

Figure 1 shows the wiring layout of a battery sensing **Lucas 11AC alternator**. When the ignition is switched on and the engine is not turning, the warning lamp glows, because one side of it is connected to the battery, whilst the other side is connected to earth via a set of closed contacts in the **3AW warning light unit**. These contacts are held closed by a taut wire in the unit. One end of the taut wire is connected to an earth terminal whilst the other end is connected to the **AL** terminal on the alternator.

When the engine starts rotating, current from the **AL terminal** flows through the **3AW** unit to earth, causing the taut wire to expand and the **3AW** contacts to open, resulting in the warning light extinguishing. The **6RA relay** closes and connects the battery positive wire to the rotor field windings, creating a magnetic field within them. The rotating field windings generate an AC current in the stator windings. Diodes convert the AC output into a DC one.

As the engine speeds up the voltage output rises and unchecked could exceed 100 volts. To prevent this the **4TR regulator** switches the current off when it reaches 14.2 volts, and switches on again when the voltage falls below this. By rapidly switching on and off, a constant 14.2 volts is maintained.

When the ignition is switched off, the **6RA relay** disconnects the rotor field windings, which prevents the battery from running flat.