

Chapter Eight

Sometimes a battery does not seem to supply its rated power. The probable cause is frequently discharging the battery at a rapid rate then quickly recharging it, which results in a cell voltage imbalance. The corrective action is to recondition the battery. In the absence of other information, have the battery checked every 50 flight hours until you have sufficient historical data to increase or decrease frequency. The range can be from a few hours to more than 1000!

Preflighting the NiCd battery is relatively simple. Check the box for structural and chemical damage. Vent and cooling lines should be checked for leaks, obstructions, or any other damage. If there is excessive electrolyte spewage or use of water by one or more cells, it may be the result of any one of several problems. The cell could have been over-filled or filled when the battery was in a state of discharge. The vent cap could be loose or there could be damage to the O-ring or vent cap. The voltage regulator charge voltage may be set too high, overcharging the battery. And finally, if a visual check doesn't reveal any problems, check the voltage regulator.

Alternator

The most significant preventive maintenance for your alternator is to assure proper polarity at all times. If you change batteries, use an external battery boost, or during a fast charge, always assure proper polarity. A mistake here can cause permanent damage to the alternator, its rectifier, and many electrical-system components. For the same reason, be very careful not to reverse regulator leads. It also is important to guard against transient voltages, which will damage semiconductors in the alternator, radios, and other electronics. A 140-volt transient voltage for more than .001 second will fry a voltage regulator! To help preclude this possibility, always keep the battery in the circuit; it serves as a sort of electrical shock absorber.

Old-style generators required "polarizing" when they were new to assure proper polarity. This was done by attaching a temporary external connection to the field circuit. Alternators NEVER require this; it will destroy the semiconductors. Obvious preventive maintenance items include a snug alternator belt and battery in good condition.

Perhaps not so obvious, the voltmeter and ammeter should be checked periodically to assure proper operation. The ammeter alone is one of the most important diagnostic tools of the alternator. Another frequently overlooked but very important preventive maintenance item is the general condition of the cowling baffles and airflow path. Alternator temperature limits are critical and are determined by the type of winding insulation, bearing lubricant, and type of semiconductors used. Even the voltage regulator and overvoltage control have temperature limitations. Baffles naturally take a beating as mechanic after mechanic remove the cowling and replace it. As baffles bend, deform, and crack, the airflow becomes altered and ultimately will lead to premature failure of the alternator as well as other parts.

Starter

The best preventive maintenance for the starter system is to use it as little as possible. Another life extender is to keep the engine in tip-top shape. Problems with the fuel, ignition,