

# TRANSMISSION LINE EARTHING EQUIPMENT

## CATALOGUE



**PENTA**  
ELECTRICAL SAFETY PRODUCTS

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The PENTA Electrical Safety Products range of equipment for use on transmission lines has a proven track record of many years' service in the electricity supply industry and conforms to the requirements of ENA 41-21.

**Product Benefits**

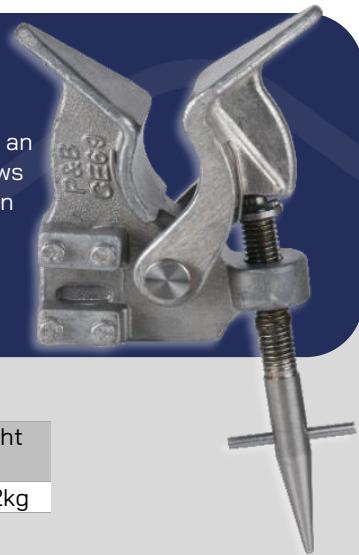
- Solid construction to give extended service
- Proven service record used by the electricity supply industry for more than 40 years
- Lightweight and excellent resistance to corrosion

**TRANSMISSION LINE END CLAMPS**

The Transmission Line range of portable earthing is suitable for temporary earthing of conductors within the range 132kV, 275kV and 400kV.

## / CE69 LINE END CLAMP

The CE69 clamp is to be applied in either an upward or downward direction utilising an OL1 operating socket attached to an insulated operating pole. The spring-loaded jaws enable the clamp to be slipped easily over the line conductor and retain the clamp in position whilst the operating screw is being tightened or loosened. The clamp is suitable for application to conductors ranging from 13mm to 46mm.

**/ TECHNICAL SPECIFICATION**

Reference	Clamping Diameter	Short Circuit Rating	Cont. Current Rating	Weight
EFP-16743	13 – 46mm	20kA/ 1s	300A	0.632kg

*Applied in either an upward or downward direction using an OL1 Socket.*

Catalogue Number  
383281



## / CE13 LINE END CLAMP

The CE13/A Line End clamp attaches to an OL1 operating socket and is designed to be applied in a nearly horizontal position, from the tower cross arm over tension set insulators to the conductor. The CE13/A clamp accommodates a range of conductors from 19mm to 42mm.

Reference	Clamping Diameter	Short Circuit Rating	Cont. Current Rating	Weight
EFP-11868	19 – 42mm	20kA/ 1s	300A	0.996kg

*Angled jaws allow application from a near-horizontal position.*

Catalogue Number  
393003



## TRANSMISSION LINE EARTHING EQUIPMENT

### LINE END CLAMP



#### / CE81 LINE END CLAMP

Designed for large special conductors such as used for river crossings and CCC conductor with double 'Armour Rods'. The CE81 Line End clamp is to be applied in either an upward or downward direction using an OL1 operating socket attached to an insulated operating pole. The spring-loaded jaws enable the clamp to be slipped easily over the line conductor and retain the clamp in position whilst the operating screw is being tightened or loosened.

Reference	Short Circuit Rating	Cont. Current Rating	Weight
EFP-16790	20kA/ 1s	300A	0.861kg

*The clamp is suitable for application to conductors ranging from 46mm to 86mm diameter.*

Catalogue Number
383286



## TRANSMISSION LINE EARTHING EQUIPMENT

### EARTH END CLAMP



#### / CE10/A2 EARTH END CLAMP

The CE10/A2 clamp is for direct application by hand to steelwork. The large thumbscrew of the device has a captive hardened steel tip which penetrates through painted, weathered or non-conductive surfaces and indents into the steelwork, ensuring a strong connection to earth potential.

Reference	Patent Reference	Short Circuit Rating	Cont. Current Rating	Weight
EFP-11173/1	GB2463506	8.9kA/ 1s	150A	0.401kg

*Hardened steel tip penetrates non-conductive surfaces for a strong connection.*

Catalogue Number
383269



#### / CE18/A BRIDGING CLAMP

The CE18/A clamp is for earthing the conductor over the tension set insulators to the tower arm coupling during maintenance. It bolts to the coupling through the clearance hole for the arcing horn bolt, which is removed before earthing.

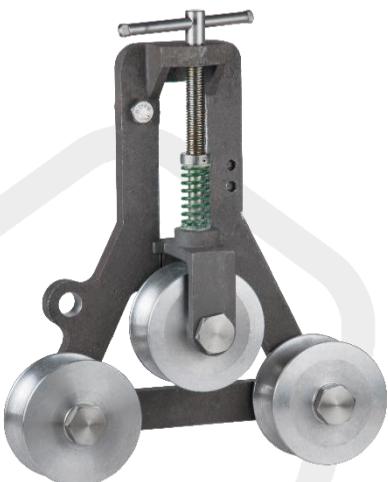
Reference	Short Circuit Rating	Cont. Current Rating	Weight
FA2043-C	8.9kA/ 1s	150A	0.331kg

Catalogue Number
383881



## TRANSMISSION LINE EARTHING EQUIPMENT

### EARTH END CLAMP



### / CE23/A RUNNING EARTH CLAMP

The CE23/A Running Earth clamp is designed specifically for earthing line conductors during "stringing" operations. The CE23/A Running Earth enables the cable to run freely between contact roller faces whilst providing a positive contact to earth.

The earth is anchored to a convenient position using the lanyard locating hole. The maximum size of a conductor that can be accommodated is 42mm. The CE23/A has a short circuit rating of 18kA/1s and a continuous current rating of 300A.

Improved cable fixing location offers improved strength, suitable for PB50 and PB120 palm terminations.

Reference	Clamping Diameter	Short Circuit Rating	Cont. Current Rating	Weight
FA2127	Up to 42mm	20kA/ 1s	300A	4.758kg

*Enables to run freely whilst providing a positive contact to earth.*

Catalogue Number 383883



## TRANSMISSION LINE EARTHING EQUIPMENT

### OPERATING POLES

PENTA Electrical Safety Products offers a range of operating poles suitable for 66-400kV for Transmission Line use. These include 8/16ft telescopic poles, 6ft extensions, 2ft bridging poles and approved single section dedicated pole sets for easy clip together assembly.

The two-part telescopic pole has an extended length of 4.83m (15' 10") and a closed length of 2.55m (8' 4"). Intermediate spring-loaded locking pegs provide partially extended lengths of 4m (13' 1") and 4.4m (14' 5"). The pole requires an OL1 operating socket for the application of our line end clamps with long taper style operating screws.

A 0.6m (2') bridging earth pole is available with a rain shield fitted above the open weave bonded hand grip and a swivelling eye fitting at the bottom of the pole. The pole employs an operating socket for application of our line end clamps with long taper type operating screws.

#### Product Benefits

- Open weave hand grips
- Rain shield available
- 'Snap action' button joints
- Lightweight rigid sections



### / 2FT BRIDGING POLES

0.6m (2 ft) Bridging Pole assembly.

Reference	Catalogue Number	Operating Socket	Total Length	Weight
EFR-18109	393008	PB331	2ft / 0.6m	0.98kg
EFR-18109/1	407475	GS1		

*Supplied with Operating socket, Rain Shield and Swivel Eye Fitting.*



## / 8FT /16FT TELESCOPIC POLE WITH OL1 SOCKET & SLING

The two-part telescopic pole has an extended length of 4.83m (15' 10") and a closed length of 2.54m (8' 4"). Intermediate spring-loaded locking pegs provide partially extended lengths of 4m (13' 1") and 4.4m (14' 5"). The pole is supplied with an OL1 operating socket for the application of our Line End clamps with long taper style operating screws.

Extended Length	Retracted Length	Operating Socket needed	Weight
16 ft / 4.83m	8 ft / 2.54m	OL1 socket	3.40kg

### / REFERENCE

	Catalogue Number
With OL1 Socket	FA1816-B
Without OL1 Socket	FA1816-B-01

*Supplied with a carry sling.*

## / 8FT /16FT TELESCOPIC POLE

Extended Length	Retracted Length	Operating Socket needed	Weight
16 ft / 4.83m	8 ft / 2.54m	OL1 socket	3.17kg

### / REFERENCE

	Catalogue Number
With OL1 Socket	FA1816-A
Without OL1 Socket	FA1816-A-01

*Can be supplied with or without an OL1 Socket  
Does not include a carry sling.*



## / OL1 OPERATING SOCKET

Suitable for fitting Long Taper Clamps, spring Loaded.

Reference	Pole Type	Op-screw type	Weight
FA1200-B	P&B Style	Long taper	0.23kg

*Suitable CE13/A, CE69 and CE81 Line End clamps.*

Catalogue Number	383867
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## / 6FT POLE WITH SLING

Attaches to the 8/16ft Telescopic Pole to extend overall length to 22ft / 6.7m.

Supplied with a carry sling.



### / TECHNICAL SPECIFICATION

Reference	Total Length	Weight
FA1817-A	6ft / 1.8m	1.68kg

Catalogue Number 393095

## / 6FT OPERATING POLE WITHOUT SLING

Attaches to the 8/16ft Telescopic Pole to extend overall length to 22ft / 6.7m.

Reference	Total Length	Weight
FA1817-B	6ft / 1.8m	1.6kg

Catalogue Number 393096

*Does not include carry sling.*





The CE60 Sparrow Plate is a multiple-earth tower bonding plate. Designed for the control of induced currents, to manage short circuits upon adjacent circuits, protect in the event of re-energisation of the circuit being worked upon and provide a common point of earthing connection for portable drain earths, equipment and platforms by removal of step and touch potentials.

PENTA Electrical Safety Products currently offers two types of Sparrow plate, the MK1 (pre-2014) and the MK2 (post-2014). Contact us more for more information on which version you require full refurbishment and repair service also available.

#### Product Benefits

- Lightweight aluminium alloy
- Good corrosion resistance
- PB50F and PB120F ferrule compatible



#### / CE60 SPARROW PLATE MK1 (PRE-2014)

Fits up to six portable Line Earth with PB50F Ferrule terminations and up to six further equipment earth. Provision for up to four interconnecting leads (120sqmm) with PB120 terminations.

Reference	Catalogue Number	Cont. Current Rating	Short Circuit Rating
EFP-16785	383285	600A	36kA/ 1s

*Bonding lead connections are suitable for Palm terminations only.*

#### / CE60 SPARROW PLATE MK2 (POST-2014)

Fits up to six portable Line Earths and up to six further equipment earth with PB50F terminations. Provision for up to four interconnecting leads (120sqmm) with PB120F terminations.



#### / TECHNICAL SPECIFICATION

Reference	Cont. Current Rating	Short Circuit Rating
EFP-16710	600A	36kA/ 1s
European Registered Design Number	001404578-0001 & 001404578-0002	

*Bonding lead connections are suitable for Ferrule terminations only.*  
Spares: CE60 Sparrow Plate 'back-to-back' fittings kit ref: EAP-20117

Catalogue Number 393006



## /CE61 DEAS BAR

Insulated Earthing bar for use in the dead-end arcing horn bolt hole when lowering off tension set insulators. Suitable for use with CE69 Line End, CE18/A Bridging Earth, CE13/A Line End, PB50 terminated leads and CE52 legacy Line End clamps.



### / TECHNICAL SPECIFICATION

Reference	Catalogue Number	Short Circuit Rating	Continuous Current Rating
EFP-16711	383280	9.1kA/ 1s	450A



## / DrESS TEE CONNECTOR ASSEMBLY

To join Sparrow Plate connecting bonds. Compatible with PB120 palm terminations only.

Reference	Short Circuit Rating	Continuous Current Rating	Weight
EFP-16783	36kA/ 1s	600A	0.38kg
Catalogue Number			383284



## / CE84 DrESS TEE CONNECTOR FOR BONDS WITH PB120F FERRULES

To join sparrow plate connecting bonds.  
Compatible with PB120F Ferrule terminations only.

Reference	Short Circuit Rating	Continuous Current Rating
EFP-17528	36kA/ 1s	600A
European Registered Design Number		001404578-0003 & 001404578-0004
Catalogue Number		383287



The PENTA Electrical Safety Products Aluflex Earth leads are wrapped with a layer of P.T.P. tape and covered with an extruded clear P.V.C. sheath. Flexible clear P.V.C. stress-relieving sleeves are fitted to prevent excessive wear around the compression joints. The Earth End to Line End clamp interconnecting lead has a 50sqmm nominal section area, terminated by PB50F type ferrule terminations.

PENTA Electrical Safety Products can supply Aluflex leads in any length required, in a range of sizes including 50sqmm, 120sqmm.

### Advantages

- **Lightweight & flexible**
- **Fully tested and approved to ENA 41-21**
- **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 CLEAR ALUFLEX LEAD



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

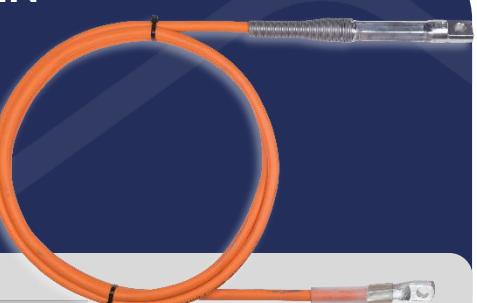
### / 120sqmm CLEAR ALUFLEX LEAD



Reference	Short Circuit Rating	Cont. Current Rating	Weight per Metre
Various	20kA/ 1s	300A	0.390kg

### / 50sqmm ARCTIC ORANGE FIELD DRAIN EARTH

Supplied with PB50 Alu. Termination ø13 Dia. Hole (Ref. EMP-07880/3) & PB50T Alu. Termination with ø13 Dia. Hole (Ref. EMP-07884).



#### / TECHNICAL SPECIFICATION

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

Other lead configurations are available upon request



## TRANSMISSION LINE EARTHING EQUIPMENT

### ALUFLEX LEADS



#### / CE4 SCAFFOLD CLAMP

Reference	Clamping Diameter	Short Circuit Rating	Continuous Current Rating	Weight
FA3736-A	20 – 50mm	8.9kA/ 1s	150A	0.669kg
Catalogue Number		383928		

The PENTA Electrical Safety Products Terminations are manufactured from specially milled and certified material and precision machined in our works, tested rigorously throughout the manufacturing process to ensure quality and performance.



## TRANSMISSION LINE EARTHING EQUIPMENT

### LEAD TERMINATIONS

#### / FERRULE TERMINATIONS

Suitable for 50sqmm, 70sqmm, 95sqmm and 120sqmm Aluflex leads.



Fig. A



Fig. B



Fig. C



Fig. D

Reference	Description	Figure	Strain Relief Type	Compatible Cable	Weight
EMP-07886	PB50F Ferrule Terminal	A	50sqmm Stress Relief Sleeve (6112-01)	50sqmm Aluflex Leads	0.03kg
EMP-07893	PB70F Ferrule Termination	B	50sqmm Stress Relief Sleeve (6112-01)	70sqmm Aluflex Leads	0.03kg
EMP-07897	PB95F Ferrule Termination	C	150sqmm Tension Spring (EBP-14714)	95sqmm Aluflex Leads	0.13kg
EMP-07891	PB120F Ferrule Termination	D	120sqmm Stress Relief Sleeve (6112-02)	120sqmm Aluflex Leads	0.13kg

	Catalogue Number
PB50F Ferrule Terminal	383519
PB70F Alu. Ferrule Termination	383523
PB95F Ferrule Termination	383525
PB120F Ferrule Termination	383522



### / 50sqmm STRESS RELIEF SLEEVES

Suitable for 50sqmm Aluflex Cables.



Reference	6112-01
Catalogue Number	381971

### / 120sqmm STRESS RELIEF SLEEVES

Suitable for 120sqmm Aluflex Cables.



Reference	6112-02
Catalogue Number	381972

### / 120sqmm TENSION SPRING

Suitable for 120sqmm Aluflex Cables.



Reference	4906
Catalogue Number	381959

### / 70sqmm STRESS RELIEF SLEEVES

Suitable for 70sqmm Aluflex Cables.



Reference	EBT-16112
Catalogue Number	383157

### / 50sqmm TENSION SPRING

Suitable for 120sqmm Aluflex Cables.



Reference	EBL-16548
Catalogue Number	383076

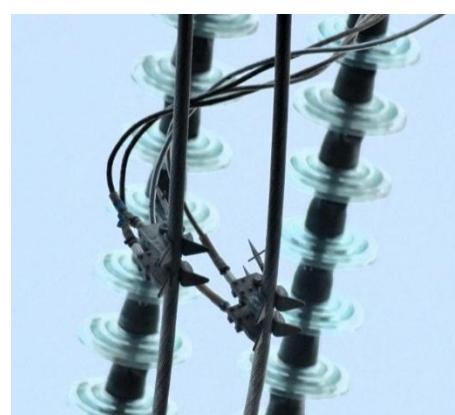
### / 150sqmm TENSION SPRING

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).





## / EARTHING SPIKE

Steel welded construction and galvanised finish.

Reference	Catalogue Number	Weight
FA3174-A	383908	3.8kg



## / REYNOLD AND MEWP PRODUCTS

Part Number	Catalogue Number	Description
EFP-16738	390112	REYNOLDS BOND FOR CONDUCTOR SAMPLING
EFP-16738/1	390113	REYNOLDS BOND FOR HOT JOINT REPAIRS
EFP-16760	390114	MEWP EARTHING KIT (photo enclosed)
EFP-20077	392741	MEWP VEHICLE MODIFICATION KIT
EFP-19306	390121	SUBSTATION DrESS EARTH KIT



MEWP EARTH KIT AND  
THE EARTH SPIKE IN USE ON SITE.



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