

**SUBJECT:** Lamar Technologies LLC (Electrodelta) voltage regulator part number VR2000-( )-2.

**REASON:** To provide general instructions for Parallel Voltage Regulator (with shunt sensing) adjustment procedure.

**INFORMATION:** This document is for reference only. Always refer to the aircraft/rotorcraft manufacturer's service and maintenance manuals concerning Instructions for Continued Airworthiness or test and adjustment information specific to the application.

**PROCEDURE:**

**SET-UP:**

To parallel an aircraft installation with two VR2000-( )-2 voltage regulators installed and connected to appropriate alternators, begin by connecting a voltmeter across the load bus to read the voltage generated as each alternator is brought on line. Each alternator should also have individual load meters connected to read the output current.

- a. When it is not possible to reach each voltage regulator to make Individual adjustments with engines running, an extension cable long enough to reach inside the cockpit can be fabricated with nine each 16 AWG wires. The regulators should be temporarily installed for adjustment, and each regulator should be appropriately marked (e.g. "left side or right side") so they can be reinstalled after adjustments are made.
- b. With the Aircraft batteries and only essential loads switched-on and the paralleling wire disconnected (Pin #5 on each voltage regulator), start the engines and turn on the alternator control switch for the left engine. Bring the left engine up to approximately 1700 rpm, adjust the voltage on the operating system to 14.5 volts (for 12-volt systems) or 28.5 volts (for 24-volt systems). Shut down the left engine, and repeat the process for the right engine and right channel with the same load and engine speed. Reconnect the paralleling leads when voltage adjustments are completed.
- c. With both engines running at approximately 1700 rpm, compare loads with both alternator control systems active; the maximum load difference between channels should be approximately 10 percent of the alternator ratings (example given, 60 amp alternators, 6 amps should be the maximum difference between the two). Test the system further by turning on the heaviest loads available and varying engine speeds, in tandem and separately; both systems should remain in balance (9 to 10 amps) throughout the speed and load range of the alternators.

**PROBLEMS & TROUBLESHOOTING:**

1. Both channels must operate properly before attempting to parallel. Common problem modes include voltage drops between the battery and the voltage regulators, loose belts, poor connections, intermittent shorts, etc.
2. Ground return on both channels must be optimal to achieve equal load division. Check for corroded fittings, mountings, etc. Higher impedance in one channel requires the voltage regulator on that channel to raise voltage excessively to achieve balance; such a voltage rise is an indicator that ground return may be compromised.

**WARNINGS & PRECAUTIONS:**

Consult your airframe operating and maintenance manuals and technical information for additional guidance in application.