

## Wrist Strap Tester - Operation, Installation and Calibration Instructions



Made in America

Pass Range 800K Ohms to 10 Megohms, 9 Volt Battery Operation



Figure 1. Model 41195 Wrist Strap Tester

### Description

Per ANSI/ESD S20.20, test equipment is required to enact the Compliance Verification Plan Requirement. Test equipment shall be selected to make measurements of appropriate properties of the technical requirements that are incorporated into the ESD program plan. The Touch Tester can be used to fulfil ESD-S1.1, "The wrist strap system should be tested daily to ensure proper electrical value" (paragraph 6.1.3). Being a portable battery powered tool, it is perfect for small labs or for a supervisor to spotcheck workers and/or ensure compliance.

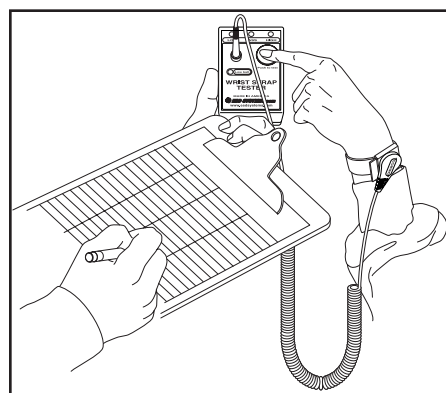


Figure 2. Testing a wrist strap

The Wrist Strap Tester is a battery operated "on demand" wrist strap tester. When the wearer of a wrist strap plugs in their coil cord and touches the metallic surface of the Wrist Strap Tester, a path for current flow is completed from the wearer's skin, through the wrist strap. This

action will cause the green "test good" LED to light as long as the resistance of the circuit path is between 800k ohms and 10 megohms.

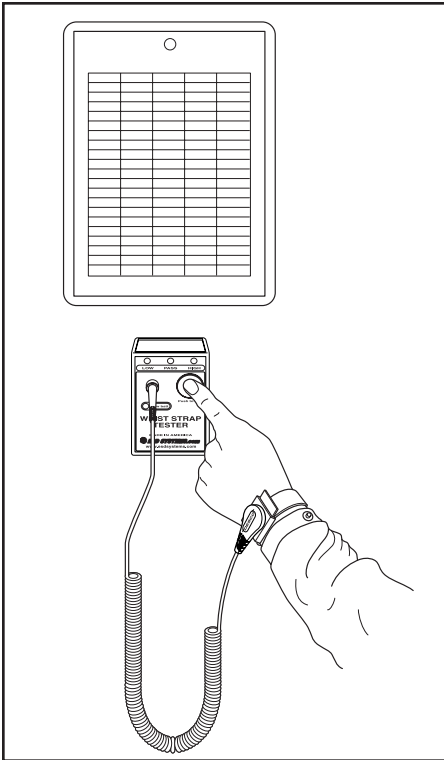
### Installation

The Wrist Strap Tester is battery powered. When received, open the battery compartment and install the battery, and you will be ready to test your wriststraps.

*Note: the low battery indicator flashes every time the unit is used. When battery fail indicator is constant, check voltage of battery and/or replace it.*

### Operation

A wrist strap cord is plugged into the banana jack. When the wearer of a wrist strap touches the metallic test button, the green "test good" LED will light if the operator-to-ground resistance is between 800k ohms and 10 megohms. If the operator-to-ground resistance is below 800K, the red "LOW" LED will light and the alarm will sound. If the operator-to-ground resistance is above 10M, the red "HIGH" LED will light and the alarm will sound. Per ESD Handbook TR20.20 paragraph 5.3.2.4.3 Test Procedure, "If the [wrist strap test] resistance is still too high, dry skin might be the problem. Dry skin conditions can be resolved by applying moisturizing lotion on the wrist and repeating the resistance test again. The moisturizing lotion should



**Figure 3. Recording the results**

be one that is compatible with process requirements." If after application of ESD lotion such as Reztore™ ESD Hand Lotion, the resulting test is still fail "HIGH" or fail "LOW", the operator should notify their supervisor to have the wrist strap and cord checked.

### Calibration

We recommend annual calibration of our testers. The model 41195 is calibrated to NIST traceable standards. Calibration may be performed to ensure that the tester is operating within limits.

If you are familiar with the procedure, the following resistance should give the display shown:

Resistance Value (±5%)	Test Output
750 Kilohms:	Red (Low-hazard)
850 Kilohms:	Green (OK-in limits)
9 Megohms:	Green (OK-in limits)
11 Megohms:	Red (High resistance)

**Procedure**  
Connect the test resistance from the banana jack to the test button. With resistance applied and test button pressed, display should yield proper output. Make sure test clips are insulated from users' hands.

A unit failing the calibration test will need to be returned to the manufacturer.

ESD Handbook TR 20.20 paragraph 5.3.2.4.2 Additional User Wrist Strap Testing, "Proper testing of the wrist strap includes the resistance of the groundable point on the end of the cord, the cord itself, the resistor, the cord-to-cuff snap connector, the resistance of the interface of the cuff, the cuff/wrist interface, and the resistance of the person between the wrist and the hand that contacts the test electrode. Typically, the maximum acceptable resistance most often used for wrist strap grounding is less than ten megohms."

The lower limit is to verify that 1 Megohm ±20% current limiting resistor is in the resistance. Typically, the minimum acceptable resistance most often used for wrist strap grounding is greater than 800 Kilohms (Ref: ANSI/ESD S20.20 Table 1).

### Limited Warranty

ESD Systems.com expressly warrants that for a period of one (1) year from the date of purchase, our Wrist Strap Testers will be free of defects in material (parts) and workmanship (labor). Within the warranty period, the product will be tested, repaired, or replaced at our option, free of charge. Call our Customer Service Department at 508-485-7390 for a Return Material Authorization (RMA) and proper shipping instructions and address. Include a copy of your original packing slip, invoice, or other proof of purchase date. Any unit under warranty should be shipped prepaid to the ESD Systems.com factory. Warranty repairs will take approximately two weeks.

If your unit is out of warranty call Customer Service at 508-485-7390 for a Return Material Authorization (RMA) and proper shipping instructions and address. ESD Systems.com will quote repair charges necessary to bring your unit up to factory standards.

### Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

### Limit of Liability

In no event will ESD Systems.com or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.



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