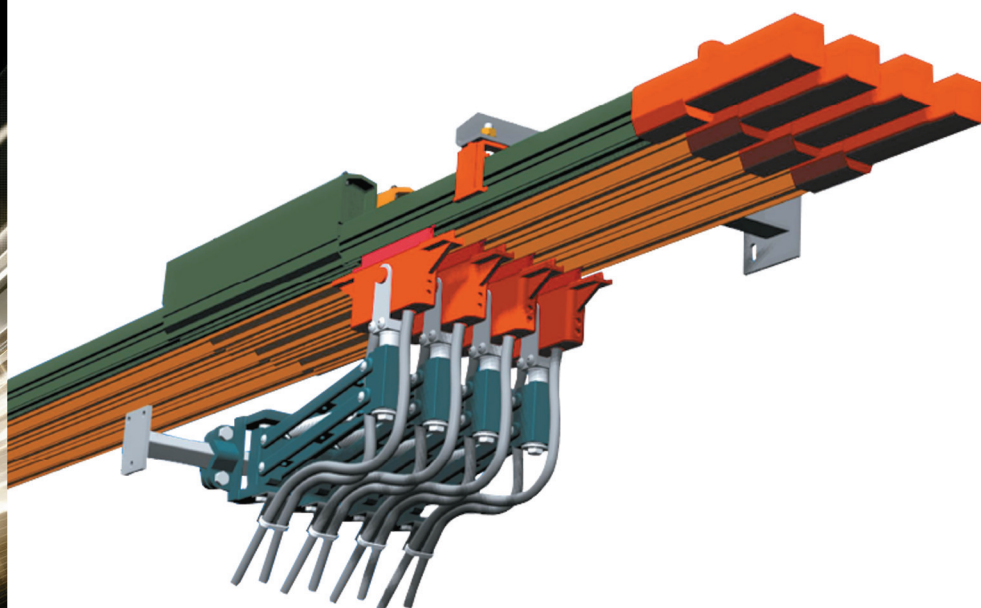


HEVIBAR 3

INSULATED CONDUCTOR BARS
630 up to 1250 Amp



- Finger safe up to IP2
- 630 to 1250 Amp conductors in Standard or Medium Heat cover
- Cover shaped to shed water and dust
- Horizontal conductors with contact from underside
- Bar length: 6 metres
- Systems up to 200 metres without expansion sections
- Reduced and simple maintenance

CONDUCTIX
INSUL 8

DELACHAUX GROUP



Certificate No. FM 21334

HEVIBAR 3

HEVIBAR 3 INSULATED CONDUCTOR BARS

The **CONDUCTOR BAR** engineering unit of **DELACHAUX** Group supplies electrical power feed systems for moving machinery. Easy to install and maintain, **HEVIBAR 3** ensures a high level of reliability. It has been designed to meet safety standards demanded in industry.

Advantages of conductor bars:

- Ability to feed several moving machines from the same conductor system
 - Suitable for high amperage
- Feed points can be placed at any location
 - Compactness
 - Long system length possible
- Suitable for both indoor and outdoor use

Range of application:

Cranes and gantries in workshops, iron and steel industry, foundries, harbours, etc.

HEVIBAR 3 features:

- Easy installation, reduced and simple maintenance
 - Protection degree IP2, finger safe
- Hard wearing, corrosion resistant stainless steel contact surface
- Insulating covers shaped to shed water and dust
 - Standard PVC cover for normal temperatures
 - Medium Heat cover available for high ambient temperatures
- Expansion sections not required for runs less than 200 m
 - Max travel speed: 200 m/min

HEVIBAR 3 complies with the following international standards:
NFC 20.010 – NFC 63.010 – NFC 32.070 – VDE 0470 – BS 5490 – DIN 53438

TYPICAL APPLICATIONS



← 3 cranes operating outdoor on a 456 metres system, comprising 3 x 1250A Phase and 1 x 800A Earth conductor.



↙ Container handling cranes operating outdoor on a 375 metres system. 3 Phase 800A + 1 earth 630A.



300 metres of 800A bar ↑ →
with medium heat cover feeding two steelwork cranes.
Dusty, corrosive and hot (+80°C) environment.
Using insulated hanger clamps supplied pre-fitted to support brackets.



CHANNEL TUNNEL ↑

180 km of HEVIBAR 3 supplied power to the locos throughout construction, taking building materials in and bringing out the excavated earth.

A similar installation was supplied on the French side by our sister company Delachaux.

Collectors mounted on lifting tables.

TECHNICAL DATA

CONDUCTOR BAR	630 A	800 A	1000 A	1250 A
Nominal current at + 25°C	630 A	800 A	1000 A	1250 A
Cross sectional area	328 mm ²	422 mm ²	631 mm ²	783 mm ²
Nominal voltage :				
AC	660 V	660 V	660 V	660 V
DC	750 V	750 V	750 V	750 V
Resistance at 25°C (for DC)	0.000 096 Ω/m	0.000 074 Ω/m	0.000 051 Ω/m	0.000 040 Ω/m
Mounting centres between conductors				
Standard hangers	70 mm	70 mm	70 mm	70 mm
Hangers with insulators	100 mm	100 mm	100 mm	100 mm
Impedance at 25°C (for AC-50Hz):				
70mm centres	0.000167 Ω/m	0.000145 Ω/m	0.000118 Ω/m	0.000106 Ω/m
100mm centres	0.000181 Ω/m	0.000159 Ω/m	0.000132 Ω/m	0.000120 Ω/m
Distance between hangers	3 m	3 m	3 m	3 m
Bar length	6 m	6 m	6 m	6 m
Max. travel speed	200 m/min	200 m/min	200 m/min	200 m/min

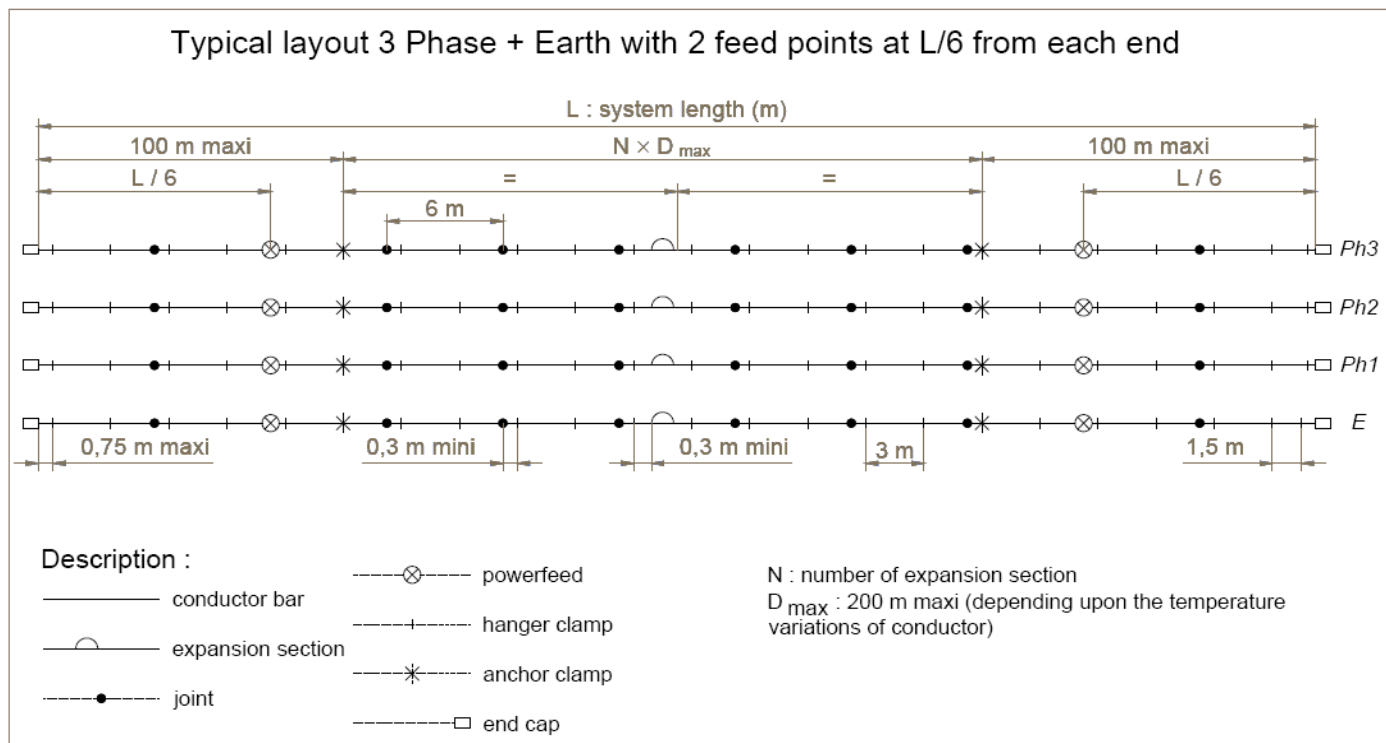
INSULATING COVERS	STANDARD	MEDIUM HEAT
Material	P V C	Noryl
Colour (Phase / Earth)	Orange / Green	Red / Red
Dielectric strength	180 kV / cm	240 kV / cm
Surface resistivity	> 10 ¹¹ Ω	> 10 ¹⁴ Ω
Volume resistivity	> 10 ¹⁵ Ω / cm	> 10 ¹⁶ Ω / cm
Softening temperature	+ 80°C	+ 125 °C
Flame test	Self extinguishing	Self extinguishing
Max. allowable ambient temperature (see below)	- 15 to + 55 °C	- 30 to + 85 °C

FACTOR "K"						
	Ta \ Duty	100%	80%	60%	40%	20%
Standard cover	25°C	1.000	1.118	1.291	1.581	2.236
	35°C	0.905	1.011	1.168	1.430	2.023
	45°C	0.798	0.892	1.030	1.261	1.784
	55°C	0.674	0.754	0.870	1.066	1.508
Medium Heat cover	65°C	0.775	0.866	1.000	1.225	1.732
	75°C	0.707	0.791	0.913	1.118	1.581
	85°C	0.632	0.707	0.816	1.000	1.414

The rating of the conductor (maximum allowable current) depending on the duty factor of the cranes and the max ambient temperature **Ta** can be established using the following formula:

$$I_{\text{allowable}} = \text{nominal current} \times K$$

SYSTEM LAYOUT



SELECTION OF CONDUCTORS

An accurate choice of conductors can only be made when the following are known:

- The type of current: single or 3 Phase AC; DC
- The maximum current and duty cycle
- The allowable volt drop for the machine being supplied
- The ambient temperature and environment (dust, coastal, humid, acidic)

Volt drop calculation ΔU :

3-Phase AC $\Delta U = \sqrt{3} \times I \times D \times Z$

Single Phase AC $\Delta U = 2 \times I \times D \times Z$

Continuous current DC $\Delta U = 2 \times I \times D \times R$

$$\Delta U\% = (\Delta U \times 100) / U_n$$

Where :

ΔU : volt drop in Volt

$\Delta U\%$: volt drop in % of the nominal voltage

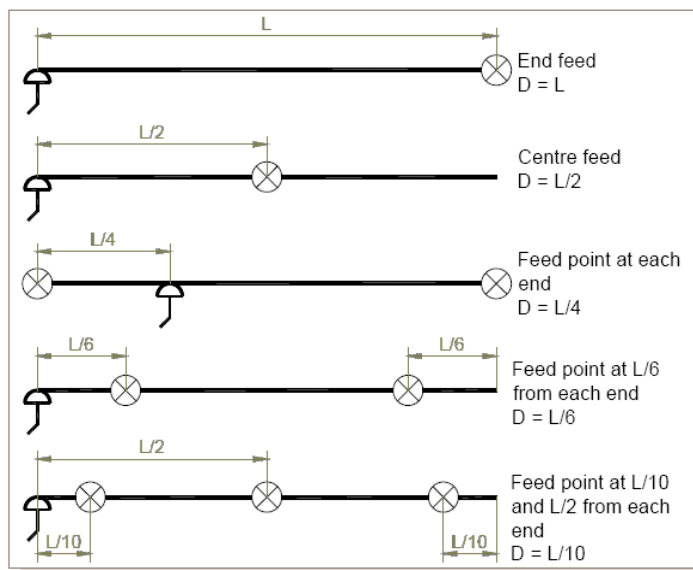
U_n : voltage in Volt

I : maximum current in Amps

D : see opposite diagram

R : resistance in Ohm per metre

Z : impedance in Ohm per metre



ENQUIRY FORM

ELECTRICAL DATA

COMPANY NAME:	CONTACT:
ADDRESS:	POSITION:
.....	Tel. No:
PROJECT:	Fax No:
DATE:	e-mail:

- Voltage: AC - DC V Frequency: Hz
- Number of conductors: Phase Earth
- Position of powerfeed: centre / end / other : qty
 At: meters } from one end
 meters }
 meters }
- Number of machines: Type: crane / gantry / other:

ELECTRICAL LOADS

	MACHINE N°1			MACHINE N°2			MACHINE N°3			MACHINE N°4		
	Current (Amps)		Duty	Current (Amps)		Duty	Current (Amps)		Duty	Current (Amps)		Duty
MOTORS	R	S	%	R	S	%	R	S	%	R	S	%
Hoist												
Cross travel												
Long travel												
Auxiliary												
Others												

- R: running current S: starting current
 - Type of motors: squirrel cage / slip rings / other Inverter drive: Yes / No
 - Allowable volt drop:%

SYSTEM DATA

- Length: metres
- Location: indoor- outdoor
 Humidity (.....%) – Excessive dust – Saline conditions – others:
- Industry:
- Ambient temperature :°C min /°C max
- Max travel speed:metres / min
- Isolation sections: Yes / No Number: Position: *enclose a sketch*

OTHER INFORMATION

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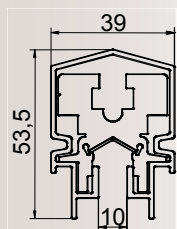
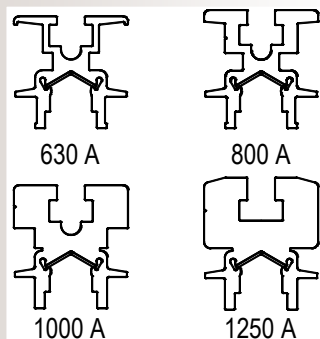
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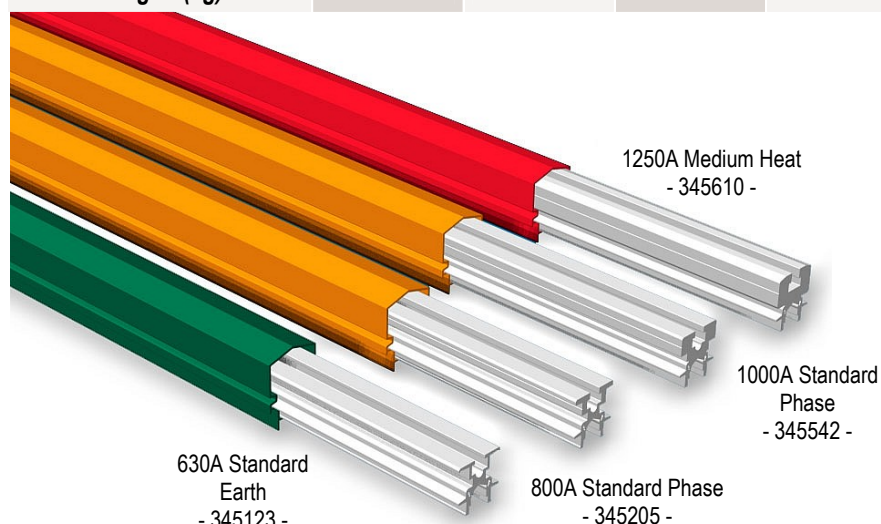
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CONDUCTOR BARS



The outer dimensions are identical for all current ratings.

CURRENT RATING	630 A	800 A	1000 A	1250 A
Standard Phase cover (orange)	345102	345205	345542	345606
Standard Earth cover (green)	345123	345249	345557	345645
Medium Heat cover (red)	345104	345229	345513	345610
Weight (kg)	10.38	12.66	17.28	20.58



EXPANSION SECTIONS

The expansion section consists of a sliding section inserted in a 6 metre long bar.

A series of strips [1] maintains the contact surface and ensures electrical continuity.

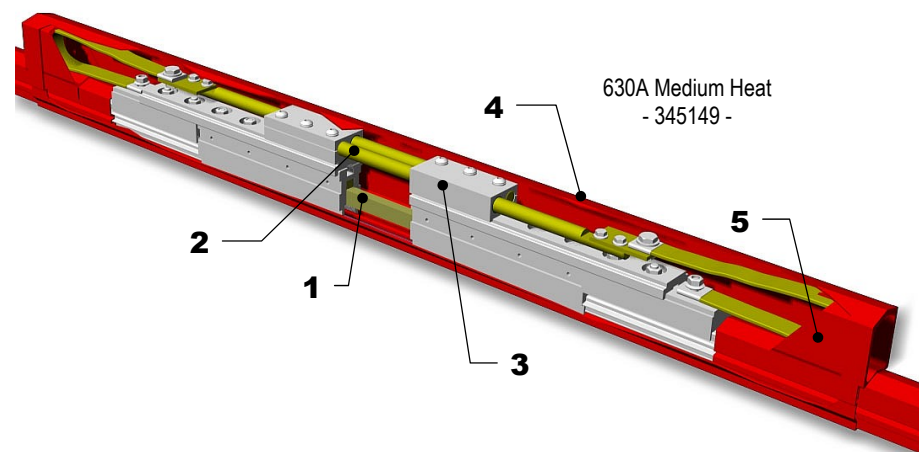
Mechanical guidance is provided by brass spindles [2], which slide within conductive carriers [3].

The maximum gap of the expansion section is 200 mm.
The overall length of the expansion section is 6 metres when gap is set at 100 mm.

A joint cover [4], the ends of which are closed by end caps [5], protects the assembly.

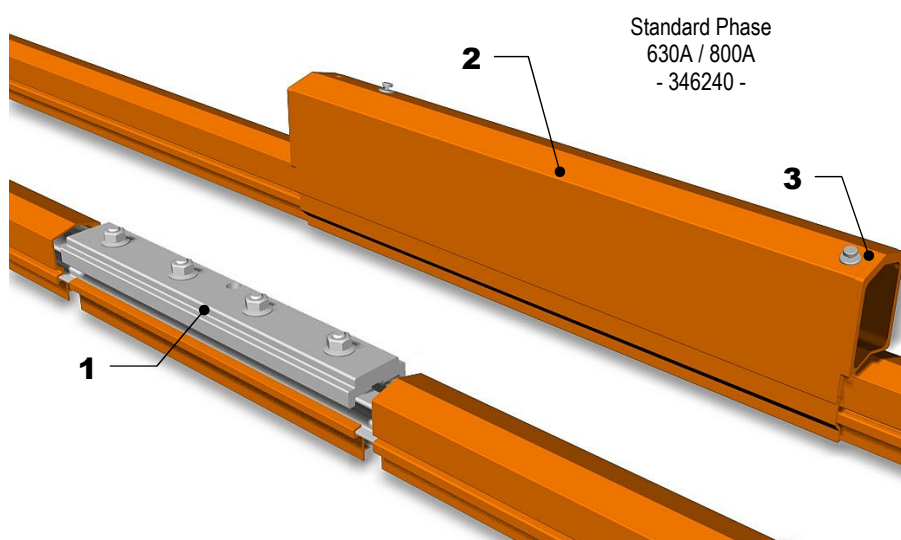
The expansion section is installed in place of one length of conductor bar.

CURRENT RATING	630 A	800 A	1000 A	1250 A
Standard Phase cover (orange)	345135	345250	345575	345660
Standard Earth cover (green)	345140	345260	345580	345665
Medium Heat cover (red)	345149	345265	345585	345670
Weight (kg)	14.00	16.00	20.00	22.00



JOINTS

CURRENT RATING	630A / 800A	1000A / 1250A
Standard Phase cover (orange)	346240	346242
Standard Earth cover (green)	345241	346243
Medium Heat cover (red)	346114	346101
Weight (kg)	0.82	1.10



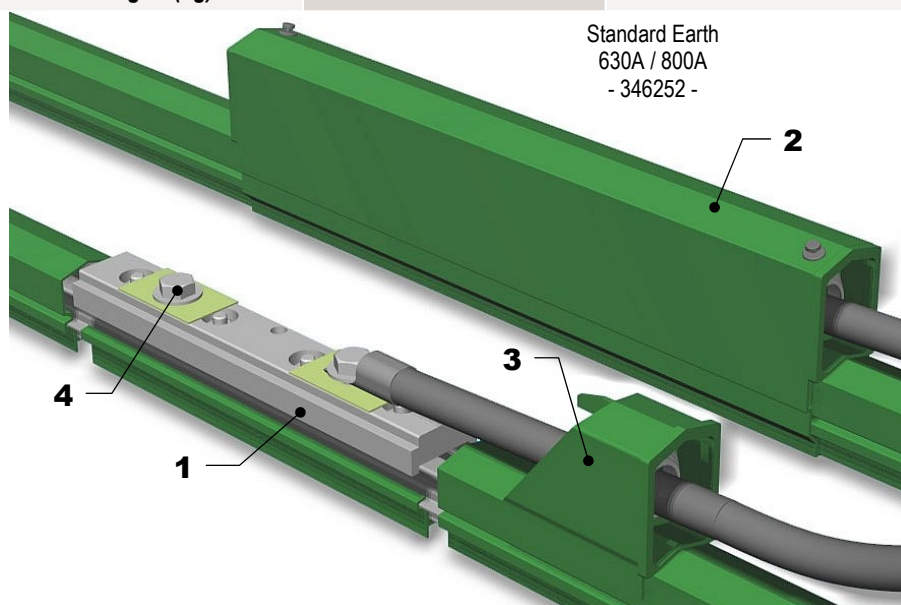
The aluminium joint body [1] ensures correct vertical and horizontal alignment of the contact surface and the electrical continuity.

A joint cover [2], the ends of which are closed by end caps [3], protects the joint.

During installation the contact surfaces of the joint and bar must be coated with electrical jointing compound (to be ordered separately).

POWERFEEDS

CURRENT RATING	630 A / 800 A	1000 A / 1250 A
Standard Phase cover (orange)	346250	346252
Standard Earth cover (green)	346251	346253
Medium Heat cover (red)	346116	346180
Weight (kg)	0.96	1.18



Powerfeed for connection of one or two flexible cables.

If the powerfeed is located near an anchor point, rigid cable may be used.

The aluminium body [1] ensures both vertical and horizontal alignment of the contact strip.

A cover [2] and two end caps [3] which are fitted with grommets to seal the cable entry protect the powerfeed.

Cable terminates onto screws [4].

Powerfeed is usually installed in place of a joint.

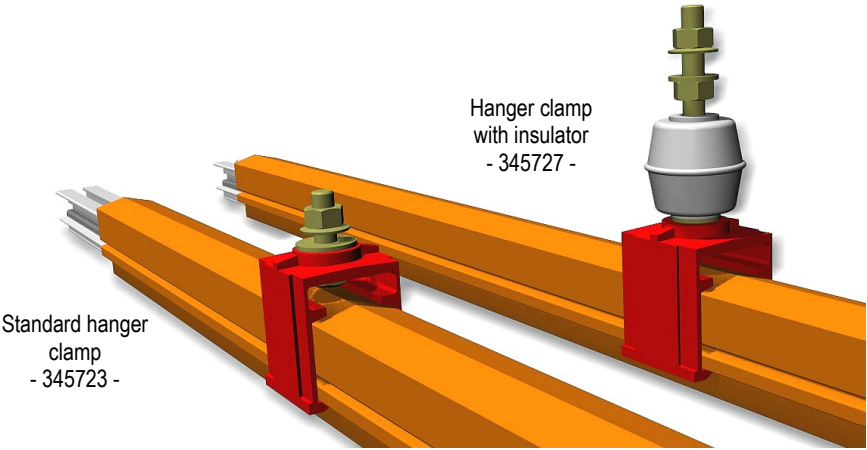
HANGER CLAMPS

TYPE	STANDARD	WITH INSULATOR
Code	345723	345727
Weight (kg)	0.11	0.28

Hanger clamp of medium heat plastic.

Hanger clamp can swivel around its shouldered fitting bolt. This allows the self-orientation of the hangers in relation to the conductors.

In particularly dusty or humid environments, hangers with insulator should be used.



ANCHOR CLAMP

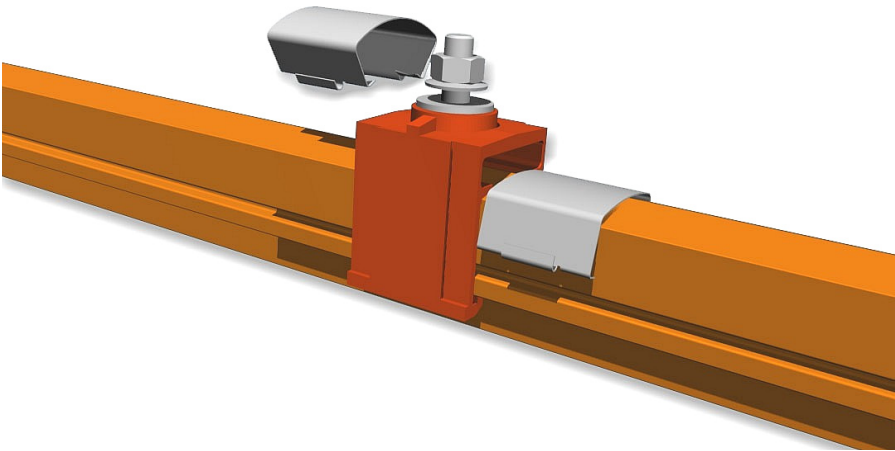
Ordered in pairs

Code	349045
Weight (kg)	0.02

An anchor point is formed when an anchor clamp is located either side of a hanger clamp.

The anchor point (1 at least per conductor) is usually in the middle of the system.

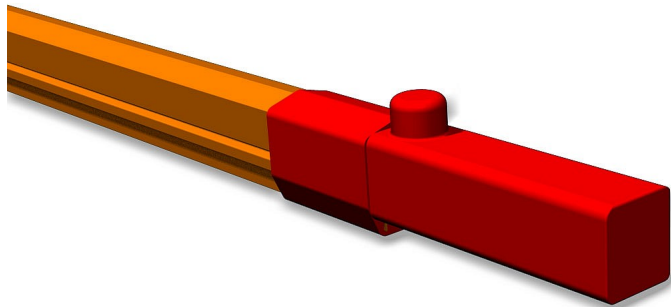
Expansion sections must always be situated equidistant between two anchor points.



END CAP

Code	346113
Weight (kg)	0.13

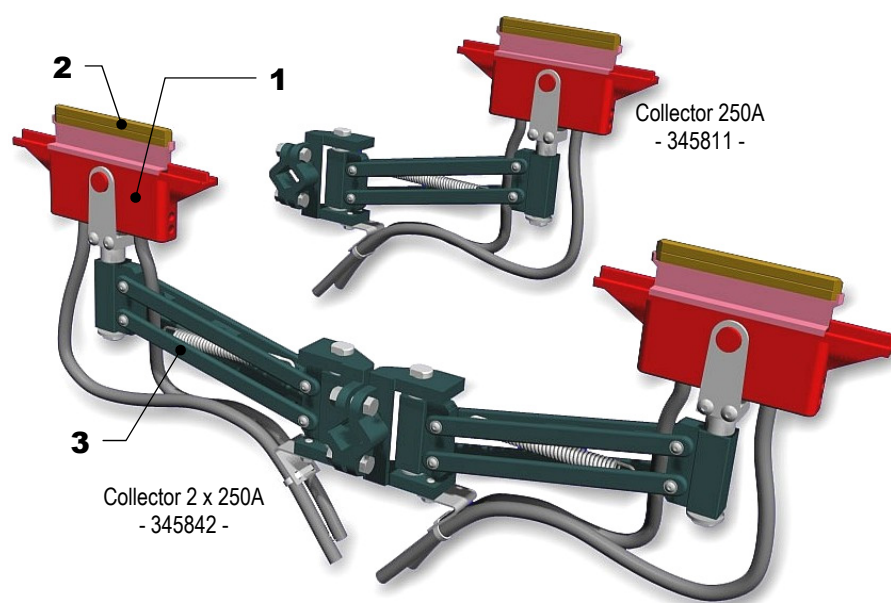
Provides protection at the end of the system.



COLLECTORS

TYPE	250 A	2 x 250 A
Maximum permanent current *	175 A	350 A
Phase collector	345811	345842
Weight (kg)	4.50	9.00

* with aluminium – stainless steel conductor



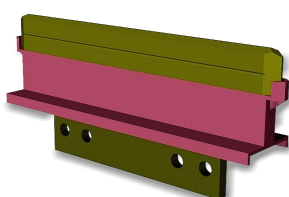
The collector head [1] prevents accidental contact with the live shoe [2] and guides the shoe along the "V"-shaped strip of the conductor.

Collector head is equipped with two flexible connection cables (25 mm², 3 m long).

The arm [3] absorbs any misalignment and bending of the conductors and ensures a permanent contact pressure.

250A COLLECTOR SHOE + HOLDER

Code	345804
Weight (kg)	0.30

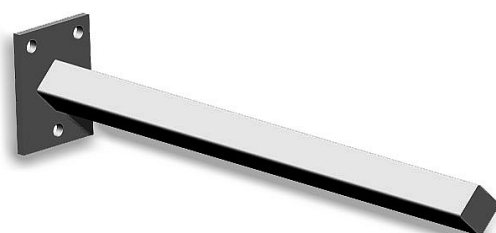


Suitable for all collectors.

The copper graphite shoe ensures electrical continuity, a smooth contact with the conductor bar and a good resistance to wear.

COLLECTOR BRACKET

Code	345886
Weight (kg)	2.55

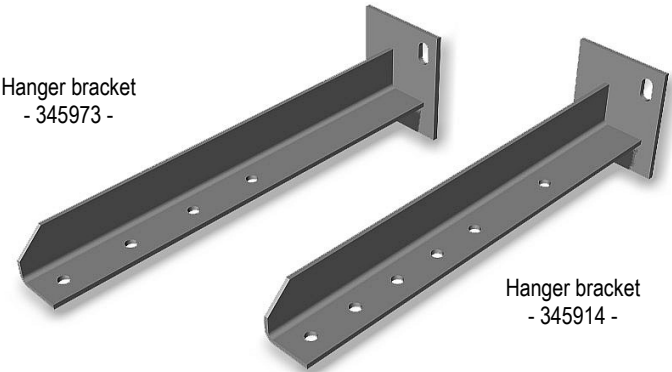


To suit all collectors.

25 mm square, 400 mm long, galvanised steel.

HANGER BRACKETS

HANGER TYPE	STANDARD	WITH INSULATOR
Code	345973	345914
Conductor pitch centre	70 mm	100 mm
Weight (kg)	2.23	2.23



Length 400 mm.
Other dimensions: see last page.

ISOLATION JOINTS

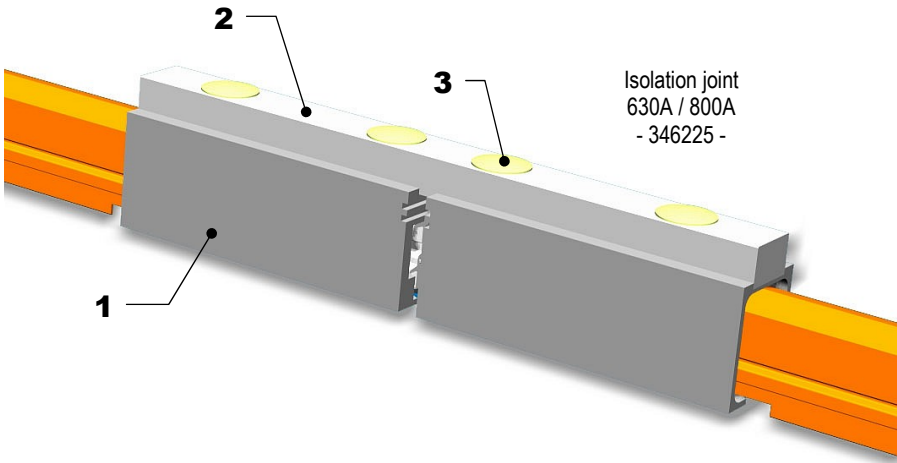
	630A / 800A	1000A / 1250A
Code	346225	346226
Weight (kg)	0.79	1.08

The isolation joint is used to electrically separate two sections of conductor.

This portion can be switched off while the rest of the system stays live.

A 100 mm gap is created when the two isolation pieces [1] are aligned using top bar [2].

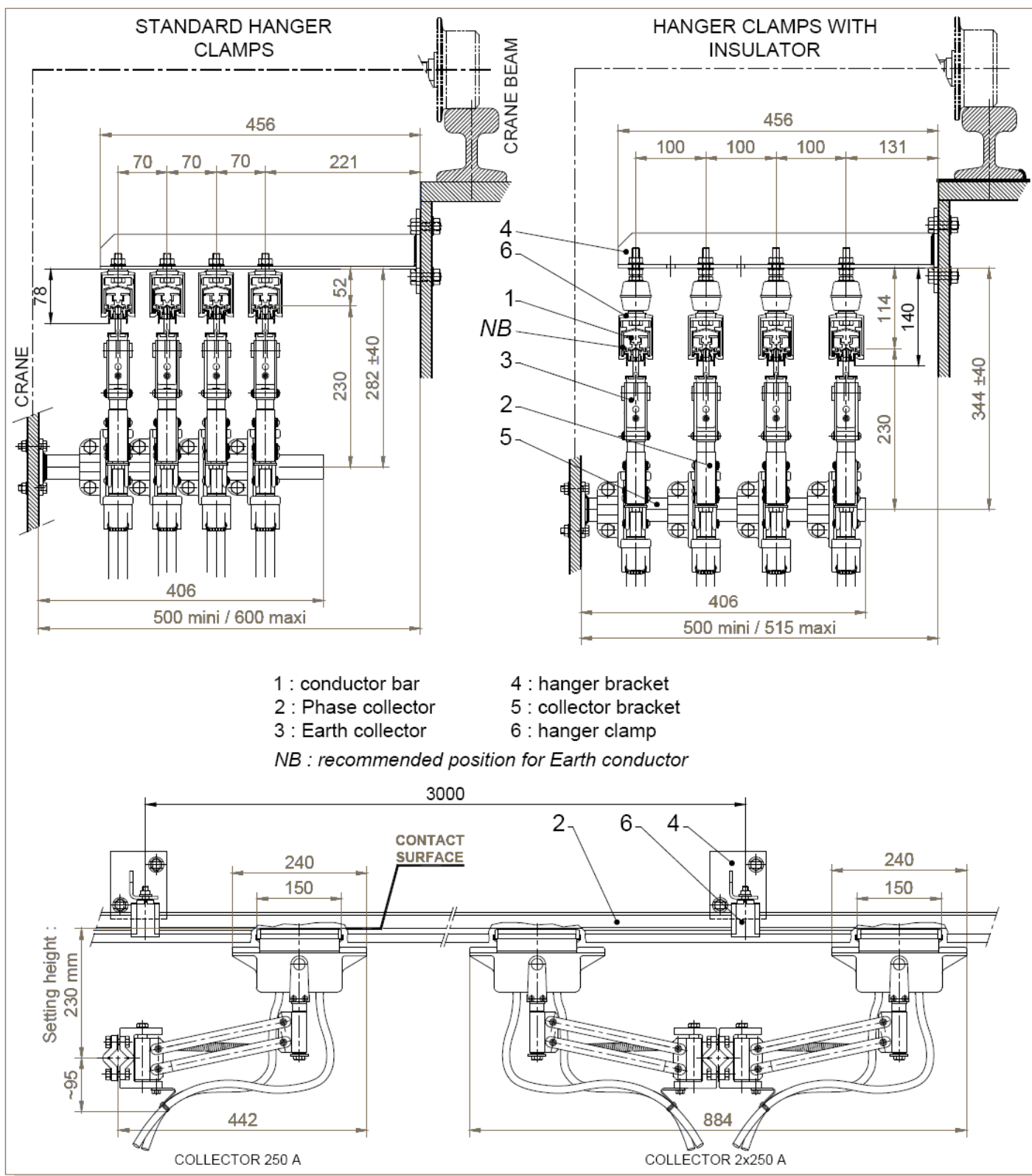
Fixings are protected by plastic plugs [3].



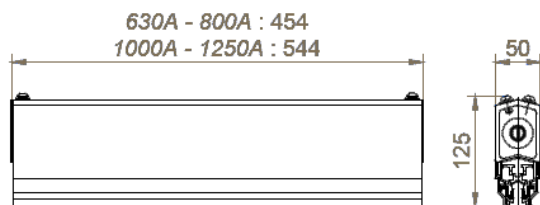
ELECTRICAL JOINTING COMPOUND

Code	918001
	Contents sufficient for roughly 20 connections

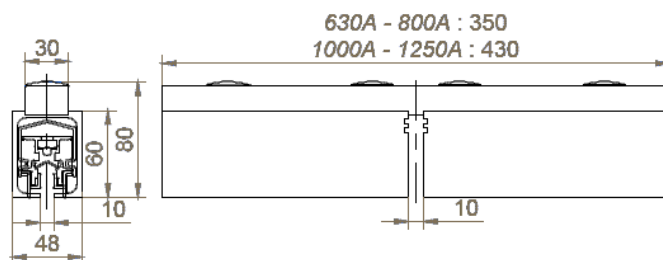
In order to optimize the electrical continuity, electrical jointing compound must be applied during the installation for joints and powerfeeds.



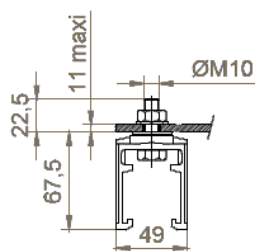
CROSS SECTIONS



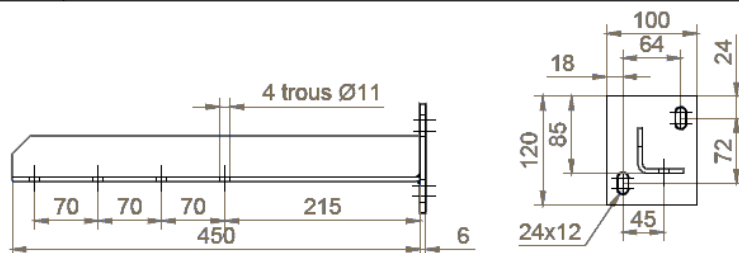
JOINTS 630A - 800A / 1000 - 1250A
POWERFEEDS 630A - 800A / 1000A - 1250A



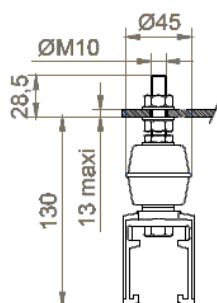
INSULATING JOINTS 630A - 800A / 1000A - 1250A



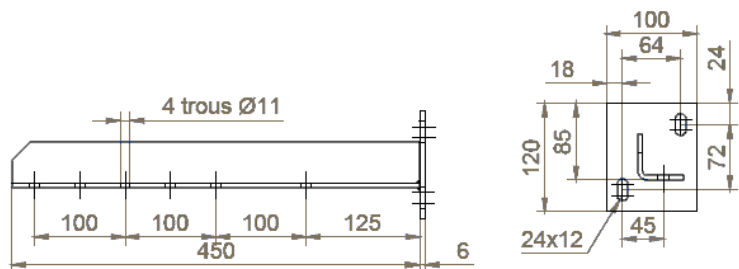
HANGER CLAMP
70 mm centres



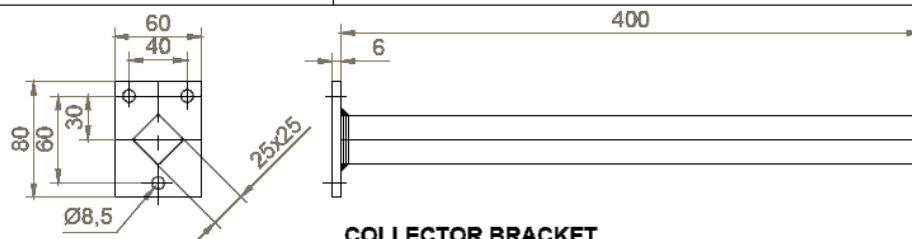
HANGER BRACKET
70 mm centres



HANGER CLAMP WITH INSULATOR
100 mm centres



HANGER BRACKET
100 mm centres



COLLECTOR BRACKET



POWER AND DATA TRANSFER

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