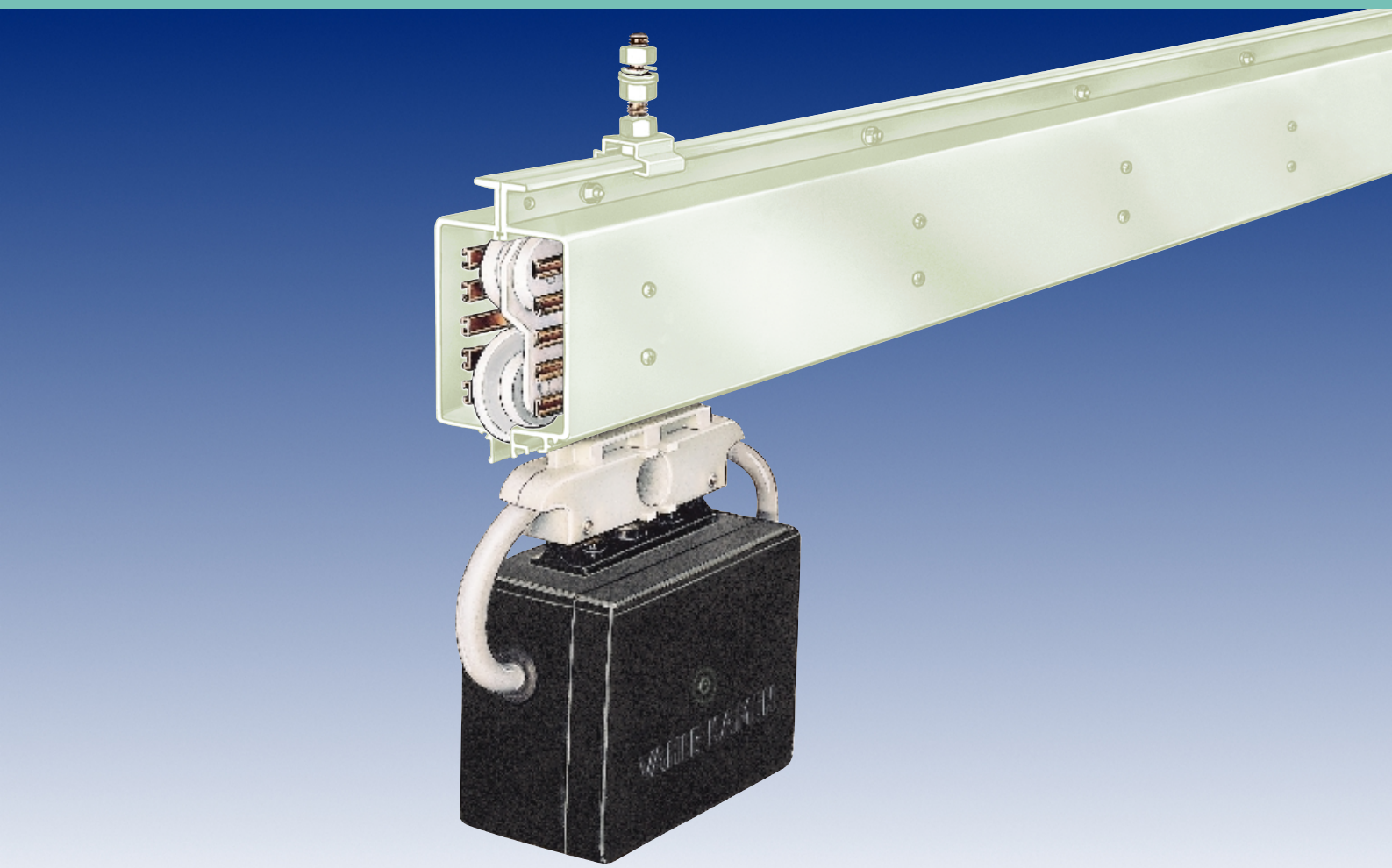


ALUMINIUM ENCLOSED CONDUCTOR SYSTEMS

LSV and LSVG

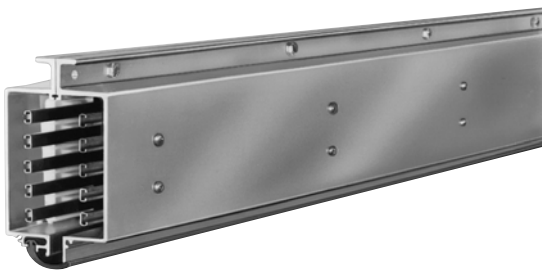
VAHLE 19 12
ELECTRIFICATION SYSTEMS

INDEX

Type LSV

Type LSV with Plastic shielding “FP”

Type LSVG



Type LSVG with sealing strip “D”

TECHNICAL DATA

Ampacity : 300 A max.
Voltage : 600 V max.
Collector rating : 40 A & multiple
min. Bending Radius : LSV 1000 mm/ LSVG 1500 mm

Temperature Resistance:
Powerail – 40° C/+100° C
Sealing strip “D” up to + 80° C
Plastic shielding “FP” up to + 55° C
Collector – 40° C/+ 70° C *

	16	25	35	50	70	mm² copper
Impedance:	1.17	0.72	0.53	0.38	0.28	Ohm/1000 m
Resistance:	16	25	35	50	70	mm² copper
	1.16	0.71	0.51	0.36	0.26	Ohm/1000 m

* Consult factory for higher temperature applications.

General

The Vahle Aluminium enclosed Powerails LSV and LSVG are compact and safe prefabricated Electrification Systems.

These systems are ideal for indoor and outdoor use, for all types of installations requiring a moving or movable source of electrical power: cranes, monorails, hoists, electric power tools, machine tools, storage and retrieval systems and many other mobile machinery applications. LSV and LSVG are especially well suited for higher ambient temperatures.

The principal advantages of these systems are maximum electrical and personnel safety, compactness, dependability and minimal maintenance expense. They fully meet all safety requirements; VDE 0470 § 3; Protection IP 23, with sealing strip IP 24 per DIN 40050 applies.

The aluminium enclosed LSV 4- and 5pole and the PVC enclosed KSL 4- and 5pole (see cat. 4a) can be combined by means of a transfer piece.

Housing

The system consists of two prefabricated, standardized aluminium profiles which are bolted together. The polarizing long and short lip profiles prevent accidental reversal and avoid phase reversing of collectors. The lateral arrangement of insulators and copper conductors allows 4-7 conductors in the LSV and 6-11 conductors in the LSVG housing.

The 5, 7 and 11 pole systems use an uninsulated ground conductor (see page 5).

Curved track sections to contour to almost any job requirement can be furnished to order.

We do recommend the anodized version for installations in coastal areas, river valleys or other humid and aggressive environments. Heating systems for icing conditions are available.

All LSV and LSVG housings can be equipped with a Neoprene sealing strip or a Plastic shielding as shown on page 6 of this catalog.

Standard duct sections are 1, 2, 3 or 4 m long; other sections to coincide with your runway requirements are available.

End caps close the open Powerail ends.

Couplings

The 60, 100 and 140 Amp. systems use side fish plates for joining adjacent sections; the 200 and 300 Amp. Sizes and all bolted conductor joint versions have joint covers (see page 6 and 7).

The lower portion of the housing serves as a smooth, rigid runway for the collector trolleys and is aligned by grooved push pegs.

Conductor rails on the 60, 100 and 140 Amp. sizes are spliced by connectors being pushed inside the hollow conductors. Bolted joints are also available for these sizes.

The 200 and 300 Amp. systems exclusively use bolted joints.

Feed Sets

End feeds or line feeds are available.

End feed boxes 4-11 pole are designed for max. 60 Amperes; line feed boxes rate from 60 to 300 Amperes. Space-saving line feeds with 2 m connection cables are available.

The factory assembled 1 m feed-in tracks integrate in your system length.

Brackets & Hangers

We do recommend to use our standard supporting brackets, page 8 for monorail and hoist applications.

Standard support spacing is 2 m. Up to 3 m support spacing is possible when using joint covers for connecting the duct sections. Use one fix point hanger; all others are sliding hangers (see installation instructions).

Expansion Joint Sections

These expansion joints can compensate for expansion and contraction difference between aluminium housing and copper conductors. They do not interrupt electric current flow.

Telescope & Anti-condensation sections

The telescope devices serve for length-compensation in high temperature fluctuations, for runs exceeding 200 m. For combined indoor/outdoor applications use the anti-condensation section. A separate feeding on both sides of these units is required.

Contact Sections, Turntables, Switches

Powerails for working areas and transfer applications see page 12.

Sectionalizing

Factory assembled conductor dead sections are available in the air gap and the insulating piece version for control circuits.

Collectors

The current collectors are made of re-inforced polyester fiberglass and duroplast, for high strength and light weight. Spring loaded carbon brushes maintaining uniform contact. Connecting cables or terminal boxes and hinged or flexible towing arms included. Double collectors for transfer applications and higher amperage.

To speed up quotations and order processing, we would appreciate receiving your drawings or sketches for Powerail systems with curves, dead sections, turntables, switches, etc.
Please use our questionnaire, page 29 and 30.

Consider the voltage drop calculation to maintain the limits established by the motor manufacturers:

Formulas:

A C: $\Delta U_1 = \sqrt{3} \times I \times \ell \times Z$

D C: $\Delta U_1 = 2 \times \ell \times I \times R$

$$\Delta U_2 = \frac{\Delta U_1 \cdot 100}{V}$$

Effective length:

$\ell = L$ power feed located at the end of the system
$\ell = L/2$ power feed located at the mid-point of the system
$\ell = L/4$ power feed located at both ends of the system
$\ell = L/6$ power feed located at $L/6$ from each end of the system

ΔU_1 = Voltage drop [V]
ΔU_2 = Voltage drop in %
I = Ampere load [A]
V = System Voltage
ℓ = Power feed length [m]
L = System length [m]
Z = Impedance in Ohm/1000 m
R = Resistance in Ohm/1000 m

The total ampere load is determined from the nominal rated current of all motors working simultaneously on the same feed section of your electrification system.

The number of feed points should be increased in case the drop is exceeding the limitations – or it may be necessary to provide booster cables.

TYPES AND CATALOG NUMBERS

LSV

Type **HS** with PE **SS** without PE		1 m Section		2 m Section		3 m Section		4 m Section	
		Weight kg	Cat.-No.	Weight kg	Cat.-No.	Weight kg	Cat.-No.	Weight kg	Cat.-No.
LSV 4/ 60 ... HS		3.000	190 001	6.000	190 002	9.000	190 003	12.000	190 004
LSV 4/ 60 ... SS	Control line	3.000	190 101	6.000	190 102	9.000	190 103	12.000	190 104
LSV 4/100 ... HS		3.400	190 041	6.800	190 042	10.200	190 043	13.600	190 044
LSV 4/140 ... HS		3.700	190 081	7.400	190 082	11.100	190 083	14.800	190 084
LSV 4/200 ... HS *		4.300	190 611	8.600	190 612	12.900	190 613	17.200	190 614
LSV 4/300 ... HS *		5.000	190 601	10.000	190 602	15.000	190 603	20.000	190 604
LSV 5/ 60 ... HS		3.150	190 011	6.300	190 012	9.450	190 013	12.600	190 014
LSV 5/100 ... HS		3.550	190 031	7.100	190 032	10.650	190 033	14.200	190 034
LSV 5/140 ... HS		3.850	190 051	7.700	190 052	11.550	190 053	15.400	190 054
LSV 5/200 ... HS *		4.450	190 621	8.900	190 622	13.350	190 623	17.800	190 624
LSV 5/300 ... HS *		5.150	190 631	10.300	190 632	15.450	190 633	20.600	190 634
LSV 6/ 60 ... HS		3.300	190 021	6.600	190 022	9.900	190 023	13.200	190 024
LSV 6/ 60 ... SS	Control line	3.300	190 111	6.600	190 112	9.900	190 113	13.200	190 114
LSV 6/100 ... HS		3.700	190 061	7.400	190 062	11.100	190 063	14.800	190 064
LSV 6/140 ... HS		4.000	190 641	8.000	190 642	12.000	190 643	16.000	190 644
LSV 6/200 ... HS *		4.480	195 521	8.960	195 522	13.450	195 523	17.930	195 524
LSV 7/ 60 ... HS		3.450	190 071	6.900	190 072	10.350	190 073	13.800	190 074
LSV 7/100 ... HS		3.850	190 091	7.700	190 092	11.550	190 093	15.400	190 094
LSV 7/140 ... HS		4.250	190 651	8.500	190 652	12.750	190 653	17.000	190 654
LSV 7/200 ... HS *		4.730	195 601	9.570	195 602	14.360	195 603	19.140	195 604

LSVG

LSVG 6/ 60 ... HS		5.150	180 001	10.300	180 002	15.450	180 003	20.600	180 004
LSVG 6/ 60 ... SS	Control line	5.150	180 221	10.300	180 222	15.450	180 223	20.600	180 224
LSVG 6/100 ... HS		5.450	180 011	10.900	180 012	16.350	180 013	21.800	180 014
LSVG 6/140 ... HS		5.750	180 021	11.500	180 022	17.250	180 023	23.000	180 024
LSVG 6/200 ... HS *		6.300	180 031	12.600	180 032	18.900	180 033	25.200	180 034
LSVG 6/300 ... HS *		7.250	180 041	14.500	180 042	21.750	180 043	29.000	180 044
LSVG 7/ 60 ... HS		5.300	180 051	10.600	180 052	15.900	180 053	21.200	180 054
LSVG 7/100 ... HS		5.700	180 061	11.400	180 062	17.100	180 063	22.800	180 064
LSVG 7/140 ... HS		6.100	180 071	12.200	180 072	18.300	180 073	24.400	180 074
LSVG 7/200 ... HS *		6.700	180 081	13.400	180 082	20.100	180 083	26.800	180 084
LSVG 7/300 ... HS *		7.400	180 091	14.800	180 092	22.200	180 093	29.600	180 094
LSVG 8/ 60 ... HS		5.450	180 101	10.900	180 102	16.350	180 103	21.800	180 104
LSVG 8/ 60 ... SS	Control line	5.450	180 231	10.900	180 232	16.350	180 233	21.800	180 234
LSVG 8/100 ... HS		5.750	180 111	11.500	180 112	17.250	180 113	23.000	180 114
LSVG 8/140 ... HS		6.050	180 121	12.100	180 122	18.150	180 123	24.200	180 124
LSVG 8/200 ... HS *		6.530	184 581	13.060	184 582	19.600	184 583	26.130	184 584
LSVG 9/ 60 ... HS		5.600	180 131	11.200	180 132	16.800	180 133	22.400	180 134
LSVG 9/100 ... HS		6.000	180 141	12.000	180 142	18.000	180 143	24.000	180 144
LSVG 9/140 ... HS		6.400	180 151	12.800	180 152	19.200	180 153	25.600	180 154
LSVG 9/200 ... HS *		6.940	184 591	13.870	184 592	20.810	184 593	26.130	184 584
LSVG 10/ 60 ... HS		5.750	180 161	11.500	180 162	17.250	180 163	23.000	180 164
LSVG 10/ 60 ... SS	Control line	5.750	180 241	11.500	180 242	17.250	180 243	23.000	180 244
LSVG 10/100 ... HS		6.050	180 171	12.100	180 172	18.150	180 173	24.200	180 174
LSVG 10/140 ... HS		6.350	180 181	12.700	180 182	19.050	180 183	25.400	180 184
LSVG 10/200 ... HS *		6.830	184 601	13.660	184 602	20.500	184 603	27.330	184 604
LSVG 11/ 60 ... HS		5.900	180 191	11.800	180 192	17.700	180 193	23.600	180 194
LSVG 11/100 ... HS		6.300	180 201	12.600	180 202	18.900	180 203	25.200	180 204
LSVG 11/140 ... HS		6.700	180 211	13.400	180 212	20.100	180 213	26.800	180 214
LSVG 11/200 ... HS *		7.240	184 611	14.470	184 612	21.710	184 613	28.940	184 614

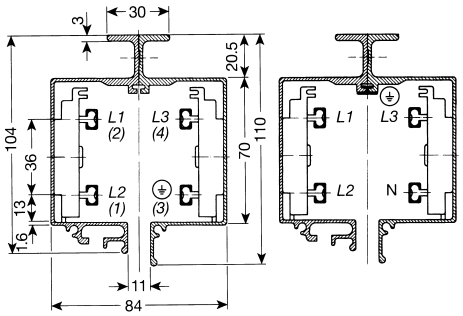
For full Type designation add length suffix of Powerail Section, e. g. LSV 4/60 – 4 HS for Cat.-No. 190 004.
Other sections to coincide with your runway requirements are made up from the next larger standard length.

***** With bolted joints only. Other types can be delivered with bolted joints without surcharge.

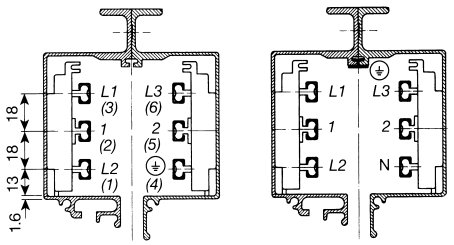
LSV

Type **HS** with PE **SS** without PE	No. of con-ductors	No. of conductors x copper section mm² L1, L2, L3	⏚	N	Control-Line	Ampacity at 80 % duty factor A	max. Vol-tage V	Leakage Path mm
LSV 4/ 60 HS	4	3 x 16	1 x 16	–	–	60	600	45
LSV 4/ 60 SS	4	–	–	–	4 x 16	60	600	45
LSV 4/100 HS	4	3 x 25	1 x 16	–	–	100	600	45
LSV 4/140 HS	4	3 x 35	1 x 16	–	–	140	600	45
LSV 4/200 HS	4	3 x 50	1 x 25	–	–	200	600	45
LSV 4/300 HS	4	3 x 70	1 x 50	–	–	300	600	35
LSV 5/ 60 HS	5	3 x 16	1 x 16	1 x 16	–	60	600	45
LSV 5/100 HS	5	3 x 25	1 x 16	1 x 25	–	100	600	45
LSV 5/140 HS	5	3 x 35	1 x 16	1 x 35	–	140	600	45
LSV 5/200 HS	5	3 x 50	1 x 16	1 x 50	–	200	600	45
LSV 5/300 HS	5	3 x 70	1 x 16	1 x 70	–	300	600	35
LSV 6/ 60 HS	6	3 x 16	1 x 16	–	2 x 16	60	600	45
LSV 6/ 60 SS	6	–	–	–	6 x 16	60	600	45
LSV 6/100 HS	6	3 x 25	1 x 16	–	2 x 16	100	600	45
LSV 6/140 HS	6	3 x 35	1 x 16	–	2 x 16	140	600	45
LSV 6/200 HS	6	3 x 50	1 x 25	–	2 x 16	200	600	45
LSV 7/ 60 HS	7	3 x 16	1 x 16	1 x 16	2 x 16	60	600	45
LSV 7/100 HS	7	3 x 25	1 x 16	1 x 25	2 x 16	100	600	45
LSV 7/140 HS	7	3 x 35	1 x 16	1 x 35	2 x 16	140	600	45
LSV 7/200 HS	7	3 x 50	1 x 16	1 x 50	2 x 16	200	600	45

Configurations



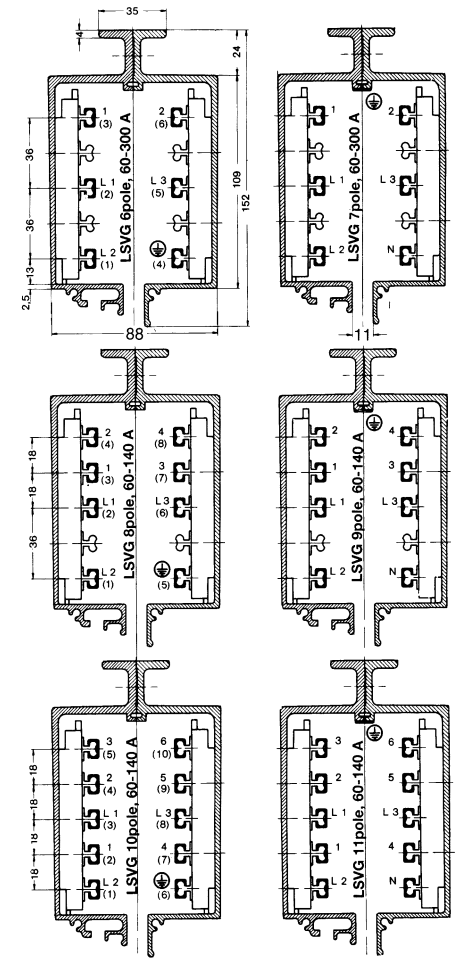
LSV 4pole, 60-300 A **LSV 5pole, 60-300 A**



LSV 6pole, 60-140 A **LSV 7pole, 60-140 A**

LSVG

LSVG 6/ 60 HS	6	3 x 16	1 x 16	–	2 x 16	60	600	45
LSVG 6/ 60 SS	6	–	–	–	6 x 16	60	600	45
LSVG 6/100 HS	6	3 x 25	1 x 16	–	2 x 16	100	600	45
LSVG 6/140 HS	6	3 x 35	1 x 16	–	2 x 16	140	600	45
LSVG 6/200 HS	6	3 x 50	1 x 25	–	2 x 16	200	600	45
LSVG 6/300 HS	6	3 x 70	1 x 50	–	2 x 20	300	600	35
LSVG 7/ 60 HS	7	3 x 16	1 x 16	1 x 16	2 x 16	60	600	45
LSVG 7/100 HS	7	3 x 25	1 x 16	1 x 25	2 x 16	100	600	45
LSVG 7/140 HS	7	3 x 35	1 x 16	1 x 35	2 x 16	140	600	45
LSVG 7/200 HS	7	3 x 50	1 x 16	1 x 50	2 x 16	200	600	45
LSVG 7/300 HS	7	3 x 70	1 x 16	1 x 70	2 x 20	300	600	35
LSVG 8/ 60 HS	8	3 x 16	1 x 16	–	4 x 16	60	600	45
LSVG 8/ 60 SS	8	–	–	–	8 x 16	60	600	45
LSVG 8/100 HS	8	3 x 25	1 x 16	–	4 x 16	100	600	45
LSVG 8/140 HS	8	3 x 35	1 x 16	–	4 x 16	140	600	45
LSVG 8/200 HS	8	3 x 50	1 x 25	–	4 x 16	200	600	45
LSVG 9/ 60 HS	9	3 x 16	1 x 16	1 x 16	4 x 16	60	600	45
LSVG 9/100 HS	9	3 x 25	1 x 16	1 x 25	4 x 16	100	600	45
LSVG 9/140 HS	9	3 x 35	1 x 16	1 x 35	4 x 16	140	600	45
LSVG 9/200 HS	9	3 x 50	1 x 16	1 x 50	4 x 16	200	600	45
LSVG 10/ 60 HS	10	3 x 16	1 x 16	–	6 x 16	60	600	45
LSVG 10/ 60 SS	10	–	–	–	10 x 16	60	600	45
LSVG 10/100 HS	10	3 x 25	1 x 16	–	6 x 16	100	600	45
LSVG 10/140 HS	10	3 x 35	1 x 16	–	6 x 16	140	600	45
LSVG 10/200 HS	10	3 x 50	1 x 25	–	6 x 16	200	600	45
LSVG 11/ 60 HS	11	3 x 16	1 x 16	1 x 16	6 x 16	60	600	45
LSVG 11/100 HS	11	3 x 25	1 x 16	1 x 25	6 x 16	100	600	45
LSVG 11/140 HS	11	3 x 35	1 x 16	1 x 35	6 x 16	140	600	45
LSVG 11/200 HS	11	3 x 50	1 x 16	1 x 50	6 x 16	200	600	45



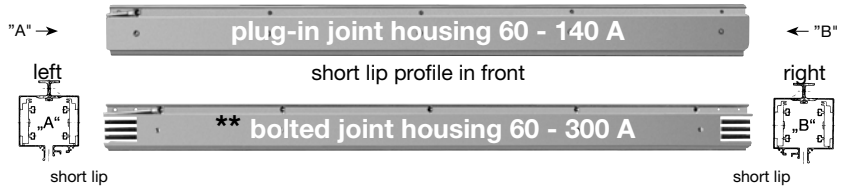
The ground conductor ⏚ is always connected to the Powerail housing and marked accordingly. The ground bar is uninsulated in the case of 5, 7, 9 and 11pole systems. Other copper cross-section combinations are possible.

Numbers in parenthesis are used for control circuit applications.
For mounting configurations also see pages 8, 11, 23 and 28.

STANDARD SECTION max. 4 m

CURVED SECTION

LSV

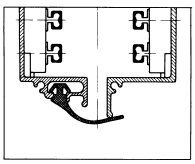


Extra finish of LSV; surcharge Cat.-No.

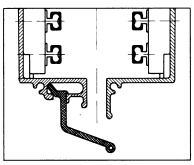
Type	Index E anodized housing Cat.-No.	Index I copper conductors with stainless steel cap Cat.-No. 60 A	Cat.-No. 200 A
LSV 4pole	190 660	194 754	194 755
LSV 5pole	190 670	194 756	194 757
LSV 6pole	190 660	194 758	–
LSV 7pole	190 670	194 760	–

Supplements for LSV:

	Type	Weight kg/m	Cat.-No.
Neoprene sealing strip	**D**	0.225	254 751
Locking pin for plastic shielding			258 578
Fastener for sealing strip (pair)			258 432
Plastic shielding*	**FP**	0.260	254 752
Coupling for sealing strip for length exceeding 50 m			258 300

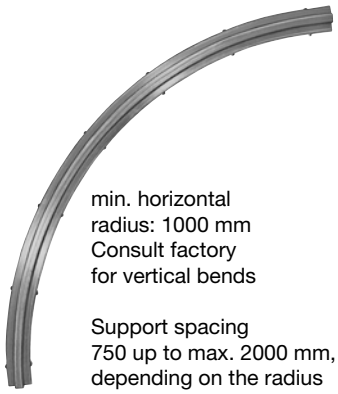


Neoprene sealing strip



Plastic shielding

Custom built



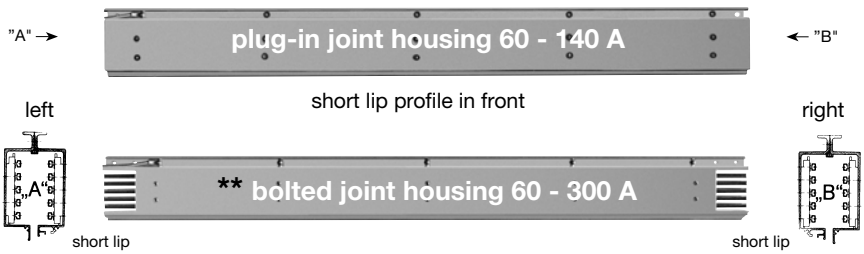
min. horizontal radius: 1000 mm
Consult factory for vertical bends

Support spacing 750 up to max. 2000 mm, depending on the radius
max. L = 3200 mm,
max. ⊀ = 120°

surcharge	Cat.-No.
horizontal curve L max. 1.8 m	194 420
horizontal curve L max. 3.2 m	195 285

Long lip side of Powerail should always be mounted towards the track (see pages 8, 28). Notify exceptions for replacements and/or extensions and determine correct curves.

LSVG

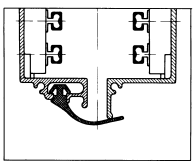


Extra finish of LSVG; surcharge Cat.-No.

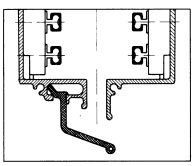
Type	Index E anodized housing Cat.-No.	Index I copper conductors with stainless steel cap Cat.-No. 60 A	Cat.-No. 200 A
LSVG 6pole	180 250	183 871	183 872
LSVG 7pole	180 260	183 873	183 874
LSVG 8pole	180 250	183 875	–
LSVG 9pole	180 260	183 877	–
LSVG 10pole	180 250	183 879	–
LSVG 11pole	180 260	183 881	–

Supplements for LSVG:

	Type	Weight kg/m	Cat.-No.
Neoprene sealing strip	**D**	0.225	254 751
Locking pin for plastic shielding			258 578
Fastener for sealing strip (pair)			258 432
Plastic shielding*	**FP**	0.260	254 752
Coupling for sealing strip for length exceeding 50 m			258 300

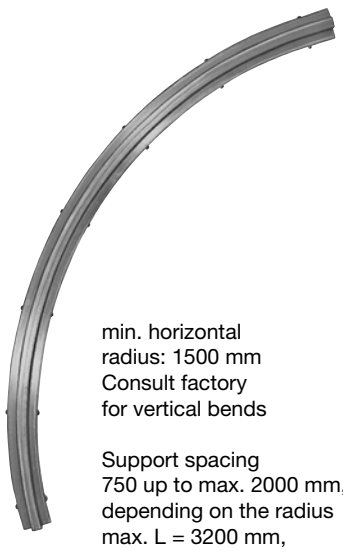


Neoprene sealing strip



Plastic shielding

Custom built



min. horizontal radius: 1500 mm
Consult factory for vertical bends

Support spacing 750 up to max. 2000 mm, depending on the radius
max. L = 3200 mm,
max. ⊀ = 120°

surcharge	Cat.-No.
horizontal curve L max. 1.8 m	183 810
horizontal curve L max. 3.2 m	184 170

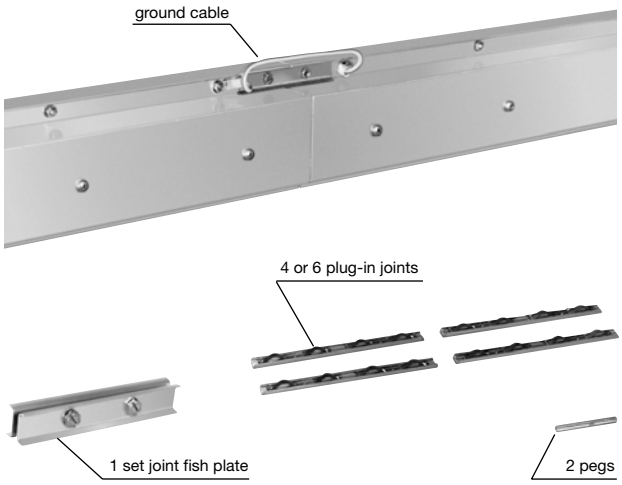
Long lip side of Powerail should always be mounted towards the track (see pages 8, 28). Notify exceptions for replacements and/or extensions and determine correct curves.

* Plastic shielding FP not for curves.

** All other types are to be delivered with bolted joints w/o surcharge

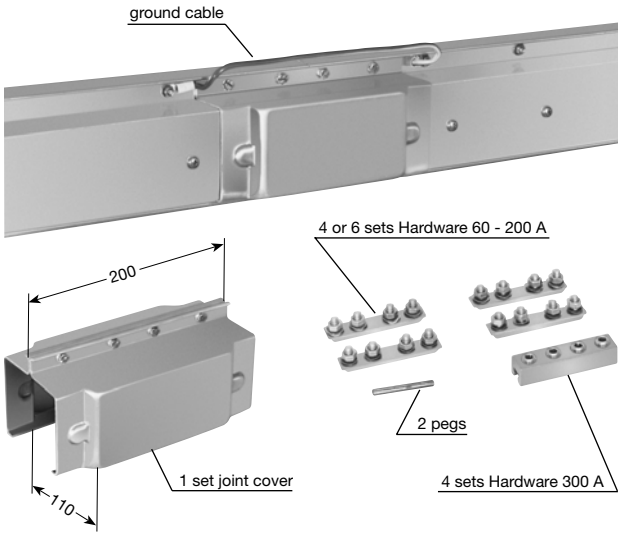
LSV

Plug-in joints 60-140 A



Type		Weight kg	Cat.-No.
VBL 4/5	for 4- and 5-pole	0.110	195 244
VBL 6/7	for 6- and 7-pole	0.140	195 246

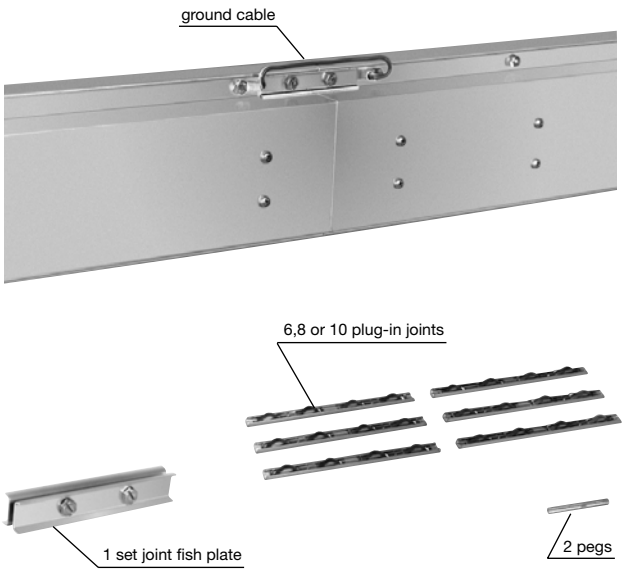
Bolted joints 60-300 A



Type		Weight kg	Cat.-No.	Cat.-No. anodized
VBLS 4/5	for 4- and 5-pole	0.450	195 248	–
VBLS/E 4/5	60-200 Amp.	0.450	–	195 255
VBLS 6/7	for 6- and 7-pole	0.505	195 250	–
VBLS/E 6/7	60-200 Amp.	0.505	–	195 259
VBLSG 4/5	for 4- and 5-pole	0.605	195 252	–
VBLSG/E 4/5	300 Amp.	0.605	–	195 256

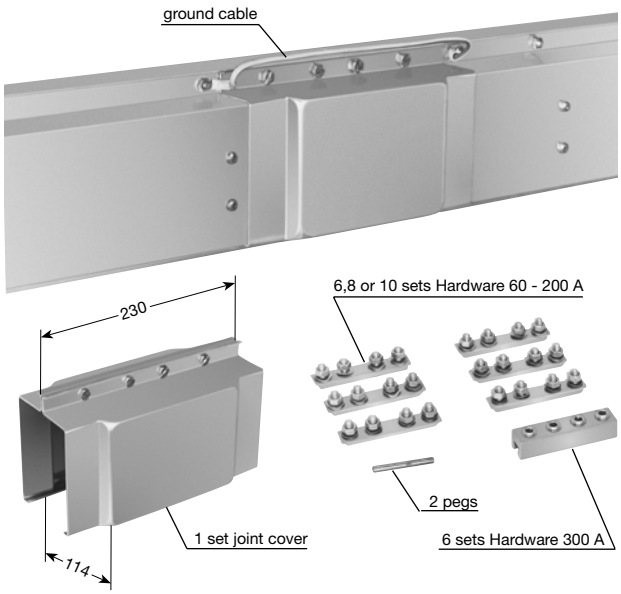
LSVG

Plug-in joints 60-140 A



Type		Weight kg	Cat.-No.
VLG 6/7	for 6- and 7-pole	0.135	184 107
VLG 8/9	for 8- and 9-pole	0.165	184 109
VLG 10/11	for 10- and 11-pole	0.195	184 111

Bolted joints 60-300 A



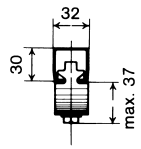
Type		Cat.-No.	Cat.-No. anodized	Weight kg
VLGS 6/7	for 6- and 7-pole	184 113	–	0.665
VLGS/E 6/7	60-200 Amp.	–	184 121	0.665
VLGS 8/9	for 8- and 9-pole	184 115	–	0.720
VLGS/E 8/9	60-200 Amp.	–	184 125	0.720
VLGS 10/11	for 10- and 11-pole	184 117	–	0.770
VLGS/E 10/11	60-200 Amp.	–	184 127	0.770
VLGSG 6/7	for 6- and 7-pole	184 119	–	0.890
VLGSG/E 6/7	300 Amp.	–	184 122	0.890

Yellow/green ground cable factory pre-assembled.
No joints required for uninsulated top conductors 5, 7, 9 and 11.

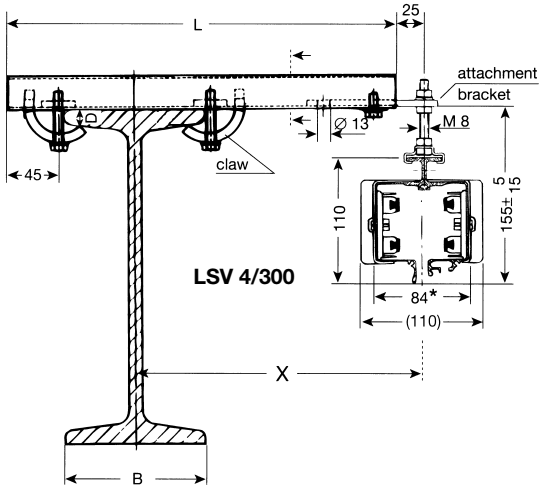
BRACKETS

These brackets are easily bolted to any type of standard I-beam.

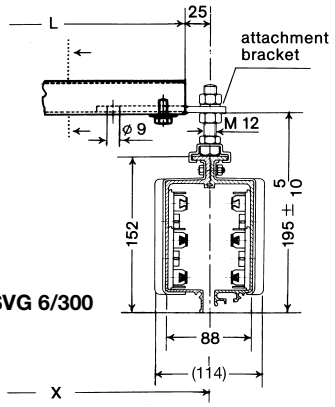
View without I-beam



Claw suitable
for D = 6-15 mm

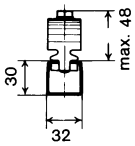


LSV 4/300

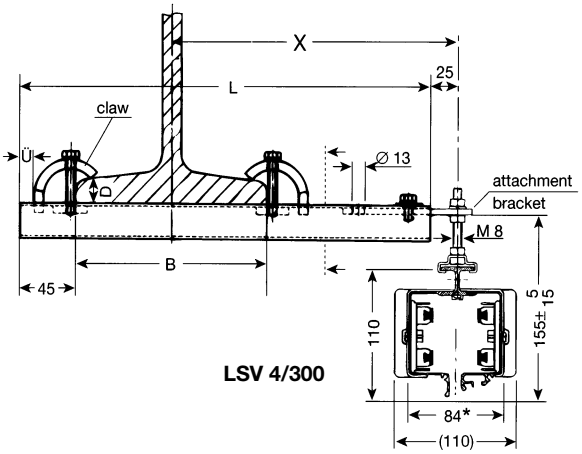


LSVG 6/300

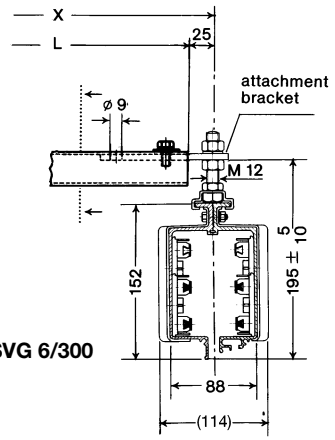
View without I-beam



Claw suitable
for D = 15-25 mm

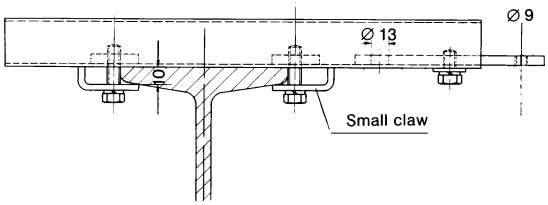


LSV 4/300



LSVG 6/300

EHKL small claw version



Attention:
Make sure that hoist wheels have enough clearance. Use small claw if necessary.

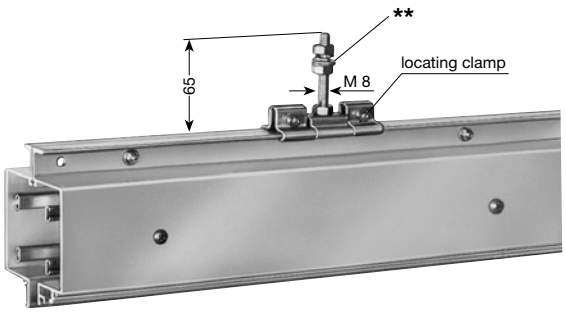
⊏ -rail of EHKL is identical to type S 1, Cat. 8a.

Select next larger size bracket when your I-beam dimension B is more than 170 mm and up to 300 mm.

		Type	X mm	L mm	B max. mm	Weight kg	Cat.-No. for std. brackets	Cat.-No. with small claw
LSV	LSVG	**EHKL 250**	250	350	170	1.070	194 210	194 300
		EHKL 300	300	400	170	1.150	194 220	194 310
		EHKL 400	400	500	170	1.300	194 230	194 320
		EHKL 500	500	600	170	1.450	194 240	194 330
		EHKL 600	600	700	170	1.600	194 250	194 340
	X	**EHKL 700**	700	800	170	1.750	194 260	194 350
		EHKL 750	750	850	170	1.820	194 270	194 360
		EHKL 800	800	900	170	1.900	194 280	194 370

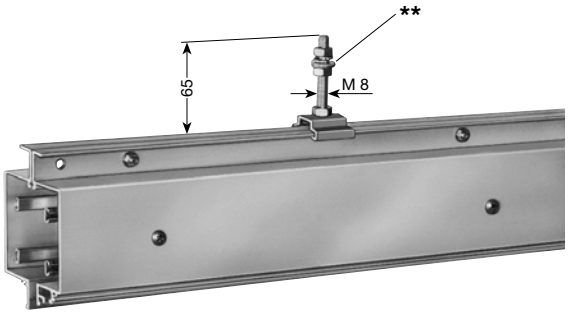
***** max. width 84 mm resp. 88 mm for plug-in joints w/o joint plates.
Dim. in parenthesis refer to bolted joints with joint plates.

FIXPOINT HANGER*



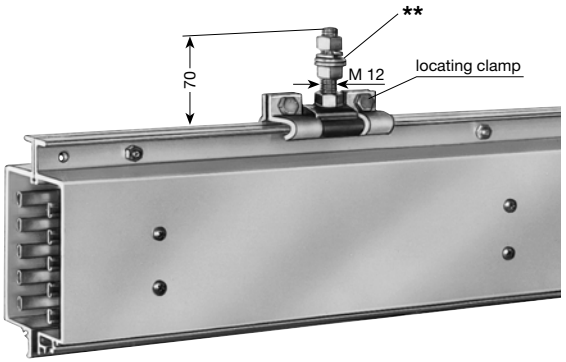
Type	Weight kg	Cat.-No.
FAL	0.150	190 120

SLIDING HANGER*

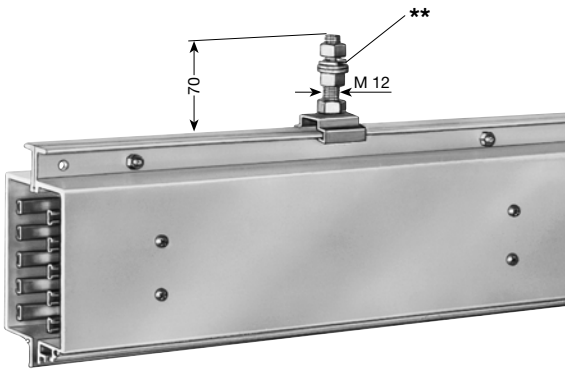


Type	Weight kg	Cat.-No.
GAL	0.080	190 130

LSV



Type	Weight kg	Cat.-No.
SAFG	0.410	180 310



Type	Weight kg	Cat.-No.
SAS	0.175	180 300

LSVG

* Illustrations show hangers mounted to powerail.
** Flat washers only to be used in slotted holes.

END CAP

END FEED*
c/w 1 m Powerail

LSV

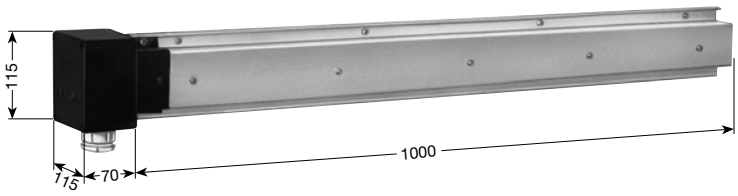
Plastic cap with plug-in joints

Type	Weight kg	Cat.-No.
EKL	0.080	190 220

Aluminium cap with bolted joints

Type	Weight kg	Cat.-No.
EKLS	0.300	195 149
EKLS/E	0.300	195 303

L = LH version, R = RH version
(see page 6)



max. Ø of feed cable: 4 & 5pole 1 x PG 29 mm
6 & 7pole 1 x PG 29 mm
and 1 x PG 21 mm

Type	Cat.-No.	Type	Cat.-No.	Weight kg	A
Power line **HS** with PE		Power line **HS** with PE			
KEL 4/60 L	192 150	**KEL 4/60 R**	190 140	3.35	60
KEL 5/60 L	192 160	**KEL 5/60 R**	190 150	3.55	60
KEL 6/60 L	192 170	**KEL 6/60 R**	190 160	3.75	60
KEL 7/60 L	192 180	**KEL 7/60 R**	190 170	3.95	60
Control line **SS** without PE		Control line **SS** without PE			
KEL 4/60 L	190 240	**KEL 4/60 R**	190 250	3.35	60
KEL 6/60 L	190 260	**KEL 6/60 R**	190 390	3.75	60

LSVG

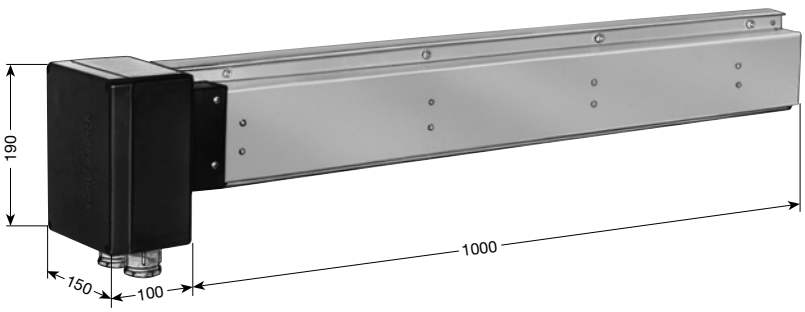
Plastic cap with plug-in joints

Type	Weight kg	Cat.-No.
EKLG	0.120	180 320

Aluminium cap with bolted joints

Type	Cat.-No.	Weight kg
EKLGS	0.450	184 100
EKLGS/E	0.450	184 177

L = LH version, R = RH version
(see page 6)

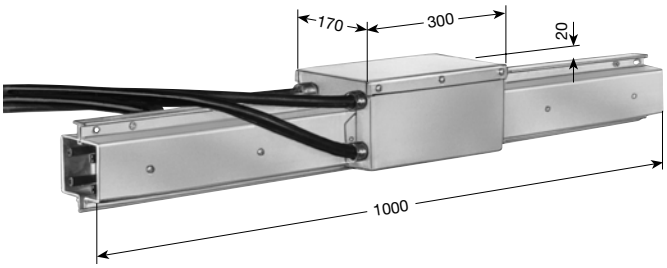


max. Ø of feed cable: for all types 1 x PG 29 mm
and 1 x PG 21 mm

Type	Cat.-No.	Type	Cat.-No.	Weight kg	A
Power line **HS** with PE		Power line **HS** with PE			
KELG 6/60 L	180 330	**KELG 6/60 R**	180 340	6.05	60
KELG 7/60 L	180 350	**KELG 7/60 R**	180 360	6.25	60
KELG 8/60 L	180 370	**KELG 8/60 R**	180 380	6.40	60
KELG 9/60 L	180 430	**KELG 9/60 R**	180 440	6.60	60
KELG 10/60 L	180 450	**KELG 10/60 R**	180 460	6.80	60
KELG 11/60 L	180 470	**KELG 11/60 R**	180 480	7.00	60
Control line **SS** without PE		Control line **SS** without PE			
KELG 6/60 L	180 390	**KELG 6/60 R**	180 400	6.05	60
KELG 8/60 L	180 410	**KELG 8/60 R**	180 420	6.40	60
KELG 10/60 L	180 490	**KELG 10/60 R**	180 500	6.80	60

LINE FEED*

c/w 2 m feed-in cable and 1 m Powerail

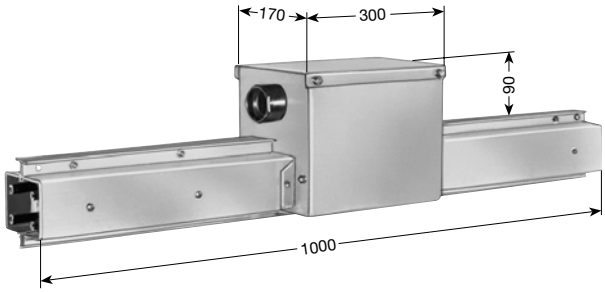


cable size:

60 A	11.5 Ø	10 mm²
100 A	13.5 Ø	25 mm²
140 A	14.5 Ø	35 mm²

LINE FEED*

c/w terminal box and 1 m Powerail



max. cable glands:
1 x PG 29 for 4 & 5pole power circuits 60 A
1 x PG 36 for 4 & 5pole power circuits 100 & 140 A
1 x PG 42 for 4 & 5pole power circuits 200 A
1 x PG 48 for 4 & 5pole power circuits 300 A
1 x PG 29 & 1 x PG 21 for 6 & 7pole power circuits 60 A
1 x PG 36 & 1 x PG 21 for 6 & 7pole power circuits 100 & 140 A
1 x PG 42 & 1 x PG 21 for 6 & 7 pole power circuits 200 A
1 x PG 29 for 4 & 6pole control circuits 60 A

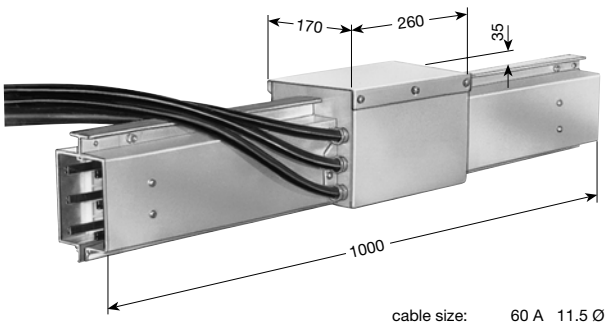
LSV

Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
LAL 4/ 60	5.65	60	195 060
LAL 4/100	6.55	100	195 061
LAL 4/140	7.40	140	195 062
LAL 4/200	8.00	200	195 637
LAL 5/ 60	6.10	60	195 064
LAL 5/100	7.00	100	195 065
LAL 5/140	8.25	140	195 066
LAL 5/200	8.85	200	195 638
Control line **SS** without PE			
LAL 4/ 60	5.65	60	195 063
LAL 6/ 60	6.65	60	195 070

Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
LAL 6/ 60	6.65	60	195 067
LAL 6/100	7.80	100	195 068
LAL 6/140	8.45	140	195 069
LAL 6/200	8.95	200	195 639
LAL 7/ 60	7.15	60	195 071
LAL 7/100	9.00	100	195 072
LAL 7/140	9.25	140	195 073
LAL 7/200	9.80	200	195 640

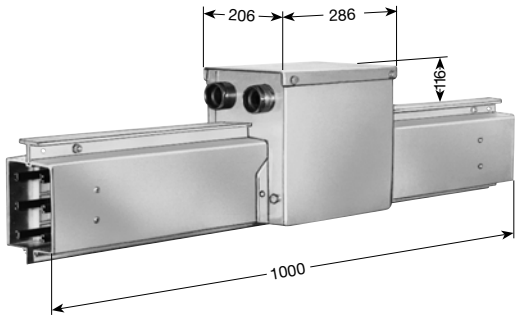
Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
NKL 4/ 60	4.40	60	195 074
NKL 4/100	4.80	100	195 075
NKL 4/140	5.10	140	195 076
NKL 4/200	5.80	200	195 077
NKL 4/300	6.50	300	195 078
NKL 5/ 60	4.60	60	195 080
NKL 5/100	5.00	100	195 081
NKL 5/140	5.30	140	195 082
NKL 5/200	6.00	200	195 083
NKL 5/300	6.70	300	195 084

Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
NKL 6/ 60	4.80	60	195 085
NKL 6/100	5.20	100	195 086
NKL 6/140	5.50	140	195 087
NKL 6/200	6.00	200	195 567
NKL 7/ 60	5.00	60	195 089
NKL 7/100	5.40	100	195 090
NKL 7/140	5.70	140	195 091
NKL 7/200	6.30	200	195 568
Control line **SS** without PE			
NKL 4/ 60	4.40	60	195 079
NKL 6/ 60	4.80	60	195 088



cable size:

60 A	11.5 Ø	10 mm²
100 A	13.5 Ø	25 mm²
140 A	14.5 Ø	35 mm²



max. cable glands:
1 x PG 29 & 1 x PG 21 for 6-11pole power circuits 60 A
1 x PG 36 & 1 x PG 21 for 6-11pole power circuits 100 & 140 A
1 x PG 42 & 1 x PG 21 for 6+7pole power circuits 200 A
1 x PG 48 & 1 x PG 21 for 6+7pole power circuits 300 A
2 x PG 21 for 6, 8 & 10pole control circuits 60 A

LSVG

Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
LALG 6/ 60	8,60	60	183 949
LALG 6/100	9,40	100	183 950
LALG 6/140	10,30	140	183 951
LALG 6/200	10,80	200	184 661
LALG 7/ 60	9,10	60	183 953
LALG 7/100	10,10	100	183 954
LALG 7/140	11,10	140	183 955
LALG 7/200	11,65	200	184 662
LALG 8/ 60	9,60	60	183 956
LALG 8/100	10,45	100	183 957
LALG 8/140	11,30	140	183 958
LALG 8/200	11,80	200	184 663
Control line **SS** without PE			
LALG 6/60	8,60	60	183 952
LALG 8/60	9,60	60	183 959
LALG 10/60	10,65	60	183 966

Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
LALG 9/ 60	10,15	60	183 960
LALG 9/100	11,05	100	183 961
LALG 9/140	12,15	140	183 962
LALG 9/200	12,70	200	184 664
LALG 10/ 60	10,65	60	183 963
LALG 10/100	11,45	100	183 964
LALG 10/140	12,30	140	183 965
LALG 10/200	12,80	200	184 665
LALG 11/ 60	11,15	60	183 967
LALG 11/100	12,10	100	183 968
LALG 11/140	13,15	140	183 969
LALG 11/200	13,70	200	184 666

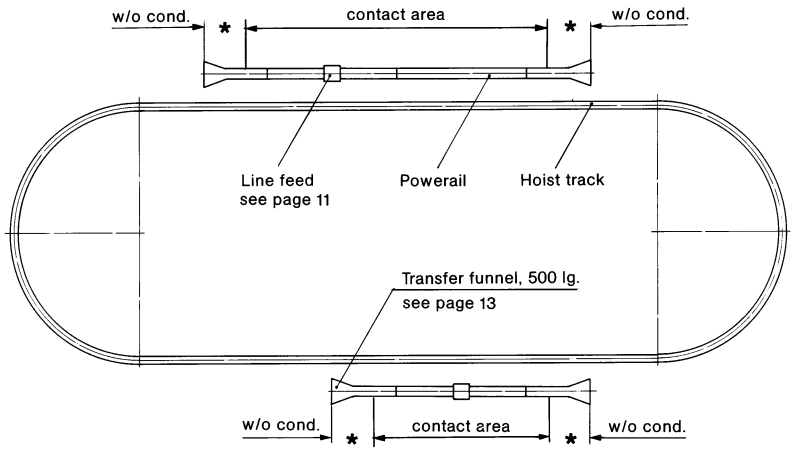
Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
NKLG 6/ 60	6,75	60	184 983
NKLG 6/100	7,05	100	184 985
NKLG 6/140	7,35	140	185 029
NKLG 6/200	7,90	200	185 031
NKLG 6/300	8,85	300	185 079
NKLG 7/ 60	6,95	60	185 033
NKLG 7/100	7,25	100	185 035
NKLG 7/140	7,55	140	185 037
NKLG 7/200	8,10	200	185 039
NKLG 7/300	9,05	300	185 081
NKLG 8/ 60	7,15	60	185 041
NKLG 8/100	7,45	100	185 043
NKLG 8/140	7,75	140	185 045
NKLG 8/200	8,25	200	185 047

Type	Weight kg	A	Cat.-No.
Power line **HS** with PE			
NKLG 9/ 60	7,35	60	185 049
NKLG 9/100	7,65	100	185 051
NKLG 9/140	7,95	140	185 053
NKLG 9/200	8,50	200	185 055
NKLG 10/ 60	7,55	60	185 057
NKLG 10/100	7,85	100	185 059
NKLG 10/140	8,15	140	185 061
NKLG 10/200	8,65	200	185 063
NKLG 11/ 60	7,75	60	185 065
NKLG 11/100	8,05	100	185 067
NKLG 11/140	8,35	140	185 069
NKLG 11/200	8,90	200	185 071
Control line **SS** without PE			
NKLG 6/ 60	6,75	60	185 073
NKLG 8/ 60	7,15	60	185 075
NKLG 10/ 60	7,55	60	185 077

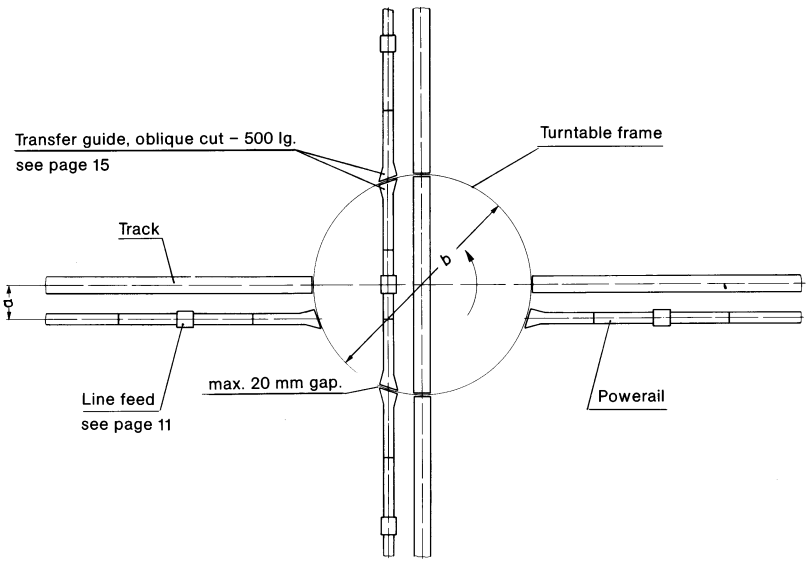
***** The feed sets (page 10 & 11) come ready assembled on 1 m Powerail section and are a part of the system length.

TRANSFER AND SWITCH ARRANGEMENTS

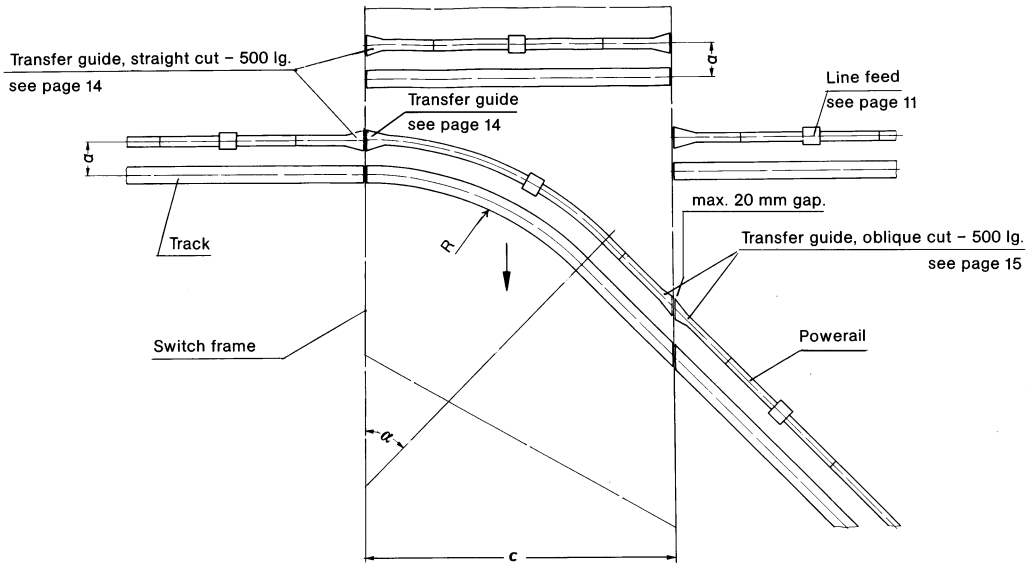
Contact section



Turntable



Sliding switch



Please submit drawings of transfer applications. Specify dimenions a, b, c and angle α.

* Transfer funnels must not be activated before collectors are fully engaged.
Flexible support type tow arms (see page 22) for collectors are essential with contact sections.

LSV

for horizontal offset ± 15 mm
for vertical offset ± 10 mm
KFM or KFML tow arm required; applications see page 12, 22

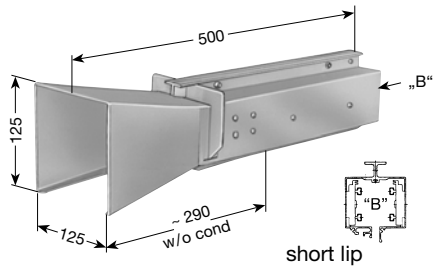


Illustration shows L. H. version
short lip in front
(see page 6)

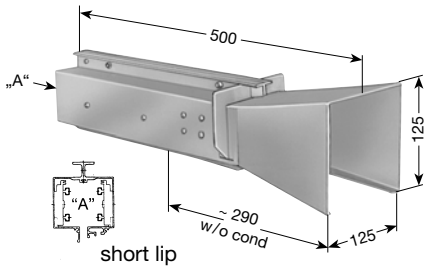


Illustration shows R. H. version
short lip in front
(see page 6)

Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.
Power line **HS** with PE			Power line **HS** with PE			Power line **HS** with PE			Power line **HS** with PE		
ETL 4/ 60 L	1,450	192 890	**ETL 6/ 60 L**	1,500	192 990	**ETL 4/ 60 R**	1,450	193 070	**ETL 6/ 60 R**	1,500	193 170
ETL 4/100 L	1,500	192 900	**ETL 6/100 L**	1,600	193 000	**ETL 4/100 R**	1,500	193 080	**ETL 6/100 R**	1,600	193 180
ETL 4/140 L	1,600	192 910	**ETL 6/140 L**	1,650	193 010	**ETL 4/140 R**	1,600	193 090	**ETL 6/140 R**	1,650	193 190
ETL 4/200 L	1,700	192 920	**ETL 6/200 L**	1,750	195 610	**ETL 4/200 R**	1,700	193 100	**ETL 6/200 R**	1,750	195 611
ETL 4/300 L	1,800	192 930	**ETL 7/ 60 L**	1,550	193 020	**ETL 4/300 R**	1,800	193 110	**ETL 7/ 60 R**	1,550	193 200
			ETL 7/100 L	1,600	193 030				**ETL 7/100 R**	1,600	193 210
ETL 5/ 60 L	1,500	192 940	**ETL 7/140 L**	1,700	193 040	**ETL 5/ 60 R**	1,500	193 120	**ETL 7/140 R**	1,700	193 220
ETL 5/100 L	1,550	192 950	**ETL 7/200 L**	1,820	195 612	**ETL 5/100 R**	1,550	193 130	**ETL 7/200 R**	1,820	195 613
ETL 5/140 L	1,650	192 960	Control line **SS** without PE			**ETL 5/140 R**	1,650	193 140	Control line **SS** without PE		
ETL 5/200 L	1,750	192 970	**ETL 4/ 60 L**	1,450	193 050	**ETL 5/200 R**	1,750	193 150	**ETL 4/ 60 R**	1,450	193 230
ETL 5/300 L	1,900	192 980	**ETL 6/ 60 L**	1,500	193 060	**ETL 5/300 R**	1,900	193 160	**ETL 6/ 60 R**	1,500	193 240

LSVG

for horizontal offset ± 15 mm
for vertical offset ± 10 mm
GFM tow arm required; applications see page 12, 22

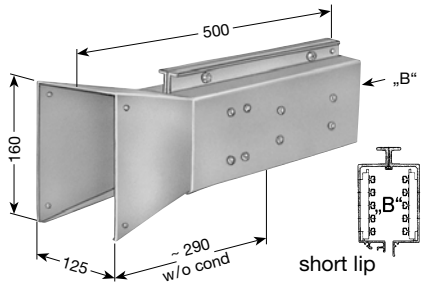


Illustration shows L. H. version
short lip in front
(see page 6)

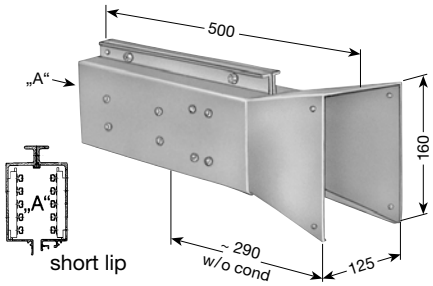


Illustration shows R. H. version
short lip in front
(see page 6)

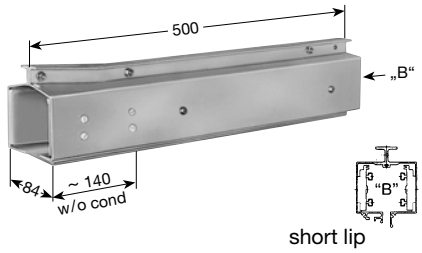
Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.
Power line **HS** witht PE			Power line **HS** with PE			Power line **HS** mit PE			Power line **HS** mit PE		
ETLG 6/ 60 L	2,500	181 970	**ETLG 9/ 60 L**	2,600	182 230	**ETLG 6/ 60 R**	2,500	181 980	**ETLG 9/ 60 R**	2,600	182 240
ETLG 6/100 L	2,550	181 990	**ETLG 9/100 L**	2,700	182 250	**ETLG 6/100 R**	2,550	182 000	**ETLG 9/100 R**	2,700	182 260
ETLG 6/140 L	2,650	182 010	**ETLG 9/140 L**	2,750	182 270	**ETLG 6/140 R**	2,650	182 020	**ETLG 9/140 R**	2,750	182 280
ETLG 6/200 L	2,750	182 030	**ETLG 9/200 L**	2,870	184 621	**ETLG 6/200 R**	2,750	182 040	**ETLG 9/200 R**	2,870	184 625
ETLG 6/300 L	2,950	182 050	**ETLG 10/ 60 L**	2,650	182 290	**ETLG 6/300 R**	2,950	182 060	**ETLG 10/ 60 R**	2,650	182 300
			ETLG 10/100 L	2,700	182 310				**ETLG 10/100 R**	2,700	182 320
ETLG 7/ 60 L	2,550	182 070	**ETLG 10/140 L**	2,750	182 330	**ETLG 7/ 60 R**	2,550	182 080	**ETLG 10/140 R**	2,750	182 340
ETLG 7/100 L	2,600	182 090	**ETLG 10/200 L**	2,850	184 622	**ETLG 7/100 R**	2,600	182 100	**ETLG 10/200 R**	2,850	184 626
ETLG 7/140 L	2,700	182 110	**ETLG 11/ 60 L**	2,650	182 350	**ETLG 7/140 R**	2,700	182 120	**ETLG 11/ 60 R**	2,650	182 360
ETLG 7/200 L	2,800	182 130	**ETLG 11/100 L**	2,750	182 370	**ETLG 7/200 R**	2,800	182 140	**ETLG 11/100 R**	2,750	182 380
ETLG 7/300 L	2,950	182 150	**ETLG 11/140 L**	2,800	182 390	**ETLG 7/300 R**	2,950	182 160	**ETLG 11/140 R**	2,800	182 400
			ETLG 11/200 L	2,920	184 623				**ETLG 11/200 R**	2,920	184 627
ETLG 8/ 60 L	2,600	182 170	Control line **SS** without PE			**ETLG 8/ 60 R**	2,600	182 180	Control line **SS** without PE		
ETLG 8/100 L	2,650	182 190	**ETLG 6/ 60 L**	2,500	182 410	**ETLG 8/100 R**	2,650	182 200	**ETLG 6/ 60 R**	2,500	182 420
ETLG 8/140 L	2,700	182 210	**ETLG 8/ 60 L**	2,600	182 430	**ETLG 8/140 R**	2,700	182 220	**ETLG 8/ 60 R**	2,600	182 440
ETLG 8/200 L	2,800	184 620	**ETLG 10/ 60 L**	2,650	182 450	**ETLG 8/200 R**	2,800	184 624	**ETLG 10/ 60 R**	2,650	182 460

* All transfer funnels are 0.5 m long and are a part of the system length.

TRANSFER GUIDE, STRAIGHT CUT*

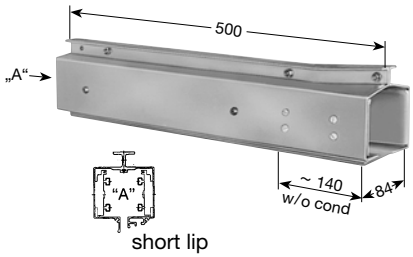
LSV

for horizontal offset ± 5 mm
for vertical offset ± 3 mm
applications see page 12



short lip

Illustration shows L. H. version
short lip in front
(see page 6)



short lip

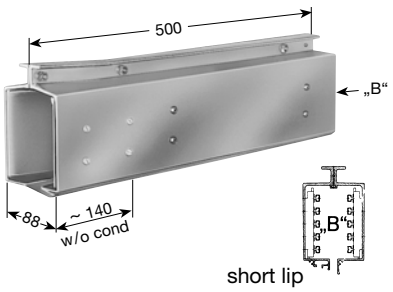
Illustration shows R. H. version
short lip in front
(see page 6)

Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.
Power line **HS** with PE			Power line **HS** with PE		
AÜL 4/ 60 L	1,400	192 190	**AÜL 6/ 60 L**	1,500	192 390
AÜL 4/100 L	1,550	192 210	**AÜL 6/100 L**	1,650	192 410
AÜL 4/140 L	1,650	192 230	**AÜL 6/140 L**	1,750	192 430
AÜL 4/200 L	1,800	192 250	**AÜL 6/200 L**	1,900	195 614
AÜL 4/300 L	2,050	192 270	**AÜL 7/ 60 L**	1,550	192 450
			AÜL 7/100 L	1,700	192 470
AÜL 5/ 60 L	1,450	192 290	**AÜL 7/140 L**	1,850	192 490
AÜL 5/100 L	1,600	192 310	**AÜL 7/200 L**	2,020	195 616
AÜL 5/140 L	1,750	192 330	Control line **SS** without PE		
AÜL 5/200 L	1,950	192 350	**AÜL 4/ 60 L**	1,400	192 510
AÜL 5/300 L	2,150	192 370	**AÜL 6/ 60 L**	1,500	192 530

Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.
Power line **HS** with PE			Power line **HS** with PE		
AÜL 4/ 60 R	1,400	192 200	**AÜL 6/ 60 R**	1,500	192 400
AÜL 4/100 R	1,550	192 220	**AÜL 6/100 R**	1,650	192 420
AÜL 4/140 R	1,650	192 240	**AÜL 6/140 R**	1,750	192 440
AÜL 4/200 R	1,800	192 260	**AÜL 6/200 R**	1,900	195 615
AÜL 4/300 R	2,050	192 280	**AÜL 7/ 60 R**	1,550	192 460
			AÜL 7/100 R	1,700	192 480
AÜL 5/ 60 R	1,450	192 300	**AÜL 7/140 R**	1,850	192 500
AÜL 5/100 R	1,600	192 320	**AÜL 7/200 R**	2,020	195 617
AÜL 5/140 R	1,750	192 340	Control line **SS** without PE		
AÜL 5/200 R	1,950	192 360	**AÜL 4/ 60 R**	1,400	192 520
AÜL 5/300 R	2,150	192 380	**AÜL 6/ 60 R**	1,500	192 540

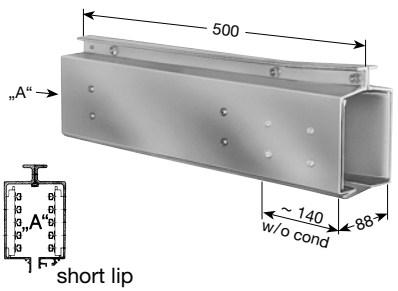
LSVG

for horizontal offset ± 5 mm
for vertical offset ± 3 mm
applications see page 12



short lip

Illustration shows L. H. version
short lip in front
(see page 6)



short lip

Illustration shows R. H. version
short lip in front
(see page 6)

Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.
Power line **HS** with PE			Power line **HS** with PE		
AÜLG 6/ 60 L	2,500	180 970	**AÜLG 9/ 60 L**	2,700	181 230
AÜLG 6/100 L	2,600	180 990	**AÜLG 9/100 L**	2,800	181 250
AÜLG 6/140 L	2,700	181 010	**AÜLG 9/140 L**	2,950	181 270
AÜLG 6/200 L	2,900	181 030	**AÜLG 9/200 L**	3,120	184 629
AÜLG 6/300 L	3,250	181 050	**AÜLG 10/ 60 L**	2,750	181 290
			AÜLG 10/100 L	2,850	181 310
AÜLG 7/ 60 L	2,550	181 070	**AÜLG 10/140 L**	2,950	181 330
AÜLG 7/100 L	2,700	181 090	**AÜLG 10/200 L**	3,100	184 630
AÜLG 7/140 L	2,850	181 110	**AÜLG 11/ 60 L**	2,800	181 350
AÜLG 7/200 L	3,050	181 130	**AÜLG 11/100 L**	2,900	181 370
AÜLG 7/300 L	3,300	181 150	**AÜLG 11/140 L**	3,050	181 390
			AÜLG 11/200 L	3,220	184 631
AÜLG 8/ 60 L	2,600	181 170	Control line **SS** without PE		
AÜLG 8/100 L	2,700	181 190	**AÜLG 6/ 60 L**	2,500	181 410
AÜLG 8/140 L	2,850	181 210	**AÜLG 8/ 60 L**	2,600	181 430
AÜLG 8/200 L	3,000	184 628	**AÜLG 10/ 60 L**	2,750	181 450

Type	Weight kg	Cat.-No.	Type	Weight kg	Bestell-Nr.
Power line **HS** with PE			Power line **HS** with PE		
AÜLG 6/ 60 R	2,500	180 980	**AÜLG 9/ 60 R**	2,700	181 240
AÜLG 6/100 R	2,600	181 000	**AÜLG 9/100 R**	2,800	181 260
AÜLG 6/140 R	2,700	181 020	**AÜLG 9/140 R**	2,950	181 280
AÜLG 6/200 R	2,900	181 040	**AÜLG 9/200 R**	3,120	184 633
AÜLG 6/300 R	3,250	181 060	**AÜLG 10/ 60 R**	2,750	181 300
			AÜLG 10/100 R	2,850	181 320
AÜLG 7/ 60 R	2,550	181 080	**AÜLG 10/140 R**	2,950	181 340
AÜLG 7/100 R	2,700	181 100	**AÜLG 10/200 R**	3,100	184 634
AÜLG 7/140 R	2,850	181 120	**AÜLG 11/ 60 R**	2,800	181 360
AÜLG 7/200 R	3,050	181 140	**AÜLG 11/100 R**	2,900	181 380
AÜLG 7/300 R	3,300	181 160	**AÜLG 11/140 R**	3,050	181 400
			AÜLG 11/200 R	3,220	184 635
AÜLG 8/ 60 R	2,600	181 180	Control line **SS** without PE		
AÜLG 8/100 R	2,700	181 200	**AÜLG 6/ 60 R**	2,500	181 420
AÜLG 8/140 R	2,850	181 220	**AÜLG 8/ 60 R**	2,600	181 440
AÜLG 8/200 R	3,000	184 632	**AÜLG 10/ 60 R**	2,750	181 460

* All transfer funnels are 0.5 m long and are a part of the system length.
Always use double collectors for transfer applications.

LSV

for horizontal offset ± 5 mm
for vertical offset ± 3 mm
applications see page 12

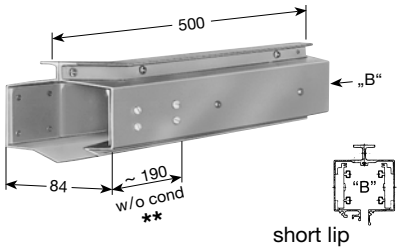


Illustration shows L. H. version
short lip in front
(see page 6)

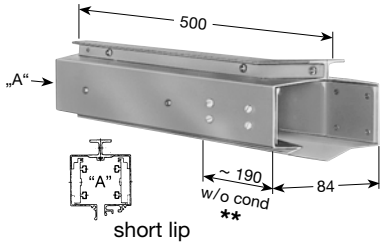


Illustration shows R. H. version
short lip in front
(see page 6)

Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.
Power line **HS** with PE			Power line **HS** with PE			Power line **HS** with PE			Power line **HS** with PE		
AÜLS 4/ 60 L	1,400	192 550	**AÜLS 6/ 60 L**	1,500	192 750	**AÜLS 4/ 60 R**	1,400	192 560	**AÜLS 6/ 60 R**	1,500	192 760
AÜLS 4/100 L	1,550	192 570	**AÜLS 6/100 L**	1,650	192 770	**AÜLS 4/100 R**	1,550	192 580	**AÜLS 6/100 R**	1,650	192 780
AÜLS 4/140 L	1,650	192 590	**AÜLS 6/140 L**	1,750	193 420	**AÜLS 4/140 R**	1,650	192 600	**AÜLS 6/140 R**	1,750	193 430
AÜLS 4/200 L	1,800	192 610	**AÜLS 6/200 L**	1,900	195 618	**AÜLS 4/200 R**	1,800	192 620	**AÜLS 6/200 R**	1,900	195 619
AÜLS 4/300 L	2,050	192 630	**AÜLS 7/ 60 L**	1,550	192 790	**AÜLS 4/300 R**	2,050	192 640	**AÜLS 7/ 60 R**	1,550	192 800
			AÜLS 7/100 L	1,700	192 810				**AÜLS 7/100 R**	1,700	192 820
AÜLS 5/ 60 L	1,450	192 650	**AÜLS 7/140 L**	1,850	192 830	**AÜLS 5/ 60 R**	1,450	192 660	**AÜLS 7/140 R**	1,850	192 840
AÜLS 5/100 L	1,600	192 670	**AÜLS 7/200 L**	2,020	195 620	**AÜLS 5/100 R**	1,600	192 680	**AÜLS 7/200 R**	2,020	195 621
AÜLS 5/140 L	1,750	192 690	Control line **SS** without PE			**AÜLS 5/140 R**	1,750	192 700	Control line **SS** without PE		
AÜLS 5/200 L	1,950	192 710	**AÜLS 4/ 60 L**	1,400	192 850	**AÜLS 5/200 R**	1,950	192 720	**AÜLS 4/ 60 R**	1,400	192 860
AÜLS 5/300 L	2,150	192 730	**AÜLS 6/ 60 L**	1,500	192 870	**AÜLS 5/300 R**	2,150	192 740	**AÜLS 6/ 60 R**	1,500	192 880

LSVG

for horizontal offset ± 5 mm
for vertical offset ± 3 mm
applications see page 12

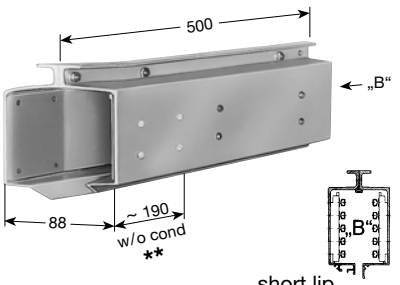


Illustration shows L. H. version
short lip in front
(see page 6)

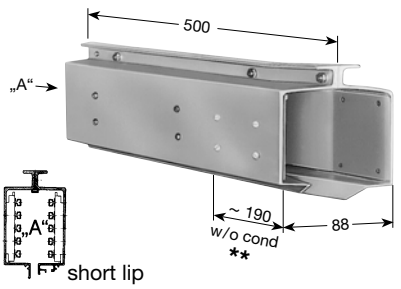
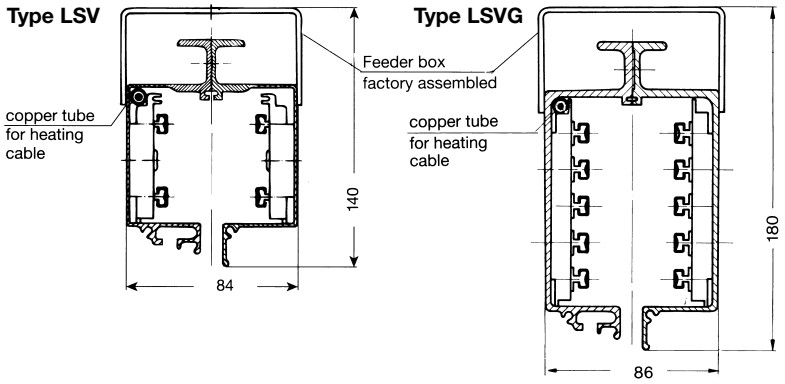


Illustration shows R. H. version
short lip in front
(see page 6)

Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.	Type	Weight kg	Cat.-No.
Power line **HS** with PE			Power line **HS** with PE			Power line **HS** with PE			Power line **HS** with PE		
AÜLSG 6/ 60 L	2,500	181 470	**AÜLSG 9/ 60 L**	2,700	181 730	**AÜLSG 6/ 60 R**	2,500	181 480	**AÜLSG 9/ 60 R**	2,700	181 740
AÜLSG 6/100 L	2,600	181 490	**AÜLSG 9/100 L**	2,800	181 750	**AÜLSG 6/100 R**	2,600	181 500	**AÜLSG 9/100 R**	2,800	181 760
AÜLSG 6/140 L	2,700	181 510	**AÜLSG 9/140 L**	2,950	181 770	**AÜLSG 6/140 R**	2,700	181 520	**AÜLSG 9/140 R**	2,950	181 780
AÜLSG 6/200 L	2,900	181 530	**AÜLSG 9/200 L**	3,120	184 637	**AÜLSG 6/200 R**	2,900	181 540	**AÜLSG 9/200 R**	3,120	184 641
AÜLSG 6/300 L	3,250	181 550	**AÜLSG 10/ 60 L**	2,750	181 790	**AÜLSG 6/300 R**	3,250	181 560	**AÜLSG 10/ 60 R**	2,750	181 800
			AÜLSG 10/100 L	2,850	181 810				**AÜLSG 10/100 R**	2,850	181 820
AÜLSG 7/ 60 L	2,550	181 570	**AÜLSG 10/140 L**	2,950	181 830	**AÜLSG 7/ 60 R**	2,550	181 580	**AÜLSG 10/140 R**	2,950	181 840
AÜLSG 7/100 L	2,700	181 590	**AÜLSG 10/200 L**	3,100	184 638	**AÜLSG 7/100 R**	2,700	181 600	**AÜLSG 10/200 R**	3,100	184 642
AÜLSG 7/140 L	2,850	181 610	**AÜLSG 11/ 60 L**	2,800	181 850	**AÜLSG 7/140 R**	2,850	181 620	**AÜLSG 11/ 60 R**	2,800	181 860
AÜLSG 7/200 L	3,050	181 630	**AÜLSG 11/100 L**	2,900	181 870	**AÜLSG 7/200 R**	3,050	181 640	**AÜLSG 11/100 R**	2,900	181 880
AÜLSG 7/300 L	3,300	181 650	**AÜLSG 11/140 L**	3,050	181 890	**AÜLSG 7/300 R**	3,300	181 660	**AÜLSG 11/140 R**	3,050	181 900
			AÜLSG 11/200 L	3,220	184 639				**AÜLSG 11/200 R**	3,220	184 643
AÜLSG 8/ 60 L	2,600	181 670	Control line **SS** without PE			**AÜLSG 8/ 60 R**	2,600	181 680	Control line **SS** without PE		
AÜLSG 8/100 L	2,700	181 690	**AÜLSG 6/ 60 L**	2,500	181 910	**AÜLSG 8/100 R**	2,700	181 700	**AÜLSG 6/ 60 R**	2,500	181 920
AÜLSG 8/140 L	2,850	181 710	**AÜLSG 8/ 60 L**	2,600	181 930	**AÜLSG 8/140 R**	2,850	181 720	**AÜLSG 8/ 60 R**	2,600	181 940
AÜLSG 8/200 L	3,000	184 636	**AÜLSG 10/ 60 L**	2,750	181 950	**AÜLSG 8/200 R**	3,000	184 640	**AÜLSG 10/ 60 R**	2,750	181 960

* All transfer guides are 0.5 m long and are a part of the system length.
Always use double collectors for transfer applications.
** Detailed drawings of switch, turntable etc. are required to manufacture oblique cut transfer guides and cut back conductors accordingly.

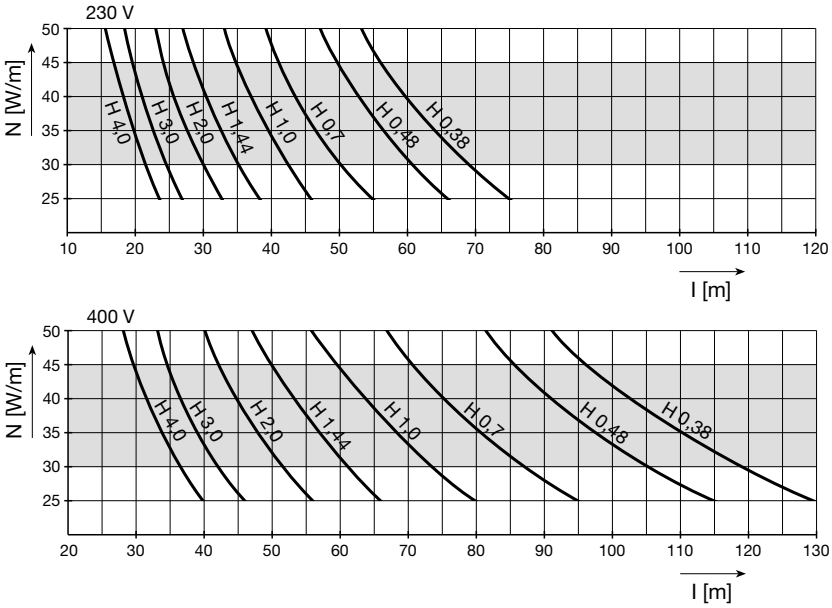
Arrangement of heating cables



Heating systems are recommended for outdoor Powerail installations with icing conditions and for extremely humid environments. The heating is accomplished by heating conductors being arranged inside the Powerail housing as shown in the adjacent drawings.

The heating cables are pulled through the factory assembled copper tubes and connected to the terminal boxes during the installation process at site.

Selection of the heating cable



Composition of heating cable:

Conductor:	material resistor CrNi, stranded
Insulation:	PTFE-(Teflon)
	tinned copper braid
Sheath:	PTFE-insulation
OD:	3.7 mm - 4.3 mm Ø

Determine a heating cable of 30-45 watt/m capacity.

For longer runs, not covered by the adjacent diagrams, divide the length of the system into two or more heating sections.

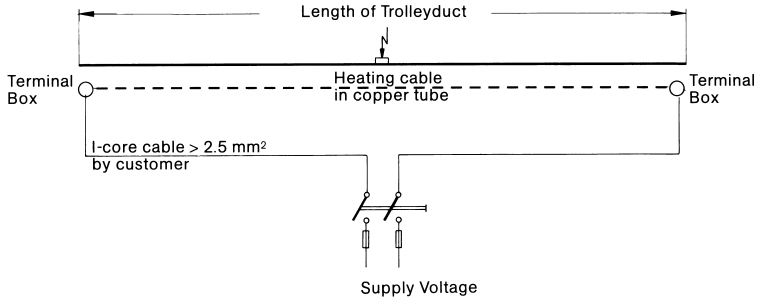
Supply lower voltage via a transformer in case of shorter heating sections.

Heating capacity [Watt/m]: N' = $\frac{U^2}{R \cdot L^2}$

U = supply voltage [Volt]
R = resistance of heating cable [Ohm/m]
L = length of heating section [m]

Wire restistance data:
heating cable: H 0,38 → 0,38 Ohm/m
heating cable: H 0,48 → 0,48 Ohm/m
heating cable: H 0,70 → 0,70 Ohm/m
heating cable: H 1,00 → 1,00 Ohm/m
heating cable: H 1,44 → 1,44 Ohm/m
heating cable: H 2,00 → 2,00 Ohm/m
heating cable: H 3,00 → 3,00 Ohm/m
heating cable: H 4,00 → 4,00 Ohm/m
tolerance ± 2,5 %

Layout of one heating section with feeder boxes at both ends

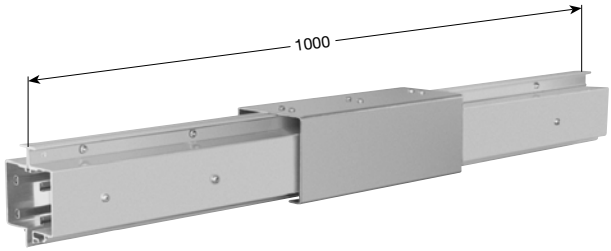


Example for ordering heating system for 60 m trolleyduct

1) 61 m heating cable type H 1.0
(60 m + 1 m safety length)
Supply voltage 380 V, 1 heating section
Heating capacity per above diagram
approx. 40 W/m
with 60 m x 40 W/m approx. 2400 W
= 2.40 kW
2) 60 m copper protection tube
8 x 1 mm factory assembled
3) 2 terminal boxes for heating system
4) 2 sets of connecting material

All switches, fuses, cable etc.
by others!

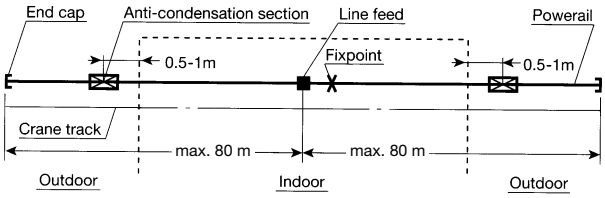
ANTI-CONDENSATION SECTIONS*



Application of Anti-condensation section

This section consists of 1 m Powerail with openings covered by a protection hood.

The anti-condensation section will be used where Powerails are passing from indoor to outdoor, preventing the icing of the outside mounted Powerail as the warm air can escape and does not condensate in the Powerail.



Feeding

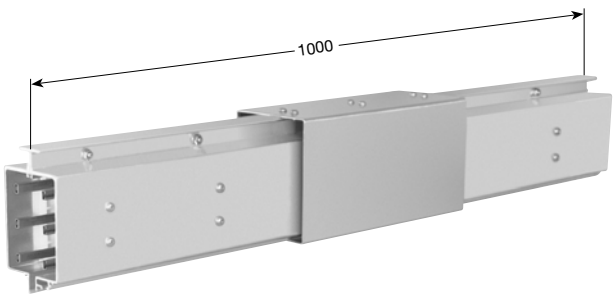
No extra feeds required as the Powerail is not interrupted.

Collectors

No extra collectors required.

Installation

The anti-condensation section will be placed directly at the transfer point from indoor to outdoor service.

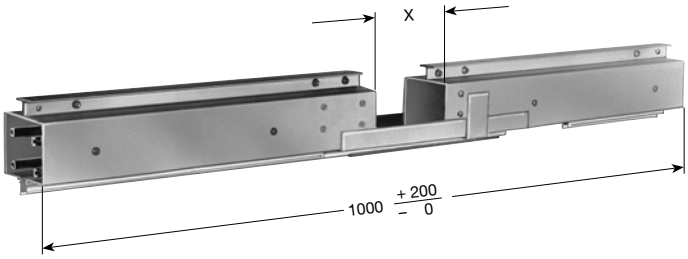


Type	Cat.-No. Power line **HS** with PE	Cat.-No. Control line **SS** without PE
BTL 4/ 60	195 154	195 159
BTL 4/100	195 155	–
BTL 4/140	195 156	–
BTL 4/200	195 157	–
BTL 4/300	195 158	–
BTL 5/ 60	195 160	–
BTL 5/100	195 161	–
BTL 5/140	195 162	–
BTL 5/200	195 163	–
BTL 5/300	195 164	–
BTL 6/ 60	195 165	195 168
BTL 6/100	195 166	–
BTL 6/140	195 167	–
BTL 6/200	195 622	–
BTL 7/ 60	195 169	–
BTL 7/100	195 170	–
BTL 7/140	195 171	–
BTL 7/200	195 623	–

Type	Cat.-No. Power line **HS** with PE	Cat.-No. Control line **SS** without PE
BTLG 6/ 60	184 049	184 073
BTLG 6/100	184 050	–
BTLG 6/140	184 051	–
BTLG 6/200	184 052	–
BTLG 6/300	184 053	–
BTLG 7/ 60	184 054	–
BTLG 7/100	184 055	–
BTLG 7/140	184 056	–
BTLG 7/200	184 057	–
BTLG 7/300	184 058	–
BTLG 8/ 60	184 059	184 062
BTLG 8/100	184 060	–
BTLG 8/140	184 061	–
BTLG 8/200	184 644	–
BTLG 9/ 60	184 063	–
BTLG 9/100	184 064	–
BTLG 9/140	184 065	–
BTLG 9/200	184 645	–
BTLG 10/ 60	184 066	184 069
BTLG 10/100	184 067	–
BTLG 10/140	184 068	–
BTLG 10/200	184 646	–
BTLG 11/ 60	184 070	–
BTLG 11/100	184 071	–
BTLG 11/140	184 072	–
BTLG 11/200	184 647	–

***** Above sections come ready assembled on 1 m Powerail and are a part of the system length.

TELESCOPE SECTIONS*



Telescope sections consist of two transfer guides. The connecting profile pieces serve as running and guiding track for the current collectors.

Foto shows telescope section for LSV.

LSV				LSVG					
Type	Cat.-No.	Type	Cat.-No.	Type	Cat.-No.	Type	Cat.-No.	Type	Cat.-No.
Power line **HS** with PE		Power line **HS** with PE		Power line **HS** with PE		Power line **HS** with PE		Power line **HS** with PE	
TSL 4/ 60	193 840	**TSL 6/ 60**	193 940	**TSLG 6/ 60**	183 310	**TSLG 8/ 60**	183 410	**TSLG 11/ 60**	183 500
TSL 4/100	195 096	**TSL 6/100**	195 104	**TSLG 6/100**	184 001	**TSLG 8/100**	184 009	**TSLG 11/100**	184 015
TSL 4/140	195 097	**TSL 6/140**	195 105	**TSLG 6/140**	184 002	**TSLG 8/140**	184 010	**TSLG 11/140**	184 016
TSL 4/200	195 098	**TSL 6/200**	195 624	**TSLG 6/200**	184 003	**TSLG 8/200**	184 648	**TSLG 11/200**	184 651
TSL 4/300	195 099	**TSL 7/ 60**	193 970	**TSLG 6/300**	184 004	**TSLG 9/ 60**	183 440	Control line **SS** without PE	
		TSL 7/100	195 106			**TSLG 9/100**	184 011		
TSL 5/ 60	193 890	**TSL 7/140**	195 107	**TSLG 7/ 60**	183 360	**TSLG 9/140**	184 012	**TSLG 6/ 60**	183 530
TSL 5/100	195 100	**TSL 7/200**	195 625	**TSLG 7/100**	184 005	**TSLG 9/200**	184 649	**TSLG 8/ 60**	183 540
TSL 5/140	195 101	Control line **SS** without PE		**TSLG 7/140**	184 006	**TSLG 10/ 60**	183 470	**TSLG 10/ 60**	183 550
TSL 5/200	195 102			**TSLG 7/200**	184 007	**TSLG 10/100**	184 013		
TSL 5/300	195 103	**TSL 4/ 60**	194 000	**TSLG 7/300**	184 008	**TSLG 10/140**	184 014		
		TSL 6/ 60	194 010			**TSLG 10/200**	184 650		

Application of Telescope section

1. For Powerail lengths exceeding 160 m (see Fig. 1).
2. For passing the Powerail from indoor to outdoor, thus preventing the icing of the outside mounted Powerail, as the warm air can escape and does not condensate in the Powerail (see Fig. 2). – Alternative solution: Anti-condensation section (see page 17). We recommend a heating system for the outdoor section for extreme winter conditions (see page 16).
3. If the Powerail length between two curves is more than 30 m and the temperature fluctuates considerably (see Fig. 3).

Fig. 1

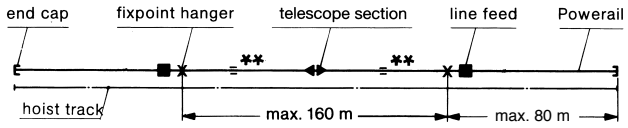


Fig. 2

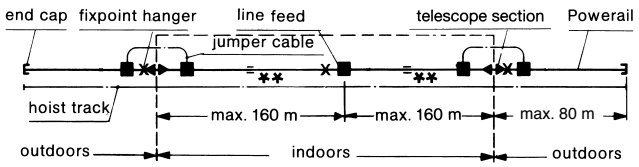
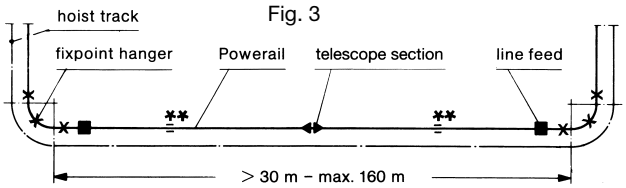


Fig. 3



Feeding

The Powerail is electrically separated into two parts by the telescope section. Each of these parts has to have a separate power feed.

For flexible jumper cables see Fig. 2.

Collectors

Two single collectors, installed at least 500 mm apart, must be used to ensure continuous electrical contact while passing through the telescope section; use two double collectors arranged in the same manner when higher ampacity is required.

Installation

The telescope section is installed halfway between anchor points. The Powerail is installed with sliding hangers according to installation instructions (see pages 30-32).

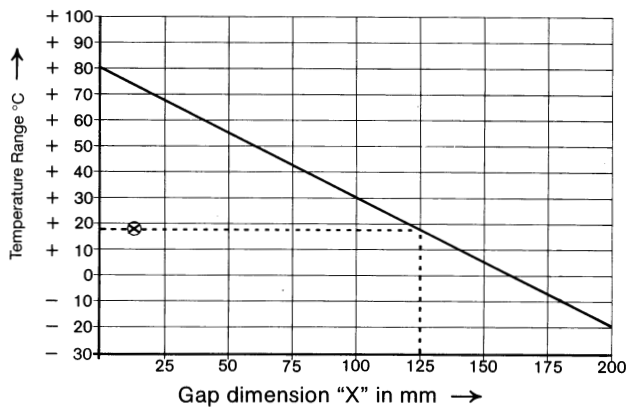
The gap setting dimension "X" between the transfer guides depends on the ambient temperature during the installation of the Powerail and the anticipated temperature fluctuation (see adjacent diagram).

Ⓧ Example

Temperature during installation: 18° C
Anticipated temperature fluctuation: –20° C / +80° C
Telescope section gap setting: "X" = 125 mm

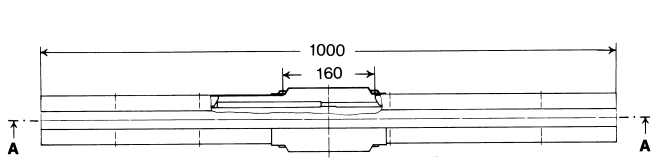
When in doubt – please consult the factory.

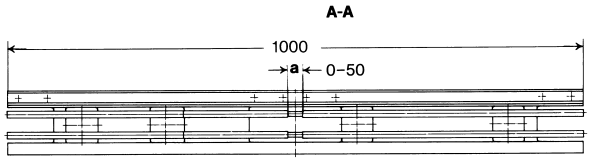
Expansion-Diagram



* Above sections come ready assembled on 1 m Powerail and are a part of the system length.

** DSL/DSLG with bolted joints only see page 19.





Drawings show expansion joint section for LSV

LSV				LSVG					
Type	Cat.-No.	Type	Cat.-No.	Type	Cat.-No.	Type	Cat.-No.	Type	Cat.-No.
Power line **HS** with PE		Power line **HS** with PE		Power line **HS** with PE		Power line **HS** with PE		Power line **HS** with PE	
DSL 4/ 60	194 020	**DSL 6/ 60**	194 120	**DSLG 6/ 60**	183 560	**DSLG 8/ 60**	183 660	**DSLG 11/ 60**	183 750
DSL 4/100	195 108	**DSL 6/100**	195 112	**DSLG 6/100**	184 017	**DSLG 8/100**	184 021	**DSLG 11/100**	184 024
DSL 4/140	195 056	**DSL 6/140**	195 058	**DSLG 6/140**	183 943	**DSLG 8/140**	183 945	**DSLG 11/140**	183 948
DSL 4/200	195 109	**DSL 6/200**	195 626	**DSLG 6/200**	184 018	**DSLG 8/200**	184 652	**DSLG 11/200**	184 655
DSL 4/300	194 060	**DSL 7/ 60**	194 150	**DSLG 6/300**	183 600	**DSLG 9/ 60**	183 690	Control line **SS** without PE	
		DSL 7/100	195 113			**DSLG 9/100**	184 022		
DSL 5/ 60	194 070	**DSL 7/140**	195 059	**DSLG 7/ 60**	183 610	**DSLG 9/140**	183 946	**DSLG 6/ 60**	183 780
DSL 5/100	195 110	**DSL 7/200**	195 627	**DSLG 7/100**	184 019	**DSLG 9/200**	184 653	**DSLG 8/ 60**	183 790
DSL 5/140	195 057	Control line **SS** without PE		**DSLG 7/140**	183 944	**DSLG 10/ 60**	183 720	**DSLG 10/ 60**	183 800
DSL 5/200	195 111			**DSLG 7/200**	184 020	**DSLG 10/100**	184 023		
DSL 5/300	194 110	**DSL 4/ 60**	194 180	**DSLG 7/300**	183 650	**DSLG 10/140**	183 947		
		DSL 6/ 60	194 190			**DSLG 10/200**	184 654		

Expansion joints are only required for LSV and LSVG systems using bolted joints. They serve to compensate for the different expansion and contraction of the aluminium housing and the copper conductors in varying temperatures.
(Plug-in type connectors, sliding inside the hollow conductors do automatically take care of this – with the copper conductors being anchored in each standard Powerail section).

Expansion joints are required if the Powerail length between two anchor points (feeds, sectionalizings and transfer guides are such anchor points and factory assembled extra anchor points FPL/Cu and FPLG/Cu are available) exceeds L/6 per Fig. 1 and 2.

Corresponding to an anticipated temperature difference (Δt) the maximum length L would be as follows:

Δt 40° C = 160 m
Δt 45° C = 140 m
Δt 50° C = 120 m
Δt 60° C = 100 m
Δt 80° C = 80 m
Δt 100° C = 60 m

When in doubt regarding position and number of expansion joints please consult the factory for layout plans.

Fig. 1

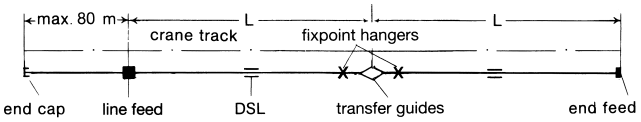
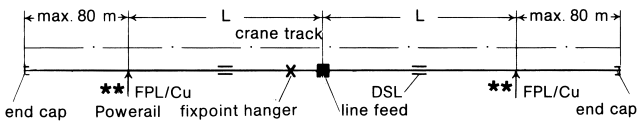


Fig. 2



Feeding

No extra feeds required as the Powerail is not interrupted.

Collectors

No extra collectors required.

Installation

The expansion joint integrated in the one meter powerail section is installed on sliding hangers in the center between two anchor points of the copper conductors.

The gap dimension “a” is factory set to 30 mm, suited for a temperature of +5° C up to +30° C during installation.

When in doubt – please consult the factory.

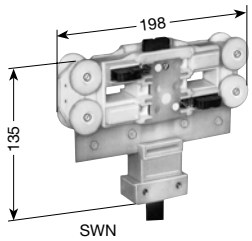
Anchor points for copper conductors (** ↑)

LSV			LSVG		
Type	No. of cond.	Cat.-No.	Type	No. of cond.	Cat.-No.
FPL/Cu	4 & 5	194 530	**FPLG/Cu**	6 & 7	183 830
FPL/Cu	6 & 7	194 540	**FPLG/Cu**	8 & 9	183 840
			FPLG/Cu	10 & 11	183 850

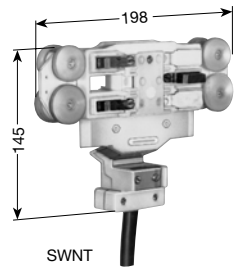
* Above sections come ready assembled on 1 m Powerail and are a part of the system length.

LSV

SWK



SWN



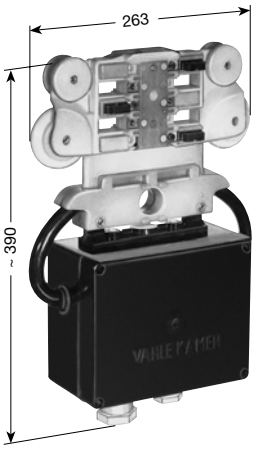
SWNT

	Type**	A*	Cat.-No.	Type**	A*	Cat.-No.	Poles	Weight kg	max. speed m/min.		General
	for Power **HS** with PE			for Control **ST** without PE					nor-mal	trans-fer	
LSV	**SWK 4/25-1**	25	250 230	**SWK 4/25-1**	25	250 240	4	0,76	80	60	for straight runs and curves R > 2.5 m for LSV 4/60 and LSV 4/100
LSV	**SWK 4/40-1**	40	257 394	–	–	–	4	0,86	80	60	
LSV	**SWN 4/40-1**	40	194 691	**SWN 4/25-1**	25	194 692	4	0,85	150	80	for straight runs and curves with ball bearing wheels
LSV	**SWN 5/40-1**	40	194 693				5	0,95	150	80	
LSV	**SWN 6/40-1**	40	194 694	**SWN 6/25-1**	25	194 695	6	1,20	150	80	
LSV	**SWN 7/40-1**	40	194 696				7	1,30	150	80	
LSV+D or FP	**SWNT 4/40-1**	40	194 772	**SWNT 4/25-1**	25	194 773	4	0,85	100	60	for straight runs and curves with ball bearing wheels
LSV+D or FP	**SWNT 5/40-1**	40	194 774				5	0,95	100	60	
LSV+D or FP	**SWNT 6/40-1**	40	194 775	**SWNT 6/25-1**	25	194 776	6	1,20	100	60	
LSV+D or FP	**SWNT 7/40-1**	40	194 777				7	1,30	100	60	

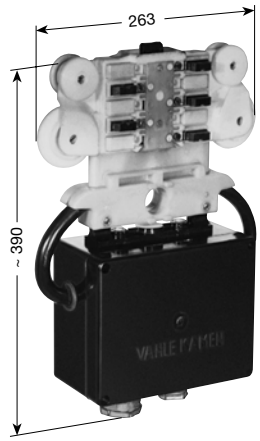
Trolley connecting cable 1 m long (longer cable available); copper cross section 2.5 mm² per core for 25 A and 4 mm² per core for 40 A.

Cleaning trolleys on request.

LSVG



SWNG 6pole



SWNG 11pole

	Type**	A*	Cat.-No.	Type**	A*	Cat.-No.	Poles	Weight kg	max. speed m/min.		General
	for Power **HS** with PE			for Control **ST** without PE					nor-mal	trans-fer	
LSVG	**SWNG 6/40**	40	183 883	**SWNG 6/25**	25	183 884	6	2,10	200	100	for straight runs and curves with ball bearing wheels and guide rollers
LSVG	**SWNG 7/40**	40	183 885				7	2,15	200	100	
LSVG	**SWNG 8/40**	40	183 886	**SWNG 8/25**	25	183 887	8	2,20	200	100	
LSVG	**SWNG 9/40**	40	183 888				9	2,25	200	100	
LSVG	**SWNG 10/40**	40	183 889	**SWNG 10/25**	25	183 890	10	2,30	200	100	
LSVG	**SWNG 11/40**	40	183 891				11	2,35	200	100	
LSVG	**SWNG 6/40 FM**	40	183 901	**SWNG 6/25 FM**	25	183 902	6	2,10	200	80	like above however, **for transfer** applications
LSVG	**SWNG 7/40 FM**	40	183 903				7	2,15	200	80	
LSVG	**SWNG 8/40 FM**	40	183 904	**SWNG 8/25 FM**	25	183 905	8	2,20	200	80	
LSVG	**SWNG 9/40 FM**	40	183 906				9	2,25	200	80	
LSVG	**SWNG 10/40 FM**	40	183 907	**SWNG 10/25 FM**	25	183 908	10	2,30	200	80	
LSVG	**SWNG 11/40 FM**	40	183 909				11	2,35	200	80	
LSVG+D or FP	**SWNGT 6/40**	40	183 892	**SWNGT 6/25**	25	183 893	6	2,10	100	60	for straight runs and curves with ball bearing wheels and guide rollers
LSVG+D or FP	**SWNGT 7/40**	40	183 894				7	2,15	100	60	
LSVG+D or FP	**SWNGT 8/40**	40	183 895	**SWNGT 8/25**	25	183 896	8	2,20	100	60	
LSVG+D or FP	**SWNGT 9/40**	40	183 897				9	2,25	100	60	
LSVG+D or FP	**SWNGT 10/40**	40	183 898	**SWNGT 10/25**	25	183 899	10	2,30	100	60	
LSVG+D or FP	**SWNGT 11/40**	40	183 900				11	2,35	100	60	

connecting cables to terminal box: 2.5 mm² for 25 Amp. trolleys
4 mm² for 40 Amp. trolleys

max. Ø of cable outlets: 1 of 29 mm and 1 of 21 mm for power and control circuits.

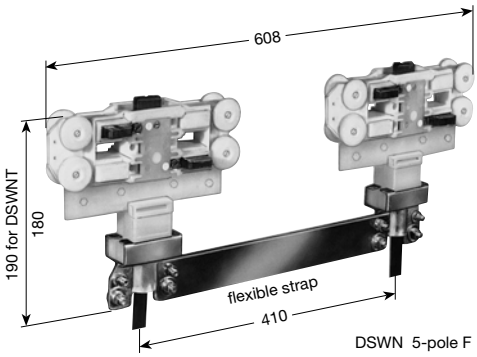
Cleaning trolleys on request.

* All ampere data for 60 % intermittent duty.
** For full Type designation add Power or Control, suffix e.g. SWK 4/25-1 **HS** for Cat.-No. 250 230
SWNG 6/25 **ST** for Cat.-No. 183 884.

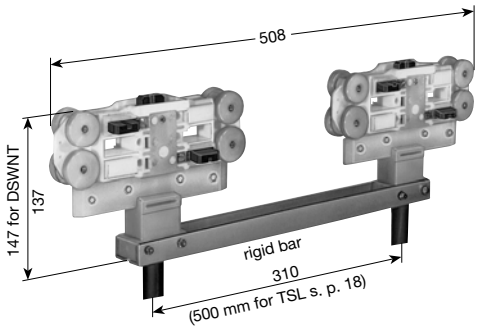
LSV

F = flexible strap connection for curves
S = rigid bar connection for straight runs

Type**	A*	Cat.-No.	Type**	A*	Cat.-No.	Poles	Weight kg
for Power **HS** with PE			for Control **ST** without PE				
		LSV					
DSWK 4/50 F-1	50	250 320	**DSWK 4/50 F-1**	50	250 330	4	1,900
DSWK 4/80 F-1	80	252 580	–	–	–	4	2,100
DSWK 4/50 S-1	50	258 383	**DSWK 4/50 S-1**	50	258 384	4	1,900
DSWK 4/80 S-1	80	252 590	–	–	–	4	2,100
DSWN 4/80 F-1	80	194 703	**DSWN 4/50 F-1**	50	194 704	4	2,150
DSWN 5/80 F-1	80	194 705	–	–	–	5	2,350
DSWN 6/80 F-1	80	194 706	**DSWN 6/50 F-1**	50	194 707	6	3,000
DSWN 7/80 F-1	80	194 708	–	–	–	7	3,250
DSWN 4/80 S-1	80	194 808	**DSWN 4/50 S-1**	50	194 809	4	2,150
DSWN 5/80 S-1	80	194 810	–	–	–	5	2,350
DSWN 6/80 S-1	80	194 811	**DSWN 6/50 S-1**	50	194 812	6	3,000
DSWN 7/80 S-1	80	194 813	–	–	–	7	3,250
		LSV + D or FP					
DSWNT 4/80 F-1	80	194 778	**DSWNT 4/50 F-1**	50	194 779	4	2,150
DSWNT 5/80 F-1	80	194 780	–	–	–	5	2,350
DSWNT 6/80 F-1	80	194 781	**DSWNT 6/50 F-1**	50	194 782	6	3,000
DSWNT 7/80 F-1	80	194 783	–	–	–	7	3,250
DSWNT 4/80 S-1	80	194 814	**DSWNT 4/50 S-1**	50	194 815	4	2,150
DSWNT 5/80 S-1	80	194 816	–	–	–	5	2,350
DSWNT 6/80 S-1	80	194 817	**DSWNT 6/50 S-1**	50	194 818	6	3,000
DSWNT 7/80 S-1	80	194 819	–	–	–	7	3,250



DSWN 5-pole F



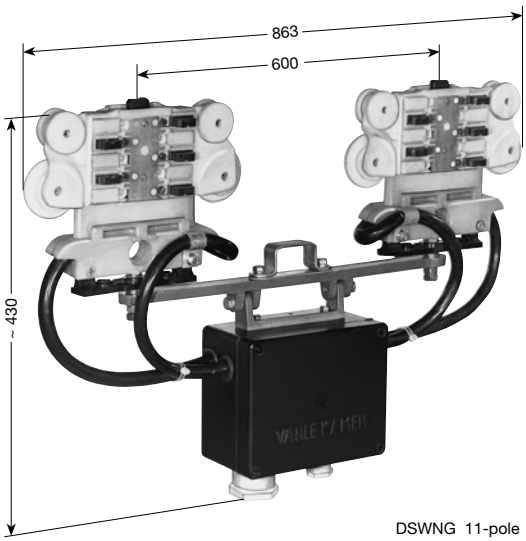
DSWN 5-pole S

With 2 connecting cables, each 1 m long; copper cross section 2.5 mm², resp. 4 mm² (longer cable available).

Don't use double collectors, but 2 singles for curves with less than 1.5 m radius and for transfer guides more than 45 degr. oblique cut.

LSVG

	Type**	A*	Cat.-No.	Type**	A*	Cat.-No.	Poles	Weight kg
	for Power **HS** with PE			for Control **ST** without PE				
LSVG	**DSWNG 6/80**	80	183 910	**DSWNG 6/50**	50	183 911	6	4,15
	DSWNG 7/80	80	183 912				7	4,25
	DSWNG 8/80	80	183 913	**DSWNG 8/50**	50	183 914	8	4,35
	DSWNG 9/80	80	183 915				9	4,45
	DSWNG 10/80	80	183 916	**DSWNG 10/50**	50	183 917	10	4,55
	DSWNG 11/80	80	183 918				11	4,65
LSVG with D + FP	**DSWNGT 6/80**	80	183 919	**DSWNGT 6/50**	50	183 920	6	4,15
	DSWNGT 7/80	80	183 921				7	4,25
	DSWNGT 8/80	80	183 922	**DSWNGT 8/50**	50	183 923	8	4,35
	DSWNGT 9/80	80	183 924				9	4,45
	DSWNGT 10/80	80	183 925	**DSWNGT 10/50**	50	183 926	10	4,55
	DSWNGT 11/80	80	183 927				11	4,65



DSWNG 11-pole

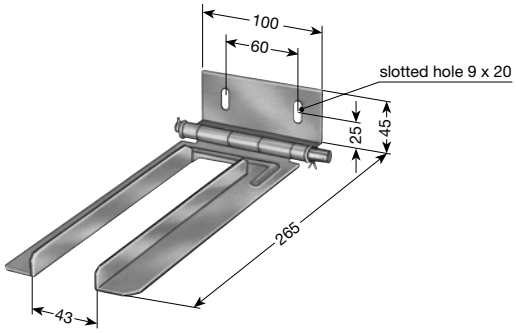
connecting cable to terminal box:
2 x 2.5 mm² for 50 Amp. trolleys
2 x 4 mm² for 80 Amp. trolleys

max. Ø of cable outlets:
1 of 36 mm and 1 of 21 mm for power circuits
1 of 29 mm and 1 of 21 mm for control circuits

* All ampere data for 60 % intermittent duty.
** For full Type designation add Power or Control, suffix e.g. DSWK 4/50 F-1 **HS** for Cat.-No. 250 320
DSWNG 6/50 **ST** for Cat.-No. 183 911.

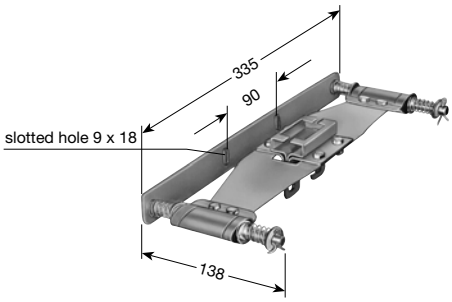
LSV

for single and double collector



Type	Weight kg	Cat.-No.
KWS	0.480	250 380
KWS/K*	0.480	252 340

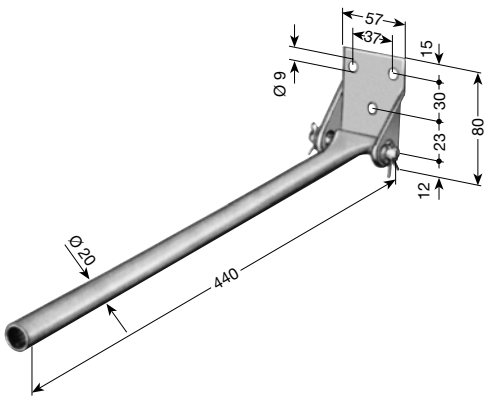
flexible support type with single collector
for tranfer funnel ETL; see pages 13 & 23



Type	Weight kg	Cat.-No.
KFM for SWK	1.160	250 390
KFML for SWN and SWNT	1.170	250 970

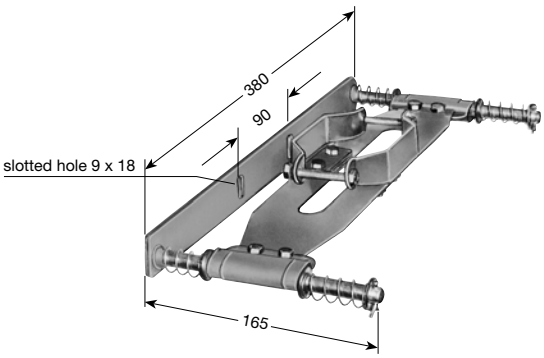
LSVG

for single and double collector



Type	Cat.-No.	Weight kg
GKM	0.620	260 350
GKM/K*	0.620	261 560

flexible support type with single collector
for tranfer funnel ETLG; see pages 13 & 23

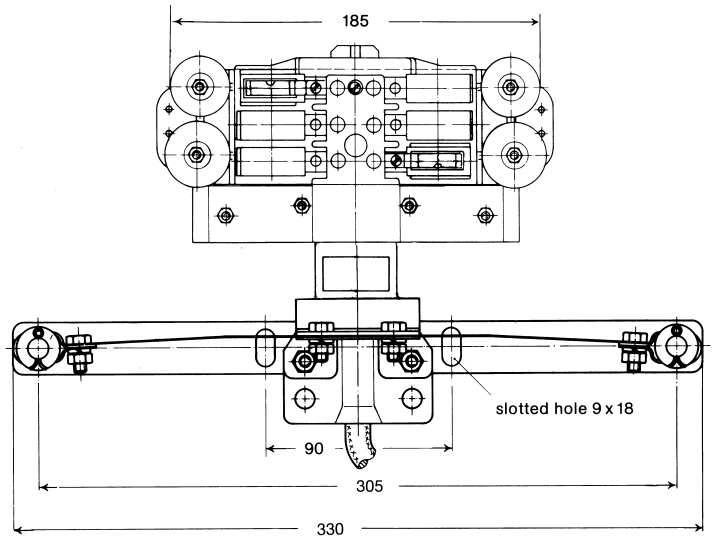


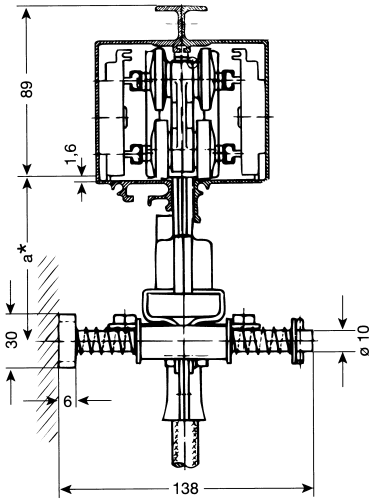
Type	Weight kg	Cat.-No.
GFM for SWNG/FM	1.300	260 360

* stainless steel

LSV

SWN 5/40 collector and KFML tow arm



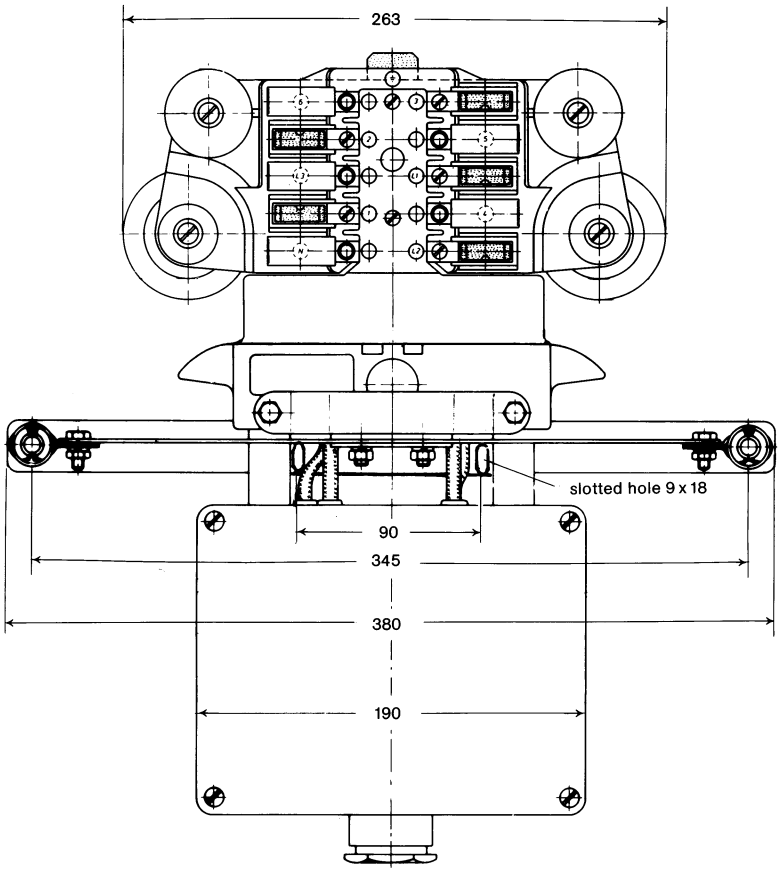


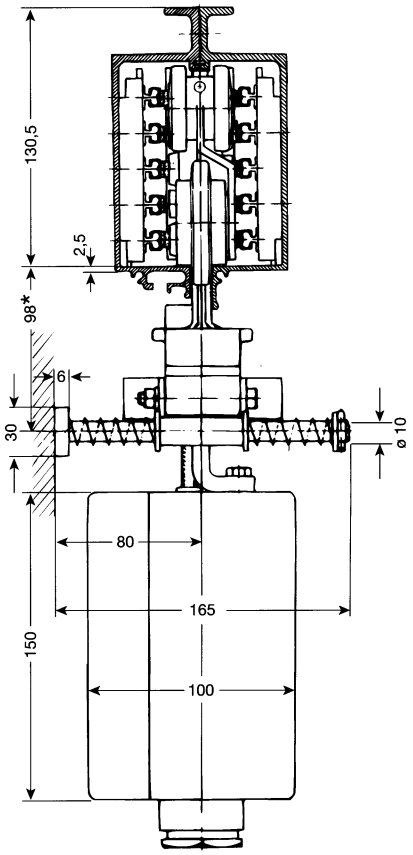
max. horizontal offset ± 15
max. vertical offset ± 10

with collector	SWK	SWN	SWNT
Dim. a	85	95	105

LSVG

SWNG 11/40 FM collector and GFM tow arm





max. horizontal offset ± 15
max. vertical offset ± 10

* adjust during installation

LSV

for Powerail

	Cat.-No.
joint fish plate (stainless), pair	191 830
joint cover, pair	191 840
joint cover anodized, pair	190 470
peg to fix housing	190 510
copper conductor 16 mm², 5th and 7th pole (top)	195 190
copper conductor rail 16 mm²	191 880
copper conductor rail 25 mm²	191 900
copper conductor rail 35 mm²	191 910
copper conductor rail 50 mm²	191 920
copper conductor rail 50 mm² (for ground 300 A only)	201 170
copper conductor rail 70 mm² (for Phase 300 A only)	201 180
2pole insulator for 60-200 A systems	191 850
2pole insulator for 300 A systems	191 860
3pole insulator for 60-200 A systems	191 870
plug-in connector for 60-140 A systems	191 800
bolted joint connector for 60-200 A systems	191 810
bolted joint connector for 300 A systems	191 820
locking pin for plastic shielding	258 578
coupling for sealing strip	258 300
fastener for sealing strip	258 432
mounting trolley for sealing strip	258 345

for Collectors

Type	SWK*	SWN	SWNT
	Cat.-No.	Cat.-No.	Cat.-No.
carbon brush phase, incl. brush holder	250 470	254 890	254 890
carbon brush ground 5th and 7th pole (top), incl. brush holder	–	254 891	254 891
carbon brush ground, incl. brush holder	250 480	254 892	254 892
carbon pressure spring	250 490	258 757	258 757
carbon pressure spring, reinforced	258 759	258 760	258 760
collector neck (pair)	–	254 893	254 898
glider plate for sealing strip	–	–	258 370
wheel (bottom)	251 690	254 895	254 895
guide roller (top)	251 700	254 903	254 903
connecting strap for double collectors	258 379	258 379	258 379
connecting bar for double collectors	258 430	258 431	258 431
attachment clamp KWZ	250 310	–	–
attachment clamp KWZ/K, stainless	252 639	–	–
attachment clamp KWZL	–	254 897	254 897

Conductor dead section**

factory assembled
(300 Amp. systems with air gap only)

Illustration shows STA 3

Type	with air gap 5 mm Cat.-No.	Type	with insul. section 30 mm Cat.-No.
STA 1	193 440	**STI 1**	193 500
STA 2	193 450	**STI 2**	193 510
STA 3	193 460	**STI 3**	193 520
STA 4	193 470	**STI 4**	193 530
STA 5	193 480	**STI 5**	193 540
STA 6	193 490	**STI 6**	193 550

LSVG

for Powerail

	Cat.-No.
joint fish plate (stainless), pair	183 060
joint cover, pair	183 080
joint cover anodized, pair	183 090
peg to fix housing	190 510
copper conductor rail 16 mm²	191 880
copper conductor 16 mm², 7th, 9th and 11th pole (top)	195 190
copper conductor rail 25 mm²	191 900
copper conductor rail 35 mm²	191 910
copper conductor rail 50 mm²	191 920
copper conductor rail 70 mm²	191 930
5pole insulator for 60-200 A systems	183 160
2pole insulator for 300 A systems	183 170
plug-in connector for 60-140 A systems	191 800
bolted joint connector for 60-200 A systems	191 810
bolted joint connector for 300 A systems	191 820
locking pin for plastic shielding	258 578
coupling for sealing strip	258 300
fastener for sealing strip	258 432
mounting trolley for sealing strip	184 033

for Collectors

Type	SWNG	SWNGT
carbon brush phase, incl. brush holder	254 890	254 890
carbon brush ground 7th, 9th and 11th pole (top)	254 891	254 891
carbon brush ground, incl. brush holder	254 892	254 892
carbon pressure spring	258 757	258 757
carbon pressure spring, reinforced	258 760	258 760
collector neck (pair)	183 280	183 865
wheel (bottom)	183 290	183 290
guide roller (top)	183 300	183 300

Conductor dead section**

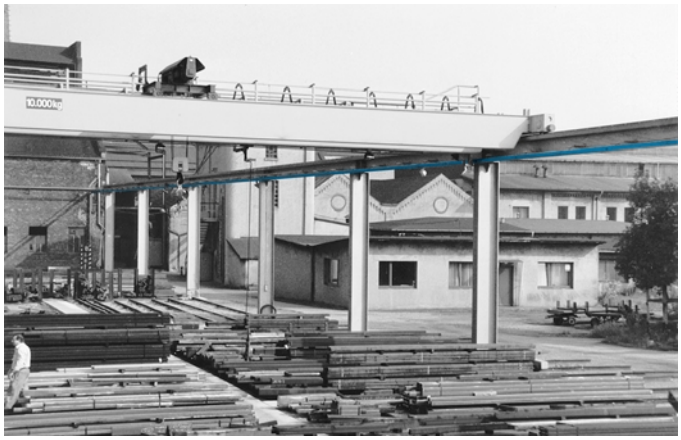
factory assembled
(300 Amp. systems with air gap only)

Illustration shows STAG 5

Type	with air gap 5 mm Cat.-No.	Type	with insul. section 30 mm Cat.-No.
STAG 1	182 860	**STIG 1**	182 960
STAG 2	182 870	**STIG 2**	182 970
STAG 3	182 880	**STIG 3**	182 980
STAG 4	182 890	**STIG 4**	182 990
STAG 5	182 900	**STIG 5**	183 000
STAG 6	182 910	**STIG 6**	183 010
STAG 7	182 920	**STIG 7**	183 020
STAG 8	182 930	**STIG 8**	183 030
STAG 9	182 940	**STIG 9**	183 040
STAG 10	182 950	**STIG 10**	183 050

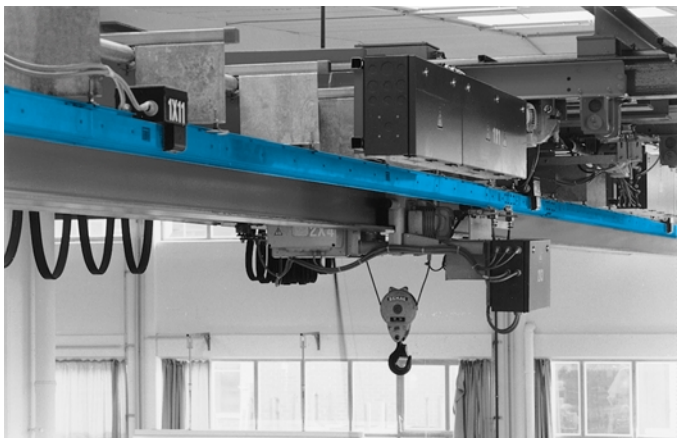
* SWK carbon brush without brush holder.

** Please indicate which conductors are to be interrupted.



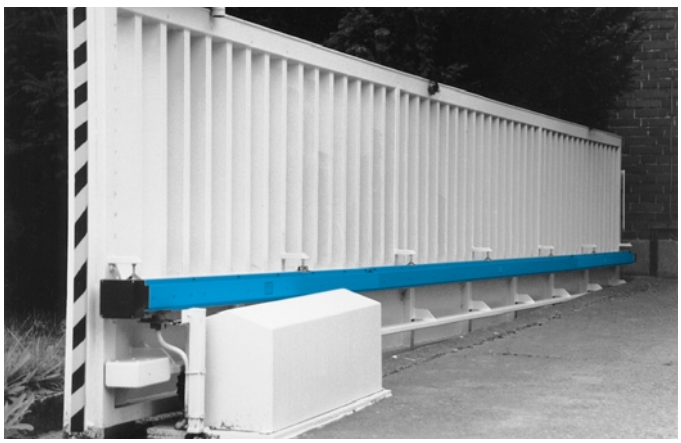
LSV feeding steel yard cranes

LSVG on crane bridge



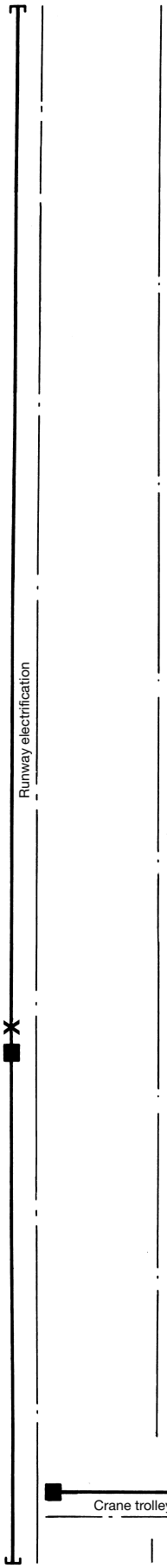
LSV serves for OHT crane electrification

LSV power gates



EXAMPLES FOR ORDERING

with Bolted joints



Runway electrification · 40 m

Qty		Type	Cat.-No.	Type	Cat.-No.
9	Powerails, 4 m long	LSV 4/60-4 **HS**	190 004	LSVG 10/60-4 **HS**	180 164
1	Powerail, 3 m long	LSV 4/60-3 **HS**	190 003	LSVG 10/60-3 **HS**	180 163
10	Joint materials	VBL 4/5	195 244	VLG 10/11	184 111
19	Sliding hangers	GAL	190 130	SAS	200 160
1	Fixpoint hanger	FAL	190 120	SAFG	180 310
1	Line feed, 1 m long	NKL 4/60 **HS**	195 074	NKLG 10/60 **HS**	183 988
2	End caps	EKL	190 220	EKLG	180 320
1	Double collector	DSWN 4/80 S-1 **HS**	194 808	DSWNG 10/80 **HS**	183 916
1	Tow arm	KWS	250 380	GKM	260 350

Crane trolley electrification · 12 m

2	Powerails, 4 m long	LSV 7/60-4 **HS**	190 074	LSVG 11/60-4 **HS**	180 194
1	Powerail, 3 m long (cut in 2.5 m)	LSV 7/60-3 **HS**	190 073	LSVG 11/60-3 **HS**	180 193
4	Joint materials	VBL 6/7	195 246	VLG 10/11	184 111
5	Sliding hangers	GAL	190 130	SAS	200 160
1	Fixpoint hanger	FAL	190 120	SAFG	180 310
1	End feed, 1 m long	KEL 7/60 R **HS**	190 170	KELG 11/60 R **HS**	180 480
1	Transfer guide, 0.5 m long	AÜL 7/60 L **HS**	192 450	AÜLG 11/60 L **HS**	181 350
1	Double collector	DSWN 7/80 S-1 **HS**	194 813	DSWNG 11/80 **HS**	183 918
1	Tow arm	KWS	250 380	GKM	260 350

Spur rail electrification · 30 m

7	Powerails, 4 m long	LSV 7/60-4 **HS**	190 074	LSVG 11/60-4 **HS**	180 194
1	Powerail, 1 m long (cut in 0.5 m)	LSV 7/60-1 **HS**	190 071	LSVG 11/60-1 **HS**	180 191
9	Joint materials	VBL 6/7	195 246	VLG 10/11	184 111
14	Sliding hangers	GAL	190 130	SAS	200 160
1	Fixpoint hanger	FAL	190 120	SAFG	180 310
1	Line feed, 1 m long	NKL 7/60 **HS**	195 089	NKLG 11/60 **HS**	183 992
1	Transfer guide, 0.5 m long	AÜL 7/60 R **HS**	192 460	AÜLG 11/60 R **HS**	181 360
1	End cap	EKL	190 220	EKLG	180 320

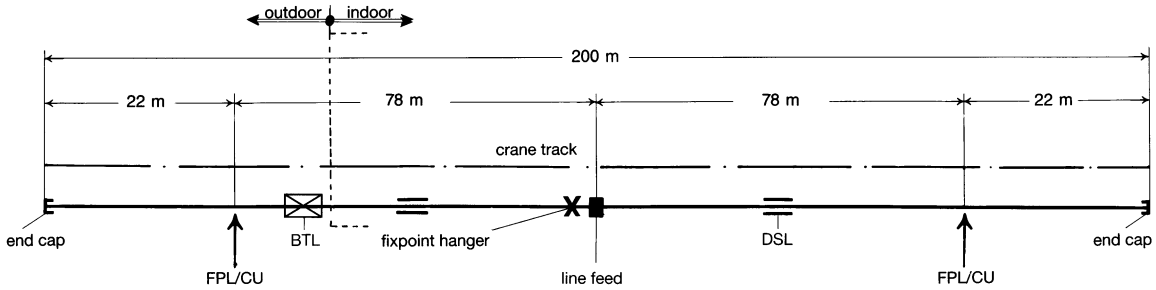
X = Fixpoint hanger; all other support points are sliding hangers.

Consider supplements (p. 6 & 16) if required.

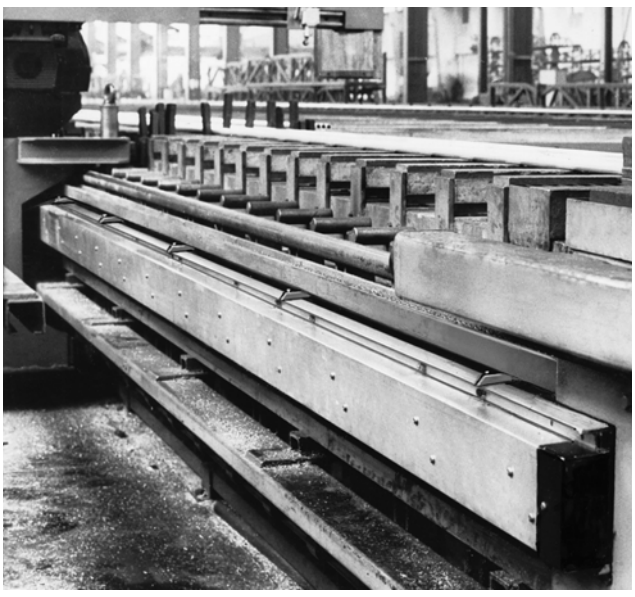
Straight track electrification · 200 m · with Line feed and Bolted joints

Anticipated temperature difference Δ t = 80° C, L = max. 80 m;
for example –20° C up to +60° C; see page 19

Qty		Type	Cat.-No.	Type	Cat.-No.
49	Powerails, 4 m long	LSV 4/200-4 **HS**	190 614	LSVG 6/200-4 **HS**	180 034
52	Joint materials	VBLS 4/5	195 248	VLGS 6/7	184 113
2	Anchor points for copper conductors	FPL/Cu 4pole	194 530	FPLG/Cu 6pole	183 830
99	Sliding hangers	GAL	190 130	SAS	200 160
1	Fixpoint hanger	FAL	190 120	SAFG	180 310
1	Line feed, 1 m long	NKL 4/200 **HS**	195 077	NKLG 6/200 **HS**	185 031
2	Expansion joint sections, 1 m long	DSL 4/200 **HS**	195 109	DSLG 6/200 **HS**	184 018
1	Anti-condensation section, 1 m long	BTL 4/200 **HS**	195 157	BTLG 6/200 **HS**	184 052
2	End caps	EKLS	195 149	EKLGS	184 100
2	Double collectors	DSWN 4/80 S-1 **HS**	194 808	DSWNG 6/80 **HS**	183 910
2	Tow arms	KWS	250 380	GKM	260 350



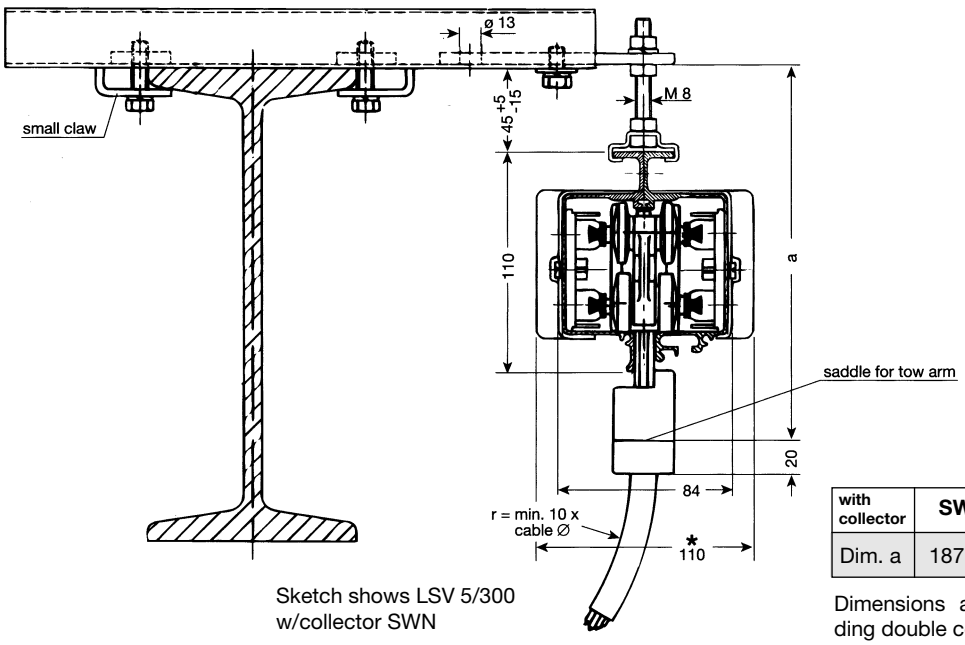
X = Fixpoint hanger; all other support points are sliding hangers. Consider supplements (p. 6 & 16) if required.



LSVG Powerail feeding a production machine

LSV Powerail feeding a steel yard crane

LSV



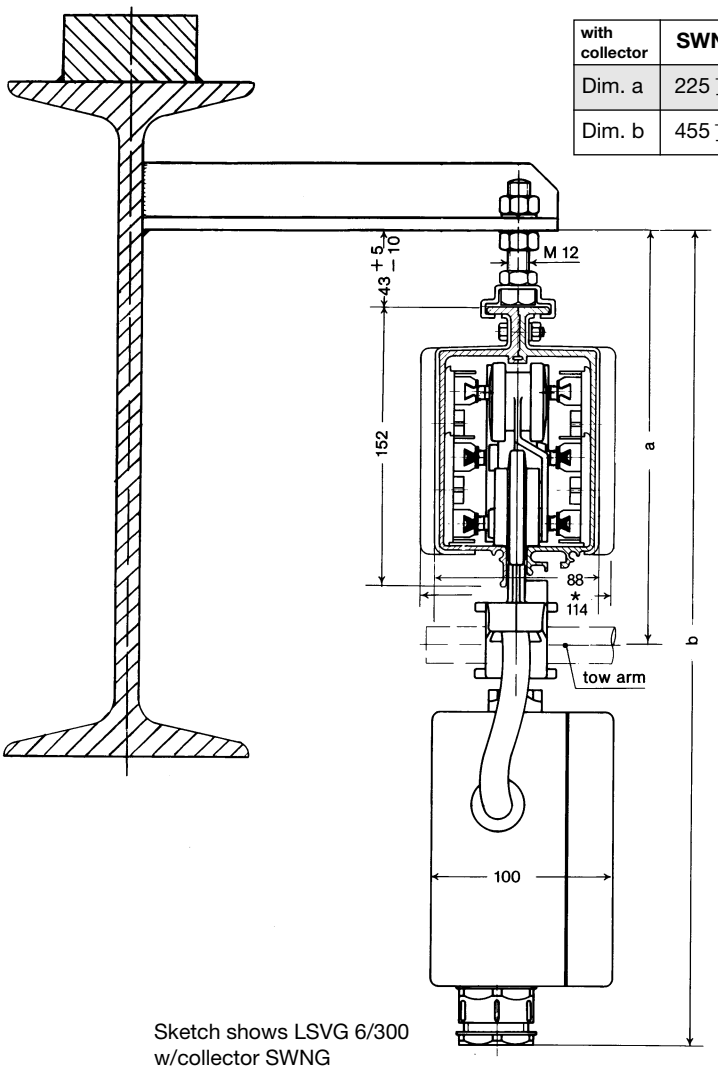
Sketch shows LSV 5/300 w/collector SWN

with collector	SWK	SWN	SWNT
Dim. a	187 +5 –15	187 +5 –15	197 +5 –15

Dimensions also refer to corresponding double collectors.

LSVG

with collector	SWNG	DSWNG	SWNGT	DSWNGT
Dim. a	225 +5 –10	255 +5 –10	243 +5 –10	268 +5 –10
Dim. b	455 +5 –10	495 +5 –10	460 +5 –10	500 +5 –10



Sketch shows LSVG 6/300 w/collector SWNG

* For max. width see also pages 10 & 11 feed set configurations.

CUSTOMER _____ ATTENTION OF _____

ADDRESS _____

TELEPHONE _____

1. Type of crane/machine to be electrified _____
2. Voltage _____ Volts~/=: _____ Phases, _____ c/s
3. Length of conductor system _____
4. Number of conductors required: _____ power lines, _____ control lines, _____ neutral (ground)
5. Indoor ☐ Outdoor ☐
6. Special site conditions (humidity, dust, chemical influences etc.) _____
7. Temperature conditions _____ °C min. _____ °C max.
8. Number and position of feed points _____
9. Installation position envisaged _____
   (prints or sketches should be submitted whenever obtainable)
10. Number of cranes/machines supplied by the one system _____
11. Ampere load of each crane/machine _____
    (use table on page 30)
12. Max. travelling speed of machinery _____
13. Other important data: _____

For curved tracks, breaks in system etc. please submit prints or sketches.

To our nearest local agency

Date:

Motor data	Crane 1			Crane 2			Crane 3		
	Power kW/HP	Current Amps	Duty-factor %	Power kW/HP	Current Amps	Duty-factor %	Power kW/HP	Current Amps	Duty-factor %
Hoist motor									
Auxiliary hoist									
Travel motor – main-trolley									
Travel motor – aux.-trolley									
Main travel									
Slewing									
Luffing									

Mark with* any motors that may be in simultaneous operation.

Additional Comments: _____

LSVG Powerail for drawing bench electrification

LSV Powerail feeding sewage treatment system

Catalog No. 3 a/E 2000

CE

DIN EN ISO 9001 CERTIFIED QUALITY SYSTEM

Reg. No. 3140

	Catalog No.
Copperhead Conductor Systems	1 a
Battery Charging Systems	1 b
Insulated Conductor Systems U 10	2 a
Insulated Conductor Systems U 20 – U 30 – U 40	2 b
Insulated Conductor Systems U 15 – U 25 – U 35	2 c
Aluminium Enclosed Conductor Systems LSV – LSVG	3 a
Steel Enclosed Conductor Systems SLG – HSL	3 b
Powerail Enclosed Conductor Systems KBSL – KSL – KSLT – KSG	4 a
Powerail Enclosed Conductor Systems VKS – VKL	4 b
Powerail Enclosed Conductor System MKLD – MKLF – MKLS	4 c
Heavy Enclosed Conductor Systems	5
Trolley Wire and Accessories	6
Cable Tenders	7
Cable Carriers for ▢-tracks	8 a
Cable Carriers for Flatform Cable on I-beams	8 bF
Cable Carriers for Round Cable on I-beams	8 bR
Cable Carriers for ◇-tracks	8 c
Conductor Cables and Fittings	8 L
Spring Operated Cable Reels	9 a
Overload Protection Systems	9 b
VAHLE POWERCOM® – Data Transmission Systems	9 c
CPS – Contactless Power Supply	9 d
SMG – Slotted Microwave Guide	9 e
Motor Powered Cable Reels	10

0011 · Printed in Germany · 2000-3127 · 2000 · 11/00

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