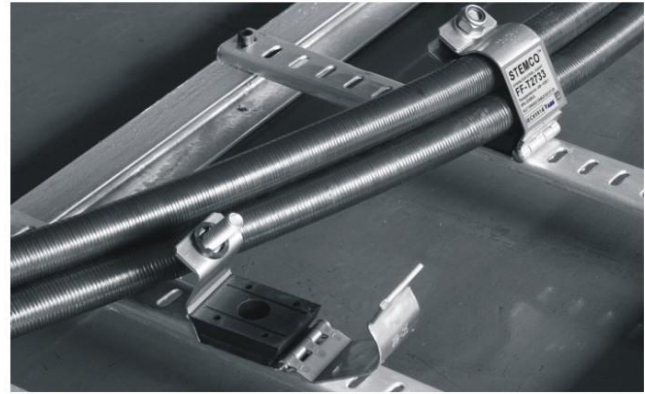


Cable Cleats



Introduction

Cable Cleats are approved by DNV(Det Norske Veritas) and ABS(American Bureau of Shipping).

FF-T&FF-S Cable Cleats are designed to support and retain your cables within your cable tray system in every conditions. More importantly, they prevent the damage in short circuit condition. Unfortunately, short circuit always happens, and when it do, it's destructive and dangerous to the cables and cable system. FF-T&FF-S Cable Cleats are one of the first lines of defense to help protect the personnel, the cables and the cable system.



How to select the Cable Cleats

1 Know the Cables

- Which type of cable is being used, Single or Multi-Conductor?
- What is the outer diameter of Cables?
- What is the cable arrangement, Flat or Trefoil?
- If a ground wire is installed in the cleats, know the outer Diameter of the ground wire .

2 Know the System

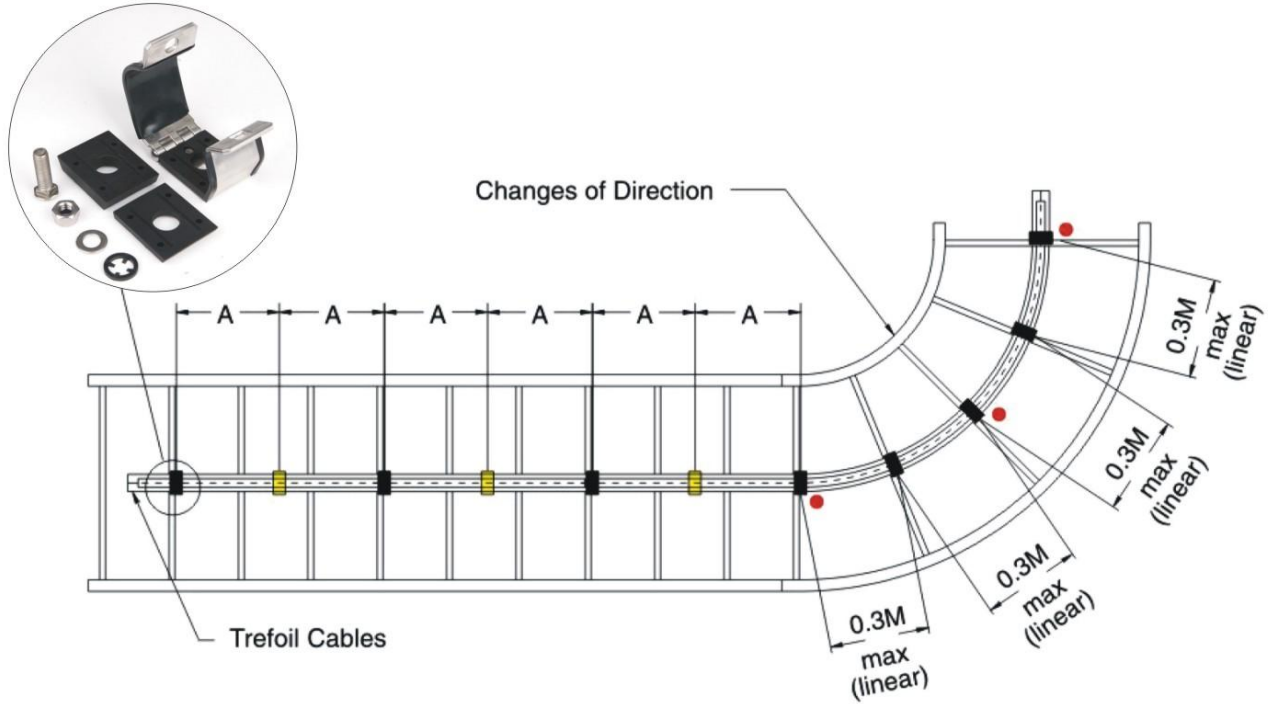
- What is the available short circuit current (RMS or IP Peak)?
- What type of copper B-line cable tray is installed?

3 Short Circuit Current Test

- Short circuit current is an over current resulting from an electrical fault of negligible impedance between live conductors or between a live conductor and an earth, having a difference in potential under normal operating conditions.
- RMS current is a calculated value for the initial cycles of the fault.
- IP Peak short current is a maximum possible instantaneous value of the short circuit current.
- Electromechanical Force is included forces acting on current carrying conductors.
- Relevant Standard: IEC 61914

DETERMINE THE CLEAT SPACE FOR INSTALLATION

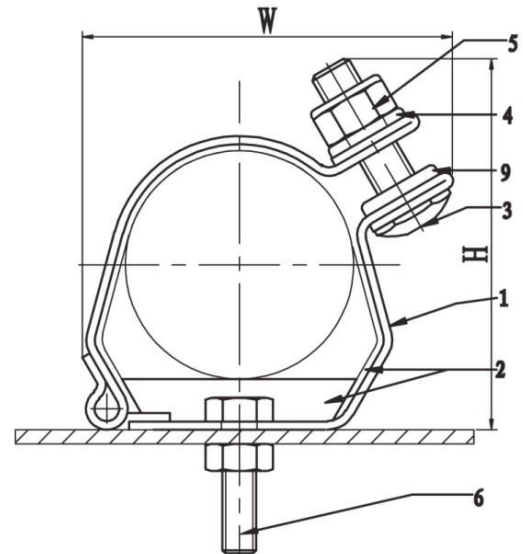
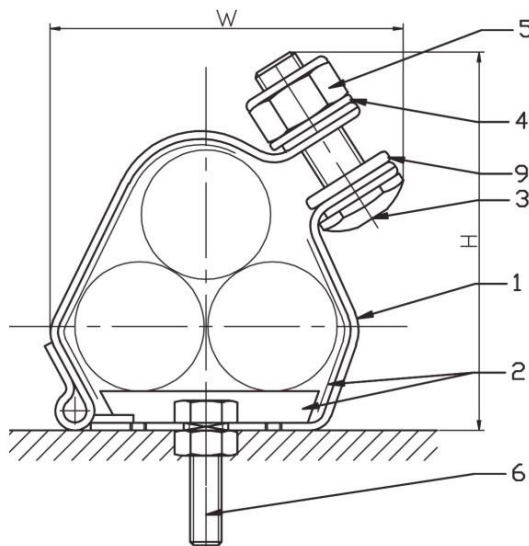
Single Conductor Short Circuit Withstand Table																					
Max. Cable Cleat Spacing(A)		Spacing Between Conductor Centers (mm)																			
		23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61
mm	In.	IP peak(KA)																			
225	8.858	179	187	194	203	209	216	220	229	234	240	246	250	255	261	266	271	276	281	286	291
300	11.81	155	163	168	174	181	187	192	198	203	209	214	215	220	225	230	235	239	244	248	252
450	17.72	128	133	137	144	148	152	157	161	165	170	174	178	180	184	188	192	195	199	202	206
600	23.62	110	115	119	124	128	132	135	139	143	148	150	153	156	160	163	166	169	172	175	178
675	26.57	104	108	113	117	121	124	128	132	135	139	143	147	150	154	156	159	162	165	168	
900	35.43	89	93	97	102	105	108	110	115	117	121	124	127	128	130	133	135	138	140	143	145



Installation Notes

The cleats should be installed properly to secure the cables. It is not necessary for every cleat to be attached onto the tray. Every cleat should be restrained to keep cables bundling. The bend radius should be 8 to 12 times of the cable diameter. The cleats should always be installed at the beginning, the middle, the end of the bend part. The distance between the cleats on the bend should be no more than 0.3M from center to center.





Performance on the Cable Cleats

Resistance to Electromechanical Force	230KA perk 300mm Spacing 180kA peak 600mm Spacking 100kA Peak 1200mm Spacking
Lateral Load Test	Average 25 kg
Axial Load Test	Pass
Max and Min Temperature	-40°C~120°C
Resistance to Impact	Very Heavy
Needle Flame Test	30 Seconds
Resistant to UV light Test	1000 hours

Construction Data of the Cable Cleats

Cleat Material	Composite
Frame	54mm*2.0mm, marine grade, Non-magnetic 316L
Closure Hardware	316SS M8 or M10 bolt and Nylon Lock Nut
Integral Pad	Smoke, Low Fume, Halogen Free
Tools Required	Wrench
Mounting Bolt	Provided with the Cable Cleat

FF-T Trefoil Cable Cleats								
Part Number	Cable Range				Dimensions			
	Min. Dia.		Max. Dia.		H		W	
	mm	in.	mm	in.	mm	in.	mm	in.
FF-T1323	13	0.51	23	0.91	73	2.87	68	2.68
FF-T2125	21	0.83	25	0.98	75	2.95	72	2.83
FF-T2329	23	0.91	29	1.14	80	3.15	79	3.11
FF-T2531	25	0.98	31	1.22	83	3.27	82	3.23
FF-T2733	27	1.06	33	1.30	84	3.31	85	3.35
FF-T2935	29	1.14	35	1.38	89	3.50	90	3.54
FF-T3238	32	1.26	38	1.50	92	3.62	96	3.78
FF-T3541	35	1.38	41	1.61	98	3.86	100	3.94
FF-T3844	38	1.50	44	1.73	100	3.94	106	4.17
FF-T4248	42	1.65	48	1.89	104	4.09	113	4.45
FF-T4551	45	1.77	51	2.01	107	4.21	120	4.72
FF-T4753	47	1.85	53	2.09	110	4.33	122	4.80
FF-T4955	49	1.93	55	2.17	113	4.45	125	4.92
FF-T5157	51	2.01	57	2.24	115	4.53	127	5.00
FF-T5359	53	2.09	59	2.32	118	4.65	135	5.31
FF-T5561	55	2.17	61	2.40	122	4.80	138	5.43
FF-T5763	57	2.24	63	2.48	125	4.92	141	5.55
FF-T5965	59	2.32	65	2.56	126	4.96	145	5.71

FF-T Trefoil Cable Cleats								
Part Number	Cable Range				Dimensions			
	Min. Dia.		Max. Dia.		H		W	
	mm	in.	mm	in.	mm	in.	mm	in.
FF-T6167	61	2.40	67	2.64	131	5.16	148	5.83
FF-T6369	63	2.48	69	2.72	134	5.28	153	6.02
FF-T6571	65	2.56	71	2.80	139	5.47	155	6.10
FF-T6773	67	2.64	73	2.87	143	5.63	156	6.14
FF-T6975	69	2.72	75	2.95	146	5.75	161	6.34
FF-T7177	71	2.80	77	3.03	150	5.91	164	6.46
FF-T7379	73	2.87	79	3.11	154	6.06	166	6.54
FF-T7581	75	2.95	81	3.19	157	6.18	170	6.69
FF-T7783	77	3.03	83	3.27	160	6.30	174	6.85
FF-T7985	79	3.11	85	3.35	162	6.38	178	7.01
FF-T8187	81	3.19	87	3.43	168	6.61	181	7.13
FF-T8389	83	3.27	89	3.50	172	6.77	185	7.28
FF-T8896	88	3.46	96	3.78	180	7.09	195	7.68
FF-T96103	96	3.78	103	4.06	189	7.44	203	7.99
FF-T103111	103	4.06	111	4.37	198	7.80	206	8.11
FF-T111119	111	4.37	119	4.69	207	8.15	215	8.46
FF-T119128	119	4.69	128	5.04	216	8.50	223	8.78

FF-S Single Cable Cleats								
Part Number	Cable Range				Dimensions			
	Min. Dia.		Max. Dia.		H		W	
	mm	in.	mm	in.	mm	in.	mm	in.
FF-S2832	28	1.10	32	1.26	60	2.36	57	2.24
FF-S3034	30	1.18	34	1.34	61	2.40	59	2.32
FF-S3236	32	1.26	36	1.42	63	2.48	61	2.40
FF-S3438	34	1.34	38	1.50	65	2.56	63	2.48
FF-S3640	36	1.42	40	1.57	67	2.64	64	2.52
FF-S3842	38	1.50	42	1.65	69	2.72	65	2.56
FF-S4044	40	1.57	44	1.73	70	2.76	68	2.68
FF-S4246	42	1.65	46	1.81	71	2.80	69	2.72
FF-S4448	44	1.73	48	1.89	73	2.87	72	2.83
FF-S4650	46	1.81	50	1.97	74	2.91	73	2.87
FF-S4852	48	1.89	52	2.05	75	2.95	77	3.03
FF-S5054	50	1.97	54	2.13	78	3.07	78	3.07
FF-S5256	52	2.05	56	2.20	79	3.11	80	3.15
FF-S5458	54	2.13	58	2.28	80	3.15	82	3.23
FF-S5660	56	2.20	60	2.36	81	3.19	85	3.35
FF-S5862	58	2.28	62	2.44	82	3.23	87	3.43
FF-S6064	60	2.36	64	2.52	85	3.35	88	3.46

FF-S Single Cable Cleats								
Part Number	Cable Range				Dimensions			
	Min. Dia.		Max. Dia.		H		W	
	mm	in.	mm	in.	mm	in.	mm	in.
FF-S6266	62	2.44	66	2.60	87	3.43	90	3.54
FF-S6468	64	2.52	68	2.68	89	3.50	91	3.58
FF-S6670	66	2.60	70	2.76	90	3.54	92	3.62
FF-S6872	68	2.68	72	2.83	92	3.62	94	3.70
FF-S7074	70	2.76	74	2.91	95	3.74	97	3.82
FF-S7276	72	2.83	76	2.99	97	3.82	99	3.90
FF-S7478	74	2.91	78	3.07	98	3.86	102	4.02
FF-S7680	76	2.99	80	3.15	100	3.94	104	4.09
FF-S7882	78	2.99	82	3.23	102	4.02	106	4.17
FF-S8084	80	3.15	84	3.31	105	4.13	107	4.21
FF-S8286	82	3.23	86	3.39	107	4.21	110	4.33
FF-S8488	84	3.31	88	3.46	109	4.29	111	4.37
FF-S8690	86	3.39	90	3.54	110	4.33	113	4.45
FF-S9094	90	3.54	94	3.70	115	4.53	121	4.76
FF-S94118	94	3.70	118	4.65	133	5.24	139	5.47
FF-S118130	118	4.65	130	5.12	140	5.51	144	5.67
FF-S127150	127	5.00	150	5.91	161	6.34	166	6.54