

3M™ Cold Shrink QT-III Silicone Rubber Skirted and Inverted Skirted Termination Kits, 7640-S, 7650-S and 7660-S Series 5, 8, 15, 25/28 and 35 kV

Applications

The 3M Cold Shrink QT-III Silicone Rubber Skirted and Inverted Skirted Termination Kits, 7640-S, 7650-S and 7660-S Series are designed for:

- 5, 8, 15, 25/28 and 35 kV voltage classes
- Jacketed Concentric Neutral (JCN) and Concentric Neutral (CN) cables
- Solid dielectric insulations, such as polyethylene, XLPE and EPR
- Protected and weather-exposed contaminated locations
- Free-hanging or bracket-mounting arrangements
- These terminations can be field tested using normal cable testing procedures (Reference: ANSI/IEEE Standard 400 "Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems." Refer to most recent version.)

The amount of airborne contamination determines the operating environment. Operating environments are described as areas having varying degrees of airborne contaminant or pollution severity that may or may not affect the long-term performance of terminations. These operating environments are defined as light, medium, heavy and extremely heavy variations of pollution severity. The appropriate termination selection depends on the system voltage and operating environment. (See tables on next page.)

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) 7642-S-2, 7642-S-2 (L)**, 7642-S-INV-2, 7642-S-INV-2 (L)**	15 kV	√	√	√	
(4 Skirt) 7652-S-4 – 7656-S-4, 7652-S-4 (L)**, 7655-S-4 (L)**, 7653-S-INV-4, 7655-S-INV-4, 7655-S-INV-4 (L)**, 7656-S-INV-4	15 kV	√	√	√	√
(8 Skirt) 7663-S-8 – 7666-S-8, 7665-S-8 (L)**	15 kV	√	√	√	√
(4 Skirt) 7652-S-4 – 7656-S-4, 7655-S-4 (L)**, 7653-S-INV-4, 7655-S-INV-4, 7655-S-INV-4 (L)**, 7656-S-INV-4	25/28 kV	√	√	√	
(8 Skirt) 7663-S-8 – 7666-S-8, 7665-S-8 (L)**	25/28 kV	√	√	√	√
(4-Skirt) 7653-S-INV-4, 7655-S-INV-4, 7656-S-INV-4	35 kV	√	√	√	
(8 Skirt) 7663-S-8 – 7666-S-8	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 Tables on Pages 5 & 6).

Pollution Severity Level Guide

Light	Heavy
<ul style="list-style-type: none"> • Areas without industry and with low-density housing • Areas subjected to frequent winds and/or rainfall with low-density industry and housing • Agricultural areas◇ • Mountainous areas <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"> • High-density industrial areas and some urban areas with high-density housing, especially those with infrequent rainfall • Areas subjected to moderate concentration of conductive dust, particularly industrial smoke-producing deposits • Areas generally close to the coast and exposed to coastal spray or to strong winds carrying sand and salt, and subjected to regular condensation
Medium	Extremely Heavy
<ul style="list-style-type: none"> • Non-polluting industrial areas subject to infrequent rainfall and with average-density housing • Areas subjected to frequent winds and/or rainfall with high-density industry and housing • Areas exposed to wind from the coast, but generally over two miles from the coast 	<ul style="list-style-type: none"> • Usually very limited areas having extremely heavy pollutants from industrial sites, especially those located near oceans and subjected to prevailing winds from the sea • Very small isolated areas where terminations are located immediately adjacent to a pollutant source, especially downwind (cement plants, paper mills, etc.)

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.

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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, 7640-S, 7650-S and 7660-S Series terminations, can be used on cables with a rated maximum operating temperature of 221°F (105°C) and emergency overload rating of 284°F (140°C).

Terminations constructed from these kits meet the requirements of IEEE 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.

3M Cold Shrink QT-III Silicone Rubber Skirted Termination Selection Table

7640-S, 7650-S and 7660-S Series

Kit Number	Cable Insulation O.D. Range in. (mm)	Conductor Range (AWG and kcmil)				
		5 kV 100% and 133%	8 kV 100% and 133%	15 kV 100% and 133%	25/28 kV 100% and 133%	35 kV 100% and 133%
7642-S-2	0.64 - 1.08 (16,3 - 27,4 mm)	4/0 - 400	3/0 - 300	2 - 4/0 (35 - 120 mm ²)	-	-
7642-S-2 (L)*	0.69 - 1.22 (17,5 - 31,0 mm)	-	-	1/0 - 4/0 (60 - 120 mm ²)	-	-
7652-S-4	0.64 - 1.08 (16,3 - 27,4 mm)	4/0 - 400	3/0 - 300	2 - 4/0 (35 - 120 mm ²)	2 - 1/0 (35 - 50 mm ²)	-
7652-S-2 (L)*	0.69 - 1.22 (17,5 - 31,0 mm)	-	-	1/0 - 4/0 (60 - 120 mm ²)	-	-
7653-S-4	0.72 - 1.29 (18,3 - 32,8 mm)	300 - 500	250 - 500	2/0 - 300 (70 - 150 mm ²)	2 - 4/0 (35 - 120 mm ²)	-
7654-S-4	0.83 - 1.53 (21,1 - 38,9 mm)	500 - 750	350 - 700	4/0 - 500 (120 - 240 mm ²)	2/0 - 250 (70 - 150 mm ²)	-
7655-S-4	1.05 - 1.80 (26,7 - 45,7 mm)	700 - 1500	600 - 1250	500 - 1000 (240 - 500 mm ²)	250 - 800 (150 - 400 mm ²)	-
7655-S-4 (L)*	1.15 - 1.98 (29,2 - 50,3 mm)	-	-	750 - 1000 (400 - 500 mm ²)	500 - 750 (240 - 325 mm ²)	-
7656-S-4	1.53 - 2.32 (38,9 - 58,9 mm)	1750 - 2000	1500 - 2000	1250 - 2000 (625 - 1000 mm ²)	900 - 1750 (500 - 800 mm ²)	-
7663-S-8	0.72 - 1.29 (18,3 - 32,8 mm)	300 - 500	250 - 500	2/0 - 300 (70 - 150 mm ²)	2 - 4/0 (35 - 120 mm ²)	2 - 2/0 (35 - 70 mm ²)
7664-S-8	0.83 - 1.53 (21,1 - 38,9 mm)	500 - 750	350 - 700	4/0 - 500 (120 - 240 mm ²)	2/0 - 250 (70 - 150 mm ²)	2 - 4/0 (35 - 120 mm ²)
7665-S-8	1.05 - 1.80 (26,7 - 45,7 mm)	700 - 1500	600 - 1250	500 - 1000 (240 - 500 mm ²)	250 - 800 (150 - 400 mm ²)	3/0 - 600 (95 - 325 mm ²)
7665-S-8 (L)*	1.15 - 1.98 (29,2 - 50,3 mm)	-	-	750 - 1000 (400 - 500 mm ²)	500 - 750 (240 - 325 mm ²)	-
7666-S-8	1.53 - 2.32 (38,9 - 58,9 mm)	1750 - 2000	1500 - 2000	1250 - 2000 (625 - 1000 mm ²)	900 - 1750 (500 - 800 mm ²)	700 - 1500 (350 - 725 mm ²)

* Conductor Size Range values for this termination only apply when using 3M Mechanical Shearbolt Lugs QL2 Series: Two-Hole, otherwise the Conductor Size Range values for the base termination Kit Number apply.