

CABLE CARRIERS I-BEAM SUPPORTED

FOR FLAT CABLE



VAHLE FESTOON SYSTEMS

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General:

Vahle Festoon systems support electric cables or hoses for mobile machinery.

The cable carriers contained in this catalog comply with VDE regulations and international safety requirements. Flat and round cables could be used.

Due to the good bending characteristics and the small allowed bending radii the flat cables are preferred.

Track profiles can be standard I-beams of the INP or IPE series. The suitable beam sizes could be found in the tables at the particular cable carriers.

Application

Cable carrier ride on an I-beam parallel to the traversing track of the equipment. Where there is sufficient space for the storage distance, the cable carriers can run on the hoist track.

While at the cable carriers of the series 20 and 30 the lead is handled over a lead carrier, where a at the machinery installed towing arm engage at the lead carrier, at all other cable carrier series is the lead handled over a towing arm which is fixed with the machinery.

The track clamp is the stationary fastening point of the cables and is bolted to the I-beam at fixed position. The cable ends extending from the track clamp are terminated at a junction box. The track clamp, together with the bumper, facing towards the last carrier, serves as a limit stop for the carriers.

Tow ropes are optional depending on the cable arrangement, loop depth, travel speed and acceleration. The strain relief ropes are slightly shorter than the electric cables in each loop.

Layout

Layout considerations for cable carriers are cable or hose dimensions and the load-carrying capacity of the cable carriers.

When selecting a Festoon system please refer to pages 35 – 39 of this catalog or please send us the completed questionnaire on page 3.

Catalog No. 8a: Cable Carriers on  -Tracks

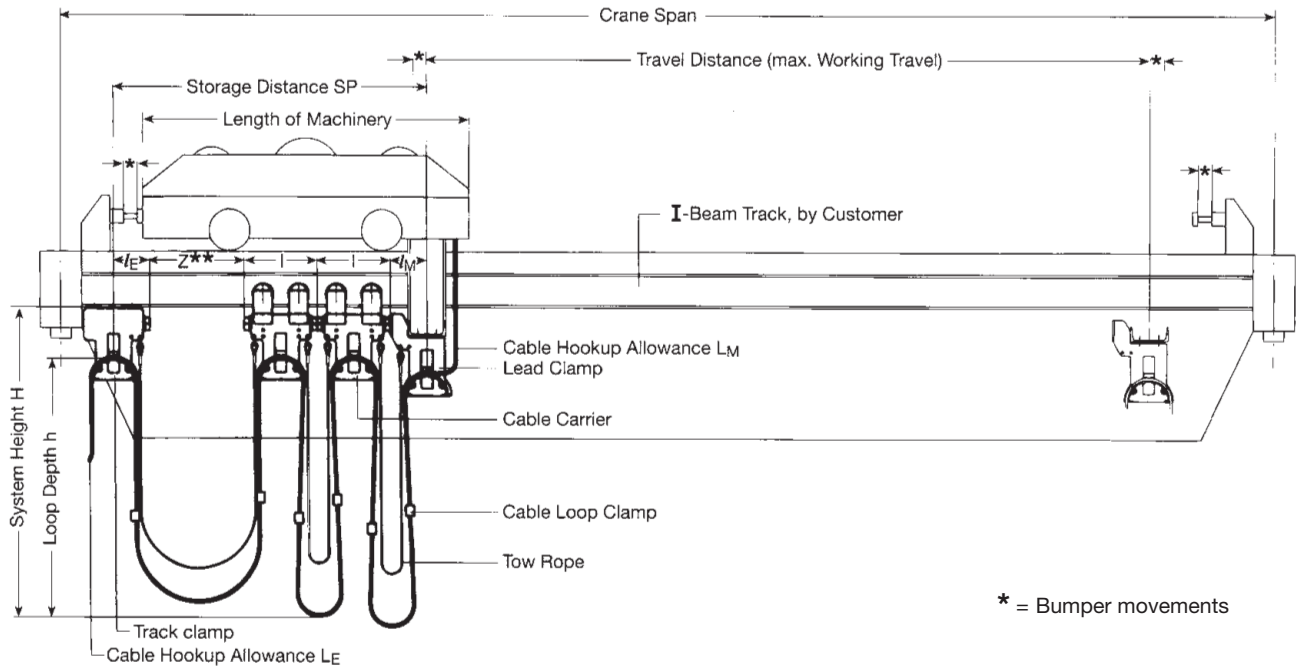
Catalog No. 8b: Cable Carriers for flatform cable on  -Beam Tracks

Catalog No. 8c: Cable Carriers for round cable on  -Beam Tracks

Catalog No. 8d: Cable Carriers on  -Tracks

Catalog No. 8e: Conductor Cables & Fittings

QUESTIONNAIRE



Name and adress of customer:

Ref.:

1. Type of application:

2. Operation

indoor ☐

outdoor ☐

3. Temperature conditions:

4. Platform cable ☐ (Specification below)

round cable ☐

5. What is the max. possible storage length? (SP)

m

6. Is it possible to extend the track for the festoon cable system in case the length of machinery is insufficient for storage?

☐ no

☐ yes, by

m

7. Special operating/environmental conditions:

8. Length of machinery:

m

9. Working travel (S):

m

10. Travel speed (v):

m/min

11. Acceleration (a):

m/s²

12. Max. loop depth (h):

m

13. Max. system height (H):

m

14. Cable hookup allowance

Track clamp side (L_E):

m

Lead clamp side (L_M):

m

15. Beam track

☐ I NP standard beam

☐ I PE flat flange beam

Cable Specification:

Quantity of Cables	Cable Specification Type/Number of Conductors/Size of Conductors	Height x Width mm	Weight kg/m	Total Weight kg/m

CABLE CARRIERS W 20

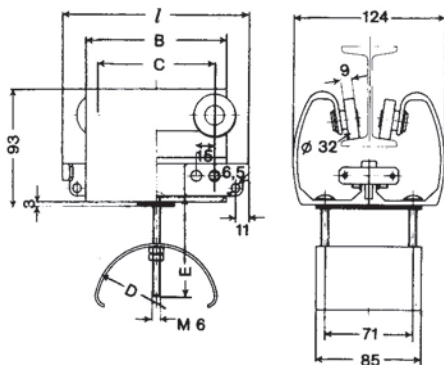
(Standard profile)



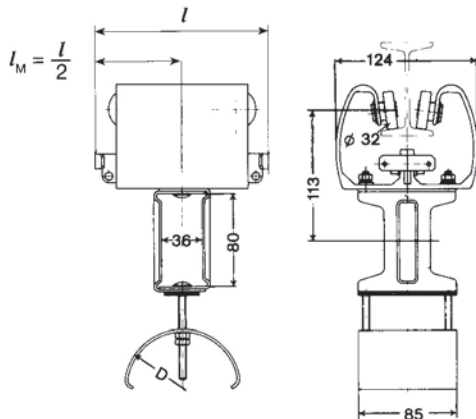
Engineering data

Type	WN 20 F for standard beam I NP 80-160
Carrying capacity	25 kg
Wheels	Hardened and galvanized steel, Ø 32 mm, with sealed precision ball bearings
Material	Carrier body: aluminium Bumpers: galvanized steel Cable saddle: galvanized steel, anodized hardware
Operating ambients	-30° C thru + 100° C
Travel speed	max. 80 m/min

Cable carrier

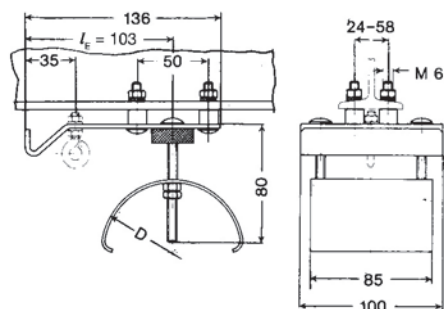


Type	max. allow. thickness of individual cable mm	max. clamping capacity mm (window dim.) height x width	<i>l</i>	B	C	D	E	Weight kg	Order- No.
			mm						
WN 20 F/ 50-125	7,9	37 x 65	125	89	69	50	60	0,900	341 450
WN 20 F/ 80-125	10,0	22 x 65	125	89	69	80	60	0,970	341 460
WN 20 F/ 50-150	7,9	50 x 65	150	114	94	50	80	1,010	341 710
WN 20 F/ 80-150	10,0	35 x 65	150	114	94	80	60	1,080	341 720
WN 20 F/100-150	12,5	25 x 65	150	114	94	100	60	1,110	341 730
WN 20 F/ 80-180	10,0	50 x 65	180	114	94	80	80	1,080	341 750
WN 20 F/100-180	12,5	40 x 65	180	114	94	100	80	1,110	341 760



Lead carrier

Type	for cable carrier	<i>l</i>	D	Weight kg	Order- No.
		mm			
MN 20 F/ 50-125	WN 20 F/ 50-125	125	50	1,270	341 340
MN 20 F/ 80-125	WN 20 F/ 80-125	125	80	1,340	341 380
MN 20 F/ 50-150	WN 20 F/ 50-150	150	50	1,380	341 550
MN 20 F/ 80-150	WN 20 F/ 80-150	150	80	1,450	341 560
MN 20 F/100-150	WN 20 F/100-150	150	100	1,480	341 570
MN 20 F/ 80-180	WN 20 F/ 80-180	180	80	1,450	345 220
MN 20 F/100-180	WN 20 F/100-180	180	100	1,480	345 230



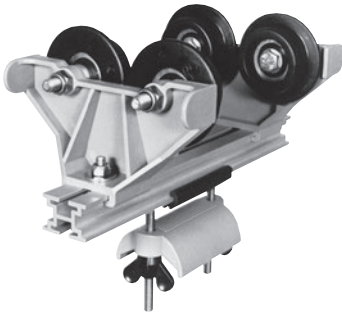
Track clamp

Type	for cable carrier	D mm	Weight kg	Order- No.
E 20 F/ 50	WN 20 F/ 50-125	50	0,590	345 240
	WN 20 F/ 50-150			
E 20 F/ 80	WN 20 F/ 80-125	80	0,660	345 250
	WN 20 F/ 80-150			
	WN 20 F/ 80-180			
E 20 F/100	WN 20 F/100-150	100	0,690	345 260
	WN 20 F/100-180			



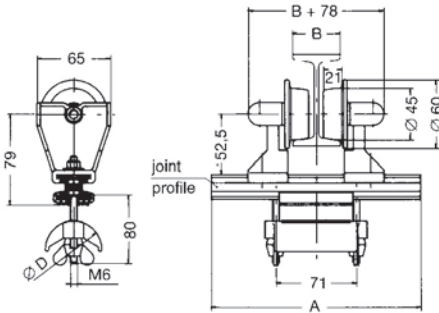
CABLE CARRIERS W 25 F, W 26 F, W 30 F

(Standard- or European profile)



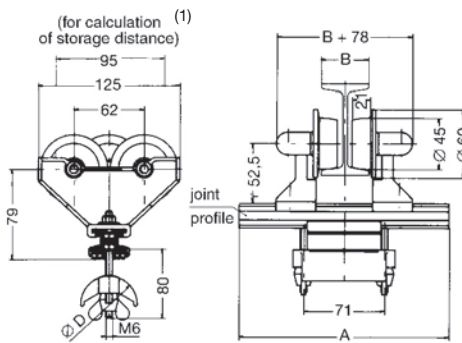
Engineering data

Type	W 25 F (2-wheels)	W 26 F (3-wheels)	W 30 F (4-wheels)
Carrying capacity	10 kg	10 kg	20 kg
Wheels	K Flanged polyamid wheels Ø 45/60 mm on stainless steel bushed bearings KL Flanged polyamid wheels Ø 45/60 mm on sealed (2 RS) precision ball bearings		
Material	Polyamid carrier body adjustable on light metal profile. Cable support saddles: polyamid Hardware: galvanized		
Operating ambients	-30° C thru +100° C		
Travel speed	max. 60 m/min		



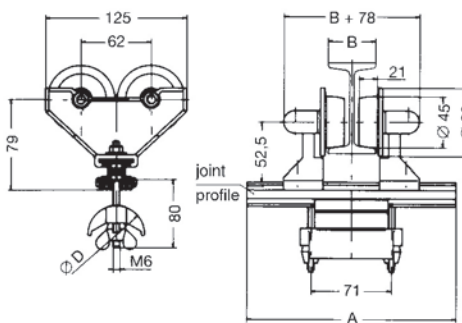
Cable carrier for platform cable Type W 25 F (2 wheels)

Type	wheels	max. clamping capacity mm height x width	A mm	D mm	for Track Profile		Weight kg	Order- No.
					INP	IPE		
W 25 F/65-50 K -1	K	25x65	185	50	80-220	80-200	0,420	346 647
W 25 F/65-50 K -2			235		240-380	220-300	0,450	346 648
W 25 F/65-50 KL-1	KL		185		80-220	80-200	0,500	346 649
W 25 F/65-50 KL-2			235		240-380	220-300	0,530	346 650



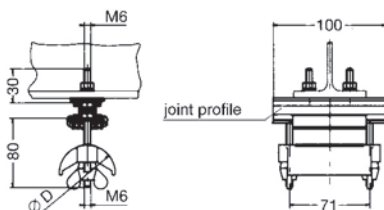
Cable carrier for platform cable Type W 26 F (3 wheels)

Type	wheels	max. clamping capacity mm height x width	A mm	D mm	for Track Profile		Weight kg	Order- No.
					INP	IPE		
W 26 F/125-50 K -1	K	25x65	185	50	80-220	80-200	0,490	346 651
W 26 F/125-50 K -2			235		240-380	220-300	0,520	346 652
W 26 F/125-50 KL-1	KL		185		80-220	80-200	0,610	346 653
W 26 F/125-50 KL-2			235		240-380	220-300	0,640	346 654



Cable carrier for platform cable Type W 30 F (4 wheels)

Type	wheels	max. clamping capacity mm height x width	A mm	D mm	for Track Profile		Weight kg	Order- No.
					INP	IPE		
W 30 F/125-50 K -1	K	35x65	185	50	80-220	80-200	0,560	346 655
W 30 F/125-50 K -2			235		240-380	220-300	0,590	346 656
W 30 F/125-50 KL-1	KL		185		80-220	80-200	0,720	346 657
W 30 F/125-50 KL-2			235		240-380	220-300	0,750	346 658
W 30 F/125-80 K -1	K	25x65	185	80	80-220	80-200	0,570	346 659
W 30 F/125-80 K -2			235		240-380	220-300	0,610	346 660
W 30 F/125-80 KL-1	KL		185		80-220	80-200	0,730	346 661
W 30 F/125-80 KL-2			235		240-380	220-300	0,770	346 662



Track clamp for platform cable Type E 25-30 F

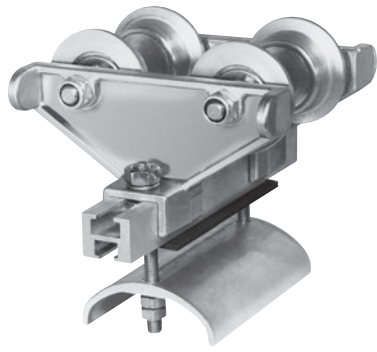
(to be used as well as towing arm)

Type	for cable carrier	D mm	Weight kg	Order- No.
E 25-30 F/50	W 25 F/ 65-50 ...	50	0,180	346 663
	W 26 F/125-50 ...			
	W 30 F/125-50 ...			
E 25-30 F/80	W 30 F/125-80 ...	80	0,200	346 664

⁽¹⁾ alternately installation of cable carriers necessary

CABLE CARRIERS W 35

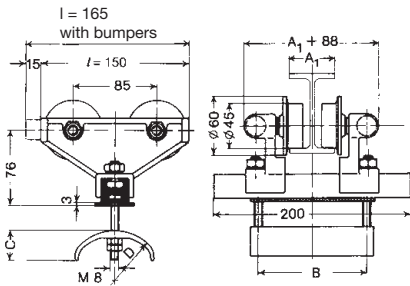
(Standard- or European profile)



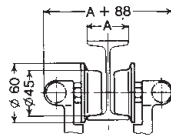
Engineering data

Type	WE 35 F for flat flange beam I PE 80-200 WN 35 F for standard beam I NP 80-220
Carrying capacity	30 kg
Wheels	a) Polyamid wheels on stainless steel bush bearing b) hardened and galvanized steel wheels with sealed ball bearing, sealed against dust and splash water – spherical form
Material	Carrier body: aluminium – seawater resistant Support saddle: aluminium 100 mm Ø, or steel galvanized 50 mm Ø Hardware: galvanized
Operating ambients	-30° C thru +100° C
Travel speed	max. 80 m/min.

Cable carrier



Type ⁽¹⁾		wheels	max.perm. thickness of cable in mm	max. clamping capacity mm height x width	B	C	D	Weight kg	Order- No.	Order- No. with bumper
					mm					
Cable carrier Standard beam	WN 35 F/ 50	a	8,0	45 x 100	110	25	50	1,170	345 481	345 492
	WN 35 F/ 100		12,0	25 x 100		30	100		345 482	345 493
Cable carrier Fl. fl. beam	WE 35 F/ 50	a	8,0	45 x 100	110	25	50	1,170	345 483	345 494
	WE 35 F/ 100		12,0	25 x 100		30	100		345 484	345 495
Cable carrier Standard- and Fl. fl. beam	W 35 F/ 50 S	b	8,0	45 x 100	110	25	50	1,940	345 485	345 496
	W 35 F/100 S		12,0	25 x 100		30	100		345 486	345 497

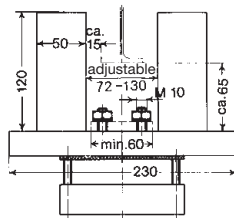
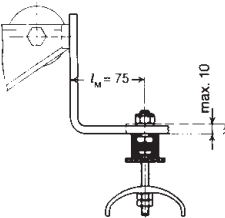


Standard beam

Beam I NP	80	100	120	140	160	180	200	220
Dim. A	42	50	58	66	74	82	90	98

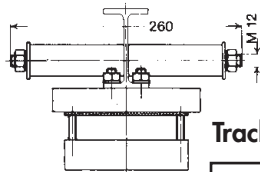
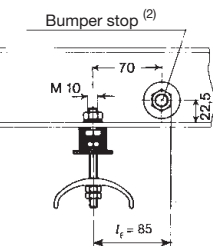
Flat flange beam

Beam I NP	80	100	120	140	160	180	200
Dim. A	46	55	64	73	82	91	100



Lead clamp

Type		for Cable carrier	B	C	D	Weight kg	Order- No.
			mm				
Lead clamp	M 35 F/ 50	W (N, E) 35 F/ 50 (S)	110	25	50	2,160	345 487
	M 35 F/100	W (N, E) 35 F/100 (S)		30	100		345 488



Track clamp and Bumper stop

Type		for Cable carrier	B	C	D	Weight kg	Order- No.
			mm				
Track clamp	E 35 F/ 50 ⁽²⁾	W (N, E) 35 F/ 50 (S)	110	25	50	0,490	345 489
	E 35 F/100 ⁽²⁾	W (N, E) 35 F/100 (S)		30	100		345 490
Bumper stop	PS 3 – 4	–	–	–	–	0,410	340 100

⁽¹⁾ Use suffix -P for bumper version (example: W 35 F/100 S-P Order-no. 345 497).

⁽²⁾ Bumper stop PS 3-4 to be ordered separately.

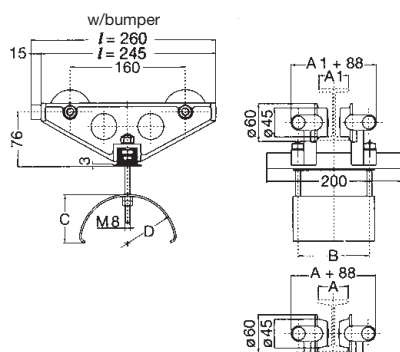
CABLE CARRIERS W 40

(Standard- or European profile)



Engineering data

Type	WE 40 F for flat flange beam I PE 80-200 WN 40 F for standard beam I NP 80-220
Carrying capacity	30 kg
Wheels	a) Polyamid wheels on stainless steel bushed bearing b) hardened and galvanized steel wheels with sealed ball bearing spherical form
Material	Carrier body: aluminium – seawater resistant Support saddle: steel galvanized Hardware: galvanized
Operating ambients	–30° C thru +100° C
Travel speed	max. 80 m/min.



Cable carrier

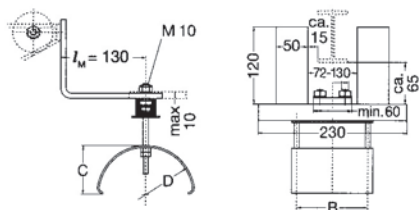
Type ⁽¹⁾		wheels	max.perm. thickness of cable in mm	max. clamping capacity mm height x width	B	C	D	Weight kg	Order- No.	Order- No. with Bumper
					mm					
Cable carrier Standard beam	WN 40 F/140	a	14	50 x 100	110	70	140	1,820	345 904	345 910
	WN 40 F/170		17	35 x 100		85	170	2,040	345 905	345 911
Cable carrier Fl. fl. beam	WE 40 F/140	a	14	50 x 100	110	70	140	1,830	345 906	345 912
	WE 40 F/170		17	35 x 100		85	170	2,050	345 907	345 913
Cable carrier Standard- and Fl. fl. beam	W 40 F/140 S	b	14	50 x 100	110	70	140	2,820	345 908	345 914
	W 40 F/170 S		17	35 x 100		85	170	2,600	345 909	345 915

Standard beam

Beam I NP	80	100	120	140	160	180	200	220
Dim. A	42	50	58	66	74	82	90	98

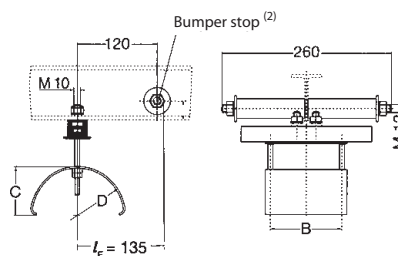
Flat flange beam

Träger IPE	80	100	120	140	160	180	200
Dim. A₁ 46	55	64	73	82	91	100	



Lead clamp

Type		for Cable carrier	B	C	D	Weight kg	Order- No.
			mm				
Lead clamp	M 40 F/140	W (N, E) 40 F/140 (S)	110	70	140	2,180	345 916
	M 40 F/170	W (N, E) 40 F/170 (S)		85	170	2,400	345 917



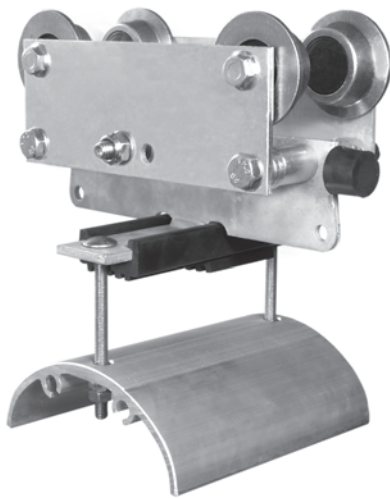
Track clamp and Bumper stop

Type		for Cable carrier	B	C	C	Weight kg	Order- No.
			mm				
Track clamp	E 40 F/140⁽²⁾	W (N, E) 40 F/140 (S)	110	70	140	0,920	345 918
	E 40 F/170⁽²⁾	W (N, E) 40 F/170 (S)		85	170	1,140	345 919
Bumper stop	PS 3-4	—	—	—	—	0,410	340 100

(1) Use suffix -P for bumper version (example: W 40 F/170 S-P Order-no. 345 915).

(2) Bumper stop PS 3-4 to be ordered separately.

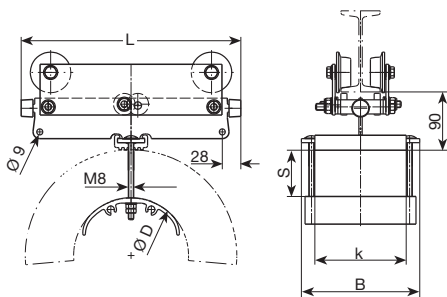
CABLE CARRIER W 45 FR



Engineering data

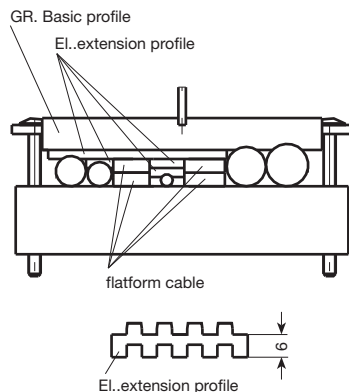
Type	W 45 FR on I-profil for flatform and round cable
Carrying capacity	50 kg (max. 80 kg - consult factory)
Travel speed	max. 120 m/min. when using appropriate cable tension relief
Wheel sets	for standard tracks INP 80 to INP 200 and for flat flange beams IPE 80 to IPE 200 other profiles on request on stainless steel bushed bearing
Wheels	flanged steel wheels Ø 45/60 mm, hardened and galvanized, steel kick-up rollers Ø 32 mm with bushed bearing and tread hardened and galvanized
Material	Carrier body: steel galvanized Support saddle: aluminium
Operating ambients	-30 °C thru +100 °C

Cable carrier W 45 FR



Collecting clamp for round cables

Extension rubber profile can be ordered per meter (Order- No.: 348 845)

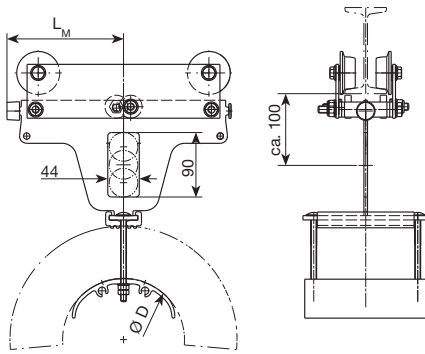


Type	max. clamping capacity mm height x width (s x k)	L mm	B mm	D mm	Weight kg	Order- No. w/o kick-up rollers	Order- No. w/kick-up rollers
W 45 FR/160- 80 B 175	35 x 130	160	175	80	2,750	348 663	348 685
W 45 FR/160- 80 B 225	35 x 180	160	225	80	2,880	348 664	348 686
W 45 FR/160-100 B 175	25 x 130	160	175	100	2,830	348 665	348 687
W 45 FR/160-100 B 225	25 x 180	160	225	100	3,000	348 666	348 688
W 45 FR/200- 80 B 175	55 x 130	200	175	80	3,050	348 667	348 689
W 45 FR/200- 80 B 225	55 x 180	200	225	80	3,180	348 668	348 690
W 45 FR/200-100 B 175	45 x 130	200	175	100	3,130	348 669	348 691
W 45 FR/200-100 B 225	45 x 180	200	225	100	3,300	348 670	348 692
W 45 FR/200-140 B 175	25 x 130	200	175	140	3,370	348 671	348 693
W 45 FR/200-140 B 225	25 x 180	200	225	140	3,610	348 672	348 694
W 45 FR/250-100 B 175	70 x 130	250	175	100	3,490	348 673	348 695
W 45 FR/250-100 B 225	70 x 180	250	225	100	3,660	348 674	348 696
W 45 FR/250-140 B 175	50 x 130	250	175	140	3,730	348 675	348 697
W 45 FR/250-140 B 225	50 x 180	250	225	140	3,970	348 676	348 698
W 45 FR/250-170 B 175	35 x 130	250	175	170	3,790	348 677	348 699
W 45 FR/250-170 B 225	35 x 180	250	225	170	4,040	348 678	348 700
W 45 FR/290-140 B 175	70 x 130	290	175	140	4,010	348 679	348 701
W 45 FR/290-140 B 225	70 x 180	290	225	140	4,250	348 680	348 702
W 45 FR/290-170 B 175	55 x 130	290	175	170	4,070	348 681	348 703
W 45 FR/290-170 B 225	55 x 180	290	225	170	4,230	348 682	348 704
W 45 FR/325-170 B 175	72 x 130	325	175	170	4,290	348 683	348 705
W 45 FR/325-170 B 225	72 x 180	325	225	170	4,540	348 684	348 706



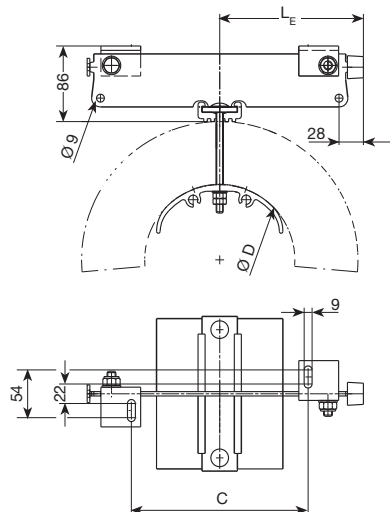
CABLE CARRIER W 45 FR

Lead clamp MW 45



Type	for Cable carrier	L _M mm	D mm	Weight kg	Order- No.
MW 45 FR/200- 80 B 175	W 45 FR/160- 80 B 175 W 45 FR/200- 80 B 175	100	80	3,290	348 741
MW 45 FR/200- 80 B 225	W 45 FR/160- 80 B 225 W 45 FR/200- 80 B 225	100	80	3,430	348 742
MW 45 FR/200-100 B 175	W 45 FR/160-100 B 175 W 45 FR/200-100 B 175	100	100	3,370	348 743
MW 45 FR/200-100 B 225	W 45 FR/160- 100 B 225 W 45 FR/200- 100 B 225	100	100	3,550	348 744
MW 45 FR/200-140 B 175	W 45 FR/200-140 B 175	100	140	3,610	348 745
MW 45 FR/200-140 B 225	W 45 FR/200-140 B 225	100	140	3,860	348 746
MW 45 FR/325-100 B 175	W 45 FR/250-100 B 175	162	100	4,280	348 747
MW 45 FR/325-100 B 225	W 45 FR/250-100 B 225	162	100	4,450	348 748
MW 45 FR/325-140 B 175	W 45 FR/250-140 B 175 W 45 FR/290-140 B 175	162	140	4,510	348 749
MW 45 FR/325-140 B 225	W 45 FR/250-140 B 225 W 45 FR/290-140 B 225	162	140	4,760	348 750
MW 45 FR/325-170 B 175	W 45 FR/250-170 B 175 W 45 FR/290-170 B 175 W 45 FR/325-170 B 175	162	170	4,570	348 751
MW 45 FR/325-170 B 225	W 45 FR/250-170 B 225 W 45 FR/290-170 B 225 W 45 FR/325-170 B 225	162	170	4,830	348 752

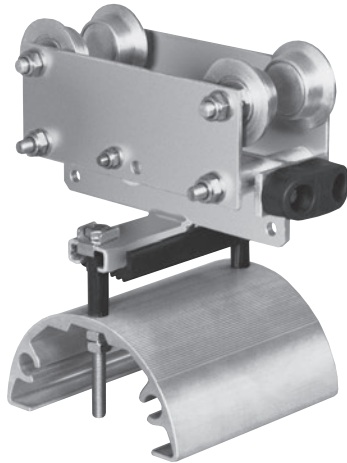
Track clamp E 45



Type	for Cable carrier	L _E mm	D mm	C mm	Weight kg	Order- No.
E 45 FR/160- 80 B 175	W 45 FR/160- 80 B 175	80	80	35	1,120	348 786
E 45 FR/160- 80 B 225	W 45 FR/160- 80 B 225	80	80	35	1,250	348 787
E 45 FR/160-100 B 175	W 45 FR/160-100 B 175	80	100	35	1,200	348 788
E 45 FR/160-100 B 225	W 45 FR/160-100 B 225	80	100	35	1,370	348 789
E 45 FR/200- 80 B 175	W 45 FR/200- 80 B 175	100	80	75	1,220	348 790
E 45 FR/200- 80 B 225	W 45 FR/200- 80 B 225	100	80	75	1,350	348 791
E 45 FR/200-100 B 175	W 45 FR/200-100 B 175	100	100	75	1,300	348 792
E 45 FR/200-100 B 225	W 45 FR/200-100 B 225	100	100	75	1,470	348 793
E 45 FR/200-140 B 175	W 45 FR/200-140 B 175	100	140	75	1,540	348 794
E 45 FR/200-140 B 225	W 45 FR/200-140 B 225	100	140	75	1,780	348 795
E 45 FR/250-100 B 175	W 45 FR/250-100 B 175	125	100	125	1,420	348 796
E 45 FR/250-100 B 225	W 45 FR/250-100 B 225	125	100	125	1,590	348 797
E 45 FR/250-140 B 175	W 45 FR/250-140 B 175	125	140	125	1,660	348 798
E 45 FR/250-140 B 225	W 45 FR/250-140 B 225	125	140	125	1,900	348 799
E 45 FR/250-170 B 175	W 45 FR/250-170 B 175	125	170	125	1,720	348 800
E 45 FR/250-170 B 225	W 45 FR/250-170 B 225	125	170	125	1,970	348 801
E 45 FR/290-140 B 175	W 45 FR/290-140 B 175	145	140	165	1,760	348 802
E 45 FR/290-140 B 225	W 45 FR/290-140 B 225	145	140	165	2,000	348 803
E 45 FR/290-170 B 175	W 45 FR/290-170 B 175	145	170	165	1,820	348 804
E 45 FR/290-170 B 225	W 45 FR/290-170 B 225	145	170	165	2,070	348 805
E 45 FR/325-170 B 175	W 45 FR/325-170 B 175	162	170	200	1,900	348 806
E 45 FR/325-170 B 225	W 45 FR/325-170 B 225	162	170	200	2,150	348 807

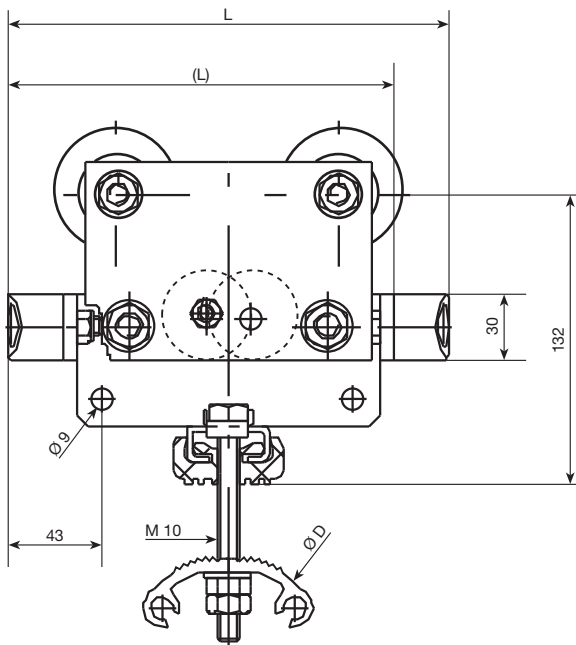
CABLE CARRIER W 55 • HEAVY DUTY

(Standard- or European profile)

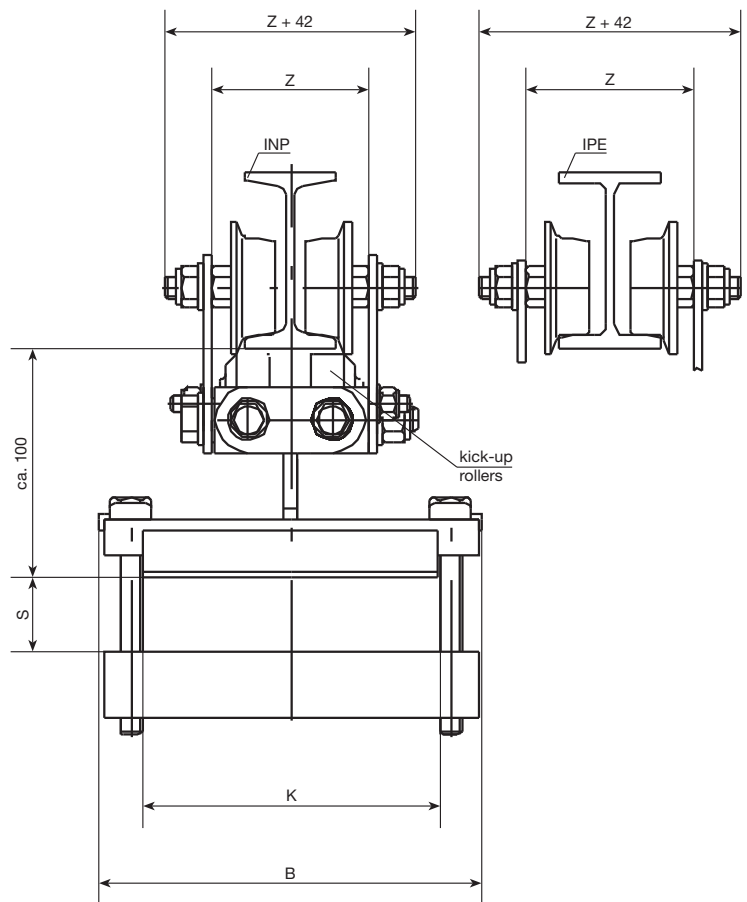


Engineering data

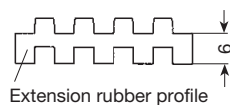
Type	W 55
Carrying capacity	70 kg
Travel speed	max. 120 m/min when using appropriate cable tension relief
Wheel sets	for standard tracks INP 80 to 200 ⁽¹⁾ for flat flange beams IPE 80 to 200 ⁽¹⁾
Wheels	flanged steel wheels Ø 45/60 mm, on stainless steel, bushed bearing, tread hardened and galvanized Support rollers (Dia.) 45 mm made of polyamid, /w antirust plain bearing
Material	Carrier body: steel galvanized Support saddle: aluminium
Operating ambients	-30° C thru +100° C



(L) = with one bumper



Beam	Z
INP 80	71
INP 100	79
INP 120	87
INP 140	95
INP 160	103
INP 180	111
INP 200	119
IPE 80	76
IPE 100	85
IPE 120	94
IPE 140	103
IPE 160	112
IPE 180	121
IPE 200	130



Assembly clamping of round clamping:
The extension profil can be ordered as piece goods
(see Page 8. (Order-No.: 348 845))

Please specify with your order:

Carrier body: Type

Order- No.

Wheel sets: Type

Order- No.

I-Beam Size:



CABLE CARRIER W 55 • HEAVY DUTY

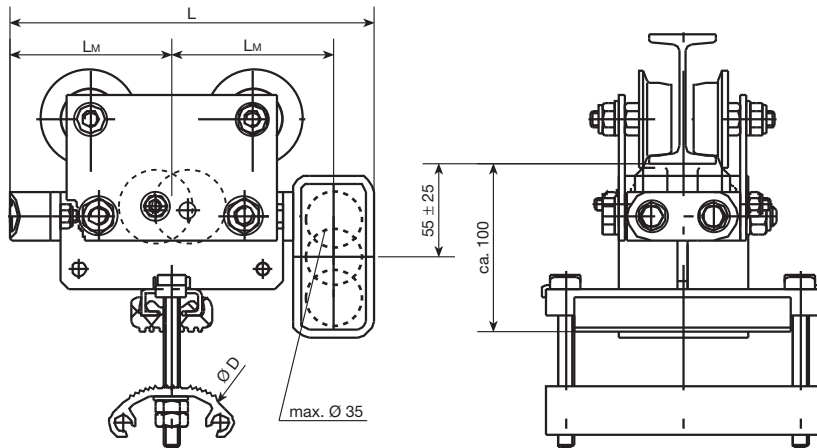
(Standard- or European profile)

Cable carrier W 55

Type	max. perm. thickness of cable in mm (s x k)	L mm	(L) mm	B mm	D mm	Weight kg	Order- No. w/o kick-up roller	Order- No. w/ kick-up roller
W 55 FR/175-100-B 175	30 x 130		175	175	100	4,000	346 101	346 115
W 55 FR/175-100-B 225	30 x 180			225		4,100	348 885	348 604
W 55 FR/175-100-B 275	30 x 230			275		4,300	348 899	348 918
W 55 FR/200-100-B 175	45 x 130	200		175	100	4,100	346 102	346 116
W 55 FR/200-100-B 225	45 x 180			225		4,200	348 886	348 137
W 55 FR/200-100-B 275	45 x 230			275		4,400	348 900	348 466
W 55 FR/200-140-B 175	25 x 130			175	140	4,200	346 103	346 117
W 55 FR/200-140-B 225	25 x 180			225		4,400	348 887	348 913
W 55 FR/200-140-B 275	25 x 230			275		4,500	348 901	348 919
W 55 FR/250-140-B 175	50 x 130			175	140	4,800	346 104	346 118
W 55 FR/250-140-B 225	50 x 180			225		5,000	348 888	346 905
W 55 FR/250-140-B 275	50 x 230			275		5,100	348 902	348 086
W 55 FR/250-170-B 175	35 x 130			175	170	5,000	346 105	346 119
W 55 FR/250-170-B 225	35 x 180			225		5,200	348 889	348 914
W 55 FR/250-170-B 275	35 x 230			275		5,500	348 903	348 920
W 55 FR/250-200-B 175	20 x 130			175	200	5,700	346 106	346 120
W 55 FR/250-200-B 225	20 x 180			225		5,900	348 890	348 915
W 55 FR/250-200-B 275	20 x 230			275		6,200	348 904	348 921
W 55 FR/275-140-B 175	60 x 130	275		175	140	4,900	346 107	346 121
W 55 FR/275-140-B 225	60 x 180			225		5,100	348 891	347 241
W 55 FR/275-140-B 275	60 x 230			275		5,200	348 905	348 922
W 55 FR/275-170-B 175	45 x 130			175	170	5,100	346 108	346 122
W 55 FR/275-170-B 225	45 x 180			225		5,300	348 892	348 270
W 55 FR/275-170-B 275	45 x 230			275		5,600	348 906	348 923
W 55 FR/275-200-B 175	30 x 130			175	200	5,800	346 109	346 123
W 55 FR/275-200-B 225	30 x 180			225		6,200	348 893	348 916
W 55 FR/275-200-B 275	30 x 230			275		6,700	348 907	348 085
W 55 FR/325-170-B 175	70 x 130			175	170	5,600	346 110	346 124
W 55 FR/325-170-B 225	70 x 180			225		5,800	348 894	347 552
W 55 FR/325-170-B 275	70 x 230			275		6,100	348 908	348 924
W 55 FR/325-200-B 175	55 x 130			175	200	6,300	346 111	346 125
W 55 FR/325-200-B 225	55 x 180			225		6,700	348 895	346 763
W 55 FR/325-200-B 275	55 x 230			275		7,200	348 909	348 925
W 55 FR/325-230-B 175	40 x 130			175	230	6,600	346 112	346 126
W 55 FR/325-230-B 225	40 x 180			225		7,100	348 896	348 917
W 55 FR/325-230-B 275	40 x 230			275		7,600	348 910	348 926
W 55 FR/350-200-B 175	70 x 130	350		175	200	6,400	346 113	346 127
W 55 FR/350-200-B 225	70 x 180			225		6,800	348 897	347 370
W 55 FR/350-200-B 275	70 x 230			275		7,300	348 911	348 927
W 55 FR/350-230-B 175	55 x 130			175	230	6,700	346 114	346 128
W 55 FR/350-230-B 225	55 x 180			225		7,200	348 898	346 897
W 55 FR/350-230-B 275	55 x 230			275		7,700	348 912	348 928

CABLE CARRIER W 55 • HEAVY DUTY

(Standard- or European profile)



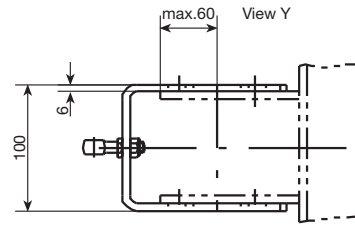
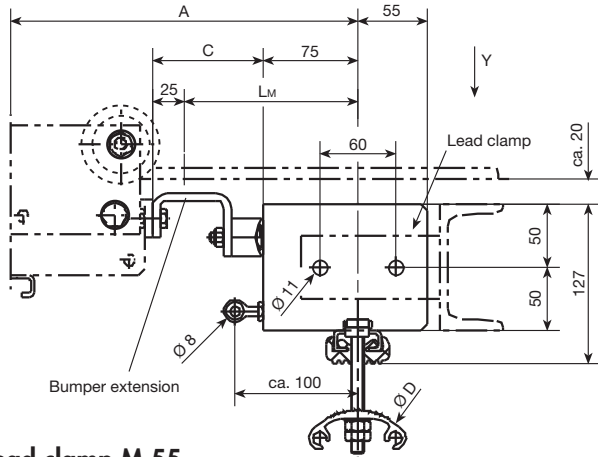
Lead clamp MW 55

Type	for Cable carrier	L	L _M	D	Weight kg	Order- No.
MW 55 FR/200-100-B 175	W 55 FR/175-100-B 175 W 55 FR/200-100-B 175	225	100	100	4,800	346 716
MW 55 FR/200-100-B 225	W 55 FR/175-100-B 225 W 55 FR/200-100-B 225				4,900	348 953
MW 55 FR/200-100-B 275	W 55 FR/175-100-B 275 W 55 FR/200-100-B 275				5,100	348 960
MW 55 FR/200-140-B 175	W 55 FR/200-140-B 175	225	100	140	5,000	346 734
MW 55 FR/200-140-B 255	W 55 FR/200-140-B 225				5,200	348 954
MW 55 FR/200-140-B 275	W 55 FR/200-140-B 275				5,300	348 961
MW 55 FR/275-140-B 175	W 55 FR/250-140-B 175 W 55 FR/275-140-B 175	300	138	140	5,700	346 584
MW 55 FR/275-140-B 225	W 55 FR/250-140-B 225 W 55 FR/275-140-B 225				5,900	348 955
MW 55 FR/275-140-B 275	W 55 FR/250-140-B 275 W 55 FR/275-140-B 275				6,000	348 962
MW 55 FR/275-170-B 175	W 55 FR/250-170-B 175 W 55 FR/275-170-B 175	300	138	170	5,000	346 735
MW 55 FR/275-170-B 225	W 55 FR/250-170-B 225 W 55 FR/275-170-B 225				5,200	348 956
MW 55 FR/275-170-B 275	W 55 FR/250-170-B 275 W 55 FR/275-170-B 275				5,500	348 963
MW 55 FR/275-200-B 175	W 55 FR/250-200-B 175 W 55 FR/275-200-B 175	300	138	200	5,600	346 736
MW 55 FR/275-200-B 225	W 55 FR/250-200-B 225 W 55 FR/275-200-B 225				6,000	348 957
MW 55 FR/275-200-B 275	W 55 FR/250-200-B 275 W 55 FR/275-200-B 275				6,500	348 964
MW 55 FR/350-170-B 175	W 55 FR/325-170-B 175	375	175	170	6,400	346 733
MW 55 FR/350-170-B 225	W 55 FR/325-170-B 225				6,600	348 958
MW 55 FR/350-170-B 275	W 55 FR/325-170-B 275				6,900	348 965
MW 55 FR/350-200-B 175	W 55 FR/325-200-B 175 W 55 FR/350-200-B 175	375	175	200	7,100	346 737
MW 55 FR/350-200-B 225	W 55 FR/325-200-B 225 W 55 FR/350-200-B 225				7,500	347 371
MW 55 FR/350-200-B 275	W 55 FR/325-200-B 275 W 55 FR/350-200-B 275				8,000	348 966
MW 55 FR/350-230-B 175	W 55 FR/325-230-B 175 W 55 FR/350-230-B 175	375	175	230	7,400	346 738
MW 55 FR/350-230-B 225	W 55 FR/325-230-B 225 W 55 FR/350-230-B 225				7,900	348 959
MW 55 FR/350-230-B 275	W 55 FR/325-230-B 275 W 55 FR/350-230-B 275				8,400	348 967



CABLE CARRIER W 55 • HEAVY DUTY

(Standard- or European profile)



Lead clamp M 55

Type	for Cable carrier	A	D	Weight kg	Order- No.
M 55 FR/100-1 B 175	W 55 FR/175-100-B 175	238	100	2,200	346 140
M 55 FR/100-1 B 225	W 55 FR/175-100-B 225			2,300	348 605
M 55 FR/100-1 B 275	W 55 FR/175-100-B 275			2,500	348 970
M 55 FR/100-2 B 175	W 55 FR/200-100-B 175		100	2,200	346 141
M 55 FR/100-2 B 225	W 55 FR/200-100-B 225			2,300	347 681
M 55 FR/100-2 B 275	W 55 FR/200-100-B 275			2,500	348 971
M 55 FR/140-1 B 175	W 55 FR/200-140-B 175		140	2,300	346 142
M 55 FR/140-1 B 225	W 55 FR/200-140-B 225			2,500	348 968
M 55 FR/140-1 B 275	W 55 FR/200-140-B 275			2,600	348 972
M 55 FR/140-2 B 175	W 55 FR/250-140-B 175 W 55 FR/275-140-B 175	275	140	2,300	346 143
M 55 FR/140-2 B 225	W 55 FR/250-140-B 225 W 55 FR/275-140-B 225			2,500	347 242
M 55 FR/140-2 B 275	W 55 FR/250-140-B 275 W 55 FR/275-140-B 275			2,600	348 973
M 55 FR/170-1 B 175	W 55 FR/250-170-B 175	275	170	3,000	346 144
	W 55 FR/275-170-B 175	350			
	W 55 FR/325-170-B 175				
M 55 FR/170-1 B 225	W 55 FR/250-170-B 225	275		3,200	347 553
	W 55 FR/275-170-B 225	350			
	W 55 FR/325-170-B 225				
M 55 FR/170-1 B 275	W 55 FR/250-170-B 275	275	3,500	348 491	
	W 55 FR/275-170-B 275	350			
	W 55 FR/325-170-B 275				
M 55 FR/200-1 B 175	W 55 FR/250-200-B 175 W 55 FR/275-200-B 175	275	200	3,200	346 145
M 55 FR/200-1 B 225	W 55 FR/250-200-B 225 W 55 FR/275-200-B 225			3,600	348 969
M 55 FR/200-1 B 275	W 55 FR/250-200-B 275 W 55 FR/275-200-B 275			4,100	348 974
M 55 FR/200-2 B 175	W 55 FR/325-200-B 175 W 55 FR/350-200-B 175	350	200	3,200	346 146
M 55 FR/200-2 B 225	W 55 FR/325-200-B 225 W 55 FR/350-200-B 225			3,600	346 765
M 55 FR/200-2 B 275	W 55 FR/325-200-B 275 W 55 FR/350-200-B 275			4,100	348 978
M 55 FR/230-1 B 175	W 55 FR/325-230-B 175 W 55 FR/350-230-B 175	350	230	3,400	346 147
M 55 FR/230-1 B 225	W 55 FR/325-230-B 225 W 55 FR/350-230-B 225			3,900	346 898
M 55 FR/230-1 B 275	W 55 FR/325-230-B 275 W 55 FR/350-230-B 275			4,400	348 979

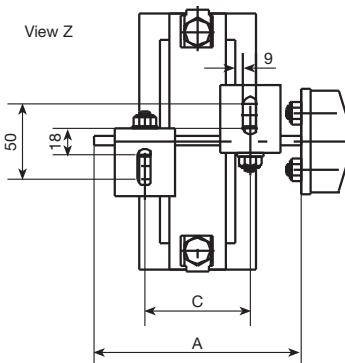
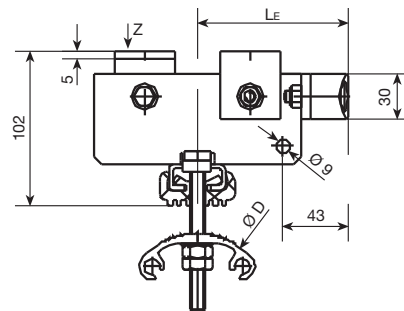
CABLE CARRIER W 55 • HEAVY DUTY

(Standard- or European profile)



Bumper extension PV 55 (see graph page 13)

Type	for Cable carrier	C	L _M	Weight kg	Order- No.
PV 55-1	W 55 FR/175-100 (all types)	88	138	0,500	346 148
	W 55 FR/200-100 (all types)				
	W 55 FR/200-140 (all types)				
	W 55 FR/250-140 (all types)				
	W 55 FR/250-170 (all types)				
	W 55 FR/250-200 (all types)				
	W 55 FR/275-140 (all types)				
	W 55 FR/275-170 (all types)				
PV 55-2	W 55 FR/325-170 (all types)	125	175	0,600	346 149
	W 55 FR/325-200 (all types)				
	W 55 FR/325-230 (all types)				
	W 55 FR/350-200 (all types)				
	W 55 FR/350-230 (all types)				



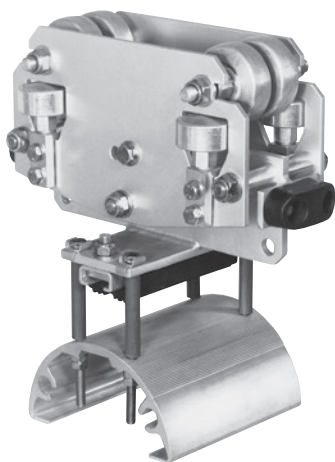
Track clamp E 55

Type	for Cable carrier	L _E	A	C	D	Weight kg	Order- No.
E 55 FR/175-100-B 175	W 55 F/175-100-B 175	100	138	70	100	1,900	346 150
E 55 FR/175-100-B 225	W 55 F/175-100-B 225					2,000	348 935
E 55 FR/175-100-B 275	W 55 F/175-100-B 275					2,200	348 944
E 55 FR/200-100-B 175	W 55 F/200-100-B 175	100	138	70	100	2,000	346 151
E 55 FR/200-100-B 225	W 55 F/200-100-B 225					2,100	348 936
E 55 FR/200-100-B 275	W 55 F/200-100-B 275					2,300	348 945
E 55 FR/200-140-B 175	W 55 F/200-140-B 175	100	138	70	140	2,100	346 152
E 55 FR/200-140-B 225	W 55 F/200-140-B 225					2,300	348 937
E 55 FR/200-140-B 275	W 55 F/200-140-B 275					2,400	348 946
E 55 FR/275-140-B 175	W 55 F/250-140-B 175	138	213	145	140	2,400	346 153
	W 55 F/275-140-B 175						
E 55 FR/275-140-B 225	W 55 F/250-140-B 225					2,600	348 938
	W 55 F/275-140-B 225						
E 55 FR/275-140-B 275	W 55 F/250-140-B 275 W 55 F/275-140-B 275					2,700	348 947
E 55 FR/275-170-B 175	W 55 F/250-170-B 175	138	213	145	170	3,100	346 154
	W 55 F/275-170-B 175						
E 55 FR/275-170-B 225	W 55 F/250-170-B 225					3,300	348 939
	W 55 F/275-170-B 225						
E 55 FR/275-170-B 275	W 55 F/250-170-B 275 W 55 F/275-170-B 275					3,600	348 948
E 55 FR/275-200-B 175	W 55 F/250-200-B 175	138	213	145	200	3,200	346 155
	W 55 F/275-200-B 175						
E 55 FR/275-200-B 225	W 55 F/250-200-B 225					3,600	348 940
	W 55 F/275-200-B 225						
E 55 FR/275-200-B 275	W 55 F/250-200-B 275 W 55 F/275-200-B 275					4,100	348 949
E 55 FR/325-170-B 175	W 55 F/325-170-B 175	175	288	220	170	3,600	346 156
	W 55 F/325-170-B 225					3,800	348 941
E 55 FR/325-170-B 275	W 55 F/325-170-B 275					4,100	348 950
E 55 FR/350-200-B 175	W 55 F/325-200-B 175	175	288	220	200	3,700	346 157
	W 55 F/350-200-B 175						
E 55 FR/350-200-B 225	W 55 F/325-200-B 225					4,100	348 942
	W 55 F/350-200-B 225						
E 55 FR/350-200-B 275	W 55 F/325-200-B 275 W 55 F/350-200-B 275					4,600	348 951
E 55 FR/350-230-B 175	W 55 F/325-230-B 175	175	288	220	230	4,000	346 158
	W 55 F/350-230-B 175						
E 55 FR/350-230-B 225	W 55 F/325-230-B 225					4,500	348 943
	W 55 F/350-230-B 225						
E 55 FR/350-230-B 275	W 55 F/325-230-B 275 W 55 F/350-230-B 275					5,000	348 952



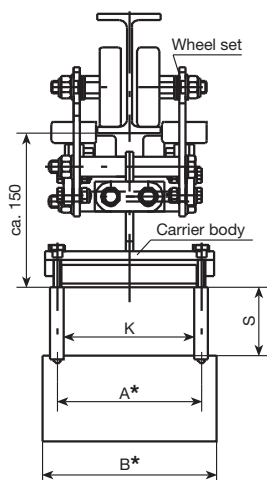
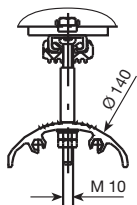
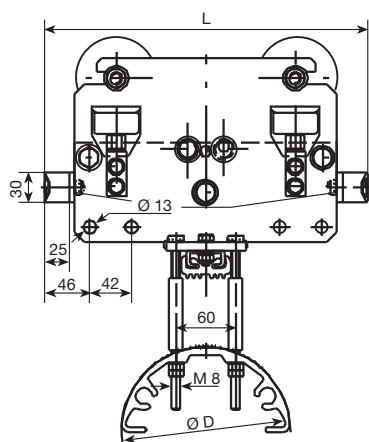
CABLE CARRIER W 65 • HEAVY DUTY

(Standard- or European profile)



Engineering data

Type	W 65	
Carrying capacity	wheels 65 mm: max. 200 kg 80 mm: max. 300 kg	see wheel sets page 25
Travel speed	max. 160 m/min	
Wheel sets	for standard track (INP) and flat flange beam (IPE) available with or without lateral & vertical guide rollers	
Wheels	flanged steel wheels Ø 65/80 mm or cylindrical steel wheels 80 mm OD with sealed precision ball bearings hardened and galvanized or with polyurethane-covering	
Material	Carrier body: steel galvanized Support saddle: aluminium	
Operating ambients	-30° C thru +100° C	



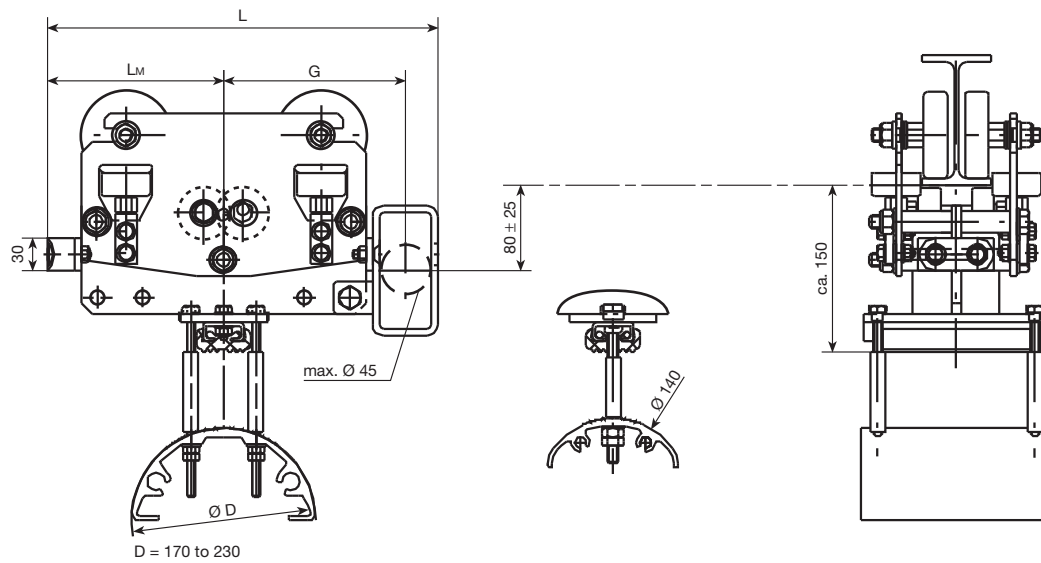
* Other width on request

Carrier body W 65 (w/o wheel set) (wheel set see page 25)

Type	max. clamping capacity mm height x width (s x k)	L mm	A mm	B mm	D mm	Weight kg	Order- No.
W 65 F/275-140-B 175	60 x 130	275	145	175	140	3,600	346 164
W 65 F/275-140-B 225	60 x 180		195	225		4,000	348 153
W 65 F/275-140-B 275	60 x 230		245	275		4,400	347 730
W 65 F/275-170-B 175	45 x 130		145	175	170	4,300	346 165
W 65 F/275-170-B 225	45 x 180		195	225		4,700	348 038
W 65 F/275-170-B 275	45 x 230		245	275		5,000	348 986
W 65 F/275-200-B 175	30 x 130	275	145	175	200	4,500	346 166
W 65 F/275-200-B 225	30 x 180		195	225		4,900	348 983
W 65 F/275-200-B 275	30 x 230		245	275		5,300	348 987
W 65 F/325-140-B 175	85 x 130	325	145	175	140	3,900	346 167
W 65 F/325-140-B 225	85 x 180		195	225		4,400	348 645
W 65 F/325-140-B 275	85 x 230		245	275		4,700	348 988
W 65 F/325-170-B 175	70 x 130		145	175	170	4,600	346 168
W 65 F/325-170-B 225	70 x 180		195	225		5,000	348 869
W 65 F/325-170-B 275	70 x 230		245	275		5,350	348 534
W 65 F/325-200-B 175	55 x 130		145	175	200	4,800	346 169
W 65 F/325-200-B 225	55 x 180		195	225		5,200	347 583
W 65 F/325-200-B 275	55 x 230		245	275		5,600	348 989
W 65 F/325-230-B 175	40 x 130		145	175	230	5,000	346 170
W 65 F/325-230-B 225	40 x 180		195	225		5,400	348 984
W 65 F/325-230-B 275	40 x 230		245	275		5,800	348 990
W 65 F/375-140-B 175	110 x 130	375	145	175	140	4,300	346 171
W 65 F/375-140-B 225	110 x 180		195	225		4,700	348 245
W 65 F/375-140-B 275	110 x 230		245	275		5,200	348 991
W 65 F/375-170-B 175	95 x 130		145	175	170	5,000	346 172
W 65 F/375-170-B 225	95 x 180		195	225		5,400	348 478
W 65 F/375-170-B 275	95 x 230		245	275		5,800	347 760
W 65 F/375-200-B 175	80 x 130		145	175	200	5,200	346 173
W 65 F/375-200-B 225	80 x 180		195	225		5,600	348 985
W 65 F/375-200-B 275	80 x 230		245	275		6,000	348 992
W 65 F/375-230-B 175	65 x 130		145	175	230	5,400	346 174
W 65 F/375-230-B 225	65 x 180		195	225		5,800	348 576
W 65 F/375-230-B 275	65 x 230		245	275		6,200	348 993

CABLE CARRIER W 65 • HEAVY DUTY

(Standard- or European profile)



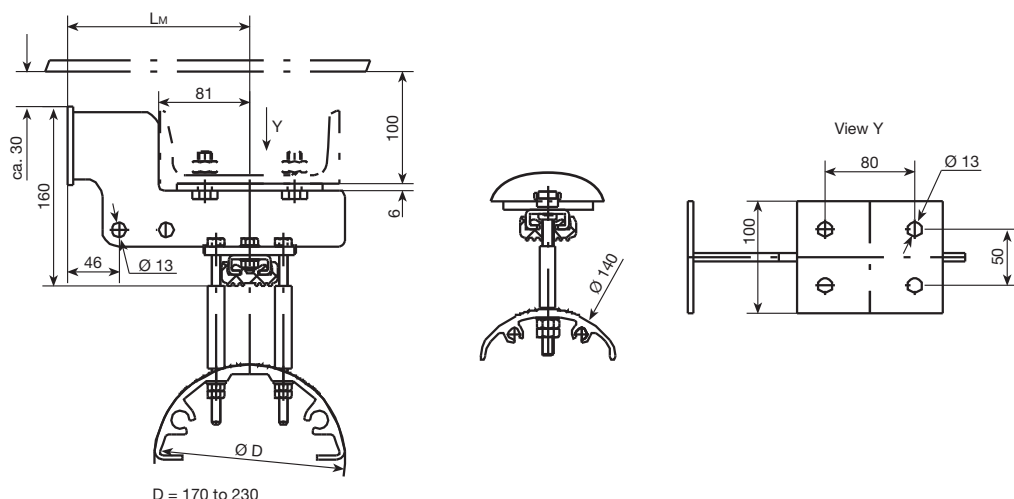
Lead carrier MW 65 (w/o wheel set)
(wheel set see page 25)

Type	for Cable carrier	L mm	Lm mm	G mm	D mm	Weight kg	Order- No.
MW 65 F/325-140-B 175	W 65 F/275-140-B 175 W 65 F/325-140-B 175	360	163	168	140	4,200	347 863
MW 65 F/325-140-B 225	W 65 F/275-140-B 225 W 65 F/325-140-B 225					5,700	348 155
MW 65 F/325-140-B 275	W 65 F/275-140-B 275 W 65 F/325-140-B 275					5,000	347 731
MW 65 F/325-170-B 175	W 65 F/275-170-B 175 W 65 F/325-170-B 175				170	5,900	347 696
MW 65 F/325-170-B 225	W 65 F/275-170-B 225 W 65 F/325-170-B 225					6,300	349 023
MW 65 F/325-170-B 275	W 65 F/275-170-B 275 W 65 F/325-170-B 275					6,600	348 532
MW 65 F/325-200-B 175	W 65 F/275-200-B 175 W 65 F/325-200-B 175				200	6,100	348 093
MW 65 F/325-200-B 225	W 65 F/275-200-B 225 W 65 F/325-200-B 225					6,500	349 024
MW 65 F/325-200-B 275	W 65 F/275-200-B 275 W 65 F/325-200-B 275					6,900	349 033
MW 65 F/325-230-B 175	W 65 F/325-230-B 175				230	6,300	348 092
MW 65 F/325-230-B 225	W 65 F/325-230-B 225					6,700	349 025
MW 65 F/325-230-B 275	W 65 F/325-230-B 275					7,000	349 034
MW 65 F/375-140-B 175	W 65 F/375-140-B 175	410	188	193	140	5,700	348 091
MW 65 F/375-140-B 225	W 65 F/375-140-B 225					6,000	349 026
MW 65 F/375-140-B 275	W 65 F/375-140-B 275					6,500	349 035
MW 65 F/375-170-B 175	W 65 F/375-170-B 175				170	6,300	347 312
MW 65 F/375-170-B 225	W 65 F/375-170-B 225					6,700	349 027
MW 65 F/375-170-B 275	W 65 F/375-170-B 275					7,000	347 761
MW 65 F/375-200-B 175	W 65 F/375-200-B 175				200	6,500	348 007
MW 65 F/375-200-B 225	W 65 F/375-200-B 225					6,900	349 028
MW 65 F/375-200-B 275	W 65 F/375-200-B 275					7,300	349 036
MW 65 F/375-230-B 175	W 65 F/375-230-B 175				230	6,700	348 088
MW 65 F/375-230-B 225	W 65 F/375-230-B 225					7,100	349 029
MW 65 F/375-230-B 275	W 65 F/375-230-B 275					7,500	349 037



CABLE CARRIER W 65 • HEAVY DUTY

(Standard- or European profile)

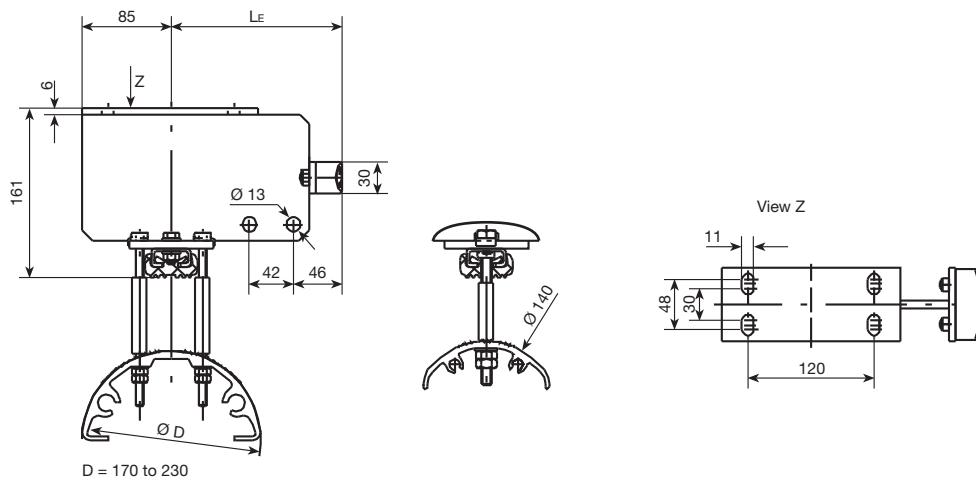


Lead clamp M 65

Type	for Cable carrier	L _M mm	D mm	Weight kg	Order- No.
M 65 F/325-140-B 175	W 65 F/275-140-B 175 W 65 F/325-140-B 175	163	140	4,000	346 244
M 65 F/325-140-B 225	W 65 F/275-140-B 225 W 65 F/325-140-B 225			4,400	349 005
M 65 F/325-140-B 275	W 65 F/275-140-B 275 W 65 F/325-140-B 275			4,800	349 010
M 65 F/325-170-B 175	W 65 F/275-170-B 175 W 65 F/325-170-B 175		170	4,700	346 245
M 65 F/325-170-B 225	W 65 F/275-170-B 225 W 65 F/325-170-B 225			5,100	348 711
M 65 F/325-170-B 275	W 65 F/275-170-B 275 W 65 F/325-170-B 275			5,400	349 011
M 65 F/325-200-B 175	W 65 F/275-200-B 175 W 65 F/325-200-B 175		200	4,900	346 246
M 65 F/325-200-B 225	W 65 F/275-200-B 225 W 65 F/325-200-B 225			5,300	347 585
M 65 F/325-200-B 275	W 65 F/275-200-B 275 W 65 F/325-200-B 275			5,700	349 012
M 65 F/325-230-B 175	W 65 F/325-230-B 175	188	230	5,100	346 247
M 65 F/325-230-B 225	W 65 F/325-230-B 225			5,500	349 006
M 65 F/325-230-B 275	W 65 F/325-230-B 275			5,900	349 013
M 65 F/375-140-B 175	W 65 F/375-140-B 175		140	4,300	346 248
M 65 F/375-140-B 225	W 65 F/375-140-B 225			4,700	348 247
M 65 F/375-140-B 275	W 65 F/375-140-B 275			5,100	349 014
M 65 F/375-170-B 175	W 65 F/375-170-B 175		170	5,000	346 249
M 65 F/375-170-B 225	W 65 F/375-170-B 225			5,400	349 007
M 65 F/375-170-B 275	W 65 F/375-170-B 275			5,800	349 015
M 65 F/375-200-B 175	W 65 F/375-200-B 175		200	5,200	346 250
M 65 F/375-200-B 225	W 65 F/375-200-B 225			5,600	349 008
M 65 F/375-200-B 275	W 65 F/375-200-B 275			6,000	349 016
M 65 F/375-230-B 175	W 65 F/375-230-B 175		230	5,400	346 251
M 65 F/375-230-B 225	W 65 F/375-230-B 225			5,800	349 009
M 65 F/375-230-B 275	W 65 F/375-230-B 275			6,200	349 017

CABLE CARRIER W 65 • HEAVY DUTY

(Standard- or European profile)



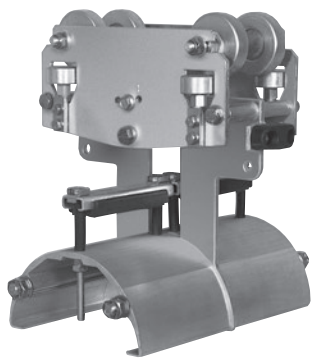
Track clamp E 65

Type	for Cable carrier	L _M mm	D mm	Weight kg	Order- No.
E 65 F/325-140-B 175	W 65 F/275-140-B 175 W 65 F/325-140-B 175	163	140	4,400	346 252
E 65 F/325-140-B 225	W 65 F/275-140-B 225 W 65 F/325-140-B 225			4,800	348 156
E 65 F/325-140-B 275	W 65 F/275-140-B 275 W 65 F/325-140-B 275			5,200	349 041
E 65 F/325-170-B 175	W 65 F/275-170-B 175 W 65 F/325-170-B 175		170	5,100	346 253
E 65 F/325-170-B 225	W 65 F/275-170-B 225 W 65 F/325-170-B 225			5,500	348 712
E 65 F/325-170-B 275	W 65 F/275-170-B 275 W 65 F/325-170-B 275			5,850	348 537
E 65 F/325-200-B 175	W 65 F/275-200-B 175 W 65 F/325-200-B 175		200	5,300	346 254
E 65 F/325-200-B 225	W 65 F/275-200-B 225 W 65 F/325-200-B 225			5,700	349 038
E 65 F/325-200-B 275	W 65 F/275-200-B 275 W 65 F/325-200-B 275			6,100	349 042
E 65 F/325-230-B 175	W 65 F/325-230-B 175		230	5,100	346 255
E 65 F/325-230-B 225	W 65 F/325-230-B 225			5,500	349 039
E 65 F/325-230-B 275	W 65 F/325-230-B 275			5,900	349 043
E 65 F/375-140-B 175	W 65 F/375-140-B 175	188	140	5,600	346 256
E 65 F/375-140-B 225	W 65 F/375-140-B 225			6,000	348 248
E 65 F/375-140-B 275	W 65 F/375-140-B 275			6,400	349 044
E 65 F/375-170-B 175	W 65 F/375-170-B 175		170	4,600	346 257
E 65 F/375-170-B 225	W 65 F/375-170-B 225			5,000	348 480
E 65 F/375-170-B 275	W 65 F/375-170-B 275			5,350	347 764
E 65 F/375-200-B 175	W 65 F/375-200-B 175		200	5,600	346 258
E 65 F/375-200-B 225	W 65 F/375-200-B 225			6,000	349 040
E 65 F/375-200-B 275	W 65 F/375-200-B 275			6,400	349 045
E 65 F/375-230-B 175	W 65 F/375-230-B 175		230	5,900	346 259
E 65 F/375-230-B 225	W 65 F/375-230-B 225			6,300	348 578
E 65 F/375-230-B 275	W 65 F/375-230-B 275			6,700	349 046



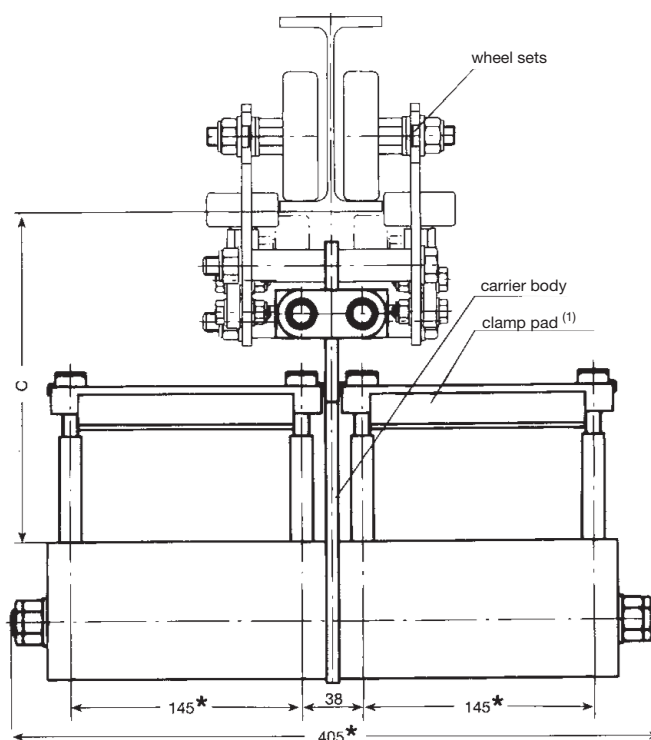
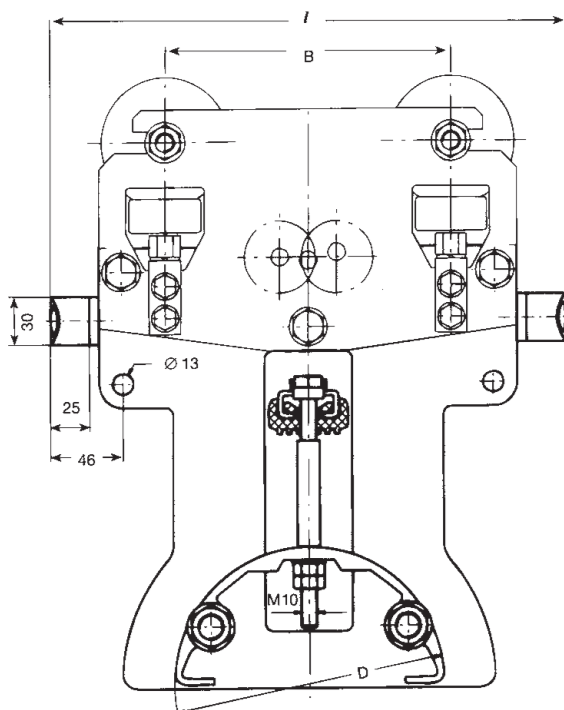
CABLE CARRIER W 75 • HEAVY DUTY

(Standard- or European profile)



Engineering data

Type	W 75	
Carrying capacity	wheels Ø 65 mm: max. 200 kg 80 mm: max. 300 kg	see wheel sets page 25
Travel speed	max. 160 m/min	
Wheel sets	for standard track (INP) and flat flange beam (IPE), Type LWB available with or without lateral & vertical guide rollers	
Wheels	flanged steel wheels Ø 65/80 mm or cylindrical steel wheels 80 mm OD with sealed precision ball bearings hardened and galvanized or with polyurethane-covering	
Material	Carrier body: steel galvanized Support saddle: aluminium	
Operating ambients	-30° C thru +100° C	



Carrier body W 75 ⁽²⁾

Type	max. clamping capacity mm height x width		<i>l</i>	B	C	D	Weight kg	Order- No.
			mm					
W 75 F/275-170	2x	45 x 130	275	130	ca. 180	170	7,700	346 211
W 75 F/275-200		30 x 130			ca. 165	200	7,900	346 212
W 75 F/325-170		70 x 130	325	180	ca. 205	170	8,200	346 213
W 75 F/325-200		55 x 130			ca. 190	200	8,400	346 214
W 75 F/325-230		40 x 130			ca. 175	230	8,900	346 215
W 75 F/375-170		95 x 130			375	230	ca. 230	170
W 75 F/375-200		80 x 130	ca. 215	200			8,900	346 217
W 75 F/375-230		65 x 130	ca. 200	230			9,400	346 218

Please specify with your order:

Carrier body: Type

Order- No.

Wheel sets: Type

Order- No.

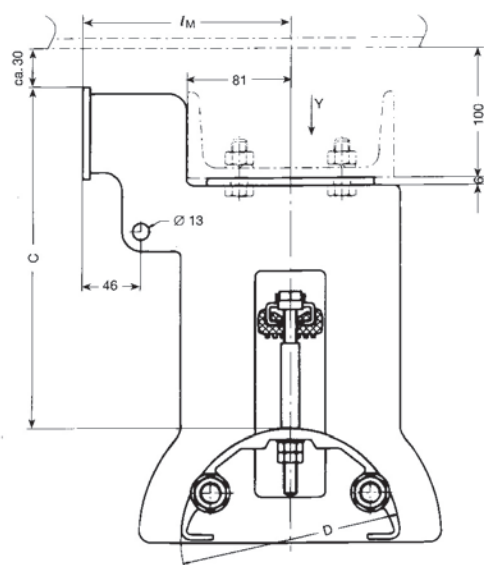
I-Beam Size:

⁽¹⁾ Extra wide carriers and continuous clamp pads are available; please consult the factory.

⁽²⁾ Wheel sets not included; see page 25.

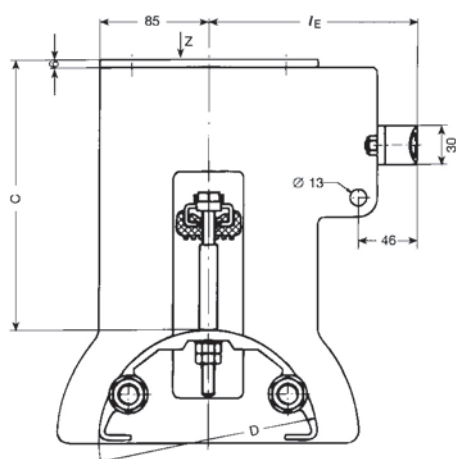
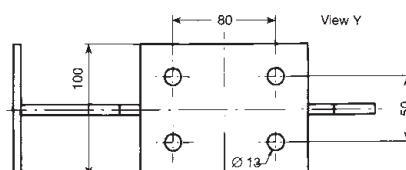
CABLE CARRIER W 75 • HEAVY DUTY

(Standard- or European profile)



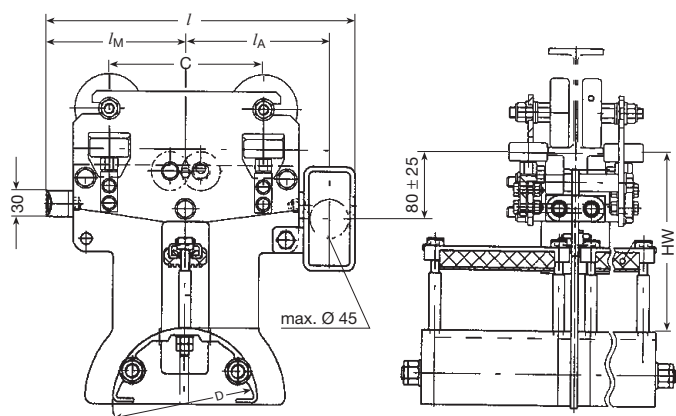
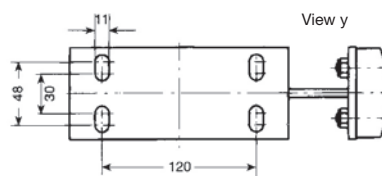
Track clamp M 75

Type	for Cable carrier	l_M	C	D	Weight kg	Order- No.
		mm				
M 75 F/325-170	W 75 F/275-170	163	ca. 265	170	8,900	346 260
	W 75 F/325-170					
M 75 F/325-200	W 75 F/275-200	163	ca. 250	200	9,100	346 261
	W 75 F/325-200					
M 75 F/325-230	W 75 F/325-230	188	ca. 235	230	9,600	346 262
M 75 F/375-170	W 75 F/375-170		ca. 290	170	9,200	346 263
M 75 F/375-200	W 75 F/375-200	188	ca. 275	200	9,400	346 264
M 75 F/375-230	W 75 F/375-230		ca. 260	230	9,900	346 265



Track clamp E 75

Type	for Cable carrier	l_E	C	D	Weight kg	Order- No.
		mm				
E 75 F/325-170	W 75 F/275-170	163	ca. 211	170	8,600	346 266
	W 75 F/325-170					
E 75 F/325-200	W 75 F/275-200	163	ca. 196	200	8,800	346 267
	W 75 F/325-200					
E 75 F/325-230	W 75 F/325-230	188	ca. 181	230	9,300	346 268
E 75 F/375-170	W 75 F/375-170		ca. 236	170	8,900	346 269
E 75 F/375-200	W 75 F/375-200	188	ca. 221	200	9,100	346 270
E 75 F/375-230	W 75 F/375-230		ca. 206	230	9,600	346 271



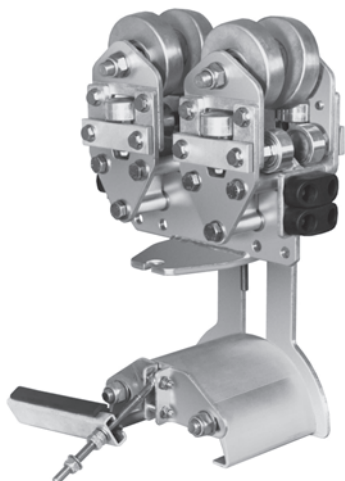
Carrier body MW 75⁽¹⁾

Type ⁽²⁾	for Cable carrier	l	l_A	l_M	C	D	HW	Weight kg	Order- No.
		mm							
MW 75 F/375-230	W 75 F/375-230	410	167,5	187,5	230	230	200	9,7	348 099
MW 75 F/375-200	W 75 F/375-200					200	215		348 100
MW 75 F/375-170	W 75 F/375-170					170	230		348 101
MW 75 F/325-230	W 75 F/325-230	360	167,5	162,5	180	230	175	9,2	348 102
MW 75 F/325-200	W 75 F/325-200					200	190		348 103
	W 75 F/275-200					200	190	9,0	348 104
MW 75 F/325-170	W 75 F/325-170					170	205		
	W 75 F/275-170					170	205		



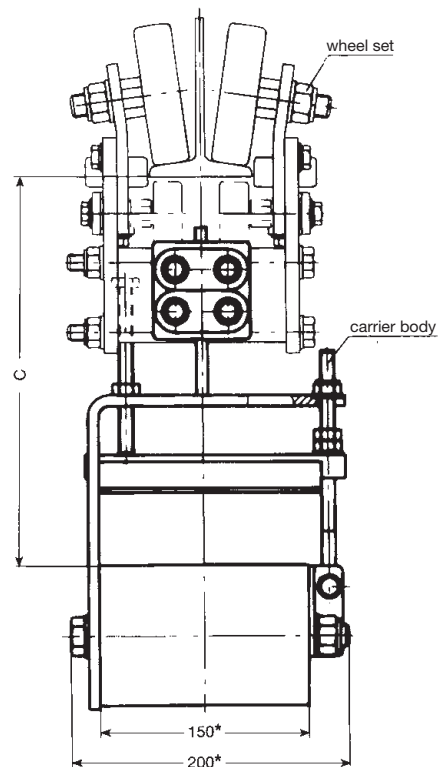
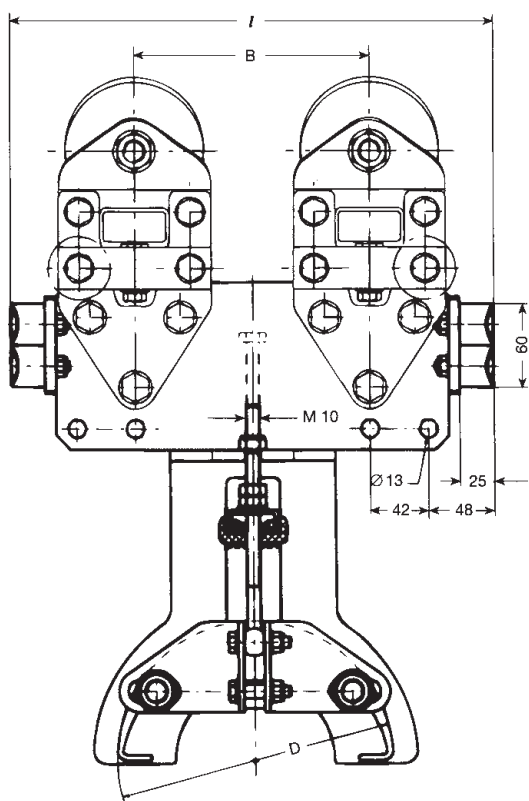
CABLE CARRIER W 85 • HEAVY DUTY

(Standard- or European profile)



Engineering data

Type	W 85	
Carrying capacity	max. 500 kg	see wheel sets page 26
Travel speed	max. 160 m/min	
Wheel sets	for standard track (INP) and flat flange beam (IPE) Type LWA	
Wheels	cylindrical steel wheels 100 mm OD with sealed precision ball bearings, hardened and galvanized or with polyurethane-covering	
Material	Carrier body: steel galvanized Support saddle: aluminium	
Operating ambients	-30° C thru +100° C	



Carrier body W 85 ⁽²⁾

Type	max. clamping capacity mm height x width	I	B	C	D	Weight kg	Order- No.
		mm					
W 85 F/300-170	55 x 150	300	120	ca. 300	170	9,100	346 219
W 85 F/300-200	40 x 150			ca. 285	200	9,200	346 220
W 85 F/350-170	80 x 150	350	170	ca. 300	170	9,500	346 221
W 85 F/350-200	65 x 150			ca. 285	200	9,600	346 222
W 85 F/350-230	50 x 150	400	220	ca. 270	230	9,700	346 223
W 85 F/400-170	105 x 150			ca. 350	170	10,100	346 224
W 85 F/400-200	90 x 150	450	270	ca. 335	200	10,200	346 225
W 85 F/400-230	75 x 150			ca. 320	230	10,300	346 226
W 85 F/450-200	115 x 150	450	270	ca. 335	200	10,600	346 227
W 85 F/450-230	100 x 150			ca. 320	230	10,700	346 228

Please specify with your order:

Carrier body: Type

Order- No.

Wheel sets: Type

Order- No.

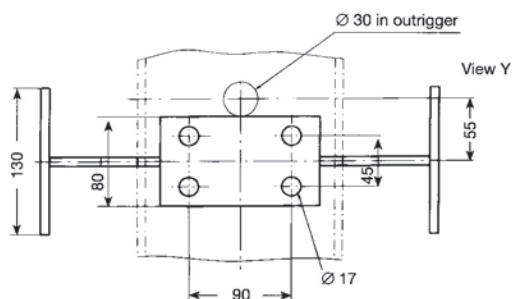
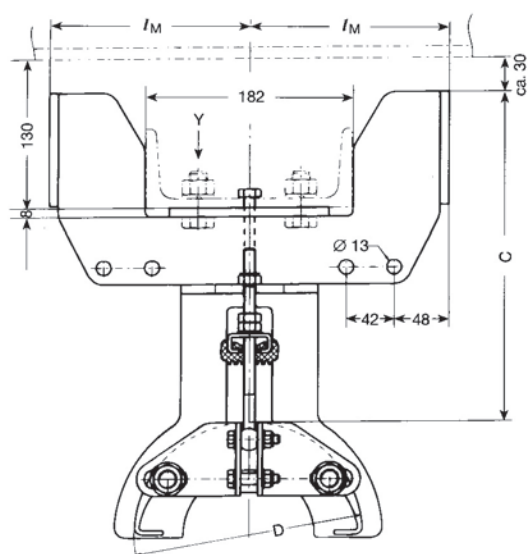
I-Beam Size:

⁽¹⁾ Extra wide side loading carriers are available; please consult the factory.

⁽²⁾ Wheel sets not included; see page 26).

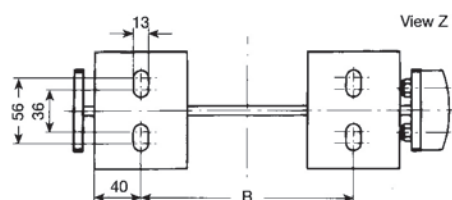
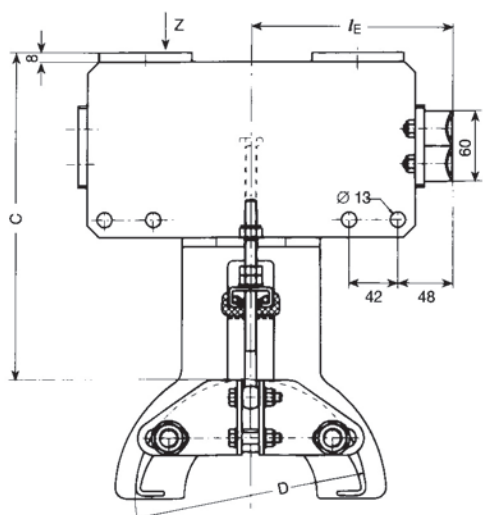
CABLE CARRIER W 85 • HEAVY DUTY

(Standard- or European profile)



Lead clamp M 85

Type	for Cable carrier	l_M	C	D	Weight kg	Order- No.
		mm				
M 85 F/350-170	W 85 F/300-170	175	ca. 310	170	10,500	346 272
	W 85 F/350-170					
M 85 F/350-200	W 85 F/300-200	175	ca. 295	200	10,600	346 273
	W 85 F/350-200					
M 85 F/350-230	W 85 F/350-230		ca. 280	230	10,700	346 274
M 85 F/450-200	W 85 F/400-170	225	ca. 345	200	12,000	346 275
	W 85 F/400-200					
	W 85 F/450-200					
M 85 F/450-230	W 85 F/400-230	225	ca. 330	230	12,100	346 276
	W 85 F/450-230					



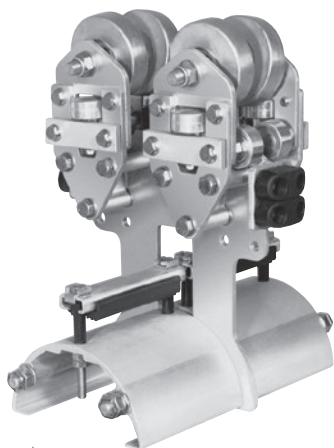
Track clamp E 85

Type	for Cable carrier	l_E	B	C	D	Weight kg	Order- No.
		mm					
E 85 F/350-170	W 85 F/300-170	175	184	ca. 298	170	9,800	346 277
	W 85 F/350-170						
E 85 F/350-200	W 85 F/300-200			ca. 283	200	9,900	346 278
	W 85 F/350-200						
E 85 F/350-230	W 85 F/350-230			ca. 268	230	10,000	346 279
E 85 F/450-200	W 85 F/400-170	225	284	ca. 333	200	11,100	346 280
	W 85 F/400-200						
	W 85 F/450-200						
E 85 F/450-230	W 85 F/400-230					ca. 318	230
	W 85 F/450-230						



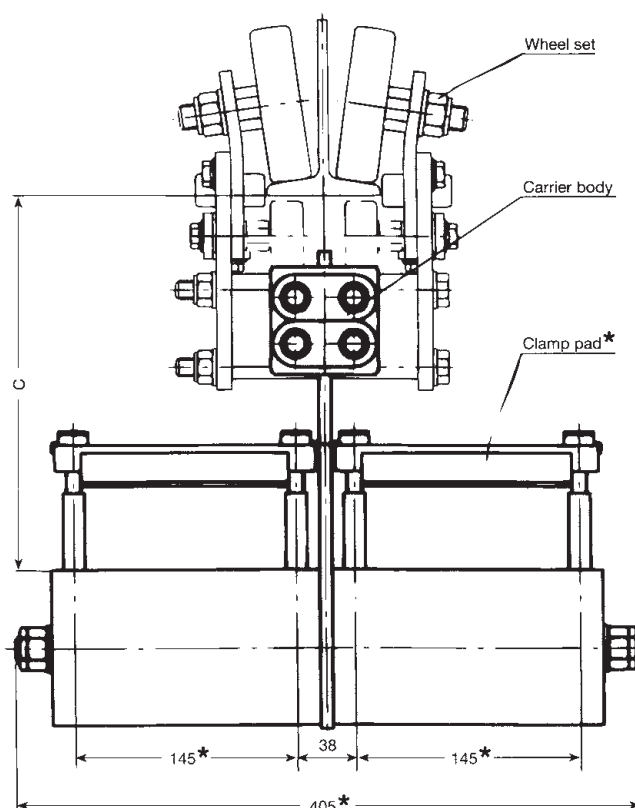
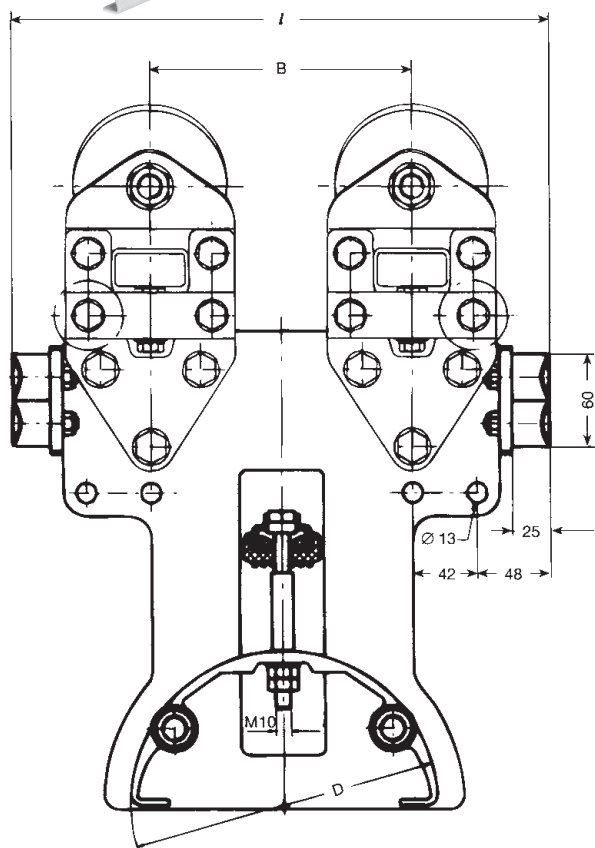
CABLE CARRIER W 95 • HEAVY DUTY

(Standard- or European profile)



Engineering data

Type	W 95	
Carrying capacity	max. 500 kg	see wheel sets page 26
Travel speed	max. 160 m/min	
Wheel sets	for standard track (INP) and flat flange beam (IPE); Type LWA	
Wheels	cylindrical steel wheels 100 mm OD with sealed precision ball bearings, hardened and galvanized or with polyurethane-covering	
Material	Carrier body: steel galvanized Support saddle: aluminium	
Operating ambients	-30° C thru +100° C	



Carrier body W 95 ⁽²⁾

Type	max. clamping capacity mm height x width		l	B	C	D	Weight kg	Order- No.
W 95 F/300-170	2x	55 x 130	300	120	ca. 240	170	10,700	346 229
W 95 F/300-200		40 x 130			ca. 225	200	11,000	346 230
W 95 F/350-170		80 x 130			ca. 265	170	11,300	346 231
W 95 F/350-200		65 x 130	350	170	ca. 250	200	11,600	346 232
W 95 F/350-230		50 x 130			ca. 235	230	11,900	346 233
W 95 F/400-170		105 x 130			ca. 290	170	11,800	346 234
W 95 F/400-200		90 x 130	400	220	ca. 275	200	12,100	346 235
W 95 F/400-230		75 x 130			ca. 260	230	12,400	346 236
W 95 F/450-200		115 x 130	450	270	ca. 315	200	12,700	346 237
W 95 F/450-230		100 x 130			ca. 285	230	13,000	346 238

Please specify with your order:

Carrier body: Type
Order- No.

Wheel sets : Type
Order- No.

I-Beam Size:

⁽¹⁾ Extra wide carriers and continuous clamp pads are available; please consult the factory.

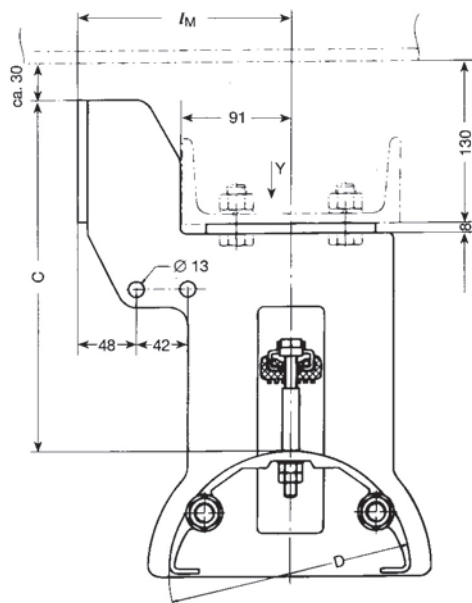
⁽²⁾ Wheel sets not included; see page 26.

CABLE CARRIER W 95 · HEAVY DUTY

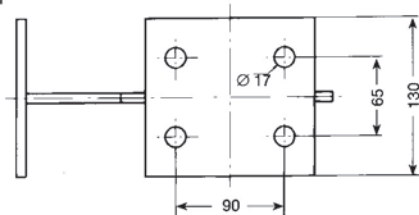
(Standard- or European profile)



Lead clamp M 95

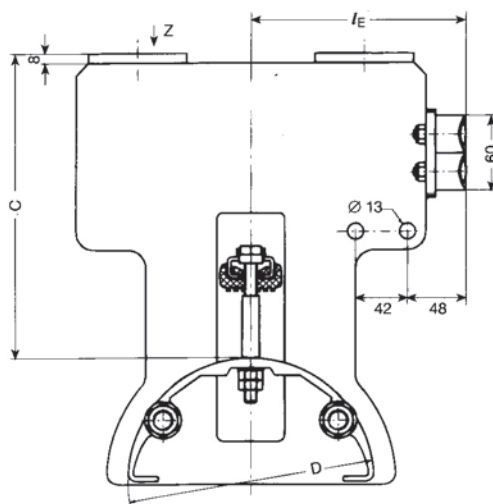


View Y

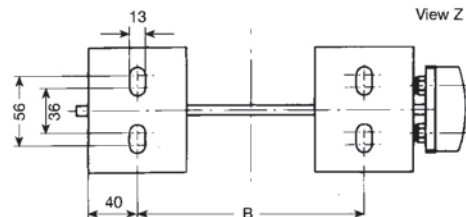


Type	for Cable carrier	l_M	C	D	Weight kg	Order- No.
		mm				
M 95 F/350-170	W 95 F/300-170	175	ca. 305	170	12,000	346 282
	W 95 F/350-170					
M 95 F/350-200	W 95 F/300-200		ca. 290	200	12,300	346 283
	W 95 F/350-200					
M 95 F/350-230	W 95 F/350-230		ca. 275	230	12,600	346 284
M 95 F/450-200	W 95 F/400-170	225	ca. 340	200	13,200	346 285
	W 95 F/400-200					
	W 95 F/450-200					
M 95 F/450-230	W 95 F/400-230		ca. 325	230	13,400	346 286
	W 95 F/450-230					

Track clamp E 95



View Z



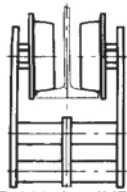
Type	for Cable carrier	l_E	B	C	D	Weight kg	Order- No.
		mm					
E 95 F/350-170	W 95 F/300-170	175	184	ca. 263	170	11,800	346 287
	W 95 F/350-170						
E 95 F/350-200	W 95 F/300-200			ca. 248	200	12,100	346 288
	W 95 F/350-200						
E 95 F/350-230	W 95 F/350-230					ca. 233	230
E 95 F/450-200	W 95 F/400-170	225	284	ca. 298	200	13,300	346 290
	W 95 F/400-200						
	W 95 F/450-200						
E 95 F/450-230	W 95 F/400-230			ca. 283	230	13,600	346 291
	W 95 F/450-230						

WHEEL SETS FOR CABLE CARRIERS W 65 UND W 75

(Standard- or European profile)

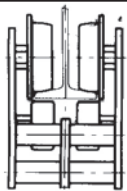
Diameter of Wheels 65 mm

Carrying capacity	max. 200 kg tread of steel
Travel speed	max. 120 m/min when using appropriate cable tension relief
Wheel Type	machined and hardened flange type steel wheels Ø 65/80 mm, galvanized and equipped with precision ball bearings, protected against dust and splash water
Kick-up Rollers	cylindrical steel wheels Ø 45 mm, hardened and galvanized with ball bearings; polyurethane on special request..

Wheel sets for standard beam ⁽³⁾ w/o kick-up-roller				
Type	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	
LWB- 3/65-275	275	5,400	346 181	
LWB- 3/65-325	325	6,000	346 182	
LWB- 3/65-375	375	6,700	346 183	

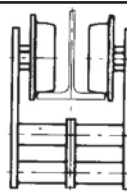
INP 100 thru INP 120

INP 100 thru INP 120

Wheel sets for standard beam w/ kick-up-roller				
Type	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	
LWB- 4/65-275	275	5,800	346 184	
LWB- 4/65-325	325	6,500	346 185	
LWB- 4/65-375	375	7,100	346 186	

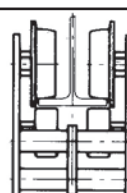
INP 100 thru INP 200

INP 100 thru INP 200

Wheel sets for flat flange beam ⁽³⁾ w/o kick-up-roller				
Type	l ⁽²⁾ mm	Wght. kg	Order- No.	
LWB- 7/65-275	275	5,400	346 193	
LWB- 7/65-325	325	6,000	346 194	
LWB- 7/65-375	375	6,700	346 195	

IPE 100 thru IPE 120

IPE 100 thru IPE 120

Wheel sets for flat flange beam w/ kick-up-roller				
Type	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	
LWB- 8/65-275	275	5,800	346 196	
LWB- 8/65-325	325	6,500	346 197	
LWB- 8/65-375	375	7,100	346 198	

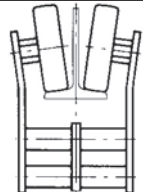
IPE 100 thru IPE 200

IPE 100 thru IPE 200

Note: All wheel sets can be upgraded with support rollers.

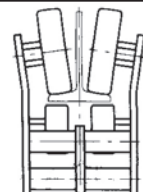
Runner wheel diameter 80 mm

Carrying capacity	300 kg tread of steel 200 kg tread of polyurethane
Travel speed	max. 160 m/min when using appropriate cable tension relief
Wheel Type	machined and hardened cylindrical type steel wheels Ø 80 mm, galvanized and equipped with precision ball bearings, protected against dust and splash water – polyurethane optional.
Side and Kick-up Rollers	cylindrical steel wheels Ø 45 mm, hardened and galvanized with ball bearings; polyurethane on special request.

Wheel sets for standard beam w/o side roller and w/o kick-up-roller					
Type ⁽¹⁾	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	Order- No. w/polyure- thane wheels	
LWB- 1/80-275	275	6,400	346 175	346 292	
LWB- 1/80-325	325	7,100	346 176	346 293	
LWB- 1/80-375	375	7,700	346 177	346 294	

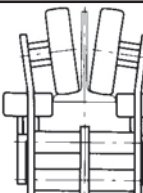
INP 100 thru INP 180

INP 100 thru INP 180

Wheel sets for standard beam w/o side roller and w/o kick-up-roller					
Type ⁽¹⁾	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	Order- No. w/polyure- thane wheels	
LWB- 2/80-275	275	6,800	346 178	346 295	
LWB- 2/80-325	325	7,500	346 179	346 296	
LWB- 2/80-375	375	8,100	346 180	346 297	

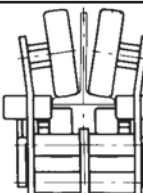
INP 100 thru INP 180

INP 100 thru INP 180

Wheel sets for standard beam w/o side roller and w/o kick-up-roller					
Type ⁽¹⁾	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	Order- No. w/polyure- thane wheels	
LWB- 5/80-275	275	7,600	346 187	346 298	
LWB- 5/80-325	325	8,300	346 188	346 299	
LWB- 5/80-375	375	9,000	346 189	346 300	

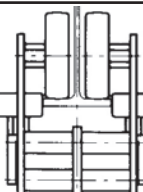
INP 120 thru INP 200

INP 120 thru INP 200

Wheel sets for standard beam w/o side roller and w/o kick-up-roller					
Type ⁽¹⁾	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	Order- No. w/polyure- thane wheels	
LWB- 6/80-275	275	8,000	346 190	346 301	
LWB- 6/80-325	325	8,700	346 191	346 302	
LWB- 6/80-375	375	9,400	346 192	346 303	

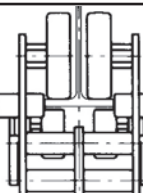
INP 120 thru INP 200

INP 120 thru INP 200

Wheel sets for flat flange beam w/ side roller and w/ kick-up-roller					
Type ⁽¹⁾	<i>l</i> ⁽²⁾ mm	Wght. kg	Order- No.	Order- No. w/polyure- thane wheels	
LWB- 9/80-275	275	7,600	346 199	346 304	
LWB- 9/80-325	325	8,300	346 200	346 305	
LWB- 9/80-375	375	9,000	346 201	346 306	

IPE 120 thru IPE 200

IPE 120 thru IPE 200

Wheel sets for flat flange beam w/ side roller and w/ kick-up-roller					
Type ⁽¹⁾	l ⁽²⁾ mm	Wght. kg	Order- No.	Order- No. w/polyure- thane wheels	
LWB-10/80-275	275	8,000	346 202	346 307	
LWB-10/80-325	325	8,700	346 203	346 308	
LWB-10/80-375	375	9,400	346 204	346 309	

IPE 120 thru IPE 200

IPE 120 thru IPE 200

Wheel set settings for beams with alternative flange dimensions on request.

⁽¹⁾ The type description of the wheel sets with vulkollan-wheels have the addition -V (Example: LWB 1/80-275-V).

⁽²⁾ While choosing the wheel set please bare in mind that the dimension „l“ corresponds with the dimension „l“ of the carrier body!

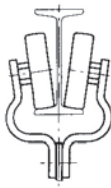
⁽³⁾ With the track profile INP/IPE 140 upto 200 the versions with support rollers have to be used.

WHEEL SETS FOR CABLE CARRIERS W 85 & W 95

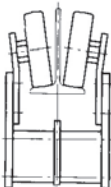
(Standard- or European profile)

Diameter of Wheels 100 mm

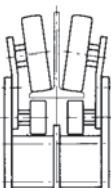
Carrying capacity	500 kg w/steel wheels 350 kg w/polyurethane wheels
Travel speed	max. 160 m/min. when using appropriate cable tension relief
Wheel Type	machined and hardened cylindrical type steel wheels Ø 100 mm, galvanized and equipped with precision ball bearings, protected against dust and splash water – polyurethane optional
Side and Kick-up Rollers	cylindrical steel wheels Ø 45 mm, hardened and galvanized with ball bearings; polyurethane on special request

Wheel sets for standard beam w/o side roller and w/o kick-up-roller				
Type ⁽¹⁾	Weight kg	Order- No.	Order- No. w/polyure- thane wheels	
LWA- 0/100	12,300	346 239	346 310	

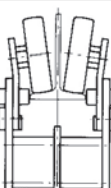
INP 140 thru INP 200

Wheel sets for standard beam w/o side roller and w/o kick-up-roller				
Type ⁽¹⁾	Weight kg	Order- No.	Order- No. w/polyure- thane wheels	
LWA- 1/100	13,800	346 240	346 311	

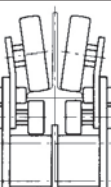
INP 140 thru INP 200

Wheel sets for standard beam w/o side roller and w/o kick-up-roller				
Type ⁽¹⁾	Weight kg	Order- No.	Order- No. w/polyure- thane wheels	
LWA- 2/100	14,700	346 241	346 312	

INP 140 thru INP 200

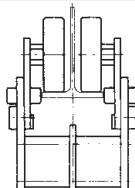
Wheel sets for standard beam w/ side roller and w/o kick-up-roller				
Type ⁽¹⁾	Weight kg	Order- No.	Order- No. w/polyure- thane wheels	
LWA- 5/100	15,400	346 242	346 313	

INP 140 thru INP 200

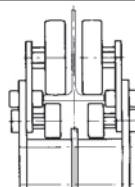
Wheel sets for standard beam w/ side roller and w/o kick-up-roller				
Type ⁽¹⁾	Weight kg	Order- No.	Order- No. w/polyure- thane wheels	
LWA- 6/100	16,300	346 243	346 314	

INP 140 thru INP 200

Note: Installation of support- and guiding rollers are at the **LWA-0/100** not possible.

Wheel sets for flat flange beam w/side roller and w/o kick-up-roller				
Type ⁽¹⁾	Weight kg	Order- No.	Order- No. w/polyure- thane wheels	
LWA- 9/100	15,700	346 205	346 315	

IPE 140 thru IPE 200

Wheel sets for flat flange beam w/side roller and w/o kick-up-roller				
Type ⁽¹⁾	Weight kg	Order- No.	Order- No. w/polyure- thane wheels	
LWA- 10/100	16,500	346 206	346 316	

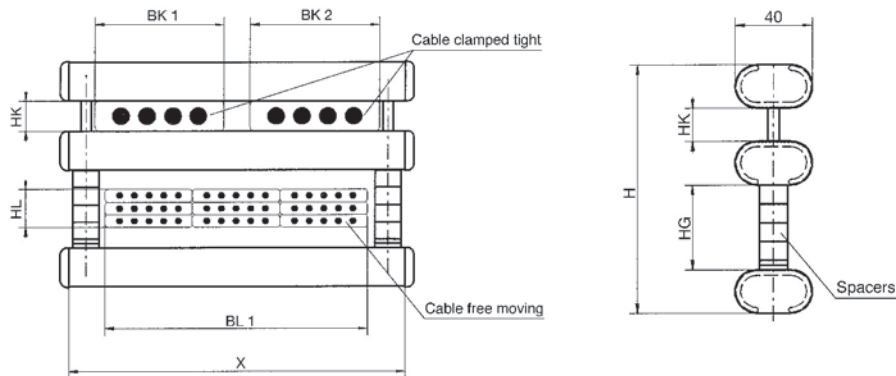
IPE 140 thru IPE 200



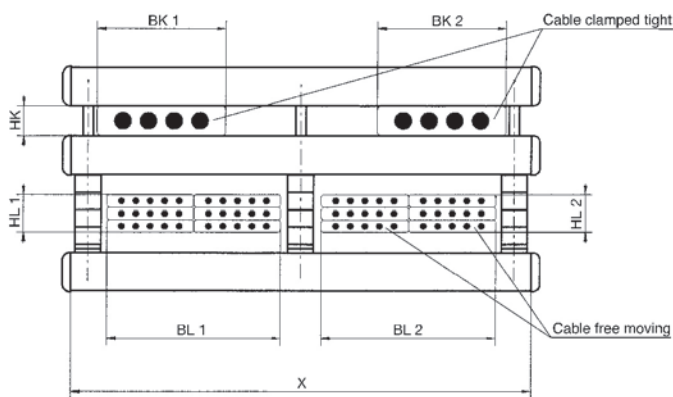
CABLE LOOP CLAMPS

Material:

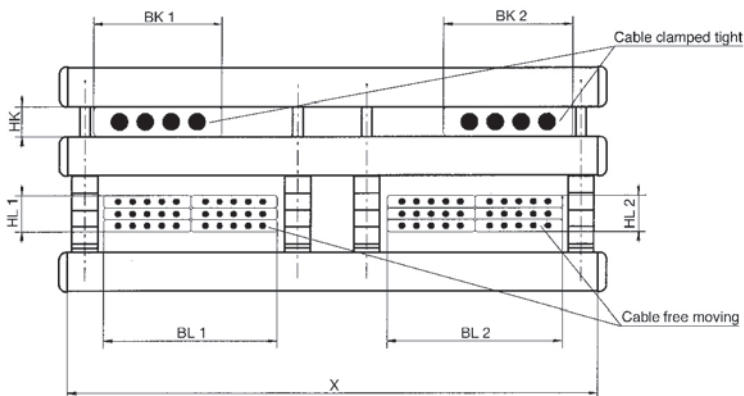
Clamping parts of aluminium
Spacers and end caps of plastic
Hardware of galvanized steel



Type	GIK 2 – AI
Order- No.	346 961
Material	2 clamping bolts



Type	GIK 3 – AI
Order- No.	346 971
Material	3 clamping bolts



Type	GIK 4 – AI
Order- No.	346 972
Material	4 clamping bolts

The cable loop clamps are supplied with a clamping height HK – 5 mm.
Larger clamping heights HK reduce the space HG accordingly.
For correct adjustment of space HG remove spacers.
Space reduction = cable thickness – 5 mm.
Available reductions of space HG in mm:

2,5 / 5 / 10 / 12,5 / 15 / 20 / 22,5 / 25

General dimensions of cable loop clamps on request.

Please specify with your order:

Cable Loop Clamp:	: Type	Order- No.	
Dimensions of cable packs: HK x BK 1 / HK x BK 2 :		/	mm
HL 1 x BL 1 / HL 2 x BL 2 :		/	mm

TENSION RELIEF

1. Steel Ropes (Tow Cables)

Recommended for applications with

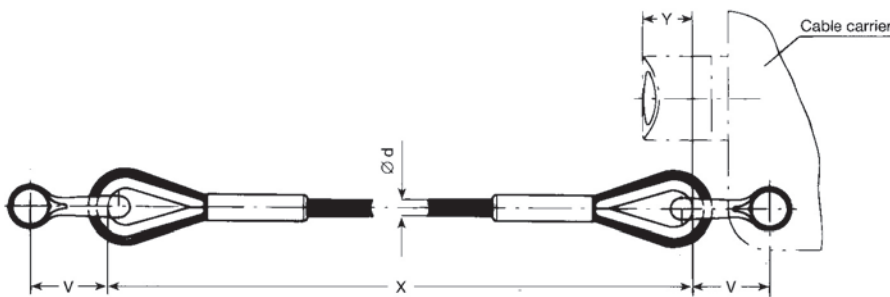
- Over 30 m Travel Distance (Working Travel)
or in general for mechanical sensitive cables and/or in very dusty environments
- Travel Speeds up to 80 m/min
- Accelerations up to 0.3 m/s²

For higher speeds or accelerations please consult the factory.

Type	Z 4	Z 4-PVC	Z 5	Z 5-PVC	Z 6	Z 6-PVC
Ø d =	6 mm	6/8 mm	6 mm	6/8 mm	8 mm	8/10 mm
Weight	0,125 kg/m	0,150 kg/m	0,125 kg/m	0,150 kg/m	0,221 kg/m	0,250 kg/m
V =	28 mm		42 mm		42 mm	
Material and finish	steel galvanized	steel galvanized PVC-shrouded	steel galvanized	steel galvanized PVC-shrouded	steel galvanized	steel galvanized PVC-shrouded
Admissible tension force (6 times safety factor)	3500 N		3500 N		6100 N	
Type of shackle lock	safety nut		hex. nut and split-pin			
for Cable carrier	W 45 / W 55		W 65 thru W 95			

Design: Round cord rope made of steel wires with fibre layers, galvanized or additional PVC-shrouding, in prefabricated length, incl. rope-clips, thimbles and shackles.

Weight: Shackles, thimbles, bush = 0.5 kgs on both sides



Projecting bumper:

Cable Carrier Type	Y in mm
W 45	0
W 55 (1 bumper)	3
W 55 (2 bumper)	15
W 65 and W 75	4
W 85 and W 95	6

How to determine the Tow rope Length:

$$X = \frac{S(f - 0,1) + Z}{n} + 2 Y$$

X = Length of tow rope mm
S = working travel mm
f = Cable safety factor (1,15)
Z = open space mm (min. one carrier)
n = number of cable loops
Y = projecting bumper (mm; see table)

Length of Two Rope mm	Order-No.					
	Cable carrier W 45 / W 55		Cable carrier W 65 thru W 95			
	Z 4	Z 4-PVC	Z 5	Z 5-PVC	Z 6	Z 6-PVC
thru – 2000	346 372	346 383	346 394	346 368	346 405	346 367
2001 – 3000	346 373	346 384	346 395	346 346	346 406	346 356
3001 – 4000	346 374	346 385	346 396	346 347	346 407	346 357
4001 – 5000	346 375	346 386	346 397	346 348	346 408	346 358
5001 – 6000	346 376	346 387	346 398	346 349	346 409	346 359
6001 – 7000	346 377	346 388	346 399	346 350	346 410	346 360
7001 – 8000	346 378	346 389	346 400	346 351	346 411	346 361
8001 – 9000	346 379	346 390	346 401	346 352	346 412	346 362
9001 – 10000	346 380	346 391	346 402	346 353	346 413	346 363
10001 – 11000	346 381	346 392	346 403	346 354	346 414	346 364
11001 – 12000	346 382	346 393	346 404	346 355	346 415	346 365

Please specify with your order

Tow rope: Type
Length of rope X: mm
Order- No.:

TENSION RELIEF

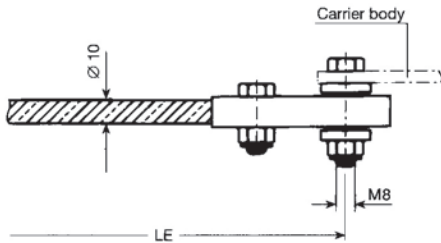
2. Elastic Tow Ropes

2.1. Material and Finish: Rope 10 mm Dia.
complete, cut to suit the application, incl. attachments in galvanized steel

Preferably used for Cable Carriers Type W 55. Job adapted Finish on request.

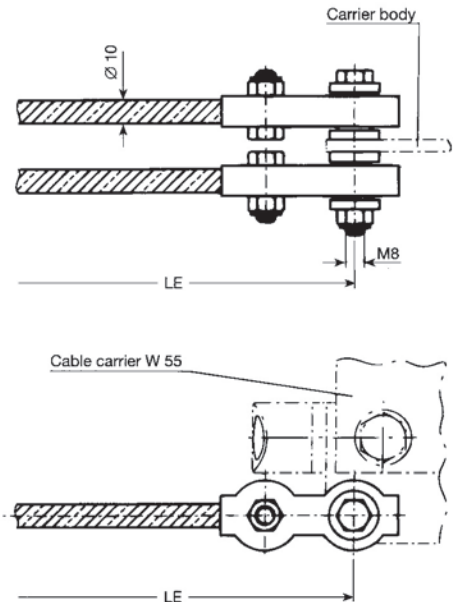
Type: ZE 1

1 Elastic Tow Rope for each Cable Loop



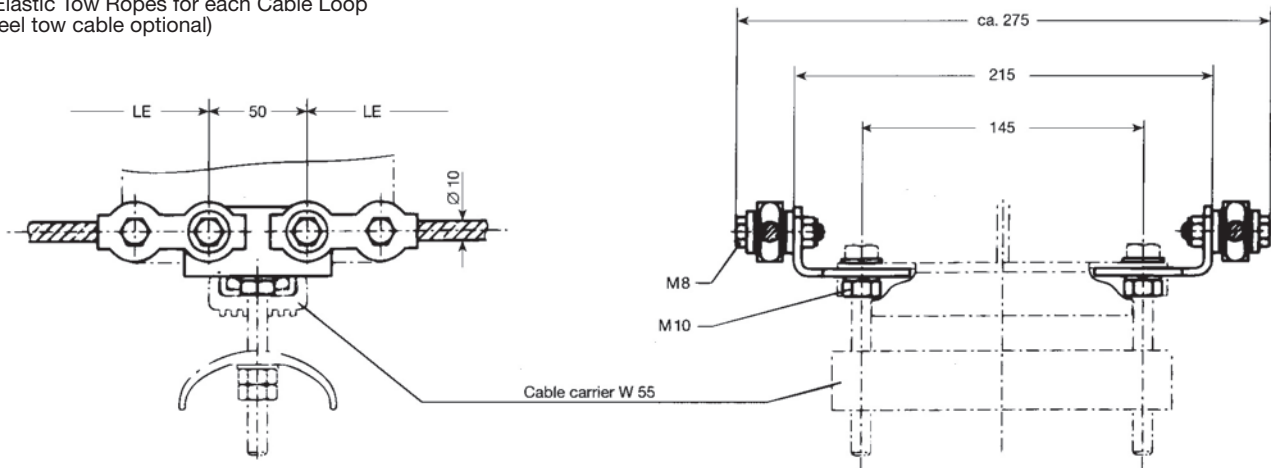
Type: ZE 2

2 Elastic Tow Ropes for each Cable Loop



Type: ZE 3

2 Elastic Tow Ropes for each Cable Loop
(steel tow cable optional)



Length of Tow Rope mm	Order- No.		
	ZE 1	ZE 2	ZE 3
1500 – 2000	346 416	346 427	346 438
2001 – 2500	346 417	346 428	346 439
2501 – 3000	346 418	346 429	346 440
3001 – 3500	346 419	346 430	346 441
3501 – 4000	346 420	346 431	346 442
4001 – 4500	346 421	346 432	346 443
4501 – 5000	346 422	346 433	346 444
5001 – 5500	346 423	346 434	346 445
5501 – 6000	346 424	346 435	346 446
6001 – 6500	346 425	346 436	346 447
6501 – 7000	346 426	346 437	346 448

Please specify with your order

Elastic Tow rope: Type

Length of rope LE: mm

Order- No.

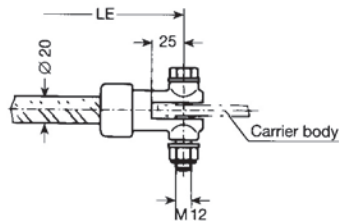
TENSION RELIEF

2.2. Material and Finish: Rope 20 mm Dia. complete, cut to suit the application, incl. attachments in stainless steel

Preferably used for Cable Carriers Type W 65 thru W 95. Job adapted Finish on request.

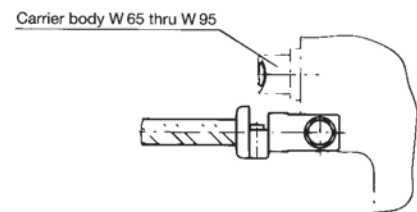
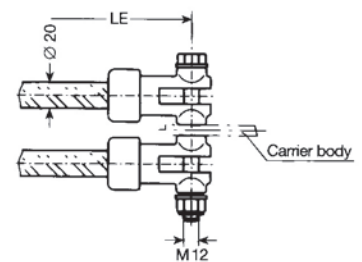
Type: ZE 5

1 Elastic Tow Rope for each Cable Loop



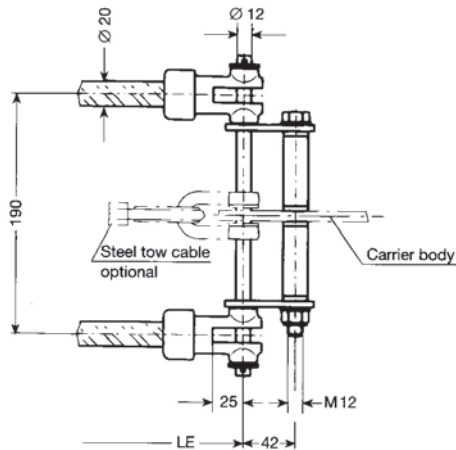
Type: ZE 6

2 Elastic Tow Ropes for each Cable Loop



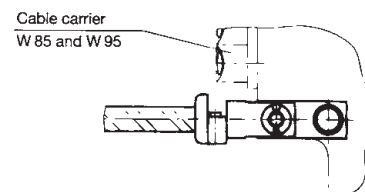
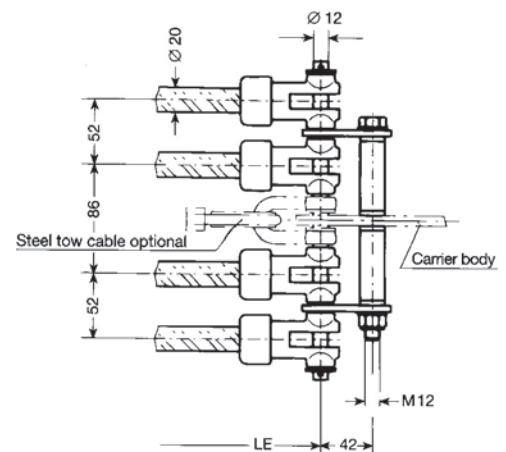
Type: ZE 7

2 Elastic Tow Ropes for each Cable Loop
(steel tow cable optional)



Type: ZE 8

4 Elastic Tow Ropes for each Cable Loop
(steel tow cable optional)



Length of Tow Rope mm	Order- No.			
	ZE 5	ZE 6	ZE 7	ZE 8
1500 – 2000	346 449	346 460	346 471	346 482
2001 – 2500	346 450	346 461	346 472	346 483
2501 – 3000	346 451	346 462	346 473	346 484
3001 – 3500	346 452	346 463	346 474	346 485
3501 – 4000	346 453	346 464	346 475	346 486
4001 – 4500	346 454	346 465	346 476	346 487
4501 – 5000	346 455	346 466	346 477	346 488
5001 – 5500	346 456	346 467	346 478	346 489
5501 – 6000	346 457	346 468	346 479	346 490
6001 – 6500	346 458	346 469	346 480	346 491
6501 – 7000	346 459	346 470	346 481	346 492

Please specify with your order

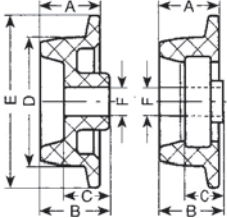
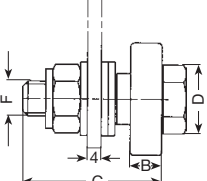
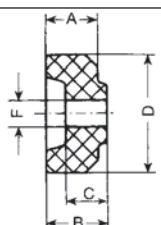
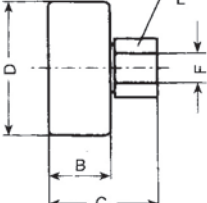
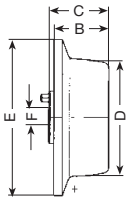
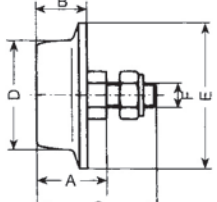
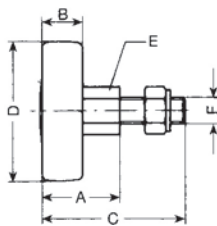
Elastic Tow rope: Type

Length of rope LE: mm

Order- No.

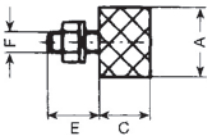
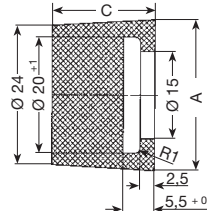
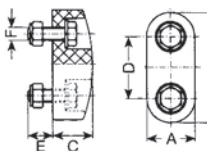
SPARE PARTS

1. Wheels

	for Cable carrier	Construction and Finish	Shape	Dimension mm						Weight kg	Order- No.
				A	B	C	D	E	F		
	W 25-30 K WN-WE 35 WN-WE 40	Flanged polyamid wheel Ø 45/60 x 24,5 mm, bushed bearing	spherical	21	24,5	16	Ø 45	Ø 60	Ø 10	0,027	346 731
	W 25 KL W 26 KL W 30 KL	Flanged polyamid wheel Ø 45/60 x 22,5 mm on sealed (2 RS) precision ball bearing	spherical	21	22,5	13.4	Ø 45	Ø 60	Ø 10	0,065	346 732
	W 45	Cyl. Kick-up Roller Steel, w/ precison ball bearings	cylindrical		9	40	Ø 32		M 10	0,040	348 709
	W 55	Cyl. Kick-up Roller Ø 45 x 23,5 mm Polyamid, bushed bearing	cylindrical	20	23,5	16	Ø 45	–	M10	0,030	346 506
	W 65 W 75 W 85 W 95	Cyl. Side and Kick-up Rollers Ø 45 x 21 mm Steel, w/ precision ball bearing (inner thread M 10)	cylindrical hardened steel	–	21	36	Ø 45	SW 17	M10 Thread Length 13 mm	0,200	346 507
			cylindrical polyurethane covered							0,120	347 651
	W 45	Cyl. wheel Ø 45/60 x 21 mm Steel, precision ball bearing, galvanized	spherical hardened steel		21	23	Ø 45	Ø 60	M10	0,240	348 708
	W 30 S W 35 S W 40 S W 55	Cyl. wheel Ø 45/60 x 21 mm, Steel; w/ precision ball bearing, galvanized	spherical hardened steel	29	21	50	Ø 45	Ø 60	M10	0,250	344 750
	W 65 W 75	Cyl. wheel, Ø 65/80 x 23 mm, Steel, galvanized, on sealed (2 RS), with sealed ball bearing.	galvanized	31,5	23	63	Ø 65	Ø 80	M12	0,520	346 509
	W 65 W 75	Cyl. wheel, Ø 80 x 22 mm, Steel, galvanized, on sealed (2 RS), with sealed ball bearing.	spherical hardened steel	37	22	69	Ø 80	SW 19	M12	0,840	346 510
		cylindrical, poly- urethane covered									0,450
	W 85 W 95	Cyl. wheel, Ø 100 x 27 mm, Steel, galvanized equipped with precision ball bearing	spherical hardened steel	42	27	80	Ø 100	SW 24	M16	1,600	346 512
		cylindrical, poly- urethane covered									1,020

SPARE PARTS

2. Bumpers

	for Cable carriers	Concstruction and Finish	Dimension mm						Weight kg	Order- No.
			A	B	C	D	E	F		
	W 35 W 40	Neoprene Bumper Ø 20 x 15 mm compl. with hardware	Ø 20	–	15	–	15	M6	0,012	346 001
	W 45	EPDM	Ø 26		18				0,010	349 335
	W 55 W 65 W 75 W 85 W 95	Neoprene Bumper 30 x 68 x 25 mm compl. with hardware M 8 x 25	30	68	25	38	15	M8	0,090	346 137



Cable carrier at a container crane

INSTALLATION INFORMATION

I-Profil

1. Install I-beam track parallel with runway of equipment; the side clearance to be sufficient to avoid interference with swinging cables.
2. The support structure of the I-beam must be adequately designed for the anticipated loads. Smooth out welded joints to ensure smooth traversing of cable carriers.

The support of the I-beam has to take place according to the occurring load. The joints have to be carried out aligned. At the tread the welding seams have to be smoothed. den Laufflächen müssen die Schweißnähte geglättet werden.

Cable Carriers

Carriers type W 20 thru W 30

Installation procedure:

1. Lead carrier: The wheel set width (only W 30) have to be adjusted according to the I-beam.
2. Cable carrier: The wheel set width (only W 30) have to be adjusted according to the I-beam.
3. End clamp: Fixed to the lower flange of the I-beam.

4. Bumper (only W 30): Fixed at the bar of the I-beam.

5. Connecting of the lead carrier to the machinery: The towing arm – (approx. 25 thru 320 mm (dia.) by others) have to be installed that it fit into the center of the rectangular pipe of the lead carrier and the distance between end clamp at the runway and the lead carrier is not smaller than the storage distance.

Carriers type W 35, W 40

Installation procedure:

1. Cable carrier: The wheel set width have to be adjusted according to the I-beam.
2. End clamp: Fixed to the lower flange of the I-beam.
3. Bumper: Fixed at the bar of the I-Profile.

4. The lead carrier of the series W 35 and W 40 are not designed as carriers, but as free under the I-beam travelling units and are connected fix with the machinery over a boom (e.g. U-profile). The stopper have to be adjusted according to the I-beam. The arrangement of the boom can be seen on the dimensional drawing of the according cable carrier type.

Carriers type W 45 thru W 95

Installation procedure:

1. Cable carrier: Factory adjusted according to the I-beam.
2. End clamp: Fixed to the lower flange of the I-beam.
3. Lead carrier: The lead carriers of the series W 55 thru W 95, are not designed as carriers, but as free under the I-beam travelling units and are connected fix with the machinery over a boom (e.g. U-profile). The arrangement of the boom can be seen on the dimensional drawing of the according cable carrier type. The cable carriers of the series W 55 have in addition a bumper extension to cover bigger travel inaccuracy. It must be installed during installation at the first cable carrier behind the lead carrier.

ling units and are connected fix with the machinery over a boom (e.g. U-profile). The arrangement of the boom can be seen on the dimensional drawing of the according cable carrier type. The cable carriers of the series W 55 have in addition a bumper extension to cover bigger travel inaccuracy. It must be installed during installation at the first cable carrier behind the lead carrier.

Cables

The cables will be installed tight according to the cable arrangement drawing using terminal blocks on the support saddle. They are locked with counternuts.

During apply of the cables please note that the cable length (L) between end clamp and lead carrier will be installed with constant loop depth onto the carrier.

In the bottom peak of the loop is a distance of approx. 5-10 mm between the single cable layer necessary.

Cable loop clamps

Cable loop clamps serve in the loop to guide the cable. The number of clamps per loop is depending on loop depth, cable packet and assembly situation of the system. As a single clamp it will be installed in the lower peak of the loop. With more than one cable loop clamp they will be arranged staggered in the lower third of the loop. The installation could be done, depending on the cable packet, pendant or standing. (Picture = pendant)

The cables of the packet have to be clamped with approx. 2 mm air gap to the clamping screws.

To prevent damaging of the cables during use, the thread ends of the clamping screws don't have to protrude over the metal profile. (see Picture)

The cables which are guided through the clamp have to swing freely.

The cable loop clamps will be delivered with a clamping height of $HK = 5$ mm. With bigger clamping heights the clamping distance is reduced accordingly. To adjust the clamps correctly the spacers have to be removed. Distance reducing = Cable thickness – 5 mm.

Available reducing of the distance HG in mm: 2,5 / 5 / 10 / 12,5 / 15 / 20 / 22,5 / 25 (please refer to page 27).

Steel tow ropes

The lead of the cable carriers is supported by strain relief tow ropes. These have to be untwisted and fixed with a shackle to the cable carrier. The protection of the shackle is done with nut and split-pin or with a locknut.

Rubber tow ropes

Please refer to the installation instructions.

Pre-assembly

Cable carrier systems could be delivered pre-assembled on a installation support beam.

Please note: When the installation of the cable carrier system is made on a support beam, please note that heavy connecting length are intercepted and not load the particular cable carrier.

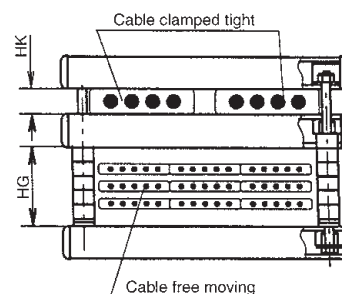
Test run

Check of the running characteristics of the cable carrier and the correct travel over the beam joints.

Maintenance

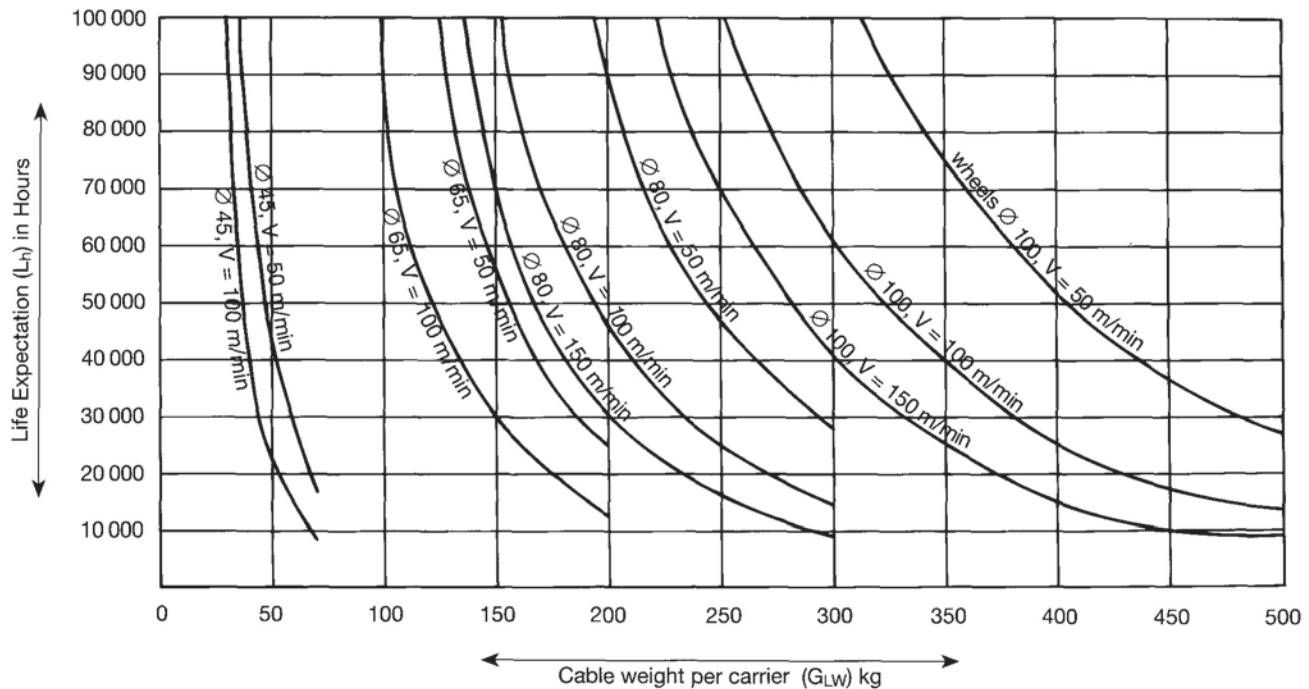
All rollers have a lifetime lubrication, a additional grease is not necessary. Approx. All three months the following controls have to be done:

1. Check – Wear of the rollers.
2. Check of all screws and nuts.
3. Check of the cable clamping at the cable carrier, lead carrier and the end clamp und counternuts of these screws.
4. Check of all cable loop clamps.
5. Check of all strain relief ropes and there fixings.
6. Check of all cables.



TYPICAL APPLICATION AND HOW TO ORDER

Analytical Life Expectation (L_H) of Wheel Bearings⁽¹⁾



Example for ordering

Application: Electrification for mobile stacker/reclaimer system

Cables:	2 Neoprene flat cables 4 x 35 mm ² 6 Neoprene flat cables 12 x 2,5 mm ² 3 Neoprene flat cables 8 x 1,5 mm ² , screened
Cable allowance for hookup (each end):	2 x 5 m
Working travel:	60 m
Loop depth:	3,0 m
Travel speed:	max. 30 m/min
I-Beam track:	INP 100

How to select the correct cable festoon system:

1. Draw a sketch of your cable package inside the window (clamping capacity) of your carrier and make a rough calculation of the cable weight per carrier.	
2. Specify cable carriers (see page 11)	W 55 F / 325 – 170 – B 175
3. Safety factor cable length (see page 35)	f = 1,15
4. Cable loops (diagram page 37)	n = 12
5. Storage distance (formula page 34)	SP = min. 4,250 m
6. Cable loop clamps required? (see page 27)	yes, 2 per cable loop
7. Tension relief required? (see page 28)	yes
Specify diameter of tow rope	Ø 6/8
Specify length of tow rope (formula page 34)	X = 5300 mm
8. Determine length of cable required (formula page 34)	$L_{total} = 84 \text{ m}$

Material to order:	Type	Order- No.
11 Cable carriers for I-Beam track INP 100	W 55 F/325 – 170 – B 175	346 124
1 Lead clamp	M 55 F/170 – 1 – B 175	346 144
1 Bumper extension	PV 55 – 2	346 149
1 Track clamp	E 55 F/325 – 170 – B 175	346 156
24 Cable loop clamps 18 x 117/35 x 127 mm	GIK 2 – Al	346 961
12 Tow ropes Ø 6/8 mm; X = 5300 mm	Z 4-PVC	346 387
2 x 84 m Neoprene flat cable – NGFLGöu-J	4 x 35 mm ²	330 770
6 x 84 m Neoprene flat cable – NGFLGöu-J	12 x 2,5 mm ²	330 720
3 x 84 m Neoprene flat cable – MCHöu-J	8 x 1,5 mm ²	331 374
2 Group connectors	FL 21	331 241

⁽¹⁾ Equivalent wheel load = 1/3 of the cable weight per carrier.

SYSTEM LAYOUT

Engineering data

Cable Specification

Travel distance	S =	m	Qty.	Type and Size of Cables	Dimensions mm Height x Width	Weight kg/m	Total weight kg/m
Travel speed	v =	m/min					
Acceleration	a =	m/s ²					
Loop depth	h =	m					
Storage distance	SP =	m					
Open space ⁽¹⁾	Z =	m					
Cable safety factor	f =						
Number of loops	n =						
Cable carrier	Type						
Length of carrier	l =	m					
Dia. Support saddle	D =	m					
Cable hookup length – track clamp side	l _e =	m					
Cable hookup length – lead clamp side	l _w =	m					
Length of tow rope	X =	m					
Projectin bumper	Y =	m	Total weight of all cables per meter G _L =				

Layout of the system

1. Number of loops (see diagram or formula)

$n = \frac{f \times S}{2 h - f \times l + 1,254 D}$	$= \frac{x}{2 x - x + 1,254 x}$	=		determined
---	---------------------------------	---	--	------------

2. Loop depth (see diagram or formula)

$h = \frac{f}{2} \left(\frac{S}{n} + l \right) - 0,627 \times D$	$= \frac{1}{2} \left(\frac{1}{1} + 1 \right) - 0,627 \times 1$	=		m
---	---	---	--	---

3. Storage distance (center track clamp to center lead clamp)

$SP = l(n - 1) + l_e + l_w + Z$	$= (1 - 1) + 1 + 1 + 1$	=		m
---------------------------------	-------------------------	---	--	---

4. Cable length

Cable length w/o hookup ends (Center end clamp thru center lead carrier)	$L = (S + SP) \times f$	$= (1 + 1) \times 1$	=		m
Hookup length – track clamp side	L _e =	1	=		m
Hookup length – lead clamp side	L _w =	1	=		m
Total cable length	L _{ges} =	2	=		m

5. Cable weight per carrier

$G_{LW} = \frac{L}{n} \times G_L$	$= \frac{2}{1} \times 1$	=		kg
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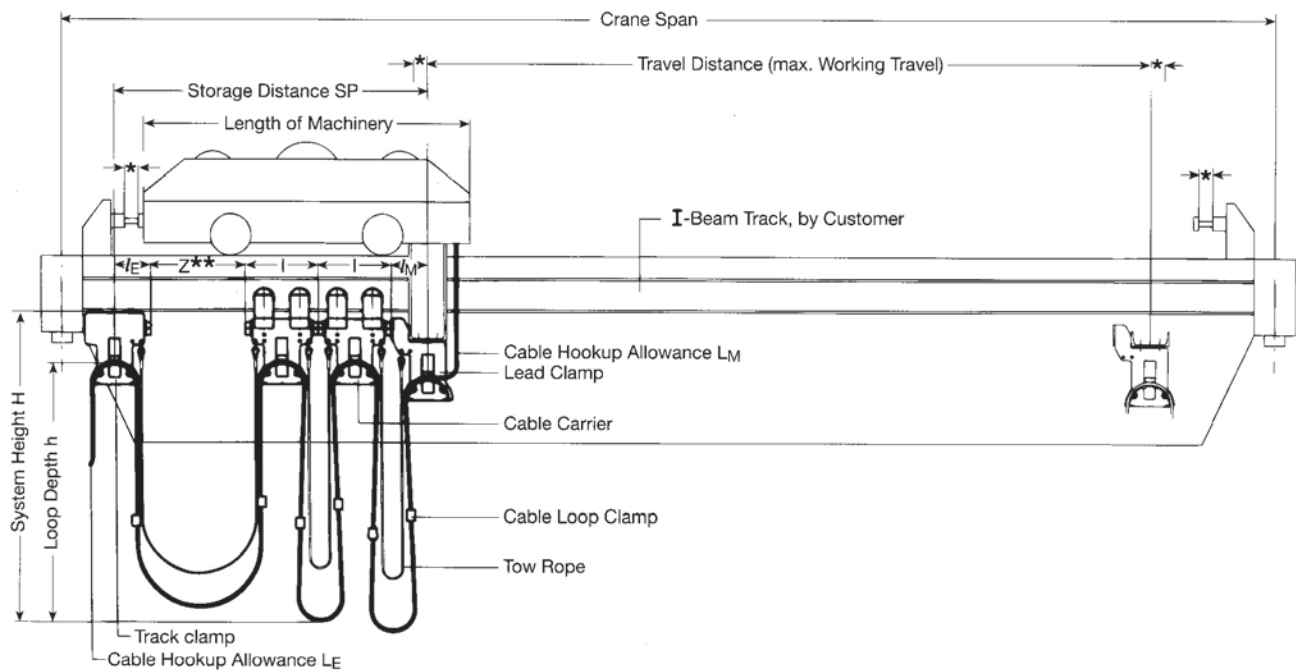
6. Length of tow rope

$X = \frac{S(f - 0,1) + Z}{n} + 2 Y$	$= \frac{1(1 - 0,1) + 1}{1} + 2 \times 1$	=		m
--------------------------------------	---	---	--	---

⁽¹⁾ (Free space (Z) must be available with stored crane bumper (emergency stop).

HOW TO DETERMINE

Number and Depth of Loops, Storage Distance, Cable Length, Number of Carriers



Cable Safety Length Directions

Travel speed	cable loop depth	safety factor
up to 35 m/min	more than 0,3 m	f = 1,1 (1,15 with tow ropes)
up to 50 m/min	up to 0,8 m	f = 1,15
up to 50 m/min	more than 0,8 m	f = 1,1 (1,15 with tow ropes)
up to 80 m/min	up to 0,8 m	f = 1,2
up to 80 m/min	more than 0,8 m	f = 1,15

For higher speed (> 80 m/min) and/or acceleration (> 0,3 m/s²) factors please consult factory.

Number of loops

$$n = \frac{f \times S}{2 h - f \times l + 1,254 D}$$

Cable loop depth

$$h = \frac{f}{2} \left(\frac{S}{n} + l \right) - 0,627 \times D$$

Storage distance

$$SP = l(n - 1) + l_E + l_M + Z$$

Cable length

(c/c track clamp – lead clamp without hookup ends)

$$L = (S + SP) \times f$$

Number of carriers

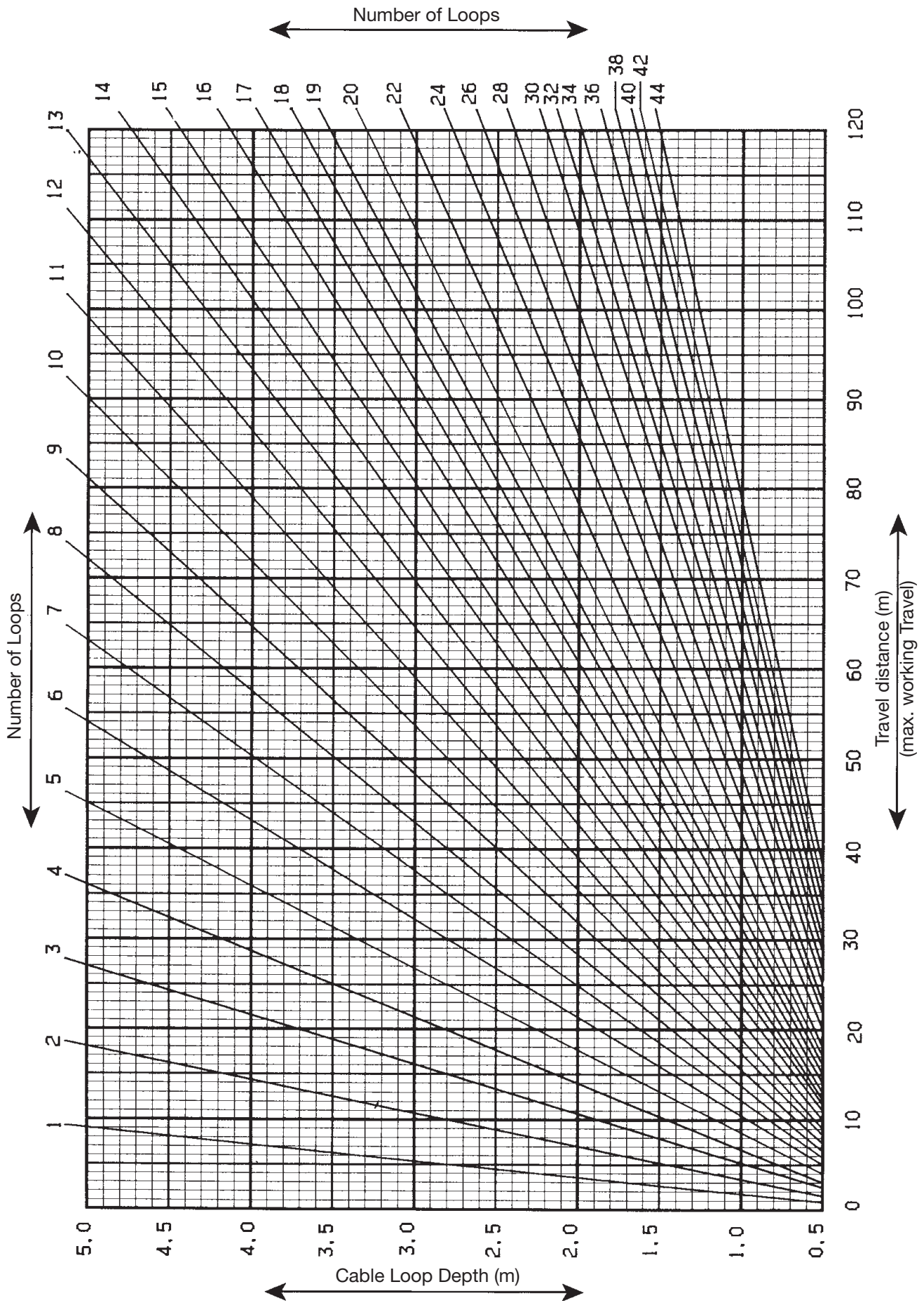
(w/o lead carrier and track clamp)

$$= n - 1$$

- S = travel distance (m)
- h = cable loop depth (m)
- SP = storage distance (m)
- Z = open space⁽²⁾
(min. one carrier length)
- n = number of loops
- l = length of carrier (m)
- D = diameter of support saddle(m)
- f = cable length safety factor
- l_E = cable hookup length – track clamp side (m)
- l_M = cable hookup length – lead clamp side (m)
- H = system height (m)

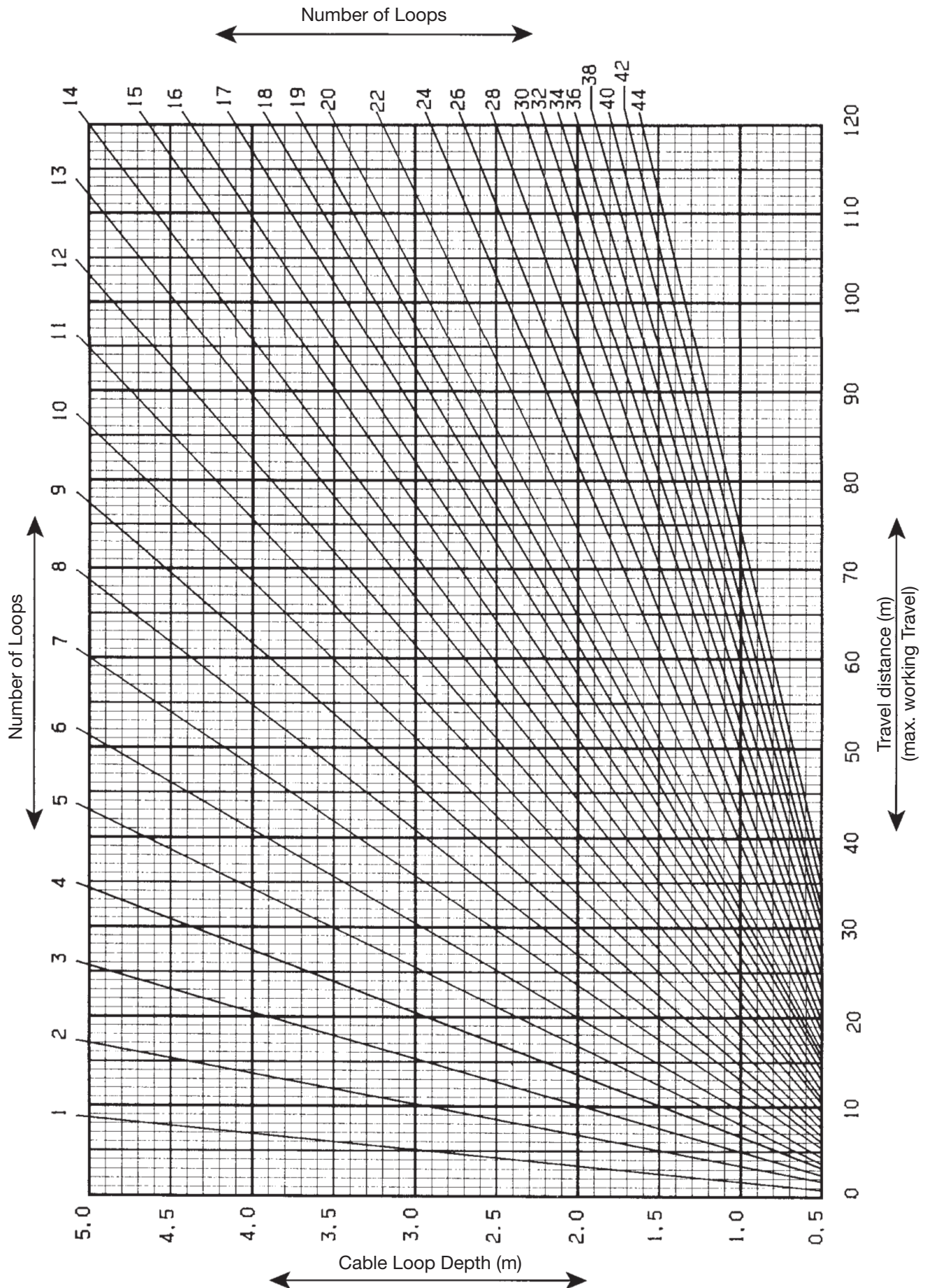
⁽²⁾ Free space (Z) must be available with stored crane bumper (emergency stop).

CABLE LOOPS



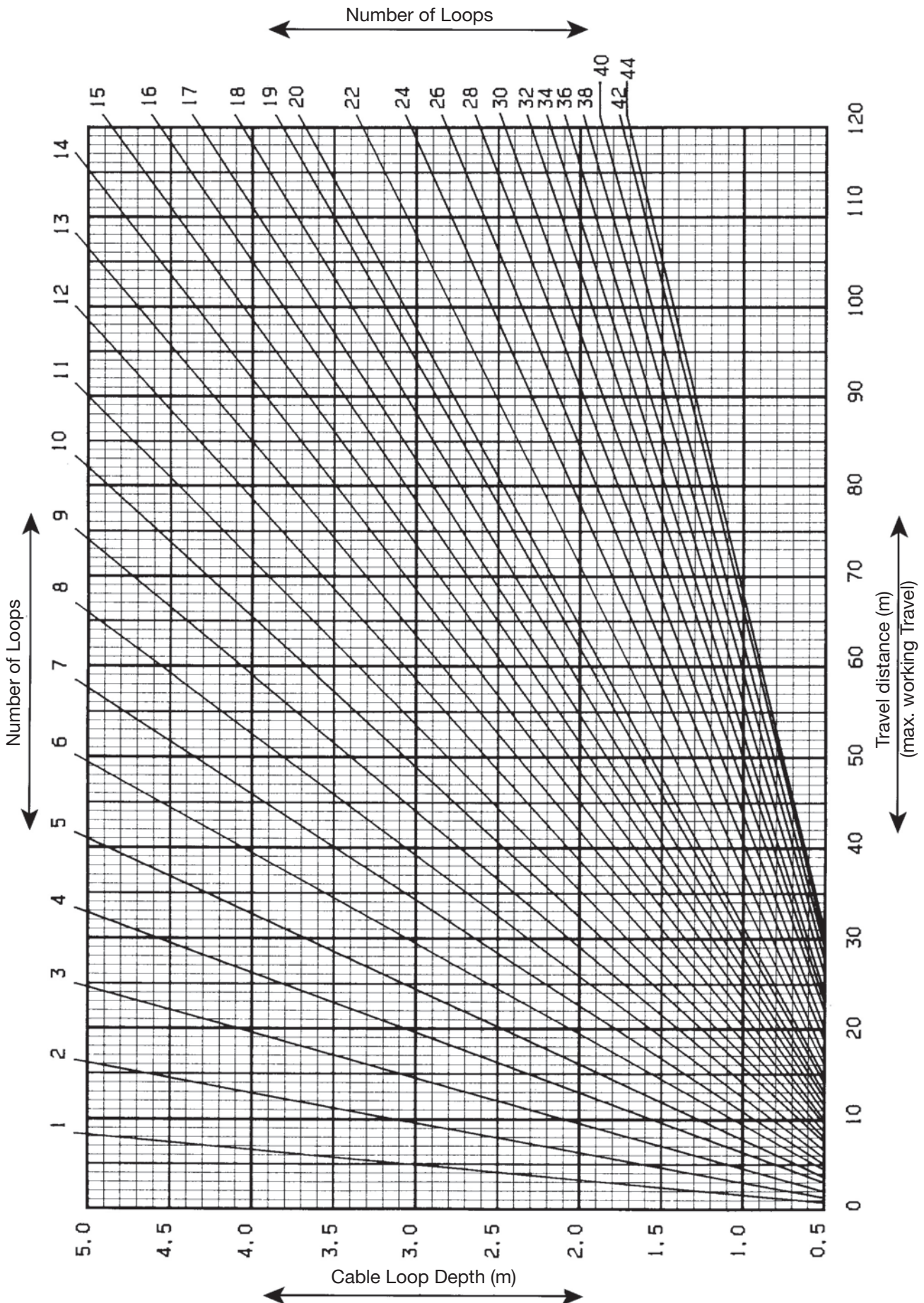
The diagram considers a cable safety length factor of $f = 1.1$

CABLE LOOPS



The diagram considers a cable safety length factor of $f = 1.15$

CABLE LOOPS



The diagram considers a cable safety length factor of $f = 1.2$



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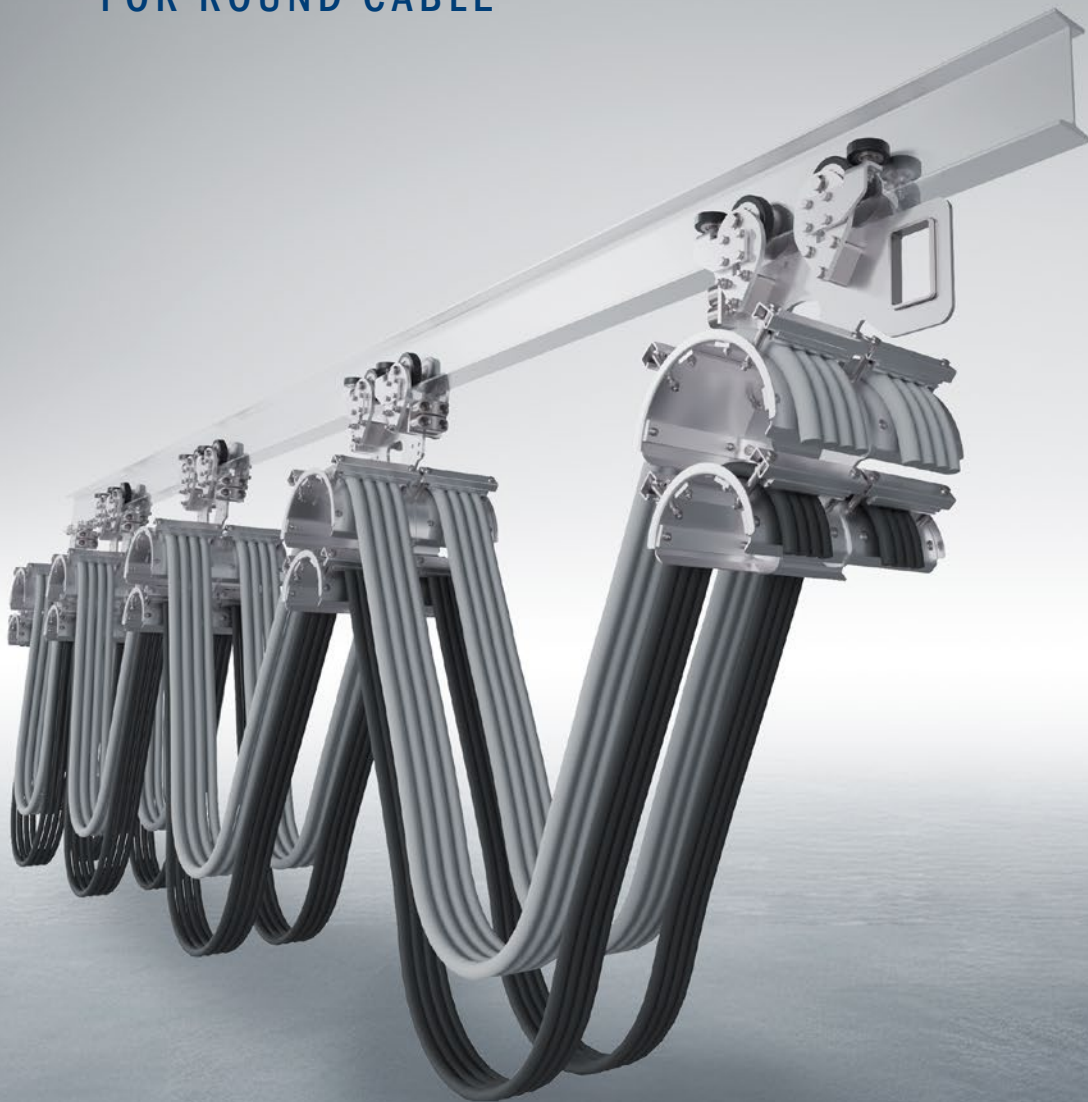
+49 2307 7040
info@vahle.com
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You can find your local contact at:

vahle.com/contact

FESTOON SYSTEMS I-BEAM SUPPORTED

FOR ROUND CABLE



VAHLE FESTOON SYSTEMS

Contents		Page		Page
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Questionnaire		3	Typical Application and How to Order	19
Cable Carriers for Round Cable		4-13	Installation Information	20
Cable Saddles for Round Cable		14-15	How to determine: Storage Distance, Cable Length, Number of Carriers	21
Cable Loop Clamps for Round Cable		16	Cable Loop Graphs	22-24
Tow Rope Assemblies		17	Application photos	21, 25

General

VAHLE Festoon systems support electric cables or hoses for mobile machinery.

The cable carriers contained in this catalog comply with VDE regulations and international safety requirements. Round cables and fittings per our catalog no. 8L.

Track profiles can be standard I-beams or flat flange beam sizes, some of which are shown in this catalog, however, actual dimensions of beams being utilized for track purposes should be specified with enquiries and orders.

Application

Cable carrier ride on an I-beam parallel to the traversing track of the equipment. This arrangement ensures that the total length of the machine (i. e. hoist, bridge trolley, etc.) is used as storage space. Where there is sufficient space for the storage distance, the cable carriers can also run on the hoist track.

All models have a lead clamp attached to an outrigger of the machinery.

The track clamp is the stationary fastening point of the cables and is bolted to the I-beam track at fixed position. The cable ends extending from the track clamp are terminated at a

junction box. The track clamp, together with the bumper, facing towards the last carrier, serves as a limit stop for the carriers. Tow ropes are optional depending on the cable arrangement, loop depth, speed, and acceleration. The strain relief ropes are slightly shorter than the electric cables in each loop.

Cable loop clamps are available and keep the cables together when the system is in operation.

Layout

When selecting a Festoon System please refer to page 21 in this catalog.

Layout considerations for cable carriers are cable dimensions, storage space available, maximum loop depth allowable, over-all height and width which the system will occupy, -beam selection, and maximum speed of travel.

After the type of carrier and the loop depth have been determined, please refer to the graphs on pages 22-24 for the number of loops required.

In case you desire a detailed quotation on VAHLE Festoon Systems please do not hesitate to contact our nearest local representative or mail the completed questionnaire on page 3 of this catalog.

Our cable carrier programm:

Catalog No. 8a: Cable Carriers on □-Tracks

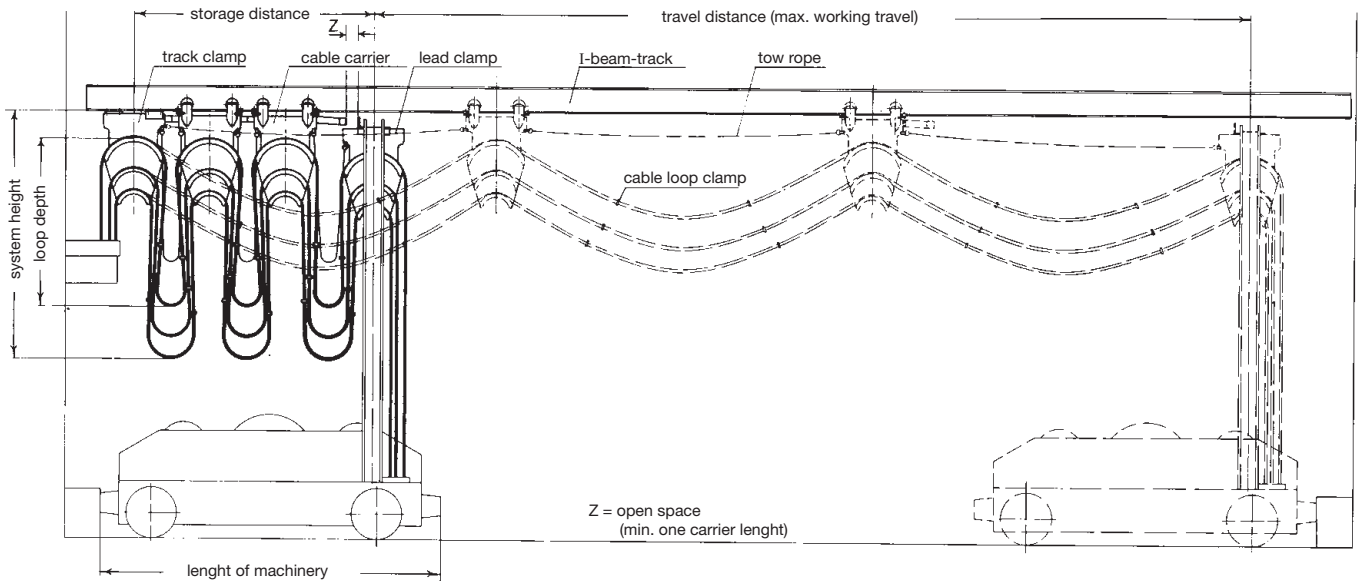
Catalog No. 8b: Cable Carriers for flatform cable on I-Beam Tracks

Catalog No. 8c: Cable Carriers for round cable on I-Beam Tracks

Catalog No. 8d: Cable Carriers on ◇-Tracks

Catalog No. 8e: Conductor cables & Fittings

QUESTIONNAIRE



Name and address of customer: _____

Ref.: _____

1. Type of application _____

2. Outdoor ☐ Indoor ☐ _____

3. Temperature conditions _____°C min. _____°C max. _____

4. Is round- or flatform cable required? _____

5. What is the max. storage distance? _____

6. Is it possible to extend the track for the festoon cable system in case the length of crane trolley is insufficient for storage?

☐ yes, by _____ mm, ☐ no, not possible

7. Special operating/environmental conditions: _____

8. Length of crane trolley: _____ mm

9. Travel distance of crane trolley: _____ mm

10. Travelling speed: _____ m/min.

11. Acceleration: _____ m/sec²

12. max. loop depth: _____ mm

13. Hook up cable length (both ends): _____ mm

14. Type of I-beam track: I NP ☐ I PE ☐

Required cables

[illegible]

CABLE CARRIERS W 25 R, W 26 R, W 30 R

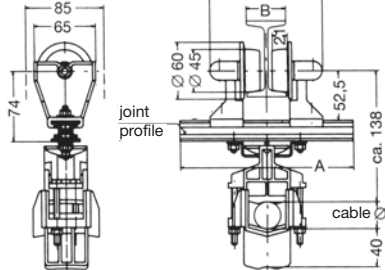
Normal- and europe profile



Engineering data

Type	W 25 R (2 wheels)	W 26 R (3 wheels)	W 30 R (4 wheels)
Carrying capacity	10 kg	10 kg	20 kg
Wheels	K Flanged polyamid wheels Ø 45/60 mm on stainless steel bushed bearings KL Flanged polyamid wheels Ø 45/60 mm on sealed (2 RS) precision ball bearings		
Material	Polyamid carrierbody adjustable on light metal profile. Cable support saddles: polyamid Hardware: galvanized		
Temperature range	- 30° C to + 100° C		
Travelling speed	max. 60 m/min		

(for calculation of storage distance)

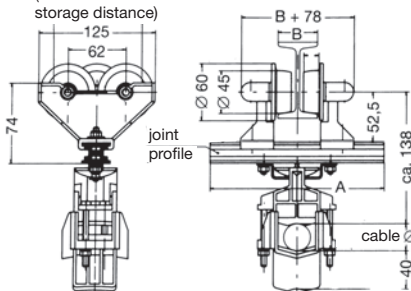


Cable carrier for round cable and hoses

Type W 25 R (2 wheels)

Type	Wheels	Cable ø mm	A mm	for Track-Profile		Weight kg	Order-No.
				INP	IPE		
W 25 R/65 K -1	K	5 mm to 38 mm	185	80-220	80-200	0,550	346 665
W 25 R/65 K -2			235	240-380	220-300	0,580	346 666
W 25 R/65 KL-1	KL		185	80-220	80-200	0,630	346 667
W 25 R/65 KL-2			235	240-380	220-300	0,660	346 668

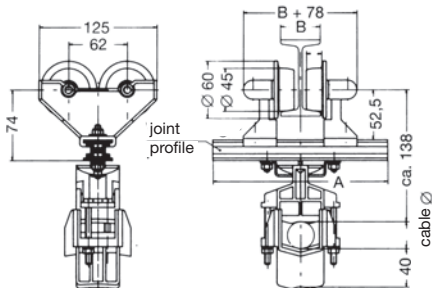
(for calculation of storage distance)



Cable carrier for round cable and hoses

Type W 26 R (3 wheels)

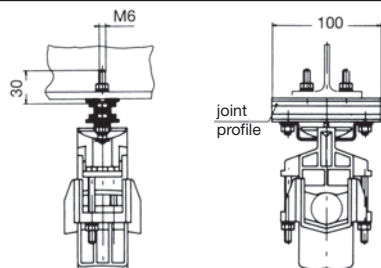
Type	Wheels	Cable ø mm	A mm	for Track-Profile		Weight kg	Order-No.
				INP	IPE		
W 26 R/125 K -1	K	5 mm to 38 mm	185	80-220	80-200	0,620	346 669
W 26 R/125 K -2			235	240-380	220-300	0,650	346 670
W 26 R/125 KL-1	KL		185	80-220	80-200	0,740	346 671
W 26 R/125 KL-2			235	240-380	220-300	0,770	346 672



Cable carrier for round cable and hoses

Type W 30 R (4 wheels)

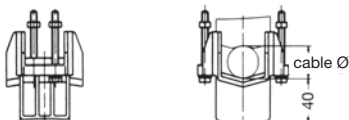
Type	Wheels	Cable ø mm	A mm	for Track-Profile		Weight kg	Order-No.
			INP	IPE			
W 30 R/125 K -1	K	5 mm to 38 mm	185	80-220	80-200	0,690	346 673
W 30 R/125 K -2			235	240-380	220-300	0,720	346 674
W 30 R/125 KL-1	KL		185	80-220	80-200	0,850	346 675
W 30 R/125 KL-2			235	240-380	220-300	0,880	346 676



Lead carrier and Track clamp for round cable and hoses

Type	for cable carrier	Weight kg	Order-No.
E 25-30 R	W 25 R/ 65 ...	0,310	346 677
	W 26 R/125 ...		
	W 30 R/125 ...		

Support saddles for round cable and hoses for additional tiers



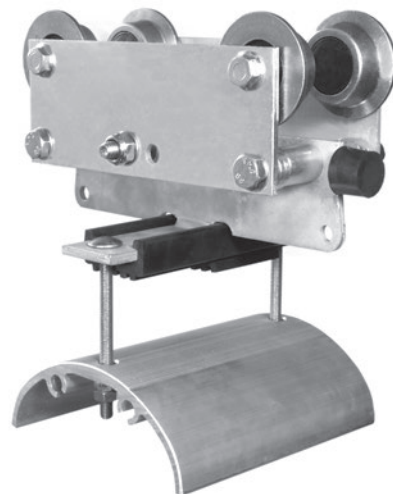
Type	for cable carrier	Weight kg	Order-No.
LAR	all Types	0,110	312 500



CABLE CARRIERS W 45 FR

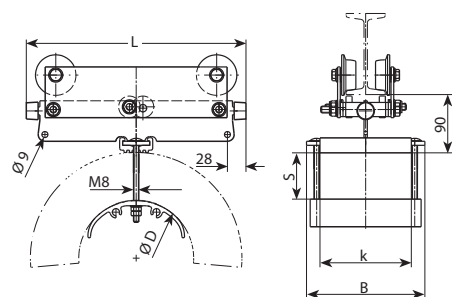
Engineering data

Type	W 45 FR on I-profil for flatform and round cable
Carrying capacity	50 kg (max. 80 kg - consult factory)
Travel speed	max. 120 m/min. when using appropriate cable tension relief
Wheel sets	for standard tracks INP 80 to INP 200 and for flat flange beams IPE 80 to IPE 200 other profiles on request on stainless steel bushed bearing
Wheels	flanged steel wheels Ø 45/60 mm, hardened and galvanized, steel kick-up rollers Ø 32 mm with bushed bearing and tread hardened and galvanized
Material	Carrier body: steel galvanized Support saddle: aluminium
Operating ambients	-30 °C to +100 °C



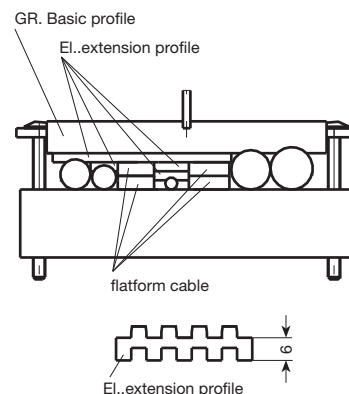
Cable carrier W 45 FR

Type	max. clamping capacity mm height x width (s x k)	L mm	B mm	D mm	Weight kg	Order-no. w/o kick-up rollers	Order-no. w/kick-up rollers
W 45 FR/160- 80 B 175	35 x 135	160	175	80	2,750	348 663	348 685
W 45 FR/160- 80 B 225	35 x 185	160	225	80	2,880	348 664	348 686
W 45 FR/160-100 B 175	25 x 135	160	175	100	2,830	348 665	348 687
W 45 FR/160-100 B 225	25 x 185	160	225	100	3,000	348 666	348 688
W 45 FR/200- 80 B 175	55 x 135	200	175	80	3,050	348 667	348 689
W 45 FR/200- 80 B 225	55 x 185	200	225	80	3,180	348 668	348 690
W 45 FR/200-100 B 175	45 x 135	200	175	100	3,130	348 669	348 691
W 45 FR/200-100 B 225	45 x 185	200	225	100	3,300	348 670	348 692
W 45 FR/200-140 B 175	25 x 135	200	175	140	3,370	348 671	348 693
W 45 FR/200-140 B 225	25 x 185	200	225	140	3,610	348 672	348 694
W 45 FR/250-100 B 175	70 x 135	250	175	100	3,490	348 673	348 695
W 45 FR/250-100 B 225	70 x 185	250	225	100	3,660	348 674	348 696
W 45 FR/250-140 B 175	50 x 135	250	175	140	3,730	348 675	348 697
W 45 FR/250-140 B 225	50 x 185	250	225	140	3,970	348 676	348 698
W 45 FR/250-170 B 175	35 x 135	250	175	170	3,790	348 677	348 699
W 45 FR/250-170 B 225	35 x 185	250	225	170	4,040	348 678	348 700
W 45 FR/290-140 B 175	70 x 135	290	175	140	4,010	348 679	348 701
W 45 FR/290-140 B 225	70 x 185	290	225	140	4,250	348 680	348 702
W 45 FR/290-170 B 175	55 x 135	290	175	170	4,070	348 681	348 703
W 45 FR/290-170 B 225	55 x 185	290	225	170	4,230	348 682	348 704
W 45 FR/325-170 B 175	72 x 135	325	175	170	4,290	348 683	348 705
W 45 FR/325-170 B 225	72 x 185	325	225	170	4,540	348 684	348 706



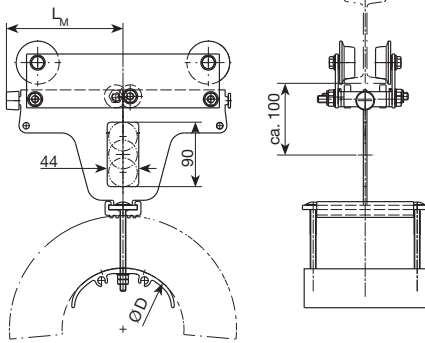
Collecting clamp for round cables

Extension rubber profile can be ordered per meter (Order-no.: 348 845)



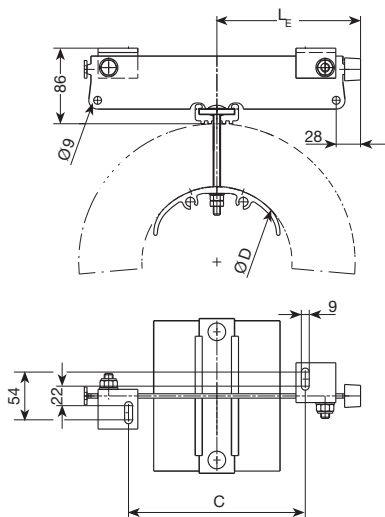


Lead clamp MW 45



Type	for Cable carrier	L _M mm	D mm	Weight kg	Order-No.
MW 45 FR/200- 80 B 175	W 45 FR/160- 80 B 175 W 45 FR/200- 80 B 175	100	80	3,290	348 741
MW 45 FR/200- 80 B 225	W 45 FR/160- 80 B 225 W 45 FR/200- 80 B 225	100	80	3,430	348 742
MW 45 FR/200-100 B 175	W 45 FR/160-100 B 175 W 45 FR/200-100 B 175	100	100	3,370	348 743
MW 45 FR/200-100 B 225	W 45 FR/160- 100 B 225 W 45 FR/200- 100 B 225	100	100	3,550	348 744
MW 45 FR/200-140 B 175	W 45 FR/200-140 B 175	100	140	3,610	348 745
MW 45 FR/200-140 B 225	W 45 FR/200-140 B 225	100	140	3,860	348 746
MW 45 FR/325-100 B 175	W 45 FR/250-100 B 175	162	100	4,280	348 747
MW 45 FR/325-100 B 225	W 45 FR/250-100 B 225	162	100	4,450	348 748
MW 45 FR/325-140 B 175	W 45 FR/250-140 B 175 W 45 FR/290-140 B 175	162	140	4,510	348 749
MW 45 FR/325-140 B 225	W 45 FR/250-140 B 225 W 45 FR/290-140 B 225	162	140	4,760	348 750
MW 45 FR/325-170 B 175	W 45 FR/250-170 B 175 W 45 FR/290-170 B 175 W 45 FR/325-170 B 175	162	170	4,570	348 751
MW 45 FR/325-170 B 225	W 45 FR/250-170 B 225 W 45 FR/290-170 B 225 W 45 FR/325-170 B 225	162	170	4,830	348 752

Track clamp E 45



Type	for Cable carrier	L _E mm	D mm	C mm	Weight kg	Order-No.
E 45 FR/160- 80 B 175	W 45 FR/160- 80 B 175	80	80	35	1,120	348 786
E 45 FR/160- 80 B 225	W 45 FR/160- 80 B 225	80	80	35	1,250	348 787
E 45 FR/160-100 B 175	W 45 FR/160-100 B 175	80	100	35	1,200	348 788
E 45 FR/160-100 B 225	W 45 FR/160-100 B 225	80	100	35	1,370	348 789
E 45 FR/200- 80 B 175	W 45 FR/200- 80 B 175	100	80	75	1,220	348 790
E 45 FR/200- 80 B 225	W 45 FR/200- 80 B 225	100	80	75	1,350	348 791
E 45 FR/200-100 B 175	W 45 FR/200-100 B 175	100	100	75	1,300	348 792
E 45 FR/200-100 B 225	W 45 FR/200-100 B 225	100	100	75	1,470	348 793
E 45 FR/200-140 B 175	W 45 FR/200-140 B 175	100	140	75	1,540	348 794
E 45 FR/200-140 B 225	W 45 FR/200-140 B 225	100	140	75	1,780	348 795
E 45 FR/250-100 B 175	W 45 FR/250-100 B 175	125	100	125	1,420	348 796
E 45 FR/250-100 B 225	W 45 FR/250-100 B 225	125	100	125	1,590	348 797
E 45 FR/250-140 B 175	W 45 FR/250-140 B 175	125	140	125	1,660	348 798
E 45 FR/250-140 B 225	W 45 FR/250-140 B 225	125	140	125	1,900	348 799
E 45 FR/250-170 B 175	W 45 FR/250-170 B 175	125	170	125	1,720	348 800
E 45 FR/250-170 B 225	W 45 FR/250-170 B 225	125	170	125	1,970	348 801
E 45 FR/290-140 B 175	W 45 FR/290-140 B 175	145	140	165	1,760	348 802
E 45 FR/290-140 B 225	W 45 FR/290-140 B 225	145	140	165	2,000	348 803
E 45 FR/290-170 B 175	W 45 FR/290-170 B 175	145	170	165	1,820	348 804
E 45 FR/290-170 B 225	W 45 FR/290-170 B 225	145	170	165	2,070	348 805
E 45 FR/325-170 B 175	W 45 FR/325-170 B 175	162	170	200	1,900	348 806
E 45 FR/325-170 B 225	W 45 FR/325-170 B 225	162	170	200	2,150	348 807

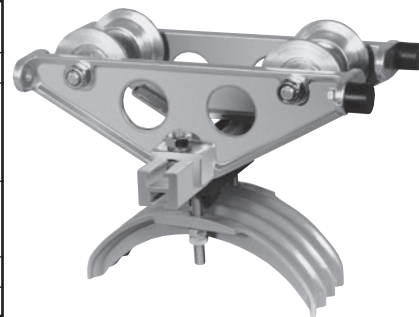


CABLE CARRIERS W 110

Normal- and europe profile

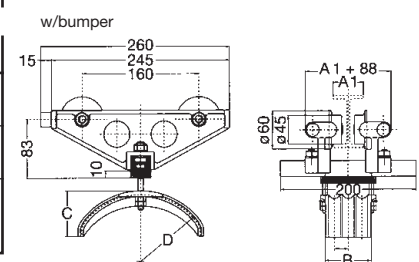
Engineering data

Type	WE 110 R ... (S) for beam -I PE 80 – 200 WN 110 R ... (S) for beam -I NP 80 – 220
Carrying capacity	30 kg
Wheels	a) Flanged polyamid wheels on stainless steel bushed bearings b) Steel wheels hardened and galvanized with sealed ball bearings
Material	carrierbody: light metal - seawater resistant support saddles: polyamid hardware: galvanized
Temperature resistance for all materials	–30° C to +100° C
Travelling speed	max. 80 m/min



Cable carrier for round cable

Type ⁽¹⁾		wheels	max. cable Ø mm	B	C	D	Weight kg	Order- No.	Order-No. with bumps
					mm				
Cable carrier standard beam	WN 110 R/200	a	3 x Ø 20	71	65	200	1,360	345 920	345 923
Cable carrier Fl. fl. beam	WE 110 R/200	a	3 x Ø 20	71	65	200	1,360	345 921	345 924
Cable carrier standard and Fl. fl. beam	W 110 R/200 S	b	3 x Ø 20	71	65	200	2,130	345 922	345 925



Standard beam

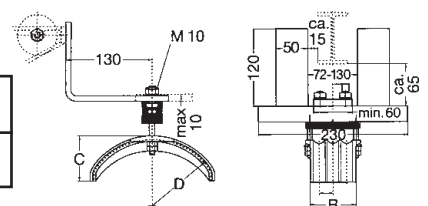
Beam TNP	80	100	120	140	160	180	200	220
Dim. A	42	50	58	66	74	82	90	98

Flat flange beam

Beam IPE	80	100	120	140	160	180	200
Dim. A 1	46	55	64	73	82	91	100

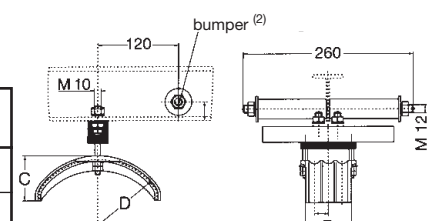
Lead clamp for round cable

	Type	for cable carrier	B	C	D	Weight kg	Order- No.
				mm			
Lead clamp	M 110 R/200	W (N, E) 110 R/200 (S)	71	65	200	1,170	345 926



Track clamp for round cable and bumper

	Type	for cable carrier	B	C	D	Weight kg	Order- No..
				mm			
Track clamp	E 110 R/200 ⁽²⁾	W (N, E) 110 R/200 (S)	71	65	200	0,450	345 927
Bumper	PS 3-4	–	–	–	–	0,410	340 100



⁽¹⁾ Use suffix-P for bumper version (example: W 110 R/200 S-P)

⁽²⁾ Bumper PS 3-4 to be ordered separately.

CABLE CARRIERS W 120 • HEAVY DUTY

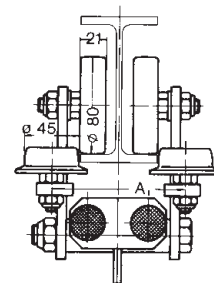
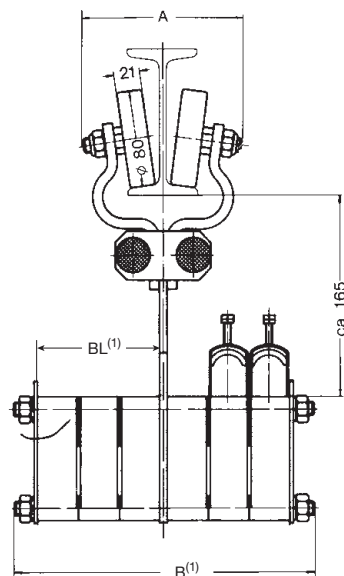
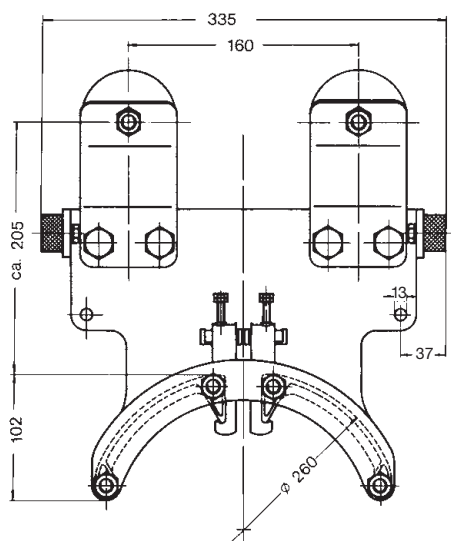
Normal- and europe profile



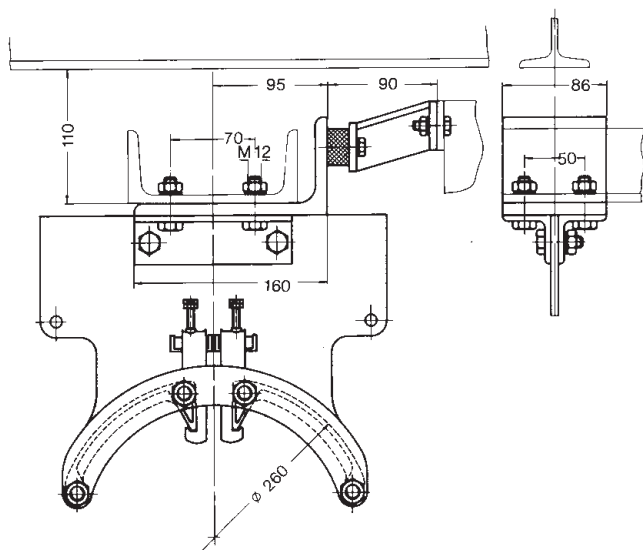
Engineering data

Type	WN 120 R/260 for beam $\overline{\text{INP}} 100 - 160$ WE 120 R/260 for beam $\overline{\text{IPE}} 100 - 160$
Carrying capacity	350 kg
Wheels	steel wheels hardened and galvanized with sealed precision ball bearings; flanged steel guide rollers hardened and galvanized with sealed ball bearings for WE-series only
Guide rollers	(only at WE-type) roller with ball bearing, made of steel, hardened, galvanically zinc-plated;
Material	carrier body: steel galvanized support saddles: polyamid temperature resistance for all materials: $-30^{\circ}\text{C} - +100^{\circ}\text{C}$
Travelling speed	max. 120 m/min (525 ft/min) when using proper cable tension relief tow ropes

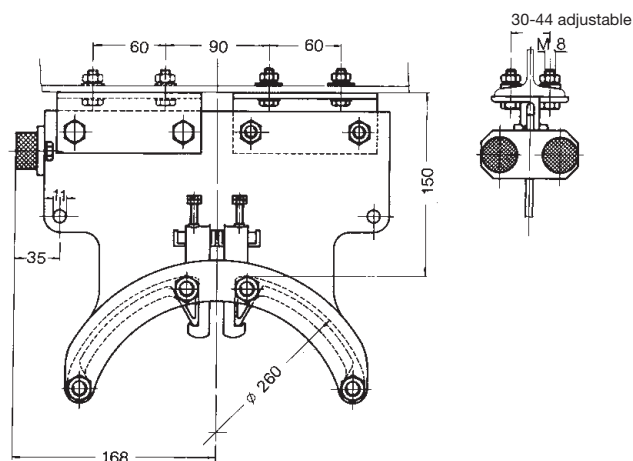
Cable carrier



Lead clamp



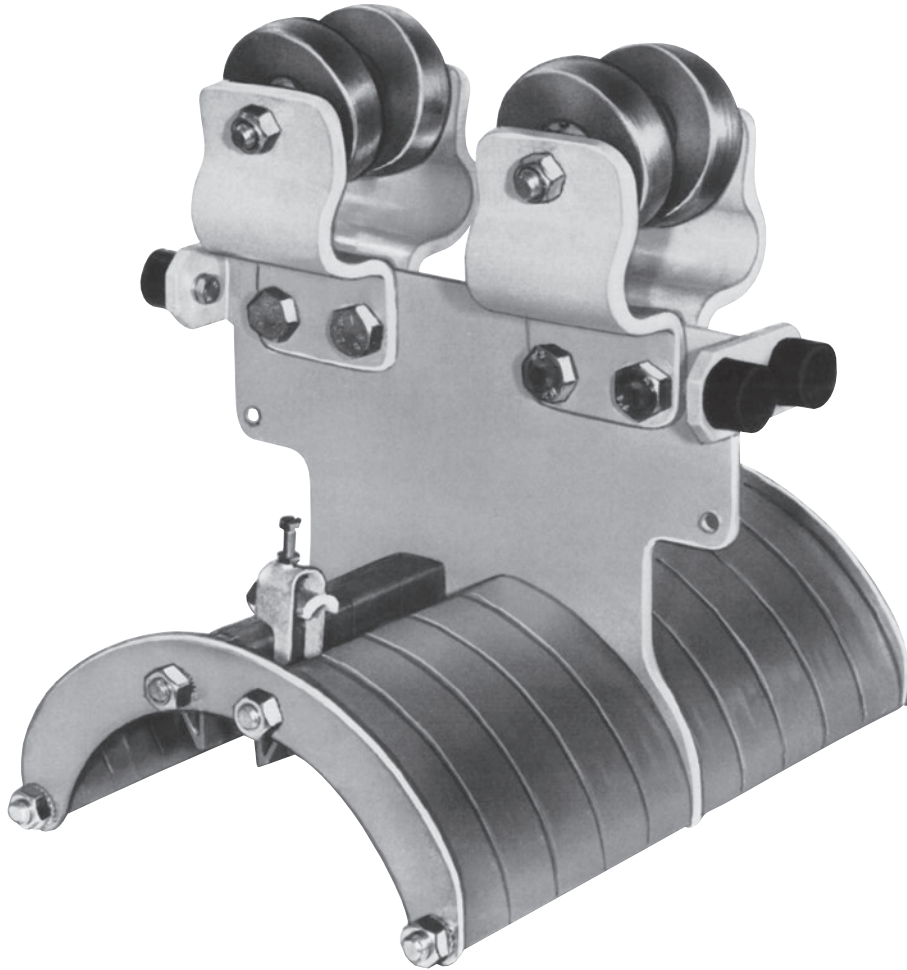
Track clamp





CABLE CARRIERS W 120 • HEAVY DUTY

Normal- and europe profile



Standard beam

I NP	100	120	140	160
Dim A mm	130	130	130	130

Flat flange beam

I PE	100	120	140	160
Dim. A ₁ mm	103	112	121	130

Standard beam

Type		Number of tiers	max. cable ø mm	Weight kg	Order-No.
Cable carrier	WN 120 R/260	1	26	10,100	341 410
Lead carrier ⁽¹⁾	M 120 R/260	1	26	6,300	341 420
Track clamp	E 120 R/260	1	26	3,800	341 430

Europe profile

Type		Number of tiers	max. cable ø mm	Weight kg	Order-No.
LCable carrier	WE 120 R/260	1	26	11,200	341 440
Lead carrier ⁽¹⁾	M 120 R/260	1	26	6,300	341 420
Track clamp	E 120 R/260	1	26	3,800	341 430

⁽¹⁾ incl.bumper extension.

CABLE CARRIERS W 130 • HEAVY DUTY

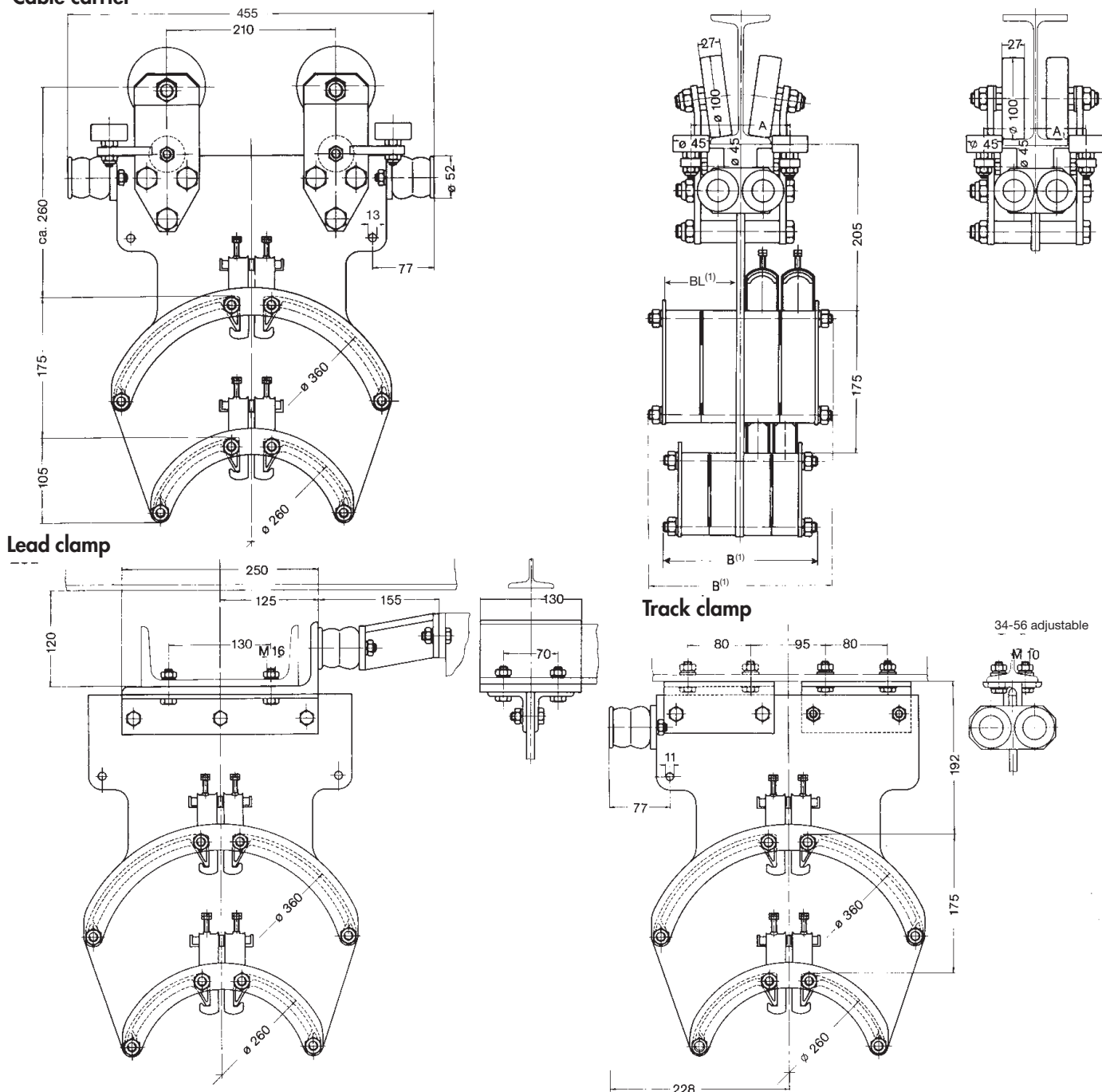
Normal- and europe profile



Engineering data

Type	WN 130 R/360 for I NP 140-200 WN 130 R/360/260 for I NP 140-200 WE 130 R/360 for I PE 140-200 WE 130 R/360/260 for I PE 140-200
Carrying capacity	550 kg
Wheels	steel wheels hardened and galvanized with sealed precision ball bearings; guide rollers hardened and galvanized with sealed ball bearings
Guide and support rollers	Cylindrical running rollers with ball bearing, made of steel, running surface hardened, galvanically zinc-plated
Material	carrierbody: steel galvanized support saddles: polyamid temperature resistance for all materials: -30° C to +100° C
Travelling speed	max. 120 m/min (525 ft/min) when using proper cable tension relief tow ropes

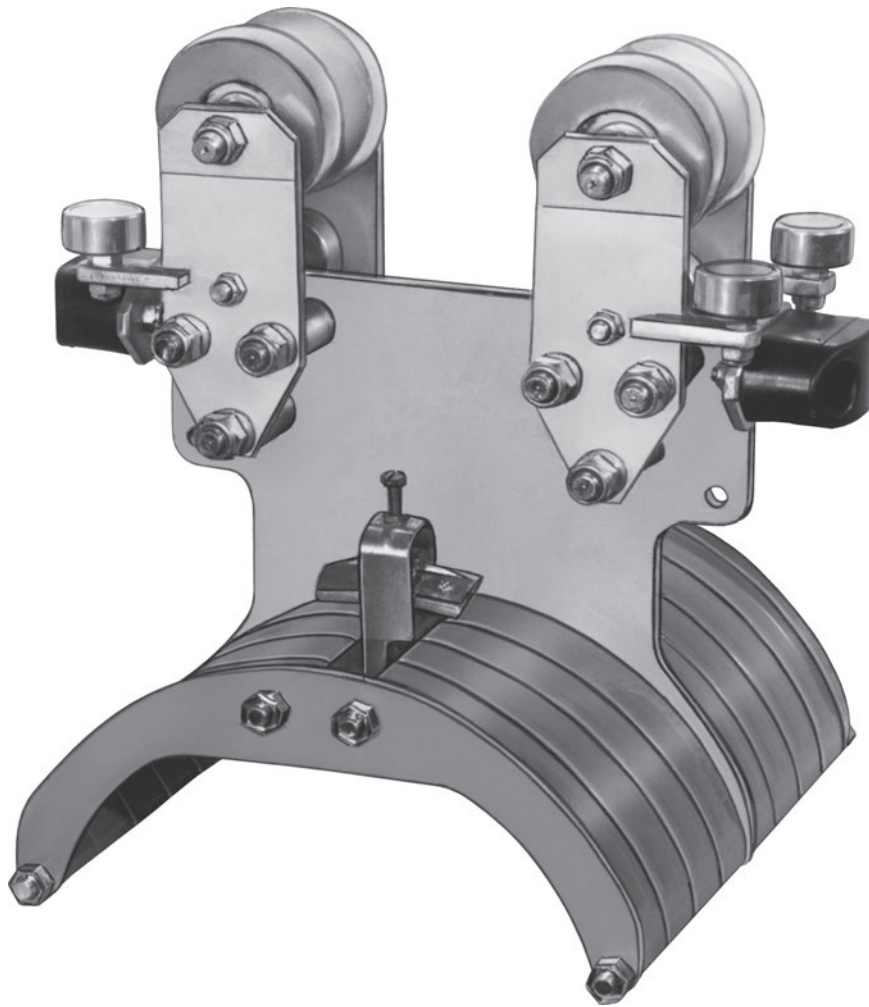
Cable carrier





CABLE CARRIERS W 130 • HEAVY DUTY

Normal- and europe profile



Standard beam

I NP	140	160	180	200
Dim. A mm	114	122	130	138

Flat flange beam

I PE	140	160	180	200
Dim. A ₁ mm	121	130	139	148

Standard beam

Type		Number of tiers	max. cable Ø mm	Weight kg	Order-No.
Cable carrier	WN 130 R/360	1	36	21,700	341 470
	WN 130 R/360/260	2	36	25,200	341 480
Lead clamp including bumper extension	M 130 R/360	1	36	12,500	341 490
	M 130 R/360/260	2	36	16,000	341 500
Track clamp	E 130 R/360	1	36	8,000	341 510
	E 130 R/360/260	2	36	11,500	341 520

Flat flange beam

Type		Number of tiers	max. cable Ø mm	Weight kg	Order-No.
Cable carrier	WE 130 R/360	1	36	21,700	341 530
	WE 130 R/360/260	2	36	25,200	341 540
Lead clamp including bumper extension	M 130 R/360	1	36	12,500	341 490
	M 130 R/360/260	2	36	16,000	341 500
Track clamp	E 130 R/360	1	36	8,000	341 510
	E 130 R/360/260	2	36	11,500	341 520

Normal- and europe profile



Type	WN 140 R/490 for INP 140–200 WN 140 R/490/360 for INP 140–200 WN 140 R/490/360/260 for INP 140–200 WE 140 R/490 for IPE 140–200 WE 140 R/490/360 for IPE 140–200 WE 140 R/490/360/260 for IPE 140–200
Carrying capacity	550 kg
Wheels	steel wheels hardened and galvanized with sealed precision ball bearings; guide rollers hardened and galvanized with sealed ball bearings
Guide and support rollers	Cylindrical running rollers with ball bearing, made of steel, running surface hardened, galvanically zinc-plated;
Material	carrierbody: steel galvanized; support saddles: polyamid temperature resistance for all materials: –30° C – +100° C
Travelling speed	max. 120 m/min (525 ft/min) when using proper cable tension relief tow ropes

Technical drawing of the 1000 series gas burner assembly, showing front, side, and detail views with dimensions in mm.

Front View Dimensions:

- Overall width: 610
- Overall height: 270
- Distance between burner heads: 365
- Distance from top to first burner head: 245
- Distance between burner heads: 175
- Distance from bottom to first burner head: 105
- Radius of burner head: $\phi 490$
- Radius of burner head: $\phi 360$
- Radius of burner head: $\phi 260$
- Distance from burner head to side connection: 77
- Side connection diameter: $\phi 52$
- Side connection offset: 13

Side View Dimensions:

- Overall height: 215
- Distance between burner heads: 245
- Distance from bottom to first burner head: 175
- Distance between burner heads: 175
- Distance from bottom to first burner head: 105
- Radius of burner head: $\phi 490$
- Radius of burner head: $\phi 360$
- Radius of burner head: $\phi 260$
- Distance from burner head to side connection: 77
- Side connection diameter: $\phi 52$
- Side connection offset: 13

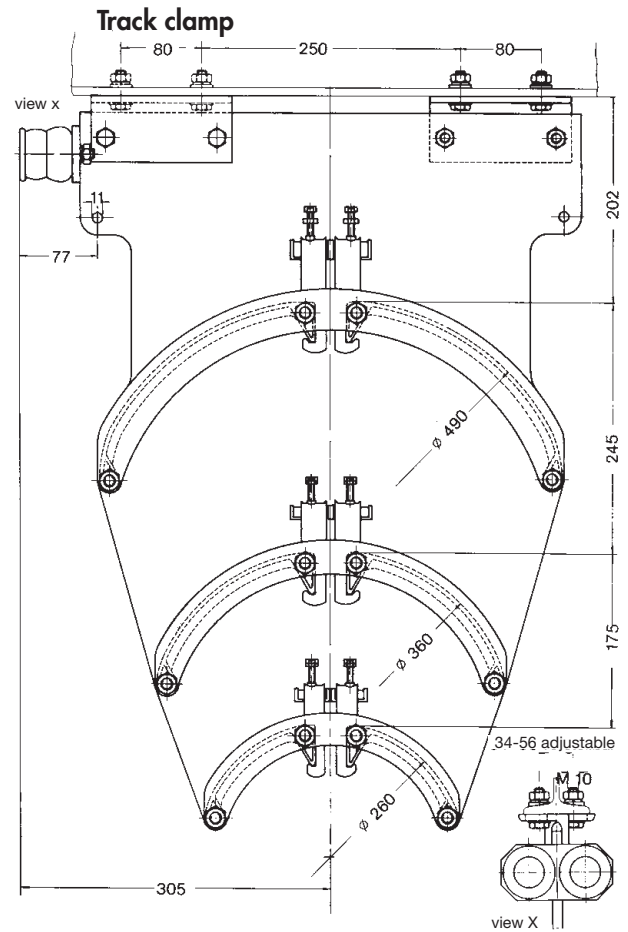
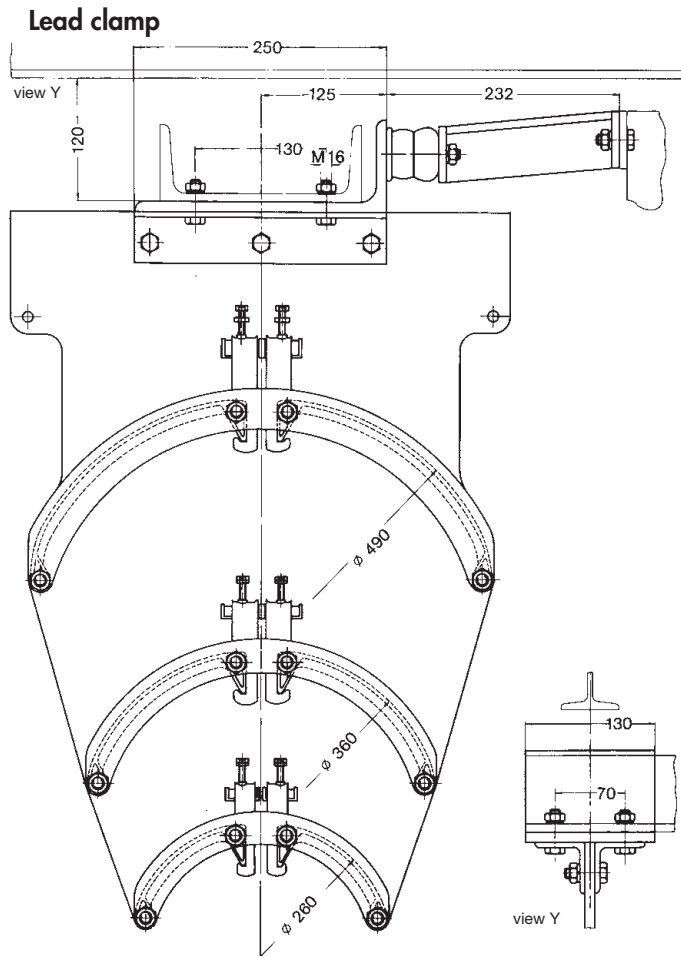
Detail View Dimensions:

- Overall width: 610
- Overall height: 270
- Distance between burner heads: 365
- Distance from top to first burner head: 245
- Distance between burner heads: 175
- Distance from bottom to first burner head: 105
- Radius of burner head: $\phi 490$
- Radius of burner head: $\phi 360$
- Radius of burner head: $\phi 260$
- Distance from burner head to side connection: 77
- Side connection diameter: $\phi 52$
- Side connection offset: 13



CABLE CARRIERS W 140 • HEAVY DUTY

Normal- and europe profile



Standard beam

INP	140	160	180	200
Dim. A mm	114	122	130	138

Flat flange beam

IPE	140	160	180	200
Dim. A ₁ mm	121	130	139	148

Normalprofil

Type		Number of tiers	max. cable Ø mm	Weight kg	Order-No.
Cable carrier	WN 140 R/490	1	49	25,700	341 590
	WN 140 R/490/360	2	49	34,200	341 600
	WN 140 R/490/360/260	3	49	38,200	341 610
Lead clamp including bumper extension	M 140 R/490	1	49	16,800	341 620
	M 140 R/490/360	2	49	25,300	341 630
	M 140 R/490/360/260	3	49	29,300	341 640
Track clamp	E 140 R/490	1	49	12,000	341 650
	E 140 R/490/360	2	49	20,500	341 660
	E 140 R/490/360/260	3	49	24,500	341 670

Flat flange beam

Cable carrier	WE 140 R/490	1	49	25,700	341 680
	WE 140 R/490/360	2	49	34,200	341 690
	WE 140 R/490/360/260	3	49	38,200	341 700
Lead clamp including bumper extension	M 140 R/490	1	49	16,800	341 620
	M 140 R/490/360	2	49	25,300	341 630
	M 140 R/490/360/260	3	49	29,300	341 640
Track clamp	E 140 R/490	1	49	12,000	341 650
	E 140 R/490/360	2	49	20,500	341 660
	E 140 R/490/360/260	3	49	24,500	341 670

$$\text{BL} \quad \frac{B - 50 \text{ mm}}{2}$$



CABLE SUPPORT SADDLES

Cable arrangement		type of support saddle	Order-No.	type of support saddle	Order-No.	dimension B ⁽¹⁾ mm	Weight kg
○ = Ø 10–26 mm ⊙ = Ø 27–36 mm ● = Ø 37–49 mm							
Ø of support saddle 490 mm		LA 490/ 2	342 100	LK 490/ 2	342 980	162	1,810
		LA 490/ 4	342 110	LK 490/ 4	342 990	274	2,910
		LA 490/ 6	342 120	LK 490/ 6	343 000	386	4,010
		LA 490/ 8	342 130	LK 490/ 8	343 010	498	5,110
		LA 490/ 10	342 140	LK 490/ 10	343 020	610	6,210
		LA 490/ 202	342 150	LK 490/ 202	343 030	274	2,690
		LA 490/ 204	342 160	LK 490/ 204	343 040	386	3,570
		LA 490/ 206	342 170	LK 490/ 206	343 050	386	3,770
		LA 490/ 208	342 180	LK 490/ 208	343 060	498	4,650
		LA 490/ 2010	342 190	LK 490/ 2010	343 070	498	4,850
		LA 490/ 2012	342 200	LK 490/ 2012	343 080	610	5,730
		LA 490/ 402	342 210	LK 490/ 402	343 090	386	3,790
		LA 490/ 404	342 220	LK 490/ 404	343 100	498	4,670
		LA 490/ 406	342 230	LK 490/ 406	343 110	498	4,870
		LA 490/ 408	342 240	LK 490/ 408	343 120	610	5,750
		LA 490/ 4010	342 250	LK 490/ 4010	343 130	610	5,950
		LA 490/ 602	342 260	LK 490/ 602	343 140	498	4,890
		LA 490/ 604	342 270	LK 490/ 604	343 150	610	5,770
		LA 490/ 606	342 280	LK 490/ 606	343 160	610	5,970
		LA 490/ 802	342 290	LK 490/ 802	343 170	610	5,990
		LA 490/ 804	342 300	LK 490/ 804	343 180	610	6,190
		LA 490/ 22	342 310	LK 490/ 22	343 190	274	2,770
		LA 490/ 24	342 320	LK 490/ 24	343 200	386	3,730
		LA 490/ 26	342 330	LK 490/ 26	343 210	498	4,690
		LA 490/ 28	342 340	LK 490/ 28	343 220	498	4,970
		LA 490/ 210	342 350	LK 490/ 210	343 230	610	5,930
		LA 490/ 42	342 360	LK 490/ 42	343 240	386	3,970
		LA 490/ 44	342 370	LK 490/ 44	343 250	498	4,930
		LA 490/ 46	342 380	LK 490/ 46	343 260	610	5,890
		LA 490/ 48	342 390	LK 490/ 48	343 270	610	6,170
		LA 490/ 62	342 400	LK 490/ 62	343 280	498	4,970
		LA 490/ 64	342 410	LK 490/ 64	343 290	610	5,930
		LA 490/ 82	342 420	LK 490/ 82	343 300	610	6,070
		LA 490/ 222	342 430	LK 490/ 222	343 310	386	3,650
		LA 490/ 224	342 440	LK 490/ 224	343 320	386	3,850
		LA 490/ 226	342 450	LK 490/ 226	343 330	498	4,730
		LA 490/ 228	342 460	LK 490/ 228	343 340	610	5,610
		LA 490/ 2210	342 470	LK 490/ 2210	343 350	610	5,810
		LA 490/ 242	342 480	LK 490/ 242	343 360	386	3,930
		LA 490/ 244	342 490	LK 490/ 244	343 370	498	4,810
		LA 490/ 246	342 500	LK 490/ 246	343 380	610	5,690
		LA 490/ 248	342 510	LK 490/ 248	343 390	610	5,890
		LA 490/ 262	342 520	LK 490/ 262	343 400	498	4,890
		LA 490/ 264	342 530	LK 490/ 264	343 410	610	5,770
		LA 490/ 266	342 540	LK 490/ 266	343 420	610	5,970
		LA 490/ 282	342 550	LK 490/ 282	343 430	610	5,850
		LA 490/ 422	342 560	LK 490/ 422	343 440	498	4,850
		LA 490/ 424	342 570	LK 490/ 424	343 450	498	5,050
		LA 490/ 426	342 580	LK 490/ 426	343 460	610	5,930
		LA 490/ 428	342 590	LK 490/ 428	343 470	610	6,130
		LA 490/ 442	342 600	LK 490/ 442	343 480	498	5,130
		LA 490/ 444	342 610	LK 490/ 444	343 490	610	6,010
		LA 490/ 462	342 620	LK 490/ 462	343 500	610	6,090
		LA 490/ 622	342 630	LK 490/ 622	343 510	610	5,850
		LA 490/ 624	342 640	LK 490/ 624	343 520	610	6,050

Maximal usable support saddle⁽²⁾ per side in mm = $\frac{BL \cdot (B - 50 \text{ mm})}{2}$

⁽¹⁾ Dimension B = max. width of support saddles, see pages 8-13.

⁽²⁾ Dimension BL see pages 8-13.

CABLE LOOP CLAMPS



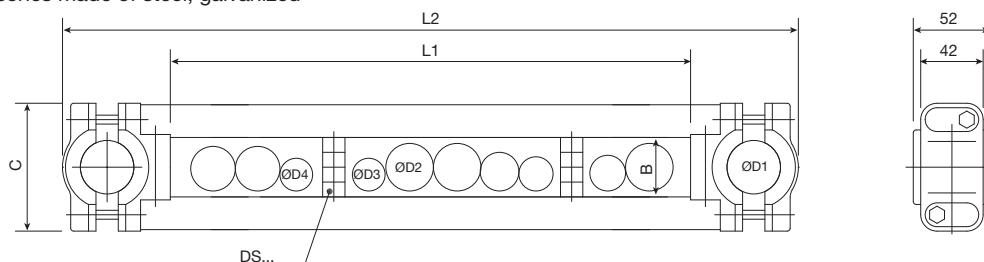
Material:

Light metal, seawater resistant

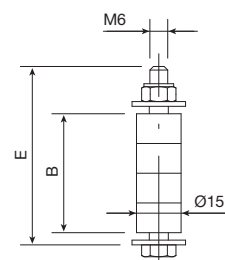
Clamping insert made of rubber

Spacer made of PVC

Screws and accessories made of steel, galvanized⁽¹⁾



Cable loop clamp									
Type	B	C	D1	D2	D3 + D4 ⁽²⁾	L1	L2	Weight kg	Order-No.
mm									
LS26 - 100	30	75	14 - 26	max. 26	34	100	max. 234	0,71	347 100
LS26 - 150						150	max. 284	0,77	347 101
LS26 - 200						200	max.334	0,82	347 102
LS26 - 250						250	max.384	0,88	347 103
LS26 - 300						300	max.434	0,94	347 104
LS26 - 350						350	max.484	0,99	347 105
LS26 - 400						400	max.534	1,05	347 106
LS26 - 450						450	max.584	1,10	347 107
LS26 - 500						500	max.634	1,16	347 108
LS26 - 550						550	max.684	1,21	347 109
LS26 - 600						600	max.734	1,27	347 110
LS36 - 100	40	86	24 - 36	max. 46	46	100	max.245	0,78	347 111
LS36 - 150						150	max.295	0,84	347 112
LS36 - 200						200	max.345	0,89	347 113
LS36 - 250						250	max.395	0,95	347 114
LS36 - 300						300	max.445	1,01	347 115
LS36 - 350						350	max.495	1,08	347 116
LS36 - 400						400	max.545	1,12	347 117
LS36 - 450						450	max.595	1,17	347 118
LS36 - 500						500	max.645	1,23	347 119
LS36 - 550						550	max.695	1,28	347 120
LS36 - 600						600	max.745	1,34	347 121
LS46 - 100	50	96	30 - 46	max. 48	56	100	max.260	0,86	347 122
LS46 - 150						150	max.310	0,92	347 123
LS46 - 200						200	max.360	0,97	347 124
LS46 - 250						250	max.410	1,03	347 125
LS46 - 300						300	max.460	1,09	347 126
LS46 - 350						350	max.510	1,14	347 127
LS46 - 400						400	max.560	1,20	347 128
LS46 - 450						450	max.610	1,25	347 129
LS46 - 500						500	max.660	1,31	347 130
LS46 - 550						550	max.710	1,36	347 131
LS46 - 600						600	max.760	1,42	347 132



Spacer				
⁽²⁾ If the amount of cables side by side is below the values D3 and D4 (see table) a spacer between this cables required.				
Type ⁽¹⁾	B	E	Weight kg	Order-No.
mm				
DS 26	30	50	0,04	346 710
DS 36	40	60		346 711
DS 46	50	70		346 712

Order details		
Cable loop clamp	Type	Order-No.
Cable arrangement	Number of cables with cable diameter	
Spacer	Type	Order-No.
	Amount	

⁽¹⁾ The type description for hardware made of stainless steel has the addition -K (e.g. LS36-400-K)

TOW ROPE ASSEMBLIES

1. Steel Ropes (Tow Cables)

Recommended for applications with

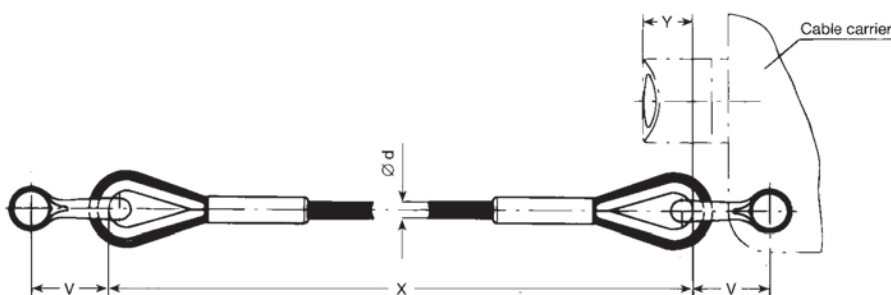
- Over 30 m Travel Distance (Working Travel)
or in general for mechanical sensitive cables and/or in very dusty environments
- Travel Speeds up to 80 m/min
- Accelerations up to 0.3 m/s²

For higher speeds or accelerations please consult the factory.

Type	Z 4	Z 4-PVC	Z 5	Z 5-PVC	Z 6	Z 6-PVC
Ø d =	6 mm	6/8 mm	6 mm	6/8 mm	8 mm	8/10 mm
Weight	0,125 kg/m	0,150 kg/m	0,125 kg/m	0,150 kg/m	0,221 kg/m	0,250 kg/m
V =	28 mm		42 mm		42 mm	
Material and finish	steel galvanized	steel galvanized PVC-shrouded	steel galvanized	steel galvanized PVC-shrouded	steel galvanized	steel galvanized PVC-shrouded
Admissible tension force (6 times safety factor)	3500 N		3500 N		6100 N	
Type of shackle lock	safety nut		Locknut			
for Cable carrier	W 45		W 120 thru W 140			

Design: Round cord rope made of steel wires with fibre layers, galvanized or additional PVC-shrouding, in prefabricated length, incl. rope-clips, thimbles and shackles.

Weight: Shackles, thimbles, bush = 0.5 kgs on both sides



Projecting bumper:

Cable Carrier Type	Y in mm
W 45	0
W 120	-5
W 130 and W 140	35

How to determine the Tow rope Length:

$$X = \frac{S(f - 0,1) + Z}{n} + 2 Y$$

X = Length of tow rope mm
S = working travel mm
f = Cable safety factor (1,15)
Z = open space mm (min. one carrier)
n = number of cable loops
Y = projecting bumper (mm; see table)

Length of Two Rope mm	Order-No.					
	Cable carrier W 45		Cable carrier W 120 thru W 140			
	Z 4	Z 4-PVC	Z 5	Z 5-PVC	Z 6	Z 6-PVC
thru – 2000	346 372	346 383	346 394	346 368	346 405	346 367
2001 – 3000	346 373	346 384	346 395	346 346	346 406	346 356
3001 – 4000	346 374	346 385	346 396	346 347	346 407	346 357
4001 – 5000	346 375	346 386	346 397	346 348	346 408	346 358
5001 – 6000	346 376	346 387	346 398	346 349	346 409	346 359
6001 – 7000	346 377	346 388	346 399	346 350	346 410	346 360
7001 – 8000	346 378	346 389	346 400	346 351	346 411	346 361
8001 – 9000	346 379	346 390	346 401	346 352	346 412	346 362
9001 – 10000	346 380	346 391	346 402	346 353	346 413	346 363
10001 – 11000	346 381	346 392	346 403	346 354	346 414	346 364
11001 – 12000	346 382	346 393	346 404	346 355	346 415	346 365

Please specify with your order

Tow rope: Type
Length of rope X: mm
Order- No.:

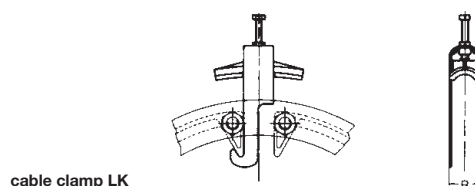
SPARE PARTS

1. Wheels

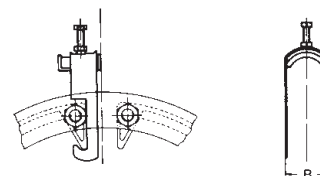
wheel	side roller	kick-up roller	for cable carriers	dim. dia x width (mm)	flange wheel	cyl. wheel	wheel material	bush-bearing	ball-bearing	Weight kg	Order-No.
x			W 25 K, W 26 K, W 30 K WN 110, WE 110	45/60 x 24,5	x		polyamid	x		0,027	346 731
x			W 25 KL, W 26 KL W 30 KL	45/60 x 22,5	x		polyamid		x	0,065	346 732
x with axle			W 45 FR	45/60 x 23	x		steel		x	0,230	348 708
		x with axle	W 45 FR	32 x 9		x	steel		x	0,110	348 709
x with axle			W 110 S	45/60 x 21	x		steel		x	0,250	344 750
	x with axle		WE 120								
	x with axle	x with axle	WN 130, WN 140 WE 130, WE 140	45 x 21		x	steel		x	0,200	344 850
x with axle			WN 120 WE 120	80 x 21		x	steel		x	0,810	346 744
x with axle			WN 130, WN 140 WE 130, WE 140	100 x 27		x	steel		x	1,500	346 746

2. Bumpers incl. attachment hardware

dim. dia x length mm	for cable carriers	Weight kg	Order-No.
Ø 26 x 18	W 45 FR	0,010	349 335
Ø 20 x 15 ⁽¹⁾	W 110	0,012	346 001
Ø 30 x 18 ⁽¹⁾	W 120	0,035	344 980
45 x 100 x 52 ⁽¹⁾	W 130, W 140	0,330	345 000



cable clamp LK



cable clamp LA

3. Cable clamps for round cable

Clamps, type LA for galvanized steel, compression insert of PVC, hardware galvanized.

clamp type	for Ø mm	dim. B mm	Weight kg	Order-No.
K 12 LA	8–12	16	0,040	345 020
K 16 LA	12–16	21	0,044	345 030
K 20 LA	16–20	24	0,050	345 040
K 24 LA	20–24	29	0,055	345 050
K 28 LA	24–28	33	0,059	345 060
K 32 LA	28–32	37	0,082	345 070
K 36 LA	32–36	41	0,087	345 080
K 40 LA	36–40	46	0,094	345 090
K 44 LA	40–44	50	0,116	345 100
K 48 LA	44–49	54	0,119	345 110

Clamps, type LK for galvanized steel, compression insert of corrosion proof aluminium, hardware of stainless steel.

clamp type	for Ø mm	dim. B mm	Weight kg	Order-No.
K 12 LK	8–12	17	0,102	345 120
K 16 LK	12–16	21	0,105	345 130
K 20 LK	16–20	25	0,132	345 140
K 24 LK	20–24	29	0,142	345 150
K 28 LK	24–28	33	0,152	345 160
K 32 LK	28–32	37	0,180	345 170
K 36 LK	32–36	41	0,185	345 180
K 40 LK	36–40	46	0,210	345 190
K 44 LK	40–44	50	0,230	345 200
K 48 LK	44–49	54	0,240	345 210



TYPICAL APPLICATION AND HOW TO ORDER

Festoon system for round cable

Application:

Electrification system for gantry crane trolley

Cable specification: (see cat. 8 L)

12 cables 1 x 120,0 mm ² , 28,5 mm Ø	trolley travel:	65 m
2 cables 4 x 35,0 mm ² , 42,0 mm Ø	travelling speed:	60 m/min.
2 cables 4 x 25,0 mm ² , 37,5 mm Ø	I-beam track	I NP 200
6 cables 24 x 2,5 mm ² , 38,0 mm Ø	loop depth:	4 m
2 cables 19 x 2,5 mm ² , 33,0 mm Ø	cable length	
5 cables 8 x 2,5 mm ² , 23,0 mm Ø	for termination:	1 x 2 m, 1 x 7 m
3 cables 4 x 2,5 mm ² , 15,5 mm Ø		

How to select the correct system:

1. Choose the correct carriers by considering diameters and weights of the cables per table on pages 14 and 15.

Result:

Tier 1 (upper level): LK 490/ 48 for	2 cables 4 x 35,0 mm ²	Tier 2 (center level): LK 360/12 for	12 cables 1 x 120 mm ²
	2 cables 4 x 25,0 mm ²		
	6 cables 24 x 2,5 mm ²	Tier 3 (lower level): LK 260/ 8 for	5 cables 8 x 2,5 mm ²
	2 cables 18 x 2,5 mm ²		3 cables 4 x 2,5 mm ²

2. The matching trolley chassis: type WN 140 R/490/360/260

3. Find out the quantity of cable loops required per diagram on page 24

4. Find out the storage distance per page 22

5. Tow ropes required? See page 18

6. Determine length of cable required:

(trolley travel + storage incl. open space Z) x 1.15

+ cable hookup lengths for termination, see page 22.

Result: 10

Result: 6100 mm + Z (one carrier of 600 mm) = 6700 mm

Answer: Yes

Result: 92 m

(see page 22)

Material to order:

	Type	Order-No.
9 cable carriers, 3-tier, c/w	WN 140 R/490/360/260	341 610
cable support saddles	LK 490/48	343 270
cable support saddles	LK 360/12	342 780
cable support saddles	LK 260/ 8	342 680
1 lead clamp, 3-tier c/w cable support saddles	M 140 R/490/360/260 (LK as before)	341 640
1 track clamp, 3-tier c/w cable support saddles	E 140 R/490/360/260 (LK as before)	341 670
20 cable loop clamps for upper tier	LS 36-350	347 116
20 cable loop clamps for center tier	LS 26-300	347 104
20 cable loop clamps for lower tier	LS 26-200	347 102
60 distance spacer for lower cable clamp	DS 26	346 710
10 tow rope assemblies, 8 mm dia, 6970 mm long, with hardware	Z 6	346 410
12 x 92 m 92 m Rubber sheathed round cable	H 07 RN-F 1 x 120	332 300
2 x 92 m 92 m Rubber sheathed round cable	H 07 RN-F 4 G 35	330 320
2 x 92 m 92 m Rubber sheathed round cable	H 07 RN-F 4 G 25	330 310
6 x 92 m 92 m Rubber sheathed round cable	A 07 RN-F 24 G 2,5	330 370
2 x 92 m 92 m Rubber sheathed round cable	A 07 RN-F 18 G 2,5	330 360
5 x 92 m 92 m Rubber sheathed round cable	A 07 RN-F 8 G 2,5	330 340
3 x 92 m 92 m Rubber sheathed round cable	H 07 RN-F 4 G 2,5	330 260
24 cable glands	M 32 for 1,5	332 531
4 cable glands	M 50 for 1,5 - 2	332 536
4 cable glands	M 50 for 1,5 - 1	332 532
12 cable glands	M 50 for 1,5 - 1	332 532
4 cable glands	M 50 for 1,5 - 1	332 532
10 cable glands	M 32 for 1,5	332 531
6 cable glands	M 25 for 1,5	332 530

INSTALLATION INFORMATION

with the associated cable carriers

I-Beam Track

1. Install I-beam track parallel with runway of equipment; the side clearance to be sufficient to avoid interference with swinging cables.
2. The support structure for the I-beam must be adequately designed for the anticipated loads. Smooth out welded joints to ensure smooth traversing of cable carriers.

The support of the I-profile has to take place according to the occurring load. The joints have to be carried out aligned. At the tread the welding seams have to be smoothed.

Cable Carrier

The system must be installed in the following order:

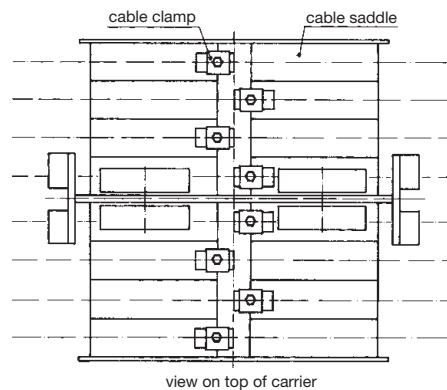
1. Cable carriers: adjusted per chosen I-beam
2. Bolt track clamp: to the lower flange of the I-beam
3. Connect lead clamp: The lead carrier of the types W 120 upto W 140 are not carried out as carriers, this units are moving free under the I-profile and will be connected fix with an arm (e. g. U-profile) to the consumer. The arrangement of the arm is apparent in the dimension illustrations of the respective cable carrier types. The cable carriers of the types W 120 upto W 140 are in addition to the absorption of bigger travel inaccuracies equipped with a bumper extension. This bumper extension has to be installed at the first cable carrier behind the lead carrier.

Cables

During installation of the cables please note that the cable length [L] between end clamp and lead carrier is distributed with equally loop depth on the carriers.

$L = (\text{storage length incl. clearance} + \text{travel distance}) \times 1,1 \text{ upto } 1,2$.
During use of tow rope assemblies 1,15 upto 1,25.

The cables will be fixed with single clamps at the cable saddles. They have to be arranged alternating, as shown on the top view of the cable carrier. The locking takes place with counter-nuts.



Tow Ropes

Tow ropes (see page 18) are to be installed on the cable carriers by means of shackles.

Cable Loop Clamps

with cable loops of approx. 2,5 m it is recommended to use one cable clamp at the lower vertex of each loop. Use two cable clamps in the lower third (one each side of the loop) when the loop depth exceeds 2 m.

Make test runs

HOW TO DETERMINE: Storage Distance, Cable Length, Number of Carriers

Cable Safety Length Directions

travelling speed	cable loop	safety factor
up 35 m/min	more than 0.3 m	f = 1,1
up 50 m/min	up to 0.8 m	f = 1,15
up 50 m/min	more than 0.8 m	f = 1,1
up 80 m/min	up to 0.8 m	f = 1,2
up 80 m/min	more than 0.8 m	f = 1,15
for spiral looped round cable		f = 1,2

For higher speed factors (> 80 m/min) please consult factory.

Storage distance

$$SP = n \times l + Z$$

Cable length

(c/c track clamp – lead clamp without hookup on both ends)

$$L = (S + SP) \times f$$

Number of Carriers

(without lead clamp and track clamp)

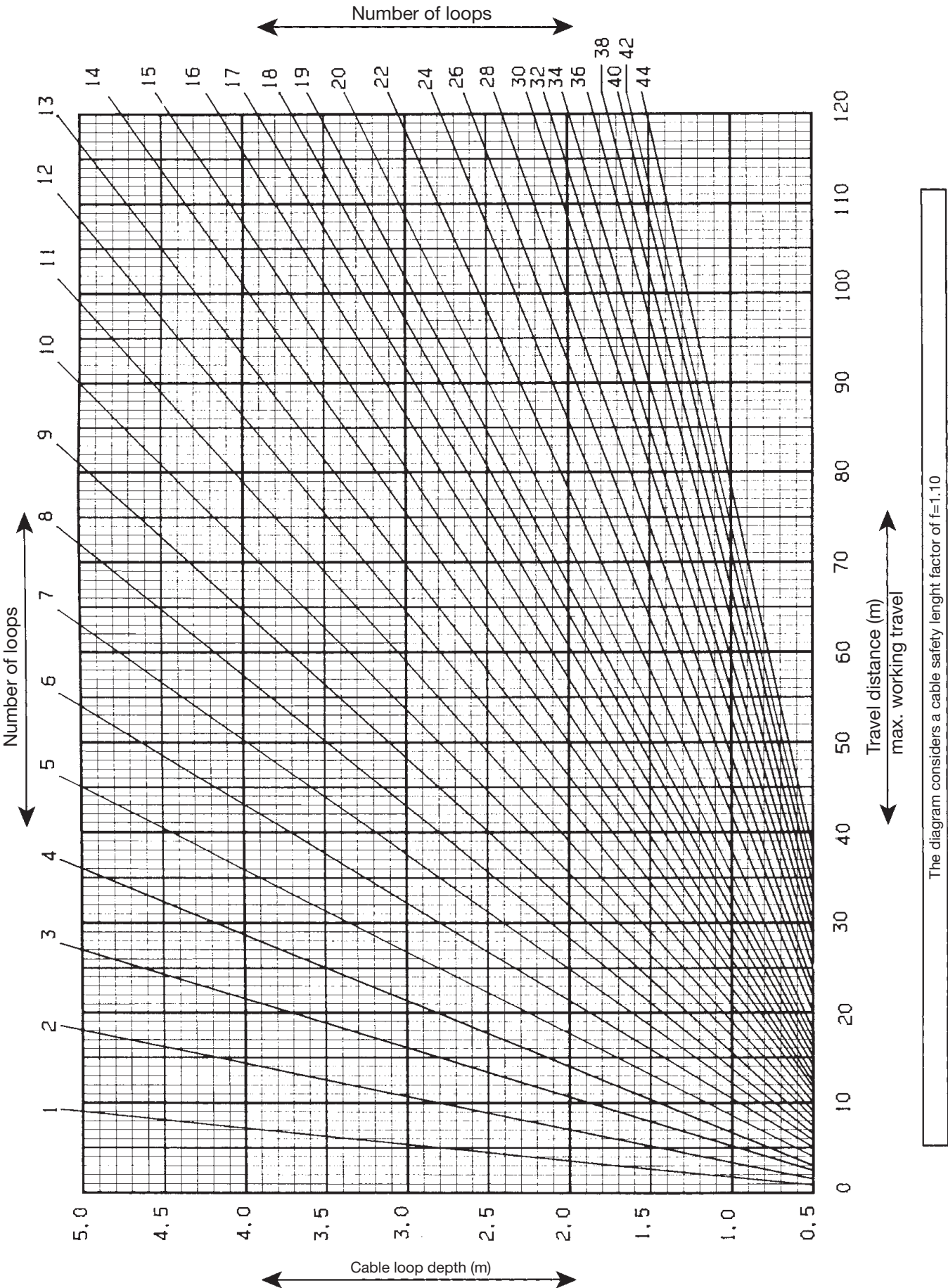
$$= n - 1$$

S = travel distance (m)
 SP = storage distance (m)
 Z = open space (m)
 (min. one carrier)
 n = number of loops
 l = length of carrier (m)
 f = cable safety factor

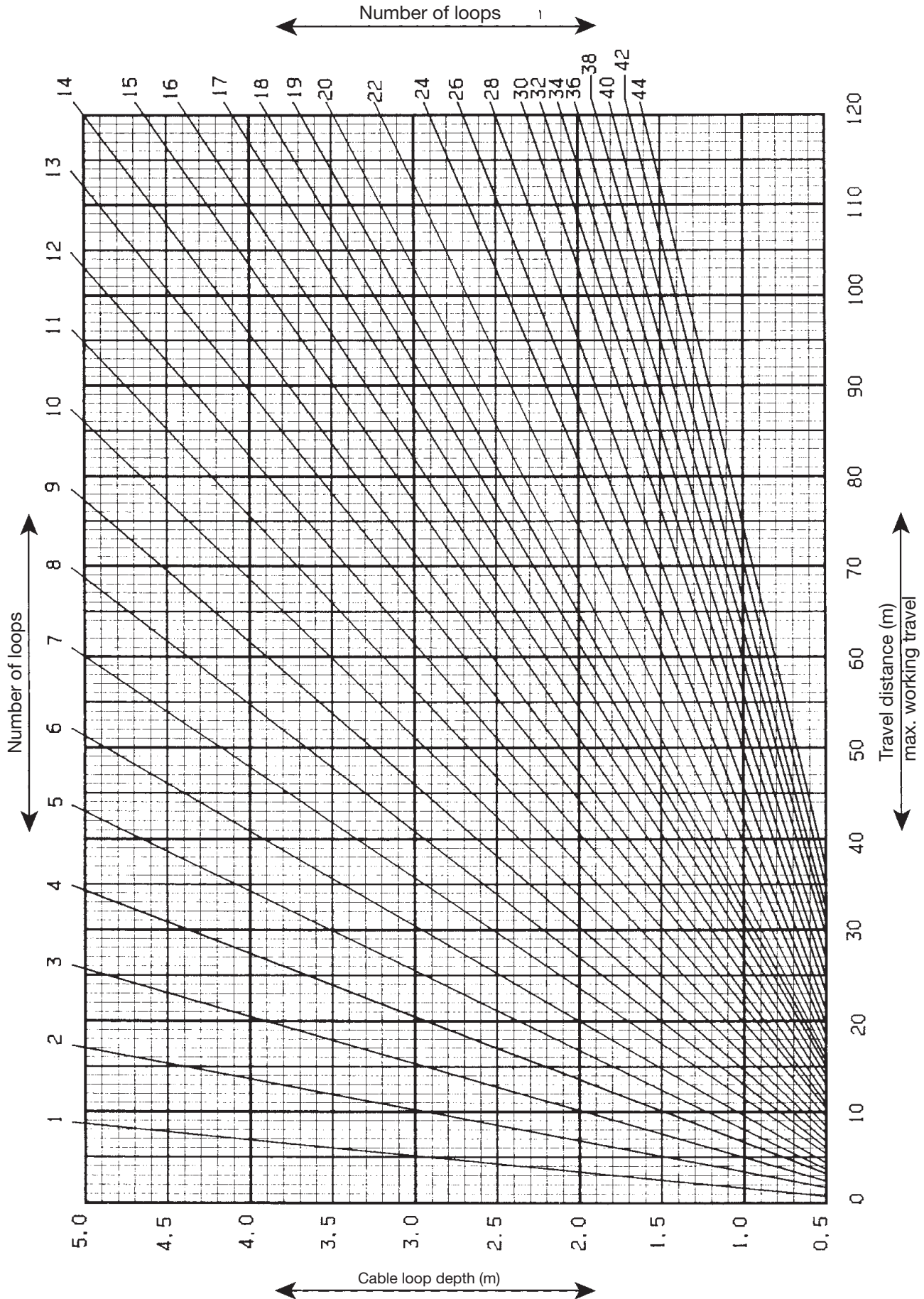


VAHLE cable carriers in Bremerhaven

CABLE LOOPS

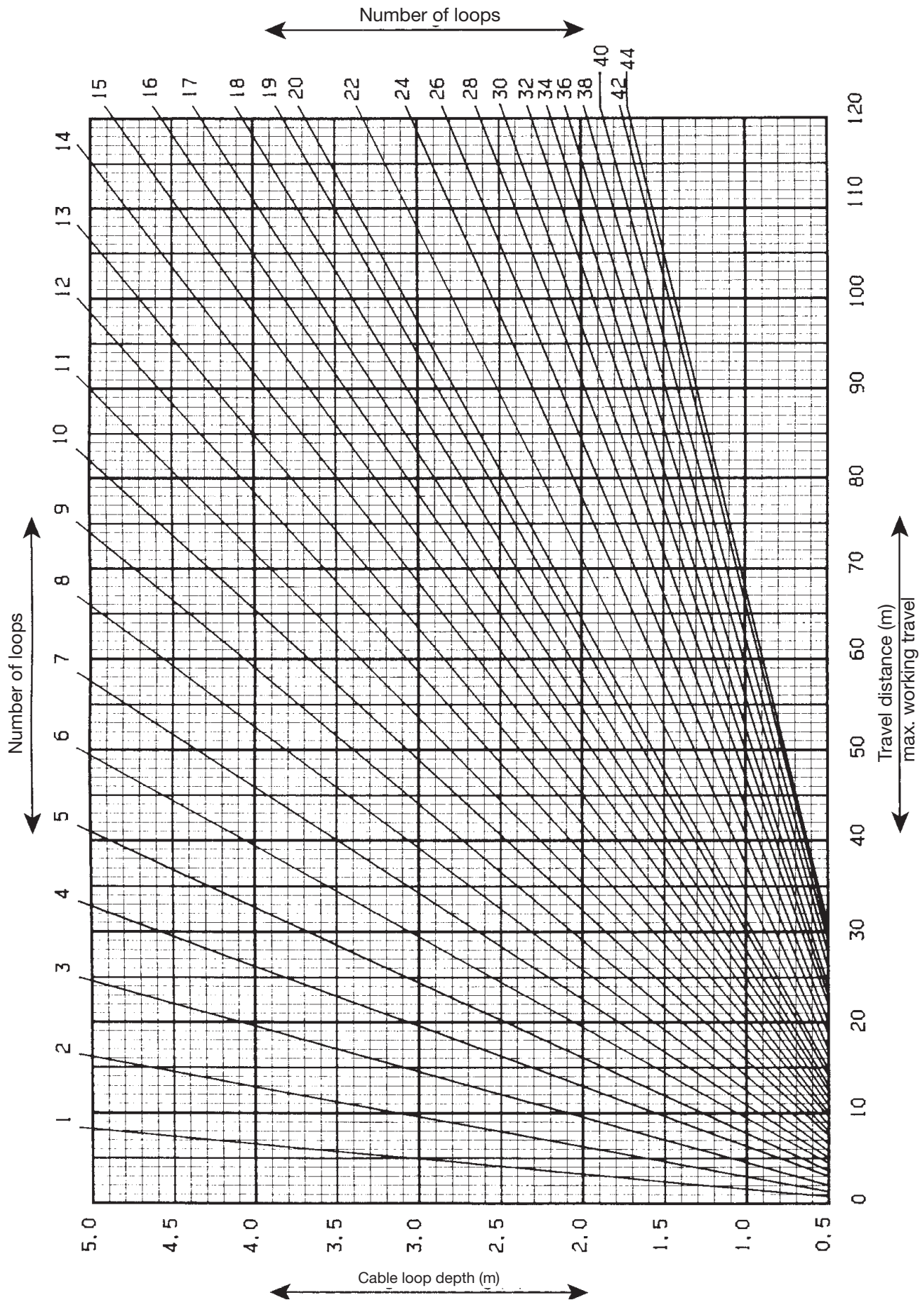


CABLE LOOPS



The diagram considers a cable safety length factor of $f=1.15$

CABLE LOOPS



The diagram considers a cable safety length factor of $f=1.20$

APPLICATION PHOTOS



VAHLE cable carriers at Hamburg harbour



NOTES



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CABLE CARRIERS FOR S-TRACK





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Catalog No. 8a: Cable Carriers on □ -Tracks

Catalog No. 8b: Cable Carriers for flatform cable on I -Beams

Catalog No. 8c: Cable Carriers for round cable on I -Beams

Catalog No. 8d: Cable Carriers on ◇ -Tracks

Catalog No. 8e: Conductor cables & Fittings



General

VAHLE Festoon Systems support conductor cables (flat or round) and hoses (hydraulic and pneumatic applications) for delivering power and control to mobile equipment in a safe, efficient and maintenance free method.

The cable carriers are well guided inside their □-tracks and protected against humidity, dust and icing.

All box-tracks can be bent in accordance to the system layout, considering the minimum bending radii and the permissible cable loops.

VAHLE cable carriers contained in this catalog comply with the VDE and most international regulations.

The use of flatform cable is highly recommended due to better bending properties compared to round cable. It allows smaller bend radii minimizing the required Festoon System storage distance which is normally within the length of equipment (e. g. hoist trolley).

VAHLE cable carriers not only deliver power and control to mobile equipment which has reciprocal motion but also support large quantities of data cables

including optic fibres travelling independently from the mobile machinery.

The relevant control carriers with and without push button lifting are also shown in this catalog.

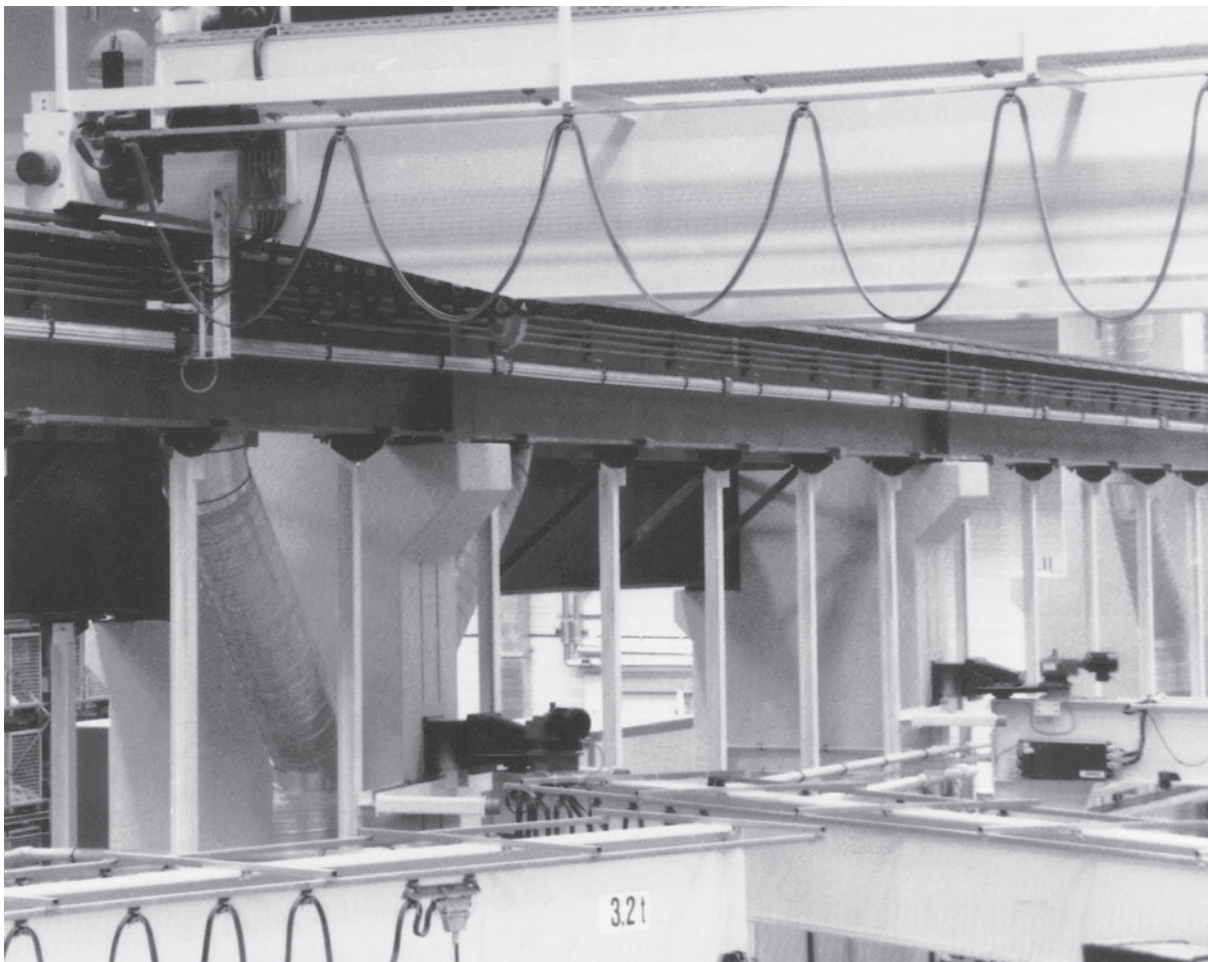
The cable carrier programs S1 / S2 are aswell suitable for ex-proof areas. Please send your enquiry.

Layout

Election of the proper carriers and components must be based on the chosen cable (see our catalog 8e – Conductor Cables and Fittings) or hose data that meets your electrical and mechanical requirements.

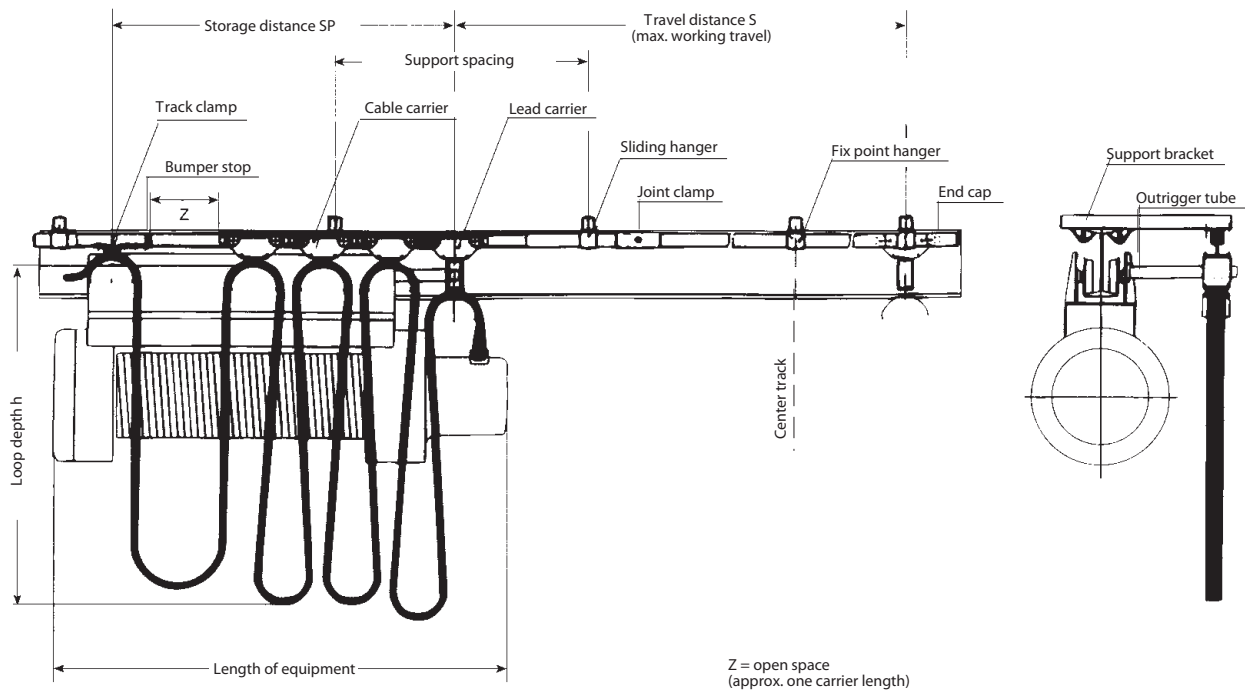
Refer to the pages 47 – 52 or send us the completed Questionnaire on page 4. Prints or sketches for system layouts including curves would be appreciated whenever obtainable.

For extra heavy duty or arduous applications it is recommended to check in our catalogs 8b & 8c for our Innovative Festoon Technology on I-Beam tracks or 8d for Festoon Systems on diamond □ shaped tracks. In any case we welcome your inquiries and guarantee our prompt quotations.





QUESTIONNAIRE



Name and Address of Customer: _____

Ref.: _____

1. Type of Application: _____

2. Outdoors ☐ Indoors ☐ _____

3. Temperature range _____

4. Is round or flatform cable envisaged? _____

5. How much space is available for storage? SP = _____ m

6. Is it possible to extend the track for the festoon cable system in case the length of equipment is insufficient for storage space?

☐ Yes, by _____ m; ☐ no, not possible.

7. Special operating conditions: _____

8. Length of equipment: _____ m

9. Travel distance: S = _____ m

10. Travel speed: V = _____ m/min

11. Acceleration: a = _____ m/s²

12. Max loop depth: h = _____ m

13. Hookup cable length required at Track clamp side: LE = _____ m

14. Hookup cable length required at Lead carrier side: LM = _____ m

15. Required cables:

No. of cables	No. & Size of conductors	cable OD ø mm	width x thickness of flatform cables

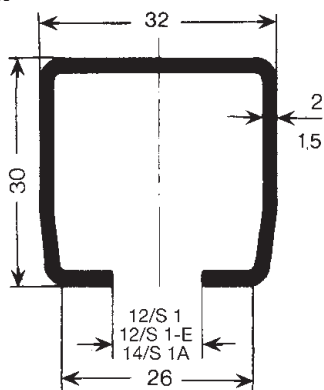


S 1 TRACK AND ACCESSORIES

acid
proof

Stain-
less

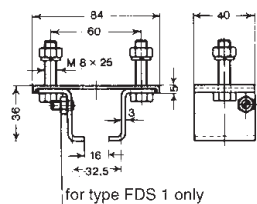
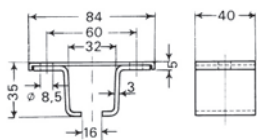
Track



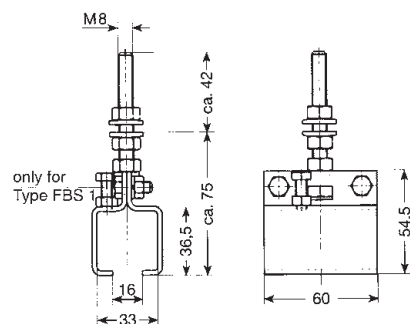
Type	S1	S1A	S1-E
Order-No. -in 6 m sections	312 946	312 966	312 956
Order-No. -in 4 m sections	312 944	312 964	312 954
Order-No. -surcharge for curves	310 470	-	312 472
for Carrier type	WS 1, WST 1		WST 1-E
Thickness	2 mm	1,5 mm	2 mm
Material	steel, galvanized		V 4 A, stainless steel
Supply lengths	6 m and 4 m		
Standard support spacing	As per Page 47, in straight system max. 2 m, in curves max.1m.		
Moment of inertia Jx	2,42 cm ⁴	1,9 cm ⁴	2,42 cm ⁴
Section modulus Wx	1,45 cm ³	1,1 cm ³	1,45 cm ³
Weight	1,550 kg/m	1,190 kg/m	1,550 kg/m

The delivery of curves is possible (excluded S1A).
Please send us your inquiry.
Max. system length: 100 m

Hanger underhung



for type FDS 1 only



only for
Type FBS 1

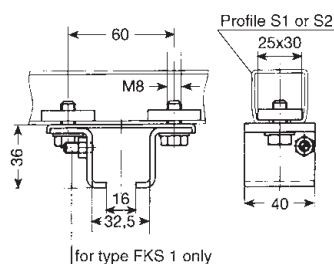
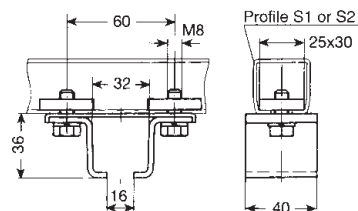
Type	Fixpoint hanger FAS 1
Order-No.	310 500
Material	steel, galvanized
Weight	0,160 kg

For up to 30 m runs only.
1 pair of bolts M 8 x 25, Order-No. 310 510 to be ordered
separately for each hanger or provided by customer.

Type	Sliding hanger ADS 1 ⁽¹⁾	Fixpoint hanger FDS 1	Sliding hanger ADS 1-E ⁽¹⁾	Fixpoint hanger FDS 1-E
Order-No.	310 370	310 430	312 393	312 394
Material	steel, galvanized		V 4 A, stainless steel	
Weight	0,200 kg	0,210 kg	0,200 kg	0,210 kg

Type	Sliding hanger ABS 1 ⁽¹⁾	Fixpoint hanger FBS 1
Order-No.	312 863	312 864
Material	steel, galvanized	
Weight	0,226 kg	0,234 kg

Hanger underhung for HK support



for type FKS 1 only

Type	Fixpoint hanger FAKS 1 (clamp)
Order-No.	310 590
Material	steel, galvanized
Weight	0,260 kg

For up to 30 m runs only.

Type	Sliding hanger AKS 1 ⁽¹⁾	Fixpoint hanger FKS 1	Sliding hanger AKS 1-E ⁽¹⁾	Fixpoint hanger FKS 1-E
Order-No.	310 380	310 450	312 457	312 458
Material	steel, galvanized		V 4 A, stainless steel	
Weight	0,260 kg	0,270 kg	0,260 kg	0,270 kg

⁽¹⁾ For systems with control-carriers use fixpoint hangers only.

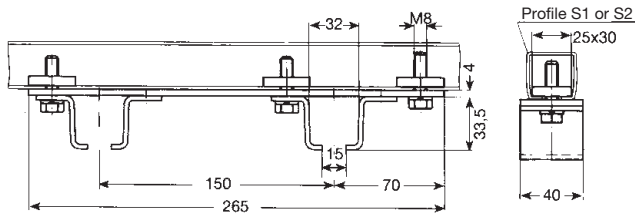


S 1 ACCESSORIES

acid
proof

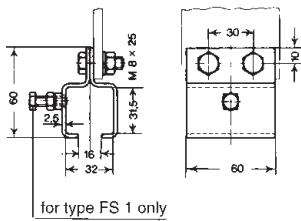
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Double Hanger for S 1 Track



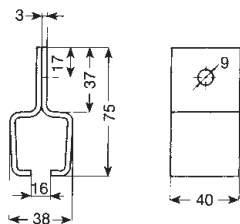
Type	DFAK-S 1 (clamp)
Order-No.	312 599
Material	steel, galvanized
Weight	0,660 kg

Hanger lateral



Type	Sliding hanger AS 1 ⁽¹⁾	Fixpoint hanger FS 1
Order-No.	310 030	310 040
Material	steel, galvan.	steel, galvan.
Weight	0,220 kg	0,230 kg

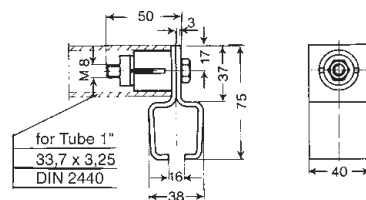
Hanger lateral



Type	Fixpoint hanger FO-S 1 (clamp)
Order-No.	312 809
Material	steel, galvanized
Weight	0,160 kg

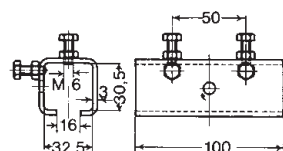
For up to 30 m runs only.

Hanger for tube



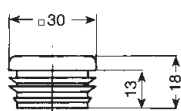
Type	Fixpoint hanger FR 1-S 1 (clamp)
Order-No.	310 991
Material	steel, dowel: polyamid
Weight	0,215 kg

Joint Clamp



Type	VS 1	VS 1-E
Order-No.	310 050	312 392
Material	steel, galvanized	V 4 A, stainless steel
Weight	0,340 kg	0,340 kg

End Cap



Type		K 30
Order-No.		360 023
Material		polyethylene
Weight		0,008 kg

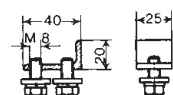


S 1 ACCESSORIES

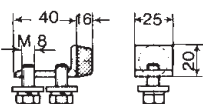
acid
proof

Stain-
less

Bumper stop



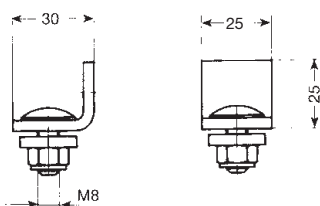
PS 1 (-E)



PS 1 G

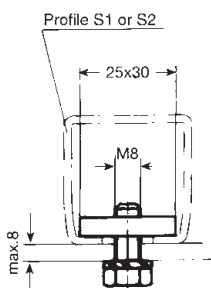
Typ	PS 1	PS 1 G	PS 1-E
Order-No.	310 300	310 360	312 395
Material	steel, galvanized	steel, galvanized	V 4 A, stainless steel
Weight	0,080 kg	0,100 kg	0,080 kg

Bumper stop



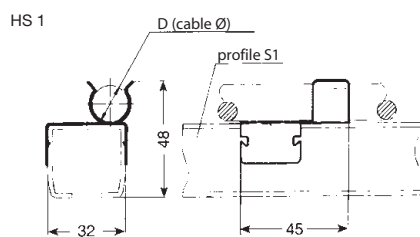
Type	PS 1-1
Order-No.	312 605
Material	steel, galvanized
Weight	0,063 kg

Flat Nut w/bolt and washer



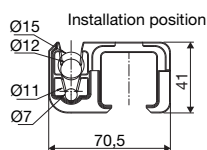
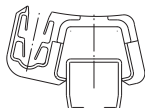
Typ	M 8 x 20	M 8 x 20 E
Order-No.	312 600	313 454
Material	steel, galvanized	V 4 A, stainless steel
Weight	0,044 kg	0,044 kg

Clamps for round cables and hoses



LK - S1

Installation



Type	Material	Weight kg	Dim. D mm	Order- No.
HS 1-D 9	stainless	0,010	8 - 10	312 667
HS 1-D 16	steel	0,011	15 - 20	312 666
LK-S1	PVC	0,010	7 - 15	313 379

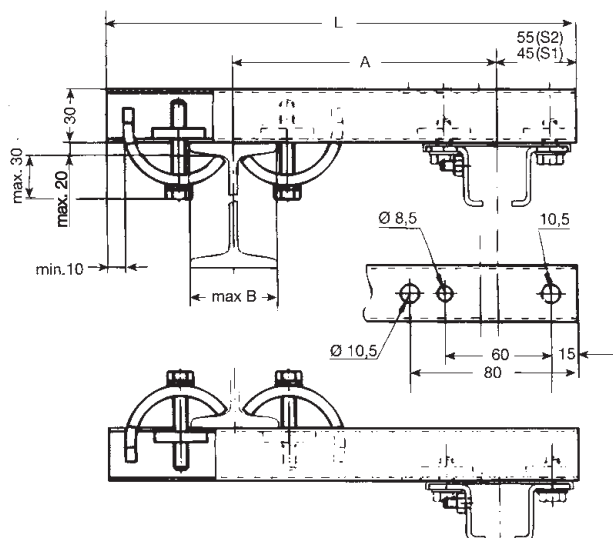


S 1 ACCESSORIES

acid
proof

Stain-
less

Standard Brackets



Choose dim. A per local requirements and make sure that hoist wheels have enough clearance.

Select next larger size bracket when your
-Beam dim. B is more than 210 mm and refer to page 9 for heavy duty brackets.

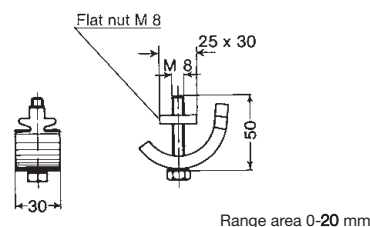
Type	Material	Weight kg	A (adjustable) mm	L mm	max. B mm	Order-No.	Type	Mat.	Order-No.
HK 200	steel galvanized	0,980	200	400	210 ⁽¹⁾	310 220	HK 200-E	stainl. steel V 4 A	312 510
HK 300		1,130	300	500	210 ⁽¹⁾	310 230	HK 300-E		312 511
HK 400		1,290	400	600	210 ⁽¹⁾	310 240	HK 400-E		312 512
HK 500		1,430	500	700	210 ⁽¹⁾	310 250	HK 500-E		312 513

Scope of supply: 1 pair of claws and rail short length S1.
Hangers AKS 1, FKS 1 and FAKS 1 to be ordered separately.

Bracket Bars for HK

Type	Material	Weight kg	L mm	Order-No.	Type	Mat.	Order-No.
S 1-400	steel galvanized	0,620	400	310 600	S 1E-400	stainl. steel V 4 A	312 515
S 1-500		0,780	500	310 610	S 1E-500		312 516
S 1-600		0,930	600	310 620	S 1E-600		312 517
S 1-700		1,090	700	310 630	S 1E-700		312 518

Claws for HK

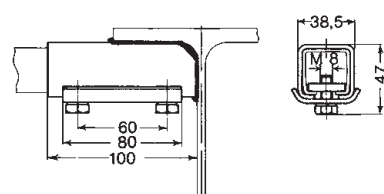


Type	SP 0-20	SP 0-20-E
Order-No.	310 390	312 514
Material	steel, galvanized	V 4 A, stainless steel
Weight	0,200 kg	0,200 kg

Flat nut M 8 separately available.
Order-No. 310 955

Flat nut M 8-E stainless
separately available.
Order-No. 312 545

Support Attachment for HK



Type	AH 1
Order-No.	310 400
Material	steel, galvanized
Weight	0,460 kg

Bracket bar and hangers to be ordered separately.



Stainless

$$L \approx A + \frac{B}{2} + 130$$

Typ	AH 2-2
Order-No.	312 648
Material	Stahl
Weight	0,854 kg



S 1 CABLE CARRIERS AND ACCESSORIES

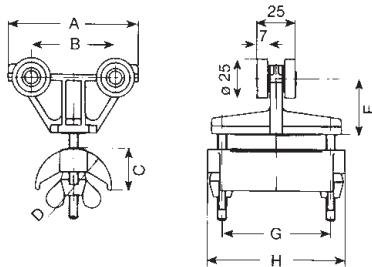
- Polyamid type -



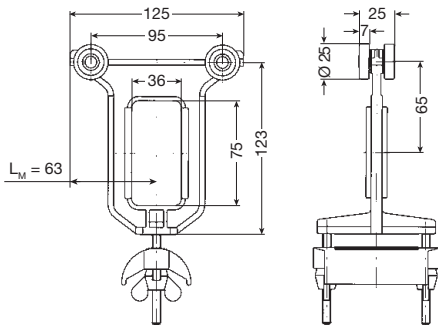
Engineering Data

Type	WS 1 F (not suitable for curved track)
Wheels	A) Polyamid rollers on bushed bearing; axle galvanized Material: polyamid, Travelling speed: ca. 50 m/min. B) Polyamid rollers on stainless bushed bearing Material: polyamid, Travelling speed: ca. 50 m/min. C) Polyamid rollers with ball bearing; inner race hardened, galvanized outer race Polyamid, Travelling speed: ca. 60 m/min. D) hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water. Temperature resistance: lub. grease of wheels: -30 °C to + 125 °C Travelling speed: ca. 80 m/min.
Material	Carrier body: Polyamid Support saddle: Polyamid Hardware: galvanized Temperature resistance: - 30 °C to + 100 °C
Max. cable load	max. 8 kg per Carrier with roller A max. 10 kg per Carrier with roller B + C max. 16 kg per Carrier with roller D
for corrosive sites	use system S 1-E or K1

Cable Carriers for flatform cables

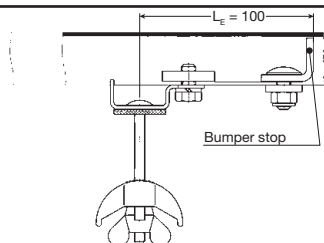


Type	wheels	max. thickness of individual cable mm	max. clamping capacity mm height x width	A	B	C	D	E	G	H	Weight kg	Order No. (1)	with patented nut Order-No. (2)
WS 1 F/ 85 G	A	8	17 x 65	85	55	25	50	37	71	90	0,120	310 958	312 686
WS 1 F/ 85 K	B										0,130	310 180	312 687
WS 1 F/ 85 KL	C										0,130	310 320	312 688
WS 1 F/ 85	D										0,190	310 070	312 689
WS 1 F/125-50 G	A	8	37 x 65	125	95	40	50	37	71	90	0,150	312 759	312 760
WS 1 F/125-50 K	B										0,160	312 761	312 762
WS 1 F/125-50 KL	C										0,160	312 763	312 764
WS 1 F/125-50	D										0,220	312 765	312 766
WS 1 F/125-80 G	A	10	22 x 65	125	95	40	80	37	71	90	0,170	312 767	312 768
WS 1 F/125-80 K	B										0,180	312 769	312 770
WS 1 F/125-80 KL	C										0,180	312 771	312 772
WS 1 F/125-80	D										0,240	312 773	312 774



Lead Carriers for flatform cables

Type	wheels	for Carrier type	Weight kg	Order No. (1)	with patented nut Order-No. (2)
MS 1 F/125-50 G	A	WS 1 F/ 85 G, WS 1 F/125-50 G	0,140	313 281	313 285
MS 1 F/125-50 K	B	WS 1 F/ 85 (K, G), WS 1 F/125-50 (K, G)	0,144	313 280	313 284
MS 1 F/125-50 KL	C	WS 1 F/ 85 (KL, K, G), WS 1 F/125-50 (KL, K, G)	0,158	313 279	313 283
MS 1 F/125-50	D	WS 1 F/85 (all types) WS 1 F/125-50 (all types)	0,200	313 278	313 282
MS 1 F/125-80 G	A	WS 1 F/125-80 G	0,156	313 293	313 297
MS 1 F/125-80 K	B	WS 1 F/125-80 (K, G)	0,162	313 292	313 296
MS 1 F/125-80 KL	C	WS 1 F/125-80 (KL, K, G)	0,174	313 291	313 295
MS 1 F/125-80	D	WS 1 F/125-80 (all types)	0,216	313 290	313 294



Track Clamps for flatform cables

Type	for Carrier type	Weight kg	Order No. (1)	with patented nut Type	Order-No.
ES 1 F/ 85	WS 1 F/ 85 (all types) WS 1 F/125-50 (all types)	0,220	313 303	EST 1-2 F/ 85-PM	313 304
ES 1 F/125-80	WS 1 F/125-80 (all types)	0,240	313 307	EST 1-2 F/125-PM	313 308

Bumper stop PS 1, PS 1-1, PS 1 G to be ordered separately.

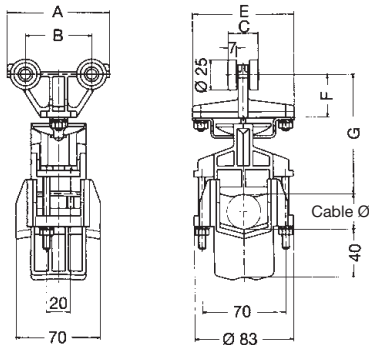
Track Clamp with bumper for flatform cables

Type	for Carrier type	Weight kg	Order-No. (1)	with patented nut Type	Order-No.
EP S1 F/ 85	WS 1 F/ 85 (all types)	0,230	313 305	EPST 1-2 F/85-PM	313 306



S 1 CABLE CARRIERS AND ACCESSORIES

– Polyamid swivel type –

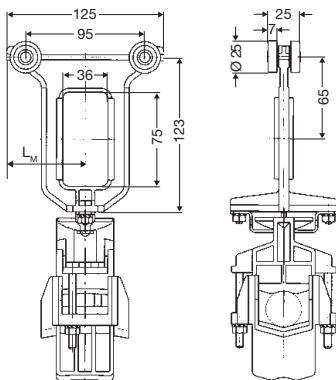


Engineering Data

Type	WS 1 R (not suitable for curved track)
Wheels	A) Polyamid rollers on bushed bearing; axle galvanized Material: polyamid, Travelling speed: ca. 50 m/min. B) Polyamid rollers on stainless bushed bearing Material: polyamid, Travelling speed: ca. 50 m/min. C) Polyamid rollers with ball bearing; inner race hardened, galvanized outer race Polyamid, Travelling speed: ca. 60 m/min. D) hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water Temperature resistance: lub. grease of wheels: -30 °C to + 125 °C Travelling speed: ca. 80 m/min.
Material	Carrier body: Polyamid Support saddle: Polyamid Hardware: galvanized Temperature resistance: - 30 °C to + 100 °C
Max. cable load	max. 8 kg per Carrier with roller A max. 10 kg per Carrier with roller B + C max. 16 kg per Carrier with roller D
for corrosive sites	use system S 1-E or K1

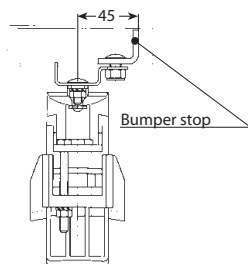
Cable Carriers for round cables and hoses

Type	Cable Ø	Wheels	A	B	C	D	E	F	G	Weight kg	Order-No.
WS 1 R/85 G	5 mm to 38 mm	A								0,260	313 332
WS 1 R/85 K		B								0,270	312 486
WS 1 R/85 KL		C	85	55	25	25	85	36	99	0,280	312 487
WS 1 R/85		D								0,320	312 485



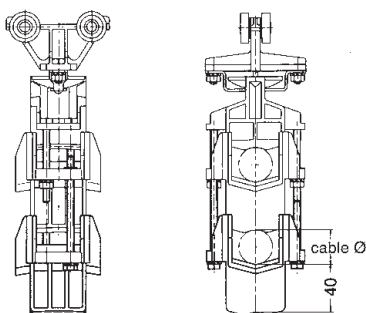
Lead Carriers for round cables and hoses

Type	for Carrier type	Lm	Weight kg	Order-No.
MS 1 R/125 G	WS 1 R/85 G	63	0,284	313 289
MS 1 R/125 K	WS 1 R/85 (K, G)	63	0,288	313 288
MS 1 R/125 KL	WS 1 R/85 (KL, K, G)	63	0,302	313 287
MS 1 R/125	WS 1 R/85 (all types)	63	0,304	313 286



Track Clamp for round cables and hoses

Type	for Carrier type	Weight kg	Order-No.
EPST 1-2 R	WS 1 R (all types)	0,346	313 322



Support Saddle for round cables and hoses for additional tiers

Type	for Carrier type	Weight kg	Order-No.
LAR	WS 1 R (all types)	0,110	312 500



S 1 CABLE CARRIERS – Steel type –



acid
proof

Stain-
less



Support saddle
with hex. nut

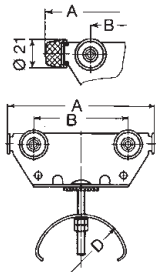


Support saddle
with patented nut

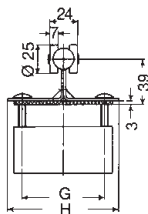
Engineering Data

Type	WST 1 F	WST 1 F-E	WST 1 F K-E
Wheels	ball bearings sealed against dust and splash water hardened, galvanized Temperature resistance Lub. grease of wheels: -30 °C to + 125 °C Travelling speed: ca. 80 m/min.	sealed ball bearings stainless steel, V 4 A -30 °C to + 150 °C ca. 80 m/min.	Polyamid rollers on bushed bearing ca. 50 m/min.
Material	Carrier body: steel, galvanized Support saddle: steel, galvanized D = 140 – aluminium Bumper: Neoprene Hardware: galvanized Temperature resistance: - 30 °C to + 100 °C	with patented nut Support saddle Polyamid	V 4 A, stainless steel V 4 A, stainless steel Neoprene V 4 A, stainless steel - 30 °C to + 80 °C
Max. cable load	max. 22 kg per carrier	max. 12 kg per carrier	max. 8 kg per carrier
Depth of cable loop	in curves max. 0,3 x track radius, consider tension relief		not in curves
for corrosive sites	use system S 1-E or K 1		

Cable Carriers for flatform cables



Bumper type



Type	max. thickn. of individual cable mm	max. clamping capacity in mm height x width	A	B	Ø D	G	H	Weight kg	Order- No.	with patented nut Order- No ⁽²⁾	Type	Order- No.	Type	Order- No.
mm														
WST 1 F/ 85 ⁽¹⁾	8	17 x 65	85	43	50	85	85	0,360	312 000	312 789	WST 1 F/ 85 E ⁽¹⁾	312 381	WST 1 F/ 85 K-E ⁽¹⁾	313 218
WST 1 F/ 85 P		29 x 65	110					0,370	312 010	312 790	WST 1 F/ 85P-E	312 387	WST 1 F/ 85 KP-E	313 219
WST 1 F/125-50 ⁽¹⁾		37 x 65	125					0,460	312 533	312 791	WST 1 F/125-50-E ⁽¹⁾	312 519	WST 1 F/125-50K-E ⁽¹⁾	313 221
WST 1 F/125-50 P	10	50 x 65	150	80	80	97	97	0,470	312 534	312 792	WST 1 F/125-50P-E	312 520	WST 1 F/125-50KP-E	313 222
WST 1 F/125 ⁽¹⁾		22 x 65	125					0,520	312 020	312 793	WST 1 F/125-E ⁽¹⁾	312 384	WST 1 F/125 K-E ⁽¹⁾	313 223
WST 1 F/125 P		34 x 65	150					0,530	312 030	312 794	WST 1 F/125P-E	312 388	WST 1 F/125 KP-E	313 224
WST 1 F/150-50 ⁽¹⁾	8	50 x 65	150	105	50	71	85	0,480	312 537	312 795	WST 1 F/150-50-E ⁽¹⁾	312 560	WST 1 F/150-50 K-E ⁽¹⁾	313 225
WST 1 F/150-50 P		62 x 65	175					0,490	312 538	312 796	WST 1 F/150-50P-E	312 561	WST 1 F/150-50 KP-E	313 226
WST 1 F/150-80 ⁽¹⁾	10	35 x 65	150		0,540			312 539	312 797	WST 1 F/150-80-E ⁽¹⁾	312 562	WST 1 F/150-80 K-E ⁽¹⁾	313 227	
WST 1 F/150-80 P		47 x 65	175	0,550	312 540			312 798	WST 1 F/150-80P-E	312 563	WST 1 F/150-80 KP-E	313 228		
WST 1 F/150 ⁽¹⁾	12	25 x 65	150	100	85			85	85	0,580	312 040		WST 1 F/150-E ⁽¹⁾	312 564
WST 1 F/150 P		37 x 65	175			0,590	312 050				WST 1 F/150P-E	312 565	WST 1 F/150 KP-E	313 230
WST 1 F/200-100 ⁽¹⁾		50 x 65	200	0,680		312 831								
WST 1 F/200-100 P		62 x 65	225	0,700		312 832								
WST 1 F/200-140 ⁽¹⁾		14	30 x 65	200		140	85			85	0,670	312 833		
WST 1 F/200-140 P	42 x 65		225	0,680	312 834									
WST 1 F/250-140 ⁽¹⁾	55 x 65		250	0,740	312 835									
WST 1 F/250-140 P	67 x 65		275	0,750	312 836									

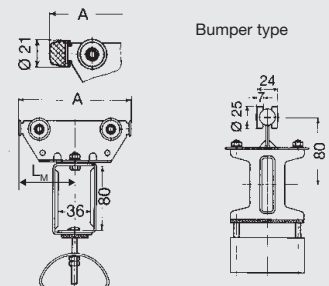


S 1 LEAD CARRIERS AND TRACK CLAMPS – Steel type –



acid
proof

Stain-
less

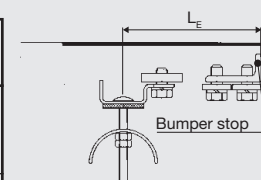


Lead Carriers for flatform cables

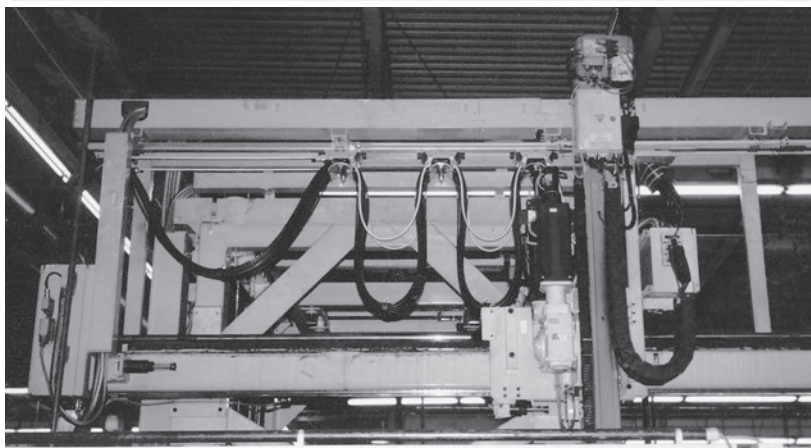
Type	for Carrier type	LM	A mm	Weight kg	Order-No.	with patented nut Order-No. ⁽²⁾	Type	Order-No.	Type	Order-No.
MST 1 F/ 85 ⁽¹⁾	WST 1 F/ 85	43	85	0,730	312 080	312 799	MST 1 F/ 85-E ⁽¹⁾	312 382	MST 1 F/ 85 K-E ⁽¹⁾	313 231
MST 1 F/ 85 P	WST 1 F/ 85 P	55	110	0,740	312 090	312 800	MST 1 F/ 85 P-E	312 389	MST 1 F/ 85 KP-E	313 232
MST 1 F/125-50 ⁽¹⁾	WST 1 F/125-50	63	125	0,830	312 535	312 801	MST 1 F/125-50-E ⁽¹⁾	312 521	MST 1 F/125-50 K-E ⁽¹⁾	313 233
MST 1 F/125-50 P	WST 1 F/125-50 P	75	150	0,840	312 536	312 802	MST 1 F/125-50 P-E	312 522	MST 1 F/125-50 KP-E	313 234
MST 1 F/125 ⁽¹⁾	WST 1 F/125	63	125	0,880	312 100	312 803	MST 1 F/125-E ⁽¹⁾	312 385	MST 1 F/125 K-E ⁽¹⁾	313 235
MST 1 F/125 P	WST 1 F/125 P	75	150	0,890	312 110	312 804	MST 1 F/125 P-E	312 390	MST 1 F/125 KP-E	313 236
MST 1 F/150-50 ⁽¹⁾	WST 1 F/150-50	75	150	0,850	312 541	312 805	MST 1 F/150-50-E ⁽¹⁾	312 566	MST 1 F/150-50 K-E ⁽¹⁾	313 237
MST 1 F/150-50 P	WST 1 F/150-50 P	88	175	0,860	312 542	312 806	MST 1 F/150-50 P-E	312 567	MST 1 F/150-50 KP-E	313 238
MST 1 F/150-80 ⁽¹⁾	WST 1 F/150-80	75	150	0,900	312 543	312 807	MST 1 F/150-80-E ⁽¹⁾	312 568	MST 1 F/150-80 K-E ⁽¹⁾	313 239
MST 1 F/150-80 P	WST 1 F/150-80 P	88	175	0,910	312 544	312 808	MST 1 F/150-80 P-E	312 569	MST 1 F/150-80 KP-E	313 240
MST 1 F/150 ⁽¹⁾	WST 1 F/150	75	150	0,950	312 120		MST 1 F/150-E ⁽¹⁾	312 570	MST 1 F/150 K-E ⁽¹⁾	313 241
MST 1 F/150 P	WST 1 F/150 P	88	175	0,960	312 130		MST 1 F/150 P-E	312 571	MST 1 F/150 KP-E	313 242
MST 1 F/200-100 ⁽¹⁾	WST 1 F/200-100	100	200	1,050	312 837					
MST 1 F/200-100 P	WST 1 F/200-100 P	113	225	1,070	312 838					
MST 1 F/200-140 ⁽¹⁾	WST 1 F/200-140	100	200	1,030	312 839					
MST 1 F/200-140 P	WST 1 F/200-140 P	113	225	1,040	312 840					
MST 1 F/250-140 ⁽¹⁾	WST 1 F/250-140	125	250	1,110	312 841					
MST 1 F/250-140 P	WST 1 F/250-140 P	138	275	1,120	312 842					

Track Clamps for flatform cables

Type	for Carrier type	LE mm	Weight kg	Order-No.	with patented nut Order-No. ⁽²⁾	Type	Order-No.
EST 1-2 F/ 85	WST 1 F/ 85 (P)	140	0,290	313 315	313 304	EST 1-2 F/ 85-E	312 383
	WST 1 F/125-50 (P)						
	WST 1 F/150-50 (P)						
EST 1-2 F/125	WST 1 F/125 (P)	140	0,370	313 316	313 308	EST 1-2 F/125-E	312 386
	WST 1 F/150-80 (P)						
EST 1-2 F/150	WST 1 F/150 (P)	140	0,410	313 317		EST 1-2 F/150-E	312 572
EST 1-2 F/100-2	WST 1 F/200-100 (P)		0,410	313 318			
EST 1-2 F/140-2	WST 1 F/200-140 (P)		0,430	313 319			
	WST 1 F/250-140 (P)	165					



Bumper stop PS 1, PS 1-1, PS 1 G or PS 1-E to be ordered separately.



VAHLE Festoon feeding robotic production.

⁽¹⁾ without Bumper

⁽²⁾ with patented quick-set nut use suffix PM



LS 1 CABLE CARRIERS AND ACCESSORIES – Steel type –



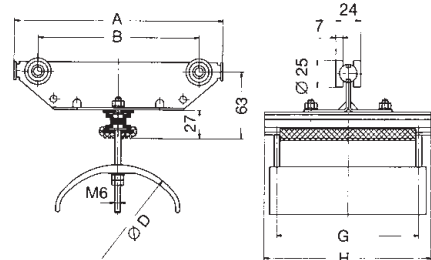
Engineering Data

Type	WST 1 F
Wheels	ball bearings sealed against dust and splash water hardened, galvanized Temperature resistance Lub. grease of wheels: -30 °C to + 125 °C Travelling speed: ca. 80 m/min.
Material	Carrier body: steel, galvanized Support saddle: steel, galvanized; D = 100 & 140 aluminium Bumper: Neoprene Hardware: galvanized Temperature resistance: - 30 °C to + 100 °C
Max. cable load	max. 22 kg per carrier
Depth of cable loop	in curves max. 0,3 x track radius, consider tension relief
for corrosive sites	use system S 1-E or K 1

Cable Carriers for flatform cables

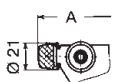


Bumper type

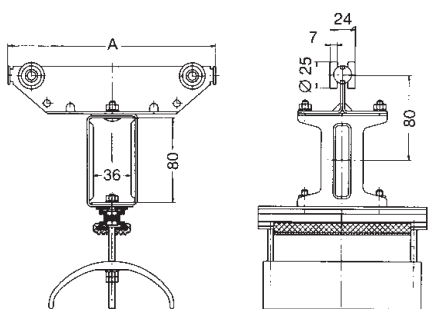


Type	max. thickn. of individual cable mm	max. clamping capacity in mm height x width	A	B	Ø D	G	H	Weight kg	Order- No.
			mm						
WST 1 F/125-50 B ⁽¹⁾	8	37 x 100	125	80	50	110	134	0,630	312 902
WST 1 F/125-50 B P		50 x 100	150		0,640			312 903	
WST 1 F/125-80 B ⁽¹⁾	10	22 x 100	125	80				0,720	312 904
WST 1 F/125-80 B P		34 x 100	150					0,730	312 905
WST 1 F/150-100 B 160 ⁽¹⁾	12	25 x 130	150	105	100			0,750	312 845
WST 1 F/150-100 B 160 P		37 x 130	175					0,760	312 846
WST 1 F/200-100 B 160 ⁽¹⁾		50 x 130	200	0,840				312 847	
WST 1 F/200-100 B 160 P	14	62 x 130	225	155	136	160		0,850	312 848
WST 1 F/200-140 B 160 ⁽¹⁾		30 x 130	200					0,970	312 849
WST 1 F/200-140 B 160 P		42 x 130	225	0,980				312 850	
WST 1 F/250-140 B 160 ⁽¹⁾		55 x 130	250	205	1,040			312 851	
WST 1 F/250-140 B 160 P		67 x 130	275		1,050			312 852	

Lead Carriers for flatform cables

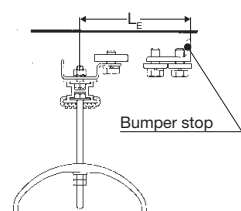


Bumper type



Type	for Carrier type	A mm	Weight kg	Order- No.
MST 1 F/125-50 B ⁽¹⁾	WST 1 F/125-50 B	125	1,000	312 906
MST 1 F/125-50 B P	WST 1 F/125-50 B P	150	1,010	312 907
MST 1 F/125-80 B ⁽¹⁾	WST 1 F/125-80 B	125	1,080	312 908
MST 1 F/125-80 B P	WST 1 F/125-80 B P	150	1,090	312 909
MST 1 F/150-100 B 160 ⁽¹⁾	WST 1 F/150-100 B 160	150	1,100	312 853
MST 1 F/150-100 B 160 P	WST 1 F/150-100 B 160 P	175	1,110	312 854
MST 1 F/200-100 B 160 ⁽¹⁾	WST 1 F/200-100 B 160	200	1,190	312 855
MST 1 F/200-100 B 160 P	WST 1 F/200-100 B 160 P	225	1,200	312 856
MST 1 F/200-140 B 160 ⁽¹⁾	WST 1 F/200-140 B 160	200	1,330	312 857
MST 1 F/200-140 B 160 P	WST 1 F/200-140 B 160 P	225	1,340	312 858
MST 1 F/250-140 B 160 ⁽¹⁾	WST 1 F/250-140 B 160	250	1,390	312 859
MST 1 F/250-140 B 160 P	WST 1 F/250-140 B 160 P	275	1,400	312 860

Track Clamps for flatform cables



Bumper stop

Bumper stop PS 1, PS 1-1, PS 1 G
to be ordered separately.

Type	for Carrier type	LE mm	Weight kg	Order- No.
EST 1-2 F/125-50 B	WST 1 F/125-50 B (P)	140	0,470	313 313
EST 1-2 F/125-80 B	WST 1 F/125-80 B (P)		0,520	313 314
EST 1-2 F/100 B 160	WST 1 F/150-100 B 160 (P)	140	0,560	313 311
	WST 1 F/200-100 B 160 (P)	155		
	WST 1 F/200-140 B 160 (P)	155		
EST 1-2 F/140 B 160	WST 1 F/250-140 B 160 (P)	180	0,700	313 312



S 1 CABLE CARRIERS AND ACCESSORIES – Steel type –



acid
proof

Stain-
less

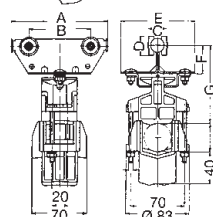


Engineering Data

Type	WST 1 R	WST 1 R-E	WST 1 RK-E
Wheels	ball bearings sealed against dust and splash water hardened, galvanized Temperature resistance: Lub. grease of wheels: -30 °C to + 125 °C Travelling speed: ca. 80 m/min.	sealed ball bearing stainless steel, V 4 A -30 °C to + 150 °C ca. 80 m/min.	Polyamid rollers on bushed bearing ca. 50 m/min.
Material	Carrier body: steel, galvanized Support saddle: Polyamid Bumper: Neoprene Hardware: galvanized Temperature resistance: - 30 °C to + 100 °C	V 4 A, stainless steel Polypropylene Neoprene V 4 A, stainless steel - 10 °C to + 80 °C	
Max. cable load	max. 22 kg per carrier	max. 12 kg per carrier	max. 8 kg per carrier
Depth of cable loop	in curves max. 0,3 x track radius; consider tension relief		not in curves
for corrosive sites	use system S 1-E or K 1		



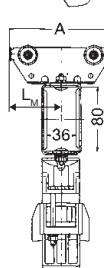
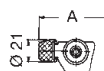
Bumper type



Cable Carriers for round cables and hoses

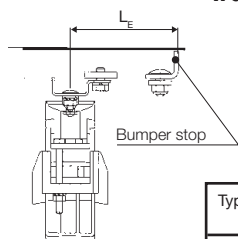
Type	Cable- Ø	A	B	C	D	E	F	G	Weight kg	Order- No.	Type	Order- No.	Type	Order- No.
WST 1 R/ 85 ⁽¹⁾	85								0,430	312 491	WST 1 R/ 85-E ⁽¹⁾	312 523	WST 1 R/ 85 K-E	313 243
WST 1 R/ 85 P	5 mm to 38 mm	110	43	24	25	85	36	99	0,460	312 492	WST 1 R/ 85 P-E	312 524	WST 1 R/ 85 KP-E	313 244
WST 1 R/125 ⁽¹⁾		125							0,540	312 493	WST 1 R/125-E ⁽¹⁾	312 525	WST 1 R/125 K-E	313 245
WST 1 R/125 P		150	80	24	25	97	36	99	0,570	312 494	WST 1 R/125 P-E	312 526	WST 1 R/125 KP-E	313 246

Lead Carriers for round cables and hoses



Type	for Carrier type	L _m	A	C	D	H	Weight kg	Order- No.	Type	Order- No.	Type	Order- No.
MST 1 R/ 85 ⁽¹⁾	WST 1 R/ 85	43	85				0,780	312 495	MST 1 R/ 85-E ⁽¹⁾	312 527	MST 1 R/ 85 K-E	313 247
MST 1 R/ 85 P	WST 1 R/ 85 P	55	110	24	25	80	0,810	312 496	MST 1 R/ 85 P-E	312 528	MST 1 R/ 85 KP-E	313 248
MST 1 R/125 ⁽¹⁾	WST 1 R/125	63	125				0,890	312 497	MST 1 R/125-E ⁽¹⁾	312 529	MST 1 R/125 K-E	313 249
MST 1 R/125 P	WST 1 R/125 P	75	150				0,920	312 498	MST 1 R/125 P-E	312 530	MST 1 R/125 KP-E	313 250

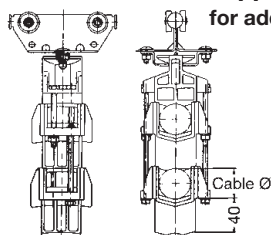
Track Clamp for round cables and hoses



Type	for Carrier type	L _E mm	Weight kg	Order- No.	Type	Order- No.
EST 1-2 R	WST 1 R (all types)	100	0,340	313 321	EST 1 R-E	312 531

Bumper stop PS 1, PS 1-1, PS 1 G, PS 1-E to be ordered separately.

Support Saddle for round cables and hoses for additional tiers



Type	for Carrier type	Weight kg	Order- No.	Type	Order- No.
LAR	WST 1 R (alle Typen)	0,110	312 500	LAR-E	312 532

⁽¹⁾ without Bumper



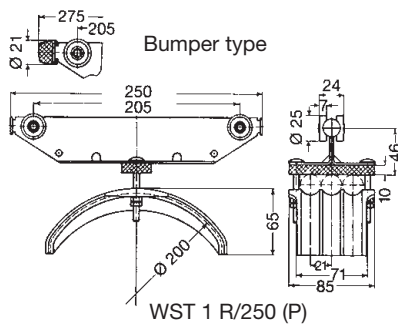
S 1 CABLE CARRIERS AND ACCESSORIES

- Steel type -



Engineering Data

Type	WST 1 R/250, WST 1 R/250 P
Wheels	ball bearings sealed against dust and splash water hardened, galvanized Temperature resistance Lub. grease of wheels: -30 °C to + 125 °C Travelling speed: ca. 80 m/min.
Material	Carrier body: steel, galvanized Cable-loop: Polyamid Support saddle: Polyamid Hardware: galvanized Temperature resistance: - 30 °C to + 100 °C
Max. cable load	max. 22 kg per carrier WST 1 R/250 (P)
for corrosive sites	use system S 1-E or K 1



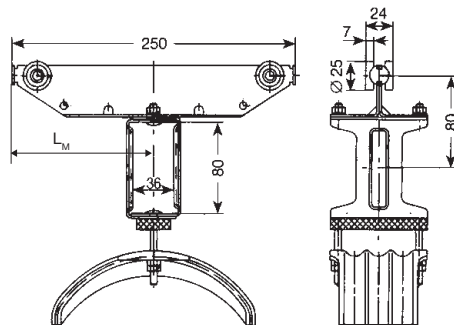
Cable Carriers for round cables and hoses

Type	max. cable-Ø mm	Weight kg	Order-No.
WST 1 R/250 ⁽¹⁾	3 x Ø 20	0,660	312 060
WST 1 R/250 P		0,690	312 070



Lead Carriers for round cables and hoses

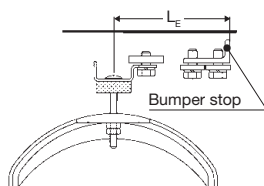
Support saddle same as for cable carriers



Type	for Carrier type	L _M	A mm	Weight kg	Order-No.
MST 1 R/250 ⁽¹⁾	WST 1 R/250	125	250	1,000	312 140
MST 1 R/250 P	WST 1 R/250 P	125	275	1,030	312 150

Track Clamp for round cables and hoses

Support saddle same as for cable carriers



Bumper stop PS 1, PS 1-1, PS 1 G
to be ordered separately.

Type	for Carrier type	L _E mm	Weight kg	Order-No.
ES 1 R/250	WST 1 R/250	165	0,298	313 320
	WST 1 R/250 P	178		



S 1 CABLE CARRIERS AND ACCESSORIES

– Steel type –



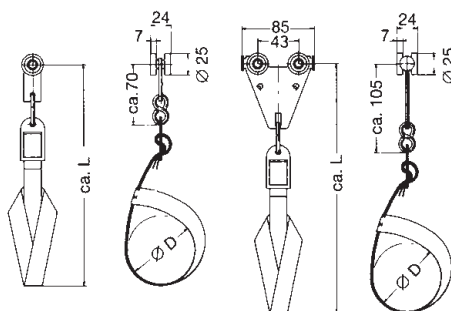
Engineering Data

Type	WR 1-Sch, WST 1-Sch
Wheels	ball bearings sealed against dust and splash water hardened, galvanized Temperature resistance Lub. grease of wheels: -30 °C to + 125 °C Travelling speed: ca. 80 m/min.
Material	Carrier body: steel, galvanized S-Hook: steel, galvanized Cable-loop: Polyamid Hardware: galvanized Temperature resistance: - 30 °C to + 100 °C
Max. cable load	max. 10 kg per carrier WR 1-Sch max. 20 kg per carrier WST 1-Sch
for corrosive sites	use system S 1-E or K 1

Cable Carriers for round cables and hoses

WR 1-Sch

WST 1-Sch



Type	Ø D mm	L mm	Weight kg	Order- No.
WR 1-Sch/ 80	80	210	0,100	312 900
WR 1-Sch/160	160	290	0,110	312 901
WST 1-Sch/ 80	80	240	0,270	312 875
WST 1-Sch/160	160	320	0,280	312 876

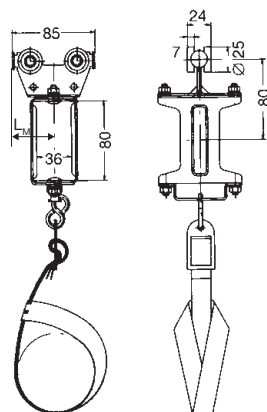
Installation information:

1. prepare ribbon ends as shown.
2. pull all ends thru flap.
3. form a loop.
4. attach flap to S-hook!

1.

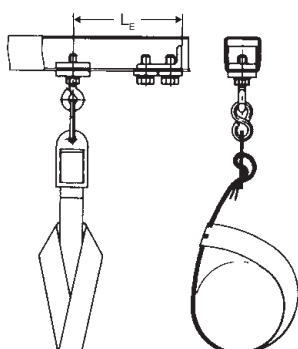


2.



Lead Carriers for round cables and hoses

Type	for Carrier type	L _M	Weight kg	Order- No.
MST 1-Sch/ 80	WR 1-Sch/ 80	43	0,680	312 877
	WST 1-Sch/ 80			
MST 1-Sch/160	WR 1-Sch/160	43	0,690	312 878
	WST 1-Sch/160			



Bumper stop PS 1, PS 1-1 or PS 1 G
to be ordered separately.

Track Clamps for round cables and hoses

Type	for Carrier type	L _E	Weight kg	Order- No.
EST 1-2-Sch/ 80	WR 1-Sch/ 80	110	0,140	312 879
	WST 1-Sch/ 80			
EST 1-2-Sch/160	WR 1-Sch/160	110	0,150	312 880
	WST 1-Sch/160			



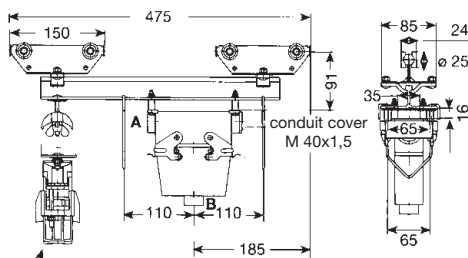
S 1 CONTROL CARRIER AND ACCESSORIES



acid
proof

Stain-
less

Control Carriers with multipole plug-in



ST-ST 1 R saddle for round cable

Type ⁽¹⁾	plug-in-device DIN 43652	Weight kg	Order- No.
ST-ST 1/16 M	16pole	2,100	313 371
ST-ST 1/24 M	24pole	2,300	313 370
Design for round cable clamp ST-ST 1 R			
ST-ST 1 R/16 M	16pole	2,200	313 373
ST-ST 1 R/24 M	24pole	2,400	313 372

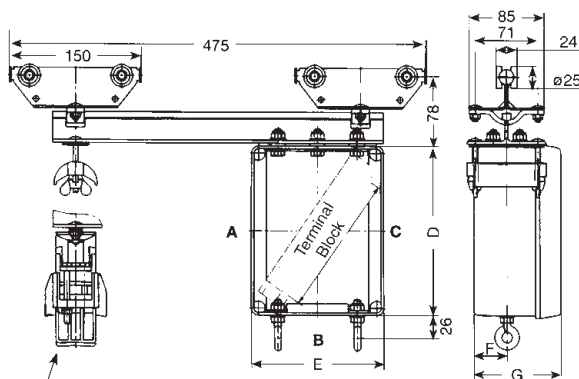
Design:

Carrier body: steel, galvanized Support bar: aluminium
Wheels: steel ball bearings Plug: cast iron

Cable glands for 16-poles Cable glands for 24-poles
A-Seite: M 40 x 1,5 A-Seite: M 40 x 1,5
B-Seite: M 32 x 1,5 B-Seite: M 40 x 1,5

Max. cable load: 25 kg
Temperature resistance: - 30 °C to + 100 °C

Control Carriers without Brake



ST-ST 1 R saddle for round cable

Type ⁽¹⁾	D	E	F	G	Weight kg	Order-No.	Type ⁽¹⁾	Order-No.
ST-ST 1/A 1	190	150	38	100	2,900	312 695	ST-ST 1-E	316 332
ST-ST 1/A 2	280	200	62	140	4,300	312 694	-	-
Design for round cable clamp ST-ST 1 R								
ST-ST 1 R/A 1	190	150	38	100	3,000	312 817	ST-ST 1 R-E	312 819
ST-ST 1 R/A 2	280	200	62	140	4,400	312 818	-	-

Design:

Carrier body: steel, galvanized Support bar: aluminium
Wheels: steel ball bearings Plug: PVC

Max. load: 25 kgs
Service temperature: -30 °C upto + 100 °C

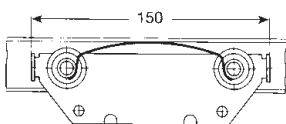
Attention: The connection box must be earthed with a protective earth conductor terminal Type EK 2.5 N PA!

ST-ST 1/A 1 ST-ST 1 R/A 1 ST-ST 1-E & ST-ST 1 R-E			ST-ST 1/A 2 ST-ST 1 R/A 2		
Cable glands	max. number A-Side	max. number B-Side	Cable glands	max. number A-Side	max. number B-Side
M 20 x 1,5	6	2	M 20 x 1,5	12	6
M 25 x 1,5	5	1	M 25 x 1,5	10	6
M 32 x 1,5	3	1	M 32 x 1,5	8	4
M 40 x 1,5	2	1	M 40 x 1,5	4	1
M 50 x 1,5	2	-	M 50 x 1,5	3	1
M 63 x 1,5	2	-	M 63 x 1,5	3	1

Max. length of Terminal Block A 1 = 130mm
A 2 = 220 mm

Brake spring for Control Carrier ST-ST 1

The braking device can be installed as an option.



Type	Material	Weight kg	Order-No.
BF 1	stainless steel	0,007	310 860

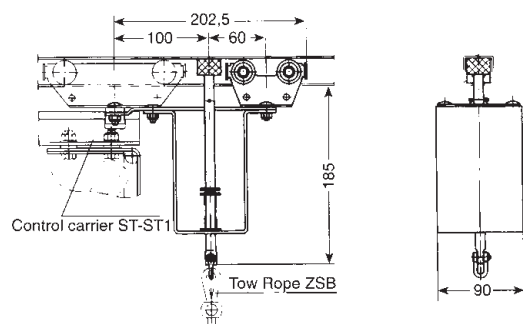


S 1 ACCESSORIES FOR CONTROL CARRIERS

acid
proof

Stain-
less

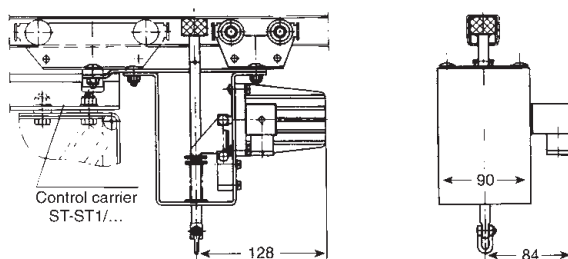
Brake for Control Carrier



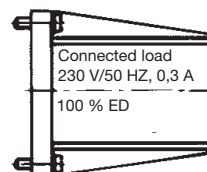
Type	Weight kg	Order-No.
BS 1	1,740	312 698

Design:
Carrier: Steel, galvanized
Wheels: Steel ball bearings

Brake for Control Carrier with AC magnet (WM)

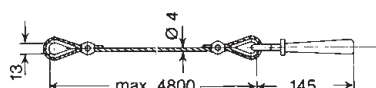


Type	Weight kg	Order-No.
BS 1-WM	2,900	312 699



Connected load
230 V/50 HZ, 0,3 A
100 % ED

Tow Rope and Grip for Brake BS 1



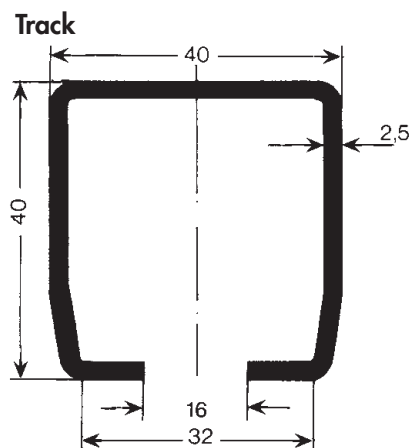
Type	Standard length- mm	Weight kg	Order-No.
ZSB	5000	0,250	310 850

Scope of delivery: hand grip, rope, rope thimble and clamp.



**acid
proof**

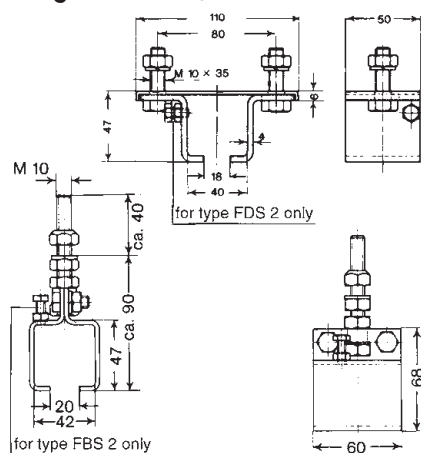
Stainless



Type	S 2	S 2-E
Order-No., in 6 m sections	316 636	316 646
Order-No., in 4 m sections	316 634	316 644
Order-No. surcharge for curves	310 480	315 372
for Carriers type	WS 2 and WST 2	WST 2-E
Material	steel, galvanized	V 4 A
Supply lengths	6 m and 4 m in straight system max. 2.5 m,	
Standard support spacing	see page 48, in curves max. 1 m,	
Moment of inertia Jx	6,7 cm ⁴	6,7 cm ⁴
Section modulus Wx	3,1 cm ³	3,1 cm ³
Weight	2,490 kg/m	2,490 kg/m

Horizontal Curves are ready available. Consult factory for specials.

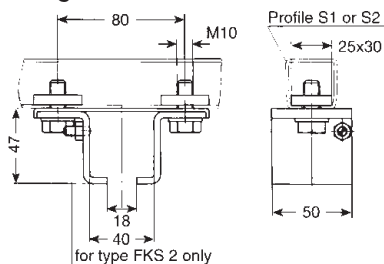
Hanger underhung



Type	Sliding-hanger ADS 2 ⁽¹⁾	Fixpoint-hanger FDS 2	Sliding-hanger ADS 2-E ⁽¹⁾	Fixpoint-hanger FDS 2-E
Order-No.	315 200	315 210	315 357	315 356
Material	steel, galvanized		V 4 A, stainless steel	
Weight	0,310 kg	0,320 kg	0,310 kg	0,320 kg

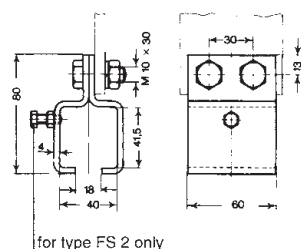
Typ	Sliding-hanger ABS 2 ⁽¹⁾	Fixpoint-hanger FBS 2
Order-No.	315 140	315 150
Material	steel, galvanized	
Weight	0,370 kg	0,380 kg

Hanger underhung for HK support



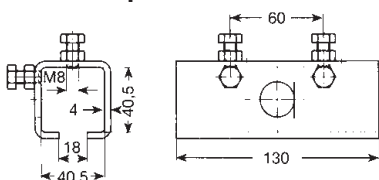
Type	Sliding-hanger AKS 2 ⁽¹⁾	Fixpoint-hanger FKS 2	Sliding-hanger AKS 2-E ⁽¹⁾	Fixpoint-hanger FKS 2-E
Order-No.	315 220	315 230	315 379	315 380
Material	steel, galvanized		V 4 A, stainless steel	
Weight	0,490 kg	0,500 kg	0,490 kg	0,500 kg

Hanger lateral



Type	Sliding-hanger AS 2 ⁽¹⁾	Fixpoint-hanger FS 2
Order-No.	315 030	315 040
Material	steel, galvanized	
Weight	0.470 kg	0.480 kg

Joint Clamp upto 100 m system length

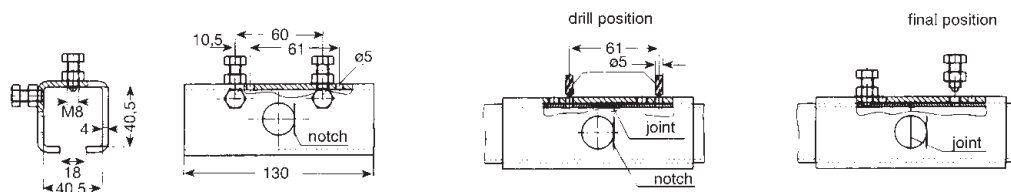


Type	VS 2	VS 2-E
Order-No.	315 050	315 355
Material	steel, galvanized	V 4 A, stainless steel
Weight	0.680 kg	0.680 kg



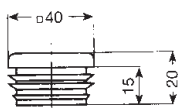
Stainless

Joint Clamp, lock type (Patent pending) from 100 m system lenght



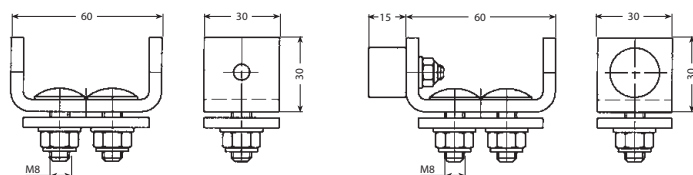
Type	VS 2-F
Order-No.	316 522
Material	steel, galvanized
Weight	0,680 kg

End Cap



Type		K 40
Order-No.		316 449
Material		polyethylene
Weight		0,009 kg

Bumper stop

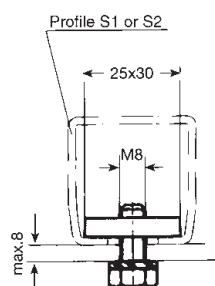


PS 2-1 (E)

PS 2-1 G

Type	PS 2-1	PS 2-1 G	PS 2-1 E
Order-No.	317 000	317 001	317 002
Material	steel, galvanized	steel, galvanized	V 4 A, stainless steel
Weight	0,220 kg	0,250 kg	0,220 kg

Flat nut w/bolt and washer



Type	M 8 x 20
Order-No.	312 600
Material	Stahl, verzinkt
Weight	0,044 kg

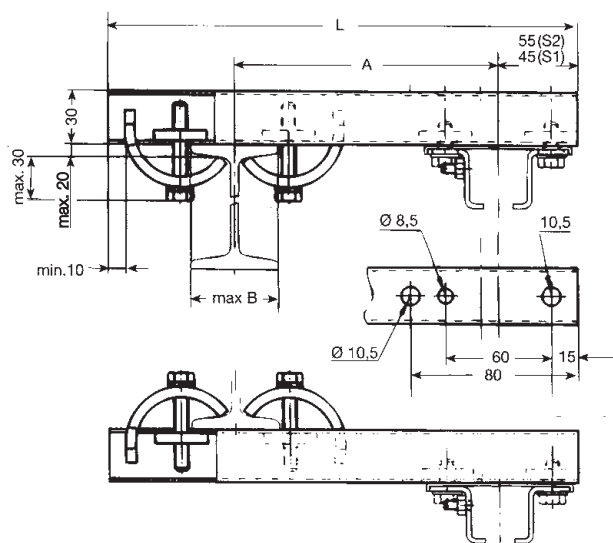


S 2 ACCESSORIES

acid
proof

Stain-
less

Standard Brackets



Choose dim. A per local requirements and make sure that hoist wheels have enough clearance.

Select next larger size bracket when your I-Beam dim. B is more than 210 mm and refer to page 23 for heavy duty brackets.

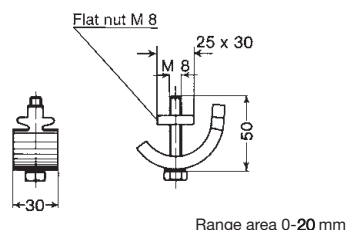
Type	Material	Weight kg	A (adjustable) mm	L mm	max B mm	Order-No.	Type	Mat.	Order-No.
HK 200	steel galvanized	0,980	200	400	210 ⁽¹⁾	310 220	HK 200-E	stainl. steel V 4 A	312 510
HK 300		1,130	300	500	210 ⁽¹⁾	310 230	HK 300-E		312 511
HK 400		1,290	400	600	210 ⁽¹⁾	310 240	HK 400-E		312 512
HK 500		1,430	500	700	210 ⁽¹⁾	310 250	HK 500-E		312 513

Scope of supply: 1 pair of claws and rail short length S1.
Hangers AKS 2 and FKS 2 to be ordered separately.

Bracket Bars for HK

Type	Material	Weight kg	L mm	Order-No.	Type	Mat.	Order-No.
S 1-400	steel galvanized	0,620	400	310 600	S 1E-400	stainl. steel V 4 A	312 515
S 1-500		0,780	500	310 610	S 1E-500		312 516
S 1-600		0,930	600	310 620	S 1E-600		312 517
S 1-700		1,090	700	310 630	S 1E-700		312 518

Claws for HK

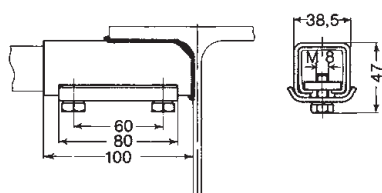


Type	SP 0-20	SP 0-20-E
Order-No.	310 390	312 514
Material	steel, galvanized	V 4 A, stainless steel
Weight	0,200 kg	0,200 kg

Flat nut M 8 separately available.
Order-No. 310 955

Flat nut M 8 E stainless
separately available.
Order-No. 312 545

Support Attachment for HK



Type	AH 1
Order-No.	310 400
Material	steel
Weight	0,460 kg

Bracket bar sections and hangers to be ordered separately..



S 2 ACCESSORIES

acid
proof

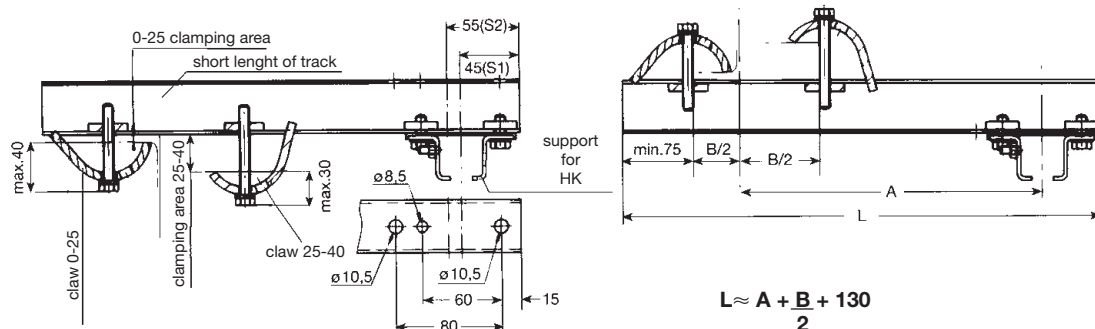
Stain-
less

Bracket Bars for HK heavy duty

The track sections are provided with drillings to fix the support hangers at the bottom flange of the track profile.

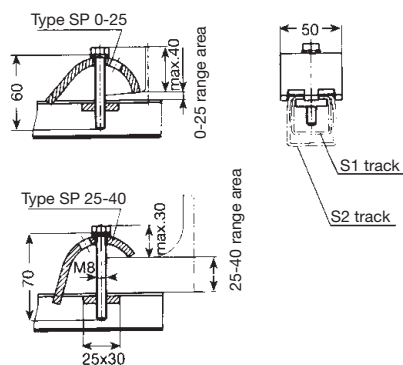
Type	Material	Weight kg	Dim. L mm	Order-No.	Type	Mat.	Order-No.
S 2- 400	steel galvanize	0,996	400	315 402	S 2E- 400	stainl. steel V 4 A	316 513
S 2- 500		1,245	500	315 403	S 2E- 500		316 514
S 2- 600		1,494	600	315 404	S 2E- 600		316 515
S 2- 700		1,743	700	315 405	S 2E- 700		316 516
S 2- 800		1,992	800	315 406	S 2E- 800		316 517
S 2- 900		2,241	900	315 407	S 2E- 900		316 518
S 2-1000		2,490	1000	315 408	S 2E-1000		316 519
S 2-1100		2,739	1100	315 409	S 2E-1100		316 520
S 2-1200		2,988	1200	315 410	S 2E-1200		316 521

General Assembly of Heavy Duty Bracket



Dimension A is based on the width of the current consumer (e.g. the trolley). Please consider the running wheel diameter (flange) of the chassis in overhead monorails.

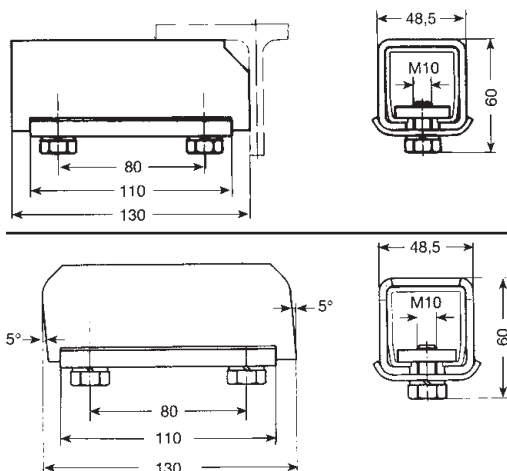
Claws for HK heavy duty



Type	SP 0-25	SP 0-25-E
Order-No.	312 643	316 690
Material	steel, galvanized	V 4 A, stainless steel
Weight	0,286 kg	0,286 kg

Type	SP 25-40	SP 25-40-E
Order-No.	312 644	316 695
Material	steel, galvanized	V 4 A, stainless steel
Weight	0,287 kg	0,287 kg

Support Attachment for HK heavy duty



Type	AH 2
Order-No.	310 989
Material	steel
Weight	0,940 kg

Type	AH 2-2
Order-No.	312 648
Material	steel
Weight	0,854 kg



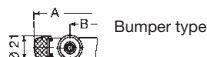
S2 CABLE CARRIERS AND ACCESSORIES – Steel type –



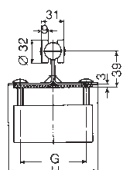
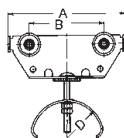
hex. nut version



quick-set nut version



Bumper type



Engineering Data

Type	WST 2 F (für Flachleitungen)	
Wheels	hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water – 2 metal sealings Temperature resistance Lub. Grease of wheels –30 °C to + 125 °C Travelling speed ca. 100 m/min.	Polyamid rollers on bushed bearings ca. 60 m/min.
Material	Carrier body: steel galvanized Support saddle galvanized steel Bumper: Neoprene Hardware galvanized Temperatur resistance: – 30 °C to + 100 °C	with patented nut support saddle Polyamid
Max. cable load	max. 28 kg per carrier	max. 12 kg per carrier
Depth of cable loop	not in curves	not in curves
for corrosive sites	use system S 2-E	

Cable carriers for flatform cables ⁽³⁾

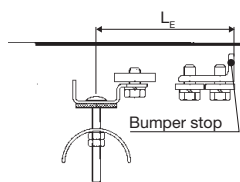
Type	max. thickn. of individual cable mm	max. clamping capacity in mm height x width	A	B	Ø D	G	H	Weight kg	with patented nut Order-No. ⁽²⁾	Order-No.	Type	with patented nut Order-No. ⁽²⁾	Order-No.
WST 2 F/ 85 ⁽¹⁾	8	17 x 65	85	43	50	85	85	0,460	316 493	316 170	WST 2 F/ 85 K ⁽¹⁾	317 008	317 018
WST 2 F/ 85 P		29 x 65	110					0,470	316 494	316 180	WST 2 F/ 85 KP	317 009	317 019
WST 2 F/125-50 ⁽¹⁾		37 x 65	125					0,560	316 495	315 381	WST 2 F/125-50 K ⁽¹⁾	317 010	317 020
WST 2 F/125-50 P	10	50 x 65	150	80	80	97	97	0,570	316 496	315 382	WST 2 F/125-50 KP	317 011	317 021
WST 2 F/125 ⁽¹⁾		22 x 65	125					0,630	316 497	316 190	WST 2 F/125 K ⁽¹⁾	317 012	317 022
WST 2 F/125 P		34 x 65	150					0,640	316 498	316 200	WST 2 F/125 KP	317 013	317 023
WST 2 F/150-50 ⁽¹⁾	8	50 x 65	150	50	71	85	85	0,590	316 499	315 383	WST 2 F/150-50 K ⁽¹⁾	317 014	317 024
WST 2 F/150-50 P		62 x 65	175					0,600	316 500	315 384	WST 2 F/150-50 KP	317 015	317 025
WST 2 F/150-80 ⁽¹⁾		35 x 65	150	105	80	85	85	0,660	316 501	315 385	WST 2 F/150-80 K ⁽¹⁾	317 016	317 026
WST 2 F/150-80 P	10	47 x 65	175					0,670	316 502	315 386	WST 2 F/150-80 KP	317 017	317 027
WST 2 F/150 ⁽¹⁾		25 x 65	150					0,700	316 210		WST 2 F/150 K ⁽¹⁾		317 028
WST 2 F/150 P	12	37 x 65	175	100	100	85	85	0,710	316 220		WST 2 F/150 KP		317 029
WST 2 F/200-100 ⁽¹⁾		50 x 65	200					0,800	316 576		WST 2 F/200-100 K ⁽¹⁾		317 030
WST 2 F/200-100 P		62 x 65	225					0,810	316 577		WST 2 F/200-100 KP		317 031

Lead Carriers for flatform cables

Type	for Carrier type	L _M	A mm	Weight kg	with patented Order-No. ⁽²⁾	Order-No.	Type	with patented Order-No. ⁽²⁾	Order-No.
MST 2 F/ 85 ⁽¹⁾	WST 2 F/ 85	43	85	0,830	316 503	316 230	MST 2 F/ 85 K ⁽¹⁾	317 032	317 042
MST 2 F/ 85 P	WST 2 F/ 85 P	55	110	0,840	316 504	316 240	MST 2 F/ 85 KP	317 033	317 043
MST 2 F/125-50 ⁽¹⁾	WST 2 F/125-50	63	125	0,940	316 505	315 389	MST 2 F/125-50 K ⁽¹⁾	317 034	317 044
MST 2 F/125-50 P	WST 2 F/125-50 P	75	150	0,950	316 506	315 390	MST 2 F/125-50 KP	317 035	317 045
MST 2 F/125 ⁽¹⁾	WST 2 F/125	63	125	1,010	316 507	316 250	MST 2 F/125 K ⁽¹⁾	317 036	317 046
MST 2 F/125 P	WST 2 F/125 P	75	150	1,020	316 508	316 260	MST 2 F/125 KP	317 037	317 047
MST 2 F/150-50 ⁽¹⁾	WST 2 F/150-50	75	150	0,960	316 509	315 391	MST 2 F/150-50 K ⁽¹⁾	317 038	317 048
MST 2 F/150-50 P	WST 2 F/150-50 P	88	175	0,970	316 510	315 392	MST 2 F/150-50 KP	317 039	317 049
MST 2 F/150-80 ⁽¹⁾	WST 2 F/150-80	75	150	1,030	316 511	315 393	MST 2 F/150-80 K ⁽¹⁾	317 040	317 050
MST 2 F/150-80 P	WST 2 F/150-80 P	88	175	1,040	316 512	315 394	MST 2 F/150-80 KP	317 041	317 051
MST 2 F/150 ⁽¹⁾	WST 2 F/150	75	150	1,070		316 270	MST 2 F/150 K ⁽¹⁾		317 052
MST 2 F/150 P	WST 2 F/150 P	88	175	1,080		316 280	MST 2 F/150 KP		317 053
MST 2 F/200-100 ⁽¹⁾	WST 2 F/200-100	100	200	1,170		316 578	MST 2 F/200-100 K ⁽¹⁾		317 054
MST 2 F/200-100 P	WST 2 F/200-100 P	113	225	1,180		316 579	MST 2 F/200-100 KP		317 055

Track clamps for flatform cables

Type	for Carrier type	L _E mm	Weight kg	with patented Order-No. ⁽²⁾	Best.-Nr.
EST 1-2 F/ 85	WST 2 F/ 85 (K) (P)	150	0,290	313 304	313 315
	WST 2 F/125-50 (K) (P)				
	WST 2 F/150-50 (K) (P)				
EST 1-2 F/125	WST 2 F/125 (K) (P)	150	0,370	313 308	313 316
	WST 2 F/150-80 (K) (P)				
EST 1-2 F/150	WST 2 F/150 (K) (P)	150	0,410		313 317
EST 1-2 F/100-2	WST 2 F/200-100 (K) (P)	190	0,410		313 318



Bumper stop PS 2-1 (PS 2-1 G, PS 2-1-E) to be ordered separately.

⁽¹⁾ w/o Bumper
⁽²⁾ with patented nut use suffix PM e. g. WST 2/F 85-PM.
⁽³⁾ cable carriers cannot be used if straw relief is required



S2 CABLE CARRIERS AND ACCESSORIES – Steel type–

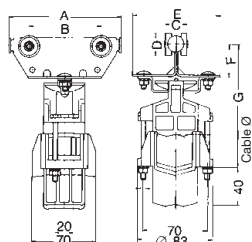


Engineering Data

Type	WST 2 R	
Wheels	hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water Temperature resistance Lub. Grease of wheels –30 °C to + 125 °C, Travelling speed ca. 100 m/min.	Kunststoffauflrollen mit Gleitlager ca. 60 m/min.
Material	Carrier body: steel galvanized Support saddle: Polyamid Bumper: Neoprene Hardware galvanized Temperatur resistance: – 30 °C to + 100 °C	
Max. cable load	max. 22 kg per carrier	max. 12 kg je Leitungswagen
Depth of cable loop	not in curves	not in curves
for corrosive sites	use system S 2-E	



Bumper type

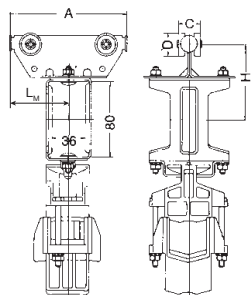


Cable carriers for round cable and hoses⁽²⁾

Type	Cable- Ø	A	B	C	D	E	F	G	Weight kg	Order- No.	Type	Order- No.
		mm										
WST 2 R/ 85 ⁽¹⁾	5 mm bis 38 mm	85	43	31	32	85	36	99	0,530	316 416	WST 2 R/ 85 K ⁽¹⁾	317 056
WST 2 R/ 85 P		110							0,550	316 417	WST 2 R/ 85 KP	317 057
WST 2 R/125 ⁽¹⁾		125	80	31	32	97	36	99	0,630	316 418	WST 2 R/125 K ⁽¹⁾	317 058
WST 2 R/125 P		150							0,650	316 419	WST 2 R/125 KP	317 059

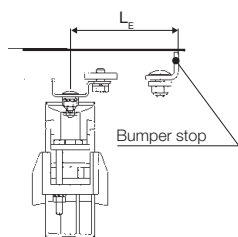
Lead carriers for round cables and hoses

Bumper type



Type	for Carrier type	A	C	D	H	Weight kg	Order- No.	Type	Order- No.
		mm							
MST 2 R/ 85 ⁽¹⁾	WST 2 R/ 85	85	31	32	80	0,890	316 420	MST 2 R/85 K ⁽¹⁾	317 060
MST 2 R/ 85 P	WST 2 R/ 85 P	110				0,910	316 421	MST 2 R/85 KP ⁽¹⁾	317 061
MST 2 R/125 ⁽¹⁾	WST 2 R/125	125				0,990	316 422	MST 2 R/125 K ⁽¹⁾	317 062
MST 2 R/125 P	WST 2 R/125 P	150				1,010	316 423	MST 2 R/125 KP ⁽¹⁾	317 063

Track clamp for round cables and hoses

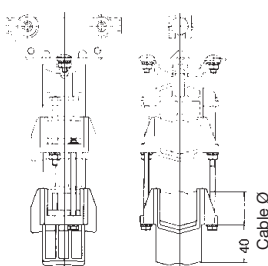


Type	for Carrier type	LE mm	Weight kg	Order- No.
EST 1-2 R	WST 2 R (all types)	140	0,338	313 321

Pufferanschlag PS 2-1 (PS 2-1 G) ist gesondert zu bestellen.

Support saddle for round cables and hoses

for additional tier



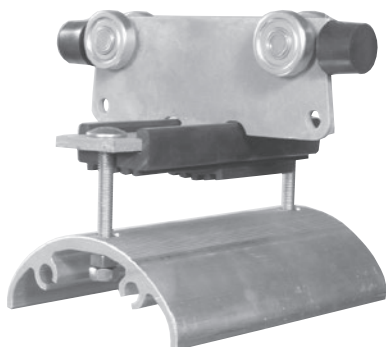
Type	for Carrier typ	Weight kg	Order- No.
LAR	WST 2 R (all types)	0,110	312 500

⁽¹⁾ w/o Bumper

⁽²⁾ cable carriers cannot be used if straw relief is required

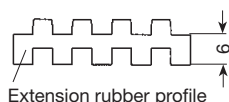
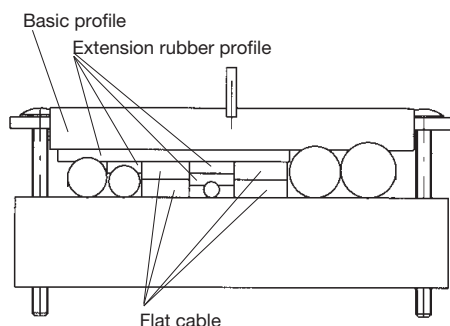
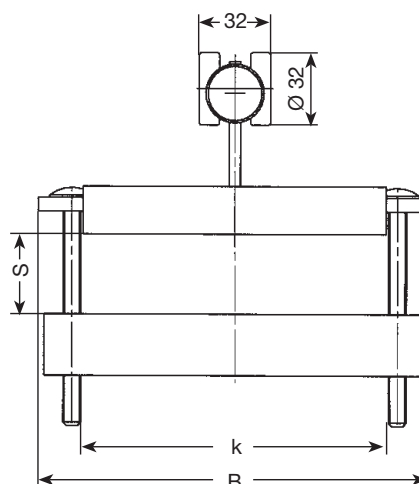
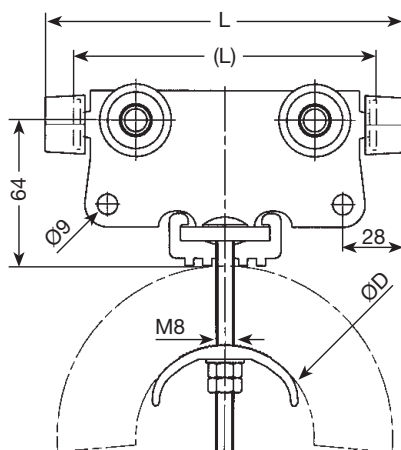


S2 CABLE CARRIERS AND ACCESSORIES – Steel type –



Engineering Data

Type	WST 2 FR
Wheels	hardened and galvanized steel rollers with precision ball bearing, sealed against dust and splash water – 2 metal sealings Temperature resistance Lub. Grease of wheels –30 °C to + 125 °C Travelling speed ca. 100 m/min. To be used with adequate tension relief ropes.
Material	Carrier body: steel galvanized Support saddle: aluminium Bumper: EPDM Hardware galvanized Temperatur resistance: – 30 °C to + 100 °C
Max. cable load	max. 35 kg per carrier
Depth of cable loop	in curves max. 0,3 x track radius, consider tension relief
for corrosive sites	use system WST 2 FR-E



Collecting clamp for round cables:
Extension rubber profile can be ordered per
meter (order no.: 348 845)



S2 CABLE CARRIERS AND ACCESSORIES – Steel type–



Cable carrier WST 2 FR:

Type	max. clamping capacity in mm height x width	L mm	(L) mm	B mm	D mm	Weight kg	Order- No.
WST 2 FR/125- 80 B175 P	18 x 130	125	–	175	80	1,09	316 895
WST 2 FR/125- 80 B225 P	18 x 180	125	–	225	80	1,22	316 896
WST 2 FR/135- 80 B175	22 x 130	–	135	175	80	1,17	316 897
WST 2 FR/135- 80 B225	22 x 180	–	135	225	80	1,30	316 898
WST 2 FR/160- 80 B175 P	35 x 130	160	–	175	80	1,17	316 899
WST 2 FR/160- 80 B225 P	35 x 180	160	–	225	80	1,30	316 900
WST 2 FR/160-100 B175 P	25 x 130	160	–	175	100	1,25	316 901
WST 2 FR/160-100 B225 P	25 x 180	160	–	225	100	1,42	316 902
WST 2 FR/175- 80 B175	42 x 130	–	175	175	80	1,27	316 903
WST 2 FR/175- 80 B225	42 x 180	–	175	225	80	1,40	316 904
WST 2 FR/175-100 B175	32 x 130	–	175	175	100	1,35	316 905
WST 2 FR/175-100 B225	32 x 180	–	175	225	100	1,52	316 906
WST 2 FR/200- 80 B175 P	55 x 130	200	–	175	80	1,27	316 907
WST 2 FR/200- 80 B225 P	55 x 180	200	–	225	80	1,40	316 908
WST 2 FR/200-100 B175 P	45 x 130	200	–	175	100	1,35	316 909
WST 2 FR/200-100 B225 P	45 x 180	200	–	225	100	1,52	316 910
WST 2 FR/200-140 B175 P	25 x 130	200	–	175	140	1,59	316 911
WST 2 FR/200-140 B225 P	25 x 180	200	–	225	140	1,83	316 912
WST 2 FR/225-100 B175	58 x 130	–	225	175	100	1,47	316 913
WST 2 FR/225-100 B225	58 x 180	–	225	225	100	1,64	316 914
WST 2 FR/225-140 B175	38 x 130	–	225	175	140	1,71	316 915
WST 2 FR/225-140 B225	38 x 180	–	225	225	140	1,95	316 916
WST 2 FR/225-170 B175	22 x 130	–	225	175	170	1,77	316 917
WST 2 FR/225-170 B225	22 x 180	–	225	225	170	2,02	316 918
WST 2 FR/250-100 B175 P	70 x 130	250	–	175	100	1,47	316 919
WST 2 FR/250-100 B225 P	70 x 180	250	–	225	100	1,64	316 920
WST 2 FR/250-140 B175 P	50 x 130	250	–	175	140	1,71	316 921
WST 2 FR/250-140 B225 P	50 x 180	250	–	225	140	1,95	316 922
WST 2 FR/250-170 B175 P	35 x 130	250	–	175	170	1,77	316 923
WST 2 FR/250-170 B225 P	35 x 180	250	–	225	170	2,02	316 924
WST 2 FR/250-200 B175 P	20 x 130	250	–	175	200	2,30	317 205
WST 2 FR/250-200 B225 P	20 x 180	250	–	225	200	2,60	317 206
WST 2 FR/265-140 B175	58 x 130	–	265	175	140	1,81	316 925
WST 2 FR/265-140 B225	58 x 180	–	265	225	140	2,05	316 926
WST 2 FR/265-170 B175	42 x 130	–	265	175	170	1,87	316 927
WST 2 FR/265-170 B225	42 x 180	–	265	225	170	2,12	316 928
WST 2 FR/265-200 B175	27 x 130	–	265	175	200	2,40	317 207
WST 2 FR/265-200 B225	27 x 180	–	265	225	200	2,70	317 208
WST 2 FR/290-140 B175 P	70 x 130	290	–	175	140	1,81	316 929
WST 2 FR/290-140 B225 P	70 x 180	290	–	225	140	2,05	316 930
WST 2 FR/290-170 B175 P	55 x 130	290	–	175	170	1,87	316 931
WST 2 FR/290-170 B225 P	55 x 180	290	–	225	170	2,12	316 932
WST 2 FR/290-200 B175 P	40 x 130	290	–	175	200	2,40	317 209
WST 2 FR/290-200 B225 P	40 x 180	290	–	225	200	2,70	317 210
WST 2 FR/300-170 B175	60 x 130	–	300	175	170	1,95	316 933
WST 2 FR/300-170 B225	60 x 180	–	300	225	170	2,20	316 934
WST 2 FR/300-200 B175	45 x 130	–	300	175	200	2,50	317 211
WST 2 FR/300-200 B225	45 x 180	–	300	225	200	2,80	317 212
WST 2 FR/300-230 B175	30 x 130	–	300	175	230	2,90	317 074
WST 2 FR/300-230 B225	30 x 180	–	300	225	230	3,40	317 075
WST 2 FR/325-170 B175 P	72 x 130	325	–	175	170	1,95	316 935
WST 2 FR/325-170 B225 P	72 x 180	325	–	225	170	2,20	316 936
WST 2 FR/325-200 B175 P	57 x 130	325	–	175	200	2,50	317 213
WST 2 FR/325-200 B225 P	57 x 180	325	–	225	200	2,80	317 214
WST 2 FR/325-230 B175 P	42 x 130	325	–	175	230	2,90	317 076
WST 2 FR/325-230 B225 P	42 x 180	325	–	225	230	3,40	317 077

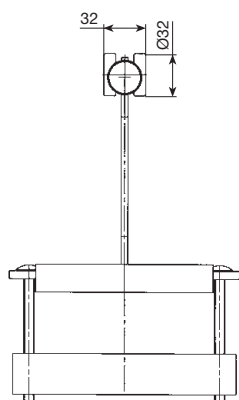
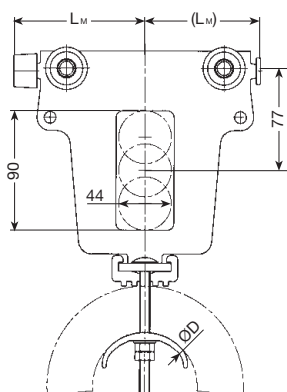


LEAD CARRIER

S 2 CABLE CARRIERS – Steel type –



Lead carriers MST 2 FR



Type	for Cable carrier	L _M mm	(L _M) mm	D mm	Weight kg	Order- No.
MST 2 FR/175- 80 B175	WST 2 FR/135- 80 B175 WST 2 FR/175- 80 B175	–	88	80	1,51	316 952
MST 2 FR/175- 80 B225	WST 2 FR/135- 80 B225 WST 2 FR/175- 80 B225	–	88	80	1,65	316 953
MST 2 FR/175-100 B175	WST 2 FR/175-100 B175	–	88	100	1,59	316 954
MST 2 FR/175-100 B225	WST 2 FR/175-100 B225	–	88	100	1,77	316 955
MST 2 FR/200- 80 B175 P	WST 2 FR/125- 80 B175 P WST 2 FR/160- 80 B175 P WST 2 FR/200- 80 B175 P	100	–	80	1,51	316 956
MST 2 FR/200- 80 B225 P	WST 2 FR/125- 80 B225 P WST 2 FR/160- 80 B225 P WST 2 FR/200- 80 B225 P	100	–	80	1,65	316 957
MST 2 FR/200-100 B175 P	WST 2 FR/160-100 B175 P WST 2 FR/200-100 B175 P	100	–	100	1,59	316 958
MST 2 FR/200-100 B225 P	WST 2 FR/160-100 B225 P WST 2 FR/200-100 B225 P	100	–	100	1,77	316 959
MST 2 FR/200-140 B175 P	WST 2 FR/200-140 B175 P	100	–	140	1,83	316 960
MST 2 FR/200-140 B225 P	WST 2 FR/200-140 B225 P	100	–	140	2,08	316 961
MST 2 FR/300-100 B175	WST 2 FR/225-100 B175	–	150	100	1,93	316 962
MST 2 FR/300-100 B225	WST 2 FR/225-100 B225	–	150	100	2,11	316 963
MST 2 FR/300-140 B175	WST 2 FR/225-140 B175 WST 2 FR/265-140 B175	–	150	140	2,17	316 964
MST 2 FR/300-140 B225	WST 2 FR/225-140 B225 WST 2 FR/265-140 B225	–	150	140	2,42	316 965
MST 2 FR/300-170 B175	WST 2 FR/225-170 B175 WST 2 FR/265-170 B175 WST 2 FR/300-170 B175	–	150	170	2,23	316 966
MST 2 FR/300-170 B225	WST 2 FR/225-170 B225 WST 2 FR/265-170 B225 WST 2 FR/300-170 B225	–	150	170	2,49	316 967
MST 2 FR/300-200 B175	WST 2 FR/265-200 B175 WST 2 FR/300-120 B175	–	150	200	2,73	317 217
MST 2 FR/300-200 B225	WST 2 FR/265-200 B225 WST 2 FR/300-200 B225	–	150	200	3,10	317 218
MST 2 FR/300-230 B175	WST 2 FR/300-230 B175	–	150	230	3,17	317 078
MST 2 FR/300-230 B225	WST 2 FR/300-230 B225	–	150	230	3,70	317 079
MST 2 FR/325-100 B175 P	WST 2 FR/250-100 B175 P	162	–	100	1,93	316 968
MST 2 FR/325-100 B225 P	WST 2 FR/250-100 B225 P	162	–	100	2,11	316 969
MST 2 FR/325-140 B175 P	WST 2 FR/250-140 B175 P WST 2 FR/290-140 B175 P	162	–	140	2,17	316 970
MST 2 FR/325-140 B225 P	WST 2 FR/250-140 B225 P WST 2 FR/290-140 B225 P	162	–	140	2,42	316 971
MST 2 FR/325-170 B175 P	WST 2 FR/250-170 B175 P WST 2 FR/290-170 B175 P WST 2 FR/325-170 B175 P	162	–	170	2,23	316 972
MST 2 FR/325-170 B225 P	WST 2 FR/250-170 B225 P WST 2 FR/290-170 B225 P WST 2 FR/325-170 B225 P	162	–	170	2,49	316 973
MST 2 FR/325-200 B175 P	WST 2 FR/250-200 B175 P WST 2 FR/290-200 B175 P WST 2 FR/325-200 B175 P	162	–	200	2,73	317 219
MST 2 FR/325-200 B225 P	WST 2 FR/250-200 B225 P WST 2 FR/290-200 B225 P WST 2 FR/325-200 B225 P	162	–	200	3,10	317 220
MST 2 FR/325-230 B175 P	WST 2 FR/325-230 B175 P	162	–	230	3,17	317 080
MST 2 FR/325-230 B225 P	WST 2 FR/325-230 B225 P	162	–	230	3,70	317 081



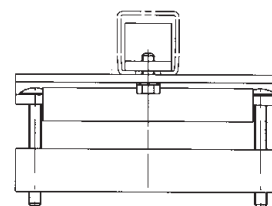
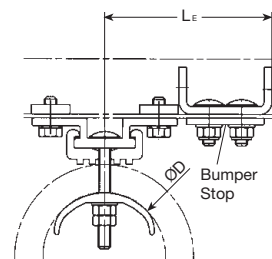
S 2 TRACK CLAMPS – Steel type –



Track clamps EST 2 FR

Bumper stop PS 2-1; PS 2-1 G to be ordered separately

Type	for Cable carrier	L _E mm	D mm	Weight kg	Order- No.
EST 2 FR/ 80 B175	WST 2 FR/125- 80 B175 P	165	80	0,78	316 986
	WST 2 FR/135- 80 B175	165			
	WST 2 FR/160- 80 B175 P	165			
	WST 2 FR/175- 80 B175	165			
	WST 2 FR/200- 80 B175P	165			
EST 2 FR/ 80 B225	WST 2 FR/125- 80 B225 P	165	80	0,92	316 987
	WST 2 FR/135- 80 B225	165			
	WST 2 FR/160- 80 B225 P	165			
	WST 2 FR/175- 80 B225	165			
	WST 2 FR/200- 80 B225 P	165			
EST 2 FR/100 B175	WST 2 FR/160-100 B175 P	165	100	0,86	316 988
	WST 2 FR/175-100 B175	165			
	WST 2 FR/200-100 B175P	165			
	WST 2 FR/225-100 B175	170			
	WST 2 FR/250-100 B175 P	180			
EST 2 FR/100 B225	WST 2 FR/160-100 B225 P	165	100	1,04	316 989
	WST 2 FR/175-100 B225	165			
	WST 2 FR/200-100 B225 P	165			
	WST 2 FR/225-100 B225	170			
	WST 2 FR/250-100 B225 P	180			
EST 2 FR/140 B175	WST 2 FR/200-140 B175 P	165	140	1,10	316 990
	WST 2 FR/225-140 B175	170			
	WST 2 FR/250-140 B175 P	180			
	WST 2 FR/265-140 B175	190			
	WST 2 FR/290-140 B175 P	200			
EST 2 FR/140 B225	WST 2 FR/200-140 B225 P	165	140	1,35	316 991
	WST 2 FR/225-140 B225	170			
	WST 2 FR/250-140 B225 P	180			
	WST 2 FR/265-140 B225	190			
	WST 2 FR/290-140 B225 P	200			
EST 2 FR/170 B175	WST 2 FR/225-170 B175	170	170	1,16	316 992
	WST 2 FR/250-170 B175 P	180			
	WST 2 FR/265-170 B175	190			
	WST 2 FR/290-170 B175 P	200			
	WST 2 FR/300-170 B175	205			
	WST 2 FR/325-170 B175 P	220			
EST 2 FR/170 B225	WST 2 FR/225-170 B225	170	170	1,42	316 993
	WST 2 FR/250-170 B225 P	180			
	WST 2 FR/265-170 B225	190			
	WST 2 FR/290-170 B225 P	200			
	WST 2 FR/300-170 B225	205			
	WST 2 FR/325-170 B225 P	220			
EST 2 FR/200 B175	WST 2 FR/250-200 B175 P	180	200	1,70	317 215
	WST 2 FR/265-200 B175	190			
	WST 2 FR/290-200 B175 P	200			
	WST 2 FR/300-200 B175	205			
	WST 2 FR/325-200 B175 P	220			
EST 2 FR/200 B225	WST 2 FR/250-200 B225 P	180	200	2,10	317 216
	WST 2 FR/265-200 B225	190			
	WST 2 FR/290-200 B225 P	200			
	WST 2 FR/300-200 B225	205			
	WST 2 FR/325-200 B225 P	220			
EST 2 FR/230 B175	WST 2 FR/300-230 B175 WST 2 FR/325-230 B175 P	205 220	230	2,10	317 082
EST 2 FR/230 B225	WST 2 FR/300-230 B225 WST 2 FR/325-230 B225 P	205 220	230	2,62	317 083



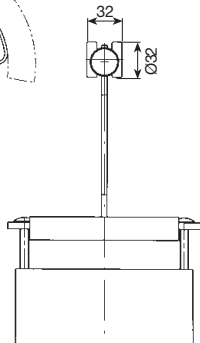
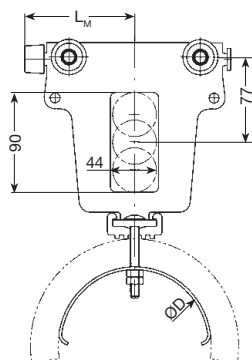
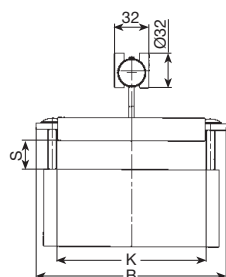
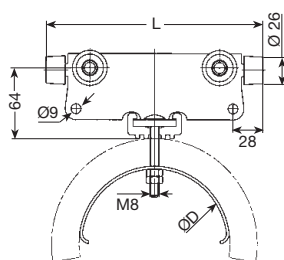


S2 CABLE CARRIERS AND ACCESSORIES

– Stainless steel type –

acid
proof

Stain-
less



Engineering Data

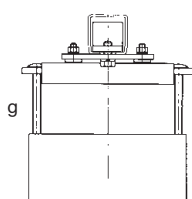
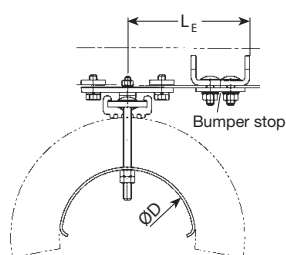
Type	WST 2 FR E
Wheels	Stainless steel rollers with precision ball bearing sealed against dust and splash water. Temperature resistance Lub. Grease of wheels –30 °C to + 125 °C Travelling speed ca. 100 m/min.
Material	Carrier body: V4A Support saddle: V4A Bumper: EPDM Hardware: V4A Temperatur resistance: – 30 °C to + 80 °C
Max. cable load	max. 20 kg er carrier

Cable carriers WST 2 FR E

Type	max. clamping capacity in mm height x width (s x k)	L mm	B mm	D mm	Weight kg	Order-No.
WST 2 FR/200-140 B175-E P	25 x 135	200	175	140	1,80	316 939
WST 2 FR/250-140 B175-E P	50 x 135	250	175	140	1,90	316 945
WST 2 FR/250-170 B175-E P	35 x 135	250	175	170	2,23	316 947

Lead Carriers MST 2 FR E

Type	for Carrier type	Lm mm	D mm	Weight kg	Order-No.
MST 2 FR/200-140 B175-E P	WST 2 FR/200-140 B175-E P	100	140	2,03	316 976
MST 2 FR/325-140 B175-E P	WST 2 FR/250-140 B175-E P	162	140	2,37	316 982
MST 2 FR/325-170 B175-E P	WST 2 FR/250-170 B175-E P	162	170	2,70	316 984



Track clamps EST 2 FR E

Bumper stop PS 2-1 E to be ordered separately.

Type	for Carrier type	LE mm	D mm	Weight kg	Order-No.
EST 2 FR/ 140 B175-E	WST 2 FR/200-140 B175-E P WST 2 FR/250-140 B175-E P	165 180	140	1,30	316 996
EST 2 FR/ 170 B175-E	WST 2 FR/250-170 B175-E P	180	170	1,62	316 998



S 2 CABLE CARRIERS AND ACCESSORIES

– Steel type –



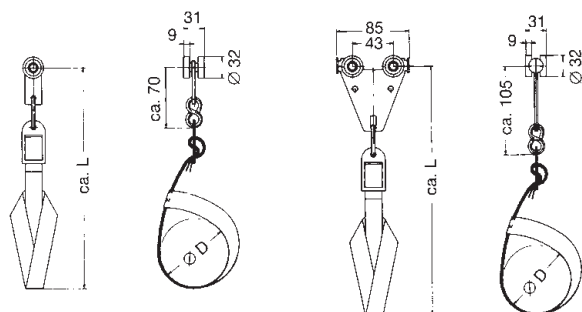
Engineering Data

Type	WR 2-Sch, WST 2-Sch	
Wheels	ball bearings sealed against dust and splash water – 2 metal sealings hardened, galvanized, Temperature resistance Lub. grease of wheels: – 30 °C to + 125 °C, Travelling speed: ca. 80 m/min.	Polyamid rollers on bushed bearings ca. 60 m/min.
Material	Carrier body: steel, galvanized S-Hook: steel, galvanized Cable-loop: Polyamid Hardware: galvanized Temperature resistance: – 30 °C to + 100 °C	
Max. cable load	max. 15 kg per carrier WR 2-Sch max. 30 kg per carrier WST 2-Sch	max. 6 kg p.c. WR 2-Sch-K max. 12 kg p.c. WST 2-Sch-K
for corrosive sites	use system S 2-E	

Cable Carriers for round cables and hoses

WR 2-Sch

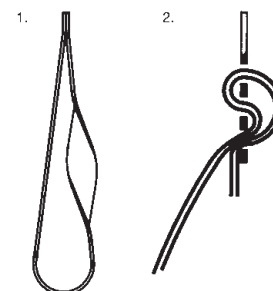
WST 2-Sch



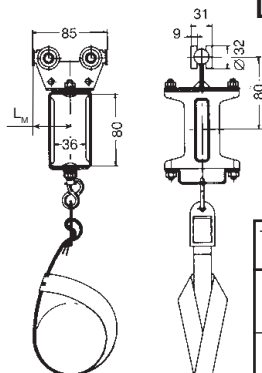
Type	Ø D mm	L mm	Weight kg	Order-No.	Type	Order-No.
WR 2-Sch/ 80	80	210	0,160	316 600	WR 2-Sch/ 80 K	317 064
WR 2-Sch/160	160	290	0,170	316 601	WR 2-Sch/160 K	317 065
WST 2-Sch/ 80	80	240	0,370	316 550	WST 2-Sch/ 80 K	317 066
WST 2-Sch/160	160	320	0,380	316 555	WST 2-Sch/160 K	317 067

Installation information:

1. prepare ribbon ends as shown
2. pull all ends thru flap.
3. form a loop
4. attach flap to S-hook

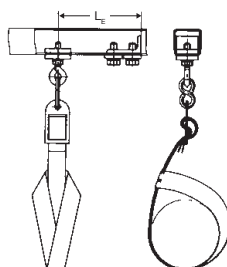


Lead Carriers for round cables and hoses



Type	for Carrier type	Weight kg	Order-No.	Type	Order-No.
MST 2-Sch/ 80	WR 2-Sch/ 80	0,780	316 556	MST 2-Sch/ 80 K	317 068
	WST 2-Sch/ 80				
MST 2-Sch/160	WR 2-Sch/160	0,790	316 557	MST 2-Sch/160 K	317 069
	WST 2-Sch/160				

Track Clamps for round cables and hoses



Bumper stop
PS 2-1 or PS 2-1 G
to be ordered
separately.

Type	for Carrier type	L _E mm	Weight kg	Order-No.
EST 1-2-Sch/ 80	WR 2-Sch/ 80	110	0,140	312 879
	WST 2-Sch/ 80			
EST 1-2-Sch/160	WR 2-Sch/160		0,150	312 880
	WST 2-Sch/160			



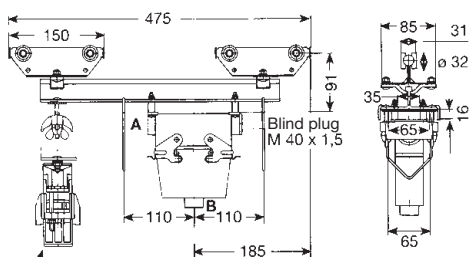
S 2 CONTROL CARRIERS AND BRAKE SPRING



acid
proof

Stain-
less

Control Carriers with multipole plug-in



Design for round cable clamp ST-ST 2 R

Type (1)	plug-in-device DIN 43652	Weight kg	Order- No.
ST-ST 2/16 M	16pole	2,300	317 144
ST-ST 2/24 M	24pole	2,500	317 143
Design for round cable clamp ST-ST 2 R			
ST-ST 2 R/16 M	16pole	2,400	317 146
ST-ST 2 R/24 M	24pole	2,600	317 145

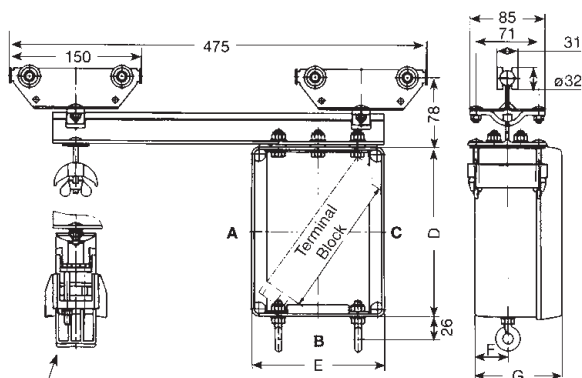
Design:

Carrier body: steel, galvanized Support bar: aluminium
Wheels: steel ball bearings Plug: cast iron

Cable glands for 16-poles for 24-poles
A-Side: Pg 29 A-Side: Pg 29
B-Side: Pg 21 B-Side: Pg 29

Max. cable load: 25 kg
Temperature resistance: - 30 °C to + 100 °C

Control Carriers without Brake



ST-ST 2 R saddle for round cable

Type (1)	D	E	F	G	Weight kg	Order-No.
	mm					
ST-ST 2/A 1	190	150	38	100	3,100	316 456
ST-ST 2/A 2	280	200	62	140	4,500	316 455
Design for round cable clamp ST-ST 2 R						
ST-ST 2 R/A 1	190	150	38	100	3,200	316 525
ST-ST 2 R/A 2	280	200	62	140	4,600	316 526

Design:

Carrier body: steel, galvanized Support bar: aluminium
Wheels: steel ball bearings Plug: PVC

Max. cable load: 25 kg
Temperature resistance: - 30 °C to + 100 °C

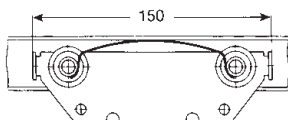
Attention: The connection box must be earthed with a protective earth conductor terminal Type EK 2.5 N PA!

ST-ST 2/A 1 ST-ST 2 R/A 1			ST-ST 2/A 2 ST-ST 2 R/A 2		
Cable glands	max. number A-Side	max. number B-Side	Cable glands	max. number A-Side	max. number B-Side
M 20 x 1,5	6	2	M 20 x 1,5	12	6
M 25 x 1,5	5	1	M 25 x 1,5	10	6
M 32 x 1,5	3	1	M 32 x 1,5	8	4
M 40 x 1,5	2	1	M 40 x 1,5	4	1
M 50 x 1,5	2	—	M 50 x 1,5	3	1
M 63 x 1,5	2	—	M 63 x 1,5	3	1

Max. length of Terminal Block A1 = 130 mm
A2 = 220 mm

Brake spring for Control Carrier ST - ST 2

The braking device can be installed as an option.



Type	Material	Weight kg	Order-No.
BF 2-2	stainless steel	0,010	316 466

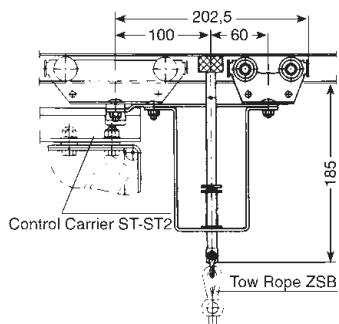


S 2 CONTROL CARRIER ACCESSORIES

acid
proof

Stain-
less

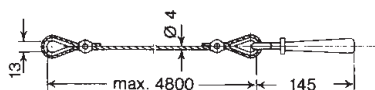
Brake for Control Carrier



Type	Weight kg	Order-No.
BS 2	1,840	316 458

Carrier body: steel, galvanized
Wheels: steel ball bearings

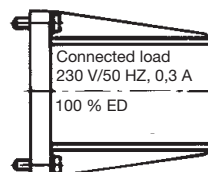
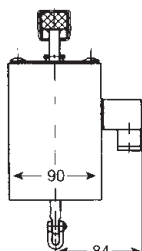
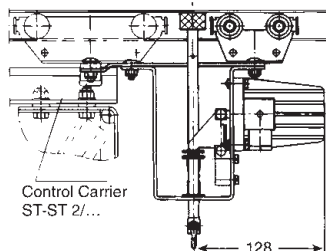
Tow Rope and Grip for Brake BS 2



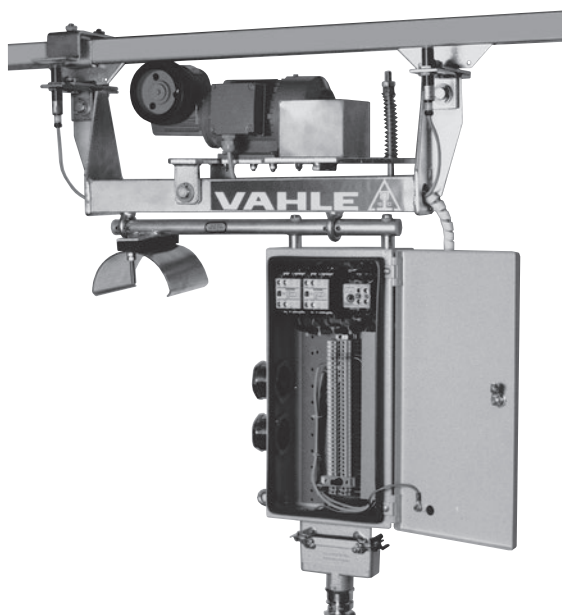
Type	Standard length- mm	Weight kg	Order-No.
ZSB	5000	0,250	310 850

Scope of supply: Grab handle, wire, 2 thimble, 2 cable clamps

Brake for Control Carrier with AC magnet (WM)



Type	Weight kg	Order-No.
BS 2-WM	3,000	316 457

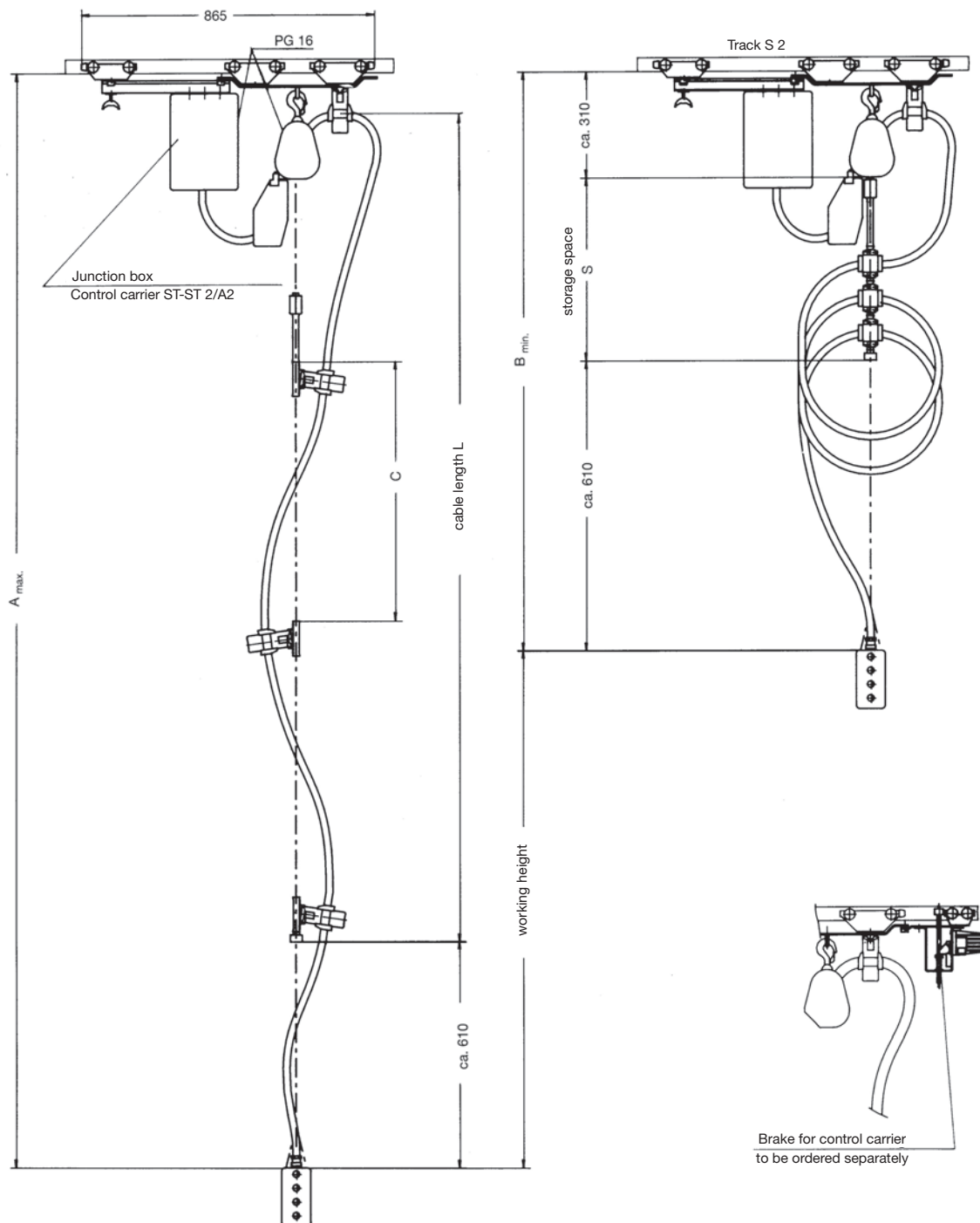


S 2 motor powered
control carrier



S 2 CONTROL CARRIERS

with motorized lifting device for pushbutton station



cable length L	= (H+S) x 1,05 (m)
attachment intervals	= $\frac{L}{n}$ (m)
storage distance S	= n x 0,1 m + 0,2 m (m)

- H = working height (m)
 A_{max.} = lowest position of pushbutton station (m)
 B_{min.} = highest position of pushbutton station (m)
 S = storage distance (m)
 L = length of cable without connecting ends (m)
 C = attachment intervals of cable loops (m)
 n = number of cable loops

Type ⁽¹⁾	Working height H (m)	A max. (m)	B min. (m)	Storage distance S (m)	Number of cable loops (n)	Permissible load cable and push button station	Weight ca. kg	Order-No.
ST 2-H 1,3	1,30	2,55	1,25	0,33	1	52,000	18,000	317 317
ST 2-H 2,6	2,60	3,95	1,35	0,43	2	51,500	18,500	317 316
ST 2-H 3,9	3,90	5,35	1,45	0,53	3	51,000	19,000	317 315
ST 2-H 5,2	5,20	6,75	1,55	0,63	4	50,500	19,500	317 314
ST 2-H 6,5	6,50	8,15	1,65	0,73	5	50,000	20,000	317 313
ST 2-H 7,8	7,80	9,55	1,75	0,83	6	49,500	20,500	317 312
ST 2-H 9,1	9,10	10,95	1,85	0,93	7	49,000	21,000	317 115
ST 2-H 10,4	10,40	12,35	1,95	1,03	8	48,500	21,500	317 311
ST 2-H 11,7	11,70	13,75	2,05	1,13	9	48,000	22,000	317 310
ST 2-H 13,0	13,00	15,15	2,15	1,23	10	47,500	22,500	317 309

⁽¹⁾ Control carriers S 2 tracks use fixpoint hangers only.

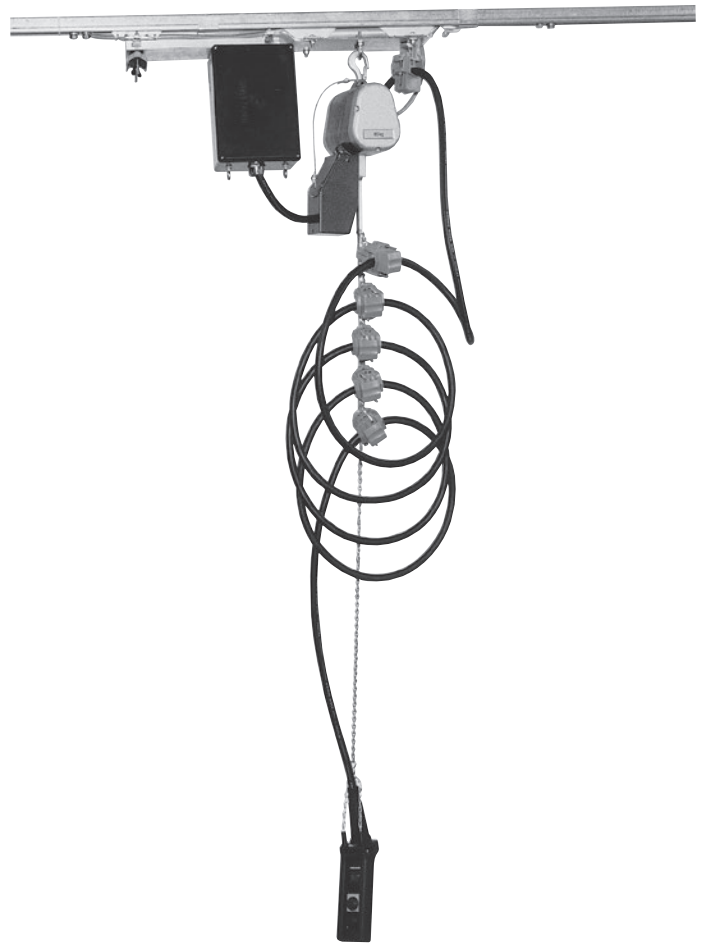
Cable glands and terminal clamps to be ordered separately (see cat. 8L). Control carriers with larger terminal box on request.



S 2 CONTROL CARRIERS

Installation and Electrical Connection

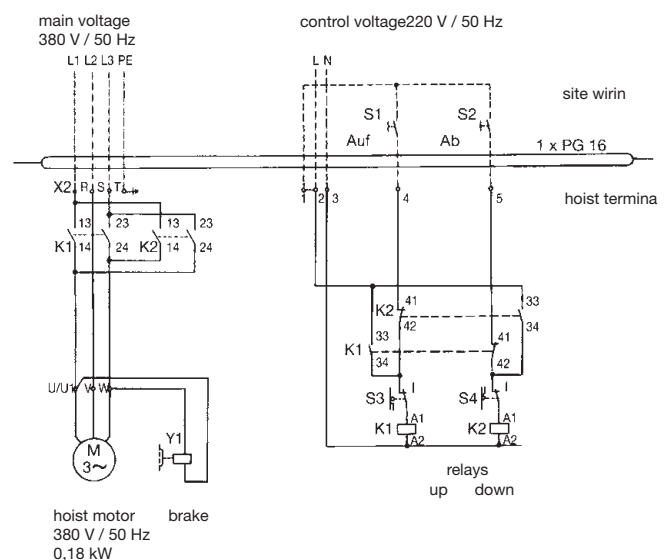
1. Install the track per installation information, using fixpoint hangers only. Support distance in accordance to the load by control carrier, cable and pushbutton station.
2. Install the cable, including min. 3 control conductors (min. 1 mm²) to operate the lifting device as shown in the adjacent picture with the pushbutton station in the upper position. We recommend to use rubber sheathed round cable with tension relief core.
3. Mark the cable length $L = (H+S) \times 1,05$ (connecting ends to the pushbutton station and to the junction box non considered) in dimension C attachment intervals of cable loops (n).
4. Start with the first cable attachment clamp above the pushbutton station and continue to install the cable to the further attachment clamps in spiral loops at dim. C intervals (consider your cable connection length to the pushbutton).
5. Guiding the cable via the upper clamp attached to the control carrier you now enter the junction box and connect your cable to the terminal blocks.
6. The junction box must in addition be provided for 8 terminal blocks and 1 ground for the electrical connection of the lifting device.
7. The connection between the hoist and the junction box must be achieved via an 8-core plus ground cable of min. 1 mm² and in accordance to the adjacent wiring diagram.
8. Incoming power 380 V, 50 Hz, to be connected at L1, L2, L3, and ground and the control voltage 220 V, 50 Hz to the terminal clamps no. 2 and 3.
9. Wires at terminal clamps 1, 4, 5 represent connection to the keys S 1 and S 2 (up/down) in the pushbutton station.
10. The function key S 2 (down) can also be installed in an other position, for example in the crane cabin. 2 control conductors are then necessary to be provided via the cable festoon system.



Commissioning and Adjustment of Limit Switch

11. The pushbutton station will lower automatically when pressing key S 2 (down).
12. The cable will form a spiral around the hoist chain and the pushbutton station will be rotating.
13. Once the pushbutton station has reached the lowest position the limit switch S 4 will switch off the hoist motor.
14. The 5% safety length guarantees a tension relief hanging down of the cable while the hoist chain is carrying the load of the pushbutton station. If this is not the case the limit switch in the chain box would have to be readjusted.
15. When pressing the function key S 1 (up) the pushbutton station will automatically move upward. Limit switch S 3 will switch off the movement.

Wiring diagram for motorized lifting device



main voltage:	380 V, 50 Hz
control voltage:	220 V, 50 Hz
-----:	site wiring to pushbutton station
S 1 and S 2:	key up/down, part of pushbutton station
S 3 and S 4:	limit switch up/down
K 1 and K 2:	relays up/down

For safety reasons and to completely secure the track joints we do recommend welding together the track and the joint clamps in the upper portion.

Track and hangers at both ends of the system to be horizontally drilled 9 mm Ø and a hex. bolt M 8 x 60 mm, with nut and washer, pushed through to prevent the track from sliding.

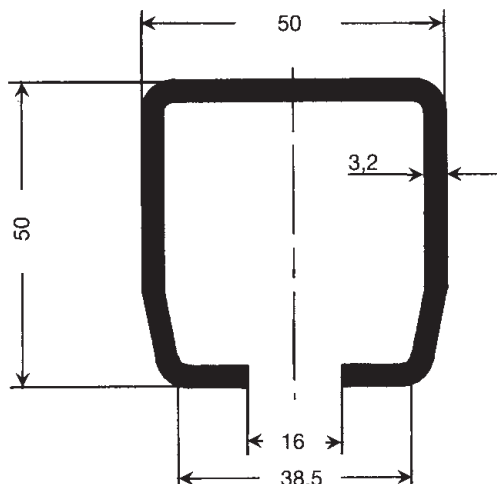


S 3 TRACK AND ACCESSORIES

acid
proof

Stain-
less

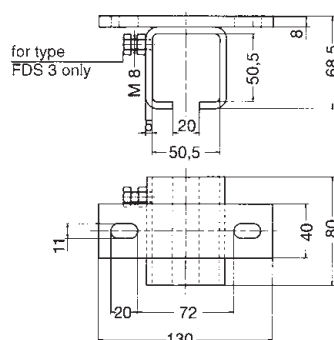
Track



Type	S 3	S3A-G
Order-No. -in 6 m sections	314 126	314 246
Order-No. -surcharge for curves		
for carrier type	WST 3	
Material	steel, galvanized	1.4571
Supply length	6 m	
Standard support spacing	as per page 47, in straight systems max. 3 m in curves 1,5 m	
Moment of inertia Jx	16,9 cm ⁴	
Section Modulus Wx	6,1 cm ³	
Weight	4,050 kg/m	

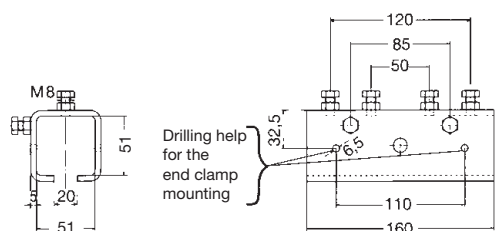
Curves are available on request.

Hangers underhung



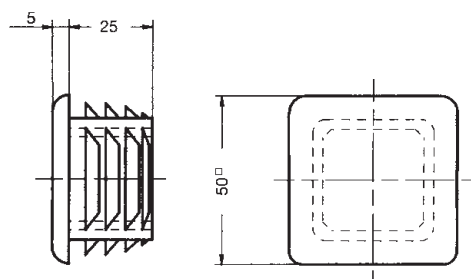
Type	Sliding hanger ADS 3	Fixpoint hanger FDS 3	Sliding hanger ADS 3-A2	Fixpoint hanger FDS 3-A2
Order-No.	314 014	314 013	314 283	314 284
Material	steel, galv.	steel, galv.	1.4301.	1.4301
Weight	0,920 kg	0,930 kg	0,920 kg	0,930 kg

Joint Clamp



Type	VS 3	VS 3-A2
Order-No.	314 008	314 285
Material	steel, galvanized	1.4301
Weight	1,250 kg	1,250 kg

End Cap



Type	KS 3
Order-No.	314 016
Material	polyethylene
Weight	0,020 kg

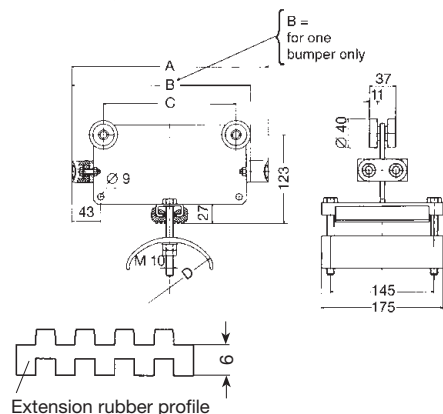


S 3 CABLE CARRIERS AND ACCESSORIES

– Steel type –



Cable Carriers for flatform cables



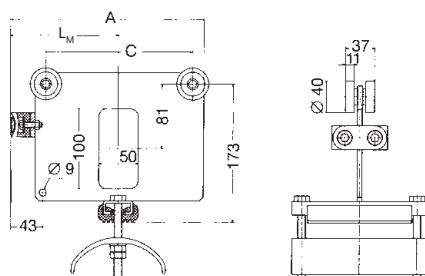
Assembly clamping of round clamping:
The extension profile can be ordered as piece goods
(see Page 26. (Order-No.: 348 845))

Engineering Data

Type	WST 3
Wheels	ball bearing sealed against dust and splash water, steel hardened, galvanized or with Polyurethane cover Temperature resistance Lub. grease of wheels: – 30 °C to + 125 °C Travelling speed: ca. 120 m/min.
Material	Carrier body: steel, galvanized Support saddle: light metal Bumper: Neoprene Hardware: galvanized Temperature resistance: – 30 °C to + 100 °C
Max. cable load	max. 55 kg per carrier
Depth of cable loop	for curves max. 0,3 x track radius; consider tension relief

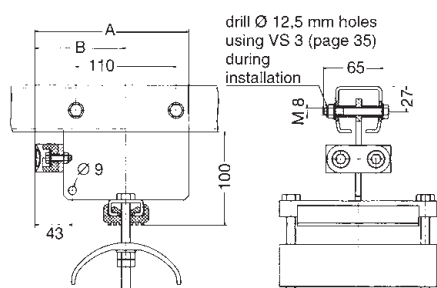
Type ⁽¹⁾	max. thicken. of individual cable mm	max. clamping capacity in mm height x width	A	B	C	D	Weight kg	Order-No.	Order-No. Polyurethane wheels
			mm						
WST 3 F/175-100	12	30 x 135		175	110	100	2,130	314 018	314 077
WST 3 F/200-100	12	45 x 135	200		110	100	2,240	314 019	314 078
WST 3 F/200-140	14	25 x 135	200		110	140	2,420	314 020	314 079
WST 3 F/250-140	14	50 x 135		250	185	140	2,750	314 021	314 080
WST 3 F/250-170	17	35 x 135		250	185	170	3,480	314 022	314 081
WST 3 F/250-200	20	20 x 135		250	185	200	3,600	314 023	314 082
WST 3 F/275-140	14	60 x 135	275		185	140	2,840	314 024	314 083
WST 3 F/275-170	17	45 x 135	275		185	170	3,570	314 025	314 084
WST 3 F/275-200	20	30 x 135	275		185	200	3,680	314 026	314 085
WST 3 F/325-170	17	70 x 135		325	260	170	3,870	314 027	314 086
WST 3 F/325-200	20	55 x 135		325	260	200	4,020	314 028	314 087
WST 3 F/325-230	23	40 x 135		325	260	230	4,240	314 029	314 088
WST 3 F/350-200	20	70 x 135	350		260	200	4,110	314 030	314 089
WST 3 F/350-230	23	55 x 135	350		260	230	4,330	314 031	314 090

Lead Carriers for flatform cables



Type ⁽¹⁾	for Carrier type	A	Lm	C	Weight kg	Order-No.	Order-No. Polyurethane-Wheels
		mm					
MST 3 F/275-100	WST 3 F/175-100 WST 3 F/200-100	244	138	185	2,720	314 032	314 091
MST 3 F/275-140	WST 3 F/200-140 WST 3 F/250-140 WST 3 F/275-140	244	138	185	2,930	314 033	314 092
MST 3 F/275-170	WST 3 F/250-170 WST 3 F/275-170	244	138	185	3,660	314 034	314 093
MST 3 F/275-200	WST 3 F/250-200 WST 3 F/275-200	244	138	185	3,770	314 035	314 094
MST 3 F/325-170	WST 3 F/325-170	319	175	260	4,220	314 036	314 095
MST 3 F/350-200	WST 3 F/325-200 WST 3 F/350-200	319	175	260	4,360	314 037	314 096
MST 3 F/350-230	WST 3 F/325-230 WST 3 F/350-230	319	175	260	4,580	314 038	314 097

Track Clamps for flatform cables



Type	for Carrier type	A	Le	Weight kg	Order-No.
		mm			
EST 3 F/200-100	WST 3 F/175-100 WST 3 F/200-100	169	100	1,800	314 039
EST 3 F/200-140	WST 3 F/200-140	169	100	1,970	314 040
EST 3 F/275-140	WST 3 F/250-140 WST 3 F/275-140	244	138	2,390	314 041
EST 3 F/275-170	WST 3 F/250-170 WST 3 F/275-170	244	138	3,120	314 042
EST 3 F/275-200	WST 3 F/250-200 WST 3 F/275-200	244	138	3,240	314 043
EST 3 F/325-170	WST 3 F/325-170	319	175	3,510	314 044
EST 3 F/350-200	WST 3 F/325-200 WST 3 F/350-200	319	175	3,660	314 045
EST 3 F/350-230	WST 3 F/325-230 WST 3 F/350-230	319	175	3,880	314 046

⁽¹⁾ Use suffix-V for Polyurethane wheels; e.g. WST 3 F/175-100-V for Order-No. 314 077.



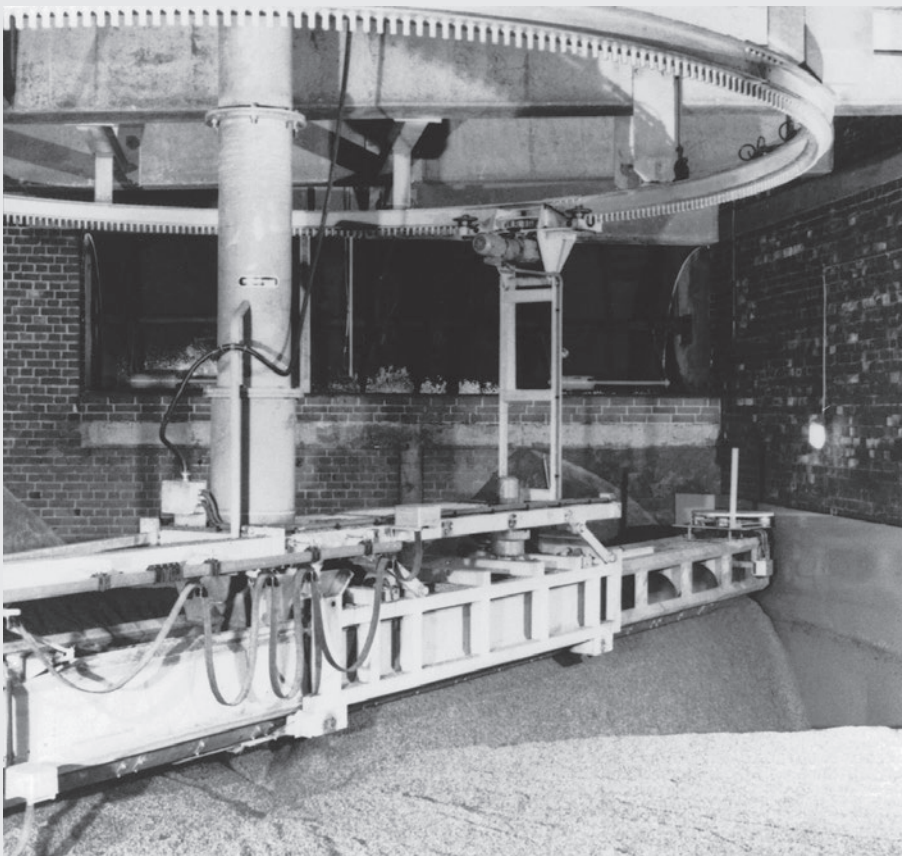
K 1 TRACK

**acid
proof**

**Stain-
less**

Extremely corrosive atmospheres (e. g. acid baths, galvanizing plants, sewage treatment plants, chemical plants etc.) require suitable materials.

The K1 track system, designed specifically for such applications, meets these special requirements.



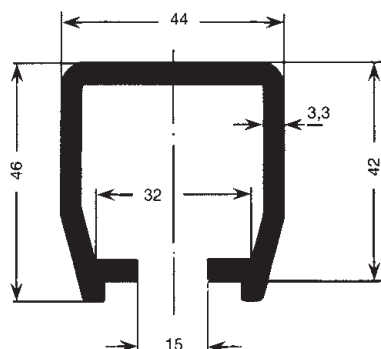
K 1 system in a malt factory



K 1 TRACK AND ACCESSORIES

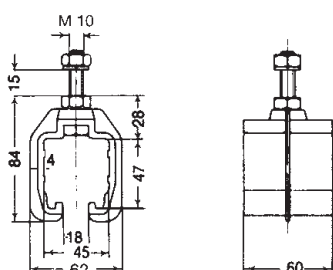
acid
proof

Stain-
less



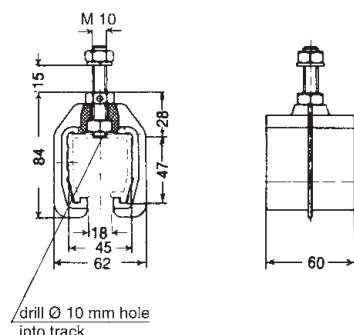
Tracks

Type	K1
Order-No. in 4 m sections	311 324
for Carriers type	SK 1 and WK 1
Material	Strong-PVC
Temperature resistance	- 30 °C to + 55 °C
Min. bending radius	1,5 m
Supply length	4 m
Standard support spacing	1 m, 0,5 m max. in curves
max. load	25 kg Support distance 1 m
Moment of inertia Jx	13,18 cm ⁴
Sections modulus Wx	5,18 cm ³
Weight	0,740 kg/m



Sliding Hanger

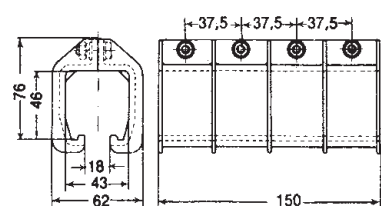
Type	GK 1
Order-No.	311 020
Material	Polyethylene Hardware: stainless steel
max. load	25 kg
Weight	0,110 kg



Fixpoint Hanger

Typ3	FK 1
Order-No.	311 030
Material	Polyethylene Hardware: stainless steel
max. load	25 kg
Weight	0,110 kg

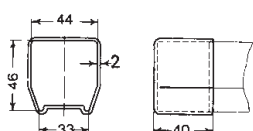
Every installation requires one fixpoint hanger only in the center of the run. With control carriers use one additional each end.



Joint Clamp

Type	VK 1
Order-No.	311 040
Material	Polyethylene Hardware: stainless steel
Weight	0,160 kg

End Cap



Type	K 1 E
Order-No.	312 170
Material	Polyethylene
Weight	0,010 kg



K 1 CABLE CARRIERS AND LEAD CARRIERS

acid
proof

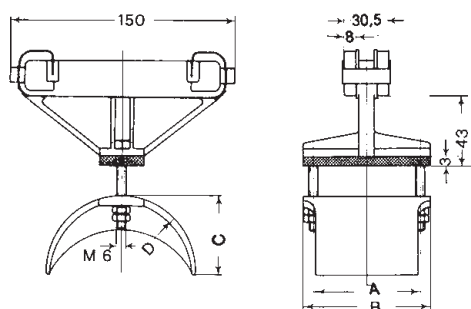
Stain-
less

Cable carrier – glider type -



Engineering Data – glider type

Type	SK 1 F
Max. system length	30 m
Material	Carrier body: HP-Polyethylene Support saddle: HP-Polyethylene Hardware: stainless steel Temperature resistance: - 30 °C to + 80 °C
Travelling speed	max. 50 m/min.
Max. load	max. 5 kg per glider

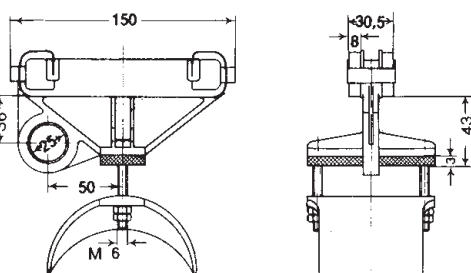


Cable Carrier – glider type – for flatform cable

Type	max. thickn. of individual cable mm	max. clamping capacity mm height x width	A	B	C	D	Weight kg	Order- No.
SK 1 F/150	12	25 x 65	71	85	52	100	0,210	311 050

Lead Carrier – glider type – for flatform cable

Type	for Glider type	Weight kg	Order- No.
MSK 1 F/150	SK 1 F/150	0,220	311 060



Cable Carrier – roller type –

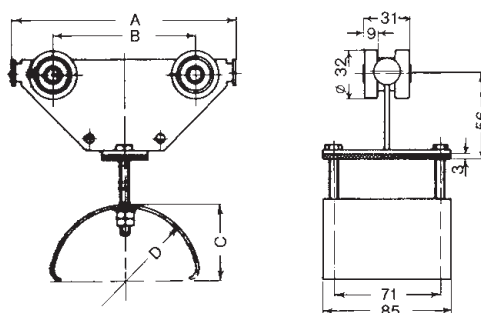


Engineering Data – roller type

Type	WK 1 F
Wheels	Polyethylene rollers on bushed bearings
Travelling Speed	max. 60 m/min.
Material	Carrier body: stainless steel Wheels: Polyethylene Support saddle: stainless steel Hardware: stainless steel Temperature resistance: - 30 °C to + 80 °C
Max. load	max. 10 kg per carrier
Loop depth	for curves max. 0,3 x track radius, consider tension relief

Cable Carrier – roller type – for flatform cable

Type	max. thickn. of individual cable mm	max. clamping capacity mm height x width	A	B	C	D	Weight kg	Order- No.
WK 1 F/100 n	8	25 x 65	100	55	25	50	0,420	311 210
WK 1 F/150 n	12	25 x 65	150	95	50	100	0,510	311 180

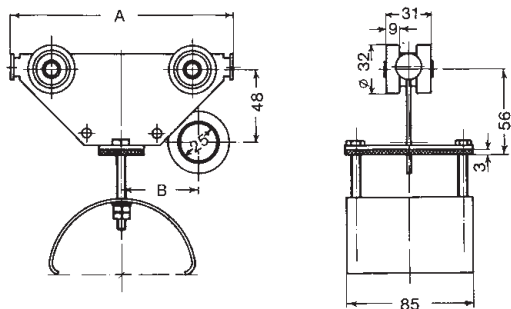




K 1 LEAD CARRIERS AND ACCESSORIES

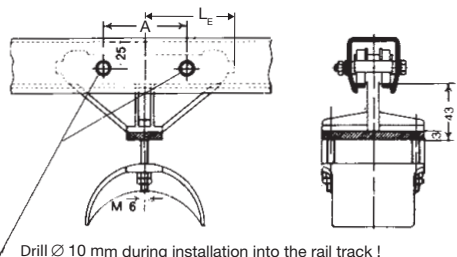
acid
proof

Stain-
less



Lead Carriers – roller type – for flatform cables

Type	for Carrier type	A	B	Weight kg	Order- No.
		mm			
MK 1 F/100 n	WK 1 F/100 n	100	45	0,450	311 220
MK 1 F/150 n	WK 1 F/150 n	150	55	0,540	311 190

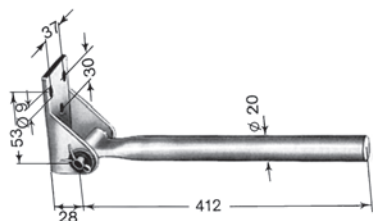


Track Clamps for flatform cables

LE = 125 mm with strain relief and stop

LE = 75 mm without strain relief

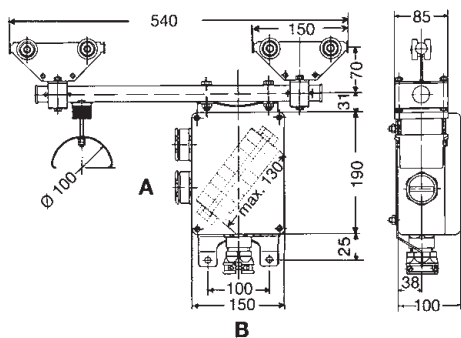
Type	for Glider and Carrier type	A mm	Weight kg	Order-No.
ESK 1 F/150	SK 1 F/150	70	0,220	311 070
EK 1 F/100 n	WK 1 F/100 n	55	0,370	311 230
EK 1 F/150 n	WK 1 F/150 n	95	0,500	311 200



Tow arm

Type	GKM	GKM/K
Material	steel, galvanized	stainless steel
Weight	0,620 kg	0,620 kg
Order-No.	260 350	261 560

Control Carrier

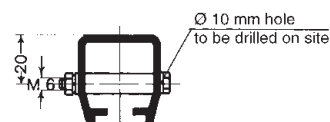


Type ⁽¹⁾	max. thickn. of individual cable mm	max. clamping capacity mm height x width	max. carrying capacity kg	Weight kg	Order-No.
ST-K 1	12	25 x 65	20	2,800	311 110

Cable glands and terminal clamps to be ordered separately (see cat. 8L).

Cable glands	max. number A-Side	max. number B-Side	Cable glands	max. number A-Side	max. number B-Side
M 20 x 1,5	6	2	M 40 x 1,5	2	1
M 25 x 1,5	5	2	M 50 x 1,5	2	1
M 32 x 1,5	3	1	M 63 x 1,5	-	-

Bumper stop



Type	PK 1
Material	PVC
Hardware	stainless steel
Weight	0,020 kg
Order-No.	311 170

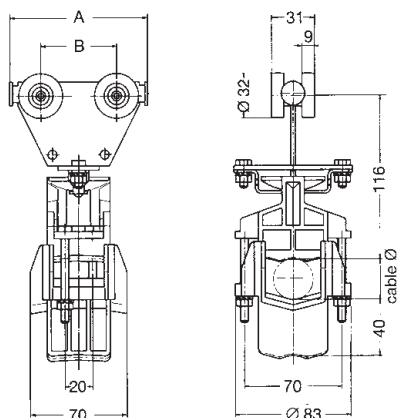
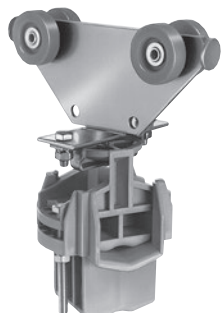
⁽¹⁾ Control Carrier tracks use one fixpoint hanger each in the center and at both ends of the run. The rest in sliding hangers.



K 1 CABLE CARRIERS AND ACCESSORIES – Steel swivel type –

acid
proof

Stain-
less

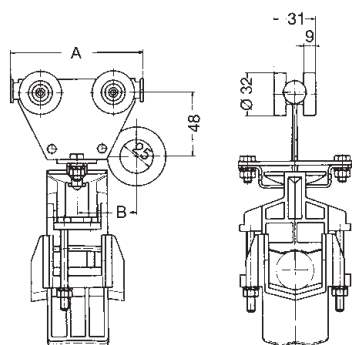


Engineering Data

Type	WK 1 R
Wheels	Polyethylene rollers on bushed bearings
Travelling speed	60 m/min.
Material	Carrier body: stainless steel Wheels: Polyethylene Support saddle: Polypropylene Hardware: stainless steel Temperature resistance: – 10 °C to + 80 °C
max. cable load	max. 10 kg per carrier
Depth of cable loop	for curves max. 0,3 x track radius, consider tension relief

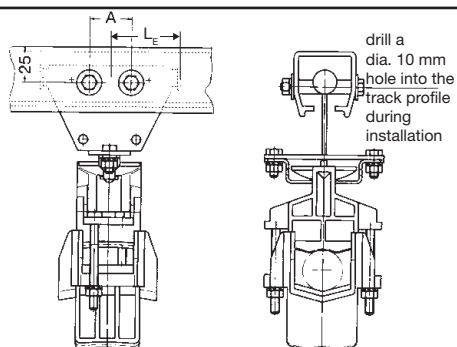
Cable Carriers for round cables and hoses

Type	Cable Ø	A mm	B mm	Weight kg	Order- No.
WK 1 R/100	5 mm to 38 mm	100	55	0,420	311 308
WK 1 R/150		150	95	0,470	311 309



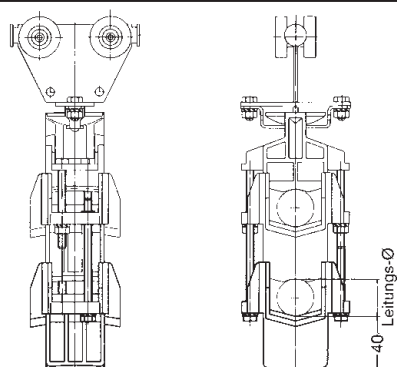
Lead Carriers for round cables and hoses

Type	for Carrier type	A mm	B mm	Weight kg	Order- No.
MK 1 R/100	WK 1 R/100	100	45	0,450	311 310
MK 1 R/150	WK 1 R/150	150	55	0,500	311 311



Track Clamps for round cables and hoses

Type	for Carrier type	L_E	A mm	Weight kg	Order- No.
EK 1 R/100	WK 1 R/100	50	55	0,370	311 312
EK 1 R/150	WK 1 R/150	75	95	0,420	311 313



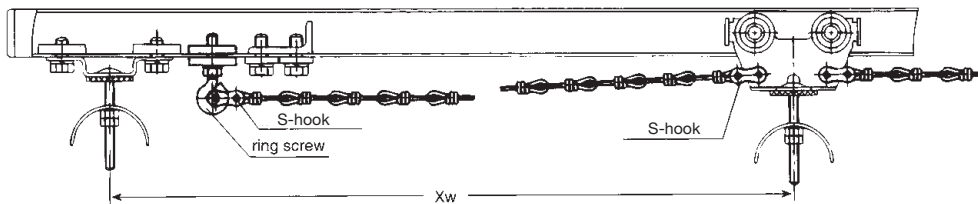
Support saddle for round cables and hoses for additional tiers

Type	for Carrier type	Weight kg	Order- No.
LAR-E	WK 1 R (all types)	0,110	312 532



TENSION RELIEF

Chains for WST 1 and WST 2 carriers



How to determine length of chain

Type	ZEK-K 20	ZEK-K 20 E
Order-No.	360 027	350 349
Material	steel	V4A
Wire-Ø mm	1,80	1,80
Link size mm	25	25
Protection	galvanized	-
Weight kg/m	0,007	0,007

$$X_w = \frac{S + SP}{n} \times 1,05$$

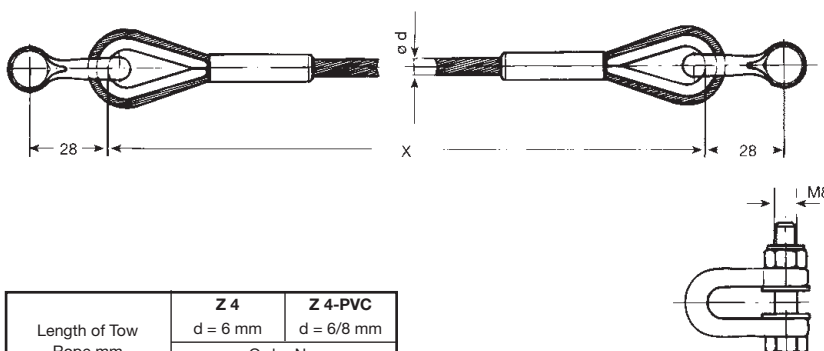
X_w = Distance c/c carriers with chain stretched mm
 S = Fahrweg in mm
 SP = Travel distance mm
 n = Number of loops

Accessories:

Each piece of chain requires: 2 S-hooks⁽¹⁾, Order-No. 360 390, stainless steel 360 391
 Each track clamp requires: 1 ring screw type RS 1-2, Order-No. 312 827, stainless steel 313 022

Steel Tow Ropes for WST 3 Carriers

Standard steel rope with fibreglass reinforcing
 Type Z 4 galvanized; Type Z 4 - PVC additionally PVC shrouded complete, cut to suit the application, incl. rope clamps, thimbles and shackles.



How to determine length of rope

$$X = \frac{S \cdot (f - 0,1) + Z}{n} + 2 Y$$

X = Length of tow rope mm
 S = Travel distance mm
 f = Cable safety factor (e.g. $\geq 1,15$)
 Z = Open space (min. 1 carrier) mm
 n = Number of loops
 Y = Projecting bumper mm (see table)

Length of Tow Rope mm	Z 4 d = 6 mm	Z 4-PVC d = 6/8 mm
	Order-No.	
up to 2000	346 372	346 383
2001- 3000	346 373	346 384
3001- 4000	346 374	346 385
4001- 5000	346 375	346 386
5001- 6000	346 376	346 387
6001- 7000	346 377	346 388
7001- 8000	346 378	346 389
8001- 9000	346 379	346 390
9001-10000	346 380	346 391
10001-11000	346 381	346 392
11001-12000	346 382	346 393

Please specify with your order:

Tow Rope: Type
 Length of tow rope X: mm
 Order-No.:

Bumper projection:

Carrier Type	Y in mm
WST 3 (1 bumper)	3
WST 3 (2 bumper)	15

⁽¹⁾ not suited for WST 2 F/85, WST 2 F/125, WST 2 F/150, WST 2 F/200-100, WST 2 R/85, WST 2 R/125.



TYPICAL APPLICATIONS AND HOW TO ORDER

– cables & fittings see cat. 8 L –

S 1 Track System (flat cable)

Application: Electric hoist, outdoors with separate supply system for pendant control

Current load:	11 kW
Voltage:	380 V, 50 Hz
Required control cable:	7 x 1,5 mm ²
Travel distance:	28 m
Perm. depth of loops:	1 m
Travel speed:	35 m/min

How to select the correct cable festoon system:

1. Take ampere load from cat. 8 L	22,5 A
2. Select suitable cables (cat. 8 L)	For main current: Neoprene flatform cable 4 x 2,5 mm ² , dimensions: 8,2 x 24 mm For control current: Neoprene flatform cable 8 x 1,5 mm ² , dimensions: 6,4 x 32 mm
3. Select cable carrier, see page 10	WS 1 F/85-PM
4. Cable safety length, see page 49	f = 1,1
5. Determine number of cable loops, diagram page 50	17
6. Determine storage distance, formula page 49 SP = 17 x 85 mm + 85 mm	= min. 1530 mm
7. Determine length of cable, formula page 49 L = (28 m + 1,53 m) x 1,1 = 32,48 m + 2 x 1 m hookup ends	= 35 m
8. Control carrier, see page 18	ST-ST 1/A1

Material to order:	Typ	Order-No.
2 x 30 m Track (10 lengths of 6 m)	S1	312 946
2 x 17 Fixpoint hangers ⁽¹⁾	FAS 1	310 500
2 x 17 Pair of Bolts	M 8 x 25	310 510
2 x 4 Joint clamps	VS 1	310 050
2 x 2 End caps	K 30	360 023
2 x 16 Cable carriers	WS 1 F/85-PM	312 689
1 Lead carrier	MS 1 F/85-PM	312 692
2 x 1 Track clamp	ES 1 F/85-PM	312 693
3 Bumper stops	PS 1-1	312 605
1 Control carrier	ST-ST 1/A1	312 695
c/w:		
7 Terminal clamps	SAK 2,5	330 800
1 Terminal clamp for ground	EK 2,5 NPA	331 283
1 End plate	APPA 2,5	331 278
2 End angles	EWK 1	331 288
A-Seite: 1 flat cable gland for 8 x 1,5 mm ²	M 50 x 1,5-1	332 552
1 counter nut	M 50 x 1,5	332 535
B-Seite: 1 round cable gland for 8 x 1,5 mm ²	M 25 x 1,5	332 539
1 counter nut	M 25 x 1,5	332 533
1 Brake spring	BF 1	310 860
2 flat cable glands for 4 x 2,5 mm ²	M 32 x 1,5-1	332 550
2 counter nut	M 32 x 1,5	332 534
1 flat cable gland for 8 x 1,5 mm ²	M 50 x 1,5-1	332 552
1 counter nut	M 50 x 1,5	332 535



TYPICAL APPLICATIONS AND HOW TO ORDER

– cables & fittings see cat. 8 L –

S 1 Track System (spiral looped round cable)

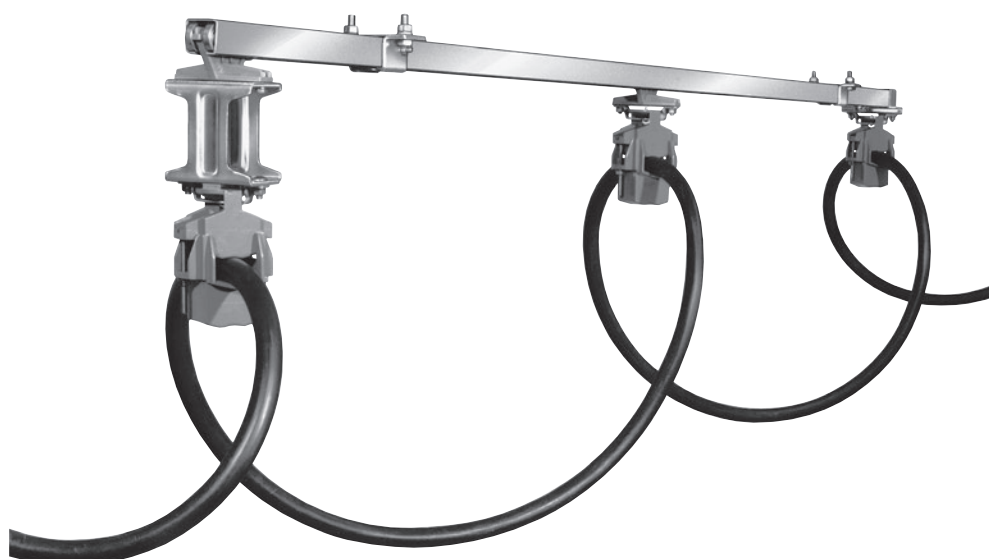
Application: Power supply to welding machine

Cable:	2 round cables Ø 25 mm 1 hose Ø 22 mm
Travel distance::	42 m
Perm. depth of loops::	1,7 m
Travel speed:	max. 30 m/min

How to select the correct cable festoon system:

1. Selection of carriers, see page 15	WST 1 R/125
2. Additional support saddles, see page 15	LAR
3. Cable safety length, see page 49	f = 1,2
4. Determine number of cable loops, diagram page 52	15
5. Determine storage distance, formula page 49 SP = 15 x 125 mm + 125 mm	= min. 2000 mm
6. Determine length of cable/hose, formula page 49 L = (42 m + 2 m) x 1,2 = 52,8 m + 2 x 3 m hookup ends	= 59 m

Material to order:	Type	Order-No.
45 m Track (7 lengths of 6 m, 1 length of 3 m)	S 1, 6 m	312 956
	S 1, 3 m	312 953
2 Fixpoint hangers ⁽¹⁾	FDS 1	310 430
22 Sliding hangers ⁽¹⁾	ADS 1	310 370
7 Joint clamps	VS 1	310 050
2 End caps	K 30	360 023
14 Cable carriers	WST 1 R/125	312 493
1 Lead carrier	MST 1 R/125	312 497
1 Track clamp	EST 1 R	312 498
32 Support saddles	LAR	312 500
1 Bumper stop	PS 1	310 300



⁽¹⁾ Consider permissible track area load (see diagram page 48).



TYPICAL APPLICATIONS AND HOW TO ORDER

– cables & fittings see cat. 8 L –

S 2 Track System (flat cables)

Application: Current supply system for crane trolley indoors

Cables:	2 flatform 4 x 16 mm ² 4 flatform 12 x 2,5 mm ²
Travel distance:	35 m
Perm. depth of loops:	1,8 m
Travel speed	80 m/min

How to select the correct cable festoon system:

1. Select cable carrier, see page 27	WST 2 FR/200-140 B175P
2. Cable safety length, see page 49	f = 1,15
3. Determine number of cable loops, diagram page 51	12
4. Determine storage distance, formula page 49 SP = 12 x 200 mm + 200 mm	= min. 2600 mm ⁽³⁾
5. Determine length of cable, formula page 49 L = (35 m + 2,6 m) x 1,15 = 43,24 m + 2 x 4 m hookup ends	= 52 m

Material to order:	Typ	Order-No.
38 m Track (6 x 6 m, 1 x 2 m) (incl. 2 x 200 m track reserve)	S 2, 6 m	312 636
	S 2, 2 m	312 632
2 Fixpoint hangers ⁽¹⁾	FDS 2	315 210
24 Sliding hangers ⁽¹⁾	ADS 2	315 200
6 Joint clamps	VS 2	315 050
2 End caps	K 40	316 449
11 Cable carriers	WST 2 FR/200-140 B175P	316 911
1 Lead carrier	MST 2 FR/200-140 B175P	316 960
1 Track clamp	EST 2 FR/140 B175	316 990
1 Bumper stop	PS 2-1 G	317 001
2 x 52 m PVC-flatform cable (N)	H07 VV H6-F 4 G 16	331 362
4 x 52 m PVC-flatform cable (N)	H07 VV H6-F 12 G 2,5	331 358
4 Flat cable glands for 4 x 16 mm ²	M 50 x 1,5-2	332 553
4 Counter nuts	M 50 x 1,5	332 535
8 Flat cable glands for 12 x 2,5 mm ²	M 63 x 1,5-1	332 554
8 Counter nuts	M 63 x 1,5	332 542

K1 Track System (flat cables)

Application: Current supply system for a malt factory (high humidity)

Cables:	1 flatform 4 x 10 mm ² 3 flatform 8 x 1,5 mm ²
Travel distance:	50 m
Perm. depth of loops:	1 m
Travel speed:	20 m/min

How to select the correct cable festoon system:

1. Select cable carrier, see page 40	WK 1 F/150 n
2. Cable safety length, see page 49	f = 1,1
3. Determine number of cable loops, diagram page 50	29
4. Determine storage distance, formula page 49 SP = 29 x 150 mm + 150 mm	= min. 4,5 m
5. Determine length of cable, formula page 49 L = (50 m + 4,5 m) x 1,1 = 59,95 m + 2 x 2 m connection ends	= 64 m

Material to order:	Typ	Order-No.
55 m Track (13 x 4 m, 1 x 3 m) (incl. 2 x 200 m track reserve)	K 1, 4 m	311 324
	K 1, 3 m	311 323
13 Joint clamps	VK 1	311 040
59 Sliding hangers ⁽²⁾	GK 1	311 020
1 Fixpoint hanger ⁽²⁾	FK 1	311 030
2 End caps	K 1 E	312 170
28 Cable carriers	WK 1 F/150 n	311 180
1 Lead carrier	MK 1 F/150 n	311 190
1 Tow arm	GKM/K	311 301
1 Track clamp	EK 1 F/150 n	311 200
64 m PVC-flatform cable (N)	H07 VV H2-F 4 G 10	331 361
3 x 64 m PVC-flatform cable (N)	H07 VV H2-F 8 G 1,5	331 354

⁽¹⁾ Consider permissible track area load (see diagram page 48).

⁽²⁾ Permissible load (25 kg) of hangers to be considered.

⁽³⁾ Track reserve 2 x 200 mm



SYSTEM LAYOUT

Engineering Data

Cable Specification

Travel distance	S =	m	Number of cables	Cable type	Dimension mm	Weight kg/m	Total weight kg/m
Travel speed	V =	m/min					
Acceleration	a =	m/s ²					
Loop depth	h =	m					
Storage distance	SP =	m					
Open space	Z =	m					
Cable safety factor	f =						
Number of loops	n =						
Cable carrier	Typ						
Length of carrier	l =	m					
Diameter of support saddle	D =	m					
Weight of carrier	Gw =	kg					
Track	Typ						
Weight of track	Gs =	kg/m	Total Weight of all cables per meter GL =				

Layout of the system

1. Number of loops (see diagram or formula) (At Z = 0)

$n = \frac{f \times S}{2h - f \times l + 1,254 D}$	$= \frac{x}{2x - \frac{x}{x} + 1,254 x}$	=		determined
--	--	---	--	------------

2. Loop depth (see diagram or formula)

$h = \frac{f}{2} \left(\frac{S}{n} + l \right) - 0,627 \times D$	$= \frac{\quad}{2} \left(\frac{\quad}{\quad} + \quad \right) - 0,627 \times \quad$	=		m
---	---	---	--	---

3. Storage distance (center track clamp to center lead carrier)

$SP = n \times l + Z$	=	x	+	=		m
-----------------------	---	---	---	---	--	---

4. Cable length

Cable length w/o hookup endsen $L = (S + SP) \times f$	=	(	+	) x	=		m
Hookup length – track clamp side					LE	=	m
Hookup length – lead carrier side					LM	=	m
Total cable length					L ges.	=	m

5. Cable weight per carrier

$GLW = \frac{L}{n} \times GL$	=		x	=		kg
-------------------------------	---	--	---	---	--	----

6. Load on track per meter

$GM = \frac{GLW + GW}{l} + Gs$	=		+	=		kg/m
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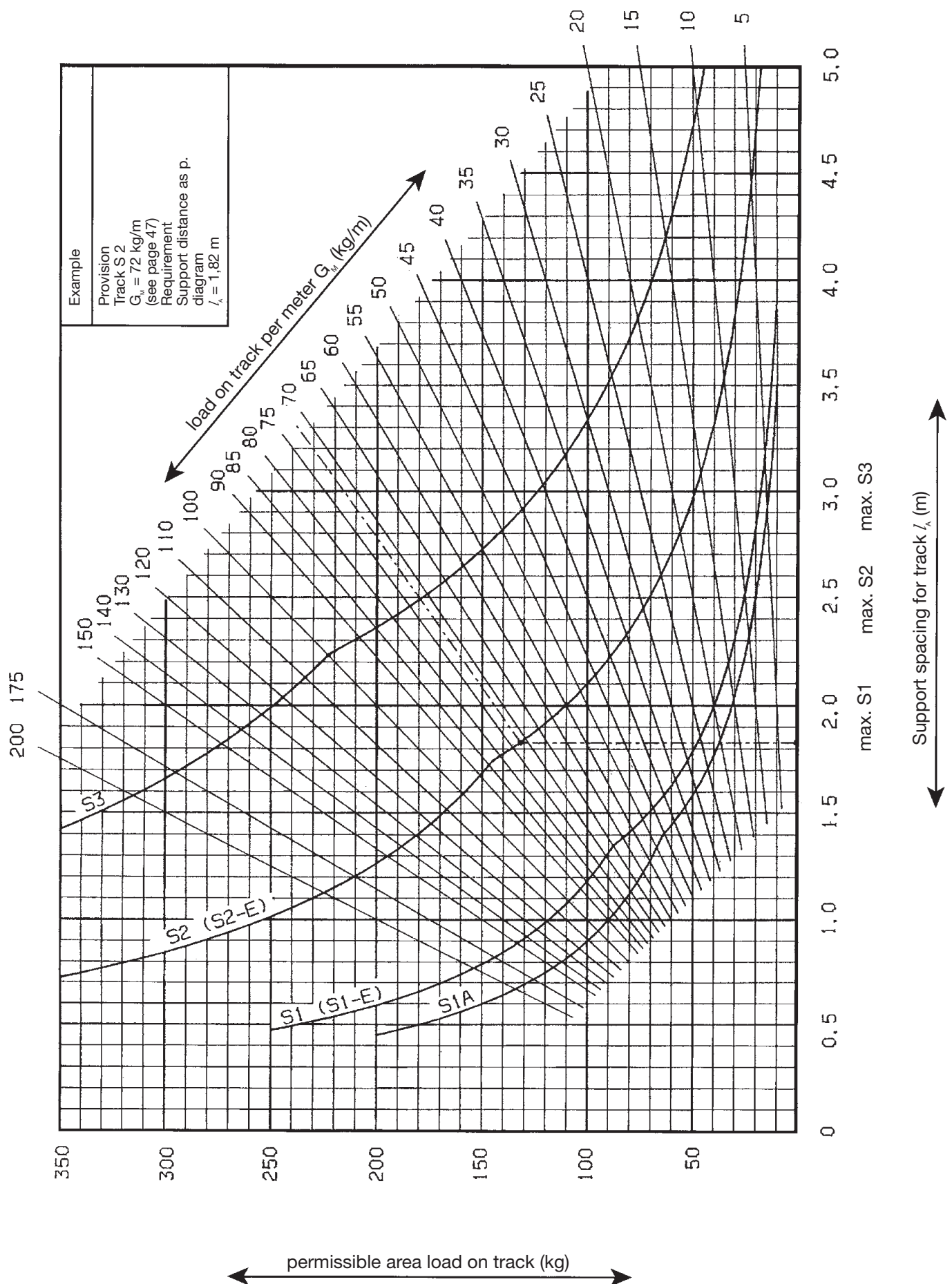
7. Support spacing for track

see diagram page 48	Support spacing / A	=		m
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SUPPORT SPACING FOR BOX TRACKS

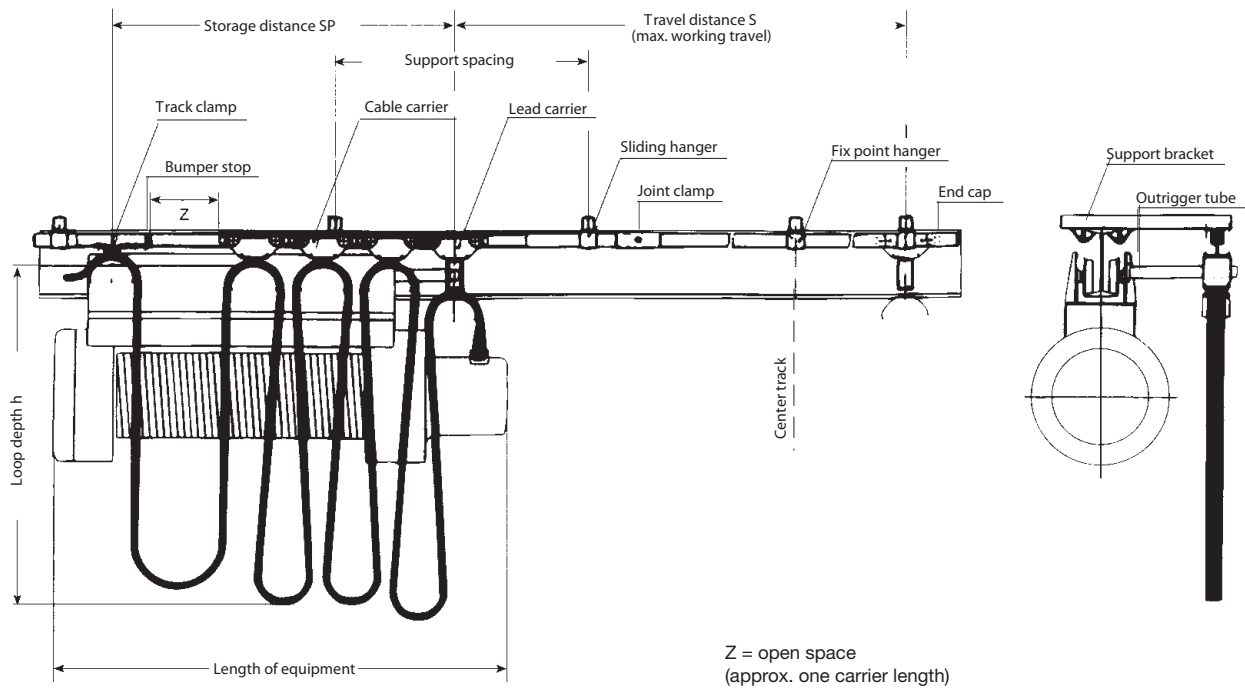
S 1 A – S 1 – S 1 E – S 2 – S 2 E – S 3





HOW TO DETERMINE

Number and Depth of Loops, Storage Distance, Cable Length, Number of Carriers



Cable Safety Length Directions

Travel Speed	cable loop depth	safety factor
up to 35 m/min	more than 0,3 m	f = 1,1
up to 50 m/min	up to 0,8 m	f = 1,15
up to 50 m/min	more than 0,8 m	f = 1,1
up to 80 m/min	up to 0,8 m	f = 1,2
up to 80 m/min	more than 0,8 m	f = 1,15
for spiral looped round cable		f = 1,2

For higher speed factors please consult factory.

Number of loops

$$n = \frac{f \times S}{2h - f \times l + 1,254 D}$$

Cable loop depth

$$h = \frac{f}{2} \left(\frac{S}{n} + l \right) - 0,627 \times D$$

Storage distance

$$SP = n \times l + Z$$

Cable length

(c/c track clamp – lead carrier without hookup ends)

$$L = (S + SP) \times f$$

Number of Carriers

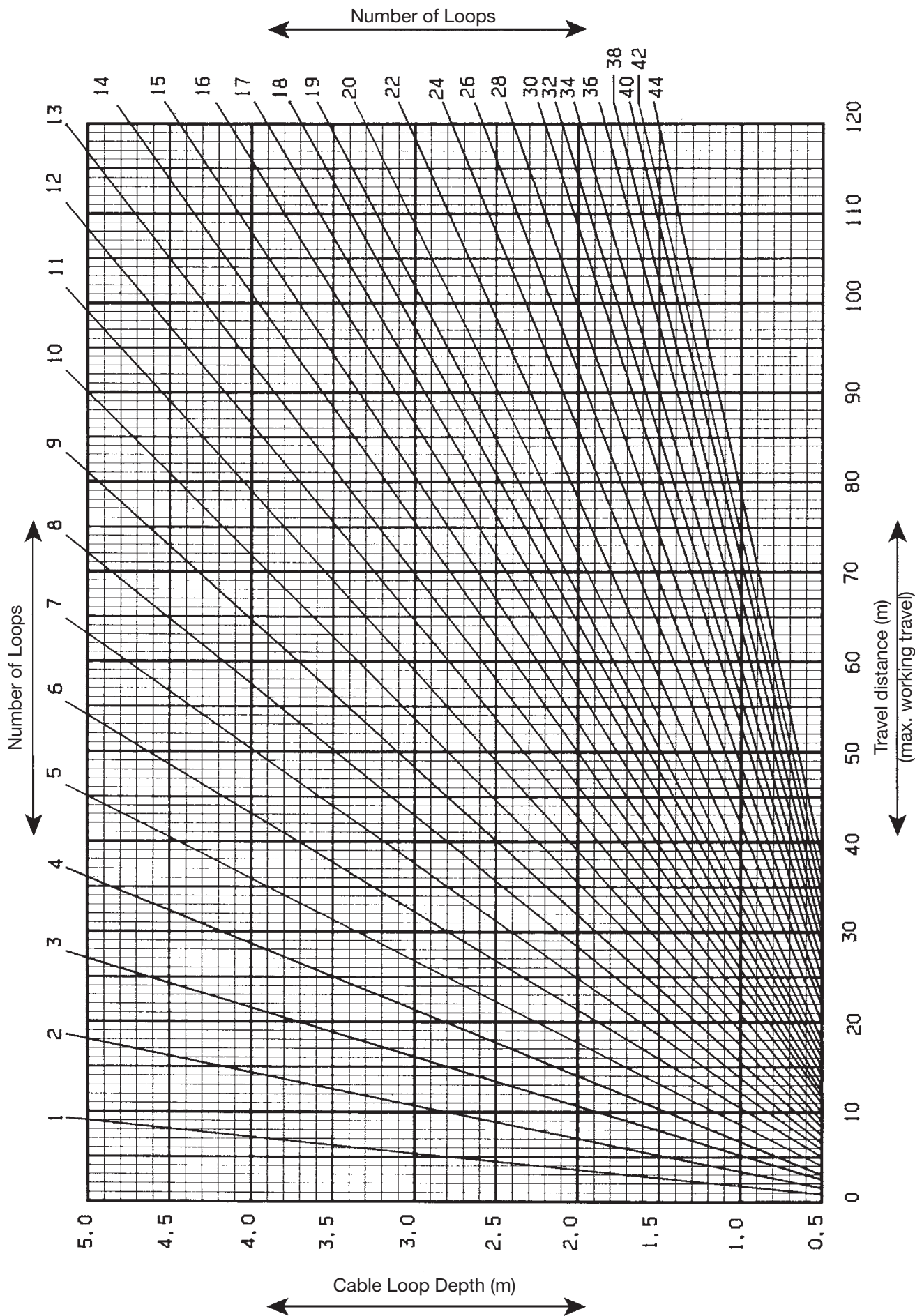
(without lead carrier and track clamp)

$$= n - 1$$

- S = Travel distance (m)
- h = Cable loop depth (m)
- SP = Storage distance (m)
- Z = Open space
(min. one carrier length)
- n = Number of loops
- l = Length of carrier (m)
- D = Diameter of
support saddle (m)
- f = Cable length safety factor



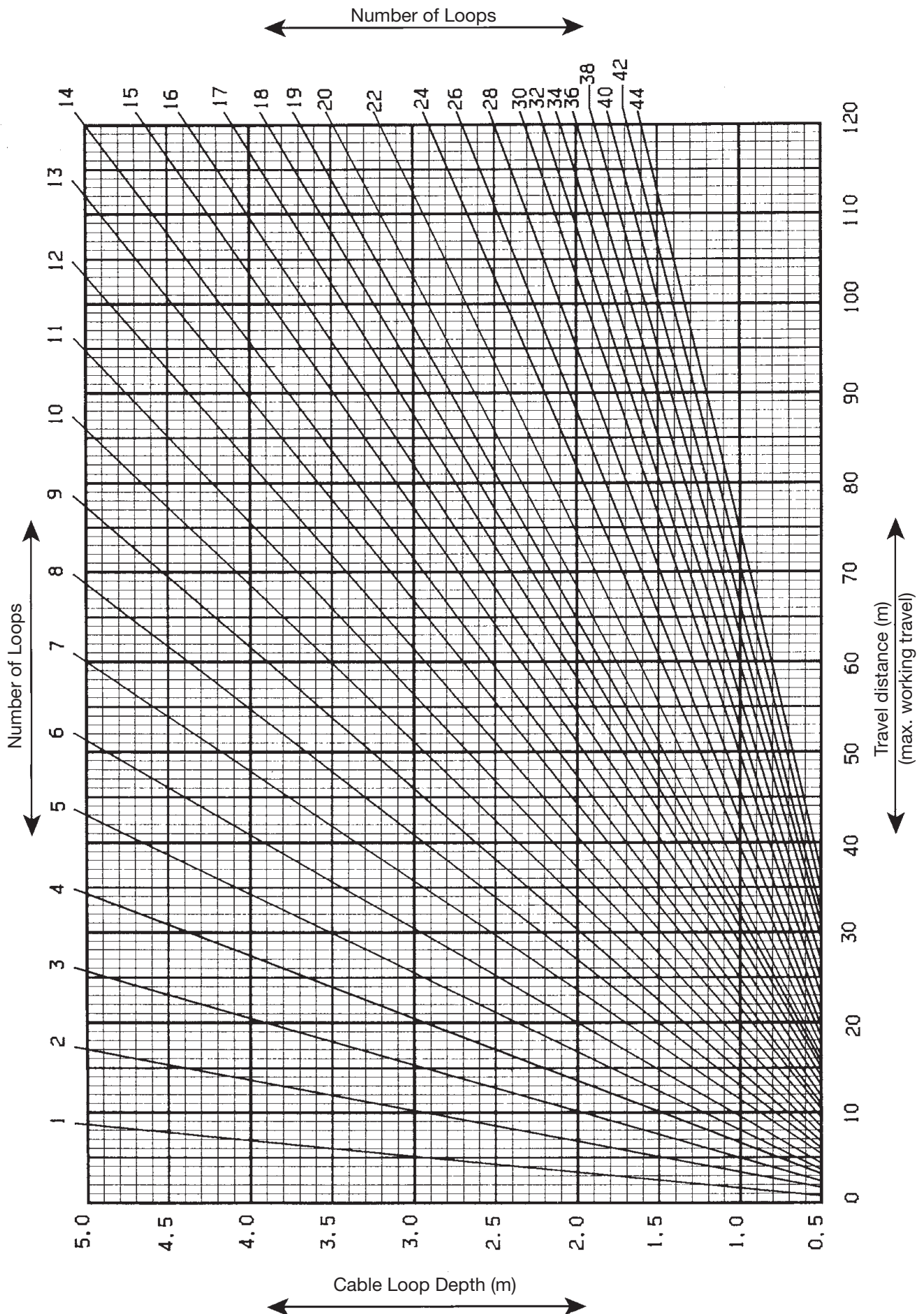
CABLE LOOPS



The diagram considers a cable length safety factor of $f = 1.1$



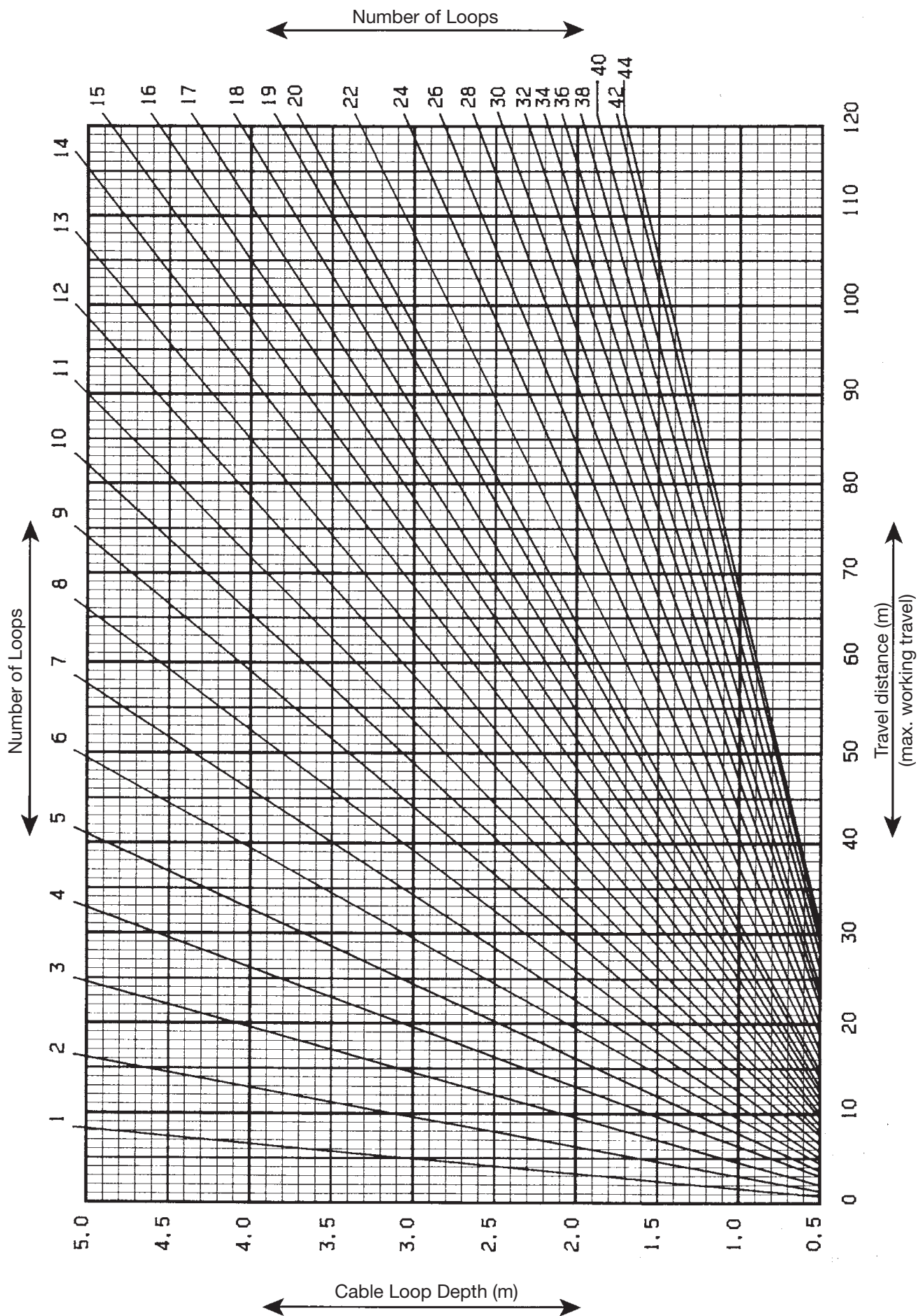
CABLE LOOPS



The diagram considers a cable length safety factor of $f = 1.15$



CABLE LOOPS



The diagram considers a cable length safety factor of $f = 1.2$



Cable carrier system for a street car wash



Cable carrier system for the cross travel on a outdoor crane



NOTES



NOTES



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FESTOON SYSTEMS FOR ◇-TRACKS





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General

VAHLE-Festoon systems support electric cables or hoses for mobile machinery.

The cable carriers contained in this catalog comply with VDE regulations. Diamond tracks are especially well suited for curved installations.

Application

Cable carriers ride on the square bar parallel to the traversing track of the equipment. This arrangement ensures that the total length of equipment (e.g. hoist, crab, trolley, etc.) is used as storage distance for the carriers (see sketch below). The first carrier (lead carrier) is connected to the equipment by an outrigger and towed along the diamond track.

All carriers are connected to each other via the cables or hoses installed. Depending on the cable/hose package, the loop, the speed, the acceleration and the type of curve radii it might be necessary to consider tension relief elements.

Important for proper performance:

- Consider min. permissible bending radii of cables
- Consider a cable loop safety length of 10-15% for straight runs and 20% for curved tracks.

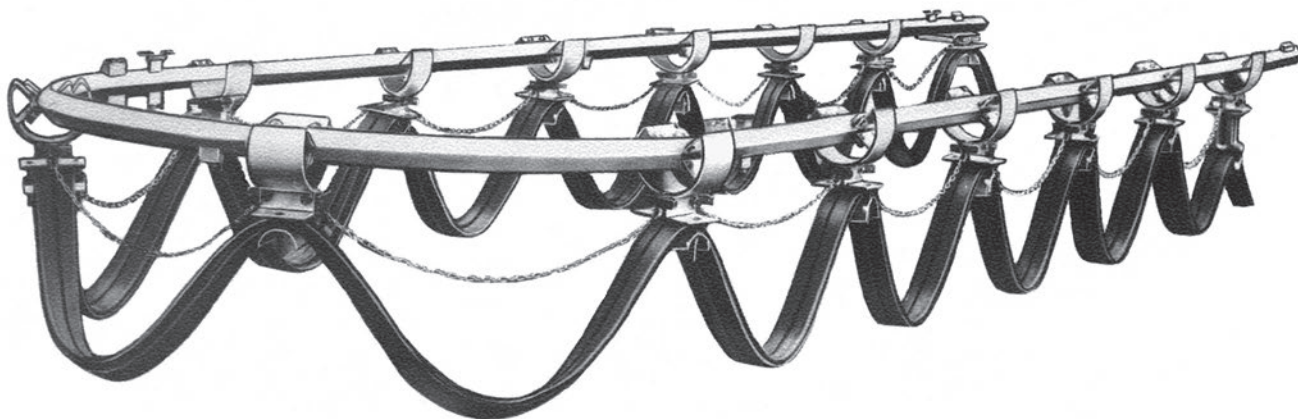
Layout

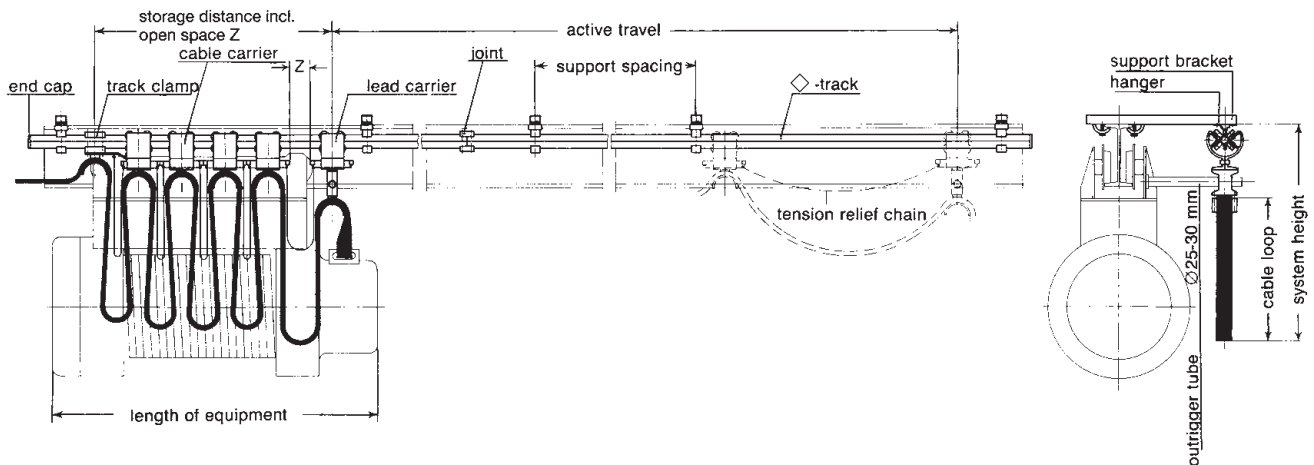
The types of cables are determined according to the required number of conductors and the current load of the equipment (see cat. 8L). The dimensions of cables are the basis for the selection of the carrier type. The length of cable results from active travel distance plus storage distance, extra safety length plus end connections (see installation information).

Consider a multiplier of 0.7 x smallest radius for the maximum permissible cable loop in curved installations. The maximum permissible speed depends on the total amount of curve angles.

For systems specification please refer to the example for ordering in this catalog.

We welcome your inquiry on your particular application. Kindly consult your local Vahle agent or the factory using the questionnaire and submitting a system layout.





Name and Address of Customer: _____

Ref.: _____

1. Type of Application _____

2. Outdoors ☐ indoors ☐ _____

3. Temperature range _____ ° C min. _____ ° C max. _____

4. Is round or flatform cable envisaged? _____

5. How much space is available for storage? _____ mm

6. Is it possible to extend the track for the festoon cable system in case the length of equipment is insufficient for storage space?

☐ Yes, by _____ mm, ☐ no, not possible.

7. Special operating conditions: _____

8. Length of crane trolley: _____ mm

9. Travel distance of crane trolley: _____ mm

10. Travelling speed: _____ m/min.

11. Max. loop depth: _____ mm

12. Further details: _____

12. Required cables:

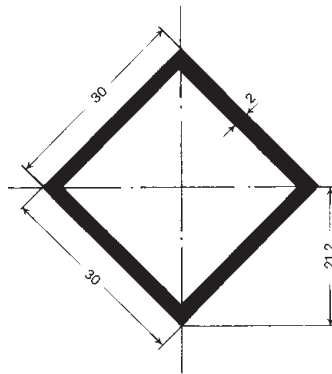
No. of cables	No. & size of conductors	ø mm	width x thickness of flatform cables

Please, submit the completed Questionnaire together with your inquiry. Your system layout drawing will be appreciated in case of curves.



V 3 TRACK AND ACCESSORIES

Track



Type	V 3
Order- No.	360 196
Order- No. for bending	360 026
For cable carrier	WV 3
Material	steel
Surface protection	galvanized
Supply lengths	6 m
Standard support spacing	2 m (1 m in storage section and curves)
Moment in inertia Jx	2,94 cm ⁴
Section modulus Wx	1,39 cm ³
Weight	1,77 kg/m

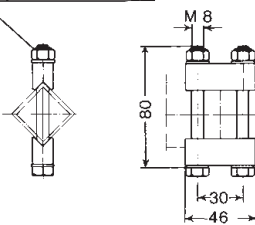
Other support centers and permissible area loads

Support spacing	1 m	1,5 m	2 m	2,5 m	3 m	3,5 m
perm. area load	111 kg	74 kg	47 kg	30 kg	21 kg	15 kg

Joint clamp

Type	VV 3
Order- No.	360 018
Material	steel/aluminium
Surface protection	galvanized
Weight	0,125 kg

torque moment 10 Nm



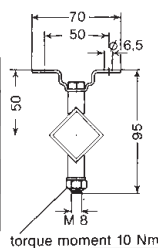
End cap

Type	K 30
Order- No.	360 023
Material	polyethylene
Weight	0,008 kg



Hanger underhung

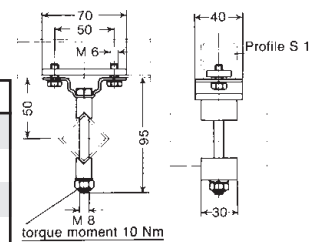
Type	ADV 3
Order- No.	360 019
Material	steel/aluminium
Surface protection	galvanized
Weight	0,11 kg



torque moment 10 Nm

Hanger underhung for HK support

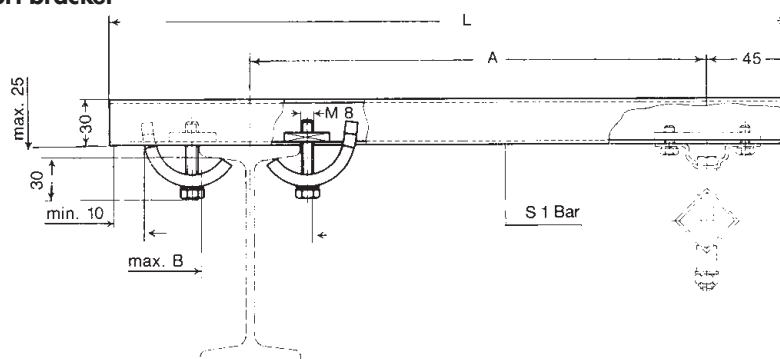
Type	AKV 3
Order- No.	360 020
Material	steel/aluminium
Surface protection	galvanized
Weight	0,19 kg



Profile S 1

2 bolts M 6 x 30, order- No. 360 030 to be ordered separately

Support bracket



Dim A depends on width of machinery (e.g. crane trolley). Make sure that hoist wheels have enough clearance.

Type	Material	Surface protection	Weight kg	A (adjustable) mm	L mm	max. B mm	Order- No.
HK 200	steel	galvanized	0,980	200	400	210 ⁽¹⁾	310 220
HK 300			1,130	300	500	210 ⁽¹⁾	310 230
HK 400			1,290	400	600	210 ⁽¹⁾	310 240
HK 500			1,430	500	700	210 ⁽¹⁾	310 250

Our delivery: 1 pair of claws and track S1. Hangers AKV 3 to be ordered separately.

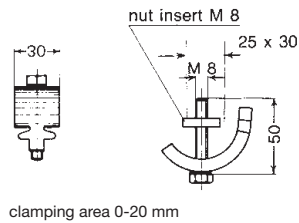
ACCESSORIES AND CABLE CARRIERS FOR V 3 TRACK



Claw for HK

Type	SP
Order- No.	310 390
Material	steel
Surface protection	galvanized
Weight	0,200 kg

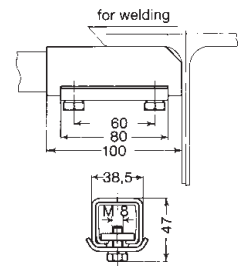
Flat nut M 8 separately available
Order- No. 310 955.



Support Attachment for HK

Type	AH 1
Order- No.	310 400
Material	steel
Surface protection	Hardware galvanized
Weight	0,460 kg

Bracket bars and hangers to be ordered separately.



Bracket bars for HK

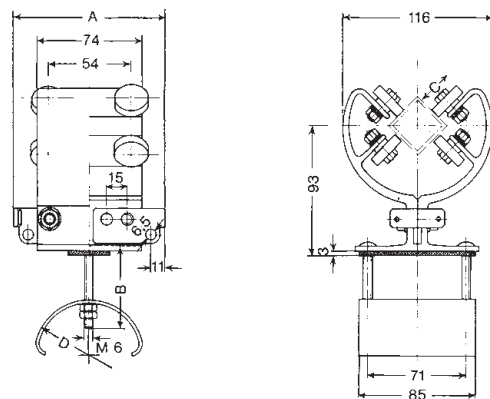
Type	Material	Surface protection	Weight kg	L mm	Order- No.
S 1 - 400	steel	galvanized	0,620	400	310 600
S 1 - 500			0,780	500	310 610
S 1 - 600			0,930	600	310 620
S 1 - 700			1,090	700	310 630

Cable Carriers for V 3 Track

Engineering data

Type	WV 3-25 F for indoor use	WV 3-32 F for indoor and outdoor use
Wheels	Ball bearings $\varnothing$ 25, galvanized Z-sealed Temperature resistance lub grease: -30° to $+125^{\circ}$ C Travelling speed: max. 80 m/min.	Ball bearings $\varnothing$ 32, galvanized RS-sealing Temperature resistance lub grease: -30° C to $+125^{\circ}$ C Travelling speed: max. 100 m/min.
Material	Carrier body: Aluminium Bumper plates: Steel, galvanized Support saddle: Steel, galvanized Hardware: galvanized	
Loop depth	max. 3.5 m with max. cable load (max. 20 kg per carrier)	max. 3.5 m with max. cable load, (max. 25 kg/carrier)

Cable Carriers for Flatform Cable

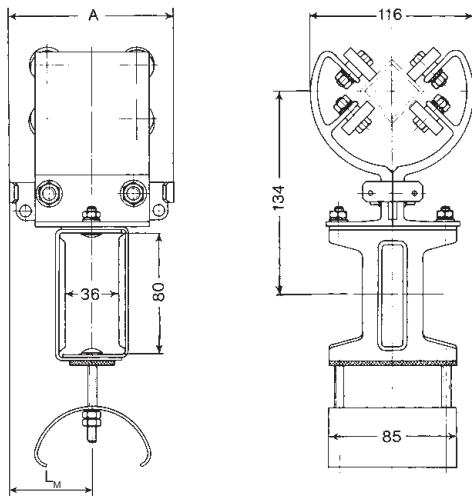


Type	Cable	max. thickness of individual cable mm	max. clamping capacity in mm height x width	A	B	C	D	Weight kg	Order- No.
				mm					
WV 3-25 F/50-110	flat- form	7,9	30 x 65	110	60	25	50	0,90	360 000
WV 3-25 F/50-140			45 x 65	140	80			360 001	
WV 3-25 F/80-110		10,0	15 x 65	110	60	80	0,96	360 004	
WV 3-25 F/80-140			30 x 65	140	60		360 005		
WV 3-32 F/50-110	flat- form	7,9	30 x 65	110	60	32	50	1,05	360 002
WV 3-32 F/50-140			45 x 65	140	80			360 003	
WV 3-32 F/80-110		10,0	15 x 65	110	60	80	1,11	360 006	
WV 3-32 F/80-140			30 x 65	140	60		360 007		



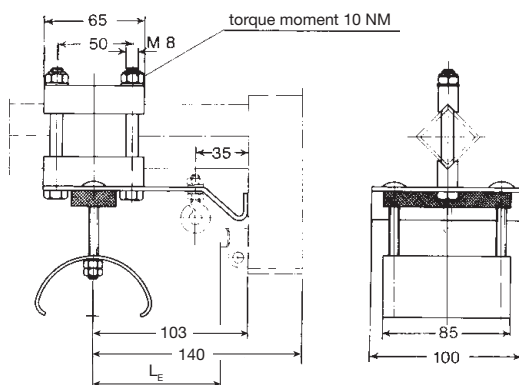
V 3 LEAD CARRIERS AND TRACK CLAMPS3

Lead Carriers for flat form Cable



Type	for Cable carriers	L _M	Cable	A mm	Weight kg	Order- No.
MV 3-25 F/50-110	WV 3-25 F/50-110	55	flat- form	110	1,27	360 008
MV 3-25 F/50-140	WV 3-25 F/50-140	70		140		360 009
MV 3-25 F/80-110	WV 3-25 F/80-110	55		110	1,33	360 012
MV 3-25 F/80-140	WV 3-25 F/80-140	70		140		360 013
MV 3-32 F/50-110	WV 3-32 F/50-110	55	flat- form	110	1,42	360 010
MV 3-32 F/50-140	WV 3-32 F/50-140	70		140		360 011
MV 3-32 F/80-110	WV 3-32 F/80-110	55		110	1,48	360 014
MV 3-32 F/80-140	WV 3-32 F/80-140	70		140		360 015

Track clamps c/w bumper for flatform Cable



Type	for Cable carriers	L _E	Cable	Weight kg	Order- No.
EV 3-F/50	WV 3-25 F/50-110	85	flatform	0,66	360 016
	WV 3-25 F/50-140	70			
	WV 3-32 F/50-110	85			
	WV 3-32 F/50-140	70			
EV 3-F/80	WV 3-25 F/80-110	85	flatform	0,73	360 017
	WV 3-25 F/80-140	70			
	WV 3-32 F/80-110	85			
	WV 3-32 F/80-140	70			

V 3 CONTROL CARRIERS AND ACCESSORIES

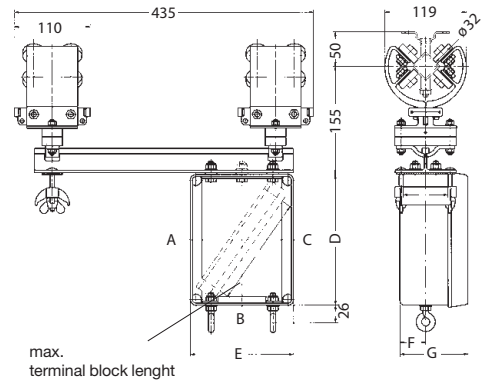


Control Carriers

Type	D	E	F	G	Weight kg	Order- No.
	mm					
ST-V3-32/A1	190	150	38	100	4,9	360 138
ST-V3-32/A2	280	200	62	140	6,3	360 139

Ausführung

Carrier body: aluminium	Support bar: aluminium
Wheels: steel ball bearings	Terminal box: noryl
Max. cable load: 25 kg	
Temperature resistance: - 30° C to + 100° C	



Attention: The junction box is to be grounded with terminal block Type EK 2.5 N PA!

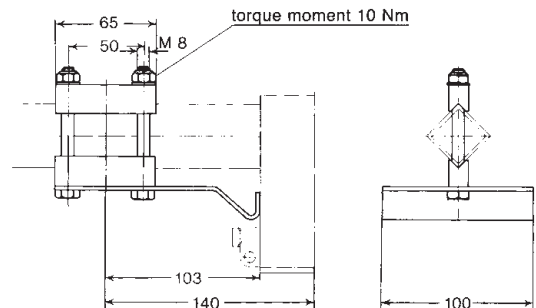
ST-V3-32/A1			ST-V3-32/A2		
Cable glands	max. number A-Side	max. number B-Side	Cable glands	max. number A-Side	max. number B-Side
M 20 x 1,5	6	2	M 20 x 1,5	12	6
M 25 x 1,5	5	1	M 25 x 1,5	10	6
M 32 x 1,5	3	1	M 32 x 1,5	8	4
M 40 x 1,5	2	1	M 40 x 1,5	4	2
M 50 x 1,5	2	1	M 50 x 1,5	3	1
M 63 x 1,5	-	-	M 63 x 1,5	3	1

Max. length of Terminal block A1 = 130 mm
A2 = 220 mm

Bumper

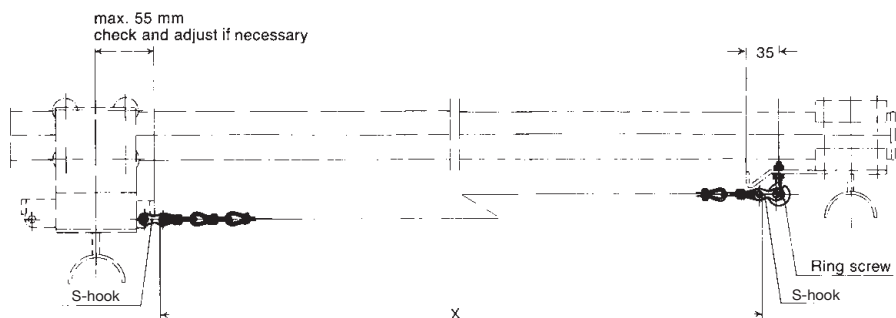
required c/w control carriers

Type	PV 3
Order- No.	360 021
Material	steel/aluminium
Weight	0,49 kg



Strain Relief Chain c/w Accessories

Type	ZEK
Order- No.	360 027
Material	steel
Surface Protection	galvanized
Weight kg/m	0,075



Accessories:

Each piece of chain requires:
2 S-hooks, Order- No. 360 390.

Each Track clamp requires:
1 ring screw RS, Order- No. 360 029.

$$X = \frac{(F \times 1,05) + Z}{n + 1}$$

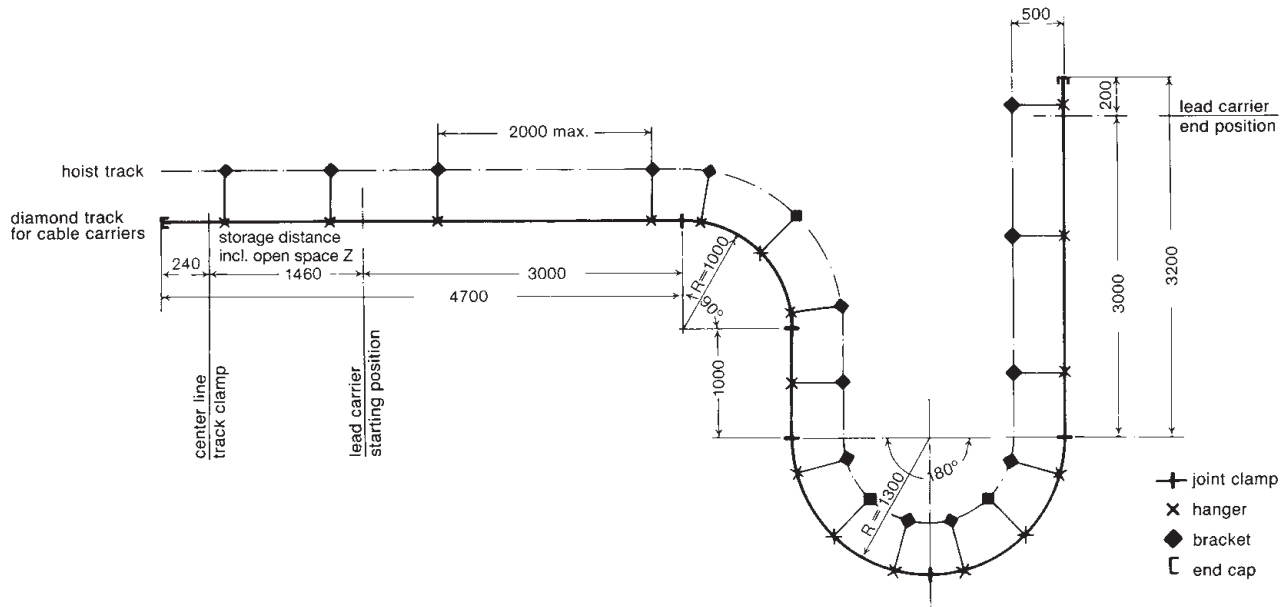
- X = Chain length in mm
F = Travel distance of lead carrier in mm
n = Number of cable carriers (w/o lead carriers and end clamps)
1,05 = Safety length factor
Z = Open space in storage section (see page 11, point 5)



EXAMPLE FOR ORDERING

Inquiry: Hoist on track per drawing – Indoor Installation –

Travelling speed:	30 m /min.
Cables:	1 PVC-flatform (K) H 07 VV H 2 - F 4 G 4 (7,1 x 22 mm) 1 PVC-flatform (K) H 07 VV H 2 - F 8 G 2,5 (5,9 x 35,7 mm)
max. Cable loop depth:	1 m (per structural environment)
required hookup cable end connections:	1 x 2 m + 1 x 5 m

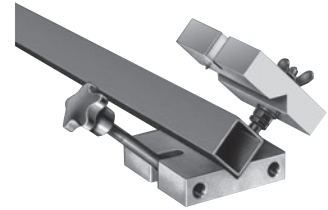
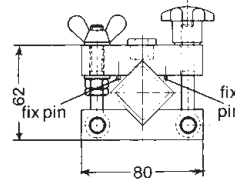
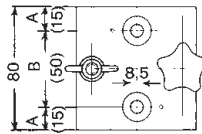


How to select the correct system:	Material to order:		
1. Calculation of lead carrier's active travel	Qty.	material	Order- No.
$3000 \text{ mm} + \frac{2 \times 1000 \text{ mm} \times \pi \times 90^\circ}{360^\circ} +$ $1000 \text{ mm} + \frac{2 \times 1300 \text{ mm} \times \pi \times 180^\circ}{360^\circ} + 3000 \text{ mm} = \mathbf{12660 \text{ mm}}$	14,555 m	square bar track, type V 3 in 1 x 4.7 m 1 x 1.571 m (curve) 1 x 1 m 2 x 2.042 m (curves) 1 x 3.2 m extras for curved sections 1 x 90° R = 1000, L = 1571 mm 2 x 180° R = 1300, L = 2 x 2042 mm ⁽¹⁾ Surcharge for bending per section	360 025
2. Max. permissible cable loop depth (see page 9) $0,7 \times R_{\min.} = 0,7 \times 1000 \text{ m} =$ $(R_{\min.} = \text{smallest curve radius of the system})$			700 mm
3. Checking the travelling speed (see diagram page 9) Total of curve angles: $90^\circ + 180^\circ = 270^\circ$ Smallest curve radius: 1000 mm That means okay for max. travelling speed of	5	joint clamps VV 3	360 018
	2	end caps KV 3	360 023
	17	hangers AKV 3	320 020
	17	brackets HK 500	310 250
4. Selection of carriers (see page 5) WV 3-25 F/50-110	11	cable carriers Typ WV 3-25 F/50-110	360 000
5. Find out the quantity of carriers required (see diagram, pages 10/11)	1	lead carrier Typ MV 3-25 F/50-110	360 008
	1	track clamp with bumper Typ EV 3-F/50	360 016
6. Find out the storage distance (see page 10) plus 1 carrier length open space $1350 \text{ mm} + 110 \text{ mm} =$	14 m	chain ZEK	360 027
	24	chain buckles KSS	360 028
	1	ring screw Typ RS	360 029
7. Find out length of each strain relief chain (see formula page 7) $X = \frac{(12\,660 \times 1,05) + 110 \text{ mm}}{12} = 1117 \text{ mm}$	24 m	plastic flat cable (K) H 07 VV H 2 - F 4 G 4 (7,1 x 22 mm)	330 180
	24 m	plastic flat cable (K) H 07 VV H 2 - F 8 G 2,5 (5,9 x 35,7 mm)	330 160
Total chain length: $12 \times 1117 \text{ mm} = 13404 \text{ mm} \approx$	2	cable glands M 32x1,5 for 4 x 4 mm ²	330 920
	2	cable glands M 40x1,5 for 8 x 2,5 mm ²	330 990
8. Length of cable required (chain length + storage distance) x cable loop safety length + 7000 mm for hookup cable end connections $(12\,660 + 1460 \text{ mm}) \times 1,2 + 7000 \text{ mm}$ for connections	1	drill-jig BV 3-50/15	360 024
	2	drill $\varnothing 8,5 \times 90^\circ$	360 032

Drill-jig

(see installation information)

Type	BV 3-50/15
Order- No.	360 024
Material	aluminium, drill inserts hardened steel
Weight	0,75 kg

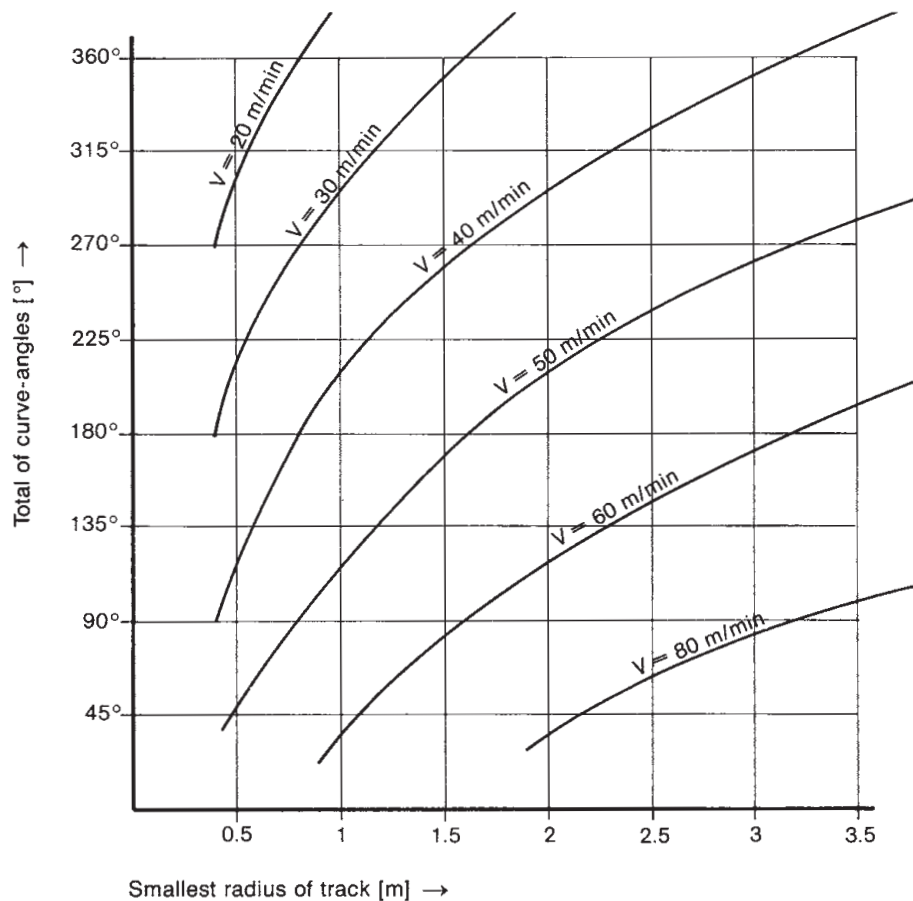


Spiral Driller

Type	Ø 8,5 x 90°
Order- No.	360 032
Material	HSS

Angle of Drill $\leq 90^\circ$.

Diagram for permissible travelling speed in curves



Max. permissible cable loop for installations with curves

$$= 0,7 \times \text{smallest curve-radius of track layout}$$

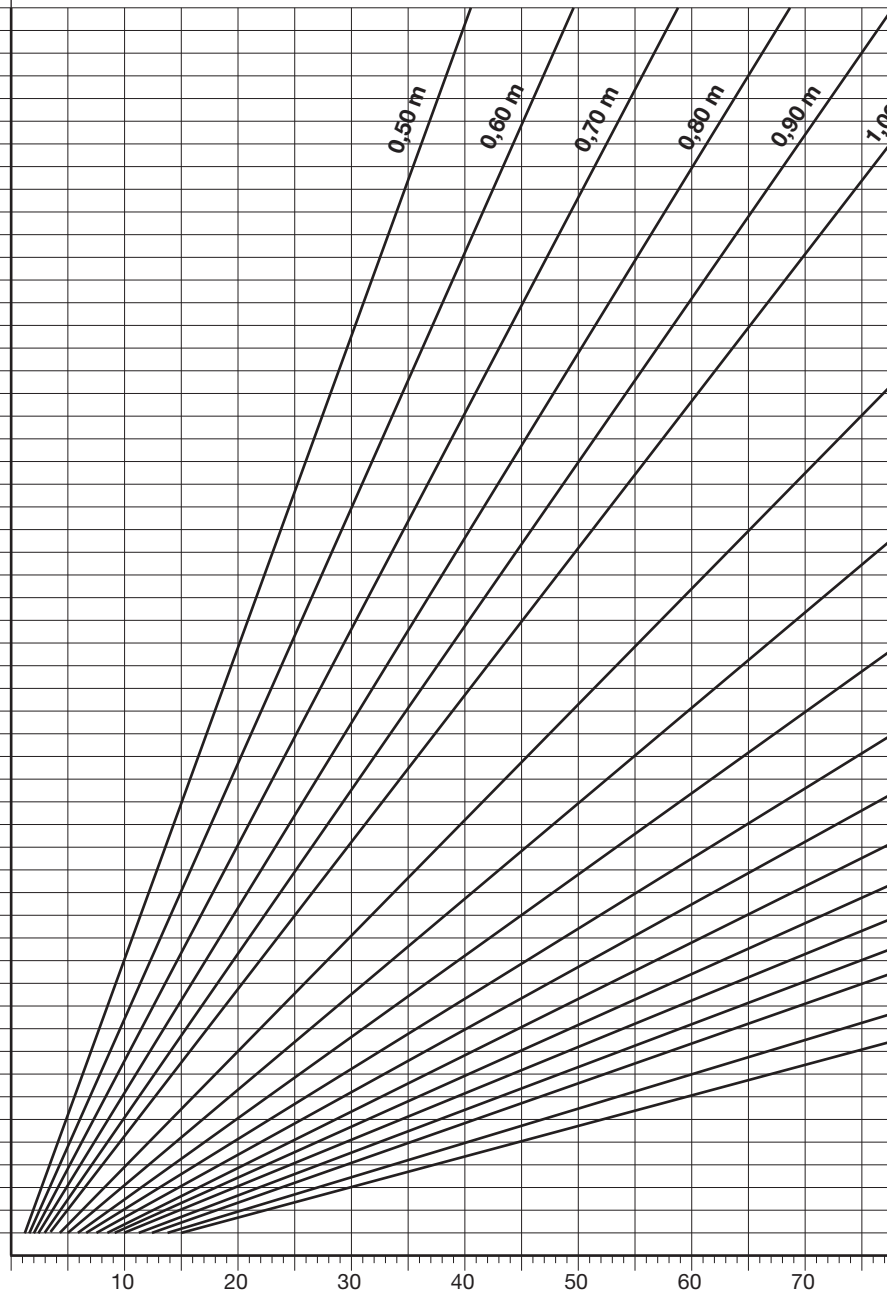


DETERMINING STORAGE DISTANCE AND NUMBER OF CARRIERS

(The Diagram considers a cable loop safety length of 20%)

Number of carriers	carrier type		Number of carriers
	WV 3-25 F/50-110	WV 3-25 F/50-140	
	WV 3-25 F/80-110	WV 3-25 F/80-140	
	WV 3-32 F/50-110	WV 3-32 F/50-140	
	storage distance (mm) w/o factor Z		
55	6190	7840	55
54	6080	7700	54
53	5970	7560	53
52	5860	7420	52
51	5750	7280	51
50	5640	7140	50
49	5530	7000	49
48	5420	6860	48
47	5310	6720	47
46	5200	6580	46
45	5090	6440	45
44	4980	6300	44
43	4870	6160	43
42	4760	6020	42
41	4650	5880	41
40	4540	5740	40
39	4430	5600	39
38	4320	5460	38
37	4210	5320	37
36	4100	5180	36
35	3990	5040	35
34	3880	4900	34
33	3770	4760	33
32	3660	4620	32
31	3550	4480	31
30	3440	4340	30
29	3330	4200	29
28	3220	4060	28
27	3110	3920	27
26	3000	3780	26
25	2890	3640	25
24	2780	3500	24
23	2670	3360	23
22	2560	3220	22
21	2450	3080	21
20	2340	2940	20
19	2230	2800	19
18	2120	2660	18
17	2010	2520	17
16	1900	2380	16
15	1790	2240	15
14	1680	2100	14
13	1570	1960	13
12	1460	1820	12
11	1350	1680	11
10	1240	1540	10
9	1130	1400	9
8	1020	1260	8
7	910	1120	7
6	800	980	6
5	690	840	5
4	580	700	4
3	470	560	3
2	360	420	2
1	250	280	1
	storage distance (mm) w/o factor Z		

1. The active travel distance of the lead carrier to be plotted on the horizontal axis (equals the machinery travelling distance with straight runs; in case of curves see runway calculation on page 8).
2. Draw an upward vertical line from this point.
3. Where this vertical axis upward intersects with the sloping line (loop depth; also see formula on page 9) now draw a horizontal axis to the left.



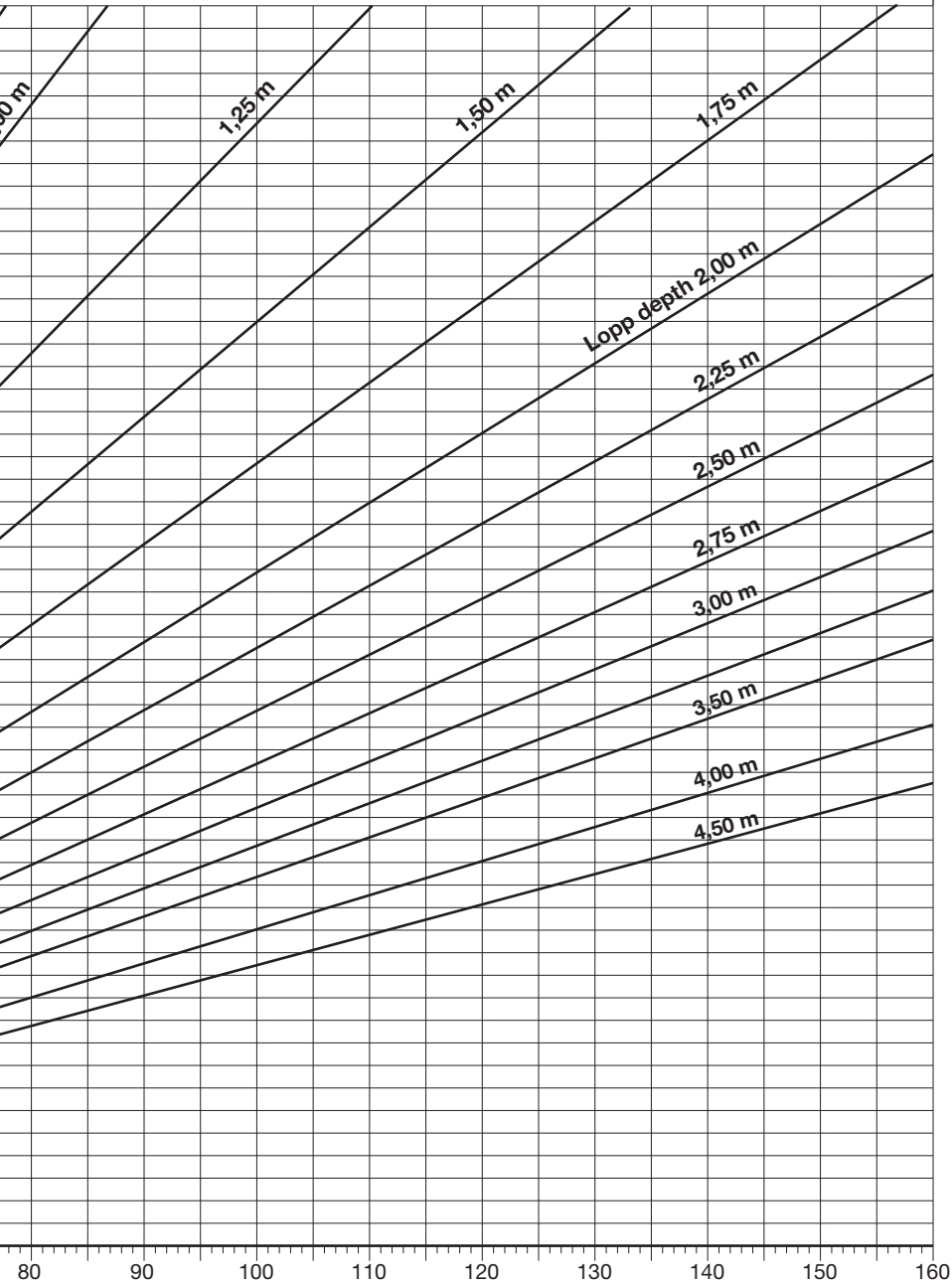
For straight runs → machinery travelling distance in meters
For curved runs → active travel distance of lead carrier in meters

DETERMINING STORAGE DISTANCE AND NUMBER OF CARRIERS



4. There, at the vertical axis you find the required number of carriers, track clamp and lead carrier not included. Always select the next larger quantity when your line ends up between two numbers.

5. The table on the left shows the required storage distance for the choosen type and number of carriers (considering all carriers, 1/2 of lead carrier and 1/2 of track clamp pushed closely together). Allow approx. one carrier length for the open space Z (see details on page 3).





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