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# Static Control Smocks Grounding, Testing and Maintenance

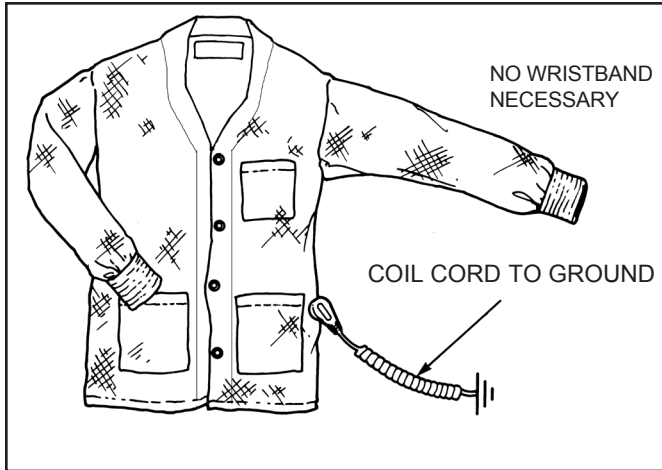


Figure 1. SCS Smock Jacket with Conductive Knit Cuffs.

## Description

SCS smocks are designed to be antistatic, low tribocharging, and create a Faraday Cage around the torso and arms of the wearer to protect ESD susceptible items from electrostatic fields generated by charges on the operator's clothing. Static control garments are intended to attenuate electrostatic fields that may be present on personnel clothing. Smocks meet the requirement for Groundable Static Control Garment System per ANSI/ESD S20.20 required limit of  $< 3.5 \times 10^7$  ohm Rtg tested per ANSI/ESD STM2.1 and ESD TR53.

"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. Personnel clothing usually is electrically separate or isolated from the body." "Groundable Static Control Garment System, Garments that are used to establish the primary ground path for a person shall provide a resistance of less than 35 megohms from the person to the groundable point of the garment." [ESD TR20.20-2008 section 5.3.13 Garments]

Smocks are constructed of a lightweight dissipative material which made from 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 smocks 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.

"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." [ESD TR20.20-2008

section 5.3.13 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 coil cord, ground the ESD garment using ESD footwear to ESD flooring.

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 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. Smocks 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:

## JACKETS WITH CUFFS

SIZE	BLUE	GRAY	CHEST	SLEEVE
XSmall	770010	770020	30"-32"	33 3/4"
Small	770011	770021	34"-36"	34"
Medium	770012	770022	38"-40"	34 3/8"
Large	770013	770023	42"-44"	35"
XLarge	770014	770024	46"-48"	35 1/2"
2XLarge	770015	770025	50"-52"	35 1/2"
3XLarge	770016*	770026*	54"-56"	37 1/2"
4XLarge	770017*	770027*	58"-60"	36 1/2"
5XLarge	770018*	770028*	62"-64"	36"
6XLarge	770019*	770029*	66"-68"	36"

\*Build To Order (BTO) items

Note: BTO terms will apply to BTO items

## Installation

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

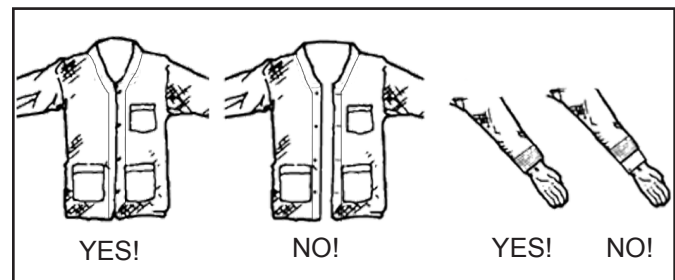


Figure 3. Proper installation of smock wearer's body

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 coil cord to the snap stud located above the left hand hip pocket. Connect the other end of the coil cord to a verified ground point or continuous monitor.

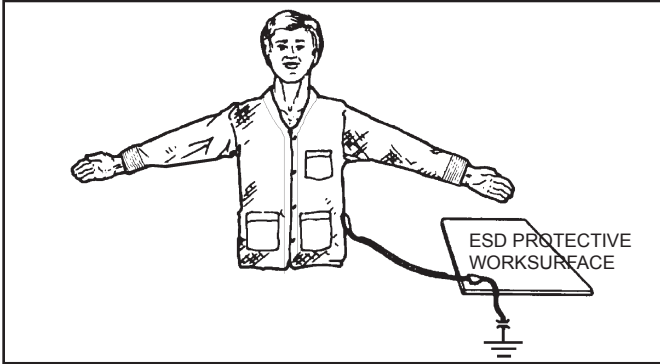


Figure 4. Grounding the smock

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

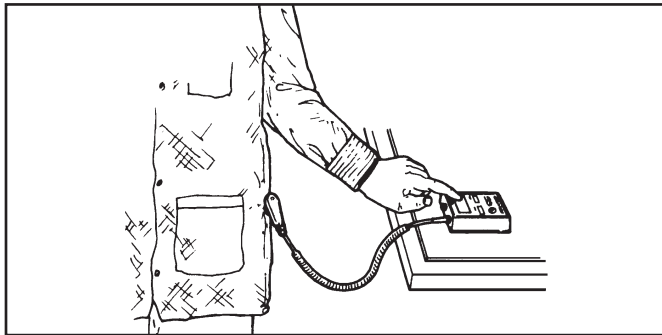


Figure 5. Testing and monitoring of smock and ground cord assembly

### Grounding Integrity Testing

For daily testing or continuous monitoring of the grounding integrity of smocks and ground cords, we recommend testing the smock while worn and the use of a standard wrist strap testers. 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 Analog Surface Resistance Megohmmeter Kit Item # 701. Place the two five-pound 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 ANSI/ESD S20.20, ESD TR20.20, ESD TR53 and the Garment Standard, ANSI/ESD STM2.1. SCS has several testers available for this purpose. For more information ask for specification drawings or operating instruction manuals by item number.

### Maintenance

Smocks must be laundered periodically for proper operation. SCS 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 smocks in cool or warm water, tumble dry with low heat or hang dry. **DO NOT USE BLEACH OR FABRIC SOFTENER.**

Launder 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 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 carbon-suffused mono-filament nylon is sensitive to heat and should not be exposed to laundering heat in excess of 120°F. Under normal wearing and recommended washing conditions, SCS 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 $1 \times 10^4$ ohms, nonflaking and non-sloughing.
Surface Resistance	$1 \times 10^5 < 1 \times 10^7$ ohms, per ANSI/ESD STM2.1 and ESD TR53 of Fabrics
Glass Transition Temp	250°F
Flash Point	1040°F

\*Fabric lots vary slightly in color and weight.

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

**View SCS Product Warranty**