

# 3M™ Cold Shrink QT-III Silicone Rubber Skirted and Inverted Skirted Termination Kits, 7620-S, 7680-S and 7690-S Series

## Pollution Severity Level Guide

Light	Heavy
<ul style="list-style-type: none"> <li>Areas without industry and with low-density housing</li> <li>Areas subjected to frequent winds and/or rainfall with low-density industry and housing</li> <li>Agricultural areas *</li> <li>Mountainous areas</li> </ul> <p>All of these regions should be situated at least 7 miles from the coast and should not be exposed to coastal winds.**</p>	<ul style="list-style-type: none"> <li>High-density industrial areas and some urban areas with high-density housing, especially those with infrequent rainfall</li> <li>Areas subjected to a moderate concentration of conductive dust, particularly deposits from industrial smoke</li> <li>Areas generally close to the coast and exposed to coastal spray or to strong winds carrying sand and salt, and subjected to regular condensation</li> </ul>
Medium	Extremely Heavy
<ul style="list-style-type: none"> <li>Non-polluting industrial areas subject to infrequent rainfall and with average-density housing</li> <li>Areas subject to frequent winds and/or rainfall with high-density industry and housing</li> <li>Areas exposed to wind from the coast, but generally over two miles from the coast</li> </ul>	<ul style="list-style-type: none"> <li>Usually very limited areas having extremely heavy pollutants from industrial sites, especially those located near oceans and subjected to prevailing winds from the sea</li> <li>Very small isolated areas where terminations are located immediately adjacent to a pollutant source, especially downwind (cement plants, paper mills, etc.)</li> </ul>

\* Use of fertilizers by spraying, or the burning of crop residues, can lead to a higher pollution level due to dispersal by wind.

\*\*Distances from coast depend on the topography of the coastal area and on the extreme wind conditions.

## Recommended Application Guide

3M Cold Shrink QT-III Silicone Rubber Skirted and Inverted Skirted Termination Kit	System Voltage	Operating Environment			
		Light	Medium	Heavy	Extremely Heavy
(2 skirt) 7620-S-2, 7621-S-2	5 & 8 kV	✓	✓	✓	
(2 Skirt) 7622-S-2, 7622-S-2 (L)**, 7622-S-INV-2, 7622-S-INV-2 (L)**	15 kV	✓	✓	✓	
(4 Skirt) 7692-S-4 - 7696-S-4, 7692-S-4 (L)**, 7695-S-4 (L)**, 7693-S-INV-4, 7695-S-INV-4, 7696-S-INV-4, 7695-S-INV-4 (L)**	15 kV	✓	✓	✓	✓
(8 Skirt) 7683-S-8 - 7686-S-8, 7685-S-8 (L)**	15 kV	✓	✓	✓	✓
(4 Skirt) 7692-S-4 - 7696-S-4, 7695-S-4 (L)**, 7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4 (L)**, 7696-S-INV-4	25/28 kV	✓	✓	✓	
(8 Skirt) 7683-S-8 - 7686-S-8, 7685-S-8 (L)**	25/28 kV	✓	✓	✓	✓
(4 Skirt) 7693-S-INV-4, 7695-S-INV-4, 7696-S-INV-4	35 kV	✓	✓	✓	
(8 Skirt) 7683-S-8 - 7686-S-8	35 kV	✓	✓	✓	*
(12 Skirt) 7685-S-12 - 7686-S-12	35 kV	✓	✓	✓	✓

Recommended operation environments are marked with a check ( ✓ )

\*Consult 3M sales representative

\*\* The designated (L) version terminations are the same as the non-(L) versions of the above specified termination kits, except that they are on a larger core to accommodate and properly fit specific 3M Mechanical Shearbolt Lugs QL2 Series: Two-Hole and the Insulation O.D. range is slightly different than the non-(L) versions (See Termination Selection Table on Pages 9 and 10).

**Environmental  
Performance**

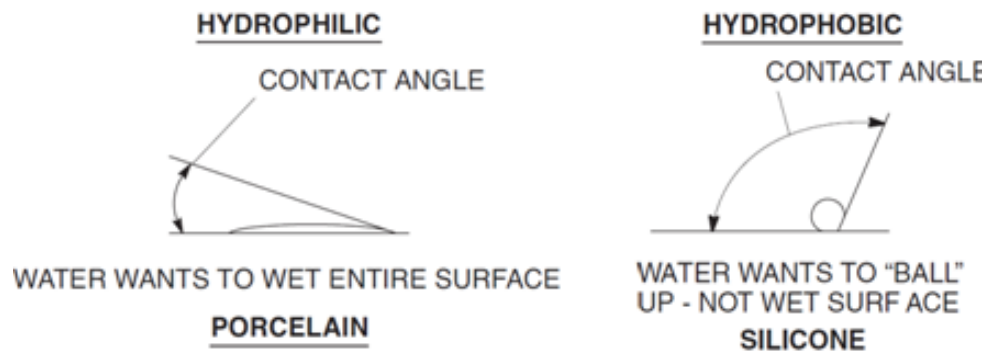
**Material Characteristics**

*Hydrophobicity*

When airborne contaminants are deposited on a termination surface, destructive leakage currents can initiate when the surface becomes wet. Fog and drizzle are normally considered to be worse than rain as these two forms of precipitation can combine with accumulated surface contaminants to reduce surface resistivity making the surface conductive to varying degrees, promoting leakage current formation. Rain tends to wash the pollutants off the termination surface.

The inherent hydrophobic nature of the silicone rubber compound used to make 3M Cold Shrink QT-III Silicone Rubber Skirted and Inverted Skirted Termination Kits 7620-S, 7680-S and 7690-S Series components tends to reject moisture accumulation, and thereby, reduces the probability for discharge-initiated material erosion and tracking.

On occasion severe environmental conditions that are sustained for long time periods can cause any polymeric surface to lose its hydrophobicity. Because of this, EPD polymers and others tend to lose their hydrophobic nature over time. Porcelain surfaces become increasingly hydrophilic with time, which can result in premature failure or flashover. Silicone surfaces can regenerate their hydrophobic character. The silicone insulator surface will re-establish its hydrophobic surface within 24 hours. This unique ability is a major factor for ensuring a long service life.



*Ozone, Heat and UV Resistance*

One of the most outstanding physical characteristics of silicone rubber is its retention of desirable properties over the very wide temperature range of -150°F (-100°C) to 600°F (315°C). While there are applications that take advantage of these temperature extremes, a more attractive feature might be that of its extremely long life expectancy at moderate operating temperatures.

The silicone polymer molecular backbone, silicon-oxygen linkage, provides the same strong -Si-O-Si- type bond occurring in quartz, sand and glass, which accounts for the outstanding temperature properties of silicones and their resistance to oxidation by ozone, corona and weathering. Polymer chains from organic rubber materials often have double carbon bond molecular backbones, which are quickly cleaved by ozone, ultraviolet light, heat or other influences found in the operating environment.

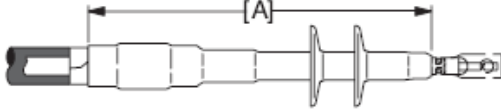
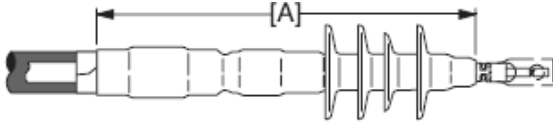
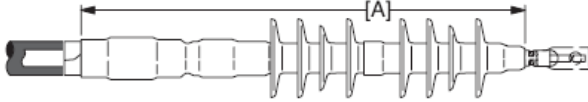
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## Typical Properties

Not for specifications. Values are typical, not to be considered minimum or maximum. Properties measured at room temperature 73°F (23°C) unless otherwise stated.

3M Cold Shrink QT-III Silicone Rubber Skirted and Inverted Skirted Termination Kits, 7620-S, 7680-S and 7690-S Series can be used on cables with a rated maximum operating temperature of 221°F (105°C) and an overload rating of 284°F (140°C). Terminations constructed from these kits meet the requirements of IEEE Standard 48, "IEEE Standard Test Procedures and Requirements for High-Voltage Alternating-Current Cable Terminations" and are designated Class 1 for outdoor weather-exposed locations. The current rating of these terminations meets or exceeds the current rating of the cables on which they are installed.

## Typical Dimensions

			
Kit Number	Dimension [A] (Max.)	Wet Creepage Distance (Max.)	Arcing Distance (Max.)
7620-S-2	10.5" (267 mm)	14.0" (356 mm)	10.5" (267 mm)
7621-S-2	10.5" (267 mm)	14.0" (356 mm)	10.5" (267 mm)
7622-S-2	9.8" (249 mm)	13.3" (338 mm)	9.8" (249 mm)
7622-S-2 (L)	9.8" (249 mm)	13.3" (338 mm)	9.8" (249 mm)
			
Kit Number	Dimension [A] (Max.)	Wet Creepage Distance (Max.)	Arcing Distance (Max.)
7692-S-4	12.25" (311 mm)	18.5" (470 mm)	12.25" (311 mm)
7692-S-4 (L)	12.25" (311 mm)	18.5" (470 mm)	12.25" (311 mm)
7693-S-4	12.25" (311 mm)	18.5" (470 mm)	12.25" (311 mm)
7694-S-4	12.25" (311 mm)	18.5" (470 mm)	12.25" (311 mm)
7695-S-4	12.25" (311 mm)	18.5" (470 mm)	12.25" (311 mm)
7695-S-4 (L)	12.25" (311 mm)	18.5" (470 mm)	12.25" (311 mm)
7696-S-4	13.25" (337 mm)	19.5" (495 mm)	13.25" (337 mm)
			
Kit Number	Dimension [A] (Max.)	Wet Creepage Distance (Max.)	Arcing Distance (Max.)
7683-S-8	20.50" (521 mm)	33.00" (838 mm)	20.50" (521 mm)
7684-S-8	20.50" (521 mm)	33.00" (838 mm)	20.50" (521 mm)
7685-S-8	20.50" (521 mm)	33.00" (838 mm)	20.50" (521 mm)
7685-S-8 (L)	20.50" (521 mm)	33.00" (838 mm)	20.50" (521 mm)
7686-S-8	21.50" (546 mm)	34.00" (864 mm)	21.50" (546 mm)