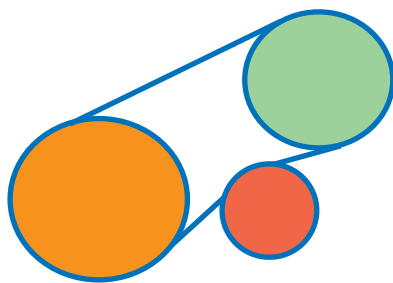




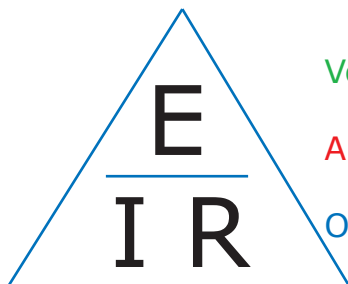
Aircraft Charging Systems

Ohm's Law



SwapTronics is a coined phrase that is descriptive of one who swaps out parts in hopes of fixing a problem. A SwapsTronics approach can be very costly when one replaces parts that didn't need replacing.

On the other hand, good troubleshooting skills is efficient and often uncovers latent problems with system parts that need repairing or replacing.



Voltage = pressure

Amps = current, flow

Ohms = resistance



Alternator Basics

The self rectifying alternator has the means to generate AC and rectify it back to DC.

The alternator is inherently self regulating, no current limit is required by the voltage regulator.

To check bus voltage at the alternator measure between the BAT terminal and the case. It should read 12 vdc or 24.5 vdc (nominally, depending upon which system you have).

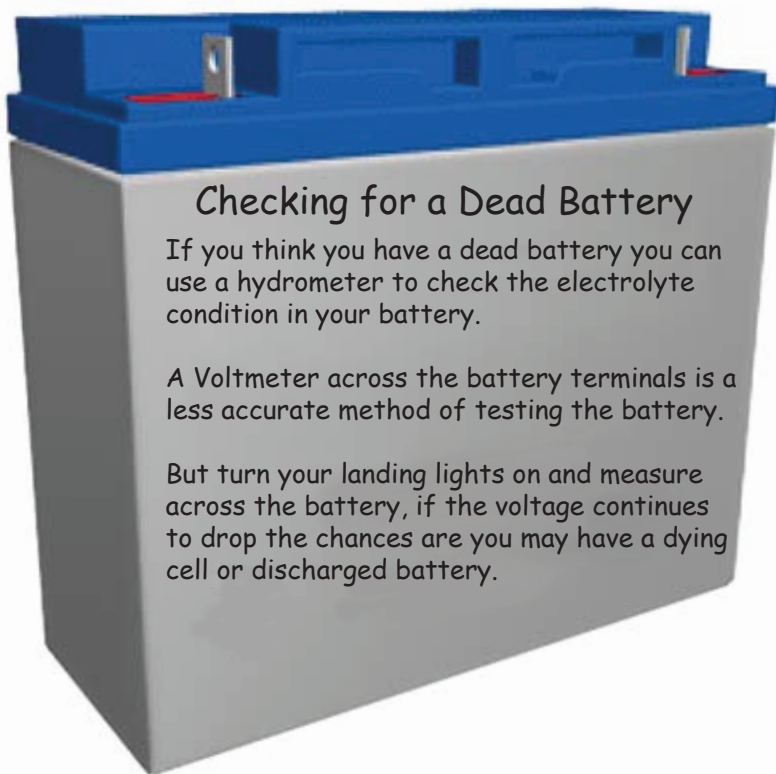
When checking between the BAT terminal and the Field terminal you are effectively checking alternator output all the way through to the field input.

Checking for a Dead Battery

If you think you have a dead battery you can use a hydrometer to check the electrolyte condition in your battery.

A Voltmeter across the battery terminals is a less accurate method of testing the battery.

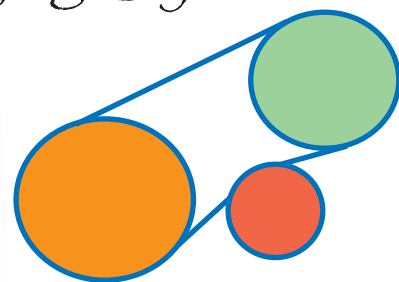
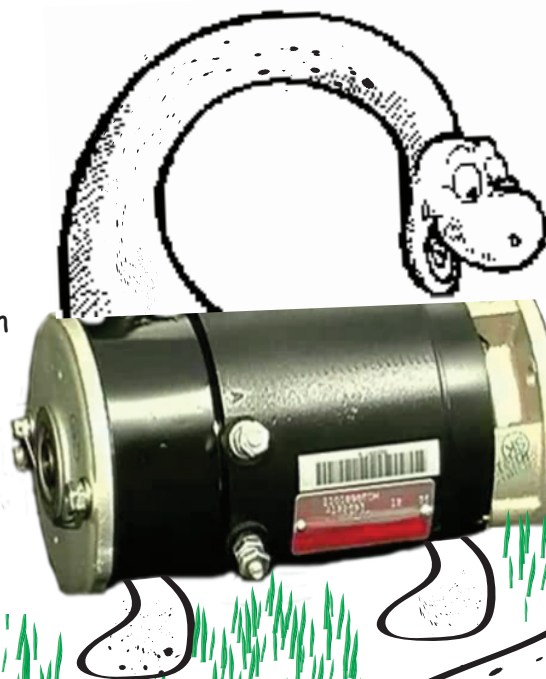
But turn your landing lights on and measure across the battery, if the voltage continues to drop the chances are you may have a dying cell or discharged battery.





Aircraft Charging Systems

Generators are dated technology, they are heavy and more costly to maintain than alternators



Quick Hints . . .

Sudden increases in the brightness on the instrument panel is an indicator of a high voltage condition.

An over voltage condition is most often caused by a faulty voltage regulator or the alternator control unit (ACU).

The field circuit breaker popped! Check the ACU. The newer ACU uses a crowbar protection system that shorts the ACU input and ground which in turn deliberately forces the field circuit breaker open.

BATTERIES & BELTS

When the low voltage light comes on during a heavy load, like lowering the landing gear and turning on the landing light, this may be an indicator of a bad or slipping alternator belt.

The output of an over excited alternator is arrested to some extent by the presence of the battery which will draw excessive current on the bus if the voltage goes above normal. This condition may be maintained for a brief period of time, but must be corrected.

Things to Remember

Load Meters indicate the output of the alternator.

The Amp Meter indicates the charge / discharge status of the battery.