Earthing & Lightning


3712
3703
3702


3719
3718
bp

PARSIAN TARASH SANAT (***PTS***) engineering & industrial Corp, With the Kindness of Dear Lord and Worthy endeavor attempt of its expert partners, which surely its our main capital, for more then forty years is working in the different fields such as Earthing and Grounding system , Cathodic Protection and Electrical installations .
We have merged 40 years of experience with relevant technology also with imparting the latest machines we Able to Produce the Products With Observance All National And International Standards .

Quality systems and achieved standards :

Introduction

The most underground structures have been electrically bonded in common to reduce hazardous voltages associated with lightning and man-made fault currents or induced currents in the earth.

A common grounding system provides an economical and lower resistance to remote earth than does an individual earthing connection. This tends to ensure a low resistance return path for power system earth return currents and fault currents.

An additional benefit is minimizing earth potential gradients around individual earthing electrodes or elements.

It also tends to reduce step and touch voltages at the surface of the earth.

Characteristics of a Good Grounding System

Low resistance and electrical impedance.

Withstanding high fault currents with no evidence of fusing or mechanical deterioration in the event of a foreseeable fault. Energy is dissipated into the ground in the safest possible way.

High frequency lightning impulses will flow through the ground electrode path. In preference to any other.

Good corrosion resistance

Electrically interconnecting many dissimilar metals in the soil environment can lead to significantly increased corrosion rates on some of the underground structures.

In addition to its inherent high conductivity copper is usually cathodic with respect to other metals in association with grounding sites.

Good electrical conductivity that causes

Mechanically robust, reliable and ability to perform for at least 40 years working life-time for a facility

Selection of Conductors and Related Corrosion Problems

When materials such as black iron (BI) cast iron (CI) and ductile iron (DI) are interconnected. They are very close together in the electromotive series of metals and therefore, each would suffer very little additional corrosion by connecting to the other metal. When a dissimilar metal couple is created by connecting BI, CI, or DI to copper or brass a significant corrosion cell is created.

Copper is electropositive with respect to all ferrous construction materials. In addition copper will not polarize readily as is the case for ferrous structures. Therefore accelerated corrosion is the result on ferrous structures whenever they are directly coupled to bare copper in the soil.

Tinning of copper has been tried by some utilities, that reduces the corrosion cell with respect to steel and zinc by about 5O% and practically eliminates this potential with respect to lead.

Most electrical engineers specify copper for grounding grid since it is the preferred material of choice for electrical conductivity. However, when copper is directly buried in the soil and completely isolated from other construction materials, it will corrode.

In acidic soil conditions, the corrosion rate of copper may be greater than that of iron or steel.

Aluminum has been used for ground grid less frequently. Though at first glance the use of aluminum would seem to be a natural choice for gas insulated substation (GIS), equipment since the enclosures are made of aluminum or aluminum alloys.

Steel has been used for ground-grid conductors in many European countries mainly for the benefit of eliminating most of the adverse effects of copper already mentioned.

Application of galvanized or stainless steel in combination with cathodic protection is typical.

Solid Earth Rod

These rods are designed for use where extremely high corrosion resistance and exceptionally long life is required. When the solid rods are required, it is necessary to put them into a bore hole and back fill the hole.

These rods are manufactured from hard drawn copper with purity and mechanical properties to BS 2874, hard drawn grade C101, C102

Standard: BS 2874
BS EN 13601

Rod Dia mm	L mm	Thread Dia. mm	PART No.
16	120 0	M10	GR-CU 16/1200
16	1500	M10	GR-CU 16/1500
16	2400	M10	GR-CU16/2400
20	1200	M14	GR-CU 20/1200
20	1500	M14	GR-CU 20/1500
20	2400	M14	GR-CU 20/2400

Dowel

Manufactured from stainless steel

Code: **DO**
Standard: BS 970

Rod Dia mm	Thread Dia. mm	PART No.
16	M10	DO 16
20	M14	DO 20

Driving Head

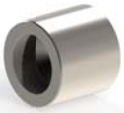
These reusable high tensile steel driving heads are suitable for driving earth rods by hand or with a power hammer. Special driving head are used for Thread or non-Thread earth rods, but normal driving heads screws into the coupling to allow deep driving of the earth rods.

Code: **AD**
Standard: BS 970

Rod Dia mm	Thread Dia. mm	PART No.
16	M10	AD 16
20	M14	AD 20

Driving Head

These reusable high tensile steel driving heads are suitable for driving earth rods by hand or with a power hammer. Special driving head are used for Thread or non-Thread earth rods.



Code: **CY**
Standard: BS 970

Rod Dia mm	PART No.
16	CY 16
20	CY 20

Spike

Manufactured from high strength steel to BS 970. These spikes protect the tip of the rods

Code: **SH**
Standard: BS 970

Rod Dia mm	Thread Dia. mm	PART No.
16	M10	SH 16
20	M14	SH 20

STAINLESS STEEL EARTH ROD & ACC.

These rods are designed for use where problems may be caused by galvanic corrosion due to dissimilar metals being buried in close proximity. In this situation a copper rod may react adversely with the buried metal, thus allowing corrosion to take place. The solution is to use stainless steel rods or austenitic stainless steel to BS 970 Grade 316S12.

Rod Dia mm	L mm	Thread Dia. mm	PART No.
16	1200	M10	GR-SS 16/1200
16	1500	M10	GR-SS 16/1500
16	2400	M10	GR-SS 16/2400
16	3000	M10	GR-SS 16/3000
20	1200	M14	GR-SS 20/1200
20	1500	M14	GR-SS 20/1500
20	2400	M14	GR-SS 20/2400
20	3000	M14	GR-SS 20/3000

Standard: BS 970
IEC 62561-2

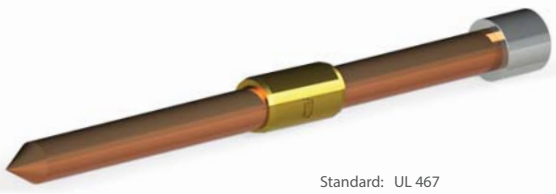
Copper Bond Earth

Copper bond earth rods are the ideal driven earth electrodes, as they offer the installer an economical and efficient earth rod grounding system. Pure electrolyte copper is uniformly molecularly bonded into a high tensile steel core to a minimum thickness of 0.254 mm, as UL467 (1996) States:

"The copper jacket shall not be less than 0.010 inch (0.25mm) thick at any point and shall comply with the adherence requirement and bending requirement thus ensuring excellent corrosion resistance and eliminating electrolytic action."

Deep driven Petunia copper bond earth rods are an economical method of achieving a low earth resistanc

Rod Dia mm	L mm	Actual Dia. mm	PART No.
16	1200	14.2	GR-SCU 16/1200
16	1500	14.2	GR-SCU 16/1500
20	1200	17.2	GR-SCU 20/1200
20	1500	17.2	GR-SCU 20/1500



Standard: UL 467

Rod Dia mm	Thread Dia. inch	PART No.
16	5/8"	CP 16
20	3/4"	CP 20

Code: **CP**
Standard: IEC 62561-2

Coupling

PTS have a high copper content to ensure excellent corrosion resistance. They facilitate deep driving and also protect the rod Threads while using the driving head. GRUN couplers are used for non-Threaded and GRU couplers are used for Threaded rods.

Rod Dia mm	Thread Dia. inch	PART No.
16	5/8"	SP 16
20	3/4"	SP 20

Code: **SP**
Standard: IEC 62561-2

pecial Spike

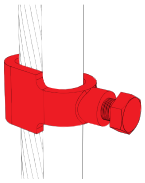
These spikes protect the tip of the rods and let installer to push the rods to earth easily when driving

Earth Clamps

All PTS road clamps have high strength copper aloy bodies. corrosion resistance high conductivity and mechanical strength manufactured to BS 6651

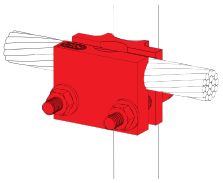
Rod to Wire Clamp

Code: **GRC1**
Standard: BS 6651



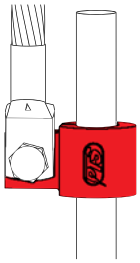
Rod Dia. mm	Conductor Range mm^2	PART No.
16	16-70	GRC1-16/70
20	50-120	GRC1-20/120
20	70-185	GRC1-20/185

Code: **GRC2**
Standard: BS 6651



Rod Dia. mm	Conductor Range mm^2	PART No.
16-20	70-185	GRC2-70/185

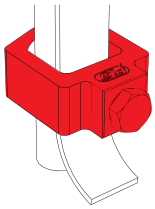
Code: **GRC3**
Standard: BS 6651



Rod Dia. mm	Conductor Range mm^2	PART No.
16	16-185	GRC3-16
20	16-185	GRC3-20

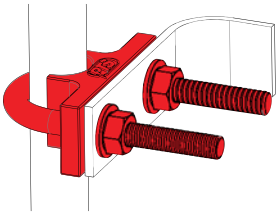
Rod to Tape Clamp

Code: **GRC4**
Standard: BS 6651



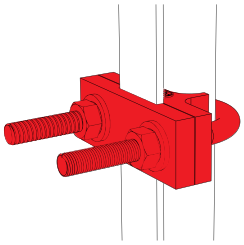
Rod Dia. mm	Conductor Range mm.mm	PART No.
16-20	20*3	GRC4
	20*5	
	30*3	
	30*5	

Code: **GRC5**
Standard: BS 6651



Rod Dia. mm	Conductor Range mm.mm	PART No.
16-20	20*3	GRC5
	20*5	
	25*3	
	25*5	
	30*3	
	30*5	
	40*3	
	40*5	

Code: **GRC6**
Standard: BS 6651

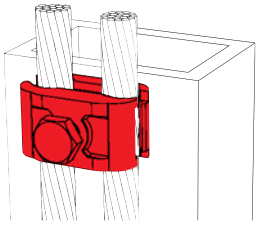


Rod Dia. mm	Conductor Range mm.mm	PART No.
16-20	20*3	GRC6-25*3
	25*3	
	30*3	

Grounding Wire Clamp

PTS grounding clamps have high strength copper alloy bodies , corrosion resistance, high conductivity and mechanical strength, to support wires

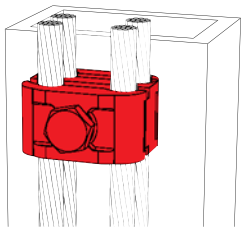
Conductor Range mm^2	Bolt Size mm	PART No.
35-185	M10	SC 185
120-300	M12	SC 300



Code: **SC**
Standard: BS 7430

Double Grounding Wire Clamp

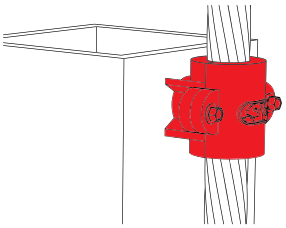
Conductor Range mm^2	Bolt Size mm	PART No.
35-185	M10	DSC 185
120-300	M12	DSC 300



Code: **DSC**
Standard: BS 7430

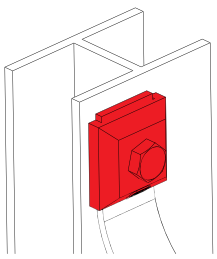
Cable Support Clamp

Conductor Range mm^2	Bolt Size mm	PART No.
70-120	M10	SCN 120
150-240	M12	SCN 240



Code: **SCN**
Standard: BS 7430

Conductor Range mm.mm	Bolt Size mm	PART No.
25*3	M10	BB 25*3



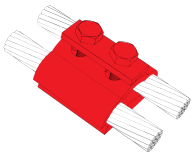
Code: **BB**
Standard: BS 7430

Rod Dia. mm	PART No.
25	FCP 25
29	FCP 29
33	FCP 33
41	FCP 41

Code: **FCP**
Standard: BS 7430

Parallel Connectors

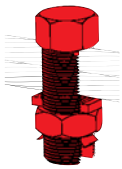
Code: **SCP**
Standard: BS 7430



Conductor Range mm²	Bolt Size mm	PART No.
35-70	M6	SCP 35/70
95-185	M8	SCP 95/185

Split Bolt Connectors

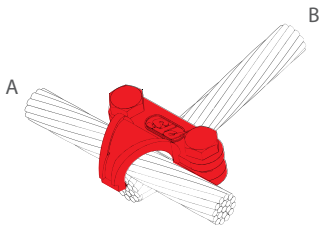
Code: **SBC**
Standard: BS 7430



Conductor Range mm²	PART No.
16-35	SBC 35
50-70	SBC 70
95-120	SBC 120
150-185	SBC 185

'T' Connectors

Code: **FCWB**
Standard: BS 7430



A mm²	B mm²	Bolt Size gr.	PART No.
35	35	M8*35	FCWB 35/35
	50	M8*35	FCWB 35/50
	70	M8*35	FCWB 35/70
	95	M8*35	FCWB 35/95
	120	M8*35	FCWB 35/120
50	35	M8*35	FCWB 50/35
	50	M8*35	FCWB 50/50
	70	M8*35	FCWB 50/70
	95	M8*35	FCWB 35/95
	120	M8*35	FCWB 50/120
70	35	M8*35	FCWB 70/35
	50	M8*35	FCWB 70/50
	70	M8*35	FCWB 70/70
	95	M8*35	FCWB70/95
	120	M8*35	FCWB 70/120
95	35	M8*35	FCWB 95/35
	50	M8*35	FCWB 95/50
	70	M8*35	FCWB 95/70
	95	M8*35	FCWB 95/95
	120	M8*35	FCWB95/120
120	35	M8*35	FCWB 120/35
	50	M8*35	FCWB 120/50
	70	M8*35	FCWB 120/70
	95	M8*35	FCWB 120/95
	120	M8*35	FCWB 120/120

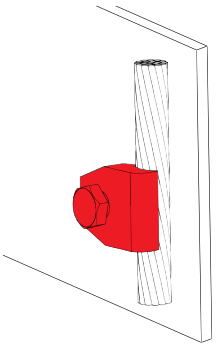
EARTH POINTS

Code: **ARC**
Standard: BS 7430

Conductor Range mm²	PART No.
50	ARC 50
70	ARC 70

Tower Earth Clamp

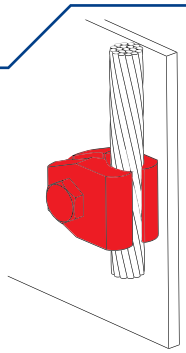
Conductor Range mm²	Bolt Size mm	PART No.
35-70	M 8*40	SK 70
95-185	M10*40	SK 185



Code: **SK**
Standard: BS 7430

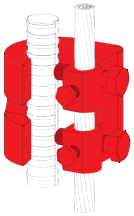
Tower Earth Clamp

Conductor Range mm²	Bolt Size mm	PART No.
35-70	M 8*40	DSK 70
95-185	M10*50	DSK 185



Code: **DSK**
Standard: BS 7430

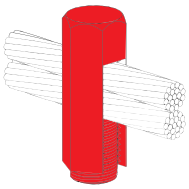
Conductor Range mm²	Bolt Size mm	PART No.
35	18-35	FCRB 35
50	18-35	FCRB 50
70	18-35	FCRB 70



Code: **FCRB**
Standard: BS EN 1982

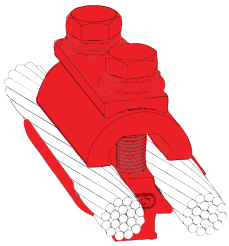
Light Bolt Connectors

Conductor Range mm²	PART No.
10-16	LSBC 16
25	LSBC 25
35	LSBC 35



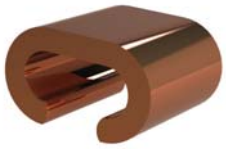
Code: **LSBC**
Standard: BS 7430

Conductor Range mm²	Bolt Size mm	PART No.
6-95	M 8*50	EDS 95

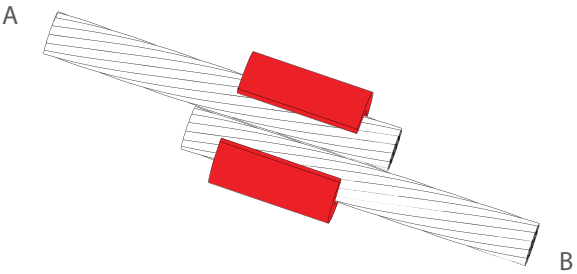


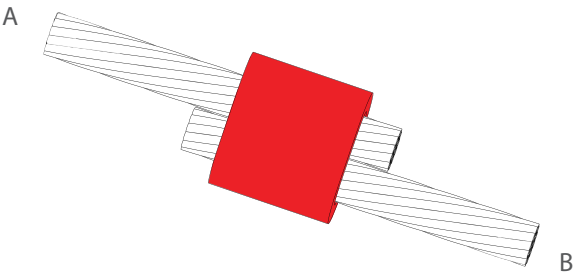
Code: **EDS**
Standard: BS 7430

COMPRESSION CONNECTORS



Code: **T**
Standard: BS 7430





A mm²	B mm²	PART No.
10	10	T 20
16	10	T 26
	16	T 44
25	10	T 44
	16	
	25	
35	10	T 44
	16	
	25	T 60
	35	T 76
50	10	T 76
	16	
	25	
	35	
	50	T 98
70	10	T 76
	16	
	25	T 98
	35	
	50	
	70	T 122
95	10	T 98
	16	
	25	
	35	T 122
	50	T 154
	70	
	95	T 190
120	16	T 122
	25	
	35	T 154
	50	
	70	
	95	T 240
	120	
150	16	T 154
	25	
	35	
	50	T 190
	70	
	95	T 240
	120	T 288
	150	
185	16	T 154
	25	
	35	T 190
	50	
	70	T 240
	95	T 288
	120	
	150	T 365
	185	
240	16	T 240
	25	
	35	
	50	
	70	T 288
	95	
	120	T 365

Light Bolt Connectors

Conductor Range mm²	Hole Size mm	PART No.
6	6	KL 6/6
	8	KL 6/8
10	6	KL 10/6
	8	KL 10/8
16	8	KL 16/8
	10	KL 16/10
25	8	KL 25/8
	10	KL 25/10
35	8	KL 35/8
	10	KL 35/10
50	8	KL 50/8
	10	KL 50/10
70	10	KL 70/10
	12	KL 70/12
95	10	KL 95/10
	12	KL 95/12
120	10	KL 120/10
	12	KL 120/12
150	12	KL 150/12
	14	KL 150/14
185	12	KL 185/12
240	14	KL 185/14
240	14	KL 240/14
	16	KL 240/16

Code: **KL**
Standard: UL 486

Conductor Range mm²	Hole Size mm	Center to center mm	PART No.
50	8	25	KLD 50/8-25
	8	40	KLD 50/8-40
	10	25	KLD 50/10-25
	10	40	KLD 50/10-40
70	10	25	KLD 70/10-25
	10	40	KLD 70/10-40
	12	25	KLD 70/12-25
	12	40	KLD 70/12-40
	10	25	KLD 95/10-25
	10	40	KLD 95/10-40
	12	25	KLD 95/10-25
	12	40	KLD 95/10-40
120	10	25	KLD 120/10-25
	10	40	KLD 120/10-40
	12	25	KLD 120/12-25
	12	40	KLD 120/12-40
150	12	25	KLD 150/12-25
	12	40	KLD 150/12-40
	14	25	KLD 150/14-25
	14	40	KLD 150/14-40
185	12	25	KLD 185/12-25
	12	40	KLD 185/12-40
	14	25	KLD 185/14-25
240	14	25	KLD 240/14-25
	14	40	KLD 240/14-40
	16	25	KLD 240/16-25
	16	40	KLD 240/16-40

Code: **KLD**
Standard: UL 486

Flexible Copper Earth Bond

The flexible earth bars are manufactured from pure copper wire braid in accordance with BS4109 C101. Depending on customer reqests, other sizes are avilable.

Code: **FBE**
Standard: BS 4109

Conductor Range mm.mm	L mm	PART No.
2*20	200	FBE 2022
	400	FBE 2024
3*20	200	FBE 2032
	400	FBE 2034
2*25	200	FBE 2522
	400	FBE 2524
3*25	200	FBE2532
	400	FBE2434
3*30	200	FBE 3032
	400	FBE 3034

EARTH INSPECTION PIT

Designed to protect and make available for inspection and testing the earth rods and earthing connections.

Designed to protect and make available for inspection and testing connections.

Code: **ER-P**

Size mm.mm.mm	Conductor Size mm.mm	PART No.
400*400*300	**No**	ER-P1
400*400*300	210*50*5	ER-P2
400*400*300	Pin Copper 5*50*210	ER-P3
400*400*600	**No**	ER-P4
400*400*600	210*50*5	ER-P5
400*400*600	Pin Copper 5*50*210	ER-P6

SOLID COPPER PLATES

These solid earth plates are used as a part of an earthing system. The material is pure electrolytic copper as BS Standard . They can provide long lasting solution where earth rod are not suitable. Other dimension are avalable too.

Code: **ESC**
Standard: BS 2874

Size mm.mm.mm	PART No.
660*660*3	ESC 663
660*660*5	ESC 665
1000*660*3	ESC 1063
1000*660*5	ESC 1065

Earth Equipotential Mats

These mats are used on top of finish and directly below the operator's normal standing position for manually operating disconnect switches

Code: **EEM**
Standard: ASTM A123

Size mm.mm.mm	Conductor Size mm.mm	PART No.
800*50*20	20*3	EEM 852
800*500*30	30*3	EEM 853
1000*500*20	20*3	EEM 1052
1000*500*30	30*3	EEM 1053

Backfill

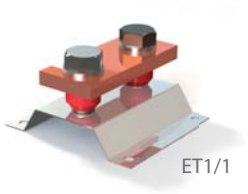
One method of reducing the ground bed resistance is to surround the rod electrodes with low resistivity soil, this work has several advantages: Reduce the resistance between conductors and soil. Provide a uniform environment so that the conductors output is predictable and constant the backfill has not organic acids and anaerobic bacteria, consequently reduces rate of corrosion in the neighborhood of rods.

DISCONNECTING LINK

The disconnecting link is mainly used to offer a temporary break in the connection to earth allowing the testing of an earth rod whilst disconnecting from the lightning protection system.

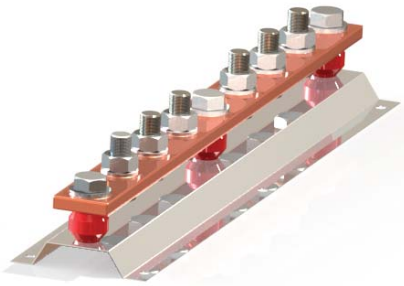
Bus Bar Size mm.mm.mm	PART No.
120*30*3	ET 1/1 *A
120*50*5	ET 1/1 *B

Code: **ET**


ET1/1

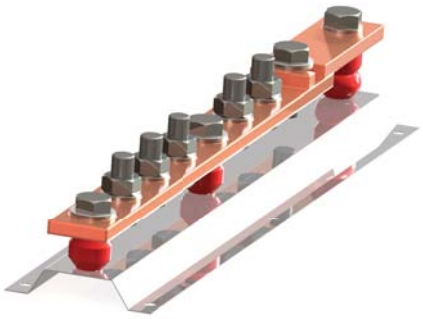
Type	Bus Bar Size mm.mm.mm	PART No.
2	160*30*3	ET 2
3	200*30*3	ET 3
4	240*50*5	ET 4
5	280*50*5	ET 5
6	320*50*5	ET 6
8	440*50*5	ET 8
10	520*50*5	ET 10
12	600*50*5	ET 12

Code: **ET**



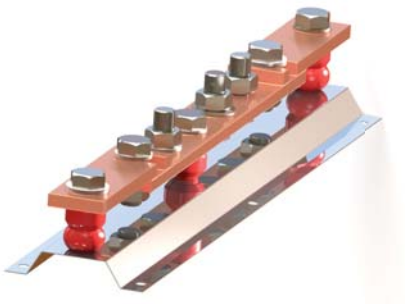
Type	Bus Bar Size mm.mm.mm	PART No.
3	275*50*5	ET 3/1
4	315*50*5	ET 4/1
5	355*50*5	ET 5/1
6	395*50*5	ET 6/1
8	515*50*5	ET 8/1
10	595*50*5	ET 10/1
12	675*50*5	ET 12/1

Code: **ET**



Type	Bus Bar Size mm.mm.mm	PART No.
3	350*50*5	ET 3/2
4	390*50*5	ET 4/2
5	430*50*5	ET 5/2
6	470*50*5	ET 6/2
8	590*50*5	ET 8/2
10	670*50*5	ET 10/2
12	750*50*5	ET 12/2

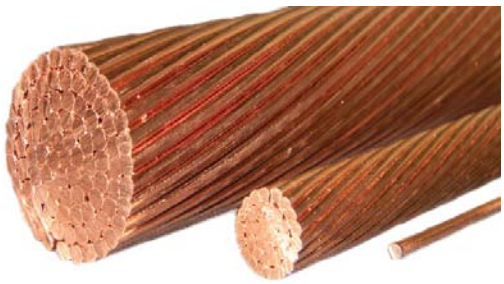
Code: **ET**



CONDUCTORS

All of following stranded PVC/Coated BARE copper conductors are manufactured in accordance with the relevant standards.

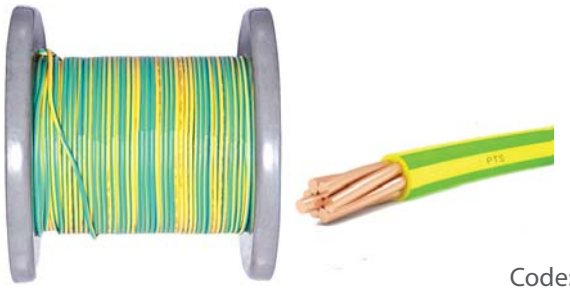
Bare Stranded Copper Conductors



Code: **SCC**
Standard: IEC 60228

Bus Bar Size mm²	PART No.
16	SCC 016
25	SCC 025
35	SCC 035
50	SCC 050
70	SCC 070
95	SCC 095
120	SCC 120
150	SCC 150
185	SCC 185
240	SCC 240

Yellow/Green PVC Coated Stranded Copper Conductors



Code: **YGC**

Conductor Range mm²	PART No.
16	YGC 016
25	YGC 025
35	YGC 035
50	YGC 050
70	YGC 070
95	YGC 095
120	YGC 120
150	YGC 150
185	YGC 185
240	YGC 240

Flat Copper Tape

Copper tapes are used in both earthing and lightning protection systems.They are manufactured to BS 1432 C101/C103

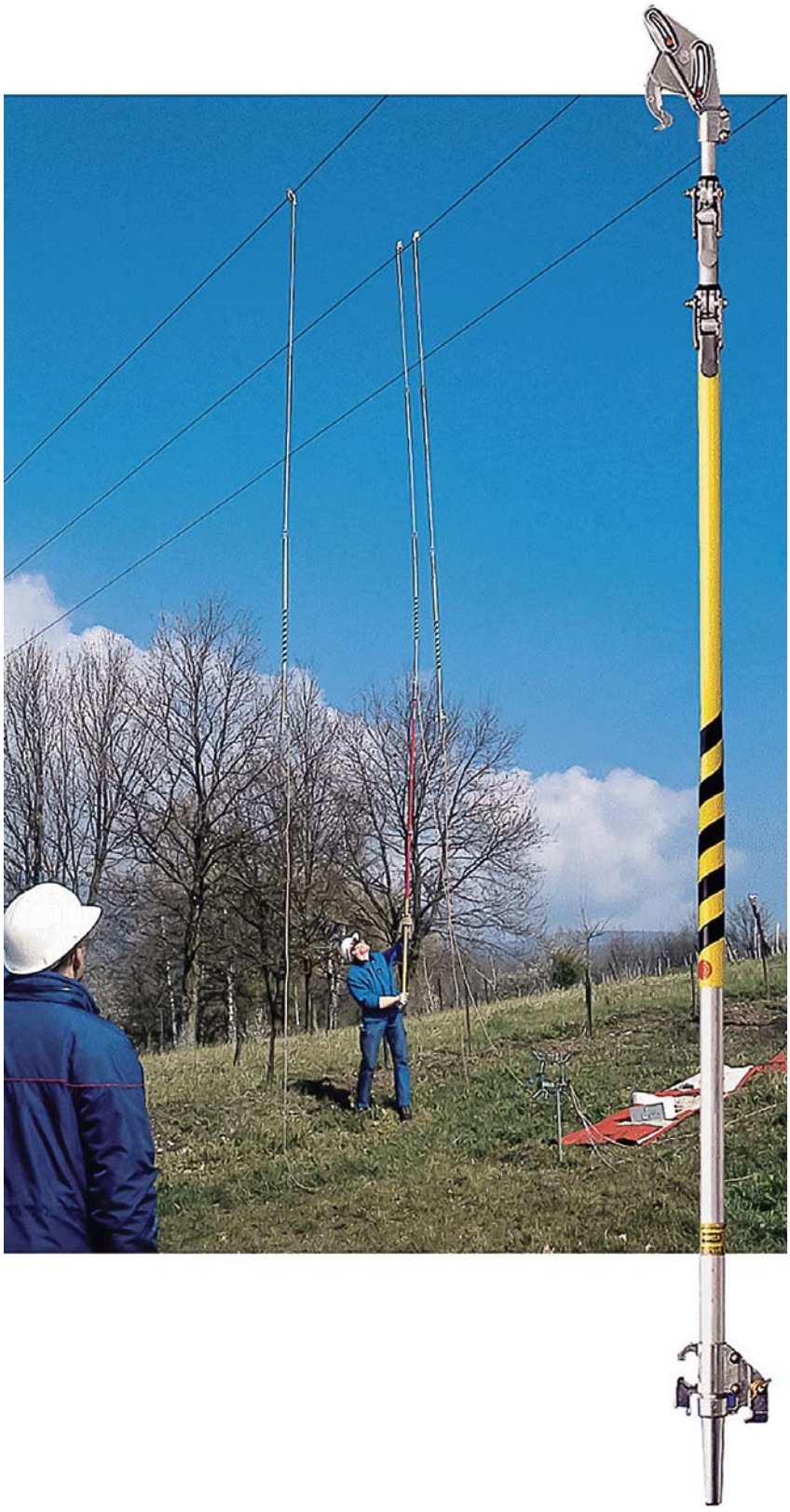
Code: **TCB**
Standard: BS EN 13601

Conductor Size mm.mm	PART No.
20*3	TCB 20*3
25*3	TCB 25*3
30*3	TCB 30*3
50*5	TCB 50*5
60*5	TCB 60*5

Temporary Earthing System

Temporary grounding devices are hand-held equlpment that brought and connected to the connecting points of electrical instigations for earthing and it permits conductors to be earthed as well as short circuit.

PTS is manufacturer of an acceptable range of temporary earthing devices for 20KV up to 400KV, and maximum 40KA, 0.5sec. Short circuit current. Temporary devices as well as the matching connection points on the conductor and on the conductor and on the earthing system, must be designed to withstand the rated short-circuit current of the respective electrical installation.



Earthing & Lightning

Lightning Protection System

Lightning Protection System Introduction

Early Streamer Emission Air Terminal (ESE)

Early Streamer Emission Air Terminal (ESE), Pulsating emitter lightning conductor are characterized by reaching to the approach of lightning, capturing it before any other element within its protection zone in order to conduct the lightning current to earth via a safe path "The standard name of this advance is "Advance Time (Dt)". It determines the radius of protection of the air terminal and must be tested and certified by official and therefore independent laboratories. It is essential for these tests to be protected by lightning current withstanding tests, with the aim of proving that the air terminal is not perishable and works after numerous lightning discharges.

Also, an ESE lightning conductor must remain operative in bad weather conditions, since it would become ineffective if short-circuited by rain Equipped with triple insulating system protector, stepped electrostatic charge accumulator, upward streamer electronic generator and multiple spark-gap. Wholly made of stainless steel type AISI-316, no need for an unnatural power supply.

Lightning Protection System installation must comply with the UNE 21186 Standard (Protection of Structures, building and open areas with early streamer emission air terminals), maintaining security distances, using proper materials and always searching for the safest and most direct way to conduct lightning currents from the air termination system to the earth termination system. The earth termination system must be able to disperse the high lightning currents rapidly, thus making low resistance and enduring characteristics necessary.

Meshed Lightning Protection System

Lightning protection systems have considered for protecting of appliances, electrical systems and building construction since Benjamin Franklin first invented lightning rods in 1752.

Most traditional lightning protection systems are based on the installation of Franklin rods and meshed conductors covering the structure. It is very important that the materials, dimensions and installation of these components follow the in force regulations. It should provide a means by which this discharge may enter or leave earth without passing through and damaging non conducting parts of a structure, such as those made of wood, brick, tile or concrete.

A lightning protection system does not prevent lightning from striking; it provides a means for controlling it and preventing damage by providing a low resistance path for the discharge of lightning energy A meshed cage installation has:

- Devices to capture atmospheric discharges, consisting of strike points;
- Roof conductors;
- Down conductors;
- Ground posts.

PTS has a wide range of air terminals, conductors, clamps and other acc. for this system.Our technical department is available to support you to study your project(s) for designing and offering with a acceptable offer.

Air Rod Base

These saddles are used for supporting air rods onto the roof network of the lightning protection system and connecting the down conductor to the air rods.

Code: **LT**
Standard: BS EN 50164-2
UL 96 (RA 215 , RA 225)

Rod Dia. mm	L mm	PART No.
16	500	LT 16/500
16	1000	LT 16/1000
16	1200	LT 16/1200
16	1500	LT 16/1500
16	2000	LT 16/2000
20	500	LT 20/500
20	1000	LT 20/1000
20	1200	LT 20/1200
20	1500	LT 20/1500
20	2000	LT 20/2000

Code: **MLT**
Standard: BS EN 50164-2
UL 96 (RA 215 , RA 225)

Rod Dia. mm	L mm	PART No.
16	500	MLT 16/500
16	1000	MLT 16/1000
16	1200	MLT 16/1200
16	1500	MLT 16/1500
16	2000	MLT 16/2000
20	500	MLT 20/500
20	1000	MLT 20/1000
20	1200	MLT 20/1200
20	1500	MLT 20/1500
20	2000	MLT 20/2000

Rod Dia. mm	Conductor Range mm²	Threaded Size mm	PART No.
16	35	M 16	SLD 16/35
	50	M16	SLD 16/50
	70	M16	SLD 16/70
	95	M16	SLD 16/95
	120	M16	SLD 16/120
	185	M16	SLD 16/185
20	35	M20	SLD 20/35
	50	M20	SLD 20/50
	70	M20	SLD 20/70
	95	M20	SLD 20/95
	120	M20	SLD 20/120
	185	M20	SLD 20/185

Code: **SLD**
Standard: BS EN 1982

Rod Dia. mm	Conductor Range mm.mm	Threaded Size mm	PART No.
16	20*3	M 16	SLD 16/25*3
	25*3	M16	SLD 16/25*3
	30*3	M16	SLD 16/30*3
20	20*3	M20	SLD 20/25*3
	25*3	M20	SLD 20/25*3
	30*3	M20	SLD 20/30*3

Code: **SLD**
Standard: BS EN 1982

Rod Dia. mm	Conductor Range mm.mm	Threaded Size mm	PART No.
16	20*3	M 16	SLB 16/25*3
	25*3	M16	SLB 16/25*3
20	20*3	M20	SLB 20/25*3
	25*3	M20	SLB 20/25*3

Code: **SLB**
Standard: BS EN 1982

Rod Dia. mm	Conductor Range mm²	Threaded Size mm	PART No.
16	35	M 16	SLW 16/35
	50	M16	SLW 16/50
	70	M16	SLW 16/70
	95	M16	SLW 16/95
	120	M16	SLW 16/120
	185	M16	SLW 16/185
20	35	M20	SLW 20/35
	50	M20	SLW 20/50
	70	M20	SLW 20/70
	95	M20	SLW 20/95
	120	M20	SLW 20/120
	185	M20	SLW 20/185

Code: **SLW**
Standard: BS EN 1982

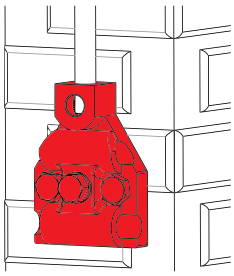
Rod Dia. mm	Conductor Range mm.mm	Threaded Size mm	PART No.
16	20*3	M 16	SLW 16/25*3
	25*3	M16	SLW 16/25*3
	30*3	M16	SLW 16/30*3
20	20*3	M20	SLW 20/25*3
	25*3	M20	SLW 20/25*3
	30*3	M20	SLW 20/30*3

Code: **SLW**
Standard: BS EN 1982

Air Rod Wall Base

Used for fixing air rods onto the wall network of the lightning protection system and connecting the down wire to the air rods

Code: **SLW**
Standard: BS EN 1982



Rod Dia. mm	Conductor Range mm^2	Threaded Size mm	PART No.
10	50 -70	M 10	SLW1
12	50-70	M12	SLW2

DC Tape Clamp

Brackets provide projection from the building face. Conjuction with the side mounting brackets is made with the air rod to tape coupling

Code: **KL**
Standard: BS EN 1982

Rod Dia. mm	Rod Coupler mm	PART No.
16	16	KL 16
20	20	KL 20

Code: **CKL**
Standard: BS EN 1982

Rod Dia. mm	Rod Coupler mm	PART No.
16	16	CKL 16
20	20	CKL 20

Standing Masts

The masts are produced with high quality hot deep galvanized in acordance with relevant international standards.

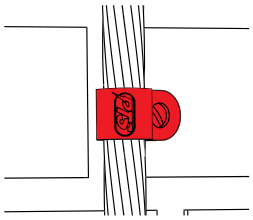
L m	PART No.
2	MGH 2
3	MGH 3
4	MGH 4
5	MGH 5
6	MGH 6
8	MGH 8
10	MGH 10

Code: **MGH**
Standard: ASTM A123

Lightning Protection Clamp

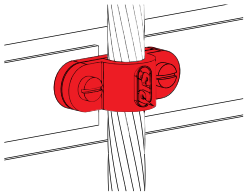
One Hole Cable Clip

Conductor Range mm^2	Material	PART No.
35	Copper	FCW1-35
50	Copper	FCW1-50
70	Copper	FCW1-70
95	Copper	FCW1-95
120	Copper	FCW1-120



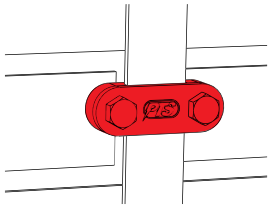
Code: **FCW1**
Standard: BS EN 1982

Conductor Range mm^2	Material	PART No.
35	Copper alloy	FCW2-35
50	Copper alloy	FCW2-50
70	Copper alloy	FCW2-70
95	Copper alloy	FCW2-95
120	Copper alloy	FCW2-120



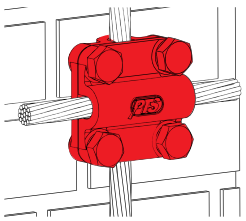
Code: **FCW2**
Standard: BS EN 1982

Conductor Range mm.mm	Material	PART No.
20*3&25*3	Copper alloy	FCB 25*3
30*3	Copper alloy	FCB 30*3
50*5	Copper alloy	FCB 50*5



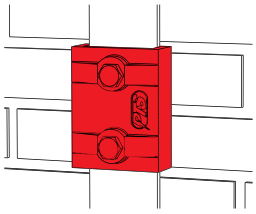
Code: **FCB**
Standard: BS EN 1982

Conductor Range mm^2	Material	PART No.
35	Copper alloy	FCDW 35
50	Copper alloy	FCDW 50
70	Copper alloy	FCDW 70
95	Copper alloy	FCDW 95
120	Copper alloy	FCDW 120



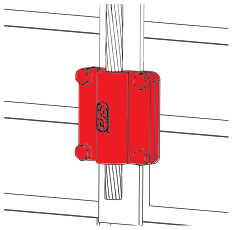
Code: **FCDW**
Standard: BS EN 1982

Conductor Range mm.mm	Material	PART No.
20*3 & 25*3	Copper alloy	FCOB 25*3
30*3	Copper alloy	FCOB 30*3



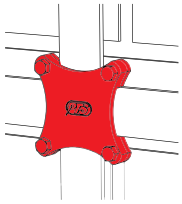
Code: **FCOB**
Standard: BS EN 1982

Code: **FCK**
Standard: BS EN 1982



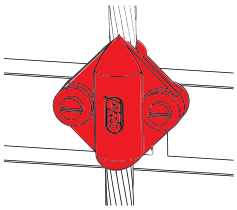
Conductor Range mm²	Conductor Size mm.mm	Material	PART No.
35	20*3 & 25*3	Copper alloy	FCK 35/25*3
50	20*3 & 25*3	Copper alloy	FCK 50/25*3
70	20*3 & 25*3	Copper alloy	FCK 70/25*3

Code: **FCDB**
Standard: BS EN 1982

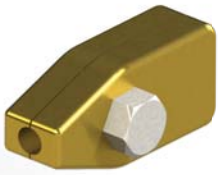


Conductor Range mm.mm	Material	PART No.
20*3 & 25*3	Copper alloy	FCDB 25*3
30*3	Copper alloy	FCDB 30*3

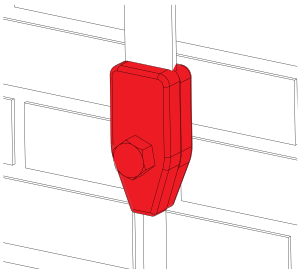
Code: **TCS**
Standard: BS EN 1982



Conductor Range mm²	Material	PART No.
35	Copper alloy	TCS 35
50	Copper alloy	TCS 50
70	Copper alloy	TCS 70
95	Copper alloy	TCS 95
120	Copper alloy	TCS 120

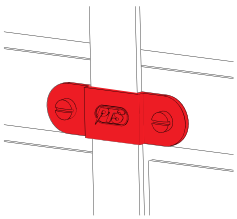


Code: **BCW**
Standard: BS EN 1982



Conductor Size mm.mm	Conductor Range mm²	PART No.
20*3 & 25*3	50	BCW 50/25*3
	70	BCW 70/25*3
	95	BCW95/25*3
30*3	50	BCW 50/30*3
	70	BCW 70/30*3
	95	BCW 95/30*3

Code: **CW**
Standard: BS EN 1982



Conductor Range mm.mm	Material	PART No.
20*3 & 25*3	Copper	CW1-25*3
20*3 & 25*3	Stinless Steel	CW2-25*3

Exothermic Welding System

Introduction

Thermo welding system is an easy simple to use field/process for welding copper to copper or copper to steel, without the use of an external power source. Thermite connections utilize the high temperature reaction of powdered copper oxide and aluminum, which when ignited; produce aluminum oxide (in the form of slag) and superheated copper .

The reaction takes place in a semi permanent graphite mould where the materials are joint and positioned.

When the total mass of powder becomes super heated molten copper, it flows through the mould onto the conductors to be joined by melting a thin steel disc which previously has stopped the powder from dropping through the mould.

This causes the conductors or surfaces to melt and form a fusion weld between them. The finished connection in the majority of cases sectional area of the conductors being welded and therefore:

1. Will not be affected by high current surges.
2. Will not loosen of corrode at the point of weld.
3. Has a current carrying capacity equal to or greater than that of the conductors welded.
4. Other efficiencies are:

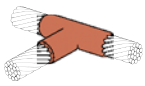
- Will withstand repeated faults.
- Has a low labor cost.
- Requires no special skills.
- Can be checked for quality by visual inspection.
- Requires no external power or heat.
- Maintenance saving, as the welds are unaffected by oxidation and fault currents.

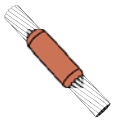
Table Welding Powder

Weight powder gr	Number in a pack	PART No.
32	12	P-32
45	12	P-45
65	12	P-65
90	12	P-90
115	12	P-115
150	12	P-150
200	12	P-200
250	12	P-250

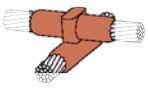
Exothermic Welding System

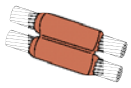
Cable to Cable

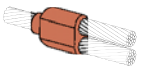

CL

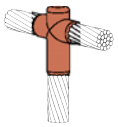

CE

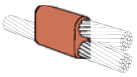

CX

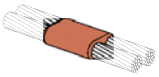

XX


CD

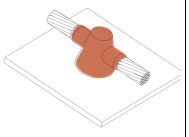

CDV

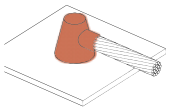

CCR

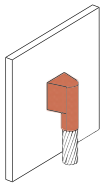

CVV


CPW

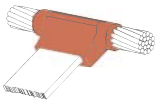
Cable to Bus Bar & Surface

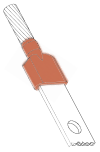

CSP


CSL

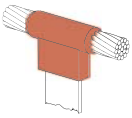

CSI

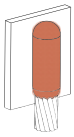

CBL

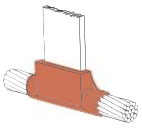

CBT

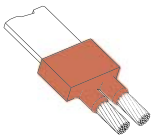

CBK

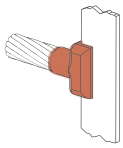

CBM

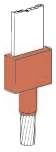

CBZ

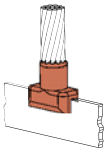

CSI

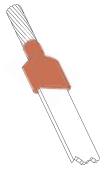

CBV


CDB

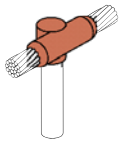

CBW

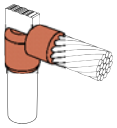

CBF

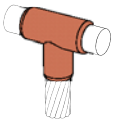

CBS

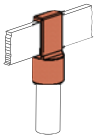

CBE

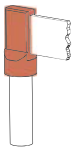
Cable to Earth Rod

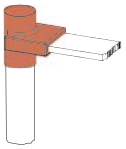

RCT


RCL

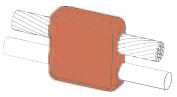

RCZ


RBT

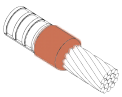

RBL


RBF

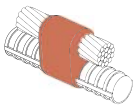

RVH

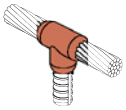

RDH

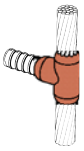
Cable to Rebar

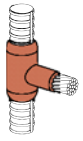

ACE

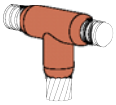

ACT


ACD


ACR


ACV

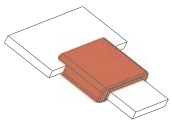
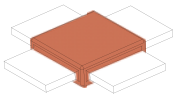
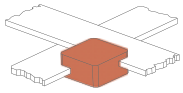
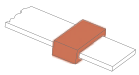
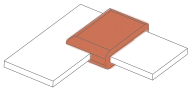
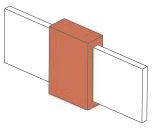
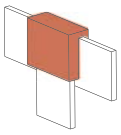
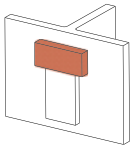
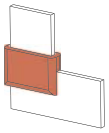
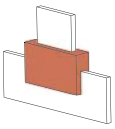
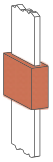
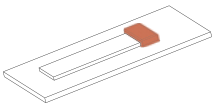
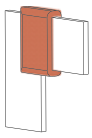
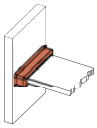
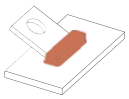
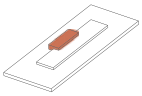
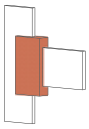

ACH


ACZ

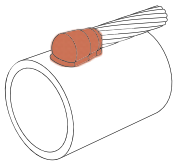

ACI

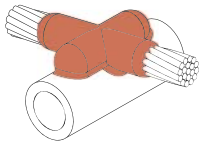
ACX

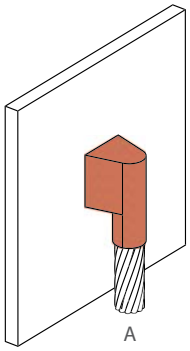
Bus Bar to Bus Bar

 BL	 BX	 BXT	 BE	 BBD	 BH
 BV	 SBV	 BBL	 BBV	 BBW	 SBD
 BBN	 SBT	 SBK	 SBG	 BBZ	

Cable to Pipe

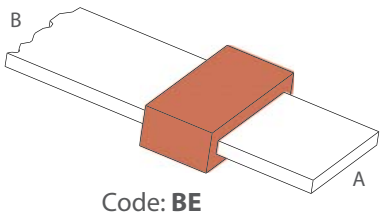

PC


SPC



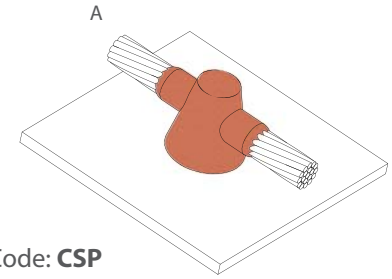
Code: **CSI**

A	Weld Powder	Handle Clamp Type	Graphite Mould Type
25	65	HC 60	CSI 25
35	65		CSI 35
50	90	HC 80	CSI 50
70	90		CSI 70
95	115		CSI 95
120	115		CSI 120
150	150		CSI 150
185	200		CSI 185
240	250		CSI 240



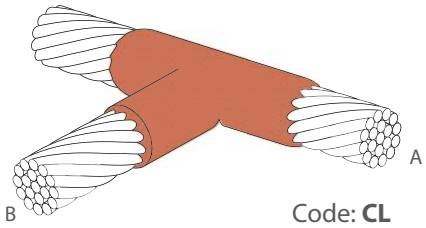
Code: **BE**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
20*3	20*3	65	HC 80	BE 20*3/20*3
25*3	25*3	65		BE 25*3/25*3
25*5	25*5	90		BE 25*5/25*5
30*3	30*3	90		BE 30*3/30*3
30*5	30*5	115		BE 30*5/30*5
40*3	40*3	90		BL 40*3/40*3
40*5	40*5	150		BE 40*5/40*5
40*10	40*10	2*150		BE 40*10/40*10



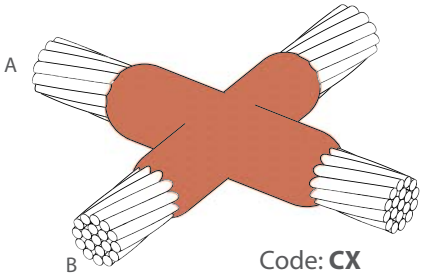
Code: **CSP**

A	Weld Powder	Handle Clamp Type	Graphite Mould Type
25	115	HC 80	CSP 25
35	115		CSP 35
50	150		CSP 50
70	150		CSP 70
95	150		CSP 95
120	200		CSP 120
185	250		CSP 185



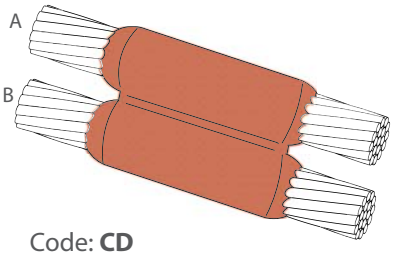
Code: **CL**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
16	16	45	HC 60	CL 16/16
25	16	45	HC 60	CL 25/16
	25	45		CL 25/25
35	16	45	HC 60	CL 35/16
	25	45		CL 35/25
	35	45		CL 35/35
50	16	65	HC 60	CL 50/16
	25	65		CL 50/25
	35	65		CL 50/35
	50	90		CL 50/50
70	25	65	HC 60	CL 70/25
	35	65		CL 70/35
	50	90		CL 70/50
	70	90		CL 70/70
	95	90		CL 70/95
95	25	90	HC 60	CL 95/25
	35	90		CL 95/35
	50	90		CL 95/50
	70	90		CL 95/70
	95	115		CL 95/95
	120	150	HC 80	CL 95/120
120	25	90	HC 60	CL 120/25
	35	90		CL 120/35
	50	90		CL 120/50
	70	90		CL 120/70
	95	115	HC 80	CL 120/95
	120	150		CL 120/120
150	35	115	HC 80	CL 150/35
	50	115		CL 150/50
	70	115		CL 150/70
	95	150		CL 150/95
	120	150		CL 150/120
	150	200		CL 150/150
	185	200		CL 150/185
185	35	115	HC 80	CL 185/35
	50	115		CL 185/50
	70	150		CL 185/70
	95	150		CL 185/95
	120	200		CL 185/120
	150	200		CL 185/150
	185	200		CL 185/185
240	35	150	HC 80	CL 240/35
	50	150		CL 240/50
	70	150		CL 240/70
	95	150		CL 240/95
	120	200		CL 240/120
	150	200		CL 240/150
	185	250		CL 240/185
	240	2*150+45		CL 240/240



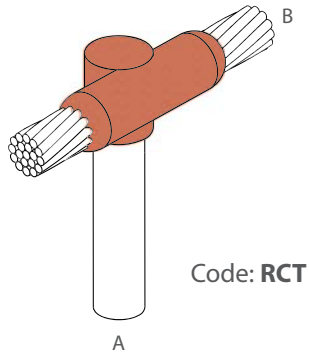
Code: **CX**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
16	16	45	HC 60	CX 16/16
25	16	45	HC 60	CX 25/16
	25	45		CX 25/25
35	16	65	HC 60	CX 35/16
	25	65		CX 35/25
	35	65		CX 35/35
50	16	90	HC 60	CX 50/16
	25	90		CX 50/25
	35	90		CX 50/35
	50	90		CX 50/50
70	25	115	HC 60	CX 70/25
	35	115		CX 70/35
	50	115		CX 70/50
	70	115		CX 70/70
	95	150	HC 80	CX 70/95
95	25	115	HC 80	CX 95/25
	35	115		CX 95/35
	50	115		CX 95/50
	70	150		CX 95/70
	95	150		CX 95/95
	120	200		CX 95/120
120	25	115	HC 80	CX 120/25
	35	115		CX 120/35
	50	150		CX 120/50
	70	150		CX 120/70
	95	200		CX 120/95
	120	200		CX 120/120
150	35	150	HC 80	CX 150/35
	50	150		CX 150/50
	70	150		CX 150/70
	95	200		CX 150/95
	120	250		CX 150/120
	150	250		CX 150/150
	185	250		CX 150/185
185	35	115	HC 80	CX 185/35
	50	200		CX 185/50
	70	200		CX 185/70
	95	200		CX 185/95
	120	250		CX 185/120
	150	250		CX 185/150
	185	150+115		CX 185/185
240	35	200	HC 80	CX 240/35
	50	250		CX 240/50
	70	250		CX 240/70
	95	250		CX 240/95
	120	150+115		CX 240/120
	150	2*150		CX 240/150
	185	2*150		CX 240/185
	240	2*150		CX 240/240



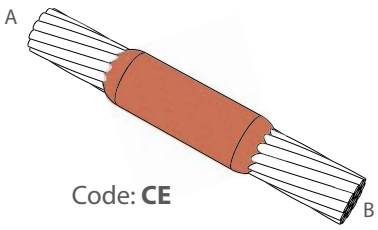
Code: **CD**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
16	16	65	HC 60	CD 16/16
25	16	65	HC 60	CD 25/16
	25	65		CD 25/25
35	16	65	HC 60	CD 35/16
	25	65		CD 35/25
	35	65		CD 35/35
50	16	65	HC 60	CD 50/16
	25	65		CD 50/25
	35	90		CD 50/35
	50	115	HC 80	CD 50/50
70	25	90	HC 80	CD 70/25
	35	90		CD 70/35
	50	115		CD 70/50
	70	115		CD 70/70
95	25	115	HC 80	CD 95/25
	35	115		CD 95/35
	50	115		CD 95/50
	70	150		CD 95/70
	95	150		CD 95/95
120	25	150	HC 80	CD 120/25
	35	150		CD 120/35
	50	150		CD 120/50
	70	150		CD 120/70
	95	200		CD 120/95
	120	250		CD 120/120
150	70	150	HC 80	CD 150/70
	95	200		CD 150/95
	120	200		CD 150/120
	150	250		CD 150/150
185	50	150	HC 80	CD 185/50
	70	150		CD 185/70
	95	200		CD 185/95
	120	200		CD 185/120
	150	250		CD 185/150
	185	250		CD 185/185
240	70	200	HC 80	CD 240/70
	95	250		CD 240/95
	120	250		CD 240/120
	150	2*150		CD 240/150
	185	2*150		CD 240/185
	240	2*150		CD 240/240



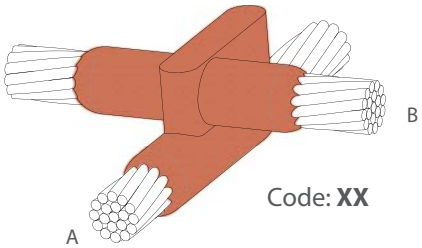
Code: **RCT**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
14.5	16	115	HC 80	RCT 14.5/16
	35	115		RCT 14.5/35
	50	115		RCT 14.5/50
	70	115		RCT 14.5/70
	95	115		RCT 14.5/95
	120	150		RCT 14.5/120
	150	200		RCT 14.5/150
	185	200		RCT 14.5/185
	240	200		RCT 14.5/240
16	16	115	HC 80	RCT 16/16
	35	115		RCT 16/35
	50	115		RCT 16/50
	70	115		RCT 16/70
	95	115		RCT 16/95
	120	150		RCT 16/120
	150	200		RCT 16/150
	185	200		RCT 16/185
	240	200		RCT 16/240
17.2	16	115	HC 80	RCT 17.5/16
	35	115		RCT 17.5/35
	50	115		RCT 17.5/50
	70	115		RCT 17.5/70
	95	115		RCT 17.5/95
	120	150		RCT 17.5/120
	150	200		RCT 17.5/150
	185	200		RCT 17.5/185
	240	250		RCT 17.5/240
20	16	115	HC 80	RCT 20/16
	35	115		RCT 20/35
	50	115		RCT 20/50
	70	115		RCT 20/70
	95	115		RCT 20/95
	120	150		RCT 20/120
	150	200		RCT 20/150
	185	200		RCT 20/185
	240	250		RCT 20/240



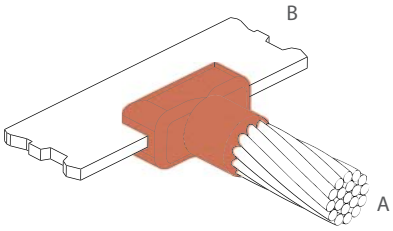
Code: **CE**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
16	16	32	HC 60	CE 16/16
25	16	32	HC 60	CE 25/16
	25	32		CE 25/25
35	16	45	HC 60	CE 35/16
	25	45		CE 35/25
	35	45		CE 35/35
50	16	45	HC 60	CE 50/16
	25	45		CE 50/25
	35	45		CE 50/35
	50	45		CE 50/50
70	25	65	HC 60	CE 70/25
	35	65		CE 70/35
	50	65		CE 70/50
	70	65		CE 70/70
95	25	65	HC 80	CE 95/25
	35	65		CE 95/35
	50	65		CE 95/50
	70	90		CE 95/70
	95	90		CE 95/95
120	25	90	HC 80	CE 120/25
	35	90		CE 120/35
	50	90		CE 120/50
	70	115		CE 120/70
	95	115		CE 120/95
	120	115		CE 120/120
150	70	115	HC 80	CE 150/70
	95	115		CE 150/95
	120	115		CE 150/120
	150	115		CE 150/150
185	50	115	HC 80	CE 185/50
	70	115		CE 185/70
	95	115		CE 185/95
	120	150		CE 185/120
	150	150		CE 185/150
	185	150		CE 185/185
240	70	150	HC 80	CE 240/70
	95	150		CE 240/95
	120	200		CE 240/120
	150	200		CE 240/150
	185	200		CE 240/185
	240	200		CE 240/240



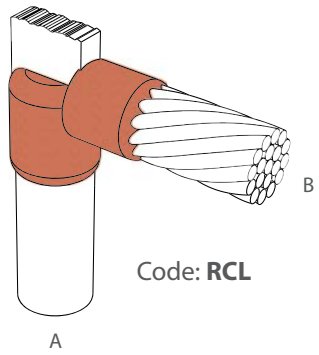
Code: **XX**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
16	16	115	HC80	XX 16/16
25	16	115	HC80	XX 25/16
	25	115		XX 25/25
35	16	115	HC80	XX 35/16
	25	115		XX 35/25
	35	115		XX 35/35
50	16	115	HC80	XX 50/16
	25	115		XX 50/25
	35	115		XX 50/35
	50	150		XX 50/50
70	25	115	HC80	XX 70/25
	35	150		XX 70/35
	50	150		XX 70/50
	70	150		XX 70/70
95	25	200	HC80	XX 95/25
	35	200		XX 95/35
	50	200		XX 95/50
	70	200		XX 95/70
	95	200		XX 95/95
120	25	250	HC80	XX 120/25
	35	250		XX 120/35
	50	250		XX 120/50
	70	250		XX 120/70
	95	250		XX 120/95
	120	250		XX 120/120
150	70	250	HC80	XX 150/70
	95	300		XX 150/95
	120	300		XX 150/120
	150	300		XX 150/150
185	50	250	HC80	XX 185/50
	70	250		XX 185/70
	95	300		XX 185/95
	120	300		XX 185/120
	150	300		XX 185/150
	185	2*150+32		XX 185/185
240	70		HC80	XX 240/70
	95			XX 240/95
	120			XX 240/120
	150			XX 240/150
	185			XX 240/185
	240			XX 240/240



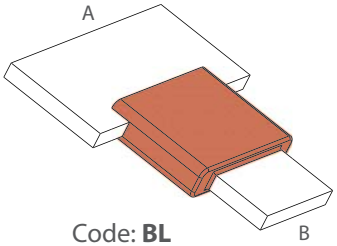
Code: **CBL**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
16	20*3	90	HC 80	CBL 16/20*3
	25*3	90		CBL 16/25*3
25	20*3	90	HC 80	CBL 16/20*3
	20*5	90		CBL 25/20*5
	25*3	90		CBL 25/25*3
35	20*3	90	HC 80	CBL 35/20*3
	20*5	90		CBL 35/20*5
	25*3	90		CBL 35/25*3
50	20*3	90	HC 80	CBL 50/20*3
	20*5	90		CBL 50/20*5
	25*3	90		CBL 50/25*3
	30*3	90		CBL 50/30*3
	40*3	90		CBL 50/40*3
	40*5	90		CBL 50/40*5
70	20*3	90	HC 80	CBL 70/20*3
	20*5	90		CBL 70/20*5
	25*3	90		CBL 70/25*3
	30*3	90		CBL 70/30*3
	40*3	90		CBL 70/40*3
	40*5	90		CBL 70/40*5
95	20*3	90	HC 80	CBL 95/20*3
	25*3	90		CBL 95/25*3
	30*3	90		CBL 95/30*3
	40*5	115		CBL 95/40*5
	50*5	115		CBL 95/50*5
120	25*5	115	HC 80	CBL 120/25*5
	30*5	115		CBL 120/30*5
	50*5	115		CBL 120*50*5
	25*10	150		CBL 120*25*10
	30*10	150		CBL 120/30*10
	40*10	150		CBL 120/40*10



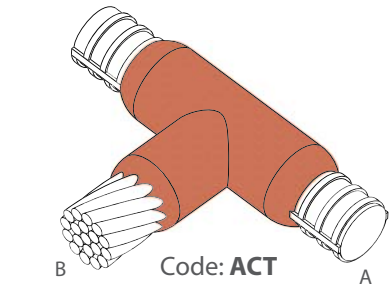
Code: **RCL**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
14.2	50	115	HC 80	RCL 14.5/50
	70	115		RCL 14.5/70
	95	115		RCL 14.5/95
	120	115		RCL 14.5/120
	150	150		RCL 14.5/150
	185	150		RCL 14.5/185
	240	150		RCL 14.5/240
16	50	115	HC 80	RCL 16/50
	70	115		RCL 16/70
	95	115		RCL 16/95
	120	115		RCL 16/120
	150	150		RCL 16/150
	185	150		RCL 16/185
	240	150		RCL 16/240
17.2	70	150	HC 80	RCL 17.5/70
	95	150		RCL 17.5/95
	120	150		RCL 17.5/120
	150	150		RCL 17.5/150
	185	150		RCL 17.5/185
	240	150		RCL 17.5/240
20	70	150	HC 80	RCL 20/70
	95	150		RCL 20/95
	120	150		RCL 20/120
	150	150		RCL 20/150
	185	150		RCL 20/185
	240	150		RCL 20/240



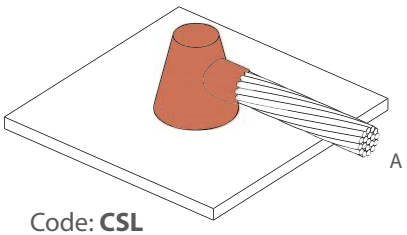
Code: **BL**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
20*3	20*3	90	HC 80	BL 20*3/20*3
25*3	25*3	90		BL 25*3/25*3
25*5	25*5	115		BL 25*5/25*5
30*3	30*3	115		BL 30*3/30*3
30*5	30*5	150		BL 30*5/30*5
40*5	40*5	150		BL 40*5/40*5



Code: **ACT**

A	B	Weld Powder	Handle Clamp Type	Graphite Mould Type
Ø 10	16	90	HC 80	ACT 10/16
	25	90		ACT 10/25
	35	90		ACT 10/35
	50	115		ACT 10/50
	70	115		ACT 10/70
	95	115		ACT 10/95
Ø 16	16	115	HC 80	ACT 16/16
	25	115		ACT 16/25
	35	150		ACT 16/35
	50	150		ACT 16/50
	70	150		ACT 16/70
	95	200		ACT 16/95
Ø 20	16	150	HC 80	ACT 20/16
	25	150		ACT 20/25
	35	150		ACT 20/35
	50	200		ACT 20/50
	70	200		ACT 20/70
	95	200		ACT 20/95
	120	250		ACT 20/120
Ø 22	16	150	HC 80	ACT 22/16
	25	150		ACT 22/25
	35	200		ACT 22/35
	50	250		ACT 22/50
	70	300		ACT 22/70
	95	350		ACT 22/95
	120	350		ACT 22/120



Code: **CSL**

A	Weld Powder	Handle Clamp Type	Graphite Mould Type
16	65	HC 80	CSL 25
25	65		CSL 35
35	90		CSL 50
50	115		CSL 70
70	115		CSL 95
95	115		CSL 120


PTS
www.pts1.ir