

# INSTALLATION

## Model 634

# VOLTAGE REGULATOR

### GENERAL INFORMATION

The VR634B-A Voltage Regulator is built for use on 50/60 Hz brushless alternators. This AVR includes frequency compensation, over voltage shutdown, an automatic exciter circuit, and an EMI filter.

### ELECTRICAL SPECIFICATIONS

Dc Output Power:

4 A dc at 63 Vdc continuous,

7 A dc at 100 Vdc (700W) forcing one minute (at 240 Vac input).

Exciter Field Dc Resistance:

15 to 100 Ohms

Sensing Input:

220v Position: 190-240 Vac, Single phase, 50/60 Hz  $\pm 5\%$

110v Position: 100-120 Vac, Single phase, 50/60 Hz  $\pm 5\%$

Voltage Adjust Range:

220v Position: 170-265 Vac

120v Position: 90-132 Vac.

Regulation Accuracy:

Better than  $\pm 1.0\%$  no load to full load.

Response Time:

Less than 1.5 cycles for  $\pm 5\%$  change in sensing voltage.

EMI Suppression:

Internal EMI filter

Overexcitation Shutdown:

Power to fields STOPS when exciter voltage greater than 100 Vdc

Voltage Build-up:

Automatic voltage build-up with 5 Vac minimum residual

Operating Temperature:

-40° C to + 80°C

### MOUNTING

The regulator may be mounted in any position. Use the Voltage Regulator itself as a template

Weight:

15 oz. (0.45 kg) Net.

### FUSE

The fuse is part of the Voltage regulator

Use Bussman Model T5AH250

**EXCITER FIELD POWER CIRCUIT** (regulator wires F+ & F-).

Connect the regulator wire F+ to the exciter field F+ terminal, and regulator wire F- to exciter field F- terminal.

**POWER & SENSING INPUT** (regulator wires 3 & 4)

Connect as shown in side diagrams. Power for the exciter field and regulator circuitry is taken from the generator output.

### FREQUENCY ROLL OFF

At 60 Hz ROLL OFF FREQUENCY starts 55 Hz.

At 50 Hz ROLL OFF FREQUENCY starts 45 Hz.

The Regulator comes factory set for 60 Hz use.

Short wires marked Hz. for 50 Hz use.

Be sure to insulate the connection.

## WARNINGS

Only qualified personal should install & service this AVR. The resistance of the exciter must be from 15 to 100 Ohms. Do not use Meggers they damage the AVR.

### OVER EXCITATION SHUTDOWN

If the exciter field voltage exceeds 100 Vdc, the regulator removes the field current after a time delay. At 135 Vdc, the field voltage is totally removed within 0.2 seconds.

After shutdown, reset the regulator by stopping and restarting the engine.

### VOLTAGE ADJUST RHEOSTAT (VAR)

Adjust with a screwdriver potentiometer on AVR to change generator output voltage. moving rheostat CW increases generator voltage.

When using remote voltage adjust rheostat (VAR), the VAR wire on the regulator should be cut and the rheostat connected to wire ends. A 1 k ohm 1/2 watt rheostat is adequate for most applications. See connection Diagrams

### PRELIMINARY SET-UP

To prevent damage to the regulator, complete the following steps before proceeding with system start-up:

- Verify that the voltage regulator conforms with the generator system requirements.
- Ensure that the regulator is correctly connected to the generator. See connection Diagrams
- Set the regulator VAR fully CCW before starting

### SYSTEM START-UP

- Start the prime mover and bring up to rated speed. Voltage should buildup. If a minimum of 5 Vac residual is not present, you must flash the fields.
- Adjust internal VAR rheostat on AVR for normal generator output voltage.

### FIELD FLASHING

When a new regulator is installed for the first time, the polarity of residual magnetism may be incorrect or the magnitude low. If the generator does not build-up voltage after startup, shut down the engine and do the following:

- With the engine STOPPED, apply a dc voltage of not more than 12Vdc, for 3 sec. to terminals F- & F+ in series with a current limiting resistor of 3-5 ohms & 100 Watts on the fields.
- Start the engine and measure voltage at regulator leads 3 and 4 if is greater than 6 volts, voltage build-up should be successful. Repeat procedure if less than 6 Volts is measured.
- If repeating steps 1 and 2 does not result in generator voltage build-up, replace the voltage regulator.

