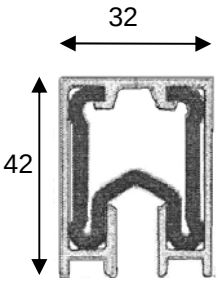
SafeTrack 3
SHROUDED CONDUCTORS
VOLTAGE DROP CALCULATIONS

Shrouded Conductor System For Cranes / Hoist Electric Trollies/ Material Handlings Equipments

VOLTAGE DROP

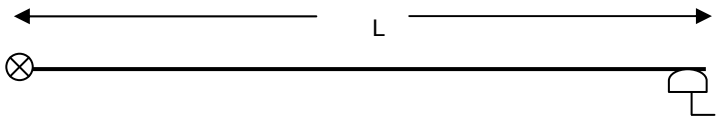
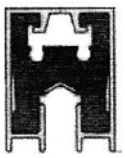
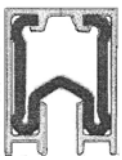
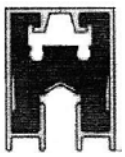
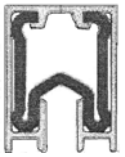
A.C $V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$

D.C $V_d = 2 \cdot l \cdot I_{total} \cdot R_{dc}$



V_d	=	Voltage Drop in Volts
I_{total}	=	Total Current in Amps
Z_{ac}	=	Impedence in Ohms/Mtr
R_{dc}	=	Resistance in Ohms/Mtr
l	=	Effective Length in Mtrs
L	=	System length in Mtrs
⊗	=	Power Feed
	=	Collector

CONDUCTOR	500A	800A	1000A	500A	800A	1000A		
Material	Aluminium/SS			Copper				
Impedence Ohms/M +35 °C	.000158	.000145	.000138	.000162	.000138	.000128		
DC Resistance Ohms/M +35 °C	.000098	.000075	.000052	.000105	.000058	.000035		

Power Feed Position ⊗	Schematic Diagram . Collector Symbol Indicates Position Of Maximum Voltage Drop	Effective Length l for voltage drop calculation
End Feed		$l = L$
For two cranes ; total current assumed 900A With 1000A **Aluminium** Busbar Bay length 245Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 245 900 .000138 = 52.6 Volts drop	
For two cranes ; total current assumed 900A With 1000A **copper** busbar Bay Length 245Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 245 900 .000128 = 48.8 Volts drop	
For one crane ; total current assumed 1000A With 1000A **Aluminium** Busbar Bay length 250Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 250 1000 .000138 = 59.7Volts drop	
For one crane ; total current assumed 1000A With 1000A **copper** busbar Bay Length 250Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 250 1000 .000128 = 55.4 Volts drop	

Mfrr : Susheel Engineering Corporation , D-7, GHATKOPAR INDUSTRIAL ESTATE, OFF L.B.S.MARG, GHATKOPAR (WEST) MUMBAI -400 086
TEL 022–6798 8642, 6796 9715, 2500 7976. FAX 2500 8039 MBL 98201 92091 Email safetrack@vsnl.com , vishu@bom2.vsnl.net.in

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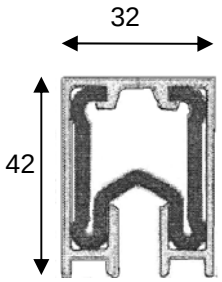

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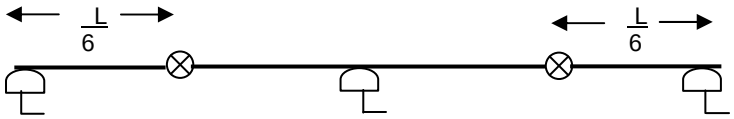
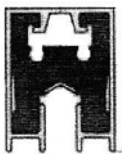
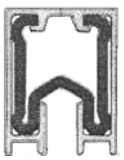
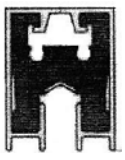
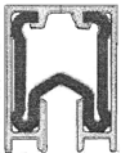
Power Feed Position ⊗	Schematic Diagram . Collector Symbol Indicates Position Of Maximum Voltage Drop	Effective Length l for voltage drop calculation
Two Power Feeds at $\frac{L}{6}$ from each end of system		$l = \frac{L}{6}$
For two cranes ; total current assumed 900A With 1000A **Aluminium** Busbar Bay length 245Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 $\frac{245}{6}$ 900 .000138 = 8.8 Volts drop	
For two cranes ; total current assumed 900A With 1000A **copper** busbar Bay Length 245Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 $\frac{245}{6}$ 900 .000128 = 8.15 Volts drop	
For one crane ; total current assumed 1000A With 1000A **Aluminium** Busbar Bay length 250Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 $\frac{250}{6}$ 1000 .000138 = 9.9 Volts drop	
For one crane ; total current assumed 1000A With 1000A **copper** busbar Bay Length 250Mtrs	$V_d = \sqrt{3} \cdot l \cdot I_{total} \cdot Z_{ac}$ = 1.73 $\frac{250}{6}$ 1000 .000128 = 9.2 Volts drop	

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