

# INSULATED CONDUCTOR SYSTEMS

U 20 – U 30 – U 40



# INSULATED CONDUCTORS U 20 – U 30 – U 40

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## BASIC DESCRIPTION

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### U 20

For cranes, self-propelled monorail carriers, amusement rides – for installations with curves, switches, turntables, special control conductor systems for pickling lines and galvanizing plants

**Pages 5–19**

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### U 30

For bridge and portal crane electrification, heavy monorail systems, amusement rides, construction and maintenance hoists and for high voltage applications up to 10 kV

**Pages 20 – 29**

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### U 40

For heavy cranes and loading bridges, container and transtainer systems, coking machinery, for dockside trench type electrification systems in ports, shipyards and steel mills – for all heavy duty and for high voltage applications up to 10 kV

**Pages 30 – 38**

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## GROUNDING DEVICE

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## QUESTIONNAIRE

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## TYPICAL INSTALLATIONS

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# INSULATED CONDUCTORS U 20 – U 30 – U 40

## General

VAHLE insulated conductors are designed in accordance to international safety regulations for a multitude of power supply applications. They fully meet VDE 0100 and are finger safe to EN 60529 (VDE 0470, part 1, protection code IP 23). They are UL, SAA and SEV approved.

For current collectors touch protection is only given if carbon brushes are fully entered into the conductors. Conductor installations in the reach of hand, where collectors leave the conductor rails during normal operation, must be protected against accidental touch by the customer e.g. switch-off or separation. This refers to voltages above 25 VAC resp. 60 VDC, only.

The adjacent picture demonstrates that the VDE test finger cannot reach live conductors – finger safety is guaranteed.

For high voltage applications we do recommend our adequate high voltage insulators but applicable international or local safety requirements have to be considered.

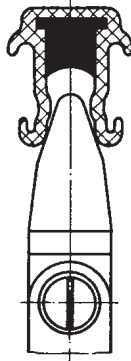
The shrouding which envelops the various conductors is an excellent insulator. Therefore our unipole insulated conductors guarantee utmost safety in operation. |

The ground conductor is identified by international colour coding.

For obvious safety reasons phase and ground collectors are not interchangeable.

Any number of conductors can be accomplished by installing various power rails side by side.

Standard rail sections are 6 m long, shorter lengths to coincide with your runway requirements are available.



## Approvals

**U 20 and U 30:** UL-approval

Please ask in case of order

## Hangers

Support brackets will be prepared in accordance to your local requirements or provided by others considering your runway system configuration.

**U 20:** see page 5 - **U 30:** see page 20 - **U 40:** see page 30.

## Insulators

The insulated conductor rails could be installed with insulators. Through this is the creepage distance longer. In systems with difficult ambient and environmental conditions (high humidity, electroplating shop, chemical industry etc.) are this insulators required.

## Insulating covers

	Standard shrouding colour green	High temp. shrouding colour grey
<b>Electrical properties:</b> dielectric strength DIN 53 481	30-40 kV/mm	45 kV/mm
specific resistance DIN 53 482	$5 \times 10^{15}$ Ohm/cm	$5 \times 10^{17}$ Ohm/cm
Surface resistance according to IEC 60093	$10^{13}$ Ohm	$10^{15}$ Ohm
Creep resistance according to IEC 60112/ VDE 0303	CTI> 600-2,7	CTI> 600-2,7
<b>Mechanical properties:</b> flexible strength	75 N/mm <sup>2</sup> ± 10%	95 N/mm <sup>2</sup> ± 10%
tensile strength	50 N/mm <sup>2</sup> ± 10%	50 N/mm <sup>2</sup> ± 10%
<b>Temperature resistance</b>	-30 °C thru +55 °C	-30 °C thru +85 °C
flame test proof per DIN 4102 part 1	class B1 no flaming particles, self extinguishing	

## Joints

The connection between the conductor rails is made through bolted joints.

For touch protection every joint will be covered through a joint cap. With bigger temperature fluctuation and length above 100 m are expansion sections required (see installation instructions).

## Feed terminals

The feed will be installed between two conductor rails instead of a standard joint. To connect this feed please consider single core cables.

## End caps

The end caps are the touch proof end of the conductor rails.

## Entry funnel and transfer guides

For the use in spurlines, turntables and switches are transfer guides and entry funnels available.

## Isolating sections

Isolating sections are electrical interrupts of the conductor. Under normal operating conditions a cross over with collectors to switch the voltage off or on is only allowed with low power ratings (control current).

For control reasons, feed tracks, repair areas etc. we supply isolating sections.

## Curves

The insulated conductor rails could be bend in horizontal or vertical curves. The rails are depending on type and radius bend in our factory or on site.

## Current collectors

Depend on usage single or double collectors are used.

The mentioned continuous currents are for collectors in standard use with conductor profiles with copper surface. With the AE-conductor rail the collectors of consumers which remain at one place continuously or work under a very low travel speed (e.g. 10/min.) the maximum continuous current is approx. 50% of the mentioned continuous current.

The length of the cable should not extend 3 m if the fuse is not laid out for this load capacity. (See aswell DIN VDE 0100, part 430 and DIN EN 60204)

Note: The a.m. Often occurs in systems with more than one collector)

The supplied connecting cables (H07RN-F) are for the mentioned nominal currents big enough. For the different cable layouts have the reduction factors of DIN VDE 0298 to be considered.

## Safety advice

It must be ensured that the arrangement of the conductor system provides minimum distances (0,5 m) between fixed and mobile parts. (i.e. Between conductor rails, collector trolleys and towing arms) so as to avoid the risk of pinching.

## Chemical resistance for both designs:

Shroudings in the standard design (color green) and in the heat resistant design (color grey) are resistance against mineral oil, fats, caustic soda 25%, caustic soda 50%, concentrated hydrochloric acid; sulfuric acid upto 50%.

**Please note: For use in galvanizing and pickling plants, under aggressive conditions and low voltage applications we would appreciate receiving detailed information, especially of the environmental conditions.**

**For quotations and order processing including Powerail systems with curves, dead sections, turntables, switches etc. we require your drawings or sketches.**

Type	U 20/50 CE	U 20/50 AC	U 20/50 C	U 20/50 CH
Weight kg/m	0,500	0,400	0,580	0,560
<b>Standard shroud, color green</b>				
Order- No. phase <sup>(2)</sup>	12701 •	12702 •	12703 •	12704 •
Order- No. ground <sup>(2)</sup>	12711 •	12712 •	12713 •	12714 •
<b>High temperature shrouding, color gray</b>				
Order- No. phase <sup>(2)</sup>	12706 •	12707 •	12708 •	12709 •
Order- No. ground <sup>(2)</sup>	12716 •	12717 •	12718 •	12719 •

## Engineering data

Type	Conductor cross section mm <sup>2</sup>			Leakage distance of shroud mm	Max. Voltage <sup>(5)</sup> V	max. continuous ampere capacity A by 35 °C	Resistance <sup>(4)</sup> Ohm/1000 m	Impedanz <sup>(4)</sup> Ohm/1000 m
	Cu	Al	stainless steel					
U 20/50 CE	30		18	45	1000	80	0,587	0,612
U 20/50 AC	18	30		45	1000	120	0,483	0,600
U 20/50 C	50			45	1000	210	0,376	0,416
U 20/50 CH	50			45	1000	210	0,376	0,416

### Conductor code

U = Unipole insulated conductor  
 20 = Shrou size  
 50 = Cross sectional area (mm<sup>2</sup>)  
 CE = Copper/stainless steel conductor  
 AC = Aluminium/copper conductor  
 C = Copper conductor  
 CH = Copper conductor with extra deep groove for high speed application and lateral mounting

### Conductor distance:

With insulated hangers: 50 mm  
 With compact hangers 23-26 mm  
 Chemical and electrical values aswell as temperature range see page 4

### Supply lengths:

6 m standard;  
 shorter lengths are available

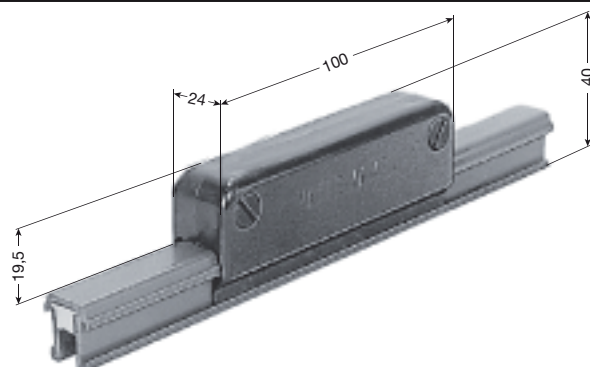
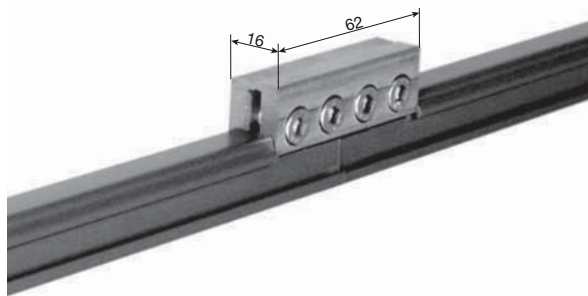
### Support spacing:

– for straight runs and lateral curves: 1000 mm  
 – for horizontal curves  $R_H < 5 m^{(3)}$ : 500 mm  
 – for horizontal curves  $R_H > 5 m$ : 1000 mm

### Bending:

Factory fabricated min. R = 400 mm  
 Field fabrication min. R = 4000 mm

## Rigid joints



Type	for conductor				Weight kg	Order- No.
UV 20/50	U 20/50 AC	U 20/50 C	U 20/50 CH	U 20/50 CE	0,140	120 180
UV 20/50 K 4 <sup>(1)</sup>	U 20/50 AC	U 20/50 CE	U 20/50 CH	U 20/50 CE	0,140	126 504

<sup>(1)</sup> Stainless steel hardware

<sup>(2)</sup> The last number of the order-no. Is the single length in meter. Please add 1,2 ... 6 in the end. Short length have to be rounded up.

<sup>(3)</sup> Recommended

<sup>(4)</sup> With frequency of 50 Hz and 20 °C.

<sup>(5)</sup> Not with UL-approval;  $U_{UL} = 600 V$

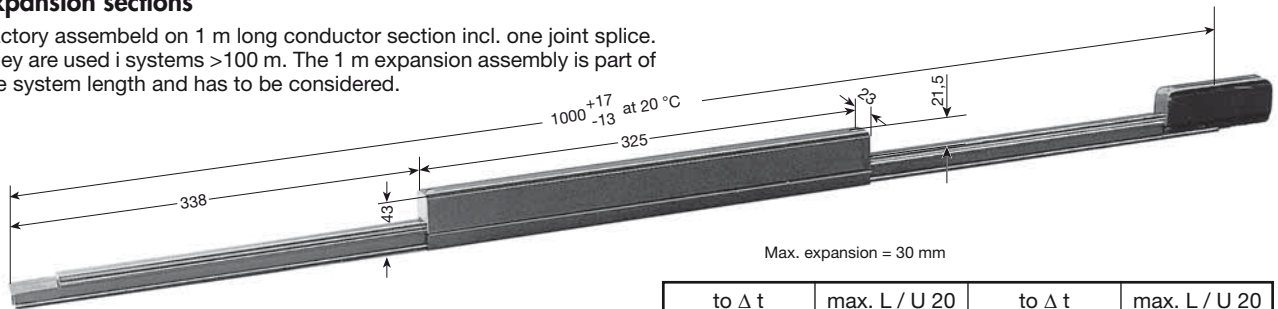




# ACCESSORIES FOR U 20

## Expansion sections

Factory assembled on 1 m long conductor section incl. one joint splice. They are used in systems >100 m. The 1 m expansion assembly is part of the system length and has to be considered.



### Ermittlung der Dehnungsteilstücke

n = Number of UDV (rounded)  
 $n = \frac{L_1}{L}$   
 $L_1$  = Length of assembly minus 100 m  
 $L$  = Expansion capacity max. of UDV (see table)

Standard shrouding, color green

Type	Weight kg	Order- No.	
		phase	ground
UDV 20/50 CE K 4 <sup>(1)</sup>	0,622	126 514	126 515
UDV 20/50 AC K 4 <sup>(1)</sup>	0,622	126 516	126 517
UDV 20/50 C K 4 <sup>(1)</sup>	1,030	126 518	126 519
UDV 20/50 CH K 4 <sup>(1)</sup>	1,020	126 520	126 521

to Δ t	max. L / U 20	to Δ t	max. L / U 20
20 °C	88 m	40 °C	44 m
30 °C	58 m	50 °C	35 m

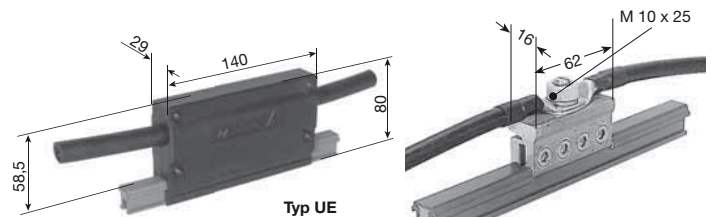
High temperature shrouding, color grey

Type	Weight kg	Order- No.	
		phase	ground
UDV 20/50 CE K 4 <sup>(1)</sup>	0,622	126 674	126 675
UDV 20/50 AC K 4 <sup>(1)</sup>	0,622	126 676	126 677
UDV 20/50 C K 4 <sup>(1)</sup>	1,030	126 678	126 679
UDV 20/50 CH K 4 <sup>(1)</sup>	1,020	126 680	126 681

## Feed terminals

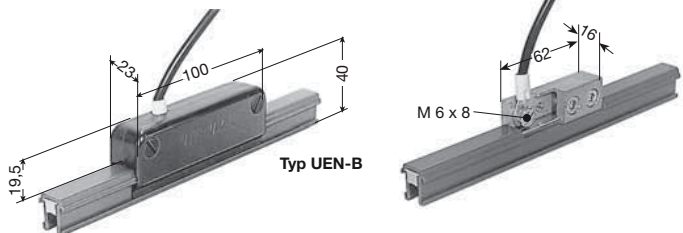
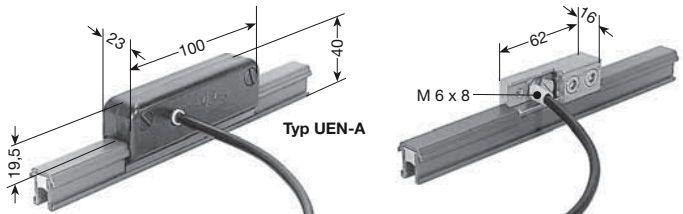
Type	Weight kg	Order- No.
UE 20/50 K4 <sup>(1)</sup>	0,290	126 522
UE 20/50 K 4 <sup>(1)</sup> -M	0,290	121 459

To be used instead of rigid joints  
 Feed cable: 2 of max. 50 mm<sup>2</sup>



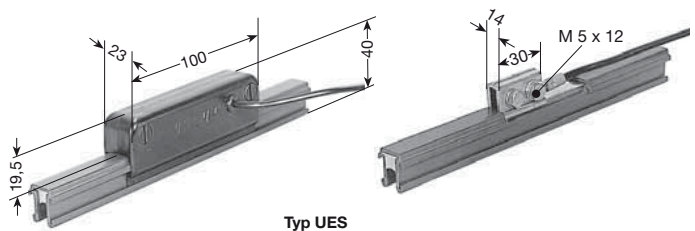
Type	Weight kg	Order- No.
UEN 20/50 K4 <sup>(1)</sup> -A	0,120	126 526
UEN 20/50 K4 <sup>(1)</sup> -A-M	0,120	121 061
UEN 20/50 K4 <sup>(1)</sup> -B	0,120	120 116
UEN 20/50 K4 <sup>(1)</sup> -B-M	0,120	121 165

Cannot be used as a rigid joint.  
 Feed cable: 1 of max. 6 mm<sup>2</sup>



Type	Weight kg	Order- No.
UES 20/50 K 4 <sup>(1)</sup>	0,060	126 530

Cannot be used as a rigid joint.  
 Feed cable: 1 of max. 4 mm<sup>2</sup>



## Contact Paste for joints and feeds

100 ml for approx. 200 joints

Order- No. 121 502



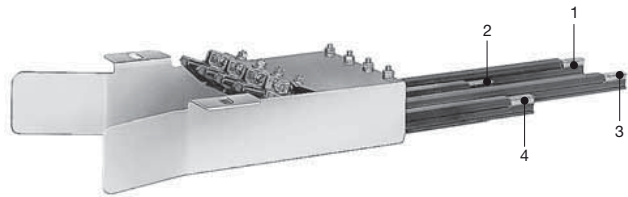
## Transfer funnels

Transfer funnels are for spurlines, switches and turntables required.

With insulated hangers the type EM 20 in 1-6 pole design is used. For the layout of conductor rails in compact hangers is the type EMK 20 in 1-7 pole design available.

The conductor distance with insulated hangers is min. 40 mm and with compact arrangement 23-26 mm.

To prepare a quote please mention rail type, number of poles and position of PE.

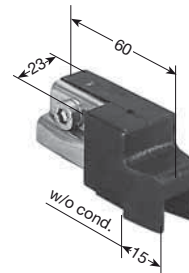


Picture shows Typ EM 20

## Transfer guides

These guides serve for transfer or power interrupting-applications. Max. horizontal and vertical offset:  $\pm 2$  mm; gap between two transfer guides max. 8 mm.

Extra hangers are required and to be ordered separately.



Type	for conductor	Weight kg	Order- No.
<b>US 20/50 CH K 4<sup>(1)</sup></b>	U 20/50 CH	0,046	120 849
<b>US 20/50 C K 4<sup>(1)</sup></b>	U 20/50 C	0,046	120 848
<b>US 20/50 A K 4<sup>(1)</sup></b>	U 20/50 AC U 20/50 CE	0,046	120 847

Transfer guides US 20 are fastened to conductor ends by means of one nylon screw.

## Isolating sections

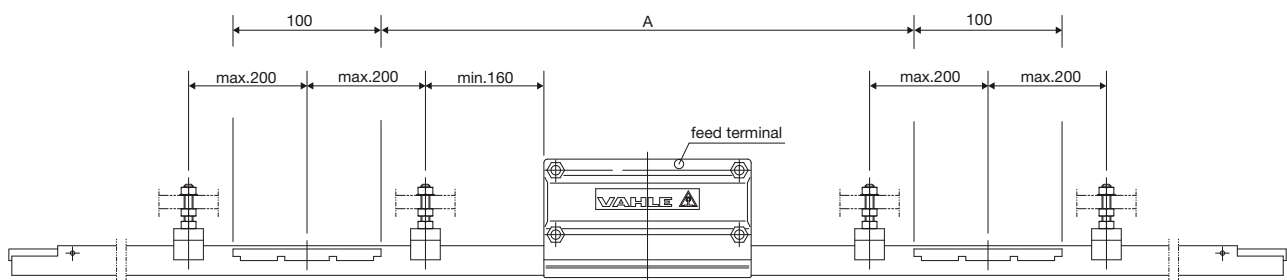
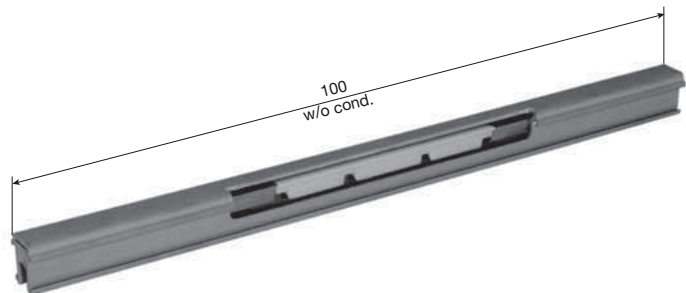
Type M: Factory assembled per system layout

Type L: Loose, incl. 2 locking pins 3 x 10

On both sides a hanger has to be considered.

Use one extra hanger each side, max. 200 mm away for stability.

Collectors, hangers and feeds have to be ordered separately.



To avoid voltage by-pass by carbon brushes and to separate maintenance bays, control and main feed sections, double isolating sections are recommended.

Dim. A depends on type and number of current collectors and stopping distance of the crane.

Type	for conductor	Weight kg	Order- No.
<b>IT/U 20/50 CH-M</b>	U 20/50 CH	0,005	120 950
<b>IT/U 20/50 C-M</b>	U 20/50 C	0,005	120 940
<b>IT/U 20/50 A-M</b>	U 20/50 AC U 20/50 CE	0,005	126 536

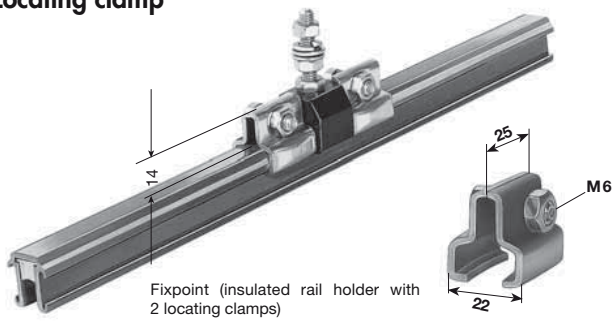
Type	for conductor	Weight kg	Order- No.
<b>IT/U 20/50 CH-L</b>	U 20/50 CH	0,005	120 010
<b>IT/U 20/50 C-L</b>	U 20/50 C	0,005	120 009
<b>IT/U 20/50 A-L</b>	U 20/50 AC U 20/50 CE	0,005	120 008

<sup>(1)</sup> Stainless steel hardware



# ACCESSORIES FOR U 20

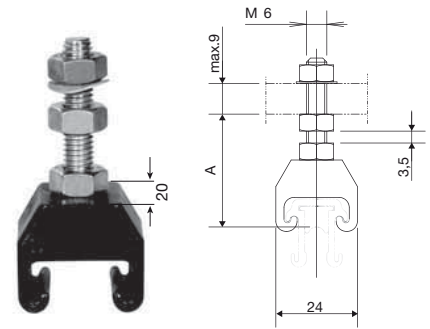
## Locating clamp



Type	Weight kg	Order- No.
<b>USK 20 K 4<sup>(1)</sup></b>	0,028	120 140

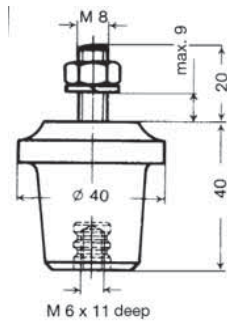
## Insulated hangers<sup>(2)</sup>

Type	A
<b>U20/50 CH</b>	33
<b>U20/50 C</b>	34
<b>U20/50 AC</b>	35
<b>U20/50 CE</b>	



Type	Weight kg	Order- No.
<b>UAM 20</b>	0,025	126 540
<b>UAM 20 K 4<sup>(1)</sup></b>	0,025	126 542

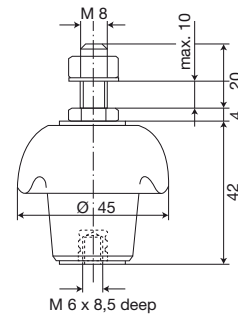
## Insulator<sup>(2)</sup>



Cantilever strength = 3000 N  
Leakage distance = 60 mm

Type	Weight kg	Order- No.
<b>GH 40-M 6</b>	0,075	121 060
<b>GH 40-M 6 K 4<sup>(1)</sup></b>	0,075	126 544

## Insulator<sup>(2)</sup> for aggressive mediums

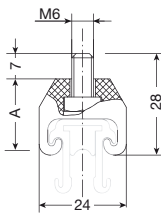


cantilever strength = 1000 N  
Leakage distance = 62 mm

Type	Weight kg	Order- No.
<b>UIK 42-M 6 K 4<sup>(1)</sup></b>	0,110	120 883

## Rail holder for insulators

for conductor rails U20/50 CH, 20/50 C, U20/50 AC and U20/50 CE

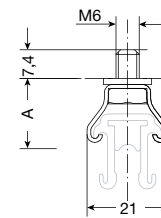


Type	A
<b>U20/50 CH</b>	20
<b>U20/50 C</b>	21
<b>U20/50 AC</b>	22
<b>U20/50 CE</b>	

Supplied with bolt M 6 x 12

Type	Weight kg	Order- No.
<b>UAK 20</b>	0,010	126 546
<b>UAK 20 K 4<sup>(1)</sup></b>	0,010	126 548

for conductor rails U 20/50 CH, 20/50 C, U 20/50 AC and U 20/50 CE

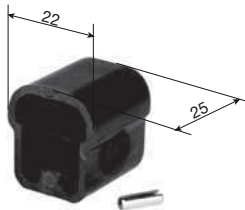


Type	A
<b>U20/50 CH</b>	17
<b>U20/50 C</b>	18
<b>U20/50 AC</b>	19
<b>U20/50 CE</b>	

Supplied with bolt M 6 x 10 and spring washer

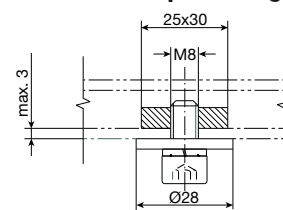
Type	Weight kg	Order- No.
<b>UAS 20 K 4<sup>(1)</sup></b>	0,014	126 550
<b>UAS 20 K 4<sup>(1)</sup>-H<sup>(3)</sup></b>	0,014	120 755

## End caps incl. Locking pin



Type	Weight kg	Order- No.
<b>UK 20-L</b>	0,010	120 120
<b>UK 20-M</b>	0,010	120 987

## Securing element for compact hangers KH 20/5....



Type	Weight kg	Order- No.
<b>SE 8</b>	0,055	170 677
<b>SE 8 K 4<sup>(1)</sup></b>	0,055	170 955

(1) Stainless steel hardware  
(2) For installation in slotted holes use on both sides discs according to DIN 9021.  
(3) For aggressive mediums



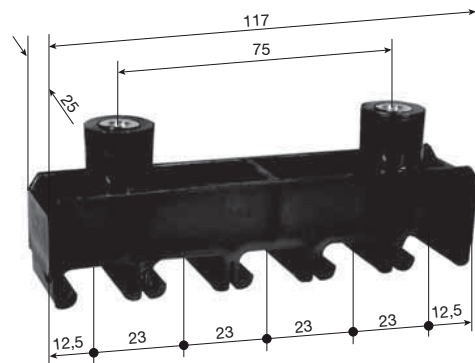
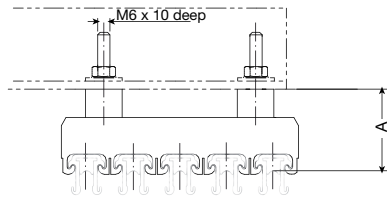


Any number of conductors poles can be assembled with compact hangers.

Can only be used with collectors of type KST. The joints and feeds have to be arranged staggered.

## Compact hangers, 5 poles to be bolted <sup>(2)</sup>

Type	A
U20/50 CH	41
U20/50 C	42
U20/50 AC	43
U20/50 CE	43

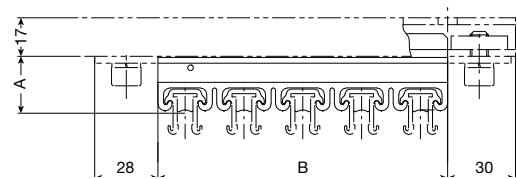
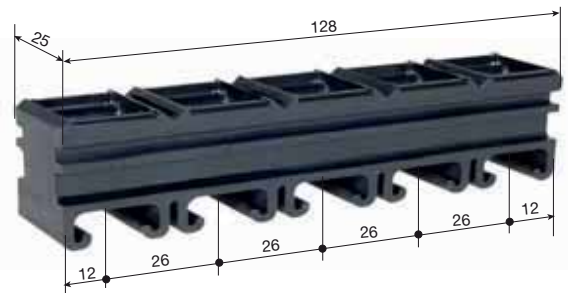


Type	Weight kg	Order- No.
KA 20/5	0,041	126 613

## Compact hangers for bracket profiles 38/17 G

Typ	A
U20/50 CH	23
U20/50 C	24
U20/50 AC	25
U20/50 CE	25

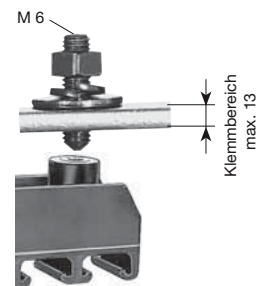
Type	B	Weight kg	Order- No.
KH 20/5-1	24	0,008	120 933
KH 20/5-2	50	0,018	120 934
KH 20/5-3	76	0,028	126 614
KH 20/5-4	102	0,038	126 615
KH 20/5-5	128	0,048	126 616



## Attachment hardware for compact hangers, insulated hangers and insulators

for 1 KA 20/5 are 2 pcs. BE 6 required.

Type	Weight kg	Order- No.
BE 6	0,015	120 406
BE 6 K 4 <sup>(1)</sup>	0,015	120 778

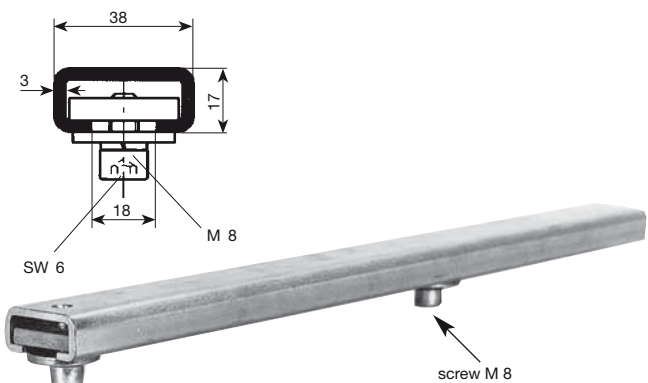


## Bracket profiles 38/17

incl. locking hardware

Type	Length mm	max. poles	Weight kg	Order- No.
HU 20/230	230	5	0,520	120 833
HU 20/360	360	10	0,750	120 834
HU 20/490	490	15	0,970	120 835

Longer Bracket profiles on request.



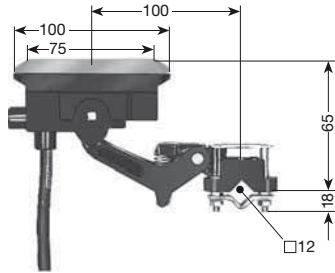
<sup>(1)</sup> Stainless steel hardware.

<sup>(2)</sup> For installation in slotted holes use on both sided discs according to DIN 9021.



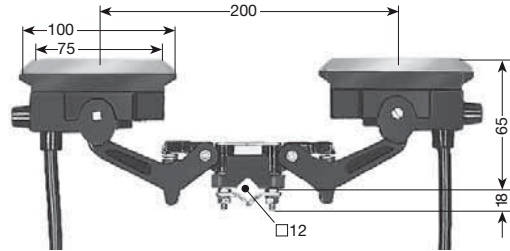
# CURRENT COLLECTORS FOR U 20

## Current collectors



with 2 m connecting cable  
lift and swivel  $\pm 20$  mm  
contact pressure: approx. 9 N

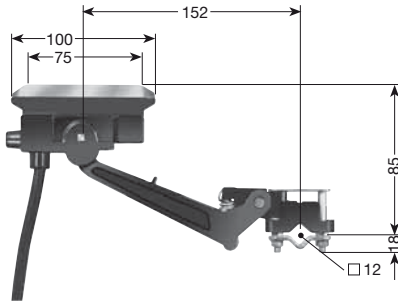
## Double collectors



with 2 x 2 m connecting cable  
lift and swivel  $\pm 20$  mm  
contact pressure: approx. 9 N per Brush

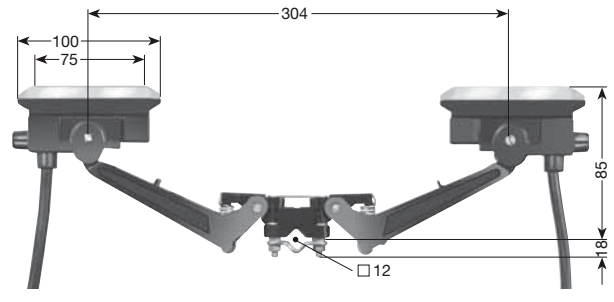
Type <sup>(1)</sup>	Am- pacity A	Connecting cable		Weight kg	Order- No.		Type <sup>(1)</sup>	Am- pacity A	Connecting cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow			mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>KST 15</b>	15	2,5	4,4	0,256	150 891	150 892	<b>KDST 30</b>	30	2,5	4,4	0,471	150 897	150 898
<b>KST 40</b>	40	6,0	11,0	0,428	152 840	152 850	<b>KDST 80</b>	80	6,0	11,0	0,821	152 960	152 970
<b>KST 60</b>	60	10,0	12,5	0,588	153 675	153 676	<b>KDST 120</b>	120	10,0	12,5	1,114	153 679	153 680

## Current collectors



with 2 m connecting cable  
lift and swivel  $\pm 40$  mm  
contact pressure: approx. 9 N

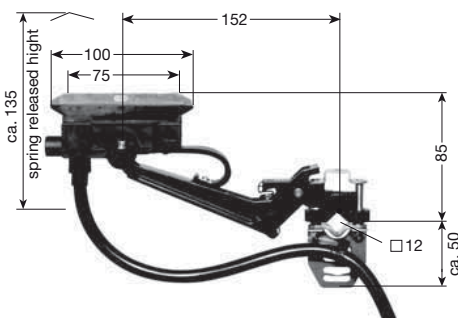
## Double collectors



with 2 x 2 m connecting cable  
lift and swivel  $\pm 40$  mm  
contact pressure: approx. 9 N per brush

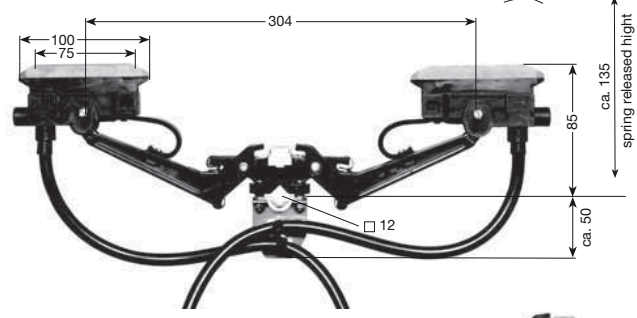
Type <sup>(1)</sup>	Am- pacity A	Connecting cable		Weight kg	Order- No.		Type <sup>(1)</sup>	Am- pacity A	Connecting cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow			mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>KSTL 15</b>	15	2,5	4,4	0,272	150 893	150 894	<b>KDSTL 30</b>	30	2,5	4,4	0,492	150 899	150 901
<b>KSTL 40</b>	40	6,0	11,0	0,453	152 860	152 870	<b>KDSTL 80</b>	80	6,0	11,0	0,822	152 980	152 990
<b>KSTL 60</b>	60	10,0	12,5	0,591	153 677	153 678	<b>KDSTL 120</b>	120	10,0	12,5	1,188	153 681	153 682

## Current collectors for transfer funnels EMK 20<sup>(1)</sup>



with 2 m connecting cable  
lift  $\pm 20$  mm  
swivel  $\pm 40$  mm  
contact pressure: approx. 9 N

## Double collectors for transfer funnels EMK 20<sup>(1)</sup>



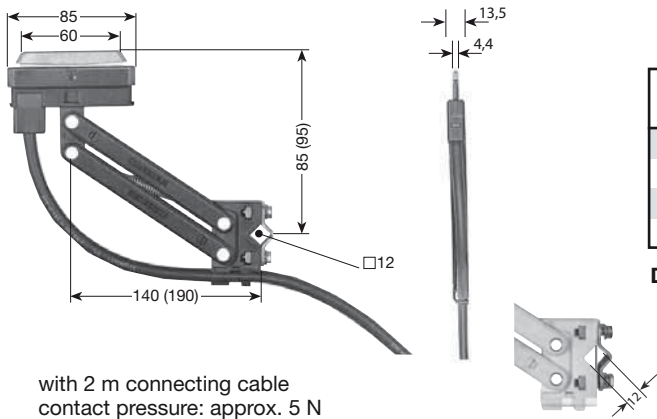
with 2 x 2 m connecting cable  
lift  $\pm 20$  mm  
swivel  $\pm 40$  mm  
contact pressure: approx. 9 N per brush

Type <sup>(1)</sup>	Am- pacity A	Connecting cable		Weight kg	Order- No.		Type <sup>(1)</sup>	Am- pacity A	Connecting cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow			mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>KSTLU 15</b>	15	2,5	4,4	0,313	150 895	150 896	<b>KDSTLU 30</b>	30	2,5	4,4	0,541	150 902	150 903
<b>KSTLU 40</b>	40	6,0	11,0	0,499	153 791	153 792	<b>KDSTLU 80</b>	80	6,0	11,0	0,895	153 786	153 787
<b>KSTLU 60</b>	60	10,0	12,5	0,652	153 793	153 794	<b>KDSTLU 120</b>	120	10,0	12,5	1,231	153 795	153 796

(1) Suffix types e.g. KST 15  $\rightarrow$  KST 15 PH Order- No. 150 891  
(2) Collectors locate in unstressed condition automatic to phase center.  
Ampacity while using stainless steel conductors on request.



## Current collectors

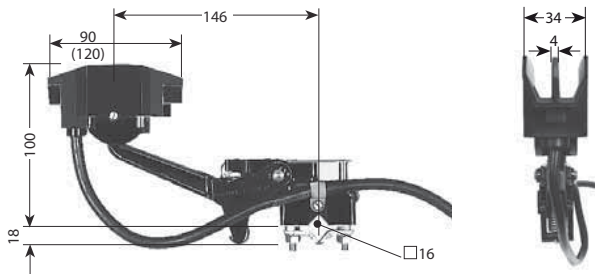


with 2 m connecting cable  
contact pressure: approx. 5 N

Type	Am- pacity A	Connecting-Cable		lift & swivel mm	Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm			phase black	ground yellow
<b>KST 30</b>	30	2,5	5	± 20	0,240	152 085	152 086
<b>KST 55</b>	55	6,0	11	± 20	0,368	154 438	154 439
<b>KSTL 30</b>	30	2,5	5	± 30	0,240	152 089	152 091
<b>KSTL 55</b>	55	6,0	11	± 30	0,368	154 443	154 444

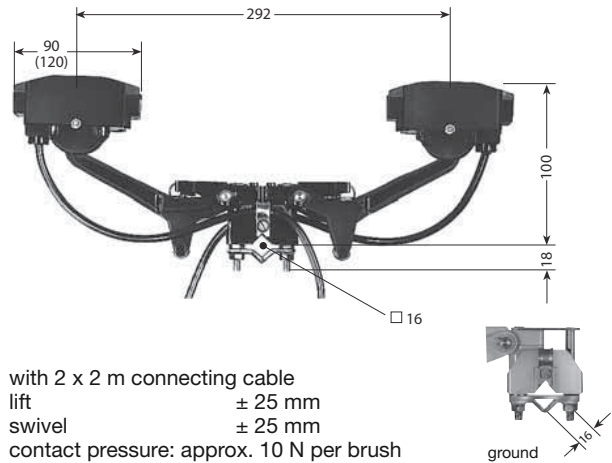
Dimensions in parenthesis for KSTL

## Current collectors<sup>(1)</sup>



with 2 m connecting cable  
lift ± 25 mm  
swivel ± 25 mm  
contact pressure: approx. 10 N

## Double collectors<sup>(1)</sup>



with 2 x 2 m connecting cable  
lift ± 25 mm  
swivel ± 25 mm  
contact pressure: approx. 10 N per brush

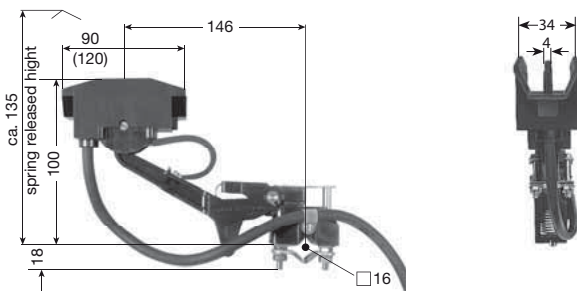
Type	Am- pacity A	Connecting-Cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>UST 40</b>	40	6	11,0	0,605	120 961	120 962
<b>UST 60</b>	60	10	12,5	0,875	120 963	120 964

Dimension in parenthesis for UST 60

Type	Am- pacity A	Connecting-Cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>UDST 80</b>	80	6	11,0	1,100	120 965	120 966
<b>UDST 120</b>	120	10	12,5	1,600	120 967	120 968

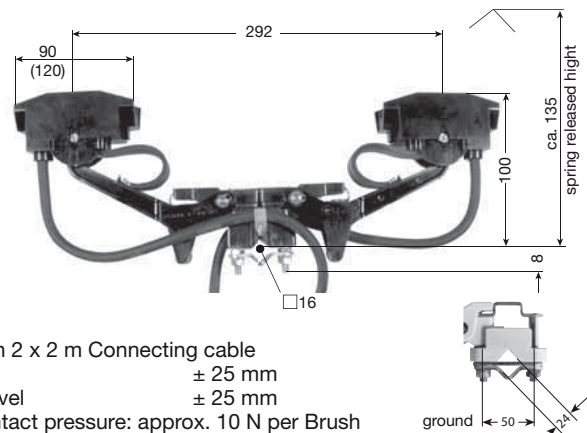
Dimension in parenthesis for UDST 120

## Current collectors for transfer funnels EM<sup>(1)</sup>



with 2 m connecting cable  
lift ± 25 mm  
swivel ± 25 mm  
contact pressure: approx. 10 N

## Double collector for transfer funnels EM<sup>(1)</sup>



with 2 x 2 m Connecting cable  
lift ± 25 mm  
swivel ± 25 mm  
contact pressure: approx. 10 N per Brush

Type	Am- pacity A	Connecting-Cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>USTU 40</b>	40	6	11,0	0,635	120 969	120 970
<b>USTU 60</b>	60	10	12,5	0,815	120 971	120 972

Dimension in parenthesis for USTU 60

Type	Am- pacity A	Connecting-Cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>UDSTU 80</b>	80	6	11,0	1,160	120 973	120 974
<b>UDSTU 120</b>	120	10	12,5	1,550	120 975	120 976

Dimension in parenthesis for UDSTU 120

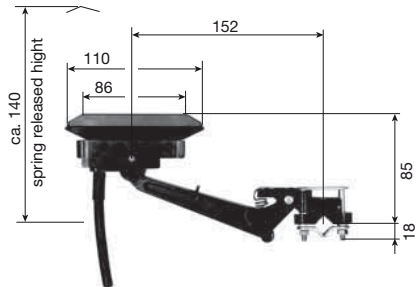
<sup>(1)</sup> Collectors UST -UDST and USTU - UDSTU only for 35 mm phase distance.  
Ampacity while using stainless steel conductors on request.



# CURRENT COLLECTORS FOR U 20

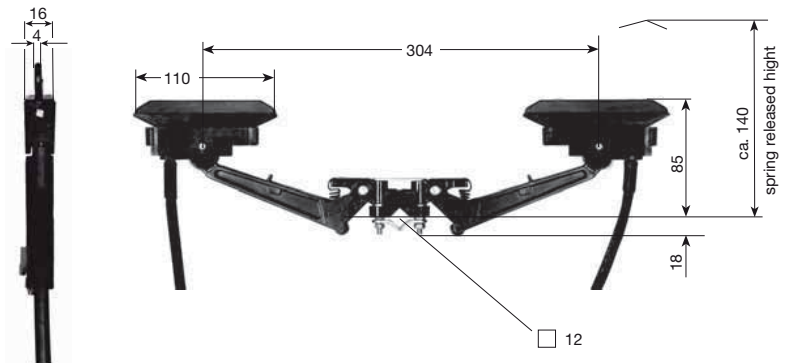
Use in aggressive mediums like pickling plants, galvanizing plants and galvanic systems.

## Current collectors phase<sup>(1)</sup>



with 2 m connecting cable  
lift +30 mm / -40 mm  
swivel  $\pm$  35 mm  
contact pressure: approx. 9 N

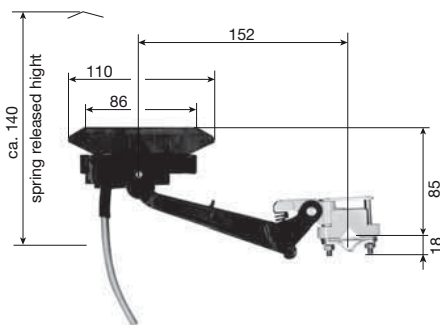
## Double collectors phase<sup>(1)</sup>



with 2 m connecting cable  
lift +30 mm / -40 mm  
swivel  $\pm$  35 mm  
contact pressure: approx. 9 N per brush

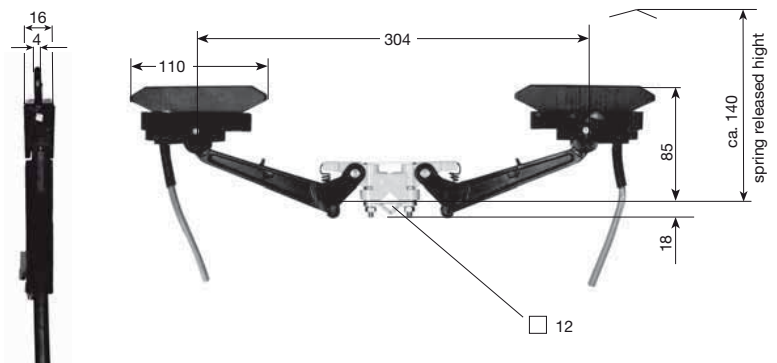
Type <sup>(1)</sup>	Am- pacity A	Connecting cable mm <sup>2</sup> $\varnothing$ max/ mm		Weight kg	Order- No. phase black
<b>KSTL 35 VB PH</b>	35	6,0	11,0	0,410	121 186
<b>KDSTL 70 VB PH</b>	70	6,0	11,0	0,750	121 188

## Current collectors, ground<sup>(2)</sup>

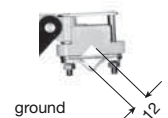


with 2 m connecting cable  
lift +30 mm / -40 mm  
swivel  $\pm$  35 mm  
contact pressure: approx. 9 N

## Double collectors, ground<sup>(2)</sup>



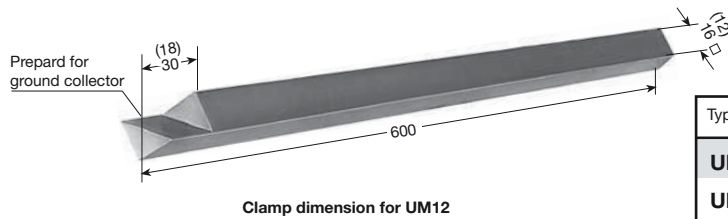
with 2 m connecting cable  
lift +30 mm / -40 mm  
swivel  $\pm$  35 mm  
contact pressure: approx. 9 N per brush



Type <sup>(1)</sup>	Am- pacity A	Connecting cable mm <sup>2</sup> $\varnothing$ max/ mm		Weight kg	Order- No. phase black
<b>KSTL 35 V PE</b>	35	6,0	6,0	0,328	121 187
<b>KDSTL 70 V PE</b>	70	6,0	6,0	0,554	121 189



## Collector bracket for KST and UST



Type	Weight kg	Order- No.
<b>UM 12 (for KST)</b>	0,675	153 506
<b>UM 12 K4<sup>(1)</sup> (for KST..V)</b>	0,688	121 162
<b>UM 16 (for UST)</b>	1,175	126 574

With a length above 600 mm for the towing arm a support have to be considered on site to prevent bending or twisting.

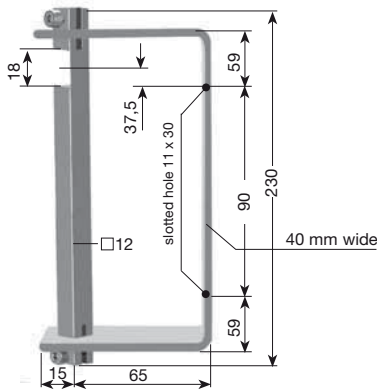
Longer length are available.

## Collector brackets

for current collectors  
KST / KDST see page 10

for current collectors  
KST see page 10

for control collectors  
KST / KDST



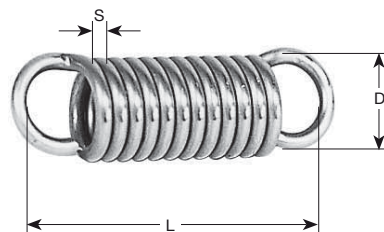
Type	Weight kg	Order- No.
<b>UMAS 12 HS-A 200</b>	0,740	121 092

Type	Weight kg	Order- No.
<b>UMAS 12 HS-B 200</b>	0,740	121 093

Type	Weight kg	Order- No.
<b>UMAS 12 ST 200</b>	0,740	121 094

Suitable for phase distance of max. 55 mm (3 pole + ground).

## Tension springs



Type	for current collectors	Weight kg	S mm	D mm	L mm	Order- No.
<b>ZF 3</b>	KST 15 thru KDST 120	0,003	1,2	10,8	28,5	153 516
<b>ZF 4</b>	KSTL 15 thru KDSTL 120 and KSTLU 15 thru KDSTLU 120	0,004	1,3	11,0	29,0	153 517
<b>ZF 4H</b>	KSTL 35 thru KDSTL 70	0,004	1,3	11,0	29,0	170 601
<b>ZF 5</b>	UST 40, USTU 40, UDST 80, UDSTU 80 UST 60, USTU 60, UDST 120, UDSTU 120	0,007	1,5	13,8	40,0	126 585

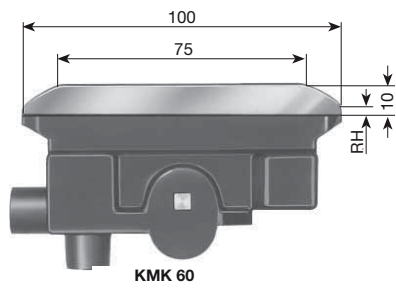
<sup>(1)</sup> Stainless steel hardware.



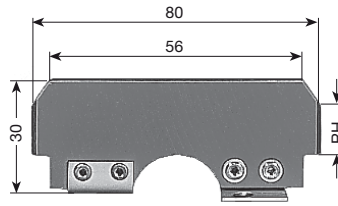


# COLLECTOR COMPONENTS U 20

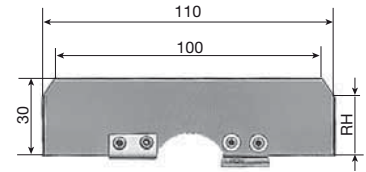
## Copper-graphite brushes



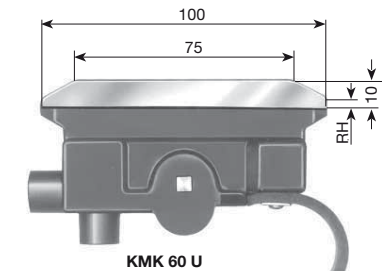
KMK 60



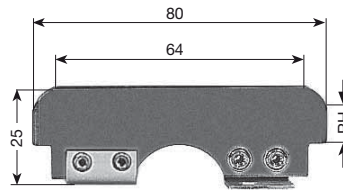
KMU 40



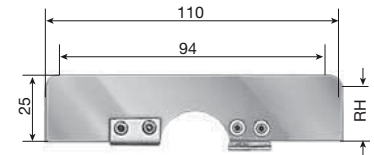
KMU 60



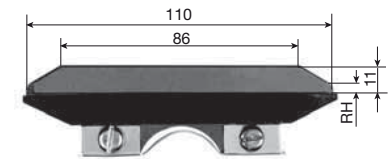
KMK 60 U



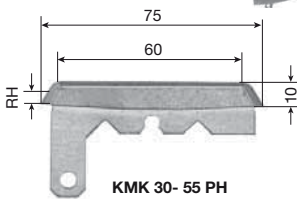
KMU 40 U



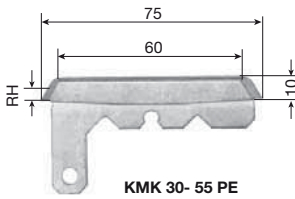
KMU 60 U



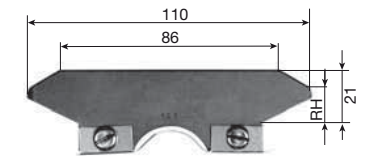
KMK 35 VB



KMK 30- 55 PH



KMK 30- 55 PE



KMK 35 V

Dim H: max. wear for U 20/50 C

Type	for current collectors	RH mm	Weight kg	Order- No.
<b>KMK 60</b>	KST 15, KST 40, KDST 30, KDST 80, KSTL 15, KSTL 40, KDSTL 30, KDSTL 80, KST 60, KDST 120, KSTL 60, KDSTL 120	3	0,110	153 512
<b>KMK 60 U</b>	KSTLU 15, KSTLU 40, KSTLU 60, KDSTLU 30, KDSTLU 80, KDSTLU 120	3	0,115	153 513
<b>KMU 40</b>	UST 40, UDST 80	12	0,060	126 579
<b>KMU 40 U</b>	USTU 40, UDSTU 80	12	0,050	126 696
<b>KMU 60</b>	UST 60, UDST 120	18	0,070	126 581
<b>KMU 60 U</b>	USTU 60, UDSTU 120	18	0,060	126 743
<b>KMK 30-55, phase</b>	KST 30, KST 55, KSTL 30, KSTL 55	2	0,031	154 440
<b>KMK 30-55, ground</b>	KST 30, KST 55, KSTL 30, KSTL 55	2	0,031	154 453
<b>KMK 35 VB, phase</b>	KSTL 35 VB, KDSTL 70 VB	5	0,030	121 063
<b>KMK 35 V, ground</b>	KSTL 35 V, KDSTL 70 V	14	0,030	121 062

## Cable attachment clamp

for current collectors Type KSTLU, KDSTLU

Type	Weight kg	Order- No.
<b>KBK<sup>(1)</sup></b>	0,030	153 519





## Collectors of type KST, KSTL, KDST, KDSTL, KSTLU and KDSTLU

Part-No.	Description	Weight kg	Order- No.
1	Collector base for KST 15 thru KST 60	phase	153 736
2	Collector base for KST 15 thru KST 60	ground	153 737
3	Collector base for KDST 30 thru KDST 120 (double arm)	phase	153 738
4	Collector base for KDST 30 thru KDST 120 (double arm)	ground	153 739
5	Collector base for KSTL 15 thru KSTL 60	phase	153 740
6	Collector base for KSTL 15 thru KSTL 60	ground	153 741
7	Collector base for KDSTL 30 thru KDSTL 120 (double arm)	phase	153 742
8	Collector base for KDSTL 30 thru KDSTL 120 (double arm)	ground	153 743
9	Collector base for KSTLU 15 thru KSTLU 60	phase	153 804
10	Collector base for KSTLU 15 thru KSTLU 60	ground	153 805
11	Collector base for KDSTLU 30 thru KDSTLU 120 (double arm)	phase	153 806
12	Collector base for KDSTLU 30 thru KDSTLU 120 (double arm)	ground	153 807
13	Connecting cable AEA 2,5 PH / AEA-KSTLU-2,5 PH, 2 m long	phase	151 374 / 156 431
	Connecting cable AEA 2,5 PH / AEA-KSTLU-2,5 PH, 2 m long	ground	151 375 / 156 432
13	Connecting cable AEA 6 PH / AEA-KSTLU-6 PH, 2 m long	phase	153 744 / 156 433
	Connecting cable AEA 6 PH / AEA-KSTLU-6 PH, 2 m long	ground	153 745 / 156 434
13	Connecting cable AEA 10 PH / AEA-KSTLU-10 PH, 2 m long	phase	153 746 / 156 427
	Connecting cable AEA 10 PE / AEA-KSTLU-10 PH, 2 m long	ground	153 747 / 156 435
14	Rubber spring <sup>(1)</sup> for KSTLU 15, KSTLU 40, KDSTLU 30, KDSTLU 80, KDSTLU 120	0,008	153 748



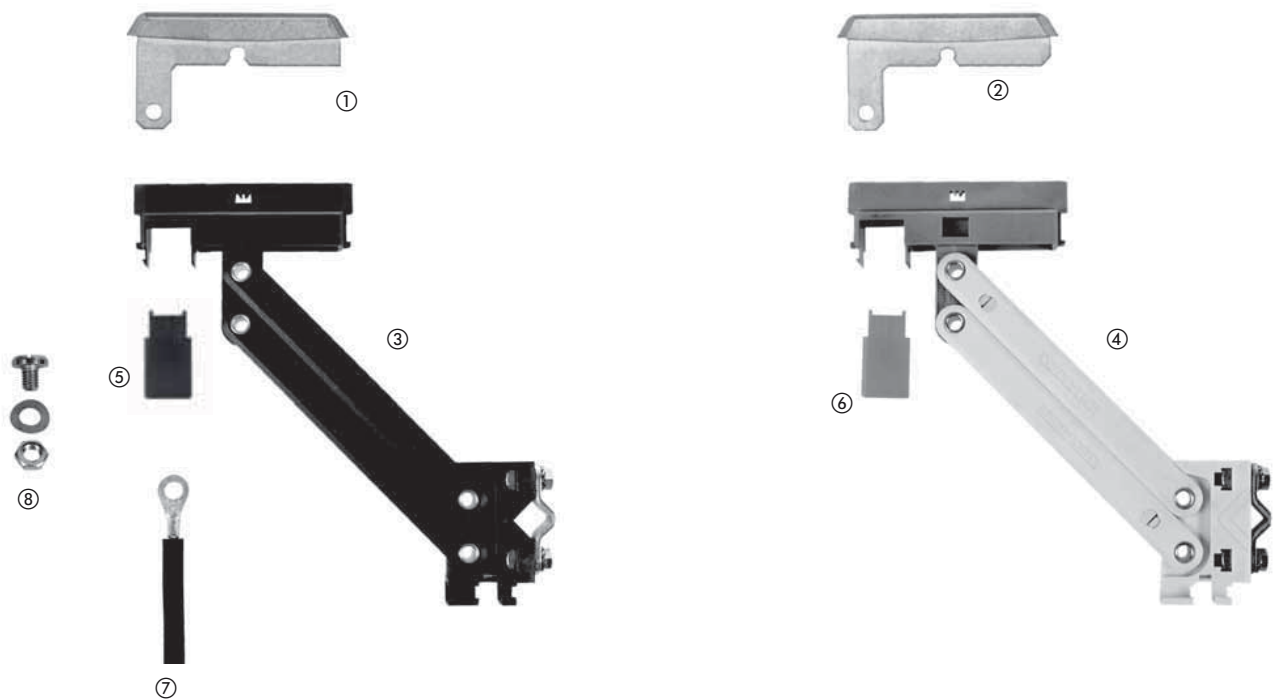
<sup>(1)</sup> Rubber spring will be included when ordering KMK 60 U brush.



# COLLECTOR COMPONENTS FOR U 20

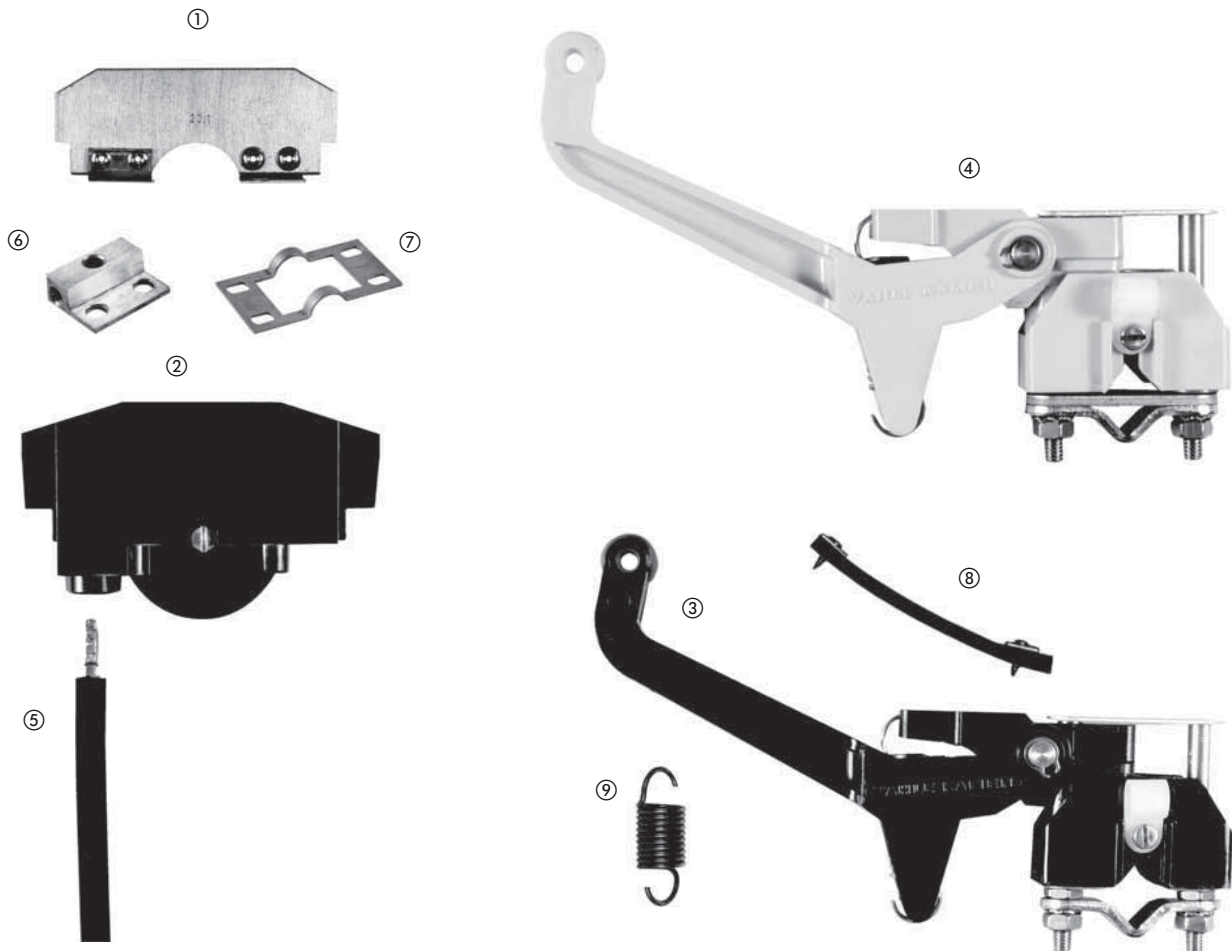
## Collectors of type KST 30-55 upto KSTL 30-55

Part.-No.	Description		Weight kg	Order- No.
1	Brush	phase	0,031	154 440
2	Brush	ground	0,031	154 453
3	Collector base & arm KST, complete	phase	0,083	152 275
3	Collector base & arm KST, complete	phase	0,083	152 279
4	Collector base & arm KST, complete	ground	0,083	152 276
4	Collector base & arm KST, complete	ground	0,083	152 281
5	Terminal cap	phase (black)	0,002	152 291
6	Terminal cap	ground (green)	0,002	152 292
7	Connecting cable RKA 2,5 PH, 2 m long	phase	0,150	154 447
	Connecting cable RKA 2,5 PH, 2 m long	ground	0,150	154 448
7	Connecting cable RKA 6 PH, 2 m long	phase	0,260	154 449
	Connecting cable RKA 6 PE, 2 m long	ground	0,260	154 450
8	Terminal bolt		0,002	152 658



## Collectors of type UST and UDST

Teil-Nr.	Artikel		Weight kg	Order- No.
1	Brush (see page 14)			
2	Brush holder for UST 40, UDST 80, USTU 40, UDSTU 80		0,050	120 949
2	Brush holder for UST 60, UDST 120, USTU 60, UDSTU 120		0,070	120 941
3	Collector base for UST 40, UST 60	phase	0,180	126 604
4		ground		126 605
3	Collector base for UDST 80, UDST 120	phase	0,250	126 692
4		ground		126 693
3	Collector base for USTU 40, USTU 60	phase	0,180	126 606
4		ground		126 607
3	Collector base for UDSTU 80, UDSTU 120	phase	0,250	126 694
4		ground		126 695
5	Connecting cable 6 mm <sup>2</sup> , 2 m long, for UST 40, USTU 40, UDST 80, UDSTU 80	phase	0,300	120 948
		ground		120 952
5	Connecting cable 10 mm <sup>2</sup> , 2 m long, for UST 60, USTU 60, UDST 120, UDSTU 120	phase	0,445	120 939
		ground		120943
6	Connecting piece		0,030	120 946
7	Current bridge		0,010	120 947
8	Rubber spring complete for USTU 40, UDSTU 80, USTU 60, UDSTU 120		0,012	121 617
9	Tension spring ZF 5		0,007	126 585

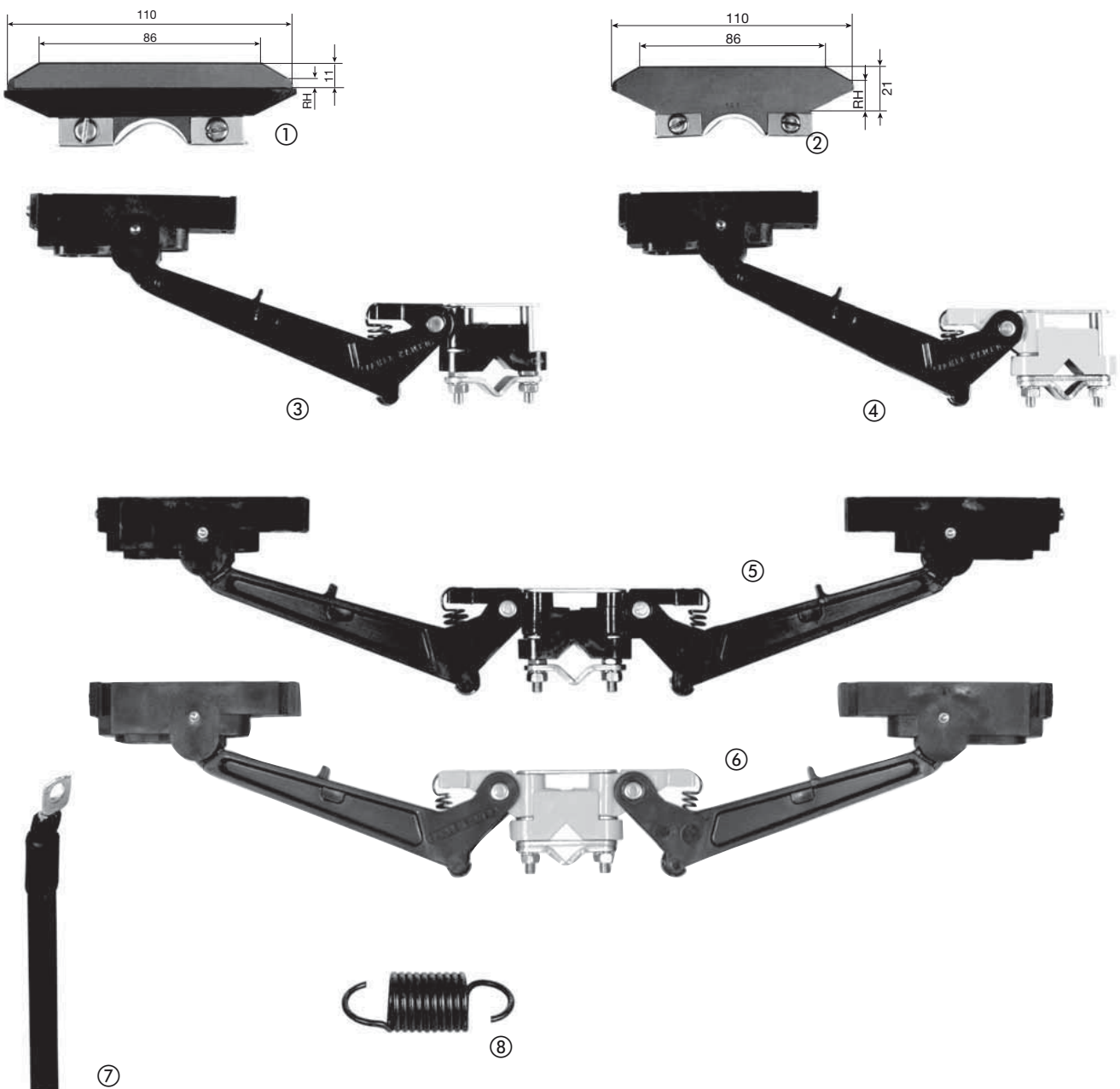




# COLLECTOR COMPONENTS FOR U 20

## Collectors of type KSTL 35 V. and KDSTL 70 V.

Part.-No.	Description		Weight kg	Order- No.
1	Brush KMK 35 VB	phase	0,030	121 063
2	Brush KMK 35 V	ground	0,030	121 062
3	Collector base with brush holder for KSTL 35 VB	phase	0,110	121 203
4	Collector base with brush holder for KSTL 35 V	ground	0,110	121 204
5	Collector base with brush holder for KDSTL 70 VB	phase	0,174	121 207
6	Collector base with brush holder for KDSTL 70 V	ground	0,172	121 208
7	Connecting cable RKA 6/5	phase	0,256	127 437
7	Connecting cable RKA 6/5	ground	0,256	127 438
8	Tension spring ZF 4 H		0,004	170 601





## Compact configuration, 31 m power supply system, 4 pole + ground, 120 A

	Qty.	Description	Type	Order- No.	
	20	Insulated conductors, 6 m long	phase	<b>U 20/50 AC</b>	127 026
	4	Insulated conductors, 1 m long	phase	<b>U 20/50 AC</b>	127 021
	5	Insulated conductors, 6 m long	ground	<b>U 20/50 AC</b>	127 126
	1	Insulated conductor, 1 m long	ground	<b>U 20/50 AC</b>	127 121
	25	Rigid joints		<b>UV 20/50</b>	120 180
	5	Feed terminals		<b>UE 20/50 K 4</b>	126 522
	10	Locating clamps		<b>USK 20 K 4</b>	120 140
	10	End caps		<b>UK 20</b>	120 120
	32	Compact hangers, 5 pole		<b>KH 20/5-5</b>	126 616
	32	Bracket profiles, 230 mm long		<b>HU 20/230</b>	120 833
	4	Current collectors	phase	<b>KST 40</b>	152 840
	1	Current collectors	ground	<b>KST 40</b>	152 850
	1	Collector bracket		<b>UM 12</b>	153 5061
	1	Contact paste			121 502

## Standard configuration, 60 m power supply system, 3 pole + ground, 200 A

	Qty.	Description	Type	Order- No.	
<p>Dimensions in parenthesis include insulators GH 40 with rail holder UAK 20</p>	30	Insulated conductors, 6 m long	phase	<b>U 20/50 C</b>	127 036
	10	Insulated conductors, 6 m long	ground	<b>U 20/50 C</b>	127 136
	36	Rigid joints		<b>UV 20/50</b>	120 180
	4	Feed terminals		<b>UE 20/50 K 4</b>	126 522
	8	Locating clamps		<b>USK 20 K 4</b>	120 140
	8	End caps		<b>UK 20</b>	120 120
	244	Insulated hangers		<b>UAM 20</b>	126 540
	3	Current collectors	phase	<b>UDST 120</b>	120 967
	1	Current collectors	ground	<b>UDST 120</b>	120 968
	1	Collector bracket		<b>UM 16</b>	126 574
	1	Contact Paste			121 502



# INSULATED CONDUCTORS U 30

Type	<b>U 30/120 CE</b>	<b>U 30/75 C</b>	<b>U 30/100 C</b>	
Weight kg/m	1,440	1,100	1,360	
<b>Standard shrouding, color green</b>				
Order- No. phase <sup>(3)</sup>	130 24 •	130 28 •	130 32 •	
Order- No. ground <sup>(3)</sup>	130 25 •	130 29 •	130 33 •	
<b>High temperature shrouding, color grey</b>				
Order- No. phase <sup>(3)</sup>	130 26 •	130 30 •	130 34 •	
Order- No. ground <sup>(3)</sup>	130 27 •	130 31 •	130 35 •	

Type	<b>U 30/130 CH</b>	<b>U 30/150 C</b>	<b>U 30/200 C</b>	<b>U 30/200 CH</b>
Weight kg/m	1,540	1,780	2,180	2,180
<b>Standard shrouding, color green</b>				
Order- No. phase <sup>(3)</sup>	130 36 •	130 40 •	130 44 •	130 48 •
Order- No. ground <sup>(3)</sup>	130 37 •	130 41 •	130 45 •	130 49 •
<b>High temperature shrouding, color grey</b>				
Order- No. phase <sup>(3)</sup>	130 38 •	130 42 •	130 46 •	130 50 •
Order- No. ground <sup>(3)</sup>	130 39 •	130 43 •	130 47 •	130 51 •

## Engineering data

Type	Conductor cross section mm <sup>2</sup>			Leakage distance of shroud mm	max. voltage <sup>(4)</sup> V	max. continuous ampere capacity A at 35° C	Resistance <sup>(1)</sup> Ohm/1000 m	Impedance <sup>(1)</sup> Ohm/1000 m
	Cu	Al	Stahl					
<b>U 30/120 CE</b>	100		18	100	1000	330	0,178	0,222
<b>U 30/ 75 C</b>	75			100	1000	280	0,238	0,280
<b>U 30/100 C</b>	100			105	1000	330	0,178	0,264
<b>U 30/130 CH</b>	130			95	1000	400	0,137	0,221
<b>U 30/150 C</b>	150			95	1000	440	0,126	0,219
<b>U 30/200 C</b>	200			90	1000	530	0,090	0,195
<b>U 30/200 CH</b>	200			90	1000	530	0,090	0,195

### Conductor Code:

U = Insulated Conductors  
 30 = Shroud Size  
 75-225 = Conductor Cross Sectional Area (mm<sup>2</sup>)  
 CE = Copper/stainless steel conductor  
 C = Copper conductor  
 CH = Copper conductor with extra deep groove for high speed applications

### Application:

for indoor and outdoor

### Supply length:

6 m standard  
 Shorter lengths are available.

### Bending:

factory fabricated on request

### Support spacing:

– for straight runs and lateral curves: 1500 mm  
 – for horizontal curves  $R_H < 10 \text{ m}^{(2)}$ : 750 mm  
 – for horizontal curves  $R_H > 10 \text{ m}$ : 1500 mm

### Heating system:

The conductor Type U 30/75 C can be equipped with heating cable for icing conditions.  
 See page 4 for chemical and electrical properties

<sup>(1)</sup> With 80 mm phase distance, 50 Hz and 20 °C.

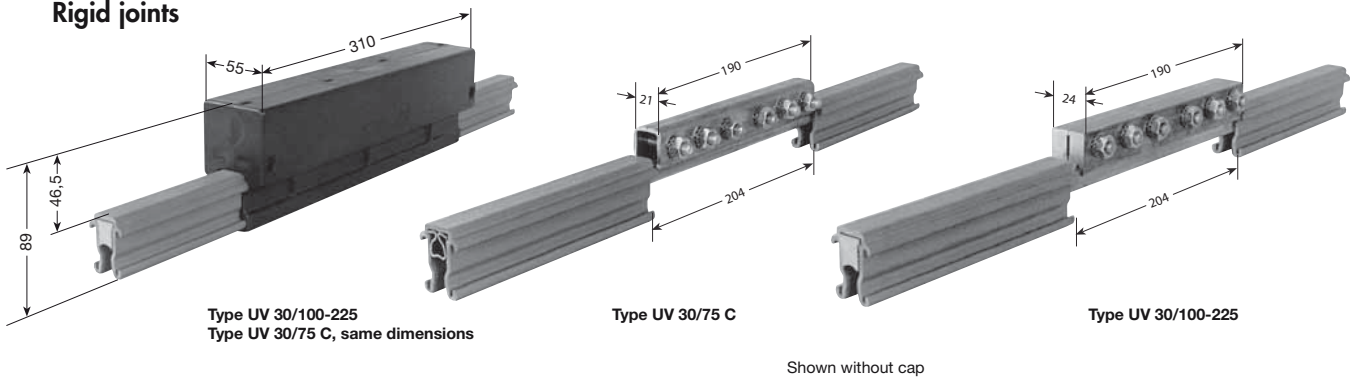
<sup>(2)</sup> Recommended

<sup>(3)</sup> Add last number (1, 2, 3, 4, 5 or 6 m length suffix) in accordance to bars required. Short length have to be rounded up.

<sup>(4)</sup> Not with UL-approval;  $U_{UL} = 600 \text{ V}$



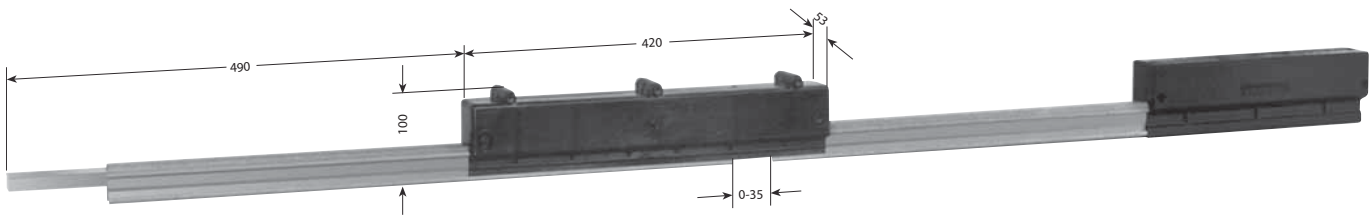
## Rigid joints



Type	for conductor type	Weight kg	Order- No.
<b>UV 30/75 C</b>	U 30/75 C	0,780	130 525
<b>UV 30/75 C K 4<sup>(1)</sup></b>	U 30/75 C	0,780	130 526
<b>UV 30/100-225</b>	U 30/120 CE, U 30/100 C,	1,180	130 527
<b>UV 30/100-225 K 4<sup>(1)</sup></b>	U 30/130 CH, U 30/150 C, U 30/200 C, U 30/200 CH,	1,180	130 528

## Expansion sections

consisting of expansion joint with rigid joint installed on a conductor rail of 1.5 m length. They are used in systems >100 m. The 1.5 m expansion assembly is part of the system length and has to be considered. Expansion sections with 70 mm expansion are available.



### Investigation of expansion sections

$n = \frac{L_1}{L}$   
 n = Number of UDV (rounded)  
 L<sub>1</sub> = Length of assembly minus 100 m  
 L = Expansion capacity max. of UDV (see table)

to Δ t	max. L / U 30	to Δ t	max. L / U 30
20 °C	100 m	40 °C	50 m
30 °C	68 m	50 °C	40 m

### Standard shrouding, color green

Type	Weight kg	Order- No.	
		phase	ground
<b>UDV 30/120 CE</b>	4,980	130 533	130 534
<b>UDV 30/ 75 C</b>	4,470	130 535	130 536
<b>UDV 30/100 C</b>	4,860	130 537	130 538
<b>UDV 30/130 CH</b>	5,130	130 539	130 540
<b>UDV 30/150 C</b>	5,490	130 541	130 542
<b>UDV 30/200 C</b>	6,090	130 543	130 544
<b>UDV 30/200 CH</b>	6,090	130 545	130 546
<b>UDV 30/120 CE K 4<sup>(1)</sup></b>	4,980	130 551	130 552
<b>UDV 30/ 75 C K 4<sup>(1)</sup></b>	4,470	130 553	130 554
<b>UDV 30/100 C K 4<sup>(1)</sup></b>	4,860	130 555	130 556
<b>UDV 30/130 CH K 4<sup>(1)</sup></b>	5,130	130 557	130 558
<b>UDV 30/150 C K 4<sup>(1)</sup></b>	5,490	130 559	130 560
<b>UDV 30/200 C K 4<sup>(1)</sup></b>	6,090	130 561	130 562
<b>UDV 30/200 CH K 4<sup>(1)</sup></b>	6,090	130 563	130 564

### High temperature shrouding, color grey

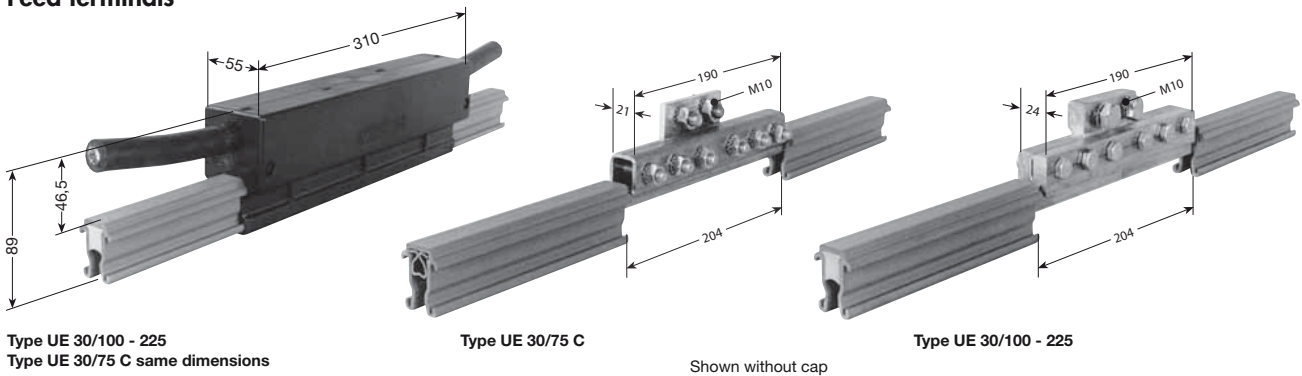
Type	Weight kg	Order- No.	
		phase	ground
<b>UDV 30/120 CE</b>	4,980	130 569	130 570
<b>UDV 30/ 75 C</b>	4,470	130 571	130 572
<b>UDV 30/100 C</b>	4,860	130 573	130 574
<b>UDV 30/130 CH</b>	5,130	130 575	130 576
<b>UDV 30/150 C</b>	5,490	130 577	130 578
<b>UDV 30/200 C</b>	6,090	130 579	130 580
<b>UDV 30/200 CH</b>	6,090	130 581	130 582
<b>UDV 30/120 CE K 4<sup>(1)</sup></b>	4,980	130 587	130 588
<b>UDV 30/ 75 C K 4<sup>(1)</sup></b>	4,470	130 589	130 590
<b>UDV 30/100 C K 4<sup>(1)</sup></b>	4,860	130 591	130 592
<b>UDV 30/130 CH K 4<sup>(1)</sup></b>	5,130	130 593	130 594
<b>UDV 30/150 C K 4<sup>(1)</sup></b>	5,490	130 595	130 596
<b>UDV 30/200 C K 4<sup>(1)</sup></b>	6,090	130 597	130 598
<b>UDV 30/200 CH K 4<sup>(1)</sup></b>	6,090	130 599	130 600

<sup>(1)</sup> Stainless steel hardware



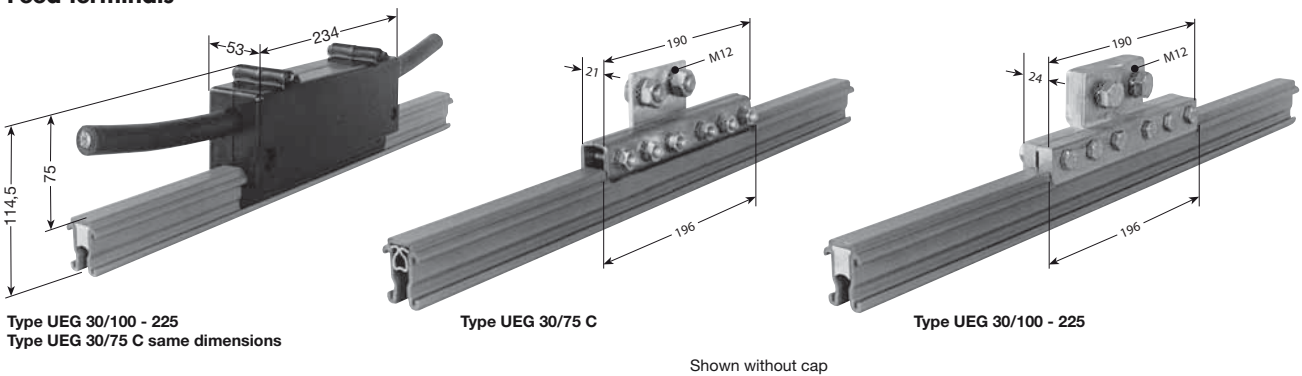
# FEED TERMINALS FOR U 30

## Feed terminals



Type	Connecting cable max. mm <sup>2</sup>	Weight kg	Order- No.
<b>UE 30/75 C</b>	2 x 70	0,990	130 601
<b>UE 30/75 CK 4<sup>(1)</sup></b>	2 x 70	0,990	130 602
<b>UE 30/100 - 225</b>	2 x 70	1,480	130 603
<b>UE 30/100-225 K 4<sup>(1)</sup></b>	2 x 70	1,480	130 604

## Feed terminals



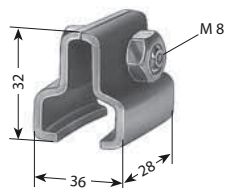
For mid-rail assembly only.

Type	Connecting max. mm <sup>2</sup>	Weight kg	Order- No.
<b>UEG 30/75 C</b>	2 x 95	0,940	130 605
<b>UEG 30/75 CK 4<sup>(1)</sup></b>	2 x 95	0,940	130 606
<b>UEG 30/100-225</b>	2 x 120	1,615	130 607
<b>UEG 30/100-225 K 4<sup>(1)</sup></b>	2 x 120	1,615	130 608

## Contact paste for joints and feeds

100 ml for ca. 200 joints	Order- No. 121 502
---------------------------	--------------------

## Locating clamp



Type	Weight kg	Order- No.
<b>USK 30 K 4<sup>(1)</sup></b>	0,065	133 537

## End caps

incl. Locking pin

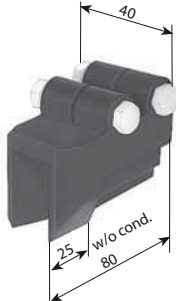


Type	Weight kg	Order- No.
<b>UK 30-L</b>	0,025	132 120
<b>UK 30-M</b>	0,025	130 158



## Transfer guides

Transfer guides are used for transfer or power interrupting applications.  
 Max. vertical and horizontal offset:  $\pm 4$  mm, max. air gap: 10 mm.  
 Additional hangers are required and have to be ordered separately.



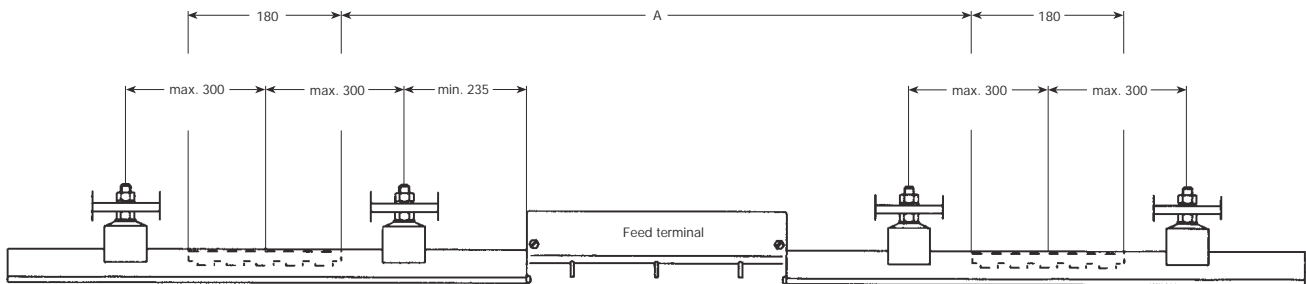
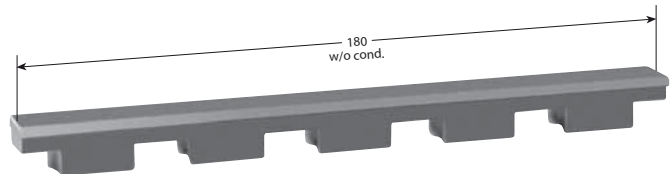
Type	Weight kg	Order- No.
US 30/120 CE	0,090	133 587
US 30/ 75 C	0,090	133 250
US 30/100 C	0,090	133 260
US 30/130 CH	0,090	133 280
US 30/150 C	0,090	133 290
US 30/200 C	0,090	133 300
US 30/200 CH	0,090	133 791

Transfer guides US 30 are fastened to conductor ends by means of two screws.

## Isolating sections

Type M: Factory assembled per system layout  
 Type L: Loose, including two locking pins 4 x 18

Position of isolating sections per system layout. Use one extra hanger each side, max. 300 mm away for stability.  
 Rails, hangers & feed terminal to be ordered separately.



To avoid voltage by-pass by carbon brushes and to separate maintenance bays, control and main feed sections, double isolating sections are recommended.

Dim. A depends on type and number of current collectors and stopping distance of the crane.

Type	Weight kg	Order- No.
IT/U 30/120 CE-M	0,021	133 588
IT/U 30/ 75 C -M	0,021	133 070
IT/U 30/100 C -M	0,021	133 080
IT/U 30/130 CH-M	0,021	133 100
IT/U 30/150 C -M	0,021	133 110
IT/U 30/200 C -M	0,021	133 120
IT/U 30/200 CH-M	0,021	133 792

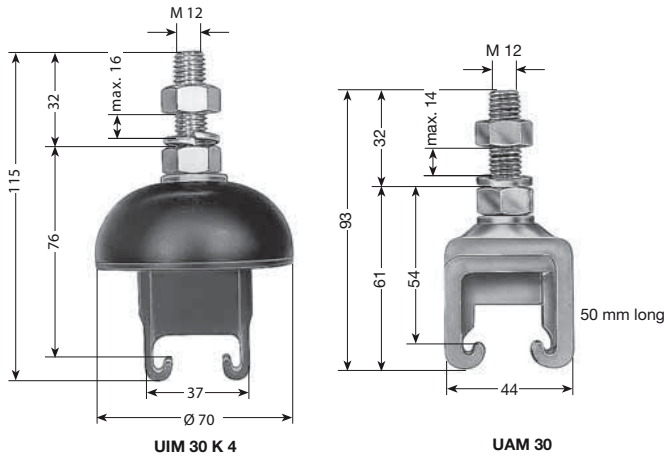
Type	Weight kg	Order- No.
IT/U 30/120 CE-L	0,021	132 580
IT/U 30/ 75 C -L	0,021	132 560
IT/U 30/100 C -L	0,021	132 570
IT/U 30/130 CH-L	0,021	132 600
IT/U 30/150 C -L	0,021	132 610
IT/U 30/200 C -L	0,021	132 620
IT/U 30/200 CH-L	0,021	132 640





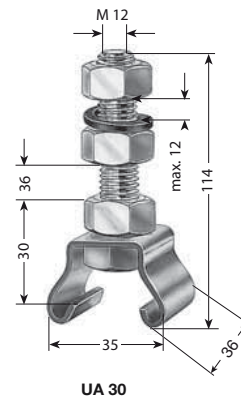
# HANGERS FOR U 30

## Insulated hangers<sup>(2)</sup>



Type	Weight kg	Order- No.
<b>UIM 30 K 4<sup>(1)</sup></b>	0,160	133 768
<b>UAM 30</b>	0,160	132 690
<b>UAM 30 K 4<sup>(1)</sup></b>	0,160	132 700

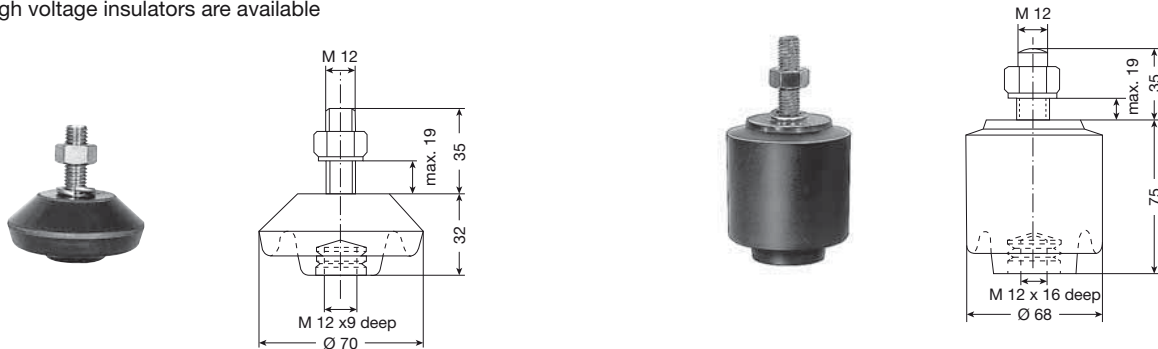
## Hangers<sup>(2)</sup>



Type	Weight kg	Order- No.
<b>UA 30</b>	0,193	132 150
<b>UA 30 K 4<sup>(1)</sup></b>	0,193	132 510

## Insulators<sup>(2)</sup>

High voltage insulators are available



Type	Weight kg	Order- No.
<b>GHH 30 - M 12</b>	0,245	130 000
<b>GHH 30 - M 12 K 4<sup>(1)</sup></b>	0,245	130 002

Cantilever strength = 4500 N  
Leakage distance = 70 mm

Type	Weight kg	Order- No.
<b>GHH 75 - M 12</b>	0,560	133 564
<b>GHH 75 - M 12 K 4<sup>(1)</sup></b>	0,560	133 566

Cantilever strength = 6500 N  
Leakage distance = 115 mm

## Rail holders

to go with insulators



Supplied with bolt M 12 x 16

Type	Weight kg	Order- No.
<b>UAK 30 K 4<sup>(1)</sup></b>	0,100	133 568

Type	Weight kg	Order- No.
<b>UAS 30 K 4<sup>(1)</sup></b>	0,080	132 710

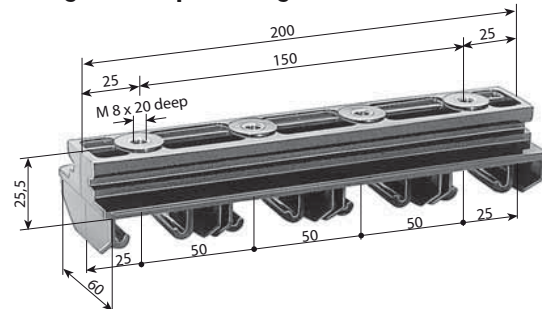
<sup>(1)</sup> Stainless steel hardware

<sup>(2)</sup> For installation in slotted holes use on both sided discs according to DIN 9021.



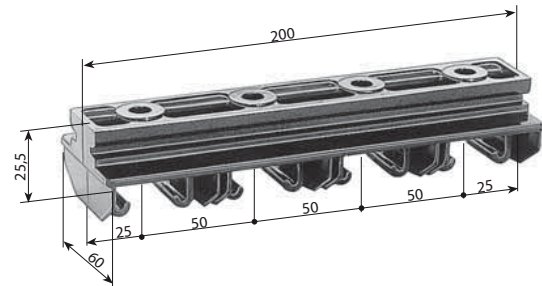
Any number of conductors can be assembled by cutting/combining the compact hangers.  
The joints and feeds have to be arranged staggered.

## Compact hanger, 4 pole for direct bolting



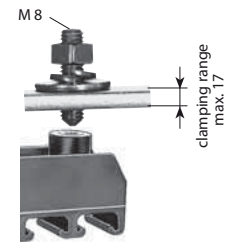
Type	Weight kg	Order- No.
KA 30/4	0,172	133 570

## Compact hanger, 4 pole to go with bracket 38/17



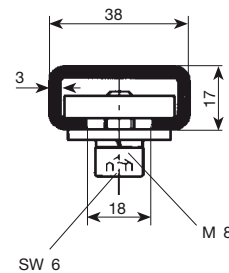
Type	Weight kg	Order- No.
KH 30/4	0,165	133 571

## Attachment hardware for compact hangers, insulated hangers and insulators



Type	Weight kg	Order- No.
BE 8	0,028	130 060
BE 8 K 4 <sup>(1)</sup>	0,028	130 111

## Bracket profiles 38/17

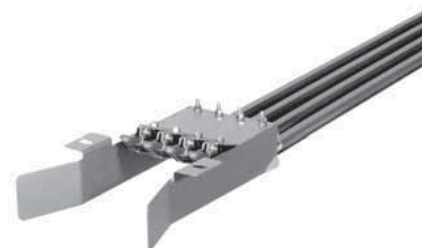


Type	Lenght mm	Number of poles	Weight kg	Bestell-Nr.
HU 30/400	400	5	0,820	130 113
HU 30/600	600	10	1,160	130 114



## Transfer funnel for compact arrangement EMK 30/1-6.

Transfer funnels are for spurlines, switches and turntables required.  
They have a height and lateral tolerance of +/- 25 mm.  
The conductor distance has to be 50 mm.  
Collector types KSTU 140 and KDSTU 280 have to be used.



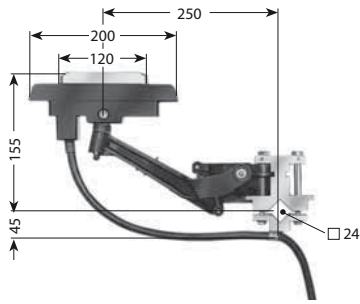
For construction please request drawing.

<sup>(1)</sup> Stainless steel hardware



# CURRENT COLLECTORS FOR U 30

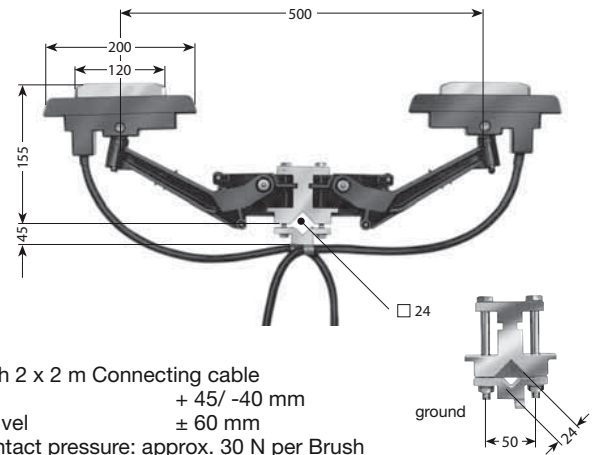
## Current collectors



with 2 m Connecting cable  
 lift + 45/ -40 mm  
 swivel ± 60 mm  
 contact pressure: approx. 30 N



## Double collector

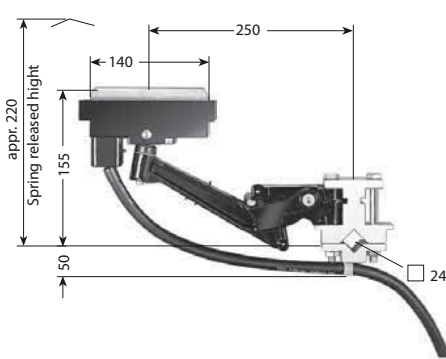


with 2 x 2 m Connecting cable  
 lift + 45/ -40 mm  
 swivel ± 60 mm  
 contact pressure: approx. 30 N per Brush

Type	Am- capacity A	Connecting cable		Weight kg	Order- No.		Type	Am- capacity A	Connecting cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow			mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>KST 100/30</b>	100	16	14,5	1,724	133 938	133 939	<b>KDST 200/30</b>	200	16	14,5	3,111	133 940	133 941
<b>KST 125/30</b>	125	25	16,5	1,960	130 863	130 864	<b>KDST 250/30</b>	250	25	16,5	3,583	130 865	130 866

## Current collectors<sup>(1)</sup>

for transfer applications KSTU 140/30

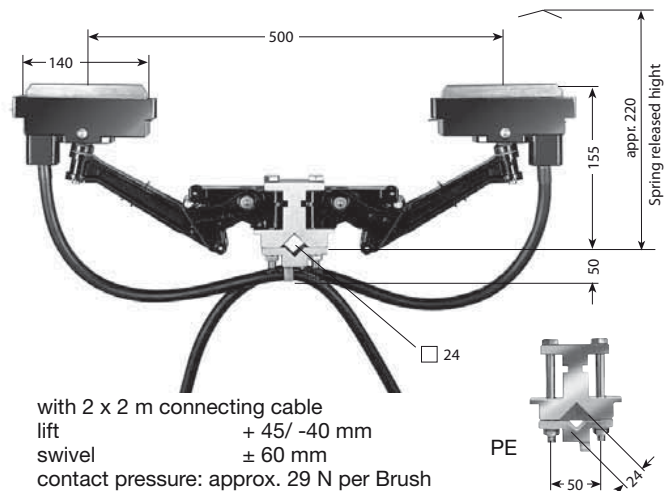


with 2 m connecting cable  
 lift + 45/ -40 mm  
 swivel ± 60 mm  
 contact pressure: approx. 29 N



## Double collectors<sup>(1)</sup>

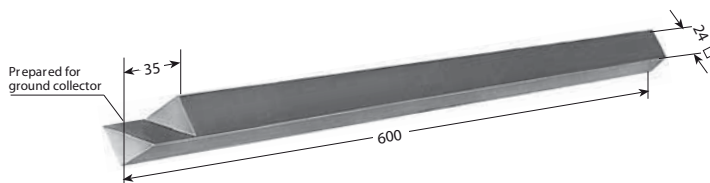
for transfer applications KDSTU 280/30



with 2 x 2 m connecting cable  
 lift + 45/ -40 mm  
 swivel ± 60 mm  
 contact pressure: approx. 29 N per Brush

Type	Am- capacity A	Connecting cable		Weight kg	Order- No.		Type	Am- capacity A	Connecting cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase black	ground yellow			mm <sup>2</sup>	ø max/ mm		phase black	ground yellow
<b>KST 140/30</b>	140	25	16,5	1,935	130 048	130 049	<b>KDST 280/30</b>	280	25	16,5	3,395	130 052	130 053
<b>KSTU 140/30</b>	140	25	16,5	1,990	130 050	130 051	<b>KDSTU 280/30</b>	280	25	16,5	3,535	130 054	130 055
<b>KST 175/30</b>	175	35	18,5	2,183	130 869	130 870	<b>KDST 350/30</b>	350	35	18,5	3,891	130 873	130 874
<b>KSTU 175/30</b>	175	35	18,5	2,238	130 871	130 872	<b>KDSTU 350/30</b>	350	35	18,5	4,031	130 875	130 876

## Collector bracket



Type	Weight kg	Order- No.
<b>UM 24</b>	2,600	175 076

With a length above 600 mm for the towing arm a support have to be considered on site to prevent bending or twisting.

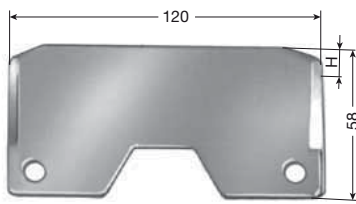
Longer length are available.

<sup>(1)</sup> Special version for acid factories available.  
 Ampacity with use on stainless steel conductors on request.

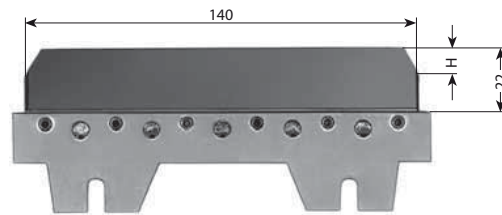
# COLLECTOR COMPONENTS U 30 • EXAMPLE FOR ORDERING



## Copper-graphite brush



**KMK 100/30**

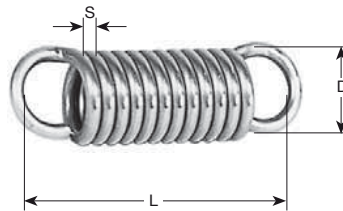


**KMK 140/30**

Dim. H: max. wear for U 30/100 C

Type	for collector	H mm	Weight kg	Order- No.
<b>KMK 100/30</b>	KST 100/30, KDST 200/30	4	0,198	130 609
<b>KMK 140/30</b>	KST 140/30, KDST 280/30, KSTU 140/30, KDSTU 280/30	5,5	0,177	133 590

## Tension spring



Type	for collector	Weight kg	L mm	D mm	S mm	Order- No.
<b>ZF 6</b>	KST 100/30, KST 140/30, KDST 200/30 KST 140/30, KDST 280/30, KSTU 140/30, KDSTU 280/30	0,023	56,50	17,30	2,25	170 167

## Example for ordering 160 m power supply system, 3 pole + ground, 530 A

	Qty.	Description	Type	Order- No.
	78	Insulated conductors, 6 m long	phase <b>U 30/200 C</b>	130 446
	3	Insulated conductors, 1 m long	phase <b>U 30/200 C</b>	130 441
	26	Insulated conductors, 6 m long	ground <b>U 30/100 C<sup>(1)</sup></b>	130 336
	1	Insulated conductor, 1 m long	ground <b>U 30/100 C<sup>(1)</sup></b>	130 331
	6	Expansion sections, 1,5 m long	phase <b>UDV 30/200 C</b>	130 543
	2	Expansion sections, 1,5 m long	ground <b>UDV 30/100 C<sup>(1)</sup></b>	130 538
	104	Rigid joints	<b>UV 30/100-225</b>	130 527
	8	Feed terminals	<b>UE 30/100-225</b>	130 603
	24	Locating clamps	<b>USK 30 K 4</b>	133 537
	8	End caps	<b>UK 30</b>	132 120
	432	Insulated hangers	<b>UAM 30</b>	132 690
	6	Double collectors, phase	<b>KDST 280/30</b>	130 052
	1 <sup>(1)</sup>	Double collectors, ground	<b>KDST 280/30</b>	130 053
	2	Collector bracket	<b>UM 24</b>	175 076

Dimensions in parenthesis include insulators GHH 75/UAS 30 with railholder UAK 30 K 4

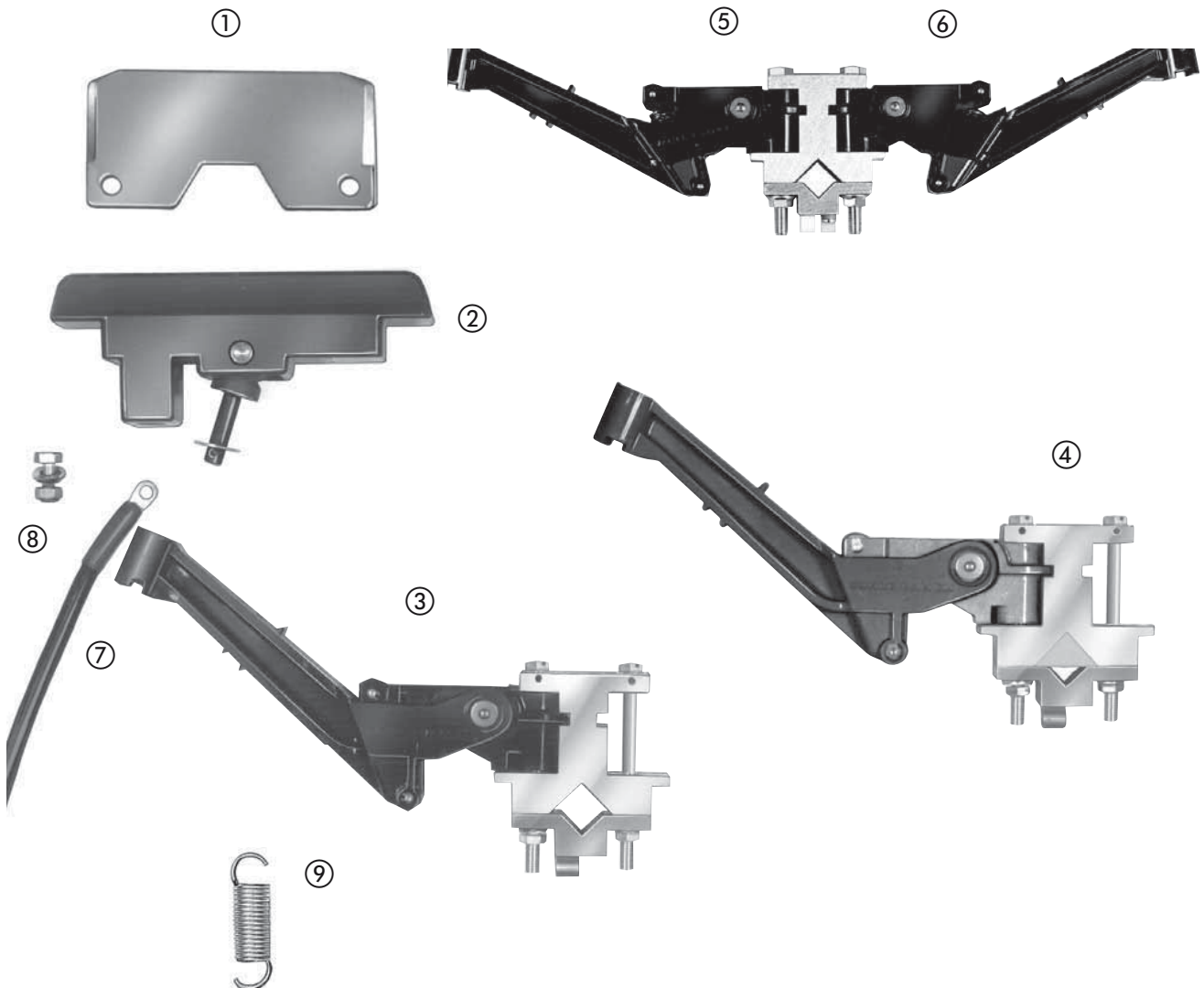
<sup>(1)</sup> Capacity reduces per VDE 0100, part 540



# COLLECTOR COMPONENTS U 30

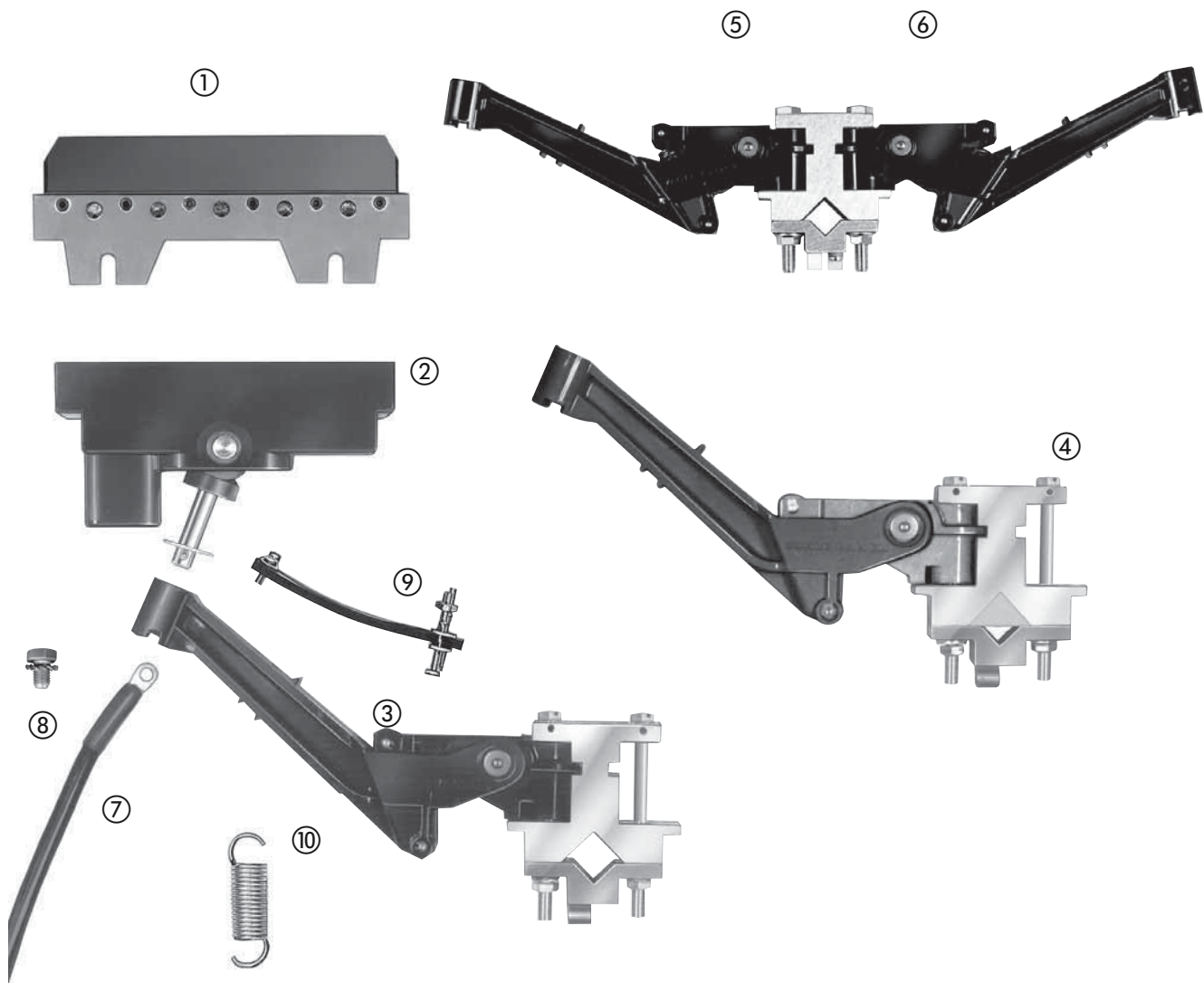
Spare parts for collectors of type KST 100/30 upto KDST 200/30

Part.-No.	Description	Weight kg	Order- No.
1	Brush (see page 28)	-	-
2	Brush holder for KST 100	0,195	170 338
3	Collector base for KST 100	phase	170 338
4		ground	170 340
5	Collector base for KDST 200	phase	170 341
6		ground	170 342
7	Connecting cable RKA 16/8 PH, 2 m long	0,887	170 343
8	Connecting cable RKA 16/8 PE, 2 m long	0,953	170 344
9	Terminal bolt M8 x 20 K4	0,614	170 345
	Tension spring (see page 27)	0,459	170 818
		-	-



## Spare parts for collectors of type KST 140/30 upto KDSTU 280/30

Order- No.				
1	Brush (see page 27)		-	-
2	Brush holder with carbon holder for KST 140	phase ground	0,375	170 169 170 169
3	Collector base for KST 140	phase	0,662	170 340
4		ground	0,731	170 341
3	Collector base for KSTU 140	phase	0,555	170 555
4		ground		170 556
5	Collector base for KDST 280	phase	0,887	170 342
6		ground	0,953	170 343
5	Collector base for KDSTU 280	phase	0,795	170 557
6		ground		170 558
7	Connecting cable RKA 25/8 PH, 2 m long	phase	0,840	170 173
	Connecting cable RKA 25/8 PE, 2 m long	ground	0,600	170 174
7	Connecting cable RKA 35/8 PH, 2 m long	phase	1,100	170 997
	Connecting cable RKA 35/8 PH, 2 m long	ground	0,800	170 998
8	Terminal bolt M 8 x 12 K 4		0,010	170 871
9	Rubber spring complete for KSTU 140, KDSTU 280		0,035	170 412
10	Tension spring (see page 27)		-	-







# INSULATED CONDUCTORS U 40

Type	<b>U 40/200 C</b>	<b>U 40/300 C</b>
Weight kg/m	2,550	3,460
<b>Standard shrouding, color green</b>		
Order- No. <sup>(1)</sup> phase	136 01 •	134 34 •
Order- No. <sup>(1)</sup> ground	136 15 •	136 16 •
<b>High temperature shrouding, color grey</b>		
Order- No. <sup>(1)</sup> phase	136 06 •	136 07 •
Order- No. * ground	136 24 •	136 25 •
Type	<b>U 40/400 CH</b>	<b>U 40/500 C</b>
Weight kg/m	4,360	5,240
<b>Standard shrouding, color green</b>		
Order- No. <sup>(1)</sup> phase	136 04 •	134 36 •
Order- No. <sup>(1)</sup> ground	136 20 •	136 21 •
<b>High temperature shrouding, color grey</b>		
Order- No. <sup>(1)</sup> phase	136 11 •	136 12 •
Order- No. <sup>(1)</sup> ground	136 29 •	136 30 •

### Conductor code::

U = Unipole insulated conductor  
 40 = Shroud size  
 200-500 = Conductor cross sectional area (mm<sup>2</sup>)  
 C = Copper conductor  
 CH = Copper conductor with extra deep groove for high speed  
 CHH = See CH plus for heating

### Application:

indoors and outdoors

### Supply lengths:

6 m standard  
shorter lengths are available.

### Support spacing:

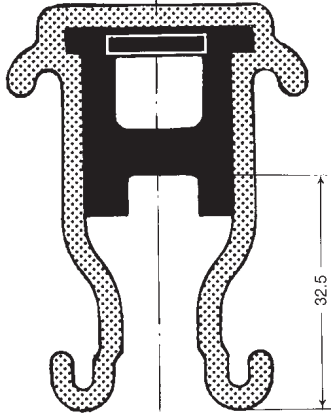
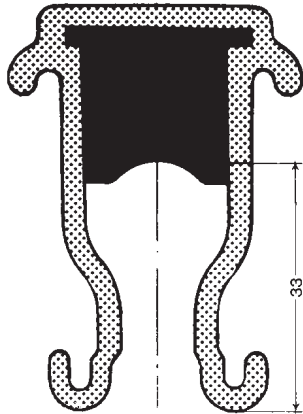
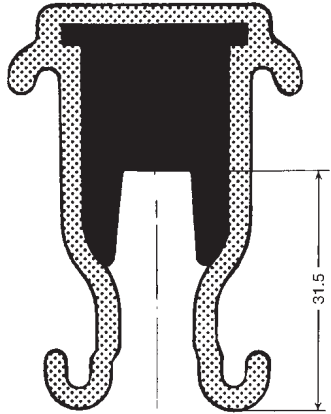
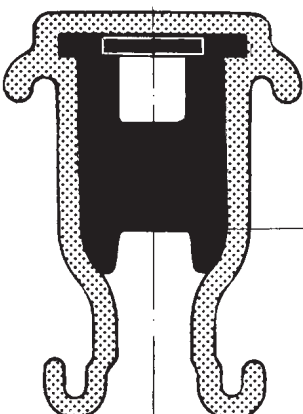
2000 mm

### Heating system:

The conductors type U 40/200 C, U 40/300 CH and U 40/500 CHH can be equipped with heating cable for icing conditions.

Factory-fabricated radius bends to your drawings or sketches are available.

See page 4 for electrical and mechanical properties.

		
	<b>U 40/300 CH</b>	<b>U 40/400 C</b>
	3,500	4,380
	136 02 • 136 17 •	134 35 • 136 19 •
	136 08 • 136 26 •	136 10 • 136 28 •
		
	<b>U 40/500 CH</b>	<b>U 40/500 CHH</b>
	5,250	5,000
	134 15 • 136 22 •	136 05 • 136 23 •
	136 13 • 136 31 •	136 14 • 136 32 •

## Engineering data

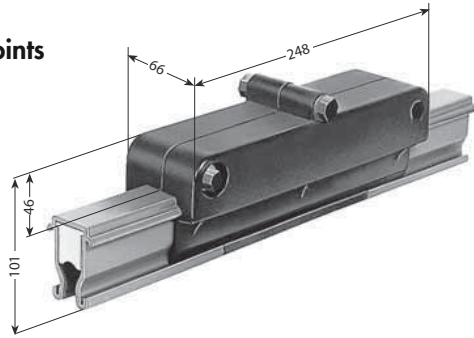
Conductor Type	Conductors cross section mm <sup>2</sup>		Leakage distance of shroud mm	max. voltage V	max. continuous ampere capacity A at 35 °C	Resistance (R) <sup>(2)</sup> Ohm/1000 m	Impedance <sup>(2)</sup> Ohm/1000 m
	Copper	Al					
<b>U 40/200 C</b>	200		130	1000	600	0,089	0,170
<b>U 40/300 C</b>	300		135	1000	700	0,063	0,178
<b>U 40/300 CH</b>	300		130	1000	700	0,063	0,178
<b>U 40/400 C</b>	400		130	1000	860	0,047	0,168
<b>U 40/400 CH</b>	400		130	1000	860	0,047	0,168
<b>U 40/500 C</b>	500		125	1000	1000	0,038	0,161
<b>U 40/500 CH</b>	500		120	1000	1000	0,038	0,161
<b>U 40/500 CHH</b>	500		120	1000	1000	0,038	0,161

<sup>(2)</sup> With 130 mm phase distance, 50 Hz and 20 °C.

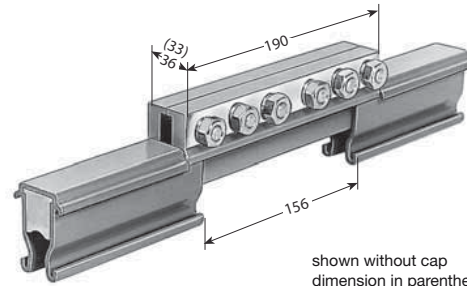


# ACCESSORIES FOR U 40

## Rigid joints



Type	Weight kg	Order- No.
<b>UV 40/200</b>	1,645	134 180
<b>UV 40/200 K 4<sup>(1)</sup></b>	1,645	135 140

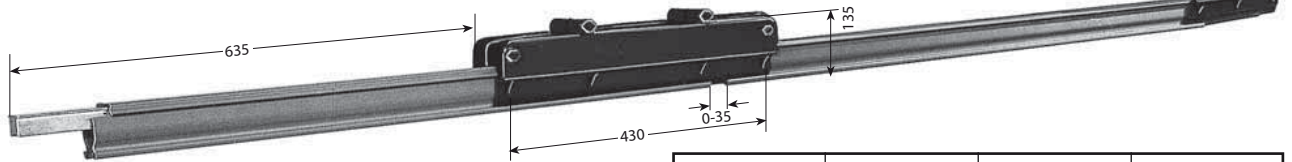


shown without cap  
dimension in parenthesis for UV 40/200

Type	Weight kg	Order- No.
<b>UV 40/300-500</b>	1,660	135 384
<b>UV 40/300-500 K 4<sup>(1)</sup></b>	1,660	135 385

## Expansion sections

consisting of expansion joint with rigid joint installed on a conductor rail of 2 m length. They are used in systems > 100 m. The 2 m expansion assembly is part of the system length and has to be considered.



### Investigation of expansion sections

$n = \frac{L_1}{L}$   
 $n$  = Number of UDV (rounded)  
 $L_1$  = Length of assembly minus 100 m  
 $L$  = Expansion capacity max. of UDV (see table)

to Δ t	max. L / U 40	to Δ t	max. L / U 40
20° C	100 m	40° C	50 m
30° C	68 m	50° C	40 m

### Standard shrouding, color green

Type	Weight kg	Order- No.	
		phase	ground
<b>UDV 40/200 C</b>	9,350	135 142	135 143
<b>UDV 40/300 C</b>	11,170	134 690	134 700
<b>UDV 40/300 CH</b>	11,250	135 144	135 145
<b>UDV 40/400 C</b>	13,010	134 710	134 720
<b>UDV 40/400 CH</b>	12,970	135 146	135 147
<b>UDV 40/500 C</b>	14,730	134 730	134 740
<b>UDV 40/500 CH</b>	14,750	134 750	134 760
<b>UDV 40/500 CHH</b>	14,250	135 390	135 391
<b>UDV 40/200 C K 4<sup>(1)</sup></b>	9,350	135 154	135 155
<b>UDV 40/300 C K 4<sup>(1)</sup></b>	11,170	135 156	135 157
<b>UDV 40/300 CH K 4<sup>(1)</sup></b>	11,250	135 148	135 149
<b>UDV 40/400 C K 4<sup>(1)</sup></b>	13,010	135 158	135 159
<b>UDV 40/400 CH K 4<sup>(1)</sup></b>	12,970	135 150	135 151
<b>UDV 40/500 C K 4<sup>(1)</sup></b>	14,730	135 160	135 161
<b>UDV 40/500 CH K 4<sup>(1)</sup></b>	14,750	135 162	135 163
<b>UDV 40/500 CHH K 4<sup>(1)</sup></b>	14,250	135 392	135 393

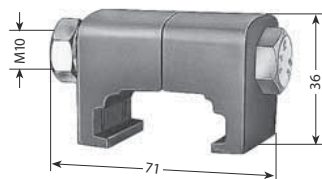
### High temperature shrouding, color grey

Type	Weight kg	Order- No.	
		phase	ground
<b>UDV 40/200 C</b>	9,350	135 272	135 273
<b>UDV 40/300 C</b>	11,170	135 274	135 275
<b>UDV 40/300 CH</b>	11,250	135 276	135 277
<b>UDV 40/400 C</b>	13,010	135 280	135 281
<b>UDV 40/400 CH</b>	12,970	135 282	135 283
<b>UDV 40/500 C</b>	14,730	135 284	135 285
<b>UDV 40/500 CH</b>	14,750	135 286	135 287
<b>UDV 40/500 CHH</b>	14,250	135 370	135 371
<b>UDV 40/200 C K 4<sup>(1)</sup></b>	9,350	135 288	135 289
<b>UDV 40/300 C K 4<sup>(1)</sup></b>	11,170	135 290	135 291
<b>UDV 40/300 CH K 4<sup>(1)</sup></b>	11,250	135 292	135 293
<b>UDV 40/400 C K 4<sup>(1)</sup></b>	13,010	135 296	135 297
<b>UDV 40/400 CH K 4<sup>(1)</sup></b>	12,970	135 298	135 299
<b>UDV 40/500 C K 4<sup>(1)</sup></b>	14,730	135 300	135 301
<b>UDV 40/500 CH K 4<sup>(1)</sup></b>	14,750	135 302	135 303
<b>UDV 40/500 CHH K 4<sup>(1)</sup></b>	14,250	135 372	135 373

## Contact Paste for joints and feeds

100 ml for ca. 200 joints	Order- No. 121 502
---------------------------	--------------------

## Locating clamp



Type	Weight kg	Order- No.
<b>USK 40 K 4<sup>(1)</sup></b>	0,360	134 080

## End cap

incl. locking pin

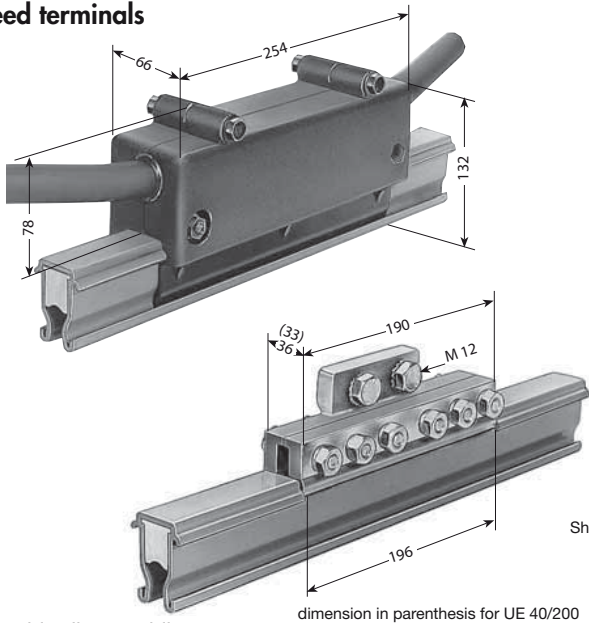


Type	Weight kg	Order- No.
<b>UK 40-L</b>	0,040	134 060
<b>UK 40-M</b>	0,040	135 974

# FEED TERMINALS FOR U 40



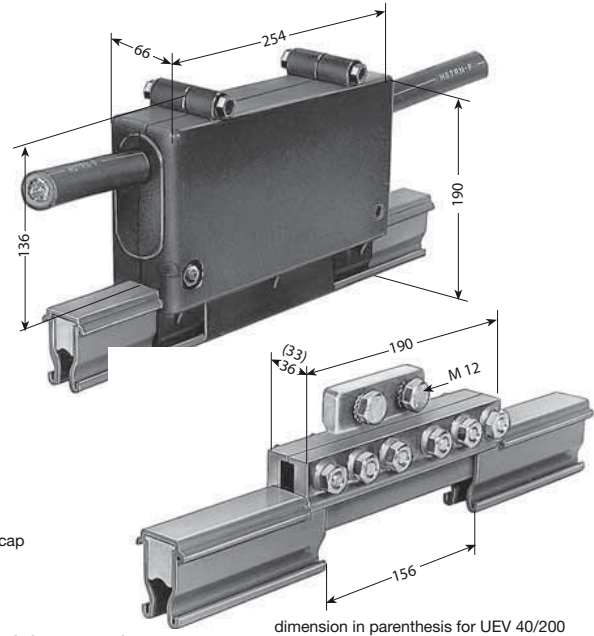
## Feed terminals



for mid-rail assembling

dimension in parenthesis for UE 40/200

Type	Weight kg	Order- No.
<b>UE 40/200</b>	2,120	134 280
<b>UE 40/200 K 4<sup>(1)</sup></b>	2,120	135 164
<b>UE 40/300-500</b>	2,130	135 386
<b>UE 40/300-500 K 4<sup>(1)</sup></b>	2,130	135 387



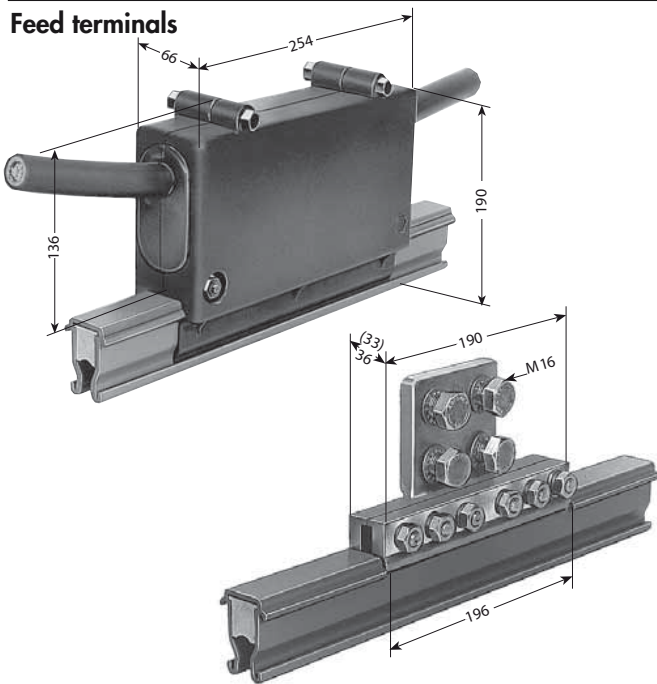
for joint mounting

dimension in parenthesis for UEV 40/200

Type	Weight kg	Order- No.
<b>UEV 40/200</b>	2,190	135 166
<b>UEV 40/200 K 4<sup>(1)</sup></b>	2,190	135 168
<b>UEV 40/300-500</b>	2,200	135 388
<b>UEV 40/300-500 K 4<sup>(1)</sup></b>	2,200	135 389

Feed cables: 2 of max. 95 mm<sup>2</sup>

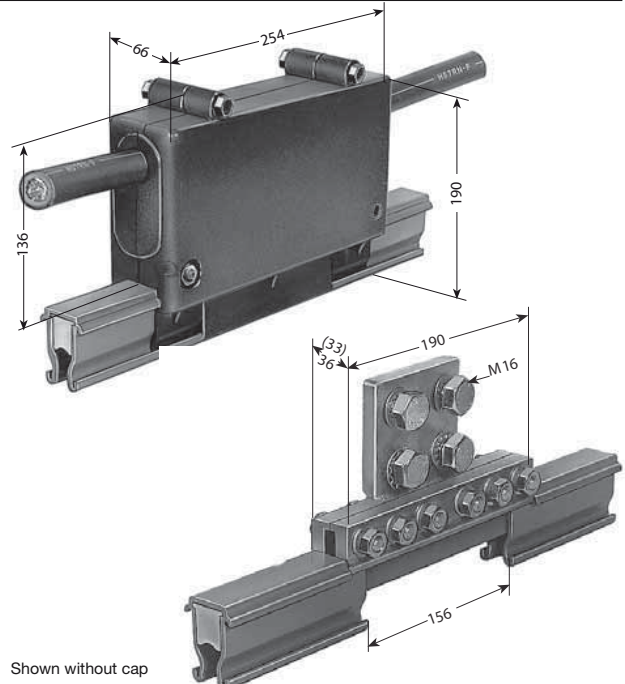
## Feed terminals



for mid-rail assembling

dimension in parenthesis for UEG 40/200

Type	Weight kg	Order- No.
<b>UEG 40/200</b>	2,775	135 213
<b>UEG 40/200 K 4<sup>(1)</sup></b>	2,775	135 170
<b>UEG 40/300-500</b>	2,785	135 374
<b>UEG 40/300-500 K 4<sup>(1)</sup></b>	2,785	135 375



Shown without cap

for joint mounting

dimension in parenthesis for UEVG 40/200

Type	Weight kg	Order- No.
<b>UEVG 40/200</b>	2,825	135 172
<b>UEVG 40/200 K 4<sup>(1)</sup></b>	2,825	135 174
<b>UEVG 40/300-500</b>	2,835	135 376
<b>UEVG 40/300-500 K 4<sup>(1)</sup></b>	2,835	135 377

Feed cables: 4 of max. 150 mm<sup>2</sup>

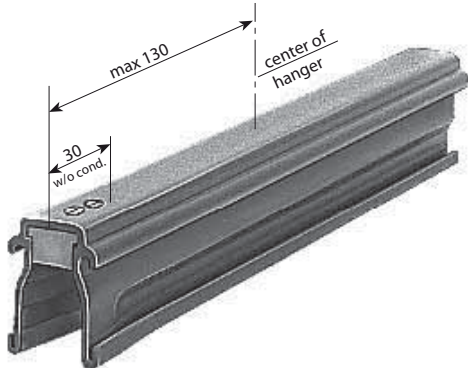
<sup>(1)</sup> Stainless steel hardware



# ACCESSORIES FOR U 40

## Transfer guide

Transfer guides are used for transfer or power-interrupting applications. Max. vertical and horizontal offset:  $\pm 6$  mm, max. air gap: 12 mm. Additional hangers have to be considered and have to be ordered separately.



Type	Weight kg	Order- No.
<b>UTI 40</b>	0,014	134 910

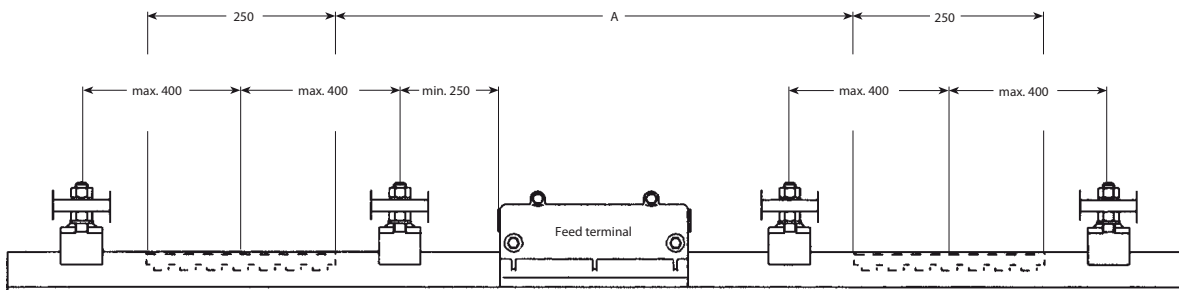
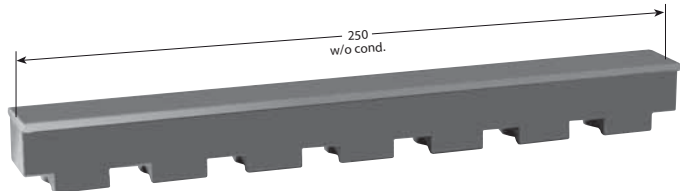
UTI 40 are transfer buttons (bellmouth shaped conductor ends) with integrated isolating piece. They are factory assembled to layout plans.

For separate ordering indicate conductor length and size. The conductor rail has to be ordered separately.

## Isolating sections

Type M: Factory assembled per system layout  
 Type L: Loose, including two locking pins 4 x 8

Position of isolating sections per system layout. Use one extra hanger each side, max. 400 mm away for stability. Rails & hangers to be ordered separately.



To avoid voltage by-pass by carbon brushes and to separate maintenance bays, control and main feed sections, double isolating sections are recommended.

Dim. A depends on type and number of current collectors and stopping distance of the crane.

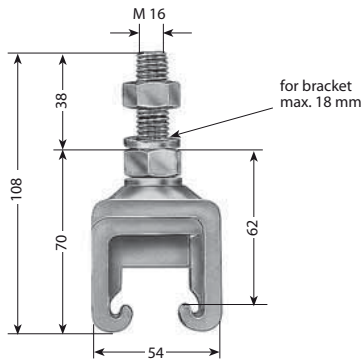
Type	Weight kg	Order- No.
<b>IT/U 40/200 C -M</b>	0,104	135 176
<b>IT/U 40/300 C -M</b>	0,104	134 790
<b>IT/U 40/300 CH -M</b>	0,104	135 187
<b>IT/U 40/400 C -M</b>	0,104	134 800
<b>IT/U 40 400 CH -M</b>	0,104	135 188
<b>IT/U 40/500 C -M</b>	0,104	134 810
<b>IT/U 40/500 CH -M</b>	0,104	134 820
<b>IT/U 40/500 CHH -M</b>	0,104	135 378

Type	Weight kg	Order- No.
<b>IT/U 40/200 C -L</b>	0,104	134 210
<b>IT/U 40/300 C -L</b>	0,104	134 220
<b>IT/U 40/300 CH -L</b>	0,104	134 230
<b>IT/U 40/400 C -L</b>	0,104	134 250
<b>IT/U 40 400 CH -L</b>	0,104	134 260
<b>IT/U 40/500 C -L</b>	0,104	134 270
<b>IT/U 40/500 CH -L</b>	0,104	134 370
<b>IT/U 40/500 CHH -L</b>	0,104	134 380



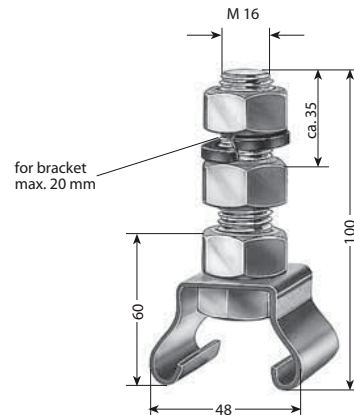


## Insulated hangers



Type	Weight kg	Order- No.
<b>UAM 40</b>	0,285	135 040
<b>UAM 40 K 4<sup>(1)</sup></b>	0,285	134 610

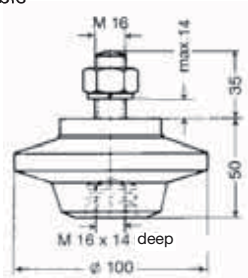
## Hangers



Type	Weight kg	Order- No.
<b>UA 40</b>	0,300	134 090
<b>UA 40 K 4<sup>(1)</sup></b>	0,300	134 400

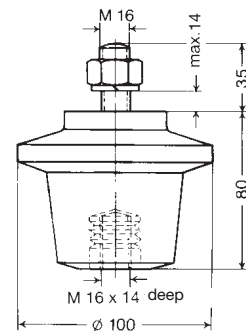
## Insulators

High voltage insulators are available



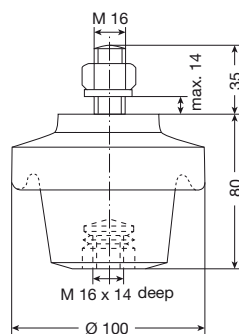
Type	Weight kg	Order- No.
<b>GH 50-M 16</b>	0,510	135 179
<b>GH 50-M 16 K 4<sup>(1)</sup></b>	0,510	135 380

Cantilever = 9000 N  
Leakage distance = 80 mm



Type	Weight kg	Order- No.
<b>GH 80-M 16</b>	0,780	135 181
<b>GH 80-M 16 K 4<sup>(1)</sup></b>	0,780	135 382

Cantilever = 9500 N  
Leakage distance = 120 mm

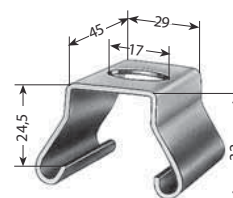


Cantilever = 9500 N  
Leakage distance = 125 mm

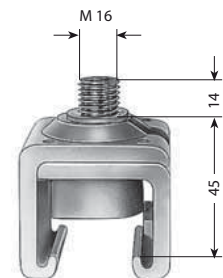
Type	Weight kg	Order- No.
<b>GHH 80-M 16</b>	0,870	135 875
<b>GHH 80-M 16 K 4<sup>(1)</sup></b>	0,870	135 877

## Rail holders

to go with insulators



**UAS**  
Supplied with bolt M 16 x 16  
and spring washer



**UAK**  
Supplied with washer

Type	Weight kg	Order- No.
<b>UAS 40</b>	0,140	134 100
<b>UAS 40 K 4<sup>(1)</sup></b>	0,140	134 550
<b>UAK 40</b>	0,170	135 183
<b>UAK 40 K 4<sup>(1)</sup></b>	0,170	135 185

<sup>(1)</sup> Stainless steel hardware

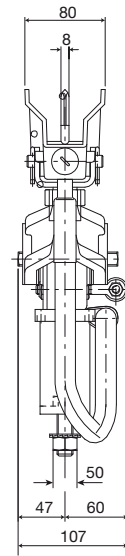
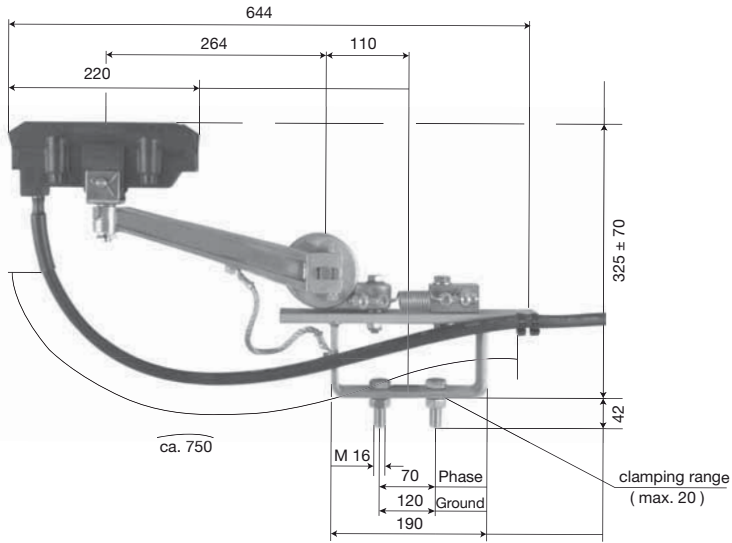




# COLLECTORS FOR U 40

## Current collectors

Use Type USTR for vertical Powerail installation.



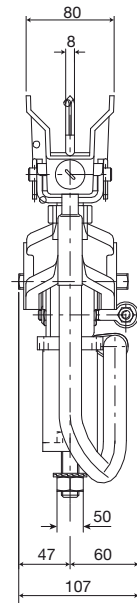
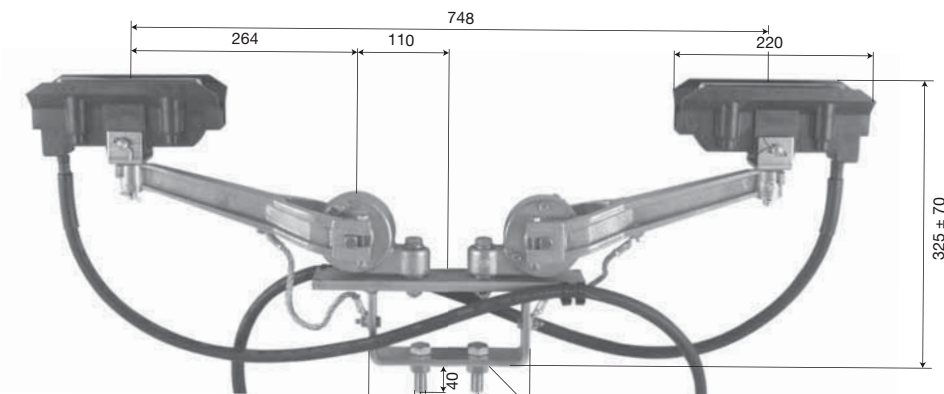
Type UST

with 2 m connecting cable  
 lift  $\pm 70$  mm  
 swivel  $\pm 80$  mm  
 contact pressure: approx. 50 – 70 N

Type	Am- pacity A	Connecting cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase - black	ground yellow
UST 200	200	50	21	9,400	134 300	134 310
USTR 200	200	50	21	9,500	134 157	134 158

## Double collector

Use Type UDSTR for vertical Powerail installatio



Typ UDST

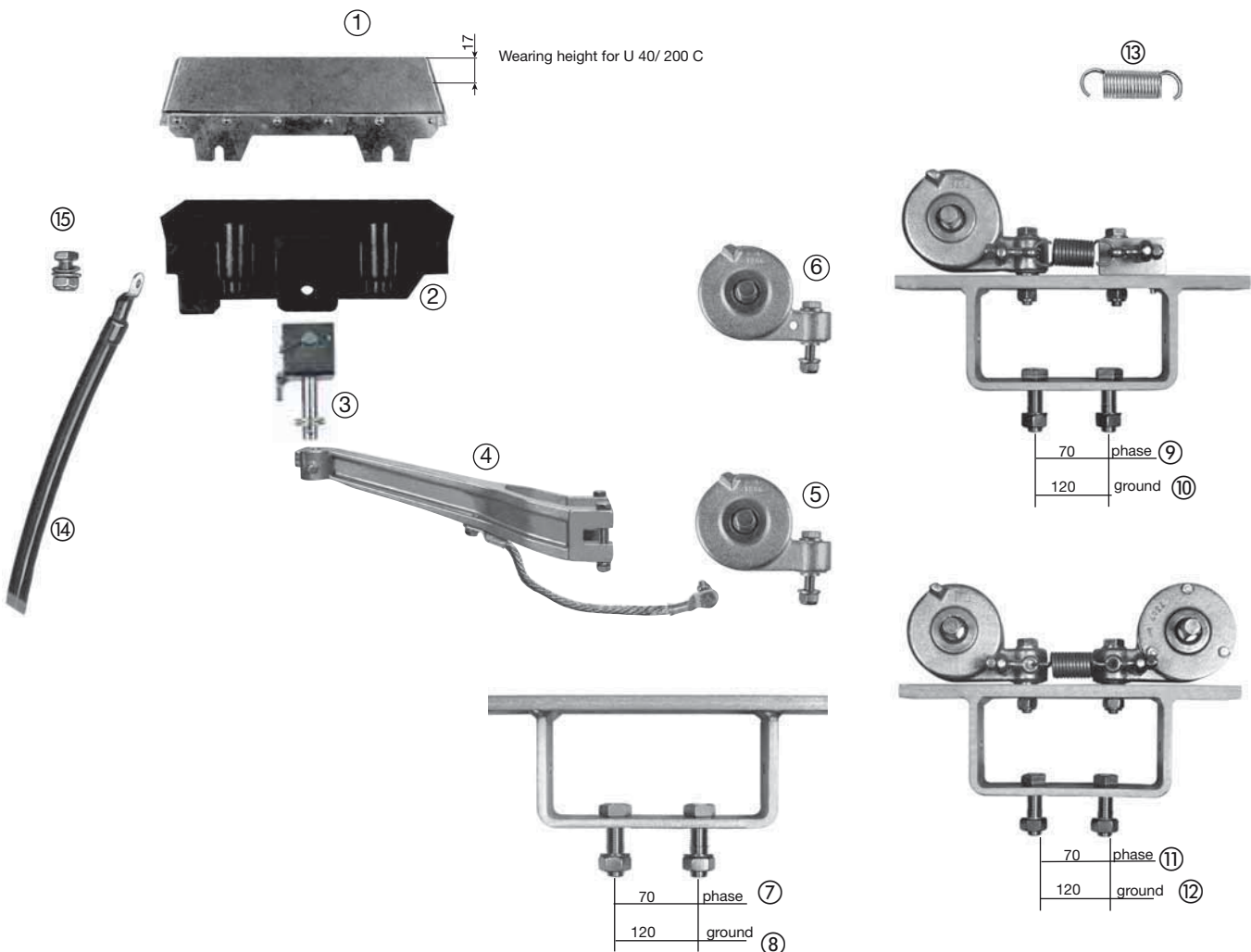
with 2 x 2 m connecting cable  
 lift  $\pm 70$  mm  
 swivel  $\pm 80$  mm  
 contact pressure: approx. 50 – 70 N per brush

Type	Am- pacity A	Connecting cable		Weight kg	Order- No.	
		mm <sup>2</sup>	ø max/ mm		phase - black	ground yellow
UDST 400	400	50	21	15,300	134 320	134 330
UDSTR 400	400	50	21	15,500	135 912	135 980



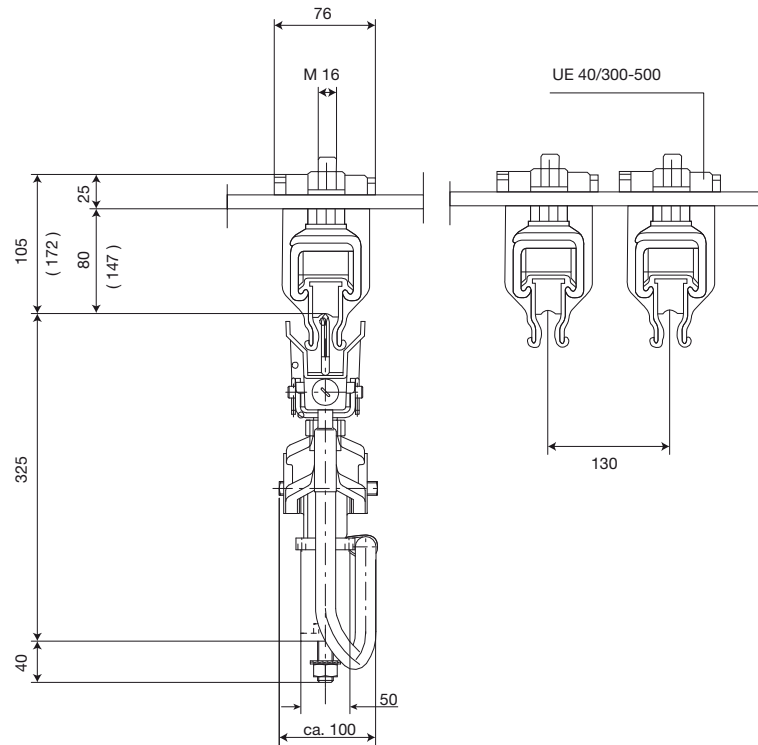
## Spare parts for collectors of type UST 200, UDST 400, USTR 200 and UDSTR 400

Part.-No.	Description		Gewicht kg	Bestell-Nr.
1	Brush KMU 200		0,410	135 207
2	Brush holder		0,730	135 206
3	Fork link with bolt		0,350	135 205
4	Lever complete		0,750	135 204
5	Spring housing complete for UST 200 and UDSTR 400		2,120	175 094
6	Spring housing complete for USTR 200 and UDSTR 400		2,110	175 562
7	Base plate compl.	phase	3,080	175 095
8	Base plate compl.	ground	3,080	175 096
9	Lower part for USTR 200	phase	5,950	175 554
10	Lower part for USTR 200	ground	5,950	175 555
11	Lower part for UDSTR 400	phase	7,610	175 556
12	Lower part for UDSTR 400	ground	7,610	175 557
13	Spring for USTR 200 and UDSTR 400		0,048	175 558
14	Connecting cable RKA 50 mm <sup>2</sup> , 2 m	phase	1,340	135 208
	Connecting cable RKA 50 mm <sup>2</sup> , 2 m	ground	1,340	135 209
15	Connecting screw M 8x12 K4		0,010	170 871





## EXAMPLE FOR ORDERING U 40



Dimensions in brackets include insulators type GH 80 with rail holder UAK 40.

### Example for Ordering 250 m power supply system, 3 pole + ground, 1000 A

Qty.	Discription	Type	Order- No.	
120	Insulated conductors, 6 m long	phase	<b>U 40/500 C</b>	134 366
3	Insulated conductors, 2 m long	phase	<b>U 40/500 C</b>	134 362
40	Insulated conductors, 6 m long	ground	<b>U 40/300 C<sup>(1)</sup></b>	136 126
1	Isolierte Stromschiene, 2 m long	ground	<b>U 40/300 C<sup>(1)</sup></b>	136 122
12	Expansion sections, 2 m long	phase	<b>UDV 40/500 C</b>	134 730
4	Expansion sections, 2 m long	ground	<b>UDV 40/300 C<sup>(1)</sup></b>	134 700
160	Rigid joints		<b>UV 40/300-500</b>	135 384
8	Feed terminals		<b>UE 40/300-500</b>	135 386
40	Locating clamps		<b>USK 40 K 4</b>	134 080
8	End caps		<b>UK 40</b>	134 060
504	Insulated hangers		<b>UAM 40</b>	135 040
6	Double collectors	phase	<b>UDST 400</b>	134 320
1	Double collectors	ground	<b>UDST 400<sup>(1)</sup></b>	134 330

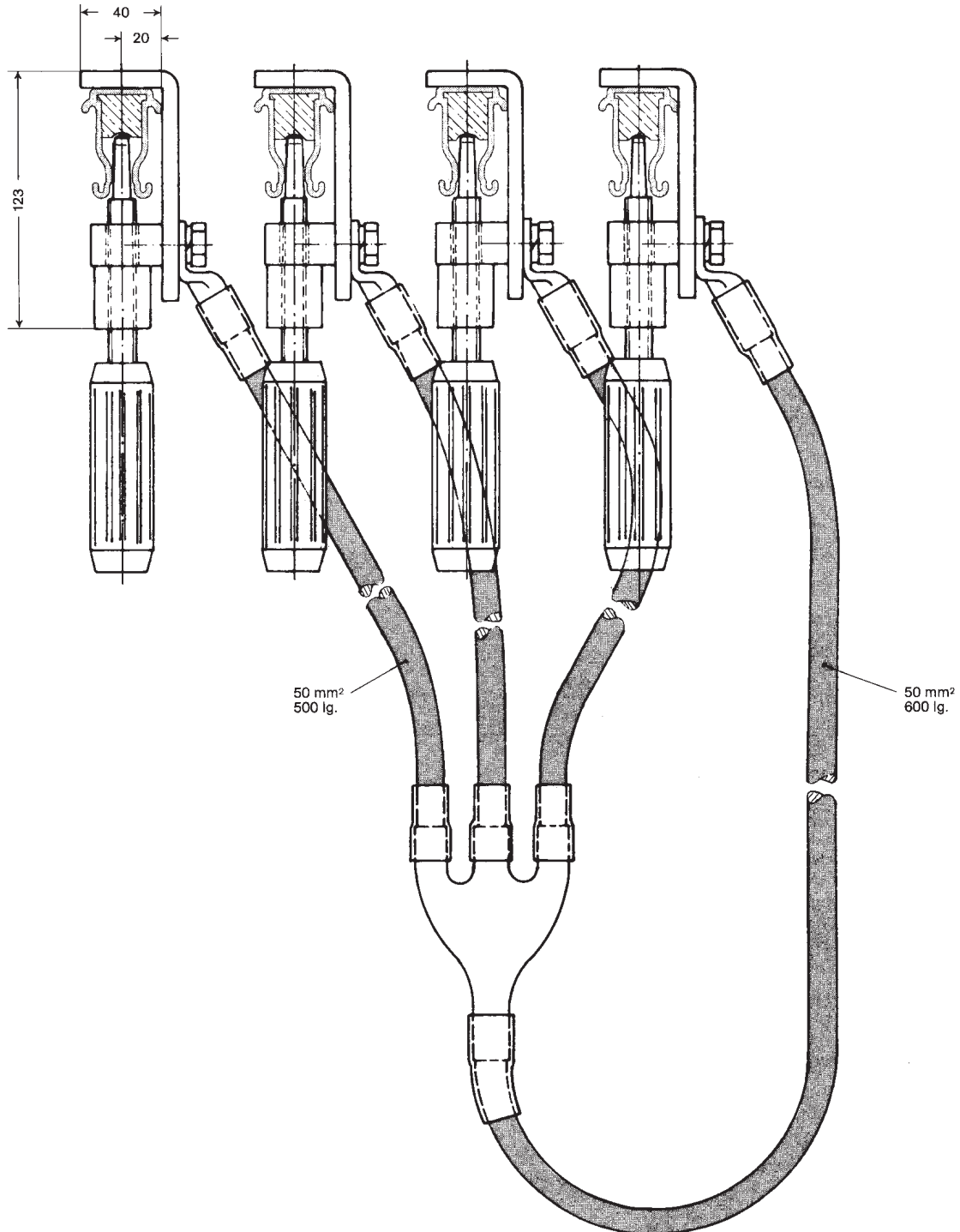
# EARTHING SPIDER SYSTEM



Earthing spider system, 4 pole, for insulated conductors serves for earthing and short-circuiting the phase conductors with the ground conductor in the case of maintenance work.

The system consists of terminal clamps for the conductors and copper wire ropes and is designed for a short-circuit current of max.40 kA.

Earthing spider system cannot be used together with compact conductor arrangement.



Type	for for conductor type	Copper section of wire rope	Order- No.
<b>EUK</b>	<b>U 20, U 30, U 40</b>	50 mm <sup>2</sup>	130 035



# QUESTIONNAIRE FOR INSULATED CONDUCTOR SYSTEMS<sup>(1)</sup>

Company: \_\_\_\_\_ Date: \_\_\_\_\_  
 Tel: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-Mail: \_\_\_\_\_ Internet: \_\_\_\_\_

1. Number of powerail systems: \_\_\_\_\_
2. Type of equipment to be powered: \_\_\_\_\_
3. Operating voltage: \_\_\_\_\_ Volts, Frequency: \_\_\_\_\_ Hz  
 Three phase voltage:  AC voltage:  DC voltage:
4. Track length: \_\_\_\_\_
5. Number of conductors: \_\_\_\_\_ (Neutral: \_\_\_\_\_ control: \_\_\_\_\_ ground: \_\_\_\_\_)
6. Mounted position of powerail:  
 Powerail pendant, collector cable facing to the bottom  
 Powerail pendant, collector cable lateral payout <sup>(1)</sup>  
 Support distance m  Other: \_\_\_\_\_
7. Number of consumers per system: \_\_\_\_\_
8. Indoor:  Outdoor:
9. Other operating conditions (humidity, dust, chemical influence etc.) \_\_\_\_\_
10. Ambient temperature: \_\_\_\_\_ °C min. \_\_\_\_\_ °C max.
11. Hall expansion gaps: \_\_\_\_\_ pc. \_\_\_\_\_ max. expansion
12. Position and number of feed points<sup>(1)</sup>: \_\_\_\_\_
13. Position and number of dead sections (e.g. maintenance bays)<sup>(1)</sup> \_\_\_\_\_
14. How will the conductor system be arranged?<sup>(1)</sup>: \_\_\_\_\_
15. Brackets required: yes  no  c/c distance beam / powerail \_\_\_\_\_  
 Flange width of beam \_\_\_\_\_
16. Travel speed (long travel): \_\_\_\_\_ in curves: \_\_\_\_\_ at transfers: \_\_\_\_\_
17. Power consumption of the individual consumers: \_\_\_\_\_
18. Max. Voltage drop from the powerail feed point to the consumer considering starting current:  
 3%  or \_\_\_\_\_ %  referring to nominal voltage.

Motor data	Crane 1						Crane 2					
	Power kW	Nominal current		Starting current		Type of Motors <sup>(2)</sup>	Power kW	Nominal current		Starting current		Type of Motors <sup>(2)</sup>
A	cos φ <sub>N</sub>	% ED	A	cos φ <sub>A</sub>	A		cos φ <sub>N</sub>	% ED	A	cos φ <sub>A</sub>		
Hoist motors												
Auxiliary hoist												
Long travel												
Cross travel												

Mark with \* those motors which can run simultaneously.  
 Mark with Δ those motors which can start up simultaneously.

Further remarks: \_\_\_\_\_  
 \_\_\_\_\_

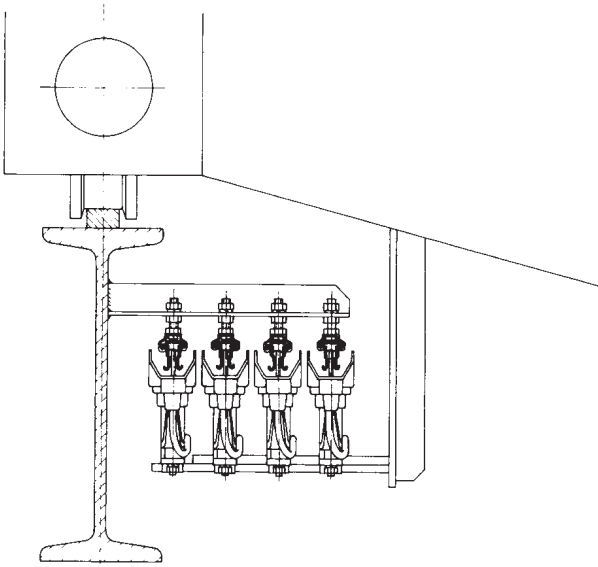
Signature: \_\_\_\_\_

<sup>(1)</sup> Sketch required

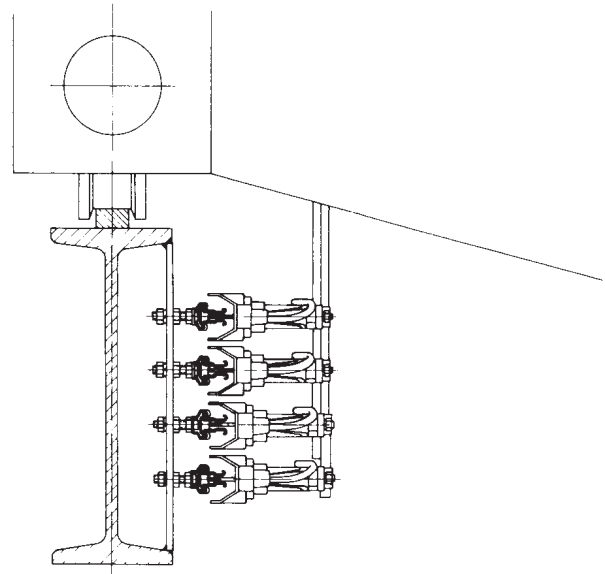
<sup>(2)</sup> Note type of Motor: K for Squirrel cage motor, S for slipring motor, F for frequency controlled motor.

We reserve the right for technical changes due to further developments.

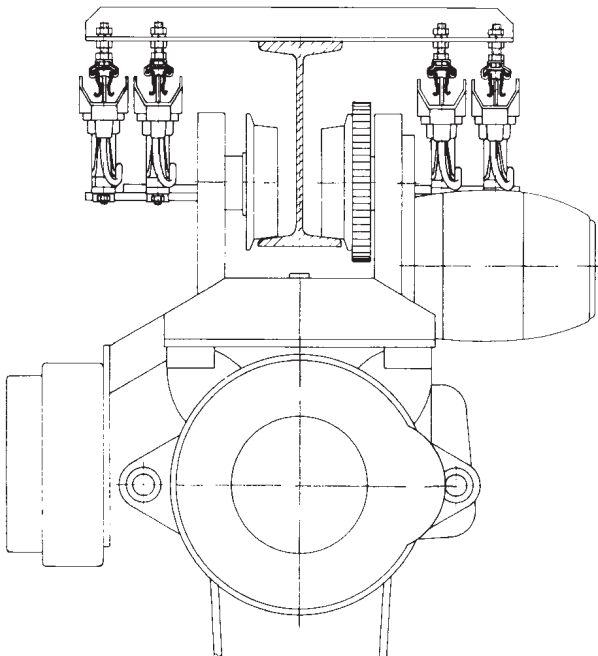
Please copy and fax this questionnaire.



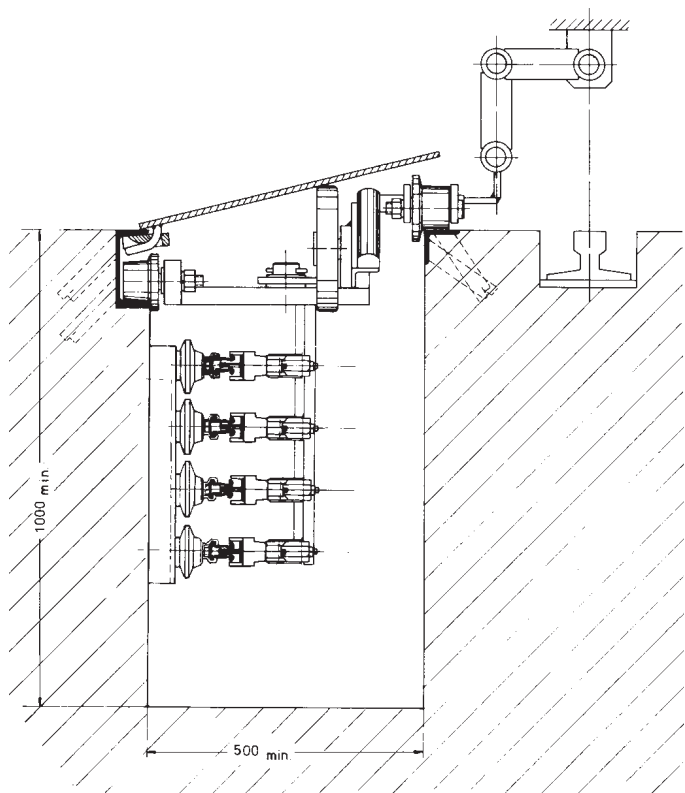
Suspended mounting of 4-pole system.



Lateral arrangement of the conductor rails.  
Lateral arrangement preferably with CH-profiles



Equally balanced conductor arrangement  
for monorail hoist.



Insulated conductors U 30 in VAHLE trench system.





## NOTES

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## Products and Service

Catalog No.

### 1 Open conductor systems

Open conductor systems 1a

### 2 Insulated conductor systems

U 10 2a

FABA 100 2b

U 15 - U 25 - U 35 2c

U 20 - U 30 - U 40 2d

### 3 Compact conductor systems

VKS 10 3a

VKS - VKL 3b

### 4 Enclosed conductor systems

KBSL - KSL 4a

KBH 4b

MKH 4c

LSV - LSVG 4d

### 5 Contactless power supply

Contactless power supply (CPS®) 5a

### 6 Data transmission

VAHLE Powercom® 6a

Slotted Microwave Guide (SMG) 6b

### 7 Positioning systems

VAHLE-APOS® 7a

### 8 Festoon systems and cables

Festoon systems for □- tracks 8a

Festoon systems for flat cables on I- tracks 8b

Festoon systems for round flat cables on I- tracks 8c

Festoon systems for ◇- tracks 8d

Cables 8e

### 9 Reels

Spring operated cable reels 9a

Motor powered cable reels 9b

### 10 Others

Battery charging systems 10a

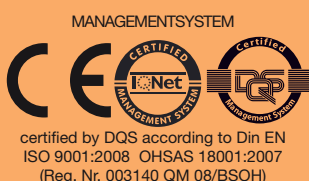
Heavy enclosed conductor systems 10b

Tender 10c

Contact wire 10d

### Assemblies/Commissioning

### Spare parts/Maintenance service



**VAHLE**   
**ELECTRIFICATION SYSTEMS**

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### Assemblies/Commissioning

### Spare parts/Maintenance service



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**VAHLE**  
**ELECTRIFICATION SYSTEMS**



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