



**PREFORMED** LINE PRODUCTS  
The connection you can count on.

# SUBSTATION

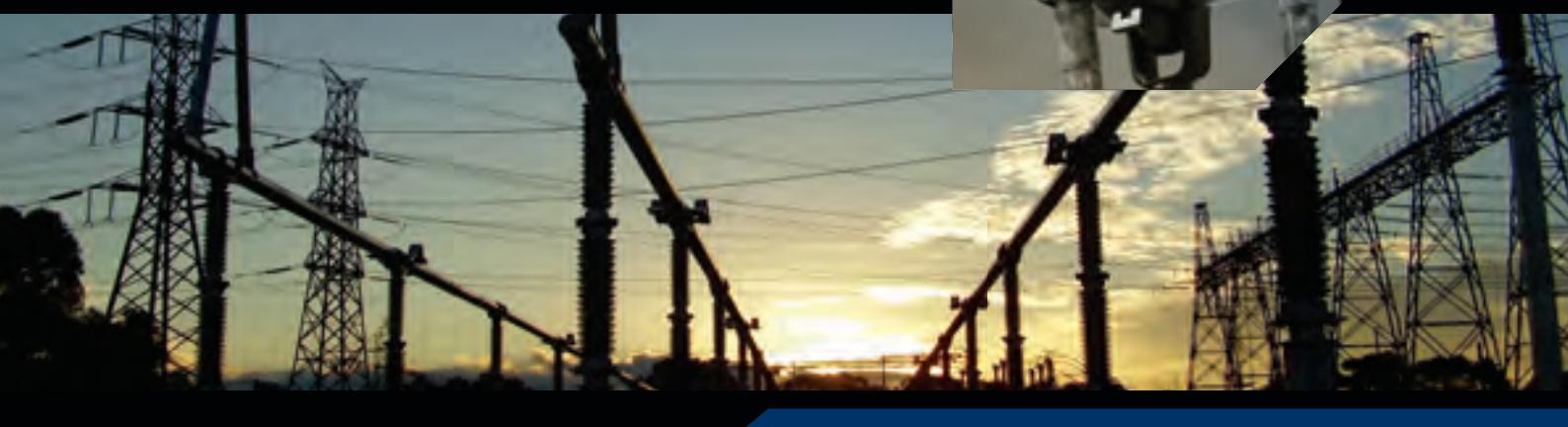
## Product Catalogue

COMMUNICATIONS

ENERGY

SPECIAL INDUSTRIES

SOLAR



**POWERFORMED™**  
Substation Systems

Distribution and transmission  
substation solutions for the  
Power Utility Industry

NZ Edition



**POWERFORMED™**  
Substation Systems

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# PREFORMED LINE PRODUCTS

## POWERFORMED™ Substations System Catalogue

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## Introduction to POWERFORMED®

### BUSALIGN™ for Busbars, SUBLIGN™ for Flexible Conductors

#### **Electropar PLP**

As a Preformed Line Products subsidiary company, Electropar PLP is a New Zealand designer, manufacturer and supplier of high quality products for the electric power Distribution and Transmission industries.

Located in 16 countries around the world, PLP's flexibility and global presence allows it to respond to customer's needs quickly and with precision. With ground breaking and innovative solutions like THERMOLIGN® products for high temperature transmission lines and COYOTE® Fibre Optic Products PLP have consistently pioneered advances in power utility communications and communications networks since 1947.

PLP was founded on technology for supporting, protecting, terminating and splicing transmission and distribution lines, OPGW (Optical Ground Wire) and ADSS (All Dielectric Self Supporting) fibre optic cables. The Company's reputation, product reliability and longevity speaks for itself. You can count on PLP's energy products and people day in and day out, year after year. That is because a steadfast commitment to quality is not just a goal at PLP, it's an obsession. In our engineering laboratories, on the manufacturing lines and all the way to field installation, it's the guiding principle of everything we do.

#### **POWERFORMED® Substation Systems**

Electropar PLP's POWERFORMED® Substation systems are a product of the company's engineering design, testing and manufacturing strengths. Proven over many years of reliable in-service performance at voltages up to 500kV, the intellectual property that underpins Electropar PLP's POWERFORMED® fittings and systems design is among the best in the world.

Within Electropar's POWERFORMED® range there are two distinct families of connectors, clamps and hardware for substation products. The families are called BUSALIGN™ and SUBLIGN™. Within these families, the fittings have been divided into three distinct groups which are structured around application voltages within substations:

1. Fittings that are designed to be applied at voltages up to and including 230kV
2. Fittings that are designed to be applied at voltages between 245kV and 400kV
3. Fittings that are designed to be applied at voltages between 400kV and 500kV

#### **BUSALIGN™: Substation Fittings for Tubular Aluminium Busbars**

POWERFORMED® BUSALIGN™ aluminium substation fittings includes both bolted, and welded solutions. Designed to be used to create high current tubular aluminium busbar systems in high voltage AC and DC substations, BUSALIGN™ fittings are available to suit Metric aluminium busbar tubes as large as 250mm OD (Outside Diameter). Conservatively designed for long and reliable in-service life, the BUSALIGN™ range represents some of the latest thinking in power engineering product design, backed by mechanical, heat cycle, Corona and RIV short circuit testing at up to 63kA/1s.

#### **SUBLIGN™: Substation Fittings for Flexible Aluminium Conductors**

POWERFORMED® SUBLIGN™ flexible conductor fittings encompasses bolted, welded and compression fitting solutions for AAC, AAAC, ACSR and ACAR flexible aluminium conductors. With some of the most unique and flexible designs available, installation is fast, easy and most importantly reliable for critical substation assets. Backed by extensive testing to NEMA, ANSI and IEC standards, SUBLIGN™ connectors are the low risk choice for substation assets.



## Pictorial Index - Buslink™ Bolted Aluminium

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	Section 2 Pg. 6		EPBTEP Section 2 Pg. 13	END TERMINALS	
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CORONA DOME CAPS		TEE CONNECTORS		EXPANSION SUPPORTS	
A circular, dome-shaped metal cap used to prevent electrical discharge from equipment.	EPBWEC Section 4 Pg. 3	A tee-shaped metal fitting used to connect three conductors at a single point.	EPBFTIL Section 4 Pg. 9	A curved metal bracket used to support a conductor and allow for expansion and contraction.	EPBAXJW Section 4 Pg. 16
A flat, circular metal cap used to protect the end of a conductor.	EPBWEFC Section 4 Pg. 4	A tee-shaped metal fitting used to connect three conductors at a single point.	EPBFTOP Section 4 Pg. 10	A curved metal bracket used to support a conductor and allow for expansion and contraction.	EPAXJW90 Section 4 Pg. 18
A FRAME CONNECTORS		EARTH GROUND POINTS		PRIMARY EQUIPMENT CONNECTORS	
An L-shaped metal connector used to join two conductors at a 90-degree angle.	EPWVC Section 4 Pg. 5	A metal rod or bolt used to provide a low-resistance path to earth.	EPBWEPIL Section 4 Pg. 12	A large metal connector used to join two conductors at a 90-degree angle.	EPBDS1 Section 4 Pg. 20
An L-shaped metal connector used to join two conductors at a 90-degree angle.	EPBWTC Section 4 Pg. 6	A metal rod or bolt used to provide a low-resistance path to earth.	EPBWEP Section 4 Pg. 13	A large metal connector used to join two conductors at a 90-degree angle.	EPBDS5 Section 4 Pg. 21
MIDSPAN COUPLER		EARTH GROUND STIRRUP		END TERMINALS	
A cylindrical metal connector used to join two conductors at a mid-span location.	EPBWJ Section 4 Pg. 7	A U-shaped metal bracket used to hold a conductor in place.	EPBWES Section 4 Pg. 14	A metal bracket used to terminate a conductor at a terminal block.	EPBWET-90 Section 4 Pg. 22
ELBOW CONNECTOR		FIXED SUPPORT		A metal bracket used to terminate a conductor at a terminal block.	EPBWET-135 Section 4 Pg. 23
A curved metal connector used to join two conductors at an elbow joint.	EPBWE Section 4 Pg. 8	A metal bracket used to support a conductor in a fixed position.	EPUBS Section 4 Pg. 15	A metal bracket used to terminate a conductor at a terminal block.	EPBWET-180 Section 4 Pg. 24

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**POWERFORMED™**

Substation Systems

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# User Guide

## POWERFORMED® Catalogue

### SUBLIGN™ and BUSLIGN™ Product Dimensions

Within Electropar's POWERFORMED® Substation System Catalogue, the company has taken the approach of providing only the critical dimensions for each SUBLIGN™ and BUSLIGN™ product. Examples of critical dimensions include: conductor centres for multiple conductor bundles; pitch circle diameters for insulator mountings; and the busbar centerline heights over post insulators. Fully dimensioned Sales Drawings are available for each SUBLIGN™ and BUSLIGN™ item from Electropar PLP on request.

### SUBLIGN™ and BUSLIGN™ Continuous Current Ratings

Neither the SUBLIGN™ nor BUSLIGN™ catalogue pages list continuous current ratings for each individual item within a product family.

The approach to engineering design for POWERFORMED™ products is conservative with continuous current rating limits being determined by factors including current density (cross sectional area and surface area contact), contact force, windspeed, and emissivity. POWERFORMED® continuous current ratings are backed by test data to standards including NEMA CC1, ANSI C119.4, and IEC 61284. Not all POWERFORMED® products have been tested because the diversity of SUBLIGN™ and BUSLIGN™ products is simply too great to achieve 100% type test status. Where products are not tested, the design is verified by tests on similar products where it is possible to extrapolate performance between assemblies. Continuous current ratings are available for all items.

### SUBLIGN™ and BUSLIGN™ Short Circuit Ratings

In 2008 and 2009 Electropar PLP embarked upon a programme to mathematically validate and then short circuit test a full size bay width of phase to phase insulated 220kV 200mm OD (4000amp) busbar and interplant connections at 25kA, 31.5kA, 40kA, 50kA and 63kA fault levels. The objectives of the testing were to prove the integrity of Electropar PLP's Powerformed fittings designs and to determine whether the existing method of calculation used to determine short circuit performance of substation components is valid (by comparing calculated load and displacement values to actual load and displacement values).

The testing took place at Powertech Lab's in Vancouver, Canada in June 2009 after a global search for laboratories with the capability to complete this scope. Under varying short circuits applied between 25kA/0.3s and 63kA/1sec (including long duration tests at 40kA/3s) measurement of the loads and displacements of the system under varying fault conditions took place. In all, 59 short circuit tests were completed over a 5 day test period with data collected by a combination of high speed cameras, still cameras, video and fibre optic sensors.

The data obtained from short circuit testing many SUBLIGN™ and BUSLIGN™ products in a real life environment underpins fundamental aspects of POWERFORMED® product designs.



FULL SCALE SHORT CIRCUIT TESTING TO 63 kA/1sec  
POWERTECH LABORATORY, VANCOUVER, 2009.



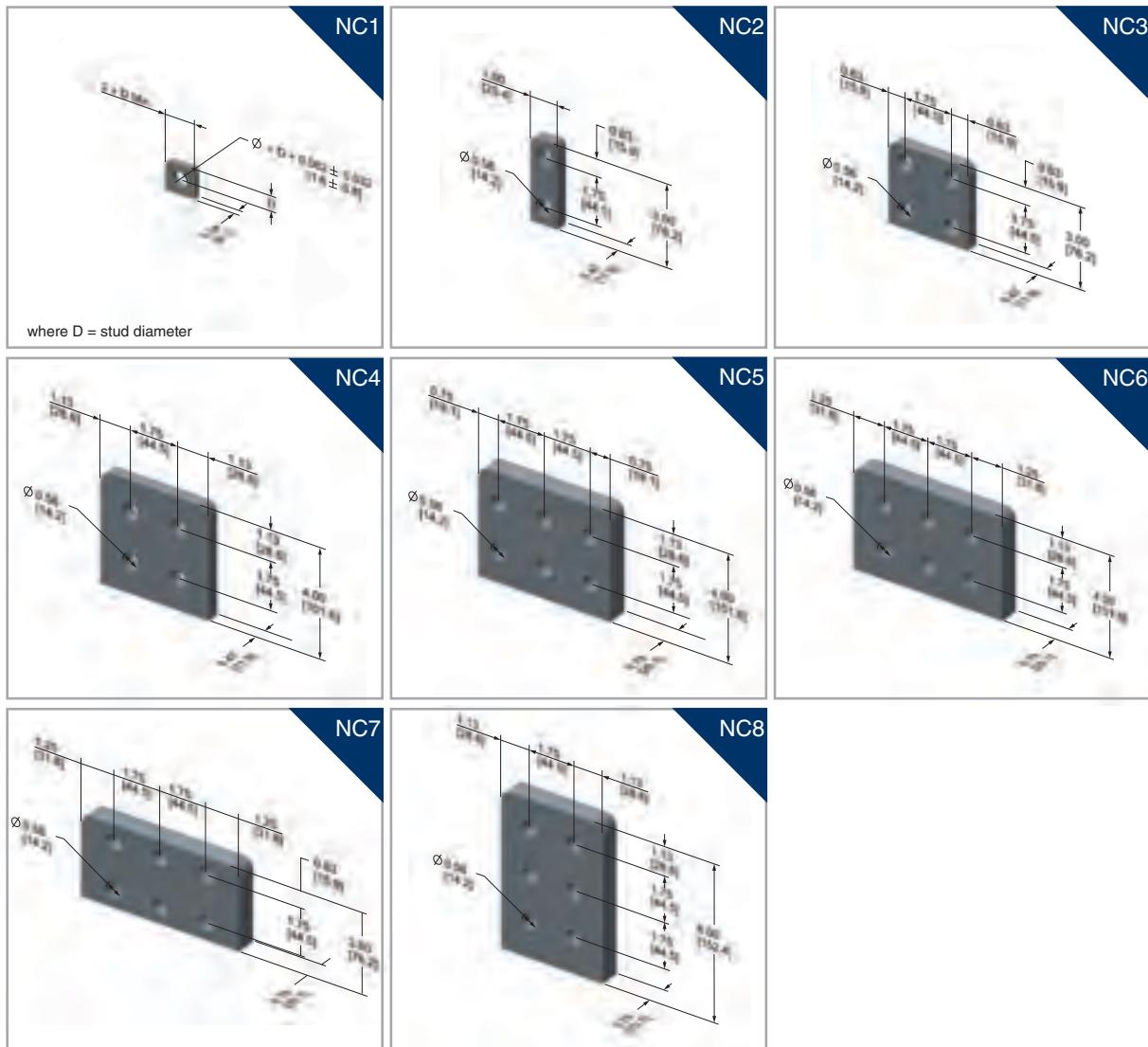
# Australian Standard Terminal Palms

## Dimensions and Types - Dimensions in Millimetres



# NEMA CC1 Type C Standard Terminal Palms

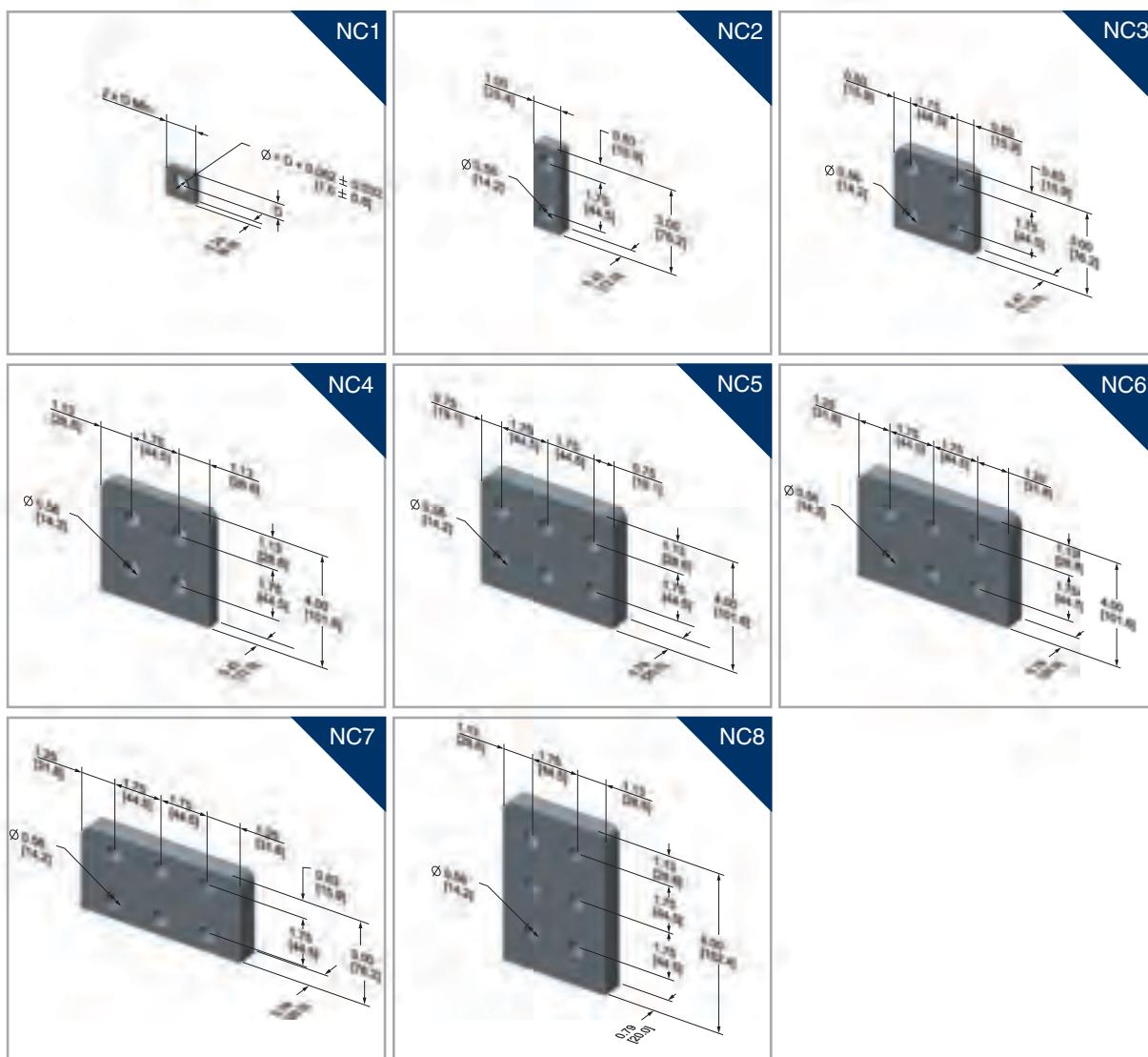
Dimensions and Types - Dimensions in Inches [Millimetres]





# NEMA CC1 Type D Standard Terminal Palms

Dimensions and Types - Dimensions in Millimetres



# Standard Primary Equipment Stud Sizes

## Dimensions, Types and Thread Details

### SUBLIGN and BUSLIGN™ IEC

Each BUSLIGN™ and SUBLIGN™ catalogue page within this catalogue that is relevant to primary equipment stud connections lists standard stud diameters in millimetres.

If the stud is threaded, details regarding the stud size (diameter and length), whether the thread is coarse or fine and the thread pitch will be required. Standard coarse and fine I.S.O metric threads are tabulated below. PLP will supply a special catalogue number and sales drawing to define the BUSLIGN™ and SUBLIGN™ product requirements.

I.S.O Metric Coarse Threads	
Stud Outside Diameter (mm)	Pitch (mm)
10.0	1.50
12.0	1.75
14.0	2.00
16.0	2.00
18.0	2.50
20.0	2.50
22.0	2.50
24.0	3.00
27.0	3.00
30.0	3.50
33.0	3.50
36.0	4.00
39.0	4.00
42.0	4.50
45.0	4.50
48.0	5.00
52.0	5.00
56.0	5.50
60.0	5.50
64.0	6.00
68.0	6.00

Standard I.S.O Metric Fine Threads	
Stud Outside Diameter (mm)	Pitch (mm)
12.0	1.25
16.0	1.50
20.0	1.50
24.0	2.00
30.0	2.00
36.0	3.00
42.0	3.00
48.0	3.00
56.0	4.00
64.0	4.00



# Nominal Dimensions and Weights

## Metric Aluminium Busbar Tubes

Outside Diameter	Wall Thickness	Cross Sectional Area	Weight
mm	mm	mm <sup>2</sup>	kg/m
50.0	4.0	578	1.57
50.0	6.0	829	2.24
63.0	4.0	741	2.01
63.0	6.0	1074	2.91
75.0	4.0	892	2.41
75.0	6.0	1301	3.52
80.0	4.0	955	2.58
80.0	6.0	1395	3.77
80.0	10.0	2199	5.94
100.0	4.0	1206	3.26
100.0	6.0	1772	4.79
100.0	8.0	2312	6.25
100.0	10.0	2827	7.64
120.0	4.0	1458	3.94
120.0	6.0	2149	5.81
120.0	8.0	2815	7.61
120.0	10.0	3456	9.34
125.0	6.0	2243	6.06
125.0	10.0	3613	9.76
140.0	6.0	2526	6.82
140.0	8.0	3318	8.96
140.0	10.0	4084	11.03
150.0	8.0	3569	9.64
150.0	10.0	4398	11.88
150.0	12.0	5202	14.05
160.0	6.0	2903	7.84
160.0	8.0	3820	10.32
160.0	10.0	4712	12.73
160.0	12.0	5579	15.07
200.0	6.0	3657	9.88
200.0	8.0	4825	13.03
200.0	10.0	5969	16.12
200.0	12.0	7087	19.14
250.0	6.0	4599	12.42
250.0	8.0	6082	16.43
250.0	10.0	7540	20.36
250.0	12.0	8972	24.23

# Current Ratings by Temperature

## Metric Aluminium Busbar Tubes

0-25°C Ambient, Operating Temperature 90°C maximum

Aluminium Tube			Current Rating					
Outside Diameter	Wall Thickness	Cross Sectional Area	0°C Ambient	5°C Ambient	10°C Ambient	15°C Ambient	20°C Ambient	25°C Ambient
mm	mm	mm <sup>2</sup>	Amps	Amps	Amps	Amps	Amps	Amps
50.0	4.0	578	1604	1548	1490	1431	1371	1309
50.0	6.0	829	1920	1852	1783	1713	1641	1566
63.0	4.0	741	1958	1889	1819	1747	1673	1598
63.0	6.0	1074	2355	2272	2188	2101	2012	1921
75.0	4.0	892	2275	2195	2113	2030	1944	1856
75.0	6.0	1301	2744	2647	2549	2448	2345	2239
80.0	4.0	955	2405	2320	2234	2146	2055	1962
80.0	6.0	1395	2903	2801	2697	2590	2481	2369
80.0	10.0	2199	3587	3461	3332	3200	3065	2927
100.0	4.0	1206	2913	2811	2706	2599	2490	2377
100.0	6.0	1772	3527	3403	3277	3147	3014	2878
100.0	8.0	2312	4013	3872	3728	3581	3430	3274
100.0	10.0	2827	4384	4230	4073	3912	3747	3577
120.0	4.0	1458	3408	3289	3167	3041	2913	2781
120.0	6.0	2149	4134	3989	3841	3689	3533	3373
120.0	8.0	2815	4713	4547	4378	4205	4028	3845
120.0	10.0	3456	5159	4978	4793	4603	4409	4209
125.0	6.0	2243	4284	4134	3980	3823	3661	3495
125.0	10.0	3613	5350	5162	4970	4774	4572	4365
140.0	6.0	2526	4729	4563	4393	4219	4041	3858
140.0	8.0	3318	5398	5208	5015	4816	4613	4404
140.0	10.0	4084	5917	5709	5497	5279	5057	4828
150.0	8.0	3569	5735	5534	5328	5118	4902	4680
150.0	10.0	4398	6290	6069	5844	5613	5376	5133
150.0	12.0	5202	6709	6474	6233	5986	5734	5474
160.0	6.0	2903	5313	5126	4936	4741	4541	4335
160.0	8.0	3820	6070	5857	5640	5417	5188	4953
160.0	10.0	4712	6661	6427	6188	5943	5693	5435
160.0	12.0	5579	7108	6858	6603	6342	6075	5800
200.0	6.0	3657	6457	6231	5999	5762	5519	5269
200.0	8.0	4825	7388	7129	6864	6592	6314	6028
200.0	10.0	5969	8118	7833	7542	7244	6938	6624
200.0	12.0	7087	8675	8370	8059	7741	7414	7078
250.0	6.0	4599	7854	7579	7297	7008	6713	6409
250.0	8.0	6082	8996	8680	8358	8027	7688	7340
250.0	10.0	7540	9895	9548	9193	8830	8457	8074
250.0	12.0	8972	10586	10214	9835	9446	9047	8638

### Basis of Ratings Calculations

Material	6101 T6 Aluminium Alloy
Resistivity (at 20°C)	0.030μΩm
Wind Velocity	0.6 m/s
Conductor Emissivity	0.5



# Current Ratings by Temperature

## Metric Aluminium Busbar Tubes

30-50°C Ambient, Operating Temperature 90°C maximum

Aluminium Tube			Current Rating				
Outside Diameter	Wall Thickness	Cross Sectional Area	30°C Ambient	35°C Ambient	40°C Ambient	45°C Ambient	50°C Ambient
mm	mm	mm <sup>2</sup>	Amps	Amps	Amps	Amps	Amps
50.0	4.0	578	1245	1179	1111	1040	966
50.0	6.0	829	1490	1411	1329	1245	1156
63.0	4.0	741	1520	1439	1356	1270	1179
63.0	6.0	1074	1828	1731	1631	1527	1418
75.0	4.0	892	1766	1672	1575	1475	1370
75.0	6.0	1301	2130	2017	1900	1779	1653
80.0	4.0	955	1866	1767	1665	1559	1448
80.0	6.0	1395	2253	2134	2011	1882	1749
80.0	10.0	2199	2784	2636	2484	2326	2161
100.0	4.0	1206	2261	2141	2018	1889	1755
100.0	6.0	1772	2737	2593	2443	2287	2125
100.0	8.0	2312	3115	2950	2779	2602	2417
100.0	10.0	2827	3403	3223	3036	2843	2641
120.0	4.0	1458	2645	2505	2361	2210	2053
120.0	6.0	2149	3209	3039	2863	2681	2490
120.0	8.0	2815	3658	3464	3264	3056	2839
120.0	10.0	3456	4004	3792	3573	3345	3108
125.0	6.0	2243	3325	3149	2967	2778	2581
125.0	10.0	3613	4152	3932	3705	3469	3223
140.0	6.0	2526	3670	3476	3275	3066	2849
140.0	8.0	3318	4189	3968	3738	3500	3252
140.0	10.0	4084	4592	4349	4098	3836	3564
150.0	8.0	3569	4451	4216	3972	3719	3455
150.0	10.0	4398	4882	4624	4356	4079	3789
150.0	12.0	5202	5207	4932	4646	4350	4041
160.0	6.0	2903	4124	3905	3679	3445	3200
160.0	8.0	3820	4712	4462	4204	3936	3657
160.0	10.0	4712	5170	4896	4613	4319	4012
160.0	12.0	5579	5517	5225	4922	4609	4282
200.0	6.0	3657	5012	4747	4472	4187	3890
200.0	8.0	4825	5734	5431	5117	4791	4451
200.0	10.0	5969	6301	5967	5622	5264	4890
200.0	12.0	7087	6733	6377	6008	5625	5226
250.0	6.0	4599	6096	5773	5440	5093	4731
250.0	8.0	6082	6982	6613	6230	5833	5419
250.0	10.0	7540	7680	7274	6853	6416	5961
250.0	12.0	8972	8216	7781	7331	6864	6377

### Basis of Ratings Calculations

Material	6101 T6 Aluminium Alloy
Resistivity (at 20°C)	0.030μΩm
Wind Velocity	0.6 m/s
Conductor Emissivity	0.5

# Short Circuit Ratings

## Metric Aluminium Busbar Tubes

Aluminium Tube			Current Rating	
Outside Diameter	Wall Thickness	Cross Sectional Area	3 Second Short Circuit Duration	1 Second Short Circuit Duration
mm	mm	mm <sup>2</sup>	kA	kA
50.0	4.0	578	31.7	54.9
50.0	6.0	829	45.5	78.8
63.0	4.0	741	40.7	70.4
63.0	6.0	1074	58.9	102.1
75.0	4.0	892	48.9	84.8
75.0	6.0	1301	71.3	123.6
80.0	4.0	955	52.4	90.7
80.0	6.0	1395	76.5	132.5
80.0	10.0	2199	120.6	208.9
100.0	4.0	1206	66.2	114.6
100.0	6.0	1772	97.2	168.3
100.0	8.0	2312	126.8	219.7
100.0	10.0	2827	155.1	268.6
120.0	4.0	1458	80.0	138.5
120.0	6.0	2149	117.9	204.1
120.0	8.0	2815	154.4	267.4
120.0	10.0	3456	189.5	328.3
125.0	6.0	2243	123.0	213.1
125.0	10.0	3613	198.2	343.2
140.0	6.0	2526	138.5	240.0
140.0	8.0	3318	182.0	315.2
140.0	10.0	4084	224.0	388.0
150.0	8.0	3569	195.7	339.0
150.0	10.0	4398	241.2	417.8
150.0	12.0	5202	285.3	494.2
160.0	6.0	2903	159.2	275.8
160.0	8.0	3820	209.5	362.9
160.0	10.0	4712	258.5	447.7
160.0	12.0	5579	306.0	530.0
200.0	6.0	3657	200.6	347.4
200.0	8.0	4825	264.7	458.4
200.0	10.0	5969	327.4	567.1
200.0	12.0	7087	388.7	673.3
250.0	6.0	4599	252.3	436.9
250.0	8.0	6082	333.6	577.8
250.0	10.0	7540	413.5	716.3
250.0	12.0	8972	492.1	852.4

### Basis of Ratings Calculations

Ambient Temperature	20°C
Conductor Temperature - Continuous	70°C
Conductor Temperature - Short Time	250°C

# Thermal Expansion

## Metric Aluminium Busbar Tubes

### 10-50°C Temperature Change

Length m	Change in Length				
	10°C temperature change mm	20°C temperature change mm	30°C temperature change mm	40°C temperature change mm	50°C temperature change mm
3.05	0.7	1.4	2.1	2.8	3.5
6.1	1.4	2.8	4.2	5.6	7.0
9.14	2.1	4.2	6.3	8.4	10.5
12.19	2.8	5.6	8.4	11.2	14.0
15.24	3.5	7.0	10.5	14.0	17.5
18.29	4.2	8.4	12.6	16.8	21.0
21.34	4.9	9.8	14.7	19.6	24.5
24.38	5.6	11.2	16.8	22.4	28.0
27.43	6.3	12.6	18.9	25.2	31.5
30.48	7.0	14.0	21.0	28.0	35.0

### 60-100°C Temperature Change

Length m	Change in Length				
	60°C temperature change mm	70°C temperature change mm	80°C temperature change mm	90°C temperature change mm	100°C temperature change mm
3.05	4.2	4.9	5.6	6.3	7.0
6.10	8.4	9.8	11.2	12.6	14.0
9.14	12.6	14.7	16.8	18.9	21.0
12.19	16.8	19.6	22.4	25.2	28.0
15.24	21.0	24.5	28.0	31.5	35.1
18.29	25.2	29.4	33.7	37.8	42.1
21.34	29.4	34.3	39.3	44.2	49.1
24.38	33.7	39.3	44.9	50.5	56.1
27.43	37.8	44.2	50.5	56.8	63.1
30.48	42.1	49.1	56.1	63.1	70.1

### Basis of Calculations

Coefficient of Thermal Expansion	0.000023 in/in.°C
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# Deflection Values

## Metric Aluminium Busbar Tubes

### 5.0-13.0m Spans

Tube Size		Span Length (m)									
OD (mm)	WT (mm)	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	
50.0	4.0	11.6	24.1	44.6							
50.0	6.0	12.6	26.0	48.2							
63.0	4.0	7.1	14.7	27.2	46.4						
63.0	6.0	7.5	15.6	29.0	49.4						
75.0	4.0	4.9	10.2	18.8	32.1	51.4					
75.0	6.0	5.2	10.7	19.8	33.8	54.2					
80.0	4.0	4.3	8.9	16.4	28.0	44.9					
80.0	6.0	4.5	9.3	17.3	29.4	47.2					
80.0	10.0	5.0	10.3	19.0	32.5	52.0					
100.0	4.0	2.7	5.6	10.3	17.6	28.2	42.9	62.8			
100.0	6.0	2.8	5.8	10.7	18.3	29.3	44.7	65.4			
100.0	8.0	2.9	6.0	11.2	19.0	30.5	46.5	68.0			
100.0	10.0	3.0	6.3	11.6	19.8	31.7	48.3	70.7			
120.0	4.0	1.8	3.8	7.1	12.0	19.3	29.4	43.1	61.0		
120.0	6.0	1.9	3.9	7.3	12.5	19.9	30.4	44.5	63.0		
120.0	8.0	2.0	4.1	7.5	12.9	20.6	31.4	46.0	65.2		
120.0	10.0	2.0	4.2	7.8	13.3	21.3	32.5	47.5	67.3		
125.0	6.0	1.7	3.6	6.7	11.4	18.3	27.9	40.9	57.9		
125.0	10.0	1.9	3.9	7.1	12.2	19.5	29.7	43.5	61.7		
140.0	6.0	1.4	2.9	5.3	9.0	14.4	22.0	32.2	45.7	62.9	
140.0	8.0	1.4	2.9	5.4	9.3	14.9	22.7	33.2	47.0	64.7	
140.0	10.0	1.5	3.0	5.6	9.5	15.3	23.3	34.1	48.3	66.6	
150.0	8.0	1.2	2.5	4.7	8.0	12.9	19.6	28.7	40.6	55.9	
150.0	10.0	1.3	2.6	4.8	8.2	13.2	20.1	29.4	41.7	57.4	
150.0	12.0	1.3	2.7	5.0	8.5	13.5	20.6	30.2	42.8	59.0	
160.0	6.0	1.0	2.2	4.0	6.8	10.9	16.7	24.4	34.6	47.6	
160.0	8.0	1.1	2.2	4.1	7.0	11.2	17.1	25.0	35.5	48.8	
160.0	10.0	1.1	2.3	4.2	7.2	11.5	17.5	25.7	36.4	50.1	
160.0	12.0	1.1	2.3	4.3	7.4	11.8	18.0	26.3	37.3	51.3	
200.0	6.0	0.7	1.4	2.5	4.3	6.9	10.5	15.4	21.8	30.0	
200.0	8.0	0.7	1.4	2.6	4.4	7.0	10.7	15.7	22.2	30.6	
200.0	10.0	0.7	1.4	2.6	4.5	7.2	10.9	16.0	22.7	31.3	
200.0	12.0	0.7	1.4	2.7	4.6	7.3	11.2	16.3	23.2	31.9	
250.0	6.0	0.4	0.9	1.6	2.7	4.4	6.7	9.7	13.8	19.0	
250.0	8.0	0.4	0.9	1.6	2.8	4.4	6.8	9.9	14.0	19.3	
250.0	10.0	0.4	0.9	1.6	2.8	4.5	6.9	10.1	14.2	19.6	
250.0	12.0	0.4	0.9	1.7	2.9	4.6	7.0	10.2	14.5	19.9	

(Continued)

# Deflection Values

## Metric Aluminium Busbar Tubes

14.0-21.0m Spans

Tube Size		Span Length (m)							
OD (mm)	WT (mm)	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0
140.0	6.0	84.6							
140.0	8.0	87.0							
140.0	10.0	89.5							
150.0	8.0	75.2							
150.0	10.0	77.3							
150.0	12.0	79.3							
160.0	6.0	64.1	84.4						
160.0	8.0	65.7	86.6						
160.0	10.0	67.3	88.8						
160.0	12.0	69.0	91.0						
200.0	6.0	40.4	53.2	68.9	87.8	110.4			
200.0	8.0	41.2	54.3	70.3	89.6	112.6			
200.0	10.0	42.0	55.4	71.7	91.4	114.9			
200.0	12.0	42.9	56.5	73.2	93.2	117.2			
250.0	6.0	25.6	33.7	43.6	55.5	69.8	86.7	106.4	129.3
250.0	8.0	26.0	34.2	44.3	56.4	70.9	88.1	108.1	131.4
250.0	10.0	26.4	34.8	45.0	57.4	72.1	89.5	109.9	133.5
250.0	12.0	26.8	35.3	45.7	58.3	73.2	90.9	111.6	135.7

### Basis of Calculations

Maximum deflections shown here are calculated assuming a simply supported beam

Maximum deflections of beams fixed at both ends is approximately 1/5 of the values shown here

See Deflection and Stress Formulae page for equations

# Standards

## Busbar Tube and Flexible Conductor Fittings, Design, Testing and Manufacture

The following standards are used by Electropar PLP for the design and supply of POWERFORMED® Products and Systems.

Design Standards		
AS 62271.301	High voltage switchgear 301: Dimensional standardization of terminals	2005
BS 159	Specification for high voltage busbars and busbar connections	1992
NEMA CC 1	Electrical Power Connections for Substations	2009
AS1154.1	Insulator and Conductor fittings for overhead power lines. Performance, material, general requirements and dimensions	2009
AS1154.3	Insulator and Conductor fittings for overhead power lines. Performance and General requirements for helical fittings	2009
IEC 60865	Short circuit currents - Calculation of effects Part 1 Definitions and calculation methods	2011
IEEE 605	IEEE Guide for bus design in air insulated substations	2008
Testing Standards		
IEC 61238-1 2nd Edition	Compression and mechanical connectors for power cables with copper or aluminium conductors - Part 1: Test methods and requirements	2nd Edition (2003)
IEC 61284	Overhead lines - Requirements and tests for fittings	1997
ANSI C119.4	Connectors for use between aluminium to aluminium and aluminium to cooper conductors designed for normal operation at or below 93 degree C and copper to copper conductors designed for normal operation at or below 100 degree C	2011
Material Standards		
AS/NZS 1531	Conductors - Bare overhead - Aluminium and Aluminium Alloy	1991
BS 2898	Specification for wrought aluminium and aluminium alloys for electrical purposes - bars, extruded round tubes and sections	1970
AS 1866	Aluminium and Aluminium alloys - Extruded rod, bar, solid and hollow shapes	1997
AS 2848.1	Aluminium and Aluminium alloys - Compositions and designations - Wrought products	1998
AS 3607	Conductors - Bare overhead, aluminium and aluminium alloy - Steel reinforced	1989
BS EN 755-2	Aluminium and aluminium alloys - extruded rod/bar, tube and profiles. Mechanical properties	2008
BS EN 1706	Aluminium and aluminium alloys - Castings. Chemical composition and mechanical properties	2010
ADC Handbook	Australian Aluminium Council Specifications	1994
Manufacturing Standards		
AS 1665	Welding of Aluminium structures	2004
Miscellaneous Standards		
AS/NZS 4680	Hot dip galvanized (zinc) coatings on fabricated ferrous articles	2006
IEC 17025	General requirements for the competence of testing and calibration laboratories	2005



# Busbar Tube Aluminium Alloys

## Mechanical and Electrical Properties

### Bus Alloys: Comparison Of Properties

Alloy and Temper	Thermal Conductivity At 25°C (W/m.k)	Electrical Conductivity At 20°C % IACS Equal Volume	Electrical Resistivity at 20°C (μΩ.m)	Average Coefficient of Thermal Expansion Per °C	Melting Range Approx (°C)	Ultimate Tensile Strength (MPa) Min	Yield Tensile Strength (MPa) Min
6060 T5	209	55	0.031	23.4	615-650	150	110
6060 T6	201	54	0.032	23.4	615-650	205	170
6061 T6	167	43	0.040	23.4	580-650	260	240
6063 T5	209	55	0.031	23.4	615-650	120	110
6063 T6	201	53	0.033	23.4	615-650	205	170
6101 T5	218	57	0.030	23.4	615-650	150	110
6101 T6	218	57	0.030	23.4	615-650	205	170

### Alloys For Compression Fitting Barrels: Comparison Of Properties

Alloy and Temper	Thermal Conductivity At 25°C (W/m.k)	Electrical Conductivity At 20°C % IACS Equal Volume	Electrical Resistivity at 20°C (μΩ.m)	Average Coefficient of Thermal Expansion Per °C	Melting Range Approx (°C)	Ultimate Tensile Strength (MPa) Min	Yield Tensile Strength (MPa) Min
1350 - F	234	61	0.028	23.8	645-655	60	30
1200 - F	222	60	0.029	24.0	645-655	90	35

Temper Designation Table

U.K/EN	U.S.A. or CANADA	ISO Temper	Description of Designation
O	O	O	Annealed
F	F	F	As fabricated, as manufactured or as cast
T3	T3	TD	Solution heat treated, cold worked and naturally aged
T4	T4	TB	Solution heat treated, naturally aged and amenable to artificial ageing
T5	T5	TE	Artificially aged or precipitation heat treated
T6	T6	TF	Solution heat treated and precipitation heat treated

#### Sources:

Aluminium Development Council of Australia handbook

BSEN 755-2 : 1997 Aluminium and aluminium alloys – Extruded rod/bar, tube and profiles.

# Busbar Tube Aluminium Alloys

## Mechanical and Electrical Properties

### Actual Temper Designations

Temper designations occur as a suffix at the end of the alloy's numeric designation, an example would be 6061-T6, the "T6" is the temper designation.

- F means the alloy is "as fabricated" no special control over strain hardening is noted
- O means that it has been annealed only, the alloy has been recrystallized, this is the softest temper
- H1 means that it has strain hardened only
- H2 means that it has been strain hardened and partially annealed
- H3 means that it has been strain hardened and thermally stabilized
- W means that it has been solution heat treated
- T1 means that it has been partially solution heat treated (cooled from an elevated-temperature shaping process such as extrusion), and naturally aged
- T2 means that it has been cooled from an elevated-temperature shaping process, (casting), cold worked, and naturally aged
- T3 means that it has been solution heat treated, then cold worked and naturally aged
- T4 means that it has been solution heat treated, and naturally aged, it applies to alloys not cold worked after solution treatment, or where the effect of cold working may not be recognized in applicable specifications
- T5 means that it has been partially solution heat treated and artificially aged, the temper is produced after an elevated temperature, rapid cool fabrication process, (like extrusion)
- T6 means that it has been solution heat treated and then artificially aged, without cold working
- T7 means that it has been solution heat treated and stabilized to control characteristics such as grain growth, distortion, or residual stresses
- T8 means that it has been solution heat treated, then cold worked, and artificially aged
- T9 means that it has been solution heat treated, artificially aged, and then cold worked
- T10 means that it has been partially solution treated (cooled from an elevated shaping process, such as extrusion), cold worked, then artificially aged



# Deflection and Stress Formulae

For Standard Pipe Size (SPS) and Metric Aluminium Busbar Tubes

			Continuous Beam	
	Simply Supported Beam	Beam Fixed At Both Ends	2 Spans	More Than 2 Spans
Maximum Deflection	$D = \frac{5wL^4}{384EI}$	$D = \frac{wL^4}{384EI}$	$D = \frac{5wL^4}{185EI}$	(1)
Maximum Moment	$M = \frac{wL^2}{8}$ (2)	$M = \frac{wL}{12}$ (3)	$M = \frac{wL^2}{8}$ (4)	$M = 0.107wL^2$ (4)
Fiber Stress	$f^1 = \frac{wL^2}{8S}$ (2)	$f^1 = \frac{wL^2}{12S}$ (3)	$f^1 = \frac{wL^2}{8S}$ (4)	$f^1 = \frac{0.107wL^2}{S}$ (4)
Maximum Load	$W = \frac{8fS}{l}$	$W = \frac{12fS}{L}$	$W = \frac{8fS}{L}$	$W = \frac{fS}{0.1071}$
Maximum Span	$L = \sqrt{\frac{8fS}{w}}$	$L = \sqrt{\frac{12fS}{w}}$	$L = \sqrt{\frac{8fS}{w}}$	$L = \sqrt{\frac{fS}{0.107w}}$

Symbols:	Units:
$D$ = deflection	in
$w$ = load	lb/in
$W$ = total uniform load	lb
$L$ = span	in
$E$ = modulus of elasticity	lb/in <sup>2</sup>
$I$ = second moment of area (4)	in
$M$ = bending moment	lb.in
$S$ = section modulus (2)	in
$f^1$ = fiber stress	lb/in <sup>2</sup>
$f$ = maximum allowable fiber stress	lb/in <sup>2</sup>

#### Notes:

- (1) Maximum deflection occurs in the end spans and is only slightly more than that for a continuous beam of 2 spans.
- (2) Maximum moment and fiber stress for simple beams occur at the center of the span.
- (3) Maximum moment and fiber stress for beams fixed at both ends occur at the points of support.
- (4) Maximum moment and fiber stress for continuous beams occur at the second support from each end.

# Aluminium Casting Alloys

## Specification, Designations, Compositions and Properties

### Specification Designations

Aluminium Association (AA)	Aluminium Development Council of Australia (ADC)	British Standard (BS)	France NF A57-702 NF A57-703	Germany DIN 1725	Italy U.N.I.
A413	CC401	LM6	A-S13	G-AISI12	4514
A356	CC601	LM25	AS7G	-	3599

Aluminium Association (AA)	Japan JIS	Spain UNE	Sweden SIS	ISO
A413	AC3A	L-2520	144261	Al-Si 12
A356	AC4C	L-2651	144244	Al-Si7Mg

### Chemical Composition Of Aluminium Castings (BS1490:1988)

Alloy	Silicon (Si)	Iron (Fe)	Copper (Cu)	Manganese (Mn)	Magnesium (Mg)	Nickel (Ni)
LM6	10.0 - 13.0	0.6*	0.1*	0.5*	0.1*	0.1*
LM25	6.5 - 7.5	0.5*	0.2*	0.3*	0.2 - 0.6	0.1*

Alloy	Zinc (Zn)	Tin (Sn)	Lead (Pb)	Titanium (Ti)	Other Elements	Aluminium (Al)
LM6	0.1*	0.05*	0.1*	0.2*	0.2*	Remainder
LM25	0.1*	0.05*	0.1*	0.2*	0.2*	Remainder

\*Maximum Value

### Typical Properties Of Aluminium Castings

Alloy and Temper	Casting Method	Thermal Conductivity At 25°C (W/m.K)	Electrical Conductivity At 20°C (%IACS Equal Volume)	Density (kg/m³)
CC401 F1	Sand	142	37	2650
	Permanent Mould	142	37	2650
CC601 T5	Sand	151	39	2680
	Permanent Mould	151	40	2680

# Damping Conductors

## Application in All Busbar Tubes

When the calculated resonant frequency of a length of busbar tube is less than 2.75 Hz in accordance with IEC 60865-1, damping is normally required to minimise aeolian vibration.

Electropar PLP recommend damping a busbar tube by installing a flexible conductor (AAC, ACSR or AAAC) inside the busbar tube fixed to the tube at one end. Damping conductors can be fixed into the tube by spot welding or by using a damping conductor type flat end cap or corona end cap.

Normally the flexible conductor mass per unit length should be between 10% and 15% of the mass per unit length of the busbar. In addition, the flexible conductor should be no less than two thirds the length of the busbar.

### Examples (Metric Aluminium Tubes)

Tube Outside Diameter (OD)	Tube Wall Thickness (WT)	Tube Mass / Unit Length kg/m	Damping Conductor Type	Damping Conductor Mass / Unit Length kg/m	Mass Per Unit Length Ratio
200.0 mm	6.0 mm	9.88	Cicada	1.73	17.5%
160.0 mm	10.0 mm	12.73	Venus	1.86	14.6%
120.0 mm	8.0 mm	7.61	Centipede	1.15	15.0%

# Expansion Supports and Connectors

## All Busbar Tubes

Within substations, thermal expansion and contraction of busbar tubes occurs as a result of variations in busbar temperature. Busbar temperatures increase when there is a higher electrical load or if, given a constant load, the ambient temperature increases (summer). This will cause the busbar to expand. Busbar temperatures decrease when there is a lighter electrical load or if, given a constant load, the ambient temperature decreases (winter). This will cause the busbar to contract.

Elsewhere in the General Information section of this catalogue, Electropar PLP lists values for the thermal expansion Metric aluminium busbar tubes. The thermal expansion tables list the change in length of Metric aluminium busbar tubes based on changes in temperature over given busbar tube lengths.

The values for expansion and contraction of busbar tubes are not dependent on the busbar tube outside diameter or wall thickness i.e. for the same span length, every size of busbar tube will expand and contract the same amount in the axial direction based on identical temperature changes.

BUSLIGN™ expansion fittings for busbar tubes are applied when busbars are being connected to primary equipment (e.g. an HV disconnector) or located on top of post insulators. The expansion supports eliminate the possibility of the busbar tube applying a mechanical load to the substation primary equipment or post insulators. Mechanical load applied to substation primary equipment can potentially damage the equipment or pre-load the equipment connections so that in the event of a short circuit the mechanical forces applied to the equipment are intensified.

POWERFORMED® expansion type BUSLIGN™ fittings are designed, when installed correctly, to account for a busbar tube operational temperature range of -20°C to 90°C continuous. For example, if a BUSLIGN™ expansion type primary equipment connector is installed on the end of a 15.3 metre busbar which is at 20°C (equal to ambient), the assembly can account for at least 24.5mm of expansion which will occur when the busbar reaches an operating temperature of 90°C. It can also account for a contraction of at least 14.0mm which will occur when the busbar reaches an operating temperature of -20°C.



Busbar temperature = -20°C



Busbar temperature = 20°C  
(As Installed)



Busbar temperature = 90°C

# Principles of Electrical Jointing

## For Aluminium and Copper Conductors

### CORROSION OF CONNECTORS

Two factors are associated with corrosion:

1. Atmospheric action
2. Galvanic action

For atmospheric action to result in corrosion, there must be moisture and oxygen. Galvanic action results in corrosion when two dissimilar metals in the electrolytic series, for example, aluminium and copper, are in physical contact. In this case, moisture acts as an electrolyte. In such an instance, the copper becomes a cathode and receives a positive charge; the aluminium becomes the anode and receives a negative charge.

The resultant current flow attacks the aluminium leaving the copper unharmed. Both factors described above are influenced by environmental conditions -the chemical attack of airborne pollutants. This occurs in rural areas to a lesser extent than in urban centres and more so in heavy industry locations such as steelworks, chemical plants, refineries, etc.

The problem of the mechanical jointing of two dissimilar metals in physical contact with each other, such as aluminium and copper, stems from their difference in electrical potential.

The column of metals listed here shows their relative positions in the Electrolytic Series, with the more anodic metals in the higher positions and the more cathodic in the lower.

The extent, or severity, of the corrosive action is proportional to the distance of separation of the metals in the list. i.e. the magnitude of the difference in electrolytic potential of the two metals, aluminium and copper, is quite considerable.

### Aluminium to Aluminium Connections

No problem exists in the jointing of these conductors as electrolytic action is nonexistent. Nevertheless, care must be taken to prevent crevice corrosion and to select an aluminium alloy connector body not liable to stress corrosion cracking.

### Aluminium to Copper Connections

The best choice is an aluminium bodied connector since it is not subject to the galvanic attack of the more vulnerable element - the aluminium conductor. It is essential to use a jointing compound on the aluminium connector body and brushed into the strands of the aluminium conductor. Wherever possible, install the aluminium conductor above the copper to prevent pitting from the galvanic action of copper salts washing over the aluminium connector and conductor when in a lower position.

### Copper to Copper Connections

No problem exists in the jointing of these conductors as electrolytic action is non-existent.

### THE ELECTROLYTIC SERIES

#### ANODIC (Corroded End)

- Magnesium
- Aluminium
- Duralumin
- Zinc
- Cadmium
- Iron
- Chromium Iron (active)
- Chromium-Nickel-Iron (active)
- Soft solder
- Tin
- Lead
- Nickel
- Brasses
- Bronze
- Monel
- Copper
- Chromium Iron (passive)
- Chromium-Nickel-Iron (passive)
- Silver solder
- Silver
- Gold
- Platinum

#### CATHODIC (Protected End)

# Jointing Compounds

Various jointing compound formulations have been developed to provide improved electrical and mechanical performance as well as environmental protection of the contact area. The use of jointing compound is recommended for aluminium to aluminium or aluminium to copper connections. Jointing compound are also recommended for copper to copper joints especially when they are subject to severe corrosive environments. Non-gritted sealants (EP Joint Seal and EP Uniseal) are recommended for flat connections and as a groove sealant in bolted connectors. EP Unigrip C is primarily used in compression connectors. The sharp metallic grit particles provide multi-contact current carrying bridges through remaining oxide films to ensure superior electrical conductivity.



## For Aluminium and Copper Jointing

Electropar's jointing compounds are formulated to improve jointing conductivity and inhibit oxidation and corrosion between jointing contact areas. Jointing compound should always be applied to the contact surface of all aluminium to aluminium, aluminium to copper and copper to copper connections prior to compression or bolting.

### EP Uniseal (Grey, 350gm tube)

EP Uniseal consists of a lithium based 180° C stable grease and zinc particles. The base grease prevents water and contaminants interfering with the connection and prevents the formation of surface oxides. The zinc particles work to break down existing oxide on the conducting surfaces when those surfaces are brought together under pressure. EP Uniseal is ideal for aluminium to aluminium and aluminium to copper compression or bolted joints.

### EP Joint Seal (White, 300gm tube)

EP Joint seal is made up of lithium based 180° C stable grease and titanium oxide. Joint seal is recommended for copper conductors in aluminium fittings and copper to copper connections. EP Joint seal assists the breakdown of contact resistance, fills and voids left after compression and prevents water or contaminants from entering the joint.

### EP Unigrip C (Brown, Black, 350gm tube)

EP Unigrip C has a noticeably gritty texture being made up of lithium based 180° C stable grease and aluminium oxide particles. The compound serves as a "locking" device for aluminium conductor being jointed or terminated by compression in full tension situations. The aluminium oxide breaks down surface oxidation, while the base grease prevents water or contaminants from entering the joint.

## QUICK REFERENCE CHART

APPLICATION	COMPOUND
For all BOLTED joints	EP Joint Seal EP Uniseal
For COPPER conductors at ALUMINIUM fittings	EP Joint Seal
For all NON TENSION ALUMINIUM conductors	EP Uniseal
For all FULL TENSION ALUMINIUM conductors	EP Unigrip C
For all NON TENSION COPPER conductors	EP Joint Seal

# Metric Fastenings

## Torque Settings

**Recommended Tightening Torque For Galvanised Steel Bolts With Lubricant Coating**

Bolt Diameter	Torque	
	ft lbs	Nm
M12	33	45
M16	66	90

**Recommended Tightening Torque For Galvanised Steel High Tensile Bolts With Lubricant Coating**

Bolt Diameter	Torque	
	ft lbs	Nm
M12	33	45
M16	66	90

**Recommended Tightening Torque For Aluminium Bolts With Lubricant Coating**

Bolt Diameter	Torque	
	ft lbs	Nm
M12	25	34
M16	40	54

**Recommended Tightening Torque For Stainless Steel**

Bolt Diameter	Torque	
	ft lbs	Nm
M12	33	45
M16	66	90

# Bolted Aluminium Joints

## Installation Instructions

### FASTENER SET ARRANGEMENTS

- i. Typical fastener set arrangements are shown in Figures A, B, C and D below.
- ii. Tools needed for installation (Fig 1) – Flat file, torque wrench, socket, spanner, stainless steel wire brush, Emery paper, Uni-Seal jointing compound.



FIG 1

### CONSTRUCTING THE JOINT

1. Remove the protective covering from the bolted joint palms. Inspect the contact surfaces and use a flat file to remove any raised imperfections (Fig 2).
2. Using a stainless steel wire brush, scouring pad or Emery paper, clean the contact surfaces of the palms (Fig 3). Apply Uni-Seal jointing compound to both contact surfaces immediately (Fig 4).



FIG 2

**DO NOT USE THE SAME ABRASIVE TOOLS FOR COPPER AND ALUMINIUM AS THIS MAY CAUSE GALVANIC CORROSION.**

3. Join the contact surfaces together and apply fasteners according to the correct arrangement illustrated in Figures A, B, C or D. Ensure the threads of the bolts are lubricated using a non-gritted compound or Uni-Seal jointing compound. Using a torque wrench, tighten the nut to the specified torque according to the bolt size (Fig 5).



FIG 3

For double nut arrangements (Fig B), apply the second nut and tighten against the first nut to the specified torque.

4. Wipe away any excess Uni-Seal jointing compound from the completed bolted aluminium electrical joint.



FIG 4

Fig A S/S OR HDG BOLTS AND NUTS WITH LARGE SERIES LOAD SPREADING WASHERS AND SPRING WASHERS



Fig B S/S OR HDG BOLTS AND NUTS WITH LARGE SERIES LOAD SPREADING WASHERS AND DOUBLE NUTS



Fig C S/S OR HDG BOLTS AND NUTS WITH STANDARD SERIES WASHERS AND DOUBLE NUTS



Fig D S/S BOLTS AND NUTS WITH LARGE SERIES WASHERS AND LOCKING PLATES



# Non Tension Compression Fittings

## Installation Instructions

### I. Preparation

Make sure the conductor is in good condition along the full length of the joint. Cut away damaged or corroded sections before constructing the joint and ensure conductor ends are cut square and not deformed. To prevent interlayer slippage and birdcaging, the conductor should be secured at all times using a combination of electrical tape and hose clamps or twisted aluminium wire.

- i. Determine the preparation method along the compression length (Fig i):
  - a. For new, bright finish, fully greased conductors no unwinding of conductor layers is required. Cleaning and oxide removal is required on the outermost surface of the conductor only.
  - b. For partially greased / ungreased conductors, all ungreased layers must be unwound and filled with POWERFORMED® Uni-Seal jointing compound. Cleaning and oxide removal is required down to the layer in contact with the steel core or a maximum of two layers, whichever is less.
  - c. For aged or dirty conductors – Ensure that all aluminium and steel strands are not corroded, and prepare as per Case (b) above.
- ii. Tools needed for installation (Fig ii) – Hacksaw, conductor trimming tool, tape measure, marker pen, zip ties, insulation tape, utility knife, stainless steel wire brush, Emery paper, Uni-Seal jointing compound, compression dies, compression tool, vernier callipers, file.

### II. Constructing the Joint

1. Ensure that the work area is clean, dry and protected from dust and water. Mark the conductor end at a distance to the knurl mark of the Joint (Fig 1). Straighten the conductor end to a distance of 2.5 times the marked length. Secure firmly at this point before preparing the conductor end (refer to Part I-i). For Case (a) proceed to Step 2, for Case (b) or (c) proceed to Step 3.
2. Clean the outermost layer of the conductor end using a stainless steel wire brush, scouring pad or Emery paper, and apply POWERFORMED® Uni-Seal jointing compound immediately (Fig 2). Proceed to Step 4.
3. Secure the conductor end firmly at a distance 2.5 times the compression length. Unwind each layer in small groups, following the natural lay of the conductor, and allowing for access along the entire compression length (Fig 3a).

Ensure that the strands are not deformed during this process. Starting at the innermost exposed layer, clean strands using a stainless steel wire brush, scouring pad or Emery paper, and apply POWERFORMED® Uni-Seal jointing compound immediately. Wind the layers back (Fig 3b).



FIG. i



FIG. ii



FIG. 1



FIG. 2



FIG. 3a



FIG. 3b

# Non Tension Compression Fittings

## Installation Instructions

4. Fully insert the conductor end into the compression barrel up to the mark. Using the correct aluminium die, compress the joint on to the conductor, starting at the knurl line and working out towards the conductor (Fig 4a). The die bites should be overlapped by a minimum of a half inch. Keep the joint as level as possible and rotate the fitting or die by one flat with each compression to avoid 'banana-ing' (Fig 4b).
5. Remove any die flash or sharp edges with a file or Emery paper. Wipe away any excess jointing compound.
6. Measure the AF (across flat) dimensions across all faces of the joint in several locations to ensure that the correct compression has been achieved.



FIG. 4a



FIG. 4b

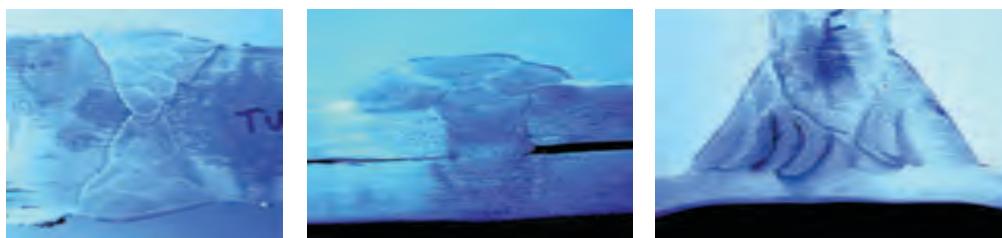
# Welding

## SUBLIGN™ and BUSLIGN™ Aluminium Fittings

Welding of high current aluminium substation busbar tubes, BUSLIGN™ busbar tube fittings and SUBLIGN™ flexible conductor fittings must be completed in accordance with a welding specification and welding procedure and must only be completed by properly trained and qualified personnel.

Welding Equipment	Both Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) welding are acceptable. The shielding gas must be pure argon or a helium argon mix and the filler wire must be type 4043.
Welding Environment	Welding must be carried out in a still, clean and dry environment. Welding POWERFORMED® fittings, aluminium busbars or flexible conductors on a substation site will normally require an enclosure or tent to be erected around the welding area and the welder.
Welding Test Piece	Before site welding of POWERFORMED® fittings, aluminium busbars or conductors, PLP recommends that a welding test piece is completed to demonstrate compliance with welding specifications and procedures. Contact PLP for welding test piece details.
Welding Procedure	The weld procedure must include (but not be limited to) specific instructions and details around weld preparation (chamfering), degreasing, tack welding, use of a stainless steel wire brush for cleaning, preheating, post weld cooling, location of the root run and the maximum temperature of the work for subsequent passes. Post weld processing and surface finish criteria should also be addressed.
Welding Destructive Testing	Macro examinations and fillet break-over tests are acceptable testing techniques for prequalifying weld test pieces.
Welding Non Destructive Testing	Both X-Ray and Ultrasound are acceptable non-destructive testing techniques for prequalifying weld test pieces and in-process testing of aluminium welds. Typical industrial x-rays images or busbar tube welds below.
Welding Acceptance Criteria	Loss of cross section of the weldment as a result of internal porosity shall not exceed 5% of the total cross sectional area of the weld. Good quality welding should not require grinding of the cap weld.

Typical X-Ray Non Destructive Weld Quality Analysis Images:



# Glossary

## POWERFORMED™ Substation Catalogue

Glossary	
CSA	Cross Sectional Area
ANSI	American National Standards Institute
Dim	Dimension
EHV	Extra High Voltage (245 to 500kV)
EWP	Elevated Work Platform
HV	High Voltage (up to 230kV)
ID	Inside Diameter
IEC	International Electrotechnical Commission
in	inches
MIG	Metal Inert Gas
mm	millimetres
NEMA	National Electrical Manufacturers Association
OD	Outside Diameter
PCD	Pitch Circle Diameter
RIV	Radio Interference Voltage
Run	Main Conductor
SPS	Standard Pipe Size
Tap	Secondary Conductor
TIG	Tungsten Inert Gas
WT	Wall Thickness



# AAC & ACSR Conductors - New Zealand

## Standard Types and Specifications

### Type AAC 1350 – All Aluminium Conductor

Catalogue Number	Conductor Code	Stranding and Wire Diameter (No/mm)	Nominal Overall Diameter (mm)	Cross Sectional Area (mm²)	Approx. Mass (kg/km)	Breaking Load (kN)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (x10-6/oC)	DC Resistance (Ω/km)
AAC/1350-Namu	Namu	7/2.11	6.33	24	67	4.2	59	23	1.1700
AAC/1350-Poko	Poko	7/2.36	7.08	31	84	5.1	59	23	0.9321
AAC/1350-Ladybird	Ladybird	7/2.79	8.37	43	117	6.9	59	23	0.6700
AAC/1350-Kutu	Kutu	7/3.00	9.00	49	135	7.9	59	23	0.5784
AAC/1350-Fly	Fly	7/3.40	10.20	64	174	10.0	59	23	0.4510
AAC/1350-Honi	Honi	19/2.11	10.50	66	182	11.4	59	23	0.4335
AAC/1350-Rango	Rango	7/3.66	10.98	74	201	11.1	59	23	0.3884
AAC/1350-Grasshopper	Grasshopper	7/3.91	11.70	84	230	12.8	59	23	0.3420
AAC/1350-Wasp	Wasp	7/4.39	13.18	106	290	16.0	59	23	0.2710
AAC/1350-Beetle	Beetle	19/2.67	13.40	106	292	17.2	56	23	0.2710
AAC/1350-Weke	Weke	7/4.72	14.16	122	335	18.5	59	23	0.2328
AAC/1350-Bee	Bee	7/4.90	14.71	132	361	20.1	59	23	0.2170
AAC/1350-Cricket	Cricket	7/5.36	16.08	158	432	23.9	59	23	0.1810
AAC/1350-Weta	Weta	19/3.35	16.75	167	461	26.2	56	23	0.1711
AAC/1350-Huhu	Huhu	37/2.52	17.60	185	507	28.9	56	23	0.1636
AAC/1350-Mata	Mata	19/3.86	19.30	222	611	33.8	56	23	0.1291
AAC/1350-Cockroach	Cockroach	19/4.22	21.10	266	731	40.4	56	23	0.1083
AAC/1350-Butterfly	Butterfly	19/4.65	23.25	323	888	48.8	56	23	0.0892
AAC/1350-Centipede	Centipede	37/3.78	26.46	415	1145	63.1	56	23	0.0694
AAC/1350-Cicada	Cicada	37/4.65	32.54	628	1730	95.6	56	23	0.0460

### Type ACSR-GZ 1350 – Aluminium Conductor Steel Reinforced

Catalogue Number	Conductor Code	Stranding and Wire Diameter (No/mm)		Nominal Overall Diameter (mm)	Cross Sectional Area (mm²)	Approx. Mass (kg/km)	Breaking Load (kN)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (x10-6/oC)	DC Resistance (Ω/km)
		Aluminium (No/mm)	Steel (No/mm)							
ACSR/1350-Magpie	Magpie	3/2.11	4/2.11	6.33	24.5	139	17.8	136	13.9	2.2300
ACSR/1350-Squirrel	Squirrel	6/2.11	1/2.11	6.33	24.5	85	7.7	79	19.1	1.3700
ACSR/1350-Gopher	Gopher	6/2.36	1/2.36	7.09	30.6	106	9.4	79	19.1	1.0930
ACSR/1350-Ferret	Ferret	6/3.00	1/3.00	8.99	49.5	172	14.9	79	19.1	0.6776
ACSR/1350-Mink	Mink	6/3.66	1/3.66	10.97	73.6	255	21.6	79	19.1	0.4550
ACSR/1350-Raccoon	Raccoon	7/4.09	1/4.09	12.27	105.1	320	27.2	79	19.1	0.3640
ACSR/1350-Skunk	Skunk	12/2.59	7/2.59	12.95	100.2	465	53.1	108	15.8	0.4566
ACSR/1350-Dog	Dog	6/4.72	7/1.57	14.17	118.5	394	32.7	76	19.8	0.2740
ACSR/1350-Hare	Hare	6/4.72	1/4.72	14.17	122.5	405	43.7	79	19.1	0.2876
ACSR/1350-Hyena	Hyena	7/4.39	7/1.93	14.6	126.4	428	44.1	78	18.4	0.2850
ACSR/1350-Coyote	Coyote	26/2.54	7/1.91	15.88	151.8	522	46.4	76	18.9	0.2292
ACSR/1350-Dingo	Dingo	18/3.35	1/3.35	16.76	167.5	506	35.4	66	21.2	0.1820
ACSR/1350-Wolf	Wolf	30/2.59	7/2.59	18.14	194.9	726	67.4	80	17.8	0.1828
ACSR/1350-Jaguar	Jaguar	18/3.86	1/3.86	19.3	222.3	671	46.6	66	21.2	0.1367
ACSR/1350-Goat	Goat	30/3.71	7/3.71	25.96	400.0	1489	135.8	80	17.8	0.0893
ACSR/1350-Zebra	Zebra	54/3.18	7/3.18	28.62	484.5	1621	131.9	69	19.3	0.0674
ACSR/1350-Moa	Moa	76/3.72	7/2.89	38.4	871.9	2577	180.6	63	21.2	0.0366
ACSR/1350-Chukar	Chukar	84/3.70	7/3.70	33.3	759.0	2710	203.0	66.5	20.7	0.0373

# AAAC Conductors - New Zealand

## Standard Types and Specifications

### Type AAAC 6201A – All Aluminium Alloy Conductor

Part Number	Conductor Code	Stranding and Wire Diameter (No/mm)	Nominal Overall Diameter (mm)	Cross Sectional Area (mm²)	Approx. Mass (kg/km)	Breaking Load (kN)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (x10-6/oC)	DC Resistance (Ω/km)
AAAC/1120 - 7/2.50	Chlorine	7/2.50	7.5	34.36	94.3	8.18	65	23	0.864
AAAC/1120 - 7/2.75	Chromium	7/2.75	8.25	41.58	113	9.91	65	23	0.713
AAAC/1120 - 7/3.00	Fluorine	7/3.00	9	49.48	135	11.8	65	23	0.599
AAAC/1120 - 7/3.75	Helium	7/3.75	11.3	77.28	211	17.6	65	23	0.383
AAAC/1120 - 7/4.50	Hydrogen	7/4.50	13.5	111.3	304	24.3	65	23	0.266
AAAC/1120 - 7/4.75	Iodine	7/4.75	14.3	124	339	27.1	65	23	0.239
AAAC/1120 - 19/3.25	Krypton	19/3.25	16.3	157.6	433	37.4	65	23	0.189
AAAC/1120 - 19/3.50	Lutetium	19/3.50	17.5	182.8	503	41.7	65	23	0.163
AAAC/1120 - 19/3.75	Neon	19/3.75	18.8	209.8	576	47.8	65	23	0.142
AAAC/1120 - 37/3.00	Nitrogen	37/3.00	21	261.6	721	62.2	64	23	0.114
AAAC/1120 - 37/3.25	Nobelium	37/3.25	22.8	307	845	72.8	64	23	0.0973
AAAC/1120 - 19/4.75	Oxygen	19/4.75	23.8	336.7	924	73.6	65	23	0.0884
AAAC/1120 - 37/3.75	Phosphorus	37/3.75	26.3	408.5	1120	93.1	64	23	0.0731
AAAC/1120 - 61/3.25	Selenium	61/3.25	29.3	506.1	1400	114	64	23	0.0592
AAAC/1120 - 61/3.50	Silicon	61/3.50	31.5	586.9	1620	127	64	23	0.0511
AAAC/1120 - 61/3.75	Sulphur	61/3.75	33.8	673.4	1860	145	64	23	0.0444

### Type AAAC 1120 – All Aluminium Alloy Conductor

Part Number	Conductor Code	Stranding and Wire Diameter (No/mm)	Nominal Overall Diameter (mm)	Cross Sectional Area (mm²)	Approx. Mass (kg/km)	Breaking Load (kN)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (x10-6/oC)	DC Resistance (Ω/km)
AAAC/6201 - 7/2.50	Diamond	7/2.50	7.5	34.36	94.3	9.64	65	23	0.967
AAAC/6201 - 7/2.75	Dolomite	7/2.75	8.25	41.58	113	11.6	65	23	0.799
AAAC/6201 - 7/3.00	Emerald	7/3.00	9	49.48	135	13.9	65	23	0.671
AAAC/6201 - 7/3.75	Garnet	7/3.75	11.3	77.28	211	21.7	65	23	0.43
AAAC/6201 - 7/4.50	Jade	7/4.50	13.5	111.3	304	31.2	65	23	0.298
AAAC/6201 - 7/4.75	Jasper	7/4.75	14.3	124	339	34.8	65	23	0.268
AAAC/6201 - 19/3.25	Opal	19/3.25	16.3	157.6	433	44.2	65	23	0.212
AAAC/6201 - 19/3.50	Patronite	19/3.50	17.5	182.8	503	51.3	65	23	0.183
AAAC/6201 - 19/3.75	Pearl	19/3.75	18.8	209.8	576	58.8	65	23	0.159
AAAC/6201 - 37/3.00	Ruby	37/3.00	21	261.6	721	73.5	64	23	0.128
AAAC/6201 - 37/3.25	Ruthenium	37/3.25	22.8	307	845	86.1	64	23	0.109
AAAC/6201 - 19/4.75	Rutile	19/4.75	23.8	336.7	924	94.4	65	23	0.0991
AAAC/6201 - 37/3.75	Sapphire	37/3.75	26.3	408.5	1120	115	64	23	0.0819
AAAC/6201 - 61/3.25	Spinel	61/3.25	29.3	506.1	1400	135	64	23	0.0662
AAAC/6201 - 61/3.50	Tantalum	61/3.50	31.5	586.9	1620	156	64	23	0.0572
AAAC/6201 - 61/3.75	Topaz	61/3.75	33.8	673.4	1860	179	64	23	0.0498















# Flexible Conductors - International

## Standard ACAR Types and Specifications

Size	OD		CSA		Aluminium Stranding		Alloy Stranding		Mass		Strength		Current Rating*
	kcmil	mm	in	mm <sup>2</sup>	in <sup>2</sup>	No./mm	No./in	No./mm	No./in	kg/km	lbs/1000ft	kN	lbs
1000	29.30	1.154	506.7	0.785	18/4.18	18/0.164	19/4.18	19/0.164	1400	940.8	111.9	25156	928
1000	29.32	1.154	506.4	0.785	54/3.25	54/0.128	7/3.25	7/0.128	1397	938.7	87.5	19671	927
1000	29.32	1.154	506.4	0.785	48/3.25	48/0.128	13/3.25	13/0.128	1397	938.7	93.7	21065	927
1000	29.32	1.154	506.4	0.785	42/3.25	42/0.128	19/3.25	19/0.128	1397	938.7	101.7	22863	927
1000	29.32	1.154	506.4	0.785	33/3.25	33/0.128	28/3.25	28/0.128	1397	938.7	122.1	27449	927
1100	30.65	1.207	567.6	0.880	33/4.42	33/0.174	4/4.42	4/0.174	1540	1034.8	91.9	20660	1004
1100	30.65	1.207	567.6	0.880	30/4.42	30/0.174	7/4.42	7/0.174	1540	1034.8	99.9	22459	1004
1100	30.65	1.207	567.6	0.880	24/4.42	24/0.174	13/4.42	13/0.174	1540	1034.8	110.1	24752	1004
1100	30.65	1.207	567.6	0.880	18/4.42	18/0.174	19/4.42	19/0.174	1540	1034.8	123.0	27652	1004
1100	30.70	1.209	557.5	0.864	54/3.41	54/0.134	7/3.41	7/0.134	1540	1034.8	95.9	21559	991
1100	30.70	1.209	557.5	0.864	48/3.41	48/0.134	13/3.41	13/0.134	1540	1034.8	101.7	22863	991
1100	30.70	1.209	557.5	0.864	42/3.41	42/0.134	19/3.41	19/0.134	1540	1034.8	110.1	24752	991
1100	30.70	1.209	557.5	0.864	33/3.41	33/0.134	28/3.41	28/0.134	1540	1034.8	118.1	26550	991
1200	32.00	1.260	608.1	0.943	33/4.58	33/0.180	4/4.58	4/0.180	1680	1128.9	100.3	22548	1053
1200	32.00	1.260	608.1	0.943	30/4.58	30/0.180	7/4.58	7/0.180	1680	1128.9	108.8	24459	1053
1200	32.00	1.260	608.1	0.943	24/4.58	24/0.180	13/4.58	13/0.180	1680	1128.9	120.4	27056	1053
1200	32.00	1.260	608.1	0.943	18/4.58	18/0.180	19/4.58	19/0.180	1680	1128.9	134.0	30125	1053
1200	32.10	1.264	608.4	0.943	54/3.56	54/0.140	7/3.56	7/0.140	1680	1128.9	102.6	23066	1053
1200	32.10	1.264	608.4	0.943	48/3.56	48/0.140	13/3.56	13/0.140	1680	1128.9	109.7	24662	1053
1200	32.10	1.264	608.4	0.943	42/3.56	42/0.140	19/3.56	19/0.140	1680	1128.9	118.6	26662	1053
1200	32.10	1.264	608.4	0.943	33/3.56	33/0.140	28/3.56	28/0.140	1680	1128.9	127.9	28753	1053
1250	32.70	1.287	633.4	0.982	33/4.67	33/0.184	4/4.67	4/0.184	1750	1175.9	104.8	23560	1083
1250	32.70	1.287	633.4	0.982	30/4.67	30/0.184	7/4.67	7/0.184	1750	1175.9	113.7	25561	1083
1250	32.70	1.287	633.4	0.982	24/4.67	24/0.184	13/4.67	13/0.184	1750	1175.9	125.2	28146	1083
1250	32.70	1.287	633.4	0.982	18/4.67	18/0.184	19/4.67	19/0.184	1750	1175.9	139.0	31249	1083
1250	32.72	1.288	632.9	0.981	54/3.64	54/0.143	7/3.64	7/0.143	1750	1175.9	107.0	24055	1083
1250	32.72	1.288	632.9	0.981	48/3.64	48/0.143	13/3.64	13/0.143	1750	1175.9	114.0	25628	1083
1250	32.72	1.288	632.9	0.981	42/3.64	42/0.143	19/3.64	19/0.143	1750	1175.9	123.4	27742	1083
1250	32.72	1.288	632.9	0.981	33/3.64	33/0.143	28/3.64	28/0.143	1750	1175.9	133.2	29945	1083
1300	33.33	1.312	658.4	1.021	33/4.76	33/0.187	4/4.76	4/0.187	1820	1223.0	108.8	24459	1113
1300	33.33	1.312	658.4	1.021	30/4.76	30/0.187	7/4.76	7/0.187	1820	1223.0	118.1	26550	1113
1300	33.33	1.312	658.4	1.021	24/4.76	24/0.187	13/4.76	13/0.187	1820	1223.0	130.0	29225	1113
1300	33.33	1.312	658.4	1.021	18/4.76	18/0.187	19/4.76	19/0.187	1820	1223.0	145.2	32642	1113





**PERFORMED** LINE PRODUCTS

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ELBOW CONNECTOR	
	EPBBJ Angled Section 2 Pg. 9

## BUSLIGN™ Bolted - Corona Dome Cap

### NON DAMPING CONDUCTOR TYPE

#### EPBBEC

BBAH - CDNDZ1



Corona dome caps seal busbar tubes to prevent the entry of dust, contaminants and wildlife. They ensure quiet, corona free operation of the bus. This style of cast BUSLIGN™ bolted corona dome cap is simply fixed inside the end of a busbar tube. For installation, the cap is pushed into the end of the busbar tube and fastened there via the four screws that are provided with the cap. The screws are set at 90 degrees to one another when installed. For installation of the self-tapping screws, pilot holes must be drilled and countersunk in the busbar tube.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBBEC-50/4	50.0	4.0
EPBBEC-50/6	50.0	6.0
EPBBEC-75/6	75.0	6.0
EPBBEC-100/4	100.0	4.0
EPBBEC-100/6	100.0	6.0
EPBBEC-100/10	100.0	10.0
EPBBEC-125/6	125.0	6.0
EPBBEC-125/10	125.0	10.0
EPBBEC-140/6	140.0	6.0
EPBBEC-140/8	140.0	8.0
EPBBEC-140/10	140.0	10.0
EPBBEC-160/6	160.0	6.0
EPBBEC-160/10	160.0	10.0
EPBBEC-200/6	200.0	6.0
EPBBEC-200/10	200.0	10.0

#### Catalogue Number Explained





## BUSLIGN™ Bolted - A Frame Connector



### VEE CONNECTOR HEAVY DUTY

#### EPBBVC

BBAH - VCZ1

BUSLIGN™ heavy duty EPBBVC 20 and 30 degree bolted vee connectors are used in combination with BUSLIGN™ bolted or welded tee connectors to create rigid busbar tube A Frame connections. Utilising BUSLIGN™ bolted vee connectors allows greatest site flexibility for A Frame construction. Flexibility may be required as a result of variations in site civil works. Via a BUSLIGN™ bolted vee connector, both the relative heights and distances of the A Frame to associated equipment are easily adjusted by either altering the length of the A Frame legs (taps) on site or sliding the connector along the main busbar tube conductor. Use 75 degree tees with 30 degree vee connectors and 80 degree tees with 20 degree vee connectors.

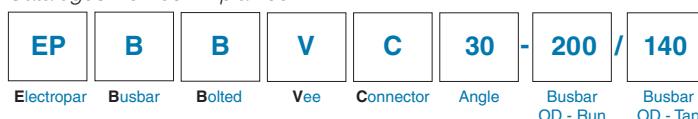


#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number		Tube OD	
20 Degree	30 Degree	Run (mm)	Tap (mm)
EPBBVC20-50/50	EPBBVC30-50/50	50.0	50.0
EPBBVC20-75/50	EPBBVC30-75/50	75.0	50.0
EPBBVC20-100/50	EPBBVC30-100/50	100.0	50.0
EPBBVC20-100/75	EPBBVC30-100/75	100.0	75.0
EPBBVC20-100/100	EPBBVC30-100/100	100.0	100.0
EPBBVC20-125/75	EPBBVC30-125/75	125.0	75.0
EPBBVC20-125/100	EPBBVC30-125/100	125.0	100.0
EPBBVC20-125/125	EPBBVC30-125/125	125.0	125.0
EPBBVC20-140/75	EPBBVC30-140/75	140.0	75.0
EPBBVC20-140/100	EPBBVC30-140/100	140.0	100.0
EPBBVC20-160/100	EPBBVC30-160/100	160.0	100.0
EPBBVC20-160/125	EPBBVC30-160/125	160.0	125.0
EPBBVC20-200/100	EPBBVC30-200/100	200.0	100.0
EPBBVC20-200/125	EPBBVC30-200/125	200.0	125.0
EPBBVC20-200/140	EPBBVC30-200/140	200.0	140.0

#### Catalogue Number Explained



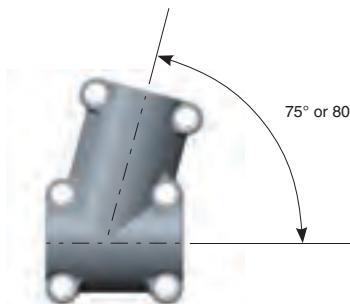
## BUSALIGN™ Bolted - A Frame Connector

### TEE CONNECTOR HEAVY DUTY

#### EPBBTC BBAH - TCBBZ1



BUSALIGN™ 75 and 80 degree bolted tee connectors are used in combination with BUSALIGN™ bolted vee connectors to create rigid busbar tube A Frame connections. The EPBBTC is a heavy duty tee connector carrying current in both halves of the casting. The advantage of this type of connector is that site welding can be avoided. In addition, the method of construction utilising bolted tee and vee connectors provides ample buswork height and length adjustment to accommodate site civil works variation. Use 75 degree tees with 30 degree vee connectors and 80 degree tees with 20 degree vee connectors.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number		Tube OD	
75 Degree	80 Degree	Run (mm)	Tap (mm)
EPBBTC75-50/50	EPBBTC80-50/50	50.0	50.0
EPBBTC75-75/50	EPBBTC80-75/50	75.0	50.0
EPBBTC75-100/50	EPBBTC80-100/50	100.0	50.0
EPBBTC75-100/75	EPBBTC80-100/75	100.0	75.0
EPBBTC75-100/100	EPBBTC80-100/100	100.0	100.0
EPBBTC75-125/75	EPBBTC80-125/75	125.0	75.0
EPBBTC75-125/100	EPBBTC80-125/100	125.0	100.0
EPBBTC75-125/125	EPBBTC80-125/125	125.0	125.0
EPBBTC75-140/75	EPBBTC80-140/75	140.0	75.0
EPBBTC75-140/100	EPBBTC80-140/100	140.0	100.0
EPBBTC75-160/100	EPBBTC80-160/100	160.0	100.0
EPBBTC75-160/125	EPBBTC80-160/125	160.0	125.0
EPBBTC75-200/100	EPBBTC80-200/100	200.0	100.0
EPBBTC75-200/125	EPBBTC80-200/125	200.0	125.0
EPBBTC75-200/140	EPBBTC80-200/140	200.0	140.0

#### Catalogue Number Explained

EP	B	B	T	C	75	-	50	/	50
Electropar	Busbar	Bolted	Tee	Connector	Angle	Busbar OD - Run	Busbar OD - Tap		

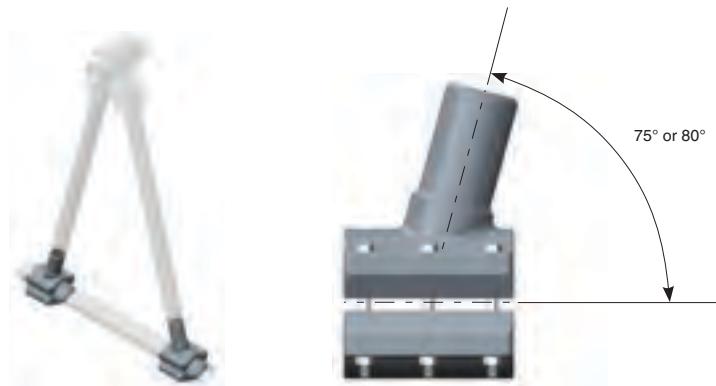


## BUSSIGN™ Bolted - A Frame Connector

### TEE CONNECTOR BOLTED / WELDED HYBRID EPBWTC BBAH - TCBW



BUSSIGN™ 75 and 80 degree bolted / welded tee connectors are used in combination with BUSSIGN™ welded or bolted vee connectors to create rigid busbar tube A Frame connections. The advantage of this style is that the connector can be factory or field welded to the A Frame "legs" at ground level, then bolted into place. This avoids site welding of A Frames from a scaffold or Elevated Work Platform (EWP). When factory welded to the A Frame legs and used in combination with a bolted or welded vee connector all A Frame site welding can be avoided. In addition, the method of construction using bolted / welded or bolted vee connectors and bolted vee connectors provides ample buswork height and length adjustment for site civil works variation. Use 75 degree tees with 30 degree vee connectors and 80 degree tees with 20 degree vee connectors.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number		Run	Tap	
75 Degree	80 Degree	OD (mm)	OD (mm)	WT (mm)
EPBWTC75-50-50/4	EPBWTC80-50-50/4	50.0	50.0	4.0
EPBWTC75-75-50/4	EPBWTC80-75-50/4	75.0	50.0	4.0
EPBWTC75-100-50/4	EPBWTC80-100-50/4	100.0	50.0	4.0
EPBWTC75-100-75/6	EPBWTC80-100-75/6	100.0	75.0	6.0
EPBWTC75-100-100/6	EPBWTC80-100-100/6	100.0	100.0	6.0
EPBWTC75-125-75/6	EPBWTC80-125-75/6	125.0	75.0	6.0
EPBWTC75-125-100/6	EPBWTC80-125-100/6	125.0	100.0	6.0
EPBWTC75-125-125/6	EPBWTC80-125-125/6	125.0	125.0	6.0
EPBWTC75-140-75/6	EPBWTC80-140-75/6	140.0	75.0	6.0
EPBWTC75-140-100/6	EPBWTC80-140-100/6	140.0	100.0	6.0
EPBWTC75-160-125/6	EPBWTC80-160-125/6	160.0	100.0	6.0
EPBWTC75-200-100/6	EPBWTC80-200-100/6	200.0	100.0	6.0
EPBWTC75-200-125/6	EPBWTC80-200-125/6	200.0	125.0	6.0
EPBWTC75-200-140/8	EPBWTC80-200-140/8	200.0	140.0	8.0

#### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>W</b>	<b>T</b>	<b>C</b>	<b>75</b>	<b>-</b>	<b>50</b>	<b>/</b>	<b>50/4</b>
Electropar	Bolted	Welded	Tee	Connector	Angle	Busbar OD - Run	Busbar OD & WT - Tap		

## BUSSIGN™ Bolted - Midspan Coupler

### FIXED HEAVY DUTY

**EPBBJ**  
BBAH - FMCZ1

BUSSIGN™ bolted midspan couplers connect busbar tubes of the same size. The EPBBJ style is a heavy duty type recommended for high current connections because unlike some other designs, both halves of the connector carry current. Contact surfaces of the busbar tubes and the connector must be thoroughly cleaned before the joint is assembled using PLP's jointing compound specially designed for high current / high voltage bolted electrical connections.

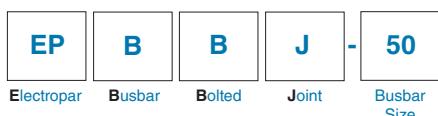


#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBBJ-50	50.0	Any
EPBBJ-75	75.0	Any
EPBBJ-100	100.0	Any
EPBBJ-125	125.0	Any
EPBBJ-160	160.0	Any
EPBBJ-140	140.0	Any
EPBBJ-200	200.0	Any

#### Catalogue Number Explained





## BUSIGN™ Bolted - Midspan Coupler

FIXED WELDED / BOLTED HYBRID

**EPBBJF**

BBAH - FMCZ1A



The EPBBJF busbar bolted coupler is a hybrid substation connector. This is because each half of the assembly is designed to be welded to the two sections of busbar tube that are to be connected in a factory environment. Thereafter, they can be bolted together at site. Traditional midspan busbar tube bolted connectors are installed onto to the outside surface of the busbar tube. The advantage of the EPBBJF is that the 2 mating (current carrying) faces of the connector are keyed and precision machined for a perfect electro-mechanical connection. This approach removes the performance risk of having ovality of an 'as extruded' busbar tube potentially creating thermal electrical problems (hot spots) in traditional bolted midspan couplers.



### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBBJF-50/4	50.0	4.0
EPBBJF-50/6	50.0	6.0
EPBBJF-75/6	75.0	6.0
EPBBJF-100/4	100.0	4.0
EPBBJF-100/6	100.0	6.0
EPBBJF-100/10	100.0	10.0
EPBBJF-125/6	125.0	6.0
EPBBJF-125/10	125.0	10.0
EPBBJF-140/6	140.0	6.0
EPBBJF-140/8	140.0	8.0
EPBBJF-140/10	140.0	10.0
EPBBJF-160/6	160.0	6.0
EPBBJF-160/10	160.0	10.0
EPBBJF-200/6	200.0	6.0
EPBBJF-200/10	200.0	10.0

### Catalogue Number Explained



## BUSSIGN™ Bolted - Elbow Connector

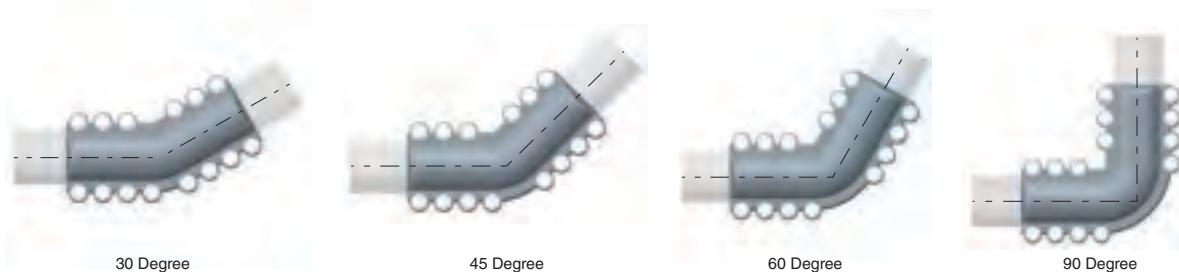
**FIXED 30, 45, 60 & 90 DEGREE**

**EPBBJ - Angled**

BBAH - EBOF



BUSSIGN™ bolted elbows connect busbar tubes of the same size. The standard angles are 30, 45, 60 and 90 degrees, but specially manufactured angles are available on request. Contact surfaces of the busbar tubes and the connector must be thoroughly cleaned before the joint is assembled using PLP's jointing compound specially designed for high current / high voltage bolted electrical connections.



30 Degree

45 Degree

60 Degree

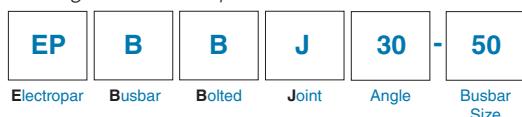
90 Degree

### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number				Tube	
30 Degree	45 Degree	60 Degree	90 Degree	OD (mm)	WT (mm)
EPBBJ30-50	EPBBJ45-50	EPBBJ60-50	EPBBJ90-50	50.0	Any
EPBBJ30-75	EPBBJ45-75	EPBBJ60-75	EPBBJ90-75	75.0	Any
EPBBJ30-100	EPBBJ45-100	EPBBJ60-100	EPBBJ90-100	100.0	Any
EPBBJ30-125	EPBBJ45-125	EPBBJ60-125	EPBBJ90-125	125.0	Any
EPBBJ30-140	EPBBJ45-140	EPBBJ60-140	EPBBJ90-140	140.0	Any
EPBBJ30-160	EPBBJ45-160	EPBBJ60-160	EPBBJ90-160	160.0	Any
EPBBJ30-200	EPBBJ45-200	EPBBJ60-200	EPBBJ90-200	200.0	Any

### Catalogue Number Explained





## BUSIGN™ Bolted - Tee Connector



### BOLTED TUBE TAP HEAVY DUTY

### **EPBBTC90**

BBAH - TTZ1

BUSIGN™ bolted 90 degree tee connectors join busbar tubes of the same or different sizes. The EPBBTC90 style is a heavy duty type recommended for high current connections because unlike some other designs, both halves of the connector carry current. Contact surfaces of the busbar tubes and the connector must be thoroughly cleaned before the joint is assembled using PLP's jointing compound specially designed for high current / high voltage bolted electrical connections.

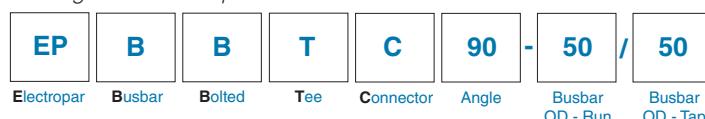


#### **Hardware**

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube OD	
	Run (mm)	Tap (mm)
EPBBTC90-50/50	50.0	50.0
EPBBTC90-75/50	75.0	50.0
EPBBTC90-100/50	100.0	50.0
EPBBTC90-100/75	100.0	75.0
EPBBTC90-100/100	100.0	100.0
EPBBTC90-125/75	125.0	75.0
EPBBTC90-125/100	125.0	100.0
EPBBTC90-125/125	125.0	125.0
EPBBTC90-140/75	140.0	75.0
EPBBTC90-140/100	140.0	100.0
EPBBTC90-140/125	140.0	125.0
EPBBTC90-140/140	140.0	140.0
EPBBTC90-160/100	160.0	100.0
EPBBTC90-160/125	160.0	125.0
EPBBTC90-160/160	160.0	160.0
EPBBTC90-200/100	200.0	100.0
EPBBTC90-200/125	200.0	125.0
EPBBTC90-200/140	200.0	140.0
EPBBTC90-200/160	200.0	160.0
EPBBTC90-200/200	200.0	200.0

#### *Catalogue Number Explained*



## BUSALIGN™ Bolted - Tee Connector

### WELDED TUBE TAP HYBRID

#### EPBWTC90 BBAH - TTW



The EPBWTC90 bolted run welded tee connector is an ideal way of making a reliable, maintenance free midspan connection between two busbar tube conductors. Most often used for connections between high and low perpendicular busbar tubes, the Metal Inert Gas (MIG) welded side of the connector can be completed in a factory or workshop environment so the final assembly simply bolts together on site.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Run	Tap	
	OD (mm)	OD (mm)	WT (mm)
EPBWTC90-50-50/4	50.0	50.0	4.0
EPBWTC90-75-50/4	75.0	50.0	4.0
EPBWTC90-100-50/4	100.0	50.0	4.0
EPBWTC90-100-75/6	100.0	75.0	6.0
EPBWTC90-100-100/6	100.0	100.0	6.0
EPBWTC90-125-75/6	125.0	75.0	6.0
EPBWTC90-125-100/6	125.0	100.0	6.0
EPBWTC90-125-125/6	125.0	125.0	6.0
EPBWTC90-140-75/6	140.0	75.0	6.0
EPBWTC90-140-100/6	140.0	100.0	6.0
EPBWTC90-140-125/6	140.0	125.0	6.0
EPBWTC90-140-140/8	140.0	140.0	8.0
EPBWTC90-160-100/6	160.0	100.0	6.0
EPBWTC90-160-125/6	160.0	125.0	6.0
EPBWTC90-160-160/6	160.0	160.0	6.0
EPBWTC90-200-100/6	200.0	100.0	6.0
EPBWTC90-200-125/6	200.0	125.0	6.0
EPBWTC90-200-140/8	200.0	140.0	8.0
EPBWTC90-200-160/6	200.0	160.0	6.0
EPBWTC90-200-200/6	200.0	200.0	6.0

#### Catalogue Number Explained

EP	B	W	T	C	90	-	50	/	50
Electropar	Busbar	Welded	Tee	Connector	Angle		Busbar OD - Run		Busbar OD & WT - Tap



## BUSSIGN™ Bolted - Tee Connector

### BOLTED CONDUCTOR TAP D-AT



A heavy duty tube-to-cable tee connector. The adjustable tap takes a large range of cables which may be clamped before attaching to tubular bus.

#### **Hardware**

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube OD (mm)	Aluminium & Copper Conductor Range CSA (mm <sup>2</sup> )	OD (mm)
D-AT2550	25.4	35 - 95	7.65 - 12.46
D-AT1065	25.4	70 - 150	10.70 - 15.75
D-AT10102	25.4	240 - 400	20.25 - 25.65
D-AT301521	30.0	175 - 345	15.00 - 21.00
D-AT3034	30.0	500 - 630	28.80 - 33.80
D-AT1350	31.8	35 - 95	7.65 - 12.46
D-AT1465	34.9	70 - 150	10.70 - 15.75
D-AT14837	34.9	150 - 240	15.75 - 20.25
D-AT1550	38.1	35 - 95	7.65 - 12.46
D-AT15837	38.1	150 - 240	15.75 - 20.25
D-AT15102	38.1	240 - 400	20.25 - 25.65
D-AT50102	50.0	240 - 400	20.25 - 25.65
D-AT2065	50.8	70 - 150	10.70 - 15.75
D-AT2365	57.2	70 - 150	10.70 - 15.75
D-AT2465	60.3	70 - 150	10.70 - 15.75
D-AT24102	60.3	240 - 400	20.25 - 25.65
D-AT3065	76.2	70 - 150	10.70 - 15.75
D-AT80837	80.0	150 - 240	15.75 - 20.25
D-AT80102	80.0	240 - 400	20.25 - 25.65
D-AT3565	88.9	70 - 150	10.70 - 15.75
D-AT35837	88.9	150 - 240	15.75 - 20.25
D-AT351339	88.9	500 - 630	28.80 - 32.76
D-AT100837	100.0	150 - 240	15.75 - 20.25
D-AT100102	100.0	240 - 400	20.25 - 25.65

**Note:** For current rating of parts on this page, contact PLP direct.

#### *Catalogue Number Explained*

<b>D</b>	-	<b>A</b>	<b>T</b>	<b>2550</b>
Dulmison		Aluminium	Tee	Style Number

## BUSSIGN™ Bolted - Earth Ground Point

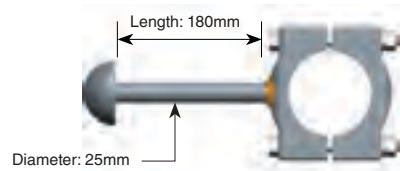
### TUBE CONNECTION

#### EPBTEP

BBAH - EGP



BUSSIGN™ bolted earth ground points are designed to be bolted to busbar tubes so that a temporary earth lead or ground lead can be applied to the busbar tube. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop at its end to eliminate the risk of the earth lead or ground lead sliding off the earth point when the lead is being applied via hotstick.



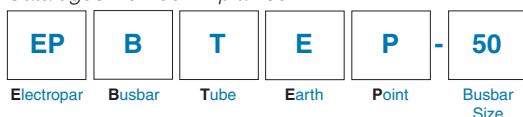
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBTEP-50	50.0	Any
EPBTEP-75	75.0	Any
EPBTEP-100	100.0	Any
EPBTEP-125	125.0	Any
EPBTEP-140	140.0	Any
EPBTEP-160	160.0	Any
EPBTEP-200	200.0	Any

**Note:** For current rating of parts on this page, contact PLP direct.

#### Catalogue Number Explained





## BUSSIGN™ Bolted - Earth Ground Point

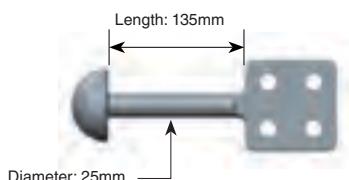
### PALM CONNECTION

#### EPEEP

BBAH - EGPP



BUSSIGN™ bolted earth ground points are designed to be bolted to busbar tubes or primary equipment terminal palms so that a temporary earth lead or ground lead can be easily and safely applied within the substation. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop at its end to remove the risk of the earth lead or ground lead sliding off the earth point when the lead is being applied via hotstick. Parallel palm or opposed palm orientation must be specified in the PLP catalogue number below.



Straight Palm

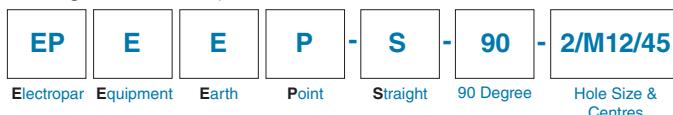


90 Degree Palm

Catalogue Number	Hole Size & Centres	Terminals Palm Size (mm)
EPEEP-S-2/M12/45	2/M12/45	100 x 50
EPEEP-S-2/M12/45	2/M12/50	100 x 50
EPEEP-S-2/M16/45	2/M16/45	100 x 50
EPEEP-S-2/M16/45	2/M16/50	100 x 50
EPEEP-S-4/M12/45	4/M12/45	100 x100
EPEEP-S-4/M12/50	4/M12/50	100 x100
EPEEP-S-4/M16/45	4/M16/45	100 x100
EPEEP-S-4/M16/50	4/M16/50	100 x100
EPEEP-90-4/M12/50	4/M12/50	100 x100
EPEEP-90-4/M16/50	4/M16/50	100 x100

**Note:** For current rating of parts on this page, contact PLP direct.

#### Catalogue Number Explained



## BUSSIGN™ Bolted - Earth Ground Stirrup

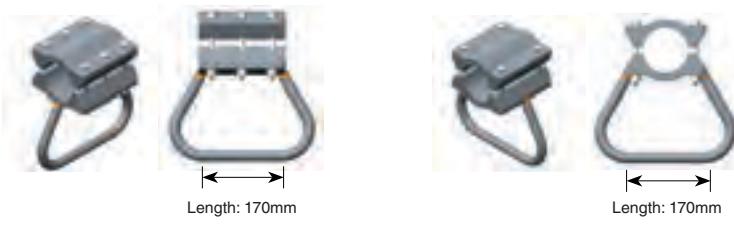


### TUBE CONNECTION

#### EPBTES

BBAH - EGSZ1A

BUSSIGN™ bolted earth ground stirrups are designed to be bolted to busbar tubes so that a temporary earth lead or ground lead can be applied to the busbar tube. The shape of the earth stirrup is designed to eliminate corona and Radio Interference Voltage (RIV) and provide a large single "target" for an operator applying a temporary earth lead via hotstick from the ground or an Elevated Work Platform (EWP). The orientation of this style of earth stirrup relative to the busbar tube (in line or opposed) must be specified at time of order via selection of the correct catalogue number.



Stirrup In Line

Stirrup Opposed

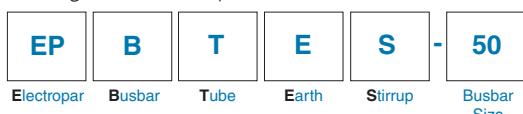
### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBTES-50	50.0	Any
EPBTES-75	75.0	Any
EPBTES-100	100.0	Any
EPBTES-125	125.0	Any
EPBTES-140	140.0	Any
EPBTES-160	160.0	Any
EPBTES-200	200.0	Any

**Note:** For current rating of parts on this page, contact PLP direct.

### Catalogue Number Explained





## BUSALIGN™ Bolted - Earth Ground Stirrup

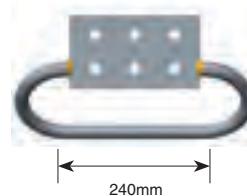
### PALM CONNECTION

#### EPEES

BBAH - EGSP



BUSALIGN™ EPEES bolted earth ground stirrups are designed to be bolted to substation primary equipment terminal palms so that a temporary earth lead or ground lead can be applied within the substation. Typically, these devices are bolted to the underside of high voltage isolator (disconnector) terminal palms where they are low enough to the ground to be able to be accessed by the substation operator without an Elevated Work Platform (EWP). The oval shape of the earth stirrup is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a large 'target' for the operator to safely apply the earth lead or ground lead.



Catalogue Number	Hole Size & Centres	Terminals Palm Size (mm)
EPEES-4/M12/45	4/M12/45	100 x100
EPEES-4/M12/50	4/M12/50	100 x100
EPEES-4/M16/45	4/M16/45	100 x100
EPEES-4/M16/50	4/M16/50	100 x100
EPEES-6/M12/45	6/M12/45	100 x150
EPEES-6/M12/50	6/M12/50	100 x150
EPEES-6/M16/45	6/M16/45	100 x150
EPEES-6/M16/50	6/M16/50	100 x150
EPEES-8/M12/45	4/M12/45	200 x 200
EPEES-8/M12/50	4/M12/50	200 x 200
EPEES-8/M16/45	4/M16/45	200 x 200
EPEES-8/M16/50	4/M16/50	200 x 200

**Note:** For current rating of parts on this page, contact PLP direct.

#### Catalogue Number Explained



## BUSSIGN™ Bolted - Fixed Support

### SINGLE CLAMP

#### D-ATF



The BUSSIGN™ D-ATF connector is designed for connecting aluminium busbar tubes to primary plant or to Subsign aluminium flexible connectors. Combined with flexible connectors, the D-ATF can be used as an expansion joint or for angles between tubes. When bolts are supplied they will accommodate a 10mm thick palm as illustrated below. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's Uniseal compound which is specifically designed for aluminium conductors and bolted joints is recommended.

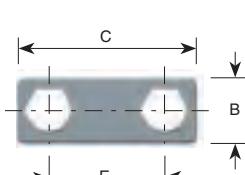


Fig. 1

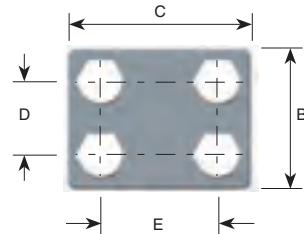
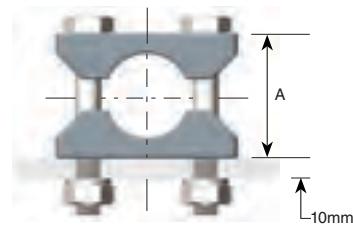


Fig. 2



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	Fig.	Dim					Bolt Size	
Without Bolts	With Bolts	OD (mm)	No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
D-ATF10	D-ATF10B	12.7	1	32.0	25.0	54.0	-	29.0	M10
D-ATF15	D-ATF15B	15.9	1	32.0	25.0	54.0	-	29.0	M10
D-ATF20	D-ATF20B	15.9	2	32.0	48.0	54.0	22.0	29.0	M10
D-ATF25	D-ATF25B	19.1	1	38.0	25.0	57.0	-	32.0	M10
D-ATF30	D-ATF30B	19.1	2	35.0	48.0	57.0	22.0	32.0	M10
D-ATF34	D-ATF34B	25.4	1	44.0	22.0	57.0	-	38.0	M10
D-ATF35	D-ATF35B	25.4	1	44.0	29.0	60.0	-	38.0	M10
D-ATF40	D-ATF40B	25.4	2	41.0	48.0	60.0	22.0	38.0	M10
D-ATF45	D-ATF45B	25.4	2	41.0	54.0	64.0	29.0	38.0	M10
D-ATF4522	D-ATF4522B	25.4	2	40.0	76.0	76.0	51.0	51.0	M10
D-ATF45A	D-ATF45AB	27.0	2	43.0	54.0	64.0	29.0	38.0	M10
D-ATF46	D-ATF46B	28.6	1	44.0	29.0	60.0	-	38.0	M10
D-ATF47	D-ATF47B	28.6	2	44.0	54.0	64.0	29.0	38.0	M10
D-ATF49	D-ATF49B	30.0	2	46.0	54.0	70.0	29.0	44.0	M10
D-ATF50	D-ATF50B	31.8	2	48.0	54.0	70.0	29.0	44.0	M12
D-ATF52	D-ATF52B	34.0	2	51.0	54.0	70.0	29.0	44.0	M10
D-ATF53	D-ATF53B	35.0	2	51.0	54.0	70.0	29.0	44.0	M10
D-ATF54	D-ATF54B	38.1	1	57.0	22.0	70.0	-	51.0	M10
D-ATF55	D-ATF55B	38.1	2	54.0	54.0	76.0	29.0	51.0	M10
D-ATF56	D-ATF56B	38.1	2	60.0	76.0	83.0	44.0	54.0	M12
D-ATF57	D-ATF57B	40.0	2	56.0	55.0	76.0	29.0	51.0	M10
D-ATF60	D-ATF60B	48.0	2	64.0	57.0	83.0	29.0	57.0	M10
D-ATF65	D-ATF65B	50.8	2	67.0	54.0	89.0	29.0	64.0	M10
D-ATF67	D-ATF67B	60.0	2	80.0	54.0	98.0	29.0	73.0	M10
D-ATF70	D-ATF70B	63.5	2	84.0	54.0	105.0	29.0	80.0	M10
D-ATF75	D-ATF75B	76.2	2	95.0	54.0	114.0	29.0	89.0	M10

#### Catalogue Number Explained

<b>D</b>	<b>A</b>	<b>T</b>	<b>F</b>	<b>10</b>	<b>B</b>
Dulmison	Aluminium	Tube	Flat	Style Number	With Bolts



## BUSIGN™ Bolted - Fixed Or Sliding Support

### TWIN CLAMP

#### EPBASC

BBAH - FSSTZ1

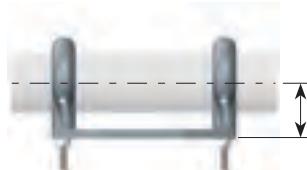


The EPBASC busbar support has been subject to full scale short circuit electro-mechanical testing and is independently proven to be able to withstand a 63kA/1s fault tested with 200mm x 6mm Wall Thickness (WT) outside diameter busbar tube. The dual aluminium busbar support castings are bolted to a hot dip galvanised steel support plate and feature teflon inserts that allow the busbar tube to slide easily as a result of thermal expansion and contraction. In fixed configuration, the busbar tube is locked into the support via two stainless steel fixing bolts that are inserted into holes drilled in the busbar tube from underneath the steel support plate. A drilling jig is supplied so the holes in the busbar tube are easily drilled. In sliding configuration, the busbar tube is bonded to the support by either an internal spring or an external bonding lead. Insulator Pitch Circle Diameter (PCD) orientation must be specified at the time of order in the PLP catalogue number. Busbar tube support sizes and centrelines for metric and SPS tubes other than those listed below are available on request, please consult PLP for details.



PCD Orientation A

PCD Orientation B



Drilling Jig

Fixing Bolt Detail

### Hardware

Tube Clamps - Grade A2 70 (304) Stainless Steel Fastenings, Metric

Fixed Support Bolt - Grade A2 70 (304) Stainless Steel Fastenings, Metric

Insulator Attachment - HDG Grade 8.8 fastenings, Metric (M12 or M16)

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBASC-75-S-76-A-91	75.0	Sliding	76.0	A	91.0
EPBASC-75-F-76-A-91	75.0	Fixed	76.0	A	91.0
EPBASC-75-S-76-B-91	75.0	Sliding	76.0	B	91.0
EPBASC-75-F-76-B-91	75.0	Fixed	76.0	B	91.0
EPBASC-100-S-76-A-105	100.0	Sliding	76.0	A	105.0
EPBASC-100-F-76-A-105	100.0	Fixed	76.0	A	105.0
EPBASC-100-S-76-B-105	100.0	Sliding	76.0	B	105.0
EPBASC-100-F-76-B-105	100.0	Fixed	76.0	B	105.0
EPBASC-125-S-76-A-116	125.0	Sliding	76.0	A	116.0
EPBASC-125-F-76-A-116	125.0	Fixed	76.0	A	116.0
EPBASC-125-S-76-B-116	125.0	Sliding	76.0	B	116.0
EPBASC-125-F-76-B-116	125.0	Fixed	76.0	B	116.0
EPBASC-140-S-76-A-124	140.0	Sliding	76.0	A	124.0
EPBASC-140-F-76-A-124	140.0	Fixed	76.0	A	124.0
EPBASC-140-S-76-B-124	140.0	Sliding	76.0	B	124.0
EPBASC-140-F-76-B-124	140.0	Fixed	76.0	B	124.0
EPBASC-160-S-76-A-134	160.0	Sliding	76.0	A	134.0
EPBASC-160-F-76-A-134	160.0	Fixed	76.0	A	134.0
EPBASC-160-S-76-B-134	160.0	Sliding	76.0	B	134.0
EPBASC-160-F-76-B-134	160.0	Fixed	76.0	B	134.0
EPBASC-200-S-76-A-154	200.0	Sliding	76.0	A	154.0
EPBASC-200-F-76-A-154	200.0	Fixed	76.0	A	154.0
EPBASC-200-S-76-B-154	200.0	Sliding	76.0	B	154.0
EPBASC-200-F-76-B-154	200.0	Fixed	76.0	B	154.0

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBASC-75-S-127-A-91	75.0	Sliding	127.0	A	91.0
EPBASC-75-F-127-A-91	75.0	Fixed	127.0	A	91.0
EPBASC-75-S-127-B-91	75.0	Sliding	127.0	B	91.0
EPBASC-75-F-127-B-91	75.0	Fixed	127.0	B	91.0
EPBASC-100-S-127-A-105	100.0	Sliding	127.0	A	105.0
EPBASC-100-F-127-A-105	100.0	Fixed	127.0	A	105.0
EPBASC-100-S-127-B-105	100.0	Sliding	127.0	B	105.0
EPBASC-100-F-127-B-105	100.0	Fixed	127.0	B	105.0
EPBASC-125-S-127-A-116	125.0	Sliding	127.0	A	116.0
EPBASC-125-F-127-A-116	125.0	Fixed	127.0	A	116.0
EPBASC-125-S-127-B-116	125.0	Sliding	127.0	B	116.0
EPBASC-125-F-127-B-116	125.0	Fixed	127.0	B	116.0
EPBASC-140-S-127-A-124	140.0	Sliding	127.0	A	124.0
EPBASC-140-F-127-A-124	140.0	Fixed	127.0	A	124.0
EPBASC-140-S-127-B-124	140.0	Sliding	127.0	B	124.0
EPBASC-140-F-127-B-124	140.0	Fixed	127.0	B	124.0
EPBASC-160-S-127-A-134	160.0	Sliding	127.0	A	134.0
EPBASC-160-F-127-A-134	160.0	Fixed	127.0	A	134.0
EPBASC-160-S-127-B-134	160.0	Sliding	127.0	B	134.0
EPBASC-160-F-127-B-134	160.0	Fixed	127.0	B	134.0
EPBASC-200-S-127-A-154	200.0	Sliding	127.0	A	154.0
EPBASC-200-F-127-A-154	200.0	Fixed	127.0	A	154.0
EPBASC-200-S-127-B-154	200.0	Sliding	127.0	B	154.0
EPBASC-200-F-127-B-154	200.0	Fixed	127.0	B	154.0

## Catalogue Number Explained





## BUSIGN™ Bolted - Fixed Support

90 DEGREE

**EPBASC90**

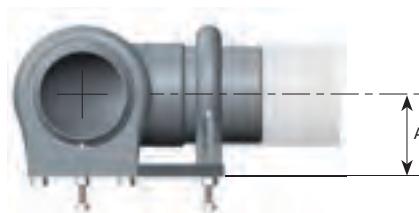
BWAH - FST90



PCD Orientation A



PCD Orientation B

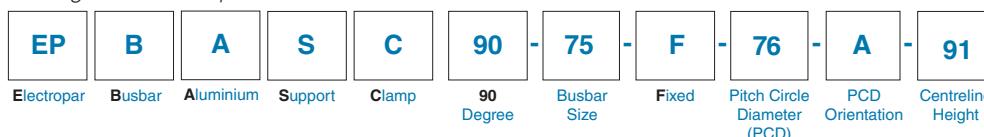


### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBASC90-75-F-76-A-91	75.0	Fixed	76.0	A	91.0
EPBASC90-75-F-76-B-91	75.0	Fixed	76.0	B	91.0
EPBASC90-100-F-76-A-105	100.0	Fixed	76.0	A	105.0
EPBASC90-100-F-76-B-105	100.0	Fixed	76.0	B	105.0
EPBASC90-125-F-76-A-116	125.0	Fixed	76.0	A	116.0
EPBASC90-125-F-76-B-116	125.0	Fixed	76.0	B	116.0
EPBASC90-140-F-76-A-124	140.0	Fixed	76.0	A	124.0
EPBASC90-140-F-76-B-124	140.0	Fixed	76.0	B	124.0
EPBASC90-160-F-76-A-134	160.0	Fixed	76.0	A	134.0
EPBASC90-160-F-76-B-134	160.0	Fixed	76.0	B	134.0
EPBASC90-200-F-76-A-154	200.0	Fixed	76.0	A	154.0
EPBASC90-200-F-76-B-154	200.0	Fixed	76.0	B	154.0
EPBASC90-75-F-127-A-91	75.0	Fixed	127.0	A	91.0
EPBASC90-75-F-127-B-91	75.0	Fixed	127.0	B	91.0
EPBASC90-100-F-127-A-105	100.0	Fixed	127.0	A	105.0
EPBASC90-100-F-127-B-105	100.0	Fixed	127.0	B	105.0
EPBASC90-125-F-127-A-116	125.0	Fixed	127.0	A	116.0
EPBASC90-125-F-127-B-116	125.0	Fixed	127.0	B	116.0
EPBASC90-140-F-127-A-124	140.0	Fixed	127.0	A	124.0
EPBASC90-140-F-127-B-124	140.0	Fixed	127.0	B	124.0
EPBASC90-160-F-127-A-134	160.0	Fixed	127.0	A	134.0
EPBASC90-160-F-127-B-134	160.0	Fixed	127.0	B	134.0
EPBASC90-200-F-127-A-154	200.0	Fixed	127.0	A	154.0
EPBASC90-200-F-127-B-154	200.0	Fixed	127.0	B	154.0

### Catalogue Number Explained



## BUSSIGN™ Bolted - Expansion Support

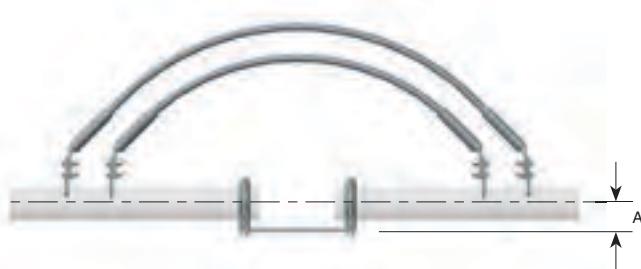
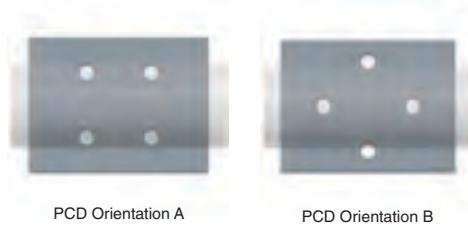
**FIXED / SLIDING OR SLIDING / SLIDING**

**EPBASCE2**

BWAH - STXZ1A



The EPBASCE2 allows an expansion connection to be made atop of a post insulator in a busbar tube system. The assembly allows the busbar tube to expand and contract in response to changes in load and operating temperature. In doing so, the expansion support eliminates the possibility of the busbar tube applying a mechanical load to the substation primary equipment. The support can be installed in sliding/sliding or fixed/sliding configuration and this must be specified in the catalogue number below together with the Pitch Circle Diameter (PCD) orientation. Busbar tube support sizes and centrelines for metric and SPS tubes other than those listed below are available on request, please consult PLP for details.



### Hardware

Tube Clamps - Grade A2 70 (304) Stainless Steel Fastenings, Metric

Fixed Support Bolt - Grade A2 70 (304) Stainless Steel Fastenings, Metric

Insulator Attachment - HDG Grade 8.8 fastenings, Metric (M12 or M16)

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBASCE2-75-SS-76-A-91	75.0	Sliding / Sliding	76.0	A	91.0
EPBASCE2-75-SS-76-B-91	75.0	Sliding / Sliding	76.0	B	91.0
EPBASCE2-100-SS-76-A-105	100.0	Sliding / Sliding	76.0	A	105.0
EPBASCE2-100-SS-76-B-105	100.0	Sliding / Sliding	76.0	B	105.0
EPBASCE2-125-SS-76-A-116	125.0	Sliding / Sliding	76.0	A	116.0
EPBASCE2-125-SS-76-B-116	125.0	Sliding / Sliding	76.0	B	116.0
EPBASCE2-140-SS-76-A-124	140.0	Sliding / Sliding	76.0	A	124.0
EPBASCE2-140-SS-76-B-124	140.0	Sliding / Sliding	76.0	B	124.0
EPBASCE2-160-SS-76-A-134	160.0	Sliding / Sliding	76.0	A	134.0
EPBASCE2-160-SS-76-B-134	160.0	Sliding / Sliding	76.0	B	134.0
EPBASCE2-200-SS-76-A-154	200.0	Sliding / Sliding	76.0	A	154.0
EPBASCE2-200-SS-76-B-154	200.0	Sliding / Sliding	76.0	B	154.0



Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBASCE2-75-SS-127-A-91	75.0	Sliding / Sliding	127.0	A	91.0
EPBASCE2-75-SS-127-B-91	75.0	Sliding / Sliding	127.0	B	91.0
EPBASCE2-100-SS-127-A-105	100.0	Sliding / Sliding	127.0	A	105.0
EPBASCE2-100-SS-127-B-105	100.0	Sliding / Sliding	127.0	B	105.0
EPBASCE2-125-SS-127-A-116	125.0	Sliding / Sliding	127.0	A	116.0
EPBASCE2-125-SS-127-B-116	125.0	Sliding / Sliding	127.0	B	116.0
EPBASCE2-140-SS-127-A-124	140.0	Sliding / Sliding	127.0	A	124.0
EPBASCE2-140-SS-127-B-124	140.0	Sliding / Sliding	127.0	B	124.0
EPBASCE2-160-SS-127-A-134	160.0	Sliding / Sliding	127.0	A	134.0
EPBASCE2-160-SS-127-B-134	160.0	Sliding / Sliding	127.0	B	134.0
EPBASCE2-200-SS-127-A-154	200.0	Sliding / Sliding	127.0	A	154.0
EPBASCE2-200-SS-127-B-154	200.0	Sliding / Sliding	127.0	B	154.0

Catalogue Number Explained



## BUSSIGN™ Bolted - End Terminal

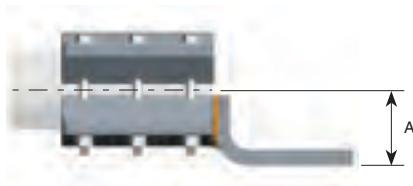
### OFFSET PALM TERMINAL OR BUSBAR TUBE SUPPORT

#### EPBBT

BBAH - ETPZ1



The EPBBT bolted end terminal acts as a fixed busbar tube support or allows flexible conductors or primary equipment to be attached to a busbar tube via the terminal palm. Manufactured as a casting with the terminal palm attached via Metal Inert Gas (MIG) welding, the dimension by which the terminal palm is offset from the centreline of the busbar tube is variable and able to be specified at time of order. This is useful when using this fitting as a busbar tube support because it allows the designer and/or installer to account for variability in site civil works which in turn can introduce variability into final equipment heights.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBBT-50-a/bbb/cc	50.0	Any
EPBBT-75-a/bbb/cc	75.0	Any
EPBBT-100-a/bbb/cc	100.0	Any
EPBBT-125-a/bbb/cc	125.0	Any
EPBBT-140-a/bbb/cc	160.0	Any
EPBBT-160-a/bbb/cc	140.0	Any
EPBBT-200-a/bbb/cc	200.0	Any

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

#### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>B</b>	<b>T</b>	<b>-</b>	<b>50</b>	<b>-</b>	<b>a</b>	<b>/</b>	<b>bbb</b>	<b>/</b>	<b>cc</b>
Electropar	Busbar	Bolted	Terminal		Busbar Size		Number of holes (e.g. 2)		Suit Bolt Size (e.g. M12)		Hole Centres in Millimetres (e.g. 50)

## BUSSIGN™ Bolted - End Terminal

### TUBE END TO CONDUCTOR D-AE



A heavy duty tube-to-conductor end connector. The adjustable tap takes a large range of conductors which may be clamped before attaching to tubular bus.

#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube OD (mm)	Aluminium & Copper Conductor Range CSA (mm <sup>2</sup> )	OD (mm)
D-AE1065	25.4		
D-AE1265	30.2		
D-AE1365	31.8	70 - 150	10.70 - 15.75
D-AE1565	38.1		
D-AE3065	76.2		
D-AE12102	30.2		
D-AE13102	31.8		
D-AE14102	34.9	240 - 400	20.25 - 25.65
D-AE15102	38.1		
D-AE80M837	80.0	150 - 240	15.75 - 20.25
D-AE80M102	80.0	240 - 400	20.25 - 25.65
D-AE10837	25.4	150 - 240	15.75 - 20.25
D-AE60837	60.0	150 - 240	15.75 - 20.25
D-AE15117	38.1	400 - 500	25.65 - 28.80
D-AE35837	88.9	150 - 240	15.75 - 20.25
D-AE2550	25.4	35 - 95	7.65 - 12.46

#### Catalogue Number Explained





**PREFORMED** LINE PRODUCTS

## Section 3 - BUSALIGN™ Bolted Copper

Table of Contents	Section	Page
Stud Connector.....	3	3
Midspan Couplers.....	3	4
Tee Connectors.....	3	6
Fixed Supports.....	3	9
Fixed or Sliding Support.....	3	11
Primary Equipment Connector.....	3	12
End Terminal.....	3	13



STUD CONNECTOR	
	D-RS Section 3 Pg. 3

FIXED SUPPORTS	
	D-PTC Section 3 Pg. 9
	D-TF Section 3 Pg. 10

PRIMARY EQUIPMENT CONNECTOR	
	D-BT Section 3 Pg. 12

MIDSPAN COUPLERS	
	D-ST Section 3 Pg. 4
	D-RT Section 3 Pg. 5

FIXED OR SLIDING SUPPORT	
	D-BS Section 3 Pg. 11

END TERMINAL	
	D-E Section 3 Pg. 13

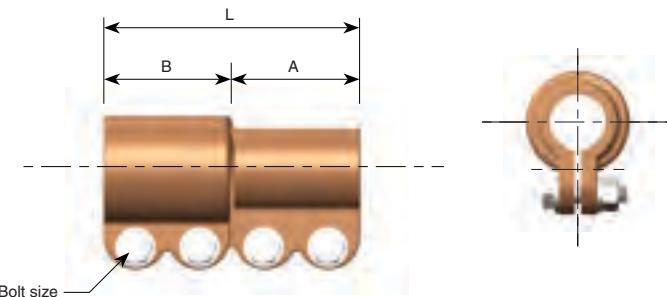
TEE CONNECTORS	
	D-TT Section 3 Pg. 6
	D-T Section 3 Pg. 8

## BUSSIGN™ Bolted - Stud Connector

### TUBE END TO STUD - FIXED D-RS



The BUSSIGN™ D-RS coupler is normally used for connecting copper busbar tubes to items of primary equipment that have a copper stud or pin as the terminal connection. However, with the ability to accommodate the same or different sized busbar tube and equipment terminal stud outside diameters, this item can also be used for connecting different sized copper busbar tubes. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.



#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD		Dim			Bolt Size
	Tube 1 (mm)	Tube 2 (mm)	A (mm)	B (mm)	L (mm)	
D-RS110	28.6	25.4	57.0	51.0	108.0	M10
D-RS120	30.2	25.4	57.0	51.0	108.0	M10
D-RS1508	38.1	22.2	60.0	57.0	117.0	M10
D-RS1509	38.1	25.0	60.0	57.0	117.0	M10
D-RS1511	38.1	28.6	60.0	54.0	114.0	M10
D-RS1512	38.1	30.2	60.0	54.0	114.0	M10
D-RS1514	38.1	34.9	60.0	54.0	114.0	M10
D-RS1610	39.7	25.4	60.0	57.0	117.0	M10
D-RS1818	44.5	44.5	76.0	76.0	152.0	M12

#### Catalogue Number Explained

<b>D</b>	<b>-</b>	<b>R</b>	<b>S</b>	<b>1110</b>
Dulmison	Reducer	Stud (Busbar)	Style Number	



## BUSIGN™ Bolted - Midspan Coupler

### FIXED HEAVY DUTY D-ST



The BUSIGN™ D-ST coupler is designed for connecting same sized copper busbar tubes. This is a heavy duty connector recommended for high current connections because unlike U bolt type connector designs both halves of the connector carry current. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.



Fig. 1

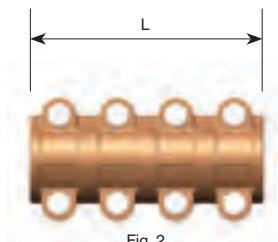


Fig. 2



#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD (mm)	Fig. No.	Dim L (mm)	Bolt Size
D-ST5	19.1	1	70.0	M10
D-ST20	25.4	1	83.0	M12
D-ST20C	25.4	2	127.0	M10
D-ST27	28.6	2	140.0	M10
D-ST35	31.8	1	102.0	M12
D-ST50	38.1	1	102.0	M12
D-ST85	50.8	2	159.0	M12
D-ST95	76.2	2	229.0	M12

**Note:** For current rating of parts on this page, contact PLP direct.

#### Catalogue Number Explained

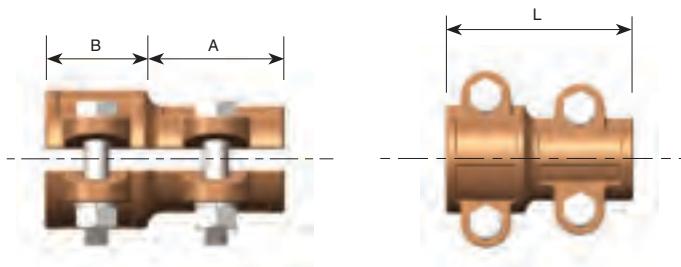


## BUSSIGN™ Bolted - Midspan Coupler

### FIXED, DIFFERENT SIZED D-RT



The BUSSIGN™ D-RT coupler is designed for connecting different sized copper busbar tubes. This is a heavy duty connector recommended for high current connections because unlike U bolt type connector designs both halves of the connector carry current. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.



#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD		Dim			Bolt Size
	Tube 1 (mm)	Tube 2 (mm)	A (mm)	B (mm)	L (mm)	
D-RT15	25.4	19.1	44.0	35.0	79.0	M10
D-RT30	31.8	19.1	48.0	32.0	79.0	M10
D-RT32C	31.8	25.4	57.0	56.0	114.0	M10
D-RT45	38.1	25.4	51.0	51.0	102.0	M12
D-RT47	38.1	30.2	51.0	51.0	102.0	M12
D-RT60	44.5	25.4	54.0	44.0	98.0	M12
D-RT65	44.5	31.8	62.0	46.0	108.0	M12
D-RT75	50.8	25.4	54.0	44.0	98.0	M12
D-RT80	50.8	38.1	64.0	48.0	111.0	M12
D-RT90	76.2	38.1	64.0	51.0	114.0	M12

#### Catalogue Number Explained

<b>D</b>	<b>R</b>	<b>T</b>	<b>5</b>
Dulmison	Reducing	Tube Connector	Style Number



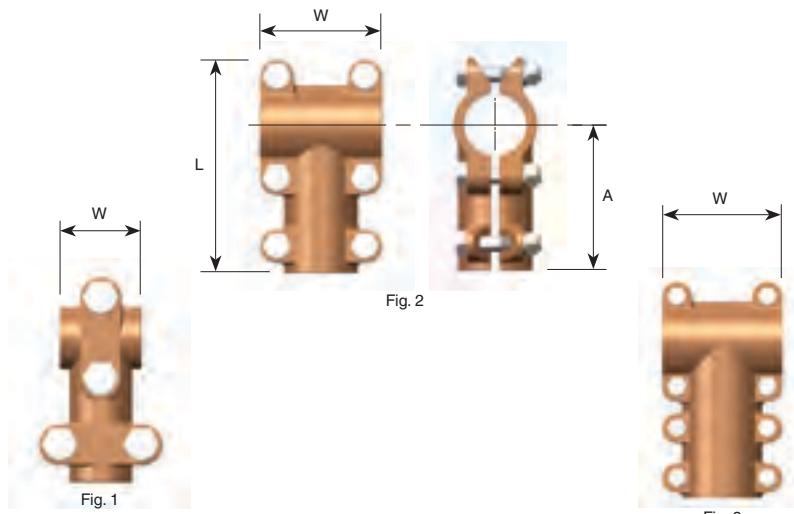
## BUSALIGN™ Bolted - Tee Connector

### BOLTED TUBE TAP

#### D-TT



The BUSALIGN™ D-TT coupler is designed for connecting same or different sized copper busbar tubes in a tee configuration. This is a heavy duty connector recommended for high current connections because unlike U bolt type connector designs both halves of the connector carry current. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.



#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD		Fig. No.	Dim			Bolt Size
	Run (mm)	Tap (mm)		A (mm)	L (mm)	W (mm)	
D-TT3	15.9	15.9	1	55.0	80.0	35.0	M10
D-TT5	19.1	19.1	1	57.0	83.0	38.0	M10
D-TT7	20.6	20.6	1	57.0	83.0	38.0	M10
D-TT10	19.1	25.4	1	68.0	98.0	44.0	M12
D-TT15	25.4	19.1	1	62.0	92.0	38.0	M10
D-TT17	22.2	20.6	1	68.0	98.0	44.0	M12
D-TT20	25.4	25.4	1	70.0	103.0	43.0	M12
D-TT20C	25.4	25.4	2	68.0	98.0	76.0	M10
D-TT21	28.6	28.6	1	71.0	107.0	44.0	M12
D-TT25	25.4	38.1	1	87.0	121.0	44.0	M12
D-TT27	28.6	15.9	2	73.0	108.0	50.0	M10
D-TT28	30.2	25.4	1	75.0	111.0	44.0	M12
D-TT30	31.8	19.1	1	64.0	95.0	44.0	M10
D-TT32	31.8	25.4	1	75.0	111.0	44.0	M12
D-TT35	31.8	31.8	1	76.0	114.0	44.0	M12

Material: Copper  
Maximum Voltage Application: 230kV

Section 3

BUSALIGN™ Bolted

Catalogue Number	Tube OD		Fig. No.	Dim			Bolt Size
	Run (mm)	Tap (mm)		A (mm)	L (mm)	W (mm)	
D-TT40	31.8	44.5	2	102.0	138.0	86.0	M12
D-TT45	38.1	25.4	1	76.0	117.0	50.0	M12
D-TT45C	38.1	25.4	2	76.0	114.0	92.0	M10
D-TT50	38.1	38.1	2	105.0	146.0	83.0	M12
D-TT50C	38.1	38.1	2	80.0	117.0	92.0	M10
D-TT55	38.1	50.8	2	110.0	149.0	97.0	M12
D-TT60	44.5	25.4	1	80.0	124.0	50.0	M12
D-TT65	44.5	31.8	1	110.0	156.0	73.0	M12
D-TT70	44.5	44.5	2	110.0	154.0	89.0	M12
D-TT75	50.8	25.4	1	84.0	133.0	50.0	M12
D-TT78	48.4	31.8	2	102.0	151.0	90.0	M12
D-TT79	50.8	31.8	2	102.0	151.0	90.0	M12
D-TT80	50.8	38.1	2	108.0	157.0	90.0	M12
D-TT83	48.4	50.8	2	116.0	164.0	95.0	M12
D-TT84	48.4	48.4	2	116.0	164.0	95.0	M12
D-TT85	50.8	50.8	2	116.0	162.0	95.0	M12
D-TT86	54	50.8	2	116.0	168.0	95.0	M12
D-TT88	63.5	38.1	2	114.0	168.0	95.0	M12
D-TT90	76.2	38.1	2	114.0	178.0	83.0	M12
D-TT95	76.2	76.2	3	156.0	216.0	95.0	M12
D-TT100	88.9	60.3	2	140.0	211.0	109.0	M12

Catalogue Number Explained



Dulmison      Tube Connector      Tee      Style Number



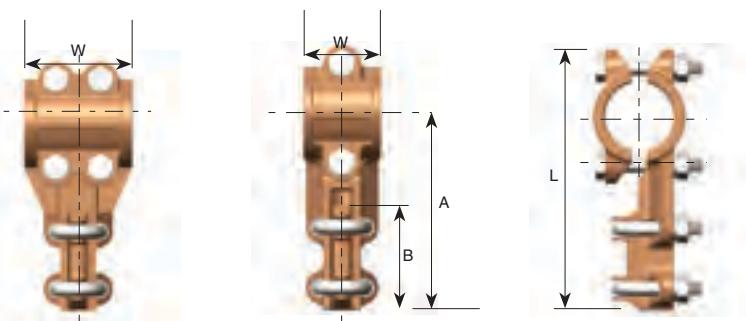
## BUSSIGN™ Bolted - Tee Connector

### FLEXIBLE CONDUCTOR TAP

#### D-T



The BUSSIGN™ D-T is designed for connecting copper busbar tubes and copper flexible conductors in a tee configuration. The advantage of this design is that each model of this type of connector can accept a wide range of flexible conductor sizes. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.



#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD (mm)	Conductor Range		Fig. No.	Dim			
		Area (mm²)	OD (mm)		A (mm)	B (mm)	L (mm)	W (mm)
D-T10	19.1	25 - 95	6.42 - 12.46	1	81.0	51.0	106.0	35.0
D-T15	19.1	35 - 95	7.65 - 12.60	1	90.0	60.0	117.0	35.0
D-T20	25.4	25 - 95	6.42 - 12.46	1	84.0	50.0	113.0	35.0
D-T25	25.4	35 - 95	7.65 - 12.60	1	92.0	60.0	121.0	35.0
D-T30	25.4	70 - 150	10.70 - 15.75	1	106.0	70.0	142.0	44.0
D-T31C	25.4	150 - 240	15.75 - 20.25	2	110.0	80.0	140.0	60.0
D-T33	30.2	70 - 150	10.70 - 15.75	1	106.0	70.0	140.0	44.0
D-T35	31.8	35 - 95	7.65 - 12.60	1	103.0	60.0	142.0	51.0
D-T40	31.8	70 - 150	10.70 - 15.75	1	110.0	70.0	146.0	51.0
D-T45	31.8	150 - 240	15.75 - 20.25	1	117.0	76.0	156.0	51.0
D-T46	31.8	240 - 400	20.25 - 25.65	2	121.0	83.0	156.0	70.0
D-T48	34.1	70 - 150	10.70 - 15.75	1	110.0	73.0	148.0	51.0
D-T50	38.1	35 - 95	7.65 - 12.60	1	106.0	60.0	146.0	51.0
D-T55	38.1	70 - 150	10.70 - 15.75	1	113.0	70.0	152.0	51.0
D-T55C	38.1	70 - 150	10.70 - 15.75	2	111.0	70.0	148.0	76.0
D-T60	38.1	150 - 240	15.75 - 20.25	1	119.0	76.0	159.0	51.0
D-T64	40.0	630 - 800	32.76 - 37.05	2	146.0	102.0	192.0	80.0
D-T65	50.8	35 - 95	7.65 - 12.60	1	111.0	60.0	156.0	51.0
D-T69	48.4	70 - 150	10.70 - 15.75	1	118.0	70.0	164.0	51.0
D-T70	50.8	70 - 150	10.70 - 15.75	1	121.0	70.0	168.0	51.0
D-T75	50.8	150 - 240	15.75 - 20.25	1	127.0	76.0	175.0	51.0
D-T77	60.3	70 - 150	10.70 - 15.75	1	130.0	70.0	187.0	57.0
D-T80	76.2	35 - 95	7.65 - 12.60	1	127.0	60.0	191.0	57.0
D-T85	76.2	70 - 150	10.70 - 15.75	1	137.0	70.0	200.0	57.0
D-T90	76.2	150 - 240	15.75 - 20.25	1	140.0	76.0	206.0	57.0
D-T105	88.9	150 - 240	15.75 - 20.25	1	151.0	80.0	222.0	64.0

**Note:** For current rating of parts on this page, contact PLP direct.

#### Catalogue Number Explained

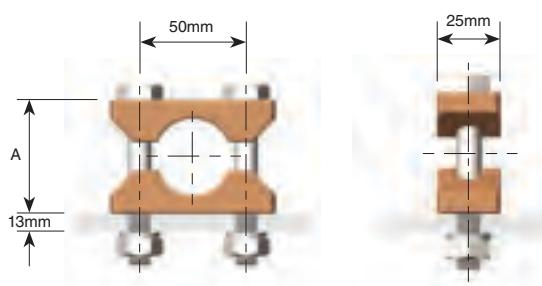
<b>D</b>	-	<b>T</b>	<b>10</b>
Dulmison	Tee	Style	Number

## BUSSIGN™ Bolted - Fixed Support

### SINGLE CLAMP - 2 BOLT D-PTC



The BUSSIGN™ D-PTC is designed for connecting copper busbar tubes to switchgear terminal palms that have 4 holes at 50mm centres and M12 bolts. Two D-PTC connectors are required per termination. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.

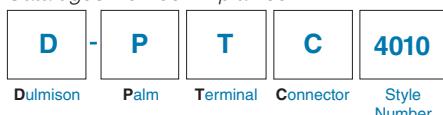


#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD (mm)	Dim A (mm)
D-PTC4010	25.4	52.0
D-PTC4012	30.2	57.0
D-PTC4020	38.1	68.0

**Note:** For current rating of parts on this page, contact PLP direct.

*Catalogue Number Explained*



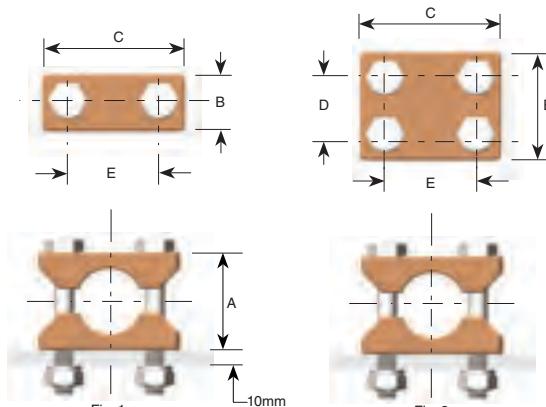
## BUSIGN™ Bolted - Fixed Support

### SINGLE CLAMP - 4 BOLT

#### D-TF



The BUSIGN™ D-TF connector is designed for connecting copper busbar tubes to primary plant or to SUBLIGN™ copper flexible connectors. Combined with flexible connectors, the D-TF can be used as an expansion joint or for angles between tubes. When bolts are supplied they will accommodate a 10mm thick palm as illustrated below. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.



#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number		Tube OD (mm)	Fig. No.	Dim					Bolt Size
Without Bolts	With Bolts			A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	
D-TF10	D-TF10B	12.7	1	32.0	25.0	54.0	-	29.0	M10
D-TF15	D-TF15B	15.9	1	32.0	25.0	54.0	-	29.0	M19
D-TF20	D-TF20B	15.9	2	32.0	48.0	54.0	22.0	29.0	M10
D-TF25	D-TF25B	19.1	1	38.0	25.0	57.0	-	32.0	M10
D-TF30	D-TF30B	19.1	2	35.0	48.0	57.0	22.0	32.0	M10
D-TF34	D-TF34B	25.4	1	44.0	22.0	57.0	-	38.0	M10
D-TF35	D-TF35B	25.4	1	44.0	29.0	60.0	-	38.0	M10
D-TF40	D-TF40B	25.4	2	41.0	48.0	60.0	22.0	38.0	M10
D-TF45	D-TF45B	25.4	2	41.0	54.0	64.0	29.0	38.0	M10
D-TF4522	D-TF4522B	25.4	2	40.0	76.0	76.0	51.0	51.0	M10
D-TF45A	D-TF45AB	27.0	2	43.0	54.0	64.0	29.0	38.0	M10
D-TF46	D-TF46B	28.6	1	44.0	29.0	60.0	-	38.0	M10
D-TF47	D-TF47B	28.6	2	44.0	54.0	64.0	29.0	38.0	M10
D-TF49	D-TF49B	30.0	2	46.0	54.0	70.0	29.0	44.0	M10
D-TF50	D-TF50B	31.8	2	48.0	54.0	70.0	29.0	44.0	M12
D-TF52	D-TF52B	34.0	2	51.0	54.0	70.0	29.0	44.0	M10
D-TF53	D-TF53B	35.0	2	51.0	54.0	70.0	29.0	44.0	M10
D-TF54	D-TF54B	38.1	1	57.0	22.0	70.0	-	51.0	M10
D-TF55	D-TF55B	38.1	2	54.0	54.0	76.0	29.0	51.0	M10
D-TF56	D-TF56B	38.1	2	60.0	76.0	83.0	44.0	54.0	M12
D-TF57	D-TF57B	40.0	2	56.0	55.0	76.0	29.0	51.0	M10
D-TF60	D-TF60B	48.0	2	64.0	57.0	83.0	29.0	57.0	M10
D-TF65	D-TF65B	50.8	2	67.0	54.0	89.0	29.0	64.0	M10
D-TF67	D-TF67B	60.0	2	80.0	54.0	98.0	29.0	73.0	M10
D-TF70	D-TF70B	63.5	2	84.0	54.0	105.0	29.0	80.0	M10
D-TF75	D-TF75B	76.2	2	95.0	54.0	114.0	29.0	89.0	M10

#### Catalogue Number Explained

<b>D</b>	<b>-</b>	<b>T</b>	<b>F</b>	<b>10</b>
Dulmison	Tube	Flat	Connector	Style Number

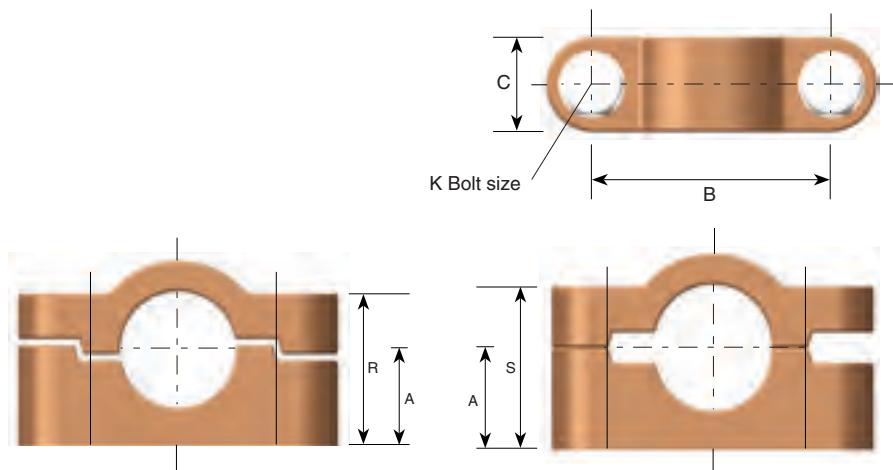
## BUSSIGN™ Bolted - Fixed or Sliding Support

### SINGLE CLAMP

#### D-BS



The D-BS copper busbar support can be installed in fixed or sliding configuration. In fixed configuration, the top cap of the support is oriented on the base so that the casting will firmly clamp the busbar tube in place. In sliding configuration, the top cap of the support is turned around 180 degrees on the base to allow the busbar to move freely within the support. The advantage of this design is that the location of the fixed and sliding supports does not have to be determined prior to site construction. Contact surfaces of the connector and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound for copper conductors is recommended.



#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD (mm)	Dim					
		A (mm)	B (mm)	C (mm)	K (mm)	R (mm)	S (mm)
D-BS5	6.35	14.0	50.8	25.4	M10	25.4	26.9
D-BS10	12.70	19.0	50.8	28.5	M10	31.7	33.3
D-BS15	12.70	19.0	76.2	28.5	M12	36.5	38.1
D-BS17	15.88	22.0	50.8	25.4	M10	38.1	36.5
D-BS20	19.05	22.0	50.8	28.5	M10	34.9	36.5
D-BS25	19.05	25.4	76.2	28.5	M12	39.7	41.2
D-BS30	25.40	25.4	50.8	28.5	M10	46.0	47.6
D-BS35	25.40	25.4	76.2	28.5	M12	41.2	42.8
D-BS40	31.75	28.5	50.8	28.5	M10	49.2	50.8
D-BS45	31.75	28.5	76.2	28.5	M12	42.8	44.4
D-BS50	38.10	31.7	50.8	28.5	M10	53.9	55.5
D-BS55	38.10	31.7	76.2	28.5	M12	49.2	50.8
D-BS60	50.80	38.0	76.2	28.5	M12	68.2	69.8
D-BS70	63.50	44.5	127.0	31.7	M16	82.5	84.1

**Note:** Adaptor plate part no. E8045 available to suit 127mm PCD insulators and above BS type connectors.

#### Catalogue Number Explained

<b>D</b>	-	<b>B</b>	<b>S</b>	<b>5</b>
Dulmison		Busbar	Support	Style Number



## BUSIGN™ Bolted - Primary Equipment Connector/End Terminal



### OFFSET PALM TERMINAL OR BUSBAR TUBE SUPPORT

#### D-BT

The D-BT bolted terminal acts as a fixed busbar support or allows flexible conductors or primary plant to be attached to a busbar tube via the terminal palm. Manufactured as a casting, the dimension by which the terminal palm is offset from the centreline of the busbar tube is illustrated below. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Joint Seal compound specifically designed for copper bolted joints is recommended.

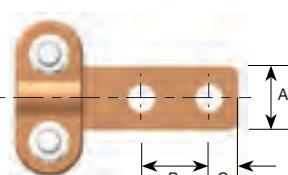
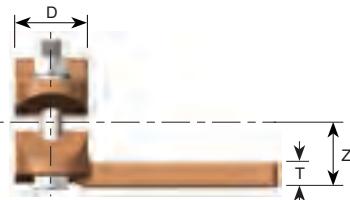


Fig. 1

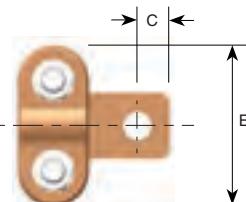


Fig. 2

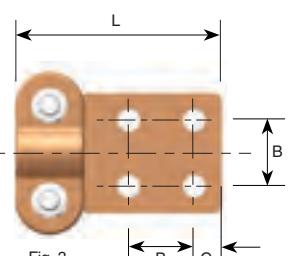


Fig. 3

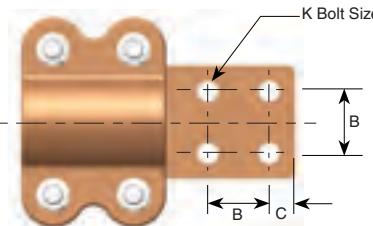


Fig. 4

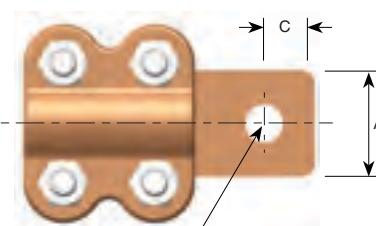


Fig. 5

#### Hardware

Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD (mm)	No. of Holes in Palm	Dim								
			A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	L (mm)	K (mm)	T (mm)	Z (mm)
D-BT2	12.7	2	29.0	---	14.0	32.0	38.0	64.0	M10	6.0	16.0
D-BT3	15.9	2	32.0	---	16.0	32.0	49.0	70.0	M10	10.0	16.0
D-BT5	19.1	2	32.0	---	16.0	35.0	52.0	73.0	M12	10.0	20.0
D-BT10	19.1	1	33.0	29.0	13.0	35.0	52.0	94.0	M10	10.0	20.0
D-BT20	25.4	1	41.0	38.0	16.0	44.0	67.0	121.0	M12	10.0	23.0
D-BT20A	25.4	5	38.0	---	19.0	51.0	59.0	108.0	M12	6.0	16.0
D-BT30	31.8	1	48.0	38.0	16.0	51.0	59.0	127.0	M12	10.0	26.0
D-BT33	33.3	3	70.0	38.0	16.0	51.0	76.0	130.0	M12	10.0	30.0
D-BT40	38.1	3	70.0	38.0	16.0	51.0	80.0	130.0	M12	11.0	30.0
D-BT46	46.0	4	70.0	38.0	16.0	64.0	89.0	146.0	M12	11.0	37.0
D-BT50	50.8	4	70.0	38.0	16.0	70.0	95.0	152.0	M12	11.0	37.0

**Note:** For current rating of parts on this page, contact PLP direct.

#### Catalogue Number Explained

<b>D</b>	-	<b>B</b>	<b>T</b>	<b>2</b>
Dulmison		Busbar	Terminal	Style Number

## BUSSIGN™ Bolted - End Terminal

### SINGLE BOLTED CONDUCTOR D-E



The D-E allows a single flexible conductor to be connected to the end of a copper substation busbar. This connector has been specifically developed as a range taking fitting so that each model of connector can accommodate a variety of copper flexible conductor sizes. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Joint Seal compound specifically designed for copper bolted joints is recommended.



Fig. 1

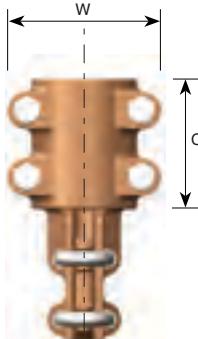
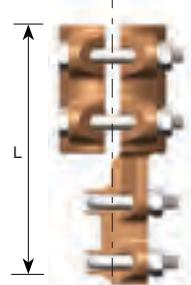
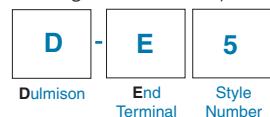


Fig. 2



Catalogue Number	Tube OD (mm)	Conductor Range		Fig. No.	Dim		
		Area (mm²)	OD (mm)		C (mm)	L (mm)	W (mm)
D-E5	12.7	16 - 95	5.10 - 12.60	1	31.7	86.5	42.9
D-E10	19.1	25 - 95	6.42 - 12.60	1	35.0	88.9	52.4
D-E15	19.1	35 - 95	7.65 - 12.60	1	35.0	98.4	52.4
D-E17	22.2	25 - 95	6.42 - 12.60	1	35.0	88.9	54.0
D-E20	25.4	25 - 95	6.42 - 12.60	1	35.0	88.9	58.8
D-E25	25.4	35 - 95	7.65 - 12.60	1	35.0	98.4	58.8
D-E30	25.4	70 - 150	10.70 - 15.75	1	44.5	117.5	68.2
D-E31C	25.4	150 - 240	15.75 - 20.25	2	60.3	141.3	58.8
D-E32C	25.4	500 - 630	28.80 - 33.80	2	76.2	190.5	73.0
D-E33C	30.0	70 - 150	10.70 - 15.75	2	63.5	139.7	47.6
D-E35	31.8	35 - 95	7.65 - 12.60	1	50.8	117.5	76.2
D-E40	31.8	70 - 150	10.70 - 15.75	1	50.8	127.0	76.2
D-E45	31.8	150 - 240	15.75 - 20.25	1	50.8	136.5	76.2
D-E46	31.8	240 - 400	20.25 - 25.65	2	76.2	168.3	69.9
D-E50	38.1	35 - 95	7.65 - 12.60	1	50.8	117.5	81.0
D-E55	38.1	70 - 150	10.70 - 15.75	1	50.8	123.9	81.0
D-E55C	38.1	70 - 150	10.70 - 15.75	2	76.2	149.3	76.2
D-E60C	38.1	150 - 240	15.75 - 20.25	2	76.2	155.6	76.2
D-E65	50.8	35 - 95	7.65 - 12.60	1	50.8	117.5	95.3
D-E70	50.8	70 - 150	10.70 - 15.75	1	50.8	127.0	95.3
D-E75	50.8	150 - 240	15.75 - 20.25	1	50.8	130.1	95.3
D-E80	76.2	35 - 95	7.65 - 12.60	1	57.1	108.0	127.0
D-E85	76.2	70 - 150	10.70 - 15.75	1	57.1	127.0	127.0
D-E90	76.2	150 - 240	15.75 - 20.25	1	57.1	142.8	127.0

#### Catalogue Number Explained







**PERFORMED** LINE PRODUCTS

## Section 4 - BUSLIGN™ Welded Aluminium

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CORONA DOME CAPS	
	EPBWEC
	Section 4 Pg. 3

FLAT END CAP	
	EPBWEFC
	Section 4 Pg. 4

A FRAME CONNECTORS	
	EPWVC
	Section 4 Pg. 5
	EPBWTC
	Section 4 Pg. 6

MIDSPAN COUPLER	
	EPBWJ
	Section 4 Pg. 7

ELBOW CONNECTOR	
	EPBWE
	Section 4 Pg. 8

TEE CONNECTORS	
	EPBFTIL
	Section 4 Pg. 9
	EPBFTOP
	Section 4 Pg. 10

	EPBWTC90
	Section 4 Pg. 11

EXPANSION SUPPORTS	
	EPBAXJW
	Section 4 Pg. 16
	EPAXJW90
	Section 4 Pg. 18

PRIMARY EQUIPMENT CONNECTORS	
	EPBDS1
	Section 4 Pg. 20
	EPBDS5
	Section 4 Pg. 21

END TERMINALS	
	EPBWET-90
	Section 4 Pg. 22
	EPBWET-135
	Section 4 Pg. 23
	EPBWET-180
	Section 4 Pg. 24

## BUSALIGN™ Welded - Corona Dome Cap

### NON DAMPING CONDUCTOR TYPE

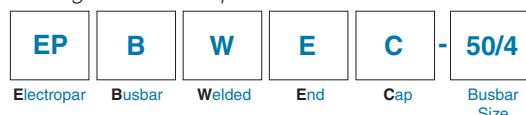
#### EPBWEC

BWAH - CDND

This style of cast BUSALIGN™ welded corona dome cap is fixed onto the end of a busbar via Metal Inert Gas (MIG) or Tungsten Inert Gas (TIG) welding. For installation, the cap is simply pushed into the end of the tube and welded around its circumference. Corona end caps reduce electrical discharge/noise and seal the tubes to prevent the entry of dust, contaminants and wildlife.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBWEC-50/4	50.0	4.0
EPBWEC-50/6	50.0	6.0
EPBWEC-75/6	75.0	6.0
EPBWEC-100/4	100.0	4.0
EPBWEC-100/6	100.0	6.0
EPBWEC-100/10	100.0	10.0
EPBWEC-125/6	125.0	6.0
EPBWEC-125/10	125.0	10.0
EPBWEC-140/6	140.0	6.0
EPBWEC-140/8	140.0	8.0
EPBWEC-140/10	140.0	10.0
EPBWEC-160/6	160.0	6.0
EPBWEC-160/10	160.0	10.0
EPBWEC-200/6	200.0	6.0
EPBWEC-200/10	200.0	10.0

*Catalogue Number Explained*



## BUSALIGN™ Welded - Flat End Cap

### NON DAMPING CONDUCTOR TYPE

#### EPBWECK

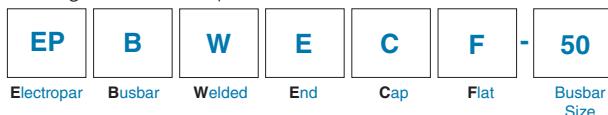
BWAH - ECND

This style of BUSALIGN™ welded flat end cap is fixed to the end of the busbar tube via Metal Inert Gas (MIG) or Tungsten Inert Gas (TIG) welding around the circumference. Flat end caps seal the busbar tubes to prevent the entry of dust, contaminants and wildlife.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBWECK-50	50.0	Any
EPBWECK-75	75.0	Any
EPBWECK-100	100.0	Any
EPBWECK-125	125.0	Any
EPBWECK-140	140.0	Any
EPBWECK-160	160.0	Any
EPBWECK-200	200.0	Any

Catalogue Number Explained



## BUSLIGN™ Welded - A Frame Connector

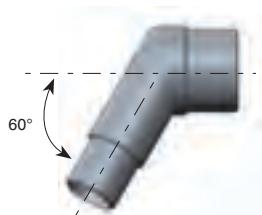
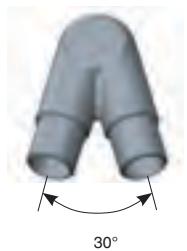
### VEE CONNECTOR 60 DEGREE

#### EPWVC

BWAH - VC60



The EPWVC vee connector is used in combination with BUSLIGN™ welded, bolted or welded/bolted hybrid tee connectors to create rigid busbar A frame connections. This style of welded vee connector sets the A frame at a 60 degree angle relative to the low perpendicular busbar. When using the EPWVC, the type of tee connector at the bottom of the A frame should be the 75 degree angled EPBWTC, EPBBTC or EPBWTC.



Catalogue Number	Run	Tap
	OD & WT (mm)	OD & WT (mm)
EPWVC-50/4-50/4	50 x 4.0	50 x 4.0
EPWVC-50/6-50/6	50 x 6.0	50 x 6.0
EPWVC-75/6-75/6	75 x 6.0	75 x 6.0
EPWVC-100/4-100/4	100 x 4.0	100 x 4.0
EPWVC-100/6-100/6	100 x 6.0	100 x 6.0
EPWVC-100/10-100/10	100 x 10.0	100 x 10.0
EPWVC-125/6-125/6	125 x 6.0	125 x 6.0
EPWVC-125/10-125/10	125 x 10.0	125 x 10.0
EPWVC-140/6-100/6	140 x 6.0	100 x 6.0
EPWVC-140/8-100/6	140 x 8.0	100 x 6.0
EPWVC-140/10-100/6	140 x 10.0	100 x 6.0
EPWVC-160/6-100/6	160 x 6.0	100 x 6.0
EPWVC-160/10-100/6	160 x 10.0	100 x 6.0
EPWVC-200/6-100/6	200 x 6.0	100 x 6.0
EPWVC-200/10-100/10	200 x 10.0	100 x 10.0

#### Catalogue Number Explained

<b>EP</b>	<b>W</b>	<b>V</b>	<b>C</b>	<b>-</b>	<b>50/4</b>	<b>-</b>	<b>50/4</b>
Electropar	Welded	Vee	Connector		Busbar Size - Run		Busbar Size - Tap

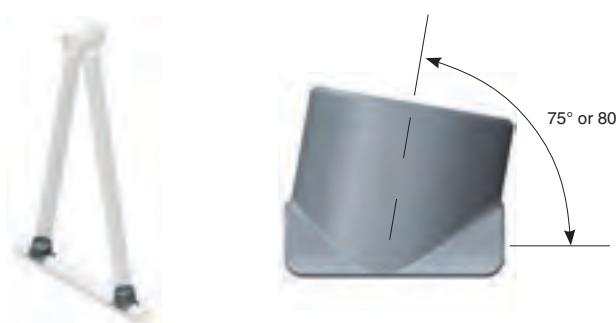


## BUSLIGHT™ Welded - A Frame Connector

### TEE CONNECTOR

#### EPBWTC

BWAH - TCWW



BUSLIGHT™ 75 and 80 degree welded tee connectors are used in combination with BUSLIGHT™ bolted vee connectors to create rigid tubular bus A frame connections. 75 degree tee connectors should be used with 30 degree vee connectors. 80 degree tee connectors should be used with 20 degree vee connectors.

Catalogue Number		Tube OD	
75 Degree	80 Degree	Run (mm)	Tap (mm)
EPBWTC75-50/50	EPBWTC80-50/50	50.0	50.0
EPBWTC75-75/50	EPBWTC80-75/50	75.0	50.0
EPBWTC75-100/50	EPBWTC80-100/50	100.0	50.0
EPBWTC75-100/75	EPBWTC80-100/75	100.0	75.0
EPBWTC75-100/100	EPBWTC80-100/100	100.0	100.0
EPBWTC75-125/75	EPBWTC80-125/75	125.0	75.0
EPBWTC75-125/100	EPBWTC80-125/100	125.0	100.0
EPBWTC75-125/125	EPBWTC80-125/125	125.0	125.0
EPBWTC75-140/75	EPBWTC80-140/75	140.0	75.0
EPBWTC75-140/100	EPBWTC80-140/100	140.0	100.0
EPBWTC75-160/100	EPBWTC80-160/100	160.0	100.0
EPBWTC75-160/125	EPBWTC80-160/125	160.0	125.0
EPBWTC75-200/100	EPBWTC80-200/100	200.0	100.0
EPBWTC75-200/125	EPBWTC80-200/125	200.0	125.0
EPBWTC75-200/140	EPBWTC80-200/140	200.0	140.0

Catalogue Number Explained

EP	B	W	T	C	75	-	50	/	50
Electropar	Busbar	Welded	Tee	Connector	Angle		Busbar Size - Run		Busbar Size - Tap

## BUSLIGHT™ Welded - Midspan Coupler

### FIXED

#### EPBWJ

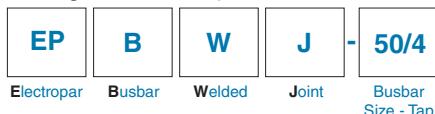
BWAH - FMC

BUSLIGHT™ welded fixed midspan couplers are used to connect busbar tubes midspan. Midspan couplers are supplied with a center stop so that they are equally inserted into each busbar tube being joined. Installation is normally made via Metal Inert Gas (MIG) welding. Fixed welded midspan couplers must never be deployed in the central 33% of a busbar tube span between post insulators.



Catalogue Number	Tube OD	
	OD (mm)	WT (mm)
EPBWJ-50/4	50.0	4.0
EPBWJ-50/6	50.0	6.0
EPBWJ-75/6	75.0	6.0
EPBWJ-100/4	100.0	4.0
EPBWJ-100/6	100.0	6.0
EPBWJ-100/10	100.0	10.0
EPBWJ-125/6	125.0	6.0
EPBWJ-125/10	125.0	10.0
EPBWJ-140/6	140.0	6.0
EPBWJ-140/8	140.0	8.0
EPBWJ-140/10	140.0	10.0
EPBWJ-160/6	160.0	6.0
EPBWJ-160/10	160.0	10.0
EPBWJ-200/6	200.0	6.0
EPBWJ-200/10	200.0	10.0

#### Catalogue Number Explained



Electropar   Busbar   Welded   Joint   Busbar Size - Tap



## BUSLIGHT™ Welded - Elbow Connector

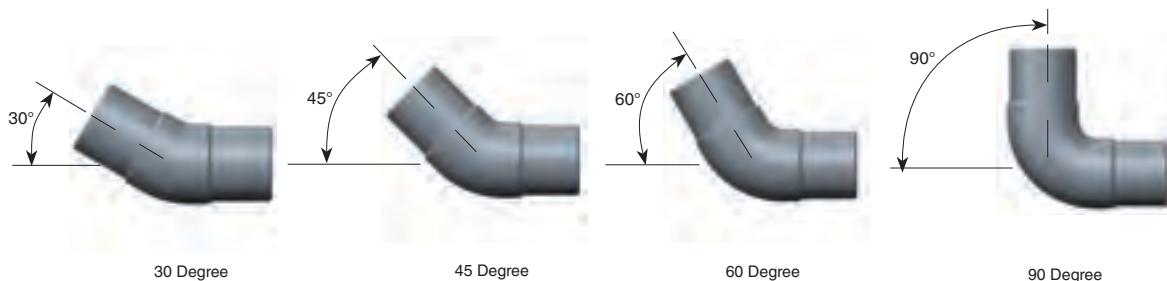
**FIXED 30, 45, 60 & 90 DEGREE**

**EPBWE**

BWAH - EBO



BUSLIGHT™ welded elbows are used to create horizontal or vertical angles within busbar tube assemblies. Installation is normally made via Metal Inert Gas (MIG) welding. Standard angles are 30, 45, 60 and 90 degrees. Other angles are available on request.



30 Degree

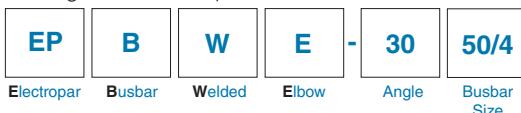
45 Degree

60 Degree

90 Degree

Catalogue Number				Tube	
30 Degree	45 Degree	60 Degree	90 Degree	OD (mm)	WT (mm)
EPBWE30-50/4	EPBWE45-50/4	EPBWE60-50/4	EPBWE90-50/4	50.0	4.0
EPBWE30-50/6	EPBWE45-50/6	EPBWE60-50/6	EPBWE90-50/6	50.0	6.0
EPBWE30-75/6	EPBWE45-75/6	EPBWE60-75/6	EPBWE90-75/6	75.0	6.0
EPBWE30-100/4	EPBWE45-100/4	EPBWE60-100/4	EPBWE90-100/4	100.0	4.0
EPBWE30-100/6	EPBWE45-100/6	EPBWE60-100/6	EPBWE90-100/6	100.0	6.0
EPBWE30-100/10	EPBWE45-100/10	EPBWE60-100/10	EPBWE90-100/10	100.0	10.0
EPBWE30-125/6	EPBWE45-125/6	EPBWE60-125/6	EPBWE90-125/6	125.0	6.0
EPBWE30-125/10	EPBWE45-125/10	EPBWE60-125/10	EPBWE90-125/10	125.0	10.0
EPBWE30-140/6	EPBWE45-140/6	EPBWE60-140/6	EPBWE90-140/6	140.0	6.0
EPBWE30-140/8	EPBWE45-140/8	EPBWE60-140/8	EPBWE90-140/8	140.0	8.0
EPBWE30-140/10	EPBWE45-140/10	EPBWE60-140/10	EPBWE90-140/10	140.0	10.0
EPBWE30-160/6	EPBWE45-160/6	EPBWE60-160/6	EPBWE90-160/6	160.0	6.0
EPBWE30-160/10	EPBWE45-160/10	EPBWE60-160/10	EPBWE90-160/10	160.0	10.0
EPBWE30-200/6	EPBWE45-200/6	EPBWE60-200/6	EPBWE90-200/6	200.0	6.0
EPBWE30-200/10	EPBWE45-200/10	EPBWE60-200/10	EPBWE90-200/10	200.0	10.0

Catalogue Number Explained



## BUSSIGN™ Welded - Tee Connector

### PALM TAP

#### EPBFTIL

BWAH - TBPTZ1

BUSSIGN™ EPBFTIL welded tee connectors allow flexible conductors or primary equipment to be attached to the midspan section of a busbar tube. Manufactured from extruded Aluminium bar, the EPBFTIL is installed via Metal Inert Gas (MIG) welding to the busbar tube. The advantage of this style of welded tee is that it does not have an integral radius which is particular to one size of tube. So on site any EPBFTIL terminal palm will fit any metric size of aluminium busbar tube.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBFTIL-50-a/bbb/cc-dd	50.0	Any
EPBFTIL-75-a/bbb/cc-dd	75.0	Any
EPBFTIL-100-a/bbb/cc-dd	100.0	Any
EPBFTIL-125-a/bbb/cc-dd	125.0	Any
EPBFTIL-140-a/bbb/cc-dd	140.0	Any
EPBFTIL-160-a/bbb/cc-dd	160.0	Any
EPBFTIL-200-a/bbb/cc-dd	200.0	Any

Common Terminal Palm Configurations		
Hole Size & Centres	Terminal Palm Size (mm)	Thickness (mm)
2/M12/50	100 x 50	12, 16, 20 & 25
2/M16/50	100 x 50	12, 16, 20 & 25
4/M12/50	100 x 100	12, 16, 20 & 25
4/M16/50	100 x 100	12, 16, 20 & 25
8/M12/50	100 x 200	12, 16, 20 & 25
8/M16/50	100 x 200	12, 16, 20 & 25

#### Catalogue Number Explained

EP	B	F	T	IL	-	50	-	a	/	bbb	/	cc	-	dd
Electropar	Busbar	Flag	Terminal	In Line		Busbar Size	Number of Holes (e.g.2)			Suit Bolt Size (e.g.M12)	Holes Centres in Millimetres (e.g.50)		Terminal Palm Thickness, Millimetres (e.g.20)	



## BUSIGN™ Welded - Tee Connector

### PALM TAP

### EPBFTOP

BWAH - TBPTZ1A

BUSIGN™ EPBFTOP welded tee connectors allow flexible conductors or primary equipment to be attached to the midspan section of a busbar tube. Manufactured from extruded aluminium bar, the EPBFTOP is installed via Metal Inert Gas (MIG) welding to the busbar tube. A full circumferential weld on both sides of the connector ensures the straightness of the busbar tube will not be distorted by the heating effect of the welding process.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBFTOP-50-a/bbb/cc-dd	50.0	Any
EPBFTOP-75-a/bbb/cc-dd	75.0	Any
EPBFTOP-100-a/bbb/cc-dd	100.0	Any
EPBFTOP-125-a/bbb/cc-dd	125.0	Any
EPBFTOP-140-a/bbb/cc-dd	140.0	Any
EPBFTOP-160-a/bbb/cc-dd	160.0	Any
EPBFTOP-200-a/bbb/cc-dd	200.0	Any

Common Terminal Palm Configurations		
Hole Size & Centres	Terminal Palm Size (mm)	Thickness (mm)
2/M12/50	100 x 50	12, 16, 20, 25
2/M16/50	100 x 50	12, 16, 20, 25
4/M12/50	100 x 100	12, 16, 20, 25
4/M16/50	100 x 100	12, 16, 20, 25
8/M12/50	100 x 200	12, 16, 20, 25
8/M16/50	100 x 200	12, 16, 20, 25

#### Catalogue Number Explained



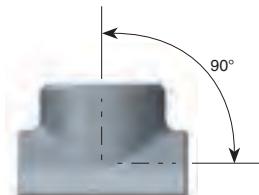
## BUSLIGHT™ Welded - Tee Connector

### WELDED TUBE TAP

#### EPBWTC90

BWAH - TWT

BUSLIGHT™ 90 degree welded tee connectors are most often used to create rigid busbar tube connections between high and low perpendicular busbars. Manufactured as a casting, the EPBWTC90 is installed via Metal Inert Gas (MIG) welding to the busbar tube.



Catalogue Number	Tube OD	
	Run (mm)	Tap (mm)
EPBWTC90-50/50	50.0	50.0
EPBWTC90-75/50	75.0	50.0
EPBWTC90-100/50	100.0	50.0
EPBWTC90-100/75	100.0	75.0
EPBWTC90-100/100	100.0	100.0
EPBWTC90-125/75	125.0	75.0
EPBWTC90-125/100	125.0	100.0
EPBWTC90-125/125	125.0	125.0
EPBWTC90-140/75	140.0	75.0
EPBWTC90-140/100	140.0	100.0
EPBWTC90-140/125	140.0	125.0
EPBWTC90-140/140	140.0	140.0
EPBWTC90-160/100	160.0	100.0
EPBWTC90-160/125	160.0	125.0
EPBWTC90-160/160	160.0	160.0
EPBWTC90-200/100	200.0	100.0
EPBWTC90-200/125	200.0	125.0
EPBWTC90-200/140	200.0	140.0
EPBWTC90-200/160	200.0	160.0
EPBWTC90-200/200	200.0	200.0

#### Catalogue Number Explained

EP	B	W	T	C	90	-	50	/	50
Electropar	Busbar	Welded	Tee	Connector	Angle	Busbar OD - Run	Busbar OD - Tap		



## BUSIGN™ Welded - Earth Ground Point

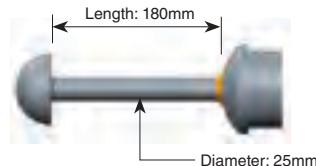
### TUBE CONNECTION

#### EPBWEPIL

BWAH - EGPIL

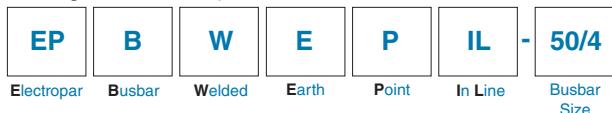


BUSIGN™ welded earth ground points are designed to be welded to the end of busbar tubes so that a temporary earth lead or ground lead can be applied to the busbar. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop to eliminate the risk of the earth lead or ground lead sliding off the end of the earth ground point when it is being applied via hotstick. Installation of the EPBWEPIL is normally made via Metal Inert Gas (MIG) welding.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBWEPIL-50/4	50.0	4.0
EPBWEPIL-50/6	50.0	6.0
EPBWEPIL-75/6	75.0	6.0
EPBWEPIL-100/4	100.0	4.0
EPBWEPIL-100/6	100.0	6.0
EPBWEPIL-100/10	100.0	10.0
EPBWEPIL-125/6	125.0	6.0
EPBWEPIL-125/10	125.0	10.0
EPBWEPIL-140/6	140.0	6.0
EPBWEPIL-140/8	140.0	8.0
EPBWEPIL-140/10	140.0	10.0
EPBWEPIL-160/6	160.0	6.0
EPBWEPIL-160/10	160.0	10.0
EPBWEPIL-200/6	200.0	6.0
EPBWEPIL-200/10	200.0	10.0

#### Catalogue Number Explained



## BUSLIGHT™ Welded - Earth Ground Point

### TUBE CONNECTION

#### EPBWEP

BWAH - EGPMZ1

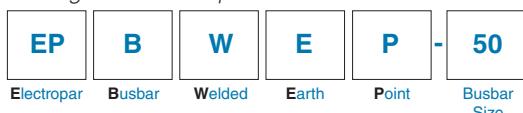


BUSLIGHT™ welded earth ground points are designed to be welded to busbar tubes so that a temporary earth lead or ground lead can be applied to the busbar. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop to eliminate the risk of the earth lead or ground lead sliding off the end of the earth ground point when being applied via hotstick. Installation of the EPBWEP is normally made via Metal Inert Gas (MIG) welding.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBWEP-50	50.0	Any
EPBWEP-75	75.0	Any
EPBWEP-100	100.0	Any
EPBWEP-125	125.0	Any
EPBWEP-140	140.0	Any
EPBWEP-160	160.0	Any
EPBWEP-200	200.0	Any

#### Catalogue Number Explained





## BUSLIGHT™ Welded - Earth Ground Stirrup

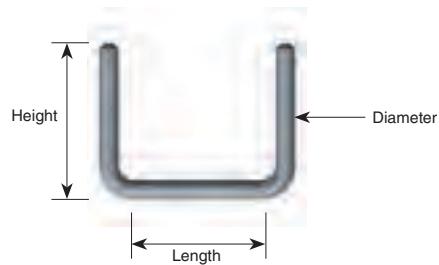
### TUBE CONNECTION

#### EPBWES

BWAH - EGS



BUSLIGHT™ welded earth ground points are designed to be welded to busbar tubes so that a temporary earth lead or ground lead can be applied to the busbar. Manufactured from extruded aluminium alloy round bar, the EPBWES suits any sized Aluminium busbar tube. Installation is made via Metal Inert Gas (MIG) welding. If stirrup lengths or heights other than standard are required, specify in the PLP catalogue number as illustrated below.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBWES-160/150/20	Any	Any
EPBWES-200/150/20	Any	Any
EPBWES-220/150/20	Any	Any
EPBWES-300/150/20	Any	Any
EPBWES-300/150/25	Any	Any
EPBWES-330/150/25	Any	Any

#### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>W</b>	<b>E</b>	<b>S</b>	<b>-</b>	<b>160</b>	<b>/</b>	<b>150</b>	<b>/</b>	<b>20</b>
Electropar	Busbar	Welded	Earth	Stirrip		Stirrup Length		Stirrup Height		Stirrup Diameter

## BUSSIGN™ Welded - Fixed Support

### TWIN SUPPORT FOR UNDERHUNG BUS

#### EPUBS BWAH - FSTZ1A

The EPUBS fixed support attaches to the busbar tube via Metal Inert Gas (MIG) welding. It can be used to support the busbar tube in an upright position, a wall mounted position or a hanging position underneath a substation structure. However, this type of support is also commonly used to hang a polymeric post insulator from a bus where a phase to phase insulation approach is being utilised in a substation. 127mm PCD is supplied as standard, but other PCD's are available on request. Busbar tube support sizes and centrelines for metric tubes other than those listed below are available on request, please consult PLP for details.



Only Available In PCD  
Orientation A

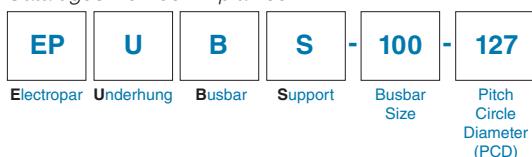


Underhung Insulator



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPUBS-100-127	100.0	135.0
EPUBS-125-127	125.0	150.0
EPUBS-140-127	140.0	155.0
EPUBS-160-127	160.0	165.0
EPUBS-200-127	200.0	185.0

#### Catalogue Number Explained





## BUSIGN™ Welded - Expansion Support

### FIXED / SLIDING OR SLIDING / SLIDING

#### EPBAXJW

BWAH - STXZ1



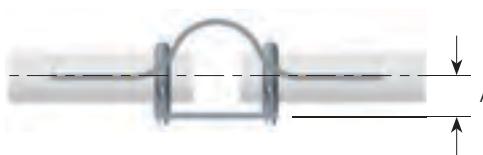
The EPBAXJW allows an expansion connection to be made atop of a post insulator in a busbar tube system. The assembly allows the busbar tube to expand and contract in response to changes in load and operating temperature. In doing so, the expansion support eliminates the possibility of the busbar tube applying a mechanical load to the substation primary equipment. The EPBAXJW busbar tube support is installed via Metal Inert Gas (MIG) welding to the busbar tube and can be installed in sliding/sliding or fixed/sliding configuration and this must be specified in the catalogue number below together with the Pitch Circle Diameter (PCD) orientation. The flexible connectors are manufactured from laminated aluminium strips MIG welded to end terminals which are weld prepared for final site installation. Busbar tube support sizes and centrelines for metric tubes other than those listed below are available on request, please consult PLP for details.



PCD Orientation A



PCD Orientation B



#### Hardware

Tube Clamps - Grade A2 70 (304) stainless steel fastenings, Metric

Fixed Support Bolt - Grade A2 70 (304) stainless steel fastenings, Metric

Insulator Attachment - HDG Grade 8.8 fastenings, Metric (M12 or M16)

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW-75-SS-76-A-91	75.0	Sliding / Sliding	76.0	A	91.0
EPBAXJW-75-SS-76-B-91	75.0	Sliding / Sliding	76.0	B	91.0
EPBAXJW-100-SS-76-A-105	100.0	Sliding / Sliding	76.0	A	105.0
EPBAXJW-100-SS-76-B-105	100.0	Sliding / Sliding	76.0	B	105.0
EPBAXJW-125-SS-76-A-116	125.0	Sliding / Sliding	76.0	A	116.0
EPBAXJW-125-SS-76-B-116	125.0	Sliding / Sliding	76.0	B	116.0
EPBAXJW-140-SS-76-A-124	140.0	Sliding / Sliding	76.0	A	124.0
EPBAXJW-140-SS-76-B-124	140.0	Sliding / Sliding	76.0	B	124.0
EPBAXJW-160-SS-76-A-134	160.0	Sliding / Sliding	76.0	A	134.0
EPBAXJW-160-SS-76-B-134	160.0	Sliding / Sliding	76.0	B	134.0
EPBAXJW-200-SS-76-A-154	200.0	Sliding / Sliding	76.0	A	154.0
EPBAXJW-200-SS-76-B-154	200.0	Sliding / Sliding	76.0	B	154.0

Material: Aluminium  
Maximum Voltage Application: 230kV

Section 4

## BUSLIGN™ Welded

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW-75-SS-127-A-91	75.0	Sliding / Sliding	127.0	A	91.0
EPBAXJW-75-SS-127-B-91	75.0	Sliding / Sliding	127.0	B	91.0
EPBAXJW-100-SS-127-A-105	100.0	Sliding / Sliding	127.0	A	105.0
EPBAXJW-100-SS-127-B-105	100.0	Sliding / Sliding	127.0	B	105.0
EPBAXJW-125-SS-127-A-116	125.0	Sliding / Sliding	127.0	A	116.0
EPBAXJW-125-SS-127-B-116	125.0	Sliding / Sliding	127.0	B	116.0
EPBAXJW-140-SS-127-A-124	140.0	Sliding / Sliding	127.0	A	124.0
EPBAXJW-140-SS-127-B-124	140.0	Sliding / Sliding	127.0	B	124.0
EPBAXJW-160-SS-127-A-134	160.0	Sliding / Sliding	127.0	A	134.0
EPBAXJW-160-SS-127-B-134	160.0	Sliding / Sliding	127.0	B	134.0
EPBAXJW-200-SS-127-A-154	200.0	Sliding / Sliding	127.0	A	154.0
EPBAXJW-200-SS-127-B-154	200.0	Sliding / Sliding	127.0	B	154.0

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW-75-FS-76-A-91	75.0	Fixed / Sliding	76.0	A	91.0
EPBAXJW-75-FS-76-B-91	75.0	Fixed / Sliding	76.0	B	91.0
EPBAXJW-100-FS-76-A-105	100.0	Fixed / Sliding	76.0	A	105.0
EPBAXJW-100-FS-76-B-105	100.0	Fixed / Sliding	76.0	B	105.0
EPBAXJW-125-FS-76-A-116	125.0	Fixed / Sliding	76.0	A	116.0
EPBAXJW-125-FS-76-B-116	125.0	Fixed / Sliding	76.0	B	116.0
EPBAXJW-140-FS-76-A-124	140.0	Fixed / Sliding	76.0	A	124.0
EPBAXJW-140-FS-76-B-124	140.0	Fixed / Sliding	76.0	B	124.0
EPBAXJW-160-FS-76-A-134	160.0	Fixed / Sliding	76.0	A	134.0
EPBAXJW-160-FS-76-B-134	160.0	Fixed / Sliding	76.0	B	134.0
EPBAXJW-200-FS-76-A-154	200.0	Fixed / Sliding	76.0	A	154.0
EPBAXJW-200-FS-76-B-154	200.0	Fixed / Sliding	76.0	B	154.0

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW-75-FS-127-A-91	75.0	Fixed / Sliding	127.0	A	91.0
EPBAXJW-75-FS-127-B-91	75.0	Fixed / Sliding	127.0	B	91.0
EPBAXJW-100-FS-127-A-105	100.0	Fixed / Sliding	127.0	A	105.0
EPBAXJW-100-FS-127-B-105	100.0	Fixed / Sliding	127.0	B	105.0
EPBAXJW-125-FS-127-A-116	125.0	Fixed / Sliding	127.0	A	116.0
EPBAXJW-125-FS-127-B-116	125.0	Fixed / Sliding	127.0	B	116.0
EPBAXJW-140-FS-127-A-124	140.0	Fixed / Sliding	127.0	A	124.0
EPBAXJW-140-FS-127-B-124	140.0	Fixed / Sliding	127.0	B	124.0
EPBAXJW-160-FS-127-A-134	160.0	Fixed / Sliding	127.0	A	134.0
EPBAXJW-160-FS-127-B-134	160.0	Fixed / Sliding	127.0	B	134.0
EPBAXJW-200-FS-127-A-154	200.0	Fixed / Sliding	127.0	A	154.0
EPBAXJW-200-FS-127-B-154	200.0	Fixed / Sliding	127.0	B	154.0

### Catalogue Number Explained





## BUSSIGN™ Welded - Expansion Support

**FIXED / SLIDING OR SLIDING / SLIDING**

**EPBAXJW90**

BWAH - STX90



The EPBAXJW90 allows an expansion connection to be made at a 90 degree corner in a busbar tube system. The assembly allows the busbar tube to expand and contract in response to changes in load and operating temperature. In doing so, the expansion support eliminates the possibility of the busbar tube applying a mechanical load to the substation primary equipment. The flexible laminates of the busbar tube support are installed via Metal Inert Gas (MIG) welding to busbar tube. The support can be installed in sliding/sliding or fixed/sliding configuration and this must be specified in the catalogue number below together with the Pitch Circle Diameter (PCD) orientation. Busbar tube support sizes and centrelines for metric tubes other than those listed below are available on request, please consult PLP for details.



PCD Orientation A



PCD Orientation B



### Hardware

Tube Clamps - Grade A2 70 (304) stainless steel fastenings, Metric

Fixed Support Bolt - Grade A2 70 (304) stainless steel fastenings, Metric

Insulator Attachment - HDG Grade 8.8 fastenings, Metric (M12 or M16)

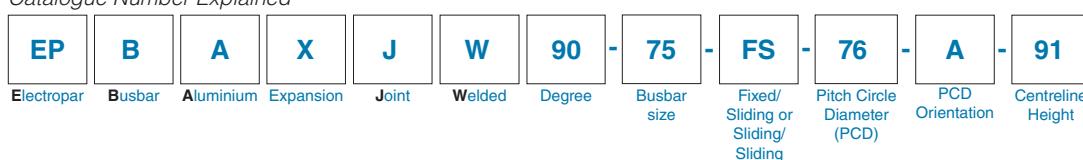
Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW90-75-FS-76-A-91	75.0	Fixed / Sliding	76.0	A	91.0
EPBAXJW90-75-FS-76-B-91	75.0	Fixed / Sliding	76.0	B	91.0
EPBAXJW90-100-FS-76-A-105	100.0	Fixed / Sliding	76.0	A	105.0
EPBAXJW90-100-FS-76-B-105	100.0	Fixed / Sliding	76.0	B	105.0
EPBAXJW90-125-FS-76-A-116	125.0	Fixed / Sliding	76.0	A	116.0
EPBAXJW90-125-FS-76-B-116	125.0	Fixed / Sliding	76.0	B	116.0
EPBAXJW90-140-FS-76-A-124	140.0	Fixed / Sliding	76.0	A	124.0
EPBAXJW90-140-FS-76-B-124	140.0	Fixed / Sliding	76.0	B	124.0
EPBAXJW90-160-FS-76-A-134	160.0	Fixed / Sliding	76.0	A	134.0
EPBAXJW90-160-FS-76-B-134	160.0	Fixed / Sliding	76.0	B	134.0
EPBAXJW90-200-FS-76-A-154	200.0	Fixed / Sliding	76.0	A	154.0
EPBAXJW90-200-FS-76-B-154	200.0	Fixed / Sliding	76.0	B	154.0

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW90-75-FS-127-A-91	75.0	Fixed / Sliding	127.0	A	91.0
EPBAXJW90-75-FS-127-B-91	75.0	Fixed / Sliding	127.0	B	91.0
EPBAXJW90-100-FS-127-A-105	100.0	Fixed / Sliding	127.0	A	105.0
EPBAXJW90-100-FS-127-B-105	100.0	Fixed / Sliding	127.0	B	105.0
EPBAXJW90-125-FS-127-A-116	125.0	Fixed / Sliding	127.0	A	116.0
EPBAXJW90-125-FS-127-B-116	125.0	Fixed / Sliding	127.0	B	116.0
EPBAXJW90-140-FS-127-A-124	140.0	Fixed / Sliding	127.0	A	124.0
EPBAXJW90-140-FS-127-B-124	140.0	Fixed / Sliding	127.0	B	124.0
EPBAXJW90-160-FS-127-A-134	160.0	Fixed / Sliding	127.0	A	134.0
EPBAXJW90-160-FS-127-B-134	160.0	Fixed / Sliding	127.0	B	134.0
EPBAXJW90-200-FS-127-A-154	200.0	Fixed / Sliding	127.0	A	154.0
EPBAXJW90-200-FS-127-B-154	200.0	Fixed / Sliding	127.0	B	154.0

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW90-75-SS-76-A-91	75.0	Sliding / Sliding	76.0	A	91.0
EPBAXJW90-75-SS-76-B-91	75.0	Sliding / Sliding	76.0	B	91.0
EPBAXJW90-100-SS-76-A-105	100.0	Sliding / Sliding	76.0	A	105.0
EPBAXJW90-100-SS-76-B-105	100.0	Sliding / Sliding	76.0	B	105.0
EPBAXJW90-125-SS-76-A-116	125.0	Sliding / Sliding	76.0	A	116.0
EPBAXJW90-125-SS-76-B-116	125.0	Sliding / Sliding	76.0	B	116.0
EPBAXJW90-140-SS-76-A-124	140.0	Sliding / Sliding	76.0	A	124.0
EPBAXJW90-140-SS-76-B-124	140.0	Sliding / Sliding	76.0	B	124.0
EPBAXJW90-160-SS-76-A-134	160.0	Sliding / Sliding	76.0	A	134.0
EPBAXJW90-160-SS-76-B-134	160.0	Sliding / Sliding	76.0	B	134.0
EPBAXJW90-200-SS-76-A-154	200.0	Sliding / Sliding	76.0	A	154.0
EPBAXJW90-200-SS-76-B-154	200.0	Sliding / Sliding	76.0	B	154.0

Catalogue Number	Tube	Support	Insulator	Insulator PCD	Centreline
	OD (mm)	Type	PCD (mm)	Orientation	Dim A (mm)
EPBAXJW90-75-SS-127-A-91	75.0	Sliding / Sliding	127.0	A	91.0
EPBAXJW90-75-SS-127-B-91	75.0	Sliding / Sliding	127.0	B	91.0
EPBAXJW90-100-SS-127-A-105	100.0	Sliding / Sliding	127.0	A	105.0
EPBAXJW90-100-SS-127-B-105	100.0	Sliding / Sliding	127.0	B	105.0
EPBAXJW90-125-SS-127-A-116	125.0	Sliding / Sliding	127.0	A	116.0
EPBAXJW90-125-SS-127-B-116	125.0	Sliding / Sliding	127.0	B	116.0
EPBAXJW90-140-SS-127-A-124	140.0	Sliding / Sliding	127.0	A	124.0
EPBAXJW90-140-SS-127-B-124	140.0	Sliding / Sliding	127.0	B	124.0
EPBAXJW90-160-SS-127-A-134	160.0	Sliding / Sliding	127.0	A	134.0
EPBAXJW90-160-SS-127-B-134	160.0	Sliding / Sliding	127.0	B	134.0
EPBAXJW90-200-SS-127-A-154	200.0	Sliding / Sliding	127.0	A	154.0
EPBAXJW90-200-SS-127-B-154	200.0	Sliding / Sliding	127.0	B	154.0

## Catalogue Number Explained





## BUSIGN™ Welded - Primary Equipment Connector

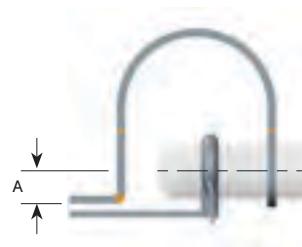
### SLIDING HORIZONTAL OFFSET PALM

#### EPBDS1

BWAH - SPEXHZ1A



The EPBDS1 support allows a busbar tube attached to an item of substation primary equipment to expand and contract in response to changes in busbar operating temperature. In doing so, the expansion support eliminates the possibility of the busbar tube applying a mechanical load to the substation primary equipment. The EPBDS1 primary equipment busbar tube support is installed via Metal Inert Gas (MIG) welding to the busbar tube. The busbar tube support plate bolts to the underside of the equipment terminal palm while current is transferred from the busbar tube to the equipment via the laminated flexible shunt connector that fixes to the top side of the steel equipment terminal palm. With this design, the busbar tube sits on teflon buttons located inside the support. The low friction teflon allows the busbar tube to move freely within the support for long term maintenance free operation.



#### Hardware

Tube Clamps - Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube	Tube	Dim A
	OD (mm)	WT (mm)	(mm)
EPBDS1-50-a/bbb/cc-70	50.0	Any	70.0
EPBDS1-75-a/bbb/cc-91	75.0	Any	91.0
EPBDS1-100-a/bbb/cc-105	100.0	Any	105.0
EPBDS1-125-a/bbb/cc-116	125.0	Any	116.0
EPBDS1-140-a/bbb/cc-124	140.0	Any	124.0
EPBDS1-160-a/bbb/cc-134	160.0	Any	134.0
EPBDS1-200-a/bbb/cc-154	200.0	Any	154.0

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 100
2/M16/50	100 x 100
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

#### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>D</b>	<b>S</b>	<b>1</b>	<b>-</b>	<b>50</b>	<b>-</b>	<b>a</b>	<b>/</b>	<b>bbb</b>	<b>/</b>	<b>cc</b>	<b>-</b>	<b>70</b>
Electropar	Busbar	Disconnector	Support	Style 1		Busbar Size		Number of Holes (e.g. 2)		Suit Bolt Size (e.g.M12)		Hole Centres in Millimetres (e.g.20)		Terminal Palm Thickness, Millimetres (e.g.20)

## BUSSIGN™ Welded - Primary Equipment Connector

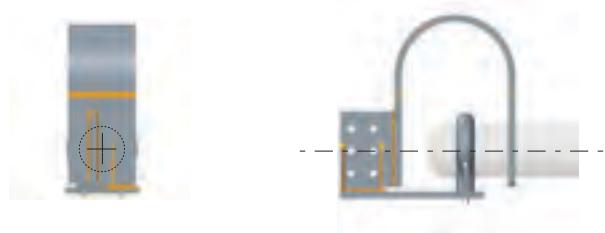
### SLIDING VERTICAL CENTRE PALM

#### EPBDS5

BWAH - SPEXVZ1A



The EPBDS5 support allows a busbar tube attached to an item of substation primary equipment to expand and contract in response to changes in busbar tube operating temperature. In doing so, the expansion support eliminates the possibility of the busbar tube applying a mechanical load to the substation primary equipment. The EPBDS5 primary equipment support is installed via Metal Inert Gas (MIG) welding to the busbar tube. The Hot Dip Galvanised (HDG) support plate bolts to one side of the equipment terminal palm while current is transferred from the busbar tube to the equipment via the laminated flexible shunt connector that fixes to the other side of the terminal palm. With this design, the busbar tube sits on teflon buttons located inside the support. The low friction teflon allows the busbar tube to move freely within the support for long term maintenance free operation. Note that the busbar tube centreline is aligned with centre of terminal palm but this can be customised if required.



#### Hardware

Tube Clamps - Grade A2 70 (304) stainless steel fastenings, Metric

Catalogue Number	Tube OD (mm)	Tube WT (mm)
EPBDS5-50-a/bbb/cc	50.0	Any
EPBDS5-75-a/bbb/cc	75.0	Any
EPBDS5-100-a/bbb/cc	100.0	Any
EPBDS5-125-a/bbb/cc	125.0	Any
EPBDS5-140-a/bbb/cc	140.0	Any
EPBDS5-160-a/bbb/cc	160.0	Any
EPBDS5-200-a/bbb/cc	200.0	Any

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 100
2/M16/50	100 x 100
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

#### Catalogue Number Explained

EP	B	D	S	5	-	50	/	a	/	bbb	/	cc
Electropar	Busbar	Disconnecter	Support	Type 5		Busbar Size	Number of Holes (e.g. 2)	Suit Bolt Size (e.g. M12)	Hole Centres in Millimetres (e.g. 50)			

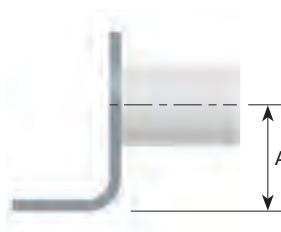
## BUSIGN™ Welded - Primary Equipment Connector/End Terminal



### OFFSET PALM TERMINAL OR TUBE SUPPORT EPBWET-90

BWAH - ETPZ1

The EPBWET-90 welded end terminal acts as a fixed busbar tube support or allows flexible conductors or primary equipment to be attached to a busbar tube. Manufactured from extruded aluminium bar, the dimension by which the terminal palm is offset from the centreline of the busbar tube is variable and able to be specified at time of order. This fitting allows the installer to account for variability in final equipment heights (due to site civil works) which create the electrical installation. The EPBWET-90 is installed via Metal Inert Gas (MIG) welding to the busbar tube.



Catalogue Number	Tube	Tube	Dim A	Common Terminal Palm Configurations		
	OD (mm)	WT (mm)	(mm)	Hole Size & Centres	Terminal Palm Size (mm)	Thickness (mm)
EPBWET-50-90-a/bbb/cc-70	50.0	Any	70.0	2/M12/50	100 x 50	12, 16, 20, 25
EPBWET-75-90-a/bbb/cc-91	75.0	Any	91.0	2/M16/50	100 x 50	12, 16, 20, 25
EPBWET-100-90-a/bbb/cc-105	100.0	Any	105.0	4/M12/50	100 x 100	12, 16, 20, 25
EPBWET-125-90-a/bbb/cc-116	125.0	Any	116.0	4/M16/50	100 x 100	12, 16, 20, 25
EPBWET-140-90-a/bbb/cc-124	140.0	Any	124.0	8/M12/50	100 x 200	12, 16, 20, 25
EPBWET-160-90-a/bbb/cc-134	160.0	Any	134.0	8/M16/50	100 x 200	12, 16, 20, 25
EPBWET-200-90-a/bbb/cc-154	200.0	Any	154.0			

#### Catalogue Number Explained

EP	B	W	E	T	-	50	-	90	-	a	/	bbb	/	cc	-	70
Electropar	Busbar	Welded	End	Terminal		Busbar Size		Angle		Number of Holes (e.g. 2)		Suit Bolt Size (e.g.M12)		Hole Centres in Millimetres (e.g.20)		Centreline Height, Millimetres (e.g.20)

## BUSLIGHT™ Welded - End Terminal

### 135° TERMINAL EPBWET-135



BUSLIGHT™ welded end terminals allow flexible conductors or primary equipment to be connected to a busbar tube. In straight configuration, the terminal palm sits exactly on the centreline of the busbar tube. When used as a busbar support, it can be attached to either the top or the bottom of the substation primary equipment terminal. The EPBWET-135 is installed via Metal Inert Gas (MIG) welding to the busbar tube and can be used as a bus support as well as a terminal palm.



Catalogue Number	Tube	Tube
	OD (mm)	WT (mm)
EPBWET-50-135-a/bbb/cc-dd	50.0	Any
EPBWET-75-135-a/bbb/cc-dd	75.0	Any
EPBWET-100-135-a/bbb/cc-dd	100.0	Any
EPBWET-125-135-a/bbb/cc-dd	125.0	Any
EPBWET-140-135-a/bbb/cc-dd	140.0	Any
EPBWET-160-135-a/bbb/cc-dd	160.0	Any
EPBWET-200-135-a/bbb/cc-dd	200.0	Any

Common Terminal Palm Configurations		
Hole Size & Centres	Terminal Palm Size (mm)	Thickness (mm)
2/M12/50	100 x 50	12, 16, 20, 25
2/M16/50	100 x 50	12, 16, 20, 25
4/M12/50	100 x 100	12, 16, 20, 25
4/M16/50	100 x 100	12, 16, 20, 25
8/M12/50	100 x 200	12, 16, 20, 25
8/M16/50	100 x 200	12, 16, 20, 25

#### Catalogue Number Explained



## BUSALIGN™ Welded - End Terminal



**180° TERMINAL**  
**EPBWET-180**

BUSALIGN™ welded end terminals allow flexible conductors or primary equipment to be connected to a busbar tube. In straight configuration, the terminal palm sits exactly on the centreline of the busbar tube. When used as a busbar support, it can be attached to either to either the top or the bottom of the substation primary equipment terminal. The EPBWET-180 is installed via Metal Inert Gas (MIG) welding to the busbar tube and can be used as a bus support as well as a terminal palm.



Catalogue Number	Tube	
	OD (mm)	WT (mm)
EPBWET-50-180-a/bbb/cc-dd	50.0	Any
EPBWET-75-180-a/bbb/cc-dd	75.0	Any
EPBWET-100-180-a/bbb/cc-dd	100.0	Any
EPBWET-125-180-a/bbb/cc-dd	125.0	Any
EPBWET-140-180-a/bbb/cc-dd	140.0	Any
EPBWET-160-180-a/bbb/cc-dd	160.0	Any
EPBWET-200-180-a/bbb/cc-dd	200.0	Any

Common Terminal Palm Configurations		
Hole Size & Centres	Terminal Palm Size (mm)	Thickness (mm)
2/M12/50	100 x 50	12, 16, 20, 25
2/M16/50	100 x 50	12, 16, 20, 25
4/M12/50	100 x 100	12, 16, 20, 25
4/M16/50	100 x 100	12, 16, 20, 25
8/M12/50	100 x 200	12, 16, 20, 25
8/M16/50	100 x 200	12, 16, 20, 25

### Catalogue Number Explained





**PREFORMED** LINE PRODUCTS

## Section 5 - SUBLIGN™ Bolted Aluminium

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STUD CONNECTORS	
A horizontal stud connector with four mounting holes and a central threaded stud.	EPPCC Section 5 Pg. 4
A horizontal stud connector with two mounting holes and a central threaded stud.	EPBSC Section 5 Pg. 5
A horizontal stud connector with two mounting holes and a central threaded stud, designed for busbar applications.	SBAH-BSCP2 Section 5 Pg. 6

TEE CONNECTORS CONTINUED	
A tee connector with a vertical post and two horizontal arms.	EPBRBT Section 5 Pg. 13
A tee connector with a vertical post and two horizontal arms, featuring a different design.	EPBRCT Section 5 Pg. 14
A tee connector with a vertical post and two horizontal arms, featuring a different design.	EPBRCTH Section 5 Pg. 15
A tee connector with a vertical post and two horizontal arms, featuring a different design.	EPBRCTH4 Section 5 Pg. 16
A tee connector with a vertical post and two horizontal arms.	EPBRPT Section 5 Pg. 17
A tee connector with a vertical post and two horizontal arms.	EPBRPT-2 Section 5 Pg. 18
A tee connector with a vertical post and two horizontal arms.	EPBRBTH4P Section 5 Pg. 19
A tee connector with a vertical post and two horizontal arms.	EPBRPT-3 Section 5 Pg. 20
A tee connector with a vertical post and two horizontal arms.	EPBRPT-4 Section 5 Pg. 21

EARTH GROUND POINTS	
A simple earth ground point consisting of a threaded rod with a nut and washer.	EPCEP-1 Section 5 Pg. 23
A more complex earth ground point with a threaded rod and a chain link.	EPCEP-2 Section 5 Pg. 24
A long earth ground point with a threaded rod and a chain link.	EPCEP-3 Section 5 Pg. 25
A long earth ground point with a threaded rod and a chain link.	EPCEP-4F Section 5 Pg. 26
A long earth ground point with a threaded rod and a chain link.	EPCEP-4S Section 5 Pg. 27

PARALLEL GROOVE CONNECTORS	
A parallel groove connector with four mounting holes and a central threaded stud.	EPCPGC Section 5 Pg. 8
A parallel groove connector with two mounting holes and a central threaded stud.	SBAH-PG Section 5 Pg. 9
A parallel groove connector with two mounting holes and a central threaded stud.	EPCPGC-3 Section 5 Pg. 10

TEE CONNECTORS	
A tee connector with a vertical post and two horizontal arms.	D-APC Section 5 Pg. 11
A tee connector with a vertical post and two horizontal arms.	D-ATC Section 5 Pg. 12

EARTH GROUND STIRRUPS	
A U-shaped stirrup made of metal.	EPCES-1 Section 5 Pg. 28
A D-shaped stirrup made of metal.	EPCES-2 Section 5 Pg. 29
A D-shaped stirrup made of metal.	EPCES-3 Section 5 Pg. 30
A D-shaped stirrup made of metal.	EPCES-4F Section 5 Pg. 31

# SUBLIGN™ BOLTED FAMILY

## UP TO 230KV

Section 5

## SUBLIGN™ Bolted

EARTH GROUND STIRRUP CONTINUED	
	EPCES-4S
	Section 5 Pg. 32

CONDUCTOR SUPPORTS	
	EPCSC-P1
	Section 5 Pg. 39

TERMINAL PALMS	
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	EPCBT
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MIDSPAN SPACERS	
	EPCSC-2
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	EPCSC-3
	Section 5 Pg. 35
	EPCSC-4F
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	EPCSC-4S
	Section 5 Pg. 38

	EPCSC-P3
	Section 5 Pg. 41
	EPCSC-P4F
	Section 5 Pg. 42
	EPCSC-P4S
	Section 5 Pg. 43

FLEXIBLE CONNECTOR	
	EPALFC
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TERMINAL PALMS	
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	Section 5 Pg. 44
	D-ATL
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	D-ATL
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## SUBLIGN™ Bolted - Stud Connector



### SINGLE CONDUCTOR

#### EPPCC

SBAH - BSCZ1

The EPPCC bolted stud connector is an easy to install means of making a connection between a single flexible conductor and an item of substation primary equipment which features a round stud terminal. It is available in both a straight or 90 degree configuration. All contact faces of this type of connector are manufactured with radii specific to both the specified stud and flexible conductor size to maximise contact surface area and provide the best installed fit possible. If the stud terminal is unthreaded and is tinned/untinned copper, a bi metal transition plate may be required. This must be specified at the time of order in the PLP catalogue number. Common sizes of stud are listed in the table below. Other stud sizes are available on request.



Straight



90 Degree



Bi Metal Transition Plate

### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number		Stud Diameter	Stud Length
Straight	90 Degree	mm	mm
EPPCC-30-80-Cicada	EPPCC90-30-80-Cicada	30.0	80.0
EPPCC-30-125-Cicada	EPPCC90-30-125-Cicada	30.0	125.0
EPPCC-40-80-Cicada	EPPCC90-40-80-Cicada	40.0	80.0
EPPCC-40-125-Cicada	EPPCC90-40-125-Cicada	40.0	125.0
EPPCC-50-80-Cicada	EPPCC90-50-80-Cicada	50.0	80.0
EPPCC-50-125-Cicada	EPPCC90-50-125-Cicada	50.0	125.0
EPPCC-60-80-Cicada	EPPCC90-60-80-Cicada	60.0	80.0
EPPCC-60-125-Cicada	EPPCC90-60-125-Cicada	60.0	125.0

Common Stud Configurations	
Diameter (mm)	Length (mm)
30.0	80.0, 125.0
40.0	80.0, 125.0
50.0	80.0, 125.0
60.0	80.0, 125.0

### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>P</b>	<b>C</b>	<b>C</b>	<b>- 90 - 30 - 125 - Cicada - Txx</b>				
Electropar	Bi Metal Transition Plate (If Required)	Pin	Conductor	Connector	Angle (If Required)	Pin Diameter	Pin Length	Conductor Name	Threaded (Specify Thread Details)

## SUBLIGN™ Bolted - Stud Connector



### SINGLE PALM

#### EPBSC

SBAH - BSCPZ2

The EPBSC bolted stud connector is designed to convert a stud connection to a terminal palm connection on an item of substation primary equipment. This type of connector is manufactured with radii specific to the specified stud size to maximise contact surface area and provide the best installed fit possible. Suitable for smooth or threaded studs, the advantage of the EPBSC connector is that it allows maximum surface area contact with the primary equipment stud terminal. This ensures low current density and reliable in service operation. If the primary equipment stud terminal is unthreaded and is tinned/untinned copper, a bi metal transition plate may be required. This must be specified at the time of order in the PLP catalogue number. Available in straight or 90 degree configuration, common sizes of stud are listed in the table below. Other stud sizes are available on request.



Straight



90 Degree



Bi Metal Transition Plate

### Hardware

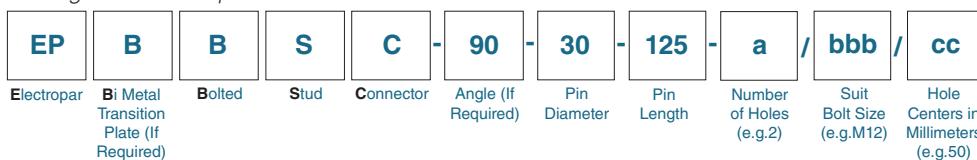
Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number		Stud Diameter	Stud Length
Straight	90 Degree	mm	mm
EPBSC-30-80-a/bbb/cc	EPBSC90-30-80-a/bbb/cc	30.0	80.0
EPBSC-30-125-a/bbb/cc	EPBSC90-30-125-a/bbb/cc	30.0	125.0
EPBSC-40-80-a/bbb/cc	EPBSC90-40-80-a/bbb/cc	40.0	80.0
EPBSC-40-125-a/bbb/cc	EPBSC90-40-125-a/bbb/cc	40.0	125.0
EPBSC-50-80-a/bbb/cc	EPBSC90-50-80-a/bbb/cc	50.0	80.0
EPBSC-50-125-a/bbb/cc	EPBSC90-50-125-a/bbb/cc	50.0	125.0
EPBSC-60-80-a/bbb/cc	EPBSC90-60-80-a/bbb/cc	60.0	80.0
EPBSC-60-125-a/bbb/cc	EPBSC90-60-125-a/bbb/cc	60.0	125.0

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 100
2/M16/50	100 x 100
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Common Stud Configurations	
Diameter (mm)	Length (mm)
30.0	80.0, 125.0
40.0	80.0, 125.0
50.0	80.0, 125.0
60.0	80.0, 125.0

### Catalogue Number Explained



## SUBLIGN™ FAMILY

## POWERFORMED™ NZ Edition

## Section 5 Page 5



## SUBLIGN™ Bolted - Stud Connector



TWIN PALM  
SBAH - BSCP2

The SBAH-BSCP2 connector is an ultra-heavy duty assembly designed for high current twin, triple or quad bundled flexible conductor connections to substation primary equipment. This type of connector is manufactured with all bolted contact surface radii specific to the specified stud size to maximise contact surface area and provide the best installed fit possible. Most commonly used at power transformer terminals, if the primary equipment stud terminal is threaded, or is tinned/untinned copper, a bi metal transition plate may be required. This must be specified at time of order in the PLP catalogue number. Common sizes of stud are listed in the tables below. Standard connector centres are 150mm, other centres and stud sizes available on request.



Bi Metal Transition Plate

### Terminal Palm Details

Select the standard terminal palm type from terminal palm drawings and dimensions listed in Section 1 of this catalogue. Add the terminal palm type as a suffix to the catalogue number as illustrated below. For non-standard terminal palms contact PLP.

### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

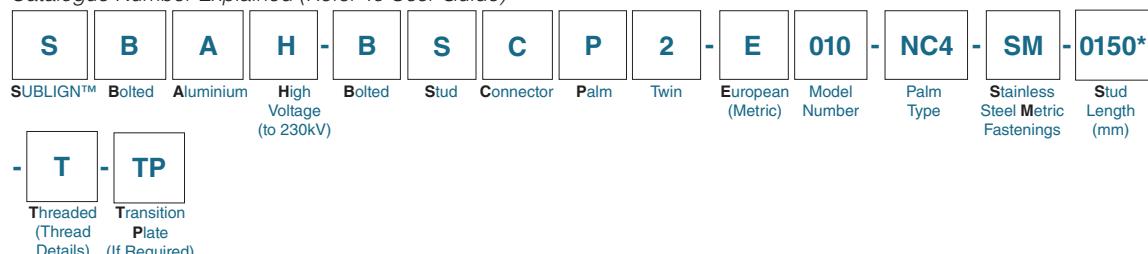
### Bi Metal Transition Plate

If the equipment terminal stud is copper bronze alloy and unthreaded (either tinned or untinned), a bi metal transition plate may be required. High conductivity copper on the inside diameter and aluminium alloy on the outside diameter, 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are formed to fit the stud terminal diameter and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Hardware	Suffix
Grade A2 70 (304) Stainless Steel Fastenings, Metric	- SM
Grade A2 70 (304) Stainless Steel Fastenings, Imperial	- SI
Aluminium Anodised Fastenings, Metric	- AM
Aluminium Anodised Fastenings, Imperial	- AI
Standard Hot Dip Galvanised Fastenings, Grade 4.6, Metric	- GM
Standard Hot Dip Galvanised Fastenings, Grade 4.6, Imperial	- GI
High Tensile Hot Dip Galvanised Fastenings, Grade 8.8, Metric	- HM
High Tensile Hot Dip Galvanised Fastenings, Grade 8.8, Imperial	- HI

Catalogue Number	Stud Diameter (mm)
SBAH-BSCP2-E010	30.0
SBAH-BSCP2-E020	40.0
SBAH-BSCP2-E030	50.0
SBAH-BSCP2-E040	60.0

Catalogue Number Explained (Refer To User Guide)



\*Express as a 4 digit non decimal value. For example, a flexible conductor OD of 33.80mm becomes 3380, a busbar tube with an OD of 50.8mm becomes 0508, a flexible conductor centre of 88mm becomes 0088, and a stud length of 125mm becomes 0125.

## SUBLIGN™ Bolted - Parallel Groove Connector



### SINGLE CONDUCTOR TO SINGLE CONDUCTOR

#### EPCPGC SBAH - PG

EPCPGC parallel groove clamps are designed to have a wide main and tap conductor acceptance range and can be used on AAC, ACSR and AAAC substation flexible conductors. Typically used for non current carrying connections to voltage transformers and surge arrestors, EPCPGC connectors are suitable for both equal and unequal conductor combinations and have interlocking fingers for maximum contact between the connector and the conductor.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPCPGC-Butterfly-Butterfly	Butterfly	Butterfly
EPCPGC-Centipede-Butterfly	Centipede	Butterfly
EPCPGC-Centipede-Centipede	Centipede	Centipede
EPCPGC-Cicada-Butterfly	Cicada	Butterfly
EPCPGC-Cicada-Centipede	Cicada	Centipede
EPCPGC-Cicada-Cicada	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained



Material: Aluminium  
Maximum Voltage Application: 230kV

## SUBLIGN™ Bolted - Parallel Groove Connector



### SINGLE CONDUCTOR TO SINGLE CONDUCTOR

#### SBAH - PG

SBAH - PG

SBAH-PG parallel groove clamps are designed to have a wide main and tap conductor acceptance range and can be used on AAC, ACSR and AAAC substation flexible conductors. Typically used for non current carrying connections to voltage transformers and surge arrestors, SBAH-PG connectors are suitable for both equal and unequal conductor combinations and have interlocking fingers for maximum contact between the connector and the conductor.



1-bolt



2-bolt



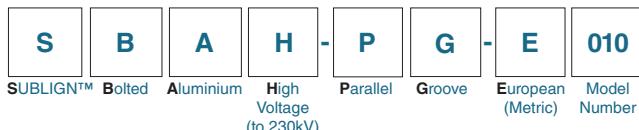
3-bolt

#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor	Number of Bolts	Length (mm)
	OD Range (mm)	OD Range (mm)		
SBAH-PG-E010	9.00 - 18.80	9.00 - 18.80	1	95.0
SBAH-PG-E020	9.00 - 18.80	9.00 - 18.80	2	110.0
SBAH-PG-E030	16.30 - 33.80	16.30 - 33.80	3	191.0

Catalogue Number Explained (Refer To User Guide)





## SUBLIGN™ Bolted - Parallel Groove Connector

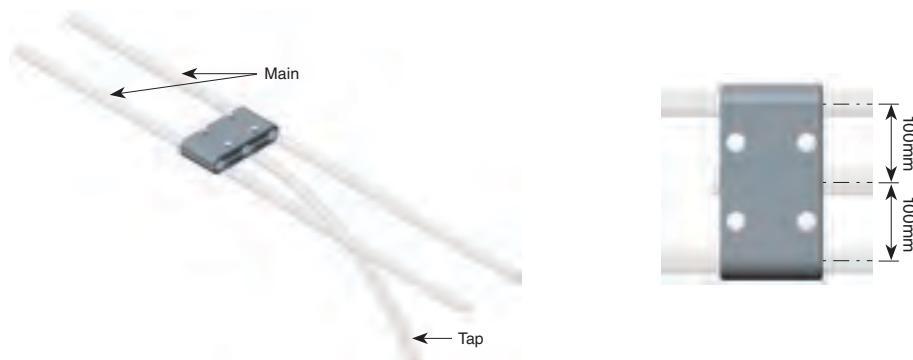


### TWIN CONDUCTOR TO SINGLE CONDUCTOR

#### EPCPGC-3

SBAH - PG2

EPCPGC-3 parallel groove clamps have been designed to be used when making non current carrying connections from main interplant conductors to voltage transformers or surge arrestors. Deployed when a single conductor tap needs to be made from a twin bundle as illustrated, the EPCPGC-3 connector is manufactured specifically to suit the specified main and tap conductor sizes. This approach maximizes the contact surface area between conductor and connector and provides the best installed fit possible. Suitable for both equal and unequal conductor combinations, the combination of main and tap conductor sizes must be specified in the PLP Catalogue number. Standard conductor centres are 100mm, but other centres are available and can be specified in the catalogue number below.



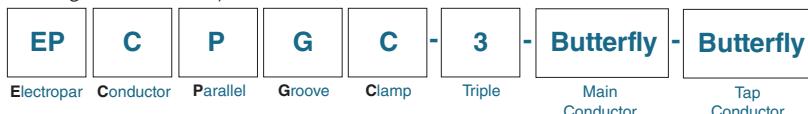
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPCPGC-3-Butterfly-Butterfly	Twin Butterfly	Single Butterfly
EPCPGC-3-Centipede-Butterfly	Twin Centipede	Single Butterfly
EPCPGC-3-Centipede-Centipede	Twin Centipede	Single Centipede
EPCPGC-3-Cicada-Butterfly	Twin Cicada	Single Butterfly
EPCPGC-3-Cicada-Centipede	Twin Cicada	Single Centipede
EPCPGC-3-Cicada-Cicada	Twin Cicada	Single Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained

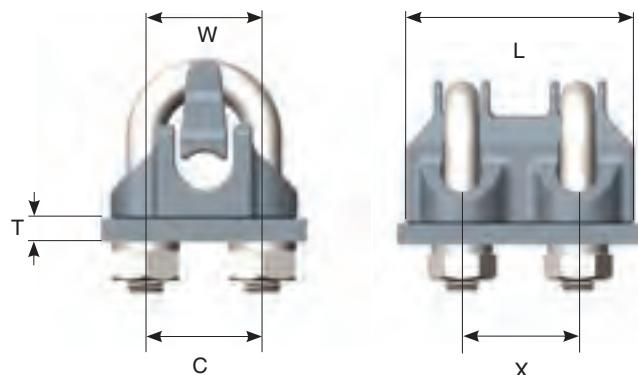


## SUBLIGN™ Bolted - Tee Connector



### SINGLE MAIN - PALMLESS **D-APC**

Low cost connectors for clamping cable to switchgear terminal plates with four 14mm diameter holes at 50mm centres. Castings are of high copper content alloy. U-bolts, nuts and spring washers are stainless steel.

**Hardware**

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Cable Range		Dim						No. of Holes
	Area (mm <sup>2</sup> )	OD	C (mm)	L (mm)	T (mm)	W (mm)	X (mm)		
D-APCS1	25 - 120	6.75 - 14.21	22.0	32.0	7.0	44.0	-	2 x 9.5	
D-APCS2	50 - 300	8.90 - 22.68	33.0	38.0	7.0	50.0	-	2 x 11.5	
D-APC3	70 - 150	10.70 - 16.00	50.0	102.0	13.0	76.0	50.0	4 x 14.0	
D-APC4	150 - 240	15.00 - 21.00	50.0	102.0	13.0	76.0	50.0	4 x 14.0	
D-APC5	240 - 400	20.00 - 25.65	50.0	102.0	13.0	76.0	50.0	4 x 14.0	
D-APC7	500 - 630	28.80 - 33.80	50.0	102.0	13.0	76.0	50.0	4 x 14.0	

*Catalogue Number Explained*

<b>D</b>	<b>A</b>	<b>P</b>	<b>C</b>	<b>S1</b>
Dulmision	Aluminium	Palmless	Connector	Style Number

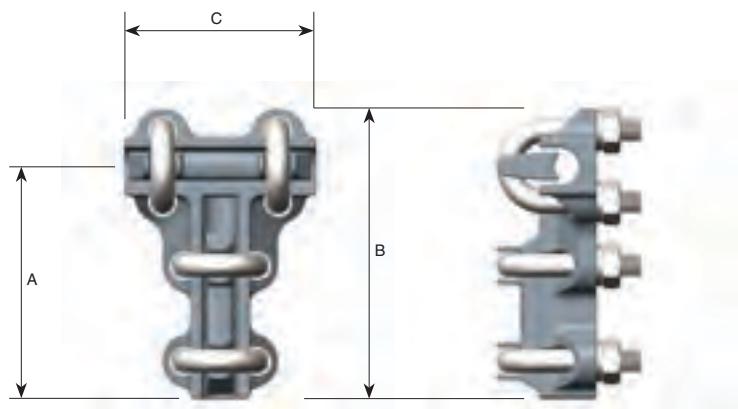


## SUBLIGN™ Bolted - Tee Connector

### SINGLE MAIN SINGLE BOLTED TAP D-ATC



A high strength aluminium alloy tee connector for all aluminium and SCA run and tap conductors. U-bolts and nuts are stainless steel.

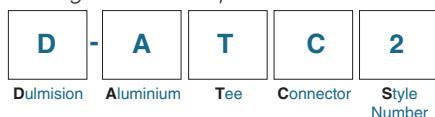


#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range OD (mm)		Dim		
	Run	Tap	A (mm)	B (mm)	C (mm)
D-ATC2	6.17 - 11.35	6.17 - 11.35	71.0	94.0	51.0
D-ATC5	10.20 - 16.30	10.20 - 16.30	92.0	116.0	70.0
D-ATC8	16.30 - 21.00	10.20 - 16.30	111.0	137.0	83.0
D-ATC9	16.30 - 21.00	16.30 - 21.00	110.0	136.0	83.0
D-ATC10	21.00 - 26.50	16.30 - 21.00	119.0	156.0	89.0
D-ATC12	21.00 - 26.50	21.00 - 26.50	127.0	165.0	89.0
D-ATC13	25.40 - 22.80	16.30 - 21.00	116.0	157.0	102.0
D-ATC15	25.40 - 33.80	25.40 - 33.80	130.0	170.0	89.0

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Tee Connector



### SINGLE MAIN SINGLE BOLTED TAP

#### EPBRBT

SBAH - TMBZ1

The EPBRBT tee connector provides a simple means of making a tee connection between two single flexible conductors within a substation. All bolted contact faces of this type of connector are manufactured with radii specific to both of the specified flexible conductor sizes as this approach maximizes contact surface area and provides the best installed fit possible. EPBRBT connectors are suitable for both equal and unequal conductor combinations. Both the main and tap conductor size should be specified in the catalogue number below.



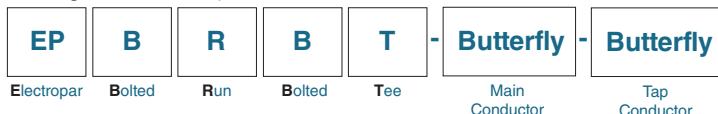
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPBRBT-Butterfly-Butterfly	Butterfly	Butterfly
EPBRBT-Centipede-Butterfly	Centipede	Butterfly
EPBRBT-Centipede-Centipede	Centipede	Centipede
EPBRBT-Cicada-Butterfly	Cicada	Butterfly
EPBRBT-Cicada-Centipede	Cicada	Centipede
EPBRBT-Cicada-Cicada	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Tee Connector

### SINGLE MAIN SINGLE COMPRESSED TAP

#### EPBRCT

SBAH - TMCZ1



The EPBRCT tee connector assembly provides a means of making a tee connection between a single strung bus conductor and a dropper conductor within a substation. The bolted current carrying contact faces of the EPBRCT are manufactured with radii specific to the specified main conductor as this approach maximizes contact surface area between the conductor and connector. The compression barrel of the connector is installed with industry standard hexagonal compression dies. For ordering, both the main and tap conductor size should be specified in the catalogue number below.



Single Main Single Dropper

Twin Main Twin Dropper

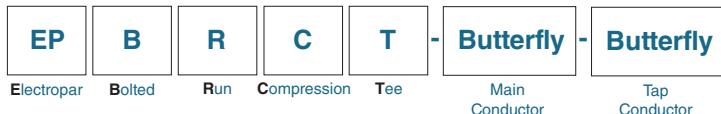
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPBRCT-Butterfly-Butterfly	Butterfly	Butterfly
EPBRCT-Centipede-Butterfly	Centipede	Butterfly
EPBRCT-Centipede-Centipede	Centipede	Centipede
EPBRCT-Cicada-Butterfly	Cicada	Butterfly
EPBRCT-Cicada-Centipede	Cicada	Centipede
EPBRCT-Cicada-Cicada	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Tee Connector



### SINGLE MAIN TO SINGLE COMPRESSED TAP

#### EPBRCTH

SBAH - TMCZ4

The EPBRCTH assembly is a heavy duty tee connector suitable for making a flexible conductor dropper connection from a strung bus conductor within a substation. Bolted current carrying contact faces of the EPBRCTH are manufactured with radii specific to the specified main conductor size as this approach maximizes contact surface area between the conductor and connector. The compression barrel of the connector is installed with industry standard hexagonal compression dies. For ordering, both the main and tap conductor size should be specified in the catalogue number below.



Single Main Single Dropper



Twin Main Twin Dropper

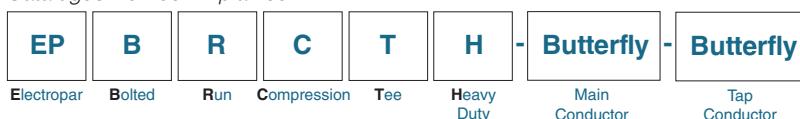
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPBRCTH-Butterfly-Butterfly	Butterfly	Butterfly
EPBRCTH-Centipede-Butterfly	Centipede	Butterfly
EPBRCTH-Centipede-Centipede	Centipede	Centipede
EPBRCTH-Cicada-Butterfly	Cicada	Butterfly
EPBRCTH-Cicada-Centipede	Cicada	Centipede
EPBRCTH-Cicada-Cicada	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained





## SUBLIGN™ Bolted - Tee Connector

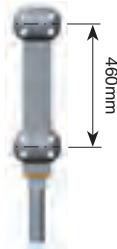
QUAD SQUARE MAIN TWIN COMPRESSED TAP  
QUAD SQUARE MAIN QUAD COMPRESSED TAP

**EPBRCTH4**

SBAH - TMQSC



The EPBRCTH4 tee connector assembly provides a means of making a tee connection from quad strung bus conductors within a substation. Normally deployed in sets of 2 or 4 units to create a twin or quad dropper bundle from a quad bundle strung bus (as illustrated) by using the EPBRCTH4 each dropper conductor current shares with two of the strung bus conductors. All of the current carrying contact faces of the EPBRCTH4 are manufactured with radii specific to both the specified main and tap conductor sizes as this approach maximizes contact surface area between the conductor and connector. The compression barrel part of the connector uses industry standard hexagonal compression dies. Standard conductor centres are 460mm. Other centres are available and can be specified together with the main and tap conductor sizes which must be specified in the catalogue number below.



Quad Main Twin Dropper



Quad Main Quad Dropper

### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPBRCTH4-Butterfly-Butterfly-460	Butterfly	Butterfly
EPBRCTH4-Centipede-Butterfly-460	Centipede	Butterfly
EPBRCTH4-Centipede-Centipede-460	Centipede	Centipede
EPBRCTH4-Cicada-Butterfly-460	Cicada	Butterfly
EPBRCTH4-Cicada-Centipede-460	Cicada	Centipede
EPBRCTH4-Cicada-Cicada-460	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>R</b>	<b>C</b>	<b>T</b>	<b>H</b>	<b>4</b>	- <b>Butterfly</b> -	<b>Butterfly</b> -	<b>460</b>
Electropar	Bolted	Run	Compression	Tee	Heavy Duty	Quad	Main Conductor	Tap Conductor	Conductor Centres in Millimetres

## SUBLIGN™ Bolted - Tee Connector



### SINGLE MAIN PALM TAP

#### EPBRPT

SBAH - TMPZ1

The EPBRPT has been designed so that a palm tap tee connection can be made from a single flexible conductor. This fitting is most often used for a current carrying connection where the tap conductor is attached with a compression terminal or where a single conductor through connection is required on an item of primary equipment e.g. a connection to a surge arrestor. All contact faces of the connector that directly contact the flexible conductor are manufactured with radii specific to flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, specify the flexible conductor size in the catalogue number below.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPBRPT-Butterfly-a/bbb/cc	Butterfly
EPBRPT-Centipede-a/bbb/cc	Centipede
EPBRPT-Cicada-a/bbb/cc	Cicada

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
Butterfly	23.3
Centipede	26.46
Cicada	32.6

#### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>B</b>	<b>R</b>	<b>P</b>	<b>T</b>	- <b>Butterfly</b>	/ <b>a</b>	/ <b>bbb</b>	/ <b>cc</b>	<b>-U</b>
Electropar	Bi Metal Transition Plate (If Required)	Bolted	Run	Palm	Tee	Conductor Type	Number of Holes (e.g.2)	Suit Bolt Size (e.g.M12)	Hole Centres in Millimeters (e.g.50)	Undrilled (If Required)



## SUBLIGN™ Bolted - Tee Connector



### TWIN MAIN PALM TAP

#### EPBRPT-2

SBAH - TMTPZ1

The EPBRPT-2 is most commonly used when a single conductor tap needs to be made at 90 degrees from a flat twin conductor bundle or when a through connection needs to be made between a twin bundle and an item of primary equipment. The EPBRPT-2 connector is manufactured with radii specific to the specified main conductor sizes. This approach maximizes the contact surface area between conductor and connector and provides the best installed fit possible. Both opposed and in line terminal palm orientations are available with 200mm conductor centres being the PLP standard. Other centres are available and can be specified in the catalogue number below.



#### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

#### Bi Metal Transition Plate

If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
In Line Terminal Palm	(mm)
EPBRPTIL-2-Butterfly-114-a/bbb/cc	Butterfly
EPBRPTIL-2-Centipede-114-a/bbb/cc	Centipede
EPBRPTIL-2-Cicada-114-a/bbb/cc	Cicada

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Catalogue Number	Conductor
Opposed Terminal Palm	(mm)
EPBRPTOP-2-Butterfly-114-a/bbb/cc	Butterfly
EPBRPTOP-2-Centipede-114-a/bbb/cc	Centipede
EPBRPTOP-2-Cicada-114-a/bbb/cc	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained

<b>EP</b>	<b>B</b>	<b>B</b>	<b>R</b>	<b>P</b>	<b>T</b>	<b>IL/OP-</b>	<b>2</b>	- <b>Butterfly</b> -	<b>114</b>	/ <b>a</b> / <b>bbb</b> / <b>cc</b> / <b>-U</b>		
Electropar	Bi Metal Transition Plate (If Required)	Bolted	Run	Palm	Tee	In Line/ Opposed	Twin Conductor	Conductor Type	Conductor Centres in Millimetres	Number of Holes (e.g. 2)	Suit Bolt Size (e.g. M12)	Hole Centres (If Required) in Millimeters (e.g. 50)

## SUBLIGN™ Bolted - Tee Connector



### QUAD SQUARE MAIN TWIN PALM TAP QUAD SQUARE MAIN QUAD PALM TAP

#### EPBRBTH4P

SBAH - TMQSP

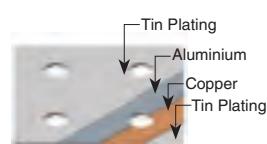
The EPBRBTH4P tee connector assembly provides a means of making a tee connection from quad strung bus conductors within a substation. Normally deployed in sets of 2 or 4 units to create a twin or quad dropper bundle (as illustrated) each dropper conductor makes a connection with two of the strung bus conductors. The current carrying contact faces are manufactured with radii specific to both the specified main and tap conductor sizes, as this approach maximizes contact surface area between the conductor and connector. Standard conductor centres are 460mm. Other centres are available and can be specified together with the terminal palm type and the main and tap conductor size in the catalogue number below.



Quad Main Twin Dropper



Quad Main Quad Dropper



#### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor
EPBRBTH4P-Butterfly-460-a/bbb/cc	Butterfly
EPBRBTH4P-Centipede-460-a/bbb/cc	Centipede
EPBRBTH4P-Cicada-460-a/bbb/cc	Cicada

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
Butterfly	23.30
Centipede	26.46
Cicada	32.60

#### Catalogue Number Explained

EP	B	R	B	T	H	4	P	- Butterfly	- 460 / a / bbb / cc - U	Conductor Type	Conductor Centres in Millimetres	Number of Holes (e.g. 2)	Suit Bolt Size (e.g. M12)	Hole Centres in Millimeters (e.g. 50)
Electropar	Bolted	Run	Bolted	Tee	Heavy Duty	Quad	Palm							



## SUBLIGN™ Bolted - Tee Connector



### TRIPLE FLAT MAIN PALM TAP

#### EPBRPT-3

SBAH - TMTRP

The EPBRPT-3 is most commonly used when a single conductor tap needs to be made from a flat triple conductor bundle or when a through connection needs to be made between a triple bundle and an item of primary equipment. The EPBRPT-3 connector is manufactured with radii specific to the specified main conductor sizes. This approach maximizes the contact surface area between conductor and connector and provides the best installed fit possible. Both opposed and in line terminal palm orientations are available with 100mm conductor centres being the PLP standard. Other centres are available and can be specified together with the flexible conductor size required in the catalogue number below.



#### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

#### Bi Metal Transition Plate

If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
In Line Terminal Palm	(mm)
EPBRPTIL-3-Butterfly-100-a/bbb/cc	Butterfly
EPBRPTIL-3-Centipede-100-a/bbb/cc	Centipede
EPBRPTIL-3-Cicada-100-a/bbb/cc	Cicada

Catalogue Number	Conductor
Opposed Terminal Palm	(mm)
EPBRPTOL-3-Butterfly-100-a/bbb/cc	Butterfly
EPBRPTOL-3-Centipede-100-a/bbb/cc	Centipede
EPBRPTOL-3-Cicada-100-a/bbb/cc	Cicada

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained

EP	B	B	R	P	T	IL/OP-	3	-	Butterfly	-	100	/	a	/	bbb	/	cc	-U
Electropar	Bi Metal Transition Plate (If Required)	Bolted	Run	Palm	Tee	In Line/ Opposed	Triple Conductor	Conductor Type	Conductor Centres in Millimetres	Number of Holes (e.g. 2)	Suit Bolt Size (e.g. M12)	Hole Centres (If Required) in Millimeters (e.g. 50)						

Material: Aluminium  
Maximum Voltage Application: 230kV

## SUBLIGN™ Bolted - Tee Connector



### QUAD FLAT MAIN PALM TAP

#### EPBRPT-4

SBAH - TMQFP

The EPBRPT-4 is most commonly used when a single conductor tap needs to be made from a flat quad conductor bundle or when a through connection needs to be made between a quad bundle and an item of primary equipment. The EPBRPT-4 connector is manufactured with radii specific to the specified main conductor sizes. This approach maximizes the contact surface area between conductor and connector and provides the best installed fit possible. Both opposed and in line terminal palm orientations are available with 88mm conductor centres being the PLP standard. Other centres are available and can be specified together with the flexible conductor type required in the catalogue number below.



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Bi Metal Transition Plate

If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric



**POWERFORMED™**

Substation Systems

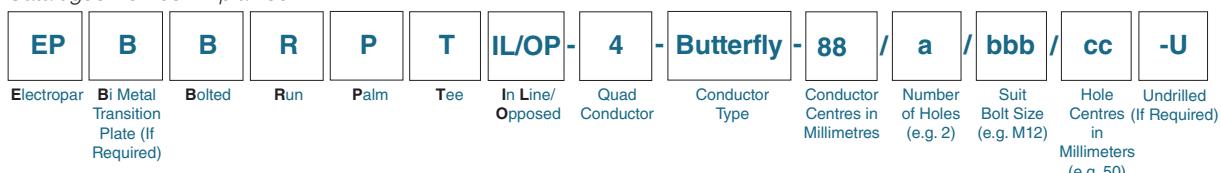
Catalogue Number	Conductor
In Line Terminal Palm	(mm)
EPBRPTIL-4-Butterfly-88-a/bbb/cc	Butterfly
EPBRPTIL-4-Centipede-88-a/bbb/cc	Centipede
EPBRPTIL-4-Cicada-88-a/bbb/cc	Cicada

Catalogue Number	Conductor
Opposed Terminal Palm	(mm)
EPBRPTOP-4-Butterfly-100-a/bbb/cc	Butterfly
EPBRPTOP-4-Centipede-100-a/bbb/cc	Centipede
EPBRPTOP-4-Cicada-100-a/bbb/cc	Cicada

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Earth Ground Point

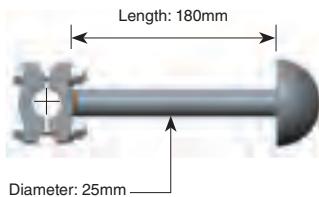
### SINGLE CONDUCTOR

#### EPCEP-1

SBAH - EGPZ1



EPCEP-1 earth ground points are designed to be bolted directly to substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop at its end to eliminate the risk of the earth lead or ground lead sliding off the earth point when the lead is being applied by hotstick. The faces of the EPCEP-1 that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, the flexible conductor size should be specified in the catalogue number below.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

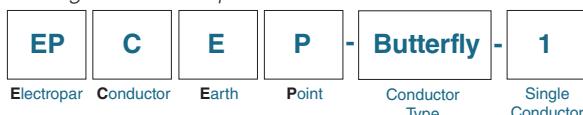
#### Catalogue Number Creation

Owing to the number of connector combinations that are possible with the EPCEP-1 there is no tabulation of standard catalogue numbers provided. To create a PLP Catalogue number for this item that is specific to your requirements, follow the "Catalogue Number Explained" section below and insert the specific conductor and/or substation equipment details as required.

Catalogue Number	Conductor
EPCEP-Butterfly-1	Butterfly
EPCEP-Centipede-1	Centipede
EPCEP-Cicada-1	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained





## SUBLIGN™ Bolted - Earth Ground Point

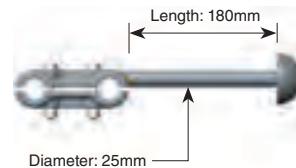
### TWIN CONDUCTOR

#### EPCEP-2

SBAH - EGPZ1



EPCEP-2 earth ground points are designed to be bolted directly to a twin bundled substation flexible conductor so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop at its end to eliminate the risk of the earth lead or ground lead sliding off the earth point when the lead is being applied by hotstick. The faces of the EPCEP-2 that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, common conductor centres are 70mm, 88mm, 100mm, 114mm, 125mm, 150mm, 180mm and 200mm but other conductor centres are available on request. Note that the flexible conductor size and conductor centres must be specified in the catalogue number below.



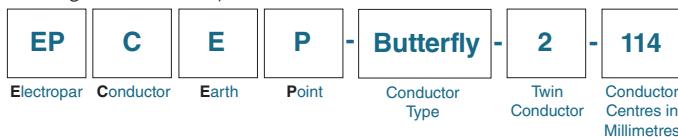
### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCEP-Butterfly-2-114	Butterfly
EPCEP-Centipede-2-114	Centipede
EPCEP-Cicada-2-114	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

### Catalogue Number Explained



## SUBLIGN™ Bolted - Earth Ground Point

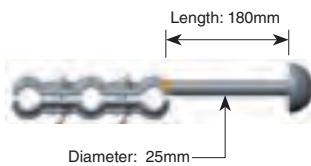
### TRIPLE FLAT CONDUCTOR

#### EPCEP-3

SBAH - EGP3F



EPCEP-3 earth ground points are designed to be bolted directly to a triple flat bundle of substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop at its end to eliminate the risk of the earth lead or ground lead sliding off the earth point when the lead is being applied by hotstick. The faces of the EPCEP-3 that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, common conductor centres are 70mm, 88mm and 100mm but other conductor centres are available on request. Note that the flexible conductor size and conductor centres must be specified in the catalogue number below.



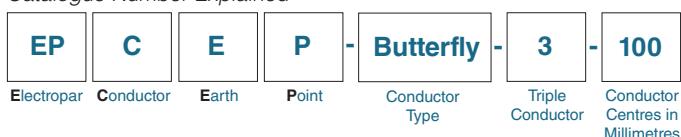
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCEP-Butterfly-3-100	Butterfly
EPCEP-Centipede-3-100	Centipede
EPCEP-Cicada-3-100	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Earth Ground Point

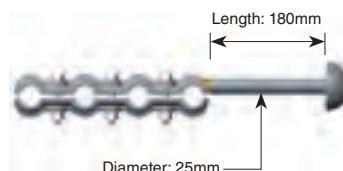


### QUAD FLAT CONDUCTOR

#### EPCEP-4F

SBAH - EGP4F

EPCEP-4F earth ground points are designed to be bolted directly to a quad flat bundle of substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop at its end to eliminate the risk of the earth lead or ground lead sliding off the earth point when the lead is being applied by hotstick. The faces of the EPCEP-4F that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, common conductor centres are 70mm, 88mm and 100mm but other conductor centres are available on request. Note that the flexible conductor size and conductor centres must be specified in the catalogue number below.



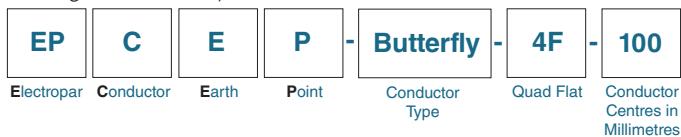
### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCEP-Butterfly-4F-88	Butterfly
EPCEP-Centipede-4F-88	Centipede
EPCEP-Cicada-4F-88	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

### Catalogue Number Explained



## SUBLIGN™ Bolted - Earth Ground Point

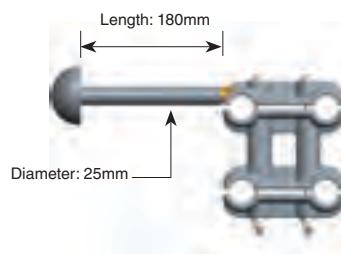


### QUAD SQUARE CONDUCTOR

#### EPCEP-4S

SBAH - EGP4S

EPCEP-4S earth ground points are designed to be bolted directly to a quad square bundle of substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The dome shaped head of the earth point is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a solid stop at its end to eliminate the risk of the earth lead or ground lead sliding off the earth point when the lead is being applied by hotstick. The faces of the EPCEP-4S that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, the most common conductor centre is 114mm but other conductor centres are available on request. Note that the flexible conductor size and conductor centres must be specified in the catalogue number below.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCEP-Butterfly-4S-114	Butterfly
EPCEP-Centipede-4S-114	Centipede
EPCEP-Cicada-4S-114	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained

<b>EP</b>	<b>C</b>	<b>E</b>	<b>P</b>	<b>Butterfly</b>	<b>4S</b>	<b>114</b>
Electropar	Conductor	Earth	Point	Conductor Type	Quad Conductor Square	Conductor Centres in Millimetres

\*Express as a 4 digit non decimal value. For example, a flexible conductor OD of 33.80mm becomes 3380, a busbar tube with an OD of 50.8mm becomes 0508, a flexible conductor centre of 88mm becomes 0088, and a stud length of 125mm becomes 0125.

## SUBLIGN™ Bolted - Earth Ground Stirrup

### SINGLE CONDUCTOR

#### EPCES-1

SBAH - EGS



EPCES-1 earth ground stirrups are designed to be bolted directly to twin bundle substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The shape of the earth stirrup is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a large 'target' for an operator applying a temporary earth lead by hotstick from the ground or from an Elevated Work Platform (EWP). The faces of the EPCES-1 that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, common conductor centres are 70mm, 88mm, 100mm, 114mm, 125mm, 150mm, 180mm and 200mm but other conductor centres are available on request. The flexible conductor size and conductor centres should be specified in the catalogue number below.

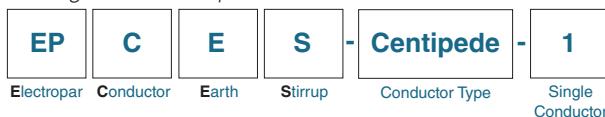
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCES-Butterfly-1	Butterfly
EPCES-Centipede-1	Centipede
EPCES-Cicada-1	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Earth Ground Stirrup

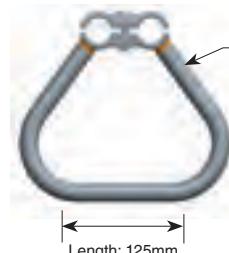


### TWIN CONDUCTOR

#### EPCES-2

SBAH - EGS2

The EPCES-2 earth ground stirrup is designed to be bolted directly to a triple flat bundle of substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The shape of the earth stirrup is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a large 'target' for an operator applying a temporary earth lead by hotstick from the ground or from an Elevated Work Platform (EWP). The faces of the EPCES-2 that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, common conductor centres are 70mm, 88mm and 100mm but other conductor centres are available on request. The flexible conductor size and conductor centres should be specified in the catalogue number below.



### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCES-Butterfly-2-114	Butterfly
EPCES-Centipede-2-114	Centipede
EPCES-Cicada-2-114	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

### Catalogue Number Explained

<b>EP</b>	<b>C</b>	<b>E</b>	<b>S</b>	<b>- Centipede -</b>	<b>2</b>	<b>- 114</b>
Electropar	Conductor	Earth	Stirrup	Conductor Type	Twin Conductor	Conductor Centres in Millimetres

## SUBLIGN™ Bolted - Earth Ground Stirrup



### TRIPLE FLAT CONDUCTOR

#### EPCES-3

SBAH - EGP3F

EPCES-3 earth ground stirrups are designed to be bolted directly to quad flat bundled substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The shape of the earth stirrup is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a large 'target' for an operator applying a temporary earth lead by hotstick from the ground or from an Elevated Work Platform (EWP). The faces of the EPCES-3 that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, common conductor centres are 70mm, 88mm and 100mm but other conductor centres are available on request. The flexible conductor size and conductor centres should be specified in the catalogue number below.



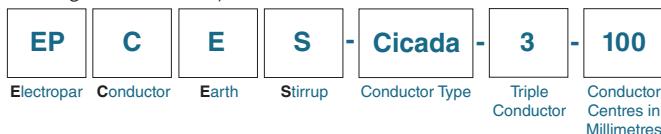
### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCES-Butterfly-3-100	Butterfly
EPCES-Centipede-3-100	Centipede
EPCES-Cicada-3-100	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

### Catalogue Number Explained



## SUBLIGN™ Bolted - Earth Ground Stirrup

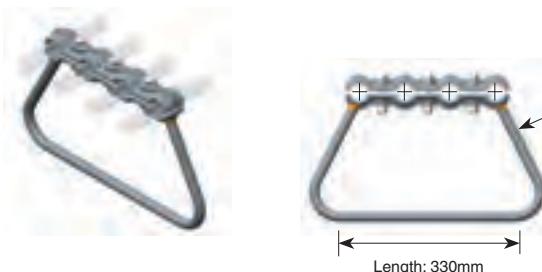


### QUAD FLAT CONDUCTOR

#### EPCES-4F

SBAH - EGS4F

EPCES-4F earth ground stirrups are designed to be bolted directly to quad square bundled substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The shape of the earth stirrup is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a large 'target' for an operator applying a temporary earth lead by hotstick from the ground or from an Elevated Work Platform (EWP). The faces of the EPCES-4F that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, the most common conductor centre is 114mm but other conductor centres are available on request. The flexible conductor size and conductor centres should be specified in the catalogue number below.



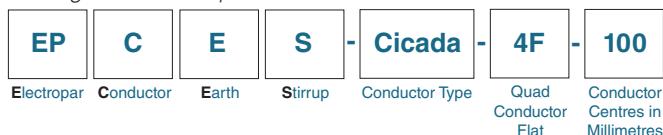
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCES-Butterfly-4F-88	Butterfly
EPCES-Centipede-4F-88	Centipede
EPCES-Cicada-4F-88	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



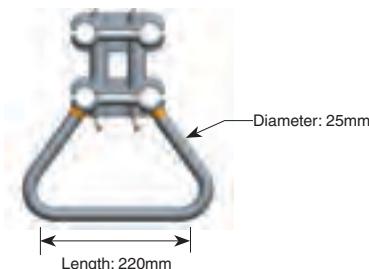
## SUBLIGN™ Bolted - Earth Ground Stirrup



### QUAD SQUARE CONDUCTOR EPCES-4S

SBAH - EGS4S

EPCES-4S earth ground stirrups are designed to be bolted directly to quad square bundled substation flexible conductors so that a temporary earth lead or ground lead can be safely and securely applied within a substation. The shape of the earth stirrup is designed to eliminate corona and Radio Interference Voltage (RIV) while at the same time providing a large 'target' for an operator applying a temporary earth lead by hotstick from the ground or from an Elevated Work Platform (EWP). The faces of the EPCES-4S that directly contact the flexible conductor are manufactured with radii specific to the specified flexible conductor size to maximise contact surface area and provide the best installed fit possible. For ordering, the most common conductor centre is 114mm but other conductor centres are available on request. The flexible conductor size and conductor centres should be specified in the catalogue number below.



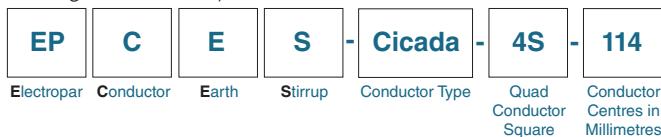
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCES-Butterfly-4S-114	Butterfly
EPCES-Centipede-4S-114	Centipede
EPCES-Cicada-4S-114	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Midspan Spacer

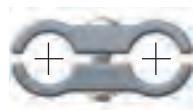
### TWIN CONDUCTOR

#### EPCSC-2

SBAH - SCM2Z1



The EPCSC-2 flexible conductor rigid spacer is manufactured as standard at either 70mm centres or 88mm centres. Commonly used at voltages to 145kV, for interplant twin conductor connections. PLP recommends at least one spacer is placed between pieces of substation equipment (e.g. between circuit breaker and current transformer) and/or one spacer is placed every 3 metres. Other spacer centres available on request. For ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCSC-Butterfly-M-2-70	Butterfly
EPCSC-Centipede-M-2-70	Centipede
EPCSC-Cicada-M-2-70	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Midspan Spacer

### TWIN CONDUCTOR

#### EPCSC-2

SBAH - SCM2Z1



The EPCSC-2 flexible conductor rigid spacer is manufactured as standard at 114mm centres for interplant twin bundle connections, 200mm centres for interplant or strung bus applications and 380mm centres for strung bus applications. Commonly used at voltages to 275kV, PLP recommends at least one spacer is placed between pieces of substation equipment (e.g. between circuit breaker and current transformer) and/or one spacer is placed every 3 metres. Other spacer centres available on request. For ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCSC-Butterfly-M-2-125	Butterfly
EPCSC-Centipede-M-2-125	Centipede
EPCSC-Cicada-M-2-125	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

### Catalogue Number Explained



## SUBLIGN™ Bolted - Midspan Spacer

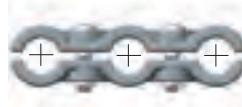
### TRIPLE FLAT CONDUCTOR

#### EPCSC-3

SBAH - SCM3FZ1



The EPCSC-3 flexible conductor rigid spacer is manufactured as standard at 70mm centres for interplant applications and 125mm for strung bus applications. This design of spacer is commonly used at voltages to 275kV. PLP recommends at least one spacer is placed between pieces of substation equipment (e.g. between circuit breaker and current transformer) and/or one spacer is placed every 3 metres. Other spacer centres available on request. For ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCSC-Butterfly-M-3-125	Butterfly
EPCSC-Centipede-M-3-125	Centipede
EPCSC-Cicada-M-3-125	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Midspan Spacer

### TRIPLE FLAT CONDUCTOR

#### EPCSC-3

SBAH - SCM3FZ1



The EPCSC-3 flexible conductor rigid spacer is manufactured as standard at 100mm centres for interplant applications and is commonly used at voltages to 275kV. For interplant bundles, PLP recommends at least one spacer is placed between pieces of substation equipment (e.g. between circuit breaker and current transformer) and/or one spacer is placed every 3 metres. Other spacer centres available on request. For ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCSC-Butterfly-M-3-100	Butterfly
EPCSC-Centipede-M-3-100	Centipede
EPCSC-Cicada-M-3-100	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Midspan Spacer

### QUAD FLAT CONDUCTOR

#### EPCSC-4F

SBAH - SCM4FZ1



The EPCSC-4F flexible conductor rigid spacer is manufactured as standard at 70mm and 88mm centres for interplant applications and is commonly used at voltages to 275kV. For interplant bundles, PLP recommends at least one spacer is placed between pieces of substation equipment (e.g. between circuit breaker and current transformer) and/or one spacer is placed every 3 metres. Other spacer centres available on request. For ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCSC-Butterfly-M-4F-88	Butterfly
EPCSC-Centipede-M-4F-88	Centipede
EPCSC-Cicada-M-4F-88	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained

EP	C	S	C	- Cicada - M - 4F - 88	
Electropar	Conductor	Spacer	Clamp	Conductor Type	Midspan

Quad Conductor  
Conductor Centres in Millimetres

## SUBLIGN™ Bolted - Midspan Spacer



### QUAD FLAT CONDUCTOR

#### EPCSC-4S

SBAH - SCM4SZ1

The EPCSC-4S flexible conductor rigid spacer is manufactured as standard at 114mm centres for interplant applications and is commonly used at voltages to 275kV. For interplant bundles, PLP recommends at least one spacer is placed between pieces of substation equipment (e.g. between circuit breaker and current transformer) and/or one spacer is placed every 3 metres. Other spacer centres available on request. For ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
EPCSC-Butterfly-M-4S-114	Butterfly
EPCSC-Centipede-M-4S-114	Centipede
EPCSC-Cicada-M-4S-114	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

### Catalogue Number Explained



\*Express as a 4 digit non decimal value. For example, a flexible conductor OD of 33.80mm becomes 3380, a busbar tube with an OD of 50.8mm becomes 0508, a flexible conductor centre of 88mm becomes 0088, and a stud length of 125mm becomes 0125.

## SUBLIGN™ Bolted - Conductor Support



### SINGLE CONDUCTOR

#### EPCSC-P1

SBAH - SCZ1

The EPCSC-P1 flexible conductor post insulator support is designed to suit a 76mm, 127mm and 178mm Pitch Circle Diameter (PCD). The 76mm PCD mounting attaches to the post insulator via 4 holes in a Hot Dip Galvanised (HDG) mild steel with orientation as illustrated. For 127mm or 178mm both the standard 4 bolt HDG mild steel mounting base arrangement with orientation as illustrated and a cast slotted aluminium mounting base are available. The advantage of the slots in the mounting base is that they allow the flexible conductor support to be rotated on the top of a substation post insulator to accommodate unusual angles between equipment. All bolted faces contacting the flexible conductor are manufactured with radii specific to the flexible conductor size to provide the best installed fit possible. For ordering, the flexible conductor size should be specified in the catalogue number below.



HDG Steel Base



Cast Aluminium Base



76mm, 127mm or 178mm PCD HDG Steel Base



127mm or 178mm PCD Cast Aluminium Base

### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

76mm PCD	Catalogue Number		Conductor	Base Plate
	127mm PCD	178mm PCD		
EPCSC-Butterfly-P1-76-ST	EPCSC-Butterfly-P1-127-ST	EPCSC-Butterfly-P1-178-ST	Butterfly	HDG Steel
Not Available	EPCSC-Butterfly-P1-127-AL	EPCSC-Butterfly-P1-178-AL	Butterfly	Cast Aluminium
EPCSC-Centipede-P1-76-ST	EPCSC-Centipede-P1-127-ST	EPCSC-Centipede-P1-178-ST	Centipede	HDG Steel
Not Available	EPCSC-Centipede-P1-127-AL	EPCSC-Centipede-P1-178-AL	Centipede	Cast Aluminium
EPCSC-Cicada-P1-76-ST	EPCSC-Cicada-P1-127-ST	EPCSC-Cicada-P1-178-ST	Cicada	HDG Steel
Not Available	EPCSC-Cicada-P1-127-AL	EPCSC-Cicada-P1-178-AL	Cicada	Cast Aluminium

### Catalogue Number Explained





## SUBLIGN™ Bolted - Conductor Support



### TWIN CONDUCTOR

#### EPCSC-P2

SBAH - SC2Z1

The EPCSC-P2 flexible conductor post insulator support is designed to suit a 76mm, 127mm and 178mm Pitch Circle Diameter (PCD). The 76mm PCD mounting attaches to the post insulator via 4 holes in a hot dip galvanised (HDG) mild steel base with orientation as illustrated. For 127mm and 178mm both the standard 4 bolt HDG mild steel mounting arrangement with orientation as illustrated and a cast slotted aluminium base are available. The advantage of the slots in the mounting base is that they allow the flexible conductor support to be rotated on the top of a substation post insulator to accommodate unusual angles between equipment. For all support PCD and base options, the bolted faces contacting the flexible conductor are manufactured with radii specific to the flexible conductor size to provide the best installed fit possible. EPCSC-P2 flexible conductor post insulator supports are manufactured as standard at 114mm, 125mm, 150mm, 180mm, 200mm and 380mm centres for interplant twin bundle connections. Commonly used at voltages to 275kV, for ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



HDG Steel Base



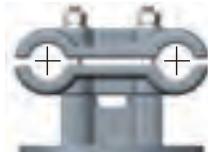
Cast Aluminium Base



76mm, 127mm or 178mm  
PCD HDG Steel Base



127mm or 178mm PCD  
Cast Aluminium Base

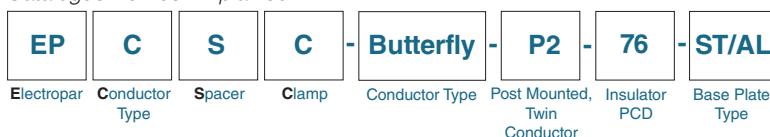


### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number			Conductor	Base Plate
76mm PCD	127mm PCD	178mm PCD		
EPCSC-Butterfly-P2-76-114-ST	EPCSC-Butterfly-P2-127-114-ST	EPCSC-Butterfly-P2-178-114-ST	Butterfly	HDG Steel
Not Available	EPCSC-Butterfly-P2-127-114-AL	EPCSC-Butterfly-P2-178-114-AL		Cast Aluminium
EPCSC-Centipede-P2-76-114-ST	EPCSC-Centipede-P2-127-114-ST	EPCSC-Centipede-P2-178-114-ST	Centipede	HDG Steel
Not Available	EPCSC-Centipede-P2-127-114-AL	EPCSC-Centipede-P2-178-114-AL		Cast Aluminium
EPCSC-Cicada-P2-76-114-ST	EPCSC-Cicada-P2-127-114-ST	EPCSC-Cicada-P2-178-114-ST	Cicada	HDG Steel
Not Available	EPCSC-Cicada-P2-127-114-AL	EPCSC-Cicada-P2-178-114-AL		Cast Aluminium

### Catalogue Number Explained



## SUBLIGN™ Bolted - Conductor Support

### TRIPLE FLAT CONDUCTOR

#### EPCSC-P3

SBAH - SC3FZ1

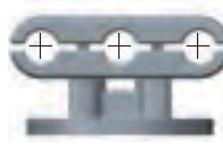


The EPCSC-P3 flexible conductor post insulator support is designed to suit a 76mm, 127mm or 178mm pitch circle diameter (PCD). The 76mm PCD mounting attaches to the post insulator via 4 holes in a hot galvanised (HDG) mild steel base with orientation as illustrated. For 127mm and 178mm PCD both the standard 4 HDG mild steel bolt mounting arrangement with PCD orientation as illustrated and a cast slotted aluminium base are available. The advantage of the slots in the mounting base is that they allow the flexible conductor support to be rotated on the top of a substation post insulator to accommodate unusual angles between equipment. For all support base and PCD options, the bolted faces contacting the flexible conductors are manufactured with radii specific to the flexible conductor size to provide the best installed fit possible. EPCSC-P3 flexible conductor post insulator supports are manufactured as standard at 70mm centres for triple bundle connections. Commonly used at voltages to 275kV, for ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below.



HDG Steel Base

Cast Aluminium Base

76mm, 127mm and 178mm  
PCD HDG Steel Base127mm and 178mm PCD  
Cast Aluminium Base

#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

76mm PCD	Catalogue Number			Conductor	Base Plate
	127mm PCD	178mm PCD	Material		
EPCSC-Butterfly-P3-76-100-ST	EPCSC-Butterfly-P3-127-100-ST	EPCSC-Butterfly-P3-178-100-ST	Butterfly	Butterfly	HDG Steel
Not Available	EPCSC-Butterfly-P3-127-100-AL	EPCSC-Butterfly-P3-178-100-AL			Cast Aluminium
EPCSC-Centipede-P3-76-100-ST	EPCSC-Centipede-P3-127-100-ST	EPCSC-Centipede-P3-178-100-ST	Centipede	Centipede	HDG Steel
Not Available	EPCSC-Centipede-P3-127-100-AL	EPCSC-Centipede-P3-178-100-AL			Cast Aluminium
EPCSC-Cicada-P3-76-100-ST	EPCSC-Cicada-P3-127-100-ST	EPCSC-Cicada-P3-178-100-ST	Cicada	Cicada	HDG Steel
Not Available	EPCSC-Cicada-P3-127-100-AL	EPCSC-Cicada-P3-178-100-AL			Cast Aluminium

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Conductor Support



### QUAD FLAT CONDUCTOR

#### EPCSC-P4F

SBAH - SC4F

The EPCSC-P4F flexible conductor post insulator support is manufactured as standard at 88mm and 100mm centres for interplant applications and is commonly used at voltages to 275kV. 127mm and 178mm Pitch Circle Diameter (PCD) mountings are available in the PCD orientation as illustrated. All bolted faces of the flat quad bundled support which contact the flexible conductors are manufactured with radii specific to the flexible conductor size to provide the best installed fit possible. For ordering, the flexible conductor size should be specified in the catalogue number below. Other spacer centres available on request.


127mm or 178mm  
PCD Mounting Orientation

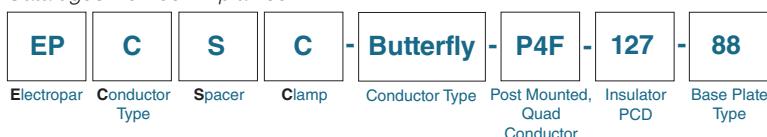

### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number		Conductor	Base Plate Material
127mm PCD	178mm PCD		
EPCSC-Butterfly-P4F-127-88	EPCSC-Butterfly-P4F-178-88	Butterfly	HDG Steel
EPCSC-Centipede-P4F-127-88	EPCSC-Centipede-P4F-178-88	Centipede	
EPCSC-Cicada-P4F-127-88	EPCSC-Cicada-P4F-178-88	Cicada	

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

### Catalogue Number Explained



## SUBLIGN™ Bolted - Conductor Support



### QUAD SQUARE CONDUCTOR

#### EPCSC-P4S

SBAH - SC4S

The EPCSC-P4S flexible conductor post insulator support is designed to suit a 127mm and 178mm Pitch Circle Diameter (PCD). Manufactured as standard at 114mm conductor centres both the 127mm and 178mm PCD mounting attach to the post insulator via 4 holes in the hot dip galvanised (HDG) steel base as illustrated. For both PCD options, the bolted faces contacting the flexible conductors are manufactured with radii specific to the flexible conductor size to provide the best installed fit possible. Commonly used at voltages to 275kV, this assembly has also been used within Static Var Compensator (SVC) air insulated bus systems a feature of which is high currents at low voltages. For ordering, the flexible conductor size and conductor centres should be specified in the catalogue number below. Other spacer centres available on request.



PCD Orientation A



PCD Orientation B



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number		Conductor	Base Plate
127mm PCD	178mm PCD		
EPCSC-Butterfly-P4S-127-A-88	EPCSC-Butterfly-P4S-178-A-88	Butterfly	HDG Steel
EPCSC-Butterfly-P4S-127-B-88	EPCSC-Butterfly-P4S-178-B-88	Butterfly	Cast Aluminium
EPCSC-Centipede-P4S-127-A-88	EPCSC-Centipede-P4S-178-A-88	Centipede	HDG Steel
EPCSC-Centipede-P4S-127-B-88	EPCSC-Centipede-P4S-178-B-88	Centipede	Cast Aluminium
EPCSC-Cicada-P4S-127-A-88	EPCSC-Cicada-P4S-178-A-88	Cicada	HDG Steel
EPCSC-Cicada-P4S-127-B-88	EPCSC-Cicada-P4S-178-B-88	Cicada	Cast Aluminium

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Adaptor Plates

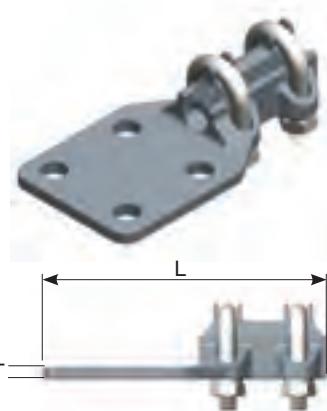
### ALUMINIUM ADAPTOR PLATES EPAP



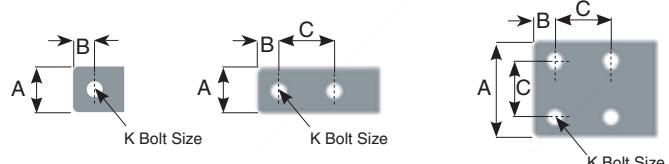
Adapter plates are customized for specific applications. Manufactured from 6000 series high conductivity aluminum alloy user specified terminal palm designs, lengths, widths, shapes and angles are commonplace. Standard thickness for adapter plates are 12mm, 16mm, 20mm and 25mm. Contact Electropar PLP for specific requirements and current ratings.

## SUBLIGN™ Bolted - Terminal Palm

### TERMINAL LUG CONDUCTOR TO PALM D-ATL



A high compression lug particularly suited to connections subject to vibration and strain. The longitudinal wave case of both lug and clamping bar assures high pullout strength. Supplied with stainless steel hardware.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range OD (mm)		Fig No.	Dimensions (mm)					
	Area (mm²)	OD		A	B	C	K	T	L
D-ATL0	16 - 35	5.10 - 7.65	1	25	13	-	M10	6	67
D-ATL0 2B1	16 - 35	5.10 - 7.65	1	50	25	-	M10	7	92
D-ATL0 187	16 - 35	5.10 - 7.65	2	25	13	48	M10	7	113
D-ATL1	25 - 70	6.75 - 10.70	2	32	13	29	M10	6	105
D-ATL2	35 - 95	7.65 - 12.60	2	32	13	29	M10	8	117
D-ATL2 150	35 - 95	7.65 - 12.60	2	32	16	38	M10	9	137
D-ATL2 187	35 - 95	7.65 - 12.60	2	32	13	48	M10	9	137
D-ATL2 200	35 - 95	7.65 - 12.60	2	32	16	50	M12	9	149
D-ATL2 B1	35 - 95	7.65 - 12.60	1	44	22	---	M20	9	108
D-ATL3	70 - 150	10.70 - 15.75	2	35	16	38	M12	10	140
D-ATL3 B22	70 - 150	10.70 - 15.75	3	79	14	50	M12	8	160
D-ATL3 187	70 - 150	10.70 - 15.75	2	35	16	48	M12	10	149
D-ATL3 B21	70 - 150	10.70 - 15.75	1	50	25	---	M10	9	127
D-ATL3 B4	70 - 150	10.70 - 15.75	3	64	13	38	M10	7	137
D-ATL3 B22C	70 - 150	10.70 - 15.75	3	102	25	50	M12	14	181
D-ATL4	150 - 240	15.75 - 20.25	2	38	16	38	M12	10	146
D-ATL4 B22	150 - 240	15.75 - 20.25	3	83	16	50	M12	10	165
D-ATL4 187	150 - 240	15.75 - 20.25	2	38	16	48	M12	10	156
D-ATL4 B4	150 - 240	15.75 - 20.25	3	64	13	38	M10	8	140
D-ATL4 B5	150 - 240	15.75 - 20.25	3	76	13	50	M10	7	159
D-ATL5	240 - 400	20.25 - 25.65	2	41	16	38	M12	13	156
D-ATL5 B22	240 - 400	20.25 - 25.65	3	83	16	50	M12	10	173
D-ATL5 187	240 - 400	20.25 - 25.65	2	41	16	48	M12	13	165
D-ATL5 B4	240 - 400	20.25 - 25.65	3	76	19	38	M10	9	165
D-ATL5 B5	240 - 400	20.25 - 25.65	3	76	13	50	M10	9	165
D-ATL6	400 - 500	25.65 - 28.80	2	48	19	38	M12	14	165
D-ATL6 B22	400 - 500	25.65 - 28.80	3	83	16	50	M12	9	176
D-ATL7	500 - 630	28.80 - 32.76	2	48	19	38	M12	16	178
D-ATL7 B22	500 - 630	28.80 - 32.76	3	83	16	50	M12	11	187
D-ATL7 B4	500 - 630	28.80 - 32.76	3	76	19	38	M10	10	184
D-ATL7 B5	500 - 630	28.8 - 32.76	3	76	13	50	M10	10	184

#### Catalogue Number Explained

<b>D</b>	<b>A</b>	<b>T</b>	<b>L</b>	<b>0</b>
Dulmision	Aluminium	Terminal	Lug	Style Number

## SUBLIGN™ Bolted - Terminal Palm

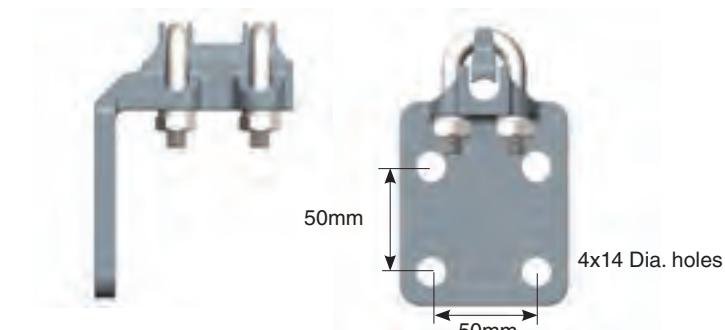


### SINGLE CONDUCTOR RANGE TAKING

#### D-ATL

SBAH - SC4S

Type D-ATL bolted terminal palms are a low cost simple to install bolted connector that can be used for AAC, AAAC and ACSR conductors. The U bolt design allows this style of connector to have a conductor outside diameter range taking ability which is detailed in the table below.

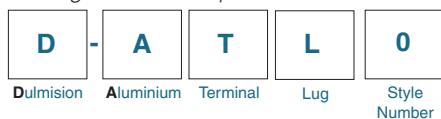


#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range OD (mm)		Dimensions (mm) A
	Area (mm²)	OD	
D-ATL3C22	70 - 150	10.70 - 15.75	8
D-ATL4C22	150 - 240	15.75 - 20.25	10
D-ATL7C22	500 - 630	28.80 - 33.80	11

#### Catalogue Number Explained

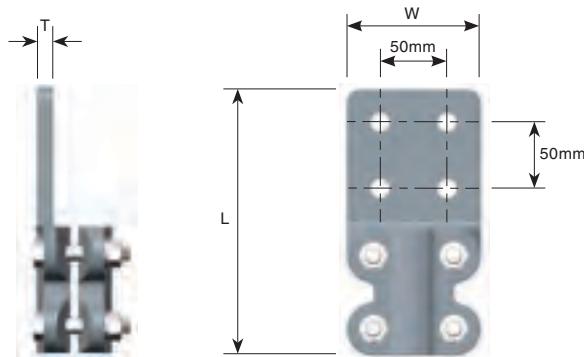


## SUBLIGN™ Bolted - Terminal Palm

### SINGLE CONDUCTOR - RANGE TAKING D-AN



Type D-AN bolted terminal palms are a range taking bolted connector that can be used for AAC, AAAC and ACSR conductors. The design allows this style of connector to have a conductor outside diameter range taking ability which is detailed in the table below. Bolt heads are captive to facilitate single spanner installation. Type D-AN75 can be supplied with one of two bolt holes drilled or blank. Type D-AN93-B22 through AN134-B22 is normally supplied with 4 only 14mm diameter holes drilled at 50mm centres but other terminal palm drilling is available on request.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range OD (mm)		Dim			No. of Holes
	Area (mm²)	OD	L (mm)	T (mm)	W (mm)	
D-AN75	35 - 185	7.65 - 17.64	149.0	44.0	85.0	-
D-AN93-B22	150 - 300	15.75 - 22.68	171.0	83.0	89.0	4
D-AN113-B22	300 - 500	22.68 - 28.80	179.0	83.0	96.0	4
D-AN134-B22	500 - 630	28.80 - 33.80	188.0	83.0	95.0	4

#### Catalogue Number Explained

<b>D</b>	<b>-</b>	<b>A</b>	<b>N</b>	<b>75</b>
Dulmision		Aluminium	Universal Terminal	Style Number



## SUBLIGN™ Bolted - Terminal Palm

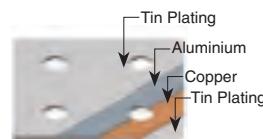


### SINGLE CONDUCTOR

#### EPCBT

SBAH - TCZ1

The EPCBT bolted terminal palm connector is designed to terminate a single flexible conductor at an item of substation primary equipment. This type of connector is manufactured with all of the bolted contact surface radii specific to the specified conductor size to maximise contact surface area and provide the best installed fit possible. The conductor size, terminal palm configuration and whether the connector should be straight or 90 degree must be specified at the time of order in the PLP catalogue number.



Straight

90 Degree

### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Bi Metal Transition Plate

If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor
Straight Terminal Palm	
EPCBT-Butterfly-a/bbb/cc	Butterfly
EPCBT-Centipede-a/bbb/cc	Centipede
EPCBT-Cicada-a/bbb/cc	Cicada

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Catalogue Number	Conductor
Straight Terminal Palm	
EPCBT90-Butterfly-a/bbb/cc	Butterfly
EPCBT90-Centipede-a/bbb/cc	Centipede
EPCBT90-Cicada-a/bbb/cc	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.3	322.4
Centipede	26.46	415.2
Cicada	32.6	627.9

**Straight Terminal Palm**

Catalogue Number	Palm Type
EPCBT-TCZ1-E-AS3	AS3
EPCBT-TCZ1-E-AS4	AS4
EPCBT-TCZ1-E-AS5	AS5
EPCBT-TCZ1-E-AS6	AS6
EPCBT-TCZ1-E-AS7	AS7
EPCBT-TCZ1-E-AS8	AS8
EPCBT-TCZ1-E-AS9	AS9
EPCBT-TCZ1-E-AS10	AS10
EPCBT-TCZ1-E-AS11	AS11
EPCBT-TCZ1-E-AS12	AS12
EPCBT-TCZ1-E-AS13	AS13
EPCBT-TCZ1-E-AS14	AS14

Catalogue Number	Palm Type
EPCBT-TCZ1-E-NC2	NC2
EPCBT-TCZ1-E-NC3	NC3
EPCBT-TCZ1-E-NC4	NC4
EPCBT-TCZ1-E-NC5	NC5
EPCBT-TCZ1-E-NC6	NC6
EPCBT-TCZ1-E-NC7	NC7
EPCBT-TCZ1-E-NC8	NC8

Catalogue Number	Palm Type
EPCBT-TCZ1-E-ND1	ND1
EPCBT-TCZ1-E-ND2-1	ND2-1
EPCBT-TCZ1-E-ND2-2	ND2-2
EPCBT-TCZ1-E-ND2-3	ND2-3
EPCBT-TCZ1-E-ND2-4	ND2-4
EPCBT-TCZ1-E-ND3-1	ND3-1
EPCBT-TCZ1-E-ND3-2	ND3-2
EPCBT-TCZ1-E-ND4	ND4
EPCBT-TCZ1-E-ND5	ND5

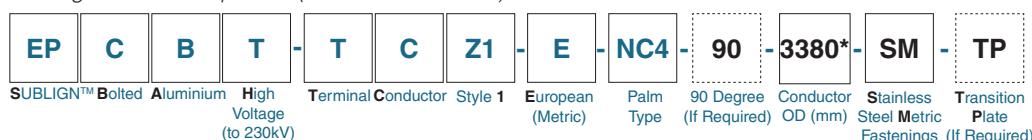
**90 Degree Terminal Palm**

Catalogue Number	Palm Type
EPCBT-TCZ1-E-AS3-90	AS3
EPCBT-TCZ1-E-AS4-90	AS4
EPCBT-TCZ1-E-AS5-90	AS5
EPCBT-TCZ1-E-AS6-90	AS6
EPCBT-TCZ1-E-AS7-90	AS7
EPCBT-TCZ1-E-AS8-90	AS8
EPCBT-TCZ1-E-AS9-90	AS9
EPCBT-TCZ1-E-AS10-90	AS10
EPCBT-TCZ1-E-AS11-90	AS11
EPCBT-TCZ1-E-AS12-90	AS12
EPCBT-TCZ1-E-AS13-90	AS13
EPCBT-TCZ1-E-AS14-90	AS14

Catalogue Number	Palm Type
EPCBT-TCZ1-E-NC2-90	NC2
EPCBT-TCZ1-E-NC3-90	NC3
EPCBT-TCZ1-E-NC4-90	NC4
EPCBT-TCZ1-E-NC5-90	NC5
EPCBT-TCZ1-E-NC6-90	NC6
EPCBT-TCZ1-E-NC7-90	NC7
EPCBT-TCZ1-E-NC8-90	NC8

Catalogue Number	Palm Type
EPCBT-TCZ1-E-ND1-90	ND1
EPCBT-TCZ1-E-ND2-1-90	ND2-1
EPCBT-TCZ1-E-ND2-2-90	ND2-2
EPCBT-TCZ1-E-ND2-3-90	ND2-3
EPCBT-TCZ1-E-ND2-4-90	ND2-4
EPCBT-TCZ1-E-ND3-1-90	ND3-1
EPCBT-TCZ1-E-ND3-2-90	ND3-2
EPCBT-TCZ1-E-ND4-90	ND4
EPCBT-TCZ1-E-ND5-90	ND5

Catalogue Number Explained (Refer To User Guide)



\*Express as a 4 digit non decimal value. For example, a flexible conductor OD of 33.80mm becomes 3380, a busbar tube with an OD of 50.8mm becomes 0508, a flexible conductor centre of 88mm becomes 0088, and a stud length of 125mm becomes 0125.

## SUBLIGN™ Bolted - Flexible Connector

### ALUMINIUM LAMINATED EPALFC



Electropar PLP manufactures customised aluminium flexible connectors for almost every substation application imaginable. Commonly used where clearances between plant and equipment are too small for conventional conductors, flexible connector terminal palms are manufactured from extruded aluminium alloy, while the laminate material is fully annealed (temper O) high conductivity aluminium strip. Terminal palms are MIG welded to the laminate material with custom terminal palm designs, lengths and angles available up to 13,000 amps continuous.



Straight

90 degree

#### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

#### Bi Metal Transition Plate

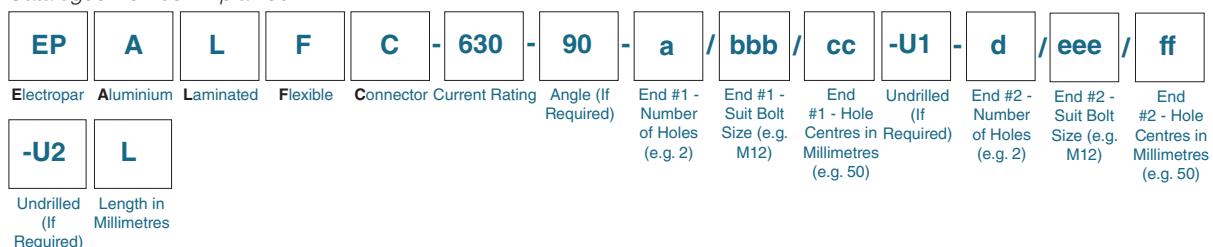
If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Catalogue Number	Current Rating
EPALFC-630-a/bbb/cc-d/eee/ff-L	630
EPALFC-800-a/bbb/cc-d/eee/ff-L	800
EPALFC-1250-a/bbb/cc-d/eee/ff-L	1250
EPALFC-2000-a/bbb/cc-d/eee/ff-L	2000
EPALFC-2500-a/bbb/cc-d/eee/ff-L	2500

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

Catalogue Number	Current Rating
90 Degree Twisted Connector	
EPALFC-630-a/bbb/cc-d/eee/ff-L	630
EPALFC-800-a/bbb/cc-d/eee/ff-L	800
EPALFC-1250-a/bbb/cc-d/eee/ff-L	1250
EPALFC-2000-a/bbb/cc-d/eee/ff-L	2000
EPALFC-2500-a/bbb/cc-d/eee/ff-L	2500

Catalogue Number Explained







**PREFORMED** LINE PRODUCTS

## Section 6 - SUBLIGN™ Bolted Copper

Table of Contents	Section	Page
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Straight Connector.....	6	6
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Flexible Connector.....	6	9
Adaptor Plate.....	6	13
Terminal Palms.....	6	14



STUD CONNECTORS	
A copper stud connector with two mounting holes and a central terminal.	D-CS Section 6 Pg. 3
A copper stud connector with one mounting hole and a central terminal.	D-LS Section 6 Pg. 4

FLEXIBLE CONNECTORS	
A copper flexible connector with a ribbed, curved design.	EPCFC Section 6 Pg. 8
A copper flexible connector with a straight, ribbed design.	EPCBL Section 6 Pg. 9
A copper flexible connector with a straight, ribbed design, similar to EPCBL but slightly different profile.	EPCBL2 Section 6 Pg. 9
A copper flexible connector with a straight, ribbed design, similar to EPCBL and EPCBL2.	D-F Section 6 Pg. 10
A copper flexible connector with a straight, ribbed design, similar to EPCBL and EPCBL2.	D-R Section 6 Pg. 11

ADAPTOR PLATE	
A copper adaptor plate with multiple mounting holes.	EPCuAP Section 6 Pg. 12

STRAIGHT CONNECTOR	
A copper straight connector with three terminals and a central mounting hole.	D-SC Section 6 Pg. 5

TERMINAL PALMS	
A copper terminal palm with two mounting holes and a central terminal.	D-NT Section 6 Pg. 13
A copper terminal palm with four mounting holes and a central terminal.	D-TL Section 6 Pg. 14
A copper terminal palm with four mounting holes and a central terminal, similar to D-TL but with a different profile.	D-TLC Section 6 Pg. 16

TEE CONNECTORS	
A copper tee connector with three terminals and a central mounting hole.	D-TC Section 6 Pg. 6
Two copper tee connectors, D-PC and D-PCS, which are identical in appearance, featuring three terminals and a central mounting hole.	D-PC AND D-PCS Section 6 Pg. 7

## SUBLIGN™ Bolted - Stud Connector

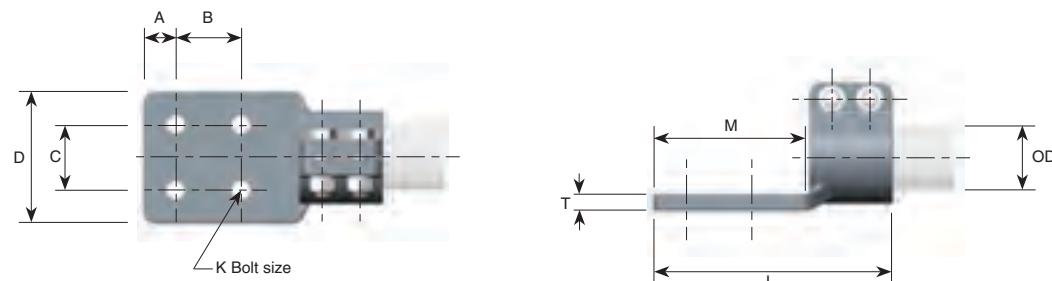


### SINGLE PALM

#### D-CS

SBAH - BSCZ1

The SUBLIGN™ D-CS coupler is normally used for connecting copper busbar tubes to items of primary equipment that have a copper stud or pin as the terminal connection. However, with the ability to accommodate the same or different sized busbar tube and equipment terminal stud outside diameters, this item can also be used for connecting different sized copper busbar tubes. Contact surfaces of the connectors and conductors must be thoroughly cleaned before assembly and use of Electropar PLP's white Joint Seal compound which is specifically designed for copper conductors and bolted joints is recommended.



### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube OD (mm)	Dim							
		A (mm)	B (mm)	C (mm)	D (mm)	L (mm)	M (mm)	T (mm)	K (mm)
D-CS5	19.1	16.0	51.0	51.0	83.0	130.0	83.0	10.0	M12
D-CS20	25.4	16.0	51.0	51.0	83.0	149.0	83.0	13.0	M12
D-CS20B	25.4	19.0	38.0	38.0	83.0	149.0	83.0	13.0	M10
D-CS112	28.6	16.0	38.0	38.0	76.0	149.0	76.0	10.0	M12
D-CS28	30.2	---	---	---	76.0	146.0	76.0	10.0	M12
D-CS28C	30.2	25.0	51.0	51.0	102.0	171.0	108.0	13.0	M12
D-CS30C	31.8	25.0	51.0	51.0	102.0	171.0	108.0	13.0	M12
D-CS38	34.9	25.0	51.0	51.0	102.0	171.0	105.0	13.0	M12
D-CS40C	38.1	25.0	51.0	51.0	102.0	171.0	105.0	13.0	M12
D-CS42	39.7	25.0	51.0	51.0	102.0	171.0	105.0	13.0	M12
D-CS42A	39.7	35.0	70.0	70.0	140.0	210.0	143.0	13.0	M16
D-CS181	46.0	25.0	38.0	51.0	102.0	178.0	105.0	16.0	M12
D-CS231	58.7	25.0	38.0	51.0	102.0	203.0	108.0	19.0	M12
D-CS250	63.5	25.0	38.0	51.0	102.0	203.0	108.0	19.0	M12

### Catalogue Number Explained

<b>D</b>	-	<b>C</b>	<b>S</b>	<b>1110</b>
Dulmison		Stud (Busbar)	Style Number	

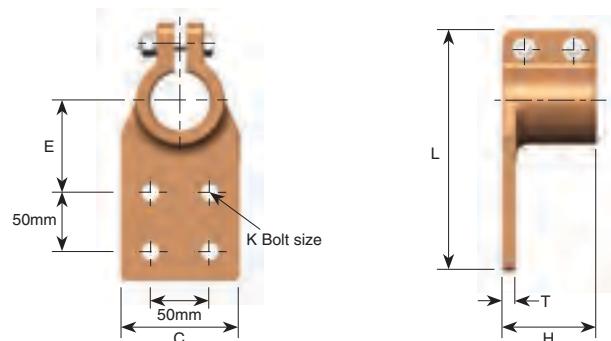


## SUBLIGN™ Bolted - Stud Connector



### SINGLE PALM 90 DEGREE D-LS

The SUBLIGN™ D-LS connector is designed to be used to convert an item of primary equipment that has a copper stud or pin connection to a 90 degree terminal palm connection. The design of this connector ensures maximum contact with the equipment terminal stud or pin to ensure a long lasting reliable connection. For installation, contact surfaces of the connector and equipment terminal pin / stud must be thoroughly cleaned and the use of Electropar PLP's white Jointseal compound designed for copper bolted joints is recommended.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Tube OD (mm)	Dim					
		C (mm)	E (mm)	H (mm)	L (mm)	T (mm)	K (mm)
D-LS5	19.1	79.0	35.0	44.0	133.0	10.0	M12
D-LS7	22.2	79.0	35.0	44.0	133.0	10.0	M12
D-LS20	25.4	76.0	41.0	64.0	143.0	10.0	M12
D-LS20C	25.4	102.0	57.0	64.0	171.0	13.0	M12
D-LS25	30.2	102.0	67.0	76.0	184.0	19.0	M12
D-LS25C	30.2	102.0	57.0	64.0	171.0	13.0	M12
D-LS28A	30.2	140.0	75.0	76.0	235.0	13.0	M16
D-LS30	31.8	83.0	43.0	64.0	146.0	13.0	M12
D-LS40	38.1	102.0	57.0	60.0	184.0	13.0	M12
D-LS50	50.8	102.0	60.0	73.0	193.0	13.0	M12
D-LS54	57.2	102.0	73.0	76.0	200.0	13.0	M12
D-LS95	76.2	102.0	67.0	83.0	216.0	13.0	M12
D-LS2018	30.2	76.0	54.0	64.0	143.0	10.0	M10

#### Catalogue Number Explained

<b>D</b>	-	<b>L</b>	<b>S</b>	<b>5</b>
Dulmison	90 Degree	Stud Terminal	Style Number	

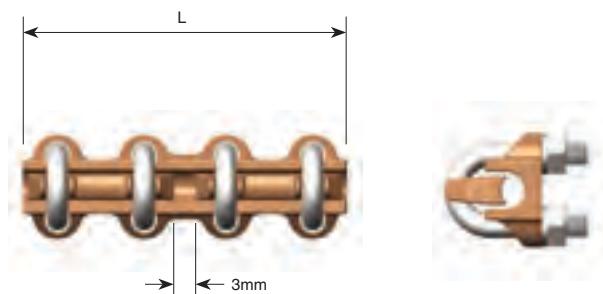
## SUBLIGN™ Bolted - Straight Connector

COPPER CONDUCTOR TO COPPER CONDUCTOR

D-SC



The SUBLIGN™ D-SC connector is designed to be used to convert an item of primary equipment that has a copper stud or pin connection to a 90 degree terminal palm connection. The design of this connector ensures maximum contact with the equipment terminal stud or pin to ensure a long lasting reliable connection. For installation, contact surfaces of the connector and equipment terminal pin / stud must be thoroughly cleaned and the use of Electropar PLP's white Jointseal compound designed for copper bolted joints is recommended.



### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range				Dim. L (mm)	
	Conductor 1		Conductor 2			
	Area (mm <sup>2</sup> )	OD	Area (mm <sup>2</sup> )	OD		
D-SC1	16 - 35	5.10 - 7.65	16 - 35	5.10 - 7.65	79.0	
D-SC2	25	6.42	25	6.75	105.0	
D-SC3	35 - 95	7.65 - 12.46	35 - 95	7.65 - 12.60	127.0	
D-SC4	70 - 150	10.70 - 15.75	25	6.75	127.0	
D-SC5	70 - 150	10.70 - 15.75	70 - 150	10.70 - 15.75	143.0	
D-SC7	150 - 240	15.75 - 20.25	25	6.75	149.0	
D-SC8	150 - 240	15.75 - 20.25	70 - 150	10.70 - 15.75	149.0	
D-SC9	150 - 240	15.75 - 20.25	150 - 240	15.75 - 20.25	156.0	

### Catalogue Number Explained

<b>D</b>	-	<b>S</b>	<b>C</b>	<b>5</b>
Dulmison	90 Degree	Stud Terminal	Style Number	



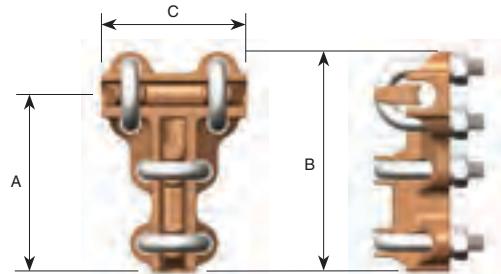
## SUBLIGN™ Bolted - Tee Connector



### COPPER CONDUCTOR TO COPPER CONDUCTOR

#### D-TC

The D-TC is designed for connecting flexible copper conductors in a tee configuration. This connector has been specifically developed as a range taking fitting so that each model of connector can accommodate a variety of copper flexible conductor main and tap sizes. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Jointseal compound specifically designed for copper bolted joints is recommended.

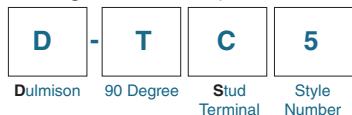


#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range				Dim		
	Run		Tap				
	Area (mm <sup>2</sup> )	OD	Area (mm <sup>2</sup> )	OD	A (mm)	B (mm)	C (mm)
D-TC1	16 - 35	5.10 - 7.65	10 - 35	5.10 - 7.65	60.0	79.0	38.0
D-TC2	25 - 70	6.42 - 10.70	25 - 70	6.42 - 10.70	70.0	90.0	51.0
D-TC3	35 - 95	7.65 - 12.60	35 - 95	7.65 - 12.60	83.0	103.0	60.0
D-TC4	70 - 150	10.70 - 15.75	25 - 70	6.42 - 10.70	75.0	98.0	70.0
D-TC5	70 - 150	10.70 - 15.75	70 - 150	10.70 - 15.75	92.0	116.0	70.0
D-TC6	70 - 150	10.70 - 15.75	150 - 240	15.75 - 20.25	95.0	122.0	70.0
D-TC7	150 - 240	15.75 - 20.25	25 - 70	6.42 - 10.70	76.0	105.0	76.0
D-TC8	150 - 240	15.75 - 20.25	70 - 150	10.70 - 15.75	95.0	122.0	76.0
D-TC9	150 - 240	15.75 - 20.25	150 - 240	15.75 - 20.25	102.0	127.0	76.0
D-TC12	240 - 400	20.25 - 25.65	240 - 400	20.25 - 25.65	121.0	156.0	83.0
D-TC20	500 - 630	28.80 - 32.76	500 - 630	28.80 - 33.80	140.0	178.0	102.0

#### Catalogue Number Explained

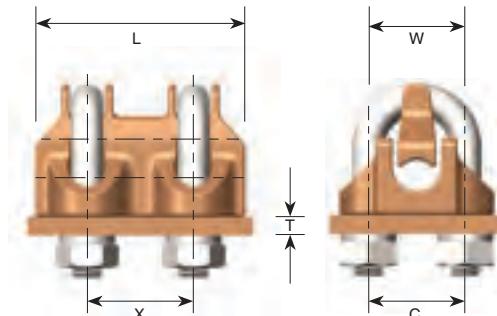


## SUBLIGN™ Bolted - Tee Connector



### SINGLE MAIN - PALMLESS D-PC and D-PCS

The D-PC and D-PCS connectors are designed for connecting flexible copper conductors to equipment terminal palms. This connector has been specifically developed as a range taking fitting so that each model of connector can accommodate a variety of copper flexible conductor sizes. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Jointseal compound specifically designed for copper bolted joints is recommended.

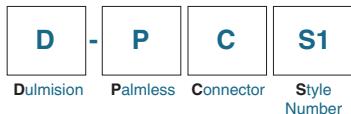


#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Cable Range		Dim					No. of Holes
	Area (mm <sup>2</sup> )	OD	C (mm)	L (mm)	T (mm)	W (mm)	X (mm)	
D-PCS1	25 - 120	6.75 - 14.21	22.0	32.0	7.0	44.0	-	2 x 9.5
D-PCS2	50 - 300	8.90 - 22.68	33.0	38.0	7.0	50.0	-	2 x 11.5
D-PC3	70 - 150	10.70 - 16.00	50.0	102.0	13.0	76.0	50.0	4 x 14.0
D-PC4	150 - 240	15.00 - 21.00	50.0	102.0	13.0	76.0	50.0	4 x 14.0
D-PC5	240 - 400	20.00 - 25.65	50.0	102.0	13.0	76.0	50.0	4 x 14.0
D-PC7	500 - 630	28.80 - 33.80	50.0	102.0	13.0	76.0	50.0	4 x 14.0

#### Catalogue Number Explained



## SUBLIGN™ Bolted - Flexible Connector



### COPPER LAMINATED EPCFC

The EPCFC connectors are designed for making 90 degree flexible copper conductor connections to equipment terminal palms. This connector has been specifically developed as a range taking fitting so that each model of connector can accommodate a variety of copper flexible conductor sizes. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Jointseal compound specifically designed for copper bolted joints is recommended.

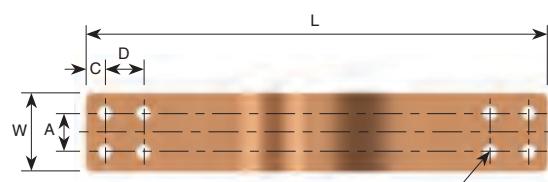


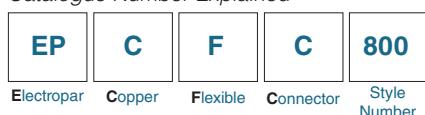
Fig. 1

#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Fig. No.	Dim						Approx. Current Rating (amp)	Approx. Thickness (mm)
		A (mm)	C (mm)	D (mm)	E (mm)	W (mm)	L (mm)		
EPCFC800	1	50.0	25.0	50.0	M12	102.0	400.0	800	6.0
EPCFC1200	1	50.0	25.0	50.0	M12	102.0	400.0	1200	9.0
EPCFC1800	1	50.0	25.0	50.0	M12	102.0	400.0	1800	13.0
EPCFC2400	1	50.0	25.0	50.0	M12	102.0	400.0	2400	17.0

#### Catalogue Number Explained



Material: Copper  
Maximum Voltage Application: 230kV

## SUBLIGN™ Bolted - Flexible Connector

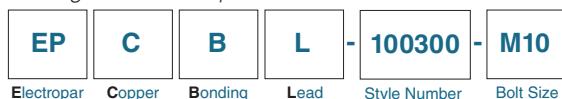
### BRAID - SINGLE BOLT EPCBL



Copper bonding leads comprise of one to six tinned copper flat braids depending on the current ratings required. Single and double hole configurations come in the following standard configurations, please contact PLP for other sizes available.

Catalogue Number	Current Rating (A)	Length (mm)	Width (mm)	Bolt Size	No. Braids
EPCBL-100300-M10	100	300.0	25.0	M10	1
EPCBL-300300-M10	300	300.0	25.0	M10	4
EPCBL-450300-M10	450	300.0	25.0	M10	6
EPCBL-100300-M12	100	300.0	25.0	M12	1
EPCBL-300300-M12	300	300.0	25.0	M12	4
EPCBL-450300-M12	450	300.0	25.0	M12	6

Catalogue Number Explained



### BRAID - TWO BOLT EPCBL2



Copper bonding leads comprise of one to six tinned copper flat braids depending on the current ratings required. Single and double hole configurations come in the following standard configurations, please contact PLP for other sizes available.

Catalogue Number	Current Rating (A)	Length (mm)	Hole Centres (mm)	Width (mm)	Bolt Size	No. Braids
EPCBL2-100300-29	100	300.0	22.0	25.0	M10	1
EPCBL2-300300-22	300	300.0	22.0	25.0	M10	4
EPCBL2-450300-22	450	300.0	22.0	25.0	M10	6
EPCBL2-100300-29	100	300.0	29.0	25.0	M10	1
EPCBL2-300300-29	300	300.0	29.0	25.0	M10	4
EPCBL2-450300-29	450	300.0	29.0	25.0	M10	6

Catalogue Number Explained





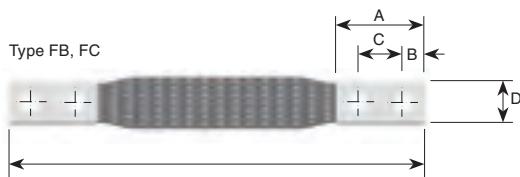
## SUBLIGN™ Bolted - Flexible Connector

BRAID - TINNED, FLAT

D-F



Series "F" flexible braid connectors consist of one or more tinned copper flat braids. Specially formed tinned copper ferrules are swaged onto the ends of the braids under high pressure to form solid rectangular terminals. Short Time Rating - Based on maximum current density being below 115 amps per mm<sup>2</sup>. Time period basis, 3 seconds.



Catalogue Number	Current Rating	Short Time Current Rating	No. of Braids	Thicknesses	Dim					Bolt Size
					A (mm)	B (mm)	C (mm)	D (mm)	L (mm)	
D-FA10300	100	2600	1	6	25.0	14.0	-	25.0	300.0	M10
D-FA30300	300	10700	4	8	25.0	14.0	-	25.0	300.0	
D-FA45300	450	16100	6	10	25.0	14.0	-	25.0	300.0	
D-FX10300	100	2600	1	6	25.0	14.0	-	25.0	300.0	M12
D-FX30300	300	10700	4	8	25.0	14.0	-	25.0	300.0	
D-FX45300	450	16100	6	10	25.0	14.0	-	25.0	300.0	
D-FB10300	100	2600	1	6	54.0	13.0	22.0	25.0	300.0	M10
D-FB30300	300	10700	4	8	54.0	13.0	22.0	25.0	300.0	
D-FB45300	450	16100	6	10	54.0	13.0	22.0	25.0	300.0	
D-FC10300	100	2600	1	6	54.0	13.0	22.0	25.0	300.0	M10
D-FC30300	300	10700	4	8	54.0	13.0	22.0	25.0	300.0	
D-FC45300	450	16100	6	10	54.0	13.0	22.0	25.0	300.0	

Note: 300mm Standard length. Other lengths and drilling to customer specifications available.

### Catalogue Number Explained

<b>D</b>	<b>F</b>	<b>A</b>	<b>10300</b>
Electropar	Flat Flexible	Type	Style Number

## SUBLIGN™ Bolted - Flexible Connector

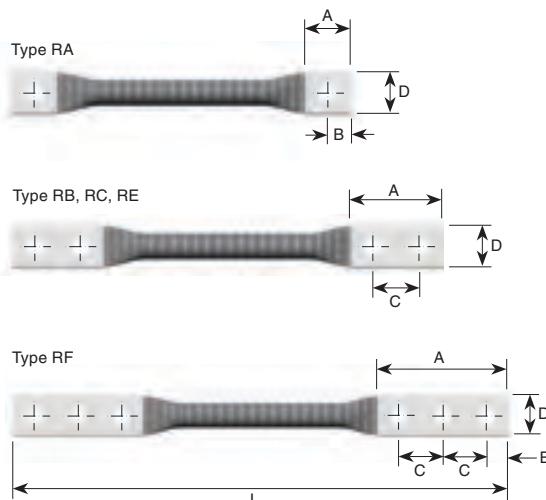
### BRAID - TINNED, ROUND

#### D-R



Series "R" flexible braid connectors consist of one or more tinned copper round braids with specially formed tinned copper ferrules swaged onto the ends of the braids under high pressure to form solid rectangular terminals.

Short Time Rating - Based on maximum current density being below 115 amps per mm<sup>2</sup>. Time period basis - 3 seconds.



Catalogue Number	Current Rating	Short Time Current Rating	No. of Braids	Approx. Thickness	Dim					Bolt Size
					A (mm)	B (mm)	C (mm)	D (mm)	L (mm)	
D-RA20300	200	6200	1	7.0	25.0	13.0	-	25.0	300.0	M10
D-RA40300	400	12500	2	8.5	25.0	13.0	-	25.0	300.0	M10
D-RB20300	200	6200	1	7.0	54.0	13.0	22.0	25.0	300.0	M10
D-RB40300	400	12500	2	8.5	52.0	13.0	22.0	25.0	300.0	M10
D-RC20300	200	6200	1	7.0	54.0	13.0	29.0	25.0	300.0	M10
D-RC40300	400	12500	2	8.5	54.0	13.0	29.0	25.0	300.0	M10
D-RC50300	500	20000	2	12.0	54.0	13.0	29.0	25.0	300.0	M10
D-RE70*	700	30000	3	14.0	83.0	19.0	40.0	40.0	*	M10
D-RE80*	800	37000	3	17.0	83.0	19.0	40.0	40.0	*	M10
D-RF60*	600	25000	2	10.5	152.0	25.0	50.0	49.0	*	M16
D-RF1K*	1000	50000	4	17.0	152.0	25.0	50.0	49.0	*	M16

**Note:** \*OVERALL LENGTH For types RA, RB & RC - standard length 300mm. Other lengths and drilling to customer specifications are available.

For types RE and RF - required length in millimetres to be added to catalogue number e.g. D-RE70450.

#### Catalogue Number Explained

<b>D</b>	<b>-</b>	<b>R</b>	<b>A</b>	<b>10300</b>
Electropar	Round Flexible	Type	Style Number	

## SUBLIGN™ Bolted - Adaptor Plates

### COPPER ADAPTOR PLATES

#### EPCuAP



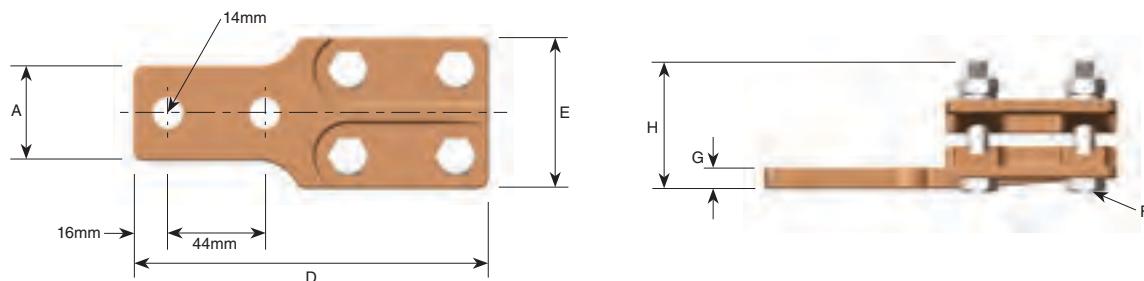
Adaptor plates are designed to be used on equipment, post insulators and other custom application within a switch yard and are manufactured to suit. Adaptor plates are generally made from HCCu copper with customised or standard palm configurations. Please contact Electropar PLP with required dimensions and specific needs.

## SUBLIGN™ Bolted - Terminal Palm



### SINGLE CONDUCTOR D-NT

The D-NT connectors are designed for connecting flexible copper conductors to equipment terminal palms. This connector has been specifically developed for NEMA dimensioned switchgear terminals and as a range taking fitting so that each model of connector can accommodate a variety of copper flexible conductor sizes. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Jointseal compound specifically designed for copper bolted joints is recommended.

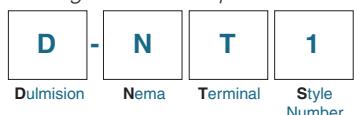


#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range		Dim					
	Area (mm²)	OD	A (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
D-NT1	6.17 - 11.35	5.10 - 10.70	32.0	129.0	49.0	M10	6.0	40.0
D-NT2	10.20 - 16.30	10.70 - 15.75	38.0	129.0	56.0	M10	8.0	46.0
D-NT3	16.30 - 21.00	15.75 - 20.25	44.0	146.0	62.0	M10	10.0	52.0
D-NT4	16.30 - 21.00	20.25 - 25.65	54.0	152.0	76.0	M12	13.0	59.0
D-NT5	21.00 - 26.50	25.65 - 33.80	64.0	159.0	83.0	M12	13.0	65.0

#### Catalogue Number Explained



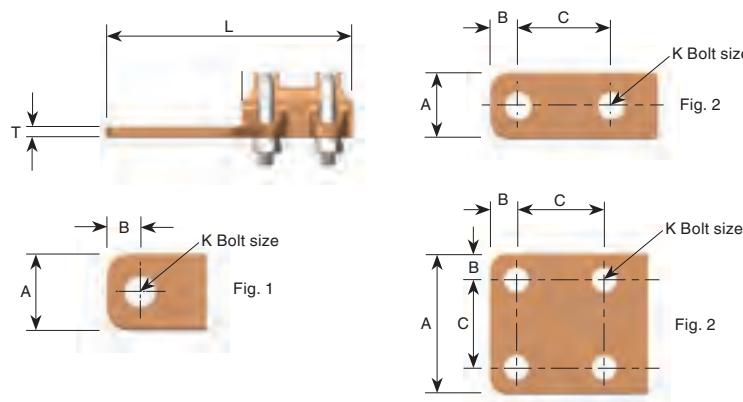


## SUBLIGN™ Bolted - Terminal Palm

### SINGLE CONDUCTOR D-TL



The D-TL connectors are designed for connecting flexible copper conductors to equipment terminal palms. This connector has been specifically developed as a range taking fitting so that each model of connector can accommodate a variety of copper flexible conductor sizes. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Jointseal compound specifically designed for copper bolted joints is recommended.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range		Fig. No.	Dim					
	Area (mm²)	OD (mm)		A (mm)	C (mm)	D (mm)	K (mm)	T (mm)	L (mm)
D-TL0	16 - 35	5.10 - 7.65	1	25.0	-	13.0	M10	6.0	67.0
D-TL02B1	16 - 35	5.10 - 7.65	1	50.0	-	25.0	M10	7.0	92.0
D-TL0187	16 - 35	5.10 - 7.65	2	25.0	48.0	13.0	M10	7.0	113.0
D-TL1	25 - 70	6.75 - 10.70	2	32.0	29.0	13.0	M10	6.0	105.0
D-TL2	35 - 95	7.65 - 12.60	2	32.0	29.0	13.0	M10	8.0	117.0
D-TL2150	35 - 95	7.65 - 12.60	2	32.0	38.0	16.0	M10	9.0	137.0
D-TL2187	35 - 95	7.65 - 12.60	2	32.0	48.0	13.0	M10	9.0	137.0
D-TL2200	35 - 95	7.65 - 12.60	2	32.0	50.0	16.0	M12	9.0	137.0
D-TL2B1	35 - 95	7.56 - 12.60	1	44.0	-	22.0	M20	9.0	108.0
D-TL3	70 - 150	10.70 - 15.75	2	35.0	38.0	16.0	M12	10.0	140.0
D-TL3 B22	70 - 150	10.70 - 15.75	3	79.0	50.0	14.0	M12	8.0	160.0
D-TL3187	70 - 150	10.70 - 15.75	2	35.0	48.0	16.0	M12	10.0	149.0
D-TL32B1	70 - 150	10.70 - 15.75	1	50.0	-	25.0	M10	9.0	127.0
D-TL3B4	70 - 150	10.70 - 15.75	3	64.0	38.0	13.0	M10	7.0	137.0
D-TL3B22C	70 - 150	10.70 - 15.75	3	102.0	50.0	25.0	M12	14.0	181.0
D-TL4	150 - 240	15.75 - 20.25	2	38.0	38.0	16.0	M12	10.0	146.0
D-TL4B22	150 - 240	15.75 - 20.25	3	83.0	50.0	16.0	M12	10.0	165.0
D-TL4187	150 - 240	15.75 - 20.25	2	38.0	48.0	16.0	M12	10.0	156.0
D-TL4B4	150 - 240	15.75 - 20.25	3	64.0	38.0	13.0	M10	8.0	140.0

Catalogue Number	Conductor Range		Fig. No.	Dim					
	Area (mm²)	OD (mm)		A (mm)	C (mm)	D (mm)	K (mm)	T (mm)	L (mm)
D-TL4B5	150 - 240	15.75 - 20.25	3	76.0	50.0	13.0	M10	7.0	159.0
D-TL5	240 - 400	20.25 - 25.65	2	41.0	38.0	16.0	M12	13.0	156.0
D-TL5B22	240 - 400	20.25 - 25.65	3	83.0	50.0	16.0	M12	10.0	173.0
D-TL5187	240 - 400	20.25 - 25.65	3	41.0	48.0	16.0	M12	13.0	165.0
D-TL5B4	240 - 400	20.25 - 25.65	3	76.0	38.0	19.0	M10	9.0	165.0
D-TL5B5	240 - 400	20.25 - 25.65	3	76.0	50.0	13.0	M10	9.0	165.0
D-TL6	400 - 500	25.65 - 28.80	2	48.0	38.0	19.0	M12	14.0	165.0
D-TL6B22	400 - 500	25.65 - 28.80	3	83.0	50.0	16.0	M12	9.0	176.0
D-TL7	500 - 630	28.80 - 32.76	2	48.0	38.0	19.0	M12	16.0	178.0
D-TL7B22	500 - 630	28.80 - 32.76	3	83.0	50.0	16.0	M12	11.0	187.0
D-TL7 B4	500 - 630	28.80 - 32.76	3	76.0	38.0	19.0	M10	10.0	184.0
D-TL7 B5	500 - 630	28.80 - 32.76	3	76.0	50.0	13.0	M10	10.0	184.0

Catalogue Number Explained



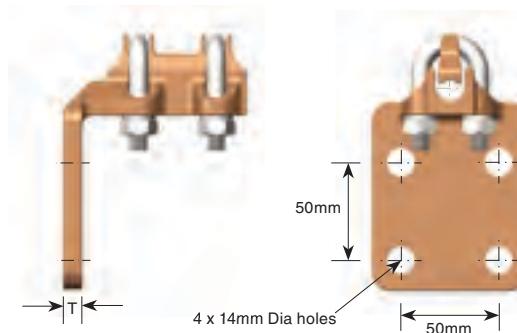


## SUBLIGN™ Bolted - Terminal Palm

### SINGLE CONDUCTOR 90° RANGE TAKING D-TLC



The D-TLC connectors are designed for making 90 degree flexible copper conductor connections to equipment terminal palms. This connector has been specifically developed as a range taking fitting so that each model of connector can accommodate a variety of copper flexible conductor sizes. For installation, contact surfaces of the connector and copper busbar tube must be thoroughly cleaned before assembly. Use of Electropar PLP's white Jointseal compound specifically designed for copper bolted joints is recommended.



#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Conductor Range		Dim T (mm)
	Area (mm <sup>2</sup> )	OD	
D-TL3C22	70 - 150	10.70 - 15.75	8.0
D-TL4C22	150 - 240	15.75 - 20.25	10.0
D-TL7C22	500 - 630	28.80 - 33.80	11.0

#### Catalogue Number Explained





**PREFORMED** LINE PRODUCTS

## Section 7 - SUBLIGN™ Compression

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## SUBLIGN™ Compression - Non Tension Connector

**SAME OR DIFFERENT SIZED CONDUCTORS**

**EPNTAAJ**

SBAH-CC



The EPNTAAJ non tension connector enables substation conductors of the same size or different sizes to be joined end to end. Most commonly used to extend substation interplant flexible conductors when primary equipment has been replaced or for interplant conductor repair, the EPNTAAJ compression connector is installed with industry standard hexagonal compression dies. Whether for same sized or different sized conductors, a centre stop is provided in the middle of the connector so that each conductor is equally inserted for installation.

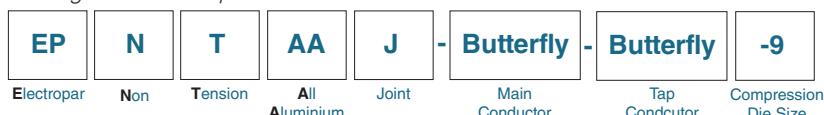
### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Conductor Number	Main Conductor	Tap Conductor
EPNTAAJ-Butterfly-Butterfly-9	Butterfly	Butterfly
EPNTAAJ-Centipede-Butterfly-11	Centipede	Butterfly
EPNTAAJ-Centipede-Centipede-11	Centipede	Centipede
EPNTAAJ-Cicada-Butterfly-12	Cicada	Butterfly
EPNTAAJ-Cicada-Centipede-12	Cicada	Centipede
EPNTAAJ-Cicada-Cicada-12	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

### Catalogue Number Explained



## SUBLIGN™ Compression - Quick Disconnect System



### SINGLE CONDUCTOR CONNECTOR

**EPQDC**  
SBAH-QDC

PLP's Quick Disconnect System (QDS) is designed to provide a quick, easy and cost effective means of creating physical disconnect points in substations for maintenance at voltages between 11 kV and 275 kV. The EPQDC can be deployed to create a disconnect point between flexible conductors and busbars, or between line and station flexible conductors. In addition, the QDS can also be used as a low cost alternative to high voltage bus section isolators in substations with only a limited loss of operational flexibility. The EPQDC is made up of a high strength, high conductivity aluminium alloy 'Clamp Body' and 'Clamp Keeper' together with a compression barrel. The quick disconnect connector is designed to be permanently installed on any standard flexible AAC, ACSR or AAAC aluminium conductor via industry standard hexagonal compression in a similar manner to a conventional compression terminal. The EPQDC can be installed by hand or by hotstick. Twin, Triple or Quad Bundles of substation conductors require one QDC to be installed per conductor. Each

EPQDC has two captive bolts, nuts and associated spring washers that generate the compressive force required to connect the EPQDC to the SUBLIGN™ Quick Disconnect Keel (EPQDK). At installation, the bolts must be tightened with a torque wrench to the specified torque setting. This can either be completed with a conventional hand held torque wrench, or via a hot stick torque wrench tool. Note that all EPQDK keels feature the same keel profile so any EPQDC connector will fit any keel type.



### Hardware

Grade 8.8 High Tensile Galvanised Steel Fastenings, Metric

Conductor Number	Main Conductor
EPQDC-Butterfly-9	Butterfly
EPQDC-Centipede-11	Centipede
EPQDC-Cicada-12	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

### Catalogue Number Explained

<b>EP</b>	<b>Q</b>	<b>D</b>	<b>C</b>	- <b>Butterfly</b>	<b>-9</b>
Electropar	Quick	Disconnect	Connector	Conductor	Compression Die Size

## SUBLIGN™ Compression - Quick Disconnect System

### TWIN CONDUCTOR CONNECTOR

#### EPQDC2 SBAH-QDC2



PLP's Quick Disconnect System (QDS) is designed to provide a quick, easy and cost effective means of creating physical disconnect points in substations for maintenance at voltages between 11 kV and 275 kV. The EPQDC2 can be deployed to create a disconnect point between flexible conductors and busbars, or between line and station flexible conductors. In addition, the QDS can also be used as a low cost alternative to high voltage bus section isolators in substations with only a limited loss of operational flexibility. The EPQDC2 is made up of a high strength, high conductivity aluminium alloy 'Clamp Body' and 'Clamp Keeper' together with twin compression barrels. The quick disconnect connector is designed to be permanently installed on any standard flexible AAC, ACSR or AAAC aluminium conductor via industry standard hexagonal compression in a similar manner to a conventional compression terminal. Standard conductor centres are 160mm but other conductor centres from 100mm can be accommodated. The EPQDC2 can be installed by hand or by hotstick. The decision regarding whether to use a EPQDC2 or two EPQDC's for a twin bundle is normally dependent on conductor size. The larger the conductor, the heavier the assembly will be to lift with a hotstick. Hence large conductors will likely be easier to manage with two EPQDC's rather than one EPQDC2. Each EPQDC2 has two captive bolts, nuts and associated spring washers that generate the compressive force required to connect the EPQDC2 to the SUBLIGN™ Quick Disconnect Keel (EPQDK). At installation, the bolts must be tightened with a torque wrench to the specified torque setting. This can either be completed with a conventional hand held torque wrench, or via a hot stick torque wrench tool. Note that all EPQDK keels feature the same keel profile so any EPQDC2 connector will fit any keel type.



#### Hardware

Grade 8.8 High Tensile Galvanised Steel Fastenings, Metric

Catalogue Number	Main Conductor
EPQDC2-Butterfly-114-9	Butterfly
EPQDC2-Centipede-114-11	Centipede
EPQDC2-Cicada-114-12	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained

EP	Q	D	C	2	- Cicada -	114	-9
Electropar	Quick	Disconnect	Connector	Twin Conductor	Conductor	Conductor Compression Centres in Millimetres	Die Size

## SUBLIGN™ Compression - Quick Disconnect System



### SINGLE DEADEND KEEL

#### EPQDKZ1

SBAH-QDKZ1

The EPQDKZ1 quick disconnect keel is manufactured from high strength high conductivity aluminium alloy. As illustrated, it is designed to be permanently attached to a terminal palm of a compression deadend so that a EPQDC can be connected. The keel portion of the EPQDKZ1 assembly is keyed with a flat edge so the quick disconnect clamp cannot rotate on it. The locator bar on the EPQDKZ1 is a safety feature that allows the operator connecting or disconnecting the EPQDKZ1 via hotstick to better control the removal and reattachment activity. The EPQDKZ1 can be provided for any standard terminal palm configuration and custom terminal palms are also available. Note that all EPQDK keels feature the same keel profile so any EPQDC connector will fit any keel type.



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

Catalogue Number	Hole Size & Centres
EPQDKZ1-2/M12/50	2/M12/50
EPQDKZ1-2/M16/50	2/M16/50
EPQDKZ1-3/M12/50	3/M12/50
EPQDKZ1-3/M16/50	3/M16/50
EPQDKZ1-4/M12/50	4/M12/50
EPQDKZ1-4/M16/50	4/M16/50

### Catalogue Number Explained

<b>EP</b>	<b>Q</b>	<b>D</b>	<b>K</b>	<b>Z1</b>	<b>-</b>	<b>2</b>	<b>/</b>	<b>M12</b>	<b>/</b>	<b>50</b>	<b>/</b>	<b>-U</b>
Electropar	Quick	Disconnect	Keel	Style 1	Number of Holes		Suit Bolt Size	Hole Centres in Millimetres		Undrilled (If Required)		

## SUBLIGN™ Compression - Quick Disconnect System



### COMPRESSION TEE KEEL

#### EPQDKZ1A

SBAH-QDKZ1A

The EPQDKZ1A quick disconnect keel is manufactured from high strength high conductivity aluminium alloy. As illustrated, it is designed to be permanently attached to a compression tee so that a EPQDC can be connected. Installed for single conductor or in pairs for twin conductor, the keel portion of the EPQDKZ1A assembly is keyed with a flat edge so the quick disconnect clamp cannot rotate on it. The locator bar supplied as standard with each EPQDKZ1A is a safety feature that allows the operator connecting or disconnecting the EPQDC via hotstick to better control the removal and re-attachment activity. The EPQDKZ1A can be provided for any standard terminal palm configuration and custom terminal palms are also available. Importantly, note that the EPQDKZ1A is orientation sensitive so left handed or right handed mounting must be specified in the catalogue below.



Twin Installation

Single Installation

Left Hand

Right Hand

### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

#### Keel Orientation Options

Left Hand

Right Hand

#### Suffix

- LH

- RH

Catalogue Number	Hole Size & Centres
EPQDKZ1A-2/M12/50	2/M12/50
EPQDKZ1A-2/M16/50	2/M16/50
EPQDKZ1A-3/M12/50	3/M12/50
EPQDKZ1A-3/M16/50	3/M16/50
EPQDKZ1A-4/M12/50	4/M12/50
EPQDKZ1A-4/M16/50	4/M16/50

#### Catalogue Number Explained

EP	Q	D	K	Z1A	-	2	/	M12	/	50	/	LH or RH	-U
Electropar	Quick	Disconnect	Keel	Style 1A	Number of Holes	Bolt Size		Hole Centres in Millimetres		Left Hand or Right Hand (if only one side required)		Undrilled (If Required)	

## SUBLIGN™ Compression - Quick Disconnect System

### TWIN DEADEND KEEL

#### EPQDKZ1B SBAH-QDKZ1B



The EPQDKZ1B quick disconnect keel is manufactured from high strength high conductivity aluminium alloy. As illustrated, it is designed to be permanently attached to a pair of compression deadends at either 380mm or 460mm centres so that a EPQDC can be connected. The keel portion of the EPQDKZ1B assembly is keyed with a flat edge so the quick disconnect clamp cannot rotate on it. The locator bar on the EPQDKZ1B is a safety feature that allows the operator connecting or disconnecting the EPQDC via hotstick to better control the removal and re-attachment activity. The EPQDKZ1B can be provided for any standard terminal palm configuration and conductor centres. Custom terminal palms are also available.

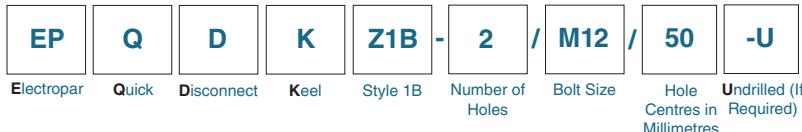


#### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

Catalogue Number	Hole Size & Centres
EPQDKZ1B-2/M12/50	2/M12/50
EPQDKZ1B-2/M16/50	2/M16/50
EPQDKZ1B-3/M12/50	3/M12/50
EPQDKZ1B-3/M16/50	3/M16/50
EPQDKZ1B-4/M12/50	4/M12/50
EPQDKZ1B-4/M16/50	4/M16/50

#### Catalogue Number Explained



## SUBLIGN™ Compression - Quick Disconnect System

### TWIN DEADEND KEEL

#### EPQDK2Z1 SBAH-QDK2Z1

The EPQDK2Z1 quick disconnect keel is manufactured from high strength high conductivity aluminium alloy. As illustrated, it is designed to be permanently attached to a pair of compression deadends so that two EPQDC clamps can be connected. The keel portion of the EPQDK2Z1 assembly is keyed with a flat edge so the quick disconnect clamp cannot rotate on it. The EPQDK2Z1 can be provided for any standard terminal palm configuration and conductor centres. Custom terminal palms are also available.



#### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

Catalogue Number	Hole Size & Centres
EPQDK2Z1-2/M12/50-380	2/M12/50
EPQDK2Z1-2/M12/50-460	2/M12/50
EPQDK2Z1-2/M16/50-380	2/M16/50
EPQDK2Z1-2/M16/50-460	2/M16/50
EPQDK2Z1-3/M12/50-380	3/M12/50
EPQDK2Z1-3/M12/50-460	3/M12/50
EPQDK2Z1-3/M16/50-380	3/M16/50
EPQDK2Z1-3/M16/50-460	3/M16/50
EPQDK2Z1-4/M12/50-380	4/M12/50
EPQDK2Z1-4/M12/50-460	4/M12/50
EPQDK2Z1-4/M16/50-380	4/M16/50
EPQDK2Z1-4/M16/50-460	4/M16/50

#### Catalogue Number Explained

EP	Q	D	K	2	Z1	-	2	/	M12	/	50	-	460	-U
Electropar	Quick	Disconnect	Keel	Twin	Style 1		Number of Holes		Suit Bolt Size		Hole Centres in Millimetres		Hole Set Spacing	Undrilled (If Required)



## SUBLIGN™ Compression - Quick Disconnect System

### BUSBAR TUBE KEEL

#### EPQDK2Z1A

SBAH-QDK2Z1A



The EPQDK2Z1A quick disconnect keel is manufactured from high strength high conductivity aluminium alloy. Supplied either as single units for connection of two EPQDC or in pairs for connection of quad EPQDC as illustrated, the keel is designed to be permanently attached to the terminal palm of a busbar tube. Supplied as a left hand and right hand unit for quad conductor connection, the keel portion of the EPQDK2Z1A assembly is keyed with a flat edge so the quick disconnect clamp cannot rotate on it. The EPQDK2Z1A can be provided for any standard terminal palm configuration. Custom terminal palms are also available. The left hand and right hand orientation must be specified in the catalogue number below.



Left Hand



Right Hand



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

#### Keel Orientation Options

Left Hand

Right Hand

#### Suffix

- LH

- RH

Catalogue Number	Hole Size & Centres
EPQDK2Z1A-4/M12/50	4/M12/50
EPQDK2Z1A-4/M16/50	4/M16/50
EPQDK2Z1A-8/M12/50	8/M12/50
EPQDK2Z1A-8/M16/50	8/M16/50

#### Catalogue Number Explained

EP	Q	D	K	2	Z1A	-	4	/	M12	/	50	/	LH or RH	-U
Electropar	Quick	Disconnect	Keel	Twin	Style 1A	Number of Holes	Bolt Size	Hole Centres in Millimetres	Left Hand or Right Hand (if only one side required)	Undrilled (If Required)				

## SUBLIGN™ Compression - Quick Disconnect System

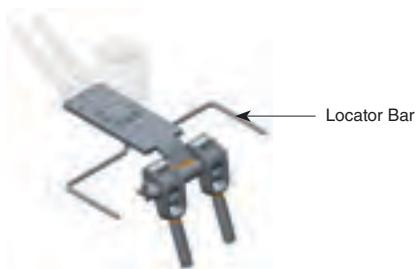
### POST INSULATOR KEEL

#### EPQDK2Z1B

SBAH-QDK2Z1B



The EPQDK2Z1B quick disconnect keel is manufactured from high strength high conductivity aluminium alloy. In this configuration, the quick disconnect keel is designed to be permanently attached to a substation post insulator hung beneath a substation gantry. Supplied so that the twin dropper connectors from the transmission line will attach to the other end of the keel plate, the keel portion of the EPQDK2Z1B assembly is keyed with a flat edge so the quick disconnect clamp cannot rotate on it. Supplied as standard with a locator bar, the EPQDK2Z1B can be provided for any insulator Pitch Circle Diameter (PCD) and terminal palm configuration, either standard or customised.



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Pitch Circle Diameter (PCD) Details

76mm, 127mm and 178mm PCD's are available as standard. For other PCD's contact PLP.

Catalogue Number	Hole Size & Centres
EPQDK2Z1B-2/M12/50-76	2/M12/50
EPQDK2Z1B-2/M12/50-127	2/M12/50
EPQDK2Z1B-2/M16/50-76	2/M16/50
EPQDK2Z1B-2/M16/50-127	2/M16/50
EPQDK2Z1B-3/M12/50-76	3/M12/50
EPQDK2Z1B-3/M12/50-127	3/M12/50
EPQDK2Z1B-3/M16/50-76	3/M16/50
EPQDK2Z1B-3/M16/50-127	3/M16/50
EPQDK2Z1B-4/M12/50-76	4/M12/50
EPQDK2Z1B-4/M12/50-127	4/M12/50
EPQDK2Z1B-4/M16/50-76	4/M16/50
EPQDK2Z1B-4/M16/50-127	4/M16/50
EPQDK2Z1B-8/M12/50-76	8/M12/50
EPQDK2Z1B-8/M12/50-127	8/M12/50
EPQDK2Z1B-8/M16/50-76	8/M16/50
EPQDK2Z1B-8/M16/50-127	8/M16/50

### Catalogue Number Explained

EP	Q	D	K	2	Z1B	-	2	/	M12	/	50	-	76	-U
Electropar	Quick	Disconnect	Keel	Twin	Style 1B	Number of Holes	Suit Bolt Size	Hole Centres in Millimetres	Pitch Circle Diameter (PCD)	Undrilled (if Required)				

## SUBLIGN™ Compression - Quick Disconnect System



### EARTHING TROLLEY SINGLE PHASE

#### EPQDET1

SBAH-QDET1

The EPQDET1 Quick Disconnect Earthing Trolley provides the means of connecting the EPQDC to the substation earth grid once the EPQDC is disconnected from a busbar, incoming line connection or from primary equipment. The EPQDET1 is a single phase earthing trolley designed for voltages above 145kV where it is normally very difficult to bring all disconnected flexible conductor bundles together at a single point. Three EPQDET1 trolleys are normally required per substation deployment. The EPQDET1 is designed to be able to be moved around the substation by hand and features foam filled pneumatic wheels to allow easy movement over the typically uneven ground within the substation. The adjustable legs on the EPQDET1 allow the device to be leveled, and each trolley can accept a single, twin, triple or quad bundle of substation conductors. The EPQDET1 is connected to the substation earth grid via an integral aluminium earth lead and is simply moved from storage to the required site location every time a disconnection and earthing procedure is required.



### Catalogue Number Creation

Owing to the fact there is only a single type of EPQDET1 available there is no tabulation of standard catalogue numbers provided. Simply quote the catalogue number provided below.

#### Catalogue Number Explained

EP	Q	D	E	T	1
Electropar	Quick	Disconnect	Earthing	Trolley	Single Phase

## SUBLIGN™ Compression - Quick Disconnect System



### EARTHING TROLLEY THREE PHASE

#### EPQDET3

SBAH-QDET3

The EPQDET3 Quick Disconnect Earthing Trolley provides the means of connecting the EPQDC to the substation earth grid once the EPQDC is disconnected from a busbar, incoming line connection or from primary equipment. The EPQDET3 is a three phase earthing trolley typically designed for use at voltages below 145kV where it is normally possible to bring all disconnected flexible conductor bundles together at a single point. One EPQDET3 trolley is normally required per substation deployment. The EPQDET3 is designed to be able to be moved around the substation by hand and features foam filled pneumatic wheels to allow easy movement over the typically uneven ground within the substation. The adjustable legs on the EPQDET3 allow the device to be leveled, and each trolley can accept three single, twin, triple or quad bundles of substation conductors. The EPQDET3 is connected to the substation earth grid via an integral aluminium earth lead and is simply moved from storage to the required site location every time a disconnection and earthing procedure is required.



Operational State



Storage State

#### Catalogue Number Creation

Owing to the fact there is only a single type of EPQDET3 available there is no tabulation of standard catalogue numbers provided. Simply quote the catalogue number provided below.

#### Catalogue Number Explained

<b>EP</b>	<b>Q</b>	<b>D</b>	<b>E</b>	<b>T</b>	<b>3</b>
Electropar	Quick	Disconnect	Earthing	Trolley	Three Phase

## SUBLIGN™ Compression - Tee Connector



### CLOSED RUN COMPRESSION TAP

#### EPCRCT

SBAH-CRT

The EPCRCT closed run compression tee provides a means of making a non disconnectable connection between a main conductor and a tap conductor. Suitable for connection of droppers to strung bus conductors or interplant tee connections, the EPCRCT must be threaded onto the main conductor or strung bus before it is terminated at both ends. Once finally positioned, the EPCRCT connector is installed with industry standard hexagonal compression dies. Main and tap conductors can be specified as the same size or different sizes.


Single Main Conductor  
Single Tap Conductor

Twin Main Conductor  
Twin Tap Conductor

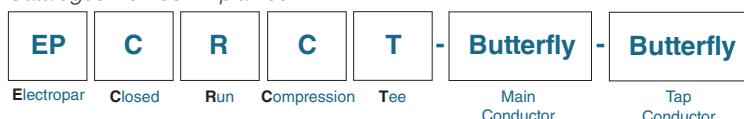
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPCRCT-Butterfly-Butterfly	Butterfly	Butterfly
EPCRCT-Centipede-Butterfly	Centipede	Butterfly
EPCRCT-Centipede-Centipede	Centipede	Centipede
EPCRCT-Cicada-Butterfly	Cicada	Butterfly
EPCRCT-Cicada-Centipede	Cicada	Centipede
EPCRCT-Cicada-Cicada	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained



## SUBLIGN™ Compression - Tee Connector

### OPEN RUN COMPRESSION TAP

#### EPORCT SBAH-ORT



The EPORCT open run compression tee provides a means of making a non disconnectable connection between a main conductor and a tap conductor. Suitable for connection of droppers to strung bus conductors or interplant tee connections, the EPORCT design features an interlocking extrusion on the main conductor side. This means that it can be easily applied to the main conductor or strung bus after the main has been terminated at both ends. Once finally positioned, the EPORCT connector is installed with industry standard hexagonal compression dies. Main and tap conductors can be specified at the same size or different sizes.



Single Main Conductor  
Single Tap Conductor

Twin Main Conductor  
Twin Tap Conductor

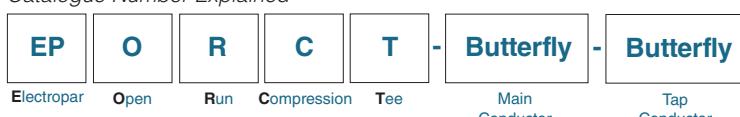
#### Hardware

Grade A2 70 (304) Stainless Steel Fastenings, Metric

Catalogue Number	Main Conductor	Tap Conductor
EPORCT-Butterfly-Butterfly	Butterfly	Butterfly
EPORCT-Centipede-Butterfly	Centipede	Butterfly
EPORCT-Centipede-Centipede	Centipede	Centipede
EPORCT-Cicada-Butterfly	Cicada	Butterfly
EPORCT-Cicada-Centipede	Cicada	Centipede
EPORCT-Cicada-Cicada	Cicada	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

#### Catalogue Number Explained



## SUBLIGN™ Compression - Tee Connector

### CLOSED RUN PALM TAP

#### EPCRPT

SBAH-CRPT



The EPCRPT closed run palm tee provides a means of making a reliable, easily disconnectable connection between a main conductor and a tap conductor. Suitable for connection of droppers to strung bus conductors or interplant tee connections, the EPCRPT is normally installed together with a compression terminal to make the tap. However, care must be taken at installation to ensure that this fitting is threaded onto the main conductor before the main is terminated at both ends. Once finally positioned, the EPCRPT connector is installed with industry standard hexagonal compression dies.


 Single Main Conductor  
 Single Tap Conductor

 Twin Main Conductor  
 Twin Tap Conductor

#### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

Catalogue Number	Main Conductor
EPCRPT-Butterfly-a/bbb/cc-9	Butterfly
EPCRPT-Centipede-a/bbb/cc-11	Centipede
EPCRPT-Cicada-a/bbb/cc-12	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm²)
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

#### Catalogue Number Explained

EP	C	R	P	T	-	Butterfly	-	a	/	bbb	/	cc	-	9	-U
Electropar	Closed	Run	Palm	Tee		Main Conductor		Number of Holes (e.g. 2)		Suit Bolt Size (e.g. M12)		Hole Centres in Millimetres (e.g. 50)		Die Size	Undrilled (If Required)

Material: Aluminium  
Maximum Voltage Application: 230kV

## SUBLIGN™ Compression - Tee Connector



### OPEN RUN PALM TAP

#### EPORPT

SBAH-CRPT

The EPORPT open run palm tee provides a convenient means of making a reliable, easily disconnectable connection between a main conductor and a tap conductor. Suitable for connection of droppers to strung bus conductors or interplant tee connections, the EPORPT design features an interlocking extrusion on the main conductor side. This means that it can be easily applied to the main conductor or strung bus after it has been terminated at both ends. The EPORPT is normally installed together with a compression terminal to make the tap. Once finally positioned, the EPORPT connector is installed with industry standard hexagonal compression dies.



Single Main Conductor  
Single Tap Conductor

Twin Main Conductor  
Twin Tap Conductor

### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

Catalogue Number	Main Conductor
EPORPT-Butterfly-a/bbb/cc-9	Butterfly
EPORPT-Centipede-a/bbb/cc-11	Centipede
EPORPT-Cicada-a/bbb/cc-12	Cicada

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

Common Terminal Palm Configurations	
Hole Size & Centres	Terminal Palm Size (mm)
2/M12/50	100 x 50
2/M16/50	100 x 50
4/M12/50	100 x 100
4/M16/50	100 x 100
8/M12/50	100 x 200
8/M16/50	100 x 200

### Catalogue Number Explained

EP	O	R	P	T	-	Butterfly	-	a	/	bbb	/	cc	-	9	-U
Electropar	Open	Run	Palm	Tee		Main Conductor		Number of Holes (e.g. 2)		Suit Bolt Size (e.g. M12)		Hole Centres in Millimetres (e.g. 50)		Die Size	Undrilled (If Required)



## SUBLIGN™ Compression - Terminal Palm



### SINGLE CONDUCTOR

#### EPJTPP

SBAH-TCPZ1

The EPJTPP provides a reliable way of making a connection between a single flexible conductor and an item of substation primary equipment which features a flat terminal palm. A feature of this design is that the compression barrel and the terminal palm are both aluminium extrusions that are Metal Inert Gas (MIG) welded together to form the terminal. For installation, the compression barrel of the EPJTPP connector is installed with industry standard hexagonal compression dies. The EPJTPP connector can be ordered bent (straight to 90 degree) or angled (straight to 45 degree) or as a combination of both bent and angled as illustrated below. Although the bent (vertical) angle is designated by the catalogue number, if a horizontal angle is required it must be specified as a suffix to the catalogue number. Note also that if the equipment terminal palm to which the EPJTPP will be bolted is copper bronze alloy, either tinned or untinned, a bi metal transition plate may be required. If this is needed it must be specified at the time of order in the PLP catalogue number together with the terminal palm type.



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Bi Metal Transition Plate

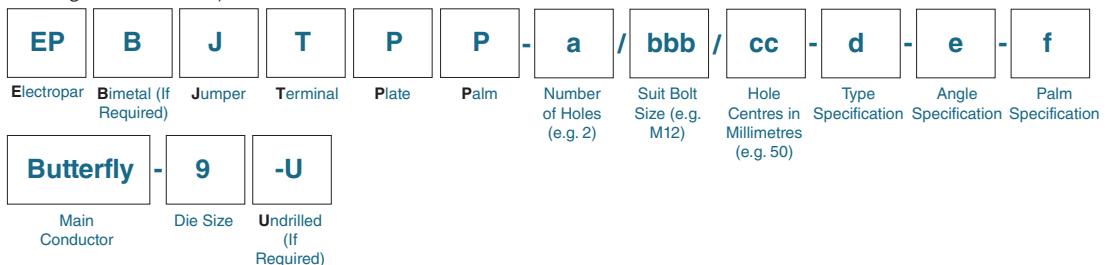
If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Catalogue Number	Main Conductor
EPJTPP-a/bbb/cc-d-e-f-Butterfly-9	Butterfly
EPJTPP-a/bbb/cc-d-e-f-Centipede-11	Centipede
EPJTPP-a/bbb/cc-d-e-f-Cicada-12	Cicada

Specification Tables		
a/bbb/cc	Common Terminal Palm Configurations	
	Hole Size & Centres	Terminal Palm Size (mm)
	2/M12/50	100 x 50
	2/M16/50	100 x 50
	4/M12/50	100 x 100
	4/M16/50	100 x 100
d	Straight, Bent, Angled	
e	0, 15, 30, 45, 60, 90 degree	
f	Offset Palm, Centre Palm	

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

Catalogue Number Explained





## SUBLIGN™ Compression - Terminal Palm



### SINGLE CONDUCTOR

#### EPJT

SBAH-TCPZ3

The EPJT provides a reliable way of making a connection between a single flexible conductor and an item of substation primary equipment which features a flat terminal palm. A feature of this design is that the palm of the compression terminal is forged from the same extrusion as the barrel rather than welded to it. For installation, the compression barrel of the EPJT connector is installed with industry standard hexagonal compression dies. The EPJT connector can be ordered bent (straight to 90 degree) or angled (straight to 45 degree) or as a combination of both bent and angled as illustrated below. Although the bent (vertical) angle is designated by the catalogue number, if a horizontal angle is required it must be specified as a suffix to the catalogue number. Note that if the equipment terminal palm to which the EPJT will be bolted is copper bronze alloy, either tinned or untinned, a bi metal transition plate may be required. If this is needed it must be specified at the time of order in the PLP catalogue number together with the terminal palm type.



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Bi Metal Transition Plate

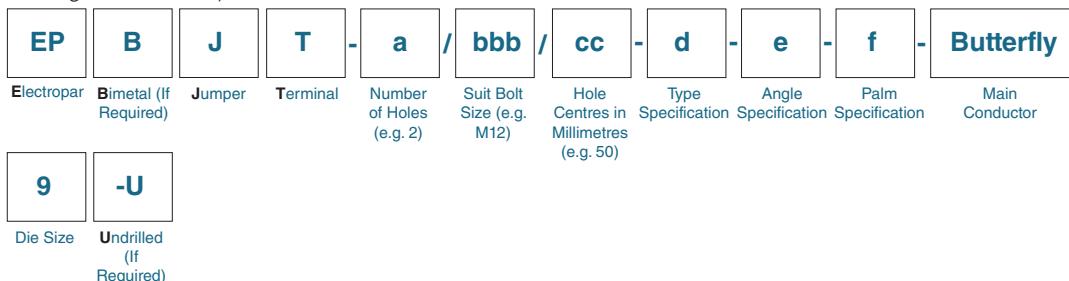
If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Catalogue Number	Main Conductor
EPJT-a/bbb/cc-d-e-f-Butterfly-9	Butterfly
EPJT-a/bbb/cc-d-e-f-Centipede-11	Centipede
EPJT-a/bbb/cc-d-e-f-Cicada-12	Cicada

Specification Tables		
a/bbb/cc	Common Terminal Palm Configurations	
	Hole Size & Centres	Terminal Palm Size (mm)
	2/M12/50	100 x 50
	2/M16/50	100 x 50
	4/M12/50	100 x 100
	4/M16/50	100 x 100
d	Straight, Bent, Angled	
e	0, 15, 30, 45, 60, 90 degree	
f	Offset Palm, Centre Palm	

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

Catalogue Number Explained



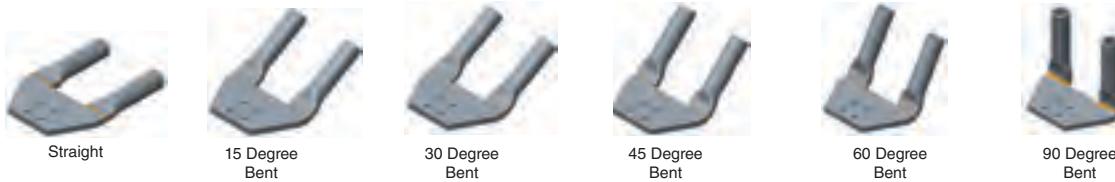
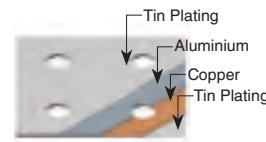


## SUBLIGN™ Compression - Terminal Palm

### TWIN CONDUCTOR

#### EP2JTWPP

SBAH-TCP2Z1



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Bi Metal Transition Plate

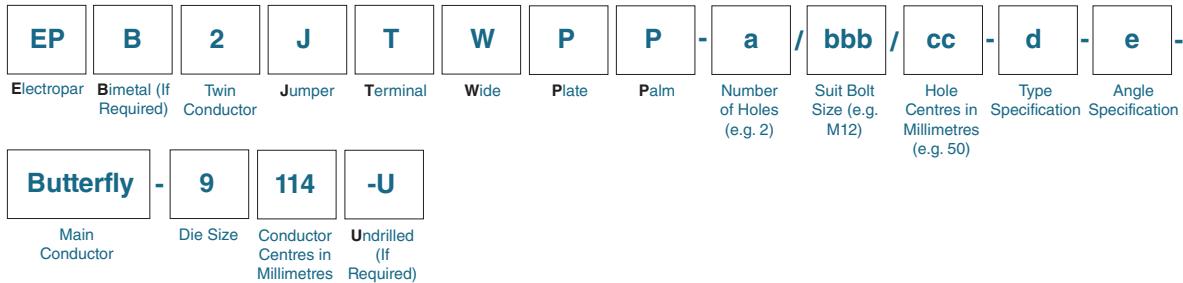
If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Catalogue Number	Main Conductor
EP2JTWPP-a/bbb/cc-d-e-f-Butterfly-9	Butterfly
EP2JTWPP-a/bbb/cc-d-e-f-Centipede-11	Centipede
EP2JTWPP-a/bbb/cc-d-e-f-Cicada-12	Cicada

Specification Tables		
a/bbb/cc	Common Terminal Palm Configurations	
	Hole Size & Centres	Terminal Palm Size (mm)
	4/M12/50	100 x 100
	4/M16/50	100 x 100
	6/M12/50	100 x 200
	6/M16/50	100 x 200
	8/M12/50	100 x 200
	8/M16/50	100 x 200
	d	Straight, Bent
	e	0, 15, 30, 45, 60, 90 degree

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

Catalogue Number Explained



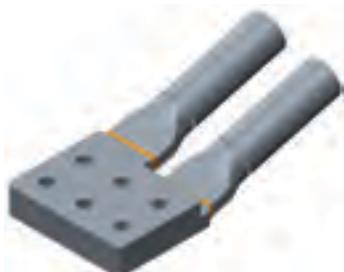


## SUBLIGN™ Compression - Terminal Palm

### TWIN CONDUCTOR

#### EP2JTNPP

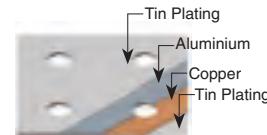
SBAH-TCP2Z1A



88mm



The EP2JTNPP provides a reliable way of making a connection between twin flexible conductors and an item of substation primary equipment which features a flat terminal palm. A feature of this design is that the compression barrel and the terminal palm are both aluminium extrusions that are Metal Inert Gas (MIG) welded together to form the terminal. For installation, the compression barrel of the EP2JTNPP connector is installed with industry standard hexagonal compression dies. Designed for tight conductor bundles standard centres for the EP2JTNPP connector are 88mm but other conductor centres available on request. EP2JTNPP connectors can be ordered bent (vertical) at angles between straight and 90 degree as illustrated. Note that if the equipment terminal palm to which the EP2JTNPP will be bolted is copper bronze alloy, either tinned or untinned, a bi metal transition plate may be required. If this is needed it must be specified at the time of order in the PLP catalogue number together with the terminal palm type.



Straight



15 Degree Bent



30 Degree Bent



45 Degree Bent



60 Degree Bent



90 Degree Bent

### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

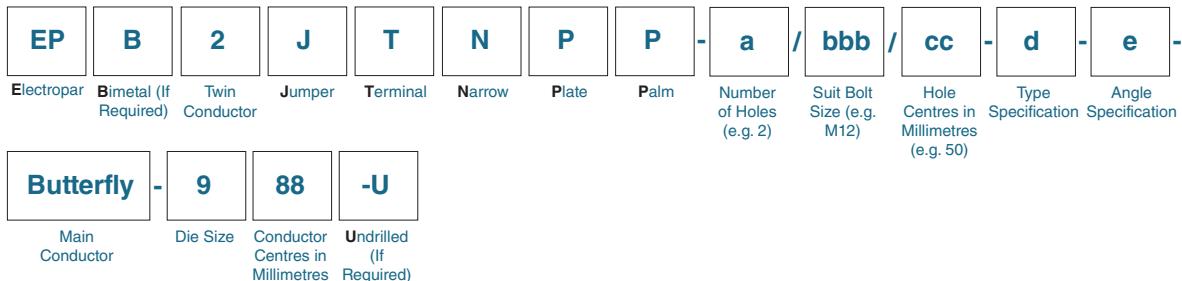
### Bi Metal Transition Plate

If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Catalogue Number	Main Conductor
EP2JTNPP-a/bbb/cc-d-e-f-Butterfly-9	Butterfly
EP2JTNPP-a/bbb/cc-d-e-f-Centipede-11	Centipede
EP2JTNPP-a/bbb/cc-d-e-f-Cicada-12	Cicada

Specification Tables		
a/bbb/cc	Common Terminal Palm Configurations	
	Hole Size & Centres	Terminal Palm Size (mm)
	4/M12/50	100 x 100
	4/M16/50	100 x 100
	6/M12/50	100 x 200
	6/M16/50	100 x 200
d	Straight, Bent	
e	0, 15, 30, 45, 60, 90 degree	

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

*Catalogue Number Explained*



## SUBLIGN™ Compression - Terminal Palm

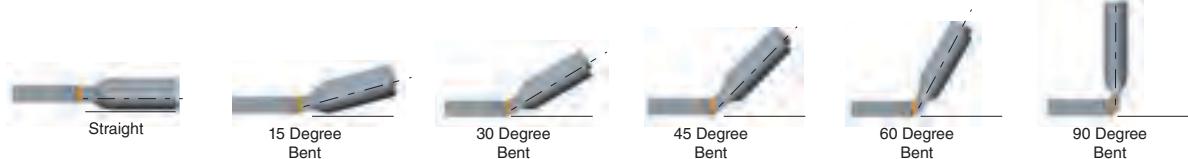
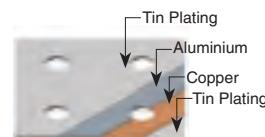
### TRIPLE CONDUCTOR

#### EP3JTNPP

SBAH-TCP3Z1A



The EP3JTNPP provides a reliable way of making a connection between triple flexible conductors and an item of substation primary equipment which features a flat terminal palm. A feature of this design is that the compression barrel and the terminal palm are both aluminium extrusions that are Metal Inert Gas (MIG) welded together to form the terminal. For installation, the compression barrel of the EP3JTNPP connector is installed with industry standard hexagonal compression dies. Standard centres for the EP3JTNPP connector are 100mm and the connector can be ordered bent (vertical) at angles between straight and 90 degree. Other conductor centres available on request. Note that if the equipment terminal palm to which the EP3JTNPP will be bolted is copper bronze alloy, either tinned or untinned, a bi metal transition plate may be required. If this is needed it must be specified at the time of order in the PLP catalogue number together with the terminal palm type.



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Bi Metal Transition Plate

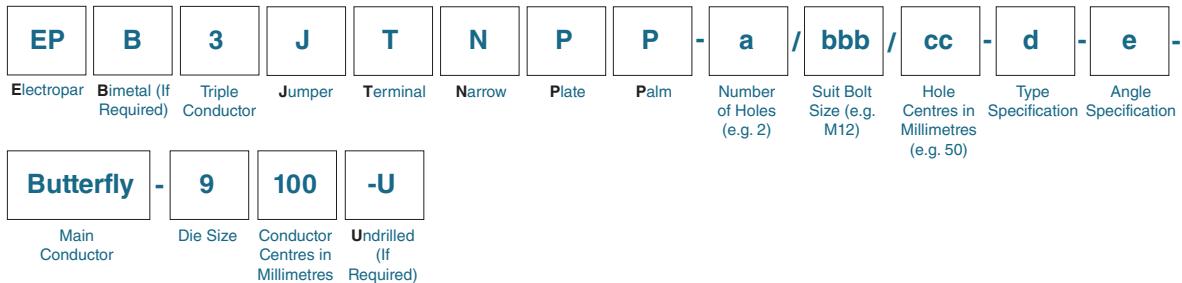
If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Catalogue Number	Main Conductor
EP3JTNPP-a/bbb/cc-d-e-f-Butterfly-9	Butterfly
EP3JTNPP-a/bbb/cc-d-e-f-Centipede-11	Centipede
EP3JTNPP-a/bbb/cc-d-e-f-Cicada-12	Cicada

a/bbb/cc	Specification Tables	
	Hole Size & Centres	Terminal Palm Size (mm)
	6/M12/50	100 x 200
	6/M16/50	100 x 200
	8/M12/50	100 x 200
	8/M16/50	100 x 200
d	Straight, Bent	
e	0, 15, 30, 45, 60, 90 degree	

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

## Catalogue Number Explained





## SUBLIGN™ Compression - Terminal Palm

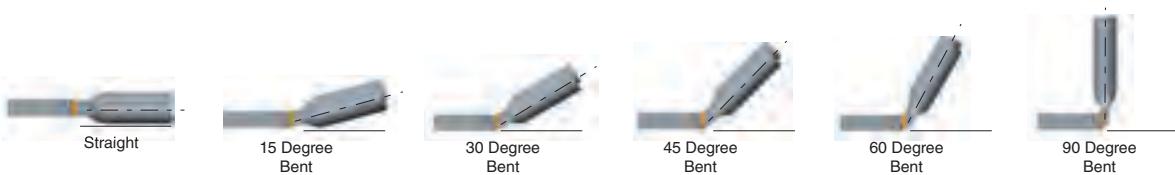
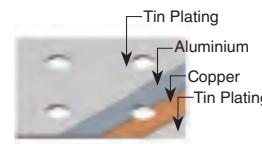
### QUAD CONDUCTOR

#### EP4JTNPP

SBAH-TCP4



The EP4JTNPP provides a reliable way of making a connection between quad flexible conductors and an item of substation primary equipment which features a flat terminal palm. A feature of this design is that the compression barrel and the terminal palm are both aluminium extrusions that are Metal Inert Gas (MIG) welded together to form the terminal. For installation, the compression barrel of the EP4JTNPP connector is installed with industry standard hexagonal compression dies. Standard centres for the EP4JTNPP connector are 88mm and 100mm and the connector can be ordered bent (vertical) at angles between straight and 90 degree. Other conductor centres available on request. Note that if the equipment terminal palm to which the EP4JTNPP will be bolted is copper bronze alloy, either tinned or untinned, a bi metal transition plate may be required. If this is needed it must be specified at the time of order in the PLP catalogue number together with the terminal palm type.



### Terminal Palm Options

For an undrilled terminal palm with outside dimensions specified by the standard palm type, add a “-U” suffix to the end of the catalogue number described below.

### Bi Metal Transition Plate

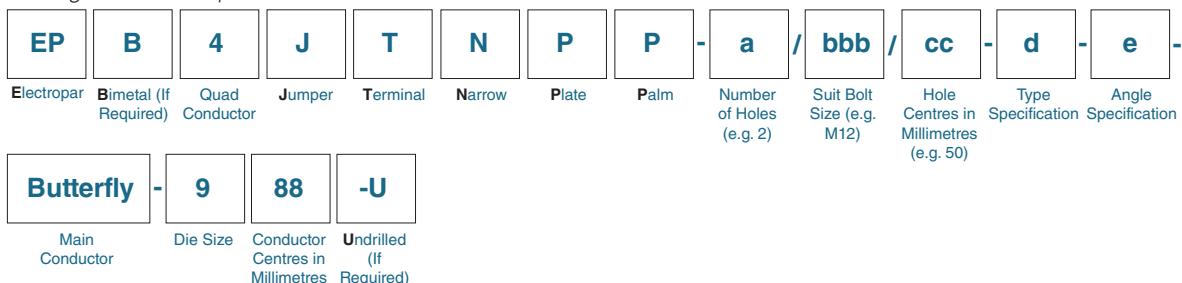
If the equipment terminal is copper bronze alloy a bi metal transition plate may be required. High conductivity copper on one side and aluminium alloy on the other side, the 1.5mm thick transition plate is electro-tin plated. Bi metal transition plates are sized to fit the substation equipment terminal and at installation are sandwiched between the POWERFORMED™ connector and the equipment terminal to create a long lasting reliable connection free from dissimilar metals corrosion.

Catalogue Number	Main Conductor
EP4JTNPP-a/bbb/cc-d-e-f-Butterfly-9	Butterfly
EP4JTNPP-a/bbb/cc-d-e-f-Centipede-11	Centipede
EP4JTNPP-a/bbb/cc-d-e-f-Cicada-12	Cicada

Specification Tables		
a/bbb/cc	Common Terminal Palm Configurations	
	Hole Size & Centres	Terminal Palm Size (mm)
	8/M12/50	100 x 200
d	Straight, Bent	
e	0, 15, 30, 45, 60, 90 degree	

Common AAC Substation Conductors		
Name	OD (mm)	CSA (mm <sup>2</sup> )
Butterfly	23.30	322.4
Centipede	26.46	415.2
Cicada	32.60	627.9

Catalogue Number Explained







**PREFORMED** LINE PRODUCTS

## Section 8 - Cable Cleats

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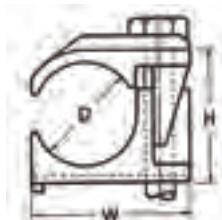
CABLE CLEATS	
	D-CAB Section 8 Pg. 3
	PSCCS Section 8 Pg. 5
	PSCCT Section 8 Pg. 6
	PSCCB Section 8 Pg. 7
	POLEFIX Section 8 Pg. 8

## Cable Cleats

### CABLE CLAMP - SINGLE WAY SINGLE BOLT CLAMP (TYPE CAB)

#### D-CAB

- A selfaligning, interlocking, non-magnetic clamp.
- Fits standard channels.



Catalogue Number	Cable Ø D (mm)		Dim		
	Min	Max	H (mm)	W (mm)	Bolt Ø
D-CAB5125	19.0	25.0	31.0	41.0	10.0
D-CAB5130	24.0	30.0	36.0	46.0	10.0
D-CAB5135	29.0	35.0	41.0	51.0	10.0
D-CAB5141	34.0	41.0	48.0	58.0	10.0
D-CAB5147	40.0	47.0	54.0	64.0	10.0
D-CAB5154	46.0	54.0	61.0	71.0	10.0

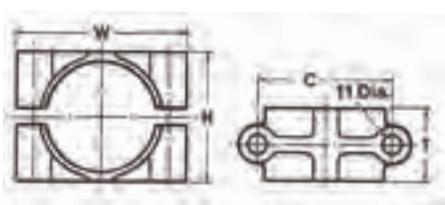
**Note:** Fasteners not included



### CABLE CLAMP - SINGLE WAY TWO BOLT CLAMP (TYPE CAB)

#### D-CAB

- For larger diameter cables
- Non-magnetic
- For flat or channel mounting



Catalogue Number	Cable Ø (mm)	Dim			
		H (mm)	C (mm)	T (mm)	W (mm)
D-CAB5960	55.0 - 60.0	72.0	73.0	45.0	96.0
D-CAB5967	60.0 - 67.0	79.0	80.0	45.0	105.0
D-CAB5974	67.0 - 74.0	88.0	89.0	50.0	112.0
D-CAB5981	74.0 - 81.0	95.0	96.0	50.0	121.0
D-CAB59105NI	101.0 - 105.0	124.0	120.0	65.0	154.0

**Note:** Fasteners not included



## Cable Cleats

### CABLE CLAMP - SINGLE WAY SINGLE BOLT CLAMP (TYPE CAB)

#### D-CAB

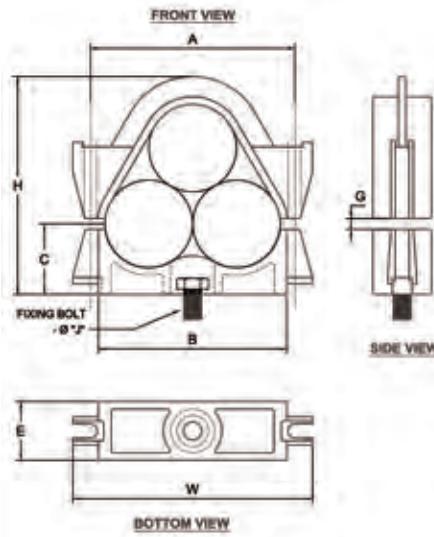


- Three Way (Trefoil) 2 Bolt Clamps.
- High strength cast aluminium.
- 20kN bursting strength.

Catalogue Number	Cable OD (mm)	Clamp Dim								
		A (mm)	B (mm)	C (mm)	E (mm)	G (mm)	H (mm)	J (mm)	K Bolt Ø	W (mm)
D-CAB5420	19.0 - 20.0	65.0	73.0	17.5.0	37.0	5.0	63.0	-	8.0	73.0
D-CAB5427	25.0 - 27.0	65.0	80.0	20.0	38.0	5.0	67.0	-	8.0	86.0
D-CAB5429	27.0 - 29.0	70.0	80.0	20.0	38.0	5.0	70.0	-	8.0	90.0
D-CAB5435	33.5 - 35.0	86.0	76.0	30.0	38.0	5.0	89.0	10.0	8.0	104.0
D-CAB5437	35.0 - 37.0	89.0	79.0	32.0	38.0	5.0	95.0	12.0	10.0	111.0
D-CAB5440	38.0 - 40.0	98.0	87.0	35.0	41.0	6.5.0	104.0	12.0	10.0	118.0
D-CAB5441	39.0 - 41.0	98.0	87.0	35.0	41.0	6.5.0	104.0	12.0	10.0	121.0
D-CAB5442	40.5 - 42.5	102.0	94.0	35.0	41.0	6.5.0	111.0	12.0	10.0	124.0
D-CAB5444	42.0 - 44.0	104.0	96.0	35.0	41.0	6.5.0	104.0	12.0	10.0	126.0
D-CAB5446	44.5 - 46.5	108.0	102.0	38.0	45.0	6.5.0	111.0	12.0	10.0	128.0
D-CAB5448	46.0 - 48.0	114.0	106.0	39.0	45.0	6.5.0	118.0	12.0	10.0	132.0
D-CAB5449	48.0 - 50.0	115.0	108.0	41.0	45.0	6.5.0	127.0	12.0	10.0	137.0
D-CAB5452	50.0 - 52.0	120.0	112.0	42.0	45.0	6.5.0	130.0	12.0	10.0	142.0
D-CAB5454	52.0 - 54.0	126.0	116.0	42.0	45.0	6.5.0	131.0	12.0	10.0	148.0
D-CAB5456	54.0 - 56.0	127.0	120.0	44.0	46.0	6.5.0	135.0	12.0	10.0	150.0
D-CAB5459	56.5 - 59.0	130.0	121.0	45.0	48.0	6.5.0	137.0	16.0	10.0	152.0
D-CAB5466	63.5 - 66.0	151.0	146.0	50.0	48.0	6.5.0	165.0	16.0	10.0	178.0
D-CAB5472	66.0 - 72.0	165.0	160.0	52.0	60.0	6.5.0	158.0	-	12.0	195.0
D-CAB5476	74.0 - 76.0	172.0	170.0	54.0	62.0	6.5.0	165.0	-	12.0	202.0
D-CAB5478	76.0 - 78.0	192.0	165.0	55.0	60.0	10.0	170.0	-	12.0	225.0
D-CAB5482	80.0 - 82.0	196.0	178.0	66.0	64.0	10.0	204.0	16.0	12.0	228.0

#### Notes:

- Bolt assemblies included as pictured
- Fixing bolt not included



## Cable Cleats

### PLASTIC SUBSTATION CABLE CLAMP SINGLE PSCCS



The Single Hole type cable clamps fasten a wide range of single and multi conductor low, medium and high voltage cables. Designed to provide superior mechanical strength, ideal for installations where cables are subject to short circuits. The wide contact area provides controlled pressure on the cable to prevent damage to the conductor insulation. Contact PLP with specific requirements and conductor diameters.

#### Characteristics:

- Made of glass fibre reinforced polyamide (PA).
- Resistant to oils, UV, ozone, salts, moisture, acids and even radioactive emissions.
- Self-extinguishing V-0 (UL94), halogen-free, low smoke.
- Temperature range from -40°C to 120°C.
- Black coloured.
- Available pre-mounted.
- Stainless steel fasteners included.

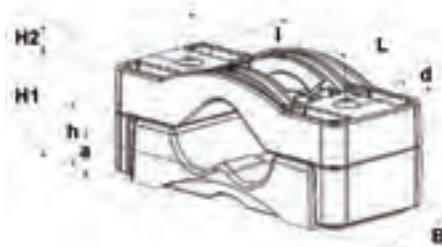
#### Testing:

By UL, KEMA, Eaton and Centrilab (reports available upon request).

Catalogue Number	Dim									Mechanical Strength
	D Ø	L (mm)	B (mm)	I (mm)	d (mm)	H1 (mm)	H2 (mm)	h (mm)	a (mm)	
PSCCS26-38	26.0 - 38.0	92.0	60.0	60.0	12.0	33.0 - 49.0	7.0	18.0	7.0	30,000Nm
PSCCS36-52	36.0 - 52.0	105.0	60.0	75.0	12.0	39.0 - 55.0	15.0	23.0	8.0	20,000Nm
PSCCS50-75	50.0 - 75.0	126.0	60.0	95.0	12.0	46.0 - 71.0	22.0	30.0	9.0	20,000Nm
PSCCS75-100	75.0 - 100.0	200.0	80.0	150.0	12.0	70.0 - 95.0	32.0	45.0	10.0	68,000Nm
PSCCS100-135	100.0 -135.0	225.0	82.0	175.0	15.0	85-120	43.0	58.0	10.0	67,400Nm

## Cable Cleats

### PLASTIC SUBSTATION CABLE CLAMP TRIPLE PSCCT



Triple type cable clamps fasten a wide range of single and multi conductor low, medium and high voltage cables in triangular formation. Designed to provide superior mechanical strength, ideal for installations where cables are subject to short circuits. The wide contact area provides a controlled pressure on the cable and prevents damage to the conductor insulation. Contact PLP with specific requirements and conductor diameters.

#### Characteristics:

- Made of glass fibre reinforced polyamide (PA).
- Resistant to oils, UV, ozone, salts, moisture, acids and even radioactive emissions.
- Self-extinguishing V-0 (UL94), halogen-free, low smoke.
- Temperature range from -40°C to 120°C.
- Black coloured.
- Available pre-mounted.
- Stainless steel fasteners included.

#### Testing:

By UL, KEMA, Eaton and Centrilab (reports available upon request).

Catalogue Number	Dim									Mechanical Strength
	D Ø	L (mm)	B (mm)	I (mm)	d (mm)	H1 (mm)	H2 (mm)	h (mm)	a (mm)	
PSCCT27-38	3X27-38	180.0	75.0	125.0	15.5	63.0	12.0	35.0	16.5	35,900Nm
PSCCT38-51	3x38-51	195.0	80.0	145.0	15.5	84.0	16.0	45.0	20.0	39,800Nm
PSCCT51-69	3x51-69	220.0	85.0	170.0	15.5	109.0	21.0	58.0	26.0	69,900Nm
PSCCT69-90	3x69-90	266.0	90.0	215.0	15.5	-	-	72.0	-	47,800Nm
PSCCT90-18	3x90-118	321.0	100.0	270.0	15.5	-	-	89.0	-	55,400Nm

## Cable Cleats

### PLASTIC SUBSTATION CABLE CLAMP BLOCKS PSCCB



Cable Blocks fasten cable diameters from 12 mm up to 32 mm. By means of 2 block parts, 4 cables can be fastened alongside each other. Additional cables are able to be fastened alongside each other by coupling the block parts together using the standard dovetail connection. Contact PLP with specific requirements and conductor diameters.

#### Characteristics:

- Made of glass fibre reinforced polyamide (PA).
- Resistant to oils, UV, ozone, salts, moisture, acids and even radioactive emissions.
- Self-extinguishing V-0 (UL94), halogen-free, low smoke.
- The mounting holes are Ø13mm, allowing the all thread to be extended with threaded bushes at any desired location, thereby eliminating the possibility of damage when cables are installed in multiple layers. The existing configuration can be expanded at any time, easily, simply, and at little cost.
- Temperature range from -40°C to 120°C.
- Stackable.
- Dovetail connections for end-to-end attachment.
- Black coloured.
- Available pre-mounted.
- Fasteners meeting your specifications can be included.

#### Testing:

By UL, KEMA, Eaton and Centrilab (reports available upon request).

PSCCB-Ø			
No. of Cables	Qty of PSCCB	Cable Ø	Cable Ø
4	2	12.0 - 32.0	32.0 - 48.0
8	3	12.0 - 32.0	32.0 - 48.0
12	4	12.0 - 32.0	32.0 - 48.0
16	5	12.0 - 32.0	32.0 - 48.0
20	6	12.0 - 32.0	32.0 - 48.0

#### Part Number System

PSCCB	Multiple Clamp
12 - 32	Diameter of Cable (Ø))

## Cable Cleats

### POLEFIX


**Applications:**

Using a stainless steel strap and two Polefix holders, all types of Dutchclamp cable clamps, cable blocks and other products can be attached to (steel or concrete) poles that may not or cannot be drilled into.

**Characteristics:**

- Made of glass fibre reinforced polyamide (PA).
- Resistant to oils, UV, ozone, salts, moisture, acids and even radioactive emissions.
- Self-extinguishing V-0 (UL94), halogen-free, low smoke.
- Temperature range from -40°C to 120°C.
- Black coloured.

Dim							
Catalogue Number	Mounting Hole Ø	L (mm)	W (mm)	H (mm)	Thickness	Groove Length	Groove Width
POLEFIX	15.0	80.0	47.0	33.0	6.0	40.0	2.5



# **PREFORMED** LINE PRODUCTS

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	SCT13
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	C14L
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	Earth Rod Clamps Section 9 Pg. 15				
	Earth Rod Clamps Section 9 Pg. 15				



## Earthing

### EARTH STUB BRASS

#### ESB



Earthing stubs are made from high purity brass, able to carry fault currents up to 40kA for 0.5 seconds or equivalent and suitable for connection of earthing devices onto structures.

Catalogue Number	Description
ESB-95213	Earth Stub Brass - M16 Tap
ESB-M12-1	Earth Stub Brass - M12 Tap Stainless steel bolt included

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## Earthing

### Earth Mats

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### EARTHMAT



Catalogue Number	Dimensions L x W (mm)
EARTHMAT-1	2500 x 1200
EARTHMAT-2	2500 x 1000
EARTHMAT-3	1500 x 1000
EARTHMAT-A	2400 x 1200
D-EARTHMAT	1500 x 900
EARTHMAT-C	600 x 450
D-KITY	Switching Kit to D-EARTHMAT

## Earthing Rods & Accessories

### Extendable Earth Rods

#### TAPERLOCK COUPLED TYPE CTE COPPER CLAD (SHEATHED)

Type CTE earth rods are among the simplest to use. They have identical taper ends and are joined by a one-piece tapered coupling which locks upon driving. These rods may be driven by hand or machine.



Catalogue Number	Length (mm)	Description
D-DHT15	-	13mm hand driving head (average driving)
D-DHT15	-	13mm hand driving head (average driving)
D-DHTU25	-	13mm hand driving head (hard driving)
D-CTE1312	1200	13mm earth rods (10 pack)
D-CTE1314	1440	13mm earth rods (10 pack)
D-CTE1318	1800	13mm earth rods (5 pack)
D-CTE1324	2400	13mm earth rods (5 pack)
D-CTE1330	3000	13mm earth rods (5 pack)
D-CTE1512	1200	15mm earth rods (10 pack)
D-CTE1514	1440	15mm earth rods (5 pack)
D-CTE1518	1800	15mm earth rods (5 pack)
D-CTE1524	2400	15mm earth rods (5 pack)
D-CTE1530	3000	15mm earth rods (5 pack)
D-CCT13	-	13mm coupling
D-CCT15	-	15mm coupling
D-DPT13	-	13mm driving point
D-SDP13T	-	13mm driving point
D-DPT15	-	15mm driving point
D-SDP15T	-	15mm driving point

## Earthing Rods & Accessories



### Tapered Earth Rods

#### TAPERLOCK COUPLED TYPE STE STAINLESS STEEL CLAD (SHEATHED)

Type STE earth rods are among the simplest to use. They have identical taper ends and are joined by a one-piece tapered coupling which locks upon driving. These rods may be driven by hand or machine.

Catalogue Number	Length (mm)	Description
D-DHT15	-	13mm hand driving head (average driving)
D-DHT15	-	14mm hand driving head (average driving)
D-STE1312	1200	13mm earth rods (10 pack)
D-STE1314	1440	13mm earth rods (10 pack)
D-STE1318	1800	13mm earth rods (5 pack)
D-STE1324	2400	13mm earth rods (5 pack)
D-STE1330	3000	13mm earth rods (5 pack)
D-STE1412	1200	13mm earth rods (10 pack)
D-STE1415	1440	13mm earth rods (5 pack)
D-STE1418	1800	13mm earth rods (5 pack)
D-STE1424	2400	13mm earth rods (5 pack)
D-STE1430	3000	13mm earth rods (5 pack)
D-SCT13	-	13mm coupling
D-SCT15	-	14mm coupling
D-DPT12	-	13mm coupling (average driving)
D-SDP12T	-	13mm coupling (hard driving)
D-DPT15	-	14mm coupling (average driving)
D-SDP15T	-	14mm coupling (hard driving)

## Earth Rods & Accessories



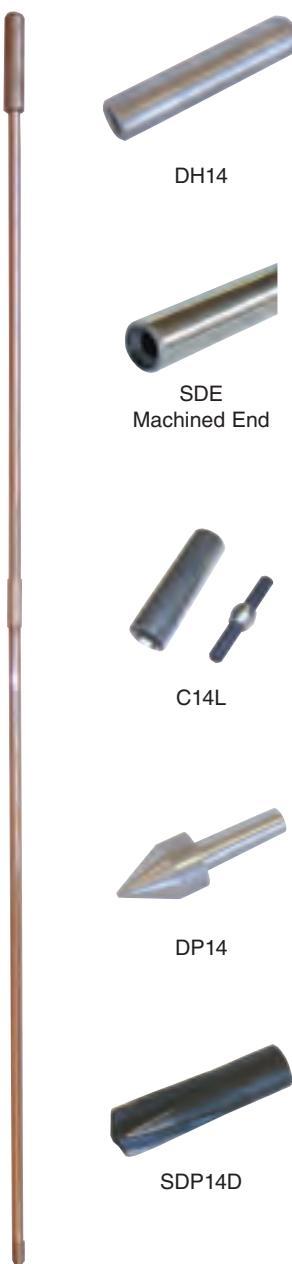
### Extendable Deep Driving Rods

#### **FLUSH JOINTED SERIES TYPE CCE - COPPER CLAD (SHEATHED)**

These deep driving flush-jointed electrodes have identical swaged ends to take driving points and coupling pins. They may be either hand or machine driven.

Catalogue Number	Length (mm)	Description
D-DH15	-	13mm hand driving head (average driving)
D-DH15	-	15mm hand driving head (average driving)
D-CCE1312	1200	13mm earth rods (10 pack)
D-CCE1314	1440	13mm earth rods (10 pack)
D-CCE1318	1800	13mm earth rods (5 pack)
D-CCE1324	2400	13mm earth rods (5 pack)
D-CCE1330	3000	13mm earth rods (5 pack)
D-CCE1512	1200	15mm earth rods (10 pack)
D-CCE1514	1440	15mm earth rods (5 pack)
D-CCE1518	1800	15mm earth rods (5 pack)
D-CCE1524	2400	15mm earth rods (5 pack)
D-CCE1530	3000	15mm earth rods (5 pack)
D-CCA13	-	13mm coupling
D-CCA15	-	15mm coupling
D-DP13	-	13mm driving point (average driving)
D-SDP13	-	13mm driving point (hard driving)
D-DP15	-	15mm driving point (average driving)
D-SDP15	-	15mm driving point (hard driving)

## Earthing Rods & Accessories



### Extendable Earthing Rods

#### EXPANSION JOINTED - TYPE SDE (TELSTRA) STAINLESS STEEL CLAD (SHEATHED)

Telstra designed and approved earth rod featuring corrosion resistant stainless steel clad rods, extendable in 1440mm lengths. The coupling system comprises of a stainless steel sleeve and hardened steel pin having a raised convolution at the midpoint. A secure and non-detachable joint is achieved by means of the pins convolute expanding and deforming the ends of the rod into the coupling sleeve as the rods are driven together.

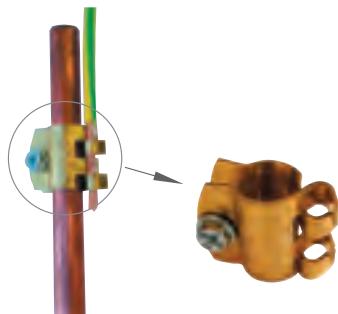
Catalogue Number	Length (mm)	Description
D-DH14	-	14mm hand driving head (average driving)
D-SDE1412K	1200	14mm earth rod (10 pack)
D-SDE1414L	1440	14mm earth rod (10 pack)
D-C14L	-	14mm coupling
D-DP14	-	14mm driving point (average driving)
D-SPD14D	-	14mm driving point (hard driving)

## Earthing Rods & Accessories

### Earth Rod Driving Accessories FOR KANGO TOOL/MACHINE ONLY



Catalogue Number	Description
D-MDH15K	For tapered end extendable rods (CTE & STE)
D-MDH15KF	For flush jointed extendable rods (CCE)
D-MDP10M	Machine Driving Pin (for use with the above tools)



### Non-Extendable Earth Rods (Domestic) COPPER CLAD (SHEATHED)

Catalogue Number	Description
D-CNE1314	Domestic earth rods (10 pack)
D-EC13D	Earth clip - Suitable for cables in the range 4 - 25mm <sup>2</sup> (10 pack)



### Non-Extendable Earth Rods - Heavy Duty Series (Industrial) TYPE LGR - COPPER CLAD (SHEATHED)

Catalogue Number	Length (mm)	Pack Qty
D-LGR1918	1800	5
D-LGR1920	2000	3
D-LGR1924	2400	3
D-LGR1930	3000	3
D-LGR1936	3600	3
D-LGR1945	4500	3

## Earthing Rods & Accessories

### Earthing Bond

#### FOR COMMERCIAL EARTHING INSTALLATIONS



The earthing bond system provides an earth connection welded to the steel reinforcement, thus offering a virtually indestructible, stable and low resistance path to earth soil. Please enquire about other sizes available.

Catalogue Number	Description
D-C70	Bonding Cable: 70mm <sup>2</sup> 1 sec Short Current Rating: 5kA Weldable Lug Dia: 12mm Terminal Thread: M10 Thread Depth: 20mm Cable Length: 3m
D-C95	Bonding Cable: 85mm <sup>2</sup> 1 sec Short Current Rating: 8kA Lug Dia: 16mm Terminal Thread: M10 Thread Depth: 20mm Cable Length: 3m
D-C120	Bonding Cable: 120mm <sup>2</sup> 1 sec Short Current Rating: 10kA Lug Dia: 20mm Terminal Thread: M10 Thread Depth: 20mm Cable Length: 3m



### Heavy Duty Earthing Connector TYPE CEC

- High strength, high conductivity connection.
- Shake-proof, permanent and corrosion resistant.
- High fault current capacity.
- Versatile: covers wide variety of single or multi-earthing applications including grid systems.
- Two profiles - '6' and 'C' - cover a wide variety of applications.

#### Profile 6

Catalogue Number	Open Sec.	Tap Off Conductor		Die Set	Pack Qty
		Dia. (mm)	Cross Sec. mm <sup>2</sup>		
D-CEC15035	Conductors 50 - 120mm <sup>2</sup> or Earth rods 13 - 15mm diameter	8.4	25 - 40	DU1315	5
D-CEC15070		11	50 - 70	DU1315	3
D-CEC15120		15	95 - 120	DU1315	3
D-CEC15150		16.5	120 - 150	DU1315	3

#### Profile C



Catalogue Number	Die Set	Conductor Combination mm <sup>2</sup>	Pack Qty
D-CEC070	DUOT	70 - 35 50 - 50 70 - 50 70 - 70	50
D-CEC095	DU1315	70 - 95 95 - 95	50

## Earthing Rods & Accessories

### Earth Rod Clamps

#### TYPES GB & EL



This clamp is designed for either parallel or right angle connections.

**Material:** High copper content alloy, with stainless steel U bolt, spring washers and nuts.

Catalogue Number	Conductor Range		Diameter of Electrode (mm)
	mm <sup>2</sup>	Dia. (mm)	
D-GB1	16 - 35	5.10 - 7.65	13 - 19
D-GB2	50 - 120	8.90 - 14.21	13 - 19
D-GB3	150 - 185	15.75 - 17.64	13 - 19
D-EL21090	35 - 120	7.65 - 14.21	12 - 15



Type EP

### Earth Rod Clamps

#### TYPES EP & ET FOR MULTI-CONDUCTOR EARTHING

For two earth conductors parallel to rod, or two or three earth conductors at right angles to rod.

**Material:** Body - high copper content alloy; Hardware - stainless steel.

Multiple Conductor Installations					
Catalogue Number	OD Ground Rod (mm)	Conductor Range		Fig. No.	No. of Conductor
		mm <sup>2</sup>	Dia (mm)		
D-EPO1	14 - 16	16 - 35	5.10 - 7.65	1	1
D-EP1	17 - 19	16 - 120	5.10 - 7.65	1	1
D-EP3	17 - 19	16 - 35	5.10 - 7.65	2	2
D-EP4	17 - 19	50 - 120	5.10 - 7.65	2	2
D-ET1	17 - 19	16 - 35	5.10 - 7.65	3	2
D-ET2	17 - 19	50 - 120	5.10 - 7.65	3	2
D-ET4	17 - 19	50 - 120	5.10 - 7.65	4	3



Type ET



Type EP3

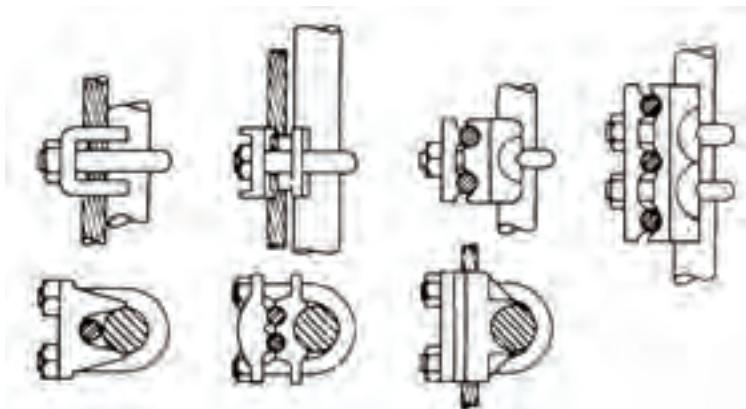


Fig. 1

Fig. 2

Fig. 3

Fig. 4



## Earthing Rods & Accessories

### Earth Rod Clamps



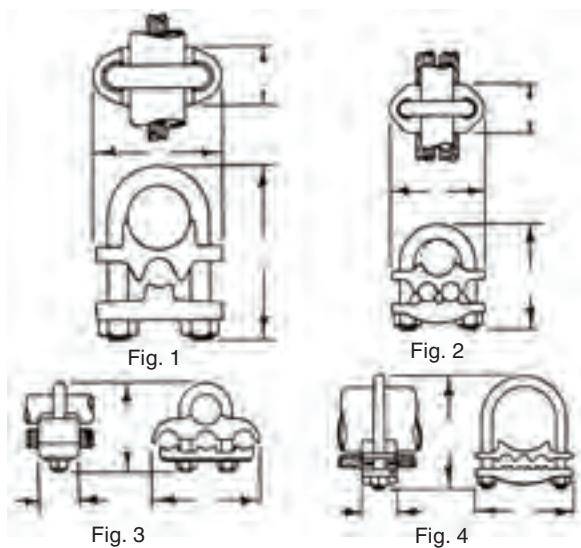
#### TYPE GP FOR CONNECTING UP TO 3 CONDUCTORS TO GALVANISED PIPE

This clamp makes all connections parallel to the pipe.

**Materials:** Clamp body - high copper content alloy.

**Hardware:** Comprising U-bolts, washers and nuts - stainless steel.

Catalogue Number	BS Pipe Series		Conductor Range		Fig. No.	No. of Cond	A	B	C	U-bolt Dia.
	OD of Pipe	Nom. Bore	mm <sup>2</sup>	Dia (mm)						
D-GP01	26	19.00	16 - 35	5.10 - 7.65	1	1	57	32	71	M10
D-GP1	34	25.40	16 - 35	5.10 - 7.65	1	1	65	32	86	M10
D-GP3					2	2	76	32	86	
D-GP5					3	3	95	38	86	
D-GP7	43	32.00	16 - 35	5.10 - 7.65	1	1	73	32	95	M10
D-GP9					2	2	81	32	95	
D-GP11					3	3	103	38	95	
D-GP13	48	38.00	16 - 35	5.10 - 7.65	1	1	80	32	102	M10
D-GP15					2	2	80	32	102	
D-GP19	60	51.00	16 - 35	5.10 - 7.65	1	1	100	32	124	M12
D-GP21					2	2	100	32	124	
D-GP23					4	4	100	38	124	
D-GP02	26	19.00	50 -120	8.90 - 14.21	1	1	57	32	71	M10
D-GP2	34	25.40	50 -120	8.90 - 14.21	1	1	65	32	86	M10
D-GP4					2	2	76	32	86	
D-GP6					3	3	95	38	86	
D-GP8	43	32.00	50 -120	8.90 - 14.21	1	1	73	32	95	M10
D-GP10					2	2	81	32	95	
D-GP12					3	3	103	38	95	
D-GP14	48	38.00	50 -120	8.90 - 14.21	1	1	80	32	102	M10
D-GP16					2	2	80	38	102	
D-GP20	60	51.00	50 -120	8.90 - 14.21	1	1	100	32	124	M12
D-GP22					2	2	100	32	124	
D-GP24					4	3	100	38	124	



## Earthing Rods & Accessories

### Earth Rod Clamps

#### TYPE FSC FOR EARTH TO FLAT BAR



For connecting copper earthing strip at right angles or parallel to the earthing electrode.

**Material:** High strength copper casting; stainless steel U-bolt, nuts and spring washers.

Catalogue Number	Earth Rod Dia. (mm)
D-FSC4	13 - 14
D-FSC5	15 - 16
D-FSC6	17 - 19

### Earth Rod Clamps

#### TYPE GF FOR CONDUCTOR TO FLAT BAR



For clamping earth cable to flat metal. Needs only one spanner as head of bolt has square shank to prevent turning. Standard bolt grips 6mm bar.

**Material:** Cast copper alloy body accommodates range of cable sizes; stainless steel bolt, nut and spring washer.

Catalogue Number	Conductor Range	
	mm <sup>2</sup>	Dia (mm)
D-GF42	16 - 70	5.10 - 10.70
D-GF58	70 - 135	10.70 - 15.25

### Earth Rod Clamps

#### SINGLE CONDUCTOR - PARALLEL



CLAMP210

GRC5

Simple and robust, these pinch and U-Bolt type clamps have a vee groove embodied in the casting to accommodate the earthing cable.

**Material:** Bodies are made from a high copper content alloy.



EP1

Catalogue Number	Rod Dia. (mm)	Conductor Range	
		mm <sup>2</sup>	Dia. (mm)
D-GRC5	13 - 15	10 - 35	4.05 - 7.65
D-CLAMP210	13 - 15	16 - 120	5.10 - 14.21
D-EP1	17 - 19	16 - 120	5.10 - 14.21

## Earthing Rods & Accessories

### Earthing Enhancement Compounds



**Features:** Stable, high conductivity providing long term low ground resistance. High expansion, low shrink characteristics. Non-toxic, non-corrosive.

**Installation:** Apply as a dry mix or pourable slurry. Dry mix will yield a volume of approximately 0.0176m<sup>3</sup> (roughly 57 bags to the cubic metre). Slurry will yield a volume of approximately 0.030m<sup>3</sup> when mixed with 20 to 25 litres of water (roughly 33 bags to the cubic metre).

**Packaging:** 20kg non-tear, plastic lined bags.

Catalogue Number	Composition	Standard
D-EARTHFIL	Bentonite, Gypsum, Sodium Sulphate	Conforms to AS2239
D-EARTHRITE	Bentonite, Gypsum, Sodium Sulphate	N/A
D-EARTH5050	Bentonite, Gypsum	Conforms to AS2239

### Connection Boxes



ERB1

Boxes ERB1 and ERB3 feature hinged inspection lids & cable entry holes on the sides. Both boxes provide ample space for conductors and clamps.

Catalogue Number
D-ERB1
D-ERB3



ERB3

## Temporary Earthing

Electropar PLP transmission earth leads and jumpers feature a 185mm<sup>2</sup> stranded aluminium conductor with head clamps, tail clamps or a combination of both.

Hotstick or hand applied, the sets are rated 25KA/1s. Head clamps will suit conductors with outside diameters 8mm - 28mm.

For vehicle earths with tail clamps at both ends, green heatshrink is added over the black heavy wall heatshrink that provides strain relief at the connection between the cable and the compression terminal.

All earth leads are supplied labelled and tested as shown below, with a certificate of compliance as standard. Common lead and configurations listed below, other lead lengths and configurations available on request.

### Earth Lead Details

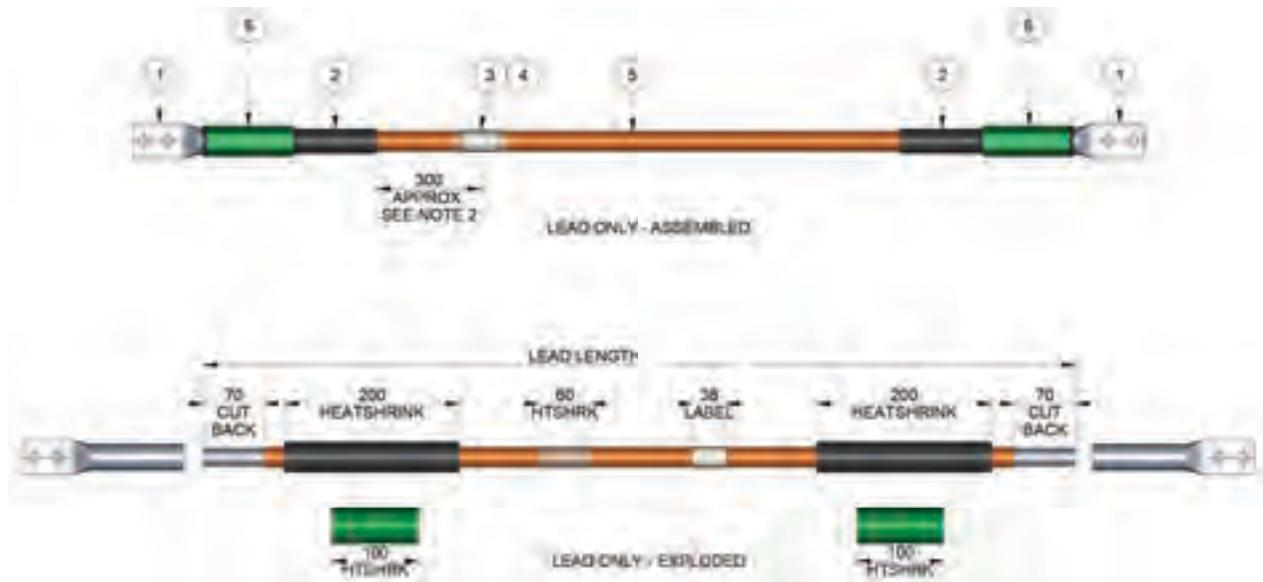


TABLE 1 - Parts List (Lead Only)

Item	Qty	Description	Material
1	2	Spring Terminal - 2 Holes D11 At 28 Centres	Aluminium 1200F
2	2	Thick Wall Heatshrink - 38.1mm - Black	Polyolefin
3	1	Thin Wall Heatshrink - 25.4mm - Clear	Polyolefin
4	1	Label - Water & Tear Proof	Plastic
5	1	Fine Strand Flexible Conductor - 185mm <sup>2</sup>	PVC / Aluminium
6	2	Thin Wall Heatshrink - 38.1mm - Green	Polyolefin



## Portable Earth



### Head Clamp, Tail Clamp & Compression TERMINAL DETAILS

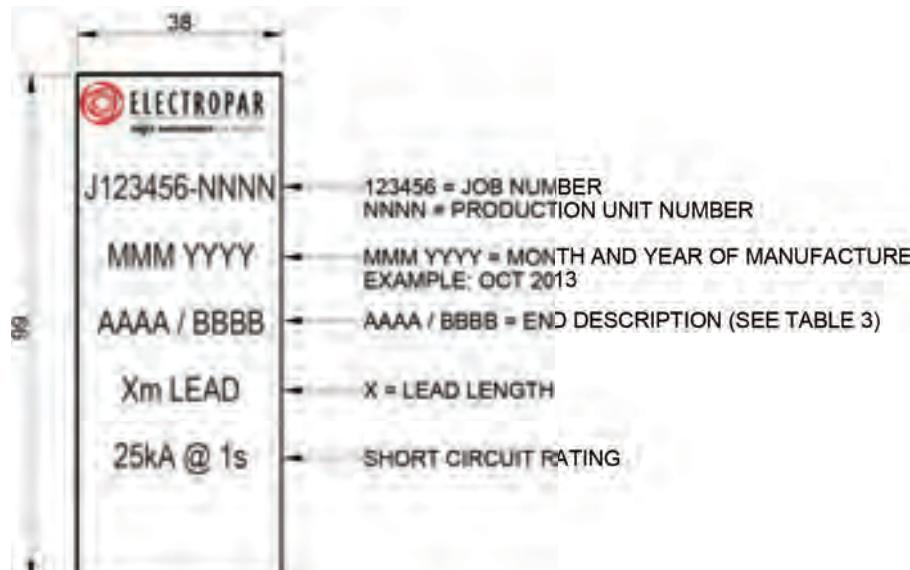
Earth Lead Assembly Part Numbers								
		Lead Length (M)						
		1	2	3	4	5	6	7
End Options	Head - Head	-	3003710	-	-	3003708	3001382	-
	Head - Tail	399051	3003641	3007035	387637	399388	387638	387639
	Head - Term	3003707	3007180	-	-	-	-	-
	Tail - Tail	380804	3001351	3003595	-	3003201	399833	388333
	Tail - Term	3001357	3001352	3000163	-	3003687	-	-
	Term - Term	3003272	399884	388069	3001362	3003401	388070	388363

End Option 1 - Head Clamp  
Label End Description: "HEAD"



Earth Lead Assembly Part Numbers									
		Lead Length (M)							
		8	9	10	12	14	16	18	20
End Options	Head - Head	-	3006616	3003709	-	-	-	-	-
	Head - Tail	387640	399533	387641	399299	3003569	3006617	386454	3003259
	Head - Term	-	-	387016	-	-	-	-	-
	Tail - Tail	3002016	3003210	3006317	3003209	3006881	-	399928	3003095
	Tail - Term	3001353	385891	3001121	-	-	-	-	399947
	Term - Term	399944	3006778	388377	399943	3003371	399845	3003402	3001111

### Earth Lead Label



End Option 3 - Terminal  
Label End Description: "TERM"

## Portable Earth

### Typical Earth Set Configurations



## Jumper Assemblies



Stock No.	Description
394995	Operating Socket
939776	1.8m Hotstick
939777	2.7m Hotstick
939778	3.6m Hotstick
939771	4.8m Hotstick



**PREFORMED** LINE PRODUCTS

## Section 10 - Primary Equipment



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## Primary Equipment

### DB36 - D362 DISCONNECTORS

36kV - 362kV



The AEM type High Voltage (HV) Double Break Disconnectors are designed for outdoor transmission substation isolation duty in power transmission networks.

Rated up to 4000A continuous current and fault withstand up to 50kA rms for 1 second (125kAp), with remote automatic operation and associated earth switches, the proven safety and reliability make it a first choice for a long life quality disconnector.

PLP's local engineering team can design structure heights, spacing, insulator options and configuration to suit your site and operating standards.

The AEM type DB disconnectors comply with AS62771.102-2005 and IEC62271.102-2003.



#### Safety:

- Robust mechanical and electrical interlocking to ensure operator and network safety.
- Mechanical interlocks prevent dangerous earth switch - phase switch combinations.
- Optional solenoid bolt interlocks are available for remote interlocking of associated earth switches and stand alone earth switches.
- Electrical interlocking with the optional motor actuator prevents incorrect remote operation.
- Disconnectors are designed to comply with AS1170.2-2002 (Wind load code - tropical cyclone) and AS1170.4-2007 (seismic) when so specified.

#### Performance:

- Self gripping contact design for high short circuit current capability.
- Low operating force for easy manual operation.
- "Easy Open" earth switch operation.

#### Reliability:

- Corrosion resistant galvanised structures.
- Maintenance free linkages and ptfe bearings.
- Comprehensive installation, operation and maintenance manuals plus drawings are provided.
- Quick Field replacement of contact system.
- Overcentre mechanism to ensure positive locking in open or close positions.

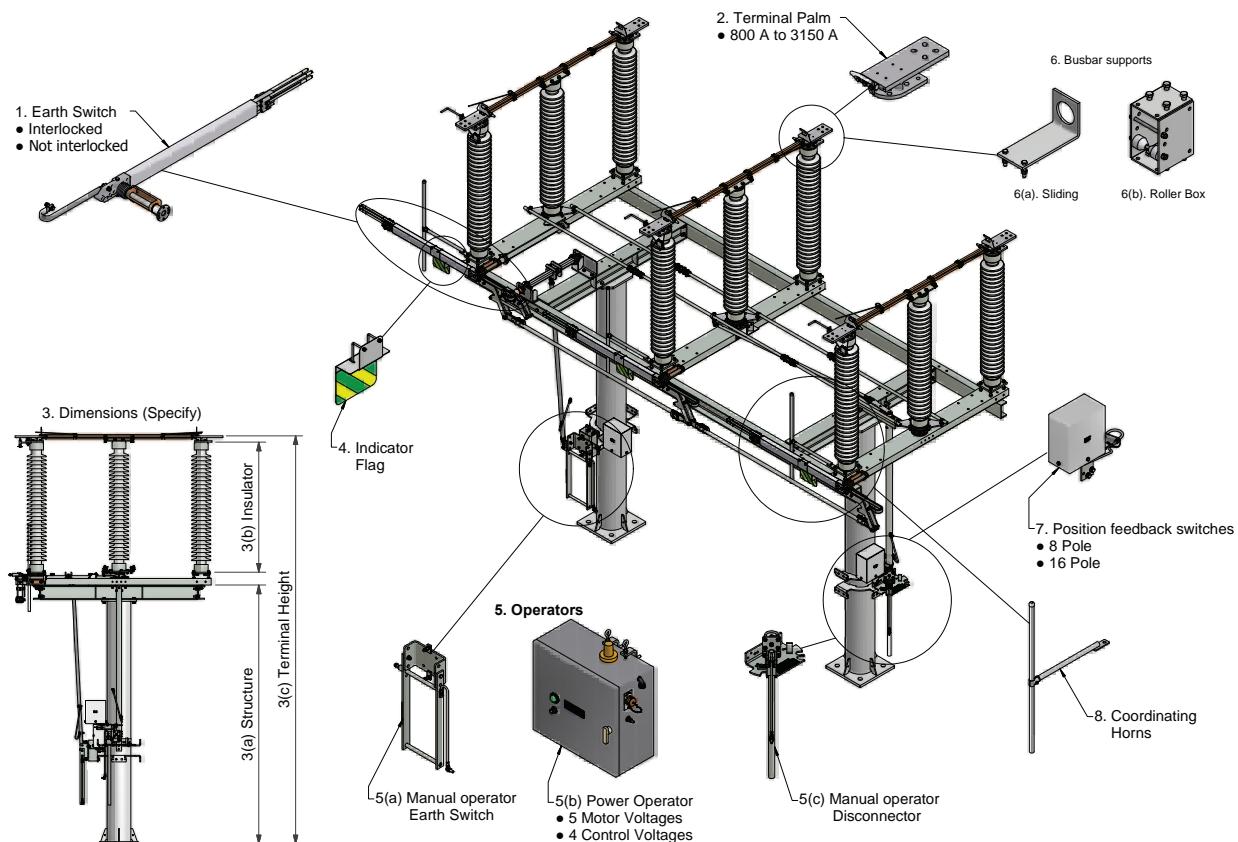
**POWERFORMED™**

Substation Systems

## Primary Equipment

### Popular Options For DB36, DB72 & DB145

(each numbered item is a set of options)



## Specifications

Ratings	DB36	DB72	DB145
Disconnecter Designation (Type)	DB36 (Double Break)	DB72 (Double Break)	DB145 (Double Break)
Earthing Switch Designation (Type)	SE36(Vertical Break)	SE72 (Vertical Break)	SE145 (Vertical Break)
Rated Voltage	36kV	72.5kV	145kV
Disconnecter Endurance Class	M1	M1	M1
Earthing Switch Endurance Class	M1	M1	M1
Rated Frequency	50Hz	50Hz	50Hz
Rated Normal Current	800A to 3150A	800A to 3150A	800A to 3150A
Rated Peak Withstand Current	50 to 100kAp	50 to 125kAp	40 to 125kAp
Rated Short Time Current/ 1 sec - STC	20kA to 40kA rms	16kA to 50kA rms	16kA to 50kA rms
Resistance of Main Circuit	<98μ Ω	<144μ Ω	<202μ Ω
Rated 1 minute Power Frequency Withstand Voltage: To Earth	>7kV rms	>140kV rms	>275kVrms
Rated 1 minute Power Frequency Withstand Voltage: Across Open Gap	>80kV rms	>160kV rms	>315kV rms
Rated Lightning Impulse Withstand Voltage: To Earth	>200kVp	>350kV rms	>650
Rated Lightning Impulse Withstand Voltage: Across Open Gap	>230kVp	>402.5kVp	>750kVp
Max RIV @ 1MHz and 23kV	N/A	N/A	<2500μV
Max Permissible Load on Terminal	500N	500N	500N

# Primary Equipment

## Specifications

Contacts/ Terminals	DB245	DB362
Contact Type: Disconnector (Earthing Switch)	Roll Over Reverse loop (Rod & Wedge)	Roll Over Reverse loop (Rod & Wedge)
Number of Breaks per Phase: Disconnector (Earthing Switch)	2 (1)	2 (1)
Contact Material	Silver Plated Copper	Silver Plated Copper
Rated Contact Force	110N	110N
Recommended Contact Lubricant:	KOPRCOTE	KOPRCOTE
Terminal Material	Aluminium	Aluminium

Drive Gear	DB245	DB362
Operating Method	Power or Manual	Power or Manual
Max Operating Effort of Manual Handle: Vertical Spade Type	<250N	<250N
Max Operating Effort of Manual Handle: Rotary Crank Type	<90N	<250N
Construction of Main Bearing: Disconnector	PTFE on galvanised steel	<90N
Construction of Main Bearing: Earthing Switch	Bronze on stainless steel shaft	Laminated PTFE on stainless steel shaft
Construction of Linkage Bearings: Disconnector (Earthing Switch)	PTFE on stainless steel (Bronze on stainless steel)	Bronze on stainless steel shaft
Recommended Maintenance Interval on Drive Gear	Maintenance Free	PTFE on Brass

Auxiliary Devices	DB245	DB362
Power Operator Voltage: Motor	32 to 250V DC & 230/240V AC	32 to 250V DC & 230/240V AC
Power Operator Voltage: Control	32 to 250V DC	32 to 250V DC
Auxiliary Switch Size	4, 6, 8, 12, 16 Pole	4, 6, 8, 12, 16 Pole
Number of Breaks per Auxiliary Switch Pole	2	2
Rated Continuous Current of Auxiliary Switch 125V DC	10A	10A

Typical Mass and Bundling Data	DB245	DB362
Mass of Disconnector (c/w Power Operator)	1355kg	140kg
Mass of Earthing Switch	410kg	420kg
Mass of Support Structure up to 2500mm high	3600kg	3600kg
Mass of Insulator	155kg ea	200kg ea





**PREFORMED** LINE PRODUCTS

## Section 11 - Insulators

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INSULATORS	
	PLP Insulators  Section 11 Pg. 3
	Disc Insulators  Section 11 Pg. 4 Pg. 5
	Porcelain
	Glass
	Station Post Insulators  Section 11 Pg. 5 6
	Polymeric Insulators  Section 11 Pg. 7

## Insulators

### Electropar PLP Insulators

#### for Power Transmission and Distribution Networks

- Porcelain & Polymeric Insulators
- Commitment to Quality
- State-of-the-art Manufacturing and In-House Testing Facilities
- IEC & Australian Standards
- Batch Tested as per Australian Standards
- Long Life & Reliable Performance

Electropar PLP is a leading manufacturer and supplier of cable line hardware for aerial power and communications networks. Electropar PLP's products have benchmarked industry standards in technology and quality, to deliver highly dependable products, making Electropar PLP one of the most trusted names in the industry.

In a world where efficiency powers bottom lines, reliability becomes the key driver for productivity and performance, and consistent reliability can be achieved only through a focused approach and proficient implementation of world class practices. Insulators supplied by Electropar PLP meet dimensional, electrical and mechanical requirements of the Australian and IEC standards. The market demands that insulators have a minimum life of 20 years in all types of natural conditions, such as industrial pollution, salt-spray fog, rain, external heat and cold.

Electropar PLP provides Porcelain and Polymer insulators for electrical transmission, distribution, sub-station and all other applications. Tested in world class laboratory facilities to Australian and IEC Standards, Electropar PLP supply voltage ranges varying from 11kV – 500kV in both Porcelain and Polymeric designs. Electropar PLP also cater for LV/MV range insulators. Munsell Grey is the color of choice unless a special glaze requirement is requested.



## Insulators



### Disc Insulators

#### Porcelain

Features:

- Manufactured and supplied by Aditya Birla Insulators, India
- ABI- Third largest manufacturer of Insulators in the world
- World class quality Standards
- State-of-the-art manufacturing and In-House test facilities
- Manufactured from non-porous electrical porcelain
- Sacrificial "Zn" collar standard on all pins
- Insulators tested at CPRI, a NABL accredited testing facility (NATA equivalent)
- Batch tested to Australian Standards

Part Number	Fixing	Security Clip	Spacing (mm)	Creepage Distance	Electro Mechanical Strength (kN)
I-U70B-PWZ	Ball & Socket	W	146	320	70
I-U70C-PZ	Tongue & Clevis		146	320	70
I-U160BS-PRZ	Ball & Socket	R	146	320	160

Note:

- Dimensional and performance characteristics in accordance with IEC & Australian standards
- Higher rated units can be supplied upon request

## Insulators

### Disc Insulators - Suspension / Tension Strings



#### Features:

- Manufactured and supplied by NANJING ELECTRICAL GROUP, China
- Nanjing is the largest glass insulators manufacturer in China and amongst top 3 in the world
- Over 210 million units supplied since 1958, in over 60 countries in the world, NZ and Australia included
- Available for transmission lines within 35 to 1000 kV
- Available in standard profile, fog/anti-pollution profile, DC, spherical and open/aeolian profile
- Fully automated five production lines, with 12 million units production capacity per year
- State-of-the art vertically integrated manufacturing plant, world class quality standards, in-house testing facility
- Manufactured as per IEC, ANSI, BS, AS and NZ standards
- Manufactured from toughened-glass, with sacrificial Zn sleeve and various types of safety clips
- Increased galvanising thickness of both cap and pin to meet Transpower requirements
- KEMA Certificate available, batch-tested to NZ / AU standards

Part Number	Detail	Ball & Socket Size	Spacing (mm)	Diameter (mm)	Creepage Distance (mm)	Mechanical Failing Load (kN)
U70 BS - LXY-70	standard	16A/16B	127	255	295	70
U70 BL - LXY1 - 70	standard	16A/16B	146	255	295	70
U70 BLP - LXHY5 - 70	anti-pollution	16	146	280	440	70
U120 BL - LXY -120	standard	16A/16B	146	255	295	120
U120 BP - LXHY4 -120	anti-pollution	16	146	280	440	120
U160 BS - LXY4-160	standard	20	146	280	315	160
U160 BSP - LXY-160D	anti-pollution	20	155	330	440	160
U210 BS - LXY3-210	standard	20	170	280	370	210
U210 BSP - LXY-210D	anti-pollution	20	170	330	525	210
U300 B - LXY3-300	standard	24	195	330	480	300
U300 BP - LXHY4-300	anti-pollution	24	195	330	550	300

## Insulators

### Station Post Insulators



#### Features:

- ABI- Third largest manufacturer of Insulators in the world
- World class quality Standards
- State-of-the-art manufacturing and In-House test facilities
- Capability up to 800kV
- Type tested at NATA equivalent laboratories
- Batch tested to Australian Standards
- Stocked at Electropar PLP

Part Number	Rated Volt. (kV)	BIL (kV)	Cantilever Strength (kN)	Polution Level	Crepage (mm)	Height
I-C6-650-4495C-1500H 127/127	132	750	6	4	4495	1500
I-C10-650-3625C-1500H 127/127	132	750	10	3	3625	1500
I-C12.5-650-3625C-1500H 127/254	132	650	12.5	3	3650	1500
I-C6-650-3730C-1473H 127/127	132	650	6	3	3733	1473
I-C8-350-II-76HT	66	350	8	2	1690	762
I-C10-325-1815C-770H 127/127	66	325	10	3	1820	770
I-C6-200-I-508HT	33	200	6	1	840	508
I-C4-200-1000C-400H 76/76	33	200	4	3	1000	400
I-C4-200-200-I-458HT	33	200	4	1	850	458
I-C10-200-II-458HT	33	200	10	2	950	458
I-C10-200-900C-475H 76/76	33	200	10	3	950	475
I-C8-225-810C-381H	36	170	3	3	810	381
I-C6-150-I-355HT	22	150	6	1	610	355
I-C4-150-500C-300H 76/76	22	150	4	3	500	300
I-C9-125-400C-254HT TR-205	11	110	10	3	400	255
I-C6-1050-7595C-2300H	220	1050	6	4	7595	2300

#### Notes:

- Dimensional and performance characteristics in accordance with IEC and Australian standards (AS 4395.1)
- Details of Station Posts not mentioned above can be provided upon request

## Insulators

### Polmeric Insulators - Suspension, Station Post

#### Features

- Manufactured and supplied by ECI, China ([www.ec-insulators.com](http://www.ec-insulators.com))
- ECI is one of the global electrical components manufacturer with plants in China and UAE
- Over 2 million pieces of silicone & polymeric insulators per year supply capacity
- Available for both distribution and transmission lines within 1 to 500 Kv range
- Available in following standards:  
IEC 60120, 61466-1, 61952, 61109, ANSI, GB 15166 & GB 1000
- Fully automated state of the art silicone injection production lines, sound detecting and in-house full testing facilities
- Most advanced R&D team and most consistent quality supplier of polymeric insulators in China
- 70% export markets in USA, Middle East, Europe (Spain, Italy, Czech Republic, Turkey), South America, Korea and Vietnam
- Various in-house manufactured end fittings and grading rings

Part Number	Type	End Fittings Type	Voltage (kV)	Length (mm)	Creepage Distance (mm)	SML / SCL (KN)
FXBW - 46/70	Suspension	Ball & Y-Clevis	46	675	1390	70
FXBW - 66/120	Suspension	Ball & Y-Clevis	66	815	2010	120
FXBW - 66/120A	Suspension	Ball & Socket	66	815	2010	120
FXBW - 66/120B	Suspension	Ball & Socket	66	885	2250	120
FXBW - 110/120	Suspension	Ball & Y-Clevis	110	1235	3290	120
FXBW - 110/120A	Suspension	Ball & Socket	110	1165	3290	120
FXBW - 110/120B	Suspension	Ball & Socket	110	1305	3824	120
FXBW - 110/210	Suspension	Ball & Y-Clevis	110	1335	3290	210
FXBW - 110/210A	Suspension	Ball & Socket	110	1265	3290	210
FXBW - 110/210B	Suspension	Ball & Socket	110	1405	3824	210
FXBW - 220/120	Suspension	Ball & Socket	220	1935	6140	120
FXBW - 220/120A	Suspension	Ball & Socket	220	2355	7680	120
FXBW - 220/210	Suspension	Ball & Socket	220	2035	6140	210
FXBW - 220/210A	Suspension	Ball & Socket	220	2455	7640	210
FXBW - 400/120	Suspension	Ball & Socket	400	3125	10530	120
FXBW - 400/120A	Suspension	Ball & Socket	400	3825	13100	120
FXBW - 400/210	Suspension	Ball & Socket	400	3225	10530	210
FXBW - 400/210A	Suspension	Ball & Socket	400	3925	13100	210
FZSW - 66/22	Station Post	127 PCD flange	66	837	1830	22
FZSW - 110/16	Station Post	127 PCD flange	110	1247	3200	16
FZSW - 220/8	Station Post	127 PCD flange	220	2149	6180	8

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