PREFORMED LINE PRODUCTS AUSTRALIA

substation catalogue

substation catalogue

Also available:

- Transmission Catalogue
- Distribution Catalogue
- Communications Catalogue

substation catalogue

Preformed
Line Products

Preformed Line Products (PLP) has been supplying product to Australian power utilities for almost 50 years. Many of the original products are still to be found in the electricity network today, highlighting the exceptionally high quality standards that are expected and supplied.

The company has three major operating divisions, PLP which manufactures and carries a range of products for the power distribution, power transmission, substation and communications markets. Rack Technologies which has a range of cabinets and enclosures for the data communication, electronics, electrical and security markets, and BlueSky Energy which offers solar power products and sustainable energy systems.

PLP's Australian operation boasts in-house manufacturing, engineering, testing, sales and administration. The modern manufacturing facility in the Sydney suburb of Glendenning includes wire forming, forging, casting, plastic moulding & extrusion, sheet metal work, powder coating and assembly. The manufacturing facility is supported by a modern toolroom which includes the latest CNC vertical machining centre, linked directly to the engineering office.






Sales & Service
Documentation

Preformed Line Products has been manufacturing full turnkey, integrated substation bus systems since 2000. PLP's long history in supplying quality high voltage hardware and fittings provided a solid foundation for advancement into substation system supply. Customers can be well assured the manufacturing quality and engineering backup synonymous with PLP products applies equally to substations. The PLP engineering team have helped design turnkey substation packages and components ranging from 22kV to 500kV. Their involvement in the process from design, estimation and final manufacture, guarantees a high quality engineered product.

PLP substation fittings are designed with the installation contractor in mind, as much work as practical is completed in-house prior to shipping to site. Fully prefabricated systems can be installed which eliminate the need for on site welding, the fully bolted system having obvious advantages. Installation of the system is simplified by provision of a marked-up site layout drawing with all bar locations clearly noted. PLP's product range caters to all standard tube sizes including 80, 100, 125, 160 and 200mm diameters with wall sections from 3 to 12mm.

As part of PLP's service to our customers we offer a maintenance manual with all substations. This manual is a complete package of the documentation relating to the manufacture of the busbar system including the following;

1. Quality Assurance Documentation.
2. Assembly Instructions.
3. Elevation and General Assembly Drawings.
4. Rigid Busbar Drawings.
5. Rigid Busbar Identification Label.
6. Component Drawings.
7. Detail Packing List.
8. Material Certifications.
9. Welder Certifications.
10. Welding Procedures.
11. Insurance Certificates.

Catalogue Content

"Preformed Line Products has been manufacturing turnkey integrated substation bus systems since 2000."

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Supports

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Overhead & Landing Span Fittings

Switchgear

Termination And Lugs

Joint Sleeves

Aluminium Alloy Bus Tube (Grade 6,101-T6)

Tube Details

BusBar Size (OD x ID) mm	Wall Thickness (mm)	Mass kg/m	Tube CSA (mm²)	Maximum Current Rating A
80 x 72	4	2.58	955	1400*
80 x 68	6	3.76	1394	1750*
100 x 92	4	3.26	1206	1700*
100 x 88	6	4.78	1772	2000*
100 x 80	10	7.63	2828	2500*
125 x 113	6	6.05	2244	2400*
125 x 105	10	9.76	3613	3200*
141 x 125	8	9.02	3342	3100*
160 x 140	10	12.72	4712	3800*
200 x 176	12	19.14	7088	5000*

Note: Damping conductor fitted to all Busbars greater than 4 metres in length

Calculation Assumptions

Ambient Temperature	25°C *
Radiation	1000 W/m² *
Wind	45° at 0.5 m/s *
Emissitivity	0.3 *
BusBar Temperature	90°C Max *

* The electrical ratings shown above are nominal and should not replace any specific utility requirements or guidelines.

Aluminium Stranded Conductor Rating Table

Conductor Details

Name	Type	Diameter (mm)	Stranding	Mass kg/m	Aluminium Area (mm²)	Maximum Current Rating A
Neon	AAAC/1120	18.8	19/3.75	0.58	210	450*
Oxygen	AAAC/1120	23.8	19/4.75	0.92	331	600*
Saturn	AAC	21.0	37/3.00	0.72	256	525*
Phosphorus	AAAC/1120	26.3	37/3.75	1.13	400	670*
Uranus	AAC	29.3	61/3.25	1.4	493	775*
Selenium	AAAC/1120	29.3	61/3.25	1.4	493	760*
Sulphur	AAAC/1120	33.8	61/3.75	1.86	659	900*
Venus	AAC	33.8	61/3.76	1.86	659	910*
Lemon	ACSR	21	30/7/3.00	0.97	207	475*
Olive	ACSR	31.5	54/7/3.50	1.96	508	780*

* The electrical ratings shown above are nominal and should not replace any specific utility requirements or guidelines.

Rigid Bus

RIGID BUS

"PLP's engineering team have helped design turnkey substation packages and components ranging from 22kV to 500kV."

Busbars End Caps




Busbar End Cap (Weld-on)

Cast Aluminium End Caps, designed to effectively seal the ends of Busbars. Busbar end caps are manufactured to suit the following standard sizes of Busbars. Spherical type end caps provide maximum corona protection for extra high voltage bus systems. Please contact PLP for custom sizes.

Part Number	Busbar Ø (mm)
BBEC-080-PLP	80
BBEC-100-PLP	100
BBEC-125-PLP	125
BBEC-141-PLP	141
BBEC-160-PLP	160

PART NUMBER SYSTEM

BBEC	Busbar End Cap
080	Busbar Outer Diameter
PLP	End Cap Type – PLP Welded

Busbar End Cap (Spherical)

Part Number	Busbar Ø (mm)
BBEC-080-SPH	80
BBEC-100-SPH	100
BBEC-125-SPH	125
BBEC-141-SPH	141
BBEC-160-SPH	160

PART NUMBER SYSTEM

BBEC	Busbar End Cap
080	Busbar Outer Diameter
SPH	End Cap Type - Spherical

Busbar End Cap (Plug)

Part Number	Busbar Ø (mm)
BBEC-080-PLUG	80
BBEC-100-PLUG	100
BBEC-125-PLUG	125
BBEC-141-PLUG	141
BBEC-160-PLUG	160

PART NUMBER SYSTEM

BBEC	Busbar End Cap
080	Busbar Outer Diameter (please advise inside diameter)
PLUG	End Cap Type - Plug

Earthing




Earthing Stirrup Plate

Part Number	Palm Dimensions L x W (mm)	Stirrup Ø (mm)	Bend Angle°
ESP-AS# - *	115 x 170	22.2	*

PART NUMBER SYSTEM

ESP	Earthing Stirrup Plate
AS#	Palm Type E.g. AS1, AS2 etc...
*	Palm bend angle (0,15,30,45 or 90)

Example: ESP-AS5-45

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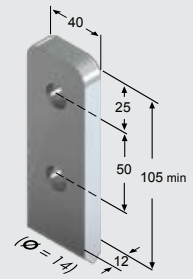

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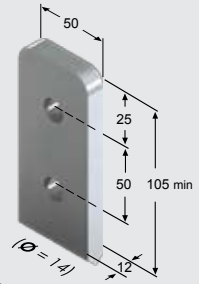

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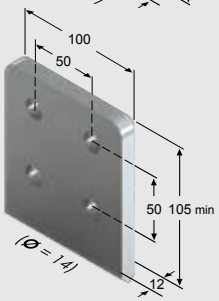

Busbar Earthing Stirrup

Attaches to tubular busbar. Please contact PLP for various other sizes and styles.

Part Number	H (mm)	W (mm)	Ø (mm)
BBES-200150	200	150	22.2

PART NUMBER SYSTEM

BBES	Busbar Earthing Stirrup
200	Stirrup Width
150	Stirrup Height

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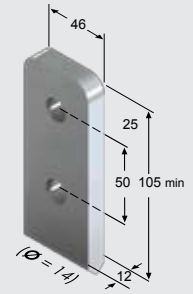

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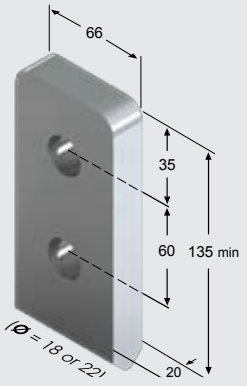

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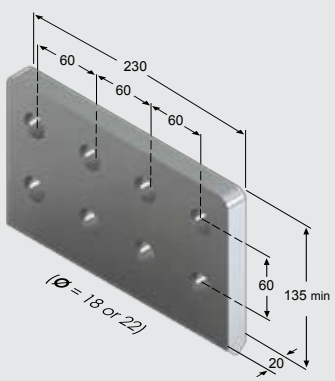

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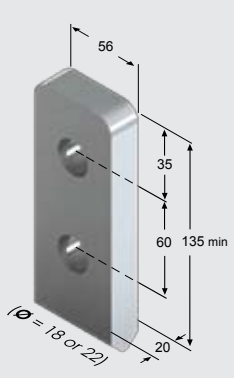

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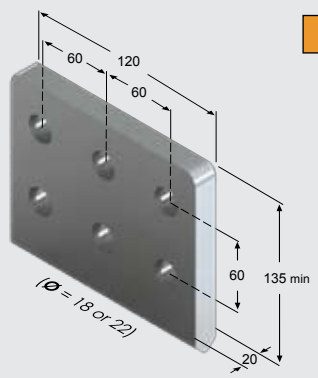

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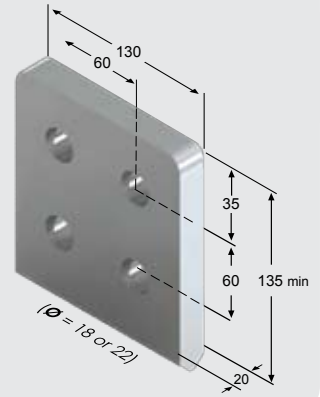
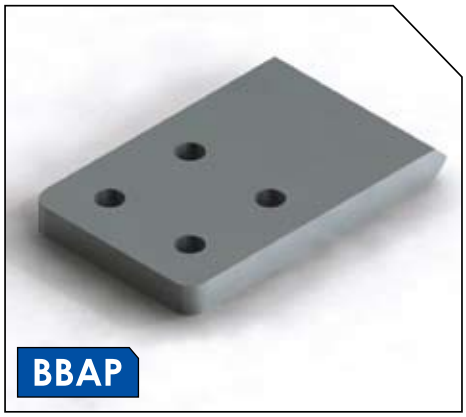


Palms/Flags

Busbar Aluminium Palm (Inline)



Palms can be welded to busbars or end caps and current ratings are matched to the rating of the Busbars. Choose palm types from the selection below. Please contact PLP for various other sizes and styles.

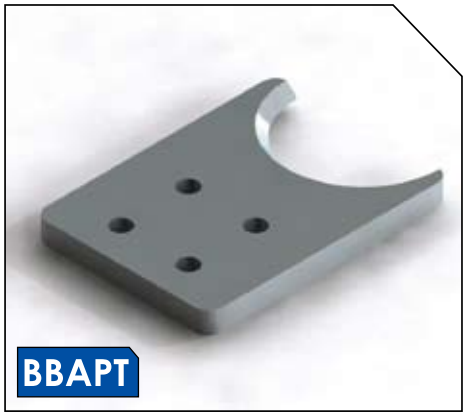
Part Number	Palm Type
BBAP-AS#	AS#

PART NUMBER SYSTEM

BBAP	Busbars Aluminium Palm Inline
AS#	Palm Type E.g. AS1, AS2 etc...

Example: BBAP-AS5

Busbar Aluminium Palm (Transverse)



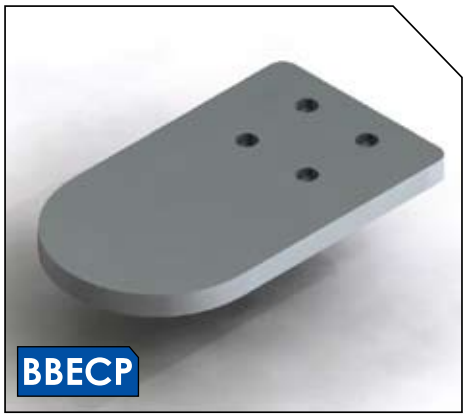
Part Number	Busbar Outer Ø (mm)	Palm Type
BBAPT-080-AS#	80	AS#
BBAPT-100-AS#	100	AS#
BBAPT-125-AS3#	125	AS#
BBAPT-141-AS#	141	AS#
BBAPT-160-AS#	160	AS#

PART NUMBER SYSTEM

BBAPT	Busbar Aluminium Palm Transverse
080	Busbar Outer Diameter
AS#	Palm Type E.g. AS1, AS2 etc...

Example: BBAP-080-AS5

Busbar End Cap Palm

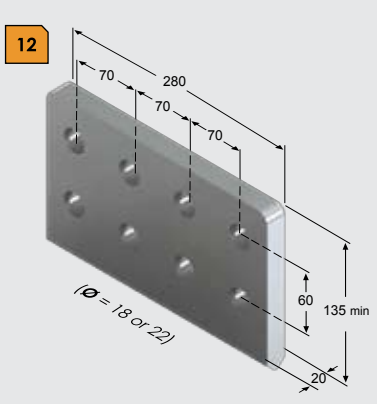


Part Number	Busbar Outer Ø (mm)	Palm Type
BBECP-080-AS#	80	AS#
BBECP-100-AS#	100	AS#
BBECP-125-AS#	125	AS#
BBECP-141-AS#	141	AS#
BBECP-160-AS#	160	AS#

PART NUMBER SYSTEM

BBECP	Busbar End Cap Palm
080	Busbar Outer Diameter
AS#	Palm Type E.g AS1, AS2 etc...

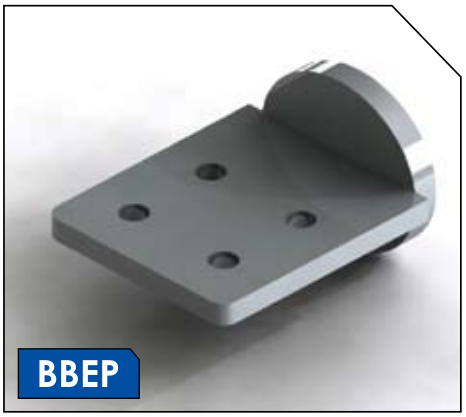
Example: BBECP-080-AS5



Palms/Flag




Busbar End Palm (Capped)



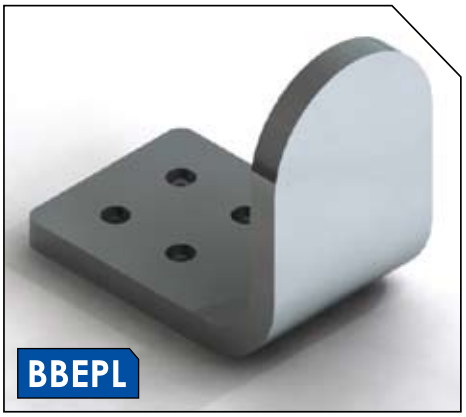
Part Number	Busbar Outer Ø (mm)	Palm Type
BBEP-080-AS#	80	AS#
BBEP-100-AS#	100	AS#
BBEP-125-AS#	125	AS#
BBEP-141-AS#	141	AS#
BBEP-160-AS#	160	AS#

PART NUMBER SYSTEM

BBECP	Busbar End Palm Capped
080	Busbar Outer Diameter
AS#	Palm Type E.g. AS1, AS2 etc...

Example: BBEP-080-AS5

Busbar End Palm (L-Type)



Can be used as an end cap palm and or fixed support

Part Number	Busbar Outer Ø (mm)	Palm Type
BBEPL-080-AS#	80	AS#
BBEPL-100-AS#	100	AS#
BBEPL-125-AS#	125	AS#
BBEPL-141-AS#	141	AS#
BBEPL-160-AS#	160	AS#

PART NUMBER SYSTEM

BBEPL	Busbar End Palm L-Type
080	Busbar Outer Diameter
AS#	Palm Type E.g. AS1, AS2 etc...

Example: BBEP-080-AS5

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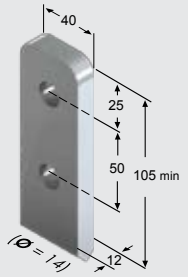

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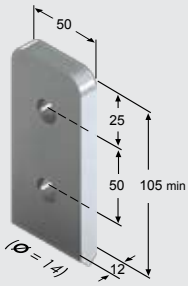

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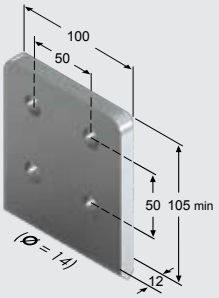

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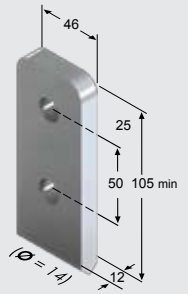

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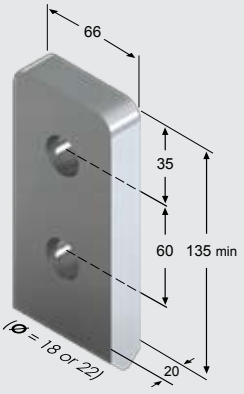

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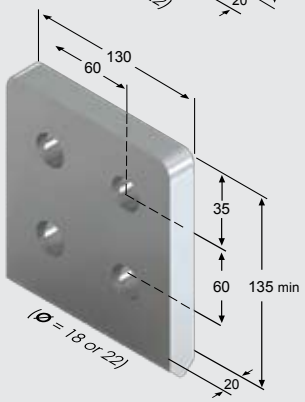

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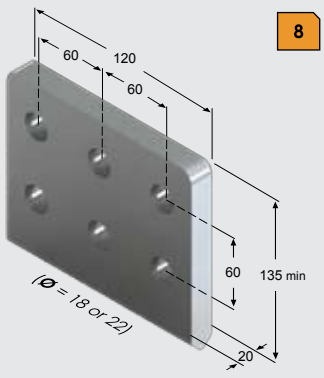

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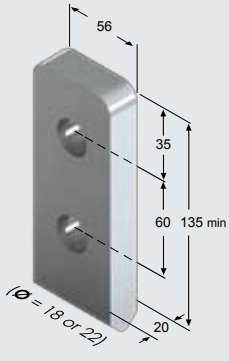

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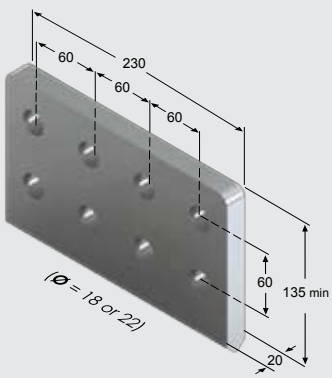


A-Frames




Busbar A-Frame Aluminium

A-Frames can be supplied as components for on-site welding or pre-fabricated in the PLP factory. Contact PLP with height, width, flange size and tube details.

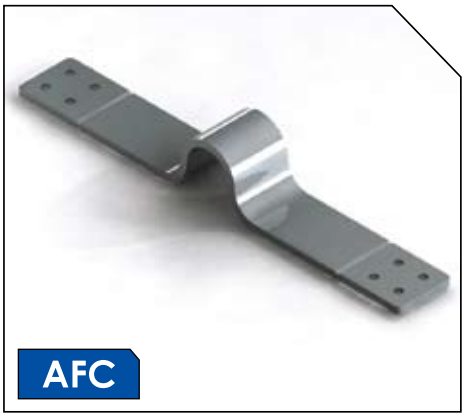
Busbar Socket Casting

ph: (02) 8805 0000

Aluminium Flexible Connectors




Aluminium Flexible Connector



TYPE 'A'

Type 'A' flexible connectors are designed for mounting on the side of Busbars where they may be used with double roller or roller/fixed supports. Common palms are No. 5 and 8.

Note: maximum ratings are shown for various palms. Other palms can be requested for custom applications; however fittings may be de-rated to suit.

Current ratings (A)	Laminations	Lamination Width	Palm Number
1200	10 x 1.2mm	100	AS5
1250	13 x 1.2mm	100	AS5
2000	13 x 1.2mm	130	AS8
2500	16 x 1.2mm	130	AS8

- Nominate palm type e.g. (AS5, AS8, etc...)
- Nominate separation length and height
- Offset palms available

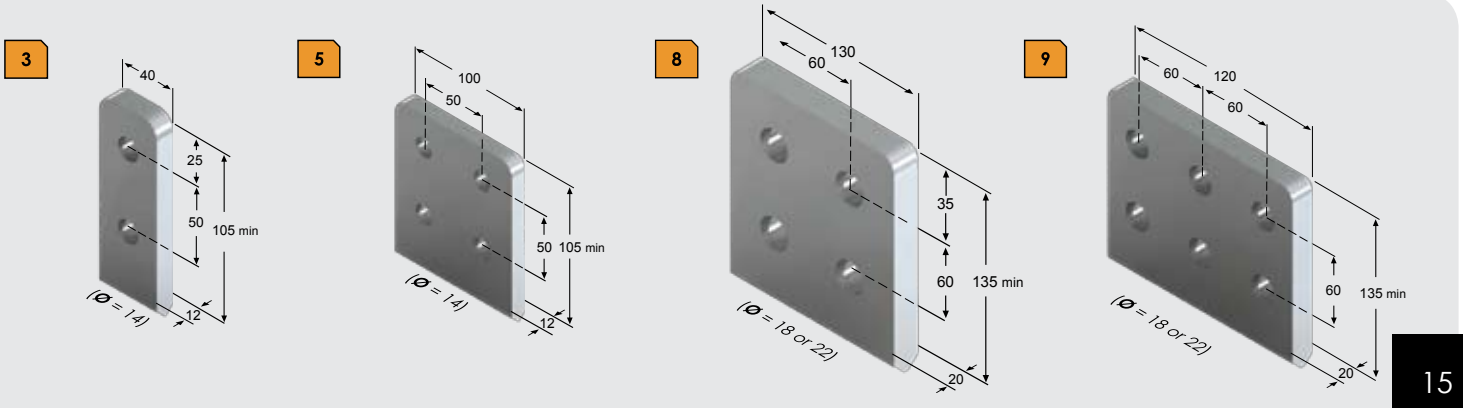
TYPE 'B'

Type 'B' flexible connectors are designed for mounting on the top of Busbars where they may be used with double roller or roller/fixed supports. Common palms used are No. 5 and 8.

Note: maximum ratings are shown for various palms. Other palms can be requested for custom applications; however fittings may be de-rated to suit.

Current rating (A)	Laminations	Lamination Width	Palm Number
1200	10 x 1.2mm	100	AS5
1250	13 x 1.2mm	100	AS5
2000	13 x 1.2mm	130	AS8

- Nominate palm type e.g. (AS5, AS8, etc...)
- Nominate separation length



Aluminium Flexible Connectors

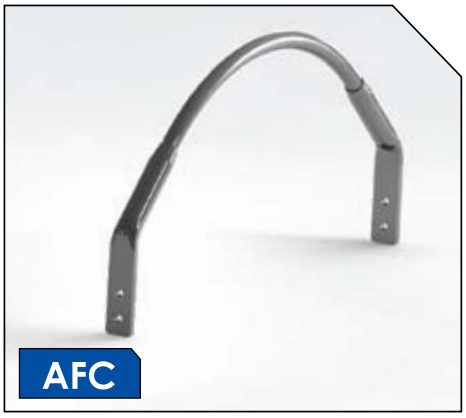
TYPE 'C'

Type 'C' is another style of flexible connector incorporating conductor rather than laminations and may also be used with double roller or roller/fixed supports or attachment on to disconnectors.

Note: maximum ratings are shown for various palms. Other palms can be requested for custom applications; however fittings may be de-rated to suit.

Current rating (A)	Stranding	Palm Type	Hole Ø (mm)	Palm Thickness (mm)
1800	3 x 37/3.00	4 Hole 60 x 70	18	16
2500	4 x 37/3.00	4 Hole 60 x 70	18	16

- Nominate palm type e.g. (AS5, AS8, etc...)
- Nominate separation length and height



TYPE 'D'

Type 'D' flexible connectors are similar to type 'B' but incorporating conductor rather than laminations and are designed for mounting to an end or a side palm where they may be used with double roller or roller/fixed supports. Commonly used palms are No. 5 and 7.

Note: maximum ratings are shown for various palms. Other palms can be requested for custom applications; however fittings may be de-rated to suit.

Current rating (A)	Stranding
600	1 x 37/3.75
1000	1 x 61/3.75

- Nominate palm type e.g. (AS6, AS7, etc...)
- Nominate separation length and height

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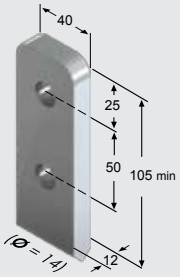

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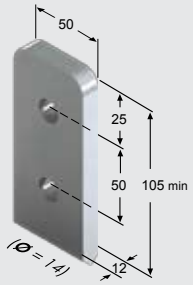

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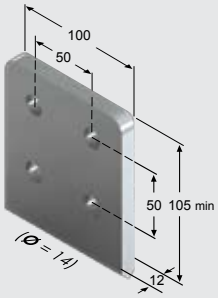

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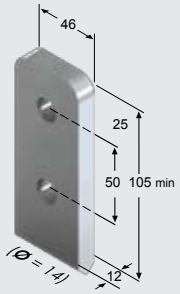
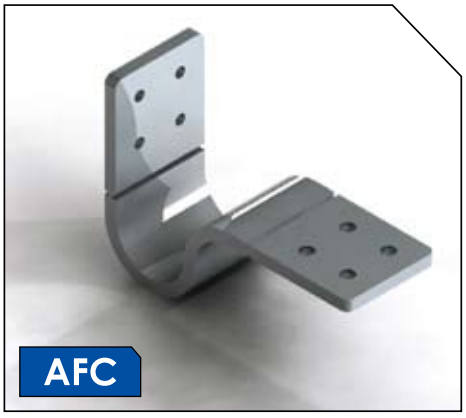


Aluminium Flexible Connectors



TYPE 'E'

Type 'E' flexible connectors are used at disconnector positions and in conjunction with fixed or roller supports. They are designed to be mounted under the disconnector palm. Centre of busbar to upper palm surface dimension should be 130mm + thickness of disconnector palm.

Note: maximum ratings are shown for various palms. Other palms can be requested for custom applications; however fittings may be de-rated to suit.

Current Rating (A)	Laminations (mm)	Lamination Width (mm)	Palm Number	Palm Thickness (mm)
1500	14 x 1.2mm	100	AS5	16
1650	16 x 1.2mm	100	AS5	20
2000	13 x 1.2mm	130	AS8	16
2500	16 x 1.2mm	130	AS8	20
2500	16 x 1.2mm	130	AS9	20
3150	17 x 1.2mm	200	AS9	20

- Nominate palm type e.g. (AS5, AS8, etc...)
- Nominate separation length and height

Busbar Joint Sleeves

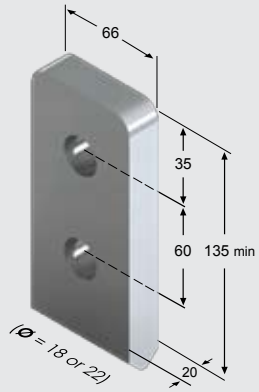
Busbar Joint Sleeves

Part Number	Busbar Outer Ø (mm)	Busbar Inner Ø (mm)	Length (mm)
BBJS-100-80	100	80	300
BBJS-100-88	100	88	300
BBJS-100-92	100	92	300
BBJS-100-94	100	94	300
BBJS-125-105	125	105	300
BBJS-125-113	125	113	300

PART NUMBER SYSTEM

BBJS	Busbar Joint Sleeve
100	Busbar Outer Diameter (mm)
80	Busbar Inner Diameter (mm)

7



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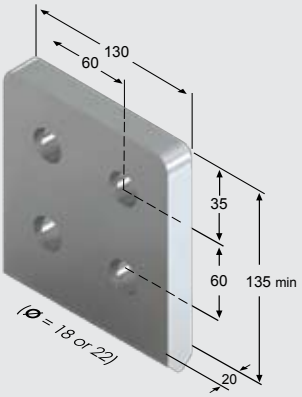

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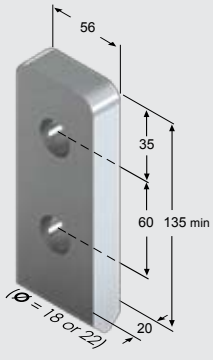
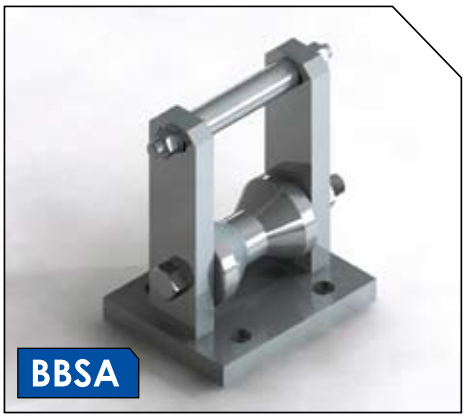


Support - Single

Busbar Support Assembly (Sliding Type)

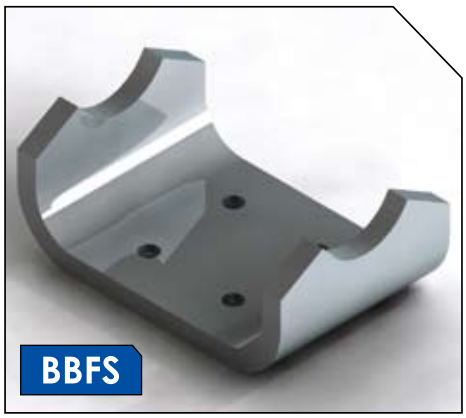


PLP roller supports are designed for mounting on disconnector palms or post insulators. Standard centre heights are 130mm over mounting palm to busbar centreline - up to busbar diameter of 141mm.

Part Number	Busbars Outer Ø (mm)	Base Size L x W x H (mm)	Hole Diameters and Centres			
			No.5	No.8	76 P.C.D.	127 P.C.D.
BBSA-080-R	80	150 x 130 x 12			14mm Holes	18mm Holes
BBSA-02	100	180 x 130 x 12			14mm Holes	18mm Holes
BBSA-02A	100	180 x 130 x 12		18mm Holes		
BBSA-04	100	180 x 130 x 12	14mm Holes			
BBSA-125-R	125	200 x 130 x 12	14mm Holes	14mm Holes	14mm Holes	18mm Holes
BBSA-141-R	141	240 x 150 x 12				18mm Holes
BBSA-160-R	160	225 x 225 x 20				18mm Holes

Please contact PLP for various other sizes and styles

Busbar Fixed Support (Weld-on U-Type)



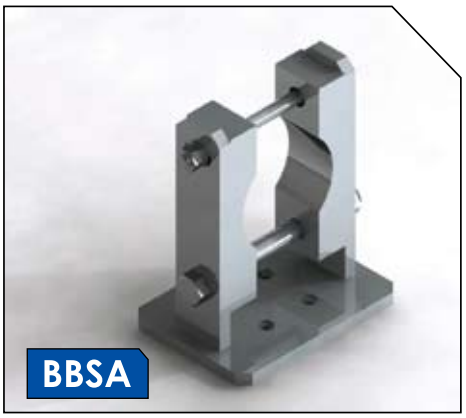
Part Number	Busbar Outer Ø (mm)	P.C.D
BBFS-080-#	80	#
BBFS-100-#	100	#
BBFS-125-#	125	#
BBFS-141-#	141	#
BBFS-200-#	200	#

PART NUMBER SYSTEM

BBFS	Busbar Fixed Support U-Type
080	Busbar Outer Diameter (mm)
#	P.C.D. (76 or 127)

Support - Single

Busbar Support Assembly (Clamp Type)



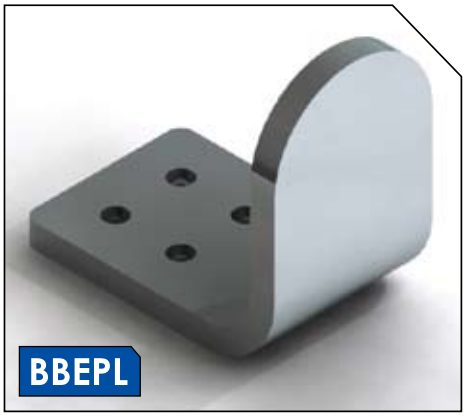
Available for the range of Busbar diameters below, with hole diameters and centres listed.

Available in the following three designs
- U - Type
- Clamp Type
- L – Type

Part Number	To Suit Bus Bar Ø (mm)	Base Size L x W x H (mm)	Hole Diameters and Centres				
			No.5	No.8	76 P.C.D.	127 P.C.D.	No.9
BBSA-080-F	80	150 x 130 x 12			14mm Holes	18mm Holes	
BBSA-01	100	180 x 130 x 12			14mm Holes	18mm Holes	
BBSA-100-F	100	180 x 130 x 12					14mm Holes
BBSA-125-F	125	200 x 130 x 12	14mm Holes	14mm Holes	14mm Holes	18mm Holes	
BBSA-141-F	141	240 x 150 x 12				18mm Holes	
BBSA-160-F	160	225 x 225 x 20				18mm Holes	

Please contact PLP for various other sizes and styles

Busbar End Palm (L-Type)



Can be used as an end cap palm and or fixed support

Part Number	Busbar Outer Ø (mm)	Palm Type
BBEPL-080-AS#	80	AS#
BBEPL-100-AS#	100	AS#
BBEPL-125-AS#	125	AS#
BBEPL-141-AS#	141	AS#
BBEPL-160-AS#	160	AS#

PART NUMBER SYSTEM

BBEPL	Busbar End Palm L-Type
080	Busbar outer Diameter
AS#	Palm Type E.g. AS1, AS2 etc...

Example: BBEP-080-AS5

Support - Double




Busbar Support Assembly (Double)

Roller/Roller

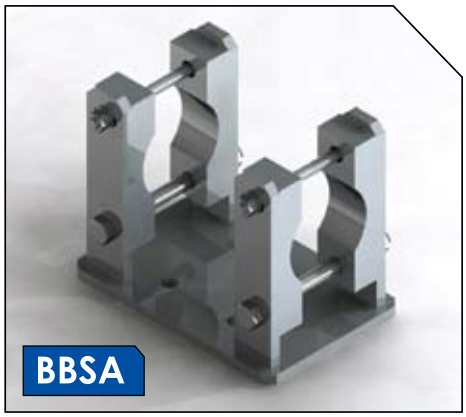
Double supports are designed to be mounted on Post insulators where busbars need to be connected via flexible connectors. Standard centre heights are 130mm over mounting palm to busbar centreline – up to busbar diameter of 141mm.

Double Supports are available in the following three designs
- Roller/Roller
- Roller/Fixed
- Fixed/Fixed

Part Number	To Suit Busbar Ø (mm)	Support type	Base Size L x W x H (mm)	Hole Diameters and Centres			
				No.5	No.8	76 P.C.D.	127 P.C.D.
BBSA-05	100	Roller/Roller	270 x 180 x 12			14mm Holes	18mm Holes
BBSA-100-FF	100	Fixed/Fixed	270 x 180 x 12				18mm Holes
BBSA-100-RF	100	Roller/Fixed	270 x 180 x 12				18mm Holes
BBSA-100-RR	100	Roller/Roller	400 x 225 x 12				18mm Holes
BBSA-125-RR	125	Roller/Roller	270 x 200 x 20	18mm Holes	18mm Holes		18mm Holes
BBSA-141-RF	141	Roller/Fixed	250 x 240 x 12				18mm Holes
BBSA-141-RR	141	Roller/Roller	250 x 240 x 12				18mm Holes
BBSA-160-RR	160	Roller/Roller	270 x 200 x 20				18mm Holes

Please contact PLP for various other sizes and styles

Roller/Fixed



Fixed/Fixed

ph: (02) 8805 0000

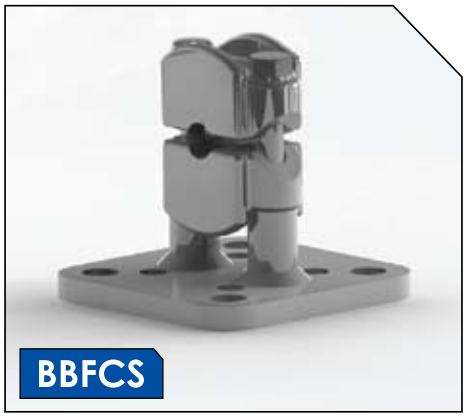
Strung Bus

STRUNG BUS

"Fully prefabricated systems have been installed which eliminated the need for on site welding."

Supports

Busbar Fixed Conductor Support



Part Number	Conductor Diameter Range (mm)	P.C.D. (mm)	Hole Ø (mm)
BBFCS-175-127-76	13.5 - 19.5	127 and 76	18/14
BBFCS-210-127-76	19.6 - 24.1	127 and 76	18/14
BBFCS-270-127-76	24.1 - 30.0	127 and 76	18/14
BBFCS-315-127-76	30.1 - 35.0	127 and 76	18/14

PART NUMBER SYSTEM

BBFCS	Busbar Fixed Conductor Support
175	Conductor Outer Diameter
127	P.C.D.
76	P.C.D.

Bolted Run Post Insulator

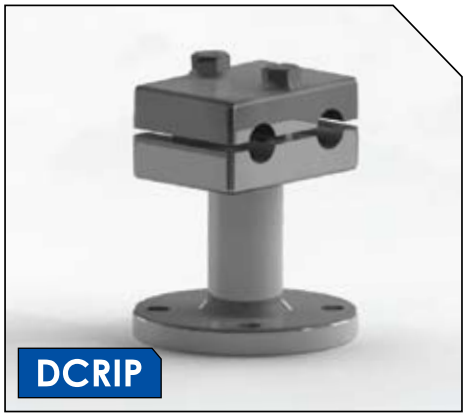
The BRPI is a heavier duty version of the BBFCS

Part Number	Conductor Ø Range (mm)	P.C.D mm	Hole Ø mm
BRPI-175-127-14	13.5 - 19.5	127	14
BRPI-210-127-14	19.6 - 24.0	127	14
BRPI-270-127-14	24.1 - 30.0	127	14
BRPI-338-127-14	30.1 - 35.0	127	14
BRPI-175-127-18	13.5 - 19.5	127	18
BRPI-210-127-18	19.6 - 24.0	127	18
BRPI-270-127-18	19.6 - 24.1	127	18
BRPI-293-127-18	24.1 - 30.0	127	18
BRPI-338-127-18	30.1 - 35.0	127	18

PART NUMBER SYSTEM

BRPI	Bolted Run Post Insulator
175	Conductor Outer Diameter
127	P.C.D.
14	Hole Ø

Double Conductor Run (Insulator Post)



The DCRIP is a double version of the BRPI

Part Number	Conductor Diameter (mm)	Conductor Spacing (mm)	P.C.D. (mm)
DCRIP-293-74-127	29.3	74	127
DCRIP-338-74-127	33.8	74	127
DCRIP-355-74-127	35.5	74	127

PART NUMBER SYSTEM

DCRIP	Double Conductor Run Insulator Post
293	Conductor Outer Diameter
74	Conductor Spacing
127	P.C.D.

Supports

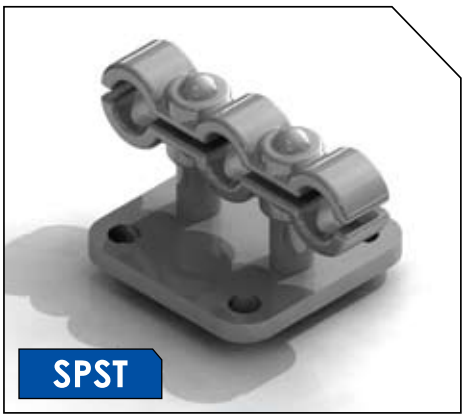
Substation Parallel Spacer Double (Post Insulator Mounted)

Part Number	Conductor Diameter (mm)	Conductor Centre Spacing (mm)	P.C.D. (mm)	Hole Ø (mm)
SPSD-240-050PI	24.0	50.0	127 and 76	18/14
SPSD-263-070PI	26.3	70.0	127 and 76	18/14
SPSD-293-125-PI	29.3	125.0	127 and 76	18/14
SPSD-315-070PI	31.5	70.0	127 and 76	18/14
SPSD-315-125PI	31.5	125.0	127 and 76	18/14

PART NUMBER SYSTEM

SPSD	Substation Parallel Spacer Double
240	Conductor Outer Diameter
050	Conductor Centre Spacing
PI	Post Insulator Mounted (76/127PCD)

Substation Parallel Spacer Triple (Post Insulator Mounted)



Part Number	Conductor Diameter (mm)	Conductor Centre Spacing (mm)
SPST-315-070PI	31.5	70.0

PART NUMBER SYSTEM

SPST	Substation Parallel Spacer Triple
315	Conductor Outer Diameter
070	Conductor Centre Spacing
PI	Post Insulator Mounted (76/127PCD)

Substation Parallel Spacer Quad (Post Insulator Mounted)

Part Number	Conductor Diameter (mm)	Conductor Centre Spacing (mm)	P.C.D. (mm)	Hole Ø (mm)
SPSQ-293-070PI	29.3	70	127 and 76	18/14

PART NUMBER SYSTEM

SPSQ	Substation Parallel Spacer Quad
240	Conductor Outer Diameter
070	Conductor Centre Spacing
PI	Post Insulator Mounted (76/127PCD)

Earthing Stirrup Transverse Single

For connection onto strung bus near equipment

Part Number	Conductor Diameter Range (mm)	Stirrup Bend Radius (mm)	Stirrup Ø mm
ESTS-175	13.5 - 18.5	R50	25.4
ESTS-210	19.6 - 24.0	R50	25.4
ESTS-270	24.1 - 30.0	R50	25.4
ESTS-338	30.1 - 35.0	R50	25.4

PART NUMBER SYSTEM

ESTS	Earthing Stirrup Transverse Single
175	Conductor Outer Diameter

Earthing Stirrup Transverse Double

Twin version of ESTS

Part Number	Conductor Diameter (mm)	Conductor Spacing (mm)	Stirrup Bend Radius (mm)	Stirrup Ø (mm)
ESTD-190-#	19.0	70 or 125	R50	25.4
ESTD-210-#	21.0	70 or 125	R50	25.4
ESTD-240-#	24.0	70 or 125	R50	25.4
ESTD-263-#	26.3	70 or 125	R50	25.4
ESTD-315-#	31.5	70 or 125	R50	25.4
ESTD-338-#	33.8	70 or 125	R50	25.4

PART NUMBER SYSTEM

ESTD	Earth Stirrup Transverse Double
190	Conductor Outer Diameter
#	Conductor Spacing (070 or 125mm)

Example: ESTD-190-070

Earthing Stirrup Transverse Triple

Conductor Diameter Ranges mm	Conductor Spacing (mm)	Stirrup Bend Radius (mm)	Stirrup Ø (mm)
ESTT-263-#	70 or125	R50	25.4
ESTT-293-#	70 or125	R50	25.4
ESTT-315-#	70 or 125	R50	25.4
ESTT-338-#	70 or 125	R50	25.4

PART NUMBER SYSTEM

ESTT	Earth Stirrup Transverse Triple
263	Conductor Outer Diameter
#	Conductor Spacing (070 or 125mm)

Example: ESTT-263-070

Busbar Earthing Stirrup Assembly

The BBESA is another version of the ESTS

Part Number	Conductor Diameter Range (mm)	Stirrup Bend Radius (mm)	Stirrup Ø (mm)
BBESA-175	13.5 - 18.5	R50	25.4
BBESA-210	19.6 - 24.0	R50	25.4
BBESA-293	24.1 - 30.0	R50	25.4
BBESA-338	30.1 - 35.0	R50	25.4

PART NUMBER SYSTEM

BBESA	Busbar Earthing Stirrup Assembly
175	Conductor Outer Diameter

Conductor Terminations




CTA - Aluminium Compression Terminals

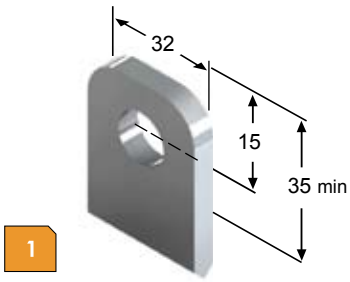
Please fill in the following information for PLP to manufacture compression terminals to suit your requirement. Copy and fax or scan and email your completed catalogue page to us.

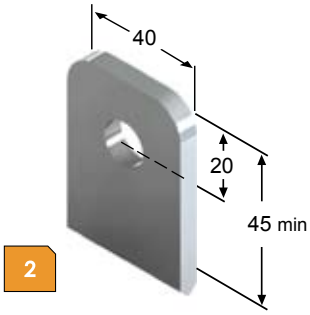
Fax: (02) 8805 0090 **Email:** sales@preformed.com.au

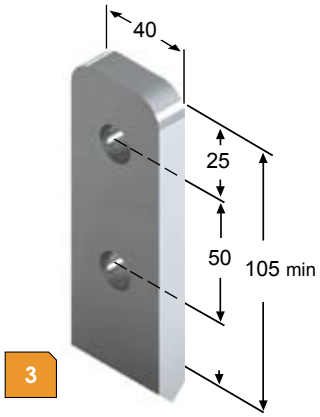
Conductor Stranding:

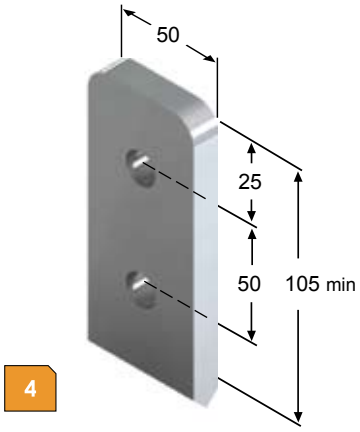
No.

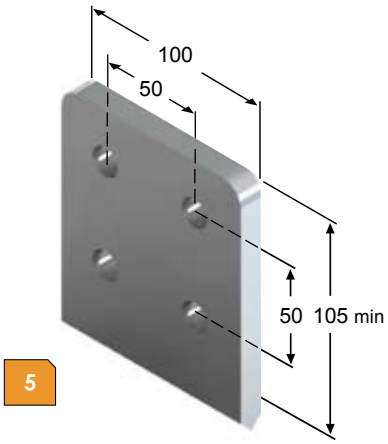
Palm Type: (Choose from Australian standard palm types AS 2395)

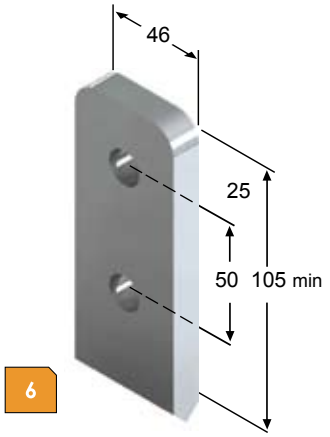


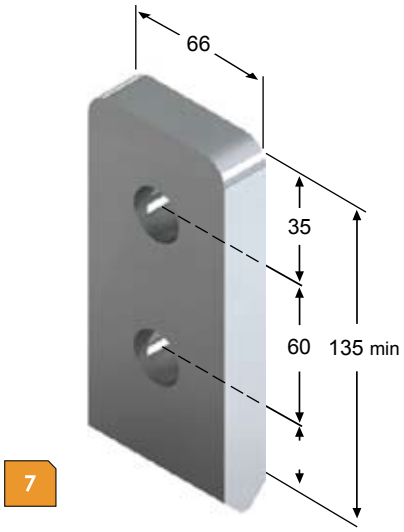


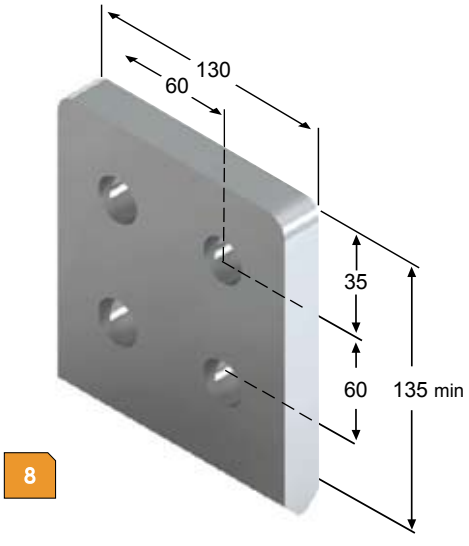


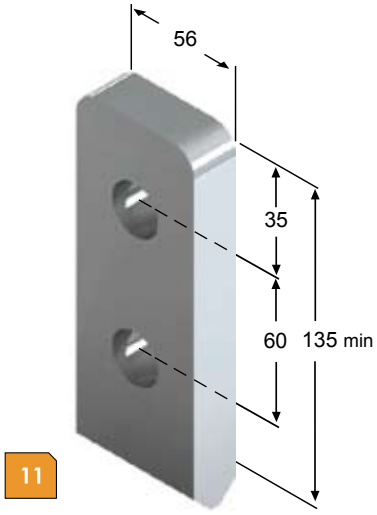








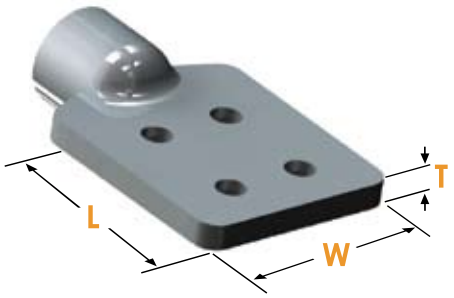




Conductor Terminations

For Non Standard Palm Types - See Below

Palm Dimension (Multiple Hole)

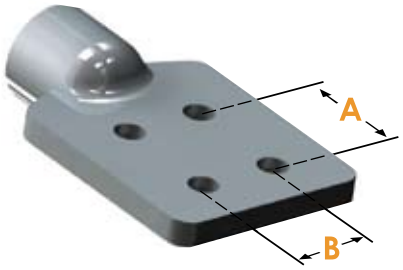


mm
Length:

mm
Width:

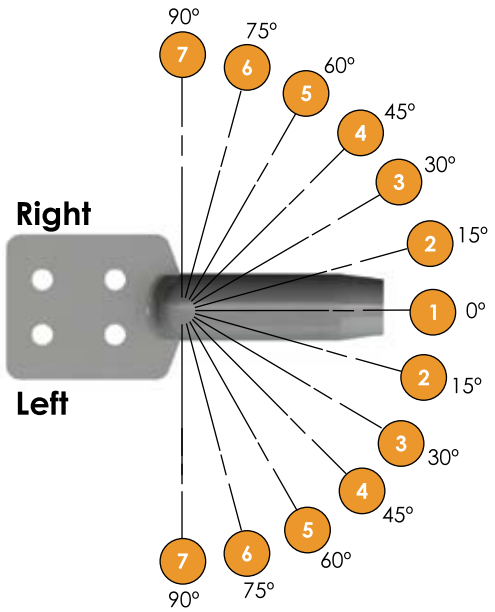
mm
Thickness:

Number of Holes:



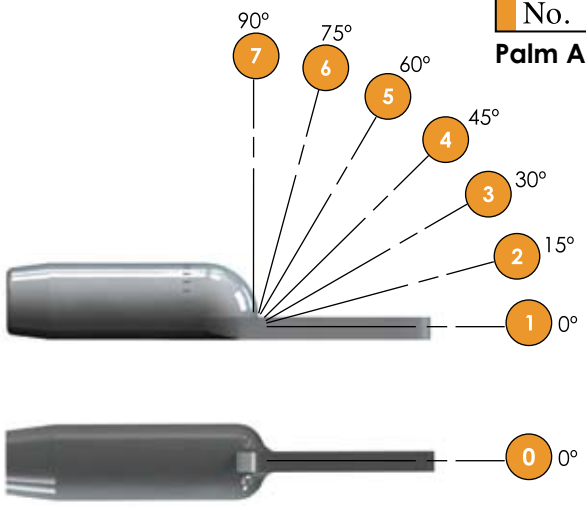
A mm
Hole Centres:

B mm
Hole Centres:



No.
Compression Tube Angle:

Left or Right:



No.
Palm Angle:

Palm Terminal Characteristics - AS 2395

Terminal Number	Bolt Hole Ø (mm)	Net Contact Area (mm)²	Min Thickness (Al)	Assigned Current Rating (Al)
1	14	780	6	80
2	14	1,430	6	200
3	14	3,670	12	630
4	14	4,670	12	800
5	14	9,300	12	1,250
6	14	4,270	12	630
7	18 or 22	7,730	20	1,250
8	18 or 22	15,300	20	2,000
9	18 or 22	2,100	20	3,150
10	18 or 22	28,100	20	4,000
11	18 or 22	6,430	20	1,000
12	18 or 22	33,300	20	5,000

Conductor Terminations

Compression Terminal Aluminium Pin Type

Pin type compression terminals are used to connect strung bus to equipment bushings and pins. Standard designs will carry 1100Amps but heavier designs are available for higher system loads. Please advise PLP of the current load expected when requesting this product. Tin plating is available as an option where connection onto copper occurs.

Part Number	Conductor Ø (mm)	Bend Angle° (mm)	Pin Ø (mm)
CTAPT-113 - # - *	11.3	#	*
CTAPT-163 - # - *	16.3	#	*
CTAPT-210 - # - *	21	#	*
CTAPT-238 - # - *	23.8	#	*
CTAPT-263 - # - *	26.3	#	*
CTAPT-293 - # - *	29.3	#	*
CTAPT-315 - # - *	31.5	#	*
CTAPT-338 - # - *	33.8	#	*

PART NUMBER SYSTEM

CTAPT	Compression Terminal Aluminium Pin Type
113	Conductor Outer diameter
#	Bend Angle° Enter angle - 0, 15, 30, 45, 90
*	Pin diameter mm, Enter Pin Diameter (25, 30, 40 or 50mm)

Example: CTAPT-113-45-30

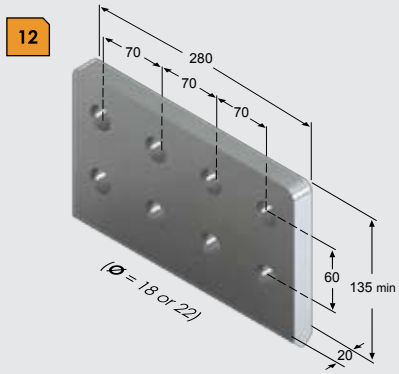
Compression Terminal Aluminium Twin (Type)

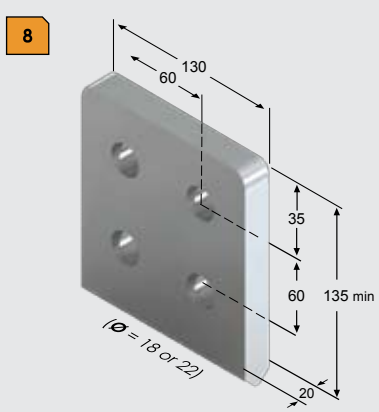
Part Number	Conductor Ø (mm)	Conductor Spacing (mm)	Palm Type	Bend Angle °
CTAT-263-A-B-C	26.3	#	AS*	^
CTAT-270-A-B-C	27.0	#	AS*	^
CTAT-293-A-B-C	29.3	#	AS*	^
CTAT-338-A-B-C	33.8	#	AS*	^

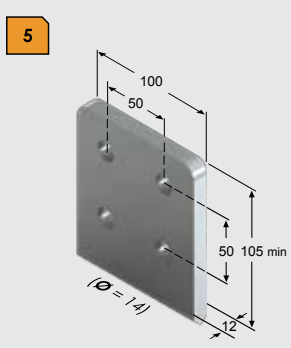
PART NUMBER SYSTEM

CTAT	Compression Terminal Aluminium Twin (Type)
263	Conductor Outer diameter
#	Conductor Spacing – 115 or 160
*	Palm Type - e.g. AS1, AS2, AS3
^	Bend Angle° - 0, 15, 30, 45 or 90

Example: CTAT-263-115-AS5-30







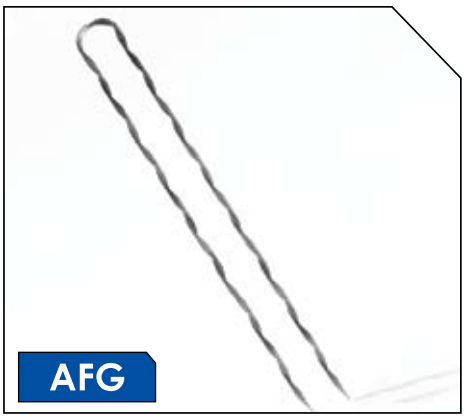
Conductor Terminations

Compression Deadend Terminal

Jumper terminals are manufactured from forged aluminium and have the compression area clearly identified. Compression jumper terminals outlined below are indicative only. Palm angle is normally 30° to match a deadend with an in-line palm. When ordering jumper terminals, please ensure the palm configuration matches the compression deadend palm to which the terminal is to be fitted. Tin plating is available as an option where connection onto copper occurs.

Part Number	Stranding
CDET-163	19/3.25
CDET-175	30/7/2.50
CDET-210	30/7/3.00
CDET-210	37/3.00
CDET-238	19/4.75
CDET-245	30/7/3.50
CDET-263	37/3.75
CDET-270	61/3.00
CDET-270	54/7/3.00
CDET-293	61/3.25
CDET-293	54/7/3.25
CDET-315	61/3.50
CDET-315	54/7/3.50
CDET-338	61/3.75
CDET-338	54/3.75+19/2.25

Aluminium Formed Grip



Preformed Deadend Grips for AAC, AAAC and Limited Tension on Large Ø ACSR

Part Number	Conductor Stranding	Conductor Diameter (mm)	Colour Code
AFG-053	7/1.75	5.25	purple
AFG-068	7/2.25	6.75	brown
AFG-075	7/2.50	7.50	blue
AFG-083	7/2.75	8.3	white
AFG-090-CL	7/3.00	9.00	red
AFG-113-CL	7/3.75	11.25	black
AFG-135-CL	7/4.50	13.50	green
AFG-143-CL	7/4.75	14.30	blue
AFG-163-CL	19/3.25	16.30	orange
AFG-175-CL	37/2.5	17.5	blue
AFG-188-CL	19/3.75	18.80	black
AFG-210-CL	37/3.00	21.00	red
AFG-240-LT-CL	19/4.75	23.80	blue
AFG-263-LT-CL	37/3.75	26.3	black

Conductor Terminations




Compression Deadends (AAAC Conductors)

Suits both 1120 and 6201 grade aluminium conductors.

Part Number	Stranding
CDEAAAC-135 -1	7/4.50
CDEAAAC-163 -1	19/3.25
CDEAAAC-188 -1	19/3.75
CDEAAAC-210 -1	37/3.00
CDEAAAC-238 -1	19/4.75
CDEAAAC-263 -1	37/3.75
CDEAAAC-270 -1	61/3.00
CDEAAAC-293 -1	61/3.25
CDEAAAC-315 -1	61/3.50
CDEAAAC-338 -1	61/3.75

Please confirm stranding when ordering.

PART NUMBER SYSTEM

CDEAAAC	Compression Deadend AAAC
135	Conductor Outer diameter
-1	Standard

Compression Deadends (AAC Conductors)

Part Number	Stranding
CDEA-163 -1	19/3.25
CDEA-175 -1	19/3.50
CDEA-188 -1	19/3.75
CDEA-210 -1	37/3.00
CDEA-238 -1	19/4.75
CDEA-293 -1	61/3.25
CDEA-338 -1	61/3.75

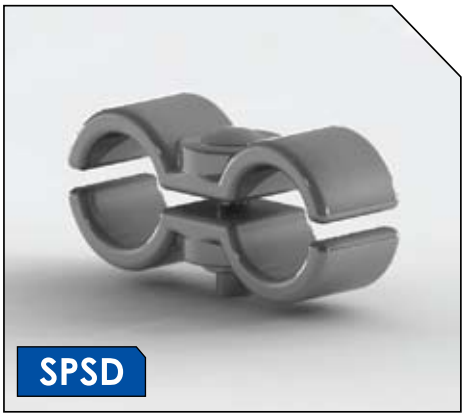
Please confirm stranding when ordering.

PART NUMBER SYSTEM

CDEA	Compression Deadend AAC
163	Conductor Outer diameter
-1	Standard

Spacers

Substation Parallel Spacer Double



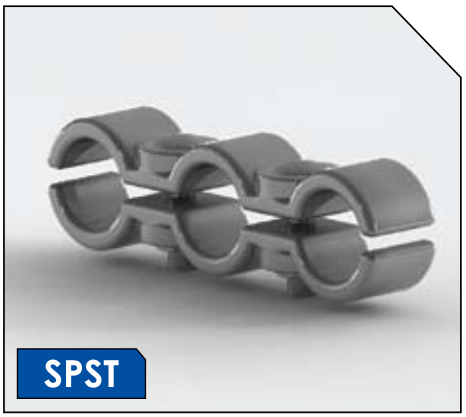
Part Number	Conductor Ø (mm)	Conductor Centre Spacing (mm)
SPSD-240-#	24.0	#
SPSD-263-#	26.3	#
SPSD-293-#	29.3	#
SPSD-315-#	31.5	#
SPSD-338-#	33.8	#

PART NUMBER SYSTEM

SPSD	Substation Parallel Spacer Double
293	Conductor Outer diameter
#	Conductor spacing – (070 or125mm)

Example: SPSD-293-070

Substation Parallel Spacer Triple



Part Number	Conductor Ø (mm)	Conductor Centre Spacing (mm)
SPST-293-#	29.3	#
SPST-315-#	31.5	#
SPST-338-#	33.8	#

PART NUMBER SYSTEM

SPST	Substation Parallel Spacer Triple
315	Conductor Outer Diameter
#	Conductor spacing – (070 or 125mm)

Example: SPST-293-070

Substation Parallel Spacer Quad

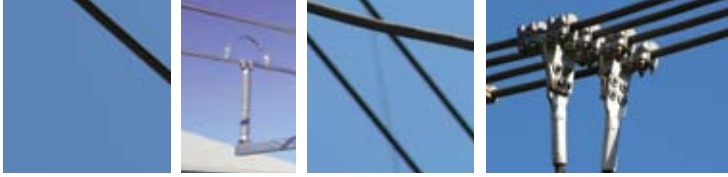
Part Number	Conductor Ø (mm)	Conductor Centre Spacing (mm)
SPSQ-293-#	29.3	#
SPSQ-315-#	31.5	#
SPSQ-338-#	33.8	#

PART NUMBER SYSTEM

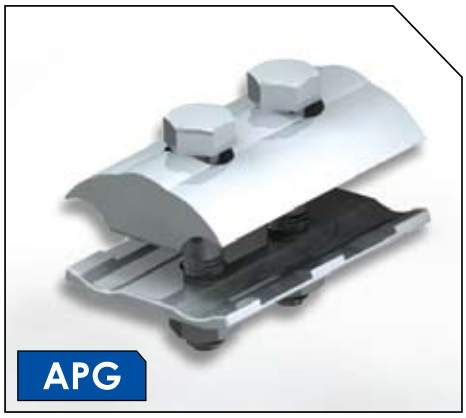
SPSQ	Substation Parallel Spacer Quad
293	Conductor Outer diameter
#	Conductor spacing - (070 or125mm)

Example: SPSQ-293-070

Parallel Groove Clamps



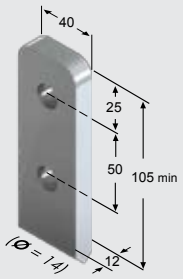
Aluminium Parallel Groove (Clamp)



Many parallel groove clamps are available tin plated for use with copper conductor. Please contact PLP for your specific requirements.

Part Number	Clamp Diameters (mm)	Material
APG-135	5.25 - 13.5	Al
APG-188DG	8.0 - 19.0	Al
APG-188SG	9.0 - 19.0	Al
APG-263104-T	10.4 - 26.3	Tinned Al
APG-163105-T	10.5 - 16.3	Tinned Al
APG-210DG	12.0 - 22.0	Al
APG-315-315-2	16.3 - 33.8	Al
APG-263165-T	16.5 - 26.3	Tinned Al
APG-338165-T	16.5 - 33.8	Tinned Al
APG-238-238	22.0 - 24.0	Al
APG-293-293-1	27.0 - 30.0	Al
APG-315-338-1	31.5 - 33.8	Al

3



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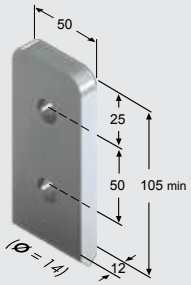
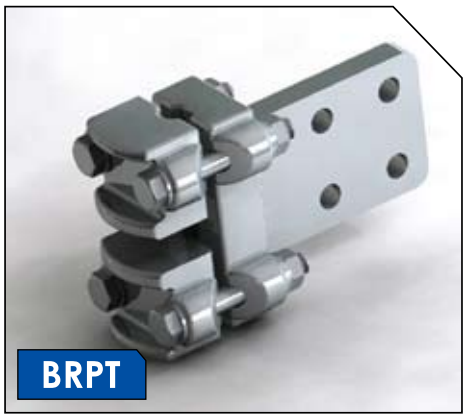


Bolted Connections

Bolted Run Palm Tap



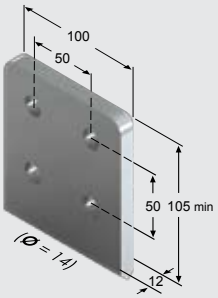
Part Number	Conductor Ø (mm)	Palm Type
BRPT-175-AS#	13.5-19.5	AS#
BRPT-210-AS#	19.6-24.0	AS#
BRPT-263-AS#	24.1-30.0	AS#
BRPT-338-AS#	30.1-35.0	AS#
BRPT-380-AS#	38.0	AS#
BRPT-396-AS#	39.6	AS#

PART NUMBER SYSTEM

BRPT	Bolted Run Palm Tap
175	Conductor Outer diameter
AS#	Palm Type E.g AS1, AS2, AS3 etc...

Example: BRPT-163-AS5

5



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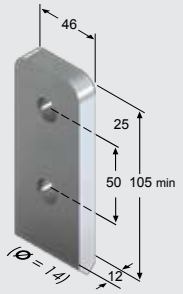

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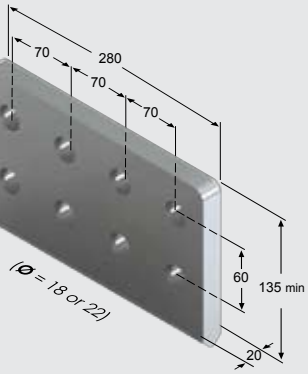

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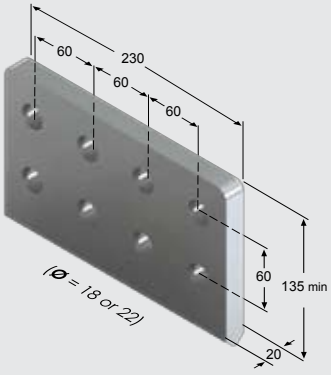

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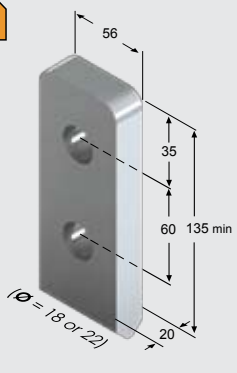


Bolted Connections

Bolted Run Compression Tee

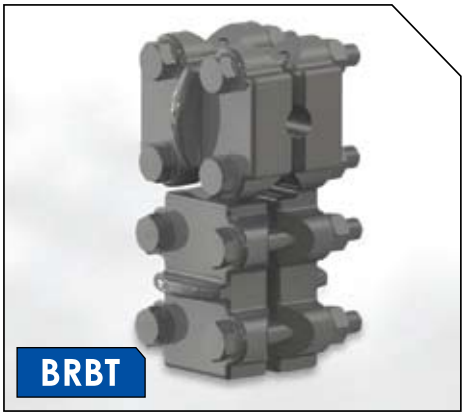
PART NUMBER SYSTEM

BRCT	Bolted Run Compression Tee
#	Bolted Run Conductor Diameter Insert one of the following: 175 (13.5 - 19.5) 210 (19.6 - 24.1) 263 (24.1 - 30.0) 315 (30.1 - 35.0)

Example: BRCT-175-143

Part Number	Bolted Run Conductor Ø Range (mm)	Tee Conductor Ø (mm)
BRCT-#-143	#	14.3
BRCT-#-165	#	16.5
BRCT-#-175	#	17.5
BRCT-#-188	#	18.8
BRCT-#-193	#	19.3
BRCT-#-210	#	21.0
BRCT-#-235	#	23.5
BRCT-#-238	#	23.8
BRCT-#-245	#	24.5
BRCT-#-252	#	25.2
BRCT-#-254	#	25.4
BRCT-#-260	#	26.0
BRCT-#-263	#	26.3
BRCT-#-270	#	27.0
BRCT-#-286	#	28.6
BRCT-#-293	#	29.3
BRCT-#-315	#	31.5
BRCT-#-338	#	33.8

Bolted Run Bolted Tee



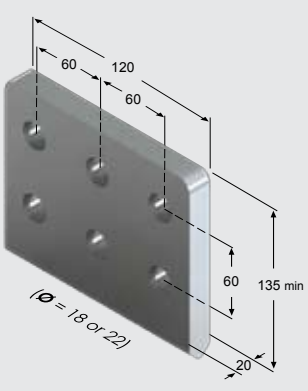
Bolted run bolted tee fittings are designed to connect stranded conductors

Part Number	Run –Conductor Outer Ø Range (mm)	Tee – Conductor Outer Ø Range (mm)
BRBT-210-210	19.6 - 24.0	19.6 - 24.0
BRBT-210-270	19.6 - 24.0	24.1 - 30.0
BRBT-263-188	24.1 - 30.0	13.5 – 19.5
BRBT-293-293	24.1 - 30.0	24.1 - 30.0
BRBT-338-143	30.1 - 35.0	13.5 – 19.5
BRBT-338-210	30.1 - 35.0	19.6 - 24.0
BRBT-338-338	30.1 - 35.0	30.1 - 35.0
BRBT-340-326	30.1 - 35.0	30.1 - 35.0

PART NUMBER SYSTEM

BRBT	Bolted Run Bolted Tee
210	Run Conductor Outer Diameter Range
210	Tee Conductor Outer Diameter Range

9



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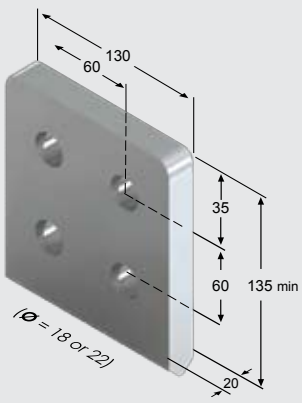

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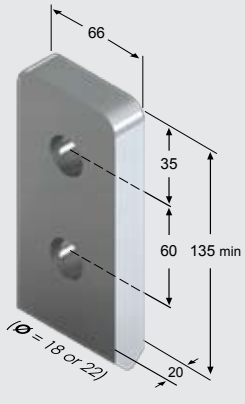
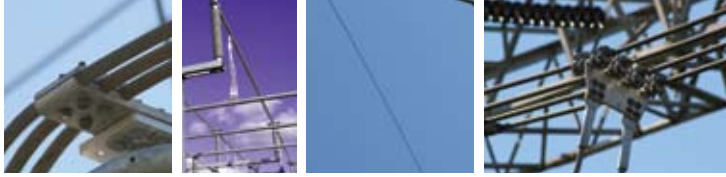
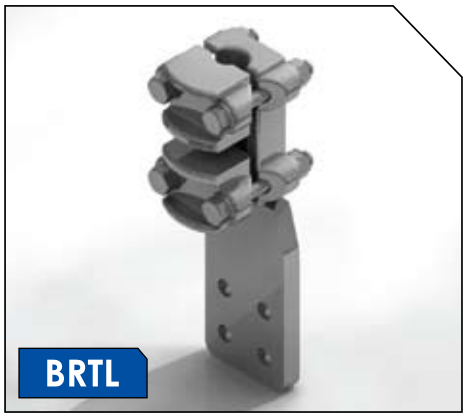


Double Conductor



Bolted Run Terminal Lug



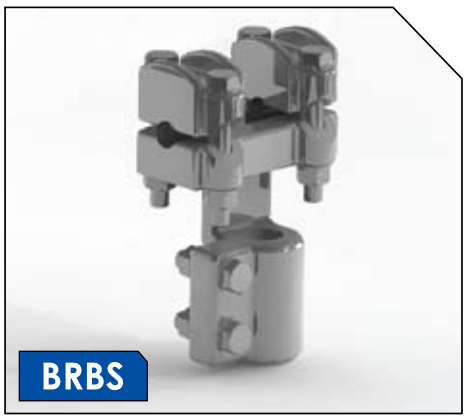
Part Number	Conductor Ø Range (mm)	Palm Type
BRTL-175-AS#	13.5-19.5	AS#
BRTL-238-AS#	19.6 -24.1	AS#
BRTL-263-AS#	24.1 - 30.0	AS#
BRTL-315-AS#	30.1 - 35.0	AS#

PART NUMBER SYSTEM

BRTL	Bolted Run Terminal Lug
175	Conductor Outer Diameter Range
AS#	Palm Type E.g. AS1, AS2 etc...

Example: BRTL-175-AS5

Bolted Run Bolted Stem



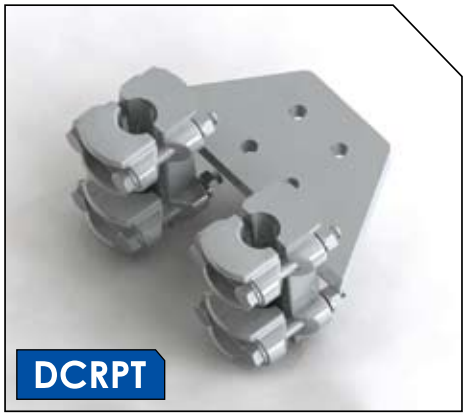
Pin type bolted fittings are designed to be as through connections to equipment bushings and pins and are not designed to carry high current loads. Tin plating is available as an option where connection onto copper occurs.

Part Number	Conductor Ø Bolted Run (mm)	Bolted Stem ID (mm)
BRBS-143-25	13.5-19.5	25.0
BRBS-163-26	13.5-19.5	26.0
BRBS-210-30	19.6-24.0	30.0
BRBS-315-30	30.1-35.0	30.0

PART NUMBER SYSTEM

BRBS	Bolted Run Bolted Stem
143	Run - Conductor Outer Diameter
25	Stem Diameter

Double Conductor Run Palm Tap



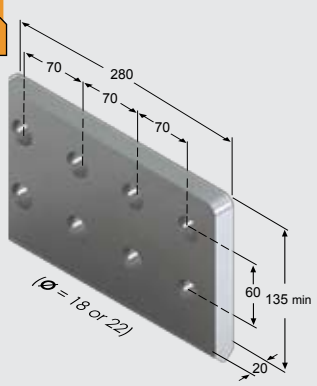
Part Number	Conductor Ø Bolted Run (mm)	Palm Type
DCRPT-210-AS#	19.6 - 24.0	AS#
DCRPT-263-AS#	24.1 - 30.0	AS#
DCRPT-338-AS#	30.1 – 35.0	AS#

PART NUMBER SYSTEM

DCRPT	Double Conductor Run Palm Tap
210	Run - Conductor Outer Diameter
AS#	Palm Type E.g AS1, AS2 etc...

12

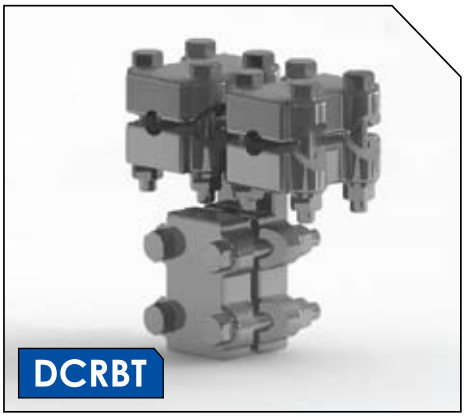
Example: DCRPT-210-AS5



Double Conductor




Double Conductor Run Bolted Tee



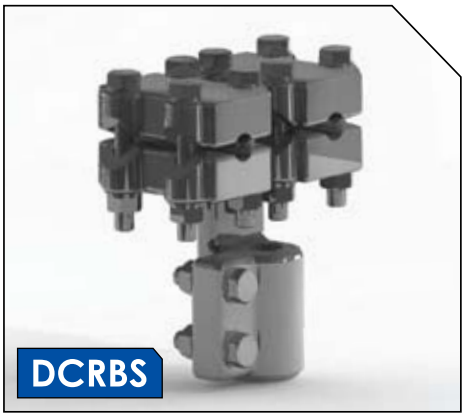
The DCRBT is a double conductor version of the BRBT on page 41

Part Number	Bolted Run Ø Range (mm)	Conductor Ø Bolted Tee (mm)
DCRBT-210-210	19.6 – 24.0	19..6 – 24.0
DCRBT-338-338	30.1 – 35.0	30.1 – 35.0

PART NUMBER SYSTEM

DCRBT	Double Conductor Run Bolted Tee
210	Run - Conductor Outer Diameter
210	Tee - Conductor Outer Diameter

Double Conductor Run Bolted Stem



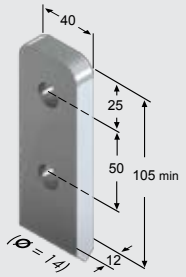
Pin type bolted fittings are designed to be as through connections to equipment bushings and pins and are not designed to carry high current loads. Tin plating is available as an option where connection onto copper occurs.

Part Number	Bolted Run Ø Range (mm)	Bolted Stem ID (mm)
DCRBS-315-30-1	30.1 – 35.0	30

PART NUMBER SYSTEM

DCRBS	Double Conductor Run Bolted Stem
315	Run - Conductor Outer Diameter
30	Stem - Diameter

3



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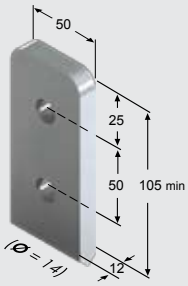

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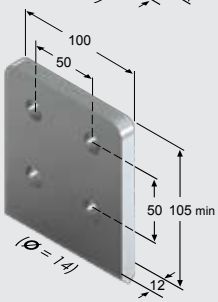

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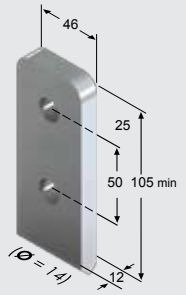

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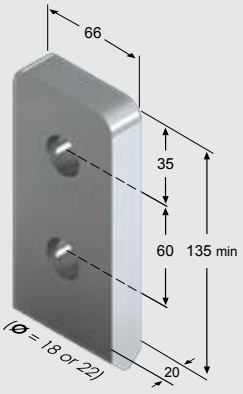

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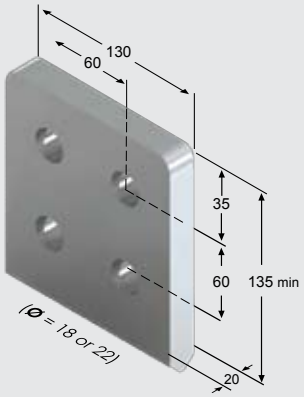

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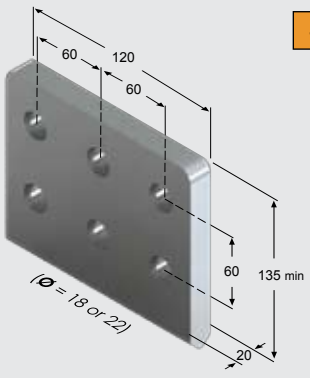

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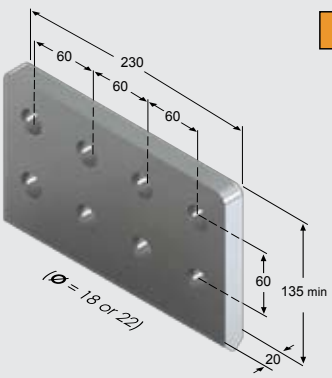

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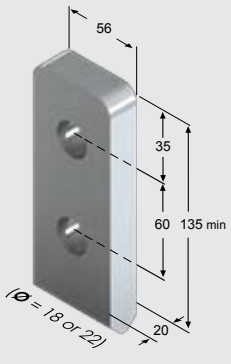
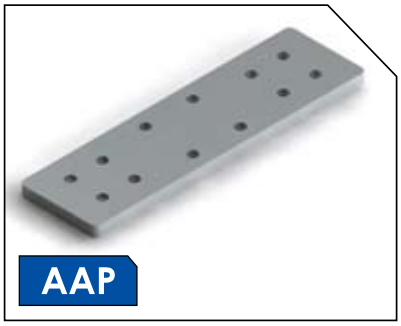


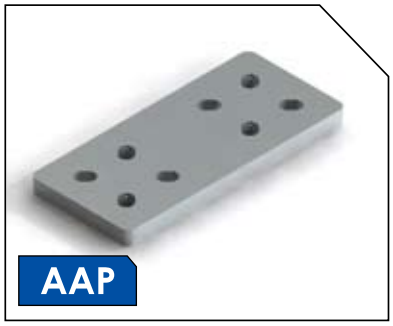
Adaptor Plates

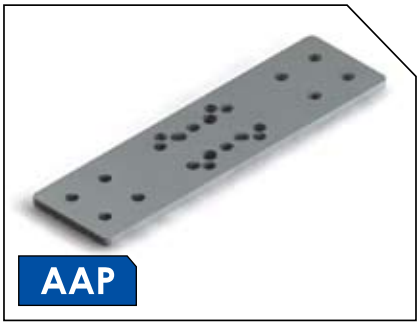



Aluminium Adaptor Plates

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 5000 or 6000 series aluminium with Australian standard palm configurations. Please contact PLP with required dimensions and specific needs.







ph: (02) 8805 0000

Overhead & Landing Span Fittings

Link Single Plate

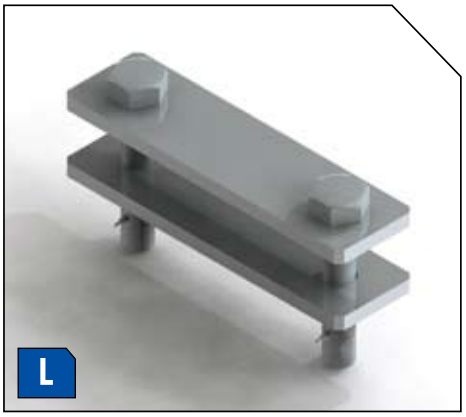
Part Number	Rating kN	Hole Separation (mm)
LSP-070-#	70	#
LSP-120-#	120	#
LSP-160-#	160	#

PART NUMBER SYSTEM

LSP	Link Single Plate
070	Link Plate Rating (070, 120, 160 available)
#	Hole Separation (100, 150, 200, 250, 300, 350)

Example: LSP-070-100

Link (Plate Double)



Part Number	Rating kN	Hole Separation (mm)
L-070-#	70	#
L-120-#	120	#
L-160-#	160	#

PART NUMBER SYSTEM

L	Link
070	Link Plate Rating (070, 120, 160 available)
#	Hole Separation (100, 150, 200, 250, 300, 350)

Example: L-070-100

Clevis Tongue Sag Link

			Range (mm)	
Part Number	Rating kN	Hole Ø (mm)	Minimum	Maximum
CTSL-070-1	70	18	556	974
CTSL-120	120	18	565	870
CTSL-160-1	160	22	535	735

PART NUMBER SYSTEM

CTSL	Clevis Tongue Sag Link
070	Sag Link Rating (070, 120, 160 available)

Overhead & Landing Span Fittings

Maintenance Tension Link

Part Number	Tension Rating kN	Hole Centre Spacing (mm)
MTL-160-4	160	60

Yoke Plate Triangular

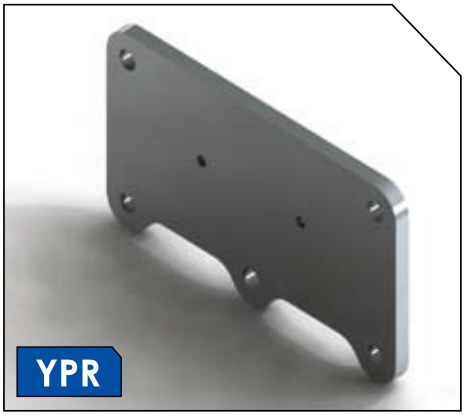
Part Number	Tension Rating kN	Hole Centre Spacing (mm)
YPT-070-#	70	#
YPT-120-#	120	#
YPT-160-#	160	#

PART NUMBER SYSTEM

YPT	Yoke Plate Triangular
070	Yoke Plate Rating (070, 120, 160 available)
#	Hole Separation (070, 100, 125, 150, 200, 250, 380, 460 available)

Example: YPT-070-100

Yoke Plate Rectangular



Part Number	Tension Rating kN	Hole Centre Spacing (mm)
YPR-070-#	70	#
YPR-120-#	120	#
YPR-160-#	160	#

PART NUMBER SYSTEM

YPR	Yoke Plate Rectangular
070	Yoke Plate Rating (070, 120, 160 available)
#	Hole Separation (070, 100, 125, 150, 200, 250, 380, 460 available)

Example: YPR-070-100

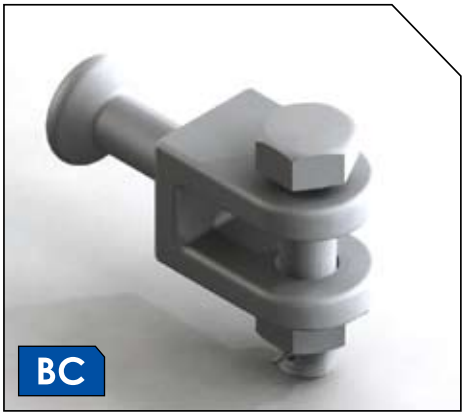
Overhead & Landing Span Fittings

Ball Eye

Galvanised Forged Steel

Part Number	Tension Rating kN	Ball Size (mm)
BE-070-1	70	16
BE-120	120	20
BE-160	160	20

Ball Clevis



Galvanised Forged Steel

Part Number	Tension Rating kN	Bolt Size (mm)
BC-070-1	70	M16
BC-120-1	120	M16
BC-160-3	160	M20

Eye Tongue

Galvanised Forged Steel

Part Number	Tension Rating kN
ET-070-1	70
ET-120-1	120
ET-160-1	160

Overhead & Landing Span Fittings

Twisted Eye Tongue

Galvanised Forged Steel

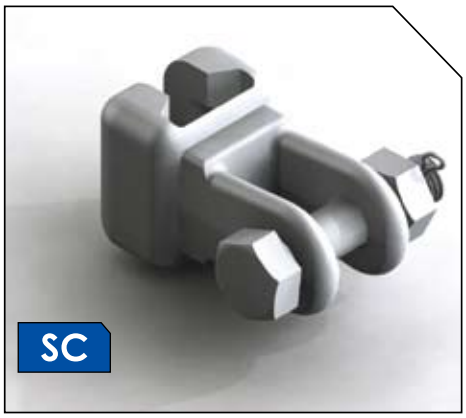
Part Number	Tension Rating kN
TET-070-1	70
TET-120-1	120
TET-160-1	160

Socket Ball

Galvanised Forged Steel
Available with 'W' or 'R' type security clips

Part Number	Tension Rating kN	Socket Size (mm)	Ball Size (mm)
SB-070-1	70	16	16
SB-120-1	120	20	20
SB-160-1	160	20	20

Socket Clevis



Galvanised Forged Steel or Cast Iron
Available with 'W' or 'R' type security clips

Part Number	Tension Rating kN	Socket Size (mm)	Ball Size (mm)
SC-070-1	**70**	**16**	**M16**
SC-120-1	**120**	**16**	**M16**
SC-160-1	**160**	**20**	**M20**

Overhead & Landing Span Fittings

Twisted Socket Tongue

Galvanised Forged Steel or Cast Iron
Available with 'W' or 'R' type security clips

Part Number	Tension Rating kN	Bolt Size (mm)
TST-070-1	70	M16
TST-120-1	120	M16
TST-160-1	160	M20

Tongue Clevis

Galvanised Forged Steel

Part Number	Tension Rating kN	Bolt Size (mm)
TC-070-1	70	M16
TC-120-1	120	M16

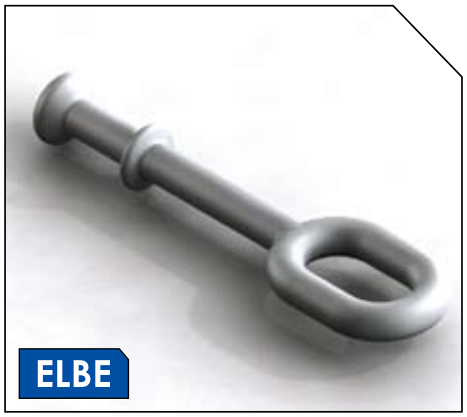
Twisted Clevis Tongue

Galvanised Forged Steel

Part Number	Tension Rating kN	Bolt Size (mm)
TCT-070-1	70	M16
TCT-160-1	160	M20

Overhead & Landing Span Fittings

Extension Link Ball Eye



Galvanised Forged Steel

Part Number	Tension Rating kN	Coupling Length (mm)	Ball Size (mm)
ELBE-160-250-1	160	250	20
ELBE-160-350-1	160	350	20
ELBE-160-500-1	160	500	20
ELBE-160-620-1	160	620	20
ELBE-160-800-1	160	800	20
ELBE-160-1000	160	1000	20
ELBE-160-1100-1	160	1100	20
ELBE-160-1330	160	1330	20
ELBE-160-1620	160	1620	20
ELBE-160-2000	160	2000	20

Extension Link Ball Clevis

Galvanised Forged Steel

Part Number	Tension Rating kN	Coupling Length (mm)	Ball Size (mm)	Bolt Size (mm)
ELBC-160-1	160	250	20	M20

Extension Link Socket Clevis

Galvanised forged steel. Available with 'W' or 'R' type security clips.

Part Number	Tension Rating kN	Coupling Length (mm)	Socket Size (mm)	Bolt Size (mm)
ELSC-160-1	160	250	20	M20

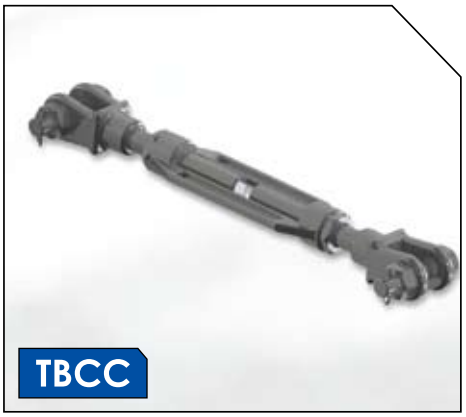
Overhead & Landing Span Fittings

Shackle

Galvanised Forged Steel

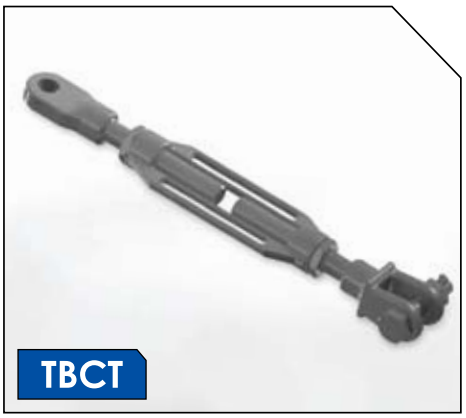
Part Number	Tension Rating kN	Bolt Size (mm)
S-070-1	70	M16
S-120-1	120	M16
S-160-1	160	M20

Turnbuckles - Clevis/Clevis



			Range (mm)	
Part Number	Rating kN	Bolt Size (mm)	Minimum	Maximum
TBCC-070-1	70	M16	350	480
TBCC-160-1	160	M20	480	600

Turnbuckles - Clevis/Tongue



			Range (mm)	
Part Number	Rating kN	Bolt Size (mm)	Minimum	Maximum
TBCT-070-1	70	M16	350	480
TBCT-160-1	160	M20	480	600

Overhead & Landing Span Fittings

Turnbuckles - Eye/Clevis

			Range (mm)	
Part Number	Rating kN	Bolt Size (mm)	Minimum	Maximum
TBEC-070-1	70	M16	350	480
TBEC-160-1	160	M20	480	600

Turnbuckles - Eye/Eye

		Range (mm)	
Part Number	Rating kN	Minimum	Maximum
TBEE-070-1	70	350	480
TBEE-160-1	160	480	600

Protection Earthing & Accessories

We offer direct strike lighting, surge and transient protection equipment and earthing products.

PROTECTION, EARTHING & ACCESSORIES

Corona Protection

Grading Ring Tension

Corona/grading rings are designed to reduce electrical stresses on busbar fittings and overhead and landing span fittings. Manufactured inhouse from extruded aluminium tube, corona rings can be designed to customer requirements.
Please contact PLP with required dimensions and specific needs.

Part Number	Description
GRT-330-1	330kV Corona Ring
GRT-330-CLAMP	330kV Grading Ring Clamp Assembly

Grading Ring Suspension

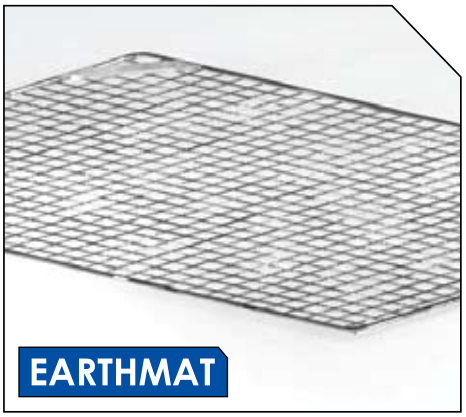
Part Number	Description
GRS-330-1	330kV Suspension Grading Ring

Substation Lightning Arrestor

PLP's Range of Substation Lightning Arrestors provide for safe and continuous protection against direct lighting strikes. Energy is captured at a preferred point of contact and effectively diverted to a designated ground position saving valuable substation equipment and personnel injury. The SLA is far more efficient than conventional lightning rods and encompasses a much larger coverage area. Minutes before a lightning strike the electric field surrounding the SLA begins to increase in potential causing an upward streamer to meet the lightning strike at the point of impact. This technology means that the SLA will consistently be the preferred lighting strike point for electrical discharge in the protected area.

Earthing

Earth Mat



Galvanised Steel Earth Mats can be either permanently installed and attached to the earthing system for where maintenance is required. Various sizes are available as described below.

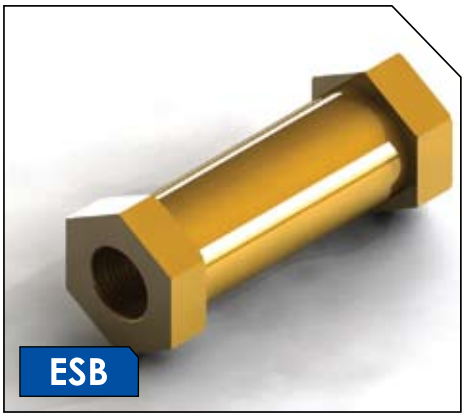
Part Number	Dimensions L x W (mm)
EARTHMAT-1	2500 x 1200
EARTHMAT-2	2500 x 1000
EARTHMAT-3	1500 x 1000
EARTHMAT-A	2400 x 1200
EARTHMAT-B	1500 x 900
EARTHMAT-C	600 x 450

Substations Portable Earth

Substation Portable Earths (SPE) are purpose designed to suit a wide range of applications and installation configurations from 5mm up to 120mm in diameter. SPE devices connect between working earth stirrups on busbars and earth stubs or mats.

All Earthing systems are factory made, tested and certified before dispatch and are individually identified and registered for traceability.

Earth Stub Brass



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.

Part Number	Description
ESB-95213	Earth Stub Brass - M16 Tap

Earth Rods




Earth Rod (Tapered)

Part Number	Diameter (mm)	Length (mm)
ER13-1200	13	1200
ER13-1440	13	1440
ER13-1800	13	1800
ER15-1200	15	1200
ER15-1440	15	1440
ER15-1800	15	1800

Earth Rod (Flushed Coupled)

Part Number	Diameter (mm)	Length (mm)
ER13F-1200	13	1200
ER13F-1440	13	1440
ER13F-1800	13	1800
ER15F-1200	15	1200
ER15F-1440	15	1440
ER15F-1800	15	1800
ER15F-2500	15	2500

Earth Rods & Accessories




Earth Rod (Tapered Accessories)

Part Number	Description
ER13-C	13mm tapered coupler
ER15-C	15mm tapered coupler
ER13-D	13mm driving head
ER15-D	15mm driving head
ER13-P	13mm driving point
ER15-P	15mm driving point
ER13-PH	13mm driving point hard
ER15-PH	15mm driving point hard
ER13-PWC	13mm push on wire clip
ER15-PWC	15mm push on wire clip
ER13-BWC	13mm bolted wire clamp
ER15-BWC	15mm bolted wire clamp

Earth Rod (Flushed Coupled Accessories)

Part Number	Description
ER13F-C	13mm flush coupler
ER15F-C	15mm flush coupler
ER13F-D	13mm driving head
ER15F-D	15mm driving head
ER13F-D	13mm driving point
ER15F-D	15mm driving point
ER13F-P	Driving pin for 13mm and 15mm rod
ER13-BWC	13mm bolted wire clamp
ER15-BWC	15mm bolted wire clamp

Accessories

Electrical Jointing Compound

Recommended for all aluminium connections to effectively preserve and protect compression joints. The conductive compound consists of Zinc particles which penetrate oxide films that form on aluminium surfaces. Air and moisture are sealed out, which reduces oxidation and corrosion that would occur on exposed Aluminium. PLP Jointing grease maximises electrical conductivity, while containing thermal properties to endure high temperatures without softening.

Part Number	Net Weight
PLP-3G	325g

Copper Bonding Lead

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.

Single Hole

Part Number	Current Rating (A)	Length (mm)	Width (mm)	Bolt Size	No. Braids
CBL-100300-M10	100	300	25	M10	1
CBL-300300-M10	300	300	25	M10	4
CBL-450300-M10	450	300	25	M10	6
CBL-100300-M12	100	300	25	M12	1
CBL300300-M12	300	300	25	M12	4
CBL450300-M12	450	300	25	M12	6

Copper Bonding Lead

Double Hole

Part Number	Current Rating (A)	Length (mm)	Hole Centres (mm)	Width (mm)	Bolt Size	No. Braids
CBL-100300-29	100	300	22	25	M10	1
CBL-300300-22	300	300	22	25	M10	4
CBL-450300-22	450	300	22	25	M10	6
CBL-100300-29	100	300	29	25	M10	1
CBL300300-29	300	300	29	25	M10	4
CBL450300-29	450	300	29	25	M10	6

ph: (02) 8805 0000

Cable Clamps & Blocks

Plastic Substation Cable Clamp Single

The Single Hole type cable clamps fasten a wide range of single and multi conductor low 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 a controlled pressure on the cable and prevent damage to the conductor insulation.

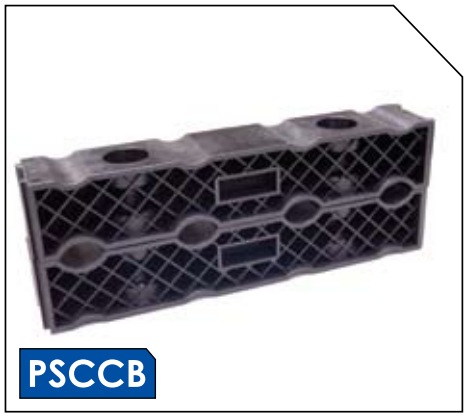
Contact PLP with specific requirements and conductor diameters.

Plastic Substation Cable Clamp Triple

Triple type cable clamps fasten a wide range of single and multi conductor low 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.

Plastic Substation Cable Clamp Blocks



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.

SwitchGear

SWITCHGEAR

"PLP complements its range of busbar fixture and fittings by offering a comprehensive range of substation switchgear including instrument transformers and circuit breakers."

Switchgear

Medium Voltage Vacuum Switchgear

Features include:
- Mechanism matching VI Performance of M2 Class
- Factory assembled, ready to install.
- Compact Size
- Motor wound spring charged mechanism with charging time of <10 sec.
- Mechanism suitable for fast auto re-closing duty.
- Manual spring charging facility
- Available optionally with 2 trip coils
- Series trip coil

Medium Voltage Gas Insulated Switchgear

Features include:
- Smaller footprint
- Minimum maintenance
- Three phases enclosed in tubular mild steel enclosures
- Vacuum interrupters are in triangular formation
- Plug in type cable terminations
- Modular construction
- Integral earthing
- Hermetically sealed enclosures
- Separate panel for busbar earthing and voltage transformers
- Conventional epoxy resin instrument transformers.
- Motor/manual operated disconnectors
- Compatible to remote operation.
- Full safety to operator
- Mechanism is of M2 class
- Motor wound spring charged mechanism with charging time of < 10 sec
- Manual spring charging facility

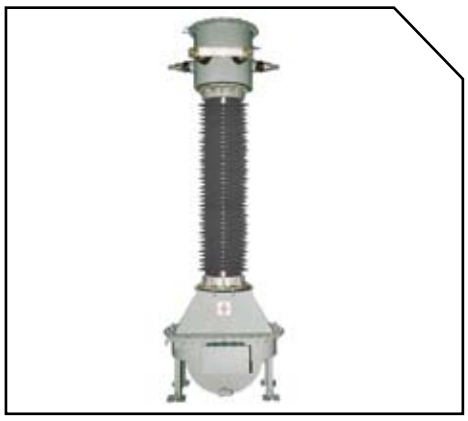
Medium Voltage - Current Transformers

Features include:
- Oil impregnated paper insulation
- Accuracy class, output & number of secondary windings as desired
- Graded insulation for primary
- Hermetically sealed

Switchgear




Medium Voltage - Voltage Transformers

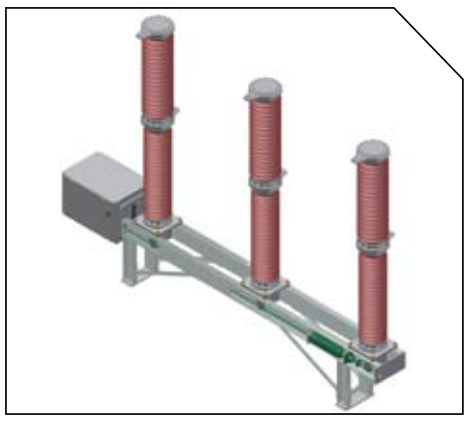


Features include:
- Oil impregnated paper insulation
- Accuracy class, output & number of secondary windings as desired
- Single primary winding
- Hermetically sealed

Medium Voltage VCB Kiosk

Features include:
- Totally enclosed, simple in construction and easy to operate
- VCB can be fixed or draw out type
- Mechanism matching VI performance of M2 class (10,000) operations
- VTs/PTs and relay control panel are in-built
- Power supply can be taken through roof bushing (or) cable box (or) combination of both
- Minimum maintenance
- Enclosure tested for IP55
- Motor wound spring charged mechanism with charging time of <10 sec
- Mechanism suitable for fast auto re-closing duty
- Series trip coil

EHV Live Tank SF6 Circuit Breakers



Features include:
- Simplicity, higher reliability and safety of design
- Hybrid interrupter design for 145 kV breaker and improvised puffer type interrupter for 245 kV breaker
- Reduced operating mechanism energy requirement
- Small amount of SF6 gas
- Rotary seals
- Minimum maintenance, servicing and installation time
- Higher mechanical endurance and very low probability of re-striking
- Conform to class M2 & C2
- Compact and reliable hydro-spring mechanism

Switchgear

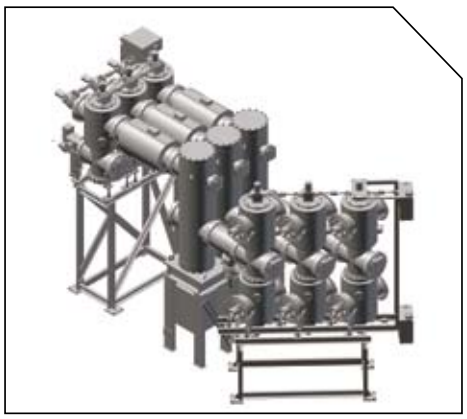



EHV Dead Tank SF6 Circuit Breakers

Features include:

- Improved puffer type interrupter
- Reduced operating mechanism energy requirement
- Rotary seals
- Higher reliability, safety and simplicity of design
- Minimum maintenance, servicing and installation time
- Compact and reliable hydro-spring mechanism
- Higher seismic stability (low center of gravity)
- Totally earthed tank - higher safety
- Conform to class M2 & C2

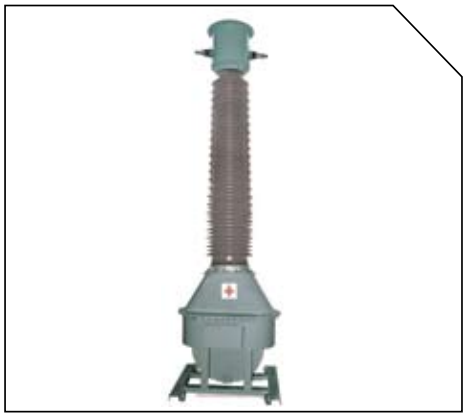
EHV Gas Insulated Switchgear



Features include:

- Smaller footprint
- Modular construction
- Minimum maintenance
- Plug- in type cable terminations
- Hermetically sealed enclosures
- Mechanism is of M2 class
- Hydro spring operating mechanism for circuit breaker
- Each section of SF6 gas is compartmentalized with insulating barrier between enclosures and sealed with O-Rings
- No environmental influences
- Electrical interlocking systems are equipped for the purpose of protecting the operator and safe operation of main circuit
- Gas section of circuit breaker is provided with dual alarm systems
- Gas monitoring is available from the control board easily
- Compatible with remote operation
- Full safety to operator

EHV Current Transformers



Features include:

- Oil impregnated paper insulation
- Accuracy class, output & number of secondary windings as desired
- Graded insulation for primary
- Hermetically sealed with N2 cushion




Switchgear

EHV Voltage Transformers

Features include:

- Oil impregnated paper insulation
- Accuracy class, output & number of secondary windings as desired
- Single primary winding up to 145 kV and 2 stage primary windings in cascade for 245 kV
- Hermetically sealed with N2 cushion

Vacuum Interrupters

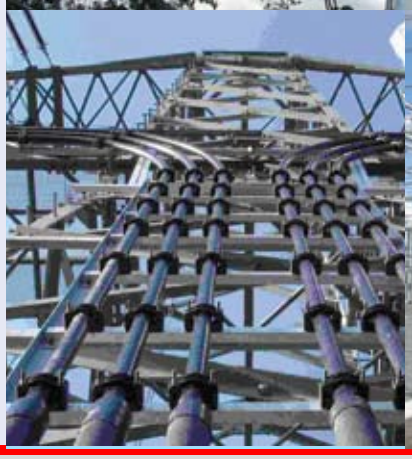
The state of the art vacuum interrupter manufacturing facility of 12 kV & 36 kV class for use in vacuum switchgear, consists of ultra clean rooms of Class100 and vacuum processing furnaces etc., with complete test facilities.

Reference Table & INDEX










Reference Table

AAAC - Aluminum Alloy Conductor
Australian Standard - AS1531 Part 2

Code Name	Stranding (mm)	OD (mm)	Eq. AL (mm²)	Area (mm²)	NBL (kN)	Mass (kg/km)
Agate	7/1.75	5.25	14.3	16.84	4.71	46.1
Amethyst	7/2.25	6.75	23.7	27.83	7.78	75.9
Diamond	7/2.50	7.50	29.3	34.36	9.64	94.3
Emerald	7/3.00	9.00	42.1	49.48	13.90	135.0
Garnet	7/3.75	11.30	65.8	77.31	21.70	211.0
Jade	7/4.50	13.50	94.8	111.30	31.20	304.0
Jasper	7/4.75	14.30	106.0	124.00	34.80	339.0
Opal	19/3.25	16.30	134.0	157.60	44.20	433.0
Pearl	19/3.75	18.80	178.0	209.80	58.80	576.0
Ruby	37/3.00	21.00	221.0	261.50	73.50	721.0
Rutile	19/4.75	23.80	285.0	336.70	94.40	924.0
Sapphire	37/3.75	26.30	345.0	408.70	115.00	1120.0
Spinel	61/3.25	29.30	426.0	506.00	135.00	1400.0
Topaz	61/3.75	33.80	568.0	673.70	179.00	1860.0

AAAC - All Aluminum Alloy Conductor - 1120 Alloy

Code Name	Stranding (mm)	OD (mm)	Eq. AL (mm²)	Area (mm²)	NBL (kN)	Mass (kg/km)
Argon	7/1.75	5.25	16.1	16.84	4.00	46.1
Boron	7/2.25	6.75	26.5	27.83	6.61	75.9
Chlorine	7/2.50	7.50	32.8	34.36	8.18	94.3
Fluorine	7/3.00	9.00	47.2	49.48	11.80	135.0
Helium	7/3.75	11.30	73.7	77.31	17.60	211.0
Hydrogen	7/4.50	13.50	106.0	111.30	24.30	304.0
Iodine	7/4.75	14.30	118.0	124.00	27.10	339.0
Krypton	19/3.25	16.30	150.0	157.60	37.40	433.0
Neon	19/3.75	18.80	199.0	209.80	47.80	576.0
Nitrogen	37/3.00	21.00	248.0	261.50	62.20	721.0
Oxygen	19/4.75	23.80	320.0	336.70	73.60	924.0
Phosphorous	37/3.75	26.30	387.0	408.70	93.10	1120.0
Selenium	61/3.25	29.30	478.0	506.00	114.00	1400.0
Sulphur	61/3.75	33.80	637.0	673.70	145.00	1860.0

Reference Table

AAC - All Aluminium Conductor Australian Standard - AS1531 Part 1

Code Name	Stranding (mm)	OD (mm)	Eq. AL (mm²)	Area (mm²)	NBL (kN)	Mass (kg/km)
Gemini	7/1.75	5.25	16.6	16.84	3.01	46.1
Jupiter	7/2.75	6.75	27.5	27.83	4.76	75.9
Leo	7/2.50	7.50	33.9	34.36	5.75	94.3
Libra	7/3.00	9.00	48.8	49.48	7.91	135.0
Mars	7/3.75	11.30	76.3	77.31	11.90	212.0
Mercury	7/4.50	13.50	110.0	111.30	16.80	305.0
Moon	7/4.75	14.30	122.0	124.00	18.80	340.0
Neptune	19/3.25	16.30	155.0	157.00	24.70	433.0
Pluto	19/3.75	18.80	206.0	209.80	32.30	578.0
Saturn	37/3.00	21.00	256.0	261.50	41.80	721.0
Taurus	19/4.75	23.80	331.0	336.70	50.90	926.0
Triton	37/3.75	26.30	400.0	408.70	62.90	1130.0
Uranus	61/3.25	29.30	493.0	506.00	75.20	1400.0
Venus	61/3.75	33.80	659.0	673.70	98.30	1860.0

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