

Modern Lucas Alternators

The modern range of Lucas alternator components are powerful, well made and more reliable than the original parts. To compliment them we supply our own brand of solid-state regulators as well as a full range of electrical parts. All of our regulators are all guaranteed to be correctly rated for use with Lucas stators and will provide long reliable service, they should not be mistaken for lower cost parts supplied by other vendors. We stock the full range including the Energy Transfer (ET) stator.

Single phase (two wire) or 3-phase?

Two wire, single phase alternators offer great value for money and work really well. However they only produce their stated output at 5,000 RPM, IE the 16 amp stator will only produce this output when you rev the engine to 5,000 RPM. At lower engine speeds the power available will be significantly less. The advantage of 3-phase alternators is at normal road cruising speeds they will be making more power than a single phase unit running at the same speed. 3-phase alternators can be identified as they have 9 pole pieces and should not be confused with the old 6 volt alternators which also have 3-wires but only 6 pole pieces. The poles are visible in the pictures below, they are the exposed metal faces in the centre of the stator.

Six Volt?

The old 6 volt three wire alternators are no longer made. This is because the original 6 volt system is un-regulated. It needed the load to be accurately matched to the alternator's output and a large battery to soak up the excess to maintain an approximate level of voltage. Surges in power as the engine is revved or lights switched on or off go unchecked. Such a system in today's world is simply unacceptable as it will damage modern batteries and electronic equipment. This would lead to warranty claims against the alternator manufacturer for the damaged equipment.

The answer is to use a 6 volt regulator connected to a modern two wire alternator. This will give reliable lights, allow the use of a smaller battery and LED lights. Warranties on AGM batteries and electronic ignitions will be preserved where a regulator is fitted. Later versions of the 6 volt alternators can be connected to 6 volt regulator as well. Our technical team can help.



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Original Lucas alternators

Alternators become popular on British motorcycles in the mid 1950s. They give better output than dynamos and need virtually no maintenance. The early RM12-15 series had individual bobbins and used a smaller rotor, these are best replaced with a complete alternator kit as the smaller rotor does not work with modern replacements. Later RM-18 to 19 units saw improvements in output, a larger 74 mm rotor and were fully encapsulated to prevent the bobbins vibrating loose. The RM19 was the most powerful 6 volt unit and much thicker than previous versions. All the round frame RM alternators use the same mounting pattern and are interchangeable. The RM12 & 14 had a hexagonal frame and can be replaced by round frame versions, provided you machine an adaptor ring and use the correct size rotor, the wiring will need to be modified as the RM12 had 6 wires.

Modern Lucas alternators are made on brand new equipment to the original drawings. Single phase systems are the cheapest option whilst 3-phase systems give much better output at low RPMs. Improving 6 volt system is possible by fitting our 6 volt solid state regulator rectifier. This will stabilise the charging and stop batteries from boiling as well as allowing sealed & AGM batteries to be used. We are happy to advise you if you need help choosing the best system for your machine.

Here are our recommendations if you want to up-grade your electrical system:

1. Systems using 70 mm rotors are not worth repairing, their output is too low to convert to 12 volts and many have lost magnetism by now, we offer complete alternator sets to replace these.
2. The later 6 volt alternators (RM18 & RM19) can be improved on by fitting a solid state voltage regulator, either 6 or 12 volts. This will stabilise the charging system and allow modern sealed & AGM batteries to be used. Adding a solid state regulator rectifier will not improve the output but it will stop batteries boiling and preserve the warranty on electronic equipment.
3. If want to fit electronic ignition and keep 6 volt electrics you must use a 6 volt solid state regulator rectifier unit. From experience most electronic ignition manufacturers will declare the warranty void if the ignition fails and there is no voltage regulator fitted. These companies often recommend a modern regulator but stop short of saying that its a requirement. We feel that in fact its a requirement to fit one, to avoid damaging your new ignition and subsequent upset for the owner.
4. If you want to run without a battery you must fit a capacitor in place of the battery. This will only allow the engine to be started where a 16 amp single phase or a 3-phase stator is used. Remember lights and horn will not work correctly with the engine at idle without a battery fitted.
5. On 12 volt systems replace zener diodes with a modern regulator. These give much better control. Note that replacements are no longer made in the correct voltage so we don't supply zener diodes.
6. AGM batteries will hold a charge for a very long time and can be left unused with little ill effect (providing they were fully charged before being left standing). Cyclon batteries are in fact designed to be left for years without use. AGM batteries such as the yellow Motobatt are held in high regard with owners and size for size give more power than similar brands. A voltage regulator must be fitted when using modern sealed batteries.



7. Avoid the lightweight lithium batteries, these have very exact charging requirements and will not stand the way old British motorcycles charge the battery.

8. Use a 'headlamp booster' unit to brighten the headlamp. A lot of power is lost in the switches and old wiring, a booster simply by-passes the switches feeding battery power directly to the headlamp bulb. The original switches are still used and only control on/off and dip/main beam. We have a simple kit that plugs in with minimal wiring. These fit inside the headlamp shell or tuck under the tank and connect to the original wiring so the normal switches work as before.

9. Check all connections are in good condition! This is an obvious one but we see many examples of poor wiring. We stock a wide range of wiring supplies.

Alternator types (using the LU54202299, 74 mm rotor)

47149 (RM15) Energy Transfer 5 wire batteryless ignition version used on T20, T100, T120, TR5, TR6, A65, C15 etc.

47204 (RM19) 6 V, 3 wire 120W single phase replacement. Fully encapsulated, highest output 3 wire, 6 volt unit.

47205 (RM21) 2 wire 10 amp, 120W single phase this unit can be regulated to 6 or 12 volts and is a popular replacement for the RM19. A solid state regulator must be used with this unit if it is being used to supply 6 volts.

47239 (RM27) 12V, 2 lead single phase 16 amp. Improved output over the RM21. Recommend 12v single phase unit, can be used with a capacitor (battery-less)

47252 (RM24) 12V 3 phase 3 lead, 3 phase 10.5 amp stator.
Fitted originally as standard to Triumph T140 pre electric start models (from 1979).

47244 High output RM24. 12 V, 3 wire 180W 3-phase. A very popular and reliable upgrade of the electrical system. It can replace all above stators, not only producing more maximum power but importantly producing more power in the lower rev range.

Adjusting running clearance

When mounted to the engine there must be a minimum 0.2 mm (0.008") clearance between the rotor and stator all the way round. Less and the rotor may touch the stator as it heats up. If this happens the stator will overheat due to friction and fail very quickly, this type of failure is not covered by the warranty. Inspect the pole pieces and the rotor for signs of touching after initial fitting. The clearance is adjusted by slightly loosening the mounting bolts and - carefully - tapping the stator with a soft faced hammer then re-tightening.

NOTE: Some Triumph T20s have a taper on the crank, in order to fit the 74 mm rotor you will need to have an adaptor sleeve machined. T20SM models have a parallel fitting on the crank. When ordering for Triumph Cubs please check the crank for a 19 mm parallel fitting.

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