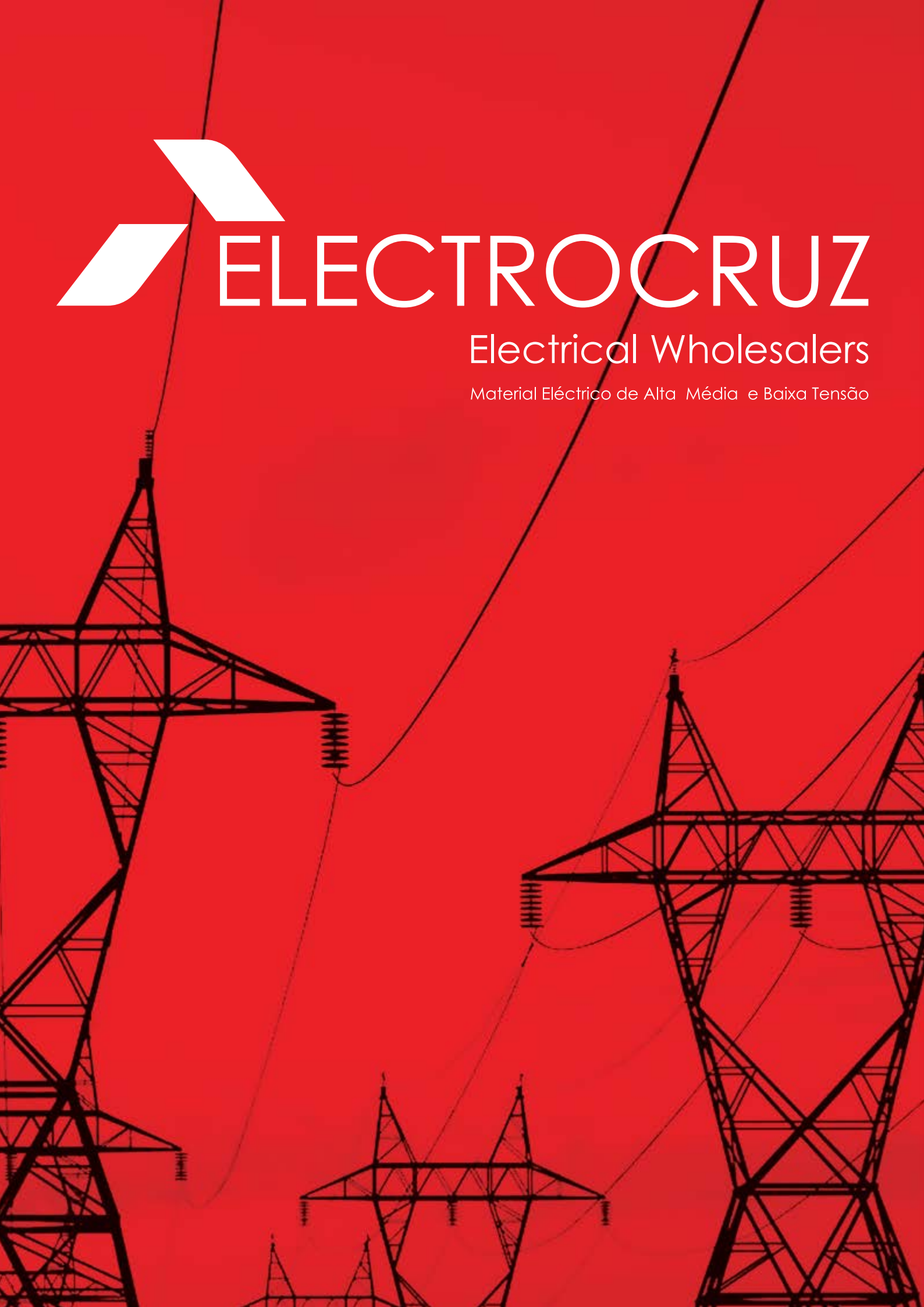




ELECTROCRUZ

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Material Eléctrico de Alta Média e Baixa Tensão





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TRANSMISSION PRODUCTS

Aluminium Copper and Bimetallic type



Aluminium Copper and Bimetallic type



Application

For bare overhead aluminium or copper tap conductors.

Description

Parallel groove clamps are mainly used for transmitting current between the interconnected conductors, for example for connection loops on terminal poles or tapping off bus-bars to equipment on substations. From this function it is therefore obvious that the electrical conducting properties and the corrosion resistance are the main factors for consideration in the design. Besides this main area of application parallel groove clamps are also used for safety loops and therefore they must provide an adequate mechanical holding strength. If conductors made of different materials are to be connected this can be done by using bimetallic tubes.

This range of connectors is designed to connect two parallel conductors in order to do a derivation of a secondary conductor, or to close a loop of one conductor to fit it on an insulator. These connectors are composed of two parts: Upper body and lower body, they have two parallel grooves to receive the conductor(s). One, two or three bolts are passing through the bodies between the grooves. In aluminium clamps, the two bodies are made out of high strength aluminium alloy. In copper clamps, the bodies are made out of high strength electrolytic copper. In bimetallic clamps, the two bodies are made out of high strength aluminium alloy, and to tight a copper conductor, one groove is made with aluminium alloy and welded by hot forged bimetallic sheet. The bolts are made out of hard steel (8.8) and Dacromatized.

To warranty a reliable tightening, a pressure pad and a spring washer are inserted under the bolt head.

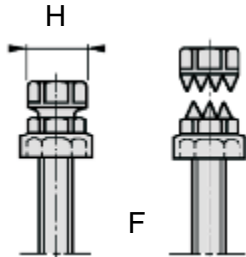
Features and benefits

Bodies in high strength aluminum alloy (AlMgSi) or electrolytic copper	Uniformity of material Long term elasticity Corrosion withstand
Pressure pad	Uniform pressure along the clamp
Spring washers	Maintain the pressure even if a temperature change causes dilatation
Dacromatized steel bolt 8.8	High permanent strength applied on the clamp
Hot forged compressed bimetallic sheet (in bimetallic clamps)	Good electrical contact without corrosion
Ridged grooves (forged type only)	Improve mechanical pullout strength and electrical contact
Holding strength	An adequate mechanical holding strength is achieved. In case of higher values two or more PG-clamps should be used in series.
Corona	Good corona and radio interference voltage (RIV) behavior due to rounded shapes.
Corrosion resistance	Maximum corrosion resistance is achieved by using a clamp material that matches with that of the conductor, for example a corrosion-resistant AlMgSi alloy for conductors made of aluminium, al-alloy etc.

The requirements will be fulfilled and demonstrated by heat cycle tests.

Option

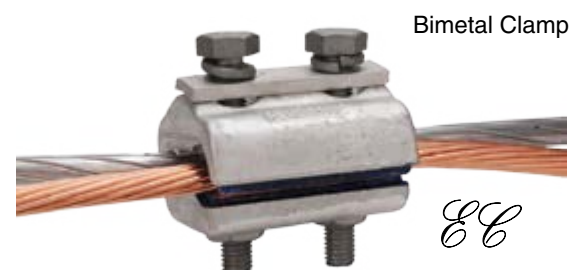
Can be equipped with shearhead bolts.



Bimetallic Clamp AL/CU

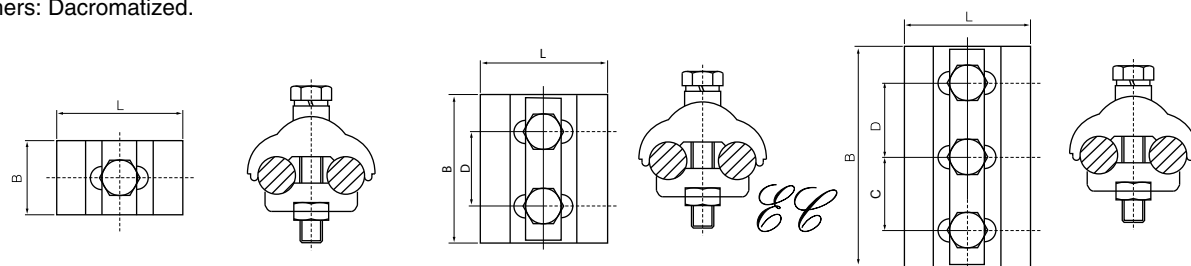
The forged aluminium clamp with a friction welded copper insert clearly marked in blue for making copper conductor connections. The clamps have serrated transverse grooves for maximum conductor contact, use dacromet steel bolts and utilise belleville washers to prevent thermal ratcheting under cyclic loads. Interface between aluminium clamp body and tap copper shape is protected. The clamps are coated with an oxide inhibitor. And hot-dip galvanized steel bolts and nuts was on requirement, also we can change to stainless bolts and nuts with washers.

Material:
Body: High strength corrosion resistant aluminium and copper-alloy
Bolts: DIN 933, steel, 8.8, Dacromatized
Nuts: DIN 934, steel, Dacromatized. pressed into lower clamp body
Spring: DIN 127, steel, Dacromatized
washers: Dacromatized.



Bimetal Clamp

EE

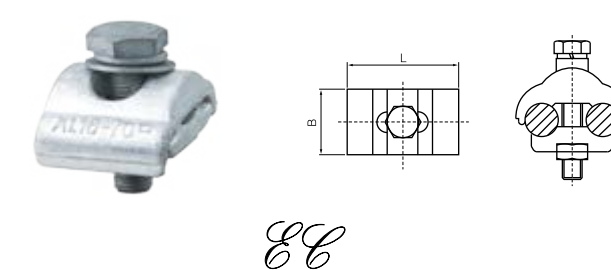


cat no	Cable	Conductor Range				No./Size of Bolts
		Aluminium Run		Copper Tap		
		mm ²	O.D	mm ²	O.D	
CU2.5-10AL16-70-1	CU / AL	16-70	5.1-11.7	2.5-10	1.8-4.1	1 X M8
CU6-50AL16-70-1	CU / AL	16-70	5.1-11.7	6-50	2.7-9.0	1 X M8
CU6-50AL16-70-2 C	CU / AL	16-70	5.1-11.7	6-50	2.7-9.0	2 X M8
CU10-95AL25-150-2	CU / AL	25-150	6.3-15.7	10-95	4.1-12.5	2 X M8
CU35-240AL35-300-3	CU / AL	35-300	7.5-22.5	35-240	7.5-20.3	3 X M8

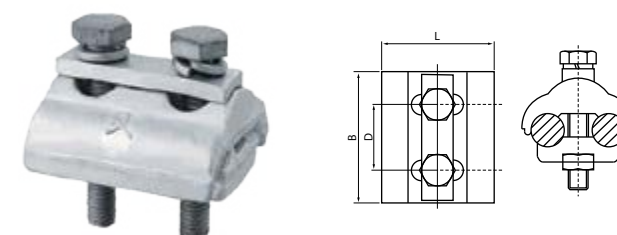
Parallel Groove Connectors AL/AL

The forged aluminium clamps wad-use for aluminium to aluminium connection throughout the conductor range. The clamps have serrated transverse grooves for maximum conductor contact, use dacromet steel bolts and utilise belleville washers to prevent thermal ratcheting under cyclic loads. The clamps are coated with an oxide inhibitor. And hot-dip galvanized steel bolts and nuts was on requirement, also we can change to stainless bolts and nuts with washers.

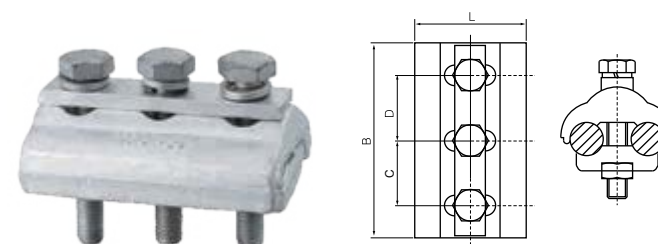
Material:
Body: High strength corrosion resistant aluminium
Bolts: DIN 933, steel, 8.8, Dacromatized
Nuts: DIN 934, steel, Dacromatized. pressed into lower clamp body
Spring: DIN 127, steel, Dacromatized
washers: Dacromatized.



EE



EE



AL P.G Clamp

EE

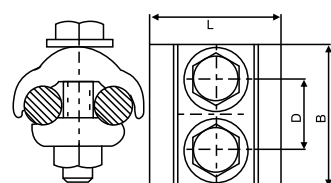
cat no	Type	Cable	Conductor Range		No./Size of Bolts
			Aluminium Run		
			mm ²	O.D	
PGC6/1	F/T	AL	16-150	5.1-15.7	1 X M10
PGC6/2	F/T	AL	16-150	5.1-15.7	2 X M10
PGC6/3	F/T	AL	25-185	6.0 - 19	3 X M10
PGC6/4	F/T	AL	95-240	7.5-22.5	3 X M10

Parallel Groove Connectors CU/CU

Parallel Groove Clamps Copper Extruded type,



EE



EE



The clamp was designed to connect two parallel bare conductors. Conductors can be copper stranded or rods. Material is forged copper for copper to copper connection throughout the conductor range. The clamps have serrated transverse grooves for maximum conductor contact, use copper bolts and utilise Belleville washers to prevent thermal ratcheting under cyclic loads. The clamps are coated with an oxide inhibitor. And stainless bolts and nuts with washers was on requirement.

For tap-off connections of copper-conductors acc. to DIN 48201

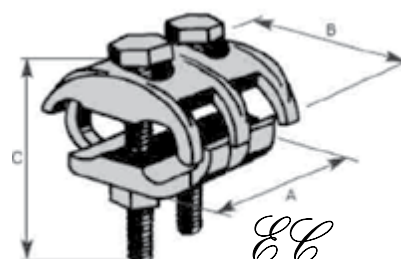
Material:
Body: Copper alloy
Bolts: steel or stainless steel
Nuts: DIN 934, steel
Surface: uncoated

Parallel Groove Clamps Copper with trust plate

Product Selection Matrix

Copper	Area of Cable - Copper - mm ²															
	6	10	16	25	35	50	70	95	120	150	185	240	300	400		
Area of Cable - Copper mm ²	6															
	10															
	16															
	25															
	35															
	50															
	70															
	95															
	120															
	150															
	185															
	240															
	300															
	400															

cat no	Type	Cable	Conductor Range mm ²	Dimensions mm O.D	No./Size of Bolts
LCK001	F/T	CU	16 - 95		2 X M10
LCJ001	F/T	CU	10 - 50		2 X M8
LCJ002	F/T	CU	25 - 95		2 X M8



Insulating Piercing Connectors

General of Insulation Piercing Connector

- Piercing connector, simple installation, need not strip the cable coat.
- Moment nut, piercing pressure is constant, keep good electric connection and make no damage to lead.
- Self-seam frame, wetproof, waterproof, and anti-corrosion, extend the using life of insulated lead and connector.
- Adopted special connecting tablet, apply to joint of Cu(Al) and Cu (Al) or Cu and Al.
- Small electric connecting resistance, impulse current can be up to 15KA.
- Special insulated case body, resistance to illumination and environmental aging, the insulation strength can up to 6KV.
- Arc surface design, apply to connection with the same (different) diameter, wide connection scope (1.5-240mm²).

Performance Testing

- Mechanical performance: the gri force of the wire clamp is 1/10 bigger than the break force of the lead. It comply with GB2314-1997.
- Temperature rise performance: L under the condition of big current, the temperature rise of connector is less than that of connection lead.
- Heat circle performance: 200 times per second, 100A/mm² big current overload, the change of connection resistance is less than 5%.
- Wetproof insulation performance: under water for 30cm, input over 3.5kV voltage for 1 min, no break out.
- Resistance to corrosion performance: under the condition of SO₂ and salt fog, it can do three times of fourteen days circle testing.
- Environmental aging performance: under the circumstance of ultraviolet. radiation, dry and moist, expose it with change of temperature and heat impulse for six weeks.



- Insulation piercing connectors (IPC)



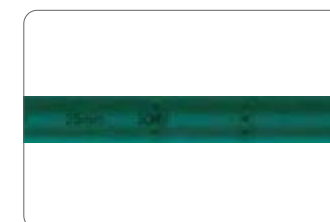
- Special nut and moment nut



- Appearance diagram of installation



- Section diagram of piercing effect



- Piercing effect of insulated coat



- Piercing effect of wire core

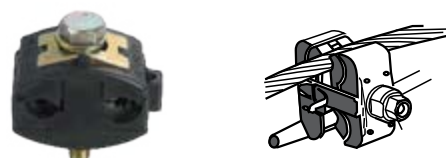
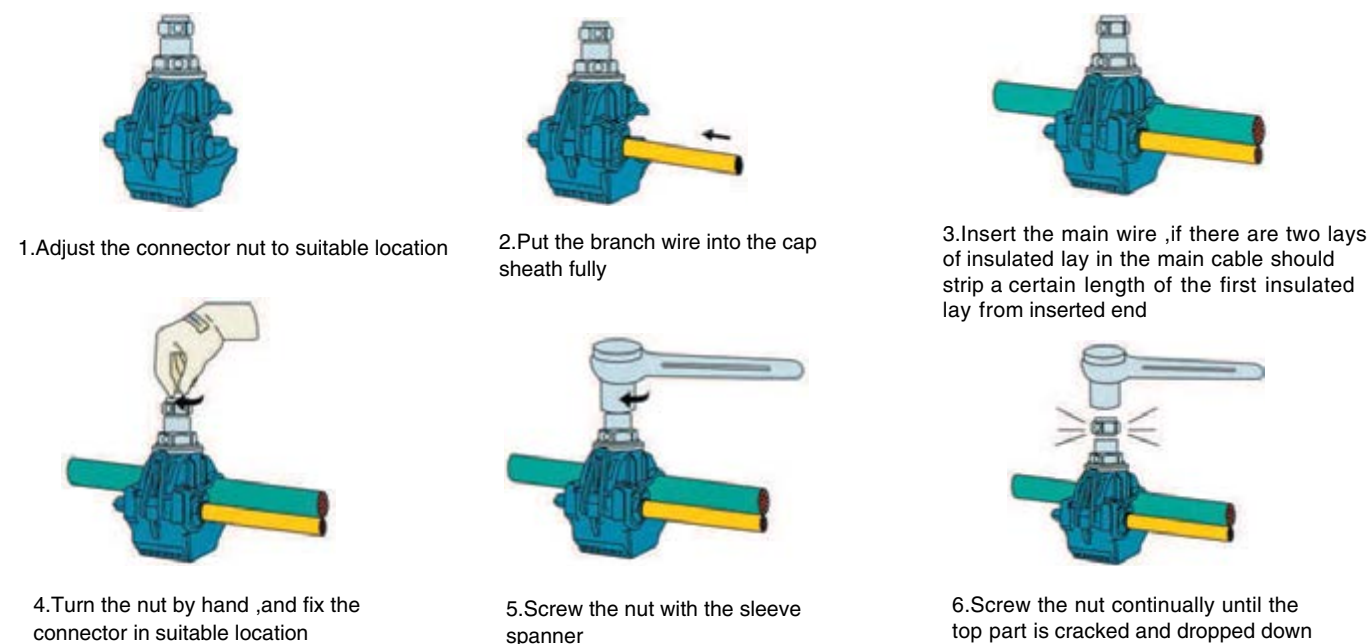


The type insulation piercing connectors are suitable for all types of LV-ABC conductors as well as connections to service and lighting cable cores. When tightening the bolts, the teeth of the contact plates penetrate the insulation and establish a perfect contact. The bolts are tightened until the heads shear off. Stripping of insulation is avoided. Suitable for aluminum and copper conductors and components not losable, end cap attached to body, Insulation material made of weather resistant glass fiber reinforced polymer, contact teeth made of tinned brass or copper or aluminum, bolt made of dacromet steel.



TYPE	Applicable conductor range mm ²		Bolts qty.
	Main line section mm ²	Branch line section mm ²	
PC1-1	16-95	1.5-10	1
PC2-1	16-95	4-35	1
PC3-1	25-95	25-95	1
PC4-1	50-185	6-35	1
PC3-2	25-95	25-95	2

Simple Installation



Product Description	Main cable cross section (mm ²)	Tap off cable cross section (mm ²)
BC21F*	25-70	6-35

Aluminum Suspension Clamps

For standard voltage application with all aluminum, ACSR, or aluminum alloy conductor.

Material:

Body and Keeper: high strength aluminum alloy

Hardware: galvanized steel

Socket and Clevis: ductile iron, galvanized

Cotter Pin: stainless steel



Tension Clamps

Bolted Aluminum

Bolted type tension clamps are used in transmission line construction with all aluminum, ACSR or aluminum alloy conductor. Consequently it is always necessary to give the exact data concerning conductor and stresses.

With this clamp type the conductor can be passed onwards uncut. Fitting is extremely simple by tightening the clamp bolts to the prescribed tightening torque.

Application

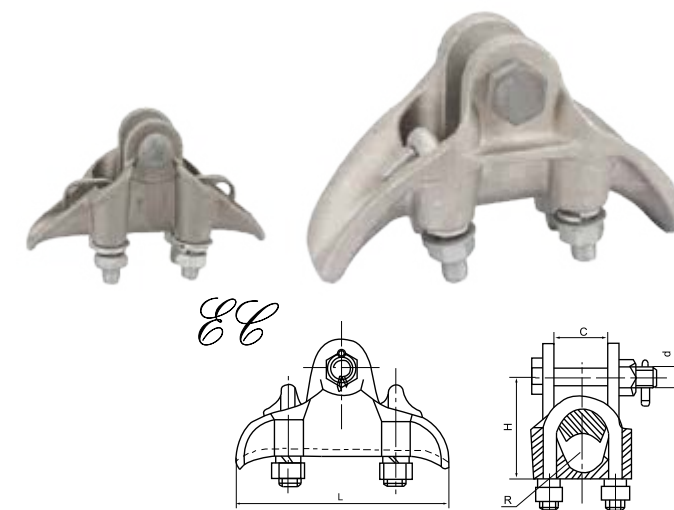
Aluminum alloy strain clamp(Bolt type) is suitable for aerial line up to 36kV, fixing aluminum wire or steel core minium wire on the strain pole, aerial insulation aluminium conductor and insulation aluminium cover are being used together, and the action is insulation protection.

The product body and press plate are made of high strength aluminum through heat treatment; the outside shield was made from good climate resistance insulating material.

This product has advantage such as high strength, good holding power, light in weight and no magnetic hysteresis loss, it was belonging to power-saving anchor clamp.

Structure Feature

1. The body is made of high-strength
2. Smooth surface long servile life
3. Easy installation
4. No waste electric energy



CRADLE SUSPENSION CLAMP

Catalog Number	Suitable Conductor (mm)	Failure load KN	Weight Kg
CSC001	5.0 - 18	70	0.72
CSC002	12 - 26	70	1.15



PISTOL GRIP STRAIN CLAMP

Catalog Number	Suitable Conductor (mm)	Failure load KN	Weight Kg
PG5-16	5.0 - 16	70	0.78
PG5-21.5	5.0 - 21.5	70	1.19
PG19-30	19 - 30	70	4.86

For A B C line



Catalog Number	Applicable conductor
SCPSP	20 - 120
SC-1500	35-50-54.6-70



PS2026

Catalog Number	Applicable conductor Section area (mm ²)
PS2026	4x25~4x35
PS3035	4x50~4x70
PS3943	4x95~4x120

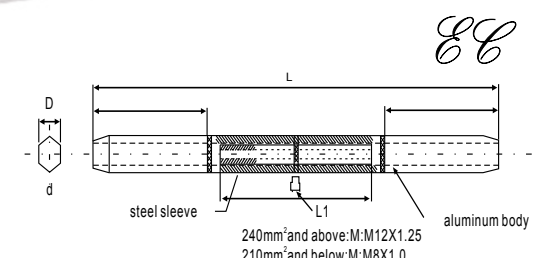
Catalog Number	Applicable conductor Section area (mm ²)
PA 1500	25-35-50-54.6
PAG25-120	4x 25 - 4 x120
PA 25/4	4x16 - 4x 25
STA 4-10	4-10 AIRDAC
STA 10-16	10-16 AIRDAC
STA 2X16-35	2 X 16/25/35 ABC



PA 1500 PA 25/4 PAG 25-120 STA 2 X 16 - 35

Full-Tension Conventional Compression Splices

For ACSR / AAC / AAAC conductors



Full Tension Compression Midspan Joints are manufactured from an Aluminum outer extrusion splice body, and an inner steel tubular core.

The two piece design ensures strength equivalent to the conductor onto which the fitting is applied. Each fitting is manufactured with internal and external tapers, to eliminate stresses associated with compression, and reduce corona discharge.

Material:

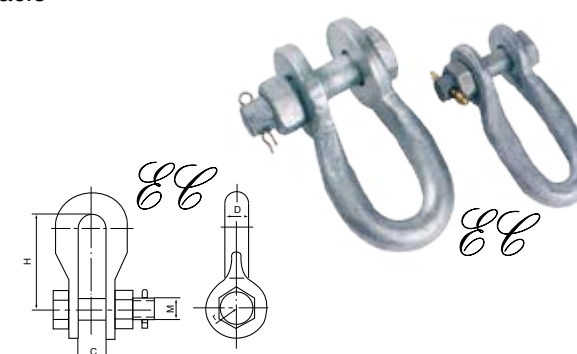
Splice Body: Seamless Extruded Aluminum Alloy Tube

Steel Sleeve: Plated Steel

Catalog Number	Suitable Conductor (mm)	Common Conductors
MSJ001	5.82 - 8.64	Squirrel, Gopher, Fox
MSJ002	9.27 - 12.07	Ferret, Rabbit, Ladybird, Mink
MSJ003	11.79 - 14.86	Pine, Willow, Hare, Oak
MSJ004	14.73 - 18.34	Mulberry

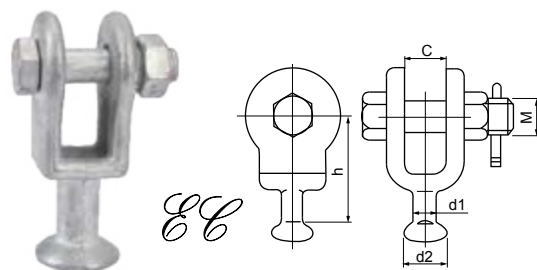
Line Hardware

D-Shackle



Cat No	Dimensions (mm)				Bolt Diameter
	C	M	D	H	
DS001	20	16	16	80	70
DS002	24	22	20	90	120

Clevis Ball Adaptors



Ball clevises are used to attach ball and socket insulators to other associated tower hardware.

Material:
Body: Galvanized steel
Bolt and nut: Galvanized steel
Split pin: stainless steel

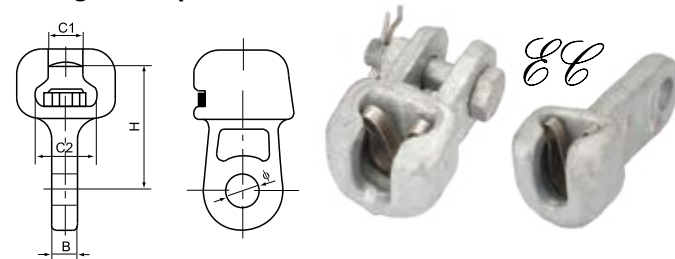
Catalogue Number	Insulator type	Dimensions (mm)					Ultimate Strength (kN)
		h	d1	d2	M	C	
CBA001	SCI33	89	17	33.3	18	22	70

Note: Split pin may be substituted for clevis nut by adding according requirement.

Socket Tongue Adaptors

Socket eyes can be used for connecting conductor clamping devices to ball and socket type insulators.

Material:
Cotter Pin: stainless steel



Catalogue Number	Coupling Size mm	Dimensions (mm)					Ultimate Strength (kN)
		B	C1	C2	H	φ	
STA70	16	16	19.2	35	70	20	70

Guy Thimbles

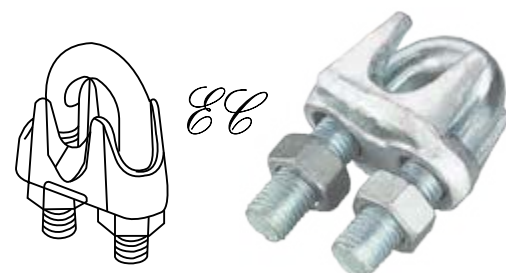
Catalogue Number	Conductor Range mm
WRT3026	6-12mm
WRT3028	10-16mm



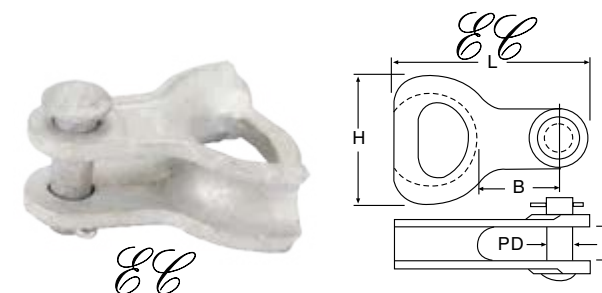
Crosby Clamp

Hot dip galvanized. Available in 10mm, 12mm and 16mm.

Catalogue Number	Conductor Range mm
CC10	10mm
CC12	12mm
CC16	16mm



Deadend Thimble

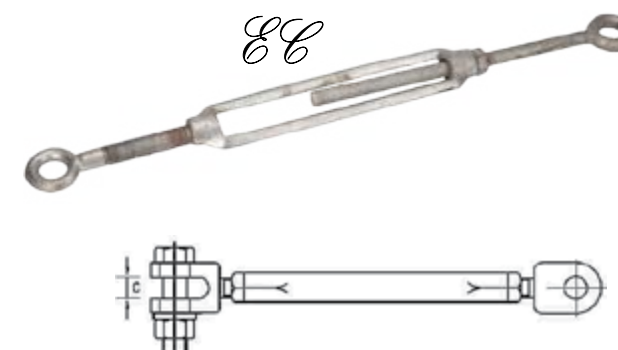


Thimble provides a convenient and efficient means for loop deadending of steel static wire and bare or insulated aluminum or copper phase wires. Magnetic induction heating will occur.

Material:
Body: steel, galvanized
Clevis Pin: galvanized steel
Cotter Pin: stainless steel

Catalogue Number	Conductor Range mm	Ultimate Body strength KN	Dimension(mm)				
			L	B	W	H	PD
CAB - 100	0-22.23	70	16	18	40	6	130

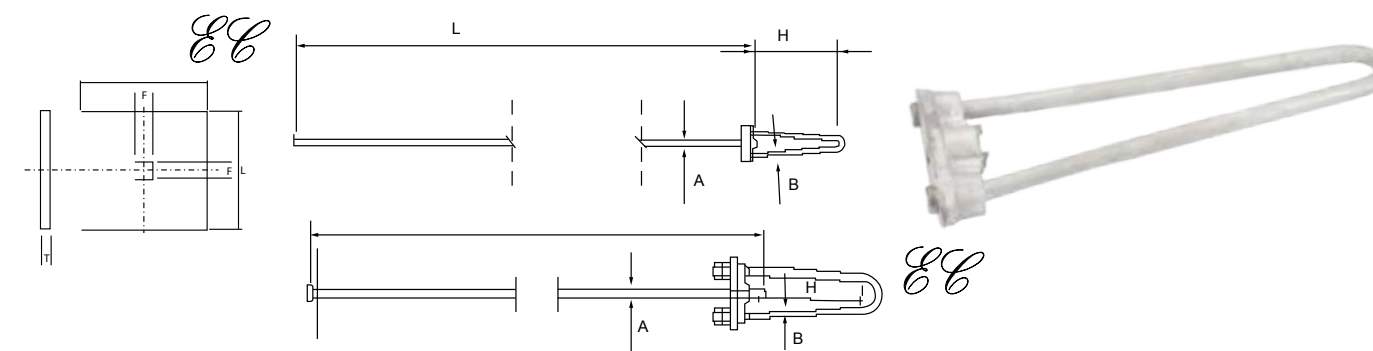
Turnbuckles



Turnbuckles are used as adjustable extension links to maintain proper tower clearance on assemblies at tower end. Jaw ends are supplied with clevis pin and humpback cotter pin.

Material:
Galvanized forged steel

Stay Rods And Bows



Catalogue Number	STAY RODS DESCRIPTION	Approx.Weight kg
	BASE PLATE DESCRIPTION	
SRM1215	LOW VOLTAGE STAY ROD M12X1500MM NON - ADJUSTABLE	
SRM1618	MEDIUM VOLTAGE STAY ROD M16X1800MM ADJUSTABLE	
SRM2018	MEDIUM VOLTAGE STAY ROD M20X1800MM NON - ADJUSTABLE	
SBP300	STAY ROD BASE PLATE 300 X 300 X 6MM	
SBP380	STAY ROD BASE PLATE 380 X 380 X 6MM	
SBP450	STAY ROD BASE PLATE 450 X 450 X 6MM	

OPERATION AND PROTECTION DEVICE

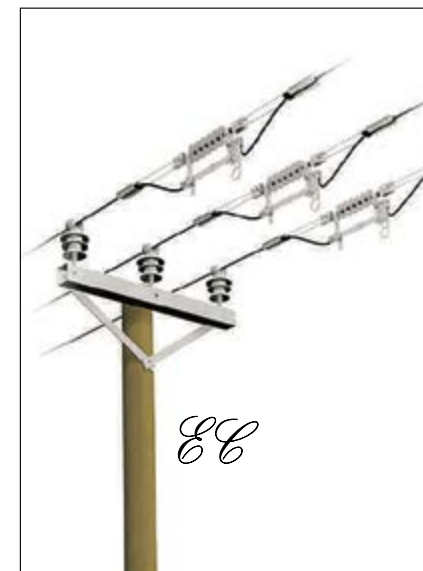
MV Overhead Lines



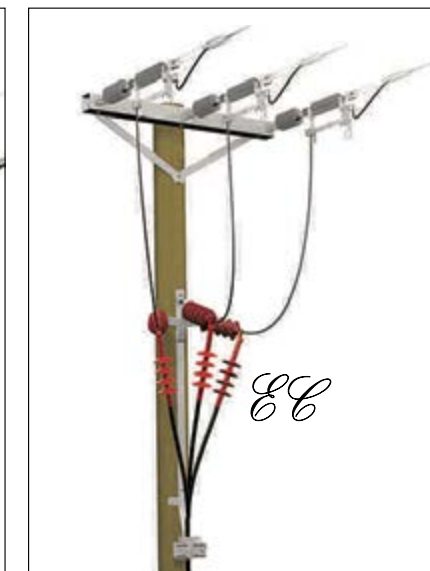
Disconnector for MV overhead line



Disconnector solution for MV overhead lines



Disconnection Point on The Network



Pole Mounted Substation and
Cable Termination



Branch Lines

400A Pole Fuse Switch Disconnectors

Pole Mounted Fuse-switch Disconnecter for low voltage system is specially designed as an on-load protective switch and offers a reliable medium for disconnection & protection of fully insulated open wire network section.

The unique modular design offers flexibility to connect switches for single, double, triple & quadruple phases. Series of such combinations can be linked together.

Construction

The switch is versatile and is ideally suited for top mounting directly to poles, transformers and cross arms. The fuse-switch disconnecter is fully insulated made from corrosion proof, impact resistant, weather & UV resilient glass fiber reinforced polyamide compound with high glass content.

This high quality of material, together with robust construction guarantees consistent performance even under adverse climatic conditions

The upper housing of the switch is hinged to the lower body and houses the conductors, terminals and contacts. The operation of the switch is simple and safe with the help of insulated operating rod.

The fuse contacts are fully shrouded and terminals are made of ETP grade high conductivity copper duly tin plated which ensures minimum contact resistance besides offering flexibility to use copper or aluminum cables.

The switch can take conductor size of 50 to 240 sq. Mm.

Features

- Electrical & Mechanical fuse indicators.
- Minimum number of moving parts.
- Designed for switching on full load with DIN Type fuse links upto a rated current of 400A.
- Arc quenching chambers to allow for On-Load switching.
- Change of fuse possible by using the Insulated operating rod.
- Lower flap can be withdrawn by the Insulated operating rod.
- Flexibility of linking a series of flaps for simultaneous operation.
- The contacts are rigidly mounted in the housing independent of the terminal bolts.
- Bolted or Moving blade linked neutral.

Type Testing

The fuse switch has been extensively type tested according to IEC 60947 part 1 & 3 for:

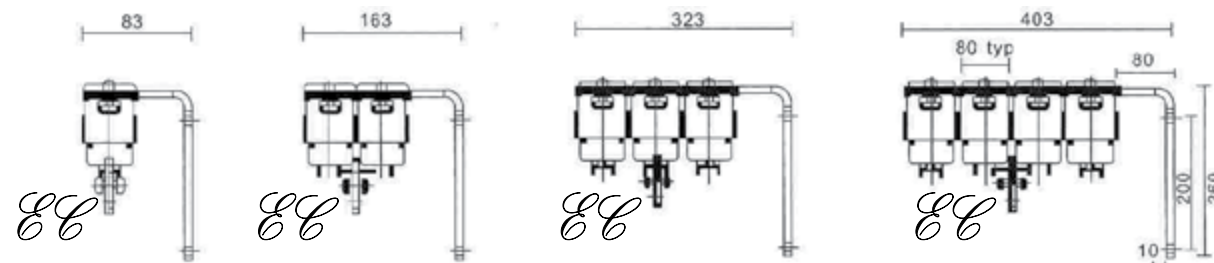
Test sequence 1: General performance characteristics.

Test sequence 2: Electrical & Mechanical endurance.

Test sequence 3: Short Circuit performance capability at 10 kA rms for 0.5 s.

Test sequence 4: Conditional Short Circuit at 17 kA peak.

Test sequence 5: Overload Performances, Degree of protection and Impulse test at 9.8 kV peak.



Technical Particulars:

Catalogue Ref:		SLDM-1/400A
Body/Carrier Material		Polyamide
Rated Operational Current	In	400 Amps
Rated Operating Voltage	Ue	440 Volts, 50 Hz
Rated Insulation Voltage	Ui	1000 Volts
Rated Short Time Current	Icw	10 kA rms for 0.5s with 17 kA peak
Cable Size up to		240 sq. mm.
Fuse Link		"NH" TYPE Size 1 & 2
Dimensions		270 X 142 X 218 mm (approx.)
Weight		2.5 Kas (Not Bindina. Without Fuse)

Insulators

Composite insulators are available for applications up to system voltages of 110 kV. The core of a composite insulator is a pultruded fiber glass rod which provides a high mechanical strength. In a direct injection molding process a non-tracking, erosion and UV resistant polymeric housing is molded directly onto the fiberglass rod. A corrosion resistant metal end fitting is crimped onto each end of the rod to provide a high mechanical strength. A new developed crimping control technology monitors the assembly process of the metal fittings and ensures that crimping forces cause no damage to the fiberglass rod while achieving a crimp that will withstand the highest possible mechanical loads. Sealed with a tracking and erosion resistant polyurethane barrier, the core is protected from deterioration due to moisture ingress. Composite insulators are available as tension (suspension), line post and station post insulators. For railway applications, tension and strut composite insulators are available in a large variety of configurations.

The design of shed adopted unique aerodynamics principle.

The shed and sheath adopted the whole moulding technique.

The end seal adopted the high temperature sulfuration high pressure seal technique, to achieve to the aim of three-protection, to ensure the end seal of metal fitting is reliable performance.

Sheath thickness accord with the IEC international standard.

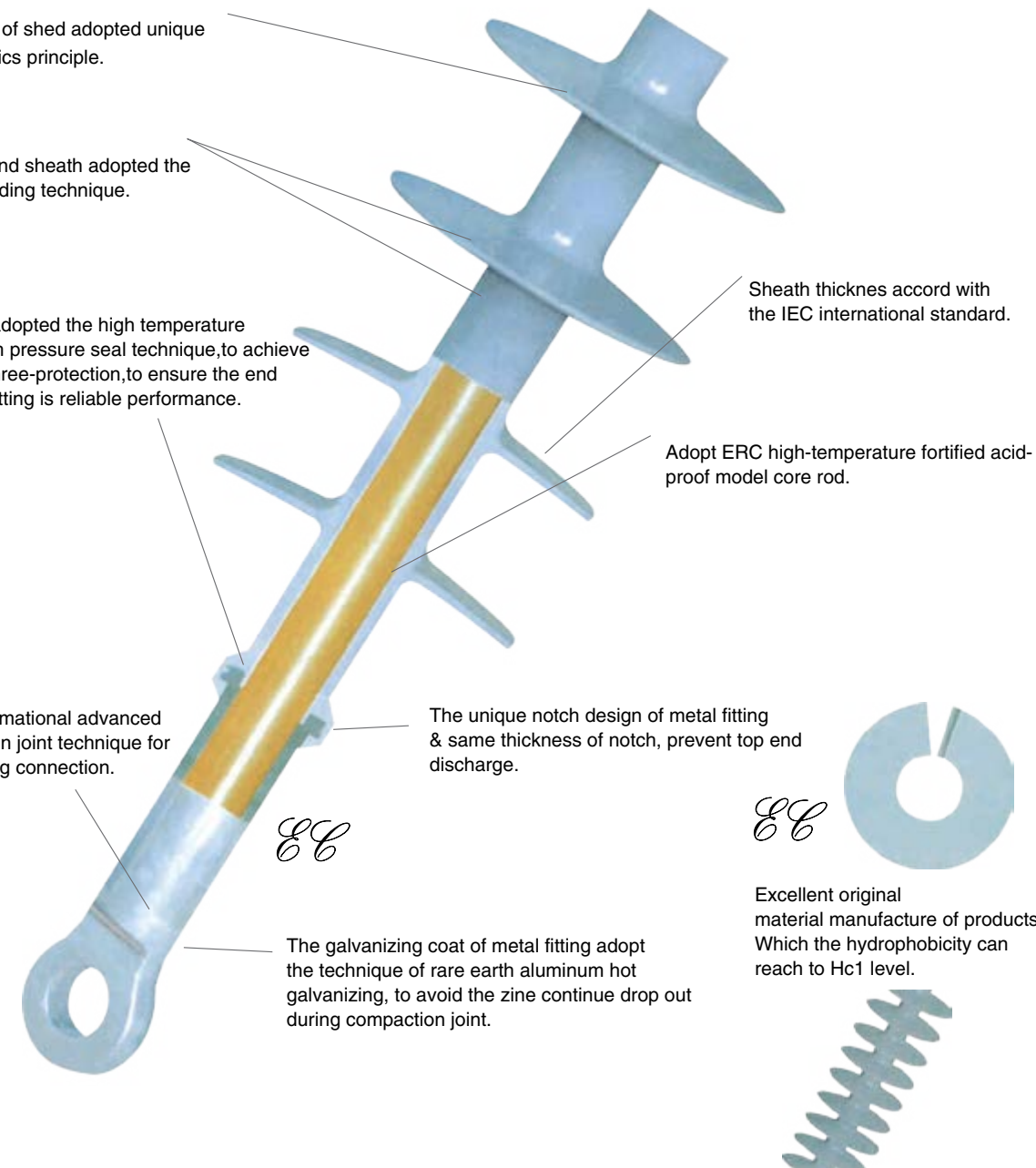
Adopt ERC high-temperature fortified acid-proof model core rod.

Adopt international advanced compaction joint technique for metal fitting connection.

The unique notch design of metal fitting & same thickness of notch, prevent top end discharge.

The galvanizing coat of metal fitting adopt the technique of rare earth aluminum hot galvanizing, to avoid the zinc continue drop out during compaction joint.

Excellent original material manufacture of products. Which the hydrophobicity can reach to Hc1 level.



Insulators



Composite suspension insulators



Composite post insulators on an overhead line switch



Modular lightweight insulators as stand-off insulators for MV terminations



Modular lightweight insulators in combination with surge arresters in overhead line fuseholders

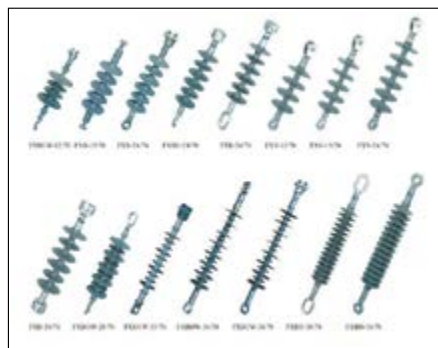
Porcelain Insulators

Insulators are made from high quality non porous electrical porcelain and galvanized ferrous (or non-ferrous) end fittings which provide long life and reliable performance over a wide range of environmental conditions.



Line post insulators

Silicone Insulators

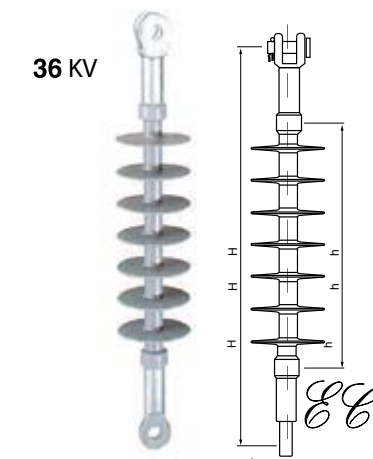
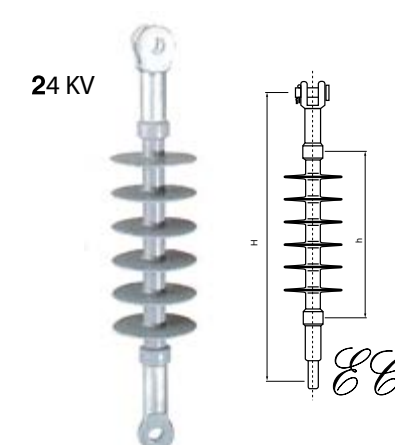
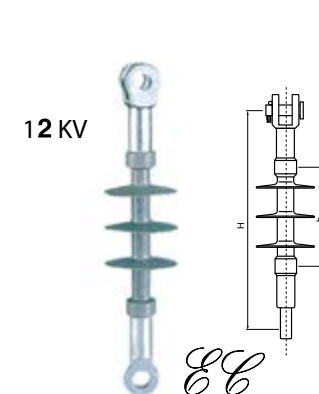


Suspension insulators

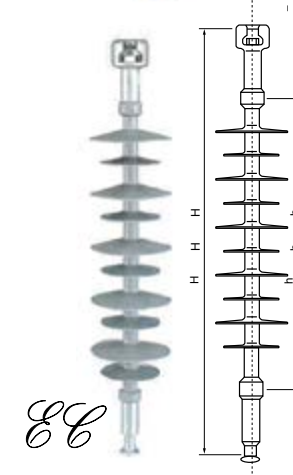
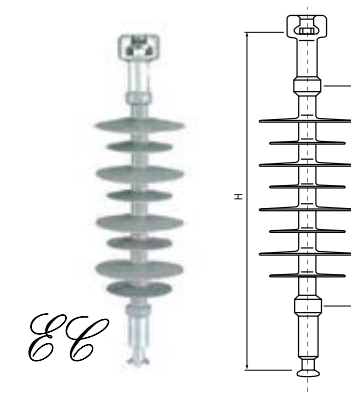


Disc and line post insulators used on overhead lines.

Clevis And Tongue



Socket And Tongue



Name	Type	Rated voltage (kV)	Rated mechanical load (kN)	H Structure Height (mm)	H Insulating distance (mm)	Min Nominal creepage distance (mm)	Diameter of shed (mm)	1min power frequency wet withstand voltage (kV)	Full wave lightning impulse withstand voltage(peak value)(kV)
composite suspension rod insulators	SCI12	12	70	352	180	650		70	155
composite suspension rod insulators	SCI24	24	70	550	370	650		75	200
composite suspension rod insulators	SCI36	36	70	630	445	1230	140/108	95	230
composite suspension rod insulators	SCI24B	24	120	550	370	1000		95	185
composite suspension rod insulators	SCI36B	36	70	640	445	1230	125/93	95	230

* Other sizes are available on request.

Line Post Insulators

Design

The structural design of the insulator consists of three basic parts:

Rod: insulator fibreglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is filled 65 % electrical grade glass fibers according the volume.

End Fittings: end fittings are directly crimped to the fiberglass rod by a circumferential crimping process. The crimp requires no intermovement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds: insulators sheds are manufactured with proprietary silicone rubber. corona cutting, salt fog, oxidative stability and variations of differential thermal analysis tests assure the quality of shed material.

Leakage Distance

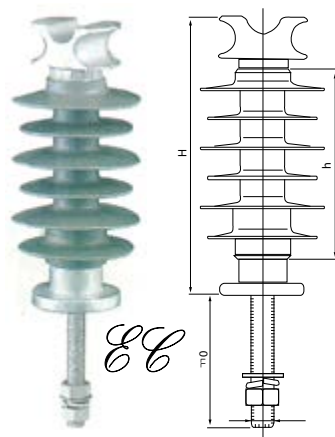
Insulators feature high leakage distance for optimum contamination performance.

Mechanical Ratings

Specified Cantilever Load (SCL) is the ultimate cantilever strength rating. Maximum Design Cantilever Load (MDCL) or Working Cantilever Load (WCL) is the maximum continuous cantilever load at which the post insulator should be applied..

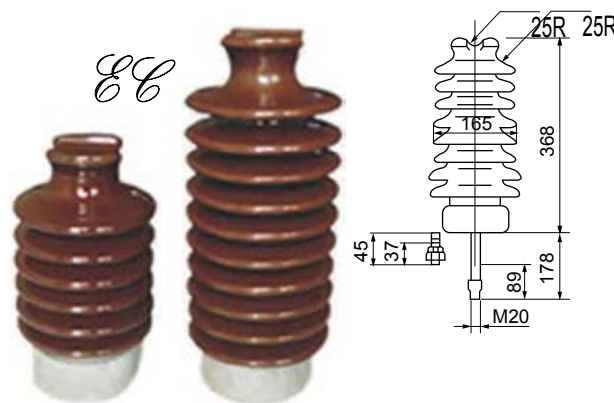
Insulation Coordination

The operating performance of a distribution or transmission line depends on its insulation level. It must not flash over under practically any operating condition. Several methods of coordination of line and station insulator have been proposed. Generally, the best method is to establish a definite common insulation level for all the station insulation and then match that level with the line insulation.



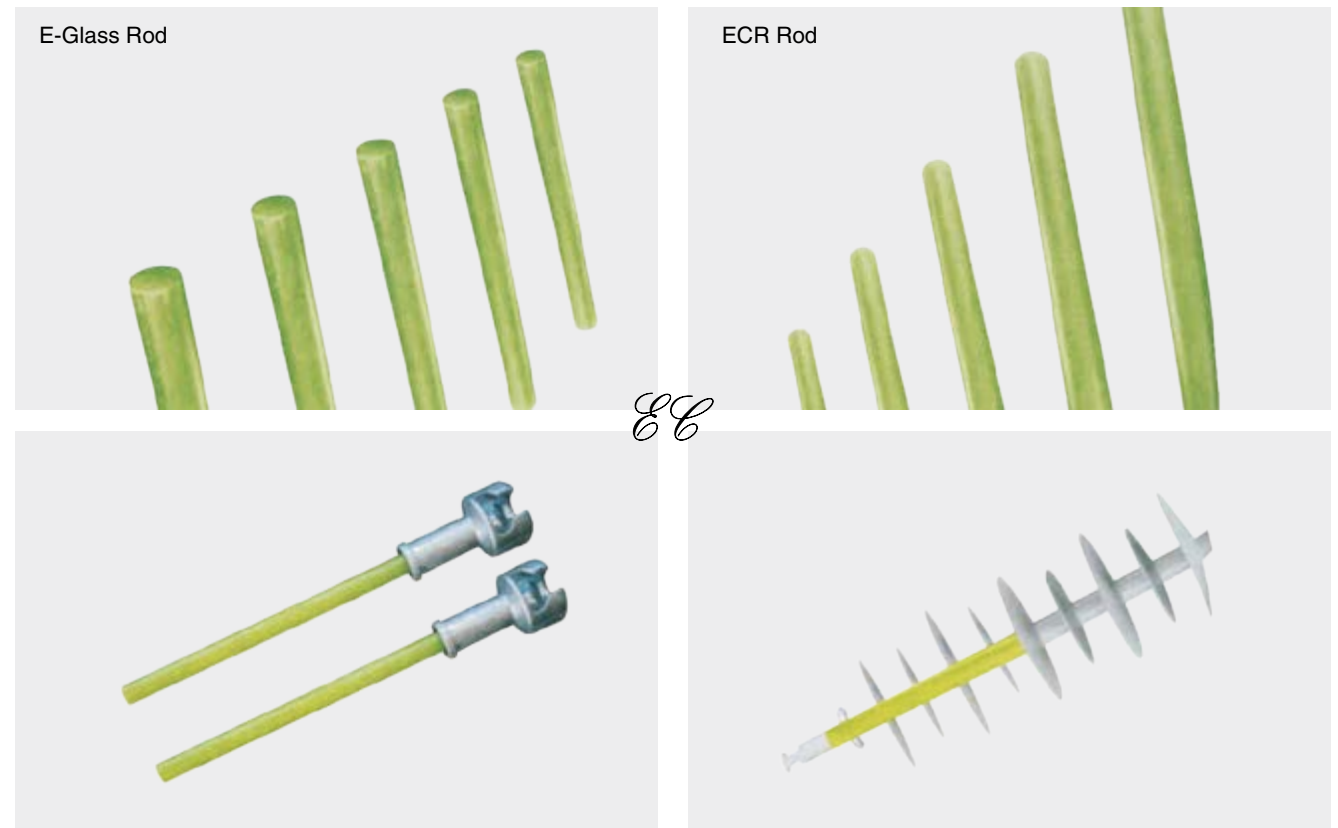
Silicone Line Post Insulator

Porcelain Line Post Insulator



Cat. No.		
ANSI	57-4S	
Class	57-4L	
Fig No.		
Dimensions of the pin	M20	
Creepage distance mm	1015	
Dry arcing distance mm	368	
Cantilever strength KN	12.5	
Low frequency flashover voltage	Dry flashover KV	150
	Wet flashover KV	125
Critical impulse flashover voltage	Postive KV	255
	Negative KV	340
Radio influence voltage data	Test voltage to ground KV	44
	At 1000kHz Max. RIV _μ V	200
Weight kg		16

Suspension Composite Insulator Rod



Note:

E-Glass rod (Vacuumpull-Extruded Resin reinforced fiber glass rod)

ECR rod (Vacuumpull-Extruded thermo-resistant acid-resistant glass rod)

No	Parameter	Unit	Specification
1	Density(at20±2℃)	G/cm3	≥2.0
2	Water Absorbtion rate(at20±2℃, 24h)	%	≤0.05
3	Tensile Strength	Mpa	≥1690
4	Bending Strength	Mpa	≥1100
5	Dry Penetration Test	min	≥50
6	Water Difussion Test(1% bacl, boiling For 100h 12kV/1Min)	μ A	<10
7	Shearing stength Along Laminals	Mpa	≥50
8	Volume Resistivity(140℃, 96h)	Ω • M	≥1010
9	DC Withstand Voltage(10 min)	kV	≥50
10	Lightning Surge Withstand Voltage(100kV,10mm)	Times	≥5
11	Bending Strength at Heating Conditions	Mpa/150℃	≥350
12	Stress Corrosion(1 mol/1HN3, at 67% Stress)	h	≥7200h
13	Torsion Strength	Mpa	≥800

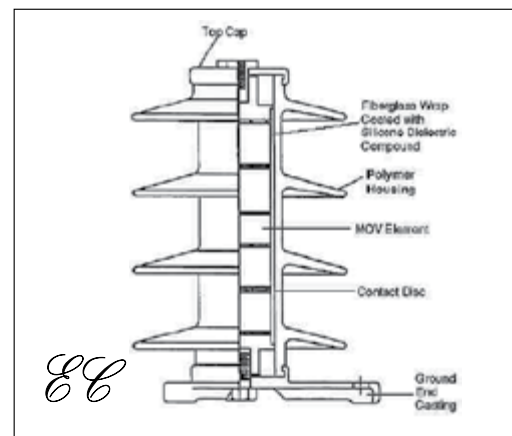
Lighting Arresters

We produce and offer a wide variety of high voltage surge arresters, metal oxide gapless arresters designed to protect transformers, switchgear, and other equipment from switching and lightning surges. These arresters meet or exceed all requirements of the most current IEC standard and can be selected to match a range of contamination and energy requirements. Surge arresters complete our reliable product solutions designed for fault free distribution of electricity. It should be installed parallel (between the line and earth) to the transformer or cable terminations, or other objects that require protection.



Construction

- In comparison to equivalent porcelain-housed arresters, these polymer housed gapless arresters are typically half the weight. This makes transportation, handling and installation much easier.
- The single-unit, high voltage designs provide improved contamination performance over multi-unit designs.
- Closer spacing Smaller line end castings and smaller grading rings allow closer phase-to-phase spacing.
- Zinc: oxide varister blocks are centered and restrained with tightly woven fiberglass filament strands impregnated with epoxy resin.



Block Routine Tests:

- Physical Inspection : Visual inspections are performed at several steps of the block manufacturing process.
- Rated Energy Test: This procedure confirms the energy capability of each zinc oxide disc element.
- Residual Voltage Test: Every block undergoes an 8/20 current wave impulse to verify its V-I characteristics.

MOV Block Batch QA Tests:

- Square Wave Energy Test : Performed on a 5 disc sample from each batch, this test is performed to quantify the batch energy capability.
- High Current Test : Each sample is subjected to high current discharges of the same polarity to ensure high current characteristics.
- A/C Life Test : The discs are placed under test conditions for a minimum of 1000 hours to verify performance.

Arrester Routine Tests:

- Physical Inspection: Every molded rubber part, block, wrap module, brackets and completed unit is visually examined to reject defective products.
- A/C Reference Voltage Test: This test measures the voltage once a predetermined maximum peak current is reached.
- Partial Discharge Test: This test ensures that the partial discharge level of the arrester does not exceed a level of 10 pC.
- Residual Voltage : Tested on individual blocks

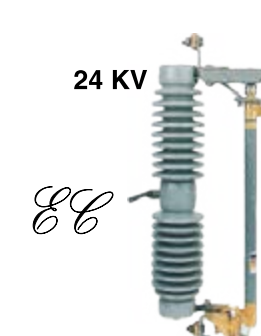
Arrester Type Tests:

- Testing Compliant with GB/T8952-2005
- Including:
 - Insulation withstand tests on housing
 - Residual voltage tests
 - Long-duration current impulse withstand
 - Operating voltage tests
 - Short circuit current tests
 - Internal partial discharge tests

Lighting Arresters

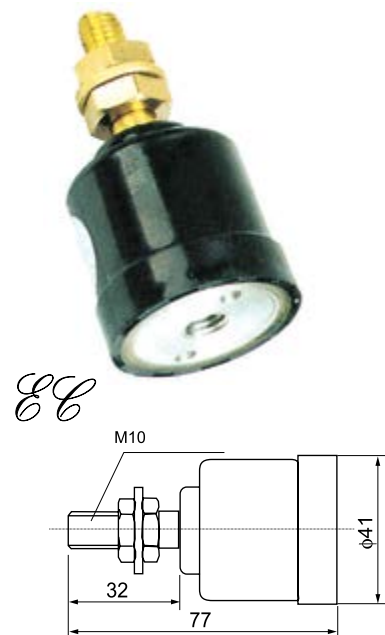


Code No.	Rated Voltage	MCOV	Current impulse Residual Voltage				
			1/4 μ s Steep current impulse	8/20 μ s Lightning current impulse	30/60 μ s Switching current impulse	Long impulse withstand current 2000 μ s	High current impulse withstand
	KV(rms)	KV(rms)	KV(crest)	KV(crest)	KV(crest)		
LA 12	12	10.2	42.2	36	27	250	100
LA 24	24	19.5	82	72	62	250	100
LA36	36	29	104.5	103	92.4	250	100



Type	Rated Voltage(kV)	Rated current(A)	Breaking current(A)	Impulse voltage(kV)	I Power-frequency withstand voltage(kV)	Creepage distance (mm)	Weight (kg)	Dimension (CM)
DO 12	12	100	10000	150	70	540	8.8	51.5 x 34 x 12
DO 24	24	100	10000	150	70	540	8.8	51.5 x 34 x 12
DO36	36	100	10000	170	70	720	15.5	63 x 38 x 14.5

Arrester Accessories



As a special supporting product for arrester, the disconnect is series connected with arrester.

When the arrester comes across any fault, it would operate quickly and let the failed arrester disconnect from the power grid, meanwhile, it would give obvious disconnection symbol, so that the maintenance personnel would find the point of failure and change the arrester in time. On the other hand, when the arrester works normally, disconnect does not work and is under low impedance state, it would not affect the protective characteristics of arrester. The arresters that have been equipped with disconnects really realize safe operation, maintenance free, convenient and reliable performance.

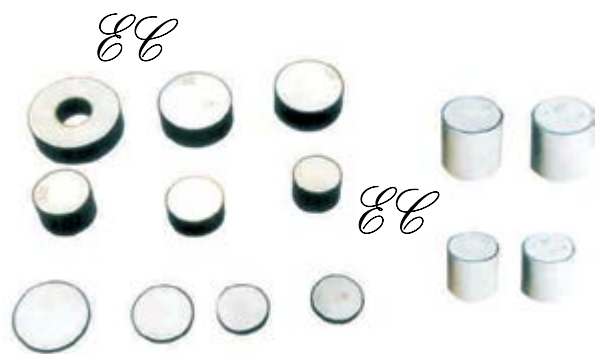
It is popular to use disconnects for distribution type, power station type and line type arresters in power grid in Japan, occident countries and other developed countries and districts.

The disconnects produced by our company adopt the latest the rmal-explosion design, with advantages of fast response and misoperation free, can be equipped with arresters of various models of 3kV above, having the same operating conditions with that of arresters.

Surge Arestor Block Sizes



Four Available Block Diameters.



Our surge arresters use only the finest metal oxide varistor (MOV) blocks so that surge energy is conducted to ground without compromising the insulation integrity of transmission or distribution system. The amount of energy a surge arrester is exposed to is dependent on the system. Thus, we supply four MOV block diameters to efficiently channel surge energy to ground. Block diameter determines the amount of energy that an arrester can absorb. The energy absorption capability of the system is simply the amount of energy that the MOV blocks can absorb without entering a mode of thermo-mechanical arrester failure.

Cut Out Fuse

Quality Construction

Efficient Current Transfer

The cutout has an all copper single piece current path with Silver-plated contacts. Terminals are tin-plated brass for use with copper or aluminum conductor.

Hooks

Galvanized steel hooks are standard on all cutouts, for use with a portable tool. The hooks are mounted under the top contact and serve as a guide for the fuse holder when closing at an off centre angle.

Top Contact

The top contact is designed such that it provides a smooth self aligning action during closing; the top contact is formed from highly conductive copper and is silver-plated, which provides a continuous current path from dome nut to PG clamp. The contact is designed to maintain firm and constant pressure with the fuse holder contact surface until fault interruption is accomplished. Backing the top contact is the Loadbreak bracket, which prevents over-racking. Used in conjunction with a load break tool of the correct rating, the cutout can be opened under load.

Hinge

The hinge on the cutouts employs a large pivot area for the fuse holder's trunnion and is manufactured from brass for its strength and superior electrical properties. The hinge contacts are of a highly conductive copper alloy and silver-plated to ensure an efficient current transfer from the trunnion casting.

Insulator (Silicone)

The advantages of HTV silicone are numerous, namely,

1. Silicone is the only housing materials that are able to transfer their intrinsic hydrophobic behavior to pollution layers. Therefore, leakage currents are suppressed and the risk of flashover is reduced. Moreover, composite insulators with silicone housings do not require cleaning.

2. High tensile strength to weight ratio.

3. Improved performance in highly polluted areas.

4. An unattractive target for vandals and very resistant to projectile damage.

5. Flexibility, providing better seismic capabilities and preventing cascade failure of post units.

6. High resistance to UV degradation.

7. High resistance to thermal extremes (-35oC to +50oC)

Insulator (Porcelain)

These insulators of sky-glazed grey porcelain, with leakage distances range from 230mm720mm, with BIL ratings of 110kV-170kV.

Terminals

Tin plated copper alloy parallel groove type terminals are standard on all cutouts. They can accommodate aluminum or copper conductor. The parallel groove terminal is designed to accommodate two different size conductors, as is the case when arrestors are being used. Eyebolt and Lug mount options are also available.

Fuse Holder

The solid cap on the single vent fuse holder is made of silver-plated brass, which provides efficient current transfer.

An integral ring is provided in the top tube casting for opening and closing the fuse holder using conventional disconnect tools from the ground, from a bucket truck or from a cherry picker.

The toggle type trunnion casting is of silver-plated brass for efficient current transfer to the lower hinge contacts. Cams on the trunnion ensure high-pressure current path to the lower contacts. The pivot bosses are cast full round for smooth rotational operation in the hinge but prevent the trunnion from disengaging when closing the fuse tube. The spring operated link ejector assists with clearing low-level fault currents. A groove in the centre of the link ejector guides the fuse tail directly from the fuse tube to the attachment nut. Radii on the link ejector minimise the bending stress on the fuse tail to prevent strands breaking. The link is pinned to the trunnion with a brass pin to provide resistance to corrosive elements and assure smooth pivotal action. An interlocking device between link and bottom tube casting prevents excessive tension on the fuse link during closure, which could cause link breakage during closure.

The link employs an impact effect to ensure toggle action of the trunnion during low fault and overload interruptions. Dropout action is assured. The link provides sufficient surface area to facilitate re-fusing by a linesman wearing gloves.

Fuse Tube

The inside diameter of the fuse tube increases the internal pressure, giving superior and reliable expulsion action. During frequently encountered intermediate fault ranges, this diameter also permits higher TRV, (Transient Recovery Voltage), values to be tolerated. The liner is constructed of an arc quenching material. The tube is manufactured from fiberglass, which permits a smaller bore and provides higher burst strength. It is protected from the weather and environment by an ultra violet resistant coating.

Brackets

All mounting brackets are manufactured from steel to international standards and are hot dip galvanized. Stainless steel options are available on request.

Higher interrupt capacities

By using a copper arc-shortening rod attached to the dome nut inside the top of the fuse tube, lowering the fuse link, higher interrupt ratings are obtainable. It is necessary to use fuse links with removable button heads when using an arc-shortening rod.

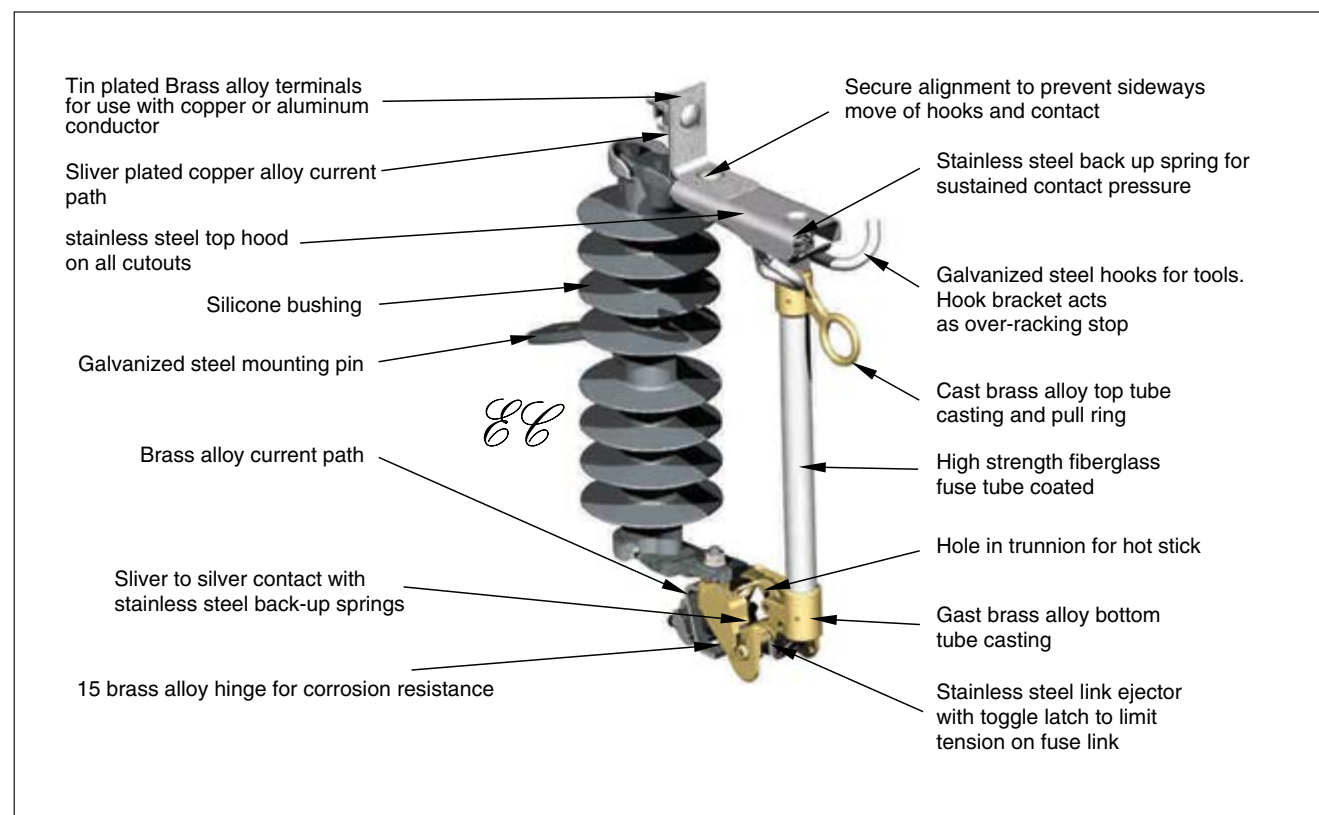
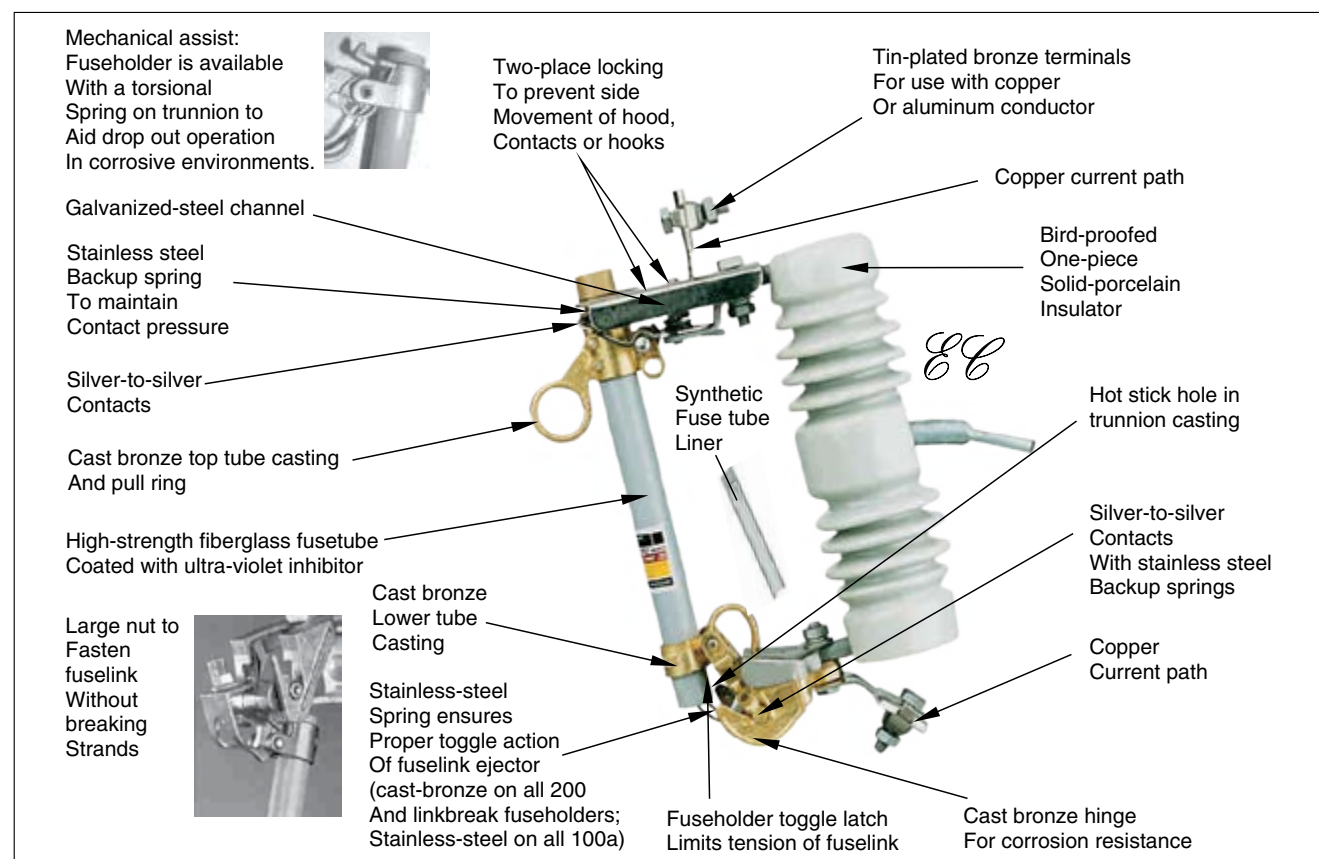
Creepage distance

Cutouts are available for use under various pollution conditions. Units are available in 245mm to 870mm, other creepage distance are available on request.

Extra Corrosion protection

All cutouts are available with components made from stainless steel and plated copper alloy, to offer greater corrosion resistance for severely aggressive environments where corrosion can become a major factor.

Cut Out Fuse



Cut Out Fuse Fuse Links

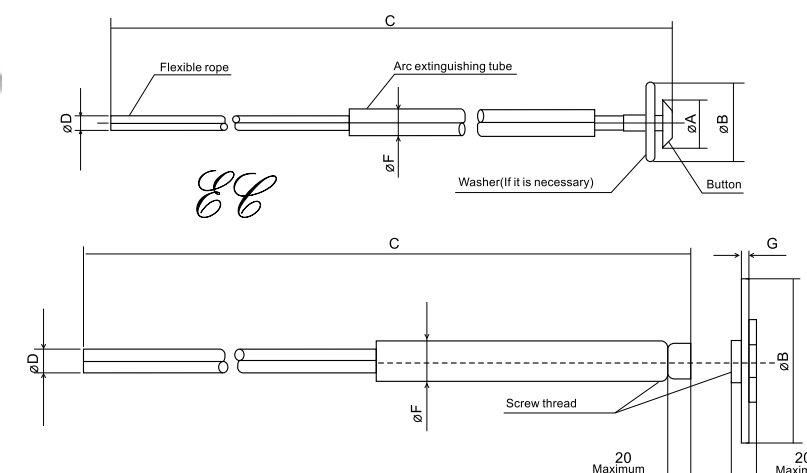
Fuse links are designed to carry 150% of their rated current without damage to the fuse link itself or the cutout in which it is installed. This capacity is for special loading situations, such as short-time overloads and cold load pick-up. It have two type, type K fuse links and type T fuse links, The fast characteristics of Type K fuse links were to provide fuse links that would meet existing coordination schemes. Type T fuse links provide slower time-current characteristics than the Type K links. Type T links coordinate particularly well with automatic oilcircuit reclosers.

Materials used of Type K links

The fusible section of the 1 through 3 ampere Type K links consist of a stainlesssteel fuse strain wire; the 6 through 10 ampere, stainless-steel strain wire and a copper-alloy fuse wire; 12 through 100 amperes, a stainless steel strain wire and a silver-copper fuse wire; 140 and 200 ampere, a silver-copper fuse wire large enough to serve as both strain and fuse wire.

Fuse elements of Type T fuse links

1 through 3 ampere Type T fuse links employ a fusing section consisting of a stainless-steel wire serving as both strain and fuse wire; 6 through 100 ampere, a stainless-steel strain wire and a pure-tin fuse wire in parallel. 140 and 200 ampere T links have a copper element mechanically crimped at one end, soldered at the other end. On overloads or low faults, the solder becomes a fluid and the link separates; on higher fault currents, the link separates when the copper wire melts.

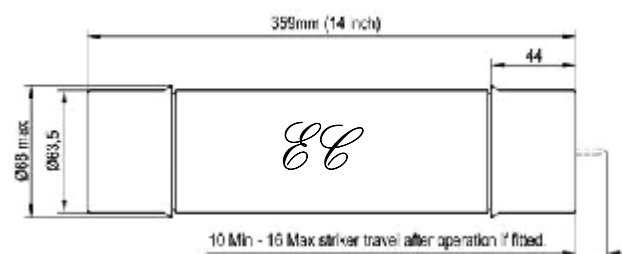


Rated current(A)	Dimension(mm)					Quantity/carton
	A	B	C	D	F	
1 (to)25	12.5 ± 0.2	19.0 ± 0.2	(Note1)	2.0	6.5	500
30 (to)40	12.5 ± 0.2	19.0 ± 0.2	(Note1)	3.0	8.0	500
50 (to)100	19.0 ± 0.3	(Not applicable)	(Note1)	5.0	10.0	250
140 (to)200	19.0 ± 0.3	(Not applicable)	(Note1)	7.0	12.0	150

Meduim Voltage Oil Fuse



Offering unparalleled short-circuit interruption capabilities, Medium Voltage (MV) current-limiting fuse links are the principle protection device used by electrical utilities and switchgear manufacturers throughout the world. Safe, reliable, environmentally friendly and cost effective, MV fuse links are the protection device of choice for distribution circuits due to their speed of operation and current limiting ability in the event of a short-circuit fault.

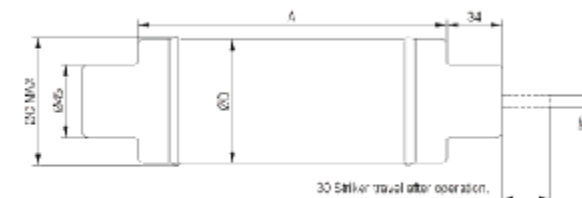


Technical specification

Rated current. Fuse(A)	Length mm	Diameter mm
16	254 / 359	63.5
20	254 / 359	63.5
25	254 / 359	63.5
31.5	254 / 359	63.5
40	254 / 359	63.5
50	254 / 359	63.5
60	254 / 359	63.5

Oil medium voltage fuse links are suitable for primary side transformer protection and oil filled switch combination unit.

The range is not suitable for use inside oil filled transformer tanks, where high oil temperatures may be expected.



Din Medium Voltage Fuse

Technical specification

Rated current. Fuse(A)	Length mm	Diameter mm
16	292 / 442 / 537	-
20	292 / 442 / 537	-
25	292 / 442 / 537	-
31.5	292 / 442 / 537	-
40	292 / 442 / 537	-
50	292 / 442 / 537	-
60	442 / 537	-

MV DIN fuse links are suitable for primary side transformer protection, fuse switch combination unit, fuse bases and fuse switches.



Din LowVoltage Fuse

Technical specification

Fuse Size	AMP Rating
NH00	32, 40, 50, 63, 80, 100, 125, 160
NH1	50, 63, 80, 100, 125, 160, 200, 250, 315, 350, 400
NH2	200, 250, 315, 350, 400, 450, 500, 550, 630
NH3	350, 400, 450, 500, 550, 630, 700, 800

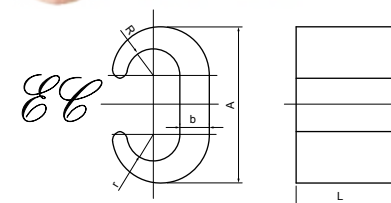


A range of NH size fuse links specifically designed for protecting and isolating photovoltaic array combiners and disconnects. These fuse links are capable of interrupting low overcurrents associated with faulted PV systems (reverse current, multi-array fault).



DISTRIBUTION PRODUCTS

Connectors Crimp Connectors CCA CCT



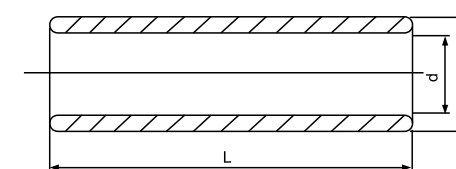
Range-taking compression tap connector made of pure copper. Designed to be gripped in the jaws or dies of installation tool, and then slipped directly over line for easy installation. Also used for deadending.

Product Facts

- Made of pure electrolytic copper
- High withstand to corrosion in or above the ground
- High capacity to flow fault-currents
- Available for copper conductors

Type	Suitable section of conductor (mm ²)	Dimension (mm)				
		A	L	b	R	r
CCA-1	16~16	22	12	25	3	3
CCA-2	16~25 16~35	20	22	3	4	3
CCA-3	25~25 25~35 35~35	24.7	22	4	4	3.5
CCA-7	50~50 50~70	27.8	23	6	5	4
CCA-8	70~70	26.7	24	4	5.5	4

Commercial type for copper conductors

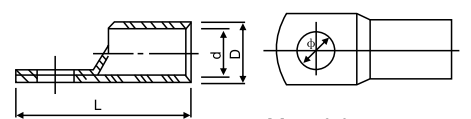
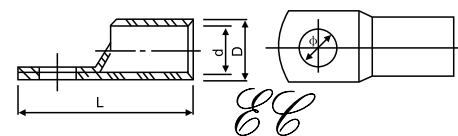


Material: copper
Surface: electro-tinned



Cat No	Dimension mm		
	D	d	L
F1.5	3.7	1.8	20
F2.5	4	2.5	20
F4	4.8	3.1	20
F6	5.5	3.8	25
F10	6.8	4.8	30
F16	7.5	5.5	35
F25	9	7	40
F35	10.5	8.1	45
F50	12.5	9.8	50
F70	14.5	11.5	55
F95	17.5	13.5	60
F120	19.5	15.5	65
F150	21	16.5	70
F185	23.5	18.5	75
F240	26.5	21	80
F300	30	24	85

Compression Terminal
Compression Cable Lugs Acc.
To DIN 46235



Material: copper
Surface: electro-tinned

Cat No	Conductor cross section	Conductor diameter (mm)		Flat hole diameter mm	Diamesion mm		
	re/rm/sm mm ²	VDE0295	DIN 48201/1		D	d	L
HT1.5	1.5			φ 4.2, φ 5.2	3.5	2.3	18
HT2.5	2.5			φ 5.2, φ 6.2	4	2.8	19
HT4	4			φ 5.2, φ 6.2	4.8	3.1	20
HT6	6		3.0	φ 6.2, φ 8.2	5.5	3.8	23
HT10	10		4.1	φ 10.5, φ 12.5	6.8	4.8	24.5
HT16	16		5.1	φ 10.5, φ 12.5	7.5	5.5	29.5
HT25	25	5.6-6.5	6.3	φ 10.5, φ 12.5	9	7	32.5
HT35	35	6.6-7.5	7.5	φ 10.5, φ 12.5	10.5	8.3	37.5
HT50	50	7.7-8.6	9.0	φ 10.5, φ 12.5	12.5	9.8	44.5
HT70	70	9.3-10.2	10.5	φ 10.5, φ 12.5	14.5	11.5	48
HT95	95	11.0-12.0	12.5	φ 10.5, φ 12.5	17.5	13.8	54
HT120	120	12.5-13.5	14.0	φ 12.5, φ 16.5	19.5	15.5	61
HT150	150	13.9-15.0	15.7	φ 12.5, φ 16.5	21	16.5	68
HT185	185	15.5-16.8	17.5	φ 16.5	23.5	18.8	76
HT240	240	17.8-19.2	20.2	φ 16.5	26	21	88.5
HT300	300	20.0-21.6	22.5	φ 16.5, φ 20.5	30	24	99

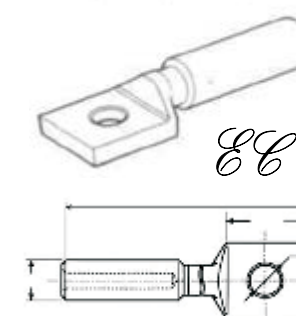
Aluminium lugs, XD8 type

Application

Aluminium lugs for aluminium conductors.
MV terminations.
LV connection on busbar inside electrical panel.

Description

The lug is made of aluminium barrel link to an aluminium palm by friction welding technology.
Single connector model for a given conductor cross-sectionnal area (independent of the core compression ratio).
Best technical solution to connect aluminium conductor to an aluminium bar.
Forged solid aluminium palm prevents moisture ingress.
Suitable for deep stepped indent crimping with fitting held in a container die. For external application, the friction welding area should be protected against humidity.
To be crimped by deep stepped indentation.



Cat No	Cross Section mm ²	Ø B mm	C mm	Ø D mm	L mm
XD8 16	16	16	38×38	13	93
XD8 25	25	16	38×38	13	93
XD8 35	35	16	38×38	13	93
XD8 50	50	20	38×38	16	100
XD8 70	70	20	38×38	16	100
XD8 95	95	20	38×38	16	100
XD8 120	120	25	38×38	16	120
XD8 150	150	25	38×38	16	120
XD8 185	185	32	38×38	16	120
XD8 240	240	32	38×38	16	120
XD8 300	300	40	38×40	16	140
XD8 400	400	40	38×40	16	160

Bimetallic Lugs

Description

The lug is made of aluminium barrel link to a copper palm by friction welding technology. For external application, the alu-cu area should be protected against humidity. To be crimped by deep stepped indentation. Features and benefits

Application

Bimetallic lugs for aluminium conductors. MV terminations.

LV connection on busbar inside electrical panel.

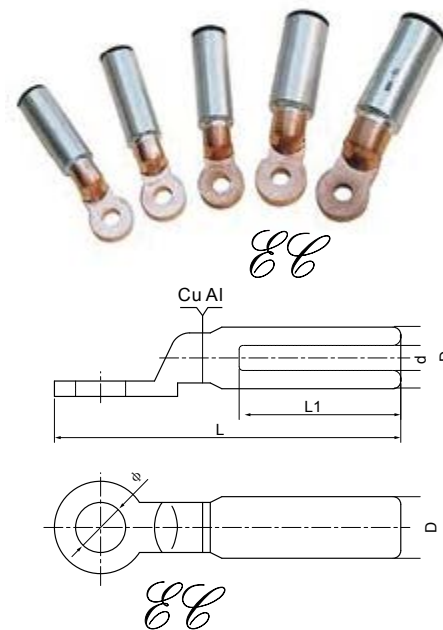
IRange from 16 to 1000 mm². One technology for all the sizes of cables.

Friction welding technology. Age resistant current passage from the aluminum shift to the solid copper plate.

Crimped deep step indentation. High quality connections independent installer's skills.

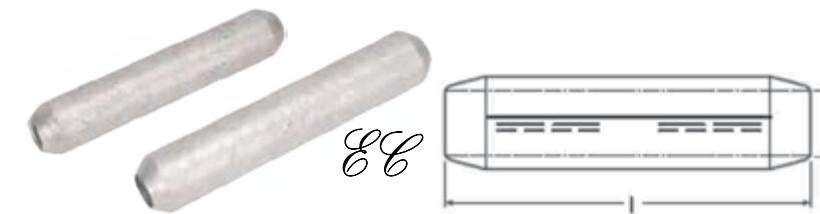
Single connector model for a given conductor cross-sectional area (independent of the core compression ratio).

Aluminum barrel and solid copper palm. Best technical solution to connect aluminium conductor to a copper bar.



Model & Spec	Conductor cross section	Diamesion mm				
	mm ²	φ	D	d	L	L1
BML/25	25	10.3	16	6.5	87	42
BML/35	35	12.8	16	8	87	42
BML50	50	12.8	20	9	87	43
BML70	70	12.8	20	11	87	43
BML95	95	12.8	20	12.5	87	43
BML120	120	12.8	25	13.5	111	60
BML150	150	12.8	25	15.5	111	60
BML185	185	12.8	32	17.5	116	60
BML240	240	12.8	32	19.5	116	60
BML300	300	16.5	34	22.5	120	62
BML400	400	On request	38	27	150	85
BML500	500	On request	40	30	165	90
BML630	630	On request	47	35	195	95

Non-Tension Compression Sleeves 10 33kv



For aluminium cable conductors

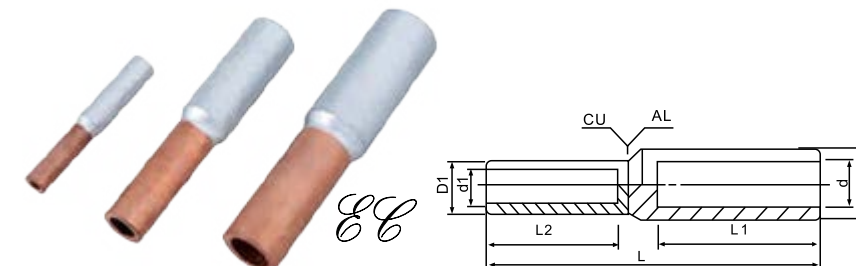
Material: aluminium
Surface: uncoated

The sleeves are filled with contact grease and sealed in plastic foil.

Part No Atalogue No	Conductor cross section (mm ²) mm ² /sm	Conductor diameter (mm) VDE0295	Diamesion mm	
			d	L
ALF25	25	5.6-6.5	6.5	90.5
ALF35	35	6.6-7.5	8.0	90.5
ALF50	50	7.7-8.6	9.0	106.5
ALF70	70	9.3-10.2	11.0	106.5
ALF95	95	11.0-12.0	12.5	106.5
ALF120	120	12.5-13.5	13.7	133.0
ALF150	150	13.9-15.0	15.5	133.0
ALF150	185	15.5-16.8	17.0	143.5
ALF185	240	17.8-19.2	19.5	143.5
ALF300	300	20.0-21.6	20.0	218.0
ALF400	400	22.9-24.6	26.0	218.0
ALF500	500	25.7-27.6	29.1	218.0
ALF630	630		32.5	218.0

Depending om cable type and voltage level, the compression sleeves are suitable for both round and hexagonal compression.

Non-tension Bimetal Compression



For aluminium and copper conductors

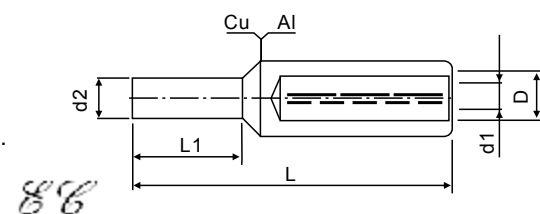
Material:aluminium and copper
Surface:uncoated

Cat No	Conductor cross section (mm ²)		Diamesion mm					
	AL	CU	D	d	D1	L1	L2	L
BMF/16	16	10	10	6	9	30	30	70
BMF/25	25	16	12	7	10	33	30	75
BMF/35	35	25	14	8.5	11	40	30	85
BMF/50	50	35	16	9.8	13	42	32	95
BMF/70	70	50	18	11.5	15	50	38	105
BMF/95	95	70	21	13.5	17	50	40	110
BMF/120	120	95	23	15	19	55	42	112
BMF/150	150	120	25	17	21	55	44	118
BMF/185	185	150	27	18.5	23	60	46	125
BMF/240	240	185	30	21	26	60	54	130
BMF/300	300	240	34	23	28	65	56	145
BMF/400	400	300	38	27	30	70	60	155
BMF/500	500	400	43	29	34	75	65	165

Non-tension Bimetal Pin

For aluminium and copper conductors

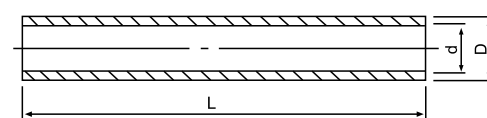
Material: Al-Cu.
Surface:uncoated.
Crimping tools:p.9/13.



Cat No	Section (mm ²)	Diamesion mm				
		d1	D	d2	L1	L
GT16	16	5.5	12	6	20	58
GT25	25	6.8	12	6	20	58
GT35	35	8.3	14	7	22	71
GT50	50	10	16	8	25	74
GT70	70	11.5	18.5	10	30	87
GT95	95	13.2	22.5	12	33	91
GT120	120	14.7	23	12	38	98
GT150	150	16.3	25	12	38	108
GT185	185	18.3	28.5	14	44	116
GT240	240	21	32	16	44	128
GT300	300	23.3	38.5	18	46	131
GT400	400	26	40	18	56	153



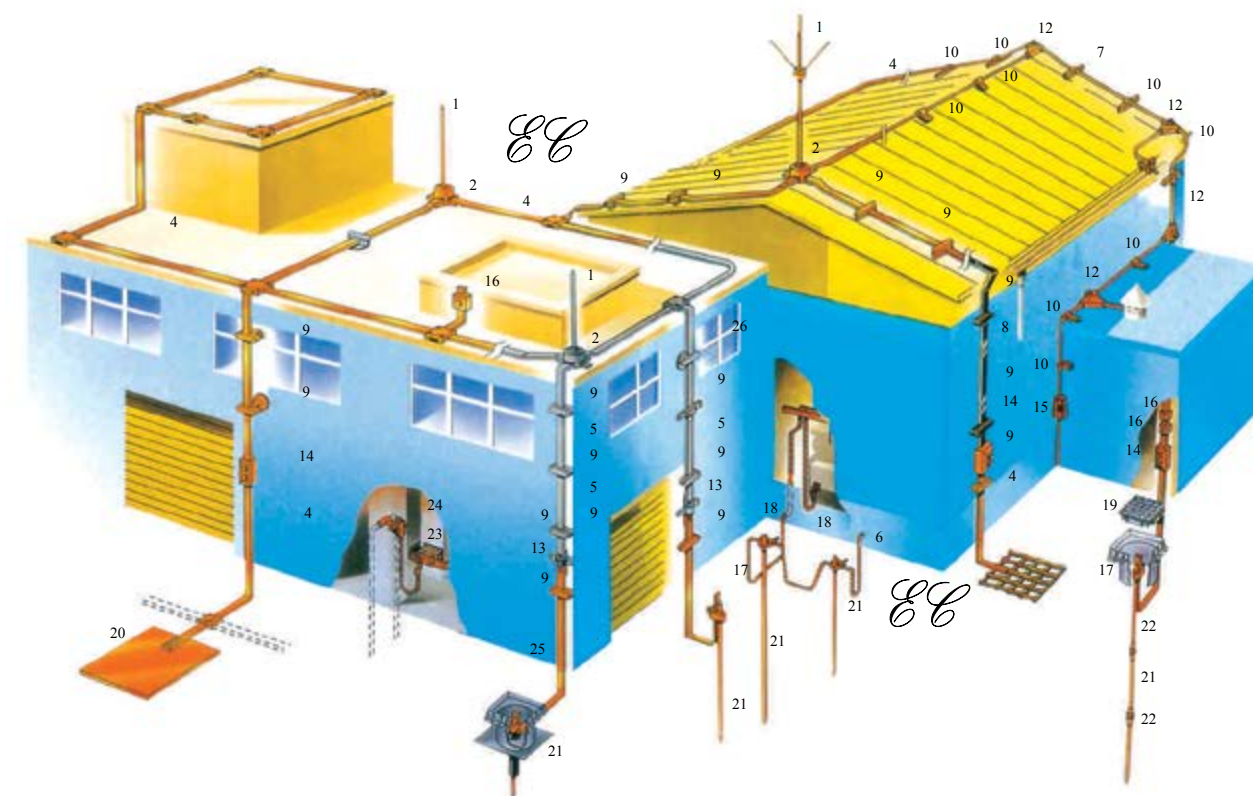
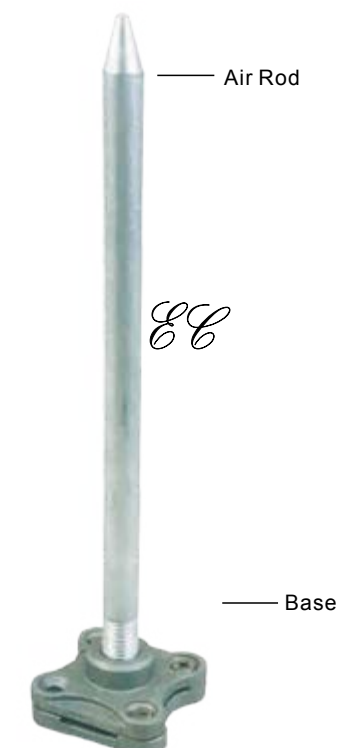
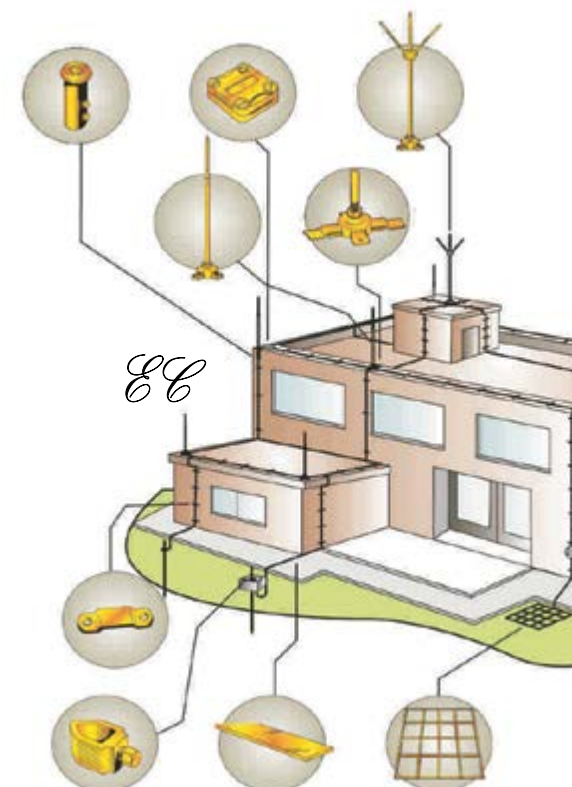
For aluminium cables, aluminium and Al alloy conductors



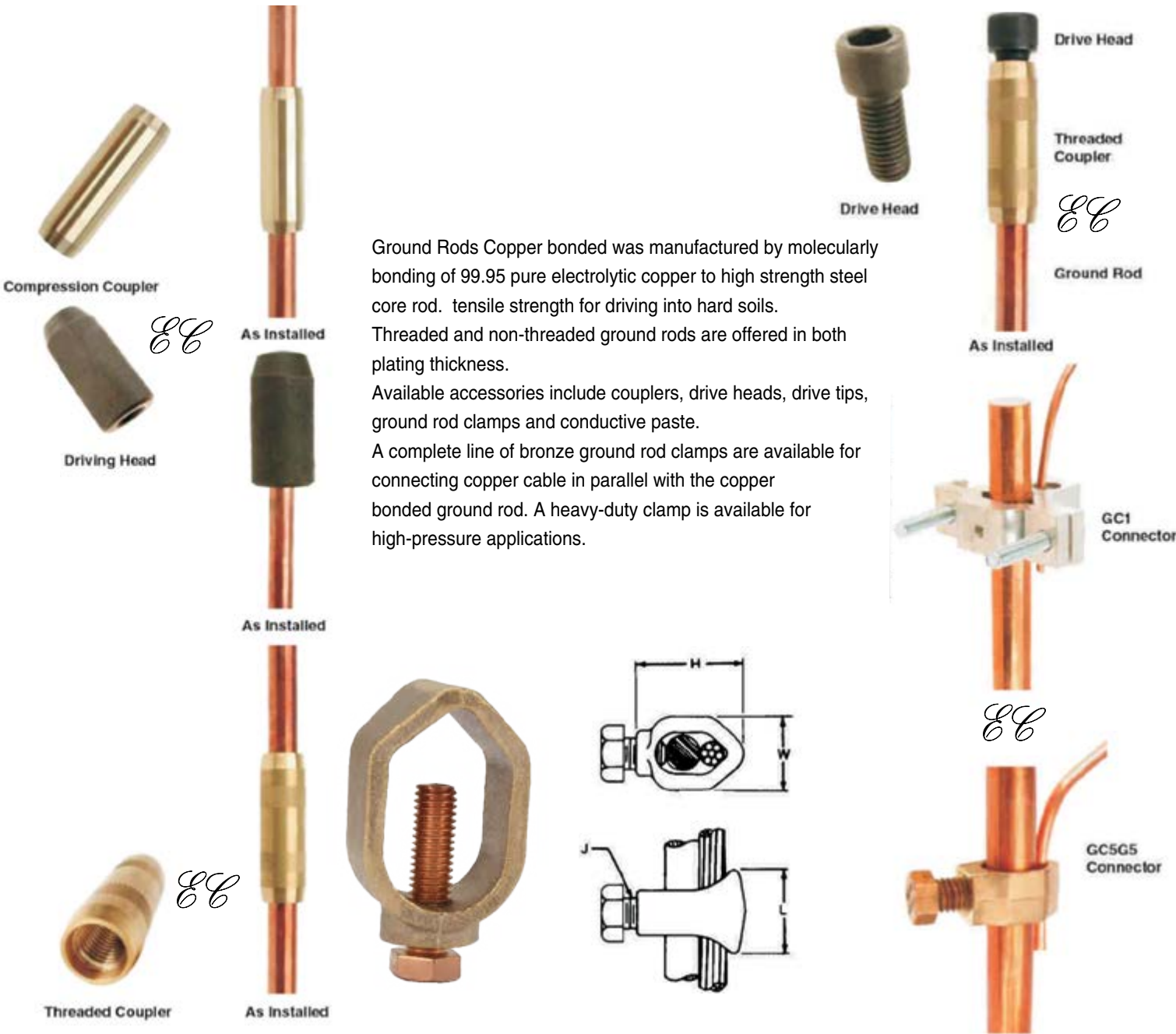
Material: aluminium
Surface: uncoated

Cat No	Conductor cross section	Conductor diameter (mm)		Diamesion mm		
	rm/wm mm ²	VDE0295	DIN 48201	D	d	L
G10	10	5.2-5.6	4.5	9	5	52
G16	16	5.6-6.7	5.1	10	6	56
GL25	25	6.6-7.8	6.3	11	7	62
GL35	35	7.7-8.6	7.5	12	8	87
GL50	50	9.3-10.2	9.0	15	10	76
GL70	70	11.0-12.0	10.5	17	11	87
GL95	95	12.5-13.5	12.5	19	13	92
GL120	120	13.9-15.0	14.0	21	15	98
GL150	150	15.5-16.8	15.8	23	17	108
GL185	185	17.8-19.2	17.5	25	19	114
GL240	240	20.0-21.6	20.3	28	21	118
GL300	300		22.5	34	24	135

Earthing Lighting Protection System



Earth Rods



Cat No	Cross Section mm ²	Ø B mm	C mm	Ø	DESCRIPTION
ER15	THREADED	M16	1500MM		EARTH ROD
ER18	THREADED	M16	1800MM		EARTH ROD
ER20	THREADED	M16	2000MM		EARTH ROD
ER70C	16 - 70	M16	70MM		BRASS CLAMP
M16C		M16			BRASS COUPLING

OVERHEAD LINE
ACCESSORIES

**Heat & Cold Shrinkable Accessories
Enhancing The Reliability Of Cable Networks**

Now in Africa the share of underground cabling is growing rapidly in the power supply system, especially in densely populated areas. But the Underground cabling need very well protected from damage such as storms, ice, frost and the sun. Moreover, underground cable networks are relatively maintenance free and their service life extends to several decades. Our Underground products include low and medium voltage cable network accessories for the voltage range of 1 to 36 kV.

This range includes accessories for different cables and all the required transition joints.

And these products were used widely including mining, marine, offshore and others around the world. Designed to withstand environmental extremes and pollution over long operating lifetimes, they help maintain service reliability in both overhead and underground installations.

We also were offering cold shrink joints and terminations.

The products are easy and quick to install, which reduces install time and total costs.

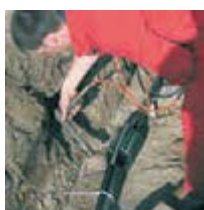
The silicone rubber has been selected as material of all cold shrink joints and terminations assure long-term reliability performance.

Product Features

We offer a wide range of products with a unique combination of properties such as:

- Increased resistance to thermal ageing
- Excellent resistance to surface electrical activity
- Improved UV performance
- Electrical stress control
- Moisture blocking
- Improved flame resistance
- Elastomeric technology
- Mechanical connecting systems
- High radiation resistance

LV



Low-voltage Joints

We offer excellent insulating and sealing performance with heat-shrinkable, gel and resin materials.

These proven materials form the basis of straight and branch joints for voltages up to 1kV.

Heat-shrink, resin, gel technologies

Environmentally friendly sealants

Quick and easy installation

Re-instatement and energisation can

follow immediately after installation

Solutions for all cable constructions

Low-voltage Terminations

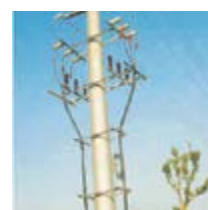
Consistent performance in harsh environments such as extreme temperatures, atmospheric pollution, and ultraviolet light has proved the reliability of terminations

Heat-shrink technology

Quick and easy installation

Solutions for all cable constructions

MV



Medium-voltage Joints

medium voltage joints have been installed on paper and polymeric cables worldwide, in the most severe service conditions, and under high electrical, thermal, mechanical and environmental stress. The reliability of the technologies is proven.

Heat-shrink and cold-shrink applied technologies

Prefabricated components

Easy and highly reliable installation

Applicability to different conductor and connecting techniques

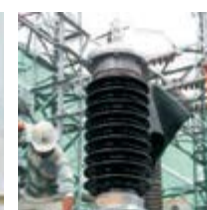
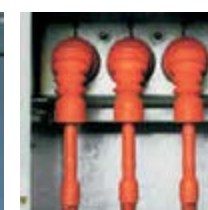
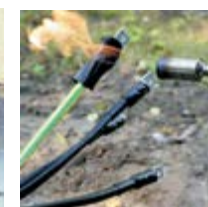
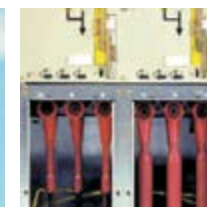
Accommodation of tolerances, range-taking

Suitable for different conductor cross sections and cable constructions

Solutions for all cable constructions

**Heat & Cold Shrinkable Accessories
Enhancing The Reliability Of Cable Networks**

MV & HV



Medium-voltage Terminations

Our medium-voltage terminations have been used by utilities and industrial organizations worldwide:

Heat-shrink and elastomeric technologies Impedance stress-control system Ceramic stress-control system anti-erosion- and UV resistant insulating material for indoor and outdoor applications

Easy and highly reliable installation

Range-taking

Suitable for crimp, soldered and mechanical lugs

Resistant to breakage and vandalism

Solutions for all cable constructions

Medium-voltage Switchgear Connection Systems

Heat-shrink and cold-shrink applied systems for switchgear with standardized bushings for 250A, 400/630A and 800A have been installed by utilities and industrial organizations worldwide.

Heat-shrink and elastomeric technologies

Right-angle insulated boots

Straight insulated boots

Separable screened adaptor systems for 250A, 400/630A and 800A

Separable insulated adaptor systems Suitable for crimp and mechanical lugs

Plug in termination 1250A

Easy and highly reliable installation

Solutions for all cable constructions

High-voltage Joints and Terminations

Heat-shrinkable accessories are well accepted for medium-voltage distribution by utilities, equipment manufacturers and industrial users throughout the world.

For higher voltage classes we offer prefabricated joints and terminations for indoor and outdoor switchgear and transformers Heat-shrink and elastomeric technologies grounding facilities

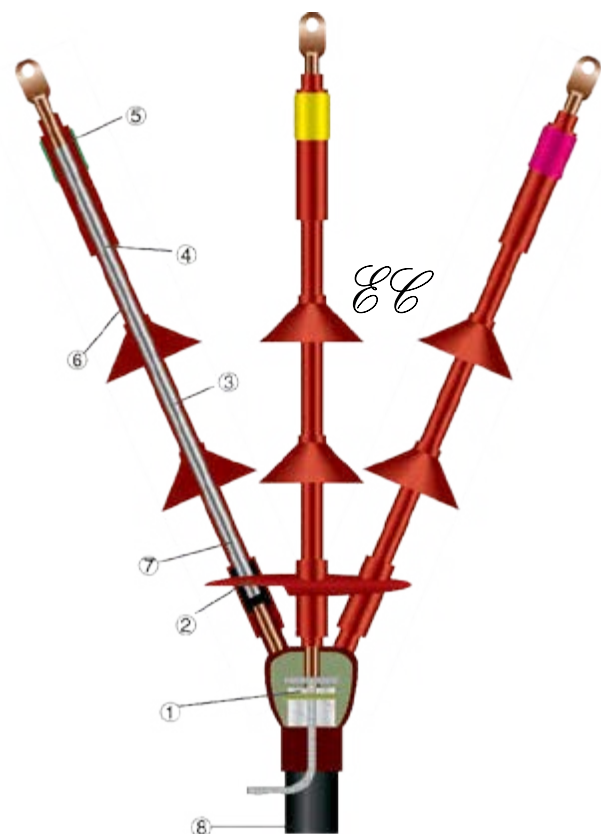
Link boxes for cross bonding

Mechanical lugs and connectors

Joints and terminations have been proven by extensive use in the field

Suitable for all polymeric cables

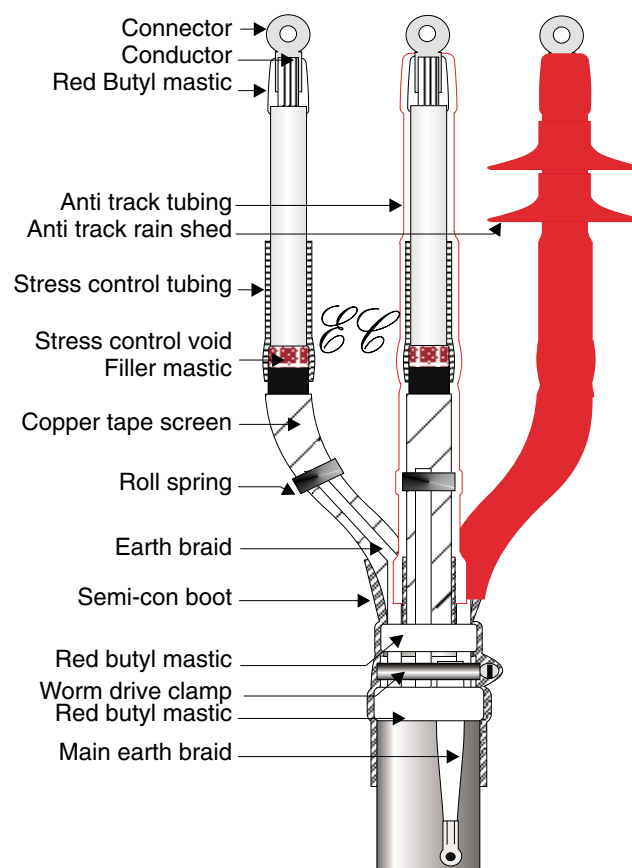
Heat & Cold Shrinkable Accessories Enhancing The Reliability Of Cable Networks



- ①Anti-breakouts
- ②Stress control tube
- ③Insulation tube
- ④Seal tube
- ⑤Mark tube
- ⑥1-hole creepage extension
- ⑦3-hole creepage extension
- ⑧Power cable

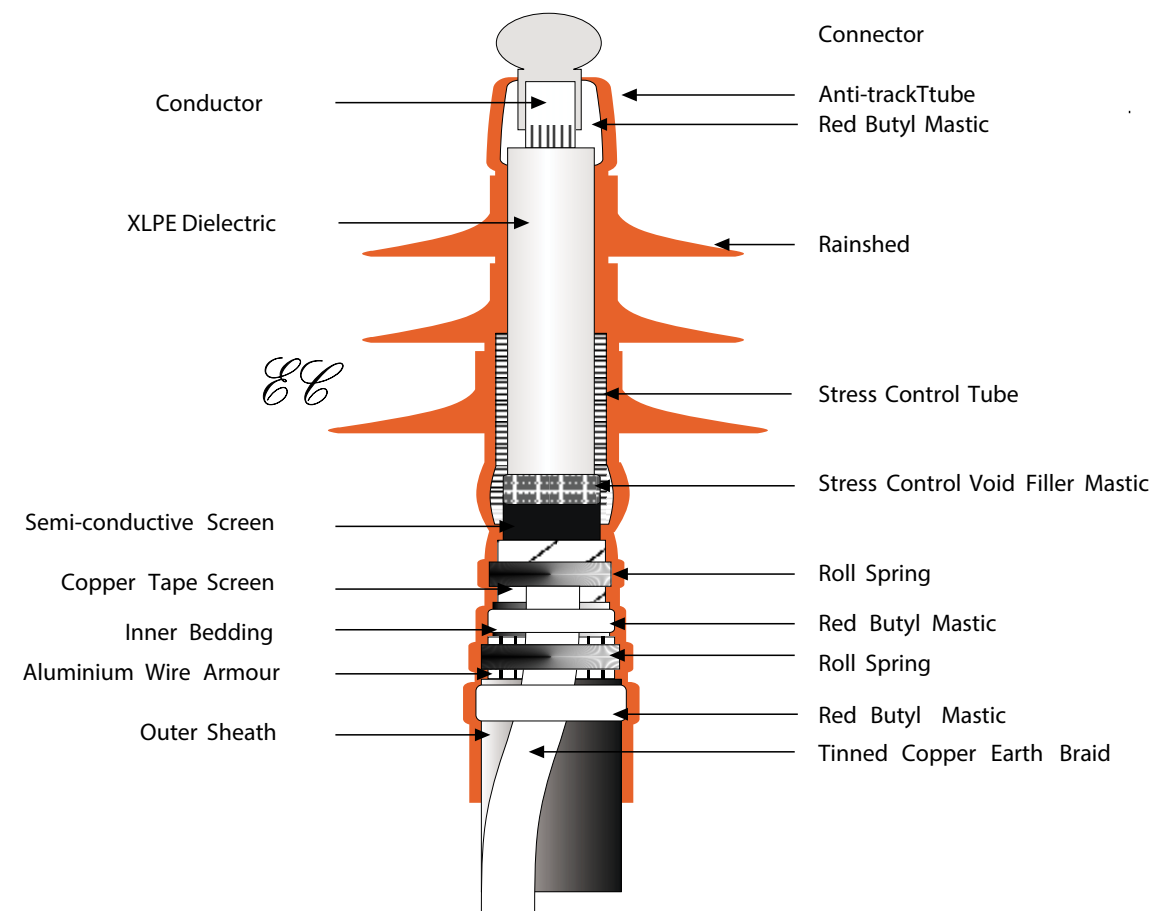
- ① Anti-breakouts-Used for the encapsulate and insulating protection of the embranchment of cable cores and the stress control of the cable termination.
- ② Insulation tube-for the insulation of the cable cores.
- ③ Stress control tube-control the electrical stress.
- ④ Semi-conductive tube-Improve the cable surface shield electric field.
- ⑤ Protective tube-Provides good insulating,mechanical protectiona and sealing for power cable medium joints.
- ⑥ Oil-resistant tube-For preventing the oil impregnated cable from dripping out and increasing the insulation.
- ⑦ Creepage extension & stain-Increase the creepage distance for outdoor termination.
- ⑧ Phase color tube-Distinguish the three phase cable.
- ⑨ Accessorial parts-Filling gummed tape, Semi-conductive self-bonding tape,

1KV 10KV 35KV series heat-shrinkable cable terminals and joints have the function of water-proof, the stress control, shield and the insulated. With the excellent electrical and mechanical functions, they can be used in all kinds of polluted conditions for a long time. With the light weight and easy mounting, they are widely used in power supply, and petrochemicals, metallurgy, railway station, sea port and constructions.



Heat & Cold Shrinkable Accessories

Medium Voltage Termination Kits



Test requirements for xlpe and plic for 1 & 3 core terminations

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

Medium Voltage Termination Kits

The termination kit is used for indoor and outdoor terminating of XLPE insulated medium voltage cables with copper wire shield. The kit is suitable for single core and three core cables, containing components for single cores and three core.

Three Core Termination Kit

Name	Cat no	Conductor size		
		(mm ²) 11/12KV	(mm ²) 22/24KV	(mm ²) 33/36KV
11/12 KV	JOT / JIT	16 - 70	—	—
XLPE outdoor/indoor terminals (3-cores)	JOT / JIT	50 - 95	—	—
	JOT / JIT	95 - 240	—	—
	JOT / JIT	185 - 630	—	—
22/24KV	JOT / JIT	—	16 - 70	—
XLPE outdoor/indoor terminals (3-cores)	JOT / JIT	—	50 - 95	—
	JOT / JIT	—	95 - 240	—
	JOT / JIT	—	185 - 630	—
	JOT / JIT	—	—	—
33/36KV	JOT / JIT	—	—	16 - 70
XLPE outdoor/indoor terminals (3-cores)	JOT / JIT	—	—	50 - 95
	JOT / JIT	—	—	95 - 240
	JOT / JIT	—	—	185 - 630
	JOT / JIT	—	—	—

* Bigger sizes are available on request.

One Core Termination Kit

Name	Cat no	Conductor size		
		(mm ²) 11/12KV	(mm ²) 22/24KV	(mm ²) 33/36KV
11/12 KV	JOT / JIT	16 - 70	—	—
XLPE outdoor/indoor terminals (1-cores)	JOT / JIT	50 - 95	—	—
	JOT / JIT	95 - 240	—	—
	JOT / JIT	185 - 630	—	—
22/24KV	JOT / JIT	—	16 - 70	—
XLPE outdoor/indoor terminals (1-cores)	JOT / JIT	—	50 - 95	—
	JOT / JIT	—	95 - 240	—
	JOT / JIT	—	185 - 630	—
	JOT / JIT	—	—	—
33/36KV	JOT / JIT	—	—	16 - 70
XLPE outdoor/indoor terminals (1-cores)	JOT / JIT	—	—	50 - 95
	JOT / JIT	—	—	95 - 240
	JOT / JIT	—	—	185 - 630
	JOT / JIT	—	—	—

* Bigger sizes are available on request.

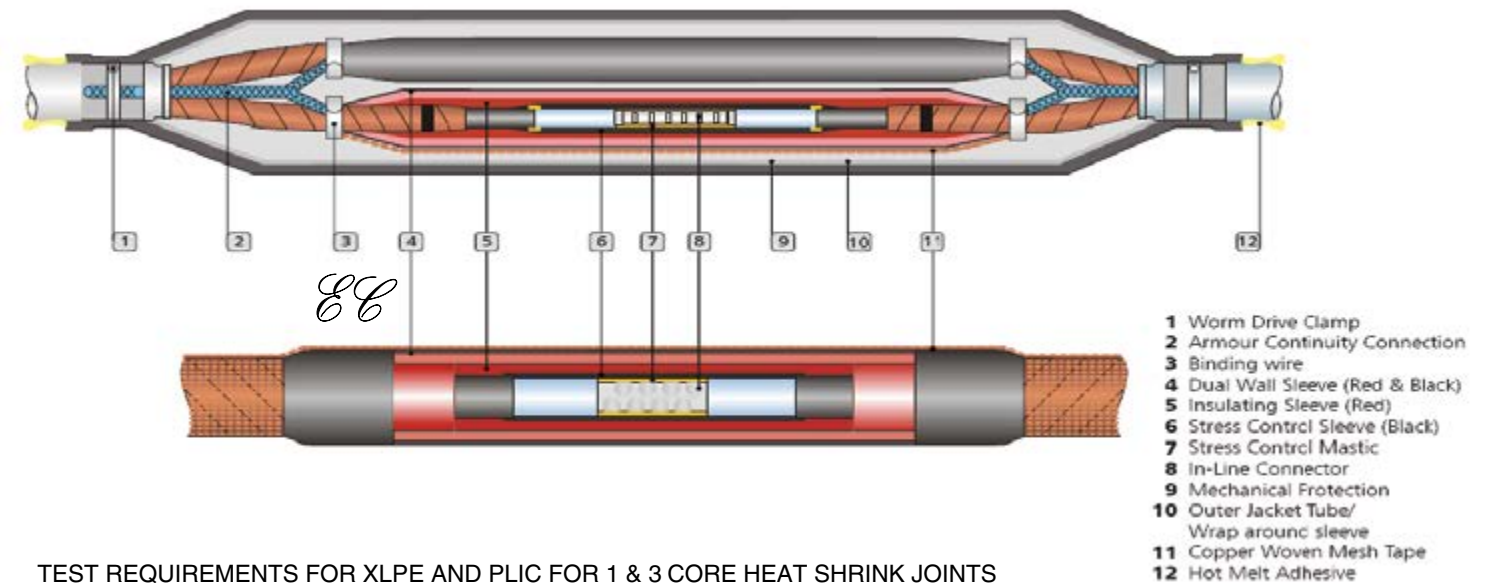


3 CORE



1 CORE

Medium Voltage Heat Shrink Joint Kits



TEST REQUIREMENTS FOR XLPE AND PLIC FOR 1 & 3 CORE HEAT SHRINK JOINTS

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



XLPE to XLPE



PILC to PILC



XLPE to PILC

Medium Voltage Cable Accessories
Heat Shrink Joints

Joint Kits

The joint kit is used for jointing of medium voltage cables with XLPE or PILC insulation and copper wire shield. The kit is suitable for single core cables, three core cables and it contains the components for one core and three core.

Three Core Heat Shrink Joint Kit

Name	Cat no	Conductor size		
		(mm ²) 11/12KV	(mm ²) 22/24KV	(mm ²) 33/36KV
11/12 KV	JHEJ / JHFJ	16 - 70	—	—
XLPE / PILC Heat shrink joints (3-cores)	JHEJ / JHFJ	50 - 95	—	—
	JHEJ / JHFJ	95 - 240	—	—
	JHEJ / JHFJ	185 - 630	—	—
22/24KV	JHEJ / JHFJ	—	16 - 70	—
XLPE / PILC Heat shrink joints (3-cores)	JHEJ / JHFJ	—	50 - 95	—
	JHEJ / JHFJ	—	95 - 240	—
	JHEJ / JHFJ	—	185 - 630	—
33/36KV	JHEJ / JHFJ	—	—	16 - 70
XLPE / PILC Heat shrink joints (3-cores)	JHEJ / JHFJ	—	—	50 - 95
	JHEJ / JHFJ	—	—	95 - 240
	JHEJ / JHFJ	—	—	185 - 630

* Bigger sizes are available on request.

One Core Heat Shrink Joint Kit

Name	Cat no	Conductor size		
		(mm ²) 11/12KV	(mm ²) 22/24KV	(mm ²) 33/36KV
11/12 KV	JHEJ / JHFJ	16 - 70	—	—
XLPE / PILC Heat shrink joints (1-cores)	JHEJ / JHFJ	50 - 95	—	—
	JHEJ / JHFJ	95 - 240	—	—
	JHEJ / JHFJ	185 - 630	—	—
22/24KV	JHEJ / JHFJ	—	16 - 70	—
XLPE / PILC Heat shrink joints (1-cores)	JHEJ / JHFJ	—	50 - 95	—
	JHEJ / JHFJ	—	95 - 240	—
	JHEJ / JHFJ	—	185 - 630	—
33/36KV	JHEJ / JHFJ	—	—	16 - 70
XLPE / PILC Heat shrink joints (1-cores)	JHEJ / JHFJ	—	—	50 - 95
	JHEJ / JHFJ	—	—	95 - 240
	JHEJ / JHFJ	—	—	185 - 630

* Bigger sizes are available on request.



Medium Voltage Cable Accessories
Heat Shrink Joints



Resin Specification

PHYSICAL PROPERTIES

Colour: Resin
Hardener
Mixed resin
Mixed Viscosity
Pot life
Gel time
Setting time
Specific gravity (mixed resin)
Exotherm 500gm
2000gm

Shrinkage
Shelf Life

MECHANICAL PROPERTIES

Tensile strength
Flexural strength
Elongation at break
Impact strength
Shore hardness - Shore D

ELECTRICAL PROPERTIES

Dielectric strength
Dielectric constant @ 50Hz
Volume resistivity 23°C@ 50% Humidity
Surface resistivity 23°C@ 50% Humidity
Loss Factor Tan 23°C
Water absorption

RESULTS

Off white
Dark brown
Beige
4500 - 5000 mPa.s @ 25°C
10 - 15 minutes [500gm @ 25°C]
15 - 20 minutes [500gm @ 25°C]
30 - 40 minutes [500gm @ 25°C]
1,63 - 1,65 g/cm³
65°C max @ 25°C
70°C max @ 25°C
Max 1%
24 Months @ 23°C

TEST METHOD

DIN 53455
DIN 53452

DIN 53453

DIN 16946
DIN 43483
BS903 Part C2

Medium Voltage Cable Accessories
Heat Shrink Joints

Cat no	No. of Cores	Cable Size mm	Max Cable OD	Min Cable OD	Useage
538/J0K	2	1.5 - 4	16	6	1KV (1000V) Armoured and Unaroured cable, for underground and above ground.
	3	1.5 - 4			
	4	1.5 - 2.5			
538/J1K	2	6 - 16	26	9	
	3	6 - 16			
	4	4 - 10			
538/J2K	2	16 - 25	32	17	
	3	16 - 25			
	4	10 - 35			
538/J2.5K	2	25 - 50	38	22	
	3	25 - 50			
	4	16 - 35			
538/J3K	2	35 - 70	50	20	
	3	35 - 70			
	4	25 - 70			
538/J4K	2	50 - 120	58	32	
	3	50 - 120			
	4	70 -95			
538/J5K	2	120 - 185	68	40	
	3	120 - 185			
	4	95 - 120			
538/J6K	2	185 - 300	80	50	
	3	185 - 300			
	4	185 - 300			

Features:

- Easy to assemble
- Easy-Mix twin pack resin for added safety
- Sufficient resin provided - no need to top up
- Long shelf life
- Strong transparent shells - Snap together - no resin leakage
- Designed for UK armoured cables to afford plenty of room to work
- Can be customised to suit individual Requirements
- Available with- or without mechanical connectors/ earth kit



Assistant Material

Cable anti-breakouts

The cable breakouts are used to protect the terminated cable ends against moisture and dirt. The breakouts are suitable for both plastic and belted paper insulated 1 kV -35KV cables. They are UV resistant and halogen free, and come with adhesive. The colour is black.



Name	Cat no	big side	small side	Conductor size (mm ²)	Useage
2-core anti-breakouts	TZ-2.0	33/12	10/3.5	10-16	1KV 2 cores polyethylene, rubber cable terminations
	TZ-2.1	48/19	15/5	25-50	
	TZ-2.2	65/23	23/8.5	70-120	
	TZ-2.3	98/42	43/14	150-240	
3-core anti-breakouts	TZ-3.0	50/16	24/7	10-16	1KV-35KV 3 cores polyethylene, rubber oil impregnated cable terminations
	TZ-3.1	70/32	32/10	25-50	
	TZ-3.2	86/45	38/14	70-120	
	TZ-3.3	102/60	48/18	150-240	
4-core anti-breakouts	TZ-3.4	120/70	65/25	300-500	1KV 4 cores polyethylene, rubber cable terminations
	TZ-4.0	37/22	11/5	10-16	
	TZ-4.1	53/26	16/5.8	25-50	
	TZ-4.2	62/33	26/7.5	70-120	
	TZ-4.3	74/42	32/11	150-240	

Heat Shrinkable Cable End Caps

THEC offers an economical means of sealing the end of power cable with a completely watertight seal. The internal surface of the end cap has a layer of spiral coated hot melt adhesive , which retains its flexible properties after recovery. THEC is recommended for application both in open air and on underground power distribution cables with PVC, lead or XLPE sheaths Effectively offering protection against oxidation, ozone, UV-radiation etc.

Coated with hot melt adhesive to ensure environment seal

Easily to fit into the cable end

Minimum fully shrink temperature: 120°C.



Order Ref Number	As supplied(mm)		After recovered (mm)			Cable diameter(mm)
	D(Min.)	D(Max.)	A(±10%)	L(±10%)	Dw(±5%)	
THEC105-12/4	12	4.0	15	40	2.6	4-10
THEC110-14/5	14	5.0	18	45	2.2	5-12
THEC115-20/6	20	6.0	25	55	2.8	6-16
THEC120-25/8.5	25	8.5	30	68	2.8	10-20
THEC130-35/16	35	16.0	35	83	3.3	17-30
THEC135-40/15	40	15.0	40	83	3.3	18-32
THEC140-55/26	55	26.0	50	103	3.5	28-48
THEC150-75/36	75	36.0	55	120	4.0	45-68
THEC160-100/52	100	52.0	70	140	4.0	55-90
THEC170-120/60	120	60.0	70	150	4.0	65-110
THEC180-145/60	145	60.0	70	150	4.0	70-130
THEC190-160/82	160	82.0	70	150	4.0	90-150
THEC200-200/90	200	90.0	70	160	4.2	100-180

Assistant Material

Self-adhesive Tape

Self-adhesive rubber insulated tape, apply to 1-36kV various wires and cables for insulation and seal.

The tape has good viscosity and can be adhered in several minutes after rolling. Moreover, it also has good airproof.

Self-adhesive rubber semiconductor tape, apply to 10-110kV power cables for electric field shield. Meanwhile, it also can be used in other electric field conditions.

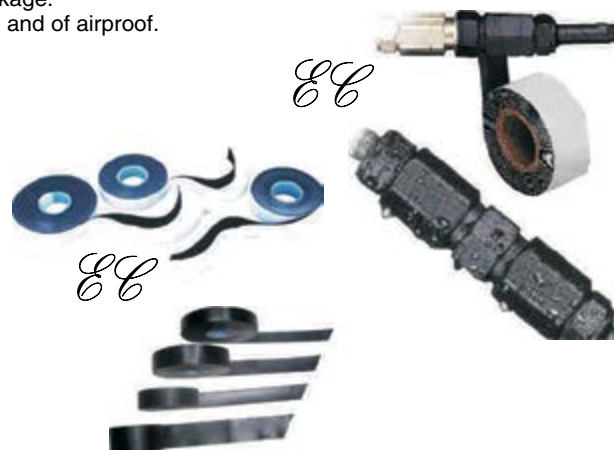


Self-fusing Rubber Splicing Tape is a highly flexible electrical insulation which is made from ethylenepropylene rubber, PIB and EPR.

The class of voltage under 69kV that electrical power cable and electrical equipments, primary insulation and water proofing.

Under 35kV voltage of electric power cable as a cone of wrap package.

Extra-high voltage is the protection of napped insulation and in the end of airproof.



Technical parameter:

Working temperature 90℃

Lash up overload temperature: 120℃

Ultimate rate of stretch: 700%

Specification

Width	Length	Thickness
19mm	5.0M, 9.1m	0.76mm
25mm		
38mm		
50mm		

Pvc Electrical Insulation Tape

The PVC electrical insulating tape takes polyvinyl chloride film as the backing material, which are coated with pressure-sensitive adhesive. It possesses favorable insulation, high tensile strength and strong cohesive force, and is resistant to pressure, fire and weather. The products are suitable for wire connection, electrical insulating protection and automobile wiring purposes. They really are the preferred insulating products for automobiles, household electrical appliances, refrigeration, and electronic fields. PVC electrical insulating tape produced by our company has complete specifications, different cutting width of 12mm. Cutting length includes 5Y, 5M, 20Y, 20M, etc., special specifications can be customized. Thickness of product has types of 0.18mm, 0.20mm, etc.

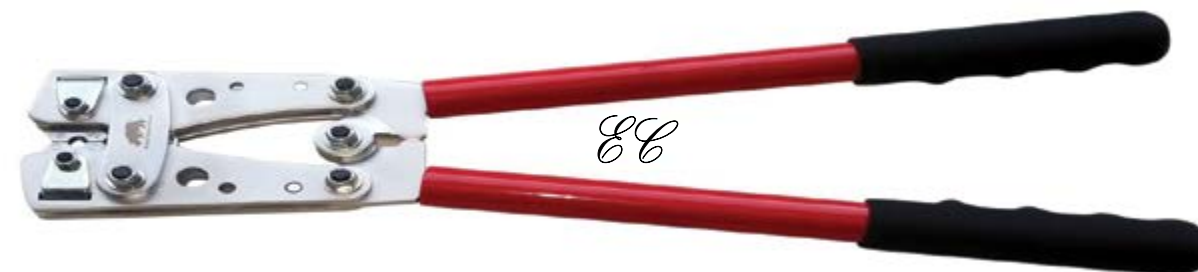


Material	Thickness mm	Tensile strength (N/cm)	Elongation at break % 180℃	Peeling strength (N/25mm)	Withstand voltage (5kVx1min)	Hold cohesive force for min
Polyvinyl chloride film	0.12-0.2	>15	>100	>1.5	No puncture	>1.0

**Crimping Tools
Copper Tube Terminal**

The crimping tool is used for non-welding and standard electrical connection.

The mould of the crimping month is made of SCM-40 hardest tool steel that has the characteristics of long life, accurate bore diameter and good crimping effect.



Model	Range of Application	Capacity	Length	Weight
HX150B	Hand Crimper	25 - 150 mm	705 mm	4.0Kg
HYCP300	Hydraulic Crimper	16 - 300 mm		
CO630A	Crimping Head with pump	150 - 630 mm		
CO1000A	Crimping Head with pump	400 - 1000 mm		

Crimper Head



Hydraulic Crimper

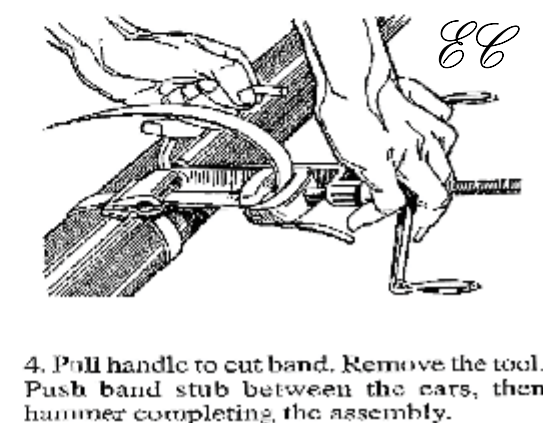
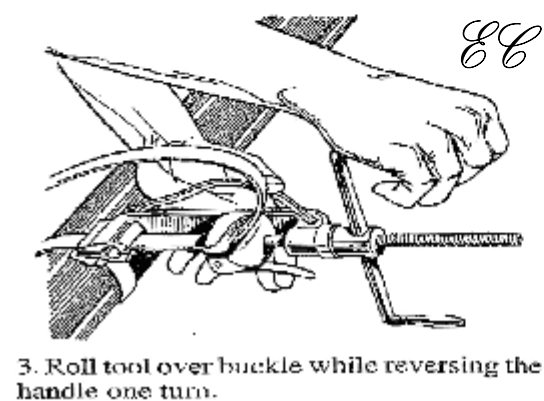
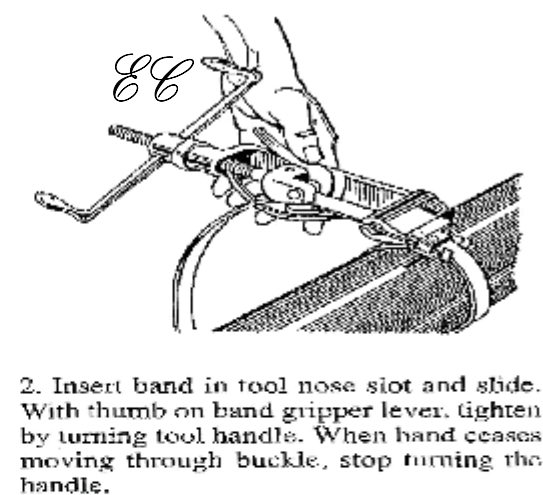
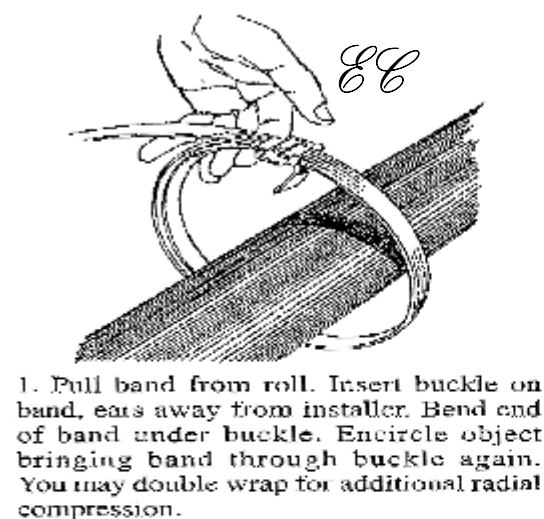


Crimping Pump



Bandit Strapping Tools

Cat No.	Description	Size	Weight
BDT/M	Strapping Tool	-	2.0
BDT/S30	30m Roll Strapping	12.70 X 0.43	2.05
BDT/B	100 Buckles P/Box	12.70	0.850



Operating Stick

Operating sticks are made from high-quality foam-filled fiberglass rods. They are used for high-voltage operations, for use with HV testers for testing and proving dead, or applying portable earthing equipment. Operating sticks are available in three standard lengths and two colors, high visibility orange and yellow. They are extendable using a non-conductive fiberglass button splice.



Features:

Electrically and mechanically type- tested to Proof-tested during manufacture to 100kV per 300mm Standard diameter 32mm OD; 39mm OD available on request Standard lengths 9m , 12m High-visibility orange or yellow coloured fibreglass cloth - not painted Filled with dense foam for good electrical performance Textured surface for good grip under all conditions May be supplied smooth for live line tools Wide range of accessories and adaptors available Standard operating kits available Customised kits on request

Link Stick

Range of application: For the pulling gateway operation of high voltage isolated switch.

Cat No.	Length	Sector Quantity	Endure Voltage
LS30F	9m	3Pieces	12 - 36KV
LS40F	12m	4Pieces	12 - 36KV

Earth Control Kit

Cat No.	Description	Sector Quantity	Endure Voltage
EK1133	Control earth Rec	3Pieces	12 - 36KV
EK1133R	Control earth Rec	4Pieces	12 - 36KV



Come A Long Clamp



Apply for overhead circuit, adjusting droop arc and tightening wire. The wire tighten clamp is made by strong intensity aluminium alloy material that has strong intensity, small volume and light weight.

Model	Applicable wire	Rating load	Limit load	Wire diameter	N.W.
NGK2T	4-22MM	10KN	20KN	14mm	1.1kg

****Bigger Sizes on Request.**

Ratchet Lever Hoist



Cat No.	Chain Lengh	Pull Strength	Weight
RL750	3M	750 KG	8.40
RL1500	3M	1500KG	13.97
RL3000	3M	3000KG	14.50
RL6000	3M	6000KG	17.00

Stringing Pulley



Number		Type and Specification	Applicable wire	Rating load	Weight	
Al wheel	Nylon wheel				Al wheel	Nylon wheel
0607	0608	SH-160 x 40	95-120	10KN	3.1kg	2.6kg
0611	0612	SH-200 x 60	150-240	15KN	4.3kg	3.3kg
0615	0616	SH-250 x 60	300-400	20KN	6.7kg	5.8kg

Drill Bit



Easy Drill Machine

Cat No.	Description	Usage
ED001	Drill Machine	Wood Pole Machine
EDB16	Drill Bit 16mm	16mm Holes into Wood Poles
EDB18	Drill Bit 18mm	18mm Holes into Wood Poles
EDB22	Drill Bit 22mm	22mm Holes into Wood Poles

Insulated Ladders

Extension ladder

1.Product characters:

A:Super light:Use material light epoxy resin produce.only 2.75kg/m,much lighter but stringer than the common FRP ladder which is 4kg/m.

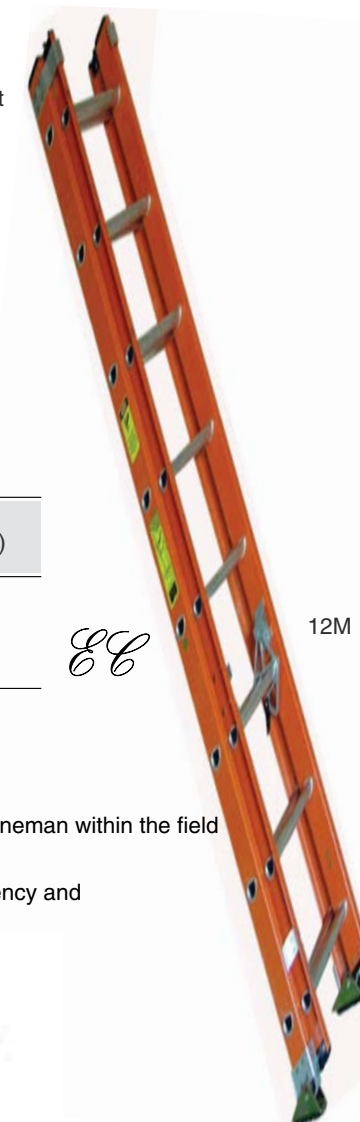
P:High strength:can withstand 200 kg impulse per meter.
ongate may from 2m to 4m,reduce may to 60—70cm.

Product characters:use material light epoxy resin produce,only 2kg/m.
uch lighter but stronger than the common FRP ladder which is 4kg/m.
igh strength:can withstand 200kg impulse per meter.



9M

Cat No.	Colour	Lengh Extended	Lengh Closed	Wieght (kg)
HDFL9	Orange	9M	4.5M	
HDFL12	Orange	12M	6M	
LDFL9	Blue	9M	4.5M	
LDFL12	Blue	12M	6M	



12M

Belt And Full Body Harnesses

Born of a need to let the lineman get closer to his work, the clothing is bonded to the conductor, placing the lineman within the field of electricity, not as a conductor himself but insulated by Epoxiglas products (ladders, platforms, etc.), and allows him to work with his hand on the conductor hardware. Thus, transmission line maintenance efficiency and effectiveness are advanced without endangering the lineman and without interrupting customer service.



Linesman Pole Climbing belt



Harness

Cat No.	Belt Type	Belt Usage	Weight
LSB01	Weist belt	Pole Climbing	
SB001	Full Body	Tower Climbing	
SB002	Full Body	Tower Climbing	

Cable Tie And Adhesive Mounting Bases

Technical Features

Self-locking head ensures stable binding power even under extreme conditions, e.g. temperature and vibration. Interior serrations help hold individual wires or bundles firmly in place through friction. Tapered tip often with the "bent tail" facility for easy insertion, speeds up threading and reduces applied cost. Tough, smooth polyamide may be used for indoor and outdoor applications. Black UV resistant ties are recommended for outdoor use. The all synthetic one-piece design eliminates metal parts. cable ties can be hand applied or by using application tools.

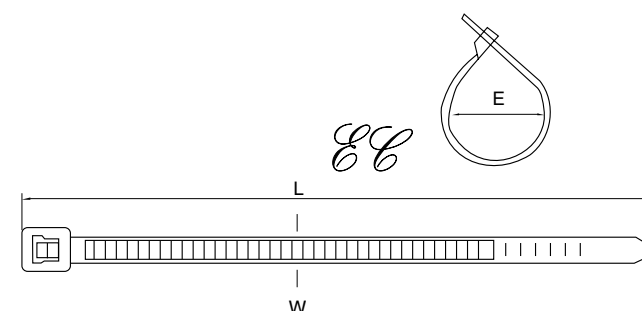
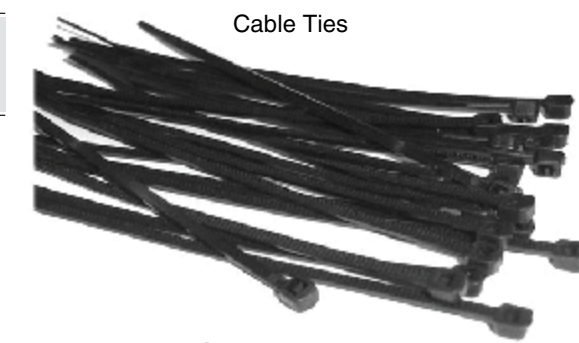
Applications

Bundling and mounting of wires, cables, harnesses and hoses in many industries. Clean bundling of cables and leads in switch boards and control systems. Mounting of conduits, tubes, cables and components in installations. Fastening and mounting

Material :
Polyamide 6.6.

Colour :
Natural or black. Colors on requirement

Cat No	Description	Length (mm)	Width (mm)	Std Pack
T18RP	Cable Ties - Black	104	2.5	20000
T18RB	Cable Ties - White	104	2.5	20000
T30RP	Cable Ties - Black	148	3.5	12000
T30RB	Cable Ties - White	148	3.5	12000
T50IP	Cable Ties - Black	305	4.7	10000
T50IB	Cable Ties - White	305	4.7	10000
T50LP	Cable Ties - Black	392	4.7	6000
T50LB	Cable Ties - White	392	4.7	6000
T120RP	Cable Ties - Black	388	7.8	2000
LK5BK	Cable Ties - Black	536	13.0	1500



Climbing Shoes



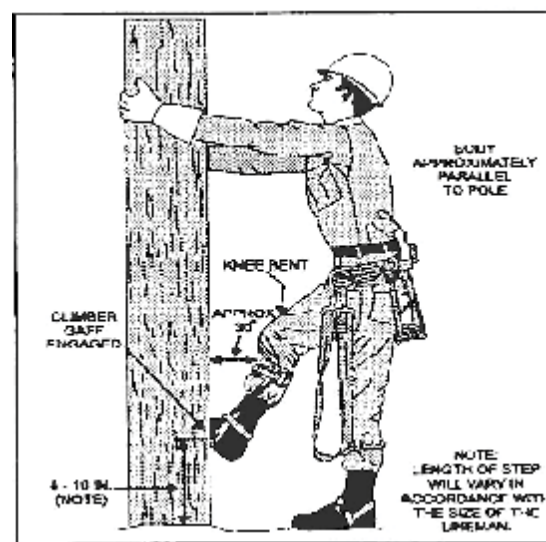
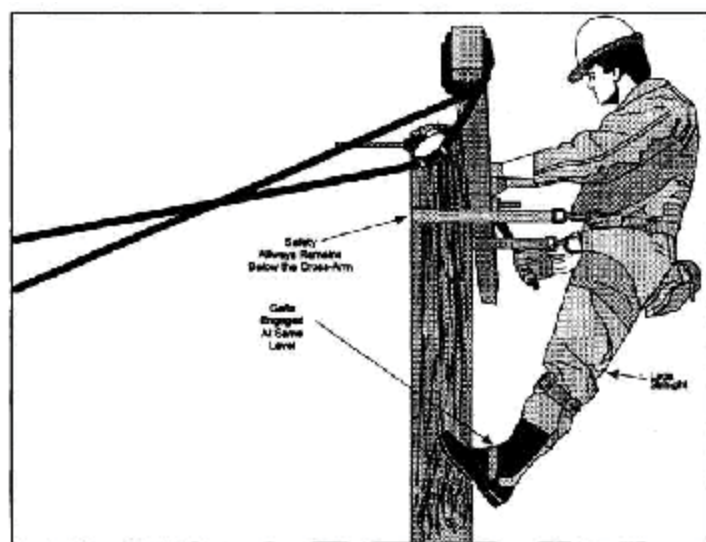
Climbing Shoes



Climbing Shoes

Climbing shoes are used to climb transmission poles. All safety equipment must be checked before climbing any wooden transmission pole.

Cat No.	Shoes Type	Usage
CS001	Horse	Wood Pole 9m / 12m
CS002	Moon	Wood Pole 12m
CS003	Moon	Wood Pole 9m



Danger Plate



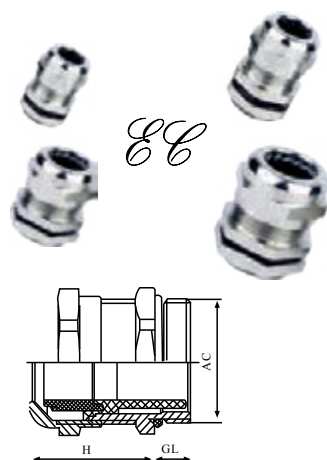
Cat No.	Size (mm)	Shape/Colour
DP001S	100 x 100 x 100	Triangle
DP002B	1500 x 1500 x 1500 x 1500	Square
DT001S	150 x 500m	Yellow
DT002B	300 x 150m	Orange

Danger Tape



System Designation for Low Voltage Cables

Cable Glands



Compression And Rotary Glands

CAT NO.	ENTRY (MM)	MAX BED/CABLE	CABLE SIZE (SWA)
CG0	20	7.0 / 12.0	
CG1	20	12.0 / 14.4	1.5 mm x 4 core
CG2	25	14.1 / 20.2	2.5 / 4 / 6 mm x 4 core
CG3	32	20.2 / 26.5	10 / 16 mm x 4 core
CG4	40	26.5 / 34.4	25 / 35 mm x 4 core
CG5	50	34.4 / 43.5	50 / 70 / 95 mm x 4 core
CG6	63	43.5 / 56.0	120 / 150 / 185 mm x 4 core
CG7	75	56.0 / 65.0	240 mm x 4 core
CGR0	20	11.8 / 16.0	1.5 / 2.5 mm x 4 core
CGR1	20	14.2 / 21.0	4 / 6 mm x 4 core
CGR2	25	20.2 / 27.2	16 mm x 4 core
CGR3	32	26.4 / 33.5	25 / 35 mm x 4 core
CGR4	40	32.5 / 40.0	50 / 70 mm x 4 core
CGR5	50	44.3 / 52.6	95 / 120 / 150 mm x 4 core
CGR6	63	56.3 / 65.5	185 / 240 mm x 4 core
CGR7	75	69.3 / 78.0	300 mm x 4 core

Rubber Gloves



Electrical Gloves

Cat No.	Voltage (KV)	Product
GCG10	1000V / 1KV	RUBBER
GCG20	17000V / 17KV	RUBBER
GCG30	27000V / 27KV	RUBBER
GCG40	36000V / 36KV	RUBBER
G001	0	LEATHER

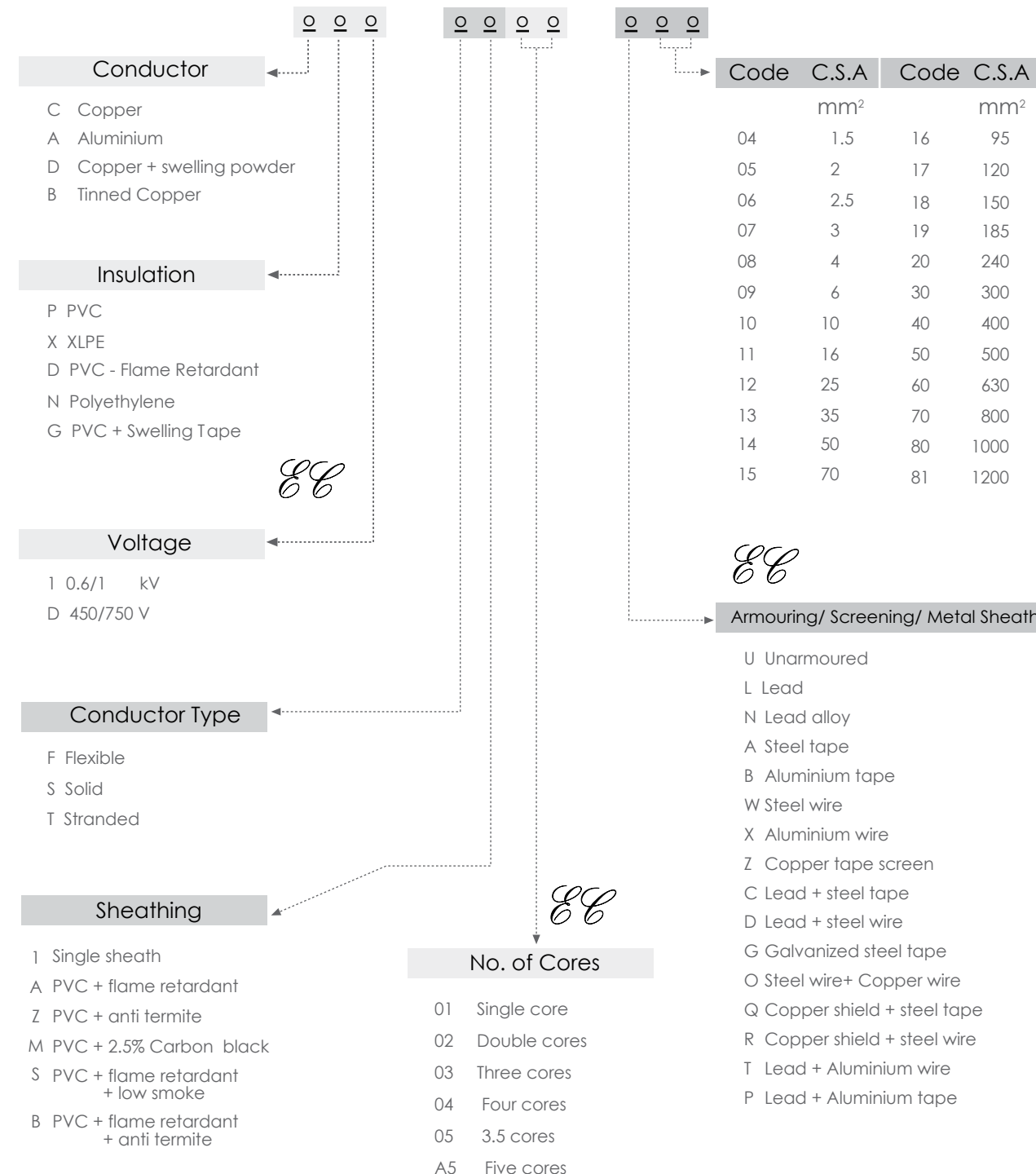
Leather Golves



Electrician Tool Kit



Cat No.	Description
PK1000V	1000v Electrician tool kit with multimeter, Screw driver set, Pliers, torch, Long Nose Pliers,



Bare Copper Earth Cable



Cat No.	Copper Size mm	Normal Stranding	Approx. Meters mm.kg
BCEW1.5	1.5	7 / 0.53	72.22
BCEW2.5	2.5	7 / 0.66	46.62
BCEW4	4	7 / 0.85	27.46
BCEW6	6	7 / 1.04	18.75
BCEW10	10	7 / 1.35	11.13
BCEW16	16	7 / 1.67	7.27
BCEW25	25	19 / 1.38	4.54
BCEW35	35	19 / 1.62	3.34
BCEW50	50	19 / 1.88	2.46
BCEW70	70	19 / 2.28	1.56
BCEW95	95	19 / 2.50	1.13
BCEW120	120	37 / 2.03	0.91

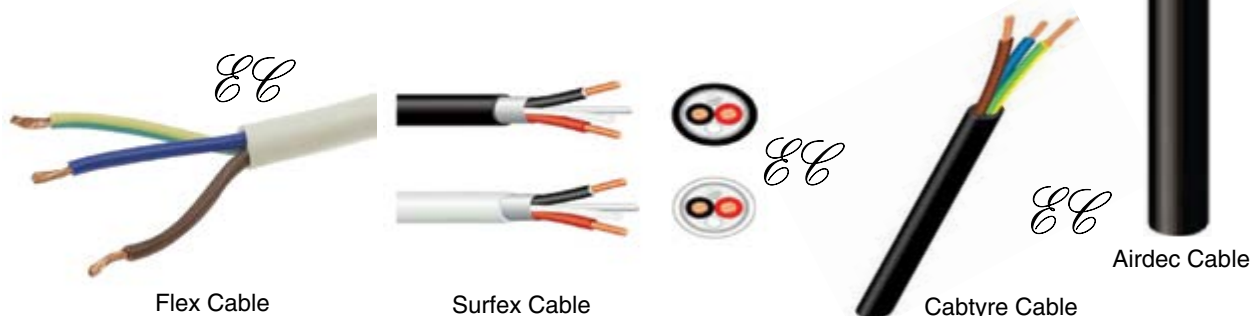
Application: Soft drawn copper conductors are used for earthing / grounding electrical systems where high conductivity and flexibility are required.

Copper Insulated Earth Cable



Cat No.	Copper Size mm	Normal Stranding	Approx. Overall Diameter mm
CPBT1.5	1.5	7 / 0.53	3.3
CPBT2.5	2.5	7 / 0.66	3.6
CPBT4	4	7 / 0.85	4.6
CPBT6	6	7 / 1.04	5.0
CPBT10	10	7 / 1.35	6.0
CPBT16	16	7 / 1.67	6.9
CPBT25	25	19 / 1.38	8.4
CPBT35	35	19 / 1.62	9.5
CPBT50	50	19 / 1.88	11.3
CPBT70	70	19 / 2.28	12.6
CPBT95	95	19 / 2.50	15.8
CPBT120	120	37 / 2.03	17.5

Application: Soft drawn copper conductors are used for earthing / grounding electrical systems where high conductivity and flexibility are required. And for indoor fixed installations in dry locations, laid in conduit or on steel support brackets.



Aerial Bundle Conductor



Cat No.	Conductor Size	Cable Stranding	Approx. Meters mm.kg
CABC210	2 x 10mm	2	
CABC216	2 x 16mm	2	
CABC416	4 x 16mm	4	
CABC225	2 x 25mm	2	
CABC425	4 x 25mm	4	
CABC335	3 x 35 +55+25	5	
CABC350	3 x 50 +55+25	5	
CABC370	3 x 70 +55+25	5	
CABC395	3 x 95 +55+25	5	

Application: ABC (Aerial Bundle Conductor) is used for secondary over head line on poles for streetlights or as feeders to residential premises.

Underground Conductor (SWA)



Cat No.	Conductor Size	Nominal Diameter		Approx. Mass (kg/km)	
		3C	4C	3C	4C
CA1.5	3C / 4C	14.13	14.95	448	501
CA2.5	3C / 4C	15.23	16.18	522	597
CA4	3C / 4C	17.02	18.39	667	762
CA6	3C / 4C	18.04	19.72	790	910
CA10	3C / 4C	20.41	21.96	996	1169
CA16	3C / 4C	22.37	25.92	1295	1768
CA25	3C / 4C	26.46	28.34	1838	2196
CA35	3C / 4C	27.89	31.17	2215	2732
CA50	3C / 4C	31.46	36.54	2871	3893
CA70	3C / 4C	35.47	40.09	3617	4837
CA95	3C / 4C	39.99	44.62	4901	6115
CA120	3C / 4C	42.18	47.40	5720	7269
CA150	3C / 4C	45.98	52.65	6908	9250
CA185	3C / 4C	51.12	57.45	8690	11039
CA240	3C / 4C	57.13	64.16	10767	13726

Application: For outside used and underground application.

A.C.S.R / A.A.A.C / A.A.C Conductor



EE

Cat No.	Diameter of Wires	Nominal Diameter mm	Approx. Mass (kg/km)
CS001	6 x 2.11	24.5	ACSR 84.7
CF001	6 x 2.79	42.8	ACSR 148.1
CF002	6 x 3.00	49.5	ACSR 171.2
CM001	6 x 3.66	73.6	ACSR 254.9
CP001	7 x 3.61	71.6	AAAC 195.6
CH001	7 x 3.91	84.1	AAAC 229.5
CW001	7 x 4.04	89.7	AAAC 245.0
CO001	7 x 4.65	118.9	AAAC 324.5
CM002	19 x 3.18	150.9	AAAC 414.3

Application: For Overhead line connections.

12KV / 24KV 36KV XLPE Conductor



EE

Cat No.	Conductor Size	KVA Rating	Core	Cable Spec
CXLPE25	25	12	1C / 3C	XLPE / CU
CXLPE35	35	12 / 24	1C / 3C	XLPE / CU
CXLPE50	50	12 / 24 / 36	1C / 3C	XLPE / CU
CXLPE70	70	12 / 24 / 36	1C / 3C	XLPE / CU
CXLPE95	95	12 / 24 / 36	1C / 3C	XLPE / CU
CXLPE120	120	12 / 24 / 36	1C / 3C	XLPE / CU
CXLPE150	150	12 / 24 / 36	1C / 3C	XLPE / CU
CXLPE185	185	12 / 24 / 36	1C / 3C	XLPE / CU
CXLPE240	240	12 / 24 / 36	1C / 3C	XLPE / CU
CXLPE300	300	12 / 24 / 36	1C / 3C	XLPE / CU

Application: For outside used and underground application.

Transmission Transformers



EE



EE

Description:

- Three phase or single phase , 50Hz for outdoor characteristics,
- Oli immersed core
- Natural cooling (ONAN)
- Powder coated or coastal painted finishes are available.

Standard Accessories:

- Off circuit regulation (off - load) tap charger
- M.V porcilian bushing
- L.V bushings
- 2 earthing terminals
- Rating plates
- Security and service procedure plates
- 2 lifting eyes

Specification:

- Transformers comply with UNE21,428
EN-60076,IEC76 standards and SANS
788:2009 & NRS

Name	Cat no	Transformer Description		
		Capacity KVA	Voltage KV	Windings
11/12 KV Oil Power Transformers	T25/11	25	11 / 400	Copper
	T50/11	50	11 / 400	Copper
	T100/11	100	11 / 400	Copper
	T160/11	160	11 / 400	Copper
	T200/11	200	11 / 400	Copper
	T250/11	250	11 / 400	Copper
22/24KV Oil Power Transformers	T315/11	315	11 / 400	Copper
	T500/11	500	11 / 400	Copper
	T25/22	25	22 / 400	Copper
	T50/22	50	22 / 400	Copper
	T100/22	100	22 / 400	Copper
	T160/22	160	22 / 400	Copper
33/36KV Oil Power Transformers	T200/22	200	22 / 400	Copper
	T250/22	250	22 / 400	Copper
	T315/22	315	22 / 400	Copper
	T500/22	500	22 / 400	Copper
	T25/33	25	33 / 400	Copper
	T50/33	50	33 / 400	Copper
Oil Power Transformers	T100/33	100	33 / 400	Copper
	T160/33	160	33 / 400	Copper
	T200/33	200	33 / 400	Copper
	T250/33	250	33 / 400	Copper
	T315/33	315	33 / 400	Copper
	T500/33	500	33 / 400	Copper

* Bigger sizes are available on request.

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CAT 2013