



Made in America

ESD Statshield® Protective Smocks Grounding, Testing and Maintenance

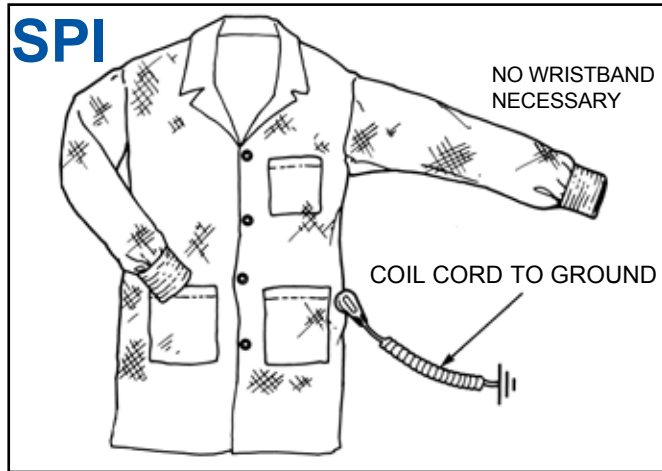


Figure 1. SPI Statshield® Smock

Description

“Garments on which high levels of static electricity can be generated are one of the causes of ESD damage. It is important that such charged garments do not come into contact with ESDs. The covering garments need to be grounded either through direct contact with the wearer’s skin or by alternative means, such as being electrically connected to a wrist strap. It is important that the ESD protective garment sleeves cover the end of the inner garment sleeves.”

Outfitting a work force in ESD smocks is the single most powerful step to demonstrate a company’s commitment to their ESD control program. The SPI Statshield® ESD protective smock is designed to be antistatic, low tribocharging, and offers protection from electrostatic fields generated by clothing on the user’s body. Using high quality material with a minimum 9% carbon nylon monofilament, the smock creates a Faraday Cage around the torso of the wearer. Static charges generated by the wearer and wearer’s clothing will be shielded from ESD susceptible products. The dissipative material becomes part of the ground path to remove static charges.

The SPI Statshield® Smock incorporates our “hip to cuff” grounding feature which allows for hands-free grounding with no tugging at the operator’s wrist. This feature allows connection of a ground cord to a 4mm snap stud on the hip. A seam of carbon-suffused threads provides a secure and direct electrical connection from the snap stud on the hip to conductive elastic cuffs, providing a highly reliable connection via the user’s skin. The smock will quickly and effectively ground the person when used in this manner.

The smock is constructed of a lightweight dissipative material which incorporates texturized polyester and a minimum of 9% carbon nylon monofilament. The conductive nylon fibers are woven in a chain-link design throughout the

material, providing continuous and consistent charge dissipation. All of the seams in the garment are designed to maintain electrical continuity from panel to panel and from sleeve to sleeve in accordance with the ESD Association Garment Standard, ESD-STM2.1.

The conductive fabric in the smock is a conductor. If not grounded, the smock can become an isolated charged conductor. Since ANSI/ESD S20.20 requires that “All conductors in the environment, including personnel, must be . . . connected and attached to a known ground”, there is no occasion “when grounding the garment is not required” in an ESD protected area. For mobile workers, personal grounding can be achieved by wearing ESD footwear on ESD flooring. Electrostatic charges on the smock will be removed to ground given there is good contact between the conductive cuff and the operator’s skin.

The SPI Statshield® Smock is available in five different sizes :

Size	Item #	Chest	Sleeve
Small	95600	34"-36"	34"
Medium	95601	38"-40"	34 3/8"
Large	95602	42"-44"	35"
X Large	95603	46"-48"	35 1/2"
2X Large	95604	50"-52"	35 1/2"
3X Large	95605	54"-56"	37 1/2"
4X Large	95606	58"-60"	36 1/2"
5X Large	95607	62"-64"	36"
6X Large	95608	66"-68"	36"

Installation

Follow the directions below for proper installation and grounding of the ESD smock.

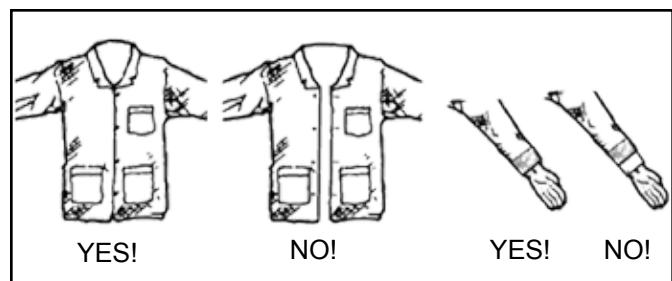


Figure 2. Proper installation of smock on wearer’s body

1. Put on the smock and fasten all of the snaps on the front of the smock, making sure that clothing is not exposed outside of the smock.

2. Throughout use, it is essential that conductive cuff be in intimate contact with wrist skin; conductive cuff should never be allowed to be pulled up and over shirt sleeve.

3. Install a ground cord to the snap stud located above the left hand hip pocket. Take the other end of the ground cord and connect to a verified ground point such as a grounding block or common point mat ground.

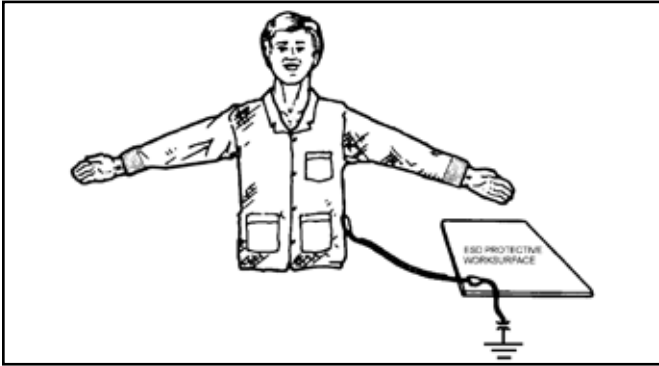


Figure 3. Grounding the smock

The user and the smock will now be properly grounded. The "hip to cuff" grounding feature allows greater freedom of movement of user's arms and hands, and a reliable path to ground while the ESD smock offers extra protection against damaging electrostatic fields which may be generated by the user's clothing.

NOTE: ANSI/ESD S20.20 REQUIRES THAT THE GROUND CORD SELECTED FOR GROUNDING OF PERSONNEL CONTAIN A BUILT-IN CURRENT LIMITING 1 MEGOHM RESISTOR.

Heat Sealed Patches

It is possible to heat seal patches to our smocks. The patch should be small and the smock should be tested before and after application.

Grounding Integrity Testing

For daily testing or monitoring of the grounding integrity of SPI ESD protective smocks and ground cords, we recommend the use of standard wrist strap testers or single-wire workstation continuous monitors.

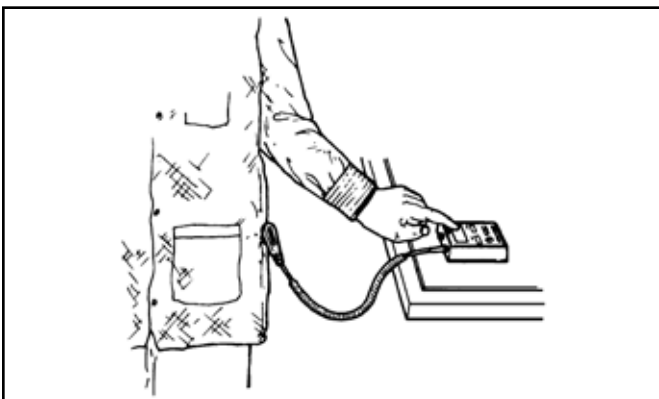


Figure 4. Testing and monitoring of smock and ground cord assembly

Panel to panel conductivity is essential so as not to leave portions of the smock as isolated charged conductors. Panel to panel conductivity is easy to test using our Surface Resistance Test Kit Item #94057, by placing 5 pound electrodes on different panels. Unless properly grounded, the smocks can hold a charge and become a possible source for discharge to ESD susceptible products. For additional information, refer to ANSI/ESD S20.20, TR20.20, and the ESD Association Garment Standard, ESD-STM2.1. SPI has several testers available for this purpose. For more information ask for specification drawings or operating instruction manuals by item number.



Figure 5. Testers

Maintenance

For proper operation, the ESD protective smock must be laundered periodically. Woolite works well. Liquid detergents are better than dry in that there is less caking and frictional wear. Launder garment in cool or warm water, tumble dry with low heat or hang dry. In terms of laundering the smocks by hand or with a washing machine, most prefer using a washing machine. This works well if you use 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 these garments in heavy industrial laundry machines as it will lead to premature wear. Garments should be tumbled dry using low heat. **DO NOT BLEACH.** The carbon-suffused mono-filament nylon is 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. Under normal wearing and recommended washing conditions, SPI Statshield® ESD protective smocks will maintain their usefulness and effectiveness for a minimum of 100 washings. Some other ESD smocks have as little as 1% suffused carbon and lose their ESD protective qualities after a few washings.

Specifications

Fabric Weight	2.2 oz per square yard
Fabric Content	Texturized polyester and a minimum of 9% carbon mono-filament nylon.
Carbon Mono-filament	Conductive at 10E4 ohms, nonflaking and non-sloughing.
Surface Resistance	10E5 - 10E6 ohms, per ESD-STM2.1 of Fabric
Static Decay Rate	5000 volts to 500 volts in less than 0.1 seconds, per FTMS-101C
Glass Transition Temp	250°F
Flash Point	1040°F

Note: Material sample swatches are available upon request. Fabric lots vary slightly in color and weight. If you have any question please don't hesitate to request a sample material from our Customer Service Team.

Limited Warranty

ESDSYSTEMS.COM expressly warrants that for a period of two (2) years from the date of purchase or (100) one-hundred wash cycles, whichever occurs first, ESDSYSTEMS.COM Statshield® ESD Smocks will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement ESDSYSTEMS.COM Statshield® ESD Smocks, or, at ESDSYSTEMS.COM's option, the Statshield® ESD Smock will be repaired or replaced free of charge. If product credit is issued, the amount will be calculated by multiplying the unused portion of the expected two year or 100 wash cycle life times the original unit purchase price. Call Customer Service at 909-664-9986 (Chino, CA) for Return Material Authorization (RMA) and proper shipping instructions and address. Include a copy of your original packing slip, invoice, or other proof of date of purchase. Any garment under warranty should be shipped prepaid to the ESDSYSTEMS.COM factory.

Warranty replacements will take approximately two weeks.

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 ESDSYSTEMS.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.