Tester, Combination, 3-State Operation, Installation and Maintenance

Made in America

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.

Inspection

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.

Installation of Model 19250

The Combo Tester may be used as a portable unit, or may be permanently mounted on either a table or a wall. Please refer to the following instructions when installing your tester.

Stationary Installation

If you will be using the tester as a portable unit, you may prefer to mount the unit to a table or wall. Three keyhole slots on the back of the unit are included to allow you to attach the tester to a stationary surface.

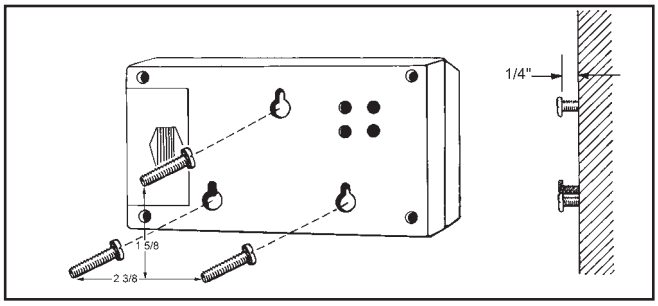

Figure 2. Mounting hole locations.

1. Select location for mounting Tester. Install three #6 or #8 screws spaced as illustrated in figure 3, into a wall or other vertical surface. Make sure that the screw heads do not project out more than 1/4" from mounting surface. The template on page four is actual size.

2. Mount the Tester on the screws, pulling down to lock it in place.

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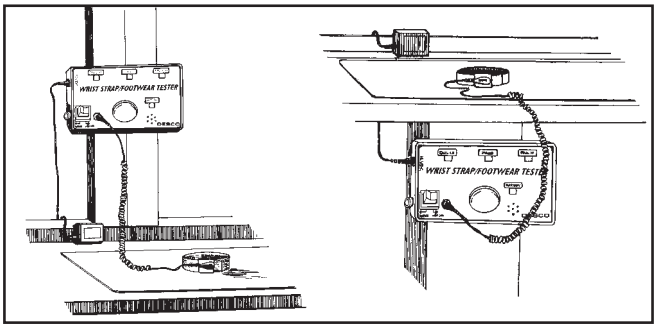

Figure 3. Stationary installation of the Combo Tester

Operation

The Combo Tester can be operated either on battery or AC power. The unit comes equipped with a 9 volt alkaline battery. For AC operation, plug the optional AC adapter into the mini phone jack located on the upper left hand corner of the tester. AC adapters are sold separately as item 98256 (120 volt) or 98257 (220 volt).

LOW BATTERY INDICATOR
The Combo Tester includes a low battery indicator alarm circuit. If both the audible alarm and indicator LED turn on during use, discontinue testing and replace the battery. The tester will continue to operate with a weak battery, but results should not be considered accurate.

The battery can be easily replaced by removing the battery compartment cover on the back of the unit and installing a new 9 volt battery.

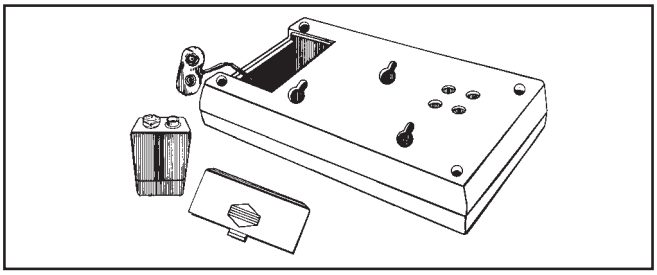

Figure 4. Replacing the battery

General Instructions

In the following test configurations, the 19250 can be used to test wrist straps while they are worn. Models 19253 and 19252 will also allow the user to test footwear. Insertion of the banana plug on the wrist strap cord activates the wrist strap tester circuit and deactivates the footwear test circuit.

WRIST STRAP TESTING WITH MODEL 19250
This test safely checks that a continuous path between the operator, wrist strap and ground cord exists.

A. While wearing the wrist strap, plug the banana plug end of the cord into the jack on the face of the unit.

B. Press rocker switch toward “WRIST CORD”.

C. Press the test button so that the unit activates. Hold down for 2-3 seconds while flexing coil cord area near resistor. ***Note:*** *Often the initial intermittency will be failure of strain relief connection to resistor as simulated by ESD S1.1-1998 paragraph 5.7 Bending Life Test.*

Note: DO NOT TOUCH ANY OTHER METAL WHILE PERFORMING TEST.

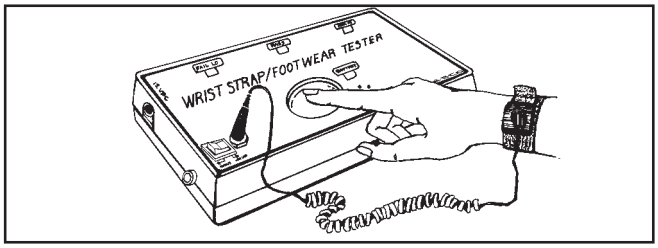

Figure 5. Testing of wrist strap grounding assemblies.

D. Lighting of the green “PASS” LED indicates that the wrist strap and ground cord assemblies are functioning properly.

E. If either “FAIL LO” or “FAIL HI” LEDs light and the audible indicator sounds, the wrist strap wearer should check the wrist strap assembly immediately.

TESTING FOOT GROUNDING DEVICES
In order to test footwear you will need the model 19253 or 19252 Combo Tester. The following instructions are intended for use while wearing foot grounding devices. When testing conductive shoes, or foot grounders worn on both feet, test each foot separately to ensure proper operation and complete protection.

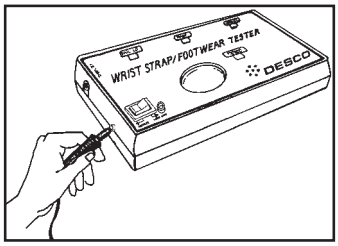

Figure 6. Installing ground cord to “footplate” jack.

A. Place the Foot Plate on the floor in front of the Combo Tester.

B. Plug the plate’s ground cord into the jack on the left hand side of the unit.

NOTE: Steps A and B are not required with the 19252.

C. Press the rocker switch toward “FOOTPLATE”

D. Place one foot on the plate. If the floor is conductive, lift the foot you are not testing off of the floor during this test. Make sure there is no cord plugged into the “WRIST CORD” jack.

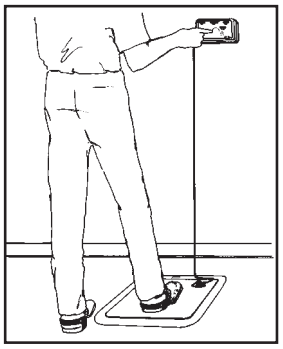

Figure 7. Testing foot grounding devices with 19253.

E. Press the test button so that the unit activates. Hold for 2-3 seconds.

F. Lighting of the green “PASS” LED indicates that the foot ground assemblies are functioning properly.

G. If either red “Fail LO” or red “Fail HI” LEDs light and the audible indicator sounds, the wearer should check the foot grounding device immediately.

H. Repeat steps C through F with other foot.

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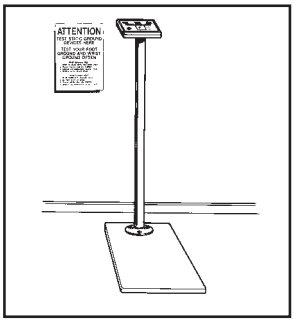
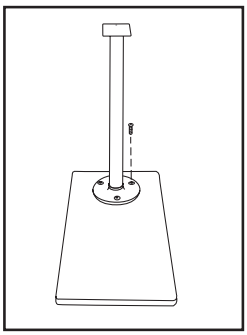


Free Standing Test Fixture Assembly and Operation (Model 19252)

The 19252's rugged steel pedestal tube is powder coated in a non-conductive white finish that helps to prevent false readings if contacted by skin or loose smocks.

Figure 8. The 19252 Free Standing Test Fixture

Assembly



A. Remove 3 screws from baseplate.

B. Position pedestal on the baseplate with the Tester mounting bracket pointing away from the operator. Attach pedestal to baseplate using the three screws provided. Tighten with hex wrench provided.

C. Open the compartment and attach the snap connector to the included 9 volt battery. Attach poster to the wall at eye level in front of the Tester location.

Figure 9. Attaching pedestal to baseplate

D. Install the Tester on the bracket by aligning keyholes on the back of tester with mounting studs on bracket. While pushing up on thumb screw, insert the mounting studs into the keyholes and slide the tester down. See Figure 10.

E. Install the 4" banana plug connector to "FOOTPLATE" jack on the side of the unit. Insert ring terminal behind thumb screw.

F. Twist the thumb screw clockwise to secure the tester to the bracket. Cover thumb screw with vinyl insulator cap.

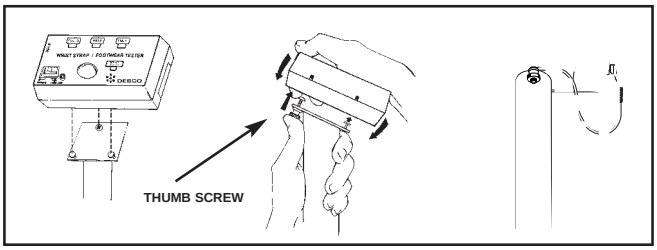


Figure 10. Installing Tester on bracket and securing Tester to bracket

WRIST STRAP TESTING
This test verifies that a continuous path between the operator, wrist strap, and ground cord exists.

A. While wearing the wrist strap, plug the banana plug end of the cord into the jack on the face of the unit.

B. Press rocker switch toward "WRIST CORD".

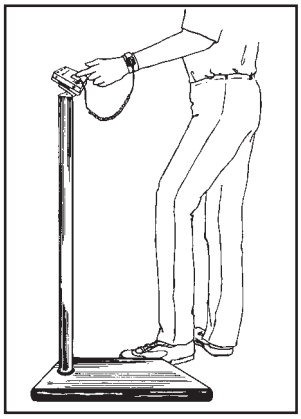


Figure 11. Testing of wrist strap grounding assemblies

C. Press the test button so that the unit activates. Hold down for 2-3 seconds while flexing coil cord area near resistor.

Note: DO NOT TOUCH ANY OTHER METAL WHILE PERFORMING TEST.

D. Lighting of the green "PASS" LED indicates that the wrist strap and ground cord assemblies are functioning properly.

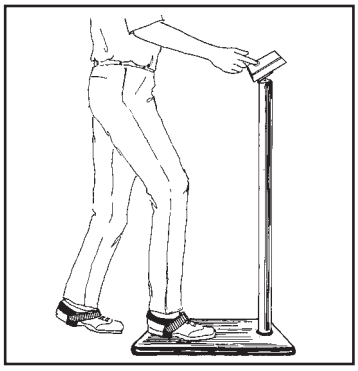
E. If either red "FAIL LO" or "FAIL HI" LEDs light and the audible indicator sounds, the wrist strap wearer should check the wrist strap assembly immediately.

TESTING FOOT GROUNDING DEVICES
When testing conductive shoes or heel straps, test each foot separately to ensure proper operation and complete protection.

A. Press rocker switch toward "FOOTPLATE".

B. Place one foot on the plate. If the floor is conductive, lift the foot you are not testing off of the floor during this test. Make sure there is no cord plugged into the "WRIST CORD" jack.

C. Press the test button so that the unit activates. Hold down for 2-3 seconds while flexing coil cord area near resistor.



D. Lighting of the green "PASS" LED indicates that the foot ground assemblies are functioning properly.

E. If either red "Fail LO" or red "Fail HI" LEDs light and the audible indicator sounds, the wearer should check the foot grounding device immediately.

F. Repeat steps A through C with other foot.

Figure 12. Testing foot grounding devices

Calibration

The models 19250, 19253, and 19252 are calibrated to NIST traceable standards. We recommend that calibration is performed annually to ensure that the Tester is operating within limits. Due to its dual circuit design both test circuits of the Combo Tester must be calibrated individually.

Desco offers a calibration unit that is specifically designed to simplify the calibration procedure. This unit is sold as item 07010. The Calibration Unit comes calibrated to NIST traceable standards. For additional information on the 07010, ask for Technical Bulletin TB-2039.

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750 Kilohm - 10 Megohm TEST RANGE - WRIST STRAPS
The following resistance should give the display shown:

Resistance Value (+/- 5%)	Test Output
675 Kilohm	Red (Fail Lo)
825 Kilohm	Green (Pass)
8.5 Megohm	Green (Pass)
11.5 Megohm	Red (Fail Hi)

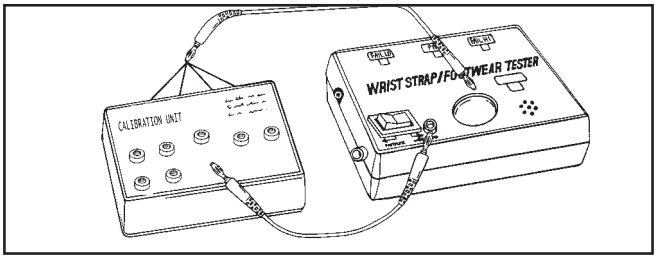

Figure 13. Calibration of the Combo Tester's 750K to 100M range.

750 Kilohm - 100 Megohm TEST RANGE - FOOTWEAR
The following resistance should give the display shown:

Resistance Value (+/- 20%)	Test Output
675 Kilohm	Red (Fail Lo)
825 Kilohm	Green (Pass)
80 Megohm	Green (Pass)
120 Megohm	Red (Fail Hi)

To calibrate, simply test each resistance value shown above which are included in the 07010 Calibration Unit. Test across the test button and "WRIST CORD" jack for calibration of the 750 Kilohm - 10 Megohm range. Test across the test button and "FOOTPLATE" jack for calibration of the 750K - 100M range. Be sure rocker switch is set correctly.

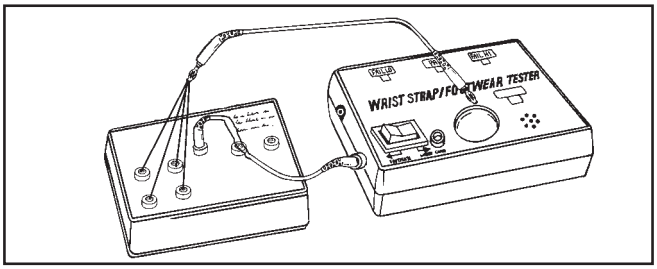

Figure 14. Calibration of the Combo Tester 750 Kilohm to 10 Megohm range with the model 07010

Observe the LED's 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 are available from the factory. 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
"Hi" Fail Factory set at 11.5 Megohms
"Lo" Fail Factory set at 675 Kilohms
Footground circuit
"Hi" Fail Factory set at 120 Megohms
"Lo" Fail Factory set at 675 Kilohms

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.

Limited Warranty

Desco expressly warrants that for a period of one (1) year from the date of purchase, Desco Combo 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 Desco's option, free of charge. Call our Customer Service Department at 909-627-8178 (Chino, CA) or 781-821-8370 (Canton, MA) 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 Desco factory. Warranty repairs will take approximately two weeks.

If your unit is out of warranty, call Customer Service at 909-627-8178 (Chino, CA) or 781-821-8370 (Canton, MA) for a Return Material Authorization (RMA) and proper shipping instructions and address. Desco 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 Desco 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.

DRILL PATTERN FOR COMBO TESTER ACTUAL SIZE

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