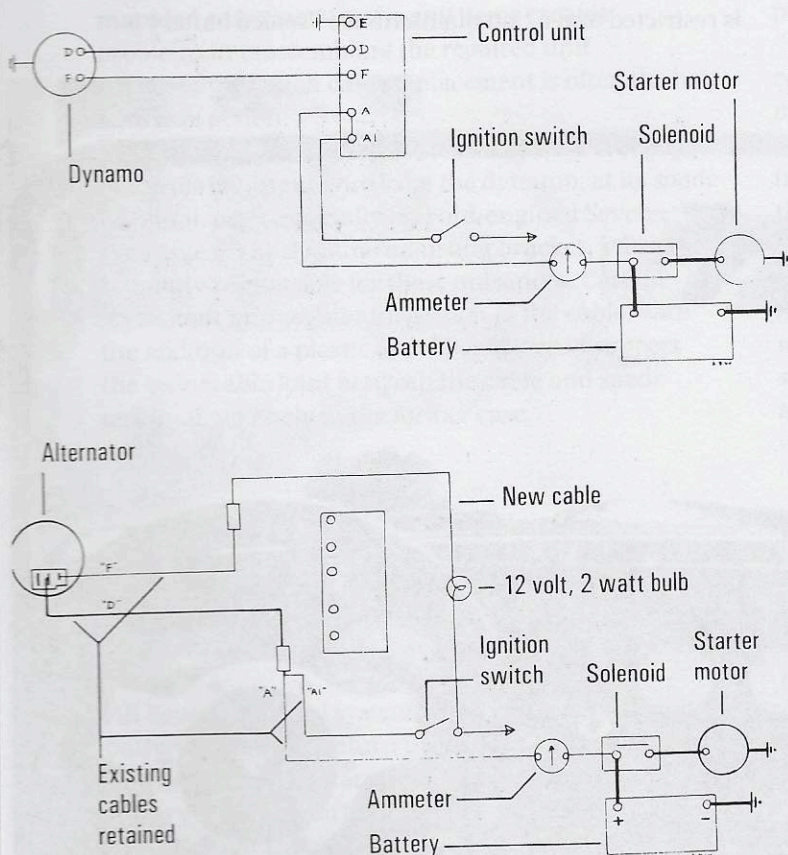


essential. Until 1989, the battery could be removed from these cars from underneath, lifting it out of its carrier towards the rear. The ignition coil and other fittings on the adjacent footbox panel must be mounted high enough to allow clearance for this. Changes in the chassis layout for the 1990-91 models restrict access from below, and it is necessary on these cars to remove the inlet manifold, steering column, throttle cable and coil before removing the battery. On all Sevens it is important that the battery is firmly secured to its mounting, otherwise it will do its best to escape as soon as hard acceleration, braking or cornering is indulged in.

Dynamo and alternator

Until 1974, Sevens were fitted with a dynamo of conventional British type, either Lucas or Ford, with



Alternator and dynamo charging circuits compared. Typical dynamo charging circuit (top). Charging circuit converted to use Lucas alternator (bottom).

a separate control unit. When Caterham began series 3 production a Lucas alternator replaced the dynamo, in line with modern practice. This was superseded in 1988 by a Motorola alternator.

Both dynamos and alternators are reliable in themselves, as would be expected, but as mentioned earlier there is trouble in Sevens from vibration which sometimes causes breakage of the output wires and sometimes breakage of the adjusting bracket. Dynamos seem more prone to this than alternators: an associated problem on Ford Kent engines is that of the water pump stud which carries the bracket pulling out of the engine block. Careful initial assembly and regular inspection will minimise difficulties.

Fitting an alternator

Replacement of the dynamo on earlier cars by an alternator is very worthwhile, especially if the car is in regular use all year round: in winter, the dynamo may not be able to cope with the demands of lights, wipers, heater, radiator fan and battery charging. The electrical components required are all available as standard Lucas parts, replacement alternators nowadays being more widely available than replacement dynamos. Most of the engines used in the Seven have suitable alternative brackets available for alternator mounting. The wiring is quite simple and differs little from the dynamo circuit, though the behaviour of the ammeter will be different when an alternator is fitted. The correct alternator mounting bracket and correct length fan belt should be installed to avoid fouling between the alternator pulley and the left hand front brake pipe.

The conversion will effectively prevent flat batteries, assuming of course that the battery is sound. The wiring layout will be simplified by removal of the separate control unit, although both this and the dynamo are easily reinstated should total originality become a requirement. In addition to the electrical benefits, the use of an alternator having a moulded multi-pin plug at its output terminals will help to prevent the cable breakage referred to in an earlier section.

The accompanying wiring diagram compares dynamo and alternator wiring. Though not perhaps theoretically the best circuit, it works well, is easy to install, and facilitates reversion to dynamo if necessary. The existing cables through the loom from

the dynamo to the control unit may be retained for alternator working if they are considered to be in good condition.

With the circuit shown it is essential to fit an ignition warning light – a 12 volt, 2 watt bulb. The purpose of this lamp is to provide a resistance in the alternator excitation circuit: without it, sufficient current will be passed from the alternator to the ignition switch to keep the engine running when the ignition is turned off. If the bulb is not wanted as a dashboard fitting, it can be mounted in a loose bulb holder and concealed (accessibly) in the wiring loom. Strictly speaking, the 30 amp. ammeter should be replaced by one with a 50 amp. scale for alternator operation, but in practice the smaller capacity instrument is satisfactory.

Starter motor

The Seven's starter motor is another familiar component, a Lucas or equivalent Ford inertia type with a separate, bulkhead mounted solenoid being used until 1981 when it was replaced by a pre-engaged type. Again, this is in line with current practice and is a more powerful motor, better able to cope with the higher compression ratios now in general use. Starter and ring gear difficulties were not unknown on earlier Sevens, caused either by the motor having to work too hard or by its mounting bolts having been allowed to work loose. It is usually possible to fit a pre-engaged starter in place of an inertia type to improve starting and reduce drain on the battery, but in most cases it will be necessary to change the ring gear on the flywheel for the appropriate type. Such a conversion is therefore only worthwhile if the engine has to be removed for some other reason.

Earlier Lotus Sevens built before 1970 had a separate, push button starter switch, usually located in the front panel of the scuttle, which was superseded on series 4 and Caterham Sevens by direct operation of the solenoid from the ignition switch.

Windscreen wipers

Windscreen wipers were optional on the first Lotus Sevens and when supplied by the factory consisted of spindles and a motor mounting in the top rail of the screen, with the motor in front of the passenger. A

similar assembly had been used for the Six, and the Eleven Sports, and it was definitely old fashioned, even for sports cars, by 1957. No doubt Lotus had obtained a large stock at the right price.

From photographic evidence, screen wipers mounted conventionally on the scuttle panel began to appear midway through series 1 production, often only a single arm being fitted, on the driver's side. When the better equipped Seven America was introduced, in 1959, its wiper installation was adopted for all production, with a bracket added to the chassis behind the dash to support the single speed Lucas motor. The wiper spindles and wheelboxes simply mounted through the scuttle top without additional framing. A similar arrangement is still used, the components resembling those fitted to the Mini. The only significant component change has been the introduction of a two speed, permanent magnet wiper motor, as was previously fitted to the series 4, in 1981.

Lamps

Headlamps have remained practically unchanged since 1964, when the 7" Lucas units became standard: in recent years they have been fitted with bulbs rather than sealed beam units to comply with current European regulations, and since 1979 they have incorporated the sidelamps. Alternative makes have appeared on some Caterham cars, and high power Cibie headlamps are now offered as an optional extra. Prior to 1964, the standard headlamps for the British market were a pair of 5" diameter spot lamps, one arranged as a dipped beam and the other as a main beam with a separate switch. This economical but rather inadequate arrangement is no longer legal in Britain.

The headlamps are mounted on brackets forming part of the forward wing stays, except on current cycle winged cars where they have separate brackets mounting to the chassis, and on the series 4 where they are attached to brackets bolted to the bonnet. All headlamps are adjustable for alignment by slackening the large clamp nut at the base, and tilting or rotating the lamp unit as required.

Before 1979, two alternative types of Lucas separate sidelamps were fitted. The larger ones will be familiar to MG "T" series owners, and the smaller ones are common with the Austin A30. Both types were listed for the series 2, and though the smaller