



*Product Catalogue*

# 产品选型手册

**电力电缆附件**

*Power Cable Accessories*

**黄石市深博电气有限公司**

*Huangshi Shenbo Electric Corporation Limited*

## COMPANY PROFILE

Huangshi Shenbo Electric Corporation Limited is located in Huangshi city, which is a famous industrial city at the Yangtze river. We are a large-scale comprehensive production enterprise of cable accessories integrating R&D, production and sales of high and low voltage cable accessories. Our factory now covers an area of 60 MU, and building area is 18000 square meters. We have more than 60 sets of advanced production equipments, including liquid/solid rubber injection molding machine, automatic flat vulcanization molding machine, high speed horizontal continuous extruder, open mill, domestic leading horizontal cold/heat shrinking expansion machine and other production equipment. The electrical and material performance testing laboratory with advanced domestic level ensures stable product quality and superior performance.

Now we have well-educated and experienced R&D experts, rigorous production engineers, professional sales team. There are more than 150 employees in our headquarter, and 80 employees in our subsidiaries. Our factory passed and fully implemented ISO 9001 Quality Management System, ISO14001 Environmental Management System and OHSAS 18001 Health and Safety System. All of our products are tested and certified in the Power Industry Electrical Equipment Quality Inspection and Testing Center, National Wire and Cable Quality Supervision and Inspection Center according to Chinese relevant national standards.

Our product portfolio covers: medium and high voltage cable accessories, separable cable connectors, high and low voltage busbar protection tubing, 110kV series of high-voltage cable accessories, 35kV and below cold and heat shrinkable cable accessories, 6~40.5kV European plug-in connectors, connectors with arrester of different voltage levels, cold and heat shrinkable protective tubing, hardware of power accessories, joint protection boxes, etc.

The business policy of our company has always been based on good faith, customer first, quality first and continuous improvement . Relying on strong R&D force and professional talent team and firmly guided by the market, the company strives to provide customers with high quality products and all round services.

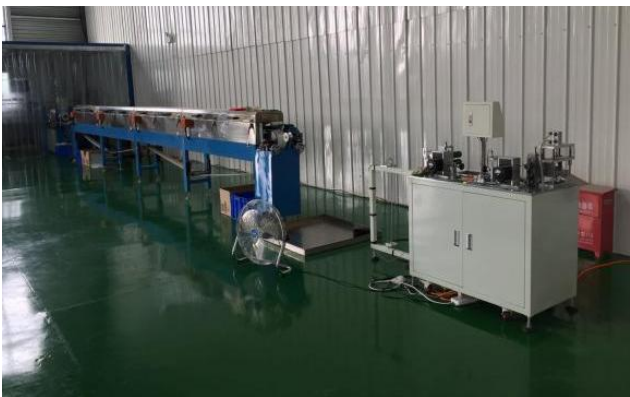
Our head quarter and subsidiary companies are listed as following:

- Huangshi Shenbo Electric Corporation Limited (headquarter and factory)
- Shenzhen Shenbo Electric Technologies Limited (Shenzhen company)
- Hubei Shenbo Electric Corporation Limited (Hubei company)
- NE Technologies (Shenzhen) Limited (export company)





**Production Facilities**

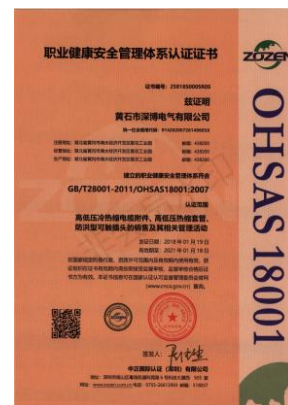
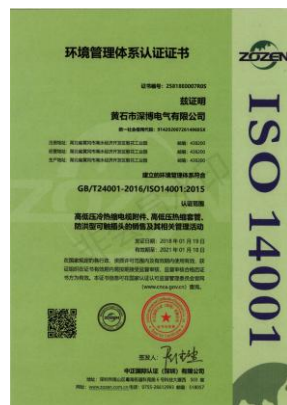




## Testing Equipments



## Certificates



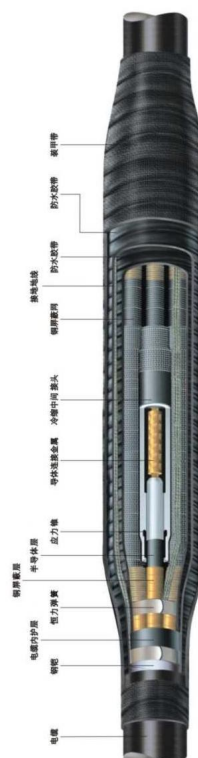
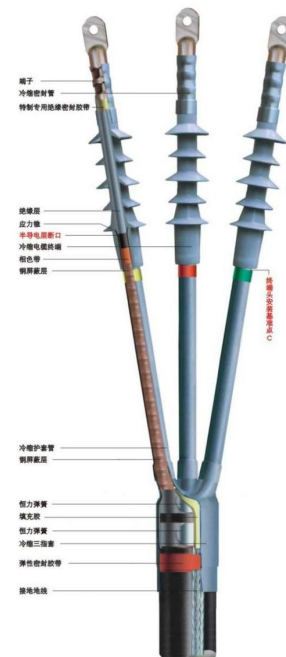
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## Silicon Rubber Cold Shrinkable Cable Accessories

## General Introduction

- Superior material. It is made by liquid silicone rubber material, which has good performance of high elasticity, insulation performance, aging resistance, hydrophobic, and anti-leakage. It can always maintain the proper radial pressure on the cable body after installation, and make inner interfaces closely be connected, and will not be shocked due to the respiratory effect of the cable during operation.
- The electrical stress control unit has stable performance. The stress control unit is geometric, based on the geometric curve to improve the electric field distortion, and integrated with the main insulation, effectively solving the problem of electrical stress concentration at the outer shield surface of the cable ensuring reliable insulation and safe operation.
- Easy to install. All products have been formed in the factory. No special training is required for installation, just twitch the support strip inside the main body. It does not require fire in using, saves time and effort, and fully retracts the automatic reset technology. It is easy to install without sweating, greatly reducing the quality accidents caused by improper operation, and solving the phenomenon that the prefabricated cable accessories are not tightly contracted or can not enter.
- Wide application. It has good performance of dirty resistance, aging, water repellency and has excellent cold and heat resistance ability. It is especially suitable for high altitude areas, cold areas, humid areas, salt spray areas and heavily polluted areas. Fire is not needed in its application. It is especially suitable for inflammable and explosive places such as petroleum, chemical, mining and tunnels.
- Good quality control. Advanced equipments are used in the production. The high degree of automation and whole-process quality control can ensure the reliable performance.
- Excellent design to ensure the safety and reliability. There is no seam line on the surface of the cold shrink tube, and the appearance is smooth and beautiful. The outer semiconducting layer of the intermediate joint product is injection molded, which has a corresponding thickness and has a stable surface resistance, so as to ensure the performance of the outer semiconducting layer and the safety of the entire joint. The middle inner conductive tube is lengthened, and can satisfy a large installation size deviation range to reduce installation errors. Its general application is very wide as a standard product can be used for several cable diameters, and it is easy to select and manage.



## 0.6/1 kV Cold Shrinkable Termination and Joint

### General Introduction



1kV Four-core Cold Shrinkable Termination



1kV Cold Shrinkable Joint

- It is used for the coordination installation for not higher than 0.6/1kV cross-linked cables, and suitable for cross section of 10~400mm<sup>2</sup>.
- Products are divided into single-core, two-core, three-core, four-core, five-core termination and joint. Among them, four-core and five-core can be unequal cores.
- Wide application, anti-pollution, anti-aging, good water repellency, small size, light weight, reliable performance.
- It is especially suitable for high altitude areas, cold areas, wet areas, salt spray areas and heavily polluted areas. Fire is not required in the installation, and it is especially suitable for use in flammable and explosive places such as petroleum, chemical, mining, tunnels, etc.

Model Selection Table

Product name	Model No.	For cable section mm <sup>2</sup>	Product name	Model No.	For cable section mm <sup>2</sup>
0.6/1kV single-core cold shrinkable termination	HS-TLS-1/1x0	10-16	0.6/1kV single-core cold shrinkable joint	HS-JLS-1/1x0	10-16
	HS-TLS-1/1x1	25-50		HS-JLS-1/1x1	25-50
	HS-TLS-1/1x2	70-120		H S-JLS-1/1x2	70-120
	HS-TLS-1/1x3	150-240		H S-JLS-1/1x3	150-240
	HS-TLS-1/1x4	300-400		H S-JLS-1/1x4	300-400
0.6/1kV two-core cold shrinkable termination	HS-TLS-1/2x0	10-16	0.6/1kV two-core cold shrinkable joint	H S-JLS-1/2x0	10-16
	HS-TLS-1/2x1	25-50		H S-JLS-1/2x1	25-50
	HS-TLS-1/2x2	70-120		H S-JLS-1/2x2	70-120
	HS-TLS-1/2x3	150-240		H S-JLS-1/2x3	150-240
	HS-TLS-1/2x4	300-400		H S-JLS-1/2x4	300-400
0.6/1kV three-core cold shrinkable termination	HS-TLS-1/3x0	10-16	0.6/1kV three-core cold shrinkable joint	H S-JLS-1/3x0	10-16
	HS-TLS-1/3x1	25-50		H S-JLS-1/3x1	25-50
	HS-TLS-1/3x2	7-120		H S-JLS-1/3x2	70-120
	HS-TLS-1/3x3	150-240		H S-JLS-1/3x3	150-240
	HS-TLS-1/3x4	300-400		H S-JLS-1/3x4	300-400
0.6/1kV four-core cold shrinkable termination	HS-TLS-1/4x0	10-16	0.6/1kV four-core cold shrinkable joint	H S-JLS-1/4x0	10-16
	HS-TLS-1/4x1	25-50		H S-JLS-1/4x1	25-50
	HS-TLS-1/4x2	70-120		H S-JLS-1/4x2	70-120
	HS-TLS-1/4x3	150-240		H S-JLS-1/4x3	150-240
	HS-TLS-1/4x4	300-400		H S-JLS-1/4x4	300-400
0.6/1kV five-core cold shrinkable termination	HS-TLS-1/5x0	10-16	0.6/1kV five-core cold shrinkable joint	H S-JLS-1/5x0	10-16
	HS-TLS-1/5x1	25-50		H S-JLS-1/5x1	25-50
	HS-TLS-1/5x2	70-120		H S-JLS-1/5x2	70-120
	HS-TLS-1/5x3	150-240		H S-JLS-1/5x3	150-240
	HS-TLS-1/5x4	300-400		H S-JLS-1/5x4	300-400



## 10kV Cold Shrinkable Termination and Joint

### General Introduction



10kV Shrinkable 3-core Indoor Termination



10kV Shrinkable 3-core Outdoor Termination



10kV Shrinkable 3-core Joint

- It is used for connection of cross-linked power cable of 3.6/6kV, 6/6kV, 6/10kV, 8.7/10kV, 8.7/15(17.5) kV and below voltage. It is suitable for cable cross section from 16 to 630mm<sup>2</sup>.
- Products are divided into single-core, three-core, four-core termination and joint; four-core can be unequal cores.
- Wide application, anti-pollution, anti-aging, good water repellency, small size, light weight, reliable performance.
- It is especially suitable for high altitude areas, cold areas, wet areas, salt spray areas and heavily polluted areas. Fire is not required in its installation, and it is especially suitable for use in flammable and explosive places such as petroleum, chemical, mining, tunnels, etc.

### Model Selection Table

Name	Model No.	For cable section mm <sup>2</sup>	Insulation outer diameter mm
10kV single-core indoor termination	HS-NLS-10/1x1	25-50	12.3~20.7
	HS-NLS-10/1x2	70-120	20.7~26.9
	HS-NLS-10/1x3	150-240	26.5~32.7
	HS-NLS-10/1x4	300-400	30.4~35.4
	HS-NLS-10/1x5	500-630	34.2~40.3
10kV single-core outdoor termination	HS-WLS-10/1x1	25-50	12.3~20.7
	HS-WLS-10/1x2	70-120	20.7~26.9
	HS-WLS-10/1x3	150-240	26.5~32.7
	HS-WLS-10/1x4	300-400	30.4~35.4
	HS-WLS-10/1x5	500-630	34.2~40.3
10kV single-core joint	HS-JLS-10/1x1	25-50	12.3~20.7
	HS-JLS-10/1x2	70-120	20.7~26.9
	HS-JLS-10/1x3	150-240	26.5~32.7
	HS-JLS-10/1x4	300-400	30.4~35.4
	HS-JLS-10/1x5	500-630	34.2~40.3

Name	Model No.	For cable section mm <sup>2</sup>	Insulation outer diameter mm
10kV three-core indoor termination	HS-NLS-10/3x1	25-50	12.3~20.7
	HS-NLS-10/3x2	70-120	20.7~26.9
	HS-NLS-10/3x3	150-240	26.5~32.7
	HS-NLS-10/3x4	300-400	30.4~35.4
	HS-NLS-10/3x5	500-630	34.2~40.3
10kV three-core outdoor termination	HS-WLS-10/3x1	25-50	12.3~20.7
	HS-WLS-10/3x2	70-120	20.7~26.9
	HS-WLS-10/3x3	150-240	26.5~32.7
	HS-WLS-10/3x4	300-400	30.4~35.4
	HS-WLS-10/3x5	500-630	34.2~40.3
10kV three-core joint	HS-JLS-10/3x1	25-50	12.3~20.7
	HS-JLS-10/3x2	70-120	20.7~26.9
	HS-JLS-10/3x3	150-240	26.5~32.7
	HS-JLS-10/3x4	300-400	30.4~35.4
	HS-JLS-10/3x5	500-630	34.2~40.3



## 20kV Cold Shrinkable Termination and Joint

### General Introduction



20kV Shrinkable 3-core Indoor Termination

20kV Shrinkable 3-core Outdoor Termination

20kV Shrinkable 3-core Joint

- It is used for connection of cross-linked power cable of 12/20KV,18/30KV and below voltage. It is suitable for cable cross section from 35 to 630mm<sup>2</sup>.
- Products are divided into single-core, three-core, four-core termination and joint; four-core can be unequal cores.
- Wide application, anti-pollution, anti-aging, good water repellency, small size, light weight, reliable performance.
- It is especially suitable for high altitude areas, cold areas, wet areas, salt spray areas and heavily polluted areas. Fire is not required in its installation, and it is especially suitable for use in flammable and explosive places such as petroleum, chemical, mining, tunnels, etc.

### Model Selection Table

Name	Model No.	For cable section mm <sup>2</sup>	Insulation outer diameter mm
20kV single-core indoor termination	HS-NLS-20/1x1	35-70	18.0~22.5
	HS-NLS-20/1x2	95-185	23.9~29.3
	HS-NLS-20/1x3	240-400	28.9~34.5
	HS-NLS-20/1x4	500-630	34.3~39.5
20kV single-core outdoor termination	HS-WLS-20/1x1	35-70	18.0~22.5
	HS-WLS-20/1x2	95-185	23.9~29.3
	HS-WLS-20/1x3	240-400	28.9~34.5
	HS-WLS-20/1x4	500-630	34.3~39.5
20kV single-core joint	HS-JLS-20/1x1	35-70	18.0~22.5
	HS-JLS-20/1x2	95-185	23.9~29.3
	HS-JLS-20/1x3	240-400	28.9~34.5
	HS-JLS-20/1x4	500-630	34.3~39.5

Name	Model No.	For cable section mm <sup>2</sup>	Insulation outer diameter mm
20kV single-core indoor termination	HS-NLS-20/1x1	35-70	18.0~22.5
	HS-NLS-20/1x2	95-185	23.9~29.3
	HS-NLS-20/1x3	240-400	28.9~34.5
	HS-NLS-20/1x4	500-630	34.3~39.5
20kV single-core outdoor termination	HS-WLS-20/1x1	35-70	18.0~22.5
	HS-WLS-20/1x2	95-185	23.9~29.3
	HS-WLS-20/1x3	240-400	28.9~34.5
	HS-WLS-20/1x4	500-630	34.3~39.5
20kV single-core joint	HS-JLS-20/1x1	35-70	18.0~22.5
	HS-JLS-20/1x2	95-185	23.9~29.3
	HS-JLS-20/1x3	240-400	28.9~34.5
	HS-JLS-20/1x4	500-630	34.3~39.5

## 27.5kV Cold Shrinkable Termination and Joint

It is used for the transmission line in the electrified railway with voltage level of 27.5kV. The product is made of high elasticity and special high quality silicone rubber. The structure is compact and the performance is excellent. It acts as sealing, insulation and stress evacuation. It is easy to install.

### 35kV Cold Shrinkable Termination and Joint

#### General Introduction



35kV Shrinkable 3-core Indoor Termination    35kV Shrinkable 3-core Outdoor Termination    35kV Shrinkable 3-core Joint

- It is used for the installation of not more than 21/35kV, 26/35kV cross-linked cables, and suitable for cable cross section of 35~630mm<sup>2</sup>.
- Products are divided into single-core, three-core termination and joint.
- Wide application, anti-pollution, anti-aging, good water repellency, small size, light weight, reliable performance.
- It is especially suitable for high altitude areas, cold areas, wet areas, salt spray areas and heavily polluted areas. Fire is not required in its installation, and it is especially suitable for use in flammable and explosive places such as petroleum, chemical, mining, tunnels, etc.

#### Model Selection Table

Name	Model No.	For cable section mm <sup>2</sup>	Insulation outer diameter mm
35kV single-core indoor termination	HS-NLS-35/1x1	35-70	29.5~35.1
	HS-NLS-35/1x2	95-185	33.4~40.0
	HS-NLS-35/1x3	240-400	37.6~47.4
	HS-NLS-35/1x4	500-630	46.3~56.3
35kV single-core outdoor termination	HS-WLS-35/1x1	35-70	29.5~35.1
	HS-WLS-35/1x2	95-185	33.4~40.0
	HS-WLS-35/1x3	240-400	37.6~47.4
	HS-WLS-35/1x4	500-630	46.3~56.3
35kV single-core joint	HS-JLS-35/1x1	35-70	29.5~35.1
	HS-JLS-35/1x2	95-185	33.4~40.0
	HS-JLS-35/1x3	240-400	37.6~47.4
	HS-JLS-35/1x4	500-630	46.3~56.3

Name	Model No.	For cable section mm <sup>2</sup>	Insulation outer diameter mm
35kV three-core indoor termination	HS-NLS-35/3x1	35-70	29.5~35.1
	HS-NLS-35/3x2	95-185	33.4~40.0
	HS-NLS-35/3x3	240-400	37.6~47.4
	HS-NLS-35/3x4	500-630	46.3~56.3
35kV three-core outdoor termination	HS-WLS-35/3x1	35-70	29.5~35.1
	HS-WLS-35/3x2	95-185	33.4~40.0
	HS-WLS-35/3x3	240-400	37.6~47.4
	HS-WLS-35/3x4	500-630	46.3~56.3
35kV three-core joint	HS-JLS-35/3x1	35-70	29.5~35.1
	HS-JLS-35/3x2	95-185	33.4~40.0
	HS-JLS-35/3x3	240-400	37.6~47.4
	HS-JLS-35/3x4	500-630	46.3~56.3

### Main Performance Parameters of Liquid Silicone Rubber

Properties	Insulating adhesive	Conductive adhesive	Test basis
Hardness (shore A)	40±5	45±5	GB531
Tensile strength (MPa)	≥ 8.0	≥ 6.0	GB528
Elongation at break (%)	≥ 650	≥ 500	GB528
Tear strength (n/min)	≥ 25	≥ 18	GB/T529
Volume resistance ( $\Omega \cdot \text{cm}$ )	$\geq 1.0 \times 10^{14}$	/	GB1692
Dielectric constant (50hz)	2.8~3.5	/	GB1693
Breakdown voltage (MV/M)	≥ 22	/	GB/T507
Resistance to electric leakage	≥ 1A3.5 class	/	GB/T6553
Tensile permanent deformation (%)	≤ 10	≤ 10	2SO2285

### Ex-factory Testing Standards

No.	Test item	Standard requirements					
		1kV series	10kV series	20kV series 12/20	20kV series 18/20 (30)	27.5kV series	35kV series
1	5 min AC power frequency withstand voltage	8kV	39kV	54kV	81kV	124kV	117kV
2	Partial discharge at room temperature	/	15kV ≤ 10pc	20kV ≤ 10pc	30kV ≤ 10pc	48kV ≤ 10pc	45kV ≤ 10pc
3	Lightning impulse (peak)	/	95kV	125kV	170kV	200kV	200kV




## Explosion Proof Box

### General Introduction

When the metal fittings are not crimped tightly, the cable intermediate joint will be heated for the long-term operation, which may cause slowly heat aging of the cable joint, and the insulation level of the joint body will be reduced. When the time lasts for a long time, and when the insulation level is reduced to not withstand the supply voltage, a breakdown accident may occur. Or the partial discharge may be too large after installation because of the quality of the joint itself. Although the voltage withstand test can be successfully passed during the acceptance process, long-term operation will gradually increase the discharge capacity of the joint, and it will also lead to breakdown of the insulation finally, and then lead to single-phase grounding or phase-to-phase short-circuit failure. If the cable joint is not sealed, the air in the environment will cause the spark to ignite. Further more, a cable fire or explosion may occur, and cause a secondary accident to damage other electrical equipment or igniting the cable.

No.	Product name	Model No.	Applicable cable	Specific reference size	Remarks	Product picture
1	FRP cable protection box (glue filling type)	HMFB-GJM	10kV three-core 25-300 35kV single-core 50-240	Length 1600mm, intermediate inner diameter $\Phi$ 160mm, two end diameter $\Phi$ 110mm, gum filling volume 21.5-25kg	Four pieces	
2	FRP cable protection box (glue filling type)	HMFB-GJL	10kV three-core 400-500 35kV single-core 300-500	Length 1800mm, intermediate inner diameter $\Phi$ 180mm, two end diameter $\Phi$ 100mm, gum filling volume 25-28kg	Two pieces	
3	FRP cable protection box (glue filling type)	HMFB-GJS	10kV single-core 25-630	Length 1300mm, intermediate inner diameter $\Phi$ 180mm, two end diameter $\Phi$ 180mm, gum filling volume 17-25kg	Four pieces	
4	SMC flame retardant cable intermediate protection box	HMFB-SCMB F	10kV single-core 25-630 10kV three-core 50-400	Length 1600mm, intermediate inner diameter $\Phi$ 180mm, two end diameter $\Phi$ 130mm	Can be filled with fireproof material	

**Explosion Proof Box**

No.	Product name	Model No.	Applicable cable	Specific reference size	Remarks	Product picture
5	10kV metal cable explosion proof shell	HMFB- I	10kV three-core 50-300	Length 1500mm, intermediate inner diameter $\Phi 150\text{mm}$ , two port diameter $\Phi 105\text{mm}$ ,	Can be filled with fireproof material	
6	10kV metal cable explosion proof shell	HMFB- II	10kV three-core 400-500	Length 1500mm, intermediate inner diameter $\Phi 180\text{mm}$ , two port diameter $\Phi 115\text{mm}$ ,	Can be filled with fireproof material	
7	35kV cable intermediate FRP protection box	HMFB-SMC3 5GJ	35kV three-core 50-400	Length 2400mm, intermediate inner diameter $\Phi 250\text{mm}$ , two end diameter $\Phi 130\text{mm}$ , gum filling amount 45-50kg	Four pieces	
8	Stainless steel cable intermediate explosion proof box	HMFB-SSFBL	8.7-20kV 50-400	Length 1400mm, intermediate inner diameter $\Phi 180\text{mm}$ , two end diameter $\Phi 110\text{mm}$ ,	Equipped with fireproof materials	
9	Stainless steel cable intermediate explosion proof box	HMFB-SSFBL M	8.7-20kV 50-400	Length 900mm, intermediate inner diameter $\Phi 180\text{mm}$ , two end diameter $\Phi 100\text{mm}$ ,	Equipped with fireproof materials	

**IEC European Style Cable Accessories**

## General Introduction

The European separable cable accessories are widely used in the electrical equipment cabinets, such as box type substations, ring main units, gas filled cabinets and cable distribution boxes and etc. The utility has the advantages of small size, light weight, safety and reliability, convenient combination. They are used in distribution networks with features of flexible assembly, fully sealed, fully insulated, maintenance free, flood resistant, and pollution resistant. The shielded surface has a semi-conductive layer. During the working or when the grounding is good, if an operator touches the surface of the product, it can be avoided to hurt the operator or damage the equipment, and it greatly improves the safety of the equipment and the operability of the power supply.

The separable cable accessories are made of silicone rubber. The material has good insulation properties, corona resistance and electrical tracking resistance. It can strengthen the adaptability of the cable accessories to the fluctuations of the electrical system, so that it matches the requirements of the cable in terms of electrical performance. The material has good flame retardancy, self-extinguishing properties and heat resistance. In the event of an extreme accident, the consequences of the accident can be minimized and the spread of the accident can be prevented to a certain extension and improve the reliability of the system. At the same time, the material is UV-resistant, anti-oxidant and water-repellent, suitable for special occasions and polluted environments.

The design conforms to the DIN47636 standard, and the experiment meets the requirements of IEC60502, GB/T12706 and other relevant standards. Our standard management system and strict quality control can ensure the quality of the products.

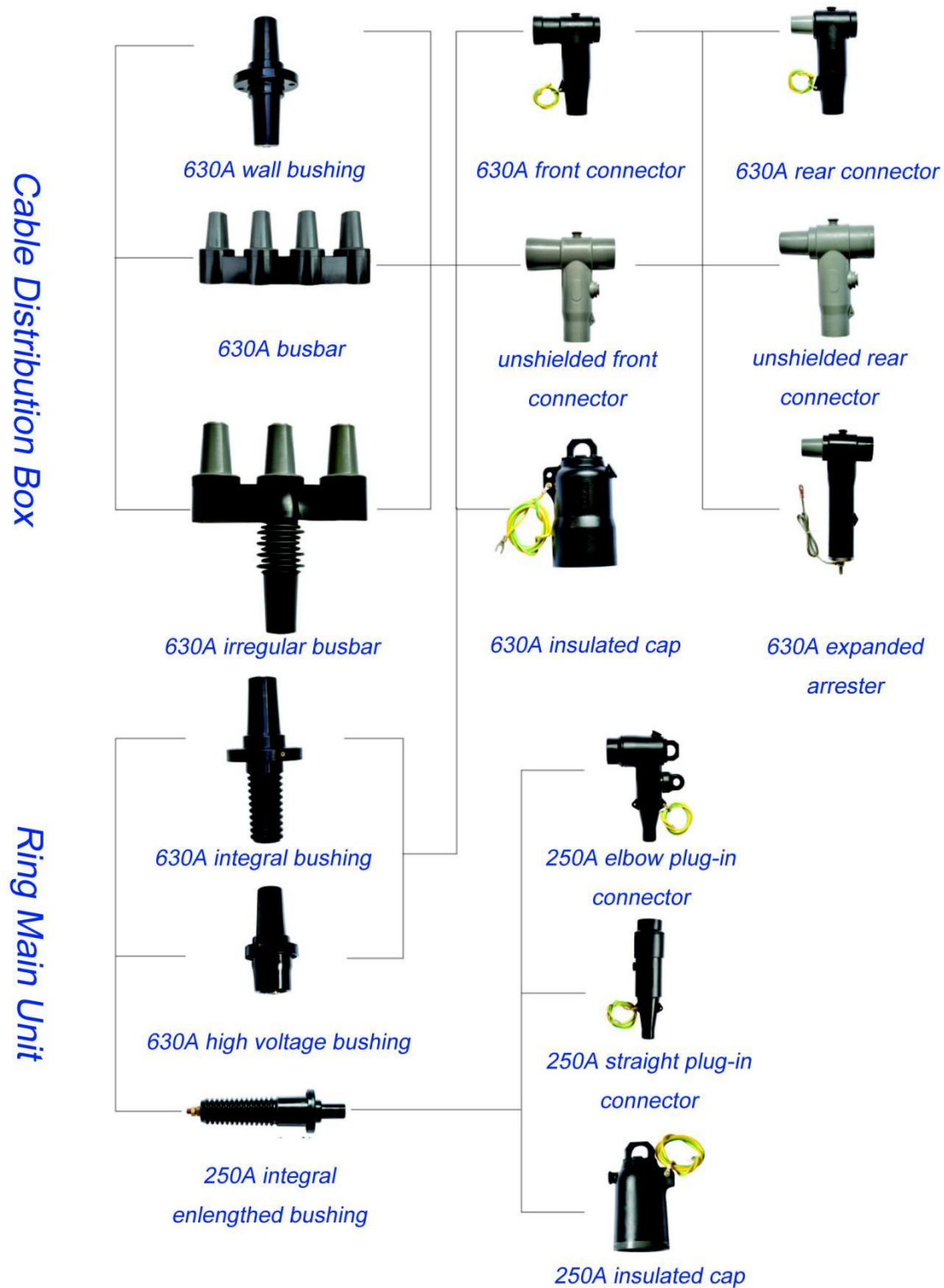
## Model explanation

Type	Code	Type	Code
T type front connector	Q	Plug-in elbow connector	ZT
T type rear connector	H	Plug-in straight connector	ZC
Insulated cap	JYM	PT plug-in elbow connector	PT
T type front connector with surge arrester	QB	Front $\pi$ type surge arrester	Q $\pi$
T type rear connector with surge arrester	HB	Rear $\pi$ type surge arrester	H $\pi$
T shaped connector	DZ	Extended T connector	CDZ
Cross connector	S Z	Extended cross connector	CSZ
Busbar connecting rod	MLG	Angle connector	JD
Side busbar connector	CML	Side busbar plug	CM D
Side busbar socket	CMZ		



IEC European Cable Accessories

Introduction of European cable accessories



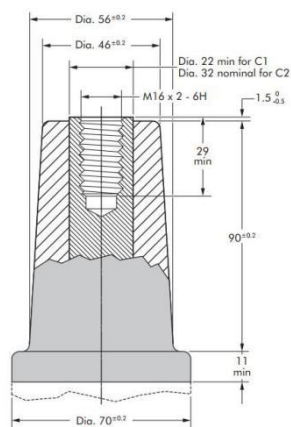
## IEC European Separable Cable Accessories performance and parameter standards

## Performance parameters of European 630A separable cable termination

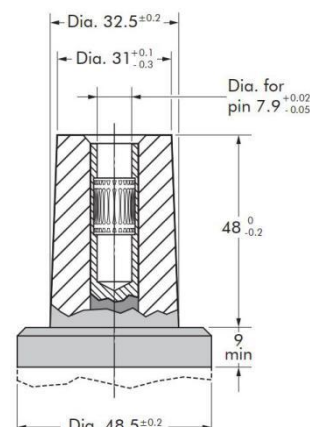
<b>Rated voltage</b>	kV	8.7/15 (17.5)	12/20 (24)	18/30 (36)
<b>Rated current</b>	A	630	630	630
<b>Power frequency withstand voltage</b>	kV/min	42/5	54/5	81/5
<b>Partial discharge</b>	<pC (kV)	<10 (15)	<10 (20)	<10 (31)
<b>Thermal stable current</b>	kA/s	22.8/2	24/2	23/2
<b>Dynamic stable current</b>	kA	80.8	84	83
<b>Lightning impulse 1.5/50<math>\mu</math>s</b>	kV	95	125	170
<b>Applicable cable section</b>	mm <sup>2</sup>	25~500	35~500	35~500

## Performance parameter of European 250A separable cable termination

<b>Rated voltage</b>	kV	8.7/15 (17.5)	12/20 (24)	18/30 (36)
<b>Rated current</b>	A	250	250	250
<b>Power frequency withstand voltage</b>	kV/min	39/5	54/5	81/5
<b>Partial discharge</b>	<pC (kV)	<10 (15)	<10 (20)	<10 (31)
<b>Thermal stable current</b>	kA/s	10/0.8	10/0.8	10/0.8
<b>Dynamic stable current</b>	kA	21.9	21.9	21.9
<b>Applicable cable section</b>	mm <sup>2</sup>	25~120	35~120	35~120



630A separable cable termination



250A separable cable termination

## 10kV Touchable Front/Rear Plug-in Connector

### General Introduction

Touchable front/rear plug-in connector is used in connecting cable distribution box, ring main unit, box substation and other equipment to connect with power cable, which can realize multiple branch supply of electricity. It is used for the fully sealed connection of  $\phi 46/\phi 56/91.5/\text{M16C}$  bushing, and suitable for 8.7/10kV, 8.7/15kV cross-linked cable with the cable section of 25~500mm<sup>2</sup>.

### Product Features

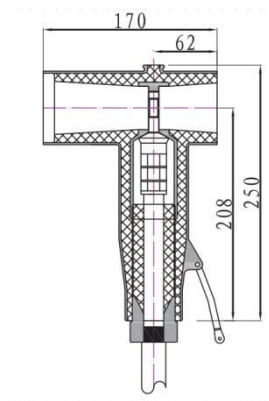
- Fully insulated, sealed, shielded and touchable.
- With the third generation injection technology, the electrical performance is superior, and the application is safe and reliable.
- Small space, unique structure design, convenient installation, high tolerance.
- Geometric stress cone design can better handle the electric field strength at the cable fracture.
- Expandability and flexible disassembly can finish cable "TT" connection.

### Photos and Drawings

Flood-proof and touchable front plug-in connector



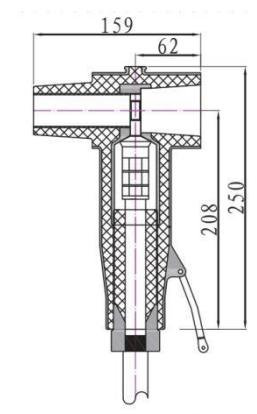
Model: HS-10/630-P-Q



Flood-proof and touchable rear plug-in connector



Model: HS-10/630-P-H





## 10kV Untouchable Front/Rear Plug-in Connector

### General Introduction

Untouchable type front/rear plug-in connector is used in connecting cable distribution box, ring main unit, box substation and other equipment to connect with power cable, which can realize multiple branch supply of electricity. It is used for the fully sealed connection of  $\phi 46/\phi 56/91.5/M16C$  bushing, and suitable for 8.7/10kV, 8.7/15kV cross-linked cable with the cable section of 25~500mm<sup>2</sup>.

### Product Features

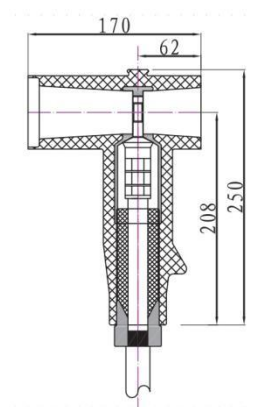
- Fully insulated and sealed.
- With the injection technology, the electrical performance is superior, and the use is safe and reliable.
- Small space, unique structure design, convenient installation, high tolerance.
- Geometric stress cone design can better handle the electric field strength at the cable fracture.
- Expandability and flexible disassembly can finish cable "TT" connection.

### Photos and Drawings

#### Flood-proof and untouchable front plug-in connector



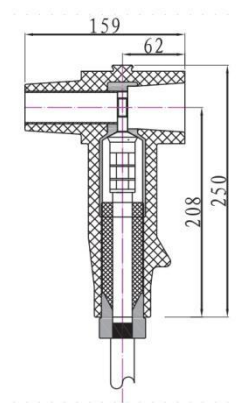
Model: HS-10/630-Q



#### Flood-proof and untouchable rear plug-in connector



Model: HS-10/630-H



## 10kV Shielded Plug-in Elbow/straight Connector

### General Introduction

The shielded plug-in elbow/straight connector is used for the connection between the transformer outgoing unit of the ring main unit and the power cable. It is used for  $\phi 30.9/\phi 32.5/\phi 8$  A type bushing connection, and suitable for 8.7/10kV and 8.7/15kV cross-linked cable, with the cable section of 25~120mm<sup>2</sup>. Its special anti-loose structure can realize elastic compression.

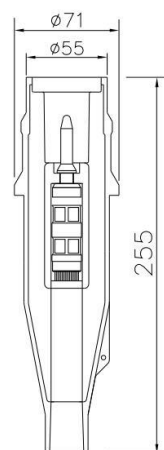
### Product Features

- Fully insulated, sealed and shielded.
- With the third generation injection technology, the electrical performance is superior, and the application is safe and reliable.
- Anti-loose pressing device ensures its reliability.
- The stress cone is designed as an integrity, which can well deal with the electric field strength at the cable fracture.

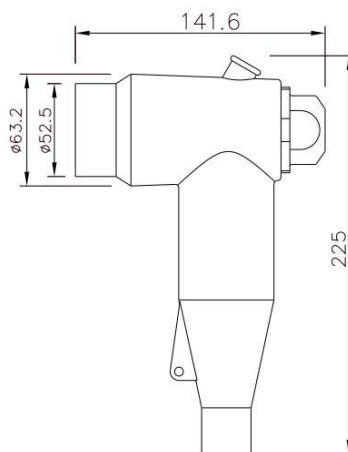
### Photos and Drawings



Model: HS-10/250-P-ZC



Model: HS-10/250-P-ZT



## 24kV Shielded Front/Rear Plug-in Connector

### General Introduction

Shielded front/rear plug-in connector is used in cable distribution box, ring main unit, box substation and other equipment to connect with power cable, which can realize multiple branch supply of electricity. It is used for the fully sealed connection of  $\phi 46/\phi 56/91.5/\text{M16C}$  bushing, and suitable for 12/20kV, 18/30kV cross-linked cable with the cable section of 25~500mm<sup>2</sup>.

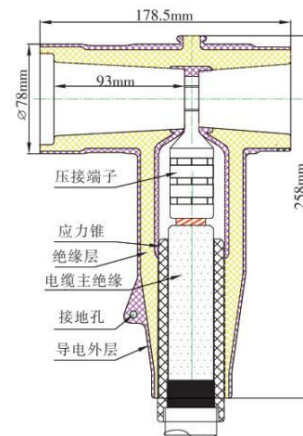
### Product Features

- Fully insulated, sealed, and shielded.
- With the third generation injection technology, the electrical performance is superior, and the application is safe and reliable.
- Small space, unique structure design, convenient installation, high tolerance.
- Geometric stress cone design can better handle the electric field strength at the cable fracture.
- Expandability and flexible disassembly can finish cable "TT" connection.

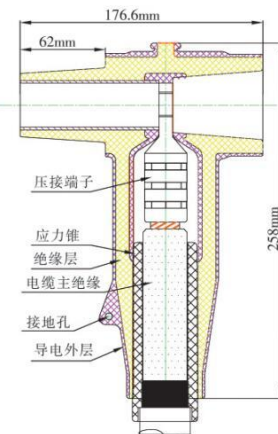
### Photos and Drawings



Model: HS-24/630-P-Q



Model: HS-24/630-P-H



## 24kV Shielded Plug-in Elbow/Straight Connector

### General Introduction

Shielded plug-in elbow/straight connector is used for the connection between the transformer outgoing unit of the ring main unit and the power cable. It is used for  $\phi 30.9/\phi 32.5/\phi 8$  A type bushing connection, and suitable for 12/20kV and 18/30kV cross-linked cable with the cable section of 35~120mm<sup>2</sup>. Its special anti-loose structure can realize elastic compression.

### Product Features

- Fully insulated, sealed and shielded.
- With the third generation injection technology, the electrical performance is superior, and the application is safe and reliable.
- Anti-loose pressing device ensures its reliability.

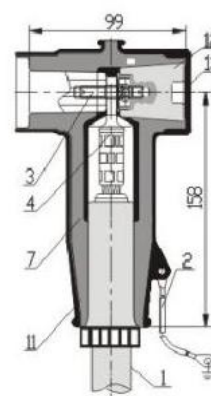
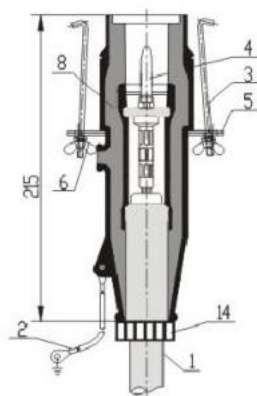
### Photos and Drawings



Model: HS-24/250-P-ZC



Model: HS-24/250-P-ZT



- |                      |               |                          |               |                   |          |                   |
|----------------------|---------------|--------------------------|---------------|-------------------|----------|-------------------|
| 1.Cable              | 2.Ground wire | 3.Bolt                   | 4.Termination | 5.Platen          | 6.Nut    | 7.Elbow connector |
| 8.Straight connector |               | 9.Power test point cover |               | 10.Conducting rod | 11.Joint |                   |
| 12.Insulated plug    |               | 13.Sealing cap           |               | 14.Positioning    |          |                   |



## 630A/250A Insulated Cap

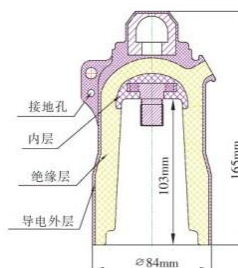
### General Introduction

630A/250A insulation cap provides insulation protection for live bushing and dust-proof and moisture-proof protection for non live bushing. It can be installed on the sleeve and multiple socket. When spare outgoing lines are reserved, they must be sealed with insulated cap.

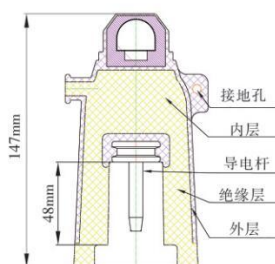
### Photos and Drawings



Model: HS-10(24)630-P-JYM



Model: HS-10(24)250-P-JYM



## 15/24kV Shielded Plug-in Elbow PT Connector

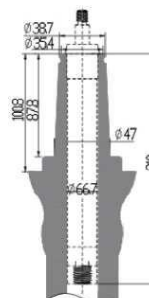
### General Introduction

It is used to provide operation power for electric operation mechanism, or provide full insulation, sealing and shield connection for the high voltage side of JDZ 12A-10R transformer for metering protection. It is applicable to the cable of 25~50mm<sup>2</sup>. The plug-in connection has a special anti-loose structure.

### Photos and Drawings



Model: HS-10/200-PT



## Plug-in Connector with Arrester

### General Introduction

Plug-in connector with arrester provides lightning protection and over-voltage protection for electrical equipment. It can ensure safe operation of power grid.

### Photos and Drawings



Model: HS-17/45-Qπ



Model: HS-17/45-Hπ



Model: HS-17/50(45)-P-HB



Model: HS-26/66)-P-HB

### Parameters of Surge Arrester Core

Name and type	HY5WZ-17/45(50)	HY5WZ-26/66	HY5WZ-34/85(90)	HY5WZ-51/134
System nominal voltage	10kV (r.m.s)	20kV (r.m.s)	20kV (r.m.s)	35kV (r.m.s)
Rated voltage	17kV	26kV	34kV	51kV
Continuous operating voltage	13.6kV	20.8kV	27.2kV	13.6kV
Residual voltage under 5kA lightning impulse current	45 (50) kV	66kV	85 (90) kV	134kV
Voltage U <sub>1mA</sub> at DC 1mA	≧ 25kV	≧ 37kV	≧ 48kV	≧ 73kV
DC leakage current at 0.75U <sub>1mA</sub>	≦ 50μA	≦ 50μA	≦ 50μA	≦ 50μA
2ms square wave shock capacity	150A	180A	180A	400A

## Top Busbar Connector Kits

### General Introduction

European style cross joint and T-joint are suitable for ABB, SIEMENS, TECHNISCHE and other brands, as well as full insulation and full sealing connection at the top or bottom of the ring main unit. There are two different kind, one is shielding, and the other is non shielding. Matching with the standard socket of load switch, it is also used in branch box with switch.

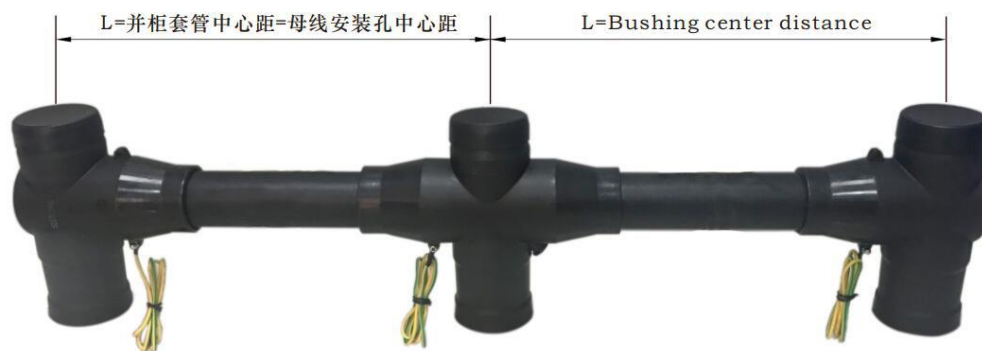
It can be used to realize full sealing and insulation of load break switch to avoid the fatal defects caused by exposed high voltage under bad weather environment. It is easy to combine and can realize multiple unit series connection. The length can be customized.



Model: HS-10(24)630(1250)-P-DZ



Model: HS-10(24)630(1250)-P-SZ



Three Cubicles Combined Assembly



## Side Expansion Busbar Connector Kits

### General Introduction

In power system, it can be used as expansion port when ring main units are combined side by side. The design is compact and the installation is convenient.

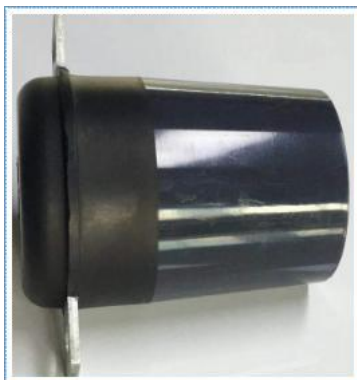
Type I busbar is for OMAR, SCHNEIDER, TIANLING, HOSTONE AND SHANTOU ZHENGCHAO cabinets. Type II busbar is for ALPHA, YINHE DIKANG AND KERUI cabinets. Type III is for Baosheng, ShangGuangDian and Huadian cabinets.



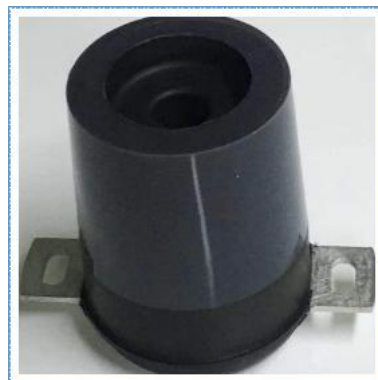
Busbar Connector



Busbar Connector



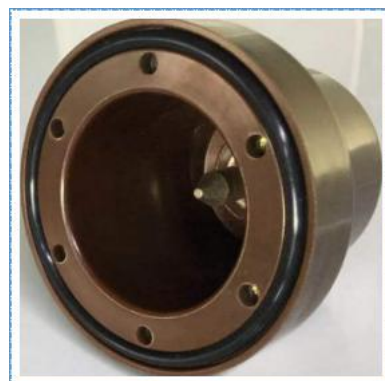
Insulation Plug



Insulation Plug



Busbar Socket



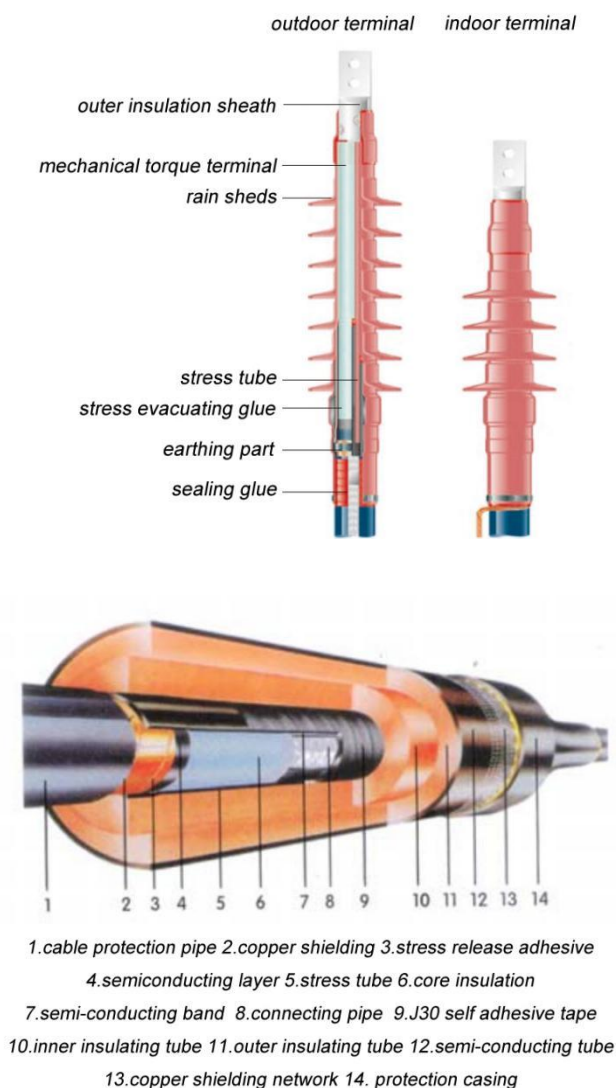
Busbar Socket



## 1kV~10kV~35kV Heat Shrinkable Cable Accessories

### Irradiation Cross-linked Heat Shrinkable Cable Accessories

- 0.6/1kV heat shrinkable cable termination and joint
  - 8.7/15kV heat shrinkable cable termination and joint
  - 18/20kV heat shrinkable cable termination and joint
  - 26/35kV heat shrinkable cable termination and joint
- 
- Heat shrinkable cable accessories have the characteristics of light weight and convenient installation;
  - Heat shrinkable cable accessories have the characteristics of stable performance, safe and reliable operation;
  - The products meets the requirements of GB/T12706.42002, JB/T8144 and DL/T413.
  - For long-term use under the temperature of -55~105 °C.
  - The product is suitable for termination treatment and joint of oil immersed and cross-linked cables under 35kV.
  - Products are widely used in electrical industry, petrochemical industry, metallurgy industry, railways, ports and construction fields.



*Schematic Section Diagram of Heat Shrinkable Joint*

**0.6/1kV Heat Shrinkable Termination and Joint**

## General Introduction

The products are divided into single-core, two-core, three-core, four-core and five-core, which have been widely used in termination processing and joint of low-voltage cables.

The insulated tubing of the termination ends are divided into different phases marked by red, yellow, green, blue, and black color.

Small size, light weight and reliable performance.

Scope of application: widely used in electric power, petrochemical, metallurgy, railway, port, construction and other fields.

## Models and Specifications

Name	Model No.	For cable sections (mm <sup>2</sup> )	Name	Model No.	For cable sections (mm <sup>2</sup> )
0.6/1kV single-core heat shrinkable termination	HS-TRSY-1/1x0	10-16	0.6/1kV single-core heat shrinkable joint	HS-JRSY-1/1x0	10-16
	HS-TRSY-1/1x1	25-50		HS-JRSY-1/1x1	25-50
	HS-TRSY-1/1x2	70-120		HS-JRSY-1/1x2	70-120
	HS-TRSY-1/1x3	150-240		HS-JRSY-1/1x3	150-240
	HS-TRSY-1/1x4	300-400		HS-JRSY-1/1x4	300-400
	HS-TRSY-1/1x5	500-630		HS-JRSY-1/1x5	500-630
0.6/1kV two-core heat shrinkable termination	HS-TRSY-1/2x0	10-16	0.6/1kV two-core heat shrinkable joint	HS-JRSY-1/2x0	10-16
	HS-TRSY-1/2x1	25-50		HS-JRSY-1/2x1	25-50
	HS-TRSY-1/2x2	70-120		HS-JRSY-1/2x2	70-120
	HS-TRSY-1/2x3	150-240		HS-JRSY-1/2x3	150-240
	HS-TRSY-1/2x4	300-400		HS-JRSY-1/2x4	300-400
0.6/1kV three-core heat shrinkable termination	HS-TRSY-1/3x0	10-16	0.6/1kV three-core heat shrinkable joint	HS-JRSY-1/3x0	10-16
	HS-TRSY-1/3x1	25-50		HS-JRSY-1/3x1	25-50
	HS-TRSY-1/3x2	70-120		HS-JRSY-1/3x2	70-120
	HS-TRSY-1/3x3	150-240		HS-JRSY-1/3x3	150-240
	HS-TRSY-1/3x4	300-400		HS-JRSY-1/3x4	300-400
0.6/1kV four-core heat shrinkable termination	HS-TRSY-1/4x0	10-16	0.6/1kV four-core heat shrinkable joint	HS-JRSY-1/4x0	10-16
	HS-TRSY-1/4x1	25-50		HS-JRSY-1/4x1	25-50
	HS-TRSY-1/4x2	70-120		HS-JRSY-1/4x2	70-120
	HS-TRSY-1/4x3	150-240		HS-JRSY-1/4x3	150-240
	HS-TRSY-1/4x4	300-400		HS-JRSY-1/4x4	300-400
0.6/1kV five-core heat shrinkable termination	HS-TRSY-1/5x0	10-16	0.6/1kV five-core heat shrinkable joint	HS-JRSY-1/5x0	10-16
	HS-TRSY-1/5x1	25-50		HS-JRSY-1/5x1	25-50
	HS-TRSY-1/5x2	70-120		HS-JRSY-1/5x2	70-120
	HS-TRSY-1/5x3	150-240		HS-JRSY-1/5x3	150-240
	HS-TRSY-1/5x4	300-400		HS-JRSY-1/5x4	300-400

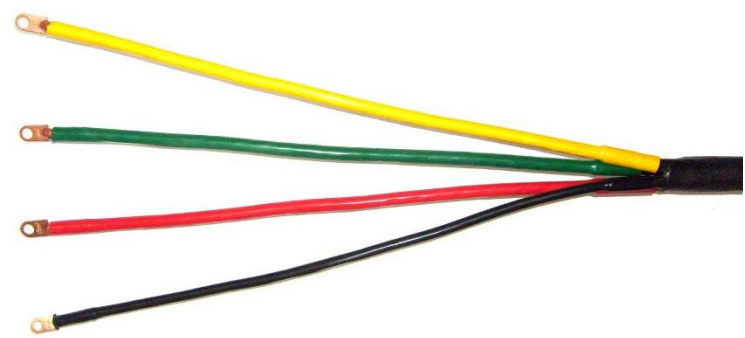
Product Photos



0.6/1kV heat shrinkable four-core termination



0.6/1kV heat shrinkable four-core joint



Installation diagram of 0.6/1kV heat shrinkable four-core termination

Technical Parameters

Product	No.	Test items	Standard requirement	Result	Evaluation
0.6/1kV termination and joint	1	1min power frequency withstand voltage test	4kV does not flash or breakdown	4kV without flicker or breakdown	passed
	2	Load circulation test (3 times)	Heating, 3h cooling,conductor temperature 75℃ when heating	5h heating, 3h cooling,conductor temperature 75℃ when heating	evaluated by following tests
	3	4h power frequency withstand voltage test	2.4kV without flicker or breakdown	2.4kV without flicker and breakdown	passed

## 8.7/15kV Heat Shrinkable Termination and Joint

### General Introduction



8.7/15kV three-core joint



8.7/15kV three-core outdoor termination



8.7/15kV three-core indoor termination

- The heat shrinkable cable accessories have characters of light weight, reliable operation and convenient installation.
- The product conforms to GB8144-1995 standard, and can be used for long time under the temperature of -50 °C~105 °C.
- The product is suitable for termination treatment and joint of 6kV-15kV oil immersed and cross-linked cables.
- Scope of application: widely used in electric power, petrochemical, metallurgy, railway, port, construction and other fields.



### Models and Specifications

Name	Model No.	For cable sections (mm <sup>2</sup> )	Name	Model No.	For cable sections (mm <sup>2</sup> )
8.7/15kV single-core heat shrinkable indoor termination	HS-NRSY-10/1x1	25-50	8.7/15kV three-core heat shrinkable indoor termination	HS-NRSY-10/3x1	25-50
	HS-NRSY-10/1x2	70-120		HS-NRSY-10/3x2	70-120
	HS-NRSY-10/1x3	150-240		HS-NRSY-10/3x3	150-240
	HS-NRSY-10/1x4	300-400		HS-NRSY-10/3x4	300-400
	HS-NRSY-10/1x5	500-630			
8.7/15kV single-core heat shrinkable outdoor termination	HS-WRSY-10/1x1	25-50	8.7/15kV three-core heat shrinkable outdoor termination	HS-WRSY-10/3x1	25-50
	HS-WRSY-10/1x2	70-120		HS-WRSY-10/3x2	70-120
	HS-WRSY-10/1x3	150-240		HS-WRSY-10/3x3	150-240
	HS-WRSY-10/1x4	300-400		HS-WRSY-10/3x4	300-400
	HS-WRSY-10/1x5	500-630			
8.7/15kV single-core heat shrinkable joint	HS-JRSY-10/1x1	25-50	8.7/15kV three-core heat shrinkable joint	HS-JRSY-10/3x1	25-50
	HS-JRSY-10/1x2	70-120		HS-JRSY-10/3x2	70-120
	HS-JRSY-10/1x3	150-240		HS-JRSY-10/3x3	150-240
	HS-JRSY-10/1x4	300-400		HS-JRSY-10/3x4	300-400
	HS-JRSY-10/1x5	500-630			



## Technical parameters

No.	Testing items	Requirements	Test result				Evaluation
1	Power frequency voltage test	5min at 39kV, no break down,no flashover	5min at 39kV, no breakdown ,no flashover				qualified
2	Partial discharge test at room temperature	Discharge amount no more than 10pC at 15kV	phase	yellow	green	red	qualified
			Voltage(kv)	15	15	15	
			Background(pC)	1.7	1.7	1.7	
			Discharge capacity(pC)	$\leq 1.7$	$\leq 1.7$	$\leq 1.7$	
3	Shock voltage test at high temperature 95℃ -100℃	95kV, 10 times on positive and negative polarity, no breakdown,no flashover	10 times on positive and negative polarity respectively at 95kv, no breakdown ,no flashover				qualified
4	Constant pressure load cycle in air	at 22kV and conductor temperature heating to 95℃-100℃,60 cycles totally, no breakdown,no flashover	at 22kV and conductor temperature heating to 95℃ -100℃, 60 cycles totally, no breakdown ,no flashover				qualified
5	Partial discharge test at high temperature of 95℃-100℃	Discharge capacity not more than 10pC at 15kV	phase	yellow	Green	red	qualified
			Voltage (kv)	15	15	15	
			Background (pC)	1.2	1.2	1.2	
			discharge capacity (pC)	$\leq 1.2$	$\leq 1.2$	$\leq 1.2$	
6	Partial discharge test at room temperature	Discharge capacity not more than 10pC at 15kV	phase	yellow	Green	red	qualified
			voltage (kV)	15	15	15	
			background (pC)	1.2	1.2	1.2	
			Discharge capacity(pc)	$\leq 1.2$	$\leq 1.2$	$\leq 1.2$	
7	Shock voltage test	10 times of positive and negative polarity respectively at 95kV, no breakdown ,no flashover	10 times of positive and negative polarity respectively at 95kV, no breakdown ,no flashover				qualified
8	Power frequency voltage test	15min at 22kv, no breakdown,no falshover	15min at 22kV, no breakdown ,no flashover				qualified

## 18/20(30)kV Heat Shrinkable Termination and Joint

### General Introduction

- The heat shrinkable cable accessories have characters of light weight, reliable operation and convenient installation.
- The product conforms to GB8144-1955 standard.
- Long term use under the temperature of 5 °C~105 °C.
- The product is suitable for termination and joint of 18kV-20kV oil immersed and cross-linked cables.
- Scope of application: widely used in electric power, petrochemical, metallurgy, railway, port, construction and other fields.



### Model Specifications & Testing Standards

Name	Model No.	For cable sections (mm <sup>2</sup> )	Name	Model No.	For cable sections (mm <sup>2</sup> )
18/20kV single-core heat shrinkable indoor termination	HS-NRSY-20/1x1	35-70	18/20kV three-core heat shrinkable indoor termination	HS-NRSY-20/3x1	35-70
	HS-NRSY-20/1x2	95-185		HS-NRSY-20/3x2	95-185
	HS-NRSY-20/1x3	240-400		HS-NRSY-20/3x3	240-400
18/20kV single-core heat shrinkable outdoor termination	HS-WRSY-20/1x1	35-70	18/20kV three-core heat shrinkable outdoor termination	HS-WRSY-20/3x1	35-70
	HS-WRSY-20/1x2	95-185		HS-WRSY-20/3x2	95-185
	HS-WRSY-20/1x3	240-400		HS-WRSY-20/3x3	240-400
18/20kV single-core heat shrinkable joint	HS-WRSY-20/1x1	35-70	18/20kV three-core heat shrinkable joint	HS-WRSY-20/3x1	35-70
	HS-WRSY-20/1x2	95-185		HS-WRSY-20/3x2	95-185
	HS-WRSY-20/1x3	240-400		HS-WRSY-20/3x3	240-400

No.	Testing items	Requirements	Test result	Evaluation
1	Power frequency voltage test	5min at 54kV, no breakdown ,no falshover	15min at 54kV, no breakdown ,no falshover	Qualified
2	Partial discharge test at room temperature	Discharge capacity not more than 10pC at 20kV	At 20kV, discharge capacity of each phases not more than 2pC	Qualified
3	Shock voltage test at high temperature, 95℃-100℃	10 times of positive and negative polarity respectively at 125kv, no breakdown ,no flashover	10 times of positive and negative polarity respectively at 125kV, no breakdown ,no flashover	Qualified
4	Constant pressure load cycle in air	At 30kV, conductor temperature heating to 95℃ -100℃, no breakdown or flashover for 3 cycles	At 30kV and conductor temperature heating to 95℃ -100℃, no breakdown,no flashover	Qualified
5	Partial discharge test at high temperature of 95℃-100℃	Discharge capacity not more than 10pC at 20kV	At 20kV, discharge capacity of each phase not more than 2pC	Qualified
6	Partial discharge test at room temperature	Discharge capacity not more than 10pC at 20kv	At 20kV, discharge capacity of each phase not more than 2pC	Qualified
7	Shock voltage test	10 times of positive and negative polarity respectively at 125kv, no breakdown,no flashover	10 times of positive and negative polarity respectively at 125kV, no breakdown ,no flashover	Qualified
8	Power frequency voltage test	15min at 30kV, no breakdown,no flashover	15min at 30kV, no breakdown ,no flashover	Qualified

## 26/35kV Heat Shrinkable Termination and Joint

### General Introduction

- Double grounding wire technology of heat shrinkable termination for cross-linked cable. That is to say, the steel armored grounding wire and copper shielded grounding wire are separated, which makes the cable pretest more reasonable and the heat shrinkable cable accessories have the characteristics of light weight, reliable operation and convenient installation.
- Long term use under the temperature of -50 °C~105 °C.
- The product is suitable for termination and joint of 26kV-35kV oil immersed and cross-linked cables.
- Scope of application: widely used in electric power, petrochemical, metallurgy, railway, port, construction and other fields.



### Model Specifications & Testing Standards

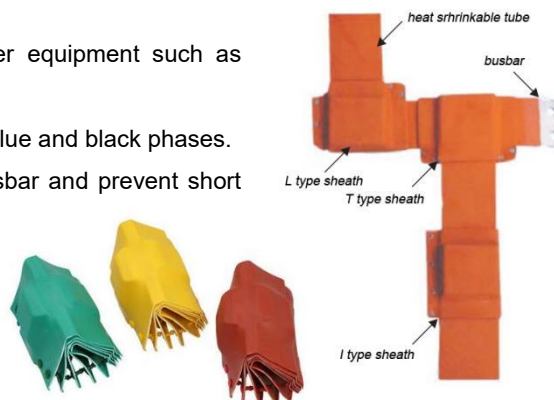
Name	Model No.	For cable sections (mm <sup>2</sup> )	Product name	Model No.	For cable sections (mm <sup>2</sup> )
26/35kV single-core heat shrinkable indoor termination	HS-NRSY-35/1x1	50-120	26/35kV three-core heat shrinkable indoor termination	HS-NRSY-35/3x1	50-120
	HS-NRSY-35/1x2	150-240		HS-NRSY-35/3x2	150-240
	HS-NRSY-35/1x3	300-400		HS-NRSY-35/3x3	300-400
	HS-NRSY-35/1x4	500-630			
26/35kV single-core heat shrinkable outdoor termination	HS-WRSY-35/1x1	50-120	26/35kV three-core heat shrinkable outdoor termination	HS-WRSY-35/3x1	50-120
	HS-WRSY-35/1x2	150-240		HS-WRSY-35/3x2	150-240
	HS-WRSY-35/1x3	300-400		HS-WRSY-35/3x3	300-400
	HS-WRSY-35/3x4	500-630			
26/35kV single-core heat shrinkable joint	HS-JRSY-35/1x1	50-120	26/35kV three-core heat shrinkable joint	HS-JRSY-35/3x1	50-120
	HS-JRSY-35/1x2	150-240		HS-JRSY-35/3x2	150-240
	HS-JRSY-35/1x3	300-400		HS-JRSY-35/3x3	300-400
	HS-JRSY-35/1x4	500-630			

No	Testing items	Requirements	Detection result	Evaluation
1	Power frequency voltage test	1 min at 105kV, no falshover or breakdown	1min at 105kV, no breakdown or flashover on each phase	Qualified
2	Partial discharge at room temperature	At 39kV, discharge capacity not more than 10pC	At 39kV, discharge capacity of each phase not more than 6pC	Qualified
3	Load circulation test	heating conductor to 90-95℃, 8h for each cycle, heating time 5h and the cooling time 3h, total 3 cycles	Complete three cycle tests according to the standard requirement	by following tests
4	Partial discharge at high temperature	At 39kV, discharge capacity not more than 10pC	At 39kV, discharge capacity not more than 10pC on each phase	Qualified
5	Shock voltage test	10 times of positive and negative polarity respectively at 250kV, no breakdown or flashover	10 times of positive and negative polarity respectively at 250kV, no breakdown or	Qualified
6	Negative DC voltage test	15min at 156kV, no breakdown or flashover	15min at 156kV no breakdown or flashover on each phase	Qualified
7	Power frequency voltage test	4h at 104kV, no breakdown or flashover	4h at 104kV, no breakdown or flashover on each phase	Qualified

## Insulated Protection Box

### General Introduction

- The insulated protection box is applicable up to 35kV power equipment such as transformer, surge arrester,, outdoor switch, etc.
- The insulated protection box is divided into red, yellow, green, blue and black phases.
- Place acid ,alkali, salt and other chemicals to corrode the busbar and prevent short circuit fault caused by mice, snakes and other small animals.
- Prevent the maintenance personnel from entering the electrified gap by mistake and causing unexpected harm.
- Solve the problem of insulation between bus ducts.
- Prevent dust, condensation and flashover.



### Technical parameters

Properties		Required parameters	
Volume resistance		$\geq 1 \times 10^{14} \Omega \cdot \text{cm}$	
Breakdown strength		$\geq 15 \text{ kV/mm}$	
Tensile strength		$\geq 10.4 \text{ Mpa}$	
Elongation at break		$\geq 200\%$	
Model No.	Applicable busbar width	Model	Regular colors
HS-MPH-30	30	I、T、L、+	Red,yellow,green,black,blue
HS-MPH-40	40	I、T、L、+	Red,yellow,green,black,blue
HS-MPH-50	50	I、T、L、+	Red,yellow,green,black,blue
HS-MPH-60	60	I、T、L、+	Red,yellow,green,black,blue
HS-MPH-80	80	I、T、L、+	Red,yellow,green,black,blue
HS-MPH-100	100	I、T、L、+	Red,yellow,green,black,blue
HS-MPH-125	125	I、T、L、+	Red,yellow,green,black,blue
HS-MPH-150	150	I、T、L、+	Red,yellow,green,black,blue
Busbar protection box can be divided into single layer, two layers, three layers and four layers. There are also special shapes such as: porcelain pillar protection box, copper bar soft connect protection box, through wall protection box, transformer pile head protection box etc. Customized service is also provided.			

## Heat Shrinkable Insulated Tape (wrapping tape)

### General Introduction

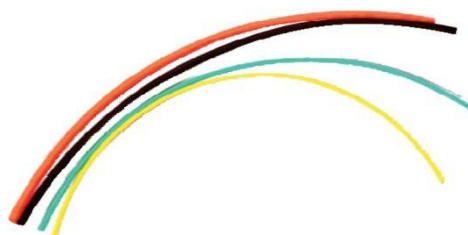
- For repairment of the cable outer sheath damaged by mechanical damage, burning or organic solvent erosion;
- Waterproof sealing treatment of the middle connection sheath port of the heat shrinkable cable.
- Against tree protection of the live bare conductor and short circuit treatment of the tunnel icicle.
- It can be divided into red, green and yellow. Specification:50mm\*5000mm\*1.0mm



## 1kV Non-halogen Flame Retardant Low Temperature Shrinkable Tubing

### Application Scope

HS-2/H-2(H) series products are widely used in electronics, electrical power, military industry, ship building and other industries, mainly used for the protection of wire harness, wire identification, insulation protection of solder joints, protection of electronic components, insulation protection of low -voltage bus bar and pipeline corrosion protection.



HS-2 heat shrinkable 0.6/1kV busbar tubing

HS-2 low temperature shrinkable halogen-free heat shrinkable tubing

### Product Characteristics

- Shrinkage ratio: 2:1
- Continuous applied temperature: -55 °C~125 °C
- Minimum complete shrinkage temperature: 90 °C
- Flame retardant performance: VW-1
- Halogen free flame retardant, in line with EU ROHS environmental protection directive.
- Color: black, red, yellow, green, blue

### Major Technical Parameters

Properties	Test method	Required data	Typical test data
Tensile strength	ASTM D 638	≥12 Mpa	16Mpa
Elongation at break	ASTM D 638	≥3350%	400%
Volume resistivity	IEC 93	$\geq 10^{14} \Omega \cdot \text{cm}$	$2 \times 10^{14} \Omega \cdot \text{cm}$
Water absorption rate	ISO 62	<0.5%	0.15%
Tensile strength after aging	Aging 7 days under 158℃	≥10 Mpa	18Mpa
Elongation at break after aging		≥300%	410%
Breakdown strength	IEC 243	>20kV/mm	23kv/mm
Power frequency withstand voltage strength		2.5 kV 60s not breakdown	passed
Copper stability	Aging 7 days under 158℃	No corrosion	passed
Wall deflection rate	UL224	W30%	15%
Longitudinal shrinkage	UL224	-33%	-0.50%
Flame retardancy		VW-1	passed
Lead content	USEPA 3050B	<1000 ppm	passed
Cadmium content	EN1122, Method B:2001	<100 ppm	passed
PBBES(PBDES)	83/264/EEC	<1000 ppm	passed
PBBS	83/264/EEC	<1000 ppm	passed
Mercury content	ERA 3052:1996	< 1000 ppm	passed
Hexavalent chromium content	EPA 3060A & EPA7196A	<1000 ppm	passed



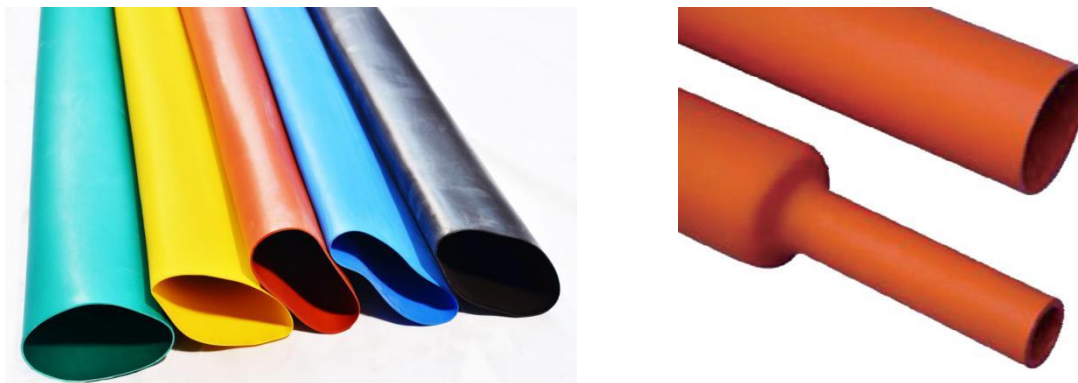
## Dimensions of HS-2/HS2(H) series tubes

Specifications	Size before shrinkage (mm)		Size after shrinkage (mm)		Packing length (meter/reel)
	Internal diameter	Wall thickness	Internal diameter	Wall thickness	
Φ0.8/0.4	1.1±0.2	0.20±0.05	0.4±0.05	0.3-0.02	400
Φ1.0/0.5	1.5±0.2	0.20±0.05	0.5±0.05	0.3-0.02	400
Φ1.5/0.75	2.0±0.2	0.20±0.05	0.7±0.05	0.32-0.02	400
Φ2.0/1.0	2.5±0.2	0.22 ±0.05	0.9±0.05	0.34-0.02	400
Φ2.5/1.25	3.0±0.2	0.22±0.05	1.2±0.05	0.34-0.02	200
Φ3.0/1.5	3.5±0.2	0.22±0.05	1.4±0.05	0.36-0.02	200
Φ3.5/1.75	4.0±0.2	0.22±0.05	1.7±0.05	0.36-0.02	200
Φ4.0/2.0	4.5±0.2	0.24±0.05	1.9±0.05	0.40-0.02	200
Φ4.5/2.25	5.0±0.2	0.24±0.05	2.0±0.05	0.40-0.02	200
Φ5.0/2.5	5.5±0.2	0.26 ±0.05	2.4±0.05	0.44-0.02	200
Φ6.0/3.0	6.5±0.2	0.26±0.05	2.9±0.05	0.44-0.02	200
Φ7.0/3.5	7.5±0.3	0.25±0.05	3.4±0.05	0.44-0.02	200
Φ8.0/4.0	8.5±0.3	0.26±0.05	3.8±0.05	0.44-0.02	200
Φ9.0/4.5	9.5±0.3	0.28±0.08	4.4±0.1	0.48-0.02	100
Φ10.0/5.0	10.5±0.3	0.30±0.08	4.8±0.1	0.50-0.02	100
Φ11.0/5.5	11.5±0.3	0.32±0.08	5.3±0.1	0.52-0.02	100
Φ12/6.0	12.5±0.3	0.32±0.08	5.8±0.1	0.52-0.02	100
Φ13.0/6.5	13.5±0.3	0.32±0.10	6.2±0.1	0.52-0.02	100
Φ14/7.0	14.5±0.3	0.32±0.10	6.6±0.1	0.54-0.02	100
Φ15.0/7.5	15.5±0.3	0.34±0.12	7.2±0.2	0.58-0.02	100
Φ16/8.0	16.5±0.3	0.34±0.12	7.5±0.2	0.58-0.02	100
Φ18/9.0	19±1.0	0.35±0.15	8.5±0.2	0.60-0.02	100
Φ20/10	21±1.0	0.35±0.15	9.5±0.3	0.60-0.02	100
Φ22/11	23±1.0	0.36±0.15	10.8±0.3	0.64-0.02	50
Φ25/12	26±1.0	0.38±0.15	12±0.3	0.68-0.02	25
Φ28/14	29±1.0	0.38±0.15	13.5±0.3	0.68-0.02	25
Φ30/15	31±1.0	0.42±0.15	14±0.3	0.74-0.02	25
Φ35/17	36±1.0	0.46±0.15	17±0.3	0.84-0.02	25
Φ40/20	41±1.0	0.46±0.15	18±0.3	0.84-0.02	25
Φ50/25	51±1.0	0.48±0.15	24±0.3	0.88-0.02	25
Φ60/30	61±1.0	0.48±0.15	28±0.5	0.88-0.02	25
Φ65/32	66±1.0	0.48±0.15	30.5±0.5	0.88-0.02	25
Φ70/35	71±1.0	0.48±0.15	34±0.5	0.88-0.02	25
Φ75/37	76±1.0	0.48±0.15	37±0.6	0.88-0.02	25
Φ80/40	81±1.0	0.55±0.15	38±0.5	1.00-0.02	25
Φ85/42	86±1.1	0.55±0.16	40±0.5	1.00-0.02	25
Φ90/45	91±1.0	0.55±0.15	42±1.0	1.00-0.02	25
Φ100/50	101±1.0	0.60±0.20	48±1.0	1.10-0.02	25
Φ120/60	121±1.0	0.65±0.20	58±1.0	1.20-0.02	25
Φ150/75	151±1.0	0.70±0.20	73±1.0	1.30-0.02	25

## 10kV Segmented Busbar Protection Heat Shrinkable Tubing

### Application Scope

HS-MPG10, HS-MPG35 series heat shrinkable tubing is widely used for busbar protection under 35kV anti embroidery, anti corrosion protection, etc.



10kV Segmented Heat Shrinkable Busbar Tubing

### Product characteristics

- High flame retardation: oxygen index greater than 30
- Good heat resistance: it can operate stably for a long time at 105 °C.
- Good low temperature performance: the product is not brittle or cracked at -55 °C.
- Good flexibility: it can adapt to the complex shape of busbar, and is easy to install.
- Good insulation: it can reduce the insulation distance between phases and ground.
- Easy phase separation: it has red, yellow and green three standard colors.
- High safety: it can prevent short circuit or personal contact accidents caused by small animals.

### Major Technical Parameters

No.	Testing items	Standard requirements	Result	Evaluation
1	1min phase to phase power frequency withstand voltage test	42kV, no flashover, no breakdown	42kV, 1min, no flashover ,no breakdown	qualified
2	Phase to phase impulse voltage test	75kV positive and negative pole 15 times respectively; phase to phase impulse withstand voltage test; no flashover ,no breakdown	75kV positive and negative poles respectively 15 times, no flashover,no breakdown	qualified
3	Temperature rise test	Copper bar with shrunk insulating sleeve at ambient temperature of 40℃ temperature rise shall not be greater than that of bare copper bar	Temperature rise of bare copper: 45.7℃. temperature rise of insulated copper busbar: 41.4℃	qualified
4	Pressure test of heat shrinkable tubing	20kV, 1min without breakdown	20kV, 1min without breakdown	qualified

Comparison of phase-to-ground and phase-to-phase insulation distances before and after use of HS-MPG series tubing

System voltage (kV)	Regular insulation distance (mm)	Insulation distance after using MPG-10 tubes		Insulation distance after using MPG-35 tubes	
		phase to ground (mm)	phase to phase (mm)	phase to ground (mm)	phase to phase (mm)
10	120	80	70	50	40
22	220	160	120	105	75
35	320	-	-	200	150
Note: the data in this table is only for reference. The actual data maybe different due to the distribution system layout and environment conditions					

Specification of HS-MPG high pressure busbar heat shrinkable tubing series

Model No.	Applicable busbar width (mm)	Internal diameter after shrinkage (mm)	10kv	Finished product specification (mm)
			Wall thickness after shrinkage (mm)	
HS-MPG10-XX-30/12	30-40	< 12	1	Φ30x1000
HS-MPG10-XX-35/14	35-40	< 14	1	Φ35x1000
HS-MPG10-XX-40/16	40-50	< 16	1	Φ40x1000
HS-MPG10-XX-50/20	50-60	< 20	1	Φ50x1000
HS-MPG10-XX-65/25	60-70	< 25	1.1	Φ65x1000
HS-MPG10-XX-75/30	80-90	< 30	1.1	Φ75x1000
HS-MPG10-XX-85/35	90-100	< 35	1.2	Φ85x1000
HS-MPG10-XX-100/45	120	< 45	1.2	Φ100x1000
HS-MPG10-XX-120/50	140	< 50	1.2	Φ120x1000
HS-MPG10-XX-150/60	180	< 60	1.2	Φ150x1000
HS-MPG10-XX-180/75	200	< 75	1.2	Φ180x1000
HS-MPG10-XX-200/75	240	< 75	1.2	Φ200x1000
HS-MPG10-XX-230/75	MAX	< 75	1.2	Φ230x1000

**10kV Continuous Heat Shrinkable Tubing**

HS-MPG-L10 10kV Continuous Busbar Protection Heat Shrinkable Tubing

**Application range**

HS-MPG-L10 series products are widely used in the insulation protection of copper (aluminum) busbar of 10kV power distribution system, the insulation protection of bare conductor and the protection pipeline metal products, such as embroidery, anti-corrosion protection ,etc.

**Product Characteristics:**

- High flame retardation :oxygen index greater than 30
- Good heat resistance: the product can run stably for a long time at 105 °C.
- Good low temperature performance: the product is not brittle or cracked at -55 °C
- Good flexibility: it can adapt to the complex shape of busbar, and is easy to install.
- Good insulation: it can reduce the insulation distance between phases and ground.
- Easy phase separation: it has many distinguished colors.
- High safety: it can prevent short circuit or personal contact accidents caused by small animals.
- Easy to use: continuous length can be cut as needed.

**Major Technical Parameters**

Properties	Test method	Requirement index	Typical test data
Tensile strength	ASTM D638	$\geq 12\text{Mpa}$	14Mpa
Elongation at break	ASTM D 638	$\geq 350\%$	400%
Volume resistivity	IEC 93	$\geq 10^{14}\Omega\text{cm}$	$2 \times 10^{14}\Omega\text{cm}$
Water absorption rate	ISO 62	$<0.5\%$	0.15%
Tensile strength after aging	Aging 7 days under 158 °C	$\geq 10\text{Mpa}$	14Mpa
Elongation at break after aging		$\geq 300\%$	410%
Breakdown strength	IEC 243	$>20\text{kV/mm}$	23kV/mm
Power frequency withstand voltage strength	-	No breakdown under 45kV for 60S	passed
Wall deflection rate	-	$\leq 30\%$	23%
Longitudinal shrinkage	-	-5~5%	3%
Flame retardation	-	Oxygen index $\geq 30$	30

## HS-MPG-L10 Series Specifications

Model No.	Wall thickness after shrinkage t (mm )	Inner diameter after shrinkage d (mm )	Inner diameter before shrinkage D (mm )	Packing length (meter/reel)
HS-MPG-L10-XX-20/10	1.9±0.15	Φ9±1.0	Φ21±2.0	25
HS-MPG-L10-XX-25/12	1.9±0.15	Φ12±1.0	Φ26±1.0	25
HS-MPG-L10-XX-30/15	1.9±0.15	Φ14±1.0	Φ31±1.0	25
HS-MPG-L10-XX-35/17	1.9±0.15	Φ16±1.0	Φ36±1.0	25
HS-MPG-L10-XX-40/20	2.0±0.15	Φ19±1.0	Φ41±1.0	25
HS-MPG-L10-XX-50/25	2.0±0.15	Φ24±1.0	Φ51±1.0	25
HS-MPG-L10-XX-60/30	2.2±0.15	Φ29±1.0	Φ61±2.0	25
HS-MPG-L10-XX-65/32	2.2±0.15	Φ31±1.0	Φ66±2.0	25
HS-MPG-L10-XX-70/35	2.2±0.15	Φ34±1.0	Φ71±2.0	25
HS-MPG-L10-XX-75/37	2.2±0.15	Φ34±1.0	Φ76±2.0	25
HS-MPG-L10-XX-80/40	2.2±0.15	Φ38±2.0	Φ81±2.0	25
HS-MPG-L10-XX-85/42	2.2±0.15	Φ38±2.0	Φ86±2.0	25
HS-MPG-L10-XX-90/45	2.2±0.15	Φ43±2.0	Φ91±3.0	25
HS-MPG-L10-XX-100/50	2.3±0.15	Φ48±2.0	Φ101±3.0	25
HS-MPG-L10-XX-120/60	2.3±0.15	Φ58±2.0	Φ120±3.0	25
HS-MPG-L10-XX-150/75	2.4±0.15	Φ73±2.0	Φ151±3.0	25
XX represents color: RD-red, YW-yellow, GN-green. Busbar connector box is processed according to customer requirements.				



## Two-color Low Temperature Flame Retardant Heat Shrinkable Tubing

### Application Scope

HS-SP-001 series is applicable to the identification of grounding wire or other insulated parts requiring color separation identification.

### Product characteristics

- Obvious identification
- Shrinkage ratio 2:1
- Flexible and easy to operate
- Continuous use temperature range is -55 °C~135 °C.
- Full shrinkage temperature is 110 °C
- Flame retardant performance is VW-1
- Color: Yellow - green striped



### Major Technical Parameters

Properties	Test method	Typical test data
Tensile strength	ASTM D 638	14Mpa
Elongation at break	ASTM D 638	400%
Volume resistivity	ASTM D 876	$2 \times 10^{14} \Omega \cdot \text{cm}$
Water absorption rate	ASTM D 570	0.20%
Tensile strength after aging (175℃ 168hours)	ASTM D 638	12Mpa
Elongation at break after aging (175℃ 168hours)	ASTM D 638	350%
Breakdown strength	ASTM D 150	23 kV/mm
Thermal shock performance (250℃ 4hours)	ASTM D 2671	passed
Low temperature bending test (-55℃ 4hours)	ASTM D 2671	passed
Wall deflection rate	UL224	15%
Longitudinal shrinkage	UL224	-1%

### HS-SP-001 Series Tubes Specifications

Model	Inside diameter after shrinkage (mm)	Wall thickness after shrinkage (mm)	Inside diameter before shrinkage (mm)	Wall thickness before shrinkage (mm)	Packing length (meter/reel)
3.0/1.5	1.4±0.1	0.45±0.05	3.4±0.3	0.20±0.05	200
6.0/3.0	2.8±0.1	0.45±0.05	6.4±0.3	0.20±0.05	100
8.0/4.0	3.8±0.2	0.55±0.05	8.4±0.4	0.35±0.05	100
10.0/5.0	4.8±0.2	0.60±0.05	10.5±0.4	0.35±0.05	100
12.0/6.0	5.7±0.3	0.75±0.05	12.5±0.4	0.35±0.10	100
15.0/7.5	7.2±0.3	0.80±0.05	15.5±0.5	0.40±0.10	100
20.0/10.0	9.7±0.3	0.95±0.05	21.0±0.5	0.50±0.10	100
25.0/12.5	11.5±0.5	0.95±0.05	25.8±0.8	0.50±0.10	25
30.0/15.0	14.5±0.5	0.95±0.05	30.8±0.8	0.50±0.10	25
40.0/20.0	19.5±0.5	1.00±0.05	41.0±1.0	0.50±0.10	25
50.0/25.0	24.5±0.5	1.00±0.05	51.0±1.0	0.50±0.10	25

### 35kV Continuous Busbar Protection Heat Shrinkable Tubing

HS-MPG-L35 series products are widely used in the insulation protection of copper (aluminum) busbar of 35kV power distribution system. The insulation protection of bare conductor and the protection pipeline metal products, such as embroidery, anti-corrosion protection ,etc. The product characteristics are as follows:

- High flame retardation: oxygen index greater than 30
- Good heat resistance: the product can work stably for a long time at 105 °C.
- Good low temperature performance: the product is not brittle or cracked at -55 °C
- Good flexibility: it can adapt to the complex shape of busbar, and is easy to install.
- Good insulation: it can reduce the insulation distance between phases and ground.
- Easy phase identification: it has many distinguished colors.
- High safety: it can prevent short circuit or personal contact accidents caused by small animals.
- Easy to use: continuous length, it can be cut as needed.

#### Major Technical Parameters

Properties	Test method	Typical test data
Tensile strength	ASTMD 638	14Mpa
Elongation at break	ASTMD 638	400%
Volume resistivity	IEC 93	$2 \times 10^{14} \Omega \cdot \text{cm}$
Water absorption rate	ISO 62	0.15%
Tensile strength after aging	Aging at 158 °C for 7 days	15Mpa
Elongation after aging		410%
Breakdown strength	EC 243	23kV/mm
Power frequency withstand voltage strength		105kv,60s,no flashover, no breakdown
Wall deflection rate		15%
Longitudinal shrinkage	Shrinkage at 200 °C for 3 minutes	-0.50%

System voltage (kV)	Regular insulation	Insulation distance after using MPG10 tubes		Insulation distance after using MPG35 tubes	
	distance (mm )	phase to ground (mm)	phase to phase (mm)	phase to ground (mm)	phase to phase (mm)
10	120	80	70	50	40
22	220	160	120	105	75
35	320	—	—	200	150

Note: Above data are for reference. Actual data may be different due to the distribution system layout and environment conditions

Model No.	Wall thickness after shrinkage t (mm )	Inner diameter after shrinkage d (mm )	Inner diameter before shrinkage D (mm )	Packing length (meter/reel)
HS-MPG-L35-XX-30/15	3.0±0.1	Φ15±1.0	Φ33±3.0	20
HS-MPG-L35-XX-40/20	3.4±0.1	Φ20±1.0	Φ43±3.0	20
HS-MPG-L35-XX-50/25	3.5±0.1	Φ25±1.0	Φ53 ±3.0	20
HS-MPG-L35-XX-65/32	3.5±0.1	Φ32±1.0	Φ68±3.0	20
HS-MPG-L35-XX-75/37	3.6±0.1	Φ37±1.0	Φ78 ±3.0	20
HS-MPG-L35-XX-85/42	3.6±0.1	Φ42±1.0	Φ88 ±3.0	20
HS-MPG-L35-XX-100/50	3.6±0.1	Φ50±1.0	Φ103±3.0	20
HS-MPG-L35-XX-120/60	3.6±0.1	Φ60±1.0	Φ123±3.0	20

XX represents color: RD-red, YW-yellow, GN- green. Busbar connector box is processed according to customer requirements.



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