



Remora Electrical

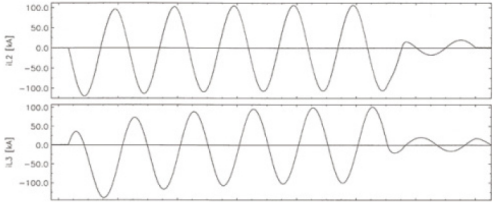
# Trefoil Selection and Correct Spacing

## Trefoil Cleat Spacing

**Scope:** The function of trefoil cable cleats is to secure cables in formation to supports. Following either a short circuit fault or an excursion up to a high temperature within their design limits they will continue to fulfil this role.

**Short Circuit Current:** When a short circuit fault occurs in a three phase system, there is at first a period of extreme asymmetry which is then followed by a steadier more symmetrical state. The degree of asymmetry depends on when in the cycle the fault is initiated and also the nature of the fault. By convention, the "Peak" is the maximum current value achieved in the early asymmetrical period and it is at this point that the highest instantaneous force between the cables occurs.

Short Circuit Current	Cleat Spacing	Fixings	Part Code
77kA peak	600mm	One Bolt	376AC01-33
101kA peak	300mm	One Bolt	376AC01-33



**Short Circuit:** BS EN 61914:2021 provides a formula which enables us to calculate the maximum force on a cable conductor.

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

$F_t$  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)

$S$  is the centre to centre distance between two neighbouring conductors [m] (for trefoil arrangements  $S = \text{Cable Diameter}$ )

Short circuit tests are performed on the most critical cleat size within its range. The formula can then be used to calculate the maximum force generated during the test. This maximum force figure can then be used when specifying alternative configurations of cable size and fault current.

**Trefoil Cleat Spacing:** Trefoil cleats are required to withstand the high forces generated by high short circuit currents will often be spaced at very regular intervals - typically matching the commonly available cable ladder (i.e. 300mm / 600mm).

The maximum short circuit current values will be quoted for each design of trefoil cleat - if a system uses larger cables or has a lower fault current it may be possible to broaden these spacings.

As a general rule in order to create and maintain a satisfactory trefoil installation **a maximum cleat spacing of 900mm or less is recommended.**

