OPERATION AND SERVICE MANUAL

Model 2503, 2510, 2525, 2550

MODEL 2503 (DC ONLY HIPOT WITH OPTIONAL GROUND CONTINUITY CHECK)
MODEL 2510 (AC ONLY HIPOT WITH OPTIONAL GROUND CONTINUITY CHECK)
MODEL 2525 (500VA AC HIPOT TESTER)
MODEL 2550 (AC/DC HIPOT WITH OPTIONAL GROUND CONTINUITY CHECK)

SERIAL NUMBER

Models 2503/2510/2525/ 2550

Item 99-10683-01 Ver 1.03

28105 N. Keith Drive
Lake Forest, Illinois, 60045-4546
U.S.A.

Printed April 18, 2016

DECLARATION OF CONFORMITY

Manufacturer: Slaughter Company, Inc.

Address: 28105 N. Keith Dr.
Lake Forest, IL 60045
USA

Product Name: Model 2525 500VA AC Hipot Tester

Model Number: 2525

Conforms to the following Standards:

Safety: UL 61010-1:2012, UL 61010-2-030:2012
CAN/CSA-C22.2 NO. 61010-1-12
CAN/CSA-C22.2 NO. 61010-2-030-12
EN 61010-1:2010, EN 61010-2-030:2010 EN 61010-031:2002+A1
IEC 61010-1:2010, IEC 61010-2-030:2010
IEC 61010-31:2002+A1

EMC: EN 61326-1:2006 (EN 55011:1998/A2:2002 Class A, EN 61000-3-2:2006, EN 61000-3-3:1995/A1:2001/A2:2005, IEC 61000-4-2:1995/A2:2000, IEC 61000-4-3:2002, IEC 61000-4-4:2004, IEC 61000-4-5:1995/A1:2000, IEC 61000-4-6:2003, IEC 61000-4-8:1993/A1:2000, IEC 61000-4-11:2004)

Supplementary Information

*The product herewith complies with the requirements of the **Low Voltage Directive 2014/35/EU** and the **EMC Directive 2014/30/EU.***

Last two digits of the year in which the CE marking was affixed: 11

The technical file and other documentation are on file with Slaughter Company, Inc.

Joseph Guerriero
President / General Manager

Slaughter Company, Inc.
Lake Forest, Illinois USA
April 18, 2016

Warranty Policy

Slaughter Company, certifies that the instrument listed in this manual meets or exceeds published manufacturing specifications. This instrument was calibrated using standards that are traceable to the National Institute of Standards and Technology (NIST).

Your new instrument is warranted to be free from defects in workmanship and material for a period of (1) year from date of shipment. You must return the "Owners Registration Card" provided within (15) days from receipt of your instrument.

Slaughter Company recommends that your instrument be calibrated on a twelve-month cycle. A return material authorization (RMA) must be obtained from Slaughter Company. Please contact our Customer Support Center at 1-800-504-0055 to obtain an RMA number. Damages sustained as a result of improper packaging will not be honored. Transportation costs for the return of the instrument for warranty service must be prepaid by the customer. Slaughter Company will assume the return freight costs when returning the instrument to the customer. The return method will be at the discretion of Slaughter Company.

Except as provided herein, Slaughter Company makes no warranties to the purchaser of this instrument and all other warranties, express or implied (including, without limitation, merchantability or fitness for a particular purpose) are hereby excluded, disclaimed and waived.

Any non-authorized modifications, tampering or physical damage will void your warranty. Elimination of any connections in the earth grounding system or bypassing any safety systems will void this warranty. This warranty does not cover batteries or accessories not of Slaughter Company manufacture. Parts used must be parts that are recommended by Slaughter Company as an acceptable specified part. Use of non-authorized parts in the repair of this instrument will void the warranty.

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SAFETY PRECAUTIONS REQUIRED FOR HIGH VOLTAGE TESTING!

GENERAL:

This product and its related documentation must be reviewed for familiarization with safety markings and instructions before operation. This product is a Safety Class I instrument (provided with a protective earth terminal).

Before applying power verify that the instrument is set to the correct line voltage (115 or 230) and the correct fuse is installed.

INSTRUCTION MANUAL SYMBOL. PLEASE REFER TO THE INSTRUCTION MANUAL FOR SPECIFIC WARNING OR CAUTION INFORMATION TO AVOID PERSONAL INJURY OR DAMAGE TO THE PRODUCT.

INDICATES HAZARDOUS VOLTAGES MAY BE PRESENT.

CHASSIS GROUND SYMBOL.

WARNING CALLS ATTENTION TO A PROCEDURE, PRACTICE, OR CONDITION, THAT COULD POSSIBLY CAUSE BODILY INJURY OR DEATH.

CAUTION CALLS ATTENTION TO A PROCEDURE, PRACTICE, OR CONDITION, THAT COULD POSSIBLY CAUSE DAMAGE TO EQUIPMENT OR PERMANENT LOSS OF DATA.

WARNING A Hipot produces voltages and currents which can cause **harmful or fatal electric shock**. To prevent accidental injury or death, these safety procedures must be strictly observed when handling and using the test instrument.

SERVICE AND MAINTENANCE

User Service

To prevent electric shock do not remove the instrument cover. There are no user serviceable parts inside. Routine maintenance or cleaning of internal parts is not necessary. Any external cleaning should be done with a clean dry or slightly damp cloth. Avoid the use of cleaning agents or chemicals to prevent any foreign liquid from entering the cabinet through ventilation holes or damaging controls and switches, also some chemicals may damage plastic parts or lettering. Schematics, when provided, are for reference only. Any replacement cables and high voltage components should be acquired directly from Slaughter Company, Inc. Refer servicing to a Slaughter Company, Inc. authorized service center.

SLAUGHTER COMPANY, INC.
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www.hipot.com

Service Interval

The instrument and its power cord, test leads, and accessories must be returned at least once a year to a Slaughter Company authorized service center for calibration and inspection of safety related components. Slaughter Company will not be held liable for injuries suffered if the instrument is not returned for its annual safety check and maintained properly.

User Modifications

Unauthorized user modifications will void your warranty. Slaughter Company will not be responsible for any injuries sustained due to unauthorized equipment modifications or use of parts not specified by Slaughter Company. Instruments returned to Slaughter Company with unsafe modifications will be returned to their original operating condition at your expense.

TEST STATION

Location

Select an area away from the main stream of activity which employees do not walk through in performing their normal duties. If this is not practical because of production line flow, then the area should be roped off and marked for **HIGH VOLTAGE TESTING**. No employees other than the test operators should be allowed inside.

If benches are placed back-to-back, be especially careful about the use of the bench opposite the test station. Signs should be posted: **"DANGER - HIGH VOLTAGE TEST IN PROGRESS - UNAUTHORIZED PERSONNEL KEEP AWAY."**

Power

Dielectric Voltage-Withstand Test Equipment must be connected to a good ground. Be certain that the power wiring to the test bench is properly polarized and that the proper low resistance bonding to ground is in place.

Power to the test station should be arranged so that it can be shut off by one prominently marked switch located at the entrance to the test area. In the event of an emergency, anyone can cut off the power before entering the test area to offer assistance.

The mains plug is used as the disconnecting device and shall remain readily operable. The socket-outlet shall be installed near the equipment and shall be easily accessible.

Do not replace the power supply cord with an improperly rated cord. For North American: A UL listed and CSA labeled power cord must be used with the instrument in the United States and Canada. The power cord must include a NEMA5-15 style male plug, SVT or SJT cord sets, and be rated for at least 125VAC, 10A, number 16 gauge (or 125VAC, 15A, number 14 gauge) wire or larger, and the length of the cord does not exceed 2 m must be used. For European: A certified power supply cord not lighter than light PVC sheathed flexible cord according to IEC 60227, designation H03 VV-F or H03 VVH2-F (for equipment mass not exceeding 3 kg), or H05 VV-F or H05 VVH2-F2 (for equipment mass exceeding 3 kg), and be rated for at least 3G 0.75 mm^2 (for rated current up to 10 A) or 3G 1.0mm^2 (for rated current over 10 A up to 16 A) wire or larger, and the length of the cord does not exceed 2 m must be used.

Work Area

Perform the tests on a non-conducting table or workbench, if possible.

There should not be any metal in the work area between the operator and the location where products being tested will be positioned.

Position the tester so the operator does not have to reach over the product under test to activate or adjust the tester. If the product or component being tested is small, it may be possible to construct guards or an enclosure, made of a non-conducting material such as clear acrylic, such that the item being tested is within the guards or enclosure during the test, and fit them with switches so that the tester will not operate unless the guards are in place or the enclosure closed.

Keep the area clean and uncluttered. All test equipment and test leads not absolutely necessary for the test should be removed from the test bench and put away. It should be clear to both the operator and to any observers which product is being tested, and which ones are waiting to be tested or have already been tested.

Do not perform Hipot tests in a combustible atmosphere or in any area where combustible materials are present.

TEST OPERATOR

Qualifications
This instrument generates voltages and currents which can cause **harmful or fatal electric shock** and must only be operated by a skilled worker trained in its use.

The operator should understand the electrical fundamentals of voltage, current, and resistance.

Safety Procedures
Operators should be thoroughly trained to follow these and all other applicable safety rules and procedures before they begin a test. Defeating any safety system should be treated as a serious offense and should result in severe penalties, such as removal from the Hipot testing job. Allowing unauthorized personnel in the area during a test should also be dealt with as a serious offense.

Dress
Operators should not wear jewelry which could accidentally complete a circuit.

Medical Restrictions
This instrument should not be operated by personnel with heart ailments or devices such as pacemakers.

TEST PROCEDURES

NEVER PERFORM A HIPOT TEST ON ENERGIZED CIRCUITRY OR EQUIPMENT!

If the instrument has an external safety-ground connection be sure that this is connected. Then connect the return lead **first** for any test regardless of whether the item under test is a sample of insulating material tested with electrodes, a component tested with the high voltage test lead, or a cord-connected device with a two or three-prong plug.

Plug in the high voltage test lead only when it is being used. Handle its clip only by the insulator---**never touch the clip directly.** Be certain that the operator has control over any remote test switches connected to the Hipot. Double-check the return and high voltage connections to be certain that they are proper and secure.

NEVER TOUCH THE ITEM UNDER TEST OR ANYTHING CONNECTED TO IT WHILE HIGH VOLTAGE IS PRESENT DURING THE HIPOT TEST.

WARNING **DO NOT TOUCH THE FRONT PANEL WHEN TESTING OR AFTER A MALFUNCTION HAS OCCURRED.**

When testing with DC, always discharge the capacitance of the item under test and anything the high voltage may have contacted--such as test fixtures--before handling it or disconnecting the test leads.

HOT STICK probes can be used to discharge any capacitance in the item under test as a further safety precaution. A hot stick is a non-conducting rod about two feet long with a metal probe at the end which is connected to a wire. To discharge the device under test, two hot sticks are required. First connect both probe wires to a good earth ground. Then touch one probe tip to the same place the return lead was connected. While holding the first probe in place, touch the second probe tip to the same place where the high voltage lead was connected.

KEY SAFETY POINTS TO REMEMBER:

- Keep unqualified and unauthorized personnel away from the test area.
- Arrange the test station in a safe and orderly manner.
- Never touch the product or connections during a test.
- In case of any problem, turn off the high voltage first.
- Properly discharge any item tested with DC before touching connections.

GLOSSARY OF TERMS

Alternating Current, AC: Current which reverses direction on a regular basis, commonly in the U.S.A. 60 times per second, in other countries 50 times per second.

Breakdown: The failure of insulation to effectively prevent the flow of current, sometimes evident by arcing. If voltage is gradually raised, breakdown will begin suddenly at a certain voltage level. Current flow is not directly proportional to voltage. Once breakdown current has flown, especially for a period of time, a repeated application of voltage will often show breakdown beginning at a lower voltage than initially.

Conductive: Having a volume resistivity of no more than 10^3 ohm-cm or a surface resistivity of no more than 10^5 ohms per square.

Conductor: A solid or liquid material which has the ability to let current pass through it, and which has a volume resistivity of no more than 10^3 ohm-cm.

Current: The movement of electrons through a conductor. Current is measured in amperes, milliamperes, microamperes, nanoamperes, or picoamperes. Symbol = **I**

Dielectric: An insulating material which is positioned between two conductive materials in such a way that a charge or voltage may appear across the two conductive materials.

Direct Current, DC: Current which flows in one direction only. The source of direct current is said to be polarized and has one terminal which is always at a higher potential than the other.

Hipot Tester: Common term for dielectric-withstand test equipment.

Insulation: Gas, liquid or solid material which has a volume resistivity of at least 10^{12} ohm-cm and is used for the purpose of resisting current flow between conductors.

Insulation Resistance Tester: An instrument or a function of an instrument capable of measuring resistance's in excess of 200 megohms. Usually employs a higher voltage power supply than used in ohmmeters measuring up to 200 megohms.

Leakage: AC or DC current flow through insulation and over its surfaces, and AC current flow through a capacitance. Current flow is directly proportional to voltage. The insulation and/or capacitance is thought of as a constant impedance, unless breakdown occurs.

Resistance: That property of a substance which impedes current and results in the dissipation of power in the form of heat. The practical unit of resistance is the *ohm.* Symbol = **R**

Trip Point: The minimum current flow required to cause an indication of unacceptable performance during a dielectric voltage-withstand test.

Voltage: Electrical pressure, the force which causes current through an electrical conductor. Symbol = **V**

Models 2503 & 2550 DC Mode Functional Specifications

Unless otherwise stated, accuracy's are relative to a laboratory standard measurement.

Descriptions	Specifications
INPUT VOLTAGE	115 / 230 V selectable, ± 15 % variation; 47 – 63 Hz
FUSE	115 VAC, 230 VAC – 2 A fast acting 250 VAC
OUTPUT	Rating : 5.00 kV DC, 3 mA Regulation: ± (1 % of output + 5 V) from no load to full load
VOLTAGE SETTING	0.00kV – 5.00 kV, 10 volts/step Accuracy: ± (2 % of Setting + 5 V) (relative to displayed output). Can be adjusted during operation via Up & Down Arrow keys.
RIPPLE	< 5 % at 5 kV DC / 3 mA
DWELL TIME SETTING	0.0, 1.0 s or 60.0 s "0.0" for continuous running
RAMP TIMER	0.0 and 0.2 – 999.9 seconds, 0.1 second / step 0.0 ramp setting = 0.1 seconds fixed ramp
FAILURE SETTING	High limit : 0.00 – 3.00 mA, 0.01 mA / step Accuracy : ± (2 % of setting + 0.02 mA)
METERING Soft key used to toggle between Voltmeter and Ammeter	Voltmeter (4 digits) Range : 0.00 – 5.00 kV Resolution : 0.01 kV Accuracy : ± (2 % of reading + 10 V) Ammeter (4 digits) Range : 0.00 – 3.00 mA Resolution : 0.01 mA Accuracy : ± (2% of reading + 0.02 mA)
TIMER DISPLAY	Range : 0.0 – 999.9 seconds Resolution : 0.1 second Accuracy : ± (0.1% of reading + 0.05 seconds)
Discharge Time	≤ 300 ms
Maximum Capacitive Load	1 uF < 1 kV 0.08 uF < 4 kV 0.75 uF < 2 kV 0.04 uF < 5 kV 0.5 uF < 3 kV
OPTIONAL Ground Continuity Check	Current: DC 0.1 A ± 0.01 A, fixed Max ground resistance: 1 Ohm ± 0.1 Ohm, fixed
REMOTE CONTROL AND SIGNAL OUTPUT	The following input and output signals are provided through the 9 pin D type connector; 1. Remote control: test, reset and interlock 2. Outputs: pass, fail and test in process
LINE CORD	Detachable 7 ft. (2.13 m) power cable terminated in a three prong grounding plug.
TERMINATIONS	6 ft. (1.82 m) high voltage safety retracting probe, 6 ft. (1.82 m) high voltage clip probe and 6 ft. (1.82 m) return clip lead.
MECHANICAL	Dimensions: (WxHxD) (4.75x5.75x14.50 in.) (120x146x370 mm) Weight: 16.5 lbs (7.5 kgs)

Models 2510 & 2550 AC Mode Functional Specifications

Descriptions	Specifications
INPUT VOLTAGE	115 / 230 V selectable, ± 15 % variation; 47 – 63 Hz
FUSE	115 VAC, 230 VAC – 2 A fast acting 250 VAC
OUTPUT	Rating : 5.00 kV AC, 10 mA Regulation: ± (1 % of output + 5 V) from no load to full load Frequency: 60 Hz fixed
VOLTAGE SETTING	0.00kV – 5.00 kV, 10 volts/step Accuracy: ± (2 % of setting + 5 V) (relative to displayed output). Can be adjusted during operation via Up & Down Arrow keys.
DWELL TIME SETTING	0.0, 1.0 s or 60.0 s "0.0" for continuous running
RAMP TIMER	0.0 and 0.2 – 999.9 seconds, 0.1 second / step 0.0 ramp setting = 0.1 seconds fixed ramp
FAILURE SETTING	High limit : 0.00 – 10.00 mA, 0.01 mA / step Accuracy : ± (2 % of setting + 0.02 mA)
METERING Soft key used to toggle between Voltmeter and Ammeter	Voltmeter (4 digits) Range : 0.00 – 5.00 kV Resolution : 0.01 kV Accuracy : ± (2 % of reading + 10 V) Ammeter (4 digits) Range : 0.00 – 10.00 mA Resolution : 0.01 mA Accuracy : ± (2% of reading + 0.02 mA)
TIMER DISPLAY	Range : 0.0 – 999.9 seconds Resolution : 0.1 second Accuracy : ± (0.1% of reading + 0.05 seconds)
OPTIONAL Ground Continuity Check	Current : DC 0.1 A ± 0.01 A, fixed Max ground resistance : 1 Ohm ± 0.1 Ohm, fixed
REMOTE CONTROL AND SIGNAL OUTPUT	The following input and output signals are provided through the 9 pin D type connector; 1. Remote control: test, reset and interlock 2. Outputs: pass, fail and test in process
LINE CORD	Detachable 7 ft. (2.13 m) power cable terminated in a three prong grounding plug.
TERMINATIONS	6 ft. (1.82 m) high voltage safety retracting probe, 6 ft. (1.82 m) high voltage clip probe and 6 ft. (1.82 m) return clip lead.
MECHANICAL	Dimensions: (WxHxD) (4.75x5.75x14.50 in.) (120x146x370 mm) Weight: 16.5 lbs (7.5 kgs)

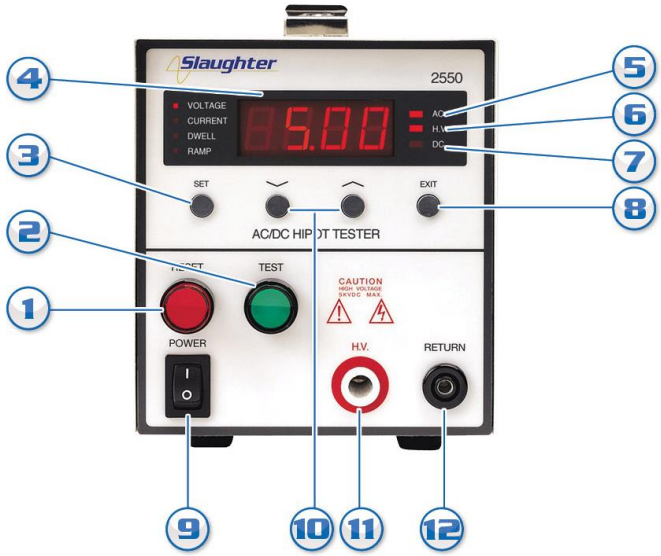
Model 2525 Functional Specifications

DIELECTRIC WITHSTAND TEST MODE	
Descriptions	**Specifications**
INPUT VOLTAGE	115 / 230V selectable, ± 10 % variation 50/60 Hz ± 5%
FUSE	115 VAC, 230VAC – 15A fast acting 250VAC
OUTPUT	Rating AC 0 – 5000V, 10V / step, 100mA Regulation : ± (1 % of output + 5V)
VOLTAGE SETTING	0V – Max output rating, 10 volts/step Accuracy: ± (2 % of Setting + 5V) (relative to displayed output) Can be adjusted during operation via UP and DOWN arrow keys.
OUTPUT FREQUENCY	50 / 60 Hz selectable
WAVE FORM	Sinewave, 1.3 < Crest Factor < 1.5
DWELL TIME SETTING	0 and 0.2 – 999.9 seconds, 0.1 second / step "0" for continuous running
RAMP TIME SETTING	0 and 0.2 – 999.9 seconds, 0.1 second / step 0 ramp setting = 0.1 seconds fixed ramp
FAILURE SETTINGS	AC mode High limit : 0.00 – 99.99 mA, 0.01 mA / step Low limit : 0.00 – 99.99 mA, 0.01 mA / step (0= OFF) Accuracy : ± (2 % of setting + 0.02 mA)
METERING	Voltmeter (4 digits) Range : AC 0.00 – 5.00 KV Resolution : 0.01 KV Accuracy : ± (2 % of reading + 10 V) Ammeter (4 digits) Range : AC 0.00 - 99.99 mA Resolution : 0.01 mA Accuracy : ± (2 % of reading + 0.02 mA)
TIMER DISPLAY	Range : 0.0 – 999.9 seconds Resolution : 0.1 seconds Accuracy : ± (0.1% of reading + 0.05 sec)

GROUND CONTINUITY CHECK	Current : DC 0.1 A ± 0.01A, fixed Max. ground resistance : 1 Ω ± 0.1Ω, fixed
GENERAL SPECIFICATIONS	
Remote Control and Signal Output	The following input and output signals are provided through two 9 pin D type connectors; 1. Remote control: test, reset, interlock 2. Outputs: pass, fail, test in process
Program Memory	5 sets
Security	Lockout capability to avoid unauthorized access to test set-up program.
Line Cord	Detachable 7ft. (2.13m) power cable terminated in a three prong grounding plug.
Terminations	5ft. (1.52m) high voltage and return leads (2) with clips and a standard U.S. style (NEMA 5-15) remote receptacle box for testing items terminated with a line cord. International receptacles also available.
Mechanical	Tilt-up front feet Dimensions (W x H x D) 17 x 5.8 x 12 in. (432 x 147 x 305mm) Weight: 56.70 Lbs. (25.92 kgs)
Environmental	Operating Temperatures: 32°-104°F (0°-40°C) Relative Humidity : 0 to 80%
Calibration	Traceable to National Institute of Standards and Technology (NIST). Calibration controlled by software. Adjustments are made through front panel keypad in a restricted access calibration mode. Calibration information stored in non-volatile memory.

CONTROLS

FRONT PANEL CONTROLS 2503, 2510, 2550



1. **RESET BUTTON:** This is a momentary contact button. If a failure is detected during the hipot test, the red Failure lamp within the button will light. To reset the system for the next test, press and release this button. This button may also be used to abort a test in progress.

2. **TEST BUTTON:** This is a momentary contact button. Press the green button to energize the high voltage output. When the Dwell function is "0.0", high voltage will remain ON until a reject occurs or the RESET button is pushed. If the Dwell function is "1.0" or "60.0," the high voltage will be present only for the programmed time.

3. **SET KEY:** Use this key to advance forward through the setup menus.

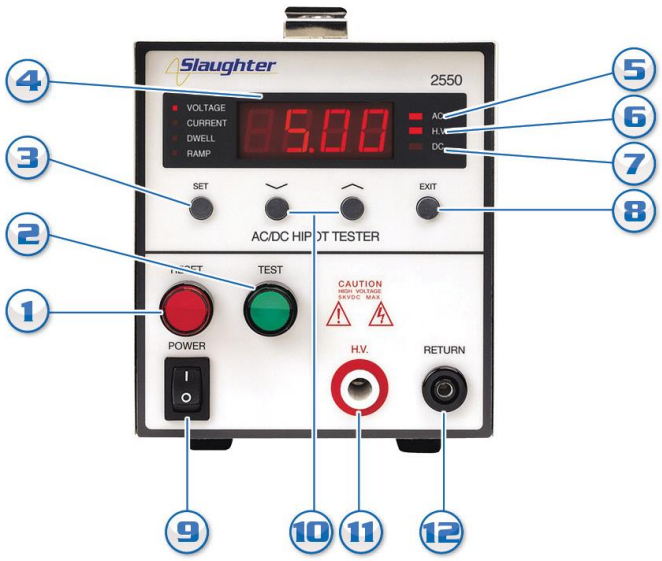
4. **DISPLAY:** The Display is the main readout for the operator and programmer of the test settings and test results. Scalar values are indicated via a digital display.

5. **AC INDICATOR:** This indicator is illuminated during testing to indicate the instrument is in the AC mode (2550 only).

6. **HIGH VOLTAGE LED INDICATOR:** This indicator flashes to warn the operator that high voltage is present at the high voltage output terminal.

7. **DC INDICATOR:** This indicator is illuminated during testing to indicate the instrument is in the DC mode (2550 only).

FRONT PANEL CONTROLS 2503, 2510, 2550



8. **EXIT KEY:** Use this key when you desire to enter the **Run Mode** to initiate a test. Also the key is used to toggle VOLTAGE, CURRENT, or DWELL screens before a test is initiated or during the test in process (2503/2510/2550 only).

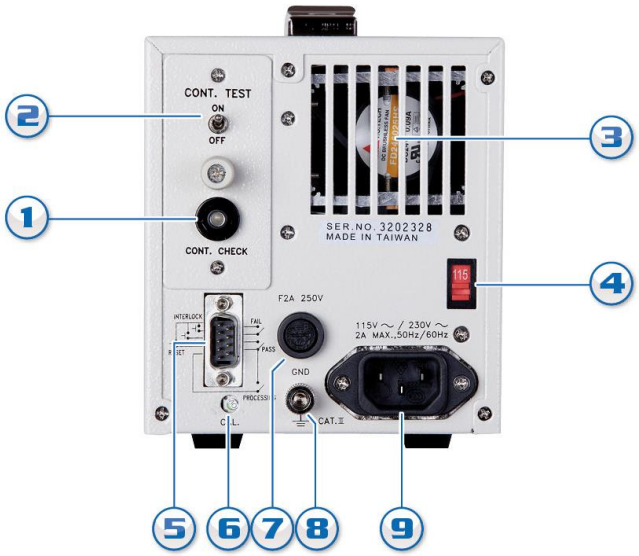
9. **POWER SWITCH:** Rocker-style switch with international ON (|) and OFF (0) markings.

10. **UP ARROW (∧) & DOWN ARROW (∨):** Use these keys to increment or decrement numeric values in the setup mode. These keys are also used to toggle between AC/DC modes (2550 only) and toggle the DWELL function parameters. These keys are used to toggle between VOLTAGE, CURRENT, and DWELL in Results mode. It also may be used to increase or decrease output voltage during a test in 10 volt increments.

11. **HIGH VOLTAGE OUTPUT JACK:** For the connection of the detachable 6 foot (1.82 m) red high voltage test lead. The jack is recessed for safety when this lead is not being used.

12. **RETURN OUTPUT JACK:** For the connection of the detachable 6 foot (1.82 m) black return test lead. This lead is always used when performing a test.

REAR PANEL CONTROLS 2503, 2510, 2550



1. **CONTINUITY RETURN JACK (OPTIONAL):** For connection of the detachable black return test lead when performing a continuity test.

2. **GROUND CONTINUITY SENSING CIRCUIT (OPTIONAL):** Used with the optional Remote Receptacle Box to verify continuity of the ground wire in line cord connected devices.

3. **VENTILATION:** To cool the instrument.

4. **INPUT VOLTAGE SWITCH:** Line voltage selection is set by the position of the switch. In the down position it is set for 115 volt operation, in the up position it is set for 230 volt operation.

5. **REMOTE INPUT:** 9 pin D subminiature male connector for remote interfacing.

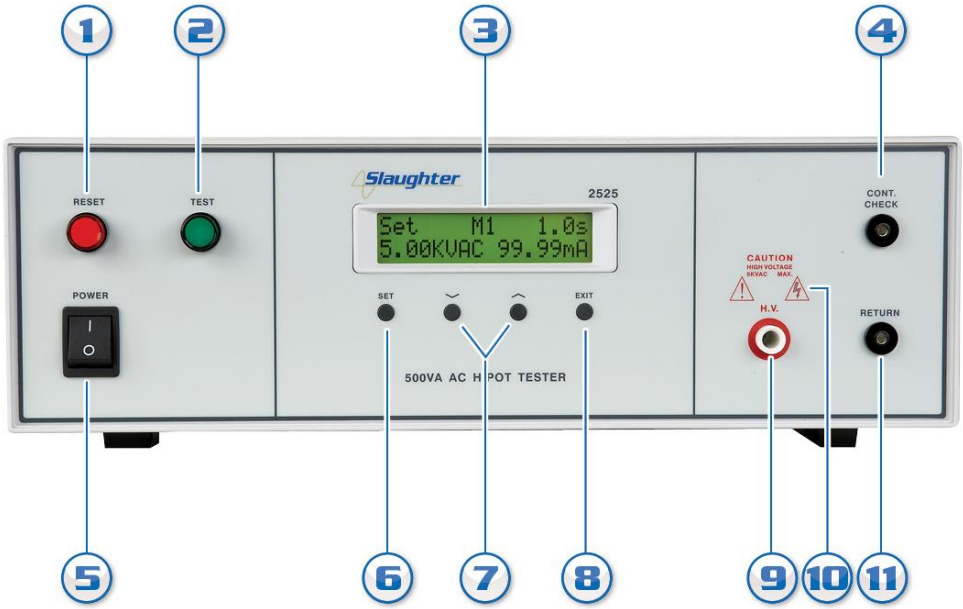
6. **CALIBRATION ENABLE KEY:** To enter the calibration mode press this key while the instrument is being powered ON.

7. **FUSE RECEPTACLE:** To change the fuse unplug the power (mains) cord and turn the fuse cap counter clockwise to remove the fuse.

8. **CHASSIS GROUND (EARTH) TERMINAL:** This safety terminal should be connected to a good earth ground before operation.

9. INPUT POWER RECEPTACLE: Standard IEC 320 connector for connection to a standard NEMA style line power (mains) cord.

2525 FRONT PANEL CONTROLS



1. **RESET SWITCH:** This is a momentary contact switch. If an out-of-range reading is detected during a hipot test or an IR test or if continuity failure occurs, the red failure lamp within the switch will light. To reset the system for the next test, press and release this switch. This switch may also be used to abort a test in progress.

2. **TEST SWITCH:** This is a momentary contact switch. Press the green switch to turn on the high voltage output when in test mode. The indicator lamp within the switch will light when continuity is "good", if continuity mode is enabled.

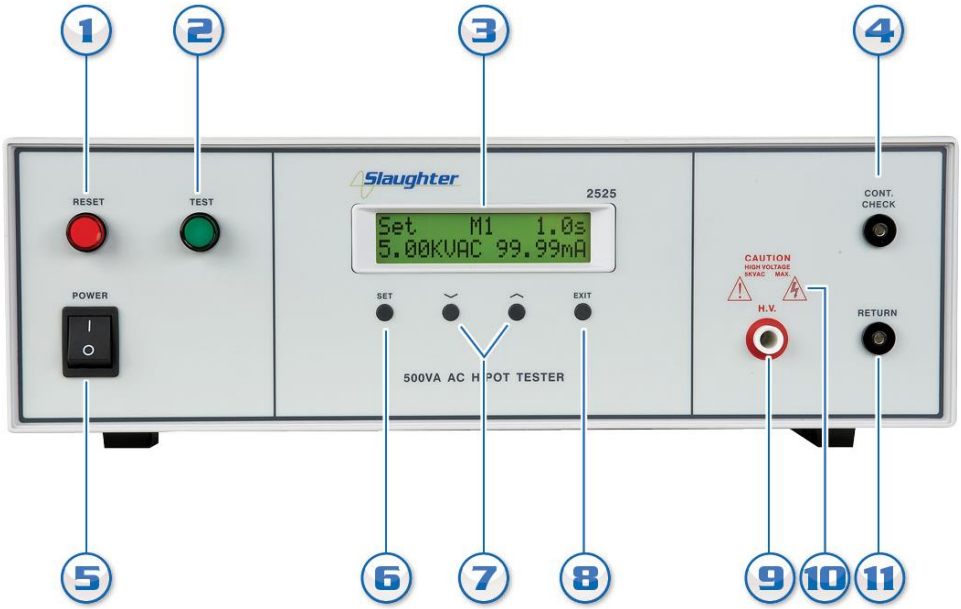
3. **LCD DISPLAY:** The Liquid Crystal Display is the main readout for the operator and programmer of the test settings and test results.

4. **CONTINUITY CHECK OUTPUT JACK:** For the connection of the detachable 5 foot (1.52 m) black return test lead or three prong receptacle adapter box. This jack is always used when performing a continuity test. Please refer to page 33 for details on connecting the adapter box between the 2525 and the device under test.

5. **POWER SWITCH:** Rocker-style switch with international ON (|) and OFF (0) markings.

6. **SET KEY:** Use this key to advance forward through the setup menus.

2525 FRONT PANEL CONTROLS



7. **UP ARROW (∧) & DOWN ARROW (∨):** Use these keys to increment or decrement numeric values in the setup mode. This key is also used to toggle ON/OFF functions. Also may be used to increase output voltage during a test in 10 volt increments.

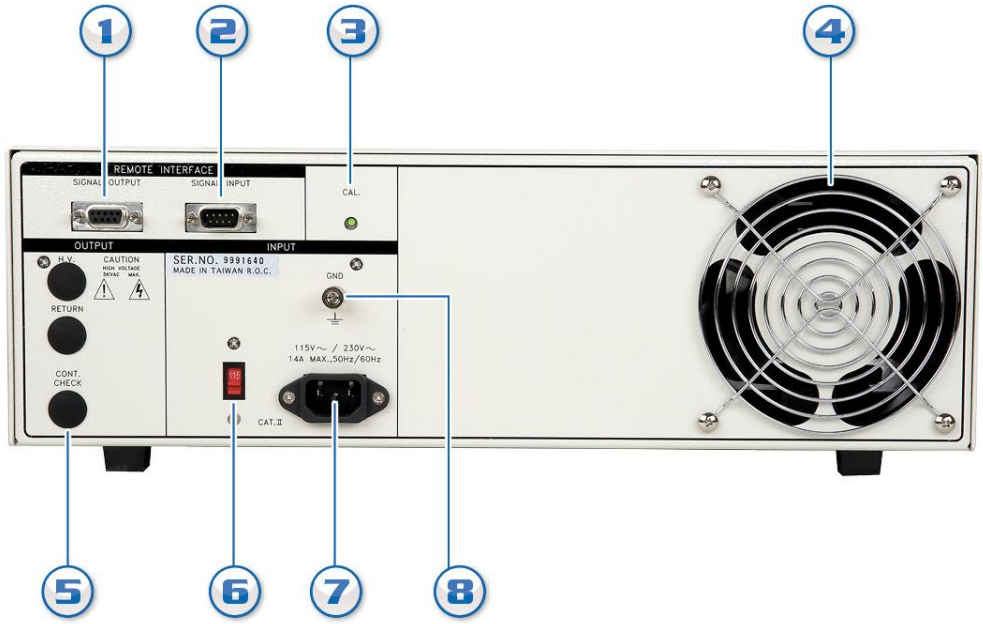
8. **EXIT KEY:** Use this key when you desire to enter the **Run Mode** to initiate a test.

9. **HIGH VOLTAGE OUTPUT JACK:** For the connection of the detachable 5 foot (1.52 m) red high voltage test lead. The silicone rubber insulation is flexible for easy handling and is rated at 30KVDC. The jack is recessed for safety when this lead is not being used.

10. **HIGH VOLTAGE ARROW (LED INDICATOR):** This indicator flashes to warn the operator that high voltage is present at the high voltage output terminal.

11. **RETURN OUTPUT JACK:** For the connection of the detachable 5 foot (1.52 m) black return test lead. This lead is always used when performing a test.

2525 REAR PANEL CONTROLS



1. **REMOTE INTERFACE SIGNAL OUTPUT:** 9 pin D subminiature female connector which provides; Pass, Fail and Test in process signals

2. **REMOTE INTERFACE SIGNAL INPUT:** 9 pin D subminiature male connector which provides remote control access over Test, Reset and Interlock.

3. **CALIBRATION ENABLE KEY:** To enter the calibration mode press this key while the instrument is being powered ON.

4. **THERMAL FAN:** To cool the instrument.

5. **REAR PANEL OUTPUT (OPTIONAL):** The Rear Outputs option gives the user the capability to access the High Voltage, Current and Return from the rear panel. These outputs are in parallel with the front panel output.

6. **INPUT POWER SWITCH:** Line voltage selection is set by the position of the switch. In the down position it is set for 115 volt operation, in the up position it is set for 230 volt operation.

7. **INPUT POWER RECEPTACLE:** Standard IEC 320 connector for connection to a standard NEMA style line power (mains) cord.

8. **CHASSIS GROUND (EARTH) TERMINAL:** This safety terminal should be connected to a good earth ground before operation

Introduction

This section contains information for the unpacking, inspection, preparation for use and storage of your Slaughter Company, Inc., product.

Unpacking and Inspection

Your instrument was shipped in a custom foam insulated container that complies with ASTM D4169-92a Assurance Level II Distribution Cycle 13 Performance Test Sequence.

If the shipping carton is damaged, inspect the contents for visible damage such as dents, scratches, or broken meters. If the instrument is damaged, notify the carrier and the Slaughter Company customer support department immediately. Please save the shipping carton and packing material for the carrier's inspection. Our customer support department will assist you in the repair or replacement of your instrument. Please do not return your product without first notifying us and receiving an RMA (return materials authorization) number.

Safe Lifting and Carrying Instructions

Proper methods of lifting and carrying can help to protect against injury. Follow the recommendations below to ensure that instruments are handled in a safe manner.

- Determine if the instrument can be lifted by one individual or requires additional support.
- Make sure that your balance is centered and your feet are properly spaced, shoulder width apart behind the instrument.
- Bend at the knees and make sure your back is straight.
- Grip the instrument with your fingers and palms and do not lift unless your back is straight.
- Lift up with your legs, not your back.
- Keep the instrument close to your body while carrying.
- Lower the instrument by bending your knees. Keep you back straight.

Contents of the Carton

Inside the carton should be the following:

Description	SLA Part Number
2525 Instrument	2525 500VA Hipot Tester
High Voltage Cable	102-050-913
Return Cable	102-069-904
High Voltage Clip	102-055-913
Fuse	99-10168-01, 15 Amp, fast acting 250VAC
Interlock Connector	99-10040-01
Line Cord*	125-013-001 Standard

Description	SLA Part Number
SLA Series Instrument	2503/2510/2550
High Voltage Cable	102-055-913
Return Cable	102-069-904
Fuse	99-10097-01, 3.15 Amp, fast acting 250VAC
Interlock Connector	99-10040-01
Line Cord*	125-013-001 Standard

*The Line Cord listed is American. Other combinations of the Line Cord are available upon request.

WARNING Only accessories which meet the manufacturer's specification shall be used.

Preparation for Use

Power Requirements and Line Voltage Selection

CAUTION This instrument requires a power source of either 115 volts AC ± 10%, 47-63 Hz single phase or 230 volts AC ±10%, 47-63 Hz single phase. Please check the rear panel to be sure the proper switch setting is selected for your line voltage requirements before turning your instrument on (model 4320 only). In addition, please be sure the correct fuse is selected and installed while the instrument is in the off position.

Do not switch the line voltage selector switch located on the rear panel while the instrument is on or operating (model 4320 only). This may cause internal damage and represents a safety risk to the operator.

NOTE
For operation at 115 Volts AC and 230 Volts AC use a 15A fast acting fuse.

Power Cable

WARNING **BEFORE CONNECTING POWER TO THIS INSTRUMENT, THE PROTECTIVE GROUND (EARTH) TERMINALS OF THIS INSTRUMENT MUST BE CONNECTED TO THE PROTECTIVE CONDUCTOR OF THE LINE (MAINS) POWER CORD. THE MAIN PLUG SHALL ONLY BE INSERTED IN A SOCKET OUTLET (RECEPTACLE) PROVIDED WITH A PROTECTIVE GROUND (EARTH) CONTACT. THIS PROTECTIVE GROUND (EARTH) MUST NOT BE DEFEATED BY THE USE OF AN EXTENSION CORD (POWER CABLE) WITHOUT A PROTECTIVE CONDUCTOR (GROUNDING).**

This instrument is shipped with a three-wire power cable. When this cable is connected to an appropriate AC power source, this cable connects the chassis to earth ground. The type of power cable shipped with each instruments depends on the country of destination.

Operating Environment

This equipment is intended for indoor use only. The equipment has been evaluated according to Installation Category II and Pollution Degree 2 as specified in IEC 664.

This instrument may be operated within the following environmental conditions:

Temperature…….41° - 104° F (5° - 40° C)

Relative humidity …….0 - 80%

Altitude ……6,560 feet (2,000 meters)

WARNING Do not block any ventilation openings to prevent over heating of the equipment. Keep the ventilation slits uncovered during operation. Failure to do so could cause the instrument to overheat and may damage internal components.

If the instrument is used in a matter not specified by the manufacturer, the protection provided by the instrument may be impaired.

STORAGE AND SHIPMENT

Environment

This instrument may be stored or shipped in environments with the following limits:

Temperature.....-40° - 167° F (-40° - 75°C)

Altitude..... 50,000 feet (15,240 meters)

The instrument should also be protected against temperature extremes which may cause condensation within the instrument.

Field Installation Options

There are no field installable options on the model 2525.

QUICK START

This quick start guide presumes the operator has some familiarity with hipot testing and desires to use the **"default"** settings on the instrument. The default settings shown will remain in memory unless you choose to override them with your own test program. The instrument default settings are as follows:

DEFAULTS

- **Input Voltage:** 115 or 230 volts AC, country specific (rear-panel switch selectable)
- **Lock:** OFF (2525)
- **Voltage Output:** 1.50 kV DC (2503/2550 DC mode)
  1.24 kV AC (2510/2525/2550 AC mode)
- **Current Trip:** HI-LMT: 10.00 mA (2525)
  HI-LMT: 5.00 mA (2510/2550 AC mode)
  HI-LMT: 3.00 mA (2503/2550 DC mode)
- **Dwell:** 1.0 (1 second)
- **Ramp:** 0.0 (0.1 second)
- **AC Output Frequency:** 60Hz

1. Unpack this instrument from its special shipping container.

2. Locate a suitable testing area and be sure you have read all safety instructions for the operation of the instrument and suggestions on the test area set-up in the SAFETY section of this manual. Locate a three prong grounded outlet. Be sure the outlet has been tested for proper wiring before connecting the instrument to it.

3. Check to be sure the correct input line voltage has been selected on the rear panel (either 115 volts AC or 230 volts AC). Connect the power input plug into its socket on the rear panel of the instrument. Connect the male end of the plug to the outlet receptacle.

4. Turn on the POWER switch located on the lower left hand side of the front panel. Upon powering the instrument up a POWER ON SELF TEST (POST) will automatically be performed. This test will check for the condition of all critical components. You will see the model number and then firmware version number briefly appear on the LED readout and then clear itself.

5. If the instrument **DEFAULTS** are acceptable, then be sure to connect the appropriate test leads to the device under test (DUT) or test fixture. Be sure to connect this safety ground to a suitable known good ground before energizing this instrument, then connect the return lead first (black) to the test fixture or item followed by the high voltage output lead (red).

6. Models 2503/2510/2550 and 2525 are equipped with a featured referred to as "Remote Interlock". Remote Interlock is a feature that utilizes a set of closed contacts to enable the instruments output. In other words, if the Interlock contacts are open, the output of the instrument will be disabled. Remote Interlock could also be referred to as a remote system lockout, utilizing "Fail When Open" logic. **If the Interlock contacts are open, the instrument will not conduct a test if the TEST button is pressed.**

If the Interlock contacts are opened during a test, the test will abort. The hardware has been configured to provide the interlock connections on pins 4 and 5 of the 9-pin, d-sub input connector located on the back of the unit. The instrument can still be used without the external interlock device as long as the Interlock Connector (99-10040-01 provided with unit) is plugged into the input connector. If there is nothing connected to the input port to provide a connection to the interlock, the instrument will not perform tests.

7. Please check your connections to be sure they are making good contact and that the test station or area is clear of debris and other personnel.

WARNING DO NOT TOUCH THE DEVICE UNDER TEST ONCE THE TEST HAS BEEN STARTED.

To initiate the test press the green TEST button on the front panel. The instrument will then cycle ON and begin the automated test using the defaults. If a failure occurs you will HEAR an audible alarm go off. To stop the alarm you must depress the RED button marked RESET. This will silence the alarm and reset the instrument to begin another test. This RESET button must also be used when the Dwell mode is set to "ON" or "0.0" to ABORT a test and cut off the HIGH VOLTAGE.

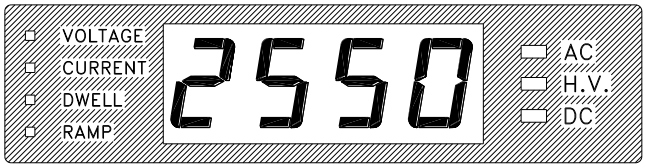
When HIGH VOLTAGE is present a RED flashing indicator located to the right of the display will remain flashing until the HIGH VOLTAGE is OFF. If the device under test PASSED the test then short beep will sound. In the case of a FAIL condition the instrument will provide a visual and audible alarm. Depressing the RESET button will reset the instrument alarm.

SETUP INSTRUCTIONS FOR MODELS 2503/2510/2550

CAUTION Check to be sure the correct input line voltage has been selected on the rear panel (either 115 volts AC or 230 volts AC). Connect the power input plug into its socket on the rear panel of the instrument. Connect the male end of the plug to the outlet receptacle.

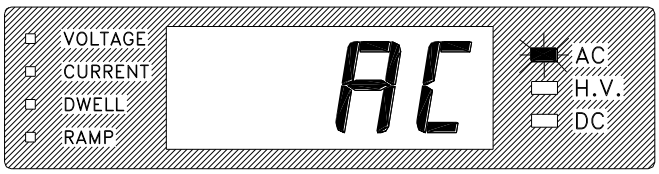
Please be sure that the safety ground on the power line cord is not defeated and that you are connected to a grounded power source. Also connect the rear panel chassis ground for additional safety.

Turn on the POWER switch located on the lower left hand side of the front panel. Upon powering the instrument up a POWER ON SELF TEST (POST) will be automatically performed. This test will check for the condition of all critical components. In addition the display will briefly flash the actual model number and then firmware version number. For example, for the model 2550 the model number will indicate as follow:

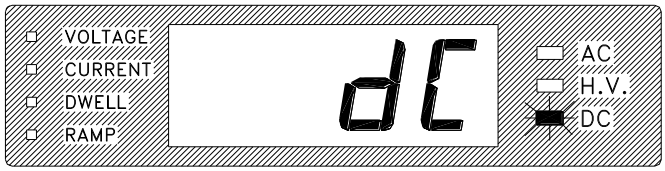


Then the instrument will recall the last setup that was active. The digital display will show 0.00. The Voltage LED, or Current LED, or Dwell LED will be illuminated depending upon the setting, and the AC or DC LED (2550 only) will be illuminated depending upon the programmed setting. On Model 2550, to view the last settings, press the SET key once and the AC or DC LED will flash and AC or DC will be displayed on the digital display. Pressing the SET key again will cause the Voltage LED to flash and the display will show the programmed voltage. On Models 2503 and 2510 the voltage LED will flash and the display will show the programmed voltage on the initial pressing of the SET key. Pressing the SET key again will cause the Current LED to flash and the display will show the programmed trip current. Press the EXIT key to ready the instrument for testing.

1. To set the AC or DC Testing Mode (Model 2550 only)
Press the SET key and the AC or the DC LED will illuminate and flash.



OR

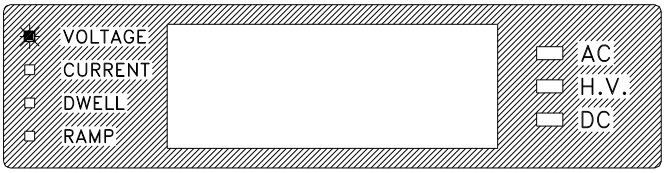


Use the Up/Down Arrow keys to toggle between the AC mode and the DC mode. The LED indicator will flash and the digital display will display AC or DC.

Note: When switching between AC and DC modes, always check ALL setting for voltage, current, ramp and dwell. The instrument DOES NOT retain separate settings for the AC mode and the DC mode.

2. To set the Output Test Voltage

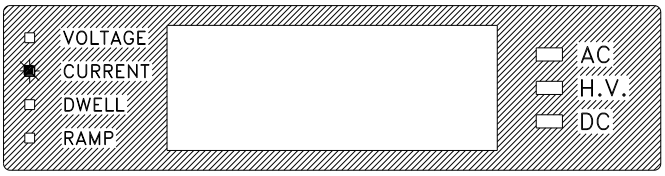
Press the SET key until the Voltage LED is illuminated and flashing



Please use the Up/Down Arrow keys to enter the desired test voltage, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. The maximum voltage, which may be entered, is 5.00kV.

3. To set the High Leakage Current Limit

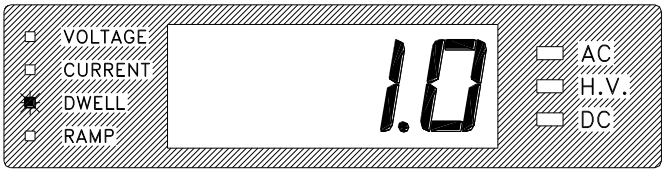
Press the SET key until the Current LED is illuminated and flashing.



Use the Up/Down Arrow keys to enter the leakage current high limit setting, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. The unit of measure is in milliamperes with the maximum setting of 10.00 mA AC for the model 2510 and 2550 and 3mA DC for the model 2503 and DC mode of the model 2550.

4. To set the Dwell function

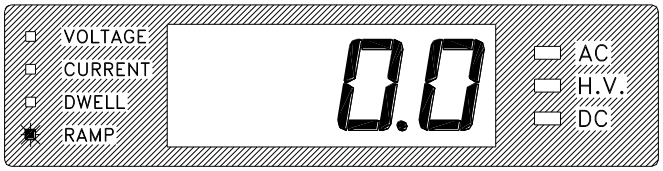
Press the SET key until the Dwell LED is illuminated and flashing. Dwell time is the length of time the instrument will apply the programmed test voltage.



Use the Up/Down Arrow keys to set the dwell time, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. If the Dwell is set to 0.0, the instrument will operate in a continuous ON mode when the TEST button is pressed and released. It will stop when the DUT (Device Under Test) goes into failure or the manual RESET button is pressed. If the Dwell is set to 1.0, the instrument will test for one second when the TEST button is pressed and released. If the Dwell is set to 60.0, the instrument will test for sixty seconds when the TEST button is pressed and released. The instrument will 'beep' at the end of a timed test. Pressing the red RESET button will terminate the test in progress.

5. To set the Ramp function

Press the SET key until the Ramp LED is illuminated and flashing. The ramp time is the time the instrument will take to reach the full programmed test voltage.



Use the Up/Down Arrow keys to increase or decrease the Ramp time, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. When set to 0.0, the ramp time is fixed at 0.1 seconds to reach full test voltage. Ramp time may be set up to 999.9 seconds. The red RESET button may be used to terminate the test at any time.

SETUP for 120KΩ Testing Requirements (AC ONLY)

Set Dwell for 1.0 or 60.0 seconds.

1. First clip Ground Lead to the DUT, and then clip the High Voltage clip lead to the DUT.
2. Press TEST button and release.

SETUP for Optional Ground Continuity Testing (2503/2510/2550)

1. Switch the instrument to Off.

2. Plug the black ground-lead's banana plug into the CONT. CHECK socket on the back panel and switch the CONT. TEST switch to ON.

3. Plug the leads from the Remote Receptacle Box into the H.V. socket and the RETURN socket on the front panel of the instrument.

FIELD INSTALLATION OF OPTIONS

Ground Continuity Sensing

1. Installation is simple and requires only a number 1 Phillips screwdriver.

2. Switch the instrument OFF and unplug the line-cord from the wall outlet.

3. Remove the test probes and the line cord from the instrument.

4. Remove and save the two (2) screws holding the blanking plate onto the rear of the instrument.

5. Please observe the upper and lower card guides inside the opening.

6. Grasp the handle on the continuity board assembly and align the PC board into the card guides. Slide the card straight in until resistance is felt approximately 1/8 inch before the metal plate on the continuity assembly reaches the back panel. A firm push will seat the card. The screw holes should be aligned.

7. Install the screws from the blanking plate.

The installation is complete.

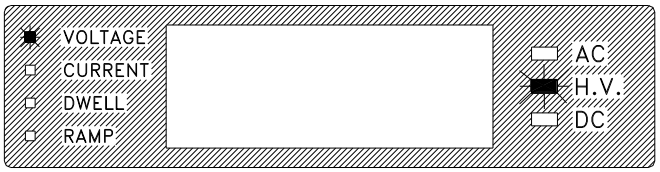
OPERATING INSTRUCTIONS FOR MODELS 2503/2510/2550

1. After the instrument's test parameters are programmed, connect the appropriate test leads to the device under test (DUT) or test fixture. Connect the safety ground (on the rear panel) to a suitable known good ground before energizing this instrument. Then connect the return lead first to the test fixture or the DUT followed by the high voltage lead.

Check your connections to be sure they are making good contact and that the test station or area is clear of debris or other personnel.

WARNING **DO NOT TOUCH THE DEVICE UNDER TEST ONCE THE TEST HAS BEEN STARTED.**

2. To initiate a test, press the TEST button on the front panel. The red High Voltage LED indicator will flash and the display will show the test voltage, or current, or time, dependent upon the setting. If the Ramp function is set and voltage meter is selected, the voltage will begin at 0 and step up to the programmed voltage. The rate at which the voltage increases is dependent upon the ramp time.



3. If Dwell is set to 0.0, the instrument will continue to output voltage indefinitely or until a failure occurs or the manual RESET button is pressed. If Dwell is set to 1.0 or 60.0, the voltage will continue only until the dwell time has elapsed, then shut off.

4. If the DUT passed the test a short audible beep will be activated. The instrument is now ready to perform another test.

5. If there is a failure in the DUT during the test, the voltage will shut off, the red indicator light will illuminate on the RESET button and an alarm will sound.

The red light will illuminate and alarm will sound when the failure occurs and will be reset automatically when the test restarts. That process may repeat many times until the dwell time has elapsed. An operator can elect to abort the test at any time by pressing the RESET button.

6. To stop the alarm, please press the RESET button once. The alarm will stop. The instrument is now ready for the next test. If the RESET button is pressed again, the data on the display screen will be cleared.

7. To see the results parameters after the test has expired, please press the Up/Down Arrow keys. Results of Voltage, Current, and Dwell parameters will be toggled when Up or Down key are pressed. Results data will be lost only when TEST button is pressed to initiate next test.

8. To select the desired parameter that the display will indicate during the next test, please press the EXIT key. The EXIT key will toggle the display between the voltmeter, current meter, and timer. The EXIT key is active also during the test, so the desired parameters can be changed at any time while the test in process.

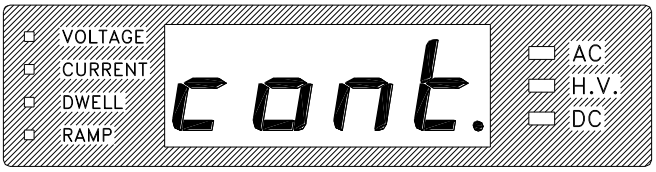
CONTINUITY

The continuity test is a passive test.

Set the CONT. TEST switch on the rear panel to ON position.

Plug the DUT's line cord into the remote receptacle box and connect the Continuity Check lead from the rear panel to the exposed 'dead metal' parts of the DUT.

If ground continuity is made, the green light in the TEST button will illuminate. Pressing the TEST button will initiate the high voltage test. If continuity is not made or is lost during the test, a reject will occur and the display will show "**cont.**".



Press the RESET button to ready the instrument for another test.

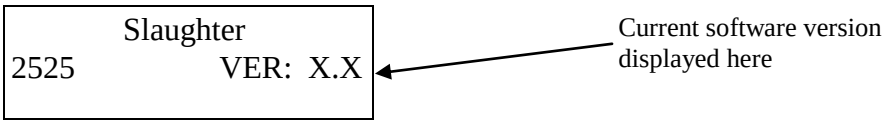
SETUP INSTRUCTIONS FOR MODEL 2525

CAUTION Check that the correct input line voltage has been selected on the rear panel, either 115 volts AC or 230 volts AC. Plug the line cord into its socket on the rear panel of the instrument. Connect the male end of the plug to the outlet receptacle.

Please be sure that the safety ground on the power line cord is not defeated and that you are connecting to a grounded power source. Also, connect the rear panel chassis ground for additional safety.

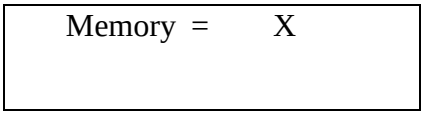
Turn on the POWER switch located on the lower left-hand side of the front panel. Upon powering the instrument up a POWER ON SELF TEST (POST) will be automatically performed. This test will check for the condition of the ram chips, PCB's and other critical components. In addition, the display will show the following message with the model and version number.

The instrument will recall the last setup that was active and the display will show the parameters that were programmed into the unit. The instrument is now ready for



operation.

1. **To Select the Memory location**
   Please press the SET key until the display shows



Use the Up/Down arrow keys to select memory locations 1 through 5. After selecting the memory, press the SET key to view the settings that have been recalled from memory or to make any changes to these settings.

To store any changes to the settings press the Exit key. The parameters are automatically updated into the memory location that was selected, when exiting to the test mode.

2. **To set the Output Test Voltage**
   Please press the SET key until the display shows:

Voltage= X.XX KV

Please use the Up/Down Arrow keys to enter the desired test voltage, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. The maximum voltage, which may be entered, is 5000 volts AC.

3. To set the High Leakage Current Limit

Please press the SET key until the display shows:

HI-LMT =XX.XX mA

Use the Up/Down Arrow keys to enter the leakage current high limit setting, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. The unit of measure is in AC milliamperes with 0.10 milliamperes as the minimum setting.

4. To set the Low Leakage Current Limit

Please press the SET key until the display shows:

LO-LMT = X.XX mA

Use the Up/Down Arrow keys to enter the leakage current low limit setting, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. The unit of measure is in AC milliamperes with 0.00 milliamperes as the minimum setting.

5. To set the Ramp Time

Please press the SET key until the display shows:

Ramp-T = X.X s

Use the Up/Down Arrow keys to enter the ramp time setting then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. If the ramp time is set to "0", the instrument will raise the voltage up to the test voltage in a fixed ramp time of 0.1 seconds and then begin the dwell cycle. The minimum ramp time setting is 0.2 seconds with 0.1 second resolution.

6. To set the Dwell Time

Please press the SET key until the display shows:

Timer = X.X s

Use the Up/Down Arrow keys to enter the dwell time setting, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key. If the dwell time is set to "0", the instrument will operate in a continuous ON mode when the test button is depressed and released. It will stop when the DUT (Device Under Test) goes into failure or the manual reset button is pressed. The minimum dwell time setting is 0.2 seconds with 0.1 second resolution.

7. To setup the Ground Continuity Check

Please press the SET key until the display shows:

Continuity=ON

or

Continuity=OFF

Press the Up/Down Arrow key to select the "ON" or "OFF" function of the Ground Continuity Check mode, the display will show the set status immediately.
Press the EXIT key to exit to the test mode or toggle to another setting using the SET key.

If the Continuity Function is set to "ON," the Ground Continuity cable has to be connected between the "Cont. Check" connector on the instrument panel and the chassis of the DUT. The instrument will test the ground connection of the DUT automatically. If continuity is present a green indicator will be illuminated on the TEST switch and the operator may proceed with the hipot test. The 2525 will continue to test the ground connection of the DUT during other tests. If no continuity is present while the operator tries to initiate a test, the instrument will signal a continuity failure.

8. To set the Frequency 50/60 Hz

Please press the SET key until the display shows:

Freq =60 HZ

or

Freq =50 HZ

Press the Up or Down Arrow keys to toggle the frequency selection; 50 or 60 hertz, then press the EXIT key to exit to the test mode or toggle to another setting using the SET key.

9. To lock or unlock the front panel keyboard

The 2525 is equipped with a lockout mode. Within this mode, you can lockout all front panel control functions except TEST and RESET.

You can toggle this selection only from a power OFF state. Please turn the power switch to the off position then press and hold the SET key, then turn the power ON. Momentarily, you will see one of the following screens to indicate if the keys are locked or unlocked:

Key Lockout	or	Key Unlock

To change the key lock function power down the instrument and repeat the process.

OPERATION INSTRUCTIONS FOR MODEL 2525

If the instruments defaults are acceptable then be sure to connect the appropriate test leads to the device under test (DUT) or test fixture. Be sure to connect the safety ground (on the rear panel) to a suitable known good ground before energizing this instrument. First, connect the return lead to the test fixture or DUT, then connect the high voltage lead.

Check your connections to be sure they are making good contact. Clear the area of any debris that may create a hazardous situation and ask any unnecessary personnel to leave the area.

DO NOT TOUCH THE DEVICE UNDER TEST ONCE THE TEST HAS BEEN STARTED.

Please follow the setup procedures to set the parameters. The display will show the Dwell or Delay Timer value, the Test Voltage value, and the High Limit Setting and memory location.

Set	MX	XXX.Xs
X.XXKVAC		XX.XxmA

1. Ground Continuity Check

If you are performing a Ground Continuity Check, the Ground Continuity must be set to the "ON (Enabled)" position. The ground check cable has to be connected properly to the chassis of the DUT and the green indicator on the TEST switch should be illuminated before activating the Test switch. Otherwise, the instrument will signal a *continuity failure* when the test switch is activated. Please refer to page 33 for the proper test connections using the adapter box, to test items terminated in a three-prong plug.

The display will show:

CONT.	MX	XXX.Xs
- .- - KVAC	- -.- - mA	

If you are not performing a Ground Continuity Check, the Ground Continuity must be set to the "OFF" (Disabled) position. It is not necessary to connect the "Cont. Check" cable since this test will not be performed if the circuit is disabled. The instrument will proceed with the Hipot Test when the "Test" switch is activated.

2. Initiating a Test

To initiate a test, press the TEST switch on the front panel. The red High Voltage Arrow indicator will flash and the display will immediately show:

Ramp MX XXX.Xs X.XXKVAC XX.XxmA	Dwell MX XXX.Xs X.XXKVAC XX.XxmA

The instrument will continue to output the desired voltage for the duration of the selected dwell time.

3. Short Circuit

If there is a short circuit in the DUT during the test, the red indicator light will illuminate on the RESET switch and an alarm will sound. The display will show:

HI-LMT MX XXX.Xs X.XXKVAC OFL mA

4. Flash Over

If a flash over occurs in the DUT during the test, which results in an OFL condition due to the current exceeding the maximum metering range, Breakdown will be indicated as follows. The red indicator light will illuminate on the RESET switch and an alarm will sound. The display will show:

HI-LMT MX XXX.Xs X.XXKVAC OFL mA

5. Leakage Current Exceeding the Metering Range

If the leakage current exceeds the metering range and neither a short circuit nor flash over occurred, the red indicator light will illuminate on the RESET switch and an alarm will sound. The display will show:

HI-LMT MX XXX.Xs X.XXKVAC OFL mA

6. High Limit

If the leakage current exceeds the high limit setting, but does not exceed the metering range, the red indicator light will illuminate on the RESET switch and an alarm will sound. The display will show:

HI-LMT MX XXX.Xs X.XXKVAC XX.XxmA

7. Low Limit

If the leakage current does not exceed the low limit setting, the red indicator light will illuminate on the RESET switch and an alarm will sound. The display will show:

LO-LMT MX XXX.Xs X.XXKVAC XX.XxmA

8. Resetting the Alarm

To stop the alarm, please press the RESET switch once. The alarm will stop and the display will retain the failure information. If the RESET switch is pressed again, the data on the display screen will be cleared and the display will indicate the setting data from the last test. The instrument is now ready for the next test.

9. Pass

If the DUT passed the test, the instrument will output a short audible beep tone to indicate the DUT has passed the test. The display will show:

Pass MX XXX.Xs X.XXKVAC XX.XxmA

The instrument is now ready to perform another test.

10. Aborting a Test

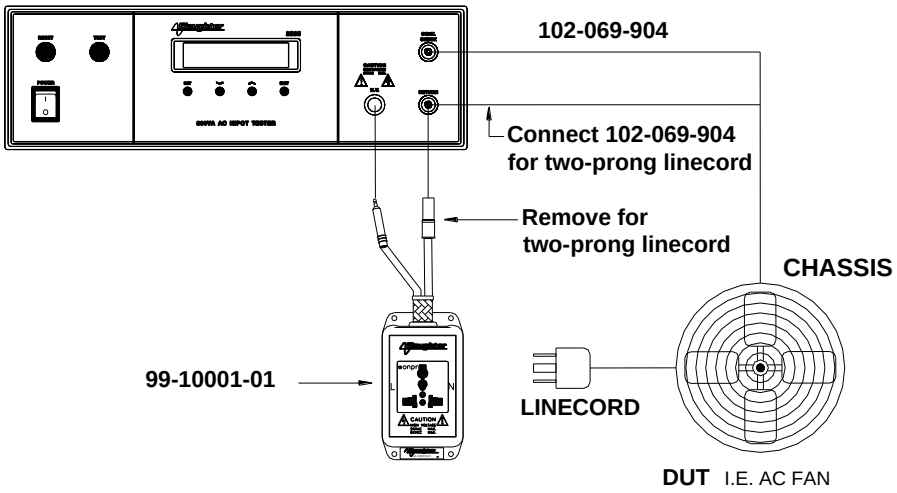
If the operator elects to abort a test in process, this can be accomplished by pressing the RESET switch at anytime. The instrument will stop the test process immediately and the display will show:

Abort MX XXX.Xs X.XXKVAC XX.XxmA

Press the TEST button to initiate another test.

ADAPTER BOX CONNECTION MODEL 2525

The following diagram shows how to connect the adapter box to the model 2525 and to the device under test.



The adapter box allows you an easy way to connect an item that is terminated in a two or three-prong line cord. If you are testing a product which is terminated in a three-prong plug, you are also required to perform a continuity or ground bond test on the ground conductor of the DUT to the chassis or dead metal of the product. With the 2525, you can perform both the hipot and continuity tests at the same time by activating the continuity function on the instrument.

When the 2525 tests the ground conductor of the line cord, if the resistance of the ground conductor exceeds 1Ω, the hipot will signal a continuity failure. If continuity is present, high voltage is applied to both conductors of the line cord to insure that all current carrying conductors in the primary circuit are tested. When testing products with two prong plugs, do not activate the continuity circuit.

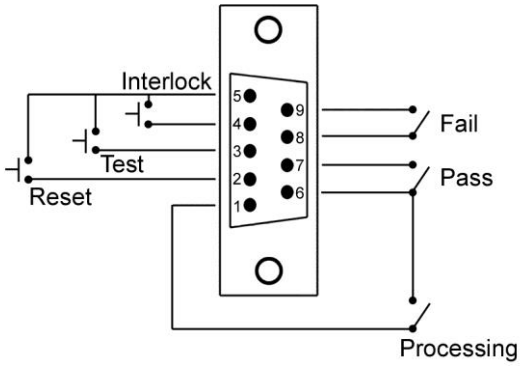
REMOTE INTERFACE FOR MODELS 2503/2510/2550

All inputs are connected through the 9-pin "D" type connector mounted on the back panel of the unit. This connector mates with the standard 9-pin "D" type subminiature connector included with the unit. For best performance, a shielded cable should be used. To avoid ground loops, the shield should not be grounded at both ends of the cable.

The remote interface includes a SAFETY INTERLOCK. This interlock must be closed to allow a test to start. The SAFETY INTERLOCK is wired between pins 4 and 5 of the interface connector. For manual operation, the provided 9-pin "D" type connector has a jumper between pins 4 and 5. ***This mating connector must be in place for manual operation.*** For remote operation, the interlock can be appropriately connected to test station guarding.

The interface allows remote operation of the TEST and RESET functions. A normally open momentary switch across pins 3 and 5 allows remote operation of the TEST function. A normally open momentary switch can also be wired across pins 2 and 5 to allow remote operation of the RESET function. The TEST and RESET buttons on the front panel remain active during remote operation.

The remote interface also provides signals to remotely monitor the PASS, FAIL, and PROCESSING conditions. These signals are provided by three normally open internal relays that switch on to indicate the current condition of the tester. These are normally open, free contacts and do not provide any voltage or current. The ratings of these contacts are 1Amp/120VAC (1Amp/24VDC).
The outputs are as follows:



Pins 1 and 6 provide the PROCESSING signal.
Pins 6 and 7 provide the PASS signal.
Pins 8 and 9 provide the FAIL signal.

A description of the output relay operation follows:

PROCESSING – The relay contact closes the connection between pin 1 and pin 6 while the instrument is performing a test. The connection is opened at the end of a test.

PASS – The relay contact closes the connection between pin 6 and pin 7 after detecting that the device under test passed the test. The connection is opened when the next test is initiated or the reset function is activated.

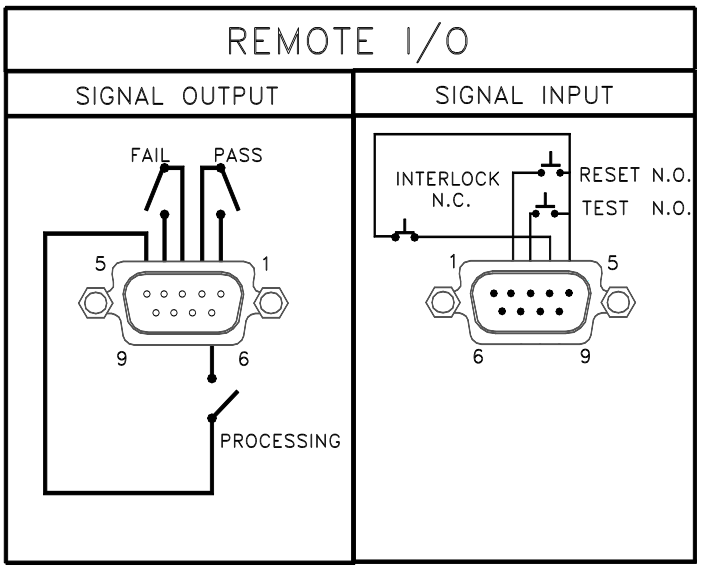
FAIL – The relay contact closes the connection between pin 8 and pin 9 after detecting that the device under test failed the test. The connection is opened when the next test is initiated or the reset function is activated.

REMOTE INTERFACE FOR MODEL 2525

Two 9 pin "D" type connectors are mounted on the rear panel which provide REMOTE-INPUT-OUTPUT control and information. These connectors mate with standard 9 pin D-subminiature connector provided by the user. The output mates to a male (plug) connector while the input mates to a female (receptacle) connector. For best performance, a shielded cable should be used. To avoid ground loops the shield should not be grounded at both ends of the cable. Suggested AMP part numbers for interconnecting to the Remote I/O are shown below.

205204-4	PLUG SHELL WITH GROUND INDENTS
205203-3	RECEPTACLE SHELL
745254-7	CRIMP SNAP-IN PIN CONTACT (for plug)
745253-7	CRIMP SNAP-IN SOCKET CONTACT (for receptacle)
745171-1	SHIELDED CABLE CLAMP (for either plug or receptacle)
747784-3	JACKSCREW SET (2)

Remote Interface Rear Panel:



- **Signal Outputs on Remote I/O**
  The rear panel connector provides three output signals to remotely monitor PASS, FAIL, and PROCESSING conditions. The monitoring signals are provided by three normally open internal relays, that switch on to indicate the current condition of the tester. These are normally open free contacts and will not provide any voltage or current. The ratings of the contacts are 1A / 250 VAC (0.5 ADC). The signal outputs are provided on the 9 pin female type D connector. Below is a listing that indicates what conditions activate each pin. When a terminal becomes active the relay closes thereby allowing the external voltage to operate an external device.

Pins 1 and 2 provide the PASS signal.
Pins 3 and 4 provide the FAIL signal.
Pins 5 and 6 provide the PROCESSING signal.
The following describes how the relays operate for each test condition.

PROCESSING – The relay contact closes the connection between pin (5) and pin (6) while the instrument is performing a test. The connection is opened at the end of the test.

PASS – The relay contact closes the connection between pin (1) and pin (2) after detecting that the item under test passed all tests. The connection is opened when the next test is initiated or the reset function is activated.

FAIL – The relay contact closes the connection between pin (3) and pin (4) after detecting that the item under test failed any test. The connection is opened when the next test is initiated, or the reset function activated.

- **Signal Inputs on Remote I/O**
  The model 2525 remote connector enables remote operation of the TEST, RESET and REMOTE INTERLOCK function. When the PLC remote function is (ON) the test switch on the front panel will be disabled to prevent a test from being activated through the test switch. A normally open momentary switch can then be wired across pins 3 and 5 to allow remote operation of the TEST function. A normally open momentary switch can also be wired across pins 2 and 5 which allows remote operation of the RESET function. For safety, the front panel RESET switch remains active even when a remote reset switch is connected so that high voltage can be shut down from either location.

  Remote Interlock is a feature that inverts the present reset logic on the instrument from normally opened (must close contacts to activate the reset) to normally closed (must open contacts to activate the reset). Hardware and software have been configured to provide the interlock connections on pins 4 and 5 of the Remote Interface, Signal Input port. This reset scheme is designed for use with an external safety interlock device that utilizes a “Fail-When-Open” configuration on its output interface. The instrument can still be used without the external reset device as long as the Interlock Connector (provided with unit) is plugged into the Remote Interface, Signal Input port. If there is nothing connected to the Remote Interface, Signal Input port to provide a connection to the interlock (reset), then the instrument will not function.

MODELS 2503/2510/2550 OPTIONS

Introduction

This section contains a list and descriptions of available factory installed options at the time of this printing. The list of options contains an option code number which can be referenced on the model option label on the rear panel of the unit when options are present.

Model Option Label

On the rear panel of the instrument, you will find a label that contains the option code.

For example, your options code would appear as follows:
fitted with option 01 ..... OPT: 01

2503/2510/2550 Options

Option List

Code	Description
01	Ground Continuity

CALIBRATION PROCEDURE MODELS 2503/2510/2550

This instrument has been fully calibrated at the factory in accordance to our published specifications. It has been calibrated with standards traceable to NIST. You will find in this manual a copy of the "Certificate of Calibration". It is recommended that you have this instrument recalibrated and a safety check done at least once per year. Slaughter recommends you use "Calibration Standards" that are NIST traceable, or traceable to agencies recognized by NIST to keep this instrument within published specifications.

End user metrology standards or practices may vary. These metrology standards determine the measurement uncertainty ratio of the calibration standards being used. Calibration adjustments can only be made in the Calibration mode and calibration checks or verification can only be made while operation in Test mode.

Calibration Equipment Required:
The following standard equipment will be needed to properly calibrate your instrument.

- A Standard AC Voltmeter with 5,000 Volts range (models 2510, 2550 only)
- A Standard DC Voltmeter with 5,000 Volts range (model 2503 only)
- A Standard AC Milliammeter with 10 mA range (models 2510, 2550 only)
- A Standard DC Milliammeter with 3 mA range (model 2503 only)

1. Calibration Initialization
To enter the calibration mode the instrument must be in the OFF position. Using a pen or small screwdriver, press and hold the recessed calibration key on the rear panel, then turn on the input POWER switch. The display will show: **CAL.**

2. To calibrate AC Voltage (models 2510, 2550 only)
Please connect a standard 5000V AC Voltmeter to the HV and RETURN connectors. Then press the SET key on the front panel. The instrument will provide around 5000VAC on the output connectors. The display will show a voltage around 5000 V.

Press the Up (∧) or Down (∨) arrow keys to enter the reading of the standard AC Voltmeter into the instrument. Then press SET key to store the voltage setting or press the RESET button or EXIT key to return to the calibration menu without changing the calibration setting. Press the EXIT key again to exit from the calibration mode and to return to the test mode.

3. To calibrate DC Voltage (models 2503 only)
Please connect a standard 5000V DC Voltmeter to the HV and RETURN connectors. Then press the SET key on the front panel. The instrument will provide around 5000VDC on the output connectors. The display will show a voltage around 5000 V.

Press the Up (∧) or Down (∨) arrow keys to enter the reading of the standard DC Voltmeter into the instrument. Then press SET key to store the voltage setting or press

the RESET button or EXIT key to return to the calibration menu without changing the calibration setting. Press the EXIT key again to exit from the calibration mode and to return to the test mode.

4. To calibrate AC Current (models 2510, 2550 only)

Please connect a load resistor (200 kΩ for 2510 and 2550) in series with the standard 10mA AC Milliammeter and connect these across the HV and RETURN connectors of the instrument.

Press the Down (∨) arrow key to initiate the calibration process. The instrument will provide around 1000V on the output connectors. The display will show some current.

Press the Up (∧) or Down (∨) arrow keys to enter the reading of the standard AC Milliammeter into the instrument. Then press SET key to store the current setting or press the RESET button or EXIT key to return to the calibration menu without changing the calibration setting. Press the EXIT key again to exit from the calibration mode and to return to the test mode.

5. To calibrate DC Current (models 2503 only)

Please connect the 400 kΩ load resistor in series with the standard 3 mA DC Milliammeter and connect these across the HV and RETURN connectors of the instrument.

Press the Down (∨) arrow key to initiate the calibration process. The instrument will provide around 1000V on the output connectors. The display will show some current around 2.5 mA.

Press the Up (∧) or Down (∨) arrow keys to enter the reading of the standard DC Milliammeter into the instrument. Then press SET key to store the current setting or press the RESET button or EXIT key to return to the calibration menu without changing the calibration setting. Press the EXIT key again to exit from the calibration mode and to return to the test mode.

CALIBRATION PROCEDURE MODEL 2525

This instrument has been fully calibrated at the factory in accordance to our published specifications. It has been calibrated with standards traceable to NIST. You will find in this manual a copy of the "Certificate of Calibration". It is recommended that you have this instrument recalibrated and a safety check done at least once per year. Slaughter recommends you use "Calibration Standards" that are NIST traceable, or traceable to agencies recognized by NIST to keep this instrument within published specifications. End user metrology standards or practices may vary. These metrology standards determine the measurement uncertainty ratio of the calibration standards being used.

Calibration Equipment Required:
The following equipment will be needed to properly calibrate your instrument.

- Digital Multimeter with the minimum ranges;
  AC Voltage: 5,000 volts
  AC Current: 100mA range.

- 10KΩ/100Watt resistor
  100KΩ/10Watt resistor

To enter the calibration mode the instrument must be in the OFF position. Using a pen or small screwdriver, press and hold the recessed calibration key on the rear panel, then turn on the Input Power Switch.

For model 2525 the display will show:

CAL Mode SET:V ∨:A

Press the SET key for kilovolts calibration, Down Arrow key (∨) for milliamps.

Equipment needed: STANDARD AC VOLTMETER capable of measuring 5000VAC.

Please connect a standard ac voltmeter with 5000V minimum full-scale range to the high voltage and return connectors.

Then press the SET key on the front panel. The instrument will provide around 5000VAC on the output connectors and the display will show:

Voltage= XXXX V

Please use the Up/Down Arrow keys to enter the reading off the AC Voltmeter, into the instrument. Then press the SET key to store the voltage setting. Press the EXIT or RESET key to return to the calibration menu without changing the calibration setting.

The instrument will output two short "beeps" when attempting to save a missing or bad parameter and will not allow return to the calibration menu.

1. Calibration of Dielectric Withstand Current

Equipment needed: STANDARD AC MILLIAMMETER with a range of 100mA and a fixed Resistor 10K Ohms, 100 watts.

Please connect a 10KΩ resistor in series with the standard ac milliammeter and connect these across the output leads of the instrument. Press the Down Arrow key. The instrument will provide around 1000VAC on the output and the display will show:

Current= X.XX mA

Please use the Up/Down Arrow keys to enter the reading of the standard AC milliammeter, into the instrument. Then press the SET key to store the current setting. Press the EXIT or RESET key to return to the calibration menu without changing the calibration setting.

The instrument will output two short "beeps" when attempting to save a missing or bad parameter and will not allow return to the calibration menu.

2. Save Calibration

After the calibration, the instrument has to be turned off to save the calibration parameters. The power must be turned off and on again to switch from the calibration mode to the run mode.

REPLACEMENT PARTS LIST

Rev: C, 12/18/2013 ECO 5671

Part Number	Qty	Reference Designator	Description
Models 2503, 2510, 2550			
102-050-913	1		High Voltage Probe (6ft.)
102-069-904	1		Return Lead (6ft.)
125-013-001	1		Input Power Cable (6ft.)
175-974-003	4		Leg
99-10312-01	1		Power Switch
330-113-001	1		Test Switch
330-113-002	1		Reset Switch
575-704-001	1	DSP-11	Display Board
575-705-001	1		Red LED
99-10016-01	1		Earth Connector
99-10017-01	1		Return Connector
99-10018-01	1		High Voltage Connector
99-10681-01	1		Microcontroller, 8-bit (89516AC25J)
Models 2503, 2510, 2550			
575-701-001	1	AMP-2510	Power Amplifier Board
575-703-001	1	CSW-06	Input Protection Board
99-10097-01	1		Fuse, 2A, 250V, 5x20mm, Fast Blow
150-135-003	1		Fuse Holder (20mm)
Models 2503, 2510, 2550			
102-055-913	1	-	High Voltage Clip (6ft.)
99-10040-01	1	-	Interlock Connector
Models 2503, 2510, 2550			
99-10124-02	1	2510	Main Control Board
575-691-004	1	CGC-04	Ground Continuity Check Board
Model 2510, 2550			
240-061-003	1	T1	Input Transformer
200-057-003	1	T2	High Voltage Transformer, 5.5kV, 10mA
Model 2503			
575-702-001	1	HV-2503	High Voltage Control Board
240-061-002	1	T1	Input Transformer
200-057-002	1	T2	High Voltage Transformer, 4kV, 8mA
Model 2550			
99-10098-01	1	HV-2550	High Voltage Control Board
Model 2525 only			
99-10625-01	1	CHV-4500	High Voltage Control Board
99-10324-01	1	CKB-06	Keyboard Assembly

Part Number	Qty	Reference Designator	Description
575-728-001	1	CSW-05	Input Protection Board
99-10624-01	1	4500	Main Control Board
99-10179-01	1	AMP-510	Power Amplifier Board
99-10148-01	1	REC-19	Rectifier Board
99-10016-01	1	-	Earth Connector
99-10017-01	4	-	Black Banana Jacks
99-10631-01	2	-	High Voltage Connector
175-946-013	1	-	Feet Kit w/o Rubber Inserts
175-974-002	4	-	Rubber Insert for Feet
99-10168-01	1	-	Fuse 15A, 250V, Fast Blow, 20 mm
99-10057-01	1	-	LCD Display 16 x 2 Characters
330-118-001	1	-	Power Switch 2P 10A/250V
330-113-001	1	-	Test Switch, Green
330-113-002	1	-	Reset Switch, Red
99-10040-01	1	-	Interlock Connector Std. M/F
200-060-001	1	T-4500-T2	Output High Voltage Transformer
99-10632-01	1	T-4500-T1	Input Transformer
99-10164-01	1	-	Input Power Cable 15A/6Ft.
102-055-913	1	-	High Voltage Output cable
99-10017-01	2	-	Return/Continuity cable
99-10031-01	1	U9	Microcontroller 8 Bit P89C52
99-10671-01	1	Test/Pass	Replacement Bulb
99-10672-01	1	Reset/Fail	Replacement Bulb