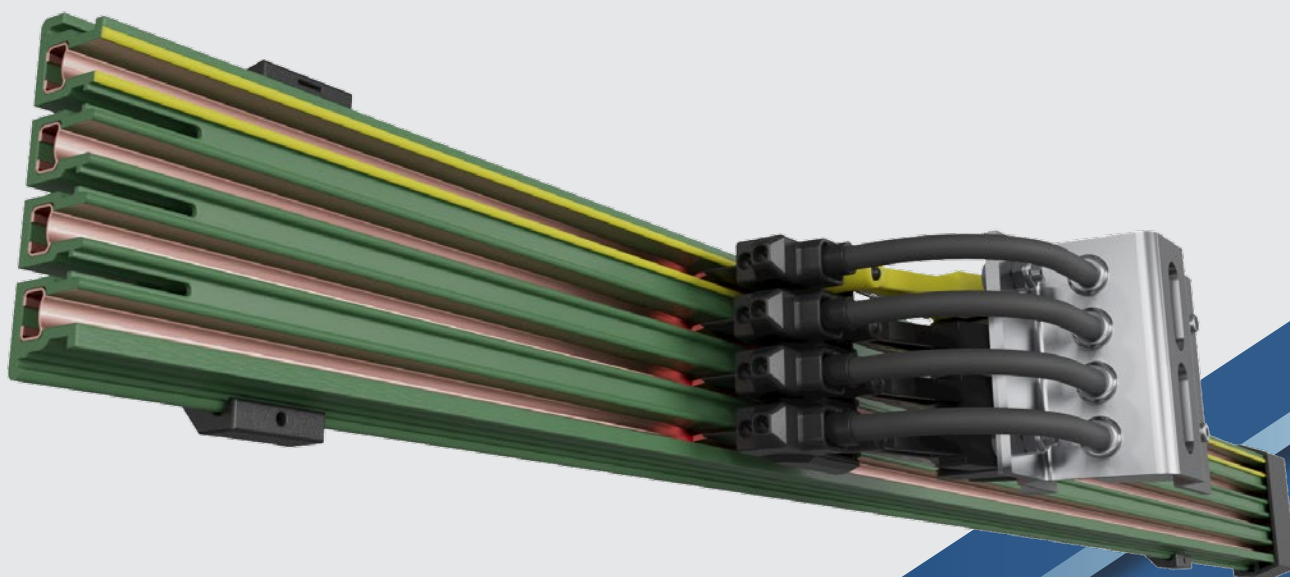




## COMPACT CONDUCTOR SYSTEMS VKS AND VKL





# COMPACT CONDUCTOR SYSTEMS VKS AND VKL

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## GENERAL

VAHLE conductor systems VKS and VKL are space saving conductor systems, designed to prevent any accidental contact and hazard to personnel and are test finger proof to regulations VDE 0470, part 1 (EN 60529), protection code IP 21. They comply with the accident and VDE regulations in electrical, mechanical and fire engineering cases. Collectors are proof against accidental touch only when fully entered into conductor rail.

Conductor system installations within reach of hand require a special protection on the part of operator against accidental touch of current collectors which are leaving the conductor rail (e.g. locking or cut-off the power).

This is applicable for voltages above 25 V AC respectively 60 V DC. If the cross-section of the N-conductor is smaller than the cross-section of the outer conductor, it must be protected against overcurrent and short-circuit in accordance with IEC60364-4-43 (HD 60364-4-43).

The creeping distance between the conductors of the VKS-conductor is 30 mm. The different plastic housings hold from 3 to 6 copper or stainless steel conductors. Multiple conductor systems can be easily designed by combining several plastic housings.

The minimal space required allows the systems to be integrated in the crane or hoist track or in other special runway profiles. The minimal required space allows a direct layout in rail tracks or special track profiles. The conductor systems VKS and VKL can be used for indoor and roof-over (rain protected) applications. They can be installed with lateral or suspended mounting and straight or curved tracks are available.

Approvals (VKS): UL-approval.

### PLEASE NOTE

Please consult factory for galvanizing plants, pickling lines, other aggressive or deep freeze ambients, as well as low voltage and data transmission applications, indicating special environmental conditions.

To speed up quotations and order processing, we would appreciate receiving your drawings or sketches for conductor systems with curves, dead sections, turntables, switches, etc.

Please use our questionnaire on page 31.

Electrical properties	VKS	VKL
Max. ampacity	140 A <sup>(2)</sup>	30 A
Allowed voltage	690 V <sup>(3)</sup>	400 V
Electrical strength DIN 53481	>25 kV/mm	
Special electrical strength IEC 60093	1 x 10 <sup>14</sup> Ohm x cm	
Surface resistance IEC 60093	2,1 x 10 <sup>13</sup> Ohm	
Creep resistance IEC 60112	CTI > 400	
Flammability	Flame resistant, self extinguishing, UL 94 V0	

Conductor material	Cross section mm <sup>2</sup>	Impedance 50 Hz Ohm/1000 m	Resistance Ohm/1000 m
Copper	16	1.107	1.102
	25	0.730	0.723
	30	0.603	0.595
	35	0.520	0.510

Mechanical properties	N/mm <sup>2</sup>
Flexible strength	70 – 80
Tensile strength	40 – 53

Chemical resistance of the isolating profile at +45° C ambient temperature	
Benzine, petroleum, fats	resistant
Caustic soda up to 50 %	resistant
Hydrochloric acid, concent	resistant
Sulfuric acid up to 50 %	resistant

Water absorption	%
Max. at 100° C	1
Max. at 20° C	0.06

Ambient temperature range	°C
Rail length up to 4 m	–30 <sup>(1)</sup> up to +55
Rail length > 4 m	von 0 <sup>(1)</sup> up to +40

(1) Consult factory for use below 0° C (32° F)

(2) 80 % ED

(3) Not with UL-approval; U<sub>UL</sub> = 600 V

# GENERAL VKS

## USE FOR INDOOR APPLICATIONS , ROOF-OVER OUTDOOR APPLICATIONS

Hoists, monorail systems, stacker cranes, machine tools, production and testing lines, also for sliding switches, turntables, hoisting stations, transfers, and many other applications, including data and signal transmission.

## SECTIONS

The well insulating plastic housing holds 3 – 6 conductors and offers safe isolation. The ends of each section are milled in to provide the required creepage distance. 4 and 6m standard lengths and shorter sections to coincide with your runway requirements are available. The ground conductor is identified by the international yellow colour coding. The conductor rail for control current is without PE-marking. The asymmetrical housing avoids phase reversing.

## JOINTS

The plastic sections are connected with plastic joint caps, the conductors with spring-loaded copper connectors.

## FEED SETS

End feeds or line feeds with terminal boxes are available, also low mounting line feeds for cable connection. Line feeds come factory assembled on 1 m long sections. End feeds come unassembled without any section.

## HANGERS

All sections are to be fixed from at least 1 hanger and the maximum permissible support centres of 1000 mm (with double collectors. 800 mm), must be adhered to (see page 7). The hangers are equipped with M 6 bolts and hardware and can be mounted directly to hanger brackets, monorail tracks or special runway profiles. The sections are snapped into the hangers. Sliding hangers allow free movement of the conductor system to compensate for temperature variations. Fixpoint hangers with tapping screw from anchor points (see installation procedure). For this we have to consider a max. distance of 6 m between two fixpoints.

## BRACKETS

Support brackets for easy installation are available (see page 27).

## COLLECTORS

The collectors have a continuous rating of 20 A up to 120 A. One collector is required for each phase and earth conductor. The ground collectors have a yellow colour and different attachments to avoid interchangeability with phase collectors.

The collectors have spring loaded carbon brushes for a constant positive contact with the conductors. Collectors are to be mounted onto towing plates or are to be attached to the moving equipment by means of towing brackets type UM. Systems with transfers, switches, turntables, etc. require 2 single collectors or one double collector per conductor. The length of the collector cable may not exceed 3 m if the added overcurrent protection device is not designed for the load capacity of this cable. Please refer also to regulations VDE 0100, part 430 and EN 60204-32. (Note: this might happen in case of several collectors running in one system).

The provided connecting cables are sufficient for the stated nominal currents. For the different laying procedures the reduction factors according to DIN VDE 0298-4 have to be considered.

## CONDUCTOR DEAD SECTIONS

Conductor dead sections are electrical interruptions 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). Conductor dead sections can be mounted at any position of the system. The plastic inserts are pushed into the copper profiles and ensure a smooth transfer of the collector brushes. The length of isolating section has to consider the total length of carbon brush and whether carbon brush must or must not bridge the isolating area.

**Special attention** is required for double collectors or collectors switched in parallel. Use double isolating sections where necessary.

**Selection of conductors** in accordance to ampere load and environmental conditions:

**VKS .../63** copper conductor for power and control system and data transmission

.../100 copper conductor for power and control system

.../120 copper conductor for power and control system

.../140 copper conductor for power and control system

Several combinations of cross sections are possible for one conductor type.

# GENERAL VKL

## USE INDOOR APPLICATIONS

Designed for small current loads and serve for the power supply of light cranes and for control current systems. The VKL conductor rail can also be used for hoists, jib cranes, power tools, machine tools, electrically operated gates, testing lines, and other applications.

## SECTIONS

The plastic housing holds up to 5 conductors. The ground conductor is identified by international yellow colour code. 4 m standard lengths and shorter sections to coincide with your runway requirements are available. The straight sections are restricted as follows:

1. Max. system length:  $L = 100\text{ m}$
2. From the curve to system end:  $\text{max. } L = 50\text{ m}$
3. Between 2 curves:  $\text{max. } L = 15\text{ m}$

The ends of each section are milled in to provide the required creepage distance. End caps, fixed with screws, can be installed to every section

## JOINTS

The mechanical jointing of the conductor rail housing is done by means of a two-piece plastic joint cap. The conductors get spring-loaded copper connectors.

## FEEDS

The feeds are available as end or line feeds. They are mounted on a 1 m section.

## SUPPORTS

Maximum support distance of 1000 mm must be kept. The support hanger consists of a pvc part with a fixing screw and is arranged as a sliding hanger. The fixpoint in the middle of the system consists of a hanger with a locating clamp on each side of the hanger.

## BRACKETS

To support the conductor rail to the crane track mounting brackets available (siehe Seite 27).

## COLLECTORS

The glider type collectors are guided at the PVC housing. They are supplied with 1 m long connecting cable. Longer cables are available upon request. The carbon brushes have a continuous current capacity of 10 A (15 A at 60 % intermittent duty). Use two collectors for higher ratings. The towing arm is the mechanical flexible connection between collector and moving equipment.

The length of the collector cable should not exceed 3 m if the installed fuse is not suitable for the cross section of this connecting cable. See DIN VDE 0100, Teil 430 und DIN EN 60204-32. (Please note: This is often the fact if more than one collector is used in the system)

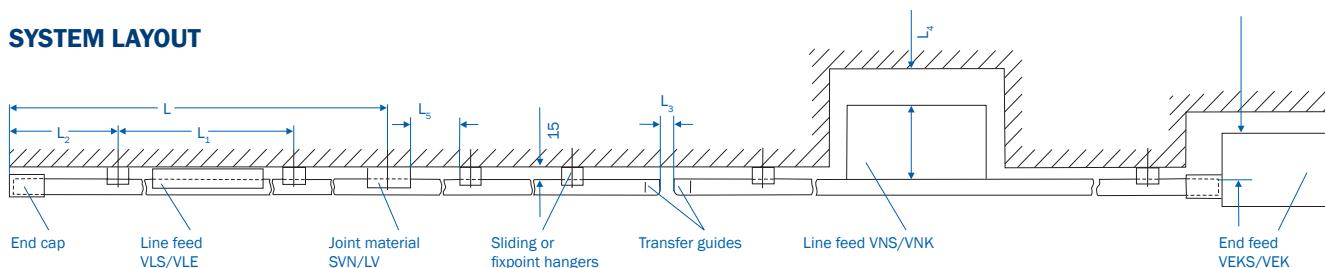
The provided connecting cables are sufficient for the stated nominal currents. For the different laying procedures the reductions factors according to DIN VDE 0298-4 have to be considered.

## DEAD SECTIONS

Dead sections for control lines can be installed according to your instructions.

# LAYOUT PLANNING FOR VKS AND VKL

## SYSTEM LAYOUT



- $L$  = Conductor rail section  
(Standard lengths: 1 m, 2 m, 3 m, 4 m, 5 m, 6 m or cut to suit the system)
- $L_1$  = Support spacing  
for straight runs: max. 1 m  
for curved runs: max. 0.5 m
- $L_2$  = Extending length (max. 200 mm)
- $L_3$  = Air gap for transfers, e.g. switches and dropout sections (3–5 mm)
- $L_4$  = Space to remove feed box cover, if applicable
- $L_5$  = Clearance for expansion of conductor system  
(min. 50 mm for VKS; min. 150 mm for VKL).

## SYMBOLS IN LAYOUT PLANS

		VKS	VKL
— — — — —	Track	—	—
—————	Conductor rail	VKS	VKL
— T —	Joint material	SVN	—
— + —	Joint material	—	LV
— ● —	Fixpoint hanger	VEPS	VEP
— ● —	Sliding hanger	VAS	VA
[ — — — ]	End cap	VES	VE
■ — — —	End feed, power	VEKS	VEK
□ — — —	End feed, control	VEKS	VEK
— ■ — —	Line feed, power	VNS	VNK
— □ — —	Line feed, control	VNS	VNK
— □ — —	Line feed, power and control	VLS	VLE
▶ — — —	Transfer guide, straight	VU	—
▶ — — —	Transfer guide, oblique	VUS	—
▷ — — —	Transfer funnel	VEM	—
— I —	Expansion section	DVKS	—
— II —	Isolating assembly	VSTS	VST

## MAX. SUPPORT SPACING

at KSTU 30-55 (Fig. 1)	VKS	VKL
for straight runs	1000 mm 800 mm	1000 mm
for curved runs	500 mm 400 mm	500 mm

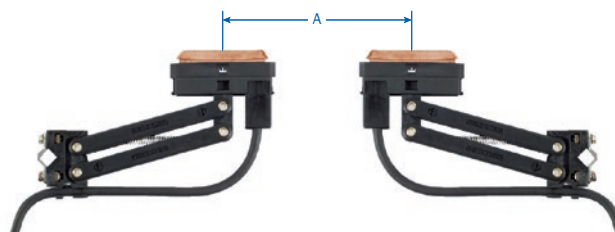


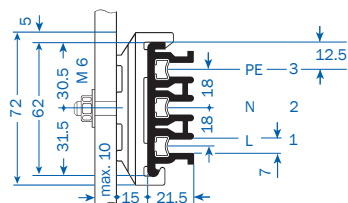
Fig. 1  
A < 300 mm Support spacing 0.8 m  
A > 300 mm Support spacing 1.0 m

## STANDARD SECTIONS VKS

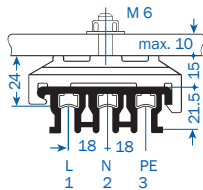
### 3-POLE SECTIONS

Standard length 4 and 6 m <sup>(6)</sup>

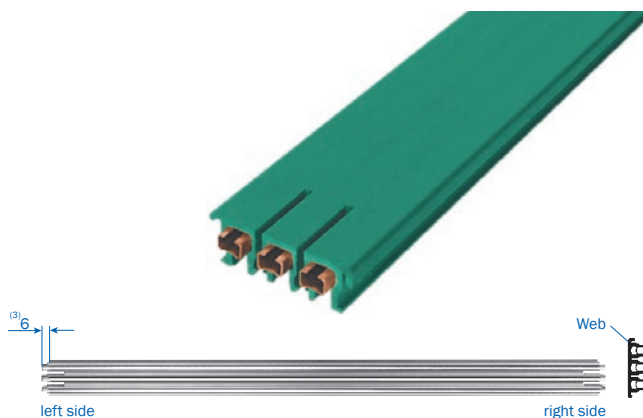
Attention: Joint material to be ordered separately (see page 10).



Installation: lateral



Installation: horizontal

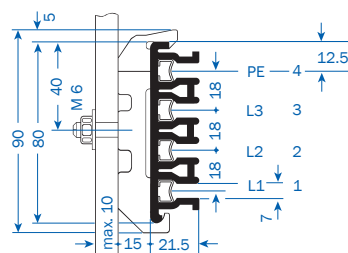


Type	No. of poles	Max. ampere rating at 35 °C A	Nominal voltage <sup>(5)</sup> V	Voltage drop per 100 m at full rating V	Conductor cross section <sup>(4)</sup> / mm <sup>2</sup>		Conductor material	Weight kg/m	Order No.
					N, L / 1.2	PE / 3			
VKS 3/ 63 HS	3	63	690	11.5	2 x 16	1 x 16	Cu	1.221	15389 •
VKS 3/ 63 SS	3	63	690	11.5	2 x 16	1 x 16	Cu	1.221	15394 •
VKS 3/100 HS	3	100	690	12.6	2 x 25	1 x 25	Cu	1.454	15390 •
VKS 3/100 SS	3	100	690	12.6	2 x 25	1 x 25	Cu	1.454	15395 •
VKS 3/120 HS	3	120	690	12.5	2 x 30	1 x 30	Cu	1.589	15391 •
VKS 3/120 SS	3	120	690	12.5	2 x 30	1 x 30	Cu	1.589	15396 •
VKS 3/140 HS	3	140 <sup>(2)</sup>	690	11.3	2 x 35	1 x 35	Cu	1.724	15496 •
VKS 3/140 SS	3	140 <sup>(2)</sup>	690	11.3	2 x 35	1 x 35	Cu	1.724	15608 •

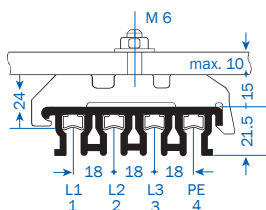
## 4-POLE SECTIONS

Standard length 4 and 6 m <sup>(6)</sup>

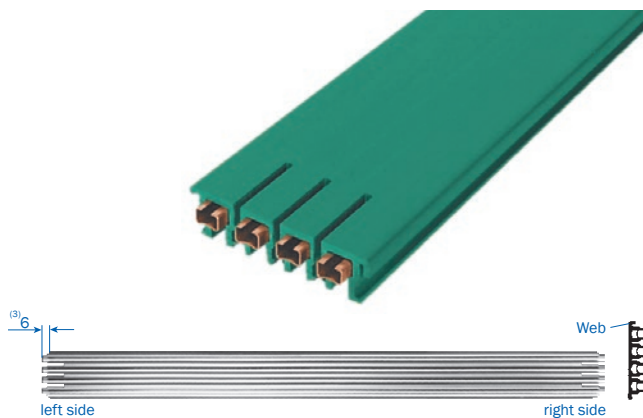
Attention: Joint material to be ordered separately (see page 10).



Installation: lateral



Installation: horizontal



Type	No. of poles	Max. ampere rating at 35 °C A	Nominal voltage <sup>(5)</sup> V	Voltage drop per 100 m at full rating V	Conductor cross section <sup>(4)</sup> / mm <sup>2</sup>		Conductor material	Weight kg/m	Order No.
					L <sub>1</sub> -L <sub>3</sub> /1-3	PE/4			
VKS 4/ 63 HS	4	63	690	11.5	3 x 16	1 x 16	Cu	1.459	15399 •
VKS 4/ 63 SS	4	63	690	11.5	3 x 16	1 x 16	Cu	1.459	15404 •
VKS 4/100 HS	4	100	690	12.6	3 x 25	1 x 16	Cu	1.693	15400 •
VKS 4/100 SS	4	100	690	12.6	3 x 25	1 x 16	Cu	1.693	15405 •
VKS 4/120 HS	4	120	690	12.5	3 x 30	1 x 16	Cu	1.828	15401 •
VKS 4/120 SS	4	120	690	12.5	3 x 30	1 x 16	Cu	1.828	15406 •
VKS 4/140 HS	4	140 <sup>(2)</sup>	690	11.3	3 x 35	1 x 16	Cu	1.956	15431 •
VKS 4/140 SS	4	140 <sup>(2)</sup>	690	11.3	3 x 35	1 x 16	Cu	1.956	15654 •





# CURVED SECTIONS, JOINT MATERIAL VKS

## CURVED SECTIONS <sup>(1)</sup>

per your layout drawing

Max. L = 3.60 m, support spacing: ~ 500 mm, max. angle 180°



## CURVED SECTIONS <sup>(1)</sup>

3-pole

Type	R mm	Surcharge Order No. VKS 3
Horizontal curve, right	400 – 900	150385
Horizontal curve, left	400 – 900	150386
Horizontal curve, right	>900	153120
Horizontal curve, left	>900	153130
Inside curve	200 – 800	150387
Inside curve	>800	153040
Outside curve	200 – 800	150388
Outside curve	>800	153050

## CURVED SECTIONS <sup>(1)</sup>

4-pole

Configuration as shown above

Type	R mm	Surcharge Order No. VKS 4
Horizontal curve, right	400 – 900	150389
Horizontal curve, left	400 – 900	150391
Horizontal curve, right	>900	153717
Horizontal curve, left	>900	150110
Inside curve	200 – 800	150392
Inside curve	>800	153718
Outside curve	200 – 800	150393
Outside curve	>800	150100

## CURVED SECTIONS <sup>(1)</sup>

5- and 6-pole

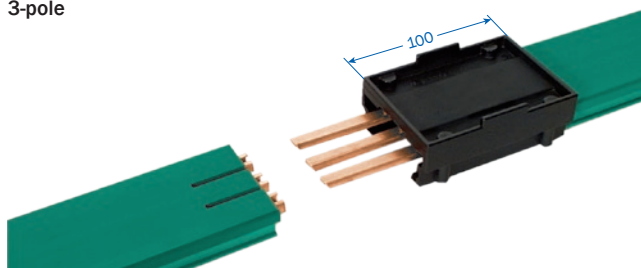
Configuration as shown above

Type	R mm	Surcharge Order No.	
		VKS 5	VKS 6
Horizontal curve, right	400 – 900	150394	150398
Horizontal curve, left	400 – 900	150395	150399
Horizontal curve, right	>900	153719	153721
Horizontal curve, left	>900	152090	152110
Inside curve	200 – 800	150396	150401
Inside curve	>800	153720	153722
Outside curve	200 – 800	150397	150402
Outside curve	>800	152080	152100



## JOINT MATERIAL

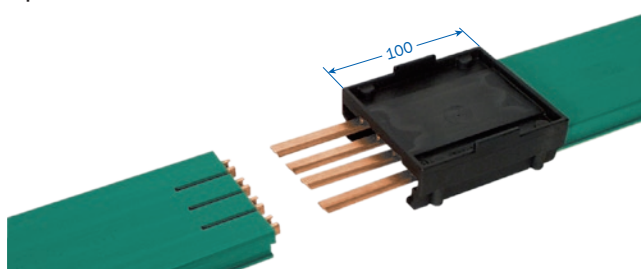
3-pole



Type	No. of poles	Weight kg	Order No.
SVN 3/ 63 - 100	3	0.112	156533
SVN 3/120 - 140	3	0.112	156534

## JOINT MATERIAL

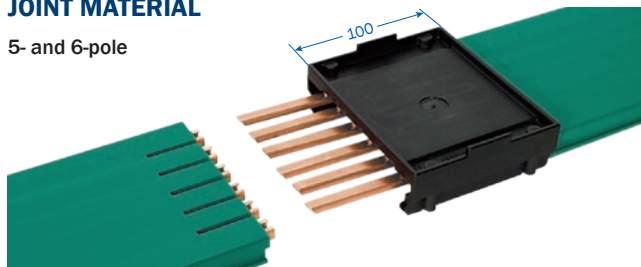
4-pole



Type	No. of poles	Weight kg	Order No.
SVN 4/ 63 - 100	4	0.136	156535
SVN 4/120 - 140	4	0.136	156536

## JOINT MATERIAL

5- and 6-pole



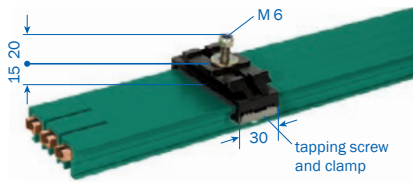
Type	No. of poles	Weight kg	Order No.
SVN 5/ 63 - 100	5	0.180	156537
SVN 5/120 - 140	5	0.180	156538
SVN 6/ 63 - 100	6	0.194	156539
SVN 6/120 - 140	6	0.194	156540

(1) Curved sections will be factory prepared with a 100 mm straight section on both ends. Horizontal curves with more than 90 degrees should be divided in two or more sections.

# HANGERS, END CAP VKS

## FIXPOINT HANGER <sup>(1)</sup>

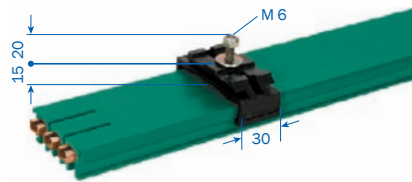
3-pole  
with tapping screw and clamp



Type	Weight kg	Order No.
VEPS 3	0.042	153070

## SLIDING HANGER <sup>(1)</sup>

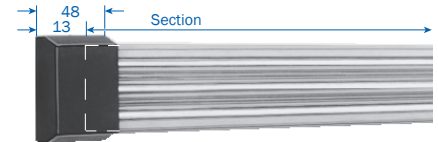
3-pole



Type	Weight kg	Order No.
VAS 3	0.036	153060

## END CAP <sup>(2)</sup>

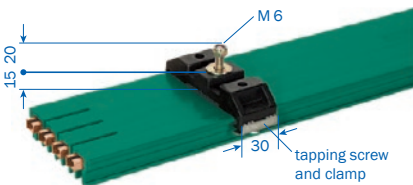
3-pole  
suitable left and right



Type	Weight kg	Order No.
VES 3 - L	0.033	153080
VES 3 - M	0.033	152023

## FIXPOINT HANGER <sup>(1)</sup>

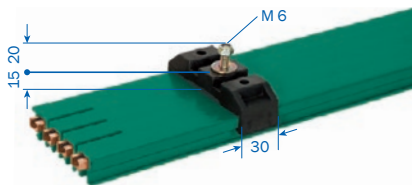
4-pole  
with tapping screw and clamp



Type	Weight kg	Order No.
VEPS 4	0.046	150120

## SLIDING HANGER <sup>(1)</sup>

4-pole



Type	Weight kg	Order No.
VAS 4	0.040	150130

## END CAP <sup>(2)</sup>

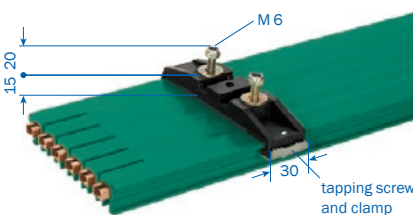
4-pole  
suitable left and right



Type	Weight kg	Order No.
VES 4 - L	0.039	150140
VES 4 - M	0.039	152022

## FIXPOINT HANGER <sup>(1)</sup>

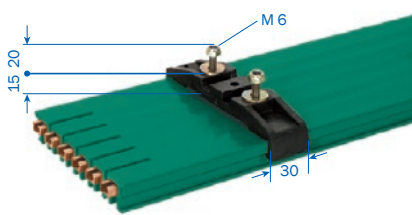
6-pole  
with tapping screw and clamp



Type	Weight kg	Order No.
VEPS 6	0.062	152120

## SLIDING HANGER <sup>(1)</sup>

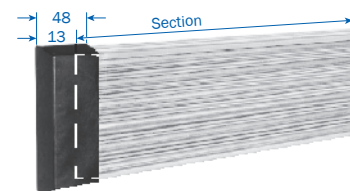
6-pole



Type	Weight kg	Order No.
VAS 6	0.056	152130

## END CAP <sup>(2)</sup>

6-pole  
suitable left and right



Type	Weight kg	Order No.
VES 6 - L	0.051	152140
VES 46 - M	0.051	152021

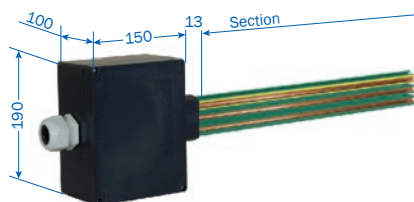
(1) Complete with hardware (bolts, nuts, spring washers). Support spacing see page 7.

(2) L = loose; c/w hardware  
M = Factory assembled

## FEEDS VKS

### END FEED<sup>(1)</sup>

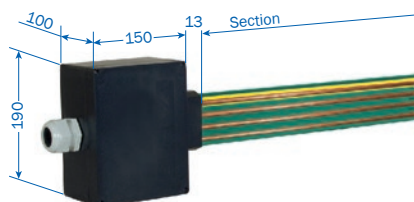
3-pole  
Terminal box with terminal clamps



Type	Cable gland <sup>(2)</sup>	Ampacity A	Weight kg	Order No.
VEKS 3/63 - 120 L	ST-M 40 x 1.5	63-120	1.150	156422
Surcharge for assembling				156423

### END FEED<sup>(1)</sup>

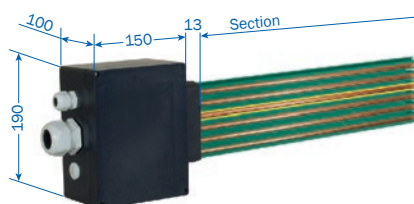
4-pole  
Terminal box with terminal clamps



Type	Cable gland <sup>(2)</sup>	Ampacity A	Weight kg	Order No.
VEKS 4/63 - 120 L	ST-M 40 x 1.5	63-120	1.230	156421
Surcharge for assembling				156423

### END FEED<sup>(1)</sup>

5- and 6-pole  
Terminal box with terminal clamps



Type	Cable gland <sup>(2)</sup>	Ampacity A	Weight kg	Order No.
VEKS 5/63 - 120 L	ST-M 40 x 1.5 ST-M 20 x 1.5	63-120	1.380	156420
VEKS 6/63 - 120 L	ST-M 40 x 1.5 ST-M 20 x 1.5	63-120	1.460	156419
Surcharge for assembling				156423

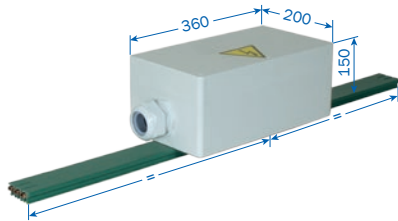
(1) End feeds loose as components. Sections are to be ordered separately (see page 8).

(2) Cable gland ST - M40 x 1,5 for  $\varnothing = 19-28$  mm  
ST - M20 x 1,5 for  $\varnothing = 7-13$  mm

# FEEDS VKS

## LINE FEED <sup>(1)</sup>

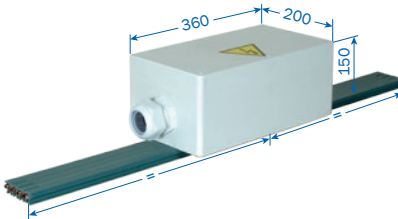
3-pole



Type <sup>(2)</sup>	Cable gland <sup>(2)</sup>	Ampacity A	Weight kg	Order No.
VNS 3/63-140	STR-M63x1.5	63-140	1.876	157147

## LINE FEED <sup>(1)</sup>

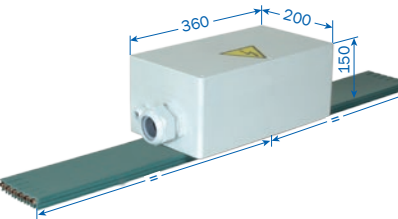
4-pole



Type <sup>(2)</sup>	Cable gland <sup>(2)</sup>	Ampacity A	Weight kg	Order No.
VNS 4/63-140	STR-M63x1.5	63-140	1.982	157146

## LINE FEED <sup>(1)</sup>

5- and 6-pole

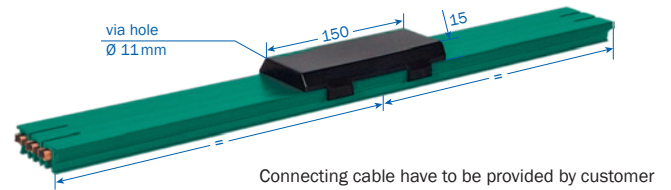


Type <sup>(2)</sup>	Cable gland <sup>(2)</sup>	Ampacity A	Weight kg	Order No.
VNS 5/63-140	STR-M63x1.5	63-140	2.080	157145
VNS 6/63-140	STR-M20x1.5			
VNS 5/100-120	STR-M63x1.5	100-120	2.200	157144
VNS 6/100-120	STR-M20x1.5			

## LINE FEED <sup>(1)</sup>

3-pole

without cable connection; cable by others terminal bolt M 6

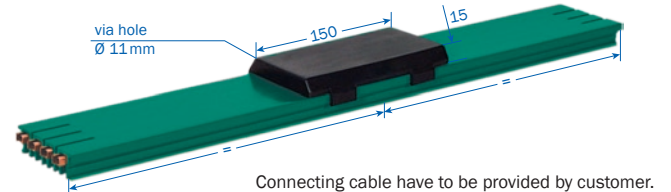


Type	Lug mm <sup>2</sup>	Ampacity A	Weight kg	Order No.
VLS 3/ 63	-	63	0.071	156948
VLS 3/100-120 <sup>(3)</sup>	25	100-120	0.137	156944
VLS 3/140 <sup>(3)</sup>	35	140	0.173	156958

## LINE FEED <sup>(1)</sup>

4-pole

without cable connection; cable by others terminal bolt M 6

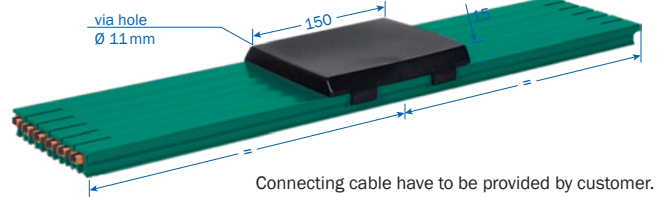


Type	Lug mm <sup>2</sup>	Ampacity A	Weight kg	Order No.
VLS 4/ 63	-	63	0.091	156947
VLS 4/100-120 <sup>(3)</sup>	25	100-120	0.179	156943
VLS 4/140 <sup>(3)</sup>	35	140	0.227	156957

## LINE FEED <sup>(1)</sup>

5- and 6-pole

without cable connection; cable by others terminal bolt M 6



Type	Lug mm <sup>2</sup>	Ampacity A	Weight kg	Order No.
VLS 5/ 63	-	63	0.115	156946
VLS 5/100-120 <sup>(3)</sup>	25	100-120	0.225	156942
VLS 5/140 <sup>(3)</sup>	35	140	0.285	156956
VLS 6/ 63	25	63	0.123	156945
VLS 6/100-120 <sup>(3)</sup>	35	100-120	0.255	156941
VLS 6/140 <sup>(3)</sup>	25	140	0.327	156955

(1) Line feeds will be normally installed on 1 m sections. This sections have to be ordered separately. (see page 8). Connecting cable by customer.

(2) Cable gland STR - M63x1.5 for Ø= 28-45 mm Cable connection main: M10  
STR - M20x1.5 for Ø= 5-13 mm Cable connection control: M5

(3) Cable connection with attached special cable lugs for single cores 35 mm<sup>2</sup> (up to conductor-Ø 8.5 mm) for 140A, 25 mm<sup>2</sup> (up to conductor-Ø 8.2 mm) for 100-120A

# TRANSFER GUIDES VKS

## TRANSFER GUIDES <sup>(1)</sup>

3-pole – for transfers, switches, spur lines  
 Max. horizontal and vertical offset:  $\pm 2$  mm  
 Application: – straight cuts  
 – oblique cuts, lateral

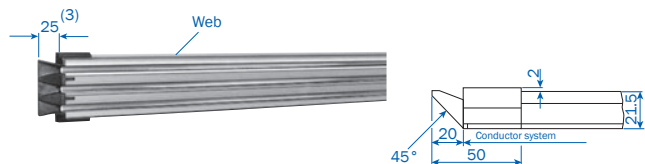


Photo shows left version

Type	Order No. Left version	Order No. Right version
VU 3 S-M	150191	150192
VU 3 S-L	150188	

Typ M: factory assembled;

Typ L: <sup>(2)</sup> loose delivery as a single component, complete with accessories

## TRANSFER GUIDE <sup>(1)</sup>

4-pole – for transfers, switches, spur lines  
 Max. horizontal and vertical offset:  $\pm 2$  mm  
 Application: straight cuts



Photo shows left version

Type	Order No. Left version	Order No. Right version
VU 4	150160	150390

## TRANSFER GUIDE <sup>(1)</sup>

6-pole – for transfers, switches, spur lines  
 Max. horizontal and vertical offset:  $\pm 2$  mm  
 Application: – straight cuts  
 – oblique cuts, lateral

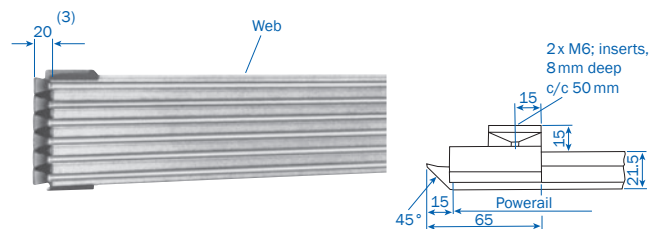


Photo shows left version for VKS 6 and VKS 5

Type	Order No. Left version	Order No. Right version
VU 6 S-M	153801	153802
VU 6 S-L	150215	

Typ M: factory assembled;

Typ L: <sup>(2)</sup> loose delivery as a single component, complete with accessories

## TRANSFER GUIDE OBLIQUE CUT <sup>(1)</sup>

3-pole – for switches and turntables  
 prepared per your layout drawings  
 Application: oblique cuts, horizontal

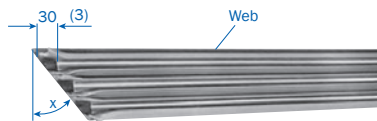


Photo shows left version

IP 21 up to  $x = 45^\circ$

Type	Order No. Left version	Order No. Right version
VUS 3 H	150410	150420

## TRANSFER GUIDE OBLIQUE CUT <sup>(1)</sup>

4-pole – for switches and turntables  
 prepared per your layout drawings  
 Application: oblique cuts, horizontal and lateral

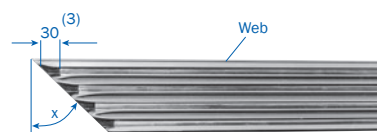


Photo shows left version

IP 21 up to  $x = 45^\circ$

Type	Order No. Left version	Order No. Right version
VUS 4 H	150170	150400
VUS 4 S	153564	153565

H = for horizontal mounting S = for lateral mounting (see page 6 and 7)

## TRANSFER GUIDE OBLIQUE CUT <sup>(1)</sup>

5- and 6-pole – for switches and turntables  
 prepared per your layout drawings  
 Application: oblique cuts, horizontal

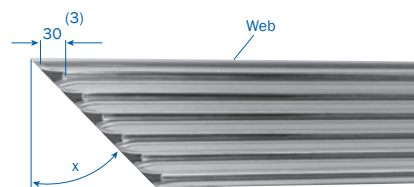


Photo shows left version

Type	Order No. Left version	Order No. Right version
VUS 5 H	152170	152300
VUS 6 H	152310	152320

(1) Fig. shows transfer and section. The section is included in the overall length. It will be charged separately for individual orders. (Specify type of conductor rail).

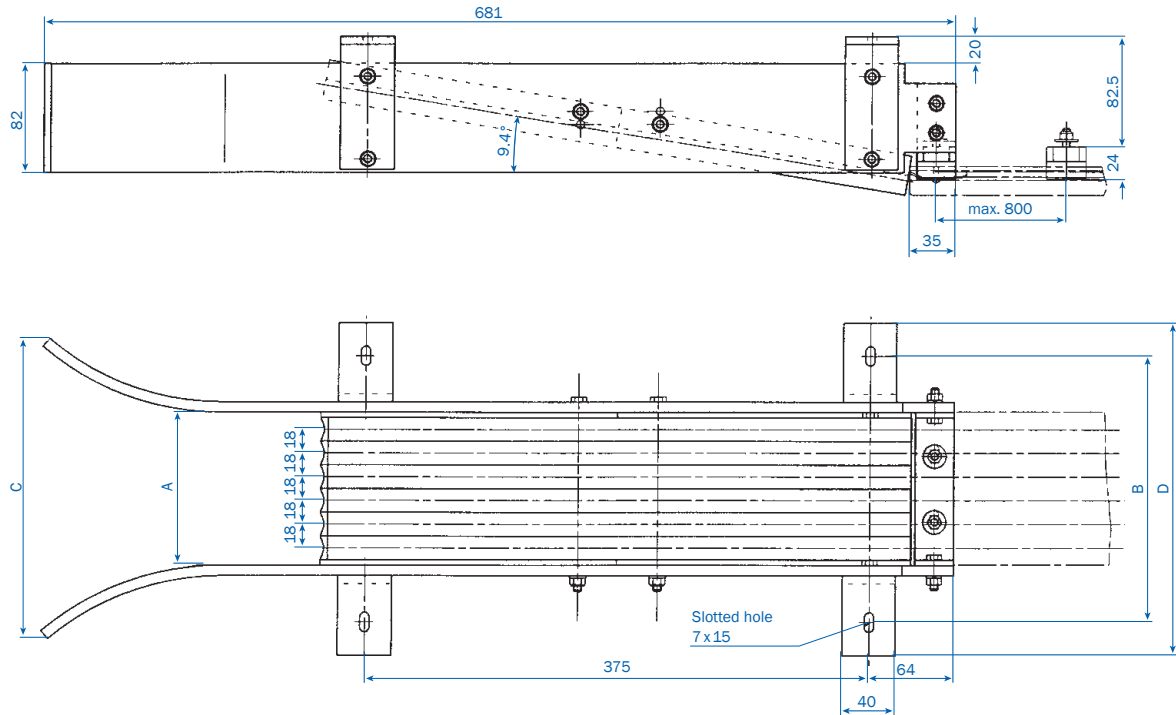
(2) Preparation of conductor rail ends by others, following attached instructions. Please specify conductor type when ordering.

(3) Length without conductors.

# TRANSFER FUNNELS VKS

## TRANSFER FUNNELS FOR KSTU 30/55

for max. speed  $v = 100 \text{ m/min.}^{(2)}$



Type	A mm	B mm	C mm	D mm	Weight kg	Order No.	VU... L <sup>(1)</sup>	VU... R <sup>(1)</sup>
EFT V3 - KSTU	62	148	175	198	3.140	156144	150370	150380
EFT V4 - KSTU	80	166	193	216	3.320	156145	150160	150390
EFT V6 - KSTU	116	202	229	252	3.680	156146	152280	152290

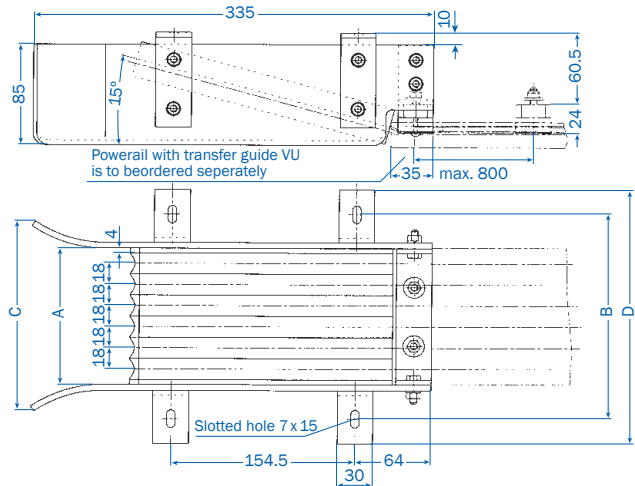
(1) Conductor rail section must be factory prepared. Order separately for left hand VU... L, for right hand VU... R.  
(2) Higher speeds on request



# TRANSFER FUNNELS / EXPANSION SECTIONS VKS

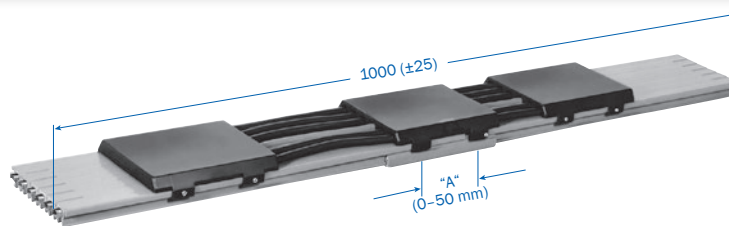
## TRANSFER FUNNELS FOR KSFU 25<sup>(1)</sup>

for max. speed  $v = 100 \text{ m/min.}^{(2)}$



Type	A mm	B mm	C mm	D mm	Weight kg	Order No.	VU ... L <sup>(1)</sup>	VU ... R <sup>(1)</sup>
EFT V3 - KSFU 25	62	120	108	162	1.400	153337	150370	150380
EFT V4 - KSFU 25	80	138	126	180	1.520	153336	150160	150390
EFT V5 - KSFU 25	98	156	144	198	1.640	156132	152160	152270
EFT V6 - KSFU 25	116	174	162	216	1.760	153335	152280	152290

## EXPANSION SECTIONS



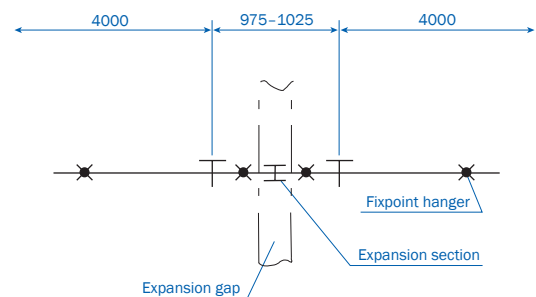
Type <sup>(3)</sup>	Weight kg	Order No. (with PE) HS	Order No. (without PE) SS	Type <sup>(3)</sup>	Weight kg	Order No. (with PE) HS	Order No. (without PE) SS
DVKS 3/ 63	1.900	153230	153240	DVKS 5/ 63	3.266	152340	152380
DVKS 3/ 100	2.090	153250	150551	DVKS 5/ 100	3.586	152350	150554
DVKS 3/ 120	2.215	153623	150552	DVKS 5/ 120	3.811	153633	150555
DVKS 3/ 140	2.346	156588	156589	DVKS 5/ 140	4.030	156596	156597
DVKS 4/ 63	2.412	150480	150510	DVKS 6/ 63	3.582	152360	152390
DVKS 4/ 100	2.622	150490	150516	DVKS 6/ 100	3.962	152370	150556
DVKS 4/ 120	2.852	153628	150553	DVKS 6/ 120	4.242	153638	150557
DVKS 4/ 140	3.027	156590	156595	DVKS 6/ 140	4.504	156598	156599

## Application

Expansion sections are required to compensate for expansion and contraction in system expansion gaps (building or track). The expansion capacity is 50 mm. More tolerance require more than one VKS expansion section. They do not interrupt electrical power, so there is no need for an extra feeding. Expansion joints do not influence the voltage drop of a system.

## Mounting

The expansion section is installed in the center between two fix points in the building/track expansion gap area. The gap dimension "A" equals the gap of the building/track. The remaining conductor rail is laid according to the installation instructions.



Sketch 1

(1) Conductor rail section must be factory prepared. Order separately for left hand VU ... L, or for right hand VU ... R.

(2) Higher speeds on request.

(3) Suffix types e.g. DVKS 3/10 with PE DVKS 3/60 HS Order No. 153230.



(4) Only with 5 and 6-pole version.

## COLLECTOR VKS

## COMPACT COLLECTOR KESR 32-55

## Two-way conveying

Max. ampacity: 1 flat plug connection 32A – FLA 2,5

40A – FLA 4,0

55A – FLA 6,0

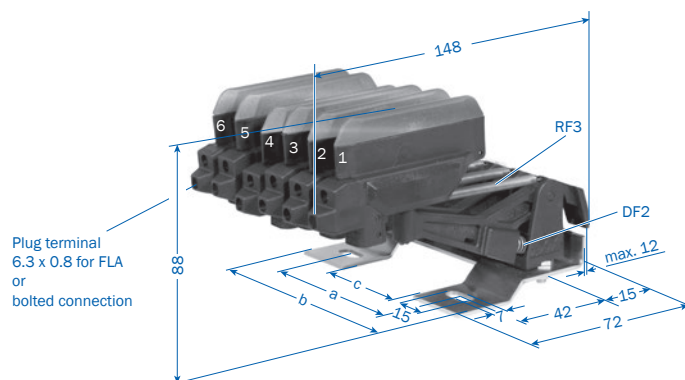
Phase distance 18 mm

Lift and swivel deflection  $\pm 15$  mm

Contact pressure: ca. 7 N per carbon

PE on No. 4, with 3-poles on No. 3, other arrangements possible

PE is first contact while entering conductor rail



Choice of connecting cable see page 20

### KESR 32-55 F (FLAT PLUG CONNECTION)

[illegible]

### KESR 32-55 S (BOLTED CONNECTION)

[illegible]

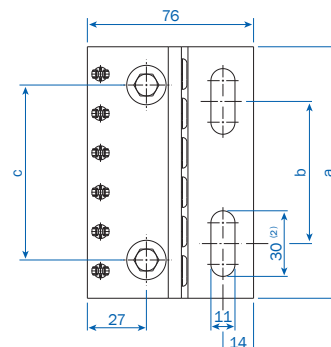
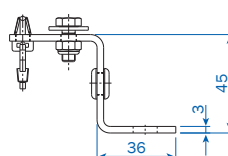
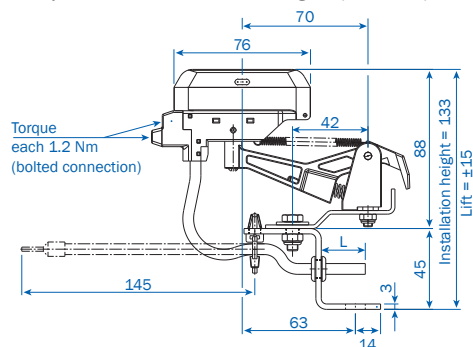
Max. ampacity: 1 bolted connection 32 A – AEA 2,5 | 40 A – AEA 4,0 | 55 A – AEA 6,0

## ADAPTOR FOR COMPACT COLLECTORS

Type	Poles	a mm	b mm	c mm	Weight kg	Order No.
AD4 - KESR/KESL	4	79	35	54	0.210	157368
AD6 - KESR/KESL	6	115	65	80	0.310	157367
AD8 - KESR/KESL	8	151	100	120	0.410	157432



Ready assembled collectors including adapter on request.



(1) Types to be completed e.g. KESR 32-55 S-4-18 with PE and bolted connection R KESR 32-55 S-4-18 HS Order No. 157221.

(2) 25 at AD4 - KESR/KESL

(1) Types to be completed e.g. KESL 32/63 with PE and bolted connection R KESL 32-63 S-4-18 HS Order No. 157191.  
(2) 25 at AD4 - KESR/KESL

## ACCESSORIES FOR COLLECTOR VKS

### CONNECTING CABLE FLA

High flexible for collectors with flat plug connection

(Arrangement to different collector types according to pages 18 and 19.)

Operating conditions  $-15^{\circ}\text{C}$  bis  $70^{\circ}\text{C}$

L = 1 m with flat plug 6.3x0.8

Longer connection cables available.



Table 1

Type	Cross section mm <sup>2</sup>	Outer-Ø mm	Wgt. kg	Order No. Phase black	PE green/ yellow
FLA 2,5	2.50	4.00	0.080	165049	165050
FLA 4	4.00	6.00	0.100	165051	165052
FLA 6	6.00	7.00	0.150	166368	166369

### CONNECTING CABLE AEA

High flexible for collectors with Bolted connection

(Arrangement to different collector types according to pages 18 and 19.)

Operating conditions  $-15^{\circ}\text{C}$  bis  $70^{\circ}\text{C}$

L = 1 m with wire ferrules

Longer connection cables available.



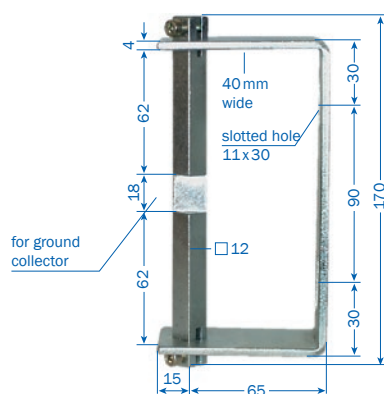
Table 2

Type	Cross section mm <sup>2</sup>	Outer-Ø mm	Wgt. kg	Order No. Phase black	PE green/ yellow
AEA 2,5	2.50	4.00	0.038	143080	143079
AEA 4,0	4.00	6.00	0.063	143078	143077
AEA 6,0	6.00	7.00	0.085	143076	143075
AEA 10,0	10.00	8.50	0.160	143074	143073

### TOWING ARM

for current collectors

KSTU 30/55 see page 17

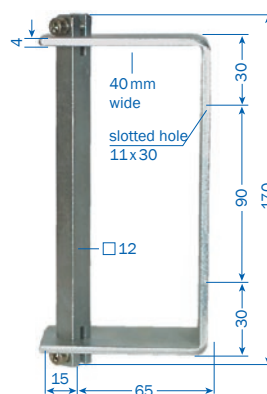


Collector with PE

Type	Weight kg	Order No.
UMAS 12 HS-B	0.600	152232

for control collectors

KSTU 30/55 see page 17



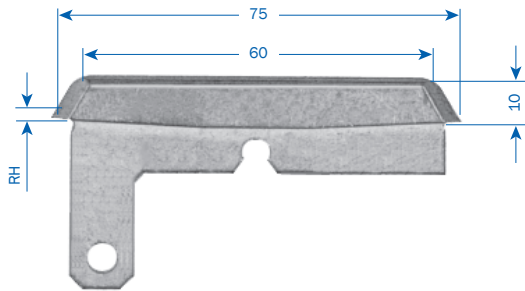
Collector without PE

Type	Weight kg	Order No.
UMAS 12 ST	0.600	152234

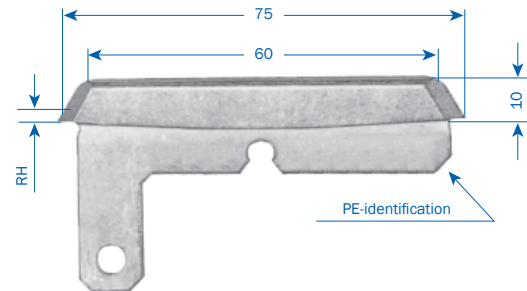
# SPARE PARTS FOR COLLECTORS VKS

## BRUSHES

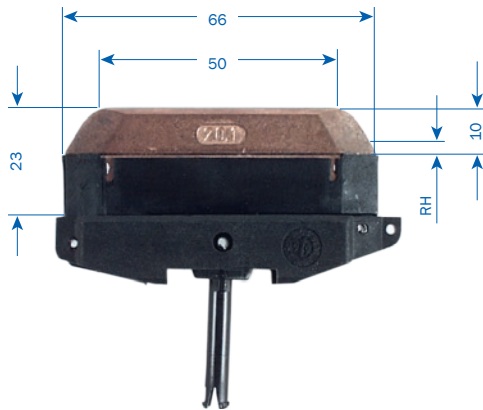
KMK 30-55 PH



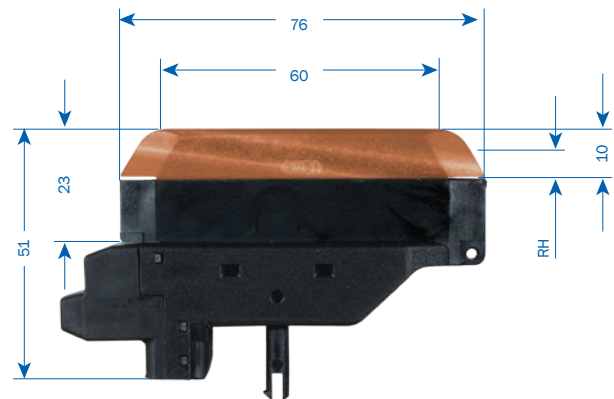
KMK 30-55 PE



KMKU 25/18<sup>(1)</sup>



MK 55, MK 63



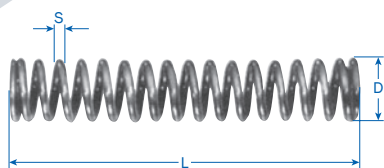
Type	For collectors	Thickness of brush	RH mm	Weight kg	Order No.
KMK 30-55 PH	KSTU 30-55	4.40 mm	4.00	0.031	154440
KMK 30-55 PE	KSTU 30-55	4.40 mm	4.00	0.034	154453
KMKU 25/18	KSFU 25	4.20 mm	3.50	0.035	155002
MK 55 F/18	KESR 32-55 F, KESL 32-55 F	4.20 mm	3.50	0.044	157308
MK 63 S/18	KESR 32-55 S, KESL 32-63 S	4.20 mm	3.50	0.053	157309

Dimension RH = allowed rest height

(1) 18 mm wide

## SPARE PARTS VKS

### SPRINGS



Pressure spring DF



Tension spring RF

Type	For collectors	S mm	D mm	L mm	Order No.
DF 2	KSFU25, KESR 32-55	0.90	7.70	43.00	153848
RF 3	KSFU 25, KESR 32-55, KESL 32-63	0.40	4.40	31.00	153849
DF 4	KESL 32-63	1.10	6.40	41.00	157312

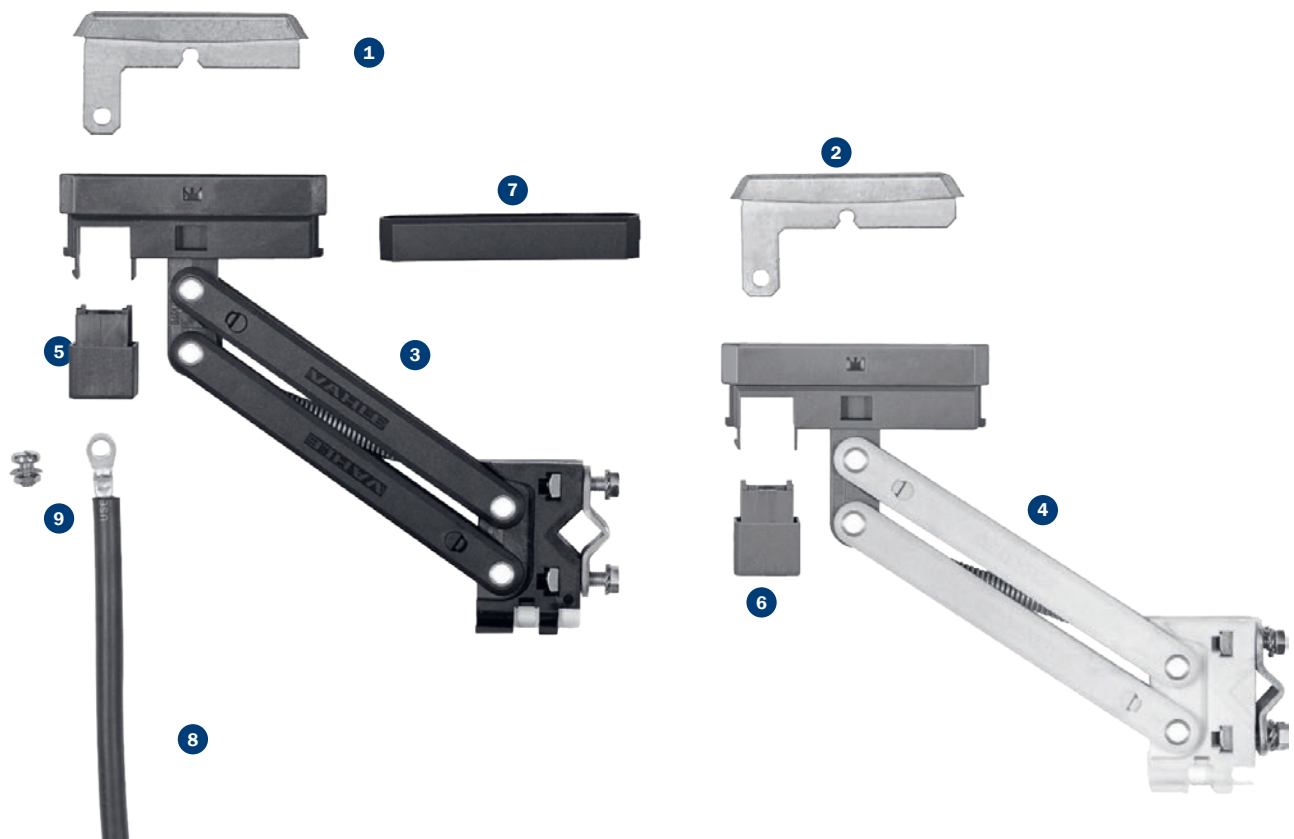
### SPARE PARTS

Type	Order No.
Joint cap for VKS 3	152012
Joint cap for VKS 4	152013
Joint cap for VKS 5 und 6	152014
Plug-in connector (1 pole, copper) for VKS.../ 10-100 A	153803
Plug-in connector (1 pole, copper) for VKS.../120-140 A	152672
Insulating piece for sectionalizing (1 pole) VSTS 1/63 L	156934
Insulating piece for sectionalizing (1 pole) VSTS 1/100 L	150419
Insulating piece for sectionalizing (1 pole) VSTS 1/120 L	151669
Insulating piece for sectionalizing (1 pole) VSTS 1/140 L	156336
Feed terminal, (1 pole) for line feed VNS	151774
Feed terminal, (1 pole) for line feed VLS	153603

# SPARE PARTS FOR COLLECTORS VKS

## COLLECTOR KSTU 30-55

Type	Order No.		Weight kg	Order No.
1	Brush	Phase	0.031	154440
2	Brush	PE	0.031	154453
3	Collector arm KSTU, complete	Phase	0.083	152275
4	Collector arm KSTU, complete	PE	0.083	152276
5	Cover cap	Phase (black)	0.002	152291
6	Cover cap	PE (green)	0.002	152292
7	Distance spacer for KSTU 30-55		0.003	152293
8	Connecting cable RKA 2,5 PH, 2 m long	Phase	0.150	154447
	Connecting cable RKA 2,5 PE, 2 m long	PE	0.150	154448
8	Connecting cable RKA 6 PH, 2 m long	Phase	0.260	154449
	Connecting cable RKA 6 PE, 2 m long	PE	0.260	154450
9	Connecting screw		0.002	152658





# STANDARD SECTIONS VKL

## SECTIONS

Standard length 4 m

Support spacing: 1000 mm

Max. system length: 100 m

HS = with PE

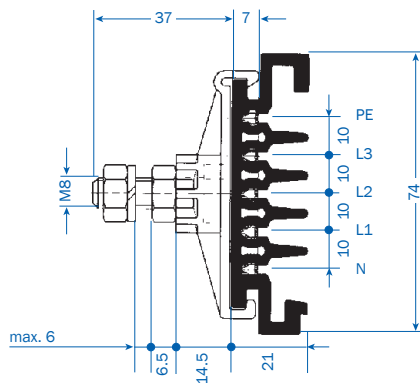
SS = without PE



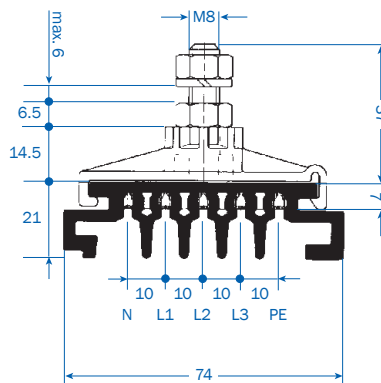
Type	Poles	Max. continuous current A at 35 °C	Voltage rating V	Voltage drop per 100 m at full rating V	Copper cross section CU mm <sup>2</sup>	Weight kg / m	Order No.
VKL 3/30 HS	3	30	400	10.3	9	1.104	28119 •
VKL 3/30 SS	3	30	400	10.3	9	1.104	28120 •
VKL 4/30 HS	4	30	400	10.3	9	1.180	28121 •
VKL 4/30 SS	4	30	400	10.3	9	1.180	28122 •
VKL 5/30 HS	5	30	400	10.3	9	1.256	28123 •
VKL 5/30 SS	5	30	400	10.3	9	1.256	28124 •

5-poles	4-poles	3-poles	5-poles	4-poles	3-poles
HS with PE			SS without PE		
PE	PE	PE	1	1	1
L3	L3		2	2	
L2	L2	L	3	3	3
L1	L1		4	4	
N		N	5		5

- Suffix types e.g. **2 m** VKL 4/30 with PE R VKL 4/30 -**2 HS** Order No. 281212  
Shorter sections are made up from the next larger standard length.



Lateral

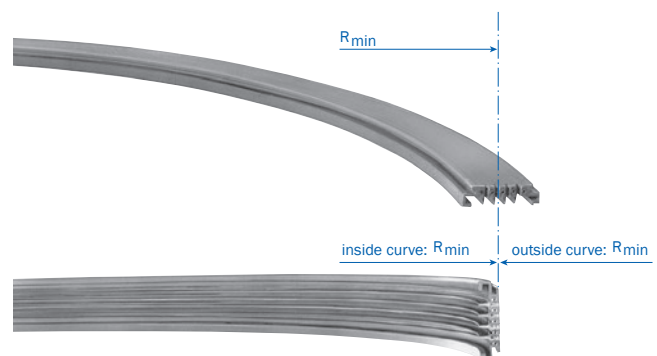


Suspended

## CURVED SECTIONS<sup>(1)</sup>

Max. L = 3.60 m, support spacing: ~500 mm  
according to your layout drawing

	R <sub>min</sub> mm	Surcharge Order No. VKL
Horizontal curve, right	600	280510
Horizontal curve, left	600	280100
Inside curve, lateral	600	280520
Outside curve, lateral	400	280090



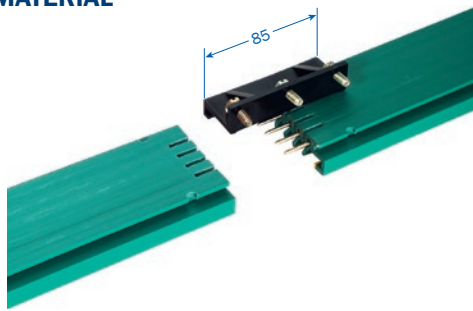
Horizontal curve, right = web outside  
Outside curve, lateral = conductors outside (not shown)

(1) Curves with less than 2000 mm radius will be factory prepared with a 100 mm straight section on both ends – for easy connection.  
Horizontal curves with more than 90 degrees should be divided in two or more sections.



# ACCESSORIES FOR VKL

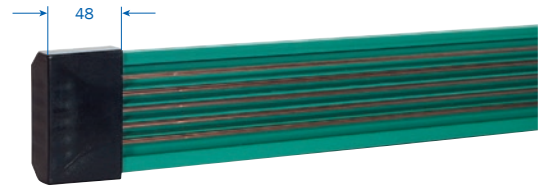
## JOINT MATERIAL



Type	Poles	Weight kg	Order No.
LV 3	3	0.082	281250
LV 4	4	0.084	281251
LV 5	5	0.086	281252

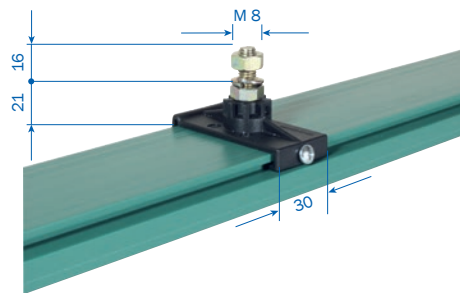
## END CAP

Suitable for left hand and right hand installation



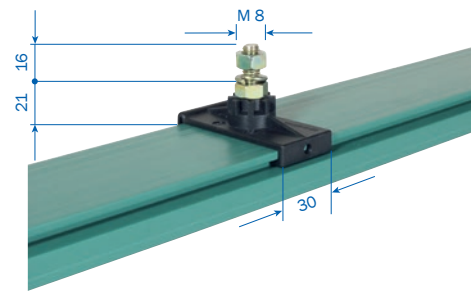
Type	Weight kg	Order No.
VE	0.040	280160

## FIXPOINT HANGER



Type	Weight kg	Order No.
VEP	0.053	281470

## SLIDING HANGER

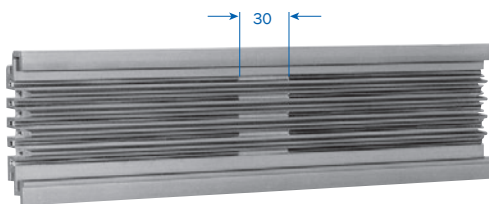


Type	Weight kg	Order No.
VA	0.050	281438

## CONDUCTOR DEAD SECTION

for control signals<sup>(2)</sup>

Please indicate where and which conductors are to be interrupted.



Type	Order No.
VST 1	280200
VST 2	280210
VST 3	280220
VST 4	280230
VST 5	280240

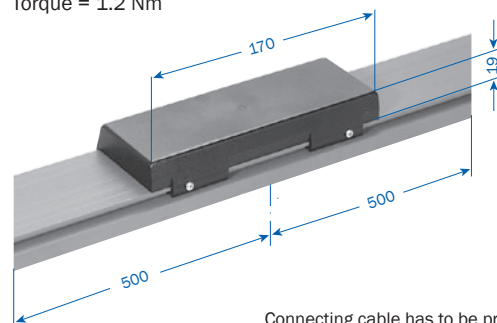
## LINE FEED<sup>(1)</sup>

for direct cable connection

Max. cable outer - Ø 16.5 mm

Max. cable-cross-section 4 mm², terminal bolt M 4

Torque = 1.2 Nm



Connecting cable has to be provided by customer.

Type <sup>(3)</sup>	A	Weight kg	Order No. (with PE) HS	Order No. (without PE) SS
VLE 3/30	30	1.740	281325	281326
VLE 4/30	30	1.900	281327	281328
VLE 5/30	30	2.065	281329	281330

(1) The line feeds come ready assembled on 1m conductor rail sections. Cable by others.

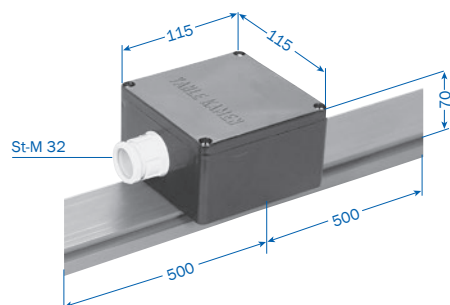
(2) Terminal markings see page 24.

(3) Suffix types e.g. VLE 3/30 with PE R VLE 3/30 HS Order No. 281325.

## ACCESSORIES VKL/ KTW-SYSTEM FOR ELECTRIC TOOLS

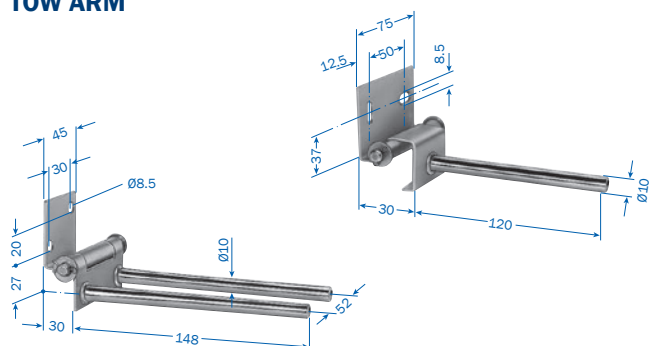
**LINE FEED<sup>(1)</sup>**

with terminal box for connecting cable 4 mm<sup>2</sup>  
terminal bolt M 4 – Torque = 1.2 Nm



Type <sup>(2)</sup>	Ampacity A	Weight kg	Order No. (with PE) HS	Order No. (without PE) SS
VNK 3/30	30	1.750	281331	281332
VNK 4/30	30	1.950	281333	281334
VNK 5/30	30	2.100	281335	281336

## TOW ARM



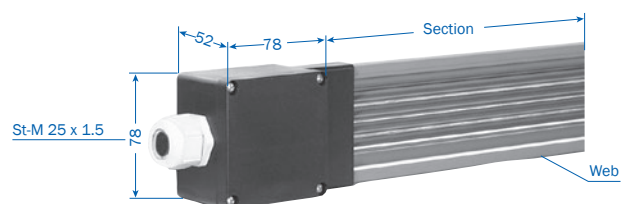
Type	Weight kg	Order No.
VM for single collectors	0.190	280310
AM for double collectors (2x VSR)	0.225	280640

**VAHLE KTW / V-SYSTEM**

These systems consist of a mounting rail with carrier wagon for holding the power tools and a plastic conductor rail for the power supply for tools. The wagon is supplied with a mounting plate on which electrical plugs, automatic circuit breakers or other electrical components can be mounted by the customer. The current collector trolley is mechanically connected to the current collector by a joint. The support rail and conductor rail are attached to a common suspension bracket, which can also be used for suspension of the entire system. Please ask for our detailed documentation.

**END FEED, LOOSE<sup>(1)</sup>**

Cable gland to 4 mm<sup>2</sup>



Installation left or right possible for power and control

Type	Ampacity A	Weight kg	Order No.
VEK 3-5	30	0.140	281436

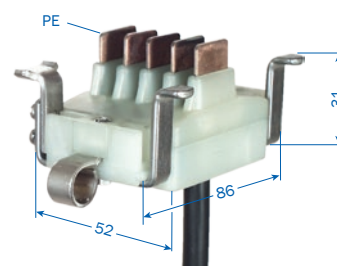
### CURRENT COLLECTOR VSR

for straight and curved runs

Travelling speed: 60 m/min. in curves

120 m/min. for straight runs

Carbon brushes not replacable.



connecting cable: 1.5 mm<sup>2</sup> (1 m long)

Type <sup>(2)</sup>	Ampa- city A	Poles	Weight kg	Order No. (with PE) HS	Order No. (without PE) ST
VSR 3/10	10	3	0.330	280250	281172
VSR 4/10	10	4	0.360	280260	281171
VSR 5/10	10	5	0.420	280270	281189

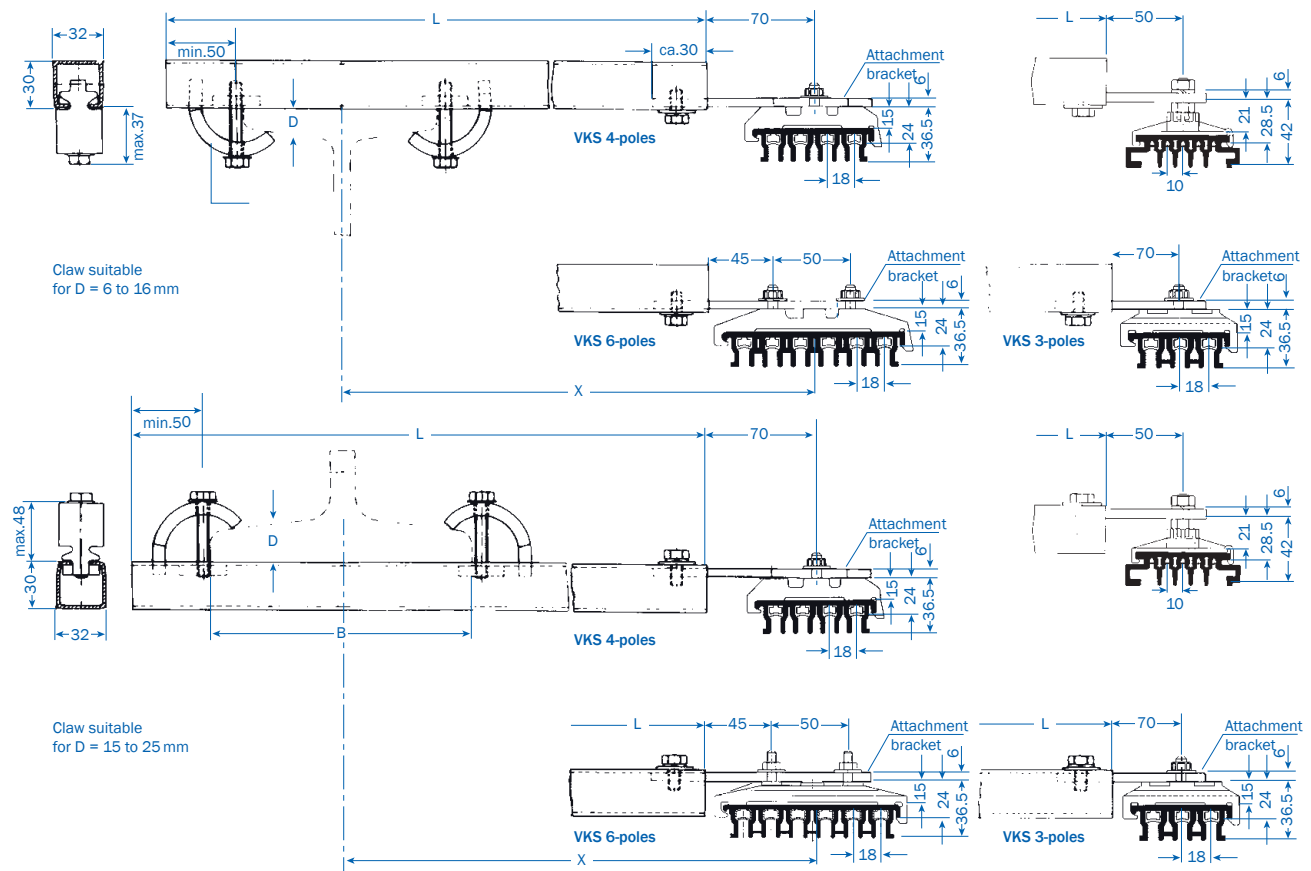


KTW / V with type VKL

(1) Feed is mounted on 1 m sections. End feed comes loose in components. Section is to be ordered separately (see page 24).

(2) Suffix types e. g. VNK 3/30 with PE R VNK 3/30 **HS** Order No. 281331.

# BRACKETS AND SNAP-ON BRACKETS VKS, VKL



## ATTENTION!

Make sure that hoist wheels of monorail systems have enough clearance.

C-rail of HKV is identical to type S1 for cable carriers (catalog 8a).

Hangers to be ordered separately.

The corresponding beam width ( $B_{max}$ ) could be enlarged by a reduction of X.

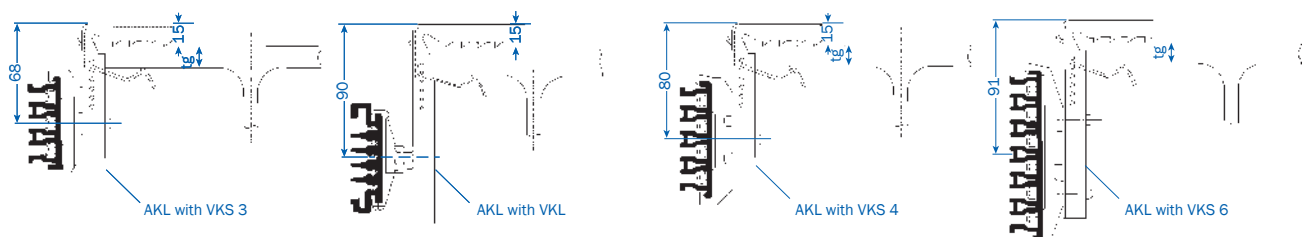
## SNAP-ON BRACKETS

Snap-on brackets facilitate installation of conductor system on flat flange beams IPE-, IPB-, IPBI- and IPBv. They are adjustable to suit beam flange dimensions (tg) of up to 43 mm.

Type <sup>(1)</sup>	x mm	L mm	B <sub>max</sub> mm	Weight kg	Order No. VKS	Order No. VKL
HK...200	200	300	90	0.920	150600	280550
HK...250	250	350	180	0.970	150610	280560
HK...300	300	400	230	1.020	150620	280570
HK...400	400	500	230	1.120	150630	280580
HK...500	500	600	230	1.220	150640	280590
HK...600	600	700	230	1.320	150650	280600
HK...700	700	800	230	1.420	150660	280610
HK...750	750	850	230	1.470	150670	280620
HK...800	800	900	230	1.560	150680	280630

Type	AKL					
Beam flange tg/mm	8-13	14-19	20-25	26-31	32-37	38-43
Weight/kg	0.184					
Order No.	151925					

Hangers for conductor system to be ordered separately.



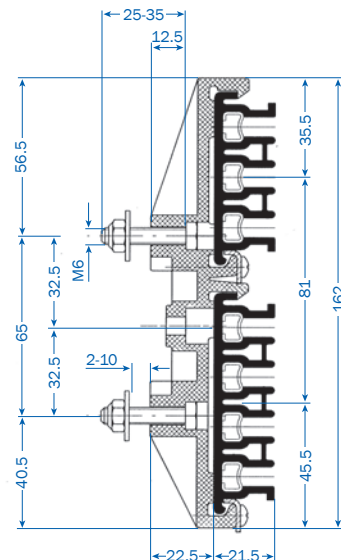
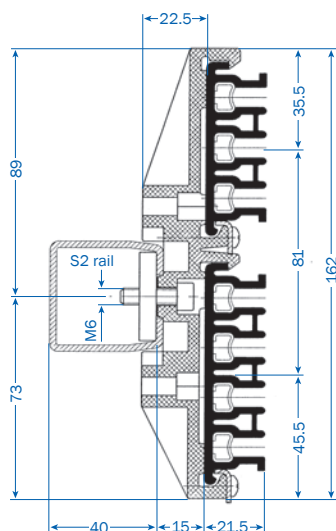
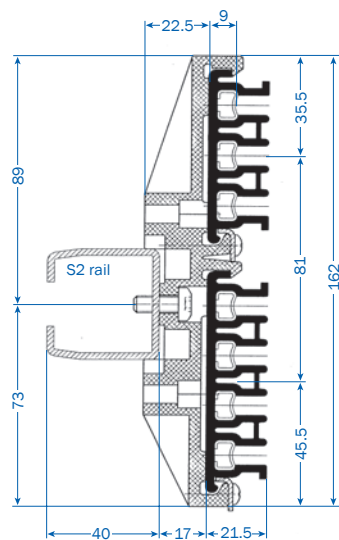
(1) Please complete types e.g. for VKS R HKVKS 200  
for VKL R HKVKL 200

## 7-POLE VKS SYSTEM FOR HRL

This system combines a VKS 4-pole and VKS 3-pole conductor rail in a common hanger clamp.

Possible fixing methods are shown below. All available VKS 4-pole and VKS 3-pole conductor systems can be combined. All standard components of VKS conductor system can be used. Restrictions apply to line feeds VNS, end feeds VEKS, transfers and towing arms (consult factory for these components).

### FIXPOINT HANGER VEPS AND SLIDING HANGER VAS

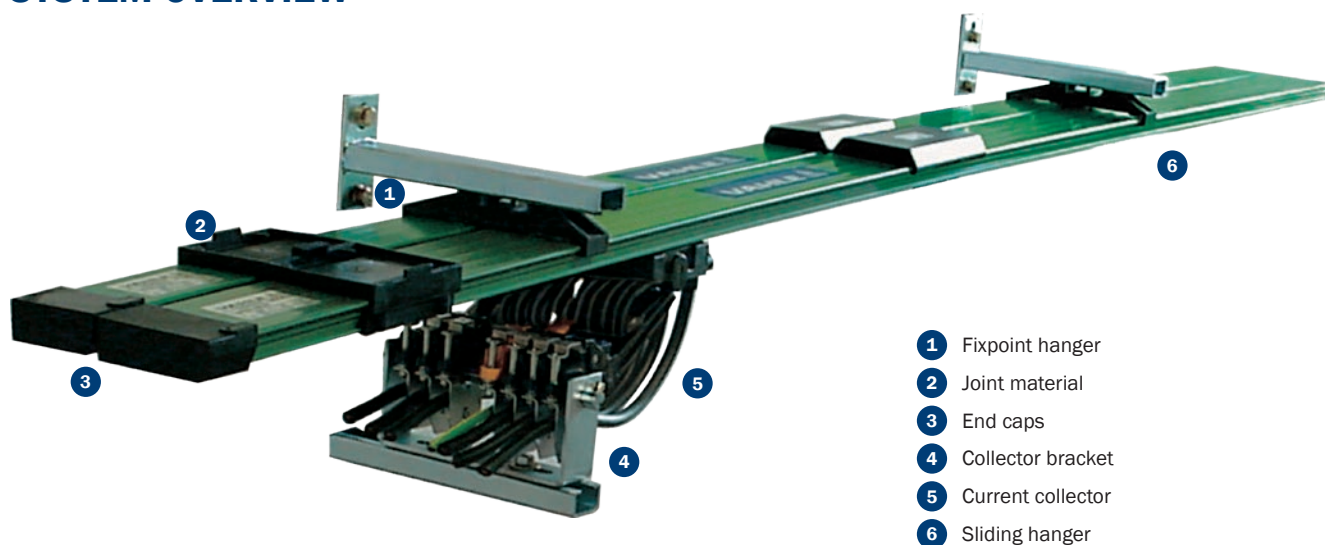


Type	Wgt. kg	Order No.
VEPS 4/3 SF M 6x16	0.100	156114
VAS 4/3 SF M 6x16	0.080	156115

Type	Wgt. kg	Order No.
VEPS 4/3 GP M 6	0.121	156116
VAS 4/3 GP M 6	0.101	156117

Type	Wgt. kg	Order No.
VEPS 4/3 M 6x35	0.119	156772
VAS 4/3 M 6x35	0.099	156089

## SYSTEM OVERVIEW

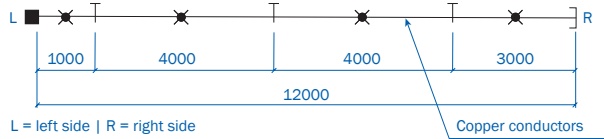


# EXAMPLES FOR ORDERING VKS AND VKL

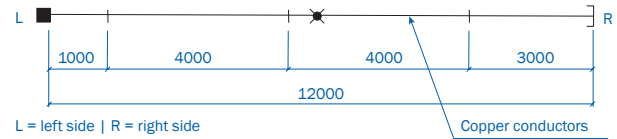
## STRAIGHT TRACK WITH END FEED<sup>(1)</sup>

12 m VKS 3/100; VKL 3/30 HS

Layout VKS



Layout VKL

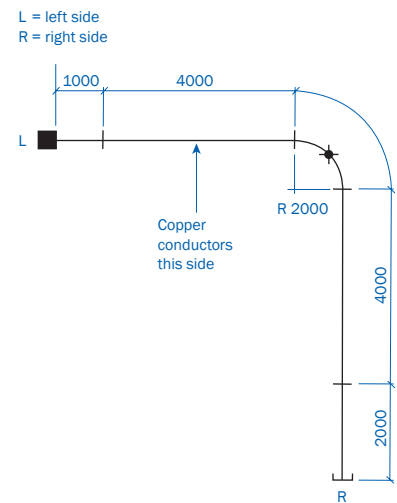


Qty	Description	Type	Order No.	Qty	Type	Order No.
2	Conductor rail, 4 m long	VKS 3/100-4 HS	153904	2	VKL 3/30-4 HS	281194
1	Conductor rail, 3 m long	VKS 3/100-3 HS	153903	1	VKL 3/30-3 HS	281193
1	Conductor rail, 1 m long	VKS 3/100-1 HS	153901	1	VKL 3/30-1 HS	281191
3	Joint material	SVN 3/63-100	156533	3	LV 3	281250
4	Fixpoint hanger	VEPS 3	153070	1	VEP	281470
10	Sliding hangers	VAS 3	153060	10	VA	281438
1	End cap	VES 3	153080	1	VE	280160
1	End feed	VEKS 3/10-120 L	156422	1	VEK 3-5	281436
1	Collector	KESR 32-55F-3-18 HS	157285	1	VSR 3/10 HS	280250
-	Tow arm	-	-	1	VM	280310
14	Support bracket	HKVKS 300	150620	14	HKVKL 300	280570

## CURVED TRACK WITH END FEED<sup>(1)</sup>

14.142 m VKL 5/30 HS

Qty	Description	Type	Order No.
2	Conductor rail, 4 m long	VKL 5/30-4 HS	281234
1	Conductor rail, 2 m long	VKL 5/30-2 HS	281232
1	Conductor rail, 4 m long for inside curve lateral 90°; R = 2000 mm; L = 3.142 m	VKL 5/30-4 HS	281234
1	Bending surcharge inside curve		280520
4	Joint material	LV 5	281252
1	Fixpoint hanger	VEP	281470
15	Sliding hangers	VA	281438
1	End cap	VE	280160
1	End feed, 1 m long	VEK 3-5	281436
1	Collector	VSR 5/10 HS	280270
1	Tow arm	VM	280310

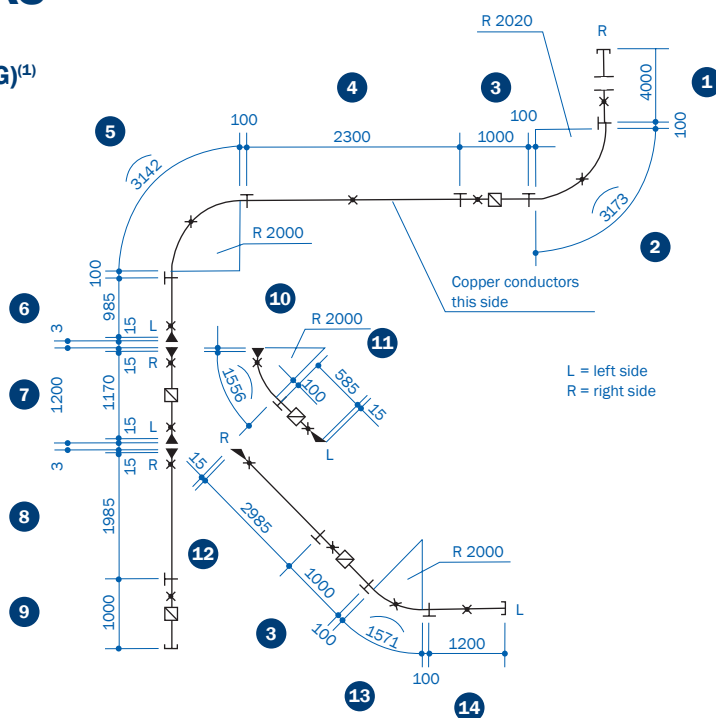


(1) Layout symbols see page 7

## EXAMPLE FOR ORDERING VKS

### CURVED TRACK WITH SWITCH (LATERAL MOUNTING)<sup>(1)</sup>

27.857 m VKS 6/63 HS



Qty	Description	Type	Order No.	Position
1	Conductor rail, 4 m long	VKS 6/63-4 HS	154194	1
2	Conductor rail, 3 m long cut to: 1x2.985 m 1x2.300 m	VKS 6/63-3 HS	154193	12 4
3	Conductor rail, 2 m long cut to: 1x1.985 m 1x1.200 m 1x1.170 m	VKS 6/63-2 HS	154192	8 14 7
3	Conductor rail, 1 m long	VKS 6/63-1HS	154191	3 9
2	Conductor rail, 1 m long cut to: 1x0.985 m 1x0.585 m	VKS 6/63-1 HS	154191	6 11
2	Conductor rail, 4 m long 1x for outside curve 90°; R = 2020 mm; L = 3.373 m 1x for inside curve 90°; R = 2000 mm; L = 3.342 m	VKS 6/63-4 HS	154194	2 5
2	Conductor rail, 2 m long 1x for inside curve ~ 45°; R = 2000 mm; L = 1.656 m 1x for inside curve 45°; R = 2000 mm; L = 1.771 m	VKS 6/63-2 HS	154192	10 13
1	Bending surcharge (outside curve)		152100	
3	Bending surcharge (inside curve)		153722	
10	Joint material	SVN 6/63-100	156539	
16	Fixpoint hangers	VEPS 6	152120	
22	Sliding hangers	VAS 6	152130	
3	End caps on above position. 1, 9, 14	VES 6-M	152021	
2	Line feeds installed on position 3, 7, 9, 11	VLS 6/63	156945	
3	Transfer guides, left installed on Pos. 6, 7, 11	VU 6 S-M	153801	
4	Transfer guides, right installed on Pos. 7, 8, 10, 12	VU 6 S-M	153802	
1	Compact collector, Ground on No. 3	KESR 32-55S-6-18 HS	157223	

(1) Layout symbols see page 7.



# QUESTIONNAIRE

Company: \_\_\_\_\_ Date: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_ Website: \_\_\_\_\_

1. Number of conductor system installations: \_\_\_\_\_
2. Type of equipment to be powered: \_\_\_\_\_
3. Operating voltage: \_\_\_\_\_ Volt Frequency: \_\_\_\_\_ Hz  
☐ Three-phase voltage ☐ AC voltage ☐ DC voltage
4. Track length: \_\_\_\_\_
5. Number of conductors: \_\_\_\_\_ neutral: \_\_\_\_\_ control: \_\_\_\_\_ ground: \_\_\_\_\_
6. Mounted position of conductor system:  
☐ Conductor system pendant, collector cable facing to the bottom ☐ Conductor system pendant, lateral payout of conductor cable<sup>(1)</sup>  
☐ Support distance \_\_\_\_\_ m (max. 2 m) ☐ Other: \_\_\_\_\_
7. Number of consumers per system: \_\_\_\_\_
8. ☐ Indoor system ☐ Outdoor system
9. Other operating conditions (humidity, dust, chemical influence, etc.) \_\_\_\_\_
10. Ambient temperature: \_\_\_\_\_ °C min. \_\_\_\_\_ °C max.
11. Hall expansion joints \_\_\_\_\_ pieces \_\_\_\_\_ expansion max.
12. Position and number of feeding points<sup>(1)</sup>: \_\_\_\_\_
13. Position and number of isolating sections (e.g. for maintenance)<sup>(1)</sup>: \_\_\_\_\_
14. How will the conductor be arranged?<sup>(1)</sup>: \_\_\_\_\_
15. Brackets required: ☐ Yes ☐ No c/c distance beam/conductor system: \_\_\_\_\_
16. Travel speed: \_\_\_\_\_ m/min. in curves: \_\_\_\_\_ m/min. at transfers: \_\_\_\_\_ m/min.
17. Max. voltage drop from the conductor system feed point to the consumer considering starting current: \_\_\_\_\_
18. Power consumption of the individual consumer loads: \_\_\_\_\_

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>	% duty	A	cos φ <sub>A</sub>			A	cos φ <sub>N</sub>	% duty	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: \_\_\_\_\_

(1) For curved tracks, conductor system with isolating sections etc., we require sketches to enable us to prepare a quotation

(2) Use: K for squirrel cage motor, S for slipring motor, F for frequency controlled motor

We reserve all rights to make alterations in the interests of further development

Please copy and fill in the questionnaire.



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