ESD Statshield® Protective Smocks Grounding, Testing and Maintenance

Made in the United States of America

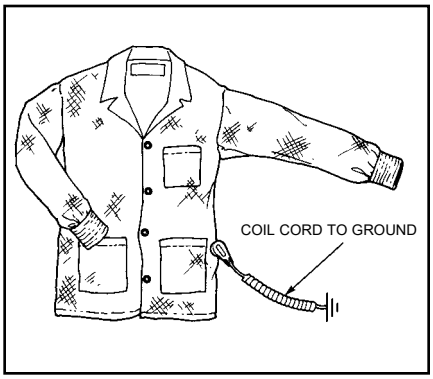


Figure 1. Vermason Statshield® Premium Smock with Conductive Cuffs.

Description

Vermason Statshield® Smocks are identified as ESD protective with an ESD protective symbol label. Per IEC 61340-5-2 clause 5.2.5, "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 [ESD sensitive items]. 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." Static control garments suppress or otherwise affect an electric field from clothing worn underneath the garment.

Outfitting a work force in ESD smocks is the single most powerful step to demonstrate a company's commitment to their ESD control programme. The Vermason 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. ESDS will be shielded from static charges generated by the wearer on the wearer's clothing. The dissipative material becomes part of the ground path to remove static charges. The smock is available in jacket length with conductive elastic cuffs.

The Vermason Statshield® premium smock incorporates our "hip-to-cuff" grounding feature which allows for hands-free grounding with no coil cord tugging at the operator's wrist. This feature allows connection of a ground cord to a 4mm snap stud on the smock at the hip. A conductive strip sewn with conductive 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. Per EN 61340-5-1 Personnel Grounding Requirements Table 2 Note 1 "For situations where an ESD garment is used as part of the wrist strap grounding path, the total system resistance including the person, garment and grounding cord should be less than 3.5 x 10^7 ohms".

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 ANSI/ESD STM2.1.

The conductive fabric of the Statshield smock is a conductor. If not grounded, the smock can become an isolated charged conductor. Proper ESD control requires that "All conductors in the environment, including personnel, must be . . . connected and attached to a known ground". If not grounded via a wrist strap coiled cord, the wearer should be grounded by using ESD footwear on a conductive floor.

"The ESD risk provided by everyday clothing cannot be easily assessed. The current general view of experts is that the main source of ESD risk may occur where ESDS [ESD sensitive items] can reach high induced voltage due to external fields from the clothing, and subsequently experience a field induced CDM [Charged Device Model] type discharge. So ESD control garments may be of particular benefit where larger ESDS having low CDM withstand voltage are handled, and operators habitually wear everyday clothing that could generate electrostatic high fields." [CLC TR 61340-5-2 2008 User guide Garments clause 4.7.7.1 Introductory remarks]

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

JACKETS WITH CUFFS IN BLUE

Item#	Size	Chest	Sleeve
221420	Small	86-91 cm	86 cm
221421	Medium	96-101 cm	87 cm
221422	Large	106-112 cm	89 cm
221423	X Large	117-122 cm	90 cm
221424	2X Large	127-132 cm	90 cm

JACKETS WITH CUFFS IN BLACK

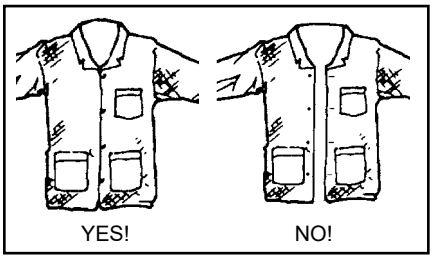
Item#	Size	Chest	Sleeve
221430	X Small	76-81 cm	85 cm
221431	Small	86-91 cm	86 cm
221432	Medium	96-101 cm	87 cm
221433	Large	106-112 cm	89 cm
221434	X Large	117-122 cm	90 cm
221435	2X Large	127-132 cm	90 cm
221436	3X Large	137-142 cm	95 cm
221437	4X Large	147-152 cm	93 cm
221438	5X Large	157-163 cm	91 cm
221439	6X Large	168-172 cm	91 cm

Note: Blue and Black Jackets with Cuffs include a Badge Holder Tab and Two Sleeve Pen Pockets.

Installation

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

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.



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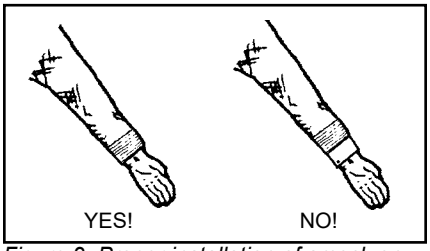

Figure 2. Proper installation of smock on wearer's body

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, common ground point or earth bonding point.

The user and the smock will now be properly grounded.

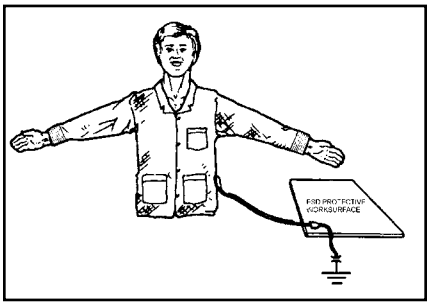

Figure 3. Grounding the smock

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: PROPER ESD CONTROL 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 Vermason ESD protective smocks and ground cords, we recommend the use of standard wrist strap testers or workstation continuous monitors.

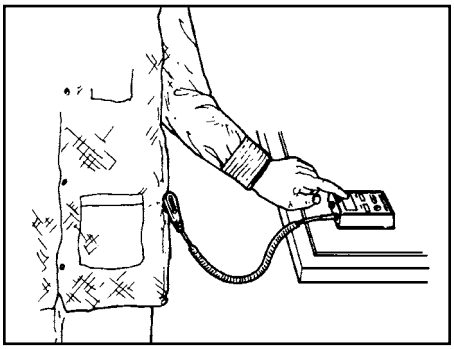
Figure 4. Testing and monitoring of smock and ground cord assembly

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 Vermason 222642 Surface Resistance Tesk Kit, by placing 2.2 Kg electrodes on different panels.

Vermason has several personnel grounding 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 a washing machine. This works well if using a standard house machine on gentle cycle. Industrial machines are fine if "pony" (typically under 90.7 Kg 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 49°C. Use only non-ionic softeners and detergents when laundering. Under normal wearing and recommended washing conditions, Vermason 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 may lose their ESD protective qualities after a few washings.

Specifications

Fabric Weight
74.6 grams/sq metre

Fabric Content
91% texturized polyester and 9% carbon suffused mono-filament nylon.

Carbon Mono-filament
Conductive at 104 ohms, non-flaking and non-sloughing.

Surface Resistivity of Fabric
Rp-p 1 x 10^5 to < 1 x 10^7 ohms per ANSI/ESD STM2.1

Glass Transition Temp
121°C

Flash Point
560°C

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.

RoHS 2, REACH and Conflict Minerals Statement
None of the RoHS 2 restricted materials, or REACH substances of very high concern as of 2014/06/16, or Conflict Minerals are intentionally added in manufacturing this product. Ref: European Directive 2011/65/EC Article 4.1. and Regulation (EC) No. 1907/2006/CE. See Desco Industries Inc. Limited Warranty at Vermason.co.uk

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