



Made in America

Combo Wrist Strap / Footwear Tester Installation, Operation and Maintenance

Pass Range 750K - 10M and 750K - 100M



Figure 1. Desco 19250 Combo Tester

Description

The Desco 19250 Combo Tester is a 3-state touch tester designed for fast, frequent testing of ESD personnel grounding devices. This product can be used as one of the tools to fulfill the ANSI ESD S20.20 paragraph 6.1.3.2 "Compliance Verification Plan. Verification should include routine checks of the Technical Requirements of the Plan." The Combo Tester incorporates a unique dual test circuit design which improves accuracy of testing and eliminates the need for separate wrist strap and foot grounder test units. The 19250 is equipped with a 750 kilohm - 10 megohm circuit, ideal for testing of wrist straps and a 750 kilohm - 100 megohm circuit designed for accurate testing of footwear.

Test parameters are factory set but can be adjusted to match your own specifications. The 19250 is very simple to operate. A green light signals the user that everything is OK. A red light and an audible indicator means that the circuit resistance is either too low or too high.

The Tester operates on either a 9 volt battery or a special AC adapter. The Combo Tester is calibrated to NIST traceable standards and is available in three models.

| Model | Description |
|-------|------------------------------|
| 19250 | Combo Tester, 9 Volt battery |
| 19253 | Combo Tester w/ Footplate |
| 19252 | Combo Tester w/ Stand |
| 98273 | Foot Plate for Combo Tester |
| 98254 | Stand for Combo Tester |
| 98256 | AC Adapter, 120V |
| 98257 | AC Adapter, 220V |

CAUTION: Use only the AC adapter designed for this unit: Item 98256 (120 volt) or Item 98257 (220 volt). Using any other adapters may damage the unit and void the warranty.

Per ESD Handbook ESD TR20.20 paragraph 5.3.2.4.4 Test Frequency "Typical test programs recommend that wrist straps that are used daily should be tested daily. However, if the products that are being produced are of such value that knowledge of a

continuous, reliable ground is needed, and then continuous monitoring should be considered or even required."

Per ESD SP9.2 APPENDIX B - Foot Grounder Usage Guidance "Compliance verification should be performed prior to each use (daily, shift change, etc.). The accumulation of insulative materials on the FCS may increase the foot grounder system resistance. If foot grounders are worn outside the ESD protected area testing for functionality before reentry to the ESD protected area should be considered."

Per ESD SP9.2 APPENDIX C -Parallel Ground Paths

"A parallel ground path allows a flow of electrical current through a path that is not intended for the test. Parallel ground paths may be caused by several different situations.

For example:

- The path represented by the person standing with one shoe on the floor and the other shoe on the test apparatus. A parallel path may be created by the shoe on the floor. Current from the test instrument is then directed down two paths when it was intended to be directed down one. The correct path for the test is with one shoe in the air or on an insulating surface and the other shoe on the test plate.
- The path presented by a person inadvertently supporting themselves by means of one hand on another object such as a wall, table or supporting member in order to measure the resistance in one foot contact. The hand has created a parallel path to ground.
- The path represented by a person leaning against another object with other parts of the body in order to provide physical support during a testing sequence. This can then lead to other grounding paths and erroneous results."

Packaging

Remove the Tester from the carton and inspect for damage.

Items included with model 19250:

- 1 Combo Tester
- 1 9 volt battery

Items included only with model 19253:

- 1 Combo Tester
- 1 Foot plate
- 1 Ground cord
- 1 9 volt battery

Items included only with model 19252:

- 1 Combo Tester
- 1 Base plate
- 1 Pedestal tube with bracket and boot installed
- 1 4" banana plug connector
- 1 Vinyl insulator cap
- 1 Wall poster
- 1 5/32" hex wrench
- 1 9 volt battery

Model numbers 19253 and 19252 are ideally suited for testing foot grounding devices.

Observe the LEDs for the proper response as indicated. Be sure to hold the cord at an insulated point, so that resistance value is not affected by the body. Should testing reveal that the Tester is not functioning properly, verify that the battery or power supply is operating correctly.

Tester calibration can also be verified with the use of discrete resistors and two banana-to-alligator cords.

Adjustment

Detailed adjustment instructions follow:

Equipment Required: - Small blade screwdriver or Trimpot adjusting tool, manufacturer's calibration box or a resistor decade box or discrete resistors, with appropriate test leads.

PREPARATION OF THE UNIT:

- I. Make sure that a fresh 9 Volt alkaline battery is installed.
- II. Orient tester so that it corresponds to Figure 15.

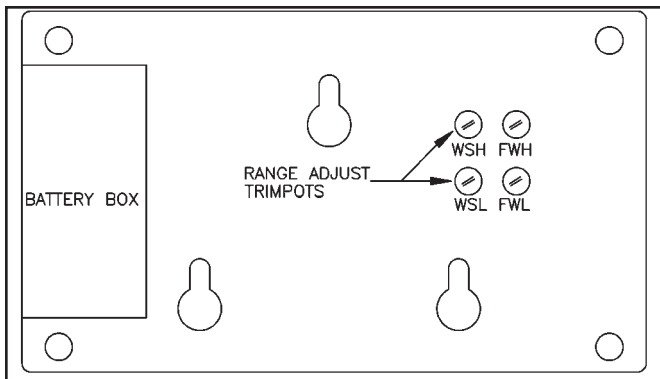


Figure 15. Back of the Combo Tester

CALIBRATION OF WRIST STRAP RANGES:

- III. Connect resistance "A" from Table 1 OR 2 between the touch plate and the "WRIST CORD" banana jack. **A banana plug must be inserted in the banana jack to properly test the wrist strap ranges.** Press and hold the touch plate. The red "FAIL LO" LED should illuminate.
- IV. If required, adjust **WSL** trimpot to the point where the "FAIL LO" LED illuminates.
- V. Connect resistance "B" and press the switch as in Step III. The green "PASS" LED should illuminate. The **WSL** trimpot may require a slight re-adjustment.
- VI. Connect resistance "C" (**wrist strap range**) and press the switch as in Step III. The green "PASS" LED should be on. If required, adjust the **WSH** trimpot to the point where the green "PASS" LED illuminates.
- VII. Finally, connect resistance "D" (**wrist strap range**) and press the switch as in Step III. The "FAIL HI" red LED should be on. The **WSH** trimpot may require re-adjustment.
- VIII. Re-check to insure that all ranges are correct, then proceed to calibrate footwear ranges.

TABLE 1 - STANDARD RANGES

| RANGE | FAIL LO | PASS LO | PASS HI | FAIL HI |
|-------------|---------|---------|---------|---------|
| WRIST STRAP | 675K | 825K | 8.5M | 11.5M |
| FOOT WEAR | 675K | 825K | 80M | 120M |
| RESISTANCE | "A" | "B" | "C" | "D" |

CALIBRATION OF FOOT WEAR RANGES:

- I. Connect resistance "A" from table 1 or 2, this time between the touch plate and the "FOOTPLATE" banana jack on the left side of the tester. For footwear calibration, press and hold the touch plate. The red "FAIL LO" LED should be on
- II. If required, adjust **FWL** trimpot to the point where the "FAIL LO" LED illuminates.
- III. Connect resistance "B" and press switch as in Step I. The green "PASS" LED illuminates. The **FWL** trimpot may require a slight re-adjustment.
- IV. Connect resistance "C" (**footwear range**) and press switch as in Step I. The green "PASS" LED should illuminate. If required, adjust the **FWH** trimpot to the point where the green LED illuminates.
- V. Finally, connect resistance "D" (**footwear range**) and press switch as in step I. The red "FAIL HI" LED should illuminate. The **FWH** trimpot may require a slight re-adjustment.
- VI. Re-check to insure that all footwear ranges are correct.

RETURN UNIT TO SERVICE.

Unauthorized modifications will void the product warranty. Servicing should be performed only at the factory. See warranty section for repair information.

Specifications

Wrist Strap Circuit

| | |
|---------|-----------------------------|
| FAIL HI | Factory set at 11.5 Megohms |
| FAIL LO | Factory set at 675 Kiloohms |

Footwear Circuit

| | |
|---------|-----------------------------|
| FAIL HI | Factory set at 120 Megohms |
| FAIL LO | Factory set at 675 Kiloohms |

General Characteristics

| | |
|------------------|--|
| Power | 9 Volt battery or optional AC power supply |
| Operation | Resistance bridge |
| Readout | Three LED's & audible alarm |
| Accuracy | ±20% |
| Weight | 12 pounds |
| Height | 39 inches |

Consider adding the 19250 to your list of "test equipment [that] shall be selected to make measurements of appropriate properties of the technical requirements that are incorporated into the ESD program plan" as required by paragraph 6.1.3.1 of ANSI/ESD S20.20.