

EA45A220

Generator Automatic Voltage Regulator Operation Manual



Self Excited Automatic Voltage Regulator
45 Amp AVR Compatible with Carbon Brush Type Generators
Full Wave & Half Wave Version Available



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1. INTRODUCTION

Sensing & power Input

Voltage 170 to 265 VAC Single phase 2 wire
Frequency 50 / 60 Hz, selectable

Output (at 220 VAC input)

Voltage EA45A220H (Half-wave) Max. 90VDC
EA45A220F (Full-wave) Max. 180VDC
Current Continuous 45A
Intermittent 60A for 10 sec.
Resistance Min. 1.5 ohm

Voltage Regulation

< ± 1% (with 4% engine governing)

Voltage Build-up

Residual voltage at AVR terminal > 5 VAC (25Hz)

External Volts Adjustment

±20%

Operation Temp.

-40 ~ 60°C

Dimensions

330mm L * 190mm W * 180mm H

Weight

EA45A220H 4.5KGS ± 2%
EA45A220F 5.2KGS ± 2%

2. WIRING

1. Connect the generator field to F+ and F-.
2. Connect sensing and power input to "AC".

3. ATTENTION

3.1 When installing

1. Let only experienced professional installer carry out the installation.
2. Install AVR inside generator control panel to avoid high temperature, moisture, or location where AVR can not be easily reached.

3.2 When generator is operating

The surface temperature of AVR may reach over 60°C.

3.3 Start Procedure

1. Setting
 - Check wiring connection.
 - Turn the volt trimmer to minimum position.
 - Turn the external trimmer to midway position if fitted.
 - Turn the stability trimmer to maximum position.
 - Connect a voltmeter to field F+, F- terminals.
 - Connect a 300VAC voltmeter to generator output voltage terminals.

2. Start the generator

- Start generator with no load. Adjust to the correct engine speed. Voltage should build-up at the lowest voltage level. If the voltage does not build up, please refer to 5. FIELD FLASHING or contact generator supplier
- Carefully turn volt trimmer clockwise until rated voltage is reached.
- First adjust stability trimmer anticlockwise until the output voltage starts to fluctuate, then carefully turn stability trimmer clockwise until rated stable voltage is reached. That is the best match point between AVR and generator.

4. ADJUSTMENT

4.1 Under frequency adjustment

Detach the controller from enclosure and select the correct frequency on the back of the controller

- For 50Hz. Factory preset at 45Hz
- For 60Hz. Factory preset at 55Hz

4.2 Voltage adjustment

Carefully turn volt trimmer until rated voltage is reached. (Clockwise = Increase)

4.3 Stability adjustment.

1. By adjusting STAB trimmer will provide the system with stable voltage output. But if it is over adjusted, then the voltage will oscillate (hunt) when heavy load is applied.
2. It is suggested to use a multi-meter DCV to adjust "stability". When adjusting, try to make the multi-meter waving to the minimum. This will improve the full load's voltage drift rate
2. Allow approximately 3 seconds before removing the DC source.
3. With the voltage regulator disconnected, start the prime mover and measure the "Residual " voltage available at the auxiliary winding. If this voltage is greater than 5 VAC, reconnect voltage regulator, and voltage build-up should be successful. If less than 5 VAC is measured, repeat field flashing procedure.

5. FIELD FLASHING

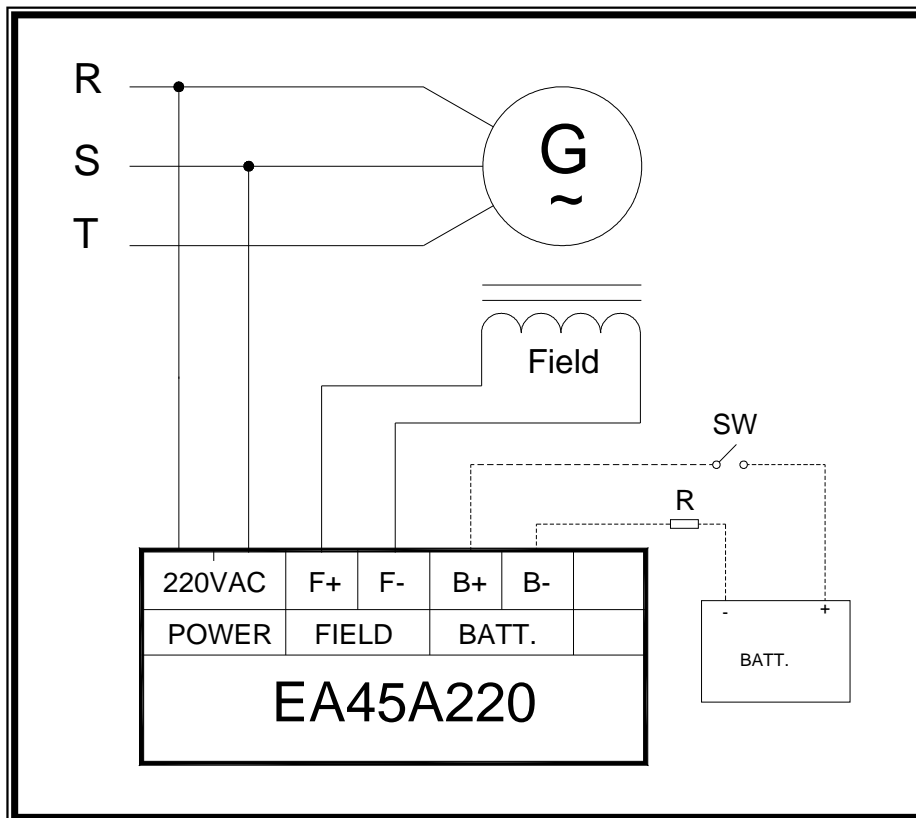
When the regulator is operated with the generator for the first time, the polarity of residual magnetism may be reversed or too small to achieve the necessary build-up voltage for the regulator. If reversing the field connections does not induce build-up, and the residual voltage is less than the specified value of 5 VAC, shut down the Prime-mover and proceed with the following steps.

1. With the Prime-mover at rest and the regulator's field output wires disconnected, apply a DC source (NOT grounded) of not more than 3~12 VDC with Positive to F+ and Negative to F-, in series with a current-limiting resistor of 3~5 ohms 20 watt. (The set battery is a suitable source.)

4. After repeating the field flashing and the residual voltage is greater than 5 VAC, but the AVR can not function accordingly, please replace with a new voltage regulator.

CAUTION

Over excite may damage the AVR or the exciter.



6. TROUBLE SHOOTING

SYMPTOM	CAUSE	CORRECTION
Voltage does not build up	Residual voltage below 5VAC	Flash generator. Please refer to 5. FIELD FLASHING
	Incorrect wiring	Check wiring diagram for proper connection
	Engine under speed	Increase engine speed to above 25HZ
Low Output Voltage	Poor adjustment is made	Turn the trimmer clockwise to reach rated voltage.
	Frequency roll-off	Increase generator speed
	Under Frequency Protection	Please refer to 4.1 Under frequency adjustment
Over Output Voltage	Poor voltage adjustment is made	Turn the trimmer anticlockwise to reach rated voltage. Please refer to the manual.
Instable Output voltage	Poor adjustment is made	Please refer to 4.3 Stability adjustment
	Low field voltage and field resistance	Change or correct the field resistance

- ※ Please use the fuse of the original plant.
- ※ Please inform us before conducting any changes to the exterior, performance or specification, otherwise material is subject to loose its warranty.