

**AC DIELECTRIC TEST SET**  
**600P SERIES**

**Model Number 605-2P (120V & 220V)**

**Serial Number**

**Version 3.0**

# TABLE OF CONTENTS

	<u>Section Number</u>
DANGER	
TITLE PAGE	1
TECHNICAL SPECIFICATIONS	2
UNCRATING PROCEDURE	3
CONTROLS AND INDICATORS	4
ELECTRICAL SET-UP	5
OPERATING INSTRUCTIONS	6
CALIBRATION	7
TROUBLESHOOTING	8
STORAGE OF EQUIPMENT	9
CIRCUIT DIAGRAM SYMBOLS	10
ELECTRICAL DIAGRAMS	11
PARTS LIST	12
PARTS ORDERING INFORMATION	13
RECOMMENDED SPARE PARTS	14
RETURNED MATERIAL	15

**AC DIELECTRIC TEST SET**

**600P SERIES**

Model Number **605-2P**

Serial Number

Customer

Customer's Purchase Order Number

Manufacturing Date

## TECHNICAL SPECIFICATIONS

### Input

110-120 Volts, 60 Hz, 1 Phase, 2.4 kVA, 20 Amperes  
OR  
220-240 Volts, 60 Hz, 1 Phase, 2.4 kVA, 10 Amperes

### Output Rating

5 kilovolts, 400 Milliamperes

### Duty Cycle

5 MINUTES ON / 15 MINUTES OFF at 2 kVA

### Type of Cooling

(Un)Circulated air

### Distortion

Less than 5 percent

### Impedance

Less than 10 percent at rated current

### Operating Ambient Temperature

0-40 degrees Celsius

### Output Termination

High voltage cable (2.4 meters/8 feet), shielded.

### Metering

<b>Output Voltmeter:</b>	Display:	3 ½ digit LCD
	Accuracy:	±(0.8% of Reading ±0.2% of Range)
	Ranges:	0 to 5kV

<b>Output Currentmeter:</b>	Display:	3 ½ digit LCD
	Accuracy:	±(0.8% of Reading ±0.2% of Range)
	Ranges:	0 to 400mA

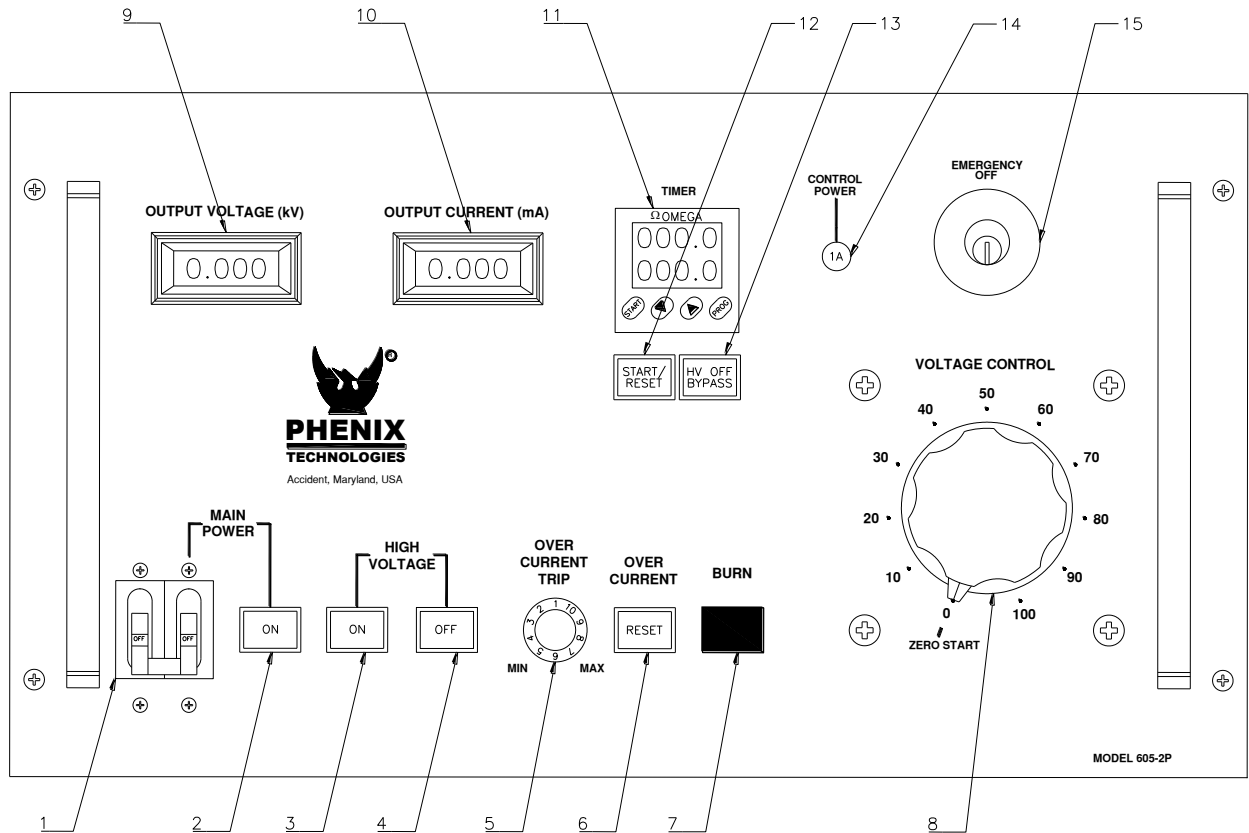
### Sizes and Weights

Cabinet section: 20"(508mm)W x 16"(407mm) D x 12"(305mm) H.  
Weight: 67 pounds (30 kg).

## UNCRATING PROCEDURE

1. Exercise care in removing shipping materials so as not to damage unit.
2. Perform visual inspection to determine if unit was damaged during shipment. If there are any signs of physical damage (such as dents, scratches, oil leaks), contact the factory before proceeding.
3. Pull out the chassis from the cabinet and check that all printed circuit boards are firmly in position. Visually inspect for any loose wires or components. (If any loose wires or components are found, refer to the appropriate circuit diagram.)

## CONTROLS AND INDICATORS



The following paragraphs are keyed to the above panel diagram.

1. **Main Power Circuit Breaker.** Turns main power of unit on and off and provides input overload protection.
2. **Main Power Lamp.** Illuminates to indicate input power is supplied to unit.
3. **High Voltage ON.** Momentary switch activates power to high voltage circuits when pre-required conditions are met. **High Voltage On** lamp illuminates red to indicate high voltage circuits are energized.

Conditions required for **High Voltage On** are:

- Power applied to unit and **Main Power Breaker** (1) on, **Main Power** lamp illuminated (2).
- **External Interlock** circuit series loop must not be open (Back Panel).
- **Voltage Control** (8) must be at zero. (Zero Start)
- Overcurrent circuit must be reset if **Reset** lamp is illuminated (6).

## CONTROLS AND INDICATORS

4. **High Voltage OFF.** This momentary switch with (green) indicator lamp serves two purposes. The first is to indicate that all adjustments are complete and testing may begin (or proceed). The second is to terminate the supply of high voltage to the unit under test; depressing the momentary switch shuts off the high voltage to the unit under test and extinguishes the HV On indicator lamp.
5. **Overcurrent Trip Adjust.** Dial adjusts from 1 to 11 corresponding to 10% to 110% of rated output current. **Overcurrent Trip/Reset** lamp illuminates and high voltage turns off when output current exceeds setting, causing circuit to trip. Circuit also acts as short circuit and overload protection on high voltage output. To reactivate high voltage, **Voltage Control** (8) must be returned to zero, and **Overcurrent Reset** switch (6) must be pressed to clear overcurrent circuit.
6. **Overcurrent Reset.** **Reset** lamp illuminates to show that overcurrent circuit has tripped. High voltage circuits are deactivated. Momentary **Reset** switch must be pressed to extinguish **Reset** lamp to allow high voltage to be reapplied after returning **Voltage Control** (8) to zero.
7. **Burn.** This switch when depressed inserts a line reactor in the primary of the high voltage transformer for location of failures in the test specimen. A (yellow) indicator lamp illuminates when depressed. (OPTION)
8. **Voltage Control.** Turn clockwise to raise output voltage. High voltage cannot be activated if **Voltage Control** is not started at zero.
9. **Voltmeter.** Displays output voltage of test set, units in kilovolts.
10. **Currentmeter.** Displays output current of test set, units based on current meter range setting.
11. **Timer.** Select desired test time using buttons on face of timer. See manual attachment.
12. **Start/Reset.** Press to start the timer after test voltage has been reached. Press again to reset the timer to the original setting.
13. **HV Off Bypass.** Press to allow high voltage to remain on after timer has expired. Indicator lights when depressed.
14. **Control Power.** Unit's control power protected by one or two resettable circuit breakers. Depress tripped breaker to reset if a fault occurs in the control power circuit.
15. **Emergency Off.** Depress Emergency Stop button to de-energize high voltage output in case of emergency. Test set is supplied with keys that must be used to reset Emergency Off switch if depressed.
16. **Flashing Light.** Connector on Back Panel used to connect optional warning light with magnetic mount base to indicate visually when HV is energized. (Option sold separately)
17. **Warning Circuit.** Connector on Back Panel to connect external light or audible alarm that will activate when HV is energized. This connector consists of dry contacts rated 250VAC, 5A meaning customer supplied power for external device required.

## ELECTRICAL SET-UP

**WARNING: Be sure the Main Power plug on the rear of the unit is unplugged before proceeding.**

1. Locate the desired location for the test set. Prepare the main power input cable for plugging in to the proper facility power (i.e., 110 volts AC, 230 volts AC, etc.). Leave plug unconnected at this time.
2. Connect a sufficient ground from the rear of the test set marked "GND" to a proper facility ground using a low inductance cable with a minimum rating equal to the input rating of the test set.
3. External Interlock

If an external interlock is not to be used, plug the connector as supplied into the socket on the rear of the cabinet marked "EXT INTLK". If an external interlock is to be used, remove the jumper on the male connector of the "EXT INTLK" circuit and connect the external security circuit at these points. (NOTE: The external interlock circuit must consist of a closed loop of dead contacts. When the control power is on, the external circuit will be energized with 115 volts AC.)

4. External Warning Circuits

Two options for providing an external warning circuit are provided on the connector rail. WX1 is a powered circuit and provides 120V power to an external flashing red warning light with magnetic mount (sold separately). WX2 provides a dry set of contacts to which an external warning device and its required power can be connected using the included plug.

4. Connect input main power cable to the rear of the test set and then to the facility power.

### High Voltage Connection

**WARNING: Main power circuit breaker on the front panel must be in the OFF position before proceeding.**

1. Connect the low side (return) of test specimen to the high voltage cable shield lead (green) or to the rear of the test set (ground stud), whichever is more convenient.
2. Install the high voltage cable to the rear connection of the test set. Connect the center conductor to the high side of the test specimen.

#### OR WITH SEPARATE HIGH VOLTAGE TRANSFORMER

1. Connect the low side (return) of test specimen to the ground stud. (Refer to Ground-Guard-Return Connections if applicable).
2. Connect the high side of test specimen to toroid on top of HV tank.



## OPERATION INSTRUCTIONS

1. Ensure proper electrical set-up has been performed.
2. Check that the Raise Voltage dial is set to "0" (zero start position).
3. Set the Overcurrent Trip to the desired current level setpoint. Setting of "1" will trip off the unit when drawing 10% of rated output current. Setting of "11" will trip off the unit when drawing 110% of rated output current.
4. Select the appropriate voltmeter range for the desired test voltage (if applicable).
5. Select the appropriate currentmeter range for the desired test current (if applicable).

### High Voltage Applied

6. Turn on the front panel circuit breaker. Control Power lamp will illuminate.
7. Press and hold HV On push-button. (If separate HV Off switch is supplied, it is not necessary to continue to hold HV On switch)
8. Rotate the Raise Voltage dial and watch the Output Voltage and Output Currentmeter until desired levels are reached.
9. Record data, if desired, and lower the output after testing is completed. Release HV On button; high voltage will shut off. (Some models have separate HV Off switch)

### Overcurrent Failure

10. If an overcurrent situation occurs, the overcurrent lamp will illuminate and high voltage will be shut off. To regain high voltage, the Raise Voltage dial must be returned to zero and the Overcurrent Reset button must be depressed (lamp will extinguish).
11. After all testing is completed, turn off the front panel circuit breaker. Remove the input power cable from the facility power input.

### Burn Feature (Optional)

If it is desired to burn a fault in order to make location easier, press the BURN switch. In this mode the overcurrent detector is disabled and a current limiting reactor is placed in series with the primary of the high voltage transformer.

## CALIBRATION

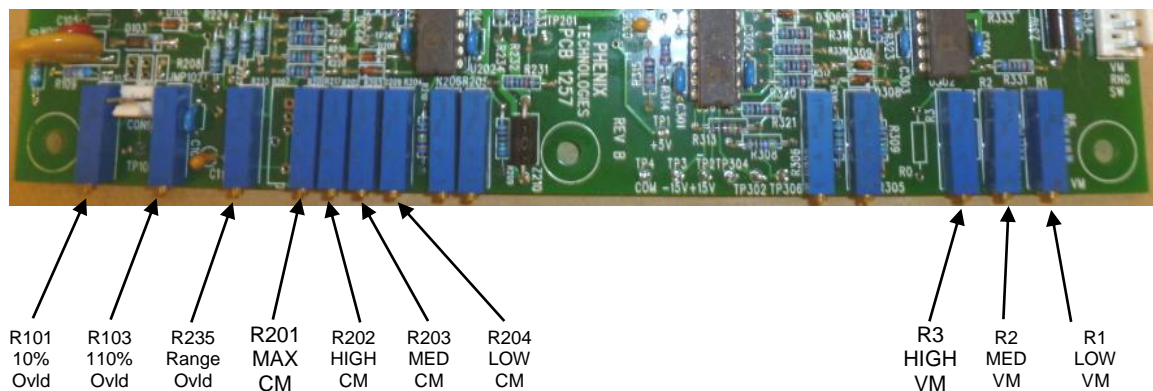
**Caution: Calibration should only be done by persons familiar with High Voltage testing and safety procedures.**

All calibrations have been done at the factory. Periodic calibration of the output voltmeter and output currentmeter should be done as necessary.

NOTE: Refer to Electrical Diagram Section for schematic pertaining to the model number of your test set.

### Locating the Calibration Adjustments

The calibration points are shown in the following diagram.



#### 1. Output Voltmeter

*Voltmeter is peak responding calibrated to  $Peak/\sqrt{2}$  (RMS value of sine wave).*

##### A) Multiple Ranges:

Connect a precision high voltage voltmeter across the output to ground on the low voltage output, with range switch set to the Low VM setting. Raise the output to approximately 80% of the output rating. Adjust the reading on the panel meter (M2) by means of potentiometer R1 to a corresponding reading. Repeat procedure with precision high voltage voltmeter connected between the mid-range output and ground with the range selector switch set to Med setting. Adjust R2 to match precision voltmeter at 80% of output rating.

Repeat voltmeter calibration with the precision voltmeter connected between the high-range output and ground with the range selector switch set to High setting. Adjust R3 to match the voltmeter at 80% of the output rating.

B) Single Range:

Connect a precision high voltage voltmeter between the single range high voltage output to ground. Raise the output to approximately 80% of the rated output voltage. Adjust the reading on the panel meter (M2) by means of potentiometer R2 to a corresponding reading. Linearity may be checked at several points between 10% and 100% of rated tap voltage.

2. **Output Currentmeter**

A) Multiple Ranges:

It is necessary to connect adequately rated High Voltage loads (isolated from ground) to the high voltage unit that will allow each full range current to be drawn at approximately 15% or higher output voltage. This allows sufficient resolution to adjust current levels. All ranges can be calibrated from the Low voltage output.

Place Binding Post Configuration in GUARD MODE. (Jumper clip is installed between "GRD" and "GND" posts.)

Connect a precision ammeter between the low potential side of the appropriate high voltage load and the "RTN" post. Select the Low meter range. Raise the output to approximately 80% of the range rating. Adjust the reading on the panel meter (M1) by means of potentiometer R204 to a corresponding reading. Repeat for Med, High and Max ranges adjusting R203, R202 and R201, respectively. (High Voltage load will need to change when changing range).

An optional method is to use current injection between "RTN" and "GND" (Guard Mode).

**Do not turn High Voltage on for this method!**

B) Single Range:

It is necessary to connect an adequately rated High Voltage load (isolated from ground) to the high voltage unit that will allow full range current to be drawn at approximately 15% or higher output voltage. This allows sufficient resolution to adjust current levels.

Connect a precision ammeter between the low potential side of the appropriate high voltage load and the "GND" post. Raise the output to approximately 80% of the range. Adjust the reading on the panel meter (M1) by means of potentiometer R204 to a corresponding reading.

3. **Overcurrent**

This calibration should not need adjustment (factory adjusted). If the overcurrent circuit is out of calibration, perform the following steps.

- a. With unit off, short the output terminal to ground through an appropriate currentmeter. NOTE: A High Voltage Load will give better resolution and make calibration easier.
- b. Set the Current Trip potentiometer on the front panel to "1".

- c. Turn on HV On and adjust the output current slowly until 10% of rated current (check nameplate) is displayed on the currentmeter.
- d. Adjust potentiometer R101 until the Reset lamp illuminates and high voltage is shut off.
- e. Set the Current Trip potentiometer on front panel to "11".
- f. Turn on HV On and adjust the output current slowly until 110% of rated current is displayed on meter.
- g. Adjust potentiometer R103 until the Overload lamp illuminates and high voltage is shut off.
- h. Repeat step "B" through "G" as necessary until both settings are calibrated.

4. **Range Overcurrent.**

A) Multiple Ranges:

R235 sets an overcurrent for the ranges and should be set to trip at approximately 112% of full range current on medium range setting with current trip potentiometer set at "11".

B) Single Range:

For Single Range models, the Range Overcurrent adjust is not used in calibration adjustments.

# TROUBLESHOOTING

## General

If the controls do not operate properly after having been used according to the instructions, the following hints may help.

- ◆ Check main facility input power to the test set.
- ◆ Check all control and switch settings.
- ◆ Check indicating lamps. (Spare lamps are available through Phenix Technologies.)
- ◆ Check Fuse F1/F1,F2
- ◆ Check operation of main power circuit breaker (CB1). Main Power lamp should be on.
- ◆ Check Transformer Power circuit breaker.
- ◆ Check all plug connections, internal and external, on the test set.

## Specific Problems

### 1. High voltage cannot be turned on?

- External interlock is open.
- Voltage Control dial is not in zero start position.
- Protection circuit (Overcurrent) is not reset.
- Faulty relay contacts.
- Transformer Power circuit breaker is off or faulty.
- Faulty HV On switch.
- Faulty Reset Switch.
- Faulty relay contacts.

### 2. Voltage control inoperable?

- High voltage is not on (K1 not energized or see number 1 above).
- Faulty variable auto-transformer, T201.
- Faulty step up transformer, T301.
- Faulty transformer, T202.

### 3. Overcurrent inoperable?

- Improper sensitivity (adjust Overcurrent Trip, R1, on front panel).
- Defective U101 or SCR101 on PCB 1257.
- Check the +15 volts DC regulator output on PCB 1257.
- Check signal input voltage to PCB 1257 at Connector 4-4.
- Check overcurrent lamp on the panel and relay K101 on PCB 1257.

### 4. Currentmeter inoperable?

- Connections between the test set and the test specimen are open
- No output from the  $\pm 15$ VDC power supply on PCB 1257.
- Current meter range switch (SW5) between detents.
- Meter defective.
- No +5VDC power to the meter from PCB 1257.

## ***TROUBLESHOOTING***

### **5. Voltmeter inoperable?**

- High voltage output shorted to ground.
- No output from the  $\pm 15\text{VDC}$  power supply on PCB 1257.
- Meter defective.
- No high voltage present at the test set output.
- No +5VDC power to the meter from PCB 1257.

### **6. No output voltage from high voltage section?**

- Defective metering circuit.
- No input to voltage regulator section, possible problems with K3 contacts, variable transformer, or with CB1.
- Shorted high voltage output.
- Defective high voltage output transformer.

## STORAGE OF EQUIPMENT

If the equipment will be stored for a prolonged period, the following precautions are recommended.

1. The equipment should be covered and kept in a warm, dry environment (95% maximum humidity, 5 to 50 degrees C).
2. In no case should the test unit be stored outdoors (unless previously specified in the original purchase agreement).

# CIRCUIT DIAGRAM SYMBOLS

CIRCUIT DIAGRAM SYMBOLS  
SYMBOLS POUR SCHEMA DE CIRCUIT  
SYMBOLE ZU SCHEMA

REF	SYMBOL	DESCRIPTION	DESCRIPTION	BEMENKUNG
A		Amplifier	Unite d'amplificateur	Verstärker
ARSR		Surge Arrestor	Parafoudre	Ueberspannungsableiter
C		Capacitor	Condensateur	Kondensator
BSHG		Bushing	Tranversée	Durchfuehung
C		Electrolytic Capacitor	Condensateur électrol	Elektrolytik kondensator
F		Fuse	Fusible	Sicherung
CT		Current Transformer	Transformateur de Courant	Stromtransformer
CB		Circuit Breaker	Intérupteur	Unterbrecher
K		Relay, Contactor	Relais, Contacteur	Relais, Schütz
L		Inductor	Self	Drossel, Spule
MOT		Motor	Moteur	Motor
MOV		Movistor	Parafoudre	Movistor
NE		Neon	Parafoudre	Ueberspannungsableiter
LP		Lamp, Indicator	Lampe	Meldeleuchte
R		Resistor	Resistance	Widerstand
R		Variable Resistor	Resistance Variable	Widerstand
T		Transformer	Transformateur	Transformer
TB		Terminal Block	Borne	Lösbare Klemme
X		Connector	Prise de Courant	Steckverbindung
K		Relay Contact Normally Open	Contact Normalement Ouvert	Schlierskontakt
K		Relay Contact Normally Closed	Contact Normalement Fermé	Oeffnungskontakt
K		Changeover Contact	Contact de Changement	Umschaltkontakt
		Shielded Wire	Cable blindé	Abgeschirmetes Kabel
TR		Transistor	Transisteur	Transistor
M		Analog Meter	Instrument Analogue	Analog Meter
D		Diode	Diode	Diode
Z		Zener	Diode Zener	Zener
SCR		Thyristor	Thyristor	Thyristor
SW		Normally Open Maintained Switch	Interrupteur Normalement Maintenu Ouvert	Schrittschalter (Schliesser)
SW		Normally Closed Maintained Switch	Interrupteur Normalement Maintenu Fermé	Schrittschalter (Oeffner)
SW		Normally Closed Momentary Switch	Interrupteur Normalement Fermé Momentanement	Druckschalter (Oeffner)
SW		Normally Open Momentary Switch	Interrupteur Normalement Ouvert Momentanement	Druckschalter (Schliesser)
DP		Current Overload Device	Dispositif De Sûr Intensité	UeberstromschutzEinheit



## ELECTRICAL DIAGRAMS

	<u>Drawing Number</u>	<u>Description</u>
1.	9607033	600P Series AC Dielectric Test Set Model 605-2P (120V)
2.	9607035	600P Series AC Dielectric Test Set Model 605-2P (220V)

## PARTS LIST

CONTROLS AND REGULATION SECTION			
ITEM	P/N	DESCRIPTION	QTY
CABLE	1077140	14/3 POWER SUPPLY CORD, NEMA 5-15P / IEC 320 C13, 6.5'	1
CB201	1601395	CKT BRKR HOLE COVER CARLING 8C1-C-621	1
CB201	1601325	25A 1P CKT BRKR 250V	1
CB201 (220V)	1601317	15A, 2P, 240V, AIRPAX, IELHK11-1-72-15.0-01-V	1
CB202	1601465	AIRPAX, 1P, 240V, 1A, BREAKER	1
K201	1705465	ABB # DP30C3P-1	1
K201AUXA,B	1701500	ABB # CADP40-11	2
LP101	1422150	31-903.2 LENS, EAO RED	1
LP101-4,6	1420150	10-1320-1179 EAO LAMP 60V	5
LP102	1422148	31-903.6 LENS, BLUE	1
LP103	1422151	31-903.5 LENS, GREEN	1
LP104	1423300	31-040-005 SOCKET	1
LP104,6-7	1422153	31-903.7 LENS CLEAR	3
M1	31126500	PCB1265: CM PROT BD-KNS-ZENERS ONLY (2013)	1
M1,M2	1506400	KNS DMO-66PHX 3 1/2 DIG LCD	2
M1,M2	1152210	1-640440-0,CON 10CKT.1	2
M2	31126501	PCB1265: VM PROT BD-KNS-ZENERS/CAPS	1
MOV201	1606100	MOVISTOR V130LA10A	1
MOV201 (220V)	1606110	MOVISTOR V275LA40A	1
P1	1153328	SCREW MOUNT POWER INLET RECEPT. 15A 250V IEC 320	1
PCB	1350101	SPCR #6 X 1/4 ALUM 1/4 RND	2
PCB SPACER	1350105	SPCR #4 X 1/2 NYLON 1/4 RND	4
R15	1355910	46-15-010 DIAL 30-0-11	1
R15	1761098	10 K, 2 W, LINEAR	1
R15	1355101	26-15-61-3 KNOB	1
R15	1355905	47-15-023 STATOR BLACK	1
R15	1355102	31-15-10-1 PEAKED CAP	1
SW101-103	1860120	31-121.025 EAO, MOM. 1POLE	3
SW104	1862917	SERIES 04 CONT BLOCK 1NC #704-900.2	1
SW104	1860791	SERIES 04 MUSHROOM-KEY RELEASE, 704-076.0	1
SW106	1860265	31-262.025 EAO LATCH 2POLE	1
SW107	1860260	31-261.025 EAO LATCH 1POLE	1
SW201	1866005	SW,ROLLER,20A Z-15GW22-B7-K	1
SX1,WX1-2	1151174	CONTACT PINS, 24-20 AWG, FEMALE	6
SX1,WX1	1151152	AMP CHS RCPT., 4F PIN, SIZE 11	2

## PARTS LIST

<b>CONTROLS AND REGULATION SECTION</b>			
<b>ITEM</b>	<b>P/N</b>	<b>DESCRIPTION</b>	<b>QTY</b>
T201	1890200	1010B VARIABLE, STACO	1
T201 <b>(220V)</b>	1890215	1220 VARIABLE, STACO (240V)	1
T202 <b>(220V)</b>	1894425	P-8620 230/115 STPDN 50VA AUTO	1
TB201-202	1154311	3-141 TERM BLK PNL MNT	2
TB201-202	1154953	MS-3-141 MARKER STRIP	2
TMR1	1480120	PANEL MOUNT DIGITAL TIMER, OMEGA #PTC-13	1
WX2	1151150	AMP CHS RCPT.,4M PIN, SIZE 11	1
WX2	1151170	CONTACT PINS, 24-20 AWG, MALE	2
WX2	1151186	CBL CLAMP, SIZE 11 SMALL	1
WX2	1151160	AMP 4F PIN CBL PLUG, SIZE 11	2
OUTPUTCBL	30070003	OUTPUT CABLE, 16' W/GROUND LEAD FOR 600P SERIES	1
PCB1257	31125725	PCB1257: 605-2P CNTRLS & METERING	1
SX1	50100001	SX1 AMP PLUG	1

<b>HV SECTION</b>			
<b>ITEM</b>	<b>P/N</b>	<b>DESCRIPTION</b>	<b>QTY</b>
D301-304	1780063	1.5KE12A 1N6273A 10V XORB	4
MOV301-303	31107000	PCB1070: 3 PC MOVISTOR BD (130V) (2013)	1
MOV301-303 <b>(220V)</b>	31107001	PCB1070: 3 PC MOVISTOR BD (275V) (2013)	1
R301	1747150	ROX-3T 25MEG 6W	1
R303-304	1740164	5W 15 Ohms Power Resistor	2
SPG301	1605110	CG90L, CPL SPARKGAP 90V	1
T301	38320046	GA1-0046	1
T301 <b>(220V)</b>	38320354	GA1-0354	1

## **PARTS ORDERING INFORMATION**

Replacement parts are available from Phenix Technologies, Inc.

Changes to Phenix Technologies' products are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest technical improvements developed in our Engineering Department. It is, therefore, important when ordering parts to include the serial number of the unit as well as the part number of the replacement part.

When your purchase order is received at our office, a representative of Phenix Technologies will contact you to confirm the current price of the part being ordered. If a part you order has been replaced with a new or improved part, an Applications Engineer will contact you concerning any change in part number.

Your order for replacement parts should be sent to:

Replacement Parts Department  
Phenix Technologies, Inc.  
75 Speicher Drive  
Accident, Maryland 21520

## RECOMMENDED SPARE PARTS

Phenix Technologies recommends that the customer purchase and stock the following parts for normal maintenance of the unit. The recommended quantity should be sufficient to support the unit during normal operation.

If the unit will be operated at an isolated site for an extended period or will be subjected to unusual stresses, a larger quantity of parts should be stocked as spares. In such a case, contact your Phenix Technologies' sales representative for a recommendation.

Current prices may be obtained by contacting the Parts Ordering Department at Phenix Technologies.

<u>Part Name</u>	<u>Computer Number</u>	<u>Recommended Quantity</u>
Digital Panel Meter, 3 1/2", 0-2V Input	1506400	1
Lamps, 31-963.4	1420150	5
Limit Switch, 2HBA190-1	1866005	1
Relay, 30A/3P CONTACTOR	1705465	1
Switch, 31-121	1860120	1

## RETURNED MATERIAL

If for any reason it should become necessary to return this equipment to the factory, the Service Department of Phenix Technologies, Inc. must be given the following information:

Name Plate Information  
Model Number  
Serial Number  
Reason for Return  
Cause of Defect

If Phenix Technologies, Inc. deems return of the part appropriate, it will then issue an "Authorization for Return".

If return is not deemed advisable, other inspection arrangements will be made.

NOTE: Material received at this plant without the proper authorization shall be held as "Customer's Property" with no service until such time as the proper steps have been taken.

Your cooperation is requested in order to ensure prompt service.