ESD JACKETS
Grounding, Testing and Maintenance

Made in Britain

Figure 1. Vermason ESD Jackets.

Description

Per EN 61340-5-2 paragraph 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. 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 Jackets is the single most powerful step to demonstrate a company's commitment to their ESD control program.
Garments can also be very important in field work, as the area may be an uncontrolled environment which can be very dry.
Vermason ESD Jackets are designed to be antistatic, low tribocharging and offer protection from electrostatic fields generated by clothing on the user's body.
The Jackets create 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.
Used as part of a company's EPA control policy and worn in conjunction with a wrist band and coiled cord the dissipative material of the jacket becomes part of the ground path to remove static charges.
To ensure continuity of the path to ground, Vermason supply a unique solution - each sleeve of the jacket is riveted at the cuff with a 10mm stud. This stud is then connected to the wearer's wristband with a feather light strip of conductive material as shown:

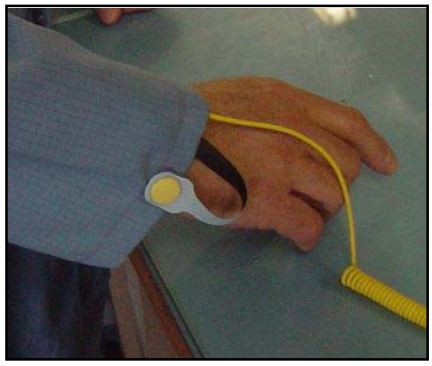

Figure 2. The link connector.

This is an extremely comfortable solution, with minimal drag on the Jacket sleeve at the same time maximizing the user's capabilities.

The Jackets are constructed of a lightweight dissipative material which incorporates textured polyester and a minimum of 3% conductive fibres. The conductive nylon fibres are woven in a 5mm grid 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 Jackets is a conductor. If not grounded, a jacket 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. The Vermason ESD Jackets must therefore be grounded via the user's wrist strap coil cord.

Figure 3. Vermason ESD Jackets.

ESD jackets are available in the following sizes:

Item#	Size	Chest	Sleeve
221100	Small	86-91 cm	86.36 cm
221105	Medium	96-101 cm	87.31 cm
221110	Large	106-112 cm	88.90 cm
221115	X Large	117-122 cm	90.17 cm
221120	2X Large	127-132 cm	90.17 cm

Vermason recommend using our wrist strap and coiled cord sets with this product:

229815 wrist strap, adjust, elastic, dark blue 2m yellow cord
229820 wrist strap, adjust, elastic, light blue, 2m light blue cord
229825 wrist strap, adjust, elastic, red, 2m black cord
229830 wrist strap, adjust, elastic, yellow, 2m yellow cord

Instructions for use

Follow these directions for proper installation and grounding of the ESD jacket:

1. Put on the garment, fastening all the press studs on the front of the jacket; ensure no clothing is exposed outside of the jacket

2. Throughout use, it is essential that the conductive cuff remains proud of the wearer's under clothing

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3. Connect one end of a coiled cord to a 10mm press stud on a convenient, verified earth bonding point

4. Fit a wristband snugly around the wrist and click the link connector over the stud, snap the other end of the coiled cord to the press stud on the wristband with the connection link sandwiched between stud and cord socket

5. Snap the connector to a stud on the jacket sleeve

6. The user and the jacket will now be properly grounded. The convenience of using the wearer's wrists strap gives a comfortable, strain free fit and a reliable path to ground while the ESD jacket offers extra protection against damaging electrostatic fields which may be generated by the user's clothing

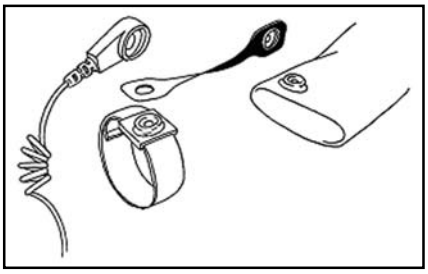

Figure 4. Exploded view of the link connector.

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

Use of ESD Jacket for mobile users

For staff in an EPA who are constantly on the move, Vermason suggest the double socket connector. This extremely simple device completely frees up the wearer whilst maintaining connection to earth. The double socket connector, links the Jacket to the wristband to allow the user to ground the garment to the body via heelgrounders.

Measurement through the operator is $R_G > 10^9\Omega$ (when garment is connected to the wearers wristband using the link and the wearer is grounded using a coiled cord or heel grounders).

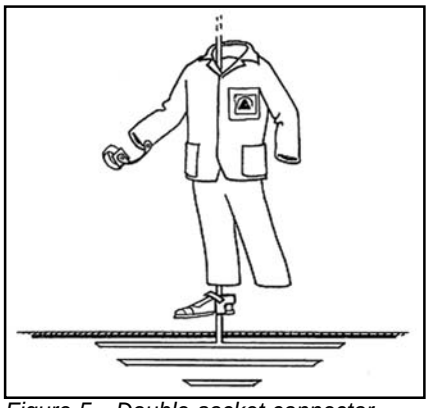

Figure 5. Double-socket connector.

Figure 6. Double-socket connector.

Note: EN 61340-5-1 paragraph 5.2.5 Garments "Coats, jackets, smocks and overalls shall completely cover all clothing in the area of the arms and torso. There shall be electrical continuity between all parts of the garment. Garments shall have characteristics on the outward facing surface in accordance with table 1 [Rp less than or equal to 1 x $10^{12}\Omega$; Charge decay to 10% of initial value (maximum 1 000 V) in less than 2 s]. Garments complying with ESD requirements shall be clearly marked. NOTE Marking with the ESD [protective] symbol … is recommended." EN 61340-5-1 paragraph 5.5 EPA working practices "When used, garments in accordance with 5.2.5 shall be worn and shall be properly fastened at all times."

Specifications

Fabric Weight
155 grams/sq metre

Fabric Content
Texturized polyester (63%), cotton (34%) and a minimum of 3% conductive fibres.

Surface Resistance of Fabric
$R_S > 10^9\Omega$

Static Decay Rate
5000 volts to 500 volts in less than 0.1 seconds, per FTMS-101C

Limited Warranty
Vermason expressly warrants that for a period of two (2) years from the date of purchase or (100) one-hundred wash cycles, whichever occurs first, Vermason ESD Jackets will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement Vermason ESD Jackets, or, at Vermason's option, the ESD Jackets 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 0044 (0) 1462 672005 for a Return Material Authorisation (RMA) and for 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 Vermason 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 Vermason 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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