

SERVICE PROCEDURES

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SYSTEM TESTING

When the ammeter shows a discharge at higher engine speeds, a charging system component (alternator, regulator, drive belt, circuit breaker, or wiring) has obviously failed. The serviceman's problem is to determine which component is not performing. The On-The-Plane alternator output tests will quickly indicate whether the alternator is, or is not, the faulty component.

The On-The-Plane procedure should be limited to finding which of the two major components (alternator or regulator) is defective and must be removed from the aircraft. Any additional testing that is required to repair the component after it has been removed should be performed on the bench.

When the system components appear to be functioning but the battery is under charged (indicated by slow cranking), or overcharged (indicated by excessive water usage) the voltage regulator should be removed for bench testing and adjustment.

VISUAL INSPECTION

A careful visual inspection of the complete aircraft charging system is an important part of any test procedure.

1. Check the "GEN" circuit breaker; reset if found open.
2. Inspect the battery for corroded cable connections and for dust and battery electrolyte on the top.
3. Check the drive belt for tension and a glazed condition.
4. Check all connectors in the system to be sure they are clean and tight.
5. Inspect the alternator and regulator and wiring for signs of physical damage.

ON-THE-PLANE TEST PROCEDURES

Before making these tests be sure the ship's master switch is functioning properly and the "GEN" circuit breaker is closed (set).

Checking The Voltage Regulator

The calibration of the voltage limiter should be tested on a test machine where it is possible to make adjustments safely and accurately. It is possible, however, to determine if the field relay is operating and if it is the cause of a "no charge" condition.

1. Turn master switch off.
2. Remove the engine cowl and the regulator cover.
3. Observe field relay while the master switch is turned on and off several times. The relay contacts must close each time the master switch is turned on. The relay contacts must open each time the master switch is turned off. A small arc should also be seen when the field relay contacts open.

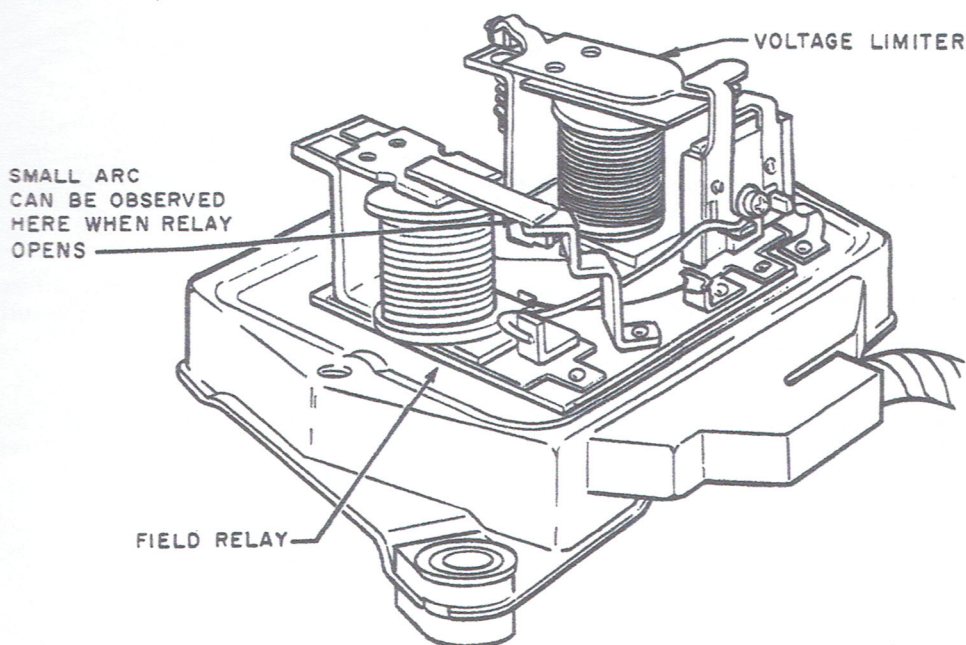


FIGURE 18

CONCLUSIONS

If the relay does not close when the master switch is turned on, the relay coil or the wiring harness is open. Check the harness for a broken wire or poor connection. If harness connections are good replace the voltage regulator assembly.

If a small arc is not observed when the relay opens, check the harness for a broken field wire or poor connection. If the harness connections are good, remove the alternator and check the rotor coil and brushes.

Checking The Alternator

1. Turn master switch of the aircraft to the "OFF" position.
2. Disconnect plug connector at the voltage regulator and connect a jumper wire from the "A" terminal to "F" terminal of the plug connector as shown.

NOTE: Fabricate a jumper wire as shown in the illustration.

3. Turn off all accessory equipment.
4. Turn master switch to "ON" position and start the engine.
5. Increase engine speed to 1500 RPM and observe the ship's ammeter.

CAUTION

Components of the electrical system may be damaged if the engine is operated for over two minutes with the jumper wire connected.

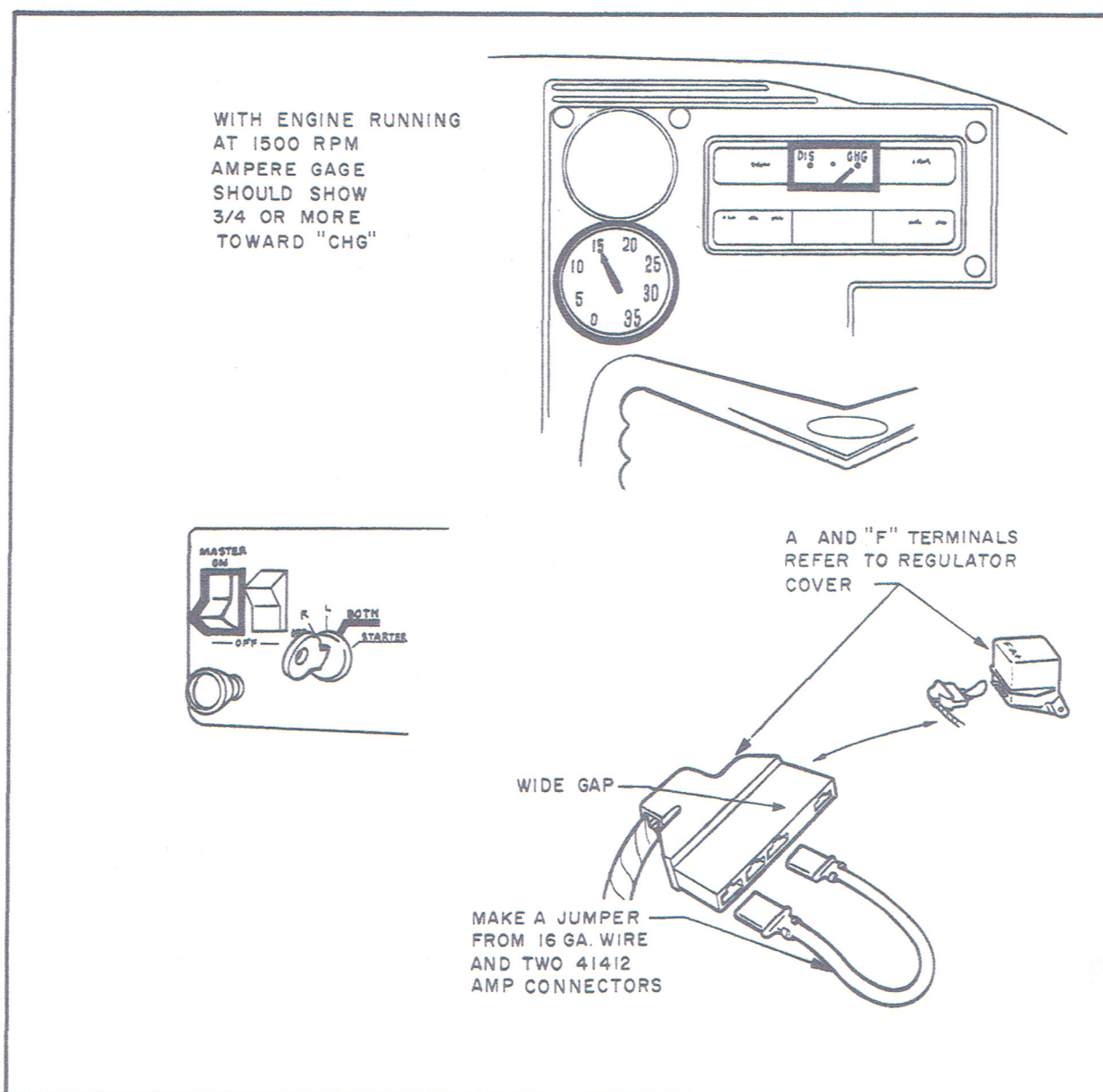


FIGURE 19

TEST CONCLUSIONS

If the pointer of the ship's ammeter was 3/4 of the way or more (45 to 50 amps) toward full "charge" the alternator is functioning properly and the cause of the trouble is the voltage regulator.

If the ammeter indicated less than 1/2 "charge," a faulty alternator, a poor connection, or a broken wire harness or plug connector is indicated. Check the harness; if all connections are good, remove alternator for bench testing and repairs. Refer to "Alternator Bench Tests," Page 20.