

SUBSTATION EARTHING EQUIPMENT CATALOGUE



PENTA
ELECTRICAL SAFETY PRODUCTS

Your life,
Our work.

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The PENTA Electrical Safety Products Substation portable earthing equipment range is designed to meet the specific requirements of ENA technical specification 41-21.

Line End Clamps are precision manufactured from robust aluminium castings with high-grade stainless steel fittings. All clamps, whether sprung loaded or not, should be applied by means of an operating socket attached to an insulated operating pole. The design of all Line End clamps is such that once hooked over the busbar they become self-supporting whilst the operating screw is tightened or loosened.

Product Benefits

- Lightweight
- Precision machined for improved performance

**/ CE22/A LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2738-A	10-38mm	25kA/1s & 17.5kA/2s	1	41-21-LE1	1.05kg

Catalogue Number	383901
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**/ CE22/B LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2143-B	38-76mm	25kA/1s & 17.5kA/2s	1	41-21-LE3	1.09kg

Catalogue Number	383885
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/ CE22/A+B LINE END CLAMP**/ TECHNICAL SPECIFICATION**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2143-A	19-76mm	25kA/1s & 17.5kA/2s	1	41-21-LE4	1.09kg

Catalogue Number	383884
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**/ CE22/C LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2739-A	60-90mm	25kA/1s & 17.5kA/2s	1	41-21-LE5	1.27Kg

Catalogue Number	383902
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**/ CE25 LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2169-B	35-75mm	53.7kA/1s	2	41-21-LE2	1.73kg

Catalogue Number	383886
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/ CE15 LINE END CLAMP**/ TECHNICAL SPECIFICATION**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2191-A	90mm	51.6kA/ 2s	2	41-21-LE6	1.37kg

Catalogue Number	383887
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**/ CE28 LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2367-A	100mm	45kA/ 1s & 31.8kA/ 2s	2	41-21-LE7	1.66kg

Catalogue Number	383891
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**/ CE27 LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2180	101.6mm	25kA/1s & 17.5kA/2s	1	41-21-LE8	1.55kg

Catalogue Number	390625
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**/ CE16/120 LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2973-A	120mm	61.2kA/ 2s	3	41-21-LE9	2.23kg

Catalogue Number	383903
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**/ CE16/127 LINE END CLAMP**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2844-A	127mm only	61.2kA/ 2s	3	41-21-LE10	1.9kg

Catalogue Number	390736
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/ CE16/140 LINE END CLAMP**/ TECHNICAL SPECIFICATION**

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
FA2004-A	140mm	61.2kA/ 2s	3	41-21-LE11	2.41kg

Catalogue Number	393097
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/ CE51 LINE END CLAMP

/ TECHNICAL SPECIFICATION

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
EFP-16703	140-160mm	53.7kA/ 1s 38kA/2s	2	41-21-LE12	2.85kg

Catalogue Number 383277



/ CE50 LINE END CLAMP

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
EFP-16702	190-200mm	53.7kA/ 1s & 38kA/2s	2	41-21-LE13	3.03kg

Catalogue Number 383276



/ CE71 LINE END CLAMP

/ TECHNICAL SPECIFICATION

Reference	Clamping Diameter	Short Circuit Rating	Max number of Leads	ENA 41-21 Reference	Weight
EFP-16749	220-250mm	25kA/ 1s 17.5kA/2s	1	41-21-LE14	3.5kg

Catalogue Number 383282



/ CE7/A/LT/105H LINE CLAMP

For 4.2mm to 19.5mm dia. conductors.

Reference	Catalogue Number	Short Circuit Rating
FA1265-B	390560	13.1kA/1s





/ H1B LIVE LINE TAP

Conductor range 5.7 to 11.0mm diameter.

Reference	Catalogue Number
EFP-10915/1	390560



/ CE29 EARTH END CLAMP FOR POLE OPERATION

Suitable for cross arm straps.

Reference	Catalogue Number
EFP-12393	383272



/ CE3 EARTH END CLAMP

Reference	Catalogue Number
EFP-10854	383265



/ CE8 EARTH END CLAMP

For flat bars 38mm wide x 6.35mm thick
(suitable for steel cross arm straps).

Reference	Catalogue Number
FA0906	383859



/ CE36 EARTH END CLAMP

Reference	Catalogue Number
FA3724-A	391102



/ S9C EARTH END CLAMP

For 38mm to 76mm diameter conductors.

Tested to 17.5kA for 2 seconds.

Reference	Catalogue Number
FA1057-A	390532



EARTH END CLAMPS

The PENTA Electrical Safety Products Substation portable earthing equipment range is designed to meet the requirements of ENA technical specification 41-21. This includes our range of Earth End clamps, which are precision manufactured from robust aluminium castings with high-grade stainless steel fittings.

The spring-loaded feature of all types makes them suitable for application by hand to copper or aluminium earth tapes in any natural condition, with minimum strength required to achieve good contact and tightness.

Advantages

- Solid construction for extended service
- Proven service record used by ESI for over 40 years
- Lightweight with excellent corrosion resistance

**/ CE20 LINE END CLAMP**

The CE20 is an Earth End clamp suitable to provide a connection to Substation Earth Tape. This is ideally suited for connection to tapes fitted with panhandles. Compatible with PB150T terminated leads and can be applied to clean or dirty copper and aluminium earth tape.

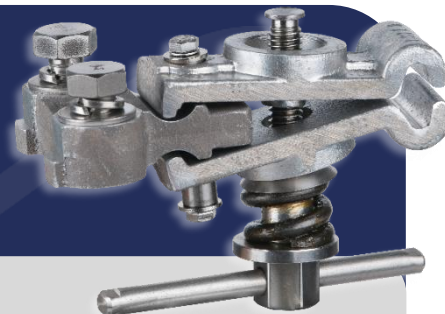
Catalogue Number 392735



Reference	Earth Tape Thickness	Earth Tape Width	Short Circuit Rating	Max Cable Connection	Weight
FA2120-B	3.2-6.5mm	38-50mm	25kA/ 1s & 17.5kA/2s	1	0.62kg

/ CE20/2 38-50 EARTH END CLAMP

CE20 Earth End clamp with adapter to permit fitting of twin cables and increase short circuit capacity.

**/ TECHNICAL SPECIFICATION**

Reference	Earth Tape Thickness	Earth Tape Width	Short Circuit Rating	Max Cable Connection	Weight
FA2173-B	3.2-6.5mm	38-50mm	53.7kA/ 1s & 38kA/2s	2	0.937kg

Catalogue Number 393098

/ CE20/2 50-60 EARTH END CLAMP

Special CE20/2 50-60 Earth End Clamp suitable for fitting to wide aluminium earth tapes 50mm to 60mm wide.

Rating same as CE20/2 38/50.

**/ TECHNICAL SPECIFICATION**

Reference	Earth Tape Thickness	Earth Tape Width	Short Circuit Rating	Max Cable Connection	Weight
EEP-13727	3.2-6.5mm	38-50mm	53.7kA/ 1s & 38kA/2s	2	0.937kg

Catalogue Number 383274



/ CE20/2/A/S/RT EARTH CLAMP

Earth clamp to allow temporary earthing of earth tapes.

Reference	Catalogue Number	Short Circuit Rating	Weight
EFP-16705	393004	25kA/ 1s & 17.5kA/2s	0.94kg

Catalogue Number	393004
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/ CE21 EARTH END CLAMP

Can be applied to clean or dirty Copper or Aluminium tape.

Reference	Earth Tape Thickness	Earth Tape Width	Short Circuit Rating	Weight
FA2121-B	3.2-13mm	25-50mm	25kA/ 1s & 17.5kA/2s	0.64kg

Catalogue Number	383882
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/ CE57 DRAIN EARTH CLAMP

Aluminium Drain Earth clamp for use in Earth Tape Bridging Kit.

Reference	Conductor Range	Short Circuit Rating	Continuous Current Rating
EFP-16708	25mm – 3mm (Min) & 100mm – 6mm (Max)	16kA/ 1s	300A

Kits are fully customisable if required, but the standard offering is the NSI 24 Temporary Earth Bond Kit.

Catalogue Number	393005
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/ LARGE PANHANDLE



Reference	Length	Material
EMP-20066	310mm	Aluminium

Catalogue Number	383646
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/ SMALL PANHANDLE

Reference	Length	Material
EMP-20066/2	220mm	Aluminium

Catalogue Number	383648
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/ CE35 EARTH CLAMP

Suitable for application to T bar stubs, ball stubs, flat bar and round bar.

For use with ball stubs and T bar stub.

Catalogue Number	383907
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Reference	For Flat Bars	For Round Bars	Short Circuit Rating	Weight
FA3129-A	Max Thickness: 12mm / Min Width: 31mm	Max Diameter: 25mm / Min Diameter: 12mm	25kA/1s & 17.5kA/2s	1.16kg

Bronze bolted ball stud to provide a designated Earth point upon an Earth tape or within an electrical cabinet.



/ BOLTED TYPE BALL STUB

Reference	Catalogue Number
4814-01	388566



/ STUD TYPE BALL STUB

Reference	Catalogue Number
4814-02	381948



/ STUD TYPE T BAR STUB

Reference	Catalogue Number
4815-03	388567



SUBSTATION EARTHING EQUIPMENT

EARTHING LEADS

PENTA Electrical Safety Products can supply Aluflex leads in any required length, in a wide range of sizes including specifically for Substation use 150sqmm & 50sqmm according to ENA specification 41-21.

The flexible aluminium earth lead comes with tested and approved compression terminations and stress support springs/sleeves. Leads are used for connecting between a Line End clamp and an Earth End clamp. For use in Substations, Portable Primary Earths always employ 150 sqmm Aluflex cable with a clear pvc sheath. Field Equipment earths employ 50sqmm Arctic orange Aluflex leads, 50 sqmm clear leads are used for the control of induced voltages.

Advantages

- Lightweight & flexible
- Fully tested and approved to ENA 41-21 standard
- Less vulnerable to theft than Copper
- Sheath encapsulated within termination
- Substantial reinforcing spring at cable termination
- Single bit compression
- Transparent PVC cover for easy maintenance

/ ALUFLEX LEAD CONFIGURATION PROCESS

*LEAD STANDARD ENA TS 41-21

REQUIRED LENGTH

Cables at any lengths

ALUFLEX COLOUR

Choose from Clear, Orange, Blue, Green, or Reflect coloured pvc Aluflex lead

REQUIRED TERMINATIONS

We supply variety of different terminations to suite your exact application

REQUIRED LINE END CLAMP

Select the Line End Clamps required for your application

REQUIRED EARTH END CLAMP

Select the Earth End Clamps required for your application



/ 50sqmm ARCTIC ORANGE ALUFLEX LEAD

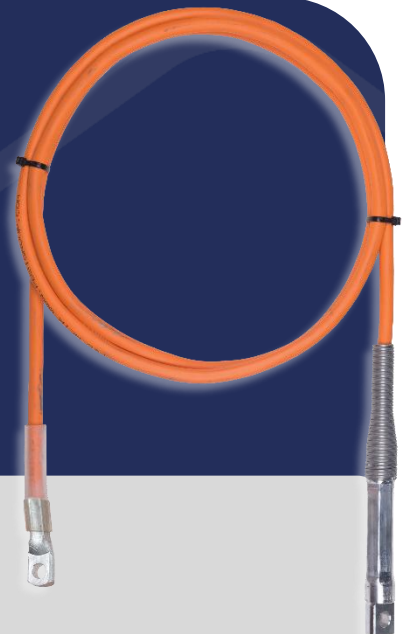
Reference	Short Circuit Rating	Cont. Current Rating	Weight per metre
Various	8.9kA/1s	150A	0.190kg

/ 50sqmm ARCTIC ORANGE FIELD DRAIN EARTH

The flexible earth lead comes with tested and approved PB50T & PB50 compression terminations and stress relief spring/sleeve.

/ TECHNICAL SPECIFICATION

Reference	Short Circuit Rating	Cont. Current Rating	Weight per Metre
Various	8.9kA/ 1s	150A	0.190kg





SUBSTATION EARTHING EQUIPMENT EARTHING LEADS



/ 150sqmm CLEAR ALUFLEX LEADS

Reference	Short Circuit Rating	Cont. Current Rating	Weight per metre
<i>Various</i>	25kA/ 1s & 17.5kA/2s	350A	0.6kg

/ OTHER AVAILABLE FIELD EQUIPMENT EARTH ACCESSORIES INCLUDE

Earth Spike	Robust galvanised steel with capacity for up to five Earth leads.
Earth Rod	Copper clad Steel Rods which can be clustered to form an earth nest.
Pan Handle	Bolted Earth Connection (aluminium)



/PB50 ALU. TERMINATIONS

Suitable for 50sqmm Aluflex cables.



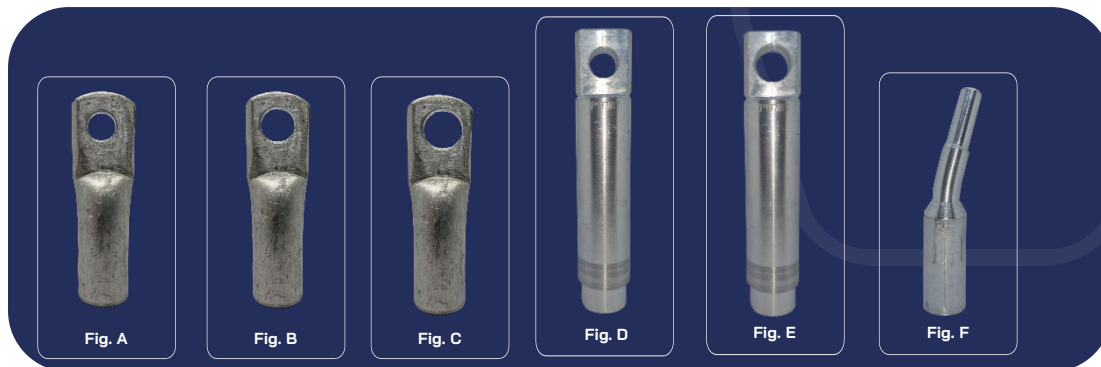
Reference	Description	Figure	Strain Relief Type	Compatible Cable	Weight
EMP-07880/1	PB50 Alu. Termination ø11 Hole	A	50sqmm Strain Relief (6112-01)	50sqmm Aluflex Leads	0.06kg
EMP-07880/2	PB50 Alu. Termination ø12 Hole	B	50sqmm Strain Relief (6112-01)		0.06kg
EMP-07880/3	PB50 Alu. Termination ø13 Hole	C	50sqmm Strain Relief (6112-01)		0.06kg
EMP-07884/1	PB50T Alu. Termination With ø11-Dia Hole	D	50sqmm Tension Spring (EBL-16548)		0.13kg
EMC-07887	PB50S Termination Lug	E	50sqmm Strain Relief (6112-01)		0.06kg
EMP-07886	PB50F Ferrule Terminal	F	50sqmm Strain Relief (6112-01)		0.03kg

	Catalogue Number
PB50 Alu. Termination ø11 Hole	383508
PB50 Alu. Termination ø12 Hole	383509
PB50 Alu. Termination ø13 Hole	383510
PB50T Alu. Termination With ø11-Dia Hole	390355
PB50S Termination Lug	383399
PB50F Ferrule Terminal	383519



/ PB70 ALU. TERMINATIONS

Suitable for 70sqmm Aluflex cables.



Reference	Description	Figure	Strain Relief Type	Compatible Cable	Weight
EMP-07883/1	PB70 Alu. Termination $\varnothing 11$ Hole	A	50sqmm Strain Relief (6112-01)	70sqmm Aluflex Leads	0.06kg
EMP-07883/2	PB70 Alu. Termination $\varnothing 12$ Hole	B	70sqmm Strain Relief (EBT-16112)		0.06kg
EMP-07883/3	PB70 Alu. Termination $\varnothing 13.25$ Hole	C	70sqmm Strain Relief (EBT-16112)		0.06kg
EMP-07892/1	PB70T Alu. Termination $\varnothing 11$ Hole	D	50sqmm Tension Spring (EBL-16548)		0.13kg
EMP-07892	PB70T Alu. Termination With $\varnothing 13$ Hole	E	150sqmm Tension Spring (EBP-14714)		0.13kg
EMP-07893	PB70F Alu. Ferrule Termination	F	50sqmm Strain Relief (6112-01)		0.03kg

	Catalogue Number
PB50 Alu. Termination $\varnothing 11$ Hole	383515
PB50 Alu. Termination $\varnothing 12$ Hole	390353
PB50 Alu. Termination $\varnothing 13$ Hole	393031
PB50T Alu. Termination With $\varnothing 11$ -Dia Hole	390359
PB50S Termination Lug	393033
PB50F Ferrule Terminal	383523



/PB95T ALU. TERMINATION

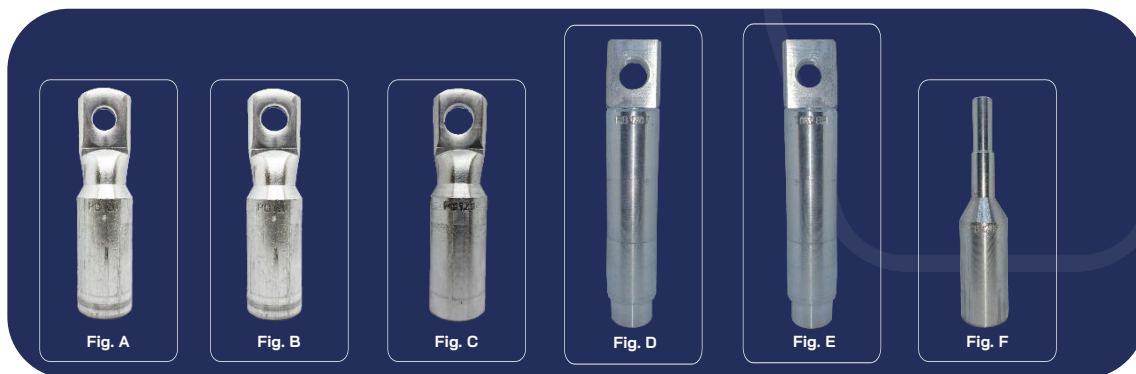
Suitable for 95sqmm Aluflex Cable.



Reference	Catalogue Number	Description	Figure	Strain Relief Type	Compatible Cable	Weight
EMP-07889/1	383521	PB95T Alu. Termination With $\varnothing 11$ Hole	A	150sqmm Tension Spring (EBP-14714)	95sqmm Aluflex Leads	0.13kg
EMP-07889	383520	PB95T Alu. Termination With $\varnothing 13$ Hole	B	150sqmm Tension Spring (EBP-14714)		0.13kg
EMP-07889/2	390357	PB95T Alu. Termination With $\varnothing 13$ Hole -Long Palm	C	150sqmm Tension Spring (EBP-14714)		0.13kg
EMP-07897	383525	PB95F Ferrule Termination	D	150sqmm Tension Spring (EBP-14714)		0.13kg

/PB120 ALU. TERMINATION

Suitable for 120sqmm Aluflex Cable.



Reference	Catalogue Number	Description	Figure	Strain Relief Type	Compatible Cable	Weight
EMP-07881/1	383511	PB120 Alu. Termination $\varnothing 11$ Hole	A	120sqmm Strain Relief (6112-02)	120sqmm Aluflex Leads	0.06kg
EMP-07881/2	390352	PB120 Alu. Termination $\varnothing 12$ Hole	B	120sqmm Strain Relief (6112-02)		0.06kg
EMP-07881/3	383512	PB120 Alu. Termination $\varnothing 13.25$ Hole	C	120sqmm Strain Relief (6112-02)		0.06kg
EMP-07885/1	383518	PB120T Alu. Termination with $\varnothing 11$ Hole	D	120sqmm Support Springs (4906)		0.13kg
EMP-07885	383517	PB120T Alu. Termination with $\varnothing 13$ Hole	E	120sqmm Support Springs (4906)		0.13kg
EMP-07891	383522	PB120F Ferrule Termination	F	120sqmm Strain Relief (6112-02)		0.06kg



/ PB150T ALU. TERMINATION: ESI-T1

Suitable for 150sqmm Aluflex Cable.



Reference	Catalogue Number	Description	Figure	Strain Relief Type	Compatible Cable	Weight
EMP-07882	383513	PB150T Alu. Termination : ESI-T1	A	150sqmm Tension Spring (EBP-14714)	150sqmm Aluflex Leads	0.13kg
EMP-07882/2	383514	SP150 Termination - Extra Long Palm	B	150sqmm Tension Spring (EBP-14714)		0.13kg



/ 50sqmm STRAIN RELIEF

Suitable for 50sqmm Aluflex Cables.



Reference	6112-01
Catalogue Number	381971

/70sqmm STRAIN RELIEF

Suitable for 70sqmm Aluflex Cables.



Reference	EBT-16112
Catalogue Number	383157

/120sqmm STRAIN RELIEF

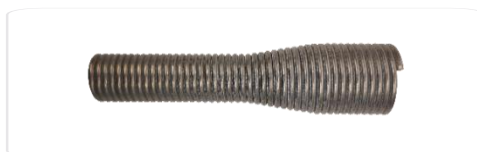
Suitable for 120sqmm Aluflex Cables.



Reference	6112-02
Catalogue Number	381972

/50sqmm TENSION SPRING

Suitable for 120sqmm Aluflex Cables.



Reference	EBL-16548
Catalogue Number	383076

/120sqmm TENSION SPRING

Suitable for 120sqmm Aluflex Cables.



Reference	4906
Catalogue Number	381959

/150sqmm TENSION SPRING

Suitable for 150sqmm Aluflex Cables.



Reference	EBP-14714
Catalogue Number	383102

Note: Short circuit and continuous current data is not quoted for terminations, as the method and quality of a third party compression cannot be guaranteed to replicate our in-house termination process for leads, as per our own type-tested products (see Aluflex Leads section).



SUBSTATION EARTHING EQUIPMENT OPERATING POLE

PENTA Electrical Safety Products offers a range of Operating Poles suitable for 66-400kV use in accordance with ENA Technical Specification 41-21. These include single 8ft (2.44m) sections and single 4ft (1.22m) sections Poles, which can be interconnected to form the required length on site comprising bottom (with a handgrip), intermediate and top sections. Our operating poles are manufactured from lightweight resin-impregnated fibreglass of a high electrical insulation grade and employ precision joints to reduce deflection and improve handling.

Operating poles are available as 8ft (2.44m) top and bottom single sections or two 1.22m (4ft) sections permanently linked. Most commonly used are 4' (1.22m) sections due to their ease of transportation and the flexibility they offer when erecting on-site to suit busbar height. The top section should be fitted with an S9D or CEA/S2 Operating Socket.

Advantages

- Lightweight
- Precision machined for rigidity
- High electrical resistance



/ 8ft (2.44m) TOP POLE SECTION

8ft pole with foam filled also available.

Reference	Material	Catalogue Number	Length	Compatible with	Weight
FA1346-E	Glass cloth reinforced epoxy resin tubing	393089	8ft (2.44m)	S9D and CEA/S2 Sockets	1.40kg
FA1346-E FOAM FILLED		390586			1.54kg



/ 8ft (2.44m) BOTTOM POLE SECTION

Reference	Material	Length	Compatible with	Weight
FA1322-H	Glass cloth reinforced epoxy resin tubing	8ft (2.44m)	S9D and CEA/S2 Sockets	1.40kg

Reference	Catalogue Number
FA1322-H	383869



/ P&B STYLE 4ft (1.22m) TOP POLE SECTION

Reference	Material	Catalogue Number	Length	Compatible with	Weight
EBR-18101/4	Glass cloth reinforced epoxy resin tubing	383121	4ft (1.22m)	S9D and CEA/S2 Sockets	0.70kg

Catalogue Number	383121
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/ P&B STYLE 4ft (1.22m) INTERMEDIATE POLE SECTION

Reference	With Grip	Material	Length	Weight
EAR-18103/1	No	Glass cloth reinforced epoxy resin tubing	4ft (1.22m)	0.70kg
EAR-18103/3	Yes			

Catalogue Number	
382929 (EAR-18103/1)	382931 (EAR-18103/3)



/ P&B STYLE 4ft (1.22m) BOTTOM POLE SECTION

Reference	With Grip	Material	Length	Weight
EAR-18103/4	No	Glass cloth reinforced epoxy resin tubing	4ft (1.22m)	0.70kg
EAR-18103/2	Yes			

Catalogue Number	
382932 (EAR-18103/4)	382930 (EAR-18103/2)



/ REMOVABLE POLE END PLUG

Reference	Catalogue Number	Compatible with	Weight
EAR-18106	382933	S9D and CEA/S2 Sockets	1.380kg



/ 8ft (2.44m) POLE (2x4ft SECTIONS JOINED BY CHAIN)

Compatible with other P&B style substation poles.

/ TECHNICAL SPECIFICATION

Reference	Catalogue Number	Sections Available	Compatible with	Weight
EFR-18104/3	383291	Used as single-pole only	S9D and CEA/S2 Sockets	1.38kg



/ 2ft SPECIAL POLE ASSEMBLIES FOR EARTH TAPE BRIDGING KITS

Special 2ft (0.6m) long upper and lower operating pole sections Identified by blue pigmented open weave hand grip.

/ TECHNICAL SPECIFICATION

Reference	Catalogue Number	Description
EFR-18114	383292	Special 2ft upper pole section operating pole c/w blue pigmented open weave hand grip. Fitted with OL1 Socket and Rain shield. Suitable for earth tape bridging kit.
EFR-18115	383293	Special 2ft lower section operating pole c/w blue pigmented open weave hand grip. Suitable for Earth Tape Bridging Kit.





SUBSTATION EARTHING EQUIPMENT OPERATING POLE SOCKETS

PENTA Electrical Safety Products operating socket type S9D in accordance with ENA Technical Specification 41-21, supports Line End clamps being applied in an upward direction. It provides a quick deployment when used in conjunction with smaller clamps which have a 'NIB', this saves fully opening the clamp in order to fit the busbar. When the clamp is fully tightened, the socket should be pushed gently up towards the clamp, whilst maintaining the tightening pressure and the socket will then automatically disengage and the Operating Pole can be lowered.

Socket type CEA/S2 is an alternative type to the S9D where the operating screw of the Line End clamp is controlled by means of a sprung loaded plunger in the socket. This is suitable for use in any direction of application due to greater security of the clamp within the socket. Again manufactured and tested in accordance with ENA Technical Specification 41-21, it is also particularly suited to the application of the larger clamps.

Advantages

- Solid construction for extended service
- Proven service record used by ESI for over 50 years
- Lightweight and excellent corrosion resistance
- In accordance with ENA 41-21



/ CEA/S2 : ESI - S2 OPERATING SOCKET

Suitable for fitting substation Line End clamps (with short taper operating screws) in any direction. Spring loaded bayonet profile for secure location.

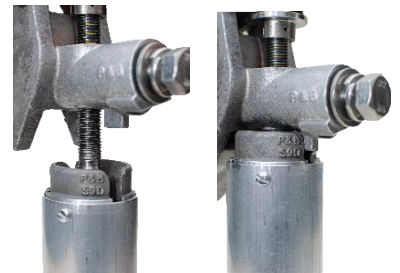


Reference	Catalogue Number	Weight
EFS-11203	383305	0.38kg



/ S9D/ ESI-S1 OPERATING SOCKET

Suitable for fitting substation Line End clamps (with short taper operating screws) in an upward direction. Quick deployment feature.



Reference	Catalogue Number	Weight
FA1097-B	383866	0.30kg

Clamp 'NIB' engages in the S9D socket to locate the clamp whilst being raised into position. The clamp does not require being fully opened/unscrewed as the socket controls the clamp whilst being fitted over the busbar.

Once the clamp fits over the busbar the socket releases the nib and allows the clamp to be tightened by rotating the Operating Pole. Once the springs upon the clamp are tightened a slight upward motion whilst maintaining tightening pressure will release the clamp.



SUBSTATION EARTHING EQUIPMENT

EARTH TAPE KITS

These portable earthing kits have been developed to provide safe and secure high voltage connections to dirty or heavy oxidized copper/aluminium earth tapes. The CE57 Earth Tape clamp provides a drain earth before fitting a bridging earth suitable for fault protection, conductor sizes ranging from 25x3mm to 100x6mm are accommodated.

Earth tape defects range from deterioration of welded underground jointed interfaces on an earthing grid, high resistance connections between a tape and the primary plant or unauthorised removal leaving breaks in the system. PENTA P&B supply kits to aid safe repairs of Earth Tapes.

Advantages

- Conductor range 66kV to 400kV
- In accordance with National Grid NSI 24

/ NSI 24 TEMPORARY EARTH BOND KIT

Comprising:

- 1x CE57 Earth Tape Clamp
- 2x 8m 50sqmm Blue Aluflex Leads
- 1x CE20/2 Clamp
- 1x 2ft Bottom Pole
- 1x 2ft Upper Pole c/w Socket
- 1x PVC Carry Bag

Reference	Short Circuit Rating	Continuous Current Rating
MISC-00021	16kA/1s	300A

This kit can be used as an NSI26 Earth.

Catalogue Number	393206
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/ NSI24 EARTH TAPE REPAIR KIT WITH CLEAR LEADS

Comprising:

- 1x CE57 Earth Tape Clamp
- 1x CE20/2 Clamp
- 2x 8m Clear 50sq mm Leads
- 1x 2ft Upper Pole Assembly c/w Socket
- 1x 2ft Lower Pole Assembly
- 1x PVC Carrying Bag

Reference	Short Circuit Rating	Continuous Current Rating
MISC-00100	16kA/1s	300A

Catalogue Number	391539
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/ EARTH TAPE REPAIR KITS FOR NIE

Comprising:

- 2x S9A/A/LT/PT/135H Clamp
- 1x CE57 Drain Earth Clamp
- 4x CE20/2 Clamp
- 4x 150sqmm Clear Lead 8.00m
- 2x 50sqmm Artic Blue Lead

Reference	Catalogue Number
FA1322-H	383869



Additional Clamps for Special Applications



/ CE5/B/ST/105H CLAMP

Reference	Material	Conductor size	Specification	S/C Rating
EFP-10911/2	Bronze	12.7mm – 25.4mm	Short taper Op. Screw	12kA/ 1s

Catalogue Number	390086
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/ E4 SCAFFOLD CLAMP

Reference	Clamping Diameter	Short Circuit Rating	Cont. Current Rating	Weight
FA3736-A	20-50mm	8.9kA/1s	150A	0.659kg

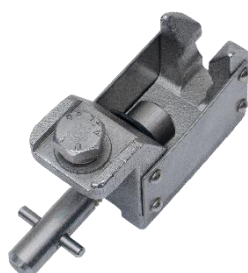
Catalogue Number	383928
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/ CE12/A/ST/135H CLAMP

Reference	Material	Conductor Size	Short Circuit Rating
FA3190-A	Aluminium	Up to 20mm bars Up to 15mm dia.	25kA/1s 17.5kA/2s

Catalogue Number	383909
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/ CE30 PRECIPITATOR EARTH CLAMP

Suitable to fit Earth ballstub using a GS1 Operating Socket.

Reference	Catalogue Number	Material
FA2540	383896	Stainless Steel



SUBSTATION EARTHING EQUIPMENT EARTHING SPIGOT

All PENTA Electrical Safety Products Spigots are designed to be permanently fitted to a new or existing busbar.

The PENTA Electrical Safety Products spigots have a proven track record of assurance and quality, which has been fully approved and tested by the National Grid and are in use throughout the UK substations.

PERFORMANCE CHARACTERISTIC

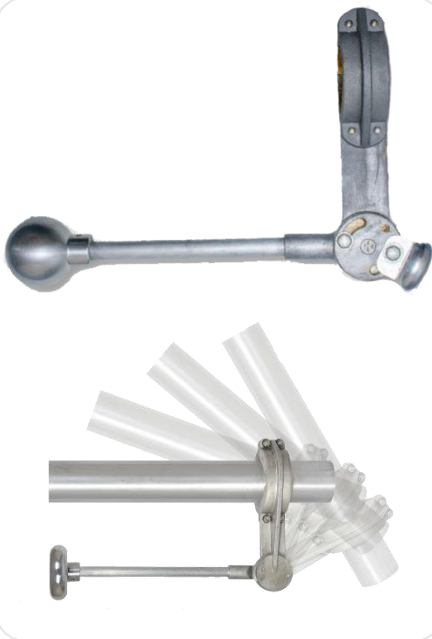
- 1kN Mechanical Load
- 900 Amps Continuous Current Rating
- RIV and Corona Discharge Test @ 400kV Rating
- 80kA/1s Short Circuit Rating including a peak at 200kA
- 40kA/3s Short Circuit Rating including a peak at 100kA



/ BOLT ON CORONA SHIELDS FOR SPIGOTS

Aluminium Corona Shields fully tested available models for 275kV and 400kV.

Reference	Catalogue Number	Description	Voltage Rating
A2617-A	388891	Stress Cone Bolted	275kV
EFF-16701	383246	Spigot & Corona Assy	400kV



/ SUSPENDED BUSBAR SPIGOT

This Spigot range is designed to be permanently fitted to new or existing busbars. It accommodates up to five PENTA P&B Clamps suitable for 38mm (CE22/A or CE22/A+B), reducing the need for heavier large-diameter clamps.

Suitable for busbar at any angle up to 60°.

Advantage

- Lightweight
- Can be set up by one person
- Suitable for existing and new busbars

Reference	Body Part Number	Spigot Part Number	Busbar Size (mm)
CE75/250	EFF-16771	EFF-16780	250
CE75/220	EFF-16772	EFF-16780	220
CE76/200	EFF-16773	EFF-16780	200
CE76/190	EFF-16774	EFF-16780	190
CE76/160	EFF-16775	EFF-16780	160
CE77/140	EFF-16776	EFF-16780	140
CE77/127	EFF-16777	EFF-16780	127
CE77/120	EFF-16778	EFF-16780	120
CE77/115	EFF-16779	EFF-16780	115

*** Note: A Suspended Busbar requires both a body and spigot assembly as shown upon the chart.**

Reference	Catalogue Number
EMF-20083	383498



/ TYPE A & B ALUMINIUM SPIGOT

Suitable for 275kV & 400kV insulator post assemblies. Available with varying lengths of Spigots to suit the required rating. Optional Corona Shields available (bolt-on type) for non-shielded applications 275kV or 400kV.



/ TECHNICAL SPECIFICATION

Reference	Catalogue Number	Description	Features
FA2277-A	390628	Spigot Type A/178/290/AL	4-slots 18 wide on a 127mm PCD
FA2277-B	390629	Spigot Type A/127/230/AL	
FA2369-A	390636	Spigot Type B/178/290/AL	4-slots 22 wide on a 178 PCD
FA2369-B	390637	Spigot Type B/178/410/AL	



/ TYPE C SPIGOT

Simple clamp on spigots in aluminium and bronze to provide a suitable Earthing Point on-site from a busbar or stranded conductor. Optional bolt-on Corona Shields available.

Different length 40mm diameter spigots are available to suit required rating.

Reference	Description	Spigot Length	Spigot Diameter	Busbar size
FA2438-A	Spigot Type C/90/230/AL	To suit rating/ Number of Line End clamps	Ø 40mm	90mm
FA2438-B	Spigot Type C/90/165/AL			

Catalogue Number

383892 (FA2438-A)	383893 (FA2438-B)
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/ TYPE D SPIGOT

Type D aluminium Spigot to suit isolator or circuit breaker head.

Reference	Description	Spigot Diameter	Busbar size	Spigot Length
FA2448-A	SPIGOT D/63.5/230/AL	Ø 40mm	Ø 63.5mm	To suit rating/number of Line End clamps

Catalogue Number	383894
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SUBSTATION EARTHING EQUIPMENT

EARTHING SPIGOT



/ TYPE E SPIGOT

Simple clamp on spigot in bronze. Stainless steel fittings optional
bolt-on Corona Shields available.

Catalogue Number	
390641 (FA2447-A)	390642 (FA2447-B)

Reference	Description	Spigot Diameter	Spigot Length	Busbar Size
FA2447-A	Spigot Type E/75/410/BZ	Ø 40mm	Ø 410mm	75mm
FA2447-B	Spigot Type E/75/230/BZ	Ø 40mm	Ø 230mm	75mm



/ TYPE M SPIGOT

Simple clamp on spigot in bronze. Stainless steel fittings optional
bolt-on Corona Shields available.

Catalogue Number	391070
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Reference	Description	Spigot Diameter	Busbar Size
FA3650	Assy Spigot 38mm Busbar	Ø 40mm	38mm

/ TYPE H SUSPENDED BUSBAR ALU. SPIGOT

Underslung design Busbar to provide a standard busbar size to suit a smaller clamp such as the CE22/B or CE22/A+B Line End. Aluminium with stainless steel fittings.

Catalogue Number	383895
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/ TECHNICAL SPECIFICATION

Reference	Description	Spigot Diameter	Busbar Size
FA2528-A	Spigot Type H/140/381/AL	Ø 40mm	140mm





PENTA
ELECTRICAL SAFETY PRODUCTS

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