

## GENERATOR CONTROL UNIT - MAINTENANCE PRACTICES

### 1. Description

- A. The generator control unit (GCU) is a solid-state unit installed on the left cabin sidewall just forward of FS 118.00. The unit monitors and controls the electrical power system, sequencing system operation from starting the engine through generator operation. The unit is equipped with overvoltage sensing. This maintenance practice provides removal/installation and voltage adjustment procedures for the GCU.
- B. For GCU (and electrical power) troubleshooting, refer to Electrical Power - Adjustment/Test.

### 2. GCU Removal/Installation

- A. Remove GCU (Refer to Figure 201).
  - (1) Disconnect airplane battery. Place maintenance tag on instrument panel with following statement:  
**NOTE: Do not turn BATT switch on. Battery disconnected from airplane.**
  - (2) Remove substrate panel forward of left circuit breaker panel to gain access to GCU.
  - (3) Disconnect electrical connector from GCU.
  - (4) Remove screws securing GCU to airplane.
  - (5) Remove GCU from airplane.
- B. Install GCU (Refer to Figure 201).
  - (1) Position GCU on bracket and secure using screws.
  - (2) Connect electrical connector to GCU.
  - (3) Install substrate panel.
  - (4) Reconnect airplane battery and remove maintenance tag from instrument panel.

### 3. GCU Adjustment/Test

**CAUTION: Do not disconnect electrical connector from GCU while power is applied to the airplane.**

- A. Adjustment Procedures.
  - (1) Remove substrate panel forward of circuit breaker panel on lower left cabin sidewall to access GCU.
  - (2) Connect voltmeter to voltage test jacks on GCU.
  - (3) Start engine. Refer to Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
  - (4) Ensure battery switch is in the ON position.
  - (5) With start switch in the start position and engine operating at 80 percent  $N_g$ , check voltage at test jacks. Voltage should indicate 28.5 VDC, +0.1 or -0.1 VDC. If not, actuate the generator switch to TRIP and then to RESET. If generator still does not build up voltage, check GCU circuits.

**CAUTION: If a metallic screwdriver is used, a short circuit may occur, damaging the GCU.**

**CAUTION: If the GCU regulated voltage is changed, then the alternator control unit for the standby alternator (if installed) must also be changed. This voltage should be set 1.0 VDC below the GCU setting.**

- (6) Loosen dust cover over the GCU voltage adjustment screw. Slowly rotate the voltage adjustment screw using a nonmetallic screwdriver until voltage at test jack reads 28.5 VDC, +0.1 or -0.1 VDC. For recommended voltage settings due to temperature variations, refer to Table 201 or Table 202.

**NOTE: The recommended voltage settings are an approximation only. A general rule to follow in setting voltage is to lower the adjustment when the battery is using too much water (indicating too high voltage) or to increase the adjustment when the battery does not remain charged.**

**Table 201. Voltage Settings With Lead Acid Battery**

OUTSIDE AIR TEMPERATURE	GCU VOLTAGE
120°F and Above	27.5 VDC, +0.1 or -0.1 VDC
60°F	28.5 VDC, +0.1 or -0.1 VDC
0°F and Below	29.5 VDC, +0.1 or -0.1 VDC

**Table 202. Voltage Settings With Ni-Cad Battery**

**OUTSIDE AIR TEMPERATURE**

**GCU VOLTAGE**

Operation in regions where outside air temperature does not get above 60°F. Increase GCU setting by 0.5 VDC

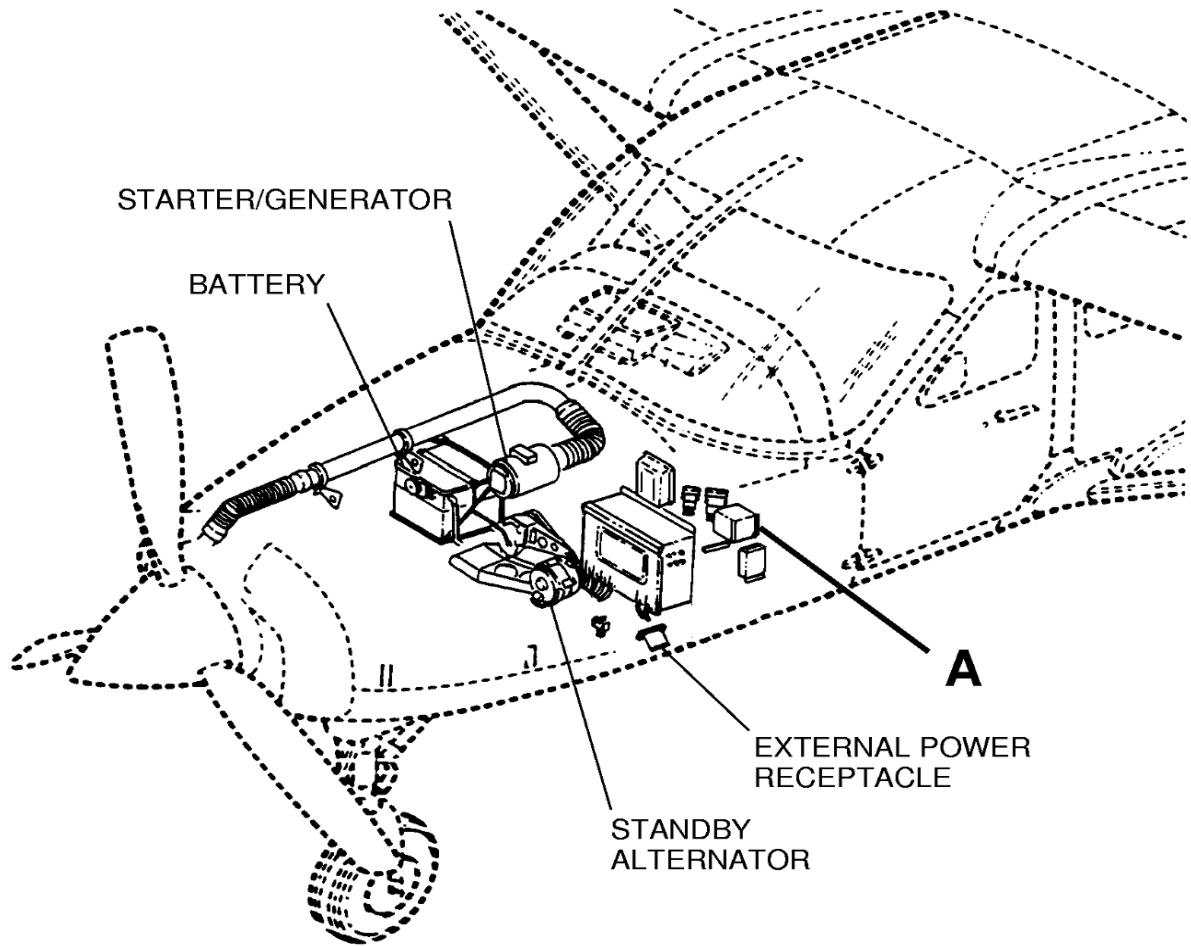
Operation in regions where outside air temperature does not get below 60°F. Decrease GCU setting by 0.5 VDC

**NOTE 1: Bus voltage may vary up to 0.5 volts (plus or minus) over the range from zero to full load and from 65 percent to 100 percent N<sub>g</sub> engine speed. For engine speeds below 65 percent, bus voltage may drop off considerably with higher loads.**

- (7) Stop engine and remove voltmeter from GCU test jack. Secure dust cover overvoltage adjustment screw.
- (8) Install substrate panel.

Figure 201 : Sheet 1 : Generator Control Unit Installation

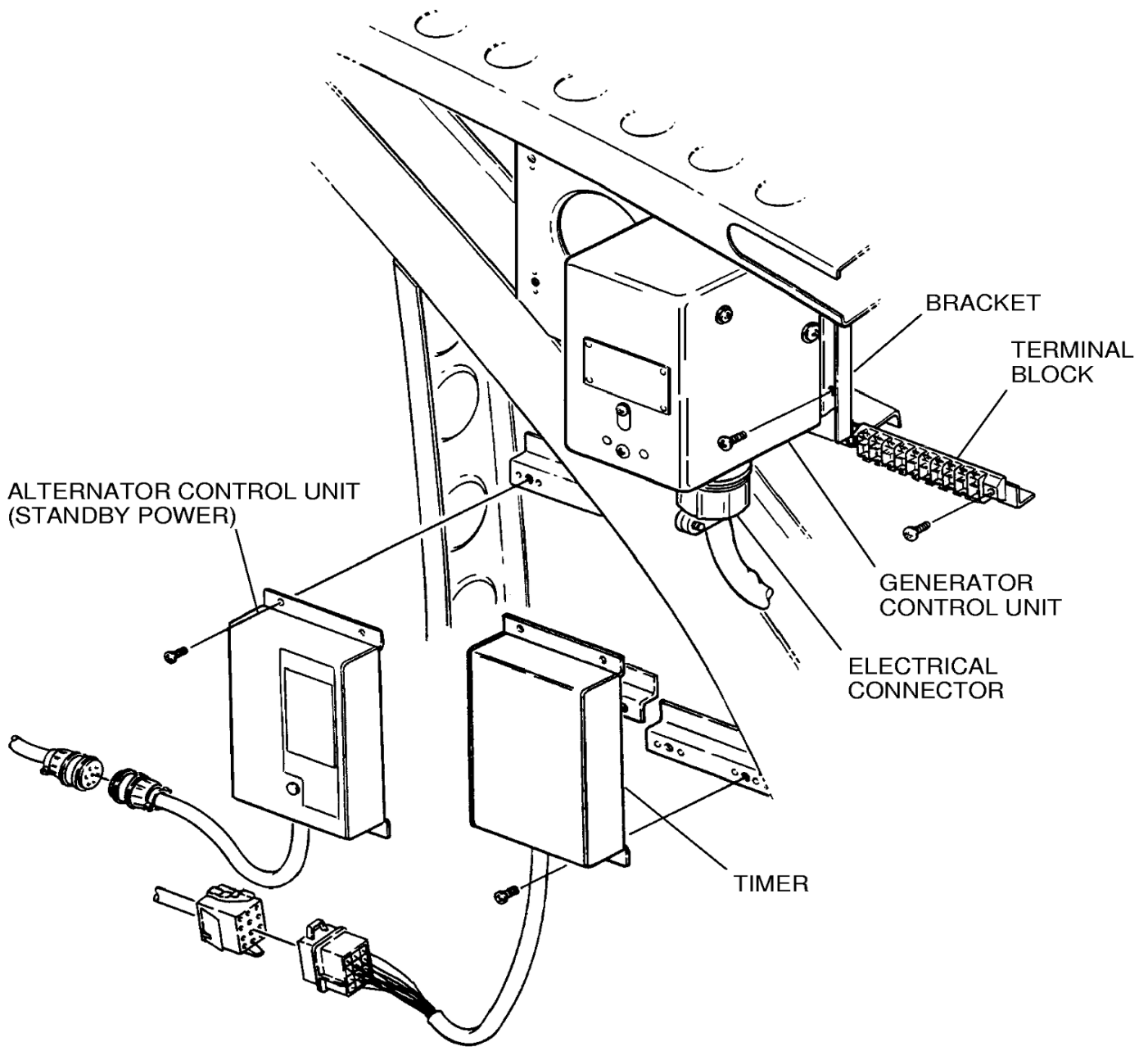
A22713



2618X1116

Figure 201 : Sheet 2 : Generator Control Unit Installation

A22714

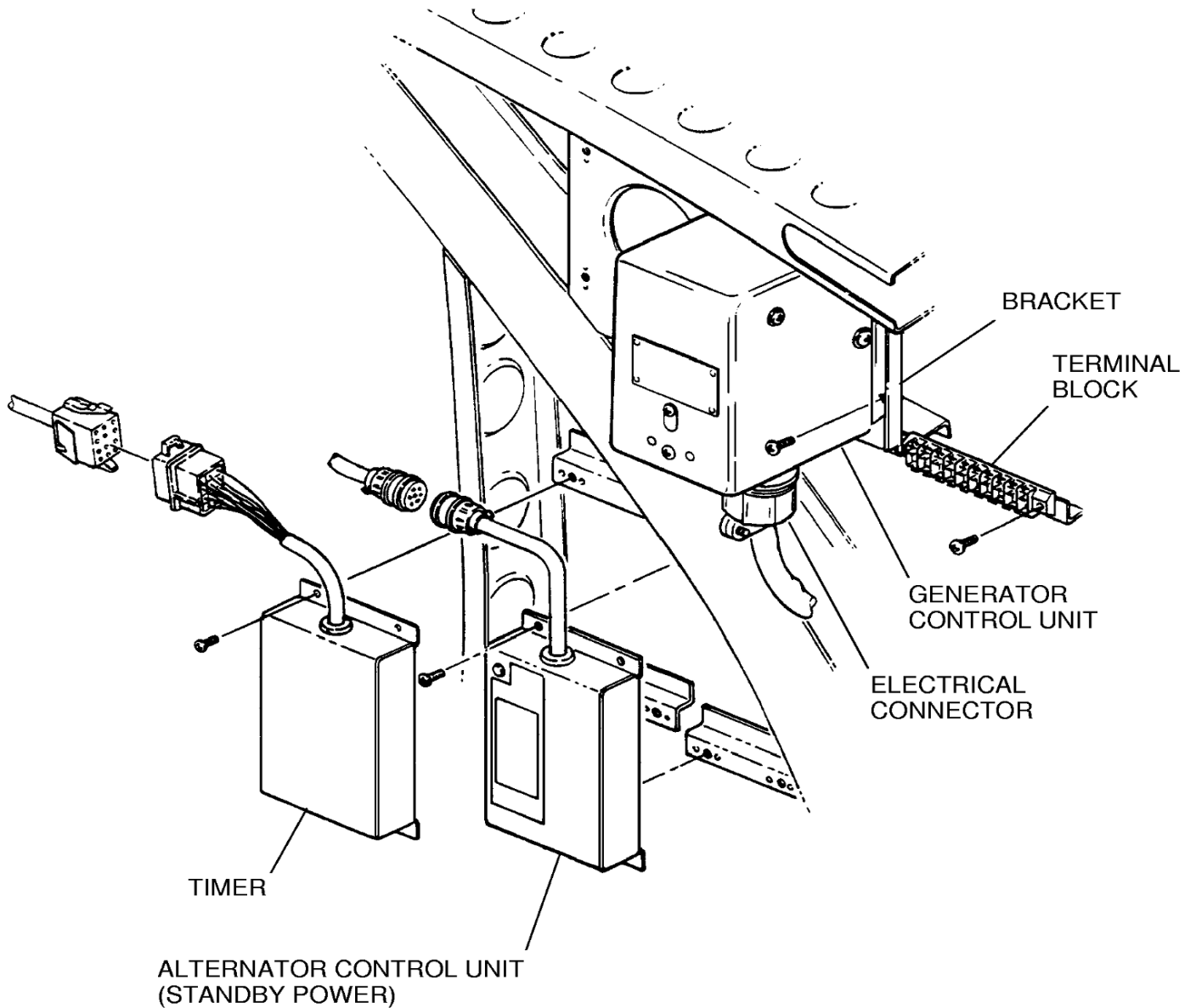


**DETAIL A**  
AIRPLANES 20800001 THRU 20800020

2618X1117

Figure 201 : Sheet 3 : Generator Control Unit Installation

A22715



**DETAIL A**  
AIRPLANES 20800021 AND ON

2618X1118