

FIGURE 1

NO COMMUTATOR PROBLEMS - One of the principal advantages of an alternator is the possible higher maximum operating speed. A major limitation imposed on generator speed is commutation difficulties. Generator commutation is limited to approximately 10,000 RPM whereas an alternator will operate at speeds up to approximately 15,000 RPM. Alternator speeds are limited only by bearing life and by physical factors such as centrifugal force acting on the rotor. This permits higher pulley ratios to be used with subsequent higher output at engine idle speed.

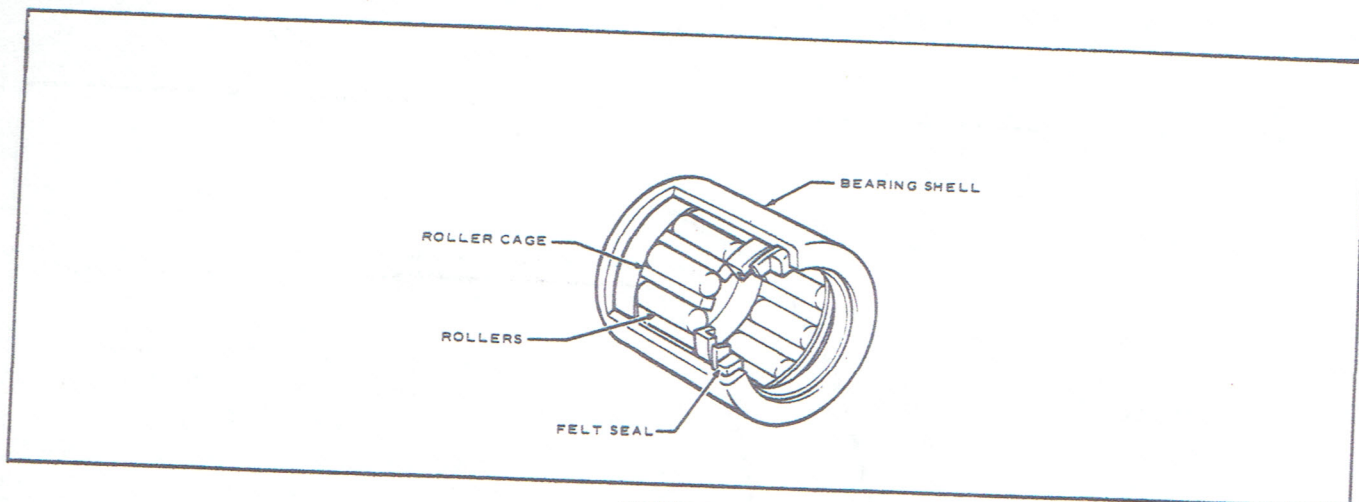


FIGURE 2

SPLASH PROTECTION - 60 AMP MODEL - Splash and dirt protection for the brushes and slip-rings is built into the alternator rear housing casting. A projection on the rear rotor pole face is called a "watershield." It rotates close to the shield portion of the rear housing so as to form a rotating seal against water entry.

Splash protection is required to prevent salt and other foreign substances from accumulating on the brushes causing them to stick in their holder. A felt seal is provided in the rear bearing as further protection against entry of contaminants into the bearing.

DESCRIPTION

voltage as low as 23.0 volts may be required to prevent overcharging a battery operating at 200° Fahrenheit.

IMPORTANT CONSIDERATIONS - Considerable expense has been incurred to provide a limiter voltage 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 over emphasized.

OPERATION OF VOLTAGE REGULATOR

FIELD RELAY

BATTERY CURRENT TO ROTOR - Due to the relatively high flux 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 generator 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.

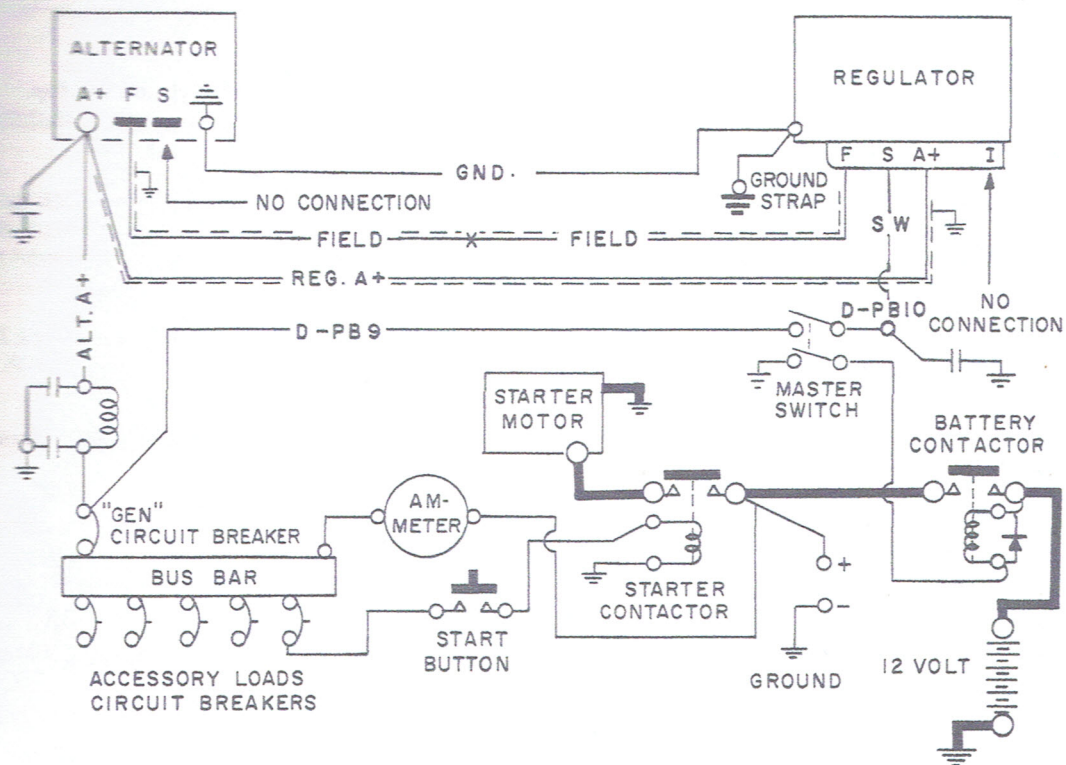


FIGURE 17

When the field relay closes full system voltage is applied to the field circuit. This provides maximum alternator field current. 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 causing the voltage limiter to sense an unrepresentative voltage source.