

TECHNICAL SERVICE BULLETIN

NO. 74-B-2



Triumph

April, 1974

SUBJECT:ALTERNATOR DAMAGE
DIAGNOSIS AND PREVENTION**MODELS:**

ALL MODELS

The Lucas ACR Alternator is designed to provide many years of reliable, maintenance-free service under normal operating conditions. It is possible, however, that the alternator may be damaged by some of the causes listed below:

1. Rectifier Pack Damage - This is generally caused by a very large current being allowed to pass through the diodes. Such a condition occurs when:
 - (a) The vehicle battery is installed with the connections reversed.
 - (b) An attempt is made to jump-start a car or boost-charge a battery in a car with the charger leads or battery cables reversed.
 - (c) A battery that has been reverse-charged is installed in a car.
 - (d) When the vehicle harness is improperly connected to the alternator.

Such damage, when it occurs, is usually characterized by at least one of the following symptoms: beads of solder emerging from one or more individual diodes and travelling up the stem; a burning or charring of a diode; melting and burning of the "petals" which connect to the diode stems and one or more diode stems lifting from the rectifier plates.

2. Regulator Damage - The regulator mounted inside a Lucas ACR Alternator is manufactured with the latest electronic devices which operate at normal battery voltage. The regulator can be damaged if subjected to high voltage which may be generated on the vehicle in the following ways:

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- (a) loose, corroded or intermittent connections in the charging system.
- (b) operation of the vehicle with the battery disconnected.
- (c) battery or alternator becoming disconnected while engine is running.
- (d) use of a battery master switch to stop the vehicle.
- (e) improper procedures when testing the charging system.

Such damage is usually confined to the internal components of the regulator itself. Symptoms include alternator supplying maximum output continuously or no output at all.

The surge protection device which is fitted to all current Lucas ACR Alternators will help to protect the regulator from occasional high voltage conditions, but only strict avoidance of the above conditions will insure trouble-free regulator and alternator operation.

- 3. Bearing failure - An alternator bearing failure is usually the result of over-tightening the vehicle fan belt. Damage can be avoided by following the vehicle manufacturer's recommendations for adjusting the fan belt.
- 4. Brush Gear - Care should be taken when installing pulleys and fans to prevent the rotor shaft being forced towards the brush gear. Such damage can result in erratic operation of the alternator as well as possible regulator damage.
- 5. Stator and Rotor - Damage to the stator or rotor is usually due to the introduction of foreign objects into the alternator. A severe or prolonged battery reversal will also burn the rotor and stator. An obvious symptom of such damage is a "burning" smell issuing from the alternator.
- 6. Housing - Housing damage is invariably the result of physical abuse of the alternator. Such damage is often caused by:
 - (a) prying on the alternator to tighten the fan belt.
 - (b) dropping the alternator
 - (c) use of incorrect mounting brackets or bolts.
 - (d) mounting bolts becoming loose.

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The forms of damage listed above can be avoided by adhering to the following rules:

- A. Always insure that the battery is connected in the correct manner.
- B. Be very careful when using jumper cables - connect positive to positive - negative to negative.
- C. Disconnect the battery before boost charging.
- D. Never disconnect the battery or alternator while the engine is running.
- E. Always remove the alternator plug before doing any electric welding on the car.
- F. Always follow the manufacturer's directions for tightening the fan belt.