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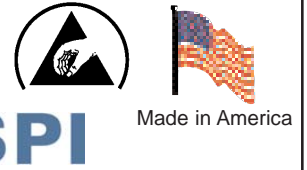
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ESD SYSTEMS.com TECHNICAL BULLETIN TB-5527

Wrist Straps Grounding, Testing and Maintenance



Location of Proper Ground Point

Wrist straps, work surfaces, and floor mats which are to be grounded for protection against electrostatic discharge (ESD) should be grounded to a common point. The common point should be connected to the "green wire" equipment ground.

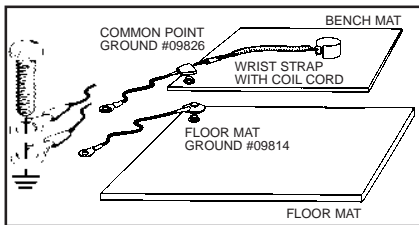


Figure 1. Common point ground for each workstation

This may be accomplished in a variety of ways utilizing common point ground blocks, ground buses, or connecting directly to the nearest utility "green wire" ground point. In a properly wired building, the nearest reliable ground point will be the center screw of the standard 110VAC outlet.

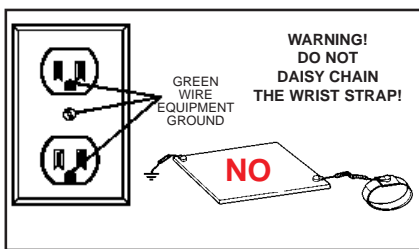


Figure 2. "Green wire" equipment ground

Each individual workstation must be individually grounded to the ground bus or "green wire" equipment ground. **Do not wire work surfaces or other ESD devices in series or "daisy chain" them.** This can create unknown resistance and unacceptable grounds.

Test The Ground Before You Use It And Periodically Thereafter

Do not assume that any AC electrical outlet is properly wired. Even if it was originally wired correctly it can become ungrounded due to corrosion and wear. **Test the ground you intend to use before you hook up.** SPI Westek recommends that you use the AC Outlet Analyzer & Wrist Strap Tester Item 94380.

A Banana Jack Is Recommended

Almost all wrist strap manufacturers terminate wrist ground cords with banana plugs. This is because the banana plug and jack have proven to be a fast and reliable way to attach to ground. If you must use another method such as snaps or alligator clips, due to your particular environment, be sure to test the connections often.

Note: Many wrist strap users clip the wrist cord to the edge of an ESD protective mat. This process is not recommended as it can increase the total system resistance to ground to over the 35 megohm limit recommended in ESD S 20.20. (ESD Handbook TR20.20 section 5.3.2.2.2 Wrist Strap Ground Cord)

Compliance Verification of the Ground System

Set up a schedule to be sure that all ESD grounds are inspected and tested periodically, every six months for example.

Testing the Wrist Strap

The best test of the wrist strap system is while it is worn. This includes all three components: the wrist band, the ground cord (including resistor), and the interface with the wearer's skin.

SPI Westek has several testers available for this purpose. For more information, see our web site for tester models and detailed technical bulletins.

If you obtain an open or bad reading from the tester you should stop work and test the wrist band and cord individually to find out which item has failed. Replace the bad component and test the system again. Obtain a "Pass" reading before beginning work.

Cleaning

For proper operation, the wrist strap, especially the wrist band, must be kept clean. All wrist band should be cleaned with a mild detergent on a periodic basis. Be sure that metallic expansion wrist bands are thoroughly dried to prevent corrosion.

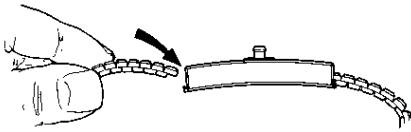
Woolite™ works well. Liquid detergents are better than dry in that there is less caking and frictional wear. Launder elastic wrist band strips in cool or warm water, tumble dry with low heat or hang dry. This works well if using a standard house machine on gentle cycle. Industrial machines are fine if "Pony" (typically under 200 pound loads) machines are used. It is not recommended to launder .. in heavy industrial laundry machines as it will lead to premature wear. Should be tumbled dry using low heat. DO NOT BLEACH.

Wrist Strap silver fibers are sensitive to heat and should not be exposed to laundering heat in excess of 120°F. Use only non-ionic softeners and detergents when laundering."

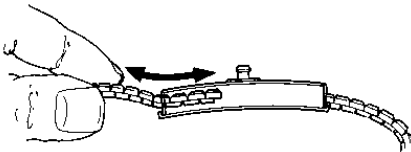
Size Adjustment of Wristbands

Metal Expansion Wristbands

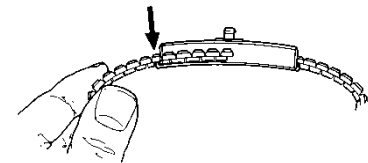
1. Insert the link end of the wristband into the slotted opening on the cap. Insert it at a downward angle to allow the links to slide inside the channel in the backplate.



2. Change the size of the band by sliding the links in or out of the stainless steel backplate. For extra small users you can cut off excess links with cutters.



3. Lock the links into place by pulling down on the band, seating the band securely over the lip on the edge of the backplate.



4. Test the wrist strap system to be sure of proper electrical resistance and skin contact. Use the procedure described under "Testing" section on reverse side.

Note: SPI Westek' wrist straps and coil cords are UL Listed for safety. However, this product is not recommended for use on equipment with operating voltage exceeding 250 VAC.

CAUTION: The ESD Series is for electrostatic control. It will not reduce or increase your risk of receiving electric shock when using or working on electrical equipment. Follow the same precautions you would use without wrist straps, including:

- Make certain that equipment having a grounding type plug is properly grounded.
- Make certain that you are not in contact with grounded objects other than through the ESD Series.

Limited Warranty

SPI Westek expressly warrants that for a period of one (1) year from the date of purchase, SPI Westek Wrist Straps 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 909-664-9986 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 SPI Westek factory. Warranty repairs will take approximately two weeks.

If your unit is out of warranty, call Customer Service at 909-664-9986 for a Return Material Authorization (RMA) and proper shipping instructions and address. SPI Westek 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 SPI Westek 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.