SCS TB-9117 Limit Comparator Instruction Manual

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Contents

Description

Frequency of re-calibration should be based on the critical nature of those ESD sensitive items handled and the risk of failure for the ESD protective equipment and materials. In general, SCS recommends that calibration be performed annually.

Use the SCS 770769 Limit Comparator to perform periodic verification (once every 6-12 months) of the SCS 770758 Dual Combination Tester. The Limit Comparator can be used to check the test limits of the Dual Combination Tester without removing it from the factory floor.

Packaging

1. Limit Comparator
2. Test Leads with Banana Plug Terminals, 5′ Length

Tester Configuration

The resistance limits for footwear and wrist strap tests are controlled by the DIP switches located on the sides of the tester. Use the following tables for the DIP switch settings and their corresponding test values.

FOOTWEAR RESISTANCE
DIP switches 1 and 2 control the HIGH test limit.

Figure 2. Locating the DIP switches on the Dual Combination Tester

Switch 1	Switch 2	HIGH Limit Resistance
ON	ON	10 Megohms (1 x 107)
OFF	OFF	35 Megohms (3.5 x 107)
ON	OFF	100 Megohms (1 x 108)
OFF	ON	1 Gigohm (1 x 109)

DIP switches 3 and 4 control the LOW test limit.

Switch 3	Switch 4	LOW Limit Resistance
ON	OFF	100 Kilohms (1 x 105)
OFF	ON	750 Kilohms (7.5 x 105)

default setting

WRIST STRAP RESISTANCE

DIP switches 5 and 6 control the HIGH test limit

Switch 5	Switch 6	HIGH Limit Resistance
OFF	OFF	wrist strap test disabled
ON	ON	10 Megohms (1 x 107)
ON	OFF	35 Megohms (3.5 x 107)

DIP switch 5 must be ON (default setting) for the wrist strap test to be active. The wrist strap test will be disabled if DIP switch 5 is set to OFF.

The LOW limit for the wrist strap test is set to 750 Kiloohms and cannot be modified by the user.

Operation

TESTING THE WRIST STRAP CIRCUIT

1. Verify that the tester is connected to equipment ground.
2. Plug the two included test leads into each yellow banana jack located at the top of the Limit Comparator.
3. Connect one of the test leads from the Limit Comparator to the SINGLE-WIRE jack located on the face of the tester. Connect the other lead from the Limit Comparator to the ground jack located on the bottom of the tester.
4. Select 750K LOW with the Limit Comparator’s rotary switch.
5. Touch and hold the test switch on the tester until the results are displayed. The tester should indicate a wrist strap FAIL LOW condition.
6. Select 750K PASS on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.

7. Select either the 10M PASS or 35M PASS setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
8. Select either the 10M HIGH or 35M HIGH setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap FAIL HIGH condition.

TESTING THE FOOTWEAR CIRCUIT

1. Insert the Limit Comparator's stereo plug into the jack labeled FOOT PLATE on the bottom of thetester.
2. Select the appropriate FAIL LOW setting on the Limit Comparator.
3. Touch and hold the test switch on the tester until the results are displayed. The tester should indicate a FAIL LOW condition for both feet.
4. Select the appropriate PASS LOW setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.
5. Select the appropriate PASS HIGH setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.
6. Select the appropriate FAIL HIGH setting on the Limit Comparator and repeat the test. The tester should indicate a FAIL HIGH condition for both feet.

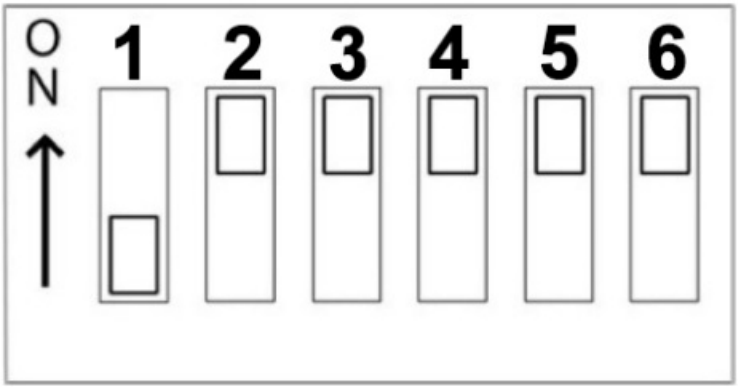
CALIBRATING THE 1 GIGOHM FOOTWEAR LIMIT

Dual Combination Tester units with serial numbers ending in 2326001 or greater include firmware that allows field calibration of the 1 gig ohm footwear test limit when needed. Environmental conditions such as humidity and temperature may affect the test accuracy of the 1 gigohm limit. Should the Dual Combination Tester fail verification testing of the 1 gigohm test limit, use the following procedure to re-calibrate its parameters.

NOTE: Two 5-pound electrodes are required to complete this procedure. The electrodes provide a method for loading the resistance from the Limit Comparator onto each of the dual foot plate's plates. One pair of 5-pound electrodes are available as SCS item 770767.

Figure 3. SCS 770767 5-Pound Electrodes

1. Verify that the Dual Combination Tester is connected to power, equipment ground, and its dual foot plate.
2. Configure the DIP switch on the Dual Combination Tester as shown below.



3. Place one 5-pound electrode onto each plate on the dual foot plate.
4. Connect each electrode to the yellow banana jacks located at the top of the Limit Comparator using the two test leads.
5. Select 1G CAL with the Limit Comparator's rotary switch.
6. Touch and hold the test switch on the tester until all six footwear LEDs rapdily blink and then remain illuminated. This confirms successful calibration of the 1 gigohm footwear test limit.

   NOTE: An unsuccessful calibration is indicated if the six footwear LEDs do not rapidly blink. Verify the setup and confirm that all wires are properly connected.
7. Reconfigure DIP switches 3-6 back to the desired footwear low and wrist strap high test limit settings.
8. Select 1G PASS with the Limit Comparator's rotary switch.
9. Touch and hold the test switch on the tester until the results are displayed. The tester should indicate a PASS condition for both feet.

10. Select 1G HIGH with the Limit Comparator's rotary switch.
11. Touch and hold the test switch on the tester until the results are displayed. The tester should indicate a FAIL HIGH condition for both feet.

Specifications

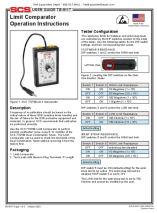
Setting	Nominal Resistance	Nominal Resistance Tolerance
100K LOW	90 kΩ	±2%
100K PASS	110 kΩ	±2%
750K LOW	675 kΩ	±2%
750K PASS	825 kΩ	±2%
1M LOW	909 kΩ	±2%
1M PASS	1.10 MΩ	±2%
10M PASS	9.09 MΩ	±5%
10M HIGH	11.09 MΩ	±5%
35M PASS	31.09 MΩ	±5%
35M HIGH	37.89 MΩ	±5%
100M PASS	90.9 MΩ	±5%
100M HIGH	112.9 MΩ	±5%
1G PASS	812.9 MΩ	±10%
1G HIGH	1.213 GΩ	±10%
1G CAL	1.0 GΩ	±5%

These resistance values may be verified using a digital ohmmeter. Connect the ohmmeter's test leads into each of the Limit Comparator's yellow banana jacks. If any value is out of specification, the Limit Comparator must be returned to the manufacturer for repair.

Operating Temperature	50 to 95°F (10 to 35°C)
Environmental Requirements	Indoor use only at altitudes less than 6500 ft. (2 km)Maximum rel ative humidity of 80% up to 85°F (30°C)decreasing linearly to 50 % @ 85°F (30°C)
Dimensions	3.8″ L x 2.4″ W x 0.9″ H(97 mm x 61 mm x 23 mm)
Weight	0.2 lbs (0.1 kg)
Country of Origin	United States of America

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

Documents / Resources

	SCS TB-9117 Limit Comparator [pdf] Instruction Manual TB-9117 Limit Comparator, TB-9117, Limit Comparator, Comparator

References

- Welcome to the Test Equipment Depot, your test equipment supplier of all the best brands.
- User Manual