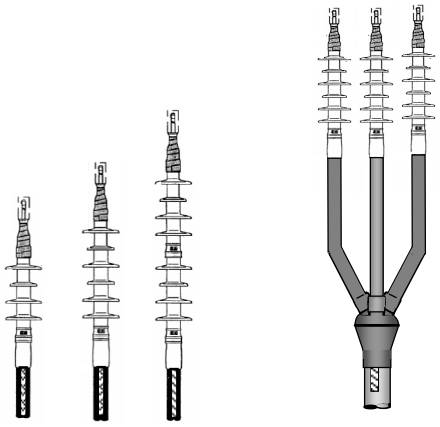
QTII (X) Series
Silicone Rubber Cold Shrink Termination Kits

For MV Armored/Non-Armored Cables up to 40.5kV

DATA SHEET **Update: May 2021**

1. Product Description

The 3M QTII (X) Series are Silicone Rubber Cold Shrink Quick Terminating System that designed to accommodate medium voltage metallic- shielded armored non-armored, copper or aluminum conductor power cables configurations.



3/C Cables 1/C Cables

The main components of QTII (X) :

▪ **QTII Termination Assembly:**
The cold shrink delivery system has repeatedly proven itself to be unsurpassed as a positive and reliable electrical insulating and moisture-sealing system for cable primary insulation interface surface.
One piece cold shrink termination assembly is created when silicon rubber skirted insulator is mounted over a High Dielectric Constant (High-K) stress relief on a common support core.

▪ **Silicone Breakout Boot Assembly (for 3C cable):**
- A molded silicone rubber open-ended three-finger boot. The installed breakout boot provides a sealed enclosure between the cable phase leg breakout boot area and the operating environment

▪ **Silicone Phase Re-jacketing Sleeve Assembly (for 3C cable):**
It is designed to reduce sliding friction when positioning the assembly over cable phase metallic shield surfaces. Re-jacketing sleeves are track-resistant insulating tubes that also protect cable phase legs from exposure to moisture, corrosion, ozone, ultraviolet radiation, physical contact and other hazards associated with termination operating environments.

Silicone Rubber-Material Characteristics

1. Smooth surface: minimum amount of contamination adhere to the termination.

2. Hydrophobicity: When water comes in contact with the silicone it beads up and runs off the skirts rather than completely wetting these surface. Thus a less conductive path is formed on the silicone and leakage currents are lowered

3. Non-organic/ nonconductive: degrade leakage current and arcing occurs on the surface of termination.

4. High temperature withstand: An outstanding physical characteristic of silicone rubber is its retention of desirable properties over the wide temperature range of 100°C to 180°C.

Configurations: **ID**: In door **OD**: Outdoor

	6/10(12)kV		12.7/22(24)kV		20/35(40.5)kV	
	ID	OD	ID	OD	ID	OD
4-Skirt	✓	✓	✓			
6-Skirt				✓	✓	
8-Skirt						✓

2. Product Applications

- For power cables up to 36 kV
- For polymeric cables: polyethylene, XLPE, EPR.
- For 1C/ 3C copper tape, wire shield, armored/ non-armored power cables.
- For copper or aluminum conductors.
- For contaminated, pollution area, operating environment.
- For switchgear, transformer, motor lead (terminal type) bus, overhead etc. connections.

3. Features and Benefits

- Versatile- Install quickly and accommodates a wide range of cable sizes: from 25sqmm to 630sqmm.
- Simple hand application, no need for special installation tools.
- No torches or heat required
- Excellent resistance to ozone and UV radiation.
- Good solvent resistant;
- Excellent thermal stability.
- High dry and wet insulation resistance.
- High flexible- accommodates all cable company bend radius recommendations.
- Reliable Seals - Termination assemblies retain resiliency and cable interface pressure after prolonged years of aging and exposure.

4. Specification

3M QTII (X) Series Termination are approved for use on electrical power cables that have continuous operating temperature rating of 90°C and an emergency overload rating of 130°C.

The current rating of the QTII (X) Series Termination meets or exceeds the current rating of the cable onto which it is applied.

3M QTII (X) pre-build a special high dielectric constant (High-K) controls the electric field surrounding the terminated cable insulation shield end. The stress in the cable underneath this unit is less than it is in the shield portion of the cable.

Standards application:
The QTII (X) Series Termination meet or exceed the specification requirements of Standards
- IEEE Standard 48-1990, for Class 1 termination
- CENELEC Standards HD 628-S1 and HD 629.1.S1.
- VDE Standard 0278-628 and VDE 0278-629-1
- British Standard BS C-89
- Spanish Standard UNE 21-115-75
- Brazilian Standard A*B*N*T* 9314
- French EdF Standards HN 33-E-01, HN 41-E-01

Operating Temperature

Cable Standard Reference	Max. Continuous OT	Emergency OT
AEIC CS5 (XLPE)/ AEIC CS6 (EPR)	90°C	130°C
IEC 60502-2 (XLPE)	90°C	250°C (conductor I_{sc})

5. Product Series Number

	6/10(12)kV	12.7/22(24)kV		20/35(40.5)kV	
	Indoor/ Outdoor	Indoor	Outdoor	Indoor	Outdoor
1-phase	QTII (X)4S-11	QTII (X)4S-12	QTII (X)6S-12	QTII (X)6S-13	QTII (X)8S-13
3-phase	QTII (X)4S-31	QTII (X)4S-32	QTII (X)6S-32	QTII (X)6S-33	QTII (X)8S-33

Note: **QTII (X)xS-CV**

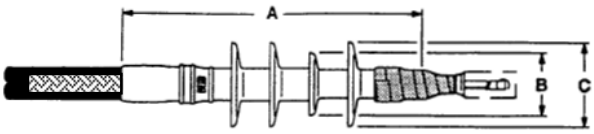
QTII : Product Name Quick Termination II
(X)xS : Type of QTII termination/body assembly (i.e. J4S, L6S, M8S …; _S: Skirt)
C : Number of Conductor/ Core (1, 3)
V : Class of Voltage (1: 12kV; 2: 24kV; 3: 40.5kV)

Ex.: QTII (L)6S-32 is QTII 3/C termitation, body type L 6S, outdoor application for 24kV class.

6. Selection Guide

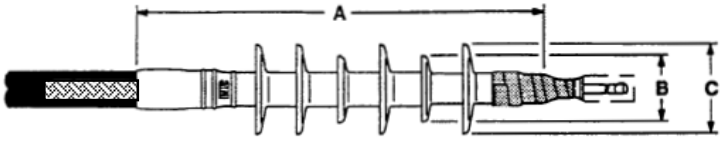
6.1. The QTII Termination

4 Skirt



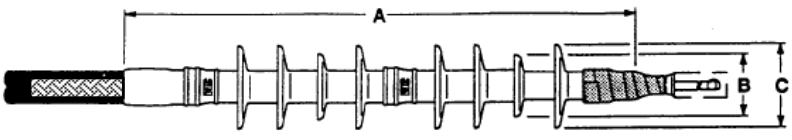
FOUR–SKIRT TERMINATION (4S)

6 Skirt



SIX–SKIRT TERMINATION (6S)

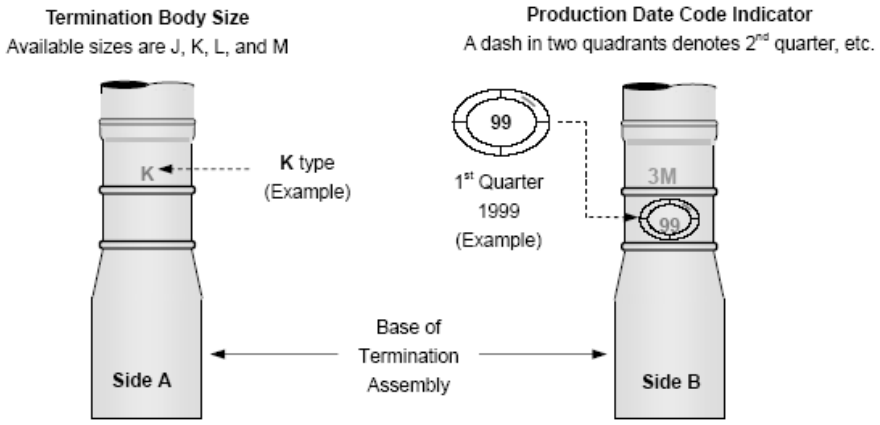
8 Skirt



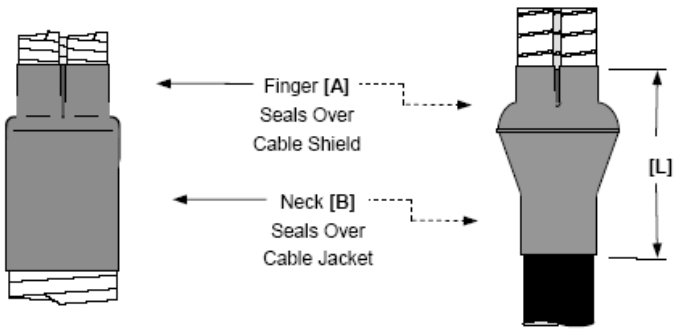
EIGHT–SKIRT TERMINATION (8S)

Number of QTII body	Cable Application Range			Dimensions (mm)				
	O.D. insulation (mm)		O.D. Jacket (mm)	Installed length (A)	B	C	Creepage Distance (1P / 3P)	Arcing Distance
	Min.	Max.						
4- SKIRT								
J	16.3	22.9	20.3 - 30.5	250	42.4	68.1	438 / 1138	317
K	21.3	33.8	25.4 - 40.6	250	46.2	69.8	438 / 1138	317
L	27.9	41.9	33.0 - 48.3	275	50.8	82.5	489 / 1189	356
M	33.0	49.5	38.1 - 61.0	280	50.8	90.2	495 / 1195	362
6- SKIRT								
J	16.3	22.9	20.3 - 30.5	325	42.4	68.1	584 / 1284	394
K	21.3	33.8	25.4 - 40.6	325	46.2	69.8	584 / 1284	394
L	27.9	41.9	33.0 - 48.3	360	50.8	82.5	654 / 1354	432
M	33.0	49.5	38.1 - 61.0	370	50.8	90.2	660 / 1360	438
M-EXT	33.0	49.5	38.1 - 61.0	370	50.8	90.2	720/NA	438
8- SKIRT								
K	21.3	33.8	25.4 - 40.6	415	46.2	69.8	762 / 1462	508
L	27.9	41.9	33.0 - 48.3	450	50.8	82.5	832 / 1532	559
M	33.0	49.5	38.1 - 61.0	450	50.8	90.2	854 / 1554	565
M-EXT	33.0	49.5	38.1 - 61.0	450	50.8	90.2	915/NA	565

Termination Identification & Marking



6.2. The Silicone Rubber Breakout Boot Assembly (for 3C cable)



Product size (*)	Finger [A]	Neck [B]	Installed Length [L]	Application Range (mm2)	
	(mm)	(mm)	(Approx. mm)	**24kV**	**35kV**
8563	33.02	83.31	165	35/50/75/95	35/50
8564	45.97	114.30	220	120/150/ 185/240/300	70/95/120/ 150/185/240

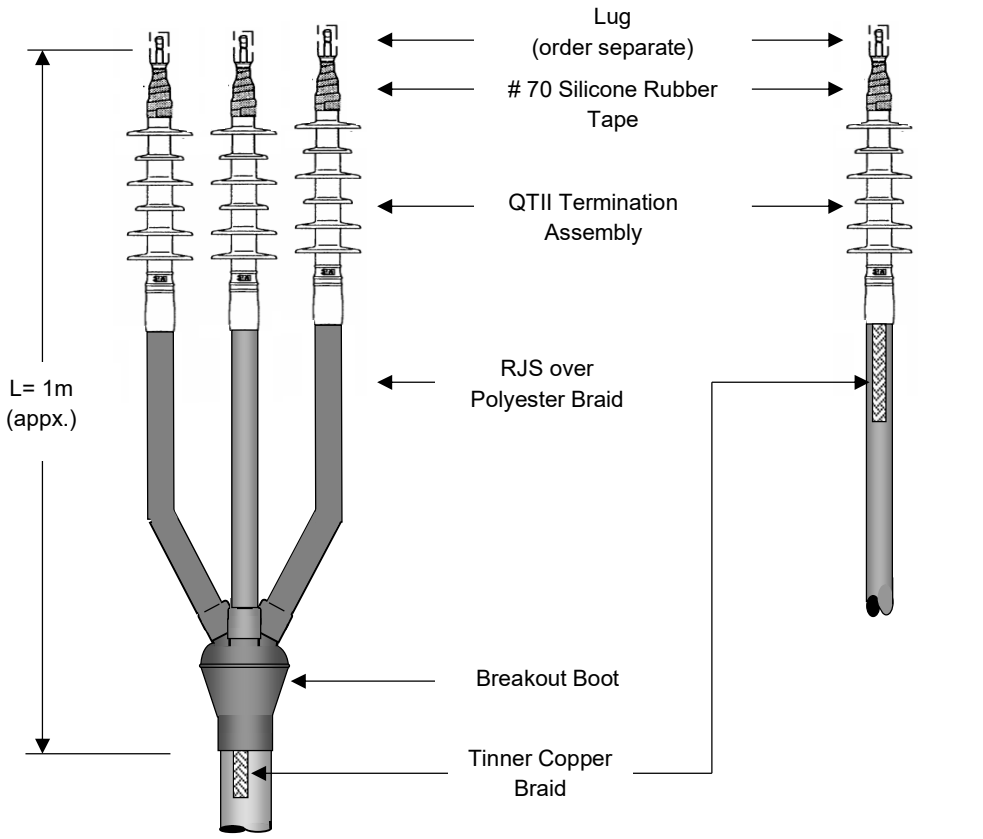
6.3. The Silicone Rubber Phase Re-jacketing Sleeve Assembly (for 3C cable)

RJS Series Phase Re-jacketing Sleeves
(Silicone Rubber Tube over Polyester Braid)

Product size (*)	Tube ∅	Braid ∅	Accommodation Range	
	(ID - mm)	(ID - mm)	**24kV**	**35kV**
RJS-3	24.1	25.4	35/50/70/95	35/50
RJS-4	29.7	25.4/ 31.7	120/150/185	70/95
RJS-5	36.3	25.4/ 31.7	240/300	120/150/185/240

(*): Length of RJS for each phase approximate 500mm. 3M can supply the length of tubes depend on Customer requirements

Typical Installed Quick Termination II Kit

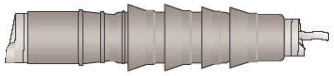


3/C Termination Kit **1/C Termination Kit**

- Length of phases depend on requirements of Customer,
- Installed length of 3-phase 3M QTII termination standard kits are 1m approximate.

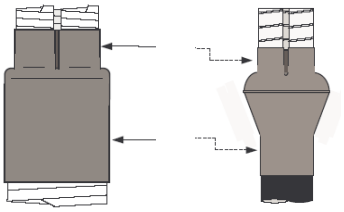
7. Installation Technique

Termination Assembly



Re-jacketing Sleeves (RJS)

Cold Shrink Breakout Boot



7.1. For 1/C cables:

1. Prepare cable according to standard procedure.
2. Install grounding system of cable termination.
3. Slide termination assembly onto cable.
4. Install termination lug.
5. Place termination over cable and unwind the core allowing termination to shrink into place.
6. Apply 70-tape top seal.

7.2. For 3/C cables:

1. Prepare cable according to standard procedure.
2. Install grounding system for 3 phases of cable.
3. Place breakout boot and unwind the inner plastic support cores.
4. Install RJS (re-jacketing Sleeves) for 3 phases. Prepare each phase cable for install termination.
5. Install termination lug.
6. Place and install termination assembly by unwind the inner plastic support core.
7. Apply 70-tape top seal.

Make the same for remaining phases.

8. Maintenance

Surface Cleaning:
3M QTII (X) Series Terminations are not harmed by field surface cleaning. Established techniques for cleaning insulators and terminations, such as high pressure water or pulverized corn cob blasting, are acceptable.
It should be noted, however, that only extreme areas of environmental contamination should require this kind of attention.

9. Availability

3M QTII (X) Series Terminations are available to terminate MV power cables.

10. Shelf Life

Components of 3M QTII (X) Series Terminations are stable under normal storage conditions.

Maximum recommended storage temperature is 43°C. The termination assemblies are not affected by freezing storage temperatures. Normal stock rotation procedures are recommended.

As provide, in the expanded state, QTII (X) Series have an on-shelf storage life of three years from the date of manufacture.

3M Viet Nam
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