

ELECTRICAL

PRODUCT CATALOGUE

ELLIS

Holding Power

# ELLIS

Holding Power

ELLIS DESIGN AND MANUFACTURE  
SOLUTIONS FOR CABLING  
ENVIRONMENTS GLOBALLY.

With 50 years of innovation and testing behind us, we are recognised as the world's leading supplier of safety critical electrical cable cleats. Every day, vital operations and services such as the Channel Tunnel Rail Link, nuclear power plants and oil rigs rely on our products to keep them running safely.

Holding Power is our guarantee that Ellis cable cleats will contain short-circuit forces – protecting your people, power and plant. Without fail.

#### TESTED TO PERFECTION

Since the birth of the company, we've been working with independent test houses to raise safety standards within the industry.

We understand the science behind the appropriate standards, but we know that results from short-circuit testing are what really counts. Testing is the only way to prove that a cleat will do its job. We undertake regular testing in accordance with the international standard IEC 61914, and the results show that our products exceed industry requirements. This uncompromising quality and our 'safety first' culture, guarantee your protection. We're more than happy to make available reports and video footage from our tests.

**Balfour Beatty – Power Transmission and Distribution on the London Power Tunnels Project.** Photograph showing a section of the tunnel between St Johns Wood and Kensal Green Substations, part of the London Power Tunnels 400kV project. The cable was installed onto Ellis Centaur saddles and secured using Ellis short circuit straps supplied to Sudkabel directly. Balfour Beatty carried out the cable installation using its bespoke cable installation machine.



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Products are supplied without mounting fixings.





Part No. Aluminium Base	Part No. LSF Zero Halogen Base	Trefoil Cable Range		Dimensions mm			Fixing Holes	Weight g
		Min Dia. mm	Max Dia. mm	W	H	D		
ALP01-ANO	ALP01-AN1	23.2	25.1	76	93	48.5	1 x M10	168
ALP02-ANO	ALP02-AN1	25.1	27.1	79	96	48.5	1 x M10	178
ALP03-ANO	ALP03-AN1	27.1	29.3	82	101	48.5	1 x M10	185
ALP04-ANO	ALP04-AN1	29.3	31.7	86	105	48.5	1 x M10	195
ALP05-ANO	ALP05-AN1	31.7	34.2	91	110	48.5	1 x M10	205
ALP06-ANO	ALP06-AN1	34.2	37.0	96	116	48.5	1 x M10	217
ALP07-ANO	ALP07-AN1	37.0	40.0	101	121	48.5	1 x M10	229
ALP08-ANO	ALP08-AN1	40.0	43.2	106	127	48.5	1 x M10	241
ALP09-ANO	ALP09-AN1	43.2	46.7	113	134	48.5	1 x M10	255
ALP10-ANO	ALP10-AN1	46.7	50.5	119	141	48.5	1 x M10	272
ALP11-ANO	ALP11-AN1	50.5	54.6	127	148	48.5	1 x M10	288
ALP12-ANO	ALP12-AN1	54.6	59.0	135	156	48.5	1 x M10	307
ALP13-ANO	ALP13-AN1	59.0	63.8	144	165	48.5	1 x M10	327
ALP14-ANO	ALP14-AN1	63.8	69.0	153	175	48.5	1 x M10	348
ALP15-ANO	ALP15-AN1	69.0	74.6	163	186	48.5	1 x M10	372



Special options:  
Single versions available to specific cable diameters.

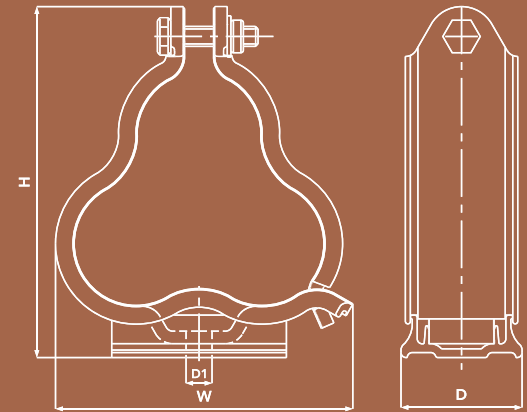
Polyester coating and alternative fasteners are available on request.



Polymer base



Aluminium base



# EMPEROR™

Stainless Steel Cable Cleats  
Patent No. UK Patent GB 233 9237



www.ellispatents.co.uk

## WHEN YOU NEED CLEATS THAT WITHSTAND THE HIGHEST LEVELS OF SHORT-CIRCUIT

The Emperor range offers the ultimate protection against the harshest conditions, and its unique design means it can be quickly installed. Manufactured in Type 316L stainless steel, Emperor cleats are available in multiple sizes with range-taking capability, to suit trefoil or single cables.

To protect and cushion the cables during short-circuit conditions, the cleat is supplied with an integral Low Smoke and Fume Polymeric liner and base pad.

We recommend that the Emperor is fixed using either two 10mm bolts, or a single 12mm bolt (not supplied but available as extras). Alternative bolt recommendations on request. For a more economical installation, cleats can be spaced more widely, with a retention strap fitted in between.

(See pages 11/12 for details.)

MAX S/C TEST LEVEL	CLEAT SPACING
156kA	600mm
195kA	300mm
235kA	225mm

## SELECTION TABLE FOR TREFOIL CABLE APPLICATION

Part No.	Cable Range		Dimensions mm					Weight g
	Min Dia. mm	Max Dia. mm	W	H	D	P	Fixing Holes	
ER19-23	19	23	96	83	54	25	2 x M10 + 1 x M12	425
ER23-28	23	28	96	83	54	25	2 x M10 + 1 x M12	425
ER27-32	27	32	97	88	54	25	2 x M10 + 1 x M12	440
ER30-35	30	35	99	91	54	25	2 x M10 + 1 x M12	445
ER33-38	33	38	103	95	54	25	2 x M10 + 1 x M12	460
ER36-42	36	42	124	100	54	50	2 x M10 + 1 x M12	600
ER40-46	40	46	125	106	54	50	2 x M10 + 1 x M12	605
ER44-50	44	50	130	117	54	50	2 x M10 + 1 x M12	630
ER48-55	48	55	132	121	54	50	2 x M10 + 1 x M12	640
ER51-58	51	58	136	128	54	50	2 x M10 + 1 x M12	650
ER55-62	55	62	160	135	54	75	2 x M10 + 1 x M12	810
ER59-66	59	66	163	143	54	75	2 x M10 + 1 x M12	825
ER63-70	63	70	166	151	54	75	2 x M10 + 1 x M12	850
ER67-74	67	74	169	158	54	75	2 x M10 + 1 x M12	850
ER71-78	71	78	172	165	54	75	2 x M10 + 1 x M12	890
ER74-82	74	82	177	171	54	75	2 x M10 + 1 x M12	890
ER77-85	77	85	183	177	54	75	2 x M10 + 1 x M12	905
ER82-88	82	88	191	187	54	75	2 x M10 + 1 x M12	820
ER88-96	88	96	207	203	54	75	2 x M10 + 1 x M12	890
ER96-103	96	103	221	218	54	75	2 x M10 + 1 x M12	940
ER103-111	103	111	237	235	54	75	2 x M10 + 1 x M12	950
ER111-119	111	119	253	250	54	75	2 x M10 + 1 x M12	1010
ER119-128	119	128	265	275	54	75	2 x M10 + 1 x M12	1220

## SELECTION TABLE FOR SINGLE CABLE APPLICATION

Part No.	Cable Range		Dimensions mm					Weight g
	Min Dia. mm	Max Dia. mm	W	H	D	P	Fixing Holes	
ES32-39	32	39	91	89	54	25	2 x M10 + 1 x M12	450
ES37-45	37	45	96	93	54	25	2 x M10 + 1 x M12	470
ES44-52	44	52	99	98	54	25	2 x M10 + 1 x M12	480
ES51-59	51	59	103	102	54	25	2 x M10 + 1 x M12	490
ES58-66	58	66	109	101	54	25	2 x M10 + 1 x M12	500
ES65-73	65	73	111	103	54	25	2 x M10 + 1 x M12	510
ES73-85	73	85	135	112	54	50	2 x M10 + 1 x M12	640
ES84-94	84	94	135	135	54	50	2 x M10 + 1 x M12	660
ES94-118	94	118	160	150	54	50	2 x M10 + 1 x M12	710
ES118-130	118	130	175	160	54	75	2 x M10 + 1 x M12	900
ES127-150	127	150	180	180	54	75	2 x M10 + 1 x M12	940

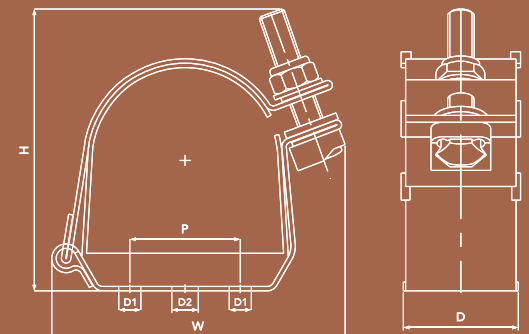
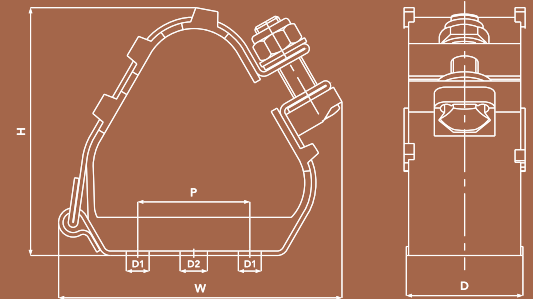
Special options: Other sizes available on request.



(American Bureau of Shipping)  
Type Approval.



Emperor Cable Cleats are compliant with  
the requirement of London Underground  
Standard 1-085. Product Register No. 362.





# VULCAN+™

Stainless Steel Cable Cleats  
Patent No. UK Patent GB 236 1029



www.ellispatents.co.uk

## WHEN YOU NEED CLEATS THAT WITHSTAND MODERATE LEVELS OF SHORT-CIRCUIT

Our Vulcan+ cleats have a unique compact design so they can be easily installed, even when space is limited. Vulcan+ cleats are available in multiple sizes with range-taking capability, to suit trefoil, single, quad or bundled cables.

Manufactured in Type 316L stainless steel, Vulcan+ offer excellent protection against the harshest environmental conditions. To protect and cushion the cables during short-circuit conditions, the cleat comes with an integral Low Smoke and Fume Zero Halogen Polymeric liner and base pad.

We recommend fixing VRT+ using one 10mm bolt for sizes 00 to 09, and one or two 10mm bolts for sizes 10 to 20. For VRQ+ use one 10mm bolt for sizes 01 to 06, and one or two 10mm bolts for sizes 07 to 09 (not supplied but available as extras). Alternative bolt recommendations on request. For a more economical installation, cleats can be spaced more widely, with a retention strap fitted in between.

(See pages 11/12 for details.)

MAX S/C TEST LEVEL	CLEAT SPACING
104kA	600mm
132kA	300mm

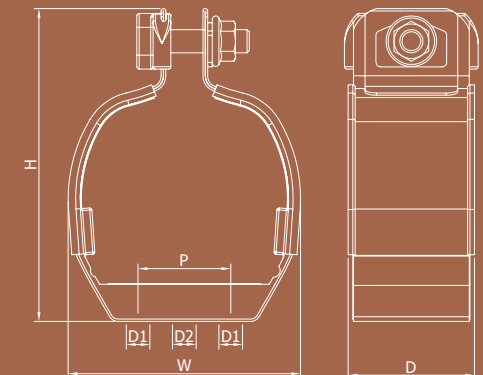
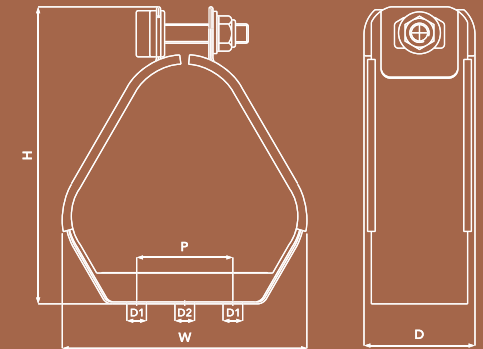


## SELECTION TABLE FOR TREFOIL AND SINGLE CABLE APPLICATION

Part No.	Trefoil Cable Range		Single Cable Range		Dimensions mm					Weight g
	Min Dia. mm	Max Dia. mm	Min Dia. mm	Max Dia. mm	W	H	D	P	Fixing Holes	
VRT+00	19	24	30	42	60	93	54	n/a	1 x M10	251
VRT+01	23	28	38	50	63	98	54	n/a	1 x M10	258
VRT+02	27	32	43	58	72	106	54	n/a	1 x M10	269
VRT+03	30	35	49	64	79	112	54	n/a	1 x M10	279
VRT+04	33	38	55	70	85	118	54	n/a	1 x M10	284
VRT+05	36	42	58	75	96	125	54	n/a	1 x M10	319
VRT+06	40	46	63	84	105	133	54	n/a	1 x M10	331
VRT+07	44	50	73	90	112	140	54	n/a	1 x M10	391
VRT+08	48	55	83	100	121	149	54	n/a	1 x M10	405
VRT+09	51	58	86	104	126	154	54	n/a	1 x M10	411
VRT+10	55	62	88	110	134	162	54	50	3 x M10	442
VRT+11	59	66	90	115	143	170	54	50	3 x M10	453
VRT+12	63	70	100	125	152	177	54	50	3 x M10	460
VRT+13	67	74	107	132	161	185	54	75	3 x M10	524
VRT+14	71	78	120	145	169	192	54	75	3 x M10	536
VRT+15	74	82	125	150	176	199	54	75	3 x M10	542
VRT+16	77	85	132	153	183	205	54	75	3 x M10	544
VRT+17	81	89	136	156	190	216	54	75	3 x M10	618
VRT+18	85	93	139	159	200	225	54	75	3 x M10	628
VRT+19	89	97	142	162	200	235	54	75	3 x M10	637
VRT+20	93	101	150	170	215	240	54	75	3 x M10	646

## SELECTION TABLE FOR QUAD CABLE APPLICATION

Part No.	Cable Range		Dimensions mm					Weight g
	Min Dia. mm	Max Dia. mm	W	H	D	P	Fixing Holes	
VRQ+01	23	25	68	110	54	n/a	1 x M10	284
VRQ+02	26	27	70	113	54	n/a	1 x M10	286
VRQ+03	28	31	78	128	54	n/a	1 x M10	318
VRQ+3A	31	35	90	138	54	n/a	1 x M10	350
VRQ+04	35	42	103	148	54	n/a	1 x M10	378
VRQ+05	43	47	120	165	54	n/a	1 x M10	452
VRQ+06	48	50	121	170	54	n/a	1 x M10	467
VRQ+07	51	57	140	190	54	50	3 x M10	486
VRQ+08	58	63	150	200	54	50	3 x M10	499
VRQ+09	64	70	170	218	54	75	3 x M10	581



# FLEXI-CLEAT™

A cable cleat based on Flexi-strap



## ADDING AN ALUMINIUM BASE TO FLEXI-STRAP CREATES FLEXI-CLEAT

Eight different bases cover cables ranging from 24mm – 80mm. Available in both standard and heavy duty form.

### FLEXI-CLEAT STANDARD DUTY

Part No.	Weight g	Trefoil Range Take	
		Min. mm	Max. mm
FC24-34SD	266	24	34
FC30-41SD	321	30	41
FC37-47SD	385	37	47
FC43-54SD	442	43	54
FC50-60SD	510	50	60
FC56-67SD	568	56	67
FC63-73SD	638	63	73
FC69-80SD	693	69	80

### FLEXI-CLEAT HEAVY DUTY

Part No.	Weight g	Trefoil Range Take	
		Min. mm	Max. mm
FC24-34HD	300	24	34
FC30-41HD	362	30	41
FC37-47HD	432	37	47
FC43-54HD	495	43	54
FC50-60HD	568	50	60
FC56-67HD	633	56	67
FC63-73HD	709	63	73
FC69-80HD	776	69	80

#### MAX S/C TEST LEVEL

Standard Duty 106kA

Heavy Duty 159kA

#### CLEAT SPACING

600mm

600mm



# FLEXI-STRAP™

Intermediate Short-circuit Strap  
Patent No. UK Patent GB 252 6331

In its standard duty form (SD) Flexi-strap is typically paired with our Vulcan+ cleats and wrapped twice around the cables. In its heavy duty form (HD) it is typically paired with our Emperor cleats and wrapped three times around the cables. Flexi-strap is usually supplied with a Low Smoke and Fume Zero Halogen Polymeric liner. For installation, a proprietary drive socket is provided with the straps, suitable for use with a standard ¼" or 6mm ratchet handle. A 10mm spanner is also required.



Flexi-strap is available with or without a Polymeric LSF liner. If a liner is required add suffix L to the part number. Sample Part number - Trefoil Strap 24 to 34mm Standard Duty with liner FS24-34SDL. All Straps are 50mm wide. Flexi-strap can also be used to contain bundles of cable. Please contact our sales office with details of your particular requirement.

## FLEXI-STRAP STANDARD DUTY

Part No.	Weight g	Trefoil Range Take	
		Min. mm	Max. mm
FS24-34SD	131	24	34
FS30-41SD	144	30	41
FS37-47SD	155	37	47
FS43-54SD	168	43	54
FS50-60SD	180	50	60
FS56-67SD	193	56	67
FS63-73SD	204	63	73
FS69-80SD	217	69	80
FS72-85SD	226	72	85
FS82-95SD	245	82	95
FS92-105SD	264	92	105
FS102-115SD	282	102	115
FS112-125SD	301	112	125
FS122-135SD	319	122	135
FS132-145SD	338	132	145
FS-T001-4		Special Drive Socket	

## FLEXI-STRAP HEAVY DUTY

Part No.	Weight g	Trefoil Range Take	
		Min. mm	Max. mm
FS24-34HD	165	24	34
FS30-41HD	185	30	41
FS37-47HD	202	37	47
FS43-54HD	221	43	54
FS50-60HD	238	50	60
FS56-67HD	258	56	67
FS63-73HD	275	63	73
FS69-80HD	294	69	80
FS72-85HD	308	72	85
FS82-95HD	336	82	95
FS92-105HD	364	92	105
FS102-115HD	392	102	115
FS112-125HD	420	112	125
FS122-135HD	448	122	135
FS132-145HD	476	132	145
FS-T001-4		Special Drive Socket	

MAX S/C TEST LEVEL

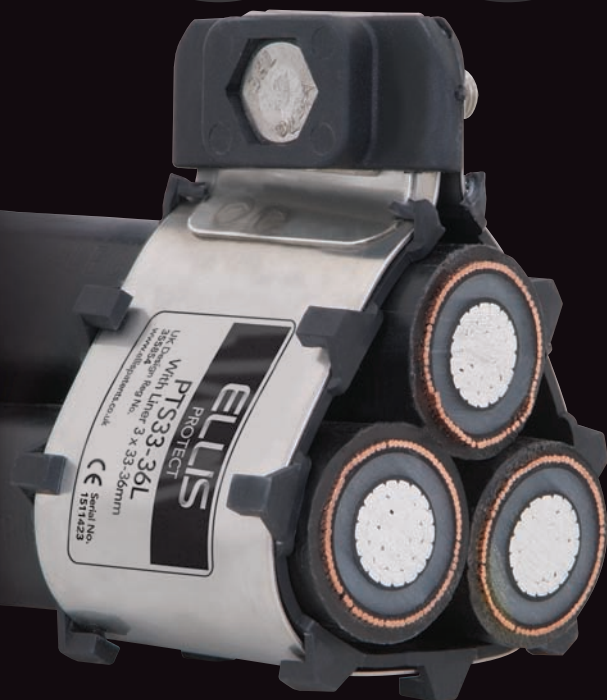
105kA

STRAP SPACING

600mm

# PROTECT™

Retention Strap  
UK Design Reg No. 355854



**PROTECT CABLE STRAPS ARE AVAILABLE FOR TREFOIL CABLE APPLICATIONS, WHEN YOU NEED TO WITHSTAND THE HIGHEST LEVELS OF SHORT-CIRCUIT**

The unique registered design means they can be quickly installed. The frame, manufactured from Type 316L stainless steel, offers the ultimate protection against the harshest environmental conditions. The frame is tightened and locked using a combination of an M10 set screw and flanged nut in A4 stainless steel, and a screw head retainer in Low Smoke and Fume (LSF) Zero Halogen Nylon.

They are available with or without an integral LSF Polymeric liner. Please contact us for further details.

MAX S/C TEST LEVEL	CLEAT SPACING
136kA	300mm



# MATRIX™

A Flexible Solution for Multiple Cables



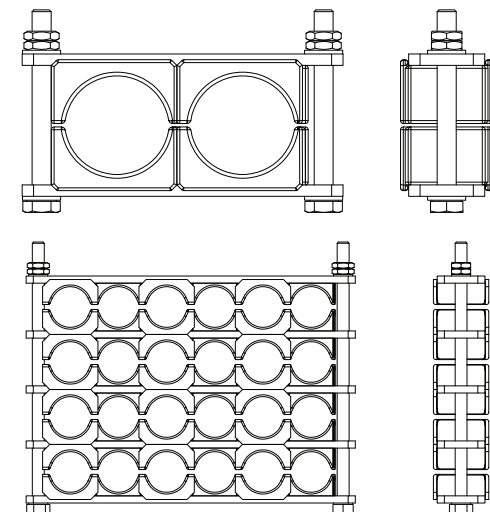
THE MATRIX CABLE CLEAT PROVIDES A SPACE SAVING SOLUTION TO THE PROBLEMS OF CLEATING MULTIPLE CABLE RUNS TO CABLE LADDER OR STEEL FRAMEWORKS

The cleat is made to order as a special to suit particular applications and any number of rows and columns can be accommodated.

The steel frameworks can be supplied in hot dipped galvanised steel or Type 316L stainless steel. The plastic cable support pads are produced in low smoke and fume Zero Halogen Polymeric material.

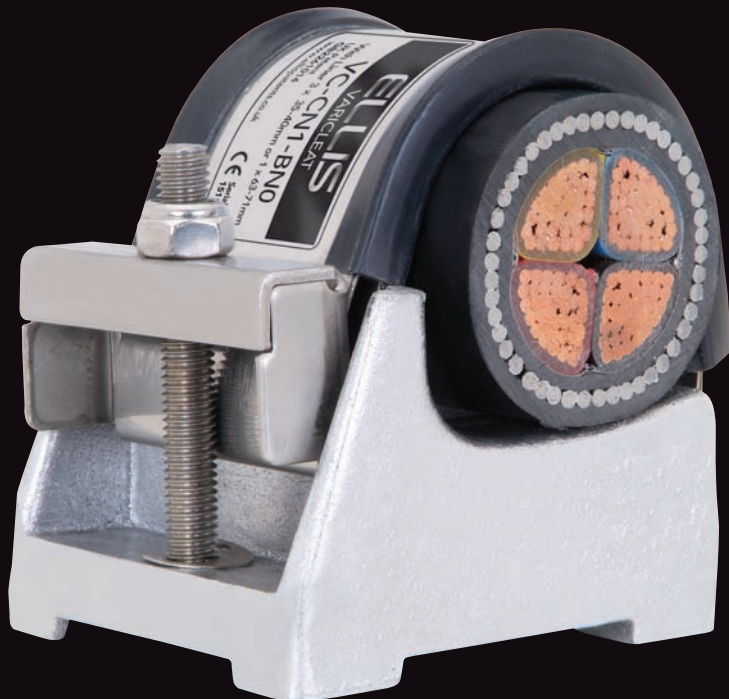
Matrix can be supplied for cables from 20mm – 70mm diameter and in any combination of ways e.g. 1x2, 2x1, up to 20x5 or more.

Please contact us for further details.



# VARI-CLEAT™

Stainless Steel and Aluminium Cable  
Cleats Patent No. UK Patent GB 226 1014



**WHEN YOU NEED COMPACT  
CLEATS WHERE THE BASE CAN  
BE FIXED BEFORE THE CABLES  
ARE IN POSITION**

Vari-cleats withstand moderate levels of short-circuit and have a separate over-strap that can be installed once your cables are in position. Available for trefoil, single or bundled cables, Vari-cleats come in over 30 sizes with range-taking capability.

The patented design includes a base cast in aluminium. The over-strap is manufactured from Type 316L stainless steel (a silicone Low Smoke and Fume liner is available on request).

We recommend Vari-cleats are fixed using either 8mm, 10mm or 12mm bolts (not supplied but available as extras). Alternative bolt recommendations on request. For a more economical installation, cleats can be spaced more widely with a retention strap fitted in between.

(See pages 11/12 for details.)

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MAX S/C TEST LEVEL	CLEAT SPACING
101kA	600mm

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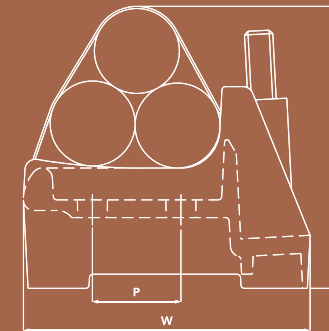
## SELECTION TABLE FOR SINGLE AND TREFOIL APPLICATION

Part No. - Suffix (See below)	Cable Range No Liner		Cable Range With Liner		Dimensions mm				Fixing Holes	Weight g
	Trefoil Dia. mm	Single Dia. mm	Trefoil Dia. mm	Single Dia. mm	W	H	D	P		
VC-AN1-	21-24	36-43	19-22	31-38	82	80	74	25	2 x M8	373
VC-AN2-	22-26	41-48	21-24	36-43	82	84	74	25	2 x M8	373
VC-AN3-	24-28	44-51	23-26	39-46	83	88	74	25	2 x M8	373
VC-AN4-	26-30	49-54	25-29	44-51	86	92	74	25	2 x M8	373
VC-BN1-	29-33	51-59	27-31	46-54	97	94	74	25	2 x M8	430
VC-BN2-	30-35	55-63	29-33	50-58	97	97	74	25	2 x M8	430
VC-BN3-	32-37	60-68	30-36	55-63	100	101	74	25	2 x M8	430
VC-BN4-	34-38	64-70	33-38	59-68	104	105	74	25	2 x M8	430
VC-CN1-	37-42	68-76	35-40	63-71	117	105	76	25	2 x M8	490
VC-CN2-	39-44	72-81	37-42	67-76	117	109	76	25	2 x M8	490
VC-CN3-	42-47	76-85	39-45	71-80	118	115	76	25	2 x M8	490
VC-CN4-	44-48	81-87	42-47	76-86	124	121	76	50	2 x M8	490
VC-DN1-	47-53	86-96	47-51	81-91	138	126	78	50	2 x M8 + 1 x M10	610
VC-DN2-	50-56	91-100	49-54	86-95	141	132	78	50	2 x M8 + 1 x M10	610
VC-DN3-	54-59	96-105	52-57	91-100	147	138	78	50	2 x M8 + 1 x M10	610
VC-DN4-	56-60	101-106	55-60	96-106	153	144	78	75	2 x M8 + 1 x M10	610
VC-EN1-	59-63	105-112	58-62	100-107	163	147	80	75	2 x M8 + 1 x M10	730
VC-EN2-	62-67	111-118	61-66	106-113	167	154	80	75	2 x M8 + 1 x M10	730
VC-EN3-	65-70	118-125	64-69	113-120	174	160	80	75	2 x M8 + 1 x M10	730
VC-EN4-	68-74	125-132	67-73	120-127	181	167	80	75	2 x M8 + 1 x M10	730
VC-FN1-	71-76	125-140	69-74	120-135	187	170	82	90	3 x M12	880
VC-FN2-	74-80	132-145	72-78	128-140	194	177	82	90	3 x M12	880
VC-FN3-	78-84	139-152	76-82	134-147	201	185	82	90	3 x M12	880
VC-FN4-	82-88	148-160	80-86	143-155	210	193	82	90	3 x M12	880
VC-GN1-	84-91	145-160	82-89	140-155	217	197	82	114	3 x M12	970
VC-GN2-	88-95	155-170	86-93	150-165	225	205	82	114	3 x M12	970
VC-GN3-	92-99	165-180	90-97	160-175	233	213	82	114	3 x M12	970
VC-GN4-	96-103	175-190	94-101	170-185	240	221	82	114	3 x M12	970
VC-HN1-	98-106	170-190	96-104	165-185	247	229	84	136	3 x M12	1170
VC-HN2-	102-110	180-200	100-108	175-195	255	237	84	136	3 x M12	1170
VC-HN3-	106-114	190-205	104-112	185-200	263	245	84	136	3 x M12	1170
VC-HN4-	110-118	200-215	108-116	195-210	271	252	84	136	3 x M12	1170

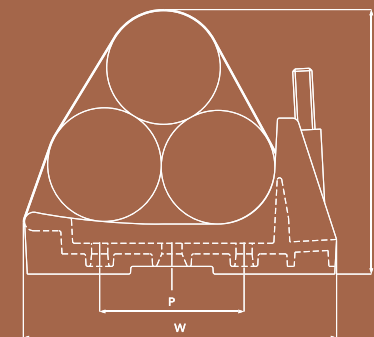
Suffix
A No liner
B Lined
C Heavy Duty No liner
D Heavy Duty Lined



Special options: Cleats for multi-cable bundles available on request.



Base Sizes AN, BN & CN



Base Sizes DN, EN, FN, GN & HN

# ATLAS™

Galvanized Steel Cable Cleats  
Patent No. UK Patent GB 228 4444



WHEN YOU NEED CLEATS THAT  
WITHSTAND HIGH LEVELS OF  
SHORT-CIRCUIT, AND HAVE  
MORE FIXING OPTIONS

Atlas cable cleats are available for trefoil and single cable applications and can be fixed using one bolt, two bolts or a framing channel fixing. Manufactured in galvanised steel, Atlas cleats are supplied with a stainless steel top bolt to eliminate eddy currents. To protect and cushion the cables during short-circuit conditions, the cleat comes with integral Low Smoke and Fume Zero Halogen Polymeric pads. For Atlas Intermediate Strap type AS please contact our sales office.

MAX S/C TEST LEVEL	CLEAT SPACING
112kA	750mm



## SELECTION TABLE FOR TREFOIL CABLE APPLICATION

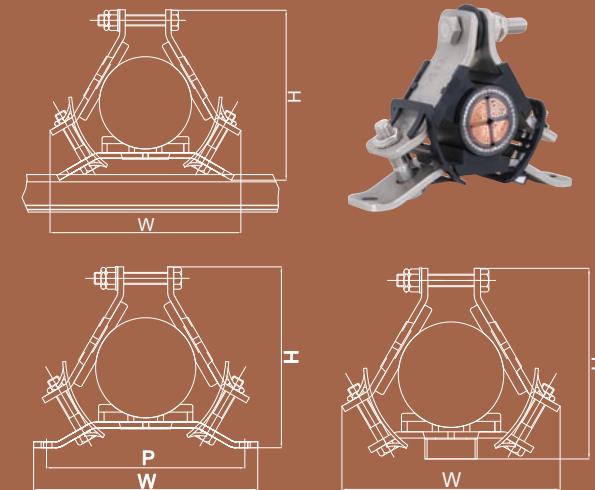
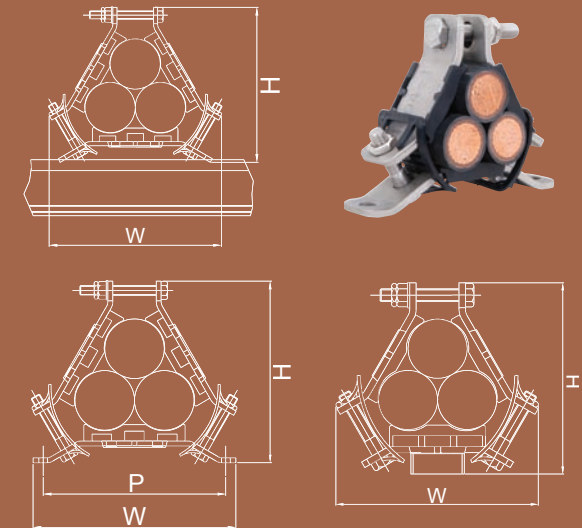
Part No.	Cable Dia. Range mm	Dimensions mm												Weight g	
		Two Bolt					Single Bolt				Framing Channel				
		W	H	D	P	Fixing Holes	W	H	D	Fixing Holes	W	H	D		Fixing Holes
AR2-A31-	24-26	170	121	54	150	2 x M10	144	130	54	1 x M10	144	125	54	1 x M10	930
AR2-A32-	26-30	170	122	54	150	2 x M10	144	130	54	1 x M10	144	125	54	1 x M10	930
AR2-A33-	30-35	170	133	54	150	2 x M10	157	141	54	1 x M10	157	136	54	1 x M10	970
AR2-A34-	35-40	170	134	54	150	2 x M10	158	142	54	1 x M10	158	137	54	1 x M10	930
AR3-A35-	40-45	198	158	54	175	2 x M10	185	165	54	1 x M10	185	160	54	1 x M10	1200
AR3-A36-	45-50	198	160	54	175	2 x M10	187	167	54	1 x M10	187	162	54	1 x M10	1200
AR4-A37-	50-55	214	174	54	200	2 x M10	204	182	54	1 x M12	204	177	54	1 x M12	1300
AR4-A38-	55-60	214	179	54	200	2 x M10	210	187	54	1 x M12	210	182	54	1 x M12	1300
AR4-A39-	60-66	214	185	54	200	2 x M10	217	193	54	1 x M12	217	188	54	1 x M12	1300
AR5-A61-	66-71	250	225	54	225	2 x M10	254	225	54	1 x M12	254	220	54	1 x M12	1800
AR5-A62-	71-76	250	226	54	225	2 x M10	255	226	54	1 x M12	255	221	54	1 x M12	1800
AR5-A63-	76-82	250	230	54	225	2 x M10	260	230	54	1 x M12	260	225	54	1 x M12	1800
AR8-A64-	82-92	285	250	54	225	2 x M10			N/A				N/A	2100	
AR8-A65-	92-102	285	250	54	225	2 x M10			N/A				N/A	1900	

## SELECTION TABLE FOR SINGLE CABLE APPLICATION

Part No.	Cable Dia. Range mm	Dimensions mm												Weight g	
		Two Bolt					Single Bolt				Framing Channel				
		W	H	D	P	Fixing Holes	W	H	D	Fixing Holes	W	H	D		Fixing Holes
AR2-A11-	38-41	170	128	54	150	2 x M10	144	136	54	1 x M10	144	131	54	1 x M10	950
AR2-A12-	41-47	170	129	54	150	2 x M10	144	136	54	1 x M10	144	131	54	1 x M10	930
AR2-A13-	47-55	170	140	54	150	2 x M10	157	147	54	1 x M10	157	142	54	1 x M10	940
AR2-A14-	55-63	170	141	54	150	2 x M10	158	148	54	1 x M10	158	143	54	1 x M10	930
AR3-A15-	63-70	198	164	54	175	2 x M10	185	172	54	1 x M10	185	167	54	1 x M10	1200
AR3-A16-	70-79	198	166	54	175	2 x M10	187	173	54	1 x M10	187	168	54	1 x M10	1200
AR4-A17-	79-87	214	180	54	200	2 x M10	204	188	54	1 x M12	204	183	54	1 x M12	1300
AR4-A18-	87-95	214	186	54	200	2 x M10	210	193	54	1 x M12	210	188	54	1 x M12	1300
AR4-A19-	95-104	214	192	54	200	2 x M10	217	199	54	1 x M12	217	197	54	1 x M12	1300
AR5-A51-	104-112	250	231	54	225	2 x M10	254	231	54	1 x M12	254	226	54	1 x M12	1700
AR5-A52-	112-120	250	232	54	225	2 x M10	255	232	54	1 x M12	255	227	54	1 x M12	1700
AR5-A53-	120-130	250	237	54	225	2 x M10	260	237	54	1 x M12	260	232	54	1 x M12	1700

To order please add fixing suffix:

Two Bolt - TB Single Bolt - SB Framing Channel - FC



# COLOSSUS™

Hybrid Cable Cleat  
Community Design Application No: 001927583



## WHEN YOU NEED CLEATS THAT WITHSTAND MODERATE LEVELS OF SHORT-CIRCUIT

Our Colossus cleats are a direct alternative to the all polymer (polyamide) cleats offered by some manufacturers. The unique design of Colossus combines a Low Smoke and Fume Zero Halogen polymer frame with the strength of a 316L stainless steel skeleton.

The strength of polymer cleats is typically quoted in Newtons and depending on the variant, range from 10,000N – 30,000N. On the same basis, all Colossus cleats have a strength of 63,000N irrespective of variant.

The composite structure of Colossus allows a compact design, which in turn allows for closer cable runs, in comparison to its all polymer competitors. The stainless steel element of Colossus ensures that the effects of UV radiation and “creep” (exhibited by all thermoplastic polymers) can be ignored. Colossus cleats will also retain cables (whatever the mounting orientation) in the event of a fire.

With its depth increasing across the range, Colossus is ideally suited for cleating very large diameter cables in trefoil (up to 170mm). The saddled version of Colossus is ideal for cleating cables simply supported at large centres, typically from 3 to 8 metres.

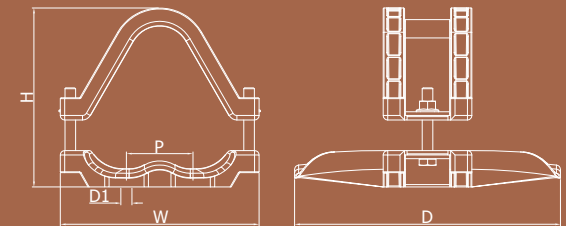
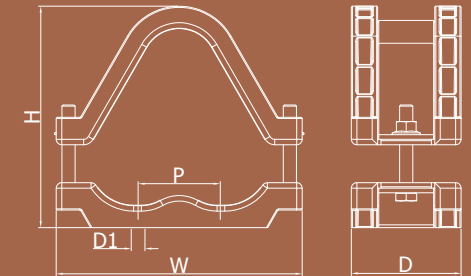
MAX S/C TEST LEVEL	CLEAT SPACING
104kA	Colossus every 7.8m with intermediate straps every 1.3m

## COLOSSUS CLEAT

Part No.	Cable Range		Dimensions mm					Weight g
	Min Dia. mm	Max Dia. mm	W	H	D	P	Fixing Holes	
COL24-29	24	29	128	87	60	25	2 x M10 + 1 x M12	1097
COL27-32	27	32	133	92	60	25	2 x M10 + 1 x M12	1125
COL30-36	30	36	137	101	60	25	2 x M10 + 1 x M12	1146
COL34-41	34	41	146	110	60	25	2 x M10 + 1 x M12	1218
COL39-47	39	47	157	122	60	25	2 x M10 + 1 x M12	1280
COL45-54	45	54	171	141	70	50	2 x M10	1455
COL52-62	52	62	185	156	70	50	2 x M10	1568
COL60-72	60	72	204	176	70	50	2 x M10	1682
COL69-83	69	83	225	202	100	75	2 x M12	2212
COL79-95	79	95	247	225	100	75	2 x M12	2374
COL91-109	91	109	273	253	100	120	2 x M12	2588
COL105-126	105	126	306	286	150	120	2 x M12	3737
COL122-146	122	146	345	324	150	150	2 x M12	4135
COL142-170	142	170	390	371	150	150	2 x M12	4633

## SADDLED COLOSSUS CLEATS

Part No.	Cable Range		Dimensions mm					Weight g
	Min Dia. mm	Max Dia. mm	W	H	D	P	Fixing Holes	
COL69-83SC	69	83	225	202	300	75	2 x M12	2532
COL79-95SC	79	95	247	225	300	75	2 x M12	2726
COL91-109SC	91	109	273	253	300	120	2 x M12	2995
COL105-126SC	105	126	306	286	300	120	2 x M12	4108
COL122-146SC	122	146	345	324	300	150	2 x M12	4562
COL142-170SC	142	170	390	371	300	150	2 x M12	5095





# CENTAUR<sup>®</sup>

Cable Saddle, UK Patent App. No. 0805128.6  
European Patent No. 1973211, US Patent No. 8398033  
Community Design Registration No. 000749999



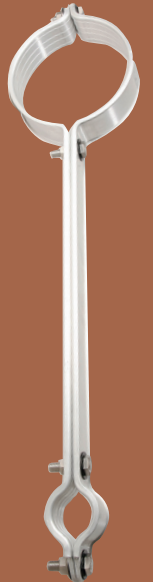
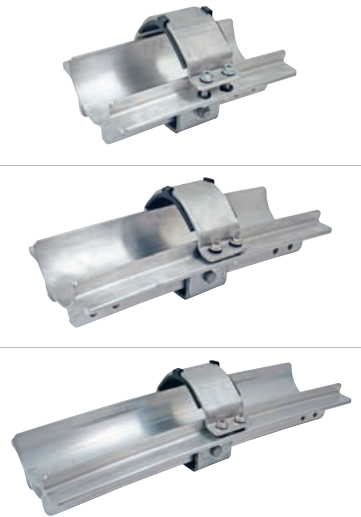
**WHEN YOU NEED A SHORT-  
CIRCUIT TESTED PRODUCT TO  
SECURE LARGE DIAMETER  
INSULATED HV CABLES, USED IN  
POWER TRANSMISSION SYSTEMS  
– TYPICALLY 275KV TO 400KV**

Centaur cable saddles are designed to support cables with diameters from 100mm to 162mm, from support steelwork at centres of up to 8.4m.

Centaur consists of an extruded and pressed aluminium saddle and a hinged aluminium overstrap. The curvature of the saddle accommodates the thermal expansion of the cable and the ends of the saddle are flared so that the cable never comes into contact with a sharp edge under any circumstances. The overstrap incorporates a Low Smoke Zero Halogen Polymeric liner, which cushions the cable in the event of a short-circuit. All the fixing bolts are in Type 316L stainless steel. To eliminate the possibility of galvanic corrosion all dissimilar metals are isolated from each other by injection moulded separation washers. Centaur saddles are available in lengths of 400, 600 and 800mm to allow for different cable diameters and mounting centres. Centaur can be supplied with a variety of rigid or flexible mounting arrangements.

MAX S/C TEST LEVEL	CLEAT SPACING
64kA RMS 1sec	8.4m
163 kA Peak	

Part No.	Cable Range Dia. mm	Length of Cable Saddle
CS100-112/400	100-112	400mm
CS108-122/400	108-122	
CS120-132/400	120-132	
CS128-142/400	128-142	
CS140-152/400	140-152	
CS148-162/400	148-162	600mm
CS100-112/600	100-112	
CS108-122/600	108-122	
CS120-132/600	120-132	
CS128-142/600	128-142	
CS140-152/600	140-152	800mm
CS148-162/600	148-162	
CS100-112/800	100-112	
CS108-122/800	108-122	
CS120-132/800	120-132	
CS128-142/800	128-142	800mm
CS140-152/800	140-152	
CS148-162/800	148-162	



# CABLE GUIDE CLAMP™

Combined Cable Guide and Cable Clamp  
Patent Applied for: GB1309223.4



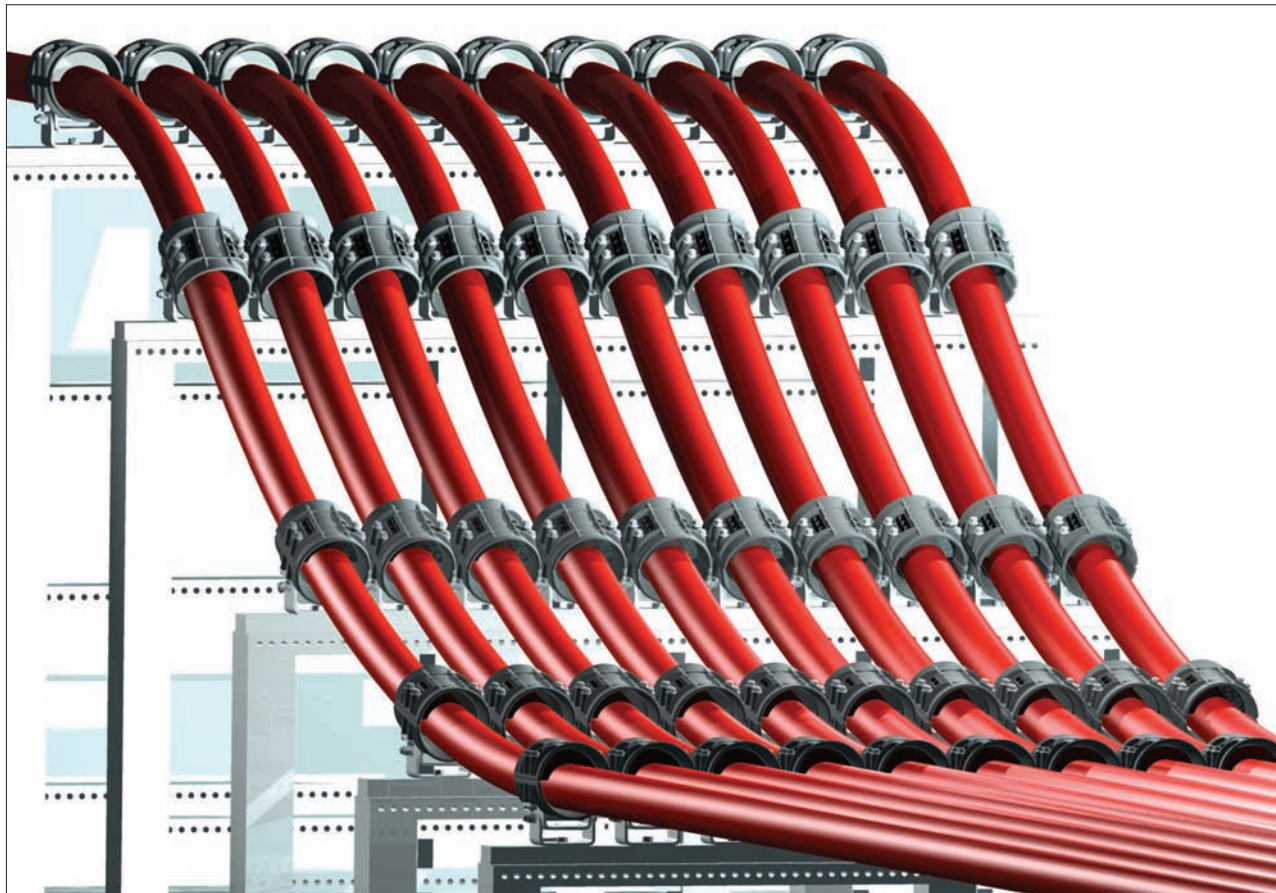
CABLE GUIDE CLAMPS ARE AVAILABLE FOR SINGLE CABLE APPLICATIONS WHERE A CABLE GUIDE AND CLAMPING SYSTEM IS REQUIRED FOR LARGE DIAMETER CABLES

The Cable Guide Clamp is a unique combination of cable guide and cable clamp.

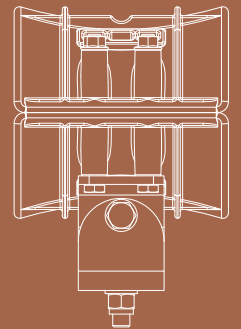
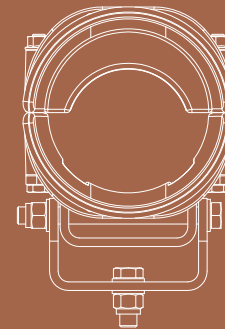
Designed to be installed along the cable route in place of rollers, cable is pushed and pulled through the guide to its final location. The Cable Guide Clamp's fully gimbaled mounting and slippery nylon construction ensures that friction is minimised. Once the cables are in position, the top half of the Cable Guide Clamp is removed, an LSF Polymeric insert is added and the lid replaced, which turns the Cable Guide Clamp from a guide into a clamp.

The Cable Guide Clamp is constructed from an immensely strong glass filled nylon and its design has been optimised using FEA analysis. It is supplied complete with a fully galvanised full gimbaled heavy duty mounting frame, ready for fixing to the support structure. It is also supplied with an LSF Polymeric pad specifically sized for the cable being installed.



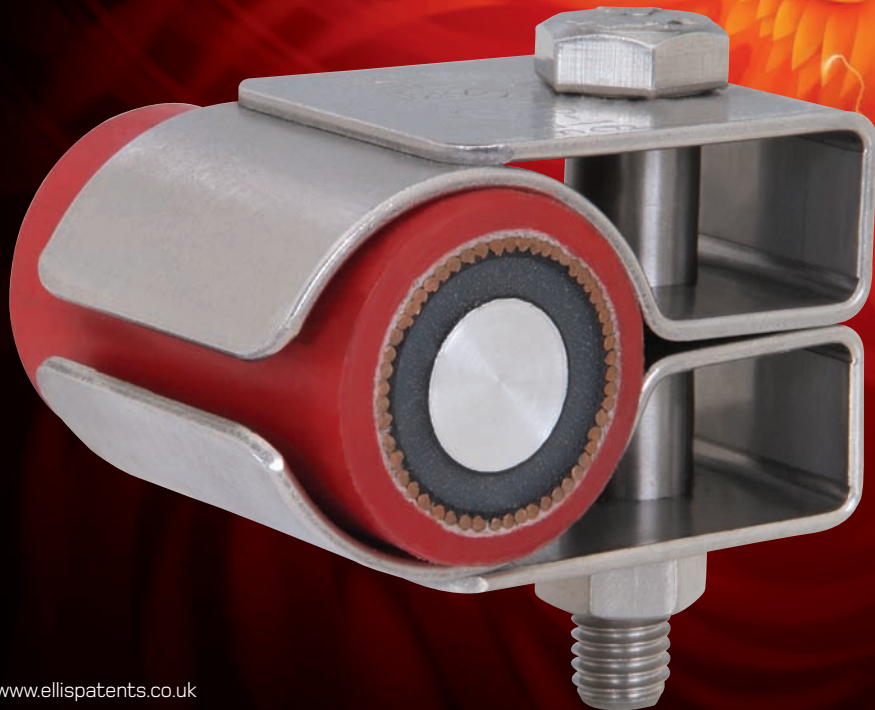


A computer simulation of the Cable Guide Clamp installed on a wind farm substation in the North Sea. Actual image unavailable due to reasons of confidentiality.



# PHOENIX<sup>®</sup>

Fire Rated Cable Clamps  
Community Design Reg No. 000355854-0002

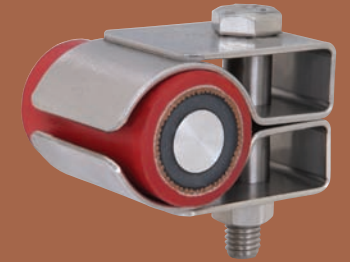


**WHEN YOU NEED CABLE  
CLAMPS THAT ARE FIREPROOF,  
CORROSION RESISTANT AND  
EASY TO FIT**

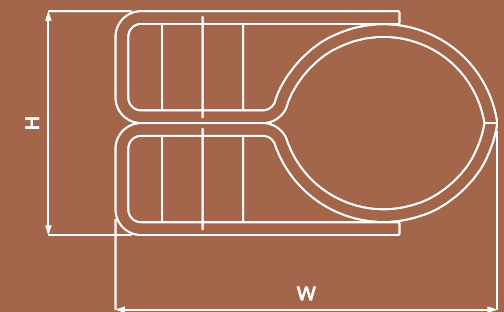
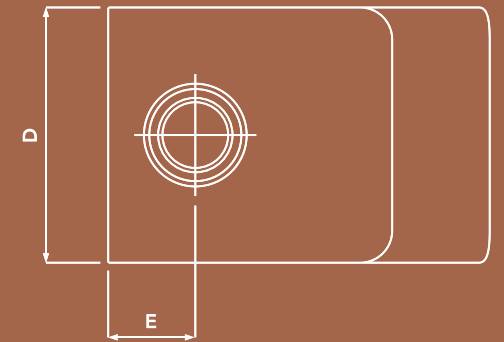
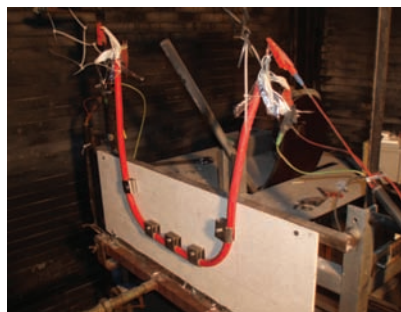
The Phoenix range is specifically designed for the installation of Fire Protection (FP) rated cables. Precision engineered from Type 316L stainless steel with single bolt fixing, Phoenix Cable Clamps are available in 11 sizes to suit single cables from 10mm to 65mm in diameter.

To prove their fire resistance these cleats were used to secure a fire rated cable during a series of tests in accordance with BS 5839-1:2002, Section 26.2d. The cleats successfully supported the cable during the test and the performance was as expected given the physical characteristics of 316L stainless steel at elevated temperatures. We would be happy to supply you with a copy of the test report and data sheet.

MAX S/C TEST LEVEL	CLEAT SPACING
60kA	600mm

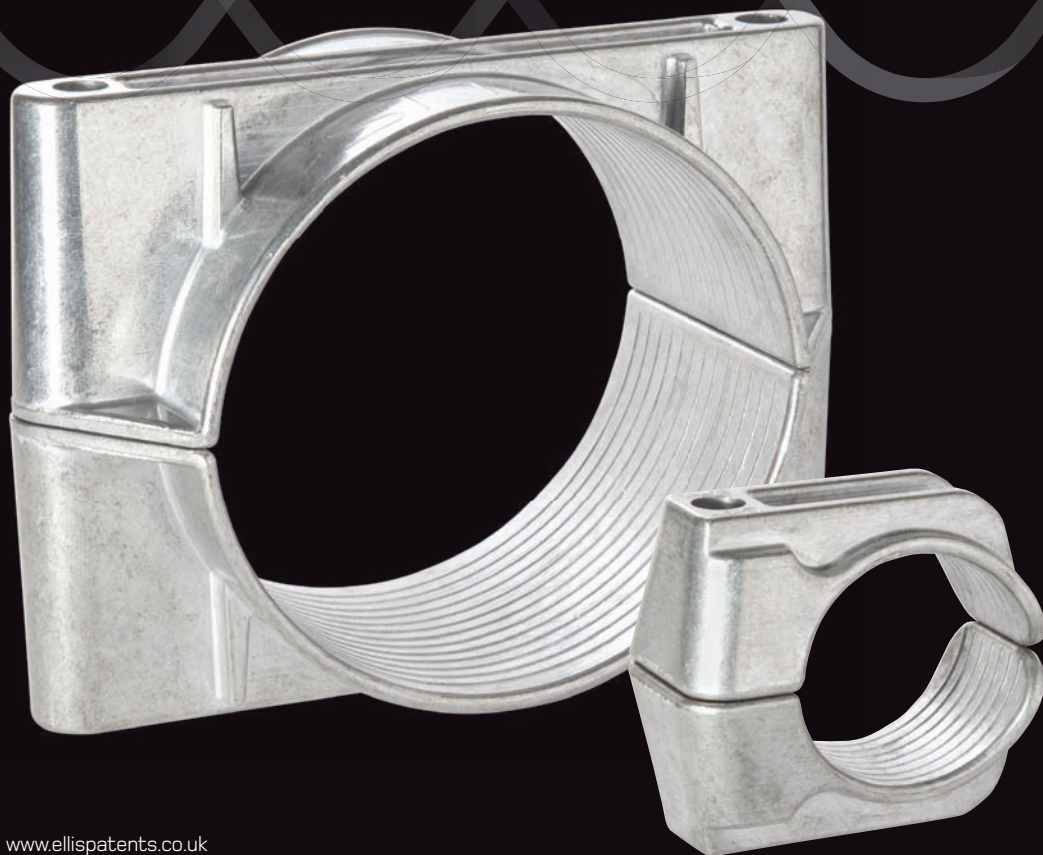


Part No.	Cable Range Dia. mm	Dimensions mm					Weight g
		W	H	D	E	Fixing Holes	
1FP-10SS	10-13	40	21	40	13.7	1 x M10	91
1FP-11SS	13-16	44	24	40	13.7	1 x M10	106
1FP-12SS	16-19	47	27	40	13.7	1 x M10	113
1FP-13SS	19-23	51	31	40	13.7	1 x M10	125
1FP-14SS	23-27	55	35	40	13.7	1 x M10	139
1FP-15SS	27-32	60	40	40	13.7	1 x M10	153
1FP-16SS	32-38	66	46	40	13.7	1 x M10	174
1FP-17SS	38-46	74	54	40	13.7	1 x M10	201
1FP-18SS	46-51	80	59	40	13.7	1 x M10	225
1FP-19SS	51-57	85	64	40	13.7	1 x M10	242
1FP-20SS	57-65	93	73	40	13.7	1 x M10	265





# ONE & TWO HOLE CABLECLAMPS - ALUMINIUM



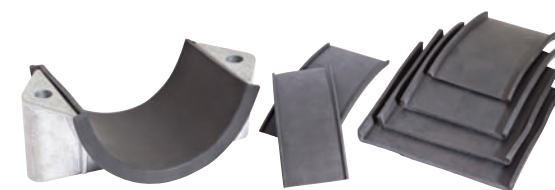
## DIE CAST ALUMINIUM CLAMP FOR SINGLE CABLES

Manufactured as standard in plain LM6 aluminium to BS 1490. Used to fix power cables in dry industrial or outdoor unpolluted applications. The product can be epoxy coated for use in harsh environments, such as sea air conditions.

Two hole cable clamps can be supplied with a neoprene liner on request ('L' should be added as a suffix to the part number).

Neoprene liners vary in width and thickness according to the clamp they are designed for. All liners have sidewall up-stands for secure location within the clamp.

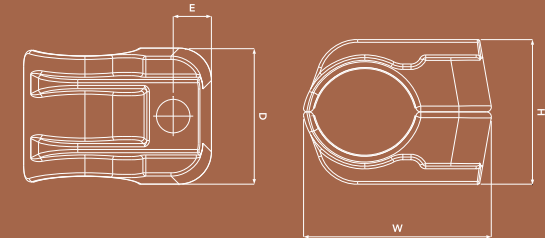
Manufactured from Neoprene the liners are rated V0 and have a carefully selected hardness to enable them to accommodate a cable's diametric thermal expansion.



Neoprene liners

## ONE HOLE CABLECLAMP

Part No.	Cable Range Dia. mm	Dimensions mm				Fixing Holes	Pack Qty	Item Weight g
		W	H	D	E			
1A-10N	10-13	37.8	27.0	41.4	10.2	1 x M10	1	43
1A-11N	13-16	41.2	30.0	41.4	10.4	1 x M10	1	52
1A-12N	16-19	44.3	33.0	41.4	10.7	1 x M10	1	61
1A-13N	19-23	48.2	36.0	41.4	10.9	1 x M10	1	68
1A-14N	23-27	52.2	40.0	41.4	11.3	1 x M10	1	78
1A-15N	27-32	57.1	44.0	41.4	11.6	1 x M10	1	85
1A-16N	32-38	63.1	49.0	41.4	12.1	1 x M10	1	97
1A-17N	38-46	71.3	58.0	41.4	12.9	1 x M10	1	121
1A-18N	46-51	77.3	67.0	41.4	13.5	1 x M10	1	155
1A-19N	51-57	83.2	72.0	41.4	13.9	1 x M10	1	171

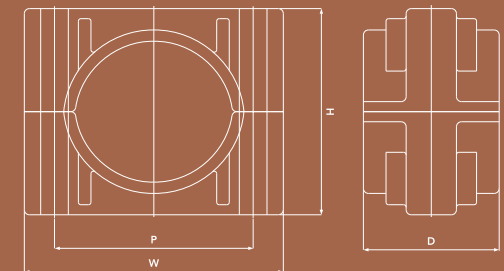


## TWO HOLE CABLECLAMP

Part No.	Cable Range Dia. mm	Liner Thickness	Range Take with Liner	Dimensions mm				Fixing Holes	Pack Qty	Item Weight g
				W	H	D	P			
2A-07N	38-46	3	32-40	94	48	49	68	2 x M10	1	174
2A-08N	46-51	3	40-45	104	54	49	79	2 x M10	1	214
2A-09N	51-57	3	45-51	105	61	49	79	2 x M10	1	224
2A-10N	57-64	3	51-58	105	68	49	79	2 x M10	1	234
2A-11N	64-70	3	58-64	133	74	64	106	2 x M10	1	360
2A-1200N	70-76	3	64-70	133	80	64	106	2 x M10	1	376
2A-1201N	76-83	3	70-77	133	87	64	106	2 x M10	1	388
2A-1202N	83-90	3	77-84	133	94	64	106	2 x M10	1	392
2A-131N	90-97	4	82-89	154	101	76	126	2 x M10	1	520
2A-132N	97-105	4	89-97	154	109	76	126	2 x M10	1	524
2A-141N	105-112	4	97-104	165	118	76	135	2 x M10	1	590
2A-142N	112-120	4	104-112	173	124	76	143	2 x M10	1	642

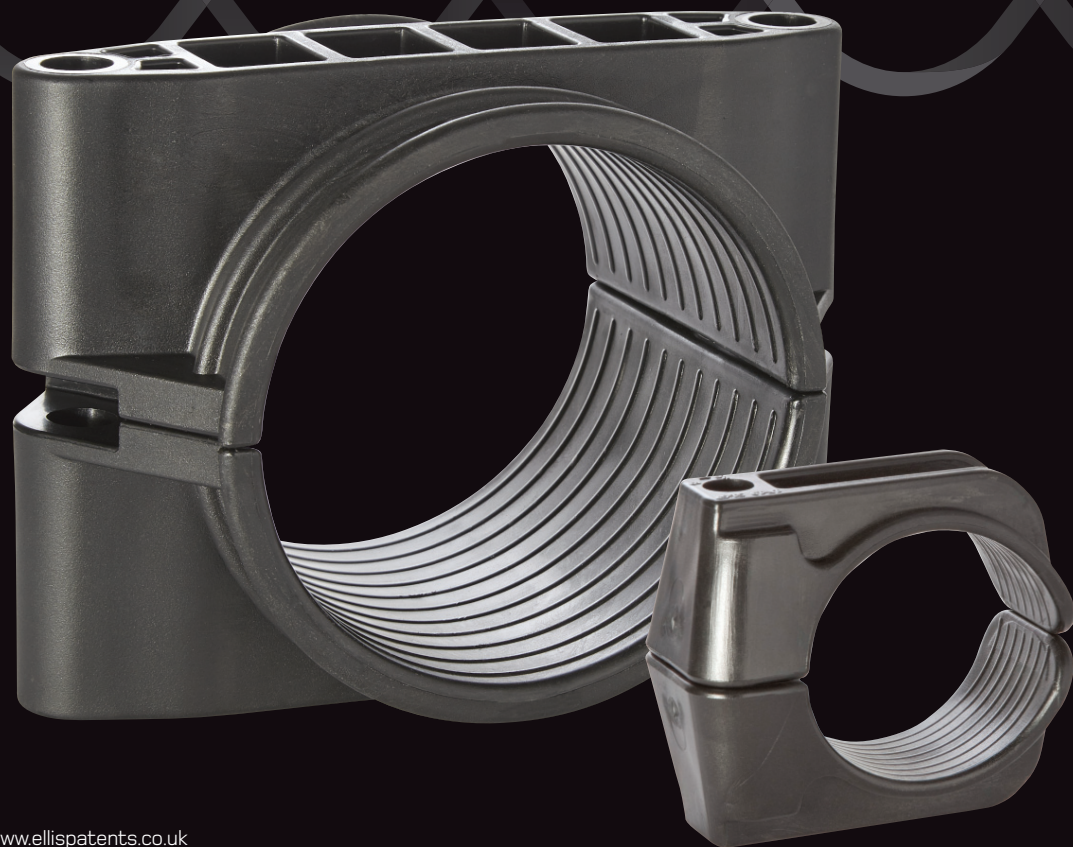
If liner ordered add 'L' as suffix to Part No. eg: 2A-07L.

Specials: For cable diameters above 112mm please contact our sales office.



# ONE & TWO HOLE CABLECLAMPS - NON METALLIC

UK Design Reg. No: 355854



## INJECTION MOULDED POLYMER CLAMP FOR SINGLE CABLES

Manufactured as standard in Black Polypropylene (B) or Black Flame Retardant V0 Zero Halogen Phosphorus-Free UV Stabilised Nylon (LSF) or to special order in a London Underground Approved Material (LUL).

Used to fix power cables in indoor and outdoor applications.

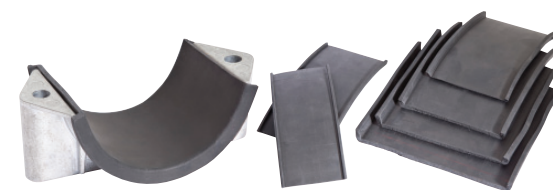
Two hole cable clamps can be supplied with a neoprene liner on request ('L' should be added as a suffix to the part number).

Neoprene liners vary in width and thickness according to the clamp they are designed for. All liners have sidewall up-stands for secure location within the clamp.

Manufactured from Neoprene the liners are rated V0 and have a carefully selected hardness to enable them to accommodate a cable's diametric thermal expansion.

MAX S/C TEST LEVEL (Multi-core Cable)	CLEAT SPACING
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76kA	600mm
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Neoprene liners



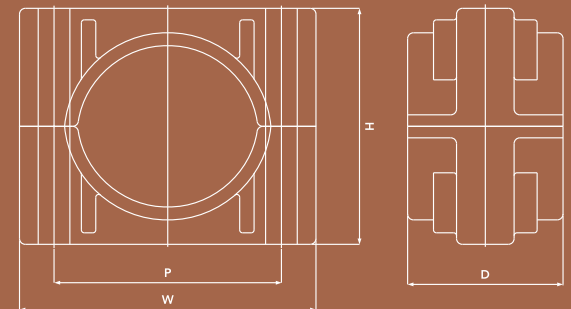
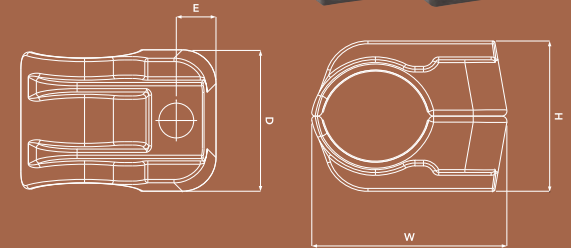
## ONE HOLE CABLECLAMP

Part No.	Material Suffix	Cable Range Dia. mm	Dimensions mm				Fixing Holes	Pack Qty	Weight g		
			W	H	D	E			B	LSF	LUL
1F-10	B/LSF/LUL	10-13	37.8	27.0	41.4	10.2	1 x M10	100	14.6	19.6	23.8
1F-11	B/LSF/LUL	13-16	41.2	30.0	41.4	10.4	1 x M10	100	17.0	23.0	27.7
1F-12	B/LSF/LUL	16-19	44.3	33.0	41.4	10.7	1 x M10	100	19.6	26.4	32.0
1F-13	B/LSF/LUL	19-23	48.2	36.0	41.4	10.9	1 x M10	100	22.4	30.2	36.5
1F-14	B/LSF/LUL	23-27	52.2	40.0	41.4	11.3	1 x M10	100	25.8	34.6	42.0
1F-15	B/LSF/LUL	27-32	57.1	44.0	41.4	11.6	1 x M10	100	29.2	39.0	47.6
1F-16	B/LSF/LUL	32-38	63.1	49.0	41.4	12.1	1 x M10	100	34.2	46.2	55.7
1F-17	B/LSF/LUL	38-46	71.3	58.0	41.4	12.9	1 x M10	50	47.8	64.0	77.9
1F-18	B/LSF/LUL	46-51	77.3	67.0	41.4	13.5	1 x M10	50	54.0	73.2	88.0
1F-19	B/LSF/LUL	51-57	83.2	72.0	41.4	13.9	1 x M10	50	59.0	80.4	96.2

## TWO HOLE CABLECLAMP

Part No.	Material Suffix	Cable Range Dia. mm	Liner Thickness	Range Take with Liner	Dimensions mm				Fixing Holes	Pack Qty	Weight g		
					W	H	D	P			B	LSF	LUL
2F+07	B/LSF/LUL	38-46	3	32-40	92	60	54	68	2 x M10	25	73.0	91.0	119.0
2F+08	B/LSF/LUL	46-51	3	40-45	103	71	54	79	2 x M10	25	80.9	109.9	132.0
2F+09	B/LSF/LUL	51-57	3	45-51	103	76	54	79	2 x M10	25	95.0	119.0	155.0
2F+10	B/LSF/LUL	57-64	3	51-58	103	82	54	79	2 x M10	25	89.1	122.5	156.5
2F+11	B/LSF/LUL	64-70	3	58-64	130	89	54	106	2 x M10	10	116.0	157.3	189.0
2F+1200	B/LSF/LUL	70-76	4	62-68	128	95	75	104	2 x M12	10	160.1	190.0	285.0
2F+1201	B/LSF/LUL	76-83	4	68-75	135	100	75	111	2 x M12	10	174.0	206.5	309.8
2F+1202	B/LSF/LUL	83-90	4	75-82	143	108	75	119	2 x M12	10	188.3	228.6	342.9
2F+131	B/LSF/LUL	90-97	5	80-87	165	115	100	138	2 x M12	5	335.5	423.0	634.5
2F+132	B/LSF/LUL	97-105	5	87-95	171	122	100	144	2 x M12	5	355.1	440.6	660.9
2F+141	B/LSF/LUL	105-112	5	95-102	178	130	100	151	2 x M12	5	382.4	509.9	764.9
2F+142	B/LSF/LUL	112-120	5	102-110	187	138	125	160	2 x M12	5	495.6	622.0	933.0
2F+151	B/LSF/LUL	120-128	5	110-118	196	148	125	168	2 x M12	5	536.8	715.7	1073.5
2F+152	B/LSF/LUL	128-135	5	118-125	203	158	125	176	2 x M12	5	578.9	771.9	1157.9
2F+161	B/LSF/LUL	135-144	5	125-134	222	168	150	190	2 x M16	5	831.3	1108.4	1662.7
2F+162	B/LSF/LUL	144-152	5	134-142	232	179	150	200	2 x M16	5	902.3	1203.1	1804.6
2F+171	B/LSF/LUL	152-160	5	142-150	242	190	150	210	2 x M16	5	976.2	1301.6	1952.4
2F+172	B/LSF/LUL	160-168	5	150-158	252	201	150	220	2 x M16	5	1052.1	1402.9	2104.3

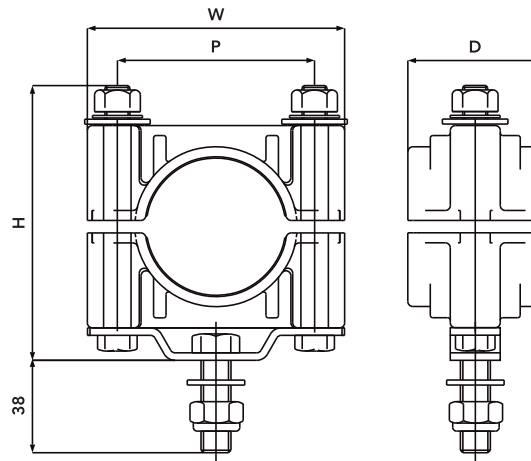
If liner ordered add 'L' as suffix to Part No. eg: 2F-07BL, 2F-07LSFL and 2F-07LULL.



# HEAVY DUTY SINGLE BOLT FIXING

Manufactured as standard in Black Polypropylene (B) or Black Flame Retardant V0 Zero Halogen Phosphorus-Free Nylon (LSF). Supplied together with a Zinc passivated mild steel support bracket that enables larger cables to be fixed with one inclusive single 12mm bolt. Used to fix power cables in indoor and outdoor applications.

Part No.	Material Suffix	Support Bracket Material	Cable Dia Range mm	Dimensions mm				Weight g	
				W	H	D	E	B	LSF
2F+AS-08	B or LSF	Y	46-51	103	110	54	38	353.9	382.9
2F+AS-09	B or LSF	Y	51-57	103	110	54	38	368	392
2F+AS-10	B or LSF	Y	57-64	103	110	54	38	362.1	395.5
2F+AS-11	B or LSF	Y	64-70	130	143	54	38	433	474.3
2F+AS-1200	B or LSF	Y	70-76	128	143	75	38	477.1	507
2F+AS-1201	B or LSF	Y	76-83	135	148	75	38	491	523.5
2F+AS-1202	B or LSF	Y	83-90	143	156	75	38	505.3	545.6



# TRIPLEX CABLE SURROUND

## PATENT NO. UK PATENT GB 238 9970

Manufactured as standard in a LSF Zero Halogen Polymeric material. Used within a single cable cleat to secure triplex cable (three single core cables which are spirally twisted together), it overcomes the twist in the cable so allowing the cable to be cleated at any point along its length. Used to fix power cables in indoor and outdoor applications.

Part No.	Triplex Cable Range		Depth mm	Weight g
	Min Dia. mm	Max Dia. mm		
SFT26	24	28	62	67.3
SFT31	28	34	62	87.0
SFT36	33	39	62	113.4
SFT43	39	47	62	140.0
SFT51	47	55	62	212.3

Tested in line with EN 50368:2003

MAX S/C TEST LEVEL (within 2F Clamps)	CLEAT SPACING
76kA	600mm



## CABLE CLEAT SELECTION DETAIL FOR CLEATS TO BE USED WITH THE SFT SURROUND FOR TRIPLEX CABLE

Cable Core Outside	SFT Outside Diameter	Adaptor Type	Cleat Vulcan+	Cleat Emperor	2F+ Clamp
24	56	SFT26	VRT+03	ES51-59	9
25	58	SFT26	VRT+03	ES51-59	10
26	59	SFT26	VRT+03	ES58-66	10
27	61	SFT26	VRT+04	ES58-66	10
28	63	SFT26	VRT+04	ES58-66	10
28	66	SFT31	VRT+04	ES65-73	11
29	68	SFT31	VRT+04	ES65-73	11
30	70	SFT31	VRT+05	ES65-73	11
31	72	SFT31	VRT+05	ES65-73	-
32	73.5	SFT31	VRT+05	ES73-85	-
33	75	SFT31	VRT+06	ES73-85	-
34	77	SFT31	VRT+06	ES73-85	-
33	77	SFT36	VRT+07	ES73-85	-
34	79	SFT36	VRT+07	ES73-85	-
35	80	SFT36	VRT+07	ES73-85	-
36	83	SFT36	VRT+07	ES73-85	-
37	85	SFT36	VRT+07	ES84-94	-
38	86	SFT36	VRT+07	ES84-94	-
39	87	SFT36	VRT+07	ES84-94	-
39	92	SFT43	VRT+08	ES84-94	-
40	94	SFT43	VRT+08	ES94-118	-
41	96	SFT43	VRT+08	ES94-118	-
42	98	SFT43	VRT+09	ES94-118	-
43	100	SFT43	VRT+09	ES94-118	-
44	101	SFT43	VRT+09	ES94-118	-
45	103	SFT43	VRT+10	ES94-118	-
46	104.5	SFT43	VRT+10	ES94-118	-
47	106	SFT43	VRT+10	ES94-118	-
47	107	SFT51	VRT+12	ES94-118	-
48	109	SFT51	VRT+12	ES94-118	-
49	111	SFT51	VRT+12	ES94-118	-
50	113.5	SFT51	VRT+12	ES94-118	-
51	115.5	SFT51	VRT+12	ES94-118	-
52	118	SFT51	VRT+12	ES94-118	-
53	120	SFT51	VRT+12	ES118-130	-
54	122.5	SFT51	VRT+12	ES118-130	-
55	125	SFT51	VRT+12	ES118-130	-





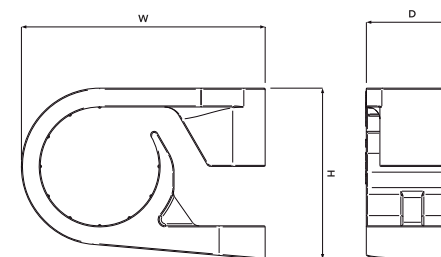
# INDUSTRIAL CABLECLAMP

Manufactured as standard in Black LLDPE (B) or in a London Underground Approved Material (LUL).  
Used to fix power cables in indoor and outdoor applications.

Part No.		Cable Range		Dimensions mm			Fixing Holes	Pack Qty	SWL kgf	Weight g	
LLDPE	LUL	Min Dia. mm	Max Dia. mm	W	H	D				LLDPE	LUL
17-01B	17-01LUL	10	15	27.8	17.6	12	1 x M4	100	18	2.0	3.5
17-02B	17-02LUL	12	17	32.0	20.8	14	1 x M4	100	24	3.3	5.4
17-03B	17-03LUL	15	20	37.1	25.3	16	1 x M4	100	32	5.2	8.6
17-04B	17-04LUL	18	24	41.0	29.6	18	1 x M4	100	39	7.3	12.2
17-05B	17-05LUL	22	29	52.1	35.4	20	1 x M6	50	52	11.2	18.6
17-06B	17-06LUL	26	34	58.2	40.9	22	1 x M6	50	66	16.5	27.9
17-07B	17-07LUL	32	42	69.3	49.2	25	1 x M6	25	79	25.6	42.9
17-08B	17-08LUL	39	51	81.7	58.5	26	1 x M6	25	93	36.2	60.1



The LUL version of this clamp is compliant with the requirement of London Underground Standard 1-085. Product Register No. 365.

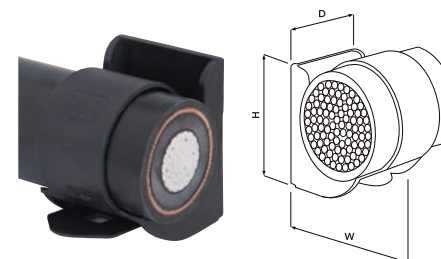


# ELITE RANGE-TAKER CABLECLAMP

Manufactured as standard in Black Polypropylene (B), White Polypropylene (W) or Black Flame Retardant V0 Zero Halogen Phosphorus-Free Nylon (LSF). The clamp incorporates a fully releasable strap allowing ease of re-installation.  
Used to fix power cables in indoor and outdoor applications.

Part No.	Material Suffix	Cable Range		Dimensions mm			Fixing Holes	Pack Qty	Weight g	
		Min Dia. mm	Max Dia. mm	W	H	D			B/W	LSF
15-1	B,W or LSF	9.5	16.0	27.0	37.0	25.0	1 x M6	100	6.0	8.0
15-2	B,W or LSF	15.0	25.0	36.0	37.0	32.0	1 x M6	50	8.0	10.9
15-3	B,W or LSF	23.0	37.0	48.0	48.0	36.0	1 x M6	50	15.0	18.1
15-4	B,W or LSF	34.0	52.0	63.0	65.0	40.0	1 x M6	25	20.0	25.5

**Tested in line with EN 50368:2003**



# EARTHING STRIP CLIP

Manufactured as standard in Black Polypropylene (B) or Grey Flame Retardant Polypropylene (FR).  
Used to fix PVC coated, bare copper or aluminium strip.

## IMPERIAL SIZES

Part No.	Material Suffix	Strip Size inches	Hold Off inches	Length inches	Fixing Holes (slotted) inches	Pack Qty	Weight g
60-04	B or FR	1 x 1/8	5/16	2	7/16 x 5/16	100	12
60-05	B or FR	1 1/4 x 1/8	3/8	2 5/8	7/16 x 5/16	100	21
60-06	B or FR	1 1/4 x 3/16	5/16	2 5/8	7/16 x 5/16	100	20
60-08	B or FR	1 1/2 x 3/16	5/16	2 5/8	7/16 x 5/16	100	20
60-10	B or FR	1 1/2 x 1/8	3/8	2 5/8	7/16 x 5/16	100	20
60-15	B or FR	2 x 1/8	1/4	3 1/8	7/16 x 5/16	100	24
60-26	B or FR	1 x 1/8	3/4	2 1/8	7/16 x 5/16	100	16
60-27	B or FR	1 x 3/16	5/8	2 1/8	7/16 x 5/16	100	16
60-28	B or FR	1 1/2 x 3/16	5/8	2 7/8	7/16 x 5/16	100	25
60-32	B or FR	1 1/4 x 1/4	5/8	3	7/16 x 5/16	100	25
60-34	B or FR	1 1/2 x 1/8	3/4	3	7/16 x 5/16	100	25
60-36	B or FR	1 1/2 x 1/4	5/8	3	7/16 x 5/16	100	24
60-37	B or FR	1 1/2 x 3/8	3/8	2 7/8	7/16 x 5/16	100	23
60-38	B or FR	1 3/4 x 1/8	3/4	3 3/8	7/16 x 5/16	100	27
60-39	B or FR	1 3/4 x 1/4	5/8	3 3/8	7/16 x 5/16	100	27
60-40	B or FR	2 x 1/8	3/4	3 3/8	7/16 x 5/16	100	30
60-42	B or FR	2 x 1/4	5/8	3 3/8	7/16 x 5/16	100	25
60-44	B or FR	2 x 3/8	3/8	3 3/8	7/16 x 5/16	100	24



## METRIC SIZES

Part No.	Material Suffix	Strip Size mm	Hold Off mm	Length mm	Fixing Holes (slotted) mm	Pack Qty	Weight g
70-04	B or FR	20 x 4	17	55	11 x 8	100	15
70-06	B or FR	20 x 6	16	55	11 x 8	100	16
70-07	B or FR	25 x 6	16	55	11 x 8	100	14
70-08	B or FR	50 x 4	18	87	11 x 8	100	28
70-09	B or FR	40 x 6	16	87	11 x 8	100	28
70-10	B or FR	50 x 6	15	87	11 x 8	100	26
70-11	B or FR	40 x 4	18	87	11 x 8	100	28
70-12	B or FR	50 x 10	11	87	11 x 8	100	24
70-14	B or FR	60 x 6	18	97	11 x 8	100	31
70-16	B or FR	80 x 6	19	118	11 x 8	50	41

# CABLE CONDUIT CLIP

Manufactured as standard in Black or White Nylon, this surface mounted Conduit Clip comes complete with a captive hinged over-strap.  
Used to fix conduit in indoor or outdoor applications.

Part No.	Material Suffix	D mm	H mm	W mm	Fixing Holes mm	Stand off	Pack Qty	Weight g
CC20B	B or W	20	35	35	4	5	100	8.8
CC25B	B or W	25	40	40	4	5	100	10.6



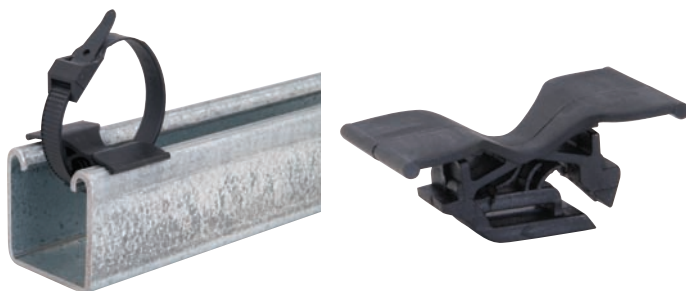
# FRAMING CHANNEL ACCESSORIES

## FRAMING CHANNEL END CAPS

Manufactured as standard in Black or White Polypropylene (PP), Black or White LDPE (PE) or Nylon (LSF). The EC version is a spring fit whilst the 'Gripper' version has fins which bend and deform into the channel. There is provision to incorporate the customer's company logo. Also available to order in other colours.



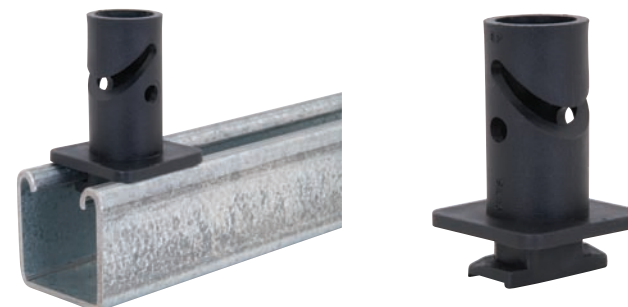
Part No.	Description	Size mm	Material Suffix	Colour	Pack Qty	Weight g
91-ECLB	'EC' type channel end cap	41 x 41	PP	Black	100	7.3
91-ECLW	'EC' type channel end cap	41 x 41	PP	White	100	7.3
91-ECSB	'EC' type channel end cap	41 x 21	PP	Black	100	3.2
91-ECSW	'EC' type channel end cap	41 x 21	PP	White	100	3.2
91-JGLB	'Gripper' type channel end cap	41 x 41	PE	Black	100	9.4
91-JGLW	'Gripper' type channel end cap	41 x 41	PE	White	100	9.4
91-JGSB	'Gripper' type channel end cap	41 x 21	PE	Black	100	4.4
91-JGSW	'Gripper' type channel end cap	41 x 21	PE	White	100	4.4
91-JGLLSF	'Gripper' type channel end cap	41 x 41	LSF	Black	100	9.4
91-JGSLSF	'Gripper' type channel end cap	41 x 21	LSF	Black	100	4.4



## BUTTERFLY CLIP

Manufactured as standard in Black Nylon 66 (NY), the butterfly clip snaps into 41mm wide framing channel. It will accommodate a cable tie of up to 10mm in width (not included). Used to allow cables to be strapped at right angles to the channel.

Part No.	Material Suffix	Pack Qty	Weight g
91-BC	NY	100	3.8



## THERMAL SPACER

Manufactured as standard in Black Polypropylene (PP). A slotted hole is also provided for running heat detection cable. Used to ensure separation of the cable on cable ladder, framing channel and ladder rungs with reduced return flanges.

Part No.	Height Above Ladder Rung	Material Suffix	Pack Qty	Weight g
91-TSL1	75mm	PP	100	19.5
91-TS75	50mm	PP	100	14.7



## FRAMING CHANNEL WASHER

Manufactured as standard in the materials shown this washer is recommended for use when our range of 2H clamps are fitted to framing channel.



Part No.	Size	Material Suffix	Hole Size mm	Pack Qty	Weight g
91-WZ	40 x 40	Mild Steel Zinc Plated	10	100	33
91-WZ-X	40 x 40	Mild Steel Zinc Plated	12	100	33
91-W-2	40 x 40	A2 Stainless Steel	10	100	34
91-W-4	40 x 40	A4 Stainless Steel	12	100	34
91-WG	40 x 40	Mild Steel Galvanised	10	100	37

## TRUNKING ADAPTOR

Manufactured as standard in Black Polypropylene (B) or Nylon (LSF), this adaptor can be used to fit one hole and two hole cable clamps when cables are being installed parallel to the trunking.



Part No.	Material Suffix	Pack Qty	Weight g
91-TA	B	100	5.3
91-TA	LSF	100	7.1

## INSULATION PLATE

Manufactured as standard in Black Polypropylene, this insulation plate can be used to provide a barrier where galvanic reaction may occur between dissimilar metals, e.g. when installing stainless steel cleats onto galvanised steel channel.



Part No.	Material Suffix	Pack Qty	Weight g
91-IP	B	100	5

## CHANNEL NUTS

Manufactured as standard in Bright Zinc Plated Mild Steel.



Part No.	Material Suffix	Pack Qty	Weight g
0F-M10-CN00-Z	M10 Channel Nut (long spring)	100	38
0F-M10-CN01-Z	M10 Channel Nut (short spring)	100	37
0F-M10-CN02-Z	M10 Channel Nut (no spring)	100	36

# SPECIALIST CABLE FIXINGS FOR UTILITIES



## SINGLE WAY FIXING CABLE CLEAT

Manufactured as standard in Black Acetal (A), Black Polypropylene (B) & Grey Flame Retardant Polypropylene (FR). A robust cleat used for securing armoured power cables.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
10-034	B or FR	9.0	3	200	0.8
10-042	B or FR	10.6	4	200	1.9
10-046	B or FR	11.7	4	200	2.8
10-053	B or FR	13.5	4	200	2.8
10-056	B or FR	14.2	4	200	3.1
10-061	B or FR	15.5	4	200	3.1
10-065	B or FR	16.5	4	200	4.8
10-072	B or FR	18.2	4	200	4.2
10-083	B or FR	21.1	6	100	7.7
10-098	B or FR	24.8	6	100	6.4
10-106	B or FR	27.0	6	100	7.5
10-120	A	31.0	6	50	15.8
10-138	A	35.0	6	50	23.0



## TWO WAY SINGLE FIXING CABLE CLEAT

Manufactured as standard in Black Polypropylene (B) & Grey Flame Retardant Polypropylene (FR). A robust cleat used for securing two armoured power cables on flat surfaces.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
2W37	B	9.4	4	100	2.2
2W42	B or FR	10.6	4	100	3.3
2W46	B or FR	11.7	4	100	3.6
2W53	B or FR	13.5	4	100	4.0
2W56	B or FR	14.2	4	100	5.0



## THREE & FOUR WAY DOUBLE FIXING CABLE CLEAT

Manufactured as standard in Black Polypropylene (B) & Grey Flame Retardant Polypropylene (FR). A robust cleat used for securing three or four armoured power cables on flat surfaces.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
3W46	B or FR	11.7	4	200	8.7
3W56	B or FR	14.2	4	200	9.3
4W10	B	4 x 15	4	100	9.5



## SINGLE WAY HEAVY DUTY RADIUS POLE CLEAT

Manufactured as standard in Black Polypropylene (B). A curved robust cleat used for securing power cables on 200mm diameter wooden electricity supply poles.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
35-04	B	27.6	8	100	13.0
35-06	B	31.2	8	100	12.0
35-065	B	33.5	8	100	18.5
35-07	B	36.0	8	100	14.0
35-08	B	37.8	8	100	16.0
35-10	B	41.5	8	100	26.0
35-12	B	44.6	8	100	25.0
35-22	B	49.2	8	100	23.0
35-26	B	53.5	8	50	25.0
35-30	B	56.6	8	50	27.0
35-34	B	61.6	11	50	53.0
35-42	B	72.5	11	25	84.0



## TWO WAY HEAVY DUTY RADIUS POLE CLEAT

Manufactured as standard in Black Polypropylene (B). A curved robust cleat used for securing two power cables on 200mm diameter wooden electricity supply poles.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
2WP04	B	11.7	4	100	6.1
2WP06	B	13.2	4	100	5.4
2WP10	B	16.5	4	100	6.5
2WP15	B	19.1	8	100	7.3



### THREE WAY HEAVY DUTY RADIUSSED POLE CLEAT

Manufactured as standard in Black Polypropylene (B). A curved robust cleat used for securing three power cables on 200mm diameter wooden electricity supply poles.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
3WP04	B	11.7	6.35	200	8.0
3WP06	B	13.2	6.35	200	8.2
3WP10	B	16.5	6.35	200	9.8
3WP15	B	19.2	6.35	200	12.5
3WP20	B	21.7	6.35	200	13.7
3WP2	B	15.0	6.35	200	10.7
3WN05	B	24.0	6.35	200	11.9



### TWO WAY CLEAT AND SPACER

Manufactured as standard in Black Polypropylene (B) & Grey Flame Retardant Polypropylene (FR). Used for mounting power cables to poles and flat surfaces. A spacer is available to facilitate the stacking of the cleat.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
E272	B or FR	11.1-19.1	10.0	50 pairs	22.7
E272S	B or FR	11.1-19.1	10.0	50	15.1
E273	B or FR	6.35-12.0	6.63	50 pairs	11.4
E273S	B or FR	6.35-12.0	6.63	50	7.2

S = Spacer



### CABLE TIE BASE

Manufactured in Nylon (NY). Used to accommodate a cable tie of up to 10mm in width (not included).

Part No.	Material Suffix	Fixing Holes mm	Pack Qty	Weight g
115-001	NY	6	100	2.5



### UNIVERSAL CLEAT

Manufactured as standard in Black Polypropylene (B). Used for stacking cables vertically or horizontally using a frame work system. More detail can be supplied on request.

Part No.	Material Suffix	Cable Dia. mm	Pack Qty	Weight g
30U-1	B	23.8-38.1	50 pairs	89



### SINGLE WAY SNAP ON SADDLE CLIP

Manufactured as standard in Black Polypropylene (B) & Grey Flame Retardant Polypropylene (FR). Used for mounting cables and pipes on flat surfaces also providing clearance between the cable or pipe and the mounting surface.

Part No.	Material Suffix	Cable Dia. mm	Fixing Holes mm	Pack Qty	Weight g
90-M095	B or FR	7.5	3.75	500	1.8
90-M120	B or FR	12.0	3.75	500	2.4
90-01	B or FR	12.7	3.75	500	2.2
90-02	B or FR	15.0	3.75	500	2.4
90-03	B or FR	17.5	4.0	500	3.3
90-075	B or FR	19.0	4.0	500	3.6
90-04	B or FR	23.0	4.0	500	3.2
90-04.1	B or FR	24.2	4.0	500	3.1
90-05	B or FR	25.4	4.0	500	4.3
90-06	B or FR	27.5	5.0	500	5.3
90-07	B or FR	31.7	5.0	200	6.8
90-08	B or FR	34.0	5.0	200	6.7
90-09	B or FR	38.1	5.0	100	6.8
90-10	B or FR	42.0	5.0	200	8.7
90-11	B or FR	42.6	5.0	200	9.5
90-12	B or FR	44.4	5.0	100	7.4
90-13	B or FR	48.7	5.0	200	10.4
90-14	B or FR	53.9	5.0	100	14.4
90-143	B or FR	55.0	6.0	100	26.3
90-15	B or FR	60.5	6.0	100	25.8
90-19	B or FR	75.0	7.5	50	40.8
90-24++	B	88.9	10.0	25	70.7
90-S	B	Saddle Clip Spacer*			1.2

++ This item is supplied with a base plate.

\* Spacer suitable for use with all saddle clips (except part no 90-24).

Provides additional separation of the cable or pipe from the mounting surface of approximately 12.5mm.



### ABC WALL CLEAT

Manufactured as standard in Black Polypropylene (B). Used as a simple solution to the fixing of vertical and horizontal aerial bundled cable to walls and other surfaces. (Tested to ESI standards 43-14.)

Part No.	Material Suffix	A mm	H mm	D mm	Fixing Holes mm	Pack Qty	Weight g
115-010	B	10	47	31	6	100	12
115-050	B	50	59	37	6	100	27
115-100	B	100	72	43	6	25	54
115-125	B	125	80	48	6	25	74

Please note: These clamps are available in 4 stand off variants denoted by 'A'.



# JOINTERS' TOOLS

## CABLE CORE TWISTERS

Manufactured in Acetal (International Orange).  
Used to manipulate bare or insulated cable  
cores and to align the cores prior to jointing.



Complies with the Dielectric testing of IEC 60900-1

### 3 CORE

Part No.	Cores	Core Range Size mm <sup>2</sup>	Pack Qty	Weight g
110-95C	3	70 Bare x 95 Bare	10	54
110-X01C	3	95 Bare x 95 Ins	10	51
110-120C	3	70 Bare x 120 Bare	10	51
110-120IC	3	70 Ins x 120 Ins	10	49
110-X06C	3	120 Bare x 120 Ins	10	48
110-X07C	3	185 Bare x 185 Ins	10	148
110-240C	3	185 Bare x 240 Bare	10	146
110-300C	3	185 Bare x 300 Bare	10	147
110-300IC	3	185 Ins x 300 Ins	10	139
110-X08C	3	300 Bare x 300 Ins	10	138
110-X09C	3	70 Bare x 70 Ins	10	53
110-X10C	3	95 Bare x 185 Bare	10	154
110-X11C	3	95 Ins x 185 Ins	10	149

### 3 & 4 CORE

Part No.	Cores	Core Range Size mm <sup>2</sup>	Pack Qty	Weight g
110-X03C	3 & 4	3C 95 Ins x 4C 95 Ins	10	50
110-X04C	3 & 4	3C 185 Ins x 4C 185 Ins	10	145
110-X05C	3 & 4	3C 300 Ins x 4C 240 Ins	10	135
110-X12C	3 & 4	3C 300 Bare x 4C 300 Bare	10	141
110-X13C	3 & 4	3C 300 Ins x 4C 300 Ins	10	134

### 4 CORE

Part No.	Cores	Core Range Size mm <sup>2</sup>	Pack Qty	Weight g
110-41C	4	95 Bare x 95 Ins	10	51
110-42C	4	185 Ins x 240 Ins	10	142
110-43C	4	185 Bare x 240 Bare	10	150
110-44C	4	185 Ins x 300 Ins	10	141
110-48C	4	120 Ins x 185 Ins	10	150
110-X02C	4	185 Bare x 300 Bare	10	146
110-X14C	4	95 Bare x 185 Bare	10	155
110-X15C	4	95 Ins x 185 Ins	10	149
110-16C	4	95 Ins stranded x 95 Ins solid	10	51
110-17C	4	300 Ins stranded x 300 Ins solid	10	140

## CABLE CORE FORMER

Manufactured in Nylon. Used to hold the  
cores of a three core cable apart whilst  
a joint is being made. The central hole  
provides a facility for positioning a  
mastic bung.



Part No.	Core Separation Distance mm	Pack Qty	Weight g
120-F	32 - 58	10	44.1

### CABLE CORE GUARD

Manufactured in Nylon (International orange). Used to provide separation between a cable core which is being cut and neighbouring cores.



Part No.	Nominal Lift mm	Pack Qty	Weight g
120-CG1C	23	10	57

### CABLE CORE WEDGE

Manufactured in Nylon (International orange). Used to prise apart and to separate the cores of cables.



Part No.	Length mm	Width mm	Nominal Lift mm	Pack Qty	Weight g
110-1NYC	150	25	15	10	41
110-2NYC	225	25	25	10	65
110-3NYC	225	25	38	10	89
110-4NYC	150	13	25	10	32

### CABLE CORE STRIPPER

Manufactured in a Polymeric material. Used to remove insulation and sheathing from live armoured power cables. The tool has an exceptionally strong tough blade and a unique handle moulded in a softer plastic which provides a cushion effect when a hammer is used to initiate a cut in the cable sheath.

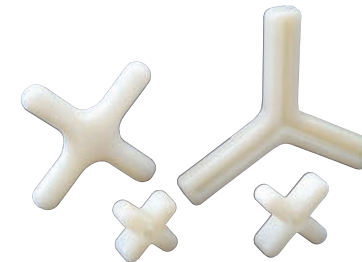


Part No.	Nominal Lift mm	Pack Qty	Weight g
120-CS	90	10	183

Complies with the Dielectric testing of IEC 60900-1

### CABLE CORE SPREADER

Manufactured in Nylon. Used to hold apart the cores of a cable when jointing cables.



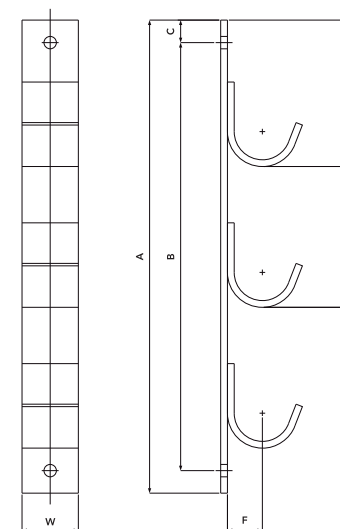
Part No.	Core	Core Range Size mm <sup>2</sup>	Pack Qty	Weight g
120-VNY	3	240 - 300	100	45
120-WNY	3	185	100	38
120-YNY	3	95 - 150	100	30
120-ZNY	3	95	100	24
120-UNY	4	Universal	100	37
120-15	4	Universal	100	10
120-20	4	Universal	100	12

# CABLE HANGERS

Manufactured in Mild Steel. Hot dipped galvanised after manufacture to BS EN ISO 1461:1999. Special designs available on request e.g. Girder hanging, 90° Twist, side by side cables. Used to hang cables on walls and support structures.

## CABLE HANGERS

Part No.	Ways	Dimensions mm						Material Size		Fixing Holes Dia.	Pack Qty	Weight g	
		A	B	C	D	E	F	W	Thickness				
CH1W1	1	145	105	20	105	-	37	40	6	11	1	500	Size 1 for cables up to 50mm Diameter
CH2W1	2	235	195	20	105	90	37	40	6	11	1	900	
CH3W1	3	325	285	20	105	90	37	40	6	11	1	1300	
CH4W1	4	415	375	20	105	90	37	40	6	11	1	1700	
CH5W1	5	505	465	20	105	90	37	40	6	11	1	2100	
CH6W1	6	595	555	20	105	90	37	40	6	11	1	2500	
CH1W2	1	170	130	20	130	-	50	50	6	13	1	820	Size 2 for cables 51 - 75mm Diameter
CH2W2	2	295	255	20	130	125	50	50	6	13	1	1480	
CH3W2	3	420	380	20	130	125	50	50	6	13	1	2240	
CH4W2	4	545	505	20	130	125	50	50	6	13	1	2980	
CH5W2	5	670	630	20	130	125	50	50	6	13	1	3710	
CH6W2	6	795	755	20	130	125	50	50	6	13	1	4440	
CH1W3	1	185	145	20	145	-	62	50	6	13	1	980	Size 3 for cables 76 - 100mm Diameter
CH2W3	2	345	305	20	145	160	62	50	6	13	1	1900	
CH3W3	3	505	465	20	145	160	62	50	6	13	1	2820	
CH4W3	4	665	625	20	145	160	62	50	6	15	1	3600	
CH5W3	5	825	785	20	145	160	62	50	6	15	1	4660	
CH6W3	6	985	945	20	145	160	62	50	6	15	1	5600	



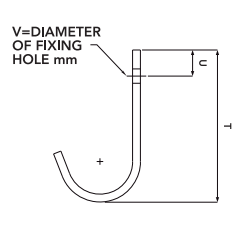


# SUSPENSION HOOKS

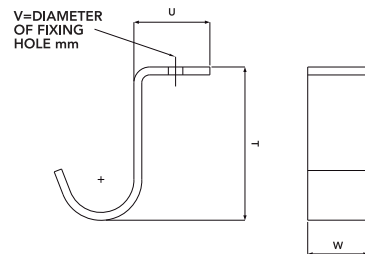
Manufactured in Mild Steel. Hot dipped galvanised after manufacture to BS EN ISO 1461:1999. Special designs available on request. Used to hang cables on walls and support structures.

## SUSPENSION HOOKS

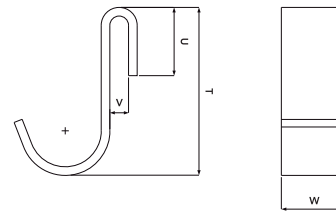
Part No.	Max Cable Dia.	Dimensions mm			Material Size		Pack Qty	Weight g	
		T	U	V	W	Thickness			
SHA1	50	105	25	11	40	6	1	320	Type A
SHA2	75	120	25	13	50	6	1	490	
SHA3	100	155	25	13	50	6	1	640	
SHB1	50	125	55	11	40	6	1	440	Type B
SHB2	75	140	60	13	50	6	1	680	
SHB3	100	150	60	13	50	6	1	780	
SHC1	50	125	40	13	40	6	1	460	Type C
SHC2	75	140	45	13	50	6	1	700	
SHC3	100	150	45	13	50	6	1	780	



Type A



Type B



Type C



Type A



Type B



Type C

# ELLIS

Holding Power

## BESPOKE SOLUTIONS AND PRODUCTS

We understand that different markets and varying situations demand different solutions. And as problem solvers, we thrive on new challenges. So when our standard product range isn't quite what you need, we can still help.



Standard Emperor products modified to suit 2, 4 and 6 cable applications.



Standard Emperor product fitted with a universal base clamp designed to retrofit to three different undrilled ladder rung designs.



Side Fix Vulcan is available as a special, with a side fixing for use when height is a limiting factor.

## MOST REQUESTED

Our customers often require help with the following:

- Mounting products onto a non-standard structure.
- Manufacturing products in a non-standard format or size.
- Specialist surface treatments, such as painting, plating, or galvanizing.
- Developing a completely bespoke product.

We are well placed to meet these, and many other, requirements.

## SPECIALIST APPLICATIONS

Just like our standard products, our bespoke solutions are designed to withstand the toughest conditions, and can be made for specialist environments such as:

- High shock load
- High or low temperature
- A large temperature range
- Tunnel (including railway)
- Unusual or aggressive corrosion
- Fire

**BG Group's Queensland Curtis LNG – the first project in the world to convert natural gas from coal seams into LNG.** Photograph showing the construction of some 540km of main pipeline network linking the gas fields to the QCLNG terminal on Curtis Island. Ellis Emperor cable cleats were specified by Thiess Pty Ltd, due to the product's capability to withstand possible 111kA peak system faults. Furthermore, the Emperor's 316L stainless steel construction meant it is ideal for use in the harsh Australian conditions.





## SHORT-CIRCUIT TESTING

During the design of an electrical installation, cable size will be specified and the maximum anticipated short-circuit load will be calculated. Using this data, the force between the conductors in the event of a short-circuit can be calculated and the correct cleats at the appropriate spacing can be determined.

Each range of cleats has different features and benefits and mechanical strength varies from product to product. Once the forces between the conductors in the event of a short-circuit have been calculated and a cleat has been selected, the spacing is calculated for that specific cleat. If the cleat type is changed, the spacing must be recalculated for the new cleat's mechanical strength.

The only way to be able to guarantee the performance of a particular type of cleat is by subjecting it to a short-circuit test. We know from experience that a cleat may withstand a certain mechanical load when subjected to a simple tensile test but it may fail when subjected to the same load in a short-circuit because of the dynamic forces involved.

IEC 61914 provides a method for cable cleats to be short-circuit tested so that results for different types of cleats can be compared.

It is up to the cable cleat manufacturer to determine the fault level at which they wish to test their cleat. However, the cable must be unarmoured single core 600V/1000V stranded copper conductor cable and the testing assembly must be in accordance with the requirements of the standard.

For a range of cleats to be classified under the Standard at a particular fault level, it must undergo one or two short-circuit tests depending on classification and afterwards:

- There shall be no failure that will affect the intended function of holding the cable in place.
- The cable cleats and intermediate restraints, if used, shall be intact with no missing parts.
- There shall be no cuts or damage visible to the outer sheath of the cable caused by the cleats or intermediate restraints.

IEC 61914 also provides formulae to enable the theoretical forces between conductors in the event of a short-circuit to be calculated.

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

$$F_t = \frac{0.17 \times i_p^2}{S}$$

Where:

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

$i_p$  is the peak short-circuit current (kA)

$S$  is the centre to centre distance between the conductors, which equals the cable diameter in trefoil cable configurations (m)

When comparing short-circuit test results for trefoil cleats, the fault level, cleat spacing and cable diameter must be known. It can only be said that a given cleat has specific short-circuit withstand at a given cleat spacing for a specific cable diameter.

Ellis Patents Ltd has carried out over four hundred short-circuit tests at independent test laboratories in the UK, Holland, Germany, Russia and the USA. Test certificates are available for all Ellis fault rated products. Technical advice regarding recommended cleat type and spacing for specific electrical installations is available on request.

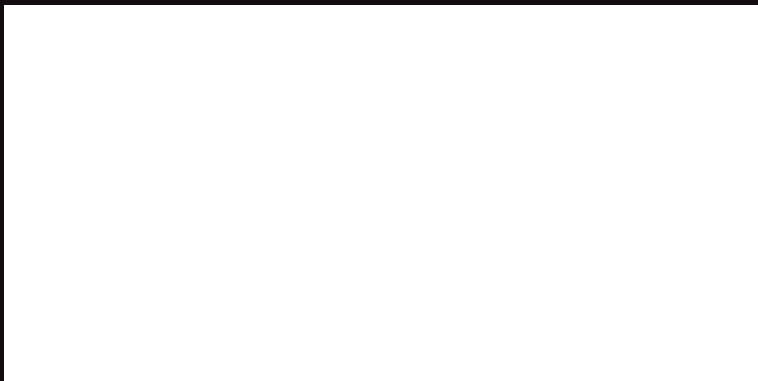


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