

# **POWERRVAR** **Single Phase** **Power Conditioners**

## *User's Guide*

- *Industrial Conditioners*
- *GPI Series B Conditioners*
- *GPI Series 1 Conditioners*
- *2-15 kVA Single Phase Conditioners*

**RoHS Compliant**

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## THANK YOU



Thank you for your purchase of this power conditioning solution. Our broad family of power conditioning products is designed to protect sensitive electronic systems from the destruction, degradation, and disruption caused by electrical power disturbances.

The model you have purchased is designed for use with a wide variety of electronic systems including terminals, workstations, LAN servers, telecommunications KEY and PBX systems, point of sale systems, medical instrumentation, programmable logic controllers, digital control systems and many others.

## INSPECTION

Remove the power conditioner from the shipping container and inspect it for shipping damage. Do not install or operate the product if it appears to be damaged in any way. If damaged, notify the carrier and the company that sold it to you immediately.

## ENVIRONMENTAL ISSUES

This power conditioner has environmental requirements similar to other computer and electronic equipment. It has been designed for indoor use only, in areas where it will not be exposed to excessive dust or moisture. Make certain that there is adequate airflow around the unit. If the unit has air vents, do not place objects on top of or near the unit in such a way as to block the vents.

## TECHNICAL AND SERVICE ASSISTANCE

Technical and service assistance is available in North America between the hours of 8:00 a.m. and 5:00 p.m. Central Time by calling 800-369-7179 (in Illinois, call 847-596-7000). In EMEA, contact POWERVAR at +44 (0) 1793 553980.

Technical and/or service problems and/or questions may also be placed with POWERVAR at our website at [www.powervar.com](http://www.powervar.com). Click on "SERVICE" and follow the appropriate link.

## CUSTOMER SERVICE

For service, obtain the model number, part number, and serial number from the rear panel data plate. Then contact POWERVAR via phone or web to obtain a Return Material Authorization (RMA) number. This number must be marked on the shipping container and packing slip of the unit being returned. The original shipping container should be used if available. Additional charges will apply for repair of damages caused by improper packing of the returned unit. Unauthorized return shipments will be refused. Units for repair must be shipped prepaid to POWERVAR.



## WARRANTY

POWERVAR warrants its power conditioners (known hereafter as the "product") to be free from defects in materials and workmanship for a period of five years from the date of shipment. The product will be repaired or (at POWERVAR's option) replaced at no charge during this warranty period. Product must be returned prepaid.

POWERVAR makes no warranties, expressed or implied, of merchantability, fitness for a particular purpose, performance, condition, capacity or otherwise. The manufacturer is not liable for incidental or consequential damages, monetary loss, loss of sales or loss of business resulting from the failure or malfunction of the product.

Warranty is void on any product that is misused, misapplied, abused, altered, repaired by unauthorized personnel, or where evidence of tampering exists. The foregoing constitutes the sole and exclusive remedy of the purchaser and is in lieu of all other warranties. No greater degree of liability is imposed on the manufacturer.

## INSTALLATION AND OPERATING INSTRUCTIONS

**Please consult Appendix A for installation and operating instructions on the following models:**

ABC360-91IND	ABC750-91IND	ABC1000-91IND
ABC1500-91IND		

**Please consult Appendix B for installation and operating instructions on the following models:**

ABC500-91BUI	ABC1000-91BUI	ABC1500-91BUI
ABC2000-91BUI	ABC3000-91BUI	ABC500-92BUI
ABC1000-92BUI	ABC1500-92BUI	ABC2000-92BUI
ABC3000-92 BUI	ABC500-91	ABC1000-91
ABC1500-91	ABC2000-91	ABC3000-91

**Please consult Appendix C for installation and operating instructions on the following models:**

ABC2000-2S	ABC2030-2S	ABC3000-11
ABC3030-11	ABC3000-2S	ABC3030-2S
ABC3300-33	ABC3800-11	ABC3830-11
ABC3800-2S	ABC3830-2S	ABC5000-2S
ABC5000-33	ABC5030-2S	ABC5800-2S
ABC6030-2S	ABC8000-2S	ABC10.0-2S
ABC15.0-2S		

**PLEASE NOTE: SOME OF THE ABOVE MODELS CAN BE QUITE HEAVY. POWERVAR RECOMMENDS THAT INSTALLERS REQUEST ASSISTANCE IN MOVING, POSITIONING OR HOLDING HEAVY ITEMS DURING THE INSTALLATION PROCESS TO AVOID PERSONAL INJURY.**

## APPENDIX A – INSTALLATION – INDUSTRIAL POWER CONDITIONERS



### GENERAL INSTALLATION

This device is designed for permanent mounting inside a control cabinet or to a wall or other solid structure using #10 hardware. The conditioner has a dustproof and splashproof enclosure and may be mounted in any position. This device is intended for use in hardwired installations.

**WARNING: TO PREVENT ELECTRICAL SHOCK, BE CERTAIN TO TURN OFF ALL ELECTRICAL POWER BEFORE CONNECTING THE POWER CONDITIONER TO THE POWER LINE AND BEFORE CONNECTING THE LOAD TO THE POWER CONDITIONER.**

A Phillips screwdriver is required to remove the power conditioner cover. Once the cover has been removed, carefully set it to one side.

This power conditioner is installed by connecting input power to terminal block TB1 and output power to terminal block TB4. The terminal blocks are designed for a maximum wire size of 8 AWG. Access to these terminal strips is via the side, top or bottom knockouts. Input power should be fed through a properly sized circuit breaker at the panelboard. All applicable electrical codes must be observed for the installation of this device.

The data plate on the conditioner lists the current and voltage rating of this device. The total current of all connected loads must not exceed the maximum total current rating. An automatically resetting thermal cut-off switch is embedded in the transformer to protect against prolonged overcurrent.

**WARNING: DO NOT CONNECT INPUT OR OUTPUT POWER CONNECTIONS TO TB2 OR TB3. THESE TERMINAL STRIPS ARE ONLY FOR USE IN SETTING THE POWER CONDITIONER'S INPUT OPERATING VOLTAGE.**

Unless specified differently at the time of order, the power conditioner has been set during manufacture by the factory for a 480-volt input. The input voltage of the power conditioner is selectable from 480, 240, 208 or 120 volts and may be changed by moving the jumpers on **BOTH** TB2 and TB3. See Figure 1 that follows for proper jumper positioning and an example of how the conditioner may be rewired. When connections are completed, replace the cover before applying power to the power conditioner.

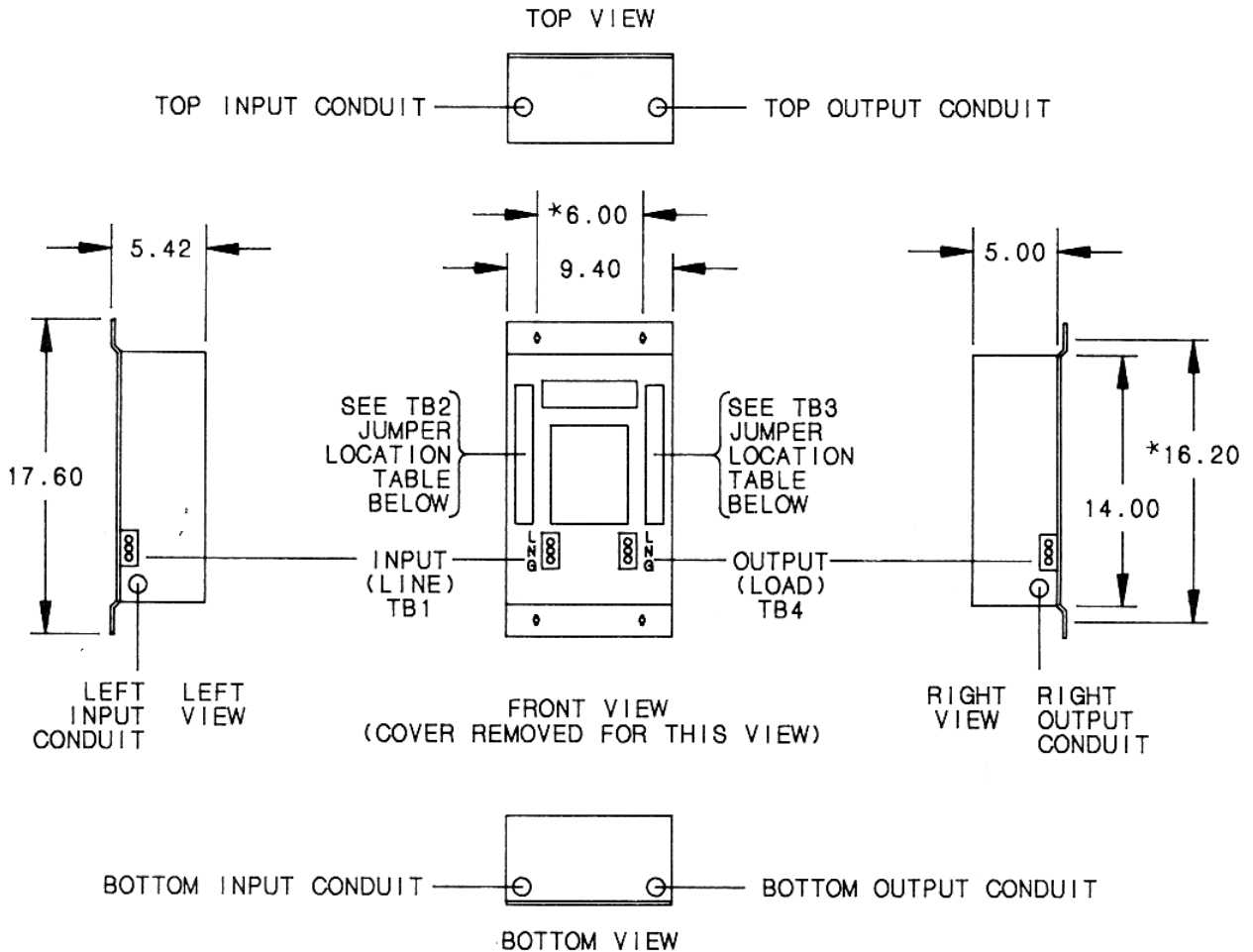
**Caution: WHEN CHANGING INPUT VOLTAGE SETTINGS, YOU MUST CHANGE JUMPERS ON BOTH TB2 AND TB3. FAILURE TO DO SO MAY DAMAGE THE POWER CONDITIONER AND VOID THE PRODUCT WARRANTY.**

For the best power conditioning results, all load equipment ground leads should be connected to a common point. A single point ground bus-bar is provided on the lower mounting flange for this purpose.

### OPERATING INSTRUCTIONS

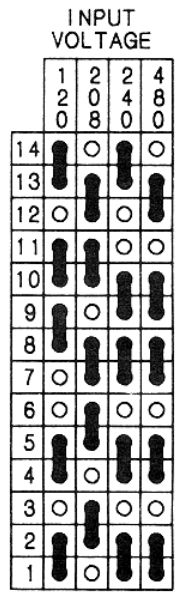
- Energize the circuit feeding the power conditioner by placing the panelboard circuit breaker in the ON position
- With a voltmeter, check that the power conditioner output voltage is 120 volts
- Turn on the load equipment and test for proper operation.

# Figure 1 INDUSTRIAL POWER CONDITIONERS



\* MOUNTING DIMENSIONS

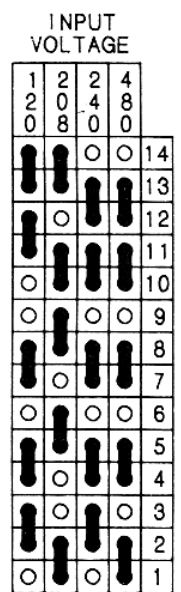
TB2 JUMPER LOCATION DIAGRAM



INPUT	TB2 JUMPER LOCATION TABLE					
120V	13-14	10-11	8-9	4-5	1-2	
208V	12-13	10-11	7-8	5-6	2-3	
240V	13-14	9-10	7-8	4-5	1-2	
480V	12-13	9-10	7-8	4-5	1-2	

INPUT	TB3 JUMPER LOCATION TABLE					
120V	13-14	11-12	7-8	4-5	2-3	
208V	13-14	10-11	8-9	5-6	1-2	
240V	12-13	10-11	7-8	4-5	2-3	
480V	12-13	10-11	7-8	4-5	1-2	

TB3 JUMPER LOCATION DIAGRAM



**EXAMPLE FOR 480 V TO 120 V CONVERSION**

IF THE UNIT IS CONFIGURED FOR 480 V INPUT AND 120 V IS DESIRED, REMOVE INPUT POWER AND REMOVE THE COVER. LOOSEN THE SCREWS ON TB2, POSITIONS 14, 13 AND 12. SLIDE THE JUMPER 'SPADE' LINK AWAY FROM POSITION 13 AND 12 AND INSERT IT AT POSITION 14 AND 13. THEN TIGHTEN THE THREE SCREWS. REPEAT THIS PROCEDURE FOR THE REMAINING FOUR TB2 POSITIONS AND FIVE TB3 POSITIONS.



**GENERAL INSTALLATION**

POWERVAR GPI Series B and GPI Series 1 power conditioners utilize an isolation transformer permitting the user to select from one of four different input voltages. Series B models are designed for hardwire installation and may be mounted in any orientation using the mounting holes provided. Series 1 models are equipped with a power cord and receptacles and are designed for standalone operation.\*

The data plate attached to the power conditioner lists the current and voltage ratings of the device. Care must be taken that the total current demand of all connected loads does not exceed the maximum current capability of the power conditioner. GPI Series B conditioners are available in two versions. Models with the suffix “-91BUI” are designed for use with loads requiring 120 volt power. Models with the suffix “-92BUI” are designed for use with loads requiring 240 volt power.

Unless specified differently at the time of order, Series B power conditioners have been pre-configured by the factory for a 120-volt input. Series 1 power conditioners are ordered for a specific input voltage and the circuit breaker installed in the unit is the correct one for the selected operating voltage. The input voltage of both the GPI Series B and Series 1 can be set to 100, 120, 208, or 240 volts by changing jumpers on terminal block TB1 as shown in Figure 2.

Series B power conditioners must be matched with a circuit breaker that is appropriately sized for the input current. The following table illustrates maximum current ratings for each model size when operated at different nominal input voltages.

**NOTE: IF THE OPERATING VOLTAGE OF A GPI SERIES 1 POWER CONDITIONER IS CHANGED, IT WILL BE NECESSARY TO INSTALL A DIFFERENT CIRCUIT BREAKER WITH APPROPRIATE CURRENT RATINGS.**

**For -91BUI and -92BUI Models**

<b>VA Rating</b>	<b>500VA</b>	<b>1000VA</b>	<b>1500VA</b>	<b>2000VA</b>	<b>3000VA</b>
<b>Voltage Tap</b>					
100V	5.5A	10.4A	15.50A	20.4A	30.4A
120V	4.35A	8.62A	12.9A	16.9A	25.50A
208V	2.50A	5.00A	7.6A	10.1A	15.15A
240V	2.17A	4.31A	6.45A	8.44A	12.7A

**Output current at full load**

<b>VA Rating</b>	<b>500VA</b>	<b>1000VA</b>	<b>1500VA</b>	<b>2000VA</b>	<b>3000VA</b>
<b>Model suffix</b>					
-91BUI	4.16A	8.33A	12.5A	16.66A	25.0A
-92BUI	2.0A	4.16A	6.25A	8.33A	12.5A

\*GPI Series 1 power conditioners are not safety agency listed.



## APPENDIX B – INSTALLATION – GPI SERIES B AND GPI SERIES 1

The table below lists the appropriate breaker for a variety of input currents. These breakers may be purchased from:

Eaton Corporation  
Commercial Controls Division, Heinemann Products  
Phone: (800) 962-0820, Fax: (414) 449-6118

Input Amps	Circuit Breaker Part Numbers		
2.25	JA2S-A38-A-2R25-25-H	10.50	JA2S-A38-A-1050-25-H
2.50	JA2S-A38-A-02R5-25-H	12.75	JA2S-A38-A-1275-25-H
4.50	JA2S-A38-A-04R5-25-H	13.00	JA2S-A38-A-0013-25-H
5.00	JA2S-A38-A-0005-25-H	15.25	JA2S-A38-A-1525-25-H
5.50	JA2S-A38-A-05R5-25-H	15.50	JA2S-A38-A-1550-25-H
6.50	JA2S-A38-A-06R5-25-H	17.00	JA2S-A38-A-1700-25-H
7.75	JA2S-A38-A-7R75-25-H	20.50	JA2S-A38-A-2050-25-H
8.50	JA2S-A38-A-08R5-25-H	25.50	JA2S-A38-A-2550-25-H
8.75	JA2S-A38-A-8R75-25-H	30.50	JA2S-A38-A-3050-25-H
10.25	JA2S-A38-A-1025-25-H		

### OPERATING INSTRUCTIONS

**WARNING: BEFORE MAKING CONNECTIONS TO GPI SERIES B POWER CONDITIONERS OR BEFORE CONFIGURING INPUT VOLTAGE ON EITHER GPI SERIES B OR SERIES ONE CONDITIONERS, BE CERTAIN TO TURN OFF ALL ELECTRICAL POWER. FAILURE TO OBSERVE THIS PRECAUTION MAY RESULT IN ELECTRICAL SHOCK.**

#### GPI Series B

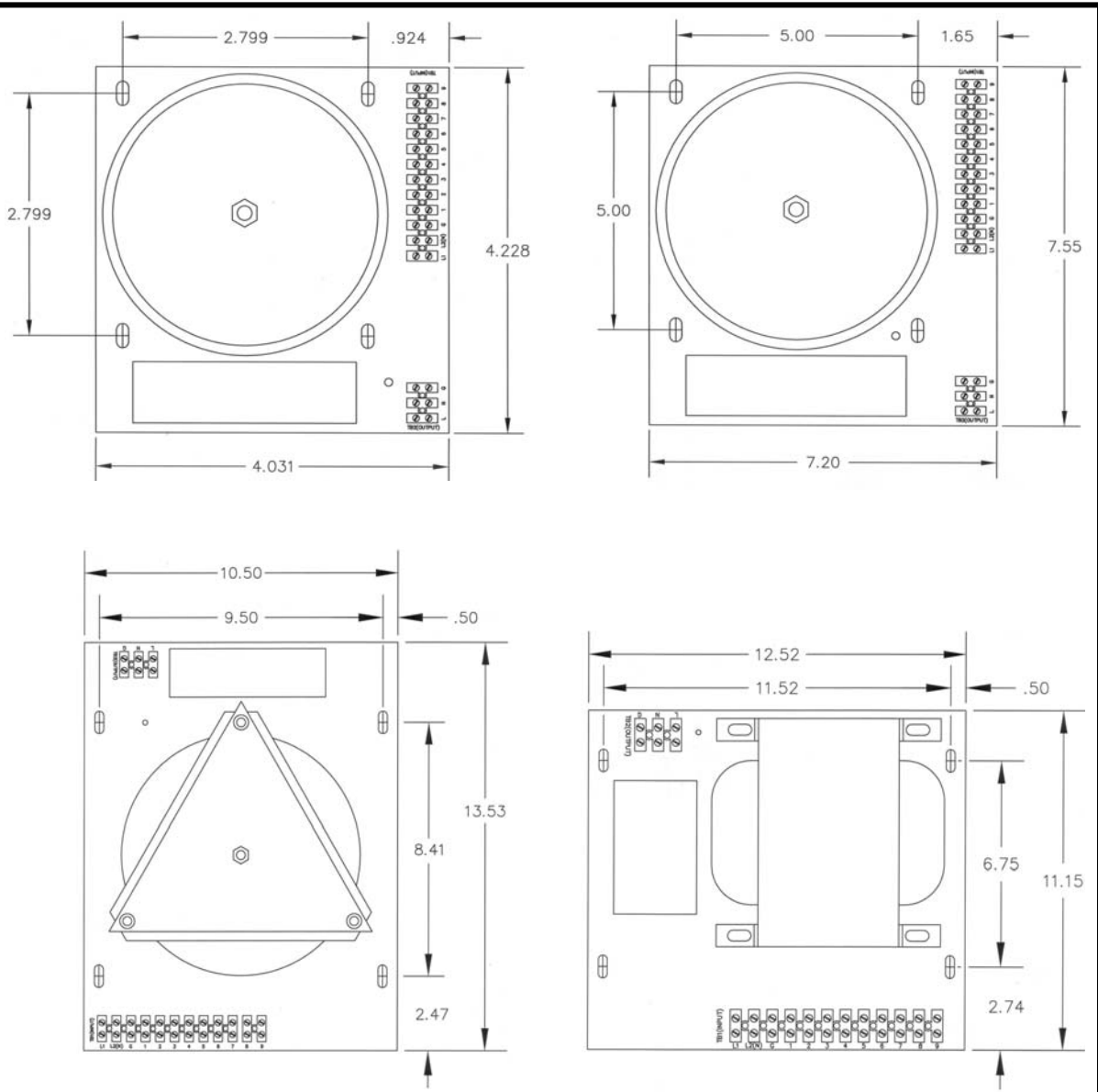
- Complete all input and output connections. Select input operating voltage that is correct for the application.
- Turn input circuit breaker ON.
- Using a voltmeter, carefully measure output voltage to verify that output is nominal 120 volts.
- If nominal output voltage is 120 volts, turn all load equipment on.

#### GPI Series 1

- Plug GPI Series 1 into appropriate power receptacle and turn input breaker ON.
- Using a voltmeter, measure output voltage to verify that output is nominal 120 volts.
- If nominal output voltage is 120 volts, turn all load equipment on.



**Figure 2**  
**INPUT VOLTAGE ADJUSTMENT**  
**GPI SERIES B AND GPI SERIES 1**



INPUT VOLTAGE SELECTION			
INPUT VOLTS	TB1("A" SIDE) JUMPER LOCATION		
	JUMPER1	JUMPER2	JUMPER3
100	3-8	2-6	2-4
120	3-8	1-5	1-4
208	1-8	4-7	-
240	1-8	4-5	-



## APPENDIX C – INSTALLATION – 2 to 15 kVA SINGLE PHASE CONDITIONERS

### GENERAL INSTALLATION

This device may be permanently mounted using ¼ inch hardware. Sheet CC in this manual is provided for your use as a mounting/installation template.

**IMPORTANT NOTE:** Models ending with the suffix “-2S” may be configured for either 208 or 240 volt input. Unless specifically ordered from the factory with a 208 volt input voltage, the power conditioner will arrive configured for 240 volts. The input voltage may be changed between 240 and 208 volts by referring to the instructions accompanying Figures 3 and 4.

### LINE CORD/RECEPTACLE MODELS

Install the power conditioner as close as possible to the load equipment. Do not use extension cords, surge protectors, or filtration devices.

For line cord/receptacle models, plug the power conditioner into a properly sized AC power source. Then connect the load equipment to the power conditioner receptacles.

**WARNING: TO PREVENT ELECTRICAL SHOCK, BE CERTAIN TO TURN OFF ALL ELECTRICAL POWER BEFORE CONNECTING THE POWER CONDITIONER TO THE POWER LINE AND BEFORE CONNECTING THE LOAD TO THE POWER CONDITIONER.**

### HARDWIRED MODELS

A Phillips screwdriver is required to remove the power conditioner cover. Once the cover has been removed, carefully set it to one side.

The input and output terminal blocks are located at the rear of the unit and are accessed by removing the knockouts on the back panel. Terminal blocks are designed to accept a maximum wire size of 8 AWG and 8 foot-pounds of torque. All applicable electrical codes must be observed for the installation of this device.

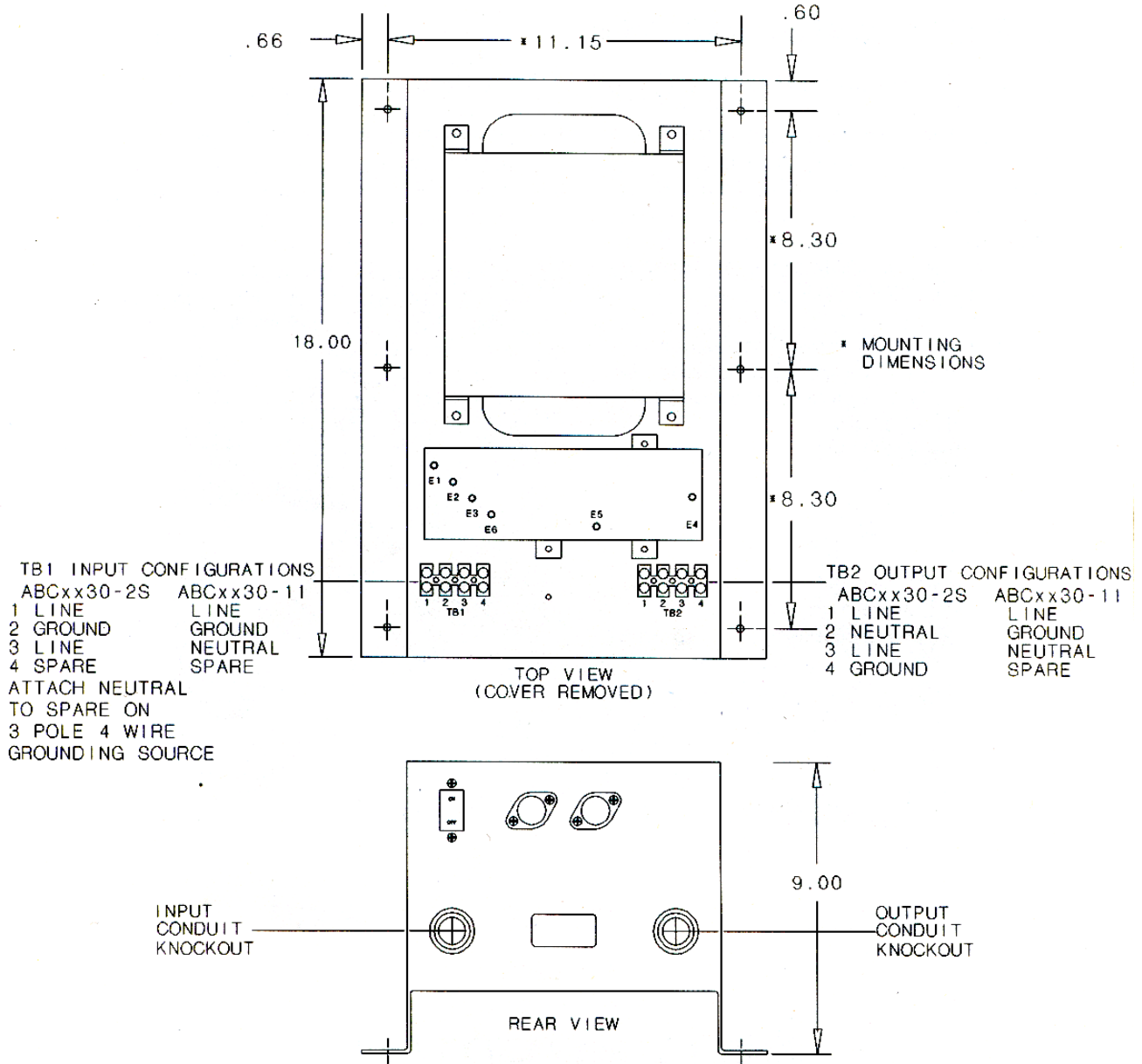
When wiring connections are complete, replace the cover before applying power to the power conditioner.

### OPERATING INSTRUCTIONS

- If power was turned off at the panel prior to installation, switch the panel circuit breaker to the ON position.
- Turn on the power conditioner circuit breaker and check that output voltage is correct (120V for –11 models, 208V for –33 models or 120/240V for –2S models)
- Turn on all load equipment and test for proper operation.
- Once these steps have been taken, the power conditioner circuit breaker may be used as a master power switch if so desired.

The data plate on the rear of the conditioner lists the current and voltage rating of this device. Models with multiple receptacles indicate the maximum current rating for each receptacle. Take care not to exceed the maximum rating of individual receptacles and that the sum of all load currents does not exceed the current rating on the data plate.

**Figure 3**  
**2 kVA – 6 kVA**



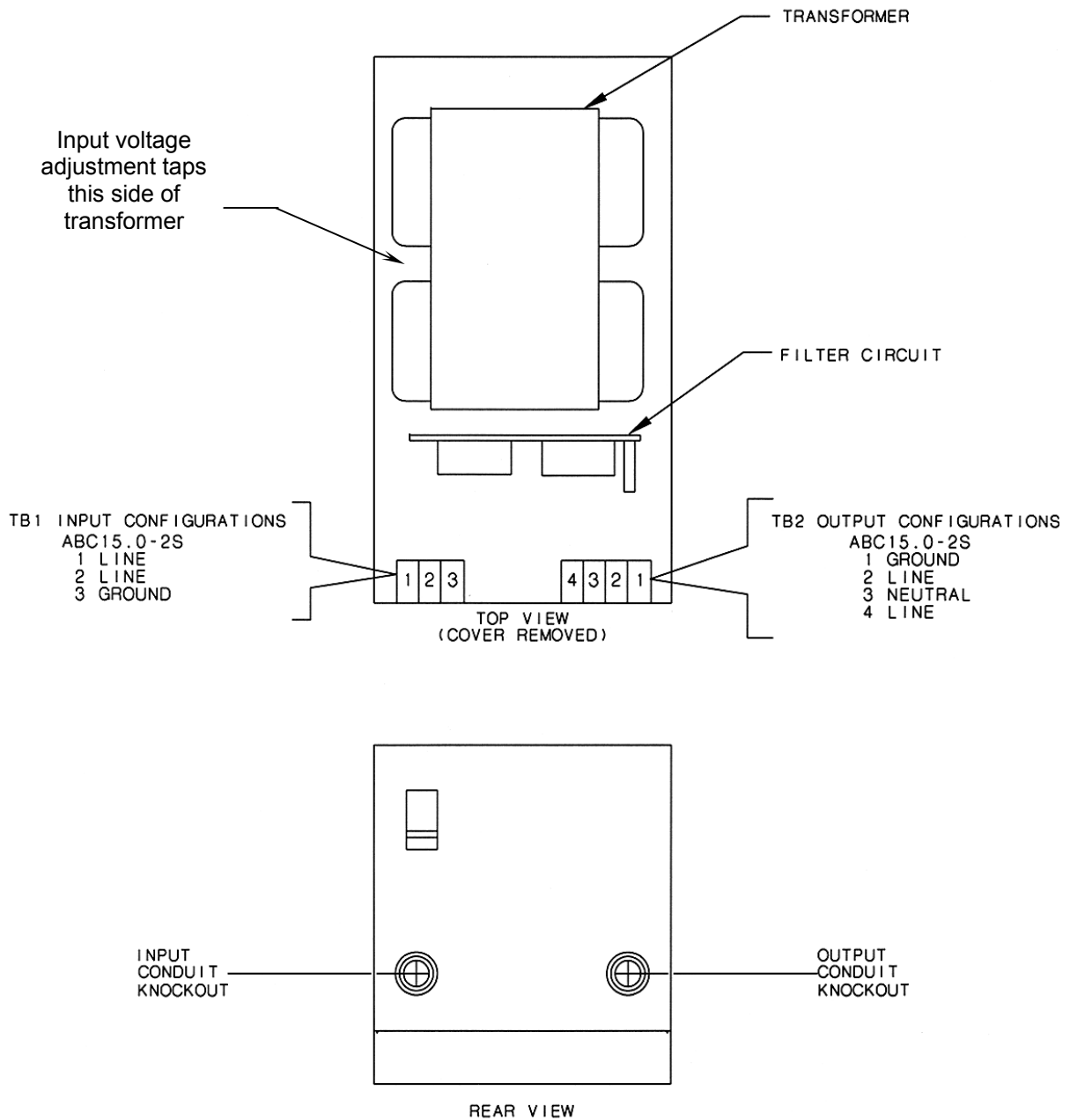
**NOTE:**

For input voltage conversion on models ending with suffix “-2S” only:

- To convert 208 volt input to 240 volt input, move circuit breaker lead from point E2 of the printed circuit filter assembly to point E3
- To convert 240-volt input to 208-volt input, move circuit breaker lead from point E3 of the printed circuit filter assembly to point E2.
- Factory default setting is 240-volt input (unless specified differently at time of order with factory).

**Figure 4**  
**8, 10, 15 kVA**

INPUT OUTPUT CONFIGURATION FOR  
MODEL ABC15.0-2S



**NOTE:**

For input voltage conversion on models ending with suffix “-2S” only, adjust taps on left side of transformer (when viewed from rear of conditioner). Moving taps permits changing of input operating voltage between 208 and 240 volts.



***In North America, South America, and the  
Caribbean:***

1450 Lakeside Drive  
Waukegan, IL 60085  
Phone: 847-596-7000, Toll Free (outside Illinois only): 800-369-7179  
Fax: 847-596-7100

**In EMEA:**

Unit 5 Birch, Kembrey Park  
Swindon, Wiltshire SN2 8UU, United Kingdom  
Phone: +44 (0) 1793-553980, Fax: +44 (0) 1793-535350

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