

# Single Pole Individually Insulated Conductors



- ◆ Finger safe to IP2
- ◆ Quick and easy installation with single-bolt 4-pole hanger
- ◆ 60 to 400 Amp conductors in the same standard or medium heat cover
- ◆ Cover shaped to shed water and dust
- ◆ Bar length = 4.5m
- ◆ Systems up to 150m without expansion sections
- ◆ Reduced and simpler maintenance
- ◆ Curved systems available
- ◆ Heater wire systems available


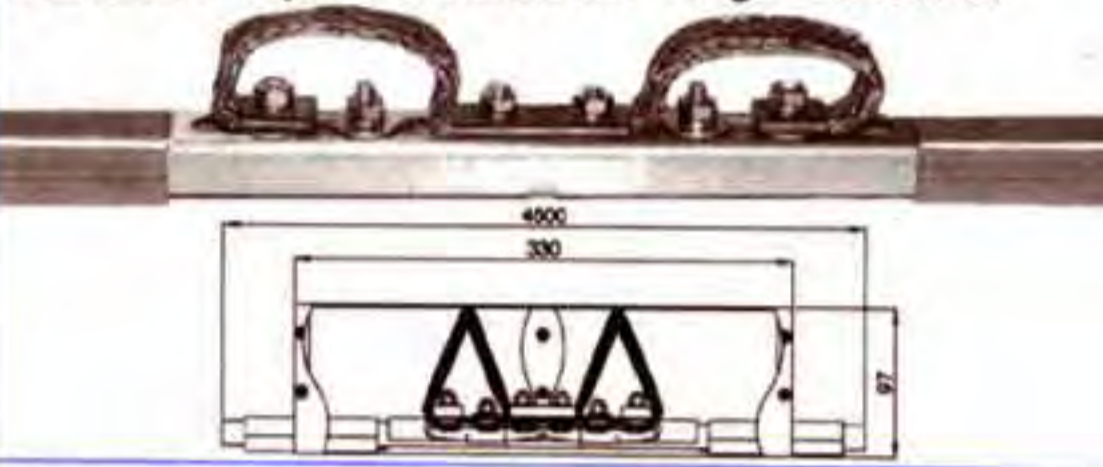
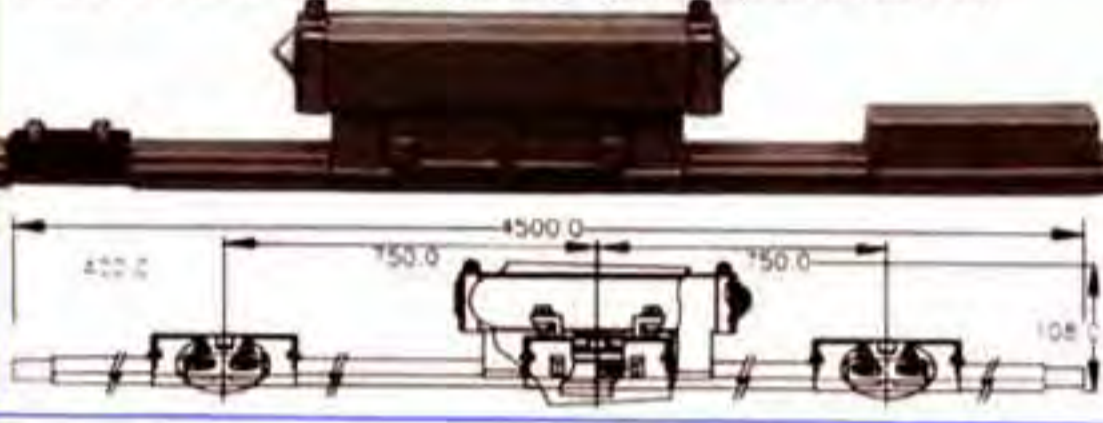


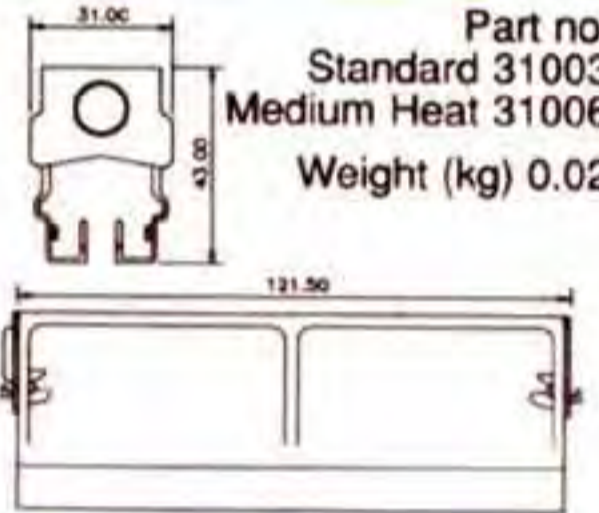
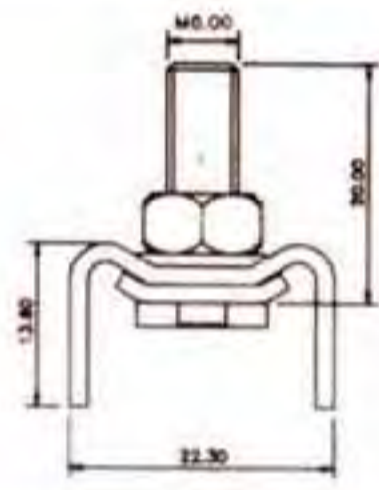
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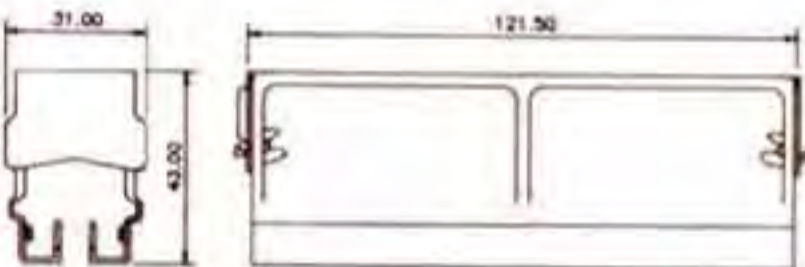
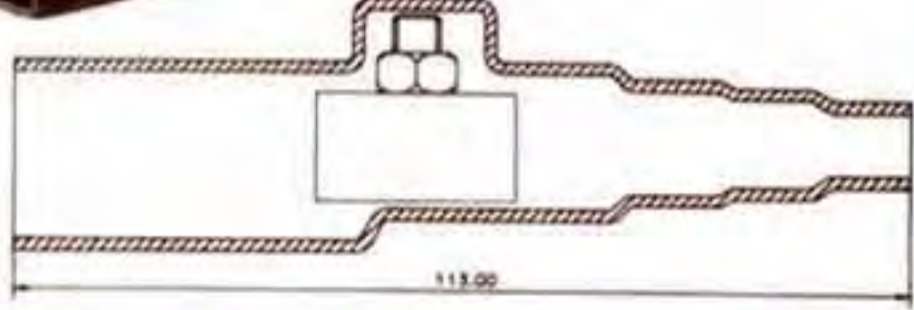


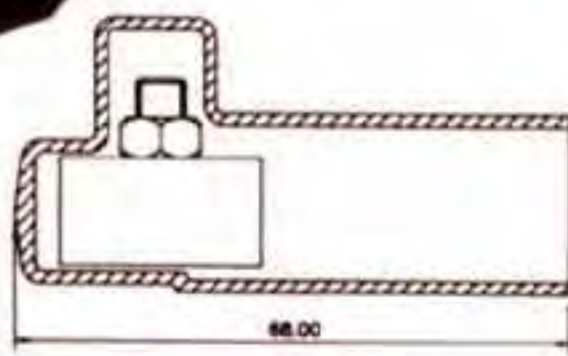
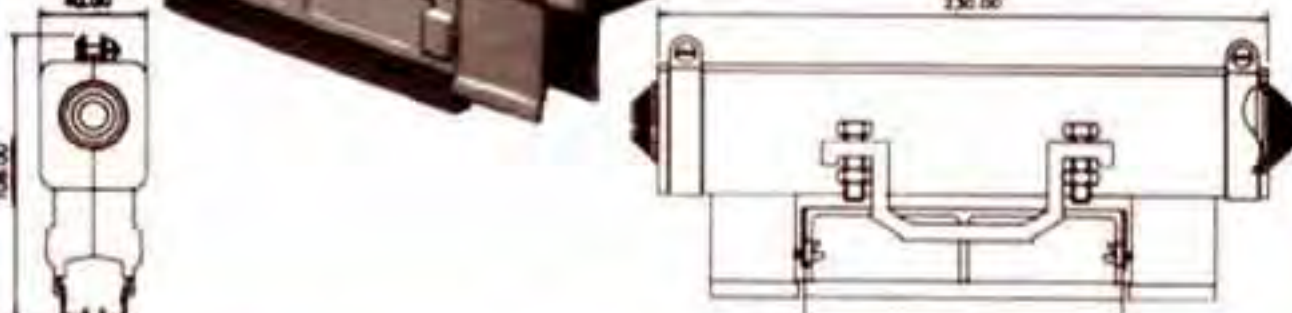


Certificate No. FM 21334


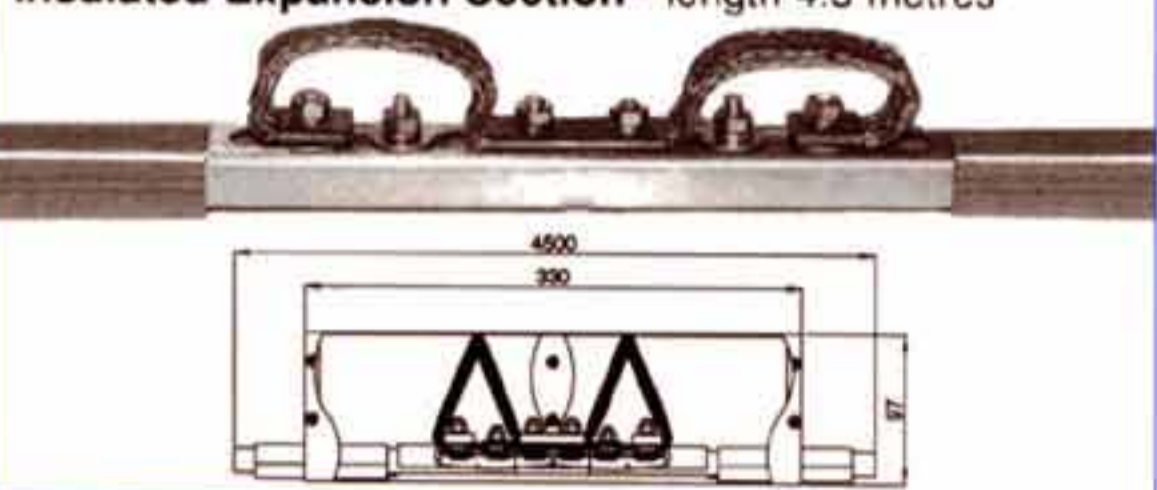
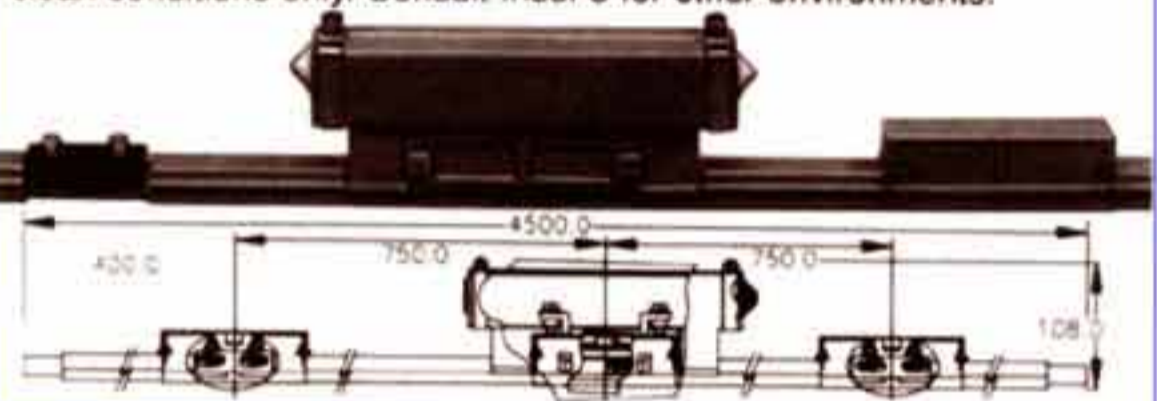


## GALVANISED STEEL

		60 Amp Part No.	100 Amp Part No.	125 Amp Part No.
<b>Insulated Conductor Bar - length 4.5 metres</b> 	Standard Phase Cover (Bolted Joint)	310001	310101	310201
	Standard Earth Cover (Bolted Joint)	310002	310102	310202
	Medium Heat Phase Cover (Bolted Joint)	310003	310103	310203
	Medium Heat Earth Cover (Bolted Joint)	310056	310156	310256
	Weight (kg)	2.410	2.860	3.890
<b>Insulated Expansion Section - length 4.5 metres</b> 	Standard Phase Cover (Bolted Joint)	310007	310107	310207
	Standard Earth Cover (Bolted Joint)	310008	310108	310208
	Medium Heat Phase Cover (Bolted Joint)	310009	310109	310209
	Medium Heat Earth Cover (Bolted Joint)	310058	310158	310258
	Weight (kg)	3.540	3.970	5.030
<b>Isolation Section - length 4.5 metres. For use in dry, clean conditions only. Consult Insul-8 for other environments.</b> 	Standard Phase Cover (Bolted Joint)	310025	310125	310225
	Standard Earth Cover (Bolted Joint)	310026	310126	310226
	Medium Heat Phase Cover (Bolted Joint)	310027	310127	310227
	Medium Heat Earth Cover (Bolted Joint)	310064	310164	310264
	Weight (kg)	2.710	3.160	4.190
<b>Joint Powerfeed up to 60Amp</b> 	Part nos. Standard 310034 Medium Heat 310066 Weight (kg) 0.027	<b>Steel Joint</b> 		Part no. 310872 Weight (kg) 0.041
				

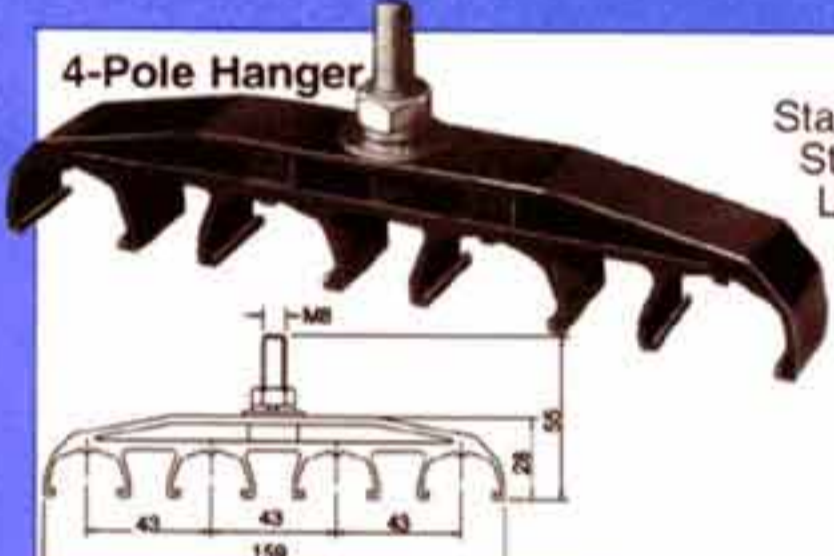






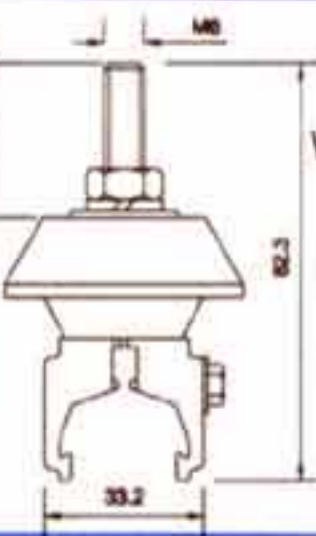

## COMPONENTS COMMON TO ALL SYSTEMS

<b>Joint Cover</b> 	Part nos. Standard Phase 310850 Standard Earth 310851 Medium Heat Phase 310855 Medium Heat Earth 310856 Weight (kg) 0.027	<b>End Powerfeed (supplied unassembled)</b> 	Part no. 310911 (up to 100 Amp) Weight (kg) 0.037
			
<b>End Cover (supplied unassembled)</b> 	Part nos. Steel/Copper 310892 Aluminium 310893 Weight (kg) 0.020	<b>Powerfeed and Cover</b> 	Part nos. Standard 310910 (up to 250 Amp) Standard 310912 (up to 400 Amp) Medium Heat 310913 (up to 250 Amp) Medium Heat 310915 (up to 400 Amp) Weight (kg) 0.179
			


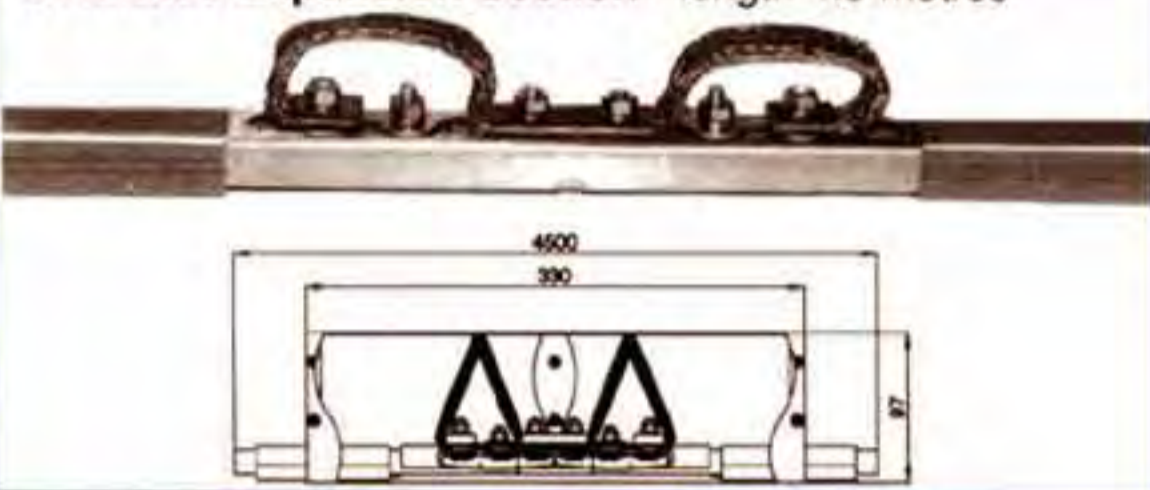
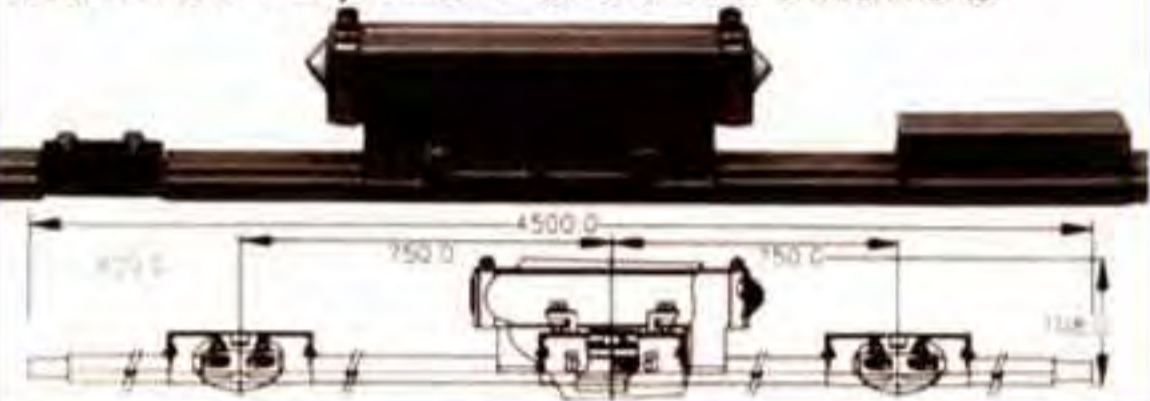


## COPPER

		160 Amp Part No.	250 Amp Part No.	400 Amp Part No.
<b>Insulated Conductor Bar - length 4.5 metres</b> 	Standard Phase Cover Standard Earth Cover Medium Heat Phase Cover Medium Heat Earth Cover Weight (kg)	310301 310302 310303 310356 2.670	310401 310402 310403 310456 3.120	310501 310502 310503 310556 4.380
<b>Insulated Expansion Section - length 4.5 metres</b> 	Standard Phase Cover Standard Earth Cover Medium Heat Phase Cover Medium Heat Earth Cover Weight (kg)	310307 310308 310309 310358 3.810	310407 310408 310409 310458 4.270	310507 310508 310509 310558 5.530
<b>Isolation Section - length 4.5 metres. For use in dry, clean conditions only. Consult Insul-8 for other environments.</b> 	Standard Phase Cover Standard Earth Cover Medium Heat Phase Cover Medium Heat Earth Cover Weight (kg)	310325 310326 310327 310364 2.970	310425 310426 310427 310464 3.420	310525 310526 310527 310564 4.680
<b>Copper Joint</b> 	Part no. 310873 Weight (kg) 0.044	<b>Jointing Compound</b> Contents sufficient for over 300 connections Please consult Factory for advice on use		Part no. 310932 Weight (kg) 0.225 

## COMPONENTS COMMON TO ALL SYSTEMS (Hangers and Clamps)

<b>4-Pole Hanger</b> 	Part nos. Standard Mount, Black 310821 Standard Mount, Red 310857 Lateral Mount, Black 310835 Lateral Mount, Red 310859 Weight (kg) 0.057	<b>3-Pole Hanger</b> 	Part nos. Black 310861 Red 310871 Weight (kg) 0.044
<b>2-Pole Hanger</b> 	Part nos. Black 310882 Red 310899 Weight (kg) 0.030	<b>1-Pole Hanger</b> 	Part nos. Black 310824 Red 310829 Weight (kg) 0.030
<b>Anchor Clamp</b> 	Part no. 310832 Weight (kg) 0.046	<b>1-Pole Hanger with Insulator</b> 	Part nos. Black 310918 Red 310834 Weight (kg) 0.120
<b>1-Pole Hanger with Insulator</b> 	Part no. 310969 Weight (kg) 0.140	<b>Anchor Clamp with Insulator</b> 	Part no. 310827 Weight (kg) 0.130
<b>1-Pole Stainless Steel Hanger with Insulator</b> 			

## ALUMINIUM / STAINLESS STEEL

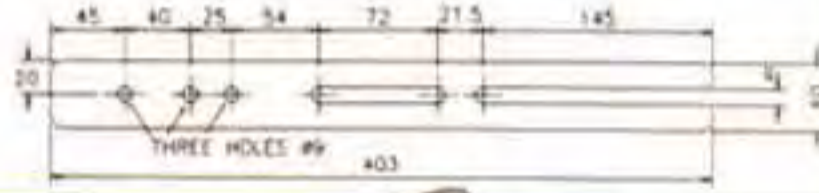
		200 Amp Part No.	315 Amp Part No.
<b>Insulated Conductor Bar - length 4.5 metres</b> 	Standard Phase Cover Standard Earth Cover Medium Heat Phase Cover Medium Heat Earth Cover Weight (kg)	310601 310602 310603 310656 2.100	310701 310702 310703 310756 2.300
<b>Insulated Expansion Section - length 4.5 metres</b> 	Standard Phase Cover Standard Earth Cover Medium Heat Phase Cover Medium Heat Earth Cover Weight (kg)	310607 310608 310609 310658 3.230	310707 310708 310709 310758 3.430
<b>Isolation Section - length 4.5 metres. For use in dry, clean conditions only. Consult Insul-8 for other environments.</b> 	Standard Phase Cover Standard Earth Cover Medium Heat Phase Cover Medium Heat Earth Cover Weight (kg)	310625 310626 310627 310664 2.400	310725 310726 310727 310764 2.600
<b>Aluminium Joint</b> 	Part no. 310874 Weight (kg) 0.032	<b>Jointing Compound</b> Contents sufficient for over 300 connections Please consult Factory for advice on use 	
	Part no. 310932 Weight (kg) 0.225		

## COMPONENTS COMMON TO ALL SYSTEMS (Clamps and Brackets)

**Single Sided Bracket**  
Beam 80-155mm



Part no. 310980  
Weight (kg) 0.540



**Double Sided Bracket**  
Beam 80-185mm



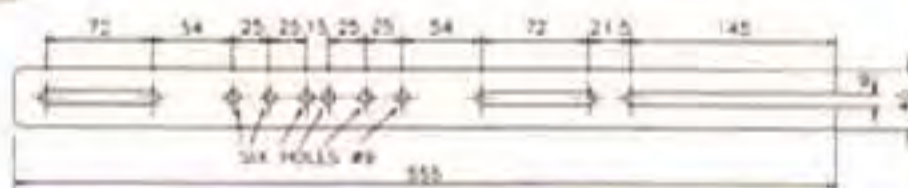
Part no. 310981  
Weight (kg) 0.720



**Single Sided Bracket**  
Beam 170-305mm



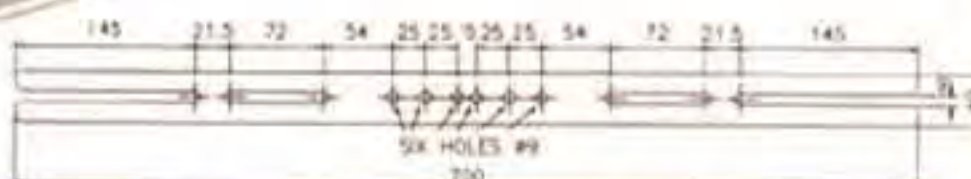
Part no. 310982  
Weight (kg) 0.740



**Double Sided Bracket**  
Beam 191-305mm



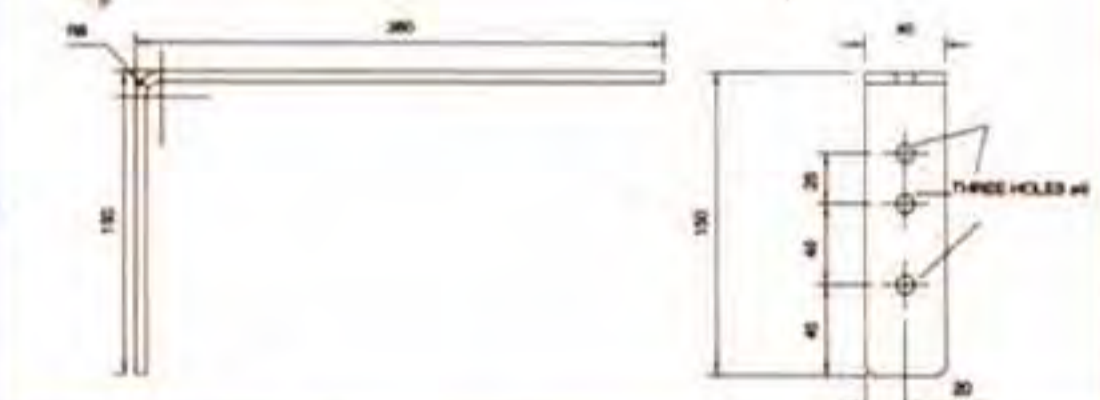
Part no. 310983  
Weight (kg) 0.880



**Web Bracket**



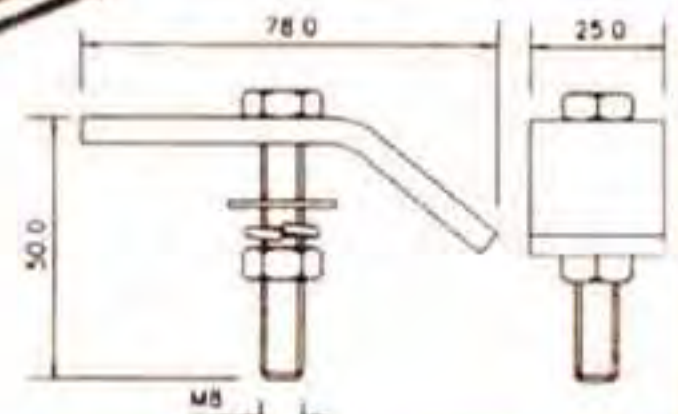
Part no. 310984  
Weight (kg) 0.540



**Girder Clamp**

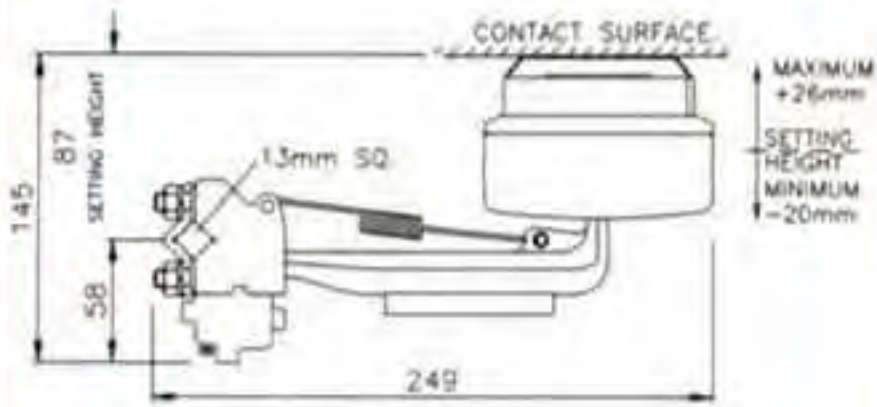


Part no. 310985  
Weight (kg) 0.106

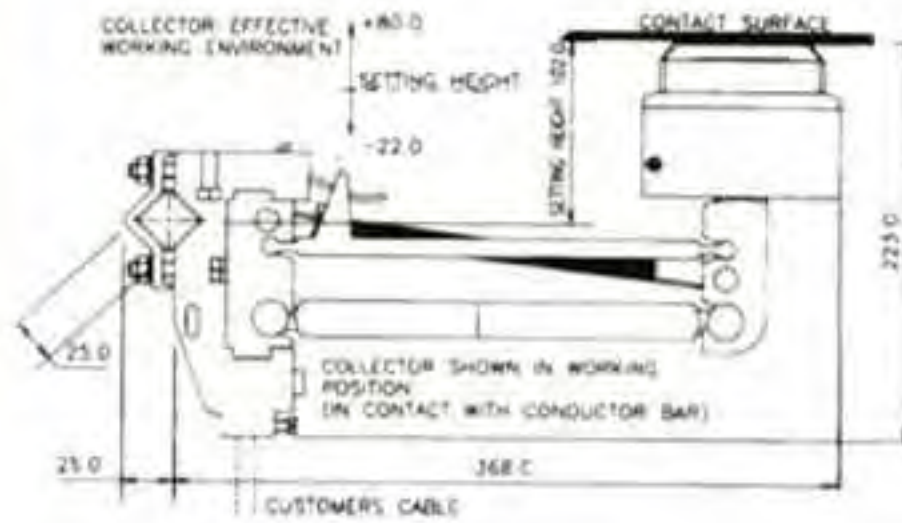


## COMPONENTS COMMON TO ALL SYSTEMS

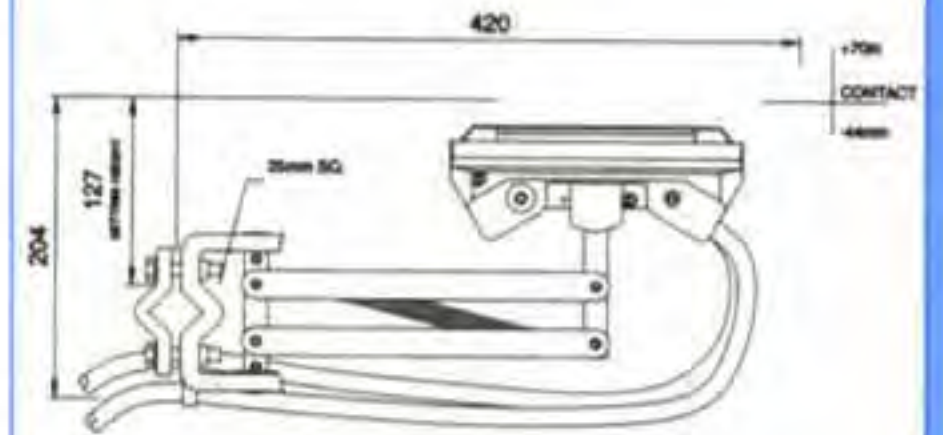
**50 Amp SI Collector** Part nos.  
 Live 399360  
 Earth Right Hand 399373  
 Earth Left Hand 399372  
 Earth without deflector 399380  
 Weight (kg) 0.392



**100 Amp DI Collector** Part nos.  
 Live 310990  
 Earth Right Hand 399340  
 Earth Left Hand 399352  
 Earth without deflector 399355  
 Weight (kg) 0.800



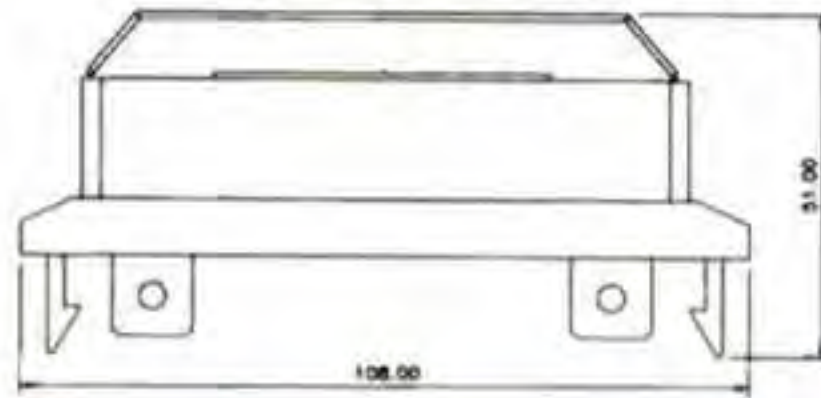
**250 Amp Collector** Part no. 34956  
 Weight (kg) 1.513



**50 Amp & 100 Amp Shoe and Holder**



Part no. 310993  
 Weight (kg) 0.083



**250 Amp Shoe and Holder**

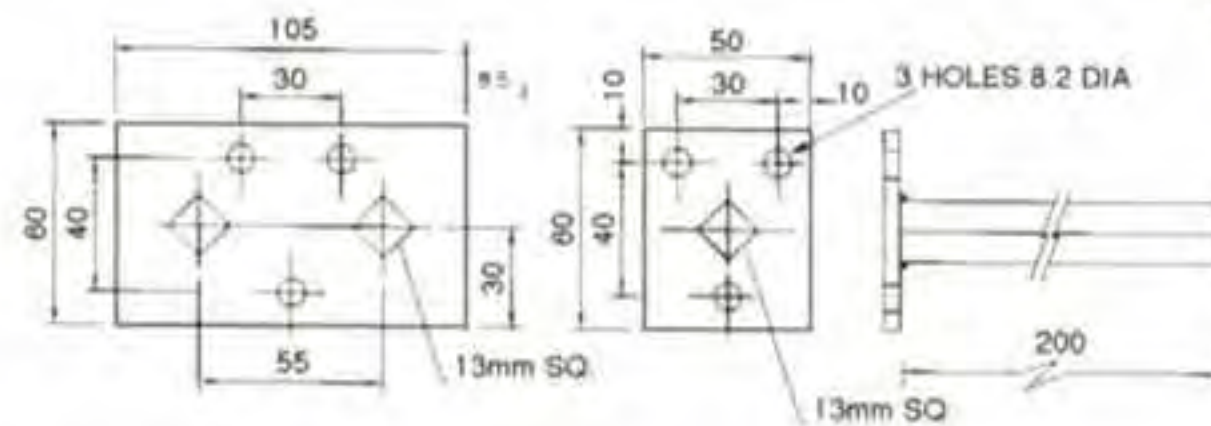
Part no. 35289  
 Weight (kg) 0.240



**Collector Brackets**

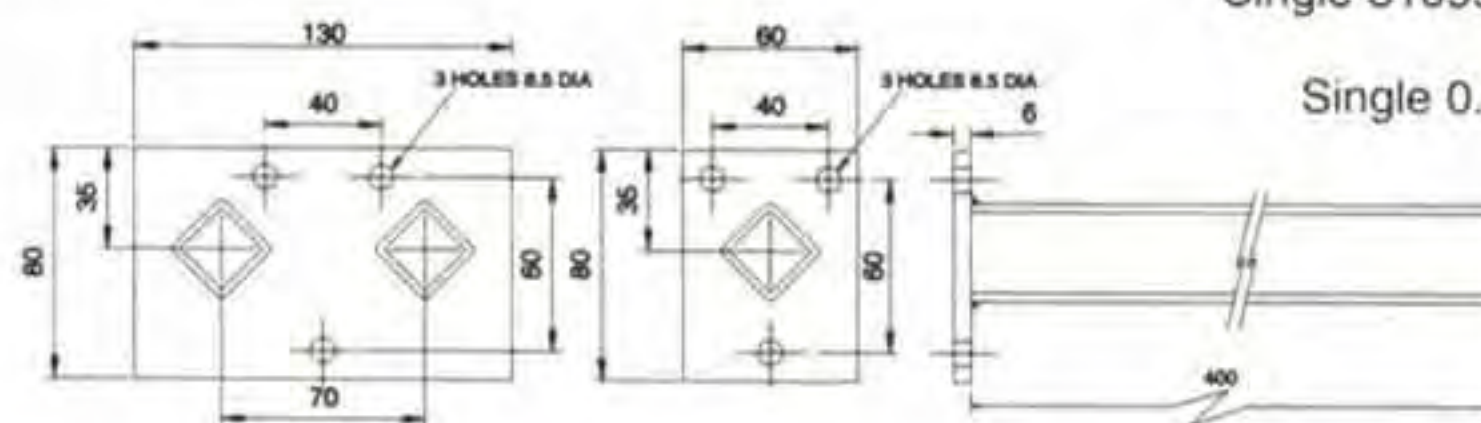


**13mm square**



Part nos.  
 Single 310994 Double 310898  
 Weight (kg)  
 Single 0.400 Double 0.800

**25mm square**

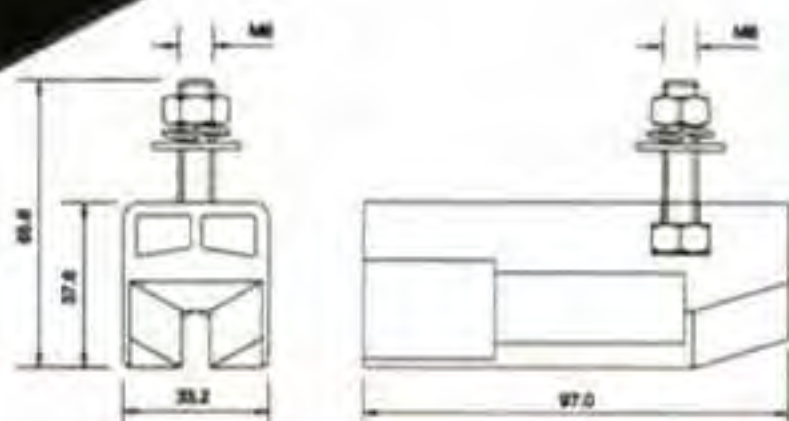


Part nos.  
 Single 310991 Double 310992  
 Weight (kg)  
 Single 0.750 Double 1.500

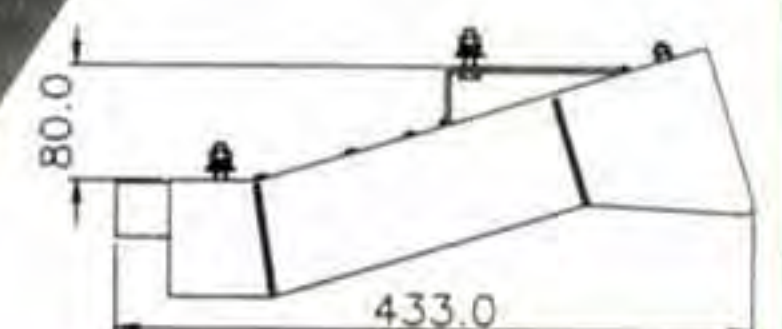
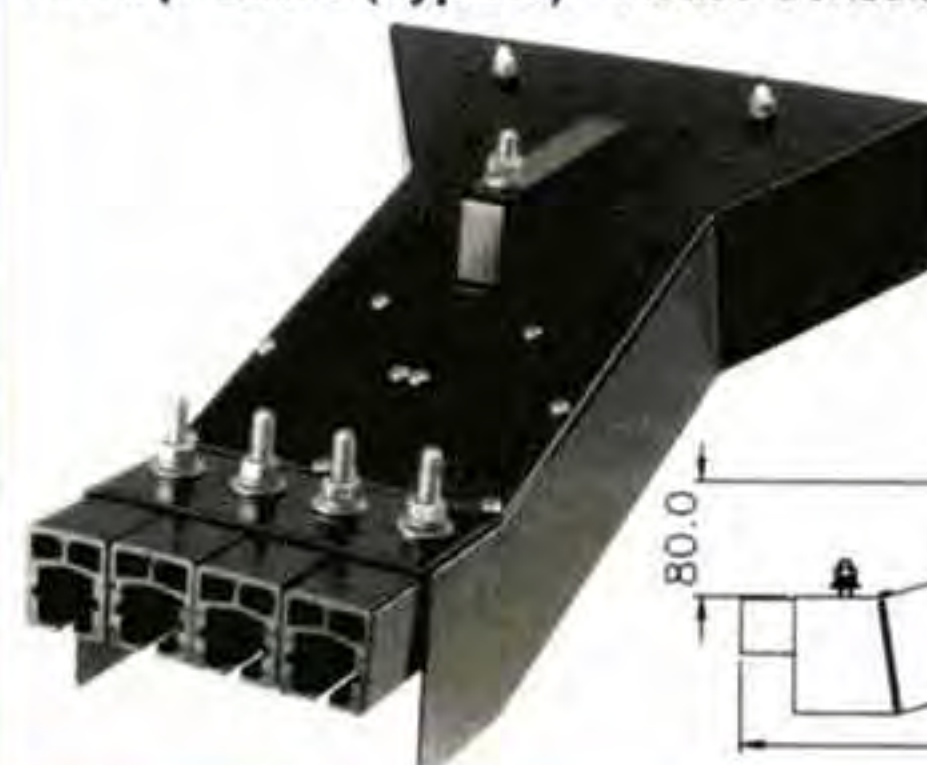
**Transfer Cap**



Part no. 310951  
 Weight (kg) 0.110



**Pickup Guide (Typical) - Please Consult Factory**



# TECHNICAL DATA

Safe-iec protected conductor bars meet the demands of the following international safety standards.  
 NFC 20-010, NFC 63-010, NFC 32-070, VDE 0470, BS EN 60529, DIN 53438.

Conductor Bar Cover	Standard	Medium Heat
Material	PVC	BAYBLEND
Dielectric strength	180 KV/cm	240 KV/cm
Surface resistivity	$10^{11}\Omega$	$>10^{14}\Omega$
Volume resistivity	$>10^{15}\Omega/cm$	$>10^{16}\Omega/cm$
Vicat softening temperature (never expose PVC cover to temperatures in excess of 80°C)	84°C	120°C
Flame-test	Self extinguishing	Self extinguishing
Oxygen index	54%	24%
Specific density	1.5 g/cm <sup>3</sup>	1.15 g/cm <sup>3</sup>

Maximum allowable temperature in relation to duty cycle					
Duty cycle	100%	80%	60%	40%	20%
Maximum allowable ambient temperature with standard insulating cover	25°C	30°C	35°C	40°C	55°C

Conductor Bar	Galvanised Steel			Copper			Aluminium/ Stainless Steel	
Nominal current	60A	100A	125A	160A	250A	400A	200A	315A
Cross sectional area	50mm <sup>2</sup>	63mm <sup>2</sup>	93mm <sup>2</sup>	50mm <sup>2</sup>	63mm <sup>2</sup>	93mm <sup>2</sup>	104mm <sup>2</sup>	120mm <sup>2</sup>
Maximum system voltage (AC) (contact for other voltages) (DC) (contact for other voltages)	1000V 1000V	1000V 1000V	1000V 1000V	1000V 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
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
Maximum allowable ambient temperature for 100% duty cycle	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
Support pitch Standard Lateral	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm
Minimum pitch centres Standard Insulated	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm	43mm 60mm
Expansion sections: not required for runs less than	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

An accurate choice of conductors can only 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...)

### Volt drop calculation - ΔU

according to the following formula:

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)

$$\Delta U = 2 \times I \times D \times R$$

NB. The value of D will vary dependent on whether the line is fed at one or several points, see diagram below:

Where:

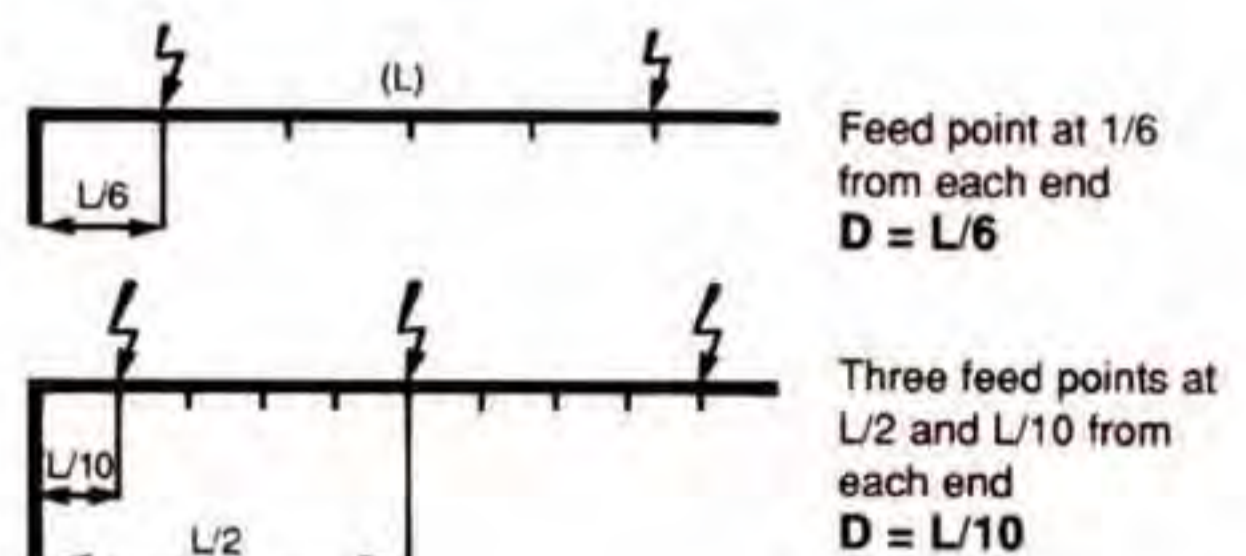
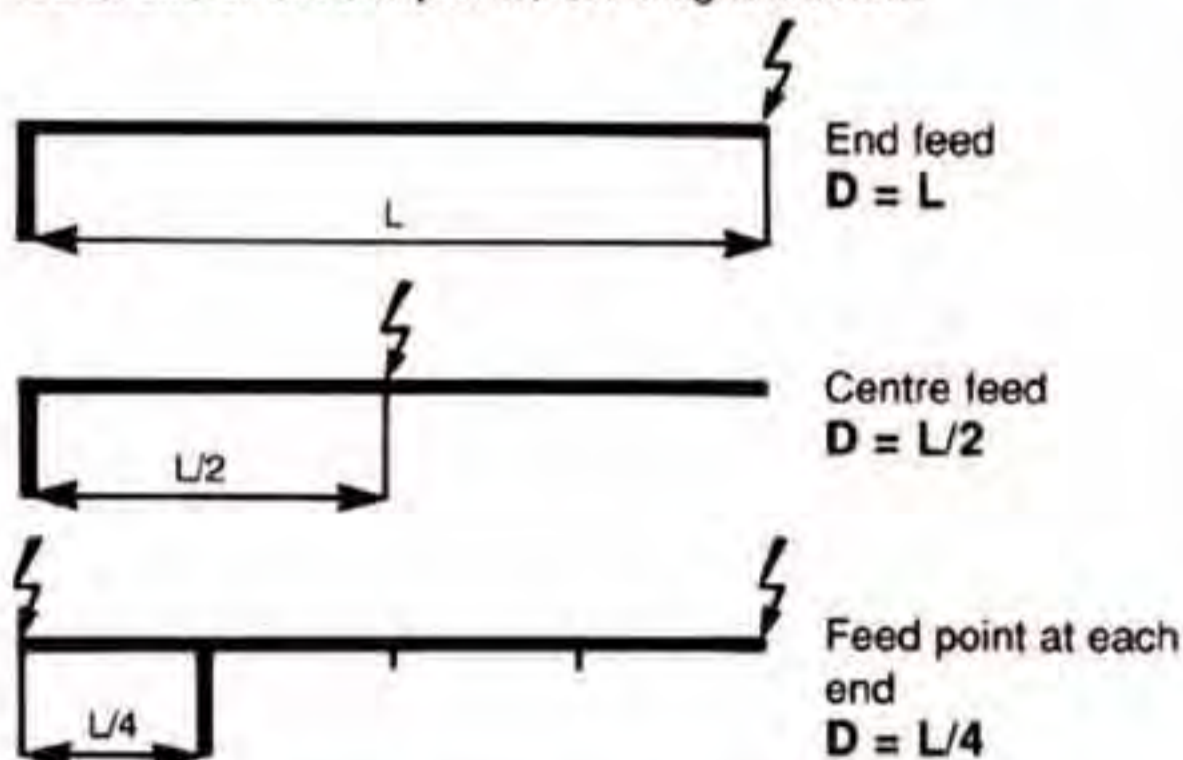
ΔU = Volt drop in volts

I = Maximum current in Amps

D = Distance between the feed and pick-up points in metres

R = Resistance of conductor in ohms per metre

Z = Impedance of conductor in ohms per metre.



$$U\% = \frac{\Delta U}{U_n} \times 100 [\%]$$

NB. When calculating ΔU do not forget to take into account the effects of temperature caused by

- heating of the conductor in relation to duty cycle
- a rise in ambient temperature above 45°C



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