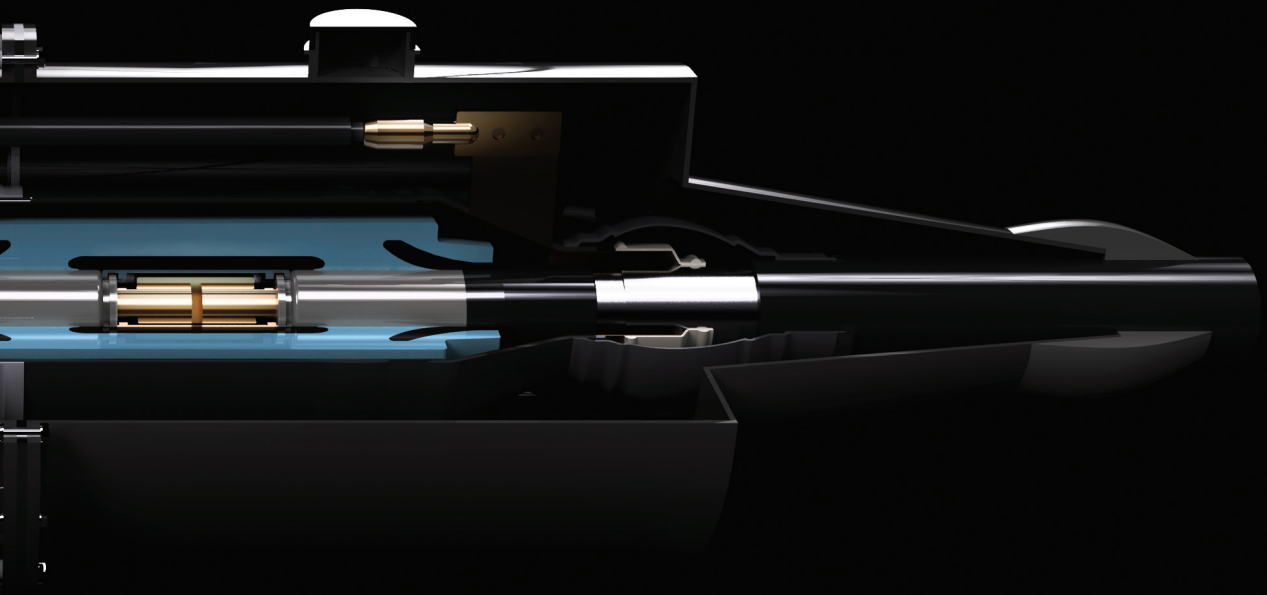
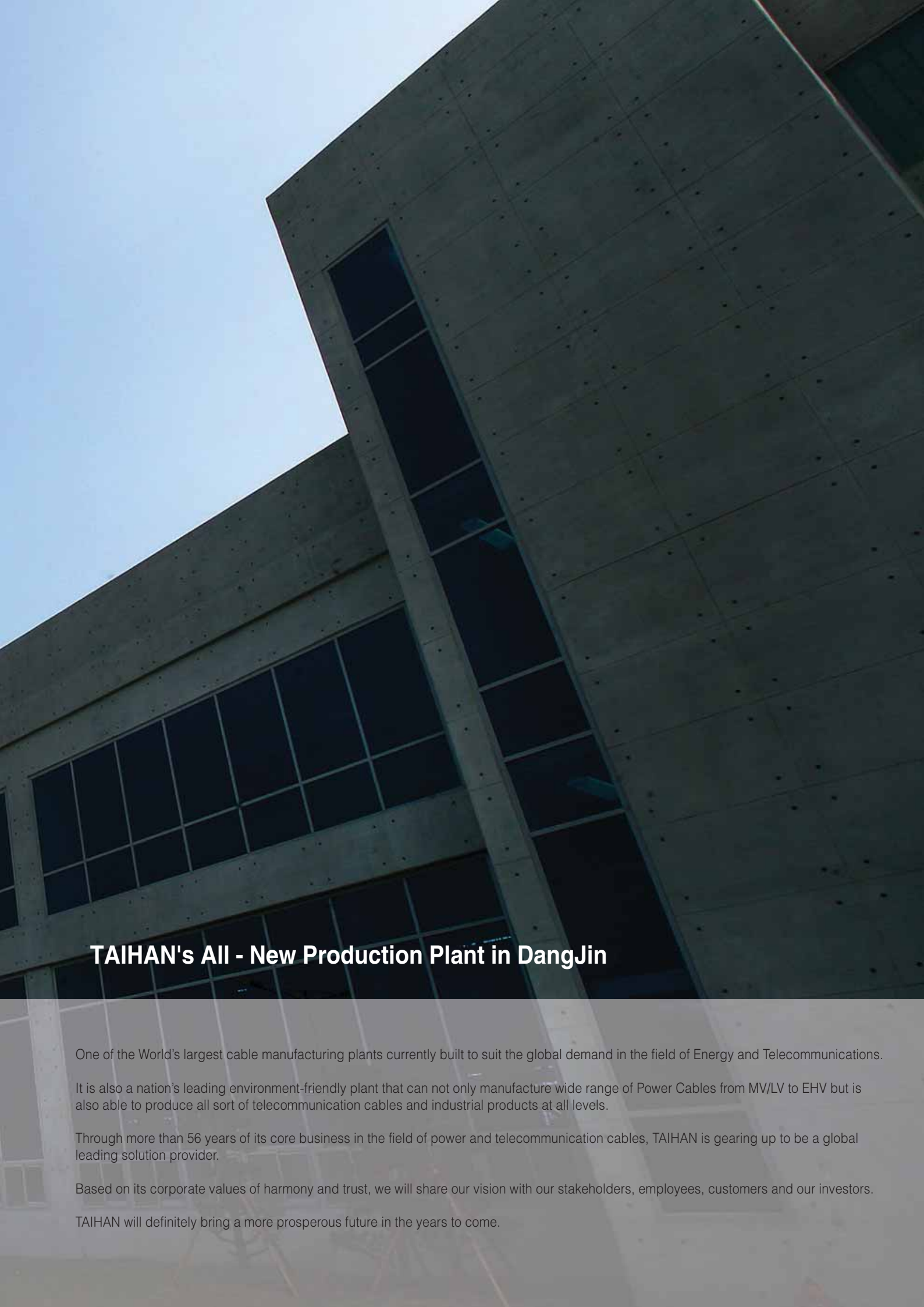
TAIHAN
ELECTRIC WIRE CO., LTD

EHV CABLE ACCESSORIES

CABLE TERMINATIONS · JOINTS





TAIHAN's All - New Production Plant in DangJin

One of the World's largest cable manufacturing plants currently built to suit the global demand in the field of Energy and Telecommunications.

It is also a nation's leading environment-friendly plant that can not only manufacture wide range of Power Cables from MV/LV to EHV but is also able to produce all sort of telecommunication cables and industrial products at all levels.

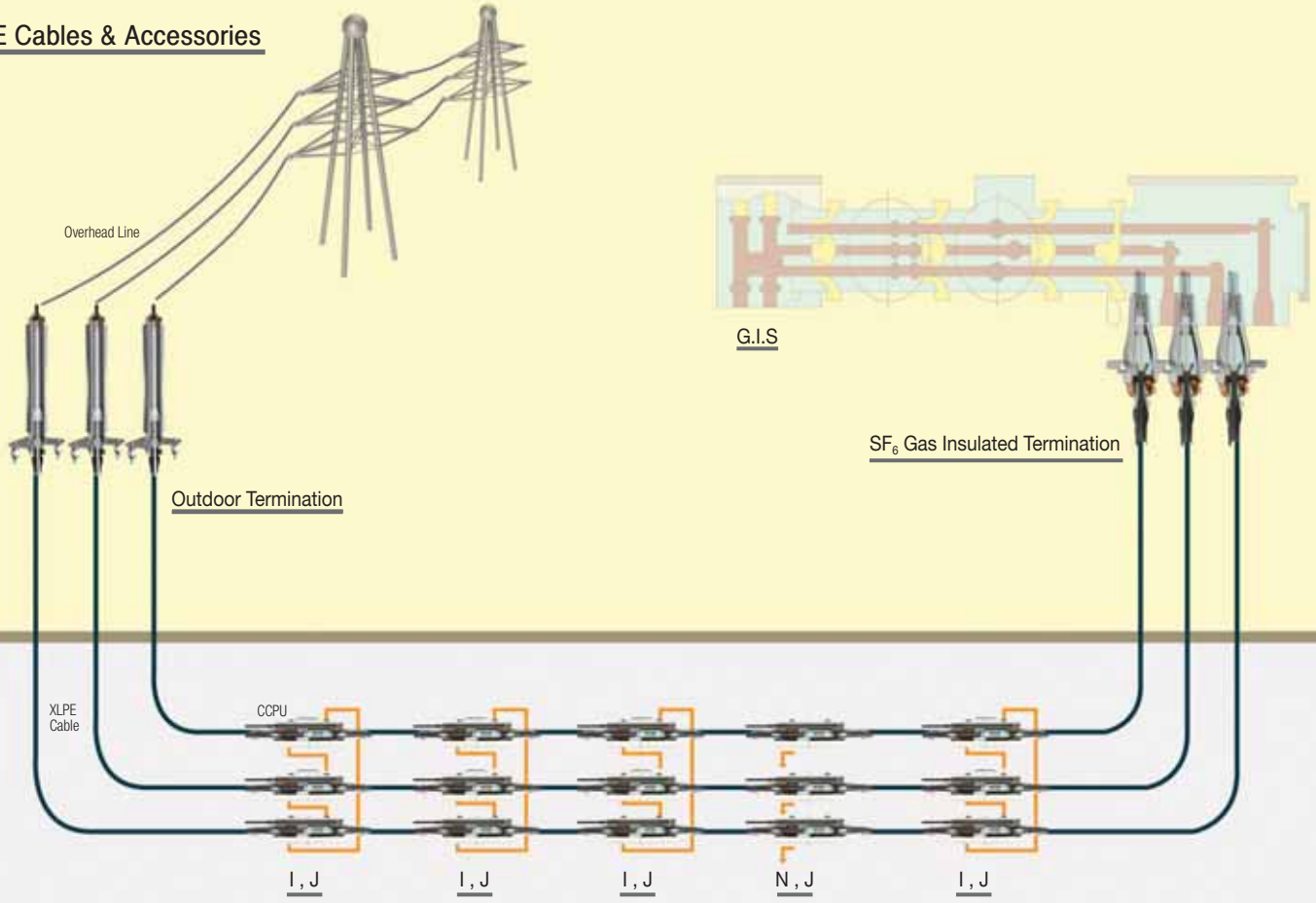
Through more than 56 years of its core business in the field of power and telecommunication cables, TAIHAN is gearing up to be a global leading solution provider.

Based on its corporate values of harmony and trust, we will share our vision with our stakeholders, employees, customers and our investors.

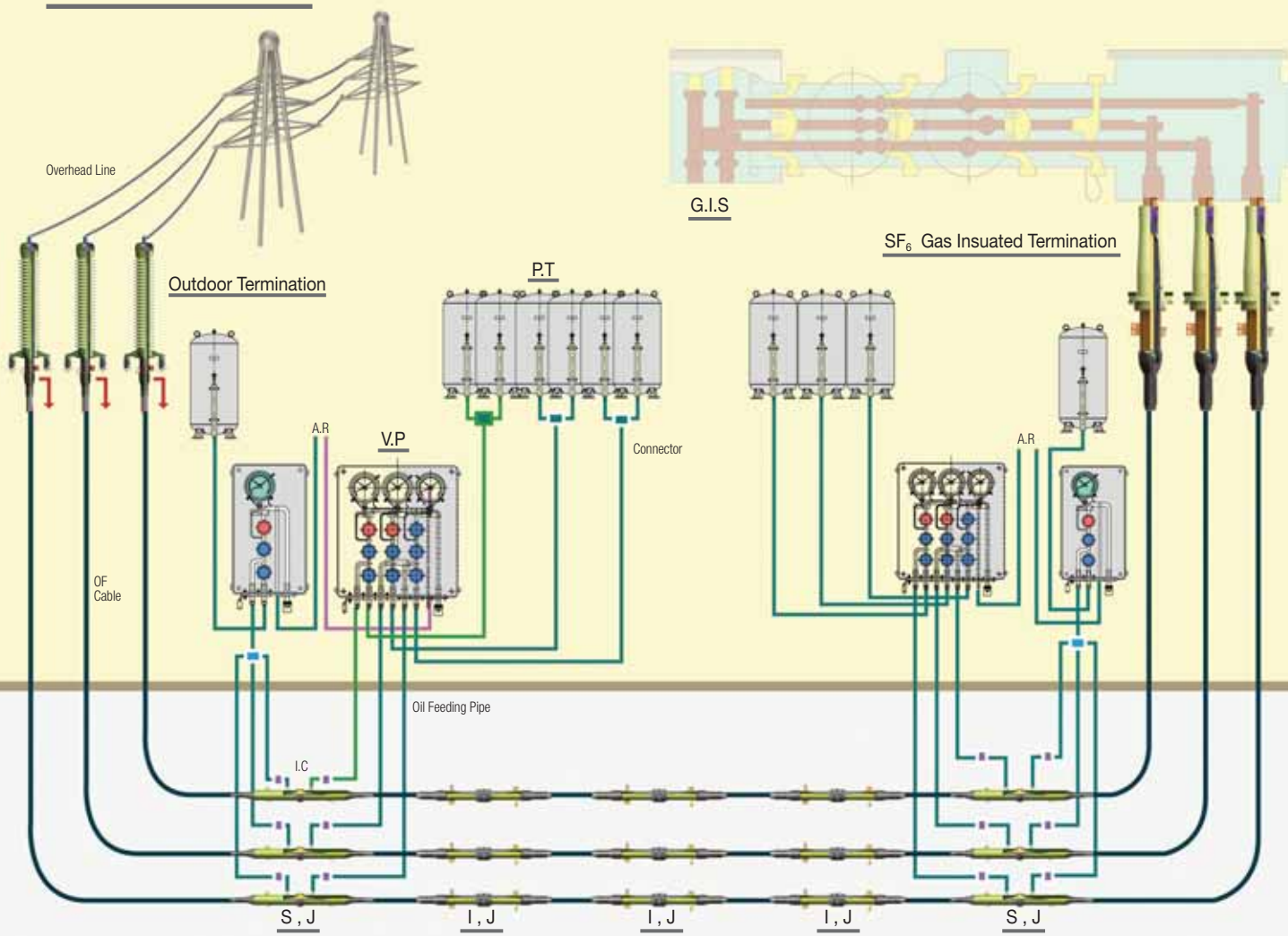
TAIHAN will definitely bring a more prosperous future in the years to come.

Power Transmission Line

XLPE Cables & Accessories



OF Cables & Accessories



XLPE CABLE ACCESSORIES

XLPE(Cross-Linked Polyethylene) insulated cables have been widely used for high voltage power cable system. Nowadays, with the aid of technical development in cable manufacturing field, XLPE insulated cable has been becoming standard of underground power cable.

For the accessories of XLPE cable, Pre-molded joint and Slip-on type termination using silicone rubber have been developed and are under an operation. Pre-molded joint and Slip-on type termination have several advantages as less jointing skill and time and quality control in the factory. For the electrical test on the pre-molded rubber unit, epoxy insulator and stress cone, special electrical test facilities have been developed and all insulation parts of accessories are carried out routine test according to IEC standard (IEC60840 & IEC62067).

Silicone rubber also has several advantages in mechanical and electrical properties in comparison with Ethylene-Propylene Rubber(EPR) as lower elasticity, lower permanent set and so on.
And most manufacturers of EHV cable accessories are using silicone rubber for the rubber unit and stress cone. So we adopted silicone rubber as insulation and electrode materials and studied mechanical and electrical properties of silicone rubber to apply it to our design prototype of pre-molded rubber unit.

We have developed accessories for XLPE cable up to 500kV class in accordance with IEC standard (IEC60840 & IEC62067).

PRE-MOLDED JOINT

The main insulation of single piece Pre-molded joint is molded silicone insulation with embedded semi-conductive electrode and two semi-conductive stress relief cones.

The Pre-molded joint is a kind of cable joint that keeps the insulation property and interface pressure just by self-elasticity of pre-molded rubber unit. Therefore, we adopted silicone rubber as insulation and electrode materials because silicone rubber has several advantages in mechanical and electrical properties.
One pre-molded rubber unit is applicable to various cable sizes where the interface pressure is sufficient to maintain the electrical characteristics.

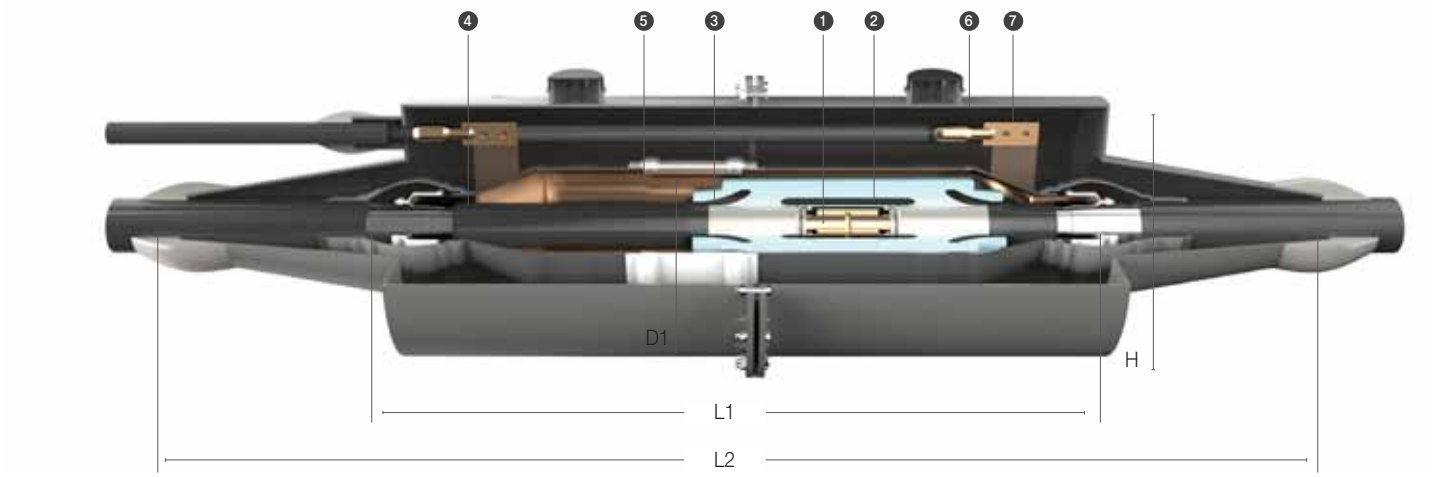
Several material and construction of outer protection case are available at the request of the customer. Metallic(copper or aluminum) case, FRP case and metallic case with coffin box are used and carried out type tests. And waterproof compound is filled in the outer case. In case of sheath insulated joint, the insulating flange made of epoxy resin or P.E is fit between metallic cases.

By using our special installation tools, the installation of PMJ can be carried out easily. the installation tools can be provided at the request of customer.

All types of pre-molded joint have high reliability because all main insulation components are carried out routine test in the factory in accordance with IEC 60840 and IEC 62067.

Pre-Molded Joint

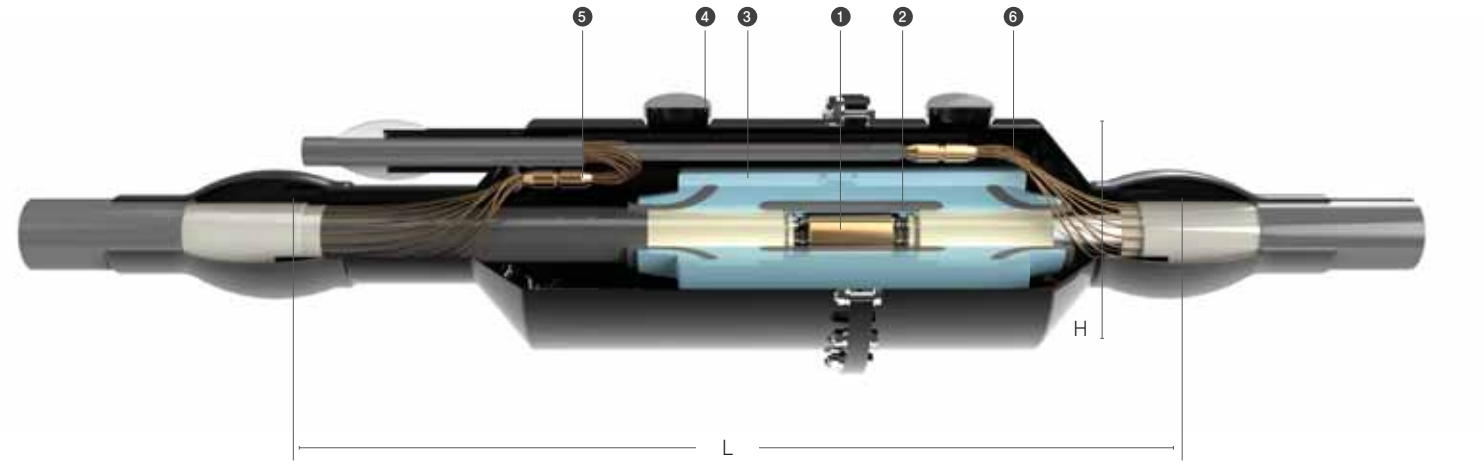
Copper Case with Coffin Box



No.	Description	Material
1	Conductor Sleeve	Copper
2	Corona Shield	Aluminum
3	PMJ Unit	Silicone Rubber
4	Outer Case	Copper
5	Insulating Flange	P.E
6	Coffin Box	F.R.P
7	Filling Compound	Polyurethane

Rated voltage	L1	L2	D1	H
66kV~69kV	1150	1650	190	420
110kV~161kV	1350	2300	255	540
220kV~275kV	1800	2500	315	600
330kV~400kV	2000	2750	360	660
500kV	2000	2750	400	680

FRP Case



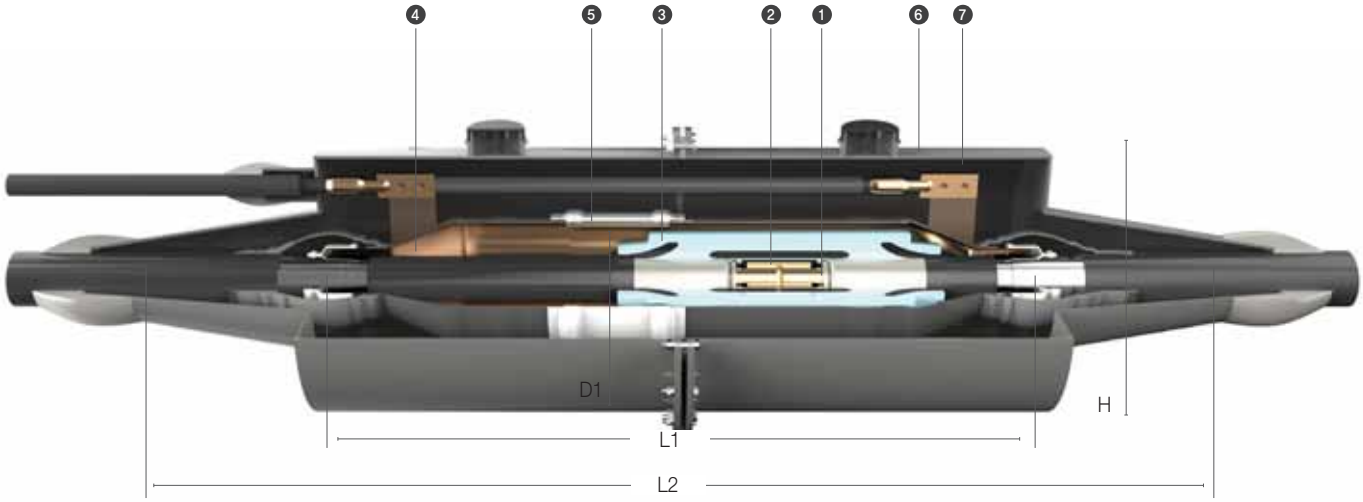
No.	Description	Material
1	Conductor Sleeve	Copper
2	Corona Shield	Aluminum
3	PMJ Unit	Silicone Rubber
4	Outer Case	F.R.P
5	Earthing Sleeve	Copper
6	Filling Compound	Polyurethane

Rated voltage	L	H
110kV~161kV	1400	310
220kV~275kV	1800	370

Pre-Molded Joint (110kV~161kV)

Copper Case With Coffin Box

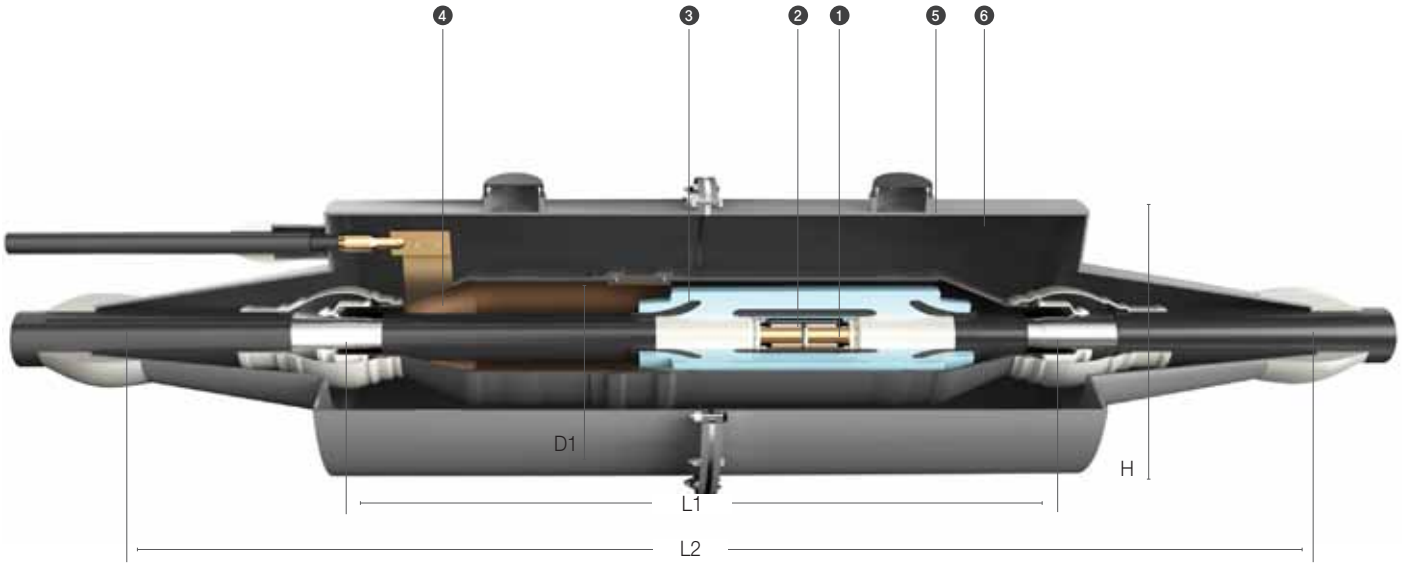
[Insulated Joint]



No.	Description	No.	Description
1	Conductor Sleeve	5	Insulating Flange
2	Corona Shield	6	Coffin Box
3	PMJ Rubber Unit	7	Filling Compound
4	Outer Case		

Product No.	XLPE Diameter [mm]	L1 [mm]	L2 [mm]	D1 [mm]	H [mm]
PMCC-13C-I01	53 - 61	1350	2400	255	445
PMCC-13C-I02	62 - 73	1350	2300	255	445
PMCC-13C-I03	74 - 86	1350	2200	265	445
PMCC-13C-I04	87 - 106	1350	2100	275	445

[Normal Joint]



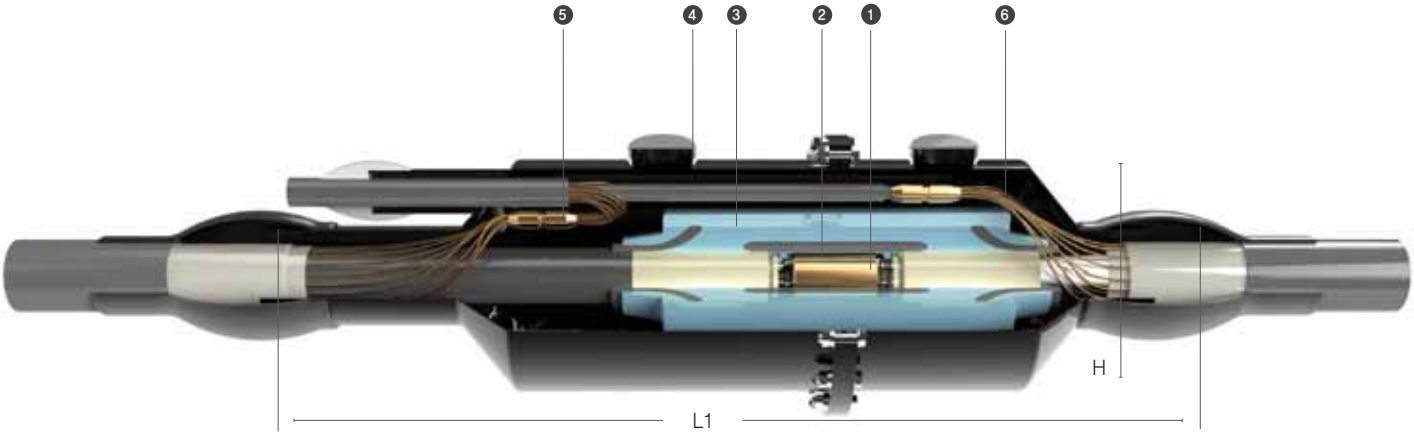
No.	Description	No.	Description
1	Conductor Sleeve	4	Outer Case
2	Corona Shield	5	Coffin Box
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	L2 [mm]	D1 [mm]	H [mm]
PMCC-13C-N01	53 - 61	1350	2400	245	445
PMCC-13C-N02	62 - 73	1350	2300	245	445
PMCC-13C-N03	74 - 86	1350	2200	255	445
PMCC-13C-N04	87 - 106	1350	2100	265	445

Pre-Molded Joint (110kV~161kV)

FRP Case

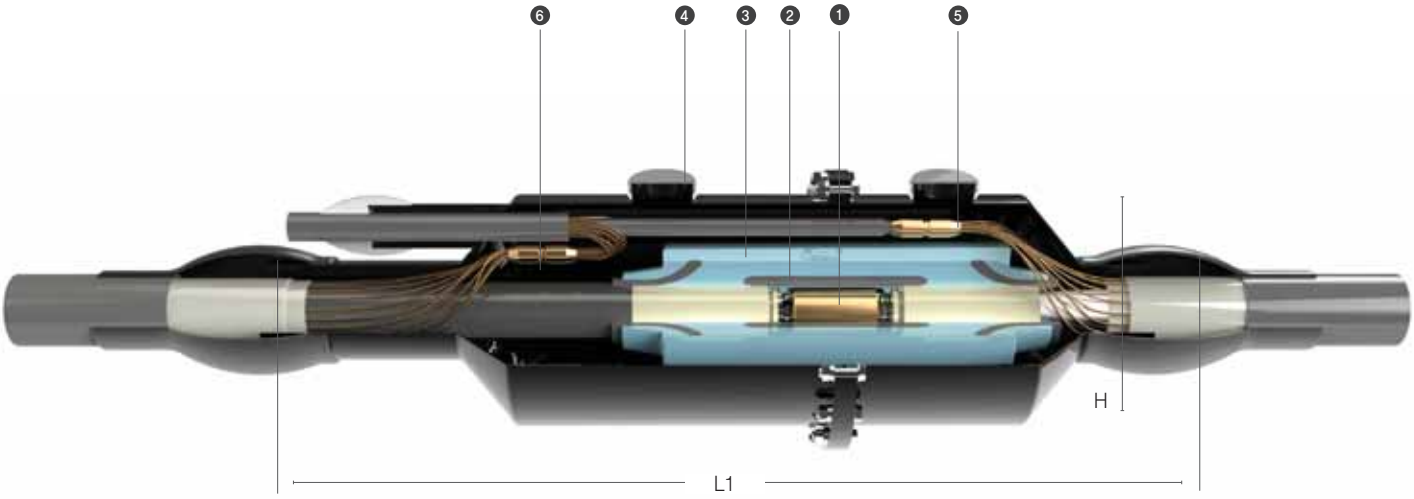
[Insulated Joint]



No.	Description	No.	Description
1	Conductor Sleeve	4	FRP Outer Case
2	Corona Shield	5	Earthing Sleeve
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	H [mm]
PMFC-13C-I01	53 - 61	1400	310
PMFC-13C-I02	62 - 73	1400	310
PMFC-13C-I03	74 - 86	1400	310
PMFC-13C-I04	87- 106	1400	345

[Normal Joint]



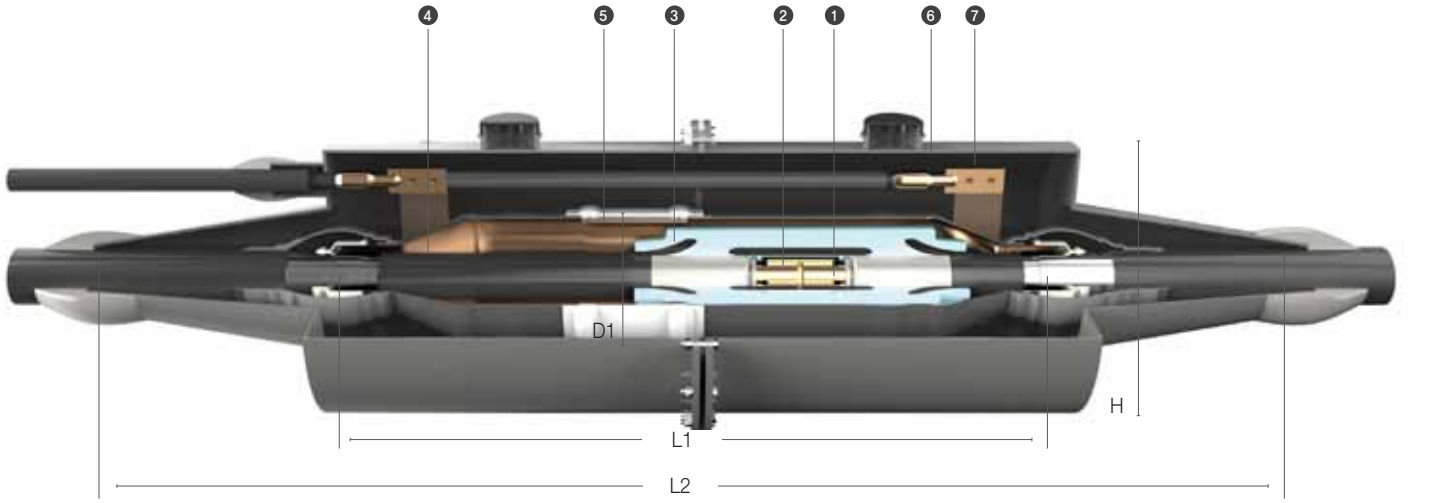
No.	Description	No.	Description
1	Conductor Sleeve	4	FRP Outer Case
2	Corona Shield	5	Earthing Sleeve
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	H [mm]
PMFC-13C-N01	53 - 61	1400	310
PMFC-13C-N02	62 - 73	1400	310
PMFC-13C-N03	74 - 86	1400	310
PMFC-13C-N04	87 - 106	1400	345

Pre-Molded Joint (220kV~275kV)

Copper Case With Coffin Box

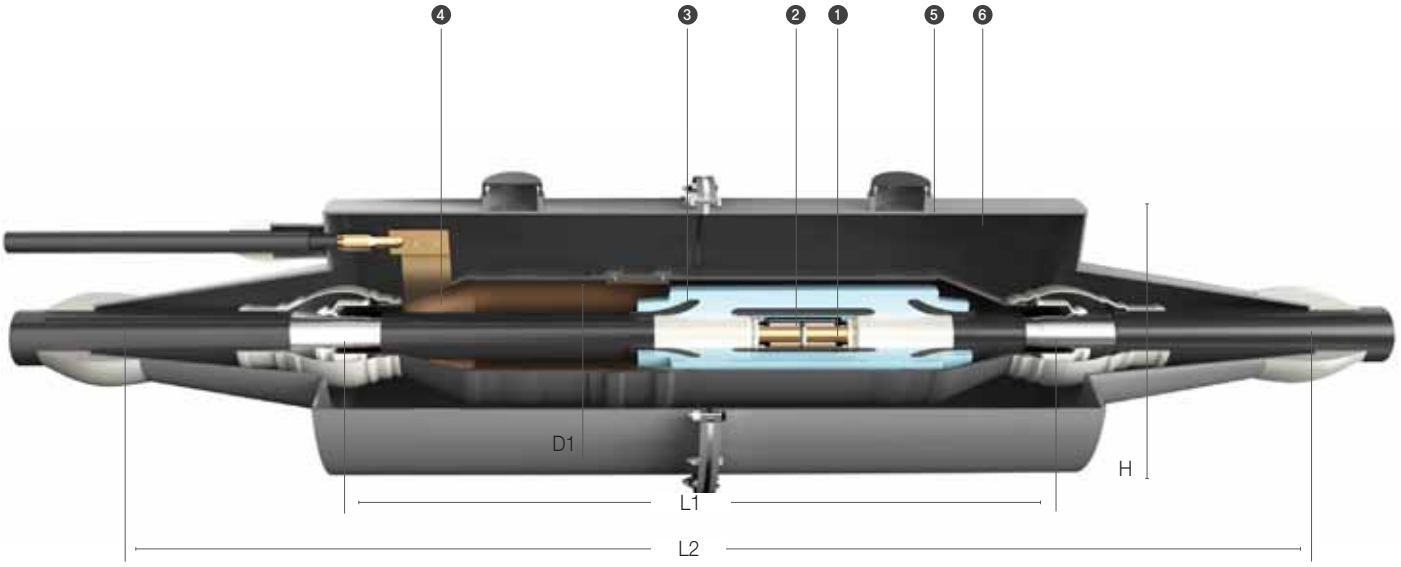
[Insulated Joint]



No.	Description	No.	Description
1	Conductor Sleeve	5	Insulating Flange
2	Corona Shield	6	Coffin Box
3	PMJ Rubber Unit	7	Filling Compound
4	Outer Case		

Product No.	XLPE Diameter [mm]	L1 [mm]	L2 [mm]	D1 [mm]	H [mm]
PMCC-24C-I01	68 - 82	1800	2500	315	600
PMCC-24C-I02	83 - 95	1800	2500	315	600
PMCC-24C-I03	96 - 105	1800	2500	315	600
PMCC-24C-I04	105 - 126	1800	2500	315	600

[Normal Joint]



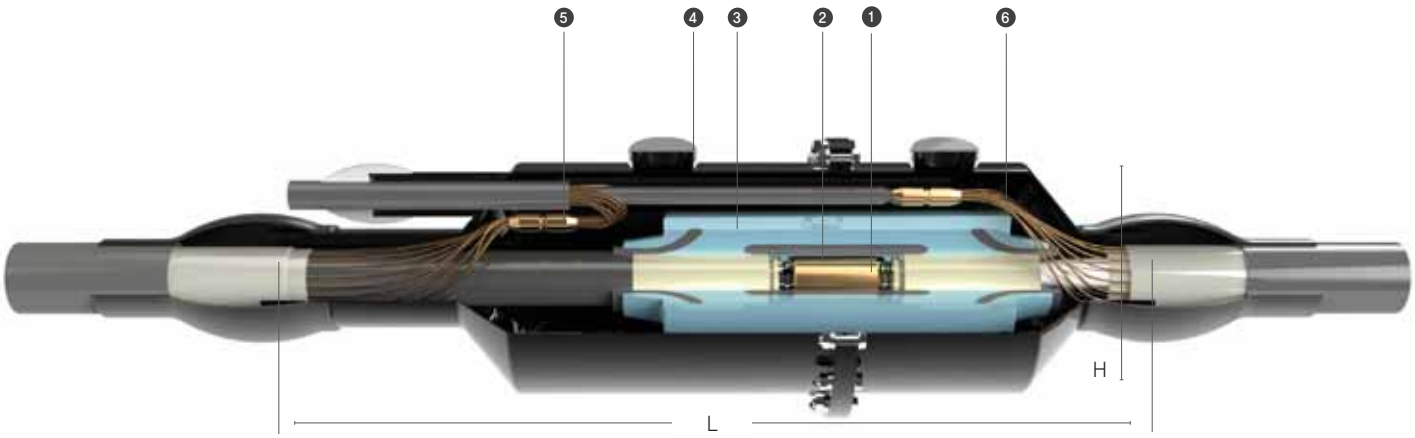
No.	Description	No.	Description
1	Conductor Sleeve	4	Outer Case
2	Corona Shield	5	Coffin Box
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	L2 [mm]	D1 [mm]	H [mm]
PMCC-24C-N01	68 - 82	1800	2500	310	600
PMCC-24C-N02	83 - 95	1800	2500	310	600
PMCC-24C-N03	96 - 105	1800	2500	310	600
PMCC-24C-N04	105 - 126	1800	2500	310	600

Pre-Molded Joint (220kV~275kV)

FRP Case

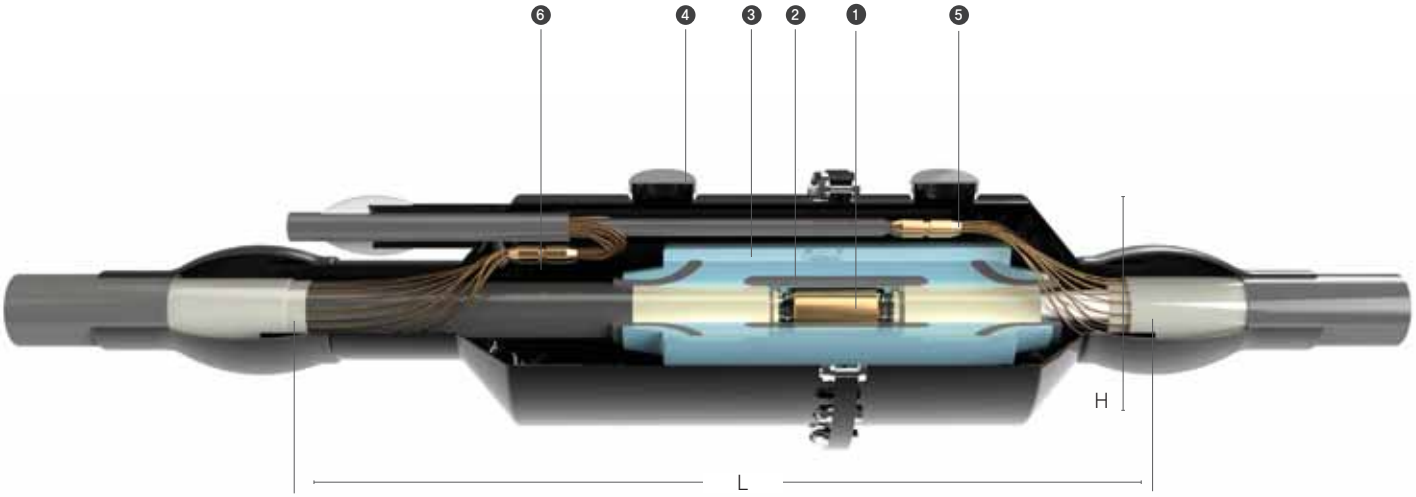
[Insulated Joint]



No.	Description	No.	Description
1	Conductor Sleeve	4	FRP Outer Case
2	Corona Shield	5	Earthing Sleeve
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	H [mm]
PMFC-24C-I01	68 - 82	1720	370
PMFC-24C-I02	83 - 95	1720	370
PMFC-24C-I03	96 - 105	1720	370
PMFC-24C-I04	105 - 126	1720	370

[Normal Joint]



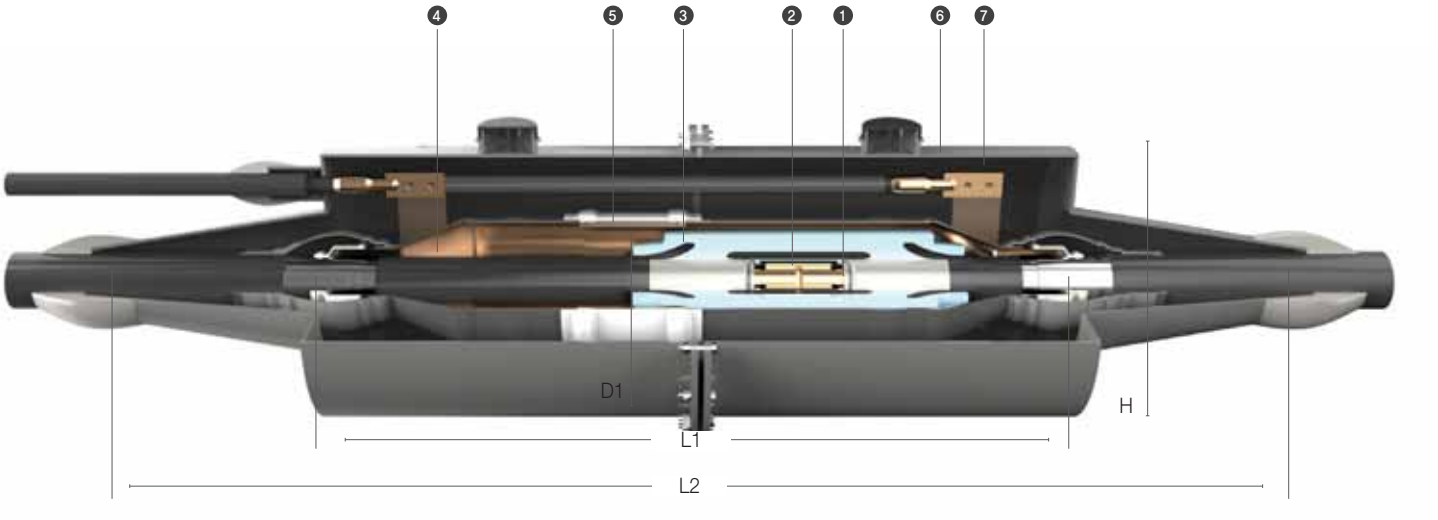
No.	Description	No.	Description
1	Conductor Sleeve	4	FRP Outer Case
2	Corona Shield	5	Earthing Sleeve
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	H [mm]
PMFC-24C-N01	68 - 82	1720	370
PMFC-24C-N02	83 - 95	1720	370
PMFC-24C-N03	96 - 105	1720	370
PMFC-24C-N04	105 - 126	1720	370

Pre-Molded Joint (330kV~400kV)

Copper Case With Coffin Box

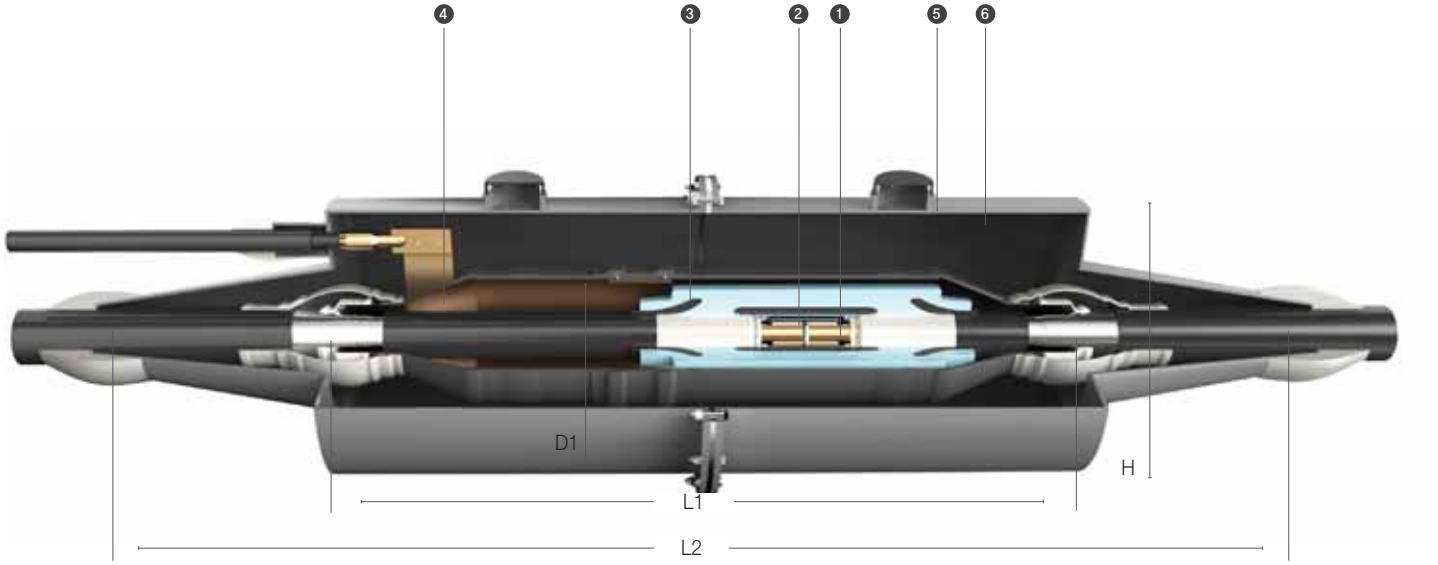
[Insulated Joint]



No.	Description	No.	Description
1	Conductor Sleeve	5	Insulating Flange
2	Corona Shield	6	Coffin Box
3	PMJ Rubber Unit	7	Filling Compound
4	Outer Case		

Product No.	XLPE Diameter [mm]	L1 [mm]	L2 [mm]	D1 [mm]	H [mm]
PMCC-40C-I01	83 - 99	2000	2800	365	665
PMCC-40C-I02	100 - 125	2000	2800	365	665
PMCC-40C-I03	126 - 138	2000	2800	410	665

[Normal Joint]



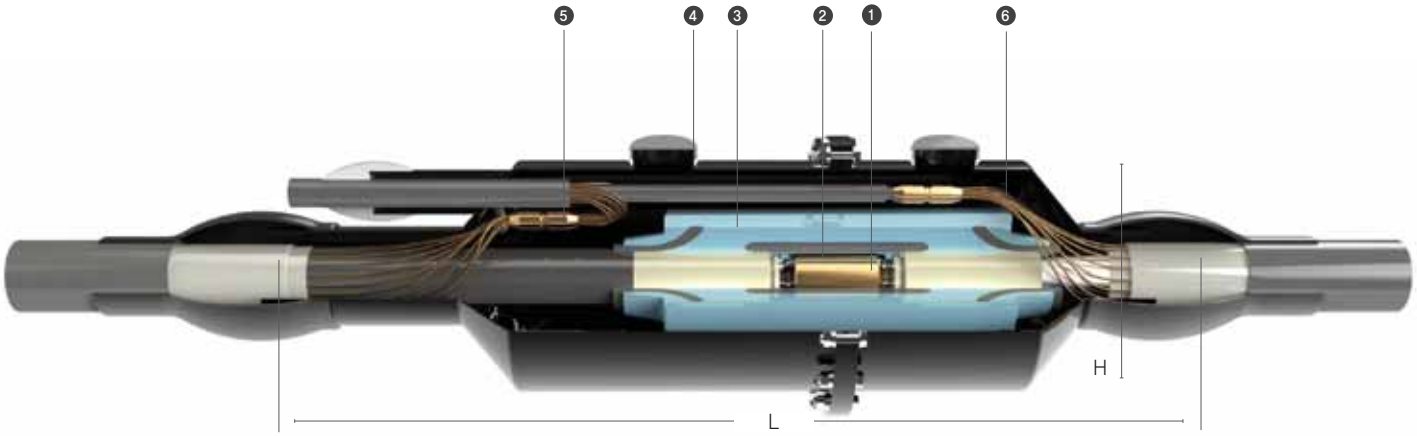
No.	Description	No.	Description
1	Conductor Sleeve	4	Outer Case
2	Corona Shield	5	Coffin Box
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	L2 [mm]	D1 [mm]	H [mm]
PMCC-40C-N01	83 - 99	2000	2800	360	665
PMCC-40C-N02	100 - 125	2000	2800	360	665
PMCC-40C-N03	126 - 138	2000	2800	405	665

Pre-Molded Joint (330kV~400kV)

FRP Case

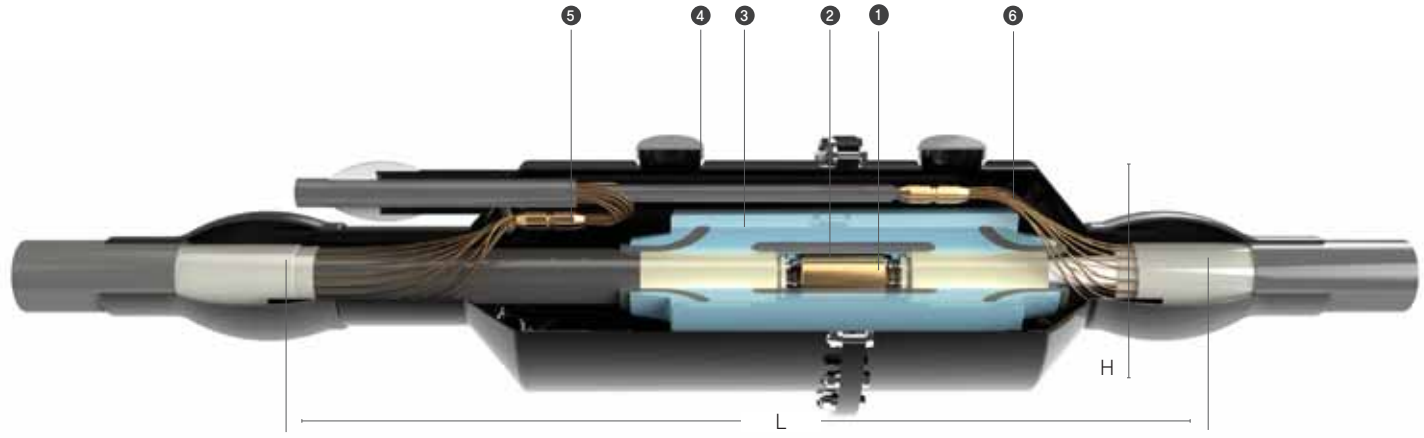
[Insulated Joint]



No.	Description	No.	Description
1	Conductor Sleeve	4	FRP Outer Case
2	Corona Shield	5	Earthing Sleeve
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	H [mm]
PMFC-40C-I01	83 - 99	2000	450
PMFC-40C-I02	100 - 125	2000	450
PMFC-40C-I03	126 - 138	2000	490

[Normal Joint]



No.	Description	No.	Description
1	Conductor Sleeve	4	FRP Outer Case
2	Corona Shield	5	Earthing Sleeve
3	PMJ Rubber Unit	6	Filling Compound

Product No.	XLPE Diameter [mm]	L1 [mm]	H [mm]
PMFC-40C-N01	83 - 99	2000	450
PMFC-40C-N02	100 - 125	2000	450
PMFC-40C-N03	126 - 138	2000	490

OUTDOOR TERMINATION (EB-A)

The outdoor termination is available for the connection of underground cables and overhead lines. This termination is widely classified into two types of configuration.

Prefabricated type termination consists of an epoxy support, an EPR stress relief cone and a set of compression device to maintain the interfacial pressure between the stress relief cone and cable core.

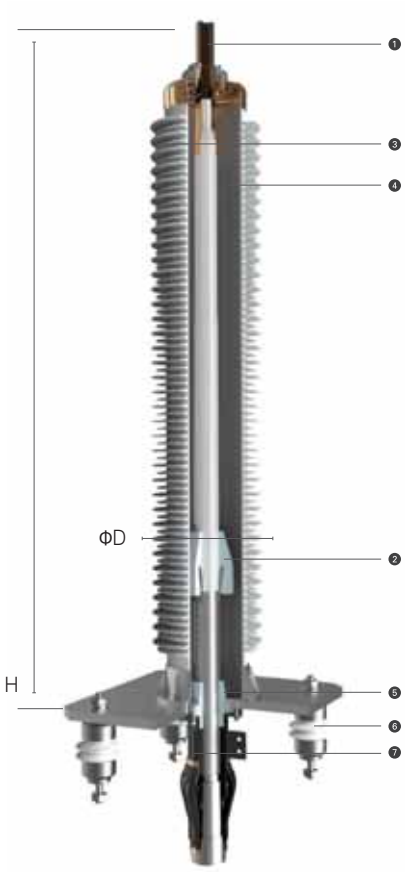
Slip-on type termination is equipped with silicone rubber stress relief cone. The interfacial pressure stability of slip-on type termination is achieved by self-elasticity of the stress relief cone. The stress relief cone guarantees a sufficient positive pressure to control the electric field concentration under any service condition. Electrical separation between cable metallic sheath and supporting structure is ensured by station post insulators.

And the termination is filled with an insulation oil up to a level where the electric field is substantially reduced.

The outdoor termination is available both porcelain hollow insulator and composite (polymeric) hollow insulator with several different creepage distances.

All types of outdoor termination have high reliability because all main insulation components are carried out routine test in the factory in accordance with IEC 60840 and 62067.

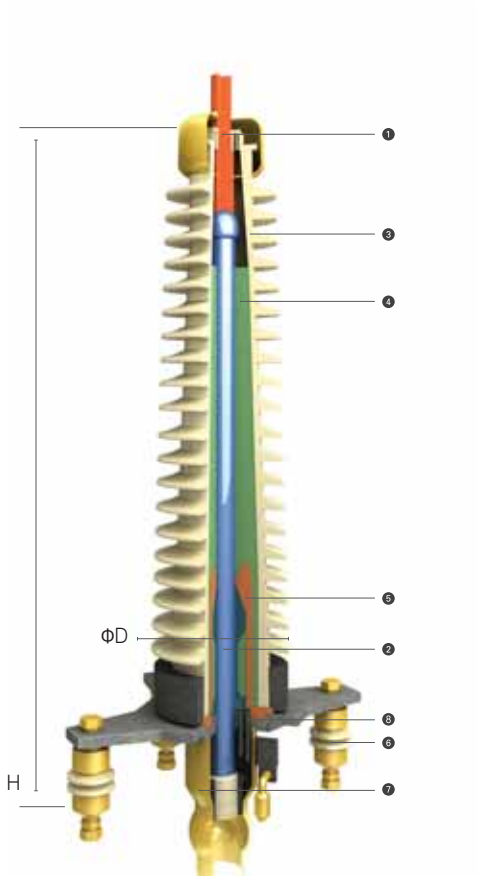
Outdoor Termination
Slip-on Type



No.	Description	Material
1	Conductor Sleeve	Copper
2	Stress Relief Cone	Silicone Rubber
3	Hollow Insulator	Polymeric or Porcelain
4	Compound	Polybutene Oil
5	Sealing Unit	Silicone Rubber
6	Post Insulator	Porcelain
7	Lower Metal Case	Aluminum

Rated Voltage	H [mm]	ΦD [mm]	Creepage Distance [mm]
66kV~69kV	Max. 1890	Max.355	Max.5215
110kV~161kV	Max. 2650	Max.355	Max.8300
220kV~275kV	Max. 4250	Max.600	Max.12600
330kV~400kV	Max. 6250	Max.780	Max.23100
500kV	Max. 7750	Max.780	Max.24800

Prefablicated Type



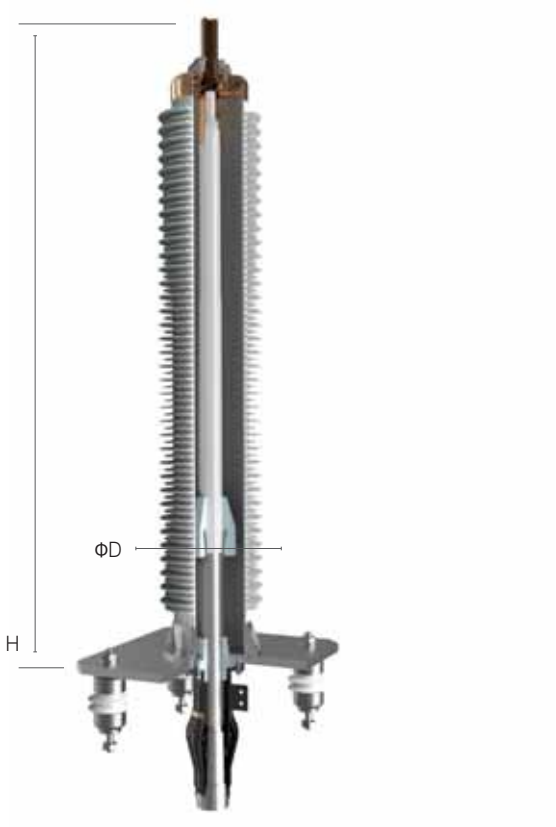
No.	Description	Material
1	Conductor Sleeve	Copper
2	Stress Relief Cone	EPR
3	Hollow Insulator	Polymeric or Porcelain
4	Compound	Silicone Oil
5	Epoxy Support	Epoxy
6	Post Insulator	Porcelain
7	Lower Metal Case	Aluminum or Copper
8	Compression Ring	Stainless Steel

Rated Voltage	H [mm]	ΦD [mm]	Creepage Distance [mm]
110kV~161kV	Max. 2650	Max.355	Max.8300
220kV~275kV	Max. 2750	Max.560	Max.8800

Outdoor Termination (110kV ~ 161kV)

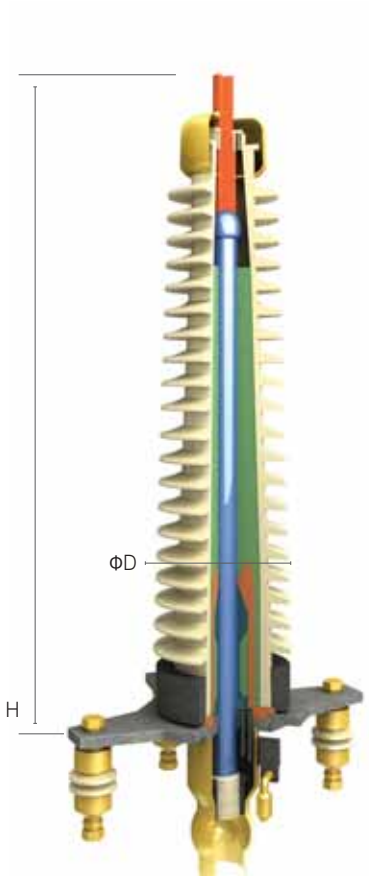
Slip-on Type

[Composite Bushing]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EACS-13C-S01	53 - 61	1800	378	5280
EACS-13C-S02	62 - 73			
EACS-13C-S03	74 - 86			
EACS-13C-S04	87 - 106			
EACS-13C-N01	53 - 61	2200	378	6720
EACS-13C-N02	62 - 73			
EACS-13C-N03	74 - 86			
EACS-13C-N04	87 - 106			
EACS-13C-F01	53 - 61	2600	378	8150
EAES-13C-F02	62 - 73			
EAES-13C-F03	74 - 86			
EAES-13C-F04	87 - 106			

[Porcelain Bushing]

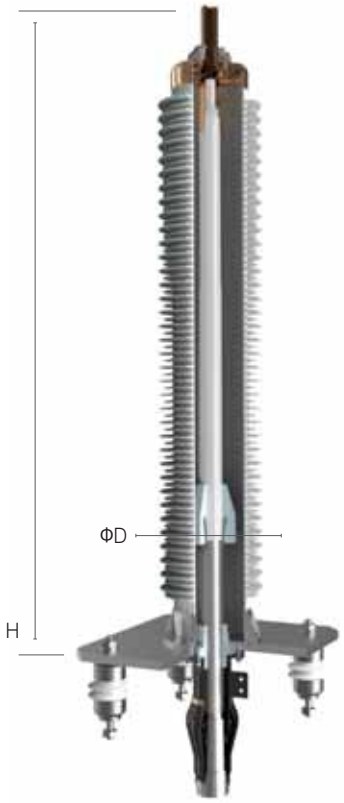


Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EAPS-13C-S01	53 - 61	1900	410	3800
EAPS-13C-S02	62 - 73			
EAPS-13C-S03	74 - 86			
EAPS-13C-S04	87 - 106			
EAPS-13C-N01	53 - 61	2200	446	6000
EAPS-13C-N02	62 - 73			
EAPS-13C-N03	74 - 86			
EAPS-13C-N04	87 - 106			
EAPS-13C-F01	53 - 61	2600	446	7100
EAPS-13C-F02	62 - 73			
EAPS-13C-F03	74 - 86			
EAPS-13C-F04	87 - 106			

Outdoor Termination (110kV ~ 161kV)

Prefablicated Type

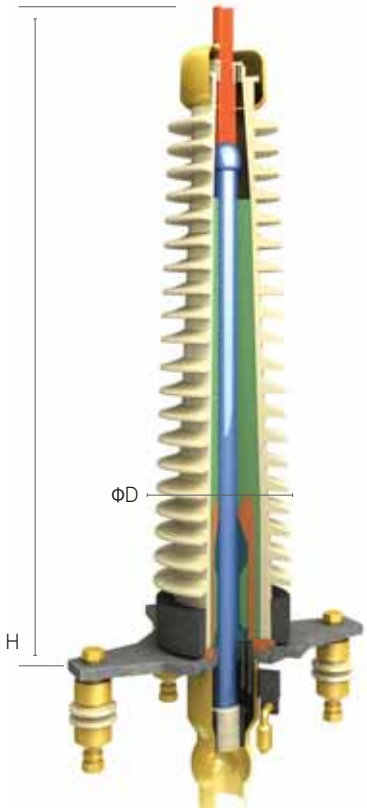
[Composite Bushing]



* All of cable diameters between Φ60 and Φ104 are also available

Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EACP-13C-S01	61 - 63	1800	378	5280
EACP-13C-S02	64 - 66			
EACP-13C-S03	71 - 73			
EACP-13C-S04	77 - 79			
EACP-13C-S05	90 - 93			
EACP-13C-N01	61 - 63	2200	378	6720
EACP-13C-N02	64 - 66			
EACP-13C-N03	71 - 73			
EACP-13C-N04	77 - 79			
EACP-13C-N05	90 - 93			
EACP-13C-F01	61 - 63	2600	378	8150
EAEP-13C-F02	64 - 66			
EAEP-13C-F03	71 - 73			
EAEP-13C-F04	77 - 79			
EAEP-13C-F05	90 - 93			

[Porcelain Bushing]

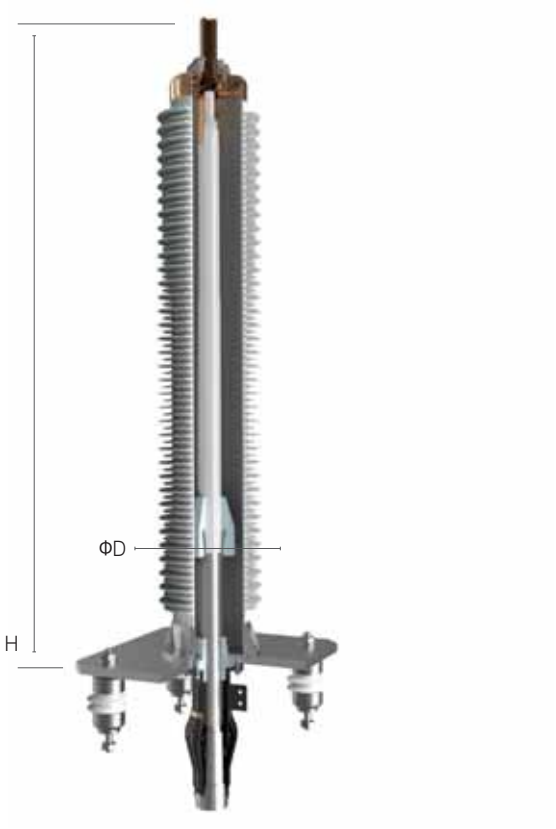


* All of cable diameters between Φ60 and Φ104 are also available

Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EAPP-13C-S01	61 - 63	1900	410	3800
EAPP-13C-S02	64 - 66			
EAPP-13C-S03	71 - 73			
EAPP-13C-S04	77 - 79			
EAPP-13C-S05	90 - 93			
EAPP-13C-N01	61 - 63	2200	446	6000
EAPP-13C-N02	64 - 66			
EAPP-13C-N03	71 - 73			
EAPP-13C-N04	77 - 79			
EAPP-13C-N05	90 - 93			
EAPS-13C-F01	61 - 63	2600	446	7100
EAPS-13C-F02	64 - 66			
EAPS-13C-F03	71 - 73			
EAPS-13C-F04	77 - 79			
EAPS-13C-F05	90 - 93			

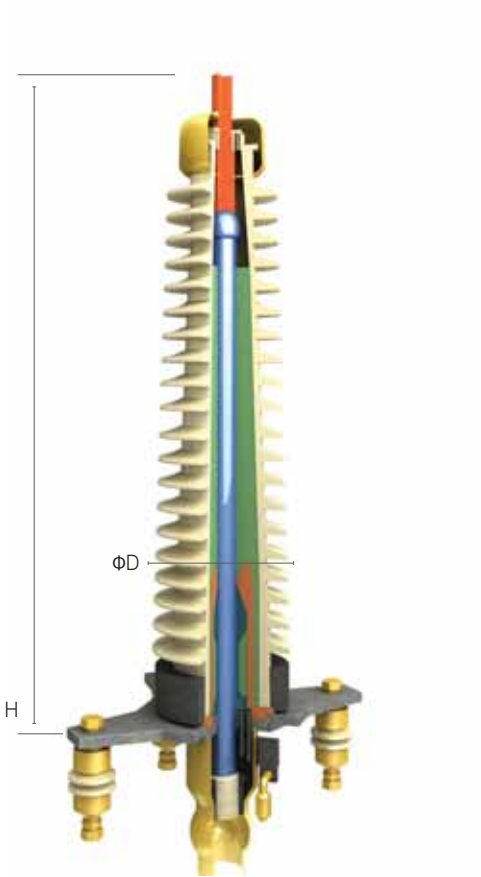
Outdoor Termination (220kV ~ 275kV)
Slip-on Type

[Composite Bushing]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EACS-24C-N01	73 - 87	2685	505	9100
EACS-24C-N02	88 - 102			
EACS-24C-N03	102 - 122			
EACS-24C-F01	73 - 87	4220	616	13000
EACS-24C-F02	88 - 102			
EACS-24C-F03	102 - 122			
EACS-24C-F04	123 - 130			

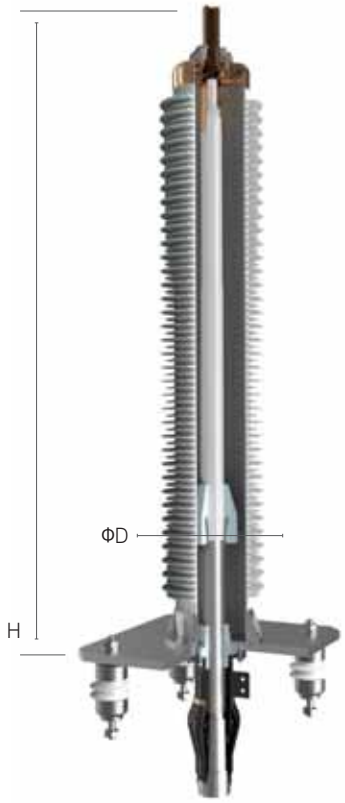
[Porcelain Bushing]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EAPS-24C-S01	73 - 87	2725	556	8700
EAPS-24C-S02	88 - 102			
EAPS-24C-S03	102 - 122			
EAPS-24C-N01	73 - 87	3705	560	11000
EAPS-24C-N02	88 - 102			
EAPS-24C-N03	102 - 122			

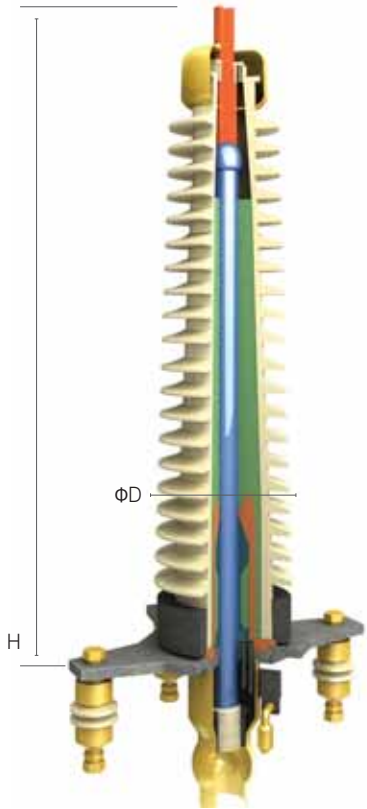
Outdoor Termination (220kV ~ 275kV)
Prefablicated Type

[Composite Bushing]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EACP-24C-N01	69 - 71	2685	505	9100
EACP-24C-N02	72 - 74			
EACP-24C-N03	75 - 77			
EACP-24C-N04	78 - 80			
EACP-24C-N05	82 - 84			
EACP-24C-N06	85 - 87			
EACP-24C-N07	88 - 90			
EACP-24C-N08	91 - 93			
EACP-24C-N09	94 - 96			
EACP-24C-N10	97 - 99			
EACP-24C-N11	100 - 102			
EACP-24C-N12	103 - 105			
EACP-24C-N13	106 - 108			
EACP-24C-N14	110 - 112			
EACP-24C-N15	113 - 115			
EACP-24C-N16	116 - 118			

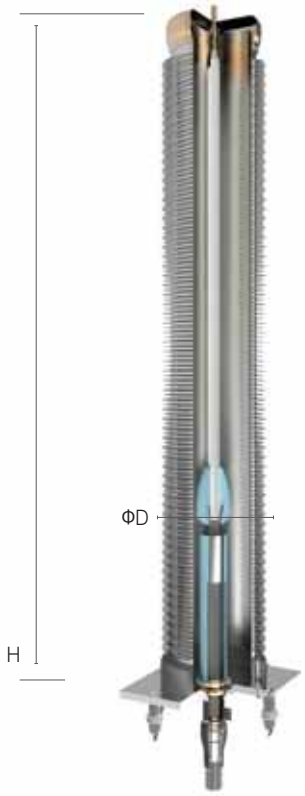
[Porcelain Bushing]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EAPP-24C-N01	69 - 71	2725	556	8700
EAPP-24C-N02	72 - 74			
EAPP-24C-N03	75 - 77			
EAPP-24C-N04	78 - 80			
EAPP-24C-N05	82 - 84			
EAPP-24C-N06	85 - 87			
EAPP-24C-N07	88 - 90			
EAPP-24C-N08	91 - 93			
EAPP-24C-N09	94 - 96			
EAPP-24C-N10	97 - 99			
EAPP-24C-N11	100 - 102			
EAPP-24C-N12	103 - 105			
EAPP-24C-N13	106 - 108			
EAPP-24C-N14	110 - 112			
EAPP-24C-N15	113 - 115			
EAPP-24C-N16	116 - 118			

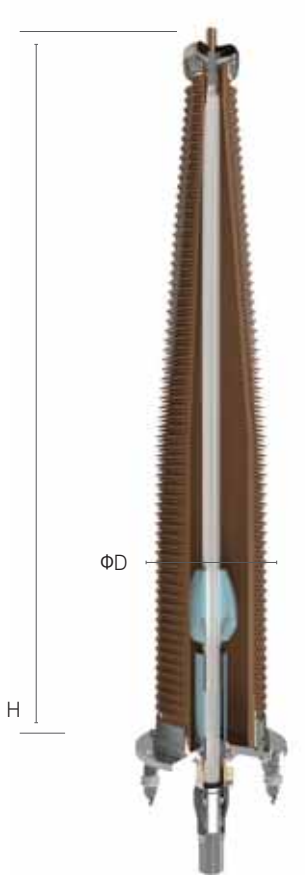
Outdoor Termination (330kV ~ 400kV)

[Composite Bushing]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EACS-40C-N01	87 - 106			
EACS-40C-N02	107 - 120	5225	784	19000
EACS-40C-N03	121 - 138			
EACS-40C-F01	87 - 106			
EACS-40C-F02	107 - 120	6225	784	23100
EACS-40C-F03	121 - 138			

[Porcelain Bushing]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD [mm]	Creepage Distance [mm]
EAPS-40C-N01	87 - 106			
EAPS-40C-N02	107 - 120	4832	750	17000
EAPS-40C-N03	121 - 138			
EAPS-40C-F01	87 - 106			
EAPS-40C-F02	107 - 120	5225	810	18755
EAPS-40C-F03	121 - 138			

SF_6 GAS INSULATED TERMINATION (EB-G)

The gas insulated termination is available for the connection of underground cables and GIS. This termination is widely classified into two types of configuration.

Prefabricated type termination consists of an epoxy bushing, an EPR stress relief cone and a set of compression device to maintain the interfacial pressure between the stress relief cone and cable core.

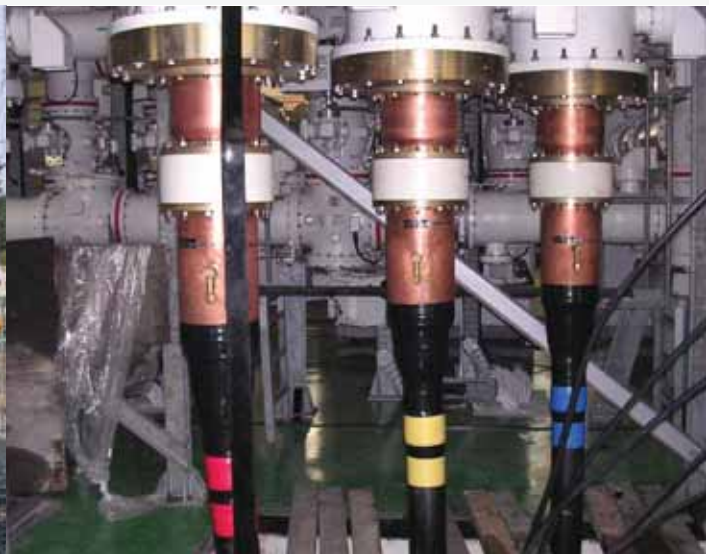
Slip-on type termination is equipped with silicone rubber stress relief cone. The interfacial pressure stability of slip-on type termination is achieved by self-elasticity of the stress relief cone. The stress relief cone guarantees a sufficient positive pressure to control the electric field concentration under any service condition.

The design and supply scope are complied with IEC 60859 and IEC 62271-209 standard. Both fluid filled type and dry type are available. And blind ended interface has been developed and is available. We can also provide non-IEC type terminations complying with customer's specification.

Plug-in type termination has been developed under the technical concept of dry and prefabricated type. The plug-in type termination can reduce the time and skill for installation.

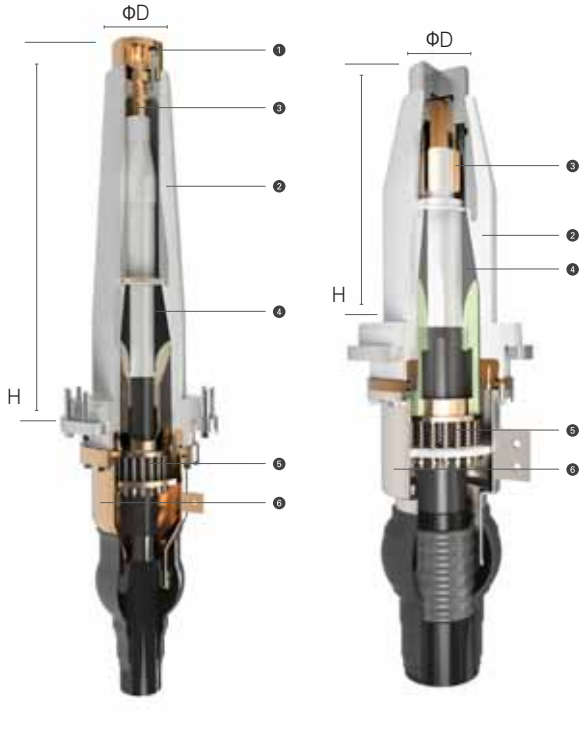
For protecting the epoxy insulator from switching impulse, the SVLs can be installed between cable sheath and GIS metal clad.

All types of gas insulated termination have high reliability because all main insulation components are carried out routine test in the factory in accordance with IEC 60840 and IEC 62067.



SF_6 Gas Insulated Termination

Prefablicated Type



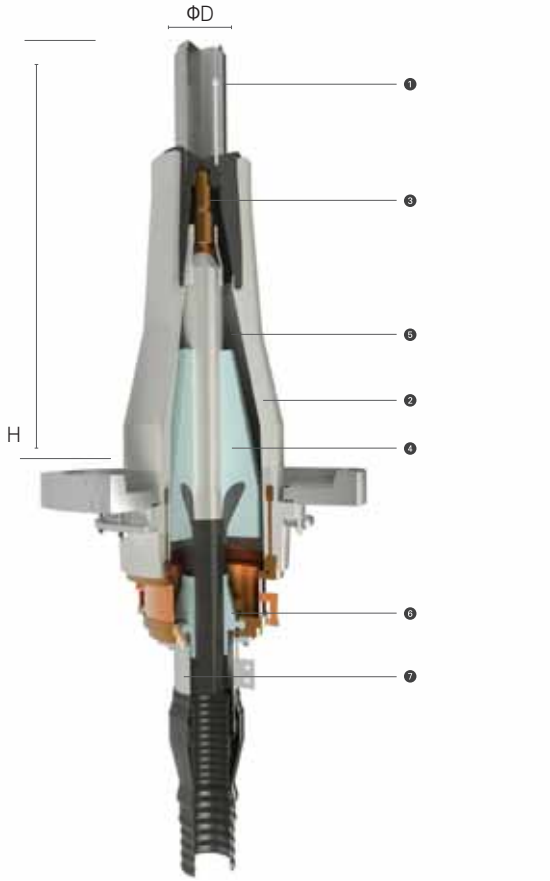
[Fluid Filled Type] [Dry Type]

* All dimensions are complying with IEC60859 and IEC62271-209

No.	Description	Material
1	Upper Metal	Aluminum
2	Epoxy Bushing	Epoxy
3	Conductor Sleeve	Copper
4	Stress Relief Cone	EPR
5	Compression Ring	Stainless Steel
6	Lower Metal Case	Copper or Aluminum

Rated Voltage	Fluid Filled type		Dry Type	
	H [mm]	ΦD [mm]	H [mm]	ΦD [mm]
66kV~88kV	583	110	310	110
110kV~161kV	757	110	470	110
220kV~275kV	960	200	620	140
330kV~400kV	1400	250	960	140

Slip-on Type



* All dimensions are complying with IEC60859 and IEC62271-209

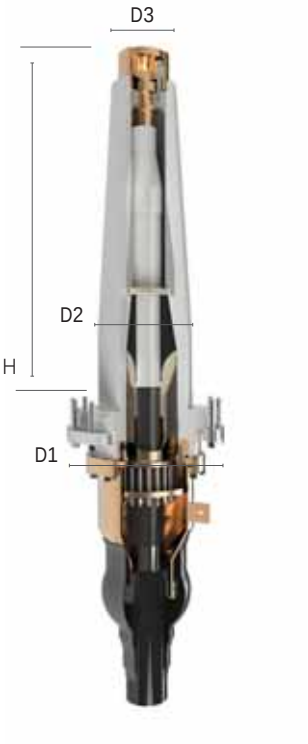
No.	Description	Material
1	Upper Metal	Aluminum
2	Epoxy Bushing	Epoxy
3	Conductor Sleeve	Copper
4	Stress Relief Cone	Silicone Rubber
5	Compound	Polybutene Oil
6	Sealing Unit	Silicone Rubber
7	Lower Metal Case	Copper or Aluminum

Rated Voltage	H [mm]	ΦD [mm]
110kV~161kV	757	110
220kV~275kV	960	140
330kV~500kV	1400	140

SF_6 Gas Insulated Termination (110kV ~ 161kV)

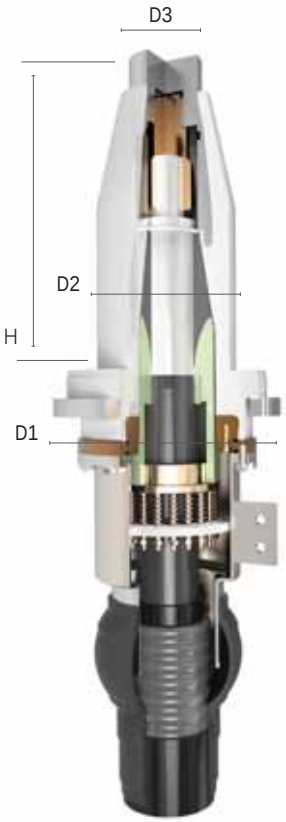
Prefablicated Type

[Fluid Filled Type]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGCF-13C-N01	56 - 58	757	320	205	110
EGCF-13C-N02	59 - 61				
EGCF-13C-N03	62 - 64				
EGCF-13C-N04	65 - 67				
EGCF-13C-N05	68 - 70				
EGCF-13C-N06	71 - 73				
EGCF-13C-N07	74 - 76				
EGCF-13C-N08	77 - 79				
EGCF-13C-N09	80 - 82				
EGCF-13C-N10	83 - 84				
EGCF-13C-N11	85 - 87			215	
EGCF-13C-N12	88 - 90				
EGCF-13C-N13	91 - 93				
EGCF-13C-N14	94 - 96				
EGCF-13C-N15	97 - 99			225	
EGCF-13C-N16	100 - 102				
EGCF-13C-N17	103 - 105				

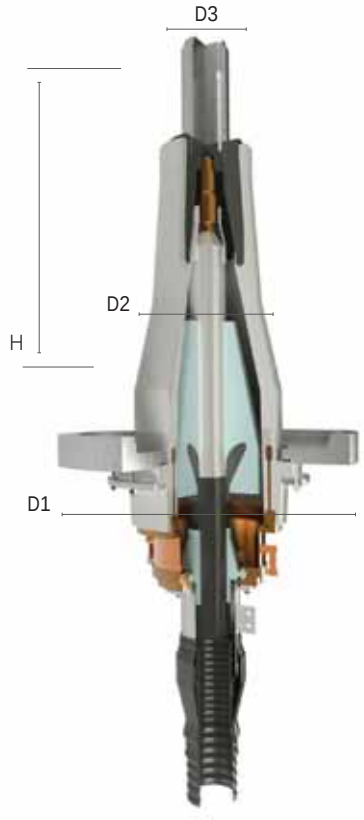
[Dry Type]



Product No.	XLPE Diameter [mm]	H [mm]	ΦD1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGCD-13C-N01	56 - 58	470	320	215	110
EGCD-13C-N02	59 - 61				
EGCD-13C-N03	62 - 64				
EGCD-13C-N04	65 - 67				
EGCD-13C-N05	68 - 70				
EGCD-13C-N06	71 - 73				
EGCD-13C-N07	74 - 76				
EGCD-13C-N08	77 - 79				
EGCD-13C-N09	80 - 82				
EGCD-13C-N10	83 - 84				
EGCD-13C-N11	85 - 87				
EGCD-13C-N12	88 - 90				
EGCD-13C-N13	91 - 93				
EGCD-13C-N14	94 - 96				
EGCD-13C-N15	97 - 99				
EGCD-13C-N16	100 - 102			225	
EGCD-13C-N17	103 - 105				

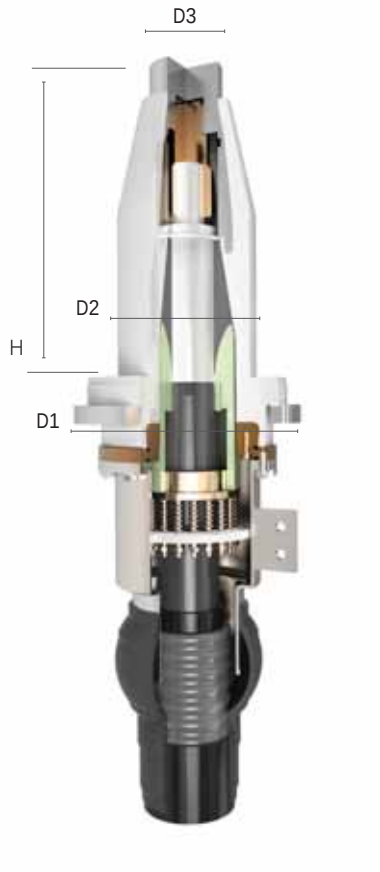
SF_6 Gas Insulated Termination (110kV ~ 161kV)

Slip-on Type



Product No.	XLPE Diameter [mm]	H [mm]	ΦD1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGSF-13C-N01	53 - 61	757	320	205	110
EGSF-13C-N01	62 - 73				
EGSF-13C-N01	74 - 86			225	
EGSF-13C-N01	87 - 106				

Plug-In Type



Product No.	XLPE Diameter [mm]	H [mm]	ΦD1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGCP-13C-N01	56 - 58	470	320	215	110
EGCP-13C-N02	59 - 61				
EGCP-13C-N03	62 - 64				
EGCP-13C-N04	65 - 67				
EGCP-13C-N05	68 - 70				
EGCP-13C-N06	71 - 73				
EGCP-13C-N07	74 - 76				
EGCP-13C-N08	77 - 79				
EGCP-13C-N09	80 - 82				
EGCP-13C-N10	83 - 84				
EGCP-13C-N11	85 - 87				
EGCP-13C-N12	88 - 90				
EGCP-13C-N13	91 - 93				
EGCP-13C-N14	94 - 96				
EGCP-13C-N15	97 - 99				
EGCP-13C-N16	100 - 102			225	
EGCP-13C-N17	103 - 105				

SF_6 Gas Insulated Termination (220kV ~ 275kV)

Prefablicated Type

[Fluid Filled Type]

Product No.	XLPE Diameter [mm]	H [mm]	ΦD1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGCF-24C-P01	69 - 71	960	582	350	140
EGCF-24C-P02	72 - 74				
EGCF-24C-P03	75 - 77				
EGCF-24C-P04	78 - 80				
EGCF-24C-P05	82 - 84				
EGCF-24C-P06	85 - 87				
EGCF-24C-P07	88 - 90				
EGCF-24C-P08	91 - 93				
EGCF-24C-P09	94 - 96				
EGCF-24C-P10	97 - 99				
EGCF-24C-P11	100 - 102				
EGCF-24C-P12	103 - 105				
EGCF-24C-P13	106 - 108				
EGCF-24C-P14	110 - 112				
EGCF-24C-P15	113 - 115				
EGCF-24C-P16	116 - 118				

[Dry Type]

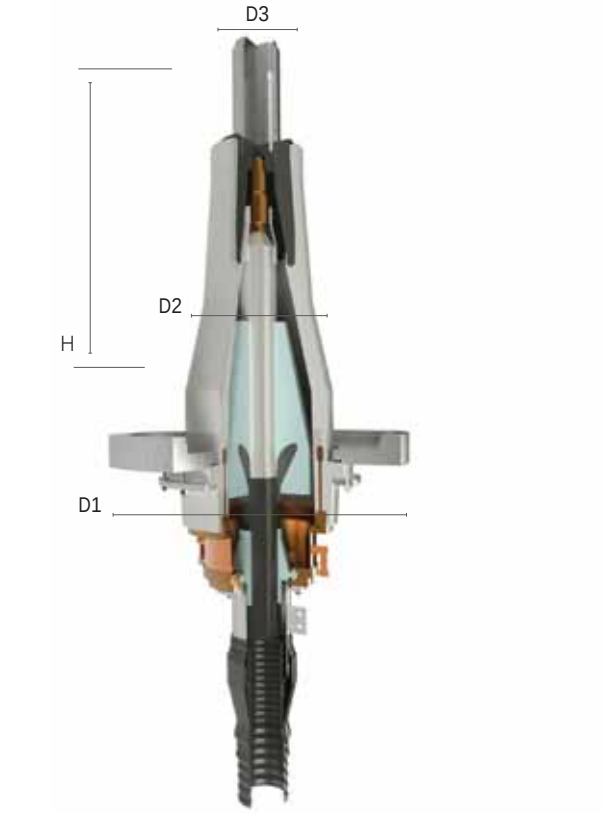
Product No.	XLPE Diameter [mm]	H [mm]	Φ D1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGCD-24C-P01	69 - 71	620	475	328	140
EGCD-24C-P02	72 - 74				
EGCD-24C-P03	75 - 77				
EGCD-24C-P04	78 - 80				
EGCD-24C-P05	82 - 84				
EGCD-24C-P06	85 - 87				
EGCD-24C-P07	88 - 90				
EGCD-24C-P08	91 - 93				
EGCD-24C-P09	94 - 96				
EGCD-24C-P10	97 - 99				
EGCD-24C-P11	100 - 102				
EGCD-24C-P12	103 - 105			350	
EGCD-24C-P13	106 - 108				
EGCD-24C-P14	110 - 112				
EGCD-24C-P15	113 - 115				
EGCD-24C-P16	116 - 118				

SF_6 Gas Insulated Termination (330kV ~ 400kV)

Prefablicated Type

Product No.	XLPE Diameter [mm]	H [mm]	ΦD1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGCF-40C-P01	87 - 89	1400	582	350	140
EGCF-40C-P02	90 - 92				
EGCF-40C-P03	92 - 94				
EGCF-40C-P04	95 - 97				
EGCF-40C-P05	98 - 100				
EGCF-40C-P06	101 - 103				
EGCF-40C-P07	104 - 106				
EGCF-40C-P08	107 - 109				
EGCF-40C-P09	110 - 112				
EGCF-40C-P10	113 - 115				
EGCF-40C-P11	116 - 118				
EGCF-40C-P12	119 - 121				
EGCF-40C-P13	122 - 124				
EGCF-40C-P14	125 - 127				

Slip-on Type

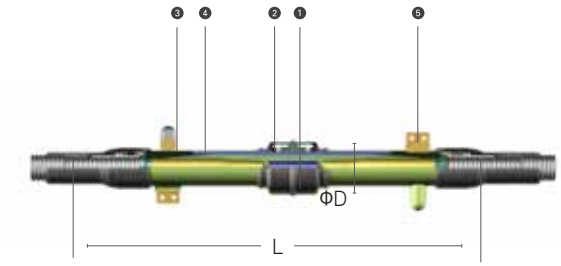


Product No.	XLPE Diameter [mm]	H [mm]	ΦD1 [mm]	ΦD2 [mm]	ΦD3 [mm]
EGSF-40C-S01	87 - 106	1400	640	500	140
EGSF-40C-S02	107 - 120				
EGSF-40C-S03	121 - 138				

OIL-FILLED(O.F) CABLE ACCESSORIES

Taihan has manufactured all types of oil filled cable accessories for fulfilling and supporting our customer's requirement. As oil-filled cable accessories, there are three types of sealing ends(EB-A, EB-G and EB-O), four types of joint boxes(NJ, IJ, SJ, TJ) and oil feeding and alarm equipments.
The accessories for 400kV PPLP(Polypropylene Laminated Insulation Paper) cable have been developed and carried out the PQ test successfully.

Oil-Filled(O.F) Cable Accessories
Straight Through Joint (NJ, IJ)

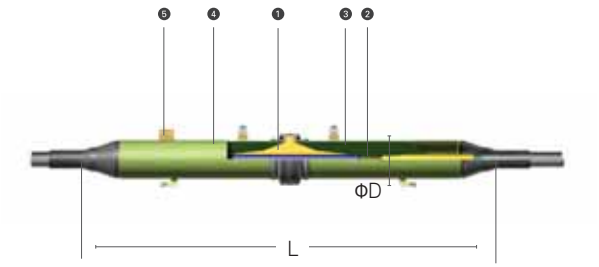


Straight through Joint is used for jointing cables electrically and hydraulically. This joint has same quality as or better than cable itself.
Insulated joint is almost same as straight through joint and the difference between them is to fix an insulator flange at the center of copper casing. This joint is used for jointing cable and at the same time for insulating metal sheath from the other metallic sheath to reduce sheath voltage to safety level.

No.	Description
1	Conductor Sleeve
2	Epoxy Insulator
3	Copper Case
4	Reinforced Insulation Paper Layers
5	Earthing Terminal

Rated Voltage	L [mm]	ΦD [mm]	Cable Conductor [mm²]
110kV~161kV	1300	130	Less than 1000
	1530	180	1200 ~ 2500
220kV~275kV	2000	200	Less than 2500
330kV~400kV	2400	240	Less than 2500

Stop Joint (SJ, SIJ)

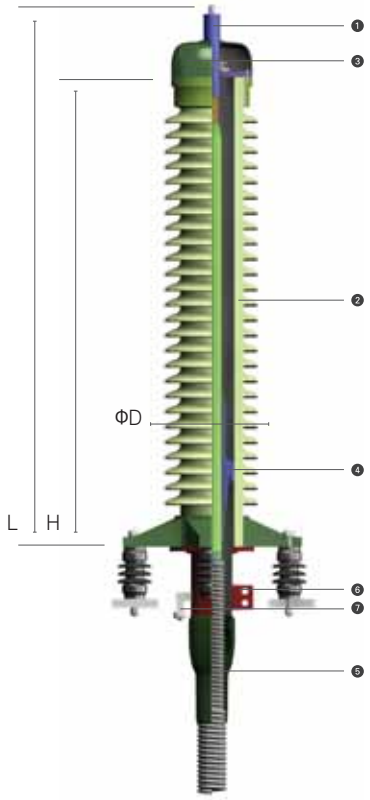


This joint is used for dividing the oil feeding section in case that route length is too long or oil pressure change is too excessive at static or transient operation. This joint is also used for connecting the cables electrically and at the same time, separating the oil feeding section of both cables. Insulated stop joint has an epoxy insulator to divide the metal sheath section.

No.	Description
1	Epoxy Stop Unit
2	Conductor Sleeve
3	Reinforced Insulation Paper Layers
4	Copper Case
5	Earthing Terminal
6	Oil Connector

Rated Voltage	L [mm]	ΦD [mm]	Cable Conductor [mm²]
110kV~161kV	2900	250	Less than 2500
220kV~275kV	3400	350	Less than 2500
330kV~400kV	4100	350	Less than 2500

Oil-Filled(O.F) Cable Accessories
Outdoor Termination

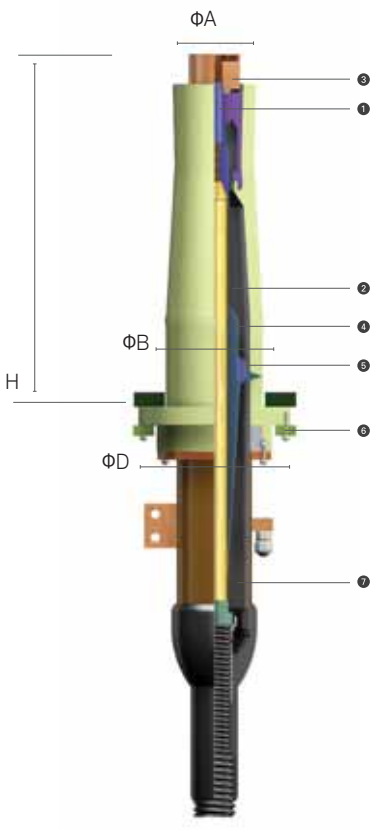


Outdoor Termination is used for sending and taking electric power into or out of underground cable. This termination has stress relief cone formed of wide width paper and above it, there is a condenser cone formed of paper and metal foil or a bell-mouth made of epoxy resin to control the electric field. Connector is fastened to the cable conductor by compression method and flexible terminal lug is placed between the conductor and the lead wire to avoid applying unnecessary external force against the sealing end.

No.	Description
1	Conductor Sleeve
2	Porcelain Bushing
3	Corona Shield
4	Epoxy Bell-Mouth
5	Copper Tube
6	Earthing Terminal
7	Oil Connector

Rated Voltage	H [mm]	L [mm]	ΦD [mm]	Creepage Distance [mm]
110kV~161kV	2850	3095	380	Max.6880
220kV~275kV	3550	3775	440	Max.9380
330kV~400kV	4300	4850	530	Max.14000

Sf_6 Gas Insulated Termination



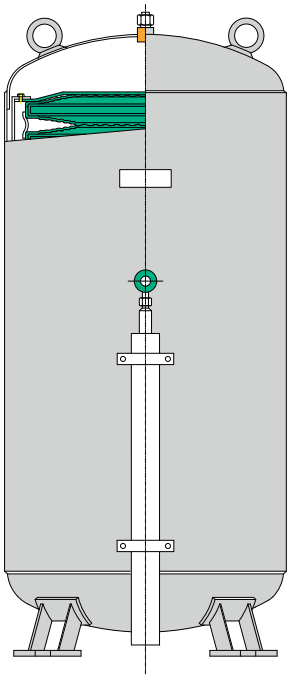
SF6 Gas Insulated Termination is used for terminating the underground cable for the SF6 gas switch gear. Epoxy bushings are needed to insulate between the earth potential parts and the high voltage parts. The inner construction of this termination is similar to that of an outdoor termination except that this termination is completely enclosed and immersed in SF6 gas to prevent dust from collecting and to secure the electric capability, etc.

No.	Description
1	Conductor Sleeve
2	Epoxy Bushing
3	Upper Metal
4	Insulation Layer
5	Epoxy Bell-Mouth
6	Fixing Metal
7	Copper Tube
8	Earthing Terminal

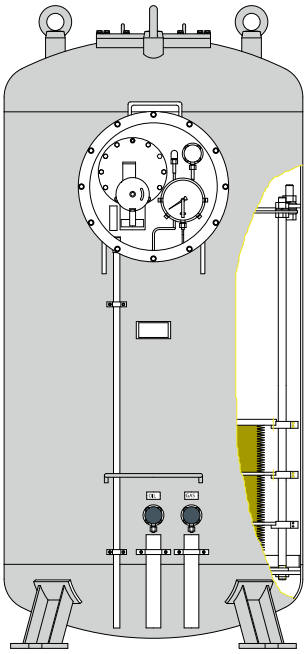
Rated Voltage	ΦA [mm]	H [mm]	ΦD [mm]	B [mm]
110kV~161kV	110	757	320	220
220kV~275kV	200	960	582	480
330kV~400kV	250	1400	640	540

Pressure Tank

Pressure tank is utilized to compensate the hydraulic shrink or expansion of insulation oil of oil-filled cable system.



[PT]



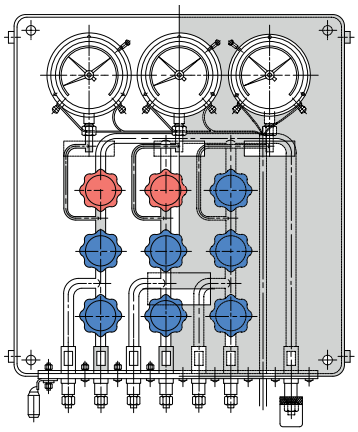
[BPT]

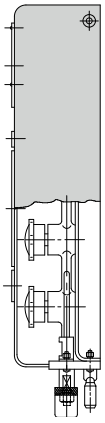
Valve Panel & Alarm Panel

The valve panel has a function as to sense and indicate the oil pressure of pressure tank. The pressure gauges shall be provided with the electrical contacts for sending emergency signal to alarm panel.

[Alarm Panel]

[Valve Panel]





TRANSITION JOINT

The transition joint is applicable for jointing single core oil-filled(O.F) cable to single core XLPE cable. The 3-core oil-filled cable can be connected by using a splitter box(trifurcating box).

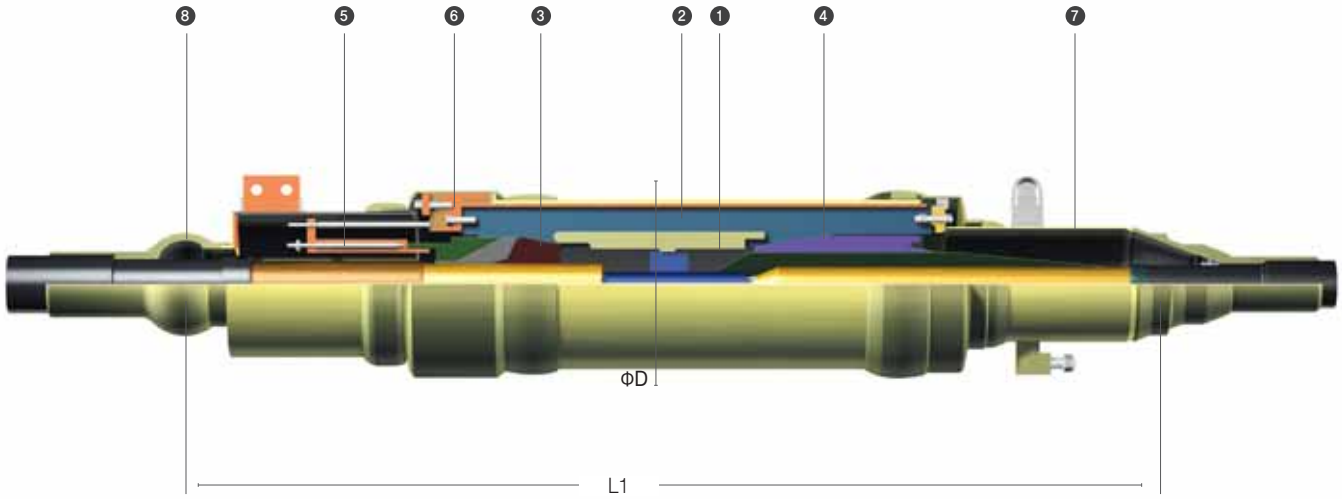
The prefabricated and dry (oil-less) configuration is used on the XLPE cable side while on the oil-filled cable side conventional oil impregnated paper roll and newly adopted epoxy bell mouth is applied to realize the compact design.

The main insulation consists of EPR stress relief cone, epoxy bell mouth and epoxy unit with embedded metallic electrodes.

Hydraulic separation between the different cables is ensured by a set of dual o-ring gasket and epoxy unit. To ensure the thermo-mechanical characteristics of XLPE cable side, EPR stress relief cone has been adopted with a compression ring which consists of several coil springs.

Prefabricated type joint has high quality reliability because all of the main insulators are conducted routine test in the factory in accordance with IEC standards.

Transition Joint (110kV~161kV)



No.	Description	Material	No.	Description	Description
1	Conductor Sleeve	Copper	5	Compression Ring	Stainless Steel
2	Epoxy Unit	Epoxy & Copper Case	6	Insulating Flange	Epoxy
3	Stress Cone	EPR	7	Outer Case (A)	Copper Case
4	Bell Mouth	Epoxy	8	Outer Case (B)	Copper case

* All of cable diameters between Φ60 and Φ104 are also available

[Insulated Joint]

Product No.	XLPE Diameter [mm]	OF Diameter [mm]	ΦD [mm]	L [mm]
TCIO-13C-I01	66 - 68	45 - 87	370	2150
TCIO-13C-I02	71 - 73			
TCIO-13C-I03	77 - 79			
TCIO-13C-I04	91 - 93			
TCIO-13C-I05	98 - 100			

[Normal Joint]

Product No.	XLPE Diameter [mm]	OF Diameter [mm]	ΦD [mm]	L [mm]
TCIO-13C-N01	66 - 68	45 - 87	370	2150
TCIO-13C-N02	71 - 73			
TCIO-13C-N03	77 - 79			
TCIO-13C-N04	91 - 93			
TCIO-13C-N05	98 - 100			

LINK BOX

Link boxes are used with cable joints and terminations to connect the cable metallic sheath to earth or each other in order to limit the overvoltage induced by lightning, fault current and switching operations. The link box optimizes loss management in the underground system and reduces circulation current.

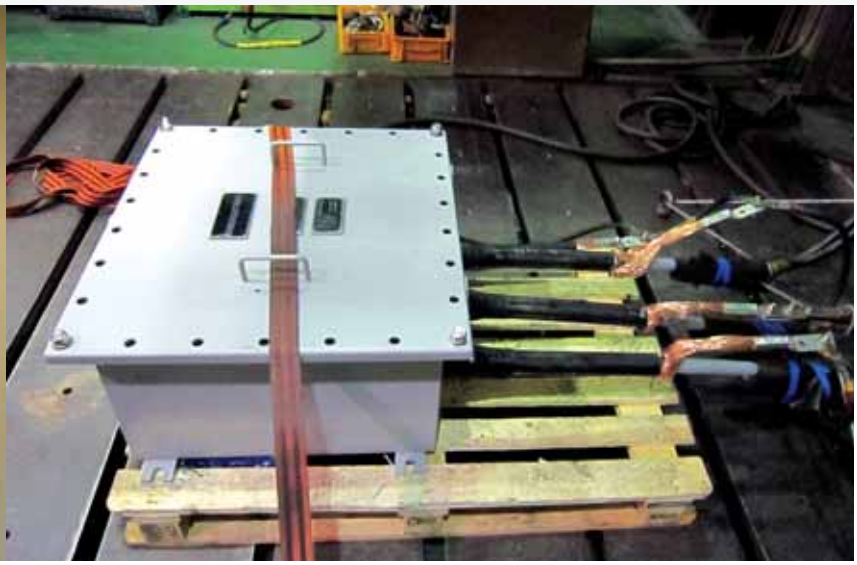
The material of outer protection case is stainless steel with epoxy coating. Several constructions of outer protection case are available at the request of the customer. We have developed and supplied three types of link boxes.

Compact type has been developed to optimize clearances between links and between link and earth in the range of DC and impulse withstand voltage.

Reinforcing type has been developed to apply against internal power arcing fault. The maximum internal arcing fault current is 40kA/0.2sec and type tested successfully. The Self-mounted type is also available.

The conductors in link box are made of tinned copper and can be installed easily by bolting, not compressing, without any special tool.

Sheath Voltage Limiters(SVLs) in link box are the gapless ZnO arresters capsulated by EPR housing or porcelain housing, which have the insulation resistance above 100MΩ at test voltage so that the sheath insulation can be checked without disconnecting SVLs.



Link Box

Compact Type

[Cross Bonding]

Product No.	Bonding Cable [mm²]	L [mm]	W [mm]	H [mm]
LB6X-CC200-S00	200	380	480	240
LB6X-CC300-S00	300	380	480	240
LB6X-CC400-S00	400	380	480	240
LB6X-CC500-S00	500	380	480	240

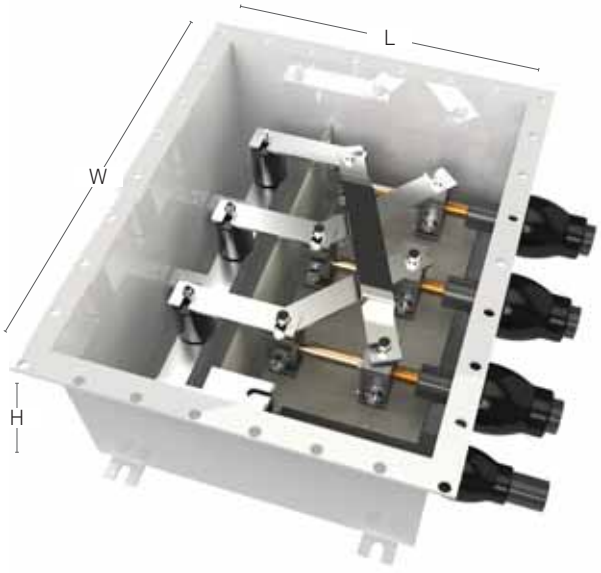
[Bonding with SVLs]

Product No.	Bonding Cable [mm²]	L [mm]	W [mm]	H [mm]
LB3A-SC200-S00	200	330	480	240
LB3A-SC300-S00	300	330	480	240
LB3A-SC400-S00	400	330	480	240
LB3A-SC500-S00	500	330	480	240

[Bonding with SVLs]

Product No.	Bonding Cable [mm²]	L [mm]	W [mm]	H [mm]
LB3B-SC200-S00	200	380	450	240
LB3B-SC300-S00	300	380	450	240
LB3B-SC400-S00	400	380	450	240
LB3B-SC500-S00	500	380	450	240

Reinforcing Type



[Cross Bonding]

Product No.	Bonding Cable [mm²]	L [mm]	W [mm]	H [mm]
LB6X-CC200-P00	200	650	800	340
LB6X-CC300-P00	300	650	800	340
LB6X-CC400-P00	400	650	800	340
LB6X-CC500-P00	500	650	800	340
LB6X-CC630-P00	630	650	800	340

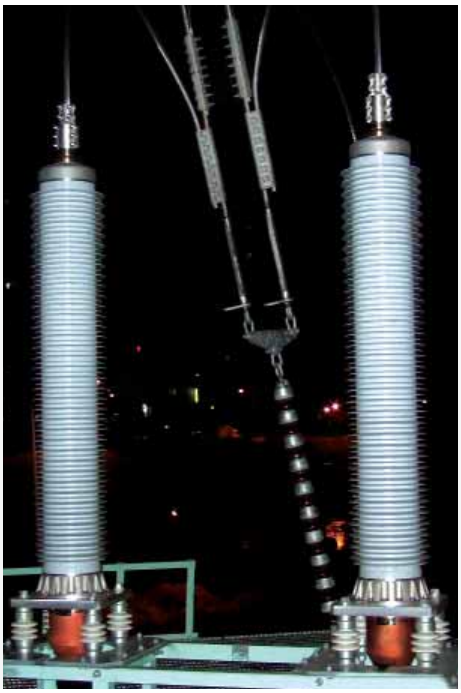
[Bonding with SVLs]

Product No.	Bonding Cable [mm²]	L [mm]	W [mm]	H [mm]
LB3A-SC200-P00	200	650	800	340
LB3A-SC300-P00	300	650	800	340
LB3A-SC400-P00	400	650	800	340
LB3A-SC500-P00	500	650	800	340
LB3A-SC630-P00	630	650	800	340

[Bonding with SVLs]

Product No.	Bonding Cable [mm²]	L [mm]	W [mm]	H [mm]
LB3B-SC200-P00	200	650	800	340
LB3B-SC300-P00	300	650	800	340
LB3B-SC400-P00	400	650	800	340
LB3B-SC500-P00	500	650	800	340
LB3B-SC630-P00	630	650	800	340

COMPOSITE HOLLOW BUSHING



Taihan has been developing and producing composite hollow bushing which consists of FRP tube and silicone rubber sheds to withstand various environmental conditions. The advantage of composite bushing over traditional porcelain bushing has been proven and is well known and accepted.

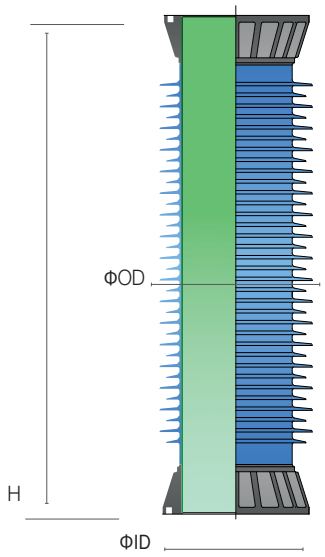
ADVANTAGES

- Reduced Risk for transport and assembly (no broken sheds)
- Explosion Safety for personnel and installation
- Excellent Seismic Performance
- High Insulating Performance in highly polluted environment

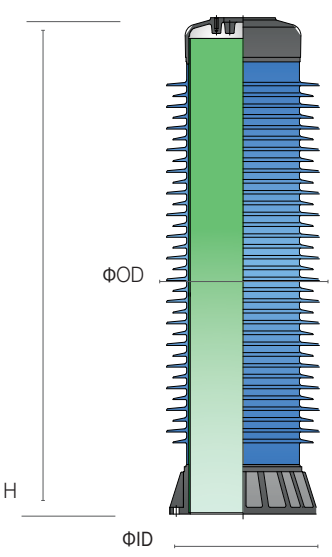
APPLICATIONS

- Cable Terminations
- Circuit Breakers
- Instrument Transformers
- Lightning arrester

[Normal flange]



[Cap flange]



* Other creepage distances are on request

Rated Voltage	Creepage Distance [mm]	Arcing Distance [mm]	H [mm]	ΦID [mm]	ΦOD [mm]
	5280	1495	1676	260	378
110kV~161kV	6720	1879	2060	260	378
	8150	2263	2444	260	378
220kV~275kV	Max.9100	Max.2308	2535	370	505

GIS EPOXY INSULATOR

Taihan has been manufacturing several kinds of cast epoxy insulators which are using in GIS systems. With our extensive knowledge regarding material technology with advanced process engineering skills, we have been developed and produced GIS insulator upto 800kV grade.

VACUUM CASTING TECHNOLOGY

- Void-free Insulation
- Excellent adhesion to metallic parts
- Net shape casting

PRODUCT

- Insulation Spacer
- Tri-post Insulator
- Earthing Terminal
- Insulation Supporter

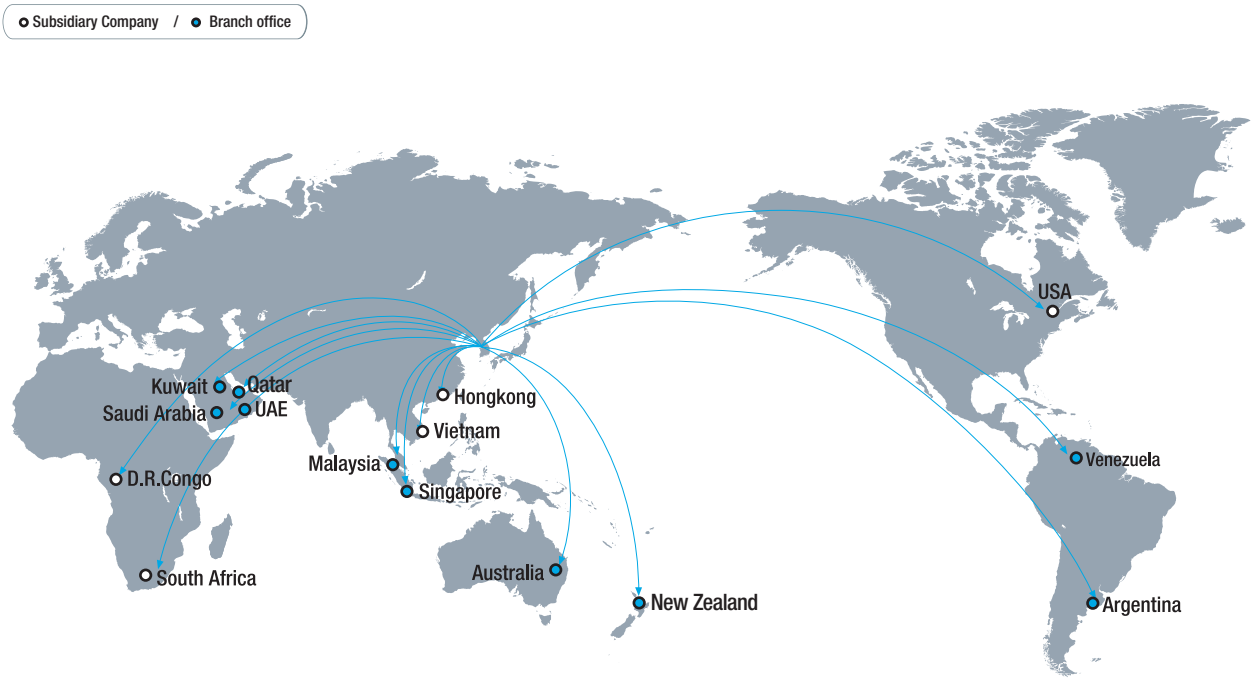
[420kV × 1P Spacer]

[170kV × 3P Spacer]

[550kV × 1P Spacer]

[420kV Tri-Post Insulator]

APPENDIX
Global Networks



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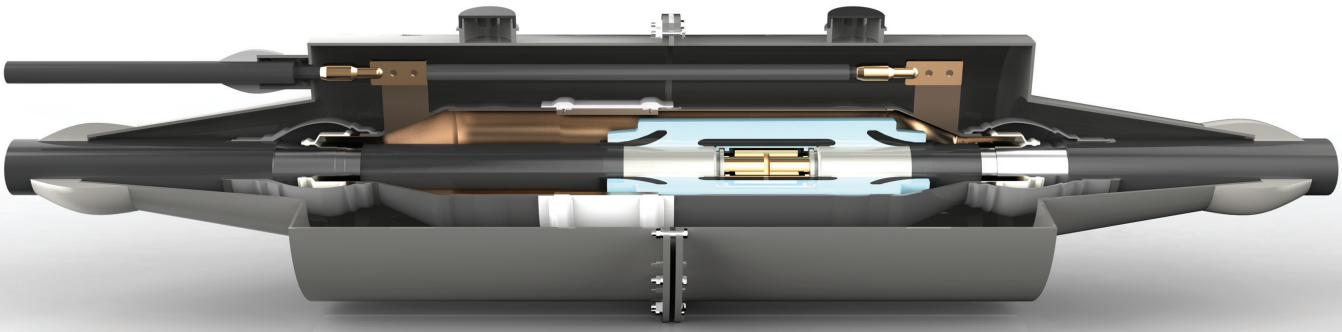

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