

JOINTMASTER

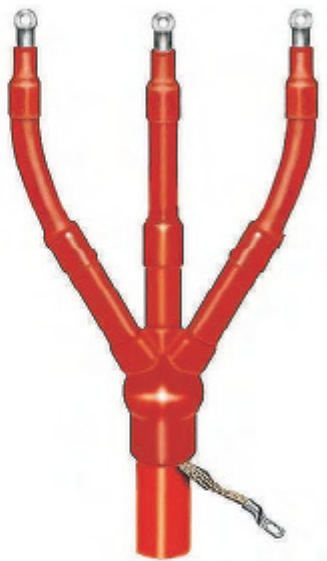
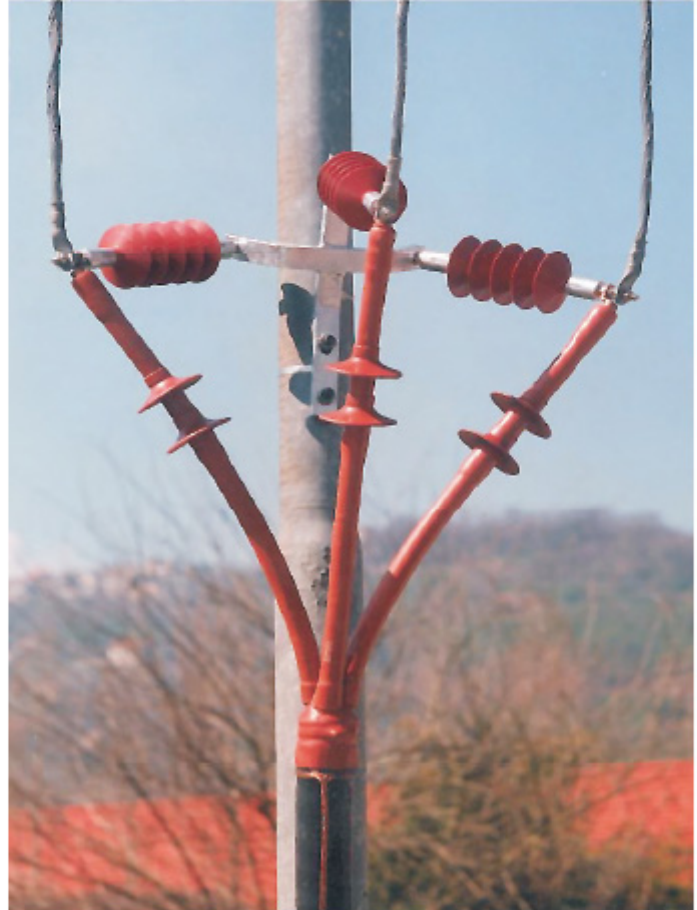


Setting the Standards in Cable Jointing

JOINTMASTER Medium & High Voltage (6,6 - 36kV) Cable Terminations



Outdoor 3 Core Termination



Indoor 3 Core Termination

JOINTMASTER - range of cable termination systems are manufactured in Italy by **elcon** and distributed by Polymer Technologies

JOINTMASTER offers a comprehensive range of medium and high voltage cable terminations aimed at the local and export markets.

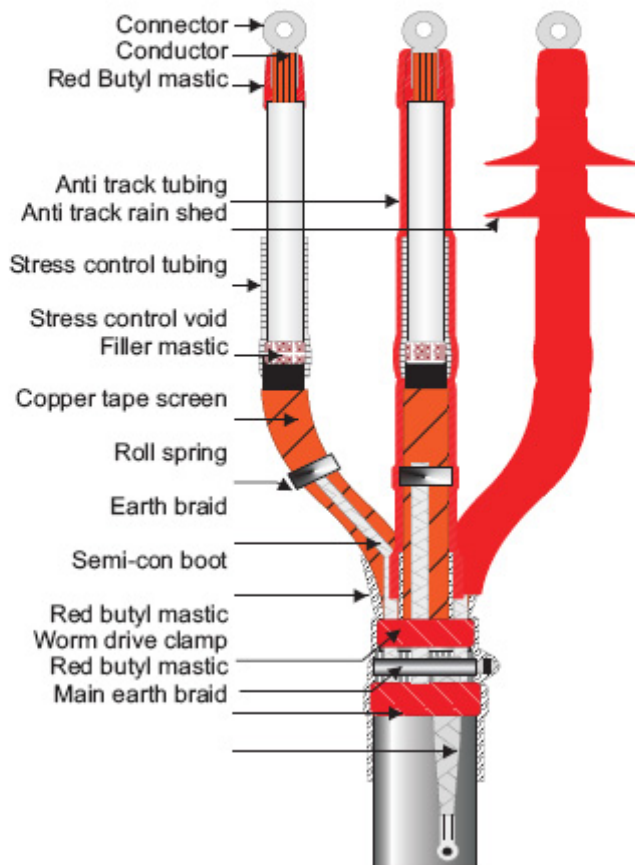
The terminations cater for all cable types including PILC and XLPE for both indoor and outdoor applications in size ranges from 16 up to 1000sq mm up to 33kV

These terminations have been independently tested to the requirements of VDE 0278, CENELEC HD629.1 S1 and IEC 60502 Parts 1-4.

A wide range of accessories such as right angle and straight anti track bushing insulating boots are available to compliment the terminations.

Ordering Information:

JOT11/3X2T4E



- E = Earth kit
- T4 = Tail length
- 2 = Cable size
- X = XLPE Cable
- B = PILC Cable
- 3 = 3 Core
- 1 = 1 Core
- 11 = 11kV
- 22 = 22kV
- 33 = 33kV
- OT = Outdoor term
- IT = Indoor term

Tail Lengths:

Voltage	T3*	T4	T5	T6	T7	T8
6,6kV	350	450	650	800	1000	1200
11kV	350	450	650	800	1000	1200
22kV		450*	650	800	1000	1200
33kV			650*	800	1000	1200

* = Single core cables only

Test requirements for PILC and XLPE cable terminations - In accordance with CENELEC HD629.1 S1

TEST no	REQUIREMENT	12kV	24kV	36kV
1	(a) Rated withstand voltage AC - Dry (b) Rated withstand voltage AC - Dry (c) Rated withstand voltage AC - Wet	28,5kV - 5 min 16kV - 15 min 25,5kV - 1 min	57kV - 5 min 32kV - 15 min 51kV - 1 min	85,5kV - 5 min 47,5kV - 15 min 76kV - 1 min
2	D.C. Voltage withstand - Dry	38kV - 15 min	76kV - 15min	114kV - 15 min
3	Rated impulse Voltage 10 pos & 10 neg	95kV	125kV	195kV
4	Partial discharge (N/A to PILC)	<5pC @ 12kV	<5pC @ 12kV	<5pC @ 12kV
5	Load cycling @ max cable temp (a) In air 3 cycles (b) In air 123 cycles (c) In air 113 cycles (d) In air 60 cycles (e) In 1 mtr Water 63 cycles (f) Immersion in water 10 cycles	16kV	32kV	47,5kV
6	Humidity test (a) 300hr @spray rate 0.3dm ³ /m ² Salt Fog test (b) 1000hr @spray rate 0.3dm ³ /m ²	8kV 8kV	16kV 16kV	24kV 24kV
7	Impact test @ ambient temp	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm
8	Impact test @ low temp -20°C for 2hr	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm

Test Sequence:	Test Number
Indoor Terminations	2, 1(a), 4, 3, 5(a), 4, 5(b), 4, 3, 1(b), 6(a)
Outdoor Terminations	2, 1(a), 1(c), 4, 3, 5(a), 4, 5(c), 5(f), 4, 3, 1(b), 6(b)
Joints	2, 1(a), 4, 7, 3, 5(a), 4, 5(d), 5(e), 4, 3, 1(b), 8

Setting the Standards in Cable Jointing

Medium Voltage Single Core Termination Kits

The **JOINTMASTER** - elcon range of medium voltage cable termination kits are suitable for both indoor and outdoor use on PILC or XLPE cables from 6,6kV up to 33kV.

The terminations are supplied in sets of three, and are complete with solderless earth kits.



These terminations are suitable for use on Aerial Bundle Conductors (ABC) and in all environment including high contamination



All of the terminations have been independently tested to, and exceed the requirements of CENELEC HD629.1 S1

Full sequence test reports are available upon request.

Test requirements for PILC and XLPE cable terminations - In accordance with CENELEC HD629.1 S1

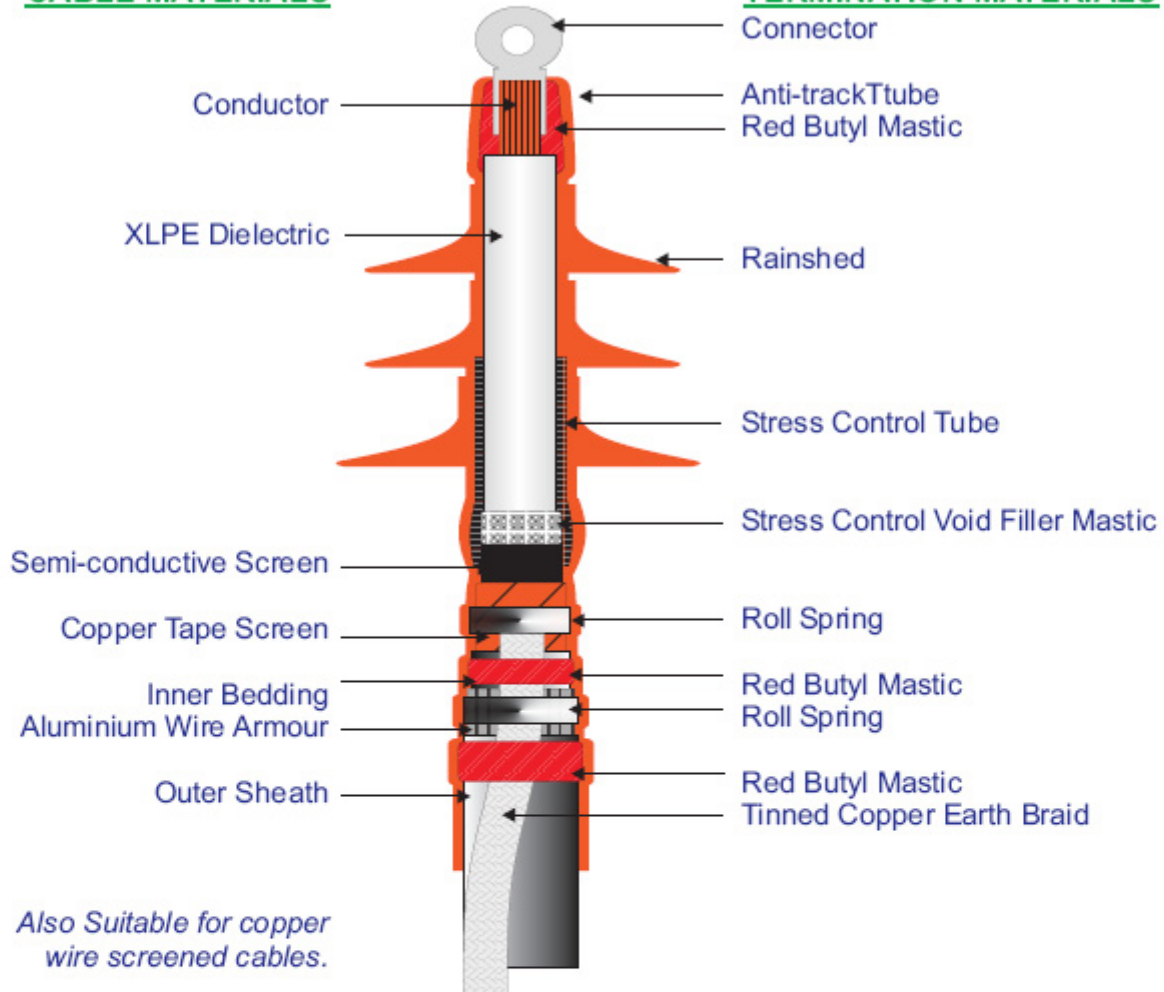
TEST no	REQUIREMENT	12kV	24kV	36kV
1	(a) Rated withstand voltage AC - Dry (b) Rated withstand voltage AC - Dry (c) Rated withstand voltage AC - Wet	28,5kV - 5 min 16kV - 15 min 25,5kV - 1 min	57kV - 5 min 32kV - 15 min 51kV - 1 min	85,5kV - 5 min 47,5kV - 15 min 76kV - 1 min
2	D.C. Voltage withstand - Dry	38kV - 15 min	76kV - 15min	114kV - 15 min
3	Rated impulse Voltage 10 pos & 10 neg	95kV	125kV	195kV
4	Partial discharge (N/A to PILC)	<5pC @ 12kV	<5pC @ 12kV	<5pC @ 12kV
5	Load cycling @ max cable temp (a) In air 3 cycles (b) In air 123 cycles (c) In air 113 cycles (d) In air 60 cycles (e) In 1 mtr Water 63 cycles (f) Immersion in water 10 cycles	16kV	32kV	47,5kV
6	Humidity test (a) 300hr @spray rate 0.3dm ³ /m ² Salt Fog test (b) 1000hr @spray rate 0.3dm ³ /m ²	8kV 8kV	16kV 16kV	24kV 24kV
7	Impact test @ ambient temp	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm
8	Impact test @ low temp -20°C for 2hr	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm

Test Sequence:	Test Number
Indoor Terminations	2, 1(a), 4, 3, 5(a), 4, 5(b), 4, 3, 1(b), 6(a)
Outdoor Terminations	2, 1(a), 1(c), 4, 3, 5(a), 4, 5(c), 5(f), 4, 3, 1(b), 6(b)
Joints	2, 1(a), 4, 7, 3, 5(a), 4, 5(d), 5(e), 4, 3, 1(b), 8

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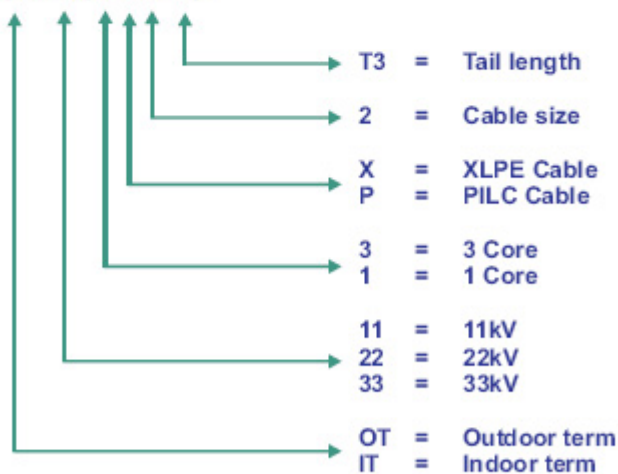
CABLE MATERIALS

TERMINATION MATERIALS



Ordering Information:

JOT11/1X2T3



Tail Lengths:						
Voltage	T3	T4	T5	T6	T7	T8
6,6kV	300*	400	650	800	1000	1200
11kV	350*	400*	650	800	1000	1200
22kV		450*	650	800	1000	1200
33kV			650*	800	1000	1200

* Indicates Standard Tail length



Setting the Standards in Cable Jointing

Cold Shrink Terminations For 1 Core 7,2 - 24kV XLPE Cable



JOINTMASTER proudly introduces the new **elcon** range of cold shrink terminations for indoor and outdoor use on single core XLPE cables up to 24kV.

This unique design incorporates two unparalleled features offered in a cold shrink termination.

- A long tail length [400mm] in one silicone cold shrinkable tube, eliminates the necessity to overlap numerous tubes.
- Separate cold shrinkable high permittivity stress control tube.
- All of the terminations have been independently tested by KEMA to CENELEC HD628.S1:1996 & HD629.1S1:1996 requirements



Test requirements for XLPE cable terminations - In accordance with CENELEC HD629.1 S1

TEST no	REQUIREMENT	12kV	24kV
1	(a) Rated withstand voltage AC - Dry (b) Rated withstand voltage AC - Dry (c) Rated withstand voltage AC - Wet	28,5kV - 5 min 16kV - 15 min 25,5kV - 1 min	57kV - 5 min 32kV - 15 min 51kV - 1 min
2	D.C. Voltage withstand - Dry	38kV - 15 min	76kV - 15min
3	Rated impulse Voltage 10 pos & 10 neg	95kV	125kV
4	Partial discharge (N/A to PILC)	<5pC @ 12kV	<5pC @ 12kV
5	Load cycling @ max cable temp (a) In air 3 cycles (b) In air 123 cycles (c) In air 113 cycles (d) In air 60 cycles (e) In 1 mtr Water 63 cycles (f) Immersion in water 10 cycles	16kV	32kV
6	Humidity test (a) 300hr @spray rate 0.3dm ³ /m ³ Salt Fog test (b) 1000hr @spray rate 0.3dm ³ /m ³	8kV	16kV
7	Impact test @ ambient temp	8kV	16kV
8	Impact test @ low temp -20°C for 2hr	> 1000 M ohm	> 1000 M ohm



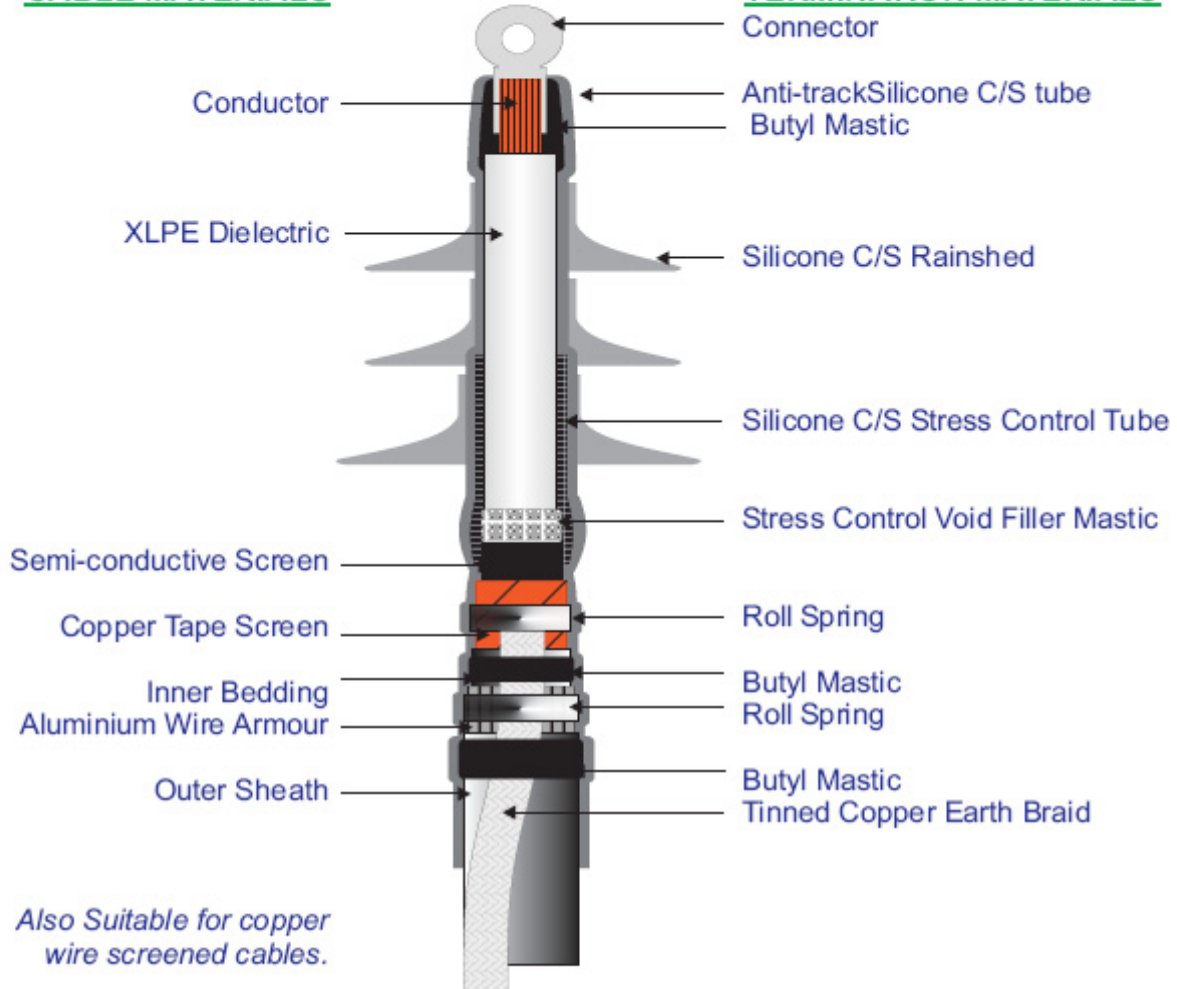
Test Sequence:	Test Number
Indoor Terminations	2, 1(a), 4, 3, 5(a), 4, 5(b), 4, 3, 1(b), 6(a)
Outdoor Terminations	2, 1(a), 1(c), 4, 3, 5(a), 4, 5(c), 5(f), 4, 3, 1(b), 6(b)
Joints	2, 1(a), 4, 7, 3, 5(a), 4, 5(d), 5(e), 4, 3, 1(b), 8



Setting the Standards in Cable Jointing

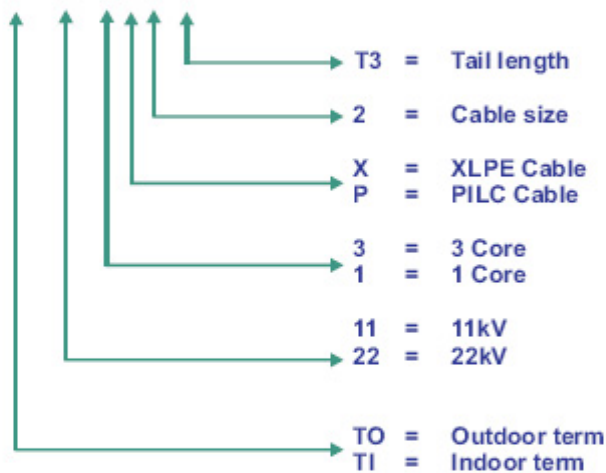
CABLE MATERIALS

TERMINATION MATERIALS



Ordering Information:

CTO11/1X2T3



Tail Lengths:				
Voltage	T3	T4	T5	T6
6,6kV	270*	400	650	800
11kV	300*	400	650	800
22kV		400*	650	800


* Indicates Standard Tail length



Setting the Standards in Cable Jointing



Cold Shrink Terminations For 3Core XLPE Cables up to 24kV

JOINTMASTER proudly introduces the new  elcon range of cold shrink terminations for indoor and outdoor use on three core XLPE cables up to 24kV. This unique design incorporates two unparalleled features offered in a cold shrink termination.

- A long tail length [up to 400mm] in one silicone cold shrinkable tube, eliminates the necessity to overlap numerous tubes.
- For ease of installation - Separate cold shrinkable rain sheds
- Separate cold shrinkable high permittivity stress control tube.
- All of the terminations have been independently tested by KEMA to CENELEC HD628.S1:1996 & HD629.1S1:1996 requirements



Test requirements for XLPE cable terminations - In accordance with CENELEC HD629.1 S1

TEST no	REQUIREMENT	12kV	24kV
1	(a) Rated withstand voltage AC - Dry (b) Rated withstand voltage AC - Dry (c) Rated withstand voltage AC - Wet	28,5kV - 5 min 16kV - 15 min 25,5kV - 1 min	57kV - 5 min 32kV - 15 min 51kV - 1 min
2	D.C. Voltage withstand - Dry	38kV - 15 min	76kV - 15min
3	Rated impulse Voltage 10 pos & 10 neg	95kV	125kV
4	Partial discharge (N/A to PILC)	<5pC @ 12kV	<5pC @ 12kV
5	Load cycling @ max cable temp (a) In air 3 cycles (b) In air 123 cycles (c) In air 113 cycles (d) In air 60 cycles (e) In 1 mtr Water 63 cycles (f) Immersion in water 10 cycles	16kV	32kV
6	Humidity test (a) 300hr @spray rate 0.3dm ³ /m ³ Salt Fog test (b) 1000hr @spray rate 0.3dm ³ /m ³	8kV 8kV	16kV 16kV
7	Impact test @ ambient temp	> 1000 M ohm	> 1000 M ohm
8	Impact test @ low temp -20°C for 2hr	> 1000 M ohm	> 1000 M ohm

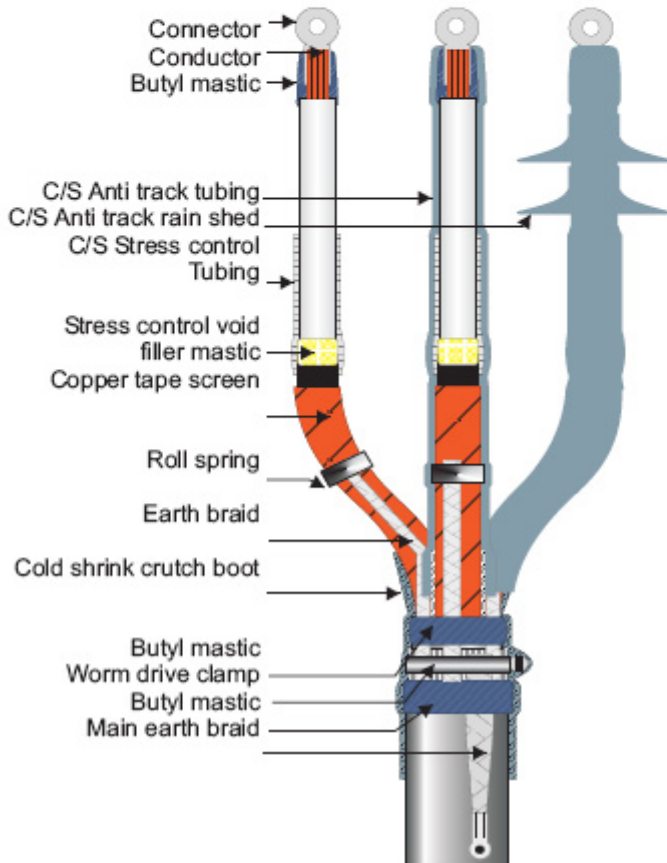
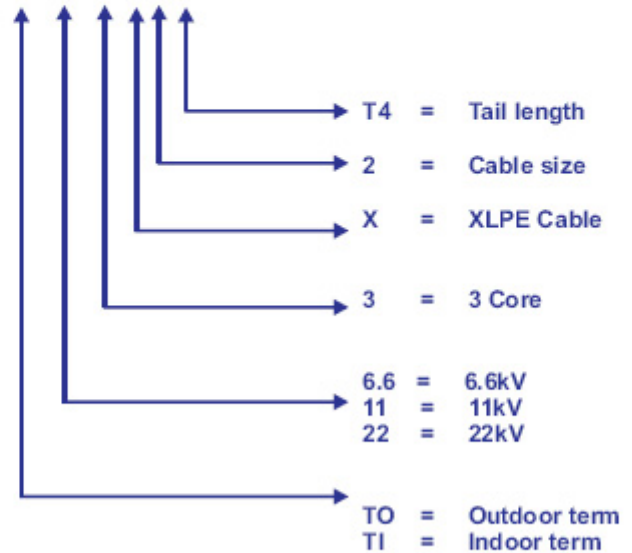
Test Sequence:	Test Number
Indoor Terminations	2, 1(a), 4, 3, 5(a), 4, 5(b), 4, 3, 1(b), 6(a)
Outdoor Terminations	2, 1(a), 1(c), 4, 3, 5(a), 4, 5(c), 5(f), 4, 3, 1(b), 6(b)
Joints	2, 1(a), 4, 7, 3, 5(a), 4, 5(d), 5(e), 4, 3, 1(b), 8



Setting the Standards in Cable Jointing

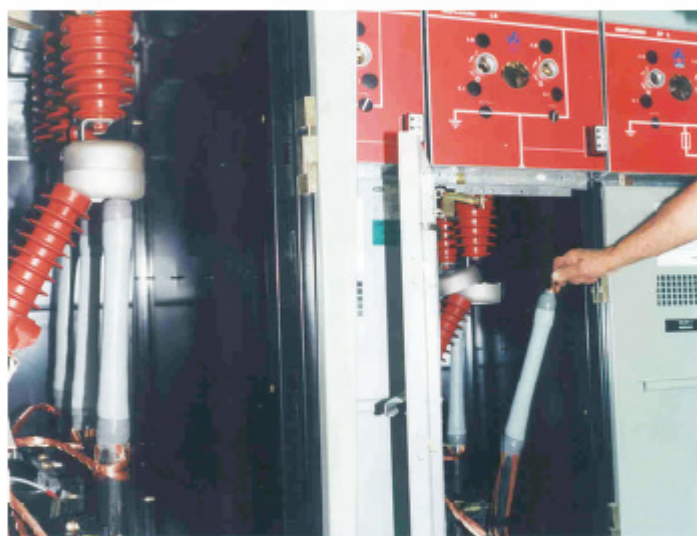
Ordering Information:

CTO11/3X2T4



Tail Lengths:

Voltage	T4	T6	T8
6,6kV	400	800	1200
11kV	400	800	1200
22kV	400	800	1200



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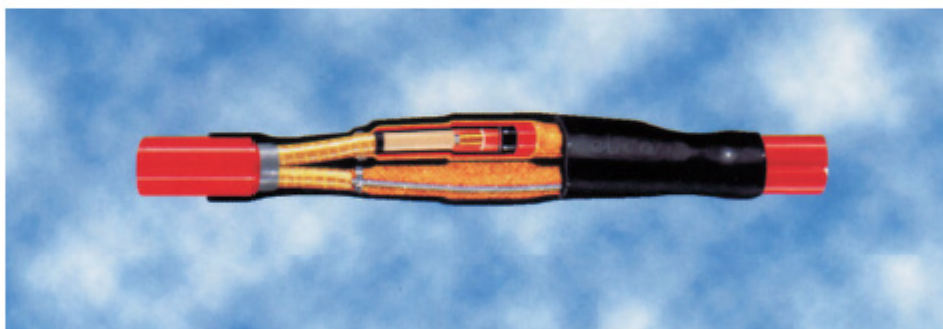
Medium & High Voltage (12 - 36kV) XLPE Cable Joints

The **JOINTMASTER - elcon** joint, has been designed to encompass easy installation, requiring minimal skills, by utilising leading edge dual extrusion thick wall heat shrink technology.

Joints are available for 12 - 36kV, 3 core and single core XLPE cables as well as 12 -

36kV transition jointing of PILC and XLPE 3 core and single core cables.

All **JOINTMASTER** XLPE and PILC cable joints have been independently tested by recognized test authorities and found to meet and exceed the requirements of VDE 0278, CENELEC HD629.1 S1 and IEC 60502. Parts 1-4



Test requirements for PILC and XLPE cable joints - In accordance with CENELEC HD629.1 S1

TEST no	REQUIREMENT	12kV	24kV	36kV
1	(a) Rated withstand voltage AC - Dry	28,5kV - 5 min	57kV - 5 min	85,5kV - 5 min
	(b) Rated withstand voltage AC - Dry	16kV - 15 min	32kV - 15 min	47,5kV - 15 min
	(c) Rated withstand voltage AC - Wet	25,5kV - 1 min	51kV - 1 min	76kV - 1 min
2	D.C. Voltage withstand - Dry	38kV - 15 min	76kV - 15min	114kV - 15 min
3	Rated impulse Voltage 10 pos & 10 neg	95kV	125kV	195kV
4	Partial discharge (N/A to PILC)	<5pC @ 12kV	<5pC @ 12kV	<5pC @ 12kV
5	Load cycling @ max cable temp (a) In air 3 cycles (b) In air 123 cycles (c) In air 113 cycles (d) In air 60 cycles (e) In 1 mtr Water 63 cycles (f) Immersion in water 10 cycles	16kV	32kV	47,5kV
6	Humidity test (a) 300hr @ spray rate 0.3dm ³ /m ²	8kV	16kV	24kV
	Salt Fog test (b) 1000hr @ spray rate 0.3dm ³ /m ²	8kV	16kV	24kV
7	Impact test @ ambient temp	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm
8	Impact test @ low temp -20°C for 2hr	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm

Test Sequence:	Test Number
Indoor Terminations	2, 1(a), 4, 3, 5(a), 4, 5(b), 4, 3, 1(b), 6(a)
Outdoor Terminations	2, 1(a), 1(c), 4, 3, 5(a), 4, 5(c), 5(f), 4, 3, 1(b), 6(b)
Joints	2, 1(a), 4, 7, 3, 5(a), 4, 5(d), 5(e), 4, 3, 1(b), 8



Setting the Standards in Cable Jointing

JOINTS FOR XLPE 3 CORE CABLES 12 - 36kV

JOINTMASTER



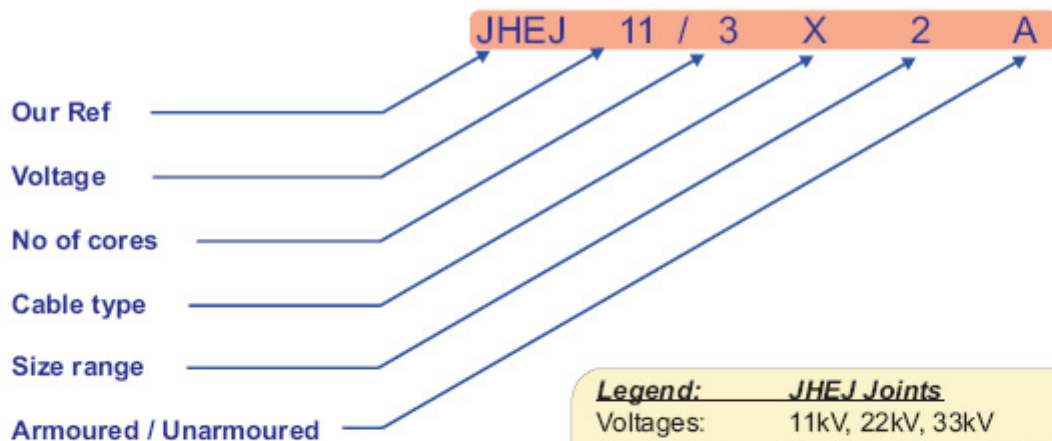
Three core joint with galvanised armour wrap.

These joints are extremely user friendly to install and are supplied with all materials necessary to complete the joint with the exception of connectors [ferrules].

The joints are supplied complete with a solderless earth system, comprising of constant force springs, tinned copper earth braids, copper mesh tape, galvanised wire mesh tape and worm drive clamps.

Joints are also available with double sleeve configuration, as well as with a galvanised armour wrap, upon specific customer request.

JOINT SELECTION GUIDE:



Legend: JHEJ Joints

Voltages: 11kV, 22kV, 33kV

No of cores 3 = 3 core, 1 = single core

Cable type X = XLPE, P = PILC

XP = Transition

Size range **11 & 22kV**

1 = 16 : 50mm, 2 = 70 : 150mm

3 = 185 : 300mm

33kV

1 = 35 : 70mm, 2 = 95 : 150mm

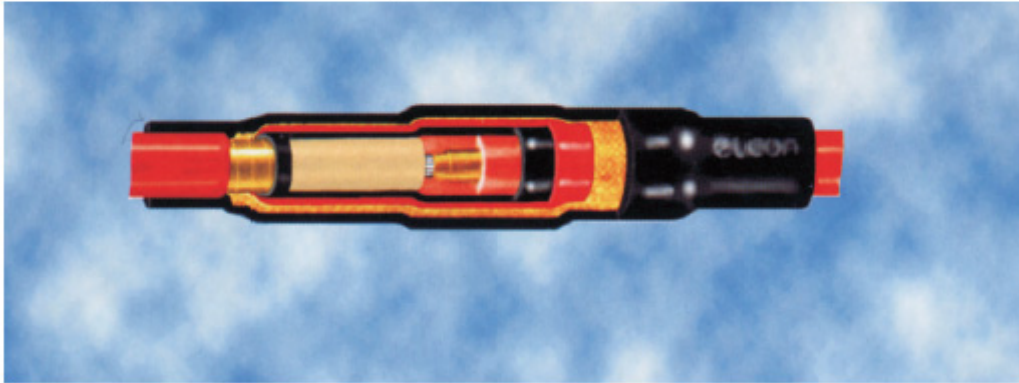
3 = 185 : 300mm

Setting the Standards in Cable Jointing

JOINTMASTER



Medium & High Voltage Single Core Joint Kits (12 - 36kV)



The **JOINTMASTER** - ELCON range of single core through joints are suitable for use on both XLPE and PILC armoured or unarmoured cables from 11kV up to 33kV.

By utilising an all heat shrinkable tubing system, comprising of stress control, insulation and semi-conductive screening tubes has resulted in a joint that is both easy and fast to install. All joints are supplied complete with solderless earthing system.

The high shrink ratio of the materials used allows for a wide size range to be covered in one joint.

All **JOINTMASTER** XLPE and PILC cable joints have been independently tested by recognized test authorities and found to meet and exceed the requirements of VDE 0278, CENELEC HD629.1 S1 and IEC 60502. Parts 1-4



XLPE to XLPE

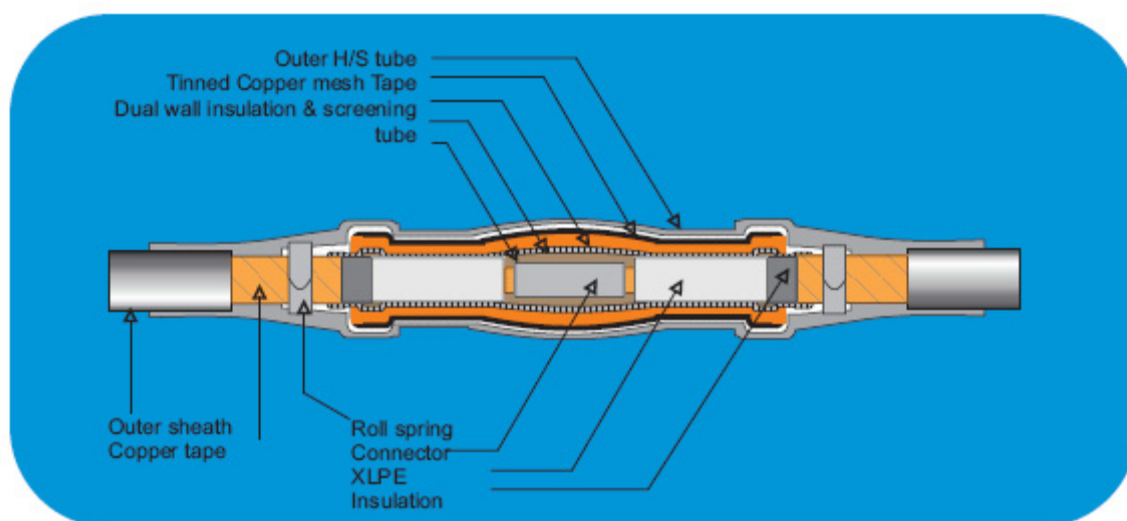
PILC to PILC



XLPE to PILC



Setting the Standards in Cable Jointing



All **JOINTMASTER** XLPE and PILC cable joints have been independently tested by recognized test authorities and found to meet and exceed the requirements of VDE 0278, CENELEC HD629.1 S1 and IEC 60502. Parts 1-4

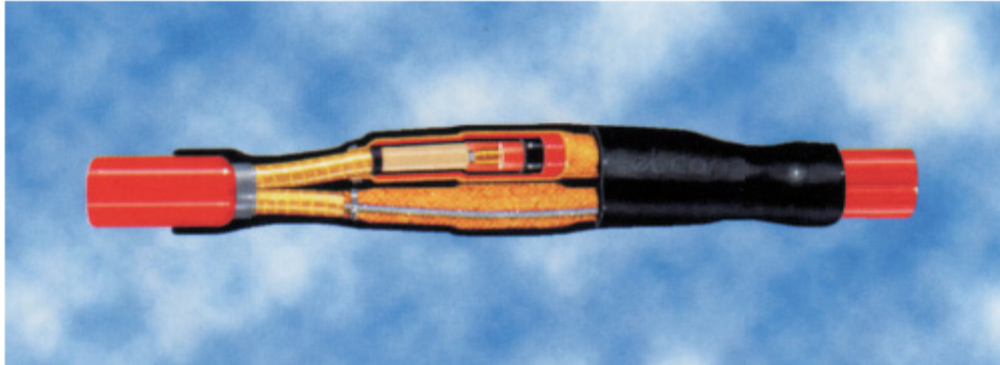
Test requirements for PILC and XLPE cable joints - In accordance with CENELEC HD629.1 S1

TEST no	REQUIREMENT	12kV	24kV	36kV
1	(a) Rated withstand voltage AC - Dry (b) Rated withstand voltage AC - Dry (c) Rated withstand voltage AC - Wet	28,5kV - 5 min 16kV - 15 min 25,5kV - 1 min	57kV - 5 min 32kV - 15 min 51kV - 1 min	85,5kV - 5 min 47,5kV - 15 min 76kV - 1 min
2	D.C. Voltage withstand - Dry	38kV - 15 min	76kV - 15min	114kV - 15 min
3	Rated impulse Voltage 10 pos. & 10 neg	95kV	125kV	195kV
4	Partial discharge (N/A to PILC)	<5pC @ 12kV	<5pC @ 12kV	<5pC @ 12kV
5	Load cycling @ max cable temp (a) In air 3 cycles (b) In air 123 cycles (c) In air 113 cycles (d) In air 60 cycles (e) In 1 mtr Water 63 cycles (f) Immersion in water 10 cycles	16kV	32kV	47,5kV
6	Humidity test (a) 300hr @spray rate 0.3dm ³ /m ³ Salt Fog test (b) 1000hr @spray rate 0.3dm ³ /m ³	8kV 8kV	16kV 16kV	24kV 24kV
7	Impact test @ ambient temp	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm
8	Impact test @ low temp -20°C for 2hr	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm

Test Sequence:	Test Number
Indoor Terminations	2, 1(a), 4, 3, 5(a), 4, 5(b), 4, 3, 1(b), 6(a)
Outdoor Terminations	2, 1(a), 1(c), 4, 3, 5(a), 4, 5(c), 5(f), 4, 3, 1(b), 6(b)
Joints	2, 1(a), 4, 7, 3, 5(a), 4, 5(d), 5(e), 4, 3, 1(b), 8

Setting the Standards in Cable Jointing

Medium & High Voltage (12 - 36kV) XLPE to PILC Transition Joints



JOINTMASTER - elcon heat shrink transition joint kits are designed for use on 3 core and single core PILC [belted or screened] to XLPE medium voltage cables up to 36kV

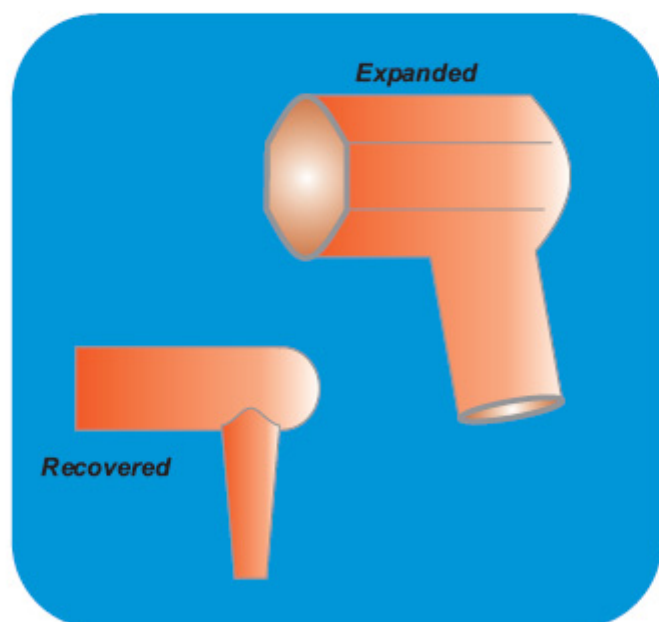
These transition joints utilise unique dual wall insulating / semiconductive and stress control thick wall heat shrink tubing to eliminate the craft sensitive taping procedures.

Test requirements for PILC and XLPE cable joints - In accordance with CENELEC HD629.1 S1

TEST no	REQUIREMENT	12kV	24kV	36kV
1	(a) Rated withstand voltage AC - Dry (b) Rated withstand voltage AC - Dry (c) Rated withstand voltage AC - Wet	28,5kV - 5 min 16kV - 15 min 25,5kV - 1 min	57kV - 5 min 32kV - 15 min 51kV - 1 min	85,5kV - 5 min 47,5kV - 15 min 76kV - 1 min
2	D.C. Voltage withstand - Dry	38kV - 15 min	76kV - 15min	114kV - 15 min
3	Rated impulse Voltage 10 pos & 10 neg	95kV	125kV	195kV
4	Partial discharge (N/A to PILC)	<5pC @ 12kV	<5pC @ 12kV	<5pC @ 12kV
5	Load cycling @ max cable temp (a) In air 3 cycles (b) In air 123 cycles (c) In air 113 cycles (d) In air 60 cycles (e) In 1 mtr Water 63 cycles (f) Immersion in water 10 cycles	16kV	32kV	47,5kV
6	Humidity test (a) 300hr @ spray rate 0.3dm ³ /m ³ Salt Fog test (b) 1000hr @ spray rate 0.3dm ³ /m ³	8kV	16kV	24kV
7	Impact test @ ambient temp	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm
8	Impact test @ low temp -20°C for 2hr	> 1000 M ohm	> 1000 M ohm	> 1000 M ohm

Test Sequence:	Test Number
Indoor Terminations	2, 1(a), 4, 3, 5(a), 4, 5(b), 4, 3, 1(b), 6(a)
Outdoor Terminations	2, 1(a), 1(c), 4, 3, 5(a), 4, 5(c), 5(f), 4, 3, 1(b), 6(b)
Joints	2, 1(a), 4, 7, 3, 5(a), 4, 5(d), 5(e), 4, 3, 1(b), 8

Right Angle Bushing Insulating Boots



JOINTMASTER's - elcon Right Angle Boots are designed for insulating the bushings in cable end boxes, integral with switchgear and transformers.

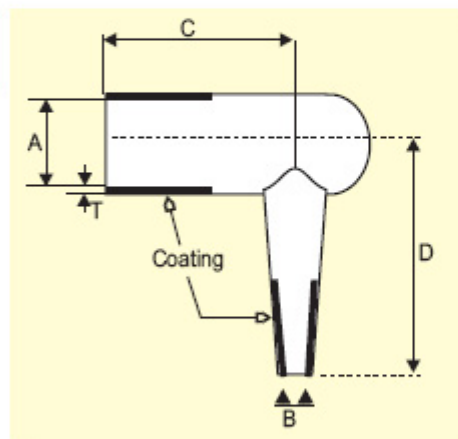
The right angle boots are complimentary red, anti-track accessories to the heat shrink cable terminations for application in air-filled cable end boxes designed with reduced clearances for compound filling.

The right angle boots are designed to withstand all surges induced during the operational life of the terminations.

MATERIAL SPECIFICATION:		
THERMAL PROPERTIES	RESULTS	TEST METHOD
Continuous operating temperature	-40 ~ +100°C	IEC 216
Shrinking temperature	120°C	IEC 216
Thermal shock	No damage	ASTM D 2671 - 746
Flamability	Self extinguishing	ASTM D 876
PHYSICAL PROPERTIES		
Tensile strength	> 8 N/mm ²	ASTM D 638 / UNI 5819-66
Elongation	> 200%	UNI 5819-66
Permeability	< 0,3%	UNI ISO 62
ELECTRICAL PROPERTIES		
Dielectric strength	> 15 kV/mm	ASTM D 149
Volume resistivity	> 1 x 10 ¹⁴ Ω cm	ASTM D 257
Permittivity	< 3	ASTM D 150
Tracking index	KA1	IEC 112
CHEMICAL PROPERTIES		
Mould resistance	No growth	ASTM G 21 - D 638

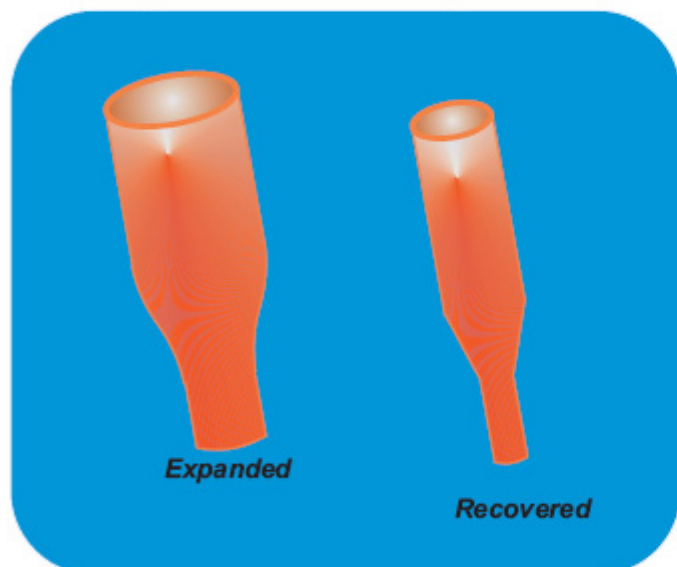
Size	A Exp	A Rec	B Exp	B Rec	C Min	D Min	T Rec
HSAB1	70	35	36	18	110	145	4.5
HSAB1S	70	35	36	18	75	145	4.5
HSAB2	70	35	50	25	110	145	4.5
HSAB2A	70	35	65	25	110	145	4.5
HSAB2S	70	35	50	25	75	145	4.5

All dimensions in mm
Exp = As supplied expanded
Rec = After free recovery
A & B are internal diameter



Setting the Standards in Cable Jointing

Straight Bushing Insulating Boots



JOINTMASTER's -  elcon Straight Boots are designed for insulating the bushings in cable end boxes, integral with switchgear and transformers.

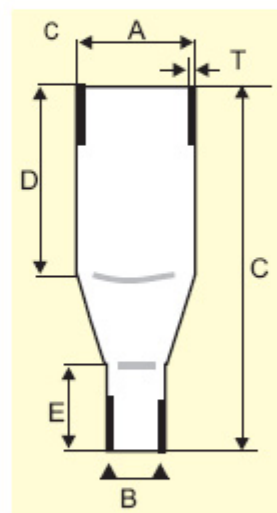
The straight boots are complimentary red, anti-track accessories to the heat shrink cable terminations for application in air-filled cable end boxes designed with reduced clearances for compound filling.

The straight boots are designed to withstand all surges induced during the operational life of the terminations.

MATERIAL SPECIFICATION:		
THERMAL PROPERTIES	RESULTS	TEST METHOD
Continuous operating temperature	-40 ~ +100°C	IEC 216
Shrinking temperature	120°C	IEC 216
Thermal shock	No damage	ASTM D 2671 - 746
Flamability	Self extinguishing	ASTM D 876
PHYSICAL PROPERTIES		
Tensile strength	> 8 N/mm ²	ASTM D 638 / UNI 5819-66
Elongation	> 200%	UNI 5819-66
Permeability	< 0,3%	UNI ISO 62
ELECTRICAL PROPERTIES		
Dielectric strength	> 15 kV/mm	ASTM D 149
Volume resistivity	> 1 x 10 ¹⁴ Ω cm	ASTM D 257
Permittivity	< 3	ASTM D 150
Tracking index	KA1	IEC 112
CHEMICAL PROPERTIES		
Mould resistance	No growth	ASTM G 21 - D 638

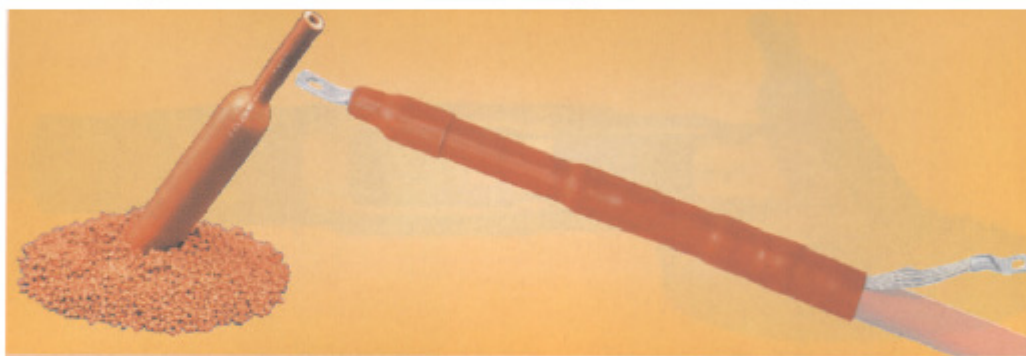
Size	A Exp	A Rec	B Exp	B Rec	C Min	D Min	E Min	T Rec
HSSB1	100	25	45	19	225	140	40	3.6
HSSB2	100	25	58	19	225	140	40	3.6

All dimensions in mm
Exp = As supplied expanded
Rec = After free recovery
A & B are internal diameter



Setting the Standards in Cable Jointing

High Voltage Non-Tracking Tubing



The **JOINTMASTER** - elcon non-tracking tubing is brick red in colour, with excellent non tracking and erosion resistance properties, and is widely used on all Jointmaster terminations.

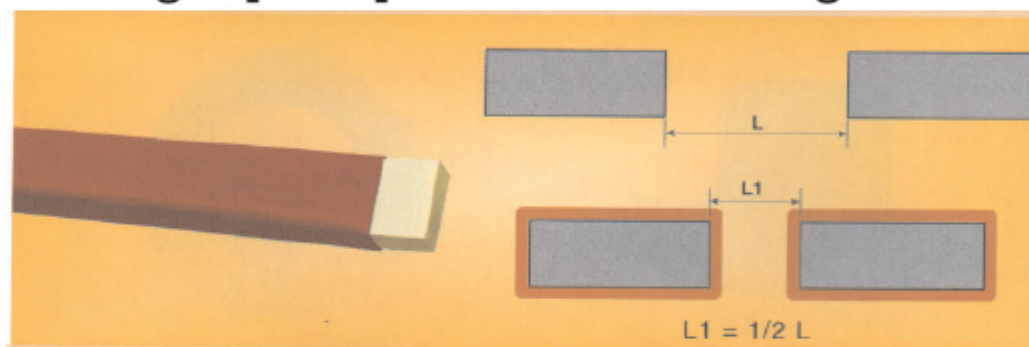
This non-tracking tubing is an ideal insulation for external and internal, medium voltage cable terminations in switchgear and substations up to 36kV.

The **JOINTMASTER** - elcon non-tracking tubing is halogen free and self extinguishing and is supplied in 40 meter rolls.

Tubing Size	A(exp)	B(rec)	C(rec)
TAT 30/08	30	08	2.5
TAT 35/10	35	10	3.0
TAT 49/16	49	16	3.0
TAT 56/21	56	21	3.1
TAT 70/26	70	26	3.6
TAT 100/40	100	40	3.9

MATERIAL SPECIFICATION: Non-Tracking Tubing		
THERMAL PROPERTIES	RESULTS	TEST METHOD
Continuous operating temperature	-40 ~ +100°C	IEC 216
Shrinking temperature	120°C	IEC 216
Thermal shock	No damage	ASTM D 2671-746
Flamability	Self extinguishing	ASTM D 876
PHYSICAL PROPERTIES		
Shrink ratio	3 : 1	
Tensile strength	>10 N/mm ²	ASTM D 638
Elongation	> 300%	ASTM D 638
Longitudinal shrinkage	< 10%	ASTM D 2671
Permeability	< 0,1%	UNI ISO 62
ELECTRICAL PROPERTIES		
Dielectric strength	> 15 kV/mm	ASTM D 149
Volume resistivity	> 1 x 10 ¹⁴ Ω cm	ASTM D 257
Comparative tracking index	KA1	IEC 112
Permittivity	3	ASTM D 150
CHEMICAL PROPERTIES		
Mould resistance	No growth	ASTM G 21 - D 638

High Voltage [MW] Bus Bar Tubing



The **JOINTMASTER** - **elcon** medium wall flexible heat shrink bus bar tubing is used on straight bus bars, to help reduce the clearance distance required between two phases in high voltage switchboards

VOLTAGE [kV]	DISTANCE IN AIR	ON ROUND BUS BAR		ON RECTANGULAR BUS BAR	
		Ph/Ph	Ph/gr	Ph/Ph	Ph/gr
12	120	50	60	60	70
17.5	160	65	80	80	100
24	220	90	120	110	145
36	320	145	200	190	280

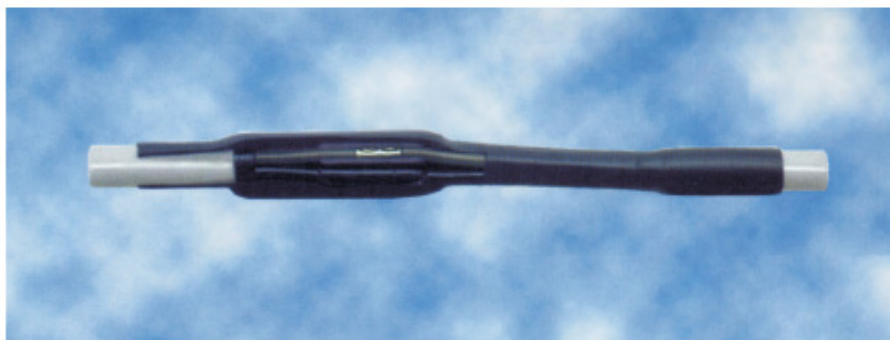
Tubing Size	A(exp)	B(rec)	C(rec)	Roll Length
TBMT 30/12	30	12	2.3	40m
TBMT 50/20	50	20	2.5	40m
TBMT 75/30	75	30	2.5	40m
TBMT 100/40	100	40	2.5	40m
TBMT 120/50	120	50	3.0	40m

MATERIAL SPECIFICATION: Medium Wall Bus Bar Tubing		
THERMAL PROPERTIES	RESULTS	TEST METHOD
Continuous operating temperature	-40 ~ +100°C	IEC 216
Shrinking temperature	120°C	IEC 216
Thermal shock	No damage	ASTM D 2671-746
Flamability	Not Self extinguishing	ASTM D 876
PHYSICAL PROPERTIES		
Shrink ratio	3 : 1	
Tensile strength	>12 N/mm ²	ASTM D 638
Elongation	> 300%	ASTM D 638
Longitudinal shrinkage	< 10%	ASTM D 2671
Permeability	< 0.1%	UNI ISO 62
ELECTRICAL PROPERTIES		
Dielectric strength	> 15 kV/mm	ASTM D 149
Volume resistivity	> 1 x 10 ¹⁵ Ω cm	ASTM D 257
Permittivity	3	IEC 250
CHEMICAL PROPERTIES		
Mould resistance	No growth	ASTM G 21 - D 638

Low Voltage Heat Shrink Joint

JOINTMASTER offers a comprehensive range of low voltage heat shrink cable joint kits, offering both double sleeve and single sleeve configurations for use on 2 to 4 core 600/1000 Volt and 3,3kV cables.

All of the tubing used is coated internally with a hot meltable adhesive to ensure good environmental sealing.



An added advantage is that the low voltage heat shrink joint kit has an indefinite shelf life.

The range of joints covers all cable sizes (armoured and unarmoured) from 1,5mm² - 300mm²

Due to the range taking capabilities of the heat shrink tubing used, one size of joint is utilised, from 2 to 4 core cables.

Special joint applications are also available for multicore cables covering from 7 up to 37 cores.

TYPE TESTING		
TEST	REQUIREMENT	RESULTS
Initial Insulation Resistance	> 50 MΩ	Complied
Initial Voltage Withstand 4kV 1min	No Breakdown	Complied
Impact Test	No Cracks or damage	Complied
Insulation Resistance After impact test	> 50 MΩ	Complied
Load Cycling Test 100 cycles @ 85°C	No Breakdown	Complied
AC Voltage Withstand 4kV 15 min	No Breakdown	Complied
Insulation Resistance Immersed	> 50 MΩ	Complied



Single Sleeve	
Part Number	Cable Size
JHJ4/1.5-4-1	1,5 - 4mm ²
JHJ4/6-16/1	6 - 16mm ²
JHJ4/25-50/1	25 - 50mm ²
JHJ4/70-150/1	70 - 150mm ²
JHJ4/185-300/1	185 - 300mm ²

Double Sleeve	
Part Number	Cable Size
JHJ4/1.5-4	1,5 - 4mm ²
JHJ4/6-16	6 - 16mm ²
JHJ4/25-50	25 - 50mm ²
JHJ4/70-150	70 - 150mm ²
JHJ4/185-300	185 - 300mm ²

Note: These joints are also available for paper cable and for transitions from paper cable to PVC cable.