SECTION 5

ALTERNATOR MONITORING SYSTEMS

OVERVOLTAGE SENSOR AND WARNING (210 Series Only)

The overvoltage system installed in 1978 210 Series aircraft consists of an overvoltage sensor and a RED warning light labeled, HIGH VOLTAGE, located on the instrument panel. When an overvoltage occurs, the sensor opens the alternator field circuit, and turns the RED warning light "ON." The ammeter will show discharge, because the battery is the power source during alternator off condition. The system may be recycled by first placing the Alternator Master Switch "OFF", then "ON." If the overvoltage condition was transient, the alternator will resume charging. If an overvoltage trip occurs again, an alternator malfunction has occurred, requiring immediate termination of flight, and repair prior to next flight. The overvoltage sensor Red warning light can be tested by momentarily placing the alternator portion of the Master Switch "OFF," which illuminates the light, and extinguishes it when turned "ON." The overvoltage circuit initially closes when the alternator switch is turned "ON." and voltage to regulator reaches a minimum of 3 volts. The circuit will trip, interrupting power to regulator when voltage reaches 31.5±.5 volts. The light filament can be tested by pressing the light bezel.

CAUTION

Shorting orange lead to ground or intermittent connecting orange and black leads will destory sensor device.

The overvoltage sensor and warning system installed in 1978 210 Series aircraft, has been replaced by the Alternator Control Unit starting with 1979 and on 210 Series aircraft (see the "28-VOLT ALTERNATOR CONTROL UNIT AND LOW VOLTAGE WARNING LIGHT" write-up in Section 4 of this manual for descriptions and operations of the Alternator Control Unit).

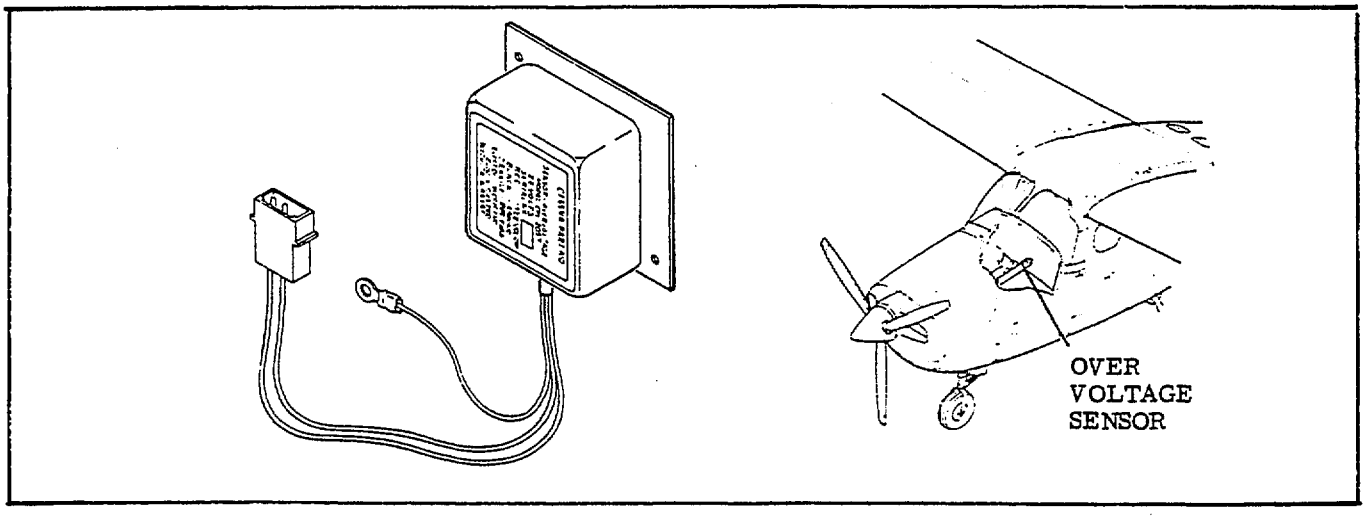

Figure 5-1. Overvoltage Sensor (210 Series Only)

AMMETER MONITORING (210 Series Only)

An overvoltage condition or alternator failure can also be detected by monitoring the ammeter. Normally, the ammeter will show a consistant alternator function corresponding to the ampere load required by the battery depending on its state of charge. Engine cranking will always deplete, to some extent, battery voltage, and charge rate (amount and time) will be directly proportional to energy depleted during cranking. Therefore, a high charge rate immediately after starting is normal, but should gradually drop to near zero (no charge or low charge). A high rate of charge or discharge after engine has been running for some time, or commencing after a normal reading is an indication of alternator or regulator malfunction. Anytime this occurs, the charging system should be thoroughly checked, even if the system returns and functions normally after the first indication, because intermittent malfunctions can occur without detection.