

ELECTRO-MECHANICAL VOLTAGE REGULATOR ASSEMBLY

ELECTRO-MECHANICAL VOLTAGE REGULATOR ASSEMBLY 15-VOLT (C611001-0102)

The electro-mechanical voltage regulator assembly was installed in Cessna single engine aircraft thru early 1974 models.

NOTE

The semi-solid state regulator (C611001-0201) is recommended as a spare replacement for the 15 volt, electro-mechanical voltage regulator. (Refer to page 14 for description of the semi-solid state regulator.)

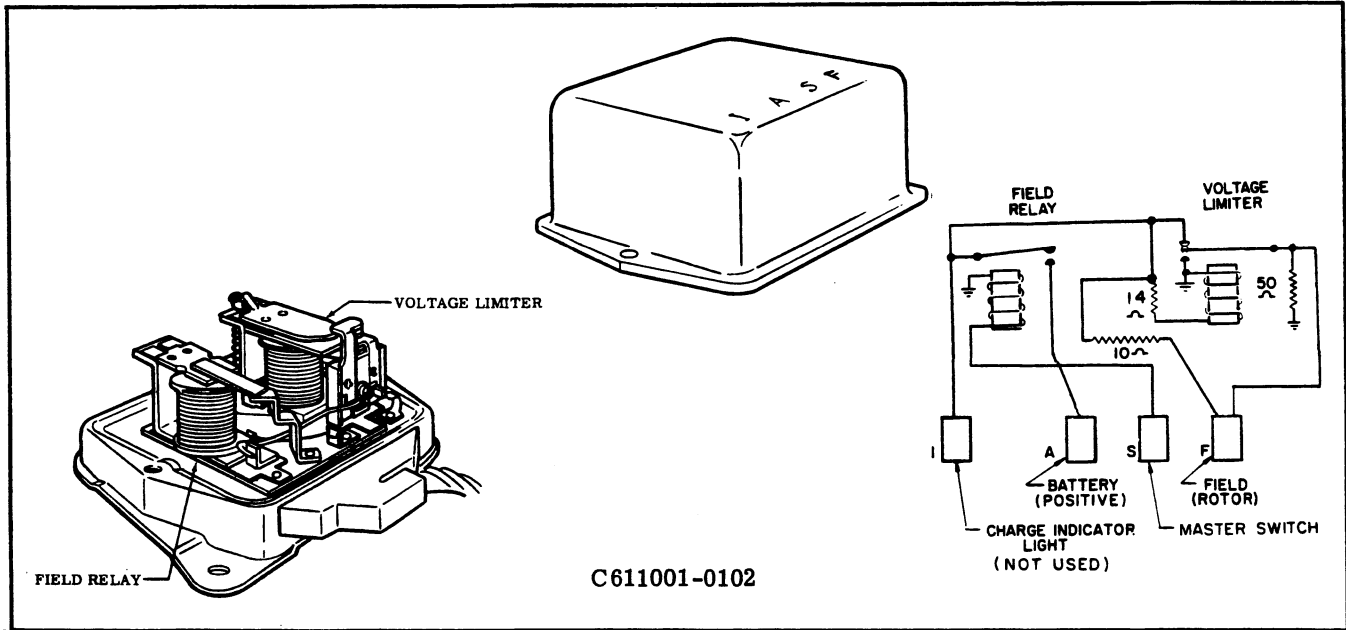


FIGURE 3

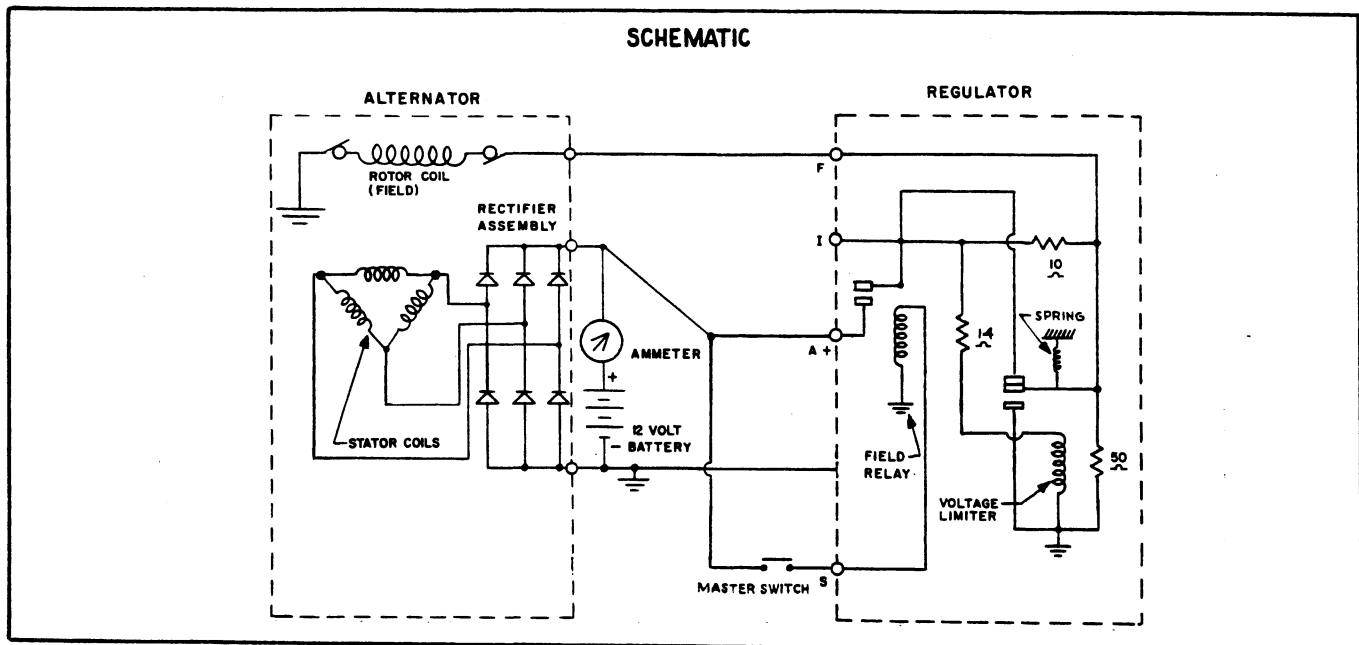


FIGURE 4

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Temperature compensation is provided to automatically raise the regulated voltage during cold operating conditions, and lower the regulated voltage as the temperature increases.

Accidental shorts and incorrect wiring connections are prevented by blade type terminals which accommodate a quick disconnect multiple circuit plug on the wiring harness.

IMPORTANT CONSIDERATIONS - Considerable expense has been incurred to provide a voltage limiter that is both temperature corrected and compensated. This becomes very important to the service technician because it is impossible to properly test or adjust the voltage limiter until the regulator is normalized and the surrounding air temperature known. The importance of these two considerations cannot be overemphasized.

OPERATION OF ELECTRO-MECHANICAL VOLTAGE REGULATOR

FIELD RELAY

BATTERY CURRENT TO ROTOR - Due to the relatively high magnetic losses and leakage, a given aircraft alternator may not develop sufficient voltage to be self-exciting. Therefore, provision must be made to supply battery current to the rotor coil when the engine is first started.

When the aircraft master switch is in the "ON" position, battery current will flow from the battery contactor through the ammeter to the bus bar and alternator circuit breaker. The current then flows to the master switch and to the voltage regulator "S" terminal. From the "S" terminal current flows to the field relay coil, closing the relay contacts.

When the field relay closes, full system voltage is applied to the field circuit. This provides maximum alternator field magnetism, and as a consequence, full alternator output. The wiring diagram shows that the regulator field circuit wire connects directly to the power circuit and not through the master switch. Better voltage regulation is obtained from this direct connection than would be possible with the master switch voltage drop in the circuit causing the voltage limiter to sense a voltage source that is not representative of battery voltage.

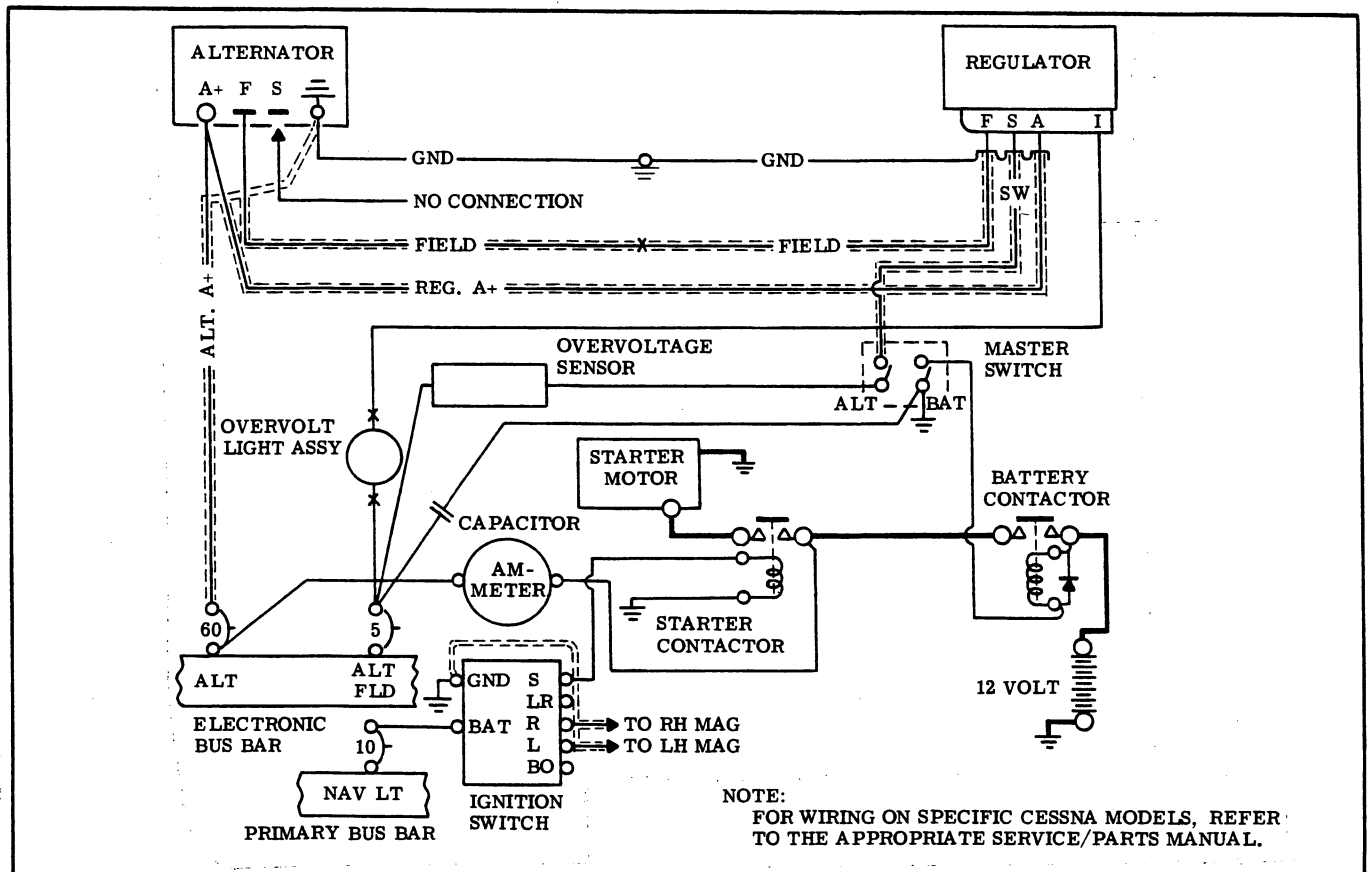


FIGURE 5

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FIELD RELAY BENCH TEST - ELECTRO-MECHANICAL REGULATOR

A 50 ohm potentiometer, a test light, and a voltmeter are used to check the voltage required to close the field relay. This test can be made with the voltage regulator on the aircraft or on the bench. Use a 12 volt battery.

TEST CONNECTIONS

1. Connect the potentiometer from the positive battery post to the "S" terminal of the regulator.
2. Connect the battery positive terminal to the regulator "A" terminal and the battery negative terminal to the regulator base.
3. Connect the voltmeter positive lead to the "S" terminal of the regulator and the negative lead to the regulator base.
4. Connect the test lamps from the regulator "I" terminal to the regulator base.

TEST PROCEDURE

1. Slowly rotate the potentiometer toward the "resistance out" position while observing test lamps and voltmeter.
2. When test lamp comes on observe voltmeter.
3. Slowly rotate the potentiometer toward the "resistance in" position while observing the test lamps and voltmeter.
4. When test lamp goes off observe voltmeter.

TEST CONCLUSIONS

Contacts should close (test light comes ON) at not less than 2.5 volts or more than 6 volts. If contacts close with less than 2.5 volts, or greater than 6 volts, replace the regulator.

Contacts should open (test light goes off) at not less than 0.5 volts.

SHOP NOTES:
