



## User's Handbook for the Plug-In-Type Units



## VARIAC® Variable Transformers

**ISE, Inc.**

10100 Royalton Rd.  
Cleveland, OH 44133  
USA

Tel: (440) 237-3200  
Fax: (440) 237-1744

<http://Variac.com>

## Specifications

Manually Operated P/N	Input Volts	Phase	Hertz	Output Volts	Constant Current Rating	Features
3PN1210B	120	1 PH	60	0-120	12A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN1510B	120	1 PH	50/60	0-140	15A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN2210B	120	1 PH	50/60	0-140	22A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN1020B	240	1 PH	50/60	0-280	3.5A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN1220B	240	1 PH	60	0-240	5.0A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN1520B	240	1 PH	50/60	0-280	9.5A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN2520B	240	1 PH	50/60	0-280	10A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle

### Portable Voltage Doublers - 120V Input / 0-280V Output

P/N	Input Volts	Phase	Hertz	Output Volts	Current Rating to 150V	Current Rating at 215V	Current Rating at 280V	Features
3PN1020B-XDVM or XDAM	120	1 PH	50/60	0-280	3.5A	2.0A	1.5A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle, Digital Volt Meter or Digital Ammeter
3PN1520B-MOD	120	1 PH	50/60	0-280	9.5A	5.4A	4.1A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN1520B-XDVM or XDAM	120	1 PH	50/60	0-280	9.5A	5.4A	4.1A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle, Digital Volt Meter or Digital Ammeter
3PN2520B-MOD	120	1 PH	50/60	0-280	10A	5.7A	4.4A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle
3PN2520B-XDVM or XDAM	120	1 PH	50/60	0-280	10A	5.7A	4.4A	Case, Cord, Plug, Switch, Light, Fuse, Receptacle, Digital Volt Meter or Digital Ammeter

**Option Suffixes:** (V) Analog Voltmeter, (A) Analog Ammeter (DVM) Digital Volt Meter, (DAM) Digital Ammeter.

**DVM:** 1 Volt resolution, 0.5% +/- 1 Digit Accuracy;  
**DAM:** 0.01 A resolution (Except 3PN2210: 0.1A), 1.0% +/- 2 Digits

## Plugs and Receptacles on Portable Transformers

**120V (0-140V)**



Input Plug (5-15P)



Output Receptacle (5-15R)

**240V (0-280V)**



Input Plug (6-15P)



Output Receptacle (6-15R)

## INSPECTION

Prior to installation we recommend the following:

1. Check the nameplate to verify that the unit received matches the rating specified in your order.
2. Verify that the line frequency, current and voltage rating are suitable for your application.
3. Inspect the unit for visible signs of shipping damage.
4. Make sure that the knob rotates freely and that a functional fuse is properly installed in the fuse holder.
5. Report missing or damaged parts to the ISE.

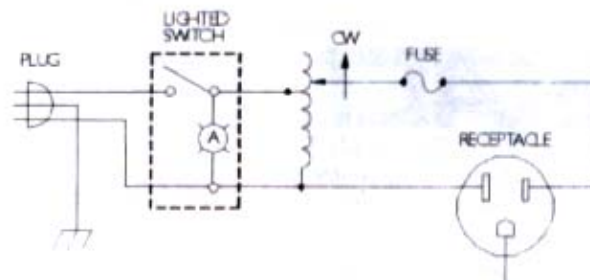
## PRECAUTIONS

1. Be absolutely sure that the voltage and frequency to be used match the ratings of the unit before applying power.
2. The unit is provided with a 3-conductor grounded cord and plug, it is recommended that it be connected to a corresponding grounded receptacle. If an adapter must be used, be sure to ground the green neutral wire. **DO NOT CUT OFF THE GROUNDING PIN OF THE PLUG!**
3. The current drawn by the load must be within the current rating of the Staco Variable Transformer.

## INSTALLATION

Installation consists of inserting the plug on the line cord of the variable transformer into a suitable power line receptacle and similarly connecting the load to the receptacle provided on the unit. Most models provide for permanent mounting to a bench or wall surface by means of screws. This is optional, so screws are not provided; but standard wood or machine screws of the proper diameter to fit the holes are recommended. L series models have a slot at the top rear of the case to allow for wall mounting. All units are connected for clockwise voltage increase.

### TYPICAL SCHEMATIC



## TROUBLESHOOTING

If your Variable Transformer fails to function properly check the following:

### A. ROCKER SWITCH NOT LIGHTED

Power is not getting to the unit.

1. Is the switch turned on?
2. Is the plug properly seated into a socket?
3. Is the socket turned on (has a fuse or circuit breaker opened)?

### B. ROCKER SWITCH LIGHTED

Power is getting to the unit.

1. Is the load properly connected to the unit?
2. Is the fuse in the Variable Transformer functional?
3. Is the load functional?
4. If there is no output under this condition, check the brush and replace if necessary.

### C. If the above procedures fail to isolate the source of trouble, refer the problem to a qualified repair technician.

## MAINTENANCE

No regular maintenance is required on ISE, Inc. Variable Transformers as long as the ratings of the unit are not exceeded. Normally, the brush may be expected to last the life of the unit. Occasionally, brushes may need replacement. Should this become necessary, it is essential that a new or reinstalled brush be properly seated. With power off, insert a piece of fine garnet paper or crocus cloth between the brush and the commutator surface with the abrasive side toward the brush. A few swings of the brush across the abrasive will mate the surfaces. Remove the paper or cloth and blow away loose particles of brush or abrasive before applying power.