

SECURING CABLES WORLDWIDE



CMP
CABLE CLEATS



WHAT WE PROMISE FOR YOUR BUSINESS



CMP Products is a leading designer, manufacturer, and supplier of cable glands, cable cleats and cable accessories for customers around the globe.



65+ years experience



3 modern, cost effective, automated factories



Operational excellence & ISO-certified business management



Fast & flexible delivery



Innovative, quality products



Cable Cleats, Cable Glands & Accessories



Specialist installation & technical training experience



Global Distribution network



Exceptional Customer Service



Extensive Project experience & trusted supply chain partner with documented case studies



We are a proud business unit of the British Engines group'

REASONS TO CHOOSE CMP

- ✓ **Product quality and reliability**
- ✓ **Global network of facilities throughout the world**
- ✓ **Recognised market leader with 65+ years' experience**
- ✓ **Multilingual installation training**
- ✓ **ISO - Certified QHSE Integrated Management System**
- ✓ **Significant worldwide project portfolio**
- ✓ **Specific Industry Sector Knowledge and Experience**



CMP CABLE CLEATS

CMP Products offers a comprehensive range of cable cleats that support cables and conductors, retaining the mechanical load of the cable itself and reducing the mechanical stress placed on any cable termination.

RIGOROUS TESTING

All of our range is designed, constructed, tested and third party certified in accordance with IEC 61914 to ensure the safety of personnel, the protection of the cable management system and the operating environment.

This testing ensures that our cable cleats are capable of providing the necessary resistance to electromechanical forces; can retain the mechanical load that the cables and conductors are subjected to when under fault conditions; and will safely maintain the integrity of the cable. We also offer project-specific testing to ensure customer needs are met in full.

EXPERTISE AND EXPERIENCE

At CMP Products, we can design and manufacture cable cleats for all applications, including single, trefoil, quad and matrix applications, and the expertise offered by our technical department means we can assist with detailed technical queries and design bespoke applications to suit the specialist needs of our customers.

Alongside this expertise comes experience. Our cable cleat range has been created and developed with a comprehensive understanding of the site installation requirements and issues faced by engineering design contractors and installers alike. Lessons learned over many years of supplying other cable-related solutions are factored into our products and can be seen in a raft of unique new design features.

These include the capability to accommodate a wide range of fluctuating cable diameters and detailing that adds to the general ease of installation.

A COMPREHENSIVE AND DIVERSE RANGE

CMP cable cleats are designed for use within heavy industrial applications and hazardous locations, as well as the arduous conditions and harsh environments encountered by operators in the railways, tunnels and underground, oil and gas and petrochemical industry sectors.

We can offer a cable cleat to suit a variety of support structures including, cable ladder, cable tray, basket, channel, masonry or concrete, and can manufacture in a variety of materials to suit the environmental conditions they may be subjected to.

SAFETY IS THE CMP PRIORITY - ALL CMP CABLE CLEAT PRODUCTS ARE THIRD PARTY TESTED AND CERTIFIED TO IEC 61914 PRIOR TO BEING RELEASED ONTO THE MARKET.

CONTENTS PRODUCTS

SINGLE MULTICORE

Sabre	32
Falcon	33
Valiant	34
Zenith	35
Zenith Fixed	36
Solace	37
Themis	38
Helios	39
Sapphire	40-41
Emerald	42-43
Olympus	44-45
SHVSS-JSC	46
Fortis	48-49
Thorus	50-51
HV-PIR	52

TREFOIL

Sovereign	56-57
Patriot	58-59
Patriot Hingeless	60-61
Endurance	62-63
Cyclone I	64-65
Cyclone II/III	66-67
Conqueror	68-69
Reliance	70-71
Huron	72-73
Legion	74
Centurion	76-77
Everest	78-80
Titan	82-83
Sphinx	84-85
Trefoil intermediate	86
Cyclone Strap	88-89

QUAD

Saturn	92
Mercury	93
Venus	94-95
Quad IR	96

CONTENTS TECHNICAL

What is a Cable Cleat	7
Why use a Cable Cleat	8-9
Cable Cleat Selection	10
Cable Cleat Spacing	11
What is a Short Circuit	12-13
Multiphysics	14-15
Simulations of Trefoil Cable Cleats During Short Circuit	16-17
Cable Formations	18-19
Materials	20-21
Galvanic Corrosion	22
Intermediate Restraints	23
Fire Performance	24-25
Bespoke Products	26-27
Engineering Services	28-29
Good Installation Practices	98-99
Short Circuit Testing	100-105
Projecting Peak Faults & Mechanical Forces	106-107
Twin Arc Profiles	108
Cable Cleat Nut Spacer	109
Cleat Fixing Packs	110-111
Isolation Pads	112
C-Clamps	113-114





WHAT IS A CABLE CLEAT

Cable cleats are devices designed and tested to ensure the retention and support of cables, and have been used for many years all over the world.

It was not until 2003 with the emergence of the standard EN 50368, that any standard for cable cleats existed. This not only highlighted the retention and support that cable cleats provided to cables, but more importantly highlighted the protection of the cable management system and the potential risk to human life without the use of cable cleats. Prior to EN 50368 both cable and cable cleat manufacturers provided testing to their own standards.

This was then followed up with the publication of IEC 61914 in 2009 and superseded by a new standard in 2015 and again in 2021, which further highlighted the importance of cable cleat products, and correct cable cleating.



IEC 61914 CABLE CLEAT

'Cable cleat' according to IEC 61914 defined as:

“device provided with a means of attachment to a mounting surface and that provides securing of cables when installed at intervals along the length of cables”

“Note: Examples of mounting surfaces that may be specified are ladder, tray, strut, or rail.”



INTERMEDIATE RESTRAINT

'intermediate restraint' according to IEC 61914 defined as:

“cable retaining device intended to be used with cable cleats, without being attached to a mounting surface, to hold cables together in formation and /or to provide resistance to electromechanical forces”

WHY USE A CABLE CLEAT?

CMP cable cleats are designed to ensure the retention and support of cables and conductors, reducing the load that the cable may be exposed to under its own weight.

By ensuring the cables are fixed, retained and supported correctly this protects all of the cable terminations by reducing the mechanical load exerted on them. CMP cable cleats are designed and tested so that in the event of short circuit fault conditions, they will contain the cables without causing damage; enabling the circuit to be restored once the fault has been rectified.

The latest standard IEC61914 specifies requirements and tests for cable cleats and intermediate restraints, used for securing cable in electrical installations. CMP cable cleats provide the necessary levels of resistance to electromechanical forces, where declared, and in addition achieve the following safety measures:

- Support cables and conductors.
- Reduce the mechanical load the cable may be exposed to under its own weight.
- Reduce the mechanical load the cable termination may be exposed to.

Cable cleats are for those whose core values include operating responsibly, safeguarding people, protecting the environment, and delivering on their zero harm HSE policies.

BS7671:2008 IET Wiring Regulations Seventeenth Edition:

'522.8.3 - The radius of every bend in a wiring system shall be such that conductors or cables do not suffer damage and terminations are not stressed.'

'522.8.4 - Where the conductors or cables are not supported continuously due to the method of installation, they shall be supported by suitable means at appropriate intervals in such a manner that the conductors or cables do not suffer damage by their own weight.'

'522.8.5 - Every cable or conductor shall be supported in such a way that it is not exposed to undue mechanical strain and so that there is no appreciable mechanical strain on the terminations of the conductors, account being taken of mechanical strain imposed by the supported weight of the cable or conductor itself.'



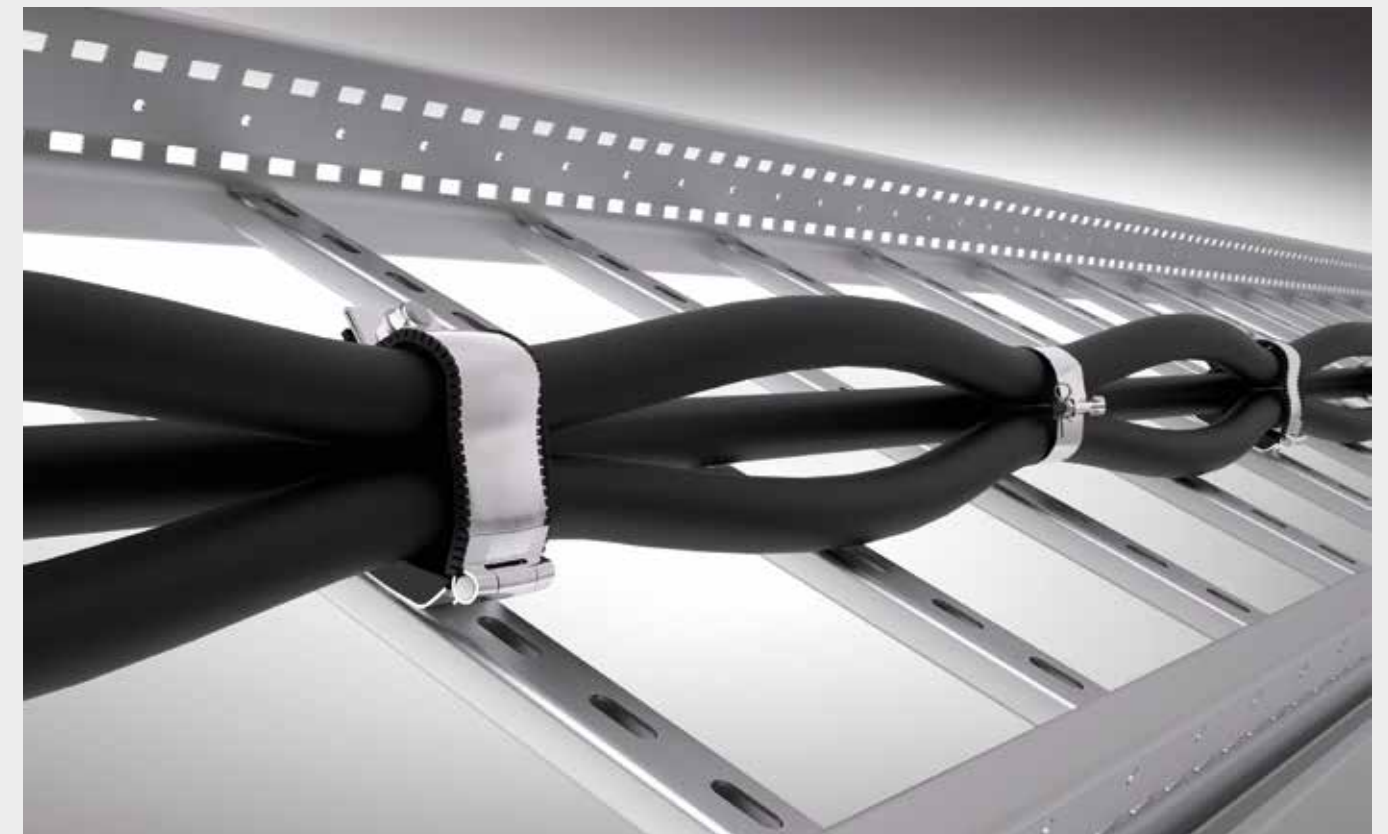
- Reduce the mechanical load a cable may be exposed to due to electrical fault conditions.

CAN I USE A CIRCUIT BREAKER INSTEAD OF CABLE CLEATS?

Although circuit breakers are capable of instantaneous protection, damage to the cables under fault conditions occurs within the first quarter cycle of the fault. Within this period of time the circuit breaker cannot open to suspend the fault, resulting in cable management system damage. A typical circuit breaker interrupts the fault after three cycles. Whilst this may protect the equipment, the cables however may have already been damaged within this short duration and depending on the size of the short circuit, need replacing.

The replacement of any cables comes at a high price as this includes the expensive cable costs themselves, the labour time of decommissioning, the reinstallation of the cable management system and the cost of operational downtime.

The latest standard for cable cleats IEC 61914 lays down the standardised method for testing and certification of cable cleats to prove they can withstand one or more short circuit tests: 6.4.4 resistant to electromechanical forces, withstanding one short circuit, 6.4.5 resistant to electromechanical forces, withstanding more than one short circuit.



"Birdcaging" effect of cables after exposure to short circuit conditions

CABLE CLEAT SELECTION

Cable cleat selection takes into account numerous factors listed below, and ideally if CMP Products can be supplied with the following: cable construction - type, ratings and diameter, system design, support structure and environment; it will then be possible to provide further advice on the correct type of cable cleat, and also the cable cleat spacing requirements for a specific application.

CABLE - WHAT TYPE OF CABLE IS BEING USED?

DIAMETER

The overall diameter of the cable will allow CMP Products to size the correct cable cleat and calculate the short circuit forces the cable cleat may be subjected to under fault conditions.

PERFORMANCE

The cable may have fire performance (FR), or Low Smoke & Fume or Zero Halogen (LSF / LSOH / LSZH) requirements that the cable cleat would also have to adhere to.

CABLE TYPE

Consideration should be given to whether the cable is single or multi-core and whether the voltage is Low (LV), Medium (MV) or High (HV).

DESIGN - OVERVIEW OF THE CABLE MANAGEMENT SYSTEM

MECHANICAL LOAD

All CMP cable cleats have been tested for both axial and lateral loads, this will ensure they will be capable of supporting the weight of the cables(s).

SHORT CIRCUIT RATING - kA PEAK FAULT OR r.m.s

What is the maximum peak fault (kA) the cable may be subjected to under short circuit conditions? Based upon the specified cable the short circuit rating can be calculated with use of the standard IEC 61914 to give the maximum forces the cable cleat will need to be able to withstand during a short circuit fault.

CABLE CONFIGURATION - FLAT FORM / PARALLEL OR TREFOIL FORMATION?

The cable configuration of the system will define the type of cable cleat required; either a single cable cleat, a trefoil cable cleat, a quad cable cleat, or this may even indicate that a bespoke cable cleat may be required which CMP Products will design, test, and certify to suit the cable management system requirements of its client.

CABLE RUN LENGTH - HOW MANY CABLE CLEATS ARE REQUIRED?

Whilst the spacing requirements for cable cleats will be subject to cable formation, cable diameter, and short circuit rating, the overall cable run length will give the correct number of cable cleats required for the installation. Cable runs that turn through 90° must also be noted as the cable cleat spacing will be reduced throughout these bends. See page 54 for more information on installing cleats through bends.

EXPANSION

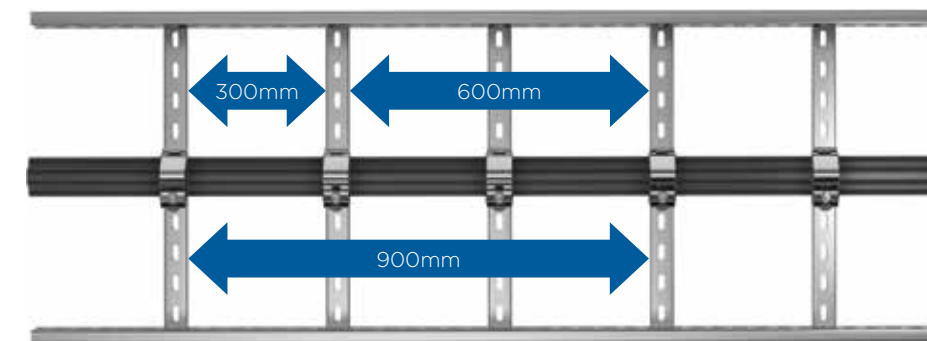
Single core cables expand and contract more due to temperature changes than multicore cables. If the cable is constrained, considerable forces can be transferred to the supporting structure. To allow for this, single core cables are generally "snaked" making slight loops to take up the expansion and contraction. It is also usual to allow some of the cable cleats to move freely and not restrain all cable cleats.

CABLE CLEAT SPACING

The following illustration shows the tensile strength required by each cable cleat depending upon fixing centres/intervals.

$$F_t = 0.17 i_p^2 / S$$

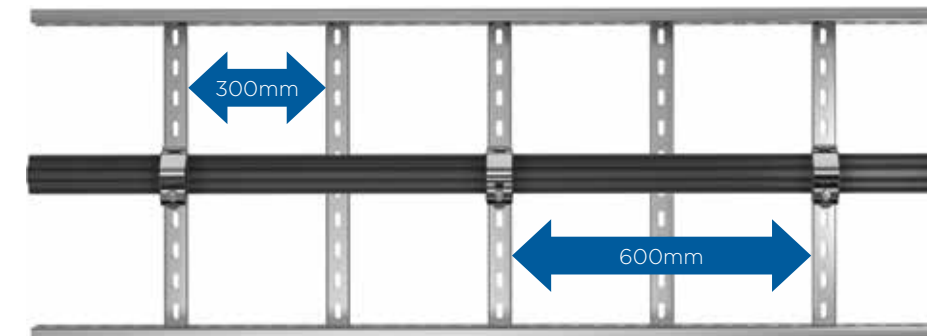
F_t = maximum force on the cable conductor (N/m)



$$0.17 (190 \times 190) / (36 / 1000) = 170,477.22 \text{ N/m}$$

Cable $\varnothing = 36\text{mm}$ $i_p = 190\text{kA}$

mounting intervals: 300mm (x 0.3) = 51,141.67N per cable cleat

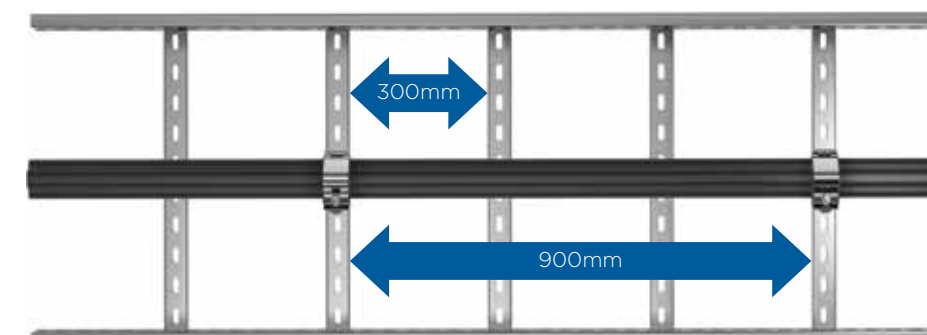


$$0.17 (190 \times 190) / (36 / 1000) = 170,477.22 \text{ N/m}$$

Cable $\varnothing = 36\text{mm}$ $i_p = 190\text{kA}$

mounting intervals: 600mm (x 0.6) = 102,283.33N per cable cleat.

Each cable cleat in this configuration must restrain two times the force of those in the above configuration (300mm).



$$0.17 (190 \times 190) / (36 / 1000) = 170,477.22 \text{ N/m}$$

Cable $\varnothing = 36\text{mm}$ $i_p = 190\text{kA}$

mounting intervals: 900mm (x 0.9) = 153,424.00N per cable cleat.

Each cable cleat in this configuration must restrain one-and-a-half times the force of those in the above configuration (600mm), or three times the force of those in the first configuration (300mm).

Refer to page 72-73 for more detailed information.

WHAT IS A SHORT CIRCUIT?

A short circuit is an electrical circuit that allows a current to travel along an unintended path, often where essentially no (or a very low) electrical impedance is encountered.

Impedance is the measure of opposition that a circuit presents to a current when a voltage is applied. This unintended or abnormal path of negligible impedance can be between live conductors, or between a live conductor and an earth, which have a difference in potential under normal operating conditions.

When electric current flows in a conductor, it creates a magnetic field. In the case of alternating current the magnetic field varies with that current. This magnetic field affects adjacent conductors in two ways: the first is to induce eddy currents, and the second is to induce an electromagnetic field.

Under Short circuit conditions the magnetic fields around the conductors will generate mechanical forces between those conductors. These forces may be considerable and will be greater the closer together the conductors are.

Whilst direct current creates a field, this field is steady and its main effect is to magnetise nearby susceptible objects.

EDDY CURRENTS (FOUCAULT)

Eddy currents are electric currents induced in conductors when a conductor is exposed to a changing magnetic field.

Eddy currents are induced circumferentially around the current carrying conductors. For this reason, the use of steel wire or steel tape armour is not permitted in single core cables used in a.c. circuits. Similarly it is strongly recommended that cast iron or ferromagnetic cable cleats are not used in conjunction with individual single core cables deployed in a.c. circuits.

TYPES OF SHORT CIRCUIT FAULTS

The most common type of short circuit in a three phase system is a single conductor to earth fault (Fig 1. Phase-to-earth). This is when one of the conductors in a circuit comes into contact with an earth.

The next most common type of short circuit is a phase to phase or conductor to conductor fault (Fig 2. Phase-phase) - when two of the conductors in a circuit come into contact with each other.

Next is a double phase or double conductor to earth fault (Fig 3. Phase-phase-to-earth) - two of the two conductors in a circuit each simultaneously come into contact with an earth.

And lastly, the least common type of short circuit is a balanced three phase or three conductor fault (Fig 4. Three-phase) - when all three conductors come into contact with an earth. Whilst this is uncommon, it can happen, and design engineers must go to considerable lengths to guard against the consequences of such an event.

In all cases these faults are short circuits - the path of least resistance is through a fault, and not through the equipment you are attempting to power.

SHORT CIRCUIT FORCES

The forces of repulsion between the individual phases of a three phase system cables under fault conditions can be considerable. The cable cleats selected must be capable of withstanding these repulsive forces, which are exacerbated when the cables involved are single core cables.

The short circuit forces generated during fault conditions will be governed by a number of factors, and not just by the type of short circuit. CMP Products cable cleats have been tested and certified in accordance with IEC 61914 for the worst case scenario, a three phase short circuit. The effects of other types of short circuits will create considerably less forces on the cables, nevertheless any short circuit has the potential to develop into a three phase short circuit.

SHORT CIRCUIT TESTING

CMP Products has carried out over 300 short circuit tests in accordance with the IEC 61914 standard 'cable cleats for electrical installations'. These tests include various peak faults, cable cleat spacing intervals, and cable formations to conclusively prove the cable cleats' ability to withstand and resist a range of electromechanical forces according to IEC 61914. CMP Products has the technical resources, capabilities and capacity to engage with its clients and deliver bespoke solutions to suit new or unusual situations. The company is able to conduct physical short circuit tests on any of its cable cleats for project specific applications including: specific cable size / type, fault current, cable cleat, and fixing centre / spacing interval configurations.

Fig 1. Phase-to-earth short circuit

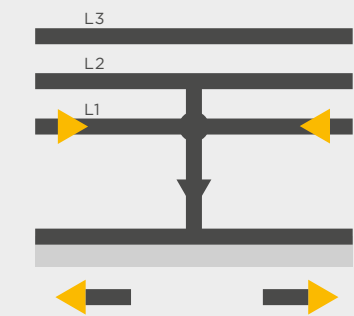


Fig 2. Phase-phase short circuit clear of earth

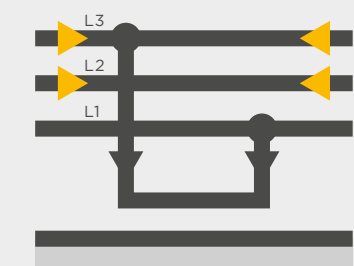


Fig 3. Phase-phase-to-earth short circuit

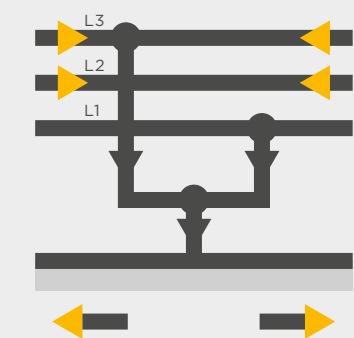
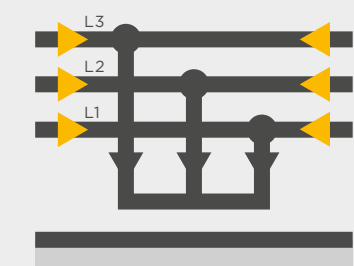


Fig 4. Three-phase short circuit



Please refer to page 56 for further information on short circuits.



MULTIPHYSICS CABLE CLEAT SIMULATION

To ensure our customers are able to benefit from the advantages that are possible with the use of advanced simulation technologies, we work closely with Comsol-certified company, Continuum Blue.

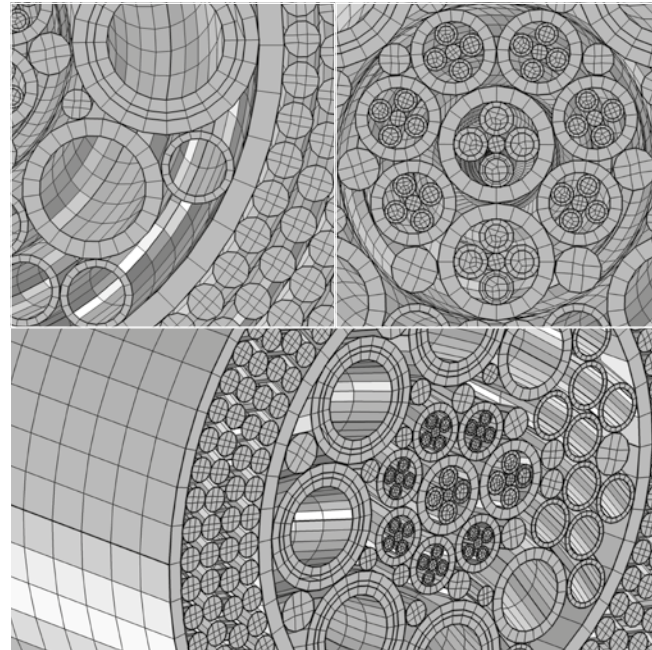
CONTINUUMBLUE
technology development



Continuum Blue's strength lies in its ability to help customers develop, assess, quantify and optimise new innovative technologies and existing products where coupled physical phenomena play a strong part in the development process.

Virtual prototyping and real world simulation helps to:

- understand and quantify a design's performance more accurately
- compare a design with a competitors products before the process of prototyping, production and testing
- reduce development cycles and costs
- eliminate redundant designs at an early stage
- ultimately produce a better product.

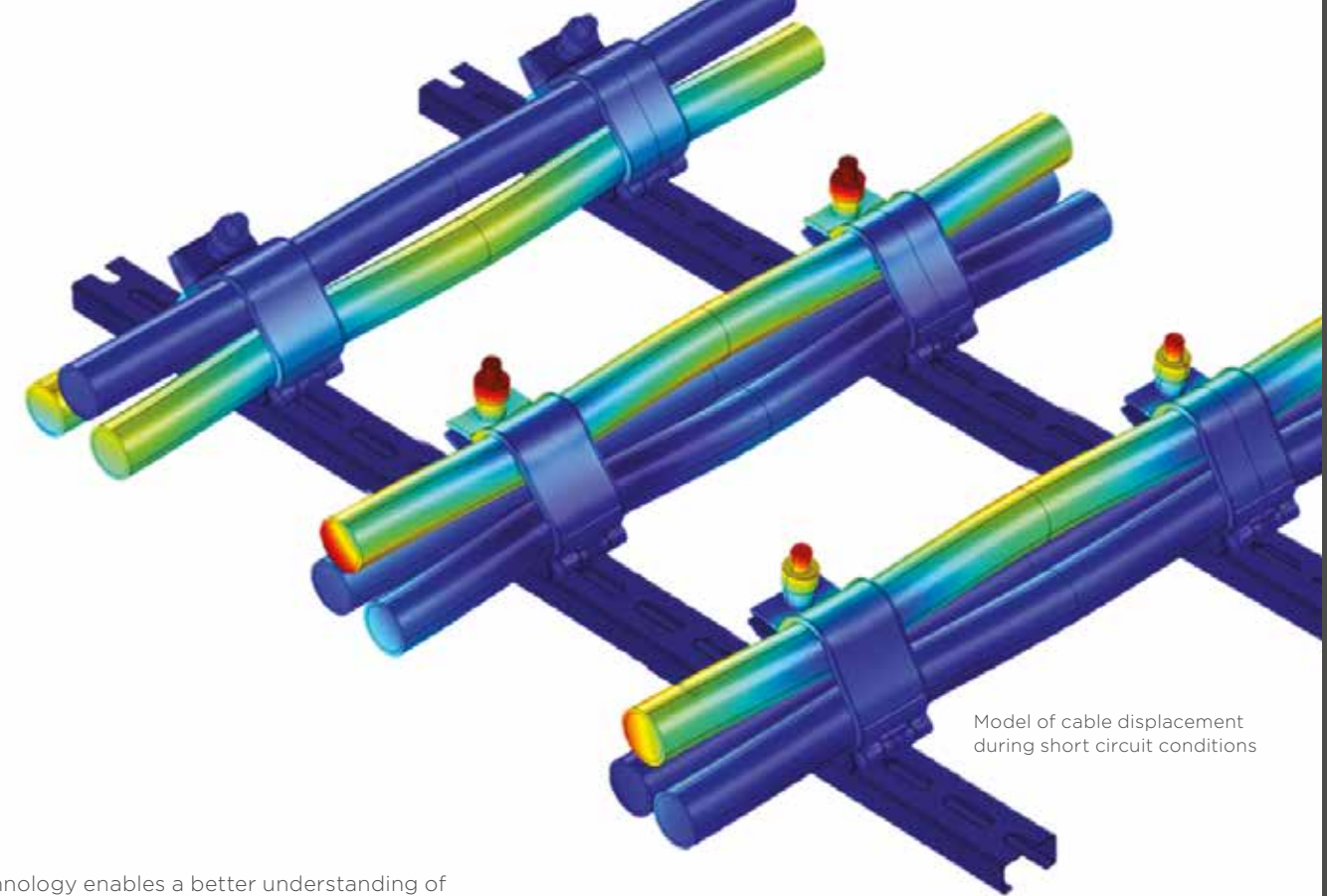


Finite Element Analysis (FEA) mesh.

We are able to call on the Continuum Blue's experience in a range of advanced simulation services that includes finite element analysis (FEA), computational fluid dynamics (CFD) and multi-body dynamics. From complex multiphase fluid flow, conjugate heat transfer and electrical and electromagnetic problems to highly nonlinear structural simulations, Continuum Blue's expertise has been used to endorse the extensive CMP cable cleat development programme.

CMP TREFOIL CABLE CLEAT MODEL

CMP selected Continuum Blue to develop the trefoil cable cleat short circuit simulation models for its range of products because of its exceptional modelling capabilities and ability to accurately predict electromagnetic and mechanical effects during short circuiting of power cables.



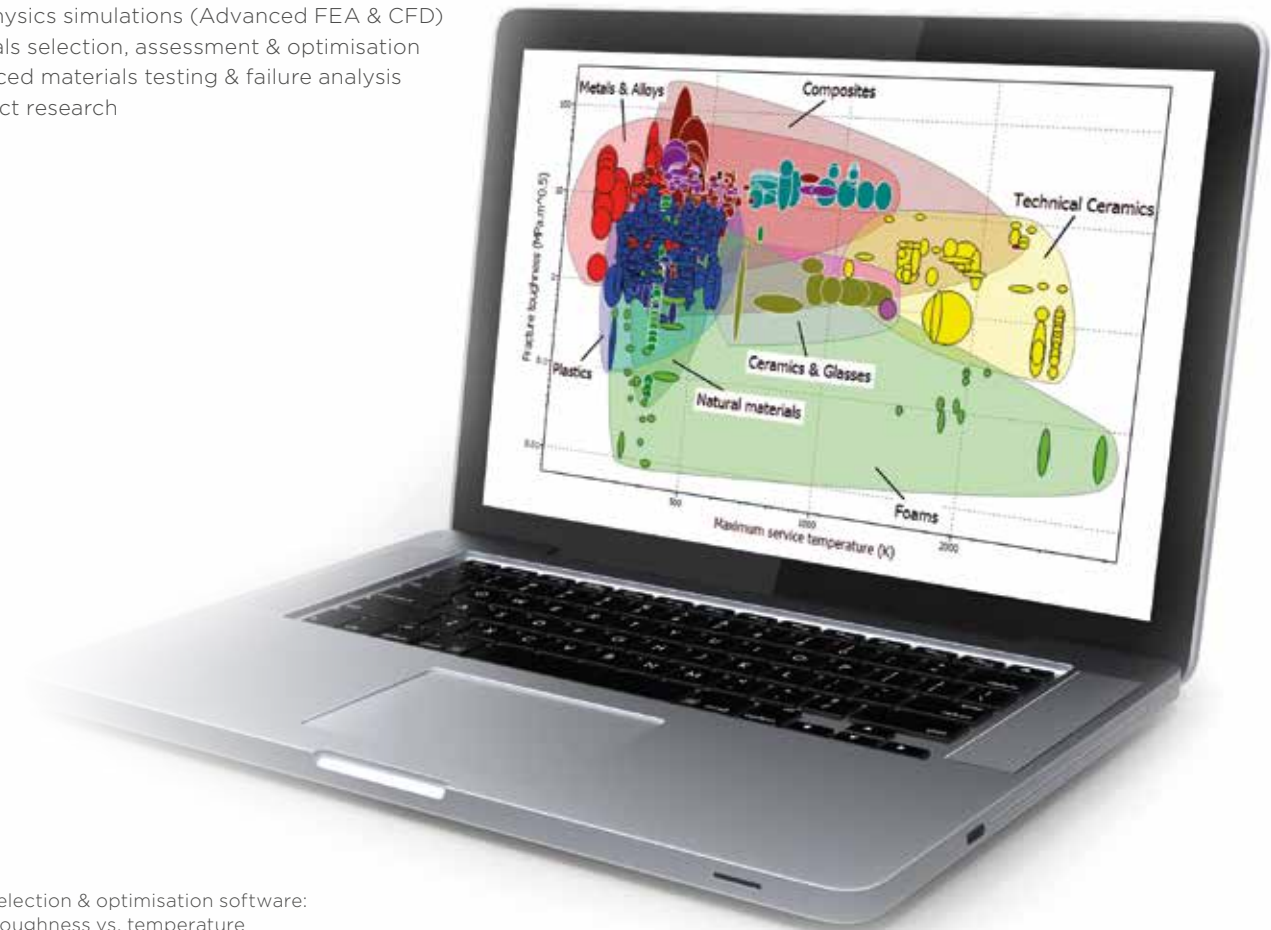
Model of cable displacement during short circuit conditions

This technology enables a better understanding of the forces acting on various trefoil cable cleat designs, the stresses and deformations observed and the subtle changes in cable cleat design or materials which result in dramatic changes in performance.

Under its founder, Dr Mark Yeoman, who has worked in the oil & gas, aerospace, automotive, chemical and biomedical industries, Continuum Blue offers over 15 years' experience in multiphysics modelling.

The company's full range of services includes:

- Multiphysics simulations (Advanced FEA & CFD)
- Materials selection, assessment & optimisation
- Advanced materials testing & failure analysis
- Contract research



Material selection & optimisation software: Fracture toughness vs. temperature

SIMULATIONS OF TREFOIL CABLE CLEATS DURING SHORT CIRCUIT

Trefoil cable formation is used where three phases are carried by three single core power cables, rather than a single multicore cable.

The advantage of installing three single core cables in such a configuration is that it minimises the induction of eddy currents, therefore reducing the effect of localised heating, whilst maintaining the current carrying capacity of the circuit.

Trefoil cable cleats are devices used to hold the three single core power cables in a triangular touching (trefoil) formation, along the length of the laid cables.

Short circuit fault conditions of single core cables in trefoil formation result in high dynamic electromagnetic forces; these forces need to be restrained correctly in order to prevent extensive damage to the cable management system, and more importantly potential injury.

Manufacturers of trefoil cable cleats are required to physically test their designs in an applied test, where

a section of three single core power cables are held with the cable cleats and then exposed to a three phase short circuit.

Each assembly of cable cleat, cable and applied current will yield a different result, so in theory an infinite number of tests are required. These physical tests can be costly in terms of both expense and time.

To avoid the inevitable delays in testing all of the possible permutations that may arise, a time-dependent multiphysics model including currents, induced electromagnetic forces, material plasticity and contact analysis has been set up. This can fully describe and simulate the dynamic load conditions on the cables and cable cleats during a short circuit fault condition.

This multiphysics model can be used to test and assess various cable cleat designs during a short circuit, in a fraction of the time taken to set up and carry out a physical short circuit test.

Every parameter is taken into consideration in the model such as peak fault current, cable diameter, conductor size and type, insulation thickness, cable cleat and liner material properties, cable cleat spacing etc.

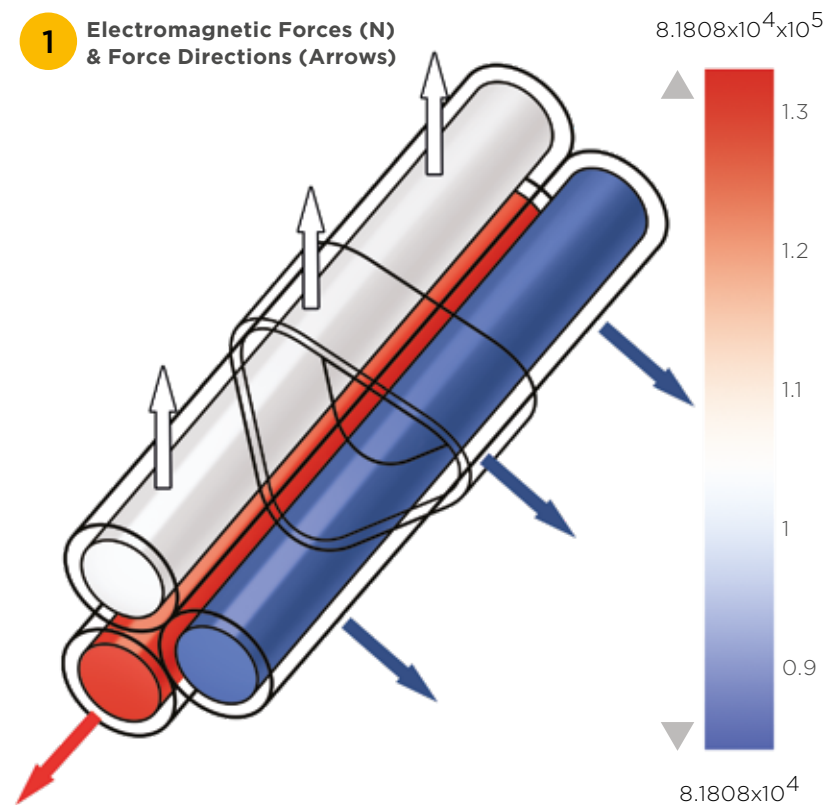
Example outputs of the model are shown below:

- 1 The electromechanical forces in Newtons, coupled with arrows showing the vector direction of forces acting upon each cable conductor at a specified point in time during the short circuit.
- 2 The displacement magnitude in mm of the cables caused by the electromagnetic forces acting upon them.
- 3 The von Mises stress in MPa of the cable cleat material caused by the cable displacement and dynamic load.

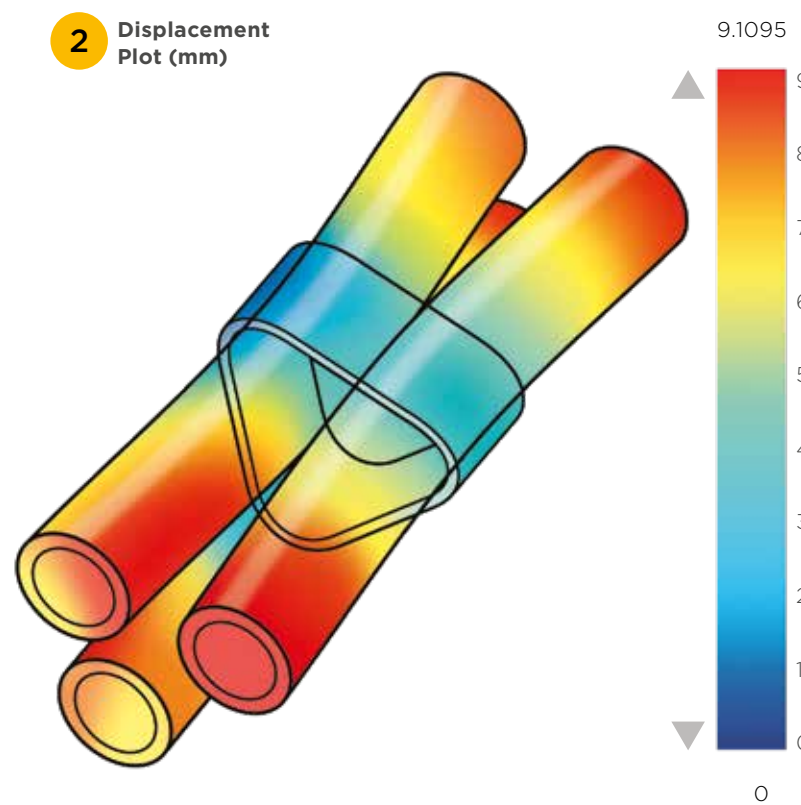
Comparisons between the model outputs, physical test data, and calculations given in the test standard, show an excellent correlation. Once the user inputs their defined parameters, the model calculates and displays the outputs which quickly indicate whether or not the selected cable cleat is safe enough to use in that particular application.

CABLE CLEAT VON MISES STRESS (MPa) CABLE DISPLACEMENT (mm) CABLE FORCES (N) ELECTROMAGNETIC FORCE (VECTOR DIRECTIONS)

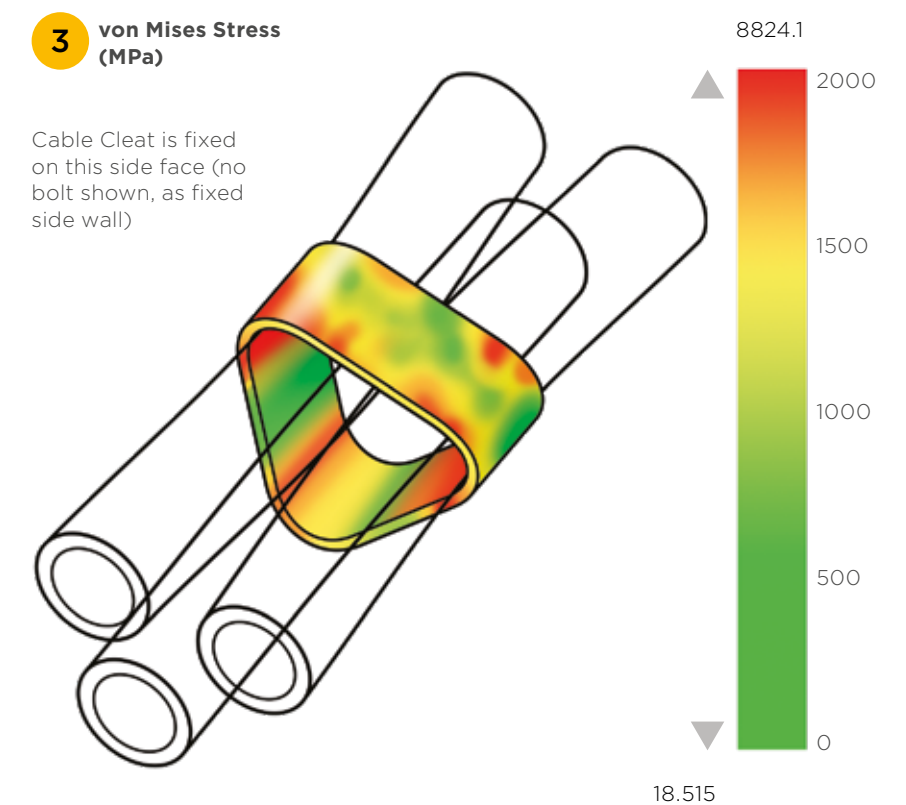
1 Electromagnetic Forces (N) & Force Directions (Arrows)



2 Displacement Plot (mm)



3 von Mises Stress (MPa)



CABLE FORMATIONS

Cable installations vary in design from one installation to the next. CMP cable cleats have been designed and tested in accordance with IEC 61914 to ensure that regardless of the cable formation there is a suitable cable cleat available for selection.

The advantage of installing three single core cables in such a configuration is that it minimises the induction of eddy currents, therefore reducing the effect of localised heating, whilst maintaining the current carrying capacity of the circuit.

Trefoil cable cleats are devices used to hold the three single core power cables in a triangular touching (trefoil) formation, along the length of the laid cables.

Short circuit fault conditions of single core cables in trefoil formation result in high dynamic electromagnetic forces; these forces need to be restrained correctly in order to prevent extensive damage to the cable management system, and more importantly potential loss of human life.

PARALLEL / FLAT FORMATION OF SINGLE CORE CABLES

The formation of a number of cables laid in a plane, usually with equal spacing between adjacent cables.

CMP Products manufactures a variety of cable cleats designed to support and restrain cables installed in parallel / flat formation, and manufacture these cable cleats in a number of materials to ensure that the cable cleat is suitable for its intended environment. The CMP Products cable cleats have also been tested for short circuit conditions in parallel / flat formation in accordance with IEC 61914.

TREFOIL FORMATION

The formation of three cables so laid to be mutually equidistant. Viewed in cross-section, the lines joining the cable centres form an equilateral triangle.

CMP Products manufactures several cable cleats designed and tested specifically for cables laid in trefoil formation. This range of cable cleats has been successfully tested and certified in accordance with IEC 61914, and these tests include some of the most extreme short circuit conditions ever tested, and greatest electromechanical forces on the cable ever experienced, by any cable cleat for the relevant cable diameters.

MULTICORE CABLE

Cable consisting of multiple conductors, with a common overall covering.

There are currently no standards for the testing of cable cleats during short circuit conditions when used with multicore cable. Nevertheless there is also a need to restrain, keep safe, and preserve the integrity of multicore cables, whether or not they are equipped with some form of mechanical protection or armour. Multicore cables by their very nature have additional layers of insulation and / or fillers as well as an outer jacket or sheath that are intended to keep them intact during their service life. It is a common assumption that the multicore cables which are equipped with armour and an outer jacket or sheath would contain the forces experienced during a short circuit. However, CMP Products continues to test its range of cable cleats on multicore cables during short circuit conditions, for project specific installations.

QUAD FORMATION

The formation of four cables so laid to be mutually equidistant. Viewed in cross-section, the lines joining the cable centres form a square.

For cables in quad formation, CMP offers a range of quad cable cleats to secure and support cables, to ensure uninterrupted operation and uptime of projects within the likes of I.T. data centres.

This range of cable cleats has been successfully tested and certified in quad formation in accordance with IEC 61914.



MATERIALS

CMP Products manufactures cable cleats from high quality materials, with excellent flame retardant properties, including products in the range that are approved to London Underground (LUL) Standard 1-085.

All of the CMP polymeric cable cleats have been tested in accordance with various standards that relate to flame propagation, vertical burning, flammability (oxygen index), halogen gas, toxic fume, and smoke emissions tests.

POLYMER:

NYLON

Standard nylon is tough, high tensile, and resistant to abrasion. This material is typically used for industrial applications where less harsh conditions exist.

LOW SMOKE & FUME (LSF), ZERO HALOGEN (LSOH) AND PHOSPHORUS FREE, VO NYLON

Nylon polymer, free of halogens and elemental phosphorus, providing a Low Smoke & Fume (LSF) solution. Rated V-0 to UL94, with very good flame retardant properties.

LUL

Flame retardant polymer, free of halogens and elemental phosphorus. It has excellent flame retardant properties and passes the most stringent tests for smoke and toxic fume emissions, making it compliant with the requirements of London Underground Standard 1-085.

METALLIC:

ALUMINIUM

Aluminium is remarkable for its low density and corrosion resistance due to the phenomenon of passivation. Corrosion resistance can be excellent due to a thin surface layer of aluminium oxide that forms when the metal is exposed to air, effectively preventing further oxidation.

The yield strength of pure aluminium is 7-11 MPa, whilst aluminium alloys have yield strengths ranging from 200 MPa to 600 Mpa.

Aluminium is non magnetic, making it suitable for use with single core cables, and does not easily ignite, ensuring that it does not contribute to the burning process in the event of a fire.

CMP utilises 5000 series copper free aluminium for its all-round performance characteristics including mechanical strength, durability, corrosion resistance and flame retardancy.

STAINLESS STEEL

The CMP Stainless Steel range of cable cleats is manufactured with type 316L Stainless Steel. Type 316L is more resistant to corrosion and pitting than more conventional Stainless Steels, and exhibits higher creep resistance, excellent tensile strength and rupture resistance at high temperatures.



ACCESSORIES

FASTENERS

The fasteners shown from pages 33 to 97 form an integral part of the cable cleat design and certification, and are included with the ordering references shown in each product selection table. They must not be substituted, or removed and replaced, with a different set of fasteners as this will inevitably change the performance of the installed cable cleat.

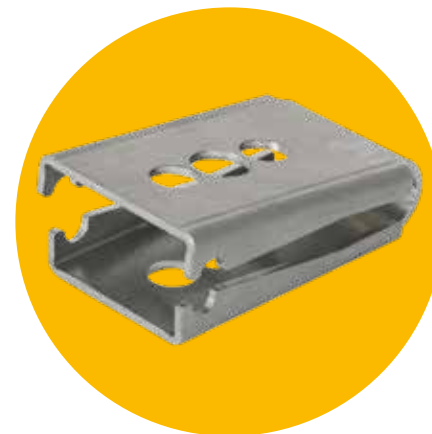
Additional fasteners required to secure the cable cleat to the support structure are not included with the ordering references shown in the selection table but can be supplied on request. See page 66 for guidance on Cleat Fixing Packs. If in doubt please consult CMP for further information.

LINERS (OR PADS)

All CMP cable cleats and intermediate restraints are supplied with liners. The liners are Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus free as standard. The Liners ensure the cable(s) do not have direct contact with the metallic cable cleat or intermediate restraint. Under short circuit conditions, these liners help to cushion the cables from the cable cleats and intermediate restraints during any such fault conditions. They also protect the cables from chafing, particularly in offshore / marine applications where movement between two modules or structures is common. Liners also assist with the restraining of cables when used in vertical cable run applications, where thermal elongation and axial movement occur.

WIRE MESH CABLE TRAY / BASKET CLIPS

The CMP Wire Mesh Cable Tray / Basket Clips are manufactured from 316L Stainless Steel and are designed to allow cable cleats to be safely installed onto wire mesh cable tray and / or basket. The CMP basket clip has one M12 and two M10 clearance holes, and slides over the mesh wires of the tray or basket to provide a secure fixing surface for the cable cleat. The CMP wire mesh cable tray / basket clips have been utilised and tested during short circuit conditions as specified in IEC 61914 'cable cleats for electrical installations'.



POWDER COATINGS

Powder coatings are available for all of our aluminium and stainless steel products. There are three types of powder coating available, each providing different properties for a range of environments.

EPOXY COATING (EC)

Excellent durability, corrosion resistance, chemical resistance and impact resistance. Only suitable for indoor applications (poor UV resistance and heat tolerance).

POLYESTER COATING (PC)

Excellent durability with good chemical resistance, impact resistance and resistance to yellowing under UV light. Suitable for all interior and some exterior applications (good UV resistance).

THERMOPLASTIC COATING (TC)

Excellent durability, corrosion resistance, chemical resistance, impact resistance, resistance to salt spray and weathering. The TC coating is Low Smoke and Fume, Halogen Free and LUL approved. Suitable for all interior and exterior applications (Excellent UV resistance).

ORDERING CODES

- ADD EC SUFFIX TO ORDER REFERENCE FOR AN EPOXY COATED PRODUCT
- ADD PC SUFFIX TO ORDER REFERENCE FOR A POLYESTER COATED PRODUCT
- ADD TC SUFFIX TO ORDER REFERENCE FOR A THERMOPLASTIC COATED PRODUCT

GALVANIC CORROSION (BI-METALLIC CORROSION)

Galvanic corrosion (Bi-metallic corrosion) is the corrosion that occurs when dissimilar metals are in contact in the presence of an electrolyte (water for example).

Dissimilar metals and alloys have different electrode potentials, and when two or more come into contact with an electrolyte, one metal acts as an anode and the other as a cathode. The electrolyte is required as it acts as a path for ion migration between the two metals, and the electro-potential difference between the dissimilar metals causes the anode metal to dissolve into the electrolyte, creating deposits on the cathode metal. The least noble (or most active / anodic) will oxidise or corrode.

Generally the further apart the materials are in the 'galvanic series' or 'anodic index', the greater the risk of galvanic corrosion between them. As a result, users of this data can either select materials that are compatible, or else take preventative measures to isolate the combination of metals, by introducing a protective coating or insulating layer (CMP cleat isolation pad for example) to mitigate the risk. Note: if there is no electrolyte present, galvanic corrosion will either not occur or be insignificant.

If the cable ladder is galvanized (zinc plated) steel, and stainless steel cable cleats are to be installed, then mild steel (the substrate of the cable ladder) is less noble - or more active (anodic) than stainless steel which is less active (cathodic) in the galvanic corrosion series table, therefore the sacrificial zinc plating on the mild steel ladder will oxidise and protect the mild steel substrate if an electrolyte is present.

The relative surface areas of the two metals is also a factor; if the most active metal (such as zinc plated steel) has a larger surface area than the least active metal (such as stainless steel) then it may negate the effects of any galvanic corrosion. Relating this to cable cleats, we know that the relative surface area of the cable ladder is far greater than that of the cable cleats fitted to it and as such, the risk of galvanic corrosion is very low. Of course, in a harsh corrosive environment it would still be advisable to fit CMP cleat isolation pads.

In another example, if the support structure (such as cable ladder) is stainless steel (least active), installing aluminium (most active) cable cleats would put the aluminium cable cleats at risk of galvanic corrosion. To mitigate this requires either the cleats to have a protective coating or CMP cleat isolation pads to be fitted.

GENERIC CORROSION DATA TABLE

GALVANIC CORROSION TABLE						
DIRECT CONNECTION OF METAL TO METAL SURFACE CONTACT WITHOUT INTERVENTION OR ISOLATION	ALUMINIUM	CAST IRON	GALVANISED STEEL	MILD STEEL	STAINLESS STEEL	ZINC
ALUMINIUM						
CAST IRON						
GALVANISED STEEL						
MILD STEEL						
STAINLESS STEEL						
ZINC						

Galvanic corrosion will not occur	Galvanic corrosion insignificant	Galvanic corrosion may occur	Galvanic corrosion will occur
-----------------------------------	----------------------------------	------------------------------	-------------------------------

CABLE CLEAT FIXINGS/SUPPORT STRUCTURE GALVANIC CORROSION TABLE

CMP CABLE CLEAT MATERIAL				
MATERIAL OF CABLE MANAGEMENT / SUPPORT STRUCTURE	SINGLE BOLT AND TWO BOLT CLEAT NYLON	SINGLE BOLT AND TWO BOLT CLEAT ALUMINIUM	316L GRADE STAINLESS STEEL	5000 SERIES ALUMINIUM
	RECOMMENDED FASTENER MATERIAL			
ALUMINIUM	Zinc plated steel	Zinc plated steel	Zinc plated steel	Zinc plated steel
GALVANISED STEEL	Zinc plated steel	Zinc plated steel	Zinc plated steel	Zinc plated steel
GRP	Zinc plated steel	Zinc plated steel	Stainless steel 316	Zinc plated steel
MILD STEEL	Zinc plated steel	Zinc plated steel	Zinc plated steel	Zinc plated steel
STAINLESS STEEL	Stainless steel 316	Stainless steel 316	Stainless steel 316	Stainless steel 316

INTERMEDIATE RESTRAINTS

Intermediate Restraints are cable restraining devices designed to be used with cable cleats, without being attached to the mounting surface, to hold the cables together in order to provide resistance to electromechanical forces.

All CMP's Intermediate Restraints have been designed, constructed, and third party tested and certified in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

CMP offers three main types of intermediate restraint; the SDDSSIR and STR ranges for trefoil installations and the QSDSS range for quad installations. Please see the compatibility table below. All types are manufactured in 316L stainless steel, providing excellent corrosion resistance, and have Low Smoke and Fume (LSF) liners as standard.

All types of Intermediate Restraint are designed to be installed at mid-point between cable cleats.

The use of Intermediate Restraints as part of the cable management system can be a safe cost-effective method when compared to a cable cleat only installation, reducing the number of cable cleats by 50% in most systems. In addition to this cost reduction, installation time is also reduced by employing a cable cleat and intermediate restraint solution when compared to cable cleat only installations, as the intermediate restraint is not secured to the mounting surface.

INTERMEDIATE RESTRAINT TYPE	CABLE CLEAT TYPE								
	SOVEREIGN	CONQUEROR	PATRIOT		ENDURANCE	EVEREST	CYCLONE I	CYCLONE II	CYCLONE III
	HDSS	RTSS	SDSS	SDSS-H	SDSS-C	HVSS-CC	1CYC	2CYC	3CYC
SDDSSIR	X	X	✓	✓	✓	X	X	X	X
ZSTR	X	X	✓	✓	✓	X	✓	✓	X
3STR	✓	✓	X	X	X	✓	X	X	✓
QSDSS	X	X	X	X	X	X	X	X	X

INTERMEDIATE RESTRAINT TYPE	CABLE CLEAT TYPE							
	RELIANCE	HURON	CENTURION	LEGION	TITAN	SPHINX	SATURN	MERCURY
	SDAL	LDAL	LDAL-B	LDAL-C	SCSS	SCAL	QSDSS	QHDSS
SDDSSIR	✓	✓	✓	✓	X	X	X	X
ZSTR	✓	✓	✓	✓	X	X	X	X
3STR	X	X	X	X	✓	✓	X	✓
QSDSS	X	X	X	X	X	X	✓	X

The above table should be used as a guide for the selection of the correct intermediate restraints to be installed with the desired cable cleat, this will be dependent on the installation parameters such as the short circuit fault conditions and centre-to-centre conductor distances. Even when relatively low short circuits are anticipated which produce relatively low electromechanical forces, CMP advises the use of intermediate restraints for installations where cable cleats are spaced 1200mm or greater. These intermediate restraints should be installed at mid-point between cable cleats to prevent unnecessary 'bird caging' effects, which can cause damage to the cables and to other surrounding equipment, as well as potentially personnel whom may be in the vicinity during such a short circuit fault.

WITHOUT INTERMEDIATE RESTRAINTS



WITH INTERMEDIATE RESTRAINTS



FIRE PERFORMANCE

Various international standards aim to ensure that the level of circuit integrity is not compromised by other components of the electrical system, including cable glands, terminations, joints, and cable support systems.

The need for fire performance cables to perform in the event of a fire is more prevalent today than ever before, and the dangers of fire threatens the safety of people and the continuous functioning of electrical circuits that are required to maintain circuit integrity.

When installing fire performance cables, the resistance to fire of the cable fixings should be at least equivalent to the survival time for the cable, allowing the cable to continue operating as intended. The fire performance of these cable management systems should take into account, fire survival, fire resistance, flame retardancy, flame propagation, smoke toxicity and emissions.

CMP PRODUCTS MANUFACTURES CABLE CLEATS SPECIFICALLY FOR THESE APPLICATIONS:

- To safely support and restrain cables for means of escape, whilst maintaining circuit integrity
- To safely support and restrain cable for means of fire-fighting, whilst maintaining circuit integrity
- All composite materials of cable cleats (where applicable) are produced in Low, Smoke, and Fume (LSF) as standard
- All composite materials of cable cleats (where applicable) are produced in VO in accordance with UL94 as standard
- LUL approved and certified polymers are available on request for some of the most stringent smoke toxicity and smoke emission testing

CMP Products' range of fire performance cable cleats has been rigorously tested to temperatures of 1,200°C including periodic water spray and shock testing. The range is certified to EN50200, BS5839, BS8491, BS8434 and AS-NZS 3013, providing fire survival times of up to 120 minutes. CMP fire rated cleats comply with BS 8519:2020.

CLASSIFICATIONS

FLAMMABILITY CLASSES (UL94)

The classification of the ignition and burning resistance characteristics of materials other than metal or ceramic:

CLASSIFICATION	V-0	V-1	V-2
Number of flame applications per sample	2 x 10	2 x 10	2 x 10
Maximum burning time of one sample (seconds)	≤ 10	≤ 30	≤ 30
Maximum burning time of five samples (seconds)	≤ 50	≤ 250	≤ 250
Allowable dripping and subsequent ignition of cotton below	No	No	Yes
Allowable afterglow remaining for: (seconds)	≤ 30	≤ 60	≤ 60

HB - Slow burning on a horizontal specimen; burning rate < 76 mm/min for thickness < 3 mm.

IMPACT CLASSIFICATION (IEC 61914)

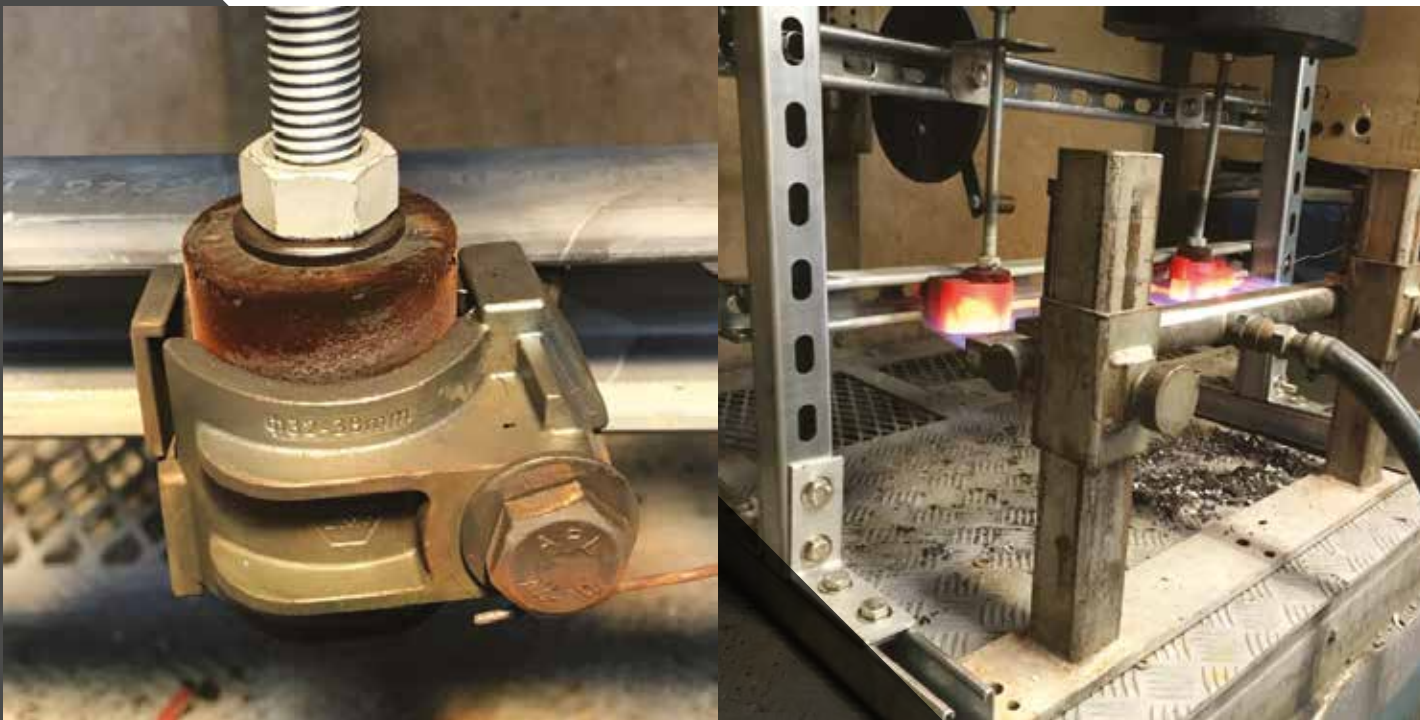
CLASSIFICATION	IMPACT ENERGY (J)	EQUIVALENT MASS (KG)	HEIGHT MM (3 1%)
Very light	0.5	0.25	200
Light	1.0	0.25	400
Medium	2.0	0.5	400
Heavy	5.0	1.7	300
Very heavy	20.0	5.0	400

CORROSION RESISTANCE (IEC 61914)

CLASSIFICATION	TYPICAL USAGE	MEAN ZINC LAYER THICKNESS (μm)	MINIMUM ZINC LAYER THICKNESS (μm)	SALT SPRAY DURATION (H)
Low	Indoor, dry locations	5	3.5	24
High	Outdoor, wet locations	25	18	192

Resistance to corrosion (IEC 61914 - Clause 11.2)

'Stainless Steel containing at least 16% chromium need not be tested and are assumed to meet the classification for high resistance to corrosion.'



BESPOKE PRODUCTS FOR COMPLEX CHALLENGES

CMP's cleat development team have extensive experience working alongside our clients to develop bespoke products for complex and unusual applications

Access to rapid prototyping and Finite Element Analysis (FEA) means we are able to simulate short circuit testing, life time analysis and thermal analysis

and adjust the design throughout the development process, to ensure the solutions meet the requirements of the project.

Third Party Testing is also available depending on client requirements.



Support Cleat for Single cables for a power plant project



Bespoke design for support arms complete with modified trefoil cleats for a bridge project



A variation on a solution for multi-core cables to allow two cables to be stacked in a rail application with restricted cable tray width.



Fabricated assembly to enable mounting of 2BCHT cleats to existing framework in an Oil and Gas Complex

BESPOKE SOLUTIONS HV & JOINTING BAYS



CMP engineered bespoke cable cleat solutions for Singapore Tunnel, a project designed to futureproof Singapore's electricity supply for the next 120 years.

The project required cable cleats to suit 230kV and 400kV cables, with diameters of up to 190mm.



At a glance



Challenge



Solution

Housed in cable ducts, cable cleats were required to restrain circuits of 230kV and 400kV cables. It was essential for the cleats to allow cables to thermally expand and contract during normal operation, as well as safely restrain the cables during short circuit conditions.

CMP was presented with a range of challenges which were taken into account when designing the bespoke products for example the cables had to be 'snaked' horizontally within cable ducts, allowing for thermal expansion and contraction, so the cleats had to work as a system with some being rigidly fixed and some allowed to slide as the cable moved.

Other challenges included cable spacing, cable weight, short circuit testing, and product life span and time constraints.

A trefoil 400kV solution was developed from 316L Stainless Steel, with a fibre reinforced plastic (FRP) low smoke & fume insert. This was followed by a similar trefoil design for the 230kV cable.

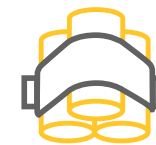
Single cable cleats and a large range of special 'joint bay' cleats were also developed to restrain the cables in the areas where they are 'transposed' and two lengths are joined together.

CMP carried out finite element analysis (FEA) to simulate short circuit testing, life time analysis and thermal analysis to identify how cables perform when installed (pictured below).

ENHANCING THE VALUE OF YOUR PROJECTS WITH OUR BESPOKE ENGINEERING SERVICES

Our team of technical experts can provide support to your projects at no additional cost, through a range of engineering services.

OUR SERVICES INCLUDE:



INSTALLATION TRIALS

We have a state of the art laboratory and R&D centre where we can conduct installation trials with your cables, as well as performing all manner of tests to prove our products are a reliable solution for your project.



GLOBAL TRAINING

We offer free of charge training globally to installers, engineers and site inspectors on the correct selection and installation of all of our product ranges. All attendees receive a certificate of competence following training.



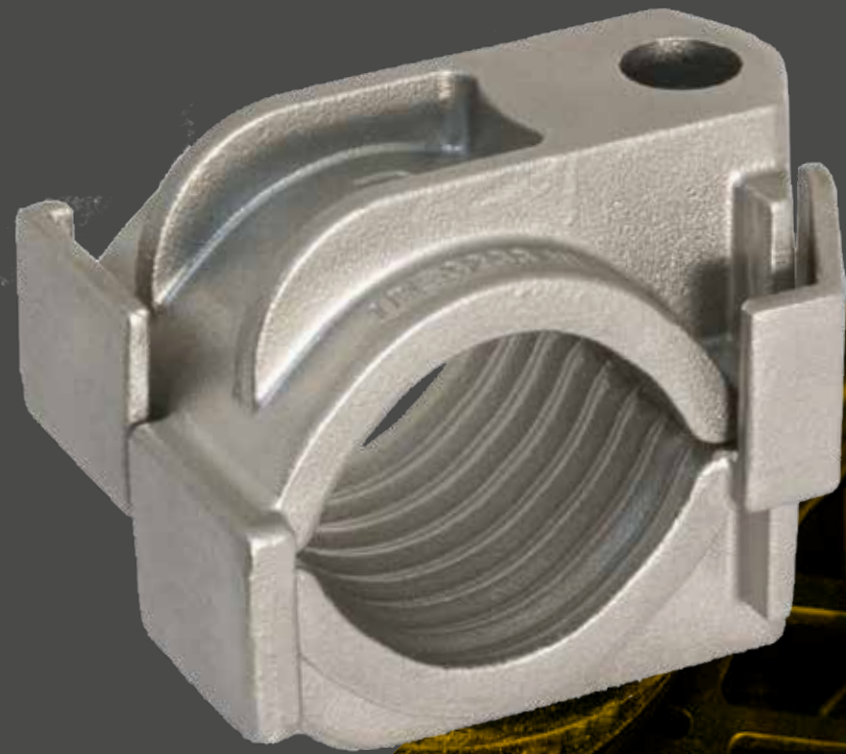
FINITE ELEMENT ANALYSIS (FEA)

Specialist software, developed with Continuum Blue, and utilised across hundreds of projects. CMP's FEA software allows engineers to simulate their cable installations under the conditions faced in real life scenarios.



SHORT CIRCUIT CLEAT SPACING CALCULATIONS

Performing short circuit cleat spacing calculations ensures cables on projects are safely restrained in the event of a short circuit fault. These calculations are based around short circuit electromechanical force withstand, to ensure that the best suited cable cleat is proposed for the project. CMP's cable cleat selector is available on the website to perform spacing calculations.



SINGLE/MULTICORE FORMATION CABLE CLEATS

CMP offers a range of high quality cable cleats for single/multicore cables covering a range of industrial applications from offshore wind farms to petrochemical plants.

The range is available vast number of materials to suit varying application requirements, including 316L stainless steel, UL94 VO nylon and aluminium.

Wherever you're installing cable cleats, on any mounting surface or structure, CMP's range of fixing options have you covered through a variety of fixing options. C-Clamps are also available for un-slotted rungs, see page 114.

View the full range of the following pages >

SABRE (1BC PLASTIC)

The Sabre One Bolt single cable cleat is a non-metallic cable cleat which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

It ensures the retention and securing of single cables, without damaging or deforming the cable. The cable cleat is manufactured from various materials making it suitable for both indoor and outdoor applications. Due to its unique twin arc internal patent pending design profile it exhibits excellent retention, limiting both the axial and lateral cable movement. The Sabre One Bolt cable cleat is available in ten sizes suitable for cable diameters of 10mm up to 57mm. This cable cleat has an M10 clearance hole for securing it to a mounting surface.

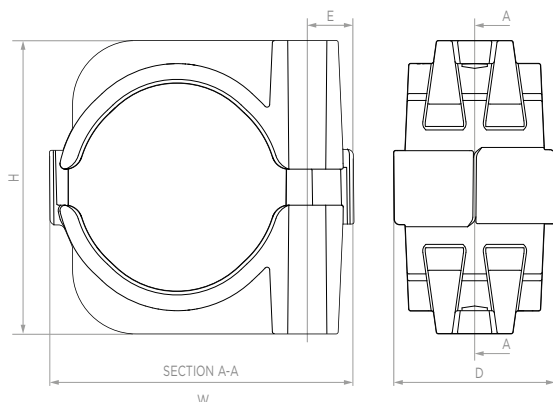
FEATURES

- Third party certification to IEC 61914
- Available in three different materials:
 - Nylon
 - Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free, VO Nylon
 - LUL approved polymer
- Sunlight (UV) and weather resistant
- Operating temperature -40°C to +60°C
- 10 - 57mm in 10 sizes
- Excellent axial and lateral load retention
- Single bolt fixing design



TECHNICAL DATA & CLASSIFICATION	
TYPE	Type 6.1.2. Non Metallic 1BC - One Bolt Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-40°C to +60°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	1kN - 1.25kN IEC 61914 clause 9.3
AXIAL LOAD TEST	0.5kN-1kN IEC61914 clause 9.4
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
UV RESISTANCE	Pass IEC 61914 clause 6.5.1.2, 11.1
MATERIAL	Standard Nylon, UL94 VO Nylon or LUL Approved Polymer Note: VO Nylon and LUL Polymer are Low Smoke and Fume Zero Halogen (LSFOH) and Phosphorus-free
MATERIAL COLOUR	Black

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5		
MULTICORE FORMATION	PARALLEL FORMATION	
One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres 105mm cable centres
0.1 sec	0.1 sec	0.1 sec
113kA Peak	99kA Peak	68kA Peak
51.3kA r.m.s	47.1kA r.m.s	32.3kA r.m.s



CABLE CLEAT SELECTION TABLE							
SABRE PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM					WEIGHT (g) *(LUL +5%)
		W	H	D	E	FIXING HOLE Ø	
1BC1013	10 - 13	41	34	46	13	1 x M10	23
1BC1316	13 - 16	44	37	46	13	1 x M10	26
1BC1619	16 - 19	47	40	46	13	1 x M10	30
1BC1923	19 - 23	51	44	46	13	1 x M10	34
1BC2327	23 - 27	54	48	46	13	1 x M10	38
1BC2732	27 - 32	61	56	46	13	1 x M10	47
1BC3238	32 - 38	67	62	46	13	1 x M10	53
1BC3846	38 - 46	75	73	46	13	1 x M10	68
1BC4651	46 - 51	81	77	46	13	1 x M10	79
1BC5157	51 - 57	86	83	46	13	1 x M10	88

Order reference examples: for standard nylon 1BC1013, for LSF suffix Z (1BC1013Z), for LUL approved polymer suffix LUL (1BC1013LUL). * LUL products are 5% heavier than the weights shown in table. Fasteners required to secure the cable cleat to the support structure are not included with the ordering references shown in the selection table but can be supplied on request - see cleat fixing pack TDS752. For lateral and axial load ratings or short circuit ratings of LUL polymer products, please contact CMP.

FALCON (2BC PLASTIC)

The Falcon Two Bolt single cable cleat is a non-metallic cable cleat which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

It ensures the retention and securing of single cables, without damaging or deforming the cable. The cable cleat is manufactured from various materials making it suitable for both indoor and outdoor applications. Due to its unique twin arc internal patent pending design profile it exhibits excellent retention, limiting both the axial and lateral movement. The Falcon Two Bolt cable cleats have an excellent range take and are suitable for cable diameters of 38mm up to 135mm in only eight sizes. This cable cleat has two M12 clearance holes for securing it to a mounting surface, which allows for either M10 or M12 fasteners to be used.

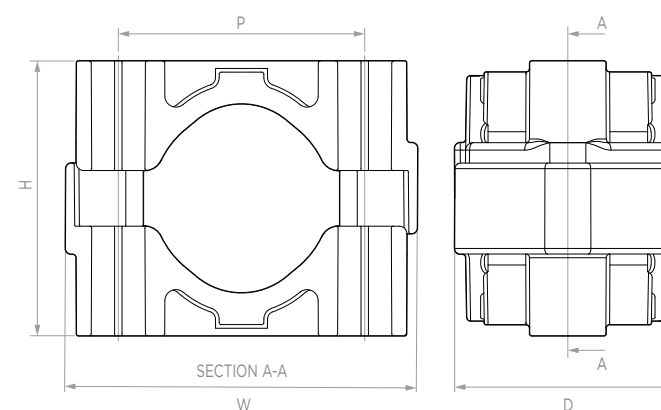
FEATURES

- Third party certification to IEC 61914
- Available in three different materials:
 - Nylon
 - Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free, VO Nylon
 - LUL approved polymer
- Sunlight (UV) and weather resistant
- Operating temperature -40°C to +60°C
- Can be double stacked
- 38 - 135mm in 8 sizes
- Excellent axial and lateral load retention
- Two bolt fixing design



TECHNICAL DATA & CLASSIFICATION	
TYPE	Type 6.1.2. Non Metallic 2BC - Two Bolt Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-40°C to +60°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	16kN - 26kN, IEC 61914 clause 9.3
AXIAL LOAD TEST	2.75kN - 5kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
UV RESISTANCE	Pass - IEC 61914 clause 6.5.1.2, 11.1
MATERIAL	Standard Nylon, UL94 VO Nylon or LUL Approved Polymer Note: VO Nylon and LUL Polymer are Low Smoke and Fume Zero Halogen (LSFOH) and Phosphorus-free
MATERIAL COLOUR	Black

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5		
MULTICORE FORMATION	PARALLEL FORMATION	
Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres
0.1 sec	0.1 sec	0.1 sec
76kA Peak	110kA Peak	86kA Peak
36.2kA r.m.s	50.0kA r.m.s	40.9kA r.m.s



CABLE CLEAT SELECTION TABLE							
FALCON PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM					WEIGHT (g) *(LUL +5%)
		W	H	D	P	FIXING HOLE Ø	
2BC038048	38 - 48	96	74	61	65 - 69	2 x M10 / M12	124
2BC048058	48 - 58	107	84	61	76 - 80	2 x M10 / M12	146
2BC058070	58 - 70	119	97	61	88 - 92	2 x M10 / M12	176
2BC070083	70 - 83	133	110	61	102 - 106	2 x M10 / M12	211
2BC083097	83 - 97	147	124	61	116 - 120	2 x M10 / M12	242
2BC096109	96 - 109	160	136	61	129 - 133	2 x M10 / M12	276
2BC106120	106 - 120	172	148	61	141 - 145	2 x M10 / M12	310
2BC120135	120 - 135	187	163	61	156 - 160	2 x M10 / M12	349

Order reference examples: for standard nylon 2BC038048, for LSF suffix Z (2BC038048Z), for LUL approved polymer suffix LUL (2BC038048LUL). * LUL products are 5% heavier than the weights shown in table. Fasteners required to secure the cable cleat to the support structure are not included with the ordering references shown in the selection table but can be supplied on request - see cleat fixing pack TDS752. For lateral and axial load ratings or short circuit ratings of LUL polymer products, please contact CMP.

VALIANT (1BCAL)

The Valiant One Bolt Aluminium single cable cleat is a metallic cleat which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

It ensures the retention and securing of single cables, without damaging or deforming the cable. The cable cleat is manufactured from high pressure die cast aluminium (LM20) making it suitable for both indoor and outdoor applications. Due to its unique twin arc internal patent pending design profile it exhibits excellent retention, limiting both the axial and lateral movement. The Valiant One Bolt cable cleat is available in twelve sizes suitable for cable diameters of 10mm up to 71mm. The cable cleat has an M10 clearance hole for securing it to a mounting surface.

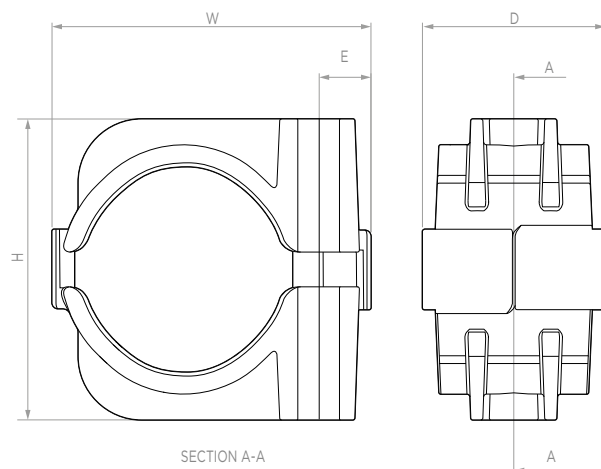
FEATURES

- Third party certification to IEC 61914
- Available in high pressure die cast aluminium
- Sunlight (UV) resistant
- Operating temperature -60°C to +150°C
- Can be double stacked
- 10 - 71mm in 12 sizes
- Excellent axial & lateral load retention
- Single bolt fixing design



TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.1 Metallic 1BCAL - One Bolt Aluminium Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +150°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	5kN - 6kN IEC 61914 clause 9.3
AXIAL LOAD TEST	1.5kN IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	High pressure die cast aluminium
MATERIAL COLOUR	Silver / grey
UL CERTIFICATE	E490770
UL STANDARD(S) FOR SAFETY	UL 2239, Support of Conduit, Tubing, and Cable. CSA-C22.2 No. 18.4-15, Hardware for the support of Conduit, Tubing, and Cable.

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
MULTICORE FORMATION		PARALLEL FORMATION	
One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres
0.1 sec	0.1 sec	0.1 sec	0.1 sec
118kA Peak	89kA Peak	90kA Peak	76kA Peak
53.6kA r.m.s	42.3kA r.m.s	42.8kA r.m.s	36.1kA r.m.s



CABLE CLEAT SELECTION TABLE								
VALIANT PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM					FIXING HOLE Ø	WEIGHT (g) *(LUL +5%)
		W	H	D	E			
1BC1013A	10 - 13	41	34	46	13	1 x M10	57	
1BC1316A	13 - 16	44	37	46	13	1 x M10	66	
1BC1619A	16 - 19	47	40	46	13	1 x M10	74	
1BC1923A	19 - 23	51	44	46	13	1 x M10	83	
1BC2327A	23 - 27	55	48	46	13	1 x M10	93	
1BC2732A	27 - 32	61	56	46	13	1 x M10	114	
1BC3238A	32 - 38	67	62	46	13	1 x M10	130	
1BC3845A	38 - 45	75	73	46	13	1 x M10	162	
1BC4551A	45 - 51	81	76	46	13	1 x M10	181	
1BC5158A	51 - 58	86	83	46	13	1 x M10	199	
1BC5865A	58 - 65	94	90	46	13	1 x M10	222	
1BC6571A	65 - 71	101	97	46	13	1 x M10	240	

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (1BC1013AEC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

ZENITH (2BCAL)

The Zenith Two Bolt single cable cleat is a metallic cable cleat which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

It ensures the retention and securing of single cables, without damaging or deforming the cable. The cable cleat is manufactured from high pressure die cast aluminium (LM20) making it suitable for both indoor and outdoor applications. Due to its unique twin arc internal patent pending design profile it exhibits excellent retention, limiting both the axial and lateral movement. The Zenith Two Bolt cable cleats have an excellent range take and are suitable for cable diameters of 38mm up to 151mm in only nine sizes. This cable cleat has two M12 clearance holes for securing it to a mounting surface, which allows for either M10 or M12 fasteners to be used.

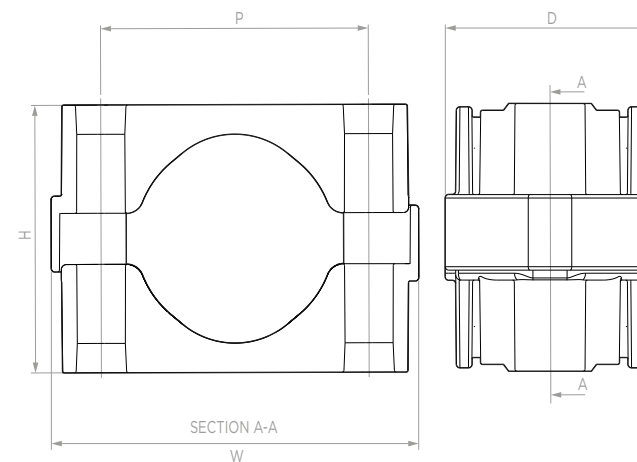


TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.1 Metallic 2BCAL - Two Bolt Aluminium Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +150°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	18kN - 32kN, IEC 61914 clause 9.3
AXIAL LOAD TEST	8kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	High pressure die cast aluminium
MATERIAL COLOUR	Silver / grey

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5					
MULTICORE FORMATION			PARALLEL FORMATION		
One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres
0.1 sec	0.1 sec	0.1 sec	0.1 sec	1 sec	1 sec
102kA Peak	102kA Peak	130kA Peak	120kA Peak	81kA Peak	71kA Peak
48.6kA r.m.s	48.6kA r.m.s	59.0kA r.m.s	54.5kA r.m.s	36.8kA r.m.s	32.2kA r.m.s

FEATURES

- Third party certification to IEC 61914
- Available in high pressure die cast aluminium
- Sunlight (UV) & weather resistant
- Operating temperature -60°C to +150°C
- Can be double stacked
- 38 - 151mm in 9 sizes
- Excellent axial & lateral load retention
- Two bolt fixing design



CABLE CLEAT SELECTION TABLE								
ZENITH PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM					FIXING HOLE Ø	WEIGHT (g)
		W	H	D	P			
2BC038048A	38 - 48	96	68	61	67	2 x M10 / M12	250	
2BC048058A	48 - 58	107	78	61	78	2 x M10 / M12	297	
2BC058070A	58 - 70	119	91	61	90	2 x M10 / M12	357	
2BC070083A	70 - 83	133	104	61	104	2 x M10 / M12	420	
2BC083097A	83 - 97	147	118	61	118	2 x M10 / M12	484	
2BC096109A	96 - 109	160	130	61	131	2 x M10 / M12	549	
2BC106120A	106 - 120	172	142	61	143	2 x M10 / M12	616	
2BC120135A	120 - 135	187	157	61	158	2 x M10 / M12	693	
2BC135151A	135 - 151	201	174	61	172	2 x M10 / M12	768	

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (2BC038048AEC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

ZENITH (2BCALFL)

The Zenith Two Bolt single cable cleat is a metallic cable cleat which has been designed, constructed, and tested in accordance with the International Standard 'cable cleats for Electrical Installations' (IEC 61914).

It ensures the retention and securing of single cables, without damaging or deforming the cable. The cable cleat is manufactured from high pressure die cast aluminium (LM20) making it suitable for both indoor and outdoor applications. Due to its unique twin arc internal patent pending design profile it exhibits excellent retention, limiting both the axial and lateral movement. The Zenith Two Bolt cable cleats have an excellent range take and are suitable for cable diameters of 34mm up to 147mm in only nine sizes. This cable cleat has two M12 clearance holes for securing it to a mounting surface, which allows for either M10 or M12 fasteners to be used.

Product supplied with fixed LSF liner.

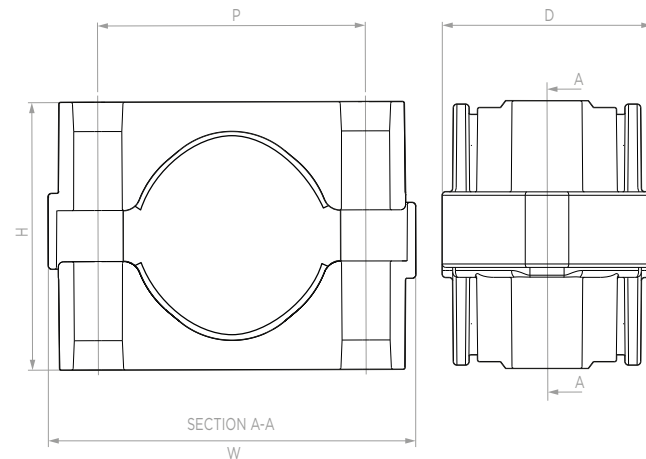


TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.1 Metallic 2BCAL - Two Bolt Aluminium Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to 150°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	18kN - 32kN, IEC 61914 clause 9.3
AXIAL LOAD TEST	8kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	High pressure die cast aluminium & low smoke & fume (LSF) liner
MATERIAL COLOUR	Silver / grey

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5					
MULTICORE FORMATION		PARALLEL FORMATION			
One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres
0.1 sec	0.1 sec	0.1 sec	0.1 sec	1 sec	1 sec
102kA Peak	102kA Peak	130kA Peak	120kA Peak	81kA Peak	71kA Peak
48.6kA r.m.s	48.6kA r.m.s	59.0kA r.m.s	54.5kA r.m.s	36.8kA r.m.s	32.2kA r.m.s

FEATURES

- Third party certification to IEC 61914
- Available in high pressure die cast aluminium
- Sunlight (UV) & weather resistant
- Operating temperature -60°C to 150°C
- Can be double stacked
- 34 - 147mm in 9 sizes
- Excellent axial & lateral load retention
- Two bolt fixing design
- Low smoke & fume (LSF) liners



CABLE CLEAT SELECTION TABLE							
ZENITH PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS mm					WEIGHT (g)
		W	H	D	P	FIXING HOLE Ø	
2BC038048AFL	34 - 44	96	68	61	67	2 x M10 / M12	250
2BC048058AFL	44 - 54	107	78	61	78	2 x M10 / M12	297
2BC058070AFL	54 - 66	119	91	61	90	2 x M10 / M12	357
2BC070083AFL	66 - 79	133	104	61	104	2 x M10 / M12	420
2BC083097AFL	79 - 93	147	118	61	118	2 x M10 / M12	484
2BC096109AFL	92 - 105	160	130	61	131	2 x M10 / M12	549
2BC106120AFL	102 - 116	172	142	61	143	2 x M10 / M12	616
2BC120135AFL	116 - 131	187	157	61	158	2 x M10 / M12	693
2BC135151AFL	131 - 147	201	174	61	172	2 x M10 / M12	768

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (2BC038048AFLEC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack page 64-65. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied upon request - see isolation/separation pad page 66.

SOLACE (1BCHT)

The Solace Heavy Duty, One Bolt, High Temperature Fire Rated Stainless Steel single cable cleat is a cast metallic cleat which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

These Fire Rated cable cleats can be used with fire performance cables to ensure the safe retention and securing of single cables in the event of a wiring system being affected by fire. These fire resisting supports help to maintain the electrical system's integrity for any critical circuits during an emergency situation to enable safe evacuation. The cable cleat is manufactured from Stainless Steel 316L making it suitable for both indoor and outdoor applications. Due to its unique twin arc internal patent pending design profile it exhibits excellent retention, limiting both the axial and lateral movement.

The Solace One Bolt High Temperature Stainless Steel cable cleat is available in twelve sizes suitable for cable diameters of 10mm up to 71mm. The cable cleat has an M10 clearance hole for securing it to a mounting surface.



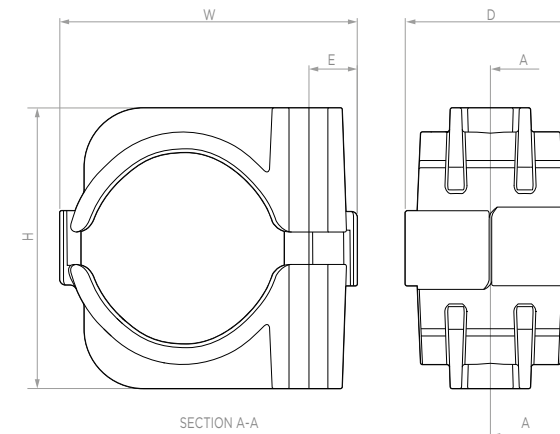
FEATURES

- 316L Stainless Steel
- Operating temperature -60°C to +250°C
- Surpasses requirements of Fire testing BS5839 / BS8491 / EN50200 / BS8434 / AS-NZS 3013 (1,200°C) (Fire, shock & water)
- 10 - 71mm cable range take in 12 sizes
- Single bolt fixing design
- Can be stacked
- Excellent axial & lateral load retention
- Corrosion resistant

BS 5839 'Fire detection and fire alarm systems for buildings. Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises'

States that "Methods of cable support should be non-combustible and such that circuit integrity will not be reduced below that afforded by the cable used, and should withstand a similar temperature and duration to that of the cable, while maintaining adequate support"

To adhere to this BS1 standard fire rated Cable Cleats must be used to support the cable in the event of a fire.



TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.1 Metallic 1BCHT - One Bolt High Temperature Stainless Steel Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +250°C IEC 61914
FIRE TESTED	Surpasses requirements of Fire testing BS5839/BS8491 / EN50200/BS8434/AS-NZS 3013 (1,200°C) (Fire, shock & water)
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914
AXIAL LOAD TEST	Refer to CMP Products, IEC 61914
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914
MATERIAL	316L Stainless Steel
MATERIAL COLOUR	Silver / grey

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
PARALLEL FORMATION	
One short circuit 600mm fixed cleat centres 100mm cable centres	Two short circuit 600mm fixed cleat centres 100mm cable centres
0.1 sec	0.1 sec
100kA Peak	100kA Peak
47.6kA r.m.s	47.6kA r.m.s

CABLE CLEAT SELECTION TABLE							
SOLACE PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM					WEIGHT (g)
		W	H	D	E	FIXING HOLE Ø	
1BC1013HT	10-13	41	34	46	13	1 x M10	164
1BC1316HT	13-16	44	37	46	13	1 x M10	185
1BC1619HT	16-19	47	40	46	13	1 x M10	215
1BC1923HT	19-23	51	44	46	13	1 x M10	237
1BC2327HT	23-27	55	48	46	13	1 x M10	277
1BC2732HT	27-32	61	56	46	13	1 x M10	341
1BC3238HT	32-38	67	62	46	13	1 x M10	387
1BC3845HT	38-45	75	73	46	13	1 x M10	486
1BC4551HT	45-51	81	76	46	13	1 x M10	541
1BC5158HT	51-58	86	83	46	13	1 x M10	617
1BC5865HT	58-65	94	90	46	13	1 x M10	697
1BC6571HT	65-71	101	97	46	13	1 x M10	763

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (1BC3845HTEC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied upon request - see isolation/separation pad TDS753.

THEMIS (2BCHT)

The Themis Heavy Duty, Two Bolt, High Temperature Fire Rated Stainless Steel single cable cleat which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations. It ensures the retention and securing of single cables, without damaging or deforming the cable.

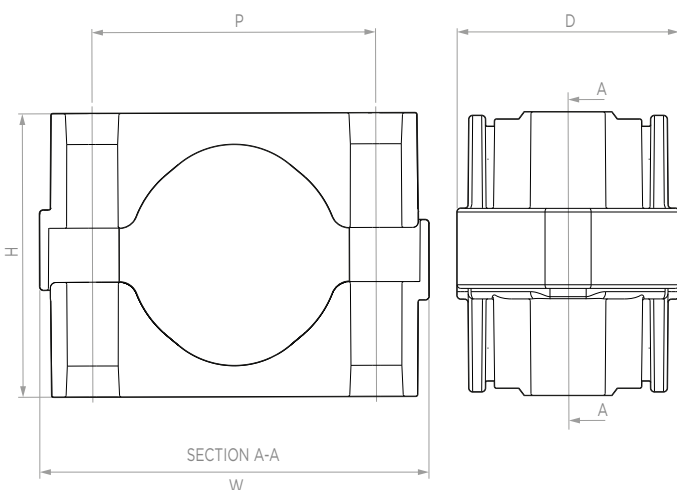
These Fire Rated cable cleats can be used with fire performance cables to ensure the safe retention and securing of single cables in the event of a wiring system being affected by fire. These fire resisting supports help to maintain the electrical systems integrity for any critical circuits during an emergency situation to enable safe evacuation. The cable cleat is manufactured from Stainless Steel 316L making it suitable for both indoor and outdoor applications.

Due to its unique twin arc internal patent pending design profile it exhibits excellent retention, limiting both the axial and lateral movement. The Themis Two Bolt cable cleats have an excellent range take and are suitable for cable diameters of 38mm up to 109mm in only six sizes. This cable cleat has two clearance holes for securing it to a mounting surface, which depending on cleat size, allows for either M10, M12 or M14 fasteners to be used.

BS 5839 'Fire detection and fire alarm systems for buildings. Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises'

States that "Methods of cable support should be non-combustible and such that circuit integrity will not be reduced below that afforded by the cable used, and should withstand a similar temperature and duration to that of the cable, while maintaining adequate support"

To adhere to this BSI standard fire rated Cable Cleats must be used to support the cable in the event of a fire.



CABLE CLEAT SELECTION TABLE

THEMIS PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM					FIXING HOLE Ø	WEIGHT (g)
		W	H	D	P			
2BC038048HT	38 - 48	96	68	61	67		2 x M10 / M12	742
2BC048058HT	48 - 58	107	78	61	78		2 x M10 / M12	900
2BC058070HT	58 - 70	119	91	61	90		2 x M10 / M12	1102
2BC070083HT	70 - 83	133	104	61	104		2 x M10 / M12	1324
2BC083097HT	83 - 97	147	118	61	118		2 x M10 / M12	1554
2BC096109HT	96-109	160	130	61	131		2 x M12 / M14	1860

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (2BC038048HTEC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack page TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad page TDS733.



FEATURES

- 316L Stainless Steel
- Operating temperature -60°C to +250°C
- Surpasses requirements of Fire testing BS5839 / BS8491 / EN50200 / BS8434 / AS-NZS 3013 (1,200°C) (Fire, shock & water)
- 38 - 109mm cable range take in 6 sizes
- Can be stacked
- Excellent axial & lateral load retention
- Corrosion resistant

TECHNICAL DATA & CLASSIFICATION

TYPE	6.1.1 Metallic 2BCHT - Two Bolt High Temperature Stainless Steel Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +250°C IEC 61914
FIRE TESTED	Surpasses requirements of Fire testing BS5839/BS8491/EN50200/BS8434/AS-NZS 3013 (1,200°C) (Fire, shock & water)
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914
AXIAL LOAD TEST	Refer to CMP Products, IEC 61914
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914
MATERIAL	316L Stainless Steel
MATERIAL COLOUR	Silver / grey

For information regarding short circuit ratings please contact CMP Products.

HELIOS (FPC)

The Helios Standard Duty, One Bolt, High Temperature Fire Rated Stainless Steel single cable cleat is a fabricated metallic cleat which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

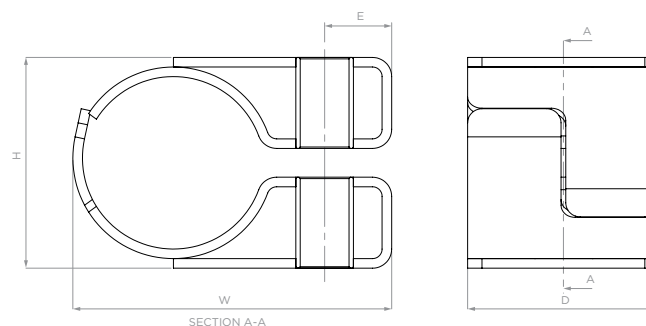
These Fire Rated cable cleats can be used with fire performance cables to ensure the safe retention and securing of single cables in the event of a wiring system being affected by fire. These fire resisting supports help to maintain the electrical systems integrity for any critical circuits during an emergency situation to enable safe evacuation. The cable cleat is fabricated from Stainless Steel 316L making it suitable for both indoor and outdoor applications.

The Helios High Temperature Stainless Steel 316L cable cleat is available in eleven sizes suitable for cable diameters of 10mm up to 65mm. The cable cleat has an M10 clearance hole for securing it to a mounting surface.

BS 5839 'Fire detection and fire alarm systems for buildings. Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises'

States that "Methods of cable support should be non-combustible and such that circuit integrity will not be reduced below that afforded by the cable used, and should withstand a similar temperature and duration to that of the cable, while maintaining adequate support"

To adhere to this BSI standard fire rated Cable Cleats must be used to support the cable in the event of a fire.



FEATURES

- Fabricated Stainless Steel 316L
- Operating temperature -60°C to +250°C
- Surpasses requirements of Fire testing BS5839 / BS8491 / EN50200 / BS8434 / AS-NZS 3013 (1,200°C) (Fire, shock & water)
- 10 - 65mm cable range take in 11 sizes
- Single bolt fixing design
- Can be stacked
- Corrosion resistant

TECHNICAL DATA & CLASSIFICATION

TYPE	6.1.1 Metallic SDHT - One Bolt Fabricated High Temperature Stainless Steel Cable Cleat
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +250°C IEC 61914
FIRE TESTED	Surpasses requirements of Fire testing BS5839/BS8491/EN50200/BS8434/AS-NZS 3013 (1,200°C) (Fire, shock & water)
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914
AXIAL LOAD TEST	Refer to CMP Products, IEC 61914
IMPACT RESISTANCE	Pass - Very heavy IEC 61914
MATERIAL	Stainless Steel 316L
MATERIAL COLOUR	Silver / grey

PARALLEL FORMATION

One short circuit 600mm fixed cleat centres 100mm cable centres	Two short circuit 600mm fixed cleat centres 100mm cable centres
0.1 sec	0.1 sec
60kA Peak	60kA Peak
29kA r.m.s	29kA r.m.s

CABLE CLEAT SELECTION TABLE

HELIOS PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM					FIXING HOLE Ø	WEIGHT (g)
		W	H	D	E			
FPC1013	10-13	38	19	40	14		1 x M10	88
FPC1316	13-16	41	22	40	14		1 x M10	103
FPC1619	16-19	45	25	40	14		1 x M10	114
FPC1923	19-23	50	29	40	14		1 x M10	128
FPC2327	23-27	55	33	40	14		1 x M10	143
FPC2732	27-32	61	38	40	14		1 x M10	165
FPC3238	32-38	67	44	40	14		1 x M10	182
FPC3846	38-46	74	52	40	14		1 x M10	210
FPC4651	46-51	80	57	40	14		1 x M10	233
FPC5157	51-57	86	63	40	14		1 x M10	252
FPC5765	57-65	94	71	40	14		1 x M10	274

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (FPC2327EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

SAPPHIRE (SHDSS)

The SHDSS cable cleat range consists of metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

The SHDSS cable cleat has been designed and tested for high short circuit conditions on cables held in single, parallel / flat formation, to ensure the securing and retention of cables without damage to the cable(s).

The Sapphire cable cleat is available for single parallel formation for diameters of 19 to 150mm in 13 sizes. The cable cleat is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments.

The Sapphire cable cleat has one M12 and two M10 fixing clearance holes within its base, allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces. The Sapphire cable cleat hinge opens fully, allowing the cables to be easily placed within the cable cleat, to aid the installer before closing and securing via the mouth piece bolt.

The Sapphire cable cleats come with liners as standard, helping to restrain the cables within vertical applications, providing a layer of protection between the cable sheath and the cable cleat during normal operation, where thermal elongation of cable occurs, protecting the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cables in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.

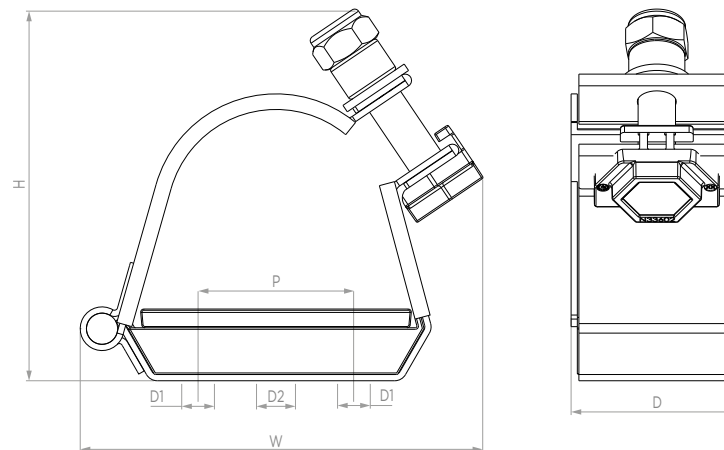


FEATURES

- Third party certification to IEC 61914
- 316L stainless steel
- 19 to 150mm in 13 sizes for single / parallel formation
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- Combined single (M12) and two bolt (M10) fixing design

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite SHDSS - Single Heavy Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	3.5kN - 14.5kN, IEC 61914 clause 9.3
AXIAL LOAD TEST	0.2kN - 0.9kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
MULTICORE FORMATION		PARALLEL FORMATION	
One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres
0.1 sec	0.1 sec	0.1 sec	0.1 sec
105kA Peak	105kA Peak	110kA Peak	109kA Peak
50.0kA r.m.s	50.0kA r.m.s	50.0kA r.m.s	50.0kA r.m.s



CABLE CLEAT SELECTION TABLE

PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS MM				FIXING HOLE Ø		WEIGHT (g)
		W	H	D	P	D1	D2	
SHDSS019026	19-26	94	85	54	25	2 x M10	1 x M12	395
SHDSS026032	26-32	95	88	54	25	2 x M10	1 x M12	402
SHDSS032038	32-38	96	93	54	25	2 x M10	1 x M12	431
SHDSS038046	38-46	100	100	54	25	2 x M10	1 x M12	446
SHDSS046051	46-51	104	103	54	25	2 x M10	1 x M12	456
SHDSS051058	51-58	108	107	54	25	2 x M10	1 x M12	472
SHDSS058070	58-70	129	119	54	50	2 x M10	1 x M12	554
SHDSS070083	70-83	137	120	54	50	2 x M10	1 x M12	581
SHDSS083097	83-97	157	137	54	75	2 x M10	1 x M12	665
SHDSS096109	96-109	165	133	54	75	2 x M10	1 x M12	688
SHDSS106120	106-120	170	142	54	75	2 x M10	1 x M12	713
SHDSS120135	120-135	197	157	54	75	2 x M10	1 x M12	814
SHDSS135150	135-150	205	172	54	75	2 x M10	1 x M12	847

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (SHDSS046051EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.



EMERALD (SSDSS)

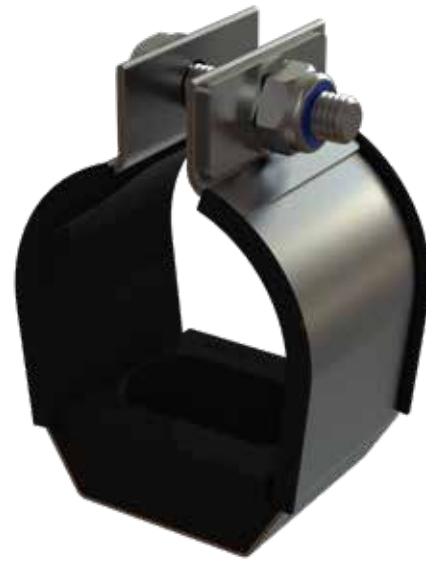
The Emerald cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations, to ensure the securing and retention of cables, without sustaining damage to the cable.

The range is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments. Designed for single and multi-core applications / formations, the Emerald cable cleat is ideal for use in datacenters, rail and other industries and applications where single or multi-core cables are installed. The Emerald can also be installed alongside any of CMP's cable cleat range to secure neutral cables.

The Emerald cable cleat has three M10 fixing clearance holes within its base allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces. The pre-formed cleat opens fully allowing the cables to be easily placed within the cable cleat to aid the installer before closing and securing via the mouth bolt.

Low Smoke and Fume, Zero Halogen (LSFOH) fixed liners are standard, restraining the cables within vertical applications whilst providing a layer of protection for the cable sheath and the cable cleat during normal operation where thermal elongation of cable occurs. This also protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications.

The LSFOH liners also assist in the extra protection of cables in the event of short circuit fault conditions.



FEATURES

- Third party certification to IEC 61914
- 316L stainless steel with polymer liner
- Standard operating temperature -60°C to +60°C or -76°F to +140°F
- Standard Polymer Liners are LUL approved and are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

TECHNICAL DATA & CLASSIFICATION

TYPE	SSDSS - Standard Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	2.5kN - 4.5kN, IEC61914 clause 9.3
AXIAL LOAD TEST	0.6kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

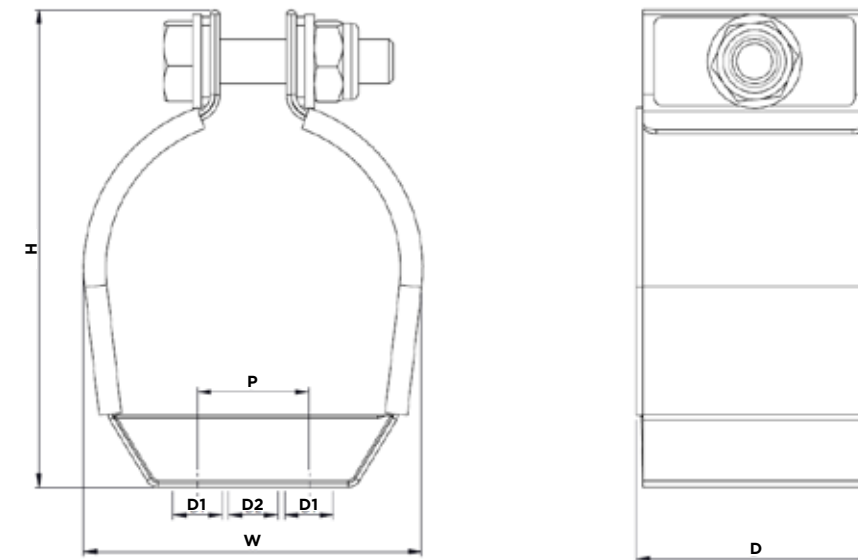
SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5

PARALLEL FORMATION				MULTICORE FORMATION	
One short circuit 600mm fixed cleat centres 105mm cable centres	One short circuit 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres	Two short circuits 600mm fixed cleat centres 105mm cable centres	One short circuit 600mm fixed cleat centres	Two short circuit 600mm fixed cleat centres
38mm	38mm	38mm	38mm	62.6mm	62.6mm
0.1sec	1sec	0.1sec	1sec	0.1sec	0.1sec
155kA Peak	80.8kA Peak	154.3kA Peak	80.8kA Peak	129kA Peak	120kA Peak
73.8kA r.m.s	38.5kA r.m.s	73.5kA r.m.s	38.5kA r.m.s	58.6kA r.m.s	54.5kA r.m.s

CABLE CLEAT SELECTION TABLE

PART NO.	CABLE RANGE TAKE (mm)	DIMENSIONS (mm)					FIXING HOLE Ø		WEIGHT (g)
		W	H	D	P	D1	D2		
						N/A	1 x M10		
SSDSS019026	19-26	54	66	58	SINGLE HOLE	N/A	1 x M10	243	
SSDSS025032	25-32	55	72	58	SINGLE HOLE	N/A	1 x M10	252	
SSDSS030042	30-42	58	82	58	SINGLE HOLE	N/A	1 x M10	266	
SSDSS040050	40-50	60	91	58	SINGLE HOLE	N/A	1 x M10	278	
SSDSS048058	48-58	71	99	53	25	2 x M10	1 x M10	283	
SSDSS056066	56-66	76	107	53	25	2 x M10	1 x M10	295	
SSDSS064074	64-74	84	115	53	25	2 x M10	1 x M10	305	
SSDSS072082	72-82	92	123	53	25	2 x M10	1 x M10	320	
SSDSS080090	80-90	100	131	53	25	2 x M10	1 x M10	333	
SSDSS088098	88-98	108	139	53	50	2 x M10	1 x M10	394	
SSDSS096106	96-106	116	147	53	50	2 x M10	1 x M10	406	
SSDSS105115	105-115	125	156	53	50	2 x M10	1 x M10	420	

Dimensions are displayed in millimeters unless otherwise stated



OLYMPUS (SHVSS)

CMP OLYMPUS single cable cleat is a composite cable cleat which has been designed, constructed and tested in accordance with the International Standard 'cable cleats for electrical installations' IEC 61914 to ensure the securing and retention of cables, without sustaining damage.

The stainless steel section of this cable cleat can be optionally coated with a high performance thermoplastic coating, UL94 VO flame retardant. This low toxicity polymer alloy coating is halogen free polymer and low smoke & fume, whilst being resistant to: impact, abrasion, salt spray, chemical attack, weathering & UV, making it perfectly suited for use in rail applications.

OLYMPUS cable cleats are designed to be installed as a system for use with High Voltage cable installations and can be manufactured in a standard set of cable diameter range or to suit specific project parameters.

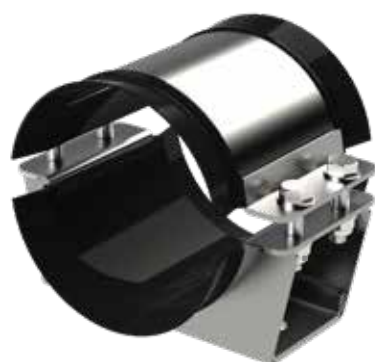
Fabricated in non-magnetic 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest environments.

Flame retardant low smoke and fume, zero halogen (FR LSF/LSOH) polymeric fixed liners are fitted as standard, helping to:

- Restrain the cables within vertical applications.
- Provide a layer of protection to both the cable sheath and the cable cleat, during normal operation where thermal elongation of cable occurs.
- Protect the cable from chafing on any mounting surface due to differential movements, such as those found in marine and offshore applications.
- Assist in the extra protection of cables in the event of short circuit fault conditions.

FEATURES

- Third party tested in accordance with IEC 61914
- Highly corrosion resistant stainless steel
- Operating temperature -60°C to +90°C
- Excellent axial and lateral load retention



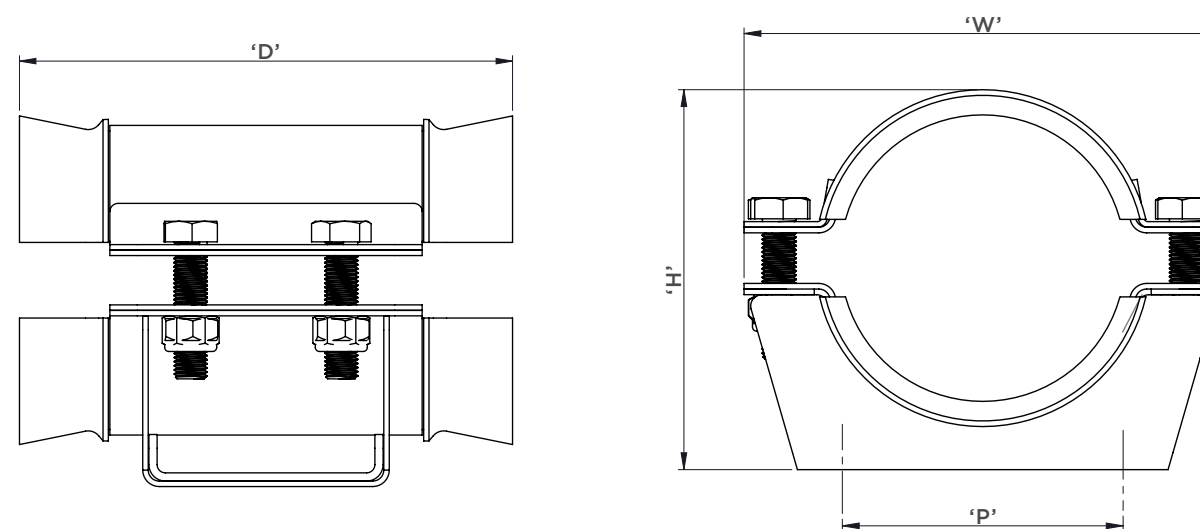
TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +90°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 seconds IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel
MATERIAL THICKNESS	2mm
LINER MATERIAL	FR LSF / LSOH Polymer
CABLE FORMATION	Parallel
LATERAL LOAD	33 kN
AXIAL LOAD	4.5 kN

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
FLAT/PARALLEL FORMATION	
ONE SHORT CIRCUIT 2.4m 290mm conductor centres 1 sec 176kA Peak 63 kA r.m.s	TWO SHORT CIRCUIT 1.5m 290mm conductor centres 1 sec 160kA Peak 64 kA r.m.s

OLYMPUS (SHVSS)

CABLE CLEAT SELECTION TABLE							
OLYMPUS PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS (mm)					WEIGHT (g)
		W	H	D	P*	FIXING HOLE Ø	
SHVSS090100	90-100	170.3	135.3	180	100	2 X M16	2200
SHVSS100110	100-110	184.1	150.3	180	100	2 X M16	2400
SHVSS110120	110-120	192.9	155.4	180	100	2 X M16	2550
SHVSS120130	120-130	203.9	165.4	180	100	2 X M16	2650
SHVSS130140	130-140	215.5	174.5	180	140	2 X M16	2850
SHVSS140150	140-150	224.7	184.5	180	140	2 X M16	2950
SHVSS150160	150-160	234.1	194.5	180	140	2 X M16	3050
SHVSS160170	160-170	243.4	204.6	180	140	2 X M16	3150
SHVSS170180	170-180	254.1	214.6	180	180	2 X M16	3350
SHVSS180190	180-190	265.3	224.6	180	180	2 X M16	3500
SHVSS190200	190-200	274.7	234.6	180	180	2 X M16	3600
SHVSS200210	200-210	284.9	244.6	180	190	2 X M16	3650
SHVSS210220	210-220	294.3	254.6	180	190	2 X M16	3750
SHVSS220230	220-230	304.5	264.7	180	200	2 X M16	3850
SHVSS230240	230-240	314.6	274.6	180	210	2 X M16	4000
SHVSS240250	240-250	323.8	284.4	180	220	2 X M16	4100

* denotes dimensions that can be altered to suit specific project requirements



SHVSS-JSC

Single high voltage stainless steel joint support cleat

The CMP SHVSS-JSC single joint support cleat is an extension to the range of SHVSS products, for the safe retention of high voltage cable joints. The range has been designed, constructed and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations; to ensure the securing and retention of cable joints, without sustaining damage.

This product has a large internal diameter to accept a single cable joint, safely securing it in position after the jointing process is complete.

The SHVSS-JSC offers greater flexibility for the installer due to its ability to rotate around the base fixing locations. In addition to this, the SHVSS-JSC is designed with flexible metallic wraps, allowing the cleat to adapt to situations where it may be difficult to move or align the cable joints.

SHVSS-JSC cleats are fabricated in non-magnetic 316L stainless steel with Flame Retardant Low Smoke and Fume (FR LSF) fixed liners fitted as standard. These liners help to restrain the joints, providing a layer of protection to the joint surface and the cable cleat during operation, where thermal elongation of the cable may cause the joint to move.

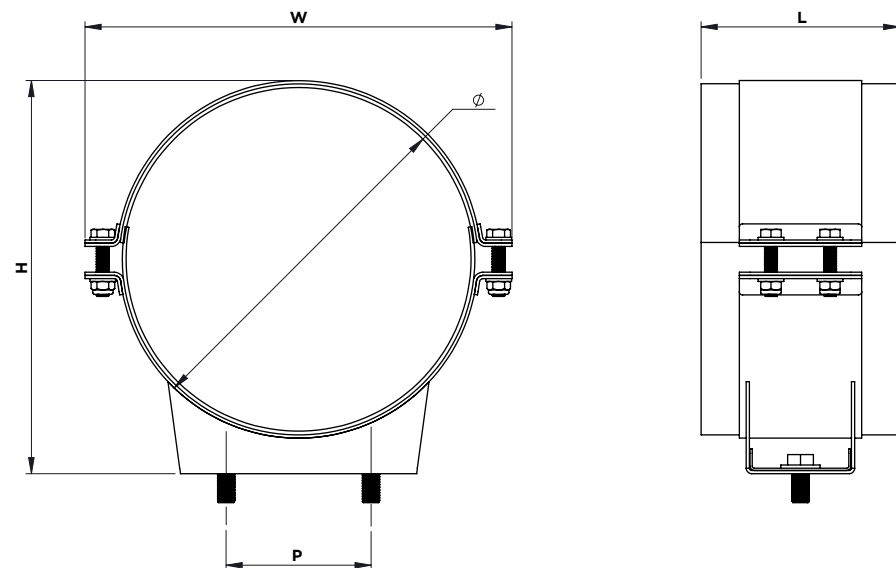
The fixed liners also assist in the extra protection of cable joints in the event of short circuit fault conditions.

FEATURES

- Third party certification to IEC 61914:2015
- Sunlight (UV) resistant
- Operating temperature -60°C to +60°C
- Offers greater flexibility for installers
- Excellent axial and lateral load retention

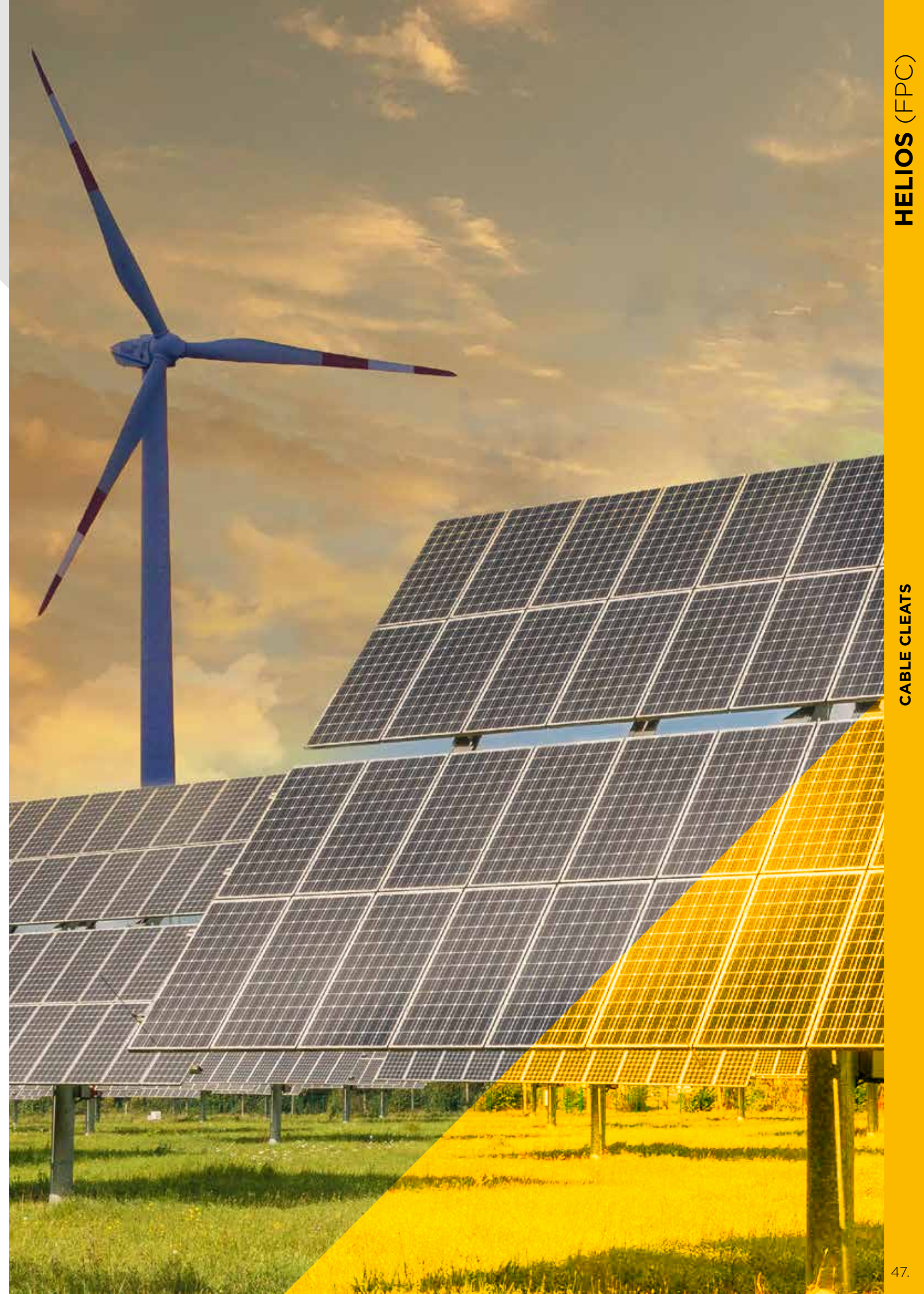


TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 seconds IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel
MATERIAL THICKNESS	3mm
LINER MATERIAL	FR LSF / LSOH Polymer
CABLE FORMATION	Single/Parallel



CABLE CLEAT SELECTION TABLE										
SHVSS-JSC PART NO.	TYPE	CABLE Ø RANGE TAKE (mm)	DIMENSIONS mm							WEIGHT (g)
			W1	W2*	H1	H2	D	P*	FIXING HOLE Ø	
AVAILABLE UPON REQUEST FROM CMP PRODUCTS										

* These dimensions can be adapted to suit specific applications



FORTIS (SSCSS)

The FORTIS cable support cleat has been designed, constructed and tested in accordance with the international standard IEC 61914 cable cleats for electrical installations; to ensure the securing and retention of cables, without sustaining damage to the cable(s).

Designed to support cables in high voltage applications, the FORTIS allows cable sag between fixed anchor points, where desirable. Sagging cable between fixed anchor points is a method of installation where the cable is allowed to hang between the cleats. This area of excess cable will accommodate thermal expansion and contraction of the cable in service, without putting undue stress on the anchor points.

The FORTIS adds additional support to the cable at the anchor points, ensuring there is no excessive pressure or point loading to the cable in these critical areas. The system is designed so that the support arm and cleat area can swivel and rotate, allowing flexibility to the installer.

The FORTIS comes in three lengths; 400mm, 600mm and 800mm. This will accommodate larger cable cleat fixing centers, whilst reducing the pressure applied to the cable from its own weight.

The product can be fabricated to suit any installation parameters. Please contact CMP to discuss your specific project requirements.

FEATURES

- Third party tested in accordance with IEC 61914
- Highly corrosion resistant stainless steel
- Sunlight (UV) resistant
- Operating temperature -60°C to +90°C
- Allows cable sag between fixed anchor points
- Increased support reducing pressure on cable
- Strong heavy duty construction



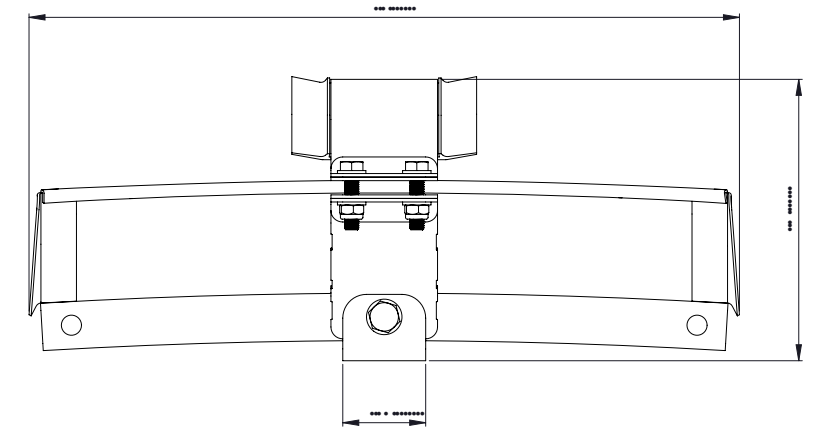
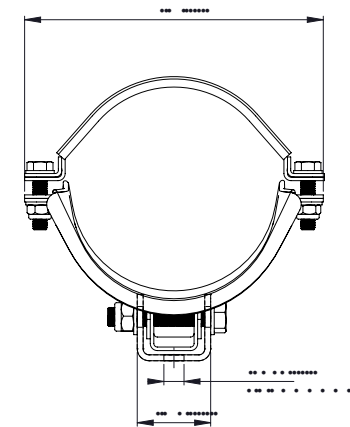
TECHNICAL DATA & CLASSIFICATION	
TYPE	61914 6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +90°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 seconds IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel
LINER MATERIAL	FR LSF / LSOH Polymer
CABLE FORMATION	Single/Parallel

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
PARALLEL FORMATION	
One Short Circuit 8.4m, with intermediate restraints	Two Short Circuit 8.4m, with intermediate restraints
800mm conductor centres	800mm conductor centres
1 sec	1 sec
168kA Peak	154kA Peak
66 kA r.m.s	60 kA r.m.s

FORTIS (SSCSS)

CABLE CLEAT SELECTION TABLE

FORTIS PART NO.	CABLE Ø RANGE TAKE (mm)	LENGTH (MM)	DIMENSIONS mm					WEIGHT (g)	
			H	W	L	L2	W2		
SSCSS-100110-400	100-110	400	178	192	400	70	62	1 x M16	4393
SSCSS-100110-600	100-110	600	178	192	600	70	62	1 x M16	5321
SSCSS-100110-800	100-110	800	178	192	800	70	62	1 x M16	6248
SSCSS-110120-400	110-120	400	188	202	400	70	62	1 x M16	4574
SSCSS-110120-600	110-120	600	188	202	600	70	62	1 x M16	5547
SSCSS-110120-800	110-120	800	188	202	800	70	62	1 x M16	6517
SSCSS-120130-400	120-130	400	198	212	400	70	62	1 x M16	4751
SSCSS-120130-600	120-130	600	198	212	600	70	62	1 x M16	5894
SSCSS-120130-800	120-130	800	198	212	800	70	62	1 x M16	6801
SSCSS-130140-400	130-140	400	208	222	400	70	62	1 x M16	4931
SSCSS-130140-600	130-140	600	208	222	600	70	62	1 x M16	6007
SSCSS-130140-800	130-140	800	208	222	800	70	62	1 x M16	7070
SSCSS-140150-400	140-150	400	218	232	400	70	62	1 x M16	5111
SSCSS-140150-600	140-150	600	218	232	600	70	62	1 x M16	6239
SSCSS-140150-800	140-150	800	218	232	800	70	62	1 x M16	7358
SSCSS-150160-400	150-160	400	228	242	400	70	62	1 x M16	5291
SSCSS-150160-600	150-160	600	228	242	600	70	62	1 x M16	6462
SSCSS-150160-800	150-160	800	228	242	800	70	62	1 x M16	7665
SSCSS-160170-400	160-170	400	238	252	400	70	62	1 x M16	5471
SSCSS-160170-600	160-170	600	238	252	600	70	62	1 x M16	6696
SSCSS-160170-800	160-170	800	238	252	800	70	62	1 x M16	7955
SSCSS-170180-400	170-180	400	248	262	400	70	62	1 x M16	5649
SSCSS-170180-600	170-180	600	248	262	600	70	62	1 x M16	6916
SSCSS-170180-800	170-180	800	248	262	800	70	62	1 x M16	8238
SSCSS-180190-400	180-190	400	258	272	400	70	62	1 x M16	5832
SSCSS-180190-600	180-190	600	258	272	600	70	62	1 x M16	7189
SSCSS-180190-800	180-190	800	258	272	800	70	62	1 x M16	8532
SSCSS-190200-400	190-200	400	268	282	400	70	62	1 x M16	6014
SSCSS-190200-600	190-200	600	268	282	600	70	62	1 x M16	7417
SSCSS-190200-800	190-200	800	268	282	800	70	62	1 x M16	8805



THORUS (SSCAL)

The THORUS cable support cleat has been designed, constructed and tested in accordance with the International Standard IEC 61914 cable cleats for electrical installations; to ensure the securing and retention of cables, without sustaining damage to the cable(s).

Designed to support cables in high voltage applications, the THORUS allows cable sag between fixed anchor points, where desirable. Sagging cable between fixed anchor points is a method of installation where the cable is allowed to hang between the cleats. This area of excess cable will accommodate thermal expansion and contraction of the cable in service, without putting undue stress on the anchor points.

The THORUS adds additional support to the cable at the anchor points, ensuring there is no excessive pressure or point loading to the cable in these critical areas. The system is designed so that the support arm and cleat area can swivel and rotate, allowing flexibility to the installer.

The THORUS comes in three lengths; 400mm, 600mm and 800mm. This will accommodate larger cable cleat fixing centers, whilst reducing the pressure applied to the cable from its own weight.

The product can be fabricated to suit any installation parameters. Please contact CMP to discuss your specific project requirements.

FEATURES

- Third party tested in accordance with IEC 61914
- Corrosion resistant aluminium
- Sunlight (UV) resistant
- Operating temperature -60°C to +90°C
- Allows cable sag between fixed anchor points
- No excessive pressure points to the cable
- Increased support reducing pressure on cable
- Strong but lightweight construction



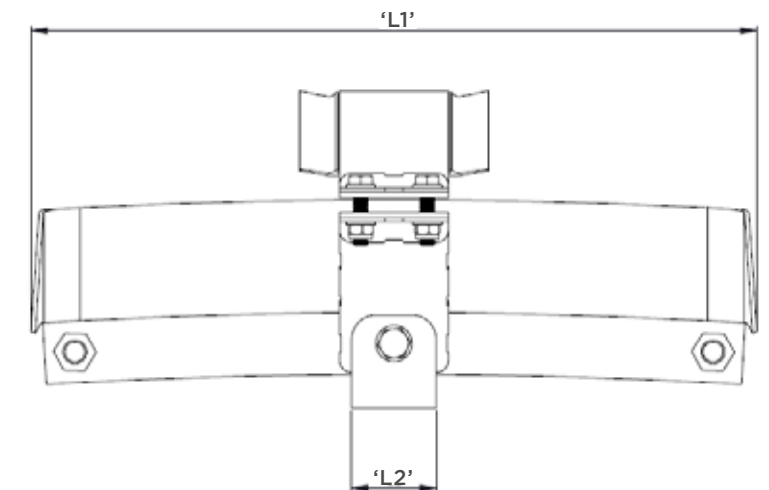
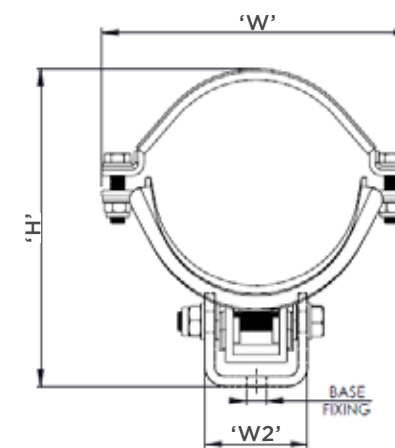
TECHNICAL DATA & CLASSIFICATION	
TYPE	IEC 61914 6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +90°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 seconds IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	5000 & 6000 Series Aluminium
LINER MATERIAL	FR LSF / LSOH Polymer
CABLE FORMATION	Single/Parallel

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
PARALLEL FORMATION	
One short circuit 8.4m, with intermediate restraints	Two short circuit 8.4m, with intermediate restraints
800mm conductor centres	800mm conductor centres
1 sec	1 sec
168 kA Peak	124 kA Peak
66 kA r.m.s	48 kA r.m.s

THORUS (SSCAL)

CABLE CLEAT SELECTION TABLE

THORUS PART NO.	CABLE RANGE TAKE (mm)	Length (mm)	H	W	L1	L2	W2	BASE FIXING	WEIGHT (g)
SSCAL-100110-400	100-110	400	202	195	400	90	84.8	1 x M16	3557
SSCAL-100110-600	100-110	600	202	195	600	90	84.8	1 x M16	4573
SSCAL-100110-800	100-110	800	202	195	800	90	84.8	1 x M16	5589
SSCAL-110120-400	110-120	400	212	205	400	90	84.8	1 x M16	3670
SSCAL-110120-600	110-120	600	212	205	600	90	84.8	1 x M16	4722
SSCAL-110120-800	110-120	800	212	205	800	90	84.8	1 x M16	5772
SSCAL-120130-400	120-130	400	222	215	400	90	84.8	1 x M16	3783
SSCAL-120130-600	120-130	600	222	215	600	90	84.8	1 x M16	4866
SSCAL-120130-800	120-130	800	222	215	800	90	84.8	1 x M16	5949
SSCAL-130140-400	130-140	400	232	225	400	90	84.8	1 x M16	3898
SSCAL-130140-600	130-140	600	232	225	600	90	84.8	1 x M16	5015
SSCAL-130140-800	130-140	800	232	225	800	90	84.8	1 x M16	6136
SSCAL-140150-400	140-150	400	242	235	400	90	84.8	1 x M16	4013
SSCAL-140150-600	140-150	600	242	235	600	90	84.8	1 x M16	5162
SSCAL-140150-800	140-150	800	242	235	800	90	84.8	1 x M16	6312
SSCAL-150160-400	150-160	400	252	245	400	90	84.8	1 x M16	4130
SSCAL-150160-600	150-160	600	252	245	600	90	84.8	1 x M16	5313
SSCAL-150160-800	150-160	800	252	245	800	90	84.8	1 x M16	6498
SSCAL-160170-400	160-170	400	262	255	400	90	84.8	1 x M16	4246
SSCAL-160170-600	160-170	600	262	255	600	90	84.8	1 x M16	5462
SSCAL-160170-800	160-170	800	262	255	800	90	84.8	1 x M16	6682
SSCAL-170180-400	170-180	400	272	265	400	90	84.8	1 x M16	4362
SSCAL-170180-600	170-180	600	272	265	600	90	84.8	1 x M16	5617
SSCAL-170180-800	170-180	800	272	265	800	90	84.8	1 x M16	6874
SSCAL-180190-400	180-190	400	282	275	400	90	84.8	1 x M16	4482
SSCAL-180190-600	180-190	600	282	275	600	90	84.8	1 x M16	5764
SSCAL-180190-800	180-190	800	282	275	800	90	84.8	1 x M16	7058
SSCAL-190200-400	190-200	400	292	285	400	90	84.8	1 x M16	4595
SSCAL-190200-600	190-200	600	292	285	600	90	84.8	1 x M16	5917
SSCAL-190200-800	190-200	800	292	285	800	90	84.8	1 x M16	7236



HV-PIR High voltage parallel intermediate restraint

CMP parallel intermediate restraints are used for the safe retention of high voltage cables. The range has been designed, constructed and tested in accordance with the international standard IEC 61914:2015 cable cleats for electrical installations; to ensure the securing and retention of cables, without sustaining damage to the cable(s).

This product design enables parallel cables to be held securely and maintain intended design phase distance, in service and under fault conditions. Cable movement due to thermo-mechanical effects can be managed by the product as the connecting braces can pivot between cleats.

The robust design is available in either fabricated aluminium or non-magnetic 316L stainless steel.

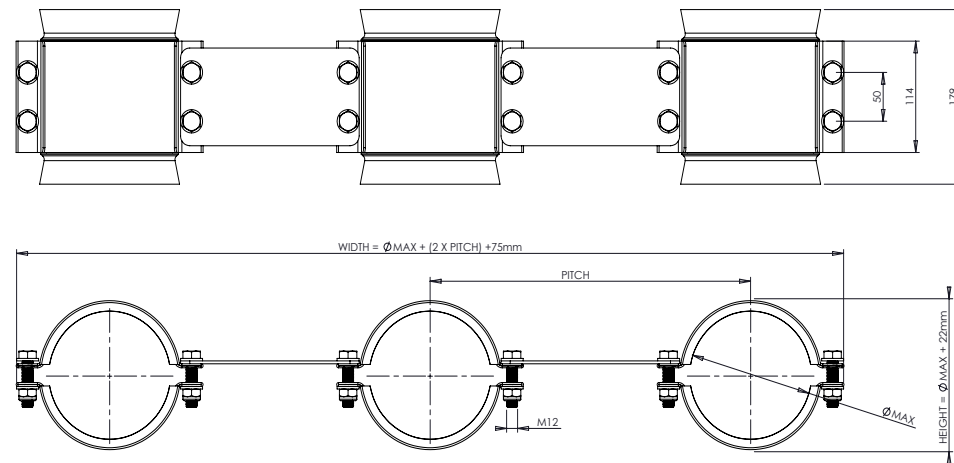
Flame retardant low smoke and fume fixed liners are fitted as standard, helping to:

- Restrain the cables within vertical applications.
- Provide a layer of protection to both the cable sheath and the cable cleat, during normal operation where thermal elongation of cable occurs.
- Protect the cable from chafing on any mounting surface due to differential movements, such as those found in marine and offshore applications.
- Assist in the extra protection of cables in the event of short circuit fault conditions.

CMP can provide this product to suit any arrangement of cable diameter and phase spacing.

FEATURES

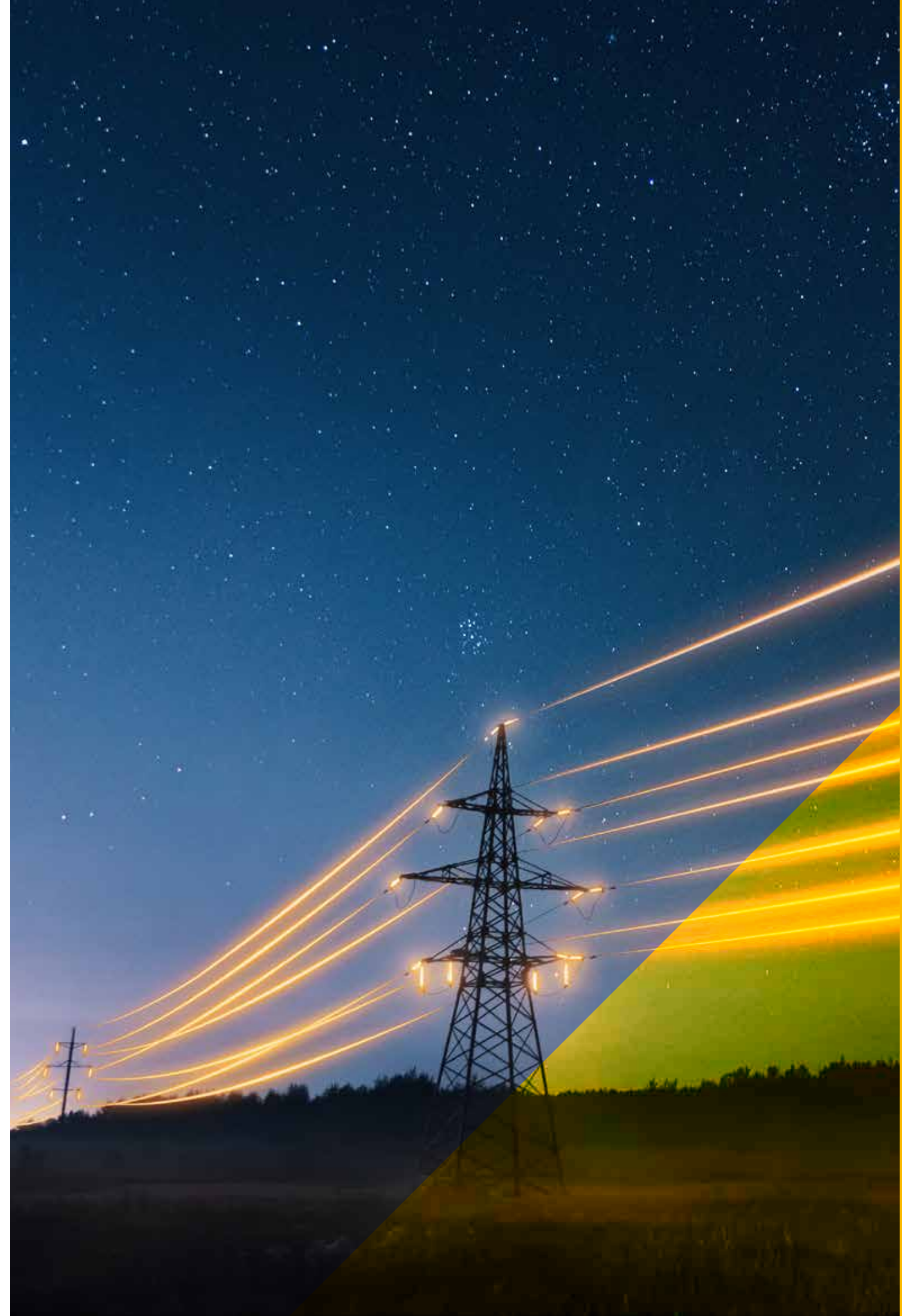
- Third party certification to IEC 61914:2015
- Available in fabricated aluminium or non-magnetic 316L stainless steel
- Operating temperature -60°C to +90°C
- Flame retardant low smoke and fume fixed liners (FR LSF) if required



PRODUCT CODE GENERATION

TYPE	MATERIAL	SIZE RANGE (mm)	PITCH (mm)	ADD L IF LINER REQUIRED
PIR	AL or SS	122128	400	L

FOR EXAMPLE - PIR-SS-122128-400-L TO SUIT A 125mm DIAMETER CABLE WITH A PHASE DISTANCE OF 400mm





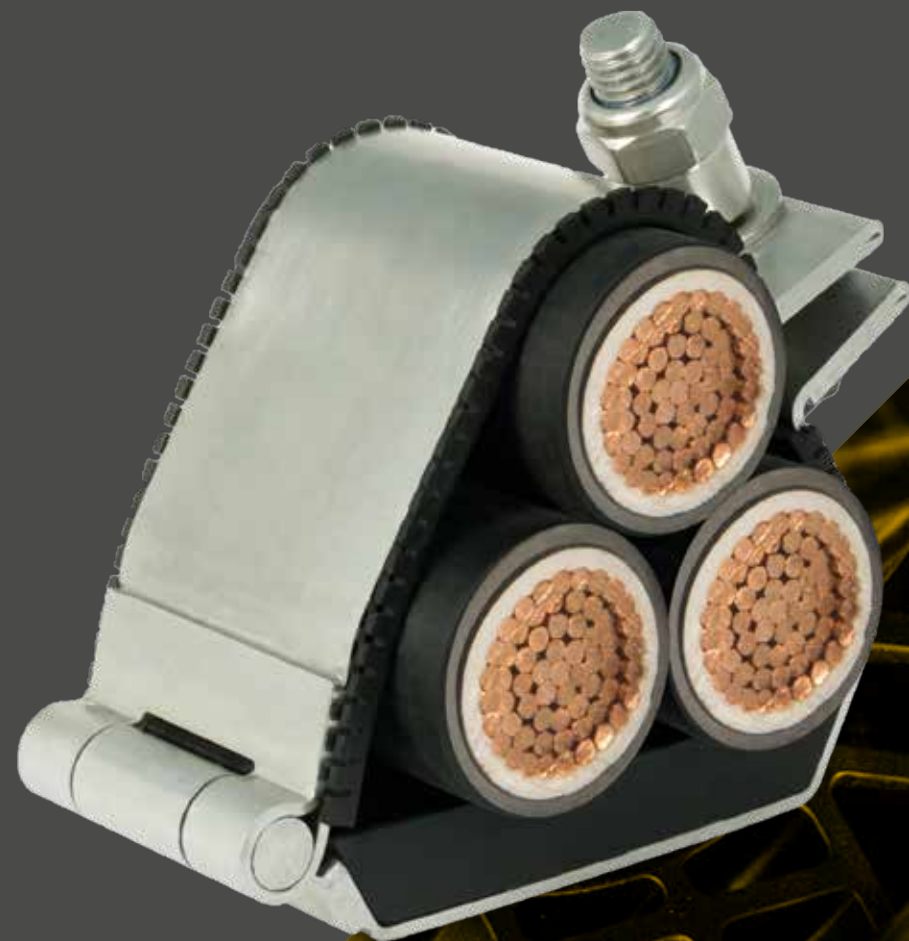
TREFOIL FORMATION CABLE CLEATS

Designed to secure and support cables in trefoil formation, CMP's range of trefoil cable cleats are tried and tested on hundreds of projects globally, from oil and gas to mining applications.

Developed with the installer in mind, CMP's trefoil cable cleats allow versatility when installing through various design features including top opening options to make for ease of installation where space constraints exist.

With options for cable sizes ranging from as small as 13mm up to 200mm and a wide range of materials, cable cleats are available to suit almost any application.

View the full range on the following pages >



SOVEREIGN (HDSS)

The Sovereign cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

The Sovereign cable cleat has been designed and tested for high short circuit conditions on cables held in trefoil application / formation, to ensure the securing and retention of cables without damage to the cable(s).

The range is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments. The Sovereign cable cleat is available for trefoil application/formation for diameters of 17mm to 128mm in 24 sizes.

The cleat has one M12 and two M10 fixing clearance holes within its base, allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces. The hinge opens fully, allowing the cables to be easily placed within the cable cleat, to aid the installer before closing and securing via the mouth piece bolt.

Liners come as standard which help to restrain the cable(s) within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke and Fume Zero Halogen (LSFOH) and Phosphorus-Free.



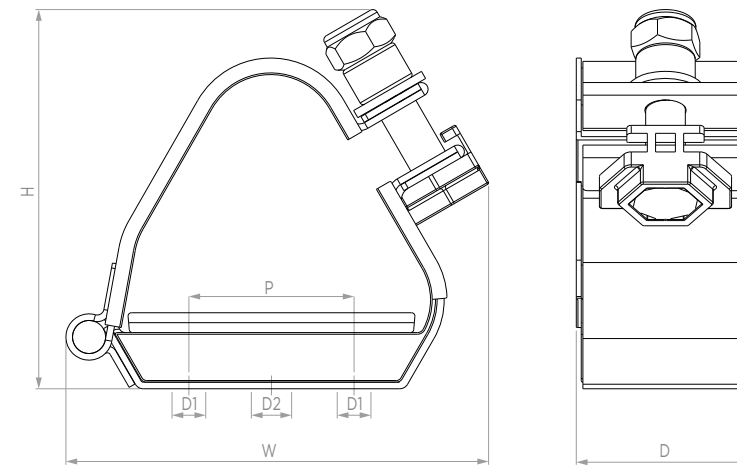
FEATURES

- Third party certification to IEC 61914
- 316L stainless steel
- 17 - 128mm in 24 sizes for trefoil formation / application
- Short circuit rating of 190kA peak fault
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- Combined single (M12) and two bolt (M10) fixing design

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite HDSS - Heavy Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	0.7kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
TREFOIL FORMATION			
One short circuit 300mm fixed cleat centres	One short circuit 300mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres
0.1sec	1sec	0.1sec	1sec
190kA Peak	96kA Peak	150kA Peak	80kA Peak
87.7kA r.m.s	46.1kA r.m.s	68.2kA r.m.s	38.1kA r.m.s

300mm SOVEREIGN HDSS (0.1 SEC)	
CABLE OD (mm)	PEAK kA
36	190.0
38	195.2
43	207.7
59	243.5
65	255.3



CABLE CLEAT SELECTION TABLE									
SOVEREIGN PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS (mm)					FIXING HOLE Ø		WEIGHT (g)
		W	H	D	P	D1	D2		
HDSS017021	17-21	99	88	54	25	2 x M10	1 x M12	406	
HDSS019023	19-23	100	87	54	25	2 x M10	1 x M12	417	
HDSS023028	23-28	104	88	54	25	2 x M10	1 x M12	450	
HDSS027032	27-32	106	97	54	25	2 x M10	1 x M12	465	
HDSS030035	30-35	108	103	54	25	2 x M10	1 x M12	473	
HDSS033038	33-38	110	107	54	25	2 x M10	1 x M12	485	
HDSS036042	36-42	132	108	54	50	2 x M10	1 x M12	570	
HDSS040046	40-46	134	113	54	50	2 x M10	1 x M12	581	
HDSS044050	44-50	136	121	54	50	2 x M10	1 x M12	594	
HDSS048055	48-55	138	127	54	50	2 x M10	1 x M12	616	
HDSS051058	51-58	140	130	54	50	2 x M10	1 x M12	627	
HDSS055062	55-62	157	138	54	75	2 x M10	1 x M12	704	
HDSS059066	59-66	157	145	54	75	2 x M10	1 x M12	718	
HDSS063070	63-70	160	152	54	75	2 x M10	1 x M12	733	
HDSS067074	67-74	163	160	54	75	2 x M10	1 x M12	748	
HDSS071078	71-78	168	167	54	75	2 x M10	1 x M12	764	
HDSS074082	74-82	190	175	54	75	2 x M10	1 x M12	863	
HDSS077085	77-85	192	180	54	75	2 x M10	1 x M12	873	
HDSS082088	82-88	193	186	54	75	2 x M10	1 x M12	883	
HDSS088096	88-96	202	201	54	75	2 x M10	1 x M12	914	
HDSS096103	96-103	214	215	54	75	2 x M10	1 x M12	942	
HDSS103111	103-111	237	229	54	75	2 x M10	1 x M12	1055	
HDSS111119	111-119	248	244	54	75	2 x M10	1 x M12	1086	
HDSS119128	119-128	265	260	54	75	2 x M10	1 x M12	1122	

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (HDSS033038EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

PATRIOT (SDSS)

The Patriot cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations to ensure the securing and retention of cables, without sustaining damage to the cable.

The range is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments. The Patriot cable cleats are available for trefoil application / formation for diameters of 13mm to 128mm in 25 sizes.

The cleat has three M10 fixing clearance holes within one base allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces. The hinge opens fully allowing the cables to be easily placed within the cable cleat to aid the installer before closing and securing via the mouth piece bolt.

Liners come as standard which help to restrain the cable(s) within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free.



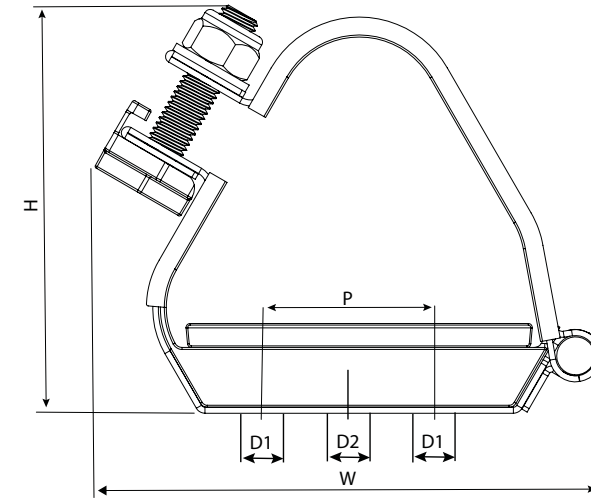
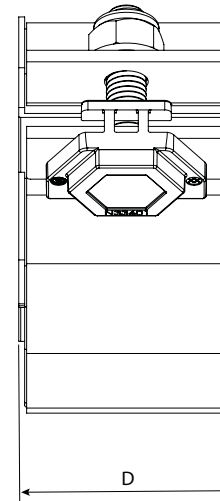
FEATURES

- Third party certification to IEC 61914
- 316L stainless steel
- 13 - 128mm in 25 sizes for trefoil formation / application
- Short circuit rating of 135kA peak fault
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- Combined single (M10) or two bolt (M10) fixing design

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite SDSS - Standard Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	0.6kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
TREFOIL FORMATION			
One short circuit 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres
0.1sec	1sec	0.1sec	1sec
135kA Peak	80kA Peak	108kA Peak	75kA Peak
58.8kA r.m.s	38.3kA r.m.s	49.1kA r.m.s	35.7kA r.m.s

300mm PATRIOT SDSS (0.1 SEC)	
CABLE OD (mm)	PEAK KA
36	135.0
38	138.7
43	147.5
59	172.8
65	181.4



CABLE CLEAT SELECTION TABLE

PATRIOT PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS (mm)						WEIGHT (g)
		W	H	D	P	FIXING HOLE Ø		
						D1	D2	
SDSS013017	13-17	84	71	60	N/A	N/A	1 X M10	304
SDSS017021	17-21	100	76	54	25	2 x M10	1 x M10	326
SDSS019024	19-24	99	81	54	25	2 x M10	1 x M10	331
SDSS023028	23-28	101	86	54	25	2 x M10	1 x M10	340
SDSS027032	27-32	104	91	54	25	2 x M10	1 x M10	353
SDSS030035	30-35	106	94	54	25	2 x M10	1 x M10	362
SDSS033038	33-38	108	98	54	25	2 x M10	1 x M10	374
SDSS036042	36-42	127	102	54	50	2 x M10	1 x M10	441
SDSS040046	40-46	130	107	54	50	2 x M10	1 x M10	453
SDSS044050	44-50	134	115	54	50	2 x M10	1 x M10	466
SDSS048055	48-55	137	124	54	50	2 x M10	1 x M10	483
SDSS051058	51-58	140	130	54	50	2 x M10	1 x M10	495
SDSS055062	55-62	160	137	54	75	2 x M10	1 x M10	549
SDSS059066	59-66	160	144	54	75	2 x M10	1 x M10	565
SDSS063070	63-70	161	152	54	75	2 x M10	1 x M10	580
SDSS067074	67-74	164	159	54	75	2 x M10	1 x M10	594
SDSS071078	71-78	167	167	54	75	2 x M10	1 x M10	607
SDSS074082	74-82	190	174	54	75	2 x M10	1 x M10	683
SDSS077085	77-85	193	180	54	75	2 x M10	1 x M10	688
SDSS082088	82-88	194	185	54	75	2 x M10	1 x M10	699
SDSS088096	88-96	202	200	54	75	2 x M10	1 x M10	728
SDSS096103	96-103	215	214	54	75	2 x M10	1 x M10	756
SDSS103111	103-111	235	228	54	75	2 x M10	1 x M10	846
SDSS111119	111-119	249	243	54	75	2 x M10	1 x M10	874
SDSS119128	119-128	266	260	54	75	2 x M10	1 x M10	909

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (SDSS030035EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

PATRIOT HINGELESS (SDSSH)

The Patriot cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard 'cable cleats for Electrical Installations' IEC 61914 to ensure the securing and retention of cables, without sustaining damage to the cable.

The range is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments. The Patriot cable cleats are available for trefoil application / formation for diameters of 17mm to 128mm in 24 sizes.

The cleat has three M10 fixing clearance holes within one base allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces.

Liners come as standard which help to restrain the cable(s) within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.



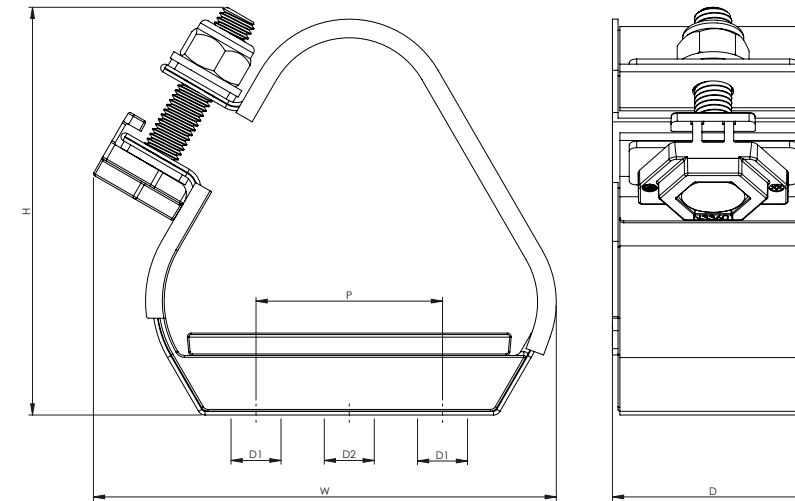
FEATURES

- Third party certification to IEC 61914
- 316L stainless steel
- 17 - 128mm in 24 sizes for trefoil formation / application
- Short circuit rating of 135kA peak fault
- Operating temperature -60°C to +60°C
- Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free
- Combined single (M10) or two bolt (M10) fixing design
- High temperature option available -60°C to +130°C
 - Low smoke, low toxicity, halogen free, VO flame retardant
- Meets all IEC 61914 requirements
- To order, add suffix HT. Example order reference for high temperature cleat: SDSS023028HT

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite SDSSH - Standard Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C High temperature (HT option) -60°C to +130°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	0.6kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Liner Standard liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
TREFOIL FORMATION			
One short circuit 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres
0.1sec	1sec	0.1sec	1sec
135kA Peak	80kA Peak	108kA Peak	75kA Peak
58.8kA r.m.s	38.3kA r.m.s	49.1kA r.m.s	35.7kA r.m.s

300MM PATRIOT SDSS (0.1 SEC)	
CABLE OD (MM)	PEAK kA
36	135.0
38	138.7
43	147.5
59	172.8
65	181.4



CABLE CLEAT SELECTION TABLE								
PATRIOT PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS (MM)						WEIGHT (g)
		W	H	D	P	FIXING HOLE Ø		
						D1	D2	
SDSS017021H	17-21	85	84	54	25	2 x M10	1 x M10	256
SDSS019024H	19-24	86	87	54	25	2 x M10	1 x M10	263
SDSS023028H	23-28	88	92	54	25	2 x M10	1 x M10	269
SDSS027032H	27-32	95	97	54	25	2 x M10	1 x M10	275
SDSS030035H	30-35	101	101	54	25	2 x M10	1 x M10	280
SDSS033038H	33-38	106	104	54	25	2 x M10	1 x M10	287
SDSS036042H	36-42	115	109	54	50	2 x M10	1 x M10	346
SDSS040046H	40-46	120	114	54	50	2 x M10	1 x M10	354
SDSS044050H	44-50	127	116	54	50	2 x M10	1 x M10	360
SDSS048055H	48-55	136	123	54	50	2 x M10	1 x M10	371
SDSS051058H	51-58	141	129	54	50	2 x M10	1 x M10	377
SDSS055062H	55-62	150	136	54	75	2 x M10	1 x M10	433
SDSS059066H	59-66	154	144	54	75	2 x M10	1 x M10	440
SDSS063070H	63-70	159	151	54	75	2 x M10	1 x M10	447
SDSS067074H	67-74	166	159	54	75	2 x M10	1 x M10	455
SDSS071078H	71-78	173	166	54	75	2 x M10	1 x M10	464
SDSS074082H	74-82	180	174	54	75	2 x M10	1 x M10	539
SDSS077085H	77-85	186	179	54	75	2 x M10	1 x M10	544
SDSS082088H	82-88	190	185	54	75	2 x M10	1 x M10	549
SDSS088096H	88-96	202	200	54	75	2 x M10	1 x M10	565
SDSS096103H	96-103	215	213	54	75	2 x M10	1 x M10	579
SDSS103111H	103-111	234	228	54	75	2 x M10	1 x M10	661
SDSS111119H	111-119	249	243	54	75	2 x M10	1 x M10	677
SDSS119128H	119-128	265	259	54	75	2 x M10	1 x M10	695

Add suffix HT for high temperature option. Example order reference: SDSS033038HT

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (SDSS030035HEC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack page. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad page.



ENDURANCE (SDSS-C)

The Endurance cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations, to ensure the securing and retention of cables, without sustaining damage to the cables.

The range is fabricated from 316L stainless steel in 24 sizes from 17 - 128mm.

The top opening is designed to fit more cleats installed side by side, whilst three M10 fixing clearance holes within each base, allow the versatility of installing with either one M10 bolt or two M10 bolts. This enables installation of the Endurance to a variety of mounting surfaces.

The hinge of the Endurance opens fully, allowing cables to be easily placed within the cable cleat, before closing and securing via the mouth piece bolt.

Liners come as standard which help to restrain the cable(s) within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free.

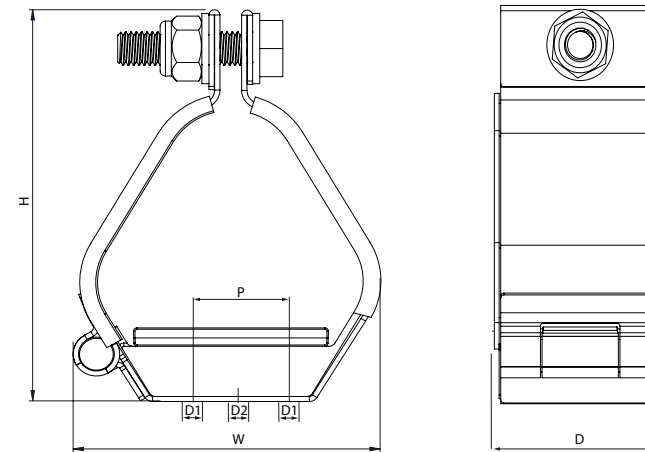


FEATURES

- Third party certification to IEC 61914
- 316L stainless steel
- 17 - 128mm in 24 sizes for trefoil formation / application
- Short circuit rating of 140kA peak fault
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- Combined single (M10) or two bolt (M10) fixing design

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite SDSS-C - Standard Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	0.6kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
TREFOIL FORMATION			
One short circuit 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres	One short circuit 300mm fixed cleat centres	
0.1 sec	0.1sec	1 sec	
140kA Peak	135kA Peak	80.1kA Peak	
63.6kA r.m.s	61.4kA r.m.s	38.5kA r.m.s	
One short circuits 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres
0.1 sec	0.1sec	1 sec	1 sec
109kA Peak	109kA Peak	75.1kA Peak	74.8kA Peak
51.9kA r.m.s	51.9kA r.m.s	35.7kA r.m.s	35.6kA r.m.s



CABLE CLEAT SELECTION TABLE								
ENDURANCE PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS (mm)						WEIGHT (g)
		W	H	D	P	FIXING HOLE Ø		
						D1	D2	
SDSSC-017021	17-21	78	88	54	N/A	N/A	1 x M10	337
SDSSC-019024	19-24	79	89	54	N/A	N/A	1 x M10	349
SDSSC-023028	23-28	79	96	54	N/A	N/A	1 x M10	353
SDSSC-027032	27-32	82	104	54	25	2 x M10	1 x M10	357
SDSSC-030035	30-35	84	110	54	25	2 x M10	1 x M10	367
SDSSC-033038	33-38	87	117	54	25	2 x M10	1 x M10	379
SDSSC-036042	36-42	113	123	54	50	2 x M10	1 x M10	444
SDSSC-040046	40-46	115	131	54	50	2 x M10	1 x M10	457
SDSSC-044050	44-50	117	139	54	50	2 x M10	1 x M10	472
SDSSC-048055	48-55	123	148	54	50	2 x M10	1 x M10	489
SDSSC-051058	51-58	127	154	54	50	2 x M10	1 x M10	503
SDSSC-055062	55-62	147	161	54	75	2 x M10	1 x M10	560
SDSSC-059066	59-66	151	169	54	75	2 x M10	1 x M10	573
SDSSC-063070	63-70	154	177	54	75	2 x M10	1 x M10	587
SDSSC-067074	67-74	157	184	54	75	2 x M10	1 x M10	602
SDSSC-071078	71-78	161	192	54	75	2 x M10	1 x M10	613
SDSSC-074082	74-82	191	199	54	75	2 x M10	1 x M10	687
SDSSC-077085	77-85	192	205	54	75	2 x M10	1 x M10	703
SDSSC-082088	82-88	193	210	54	75	2 x M10	1 x M10	711
SDSSC-088096	88-96	204	225	54	75	2 x M10	1 x M10	733
SDSSC-096103	96-103	217	239	54	75	2 x M10	1 x M10	755
SDSSC-103111	103-111	236	254	54	75	2 x M10	1 x M10	853
SDSSC-111119	111-119	250	269	54	75	2 x M10	1 x M10	884
SDSSC-119128	119-128	267	285	54	75	2 x M10	1 x M10	915

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (SDSS-C030035EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

CYCLONE I (LDSTR 2 LOOP)

The Cyclone I Strap cable cleat is a metallic cable cleat consisting of a fabricated lightweight aluminium base and a stainless steel strap which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

The Cyclone I Strap cable cleat ensures the retention and securing of cables, whilst preventing damage to the cable when in normal operation, or in the event of a short circuit.

The cable cleats allow a wide range of applications including miscellaneous formations. They have an exceptional overlapping cable range take and give the end user more flexibility when compared to more rigid cable cleats on the market. Each cleat is capable of securing various cable formations, such as single cable (multicore) or single cable in parallel formation, trefoil formation, and quad formation. Suitable for single cable applications in diameters of 36mm to 165mm in 10 sizes, in trefoil formation from diameters of 24mm to 145mm in 15 sizes and quad formation from 21mm to 124mm in 15 sizes.

The Cyclone I bases are manufactured from 5000 series aluminium, making the base lightweight, easy to handle and corrosion resistant. The Cyclone straps are manufactured in 316L stainless steel, providing excellent corrosion resistance, and the tensioned straps act as a coil during short circuit conditions to restrain the cable. The Cyclone strap wraps around the angled Cyclone I aluminium base ensuring the cables are always kept central. The strap is fastened to a stainless steel pin with a hexagon shaped head at one end allowing fast, easy installation via the use of a ratchet, power tool or other suitable mechanical device.

The Cyclone I Strap cable cleat has one M12 and two M10 fixing clearance holes within each base, allowing versatile installation and enabling the product to be secured to a variety of mounting surfaces. Due to the design of the Cyclone, the cables do not need to be lifted and placed in to the cable cleat, instead the cables are placed on to the Cyclone bases and the Cyclone straps then wrap around the cables securing them to the mounting surface of the Cyclone base.

The Cyclone I Cable Cleats and Cyclone intermediate straps come with standard liners, which are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free. A high temperature version of the liner is available by adding HT suffix to the ordering code. The liners help to restrain the cables within vertical applications, providing a layer of protection between the cable sheath and the Cyclone stainless steel strap and base during normal operation where thermal elongation of cables occurs. The liners also prevent the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications, and protect the cable during short circuit conditions.

The Cyclone Strap is also designed to be used as an intermediate restraint (where applicable) between two Cyclone cable cleats to bind cables together giving a cost effective, easy application fixing system. Using the Cyclone I Strap cable cleat and the Cyclone Intermediate Restraint alternatively will dramatically reduce installation time and cost, when compared to alternative cable cleat only solutions.



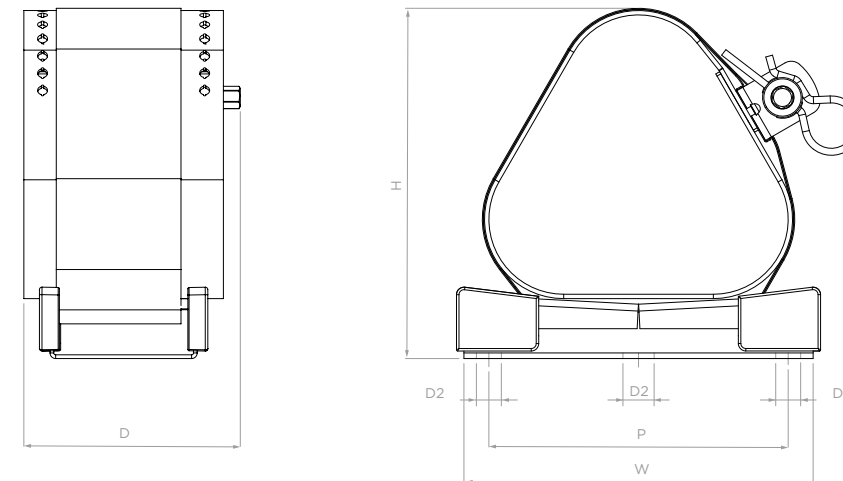
FEATURES

- Third party certification to IEC 61914
- Lightweight aluminium base with 316L stainless steel strap
- Short circuit rating of 124kA peak fault
- Standard operating temperature -50°C to +40°C
- Standard Polymer Liners are LUL approved and are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- High temperature liner version with HT suffix available with operating temperature -50°C to +90°C
- High temperature liners are classified as VO Flame Retardant Polymer
- Combined single (M12) and two bolt (M10) base fixing design

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite Strap Cable Cleat - 2 Loop Cyclone I
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-50 to +40°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Single and Trefoil, Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	Single and Trefoil, Refer to CMP Products, IEC 61914 clause 9.4
IMPACT RESISTANCE	Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	5000 Series Aluminium, 316L Stainless Steel Strap Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free. HT liners are classified as VO Flame Retardant Polymer.

300MM CYCLONE I (0.1 SEC)	
CABLE OD (MM)	PEAK kA
36	124.0
38	127.4
43	135.5
59	158.7
65	166.6

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5		
TREFOIL FORMATION		
One short circuit 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres
0.1 sec	0.1 sec	3 sec
124kA Peak	116kA Peak	61kA Peak
56.3kA r.m.s	52.7kA r.m.s	29.0kA r.m.s



CABLE CLEAT SELECTION TABLE											
CYCLONE I PART NO.	INTERMEDIATE RESTRAINT PART NO.	CABLE Ø RANGE TAKE (MM)			DIMENSIONS (MM)						WEIGHT (g)
		SINGLE	TREFOIL	QUAD	W	H	D	P	FIXING HOLE Ø		
									D1	D2	
1CYC024034	2STR024034	36-50	24-34	21-29	108	96	89	80	2 x M10	1 x M12	347
1CYC030041	2STR030041	45-60	30-41	26-35	108	109	89	80	2 x M10	1 x M12	358
1CYC037047	2STR037047	55-69	37-47	32-40	128	120	89	100	2 x M10	1 x M12	393
1CYC043054	2STR043054	64-80	43-54	37-46	128	134	89	100	2 x M10	1 x M12	406
1CYC050060	2STR050060	75-88	50-60	43-51	148	145	89	120	2 x M10	1 x M12	465
1CYC056067	2STR056067	83-99	56-67	49-57	148	158	89	120	2 x M10	1 x M12	478
1CYC063073	2STR063073	94-108	63-73	55-62	168	170	89	140	2 x M10	1 x M12	514
1CYC069080	2STR069080	103-118	69-80	60-68	168	183	89	140	2 x M10	1 x M12	527
1CYC072085	2STR072085	114-150	72-85	66-72	188	193	89	160	2 x M10	1 x M12	596
1CYC082095	2STR082095	145-165	82-95	70-81	188	212	89	160	2 x M10	1 x M12	615
1CYC092105	2STR092105		92-105	70-81	210	231	89	100	2 x M10	1 x M12	653
1CYC102115	2STR102115		102-115	88-98	210	250	89	100	2 x M10	1 x M12	672
1CYC112125	2STR112125		112-125	96-107	235	269	89	100	2 x M10	1 x M12	751
1CYC122135	2STR122135		122-135	105-116	235	288	89	100	2 x M10	1 x M12	771
1CYC132145	2STR132145		132-145	113-124	250	307	89	120	2 x M10	1 x M12	808

Note: Cyclone I cable cleat consists of one base and one strap, additional Cyclone cable straps (restraints) ordered separately. Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Order reference example for epoxy coating of cable cleat base suffix EC (1CYC024034EC). Order reference example for High Temperature liner version suffix HT (1CYC024034HT). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

CYCLONE II/III (SDSTR 2 LOOP/ HDSTR 3 LOOP)

The Cyclone II and III Strap cable cleats are metallic cable cleats consisting of a fabricated 316L stainless steel base and a stainless steel strap which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations.

The Cyclone II and III Strap cable cleats ensure the retention and securing of cables, whilst preventing damage to the cable when in normal operation or in the event a short circuit fault condition.

The cable cleats allow a wide range of applications including miscellaneous formations. They have an exceptional overlapping range and give the end user more flexibility when compared to more rigid cable cleats on the market. Each cable cleat is capable of securing various cable formations, such as single cable (multicore) or single cable in parallel formation, trefoil formation, and quad formation. Suitable for single cable applications diameters from 36mm to 165mm in 10 sizes, in trefoil formation from diameters of 24mm to 145mm in 15 sizes and quad formation from 21mm to 124mm in 15 sizes.

The Cyclone II Strap cable cleat is designed and tested to restrain cables securely during moderate short circuit forces, whilst the Cyclone III Strap cable cleat is designed for high short circuit forces. Cyclone II straps are designed to wrap around the cables twice, whilst the Cyclone III straps are designed to wrap around the cables three times to provide the resistance needed during high fault short circuit conditions.

The Cyclone II and III bases are manufactured from 316L stainless steel, giving the cable cleats high creep strength and excellent corrosion resistance. The Cyclone straps are manufactured in 316L stainless steel providing excellent corrosion resistance, and the tensioned straps act as a coil during short circuit conditions to restrain the cable. The Cyclone strap wraps around the angled Cyclone II or III stainless steel base ensuring the cables are always kept central, the strap is fastened to a stainless steel pin with a hexagon shaped head at one end allowing fast, easy installation via the use of a ratchet, power tool or other suitable mechanical device.

The Cyclone II and III Strap cable cleats have one M12 and two M10 fixing clearance holes within each base, allowing versatile installation, and enabling the product to be secured to a variety of mounting surfaces. Due to the design of the Cyclone, the cables do not need to be lifted and placed in to the cable cleat, instead the cables are placed on to the bases and the Cyclone straps then wrap around the cables securing them to the mounting surface of the base.

The Cyclone II and III cable cleats and Cyclone intermediate straps come with standard liners, which are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus free. A high temperature version of the liner is available by adding HT suffix to the ordering code. The liners help to restrain the cables within vertical applications, providing a layer of protection between the cable sheath and the Cyclone stainless steel strap and base during normal operation where thermal elongation of cables occurs. The liners also prevent the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications,



and protect the cable during short circuit conditions.

The Cyclone Straps are designed to be used as an intermediate restraint (where applicable) between two Cyclone cable cleats to bind cables together giving a cost effective, easy application fixing system. Using the Cyclone II or III Strap cable cleat and the Cyclone Intermediate Restraints alternatively will dramatically reduce installation time and cost, when compared to alternative cable cleat only solutions.

FEATURES

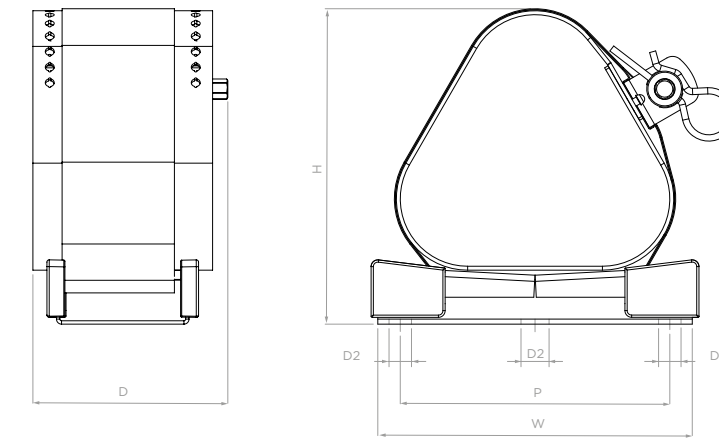
- Third party certification to IEC 61914
- 316L stainless steel base with stainless steel strap
- Cyclone II short circuit rating of 151kA peak fault
- Cyclone III short circuit rating of 180kA peak fault
- Standard operating temperature -50°C to +40°C
- Standard Polymer Liners are LUL approved and are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- High temperature liner version with HT suffix available with operating temperature -50°C to +90°C
- High temperature liners are classified as VO Flame Retardant Polymer
- Combined single (M12) and two bolt (M10) base fixing design

300MM CYCLONE II (0.1 SEC)	
CABLE OD (MM)	PEAK KA
36	151.0
38	155.1
43	165.0
59	193.3
65	202.9

300MM CYCLONE III (0.1 SEC)	
CABLE OD (MM)	PEAK KA
36	180.0
38	184.9
43	196.7
59	230.4
65	241.9

CYCLONE II SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5						
TREFOIL FORMATION						
fixed cleat centres 300mm	One short circuit		One short circuit w/ Cyclone strap	Two short circuits		Two short circuits w/ Cyclone strap
		300mm	600mm	1200mm	600mm	600mm
0.1 sec	1 sec	1 sec	0.1 sec	0.1 sec	1 sec	0.1 sec
151kA Peak	80kA Peak	75kA Peak	125kA Peak	120kA Peak	70kA Peak	114kA Peak
68.6kA r.m.s	35.6kA r.m.s	34.8kA r.m.s	56.8kA r.m.s	54.5kA r.m.s	32.8kA r.m.s	51.8kA r.m.s

CYCLONE III SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5						
TREFOIL FORMATION						
fixed cleat centres 300mm	One short circuit		One short circuit w/ Cyclone strap	Two short circuits		Two short circuits w/ Cyclone strap
		300mm	600mm	1200mm	600mm	600mm
0.1 sec	1 sec	1 sec	0.1 sec	0.1 sec	1 sec	0.1 sec
180kA Peak	90kA Peak	80kA Peak	137kA Peak	135kA Peak	75kA Peak	130kA Peak
81.8kA r.m.s	41.7kA r.m.s	36.9kA r.m.s	62.2kA r.m.s	61.4kA r.m.s	34.7kA r.m.s	60kA r.m.s



TECHNICAL DATA & CLASSIFICATION

TYPE	6.1.3 Composite Strap Cable Cleat - 2 Loop Cyclone II / 3 Loop Cyclone III
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-50 to +40°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time, IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Single - 5.5kN - 20kN Cyclone II and 6.5kN - 22kN Cyclone III, IEC 61914 clause 9.3 Trefoil - Refer to CMP Products, Cyclone II and Cyclone III, IEC 61914 clause 9.3
AXIAL LOAD TEST	IEC 61914 clause 9.4, Single - 0.4kN - 0.6kN Cyclone II and 0.4kN Cyclone III IEC 61914 clause 9.4, Trefoil - 0.4kN Cyclone II and 0.4kN Cyclone III
IMPACT RESISTANCE	Very Heavy, IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel Base & Strap Standard Polymer Liner are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free. HT liners are classified as VO Flame Retardant Polymer

CABLE CLEAT SELECTION TABLE

CYCLONE II PART NO.	CYCLONE III PART NO.	CABLE Ø RANGE TAKE (MM)			DIMENSIONS MM				FIXING HOLE Ø		WEIGHT (g)
		SINGLE	TREFOIL	QUAD	W	H	D	P	D1	D2	
									2 x M10	1 x M12	
2CYC024034	3CYC024034	36-50	24-34	21-29	108	96	89	80	2 x M10	1 x M12	519
2CYC030041	3CYC030041	45-60	30-41	26-35	108	109	89	80	2 x M10	1 x M12	538
2CYC037047	3CYC037047	55-69	37-47	32-40	128	120	89	100	2 x M10	1 x M12	612
2CYC043054	3CYC043054	64-80	43-54	37-46	128	134	89	100	2 x M10	1 x M12	634
2CYC050060	3CYC050060	75-88	50-60	43-51	148	145	89	120	2 x M10	1 x M12	729
2CYC056067	3CYC056067	83-99	56-67	49-57	148	158	89	120	2 x M10	1 x M12	747
2CYC063073	3CYC063073	94-108	63-73	55-62	168	170	89	140	2 x M10	1 x M12	822
2CYC069080	3CYC069080	103-118	69-80	60-68	168	183	89	140	2 x M10	1 x M12	841
2CYC072085	3CYC072085	114-150	72-85	66-72	188	193	89	160	2 x M10	1 x M12	951
2CYC082095	3CYC082095	145-165	82-95	70-81	188	212	89	160	2 x M10	1 x M12	978
2CYC092105	3CYC092105		92-105	70-81	210	231	89	100	2 x M10	1 x M12	1051
2CYC102115	3CYC102115		102-115	88-98	210	250	89	100	2 x M10	1 x M12	1080
2CYC112125	3CYC112125		112-125	96-107	235	269	89	100	2 x M10	1 x M12	1210
2CYC122135	3CYC122135		122-135	105-116	235	288	89	100	2 x M10	1 x M12	1239
2CYC132145	3CYC132145		132-145	113-124	250	307	89	120	2 x M10	1 x M12	1314

Note: Both Cyclone II and Cyclone III cable cleat consists of one base and one strap, additional cable straps (restraints) ordered separately. Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Order reference example for epoxy coating of cable cleat base suffix EC (2CYC024034EC). Order reference example for high temperature liner version suffix HT (2CYC024034HT). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

CONQUEROR (RTSS) THE FULLY VERSATILE CABLE CLEAT

Conqueror has been designed to suit a wide cable range take, allowing one cleat to fit a much broader range of cable sizes than a conventional fixed hinge cable cleat.

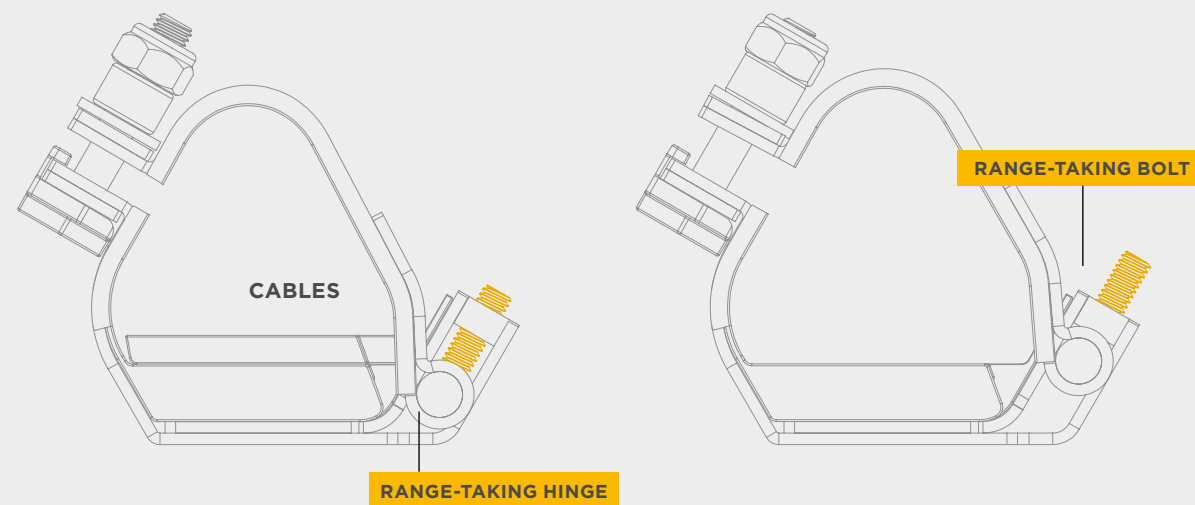
A common problem when ordering cable is that the actual outer cable diameter may vary from the nominal size by as much as 5%. If the cable diameter is at the upper or lower limit of a fixed hinge cable cleats range, this could result in the cleat being either too small or too large to properly restrain the cables. When this happens during a project,

especially one situated in a remote location, there will be delays and additional costs to re-order cleats of the correct size.

The Conqueror can easily cope with these size fluctuations, reducing the need for multiple cleat sizes to safely clamp the cables. The simple and easy-to-use adjustable hinge of the conqueror cable cleat allows each of the 16 sizes to provide a cable range take of 9mm, almost twice that of other fixed hinge cable cleats.

CABLE RANGE CAPABILITIES

Each of the 15 sizes has 9mm range take. Range-taking bolt allows the Conqueror to safely clamp cables within its 9mm range.



The Conqueror cable cleats are metallic cable cleats designed, constructed, and tested in accordance with the International Standard 'cable cleats for Electrical Installations' IEC 61914. The Conqueror cable cleat has been designed to restrain a large cable range take, and tested for exceptionally high short circuit conditions on cables held in trefoil application / formation, to ensure the securing and retention of cables without damage.

Conqueror is unique with its patent pending adjustable hinge. The movement of this hinge virtually doubles the range take adjustment when compared to other fixed hinged products on the market. Conqueror covers a range of cable diameters from 19mm up to 130mm in only 15 sizes. The cable cleat is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments.

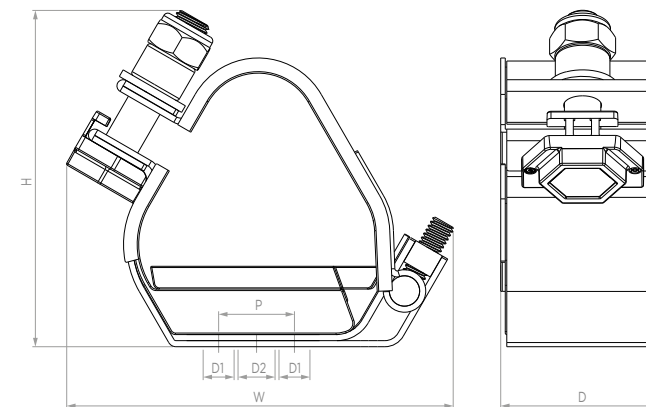
The Conqueror cable cleat has one M12 and two M10 fixing clearance holes within its base, allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces. The cable cleat hinge opens fully, allowing the cables to be easily placed within the cable cleat, to aid the installer before closing and securing via the mouth piece bolt.

The Conqueror cable cleats come with a liner as standard which help to restrain the cable(s) within vertical applications. The liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation, where thermal elongation of cables occurs. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.

FEATURES

- Third party certification to IEC 61914
- 316L stainless steel
- 23-130mm in 15 sizes for trefoil formation /application
- Short circuit rating of 170kA peak fault
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- Combined single (M12) and two bolt (M10) fixing design

CONQUEROR (RTSS) THE FULLY VERSATILE CABLE CLEAT



TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite RTSS - Range Taking Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	0.9kN - 1.1kN, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5				
TREFOIL FORMATION				
One short circuit 300mm fixed cleat centres	One short circuit 300mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres
0.1 sec	1 sec	0.1 sec	3 sec	1 sec
170kA Peak	90kA Peak	131kA Peak	61kA Peak	80kA Peak
77.3kA r.m.s	43.2kA r.m.s	59.6kA r.m.s	29.1kA r.m.s	38.1kA r.m.s

300MM CONQUEROR RTSS (0.1 SEC)	
CABLE OD (MM)	PEAK kA
36	170.0
38	174.6
43	185.7
59	217.6
65	228.4

CABLE CLEAT SELECTION TABLE								
CONQUEROR PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS (MM)						WEIGHT (g)
		W	H	D	P	FIXING HOLE Ø		
						D1	D2	
RTSS023032	23-32	122	99	54	25	2 x M10	1 x M12	509
RTSS030039	30-39	126	111	54	25	2 x M10	1 x M12	534
RTSS037046	37-46	132	117	54	25	2 x M10	1 x M12	557
RTSS044053	44-53	151	128	54	50	2 x M10	1 x M12	676
RTSS051060	51-60	154	139	54	50	2 x M10	1 x M12	694
RTSS058067	58-67	157	151	54	50	2 x M10	1 x M12	727
RTSS065074	65-74	176	163	54	75	2 x M10	1 x M12	839
RTSS072081	72-81	182	175	54	75	2 x M10	1 x M12	866
RTSS079088	79-88	191	190	54	75	2 x M10	1 x M12	900
RTSS086095	86-95	216	202	54	75	2 x M10	1 x M12	1023
RTSS093102	93-102	222	215	54	75	2 x M10	1 x M12	1050
RTSS100109	100-109	228	228	54	75	2 x M10	1 x M12	1079
RTSS107116	107-116	254	241	54	75	2 x M10	1 x M12	1199
RTSS114123	114-123	257	254	54	75	2 x M10	1 x M12	1228
RTSS121130	121-130	268	267	54	75	2 x M10	1 x M12	1255

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (RTSS065074EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

RELIANCE (SDAL)

The Reliance cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard 'cable cleats for Electrical Installations' IEC 61914 to ensure the securing and retention of cables, without sustaining damage to the cable(s).

The range is fabricated from 5000 series aluminium and is available in 24 sizes to suit cable diameters 19mm to 128mm.

The cleat has three M10 fixing clearance holes within one base, allowing versatility to the installer during installation to use either one M10 bolt or two M10 bolts, and is designed to enable the product to be secured to a variety of mounting surfaces. The hinge opens fully allowing the cables to be easily placed within the cable cleat to aid the installer before closing and securing via the mouth piece bolt.

Liners come as standard which help to restrain the cable(s) within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard polymer liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.



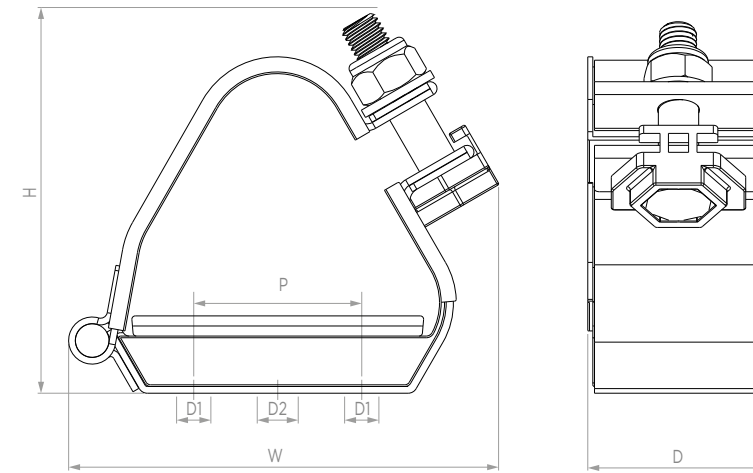
FEATURES

- Third party certification to IEC 61914
- 5000 series aluminium
- 3mm material thickness
- 19 - 128mm in 24 sizes for trefoil formation / application
- Short circuit rating of 106kA peak fault
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- Combined single (M10) or two bolt (M10) fixing design

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite SDAL - Aluminium
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products
AXIAL LOAD TEST	Refer to CMP Products
IMPACT RESISTANCE	Pass - Very heavy IEC 61914
MATERIAL	5000 Series Aluminium with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
TREFOIL FORMATION	
One short circuit 300mm fixed cleat centres	One short circuit 300mm fixed cleat centres
0.1 sec	1.0 sec
106kA Peak 50.5kA r.m.s	70kA Peak 33.3kA r.m.s
Cable Ø 38 mm	Cable Ø 38 mm

300MM RELIANCE SDAL (0.1 SEC)	
CABLE OD (MM)	PEAK KA
36	103
38	106
43	112
59	132
65	138



CABLE CLEAT SELECTION TABLE								
RELIANCE PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS (MM)				FIXING HOLE Ø		WEIGHT (g)
		W	H	D	P	D1	D2	
						2 x M10	1 x M10	
SDAL019023	19-23	102	88	54	25	2 x M10	1 x M10	260
SDAL023028	23-28	106	94	54	25	2 x M10	1 x M10	285
SDAL027032	27-32	108	97	54	25	2 x M10	1 x M10	294
SDAL031035	31-35	110	103	54	25	2 x M10	1 x M10	302
SDAL034038	34-38	112	107	54	25	2 x M10	1 x M10	307
SDAL037042	37-42	134	107	54	50	2 x M10	1 x M10	357
SDAL041046	41-46	136	113	54	50	2 x M10	1 x M10	366
SDAL045050	45-50	138	121	54	50	2 x M10	1 x M10	376
SDAL049055	49-55	140	127	54	50	2 x M10	1 x M10	390
SDAL052058	52-58	142	130	54	50	2 x M10	1 x M10	398
SDAL056059	56-59	144	131	54	50	2 x M10	1 x M10	419
SDAL056062	56-62	159	138	54	75	2 x M10	1 x M10	448
SDAL060066	60-66	159	146	54	75	2 x M10	1 x M10	451
SDAL064070	64-70	162	153	54	75	2 x M10	1 x M10	461
SDAL068074	68-74	165	160	54	75	2 x M10	1 x M10	471
SDAL072078	72-78	170	168	54	75	2 x M10	1 x M10	483
SDAL076082	76-82	192	175	54	75	2 x M10	1 x M10	539
SDAL080086	80-86	196	183	54	75	2 x M10	1 x M10	547
SDAL084090	84-90	199	190	54	75	2 x M10	1 x M10	554
SDAL090098	90-98	208	205	54	75	2 x M10	1 x M10	576
SDAL098103	98-103	216	215	54	75	2 x M10	1 x M10	594
SDAL103111	103-111	239	229	54	75	2 x M10	1 x M10	663
SDAL111119	111-119	250	244	54	75	2 x M10	1 x M10	684
SDAL119128	119-128	267	261	54	75	2 x M10	1 x M10	720

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (SDAL019023EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

HURON (LDAL)

The Huron cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard 'cable cleats for Electrical Installations' IEC 61914 to ensure the securing and retention of cables, without sustaining damage to the cable(s).

The range is fabricated from 5000 series aluminium and is available in 23 sizes to suit cable diameters 19mm to 128mm.

The cleat has three M10 fixing clearance holes within one base, allowing versatility to the installer during installation to use either one M10 bolt or two M10 bolts, and is designed to enable the product to be secured to a variety of mounting surfaces. The Huron cable cleats hinge opens fully allowing the cables to be easily placed within the cable cleat to aid the installer before closing and securing via the mouth piece bolt.

Liners come as standard which help to restrain the cable(s) within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.



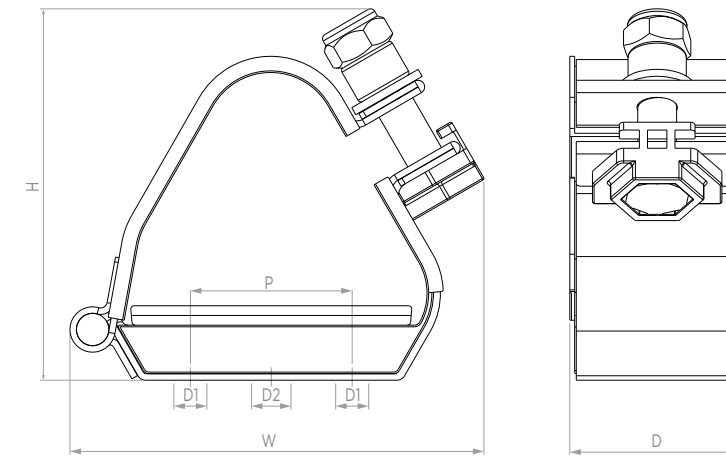
FEATURES

- Third party certification to IEC 61914
- 5000 series aluminium
- 19 - 128mm in 23 sizes for trefoil formation/application
- Short circuit rating of 84kA peak fault
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- Combined single (M10) or two bolt (M10) fixing design

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite LDAL - Aluminium
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	5000 Series Aluminium with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
TREFOIL FORMATION	
One short circuit 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres
0.1 sec	0.1 sec
84kA Peak 40.5kA r.m.s	84kA Peak 40.5kA r.m.s

300MM HURON LDAL (0.1 SEC)	
CABLE OD (MM)	PEAK KA
36	84.0
38	86.3
43	91.8
59	107.5
65	112.9



CABLE CLEAT SELECTION TABLE

HURON PART NO.	CABLE Ø RANGE TAKE (MM)	DIMENSIONS (MM)						WEIGHT (g)
		W	H	D	P	FIXING HOLE Ø		
						D1	D2	
LDAL019023	19-23	100	87	54	25	2 x M10	1 x M10	213
LDAL023028	23-28	104	88	54	25	2 x M10	1 x M10	235
LDAL027032	27-32	106	97	54	25	2 x M10	1 x M10	242
LDAL030035	30-35	108	103	54	25	2 x M10	1 x M10	248
LDAL033038	33-38	110	107	54	25	2 x M10	1 x M10	251
LDAL036042	36-42	132	108	54	50	2 x M10	1 x M10	295
LDAL040046	40-46	134	113	54	50	2 x M10	1 x M10	302
LDAL044050	44-50	136	121	54	50	2 x M10	1 x M10	309
LDAL048055	48-55	138	127	54	50	2 x M10	1 x M10	320
LDAL051058	51-58	140	130	54	50	2 x M10	1 x M10	326
LDAL055062	55-62	157	138	54	75	2 x M10	1 x M10	363
LDAL059066	59-66	157	145	54	75	2 x M10	1 x M10	371
LDAL063070	63-70	160	152	54	75	2 x M10	1 x M10	378
LDAL067074	67-74	163	160	54	75	2 x M10	1 x M10	386
LDAL071078	71-78	168	167	54	75	2 x M10	1 x M10	395
LDAL074082	74-82	190	175	54	75	2 x M10	1 x M10	444
LDAL077085	77-85	192	180	54	75	2 x M10	1 x M10	450
LDAL082088	82-88	193	186	54	75	2 x M10	1 x M10	455
LDAL088096	88-96	202	201	54	75	2 x M10	1 x M10	472
LDAL096103	96-103	214	215	54	75	2 x M10	1 x M10	486
LDAL103111	103-111	237	229	54	75	2 x M10	1 x M10	545
LDAL111119	111-119	248	244	54	75	2 x M10	1 x M10	561
LDAL119128	119-128	265	260	54	75	2 x M10	1 x M10	591

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (LDAL019023EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

LEGION (LDAL-C)

The LEGION cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations, to ensure the securing and retention of cables, without sustaining damage to the cables.

The range is fabricated from 5000 series aluminium and is available in 23 sizes to suit cable diameters 19mm to 128mm.

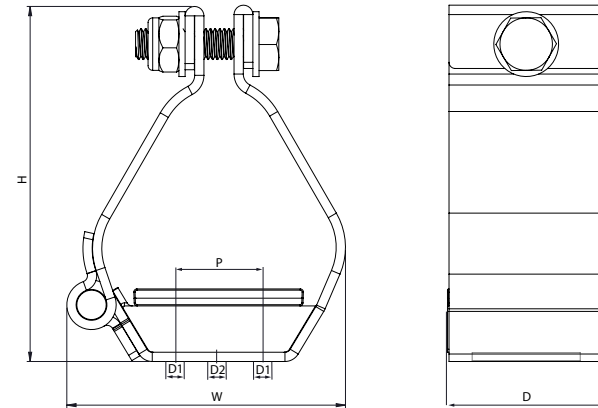
The top opening is designed to fit more cleats installed side by side, whilst three M10 fixing clearance holes within each base, allow the versatility of installing with either one M10 bolt or two M10 bolts. This enables installation of the LEGION to a variety of mounting surfaces.

The hinge of the LEGION opens fully, allowing cables to be easily placed within the cable cleat, before closing and securing via the mouth piece bolt.



FEATURES

- Third party certification to IEC 61914
- 5000 series aluminium
- 19 - 128mm in 23 sizes for trefoil formation/application
- Operating temperature -60°C to +60°C
- Combined single (M10) or two bolt (M10) fixing design



TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite LDAL-C - Aluminium
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	5000 Series Aluminium

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
TREFOIL FORMATION			
One short circuit 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres	One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres
0.1 sec	0.1 sec	0.1 sec	0.1 sec
112kA Peak	102kA Peak	86kA Peak	86kA Peak
50.9kA r.m.s	48.6kA r.m.s	40.1kA r.m.s	40.1kA r.m.s

CABLE CLEAT SELECTION TABLE								
LEGION PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS (mm)				FIXING HOLE Ø		WEIGHT (g)
		W	H	D	P	D1	D2	
						1 x M10		
LDALC019023	19-23	68	87	58	N/A	N/A	1 x M10	220
LDALC023028	23-28	84	96	50	25	2 x M10	1 x M10	208
LDALC027032	27-32	84	104	50	25	2 x M10	1 x M10	215
LDALC031035	31-35	87	110	50	25	2 x M10	1 x M10	220
LDALC034038	34-38	90	115	50	25	2 x M10	1 x M10	225
LDALC037042	37-42	116	123	50	50	2 x M10	1 x M10	286
LDALC041046	41-46	116	130	50	50	2 x M10	1 x M10	293
LDALC045050	45-50	119	138	50	50	2 x M10	1 x M10	299
LDALC049055	49-55	124	147	50	50	2 x M10	1 x M10	308
LDALC052058	52-58	127	153	50	50	2 x M10	1 x M10	314
LDALC056062	56-62	147	160	50	75	2 x M10	1 x M10	366
LDALC060066	60-66	150	168	50	75	2 x M10	1 x M10	373
LDALC064070	64-70	154	175	50	75	2 x M10	1 x M10	380
LDALC068074	68-74	158	183	50	75	2 x M10	1 x M10	388
LDALC072078	72-78	162	190	50	75	2 x M10	1 x M10	396
LDALC076082	76-82	187	198	50	75	2 x M10	1 x M10	468
LDALC080086	80-86	190	205	50	75	2 x M10	1 x M10	475
LDALC084090	84-90	194	213	50	75	2 x M10	1 x M10	482
LDALC090098	90-98	202	228	50	75	2 x M10	1 x M10	498
LDALC098103	98-103	212	237	50	75	2 x M10	1 x M10	508
LDALC103111	103-111	235	252	50	75	2 x M10	1 x M10	596
LDALC111119	111-119	244	267	50	75	2 x M10	1 x M10	611
LDALC119128	119-128	262	284	50	75	2 x M10	1 x M10	629

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (LDALC019023EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.



CENTURION (LDAL-B)

The Centurion cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations to ensure the securing and retention of cables, without sustaining damage to the cable(s).

The range is fabricated from 5000 series aluminium and is available in 23 sizes to suit cable diameters 19mm to 128mm.

The Centurion cleat has three M10 fixing clearance holes within one base, allowing versatility during installation to use either one or two M10 bolts. This design enables adaptation of the Centurion for a variety of mounting surfaces.

The hinge of the Centurion opens fully, allowing cables to be easily placed within the cable cleat, before closing and securing via the mouth piece bolt.



SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5

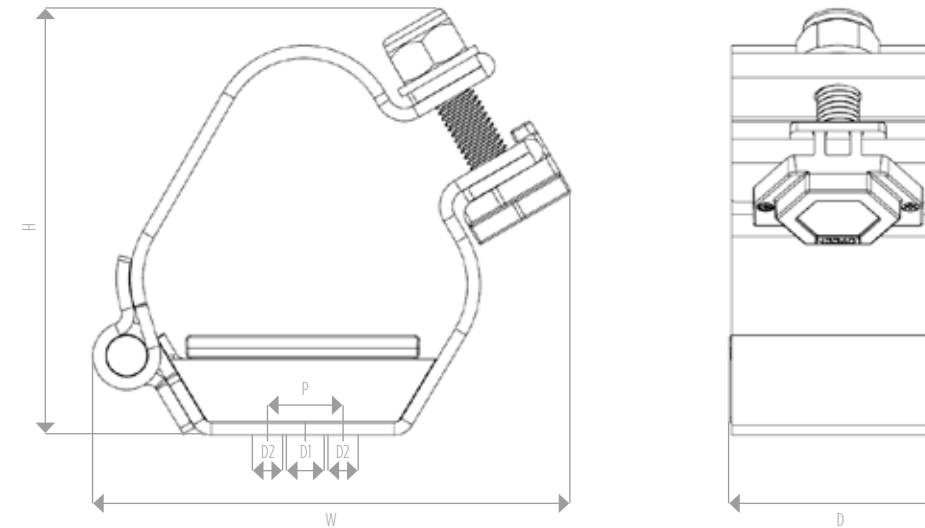
TREFOIL INFORMATION				
One short circuit 300mm fixed cleat centres	Two short circuit 300mm fixed cleat centres	One short circuit 600mm fixed cleat centres	Two short circuit 600mm fixed cleat centres	One short circuit 300mm fixed cleat centres
0.1 sec	0.1 sec	0.1 sec	0.1 sec	1 sec
112kA Peak	86kA Peak	86kA Peak	86kA peak	71kA peak
50.9kA r.m.s	39.1kA r.m.s	39.1kA r.m.s	39.1kA r.m.s	32.3kA r.m.s

FEATURES

- Third party certification to IEC 61914
- 5000 series aluminium
- 19 - 128mm in 23 sizes for trefoil formation/application
- Operating temperature -60°C to +60°C
- Three M10 fixing clearance holes within one base

TECHNICAL DATA & CLASSIFICATION

TYPE	IEC 61914 6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	0.6kN
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	5000 Series Aluminium



CABLE CLEAT SELECTION TABLE

CENTURION PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS (mm)						WEIGHT (g)
		W	H	D	P	FIXING HOLE Ø		
						D1	D2	
LDALB019023	19-23	103	83	51	25	1 x M10	2 x M10	226
LDALB023028	23-28	106	88	51	25	1 x M10	2 x M10	234
LDALB027032	27-32	110	91	51	25	1 x M10	2 x M10	240
LDALB031035	31-35	110	97	51	25	1 x M10	2 x M10	245
LDALB034038	34-38	112	100	51	25	1 x M10	2 x M10	259
LDALB037042	37-42	134	106	51	50	1 x M10	2 x M10	320
LDALB041046	41-46	136	110	51	50	1 x M10	2 x M10	315
LDALB045050	45-50	137	115	51	50	1 x M10	2 x M10	320
LDALB049055	49-55	140	125	51	50	1 x M10	2 x M10	330
LDALB052058	52-58	142	129	51	50	1 x M10	2 x M10	335
LDALB056062	56-62	161	138	51	75	1 x M10	2 x M10	382
LDALB060066	60-66	161	145	51	75	1 x M10	2 x M10	390
LDALB064070	64-70	163	152	51	75	1 x M10	2 x M10	397
LDALB068074	68-74	165	159	51	75	1 x M10	2 x M10	404
LDALB072078	72-78	167	167	51	75	1 x M10	2 x M10	412
LDALB076082	76-82	193	174	51	75	1 x M10	2 x M10	504
LDALB080086	80-86	195	182	51	75	1 x M10	2 x M10	483
LDALB084090	84-90	197	189	51	75	1 x M10	2 x M10	490
LDALB090098	90-98	203	204	51	75	1 x M10	2 x M10	506
LDALB098103	98-103	208	213	51	75	1 x M10	2 x M10	515
LDALB103111	103-111	239	228	51	75	1 x M10	2 x M10	631
LDALB111119	111-119	246	243	51	75	1 x M10	2 x M10	609
LDALB119128	119-128	263	260	51	75	1 x M10	2 x M10	627

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (LDALB019023EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack TDS752. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied on request - see isolation/separation pad TDS733.

EVEREST (HVSS-CC)

CMP Everest trefoil cable cleat range has been designed for the safe retention of high voltage cables. The Everest is designed, constructed and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations; to ensure the securing and retention of cables without sustaining damage to the cable(s). The product variations comprise of a fixed, slide and a float cleat or intermediate restraint.

The Everest trefoil range of cable cleats are designed for use with high voltage cable installations and are manufactured to suit a range of cable diameters. The range consists of three cable cleats designed to be installed as a system; a fixed cleat, a slide cleat and an intermediate restraint or float cleat (if required).

The Everest fixed cleat is designed to secure the cables in a trefoil formation to a mounting surface, providing excellent axial and lateral retention. This variation securely holds the cables to a support structure. The Everest fixed cleat can be installed in a rigid system where there would be no allowance for movement within the system.

The Everest slide cleat is designed to secure cables in trefoil formation to a mounting surface, whilst providing excellent axial and lateral load retention the sliding base design allows for the cables to move in a horizontal direction, perpendicular to the cables direction. The Everest slide cleat is to be installed in a flexible system, where a snaking method is adopted. The slide bases allow the cables to expand the arc within the snake so to take up additional length generated by thermal expansion.

Everest Float Cleat is designed to secure cables in trefoil formation. The Everest float cleat would be installed between two fixed cleat or a fixed cleat and sliding cleat to be an intermediate restraint, allowing for greater fixed/sliding cleat spacing.

HVSS-CC cleats are fabricated in non-magnetic 316L stainless steel.

Flame retardant low smoke and fume fixed liners are fitted as standard, helping to:

- Restrain the cables within vertical applications.
- Provide a layer of protection to both the cable sheath and the cable cleat, during normal operation where thermal elongation of cable occurs.
- Protect the cable from chafing on any mounting surface due to differential movements, such as those found in marine and offshore applications.
- Assist in the extra protection of cables in the event of short circuit fault condition

FEATURES

- Third party certification to IEC 61914
- Available in 316L stainless steel
- Sunlight (UV) resistant
- Operating temperature -60°C to +90°C
- Available in slide or fixed design
- Excellent axial and lateral load retention



TECHNICAL DATA & CLASSIFICATION	
TYPE	IEC 61914 6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +90°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 seconds IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel
MATERIAL THICKNESS	2mm
LINER MATERIAL	FR LSF / LSOH Polymer
CABLE FORMATION	Trefoil

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
TREFOIL FORMATION	
One Short Circuit 1.4m, with intermediate restraints	Two Short Circuit 1.4m, with intermediate restraints
142mm	142mm
1 sec	1 sec
238kA Peak	164kA Peak
92 kA r.m.s	64 kA r.m.s



Fixed type cable cleat

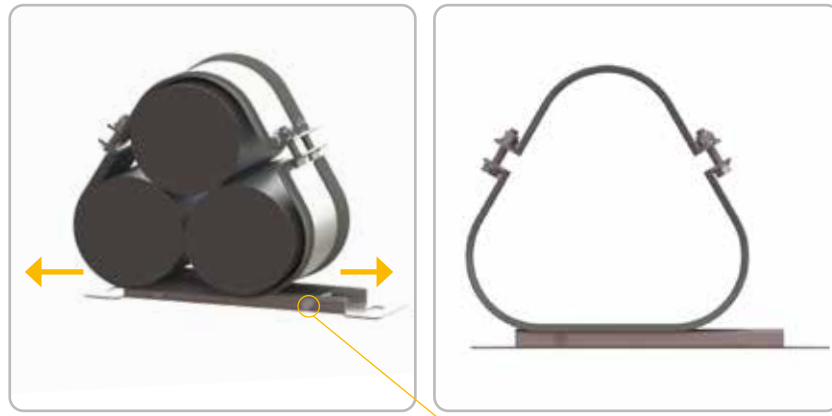
CABLE CLEAT SELECTION TABLE									
HVSS-CC PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS mm							WEIGHT (g)
		W1	W2	H1	H2	D	P	D1	
HVSS-CC-100110-FX	100-110	239	334	221	244	156	282	2 x M16	3019
HVSS-CC-110120-FX	110-120	259	354	239	262	156	302	2 x M16	3208
HVSS-CC-120130-FX	120-130	279	374	258	281	156	322	2 x M16	3396
HVSS-CC-130140-FX	130-140	299	394	277	300	156	342	2 x M16	3585
HVSS-CC-140150-FX	140-150	319	414	295	318	156	362	2 x M16	3774
HVSS-CC-150160-FX	150-160	339	434	314	337	156	382	2 x M16	3962
HVSS-CC-160170-FX	160-170	359	454	333	356	156	402	2 x M16	4151
HVSS-CC-170180-FX	170-180	379	474	351	374	156	422	2 x M16	4340
HVSS-CC-180190-FX	180-190	399	494	370	393	156	442	2 x M16	4528
HVSS-CC-190200-FX	190-200	419	514	389	412	156	462	2 x M16	4717



Float type cable cleat

Note: Cyclone Intermediate Restraint may also be used

CABLE CLEAT SELECTION TABLE							
HVSS-CC PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS mm					WEIGHT (g)
		W1	H1	D	P	D1	
HVSS-CC-100110-FL	100-110	239	221	156	n/a	n/a	2169
HVSS-CC-110120-FL	110-120	259	239	156	n/a	n/a	2358
HVSS-CC-120130-FL	120-130	279	258	156	n/a	n/a	2546
HVSS-CC-130140-FL	130-140	299	277	156	n/a	n/a	2735
HVSS-CC-140150-FL	140-150	319	295	156	n/a	n/a	2924
HVSS-CC-150160-FL	150-160	339	314	156	n/a	n/a	3112
HVSS-CC-160170-FL	160-170	359	333	156	n/a	n/a	3301
HVSS-CC-170180-FL	170-180	379	351	156	n/a	n/a	3490
HVSS-CC-180190-FL	180-190	399	370	156	n/a	n/a	3678
HVSS-CC-190200-FL	190-200	419	389	156	n/a	n/a	3867

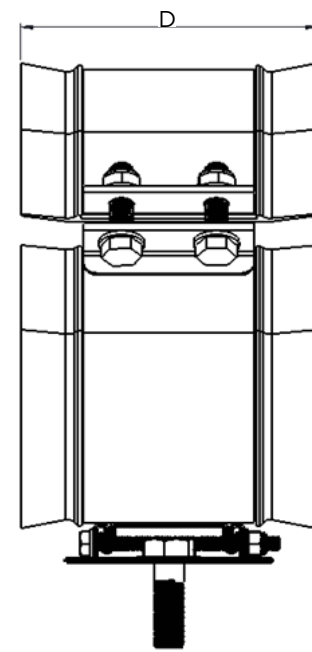
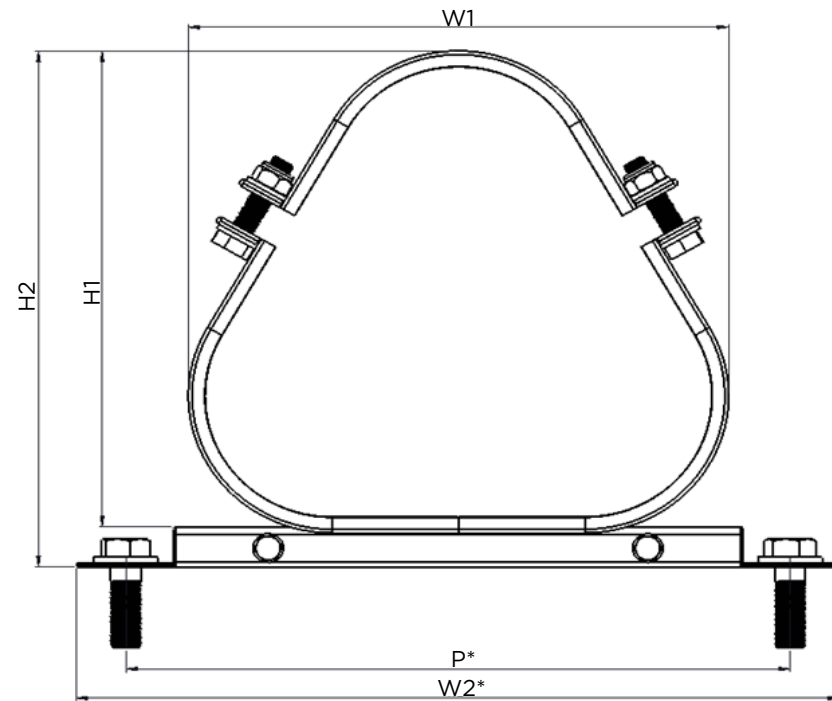


Slide type cable cleat

The Slide Cleat base channel includes a stop position, to limit the slide distance in each direction.

CABLE CLEAT SELECTION TABLE

HVSS-CC PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS mm							WEIGHT (g)
		W1	W2	H1	H2	D	P	D1	
HVSS-CC-100110-SL	100-110	239	334	221	244	156	282	2 x M16	3019
HVSS-CC-110120-SL	110-120	259	354	239	262	156	302	2 x M16	3208
HVSS-CC-120130-SL	120-130	279	374	258	281	156	322	2 x M16	3396
HVSS-CC-130140-SL	130-140	299	394	277	300	156	342	2 x M16	3585
HVSS-CC-140150-SL	140-150	319	414	295	318	156	362	2 x M16	3774
HVSS-CC-150160-SL	150-160	339	434	314	337	156	382	2 x M16	3962
HVSS-CC-160170-SL	160-170	359	454	333	356	156	402	2 x M16	4151
HVSS-CC-170180-SL	170-180	379	474	351	374	156	422	2 x M16	4340
HVSS-CC-180190-SL	180-190	399	494	370	393	156	442	2 x M16	4528
HVSS-CC-190200-SL	190-200	419	514	389	412	156	462	2 x M16	4717



TITAN (SCSS)

The TITAN cable support cleat has been designed, constructed and tested in accordance with the international standard IEC 61914 cable cleats for electrical installations; to ensure the securing and retention of cables, without sustaining damage to the cable(s).



Designed to support cables in high voltage applications, the TITAN allows cable sag between fixed anchor points, where desirable. Sagging cable between fixed anchor points is a method of installation where the cable is allowed to hang between the cleats. This area of excess cable will accommodate thermal expansion and contraction of the cable in service, without putting undue stress on the anchor points.

The TITAN adds additional support to the cable at the anchor points, ensuring there is no excessive pressure or point loading to the cable in these critical areas. The system is designed so that the support arm and cleat area can swivel and rotate, allowing flexibility to the installer.

The TITAN comes in three lengths; 400mm, 600mm and 800mm. This will accommodate larger cable cleat fixing centers, whilst reducing the pressure applied to the cable from its own weight.

The product can be fabricated to suit any installation parameters. Please contact CMP to discuss your specific project requirements.

FEATURES

- Third party tested in accordance with IEC 61914
- Highly corrosion resistant in stainless steel
- Operating temperature -60°C to +90°C
- Allows cable sag between fixed anchor points
- Increased support reducing pressure on cable
- Strong heavy duty construction

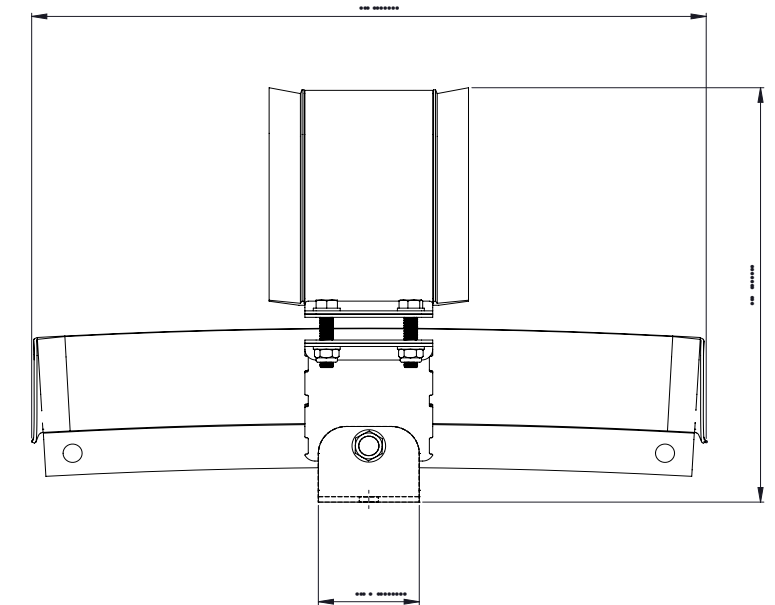
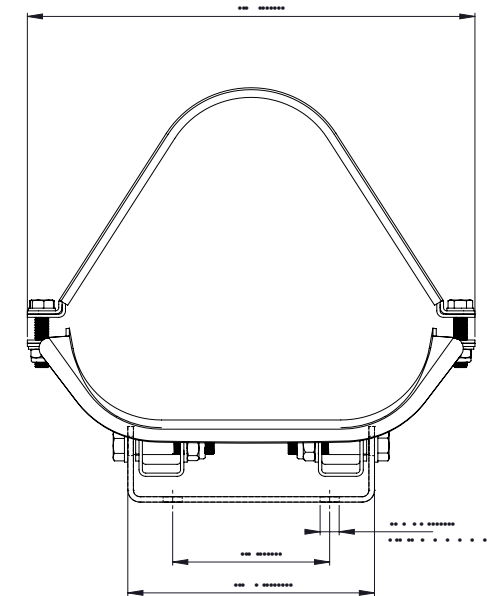
TECHNICAL DATA & CLASSIFICATION	
TYPE	IEC 61914 6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +90°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 seconds IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	Stainless steel
LINER MATERIAL	FR LSF / LSOH Polymer
CABLE FORMATION	Trefoil

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5		
TREFOIL FORMATION		
One Short Circuit 8.4m, with intermediate restraints	Two Short Circuit 8.4m, with intermediate restraints	
142mm conductor centres	142mm conductor centres	
1 sec	1 sec	
183kA Peak	153 kA Peak	
72 kA r.m.s	60 kA r.m.s	

TITAN (SCSS)

CABLE CLEAT SELECTION TABLE

TITAN PART NO.	CABLE Ø RANGE TAKE (mm)	LENGTH (mm)	DIMENSIONS (mm)						BASE FIXING	WEIGHT (g)
			H	W	L	L2	W2	P		
SCSS-100110-400	100-110	400	287.8	298.4	400	90	170	120	2 x M16	7541
SCSS-100110-600	100-110	600	287.8	298.4	600	90	170	120	2 x M16	9448
SCSS-100110-800	100-110	800	287.8	298.4	800	90	170	120	2 x M16	11337
SCSS-110120-400	110-120	400	306.4	318.5	400	90	180	120	2 x M16	8560
SCSS-110120-600	110-120	600	306.4	318.5	600	90	180	120	2 x M16	10693
SCSS-110120-800	110-120	800	306.4	318.5	800	90	180	120	2 x M16	12704
SCSS-120130-400	120-130	400	325.1	338.7	400	90	190	120	2 x M16	8404
SCSS-120130-600	120-130	600	325.1	338.7	600	90	190	120	2 x M16	10560
SCSS-120130-800	120-130	800	325.1	338.7	800	90	190	120	2 x M16	12692
SCSS-130140-400	130-140	400	343.7	358.8	400	90	200	120	2 x M16	8837
SCSS-130140-600	130-140	600	343.7	358.8	600	90	200	120	2 x M16	11122
SCSS-130140-800	130-140	800	343.7	358.8	800	90	200	120	2 x M16	13125
SCSS-140150-400	140-150	400	362.4	379	400	90	210	140	2 x M16	9268
SCSS-140150-600	140-150	600	362.4	379	600	90	210	140	2 x M16	12101
SCSS-140150-800	140-150	800	362.4	379	800	90	210	140	2 x M16	13934
SCSS-150160-400	150-160	400	381.1	399.1	400	90	220	140	2 x M16	9702
SCSS-150160-600	150-160	600	381.1	399.1	600	90	220	140	2 x M16	12238
SCSS-150160-800	150-160	800	381.1	399.1	800	90	220	140	2 x M16	14739
SCSS-160170-400	160-170	400	399.7	419.3	400	90	230	140	2 x M16	10134
SCSS-160170-600	160-170	600	399.7	419.3	600	90	230	140	2 x M16	12797
SCSS-160170-800	160-170	800	399.7	419.3	800	90	230	140	2 x M16	15281
SCSS-170180-400	170-180	400	418.4	439.4	400	90	240	160	2 x M16	10568
SCSS-170180-600	170-180	600	418.4	439.4	600	90	240	160	2 x M16	13354
SCSS-170180-800	170-180	800	418.4	439.4	800	90	240	160	2 x M16	15961
SCSS-180190-400	180-190	400	437	459.6	400	90	250	160	2 x M16	11002
SCSS-180190-600	180-190	600	437	459.6	600	90	250	160	2 x M16	13917
SCSS-180190-800	180-190	800	437	459.6	800	90	250	160	2 x M16	16640
SCSS-190200-400	190-200	400	455.7	479.8	400	90	260	160	2 x M16	11444
SCSS-190200-600	190-200	600	455.7	479.8	600	90	260	160	2 x M16	14478
SCSS-190200-800	190-200	800	455.7	479.8	800	90	260	160	2 x M16	17494



SPHINX (SCAL)

The SPHINX cable support cleat has been designed, constructed and tested in accordance with the international standard IEC 61914 cable cleats for electrical installations; to ensure the securing and retention of cables, without sustaining damage to the cable(s).

Designed to support cables in high voltage applications, the SPHINX allows cable sag between fixed anchor points, where desirable. Sagging cable between fixed anchor points is a method of installation where the cable is allowed to hang between the cleats. This area of excess cable will accommodate thermal expansion and contraction of the cable in service, without putting undue stress on the anchor points.

The SPHINX adds additional support to the cable at the anchor points, ensuring there is no excessive pressure or point loading to the cable in these critical areas. The system is designed so that the support arm and cleat area can swivel and rotate, allowing flexibility to the installer.

The SPHINX comes in three lengths; 400mm, 600mm and 800mm. This will accommodate larger cable cleat fixing centers, whilst reducing the pressure applied to the cable from its own weight.

The product can be fabricated to suit any installation parameters. Please contact CMP to discuss your specific project requirements.

FEATURES

- Third party tested in accordance with IEC 61914
- Corrosion resistant aluminium
- Sunlight (UV) resistant
- Operating temperature -60°C to +90°C
- Allows cable sag between fixed anchor points
- No excessive pressure points to the cable
- Increased support reducing pressure on cable
- Strong but lightweight construction

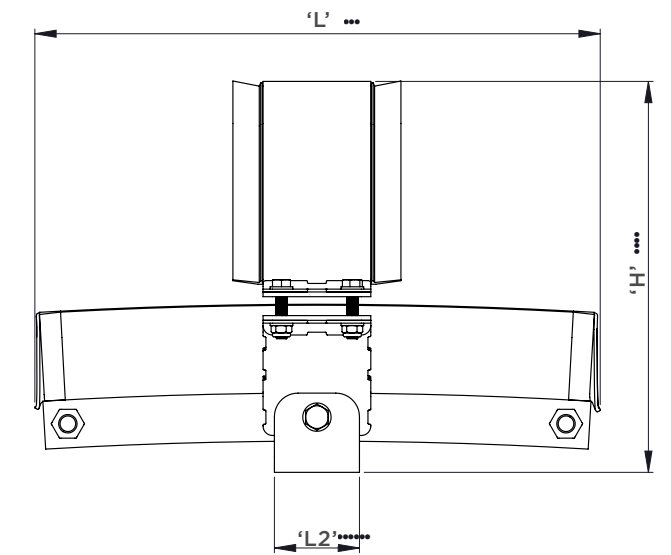
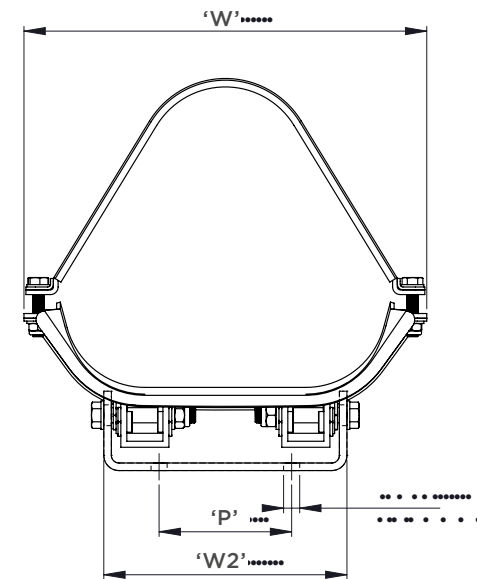


TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +90°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 seconds IEC 61914 clause 10.0., 10.1, IEC 60695-11-5
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	5000 & 6000 Series Aluminium
LINER MATERIAL	FR LSF / LSOH Polymer
CABLE FORMATION	Trefoil

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5	
TREFOIL FORMATION	
One short circuit 8.4m, with intermediate restraints	Two short circuit 8.4m, with intermediate restraints
142mm conductor centres	142mm conductor centres
1 sec	1 sec
153 kA Peak	104 kA Peak
60 kA r.m.s	40 kA r.m.s

SPHINX (SCAL)

CABLE CLEAT SELECTION TABLE										
SPHINX PART NO.	CABLE Ø RANGE TAKE (mm)*	LENGTH (MM)	DIMENSIONS mm						BASE FIXING Ø	WEIGHT (g)
			H	W	L	L2	W2	P		
SCAL-100110-400	100-110	400	300	302	400	90	197	120	2 x M16	6197
SCAL-100110-600	100-110	600	300	302	600	90	197	120	2 x M16	8074
SCAL-100110-800	100-110	800	300	302	800	90	197	120	2 x M16	9923
SCAL-110120-400	110-120	400	320	324	400	90	207	120	2 x M16	6424
SCAL-110120-600	110-120	600	320	324	600	90	207	120	2 x M16	8346
SCAL-110120-800	110-120	800	320	324	800	90	207	120	2 x M16	10248
SCAL-120130-400	120-130	400	339	344	400	90	217	120	2 x M16	6658
SCAL-120130-600	120-130	600	339	344	600	90	217	120	2 x M16	8636
SCAL-120130-800	120-130	800	339	344	800	90	217	120	2 x M16	10594
SCAL-130140-400	130-140	400	356	364	400	90	227	120	2 x M16	6893
SCAL-130140-600	130-140	600	356	364	600	90	227	120	2 x M16	8926
SCAL-130140-800	130-140	800	356	364	800	90	227	120	2 x M16	10938
SCAL-140150-400	140-150	400	376	385	400	90	237	140	2 x M16	7127
SCAL-140150-600	140-150	600	376	385	600	90	237	140	2 x M16	9406
SCAL-140150-800	140-150	800	376	385	800	90	237	140	2 x M16	11284
SCAL-150160-400	150-160	400	395	405	400	90	247	140	2 x M16	7362
SCAL-150160-600	150-160	600	395	405	600	90	247	140	2 x M16	9507
SCAL-150160-800	150-160	800	395	405	800	90	247	140	2 x M16	11629
SCAL-160170-400	160-170	400	414	426	400	90	257	140	2 x M16	7594
SCAL-160170-600	160-170	600	414	426	600	90	257	140	2 x M16	9796
SCAL-160170-800	160-170	800	414	426	800	90	257	140	2 x M16	11976
SCAL-170180-400	170-180	400	432	446	400	90	267	160	2 x M16	7830
SCAL-170180-600	170-180	600	432	446	600	90	267	160	2 x M16	10089
SCAL-170180-800	170-180	800	432	446	800	90	267	160	2 x M16	12323
SCAL-180190-400	180-190	400	451	466	400	90	277	160	2 x M16	8064
SCAL-180190-600	180-190	600	451	466	600	90	277	160	2 x M16	10381
SCAL-180190-800	180-190	800	451	466	800	90	277	160	2 x M16	12669
SCAL-190200-400	190-200	400	470	487	400	90	287	160	2 x M16	8298
SCAL-190200-600	190-200	600	470	487	600	90	287	160	2 x M16	10673
SCAL-190200-800	190-200	800	470	487	800	90	287	160	2 x M16	13021



TREFOIL INTERMEDIATE RESTRAINT (SDSSIR)

The SDSSIR is a metallic intermediate restraint which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations, to assist CMP cable cleats in the securing and retention of cables, without sustaining damage to the cable(s).

Available for trefoil application/formation, the SDSSIR is fabricated from 316L stainless steel giving it high creep strength, whilst providing excellent corrosion resistance in the harshest of environments.

The product comes standard with polymer liners classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free. This helps to restrain the cable(s) and provides a layer of protection between the cable sheath and the cable cleat during normal operation, where thermal elongation of cables occur.

This intermediate restraint product also protects the cable from chafing on any mounting surface due to differential movements (such as those found in marine and offshore applications) and provides further protection to the cable in the event of short circuit fault conditions.

FEATURES

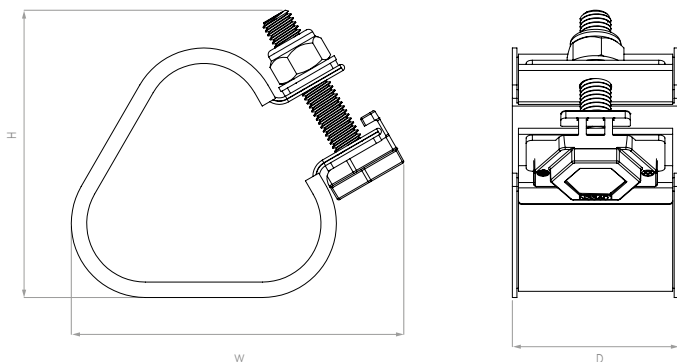
- Third party certification to IEC 61914
- 316L stainless steel
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free



TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite SDSSIR - Standard Duty Stainless Steel Intermediate Restraint
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	Standard Polymer Liner -60 to +60°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products
AXIAL LOAD TEST	Refer to CMP Products
IMPACT RESISTANCE	Pass - Very heavy IEC 61914
MATERIAL	316L Stainless Steel Low Smoke & Fume (LSF) Polymer Liners

SELECTION TABLE					
PATRIOT PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS mm			WEIGHT (g)
		W	H	D	
SDSSIR019022	19-22	81	78	54	214
SDSSIR022026	22-26	89	81	54	227
SDSSIR026030	26-30	97	84	54	238
SDSSIR030034	30-34	105	87	54	250
SDSSIR034038	34-38	112	91	54	263
SDSSIR038042	38-42	119	97	54	276
SDSSIR042046	42-46	126	101	54	289
SDSSIR046050	46-50	131	106	54	302
SDSSIR050054	50-54	139	111	54	315
SDSSIR054058	54-58	146	118	54	327
SDSSIR058062	58-62	153	126	54	341
SDSSIR062066	62-66	160	133	54	355
SDSSIR066070	66-70	167	141	54	368
SDSSIR070074	70-74	174	148	54	381
SDSSIR074078	74-78	181	156	54	394
SDSSIR078082	78-82	188	163	54	407
SDSSIR082086	82-86	195	171	54	421
SDSSIR086090	86-90	201	178	54	434
SDSSIR090094	90-94	208	186	54	447
SDSSIR094098	94-98	215	193	54	460
SDSSIR098102	98-102	222	201	54	473
SDSSIR102106	102-106	229	208	54	486
SDSSIR106110	106-110	236	215	54	499
SDSSIR110114	110-114	243	223	54	512
SDSSIR114118	114-118	250	230	54	525
SDSSIR118122	118-122	256	238	54	539
SDSSIR122126	122-126	263	246	54	552
SDSSIR126130	126-130	270	253	54	565

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (SDSSIR066070EC)



CYCLONE STRAP (INTERMEDIATE RESTRAINT)

Cyclone Straps are metallic intermediate restraints consisting of a 316L stainless steel strap complete with standard liners which have been designed, constructed, and tested in accordance with the International Standard 'cable cleats for Electrical Installations' IEC 61914.

The standard liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.

Intermediate restraints are cable retaining devices that can be used in conjunction with cable cleats to hold the cables together in order to provide resistance to electromechanical forces.

Cyclone II Intermediate restraints (2STR) are designed to wrap around the cables twice to provide resistance required for moderate short circuit faults, whilst the Cyclone III intermediate restraints (3STR) are designed to wrap around the cables three times to provide the resistance needed during high fault short circuit conditions.

Using intermediate restraints between each cable cleat reduces installation time and cost when compared to alternative cleat only systems for use in trefoil or quad formations. CMP has tested the Cyclone strap range in accordance to IEC 61914 and is certified to offer these for use with any trefoil cable cleats.



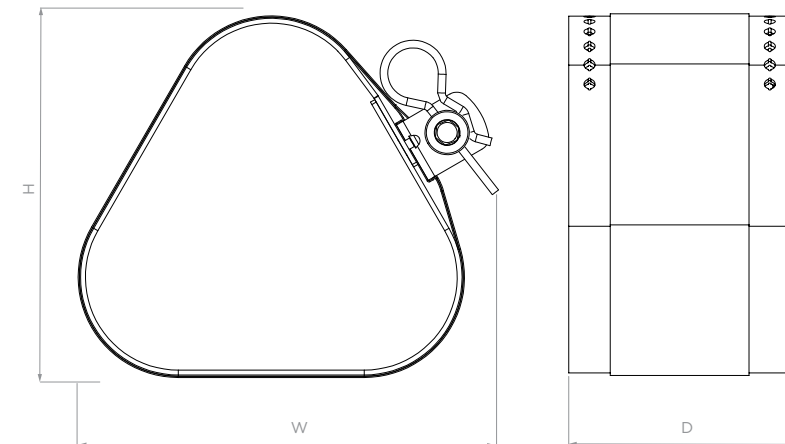
FEATURES

- Reduces installation cost
- Reduces installation time
- For trefoil and quad installations
- Third party certification to IEC 61914
- Lightweight 316L stainless steel strap
- Sunlight (UV) resistant
- Standard operating temperature -50°C to +40°C
- Standard Polymer Liners are LUL approved and are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free
- High temperature liner version with HT suffix available with operating temperature -50°C to +90°C
- High temperature liners are classified as VO Flame Retardant Polymer

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite Strap
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-50°C to +40°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time, IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Single - 5.5kN - 20kN 2STR and 6.5kN - 22kN 3STR, IEC 61914 clause 9.3 Trefoil - Refer to CMP Products, 2STR and 3STR IEC 61914 clause 9.3
AXIAL LOAD TEST	IEC 61914 clause 9.4, Single - 0.4kN - 0.6kN 2STR and 0.4kN 3STR IEC 61914 clause 9.4, Trefoil - 0.4kN 2STR and 0.4kN 3STR
IMPACT RESISTANCE	Pass - Very Heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel Strap with Standard Polymer Liner Standard Polymer Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free. HT liners are classified as VO Flame Retardant Polymer.
MATERIAL COLOUR	Silver / Grey

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5

Short circuit tested and certified for use with all CMP cable cleats.
Refer to CMP Products for further information



CABLE CLEAT SELECTION TABLE

CYCLONE II STRAP PART NO.	CYCLONE III STRAP PART NO.	CABLE Ø RANGE TAKE (MM)			DIMENSIONS (MM)			II STRAP WEIGHT (g)	III STRAP WEIGHT (g)
		SINGLE	TREFOIL	QUAD	W	H	D		
2STR024034	3STR024034	36-50	24-34	21-29	73	67	80	211	254
2STR030041	3STR030041	45-60	30-41	26-35	87	81	80	230	267
2STR037047	3STR037047	55-69	37-47	32-40	97	93	80	247	301
2STR043054	3STR043054	64-80	43-54	37-46	113	106	80	265	320
2STR050060	3STR050060	75-88	50-60	43-51	125	118	80	280	336
2STR056067	3STR056067	83-99	56-67	49-57	139	131	80	300	377
2STR063073	3STR063073	94-108	63-73	55-62	151	142	80	316	385
2STR069080	3STR069080	103-118	69-80	60-68	165	156	80	334	421
2STR072085	3STR072085	114-150	72-85	66-72	175	165	80	348	429
2STR082095	3STR082095	145-165	82-95	70-81	195	185	80	375	465
2STR092105	3STR092105		92-105	70-81	215	204	80	402	502
2STR102115	3STR102115		102-115	88-98	235	223	80	429	549
2STR112125	3STR112125		112-125	96-107	255	243	80	456	588
2STR122135	3STR122135		122-135	105-116	275	262	80	483	619
2STR132145	3STR132145		132-145	113-124	295	281.5	80	510	657



QUAD FORMATION CABLE CLEATS

For cables in quad formation, CMP offers a range of quad cable cleats to secure and support cables, to ensure uninterrupted operation and uptime of projects within the likes of I.T. data centres.

To aid installation, C-Clamps can be utilised (see Venus QPSS) where cable tray or rungs exist with no fixing points to secure cable cleats.

Options are available for cables of various sizes from 16mm through to 71mm, as well as quadruplex cables from 16.5mm to 61.5mm

View the full range on the following pages >

SATURN (QSDSS)

Saturn cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914:2015 'cable cleats for Electrical Installations' to ensure the securing and retention of cables, without sustaining damage to the cable.

The range is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments. Designed for quad application / formation. The Saturn cleat is ideal for use in data centres, rail and other industries and applications where the neutral and three-phase conductors are secured together.

The cleat has three M10 fixing clearance holes within its base allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces. The pre-formed cleat opens fully, allowing the cables to be easily placed within the cable cleat to aid the installer before closing and securing via the mouth bolt.

Liners come as standard which help to restrain the cables within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.

SHORT CIRCUIT TESTING TO IEC 61914:2015 - CLAUSE 9.5

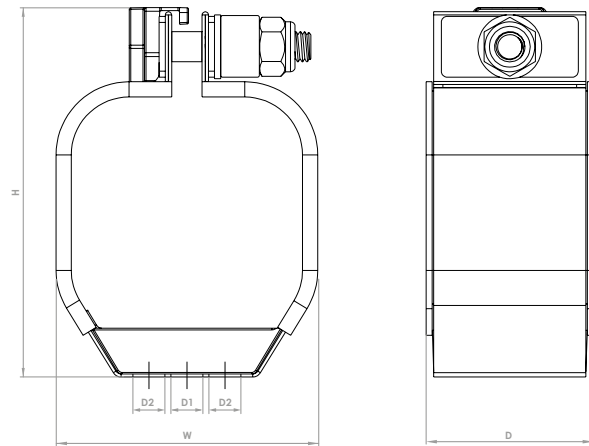
One short circuit 300mm fixed cleat centres	Two short circuits 300mm fixed cleat centres	One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 300mm fixed cleat centres
0.1 sec	0.1 sec	0.1 sec	0.1 sec	1 sec
152kA Peak	138kA Peak	130.4kA Peak	120.4kA Peak	82kA Peak
69.1kA r.m.s	62.7kA r.m.s	59.3kA r.m.s	54.7kA r.m.s	40.2kA r.m.s

FEATURES

- Third party certification to IEC 61914:2015
- 316L stainless steel
- For quad formation / application
- Short circuit rating of 152kA peak fault
- Operating temperature -60°C to +60°C or -76°F to +140°F
- Liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free
- Combined single (M10) or 2 bolt (M10) fixing design



TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite QSDSS - Standard Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914:2015
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914:2015 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914:2015 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	IEC 61914:2015 clause 9.3 (Refer to CMP Products)
AXIAL LOAD TEST	IEC 61914:2015 clause 9.4 (Refer to CMP Products)
IMPACT RESISTANCE	Pass - Very heavy IEC 61914:2015 clause 6.3, 6.3.5, 9.2
MATERIAL	316L stainless steel with standard liners Standard liners are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free



CABLE CLEAT SELECTION TABLE

QUAD PART NO.	CABLE Ø RANGE	DIMENSIONS (mm)			FIXING HOLE Ø		WEIGHT (g)
		W	H	D	D1	D2	
QSDSS016020	16-20	63	87	58	1 x M10	N/A	300
QSDSS019023	19-23	66	93	58	1 x M10	N/A	309
QSDSS021027	21-27	73	101	58	1 x M10	N/A	334
QSDSS026031	26-31	77	109	58	1 x M10	N/A	352
QSDSS030034	30-34	80	115	58	1 x M10	N/A	364
QSDSS031035	31-35	81	117	55	1 x M10	2 x M10	332
QSDSS033037	33-37	84	121	55	1 x M10	2 x M10	338
QSDSS036040	36-40	90	127	55	1 x M10	2 x M10	349
QSDSS039043	39-43	96	133	55	1 x M10	2 x M10	360
QSDSS041045	41-45	100	137	55	1 x M10	2 x M10	366
QSDSS044047	44-47	104	140	55	1 x M10	2 x M10	374
QSDSS046051	46-51	110	147	55	1 x M10	2 x M10	429
QSDSS049053	49-53	116	153	55	1 x M10	2 x M10	438
QSDSS052056	52-56	122	159	55	1 x M10	2 x M10	447
QSDSS055059	55-59	128	165	55	1 x M10	2 x M10	456
QSDSS058062	58-62	134	171	55	1 x M10	2 x M10	468
QSDSS061065	61-65	140	177	55	1 x M10	2 x M10	478
QSDSS064068	64-68	146	183	55	1 x M10	2 x M10	524
QSDSS067071	67-71	152	189	55	1 x M10	2 x M10	533

Additional sizes are available upon request.

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (QSDSS026031EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack page. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied upon request - see isolation/separation pad page.

MERCURY (QHDSS)

QHDSS cable cleats are metallic cable cleats that have been designed, constructed, and tested in accordance with the International Standard IEC 61914 'Cable Cleats for Electrical Installations' to ensure the securing and retention of cables, without sustaining damage to the cable.

The range is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments. Designed for quad application / formation. The QHDSS cleat is ideal for use in data centres, rail and other industries and applications where the neutral and three-phase conductors are secured together.

The cleat has three M10 clearance holes within its base allowing versatility to the installer during installation, and is designed to enable the product to be secured to a variety of mounting surfaces. The pre-formed and hinged cleat opens fully, allowing the cables to be easily placed within the cable cleat to aid the installer before closing and securing via the mouth bolt.

Liners come as standard which help to restrain the cables within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners assist in the protection of cable(s) in the event of short circuit fault conditions. The standard polymeric liners supplied are classified as Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus Free.

SHORT CIRCUIT TESTING TO IEC 61914 CLAUSE 9.5

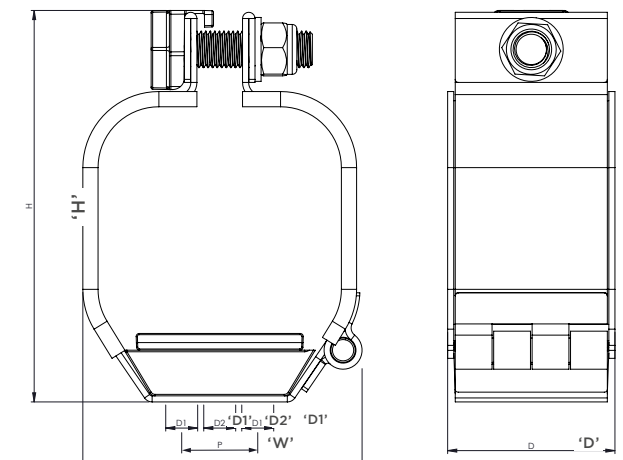
One short circuit 300mm fixed cleat centres	One short circuit 300mm fixed cleat centres	One short circuit 600mm fixed cleat centres	One short circuit w/ Cyclone III strap 600mm fixed cleat centres
0.1 sec	1 sec	0.1 sec	0.1 sec
189kA Peak	98.2kA Peak	139kA Peak	171kA Peak
85.9kA r.m.s	44.6kA r.m.s	63.2kA r.m.s	77.7kA r.m.s

FEATURES

- 316L stainless steel
- For quad formation / application
- Short circuit rating of 154kA peak fault
- Operating temperature -60°C to +60°C or -76°F to +140°F
- Combined single (M10) or 2 bolt (M10) fixing design



TECHNICAL DATA & CLASSIFICATION	
TYPE	IEC 61914 6.1.3 Composite QHDSS - Quad Heavy Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products
AXIAL LOAD TEST	Refer to CMP Products
IMPACT RESISTANCE	Pass - Very heavy
MATERIAL	316L stainless steel with standard liners



CABLE CLEAT SELECTION TABLE

QUAD PART NO.	CABLE Ø RANGE	DIMENSIONS (mm)					FIXING HOLE Ø		WEIGHT (g)
		W	H	D	P	D1	D2		
QHDSS016020	16-20	66	89	58	N/A	N/A	1 x M10	430	
QHDSS019023	19-23	69	95	58	N/A	N/A	1 x M10	440	
QHDSS021027	21-27	76	103	58	N/A	N/A	1 x M10	513	
QHDSS026031	26-31	80	111	58	N/A	N/A	1 x M10	516	
QHDSS030034	30-34	83	117	58	N/A	N/A	1 x M10	524	
QHDSS031035	31-35	84	119	55	N/A	N/A	1 x M10	535	
QHDSS033037	33-37	87	122	55	25	2 x M10	1 x M10	537	
QHDSS036040	36-40	93	129	55	25	2 x M10	1 x M10	546	
QHDSS039043	39-43	99	135	55	25	2 x M10	1 x M10	553	
QHDSS041045	41-45	103	139	55	25	2 x M10	1 x M10	575	
QHDSS044047	44-47	107	142	55	25	2 x M10	1 x M10	562	
QHDSS046051	46-51	113	149	55	50	2 x M10	1 x M10	643	
QHDSS049053	49-53	119	155	55	50	2 x M10	1 x M10	649	
QHDSS052056	52-56	125	161	55	50	2 x M10	1 x M10	664	
QHDSS055059	55-59	131	167	55	50	2 x M10	1 x M10	667	
QHDSS058062	58-62	137	173	55	50	2 x M10	1 x M10	686	
QHDSS061065	61-65	143	179	55	50	2 x M10	1 x M10	703	
QHDSS064068	64-68	149	185	55	75	2 x M10	1 x M10	812	
QHDSS067071	67-71	155	191	55	75	2 x M10	1 x M10	830	

Additional sizes are available upon request.

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (QHDSS026031EC). Fasteners required to secure the cable cleat to the support structure are not included but can be supplied upon request - see cleat fixing pack page. Isolation/separation pads (to prevent corrosion between two dissimilar metals) are not included but can be supplied upon request - see isolation/separation pad page.

VENUS (QPSS)

The QPSS cable cleats are metallic cable cleats which have been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations, to ensure the securing and retention of cables, without sustaining damage to the cable.

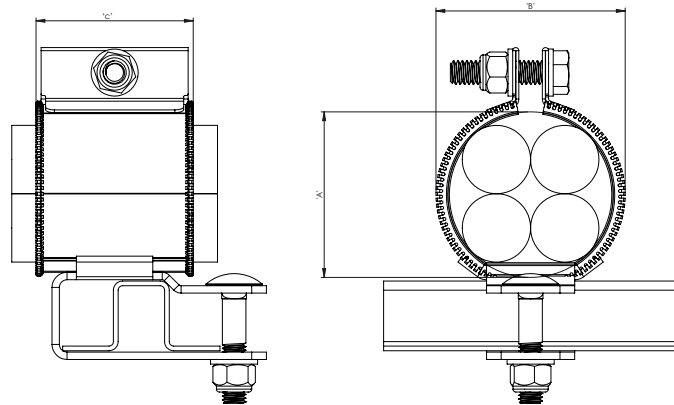
The range is fabricated from 316L stainless steel, giving it high creep strength whilst providing excellent corrosion resistance in the harshest of environments.

The cleat has one M8 coach bolt fixing hole integrated into the C-Clamp allowing versatility to the installer during installation.

Liners come as standard which help to restrain the cable(s) within vertical applications. Where thermal elongation of cables occurs, the liner also provides a layer of protection between the cable sheath and the cable cleat during normal operation. This additional layer protects the cable from chafing on any mounting surface due to differential movements such as those found in marine and offshore applications. The liners also assist in the extra protection of cable(s) in the event of short circuit fault conditions. The standard liners supplied are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free.



Ladder rung shown as example.



FEATURES

- Third party certification to IEC 61914
- 316L stainless steel
- For Quadruplex/standard quad formation
- Operating temperature -60°C to +60°C or -76°F to +140°F
- Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free

CABLE CLEAT SELECTION TABLE

QUAD PART NO.	QUAD PLEX Ø RANGE 'A' (mm)		CLEAT WIDTH 'B' (mm)	CLEAT DEPTH 'C' (mm)	WEIGHT (g)	FIXING HOLE Ø
	MIN Ø	MAX Ø				
QPSS-18	16.5	19.5	29.5	33.5	184	1 x M8
QPSS-19	17.5	20.5	30.5	33.5	187	1 x M8
QPSS-20	18.5	21.5	31.5	33.5	188	1 x M8
QPSS-21	19.5	22.5	32.5	33.5	190	1 x M8
QPSS-22	20.5	23.5	33.5	33.5	192	1 x M8
QPSS-24	22.5	25.5	35.5	33.5	194	1 x M8
QPSS-26	24.5	27.5	37.5	33.5	202	1 x M8
QPSS-28	26.5	29.5	39.5	33.5	205	1 x M8
QPSS-30	28.5	31.5	41.5	33.5	207	1 x M8
QPSS-32	30.5	33.5	43.5	33.5	210	1 x M8
QPSS-34	32.5	35.5	44.5	33.5	213	1 x M8
QPSS-36	34.5	37.5	47.5	33.5	216	1 x M8
QPSS-38	36.5	39.5	49.5	33.5	218	1 x M8
QPSS-40	38.5	41.5	51.5	33.5	218	1 x M8
QPSS-42	40.5	43.5	50.5	33.5	218	1 x M8
QPSS-44	42.5	45.5	55.5	33.5	220	1 x M8
QPSS-46	44.5	47.5	57.5	33.5	223	1 x M8
QPSS-48	46.5	49.5	59.5	33.5	226	1 x M8
QPSS-50	48.5	51.5	61.5	33.5	229	1 x M8
QPSS-51	49.5	52.5	62.5	33.5	232	1 x M8
QPSS-52	50.5	53.5	63.5	33.5	235	1 x M8
QPSS-54	52.5	55.5	65.5	33.5	238	1 x M8
QPSS-56	54.5	57.5	67.5	33.5	290	1 x M8
QPSS-58	56.5	59.5	69.5	33.5	293	1 x M8
QPSS-60	58.5	61.5	71.5	33.5	296	1 x M8

Dimensions are displayed in millimeters unless otherwise stated

Order reference examples: When ordering, please add rung type as suffix. For example, QPSS-26 for installation on rung B, please add suffix -B (QPSS-26-B). All rung types can be found on second page.

TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite QPSS - Standard Duty Stainless Steel
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	-60°C to +60°C IEC 61914 clause 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914 clause 10.0, 10.1, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.3
AXIAL LOAD TEST	Refer to CMP Products, IEC 61914 clause 9.4
IMPACT RESISTANCE	Pass - Very heavy IEC 61914 clause 6.3, 6.3.5, 9.2
MATERIAL	316L Stainless Steel with Standard Liners Standard liners are classified as Low Smoke and Fume Zero Halogen (LSFOH) and Phosphorus-free

SHORT CIRCUIT TESTING TO IEC 61914 - CLAUSE 9.5			
QUAD FORMATION			
Two short circuits 300mm fixed cleat centres	Two short circuits 600mm fixed cleat centres	One short circuit 600mm fixed cleat centres	Two short circuits 600mm fixed cleat centres with intermediate restraints
0.1 sec	0.1 sec	1 Sec	0.1 Sec
135kA Peak	79.5kA Peak	62kA Peak	100kA Peak
61.3kA r.m.s	37.8kA r.m.s	29.5kA r.m.s	47.6kA r.m.s

HOW TO ORDER

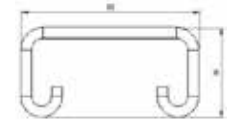
Take 'PLEXED' cable enveloping diameter (dimension 'A') I.E 90mm = QPSS-90
If the rung is one of the standard rungs shown below then add the letter for that rung:

For **QUADPLEX** on rung type A = QPSS-90-A

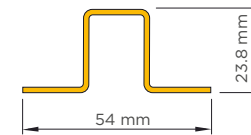
If the rung is size is not shown then the code can be generated referencing the dimensions of the rung:

Example: RUNG WIDTH (W) = 40mm
RUNG HEIGHT (H) = 24mm

For **QUADPLEX** application = QPSS-90-40-24



1. Identify ladder type (refer to line drawings in section below).



1. RUNG DIMENSION CODES					
		RUNG A	RUNG B	RUNG C	RUNG D
HEIGHT	INCHES	0.500"	0.9375"	1"	0.8125"
	mm	12	23.8	25.4	20.6
WIDTH	INCHES	2.125"	2.125"	1"	1.625"
	mm	54	54	25.4	41.2

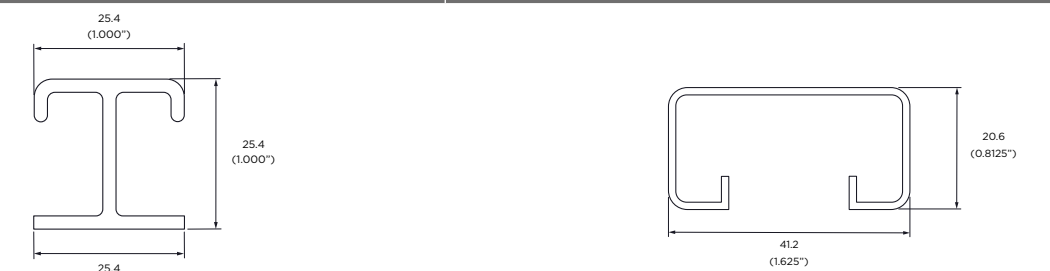
Ladder types shown are typical examples, if you have a different type please contact CMP directly. Bespoke sizes available on request.

2. Identify required cleat size (refer to cable cleat selection table).

2. QPSS ORDERING CODES					
QUAD CABLE Ø RANGE TAKE	QUAD PART No.	RUNG A	RUNG B	RUNG C	RUNG D
17.5 - 20.5	19	QPSS-19-A	QPSS-19-B	QPSS-19-C	QPSS-19-D
19.5 - 22.5	21	QPSS-21-A	QPSS-21-B	QPSS-21-C	QPSS-21-D
22.5 - 25.5	24	QPSS-24-A	QPSS-24-B	QPSS-24-C	QPSS-24-D
24.5 - 27.5	26	QPSS-26-A	QPSS-26-B	QPSS-26-C	QPSS-26-D
34.5 - 37.5	36	QPSS-36-A	QPSS-36-B	QPSS-36-C	QPSS-36-D
36.6 - 39.5	38	QPSS-38-A	QPSS-38-B	QPSS-38-C	QPSS-38-D
40.5 - 43.5	42	QPSS-42-A	QPSS-42-B	QPSS-42-C	QPSS-42-D
54.5 - 57.5	56	QPSS-56-A	QPSS-56-B	QPSS-56-C	QPSS-56-D
56.5 - 59.5	58	QPSS-58-A	QPSS-58-B	QPSS-58-C	QPSS-58-D
58.5 - 61.5	60	QPSS-60-A	QPSS-60-B	QPSS-60-C	QPSS-60-D

- 1 - Ladder / Strut / Mounting Surface
- 2 - C-Clamp

RUNG TYPE



Dimensions are displayed in millimetres unless otherwise stated.

QUAD INTERMEDIATE RESTRAINT (QSDSSIR)

The QSDSSIR is a metallic intermediate restraint which has been designed, constructed, and tested in accordance with the International Standard IEC 61914: Cable cleats for electrical installations, to assist CMP cable cleats in the securing and retention of cables, without sustaining damage to the cable(s).

Available for quad application/formation, the QSDSSIR is fabricated from 316L stainless steel giving it high creep strength, whilst providing excellent corrosion resistance in the harshest of environments.

The product comes standard with polymer liners classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free. This helps to restrain the cable(s) and provides a layer of protection between the cable sheath and the cable cleat during normal operation, where thermal elongation of cables occur.

This intermediate restraint product also protects the cable from chafing on any mounting surface due to differential movements (such as those found in marine and offshore applications) and provides further protection to the cable in the event of short circuit fault conditions.

FEATURES

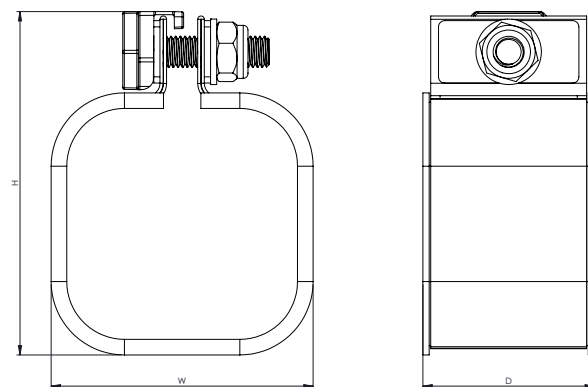
- Third party certification to IEC 61914
- 316L stainless steel
- Operating temperature -60°C to +60°C
- Standard Polymer Liners are classified as Low Smoke and Fume Zero Halogen (LSFOH), Phosphorus-free



TECHNICAL DATA & CLASSIFICATION	
TYPE	6.1.3 Composite QSDSSIR - Quad Standard Duty Stainless Steel Intermediate Restraint
DESIGN SPECIFICATION	IEC 61914
TEMPERATURE FOR PERMANENT APPLICATION	Standard Polymer Liner -60 to +60°C IEC 61914 clause / part 6.2
NEEDLE FLAME TEST	Pass - 120 second flame application time IEC 61914, IEC 60695-11-5
LATERAL LOAD TEST	Refer to CMP Products
AXIAL LOAD TEST	Refer to CMP Products
IMPACT RESISTANCE	Pass - Very heavy IEC 61914
MATERIAL	316L Stainless Steel Low Smoke and Fume zero halogen (LSFOH), Phosphorus-free Polymer Liners

SELECTION TABLE					
PART NO.	CABLE Ø RANGE TAKE (mm)	DIMENSIONS mm			WEIGHT (g)
		W	H	D	
QSDSSIR019021	19-21	52	78	55	235
QSDSSIR021023	21-23	56	82	55	247
QSDSSIR023025	23-25	60	86	55	254
QSDSSIR025027	25-27	64	90	55	260
QSDSSIR027029	27-29	68	94	55	271
QSDSSIR029031	29-31	72	98	55	278
QSDSSIR031033	31-33	76	102	55	284
QSDSSIR033035	33-35	80	106	55	290
QSDSSIR035037	35-37	84	110	55	283
QSDSSIR037039	37-39	88	114	55	288
QSDSSIR039041	39-41	92	118	55	295
QSDSSIR041043	41-43	96	122	55	299
QSDSSIR043045	43-45	100	126	55	311
QSDSSIR045047	45-47	104	130	55	327
QSDSSIR047049	47-49	108	134	55	330
QSDSSIR049051	49-51	112	138	55	333
QSDSSIR051053	51-53	116	142	55	341
QSDSSIR053055	53-55	120	146	55	350
QSDSSIR055057	55-57	124	150	55	356
QSDSSIR057059	57-59	128	154	55	371
QSDSSIR059061	59-61	132	158	55	383
QSDSSIR061063	61-63	136	162	55	385
QSDSSIR063065	63-65	140	166	55	399
QSDSSIR065067	65-67	144	170	55	409
QSDSSIR067069	67-69	148	174	55	418
QSDSSIR069071	69-71	152	178	55	422

Coatings are available upon request by adding the following suffixes to the ordering reference - EC for epoxy coating, PC for polyester coating and TC for thermoplastic coating. Example order reference for epoxy coating suffix EC (QSDSSIR066070EC)



GOOD INSTALLATION PRACTICES

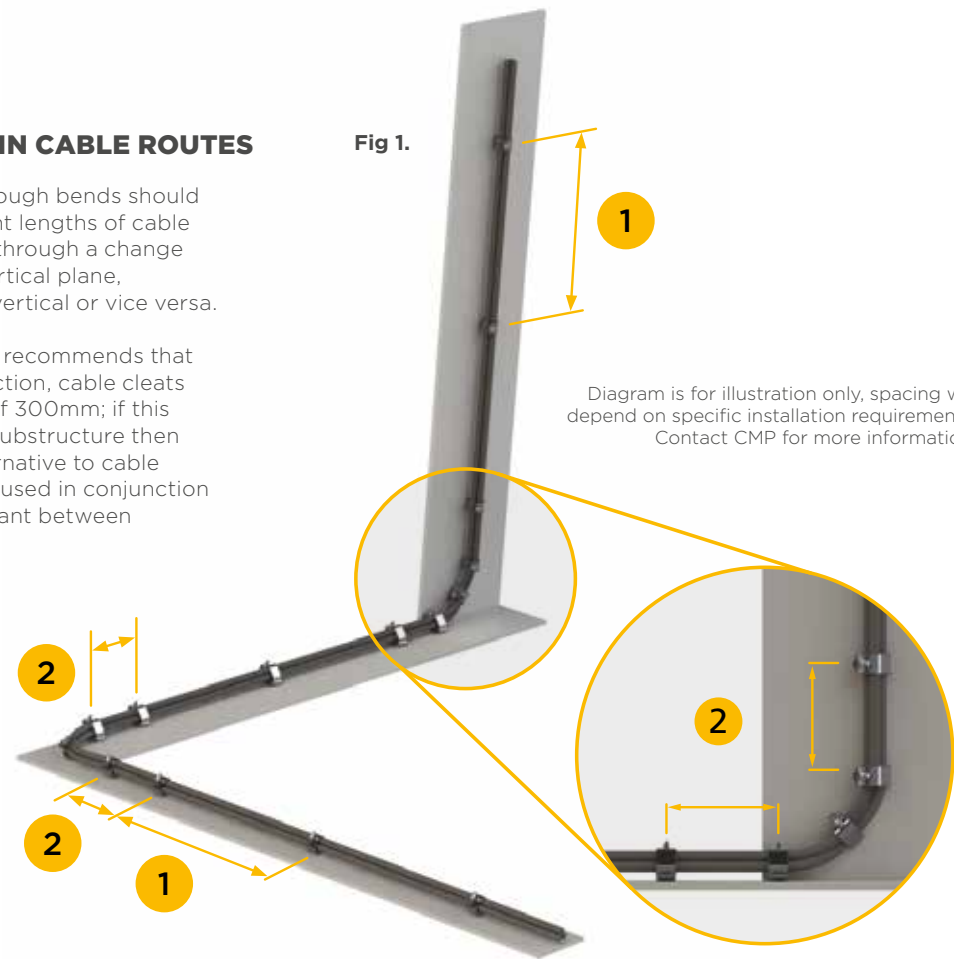
CHANGES OF DIRECTION IN CABLE ROUTES

Cable routes that are installed through bends should be restrained differently to straight lengths of cable run, whether this cable routing is through a change in direction in the horizontal or vertical plane, or a transition from horizontal to vertical or vice versa.

As a guide to good practice, CMP recommends that throughout these changes in direction, cable cleats should be installed at a distance of 300mm; if this is not possible due to the lack of substructure then it is recommended that as an alternative to cable cleats, intermediate restraints are used in conjunction with cable cleats, spaced equidistant between the fixed cable cleats.

KEY

- 1 900mm linear spacing
- 2 300mm cleat spacing around cable bend



TERMINATION AND JOINTING

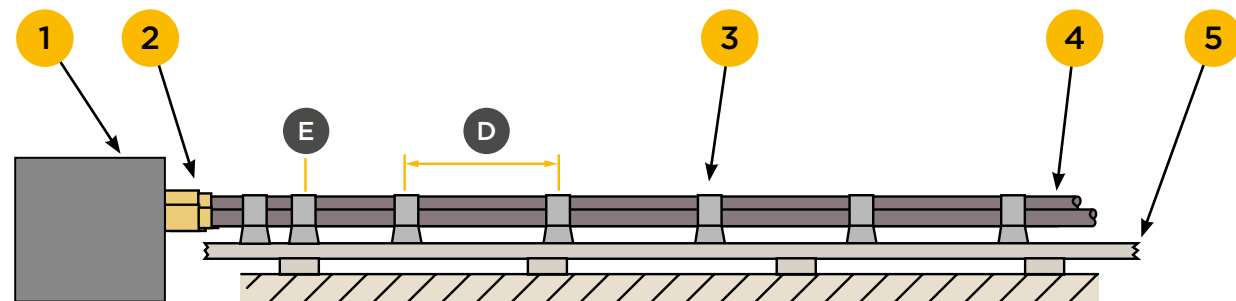
Cable cleats are not only designed for the protection of the cable but for the cable system itself. This includes the accessories such as joints and terminations. In order to protect such accessories and reduce the mechanical load on these items, cable cleats are recommended to be installed as close as possible to the accessories, followed immediately by an additional cable cleat before the equidistant spacing of the cable cleat installation.

This is recommended to compensate for the expansion forces generated during normal operation of the cables, and to prevent excessive axial movement that could be transferred onto the accessories / terminations and subsequently to the equipment.

The same installation technique should be applied at either side of any cable joints.

TERMINATING CABLE RUNS:

Fig 2.



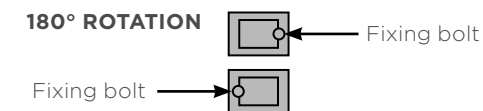
- KEY 1 Equipment 2 Cable termination 3 Cable cleats 4 Cable 5 Mounting surface
D Spacing E Additional cleat before equidistant spacing

TREFOIL FORMATION VERTICAL RUNS

CMP Products recommends that cables that are to be installed in trefoil formation, in long vertical runs should use a method known as 'alternative cleating'. This method involves installing cable cleats at equidistant spacing, but rotated by 180° every cleat.

This method allows a more even distribution of axial load through the cable cleat, resulting in a safer installation.

Fig 4.



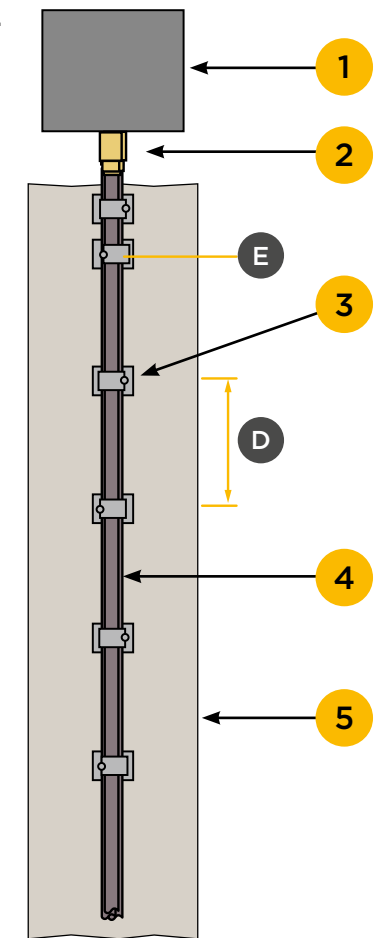
PRACTICAL CABLE CLEAT SPACING

The correct spacing of cable cleats is dictated by the short circuit forces produced during a fault, or by the axial load when cables are held in a vertical application, whichever is more onerous. When calculating these distances between cable cleats, the distances can be very large.

CMP Products recommends that cable cleats to be used for cables in trefoil formation should not exceed a 900mm spacing; for cable cleating in excess of 900mm, intermediate restraints shall be used at the mid-point between fixed cable cleats up to and including a distance of 1800mm. This provides the safe restraint of the cables during fault conditions and prevents excessive 'bird caging' which can lead to cable damage and damage to surrounding infrastructure. These distances ensure that the cable formation specified for the installation is correctly maintained throughout the cable run. See page 40 for more information.

If the required cable cleat spacing of any particular installation exceeds a distance of 1800mm, it should be noted that every installation is different, CMP Products will work with customers to ensure a safe and successful installation on a case-by-case basis.

Fig 3.



KEY

- 1 Equipment
- 2 Cable termination
- 3 Cable cleats
- 4 Vertical trefoil cable formation
- 5 Mounting surface
- D Equidistant spacing - 180° rotation as per Fig 4.
- E Additional cleat before equidistant spacing

SHORT CIRCUIT TESTING

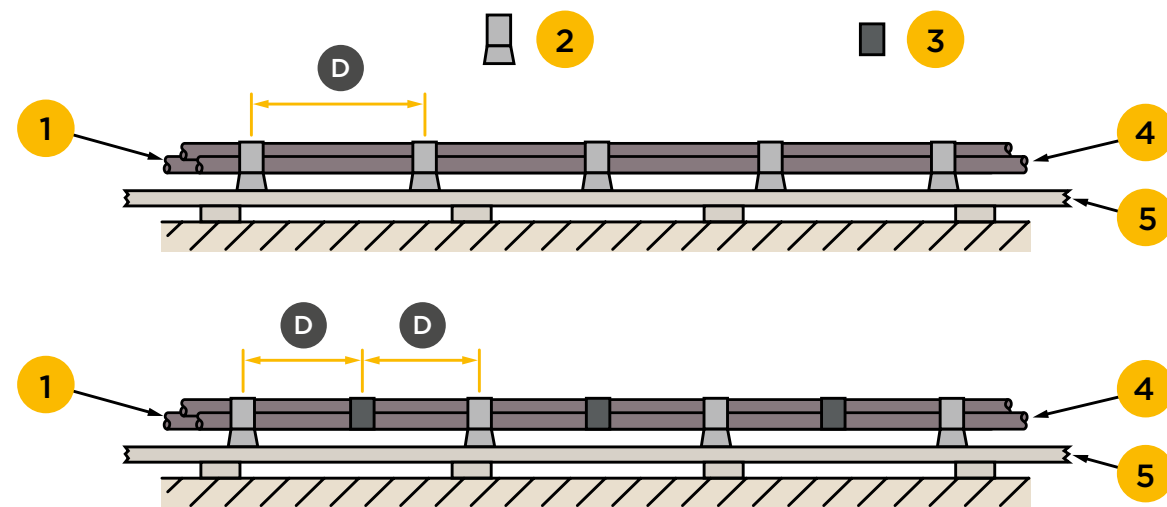
Test for resistance to electromechanical force according to IEC 61914.

A short circuit test is carried out as follows, using the manufacturer's or responsible vendor's declared values of peak short circuit current (i_p) and initial r.m.s symmetrical short circuit current (I''_k). Where there are a number of cable cleats in the range, one or more classes are defined (see IEC 61914 - Clause 5.1). This test is performed on the most critical size in each class.

The test is carried out at ambient temperature, considered to be the defined temperature for permanent application, using unarmoured single core 600 V / 1,000 V cable with stranded copper conductor. A test rig is assembled using the selected cables and cable cleats, being the equipment under test, with the equipment and cables used being fully documented. The test is then carried out on the declared arrangement at the declared short circuit level.

Typical test rig layouts are shown in the illustrations below.

TYPICAL LAYOUT FOR TESTING FOR THE RESISTANCE TO ELECTROMECHANICAL FORCES DURING SHORT CIRCUIT:



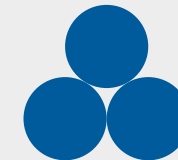
IEC 144/09

KEY

- 1 Supply end
- 2 Cable cleats
- 3 Intermediate restraints
- 4 Short circuit busbar end
- 5 Mounting surface
- D Spacing

FIGURE 1.

Typical arrangement of three cables in close trefoil formation



For the purpose of testing, the arrangement of the cables may be as shown in Figure 1, Figure 2 or any other configuration as declared by the manufacturer or responsible vendor.

One end of the test set-up is connected to a three phase supply and the other end to a short circuiting busbar, with all three phases connected. The cable is restrained at a minimum of 5 positions along the length of the cable run. Where intermediate restraints are used, at least 4 cable cleats and at least 3 intermediate restraints shall be used. Cable cleats and intermediate restraints, where used, shall be equally spaced. The cable cleats are fixed to a mounting surface defined by the manufacturer (e.g. cable ladder) which shall be suitably selected taking into account the electromechanical forces likely to occur during the test.

FIGURE 2.

Typical arrangement of cables in flat formation



Care is taken to ensure that the cross-sectional area of the cable is adequate for the magnitude and duration of the test current.

The manufacturer's or responsible vendor's catalogue references of the cable cleats and intermediate restraint (where used), the assembly details showing the spacing intervals and the external cable diameter used in the test shall be recorded.

The test set-up is subjected to a three phase short circuit for a duration of not less than 0.1 s. The duration of the test is recorded along with any other relevant data.

FOR CABLE CLEATS AND INTERMEDIATE RESTRAINTS AS CLASSIFIED IN IEC 61914: IEC 61914 RESISTANT TO ELECTROMECHANICAL FORCES, WITHSTANDING ONE SHORT CIRCUIT

Cable cleats and intermediate restraints classified under the aforementioned clauses shall comply with the following requirements:

- there shall be no failure that will affect the intended function of holding the cables in place;
- the cable cleats and the intermediate restraints, if used, shall be intact with no missing parts (minor deformation is acceptable);
- there shall be no cuts or damage visible to normal or corrected vision to the outer sheath of the cable caused by the cable cleats or by the intermediate restraints, if used.

FOR CABLE CLEATS AND INTERMEDIATE RESTRAINTS AS CLASSIFIED IN IEC 61914: IEC 61914 RESISTANT TO ELECTROMECHANICAL FORCES, WITHSTANDING MORE THAN ONE SHORT CIRCUIT

Cable cleats and intermediate restraints classified under the aforementioned clauses shall withstand two short circuits. After the second short circuit application, a voltage withstand test is performed by applying a minimum test voltage of 2.8 kV d.c. for a period of (60 ± 5) seconds according to the provisions of IEC 60060-1:2010, 'High-voltage test techniques - Part 1: General definitions and test requirements', Clause 13.1, 'Requirements for the test voltage', and Clause 14.1, 'Withstand voltage tests'. The voltage withstand test shall be administered between the cable cores and the mounting frame. The mounting frame shall be bonded to the earthing system. Where the cables incorporate screening or shielding, the screens and shields shall be bonded together and also bonded to the mounting frame. Where the cables do not incorporate screening or shielding, the cable jackets or sheaths and mounting frames shall be pre-wetted with sufficient water to facilitate a current leakage path along the outer jackets or sheaths. The cable jackets or sheaths and mounting frames shall be pre-wetted for (2 ± 1) minutes before the test begins using water with a resistivity of (100 ± 15) $\Omega \cdot \text{m}$, which shall be measured immediately before starting the test.

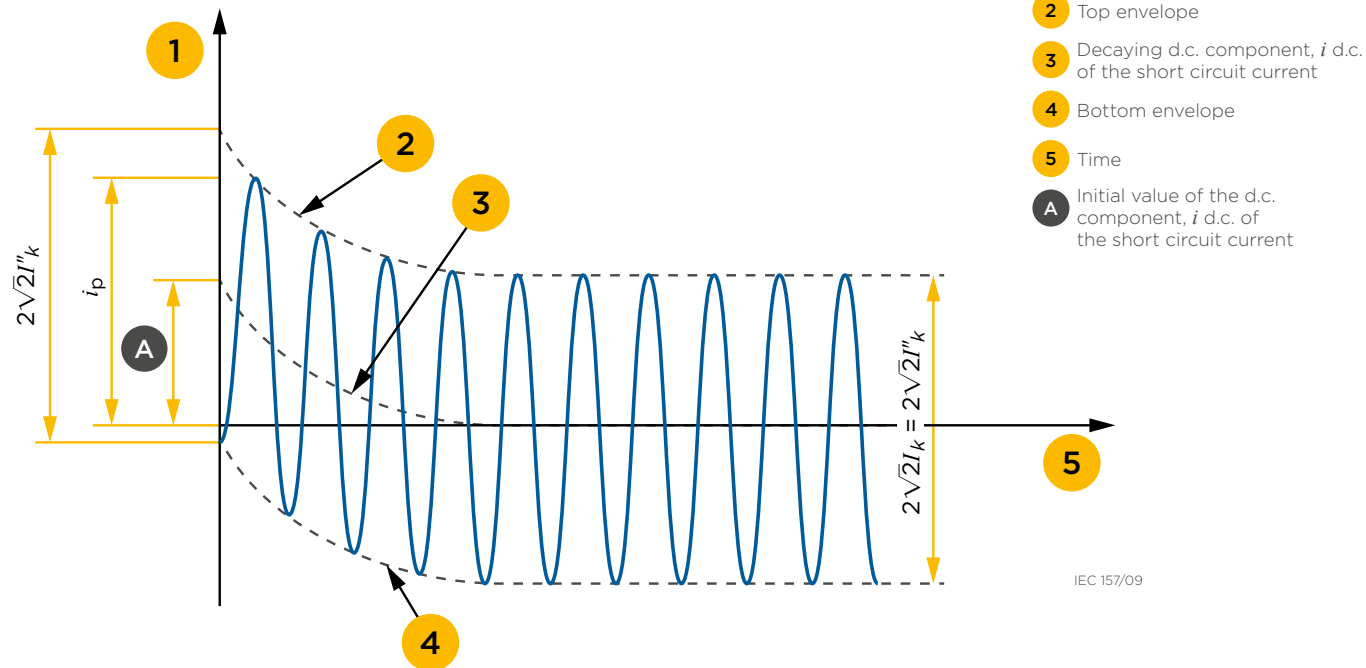
The cables shall meet the requirements of the voltage withstand test without failure of the insulation.

CALCULATION OF FORCES CAUSED BY SHORT CIRCUIT CURRENTS (IEC 61914)

The characteristics of the current during a short circuit depend on a number of factors, including the electrical separation from the generator. The figure below shows a current vs. time characteristic typical of a far-from-generator short circuit. The a.c. component in this case has a constant amplitude ($I''_k = I_k$) and is superimposed on a decaying d.c. component, i d.c. This falls from an initial value, A, to zero.

SHORT CIRCUIT TESTING

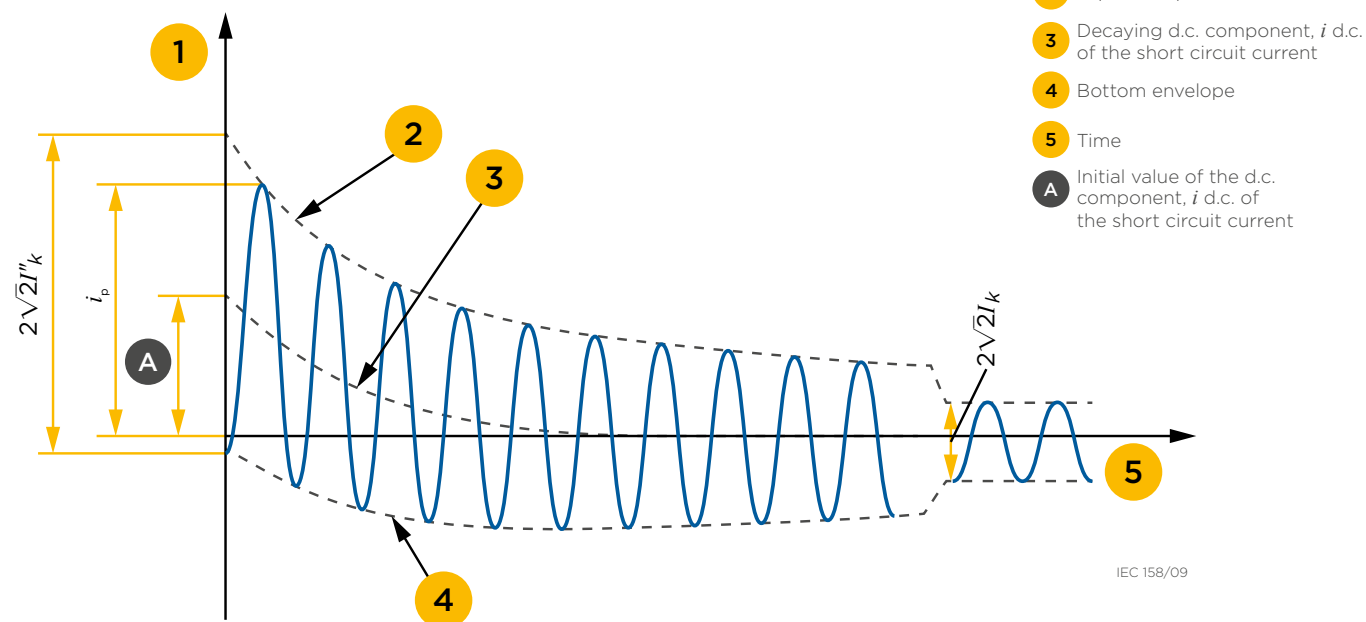
SHORT CIRCUIT CURRENT OF A FAR-FROM-GENERATOR SHORT CIRCUIT WITH CONSTANT a.c. COMPONENT



- KEY
- 1 Current
 - 2 Top envelope
 - 3 Decaying d.c. component, i d.c. of the short circuit current
 - 4 Bottom envelope
 - 5 Time
 - A Initial value of the d.c. component, i d.c. of the short circuit current

For near-to-generator short circuits, the a.c. component has a decaying amplitude ($I''_k > I_k$) and is also superimposed on a decaying d.c. component, i d.c. that falls from an initial value, A, to zero. The figure below shows a typical current vs. time characteristic for a near-to-generator short circuit.

SHORT CIRCUIT CURRENT OF A NEAR-TO-GENERATOR SHORT CIRCUIT WITH DECAYING a.c. COMPONENT



- KEY
- 1 Current
 - 2 Top envelope
 - 3 Decaying d.c. component, i d.c. of the short circuit current
 - 4 Bottom envelope
 - 5 Time
 - A Initial value of the d.c. component, i d.c. of the short circuit current

SPECIFICATION OF THE TEST CURRENT

A complete specification of short circuit currents should give the currents as a function of time at the short circuit location from the initiation of the short circuit up to its end. In most practical cases, this is not necessary. It is usually sufficient to know the peak current, i_p , and the values of the initial r.m.s symmetrical, I''_k , and steady state, I_k , currents.

In order to specify the current used in a short circuit test the following are quoted:

- the peak current, i_p ;
- the initial r.m.s symmetrical short circuit current, I''_k ;
- the short circuit duration, t .

CALCULATION OF THE MECHANICAL FORCES BETWEEN CONDUCTORS

The electromagnetic force acting on a conductor is determined by the current in the conductor and the magnetic field from the neighbouring conductors. In cable installations, the distances between the conductors are normally small and hence the forces may be considerable. In the case of two parallel conductors, the electromagnetic force on a conductor can be derived from Equation B1:

$$F(t) = B(t) \cdot i(t) \cdot l$$

- l is the length;
- $F(t)$ is the momentary electromagnetic force on a conductor;
- $B(t)$ is the momentary magnetic field from the neighbouring conductor;
- $i(t)$ is the momentary current in the neighbouring conductor.

If the d.c. component of the short circuit current is disregarded, the momentary force has a sinusoidal variation with a frequency twice the frequency of the currents (Equation B.1). The d.c. component gives a decaying force-component with a frequency the same as the system frequency.

TWO PARALLEL CONDUCTORS



For the two parallel conductors in figure above, the magnetic field from current i_1 , at the location of the other conductor is:

$$B = \mu_0 \cdot H = \mu_0 \cdot i_1 / 2 \cdot \pi \cdot S \quad (B.2)$$

where $\mu_0 = 4 \cdot \pi \cdot 10^{-7}$ (H/m) and the mechanical force is:

$$F = i_2 \times B = i_2 \cdot \mu_0 \cdot i_1 / 2 \cdot \pi \cdot S \quad (B.3)$$

this equation is usually written as:

$$F_s = 0.2 \cdot i_1 \cdot i_2 / S \quad (B.4)$$

SHORT CIRCUIT TESTING

In this equation, the force is given in N/m, i in kA and S in metres. The evaluation of Equation B.4 requires $S \gg d$ but gives an acceptable accuracy when the current distribution is uniform (or symmetrical) within the conductors.

The vector Equation B.3 confirms that two parallel conductors are repelled if the two currents have a difference in phase angle of 180° and that the force is directed towards the other conductor for currents that have the same phase angle.

In a three phase system, the magnetic field in Equation B.2 is the resulting momentary vector value from the other two phases.

For a three phase short circuit with the conductors in flat configuration, the forces on the two outer conductors are always directed outwards from the central conductor. The force on the central conductor is oscillating. The maximum force on the outer conductors in flat formation can be calculated by:

$$F_{fo} = 0.16 i_p^2 / S \text{ (B.5)}$$

The maximum force on the middle conductor in flat formation can be calculated by:

$$F_{fm} = 0.17 i_p^2 / S \text{ (B.6)}$$

For a three phase short circuit with the cables in a trefoil configuration the maximum force on the conductor is:

$$F_t = 0.17 i_p^2 / S \text{ (B.7)}$$

where:

F_s is the maximum force on the cable conductor in flat formation for a single phase short circuit [N/m];

F_{fo} is the maximum force on the outer cable conductors in flat formation for a three phase short circuit [N/m];

F_{fm} is the maximum force on the centre cable conductor in flat formation for a three phase short circuit [N/m];

F_t is the maximum force on the cable conductor in a trefoil configuration for a three phase short circuit [N/m];

i_p is the peak short circuit current [kA];

d is the external diameter of the conductor [m];

S is the centre to centre distance between two neighbouring conductors [m].

PEAK FAULT & r.m.s

A three phase short circuit fault can be split into two states, an asymmetrical state and a symmetrical state. The Peak fault occurs first during the asymmetrical state and is the maximum possible instantaneous value of the short circuit current. The r.m.s fault occurs after the Peak fault and is the latter more symmetrical state of the short circuit. r.m.s is the square root of the mean of the squares of the values of these two states.

PEAK SHORT CIRCUIT - i_p

'maximum possible instantaneous value of the short circuit current'

INITIAL r.m.s SYMMETRICAL SHORT CIRCUIT CURRENT - I''_k

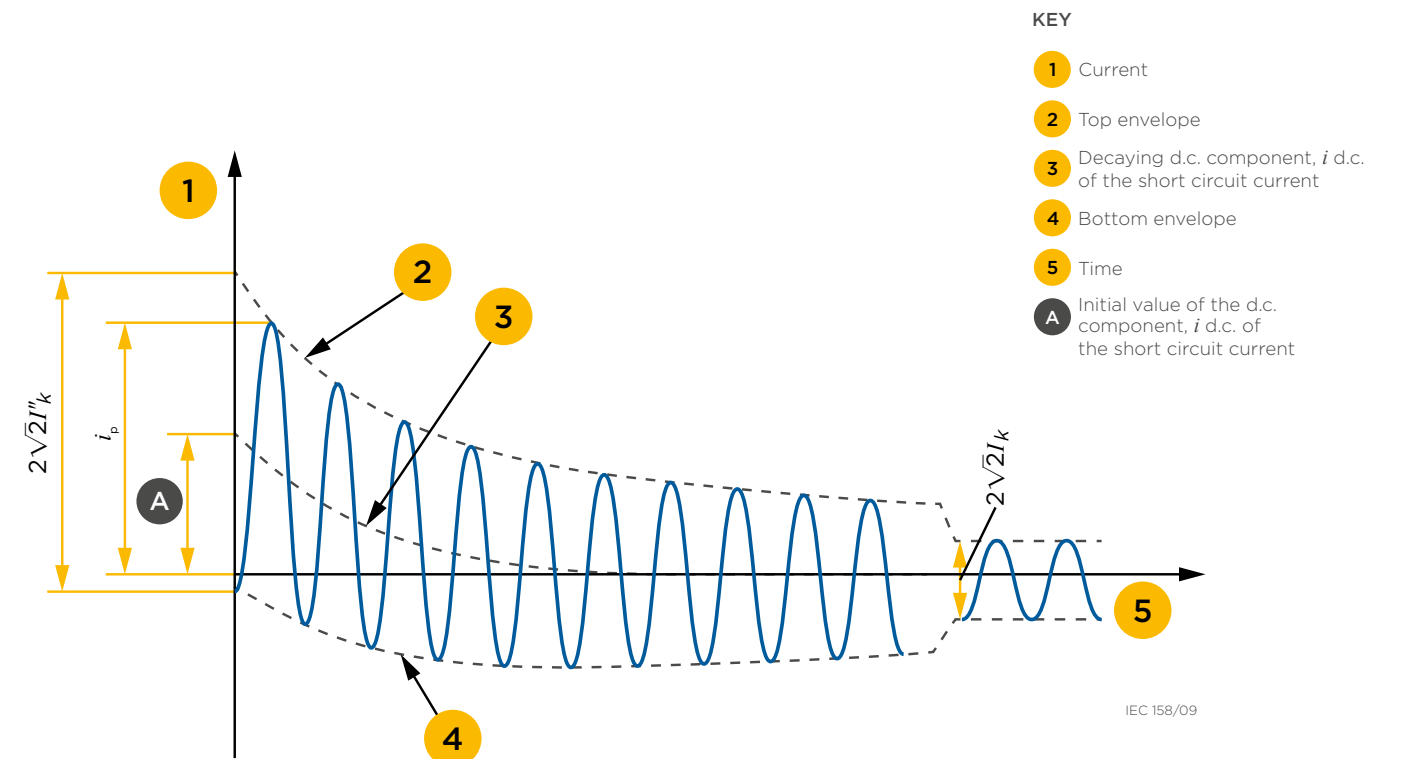
'r.m.s value of the a.c. symmetrical component of a short circuit current, applicable at the instant of the short circuit if the impedance remains at the zero-time value'

DECAYING (APERIODIC) COMPONENT OF SHORT CIRCUIT CURRENT - $i_{d.c}$

'mean value between the top and bottom envelope of a Short circuit current decaying from an initial value to zero'

STEADY-STATE SHORT CIRCUIT CURRENT - I_k

'r.m.s value of the Short circuit current which remains after the decay of the transient phenomena'



CMP SHORT CIRCUIT TESTING

ALL CMP PRODUCTS CABLE CLEATS HAVE BEEN TESTED AND CERTIFIED ACCORDING TO THE LATEST IEC 61914 STANDARD BEFORE THEIR RELEASE TO THE MARKET.

PROJECTING PEAK FAULTS AND MECHANICAL FORCES

CABLE CLEATS - SHORT CIRCUIT CALCULATIONS

Below is an explanation of how CMP Products calculates Peak kA current short circuit current ratings for each specific customer application and installation.

CMP Products has carried out over 300 short circuit tests, however it is not viable to test for every fault current, cable cleat, cable size/type and fixing centre configuration.

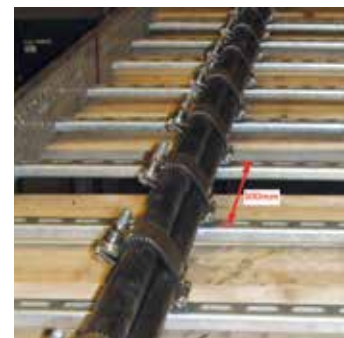
In order to replicate these tests CMP is continuously developing simulation software and can undertake project specific testing on the cable cleat, cable and cable tray or ladder intended to be used on the installation.

CMP also has the experience to reliably calculate what the Peak kA short circuit rating will be, based upon the expansive test data it holds following the comprehensive testing programme undertaken.

TESTING

Beginning with a short circuit test at 300mm fixing centres, the maximum safe Peak current in kA that the cable cleat under test can restrain is established and achieved.

In the example below the cable cleat successfully passed the tests in the IEC 61914 standard at 190kA on Ø36mm cable @ 300mm fixing centres.



Before short circuit test



After short circuit test

CALCULATING THE MAX FORCE PER CABLE CLEAT TESTED

$$F_t = \frac{0.17 \times i_p^2}{S} \quad F_t = \frac{0.17 \times 190^2 (\text{kA})}{0.036 (\text{m})}$$

From that test result the calculation from the cable cleat standard IEC 61914 is used to work out the force restrained by the cable cleat under test:

F_t is the maximum force on the cable (N/m)

i_p is the peak short circuit current (kA)

S is the centre to centre distance between two neighbouring conductors i.e. for trefoil formation this is the cable outside diameter (m)

IN THIS EXAMPLE THE F_t EQUALS 170,472.22 N/m

F_t is a force in Newtons per metre so to calculate the maximum force which each cable cleat restrained, this must be multiplied by the cable cleat fixing centres:

Max force per cable cleat = F_t (N/m) x fixing centres (m)
Max force per cable cleat in this example (0.3m fixing centres) = 51,141.67 N

CALCULATING THE F_t FOR A NEW APPLICATION

$$F_t = \frac{\text{max force per cable cleat (N)}}{\text{fixing centres (m)}} \quad F_t = \frac{51.141.67 (\text{N})}{0.6 (\text{m})}$$

Now that the maximum force per cable cleat has been established, the formula is transposed to calculate the maximum peak fault current for different fixing centres, cable diameters etc.

To calculate the i_p if the fixing centres were to be increased 600mm then F_t would first need to be calculated:

F_t is the maximum force on the cable (N/m)

i_p is the peak short circuit current (kA)

S is the centre to centre distance between two neighbouring conductors i.e. the cable outside diameter (m)

F_t IN THIS NEW EXAMPLE = 85,236.11 (N/m)

Now that the F_t for this application has been established, the i_p can be calculated.

CALCULATING THE i_p FOR A NEW APPLICATION

$$i_p = \sqrt{\left(\frac{F_t \times S}{0.17}\right)} \quad i_p = \sqrt{\left(\frac{85,236.11 (\text{N/m}) \times 0.036 (\text{m})}{0.17}\right)}$$

F_t is the maximum force on the cable (N/m)

i_p is the peak short circuit current (kA)

S is the centre to centre distance between two neighbouring conductors i.e. the cable outside diameter (m)

i_p IN THIS EXAMPLE = 134.35kA

Experience shows that this value is always lower than can be achieved in a physical test. This confirms that there is a safety factor element included in the IEC 61914 calculation; this is a good thing as it means that calculated values are always on the conservative side.

However it also means that the F_t or maximum force per cable cleat ratings taken from test results should only be used on fixing centre intervals which are shorter than those actually tested, as a basis for any calculated i_p 's. Calculating the opposite way is not recommended as it contradicts the safety factor employed in the standard and gives unrealistic and unachievable i_p 's.

FOR EXAMPLE

On the same cable cleat and cable the cable cleat successfully passed the tests in the 61914 standard at 150kA @ 600mm fixing centres (calculated i_p was only 134.35kA so in practice -12% more was achieved)

From this new i_p an F_t is calculated:

$$F_t = \frac{0.17 \times i_p^2}{S} \quad F_t = \frac{0.17 \times 150^2 (\text{kA})}{0.036 (\text{m})}$$

F_t is the maximum force on the cable (N/m)

i_p is the peak short circuit current (kA)

S is the centre to centre distance between two neighbouring conductors i.e. the cable outside diameter (m)

IN THIS EXAMPLE THE F_t = 106,250 N/m

Max force per cable cleat in this example (0.6m fixing centres) = 63,750 N

If this maximum force per cable cleat value was to be used as a basis to calculate the i_p for fixing centres of 0.3m, then the F_t would = 212,500 N/m

This gives a calculated i_p of 212.13kA - THIS IS DANGEROUSLY HIGH!

Only 190kA was achieved @ 300mm fixing centres under physical test and that showed that the cable cleat was very close to its maximum strength capabilities.

TO RE-CONFIRM:

Only use the F_t or max force per cleat ratings from CMP test results on shorter fixing centres than those intended to be used, as a basis for any calculated i_p 's. Calculating the opposite way is dangerous, as it contradicts the included safety factor in the standard calculation which gives unrealistic and unachievable i_p 's.

For the most accurate calculation and safest installation, CMP recommends that the data from the CMP test result of cable cleats fixed closest (but still shorter) to the target fixing centres is used to calculate the i_p , for example:

If 500mm fixing centres are required, use the 300mm centres force per cleat CMP test data as a basis for the i_p calculation.

If 900mm fixing centres are required, use the 600mm centres force per cleat CMP test data as a basis for the i_p calculation.

TWIN ARC PROFILES

DISADVANTAGES OF STANDARD CABLE CLEAT PROFILES

In the past many cable cleats had a simple circular internal profile; this gives excellent surface contact on the maximum size of cable in the clamping range (84% of the cable in contact with the cable cleat) which in turn gives an excellent level of axial restraint.

However, on the minimum size of cable in the clamping range, little more than a point contact between the top and bottom of the cable and the cable cleat (11% of the cable in contact with the cable cleat) is achieved which gives a very poor level of axial restraint.

Due to the poor surface contact (only in the centres at the top and bottom of the cable) on the smaller sizes of cable in the range, it is easy to over-tighten the fixing bolts. This not only crushes the cable out of shape, it also deforms the cable cleat around the cable therefore stressing the cable cleat material. It is not possible to have the same bolt torque settings for every size of cable, since the smaller cables allow the cable cleat to deform (closing the gaps either side of the cable to cable cleat contact areas in the centre) and the torque level will be reached later, so installation procedures can be ambiguous.

Typical range taking capabilities of prior art cable cleats vary from 5-8mm on cable outside diameter.

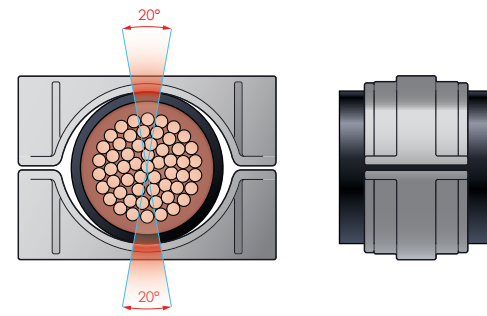
BENEFITS OF CMP TWIN ARC CABLE CLEAT PROFILES

Analysing CMP's single bolt Sabre, Valiant and Solace and two bolt Falcon, Zenith and Themis cable cleat internal profile, there are two separate arcs joined tangentially; one arc suited to the minimum sized cable and the other arc suited to the maximum sized cable in the clamping range. The tangential join means that all cable sizes in-between are clamped just as effectively.

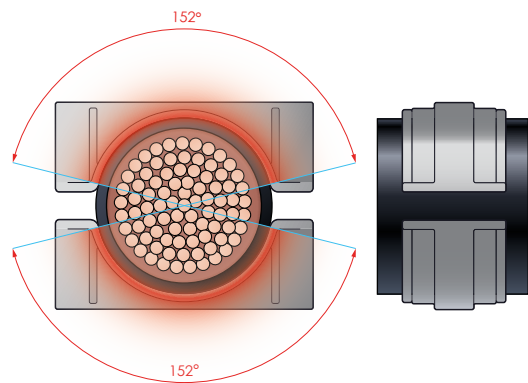
This gives an almost uniform level of surface contact throughout the clamping range (44% on the minimum and 54% on the maximum sized cables) meaning axial restraint is just as good on the smaller sizes of cable in the range as it is for the largest.

The better comparative surface area contact throughout the clamping range also means that the same torque settings can be used, no matter what size of cable is fitted; removing any uncertainty during installation.

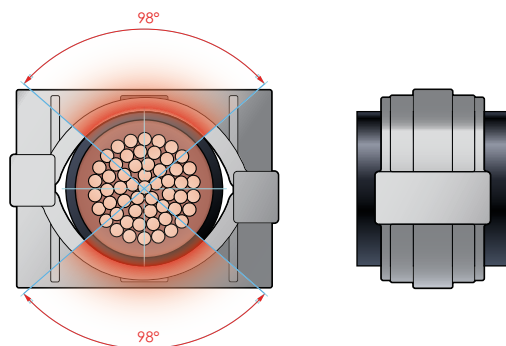
By using the new twin arc design, CMP has also dramatically increased the range taking capability of these types of cable cleat, which varies from 10-15mm on cable outside diameter.



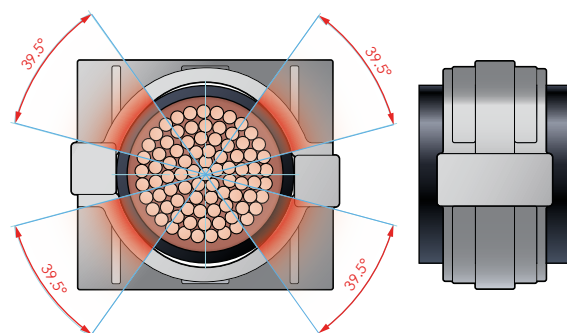
SMALLEST CABLE
40° therefore 11% of cable surface in contact with cable cleat



LARGEST CABLE
304° therefore 84% of cable surface in contact with cable cleat



SMALLEST CABLE
196° therefore 54% of cable surface in contact with cable cleat



LARGEST CABLE
158° therefore 44% of cable surface in contact with cable cleat

CABLE CLEAT NUT SPACER

Industry-wide, a fully threaded bolt is used as standard to ensure that the cable cleat can accept a range of cable diameters. However, the use of a fully threaded bolt can lead to damage to the cables during high short circuit fault conditions.

Designed to withstand high short circuit fault conditions, CMP's cable cleat nut spacer is supplied on selected cable cleats. The nut spacers are designed to ensure the cable never comes into contact with the threaded portion of the cable cleat closure bolt during fault conditions.

In over 300 short circuit tests that CMP Products has conducted on our cable cleat range, extreme dynamic forces were generated by the cables during high short circuit conditions. It is during this stage that cables can repel away from each other and try to break the cable cleat restraining them. If any sharp edges, such as threads are exposed to the cables, there may be damage to the cable insulation and, depending on the peak fault, this can be catastrophic. Where the cable insulation is sufficiently damaged, earth shortages will occur, leading to a life-threatening environment for any personnel in the vicinity.

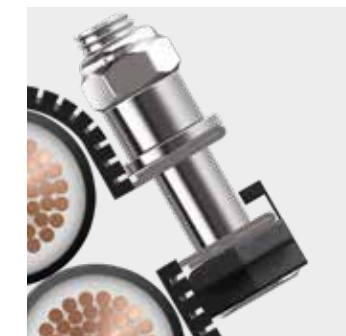


Minor cable damage caused by thread contact



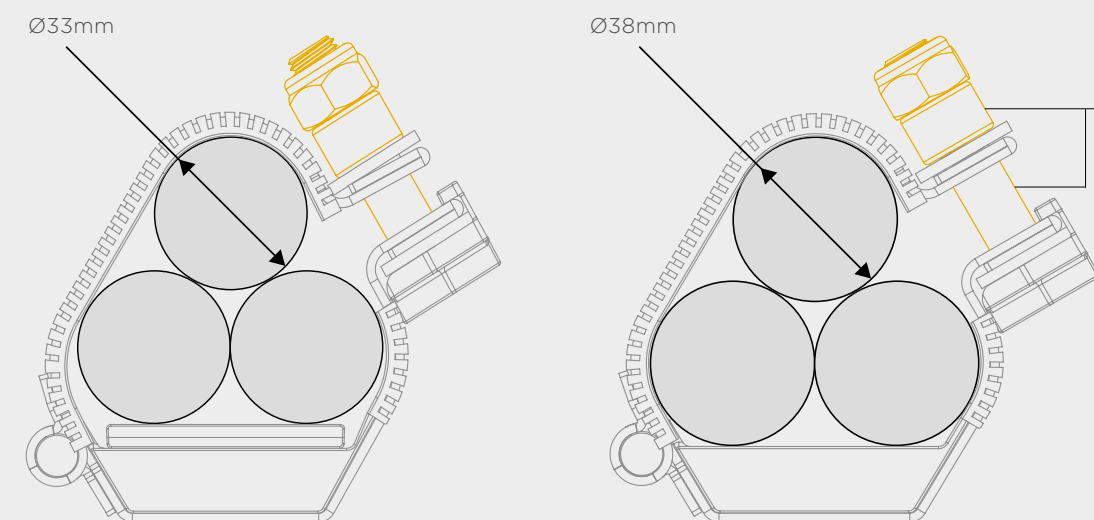
Major cable damage caused by thread contact

THE CMP SPACER AND BOLT COMBINATION - ONE SIZE FITS ALL



Selected CMP cable cleats use a partially threaded bolt in conjunction with the nut spacer, never allowing the cables to be exposed to the thread of the bolt. The use of these, along with cable cleat liners, means the cables can only ever come into contact with smooth or flat surfaces.

THE CABLE CLEAT CAN ACCEPT A RANGE OF CABLE DIAMETERS



Nut spacer and partially threaded bolt prevent cable coming into contact with the thread

CLEAT FIXING PACKS

EXAMPLE ORDERING CODES

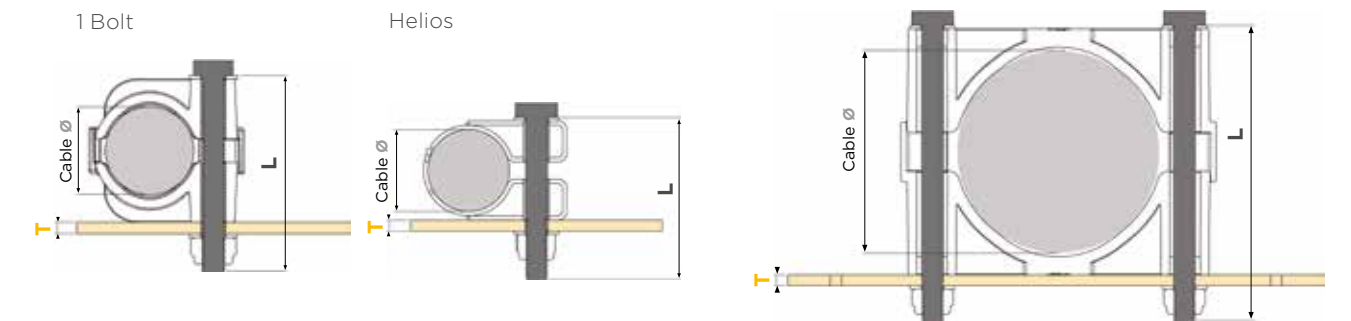
CFP	02	M12	080	BZP
Product Type	Quantity	Bolt Thread Size	Bolt Length	Material

CLEAT FIXING PACK EXAMPLE ORDERING CODES									
PRODUCT TYPE	QUANTITY	BOLT THREAD SIZE		BOLT LENGTH		MATERIAL			
CFP	Cleat Fixing Pack	01	2 Digit Value*	M10	Thread Size**	080	3 Digit Value***	A4	Grade A4 Stainless Steel
		02		M12				BZP	Bright Zinc Plated

* 01 x Cleat Fixing Pack includes: 1 Bolt, 2 x FORM A Washer, 1 Nyloc Nut
 ** M10 / M12 Standard
 *** Min Bolt length (L) should be calculated using equation, standard increments of 5 (see below) If an insulation pad is required then add 2mm onto length of bolt. Bespoke fixings available on request.

DETERMINING BOLT LENGTH

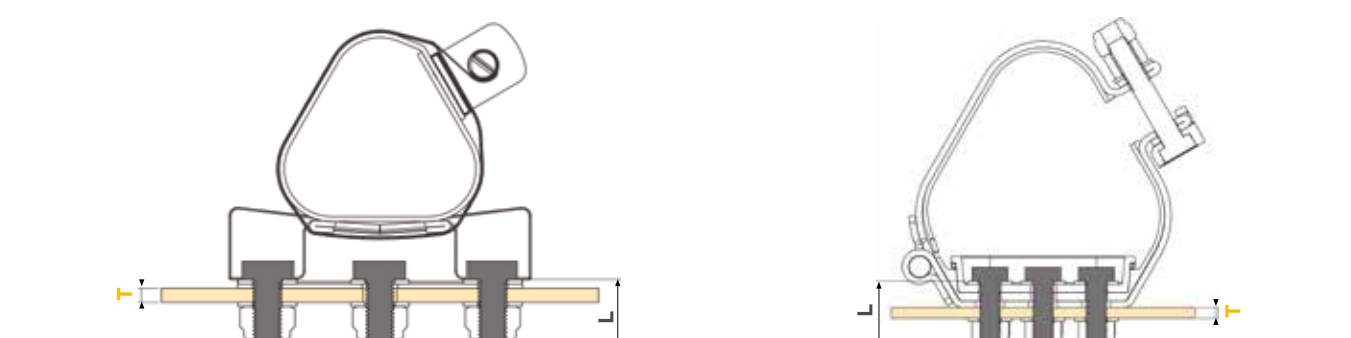
1 BOLT CABLE CLEAT & HELIOS	2 BOLT CABLE CLEAT
-----------------------------	--------------------



1 Bolt: Bolt Length (L) = Cable Ø + T + 48.0mm
 Helios: Bolt Length (L) = Cable Ø + T + 27.0mm
 (T = Substrate Thickness)

M10 Bolt Length (L) = Cable Ø + T + 39.0mm
 M12 Bolt Length (L) = Cable Ø + T + 41.0mm
 (T = Substrate Thickness)

CYCLONE CABLE CLEAT	HINGED CABLE CLEAT
---------------------	--------------------



M10 Bolt Length (L) = 19.5mm + T
 M12 Bolt Length (L) = 21.5mm + T
 (T = Substrate Thickness)

M10 Bolt Length (L) = 29.0mm + T
 M12 Bolt Length (L) = 31.0mm + T
 (T = Substrate Thickness)

Note: See standard bolt lengths on page 65. Always round up to nearest whole number. Fixings can be ordered as packs or individually. Any queries please contact CMP.

FOR FURTHER SUPPORT ON SELECTING FIXING PACKS, PLEASE VISIT THE CMP WEBSITE AND USE THE 'CLEAT SELECTOR' TOOL AVAILABLE UNDER THE SEARCH MENU ON THE HOMEPAGE

INDIVIDUAL ORDERING CODES

	INDIVIDUAL BOLT (SET SCREW) CODES			
	M10		M12	
	A4	BZP	A4	BZP
25MM SET SCREW	M10X025FTA4	M10X025FTBZP	M12X025FTA4	M12X025FTBZP
30MM SET SCREW	M10X030FTA4	M10X030FTBZP	M12X030FTA4	M12X030FTBZP
35MM SET SCREW	M10X035FTA4	M10X035FTBZP	M12X035FTA4	M12X035FTBZP
40MM SET SCREW	M10X040FTA4	M10X040FTBZP	M12X040FTA4	M12X040FTBZP
45MM SET SCREW	M10X045FTA4	M10X045FTBZP	M12X045FTA4	M12X045FTBZP
50MM SET SCREW	M10X050FTA4	M10X050FTBZP	M12X050FTA4	M12X050FTBZP
55MM SET SCREW	M10X055FTA4	M10X055FTBZP	M12X055FTA4	M12X055FTBZP
60MM SET SCREW	M10X060FTA4	M10X060FTBZP	M12X060FTA4	M12X060FTBZP
65MM SET SCREW	M10X065FTA4	M10X065FTBZP	M12X065FTA4	M12X065FTBZP
70MM SET SCREW	M10X070FTA4	M10X070FTBZP	M12X070FTA4	M12X070FTBZP
75MM SET SCREW	M10X075FTA4	M10X075FTBZP	M12X075FTA4	M12X075FTBZP
80MM SET SCREW	M10X080FTA4	M10X080FTBZP	M12X080FTA4	M12X080FTBZP
90MM SET SCREW	M10X090FTA4	M10X090FTBZP	M12X090FTA4	M12X090FTBZP
100MM SET SCREW	M10X100FTA4	M10X100FTBZP	M12X100FTA4	M12X100FTBZP
110MM SET SCREW	M10X110FTA4	M10X110FTBZP	M12X110FTA4	M12X110FTBZP
120MM SET SCREW	M10X120FTA4	M10X120FTBZP	M12X120FTA4	M12X120FTBZP
130MM SET SCREW	M10X130FTA4	M10X130FTBZP	M12X130FTA4	M12X130FTBZP
140MM SET SCREW	M10X140FTA4	M10X140FTBZP	M12X140FTA4	M12X140FTBZP
150MM SET SCREW	M10X150FTA4	M10X150FTBZP	M12X150FTA4	M12X150FTBZP
160MM SET SCREW	M10X160FTA4	M10X160FTBZP	M12X160FTA4	M12X160FTBZP
170MM SET SCREW	M10X170FTA4	M10X170FTBZP	M12X170FTA4	M12X170FTBZP
180MM SET SCREW	M10X180FTA4	M10X180FTBZP	M12X180FTA4	M12X180FTBZP
190MM SET SCREW	M10X190FTA4	M10X190FTBZP	M12X190FTA4	M12X190FTBZP
200MM SET SCREW	M10X200FTA4	M10X200FTBZP	M12X200FTA4	M12X200FTBZP

STUDDING CODES

	M10		M12	
	A4	BZP	A4	BZP
STUDDING 1M LENGTH	M10STUDA41M	M10STUDBZP1M	M12STUDA41M	M12STUDBZP1M

Studding is available to order in 1m lengths

NUT & WASHER CODES

	M10		M12	
	A4	BZP	A4	BZP
NYLOC NUT	M10NYNA4	M10NYNBZP	M12NYNA4	M12NYNBZP
FORM A WASHER	M10FAWA4	M10FAWBZP	M12FAWA4	M12FAWBZP

Note: If your requirements are not listed above then please contact CMP. Bespoke fixings are available on request.

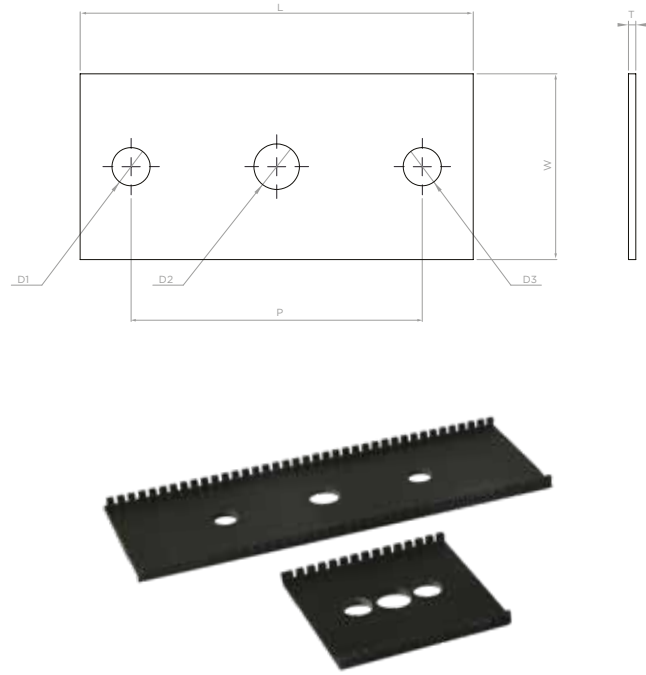
CLEAT FIXING PACKS

CLEAT FIXING PACKS

ISOLATION / SEPARATION PADS

The CMP cable cleat isolation / separation pad is designed to prevent corrosion between two dissimilar metals, by ensuring that the cable cleat avoids direct contact with the supporting structure.

The pad is manufactured from a Low Smoke & Fume (LSF), Zero Halogen (LSOH) and Phosphorus free material as standard. There is a suitable isolation pad for each of CMP Products' cable cleats, all of which have pre-defined bolt hole positions and have been specifically designed to be easily fitted with no preparation required by the installer. Once installed the isolation pad will help prevent galvanic corrosion should the material of the cable management system be different from that of the cable cleat. The selection table below covers all of the standard CMP Products cable cleats however bespoke isolation/separation solutions are available on request.



ISOLATION PADS										
SUITABLE FOR CLEATS	ISOLATION PAD	TREFOIL CLEAT SIZE (MM)	SINGLE CLEAT SIZE(MM)	DIMENSIONS (MM)						
				L	W	T	P	FIXING HOLE Ø		
								D1	D2	D3
Patriot (SDSS) Sovereign (HDSS) Huron (LDAL) Reliance (SDAL) Conqueror (RTSS) Sapphire (SHDSS) Endurance (SDSS-C) Centurion (LDAL-B) Legion (LDAL-C) Saturn (QSDSS) Mercury (QHDSS)	IP01	19-38	26-58	60	55	2	25	M10	M12	M10
	IP02	36-58	58-83	80	55	2	50	M10	M12	M10
	IP03	55-78	83-120	110	55	2	75	M10	M12	M10
	IP04	74-103	120-135	150	55	2	75	M10	M12	M10
	IP05	103-128	N/A	190	55	2	75	M10	M12	M10
Zenith (2BCAL) Falcon (2BC Nylon) Themis (2BCHT)	IP2BC01	N/A	38-48	89	51	2	67	M12	N/A	M12
	IP2BC02	N/A	48-58	100	51	2	78	M12	N/A	M12
	IP2BC03	N/A	58-70	112	51	2	90	M12	N/A	M12
	IP2BC04	N/A	70-83	126	51	2	104	M12	N/A	M12
	IP2BC05	N/A	83-97	140	51	2	118	M12	N/A	M12
	IP2BC06	N/A	96-109	153	51	2	131	M12	N/A	M12
	IP2BC07	N/A	106-120	165	51	2	143	M12	N/A	M12
	IP2BC08	N/A	120-135	180	51	2	158	M12	N/A	M12
	IP2BC09	N/A	135-151	194	51	2	172	M12	N/A	M12
Valiant (1BCAL) Sabre (1BC Nylon) Solace (1BCHT) Helios (FPC)	IP1BC01	N/A	10-13	32	25	2	NA	M10	N/A	N/A
	IP1BC02	N/A	13-16	35	25	2	NA	M10	N/A	N/A
	IP1BC03	N/A	16-19	38	25	2	NA	M10	N/A	N/A
	IP1BC04	N/A	19-23	42	25	2	NA	M10	N/A	N/A
	IP1BC05	N/A	23-27	46	25	2	NA	M10	N/A	N/A
	IP1BC06	N/A	27-32	51	25	2	NA	M10	N/A	N/A
	IP1BC07	N/A	32-38	57	25	2	NA	M10	N/A	N/A
	IP1BC08	N/A	38-45	65	25	2	NA	M10	N/A	N/A
	IP1BC09	N/A	45-51	71	25	2	NA	M10	N/A	N/A
	IP1BC10	N/A	51-58	78	25	2	NA	M10	N/A	N/A
	IP1BC11	N/A	58-65	85	25	2	NA	M10	N/A	N/A
	IP1BC12	N/A	65-71	91	25	2	NA	M10	N/A	N/A
Cyclone I (LDSTR) Cyclone II (SDSTR) Cyclone III (HDSTR)	IPCYC01	24-41	36-60	108	51	2	80	M10	M12	M10
	IPCYC02	37-54	55-80	128	51	2	100	M10	M12	M10
	IPCYC03	50-67	75-99	148	51	2	120	M10	M12	M10
	IPCYC04	63-80	94-118	168	51	2	140	M10	M12	M10
	IPCYC05	72-95	N/A	188	51	2	160	M10	M12	M10
	IPCYC06	92-115	N/A	210	51	2	100	M10	M12	M10
	IPCYC07	112-135	N/A	235	51	2	100	M10	M12	M10
	IPCYC08	132-145	N/A	250	51	2	120	M10	M12	M10

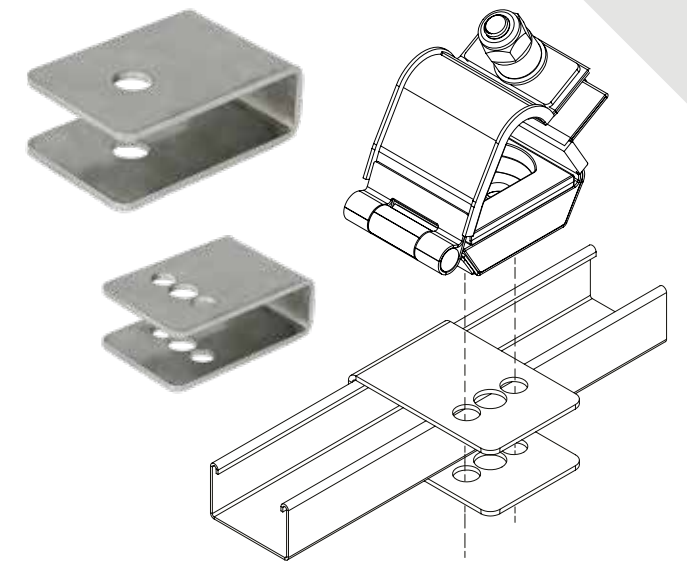
C-CLAMPS

The CMP C-Clamp is designed to be used with all plain or continuous ladder rungs, struts, or channel mounting frame which have no mounting slots or holes provided allowing for ease of cable cleat mounting.

The C-Clamp is manufactured from 316L Stainless Steel, and is supplied in various sizes to suit all CMP cable cleats. The C-Clamps have been extensively tested during short circuit conditions as specified in IEC 61914 'cable cleats for electrical installations'.

The product is supplied as a complete fixing pack which includes fixing bolt, C-Clamp spacer, washers and nyloc nut.

CMP is also able to manufacture bespoke C-Clamps to suit installation requirements. If a bespoke C-Clamp is required, the width (W) and height (H) of the rung is required from the customer.



TECHNICAL DATA & CLASSIFICATION

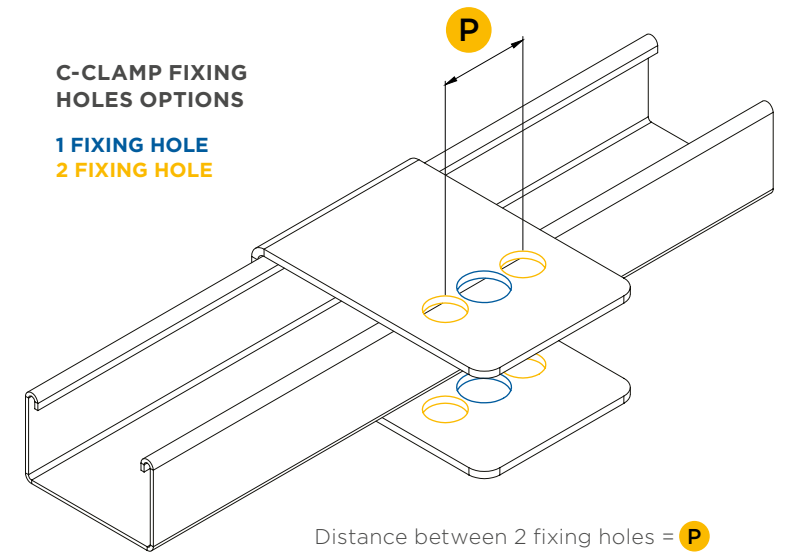
TYPE	6.1.1 Metallic C-Clamp
DESIGN SPECIFICATION	IEC 61914
MATERIAL	316L Stainless Steel

CLEAT IDENTIFICATION

FIXING TYPE	NAME
1 BC RANGE	Sabre
	Valiant
	Solace
	Helios
	Cyclone I / II / III
	Patriot
	Sovereign
	Conqueror
	Huron
1 BOLT FIXING HOLE	Reliance
	Sapphire
	Endurance
	Centurion
	Legion
	Saturn
	N/A
	Mercury
	Cyclone I / II / III
	Patriot
	Sovereign
	Conqueror
2 BOLT FIXING HOLE	Huron
	Reliance
	Sapphire
	Endurance
	Centurion
	Legion
	Saturn
	Mercury
2 BC RANGE	Falcon
	Themis

C-CLAMP FIXING HOLES OPTIONS

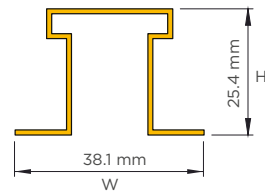
- 1 FIXING HOLE
- 2 FIXING HOLE



Distance between 2 fixing holes = P

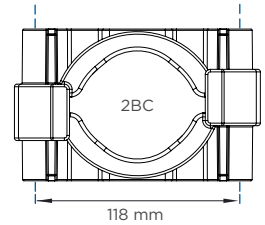
HOW TO ORDER

1. Identify ladder type and size. (refer to line drawings in section below).



2a. Identify cleat fixing type and bolt size for 1BC or any 1 Bolt Fixing Hole. Identify pitch for 2BC or 2 Bolt Fixing Hole.

2b. Cross reference cleat and ladder to find order code.



3. C-clamps can be coated by adding the suffixes listed on page 21 to the product code. For example CFP-CC-C-118-TC

1. LADDER / STRUT / MOUNTING SURFACE DIMENSION CODES							
		CC-A	CC-B	CC-C	CC-D	CC-E	CC-F
HEIGHT	INCHES	1/2"	1"	1"	3/4"	1"	1"
	MM	12.7	25.4	25.4	19.05	25.4	25.4
WIDTH	INCHES	1-1/2"	1-5/8"	1-1/2"	25/32"	1"	1-1/8"
	MM	38.1	41.275	38.1	19.84	25.4	28.6

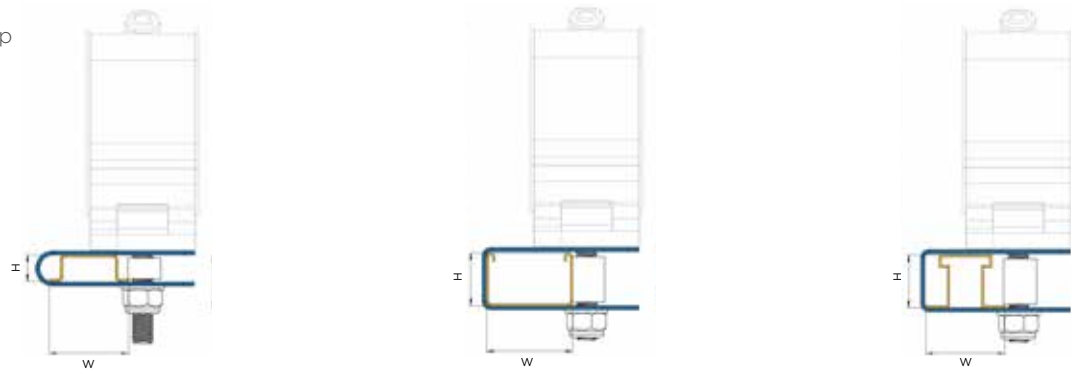
Ladder types shown are typical examples, if you have a different type please contact CMP directly. Bespoke sizes available on request.

2. C - CLAMP FIXING PACK CODES									
FIXING TYPE	BOLT SIZE	PITCH	RANGE	CC-A	CC-B	CC-C	CC-D	CC-E	CC-F
1 BOLT FIXING HOLE	M10	-	-	CC-A-M10	CC-B-M10	CC-C-M10	CC-D-M10	CC-E-M10	CC-F-M10
	M12	-	-	CC-A-M12	CC-B-M12	CC-C-M12	CC-D-M12	CC-E-M12	CC-F-M12
2 BOLT FIXING HOLES	M10	P = 25	-	CC-A-25	CC-B-25	CC-C-25	CC-D-25	CC-E-25	CC-F-25
		P = 50	-	CC-A-50	CC-B-50	CC-C-50	CC-D-50	CC-E-50	CC-F-50
		P = 75	-	CC-A-75	CC-B-75	CC-C-75	CC-D-75	CC-E-75	CC-F-75
		P = 80	-	CC-A-80	CC-B-80	CC-C-80	CC-D-80	CC-E-80	CC-F-80
		P = 100	-	CC-A-100	CC-B-100	CC-C-100	CC-D-100	CC-E-100	CC-F-100
		P = 120	-	CC-A-120	CC-B-120	CC-C-120	CC-D-120	CC-E-120	CC-F-120
		P = 140	-	CC-A-140	CC-B-140	CC-C-140	CC-D-140	CC-E-140	CC-F-140
		P = 160	-	CC-A-160	CC-B-160	CC-C-160	CC-D-160	CC-E-160	CC-F-160
1BC RANGE	M10	-	10-23	CC-A-1BC1023	CC-B-1BC1023	CC-C-1BC1023	CC-D-1BC1023	CC-E-1BC1023	CC-F-1BC1023
		-	23-38	CC-A-1BC2338	CC-B-1BC2338	CC-C-1BC2338	CC-D-1BC2338	CC-E-1BC2338	CC-F-1BC2338
		-	38-58	CC-A-1BC3858	CC-B-1BC3858	CC-C-1BC3858	CC-D-1BC3858	CC-E-1BC3858	CC-F-1BC3858
		-	58-71	CC-A-1BC5871	CC-B-1BC5871	CC-C-1BC5871	CC-D-1BC5871	CC-E-1BC5871	CC-F-1BC5871
		-	71-83	CC-A-1BC7183	CC-B-1BC7183	CC-C-1BC7183	CC-D-1BC7183	CC-E-1BC7183	CC-F-1BC7183
2BC RANGE	M10	P = 67	38-48	CC-A-67	CC-B-67	CC-C-67	CC-D-67	CC-E-67	CC-F-67
		P = 78	48-58	CC-A-78	CC-B-78	CC-C-78	CC-D-78	CC-E-78	CC-F-78
		P = 90	58-70	CC-A-90	CC-B-90	CC-C-90	CC-D-90	CC-E-90	CC-F-90
		P = 104	70-83	CC-A-104	CC-B-104	CC-C-104	CC-D-104	CC-E-104	CC-F-104
		P = 118	83-97	CC-A-118	CC-B-118	CC-C-118	CC-D-118	CC-E-118	CC-F-118
		P = 131	96-109	CC-A-131	CC-B-131	CC-C-131	CC-D-131	CC-E-131	CC-F-131
		P = 143	106-120	CC-A-143	CC-B-143	CC-C-143	CC-D-143	CC-E-143	CC-F-143
		P = 158	120-135	CC-A-158	CC-B-158	CC-C-158	CC-D-158	CC-E-158	CC-F-158
P = 172	135-151	CC-A-172	CC-B-172	CC-C-172	CC-D-172	CC-E-172	CC-F-172		

If C-Clamp is required with fixing pack, add the prefix CFP-. Example order reference for C-Clamp with fixing pack CFP (CFP-CC-C-118). If isolation pad is required, add suffix of -IP. Example order reference for C-Clamp with isolation pad IP (CC-C-118-IP).

LADDER TYPE

- Ladder
- C - Clamp



CFP-CC-A

CFP-CC-B

CFP-CC-C

CFP-CC-D

CFP-CC-E

CFP-CC-F

All diagrams shown with fixing pack.

TDS733 REV 3 10/20



CMP PRODUCTS

As a market-leading specialist designer and manufacturer of cable glands, cable cleats and accessories, CMP has been providing safe and innovative solutions to the global market for over 60 years; gaining us an international reputation for quality and reliability.

Our products are developed to suit a wide range of customers' industrial applications across market sectors such as infrastructure, renewable energy, power transmission and distribution, rail, tunnels, marine, data centres, automation and robotics, water treatment, desalination, oil and gas, mining and general construction. They have been designed and rigorously tested to cover a variety of international codes, standards and approvals.

Our high-quality products are reinforced with exceptional customer service and innovative solutions; we offer on-hand technical support from our experts across the globe, from 10 different offices spread across 6 continents.

NEWCASTLE (Headquarters)
CMP Products Limited
United Kingdom
Tel: +44 (0) 191 2657411
E-Mail:
customerservices@cmp-products.com

HOUSTON (Texas Inc)
CMP Products Texas Inc
Texas, USA
Tel: +1 281 776 5201
E-Mail:
houstonoffice@cmp-products.com

PERTH, WA
CMP Products Pty Ltd
Australia
Tel: +61 8 9249 4508
E-Mail: perthoffice@cmp-products.com

BRISBANE, QLD
CMP Products Pty Ltd
Australia
Tel: +61 7 3801 0301
E-Mail: qldoffice@cmp-products.com

DUBAI
CMP Products Middle East FZCO
United Arab Emirates
Tel: +971 4 214 6114
E-Mail: meoffice@cmp-products.com

BUSAN
CMP Products (Korea) Ltd
South Korea
Tel: +82 51 780 5300
E-Mail: busanoffice@cmp-products.com

SINGAPORE
CMP Products (S.E.A) Pte Ltd.
Singapore
Tel: +65 6466 6180
E-Mail: seaoffice@cmp-products.com

SHANGHAI
CMP Products Division
P.R. China
Tel: +86 21 5837 9978
E-Mail: shanghaioffice@cmp-products.com

JOHANNESBURG
CMP Products
South Africa
Tel: +27 11 266 8880
E-Mail: africaoffice@cmp-products.com

EDMONTON, AB
CMP Products
Canada
Tel: +1 281 776 5201
E-Mail: houstonoffice@cmp-products.com

www.cmp-products.com