

Smocks Grounding, Testing and Maintenance



Figure 1. Desco Europe Smock

Description

Desco Europe smocks are designed to be low tribocharging and provide electric field suppression around the torso and arms of the wearer to protect ESD susceptible items from electrostatic fields generated by operator's clothing. Static control garments are intended to attenuate electrostatic fields that may be present on personnel clothing. The smocks meet the requirement for Groundable Static Control Garment System per IEC 61340-5-1 required limit of $< 3.5 \times 10^7$ ohm Rg.

"ESD control garments should be properly fastened to avoid exposure of possible charges on personal clothing worn under the ESD control garments. Groundable static control garments and groundable static control garment systems should be connected to ground before ESDS are handled and should remain grounded whilst handling ESDS."
[IEC TR 61340-5-2 section 5.3.3.4.7 Garments]

Smocks are constructed of a lightweight dissipative material which is made from texturised polyester and a minimum of 8% conductive yarn. The conductive fibres are woven in a diamond design throughout the material, providing continuous and consistent charge dissipation. All of the seams in the smocks are designed to maintain electrical continuity from panel to panel and from sleeve to sleeve in accordance with ANSI/ESD STM2.1.

"After verifying that the garment has electrical continuity through all panels, the garment should be electrically bonded to the grounding system of the wearer so as not to act as a isolated conductor." [IEC TR 61340-5-2 section 5.3.3.4.7 Garments] The conductive fabric in smock is a conductor. If not grounded, the smock can become an isolated charged conductor. If not grounded via a wrist strap coiled cord, ground the ESD garment using ESD footwear to ESD flooring.

The dissipative material becomes part of the ground path to remove static charges. Smocks are available in jacket length with conductive elastic cuffs

The smocks incorporate a "hip-to-cuff" grounding feature which allows for hands-free grounding with no cord attached to the operator's wrist. This feature allows connection of a ground cord to a 4 mm 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. A smock ground the person when used in this manner. Standard touch testing or continuous monitoring can be used to test the "hip-to-cuff" function.

Smocks are available in the following styles and sizes:

| SIZE | ITEM NUMBER | | DIMENSIONS | | |
|----------|------------------------|--|------------|-------------|-------------|
| | Blue | | Chest (cm) | Sleeve (cm) | Length (cm) |
| X Small | 221460 | | 76 - 81 | 86 | 76 |
| Small | 221461 | | 86 - 91 | 86 | 77 |
| Medium | 221462 | | 96 - 101 | 87 | 79 |
| Large | 221463 | | 106 - 112 | 89 | 79 |
| X Large | 221464 | | 117 - 122 | 90 | 81 |
| 2X Large | 221465 | | 127 - 132 | 90 | 83 |
| 3X Large | 221466 | | 137 - 142 | 95 | 84 |
| 4X Large | 221467 | | 147 - 152 | 92 | 86 |
| 5X Large | 221468 | | 168 - 173 | 91 | 89 |

Installation

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

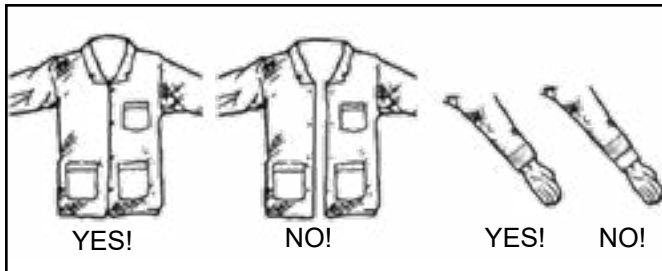


Figure 3. Proper installation of smock on wearer's body

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 (or the wristband) be in contact with operator's skin; the conductive cuff (or the wristband) should never be allowed to be pulled up and over shirt sleeve.
3. Install a coiled cord to the snap stud located above the left hand hip pocket. Connect the other end of the coiled cord to a verified ground point or continuous monitor.

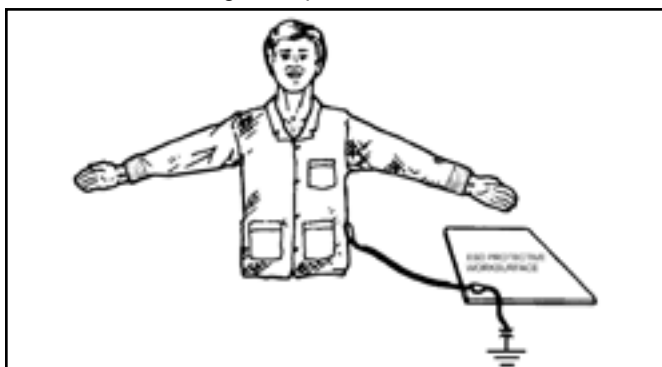


Figure 4. Grounding the smock

NOTE: PROPER ESD CONTROL REQUIRES THAT THE GROUND COILED CORD SELECTED FOR GROUNDING OF PERSONNEL CONTAIN A BUILT-IN CURRENT LIMITING 1 MEGOHM RESISTOR.

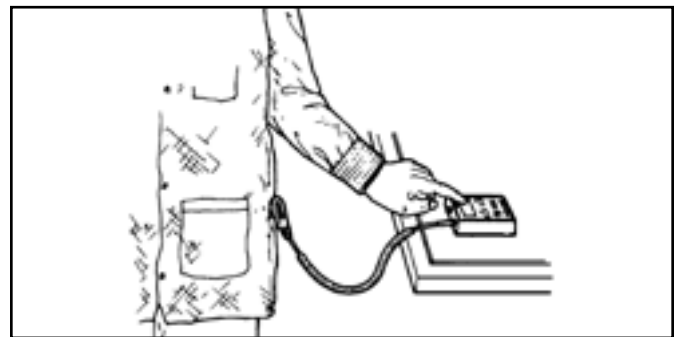


Figure 5. Testing and monitoring of smock and ground cord assembly

Grounding Integrity Testing

For daily testing or continuous monitoring of the grounding integrity of the smocks and ground cords, we recommend testing the smock while worn and the use of a standard wrist strap testers or single-wire workstation continuous monitors. 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 Meter Kit item [19290](#). Place the two 2.27 kg electrodes on different panels to test. Unless properly grounded, the smocks can hold a charge and become a possible source for discharge to ESD sensitive items. For additional information, refer to IEC 61340-4-9 or IEC TS 61340-4-2. Desco Europe has several testers available for this purpose. For more information ask for specification drawings or operating instruction manuals by item number.



Figure 6. Testers

Maintenance

Smocks must be laundered periodically for proper operation. Desco Europe recommends Woolite. Liquid detergents are better than dry because there is less caking and frictional wear. Use only non-ionic softeners and detergents when laundering. Launder the smocks in cool or warm water (max 40 °C), tumble dry with low heat or hang dry. DO NOT USE BLEACH OR FABRIC SOFTENER. DO NOT DRY CLEAN.

Launder the smocks by hand or with a washing machine. Use a standard household machine on gentle cycle or use an industrial machine if "Pony" (typically under 91 kg (200 pound) loads) machines are used. It is not recommended to launder these smocks in heavy industrial laundry machines because it will lead to premature wear; degrading the ESD properties. Smocks should be tumbled dry using low heat.

The conductive yarn is sensitive to heat and should not be exposed to laundering heat in excess of 40 °C (104 °F). Under normal wearing and recommended washing conditions, Desco Europe ESD protective smocks will maintain their usefulness and effectiveness for a minimum of 50 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* | 85 gr/m ² +/- 5% |
| Fabric Colour* | Blue |
| Fabric Content | 92% texturised polyester and 8 % conductive yarn |
| Fabric Weave | Diamond Knitted |
| Surface Resistance | 1 x 10 ⁵ to < 1 x 10 ⁷ ohms, per ANSI/ESD STM2.1 |
| System Resistance | Rg < 3.5 x 10 ⁷ ohm per IEC 61340-5-1 |

*Fabric lots vary slightly in colour and weight.

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

See the Desco Europe Warranty -
DescoEurope.com/Limited-Warranty.aspx