

PT-5000W

PORTABLE DUAL HIGH VOLTAGE TESTER

Operating & Instruction Manual



HDE HD ELECTRIC COMPANY
A Textron Company

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GENERAL DESCRIPTION

This portable dual high voltage tester can test both primary and secondary insulated systems and components. The test voltage is selected by the user at either 500VDC or 5,000VDC.

This HD Electric tool is designed for use only on cables or equipment that has been verified to be both deenergized and discharged. This tool does not have any capability to withstand any externally applied voltage.

Always connect both alligator clip connections before initiating a test and disconnect the leads only after the tester is turned off and the device under test is discharged. This tester is powered by one 9V lithium or alkaline battery which can be accessed on the back of the unit by removing the two screws holding the battery compartment cover in place.

This tester provides a high voltage DC output used typically to test primary distribution voltage or secondary voltage equipment for faults or high leakage currents. The tester includes these features:

- Powered by one 9V lithium or alkaline battery.
- Provides a nominal output voltage of user selectable 500VDC or 5,000VDC.
- The output is current limited to two milliamps maximum for safety.
- The tester is turned on by pressing and holding a single pushbutton for 500VDC or two buttons for 5,000VDC. The buttons are mechanically guarded to prevent accidental operation.
- The front panel has indicators for each voltage range. When only the left button is pressed an amber light turns on indicating the battery condition is good and that the 500VDC range has been selected. When both buttons are pressed simultaneously a red light turns on indicating the battery condition is good and that the 5,000VDC range has been selected. An additional red light indicates a leakage current of 100 microamps when the 5,000VDC range is selected or 1,000 microamps when the 500VDC range is selected. If the voltage indicating lights do not turn on, indicating a low battery, no high voltage will be produced.
- The maximum test period is 30 seconds after which the tester automatically shuts off.
- The output leads are high voltage retractable wire with an insulation value of 10kV, a retracted length of 24 in. and an extended length of 48 in. The output leads are terminated in large booted copper alligator clips.
- A magnet on the back holds the tester firmly to a steel surface.

OPERATING INSTRUCTIONS

WARNING: Always wear high voltage gloves rated for the planned test. For a 500V test class 00 or better high voltage gloves are required. For a 5,000V test, class 1 or better high voltage gloves are required. Before using this tool, ensure that the equipment to be tested is both deenergized and discharged. This tool may leave a high voltage charge on tested equipment. Following each test, leave the tool connected for 30 seconds to allow this equipment to discharge.

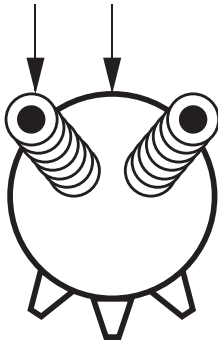
- 1) Connect one of the two clips to ground. Connect the other clip to the equipment to be tested.
- 2) Select the test voltage. Press and hold the ONE left button to select 500VDC. Press and hold BOTH buttons simultaneously to select 5,000VDC.
- 3) Indicator lights verify the selected test voltage and confirm the battery condition is OK.
- 4) Leakage current, if any, is indicated for either 100 or 1,000 microamps depending on the voltage range selected. Equipment with a substantial capacitance such as long cables or power factor correction capacitors may indicate leakage current when first energized. If the equipment is in good condition, these leakage current indications will disappear as the equipment is charged.

APPLICATIONS

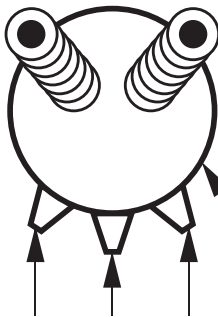
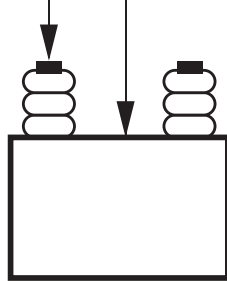
The PT-5000W is a general purpose insulation tester for both primary voltage and secondary voltage insulation systems and components. Most important is that the proper voltage is selected for the system or components to be tested. For secondary voltage systems rated to 600V select the 500VDC test range.

Testing secondary voltage systems or components with 5,000VDC may result in permanent damage to the systems or components being tested. For primary voltage systems either the 500VDC or 5,000VDC range may be selected but the 5,000VDC range will be both a more rigorous and more sensitive test since the 5,000VDC range automatically selects the lower leakage current indication threshold of 100 microamps.

primary to ground
on two bushing
transformer

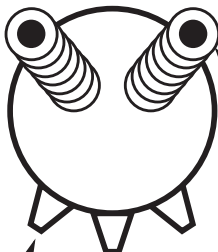
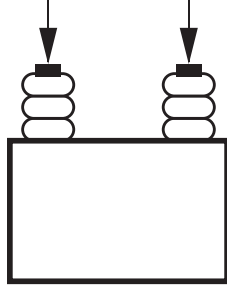


one bushing to ground



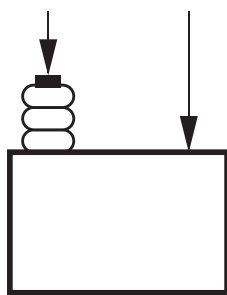
secondaries to ground
center tap must be
ungrounded

across two bushings



from primaries to
secondaries

one bushing



Overhead Applications

Such typical components as capacitors, transformers, potheads, terminations and insulators can be tested with the PT-5000W as shown here.

Transformers can be tested to verify insulation between both primary and secondary windings. For two bushing transformers connect the tester from either primary bushing to ground and select the 5,000VDC range. Single primary bushing transformers cannot be tested here.

Test transformer secondary insulation to ground only when the secondary center tap has been ungrounded. Select the 500VDC range.

Test insulation from primary winding to secondary winding as shown here. Select the 500VDC range.

Test capacitor insulation to ground on two bushing capacitors as shown. Select the 5,000VDC range for typical primary voltage power factor correction capacitors.

Testing across the two bushings of a two bushing capacitor or from bushing to ground on a one bushing capacitor will place a substantial charge on the capacitor and the PT-5000W will indicate leakage current until the capacitor is fully charged. Because of the built in 30 second time limit, capacitors tested in this manner can only be charged up to 500VDC and should only be tested with the 500VDC range. Remember that the tester requires up to 2 minutes to fully discharge a charged capacitor and should remain connected for that time.

Underground Applications

Underground insulation systems include a wide variety of cable and equipment and almost any insulating system or component can be tested with the PT-5000W. Secondary voltage systems should be tested only with the 500VDC range except some direct bury secondary cables with higher test voltages can be tested on the 5,000VDC range. Consult the cable supplier for more information.

Pad mount transformers can be tested with the same connections as shown for overhead transformers as shown for overhead transformers above.

Primary voltage insulating systems can be tested with the 5,000VDC range. When testing primary voltage systems that include lengths of underground cable, the PT-5000W may initially show a high leakage indication until the cable charges up. If the high leakage indication does not turn off before the end of the test then leaky or shorted cable would be indicated. For very long cable lengths, it may be possible to test only with the 500VDC range.

SPECIFICATIONS

- TEST VOLTAGE:** 500VDC or 5,000VDC nominal
TEST CURRENT: 100 microamps indicated on 5,000VDC range and
1,000 microamps indicated on 500VDC range,
2,000 microamps maximum.
BATTERY: 9V lithium or alkaline

IMPORTANT SAFETY INFORMATION

Read and understand these instructions prior to use. These operating instructions are not a substitute for proper training in the use of this equipment. High voltage systems present serious hazards, including the risk of death or serious injury due to arcing, thermal burns and electrocution. HD Electric's products are intended solely for use by professionals with knowledge, training and experience in the use of the equipment and its accessories in and around high voltage systems.

All applicable federal, state, company and OSHA work practices must be followed. If you are unfamiliar with the work practices required, DO NOT PROCEED. Call HD Electric Company if you have any questions regarding this equipment.

Important labels are affixed to the products. Read and understand each of them before proceeding.

The users of this device should always be equipped with personal protective equipment including high voltage gloves, flame retardant clothing and eye and face protection. Some applications may require additional protective equipment.

Failure to follow these and other warnings and safety precautions may result in severe injury or death.

PT-5000W High Voltage Tester

This Tester will produce up to 5kVDC at the test leads for testing insulating systems for the presence of leakage current.

Press and hold one button for 500V or two buttons for 5,000V. Leakage is indicated for >100 uA for 5kV tests and >1ma for 500V tests.

CAUTION: This Tester generates high voltage DC. Do not touch the test leads or any connected equipment while testing.

WARNING: Do not use this tester except as directed. Do not apply to energized circuits or equipment. Refer all servicing to the factory. Failure to follow these instructions may lead to electric shock, severe injury or death.

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NOTICES - This product is designed for use by professionals trained in its use and application in and around high voltage electrical equipment. If you are not trained in the work methods required for safe operation, do not proceed until you obtain the training.

CAUTIONS - This product was tested before leaving the factory but it must be inspected prior to and after each use for proper working condition. If any defect or condition is noted, do not use this product. Remove from service and arrange for repair.

WARNINGS - Rigorous hot stick work precautions and all OSHA and company work practices must be followed. Always wear approved cover-up and safety equipment. Read and understand instructions prior to use. Misuse and abuse of this product can lead to severe injury or death.

LIMITED WARRANTY AND LIMITATION OF LIABILITY

This warranty applies to all products sold by HD Electric Company (the "Products"); provided, however, that the term Products does not include any third party products purchased through HD Electric Company, for which no warranties are made (the "Third Party Products"). Third Party Products may be subject to a separate manufacturer's warranty; [should you have any question regarding whether a separate warranty applies, please contact HD Electric Company].

NOTICE: READ THIS LIMITATION OF WARRANTY AND LIABILITY BEFORE BUYING OR USING THE PRODUCTS CONTAINED HEREIN.

It is impossible to eliminate all risks associated with the use of the Products. Risks of serious injury or death, including risks associated with electrocution, arcing and thermal burns, are inherent in work in and around energized electrical systems. Such risks arise from the wide variety of electrical systems and equipment to which Products may be applied, the manner of use or application, weather and environmental conditions or other unknown factors, all of which are beyond the control of HD Electric Company.

HD Electric Company does not agree to be an insurer of these risks, and shall have no liability for any claims arising from such risks.

WHEN YOU BUY OR USE THESE PRODUCTS, YOU AGREE TO ACCEPT THESE RISKS.

HD Electric Company warrants to the original purchaser that the Products (excluding any third party products purchased through HD Electric Company, for which no warranties are made) will be free from defects in material and workmanship, under normal use and regular service, and preventative maintenance for a period of one (1) year (ten (10) years for HDE Capacitor Controls) from the date of shipment (the "Warranty Period"). Should any failure to conform with this warranty be found during the Warranty Period, you must notify HD Electric Company of your claim within thirty (30) days of discovery, and within the Warranty Period. Your failure to give notice of claims of breach of warranty within the Warranty Period shall be deemed an absolute and unconditional waiver of claims for such defects. HD Electric Company will have no responsibility to honor claims received after the date the applicable Warranty Period expires.

Upon notice of your claim, HD Electric Company will provide a return authorization number, and further instructions on how to return the product for service. You must follow HD Electric Company's instruction. You are responsible for all Product removal, handling, re-installation, and shipping (both to and from HD Electric Company). Products returned for repair, as well as repaired or replacement Products shall be sent postage / freight prepaid. After receipt of a product which HD Electric Company determines is defective, HD Electric will, at its option, either (1) repair (or authorize the repair of) the Product or (2) replace the Product, subject to the following: The Products are made using parts sourced from a variety of manufacturers. Due to the rapidly changing technology environment, parts may become obsolete / unavailable over time (end of life). In the event that a Product cannot be repaired or replaced due to unavailability of parts, HD Electric Company will use commercially reasonable efforts to obtain substitute parts or conduct work around design, but cannot guarantee its ability to do so.

Items not found defective will be returned at your expense, or failing receipt of instruction from you on return of such items within five (5) business days of our notice to you that the product is not defective, HD Electric may dispose of the product at its discretion and with no liability to you. HD Electric Company's determination of defects is final. Products repaired or replaced during the Warranty Period shall be covered by the foregoing warranties for the remainder of the original Warranty Period or ninety (90) days from the date of delivery of the repaired or replaced Products, whichever is longer.

LIMITATIONS:

This warranty is void in the event of misuse, alteration, faulty installation, or misapplication of the product.

This warranty does not cover failure of product or components due to any ACT OF NATURE; lightning, floods, hurricanes, tornadoes or any other such catastrophic events.

HD Electric Company does not warrant any third party products or associated hardware or their performance or suitability for use and application. Such items are provided "as-is".

All repairs must be authorized by HD Electric Company. Unauthorized repairs will not be reimbursed under any circumstances.

HD Electric Company is not required to make replacement or loaner equipment available while Products are being repaired or replaced, or to compensate you for any in/out labor charges or expenses associated with removal, handling or re-installation of the Products.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. HD ELECTRIC EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY AND NON-INFRINGEMENT.

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IN NO EVENT SHALL HD ELECTRIC COMPANY HAVE ANY LIABILITY FOR ANY THIRD PARTY PRODUCTS OR ASSOCIATED HARDWARE, OR CUSTOMER-OWNED SYSTEMS, EQUIPMENT OR SOFTWARE.

HD Electric Company must have prompt notice of any claim so that an immediate product inspection and investigation can be made. Buyer and all users shall promptly notify HD Electric Company of any claims, whether based on contract, negligence, strict liability, or other tort or otherwise be barred from any remedy.

HD Electric Company is committed to ongoing review and improvement of its product lines, and thus reserves the right to modify product design and specifications without notice.

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