USER'S GUIDE

Model Number: 8120-5PL-A
8120-5PL-B

Part Number: DS11-853

WARNING

This publication describes a product engineered and designed to measure or operate with **HIGH VOLTAGES**. Accordingly, maximum safeguards have been built into the equipment and the best safety techniques possible are described in the unit's operating instructions. These instructions caution the user to exercise great care when using certain controls at appropriate points in the operating procedures. In addition to following these written warnings, the operator of this equipment is strongly advised to maintain safety consciousness. The following rules are particularly relevant and must be followed at all times.

⚠ Ground the system before connecting input power.

⚠ Disconnect power before un-grounding the system.

⚠ Never approach or touch a potentially live **HIGH VOLTAGE** circuit without solidly connecting an appropriate ground conductor first.

Hipotronics, Inc. - P.O. Box 414 - Route 22 - Brewster, N.Y. - 10509-0414 – (845) 279-3644 – Fax: (845) 279-2467

Table of Contents

About the User's Guide

This user's guide describes the HIPOTRONICS 800PL Series of portable dc insulation test sets. It is intended to provide a simplified reference for users of this equipment, allowing the quick, safe, and efficient use of the unit's features.

Instructions for the following models and their associated part numbers are included in this user's guide:

Model	815 PL	8120-5 PL	8170-5 PL
Part No.	DS11-527	DS11-853	DS11-969

Before You Begin

It is assumed that the user has a basic understanding of electrical equipment and the major functions to be performed by the specific unit discussed in this manual. ***Only trained, qualified personnel should operate this equipment.***

Organization of this User's Guide

This user's guide is divided into four major sections, including:

- **General Information**, which discusses the features and specifications of the HIPOTRONICS 800PL series and provides a description of the functions performed by each of the controls and indicators on the front panel.
- **Setting Up the Equipment**, which provides instructions for preparing the unit for test operations.
- **Operating the Equipment**, which provides instructions for performing test operations.
- **Performing Special Operations**, which provides procedures for recalibrating the unit and diagnosing common problems.

General Information

This section acquaints the user with the major features and specifications of the HIPOTRONICS 800PL series of portable dc insulation testers and the functions performed by each of the controls and indicators on the front panel.

Features and Specifications

The HIPOTRONICS 800PL series of portable dc insulation testers consists of equipment particularly suited for use in the utility and wire and cable industries. These units are used to test insulated cables, capacitors, and other one-sided, grounded samples.

Model 815PL-A operates from an input of 120 volts ac, 50/60 Hz, 3 Amps. Model 815PL-B operates from an input of 220/240 volts ac, 50/60 Hz, 3 Amps. Models 8120-5PL-A and 8170-5PL-A operate from an input of 120 volts ac, 50/60 Hz, 10 Amps. Models 8120-5PL-B and 8170-5PL-B operate from an input of 220/240 volts ac, 50/60 Hz, 5 Amps.

MODEL	VOLTS (AC)	CURRENT
815PL-A	120	3 Amps
815PL-B	220/240	3 Amps
8120-5PL-A	120	10 Amps
8120-5PL-B	220/240	5 Amps
8170-5PL-A	120	10 Amps
8170-5PL-B	220/240	5 Amps

Models 815PL, and 880PL are housed in a High Impact Plastic cabinet containing an oil-filled, hermetically sealed steel container. The storage section at the top of the cabinet contains two insulated return leads, an auxiliary power plug, a three-pronged input power cord, and a shielded HV output cable with a battery clamp.

Models 8120-5PL and 8170-5PL include an oil-filled, air-sealed steel tank. The control section houses two insulated return leads, an auxiliary power plug, and a three-pronged input power cord.

Standard features of the 800PL series of portable dc insulation testers include:

- Triple range kV meter
- Four range current meter
- Adjustable voltage control
- "Zero start" interlock

- Insulated return and guard circuits
- HV shorting solenoid with a discharging resistor
- Provision for an external interlock or "deadman" switch
- Input and backup overload fuses
- Pilot light indicators for ac input and high voltage output.
- Rated output current of 5 mA for 15 minutes (capacitor charging duty)
- Internal circuit protection allowing for repeated short circuits at full output

Figure 1 on Page 3 lists the specifications for each model in the series.

MODEL	OUTPUT VOLTAGE	RIPPLE AT RATED LOAD	REGULATION NL-FL	WEIGHT	SIZE
815PL	0-15 kV Negative Polarity	1.3 % @ 50 Hz	15 %	39 lb. (20 kg)	18" H (457 mm) 18" W (457 mm) 10" D (254 mm)
8120-5PL (Controls)				22 lb. (12.3 kg)	18" H (457 mm) 18" W (457 mm) 10" D (254 mm)
8120-5PL (Tank)	0-120 kV Negative Polarity	2.5 % @ 50 Hz	15 %	84 lb. (38 kg)	22" H (559 mm) 12" W (305 mm) 10" D (254 mm)
8170-5PL (Controls)				22 lb. (12.3 kg)	18" H (457 mm) 18" W (457 mm) 10" D (254 mm)
8170-5PL (Tank)	0-170 kV Negative Polarity	1.6 % @ 50 Hz	15 %	140 lb. (64 kg)	30" H (762 mm) 12" W (305 mm) 9" D (229 mm)

Figure 1 *Portable 800PL Series Specifications*

All 800 PL Series units are rated for 15 minute duty at 5 milliamperes.

Environment

Storage Temperature:	-10° to 45° C
Operating Temperature:	10° to 40° C
Humidity:	Less than 95 percent non-condensing
Altitude:	Less than 1000 meters

Controls and Indicators

A diagram of the front panel for the HIPOTRONICS 800PL Series is displayed in Figure 2. Refer to this diagram, as well as to the actual front panel, when reading the description of the controls and indicators. ***Note that the front panel displayed in Figure 2 may differ slightly from that of the model purchased.***

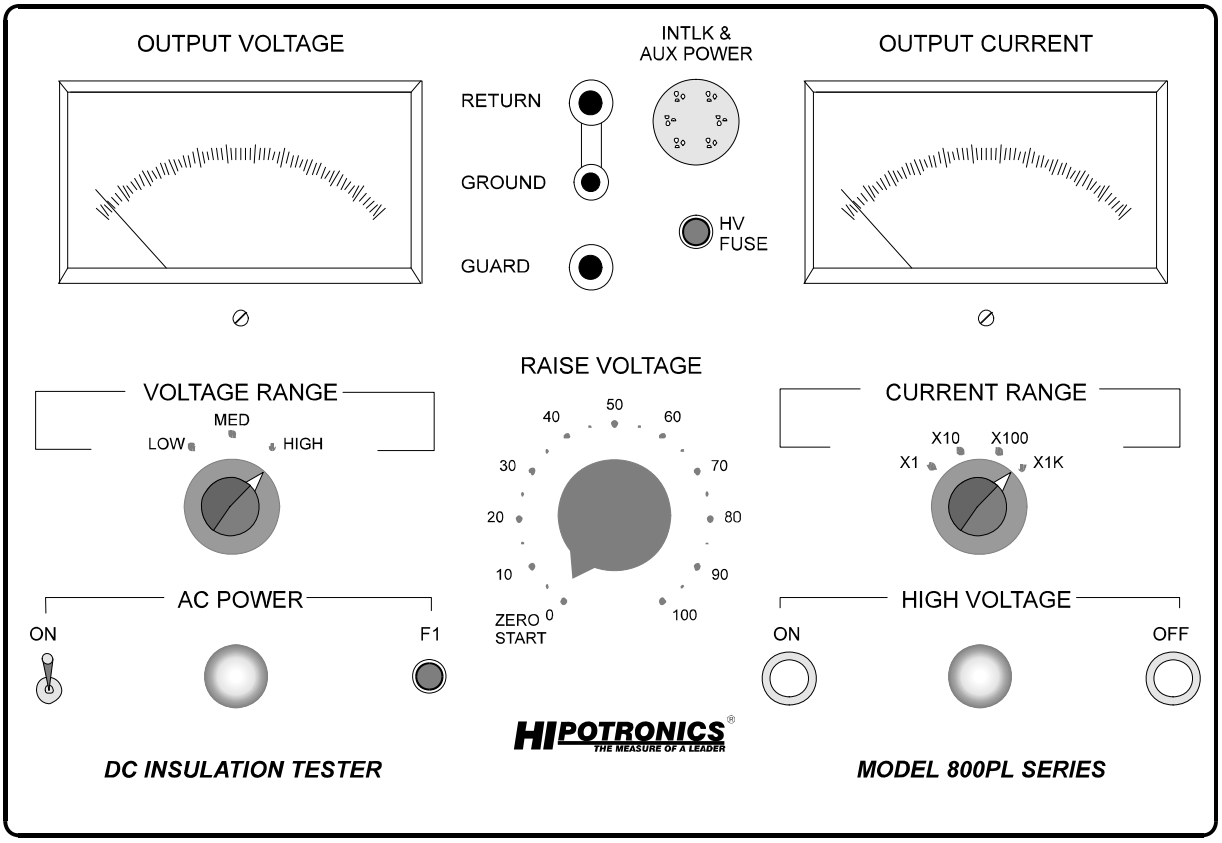


Figure 2 *DC Insulation Tester Front Panel*

Voltmeter and Range Selector

The kilovoltmeter is located at the top left of the front panel and is labeled *DC kV* on the scale. Directly below the meter is a triple-range selector switch, with each range corresponding to a different set of numbers on the scale. The **LOW** range corresponds to the bottom row of numbers, the **MED** range to the middle row, and the **HIGH** range to the top row. The voltmeter indicator should be at 0 when then unit is OFF. Minor adjustments may be made via the adjusting screw below the meter window. To make these adjustments, the high voltage must be OFF.

Current Meter and Range Selector

The current meter is located at the top right of the front panel and is labeled *DC μA* on the scale. Directly below the meter is a four-range selector switch. To obtain proper dc readings, multiply the scale reading by the factor at which the range selector is positioned. The factors associated with the various range settings are as follows:

Setting	Value	Setting	Value
X1	1	X100	100
X10	10	X1K	1,000

For example, when performing a dc insulation test, the current meter indication is 4 on the dc μA scale and the **CURRENT RANGE** setting is X1K. The correct reading is 4 x 1000, or 4,000 μA.

The current meter indicator should be at 0 when the unit is OFF. Minor adjustments may be made via the adjusting screw below the meter window. To make these adjustments, the high voltage must be OFF.

AC Power Controls

The **AC POWER** section contains an **ON/OFF** toggle switch, a pilot light to indicate that AC power is on, and a current limiting fuse. The current limiting fuse protects the unit and may be removed for replacement by pressing the black cap down while turning it counterclockwise,

Guard/Ground/Return Connections

There are three connection posts on the front panel labeled **GUARD**, **GROUND**, and **RTN**. **GUARD** or **RTN** must *always* be connected to **GROUND** by a jumper when testing. Figure 3 and Figure 4 illustrate these connections.

Jumper Link Connected Between GROUND and GUARD Posts

The sole function of this mode of operation is to separate the paths of leakage currents. These leakage currents are *leakage to ground* and *leakage across the test specimen*. The leakage currents to **GROUND** are bypassed around the current meter, measuring only the specimen leakage current. The low side (**RETURN**) connection of the specimen must be "floated" (isolated from **GROUND**).

This is typically used for discrete components or when leakage to **GROUND** is to be disregarded. For example, when testing a transformer for leakage (or resistance) between the secondary and the primary, the guarded return mode allows leakage to the core or frame to bypass the meter, thus reading only leakage between the two coils.

It is not possible to test installed cables in this mode of operation, as the cable shields are always grounded, making it impossible to see the leakage current.

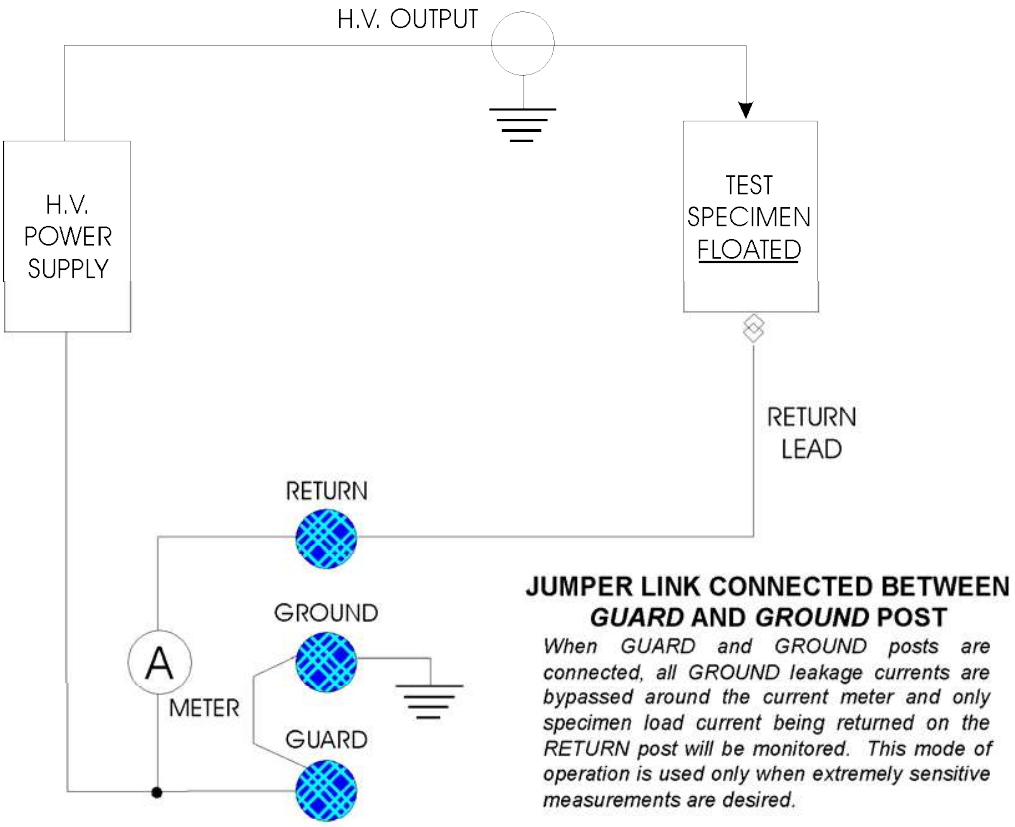


Figure 3 *Jumper Link Connected Between Ground and Guard Post*

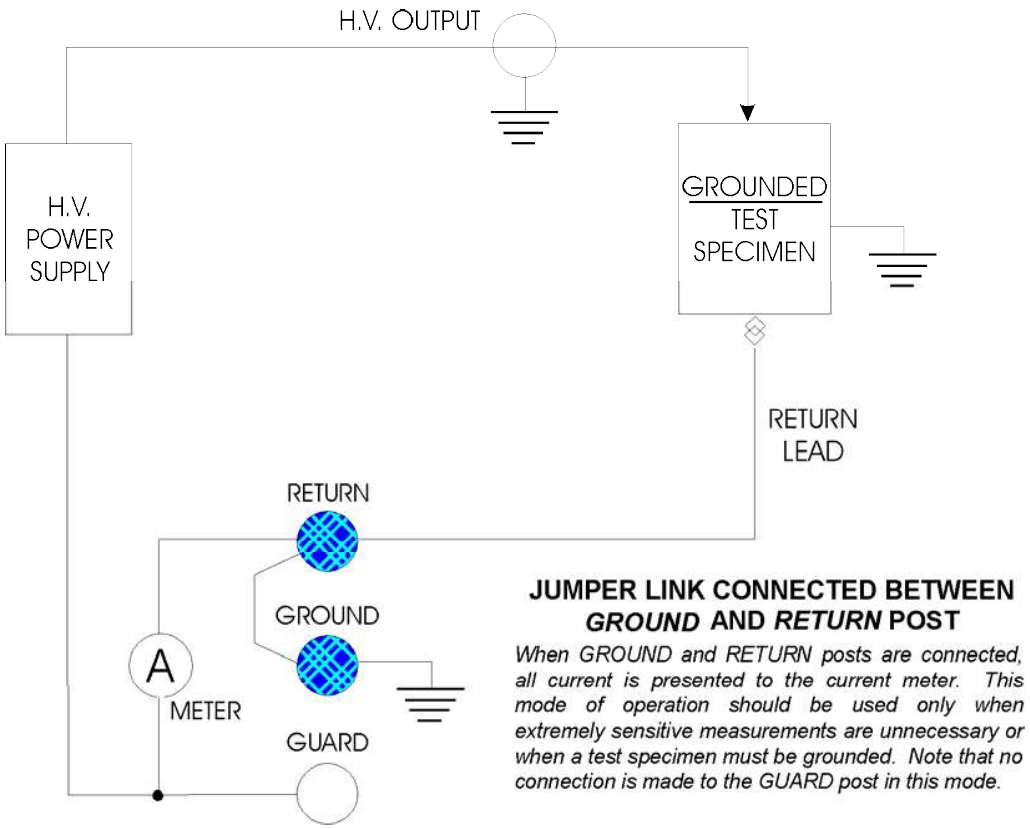


Figure 4 *Jumper Link Connected Between Ground and Return Post*

High Voltage Controls

The **HIGH VOLTAGE** controls consist of **ON** and **OFF** pushbuttons, a lighted indicator, and a **RAISE VOLTAGE** control. High voltage can be energized by turning the **RAISE VOLTAGE** control to zero (zero start interlock) and pressing the **HV ON** pushbutton. The indicator lights when the high voltage is on. If the **HV OFF** pushbutton is pressed or if the test is terminated by another means, for example, if an overload circuit trips, the indicator light goes out and the high voltage is de-energized.

The **RAISE VOLTAGE** control regulates output voltage. The markings on the control knob indicate the percent of output. ***Keep the RAISE VOLTAGE control set to zero when not in use, and set the control to zero immediately upon completion of a test.***

Interlock and Auxiliary Power Socket

The **INTLK & AUX POWER** socket provides for an external interlock or "deadman" switch, which must be connected to the interlock and the auxiliary power plug provided with the unit. Whether or not this feature is used, the power plug *must* be plugged into the socket in order for the unit to operate.

HV Fuse

The **HV FUSE** is located beneath the **INTLK & AUX POWER** socket and functions as a backup overload fuse. For model 815PL is a 3 amp fuse. For Models 8120-5PL and 8170-5PL, this is a 10 amp fuse. This fuse is accessed in the same manner as the **AC POWER** fuse described in this section, and serves both as current surge protection and the overload tripping facility for the unit.

Setting Up the Equipment

1. Select a location for the unit that places the meters at a level to allow maximum accuracy when reading.

2. Set the **RAISE VOLTAGE** control to zero and check to ensure that the **AC POWER** switch is OFF.

3. ***Ground the unit before connecting input power.*** The **GROUND** post on the front panel may be used for this purpose. Connect the jumper link between the **GROUND** and **RETURN** posts for most cable tests.

4. Insert the 5-pronged shorting plug provided with the unit into the **INTLK & AUX POWER** socket on the front panel. (This plug may also be used as a connector to the external interlock or capacitor discharge unit. See the schematic for pin connections.)

5. Connect the insulated return leads supplied with the unit as illustrated in Figure 3 and Figure 4.

6. For Models 8120-5PL and 8170-5PL, connect a 25-foot interconnect lead between the HV tank and the controls. ***Ensure that the HV tank is grounded to a reliable ground.***

Operating the Equipment

This section provides step-by-step instructions for performing dc insulation testing of one-side grounded and ungrounded samples. In addition, it provides a section with instructions for testing high voltage cable, and a section containing special safety instructions.

Before beginning any test procedures, ensure that the equipment has been properly installed according to the steps in the section of this user's guide titled *Setting Up the Equipment.*

1. Set the **CURRENT RANGE** control to the **X1K** range setting.

2. Set the **VOLTAGE RANGE** control to the desired setting for voltmeter reading.

3. Connect the HV output lead to the test sample.

4. Plug the line cord of the unit into a 120 volt, 50/60 Hz outlet. If a 2-prong adapter is used, ***be sure to ground the third wire.*** **(**For 230V (-B) Units, connect the supplied cord to a 230V, 50/60Hz source)

5. Turn the **AC POWER** toggle switch ON. ***Ensure that the test area is clear of all personnel not directly involved with testing procedures.***

6. Press the **HIGH VOLTAGE ON** pushbutton. The indicator will light.

7. Increase the output voltage to the desired level with the **RAISE VOLTAGE** control. Note that the current meter readings increase along with the voltage.

8. Maintain the output voltage at the desired level for the required amount of test time. Reduce the **CURRENT RANGE** until the needle deflects 10 percent or more for the most accurate leakage reading. Steady voltage must be maintained in order to read leakage rather than charging current.

9. When the test is complete, slowly lower the **RAISE VOLTAGE** control to zero. When the voltmeter reading is zero, press the **HIGH VOLTAGE OFF** pushbutton. Ensure that the **CURRENT RANGE** control is positioned at the highest range (**X1K**) when reducing voltage to prolong the life of the meter.

10. If the test sample fails, the overload circuit trips **HIGH VOLTAGE OFF** and the internal shorting solenoid will bleed off the remaining charge in the sample.

Testing High Voltage Cables

1. Ensure that all insulators, pot heads, and stress cones are clean and free of dust or moisture.

2. Ensure that the shields of all three cables are grounded and tied together at the near end of the cable.

3. Isolate the far end of the cable conductors under test from each other and from all ground points. They must also be free of all other potential sources of leakage, such as sharp points.

4. When testing each of three conductors separately, two must be grounded to protect against dangerous charge build up, as must other de-energized cables in the test area.

5. Increase voltage slowly, following the test specifications outlined by the cable manufacturer or any other relevant standards. Charging current depends on the rate of rise of the voltage.

6. In an average test of a 3-conductor, 3-phase circuit, the current meter readings should be approximately the same on all three conductors. Higher than expected readings or flashover are indicative of a faulty cable, a poor splice, a dirty pot head or insulator, or cable end leakage.

7. Upon completion of the test, follow the *Turn Off Procedure* on Page 14.

TEST EXAMPLE

One thousand feet of cable rated at 15 kV ac is to be tested for five minutes at a voltage level of approximately 50 kV dc, in accordance with manufacturer's specifications. Using a HIPOTRONICS 880PL unit, (or higher) and by following the installation and operation instructions described previously, it will be noted that current meter readings in the order of magnitude of 100 μA will exist until voltage has been increased to 50 kV dc. Current meter readings then drop off to approximately 10 μA for the duration of the test on a good cable. Current meter readings can vary significantly according to the length and size of the cable under test. Readings can also be affected by damp weather, cable splices, switchgear in the circuit, and voltage change in the input source. For further details, see Figure 5.

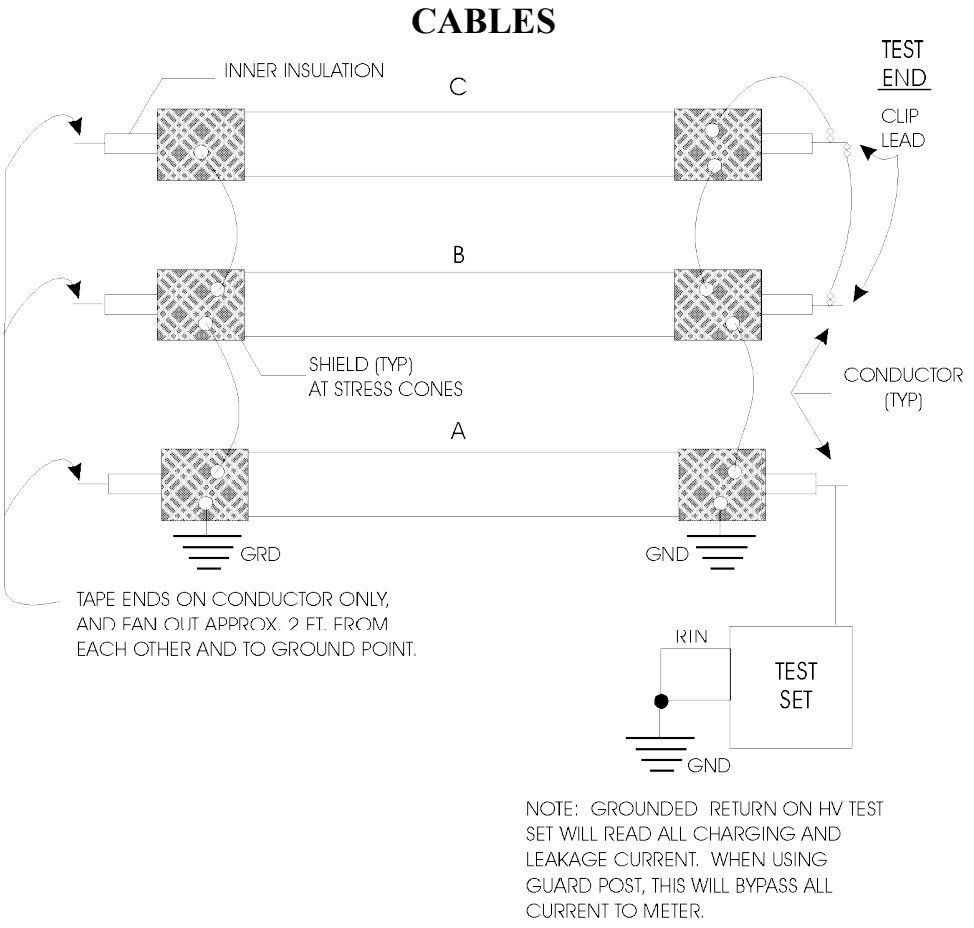
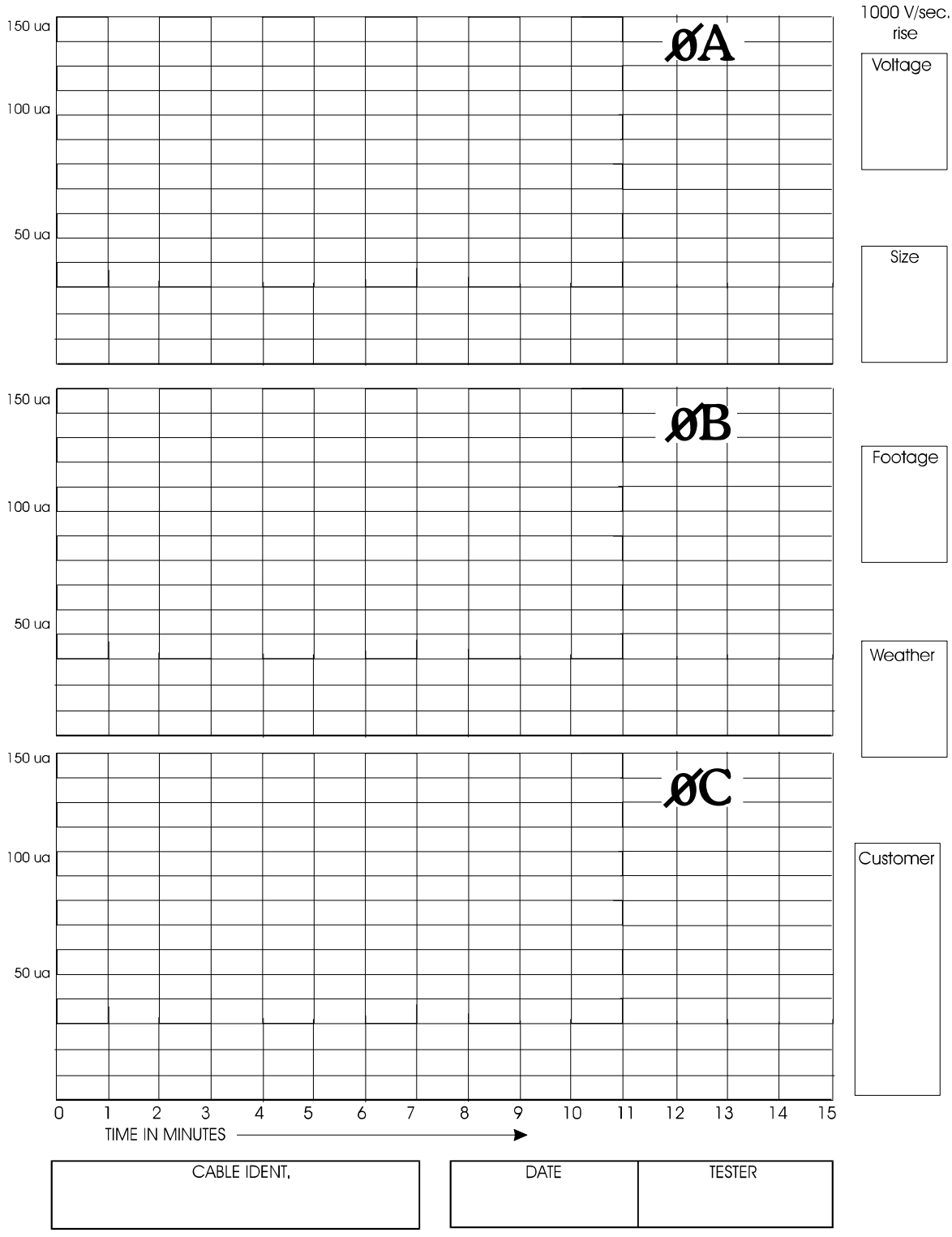


Figure 5 *Test Example*

CABLE TEST RECORD



Special Safety Instructions

Follow these safety procedures upon completion of testing.

Turn Off Procedure

Warning!! Never press the* HIGH VOLTAGE OFF *pushbutton or turn off the main power switch immediately upon completion of a high voltage test. When stored energy is greater than 1 kilojoule, allow the energy to bleed down until the voltmeter reading is zero.

1. Slowly turn the **RAISE VOLTAGE** control to zero. Ensure that **CURRENT RANGE** is set to **X1K.**

2. Allow the charged cable to bleed down to approximately a 10 kV on the voltmeter or proceed to Step 3.

3. Completely discharge the cable through a resistive grounding (shorting) stick.

4. Attach a solid ground connection before touching the sample.

Completing Tests of Large Capacitive Loads

When completing a dc insulation test of large capacitive loads, the following steps are recommended for the protection of both the user and the equipment.

1. ***Secure a tested, hand-held, resistive grounding (shorting) stick.***

2. Using the hand-held grounding stick, bleed down the charged cable or other capacitive load. This eliminates the unnecessary discharge of a high capacitive cable back into the high voltage section of the 800PL unit when the **HIGH VOLTAGE OFF** pushbutton is pressed.

3. Place a solid earth connection before touching the sample.

Performing Special Operations

The first part of this section describes the step-by-step procedures required to perform meter recalibration. The second part of this section provides suggestions for problem diagnosis and maintenance of the equipment.

Meter Recalibration

HIPOTRONICS meters have been calibrated with standards traceable to national standards maintained by the National Institute of Standards and Technology (NIST) in Washington, DC and are certified accurate to within 2 percent when shipped. Perform meter recalibration as often as necessary to meet the requirements of each particular installation, as dictated by use and by standards for accuracy. Three factors influence the frequency of meter calibration: the amount of physical handling, time lapse, and extent of usage. Intervals between meter recalibration can vary from one month to one year.

The voltmeter potentiometer is accessed through the front panel. The current meter is factory calibrated and need not be adjusted.

Recalibrating the Voltmeter

1. Ensure that the voltmeter is set to zero. Adjust the zero setting screw if necessary.

2. Select a location for the unit that places the voltmeter at a level to allow maximum accuracy for calibration.

3. Set the **RAISE VOLTAGE** control to zero and check to ensure that the **AC POWER** toggle switch is OFF.

4. ***Ground the case before connecting the input power.*** The **GROUND** post on the front panel may be used for this purpose.

5. Ensure that the 5-pronged shorting plug provided with the unit is plugged into the **INTLK & AUX POWER** socket on the front panel.

6. Set **VOLTAGE RANGE** to **LOW**.

7. Connect the **RETURN** post to the **GROUND** post on the front panel with the jumper link.

8. Select a calibrated external voltmeter with a meter range appropriate for the unit to be calibrated (HIPOTRONICS' Model KVM 100 or similar).

9. Connect the low side (ground) of the external voltmeter to the **RETURN** post of the front panel using the insulated return lead supplied with the unit.

10. Connect the output of the unit to the high side of the external voltmeter using the shielded high voltage lead supplied with the unit.

11. Unscrew the front panel from the cabinet, tipping the panel vertically and locating the kV calibration potentiometer (pot) in the corner of the circuit board attached to the back of the voltmeter.

12. Secure the front panel in a vertical position, allowing ease of access to the kV calibration potentiometer and accurate meter readings.

13. Turn **VOLTAGE RANGE** to **LOW** and energize the high voltage. Raise the voltage to approximately 70 percent of the full scale on the unit's kilovoltmeter. Note that calibrating the **LOW** range automatically calibrates the **MED** and **HIGH** ranges, but it is recommended that each range be checked individually.

14. Calibrate the unit's meter with the external meter using the calibration potentiometer (2 percent accuracy is recommended).

15. Return the **RAISE VOLTAGE** control to zero and turn the high voltage OFF.

Diagnosing Problems

All products shipped by HIPOTRONICS are thoroughly tested against a rigid set of standards by the firm's Quality Control Department. If a unit does not function properly upon delivery, refer to the section titled *Returned Material* at the end of the user's guide.

This section is intended to help the user *locate* the source of a problem when the unit is not functioning or is functioning improperly. The procedures described should be performed by a trained repair technician and are not recommended for individuals trained only to operate the equipment. It is not recommended that repairs be performed while the equipment is under Warranty, as some of the recommended steps may void the Warranty. Contact HIPOTRONICS' Service Department for further information.

Figure 6 lists the most frequently encountered problems, with possible causes and corrective actions. If a more complex problem arises, the enclosed schematics should provide the experienced technician with additional information.

PROBLEM	POSSIBLE CAUSE/ CORRECTIVE ACTION
No high voltage output	• Defective F2 fuse. Replace fuse. • INTLK & AUX POWER plug faulty or not plugged in. Plug in the INTLK plug or replace the faulty plug. See J1 in the schematic; prongs 2 and 3 should be connected together. • Zero start faulty. Clean contact between T1 swinger and the arm of the zero start.
Low voltmeter readings.	• Voltmeter out of adjustment. Re-calibrate the voltmeter. • Low line voltage. Obtain a reading at the power source and inform the responsible authority.
Erratic high voltage output	• Varian (RAISE VOLTAGE control) brushes dirty or worn. Clean or replace brushes. • Fluctuating line voltage. Obtain reading at power source and inform responsible person.
Overload doesn't trip	• Faulty RYA relay. Replace RYA relay. • C1 capacitor shorted. Replace C1 capacitor. • RYA operation impaired. Check wire harness to ensure it does not impair RYA operation.
Overload trips before hookup	• Short in HV output cable. Replace HV output cable.
Current meter doesn't function	• Jumper clip on front panel not connected properly. Connect jumper clip as illustrated in Figure 3 and Figure 4.
CONTACT HIPOTRONICS' SERVICE DEPARTMENT IF OTHER PROBLEMS OCCUR.	

Figure 6 *Diagnosing Problems*

Declaration of CE Conformity

Hipotronics, Inc.
1650 Route 22 North
PO Box 414
Brewster, NY 10509
USA

Declare, under his own responsibility, that the below mentioned product complies with the requirements of the listed standards or other normative documents.

So, the product complies with the requirements of the EMC directive 2004/108/EC and the low voltage directive 2006/95/EC.

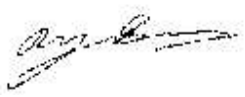
Product: **800PL Series DC Hipot Test System**

Description: 800PL Series DC Hipot System is used to test dielectric strength of electrical Apparatus.

Standards: EN 61010-1: 2001
EN 61326-1: 2006

Ryan Bares
Product Manager
Hipotronics, Inc.
1650 Route 22 North
USA

Brewster, September 8, 2010



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(Signature)

Warranty

HIPOTRONICS, INC. warrants to the original purchaser of any new merchandise that the merchandise is free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of shipment. The obligation of Hipotronics, Inc. under this warranty is limited, in its exclusive option, to repair, replace or issue credit for parts or materials which prove to be defective, and is subject to Purchaser's compliance with the Hipotronics, Inc. Warranty Claim Procedure as set forth below. The happening of any one or more of the following events will serve to void this warranty and any defect or damage resulting therefrom is specifically excluded from Warranty coverage:

(a) defects due to accident, negligence, alteration, modification, faulty installation, abuse or misuse by Purchaser or Purchaser's agents or employees.

(b) attempted or actual dismantling, disassembling, service or repair by any person, firm or corporation not specifically authorized in writing by Hipotronics, Inc.

(c) defects caused by or due to handling by carrier or incurred during shipment, transshipment or other move.

This Warranty covers only those parts and/or materials deemed by Hipotronics, Inc. to be defective within the meaning of this Warranty. The liability of Hipotronics, Inc. shall be limited to the repair, replacement or issuance of credit for parts deemed defective within the meaning of this Warranty. Costs incurred by purchaser for labor or other expenses incidental to the inspection, repair, replacement or issuance of credit for such parts and/or materials shall be the sole responsibility of purchaser. This Warranty shall not apply to any accessories, parts or materials not manufactured or supplied by Hipotronics, Inc. and if, in the sole discretion of Hipotronics, Inc., Purchaser's claim relates to any materials of a component part, or of the manufacturer of a device of which the defective part is a component, Hipotronics, Inc. reserves the right to disclaim liability under this Warranty and to direct that the Purchaser deal directly with such supplier or manufacturer. Hipotronics, Inc. agrees to assist the purchaser in processing or settling any such claim without prejudicing its position as to liability purchaser in processing or settling any such claim without prejudicing its position as to liability.

Warranty Claim Procedure

Compliance with the following Warranty Claim Procedure is a condition precedent to the obligation of Hipotronics, Inc. under this Warranty.

(a) Purchaser must notify Hipotronics, Inc. in writing by certified or registered mail, of the defect claimed within twelve (12) months after the date of original shipment. Said notice shall describe in detail the defect, the defective part and the alleged cause of the defect.

(b) At the exclusive option of Hipotronics, Inc., Purchaser shall dismantle or disassemble at Purchaser's cost and expense and shall ship the defective part or material, prepaid, to Hipotronics, Inc., Brewster, New York 10509, for inspection, or permit an authorized service representative of Hipotronics, Inc. to inspect the defective part or material at the Purchaser's premises. Purchaser shall provide facilities for, and at Purchaser's cost and expense, dismantle, disassemble, or otherwise make accessible the subject part or material whether or not same is a component of, or installed in, a device other than that manufactured or supplied by Hipotronics, Inc. If disclosure shows that the defect is not one for which Hipotronics, Inc. is liable, the Purchaser agrees to reimburse Hipotronics, Inc. for all expense incurred.

(c) Upon receipt of the defective part or material, or after access to same, Hipotronics, Inc. shall inspect the part or material to determine the validity of Purchaser's claim.

The validity of any Warranty Claim, Purchaser's compliance with Hipotronics, Inc. Warranty Claim Procedure, the obligation to either repair, replace or issue credit, or direct the purchaser to deal directly with a manufacturer or supplier are to be determined solely and exclusively by Hipotronics, Inc. any determination so made shall be final and binding.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ON THE PART OF HIPOTRONICS, INC., INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH THEREOF AND HIPOTRONICS, INC. NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON, FIRM OR CORPORATION TO ASSUME ANY LIABILITY OR OBLIGATION IN CONNECTION WITH THIS SALE ON ITS BEHALF AND PURCHASER ACKNOWLEDGES THAT NO REPRESENTATIONS EXCEPT THOSE MADE HEREIN HAVE BEEN MADE TO PURCHASER.

Returned Material

If it should become necessary to return the equipment described in this publication to the factory, the Service Department of HIPOTRONICS, INC. must be contacted at (845) 279-8091. If the return of the unit is appropriate, a Return Authorization Number will be issued and you will be instructed as to the method of return. If return of the unit is *not* advisable, other inspection arrangements will be made.

Please have the following information available to help our service personnel identify the unit and determine the necessity for return.

Note: **Material received at this plant without the proper authorization shall be held as "customer's property" and no service will be performed until the proper steps have been taken. Your cooperation is requested in order to ensure prompt service.**

MODEL: _____

SERIAL NUMBER: _____

TYPE (Part Number): _____

(The MODEL, SERIAL NUMBER and TYPE are indicated on the black and silver tag affixed to the unit.)

REASON FOR RETURN: _____

_____

_____

DEFECT: _____

_____

_____

Replacement Parts

To order replacement parts for this unit, please refer to the Parts List provided with this publication. Provide the number of the specific component along with the *type* (Part Number) of the unit, which is indicated on the Parts List and on the black and silver tag affixed to the unit.