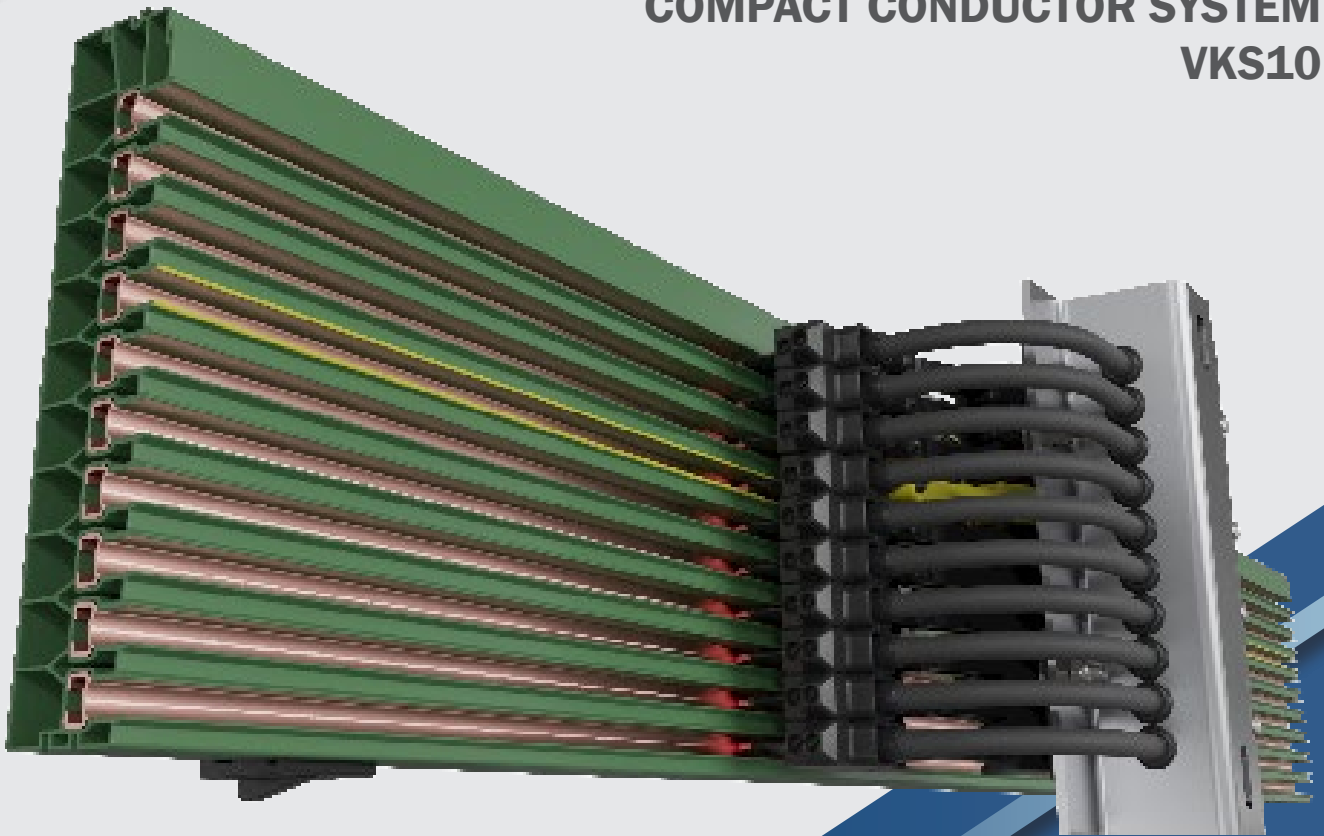




**COMPACT CONDUCTOR SYSTEM
VKS10**



COMPACT CONDUCTOR SYSTEM VKS10

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GENERAL

VAHLE's compact conductor system type VKS10 is 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. Other cross sections than shown on page 7 are possible. 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-circuits in accordance with IEC60364-4-43 (HD 60364-4-43).

For the collectors 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.

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 page 26.

Electrical properties	VKS10
Max. ampacity	140 A ⁽¹⁾
Allowed voltage (UL)	690 V (600 V)
Electrical strength DIN 53481	>25 kV/mm
Special electrical strength IEC 60093	1 x 10 ¹⁴ Ohm x cm
Surface resistance IEC 60093	2.1 x 10 ¹³ Ohm
Creep resistance IEC 60112	CTI > 400
Flammability	Flame resistant, self extinguishing, UL 94 V0

Conductor material	Cross section mm ²	Impedance 50 Hz Ohm/1000 m	Resistance Ohm/1000 m	Max. continuous current A
Copper	16	1.106	1.102	63
	25	0.728	0.723	100
	30	0.602	0.595	120
	35	0.510	0.510	140 ⁽¹⁾

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
UV (Xenon test > 1500)	resistant

Water absorption	%
Max. at 20 °C	0.06

Ambient temperature range	°C
Service temperature	-30 up to +55
Max. temperature differences	50 °C (50 ≤ ΔT) ⁽²⁾
Rail length 6 m	-10 up to +40
Rail length 4 m (deep freeze storage ⁽²⁾)	-30 up to +20

(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

GENERAL VKS10

USE FOR INDOOR APPLICATIONS

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

All sections must be fastened at least twice and the maximum distance between suspension points must not exceed 1.2 m. The hangers are available for the following mounting options:

1. VAHLE support profile (self-locking)
2. C-rail (bolted type)
3. 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

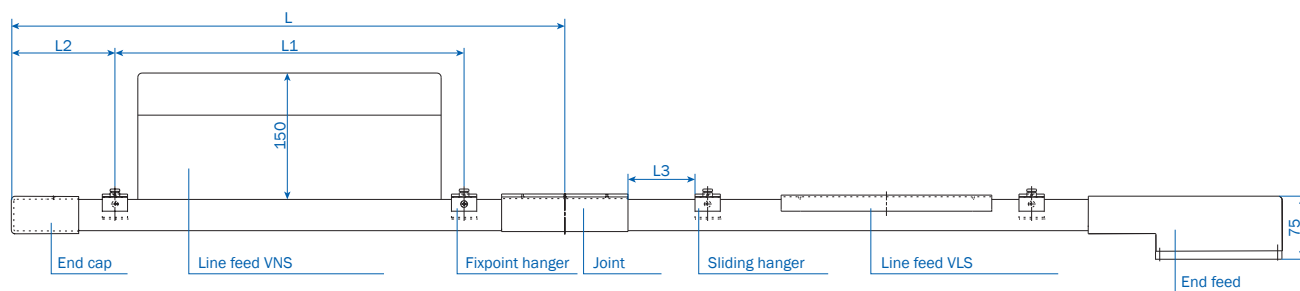
The current collectors are manufactured from impact resistant plastic and stainless steel parts. The current is transmitted by a carbon brush. According to the application, one or more current collectors are required per phase and ground conductor. The current collectors for the ground conductor can 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 above mentioned 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

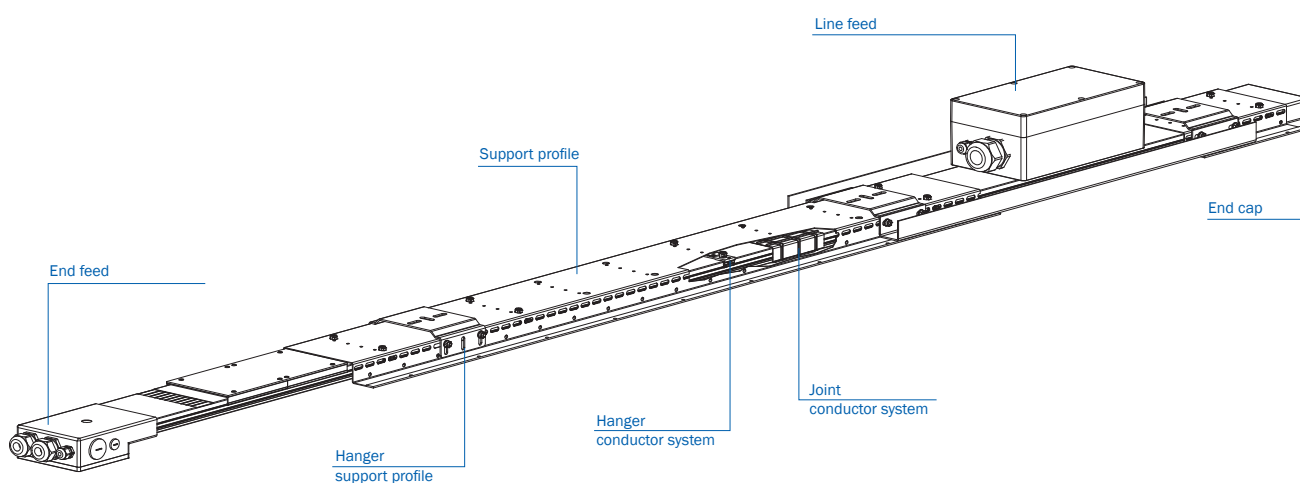
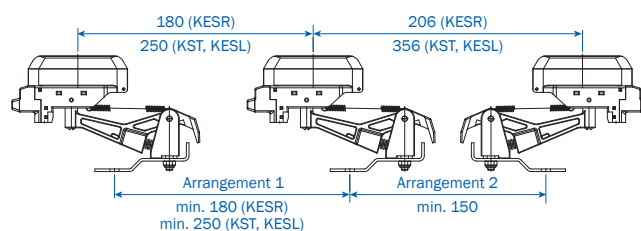


L = Length of conductor section (standard length: 1 m – 6 m, respectively short length)
 L1 = Support distance for straight runs: max. 1.2 m, in curves 0.6 m
 L2 = Overhang (max. 350 mm)
 L3 = Distance to be allowed for conductor system expansion (min. 50 mm)

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



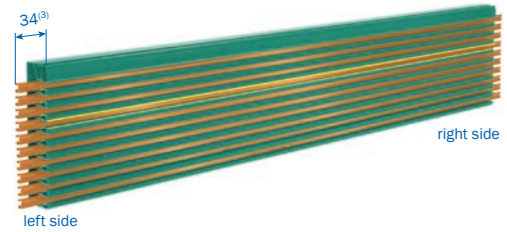
SECTIONS

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 at 35 °C A	Nominal voltage ⁽⁵⁾ V	Conductor cross section			Number of poles	Order No.
				L1-L3	PE	5 - 10 ⁽⁴⁾		
VKS10-4/63-....HSA	2.020	63	690	3x16	1x16	-	4	78099•
VKS10-4/100-....HSA	2.250	100	690	3x25	1x16	-	4	78071•
VKS10-4/120-....HSA	2.359	120	690	3x30	1x16	-	4	78090•
VKS10-4/140-....HSA	2.520	140 ⁽¹⁾	690	3x35	1x16	-	4	78068•
VKS10-5/63-....HSA	2.156	63	690	3x16	1x16	1x16	5	78061•
VKS10-5/100-....HSA	2.384	100	690	3x25	1x16	1x16	5	78070•
VKS10-5/120-....HSA	2.729	120	690	3x30	1x16	1x16	5	78062•
VKS10-5/140-....HSA	2.864	140 ⁽¹⁾	690	3x35	1x16	1x16	5	78128•
VKS10-6/63-....HSA	2.300	63	690	3x16	1x16	2x16	6	78004•
VKS10-6/100-....HSA	2.540	100	690	3x25	1x16	2x16	6	78005•
VKS10-6/120-....HSA	2.640	120	690	3x30	1x16	2x16	6	78006•
VKS10-6/140-....HSA	2.810	140 ⁽¹⁾	690	3x35	1x16	2x16	6	78007•
VKS10-7/63-....HSA	2.450	63	690	3x16	1x16	3x16	7	78003•
VKS10-7/100-....HSA	2.680	100	690	3x25	1x16	3x16	7	78008•
VKS10-7/120-....HSA	2.810	120	690	3x30	1x16	3x16	7	78009•
VKS10-7/140-....HSA	2.950	140 ⁽¹⁾	690	3x35	1x16	3x16	7	78001•
VKS10-8/63-....HSA	2.590	63	690	3x16	1x16	4x16	8	78021•
VKS10-8/100-....HSA	2.830	100	690	3x25	1x16	4x16	8	78022•
VKS10-8/120-....HSA	2.960	120	690	3x30	1x16	4x16	8	78023•
VKS10-8/140-....HSA	3.090	140 ⁽¹⁾	690	3x35	1x16	4x16	8	78024•
VKS10-9/63-....HSA	2.740	63	690	3x16	1x16	5x16	9	78025•
VKS10-9/100-....HSA	2.970	100	690	3x25	1x16	5x16	9	78026•
VKS10-9/120-....HSA	3.110	120	690	3x30	1x16	5x16	9	78027•
VKS10-9/140-....HSA	3.240	140 ⁽¹⁾	690	3x35	1x16	5x16	9	78028•
VKS10-9/200-....HSA	3.280	200 ⁽²⁾	690	6x25	1x25	2x16	9	78014•
VKS10-9/240-....HSA	3.600	240 ⁽²⁾	690	6x30	1x30	2x16	9	78013•
VKS10-9/280-....HSA	3.910	280 ⁽¹⁾⁽²⁾	690	6x35	1x35	2x16	9	78012•
VKS10-10/63-....HSA	2.880	63	690	3x16	1x16	6x16	10	78029•
VKS10-10/100-....HSA	3.110	100	690	3x25	1x16	6x16	10	78020•
VKS10-10/120-....HSA	3.250	120	690	3x30	1x16	6x16	10	78030•
VKS10-10/140-....HSA	3.380	140 ⁽¹⁾	690	3x35	1x16	6x16	10	78031•
VKS10-10/200-....HSA	3.430	200 ⁽²⁾	690	6x25	1x25	3x16	10	78010•
VKS10-10/240-....HSA	3.740	240 ⁽²⁾	690	6x30	1x30	3x16	10	78011•
VKS10-10/280-....HSA	4.050	280 ⁽¹⁾⁽²⁾	690	6x35	1x35	3x16	10	78002•

(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: $U_{UL} = 600$ V

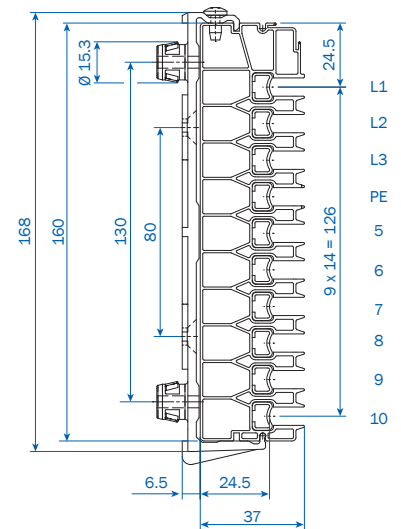
Complete types e.g. VKS10-6/60-2000HSA for 2 m. Order No. 780042

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.

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 ⁽¹⁾	VKS10-10/ 63-140	VKS10-10/ 200-280 ⁽¹⁾
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 mm²

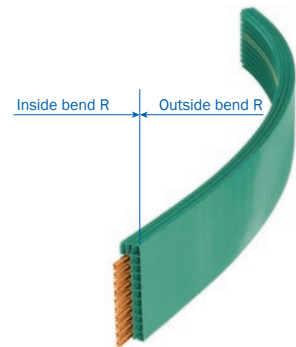
Max. length of bend = 5.3 m

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 ⁽¹⁾	Order No.
Surcharge inside bend lateral (R > 1000)	≥1000	780344
Surcharge outside bend lateral (R > 1500)	≥1500	780345

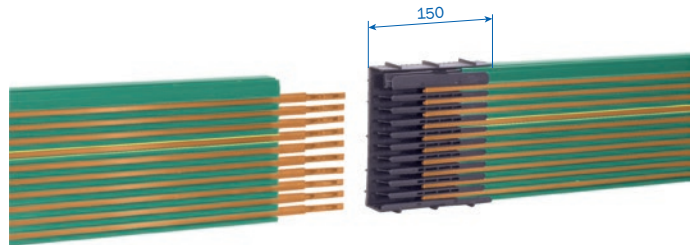
CONNECTING MATERIAL⁽²⁾



Plug-in joint
for 63–100A/120–140 A



Connector cap (plastic)



Type	Weight kg	Number of poles	Order No.
VM-SV10-4/63-100	0.385	4	781321
VM-SV10-4/120-140	0.385	4	781323
VM-SV10-5/63-100	0.400	5	781315
VM-SV10-5/120-140	0.400	5	781277
VM-SV10-6/63-100	0.415	6	781150
VM-SV10-6/120-140	0.415	6	781152
VM-SV10-7/63-100	0.430	7	781153
VM-SV10-7/120-140	0.430	7	781155
VM-SV10-8/63-100	0.445	8	781156
VM-SV10-8/120-140	0.445	8	781158
VM-SV10-9/63-100	0.460	9	781159
VM-SV10-9/120-140	0.460	9	781161
VM-SV10-9/200 ⁽³⁾	0.460	9	781162
VM-SV10-9/240-280 ⁽³⁾	0.460	9	781163
VM-SV10-10/63-100	0.475	10	781164
VM-SV10-10/120-140	0.475	10	781166
VM-SV10-10/200 ⁽³⁾	0.475	10	781167
VM-SV10-10/240-280 ⁽³⁾	0.475	10	781168

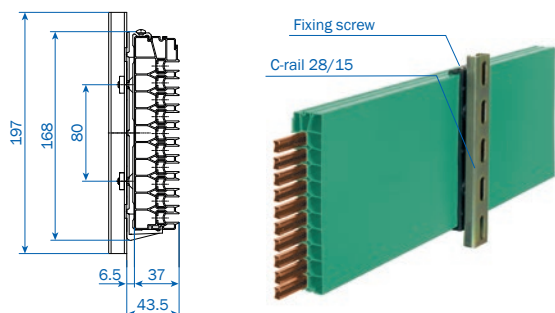
(1) Smaller radius on request

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

(3) Conductor rails connected in parallel

FIXPOINT HANGER

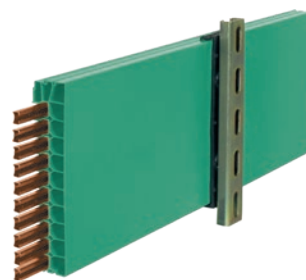
on C-rail consisting of hanger clamp and fixing screw and C-rail



Type	Weight kg	Order No.
AH-VEPS10-H	0.224	780007

SLIDING HANGER

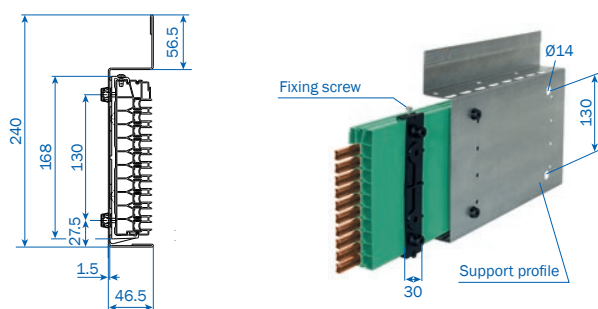
on C-rail consisting of hanger clamp and C-rail



Type	Weight kg	Order No.
AH-VAS10-H	0.223	780008

FIXPOINT HANGER

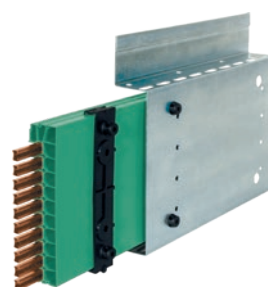
for support profile VTP 10 consisting of hanger and fixing screw



Type	Weight kg	Order No.
AH-VEPS10-VTP	0.033	780009

SLIDING HANGER

for support profile VTP 10 consisting of hanger clamp

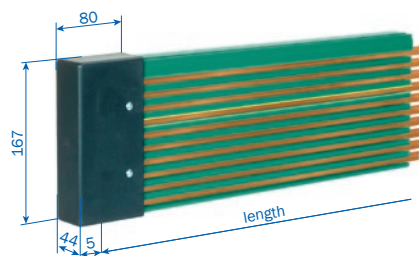


Type	Weight kg	Order No.
AH-VAS10-VTP	0.032	780010

END CAP

Can be used right or left handed.

Supplied loose as individual part with fixing screws.

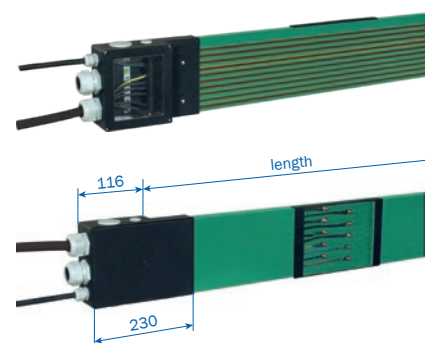


Type	Weight kg	Order No.
EK-VES10L	0.210	780004

END FEED⁽¹⁾

Terminal box supplied loose,

only in conjunction with line feed VLS⁽²⁾



Type	Weight kg	Order No.
ES-VEKS10-10/63-280	0.664	780018

(1) Cable glands 2x ST-M 40x1.5 for $\varnothing = 19 - 28$ mm
1x ST-M 20x1.5 for $\varnothing = 7 - 13$ mm

(2) Please order VLS line feed separately.

LINE FEEDS

LINE FEED VLS

for direct connection of single core cables

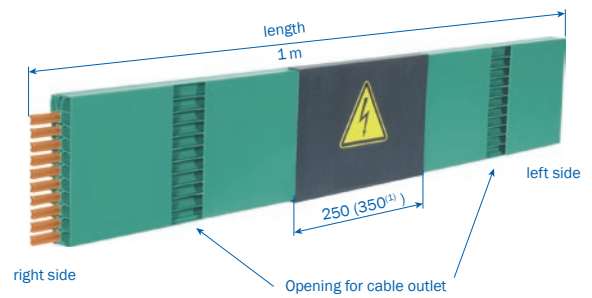
M6 terminal with special cable shoe for single core cables;

35 mm² (up to cable Ø 8.5 mm) for 140 A,

25 mm² (up to cable Ø 8.2 mm) for 100 – 120 A

or feed bolts for 60 A conductor system

1 m section to be ordered separately



Type	Weight kg	Current A	Number of poles	Order No.
ES-VLS10-4/63	0.217	63	4	781445
ES-VLS10-4/100-120	0.382	100 – 120	4	781479
ES-VLS10-4/140	0.574	140	4	781478
ES-VLS10-5/63	0.230	63	5	780610
ES-VLS10-5/100-120	0.426	100 – 120	5	780759
ES-VLS10-5/140	0.630	140	5	780745
ES-VLS10-6/63	0.217	63	6	780047
ES-VLS10-6/100-120	0.382	100 – 120	6	780060
ES-VLS10-6/140	0.574	140	6	780187
ES-VLS10-7/63	0.230	63	7	780049
ES-VLS10-7/100-120	0.426	100 – 120	7	780188
ES-VLS10-7/140	0.630	140	7	780189
ES-VLS10-8/63	0.243	63	8	780050
ES-VLS10-8/100-120	0.470	100 – 120	8	780196
ES-VLS10-8/140	0.686	140	8	780198
ES-VLS10-9/63	0.256	63	9	780058
ES-VLS10-9/100-120	0.514	100 – 120	9	780199
ES-VLS10-9/140	0.742	140	9	780191
ES-VLS10-9/200-240 ⁽¹⁾	0.744	200 – 240	9	780322
ES-VLS10-9/280 ⁽¹⁾	0.828	280	9	780321
ES-VLS10-10/63	0.269	63	10	780059
ES-VLS10-10/100-120	0.558	100 – 120	10	780192
ES-VLS10-10/140	0.798	140	10	780208
ES-VLS10-10/200-240 ⁽¹⁾	0.757	200 – 240	10	780318
ES-VLS10-10/280 ⁽¹⁾	0.815	280	10	780317

(1) Larger cap

LINE FEEDS

LINE FEED VNS

Shown with terminal box

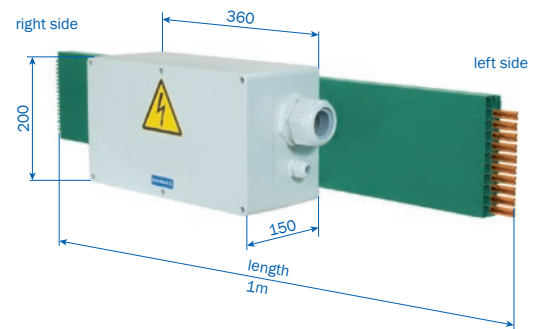
Cable gland: STR-M 63x1.5 for $\varnothing = 28 - 45$

STR-M 20x1.5 for $\varnothing = 5 - 13$

Connecting cable: to be supplied by customer

Cable connection: Main current: M10

Control current: M5



1 m section to be ordered separately.

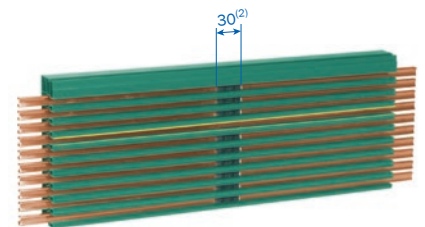
Cable payout left, standard

Type	Weight kg	Current A	Number of poles	Order No.
ES-VNS10-4/63-140	2.354	63 - 140	4	780527
ES-VNS10-5/63-140	2.580	63 - 140	5	780537
ES-VNS10-6/63-140	2.766	63 - 140	6	780327
ES-VNS10-7/63-140	2.952	63 - 140	7	780328
ES-VNS10-8/63-140	3.138	63 - 140	8	780329
ES-VNS10-9/63-140	3.324	63 - 140	9	780330
ES-VNS10-9/200-280	2.840	200 - 280	9	780334
ES-VNS10-10/63-140	3.510	63 - 140	10	780331
ES-VNS10-10/200-280	2.865	200 - 280	10	780332

ISOLATING SECTION⁽¹⁾

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	156933
ST-VSTS1/100M	0.004	150150
ST-VSTS1/120M	0.004	151674
ST-VSTS1/140M	0.004	156335

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

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

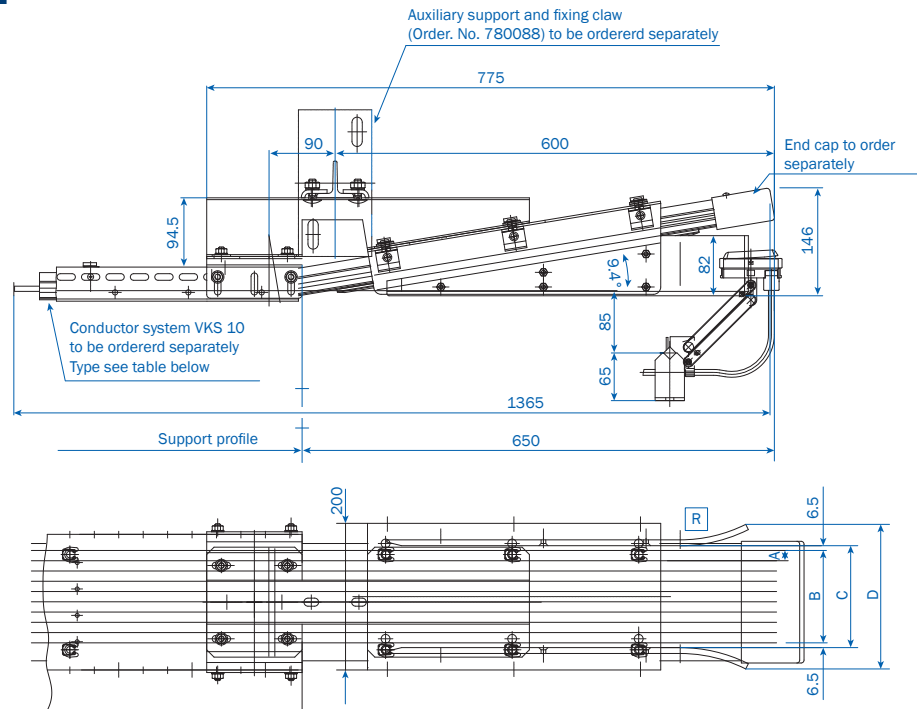
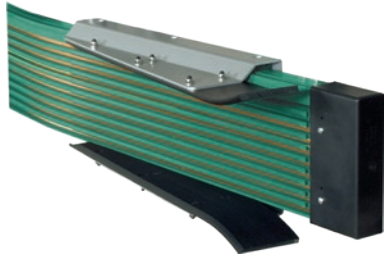
TRANSFER FUNNEL⁽¹⁾

for current collector KSTU 30-63-14

Max. speed $v = 100$ m/min.

Tolerances: $x = \pm 10$ mm

$y = \pm 10$ mm



Type	Weight kg	A mm	B mm	C mm	D mm	Number of poles	Order No.
ET-EFTV10-4-KSTU30/63-14L	7.594	14	42	55	109	4	781441
ET-EFTV10-4-KSTU30/63-14R	7.594	14	42	55	109	4	781440
ET-EFTV10-5-KSTU30/63-14L	7.584	14	56	69	123	5	780746
ET-EFTV10-5-KSTU30/63-14R	7.584	14	56	69	123	5	780747
ET-EFTV10-6-KSTU30/63-14L	7.574	14	70	83	137	6	780350
ET-EFTV10-6-KSTU30/63-14R	7.574	14	70	83	137	6	780173
ET-EFTV10-7-KSTU30/63-14L	7.564	14	84	97	151	7	780349
ET-EFTV10-7-KSTU30/63-14R	7.564	14	84	97	151	7	780172
ET-EFTV10-8-KSTU30/63-14L	7.554	14	98	111	165	8	780348
ET-EFTV10-8-KSTU30/63-14R	7.554	14	98	111	165	8	780171
ET-EFTV10-9-KSTU30/63-14L	7.554	14	112	125	179	9	780347
ET-EFTV10-9-KSTU30/63-14R	7.544	14	112	125	179	9	780170
ET-EFTV10-7-KSTU30/63-14L	7.534	14	126	139	193	10	780346
ET-EFTV10-10-KSTU30/63-14R	7.534	14	126	139	193	10	780169

CONDUCTOR SECTION FOR FUNNEL

(all cross sections 25 mm², length 1365 mm)

Type	Order No.
VKS10-4/100-1365HS02AT	781442
VKS10-5/100-1365HS02AT	780743
VKS10-6/100-1365HS02AT	780247
VKS10-7/100-1365HS02AT	780248
VKS10-8/100-1365HS02AT	780249
VKS10-9/100-1365HS02AT	780250
VKS10-10/100-1365HS02AT	780257

(1) Transfer funnel only in combination with conductor section.

TANGENTIAL ENTRY FUNNEL

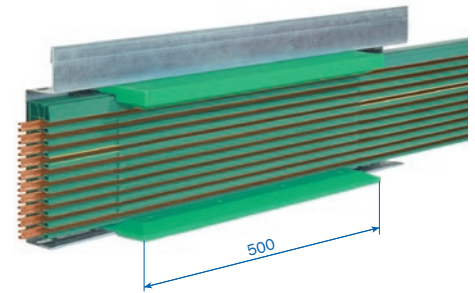
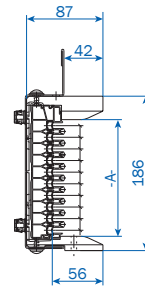
for collector KSTU 30-63

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

Copper cross section min. 25 mm^2

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

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



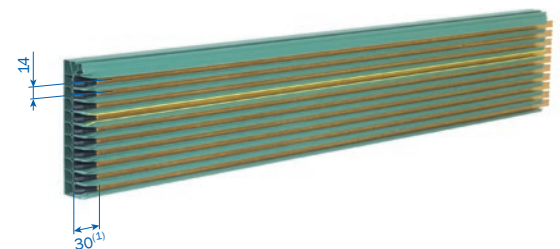
Type	Weight kg	Dim A	Number of poles	Order No.
SE-DSEV10-4-KSTU30/63	1.888	56.5	4	781453
SE-DSEV10-5-KSTU30/63	1.884	70.5	5	781452
SE-DSEV10-6-KSTU30/63	1.880	84.5	6	780168
SE-DSEV10-7-KSTU30/63	1.876	98.5	7	780167
SE-DSEV10-8-KSTU30/63	1.872	112.5	8	780166
SE-DSEV10-9-KSTU30/63	1.868	126.5	9	780165
SE-DSEV10-10-KSTU30/63	1.575	140.5	10	780164

TRANSFER GUIDE VU 10

for cross travel

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

Max. air gap between the transfer guides: 5 mm



Type	Assignment from top	Order No.
US-VU10-4L	conductor 1 – 4	781456
US-VU10-4R	conductor 1 – 4	781457
US-VU10-5L	conductor 1 – 5	781458
US-VU10-5R	conductor 1 – 5	781459
US-VU10-6L	conductor 1 – 6	780287
US-VU10-6R	conductor 1 – 6	780288
US-VU10-7L	conductor 1 – 7	780227
US-VU10-7R	conductor 1 – 7	780228
US-VU10-8L	conductor 1 – 8	780229
US-VU10-8R	conductor 1 – 8	780230
US-VU10-9L	conductor 1 – 9	780289
US-VU10-9R	conductor 1 – 9	780290
US-VU10-10L	conductor 1 – 10	780269
US-VU10-10R	conductor 1 – 10	780270

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

COMPACT CURRENT COLLECTORS

COMPACT CURRENT COLLECTOR KESR 32-55

for reverse run

Distance between conductors: 14 mm

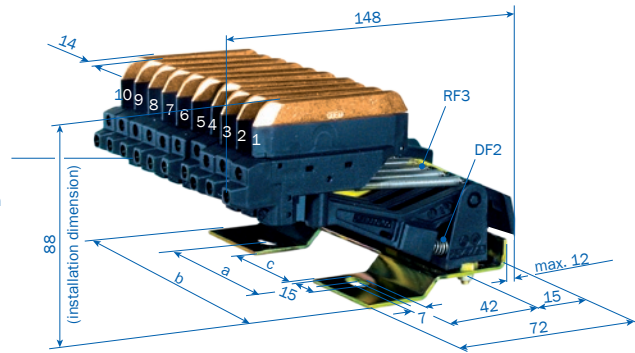
Lift and swivel: ± 15 mm

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.

Flat plug
6.3 x 0.8
for FLA or
bolted
connection



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

KESR-F

for connecting cables with flat plug, see page 19

Type	Weight kg	a mm	b mm	c mm	Number of poles	Base plate	Order No.	
SA-KESR32-55F-4-14HS-0-04-04	0.480	28	62	-	4	4-pole	143170	
SA-KESR32-55F-5-14HS-0-04-06-06	0.540	56	90	-	5	6-pole (no. 6 free)	143373	
SA-KESR32-55F-6-14HS-0-04-06	0.600	56	90	-	6	6-pole	143113	
SA-KESR32-55F-7-14HS-0-04-08-08	0.660	80	118	53	7	8-pole (no. 8 free)	143114	
SA-KESR32-55F-8-14HS-0-04-08	0.720	80	118	53	8	8-pole	143115	
SA-KESR32-55F-9-14HS-0-04-10-10	0.780	80	146	53	9	10-pole (no. 10 free)	143116	
SA-KESR32-55F-10-14HS-0-04-10	0.840	80	146	53	10	10-pole	143117	
Single collector							Phase	PE (ground)
SA-KESR32-55F/14...-31-0	0.060						143111	143112

KESR-S

for connecting cables with bolted connection, see page 19

Type	Weight kg	a mm	b mm	c mm	Number of poles	Base plate	Order No.	
SA-KESR32-55S-4-14HS-0-04-04	0.504	28	62	-	4	4-pole	142937	
SA-KESR32-55S-5-14HS-0-04-06-06	0.570	56	90	-	5	6-pole (no. 6 free)	142938	
SA-KESR32-55S-6-14HS-0-04-06	0.636	56	90	-	6	6-pole	142939	
SA-KESR32-55S-7-14HS-0-04-08-08	0.702	80	118	53	7	8-pole (no. 8 free)	142940	
SA-KESR32-55S-8-14HS-0-04-08	0.768	80	118	53	8	8-pole	142941	
SA-KESR32-55S-9-14HS-0-04-10-10	0.834	80	146	53	9	10-pole (no. 10 free)	142942	
SA-KESR32-55S-10-14HS-0-04-10	0.890	80	146	53	10	10-pole	142943	
Single collector							Phase	PE (ground)
SA-KESR32-55S/14...-31-0	0.066						143120	143121

COMPACT CURRENT COLLECTORS

COMPACT CURRENT COLLECTOR KESR 63S

for reverse run with adapter plate and clamping block

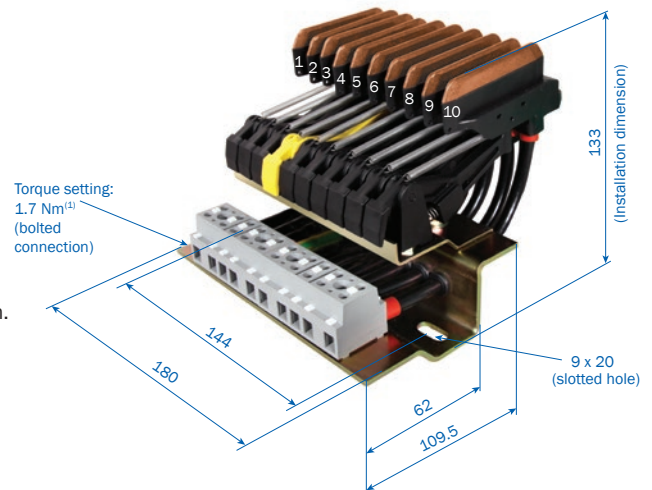
Distance between conductors: 14 mm

Lift and swivel: ± 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	Number of poles	Configuration	Order No.
SA-KESR63S-4-14-HS-KBL-04-10-01-04	4	1 - 4	781089
SA-KESR63S-5-14-HS-KBL-04-10-01-05	5	1 - 5	781088
SA-KESR63S-6-14-HS-KBL-04-10-01-06	6	1 - 6	781087
SA-KESR63S-7-14-HS-KBL-04-10-01-07	7	1 - 7	781086
SA-KESR63S-8-14-HS-KBL-04-10-01-08	8	1 - 8	781085
SA-KESR63S-9-14-HS-KBL-04-10-01-09	9	1 - 9	781084
SA-KESR63S-10-14-HS-KBL-04-10-01-10	10	1 - 10	781083

RIGHT HAND VERSION

Ground on No. 7

Type	Number of poles	Configuration	Order No.
SA-KESR63S-4-14-HS-KBR-07-10-01-06	4	7 - 10	781096
SA-KESR63S-5-14-HS-KBR-07-10-06-10	5	6 - 10	781095
SA-KESR63S-6-14-HS-KBR-07-10-05-10	6	5 - 10	781094
SA-KESR63S-7-14-HS-KBR-07-10-04-10	7	4 - 10	781093
SA-KESR63S-8-14-HS-KBR-07-10-03-10	8	3 - 10	781092
SA-KESR63S-9-14-HS-KBR-07-10-02-10	9	2 - 10	781091
SA-KESR63S-10-14-HS-KBR-07-10-01-10	10	1 - 10	781090

SPARE PARTS

Type	Description	Order No.
SK-MK63S-31-14	Carbon brush	780921
SA-KESR32-55S/14PE-31-0	Current collector PE	143121
SA-KESR32-55S/14PH-31-0	Current collector PH	143120

(1) Max. cross section of connecting cable 16 mm² (UL = 10 mm²)

COMPACT CURRENT COLLECTORS

COMPACT CURRENT COLLECTOR KESL 32-63

for reverse run

Distance between conductors: 14 mm

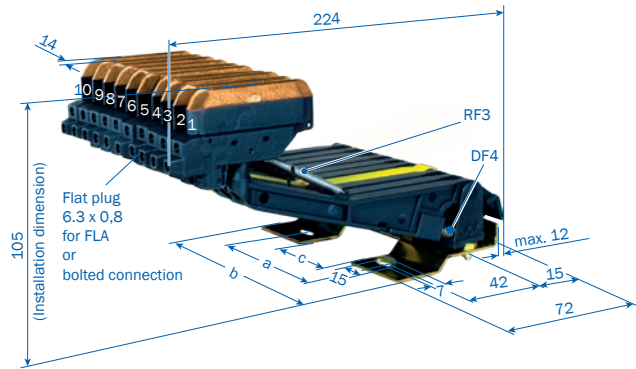
Lift and swivel: ± 30 mm

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	Number of poles	Base plate	Order No.	
SA-KESL32-55F-4-14HS-0-04-04	0.536	28	62	-	4	4-pole	143152	
SA-KESL32-55F-5-14HS-0-04-06-06	0.612	56	90	-	5	6-pole (no. 6 free)	781257	
SA-KESL32-55F-6-14HS-0-04-06	0.688	56	90	-	6	6-pole	142883	
SA-KESL32-55F-7-14HS-0-04-08-08	0.764	80	118	53	7	8-pole (no. 8 free)	142884	
SA-KESL32-55F-8-14HS-0-04-08	0.840	80	118	53	8	8-pole	142885	
SA-KESL32-55F-9-14HS-0-04-10-10	0.916	80	146	53	9	10-pole (no. 10 free)	142886	
SA-KESL32-55F-10-14HS-0-04-10	0.992	80	146	53	10	10-pole	142887	
Single collector							Phase	PE
SA-KESL32-55F/14...-31-0	0.076						142881	142882

KESL-S

for connecting cables with bolted connection, see page 19.

Type	Weight kg	a mm	b mm	c mm	Number of poles	Base plate	Order No.	
SA-KESL32-63S-4-14HS-0-04-04	0.553	28	62	-	4	4-pole	143539	
SA-KESL32-63S-5-14HS-0-04-06-06	0.637	56	90	-	5	6-pole (no. 6 free)	143354	
SA-KESL32-63S-6-14HS-0-04-06	0.721	56	90	-	6	6-pole	142888	
SA-KESL32-63S-7-14HS-0-04-08-08	0.803	80	118	53	7	8-pole (no. 8 free)	142889	
SA-KESL32-63S-8-14HS-0-04-08	0.885	80	118	53	8	8-pole	142890	
SA-KESL32-63S-9-14HS-0-04-10-10	0.967	80	146	53	9	10-pole (no. 10 free)	142891	
SA-KESL32-63S-10-14HS-0-04-10	1.049	80	146	53	10	10-pole	142892	
Single collector							Phase	PE
SA-KESL32-63S/14...-31-0	0.084						168395	142880

COMPACT CURRENT COLLECTORS

COMPACT CURRENT COLLECTOR KESL63S

for reverse run with adapter plate and clamping block

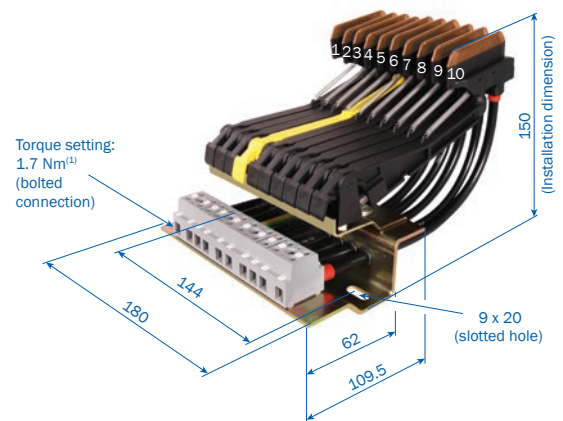
Distance between conductors: 14 mm

Lift and swivel: ± 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	Number of poles	Configuration	Order No.
SA-KESL63S-4-14-HS-KBL-04-10-01-04	4	1 - 4	781075
SA-KESL63S-5-14-HS-KBL-04-10-01-05	5	1 - 5	781074
SA-KESL63S-6-14-HS-KBL-04-10-01-06	6	1 - 6	781073
SA-KESL63S-7-14-HS-KBL-04-10-01-07	7	1 - 7	781072
SA-KESL63S-8-14-HS-KBL-04-10-01-08	8	1 - 8	781071
SA-KESL63S-9-14-HS-KBL-04-10-01-09	9	1 - 9	781070
SA-KESL63S-10-14-HS-KBL-04-10-01-10	10	1 - 10	781069

RIGHT HAND VERSION

Ground on No. 7

Type	Number of poles	Configuration	Order No.
SA-KESL63S-4-14-HS-KBR-07-10-06-10	4	7 - 10	781082
SA-KESL63S-5-14-HS-KBR-07-10-05-10	5	6 - 10	781081
SA-KESL63S-6-14-HS-KBR-07-10-05-10	6	5 - 10	781080
SA-KESL63S-7-14-HS-KBR-07-10-04-10	7	4 - 10	781079
SA-KESL63S-8-14-HS-KBR-07-10-03-10	8	3 - 10	781078
SA-KESL63S-9-14-HS-KBR-07-10-02-10	9	2 - 10	781077
SA-KESL63S-10-14-HS-KBR-07-10-01-10	10	1 - 10	781076

SPARE PARTS

Type	Description	Order No.
SK-MK63S-31-14	Carbon brush	780921
SA-KESL32-63S/14PE-31-0	Current collector PE	142880
SA-KESL32-63S/14PH-31-0	Current collector PH	168395

(1) Max. cross section of connecting cable 16 mm² (UL = 10 mm²)

SINGLE CURRENT COLLECTOR

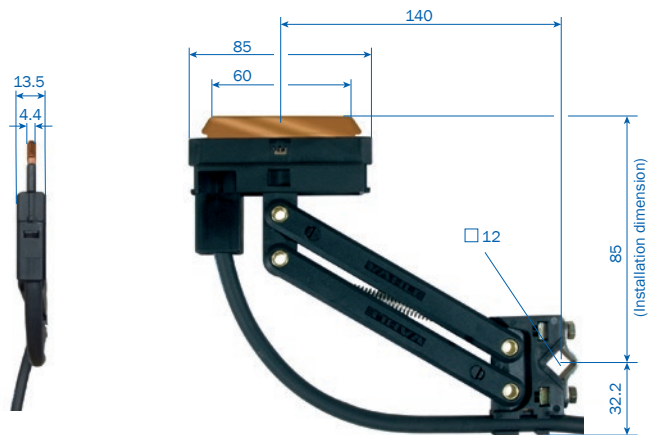
CURRENT COLLECTOR KST

for reverse run

incl. 2 connecting cable

Lift and swivel: ± 20 mm

Contact pressure: approx. 5 N



Type	Weight kg	Current A	Connection cable		Order No.	
			A in mm ²	d max. in mm	Phase black	Ground yellow
SA-KST30PE-04A-2000	0.240	30	2.50	5	-	152086
SA-KST30PH-04C-2000	0.240	30	2.50	5	152085	-
SA-KST55PE-04D-2000	0.368	55	6.00	11	-	154439
SA-KST55PH-04C-2000	0.368	55	6.00	11	154438	-
SA-KST63PE-2000	0.394	63	10.00	9	-	156792
SA-KST63PH-2000	0.394	63	10.00	9	156791	-

CURRENT COLLECTOR KSTU

for reverse run

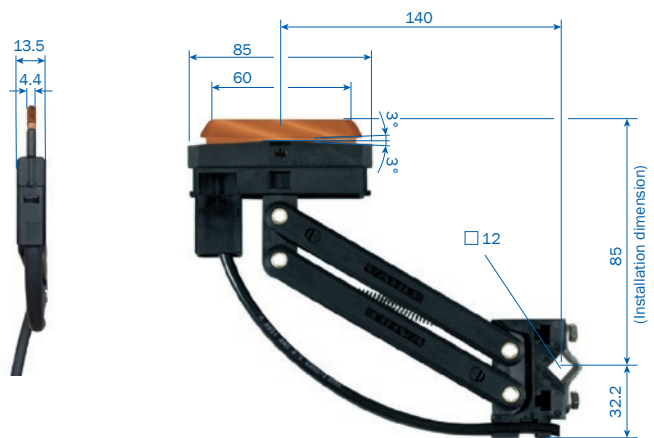
for funnels and tangential entry funnels (multi systems)

incl. 2 connecting cable

Lift and swivel: ± 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 ²	d max. in mm	Phase black	Ground yellow
SA-KSTU30/14PE-04A-2000	0.240	30	2.50	5	-	168364
SA-KSTU30/14PH-04A-2000	0.240	30	2.50	5	168363	-
SA-KSTU55/14PE-04D-2000	0.368	55	6.00	11	-	168362
SA-KSTU55/14PH-04A-2000	0.368	55	6.00	11	168361	-
SA-KSTU63/14PE-04D-2000	0.394	63	10.00	9	-	148019
SA-KSTU63/14PH-04A-2000	0.394	63	10.00	9	148018	-

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 6.3x0.8

Longer connecting length available

Temperature range: 0 °C to +70 °C



Type	Weight kg	A in mm ²	d max. in Ø mm	Order No.	
				Phase black	Ground yellow
AL-FLA2,5PE1-6,3	0.080	2.50	4.00	-	165050
AL-FLA2,5PH1-6,3	0.080	2.50	4.00	165049	-
AL-FLA4PE1-6,3	0.100	4.00	6.00	-	165052
AL-FLA4PH1-6,3	0.100	4.00	6.00	165051	-
AL-FLA6PE1-6,3	0.150	6.00	7.00	-	166369
AL-FLA6PH1-6,3	0.150	6.00	7.00	166368	-

CONNECTING CABLE AEA

Highly flexible, for current collectors with bolted connection „S“

Length: 1 m

Longer connecting length available

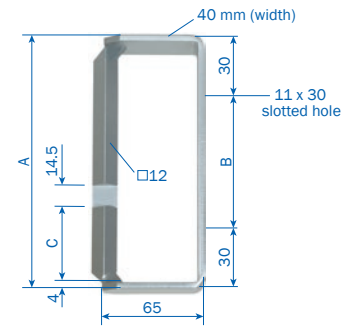
Temperature range: -15 °C to +70 °C



Type	Weight kg	A in mm ²	d max. in Ø mm	Order No.	
				Phase black	Ground yellow
AL-AEA2,5PE-32-3,7-1000-D	0.038	2.50	4.00	-	143079
AL-AEA2,5PH-32-4-1000-A	0.038	2.50	4.00	143080	-
AL-AEA4PE-40-4,4-1000-D	0.063	4.00	5.50	-	143077
AL-AEA4PH-40-5,6-1000-A	0.063	4.00	5.50	143078	-
AL-AEA6PE-55-5,5-1000-D	0.085	6.00	6.00	-	143075
AL-AEA6PH-55-5,9-1000-A	0.085	6.00	6.00	143076	-
AL-AEA10PE-63-8,2-1000-D	0.160	10.00	9.00	-	143073
AL-AEA10PH-63-8,4-1000-A	0.160	10.00	9.00	143074	-

TOWING ARM

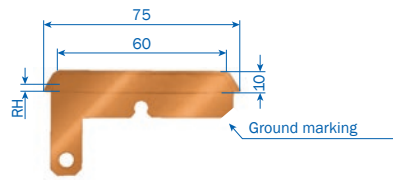
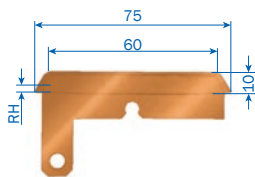
for current collectors KST 30-63 (page 18).



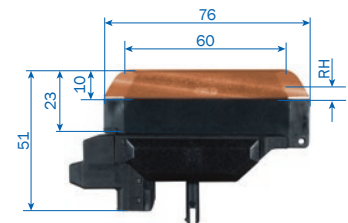
Version „R“ shown with ground

Type	Weight kg	A mm	B mm	C mm	Order No.
MN-UMAA12HS-B-4-14L-80	0.33	80	20	50	781444
MN-UMAA12HS-B-4-14R-80	0.33	80	20	50	781443
MN-UMAA12HS-B-5-14L-94	0.36	94	34	50	780186
MN-UMAA12HS-B-5-14R-94	0.36	94	34	50	780185
MN-UMAA12HS-B-6-14L-108	0.39	108	48	50	780184
MN-UMAA12HS-B-6-14R-108	0.39	108	48	50	780183
MN-UMAA12HS-B-7-14-122	0.42	122	62	50	780181
MN-UMAA12HS-B-8-14L-136	0.46	136	76	50	780180
MN-UMAA12HS-B-8-14R-136	0.46	136	76	50	780179
MN-UMAA12HS-B-9-14L-150	0.49	150	90	50	780178
MN-UMAA12HS-B-9-14R-150	0.49	150	90	50	780177
MN-UMAA12HS-B-10-14L-164	0.52	164	104	50	780176
MN-UMAA12HS-B-10-14R-164	0.52	164	104	50	780175

CARBON BRUSHES



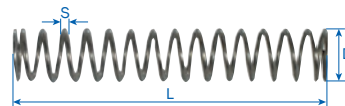
SK-KMK30-55-04-PE



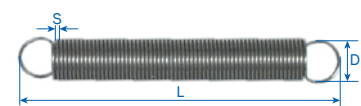
SK-MK55PH/PE

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 and KSTU 30-63	4.40	154440
SK-KMK30-63-04-PE	0.031	4.00	KST 30-KST 63 and KSTU 30-63	4.40	154453
SK-MK55F-31-14	0.040	3.50	KESR 32-55F and KESL 32-55F	4.20	780920
SK-MK63S-31-14	0.046	3.50	KESR 32-63S and KESL 32-63S	4.20	780921

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	153848
RF3	KESR 32-55 KESL 32-63	0.40	4.40	31.00	153849
DF4	KESL 32-63	1.10	6.40	41.00	157312

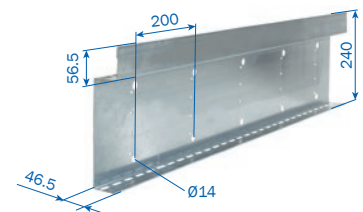
SPARE PARTS AND ACCESSORIES

SPARE PARTS VKS10

Type	Description	Order No.
VK-SV10	Connector cap	780137
VM-STV63-100-VKS10	Plug-in joint (63-100 A)	781818
VM-STV120-140-VKS10	Plug-in joint (120-140 A)	781819
ES-AB-VLS10/200-280	Connection bolts, complete for VLS 10 / 60 + 200-280	780138
ES-AB-VLS10/63-280	Connection bolts, complete for VLS 10 / 100-140	780130
ES-AB-VNS10/63-280	Connection bolts, complete for VNS 10 / 60-280	780139
KL-DSEV10	Plastic glue for tangential funnel DSEV 10	780280

SUPPORT PROFILE

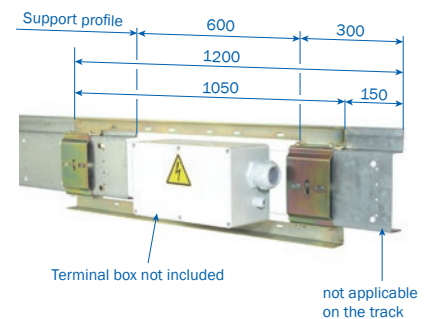
Length: 6 m



Type	Weight kg/m	Order No.
VTP10-6000	4.300	781006

ATTACHMENT SUPPORT PROFILE VTP 10

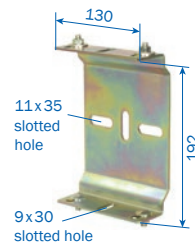
for feed VNS 10, VLS 10



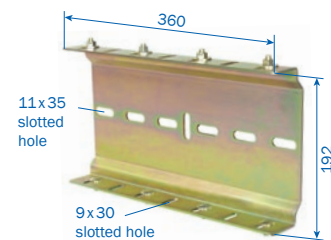
Type	Description	Order No.
VTPB1050-ESAE	Version for initial/ end section	780100
VTPB1050-ESST	Version on the track	780098

HRL JOINTS

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



HRL joint



HRL connector

Type	Weight kg	Description	Order No.
VTPV10	2.398	HRL joint	781000
VTPA10-130	0.878	HRL connector	781007

HRL AUXILIARY SUPPORT

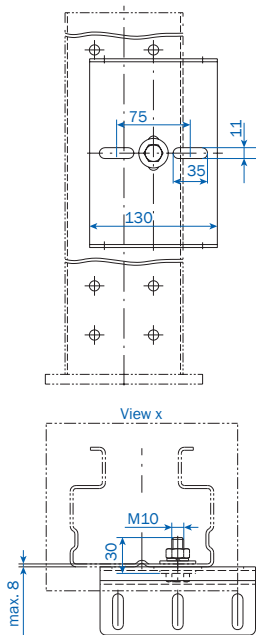
Length: 500 mm
incl. fixing material



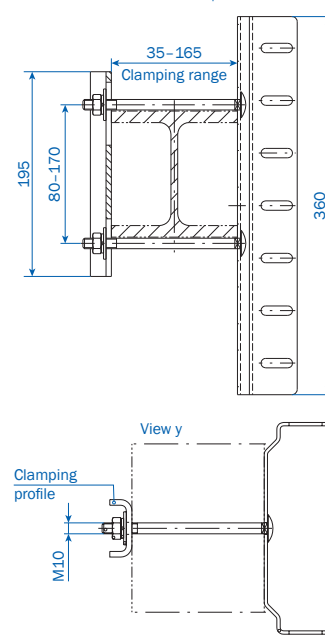
Type	Weight kg	Order No.
HRL-HSE-500	1.894	781677

SUPPORT PROFILE ATTACHMENTS

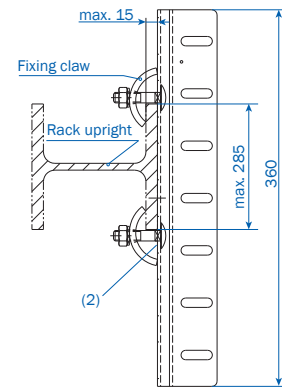
1 VTPB-P x



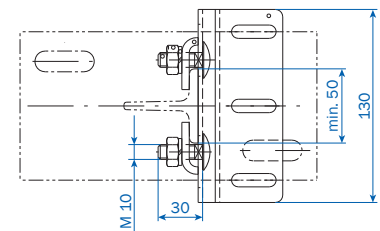
2 VTPB-35-165 y



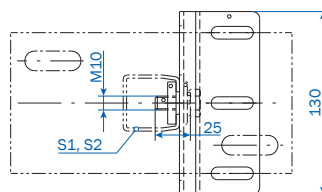
3 VTPB-SPR



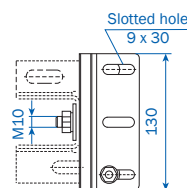
4 VTPB 130-SPW



5 VTPB 130-S1/2



6 VTPB 130-HST



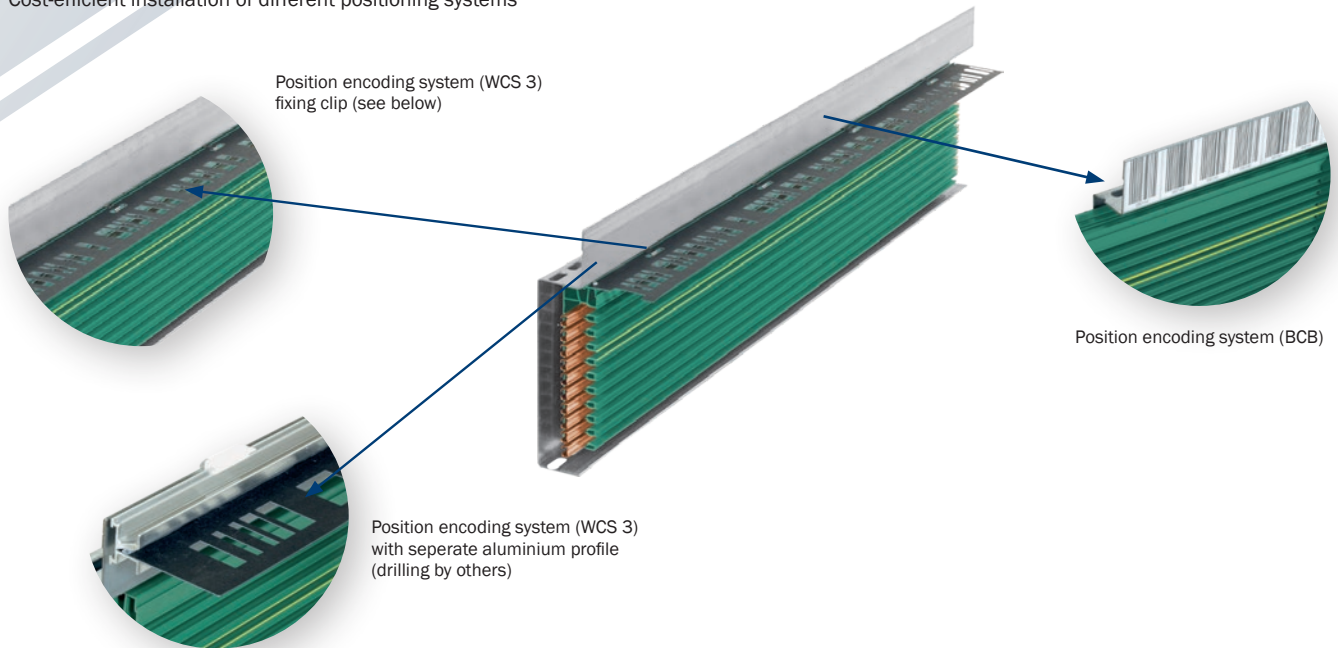
Type ⁽¹⁾	Weight kg	Clamping range mm	Figure	Order No.
VTPB130-P-30	0.938	max. 8	1	780147
VTPB360-SPR	2.674	max. 15	3	780149
VTPB130-SPW	1.066	max. 6	4	780148
VTPB360-35-45	3.054	35 - 45	2	780150
VTPB360-45-55	3.062	45 - 55	2	780151
VTPB360-55-65	3.076	55 - 65	2	780152
VTPB360-65-75	3.084	65 - 75	2	780153
VTPB360-75-85	3.096	75 - 85	2	780154
VTPB360-85-95	3.102	85 - 95	2	780155
VTPB360-90-105	3.110	90 - 105	2	780156
VTPB360-100-115	3.118	100 - 115	2	780157
VTPB360-110-125	3.132	110 - 125	2	780158
VTPB360-120-135	3.144	120 - 135	2	780159
VTPB360-130-145	3.152	130 - 145	2	780160
VTPB360-140-155	3.164	140 - 155	2	780161
VTPB360-150-165	3.712	150 - 165	2	780162
VTPB130-S1/2	0.944	max. 8	5	780163
VTPB130-HST	0.922	max. 8	6	781678

(1) Bigger clamping range on request

(2) Locking torque of the round-head screw M10, MA = 18 Nm

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	302160

FIXING CLIP

for laminate band

Fixing distance 0.2 m



Type	Weight kg	Order No.
PS-WCS3-BKK	0.002	780193

POSITION ENCODING BAND

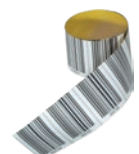
Fixing distance 0.2 m



WCS⁽¹⁾



1x per conductor section



BCB⁽²⁾

Type	Weight kg	Description	Order No.
PS-WCS3-CS70-L2	0.040	Plastic laminate band with special perforation (WCS 3)	302106
PS-WCS3-FPK	0.001	Screws for fixation	780140
PS-BCB-50	0.015	Barcode band (BCB)	302107

(1) Max. travel length 327 m

(2) Max. travel length 10.000 m

INSTALLATION TOOLS

JOINT CAP ASSEMBLY TOOL

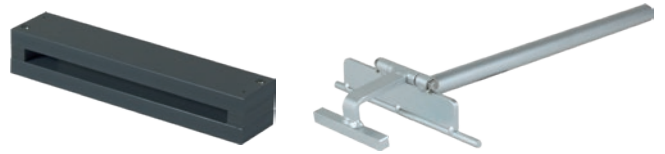
for use with support profile



Type	Weight kg	Order No.
MZ-MGVK	0.350	780070

COPPER CONNECTOR MOUNTING LEVER

for use with support profile



Type	Weight kg	Order No.
MZ-MGVS	1.50	780090

INSTALLATION COMB

Set for VKS10

To adjust the air gap at the joint



Type	Weight kg	Order No.
MZ-MK	0.230	781112

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⁽¹⁾
 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⁽¹⁾: _____
13. Position and number of isolating sections (e. g. for maintenance)⁽¹⁾: _____
14. How will the conductor be arranged?⁽¹⁾: _____
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 ⁽²⁾	Power kW	Nominal current			Starting current		Type of motors ⁽²⁾
		A	cos φ _N	% duty	A	cos φ _A			A	cos φ _N	% duty	A	cos φ _A	
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.

NOTES



A large grid of small dots for taking notes, covering most of the page. The dots are arranged in a regular pattern, forming a grid that is approximately 30 columns wide and 40 rows high. The grid is intended for writing notes.



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