# CABLE CLEATS

## 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.

## 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.

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 engineered for installation in harsh, corrosive environments and direct burial applications.

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 Cleats withstand mechanical forces caused by fault currents of up to 180kA.

CABLE TERMINATIONS


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CABLE TERMINATIONS

CABLE CLEATS


# SINGLE & TREFOIL CABLE CLEATS

**180kA**

**IEC 61914:2015**

CABLE TERMINATIONS

# CABLE CLEATS

## SINGLE

### Features and Benefits

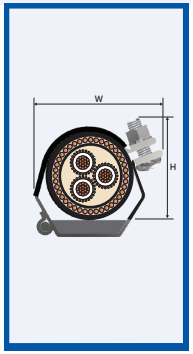
- Used to restrain single cables (single core or multi-core) onto cable ladder, tray or strut systems.
- Open hinge system allows easy placement of the cable into the cleat prior to tightening.
- Manufactured from corrosion resistant, non-magnetic 316 stainless steel.
- Complete with LSOH polymeric liners 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: | LSOH Halogen Free Plastic - Polymeric composite |
| Liner: | LSOH Halogen Free Plastic - Polymeric composite |
| Locking hardware: | 316 stainless steel M8 and M10 bolt and nylon locking nut |

### Technical Specifications

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




### 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-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

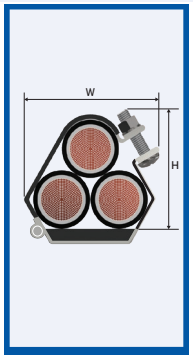
- Provides securing, support and retention of cables in cable ladder, tray or strut systems.
- Designed to hold cables together in a trefoil arrangement and to provide resistance to electromechanical forces during short circuit conditions. Suitable for use with LV and HV cables.
- Manufactured from corrosion resistant non-magnetic 316 stainless steel.
- Complete with 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: | LSOH Halogen Free Plastic - Polymeric composite |
| Liner: | LSOH Halogen Free Plastic - Polymeric composite |
| Locking hardware: | 316 stainless steel M8 and M10 bolt and nylon locking nut |

### Technical Specifications

| | |
|---|---|
| Type: | Trefoil Cable Cleat |
| Third party certified: | IEC 61914:2015 |
| Resistance to mechanical forces | See datasheet - table on page 2 |
| Lateral load test: | Average 25kg |
| Axial load test: | Pass according to IEC 61914 |
| Impact resistance: | Very Heavy |
| Temperature range: | -40°C to 105°C |
| Needle flame test: | 650°C for 30 sec |
| UV resistance test: | 1,000 hrs |




### Standards and Certifications

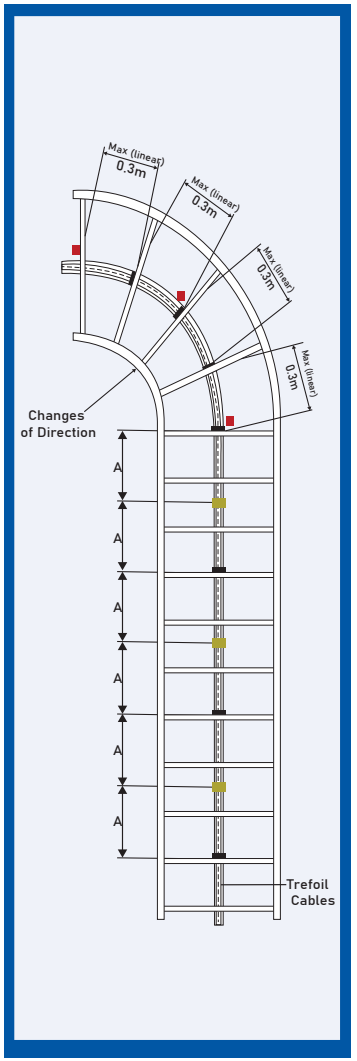
| Conformance: | Standard: | Certificate: |
|---|---|---|
| Marine DNV | IEC 61914:2015 | TAE0004C3 |

| 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 |

## 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 |