

**MACHINE: Ford Models 3230 to 4630 Tractors, Model 4610 With Cab Tractors, Models 5610 to 8210 With and Less Cab Tractors, and Models 250C to 655C Industrial Tractors**

**TOPIC: Magneti Marelli (Formerly Lucas) Charging Systems**

**8191 - T6**

**PROBLEM**

The alternator warning lamp will not illuminate when the key switch is first turned on and the alternator will not charge.

**CAUSE**

- 1 Open circuit in the regulator caused by corrosion resulting from moisture accumulation inside the regulator, especially on models where the alternator extends beyond the hood sheet metal and rain drips from the edge of the hood onto the alternator and regulator.
- 2 The voltage regulator remains "switched off" due to an open circuit in the battery temperature sensor wiring resulting from damage to the sensor wiring. The temperature sensor circuit must be operating to "switch on" the voltage regulator and allow current to flow through the alternator field circuit.

**CORRECTION**

**Production Units**

Effective immediately, the voltage regulator design is being changed to incorporate the addition of a vent/drain hole to allow moisture to escape from the regulator.

Ongoing changes have been made to improve protection and the method of securing the temperature sender circuit wiring.

**Field Units**

Use correct troubleshooting procedures to determine if the fault is with the temperature sensor circuit or with the voltage regulator. Repair the temperature sensor, sensor wiring or replace the voltage regulator as necessary.

**SERVICE INFORMATION**

A suggested troubleshooting guide for Magneti Marelli alternators is included. See Figure 1. Also included are schematic diagrams of charging systems with A127 and A133 Magneti Marelli alternators. See Figure 2. Both alternators have "A" type field circuits; the regulator is downstream from the rotor field. The method of bypassing the regulator is to ground the field circuit ahead of the regulator. Figure 3 illustrates the method of bypassing the regulator for both types of alternators as well as providing terminal identification.

Also review the previous service bulletin regarding Magneti Marelli alternators in Service Journal 8/90 - T13, page 71

**WARRANTY STATUS**

Standard warranty applies.

Causal part: A127 regulator- E7NN-10316-AA  
A133 regulator- E4NN-10316-AA

Temperature sensor:

In battery tray - D3NN-10N311 -A  
(straddle mount models)

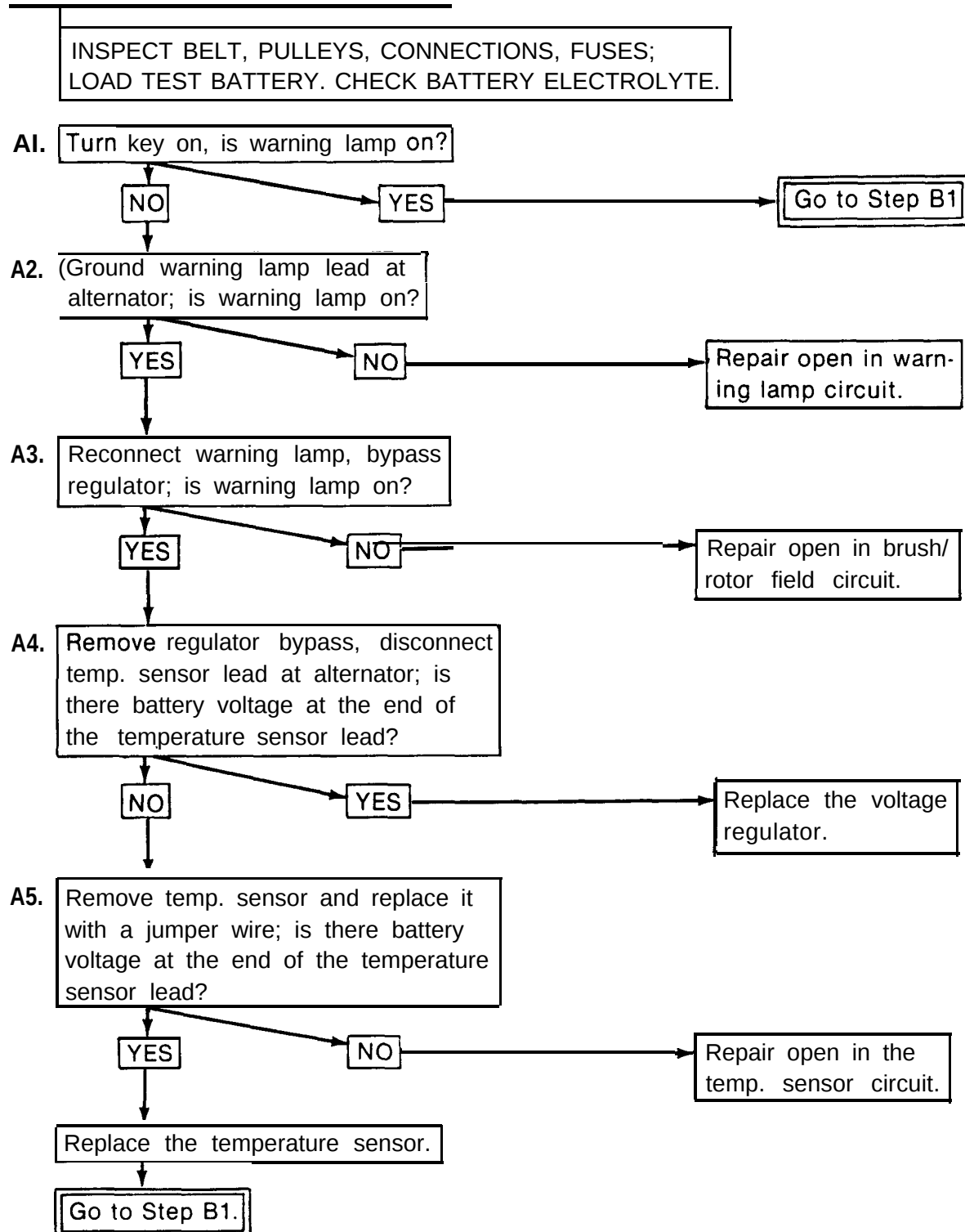
On right-hand step bracing and in  
battery box - D5NN-10N311-A  
(flat deck models)

Labor Allowance:

Charging system diagnosis - 0.5 hr.

Regulator replacement - **0.1** hr.

Sensor wiring repairs - 0.5 hr.

**TROUBLE SHOOTING CHART – MAGNETI-MARELLI (LUCAS) CHARGING SYSTEM****A. PRELIMINARY TEST (ENGINE OFF)**

**TROUBLE SHOOTING CHART MAGNETI-MARELLI (LUCAS) CHARGING SYSTEM (CONT'D.)****B. PERFORMANCE TESTS (ENGINE OPERATING)**

**NOTE:** Replace temperature sensor with 205 ohm resistor if ambient temperature is unusually warm or cool.

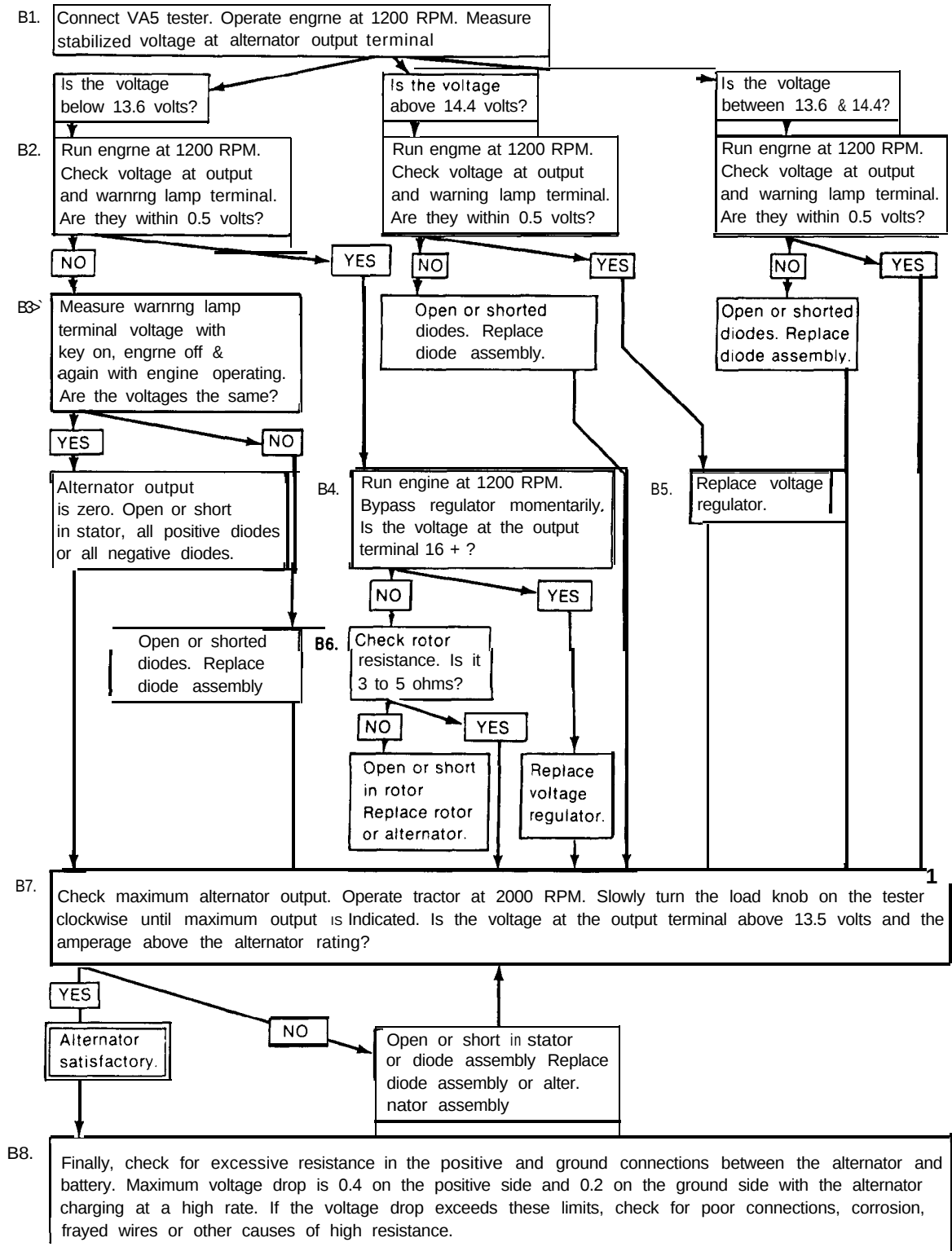
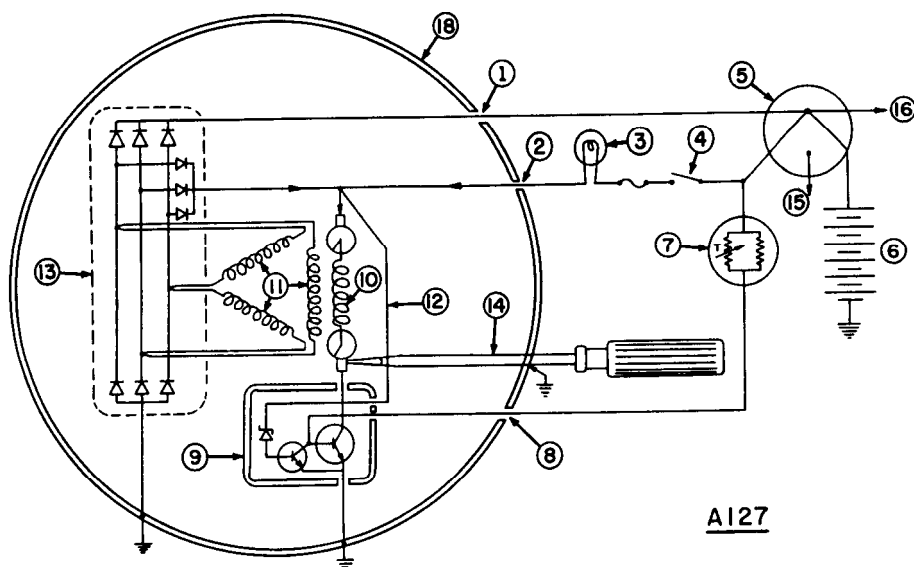


FIGURE 1



### CHARGING SYSTEM SCHEMATICS

- |                         |                                  |                                                                                                              |
|-------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------|
| ① OUTPUT TERMINAL       | ⑦ BATTERY TEMPERATURE SENDER     | ⑭ REGULATOR BYPASS:<br>A 127: MOMENTARILY<br>GROUND REAR BRUSH<br>A133: MOMENTARILY<br>GROUND REGULATOR CASE |
| ② WARNING LAMP TERMINAL | TEMPERATURE SENSOR TERMINAL      |                                                                                                              |
| ③ WARNING LAMP          | @ VOLTAGE REGULATOR (SIMPLIFIED) |                                                                                                              |
| ④ KEY SWITCH            | ⑩ ROTOR (FIELD)                  | ⑮ STARTER                                                                                                    |
| ⑤ STARTER SOLÉNOID      | ⑪ STATOR                         | ⑯ ELECTRICAL LOADS                                                                                           |
| ⑥ BATTERY               | ⑫ VOLTAGE SENSE LEAD             | ⑰ ALTERNATOR                                                                                                 |
|                         | ⑬ DIODE ASSEMBLY                 |                                                                                                              |

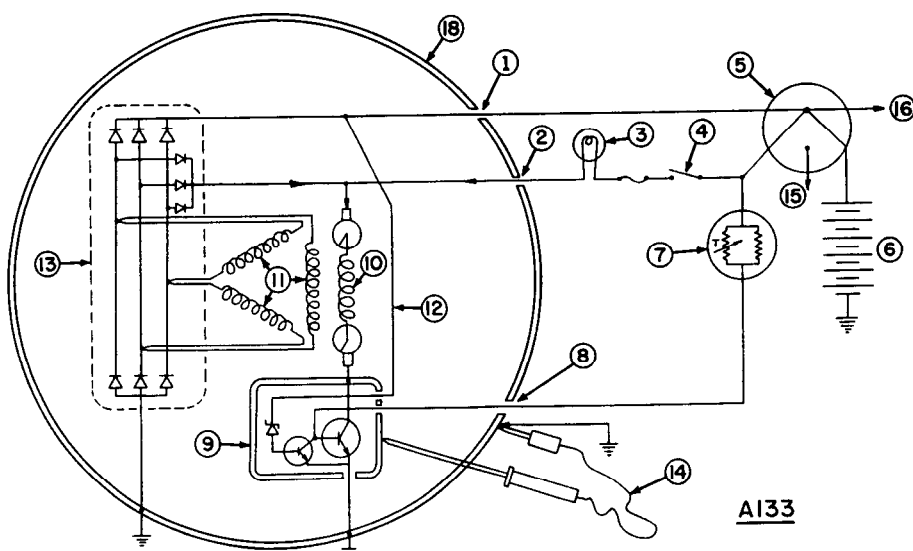
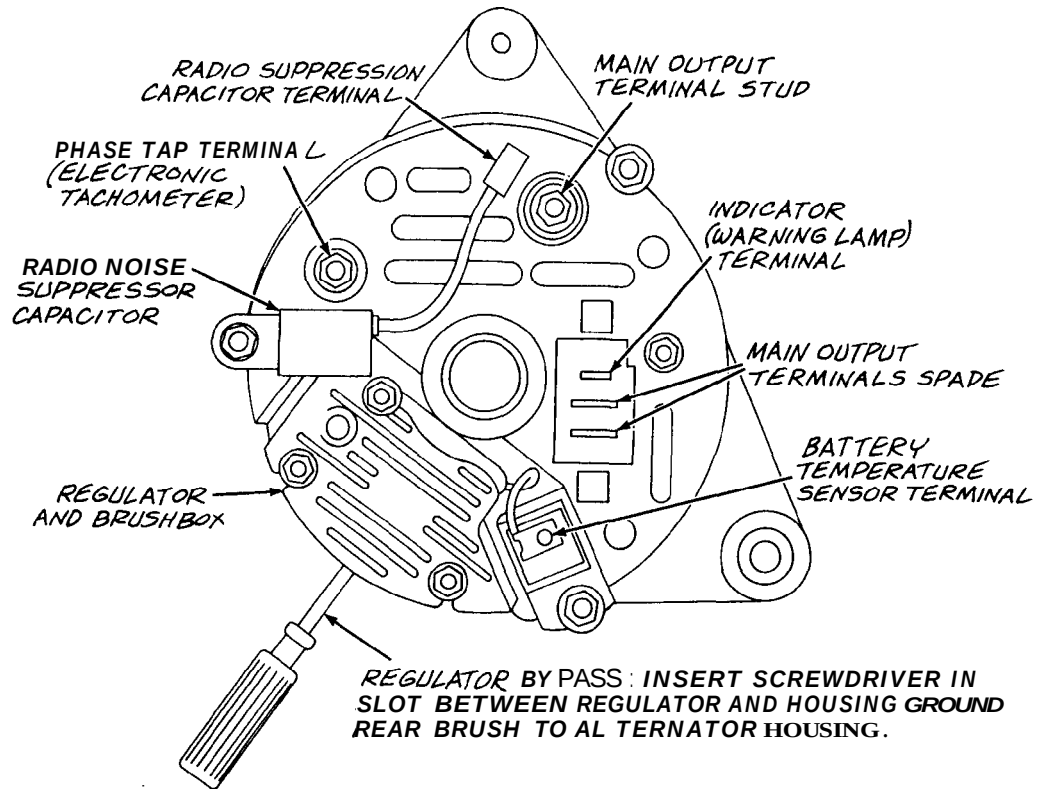
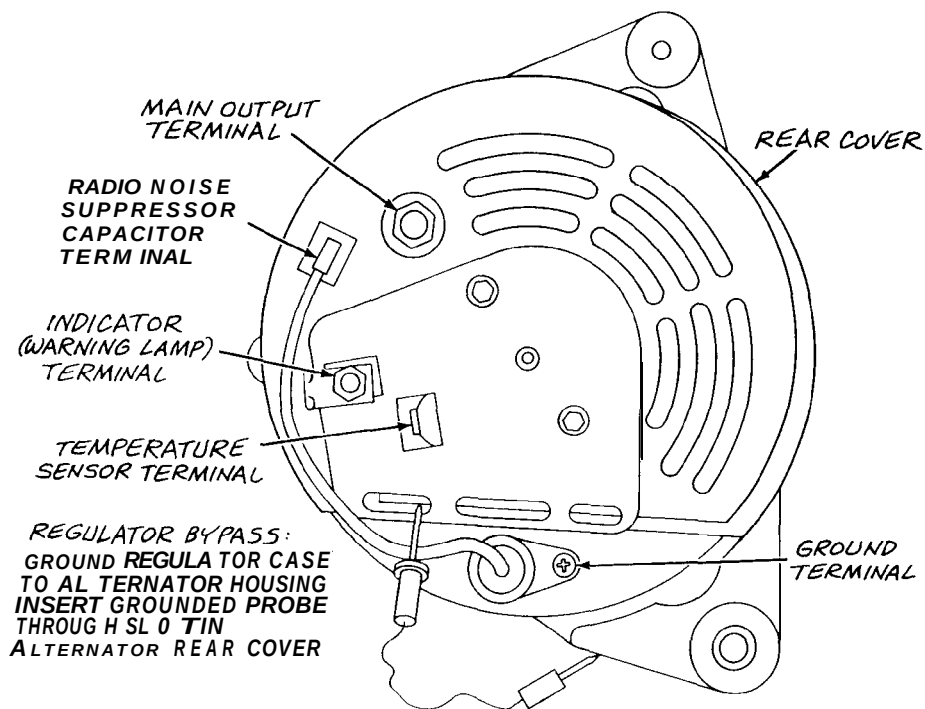


FIGURE 2



127 SERIES ALTERNATORS (3 CYL. 30 SERIES, C SERIES INDUSTRIAL)

### TERMINAL IDENTIFICATION AND REGULATOR BY PASS



133 SERIES ALTERNATORS (4 CYL. 10 SERIES)

FIGURE 3