

## VOLTAGE REGULATORS

Several months ago Charles Patton talked on aircraft electrical systems including batteries and voltage regulators. Charles mentioned that batteries and voltage regulators varied considerably with temperature and has sent some info to me which I will condense.

Briefly a voltage regulator will put out less voltage as it warms up and this is designed into it so as to match the changing characteristics of the battery as it changes temperature. It is best, therefore, to put the regulator near the battery so they stay at similar temperatures. Below is a chart of voltages versus temperature. Ideally you would like to start at the star (14.2 V at 125°F) and the voltage would vary with temperature according that vertical column.



### EFFECT OF REGULATOR AMBIENT TEMPERATURE ON REGULATED VOLTAGE

REGULATOR AMBIENT TEMPERATURE	VOLTAGE										
165° F	12.8	13.0	13.2	13.4	13.6	13.8	14.0	14.2	14.4	14.6	
145° F	13.1	13.3	13.5	13.7	13.9	14.1	14.3	14.5	14.7	14.9	
125° F	13.4	13.6	13.8	14.0	14.2	14.4	14.6	14.8	15.0	15.2	
105° F	13.7	13.9	14.1	14.3	14.5	14.7	14.9	15.1	15.3	15.5	
85° F	14.0	14.2	14.4	14.6	14.8	15.0	15.2	15.4	15.6	15.8	
65° F	14.3	14.5	14.7	14.9	15.1	15.3	15.5	15.7	15.9	16.1	
45° F	14.6	14.8	15.0	15.2	15.4	15.6	15.8	16.0	16.2	16.4	
NORMAL SPECIFICATION RANGE											
INDICATES PUBLISHED SPECIFICATIONS											

### APPROXIMATE BATTERY CONDITIONS

Battery Voltage	Capacity	Specific Gravity
12.9 Volt	100%	1.280
12.5	75%	1.250
12.3	50%	1.220
12.0	25%	1.190
11.6	0%	1.130

#### EXAMPLE:

\* VOLTAGE REGULATOR SETTING  
OF 14.2 VOLTS @ 125°

13.6 VOLTS	@ 165°
13.9 VOLTS	@ 145°
14.5 VOLTS	@ 105°
14.8 VOLTS	@ 85°
15.1 VOLTS	@ 65°
15.4 VOLTS	@ 45°

Multi-com field elevation is 480'.  
is 122.9