

Statshield® ESD Smocks Grounding, Testing and Maintenance



Made in America

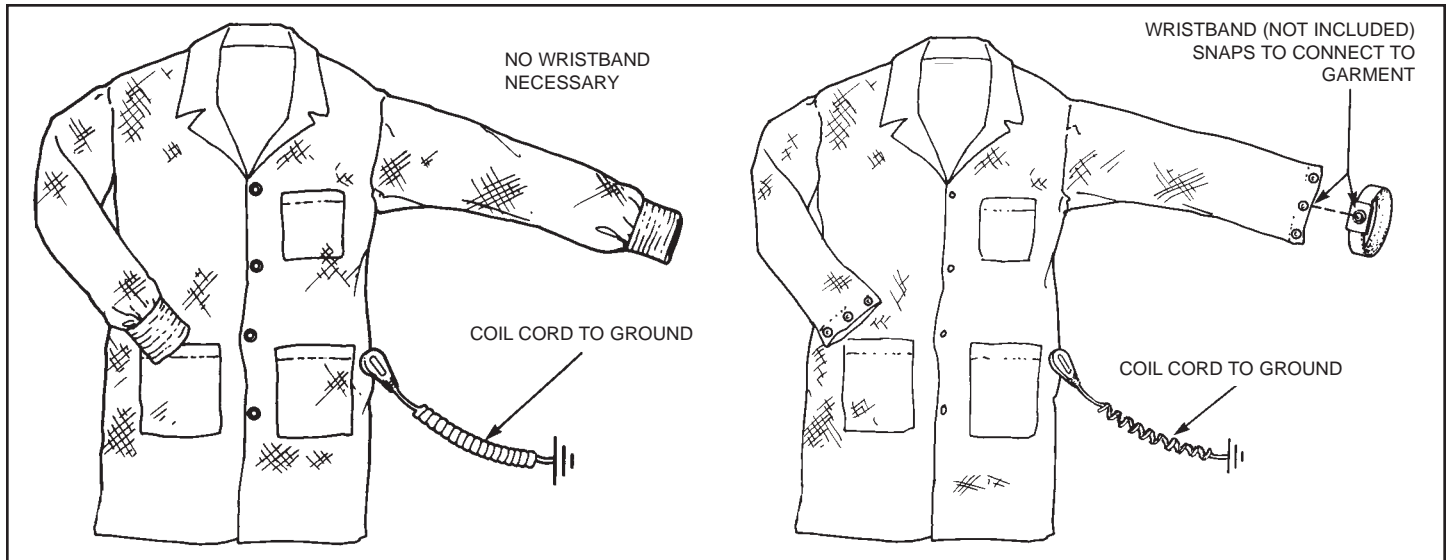


Figure 1. ESD Systems Statshield® Lab Coat with Conductive Cuffs and with Snaps. Also available in Jacket length.

Description

While worn, Statshield® ESD Smocks meet the RTG < 3.5 x 10E7 ohms required limit of ANSI/ESD S20.20-2007 for Groundable Static Control Garment System tested per ANSI/ESD STM2.1 and ESD TR53.

Per ESD Handbook TR 20.20 paragraph 5.3.13.1 Introduction and Purpose/ General Information "While a person may be grounded using a wrist strap or other grounding methods, that does not mean that insulative clothing fabrics can dissipate a charge to that person's skin and then to ground. Clothing usually is electrically separate or isolated from the body."

"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 mb 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 ESD

Systems.com Statshield® ESD 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 smock is available in two lengths -- the lab coat length and the jacket length. Both lengths are available in two styles - with snaps and with conductive elastic cuffs. All styles are available in three colors -- blue, white, and teal.

The ESD Systems.com Statshield® ESD Smock incorporates our patented** "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, ANSI/ESD STM2.1.

The chart below shows chest and sleeve dimensions for all ESD Systems.com smocks.

Size	Chest	Sleeve
X Small	30"-32"	33 3/4"
Small	34"-36"	34"
Medium	38"-40"	34 3/8"
Large	42"-44"	35"
X Large	46"-48"	35 1/2"
2X Large	50"-52"	35 1/2"
3X Large	54"-56"	37 1/2"
4X Large	58"-60"	36 1/2"
5X Large	62"-64"	36"
6X Large	66"-68"	36"

*Ref EN61340-5-2

**U.S. Patent # 4,596,053

ESD protective smocks are available in the following styles and sizes:

LAB COATS WITH SNAPS

Size	Blue	White	Teal
X Small	16800	16820	16840
Small	16801	16821	16841
Medium	16802	16822	16842
Large	16803	16823	16843
X Large	16804	16824	16844
2X Large	16805	16825	16845
3X Large	16806	16826	16846
4X Large	16807	16827	16847
5X Large	16808	16828	16848
6X Large	16809	16829	16849

LAB COATS WITH CUFFS

Size	Blue	White	Teal
X Small	16810	16830	16850
Small	16811	16831	16851
Medium	16812	16832	16852
Large	16813	16833	16853
X Large	16814	16834	16854
2X Large	16815	16835	16855
3X Large	16816	16836	16856
4X Large	16817	16837	16857
5X Large	16818	16838	16858
6X Large	16819	16839	16859

JACKETS WITH SNAPS

Size	Blue	White	Teal
X Small	16699	16920	16940
Small	16700	16921	16941
Medium	16701	16922	16942
Large	16720	16923	16943
X Large	16730	16924	16944
2X Large	16740	16925	16945
3X Large	16741	16926	16946
4X Large	16742	16927	16947
5X Large	16743	16928	16948
6X Large	16744	16929	16949

JACKETS WITH CUFFS

Size	Blue	White	Teal
X Small	16910	16930	16950
Small	16911	16931	16951
Medium	16912	16932	16952
Large	16913	16933	16953
X Large	16914	16934	16954
2X Large	16915	16935	16955
3X Large	16916	16936	16956
4X Large	16917	16937	16957
5X Large	16918	16939	16959
6X Large	16919	16939	16959

Size	Burgundy
Small	95600
Medium	95601
Large	95602
X Large	95603
2X Large	95604

Installation

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

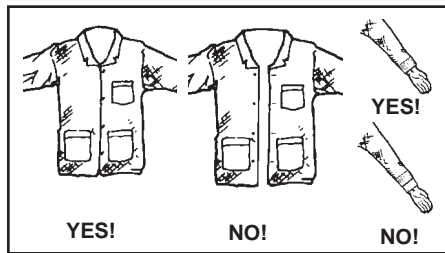


Figure 2. Proper installation of smock on wearer's body

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.

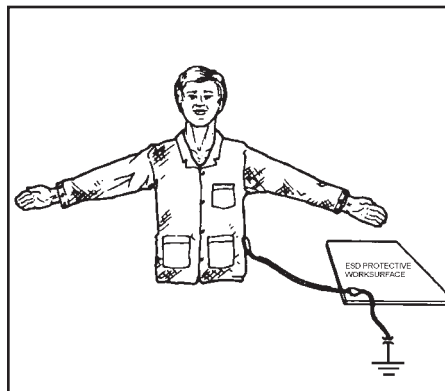


Figure 3. Grounding the smock

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.

"For personnel safety, static control garments should not be worn in situations where there is exposure to high voltage." (ESD Handbook TR 20.20 paragraph 5.3.13.6 Other Considerations)

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

"After verifying that the garment has electrical conductivity through all panels, the garment should be electrically bonded to the grounding system of the wearer so as not to act as a floating [conductor]. Garments should be worn with the front properly snapped or buttoned to avoid exposure of possible charges on personal clothing worn under the garment." (ESD Handbook TR 20.20 paragraph 5.3.13.2.6 Proper Use)

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

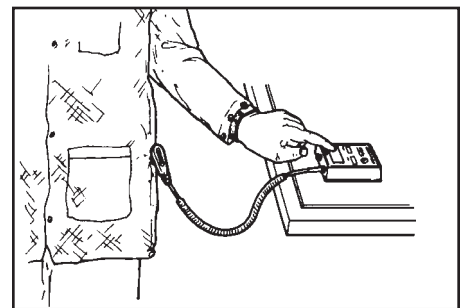


Figure 4. Testing and monitoring of smock and ground cord assembly

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 #41290, 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.

ESD Systems.com has several testers available for this purpose. For more information ask for specification drawings or operating instruction manuals by item number.

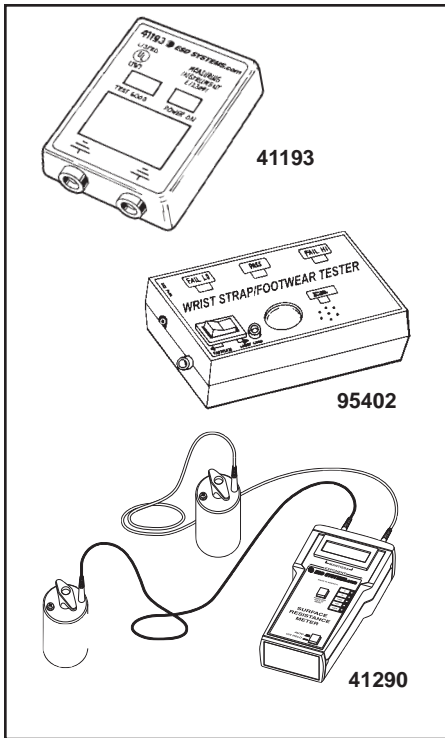


Figure 5. Testers

Maintenance

ESD Handbook TR 20.20 paragraph 5.3.13.3.1.6 Labels "A label should be considered with the manufacturer's name or logo and date or lot code and ESD identification. This will identify the smock as an ESD protective garment and provide information as to the manufacturer and date of manufacture. The label should be legible after 50 commercial cleanings (washings)." Ask for independent test report of Statshield® ESD Smocks meeting requirements after 100 launderings.

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 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 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, ESD Systems.com 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, non-flaking and non-sloughing.
 Surface Resistance: 10E5 - 10E6 ohms, per ANSI/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

ESD Systems.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, ESD Systems.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 ESD Systems.com Statshield® ESD Smocks, or, at our 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 508-485-7390 for a Return Material Authorization (RMA) and proper shipping instructions. You should 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 ESD Systems.com factory. Warranty repairs 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 ESD Systems.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.



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