

SINGLE & TREFOIL CABLE CLEATS

180kA
IEC 61914:2015



What is a cable cleat

The international standard governing Cable Cleats used in electrical installations is IEC 61914:2015. In this standard Cable Cleats are defined as *“devices designed to provide securing of cables when installed at intervals along the length of the cables”*. Simply put, cable cleats are used to secure, fix and route electrical cables in the positions required in an electrical installation. They can consist of single or multiple parts, plastic or metal material and include some sort of provision for securing to a surface or structure. Mounting surfaces that may be specified include; ladder, tray, strut, rail, and beam.

Cable cleats are designed to ensure that cables are fixed, supported and routed in a manner that provides safe operation and reduces the risk of damage or injury in the event of a short circuit fault, emergency or accident. Improper clamping of cables can result in loss through unnecessary downtime or even injury and death. Cable cleats should at a minimum:

- Be rated for the specified cable OD.
- Provide a means of securely fixing the cable.
- Have adequate strength to secure the cable.
- Prevent excessive cable movement and damage.
- Avoid chafing and undue stress in the cable.

Cleat Selection and How to Specify Cable Cleats

Cable Arrangement - The cable arrangement/configuration will primarily dictate the type of cleat required. Cable arrangements for 3 phase installations utilising single conductor cables are typically flat spaced, flat touching or trefoil. A parallel or flat arrangement of single core cables can be completed with a range of single or two-part cleats. Whereas a trefoil would require a trefoil type cleat.

Cable Type - The type of cable being used, Single or Multi-core, as well as its Voltage Levels and Construction Low Voltage (LV), Medium Voltage (MV) or High Voltage (HV) should be considered.

Cable Diameter - Knowing the overall diameter of the cable (measurement across the entire cross-section) is essential in ensuring the correct size of cleat is selected. It is also required to calculate the short circuit forces that the cleat may be subjected to; this can be used to determine correct cleat spacing.

CABLE CLEATS

Performance

A range of factors will dictate the level of performance your installation will require. The size, weight and length of run of the cable and spacing will usually influence whether you require a polymer or metallic cleat. Things such as the support structure material and environmental conditions (corrosion) can also affect your decision of cleat material. Other factors such as project specification may require special provision for performance in the event of a fire such as Low Smoke or Zero Halogen.

In summary, to correctly select the type of cleat you require you should be looking to obtain the following information;

1. Calculate the system peak fault current.
2. Confirm cable type and arrangement, including the overall diameter and manufacturing tolerance.
3. Confirm the support structure type and material
4. Consider any other environmental conditions and project specification requirements.

CCG's range of stainless-steel single and trefoil cleats.

Designed to restrain single or trefoil cables onto ladder tray or strut systems and are manufactured from corrosion resistant, magnetic free, 316 stainless steel with LSOH and UV protected polymeric linings for cable protection. CCG's cleats are designed to withstand mechanical forces caused by fault currents of up to 180kA.

CCG's range of cleats have an open hinge single bolt fastening system allowing ease of installation for a wide range of cables from 13mm to 128mm.



CABLE TERMINATIONS

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SINGLE

Features and Benefits

- Used to restrain single cables (single core or multi-core) onto cable ladder, tray or strut systems.
- Open hinge system allows easy placement of the cable into the cleat prior to tightening.
- Manufactured from corrosion resistant, non-magnetic 316 stainless steel.
- Complete with LSOH polymeric liners to protect the cable sheath.
- Accessible clamping bolt allows easy tightening with a single tool.

Construction

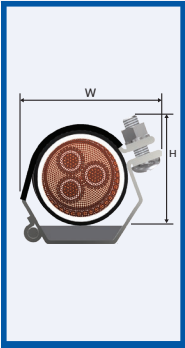
Frame:	Corrosion resistant, non-magnetic 316 Stainless Steel
Cable resting base:	LSF Polymeric composite
Liner:	LSF Polymeric composite
Locking hardware:	316 Stainless Steel M8 or M10 bolt and nylon locking nut

Technical Specifications

Type:	Single Cable Cleat
Third party certified:	IEC 61914:2015
Lateral Load test:	Average 25 kg
Axial Load test:	Pass according to IEC 61914:2015
Impact resistance	Very Heavy
Temperature range	-40°C to +105°C
Needle flame test	650°C for 30 seconds

Standards and Certifications

Conformance:	Standard:	Certificate:
Marine DNV	IEC 61914:2015	TAE0004C3



DNV-GL

Product Code	Cable Range		Dimensions	
	Min. Dia. mm	Max. Dia. mm	Height mm	Width mm
CC-S2832	28.0	32.0	60.0	57.0
CC-S3034	30.0	34.0	61.0	59.0
CC-S3236	32.0	36.0	63.0	61.0
CC-S3438	34.0	38.0	65.0	63.0
CC-S3640	36.0	40.0	67.0	64.0
CC-S3842	38.0	42.0	69.0	65.0
CC-S4044	40.0	44.0	70.0	68.0
CC-S4246	42.0	46.0	71.0	69.0
CC-S4448	44.0	48.0	73.0	72.0
CC-S4650	46.0	50.0	74.0	73.0
CC-S4852	48.0	52.0	75.0	77.0
CC-S5054	50.0	54.0	78.0	78.0
CC-S5256	52.0	56.0	79.0	80.0
CC-S5458	54.0	58.0	80.0	82.0
CC-S5660	56.0	60.0	81.0	85.0
CC-S5862	58.0	62.0	82.0	87.0
CC-S6064	60.0	64.0	85.0	88.0
CC-S6266	62.0	66.0	87.0	90.0
CC-S6468	64.0	68.0	89.0	91.0
CC-S6670	66.0	70.0	90.0	92.0
CC-S6872	68.0	72.0	92.0	94.0
CC-S7074	70.0	74.0	95.0	97.0
CC-S7276	72.0	76.0	97.0	99.0
CC-S7478	74.0	78.0	98.0	102.0
CC-S7680	76.0	80.0	100.0	104.0
CC-S7882	78.0	82.0	102.0	106.0
CC-S8084	80.0	84.0	105.0	107.0
CC-S8286	82.0	86.0	107.0	110.0
CC-S8488	84.0	88.0	109.0	111.0
CC-S8690	86.0	90.0	110.0	113.0
CC-S9094	90.0	94.0	115.0	121.0
CC-S94118	94.0	118.0	133.0	139.0
CC-S118130	118.0	130.0	140.0	144.0
CC-S127150	127.0	150.0	161.0	166.0

TREFOIL

Features and Benefits

- Provides securing, support and retention of cables in cable ladder, tray or strut systems.
- Designed to hold cables together in a trefoil arrangement and to provide resistance to electromechanical forces during short circuit conditions.
- Manufactured from corrosion resistant non-magnetic 316 Stainless Steel.
- Complete with UV Resistant LSOH Polymeric Liners to protect cable sheaths during installation and movement due to electromechanical forces during short circuits.
- Open hinge system allows for easy placement of cables into the cleat prior to tightening.
- Accessible tightening bolt allows for easy tightening with a single tool.
- Wide range 13mm to 128mm.

Construction

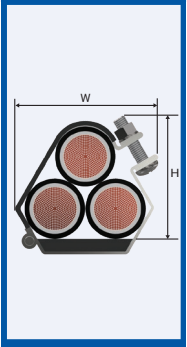
Frame:	Corrosion resistant, non-magnetic 316 Stainless Steel
Cable resting base:	LSF Polymeric composite
Liner:	LSF Polymeric composite
Locking hardware:	316 Stainless Steel M10 bolt and nylon locking nut

Technical Specifications

Type:	Trefoil Cable Cleat
Third party certified:	IEC 61914:2015
Resistance to mechanical forces:	180 kA 300mm spacing 125 kA 600mm spacing 103 kA 900mm spacing 90 kA 1200mm spacing
Lateral load test:	Average 25kg
Axial load test:	Pass according to IEC 61914:2015
Impact resistance:	Very Heavy
Temperature range:	-40°C to 105°C
Needle flame test:	650°C for 30 seconds

Standards and Certifications

Conformance:	Standard:	Certificate:
Marine DNV	IEC 61914:2015	TAE0004C3



Product Code	Cable Range		Dimensions	
	Min. Dia. mm	Max. Dia. mm	Height mm	Width mm
CC-T1323	13.0	23.0	73.0	68.0
CC-T2125	21.0	25.0	75.0	72.0
CC-T2329	23.0	29.0	80.0	79.0
CC-T2531	25.0	31.0	83.0	82.0
CC-T2733	27.0	33.0	84.0	85.0
CC-T2935	29.0	35.0	89.0	90.0
CC-T3238	32.0	38.0	92.0	96.0
CC-T3541	35.0	41.0	98.0	100.0
CC-T3844	38.0	44.0	100.0	106.0
CC-T4248	42.0	48.0	104.0	113.0
CC-T4551	45.0	51.0	107.0	120.0
CC-T4753	47.0	53.0	110.0	122.0
CC-T4955	49.0	55.0	113.0	125.0
CC-T5157	51.0	57.0	115.0	127.0
CC-T5359	53.0	59.0	118.0	135.0
CC-T5561	55.0	61.0	122.0	138.0
CC-T5763	57.0	63.0	125.0	141.0
CC-T5965	59.0	65.0	126.0	145.0
CC-T6167	61.0	67.0	131.0	148.0
CC-T6369	63.0	69.0	134.0	153.0
CC-T6571	65.0	71.0	139.0	155.0
CC-T6773	67.0	73.0	143.0	156.0
CC-T6975	69.0	75.0	146.0	161.0
CC-T7177	71.0	77.0	150.0	164.0
CC-T7379	73.0	79.0	154.0	166.0
CC-T7581	75.0	81.0	157.0	170.0
CC-T7783	77.0	83.0	160.0	174.0
CC-T7985	79.0	85.0	162.0	178.0
CC-T8187	81.0	87.0	168.0	181.0
CC-T8389	83.0	89.0	172.0	185.0
CC-T8896	88.0	96.0	180.0	195.0
CC-T96103	96.0	103.0	189.0	203.0
CC-T103111	103.0	111.0	198.0	206.0
CC-T111119	111.0	119.0	207.0	215.0
CC-T119128	119.0	127.0	216.0	223.0

CABLE CLEATS

TREFOIL

How to select cable cleats

1. IDENTIFY

- Which type of cable is being used. Single or multi-conductor?
- What is the outer diameter of the cable?
- What is the available short circuit current (RMS or Peak) of the cables?
- If a ground wire is installed in the cleats, identify the outer diameter of the ground wire?

2. THE SYSTEM

- What is the cable formation, single or trefoil?
- What type of the cable tray is installed?

Product Code	Cable Dia. (mm)	Spacing between Conductor Centers mm IP PEAK (kA)			
		0.3	0.6	0.9	1.2
CC-T1323	13.0	109.0	77.0	63.0	54.0
	23.0	145.0	103.0	84.0	72.0
CC-T2125	21.0	139.0	98.0	80.0	69.0
	25.0	152.0	107.0	87.0	76.0
CC-T2329	23.0	145.0	103.0	84.0	72.0
	29.0	163.0	115.0	94.0	81.0
CC-T2531	25.0	152.0	107.0	87.0	76.0
	31.0	169.0	119.0	97.0	84.0
CC-T2733	27.0	158.0	111.0	91.0	79.0
	33.0	174.0	123.0	100.0	87.0
CC-T2935	29.0	163.0	115.0	94.0	81.0
	35.0	180.0	125.0	103.0	90.0
CC-T3238	32.0	172.0	121.0	99.0	86.0
	38.0	187.0	132.0	108.0	93.0
CC-T3541	35.0	180.0	125.0	103.0	90.0
	41.0	194.0	137.0	112.0	97.0
CC-T3844	38.0	187.0	132.0	108.0	93.0
	44.0	201.0	142.0	116.0	100.0
CC-T4248	42.0	197.0	139.0	113.0	98.0
	48.0	210.0	149.0	121.0	105.0
CC-T4551	45.0	204.0	144.0	117.0	102.0
	51.0	217.0	153.0	125.0	108.0
CC-T4753	47.0	208.0	147.0	120.0	104.0
	53.0	221.0	156.0	127.0	110.0
CC-T4955	49.0	212.0	150.0	122.0	106.0
	55.0	225.0	159.0	130.0	112.0
CC-T5157	51.0	217.0	153.0	125.0	108.0
	57.0	229.0	162.0	132.0	114.0
CC-T5359	53.0	221.0	156.0	127.0	110.0
	59.0	233.0	165.0	134.0	116.0
CC-T5561	55.0	225.0	159.0	130.0	112.0
	61.0	237.0	168.0	137.0	118.0
CC-T5763	57.0	229.0	162.0	132.0	114.0
	63.0	241.0	170.0	139.0	120.0
CC-T5965	59.0	233.0	165.0	134.0	116.0
	65.0	245.0	173.0	141.0	122.0
CC-T6167	61.0	237.0	168.0	137.0	118.0
	67.0	249.0	176.0	143.0	124.0
CC-T6369	63.0	241.0	170.0	139.0	120.0
	69.0	252.0	178.0	145.0	126.0
CC-T6571	65.0	245.0	173.0	141.0	122.0
	71.0	256.0	181.0	148.0	128.0
CC-T6773	67.0	249.0	176.0	143.0	124.0
	73.0	259.0	183.0	150.0	130.0
CC-T6975	69.0	252.0	178.0	145.0	126.0
	75.0	263.0	186.0	152.0	131.0
CC-T7177	71.0	256.0	181.0	148.0	128.0
	77.0	266.0	188.0	154.0	133.0
CC-T7379	73.0	259.0	183.0	150.0	130.0
	79.0	270.0	191.0	156.0	135.0
CC-T7581	75.0	263.0	186.0	152.0	131.0
	81.0	273.0	193.0	158.0	136.0
CC-T7783	77.0	266.0	188.0	154.0	133.0
	83.0	277.0	196.0	160.0	138.0
CC-T7985	79.0	270.0	191.0	156.0	135.0
	85.0	280.0	198.0	161.0	140.0
CC-T8187	81.0	273.0	193.0	158.0	136.0
	87.0	283.0	200.0	163.0	141.0
CC-T8389	83.0	277.0	196.0	160.0	138.0
	89.0	287.0	202.0	165.0	143.0
CC-T8896	88.0	285.0	201.0	164.0	142.0
	96.0	298.0	210.0	172.0	149.0
CC-T96103	96.0	298.0	210.0	172.0	149.0
	103.0	308.0	218.0	178.0	154.0
CC-T103111	103.0	308.0	218.0	178.0	154.0
	111.0	320.0	226.0	185.0	160.0
CC-T111119	111.0	320.0	226.0	185.0	160.0
	119.0	331.0	234.0	191.0	165.0
CC-T119128	119.0	331.0	234.0	191.0	165.0
	128.0	344.0	243.0	198.0	172.0

