

DUAL (28-VOLT) ALTERNATOR CONTROL UNITS (C611007-0101) AND EQUALIZATION FUNCTIONS

Description and Operation

All 1982 and on 210 Series and T303 model aircraft equipped with dual alternators, are equipped with two alternator control units (ACU's) mounted under the floorboard behind the pilots seat on T303 models (see figure 30) and on 210 series models, the dual ACUs are mounted on the left-hand side of the forward cabin section, just aft of the firewall (see figure 30A). The ACUs are installed to provide electrical control functions for both alternators.

The ACU's are solid state and provide voltage regulation, plus high voltage protection and low voltage sensing. Should either alternator system cause an over-voltage condition, the alternator control units disconnect their respective alternators from the bus. In the event of a high voltage condition, one or both alternators may be disconnected from the buses. Should a low-voltage condition occur, the Model T303 ACU's will illuminate a red light, labeled LOW V on the pilot's annunciator panel to warn of this condition and on 210 series models, the ACU's will illuminate a red light, labeled LOW VOLT on the upper left side of the instrument panel. Each ACU continually monitors the output of each alternator; should an alternator fail completely or fall below 15-volts output, an amber light (labeled L. ALT OFF or R. ALT OFF located on the annunciator panel on T303 Models and labeled ALT 1 OFF or ALT 2 OFF on the upper left side of the instrument panel on 210 Series Models) will illuminate to indicate a loss of alternator output. One or the other alternator off lights may be on at a time.

Load sharing between the alternators is achieved by internal paralleling circuitry in the ACU's. The load on each alternator is monitored by means of alternator shunts. The ACU's adjust the alternator field excitation such that each alternator is carrying approximately half the load (± 15 amps). Should the paralleling system fail, the alternators will revert to, two independent systems. Under these conditions, the alternator and ACU with the highest regulating point will continue to carry the electrical load. If this alternator becomes overloaded, the other one will automatically pick up the excess electrical load.

The low voltage, red warning light, will illuminate to warn the pilot anytime the voltage falls below approximately 24.5 volts, as sensed by either alternator control unit..

A volt-ammeter and selector switch (mounted on the left side of the instrument panel on T303 Models and mounted on the upper right side of the instrument panel on 210 Series Models) are installed so that the electrical system operation can be monitored. Depending on the position of the selector switch, the load placed on the left or right alternator on T303 Models or ALT 1 (Aft) of ALT 2 (Fwd) on 210 Series Models, the battery charge or discharge current, or the system voltage can be selected and indicated by the volt-ammeter.

For a complete operational description of all dual alternator controls, switches and emergency alternator restart systems, refer to the appropriate Maintenance Manual and Pilot's Operating Handbook.