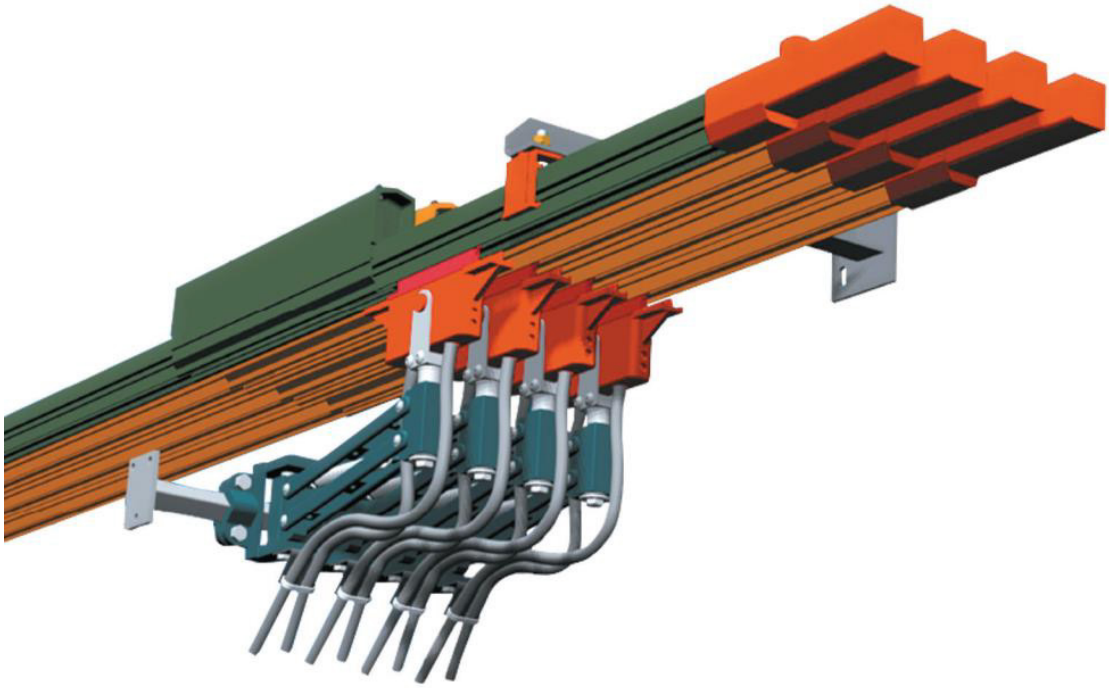
HEVIBAR 3

Insulated Conductor Rails



CONDUCTIX wampfler

Index

HB3 Conductor Rail System

Product Feature

Conductix Wampfler supplies electrical power feed systems for moving machinery. The HEVIBAR 3 system is easy to install and maintain, and ensures a high level of reliability. It has been designed to meet the safety standards demanded in industry.

Advantages:

- Able 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

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

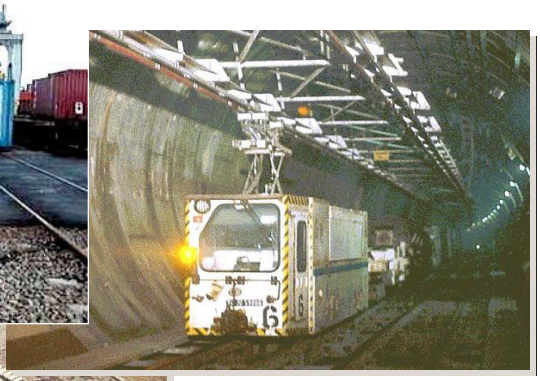
Range of application:

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

Typical Application

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

Container handling cranes operating outdoors 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.

HB3 Conductor Rail System

Technical Data

Conductor Rail	630A	800A	1000A	1250A
Nominal Current at + 25°C	630A	800A	1000A	1250A
Cross Sectional Area	328mm²	422mm²	631mm²	783mm²
Nominal Voltage AC/DC	1000V / 1000V			
Resistance at 25°C (DC)	0.000096 Ω/m	0.000074Ω/m	0.000051Ω/m	0.000040Ω/m
Mounting centers between conductors Standard hangers / Hangers with insulators	70mm / 100mm			
Impedance at 25°C (for AC-50Hz) 70mm Centers 100mm Centers	 0.000167Ω/m 0.000181Ω/m	 0.000145Ω/m 0.000159Ω/m	 0.000118Ω/m 0.000132Ω/m	 0.000106Ω/m 0.000120Ω/m
Distance between Hangers	3m			
Rail Length	6m			
Max. Travel Speed	200m/min			

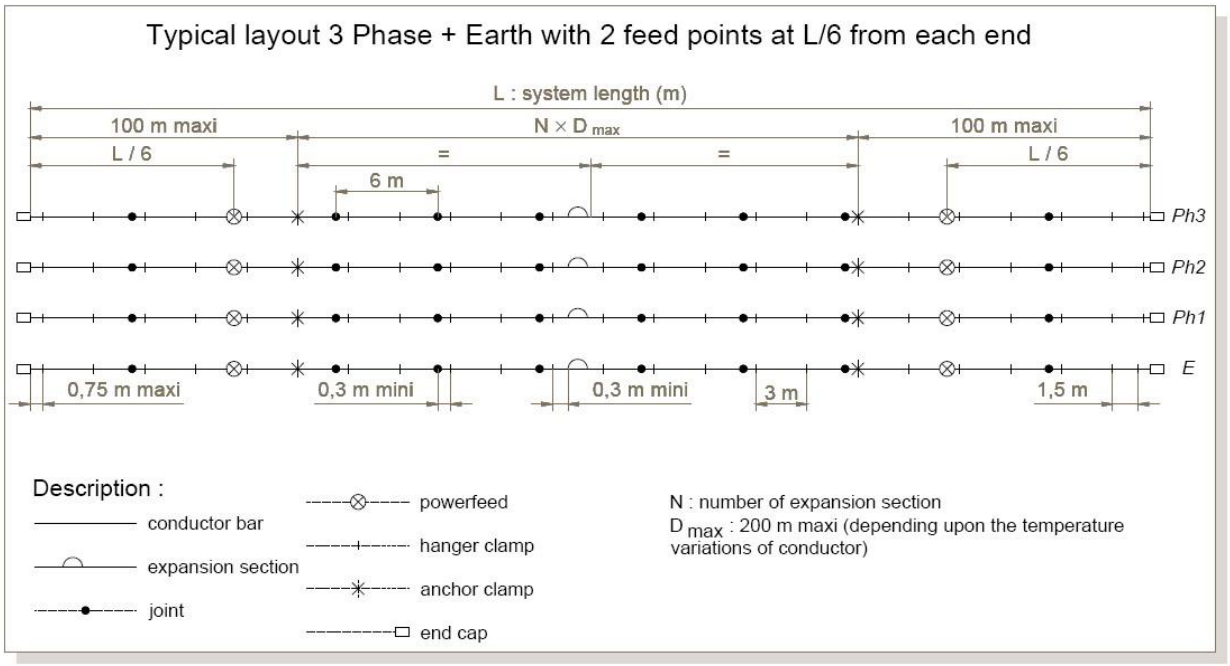
Insulating Covers	Standard	Medium Heat
Material	PVC	PC
Colour (Phase /Earth)	Orange / Green	Red / Red
Dielectric Strength	180kV / cm	240kV / cm
Surface Resistivity	$>10^{11}\Omega$	$>10^{14}\Omega$
Volume Resistivity	$>10^{15}\Omega$/cm	$>10^{16}\Omega$/cm
Softening Temperature	+ 80 °C	+125 °C
Flame Test	Self extinguishing	Self extinguishing
Max. Allowable Ambient Temperature	-15 to +55 °C	-30 to +85 °C

Factor "K"						
	Duty / Ta	100%	80%	60%	40%	20%
Standard Cover	25	1.000	1.118	1.291	1.581	2.236
	35	0.905	1.011	1.168	1.430	2.023
	45	0.798	0.892	1.030	1.261	1.784
	55	0.674	0.754	0.870	1.066	1.508
Medium Heat Cover	65	0.775	0.866	1.000	1.225	1.732
	75	0.707	0.791	0.913	1.118	1.581
	85	0632	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 : $I_{allowable}$ = nominal current * **K**

HB3 Conductor Rail System

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

ΔU%: volt drop in % of the nominal voltage

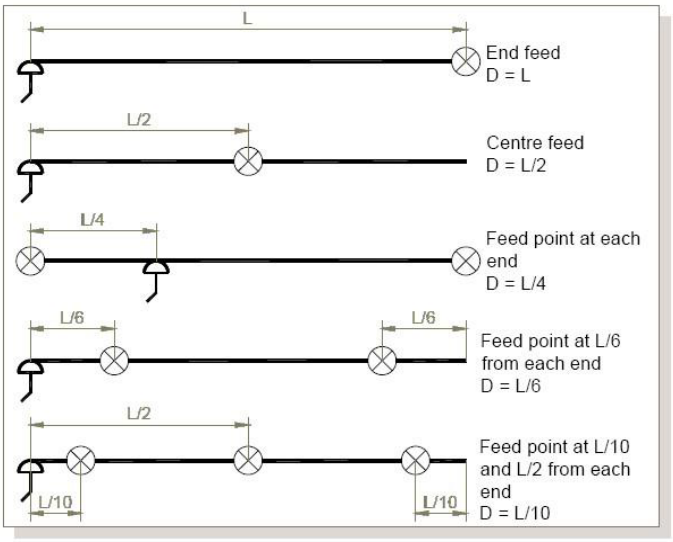
U_n: voltage in Volt

I: maximum current in Amps

D: see diagram on the right

R: resistance in Ohm per meter

Z: impedance in Ohm per meter

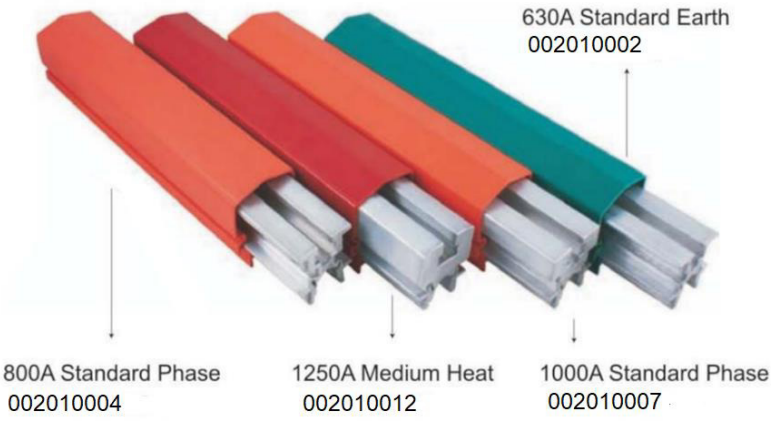


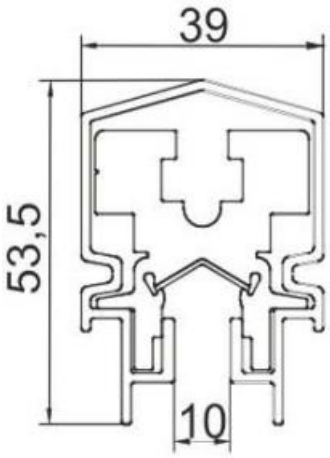
HB3 Conductor Rail System

Conductor Rails

CURRENT RATING	630A	800A	1000A	1250A
Standard Phase Cover(orange)	002010001	002010004	002010007	002010010
Standard Earth Cover(green)	002010002	002010005	002010008	002010011
Medium Heat Cover(red)	002010003	002010006	002010009	002010012
Weight (kg)	8.4	9.8	13.3	15.7

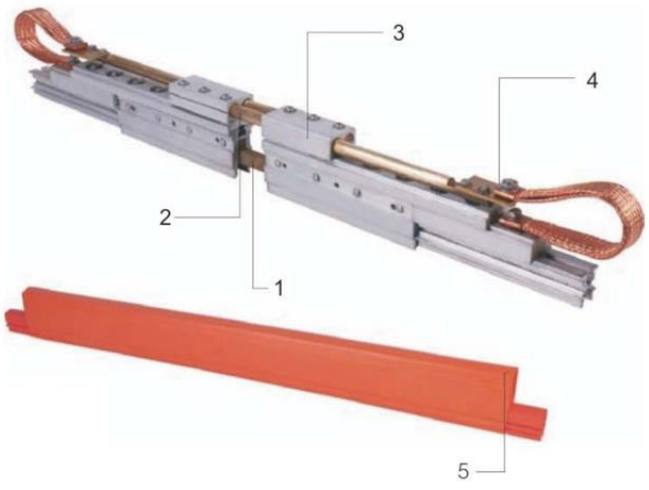
The stainless steel strip crimped into the aluminum conductor provides a hard wearing contact surface.
Standard and Medium heat covers provide a degree of protection in accordance with required standards.
Covers are shaped to shed water and dust.
Conductor rails are 6 meters long.
The outer dimensions are identical for all current ratings.





Expansion Joint

CURRENT RATING	630A	800A	1000A	1250A
Standard Phase Cover(orange)	002020001	002020004	002020007	002020010
Standard Earth Cover(green)	002020002	002020005	002020008	002020011
Medium Heat Cover(red)	002020003	002020006	002020009	002020012
Weight (kg)	14.00	16.00	20.00	22.00



The expansion section consists of a sliding section inserted in a 6 meters long rail. 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 max. gap of the expansion section is 200mm.
The overall length of the expansion section is 6 meters when gap is set at 100mm. 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.

When the system length is less than 200m, no need to install expansion section.

When the system length is more than 200m, use expansion sections according to installation manual.

HB3 Conductor Rail System

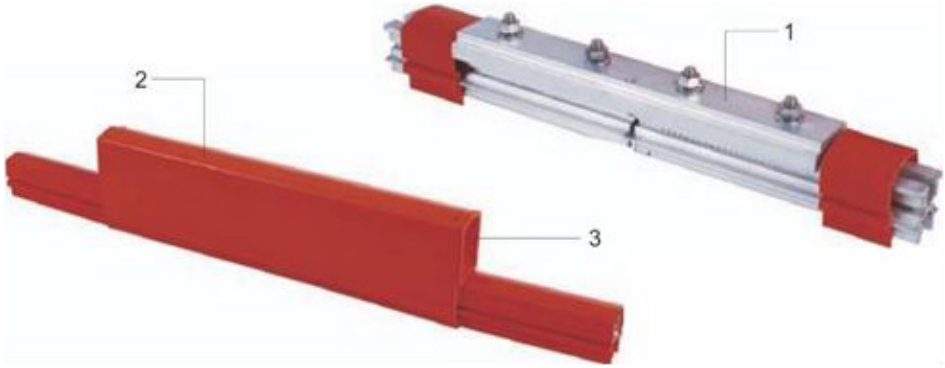
Joints

CURRENT RATING	630A / 800A	1000A / 1250A
Standard Phase Cover(orange)	002030001	002030007
Standard Earth Cover(green)	002030002	002030008
Medium Heat Cover(red)	002030003	002030009
Weight (kg)	0.82	1.10

The aluminum 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 joints.

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



Powerfeeds

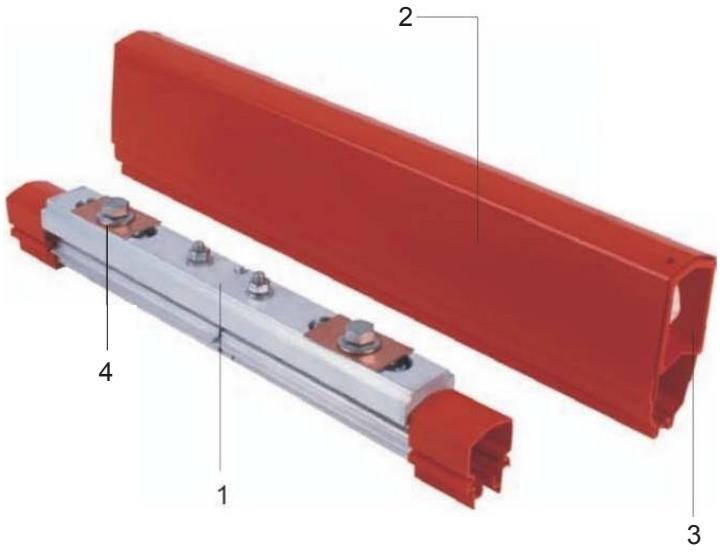
Standard Phase/Orange	002030004	002030010
Standard Earth/Green	002030005	002030011
Medium Heat/Red	002030006	002030012
Weight (kg)	0.96	1.18

Powerfeed for connection of one or two flexible cables

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

The aluminum 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. Cables are terminated onto screws (4). Powerfeed is usually installed in place of a joint.



HB3 Conductor Rail System

Hanger Clamps

Type	Standard	With Insulator	Standard for Outdoor	With Insulator for Outdoor
Code	002040001	002040002	002040003*	002040004*
Weight (kg)	0.11	0.33	0.11	0.33

*with stainless steel fasteners

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 enviroments, hangers with insulator(1pc/3m) should be used.

Strengthened Hanger Clamps

Type	4-hole w/o channel steel	4-hole with channel steel	3-hole w/o channel steel	3-hole with channel steel
Code	002040005	002040013	002040006	002040014
Weight (kg)	1.17	1.79	1.01	1.47

The gap of each entry center is 50mm.

End Cap

Code	002030013
Weight (kg)	0.13

To provide protection at the end of the system.

HB3 Conductor Rail System

Anchor Assembly

Code	Description
002050013	HB3 630A/800A Orange Anchor System (Stainless Steel Fasteners)
002050014	HB3 630A/800A Green Anchor System (Stainless Steel Fasteners)
002050015	HB3 630A/800A Red Anchor System (Stainless Steel Fasteners)
002050016	HB3 1000A/1250A Orange Anchor System (Stainless Steel Fasteners)
002050017	HB3 1000A/1250A Green Anchor System (Stainless Steel Fasteners)
002050018	HB3 1000A/1250A Red Anchor System (Stainless Steel Fasteners)

250A Collector Shoe+Holder

Code	002070001
Weight (kg)	0.23

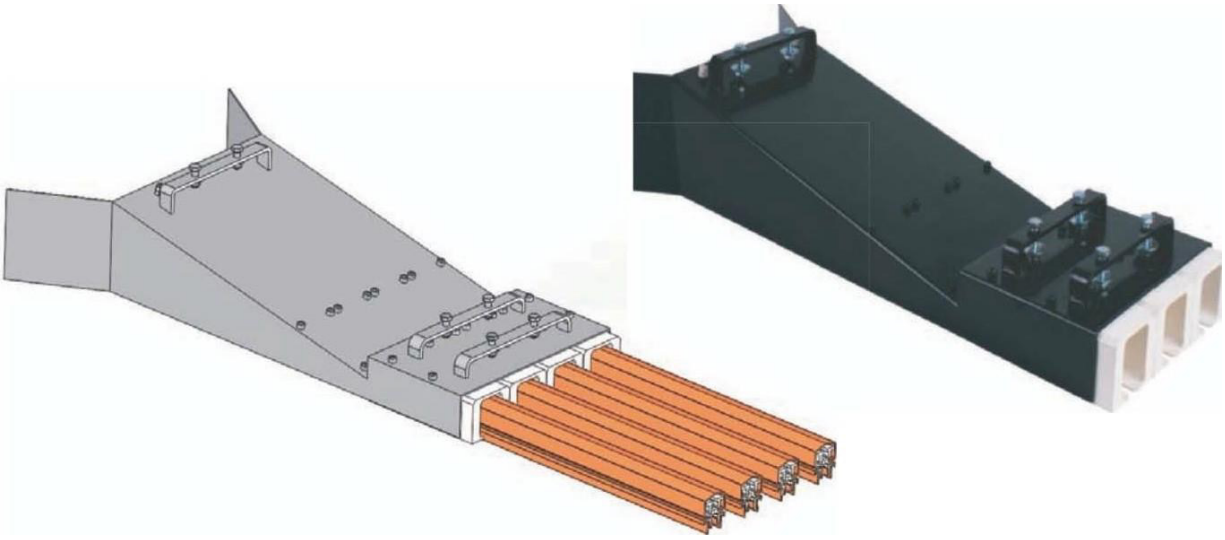
Suitable for all collectors

HB3 Conductor Rail System

Pickup Guides

Type	3 poles 630-1000A	4 poles 630-1000A	3 poles 1250A	4 poles 1250A
Code	002080001	002080002	002080003	002080004
Weight (kg)	8.27	9.73	7.91	9.84

Must be used with special collectors (002070006&002070007) to be discontinuous conductor rail system.



HB3 Conductor Rail System

Collectors

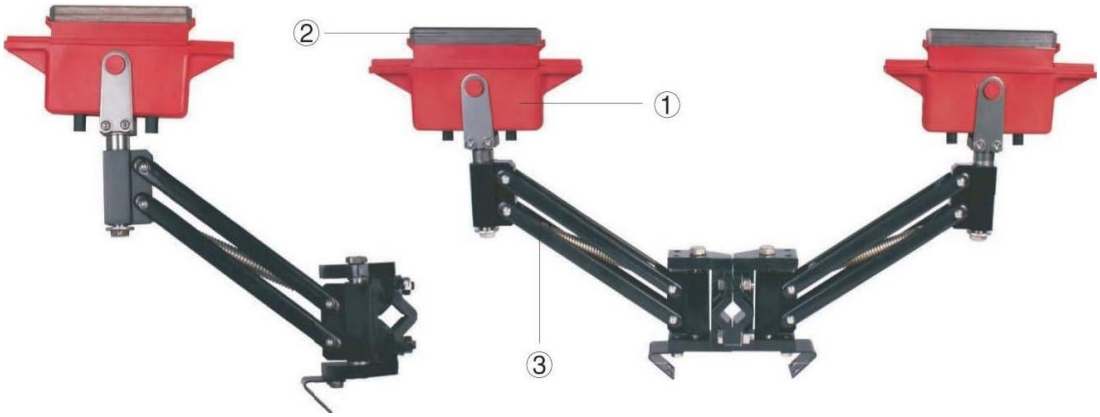
Type	250A	2X250A	250A	2X250A
Max. Permanent Current	175A	350A	175A	350A
Phase Collector	002070002	002070004	002070006*	002070007*
Earth Collector	002070003	002070005		
Weight (kg)	4.5	9	4.96	9.93

The collector head (1) prevents accidental contact with the live shoe (2) and guides the shoes along the "V" shaped strip of the conductor. Collector head is equipped with two flexible connection cables(25mm^2 3m long). The arm (3) absorbs any misalignment and bending of the conductors and ensure a permanent contact pressure.

*Special desgin for pickup Guide, no difference between phase and earth collectors.

Note: 002070004&002070005 with 4pcs 25mm^2 cable

002070010&002070011 without cable



HB3 Conductor Rail System

Hanger Bracket

Type	Standard	With Insulator
Code	002040015	002040017
Centers between Conductors	70mm	100mm
Weight (kg)	8.27	9.73

Length: 450mm, other dimensions refer to page 14.

Collector Bracket

Code	002070041
Weight (kg)	2.55

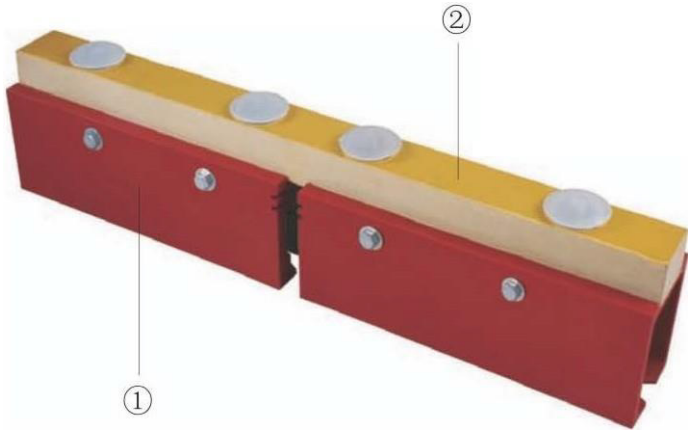
HB3 Conductor Rail System

Isolation Joint

Type	630A/800A	1000A/1250A
Code	002060003	002060004
Weight (kg)	0.79	1.08

The isolation joint is used to electrically separate two sections of conductor. A 10mm gap is created when the two isolation pieces (1) are aligned using top bar (2).

Note: while partial isolation joint switched off for maintenance, it's forbidden for collectors entrance.



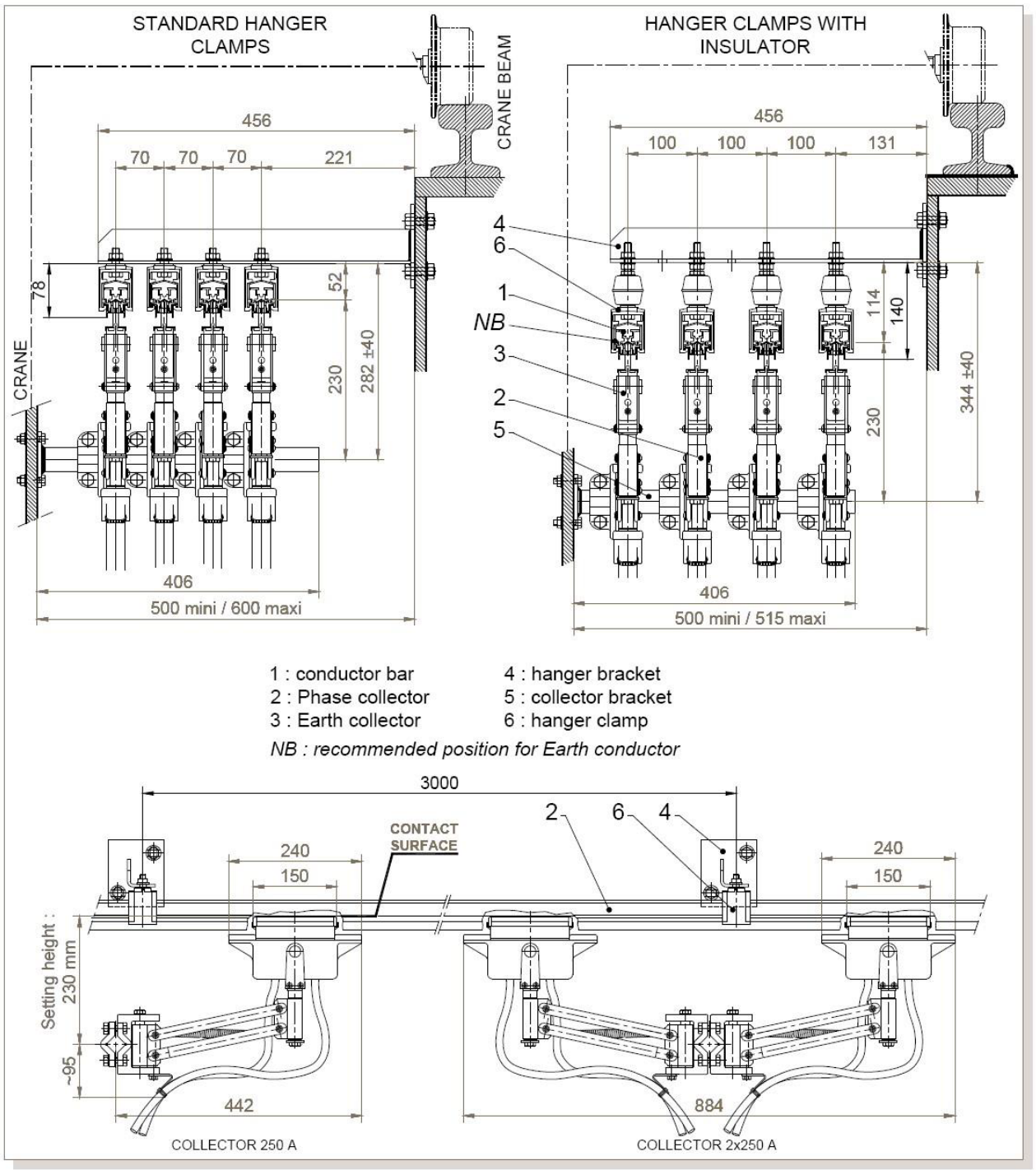
Electrical Joint Compound

Code	507010006
Description	Contents sufficient for roughly 20 connections

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

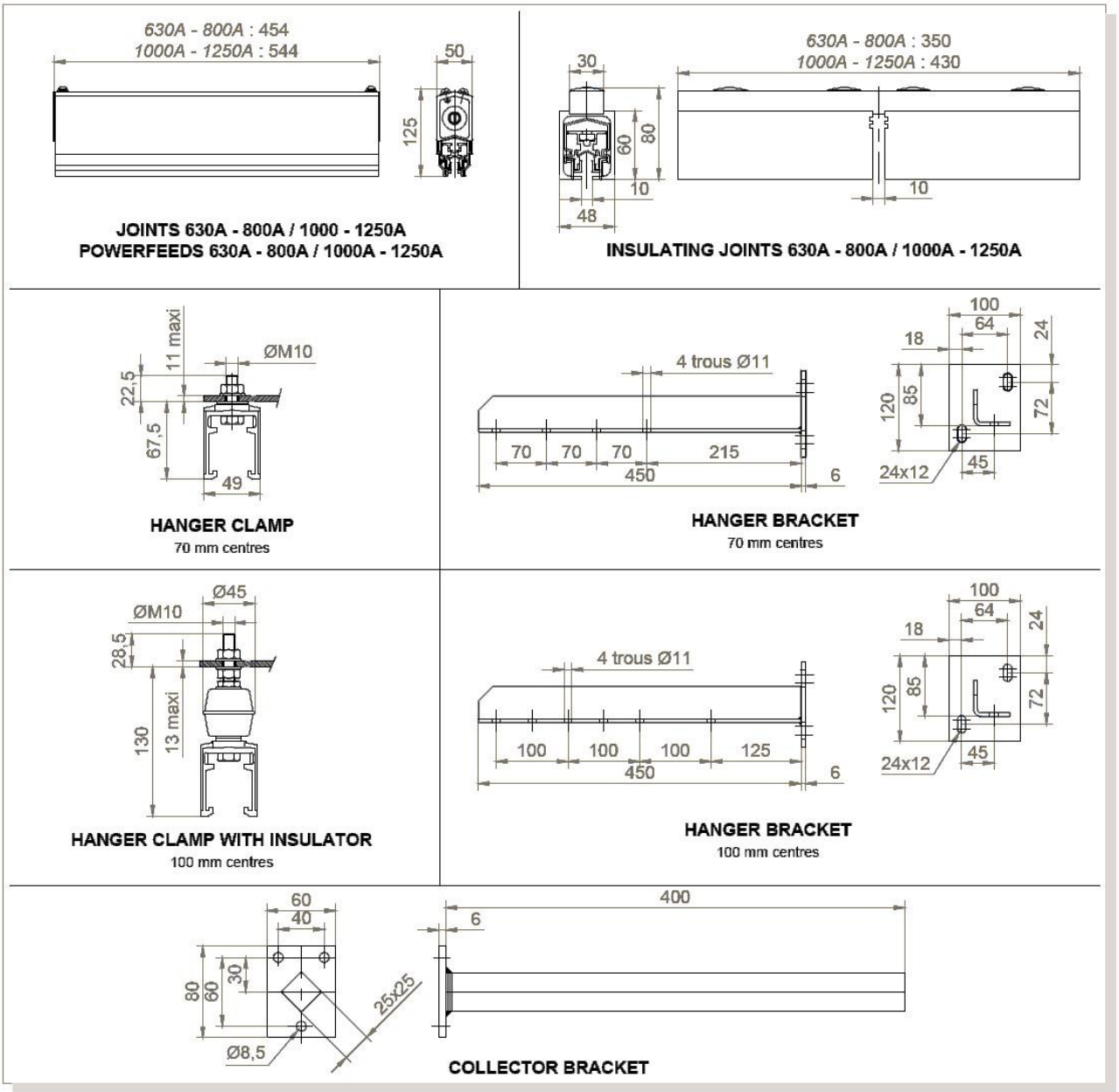
HB3 Conductor Rail System

System Dimension



HB3 Conductor Bar System

Cross Sections



HB3 Conductor Rail System

Enquiry Form

Company name: ..... Address: .... ……..…… ..... …….. Project: ..... Date:	CONTACT: ..... POSITION: ..... Tel.: ..... Fax: ..... E mail: .....

- Electrical Data

- Voltage: AC - DC ……. V Frequency: …….. Hz
- Number of conductors: ……. Phase ……. Earth
- Position of powerfeed: center / end / other : qty …..

At: …….. m
…….. m } from one end
…….. m

- Number of machines: ……. Type: crane / gantry / other: ……

- Electrical Loads

	MACHINE N° 1			MACHINE N° 2			MACHINE N° 3			MACHINE N° 4		
MOTORS	Current (Amps)		Duty %	Current (Amps)		Duty %	Current (Amps)		Duty %	Current (Amps)		Duty %
	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 invertor drive: Yes / No
  Allowable volt drop: …….%
  System Data
- Length: ……. meters
- Location: indoor- outdoor
  Humidity (…….%) – Excessive dust – Saline conditions – others: .....
- Industry: .....

- Ambient temperature : .....°C min / .....°C max
- Max travel speed: .....meters / min
- Isolation sections: Yes / No Number: …… Position: *enclose a sketch*

Other information

.....

.....

www.conductix.com

Conductix-Wampfler
has just one critical mission:
To provide you with energy and data transmission systems that will keep your operations up and running 24/7/365.

To contact your nearest sales office, please refer to:

www.conductix.com/contact-search

CONDUCTIX wampfler