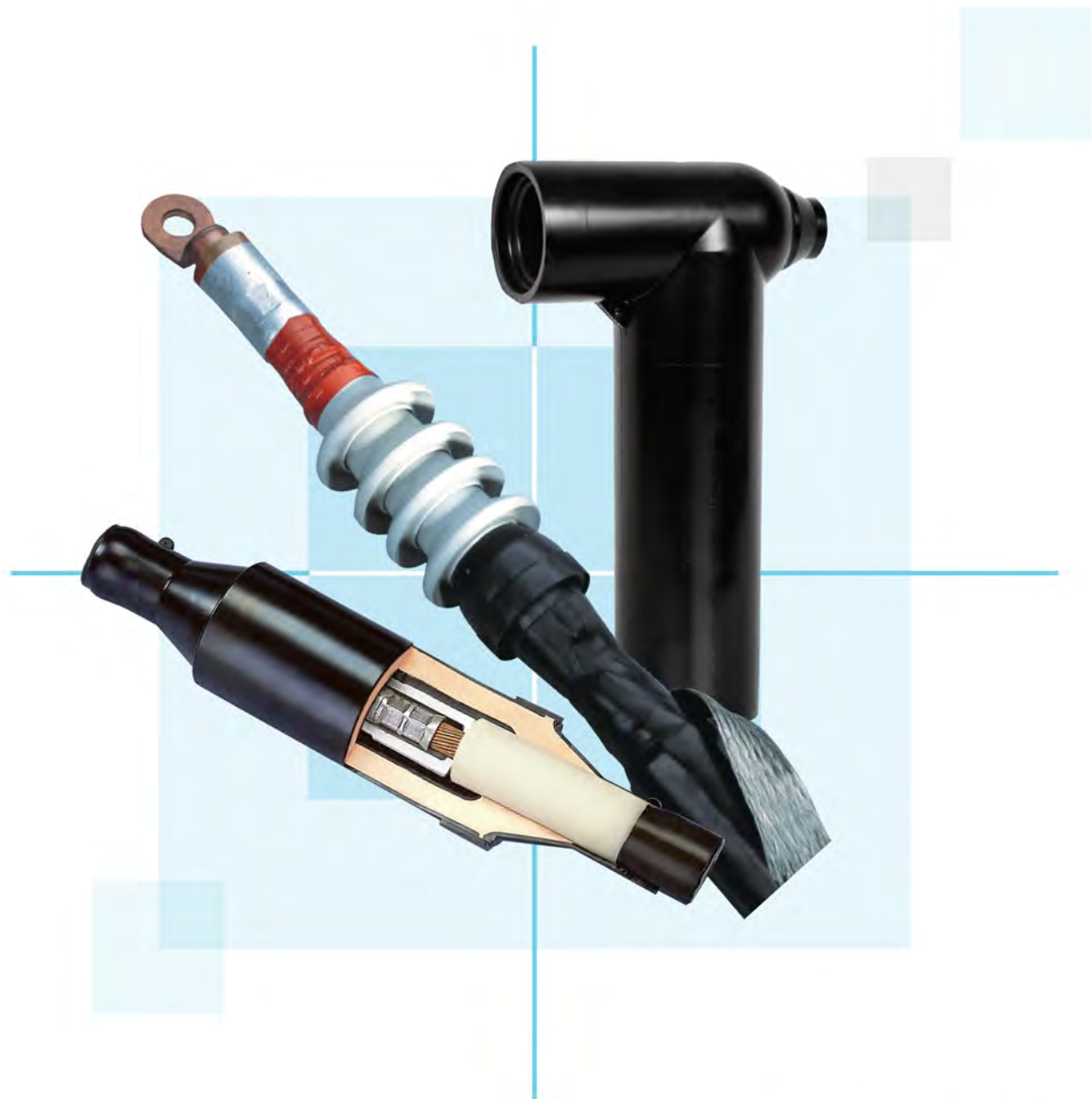


# CABLE ACCESSORIES

## CATALOGUE



**ELSEWEDY**  
**ELECTRIC**

Integrated Energy Solutions



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## ABOUT US



**Elsowedy SEDCO and Elastimold Egypt are subsidiaries of Elsowedy Electric, Elsowedy Electric is one of the largest industrial entities operating in the field of cables and cables accessories.**

Elastimold Egypt , a joint venture with ELastimold USA and Elsowedy SEDCO is the only cable accessories manufacturer in the middle east since 1997. Elastimold Egypt follows the manufacturing concepts of ELsowedy, starting at the first step by sourcing our own raw materials followed by all the main components. we utilize state of the art production equipment while adhering to the highest quality standards to ensure premium quality and cost optimization. through our experienced R&D Team and utilizing group resources we are able to accommodate and adapt our facilities to give our clients the best possible solution for their needs.

Our services range from engineering, design and correct accessory se-lection to supplying, training, installation and supervision.

We have our own highly experienced project department in projects up to 220kv with different teams located in Qatar, KSA, Kuwait and Algeria. We are confident that we can handle any requirements that faces our clients.

Our wide product range fulfills most of the market's needs for under-ground cable accessories with various types and techniques for each product to give the best solutions available.

We are ISO certified, type tested by KEMA, CESI and IPH

# PREMOLDED CABLE ACCESSORIES

## VISION

To be one of the key players in cable accessories manufacturing and its related services globally

## MISSION

Manufacturing & supplying safe cable accessories products in order to meet & exceed market expectations and positively contribute to developing In our society & environment

## VALUES

The guiding factors for Elsewedy Electric to achieve its vision

### Integrity

Be ethical, honest and transparent

### Customer Satisfaction

- Offer exceptional customer experience locally & globally
- Offer quality products, services and Innovative Solutions

### Excellence

- Strive to excel in every aspect of our business
- Approach challenges with determination to succeed

### Ownership, Commitment and Collaboration

- Assume responsibility for actions & decisions
- Execute & deliver with sense of urgency
- Demonstrate equality, humility and respect for others
- Collaboration & teamwork

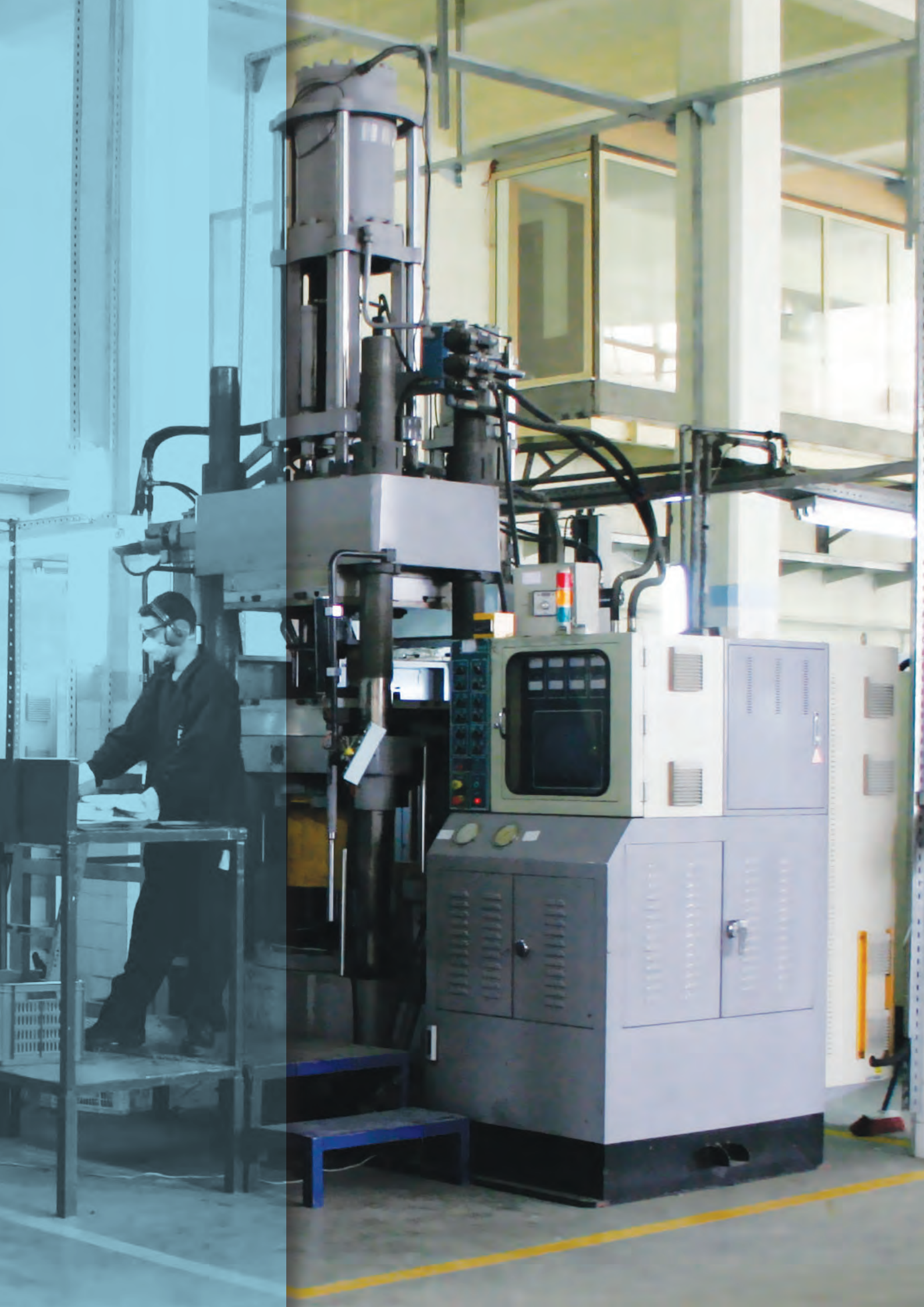
### Innovation

- Identify, develop and deploy leading edge technology
- Pursue improvement tools

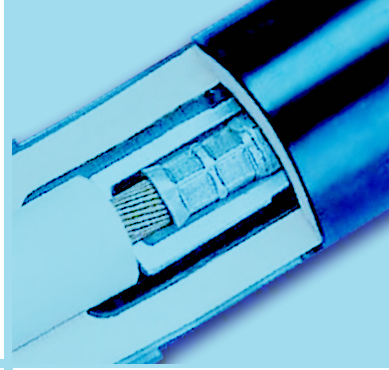
## FEATURES OF PREMOLDED ACCESSORIES

- FACTORY MOLDED
- LONGEST SHELF LIFE
- FACTORY TESTED 100%
- FAST AND EASY TO INSTALL
- HIGH MECHANICAL STRENGTH
- POSITIVE HEAT TRANSFER INTERFACE
- PROVIDE PERMANENT, FULLY SHIELD, FULLY SUBMERSIBLE
- EASILY LEARNED INSTALLATION PROCEDURE, NO SPECIAL SKILLS REQUIRED
- UNIQUE CONDUCTIVE INSERT PROVIDES OPTIMUM ELECTRICAL STRESS RELIEF
- ASSURE WATERTIGHT SEAL AND COMPLETE DIELECTRIC INTEGRITY
- MEET OR EXCEED THE INTERNATIONAL STANDARDS
- NO ASSEMBLY TOOLS REQUIRED
- APPLICABLE FOR HAZARD AREA
- DISMANTLING AVAILABILITY
- NO WEATHER EFFECT
- EASY TO SPECIFY

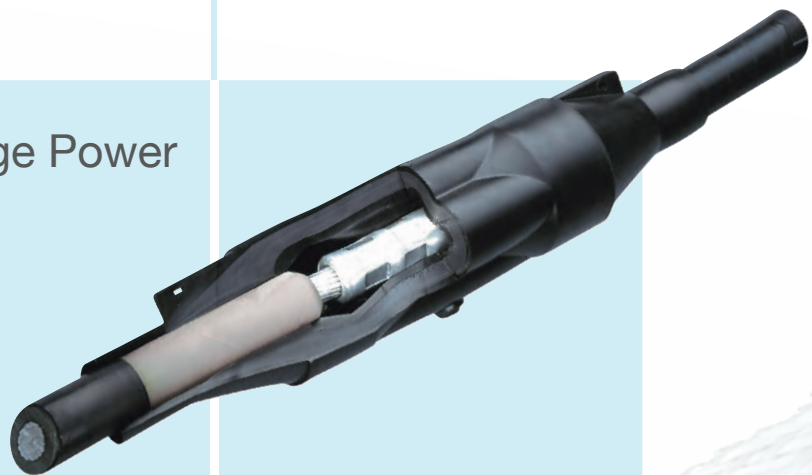




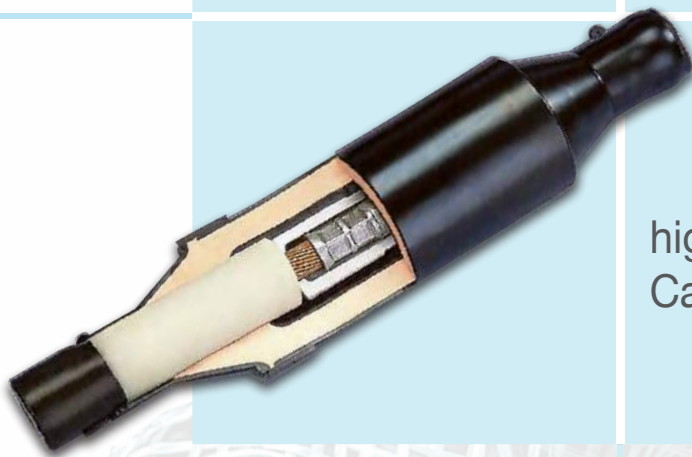
## PREMOLDED CABLE JOINTS



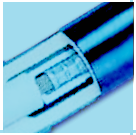
Medium Voltage Power  
Cable Joints



high Voltage Power  
Cable Joints



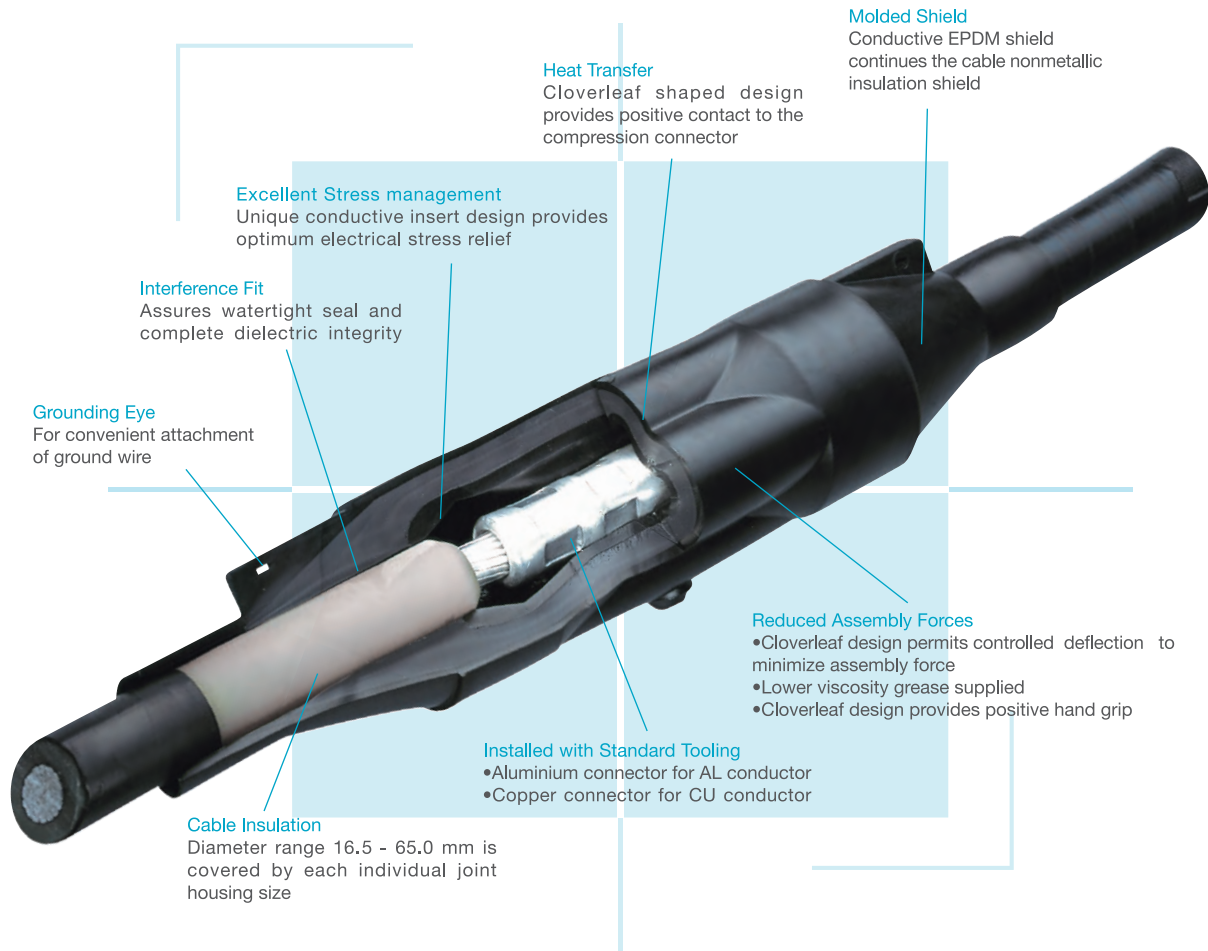




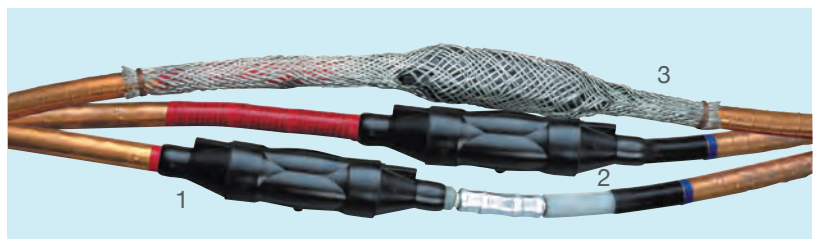
# PREMOLDED CABLE JOINTS

## MEDIUM VOLTAGE POWER CABLE JOINTS

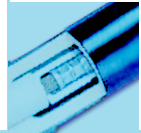
IEC Standard 60502-4 , IEEE Standard 404 , CENELEC HD 629.1



- 1 Joint Stored on One Side of The Cable Core.
- 2 Joint In Its Final Position.
- 3 Restoration.



- The Power Cable Joints are highly reliable, factory-molded and tested cable joints for 15kV, 25kV and 35(36) kV class distribution systems. When assembled, they provide permanent, fully shielded, fully submersible cable joints for direct burial or vault applications of solid dielectric single-core and three-core cables.
- The Power Cable Joints are designed to meet or exceed the IEC 60502-4 standard as well as the rigid IEEE 404 standard.
- The Power cable joints offer the benefits of an optimum design for electrical stress control, they are factory molded for consistent high quality and are factory tested before field installation to insure maximum reliability. They are easy to install without special tools and they are easy to specify for various cable types.



The molded stress control configuration offers excellent stress management through computer-aided definition of shape transitions and state-of-the-art materials science.



- Heat transfer from the cable contact is enhanced by maintaining a positive interference fit with the conductive insert, and shaping of the electrical insulation to provide minimal thermal resistance to ambient and an increased external surface area (relative to a cylindrical design of equal insulation thickness).
- The cloverleaf design reduces assembly forces by allowing the housing wall section to flex rather than stretch during assembly (A basic cylindrical design would require the circumference to expand).
- The cloverleaf design, with benefits of positive heat transfer interface, and reduced assembly force is made possible by exact proportioning of the changing cross section. The resulting equipotential lines have a smooth transition without areas of stress concentration.



## Ordering Formula

CABLE INSULATION DIAMETER (mm)		CONNECTOR		COND. SIZE (mm <sup>2</sup> )		Outer Jacket Restoration Kit (If Specified)		Armor Restoration Kit (If Specified)		Inner Jacket Restoration Kit (If Specified)		Metal Shield Restoration Kit (If Specified)	
MIN.	MAX.	TYPE	SYMBOL										
16.5	21.0	Aluminum	1	0025		N = Non Required		N = Non Required		N = Non Required		N = Non Required	
19.5	24.0	Copper	2	0035		A = Tape		A = Galvanized Steel		A = Tape		A = Copper Braid	
21.5	26.5	Special	3	0050		B = Heat Shrink		B = Stainless Steel		B = Heat Shrink		B = Copper Mesh	
25.0	30.0			0070				C = Copper Tubular				C = Other	
27.5	33.0			0095				D = Aluminum Cage					
30.0	37.0			0120									
35.0	41.5			0150									
38.0	45.0			0185									
44.0	49.0			0240									
49.0	55.0			0300									
53.0	59.0			0400									
58.0	65.0			0500									
				0630									
				0800									
				1000									
				1200									

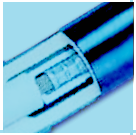
**Application Notes:**  
 1- An aluminum compression connector is used for splicing aluminum to aluminum  
 2- A copper compression connector is used for splicing copper to copper  
 3- Special connectors are available on request.

U <sub>o</sub> (KV)	6	8.7	12	18 or 19
U (KV)	10	15	20	30 or 33
U <sub>m</sub> (KV)	12	17.5	24	36
Impulse Test voltage (KV)	75	95	125	170
IEC Standard No.	IEC 60502-4			

### Note:

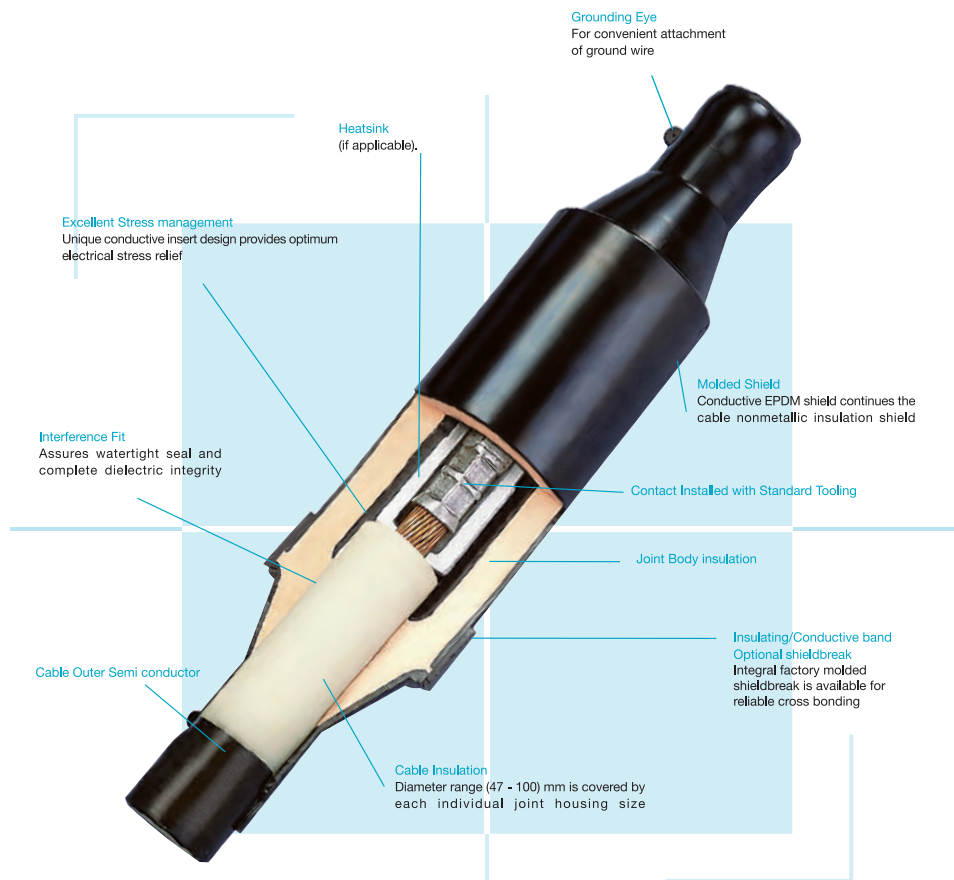
**U<sub>o</sub>** : is the rated power frequency voltage between conductor and earth or metal screen for which the cable is designed  
**U** : is the rated power frequency voltage between conductors for which the cable is designed  
**U<sub>m</sub>** : is the maximum value of the "highest system voltage" for which the equipment may be used





# PREMOLDED CABLE JOINTS HIGH VOLTAGE POWER CABLE JOINTS

IEC 60840 , IEEE Standard 404 ,CENELEC HD 629.1



## Maximum Reliability & lowest Installed Cost

### ■ Faster Installation.

The molding is done in the factory, reducing on-site time. No penciling of cable insulation required.

### ■ Reduced Training Requirements.

Easily -learned installation procedure.

### ■ No Costly Installation Machinery Required

Field molds or wrapping machines are not required. A low-cost assembly tool is available.

### ■ No Special Environmental Equipment Requirements

### ■ Unlimited Shelf Life

Allows for instant availability

### ■ Factory-Molded Quality

You can be sure each cable joint in the field is produced exactly per design. Each unit is molded a micro- processor controlled screw injection press to produce a level of quality not possible with field molding equipment or tape.

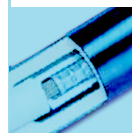
### ■ Factory- 100% factory Tested

Each unit is electrically tested in the factory to insure consistent quality.

All Transmission Cable Joints are designed with optimized stress control and heat transfer capabilities. You do not have to rely on the expertise of a field installer to fabricate a reliable joint.



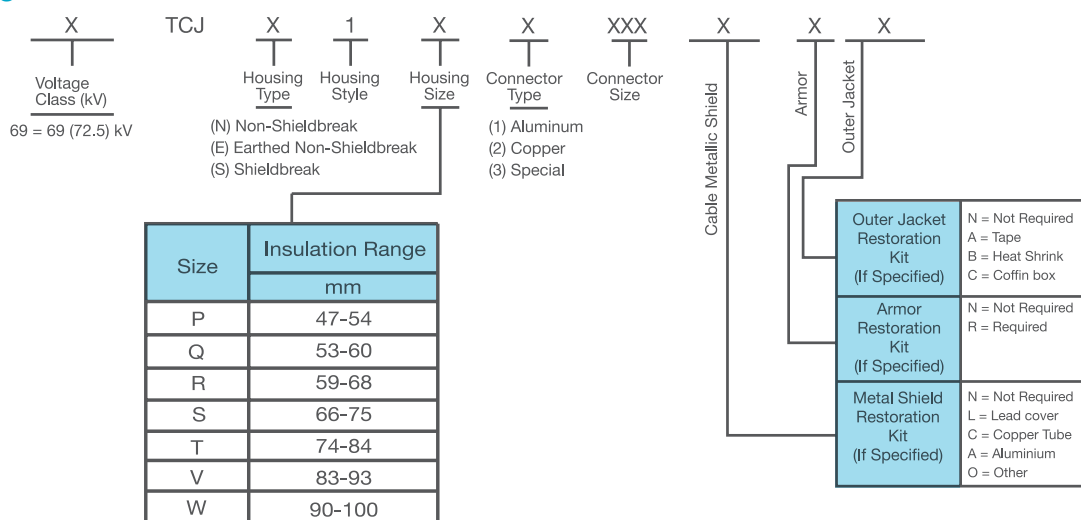
Premolded housing void - free joint housing consists of cured EPDM insulation bonded under pressure to cured molded semiconductive elements.



## Technical Data According to IEC 60840

RATINGS	
Nominal system voltage up to Uo ( kV)	69
Maximum system voltage Um ( kV)	72.5
Maximum continuous conductor temperature	90°C
Type test (IEC 60840 )	
Partial discharge test voltage	
- Partial discharge level determined at (kV)	54
- Maximum allowable Partial discharge level ( PC )	5
- Conductor temperature	Ambient
Load cycle	
- Test voltage (kV)	72
- No of cycles,each cycle 24 hrs	20
- Heating duration	8 hrs.
- Cooling duration	16 hrs.
- Conductor temperature	(95 °C)
Basic impulse level (10 pos., 10 Neg., 50 Hz )	
- Impulse voltage (kV)	325
- Conductor temperature	(95 °C)
AC withstand voltage	
- Test voltage (kV) for 15min.	90
- Conductor temperature	Ambient
Routine test	
AC withstand voltage (kV) for 30min.	90
Partial discharge test voltage	
- Partial discharge level determined at (kV)	54
- Maximum allowable Partial discharge level ( PC )	5
Other technical data as per (IEEE)	
AC line to ground to withstand (kV)	
- 6 hrs. dry	100
- 15 min. dry	120

## Ordering Formula







## PREMOLDED CABLE TERMINATION

### Medium Voltage

#### Modular Termination

Premolded Cable Termination for XLPE, EPR and any Polymeric Insulation Cable up to 52 kV Indoor & Outdoor



### High Voltage Transmission Termination

The 69 TCT Termination is lightweight and easy to handle. It can be assembled horizontally on the ground and then raised to the installation position without a crane. Installation can be accomplished without special training using a normal assembly / tension device.

The 69 TCT can utilize standard cable support systems.





# PREMOLDED CABLE TERMINATION

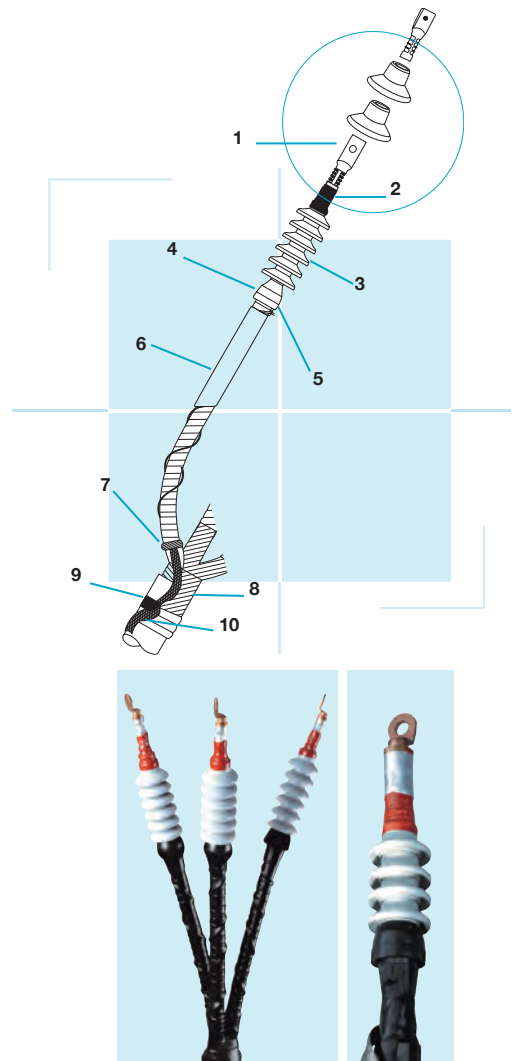
## MEDIUM VOLTAGE MODULAR TERMINATION



IEC standard 60502-4, IEEE standard (404 & 048) , CENELEC HD 629.1, IEC 60840

### Design and Components

- 1 Cable Lug**
- 2 Sealant Cover**  
To seal between the contact and the terminator
- 3 Non-tracking Rubber Modules**  
Molded of special EPDM compound for functional reliability and long life
- 4 Molded Stress Cone**  
Molded stress relief assures proper stress relief for terminating cables
- 5 Ground Wire**  
Makes the connection between the stress cone and the copper tape shield
- 6 Screen Cover**  
To protect the screen
- 7 Ground Connection Point**  
secures the grounding flat braid to the metallic screen and the armor
- 8 Trifurcating Boot**  
Boot that seals the transition of the three-core cable into three single cores
- 9 Sealant Tape**  
Mastic tape used to seal the jacket and flat braids from the ingress of water
- 10 Grounding Flat Braid**  
The flat braid makes the electrical connection between the metallic screen and armor to the system ground



### Features

- **Maximum Reliability** : Computer designed and manufactured for superior temperature and stress management. Maximum reliability with control of known factors.
- **Superior Stress Management and Temperature profile** : Computer designed and manufactured using a microprocessor - controlled screw injection press to ensure a constant stress control configuration. Operates cooler than the cable conductor.
- **Tests** : Meets the requirements of international standards, IEEE (404 & 048), IEC 60502-4, CENELEC HD 629.1 and IEC 60840.
- **Factory Molded** : For constant stress control configuration.
- **Factory Pretested** : Assuring field installations meet design standards, Stress cone undergoes partial Discharge Tests.
- **Fast Fitting** : Stress Cone fits directly over semiconductor of cables. Earthing provision available for stress cone.
- **Faster installation** : Lower installation cost, requiring no special skills.
- **Extra Creepage Distance** : This is achieved by adding extra modular skirts.
- **Ambient Temperature** : -10°C upto +60°C.
- **Reduced Training Requirements** : Easily learned installation procedure, Human error totally eliminated.



## Electrical Ratings

Uo (KV)	3.6	6	8.7	12	18 or 19	26
U (KV)	6	10	15	20	30 or 33	45 to 47
Um (KV)	7.2	12	17.5	24	36	52
Impulse Test Voltage (KV)	60	75	95	125	170	250
IEC Standard No.	IEC 60502-4				IEC 60840	
MTG Size1, Range (12.5 : 39.5) mm	MTG- Size 1					
MTG Size2, Range (21 : 50) mm	MTG- Size 2					
MTG Size3, Range (48 : 67) mm					MTG- Size 3	
Min. No. of modules for Indoor termination	1	2	2	3	5	7
Min. No. of modules for Outdoor termination	2	3	4	5	7	9

### Note

**U<sub>o</sub>** : is the rated power frequency voltage between conductor and earth or metal screen for which the cable is designed

**U** : is the rated power frequency voltage between conductors for which the cable is designed

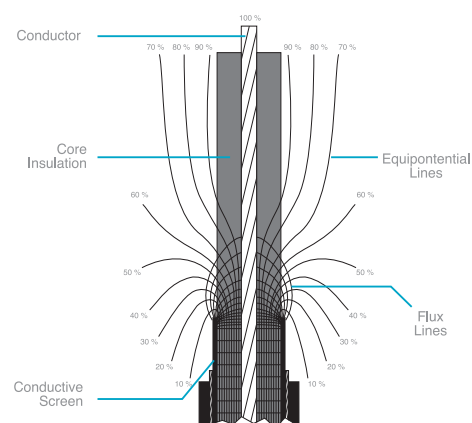
**U<sub>m</sub>** : is the maximum value of the “highest system voltage” for which the equipment may be used

- Current Rating is equal to the cable's rating.
- Ratings based on IEEE (404 & 048) IEC 60502-4, CENELEC HD 629.1, IEC 60840 and do not reflect maximum withstand levels, For levels that exceed the above, contact your dealer representative.

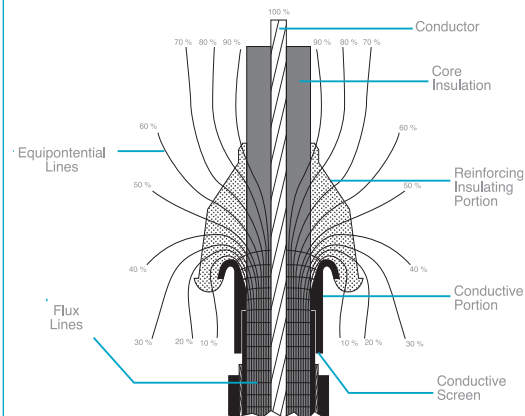
## Creepage distance of the termination

- Creepage distance is the shortest distance along the surface of the termination between the two conductive parts.
- For the dimensioning of the creepage distance, the tracking formation of the insulating material has to be considered.
- Creepage distance depends on the voltage class, pollution level and the type of termination.
- Creepage distance is met by number of antitracking modules used. Any value of creepage distance can be achieved by adding excess modules.

## Stress Control Configuration



Electric field distribution without stress cone



Electric field distribution after adding the stress cone

## Ordering Formula

Voltage class		Stress cone Size		Application Range		MTG Family Size		Insulation Diameter		Conductor Size (mm <sup>2</sup> )		N N		X	
7.5		EB	12.5	15.0		MTG SIZE 1									
12		EF	13.5	16.0											
17.5		FA	14.5	17.5											
24		FAB	16.0	19.0											
36		FB	17.5	20.0											
52		FG	18.5	21.5											
		GA	20.0	25.0											
		GAB	21.0	26.0											
		GB	22.5	27.5											
		GH	23.5	28.5											
		HA	25.0	30.0											
		HAB	26.5	31.5											
		HB	28.0	33.0											
		HJ	29.5	34.5											
		JA	31.0	36.0											
		JAB	32.5	37.5											
		JB	34.5	39.5											
		KA	38.0	41.0											
		KAB	39.0	42.5											
		KB	40.0	43.5											
		PA	42.5	48.0											
		PB	44.5	50.0											
		Q	48.0	55.0											
		R	53.0	60.0											
		S	58.0	67.0											

Number of Modules:  
Depending on the Voltage Class, the type of the termination & the required creepage distance.

LUG	
TYPE	SYMBOL
Aluminum	1
Copper	2
Special	3

### Application Notes:

- 1- An Aluminum compression lug is used for Aluminum conductor.
- 2- A Copper compression lug is used for Copper conductor.
- 3- Special lugs are available on request.



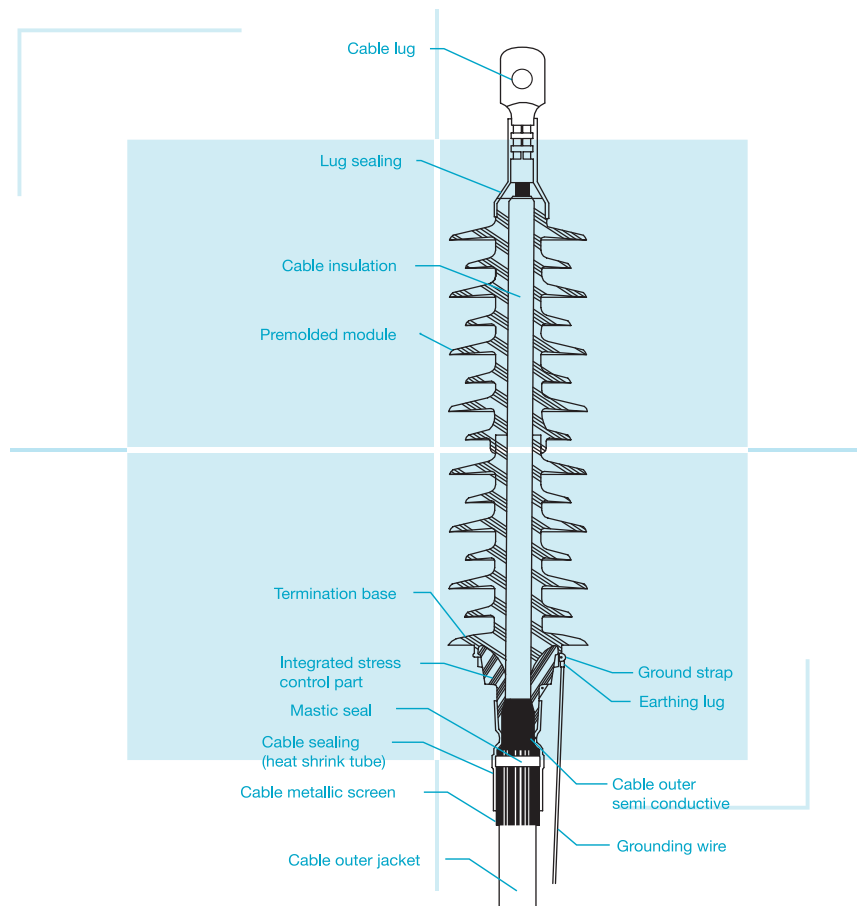
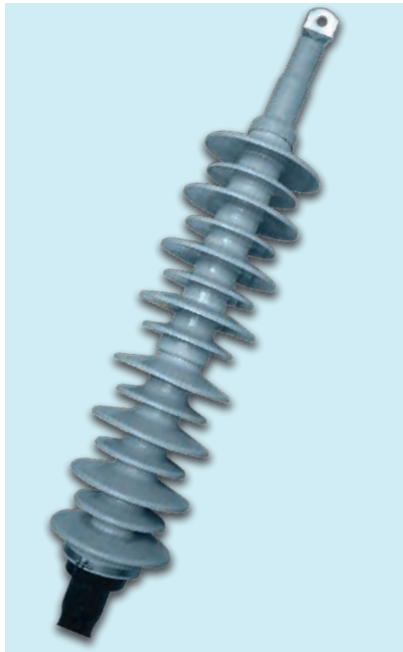


## PREMOLDED CABLE TERMINATION HIGH VOLTAGE TRANSMISSION TERMINATION



IEC 60840, IEEE (048&404), CENELEC HD 629.1

- The 69 TCT Termination provides a termination for cable systems rated up to 72.5 KV class.
- It conforms to IEC 60840. This terminator is designed for solid dielectric cables with insulation diameters from 37 mm to 84 mm.
- Various lugs are available for the conductor connection.
- The durable elastomer construction eliminates glaze damage failures associated with porcelain.
- A state-of-the-art shed design ensures a non-continuous drip path and the non-tracking polymer requires no surface oil or grease.

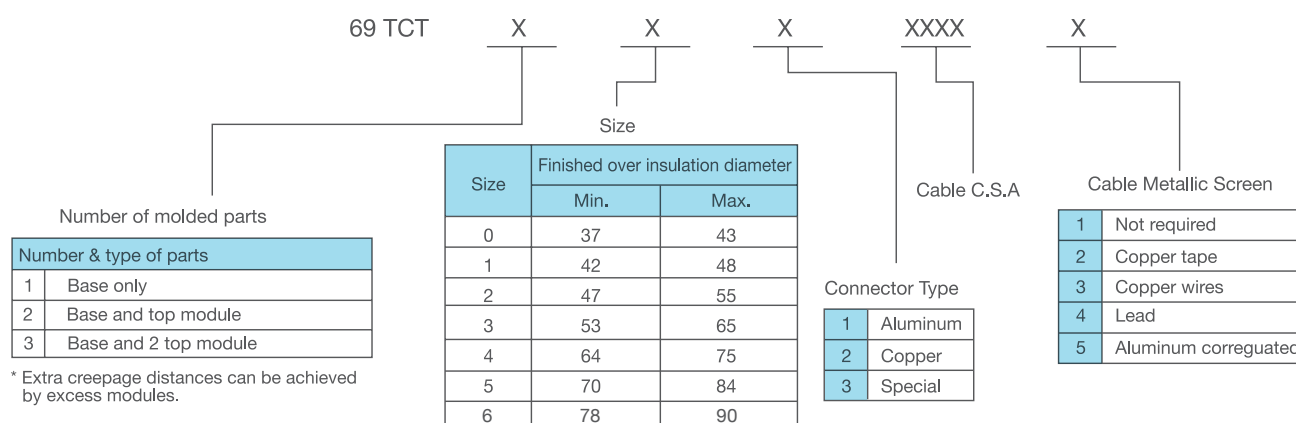


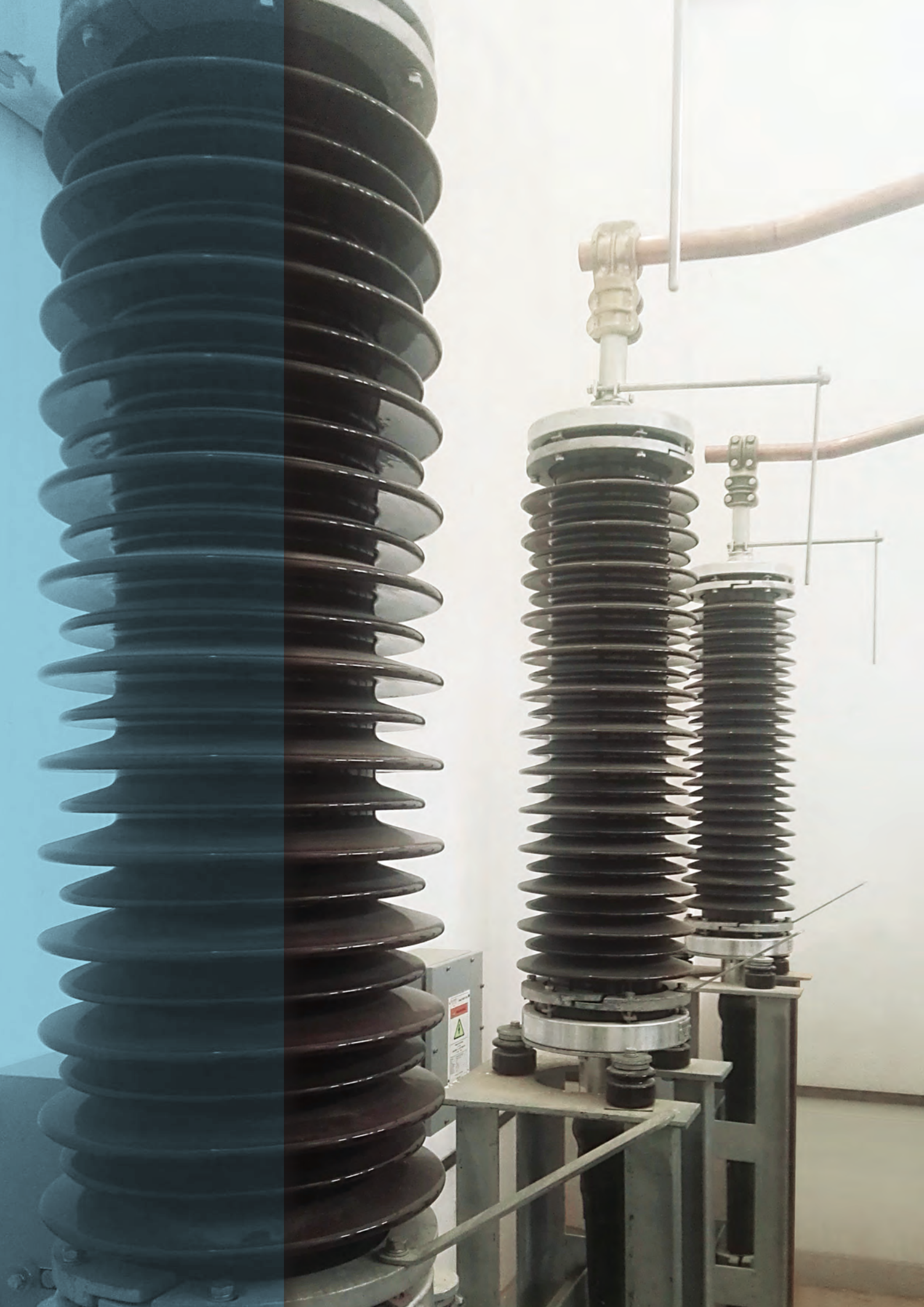


## Electrical Data for 69TCT Transmission Rating Data According to IEC 60840

RATINGS	
Nominal system voltage up to Uo ( kV)	69
Maximum system voltage Um ( kV)	72.5
Maximum continuous conductor temperature	90°C
Type test (IEC 60840 )	
Partial discharge test voltage	
- Partial discharge level determined at (kV)	54
- Maximum allowable Partial discharge level ( PC )	5
- Conductor temperature	Ambient
Load cycle	
- Test voltage (kV)	72
- No of cycles,each cycle 24 hrs	20
- Heating duration	8 hrs.
- Cooling duration	16 hrs.
- Conductor temperature	(95 °C)
Basic impulse level (10 pos., 10 Neg., 50 Hz )	
- Impulse voltage (kV)	325
- Conductor temperature	(95 °C)
AC withstand voltage	
- Test voltage (kV) for 15min.	90
- Conductor temperature	Ambient
Routine test	
AC withstand voltage (kV) for 30min.	90
Partial discharge test voltage	
- Partial discharge level determined at (kV)	54
- Maximum allowable Partial discharge level ( PC )	5
Other technical data as per (IEEE)	
AC line to ground to withstand (kV)	
- 10 sec. wet	145
- 1 min. dry	175
- 6 hrs. dry	100
- 15 min. dry	120

## Ordering Formula



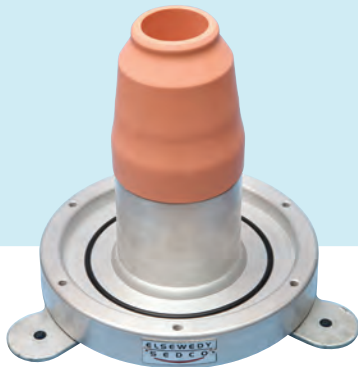
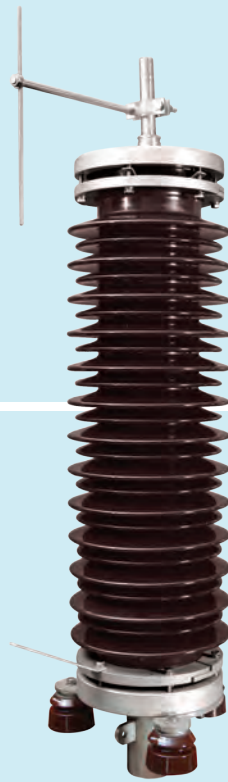




## PORCELAIN OUTDOOR SEALING END



SEPT 72 outdoor sealing end  
porcelain termination for cable  
systems with rated voltage up to  
72.5 kV.





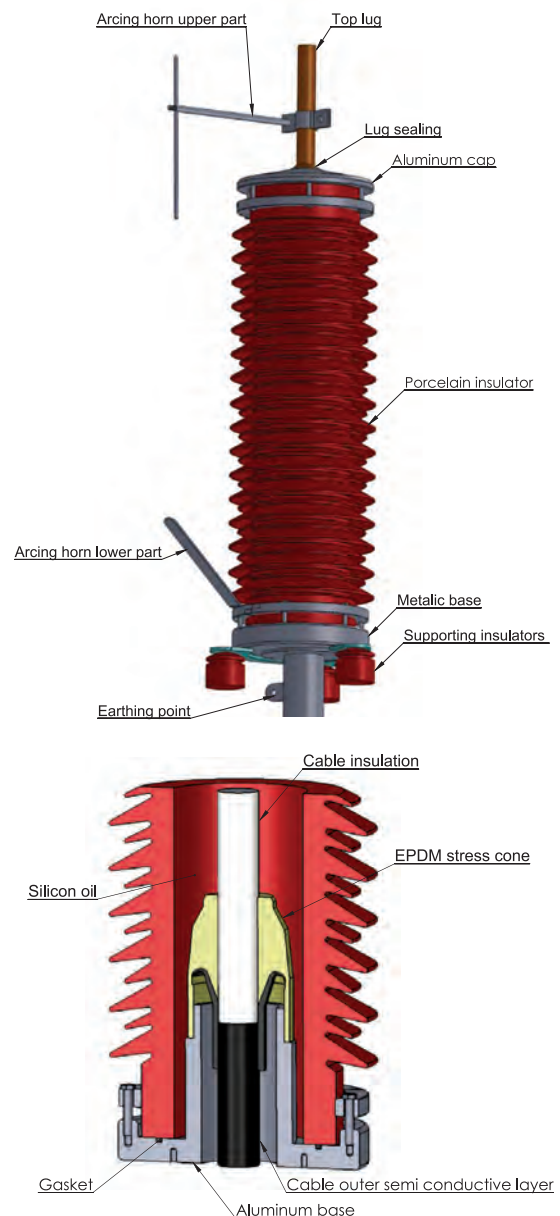
## PORCELAIN OUTDOOR SEALING END

IEC 60840, IEEE (048&404), CENELEC HD 629.1

- The SEPT 72 conforms and type tested according to IEC 60840
- Pre-molded stress control system made of EPDM rubber.
- Termination's stress cone covers cable cross section area up to 2000 mm<sup>2</sup> with diameter over insulation up to 97 mm.
- Termination is filled with an insulating compound up to a level where the electric field is substantially reduced. The terminations base plates and the cables metallic screen are electrically insulated from the supporting structure by means of stand-off insulators, designed to withstand both mechanical and electrical operating stresses
- Termination designed for operation under severe outdoor conditions.
- Main components of the termination are the porcelain hollow insulator, upper metal cap, top bolt , metal base plate , supporting insulators , silicon oil filling compound , O-Ring gaskets and pre-molded stress cone for electrical field control.
- Arcing horn , Corona Ring , Overhead Clamps are available under customer request , and to be ordered separately

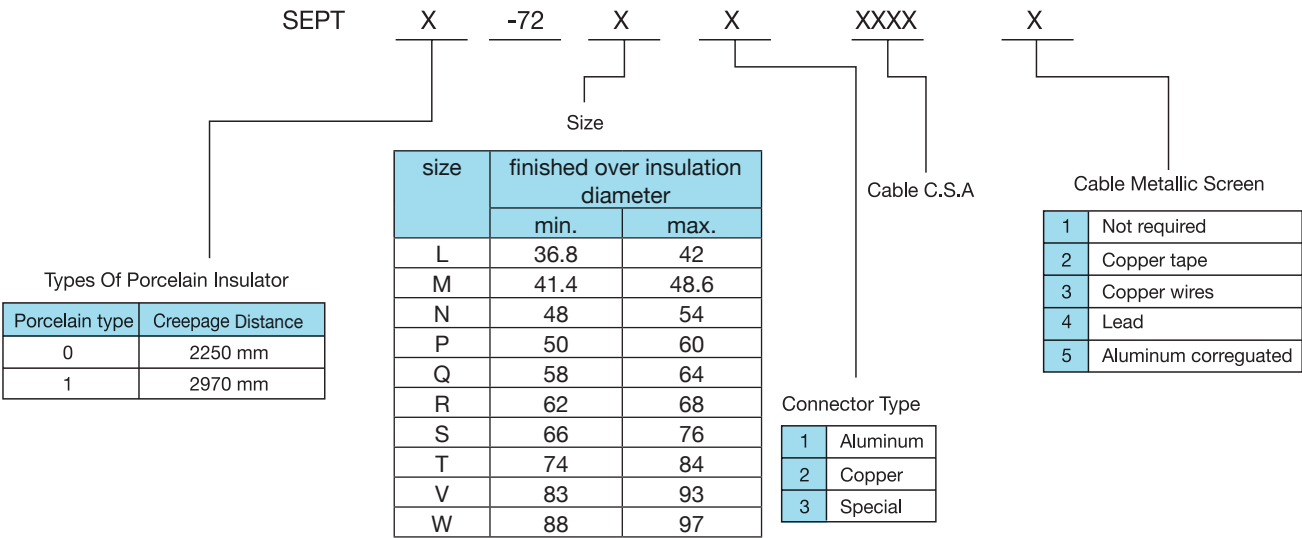
### Technical data

RATINGS	
Nominal system voltage up to $U_o$ ( kV)	69
Maximum system voltage $U_m$ ( kV)	72.5
Maximum continuous conductor temperature	90°C
Type Test (IEC 60840 ):	
Partial discharge test voltage	
- Partial discharge level determined at [KV]	54
- Maximum allowable partial discharge level [PC]	5
- Conductor Temperature	Ambient
Load cycle	
- Test voltage (kV)	72
- No of cycles, each cycle 24 hrs	20
- Heating duration	8 hrs.
- Cooling duration	16 hrs.
- Conductor temperature	(95 °C)
Basic impulse level (10pos., 10Neg., 50 Hz )	
- Impulse voltage (kV)	325
- Conductor temperature	(95 °C)
AC withstand voltage	
- Test voltage (kV) for 15min.	90
- Conductor temperature	Ambient
Routine Test:	
AC withstand voltage (kV) for 30min.	90
Partial discharge test voltage	
- Partial discharge level determined at (kV)	54
- Maximum allowable Partial discharge level ( PC )	5
Other Technical Data as per (IEEE):	
AC line to ground to withstand (kV)	
- 6 hrs. dry	100
- 15 min. dry	120
- 1 min. dry	175
- 10 sec. Wet	145





Ordering Formula



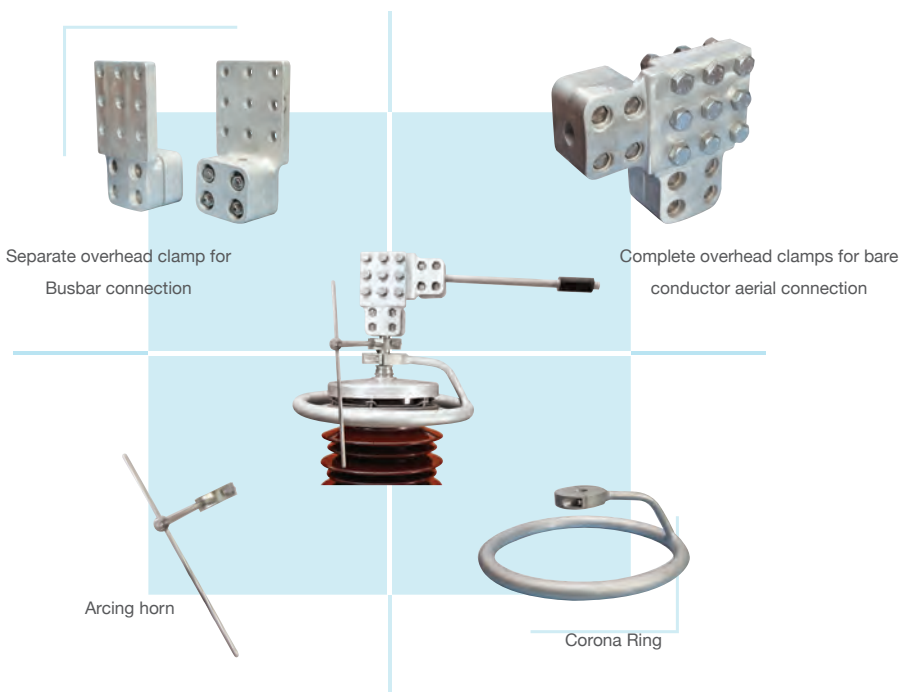
Extra creepage distances can be achieved.

Example

for 66kv, 630mm<sup>2</sup> CU cable with dia. over insulation of 66 mm, the cable metallic screen is lead and minimum creepage distance 2970mm.

Order SEPT1-72R2 6304

The following item's shall be ordered separately







## DEAD BREAK SEPARABLE CONNECTORS



### L-Shape Elbow 156 LR

156LR Elbow Connector is a fully-rated 15/25kV, 250Amp Class deadbreak connector. Units include provisions for de-energized operation using standard hot stick tools. It has a standard interface for connecting to 15/25kV, 250 Amp deadbreak bushing inserts, junctions and other accessories. The 156LR is equipped with an integral voltage test point.

Mates with bushing interface conforms to CENELEC EN 50181 interface (A).



### L-Shape Elbow 400LB

The K400LB is designed to provide fully-shielded, dead-front submersible cable connections to high-voltage apparatus. The K400LB can be used up to 25 kV for aluminum and copper conductors.

### T Shape Elbow

The T - body is designed to provide fully-shielded, dead-front submersible cable connections to high-voltage apparatus. It can be used through 36 kV with conductor range up to 630 mm<sup>2</sup> for aluminum and copper conductors.





## DEAD BREAK SEPARABLE CONNECTORS

### L-SHAPE ELBOW

156 LR

IEC Standard 60502-4, IEEE Standard 386, CENELEC HD 629.1

- 15/25kV, 250 Amp Deadbreak plug in Elbow.
- Fully shielded, fully submersible molded rubber housing.
- 100% peroxide-cured construction includes insulation and conductive EPDM materials.
- Optionally, Non-corrosive, capacitively coupled voltage test point with removable protective cap.
- Provision for hot stick operation.
- Provision for ground wire connection.
- Wide cable range with minimum number of sizes.
- No special tool, heating, taping or potting are required.



#### 1 Semi conductive shield

Semi conductive EPDM shield provides ground shield continuity between elbow and cable shield.

#### 2 Probe

from tin plated copper to insure positive interference fit with the mating bushing.

#### 3 Pulling eye

stainless steel pulling eye provides easy hotstick operation.

#### 4 Semi conductive insert

Molded cured EPDM semi conductive contains electrical stress control.

#### 5 Optional capacitive test

point capacitive test point with cap provides a shielded hotstick operation to test if the circuit is energized or not.

#### 6 EPDM insulation

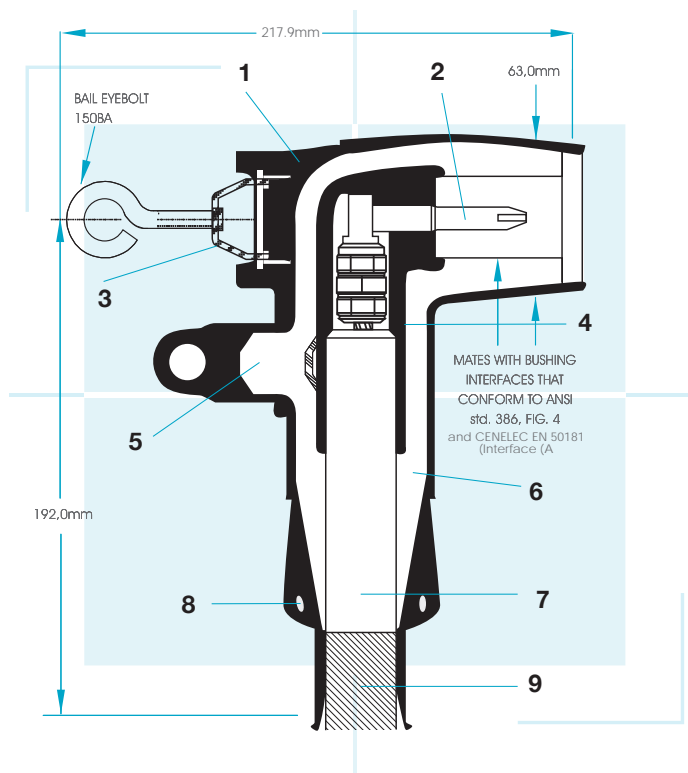
Molded from high quality special formula EPDM rubber to provide superior insulation characteristics

#### 7 Cable insulation

#### 8 Grounding eye

provisioned for ground wire connection.

#### 9 Cable's outer semi conductor



### Ordering Instructions

Determine the insulation diameter of the cable. Select the corresponding elbow size that straddles the insulation diameter.

K - 156LR - W - X - XXX

Voltage Class	Cable Insulation Dia. Range	Elbow Size	Conductor metal		COND. SIZE (mm <sup>2</sup> )
	mm			Symbol	
7.5	16.3 - 20.8	F	Aluminum	1	025
12	19.3 - 24.1	G	Copper	2	035
17.5	21.6 - 26.7	H			050
24	24.9 - 30.0	J			070
	27.7 - 33.3	K			095
					120

# DEAD BREAK SEPARABLE CONNECTORS

## L-SHAPE ELBOW



IEC Standard 60502-4, IEEE Standard 386, CENELEC HD 629.1

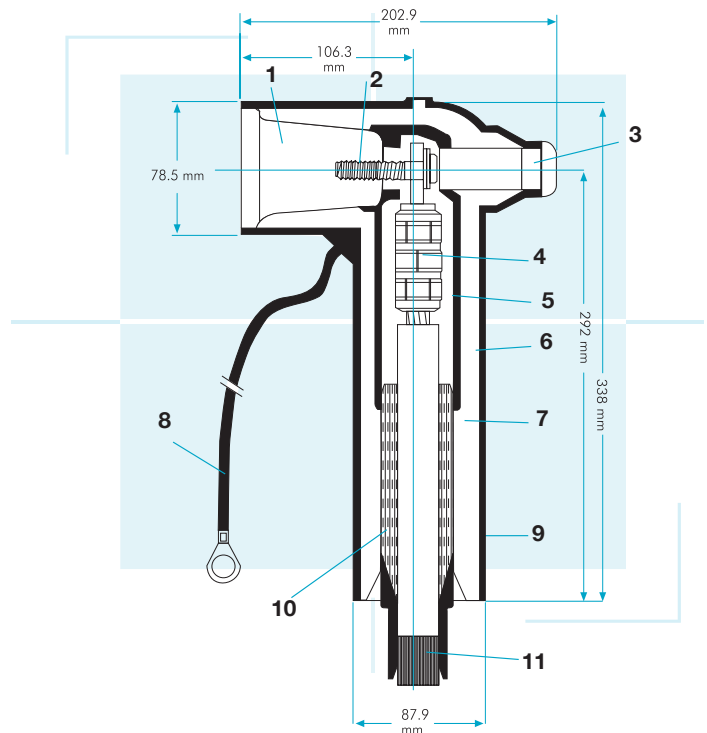
400LB



- The bushing interface conforms to CENELEC EN 50181 for using with standard 400/630A European switchgear C interface. A ground wire is attached for easy shield grounding after installation.
- The product for using with standard 400 A European switchgear B interface is available upon request.



- 1 Bushing Interface
- 2 Stud
- 3 Insulating Plug
- 4 Compression Connector
- 5 Semi Conductive Insert
- 6 Elbow Housing
- 7 Elbow Insulation
- 8 Grounding Wire
- 9 Outer Semi conductive layer
- 10 Cable Adaptor
- 11 Cable's Outer Semi Conductor



### Ordering Instructions

Determine the insulation diameter of the cable.  
Select the corresponding adaptor size that straddles the insulation diameter .

**K - 400LB - W - X - XXX**

Voltage Class	Cable Insulation Dia. Range	Adaptor Size	Conductor metal		COND. SIZE (mm²)
	mm			Symbol	
7.5	16.3 - 20.8	F	Aluminum	1	025
12	19.3 - 24.1	G	Copper	2	035
17.5	21.6 - 26.7	H			050
24	24.9 - 30.0	J			070
	27.7 - 33.3	K			095
	30.0 - 37.2	L			120
	34.8 - 41.4	M			150
	38.5 - 45.2	N			185
	43.8 - 49.1	P			240
					300
					400
					500
					630

### Note

Tinned Al lug is supplied for both Cu & Al conductor as a default.  
For other options please specify.





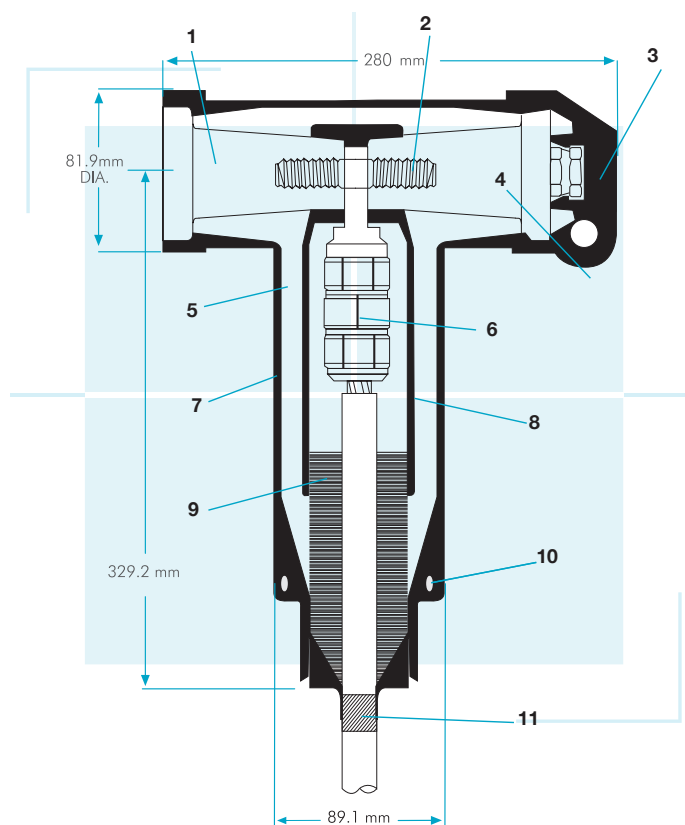
## DEAD BREAK SEPARABLE CONNECTORS T SHAPE ELBOW

IEC Standard 60502-4, IEEE Standard 386, CENELEC HD 629.1

- The product mates with bushing interface conform to CENELEC EN 50181. B, C & D interface customized from both side as per client requests.



- 1** Bushing Interface
- 2** Stud
- 3** Protective Cap
- 4** Insulating Plug
- 5** Elbow insulation
- 6** Compression Connector
- 7** Outer Semi Conductive Layer
- 8** Semi Conductive Insert
- 9** Cable Adaptor
- 10** Earthing Eye
- 11** Cable's Outer Semi Conductor



### Ordering Instructions

- Specify interface symbol according to your switch gear interface.
- Determine the insulation diameter of the cable. Select the corresponding adaptor size that straddles the insulation diameter.



**X - X - W - X - XXX**

Voltage Class		Type of Interface	Symbol	Cable Insulation Dia. Range	Adaptor Size	Conductor metal		COND. SIZE (mm <sup>2</sup> )
KV	Symbol			mm			Symbol	
7.5	-	C/D	465	16.3 - 20.8	F	Aluminum	1	025
12	-	D/D	655	19.3 - 24.1	G	Copper	2	035
17.5	-	C/C	455	21.6 - 26.7	H			050
24	K	B/D	466	24.9 - 30.0	J			070
36	M			27.7 - 33.3	K			095
				30.0 - 37.2	L			120
				34.8 - 41.4	M			150
				38.5 - 45.2	N			185
				43.8 - 49.1	P			240
								300
								400
								500
								630

## Example

For 24KV ,185mm<sup>2</sup> stranded AL Cable with a dia.  
Over insulation of 28.5mm and the required ELBOW interface C/D. Order K465J1185

## Note

Tinned Al lug is supplied for both Cu&Al conductor as a default.  
For other options, please specify.

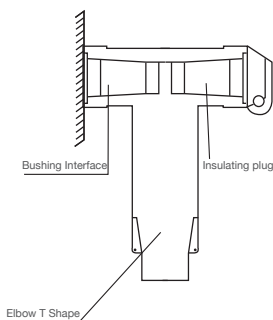
## Possible Arrangements

- Various possibilities could be achieved using the correct mating parts, which enables providing innovative solutions as per customers needs.
- Other combinations can be achieved.

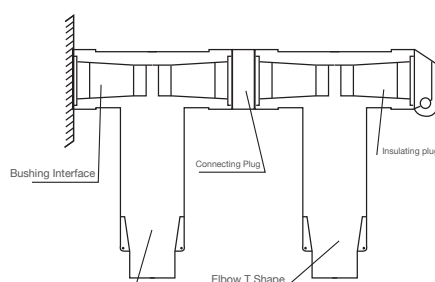
## Separable Connectors

### Elbows types and Bushing Interfaces

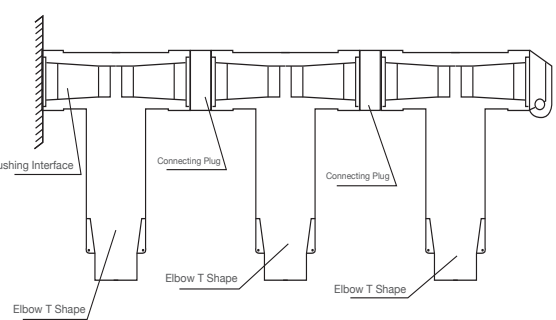
Bushing Interface Type	Elbow Shape	Rated voltage (um)	Rated Current	Connection Type
A	L- Shape only	15,25 KV	250 A	Plug in
B	L or T- Shape	15,25 KV	400 A	Plug in
	T - Shape only	35 kv		
C	L or T- Shape	15,25 KV	630 A	Screw ( metric )
	T - Shape only	35 kv		
D	T - Shape only	15,25,35 KV	630 A	Screw ( inch )



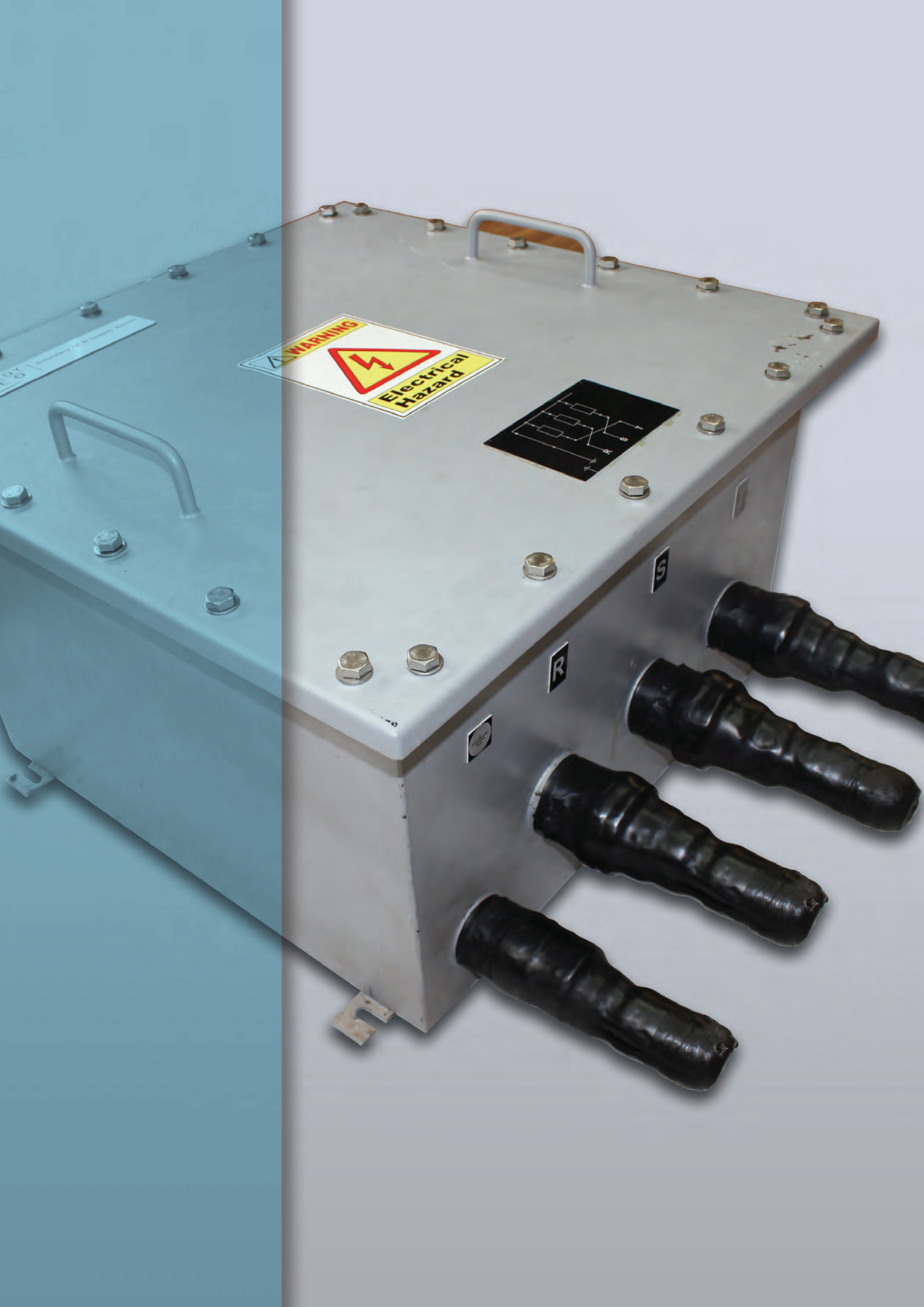
SINGLE CONNECTION TO EQUIPMENT



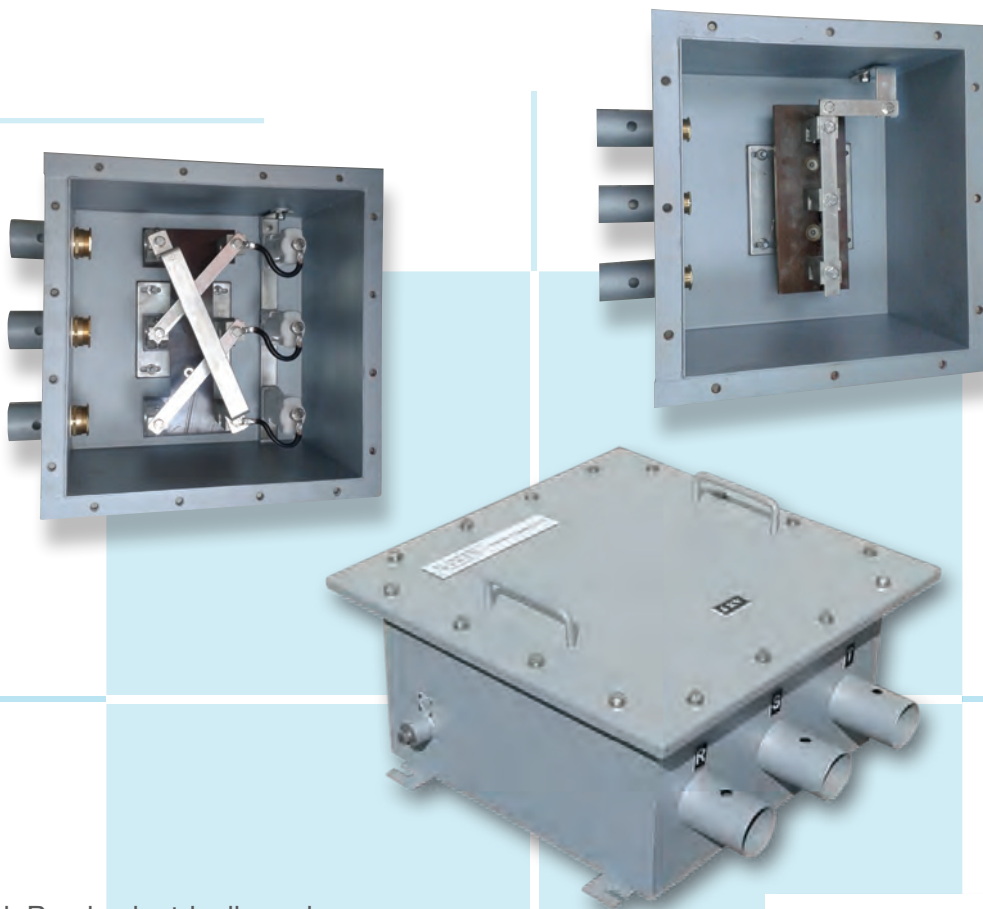
DOUBLE CONNECTION TO EQUIPMENT FOR DUAL CABLE/PHASE



TRIPLE CONNECTION EXAMPLE BRANCHING APPLICATION



## LINK BOX



Link Box is electrically and mechanically one of the integral accessories of HV underground and above ground cable bonding system, associated with HV XLPE power cable systems. SEDCO offers an array of its product disconnecting link boxes to complete the desired sheath grounding arrangement. We provide a sealed dry environment for cable metal sheath earthing connections (links). These links may be removed to facilitate cable sheath inspection and testing.



1194-15

### TYPE TEST CERTIFICATE OF PRE-QUALIFICATION

**OBJECT** Power cable system consisting of a single-core power cable, 2 outdoor terminations, 2 GB terminations, 4 joints with screen separation and link boxes.

Rated voltage (U<sub>n</sub>) (kV) 130/220 (245) kV Conductor material Cu  
Conductor cross-section 1200 mm<sup>2</sup> Insulation material XLPE

**MANUFACTURERS** \*) Cable Elwedy Cables,  
10<sup>th</sup> of Ramadan City, Egypt  
Accessories Elwedy SEDCO,  
10<sup>th</sup> of Ramadan City, Egypt  
and  
all cables GmbH,  
Cologne, Germany

**CLIENT** Elwedy Cables  
10<sup>th</sup> of Ramadan City, Egypt

**TESTED BY** KEMA Nederland B.V.,  
Amhem, The Netherlands

**DATE OF TESTS** 18 March 2014 to 18 June 2015

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 62067 (2011) subclause 13

This Prequalification Certificate has been issued by KEMA following exclusively the STL Guide. The results are shown in this document. The values obtained and the general performance are considered to comply with the above standard and to justify the ratings assigned by the manufacturer as listed on page 4 to 12.

This Certificate applies only to the object tested. The responsibility for conformity of any object having the same type references as that tested rests with the manufacturer.

The Certificate consists of 62 pages in total.

\*) as stated by the manufacturer.

Copyright: Only integral reproduction of this Certificate is permitted without written permission from KEMA. Electronic copies, e.g. PDF-format or scanned version of this Certificate may be available and have the status "for information only". The sealed and bound version of the Certificate is the only valid version.

KEMA Nederland B.V.  
S.A.M. Verhoeven  
Technical Testing, Inspections &  
Certification The Netherlands  
Amhem, 8 December 2015





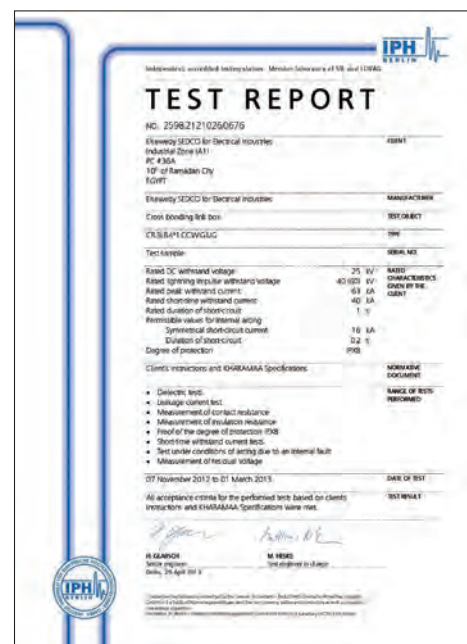
- Enclousre from stainless steel ,electrostatic painting for long term corrosion resistance
- Great Sealing and waterproof performance.
- Designs for indoor,outdoor and underground applications.
- Different mechanical protection level up to IP 68.
- All Connections and links are tin Plated.

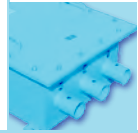


- Accommodate single core or concentric cables
- Suitable for earthing cable leads C.S.A up to 400mm<sup>2</sup>.
- Different designs available : single point, cross bonding and direct grounding versions available with or without removable links.
- With or without SVL: Zinc oxide sheath voltage limiters (SVL) can be used. Rated voltage as per client specifications/bonding system design.
- Arrangement fulfilled all electrical requirements for the voltage class up to 400 kV.

Our link boxes are type tested to comply with Engineering recommendation C55/4 and IEC 60840

	Item	Parameters
1	DC withstand voltage	25kV/1 min.
2	Impulse withstand voltage	40 kV
3	AC withstand voltage	10 kV/1 min.
4	Insulating resistance	≥100MΩ
5	Contact resistance	≤20μΩ
6	Short circuit test current (as per Cable C.S.A.)	40kA / 1 sec
7	Degree of protection	IP 68
8	SVL Leakage Current (as applicable)	≤ 0.1 mA

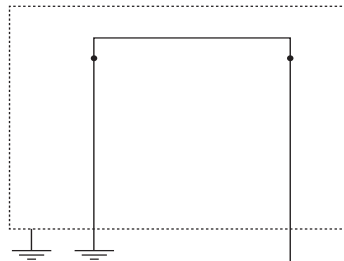




## Selection Product

### Single Phase Solid Earthed Link boxes Without SVL

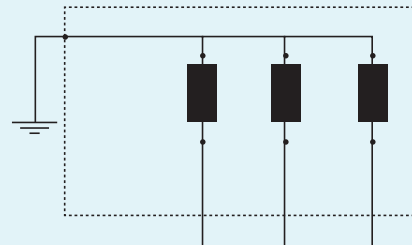
Link Diagram



Type : SE.1LB.WOS.1\*1.SC.XX  
XX : AG (IP65) or UG (IP68)

### Three phase Direct Earthed with SVL

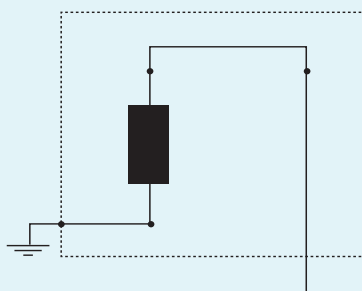
Link Diagram



Type : DE.3LB.WIS.3\*1.SC.XX  
XX : AG (IP65) or UG (IP68)

### Single Phase Direct Earthed Link Boxes With SVL

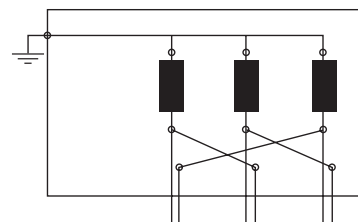
Link Diagram



Type : DE.1LB.WIS.1\*1.SC.XX  
XX : AG (IP65) or UG (IP68)

### Three phase Cross Bonding Link Boxes With SVL using Concentric cables

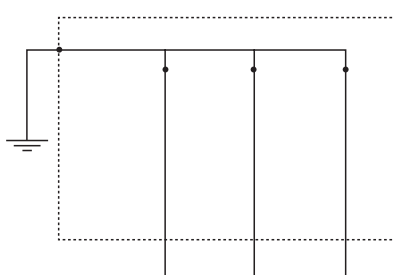
Link Diagram



Type : CB.3LB.WIS.3\*1.CC.XX  
XX : AG (IP65) or UG (IP68)

### Three Phase Solid Earthed Link Boxes Without SVL

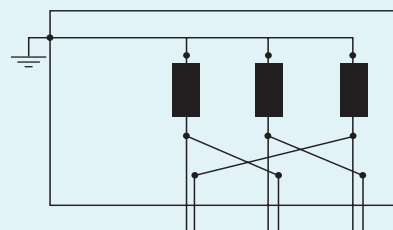
Link Diagram



Type : SE.3LB.WOS.3\*1.SC.XX  
XX : AG (IP65) or UG (IP68)

### Three Phase cross bonding link boxes with SVL using single phase cable

Link Diagram

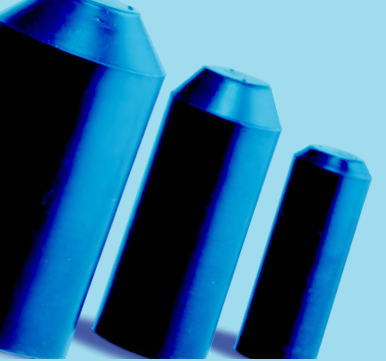


Type : CB.3LB.WIS.3\*2.SC.XX  
XX : AG(IP65) or ug (IP68)

AG : Above Ground	CB : Cross Bonding
UG : Underground	SC : Single Core Cable
DE : Direct Earthed	CC : Concentric Cable
SE : Solid Earthed	W/O : Without

## NOTES

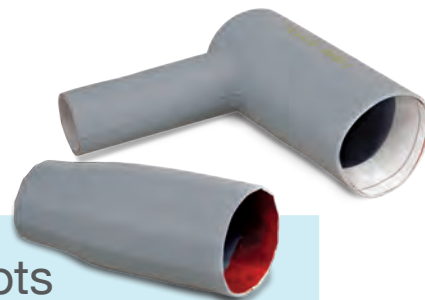
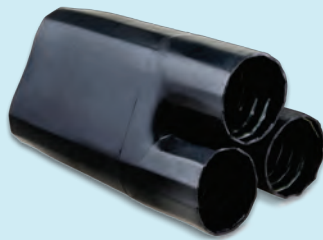
- Outer dimensions are related to the earthing cable dimensions, rated voltage and SVL value (if exist).
- 4 ways design are also available upon request.
- All design can be used for bonding cable C.S.A up to 400mm<sup>2</sup>.
- Complete kit is supplied with all heat shrinks, resins and tapes (if needed)
- When requesting a quotation please include:
  - Link box type
  - Cable size of bonding and earthing cable
  - SVL values if required
  - Any special requirements or modifications required by customers can be met.



## HEAT SHRINK PRODUCTS

### Cable Breakouts

Cable breakouts are designed for cable sealing crutches and to provide resistance to abrasion, weathering and chemical attack. It's applicable for indoor and outdoor applications for all types of polymeric and paper insulated cables.



### Boots

Heat shrinkable stabilized cross-linked Polyolefin anti tracking boots, in red or grey color, designed to provide protection to the end cables and bushing insulation and sealing against ingress of moisture and contamination. and provide insulation and resistance to abrasion, weathering and chemical attack.

### End Caps

Heat shrinkable stabilized cross linked polyolefin sealing caps (SC), in black color are ideal for protecting cable ends. SC are designed to seal the end of cables against ingress of moisture and contamination, and provide insulation and resistance to abrasion, weathering and chemical attack. Such sealing caps are required for cable transport, storage and installation.



### Heat Shrink Tubes

SHSI is an excellent product for sealing and insulating cable splices connections, terminations and jacket repairs. The tubing is designed to withstand the severe mechanical requirements of submersible, and direct buried installations.





## Low Voltage Heat Shrink Joint

SHSJ (cable Joint) are outstandingly suitable for jointing two single or multi-core, polymeric (XLPE, PVC ...), Al or Cu, armored or non-armored in the low voltage range (up to 1kV).



## Low Voltage Heat Shrink Termination

SHST (cable-Termination) are outstandingly suitable for Terminating multi-core, polymeric (XLPE, PVC ...) and power cables, Al or Cu, armored or non-armored in the low voltage range (up to 1kV).





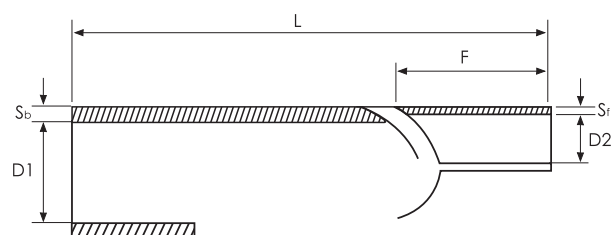
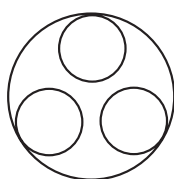


## HEAT SHRINK PRODUCTS CABLE BREAKOUTS



### Main Features

- Resistance against abrasion, corrosion, chemicals, solvents, common fluids.
- Resistance against weather, UV and oxidation.
- Compatible with nearly all cable types.
- Unlimited shelf life.
- Easy and fast installation.
- Available with adhesive or mastic if required.



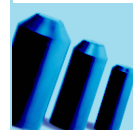
### Material Specification

Properties	Unit	Value	Standrad
Application Temperature	°C	-40 : + 150	
Shrinking Temperature	°C	> 120	
Tensile Strength	N/mm <sup>2</sup>	12 Min	ISO 527
Elongation at Break	%	300 Min	ISO 527
Thermal Ageing	(150 °C for 168H)		ASTM D 573
Tensile Strength	N/mm <sup>2</sup>	10 Min	ISO 527
Elongation at Break	%	250 Min	ISO 527
Water Absorption	%	< 0.5	DIN 53495
Volume Resistivity	Ohm.cm	10 <sup>12</sup> Min	ASTM D 257
Carbon Black Content	%	> 2.5	ASTM D 1603
Density	gm/cm <sup>3</sup>	1.07 ± 0.03	ASTM D 792

### Dimensions

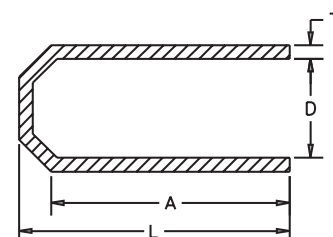
Type	Cable Side			( L ) mm total length after free recovery	Finger Side			
	Diameter		( Sb ) mm standard thickness after free recovery				( Sf ) mm standard thickness after free recovery	( F )mm finger length after free recovery
	( D1 ) mm as supplied	( d1 ) mm after free recovery			( D2 ) mm as supplied	( d2 ) mm after free recovery		
STFB0	50	20	3.5	170	22	8	2.2	50
STFB1	75	30	3.5	215	32	13	2.2	75
STFB2	110	45	5	290	52	21	4	110
STFB3	135	55	5	310	64	27	4	135

- All dimensions in mm.
- For any other dimensions, please contact us.
- Due to continuous product improvements, some specifications could be changed without notice.



## Main Features

- Resistance against abrasion, corrosion, chemicals, solvents and common fluids.
- Resistance against weather, UV and oxidation.
- Compatible with nearly all types of cables.
- Rated up to 600/1000 V energized cable.
- Unlimited shelf life.
- Easy and fast installation.
- Available with adhesive, mastic, or valve if required.



## Material Specification

Properties	Unit	Value	Standrad
Application Temperature	°C	-40 : + 150	
Shrinking Temperature	°C	> 120	
Tensile Strength	N/mm <sup>2</sup>	12 Min	ISO 527
Elongation at Break	%	300 Min	ISO 527
Water Absorption	%	< 0.5	DIN 53495
Volume Resistivity	Ohm.cm	10 <sup>12</sup> Min	ASTM D 257
Carbon Black Content	%	> 2.5	ASTM D 1603
Density	gm/cm <sup>3</sup>	1.07 ± 0.03	ASTM D 792

## Dimensions

Type	As Supplied			After Free Recovery	
	(L)	(A)	(D)	(T)	(D) Max.
SC 14	50	45	14	3	4
SC 20	65	60	20	3	9
SC 35	90	80	35	3	15
SC 55	110	88	55	3.7	24
SC 80	120	105	80	4	35
SC 100	140	110	100	4.8	55
SC 115	150	110	115	4.8	55

- All Dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvements, some specifications could be changed without notice.



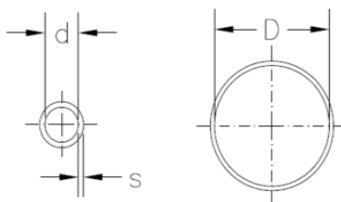
## HEAT SHRINK PRODUCTS

### HEAT SHRINK TUBES



#### Main Features

- Continuous operating temperature range of -40°C to +120°C (Jacket Only) 3:1 shrink ratio.
- High resistance to abrasion, corrosion, and chemicals.
- Excellent weather ability.
- Excellent insulating performance.
- Excellent mechanical stability.
- Easy and fast installation.
- Available with adhesive:
  - for adhesive tube (X = A),
  - for non-adhesive tube (X = N)..



#### Ordering formula:

**SHSI D / D – X – S / L**

N	Non Adhesive
A	Adhesive

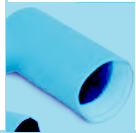
- For any other dimensions, please contact us.
- Due to continuous product improvements, some specification could be changed without notice.

#### Technical Data

Properties	Unit	Value	Standrad
Application Temperature	°C	-40 : + 150	
Shrinking Temperature	°C	> 120	
Shrink Ratio		3:1	
Density	gm/cm <sup>3</sup>	0.95 ± 0.03	ASTM D 792
Hardness shore D	SH	49± 4	ASTM D 2240
Tensile Strength	N/mm <sup>2</sup>	10 Min	ISO 527
Elongation at Break	%	400 Min	ISO 527
Thermal Ageing	(150 oC for 168H)		ASTM D 573
Tensile Strength	N/mm <sup>2</sup>	8 Min	ISO 527
Elongation at Break	%	350 Min	ISO 527
Water Absorption	%	< 0.2	DIN 53495
Carbon Black Content	%	> 2.5	ASTM D 1603
Brittleness Temperature	°C	-40	DIN 59546
Volume Resistivity	Ohm.cm	10 <sup>12</sup> Min	ASTM D 257/IEC 93
Dielectric Strength	KV/mm	10 Min	ASTM D 149/IEC 243
Heat Shock		Pass	IEC 60811-3-1

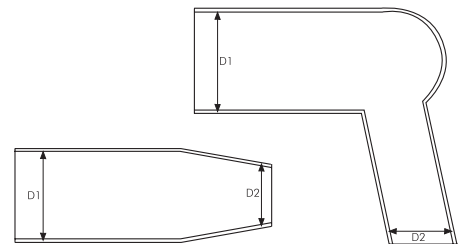
Type	Diameter		(S) mm wall thickness
	(D) mm as supplied	(d) mm after recovery	
22/6	22	6	2.2
33/8	33	8	2.5
40/12	40	12	2.5
55/16	55	16	2.7
101/25	101	25	3.5
124/34	124	34	3.6
160/50	160	50	3.5
180/60	180	60	3.5
225/75	225	75	5
235/65	235	65	3.7
265/75	265	75	4
300/75	300	75	4

# HEAT SHRINK PRODUCTS BOOTS



## Main Features

- Resistance against abrasion, corrosion, chemicals, solvents and common fluids.
- Resistance against weather, UV and oxidation.
- High tracking resistant.
- Compatible with nearly all types of cables.
- Unlimited shelf life.
- Easy and fast installation.
- Available with adhesive or mastic if required.



## Material Specification

Properties	Unit	Value	Standrad
Density	gm/cm <sup>3</sup>	1.11 ± 0.03	ASTM D 792
Tensile Strength	N/mm <sup>2</sup>	10 Min	ISO 527
Elongation at Break	%	300 Min	ISO 527
Hardness shore D	SH	35± 4	ASTM D 2240
Water Absorption	%	1% Max	DIN 53495
Thermal Ageing	(150 oC for 168H)		ASTM D 573
Tensile Strength	N/mm <sup>2</sup>	8 Min	ISO 527
Elongation at Break	%	250 Min	ISO 527
Volume Resistivity	Ohm.cm	10 <sup>12</sup> Min	ASTM D 257/IEC 93
Dielectric Strength	KV/mm	10 Min	ASTM D 149/IEC 243
Dielectric constant		5 Max	ASTM D 150/IEC 250
resistance to Track		No failure by tracking	ASTM D 2303

Type	Bushing Side		Cable Side	
	D1	D2	D3	D4
Straight Boot SB1	81	30	48	15
Straight Boot SB2	95	35	70	25
Right Angle Boot RAB1	81	35	48	15
Right Angle Boot RAB2	95	35	70	25

- All Dimensions in mm.
- For any other dimensions, please contact us.
- D1 and D2 are the dimensions as supplied
- d1 and d2 are the dimensions after free recovery
- Due to continuous product improvements, some specifications could be changed without notice.



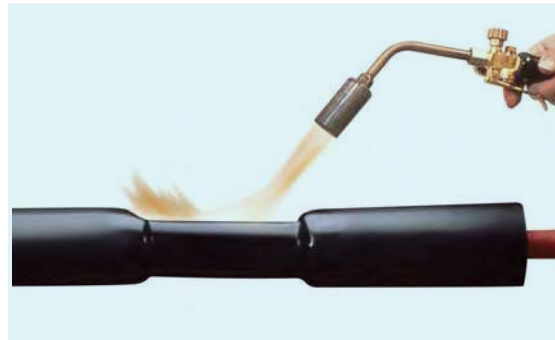


## HEAT SHRINK PRODUCTS

### LOW VOLTAGE HEAT SHRINK JOINT

#### Main Features

- Quick, simple installation.
- Superior insulation.
- Good mechanical load-bearing ability.
- Unrestricted shelf life.
- Easy customization.
- Outstanding environment resistance.
- Long service time.



#### Ordering Formula

<b>SHSJ</b>	<b>X C</b>	-	<b>X X X</b>	-	<b>X</b>	-	<b>X</b>
No. of cores			Conductor size		Armoring		connector type

A	Aluminum
C	Copper
N	Not armored
A	Armored

- Due to continuous product improvements, some specifications could be changed without notice.

# HEAT SHRINK PRODUCTS

## LOW VOLTAGE HEAT SHRINK TERMINATION



### Main Features

- Quick, simple installation.
- Superior insulation.
- Good mechanical load-bearing ability.
- Long service life.
- Reliable seal.
- Consistent performance.
- Easy customization.



### Ordering Formula

SHST	X C	-	X X X	-	X	-	X
	No. of cores		Conductor size		Lug type		tube Length

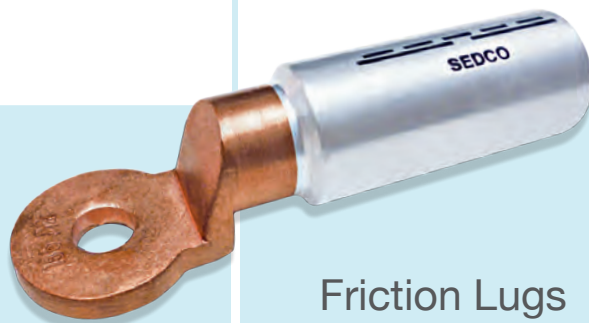
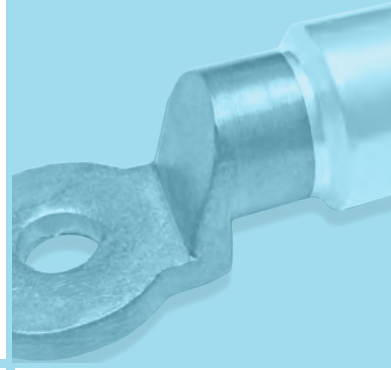
N	Not Required
A	Aluminum
C	Copper

- Due to continuous product improvements, some specifications could be changed without notice.

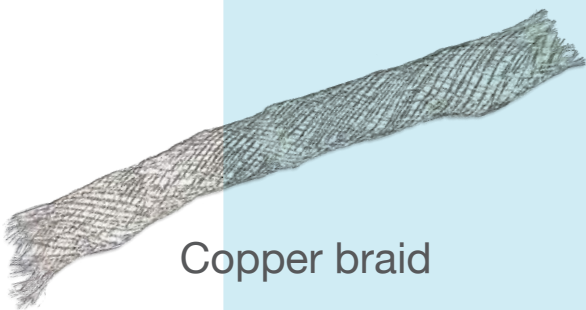




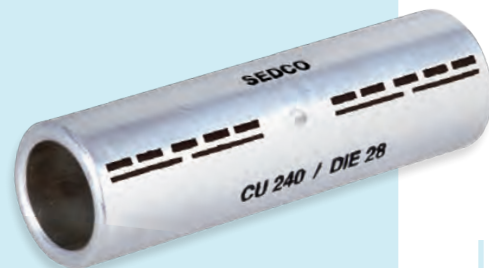
## METAL ACCESSORIES



Friction Lugs



Copper braid



Tubular Copper Connectors



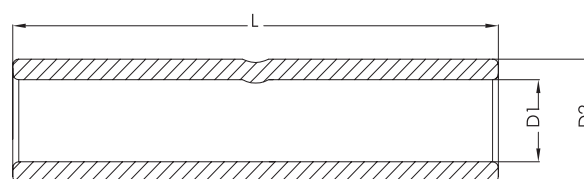


## COPPER METAL ACCESSORIES

### TUBULAR COPPER CONNECTORS FOR MV JOINTS



Tube	: Seamless, one piece tube
Material	: Electrolytic tough pitch copper
Purity	: High Purity (Chemical composition min. copper ratio 99.9 %)
Finish	: Tin plated to assure maximum conductivity
Identification	: Conductor size , connector die size, number of crimping and crimping position are marked on every piece
Manufacturing Standard	: DIN 46267 part 1
Tube Manufacturing	: In compliance with DIN EN 13600.
Conductivity	: High conductivity > 96.6 % IACS
IACS	: international annealed copper standard



Positive cable stops ensure proper insertion of conductors to full depth (\*\*) connectors are for cable joints only.

Code	Conductor Size mm <sup>2</sup>	Connector Die D3(*)	D1	D2	L(**)
MV STCC 25/100	25	10	7.0	10	100
MV STCC 35/100	35	12	8.2	12.5	100
MV STCC 50/100	50	14	10	14.5	100
MV STCC 70/100	70	16	11.5	16.5	100
MV STCC 95/100	95	18	13.5	19	100
MV STCC 120/100	120	20	15.5	21	100
MV STCC 150/100	150	22	17	23.5	100
MV STCC 185/100	185	25	19	25.5	100
MV STCC 240/100	240	28	21.5	29	100
MV STCC 300/100	300	32	24.5	32	100
MV STCC 400/100	400	38	27.5	38.5	100
MV STCC 400/120	400	38	27.5	38.5	120
MV STCC 500/100	500	42	31	42	100
MV STCC 500/120	500	42	31	42	120
MV STCC 630/100	630	44	34.5	44	100
MV STCC 630/120	630	44	34.5	44	120
MV STCC 800/120	800	52	40	52	120
MV STCC 1000/120	1000	58	44	58	120

(\*) D3= Recommended die size for hexagonal crimping 

(\*\*) L= 100 mm for MV premolded cables joints type PCJ size (F,G ...M)

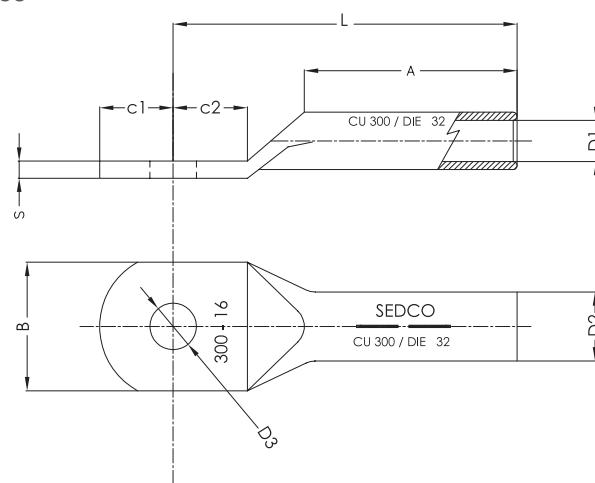
L= 120 mm for (MV premolded cables joints type PCJ size (N,.....,S)

- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the connector should not less than 50% of the connector length (L)
- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.



## TUBULAR COPPER LUGS FOR LV &amp; MV TERMINATIONS

Tube	: Seamless, one piece tube
Material	: Electrolytic tough pitch copper
Purity	: High Purity (Chemical composition min. copper ratio 99.9 %)
Finish	: Tin plated to assure maximum conductivity.
Identification	: Conductor size ,stud size, connector die size, number of crimping and crimping position are marked on every piece
Manufacturing standard	: DIN 46235
Tube manufacturing	: In compliance with DIN EN 13600.
Conductivity	: High conductivity > 96.6 % IACS
IACS	: international annealed copper standard



Code	Conductor Size mm <sup>2</sup>	Stud Size	Conn. Die D(*)	A	B	C1	C2	D1	D2	D3	L	S
STCL 6/6	6	M 6	5	10	8.5	7.5	8	3.8	5.5	6.4	24	1.5
STCL 10/6	10	M 6	6	10	9	7.5	8.5	4.5	6	6.4	27	1.5
STCL 16/8	16	M 8	8	20	13	10	10	5.5	8.5	8.4	36	2.5
STCL 25/8	25	M 8	10	20	16	10	10	7	10	8.4	38	3
STCL 35/10	35	M 10	12	20	19	12	12	8.2	12.5	10.5	42	2.5
STCL 50/10	50	M 10	14	28	22	12	12	10	14.5	10.5	52	4
STCL 70/12	70	M 12	16	28	24	13	13	11.5	16.5	13	55	4.5
STCL 95/12	95	M 12	18	35	28	13	13	13.5	19	13	65	5
STCL 120/12	120	M 12	20	35	32	16	13	15.5	21	13	70	5.5
STCL 150/12	150	M 12	22	35	34	16	17	17	23.5	13	78	6
STCL 185/16	185	M 16	25	40	37	19	20	19	25.5	17	82	6
STCL 240/16	240	M 16	28	40	42	19	20	21.5	29	17	92	7
STCL 300/16	300	M 16	32	50	48	19	20	24.5	32	17	100	7
STCL 400/20	400	M 20	38	70	55	25	20	27.5	38.5	21	115	10
STCL 500/20	500	M 20	42	70	60	25	20	31	42	21	125	10
STCL 630/20	630	M 20	44	80	63	25	20	34.5	44	21	135	10
STCL 800/20	800	M 20	52	100	75	25	20	38	52	21	165	12
STCL 1000/20	1000	M20	58	100	85	25	20	44	58	21	165	14

(\*) D= Recommended crimping die size for hexagonal type with hydraulic crimping tool  
The crimping area of the lug should not less than 70% of the lug barrel length (A)

- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.
- Hole Size can be changed according to DIN 46235



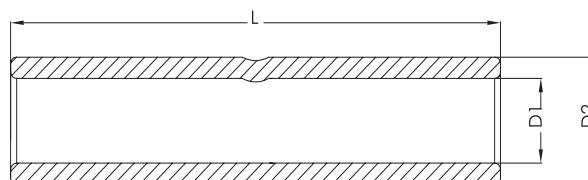
## COPPER METAL ACCESSORIES

### TUBULAR COPPER CONNECTORS FOR LV JOINTS

Tube	: Seamless, one piece tube
Material	: Electrolytic tough pitch copper
Purity	: High Purity (Chemical composition min. copper ratio 99.9 %)
Finish	: Tin plated to assure maximum conductivity
Identification	: Conductor size , connector die size, number of crimping and crimping position are marked on every piece
Manufacturing Standard	: DIN 46267 part 1
Tube Manufacturing	: In compliance with DIN EN 13600.
Conductivity	: High conductivity > 96.6 % IACS
IACS	: international annealed copper standard



Positive cable stops ensure proper insertion of conductors to full depth.



Code	Conductor Size mm <sup>2</sup>	Connector Die (*)D3	D1	D2	(**)L
STCC 6/30	6	5	3.8	5.5	30
STCC 10/30	10	6	4.5	6	30
STCC 16/50	16	8	5.5	8.5	50
STCC 25/50	25	10	7	10	50
STCC 35/50	35	12	8.2	12.5	50
STCC 50/56	50	14	10	14.5	56
STCC 70/56	70	16	11.5	16.5	56
STCC 95/70	95	18	13.5	19	70
STCC 120/70	120	20	15.5	21	70
STCC 150/80	150	22	17	23.5	80
STCC 185/85	185	25	19	25.5	85
STCC 240/90	240	28	21.5	29	90
STCC 300/100	300	32	24.5	32	100
STCC 400/150	400	38	27.5	38.5	150
STCC 500/160	500	42	31	42	160
STCC 630/160	630	44	34.5	44	160
STCC 800/200	800	52	40	52	200
STCC 1000 mm <sup>2</sup>	1000	58	44	58	200

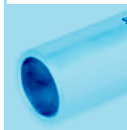
(\*) D3= Recommended die size for hexagonal crimping 

L (\*\*) = Indicted Length for low Voltage Only

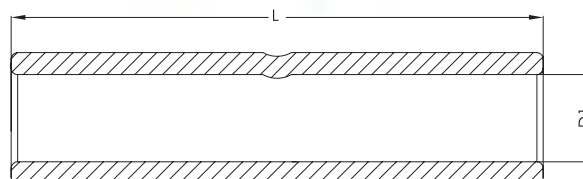
- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the connector should not less than 50% of the connector length (L)
- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.

## COPPER METAL ACCESSORIES

### STANDARD COPPER CONNECTORS



Tube	: Seamless, one piece tube
Material	: Electrolytic tough pitch copper
Purity	: High Purity (Chemical composition min. copper ratio 99.9 %)
Finish	: Tin plated to assure maximum conductivity
Identification	: Conductor size is marked on every piece
Conductivity	: High conductivity > 96.6 % IACS
IACS	: international annealed copper standard



Positive cable stops ensure proper insertion of conductors to full depth.

Code	Conductor Size mm <sup>2</sup>	D1	L
SSCC 6/25	6	3.8	25
SSCC 10/30	10	4.5	30
SSCC 16/35	16	5.5	35
SSCC 25/40	25	6.8	40
SSCC 35/45	35	8.2	45
SSCC 50/50	50	9.5	50
SSCC 70/55	70	11.2	55
SSCC 95/60	95	13.4	60
SSCC 120/65	120	15.0	65
SSCC 150/70	150	16.5	70
SSCC 185/80	185	19.0	80
SSCC 240/90	240	21.0	90
SSCC 300/100	300	23.5	100
SSCC 400/110	400	27.0	110
SSCC 500/140	500	31.0	140
SSCC 630/160	630	34.0	160

- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.
- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the connector should not less than 50% of the connector length (L)



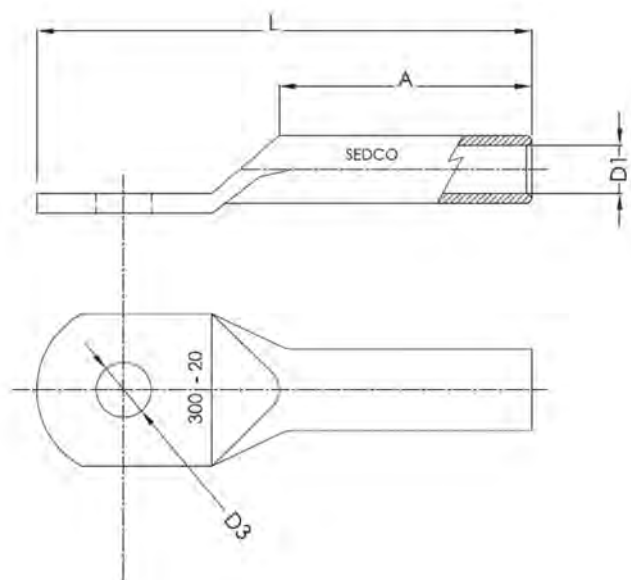


## COPPER METAL ACCESSORIES

### STANDARD COPPER LUGS



Tube	: Seamless, one piece tube
Material	: Electrolytic tough pitch copper
Purity	: High Purity (Chemical composition min. copper ratio 99.9 %)
Finish	: Tin plated to assure maximum conductivity
Identification	: Conductor size and stud size are marked on every piece.
Conductivity	: High conductivity > 96.6 % IACS
IACS	: international annealed copper standard



Code	Conductor Size mm <sup>2</sup>	Stud Size	A	D1	D3	L
SSCL 6/6	6	M 6	10	3.8	6.5	31.5
SSCL 10/6	10	M 6	10	4.5	6.5	34.5
SSCL 16/8	16	M 8	11	5.5	8.5	35
SSCL 25/8	25	M 8	12	6.8	8.5	38
SSCL 35/8	35	M 8	15	8.2	8.5	45
SSCL 50/10	50	M 10	18	9.5	10.5	50
SSCL 70/10	70	M 10	20	11.2	10.5	53
SSCL 95/12	95	M 12	22	13.4	13.0	60
SSCL 120/12	120	M 12	26	15.0	13.0	65
SSCL 150/12	150	M 12	30	16.5	13.0	72
SSCL 185/16	185	M 16	30	19.0	17.0	83
SSCL 240/16	240	M 16	35	21.0	17.0	94
SSCL 300/20	300	M 20	44	23.5	21.0	111
SSCL 400/20	400	M 20	44	27.0	21.0	114
SSCL 500/20	500	M 20	68	31.0	21.0	144
SSCL 630/20	630	M 20	68	34.0	21.0	144

- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.
- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the lug should not less than 70% of the Lug barrel length (A)

## COPPER METAL ACCESSORIES

### COPPER BRAID

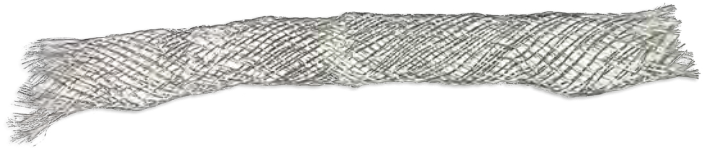


#### Material

- Tinned Copper wire 0.3 mm

#### Application

- Screen restoration for copper screen cables.
- Connect the cable metallic screen to earth in case of termination.



#### Properties :

Type	No. of bundle	No. of wires/ bundle	Width (mm)
Copper braid -16mm <sup>2</sup>	48	5 : 6	16
Copper braid -25 mm <sup>2</sup>	48	7 : 8	25
Copper braid -35 mm <sup>2</sup>	48	10:11	25
Copper braid -50 mm <sup>2</sup>	48	15	25





## ALUMINUM METAL ACCESSORIES

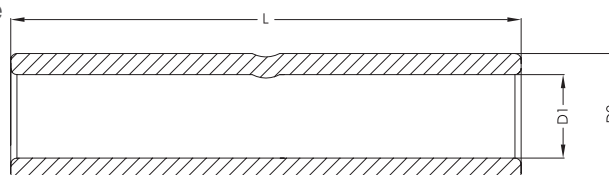
### TUBULAR ALUMINUM CONNECTORS FOR MV JOINTS



Tube	: Seamless, one piece tube
Material	: Pure aluminum
Conductivity	: High conductivity > 58 % IACS
IACS	: international annealed copper standard
Purity	: High Purity 99.5%
Finish	: Chemically treatment
Identification	: Conductor size , connector die size, number of crimping and crimping position are marked on every piece

Tube manufacturing : According to DIN EN 755-7.

Positive cable stops ensure proper insertion of conductors to full depth (\*\*) connectors are for cable joints only.



Code	Conductor Size mm <sup>2</sup>	Connector Die D3 <sup>(*)</sup>	D1	D2	L <sup>(**)</sup>
STAC 25/100	25	12	6.8	12	100
STAC 35/100	35	14	8	14	100
STAC 50/100	50	16	10	16	100
STAC 70/100	70	18	10.8	18	100
STAC 95/100	95	22	13.2	22	100
STAC 120/100	120	22	14.7	22	100
STAC 150/100	150	25	15.5	25	100
STAC 185/100	185	28	18.5	28	100
STAC 240/100	240	32	20	32	100
STAC 300/100	300	34	22.2	34	100
STAC 400/100	400	38	25	38	100
STAC 400/120	400	38	25	38	120
STAC 500/100	500	44	29	44	100
STAC 500/120	500	44	29	44	120
STAC 630/120	630	44	32	44	120

(\*) D3= Recommended die size for hexagonal crimping

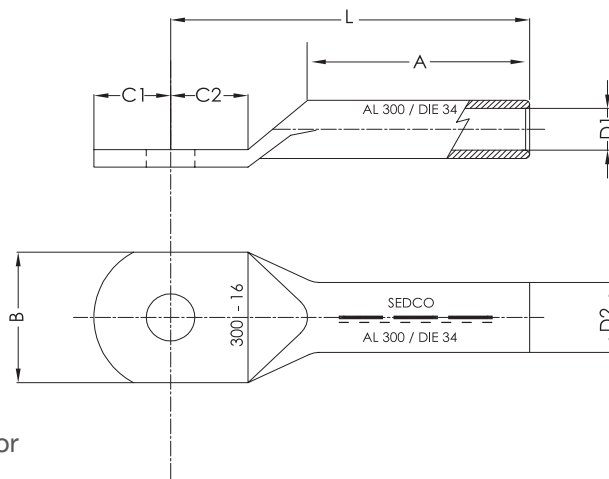
(\*\*) L= 100 mm for (MV cables joints premolded type PCJ size (F,G ...M))

L= 120 mm for ( MV cables joints premolded type PCJ size (N,.....,S))

- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the connector should not less than 50% of the connector length (L)
- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.

# ALUMINUM METAL ACCESSORIES

## TUBULAR ALUMINUM LUGS FOR MV TERMINATIONS



Tube : Seamless, one piece tube  
 Material : Pure Aluminum  
 Purity : high Purity 99.5%  
 Finish : Chemically treatment  
 Conductivity : High conductivity > 58% IACS  
 Identification : Conductor size ,stud size, connector die size, number of crimping and crimping position are marked on every piece

Tube manufacturing : according to DIN EN 755-7

Conductivity : High conductivity > 58% IACS

IACS : international annealed copper standard

Code	Conductor Size mm <sup>2</sup>	Stud Size	Conn. Die D(*)	A	B	C1	C2	D1	D2	L
MV-STAL 25/8	25	M 8	12	39	18	9.5	12.0	6.8	12	60
MV-STAL 35/10	35	M 10	14	42	21	11.2	14.5	8.0	14	67
MV-STAL 50/10	50	M 10	16	44	25	14.0	14.5	10.0	16	72
MV-STAL 70/12	70	M 12	18	51.5	28	15.0	17.5	10.8	18	86
MV-STAL 95/12	95	M 12	22	51.5	32	15.5	18.0	13.2	22	90
MV-STAL 120/12	120	M 12	22	51.5	32	16.0	17.0	14.7	22	91
MV-STAL 150/12	150	M 12	25	59	35	17.5	21.5	15.5	25	103
MV-STAL 185/16	185	M 16	28	59	40	21.5	25.0	18.5	28	106
MV-STAL 240/16	240	M 16	32	67	45	23.5	26.0	20.0	32	116
MV-STAL 300/16	300	M 16	34	76.5	49	24.0	25.0	22.2	34	124
MV-STAL 400/20	400	M 20	38	99	58	30.5	32.0	25.0	38	165
MV-STAL 500/20	500	M 20	44	110	60	30.0	31.5	29.0	44	185

\*D= Recommended crimping die size for hexagonal type with hydraulic crimping tool  
 The crimping area of the lug should not less than 70% of the lug barrel length (A)

- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.

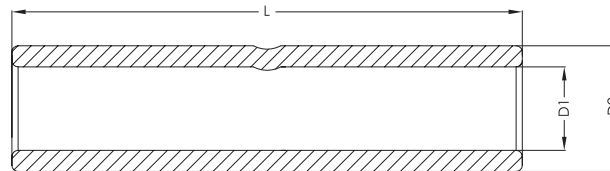




## ALUMINUM METAL ACCESSORIES

### TUBULAR ALUMINUM CONNECTORS FOR LV JOINTS

- Tube : Seamless, one piece tube
- Material : Pure aluminum
- Purity : High Purity 99.5%
- Finish : Chemically treatment
- Identification : Conductor size , connector die size, number of crimping and crimping position are marked on every piece
- Tube manufacturing : According to DIN EN 755-7.
- Conductivity : High conductivity > 58 % IACS
- IACS : international annealed copper standard
- Positive cable stops ensure proper insertion of conductors to full depth.



Code	Conductor Size mm <sup>2</sup>	Connector Die D3(*)	D1	D2	L(**)
STAC 25/70	25	12	6.8	12	70
STAC 35/85	35	14	8.0	14	85
STAC 50/85	50	16	10.0	16	85
STAC 70/105	70	18	11.2	18	105
STAC 95/105	95	22	13.2	22	105
STAC 120/105	120	22	14.7	22	105
STAC 150/125	150	25	16.3	25	125
STAC 185/125	185	28	18.5	28	125
STAC 240/145	240	32	21.0	32	145
STAC 300/145	300	34	23.3	34	145
STAC 400/210	400	38	26.0	38	210
STAC 500/210	500	44	29.0	44	210

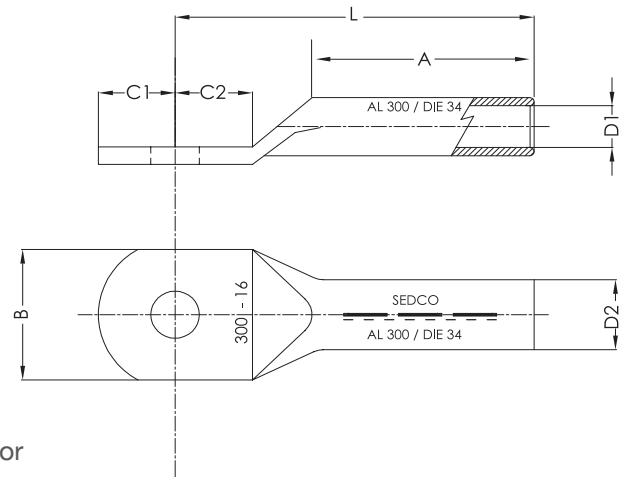
(\*) D3= Recommended die size for hexagonal crimping

L (\*\*)= Indicted Length for low Voltage Only

- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the lug should not less than 50% of the connector length (L)
- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.

# ALUMINUM METAL ACCESSORIES

## TUBULAR ALUMINUM LUGS FOR LV TERMINATION

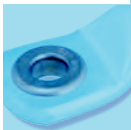


- Tube : Seamless, one piece tube
- Material : Pure Aluminum
- Purity : high Purity 99.5%
- Finish : Chemically treatment
- Identification : Conductor size ,stud size, connector die size, number of crimping and crimping position are marked on every piece
- Tube manufacturing : according to DIN EN 755-7
- Conductivity : High conductivity > 58% IACS
- IACS : international annealed copper standard

Code	Conductor Size mm <sup>2</sup>	Stud Size	Conn. Die D(*)	A	B	C1	C2	D1	D2	L
STAL 25/8	25	M 8	12	39	18	9.5	12.0	6.8	12	60
STAL 35/10	35	M 10	14	42	21	11.2	14.5	8.0	14	67
STAL 50/10	50	M 10	16	44	25	14.0	14.5	10.0	16	72
STAL 70/12	70	M 12	18	51.5	28	15.0	17.5	11.2	18	86
STAL 95/12	95	M 12	22	51.5	32	15.5	18.0	13.2	22	90
STAL 120/12	120	M 12	22	51.5	32	16.0	17.0	14.7	22	91
STAL 150/12	150	M 12	25	59	35	17.5	21.5	16.3	25	103
STAL 185/16	185	M 16	28	59	40	21.5	25.0	18.5	28	106
STAL 240/16	240	M 16	32	67	45	23.5	26.0	21.0	32	116
STAL 300/16	300	M 16	34	76.5	49	24.0	25.0	23.3	34	124
STAL 400/20	400	M 20	38	99	58	30.5	32.0	26.0	38	165
STAL 500/20	500	M 20	44	110	60	30.0	31.5	29.0	44	185

\*D= Recommended crimping die size for hexagonal type with hydraulic crimping tool  
The crimping area of the lug should not less than 70% of the lug barrel length (A)

- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.



## BI-METALLIC LUGS

## BI-METALLIC INSERT LUGS FOR MV TERMINATIONS



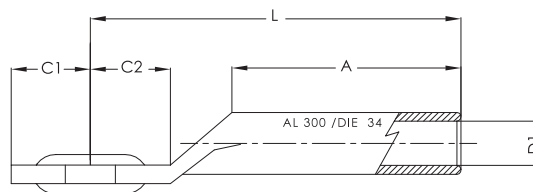
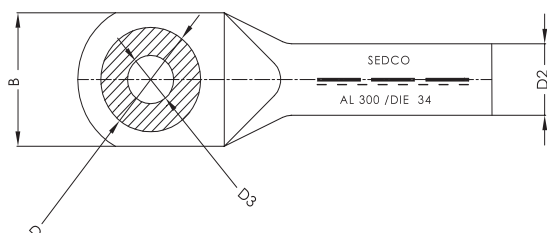
Tube	: Seamless, one piece tube
Material	: Pure Aluminum 99.5 %
Finish	: Chemically treatment
Ring Material	: High purity 99.9 % E.T.P copper
Ring Finish	: Plain copper
Identification	: Conductor size ,stud size, connector die size, number of crimping and crimping position are marked on every piece



Tube Manufacturing : According to DIN EN 755-7.

Manufacturing : Copper ring is inserted in the Al palm and excellent connection is assured .

Bi-metallic insert (ring) lugs assure a maximum reliability connection of aluminum cables to copper busbars,copper bushings,..etc.



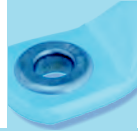
Code	Conductor Size mm <sup>2</sup>	Stud Size	Conn. Die D(*)	A	B	C1	C2	D1	D2	D3	D	L
MV-SBIL 70/12	70	M 12	18	51.5	32	16.5	18	10.8	18	13	28	86
MV-SBIL 95/12	95	M 12	22	51.5	35	17	18	13.2	22	13	28	90
MV-SBIL 120/12	120	M 12	22	51.5	35	17	19	14.7	22	13	28	92
MV-SBIL 150/12	150	M 12	25	59	35	18.5	21.5	15.5	25	13	28	103
MV-SBIL 185/12	185	M 12	28	59	40	22.5	24	18.5	28	13	28	106
MV-SBIL 240/16	240	M 16	32	67	45	25.5	26	20.0	32	17	33	116
MV-SBIL 300/16	300	M 16	34	76.5	50	25	25	22.2	34	17	33	125
MV-SBIL 400/16	400	M 16	38	99	58	30.5	32	25.0	38	17	35	165
MV-SBIL 500/16	500	M 16	44	110	62	30.0	37	29	44	17	35	185

(\*) D= recommended die size for hexagonal crimping

- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.
- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the lug should not less than 70% of the Lug barrel length (A)

# BI-METALLIC LUGS

## BI-METALLIC INSERT LUGS FOR LV TERMINATION



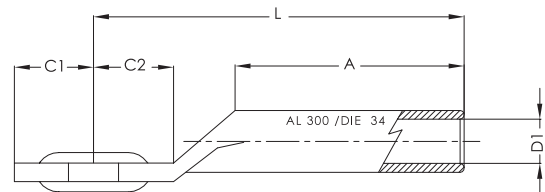
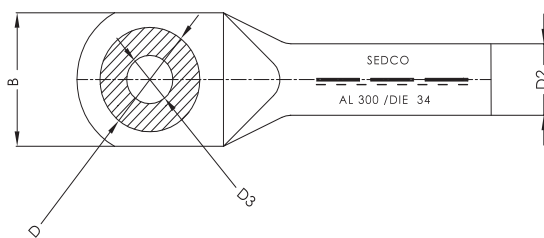
Tube	: Seamless, one piece tube
Material	: Pure Aluminum 99.5%
Finish	: Chemically treatment
Ring Material	: High purity 99.9% E.T.P copper
Ring Finish	: Plain copper
Identification	: Conductor size ,stud size, connector die size, number of crimping and crimping position are marked on every piece



Tube Manufacturing : According to DIN EN 755-7.

Manufacturing : Copper ring is inserted in the Al palm and excellent connection is assured .

Bi-metallic insert (ring) lugs assure a maximum reliability connection of aluminum cables to copper busbars,copper bushings,..etc.



Code	Conductor Size mm <sup>2</sup>	Stud Size	Conn. Die D(*)	A	B	C1	C2	D1	D2	D3	D	L
SBIL 70/12	70	M 12	18	51.5	32	16.5	18	11.2	18	13	28	86
SBIL 95/12	95	M 12	22	51.5	35	17	18	13.2	22	13	28	90
SBIL 120/12	120	M 12	22	51.5	35	17	19	14.7	22	13	28	92
SBIL 150/12	150	M 12	25	59	35	18.5	21.5	16.3	25	13	28	103
SBIL 185/12	185	M 12	28	59	40	22.5	24	18.5	28	13	28	106
SBIL 240/16	240	M 16	32	67	45	25.5	26	21	32	17	33	116
SBIL 300/16	300	M 16	34	76.5	50	25	25	23.3	34	17	33	125
SBIL 400/16	400	M 16	38	99	58	30.5	32	26	38	17	35	165
SBIL 500/16	500	M 16	44	110	62	30.0	37	29	44	17	35	185

(\*) D= recommended die size for hexagonal crimping

- All dimensions in mm.
- Other dimensions, shapes or sizes are available upon request.
- Due to continuous product improvement, some specifications could be changed without notice.
- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the lug should not less than 70% of the Lug barrel length (A)





## BI-METALLIC LUGS

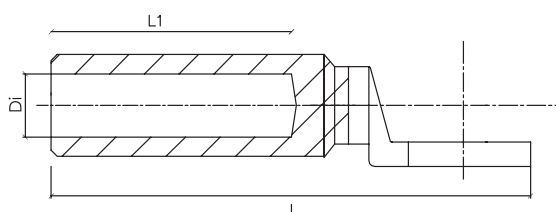
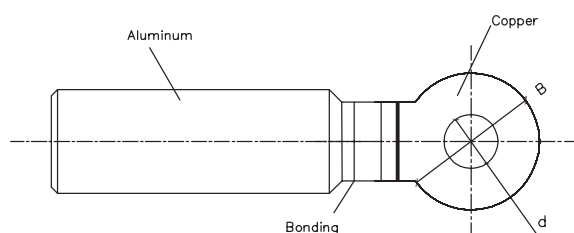
## BI-METALLIC FRICTION LUGS FOR MV TERMINATION



Palm Material	: Pure electrolytic copper
Palm Finish	: Plain copper
Barrel Material	: Pure aluminum
Barrel Finish	: Chemically treatment
Identification	: Conductor size ,stud size, connector die size, number of crimping and crimping position are marked on every piece
Manufacturing	: Copper palm is welded to Al barrel by cutting edge friction welding technology.



Bi-metallic friction lugs assure a maximum reliability connection of aluminum cables to copper busbars, copper bushings,..etc



Code	Conductor Size mm <sup>2</sup>	d	Di	B	L1	L
SBFL 25/10	25	10.5	6.8	23	43	85
SBFL 35/10	35	10.5	8	23	43	85
SBFL 50/12	50	13	10	25	43	85
SBFL 70/12	70	13	10.8	25	43	85
SBFL 95/12	95	13	13.2	25	43	85
SBFL 120/12	120	13	14.7	30	59	112
SBFL 150/12	150	13	15.5	30	59	112
SBFL 185/12	185	13	18.5	35	59	115
SBFL 240/ 14	240	14.5	20	35	59	115
SBFL 300/16	300	17	23.5	38	90	155
SBFL 400/16	400	17	26.5	38	90	155

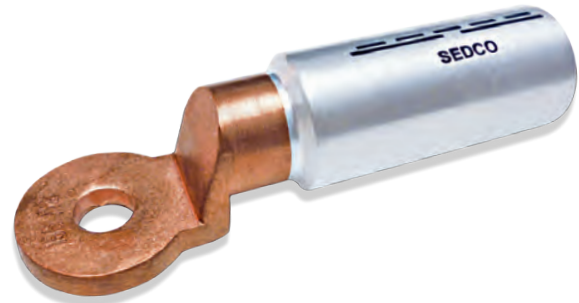
- All Dimensions in mm.
- Tolerance in lengths  $\pm 5$ mm and in diameters  $\pm 3$
- For any other dimensions, please contact us.
- Due to continuous product improvements, some specifications could be changed without notice.
- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the lug should not less than 70% of the Lug barrel length (L1)

# BI-METALLIC LUGS

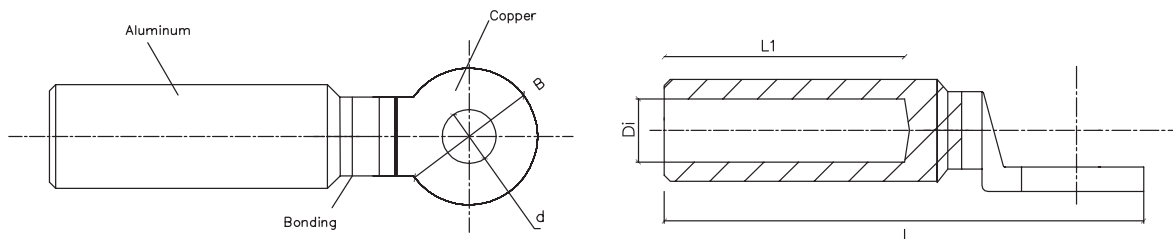
## BI-METALLIC FRICTION LUGS FOR LV TERMINATION



Palm Material	: Pure electrolytic copper
Palm Finish	: Plain copper
Barrel Material	: Pure aluminum
Barrel Finish	: Chemically treatment
Identification	: Conductor size ,stud size, connector die size, number of crimping and crimping position are marked on every piece
Manufacturing	: Copper palm is welded to Al barrel by cutting edge friction welding technology.



Bi-metallic friction lugs assure a maximum reliability connection of aluminum cables to copper busbars, copper bushings,..etc



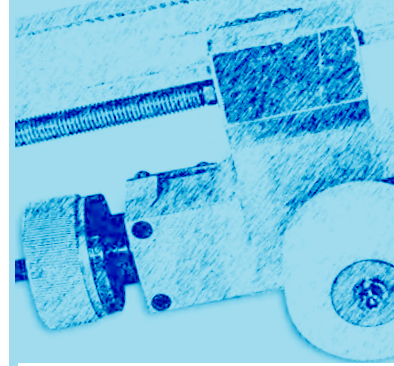
Code	Conductor Size mm <sup>2</sup>	d	Di	B	L1	L
SBFL 25/10	25	10.5	6.8	23	43	85
SBFL 35/10	35	10.5	8	23	43	85
SBFL 50/12	50	13	10	25	43	85
SBFL 70/12	70	13	11.2	25	43	85
SBFL 95/12	95	13	13.2	25	43	85
SBFL 120/12	120	13	14.7	30	59	112
SBFL 150/12	150	13	16.3	30	59	112
SBFL 185/12	185	13	18.5	35	59	115
SBFL 240/ 14	240	14.5	21	35	59	115
SBFL 300/16	300	17	23.5	38	90	155
SBFL 400/16	400	17	26.5	38	90	155

- All Dimensions in mm.
- Tolerance in lengths  $\pm 5$ mm and in diameters  $\pm 3$
- For any other dimensions, please contact us.
- Due to continuous product improvements, some specifications could be changed without notice.
- Recommended crimping die size for hexagonal type with hydraulic crimping tool
- The crimping area of the lug should not less than 70% of the Lug barrel length (L1)





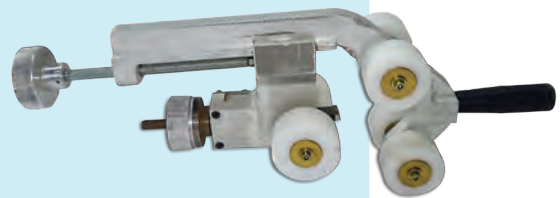
## TOOLS



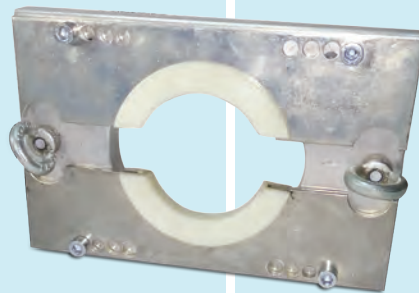
Grinding Machine



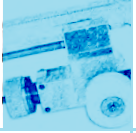
Insulation Remover



Storing Set







### GRINDING MACHINE

#### Application

The grinding machine is used to grind cable insulation surface and make it smooth free of any edges.

#### Features

- Various working speed .
- Can be used with all sandpaper grades .
- Efficient and time saver.



### PEELING DEVICE

#### Application

The peeling device is applied to remove the outer semiconductor layer of the cable

#### Features

- Available with wide range suitable for MV, HV cables.
- Can be adjusted to fit different cables C.S.A
- Light weight easy to be controlled.



### HEATING MAT

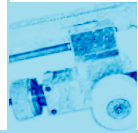
#### Application

- Heating mat used to raise the temperature of the cable before removing its layers in order to make it able to be straightened.

#### Features

- Can be used over any cable regardless it C.S.A.
- Adjustable temperature.
- Offered with Temp controller to avoid overheating.





## SEMICONDUCTOR REMOVER

### Application

Semiconductor remover used to remove semiconductor layer in certain parts also to make the slope of the semiconductor and the stress cone area .

### Features

- Can be used over any cable regardless its C.S.A



## INSULATION REMOVER

### Application

Insulation remover is used to remove the insulation of the cable and expose the conductor.

### Features

- Adjustable blade.
- Light weight.



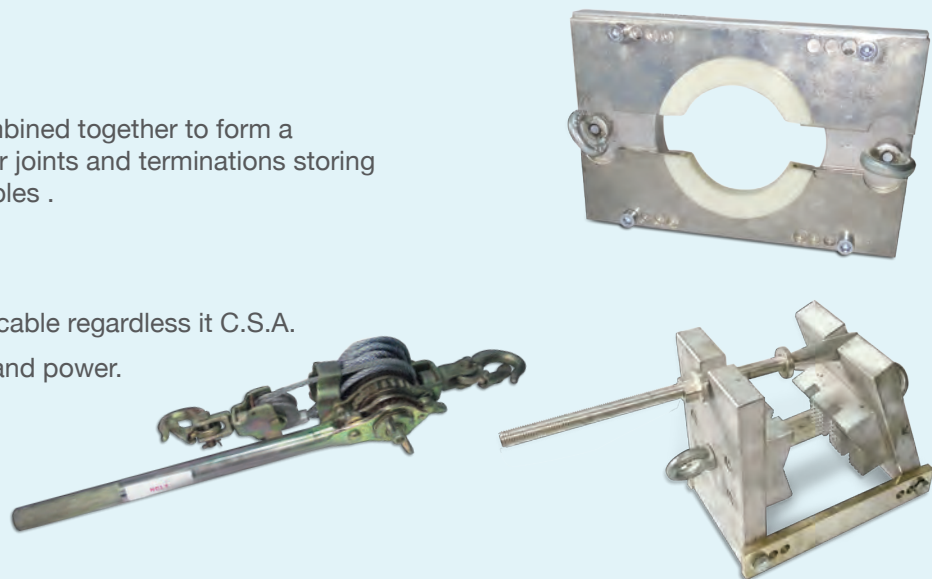
## STORING SET

### Application

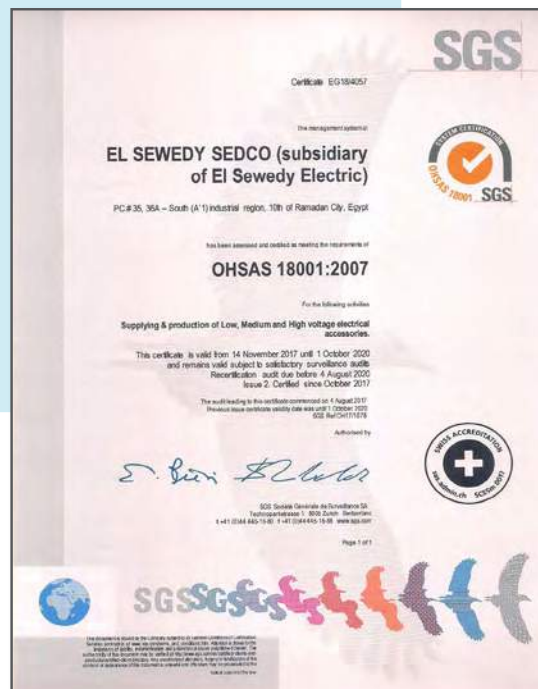
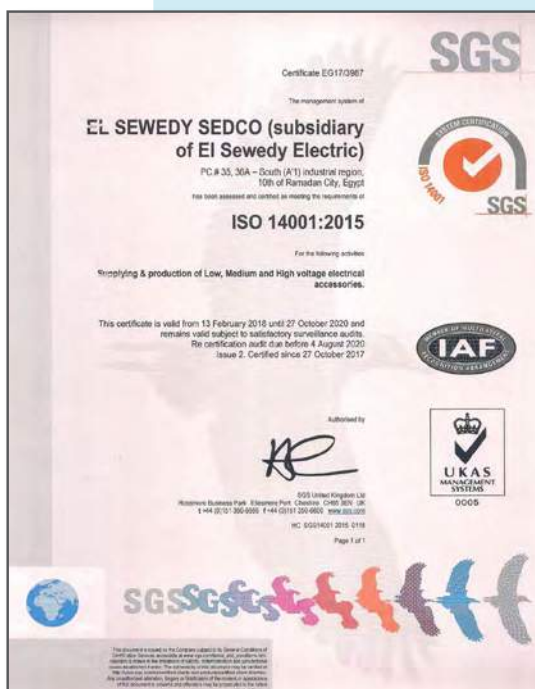
It consists of 3 parts , combined together to form a complete set to be used for joints and terminations storing and centering over the cables .

### Features

- Can be used over any cable regardless it C.S.A.
- Reduce required time and power.
- Safe and controlled



# ISO CERTIFICATIONS



# IPH CERTIFICATIONS

Independent, accredited testing station - Member laboratory of ILI and IVOAG

## TEST REPORT

NO: 258921304370554

Client: Elasmold Egypt  
Plot 27,  
1st District, 5th Settlement,  
New Cairo 11835,  
EGYPT

Manufacturer: Elasmold Egypt  
PC 16-A,  
South (A1), Industrial Region  
10th of Ramadan City

Test object: Premolded Ulp-on insulator for three-core power cables, with extruded XLPE insulation

3C MTG I

Test samples:

Rated voltage	$U_0/U$	B2/T5	KV	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Maximum value of highest system voltage	$U_0$	175	KV	
Rated cross-section range		3 x 300	mm²	

Client's instructions and SEC Specifications: I2-S0M5-01 Rev. 01-2010 with reference to IEEE 404-2006, IEEE 404-2006 and IEC 62507-3:1991

Range of tests performed:

- Partial discharge test
- AC voltage withstand test
- DC voltage withstand test
- Impulse voltage withstand test
- Cyclic aging test
- Short time current test
- Salt fog test

From: 25 July to 18 September 2013

All acceptance criteria for the performed tests based on client's instructions and SEC Specifications were met.

Test Result: PASS

Signature: H. AGAR  
Date: 7 November 2013

Signature: M. HESKI  
Date: 7 November 2013

IPH CERTIFICATION

Independent, accredited testing station - Member laboratory of ILI and IVOAG

## TEST REPORT

NO: 258921304380853

Client: Elasmold Egypt / Elasmold SEDCO Substation, of Elasmold Electric  
Plot 27,  
1st District, 5th Settlement,  
New Cairo 11835,  
EGYPT

Manufacturer: Elasmold Egypt - Subsidiary of Elasmold Electric  
South (A1), Industrial Region  
10th of Ramadan City

Test object: Premolded straight joint

PC1

Test samples:

Rated voltage	$U_0/U$	B2/T5	KV	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Maximum value of highest system voltage	$U_0$	175	KV	
Rated cross-section range		3 x 300	mm²	

Client's instructions and SEC Specifications: I2-S0M5-01 Rev. 01-2010 with reference to IEEE 404-2006, IEEE 592-2007

Range of tests performed:

- Partial discharge test
- AC voltage withstand test
- DC voltage withstand test
- Impulse voltage withstand test
- Cyclic aging test
- Short time current test
- Fault current isolation test

From: 07 November 2013 to 09 January 2014

All acceptance criteria for the performed tests based on client's instructions and SEC Specifications: I2-S0M5-01 Rev. 01-2010 with reference to IEEE 404-2006, IEEE 592-2007 were met.

Test Result: PASS

Signature: H. AGAR  
Date: 07 November 2014

Signature: M. HESKI  
Date: 07 November 2014

IPH CERTIFICATION

Independent, accredited testing station - Member laboratory of ILI and IVOAG

## TEST REPORT

NO: 259821210260676

Client: Elasmold SEDCO for Electrical Industries  
Industrial Zone (A1)  
PC 13GA,  
10th of Ramadan City  
EGYPT

Manufacturer: Elasmold SEDCO for Electrical Industries

Test object: Cross-bushing link bolt

OK3LB413CCWIGUG

Test samples:

Rated DC withstand voltage	25	KV	RATED CHARACTERISTICS GIVEN BY THE CLIENT
Rated lightning impulse withstand voltage	40 (50)	KV	
Rated peak withstand current	60	KA	
Rated short time withstand current	40	KA	
Rated duration of short-circuit	1	s	
Permissible values for internal arcing			
Symmetrical short-circuit current	16	KA	
Duration of short circuit	0.2	s	
Degree of protection	IP68		

Client's instructions and KHARMAA Specifications:

Range of tests performed:

- Dielectric tests
- Leakage current test
- Measurement of contact resistance
- Measurement of insulation resistance
- Proof of the degree of protection IP68
- Short time withstand current tests
- Test under conditions of aging due to an internal fault
- Measurement of residual voltage

From: 07 November 2012 to 01 March 2013

All acceptance criteria for the performed tests based on client's instructions and KHARMAA Specifications were met.

Test Result: PASS

Signature: H. AGAR  
Date: 29 April 2013

Signature: M. HESKI  
Date: 29 April 2013

IPH CERTIFICATION



# IPH CERTIFICATIONS

Independent, accredited testing station - Member laboratory of IEC and IECAC

## TEST REPORT

NO: 258921304380864

Client: Elasmold Egypt / Elnewedy SEDCO Subsidiaries of Elnewedy Electric  
Box 27,  
18 District, 5th Settlement,  
New Cairo 11835  
EGYPT

Manufacturer: Elasmold Egypt - Subsidiary of Elnewedy Electric  
PCA36 A,  
South (A11) Industrial Region,  
10th of Ramadan City  
EGYPT

Test Object: Reinforced slip-on outdoor termination for three-core power cables with insulated XLPE insulation

SC MTG: TYPE

Test samples: SERIAL NO.

Rated voltage:  $U_n/U$  87/15 kV  
Maximum value of highest system voltage:  $U_m$  175 kV  
Rated cross-section range: 3 x 300 mm<sup>2</sup>

Client's instructions and SSC Specifications 12-SDMS-01 Rev 01-2010 with reference to IEE 048-2009, IEE 404-2006 and IEC 60507-3: 2013

Range of tests performed:

- Partial discharge test
- AC voltage withstand test
- DC voltage withstand test
- Impulse voltage withstand test
- Cycle aging test
- Short time current test
- Salt fog test

From 07 November 2013 to 10 January 2014

DATE OF TEST

TEST RESULT

All acceptance criteria for the performed tests based on client's instructions and SSC Specifications 12-SDMS-01 Rev 01-2010 with reference to IEE 048-2009, IEE 404-2006 and IEC 60507-3: 2013 were met.

IPHT  
Sayed Elmaghrabi  
Date: 03 March 2014

IPHT  
M. HENSE  
Test engineer in charge

IPHT  
DAKKS

Independent, accredited testing station - Member laboratory of IEC and IECAC

## TEST REPORT

NO: 00882-14-0250

Client: Elasmold Egypt  
Elnewedy SEDCO Subsidiaries of Elnewedy Electric  
Plot 27, 1st District, 5th Settlement,  
New Cairo 11835  
EGYPT

Manufacturer: Elasmold Egypt - Subsidiary of Elnewedy Electric  
PCA36 A South (A11) Industrial Region,  
10th of Ramadan City  
EGYPT

Test Object: Deadbreak screened separable insulated connector  
Retrofitted Bolted Type Elbow Connector

Test samples: SERIAL NO.

Rated voltage:  $U_n/U$  87/15 kV  
Maximum value of highest system voltage:  $U_m$  175 kV  
Rated current: 630 A  
Rated cross-section range: 3 x 300 mm<sup>2</sup>

Client's instructions and SSC Specifications 12-SDMS-01 Rev 01-2010 with reference to IEE 386-2006, IEE 592-2007

Range of tests performed:

- Corona voltage level test / Partial discharge test
- AC withstand voltage test
- DC withstand voltage test
- Impulse withstand voltage test
- Current carrying test
- Accelerated sealing life test
- Cable pull-out test / Tensile strength test
- Short time current test
- Shedding test

From 26 May 2014 to 16 July 2014

DATE OF TEST

TEST RESULT

All acceptance criteria for the performed tests based on client's instructions and SSC Specifications 12-SDMS-01 Rev 01-2010 with reference to IEE 386-2006, IEE 592-2007 were met.

IPHT  
H. ZIMMEL  
Head of Center of Competence  
High-Voltage High-Voltage  
Date: 25 September 2014

IPHT  
M. SCHROEDER  
Test engineer in charge

IPHT  
DAKKS

Independent, accredited testing station - Member laboratory of IEC and IECAC

## TYPE TEST REPORT

NO: 259821100410628

Client: Elnewedy SEDCO - Subsidiary of Elnewedy Electric  
5th Settlement,  
New Cairo 11835  
EGYPT

Manufacturer: Elnewedy SEDCO - Subsidiary of Elnewedy Electric  
South (A11) Industrial Region,  
10th of Ramadan City  
EGYPT

Test Object: Connector

Compression (punching) type

Test samples (thermal code): 51C0111020000111201

Serial NO.

Number of cross-sectional area: 2.63 mm<sup>2</sup>

Conductor material: Copper

Type of conductor: Round stranded

Class: A

IEC 61238-1: 2003-05

Range of tests performed:

Type tests:

- Electrical tests (heat cycle and short-circuit test)
- Mechanical test

On June to 30 September 2011

DATE OF TEST

TEST RESULT

The rated characteristics related to the range of tests performed have been verified.  
The tests have been PASSED.

IPHT  
RONALD SCHROEDER  
Test engineer

IPHT  
DANIEL HAUSSINGER  
Test engineer in charge

IPHT  
Date: 10 January 2012

IPHT  
DAKKS



# KEMA CERTIFICATIONS

**KEMA** 08-1002

**TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST**

**OBJECT** Three-core cable joint

**TYPE** 3C-36-PCJ-K

Rated voltage (U<sub>0/U</sub>) 18/30 kV  
Conductor cross-section 3x150 mm<sup>2</sup>

**MANUFACTURER** ELSEWEDY CABLES - Elastimold  
Cairo, Egypt

**CLIENT** ELSEWEDY CABLES - Elastimold  
Cairo, Egypt

**TESTED BY** KEMA HIGH-VOLTAGE LABORATORY  
Arnhem, the Netherlands

**DATES OF TESTS** 25 October 2007 until 5 February 2008

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

**IEC 60502-4**

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 4.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

The Certificate consists of 35 pages in total.

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KEMA Nederland B.V.  
P.O. Box 804  
KEMA T&D Testing Services  
Managing Director

**KEMA** 1194-15

**TYPE TEST CERTIFICATE OF PRE-QUALIFICATION**

**OBJECT** Power cable system consisting of a single-core power cable, 2 outdoor terminations, 2 GIS terminations, 4 joints with screen separation and link boxes

Rated voltage (U<sub>0/U</sub>) 130/220 (245) kV  
Conductor cross-section 1x2500 mm<sup>2</sup>

Conductor material Cu  
Insulation material XLPE

**MANUFACTURERS \*)** Cable: Elsewedy Cables, 10<sup>th</sup> of Ramadan City, Egypt  
Accessories: Elsewedy SEDCO, 10<sup>th</sup> of Ramadan City, Egypt and nlc cables GmbH, Cologne, Germany

**CLIENT** Elsewedy Cables, 10<sup>th</sup> of Ramadan City, Egypt

**TESTED BY** KEMA Nederland B.V., Arnhem, The Netherlands

**DATE OF TESTS** 18 March 2014 to 18 June 2015

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

**IEC 62067 (2011)** subclause 13

This Pre-qualification Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in this document. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 4 to 12.

This Certificate applies only to the object tested. The responsibility for conformity of any object having the same type references as that tested rests with the manufacturer.

This Certificate consists of 62 pages in total.  
) as stated by the manufacturer.

Copyright: Only integral reproduction of this Certificate is permitted without written permission from KEMA. Electronic copies in e.g. PDF-format or scanned version of this Certificate may be available and have the status "for information only". The sealed and bound version of the Certificate is the only valid version.

KEMA Nederland B.V.  
J.A.M. Verhoeven  
Director Testing, Inspections & Certification The Netherlands  
Arnhem, 8 December 2015

**KEMA** 03-1123

**TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST**

**OBJECT** 66 kV pre-moulded straight-through joint

**DESIGNATION** single-core 66 TCJ-K1R

Rated voltage U<sub>0/U</sub> 38.5/66 kV  
Rated frequency 50 Hz

**MANUFACTURER** ELASTIMOLD EGYPT  
PC #38 A - South (A 1) - Industrial Region - 10<sup>th</sup> of Ramadan City - Egypt

**TESTED FOR** EL SEWEDY  
Obour Buildings No. 13 - Salah Salem St. - Nasr City - Egypt

**DATE OF TESTS** 8 May 2003 until 5 June 2003

**TESTED BY** KEMA HIGH-VOLTAGE LABORATORY  
Utrechtseweg 310 - 6812 AR Arnhem - the Netherlands

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

**IEC 60840**

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 1.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the manufacturer.

This Certificate comprises 16 sheets in total.

© Copyright: Only integral reproduction of this Certificate, or reproductions of this page accompanied by any page(s) on which are stated the endorsed ratings of the object tested, are permitted without written permission from KEMA. Electronic copies in e.g. PDF-format or scanned version of this Certificate may be available and have the status "for information only". The sealed and bound version of the Certificate is the only valid version.

KEMA Nederland B.V.  
J.A.M. Verhoeven  
Arnhem, 9 July 2003

# LABORATORIES OF EXTRA HV RESEARCH CENTER SECTOR CERTIFICATIONS

**TEST REPORT**  
REPORT No. (236/2010)

**CLIENT:** Elastimold Egypt – Elsewedy cables CO.

**Report Date:** 7 / 11 / 2010.

**Place:**  
- Laboratories of Extra High Voltage Research Center.  
- Internal code: TO – AC – 10 – 10 – 03 – 01

**Requirements:**  
- Testing according to IEC (60502-4) Table (10).

**Standard Specification:**  
- IEC 60502-4 "Power cables with extruded insulation and their accessories for rated voltages from 1.0 kV ( $U_m = 1.2$  kV) up to 30 kV ( $U_m = 36$  kV)".  
Part 4: Test requirements on accessories for cables with rated voltages from 6 kV ( $U_m = 7.2$  kV) up to 30 kV ( $U_m = 36$  kV).  
- IEC 61442 "Test method for accessories for power cables with rated voltages from 6 kV ( $U_m = 7.2$  kV) up to 30 kV ( $U_m = 36$  kV)".

**Description of the Specimen:**  
1- One 35 kV Premolded Power Cable Outdoor Termination with the following specifications:  
- Manufacturer : Elastimold Egypt.  
- Type : MTG 35 kV.  
- Size : B.  
- Module & Stress Cone : PA.  
- Leakage path : 620 mm.  
- Diameter of sheds : 90 mm.  
- Number of sheds : 7.  
- Terminations Lugs : Copper lugs made by EL-Sewedy SEDCO.

2- One 35 kV Premolded Power Cable Indoor Termination with the following specifications:  
- Manufacturer : Elastimold Egypt.  
- Type : MTG 35 kV.  
- Size : B.  
- Module & Stress Cone : PA.  
- Leakage path : 470 mm.  
- Diameter of sheds : 90 mm.  
- Number of sheds : 5.  
- Terminations Lugs : Copper lugs made by EL-Sewedy SEDCO.

M. Rabiey

**TEST REPORT**  
REPORT No. (295/2014)

**Report Date:** 30 / 12 / 2014

**Place:**  
- Laboratories of Extra High Voltage Research Center.  
- Internal code: TO – AC – 14 – 04 – 36 – 01

**Requirements:**  
- Loop type tests according to IEC 60840.

**Standard Specification:**  
- IEC 60840 "Power cables with extruded insulation and their accessories for rated voltages above 30 kV ( $U_m = 36$  kV) up to 150 kV ( $U_m = 170$  kV)".

**Description of the Specimen:**  
- Loop systems, cable and accessories consist of the following:  
1- 18/66 kV Power cable with the following specification:  
- Type : 30/66 kV/CU/XLPE/LEAD/HDPE/1 x 1200 mm<sup>2</sup>  
- No. of Phases : 3  
- Insulation : XLPE  
- Conductor Material : Copper + Sintering Powder  
- Conductor cross-section : 1200 mm<sup>2</sup>  
- Metallic sheath Material : Lead  
- Over sheath Material : HDPE (ST3)  
- Sheath Color : Black  
- Water Penetration Design : A barriers are included which prevents longitudinal water penetration (water blocking tape).  
Along the outer surface of the conductor.  
The gap between the outer surface of the insulation screen and the metallic sheath.

**TEST REPORT**  
REPORT NO. (154/2015)

**CLIENT:** ELASTIMOLD EGYPT – ELSEWEDY SEDCO CO. – SUBSIDIARIES OF ELSEWEDY ELECTRIC.

**Report Date:** 30 / 07 / 2015.

**Place:**  
- LABORATORIES OF EXTRA HIGH VOLTAGE RESEARCH CENTER.  
- Internal code: TO – AC – 15 – 02 – 00 – 01.

**Requirements:**  
- Testing according to IEC 60502-4.

**Standard Specification:**  
- IEC 60502-4 "Power cables with extruded insulation and their accessories for rated voltages from 1.0 kV ( $U_m = 1.2$  kV) up to 30 kV ( $U_m = 36$  kV)".  
Part 4: Test requirements on accessories for cables with rated voltages from 6 kV ( $U_m = 7.2$  kV) up to 30 kV ( $U_m = 36$  kV).  
- IEC 61442 "Test method for accessories for power cables with rated voltages from 6 kV ( $U_m = 7.2$  kV) up to 30 kV ( $U_m = 36$  kV)".

**Description of the Specimen:**  
1- One 35 kV Premolded Power Cable Outdoor Termination with the following specifications:  
- Manufacturer : Elastimold Egypt – Elsewedy SEDCO CO. – Subsidiaries of Elsewedy Electric - Egypt.  
- Type : MTG 35 kV.  
- Leakage path : 850 mm.  
- Flash over path : 430 mm.  
- Diameter of sheds : 100 mm.  
- Number of sheds : 7.  
- Terminations Lugs : Compression Lugs.

2- One 35 kV Premolded Power Cable Indoor Termination with the following specifications:  
- Manufacturer : Elastimold Egypt – Elsewedy SEDCO CO. – Subsidiaries of Elsewedy Electric - Egypt.  
- Type : MTG 35 kV.  
- Leakage path : 625 mm.  
- Flash over path : 370 mm.  
- Diameter of sheds : 100 mm.  
- Number of sheds : 7.  
- Terminations Lugs : Compression Lugs.

M. Rabiey

**TEST REPORT**  
REPORT NO. (154/2015)

**CLIENT:** ELASTIMOLD EGYPT – ELSEWEDY SEDCO CO. – SUBSIDIARIES OF ELSEWEDY ELECTRIC.

**Report Date:** 30 / 07 / 2015.

**Place:**  
- LABORATORIES OF EXTRA HIGH VOLTAGE RESEARCH CENTER.  
- Internal code: TO – AC – 15 – 02 – 00 – 01.

**Requirements:**  
- Testing according to IEC 60502-4.

**Standard Specification:**  
- IEC 60502-4 "Power cables with extruded insulation and their accessories for rated voltages from 1.0 kV ( $U_m = 1.2$  kV) up to 30 kV ( $U_m = 36$  kV)".  
Part 4: Test requirements on accessories for cables with rated voltages from 6 kV ( $U_m = 7.2$  kV) up to 30 kV ( $U_m = 36$  kV).  
- IEC 61442 "Test method for accessories for power cables with rated voltages from 6 kV ( $U_m = 7.2$  kV) up to 30 kV ( $U_m = 36$  kV)".

**Description of the Specimen:**  
1- One 35 kV Premolded Power Cable Outdoor Termination with the following specifications:  
- Manufacturer : EL SEWEDY SEDCO.  
- Type : SEPT 1-72  
- Creepage distance : 2970 mm.  
- Arc distance : 930 mm.  
- No. of sheds : 13 large and 12 small.  
- Greatest diameter : 325 mm.  
- Termination housing material : Porcelain.  
- Filling compound : Silicon oil.  
- Base and top : Aluminium.  
- Stress control material : EPDM.  
- Gaskets : O-ring.

2- One 35/66 kV straight cable joint with the following specifications:  
- Manufacturer : EL SEWEDY SEDCO.  
- Type : 691CJ  
- Description of joint : Premolded joint.  
- Method of ground : Lead cover.  
- Type of overall casing : Heat shrink tube.  
- Connector type : Compression.  
- Type of insulation : EPDM.

3- One 66 kV Premolded outdoor cable termination with the following specifications:  
- Manufacturer : EL SEWEDY SEDCO.  
- Type : 691CT  
- Creepage distance : 2640 mm.  
- Arc distance : 1105 mm.  
- No. of sheds : 8 large and 7 small.  
- Greatest diameter : 325 mm.  
- Termination housing material : Premolded.  
- Modular material : EPDM.  
- Stress control material : EPDM.

M. Rabiey

# KFUPM-KSA CERTIFICATIONS

**MINISTRY OF HIGHER EDUCATION**  
**King Fahd University of Petroleum & Minerals**  
**RESEARCH INSTITUTE**  
Center for Engineering Research

**TEST REPORT**

Test report No.:	CER/004-0037	Date:	March 5, 2017
Report on:	Power Frequency Voltage Withstand test for 33 kV Elastomold separable elbow cable termination.		
Client request:	E-mail dated July 17, 2016, and September 28, 2016.		
Client:	Saudi Electricity Company, Riyadh- Saudi Arabia Attn: Eng. Mohammed A. Al-Nadkary Spine Distribution Engineering Expert Technical Improvements & Standards, Distribution Services- SEC AIO, Tel. #: +9661 18079534		
KFUPM Question:	E-mail dated July 17, 2016, and September 28, 2016, and KFUPM laboratory service contract No. (CFR-004-0037, dated December 7, 2016).		
Test samples:	1. Elastomold, 3C-M46S-M1-400, Interface C, 33 kV pre-mold termination, dead break separable connector elbow, manufactured by Elsewedy S.A.E.C., Elastomold Egypt-Subsidiary of Elsewedy Electric- Egypt and supplied locally by Al Abdulkarim Holding Company (AKH), Jeddah, Saudi Arabia. 2. Onload, SEL RMU 33 kV, Type TP88-4F as per SEL's specification 22-NDMS-07, manufactured by SEL Company from Italy. 3. ABBon cable of 36 kV, Al JX400 mm2, as per SEL's Specifications 11-SDMS-03.		
Test purpose:	To conduct power frequency voltage withstand test for the Elastomold, 3C-M46S-M1-400, Interface C, 33 kV cable separable elbow connector.		
Tested at:	The High Voltage Laboratory, Research Institute/King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia.		
Test date:	February 9, 2017		
Test reference:	IEC 62271-1		
Conclusion:	The tested Separable Elbow Connector, Elastomold part 3C-M46S-M1-400, passed the test of the applied voltage of 70 kV per core as per IEC 62271-1.		

Eng. Khaleel V. Al-Soufi  
Supervisor, KFUPM-High Voltage Laboratory

Dr. Eiad M. Alkhamis  
Director, Center for Engineering Research

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# RAWAR PAKISTAN CERTIFICATIONS

Form No. HV&SC Lab/NV-003  
**HIGH VOLTAGE AND SHORT CIRCUIT LABORATORY, NTDC, RAWAT-ISLAMABAD**

No. HV/SC/Lab/NV/41-45 Date: 04.02.2014

**TEST REPORT**

**TYPE TESTS PERFORMED ON 11 kV TERMINATION KIT**

1. Client:	M/S Associated Commercial Agencies (Pvt.) Ltd., (ACA) Lahore
2. Specimen identification:	Indoor/Outdoor Termination Kit 500 mm <sup>2</sup> (1000 MCM), Single Core (Unarmored)
• Material:	MS Elastomold Egypt (Elsewedy SEDCO, Egypt)
• Serial No.:	11 kV
• Purchaser:	1C35MTGJB 500021/1C35MTGJB 500041 respectively
• Purchase order/contract:	Prototype
• Supplied by letter (to customer):	M/S Associated Commercial Agencies (Pvt.) Ltd., (ACA) Lahore
3. Relevant test standard(s)/spec.:	P-184-85, IEC-45042-4-2010, IEEE Std. 48-2009 & IEEE Std. 486-2010
4. Tests performed on:	Jan. 20-Feb. 04, 2014
5. Test outcome:	Given in Table below:

Table: Outcome of Tests performed.

S. No	Tests performed	Requirements	Results	Remarks
1.	Power frequency voltage one min. (dry) withstand test	No breakdown or flashover shall occur at 60 kV.	Withstood	Pass
2.	Power frequency voltage withstand (1 sec. wet) test	No breakdown or flashover shall occur at 45 kV for 12 s.	Withstood	Pass (Applicable only for outdoor termination).
3.	Power frequency voltage 9 hour dry withstand test	No breakdown or flashover shall occur at 35 kV.	Withstood	Pass
4.	Partial discharge test.	The magnitude of partial discharge shall not exceed 5 pC at 13 kV.	PO Inv.	Pass
5.	Lightning impulse voltage withstand test at 110 kV.	No breakdown or flashover shall occur during 10 applications for both +ve & -ve polarities at 110 kV.	Withstood	Pass
6.	Direct voltage withstand (dry) test for 15 min.	No breakdown or flashover shall occur at 75 kV DC.	Withstood	Pass
7.	Radio influence voltage (RIV) test.	RIV should not exceed 50 $\mu$ V when the sample is energized at 10 kV.	Within specified limit	Pass

1/2

S. No	Tests performed	Requirements	Results	Remarks
8.	Thermal short circuit test	A current of 32.5 kA shall flow for 2s through the termination (2-applications). The termination shall not have any sign of damage.	Qualified	Pass
9.	Humidity test	A voltage of 10.1 kV shall be applied on the termination in a humid chamber for 100 hours. There shall be neither breakdown nor flashover. Moreover, the sample will have no sign of visible tracking or erosion.	Qualified	Pass (Applicable only for indoor termination).
10.	Tracking resistance test.	A voltage of 11.3 kV shall be applied on the termination in a humid chamber. The leakage current through the surface of termination should not exceed 500 $\mu$ A during 101 operations of rain ON/OFF.	Qualified	Pass (Applicable only for outdoor termination).
11.	Salt fog test.	Four flashovers through the surface of termination are obtained with rain of high salinity. After washing the termination, it is subjected to a voltage of 10.1 kV for 1 hour. There shall be no visible tracking or damage in the termination.	Qualified	Pass (Applicable only for outdoor termination).

Remarks: On the basis of above test results, the termination kit is declared to have successfully "QUALIFIED" the requisite type test.

Test(s) supervised by:  
1. Eng. Sajid Zulfar  
2. Eng. Abdul Haq

Test(s) witnessed by:  
1. Eng. Abubakar  
2. Mr. Mousafa Said  
3. Mr. Tauqeer-ul-Haq Abbasi

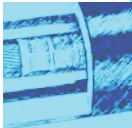
Deputy Director, High Voltage Division  
Deputy Director, High Power Division

Assistant Manager (DE), % CE (DMS) NTDC, Lahore  
Testing Section Head of Elasmold Egypt, M/S Elsewedy SEDCO, Egypt  
Manager Marketing & Sale, M/S Associated Commercial Agencies (Pvt.) Ltd., Lahore

General Manager  
HV & SC Lab, NTDC,  
Rawat, Islamabad







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ELSEWEDY  
S E D C O



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Due to continuous product improvements, some specifications could be changed without notice.