



ABRE PTE. LTD.

(201524109R)



EARTHING | LIGHTNING | SURGE PROTECTION SPECIALIST



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ABRE, the solution for all your Lightning problems

ABRE a lightning protection equipment and accessories manufacturer ensures high quality of products that are in compliance with International standards such as European (IEC), British (BS), European (EN) and Malaysia / Singapore / Indonesia standards (MS/SS/SNI).

THE SOLUTION FOR ALL YOUR LIGHTNING PROBLEM



COMPANY PROFILE

ABRE, a manufacturer of Lightning Protection System, together with a team of combine experience of more than 50 years have extensive knowledge of the current standard series, IEC 62305 which is recognized by all leading European and Asian companies. It is known in the modern world today that air-termination system, down conductors and earth termination system does not fully cover a total solution for lightning protection.

We adopt the IEC 62305 standards which are harmonized in Asia and this series of standards is internationally approved. These standards include

- 1) IEC 62305-1: Protection against lightning part 1:
General Principals**
- 2) IEC 62305-2: Protection against lightning part 2:
Risk management**
- 3) IEC 62305-3: Protection against lightning part 3:
Physical damage to structure and life hazard**
- 4) IEC 62305-4: Protection against lightning part 4:
Electrical and electronic systems within structures.**

This lightning protection standard is applied to various industries such as

- **Infrastructure Buildings**
- **Commercial Buildings**
- **Oil & Gas Projects**
- **Utility Projects**



| Information of ABRE

ABRE has team of dynamic, experienced members which have also extensive knowledge of international standards in Lightning & Earthing Protection businesses. The mottos of **ABRE** are:-

- Actions** : We are always ready to listen and give appropriate solutions to solve your lightning problems.
- Believe** : We believe in honesty. Our solutions are following the standards and we do our best to save cost for the end users with our knowledge in managing the risk assessment. You can always rely on us for honest opinions and we deliver our promises.
- Respect** : We always form a mutual understanding and trust and that brings customer into believing. With the customer always in our mind, we will find solutions to their problems and fulfil wishes quickly and effectively. Our specialists are here to actively support you in achieving your goals.
- Enthusiasm:** We always have the driving force that is the formula to success. We are always updated on international standards and we always keep ourselves exposed to new technology.

OUR PROMISE.....

“ Always Deliver
our promises
and
Plan a STEP
ahead ! ”

Innovations and inventions are part of our business, but we also simplify work processes in terms of cost savings for our clients. We only provide high quality reliable products to our customers.



| Theory of Lightning

Engineering and planning is also a priority for us when offering support on projects and engineering solution work. We always put our customers in the top position and work towards their goals with our expertise that will not compromise on the quality of work and standards.

With our regular consultancy & seminars, we provided training sessions to keep our customers updated, and always have a great feedback session.

The founder who has more than 20 years experiences, together with his team has a combined experience of over 50 years. We customer orientated and work towards our customers need without compromising the local and international standards.

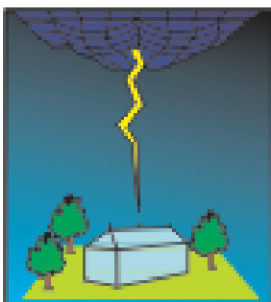
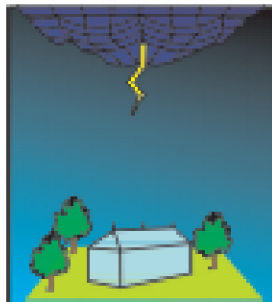
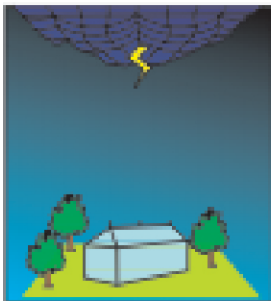
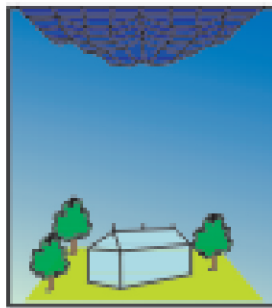
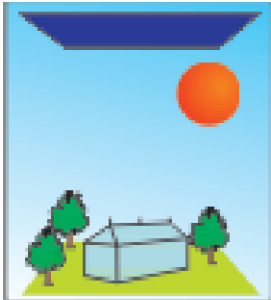
Our coverage extends from Europe to Asia Far East.

THEORY OF LIGHTNING

In the 18th century, Benjamin Franklin discovered lightning is nature of electrical reality and the lightning rod was invented by him in Pennsylvania in 1749.

Lightning is big electrical discharge of electricity that can reach either between the opposite charged regions within a cloud or between the lower region of a cloud and the ground. The former event is a cloud-to-cloud discharge, while the latter, known as cloud-to-ground lightning or simply ground strike, is much more destructive. In the case of ground strike, a downward leader progresses from a thundercloud, it's strong enough to hurt and kill people.





The charge distributed along the leader causes a rapid increase in the electric field between it and the ground. When a critical field value is reached approximately 100 m from the earth, a ground point will launch an intercepting upward leader. The distance at which this occurs is known as the "Striking Distance". Once interception occurs, the lightning path is completed and the main discharge takes place.

The sky is filled with electric charge. In a calm sky, the positive (+) and negative (-) charges are evenly spaced throughout the atmosphere. Therefore, a calm sky has a neutral charge.

Inside a thunderstorm, the electric charge is spread out differently. A thunderstorm is made up of ice crystals and hailstones. The ice crystals have a positive charge, and the hailstones have a negative charge. An updraft pushes the ice crystals to the top of the thunderstorm cloud. At the same time, the hailstones are pushed to the bottom of the thunderstorm by its downdraft. These processes separate the positive and negative charges of the cloud into two levels: the positive charge at the top and the negative charge at the bottom.

During a thunderstorm, the Earth's surface has a positive charge. Because opposites attract, the negative charge at the bottom of the thunder cloud wants to link up with the positive charge of the Earth's surface.

Once the negative charge at the bottom of the cloud gets large enough, a flow of negative charge rushes toward the Earth. This is known as a stepped leader. The positive charges of the Earth are attracted to this stepped leader, so a flow of positive charge moves into the air. When the stepped leader and the positive charge from the earth meet, a strong electric current carries positive charge up into the cloud. This electric current is known as the return stroke and humans can see it as lightning.

STATE OF THE ART FOR THE PROTECTION AGAINST LIGHTNING

At the beginning of 2006, the new IEC standards on lightning protection, Parts 1 to 4 of the series IEC 62305 were published. Almost after each 3 to 4 years of revision and time, now they became effective as new Asian Lightning Protection Standards MS IEC 62305, SS 555 and SNI 62305.

This is the oldest concept in lightning protection. The technology was developed in Year 1752 when Benjamin Franklin first started experimenting with the lightning mechanism. As shown in Figures 1 and 2, the Franklin Rod offers a cone of protection based upon its installed height above the structure. It assumes a positive angle from projections and the structural components within the cone are deemed to be protected against direct strikes. The current recommendation for applying the cone is for structure of protective angle α as a function of height h depending on the class of lightning protection system as shown in Figure 3.

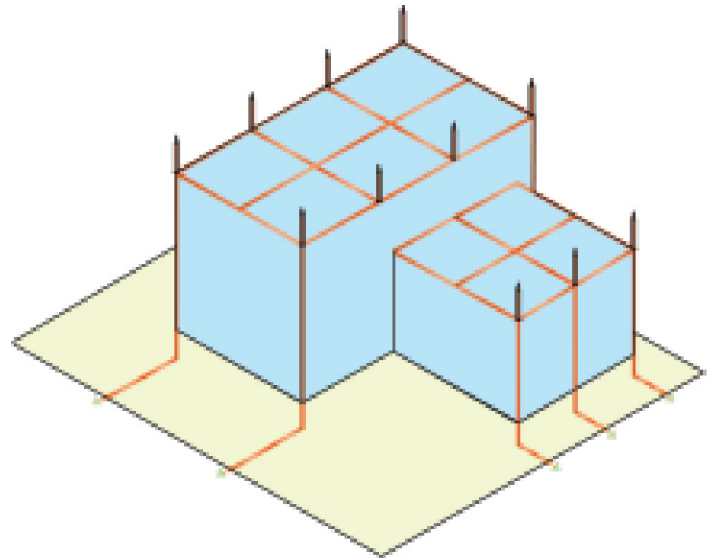


Figure 1: Franklin Rod offer cone protection method

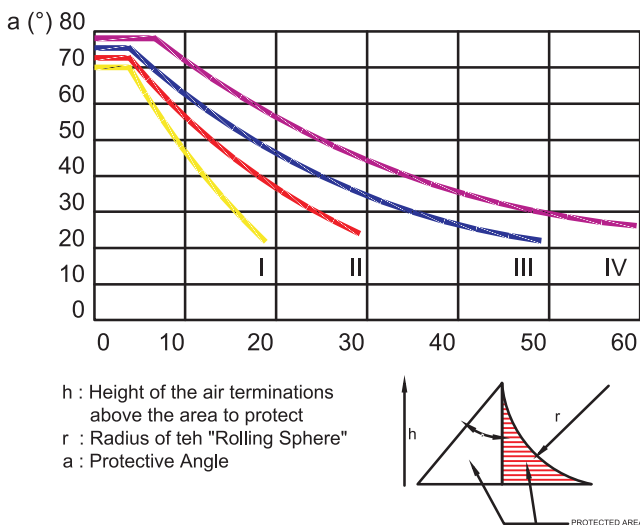


Figure 2: Protection angle depending on different class of lightning protection system

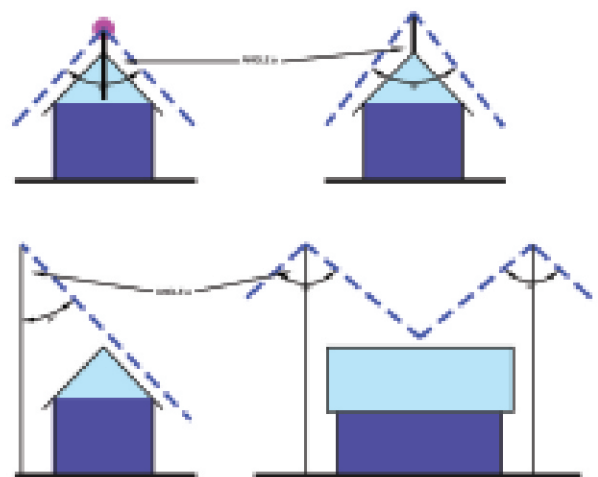


Figure 3: Typical protection angle from Air Termination

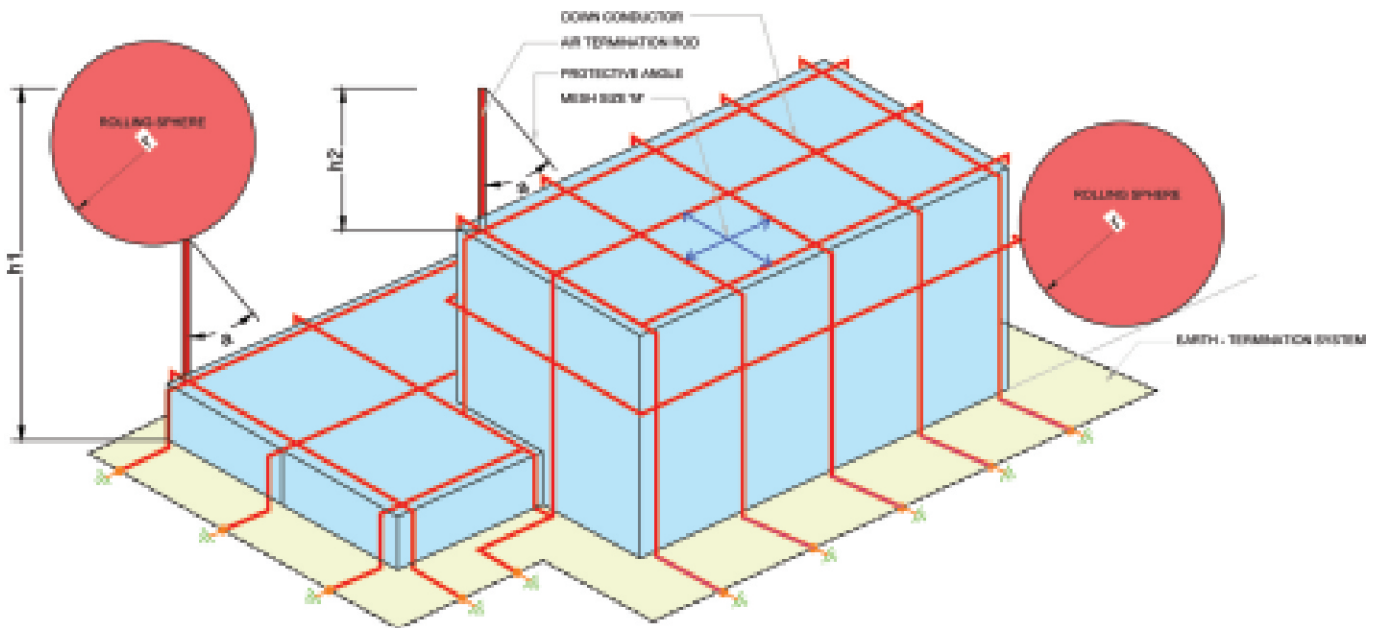


Figure 4: Methodological Air Termination designing method

The lightning protection systems for this design method should be manufactured from materials having highly corrosion-resistant characteristic.

The design concept of Faraday Cage is very similar to Franklin Rod and theory of Rolling Sphere as shown in Figure 4, the Faraday Cage comprises of horizontal air termination where external down conductors descend vertically from the air terminations.

These should be horizontally bonded at set intervals. The structural steel of reinforcing bars, if bonded, may be used to conduct the lightning current. This

technique, however, allows a pseudo random current flow of lightning current within the building. The vertical down conductors should be spaced around the perimeter of the structure.

The essence of Rolling Sphere method is based on an imaginary sphere, typically 20m to 60m in radius for standard class of protection to roll over the structure. All surface contact points by this sphere are deemed to require protection against lightning strikes.

MAX. BUILDING HEIGHT		
Class of LPS	Radius of the rolling sphere (r)	Mesh size (M)
I	20m	5 x 5m
II	30m	10 x 10m
III	45m	15 x 15m
IV	60m	20 x 20m

GROUNDING FOR EARTHING SYSTEM

ABRE is pleased to introduce most cost effectiveness and grounding solution, a comprehensive in different grounding system expanding their grounding product offering to include new simple and connection types adding increased versatility for installing a ground grid mesh system, a flexible rods grounding system, provides new solutions for grounding applications and minimizes the number of connector types and installing dies required to complete the system.

The industry's other common methods of installing grounding systems are offered by exothermic welding products and mechanical connector clamps the broadest range of products offered in the market. Overall, ABRE solution grounding can save time and labor costs.

Below some types of earth electrodes provides permanent, not easily broken and sufficient current carrying capability low resistance their classification are described according to location, form and profile of the classification according to IEC62305, BS7430 and IEEE80 providing a low impedance network to dissipate the fast rising lightning impulse, minimization of step and touch potential hazards and long term performance of the system.

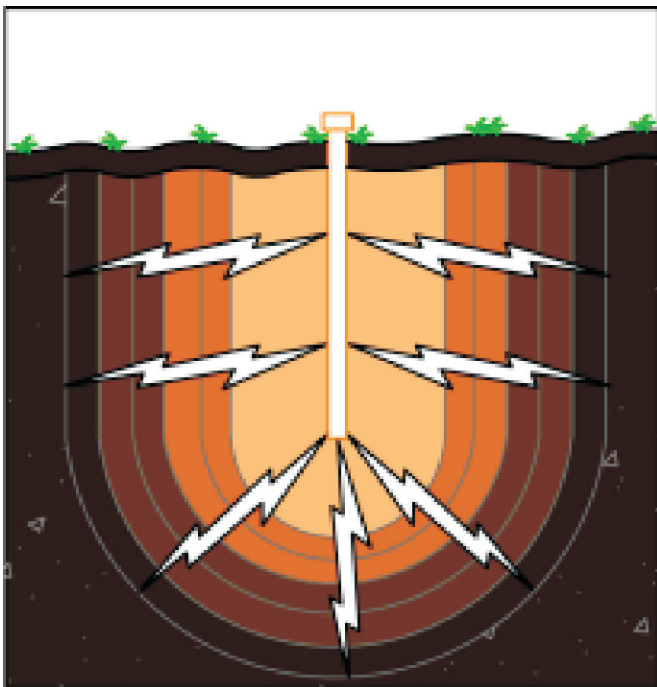


Figure 5: Good grounding connection

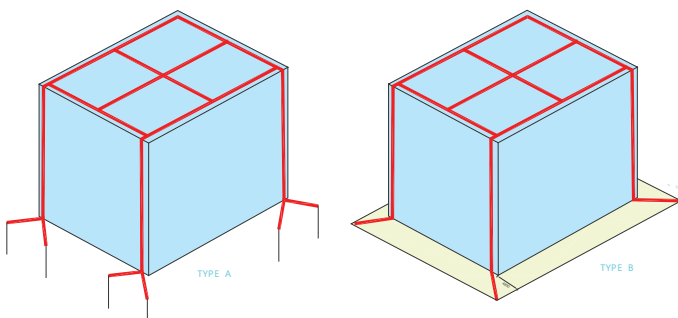


Figure 6: Type A & B Grounding Systems method to MS IEC 62305-3, SS 555-3 or BS EN 62305-3

Surface earth electrode

Is an earth electrode generally driven in at a shallow depth down to 1 m. It can consist of round material or flat strips and be designed as a startype, ring or meshed earth electrode or a combination thereof.

Earth rod

Is an earth rod generally driven in plumb down to greater depths. It can consist of round material or material with another profile, for example.

Foundation earth electrode

Which comprises one or more conductors embedded in concrete which is in contact with the earth over a wide area.

Control earth electrode

is an earth electrode whose form and arrangement serves more to control the potential than to maintain a certain earth electrode resistance.

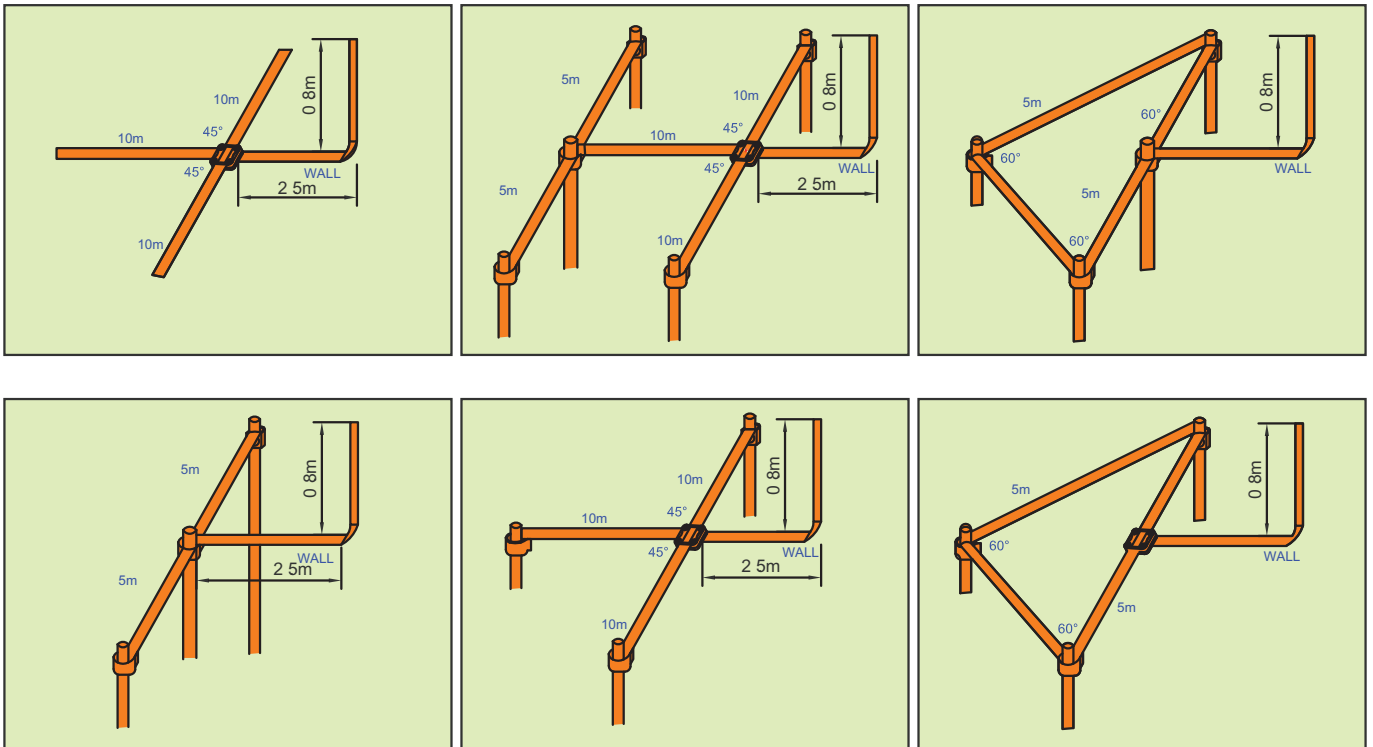
Ring earth electrode

Is an an earth electrode underneath or on the surface of the earth, leading as closed ring around the structure.

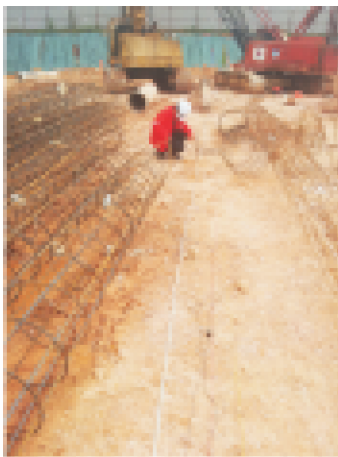
Natural earth electrode

Is a metal component in contact with the earth or with water either directly or via concrete, whose original function is not as an earth electrode but which acts as an earth electrode example reinforcementsof concrete foundations.

Type A for an arrangement consisting of horizontal or vertical earth electrodes connected to each down conductor, there are several types of earthing systems which depend mainly on the environment in which they will be installed:



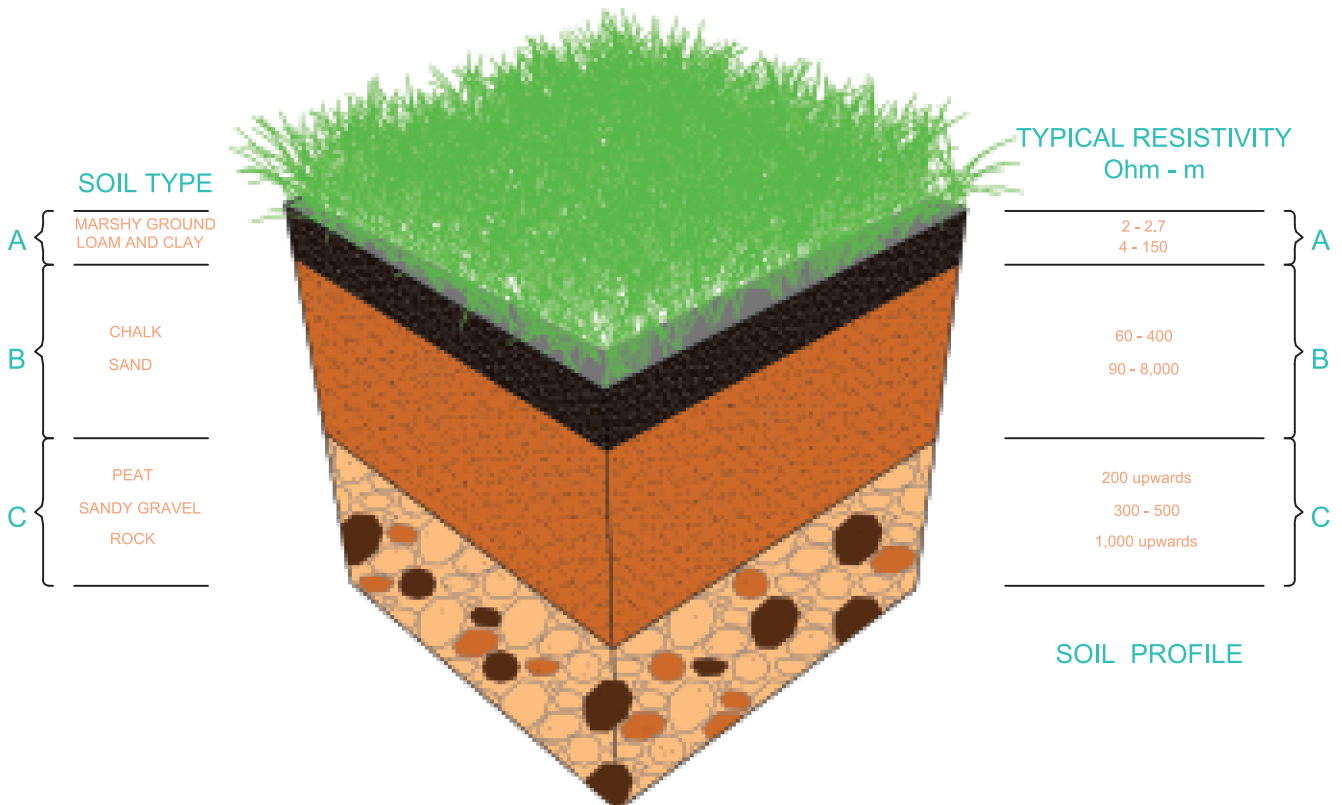
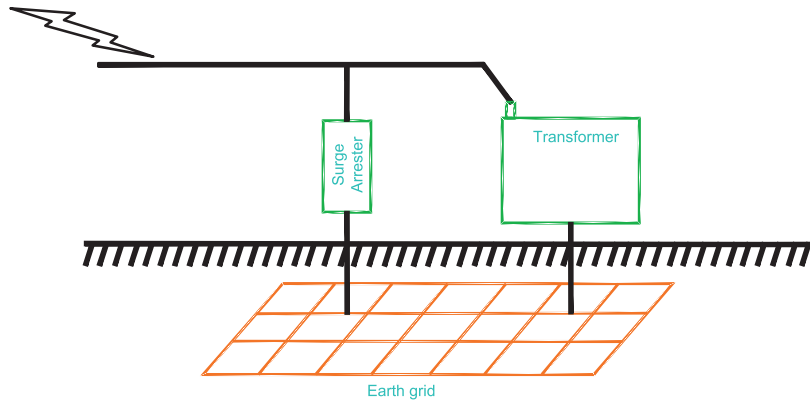
Type B for an earthing arrangement using foundation earth electrodes, the earth electrodes shall be used to augment the steel reinforcing foundation mesh, reinforcing steel bar are used to help concrete withstand tension forces. Concrete by nature is sufficiently strong to compression forces, although tension forces can crack concrete, these will assist in achieving the required earth resistance, Foundation earth electrodes may be supplemented by installation of earth rods connected to the ring earth system.



Earthing Design

With years of experience to draw on, our highly qualified engineers are ideally placed to provide a comprehensive earthing design service that is second to none. ABRE engineers use the latest CAD and earthing design engineering simulation to produce detailed designs, in compliance with any given standard, whatever the complexity of system required. Collating all relevant information from site surveys, soil resistivity tests, site plans and client meetings, the earthing design includes comprehensive drawings, calculations and a detailed report to validate each bespoke design.

- * Multilayer soil resistivity model
- * Earth potential rise, step/touch voltages



The structural lightning protection system can also be incorporated into the design if required. Our design experience and technical knowledge allow ABRE engineers to provide designs to BS7430 and IEEE Std 80 Standards.

LIGHTNING PROTECTION RISK ANALYSIS



ABRE provide lightning strikes risk assessment and management analysis which can affecting a structure or a service can cause damage to the structure itself, to its occupants and contents including failure of internal electrical and electronic systems. The damages and failures may also extend to the surroundings of the structure and the local environment. They depend on the characteristics of the object and also on the characteristics of the lightning flashes.

The damages and failures may in-turn produce different types of consequential loss on the object to be protected. To reduce the loss due to lightning, protection measure may be required. The need for protection, the economic benefits of installing protection measures and the selection of adequate protection measures should be determined in terms of risk analysis and management.

Located at the Malaysia and Singapore experiences one of the highest lightning activities in the world, at almost > 143 thunderstorms per year. Lightning strikes to buildings and grounds often results in fire, damages to buildings, cultural heritages and economic losses. Lightning strikes may also result in disruption of critical services to the society and in the worst case, injuries and loss of human lives.

It is thus important that facility owners and event organizers conduct Lightning Risk Assessments to ensure that the exposure to lightning risks are kept to a minimum.

The inherent risks are compared to the tolerable risk factors to determine whether additional lightning protection measures are required. A lightning protection system therefore forms an important part of a building structure and electrical system, ensuring that damage, disruption and injuries are kept to a minimum.

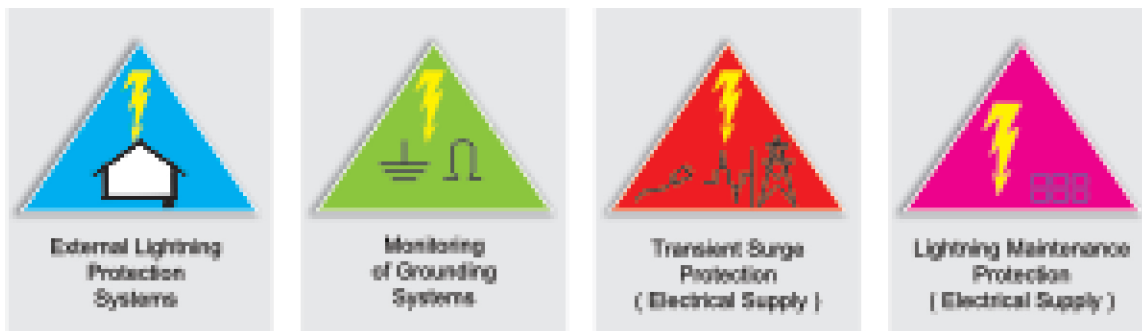
We provide the services to conduct Lightning Risk Assessment and the respective design of the Lightning Protection System based to the international standard IEC 62305, BS EN 62305 and SS 555.



INSPECTION, TESTING, RECORDS AND MAINTENANCE

ABRE and company follow & offer the latest standards in practice and adequately details the requirement for inspecting a Lightning Protection System LPS, the testing required and the detailed records that should be maintained.

Observance of clauses from IEC 62305-3, BS EN 62305-3 and SS 555-3 will highlight any maintenance of the system required. Of particular importance is the regular detailed examination of the complete LPS for any evidence of corrosion. If this check is not carried out then vital components within the LPS, which may have suffered from corrosion and which could exhibit a high resistance could be missed. This will have a detrimental effect on the whole system making it an unattractive high impedance path for the lightning current to follow.



To minimize this problem, along with regular inspections, the selection of the correct materials should be made in accordance with the recommendations of the latest standards apply.

The checking of one installation must be done according to the level of protection.
(Every 2 years for level I and every 4 years for level IV)

Level of Protection	Normal Periodicity	Normal Periodicity
I	2 years	1 years
II	3 years	2 years
III	3 years	2 years
IV	4 years	3 years

The Benefits

The benefits of coming to ABRE for earthing, lightning and surge protection service and maintenance are:

- * We deal every day in this specialist area
- * We provide designs that comply with all relevant standards
- * We have the experience to provide an 'optimist' design
- * With our manufacturing experience,
we are able to utilize our engineering and affordable the products available to provide a design that is not just safe but can be installed using appropriate and the most up to date products.





Introduction

Asia one of the largest usage conductor or flat tape as an important component of any earthing or structural lightning protection system, ABRE offer a comprehensive range of copper and aluminium conductors in each of the main world standard formats. The conductor should have sufficient cross sectional area (c.s.a. mm²) capable of withstanding and carrying selected currents rating.

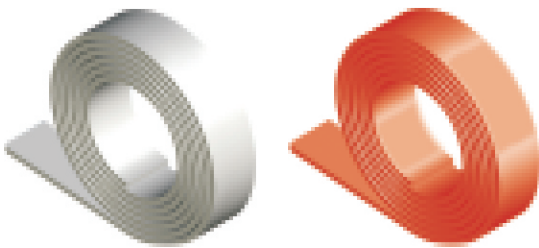


BS EN 13601 / IEC 62561-2

The conductor is the continuously extruded bare copper tape is the brand of choice by the electrical installers & contractors as an earthing conductor for lightning protection of building & electrical substations. High conductivity of Oxygen free high purity copper is important criteria provides the security & safety to every homeowner in case the lightning strikes.

Copper Conductor Ratings

Below table offering the consultant designer standard size tapes for fault current capability of the system, correctly rated conductor for one and three second durations. These conductor ratings are based on the recommendations of BS7430 with an initial conductor temperature of 30°C and maximum temperature of 250°C.



Conductor Size mm	Cross Section Area C.S.A. mm ²	KA for 1 second	KA for 3 second
25mmx2mm	50	8.8	5.1
25mmx3mm	75	13.2	7.6
25mmx6mm	150	26.4	15.2
38mmx6mm	228	40.1	23.2
50mmx3mm	150	26.4	15.2
50mmx4mm	200	35.2	20.3
50mmx6mm	300	52.8	30.5

Bare Conductor Tape

Part No.	Conductor Size	Material
TBA05	25mmx2mm	Aluminium
TBA10	25mmx3mm	Aluminium

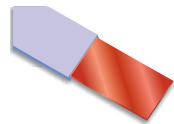
Part No.	Conductor Size	Material
TTC05	25mmx2mm	Tinned Copper
TTC10	25mmx3mm	Tinned Copper
TTC15	25mmx6mm	Tinned Copper
TTC20	38mmx6mm	Tinned Copper
TTC25	50mmx3mm	Tinned Copper
TTC30	50mmx4mm	Tinned Copper
TTC35	50mmx6mm	Tinned Copper

Part No.	Conductor Size	Material
TBC05	25mmx2mm	Copper
TBC10	25mmx3mm	Copper
TBC15	25mmx6mm	Copper
TBC20	38mmx6mm	Copper
TBC25	50mmx3mm	Copper
TBC30	50mmx4mm	Copper
TBC35	50mmx6mm	Copper

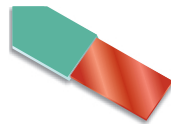
ABRE offer a comprehensive range of copper and aluminium conductors in each of the Asian standard formats, ie flat tape high conductivity bare copper tape and aluminum or tinned copper tape is used on both lightning protection and earthing applications. By the electrical system the largest and most important component of any copper or tinned earthing conductor tape is the actual conductor., ie Flat tape high conductivity bare copper tape to IEC 62561-2 and BS EN 13601 (formerly BS 1432). Aluminium to BS EN 755-5. Other selection colours available to order.



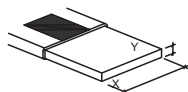
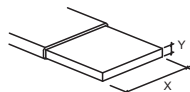
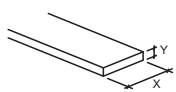
PVC Covered Tape



Lead Covered Tape



LSF Covered Tape



Lead Covered Bare Copper tape

Part No.	Conductor Size	Material	Colour
TDC10	25 x 3mm	Copper	Grey
TDC15	25 x 6mm	Copper	Grey
TDC20	38 x 6mm	Copper	Grey
TDC35	50 x 6mm	Copper	Grey

PVC Covered Bare Copper tape

Part No.	Conductor Size	Material	Colour
TPC10	25 x 3mm	Copper	Green
TPC11	25 x 3mm	Copper	Grey
TPC12	25 x 3mm	Copper	Black
TPC13	25 x 3mm	Copper	Green/Yellow
TPC15	25 x 6mm	Copper	Green
TPC16	25 x 6mm	Copper	Grey
TPC17	25 x 6mm	Copper	Black
TPC18	25 x 6mm	Copper	Green/Yellow
TPC20	38 x 6mm	Copper	Green
TPC21	38 x 6mm	Copper	Grey
TPC22	38 x 6mm	Copper	Black
TPC23	38 x 6mm	Copper	Green/Yellow
TPC35	50 x 6mm	Copper	Green
TPC36	50 x 6mm	Copper	Grey
TPC37	50 x 6mm	Copper	Black
TPC38	50 x 6mm	Copper	Green/Yellow

LSOH Covered Bare Copper tape

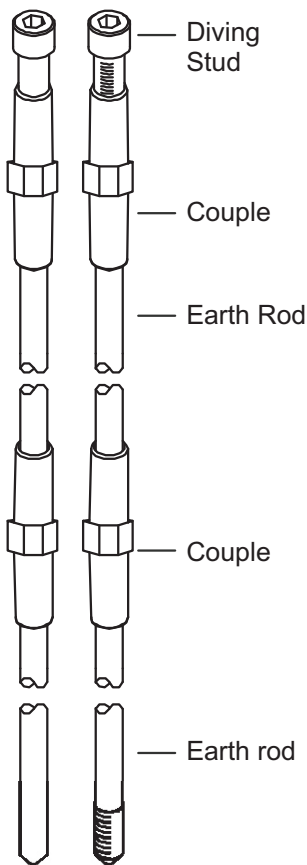
Part No.	Conductor Size	Material	Colour
TLC10	25 x 3mm	Copper	Green
TLC11	25 x 3mm	Copper	Grey
TLC12	25 x 3mm	Copper	Black
TLC13	25 x 3mm	Copper	Green/Yellow
TLC15	25 x 6mm	Copper	Green
TLC16	25 x 6mm	Copper	Grey
TLC17	25 x 6mm	Copper	Black
TLC18	25 x 6mm	Copper	Green/Yellow
TLC20	38 x 6mm	Copper	Green
TLC21	38 x 6mm	Copper	Grey
TLC22	38 x 6mm	Copper	Black
TLC23	38 x 6mm	Copper	Green/Yellow
TLC35	50 x 6mm	Copper	Green
TLC36	50 x 6mm	Copper	Grey
TLC37	50 x 6mm	Copper	Black
TLC38	50 x 6mm	Copper	Green/Yellow

ABRE offer a comprehensive range of PVC, Lead and LSOH covered copper conductors in each of the Asian standard formats, ie Flat tape high conductivity bare copper tape to IEC 62561-2 and BS EN 13601. PVC colours and UV stability of its PVC plastic coverings. Other selection colours available to order.



Copper bonded Rod

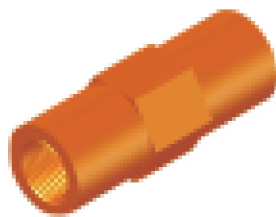
Part No. Threaded	Part No. Non-Threaded	Rod Length	Nominal Diameter	Shank Diameter
RTC11	RNC11	1200mm	1/2"	12.7mm
RTC12	RNC12	1500mm	1/2"	12.7mm
RTC13	RNC13	1800mm	1/2"	12.7mm
RTC14	RNC14	2400mm	1/2"	12.7mm
RTC15	RNC15	3000mm	1/2"	12.7mm
RTC21	RNC21	1200mm	5/8"	14.2mm
RTC22	RNC22	1500mm	5/8"	14.2mm
RTC23	RNC23	1800mm	5/8"	14.2mm
RTC24	RNC24	2400mm	5/8"	14.2mm
RTC25	RNC25	3000mm	5/8"	14.2mm
RTC31	RNC31	1200mm	3/4"	17.2mm
RTC32	RNC32	1500mm	3/4"	17.2mm
RTC33	RNC33	1800mm	3/4"	17.2mm
RTC34	RNC34	2400mm	3/4"	17.2mm
RTC35	RNC35	3000mm	3/4"	17.2mm



ABRE copperbond earth rods offer to the installer the best economical and solution method of achieving a low earth ohms resistance. They are made by molecularly bonding 99.9% pure electrolytic copper onto a low carbon steel core which is not sheathed type and highly resistance to corrosion. Each rod has a high tensile strength, low carbon steel core and makes the rod ideal for deep driving driven by power hammers to great depths. The standard copper thickness is 0.25mm or minimum 250 microns, used in to meet IEC 62561-2.



Driving Stud

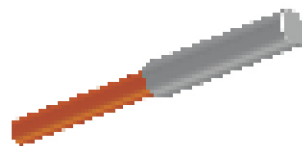
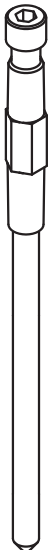


Copper Rod Coupling - Threaded

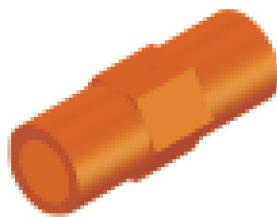


Threaded Driving Stud / Coupling

Part No.	Description Threaded	Material
RTD10	12mm (1/2")	High Tensile Steel
RTD20	16mm (5/8")	
RTD30	20mm (3/4")	
RTC10	12mm (1/2")	High Copper Alloy
RTC20	16mm (5/8")	
RTC30	20mm (3/4")	



Non Threaded Driving Stud



Copper Rod Coupling - Non-Threaded

Non-Threaded Driving Stud / Coupling

Part No.	Description Threaded	Material
RND10	12mm (1/2")	High Tensile Steel
RND20	16mm (5/8")	
RND30	20mm (3/4")	
RNC10	12mm (1/2")	High Copper Alloy
RNC20	16mm (5/8")	
RNC30	20mm (3/4")	

This ABRE threaded driving studs to protect the top ground rod and suitable for driving earth rods by hand or with a power hammer.

These ABRE high strength couplings are important applied for joining copperbond threaded earth rods together. The application ensures deep driving and continual contact between the rods both during and after installation. The coupling ensures excellent resistance and high strength that protects the earth rod threads during installation with the driving head and ease of assembly with hexagon grip and keeping the coupling tight when driving into the ground. All couplings are manufactured materials used high copper content alloy provide excellent corrosion resistance, used in to meet IEC 62561-2.

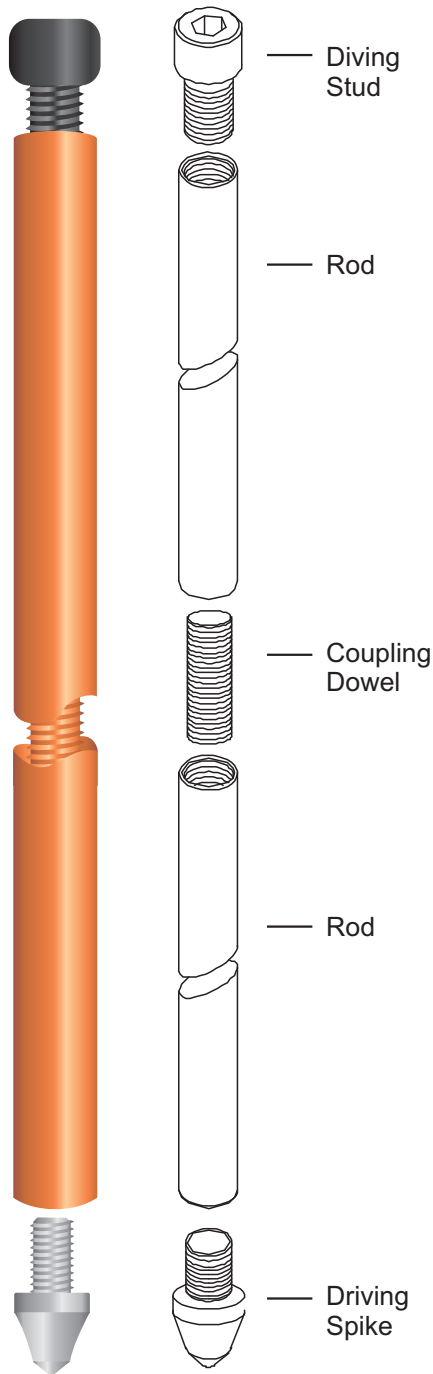


Corrosion is major factor limiting the lifetime of earth termination system consisting of different types of earth electrodes - both natural and artificial. Earthing electrodes, which are important components of Lightning Protection System have to fulfil number of requirements described in IEC standards. One of most important requirements of earthing electrodes' environmental tests and their connections are related to protection against corrosion.

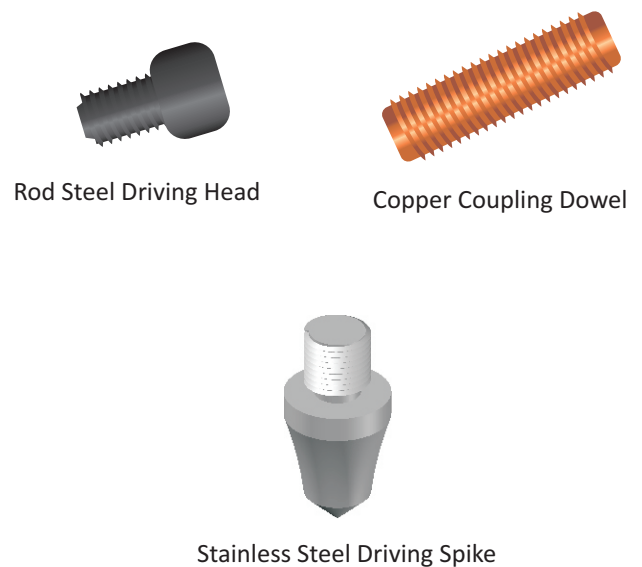
Soil Characteristics	pH
Extremely Acid	Below 4.5
Very Strongly Acid	4.5-5.0
Strongly Acid	5.1-5.5
Medium Acid	5.6-6.0
Slightly Acid	6.1-6.5
Neutral	6.6-7.3
Mildly Alkaline	7.4-7.8
Moderately Alkaline	7.9-8.4
Strongly Alkaline	8.5-9.0
Very Strongly Alkaline	9.1-Higher

Solid Copper Earth Rod

ABRE solid copper earth rod are designed to offer greater resistance to high corrosion for longer life. Applications where soil conditions are very aggressive corrosion resistance, solid rod are internally threaded for deep driven in soil with high salt content or backfilling with earthing enhancement compound.



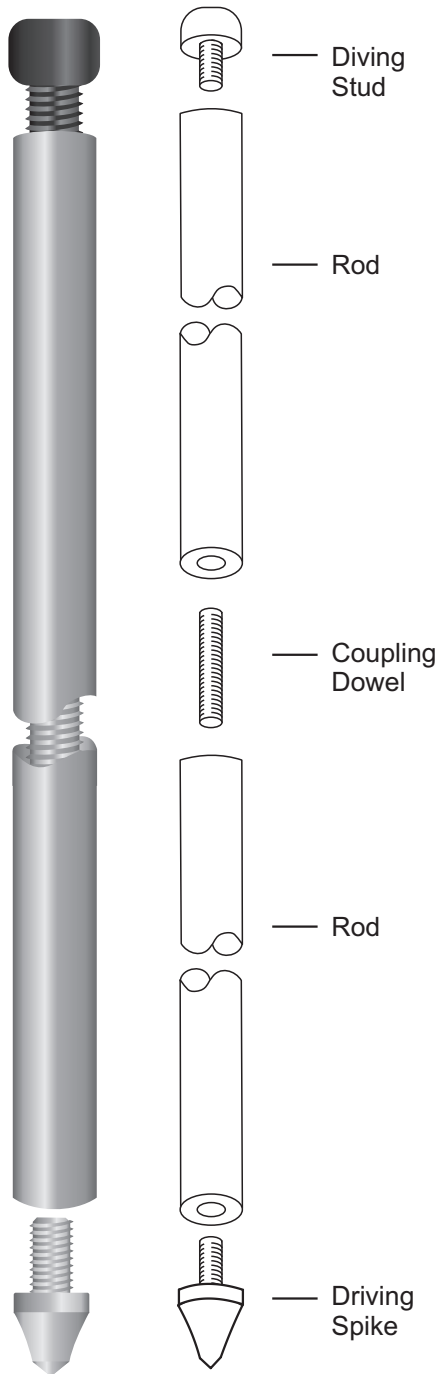
Part No.	Rod Length	Nominal Diameter	Thread Size
RSC11	1200mm	12mm (1/2")	M8
RSC12	1500mm		M8
RSC22	1500mm	16mm (5/8")	M10
RSC23	1800mm		M10
RSC32	1500mm	20mm (3/4")	M10
RSC33	1800mm		M10



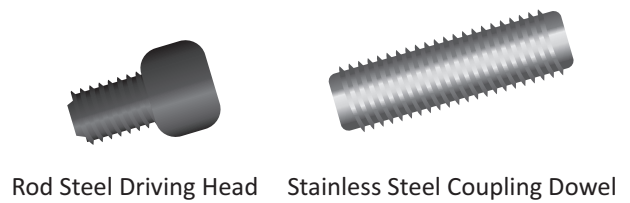
Rod Steel Driving Head (Thread Size)	Rod Coupling Dowel (Thread Size)	Rod Driving Spike (Thread Size)
RHS08	RDC08	RSS10M
RHS10	RDC10	

Stainless Steel Earth Rod

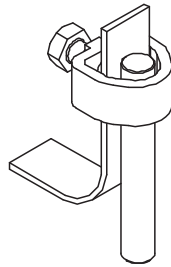
ABRE stainless steel rods are designed to offer greater resistance to high galvanic corrosion for longer life. Applications where reaction caused by galvanic corrosion taken place due to dissimilar metals being buried in close proximity. Stainless steel rod are internally threaded for deep driven in soil.



Part No.	Rod Length	Nominal Diameter	Thread Size
RST21	1200mm	16mm (5/8")	M10
RST22	1500mm		M10
RST32	1500mm	20mm (3/4")	M10
	1800mm		M10



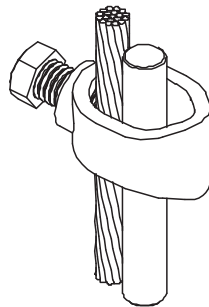
Rod Steel Driving Head (Thread Size)	Rod Coupling Dowel (Thread Size)	Rod Driving Spike (Thread Size)
RHS10	RDS10	RSS10



Rod To Conductor Tape Coupling (Type A)

Part No.	Nominal Rod Diameter	Maximum Conductor Size
RTA12	12mm (1/2")	26mm x 12mm
RTA22	16mm (5/8")	26mm x 12mm
RTA32	20mm (3/4")	26mm x 10mm
RTA25	16mm (5/8")	51mm x 8mm
RTA35	20mm (3/4")	51mm x 12mm

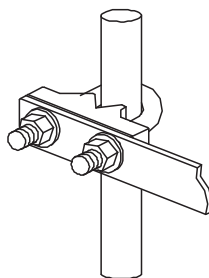
This ABRE clamps are used for joining earth rods to different sizes of copper tape. High resistance to corrosion, conductivity and made to mechanical strength with copper alloy materials ensure long lasting connection, used in to meet IEC 62561-1.



Rod To Conductor Cable Coupling (Type B)

Part No.	Nominal Rod Diameter	Maximum Conductor Size (mm ²)
RCB11	12mm (1/2")	16-50
RCB21	16mm (5/8")	16-70
RCB33	20mm (3/4")	35-95
RCB27	16mm (5/8")	70-120
RCB37	20mm (3/4")	70-185

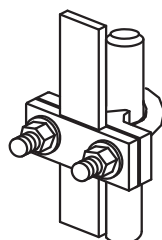
This ABRE clamps are used for joining earth rods to different sizes of copper cable conductor. High resistance to corrosion, conductivity and made to mechanical strength with copper alloy materials ensure long lasting connection, used in to meet IEC 62561-1.



Rod "U" Bolt Coupling (Type U)

Part No.	Nominal Rod Diameter	Maximum Conductor Size (mm ²) or (mm)
RCU30	30mm	70-185
RCU40	40mm	185-300
RCU50	50mm	150-300

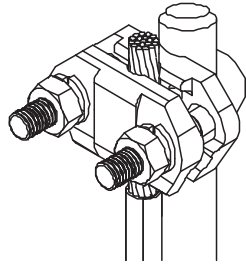
This ABRE clamp rod coupling range of 'U' bolt threaded M10 can be used to connect flat tape or stranded cable with cable lugs and parallel to earth rod, reinforcing bar (re-bar) or hand rail etc, used in to meet IEC 62561-1.



Rod "U" Bolt Coupling (Type U)

Part No.	Nominal Rod Diameter	Maximum Conductor Size (mm ²) or (mm)
RTU16	16mm (5/8")	25 x 3
RTU20	20mm (3/4")	25 x 3

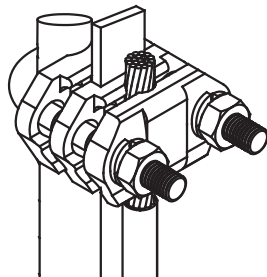
This ABRE clamp rod coupling range of 'U' bolt threaded M10 can be used to connect flat tape and parallel to earth rod, reinforcing bar (re-bar) or hand rail etc, used in to meet IEC 62561-1.



Rod "U" Bolt Coupling (Type U)

Part No.	Nominal Rod Diameter	Maximum Conductor Size (mm ²) or (mm)
RCU16	16mm (5/8")	70-120
RCU20	20mm (3/4")	70-185

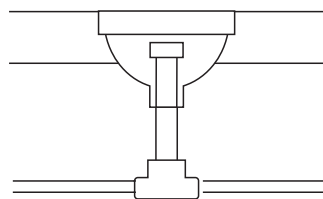
This ABRE clamp rod coupling range of 'U' bolt threaded M10 can be used to connect stranded cable and parallel to earth rod, reinforcing bar (re-bar) or hand railsetc, used in to meet IEC 62561-1.



Rod "U" Bolt Coupling (Type U)

Part No.	Nominal Rod Diameter	Maximum Conductor Size (mm ²) or (mm)
RCT16	16mm (5/8")	70-120 / 25 x 3
RCT20	20mm (3/4")	70-185 / 25 x 3

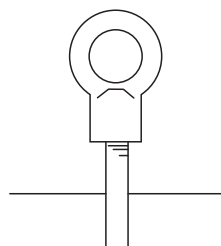
This ABRE clamp rod coupling range of 'U' bolt threaded M10 can be used to connect flat tape and stranded cable parallel to earth rod, reinforcing bar (re-bar) or hand railsetc, used in to meet IEC 62561-1.



Earth Receptacle Point - Static

Part No.	Dimensions / Nominal Rod Diameter
ERS10	(L) 100mm (φ) 70mm

This ABRE receptacle is Earth Receptacle Point - Static used into aircraft, fuel tanker depot or petrol stations and open area provides a static discharge points. And to mett LEC 62561-1.



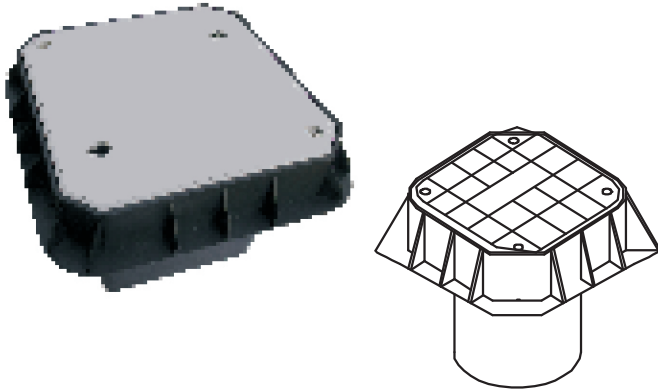
Earth Receptacle Point - Ring

Part No.	Dimensions / Nominal Rod Diameter
ERR16	16mm (5/8")
ERR20	20mm (3/4")

This ABRE earth receptacle point for runway or gas stations setting into a static and copper bonded rod discharge point for aircraft, fuel tankers, oil tank, boats or trucks etc, used in to meet IEC 62561-1.

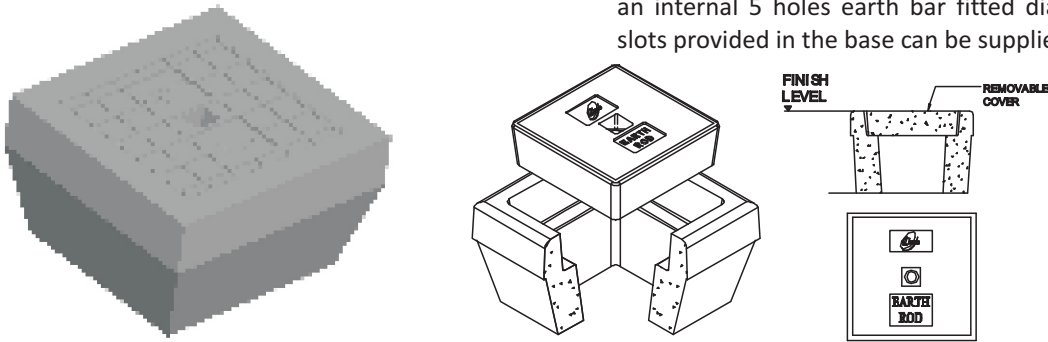


Earth Inspection Chamber – concrete / Heavy Duty Polymer

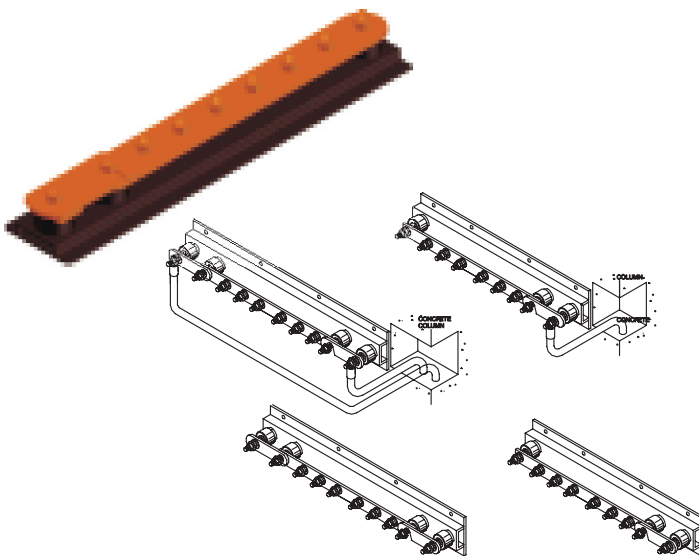


Part No.	Size LxWxH (mm)	Material
EPC05	265 x 265 x 175	Concrete
EPC15	345 x 345 x 210	Concrete
EPP10	290 x 290 x 210	Polymer

This ABRE support both concrete earth inspection housings are load rated to 3 tons to 4 tons and heavy duty Polymer to 5 tons all are suitable for most industrial applications to meet IEC 62561-5. The housing can have an internal 5 holes earth bar fitted diagonally across in slots provided in the base can be supplied on request.



Earth Bars and Disconnecting Links



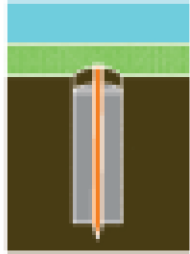
Part No.	Type	Material
EBC00	Disconnecting Link	Copper
EBC06	Six Way Earth Bar	Copper
EBS06	Six Way Single Disconnecting	Copper
EBT06	Six Way Twin Disconnecting	Copper
EBC00T	Disconnecting Link	Tinned Copper
EBC06T	Six Way Earth Bar	Tinned Copper
EBS06T	Six Way Single Disconnecting	Tinned Copper
EBT06T	Six Way Twin Disconnecting	Tinned Copper

This ABRE earth bar link suitable for testing point in grounding system. All the above products consist of 50mmx6mm copper bar and fixing with roundhead woodscrew 1 1/2" x no.16 and wall plug, used in to meet IEC 62561-1.

ABRE can offer wide range of earth bars manufactured to your individual requirements and design recommendation. Contact the sales office for further information.



ABRE Grounding and Electrical Protection System



Vertical Application

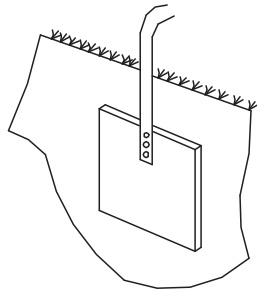
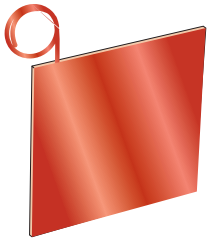


Horizontal Application

Earth Premix Enhancement Compound (Bag)

Part No.	Description
EEC10	Earth Enhancement Compound (10Kg)
EEC25	Earth Enhancement Compound (25Kg)

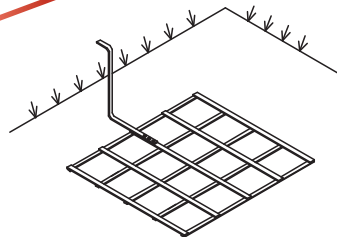
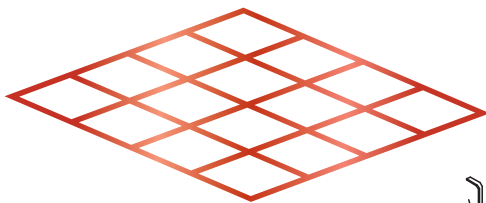
The ABRE earth enhancement compound is low resistance with electrically conductive aggregate. It is a dark grey premix with carbon, cement and water it forms a permanent when used as a backfill for earth electrodes. The premix compound greatly increases the electrodes surface area thus lowering its resistance to earth and meet IEC 62561-7.



Copper Earth Plate

Part No.	Size (mm)	Weight
EPC66	600 x 600 x 1.5	5.00 kg
EPC99	900 x 900 x 1.5	11.20 kg

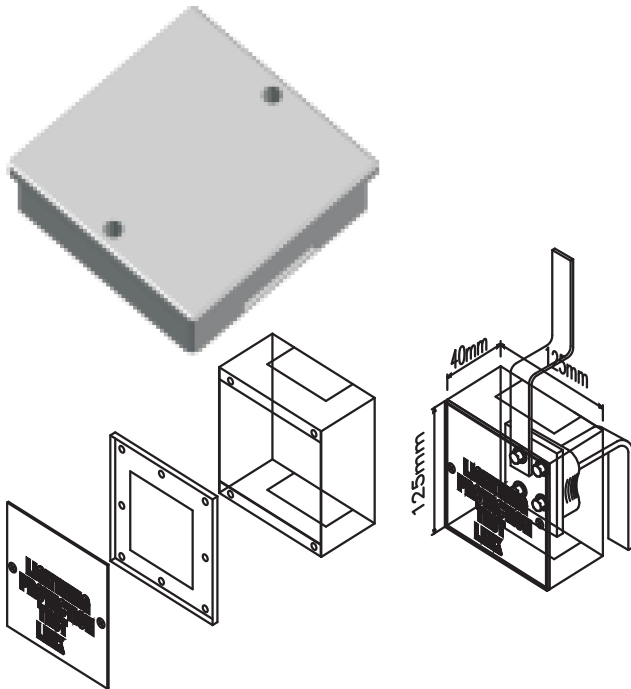
ABRE provide BS EN 13601 Copper flat tape joined by mechanical used to mesh earth system on step and touch potential voltage grounding system. Other sizes available upon request.



Copper Wire Mesh

Part No.	Size (mm)	Weight
WMC66	600 x 600 x 3	4.10 kg
WMC99	900 x 900 x 3	7.20 kg

ABRE provide BS EN 13601 Copper flat tape joined by mechanical used to mesh earth system on step and touch potential voltage grounding system. Other sizes available upon request.

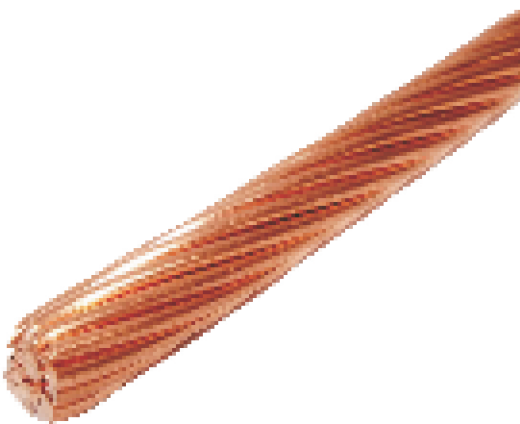


Lightning Test Link Box

Part No.	Conductor Size	Material
LBA10	125 x 125 x 40	Aluminum
LBS10	125 x 125 x 40	Stainless Steel

ABRE offer test link box is easy to install and apply for lightning down conductor test points where conductors are embedded or concealed within the structure.

Bare Stranded Cable



Part No.	Conductor Size (mm ²)	Stranding No. / mm dia.
SC050	50	19/1.78
SC070	70	19/2.14
SC095	95	19/2.52
SC120	120	37/2.03
SC150	150	37/2.25
SC185	185	37/2.52
SC240	240	61/2.25
SC300	300	61/2.52

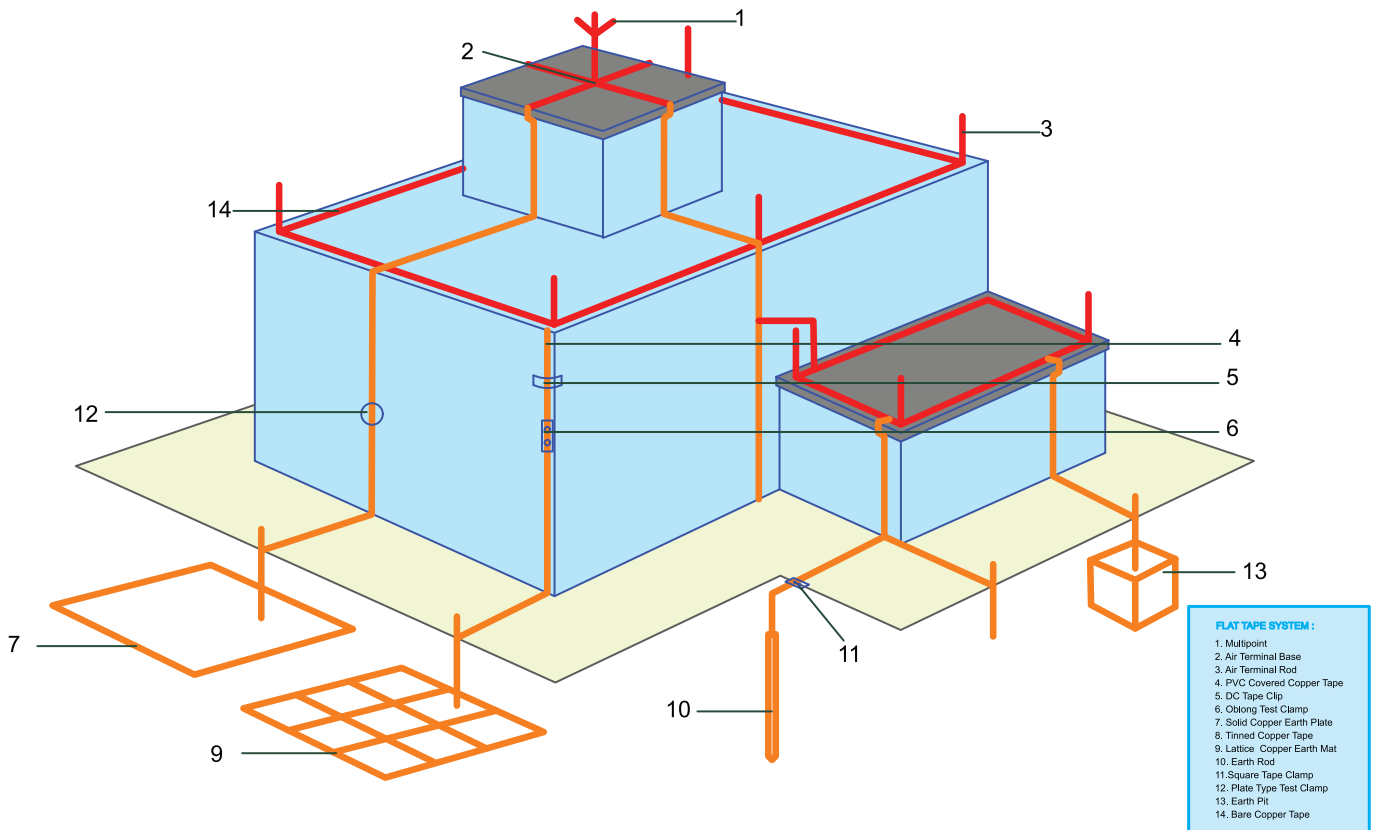
High conductivity copper stranded to IEC 6028 construction of cable core and weight per meter is subjected to manufacturing tolerance.

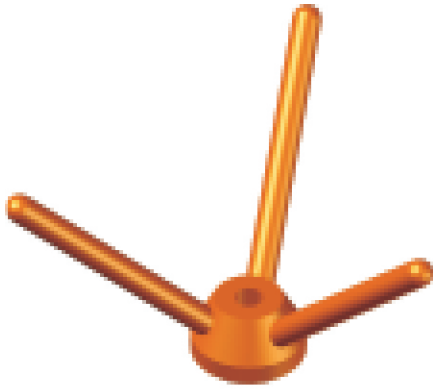
ABRE Faraday Cage Systems - Flat Tape System



Known also as a simple lightning rod and mesh type, its installation consists in the inclusion, on the top of the structure to protect, slender points connected to the earth by the most direct path possible. A cone of protection is produced which corresponds to the height of the rod and to the level of protection required. Contrary to the meshed cage, this method only protects the elements which are in its radius of protection. In order to afford protection to a building structure in the event of a Lightning strike, a Lightning Protection System is required, combining Copper and / or Aluminium Roof Tapes and Down Conductors with an Earthing System. Tapes are fitted to both the roof and walls of the building to form a Faraday Cage, thereby providing a designated route for the current to travel to ground. If required, these can be matched to the colour of the building using PVC-covered tape. And it meets the requirements of IEC 62561.

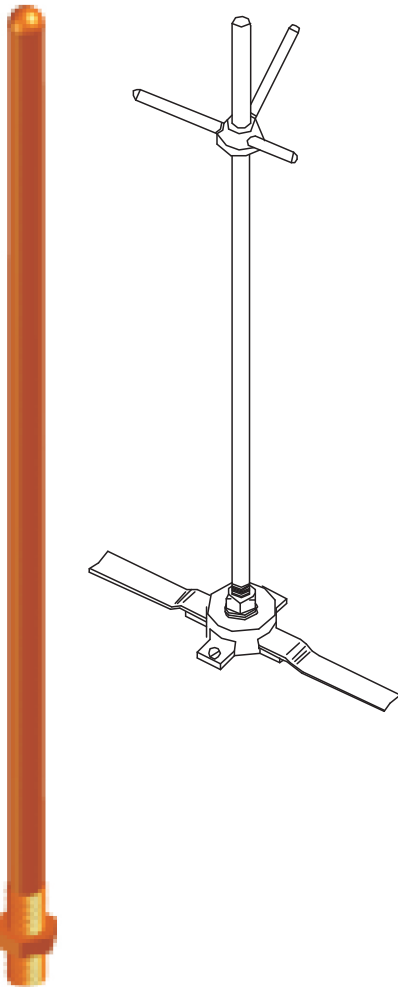
In the case of steel-structured buildings, the framework can be utilized as the Faraday Cage and relevant stanchions are then earthed at base, as specified in IEC 62305.





Air Terminal – Multiple Point

Part No.	Diameter	Material
AMC16	16mm	Copper
AMC20	20mm	Copper
AMA16	16mm	Aluminium
AMA20	20mm	Aluminium
AMC16T	16mm	Tinned Copper
AMC20T	20mm	Tinned Copper

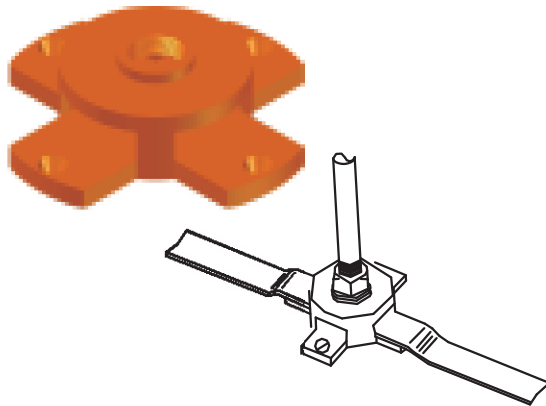


This ABRE clamp rod coupling range of 'U' bolt threaded M10 can be used to connect flat tapes and stranded cables or parallel to earth rods, reinforcing bars (re-bar) or hand rails etc, used in to meet IEC 62561-1.

Air Terminal – Air rod

Part No.	Rod Length	Diameter	Material
ATC12	500mm	16mm	Copper
ATC14	1000mm	16mm	Copper
ATC16	1500mm	16mm	Copper
ATC18	2000mm	16mm	Copper
ATC22	500mm	20mm	Copper
ATA12	500mm	16mm	Aluminium
ATA14	1000mm	16mm	Aluminium
ATA16	1500mm	16mm	Aluminium
ATA18	2000mm	16mm	Aluminium
ATA22	500mm	20mm	Aluminium
ATC12T	500mm	16mm	Tinned Copper
ATC16T	1500mm	16mm	Tinned Copper
ATC18T	2000mm	16mm	Tinned Copper
ATC22T	500mm	20mm	Tinned Copper

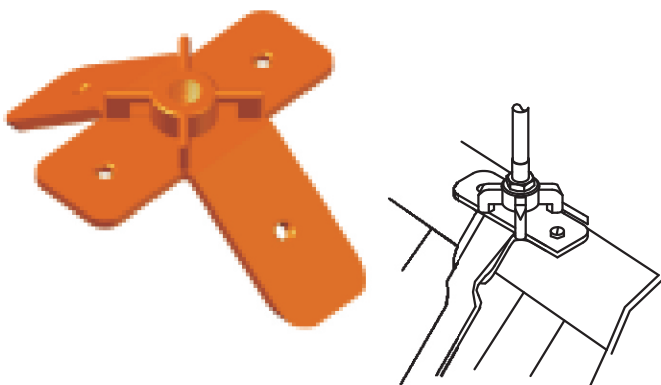
ABRE provide, proven and visible on sharp corners of buildings, pointed tips of spires, exposed edges of horizontal roofs and the ends of roof ridges. And field application in many countries in Asian have confirmed that blunt copper, aluminum or tinned copper air rods are the best design by lightning in preference to taper pointed copper air rods to meet BS EN 13601.



Air Terminal - Flat Air Rod Base

Part No.	Diameter	Material
ABC16	16mm	Copper
ABC20	20mm	Copper
ABA16	16mm	Aluminium
ABA20	20mm	Aluminium
ABC16T	16mm	Tinned Copper
ABC20T	20mm	Tinned Copper

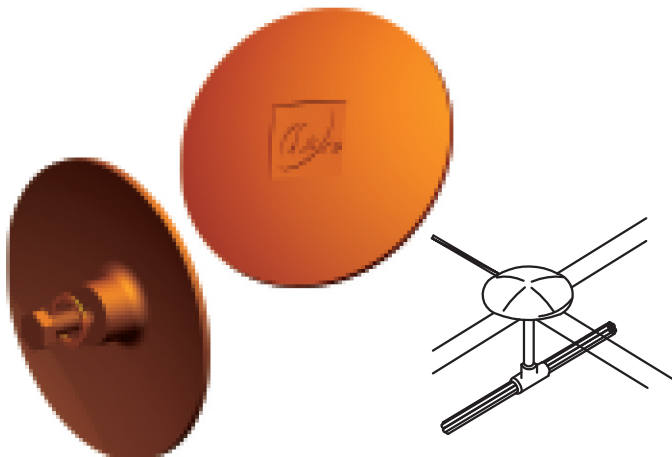
This ABRE support copper, aluminum or tinned copper air terminal rod to connect and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in connection to meet IEC 62561-1



Air Terminal - Ridge Air Rod Base

Part No.	Diameter	Material
ARC16	16mm	Copper
ARC20	20mm	Copper
ARA16	16mm	Aluminium
ARA20	20mm	Aluminium
ARC16T	16mm	Tinned Copper
ARC20T	20mm	Tinned Copper

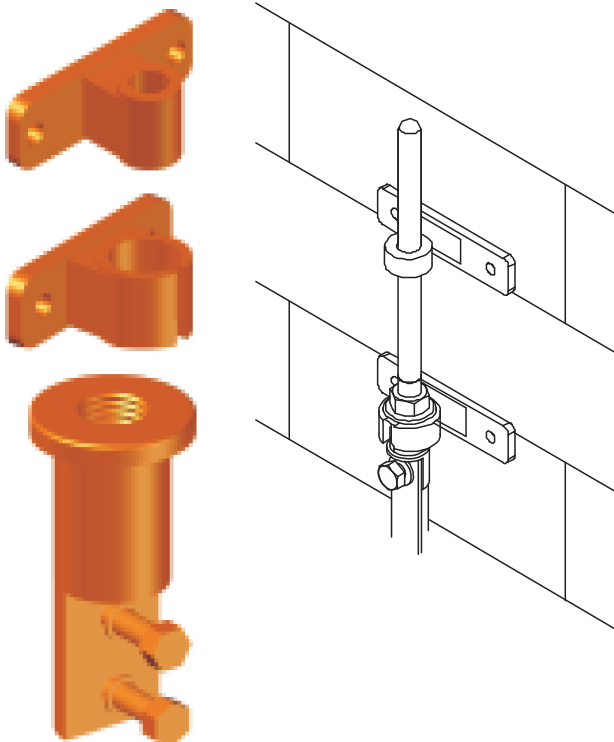
This ABRE support copper, aluminum or tinned copper air terminal rods on ridges to connect and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in connection to meet IEC 62561-1.



Air Terminal – Strike Pad

Part No.	Diameter	Material
ASC16	112mm	Copper
ASA16	112mm	Aluminium
ASC16T	112mm	Tinned Copper

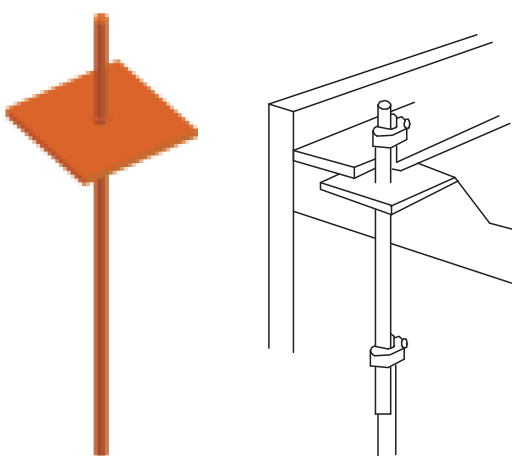
This ABRE product mostly apply in the open area car park or side flashing and is supplied with a set screw to enable the lightning conductors to be attached to the copper strike pads to meet BS EN 1982.



Air Terminal Rod - Bracket and Tape Coupling

Part No.	Rod Diameter	Material
AKC16	16mm	Copper
AKC20	20mm	Copper
AKA16	16mm	Aluminium
AKA20	20mm	Aluminium
AKC16T	16mm	Tinned Copper
AKC20T	20mm	Tinned Copper
ACC16	16mm	Copper
ACC20	20mm	Copper
ACA16	16mm	Aluminium
ACA20	20mm	Aluminium
ACC16T	16mm	Tinned Copper
ACC20T	20mm	Tinned Copper

This ABRE supportcopper, aluminum or tinned copper air terminal by fastening on wall and fixing round head woodscrew 1 5/8" x no.16 and wall plug, used in conjunction tape coupling to meet IEC 62561-1.

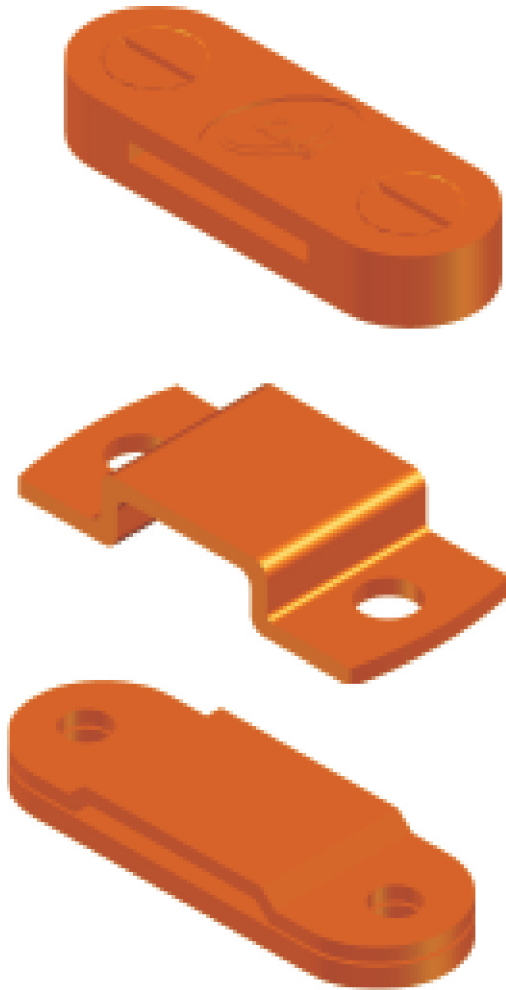


Roof Puddle Flange

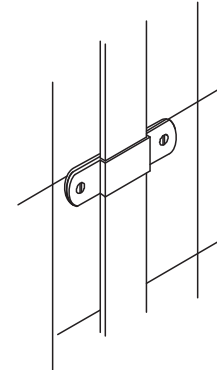
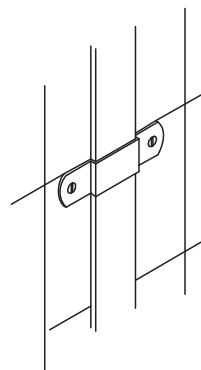
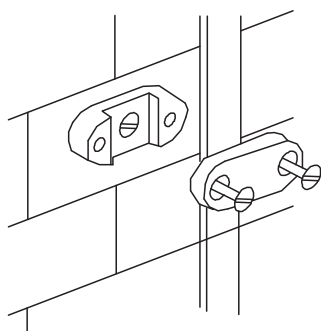
Part No.	Rod Diameter	Material
PFC16	16mm	Copper
PFC20	20mm	Copper
PFA16	16mm	Aluminum
PFA20	20mm	Aluminum
PFC16T	16mm	Tinned Copper
PFC20T	20mm	Tinned Copper

The ABRE for interconnecting floor taking lightning conductors through roofs or floor levels to meet IEC 62561-2.

**Tape Clip –
DC, Flat and Flat With Base Types**



Part No.	Conductor Size	Material
CDB05	25mmx2mm	Copper
CDB10	25mmx3mm	Copper
CDA05	25mmx2mm	Aluminum
CDA10	25mmx3mm	Aluminum
CDB05T	25mmx2mm	Tinned Copper
CDB10T	25mmx3mm	Tinned Copper
CDE05	25mmx2mm	Copper
CDE10	25mmx3mm	Copper
CDG05	25mmx2mm	Aluminum
CDG10	25mmx3mm	Aluminum
CDE05T	25mmx2mm	Tinned Copper
CDE10T	25mmx3mm	Tinned Copper
CDF05		Copper
CDF10	25mmx3mm	Copper
CDH05		Aluminum
CDH10	25mmx3mm	Aluminum
CDF05T		Tinned Copper
CDF10T	25mmx3mm	Tinned Copper



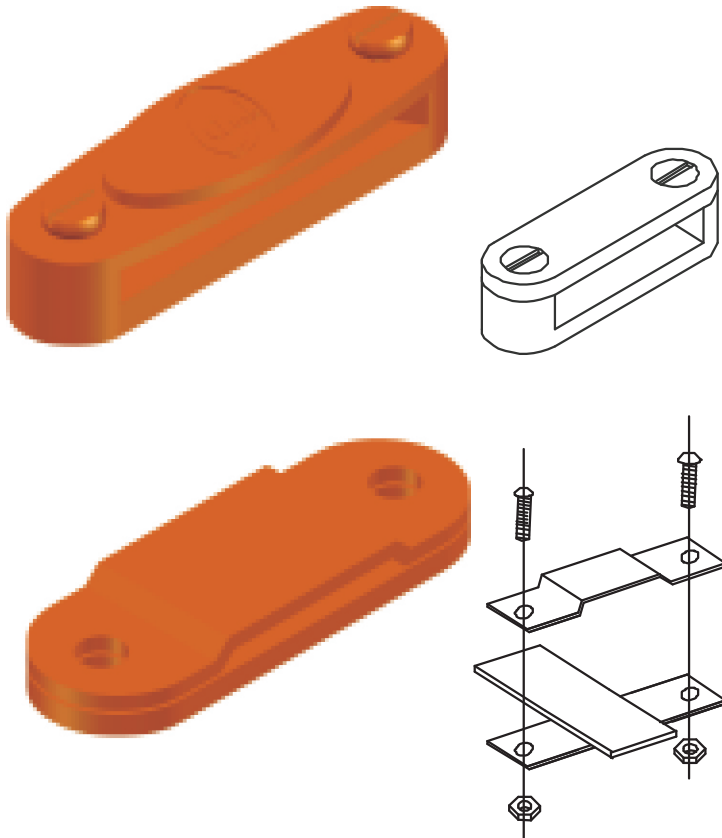
This ABRE DC and Tape Clip suitable fix copper, aluminum or tinned copper tape conductors and material made from high quality copper, aluminum alloys and aluminum or tinned. And installation fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used DC and Flat Type to meet IEC 62561-4.



ABRE Lightning Protection System - Flat Tape System



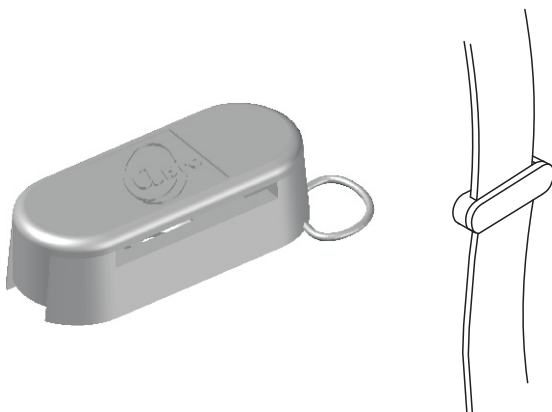
Tape Clip – DC



Part No.	Conductor Size	Material
CDB15	25mmx6mm	Copper
CDB20	38mmx6mm	Copper
CDB30	50mmx4mm	Copper
CDB35	50mmx6mm	Copper
CDB15T	25mmx6mm	Tinned Copper
CDB20T	38mmx6mm	Tinned Copper
CDB30T	50mmx4mm	Tinned Copper
CDB35T	50mmx6mm	Tinned Copper
CDE15	25mmx6mm	Copper
CDE20	38mmx6mm	Copper
CDE30	50mmx4mm	Copper
CDE35	50mmx6mm	Copper
CDE15T	25mmx6mm	Tinned Copper
CDE20T	38mmx6mm	Tinned Copper
CDE30T	50mmx4mm	Tinned Copper
CDE35T	50mmx6mm	Tinned Copper

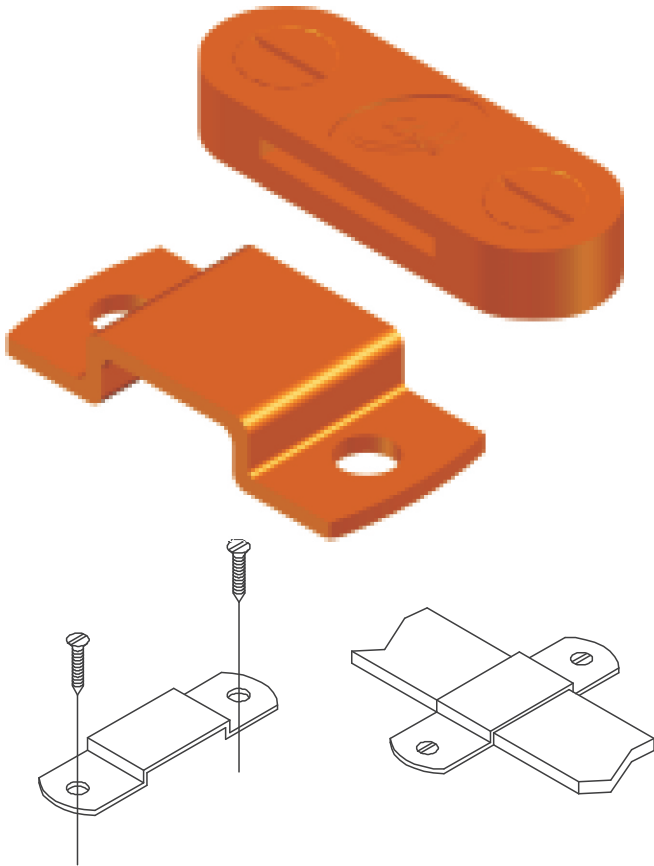
This ABRE DC Tape and Flat Clip suitable fix copper or tinned copper tape conductors and material made from high quality copper and aluminium alloy or tinned. And installation fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used DC and Flat Type to meet IEC 62561-4.

Non Metallic Tape Clip

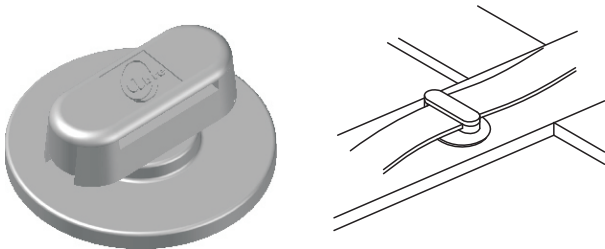


Part No.	Conductor Size	Color
CPA05	25mmx2mm	Green
CPA10	25mmx3mm	Green
CPB05	25mmx2mm	Brown
CPB10	25mmx3mm	Brown
CPC05	25mmx2mm	Grey
CPC10	25mmx3mm	Grey

The ABRE Non-metallic DC clip - PVC polypropylene, UV stabilized sunlight to prevent hot weather damage. Available in three colors to match bare and pvc covered copper, aluminum and tinned tapes fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-4.



This ABRE DC Tape suitable fix copper, aluminum or tinned copper tape conductors and material made from high quality copper, aluminum alloys and aluminum or tinned. And installation fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used DC and Flat Type to meet IEC 62561-4.



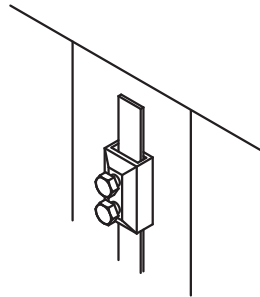
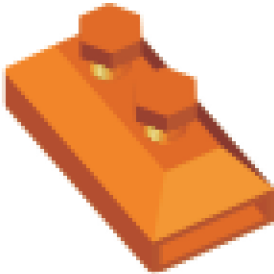
The ABRE Non-metallic DC clip complete with base - PVC polypropylene, UV stabilized sunlight to prevent hot weather damage. Available in three colors and the base strongly recommend the use of proven silicon or primer when installing the ABRE adhesive clip used in to meet IEC 62561-4.

PVC Tape Clip – DC and Flat Type

Part No.	Conductor Size	Material
CDP10	25mmx3mm	Copper
CDP15	25mmx6mm	Copper
CDP20	38mmx6mm	Copper
CDP30	50mmx4mm	Copper
CDP35	50mmx6mm	Copper
CDP10T	25mmx3mm	Tinned Copper
CDP15T	25mmx6mm	Tinned Copper
CDP20T	38mmx6mm	Tinned Copper
CDP30T	50mmx4mm	Tinned Copper
CDP35T	50mmx6mm	Tinned Copper
CDM10	25mmx3mm	Copper
CDM15	25mmx6mm	Copper
CDM20	38mmx6mm	Copper
CDM30	50mmx4mm	Copper
CDM35	50mmx6mm	Copper
CDM10T	25mmx3mm	Tinned Copper
CDM15T	25mmx6mm	Tinned Copper
CDM20T	38mmx6mm	Tinned Copper
CDM30T	50mmx4mm	Tinned Copper
CDM35T	50mmx6mm	Tinned Copper

Adhesive Non Metallic Tape Clip

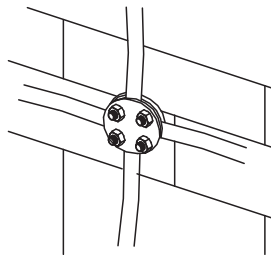
Part No.	Conductor Size	Color
CAA05	25mmx2mm	Green
CAA10	25mmx3mm	Green
CAB05	25mmx2mm	Brown
CAB10	25mmx3mm	Brown
CAC05	25mmx2mm	Grey
CAC10	25mmx3mm	Grey



Oblong or Junction Test Clamp

Part No.	Conductor Size	Material
CNC10	25mmx3mm	Copper
CNA10	25mmx3mm	Aluminium
CNC10T	25mmx3mm	Tinned Copper

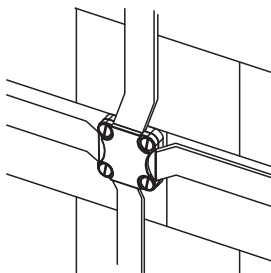
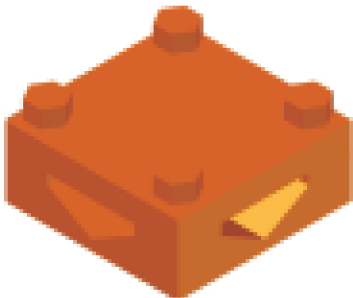
This ABRE connectcopper, aluminum or tinned copper tape conductors 2-way straight through joints to meet IEC 62561-1.



Cross Plate Type Test Clamp

Part No.	Conductor Size	Material
COC10	25mmx3mm	Copper
COA10	25mmx3mm	Aluminium
COC10T	25mmx3mm	Tinned Copper

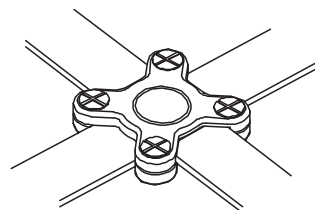
This ABRE connect copper, aluminum or tinned copper tape conductors 4-way cross joints and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



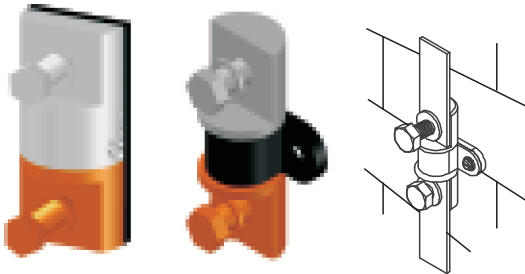
Square or Junction Test Clamp

Part No.	Conductor Size	Material
CSC05	25mmx2mm	Copper
CSC10	25mmx3mm	Copper
CSC15	25mmx6mm	Copper
CSC20	38mmx6mm	Copper
CSC30	50mmx4mm	Copper
CSC35	50mmx6mm	Copper
CSA05	25mmx2mm	Aluminum
CSA10	25mmx3mm	Aluminum
CSC05T	25mmx2mm	Tinned Copper
CSC10T	25mmx3mm	Tinned Copper
CSC15T	25mmx6mm	Tinned Copper
CSC20T	38mmx6mm	Tinned Copper
CSC30T	50mmx4mm	Tinned Copper
CSC35T	50mmx6mm	Tinned Copper

(New design approach)



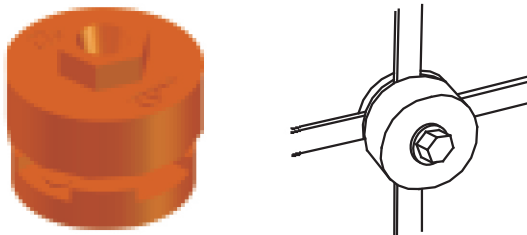
The ABRE connect copper, aluminum or tinned copper conductor in form of straight through, cross or tee joints and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



Bimetallic Connector Tape

Part No.	Description Tape
BMT10	25mmx3mm Aluminium to 25mmx3mm Copper
BMT15	25mmx3mm Aluminium to 25mmx3mm Copper - with Black plastic holder

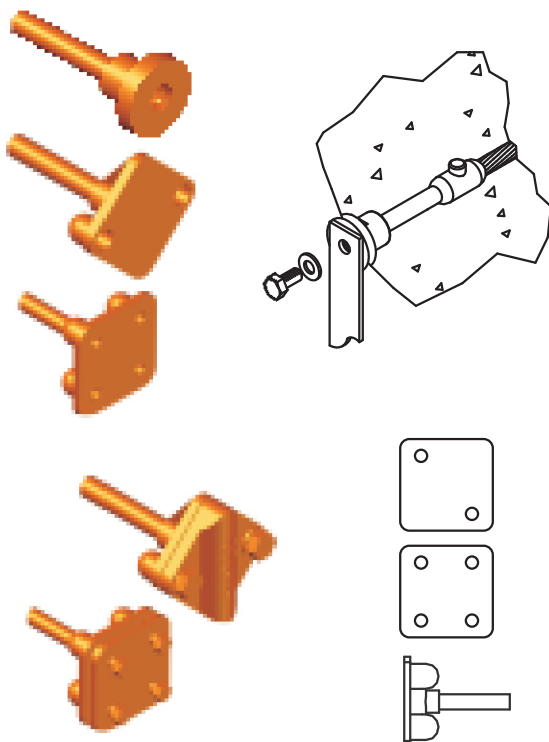
The ABRE connect copper and aluminum conductors by non-corrosive contact which is made by fusion method particularly useful when lightning protection system needs to be earthed using copper and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



Screw Down Test Clamp

Part No.	Max Conductor Size	Material
SDC15	25mmx6mm	Copper
SDA15	25mmx6mm	Aluminum
SDC15T	25mmx6mm	Tinned Copper

The ABRE connect copper, aluminum or tinned copper tape conductors 4-way cross joints and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



Reinforcement Bonding Point – One, Two or Four Hole Earth Point

Part No.	Hole Size (mm)	Size LxWxH (mm)
ESP00		65 x (φ) 50
ETP00	M10 x 20	70 x 35
EFP00		70 x 70

Connect reinforcement bar to earth point with stem diameter = 10.7mm or 70mm².

Re-Bar Bonding Point – 2 & 4 Hole Earth Point with Front Plate Cover

Part No.	Tape Size (mm)	Size LxWxH (mm)
ETC00	25 x 3	80 x 80
EFC00	25 x 3	80 x 80

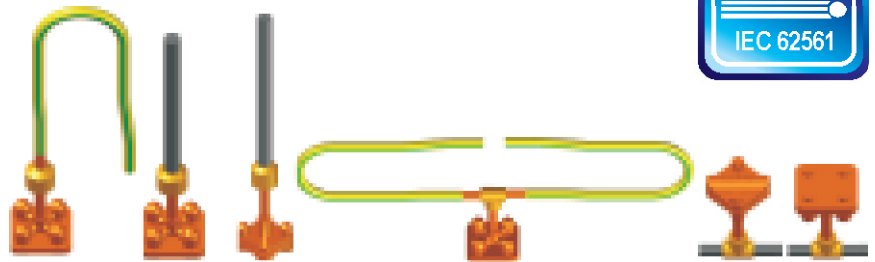
Connect reinforcement bar to earth point with stem diameter = 10.7mm or 70mm² and supplied complete with front plate for connection of 25mmx3mm copper tape option with 70mmsq stranded copper wire cable.



ABRE Lightning Protection System - Flat Tape System



Tails Earth Point Pre-Welded

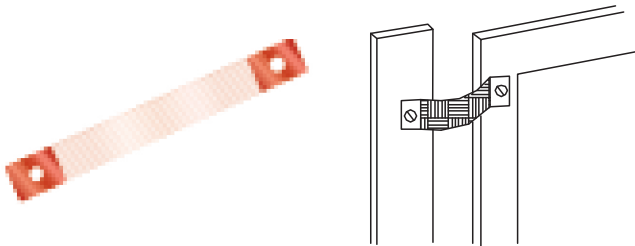


	Part No.	Cable Size (mm ²)	Type
	EFC11	70	Four Hole Earth Point Pre-welded 500mm long tail of 70mm sq. - PVC Insulated Cable
	EFC21	95	Four Hole Earth Point Pre-welded 500mm long tail of 95mm sq. - PVC Insulated Cable
	EFC31	120	Four Hole Earth Point Pre-welded 500mm long tail of 120mm sq. - PVC Insulated Cable
	EFC41	150	Four Hole Earth Point Pre-welded 500mm long tail of 150mm sq. - PVC Insulated Cable
	EFC12	70	Four Hole Earth Point Pre-welded 500mm long tail of 2nos. 70mm sq. - PVC Insulated Cable
	EFC22	95	Four Hole Earth Point Pre-welded 500mm long tail of 2nos. 95mm sq. - PVC Insulated Cable
	EFC32	120	Four Hole Earth Point Pre-welded 500mm long tail of 2nos. 120mm sq. - PVC Insulated Cable
	EFC42	150	Four Hole Earth Point Pre-welded 500mm long tail of 2nos. 150mm sq. - PVC Insulated Cable
	ETC51	16	Two Hole Earth Point with Front Plate Cover Pre-welded 16mm Steel Rod - Straight Joint
	EFC51	16	Four Hole Earth Point with Front Plate Cover Pre-welded 16mm Steel Rod - Straight Joint
	ETC61	20	Two Hole Earth Point with Front Plate Cover Pre-welded 20mm Steel Rod - Straight Joint
	EFC61	20	Four Hole Earth Point with Front Plate Cover Pre-welded 20mm Steel Rod - Straight Joint
	ETC71	25	Two Hole Earth Point with Front Plate Cover Pre-welded 25mm Steel Rod - Straight Joint
	EFC71	25	Four Hole Earth Point with Front Plate Cover Pre-welded 25mm Steel Rod - Straight Joint
	ETC52	16	Two Hole Earth Point with Front Plate Cover Pre-welded 16mm Steel Rod - Tee Joint
	EFC52	16	Four Hole Earth Point with Front Plate Cover Pre-welded 16mm Steel Rod - Tee Joint
	ETC62	20	Two Hole Earth Point with Front Plate Cover Pre-welded 20mm Steel Rod - Tee Joint
	EFC62	25	Four Hole Earth Point with Front Plate Cover Pre-welded 20mm Steel Rod - Tee Joint
	ETC72	25	Two Hole Earth Point with Front Plate Cover Pre-welded 25mm Steel Rod - Tee Joint
	EFC72	25	Four Hole Earth Point with Front Plate Cover Pre-welded 25mm Steel Rod - Tee Joint

The ABRE connect reinforcing bonding points are installed to provide a convenient earth system connection point in concrete structures. When cast into concrete they connect the re-bar to the earthing or lightning protection system to meet IEC 62561-1.



ABRE Lightning Protection System - Flat Tape System

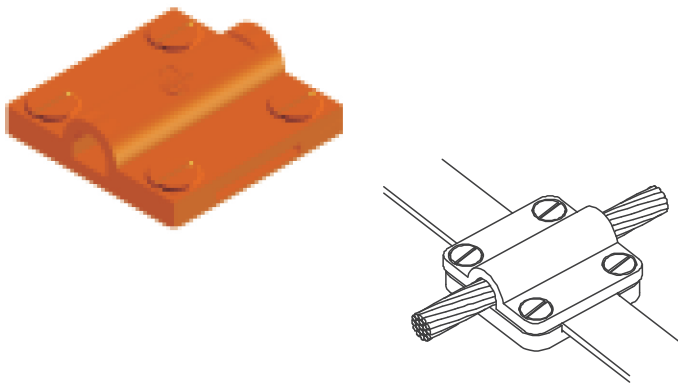


Flexible Braids Bond

Part No.	Braid Dimensions	Material
FBC35	25 x 3.5mm Length (L) 350mm	Copper
FBA35		Aluminum
FBC35T		Tinned Copper

The ABRE Flexible copper, aluminum or tinned copper braid suitable for bonding gates, doors, fences etc. Equivalent cross sectional area 35mm². Copper in length and hole sizes made to order and copper meet to BS EN 13602.

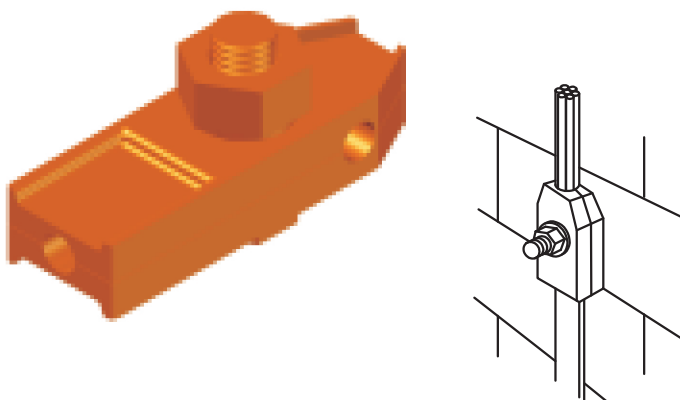
Cable to Tape Clamp



Part No.	Tape Size (mm)	Cable Size (mm ²)	Material
CTC50	25 x 3	50-70	Copper
CTC95	25 x 3	95-120	Copper
CTA50	25 x 3	50-70	Aluminum
CTA95	25 x 3	95-120	Aluminum
CTC50T	25 x 3	50-70	Tinned Copper
CTC95T	25 x 3	95-120	Tinned Copper

This ABRE connect stranded cable to tape clamp conductors and manufactured from high quality copper alloy, aluminum or tinned copper. Easy installation and provide an effective low resistance connection and using countersunk wood screws 11/2" No. 10 or M6 and wall plugs, used in to meet IEC 62561-1.

Cable to Tape Test Clamp

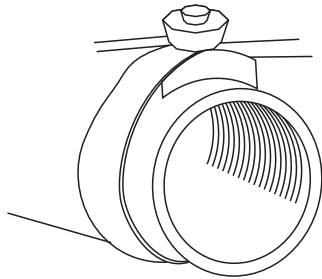
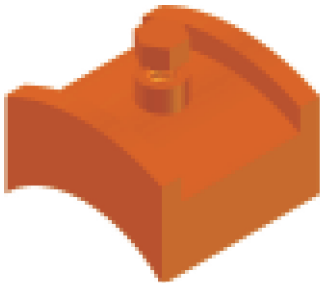


Part No.	Tape Size (mm)	Cable Size (mm ²)	Material
CMC50	25 x 3	50	Copper
CMC70	25 x 3	70	Copper
CMA50	25 x 3	50	Aluminum
CMA70	25 x 3	70	Aluminum
CMC50T	25 x 3	50	Tinned Copper
CMC70T	25 x 3	70	Tinned Copper

This ABRE connect stranded cable to tape clamp conductors and applied to low resistance tee joints in cable conductor system and manufactured from high quality copper, aluminum alloys or tinned for excellent corrosion resistance to meet IEC 62561-1.



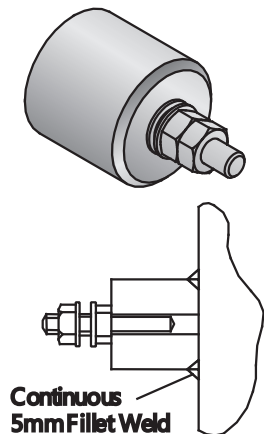
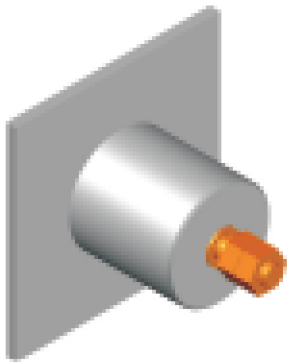
ABRE Lightning Protection System - Flat Tape System



Metallic Pipe Bond Clamp

Part No.	Maximum Tape Width	Material
PBC25	25 mm Bolt Size M10	Copper
PBA25		Aluminum
PBC25T		Tinned Copper

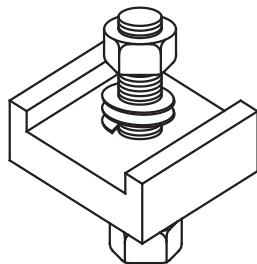
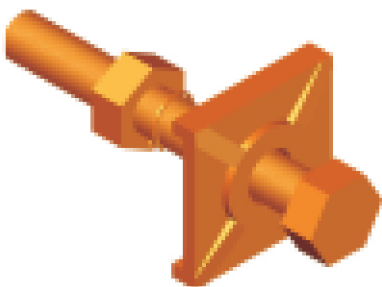
This ABRE connect conductor to metallic structure for bonding copper, aluminum or tinned copper tape to large diameter pipes to meet IEC 62561-1.



Earth Boss

Part No.	Thread Size	Material
ESB10	M10 (φ)50mm	Stainless Steel
EMB10	(L) 45mm	Mild Steel

The ABRE connect cable or tape conductor for welding to steel vessels, tanks or metallic structures to meet SS316 Stainless steel.



Metallic B Bond – Tape Connection

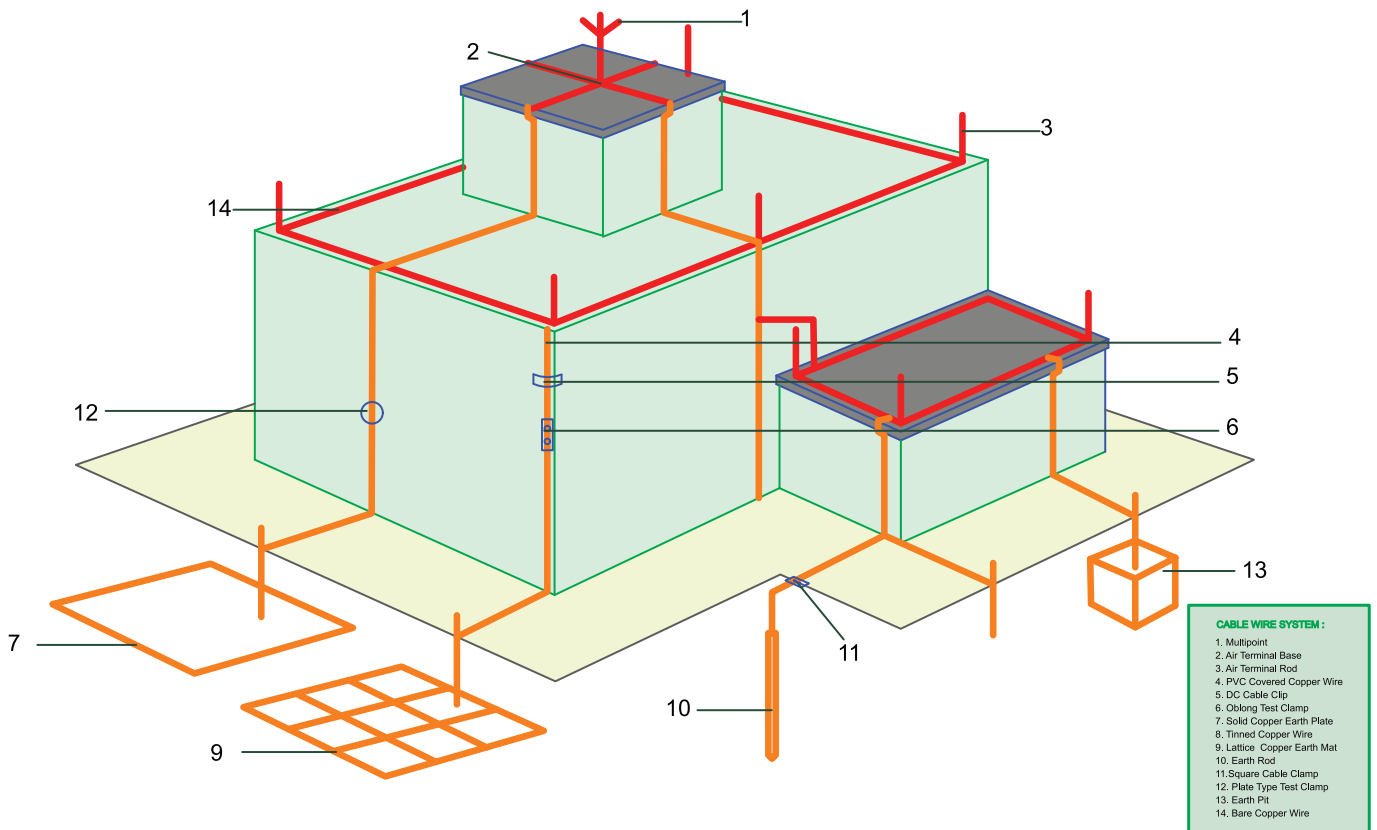
Part No.	Maximum Tape Width	Material
BBC10	25 mm	Copper
BBA10	Bolt Size	Aluminum
BBC10T	M10	Tinned Copper

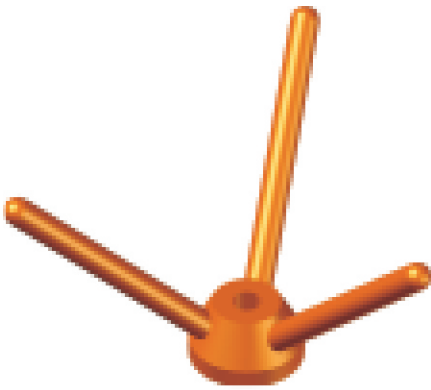
This ABRE Metallic 'B' bond is used for bonding copper, aluminum or tinned copper tapes to flat metal surfaces, steel structures or aluminum cladding and structure to meet IEC 62561-1.

ABRE Faraday Cage Systems - Cable & Wire System



ABRE produce detail the products required to install a 'Cable & Wire' System and additional fittings suitable simple lightning rod type, its installation consists in the inclusion, on the top of the structure to protect, slender points connected to the earth by the most direct path possible. A cone of protection is produced which corresponds to the height of the rod and to the level of protection required. Contrary to the meshed cage, this method only protects the elements which are in its radius of protection. And its meets the requirements of IEC 62305.

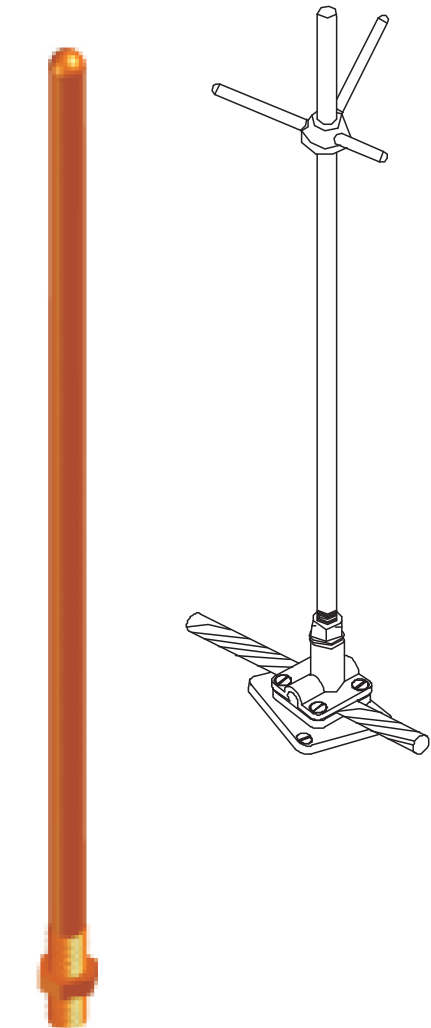




Air Terminal – Multiple Point

Part No.	Diameter	Material
AMC16	16mm	Copper
AMA16	16mm	Aluminium
AMC16T	16mm	Tinned Copper

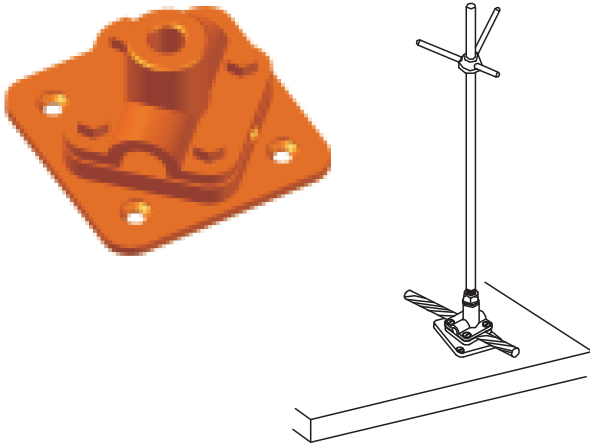
This ABRE suitable for use with copper, aluminium and tinned copper air terminals to meet BS EN 13601.



Air Terminal – Air rod

Part No.	Rod Length	Diameter	Material
ATC12	500mm	16mm	Copper
ATC14	1000mm	16mm	Copper
ATC16	1500mm	16mm	Copper
ATC18	2000mm	16mm	Copper
ATA12	500mm	16mm	Aluminium
ATA14	1000mm	16mm	Aluminium
ATA16	1500mm	16mm	Aluminium
ATA18	2000mm	16mm	Aluminium
ATC12T	500mm	16mm	Tinned Copper
ATC16T	1500mm	16mm	Tinned Copper
ATC18T	2000mm	16mm	Tinned Copper

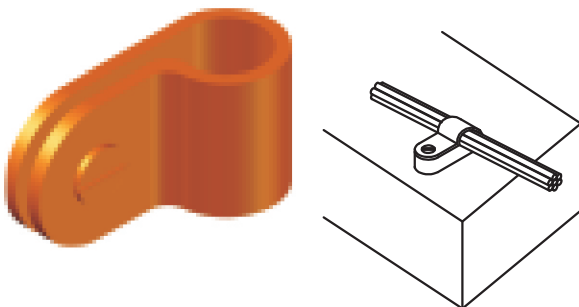
ABRE provide, proven and visible on sharp corners of buildings, pointed tips of spires, exposed edges of horizontal roofs and the ends of roof ridges. And field application in many countries in Asian have confirmed that blunt copper, aluminium or tinned copper air rods are the best design by lightning in preference to taper pointed copper air rods to meet BS EN 13601.



Air Terminal - Flat Air Rod Base

Part No.	Conductor Size	Thread Diameter	Material
AWC50	50mm ²	16mm	Copper
AWC70	70mm ²	16mm	Copper
AWA50	50mm ²	16mm	Aluminium
AWA70	70mm ²	16mm	Aluminium
AWC50T	50mm ²	16mm	Tinned Copper
AWC70T	70mm ²	16mm	Tinned Copper

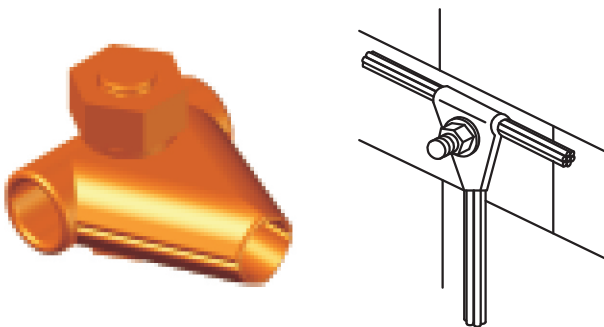
This ABRE support copper, aluminum or tinned copper air terminal rod to connect and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug to meet IEC 62561-1.



Conductor Fixing – Cable Clip

Part No.	Conductor Size	Material
CFC50	50mm ²	Copper
CFC70	70mm ²	Copper
CFA50	50mm ²	Aluminium
CFA70	70mm ²	Aluminium
CFC50T	50mm ²	Tinned Copper
CFC70T	70mm ²	Tinned Copper

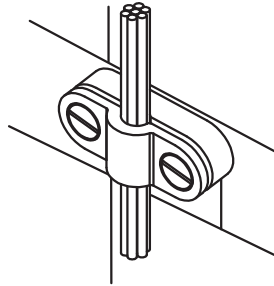
This ABRE support copper, aluminum or tinned copper conductor cable fixing with round head woodscrew 1 1/2"x no.10 and wall plug, used clip to meet IEC 62561-4.



Conductor Fixing – Tee Clamp

Part No.	Conductor Size	Material
CGC50	50mm ²	Copper
CGC70	70mm ²	Copper
CGA50	50mm ²	Aluminium
CGA70	70mm ²	Aluminium
CGC50T	50mm ²	Tinned Copper
CGC70T	70mm ²	Tinned Copper

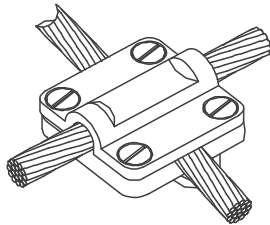
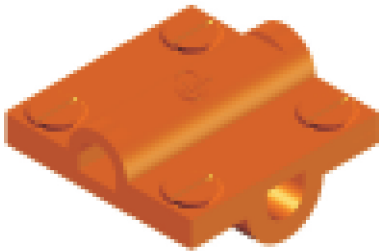
This ABRE connect copper, aluminum or tinned copper conductor in form of tee joints and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



Conductor Fixing – Cable Saddle

Part No.	Conductor Size	Material
CHC50	50mm ²	Copper
CHC70	70mm ²	Copper
CHA50	50mm ²	Aluminium
CHA70	70mm ²	Aluminium
CHC50T	50mm ²	Tinned Copper
CHC70T	70mm ²	Tinned Copper

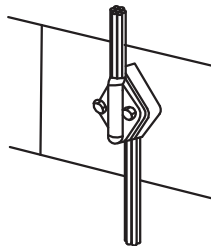
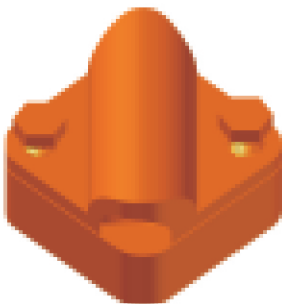
This ABRE support copper, aluminum or tinned copper conductor cable fixing with round head woodscrew 1 1/2" x no.10 and wall plug, used saddle to meet IEC 62561-4.



Conductor Fixing – Square Clamp

Part No.	Conductor Size	Material
CCC50	50mm ²	Copper
CCC70	70mm ²	Copper
CCA50	50mm ²	Aluminium
CCA70	70mm ²	Aluminium
CCC50T	50mm ²	Tinned Copper
CCC70T	70mm ²	Tinned Copper

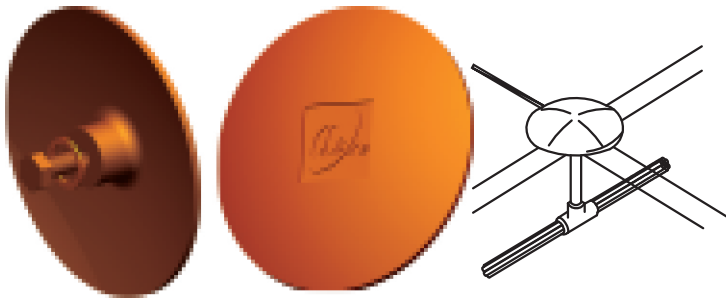
This ABRE connect copper, aluminum or tinned copper conductor in form of straight through, cross or tee joints and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



Conductor Fixing – Test Clamp

Part No.	Conductor Size	Material
CLC50	50mm ²	Copper
CLC70	70mm ²	Copper
CLC50T	50mm ²	Tinned Copper
CLC70T	70mm ²	Tinned Copper

This ABRE connect copper or tinned copper conductor in form of straight through forming end to end joints and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.

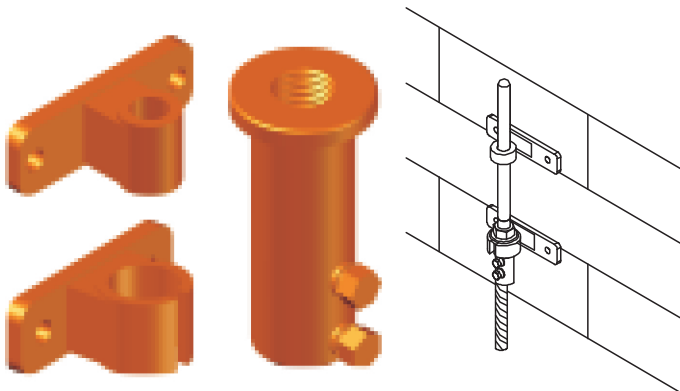


Air Terminal – Strike Pad

Part No.	Diameter	Material
ASC16	112mm	Copper
ASA16	112mm	Aluminium
ASC16T	112mm	Tinned Copper

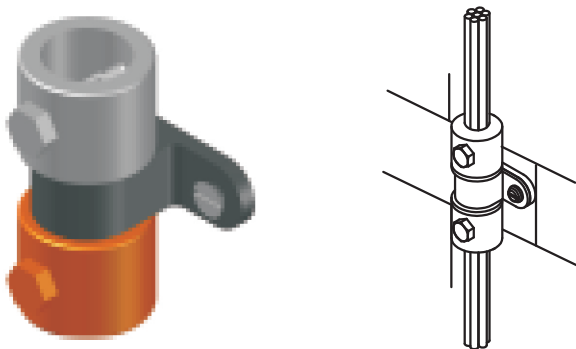
This ABRE product mostly apply in the open area car park or side flashing and is supplied with a set screw to enable the lightning conductors to be attached to the copper strike pads to meet BS EN 1982.

Air Terminal Rod - Bracket and Cable (50mm²-70mm²) Coupling



Part No.	Rod Diameter	Material
AKC16	16mm	Copper
AKA16	16mm	Aluminium
AKC16T	16mm	Tinned Copper
ADC16	16mm	Copper
ADA16	16mm	Aluminium
ADC16T	16mm	Tinned Copper

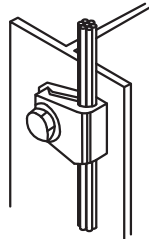
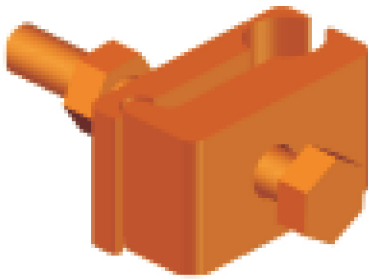
This ABRE connect copper, aluminum or tinned copper conductor in form of straight through, cross or tee joints and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



Bimetallic Connector Cable

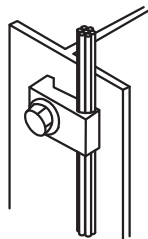
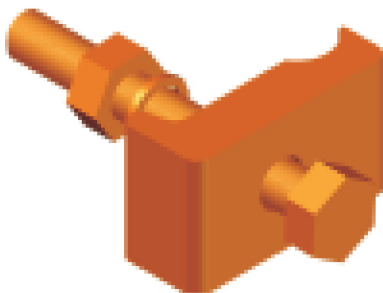
Part No.	Description Cable
BMC50	50mm ² Aluminium to 50mm ² Copper
BMC70	70mm ² Aluminium to 70mm ² Copper

The ABRE connect copper and aluminum conductors by non-corrosive contact which is made by fusion method particularly useful when lightning protection system needs to be earthed using copper and fixing with countersunk woodscrew 1 1/2" x no.10 and wall plug, used in to meet IEC 62561-1.



Metallic B Bond – Cable Connection

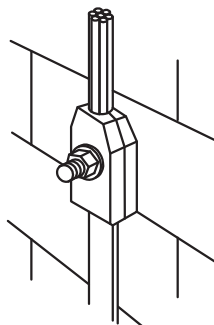
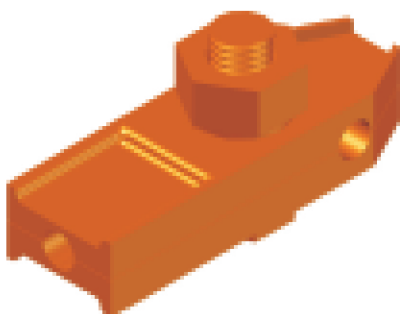
Part No.	Description	Material
BCC50	25mm ² to 50mm ² Bolt Size M10	Copper
BCA50		
BCC50T		Tinned Copper
BCC70	70mm ² to 120mm ² Bolt Size M10	Copper
BCA70		Aluminum
BCC70T		Tinned Copper



Metallic Tower Bond – Cable Connection

Part No.	Description	Material
BTC50	25mm ² to 50mm ² Bolt Size M10	Copper
BTA50		
BTC50T		Tinned Copper
BTC70	70mm ² to 120mm ² Bolt Size M10	Copper
BTA70		Aluminum
BTC70T		Tinned Copper

This ABRE Metallic 'B' and tower bond are used for bonding copper, aluminum or tinned copper cables to flat metal surfaces, steel structures or aluminum cladding and structure to meet IEC 62561-1.

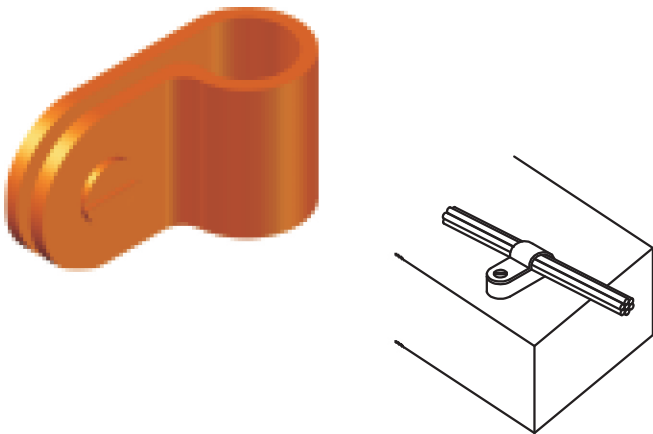


Cable to Tape Test Clamp

Part No.	Tape Size (mm)	Cable Size (mm ²)	Material
CMC50	25 x 3	50	Copper
CMC70	25 x 3	70	Copper
CMA50	25 x 3	50	Aluminum
CMA70	25 x 3	70	Aluminum
CMC50T	25 x 3	50	Tinned Copper
CMC70T	25 x 3	70	Tinned Copper

This ABRE connect stranded cable to tape clamp conductors and applied to low resistance tee joints in cable conductor system and manufactured from high quality copper, aluminum alloys or tinned for excellent corrosion resistance to meet IEC 62561-1.

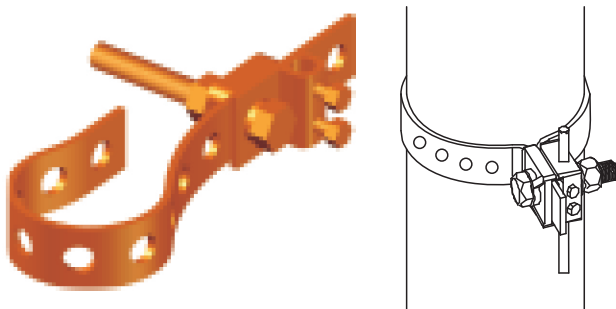
Conductor Fixing – Cable Clip



Part No.	Conductor Size	Material
CFC50	50mm ²	Copper
CFC70	70mm ²	Copper
CFA50	50mm ²	Aluminium
CFA70	70mm ²	Aluminium
CFC50T	50mm ²	Tinned Copper
CFC70T	70mm ²	Tinned Copper

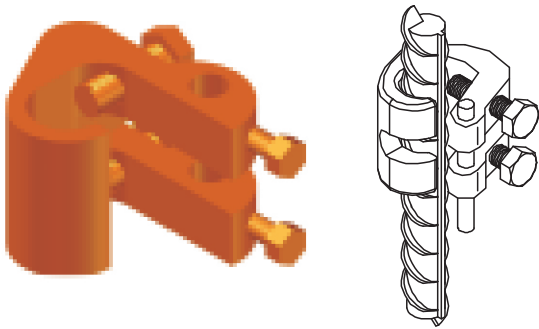
This ABRE support copper, aluminum or tinned copper conductor cable fixing with round head woodscrew 1 1/2" x no.10 and wall plug, used clip to meet IEC 62561-4.

Metallic Pipe Clamp



Part No.	Pipe Diameter	Material
PCC50	50mm ² cable	Copper
PCA50	to 50-100mm	Aluminium
PCC70	70mm ² cable	Copper
PCA70	to 50-100mm	Aluminium

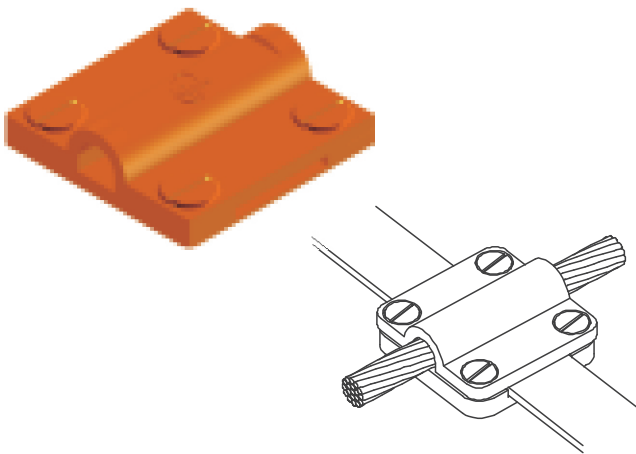
This ABRE connect conductor to metallic structure for bonding copper, aluminum or tinned copper cable to large diameter pipes to meet IEC 62561-1.



Re-Bar Clamp

Part No.	Conductor Size	Re-Bar Diameter	Material
RBC50	50mm ²	8-16mm	Copper
RBC70	70mm ²	20-40mm	Copper

The ABRE connectreinforcing bonding points are installed to provide a convenient earth system connection point in concrete structures. When cast into concrete they connect the re-bar to the earthing or lightning protection system to meet IEC 2561-1.



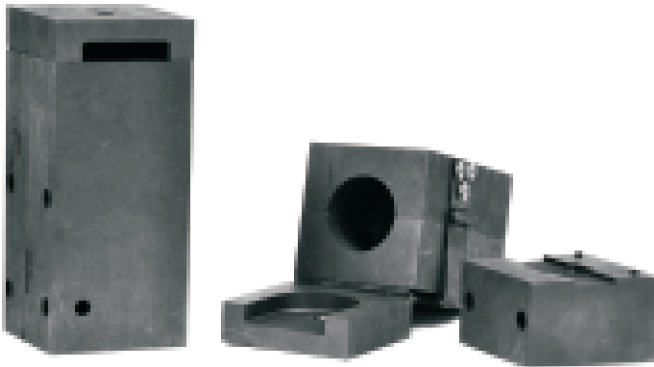
Cable to Tape Clamp

Part No.	Tape Size (mm)	Cable Size (mm ²)	Material
CTC50	25 x 3	50-70	Copper
CTC95	25 x 3	95-120	Copper
CTA50	25 x 3	50-70	Aluminum
CTA95	25 x 3	95-120	Aluminum
CTC50T	25 x 3	50-70	Tinned Copper
CTC95T	25 x 3	95-120	Tinned Copper

The ABRE connectreinforcing bonding points are installed to provide a convenient earth system connection point in concrete structures. When cast into concrete they connect the re-bar to the earthing or lightning protection system to meet IEC 2561-1.



| ABRE Exothermic Welding Systems | IEEEstd.80-1986



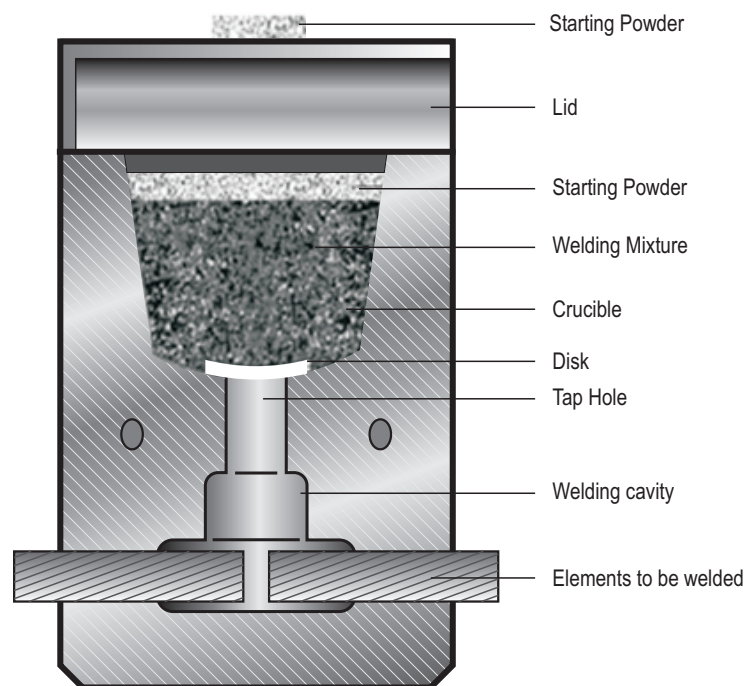
ABRE provide the finest in permanent bonding in exothermic welding in which no external heat or power is required, the compression process which is very simple and easy, takes place. These has been widely accepted as the quality method the world over for electrical connections.

We intend to develop any kind of products to achieve better quality that can be widely accepted to the world under the full earthing brand name "ABRE WELD".

- * Copper to copper
- * Copper to steel

Grounding Connection Specification

All grounding connections of copper to copper and copper to steel, when making a copper tape or wire connection of Ground Rod or other metal connection, place the ABRE powder into graphite mould. Just ignite to start the welding process. The result will be clean and smooth connection surface, which has been field proven. The connection types also apply for other metal such as: Iron, Steel, Railway track, Wrought and cast iron, Bronze, Nichrome and Brass. ABRE exothermic welding connections shall be considered as a continuous conductor accompanying IEEE std 80-1986.

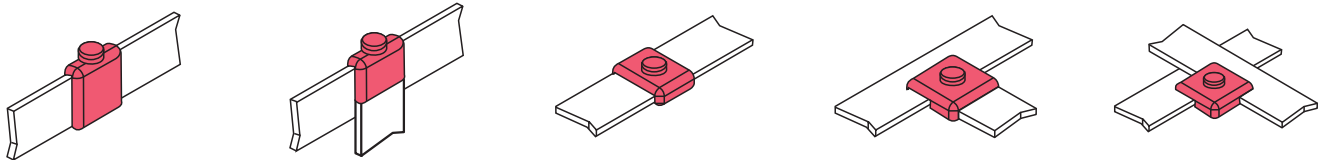


View of a vertical section of the mould

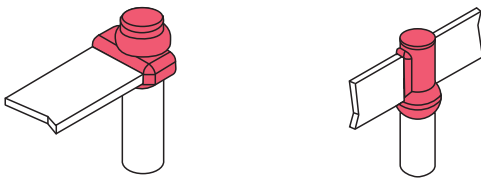


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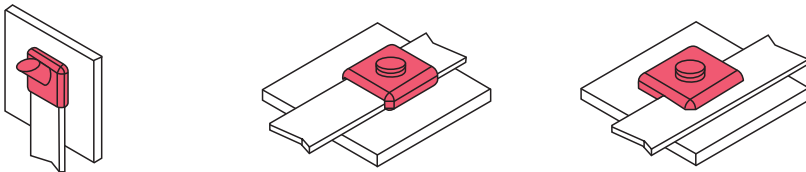
Copper Tape : Bar to Bar (BB Type)



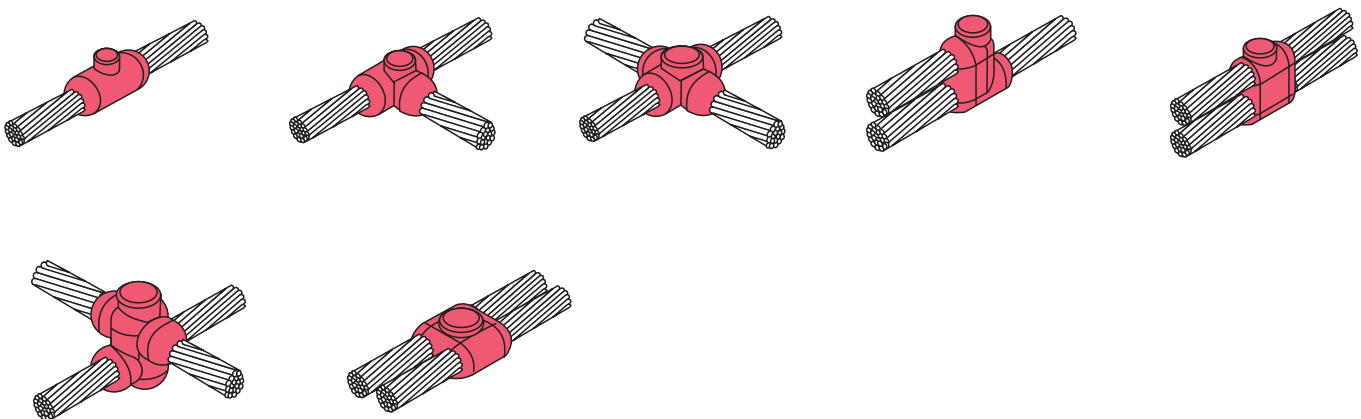
Copper Tape to Rod : Bar to Rod (BR Type)



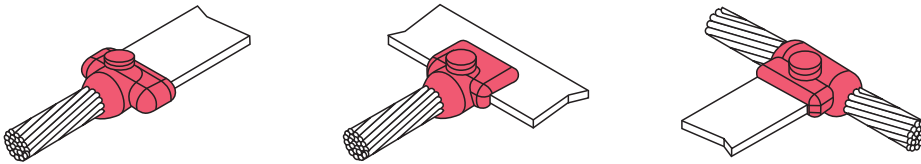
Copper Tape to Steel Surface : Bar to Steel Surface (BS Type)



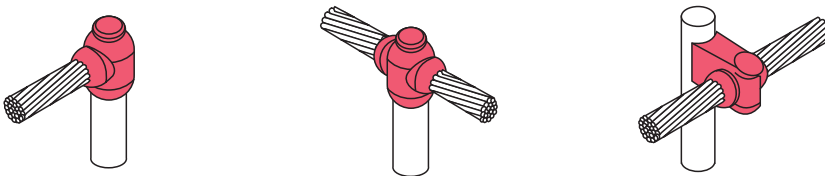
Cable Stranded : Cable to Cable (CC Type)



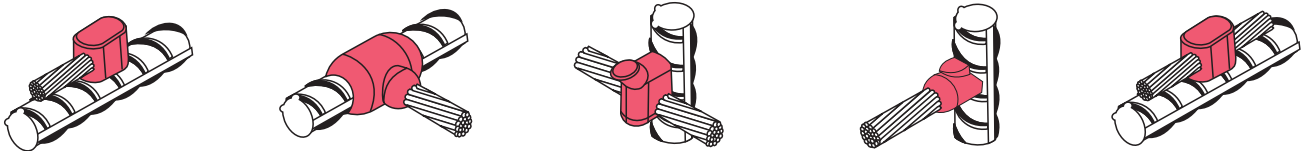
Cable to Copper Tape : Cable to Bar (CB Type)



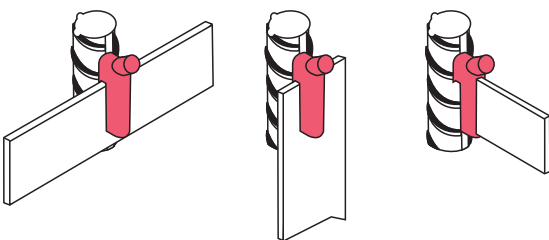
Cable Stranded to Rod : Cable to Rod (CR Type)



Cable Stranded to Rebar : Cable to Rebar (CR Type)



Copper Tape to Rebar : Tape to Rebar (TR Type)



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Non-contractual pictures



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