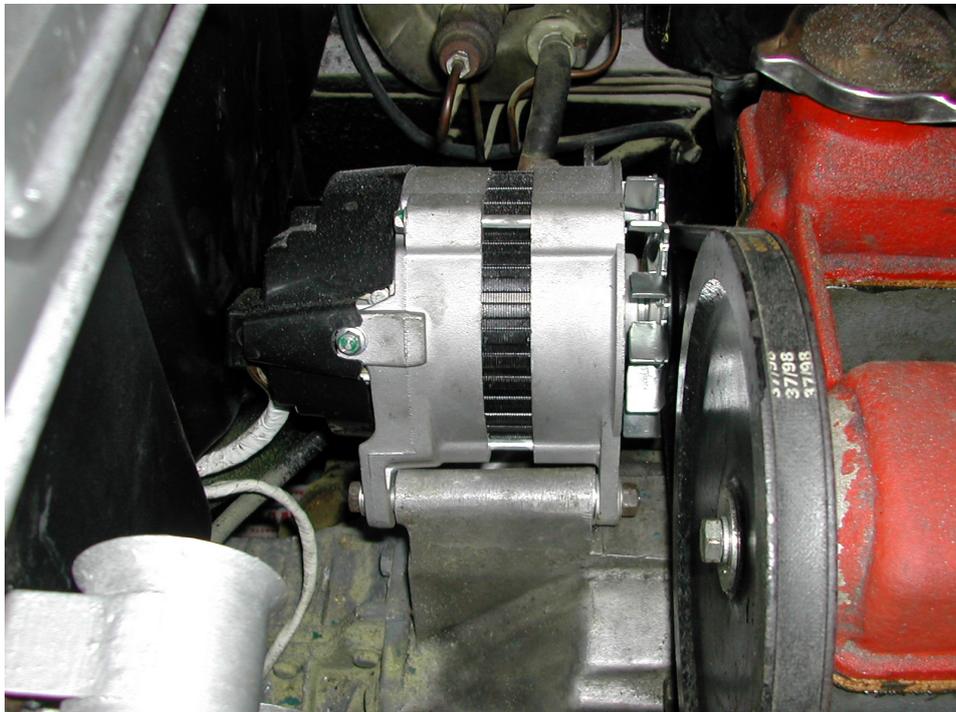
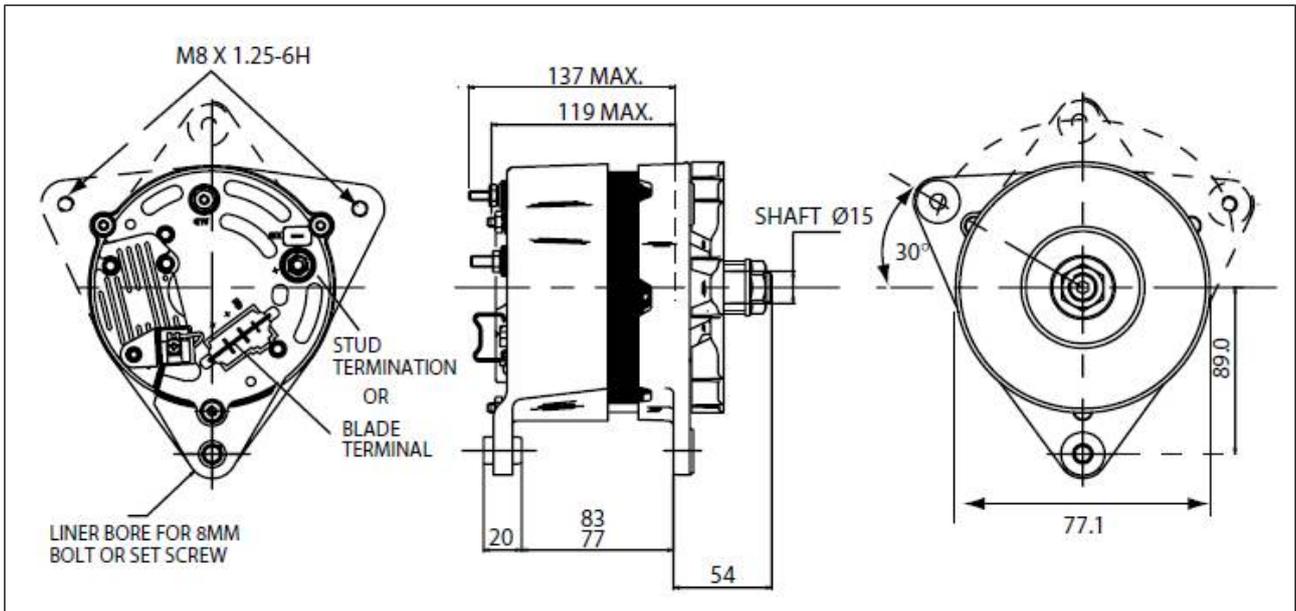


Fig 1 : Lucas 17ACR Installed

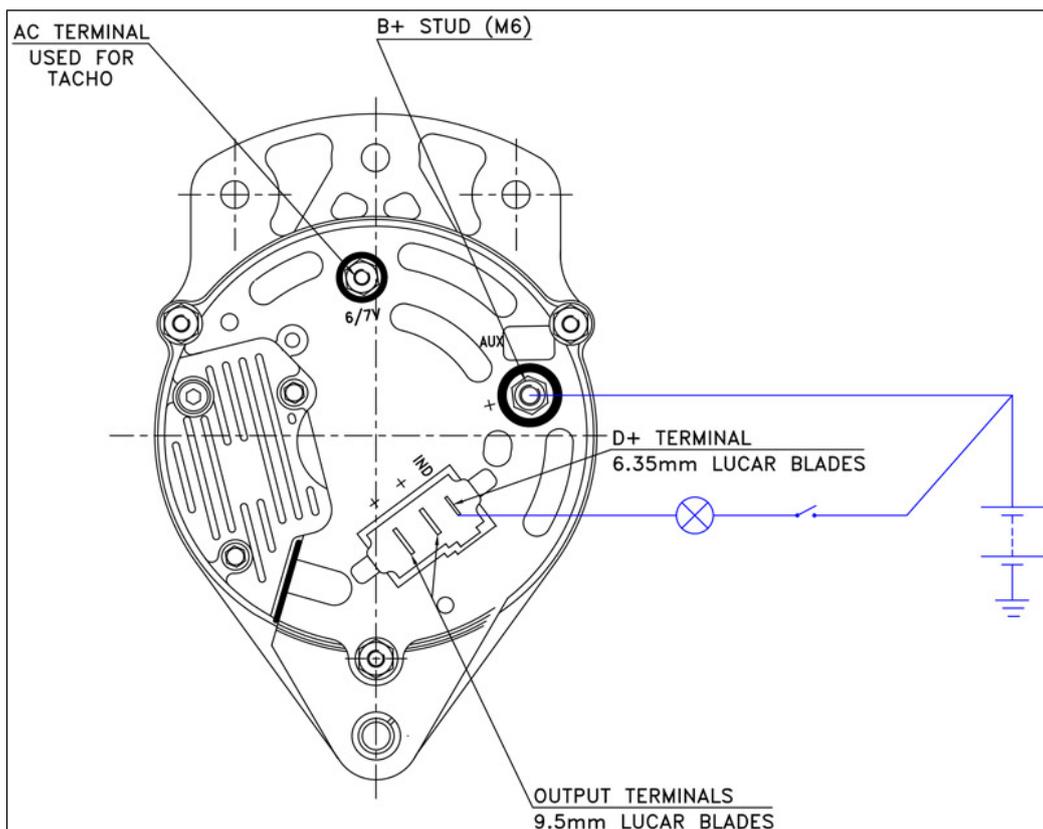
With my perfect 20/20 hindsight I should have done a little bit more research and found that the 16ACR is roughly 1/4" smaller than the 17ACR and hence would have been a better idea. Clearance isn't an issue on the Elan, so I suppose at some point I'll get around to swapping them around. Someday... maybe.

Lucas A127 Alternator

I happened to see a dimensional drawing of the Lucas A127 alternator and it struck me as being much smaller than either the 16ACR or 17ACR units. In fact it looked as if Uncle Lucas had designed it just for my Europa, so it seemed rude not to buy one.



Now this isn't an obvious swap. Yes, it fits in place, the pulley wheels align perfectly and it uses the same 3 spade terminal block connector as you can see in these diagrams, but it's a significantly different beast.



The A127 comes in several varieties but the least powerful has a capacity for 55amps and the most common are the 70amp versions, which is quite a change from the 35amp of the OEM alternator.

Technically the wiring is designed for 35amps, the Ammeter is a 30-0-30 range and hence fitting something with 70amp capacity looks complete madness.

My debatable logic was that I've rarely seen a charge rate over 10amps and it would appear that an alternator supplies sufficient current to satisfy demand from the immediate electrical load plus charging the battery. The electrical load from the car hasn't changed and the 35amp alternator never actually charged at 35amps because if it had done, it would be off-scale on the ammeter.

And I think even I would have noticed that. Maybe theory and practice aren't necessarily the same deal.

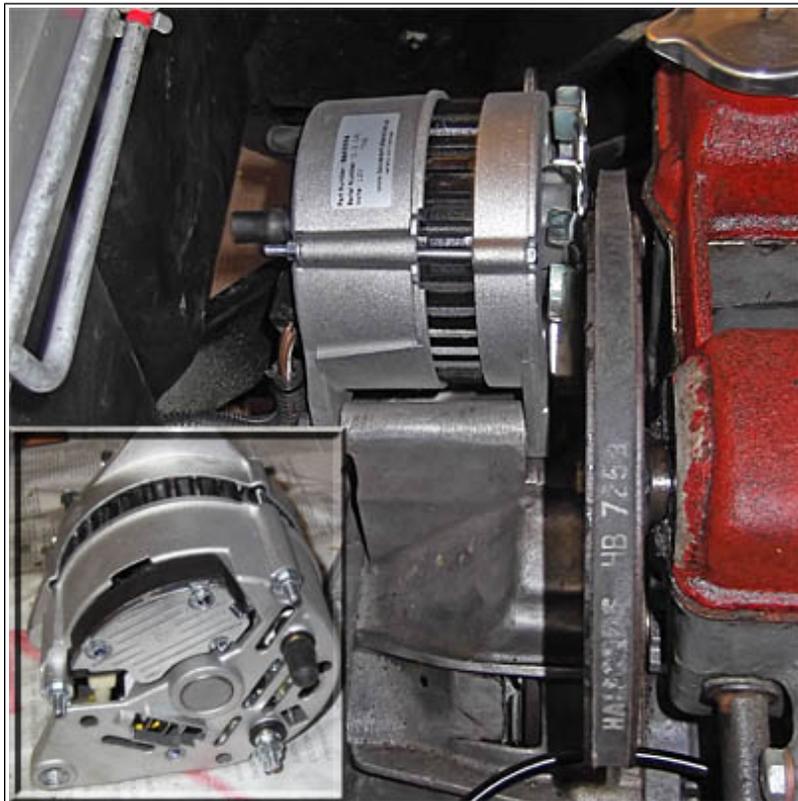


Fig 2 : Lucas A127 Installed

So this is early days and careful monitoring is required until I'm happy but so far it's looking hopeful. The maximum charge rate I've seen has been 15-20 amps for seconds after starting. Normally it's just showing a slight +ve charge, just like the 17ACR did.

Notes on Alternators

A slow start up to charge is probably a F+ field supply poor connection - the indicator warning light lead. An alternator does not use permanent magnets and relies on the Field supply voltage/current when ignition is turned on to magnetise to create the magnetic field which is part of the function of creating electricity. A bad connection makes it a bit slow to build up and then when built up OK.

It is little understood and quite incredible that a simple blown lamp on the ignition lamp can leave you soon stranded by the roadside. I have only had this twice on helping friends in over 45 years but the alternator needs the lamp filament to pass the current through to the field windings.

There is a 'fix' that can place a diode resistor in parallel with the lamp that will always mean you will get home.