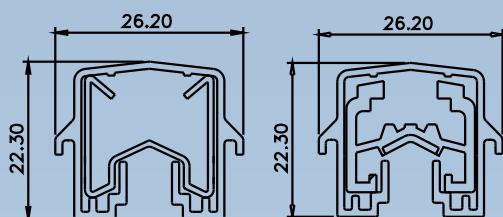




SAFE-LINE W

The Individual Conductor Bar System

Wide Range of Conductor Bar System



MOBILE ELECTRIFICATION SYSTEMS

SAFE-LINE W

The Individual Conductor Bar System

Safeline-W Insulated conductor bars are used for power transmission. Current Capacity ranges from 60 Amps. to 1250 Amps rated at 100% duty cycle & nominal voltage upto 660 V. They fulfill the requirements of latest international standards. All are safe to touch and designed finger proof. Conductor rail provide a safe and economical supply of electrical power for track guided mobile machinery.

SAFELINE W

Features

Insulated conductor are touch proof, no exposed live parts to contact.

Quick and easy installation with single bolt, 4 pole hanger.

60 to 400 Amps. Conductor in same standard

60,100 & 125 Amps. Galvanised Steel

200 & 315 Amps. Aluminium / Stainless Steel

160,250 & 400 Amps rolled Copper.

4.5 meters bar length

Cover designed to shed water and dust

Joint cover provides total protection of joints.

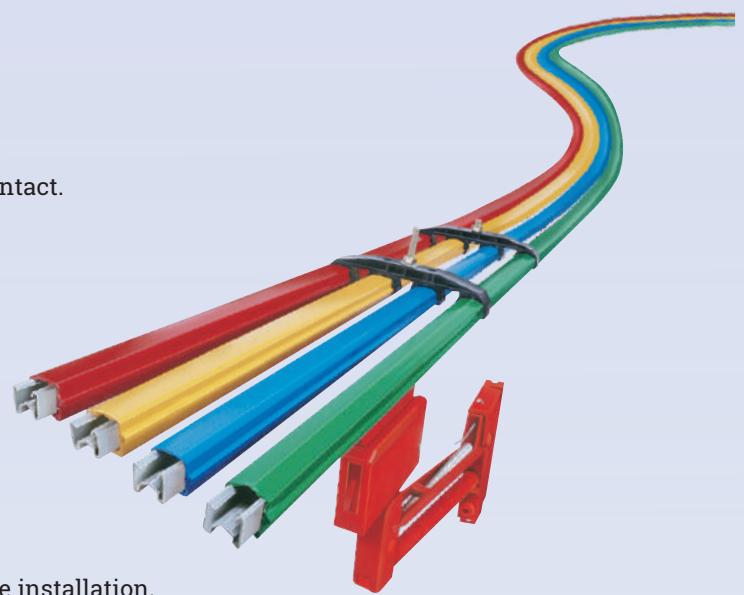
Enclosed wiring for connection on collectors for safe and simple installation.

No expansion joints up to 150 meters long system

Slide in slot features for hanger supports to eliminate mis-alignment

Track configuration :Straight or Curved.

Degree of protection IP:21



COMPONENTS / PARTS

25 Amps Collector



50 Amps Collector SP



100 Amps STD



100 Amps. SP



250 Amps Collector W



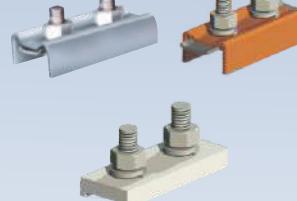
End Power feed



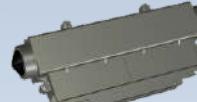
End Cover



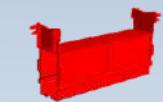
Steel Joint /Copper Joint/Aluminium Joint



Power feed Cover



Joint Cover



Shoe and Shoe Holder

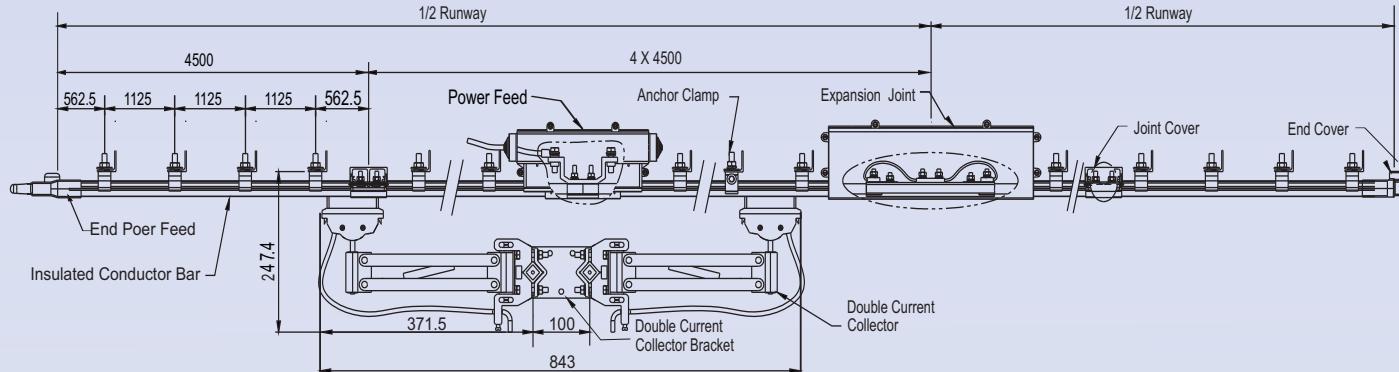


100 Amp Shoe



250 Amp Shoe

SYSTEM ARRANGEMENT FOR SAFELINE - W (60-400Amps.)



FEATURES

- Touch proof, no exposed live part
- Bolted Joint.
- Insulating cover shaped to shed water and dust.
- IEC-60204-1 (Safety of Machinery):
IEC-60529 (Protection Class using Housing)
- IEC-60364-5-54 (Electrical)
- Installation upto 1000V)
- Quick & easy Installation.
- 1 pole / 4 Pole Hanger.
- No Expansion Joints upto 150 meters long system.
- Track Configuration : Straight or Curved.
- Suitable for Indoor / Outdoor Installation.
- 60 to 400 Amps. Conductor in same standard.

Current capacity factor for different ambient temperature

Ambient Temperature		35°C	40°C	45°C	50°C	55°C
Standard Insulation	Galvanized Iron	1.0	0.90	0.80	0.70	0.60
	Aluminum Rail	1.0	0.92	0.81	0.76	0.68
	Copper Rail	1.0	0.93	0.87	0.82	0.78

Ambient Temperature		110°C	115°C	120°C	125°C	130°C	135°C	140°C
High Temperature	Galvanized Iron	1.0	0.9	0.8	0.7	0.6	0.5	0.4
	Aluminum Rail	1.0	0.92	0.81	0.76	0.68	0.63	0.59
	Copper Rail	1.0	0.93	0.87	0.82	0.78	0.74	0.72

Technical data Safeline W Bolted Joint Conductor Bar System

Conductor Bar System	Galvanised Steel			Copper			Aluminium/SS		
Type	WG60	WG100	WG125	WC160	WC250	WC400	WA200	WA315	WA400
Nominal Current (A) at 100% Duty and 35°C	60	100	125	160	250	400	200	315	400
DC Resistance (Ω/KM) at + 35°C	3.52	2.84	1.92	0.35	0.27	0.18	0.30	0.26	0.19
Impedance (Ω/KM) and + 35°C	3.55	2.86	1.92	0.36	0.30	0.22	0.32	0.29	0.23
Voltage grade [V]	1000								
Support Spacing [mm]	1125								
Bar Length [mm]	4500								
Minimum pitch center [mm]	43								
Traveling speed [MPM]	600 max								
Permissible ambient temperature	-30°C + 55°C (Standard Insulation) -30°C + 140°C (High Temperature Insulation)								
Minimum bending radius [m]	1.5								

*High temperature insulation on request up to 140° C

The Intermittent rating for conductors

RATING				
	100%	80%	60%	40%
ALLOWABLE CURRENT (AMPS)	60	66	77	94
	100	111	129	158
	125	138	161	197
	160	177	206	252
	200	222	258	316
	250	277	322	395
	315	349	406	497
	400	444	516	632

DSL - LOAD CALCULATION

Sizing systems for multiple hoists, motors, and/or multiple cranes

For a single crane : Size the conductor bar to handle 100% of the current draw of the largest motor or group of motors, plus 50% of the combined current draw of the other motors on the vehicle.

For multiple cranes or vehicles : Determine the current draw for each crane/vehicle, using the method above. Sum all the current draws for each crane/vehicle, then multiply the sum by the appropriate demand factor :

# of Crane/vehicles	Demand Factor
2	.95
3	.91
4	.87
5	.84
6	.81
7	.78

The most effective way to demonstrate each factor is with examples based upon the following :

Example :

10 Tonne overhead crane conductor system length 100 meters.

Maximum Temperature Range 0 degrees C, to 35 degrees C.

Environmental Conditions - Good Indoors.

Supply - 415 volts, 3 phase, 50 Cycles, with Single End Powerfeed.

Allowable volt drop in downshop conductors - 3%

Crane Motor Details :

	KW	Normal Motor Running Currents	Motor Starting Currents
Hoist (H)	20	35A	70A
Cross Travel (CT)	3	5.25A	12A
Long Travel Twin Drive	2 x 2	7A	14A

Thermal Electrical Loading :

The total electrical load is the sum of the simultaneous individual electrical loads produced by normal running. There are two types of load to be considered :

- 1 . Continuous load**
- 2 . Intermittent load**

On systems with more than one crane, determine the thermal electrical loading by considering the combination of the running currents of the motors marked.

No of Cranes	Largest Motor of All Cranes	Second Largest Motor of All Cranes	Third Largest Motor of All Cranes	Fourth Largest Motor of All Cranes
1	*	*		
2	*	*	*	
3	*	*	*	
4	*	*	*	*

In the above example the total thermal load would be $35 + 7 = 42A$. Therefore Safeline W - WG60 - 60Amps would be satisfactory.

INTENSITY DURING THE START-UP PHASE :

(2 seconds maximum)

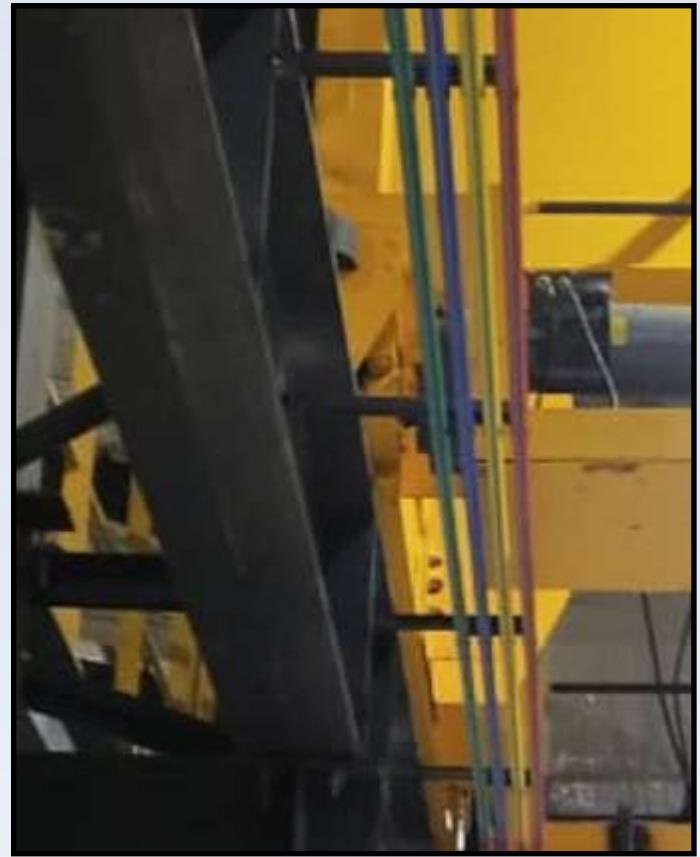
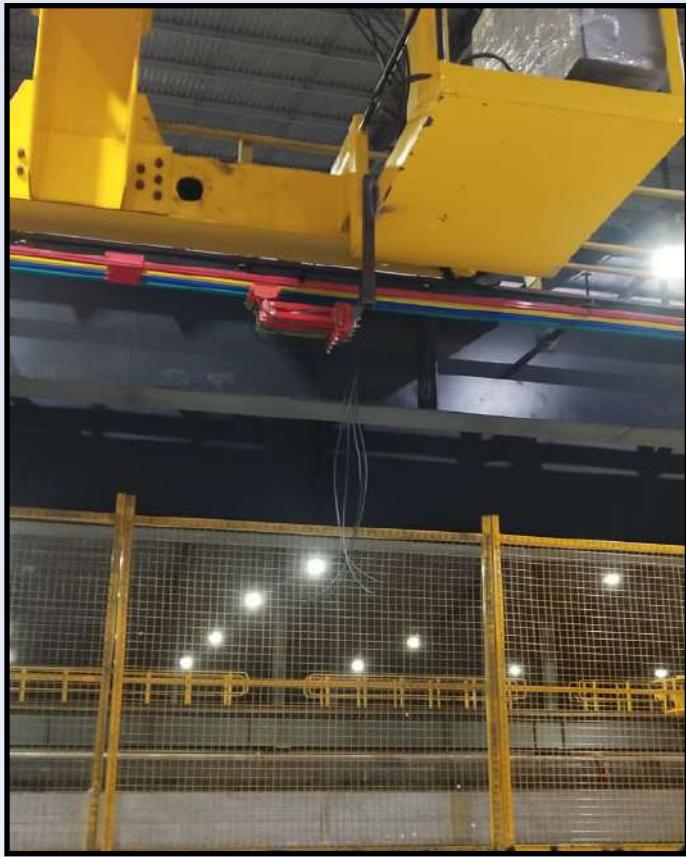
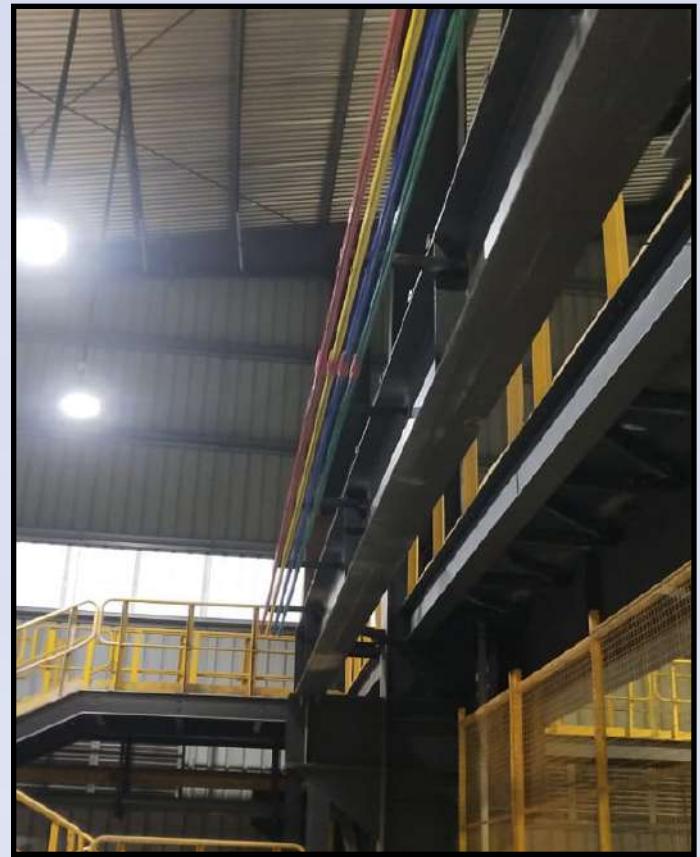
Take into account the number of motors starting up simultaneously and those already in operation, then calculate the corresponding intensity. When the start-up intensity is not known, find the approximate value as follows :

Standard squirrel cage motor	—	5 x normal running current
Type rotor motors - as used on some hoists	—	7 x normal running current
Slip Ring motors	—	2 x normal running current

In the absence of information about running simultaneity of crane, please refer to the table hereunder :

Number of crane on the line	For all the Cranes (IN)							
	1" motor		2" motor		3" motor		4" motor	
	I_d	I_n	I_d	I_n	I_d	I_n	I_d	I_n
1	x			x				
2	x			x		x		
3	x		x			x		
4	x		x			x		x

INSTALLATION PICTURES



ENQUIRY FORM

1- Power Consumer Type :

(traveling crane, monorail, transtocker etc.)

2 - Length of the Installation : _____ m

3 - Type of Current : AC DC _____ V _____ Hz

4 - Number of Poles : _____ phase _____ earth _____ neutral

5 - Current (if know) : _____ A

6 - Features of Crans :

MOTOR (IN KW)	CRANE 1	CRANE 2	CRANE 3
HOST			
LONG TRAVEL			
CROSS TRAVEL			
OTHERS (PLEASE SPECIFY)			

7 - Type of Motor Start-Up (direct vanator, additional resistors)

8 - Stationary Use : yes no

9 - Duty Cycle Factor (maximum rate of use per 10 min period) : _____ %

10 - Operation : indoors outdoors

11 - Temperature : min _____ °c max _____ °c

12 - Permissible voltage Drop : in continuous: _____ (default value : 2%)

at start-up: _____ (default value : 5%)

13 - Installation Environment (dust, humidity, chemical agents) :

14 - Traveling Speed of Mobile : _____ m/mn

15 - Number and Position of Feeding Points along the line :

16 - Supply of Fixing Brackets (see page 15) : yes no

17 - Other Information about the Installation :

18 - For Installations with curves, Transfers or Other special Elements,

Please Include Drawing or a sketch

19 - Contact Data :

• Company :

• For the attention of :

• Department :

• Postal address :

• Telephone :

• Fax :

• E-mail :

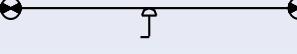
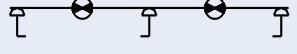
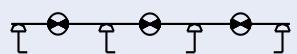
SAFE-LINE W

The Individual
Conductor Bar System



Effects of various power feed positions on Volt Drop Calculations.

Selection of feed-in points. The feed-in point for every application must be selected because the length L between power feed and conductor rail end is used for calculating the voltage drop. Following feed - in points can normally be used.

Powered Position	Schematic Diagram Indicates Positions of Maximum Volt Drop	Effective Length to be used in Volt Drop Calculations	Voltage Drop
Endfeed		LVD = L	The allowable volt drop determines, the maximum allowable resistance of conductor. The value of volt drop within a conductor system is effected by effective length of system and current drawn.
Center-feed		LVD = $\frac{L}{2}$	
Two end feed		LVD = $\frac{L}{4}$	
Two feeds both in from end		LVD = $\frac{L}{6}$	Volt Drop Calculation For A. C. Machine 3 phase ΔU Volt drop = length (D) x Impedance (Z) x Current (I) x $3\sqrt{3}$
Three feeds at in from ends and centre		LVD = $\frac{L}{10}$	$U \% = \frac{\Delta U}{U_n} \times 100 [\%]$

PRODUCT RANGE - INDIVIDUAL

System Design	Insulated Conductor Bar				Heavy Conductor Bar	
Conductor Bar System	Safeline-W	Safeline-M	Safeline-U	Safeline-C	Safeline-V	Safeline-V
Type of Joints	Bolted	Pin	Joint Less	Joint Less	Aluminium	Copper
						
Nominal Current (A)	60-400	60-315	70-100	40-140	500-800-1000-1250	500-800-1000-1250
Volts (V)	600	600	600	600	600	600
Support Spacing (m)	1.125	1.125	1.2	1.2	2.25	2.25
Bar Length	4500	4500	4500	4800	4500	4500
Outside Dimensions (mm)	23 x 27	20 x 22	74 x 14	34 x 19	42 x 32	42 x 32

System Design	Enclosed Conductor Bar			
Conductor Bar System	Safe-Duct 5	Safe-Duct 7	Safe-Duct 4	Safe-Duct Mini
Type of Joints	Bolted/Joint Less	Bolted/Joint Less	Bolted/Joint Less	Bolted/Joint Less
				
Nominal Current (A)	40-60-80-100-140-200	40-60-80-100-140	40-60-80-100-140	40-60
Volts (V)	600	600	600	600
Support Spacing (m)	1.333	1000	1000	1000
Bar Length	4000	4000	4000	4000
Outside Dimensions (mm)	85 x 56	87 x 52	87 x 52	60 x 40