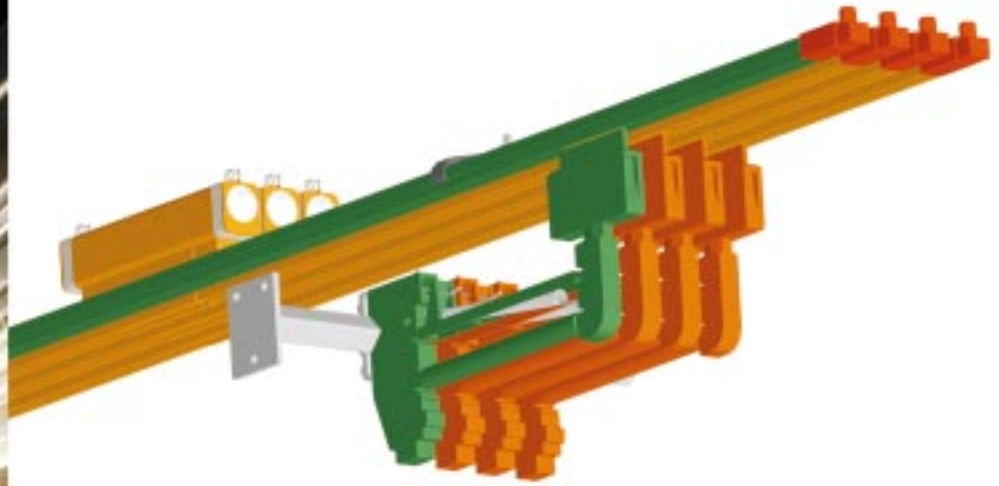


Update in Progress

SAFELEC

INSULATED CONDUCTOR BARS
60 up to (00 Amp



- Finger safe up to IP2
- 60 to (00 Amp conductors in Standard or Medium Heat cover
- Cover shaped to shed water and dust
- Horizontal conductors with contact from underside
- Bar length: 4.5 metres
- Systems up to 150 metres without expansion sections
- Reduced and simple maintenance

CONDUCTIX
INSUL 8

© DELACHAUX GROUP



Certificate No. FM 21334

SAFELEC INSULATED CONDUCTOR BARS

CONDUCTIX supplies electrical power feed systems for moving machinery. Easy to install and maintain, the **SAFELEC range** ensures a high level of reliability. It has been designed to meet the 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

SAFELEC features:

- Easy installation, reduced and simple maintenance
 - Protection degree IP2, finger safe
- 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 150 m
 - Max travel speed: 200 m/min

Range of application:

Workshop cranes, iron and steel industry, railways, leisure industry, mines etc.

SAFELEC complies with the following international standards:

NFC 20-010, NFC 63-010, NFC 32-070, VDE 0470, BSEN 60529, DIN 53438

TYPICAL APPLICATIONS



Conveyor System



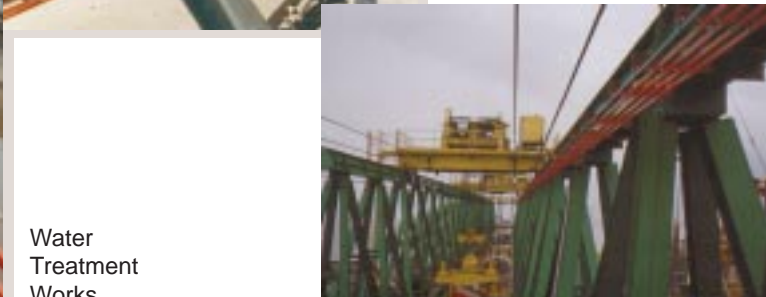
Roller Coaster



Multipole Feed System



Water Treatment Works



Bridge Construction Crane

Update in Progress

SELECTION OF CONDUCTORS

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 Volts

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

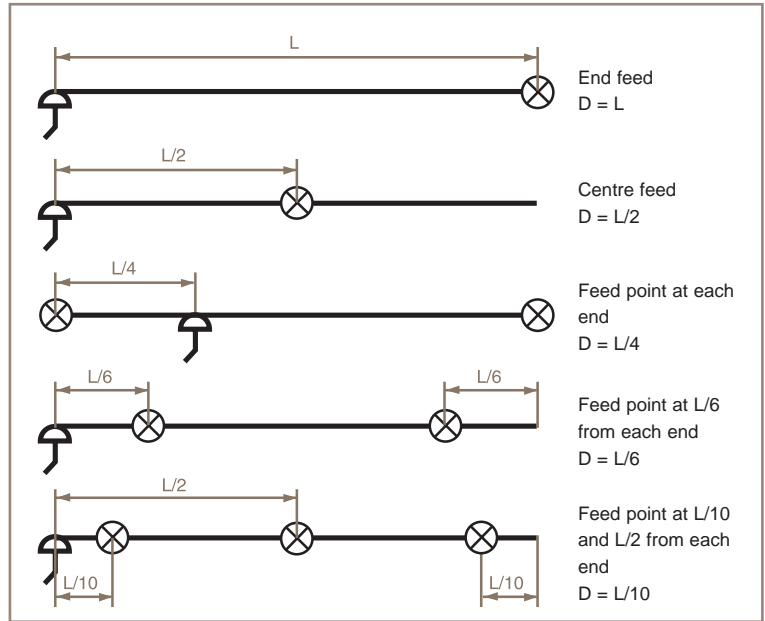
U_n : nominal supply voltage in Volts

I : maximum current in Amps

D : see opposite diagram

R : resistance in Ohms per metre

Z : impedance in Ohms per metre



Update in Progress

TECHNICAL DATA

FACTOR "K"

	Duty	FACTOR "K"				
		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 maximum permissible continuous current rating of the conductor bar depends on the duty factor of the cranes and the maximum ambient temperature T_a . It can be established using the following formula:

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

SAFELEC 2 TECHNICAL DATA

CONDUCTOR BAR COVER	STANDARD	MEDIUM HEAT
Material	PVC	BAYBLEND
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
Maximum operating temperature *	80°C	120°C
Minimum operating temperature	-20°C	-20°C
Flame-test	Self extinguishing	Self extinguishing
Oxygen index	54%	24%
Specific density	1.5 g/cm ³	1.15 g/cm ³

* See Table on Page 4

Update in Progress

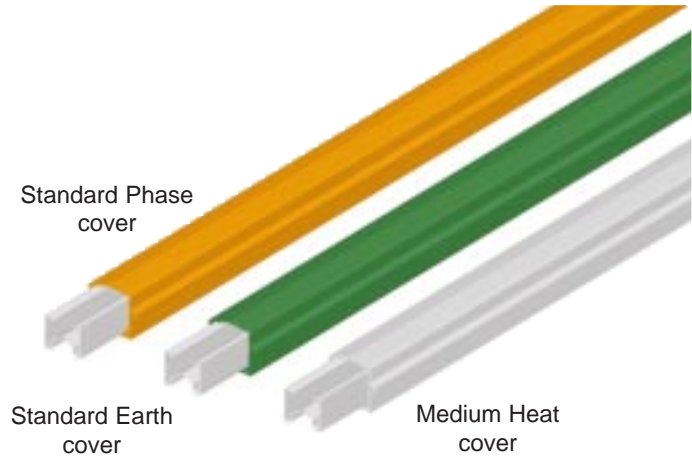
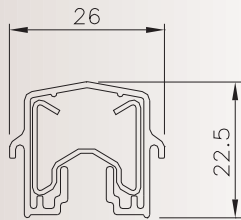
CONDUCTOR BAR	GALVANISED STEEL			COPPER			ALUMINIUM / STAINLESS STEEL		
	60A	100A	125A	160A	250A	400A	200A	315A	400A
Nominal current	60A	100A	125A	160A	250A	400A	200A	315A	400A
Cross sectional area	50mm ²	63mm ²	93mm ²	50mm ²	63mm ²	93mm ²	104mm ²	120mm ²	156mm ²
Maximum system voltage (AC) (contact Insul-8 for other voltages) (DC) (contact Insul-8 for other voltages)	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V
Resistance R (for DC) at 20°C (Ω/m)	0.003584	0.002867	0.001933	0.000342	0.000274	0.000184	0.000301	0.000261	0.000199
Impedance Z (for AC) at 20°C (Ω/m)	0.003604	0.002891	0.001968	0.000364	0.000300	0.000221	0.000325	0.000288	0.000234
Maximum allowable ambient temperature for 100% duty cycle	25°C	25°C	25°C	25°C	25°C	25°C	25°C	25°C	25°C
Bar length	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m
Support pitch Standard	1500mm	1500mm	1500mm	1500mm	1500mm	1500mm	1500mm	1500mm	1500mm
Lateral	1125mm	1125mm	1125mm	1125mm	1125mm	1125mm	1125mm	1125mm	1125mm
Minimum pitch centres Standard	43mm	43mm	43mm	43mm	43mm	43mm	43mm	43mm	43mm
Lateral	60mm	60mm	60mm	60mm	60mm	60mm	60mm	60mm	60mm
Expansion sections: not required for runs less than	150m	150m	150m	150m	150m	150m	150m	150m	150m
Minimum bending radius: (horizontal only)	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m

An accurate choice of conductors can be made when all the following information is known:

- The type of current: single or three phase AC ; continuous (DC)
- The maximum current power and duty cycle
- The allowable volt drop for the machines being supplied
- The ambient temperature
- Environment (dusty, coastal, humid, acidic etc.)

GALVANISED STEEL CONDUCTOR BARS

CURRENT RATING	60A	100A	125A
Standard Phase cover (orange)	310001	310101	310201
Standard Earth cover (green)	310002	310102	310202
Medium Heat cover Phase (grey) Earth	310003 310056	310103 310156	310203 310256
Weight (Kg)	2.34	2.76	3.76



EXPANSION SECTIONS

CURRENT RATING	60A	100A	125A
Standard Phase cover (orange)	310007	310107	310207
Standard Earth cover (green)	310008	310108	310208
Medium Heat cover Phase (grey) Earth	310009 310058	310109 310158	310209 310258
Weight (Kg)	3.06	3.32	4.20

Expansion sections are required on all systems over 150m long.

The maximum gap of the expansion section is 50mm.

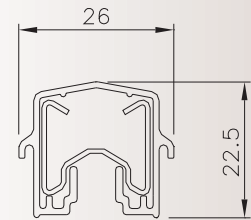
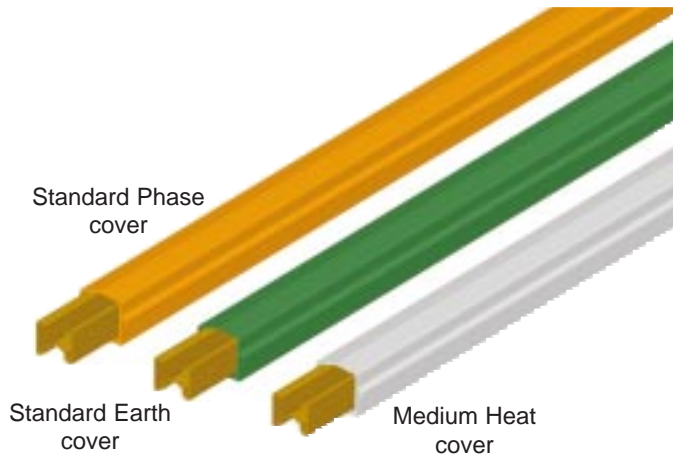
The expansion section is 4.5m long and is installed in place of one length of conductor bar.



Expansion section 310007

COPPER CONDUCTOR BARS

CURRENT RATING	160A	250A	400A
Standard Phase cover (orange)	310301	310401	310501
Standard Earth cover (green)	310302	310402	310502
Medium Heat cover Phase (grey) Earth	310303 310356	310403 310456	310503 310556
Weight (Kg)	2.76	3.04	4.40



EXPANSION SECTIONS

CURRENT RATING	160A	250A	400A
Standard Phase cover (orange)	310307	310407	310507
Standard Earth cover (green)	310308	310408	310508
Medium Heat cover Phase (grey) Earth	310309 310358	310409 310458	310509 310558
Weight (Kg)	3.28	3.86	4.74

Expansion section 310307



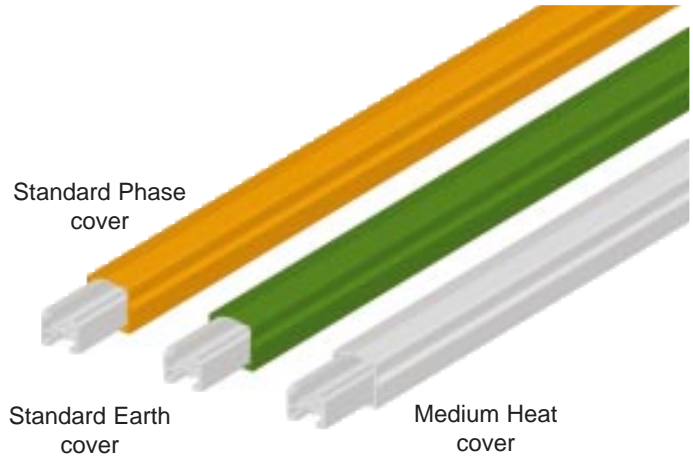
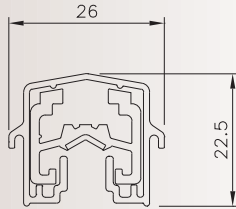
Expansion sections are required on all systems over 150m long.

The maximum gap of the expansion section is 50mm.

The expansion section is 4.5m long and is installed in place of one length of conductor bar.

ALUMINIUM / STAINLESS STEEL CONDUCTOR BARS

CURRENT RATING	200A	315A	400A
Standard Phase cover (orange)	310601	310701	399101
Standard Earth cover (green)	310602	310702	399102
Medium Heat cover Phase Earth (grey)	310603 310656	310703 310756	399103 399156
Weight (Kg)	2.12	2.18	2.50



EXPANSION SECTIONS

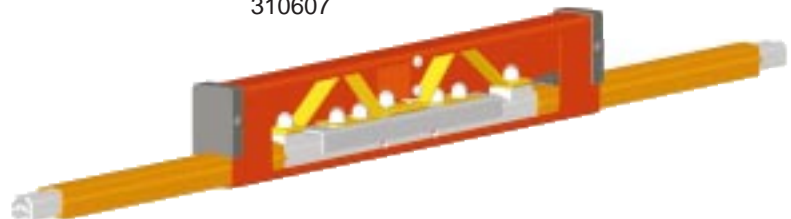
CURRENT RATING	200A	315A	400A
Standard Phase cover (orange)	310607	310707	399107
Standard Earth cover (green)	310608	310708	399108
Medium Heat cover Phase Earth (grey)	310609 310658	310709 310758	399109 399158
Weight (Kg)	3.23	3.43	3.80

Expansion sections are required on all systems over 150m long.

The maximum gap of the expansion section is 50mm.

The expansion section is 4.5m long and is installed in place of one length of conductor bar.

Expansion section 310607



Update in Progress

JOINTS

JOINT		Weight (Kg)
Steel	310872	0.049
Copper	310873	0.044
Aluminium	310874	0.032
Heavy Duty Copper	399549	0.2

JOINT COVER		
Standard Phase cover (orange)		310850
Standard Earth cover (green)		310851
Heavy Duty cover		399541
Medium Heat cover	black green	310855 310856
Weight (Kg)		0.027

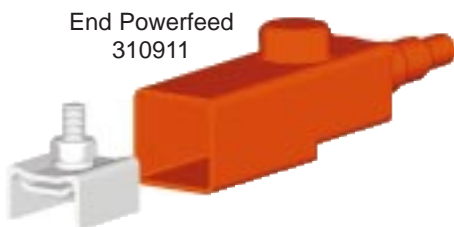


JOINTING COMPOUND	Weight (Kg)
310932	0.225

JOINTING COMPOUND

Jointing compound should be applied to the contact surfaces of the joint and bar at every joint on copper and aluminium systems. One tube is sufficient for over 300 connections.

POWERFEEDS: END POWERFEED



UP TO 100A	Weight (Kg)
310911	0.037

Powerfeed installed in place of an end cover.

Maximum cable connection size: 16mm²

POWERFEEDS: JOINT POWERFEED

CURRENT RATING	UP TO 60A	UP TO 250A	UP TO 400A
Standard cover (orange)	310034	310910	310912
Medium Heat cover (red)	310066	310913	310915
Weight (Kg)	0.028	0.25	0.30

Powerfeed for connection of one or two flexible cables.

310910 has single cable connection.

310912 has double cable connection.

Powerfeed is usually installed in place of a joint.

Maximum cable connection size:

60A – 10mm²

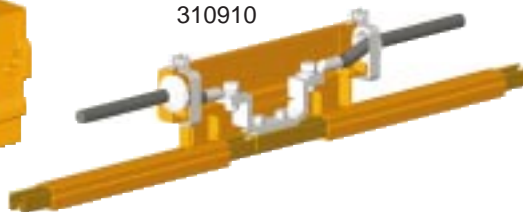
250A – 95mm²

400A – 150mm²

60A Joint Powerfeed 310034



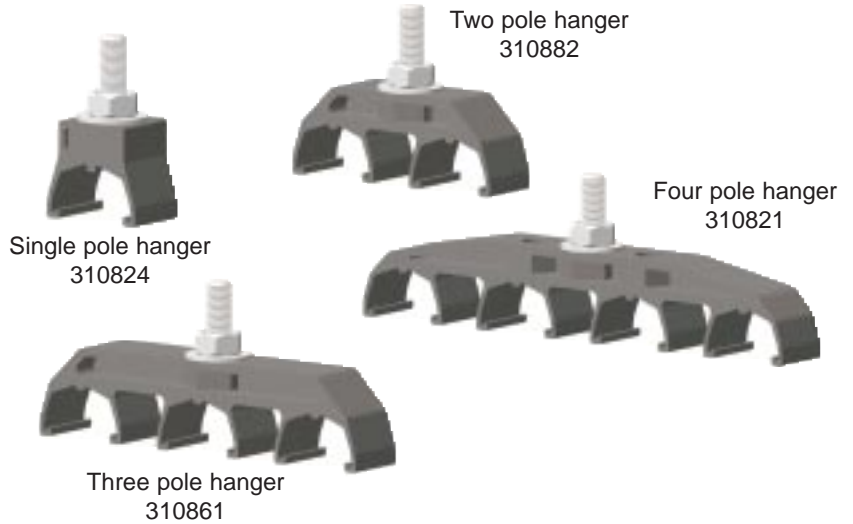
250A Joint Powerfeed 310910



HANGER CLAMPS: STANDARD MOUNT

	STANDARD (BLACK)	POLYCARBONATE (RED)	WEIGHT (Kg)
Single pole	310824	310829	0.03
Single pole with stainless steel fasteners	310919		0.03
Two pole	310882	310899	0.04
Three pole	310861	310871	0.05
Four pole	310821	310857	0.057

Standard hangers are acetyl.
Maximum support spacing is 1.5m.

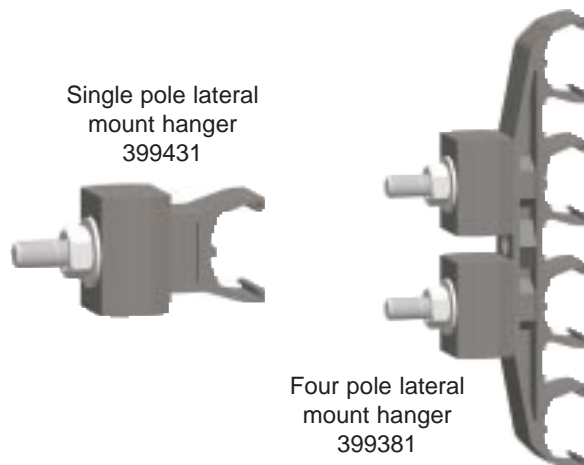


HANGER CLAMPS: LATERAL MOUNT

	STANDARD (BLACK)	POLYCARBONATE (RED)	WEIGHT (Kg)
Single pole	399431	399434	0.05
Two pole	399432	399435	0.06
Three pole	399433	399436	0.07
Four pole	399381	399382	0.12
Four pole (without spacer)	310835	310859	0.08

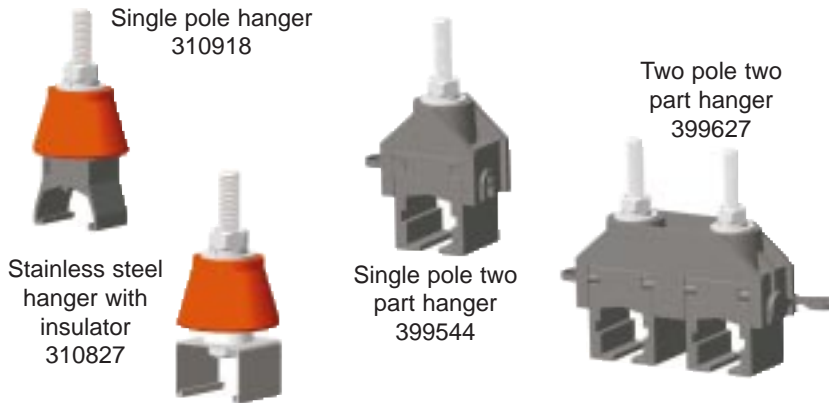
Lateral mount hangers are supplied with 20mm spacers to provide clearance for joint covers.

Maximum support spacing is 1.125m.



HANGER CLAMPS: WITH INSULATOR

			WEIGHT (Kg)
Single pole	(Black)	310918	0.10
Single pole	(Red)	310834	0.10
Single pole	Stainless steel	310827	0.106
Single pole	Two part	399544	0.08
Two pole	Two part	399627	0.174



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

ANCHOR CLAMPS

		WEIGHT (Kg)
Standard	310832	0.06
With stainless steel fasteners	399667	0.06
With insulator	310969	0.12
Lateral mount	399383	0.10
Without top bolt (two required per anchor point)	310831	0.05

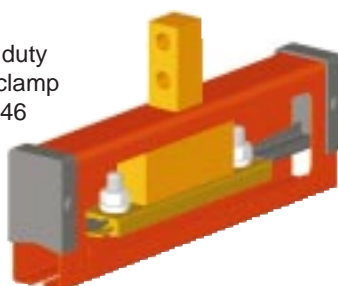


Anchor points are usually situated in the middle of a conductor system.

Additional anchor points are required for systems with expansion sections.

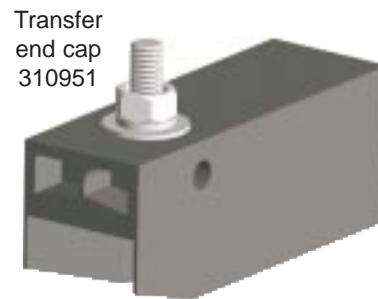
		WEIGHT (Kg)
Heavy duty anchor	399546	0.48

Heavy duty anchor clamp 399546



END CAPS

		WEIGHT (Kg)
Steel / copper bar	310892	0.04
Aluminium bar	310893	0.02
Transfer cap	310951	0.10



Transfer caps are suitable for air gaps up to 10mm.

Vertical tolerance ± 5 mm

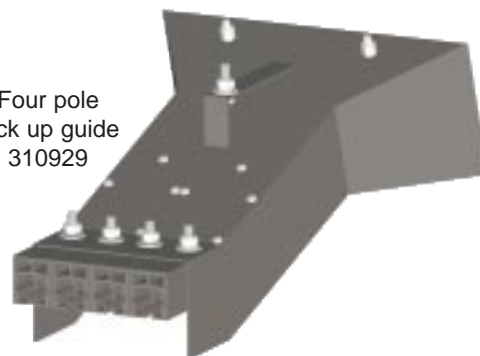
Horizontal tolerance ± 2 mm

PICK UP GUIDES

		WEIGHT (Kg)
Single pole	310920	1.27
Two pole	399532	1.72
Three pole	399502	2.16
Four pole	310929	2.54

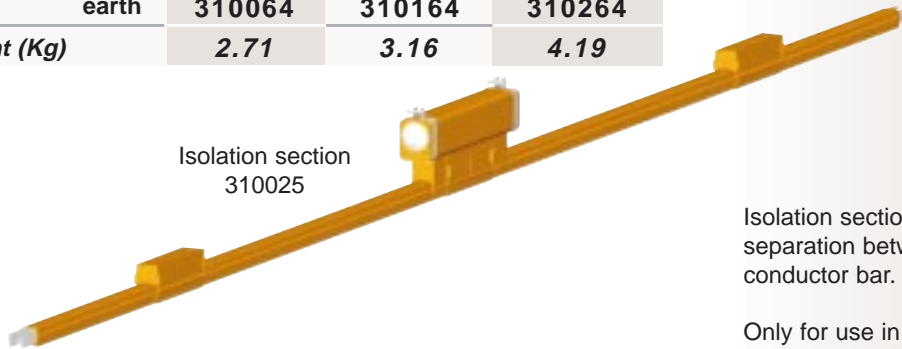
Special collectors are required for systems where pick up guides are fitted.

Four pole pick up guide 310929



GALVANISED STEEL BAR

CURRENT RATING	60A	100A	125A
Standard Phase cover (orange)	310025	310125	310225
Standard Earth cover (green)	310026	310126	310226
Medium Heat cover phase (grey) earth	310027 310064	310127 310164	310227 310264
Weight (Kg)	2.71	3.16	4.19



Isolation section
310025

Isolation sections provide electrical separation between adjacent sections of conductor bar.

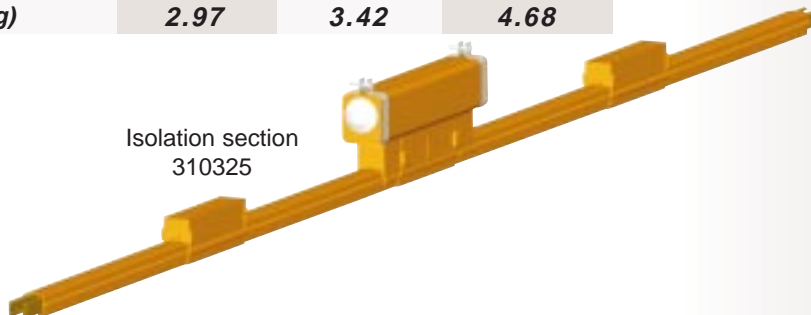
Only for use in dry, clean conditions.

The Isolation section is 4.5m long and is installed in place of one length of conductor bar.

It is recommended that Isolation sections are not fitted in earth conductors.

COPPER BAR

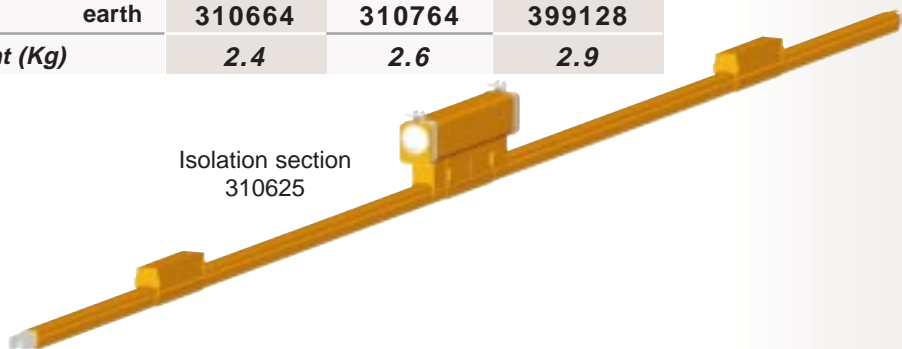
CURRENT RATING	160A	250A	400A
Standard Phase cover (orange)	310325	310425	310525
Standard Earth cover (green)	310326	310426	310526
Medium Heat cover phase (grey) earth	310327 310364	310427 310464	310527 310564
Weight (Kg)	2.97	3.42	4.68



Isolation section
310325

ALUMINIUM / STAINLESS STEEL BAR

CURRENT RATING	200A	315A	400A
Standard Phase cover (orange)	310625	310725	399125
Standard Earth cover (green)	310626	310726	399126
Medium Heat cover phase (grey) earth	310627 310664	310727 310764	399127 399128
Weight (Kg)	2.4	2.6	2.9



Isolation section
310625

COLLECTORS

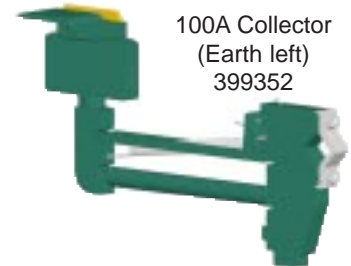
CURRENT RATING	50A	100A	250A
Phase	399360	310990	34956
Phase with stainless steel fastener		399675	
Earth - without deflector	399380	399355	
Earth - right hand	399373	399340	
Earth - left hand	399372	399352	
Weight (Kg)	0.38	0.8	2.00

50A and 100A collectors are supplied without cable.

Stranded cable terminal clamps are included.

250A collectors are supplied with 2 x 1m 35mm² cable.

250A collectors only suitable for use on 400A bar



COLLECTOR SHOE + HOLDER

CURRENT RATING	50A + 100A Phase - red	50A + 100A Earth - green	250A
Code	310993	399357	35289
Weight (Kg)	0.06	0.06	0.28

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

50 / 100A Collector
Shoe and Holder
310993

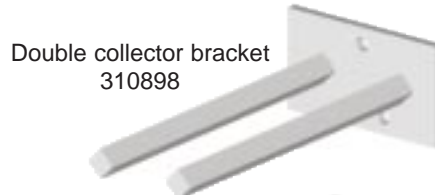


250A Collector
Shoe and Holder
35289



COLLECTOR BRACKET

	13mm SQUARE	Weight (Kg)	25mm SQUARE	Weight (Kg)
Single	310994	0.36	310991	0.88
Double	310898	0.74	310992	1.84



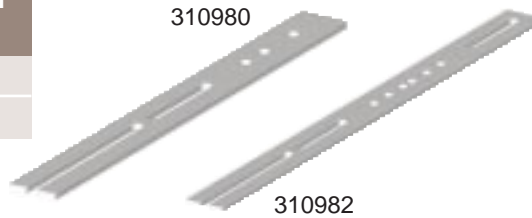
13mm square, 200mm long for use with 50A collector.



25mm square, 400mm long for use with 100A and 250A collectors.

BRACKETS: SINGLE SIDED BRACKET

	WEIGHT (Kg)
310980	0.66
310982	0.86



310980 - to suit beam flange 80-155mm.
310982 - to suit beam flange 155-305mm.

BRACKETS: DOUBLE SIDED BRACKET

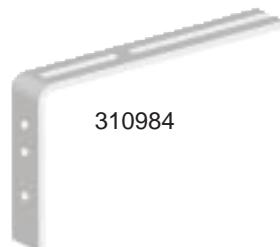
	WEIGHT (Kg)
310981	0.84
310983	1.08



310981 - to suit beam flange 80-185mm.
310983 - to suit beam flange 185-305mm.

BRACKETS: WEB BRACKET

	WEIGHT (Kg)
310984	0.62



BRACKETS: GIRDER CLAMP

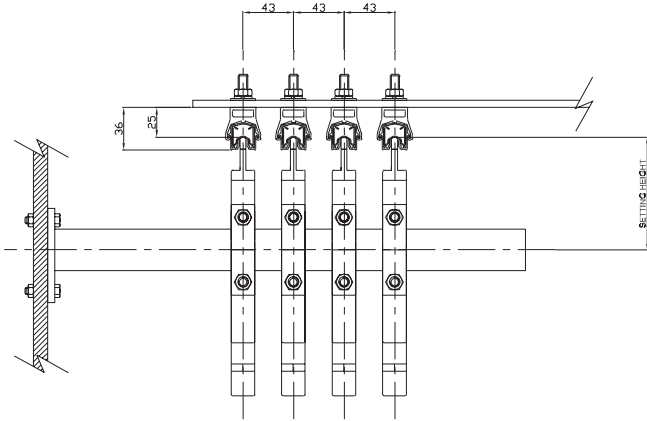
	WEIGHT (Kg)
310985	0.08



Update in Progress

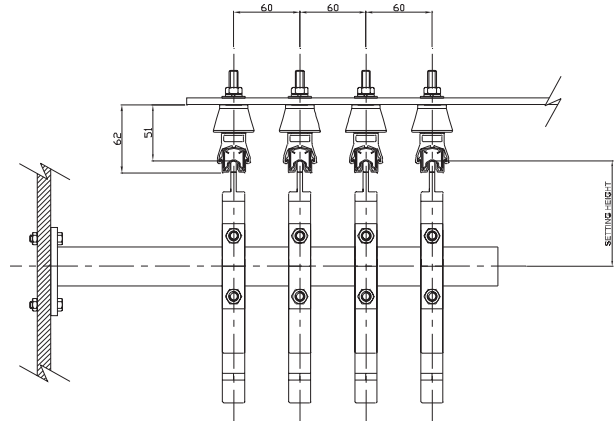
SYSTEM DIMENSIONS

STANDARD HANGER CLAMPS



SETTING HEIGHT - SEE RELEVANT COLLECTOR DRAWING FOR DIMENSION

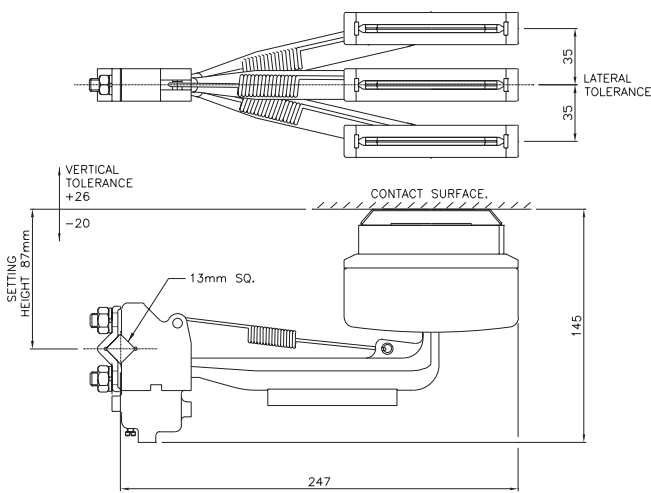
HANGER CLAMPS WITH INSULATOR



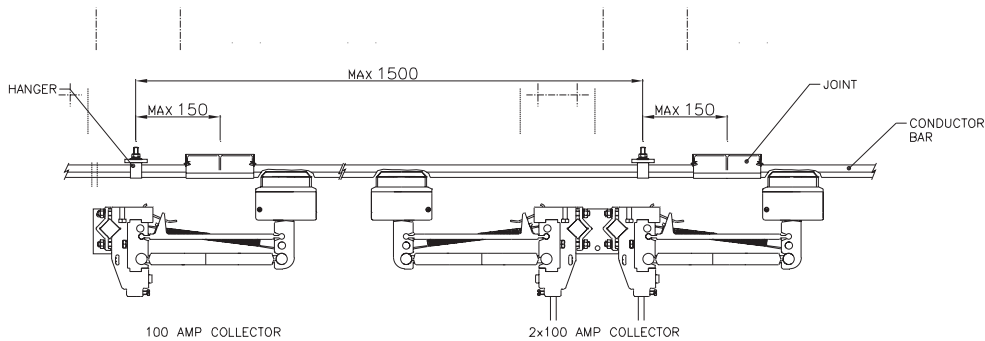
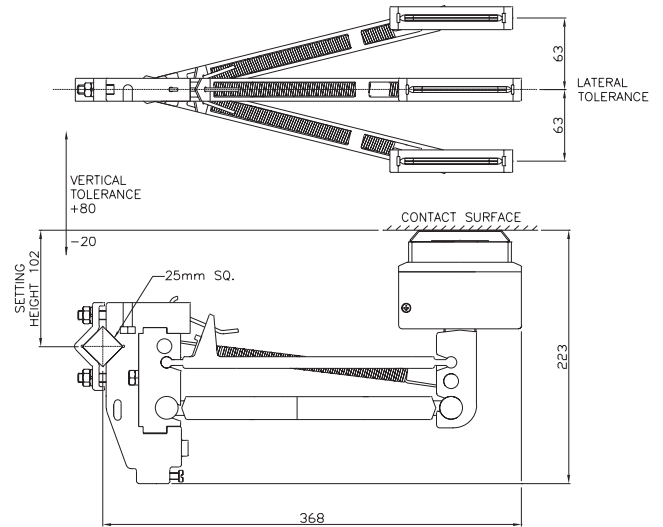
SETTING HEIGHT - SEE RELEVANT COLLECTOR DRAWING FOR DIMENSION

COLLECTOR SETTING DETAILS

50A COLLECTOR (399360)

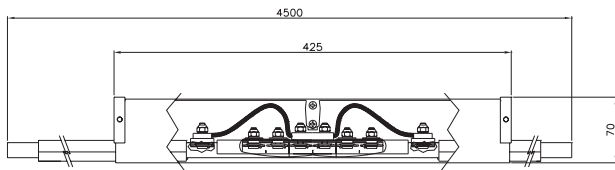


100A COLLECTOR (310990)

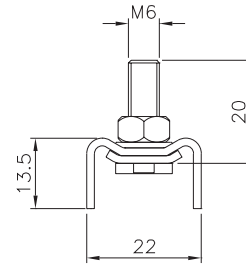


Update in Progress

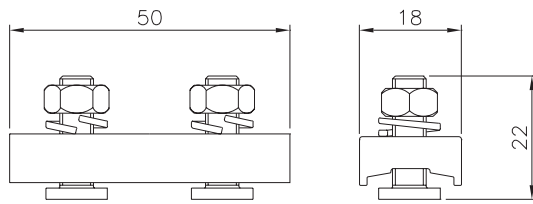
COMPONENT DIMENSIONS



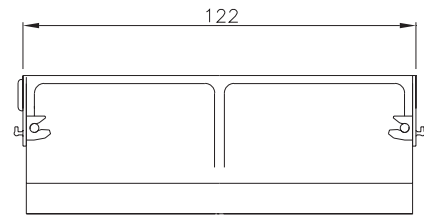
60A EXPANSION SECTION - Standard Phase Cover (310007)



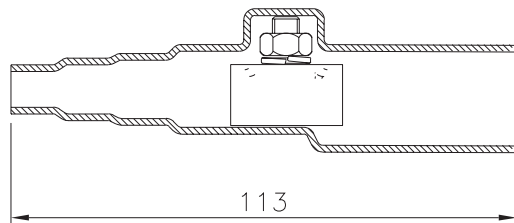
STEEL JOINT (310872)



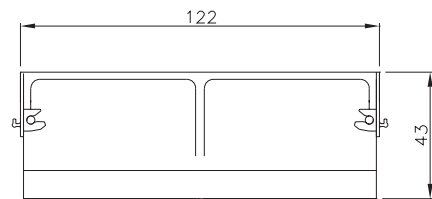
ALUMINIUM JOINT (310874)



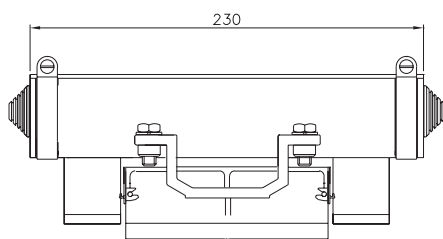
STANDARD PHASE COVER (310850)



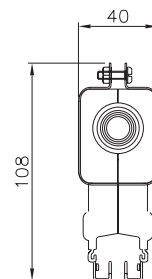
END POWERFEED (310911)



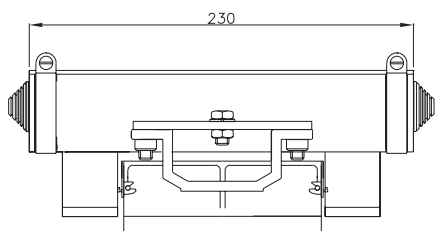
60A JOINT POWERFEED (310034)



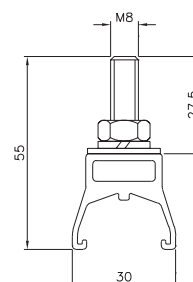
250A JOINT POWERFEED (310910)



250A JOINT POWERFEED (310910)



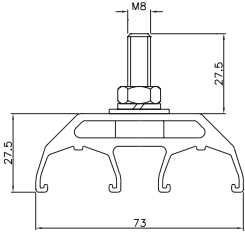
400A JOINT POWERFEED (310912)



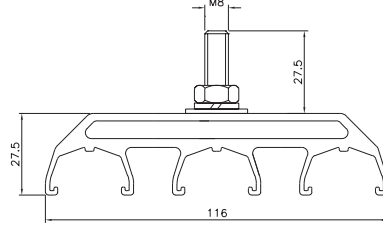
SINGLE POLE HANGER CLAMP Standard Mount (310824)

Update in Progress

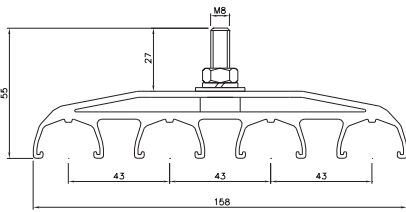
COMPONENT DIMENSIONS (Continued)



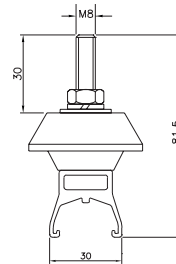
**TWO POLE
HANGER CLAMP
Standard Mount
(310882)**



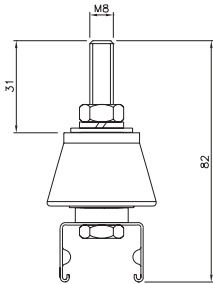
**THREE POLE
HANGER CLAMP
Standard Mount
(310861)**



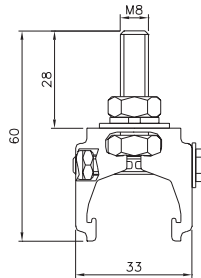
**FOUR POLE
HANGER CLAMP
Standard Mount
(310821)**



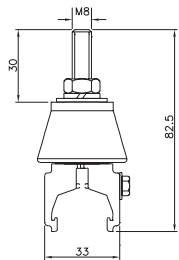
**SINGLE POLE
HANGER CLAMP
with Insulator
(310918)**



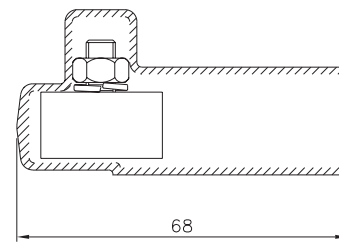
**STAINLESS STEEL
HANGER CLAMP
with Insulator
(310827)**



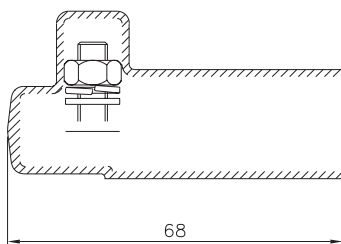
**ANCHOR CLAMP
(310832)**



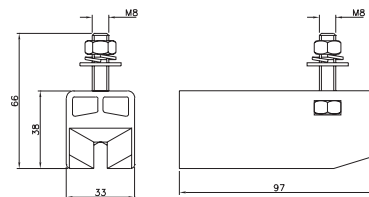
**ANCHOR CLAMP
With Insulator
(310969)**



**END CAP
for Steel / Copper Bar
(310892)**



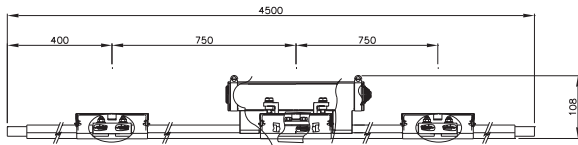
**END CAP
for Aluminium Bar
(310893)**



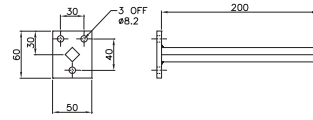
**TRANSFER END CAP
(310951)**

Update in Progress

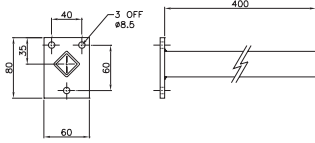
COMPONENT DIMENSIONS (Continued)



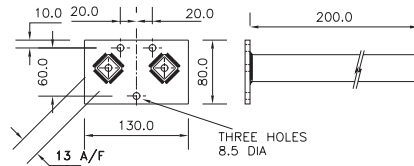
ISOLATION SECTION
Standard Phase Cover
(310025)



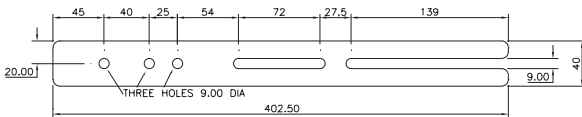
SINGLE COLLECTOR BRACKET
13mm square
(310994)



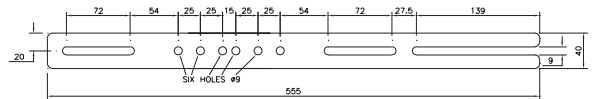
SINGLE COLLECTOR BRACKET
25mm square
(310991)



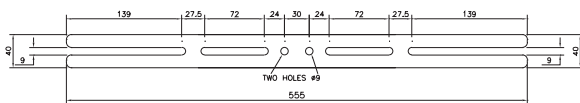
DOUBLE COLLECTOR BRACKET
13mm square
(310898)



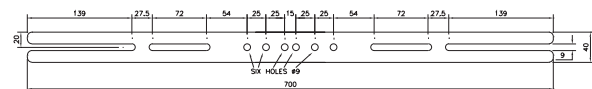
SINGLE SIDED BRACKET
(310980)



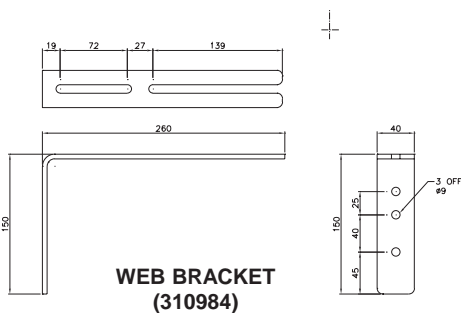
SINGLE SIDED BRACKET
(310982)



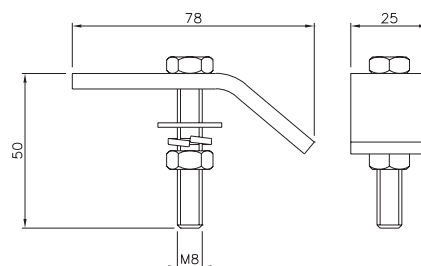
DOUBLE SIDED BRACKET
(310981)



DOUBLE SIDED BRACKET
(310983)



WEB BRACKET
(310984)



GIRDER CLAMP
(310985)

Update in Progress