The power conductor



Trailing cable systems are simple and cheap solutions if only one movable consumer must be supplied with power.

All system parts are made of galvanised steel or plastic.

Since they are corrosion-proof they may also be used outdoor or in damp rooms.

A great variety of trailing cable systems can be delivered:

Cable trailer in connection with a runner

Cable trailer in connection with a wire rope

Cable trailer in connection with a I-carrier

which is the travelling path for the consumer to be supplied with energy.

Trailing cable systems

However, the usage of the trailing cable systems is not restricted to power supply via round and flat cables. They can also transport pressure air and liquids.

made by Gluma

Trailing cable systems are mainly used for:

Electrical lifts Cranes Machine tools Pneumatic tools Pneumatic hoisting gears Cutting-off machines and cutters Wash-mobiles

To use trailing cable systems means to use the most cost-effective solution for power supply of movable consumers.

The choice of the type of power supply is made depending on the path length, the mechanical load of the cable trailer and the possibilities provided by customer.

We have summarised the standard values required.

We have summarised the standard values required for correct determination of the system parts.

Please note that, on principle,

trailing cable units are only suitable for <u>one</u> consumer.

Trailing cable systems are not influenced

by atmospheric conditions.
They may also be used in damp rooms and very dirty environment.

Thus they are the power transporters for the most extreme environmental conditions.

If several consumers shall be fed by one line metal or plastic collector wires or plug-in rails are to be used.

We are manufacturer of these power transporters, too.

For detailed information please let us have your request for the catalogues of the respective product groups.

We would be pleased to provide the service of specifying the system fitting best in case of your requirements and defining the necessary system parts.

Of course you can also work out your system using the following formulae:

Trailing cable systems with runners

Maximum path length: approx, 100 m Cable trailer load capacity: 20 kg per trailer

Cable dimensions:

Flat cable: up to a width of 134 mm and a thickness of 35 mm max.

Round cable: up to a diameter of 36 mm max.

and 3 round cables one under another

maximum

Radius of curves: minimum radius 800 mm.

For radii of curves between 800 and 1600 mm metal cable

trailers are to be used.

Number of cable trailers = $\frac{\text{path length x 1.1}}{2 \text{ x cable slack}} - 1$

<u>Trailer station = number of trailers x trailer length</u> + 200 mm

Length of runner = path + trailer station [m]

Cable length = length of runner [m] x 1.1 + 2 m

Suspension distance = 1.5 m at a field load of 60 kg.

Trailing cable systems with wire rope

Maximum path length: approx. 30 m

Cable trolley load capacity: 3 kg per cable trolley roll Cable dimensions:

Flat cable: up to a width of 44 mm and a thickness of 20 mm max.

Round cable: up to a diameter of 36 mm max. and 3 round cables one under another maximum

Number of cable trolleys = $\frac{\text{span x 1.1}}{2 \text{ x cable slack}} - 1$

<u>Trolley station = number of trolleys x trolley length</u> + 200 mm

Rope length = span [m] + 0.5 mCable length = span $[m] \times 1.1 + 2 m$

Trailing cable systems on I carrier

Maximum path length: approx. 100 m Cable trailer load capacity:

with 2 and 3 rolls up to 10 kg

with 4 rolls up to 20 kg Cable dimensions:

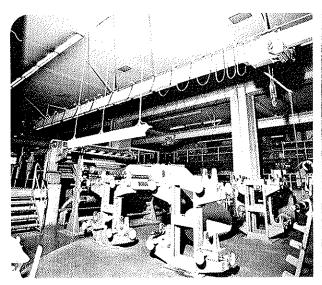
Flat cable: up to a width of 134 mm and a thickness of 25 mm max.

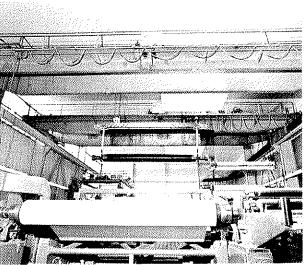
Number of trailers = $\frac{\mathbf{I}\text{-carrier length x 1.1}}{2 \text{ x cable slack}} -1$

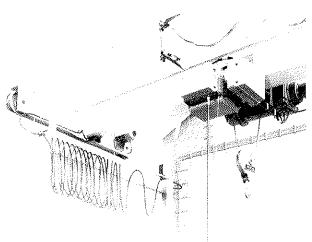
<u>Trailer station</u> = number of trailers x trailer length + 200 mm

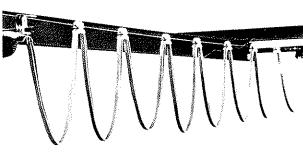
Cable length = I-carrier length [m] x 1.1 + 2 m

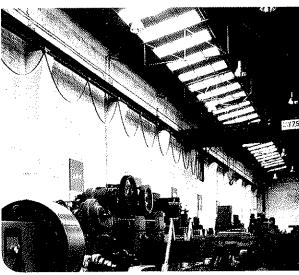
Examples for Application

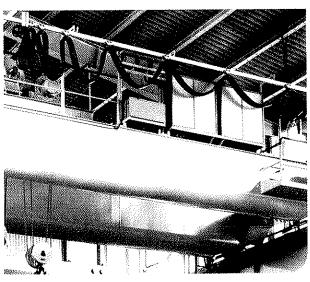




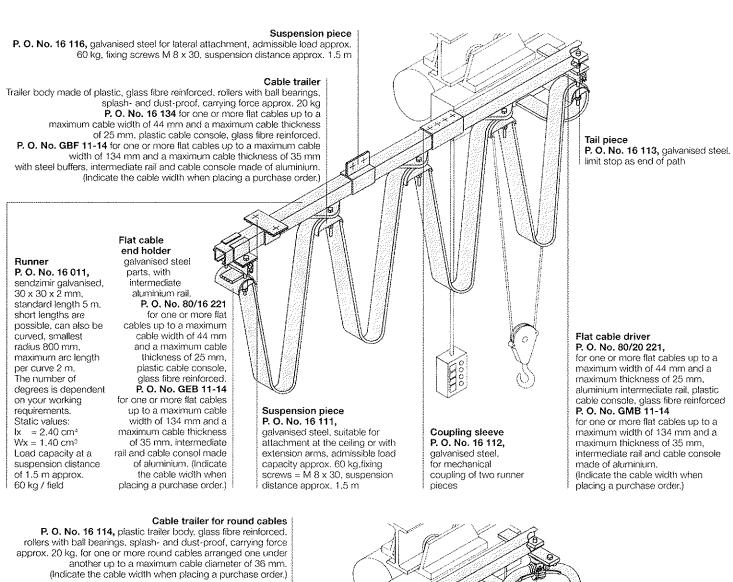


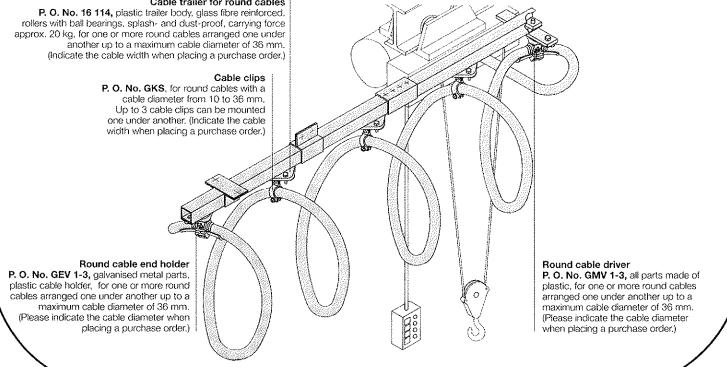




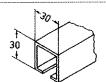


Trailing cable systems with runners



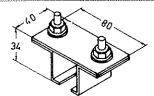


Runner P.O. No. 16 011, sendzimir galvanised. standard length 5 m



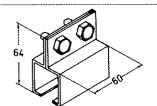
Suspension piece P. O. No. 16 111,

galvanised steel. distance between bore holes for fixing screws M 8 x 30 = 54 mm

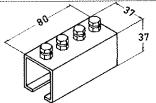


Suspension piece P. O. No. 16 116,

galvanised steel. distance between bore holes for fixing screws M 8 x 30 = 30 mm



Coupling sleeve P. O. No. 16 112, galvanised steel



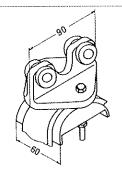
Tail piece P. O. No. 16 113, galvanised steel



Flat cable trailer P. O. No. 16 134,

for one or more flat cables. up to a max, cable width of 44 mm and a max. cable thickness of 25 mm P. O. No. 16 134 MSR,

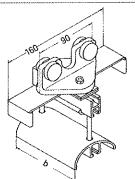
metal trailer body, for one or more flat cables. up to a max. cable width of 44 mm and a max. cable thickness of 25 mm



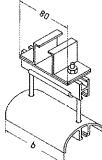
Cable trailers for one or more flat cables,

up to a max, cable width of 134 mm and a max, cable thickness of 35 mm

Cable width	Width of flat cable console b mm	P. O. No.
54	80	GBF 11
74	100	GBF 12
99	125	GBF 13
134	160	GBF 14

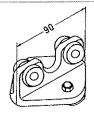


Drivers for o	one or more	e flat cables	8. 6	
Cable width	Cable thickness mm	Width of flat cable console b mm	P. O. No.	
44 54 74 99 134	25 35 35 35 35 35	60 80 100 125 160	80/20 221 GMB 11 GMB 12 GMB 13 GMB 14	ð



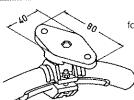
End holder for one or more flat cables

Cable width	Cable thickness mm	Width of flat cable console b mm	P. O. No.
44 54 74 99 134	25 35 35 35 35 35	60 80 100 125 160	80/16 221 GEB 11 GEB 12 GEB 13 GEB 14



Round cable trailers P. O. No. 16 114,

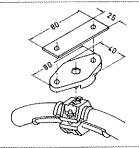
for one or more round cables arranged one under another, up to a maximum diameter of 36 mm. (Cable clips GKS must be ordered additionally.)



Round cable drivers

for one or more round cables arranged one under another, up to a maximum diameter of 36 mm

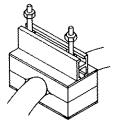
Cable-Ø mm	P. O. No
10-16	GMV 1
17-25	GMV 2
26-36	GMV 3



Round cable end holders

for one or more round cables arranged one under another, up to a maximum diameter of 36 mm

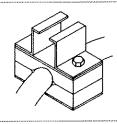
Cable-Ø mm	P. O. No
10-16	GEV 1
17-25	GEV 2
26-36	GEV 3



Flat or round cable driver: P. O. No. 16 212,

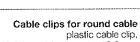
aluminium intermediate rail, galvanised steel parts with sponge insert for flat cables: max. cable width 44 mm max. cable thickness 25 mm for round cables:

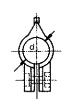
applicable for a round cable with a maximum cable diameter of 36 mm

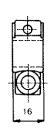


Flat or round cable end holder: P. O. No. 16 211,

galvanised steel parts with sponge insert for flat cables: max. cable width 44 mm max. cable thickness 25 mm for round cables: applicable for a round cable with a maximum cable diameter of 36 mm

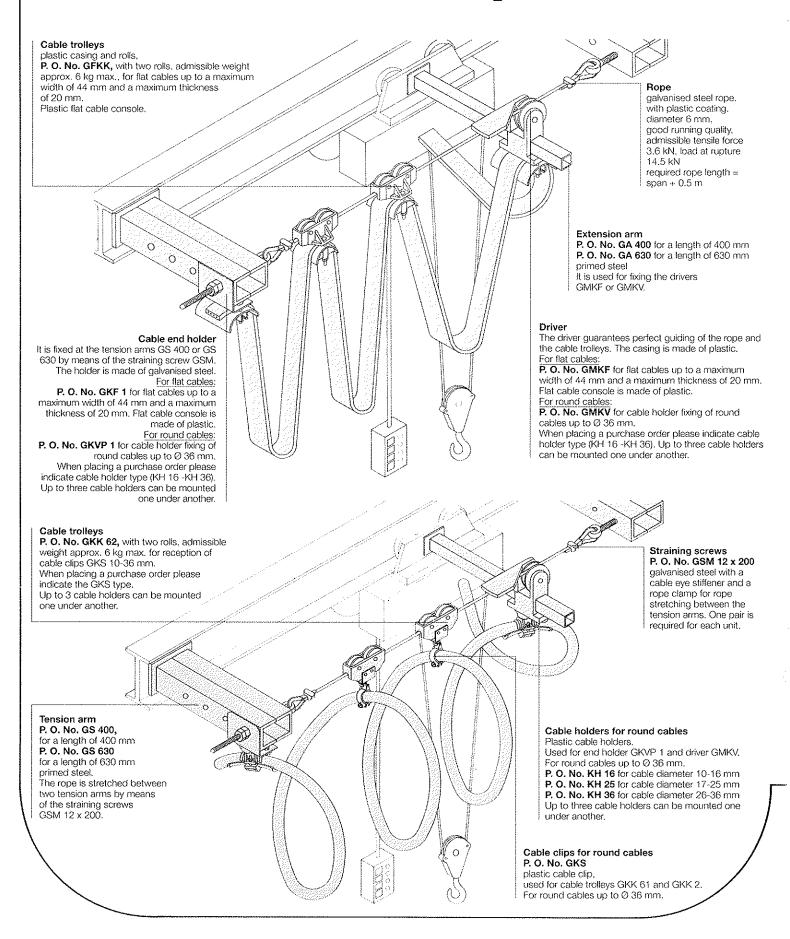






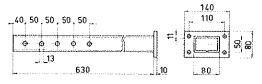
P. O. No. GKS 10.0 for cable diameter 10.0 mm GKS 11.0 for cable diameter 11.0 mm GKS 12.5 for cable diameter 12.5 mm GKS 14.0 for cable diameter 14.0 mm GKS 16.0 for cable diameter 16.0 mm GKS 18.0 for cable diameter 18.0 mm GKS 20.0 for cable diameter 20.0 mm GKS 22.0 for cable diameter 22.0 mm GKS 25.0 for cable diameter 25.0 mm GKS 28.0 for cable diameter 28.0 mm GKS 32.0 for cable diameter 32.0 mm GKS 36.0 for cable diameter 36.0 mm

Trailing cable systems with wire rope



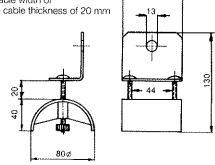
Tension arm P. O. No. GS 400 for a length of 400 mm

P. O. No. GS 630 for a length of 630 mm

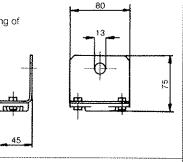




P. O. No. GKF 1 for a flat cable width of up to 44 mm and maximum cable thickness of 20 mm



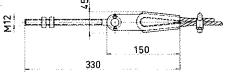
Cable end holder P. O. No. GKVP 1 for cable holder fixing of round cables up to Ø 36 mm



80

Straining screws

P. O. No. GSM 12 x 200

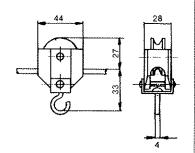


Cable trolleys with one roll

plastic casing and rolls for round cables

P. O. No. GKK 61

maximum admissible weight approx. 3 kg

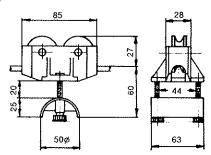


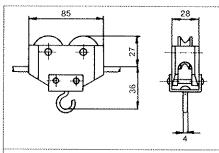
Cable trolleys with two rolls

plastic casing and rolls for flat cables up to a width of 44 mm and a maximum thickness of

P. O. No. GFKK

maximum admissible weight approx. 6 kg



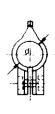


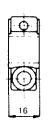
Cable trolleys with two rolls

plastic casing and rolls

for round cables P. O. No. GKK 62

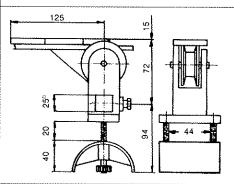
maximum admissible weight approx. 6 kg





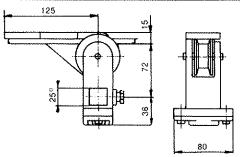
Cable clips for round cables

plastic cable clip.
P. O. No. GKS 10.0 for cable diameter 10.0 mm
GKS 11.0 for cable diameter 11.0 mm GKS 12.5 for cable diameter 12.5 mm GKS 14.0 for cable diameter 14.0 mm GKS 16.0 for cable diameter 16.0 mm GKS 18.0 for cable diameter 18.0 mm GKS 20.0 for cable diameter 20.0 mm GKS 22.0 for cable diameter 22.0 mm GKS 25.0 for cable diameter 25.0 mm GKS 28.0 for cable diameter 28.0 mm GKS 32.0 for cable diameter 32.0 mm GKS 36.0 for cable diameter 36.0 mm

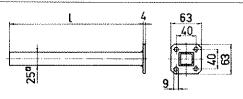


Driver

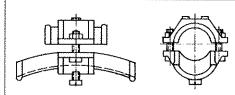
P. O. No. GMKF for flat cables up to a width of 44 mm and a maximum cable thickness of 20 mm



Driver P. O No. GMKV for cable holder fixing of round cables up to Ø 36 mm



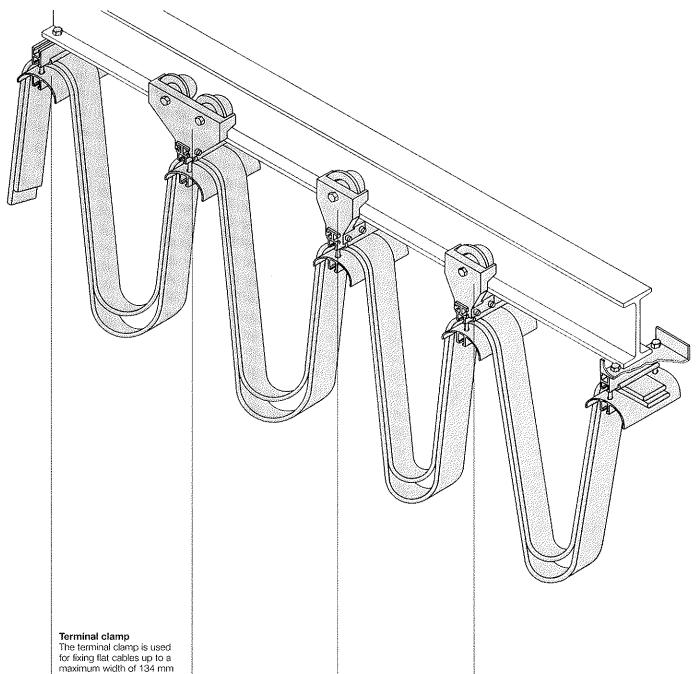
Extension arms P. O. No. GA 400 for a length of 400 mm P. Ŏ. No. GA 630 for a length of 630 mm



Cable holder for round cables

plastic cable holder P.O. No. KH 16 for Ø 10-16 mm KH 25 for Ø 17-25 mm KH 36 for Ø 26-36 mm

Trailing cable systems on I-carrier



and a maximum thickness of 25 mm.

For fixing of the terminal clamp two bore holes Ø 6.2-7 mm are provided in the lower flange of the I-carrier with a distance of approx. 60 mm.

GEK 10:

Aluminium rail, plastic cable console

GEK 11-14:

Aluminium rail, aluminium cable console, rubber clamping piece

Cable trailer with 4 rolls

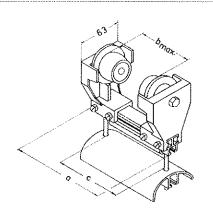
Plastic trailer body and rolls, aluminium rail, maximum load approx. 20 kg, plastic cable console for cables up to a width of 44 mm and a thickness of 20 mm, aluminium cable console for cables up to a width of 45-135 mm and a thickness of 25 mm. Please indicate the cable width when placing a purchase order

Cable trailer with 3 rolls

Plastic trailer body and rolls, aluminium rail, maximum load approx. 10 kg, plastic cable console for cables up to a width of 44 mm and a thickness of 20 mm, aluminium cable console for cables up to a width of 45-134 mm and a thickness of 25 mm. Please indicate the cable width when placing a purchase order

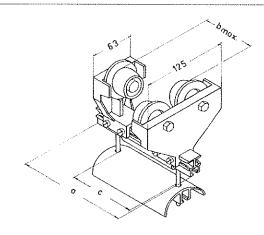
Cable trailer with 2 rolls

Plastic trailer body and rolls, aluminium rail, plastic cable console for flat cables up to a width of 44 mm and a thickness of 25 mm, maximum load approx, 10 kg



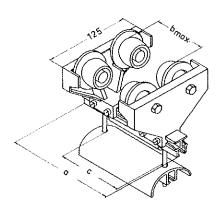
Cable trailer with 2 rolls for flat cable

a D	imensions (mr b max.	n) c max. cable width	Weight piece kg	P. O. No.
125	81	44	0.32	GKIF 2/125
160	116	44	0.34	GKIF 2/160



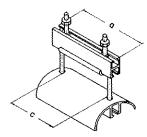
Cable trailer with 3 rolls for flat cable

Cable trailer	Jable tranel with 3 toll har cade			
a	limensions (mi b max.	m) c max. cable width	Weight piece kg	P. O. No.
125 125 125 125 125 160 160 160 160 200 200 200 200 200 200 200 250 250	81 81 81 81 116 116 116 116 116 116 156 156 156 15	44 54 74 99 44 54 74 99 134 44 54 74 99 134	0.38 0.43 0.45 0.47 0.44 0.45 0.47 0.49 0.52 0,42 0,47 0.49 0.51 0.54 0.44	GKIF 3/125 GKIB 301 GKIB 302 GKIB 303 GKIF 3/160 GKIB 304 GKIB 305 GKIB 306 GKIB 307 GKIF 3/200 GKIB 308 GKIB 309 GKIB 311 GKIF 3/250 GKIB 311
250 250 250	206 206 206	74 99 134	0,44 0,44 0,44	GKIB 313 GKIB 314 GKIB 315



Cable trailer with 4 rolls for flat cable

a	imensions (mi b max.	m) C max. cable width	Weight piece kg	P. O. No.
125 125 125 125 125 160 160 160 160 200 200 200 200 200 200 250 250 250	81 81 81 81 116 116 116 116 116 156 156 156 156 15	44 54 74 99 44 54 74 99 134 44 54 74 99 134	0.44 0.49 0.51 0.53 0.46 0,51 0.55 0.58 0.48 0,53 0.55 0,57 0,60 0,50 0,55 0,57	GKIF 4/125 GKIB 401 GKIB 402 GKIB 403 GKIF 4/160 GKIB 404 GKIB 405 GKIB 406 GKIB 407 GKIB 408 GKIB 408 GKIB 409 GKIB 411 GKIB 411
250 250	206 206	99 134	0,59 0,62	GKIB 414 GKIB 415



Terminal clamp, can also be used as driver

D	mensions (mr	n)	Weight	P. O. No.
а	b max.	c max. cable width	piece kg	
80	_	44	0.09	GEK 10
80	_	54	0.11	GEK 11
100		74	0.13	GEK 12
120		99	0.15	GEK 13
160		134	0.19	GEK 14

Technical explanation

For an electrical power installation with a nominal voltage up to 1000 V the VDE 0100 g instructions are obligatory. For movable connecting cables the following is stated in § 28 f):

 Movable connecting cables of hoisting gears must be arranged in such a way that damages due to overrun are excluded.

> When determining the lead cross section pay attention to the following: a) admissible current loading b) admissible voltage drop We have made a list of the respective charts and formulae:

2. For rail trolleys the running gear of which is driven manually or via electric motor PVC-insulated connections according to VDE 0281 or rubber insulated connections according to VDE 0282 are to be used as movable connecting cables. It depends on the kind of operation and stressing which type of insulation is used.

For the admissible continuous load of insulated connections at an ambient temperature of 30 °C VDE0100 section 523/6.81, Chart 2 is applicable.

For the admissible continuous load of insulated connections at an ambient temperature of 30 °C up to 55 °C VDE0100 section 523/6.81, Chart 3 is applicable.

Excerpt from Chart 2 (Group 2-Cu)

Nominal cross section mm2	Admissible continuous load at an ambient temp. of 30 °C A	Nominal cross section mm2	Admissible continuous load at an ambient temp. of 30 °C A
0.75	12		
1	15	25	108
1.5	18	35	135
2.5	26	50	168
4	34	70	207
6	44	95	250
10	61	120	292
16	82	150	335

The voltage drop from the distribution to the consumer must not exceed 5 % because of the sliding rotor motors which are very often used for hoisting gear manufacturing.

Chart 3

Ambient	Admissible current loading J_7 in % in respect to the values of Chart 2		
temperature in °C	Rubber insulation (admissible cable temperature 60 °C)	PVC insulation (admissible cable temperature 70 °C)	
more than 30 up to 35 more than 35 up to 40	91 82	94 87	
more than 40 up to 45	71	79	
more than 45 up to 50 more than 50 up to 55	58 41	71 61	

On the basis of the voltage applied it can be calculated using the following formulae:

D. c.
$$\triangle U = \frac{2 \cdot 1 \cdot J}{\gamma \cdot \Delta}$$
 [V]

Single phase a. c.:
$$\angle U = \frac{2 \cdot 1 \cdot J \cdot \cos \varphi}{\chi \cdot A}$$
 [V]

Three phase a. c.:
$$\triangle U = \frac{1.73 \cdot I \cdot J \cdot \cos \varphi}{\chi \cdot A}$$
 [V]

J = Total current [A]

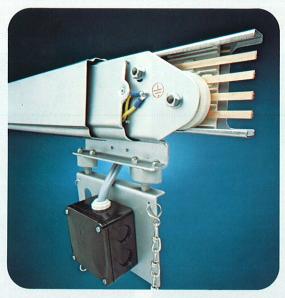
$$U = \text{Voltage drop [V]}$$
 $V = \text{Cable length [m]}$
 $V = \text{Cable cross section [mm}^2$
 $V = \text{Conductivity; Cu} = 56 \frac{\text{m}}{\Omega \text{ mm}^2}$

Mounting hints:

If several flat cables are used for one cable trailer the flat cable which is less thick shall be arranged first. The other flat cables are to be arranged according to the thickness so that the thickest flat cable is on the top.

The same procedure applies for arrangement of several round cables which are mounted one under another.

 $\cos \omega = \text{Power factor}$

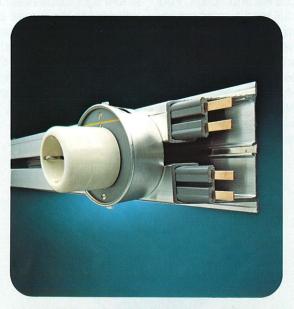


Metal enclosed conductor system SG

(Protection IP 21 up to IP 34). Already for many years this system has proved most worthwhile for application as feed-in of cranes, testing stations and conveyors or as power supply of electric tools. Because of the clamshell type and sendzimir galvanised

Because of the clamshell type and sendzimir galvanised metal casing the flexible connector is easy to maintain and to install.

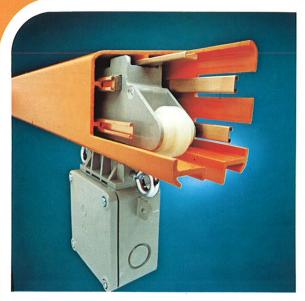
The load capacity amounts to 60, 100, 140 and 200 A at a standard length of 4.5 m. Up to 18 connectors can be arranged in the metal casing at one level. Our product is fit for any of your working requirements as funnel entries, crossings, horizontal and vertical curves are possible.

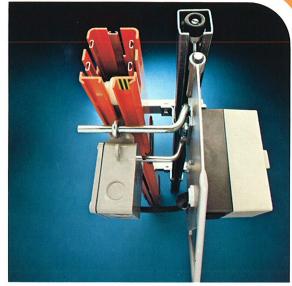


Plug-in rails

(Protection IP 20). With the Gluma plug-in rail we have created a solution to your problems regarding machine connection in dry rooms as each connection can be located at and removed from each position of the plug-in rail.

That means the machine installation can be quickly adapted to changing production processes without any problem. The plug-in rail is made of an aluminium casing with 5 poles. Standard length = 5 m. The electric load capacity amounts to 20, 50 and 100 A.





Plastic Bus-Way, Plastic Bus-Way, Model SGK Model SGK-L

(Protection IP 23) This Bus-Way is a well tried and proven power supply system for cranes and hoists. Four sizes of conductor give full load current ratings of 60, 80, 100 and 140 Amps. Standard length = 4.5 m, designed for both indoor and outdoor installations, and ambient temperature range between -30 °C and +60 °C. The availability of Bell-Mouth approach units, Crossings, Horizontal and Vertical Bends, enables systems to be produced to suit almost any special application.

(Protection IP 23)

This combined system is especially suitable where light loads need to be suspended adjacent to the power outlet, the system will safely support a maximum load of 100 kg per mtr. and is supplied in standard 4.5 m lengths. Installation of the SGK-L system assists in providing a tidy workplace reducing potential hazards and ensuring more efficient use of portable electric tools.



Gluma GmbH

Hännerstraße 15 D-79725 Laufenburg Telefon 07763/7071 Telefax 07763/5985

apolitine peralised in the individual portulation as a saliable odice or other Please do in and last product of the solidate to order in