

VOLTAGE REGULATOR



INSTRUCTION MANUAL FOR SE100A

THE LIMA LINE FROM
MARATHON
ELECTRIC

WARNING

TO PREVENT PERSONAL INJURY OR EQUIPMENT DAMAGE, ONLY QUALIFIED PERSONNEL SHOULD INSTALL, OPERATE, OR SERVICE THIS DEVICE.

CAUTION: DO NOT megger or high-pot the generator with the regulator connected. DO NOT high-pot the regulator.

INTRODUCTION

GENERAL DESCRIPTION

The SE100A voltage regulator is a sealed electronic voltage regulator which controls the output of a brushless ac generator by regulating the current into the exciter field.

SPECIFICATION

Sensing & Power Input	190-240 Vac	500VA
Output Power - Continuous	63 Vdc at 4 Adc (252w)	
Output Power - Forcing (1-min)	105 Vdc at 7 Adc (735w with 240 Vac input power)	
Regulation	1.0%	
Exciter Field Resistance	15 ohms minimum 100 ohms maximum	
Voltage Adjustment Range	171-264 Vac	
Remote Voltage Adjustment Range	$\pm 10\%$ with 1000 ohm rheostat $\pm 5\%$ with 500 ohm rheostat minimum 1/2 watt rated	
Voltage Buildup	Internal provisions for automatic voltage buildup from generator residual voltage as low as 10 Vac.	
Overexcitation Shutdown	The regulator turns off when: The exciter field voltage exceeds 100 ± 5 Vdc for a time inversely proportional to voltage or instantaneously if the exciter field voltage exceeds 135 ± 5 Vdc.	

EMI Suppression	Internal electromagnetic Interference filter (EMI filter).
Frequency Compensation	Roll-off at approx. 55 Hz at 60 Hz operation and 45 Hz at 50 Hz operation.
Operating Temperature	-40°C to +60°C
Storage Temperature	-65°C to +85°C
Power Dissipation	8 watts maximum
Size	3.92L x 2.65W x 1.30H
Weight	14 oz.

INSTALLATION

MOUNTING

The SE100A voltage regulator can be mounted in any plane. See Figure 1 for mounting dimensions.

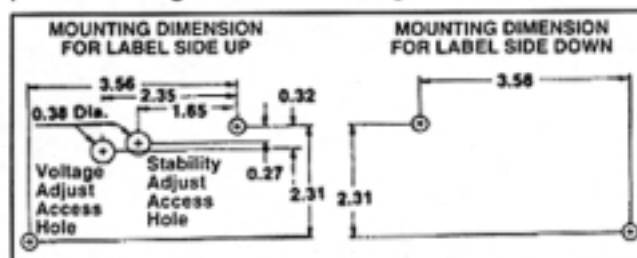


Figure 1

EXCITER POWER CIRCUIT

Connect the regulator wire F+ to the generator F+ or F1 field terminal. Connect the regulator wire F- to the generator F- or F2 field terminal. See Figure 2 for typical connection diagram.

Note: The DC resistance of the exciter field must be greater than 15 ohms but less than 100 ohms.

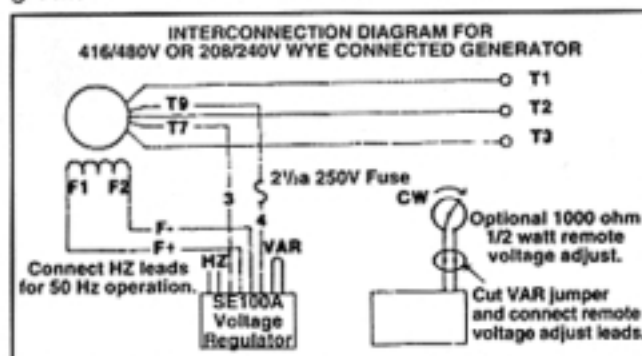


Figure 2

SENSING/POWER INPUT CIRCUIT

See Figure 2 for typical connection diagram.

Input power and sensing is achieved through wires 3 and 4. The **voltage input requirement of the SE100A regulator is 190 to 240 Vac.**

Refer to the specific generator diagram for proper connections.

FUSE

Use a 2½ amp, 250 volt, type 3AG, fuse.

VOLTAGE ADJUST

The screwdriver adjustable potentiometer adjusts the generator output voltage. Adjustment clockwise increases the generator output voltage.

When using a remote voltage adjust rheostat (VAR), the VAR wire on the regulator should be cut and a 1000 ohm 1/2 watt (minimum) rheostat installed. (See Figure 2.) This will give $\pm 10\%$ voltage variation from the nominal. (For $\pm 5\%$ voltage variation use a 500 ohm 1/2 watt rheostat).

STABILITY ADJUST

The screwdriver adjustable potentiometer adjusts the system stability. Adjustment clockwise increases the stability. Increasing the stability increases the response time of the generator. Conversely, decreasing the stability decreases the response time of the generator.

V/HZ ROLL-OFF FREQUENCY SELECTION

For 60 Hz operation, the two leads labeled "HZ" should be disconnected. This will give a roll-off frequency of about 55 Hz.

For 50 Hz operation, the two leads labeled "HZ" should be connected. This will give a roll-off frequency of about 45 Hz.

The lead ends must be insulated at all times.

OVEREXCITATION SHUTDOWN

This feature turns the regulator off if the exciter field exceeds 100 ± 5 Vdc incorporating an inverse voltage/time characteristic. If the voltage exceeds 135 ± 5 Vdc, the regulator is turned off instantaneously.

START-UP PROCEDURE

PRELIMINARY SET-UP

Ensure the voltage regulator is correctly connected to the generator. Refer to the specific connection diagram supplied with the generator.

Be sure the proper fuse is installed.

Set the regulator voltage adjust to full counter-clockwise (minimum voltage level).

Set the remote voltage adjust (if used) to the center position.

Set the stability control full clockwise (maximum stability level).

Connect either a 1000 Vdc voltmeter to the generator field terminals F1 and F2 with F1 - positive and F2 - negative or an appropriate ac voltmeter to the generator output leads.

SYSTEM START-UP

Start and run the generator at no load and rated speed. The generator voltage should build up to a minimum level. (Actual level is dependent upon connection). If it does not build up, refer to field flashing section in generator manual.

Slowly adjust the voltage control until the generator voltage reaches the nominal value. If used, adjust the remote voltage adjust rheostat to set the generator voltage to the exact value desired.

Turn the stability adjust counter-clockwise until instability is shown on either of the voltmeters mentioned in the "PRELIMINARY SET-UP" section. With the system operating in an unstable condition, slowly adjust the stability control clockwise until generator stability is reached.

Interrupt regulator power for a short time (approximately 1-2 seconds).

If the generator remains stable, no further adjustment is necessary. If the generator does not remain stable, increase the stability slightly and interrupt regulator power again.

This procedure should be repeated until system stability is reached and maintained.

Symptom	Cause	Action
Residual Voltage - No Output	Residual voltage at regulator power input wires 3 & 4 below 10Vac. Field leads F1, F2 not connected. Power input leads not connected. Blown or missing fuse. Defective regulator. Defective generator.	Check wiring diagram for proper connections. Flash generator field. Refer to field flashing section in generator manual. Connect field leads F1, F2. Connect power input leads 3, 4. Replace fuse. Replace regulator. Consult generator manual.
Output Voltage Low	Incorrect connections. Voltage adjust turned down. Remote voltage adjust is turned down. Defective regulator.	Check wiring diagram for proper connections. Rotate voltage adjust CW until desired voltage is reached. Rotate remote voltage adjust CW until desired voltage is reached. Replace regulator.
Output Voltage High	Voltage adjust turned too high. Remote voltage adjust is turned too high.	Rotate voltage adjust CCW until desired voltage is reached. Rotate remote voltage adjust CCW until desired voltage is reached.
Output Voltage High - No Adjustment	Defective regulator.	Replace regulator.
Remote Voltage Adjust Operates Backwards	Voltage adjust wire backwards.	Reverse the wiring of the wiper arm on the remote voltage adjust.
Generator Output Voltage Hunting	Stability adjust not set properly.	Rotate the stability adjust in a CW direction until hunting stops.
Poor Regulation	Defective regulator.	Replace regulator.