



**VAHLE**

**Compact  
Conductor System  
VKS10**

**SYSTEMS IN MOTION**



## Content

General.....	3	Compact current collectors .....	14
System diagram .....	5	Single current collector.....	18
Sections .....	6	Connecting cables.....	19
Pole configuration .....	7	Collector bracket .....	20
Curved sections .....	8	Carbon brushes.....	20
Fixpoint hanger .....	9	Springs .....	20
End cap .....	9	Spare parts and accessories.....	21
Sliding hanger.....	9	Connector and hanger .....	22
End feed .....	9	Auxiliary support.....	22
Line feeds .....	10	Support profile attachments.....	23
Isolating section .....	11	Positioning systems .....	24
Transfer funnel .....	12	Installation tools .....	25
Tangential entry funnel .....	13	Questionnaire .....	26
Transfer guide VU 10 .....	13		

## General

VAHLE compact conductor system type VKS10 are compact and shock hazard protected safety conductor rails. They consist of a flatformed insulated housing with integrated copper conductors. These conductors are protected according to European standard EN 60529. They comply with accident and VDE regulations in the context of electrical, mechanical and fire safety and are protected to IP 21 standards.

For the collectors is the contact protection only applies if the carbons are complete in the conductor. Conductor systems located within arm's reach, and in which the collectors leave the conductor rails during operation, must be provided with protection against

contact at the installation site, e.g., with the use of barriers or shutoff switches. This is only necessary for voltages above 25 Volts AC or 60 Volts DC.

The insulated housing accommodates up to 10 conductors. No special finishing work to the rail ends is necessary. The compact design allows direct mounting in runway beams and Vahle support profiles.

The conductor rail is designed for indoor use only and for hanging and lateral arrangement in straight or curve systems.

### Electrical values of the conductor system

Max. continuous current:	140 A <sup>(1)</sup>
Permitted operating voltage (UL):	690 V (600 V)

### Electrical values of the housing

Dielectric strength in accord. with DIN 53481:	> 25 kV/mm
Specific resistance in acc. with IEC 60093:	> $1 \times 10^{14} \Omega \times \text{cm}$
Surface resistivity IEC 60093:	> $1 \times 10^{13} \Omega$
Leakage resistance in acc. with IEC 60112:	CTI $\geq$ 400
Combustibility:	flame retardant, self-extinguishing, UL 94 VO

### Chemical resistance of the insulated housing at +45°C ambient temperature:

Petrol, mineral oil, greases	resistant
Caustic soda up to 50 %	resistant
Hydrochloric acid, concentrated	resistant
Sulfuric acid up to 50 %	resistant
UV (Xenon test > 1500)	resistant

Water absorption:	max. bei 20 °C = 0,06 %
Ambient temperature:	von -30 °C bis +55 °C (Application area)

Max. temperature differences:	50 °C ( $50 \leq \Delta T$ ) <sup>(2)</sup>
from -10 °C to +40 °C with supply length =	6 m
from -30 °C to +20 °C with supply length =	4 m (deep freeze storage <sup>(2)</sup> )

Conductor material	copper				unit
	16	25	30	35	
Cross section	16	25	30	35	mm <sup>2</sup>
Impedance at 50Hz <sup>(3)</sup>	1,106	0,728	0,602	0,510	$\Omega/1000 \text{ m}$
Resistance	1,102	0,723	0,595	0,510	$\Omega$
Ampacity	60	100	120	140 <sup>(1)</sup>	A

Please note: When using extra-low voltages please submit detailed information with your inquiry, especially with regard to the ambient conditions. In order to process quotations and orders, we require drawings if the conductor system includes curves or rail section isolation. Please use our questionnaire on pages 26.

(1) 80 % duty cycle

(2) Cold store applications on request

(3) By parallel circuit (doubling of cross section) is the impedance and the resistance halved

## VKS10 Compact conductor system

Application area: Indoor installation

### Sections

The insulated housing accommodates up to max. 10 conductors and provides reliable insulation. The standard length is 6 m, shorter lengths can be supplied. The ground conductor rail is identified with continuous yellow marking. The asymmetric design eliminates the possibility of reversing the phases during installation. One fixpoint hanger is required for each conductor section.

### Joints

The insulated housing sections are connected with joint caps, the conductors are joined with copper plug-in connectors.

### Feeds

Feed units can be supplied as end or line feeds with plastic terminal boxes or as especially flat line feeds for direct single core cable connection. Both line feed types are supplied preassembled on a 1 m conductor rail section.

The end feeds are supplied loose and can only be used in conjunction with the VLS line feed.

### Hangers

The maximum distance between suspension points must not exceed 1.2 m. The hangers are available for the following mounting options:

1. for assembly in VAHLE support profile (self-locking)
2. for assembly in c-rail (bolted type)
3. for assembly to plain surface (bolted type)

The conductor system can move with the sliding hangers for longitudinal expansion. At the fixpoint it is locked by an additional screw. The distance between two fixpoints is max. 6 m.

### Isolating sections

Conductor dead 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).

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 the isolating section has to consider the total length of the carbon brush and whether the carbon brush must or must not bridge the isolation area.

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

### Current collectors

The current collectors are manufactured from impact resistant plastic and stainless steel parts. The current is transmitted by a carbon brush. According to the application, one or more current collectors are required per phase and ground conductor. The current collectors for the ground conductor can be identified by yellow color-coding and are equipped with different fixings to make them not-interchangeable with the phase current collectors. Springs in the current collectors ensure even pressure of the carbon brush against the conductor, thus maintaining reliable contact.

The current collectors must be mounted on base plates or rectangular brackets.

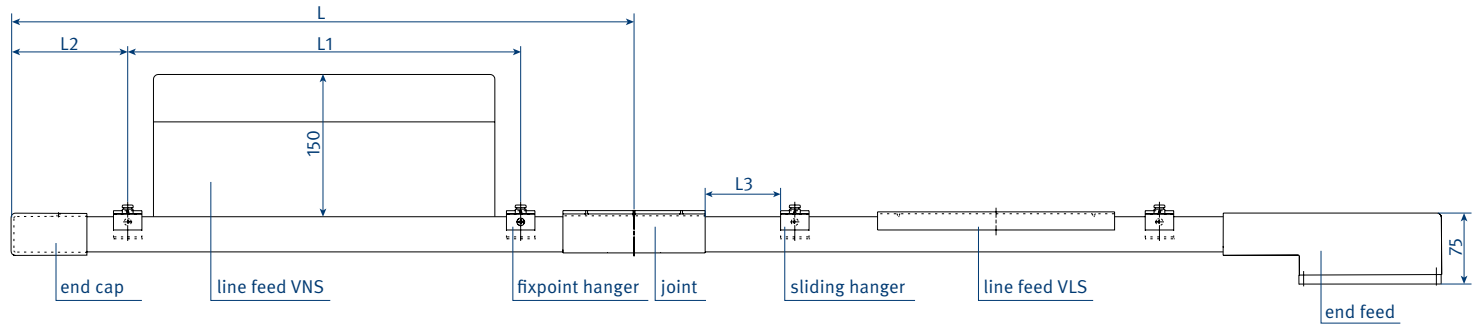
The length of the current collector cable should not exceed 3 m, if the connected overload protection is not according to the load of this connecting cable. See as well DIN VDE 0100, part 430 and DIN EN 60204-32. (Note: The a.m. often occurs in systems with more collectors per system.)

The connection cables provided are adequately sized for the specified nominal currents. Reduction factors in accordance with DIN VDE 0298-4 are to be taken into account for various layout methods.

### Layout plan

We create a custom layout plan for each delivery.

## System diagram



L = length of conductor section (standard length: 1 m, 2 m, 3 m, 4 m, 5 m, 6 m respectively short length)

L1 = support distance for straight runs: max. 1.2 m in curves: max. 0.6 m

L2 = overhang (max. 350 mm)

L3 = distance, to be allowed for conductor system expansion (min. 50 mm)

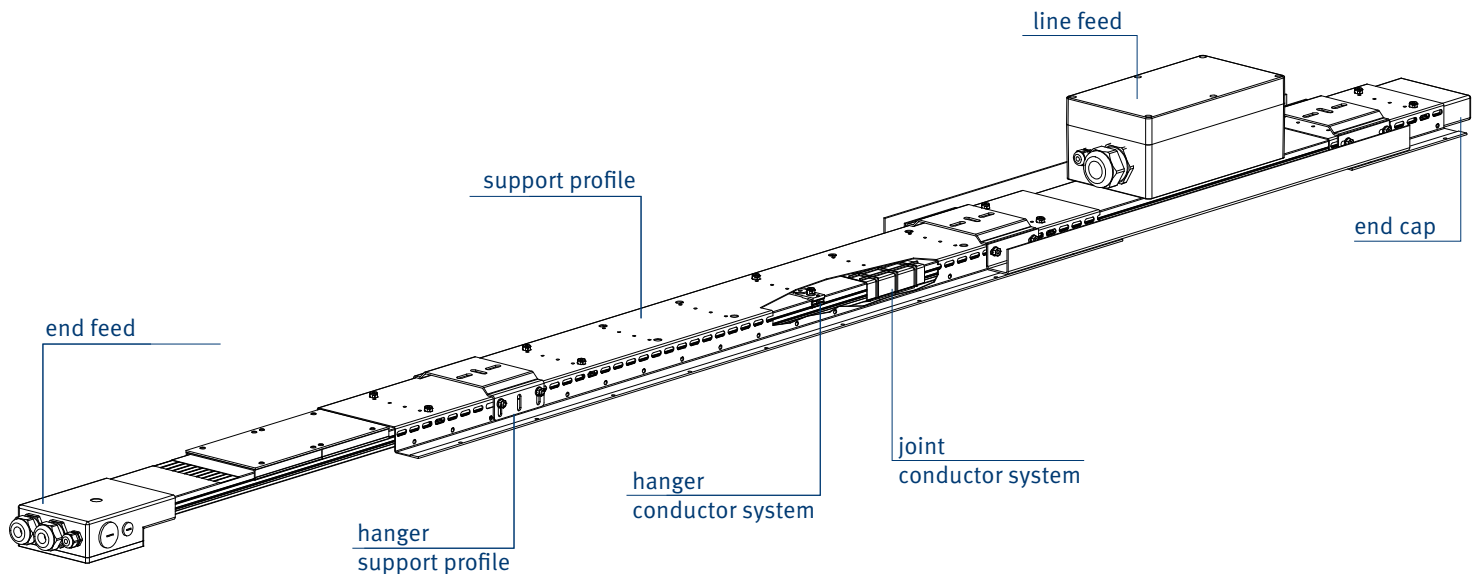
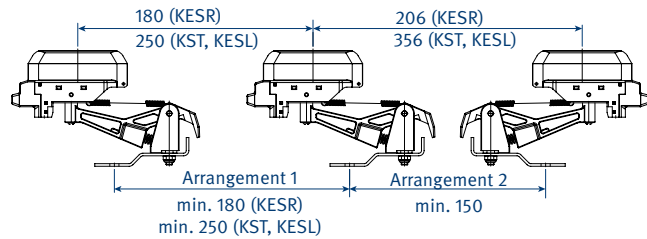
## Max. hanger distance

### Conductor system VKS10

- in straight runs 1,2 m
- in curves 0,6 m
- horizontal 0,6 m

### Support profile VTP10

- on rack uprights 4,5 m
- on support posts 4,0 m
- horizontal arrangement 3,0 m
- attached to the wall 3,0 m



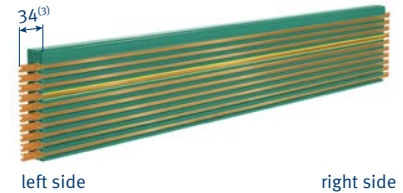
## Sections

Standard lengths: 6 m

Cold stores: 4 m

HS = with ground

Attention: Joints to be ordered separately (see page 8).

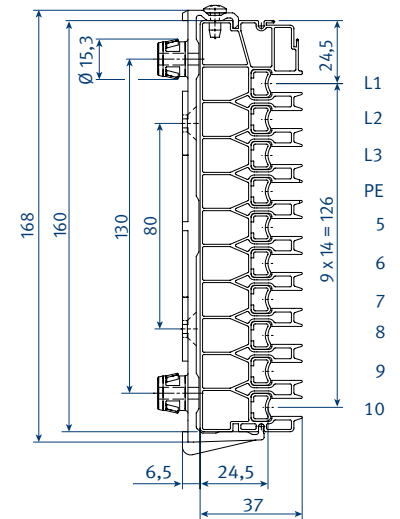


Type	Weight kg/m	Max. continuous current A at 35 °C	Nominal Voltage <sup>(5)</sup> V	Conductor cross section			No. of conductors	Order-No.
				L1-L3	PE	5-10 <sup>(4)</sup>		
VKS10-4/63-....HSA	2,020	63	690	3x16	1x16	-	4	780 99•
VKS10-4/100-....HSA	2,250	100	690	3x25	1x16	-	4	780 71•
VKS10-4/120-....HSA	2,359	120	690	3x30	1x16	-	4	780 90•
VKS10-4/140-....HSA	2,520	140 <sup>(1)</sup>	690	3x35	1x16	-	4	780 68•
VKS10-5/63-....HSA	2,156	63	690	3x16	1x16	1x16	5	780 61•
VKS10-5/100-....HSA	2,384	100	690	3x25	1x16	1x16	5	780 70•
VKS10-5/120-....HSA	2,729	120	690	3x30	1x16	1x16	5	780 62•
VKS10-5/140-....HSA	2,864	140 <sup>(1)</sup>	690	3x35	1x16	1x16	5	781 28•
VKS10-6/63-....HSA	2,300	63	690	3x16	1x16	2x16	6	780 04•
VKS10-6/100-....HSA	2,540	100	690	3x25	1x16	2x16	6	780 05•
VKS10-6/120-....HSA	2,640	120	690	3x30	1x16	2x16	6	780 06•
VKS10-6/140-....HSA	2,810	140 <sup>(1)</sup>	690	3x35	1x16	2x16	6	780 07•
VKS10-7/63-....HSA	2,450	63	690	3x16	1x16	3x16	7	780 03•
VKS10-7/100-....HSA	2,680	100	690	3x25	1x16	3x16	7	780 08•
VKS10-7/120-....HSA	2,810	120	690	3x30	1x16	3x16	7	780 09•
VKS10-7/140-....HSA	2,950	140 <sup>(1)</sup>	690	3x35	1x16	3x16	7	780 01•
VKS10-8/63-....HSA	2,590	63	690	3x16	1x16	4x16	8	780 21•
VKS10-8/100-....HSA	2,830	100	690	3x25	1x16	4x16	8	780 22•
VKS10-8/120-....HSA	2,960	120	690	3x30	1x16	4x16	8	780 23•
VKS10-8/140-....HSA	3,090	140 <sup>(1)</sup>	690	3x35	1x16	4x16	8	780 24•
VKS10-9/63-....HSA	2,740	63	690	3x16	1x16	5x16	9	780 25•
VKS10-9/100-....HSA	2,970	100	690	3x25	1x16	5x16	9	780 26•
VKS10-9/120-....HSA	3,110	120	690	3x30	1x16	5x16	9	780 27•
VKS10-9/140-....HSA	3,240	140 <sup>(1)</sup>	690	3x35	1x16	5x16	9	780 28•
VKS10-9/200-....HSA	3,280	200 <sup>(2)</sup>	690	6x25	1x25	2x16	9	780 14•
VKS10-9/240-....HSA	3,600	240 <sup>(2)</sup>	690	6x30	1x30	2x16	9	780 13•
VKS10-9/280-....HSA	3,910	280 <sup>(1)(2)</sup>	690	6x35	1x35	2x16	9	780 12•
VKS10-10/63-....HSA	2,880	63	690	3x16	1x16	6x16	10	780 29•
VKS10-10/100-....HSA	3,110	100	690	3x25	1x16	6x16	10	780 20•
VKS10-10/120-....HSA	3,250	120	690	3x30	1x16	6x16	10	780 30•
VKS10-10/140-....HSA	3,380	140 <sup>(1)</sup>	690	3x35	1x16	6x16	10	780 31•
VKS10-10/200-....HSA	3,430	200 <sup>(2)</sup>	690	6x25	1x25	3x16	10	780 10•
VKS10-10/240-....HSA	3,740	240 <sup>(2)</sup>	690	6x30	1x30	3x16	10	780 11•
VKS10-10/280-....HSA	4,050	280 <sup>(1)(2)</sup>	690	6x35	1x35	3x16	10	780 02•

Complete types e.g. VKS10-6/60-**2000**HSA for 2 m. Order-No. 780 042  
 The 4-digit number (in bold) in the type indicates the length of the section in mm.  
 • The last number of the order specifies the section length.  
 Please suffix the order number with 1, 2, 3, 4.

(1) At 80% duty cycle  
 (2) 2 conductors per phase  
 (3) Powerail projecting length 34 mm at 20 °C ambient  
 (4) Consult factory in case of circuits incl. N conductors.  
 (5) Not with UL-approval: U<sub>UL</sub>=600 V

## Pole configuration



VKS10-4/ 63-140	VKS10-5/ 63-140	VKS10-6/ 63-140	VKS10-7/ 63-140	VKS10-8/ 63-140	VKS10-9/ 63-140	VKS10-9/ 200-280 <sup>(1)</sup>	VKS10-10/ 63-140	VKS10-10/ 200-280 <sup>(1)</sup>
L1	L1	L1	L1	L1	L1	L1	L1	L1
L2	L2	L2	L2	L2	L2	L2	L2	L2
L3	L3	L3	L3	L3	L3	L3	L3	L3
PE	PE	PE	PE	PE	PE	PE	PE	PE
free	5	5	5	5	5	l1	5	l1
free	free	6	6	6	6	l2	6	l2
free	free	free	7	7	7	l3	7	l3
free	free	free	free	8	8	8	8	8
free	free	free	free	free	9	9	9	9
free	free	free	free	free	free	free	10	10

(1) 2 conductors per phase

## Curved sections

Copper cross section min. 25 mm<sup>2</sup>

Max. length of bend = 5,3 m

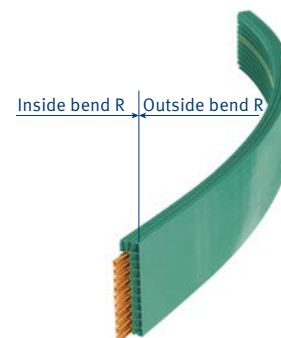
Hanger distance ≈ 0,6 m

Max. angle = 180°

Inside bend = conductors inside

Outside bend = conductors outside (not shown)

Bends are supplied with straight ends, each 250 mm long.



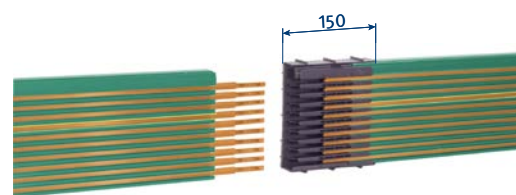
Type	R mm <sup>(1)</sup>	Order-No.
AUFPREIS INNENBOGEN SEITLICH (R>1000)	≥ 1000	780 344
AUFPREIS AUßENBOGEN SEITLICH (R>1500)	≥ 1500	780 345



Plug-in joint  
for 140A



Plug-in joint  
for 63A and 100 - 120A



Type	Weight kg	No. of poles	Order-No.
VM-SV10-4/ 63	0,165	4	781 321
VM-SV10-4/100-120	0,165	4	781 322
VM-SV10-4/140	0,344	4	781 323
VM-SV10-5/ 63	0,385	5	781 315
VM-SV10-5/100-120	0,385	5	781 320
VM-SV10-5/140	0,366	5	781 277
VM-SV10-6/63	0,407	6	781 150
VM-SV10-6/100-120	0,407	6	781 151
VM-SV10-6/140	0,388	6	781 152
VM-SV10-7/63	0,429	7	781 153
VM-SV10-7/100-120	0,429	7	781 154
VM-SV10-7/140	0,410	7	781 155
VM-SV10-8/63	0,451	8	781 156
VM-SV10-8/100-120	0,451	8	781 157
VM-SV10-8/140	0,432	8	781 158
VM-SV10-9/63	0,473	9	781 159
VM-SV10-9/100-120	0,473	9	781 160
VM-SV10-9/140	0,454	9	781 161
VM-SV10-9/200-240 <sup>(3)</sup>	0,473	9	781 162
VM-SV10-9/280 <sup>(3)</sup>	0,423	9	781 163
VM-SV10-10/63	0,495	10	781 164
VM-SV10-10/100-120	0,495	10	781 165
VM-SV10-10/140	0,476	10	781 166
VM-SV10-10/200-240 <sup>(3)</sup>	0,495	10	781 167
VM-SV10-10/280 <sup>(3)</sup>	0,450	10	781 168

(1) Smaller radius on request

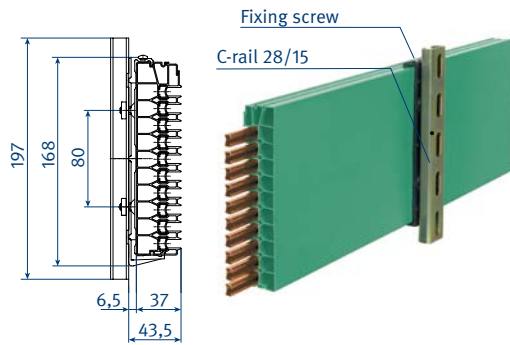
(2) In case of hall expansion joints please consider expansion sections (on request).

(3) Conductor rails connected in parallel



## Fixpoint hanger

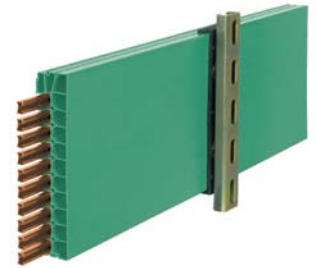
on C-rail consisting of hanger clamp and fixing screw and C-rail



Type	Weight kg	Order-No.
AH-VEPS10-H	0,224	780 007

## Sliding hanger

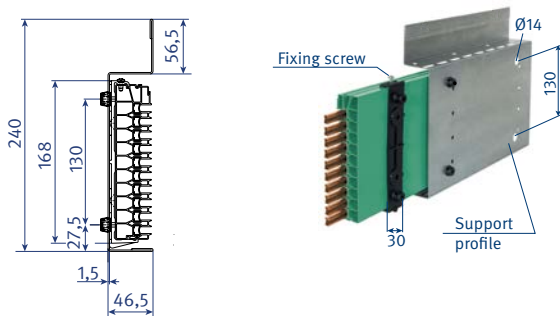
on C-rail consisting of hanger clamp and C-rail



Type	Weight kg	Order-No.
AH-VAS10-H	0,223	780 008

## Fixpoint hanger

for support profile VTP 10 consisting of hanger and fixing screw



Type	Weight kg	Order-No.
AH-VEPS10-VTP	0,033	780 009

## Sliding hanger

for support profile VTP 10 consisting of hanger clamp

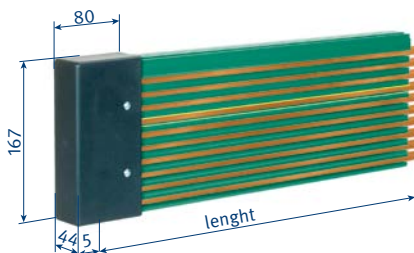


Type	Weight kg	Order-No.
AH-VAS10-VTP	0,032	780 010

## End cap

Can be used right or left handed.

Supplied loose as individual part with fixing screws.

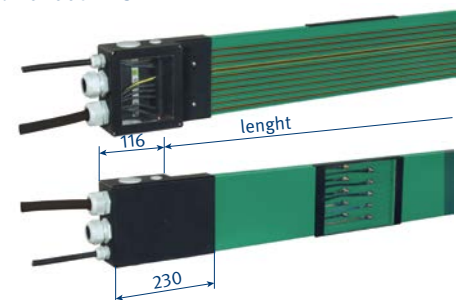


Type	Weight kg	Order-No.
EK-VES10L	0,210	780 004

## End feed <sup>(1)</sup>

Terminal box supplied loose,

only in conjunction with line feed VLS<sup>(2)</sup>



Type	Weight kg	Order-No.
ES-VEKS10-10/60-280	0,664	780 018

(1) Cable glands 2 x ST-M 40 x 1,5 for  $\phi = 19-28$  mm  
1 x ST-M 20 x 1,5 für  $\phi = 7-13$  mm

(2) Please order VLS line feed separately

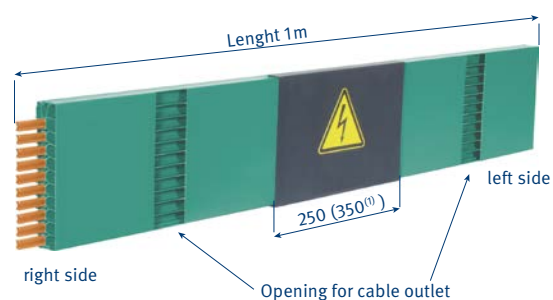
## Line feeds

### Line feed VLS

for direct connection of single core cables

M6 terminal with special cable shoe for single core cables;  
 35 mm<sup>2</sup> (up to cable Ø 8.5 mm) for 140 A,  
 25 mm<sup>2</sup> (up to cable Ø 8.2 mm) for 100 A - 120 A,  
 or feed bolts for 60 A conductor system

1 m section to be ordered separately



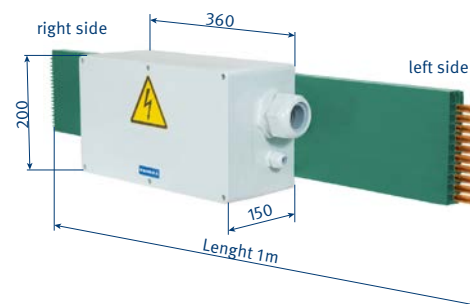
Type	Weight kg	Current A	No. of poles	Order-No.
ES-VLS10-4/63	0,217	63	4	781 445
ES-VLS10-4/100-120	0,382	100-120	4	781 479
ES-VLS10-4/140	0,574	140	4	781 478
ES-VLS10-5/63	0,230	63	5	780 610
ES-VLS10-5/100-120	0,426	100-120	5	780 759
ES-VLS10-5/140	0,630	140	5	780 745
ES-VLS10-6/63	0,217	63	6	780 047
ES-VLS10-6/100-120	0,382	100-120	6	780 060
ES-VLS10-6/140	0,574	140	6	780 187
ES-VLS10-7/63	0,230	63	7	780 049
ES-VLS10-7/100-120	0,426	100-120	7	780 188
ES-VLS10-7/140	0,630	140	7	780 189
ES-VLS10-8/63	0,243	63	8	780 050
ES-VLS10-8/100-120	0,470	100-120	8	780 196
ES-VLS10-8/140	0,686	140	8	780 198
ES-VLS10-9/63	0,256	63	9	780 058
ES-VLS10-9/100-120	0,514	100-120	9	780 199
ES-VLS10-9/140	0,742	140	9	780 191
ES-VLS10-9/200-240 <sup>(1)</sup>	0,744	200-240	9	780 322
ES-VLS10-9/280 <sup>(1)</sup>	0,828	280	9	780 321
ES-VLS10-10/63	0,269	63	10	780 059
ES-VLS10-10/100-120	0,558	100-120	10	780 192
ES-VLS10-10/140	0,798	140	10	780 208
ES-VLS10-10/200-240 <sup>(1)</sup>	0,757	200-240	10	780 318
ES-VLS10-10/280 <sup>(1)</sup>	0,815	280	10	780 317

(1) Larger cap

## Line feed VNS

with terminal box

Cable gland: STR-M 63 x 1,5 für  $\varnothing = 28-45$   
 STR-M 20 x 1,5 für  $\varnothing = 5-13$   
 Connection cable: to be supplied by customer  
 Cable connection: Main current: M10  
 Control current: M5



1 m section to be ordered separately.

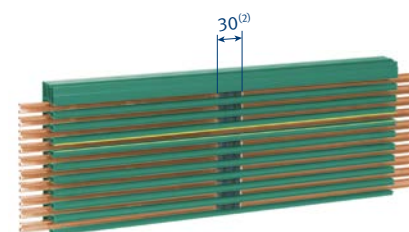
Cable payout left, standard

Type	Weight kg	Current A	No. of poles	Order-No.
ES-VNS10-4/63-140	2,354	63-140	4	780 527
ES-VNS10-5/63-140	2,580	63-140	5	780 537
ES-VNS10-6/63-140	2,766	63-140	6	780 327
ES-VNS10-7/63-140	2,952	63-140	7	780 328
ES-VNS10-8/63-140	3,138	63-140	8	780 329
ES-VNS10-9/63-140	3,324	63-140	9	780 330
ES-VNS10-9/200-280	2,840	200-280	9	780 334
ES-VNS10-10/63-140	3,510	63-140	10	780 331
ES-VNS10-10/200-280	2,865	200-280	10	780 332

## Isolating section<sup>(1)</sup>

Specify the position of the isolating sections and the designation of the conductor profiles, which are to be separated, when ordering.

The sections are factory assembled, loose delivery on request.



Type	Weight kg	Order-No.
ST-VSTS1/10-63M	0,004	156 933
ST-VSTS1/100M	0,004	150 150
ST-VSTS1/120M	0,004	151 674
ST-VSTS1/140M	0,004	156 335

(1) For specification of the conductor profile refer to page 6

(2) Length of the conductor dead section (longer dead sections on request).



## Tangential entry funnel

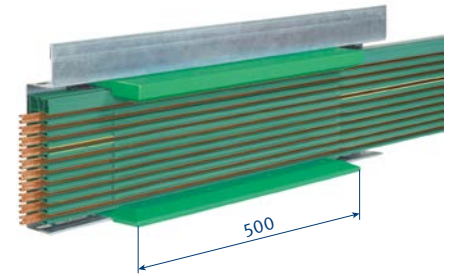
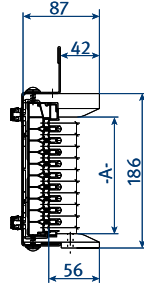
for collector KSTU 30-63

max. entry speed  $v = 100 \text{ m/min.}$

Copper cross section min.  $25 \text{ mm}^2$

Tolerances:  $x = \pm 10 \text{ mm}$

$y = + 8 \text{ mm, } -7 \text{ mm}$



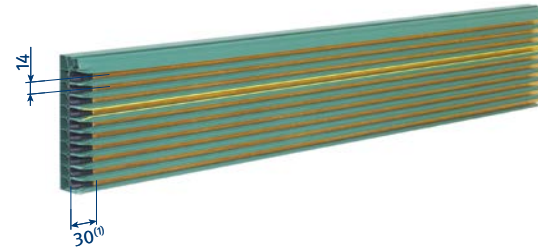
Type	Weight kg	A	No. of Poles	Order-No.
SE-DSEV10-4-KSTU30/63	1,888	56,5	4	781 453
SE-DSEV10-5-KSTU30/63	1,884	70,5	5	781 452
SE-DSEV10-6-KSTU30/63	1,880	84,5	6	780 168
SE-DSEV10-7-KSTU30/63	1,876	98,5	7	780 167
SE-DSEV10-8-KSTU30/63	1,872	112,5	8	780 166
SE-DSEV10-9-KSTU30/63	1,868	126,5	9	780 165
SE-DSEV10-10-KSTU30/63	1,575	140,5	10	780 164

## Transfer guide VU 10

For cross travel and terminal lines

max. height- and lateral off-set:  $\pm 2 \text{ mm}$

max. air gap between the transfer guides:  $5 \text{ mm}$



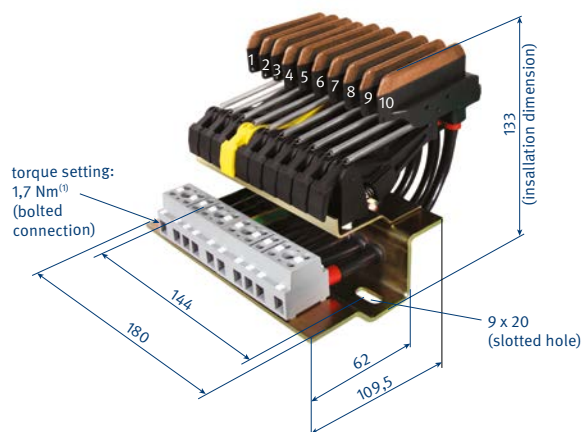
Type	Assignment from top	Order-No.
US-VU10-4L	conductor 1- 4	781 456
US-VU10-4R	conductor 1- 4	781 457
US-VU10-5L	conductor 1- 5	781 458
US-VU10-5R	conductor 1- 5	781 459
US-VU10-6L	conductor 1- 6	780 287
US-VU10-6R	conductor 1- 6	780 288
US-VU10-7L	conductor 1- 7	780 227
US-VU10-7R	conductor 1- 7	780 228
US-VU10-8L	conductor 1- 8	780 229
US-VU10-8R	conductor 1- 8	780 230
US-VU10-9L	conductor 1- 9	780 289
US-VU10-9R	conductor 1- 9	780 290
US-VU10-10L	conductor 1-10	780 269
US-VU10-10R	conductor 1-10	780 270

(1) Length of the conductor dead section (longer dead sections on request)



## Compact current collector KESR 63S

for reverse run with adapter plate and clamping block.  
 Distance between conductors: 14 mm  
 Lift and swivel  $\pm 15$  mm  
 Contact pressure: approx.: 7 N per carbon brush  
 PE (ground) on No. 4, (other combinations possible)  
 The ground collector always moves first when entering the conductor system.



### Left hand version

as shown  
 Ground on No.4

Type	No. of Poles	Configuration	Order-No.
SA-KESR63S-4-14-HS-KBL-04-10-01-04	4	1- 4	781 089
SA-KESR63S-5-14-HS-KBL-04-10-01-05	5	1- 6	781 088
SA-KESR63S-6-14-HS-KBL-04-10-01-06	6	1- 6	781 087
SA-KESR63S-7-14-HS-KBL-04-10-01-07	7	1- 7	781 086
SA-KESR63S-8-14-HS-KBL-04-10-01-08	8	1- 8	781 085
SA-KESR63S-9-14-HS-KBL-04-10-01-09	9	1- 9	781 084
SA-KESR63S-10-14-HS-KBL-04-10-01-10	10	1-10	781 083

### Right hand version

Ground on No. 7

Type	No. of Poles	Configuration	Order-No.
SA-KESR63S-4-14-HS-KBR-07-10-01-06	4	7-10	781 096
SA-KESR63S-5-14-HS-KBR-07-10-06-10	5	6-10	781 095
SA-KESR63S-6-14-HS-KBR-07-10-05-10	6	5-10	781 094
SA-KESR63S-7-14-HS-KBR-07-10-04-10	7	4-10	781 093
SA-KESR63S-8-14-HS-KBR-07-10-03-10	8	3-10	781 092
SA-KESR63S-9-14-HS-KBR-07-10-02-10	9	2-10	781 091
SA-KESR63S-10-14-HS-KBR-07-10-01-10	10	1-10	781 090

### Spare parts

Type	Description	Order-No.
SK-MK63S-31-14	Carbon brush	780 921
SA-KESR32-55S/14PE-31-0	Current collector PE	143 121
SA-KESR32-55S/14PH-31-0	Current collector PH	143 120

(1) Max. cross section of connecting cable 16 mm<sup>2</sup> (UL = 10 mm<sup>2</sup>)

## Compact current collector KESL 32-63

for reverse run

Distance between conductors: 14 mm

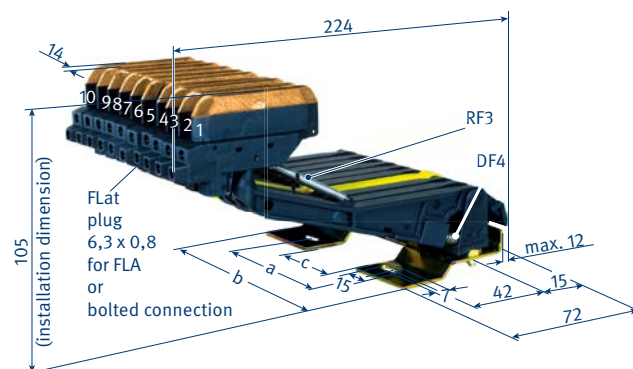
Lift and swivel  $\pm 30$  mm

Contact pressure approx.: 7 N per carbon brush

PE (ground) on No. 4, (other combinations possible)

The ground collector always moves first when entering the conductor system.

max. current	Flat plug	Bolted connection
32 A	FLA 2,5	AEA 2,5
40 A	FLA 4,0	AEA 4,0
55 A	FLA 6,0	AEA 6,0
63 A	-	AEA 10,0



## KESL-F

for connecting cables with flat plug, see page 19

Type	Weight kg	a mm	b mm	c mm	No. of Poles	Baseplate	Order-No.	
SA-KESL32-55F-4-14HS-0-04-04	0,536	28	62	-	4	4-pole	143 152	
SA-KESL32-55F-5-14HS-0-04-06-06	0,612	56	90	-	5	6-pole (no. 6 free)	781 257	
SA-KESL32-55F-6-14HS-0-04-06	0,688	56	90	-	6	6-pole	142 883	
SA-KESL32-55F-7-14HS-0-04-08-08	0,764	80	118	53	7	8-pole (no. 8 free)	142 884	
SA-KESL32-55F-8-14HS-0-04-08	0,840	80	118	53	8	8-pole	142 885	
SA-KESL32-55F-9-14HS-0-04-10-10	0,916	80	146	53	9	10-pole (no. 10 free)	142 886	
SA-KESL32-55F-10-14HS-0-04-10	0,992	80	146	53	10	10-pole	142 887	
Single collector							Phase	PE
SA-KESL32-55F/14...-31-0	0,076						142 881	142 882

## KESL-S

for connecting cables with bolted connection, see page 19

Type	Weight kg	a mm	b mm	c mm	No. of Poles	Baseplate	Order-No.	
SA-KESL32-63S-4-14HS-0-04-04	0,553	28	62	-	4	4-pole	143 539	
SA-KESL32-63S-5-14HS-0-04-06-06	0,637	56	90	-	5	6-pole (no. 6 free)	143 354	
SA-KESL32-63S-6-14HS-0-04-06	0,721	56	90	-	6	6-pole	142 888	
SA-KESL32-63S-7-14HS-0-04-08-08	0,803	80	118	53	7	8-pole (no. 8 free)	142 889	
SA-KESL32-63S-8-14HS-0-04-08	0,885	80	118	53	8	8-pole	142 890	
SA-KESL32-63S-9-14HS-0-04-10-10	0,967	80	146	53	9	10-pole (no. 10 free)	142 891	
SA-KESL32-63S-10-14HS-0-04-10	1,049	80	146	53	10	10-pole	142 892	
Single collector							Phase	PE
SA-KESL32-63S/14...-31-0	0,084						168 395	142 880



## Compact current collector KESL63 S

for reverse run with adapter plate and clamping block.

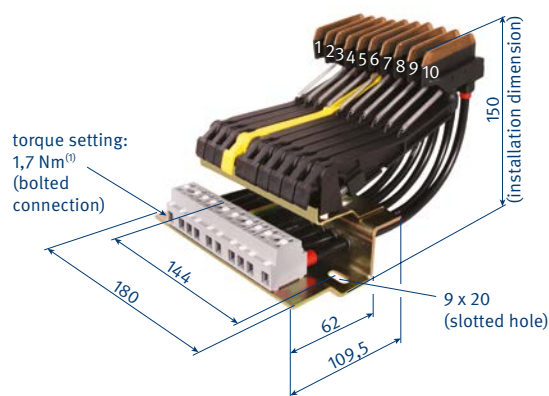
Distance between conductors: 14 mm

Lift and swivel  $\pm 30$  mm

Contact pressure: approx.: 7 N per carbon brush

PE (ground) on No. 4, (other combinations possible)

The ground collector always moves first when entering the conductor system.



### Left hand version

as shown

Ground on No.4

Type	No. of Poles	Configuration	Order-No.
SA-KESL63S-4-14-HS-KBL-04-10-01-04	4	1- 4	781 075
SA-KESL63S-5-14-HS-KBL-04-10-01-05	5	1- 5	781 074
SA-KESL63S-6-14-HS-KBL-04-10-01-06	6	1- 6	781 073
SA-KESL63S-7-14-HS-KBL-04-10-01-07	7	1- 7	781 072
SA-KESL63S-8-14-HS-KBL-04-10-01-08	8	1- 8	781 071
SA-KESL63S-9-14-HS-KBL-04-10-01-09	9	1- 9	781 070
SA-KESL63S-10-14-HS-KBL-04-10-01-10	10	1-10	781 069

### Right hand version

Ground on No. 7

Type	No. of Poles	Configuration	Order-No.
SA-KESL63S-4-14-HS-KBR-07-10-06-10	4	7-10	781 082
SA-KESL63S-5-14-HS-KBR-07-10-05-10	5	6-10	781 081
SA-KESL63S-6-14-HS-KBR-07-10-05-10	6	5-10	781 080
SA-KESL63S-7-14-HS-KBR-07-10-04-10	7	4-10	781 079
SA-KESL63S-8-14-HS-KBR-07-10-03-10	8	3-10	781 078
SA-KESL63S-9-14-HS-KBR-07-10-02-10	9	2-10	781 077
SA-KESL63S-10-14-HS-KBR-07-10-01-10	10	1-10	781 076

### Spare parts

Type	Description	Order-No.
SK-MK63S-31-14	Carbon brush	780 921
SA-KESL32-63S/14PE-31-0	Current collector PE	142 880
SA-KESL32-63S/14PH-31-0	Current collector PH	168 395

(1) Max. cross section of connecting cable 16 mm<sup>2</sup> (UL = 10 mm<sup>2</sup>)

## Single current collector

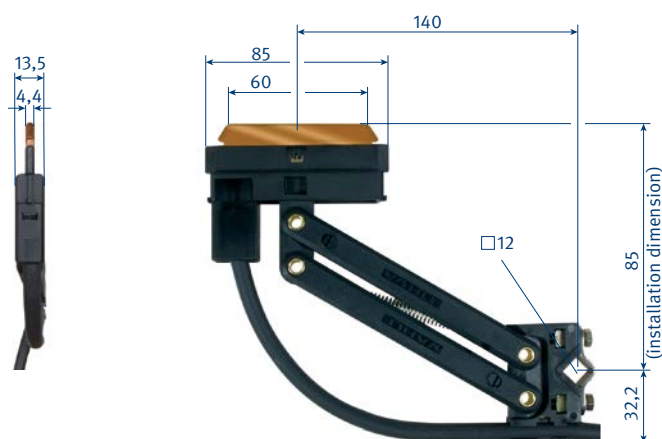
### Current collector KST

for reverse run

incl. 2 connecting cable

Lift and swivel  $\pm 20$  mm

Contact pressure approx: 5 N



Type	Weight kg	Current A	Connection cable		Order-No.	
			A in mm <sup>2</sup>	d max. in mm	Phase black	Ground yellow
SA-KST30PE-04A-2000	0,240	30	2,50	5	-	152 086
SA-KST30PH-04C-2000	0,240	30	2,50	5	152 085	-
SA-KST55PE-04D-2000	0,368	55	6,00	11	-	154 439
SA-KST55PH-04C-2000	0,368	55	6,00	11	154 438	-
SA-KST63PE-2000	0,394	63	10,00	9	-	156 792
SA-KST63PH-2000	0,394	63	10,00	9	156 791	-

### Current collector KSTU

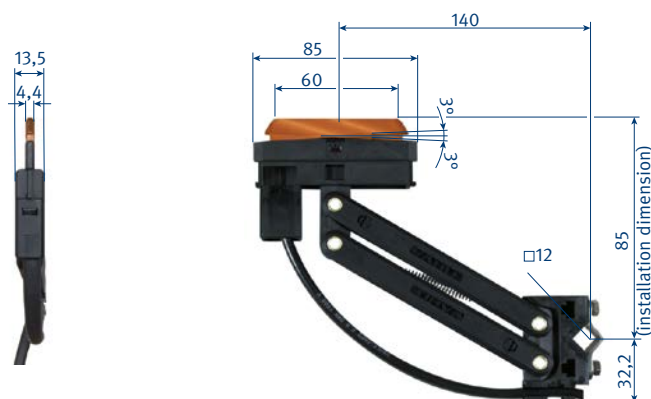
for reverse run

for funnels and tangential entry funnels (multi systems)

incl. 2 connecting cable

Lift and swivel  $\pm 20$  mm (in funnels 10 mm to all sides)

Contact pressure approx: 5 N



Type	Weight kg	Current A	Connection cable		Order-No.	
			A in mm <sup>2</sup>	d max. in mm	Phase black	Ground yellow
SA-KSTU30/14PE-04A-2000	0,240	30	2,50	5	-	168 364
SA-KSTU30/14PH-04A-2000	0,240	30	2,50	5	168 363	-
SA-KSTU55/14PE-04D-2000	0,368	55	6,00	11	-	168 362
SA-KSTU55/14PH-04A-2000	0,368	55	6,00	11	168 361	-
SA-KSTU63/14PE-04D-2000	0,394	63	10,00	9	-	148 019
SA-KSTU63/14PH-04A-2000	0,394	63	10,00	9	148 018	-

## Connecting cables

### Connecting cable FLA

highly flexible, for current collectors with flat plug 'F'

Note allocation to the current collectors

Length: 1 m incl. flat plug 6,3 x 0,8

Longer connecting length available

Temperature range: -15 °C to + 70 °C



Type	Weight kg	A in mm <sup>2</sup>	d max. in ø mm	Order-No.	
				Phase black	Ground yellow
AL-FLA2,5PE1-6,3	0,080	2,50	4,00	-	165 050
AL-FLA2,5PH1-6,3	0,080	2,50	4,00	165 049	-
AL-FLA4PE1-6,3	0,100	4,00	6,00	-	165 052
AL-FLA4PH1-6,3	0,100	4,00	6,00	165 051	-
AL-FLA6PE1-6,3	0,150	6,00	7,00	-	166 369
AL-FLA6PH1-6,3	0,150	6,00	7,00	166 368	-

### Connecting cable AEA

highly flexible, for current collectors with bolted connection 'S'

Length: 1 m

Longer connecting length available

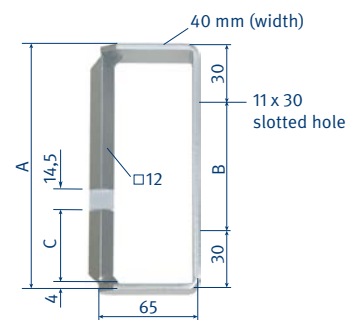
Temperature range: -15 °C to + 70 °C



Type	Weight kg	A mm <sup>2</sup>	d max. ø mm	Order-No.	
				Phase black	Ground yellow
AL-AEA2,5PE-32-3,7-1000-D	0,038	2,50	4,00	-	143 079
AL-AEA2,5PH-32-4-1000-A	0,038	2,50	4,00	143 080	-
AL-AEA4PE-40-4,4-1000-D	0,063	4,00	5,50	-	143 077
AL-AEA4PH-40-5,6-1000-A	0,063	4,00	5,50	143 078	-
AL-AEA6PE-55-5,5-1000-D	0,085	6,00	6,00	-	143 075
AL-AEA6PH-55-5,9-1000-A	0,085	6,00	6,00	143 076	-
AL-AEA10PE-63-8,2-1000-D	0,160	10,00	9,00	-	143 073
AL-AEA10PH-63-8,4-1000-A	0,160	10,00	9,00	143 074	-

## Collector bracket

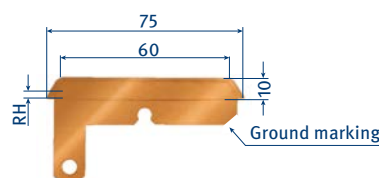
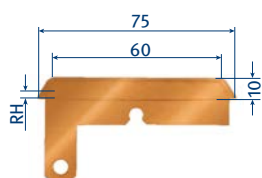
for current collectors KST 30-63 (page 18).



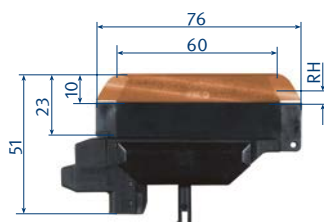
Version "R" shown with ground

Type	Weight kg	A mm	B mm	C mm	Order-No.
MN-UMAA12HS-B-4-14L-80	0,33	80	20	50	781 444
MN-UMAA12HS-B-4-14R-80	0,33	80	20	50	781 443
MN-UMAA12HS-B-5-14L-94	0,36	94	34	50	780 186
MN-UMAA12HS-B-5-14R-94	0,36	94	34	50	780 185
MN-UMAA12HS-B-6-14L-108	0,39	108	48	50	780 184
MN-UMAA12HS-B-6-14R-108	0,39	108	48	50	780 183
MN-UMAA12HS-B-7-14-122	0,42	122	62	50	780 181
MN-UMAA12HS-B-8-14L-136	0,46	136	76	50	780 180
MN-UMAA12HS-B-8-14R-136	0,46	136	76	50	780 179
MN-UMAA12HS-B-9-14L-150	0,49	150	90	50	780 178
MN-UMAA12HS-B-9-14R-150	0,49	150	90	50	780 177
MN-UMAA12HS-B-10-14L-164	0,52	164	104	50	780 176
MN-UMAA12HS-B-10-14R-164	0,52	164	104	50	780 175

## Carbon brushes



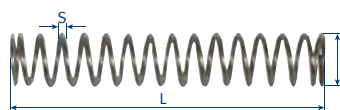
SK-KMK30-55-04-PE



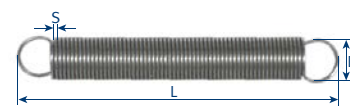
SK-MK55PH/PE

Type	Weight kg	RH mm	for current collector	Carbon brush thickness mm	Order-No.
SK-KMK30-63-04-PH	0,031	4,00	KST 30-KST 63 und KSTU 30-63	4,40	154 440
SK-KMK30-63-04-PE	0,031	4,00	KST 30-KST 63 und KSTU 30-63	4,40	154 453
SK-MK55F-31-14	0,040	3,50	KESR 32-55F und KESL 32-55F	4,20	780 920
SK-MK63S-31-14	0,046	3,50	KESR 32-63S und KESL 32-63S	4,20	780 921

## Springs



Pressure spring DF



Tension spring RF

Type	for current collector	S mm	D mm	L mm	Order-No.
DF2	KESR 32-63	0,90	7,70	43,00	153 848
RF3	KESR 32-53   KESL 32-63	0,40	4,40	31,00	153 849
DF4	KESL 32-63	1,10	6,40	41,00	157 312

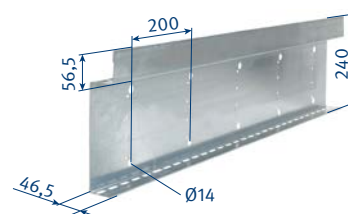
## Spare parts and accessories

### Spare parts VKS10

Type	Description	Order-No.
VK-SV10	connector cap	780 137
VM-STV63-VKS10	plug-in joint (10 – 60 A)	780 807
VM-STV100-120-VKS10	plug-in joint (100 – 120 A)	780 808
VM-STV140-VKS10	plug-in joint (140 A)	780 028
ES-AB-VLS10/200-280	connection bolts, complete for VLS 10/ 60 + 200-280	780 138
ES-AB-VLS10/63-280	connection bolts, complete for VLS 10/100-140	780 130
ES-AB-VNS10/63-280	connection bolts, complete for VNS 10/ 60-280	780 139
KL-DSEV10	plastic glue for tangential funnel DSEV 10	780 280

### Support profile

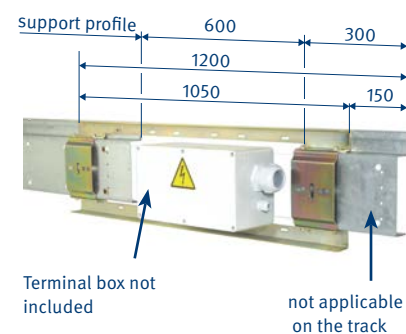
Length: 6 m



Type	Weight kg	Order-No.
VTP10-6000	4,300	781 006

### Attachment support profile VTP 10

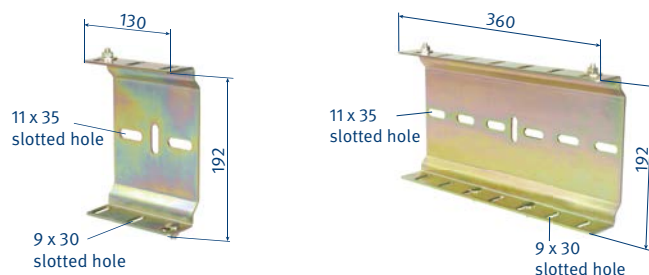
for feed VNS 10, VLS 10



Type	Description	Order-No.
VTPB1050-ESAE	Version for initial / end section	780 100
VTPB1050-ESST	Version on the track	780 098

## Connector and hanger

only as single component otherwise included in the attachment material of the support profile (page 23)



hanger

connector

Type	Weight kg	description	Order-No.
VTPV10	2,398	connector	781 000
VTPA10-130	0,878	hanger	781 007

## Auxiliary support

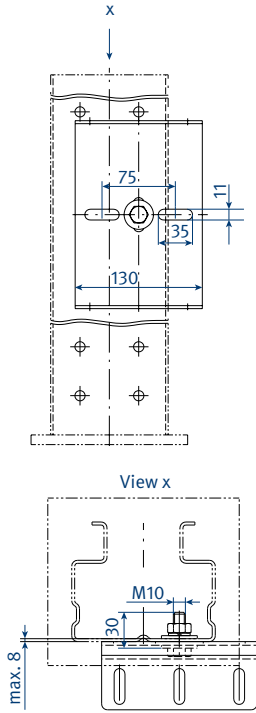
Length: 500 mm  
incl. fixing material



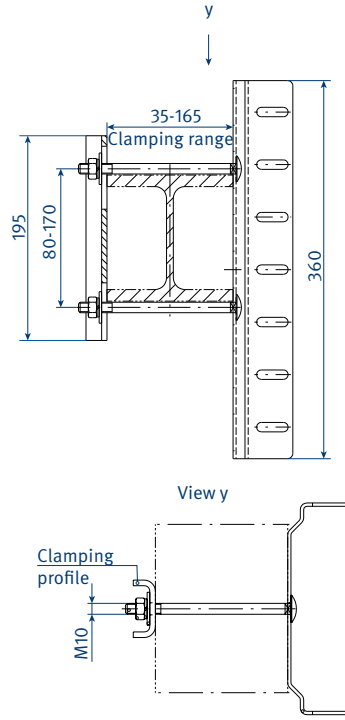
Type	Weight kg	Order-No.
HRL-HSE-500	1,894	781 677

## Support profile attachments

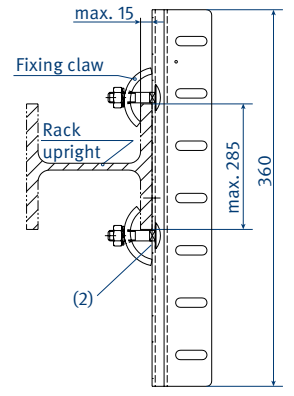
**Fig. 1: VTPB-P**



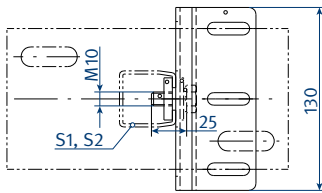
**Fig. 2: VTPB-35-165**



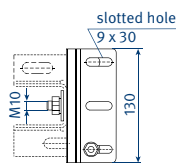
**Fig. 3: VTPB-SPR**



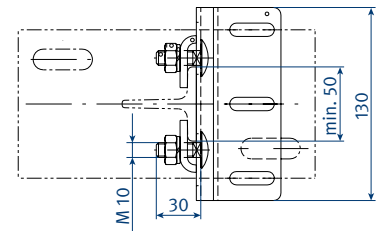
**Fig. 5: VTPB 130-S1/2**



**Fig. 6: VTPB 130-HST**



**Fig. 4: VTPB 130-SPW**



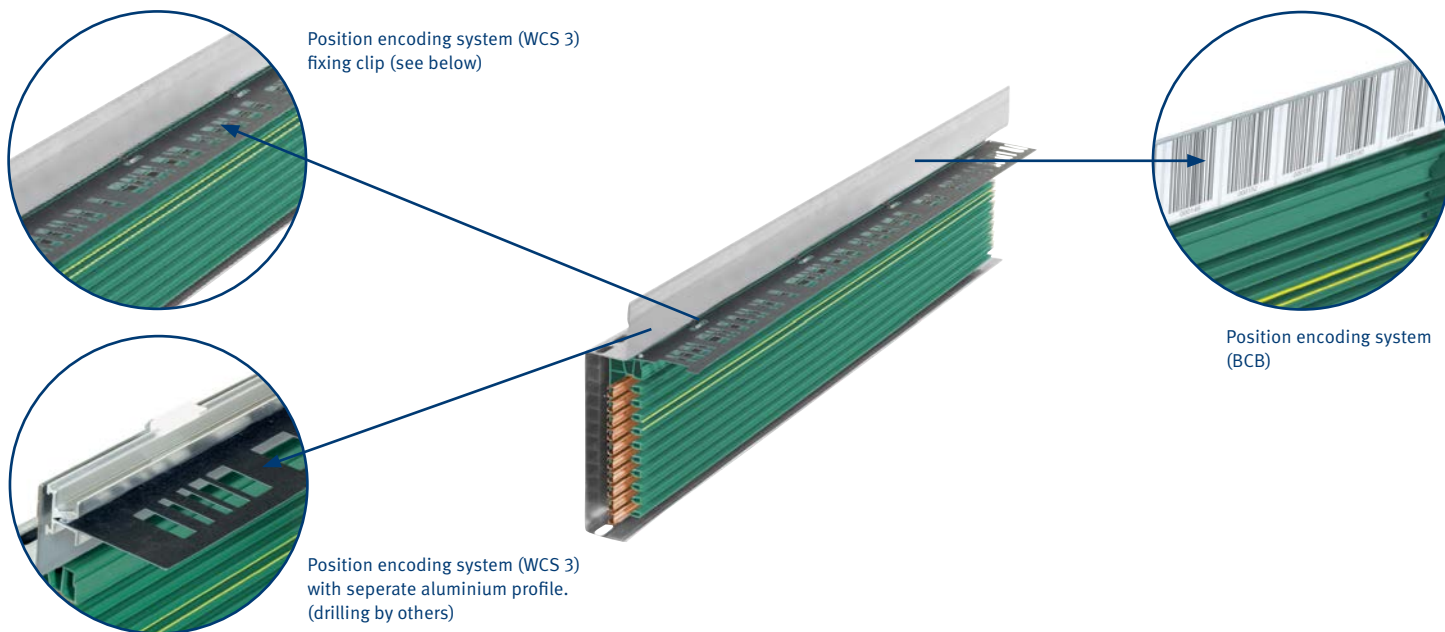
Type <sup>(1)</sup>	Weight kg	Clamping range mm	Fig.	Order-No.
VTPB130-P-30	0,938	max. 8	1	780 147
VTPB360-SPR	2,674	max. 15	3	780 149
VTPB130-SPW	1,066	max. 6	4	780 148
VTPB360-35-45	3,054	35-45	2	780 150
VTPB360-45-55	3,062	45-55	2	780 151
VTPB360-55-65	3,076	55-65	2	780 152
VTPB360-65-75	3,084	65-75	2	780 153
VTPB360-75-85	3,096	75-85	2	780 154
VTPB360-85-95	3,102	85-95	2	780 155
VTPB360-90-105	3,110	90-105	2	780 156
VTPB360-100-115	3,118	100-115	2	780 157
VTPB360-110-125	3,132	110-125	2	780 158
VTPB360-120-135	3,144	120-135	2	780 159
VTPB360-130-145	3,152	130-145	2	780 160
VTPB360-140-155	3,164	140-155	2	780 161
VTPB360-150-165	3,712	150-165	2	780 162
VTPB130-S1/2	0,944	max. 8	5	780 163
VTPB130-HST	0,922	max. 8	6	781 678

(1) Bigger clamping range on request

(2) Locking torque of the round-head screw M 10, MA= 18Nm

## Positioning systems

Cost-efficient installation of different positioning systems



### Earthing of the code rail:

Connect the WCS code rail at least every 30 m to the potential of the system of low resistance.

Type	Weight kg	Order-No.
PS-WCS3-EVTP10	0,026	302 160

### Fixing clip

for laminate band  
Fixing distance 0.2 m



Type	Weight kg	Order-No.
PS-WCS3-BKK	0,002	780 193

### Position

encoding band



WCS<sup>(1)</sup>



1 x per  
conductor section



BCB<sup>(2)</sup>

Type	Weight kg	Description	Order-No.
PS-WCS3-CS70-L2	0,040	Plastic laminate band with special perforation (WCS 3)	302 106
PS-WCS3-FPK	0,001	Screws for fixation	780 140
PS-BCB-50	0,015	Barcode band (BCB)	302 107

(1) Max.travel length 327 m

(2) Max.travel length 10.000 m



## Installation tools

### Joint cap assembly tool

For use with support profile



Type	Weight kg	Order-Nr.
MZ-MGVK	0,350	780 070

### Copper connector mounting lever

For use with support profile



Type	Weight kg	Order-Nr.
MZ-MGVS	1,50	780 090

### Installation comb

set for VKS10

To adjust the air gap at the joint



Type	Weight kg	Order-Nr.
MZ-MK	0,230	781 112



**Notes:**

A large grid of small dots, intended for taking notes. The dots are arranged in a regular pattern across the page.

# Scope of delivery and services

Catalog no.

<b>1 Open conductor systems</b>	
Open conductor systems	1a
<b>2 Insulated conductor systems</b>	
U10	2a
FABA 100	2b
U15, U25, U35	2c
U20, U30, U40	2d
<b>3 Compact conductor systems</b>	
VKS 10	3a
VKS - VKL	3b
VMT	3c
<b>4 Enclosed conductor systems</b>	
KBSL - KSL	4a
KBH	4b
MKH	4c
LSV - LSVG	4d
<b>5 Contactless power supply</b>	
Contactless power supply (CPS®)	5a
<b>6 Data transmission</b>	
VAHLE Powercom®	6a
Slotted Microwave Guide (SMG)	6b
<b>7 Positioning systems</b>	
VAHLE APOS®	7a
VAHLE APOS® Optic	7b
<b>8 Festoon systems and cables</b>	
Festoon systems for □-tracks	8a
Festoon systems for flatform cables on I-tracks	8b
Festoon systems for round cables on I-tracks	8c
Festoon systems for ◇-tracks	8d
Cables	8e
<b>9 Reels</b>	
Spring-operated cable reels	9a
Motor-powered cable reels	9b
<b>10 Other</b>	
Battery charging systems	10a
Heavy enclosed conductor systems	10b
Tender	10c
Contact wire	10d
<b>11 Automotive   Handling</b>	
Control systems	11a
BOK	11b
<b>Assemblies / Commissioning</b>	
<b>Spare parts / Maintenance service</b>	



DQS certified in accordance with DIN EN ISO 9001:2008  
OHSAS 18001 (Reg.No. 003140 QM OH)

