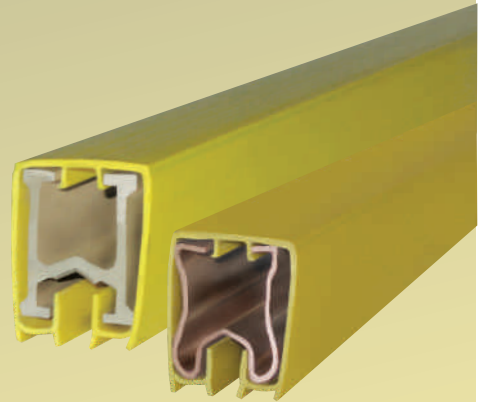


SAFE-LINE V

Heavy Conductor Bar System

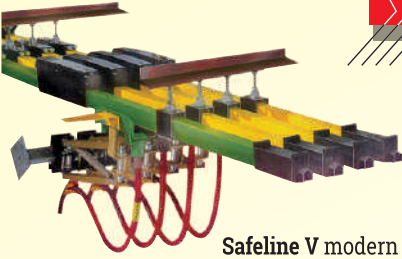


Wide Range of Conductor Bar System



MOBILE ELECTRIFICATION SYSTEMS

SAFE-LINE V



Heavy Conductor Bar System

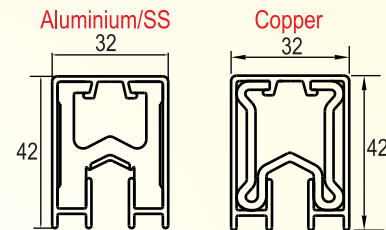
Safeline V insulated conductor bar system are used for power transmission. Current capacity from 500 Amps. to 2000 Amps., rated at 100% duty cycle and nominal voltage up to 600V Conductor Bar provide a safe and economical power for track guided mobile machinery.

Safeline V modern power supply system using single pole insulated conductor. The applications of this system are travelling cranes, container traffic and special application used for high energy consumption under difficult conditions. The conductor material is copper (500 Amps., 800 Amps., 1000 Amps., 1250 Amps) aluminium (500 Amps., 800 Amps., 1000 Amps., 1250 Amps) The aluminium conductor bar is provided proven and patented stainless steel contact surface. For high temperature conditions; a high temperature insulation cover up to 140° C is available. The phase conductor are yellow colour and earth insulation cover is green.

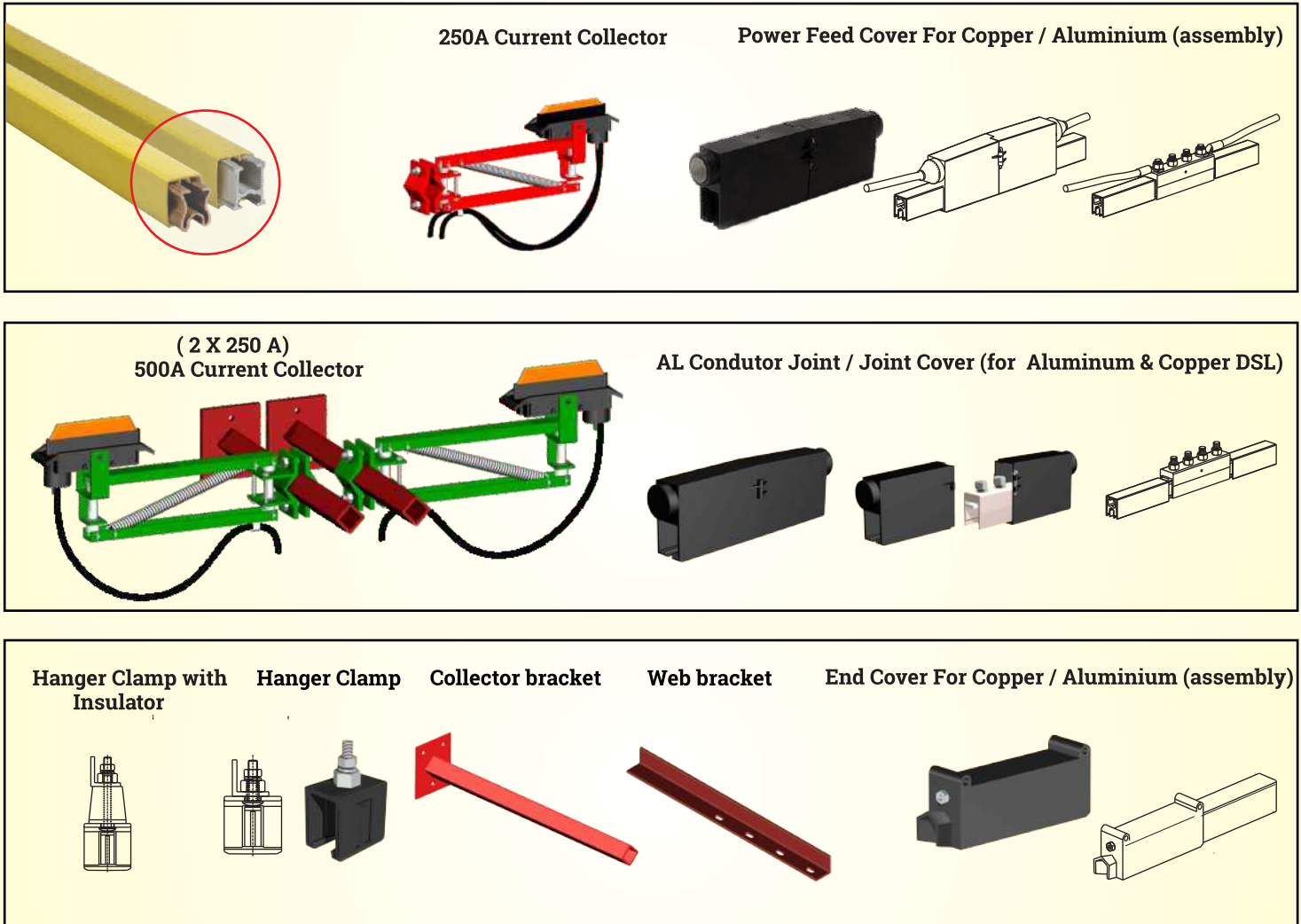
The spring loaded collector can be used for horizontal / vertical installation in single or double version. Installation of conductor bar system is simple maintenance is confine to a routine check of collectors.

MAIN APPLICATION

- Crane and Hoist
- Monorail
- Automated storage System.
- Moving equipment
- Elevators
- Amusement Park Rides
- Transfer Car
- People mover

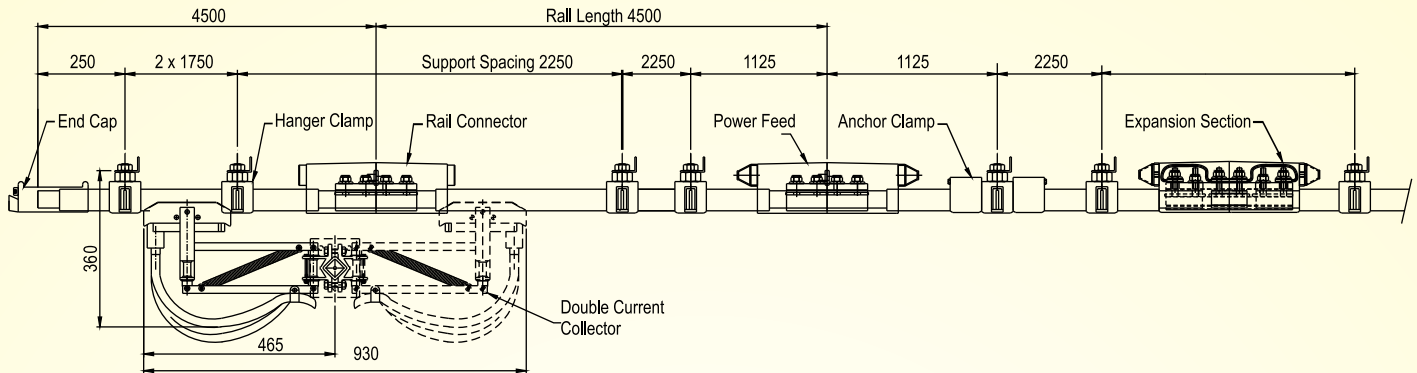


COMPONENTS / PARTS





SYSTEM ARRANGEMENT FOR SALINE-V (500-2000Amps.)



FEATURES

- Insulated Conductor Bar are touch proof.
- Quick & easy Installation.
- 500, 800, 1000 & 1250 in same standard.
- 500, 800, 1000, 1250 Amps Aluminium / Stainless Steel.
- 500, 800, 1000, 1250 Amps. Copper.
- No expansion joint upto 200 meter long system.
- Horizontal Installation.
- Spring loaded Current Collectors 250A / 500A.
- IEC-60204-1 (Safety of Machinery):
- IEC-60529 (Protection Class using Housing)
- IEC -60364-5-54 (Electrical Installation upto 1000V)

Current capacity factor for different ambient temperature

Ambient Temperature		35°C	40°C	45°C	50°C	55°C
Standard Insulation	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	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 V Bolted Joint Conductor Bar System

Conductor Bar System	Aluminium/Stainless Steel				Copper			
Standard Type	VA500	VA800	VA1000	VA1250	VC500	VC800	VC1000	VC1250
High Temperature Type	VAH500	VAH800	VAH1000	VAH1250	VCH500	VCH800	VCH1000	VCH1250
Nominal Current (A) at 100% Duty and 35°C	500	800	1000	1250	500	800	1000	1250
DC Resistance (Ω/KM) at + 35°C	0.097	0.074	0.051	0.028	0.104	0.057	0.044	0.033
Impedence (Ω/KM) and + 35°C	0.157	0.144	0.137	0.131	0.161	0.136	0.130	0.127
Voltage grade [V]	1000							
Support Spacing [mm]	2250							
Bar Length [mm]	4500							
Minimum pitch center [mm]	80							
Traveling speed [MPM]	600 max							
Permissible ambient temperature	-30°C + 55°C (Standard Insulation) -30°C + 140°C (High Temperature Insulation)							

The Intermittent rating for conductors

RATING				
ALLOWABLE CURRENT (AMPS)	100%	80%	60%	40%
	500	555	645	790
	800	888	1032	1264
	1000	1110	1290	1580
	1250	1387	1612	1975

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)	200	350A	700A
Cross Travel (CT)	40	70A	140A
Long Travel Twin Drive	55 x 2	192A	384A

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 $350 + 192 = 542A$. Therefore Safeline V-VA800/VC800 - 800Amps 800Amps would be satisfactory.

INTENSITY DURING THE START-UP PHASE :

(2 seconds maximum)

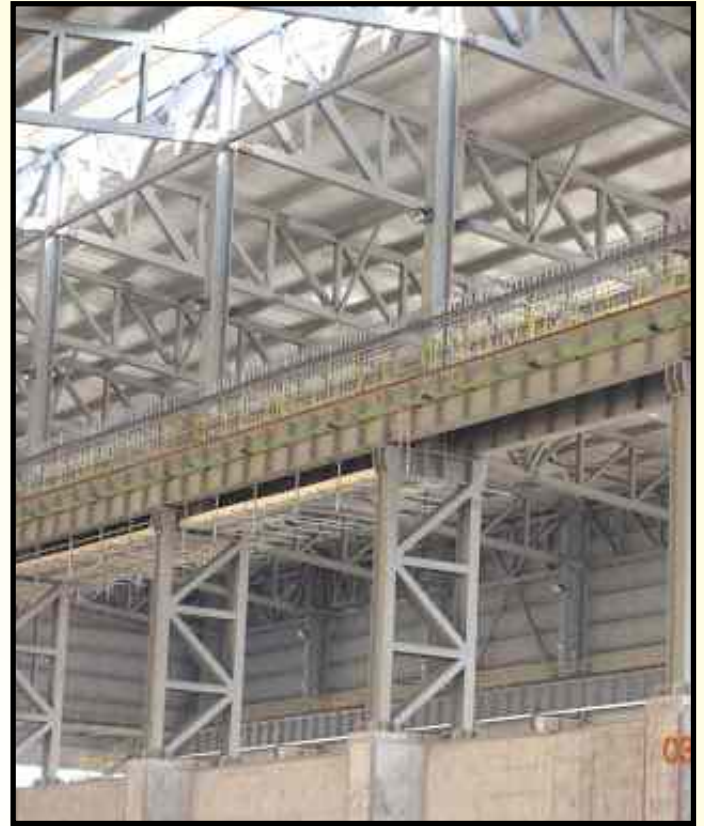
Take into account the number of motors starting up simultaneously and those already in operation, then calculate the corresponding intensity. When the start-up intensity is not known, find the approximate value as follows :

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 :



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 Collector symbol Indicates Positions of Maximum Volt Drop	Effective Length to be used in Volt Drop Calculations	Voltage Drop
Endfeed		$LVD = L$	<p>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.</p> <p>Volt Drop Calculation For A. C. Machine 3 phase</p> <p>ΔU Volt drop = length (D) x Impedance (Z) x Current (I) x $3\sqrt{}$</p> <p>$U \% = \frac{\Delta U}{U_n} \times 100 [\%]$</p>
Center-feed		$LVD = \frac{L}{2}$	
Two end feed		$LVD = \frac{L}{4}$	
Two feeds both in from end		$LVD = \frac{L}{6}$	
Three feeds at in from ends and centre		$LVD = \frac{L}{10}$	

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

H. O. Unit - I : C-15/16, Nand Jyot Industrial Estate, Andheri-Kurla Road, Mumbai - 400072,
Tel : (022) 42469700/730
E-mail : sales@socgroup.in

Unit - II: Plot No. 4912, G. I. D. C., Phase IV, Vatva, Ahmedabad - 382445
Tel.: (079) 68169700/702/712
E-mail : enquiry2@socgroup.in

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