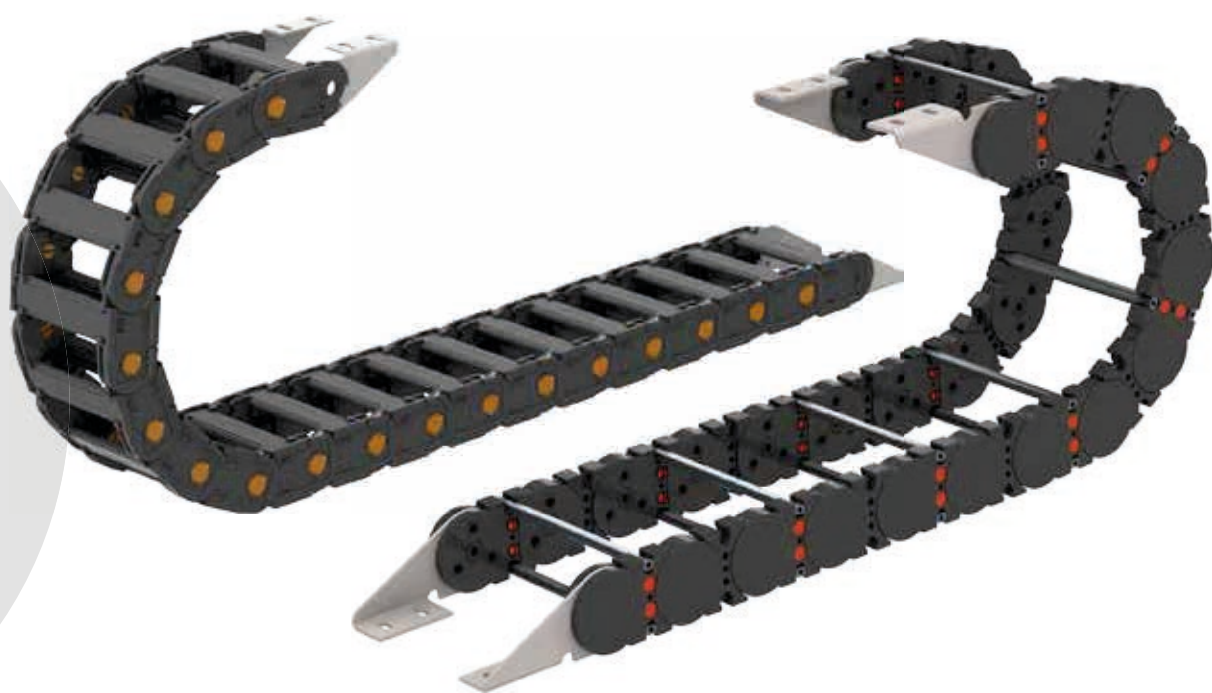


Energy Guiding Chains

Series LC & LF



CONDUCTIX
wampfler

Ⓢ DELACHAUX GROUP

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Program LC55:
Wired with cables and connectors

Energy Guiding Chains for Countless Applications

Conductix-Wampfler programs LC and LF are full ranges of Energy Guiding Chains made in nylon and nylon/metal that represent the ideal solution for many different applications. From the fast and short movements of machine tools to the heavy applications of cranes, our LC and LF programs can fulfill all requirements of our customers.

Light, stable, durable and with a high level of possible customization, our chains are built to have a long working life and to be conform to the standard industrial dimensions. We offer a full range of standard sizes and versions.

Sideband design and chain features:

- All plastic components of our chains are made with polyamide (PA 6 – nylon reinforced with fiber glass); ATEX-compliant material is available.

- LC10/17/25/27 and 31 are mono-link chains. Sidebands are made with alternating links and closed with frame stays, most of them are available in openable frame stay versions for quick access to cables.

- LC32/43/55 and 85 are made with two mono-link sidebands connected by nylon frame stays. Closed nylon frame stays are available to protect cables in aggressive environments.

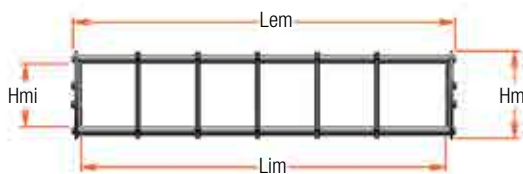
- LF38/58/73 consist of single thickness and double thickness links connected by aluminum frame stays; reinforced aluminum frame stays are also available.

- All chains are easy to disassemble and install. Special tools are available to assemble sidebands quickly.

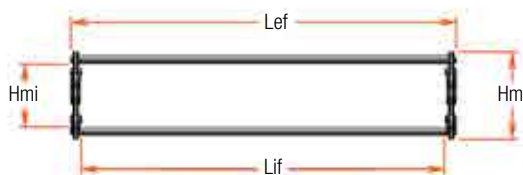
Primary applications for Conductix-Wampfler LC and LF chains are:

- Machine tools
- Wood working machines
- Textile machines
- Packing machines
- Theater and stage technology
- Car wash systems
- Overhead cranes (cross travel distance)
- Storage systems
- Railway industry and automotive

Cross section view: Female Link, composed of two double-thickness plates



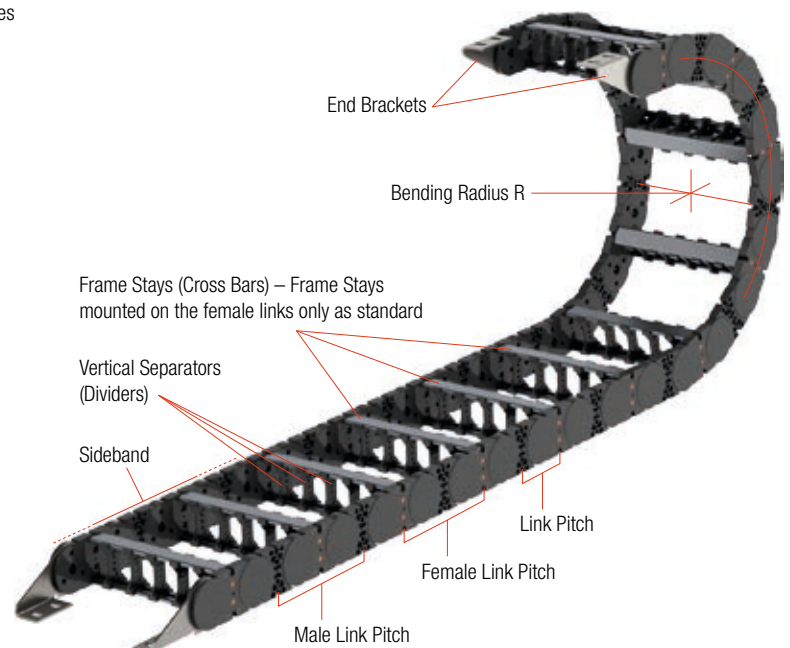
Cross section view: Male Link, composed of four single thickness plates



Hm = Chain height
Hmi = Cavity height

Le, Lem, Lef = Chain width
Li, Lim, Lif = Cavity width

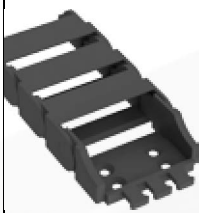
$Le = \max(Lem; Lef) \rightarrow$ In general: $Le = Lef$
 $Li = \min(Lim; Lif) \rightarrow$ In general: $Li = Lim$



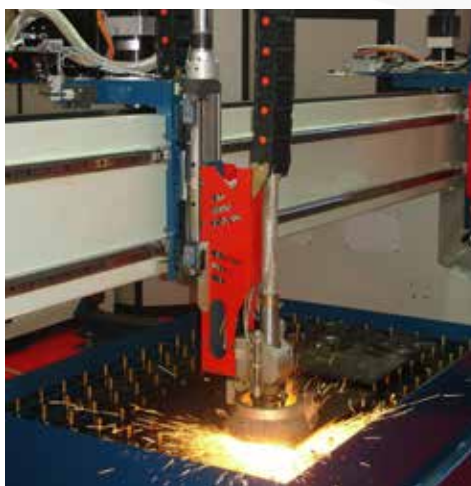
Overview



Please see page 61 to configure the right chain for your specific requirements.

	LC10	LC17	LC25	LC27	LC31
Chain Series					
Chain Features					
Link pitch (mm)	20	29.5	45	44	50
Link outside height (mm)	12 or 15	23	37	36	47
Standard bending radius (mm)	18, 40	40, 80, 120	40, 50, 70, 110, 150, 200, 250	50, 70, 110, 150, 200, 250	70, 110, 150, 200, 250
Standard outside width (mm)	15, 23, 32, 42	27, 32, 37, 47, 62, 87	48, 63, 83, 103, 121, 138	48, 63, 103, 121, 138	73, 93, 123
Application Features					
Maximum self-support length $L_c/2$ (m per kg)*	0.1 at 0.6	0.2 at 1.3	0.5 at 2	0.5 at 2	0.3 at 1.8
Maximum speed (m/s)	10	10	10	10	10
Maximum acceleration (m/s ²)	20	20	20	20	20
See page	10	14	18	22	26

Program LC32:
Installed on a machine tool



LC32	LC43	LC55	LC85	LF38	LF58	LF73
						
62.5	70	90	100	65	95	125
49	56	75	108	57	80	95
70, 110, 150, 200	90, 120, 150, 200, 250, 300	150, 200, 250, 300, 350, 400	150, 200, 250, 300, 350, 400, 500	75, 95, 115, 145, 175, 220	140, 170, 200, 260, 290, 320	190, 220, 260, 300, 340, 380
75, 95, 120, 145, 185, 230, 280, 305	77, 97, 122, 147, 187, 232, 282, 307	81, 101, 126, 151, 191, 236, 286, 311	150, 200, 250, 300, 350, 400, 450	Custom: see page 47	Custom: see page 51	Custom: see page 55
0.8 at 2.8	1 at 3	2 at 3.5	2 at 3	2 at 1.8	5 at 3.2	8 at 4.3
8	8	8	5	8	8	6
17	17	17	15	40	30	20
30	34	38	42	46	50	54

* Calculated with an additional load of 50% of maximum.



Program LF58: Installed in sliding configuration in an automatic warehouse

Material Table

Material used: PA-LC6

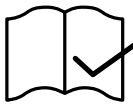
Physical properties	Unit	Method	Results
Specific density	kg/m ³	ISO 1183	1280
Melting temperature	°C	ISO 3146	217 ÷ 223
Shrinkage	%	ASTM D 955	0.30 ± 0.40
Moisture absorption (2 mm thickness)	%	ISO 62	1.7

Mechanical characteristics	Unit	Method	Results
Yield point	N/mm ²	ASTM D 638	150 ± 160
Elongation at break	%	ASTM D 638	2.00 ± 4.00
Tensile modulus	N/mm ²	ASTM D 638	8500 ± 9500
Bending strength	N/mm ²	ASTM D 790	210 ± 220
Izod impact (notched)	J/m	ASTM D 256	
Izod impact	KJ/m ²	Met. Int.	65 ± 85
Charpy impact (notched)	KJ/m ²	DIN 53 453	
Charpy impact	KJ/m ²	DIN 53 453	

Thermal characteristics	Unit	Method	Results
Forming temperature 1.81	°C	ASTM D 648	205 ± 215
Forming temperature 0.45	°C	ASTM D 638	210 ± 220
Softening temperature (Vicat A)	°C	ASTM D 1525	210 ± 220
Maximum continuous use temperature	°C		100 ± 110
Short-term use temperature	°C		170 ± 180

Miscellaneous characteristics	Unit	Method	Results
Average forging temperature	°C		260 ± 270
Embossing temperature	°C		80 ± 100
Inflammability	mm/class	UL-94	16 mm / HB
Glow wire flammability index	mm/ °C	IEC 695-2-1	2 mm / 700 °C

These technical data mentioned are for general information only and not specific to certain products. Any modification/deactivation of the material, after supply, could cause behavioral variations in the values or technical characteristics. Results are calculated on standard test pieces.

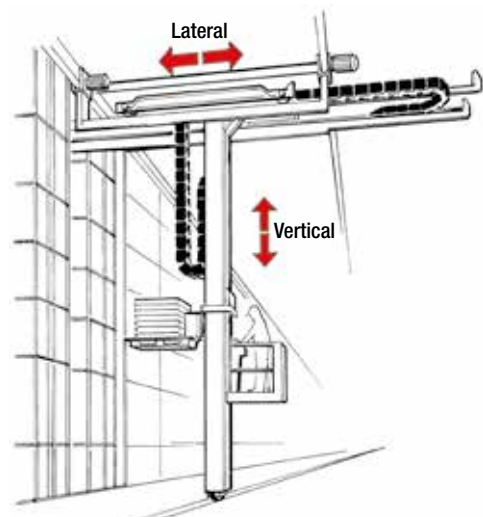
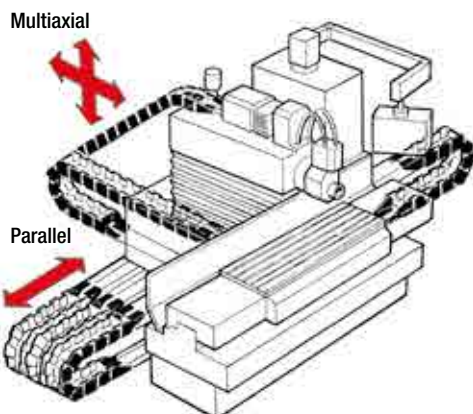
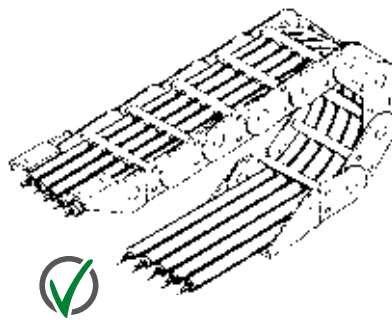
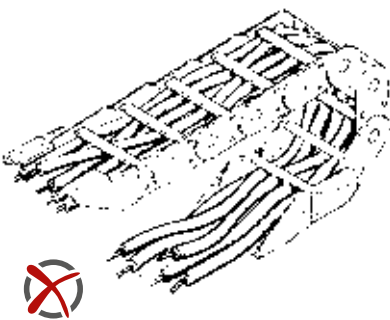
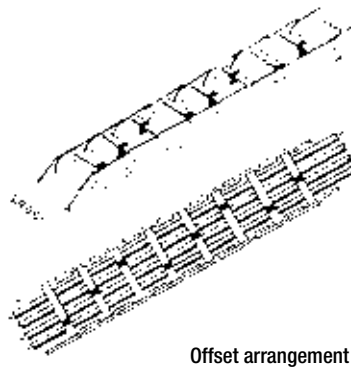
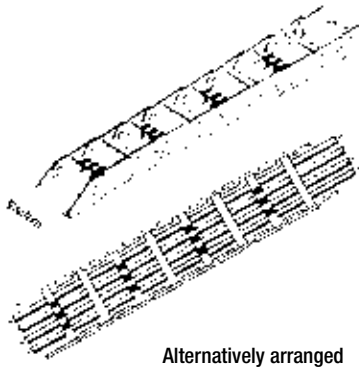
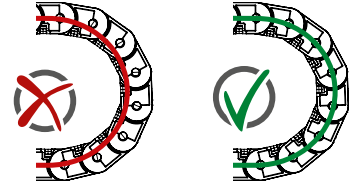
Self-extinguishing material The material is classified HB according to the regulation UL94. Material with V0 or V2 classification (material with a higher grade of self-extinguishing) is available by request.		Vacuum Our Energy Guiding Chains are suitable for vacuum applications. Outgassing of our chains is less than 1%.	
Temperature resistance Our products are suitable for applications that have a wide range of ambient temperatures. Customized color schemes are available by request.		Radiation resistance The material is durable up to one Mrad. The principle mechanical characteristics undergo weak variation up to a dosage of 100 Mrad. For applications with a higher content of energy we request you contact customer assistance.	
Cold: Conductix-Wampfler Energy Guiding Chains can be used up to -40 °C. We recommend to ask for our technical evaluation when the application exceeds -25 °C.		Hazardous environments The use of cable support chains in hazardous environments is subject to the regulations actually in force. For this purpose we can produce Energy Guiding Chains constructed from specifically tested polyamides.	
Heat: Conductix-Wampfler Energy Guiding Chains can be used up to a constant temperature of 130 °C. In such cases, mechanical characteristics and durability of the material may change. If the application requires greater stability at high temperatures, please consult our technical office.		Environment friendly The material PA-LC6 is 100% recyclable. We guarantee the collection of your used chains, solving your problem of disposal.	
UV resistance Our Energy Guiding Chains are UV resistant and are suitable for outdoor applications. By request, we can offer chains with special additives for applications requiring higher UV resistance.		Standard compliance All the Energy Guiding Chains, cable channels and accessories are entirely produced in Italy and are compliant with the following standards: Machine Directive (98/37/CE); RAEE Directive (2002/96/CE); RoHS Directive (76/769/CE, 2000/53/CE, 2002/95CE and 2003/11CE).	

Installation Examples

Guidelines for Installing Cables and/or Hoses

To ensure proper operation of the chain and to avoid damage to the cables, please note the following recommendations:

- Cables should be unwound completely from the drum or coil to remove residual torsion caused by winding.
- Once the cable is cut to the desired length, it should be laid out on the floor (or hung up, if needed) to relieve internal strains of the strands and to avoid kinks.
- The chain bending radius must be bigger than the allowable bending radius of the cables and/or hoses.
- The cable and/or hoses must not be placed on top of one another (without separators), but side by side.
- The clear height of the chain must be 10% larger than the largest cable diameter.
- Lay cables and/or hoses symmetrically according to their weight and dimensions: lighter cables in the middle, heavier cables at both ends.
- In the case of cable and/or hoses of different sizes within the same chain, it is necessary to use separators.
- If the total travel length exceeds the self-support distance of the chain, we recommend installing a channel guide.
- Cables and/or hoses have to be fastened both at the fixed point and at the mobile point.
- During movement of the chain, cables must be able to move in the centre line of the curve:



Nylon Energy Guiding Chains

Series LC10

General Description



Energy Guiding Chain with nylon framestays and sidebands.

This chain is the ideal solution for applications with limited installation space, and when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Machine tools
- Sliding doors (e.g. in railway cars)
- Micromechanical applications

Application parameters:

- Maximum speed: 10 m/s
- Maximum acceleration: 20 m/s²
- Working temperature: -30 °C / +80 °C

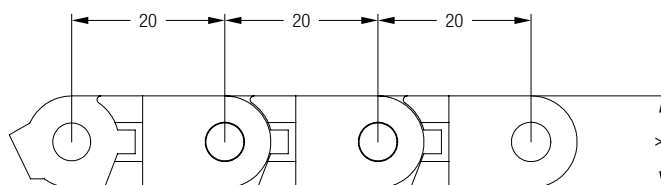
Sidebands

LC10 sidebands consist of single-thickness links, connected by a snap-opening system.

All sidebands are made of glass fiber reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

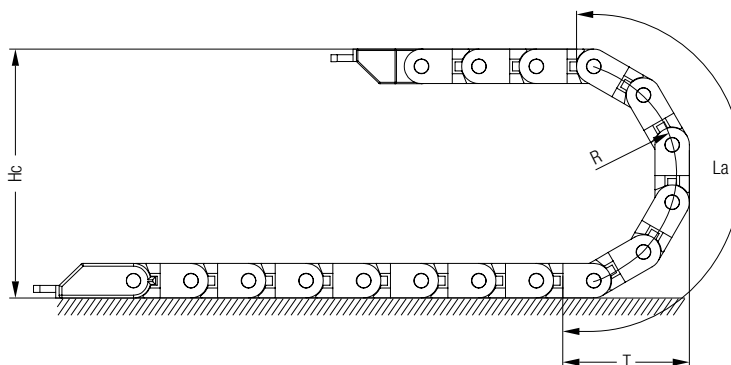
Sideband technical features	Program	LC1001	LC1002 LC1003 LC1004
	Chain height Hm (mm):	12	15
	Link pitch Lp (mm):	20	20
	Cavity width Li (mm):	10	Le - 7

Le = Chain width



X = 12 mm (LC1001) / 15 mm (LC1002, LC1003, LC1004)

R (mm)	La (mm)	T (mm)	Hc (mm)
LC1001			
18	96	44	48
40	166	66	92
LC1002 / LC1003 / LC1004			
18	136	64	50
40	205	87	95
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$

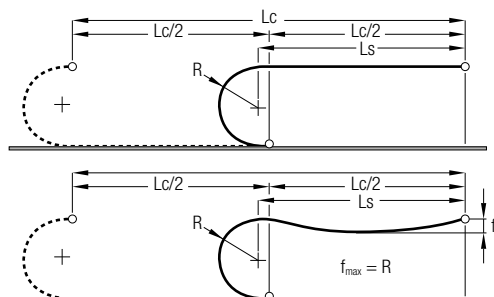


The connecting height should be at least **Hm/2** more than **Hc**. For circular movements, the chain can be equipped with customized reverse-bending radius links (Rbr).

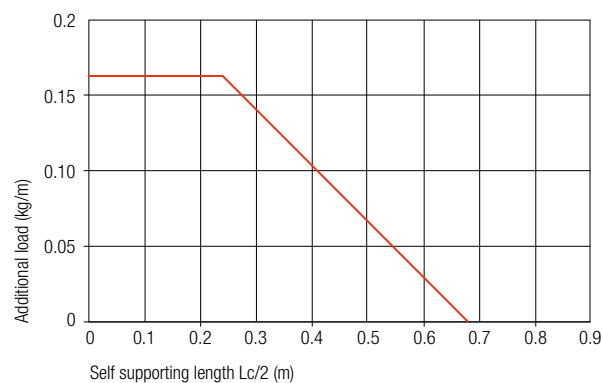
Nylon Energy Guiding Chains Series LC10

Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 0.08 kg/m and a cavity width of 10 mm.



Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.

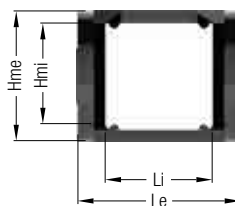


Frame Stay Types

The LC10 Series is available in the following configuration, depending on the frame stay design:

- **Type Pa:** Mono link design

Le (mm)	Type Pa	
	Li (mm)	Weight (kg/m)
15	10	0.08
23	16	0.15
32	25	0.17
42	35	0.20
Hmi (mm)	10	



Standard configuration with stays mounted on every link (full frame).

Nylon Energy Guiding Chains Series LC10

End Brackets

Available with nylon brackets only.



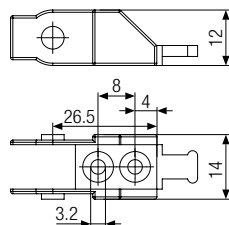
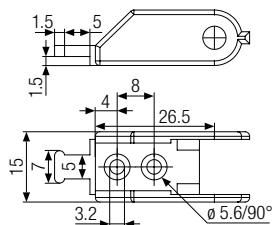
For LC 1001



For LC 1002

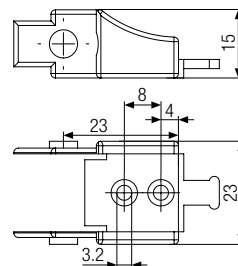
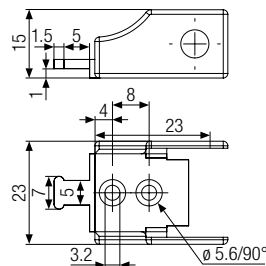
LC 1010 F

LC 1010 P



LC 1020 F

LC 1020 P



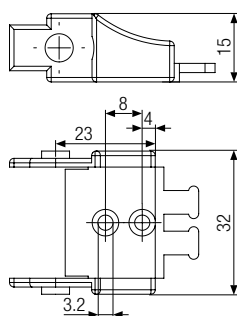
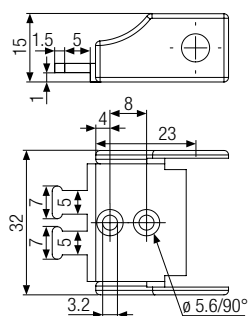
For LC 1003



For LC 1004

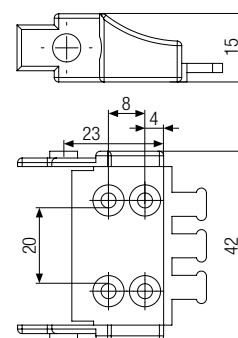
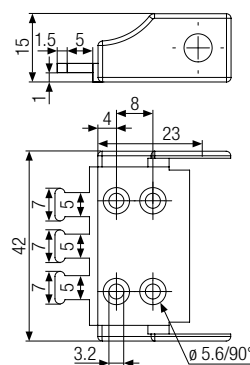
LC 1030 F

LC 1030 P



LC 1040 F

LC 1040 P





Nylon Energy Guiding Chains Series LC17

General Description



Energy Guiding Chain with nylon framestays and sidebands.

The chain can be opened on the internal radius side.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Machine tools
- Small cranes

Application parameters:

- Maximum speed: 10 m/s
- Maximum acceleration: 20 m/s²
- Working temperature: -30 °C / +80 °C

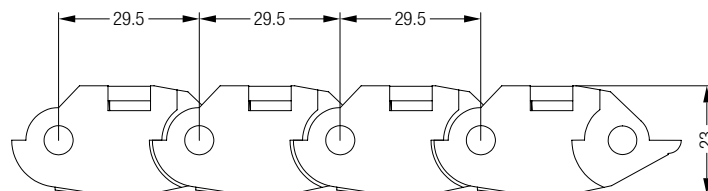
Sidebands

LC17 sidebands are built up of single-thickness links, connected by a snap-opening system.

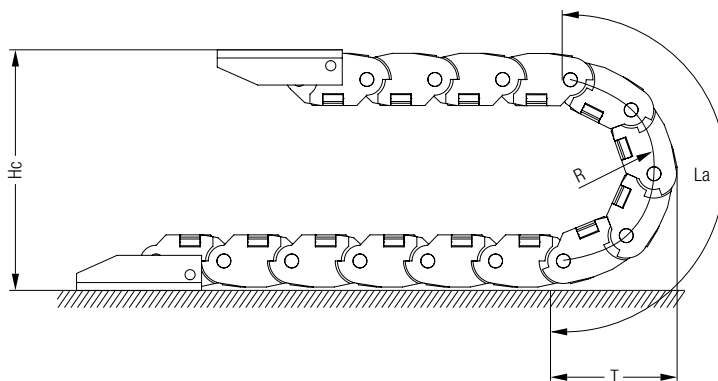
All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LC17
	Chain height Hm (mm):	23
	Link pitch Lp (mm):	29.5
	Cavity width Li (mm):	Le - 12

Le = Chain width



R (mm)	La (mm)	T (mm)	Hc (mm)
40	244	110	63
80	370	150	103
120	495	210	143
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$

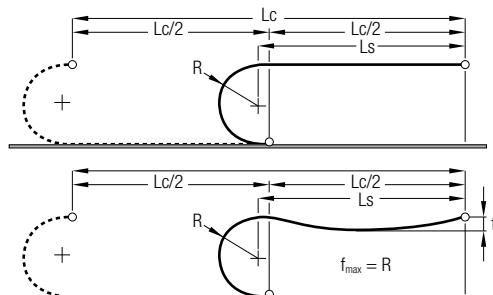


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr).

Nylon Energy Guiding Chains Series LC17

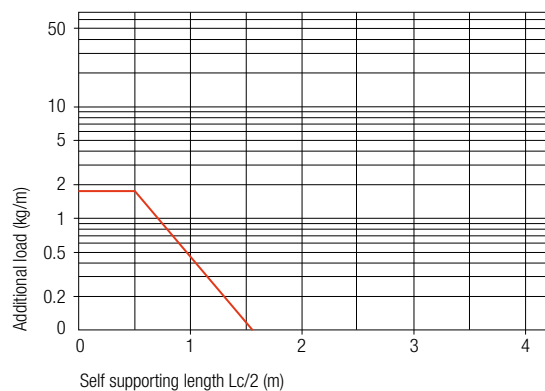
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 0.30 kg/m and a cavity width of 15 mm.



Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the Pa and I frame stay configuration, width $Le = 27$ mm.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.

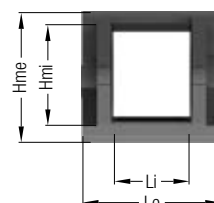


Frame Stay Types

The LC17 Series is available in the following configurations, depending on the frame stay design:

- **Type Pa:** Nylon frame stays which can not be opened
- **Type I:** Nylon frame stays which can be opened on the inside radius of the chain

Le (mm)	Type Pa		Type I	
	Li (mm)	Weight (kg/m)	Li (mm)	Weight (kg/m)
27	15	0.30	15	0.31
32	20	0.33	20	0.33
37	25	0.34	25	0.35
47	35	0.39	35	0.39
62	50	0.47	50	0.47
87	75	0.56	75	0.57
Hmi (mm)	17			



Standard configuration with stays mounted on every link (full frame).

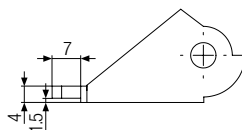
Nylon Energy Guiding Chains

Series LC17

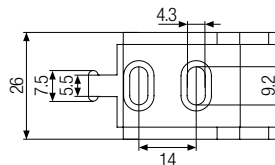
End Brackets



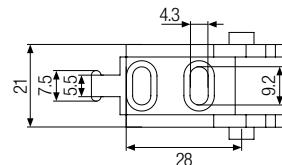
LC 1701/1
for Li = 15 mm



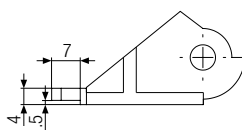
LC 1715 F



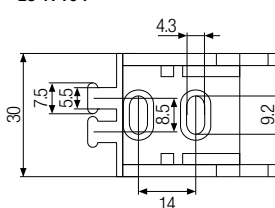
LC 1715 P



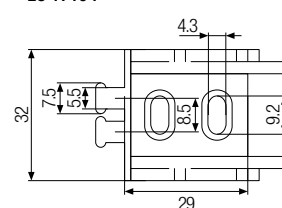
LC 1701
for Li = 20 mm



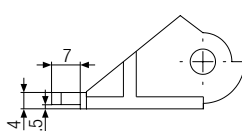
LC 1710 F



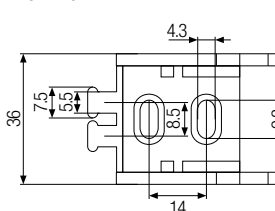
LC 1710 P



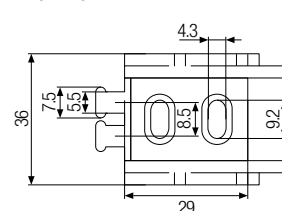
LC 1702
for Li = 25 mm



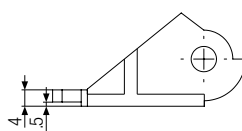
LC 1720 F



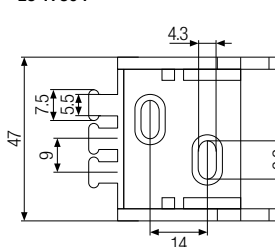
LC 1720 P



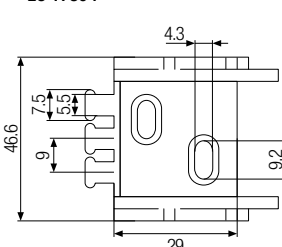
LC 1703
for Li = 35 mm



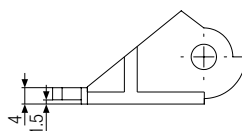
LC 1730 F



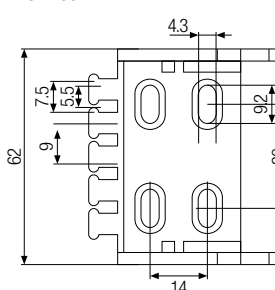
LC 1730 P



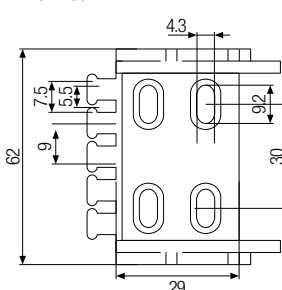
LC 1704
for Li = 50 mm



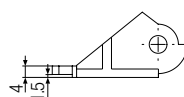
LC 1750 F



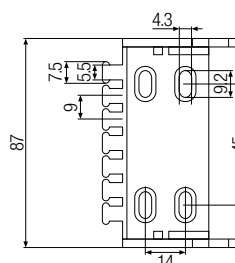
LC 1750 P



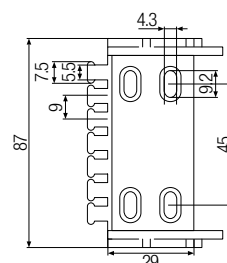
LC 1705
for Li = 75 mm

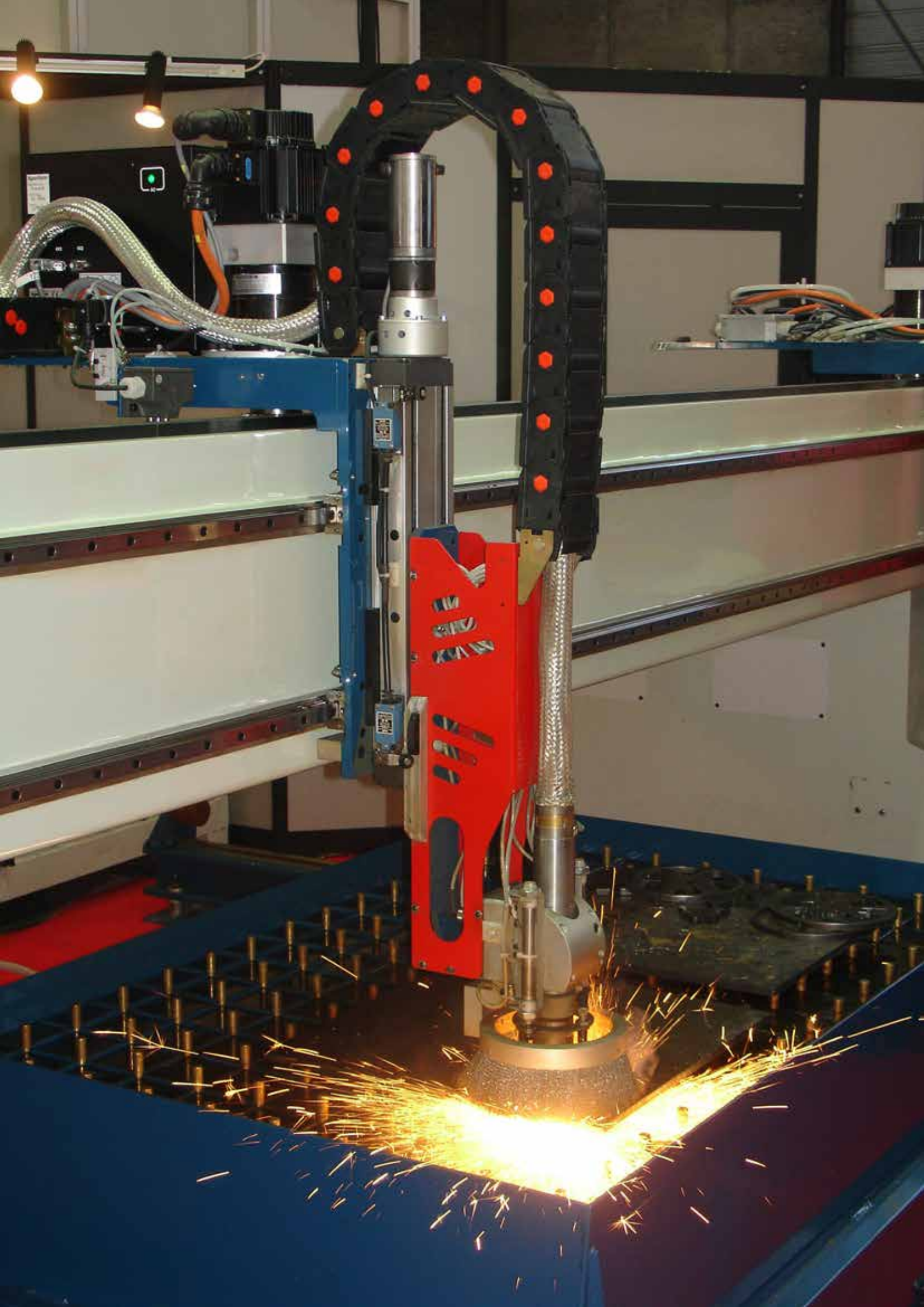


LC 1775 F



LC 1775 P





Nylon Energy Guiding Chains

Series LC25

General Description



Energy Guiding Chain with nylon framestays and sidebands.

The chain can be opened on the internal or external radius side.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Machine tools
- Special machines
- Standard cranes
- Railway industries
- Automotive industries
- Applications with very long travel lengths (e.g. recycling facilities, landfills, dumps)

Application parameters:

- Maximum speed: 10 m/s
- Maximum acceleration: 20 m/s²
- Working temperature: -30 °C / +80 °C

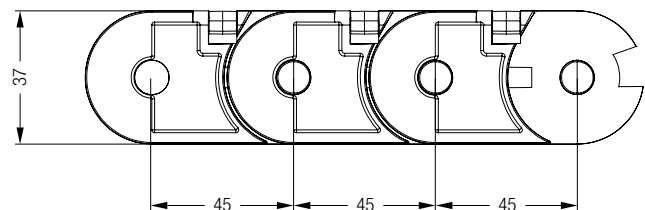
Sidebands

LC25 sidebands are built up of single-thickness links, connected by a snap-opening system.

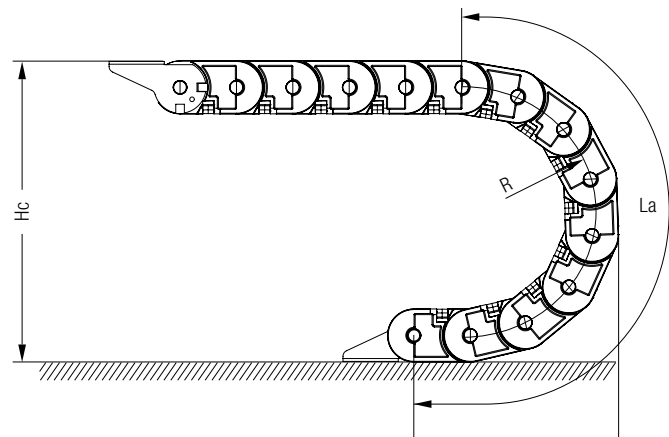
All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LC25
	Chain height Hm (mm):	37
	Link pitch Lp (mm):	45
	Cavity width Li (mm):	Le - 18

Le = Chain width



R (mm)	La (mm)	T (mm)	Hc (mm)
40	215	148	117
50	247	158	137
70	309	178	107
110	435	218	147
150	561	258	187
200	718	308	237
250	875	358	287
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$

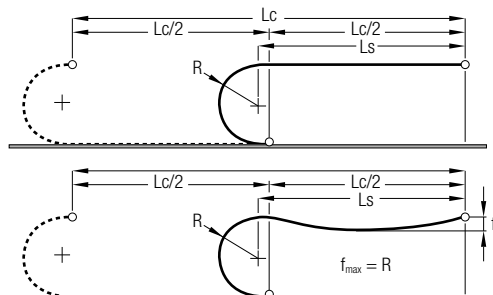


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr).

Nylon Energy Guiding Chains Series LC25

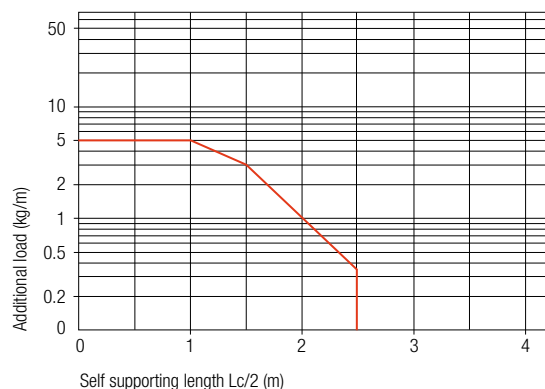
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 0.88 kg/m and a cavity width of 65 mm.



Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the I frame stay configuration, width $Le = 48$ mm.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.



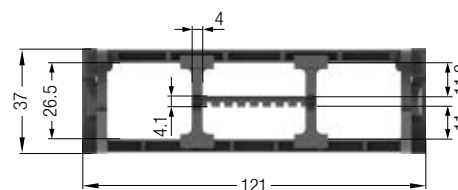
Frame Stay Types

The LC25 Series is available in different configurations, depending on the frame stay design:

- **Type I:** Nylon frame stays which can be opened on the inside radius of the chain
- **Type Ie:** Nylon frame stays which can be opened on the outside radius of the chain

Le (mm)	Type I		Type Ie	
	Li (mm)	Weight (kg/m)	Li (mm)	Weight (kg/m)
48	30	0.782	—	—
63	45	0.824	—	—
83	65	0.882	—	—
103	85	0.938	—	—
121	103	0.987	103	0.987
138	120	1.032	120	1.032
max. Le (mm)	138		138	
Hmi (mm)	26		26	

Standard configuration with stays mounted on every link (full frame).



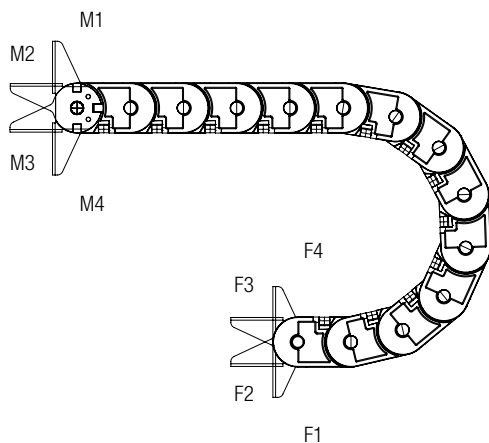
Nylon Energy Guiding Chains

Series LC25

End Brackets

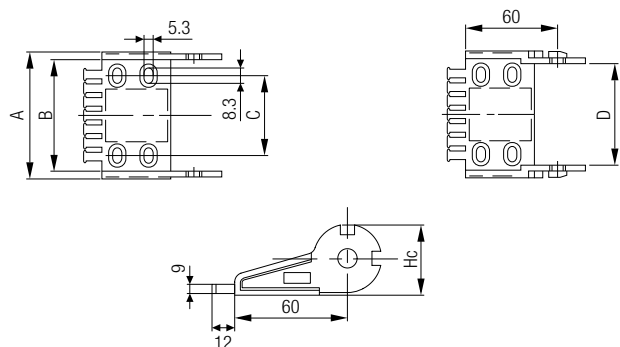
The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). The LC25 chain series can be supplied with nylon or steel brackets.

Possible mounting positions of steel brackets



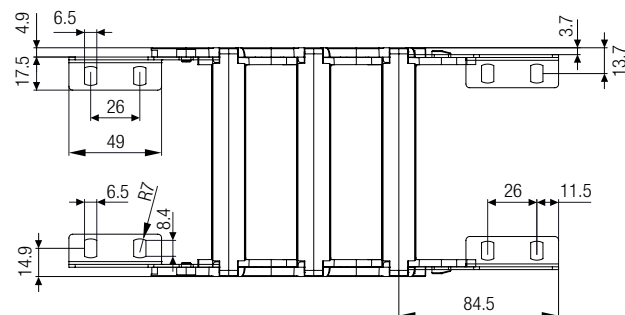
- M1** Mobile point frontal outside radius
- M2** Mobile point standard outside radius
(also possible for nylon brackets)
- M3** Mobile point standard inside radius
(also possible for nylon brackets)
- M4** Mobile point frontal inside radius
- F1** Fixed point frontal outside radius
- F2** Fixed point standard outside radius
(also possible for nylon brackets)
- F3** Fixed point standard inside radius
(also possible for nylon brackets)
- F4** Fixed point frontal inside radius

Standard Nylon brackets

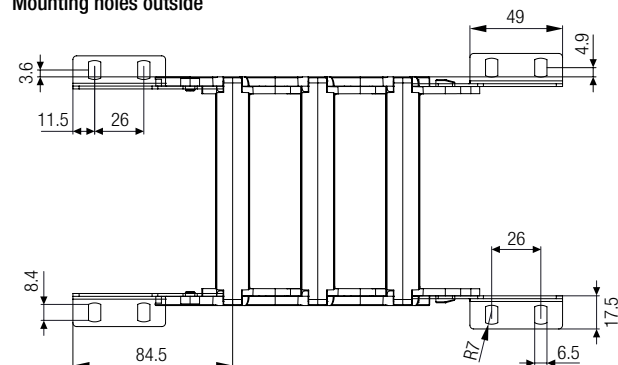


Chain Series	Bracket Type	A (mm)	B (mm)	C (mm)	D (mm)
LC2501	LC2530F	48	38.2	17	
	LC2530P				30
LC2502	LC2545F	63	52.7	32	
	LC2545P				45
LC2503	LC2565F	83	72.2	52	
	LC2565P				65
LC2504	LC2585F	103	93.2	72	
	LC2585P				85
LC2505	LC25103F	121	111.2	90	
	LC25103P				103
LC2506	LC25120F	138	128.2	107	
	LC25120P				120

Mounting holes inside



Mounting holes outside



Nylon Energy Guiding Chains

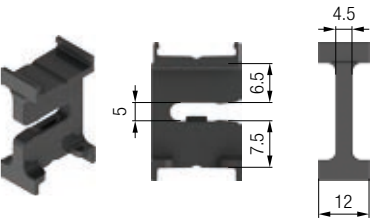
Series LC25

Vertical and Horizontal Separators

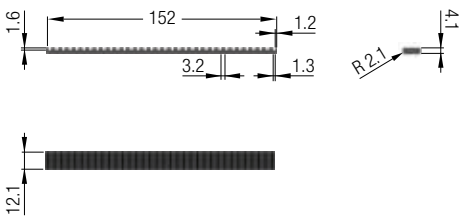
By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and dimensions (item LC5522C)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
I, Ie	Nylon	LC2521	4.5	Nylon	12 x 4 mm	

LC2521



LC5522C



Nylon Energy Guiding Chains

Series LC27

General Description



Energy Guiding Chain with nylon framestays and sidebands.

The chain can be opened on the internal radius side.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Machine tools
- Special machines
- Applications with long travel lengths
(e.g. recycling facilities, landfills, dumps)

Application parameters:

- Maximum speed: 10 m/s
- Maximum acceleration: 20 m/s²
- Working temperature: -30 °C / +80 °C

Sidebands

LC27 sidebands are built up of single-thickness links, connected by a snap-opening system.

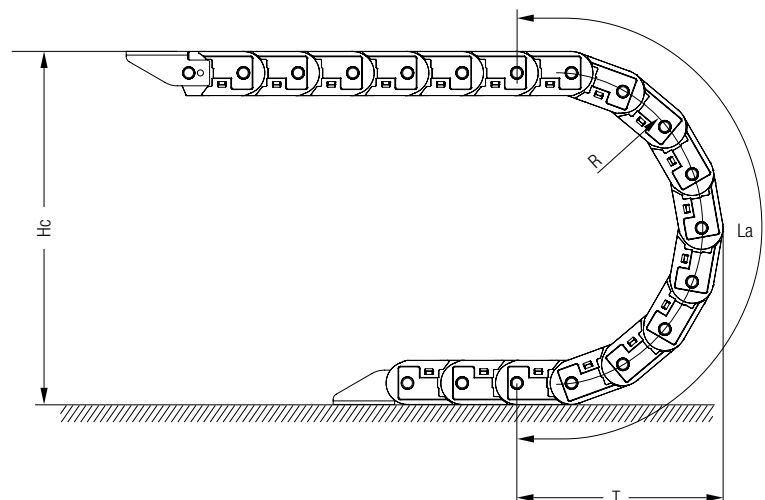
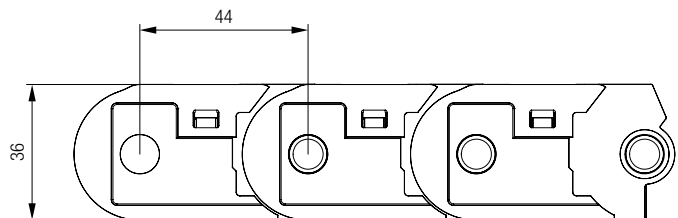
All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LC27
	Chain height Hm (mm):	36
	Link pitch Lp (mm):	44
	Cavity width Li (mm):	Le - 18

Le = Chain width

R (mm)	La (mm)	T (mm)	Hc (mm)
50*	333	112	136
70	396	132	176
110	521	172	256
150	647	212	336
200	804	262	436
250*	961	312	536
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$

* available on demand

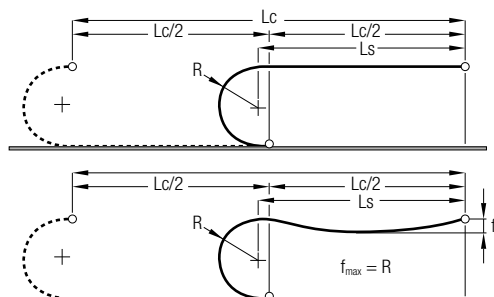


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr).

Nylon Energy Guiding Chains Series LC27

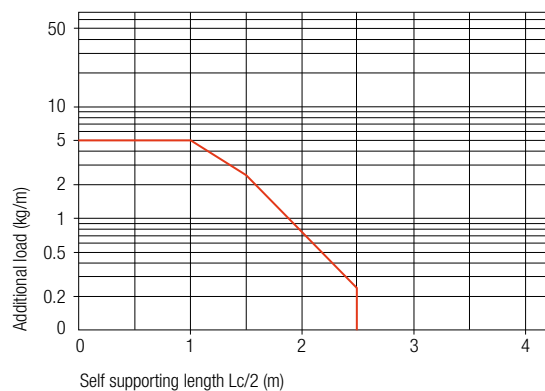
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 0.78 kg/m and a cavity width of 30 mm.



Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the Pa frame stay configuration, width $Le = 48$ mm.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.



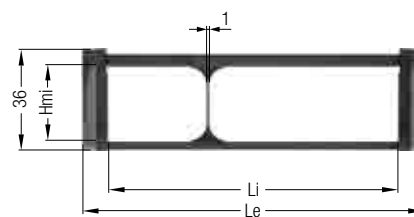
Frame Stay Types

The LC27 Series is available in the following configuration, depending on the frame stay design:

- **Type Pa:** Nylon frame stays that can be opened on the internal radius side

Le (mm)	Type Pa	
	Li (mm)	Weight (kg/m)
48	30	0.781
63	45	0.831
83	65	0.898
103	85	1.012
121	103	1.124
Hmi (mm)	26	

Standard configuration with stays mounted on every link (full frame).

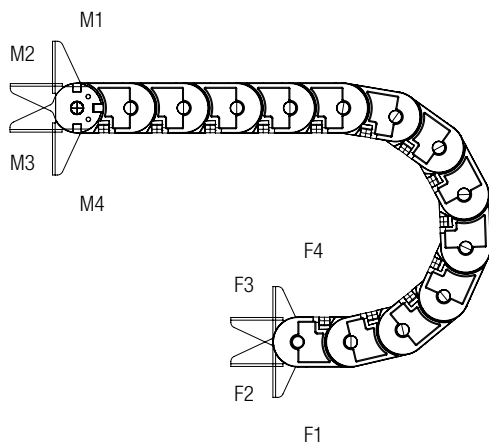


Nylon Energy Guiding Chains Series LC27

End Brackets

The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). The LC27 chain series can be supplied with steel brackets only.

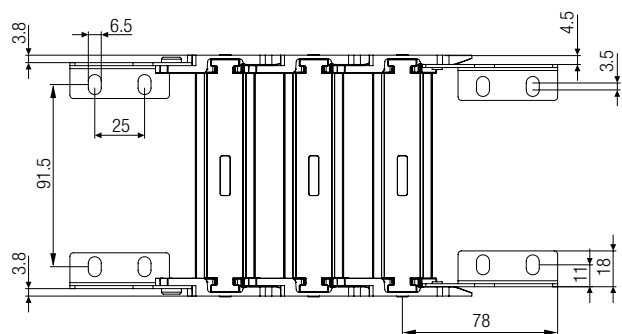
Possible mounting positions of steel brackets



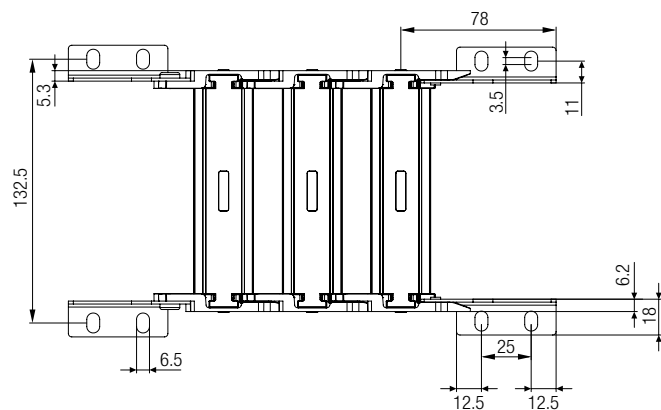
- M1** Mobile point frontal outside radius
- M2** Mobile point standard outside radius
- M3** Mobile point standard inside radius
- M4** Mobile point frontal inside radius

- F1** Fixed point frontal outside radius
- F2** Fixed point standard outside radius
- F3** Fixed point standard inside radius
- F4** Fixed point frontal inside radius

Mounting holes inside



Mounting holes outside



One-piece steel bracket



Nylon Energy Guiding Chains

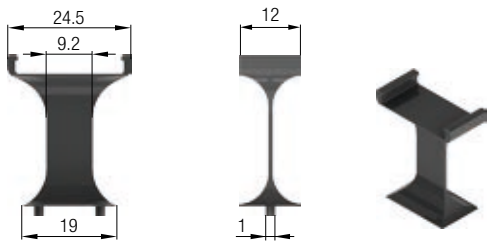
Series LC27

Vertical and Horizontal Separators

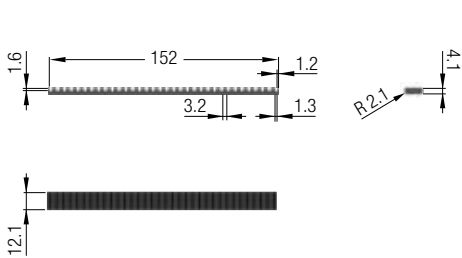
By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and dimensions (item LC5522C)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
Pa	Nylon	LC2720	1	Nylon	12 x 4 mm	

LC2720



LC5522C



Nylon Energy Guiding Chains Series LC31

General Description



Energy Guiding Chain with nylon framestays and sidebands.

The chain can be opened on the internal radius side.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Machine tools
- Special machines
- Standard cranes
- Applications with very long travel lengths and heavy loads (e.g. recycling facilities, landfills, dumps)

Application parameters:

- Maximum speed: 10 m/s
- Maximum acceleration: 20 m/s²
- Working temperature: -30 °C / +80 °C

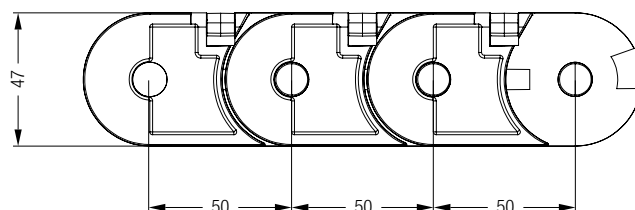
Sidebands

LC31 sidebands are built up of single-thickness links, connected by a snap-opening system.

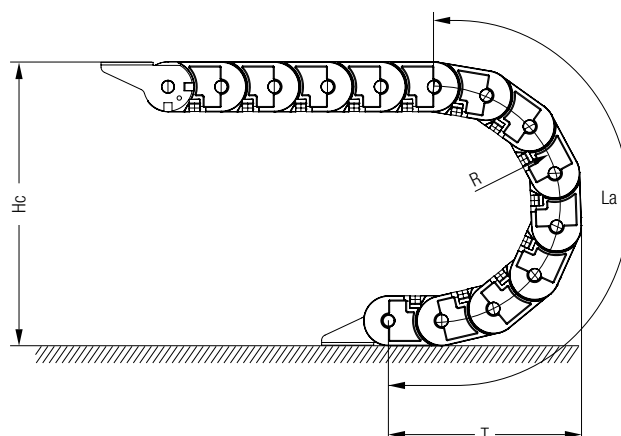
All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LC31
	Chain height Hm (mm):	47
	Link pitch Lp (mm):	50
	Cavity width Li (mm):	Le - 18

Le = Chain width



R (mm)	La (mm)	T (mm)	Hc (mm)
70	419	144	187
110	545	184	267
150	671	224	347
200	828	274	447
250	985	324	547
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hm/2$	$2 R + Hm$

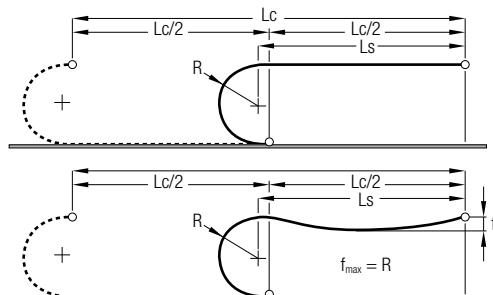


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr).

Nylon Energy Guiding Chains Series LC31

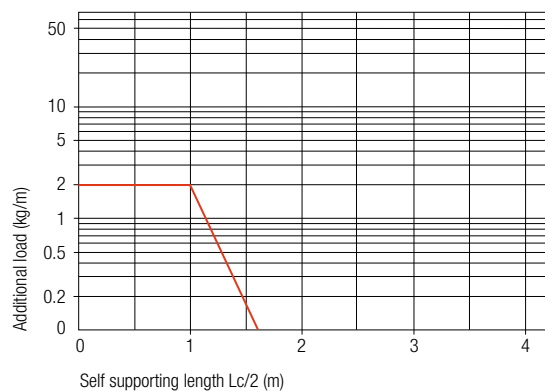
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 1.183 kg/m and a cavity width of 75 mm.



Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the Pa frame stay configuration, width $Le = 73$ mm.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.

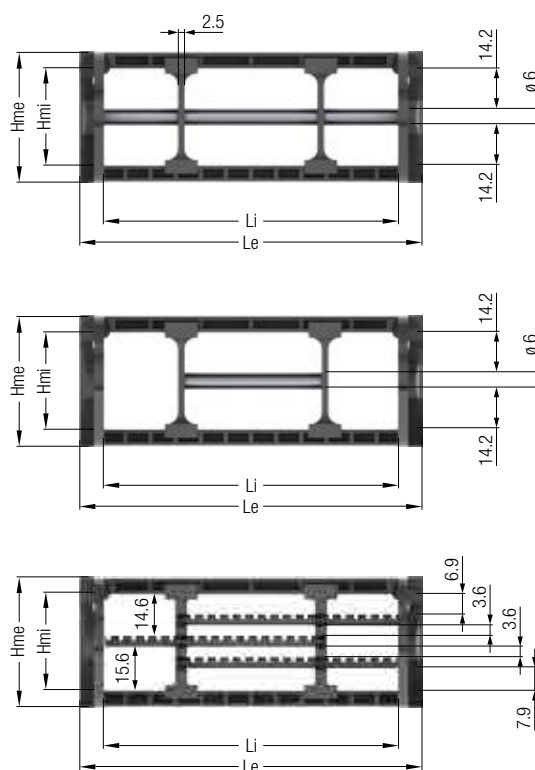
Frame Stay Types

The LC31 Series is available in the following configuration, depending on the frame stay design:

- **Type Pa:** Nylon frame stays that can be opened on the internal radius side

Le (mm)	Type Pa	
	Li (mm)	Weight (kg/m)
73	55	1.14
93	75	1.18
123	105	1.2
Hmi (mm)	3	4

Standard configuration with stays mounted on every link (full frame).

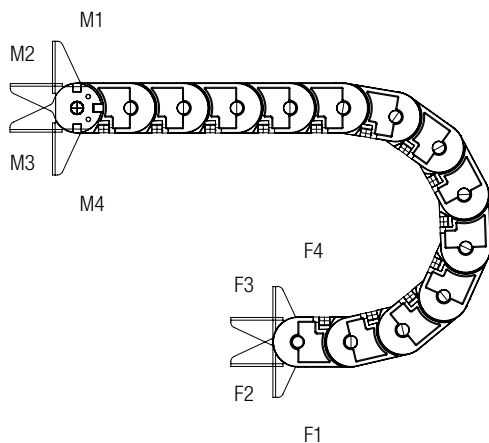


Nylon Energy Guiding Chains Series LC31

End Brackets

The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). The LC31 chain series can be supplied with steel brackets only.

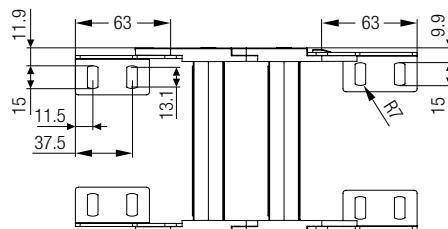
Possible mounting positions



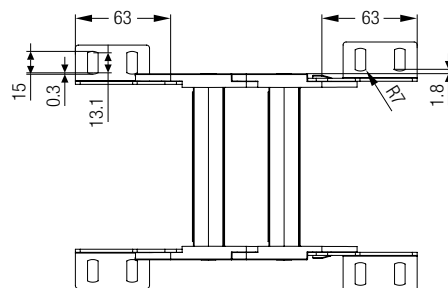
- M1** Mobile point frontal outside radius
- M2** Mobile point standard outside radius
- M3** Mobile point standard inside radius
- M4** Mobile point frontal inside radius

- F1** Fixed point frontal outside radius
- F2** Fixed point standard outside radius
- F3** Fixed point standard inside radius
- F4** Fixed point frontal inside radius

Mounting holes inside



Mounting holes outside



Nylon Energy Guiding Chains

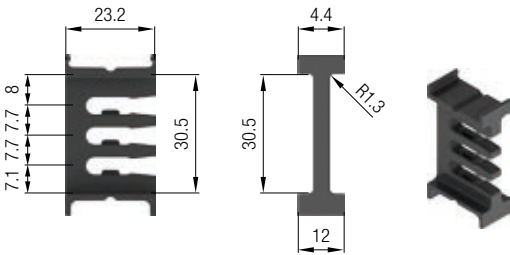
Series LC31

Vertical and Horizontal Separators

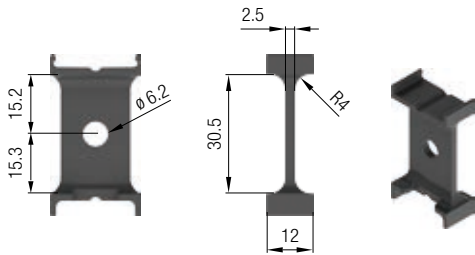
By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and dimensions (item LC5522C)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
Pa	Nylon	LC3120	2,5	Nylon	150 x 12 x 4 mm	

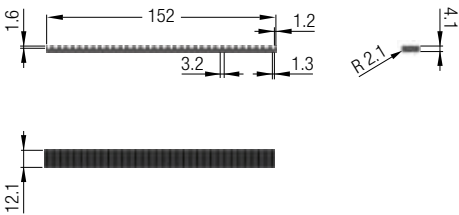
LC3121



LC3120



LC5522C



Nylon Energy Guiding Chains

Series LC32

General Description



Energy Guiding Chain with nylon sidebands, framestays available in nylon.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Machine tools with high duty cycles
- Standard cranes
- Woodworking machines
- Applications with very long travel lengths and heavy loads (e.g. recycling facilities, landfills, dumps)

Application parameters:

- Maximum speed: 8 m/s
- Maximum acceleration: 17 m/s²
- Working temperature: -30 °C / +80 °C (frame stay types Pa and C)

Sidebands

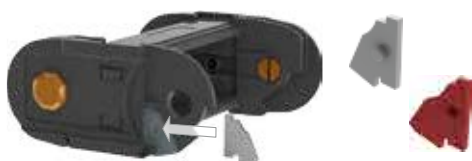
LC32 sidebands are built up of alternating single-thickness links, connected with orange-colored single pins.

All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

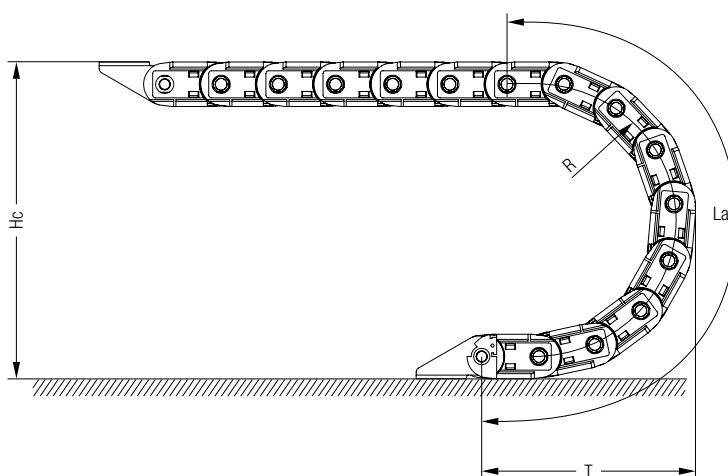
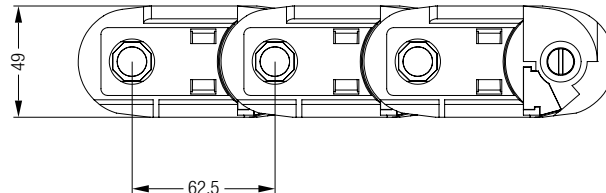
Sideband technical features	Program	LC32
	Chain height Hm (mm):	49
	Link pitch Lp (mm):	62.5
	Cavity width Li (mm):	Le -30

Le = Chain width

R (mm)	La (mm)	T (mm)	Hc (mm)	Clip color
75	485	162	199	no clip
110	595	197	269	blue
150	721	237	349	green
200	878	287	449	red
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hm/2$	$2 R + Hm$	no clip



The radius of the chain is set with a colored clip mounted inside the link, which can be easily changed to modify the bending radius of the chain.

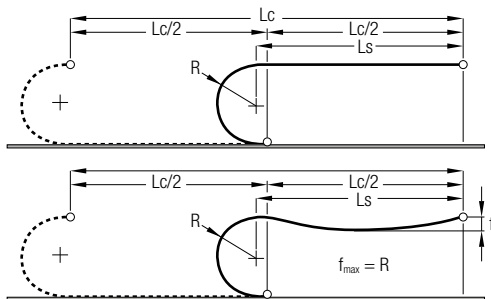


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (**Rbr**).

Nylon Energy Guiding Chains Series LC32

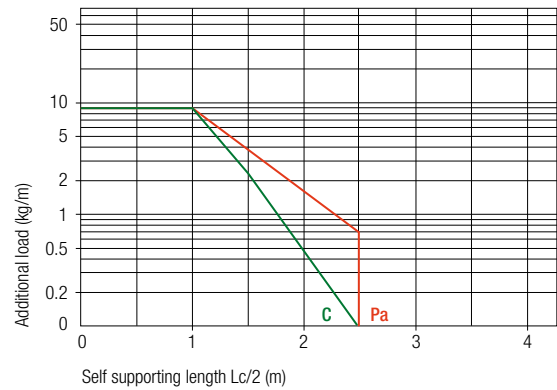
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 1.9 kg/m and a cavity width of 115 mm.

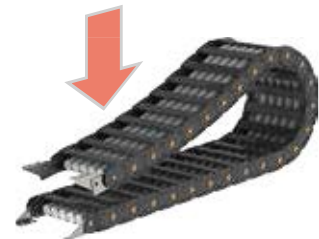


Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the Pa and C frame stay configuration, width $Le = 145$ mm. The self-support length of LC32 with frame stays type C is shorter because of the increased weight of the closed frame stays.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.



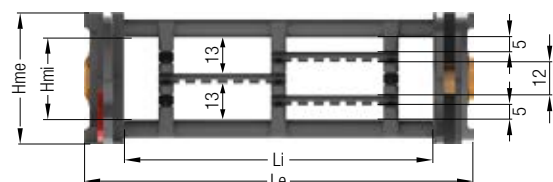
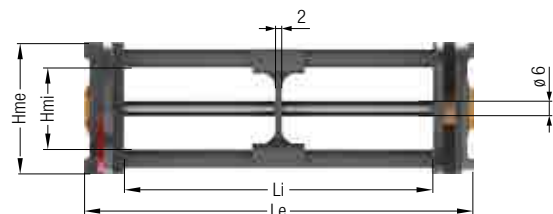
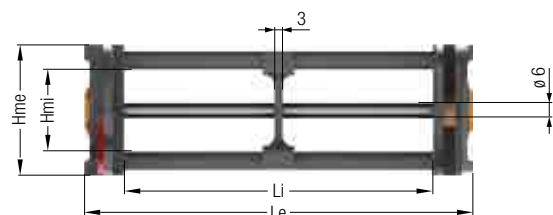
Frame Stay Types

The LC32 Series is available in several configurations, depending on the frame stay design:

- **Type Pa:** Injection-molded profile stays with hexagonal cross section, snap-on system jointed to the sidebands
- **Type C:** Injection-molded profile stays, to close and protect the chain from dust or hot chips
- **Type T:** By request, we can design hose carriers with lower, screw-mounted aluminum profiles with a rounded upper steel profile

Le (mm)	Type Pa		Type C	
	Li (mm)	Weight (kg/m)	Li (mm)	Weight (kg/m)
75	45	1.38	45	1.56
95	65	1.58	—	—
120	90	1.74	90	1.96
145	115	1.90	—	—
185	155	2.12	155	2.68
230	200	2.54	—	—
280	250	2.60	—	—
305	275	2.72	—	—
max. Le (mm)	305		185	
Hmi (mm)	32		26	

Standard configuration with stays mounted on every link (full frame).

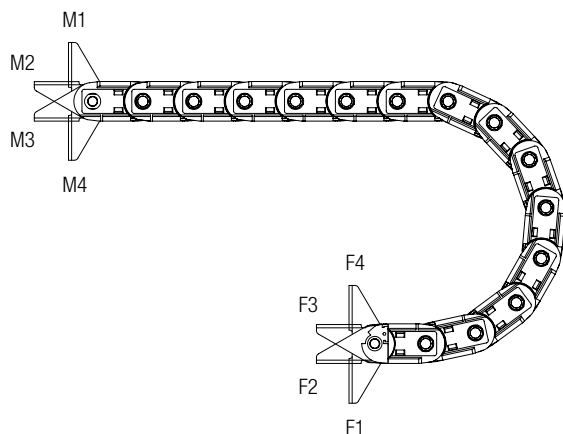


Nylon Energy Guiding Chains Series LC32

End Brackets

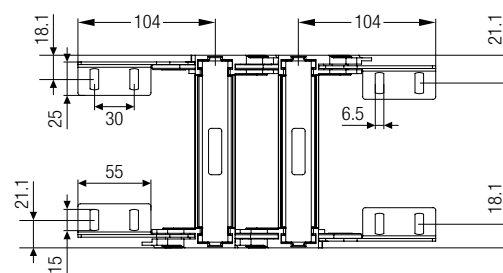
The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). Frontal steel end brackets available for closed chains.

Possible mounting positions

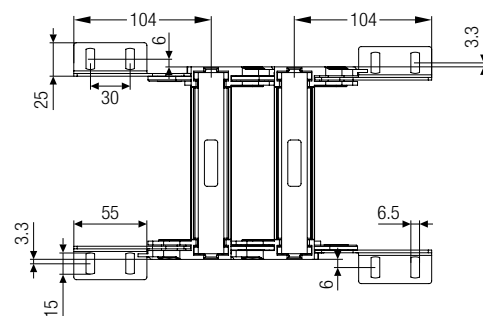


- M1** Mobile point frontal outside radius
- M2** Mobile point standard outside radius
(also possible for nylon brackets)
- M3** Mobile point standard inside radius
(also possible for nylon brackets)
- M4** Mobile point frontal inside radius
- F1** Fixed point frontal outside radius
- F2** Fixed point standard outside radius
(also possible for nylon brackets)
- F3** Fixed point standard inside radius
(also possible for nylon brackets)
- F4** Fixed point frontal inside radius

Mounting holes inside

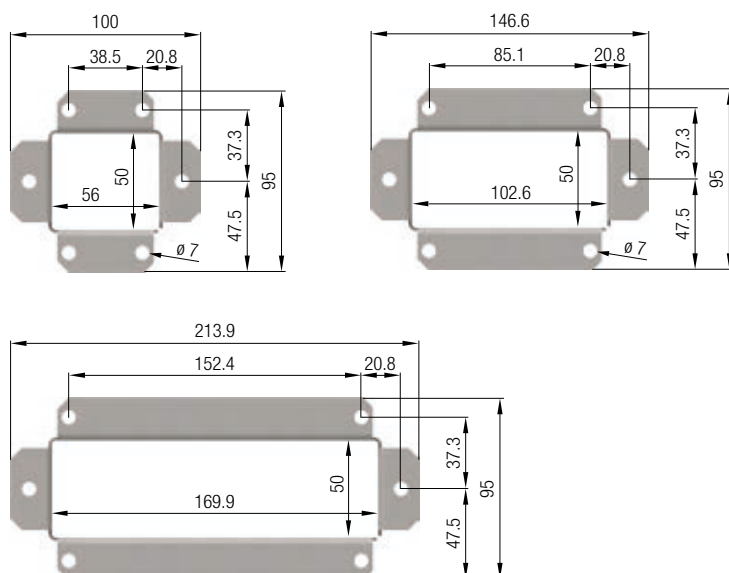


Mounting holes outside



Frontal Steel End Brackets

for LC3200C



Nylon Energy Guiding Chains

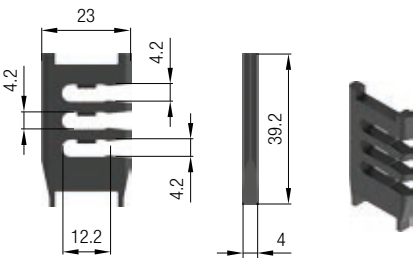
Series LC32

Vertical and Horizontal Separators

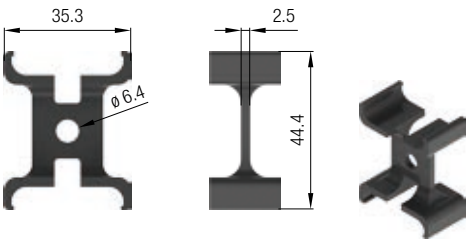
By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and dimensions (item LC5522)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
Pa	Nylon	LC3220	3.1	Nylon	150 x 12 x 2 mm	
C		LC3220C	1.9			

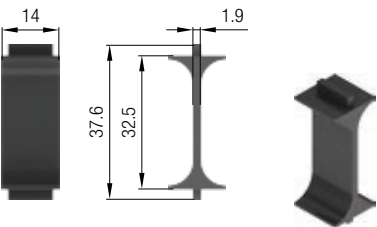
LC3221C - for Type C



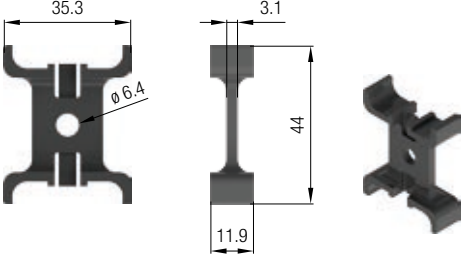
LC3222A - for Type Pa



LC3220C - for Type C



LC3220 - for Type Pa



Nylon Energy Guiding Chains

Series LC43

General Description



Energy Guiding Chain with nylon sidebands, framestays available in nylon.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Machine tools with high duty cycles
- Standard cranes
- Woodworking machines
- Applications with very long travel lengths and heavy loads (e.g. recycling facilities, landfills, dumps)

Application parameters:

- Maximum speed: 8 m/s
- Maximum acceleration: 17 m/s²
- Working temperature: -30 °C / +80 °C (frame stay types Pa and C)

Sidebands

LC43 sidebands are built up of single-thickness links, connected with orange-colored pins.

All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

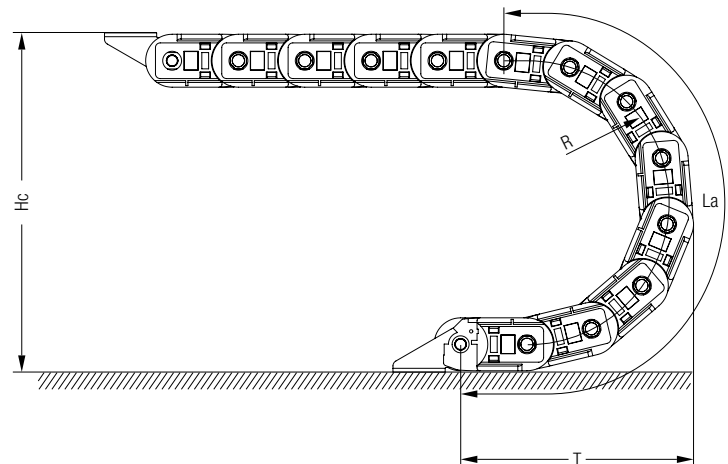
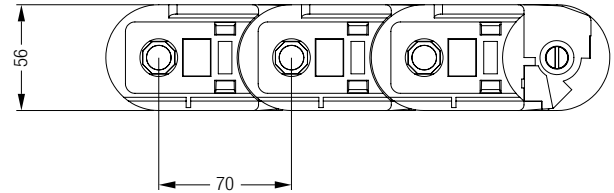
Sideband technical features	Program	LC43
	Chain height Hm (mm):	56
	Link pitch Lp (mm):	70
	Cavity width Li (mm):	Le -32

Le = Chain width

R (mm)	La (mm)	T (mm)	Hc (mm)	Clip color
90	463	208	236	no clip
120	557	238	296	red
150	651	268	356	green
200	808	318	456	yellow
250	965	368	556	blue
300	1122	418	656	grey
Custom	$\pi R + 4$ links	$R + 2 Lp + Hmi/2$	$2 R + Hm$	no clip



The radius of the chain is set with a colored clip mounted inside the link, which can be easily changed to modify the bending radius of the chain.

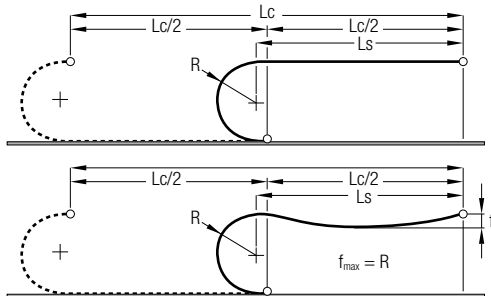


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (**Rbr**).

Nylon Energy Guiding Chains Series LC43

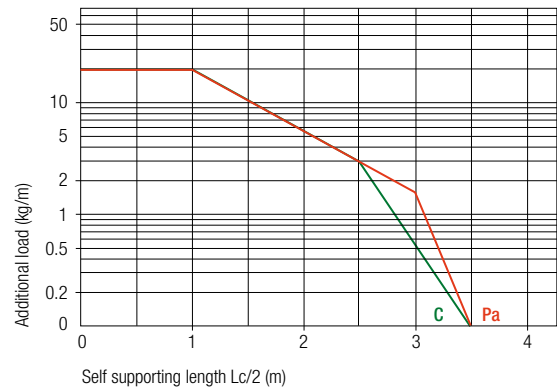
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 1.5 kg/m and a cavity width of 45 mm.

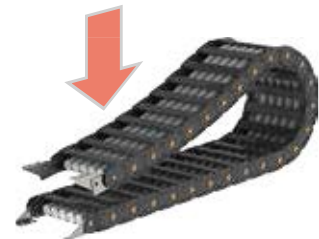


Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the Pa frame stay configuration, width $Le = 72$ mm. The self-support length of LC43 with frame stays type C is shorter because of the increased weight of the closed frame stays.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.



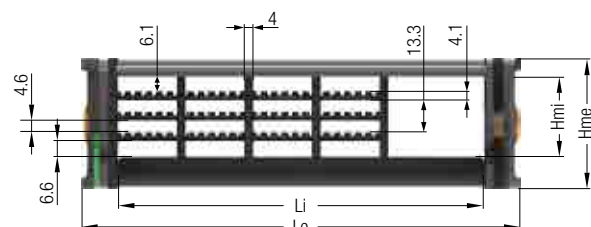
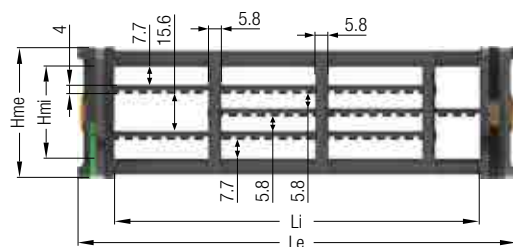
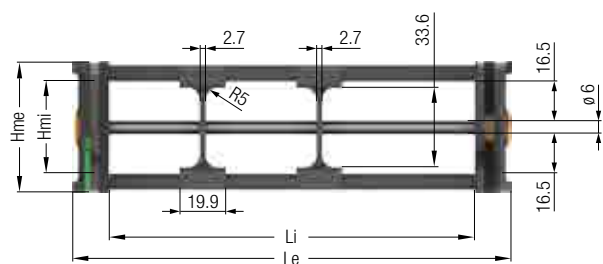
Frame Stay Types

The LC43 Series is available in several configurations, depending on the frame stay design:

- **Type Pa:** Injection-molded profile stays with hexagonal cross section, snap-on system jointed to the sidebands
- **Type C:** Injection-molded profile stays, sheets completely closing the chain
- **Type T:** By request, we can design hose carriers with lower, screw-mounted aluminum profiles with a rounded upper steel profile

Le (mm)	Type Pa		Type C	
	Li (mm)	Weight (kg/m)	Li (mm)	Weight (kg/m)
77	45	1.5	—	—
97	65	1.68	65	2
122	90	1.82	115	2.56
147	115	1.94	—	—
187	155	2.14	155	3.08
232	200	2.52	200	3.60
282	250	2.56	—	—
307	275	2.68	—	—
max. Le (mm)	307		232	
Hmi (mm)	40		35	

Standard configuration with stays mounted on every link (full frame).



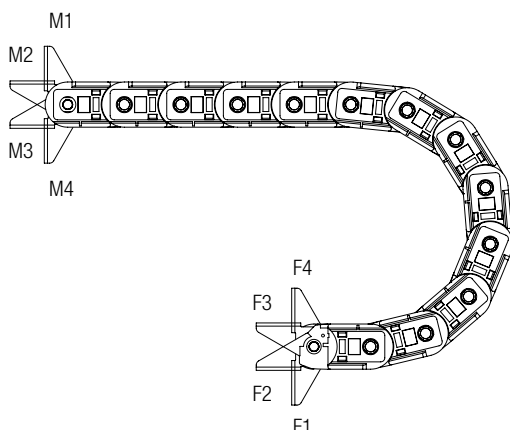
Nylon Energy Guiding Chains

Series LC43

End Brackets

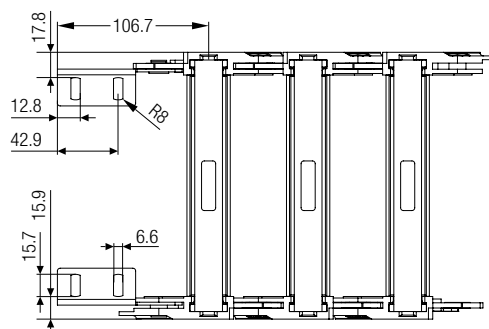
The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). Frontal steel end brackets available for closed chains.

Possible mounting positions

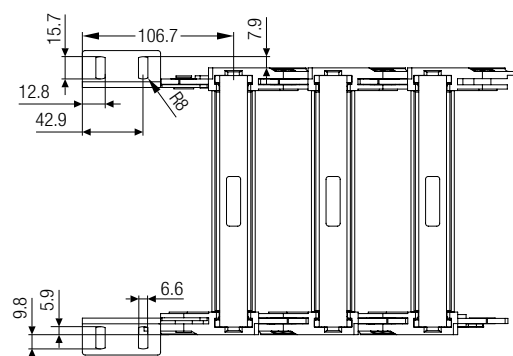


- M1** Mobile point frontal outside radius
- M2** Mobile point standard outside radius
(also possible for nylon brackets)
- M3** Mobile point standard inside radius
(also possible for nylon brackets)
- M4** Mobile point frontal inside radius
- F1** Fixed point frontal outside radius
- F2** Fixed point standard outside radius
(also possible for nylon brackets)
- F3** Fixed point standard inside radius
(also possible for nylon brackets)
- F4** Fixed point frontal inside radius

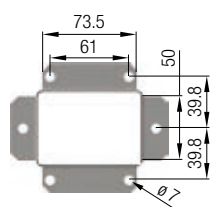
Mounting holes inside



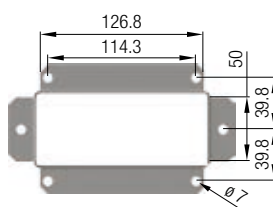
Mounting holes outside



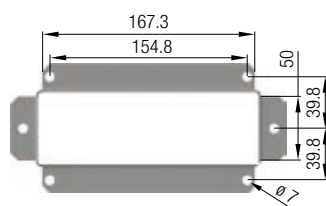
Frontal Steel End Brackets for LC4300C



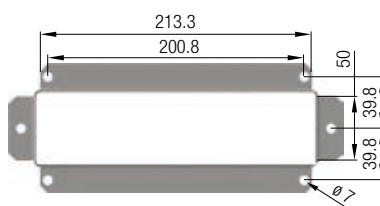
Li = 065



Li = 115



Li = 155



Li = 200



Nylon Energy Guiding Chains

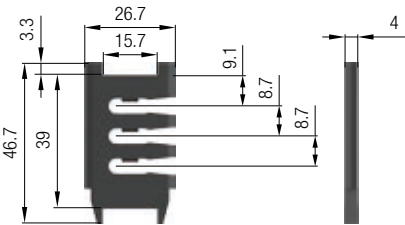
Series LC43

Vertical and Horizontal Separators

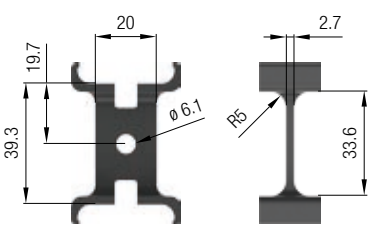
By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and dimensions (item LC5522)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
Pa	Nylon	LC4320	2.7	Nylon	150 x 12 x 2 mm	
C		LC4320C	4			

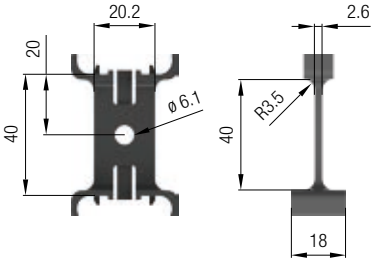
LC4320C - for Type C



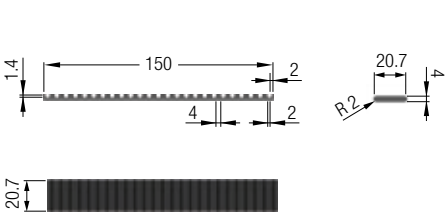
LC4320 - for Type Pa



LC4322A - for Type Pa



LC5522



Nylon Energy Guiding Chains

Series LC55

General Description



Energy Guiding Chain with nylon sidebands, framestays available in nylon.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Machine tools with high duty cycles
- Standard cranes
- Woodworking machines
- Applications with very long travel lengths and heavy loads (e.g. recycling facilities, landfills, dumps)

Application parameters:

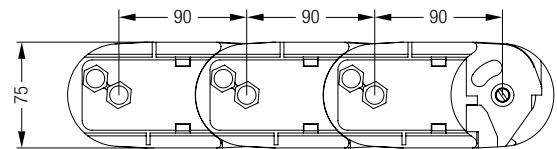
- Maximum speed: 8 m/s
- Maximum acceleration: 17 m/s²
- Working temperature: -30 °C / +80 °C (frame stay types R, Pa, and C)

Sidebands

LC55 sidebands are built up of alternating single-thickness and double-thickness links, connected with orange-colored double pins. All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LC55
	Chain height Hm (mm):	75
	Link pitch Lp (mm):	90
	Cavity width Li (mm):	Le -36

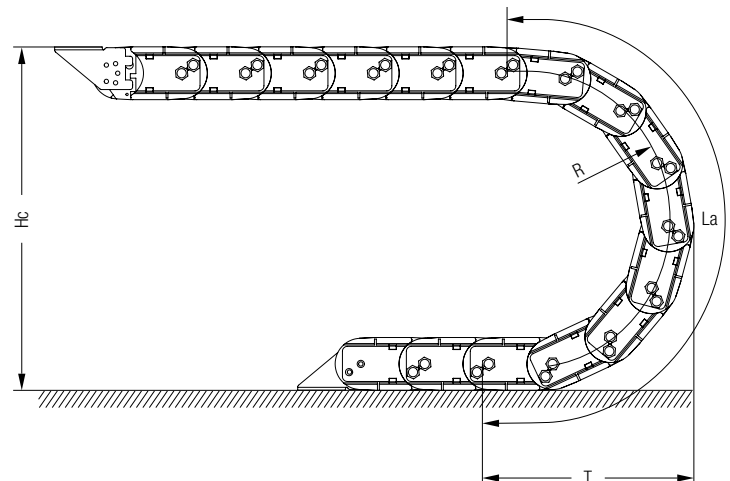
Le = Chain width



R (mm)	La (mm)	T (mm)	Hc (mm)	Clip color
120	557	337	315	no clip
150	651	367	375	no clip
200	808	417	475	yellow
250	965	467	575	blue
300	1122	517	675	green
350	1279	567	775	red
400	1436	617	875	grey
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hm/2$	$2 R + Hm$	no clip



The radius of the chain is set with a colored clip mounted inside the link, which can be easily changed to modify the bending radius of the chain.



The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr).

39

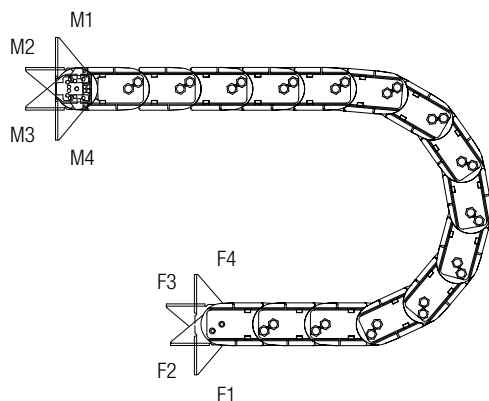
Nylon Energy Guiding Chains

Series LC55

End Brackets

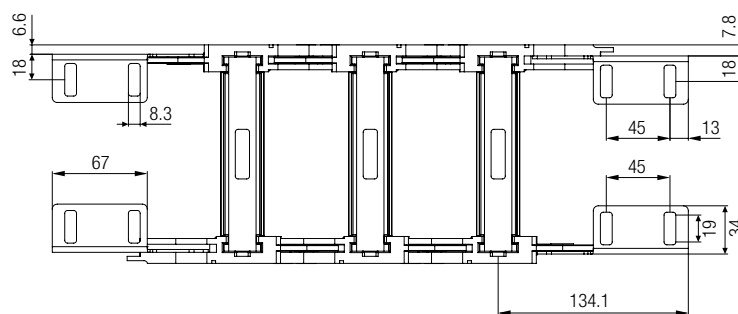
The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). Frontal steel end brackets available for closed chains.

Possible mounting positions

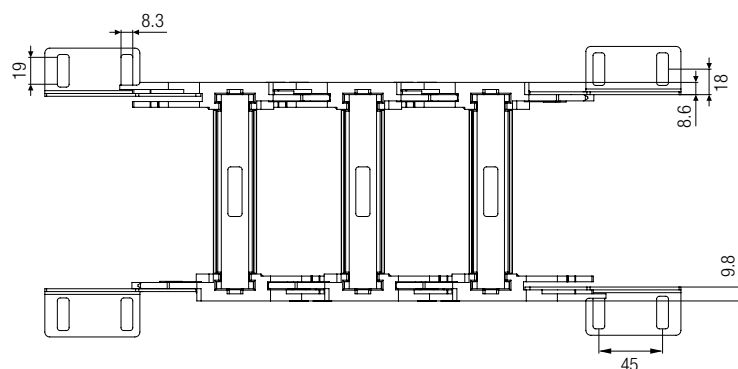


- M1** Mobile point frontal outside radius
- M2** Mobile point standard outside radius
(also possible for nylon brackets)
- M3** Mobile point standard inside radius
(also possible for nylon brackets)
- M4** Mobile point frontal inside radius
- F1** Fixed point frontal outside radius
- F2** Fixed point standard outside radius
(also possible for nylon brackets)
- F3** Fixed point standard inside radius
(also possible for nylon brackets)
- F4** Fixed point frontal inside radius

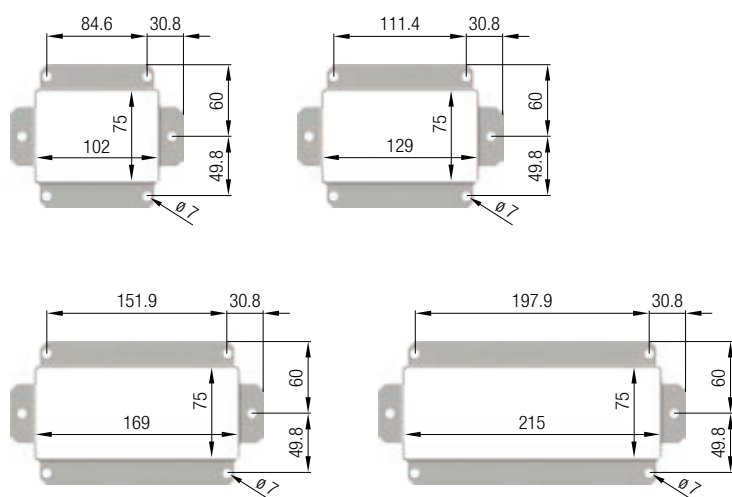
Mounting holes inside



Mounting holes outside



Frontal Steel End Brackets



Nylon Energy Guiding Chains

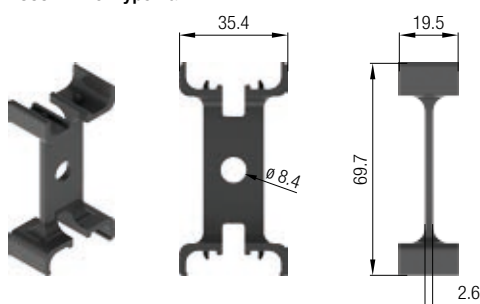
Series LC55

Vertical and Horizontal Separators

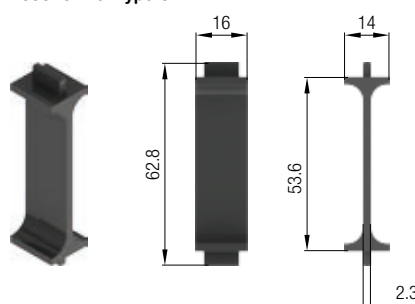
By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and diameter (item LC5522)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
A	Nylon	LC5520	2.6	Aluminum	ø 8 mm	12.15 x 8 mm
Pa						
C		LC5520C	2.3		ø 6 mm	10.79 x 7 mm

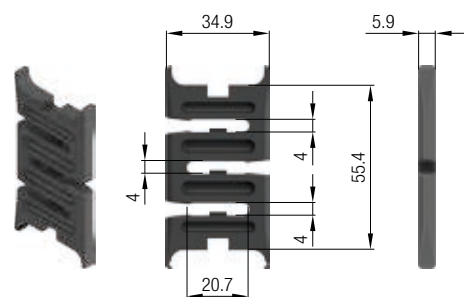
LC5522 - for Type Pa



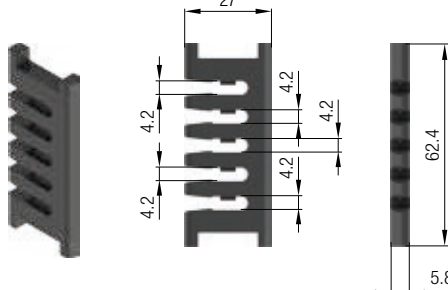
LC5520 - for Type C



LC5521

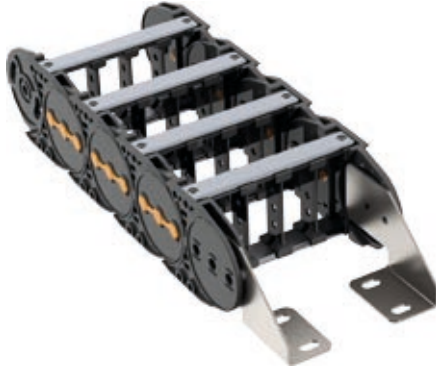


LC5521C



Nylon / Nylon & Metal Energy Guiding Chains Series LC85

General Description



Energy Guiding Chain with nylon sidebands, frame stays available in aluminum, nylon, and closed. This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Medium-sized bridge cranes
- Woodworking machinery
- Heavy-duty machine tools
- Transfer cars
- Material handling
- Cranes
- Applications with long travel distances

Application parameters:

- Maximum speed: 5 m/s
- Maximum acceleration: 15 m/s²
- Working temperature: -30 °C / +80 °C – Frame stay Types R, Pa, and C

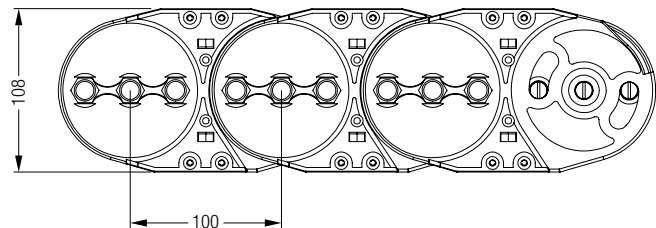
Sidebands

LC85 sidebands are built up of single-thickness links, connected with three orange-colored pins.

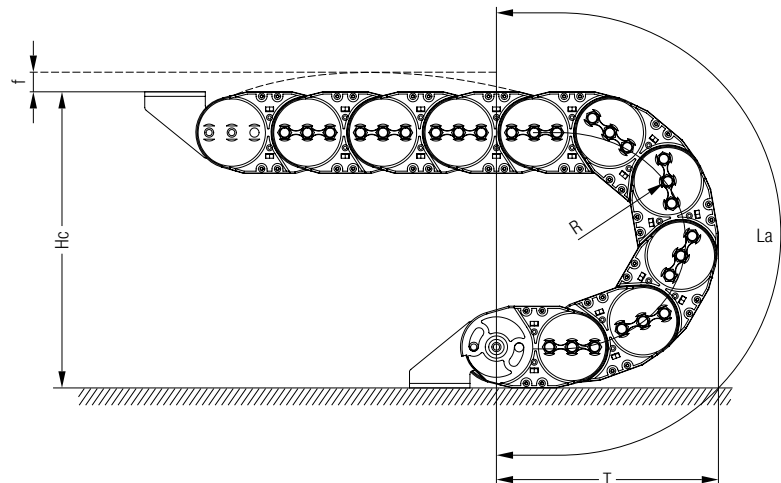
All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LC85
	Chain height Hm (mm):	108
	Link pitch Lp (mm):	100
	Cavity width Li (mm):	Le -50

Le = Chain width



R (mm)	La (mm)	T (mm)	Hc (mm)
150	871	404	408
200	1028	454	508
250	1185	504	608
300	1342	554	708
350	1500	604	808
400	1656	654	908
500	1970	704	1008
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$

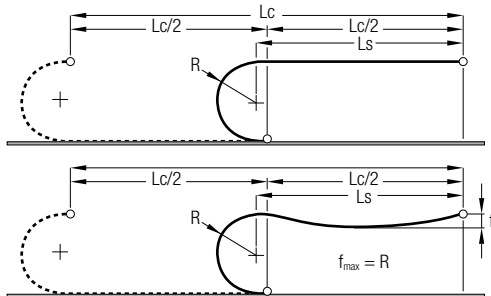


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr). Value **f** depending on travel lengths and additional weights.

Nylon / Nylon & Metal Energy Guiding Chains Series LC85

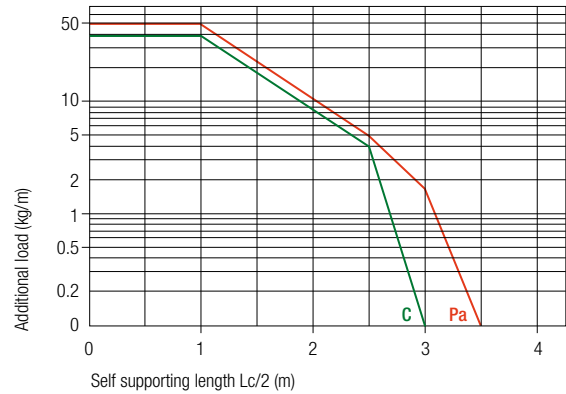
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 4.6 kg/m and a cavity width of 100 mm. Frame stays type R.



Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the Pa frame stay configuration, width $Le = 150$ mm. When equipped with frame stays type C, the self support distance of LC85 is shorter because of the higher weight of the closed frame stays.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.

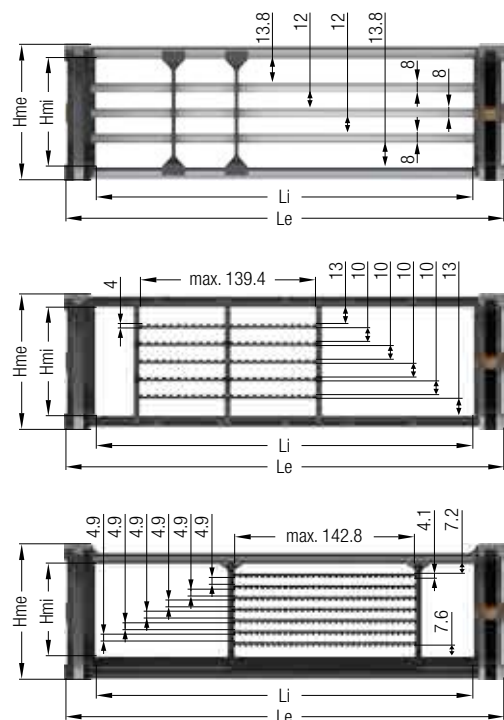
Frame Stay Types

The LC85 Series is available in several configurations, depending on the frame stay design:

- **Type R:** Extruded aluminum profile stays, reinforced, with hexagonal cross section, mounted with screws either outside or inside the radius
- **Type Pa:** Injection-molded profile stays with hexagonal cross section, snap-on system jointed to the sidebands
- **Type C:** Injection-molded profile stays, sheets completely closing the chain
- **Type T:** By request, we can design hose carriers with lower, screw-mounted aluminum profiles with a rounded upper steel profile

Le (mm)	Type R		Type Pa		Type C	
	Li (mm)	Weight (kg/m)	Li (mm)	Weight (kg/m)	Li (mm)	Weight (kg/m)
150	100	4.6	100	4.54	—	—
200	150	5	150	4.84	150	4.75
250	200	5.23	200	5.14	200	5
300	250	5.47	250	5.44	250	5.25
350	300	5.7	300	5.74	300	5.7
400	350	5.93	250	6.04	250	5.95
450	400	6.16	400	6.34	400	6.4
Custom	Le -50		—		—	
max. Le (mm)	450		450		450	
Hmi (mm)	85		85		72	

Standard configuration with stays mounted on every other link (half frame).
Available by request with stays mounted on every link (full frame).

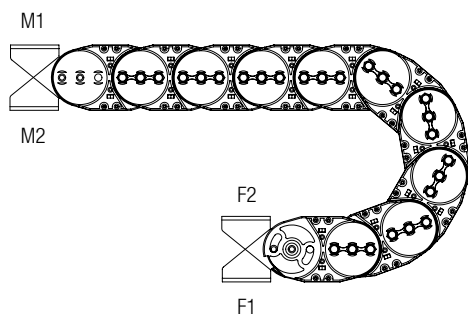


Nylon / Nylon & Metal Energy Guiding Chains Series LC85

End Brackets

The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). Frontal steel end brackets available for closed chains.

Possible mounting positions



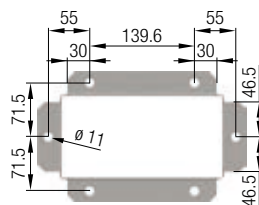
M1 Mobile point standard outside radius

M2 Mobile point standard inside radius

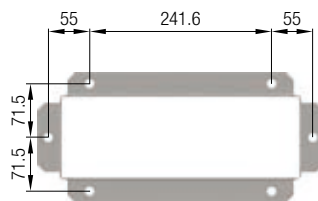
F1 Fixed point standard outside radius

F2 Fixed point standard inside radius

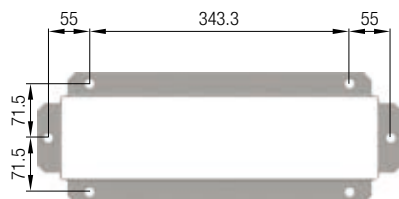
Frontal Steel End Brackets



Li = 200

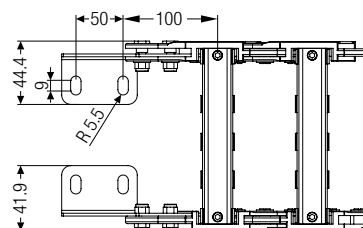


Li = 300

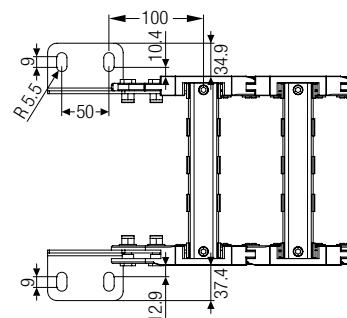


Li = 400

Mounting holes inside



Mounting holes outside



Nylon & Metal Energy Guiding Chains Series LF38

General Description



Energy Guiding Chain with nylon sidebands and metal frame stays.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Applications with very long travel lengths and heavy loads (e.g. recycling facilities, landfills, dumps)
- Machine tools
- Cranes

Application parameters:

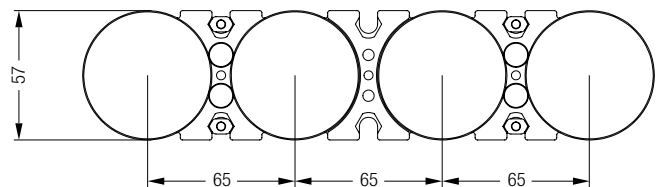
- Maximum speed: 8 m/s
- Maximum acceleration: 40 m/s²
- Working temperature: -30 °C / +80 °C (all frame stay types)

Sidebands

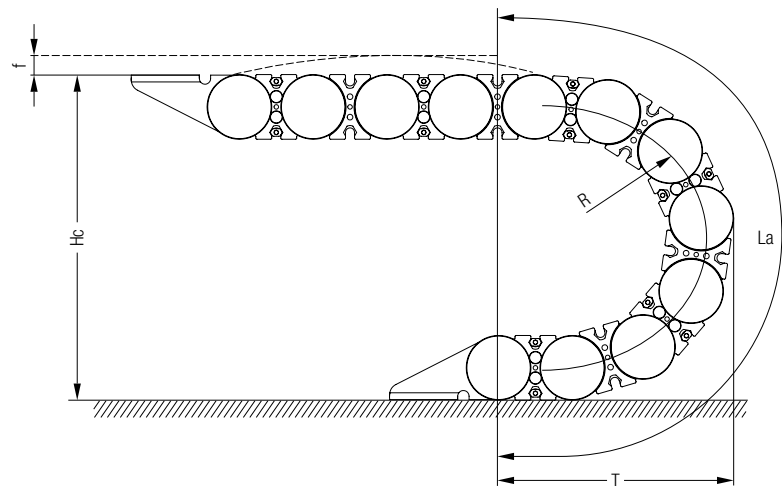
LF38 sidebands are built up of alternating single-thickness and double-thickness links, connected with two orange-colored pins. All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LF38
	Chain height Hm (mm):	57
	Link pitch Lp (mm):	65
	Cavity width Li (mm):	Le -32

Le = Chain width



R (mm)	La (mm)	T (mm)	Hc (mm)
75	496	233	207
95	559	253	247
115	622	273	287
145	716	303	347
175	810	333	407
220	952	378	497
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$



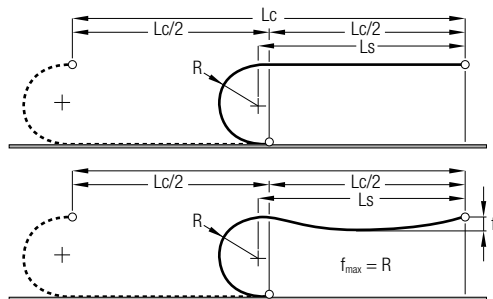
The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr). Value **f** depending on travel lengths and additional weights.

Nylon & Metal Energy Guiding Chains

Series LF38

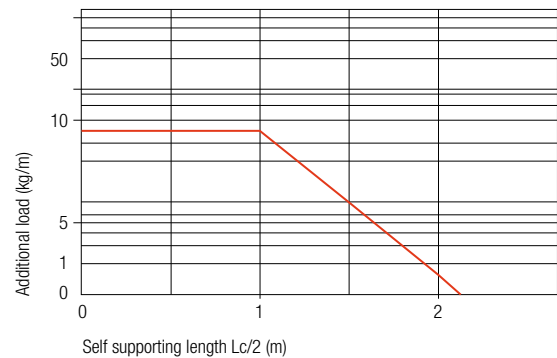
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 2.28 kg/m and a cavity width of 63 mm.



Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the A stay configuration, width $Le = 95$ mm.



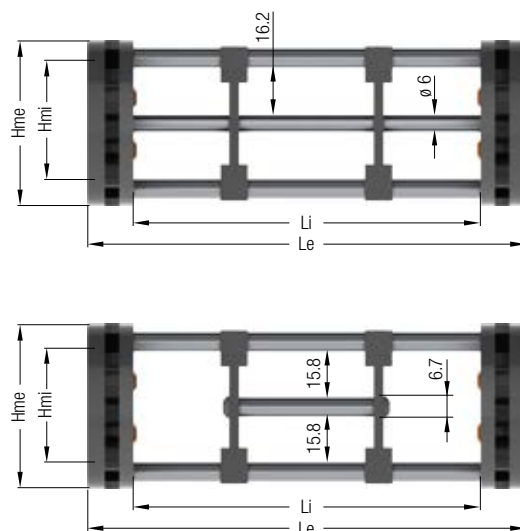
Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.

Frame Stay Types

The LF38 Series is available in several configurations, depending on the frame stay design:

- **Type A:** Extruded aluminum profile stays with hexagonal cross section, snap-on system jointed to the sidebands
- **Type T:** By request, we can design hose carriers with lower, screw-mounted aluminum profiles with a rounded upper steel profile

Le (mm)	Type A	
	Li (mm)	Weight (kg/m)
80	48	2.32
110	78	2.36
135	103	2.39
170	138	2.435
195	163	2.47
235	203	2.52
285	253	2.59
310	278	2.62
435	403	2.79
485	453	2.86
500	468	2.88
Custom	Le -32	
max. Le (mm)	500	
Hmi (mm)	38	



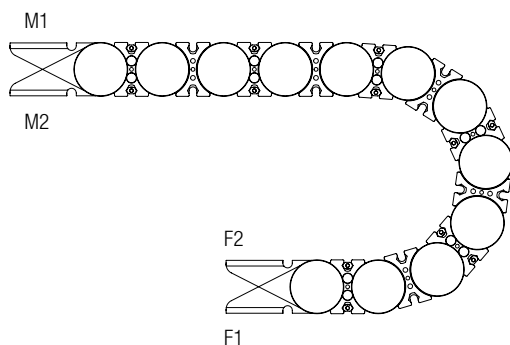
Standard configuration with stays mounted on every other link (half frame).
Available by request with stays mounted on every link (full frame).

Nylon & Metal Energy Guiding Chains Series LF38

End Brackets

The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). Brackets can only be mounted on double thickness links.

Possible mounting positions



M1 Mobile point standard outside radius

M2 Mobile point standard inside radius

F1 Fixed point standard outside radius

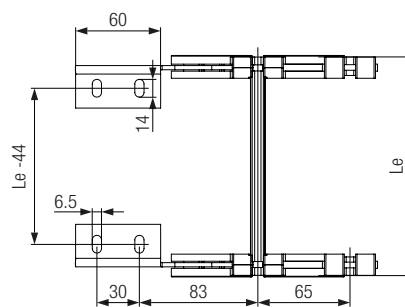
F2 Fixed point standard inside radius

Frontal Brackets

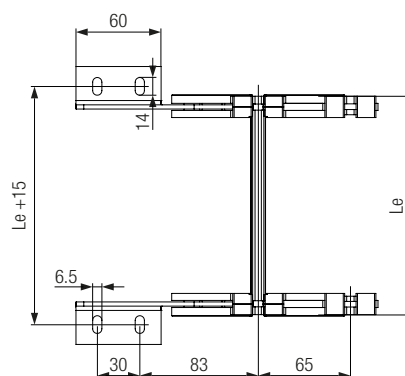


Special frontal brackets can be supplied for nylon/metal chains. These brackets reduce the necessary installation length (e.g. when connecting the chain directly to a junction box).

Mounting holes inside



Mounting holes outside



Nylon & Metal Energy Guiding Chains

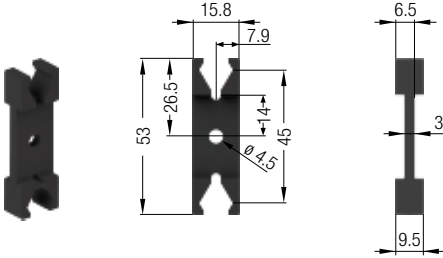
Series LF38

Vertical and Horizontal Separators

By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and diameter (item LF3822)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
A	Nylon	LF3820	3	Aluminum	ø 6 mm	10.79 x 7 mm

LF3820



Nylon & Metal Energy Guiding Chains Series LF58

General Description



Energy Guiding Chain with nylon sidebands and metal frame stays.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Applications with very long travel lengths and heavy loads (e.g. recycling facilities, landfills, dumps)
- Machine tools
- Cranes

Application parameters:

- Maximum speed: 8 m/s
- Maximum acceleration: 30 m/s²
- Working temperature: -30 °C / +80 °C (frame stay types A and T)

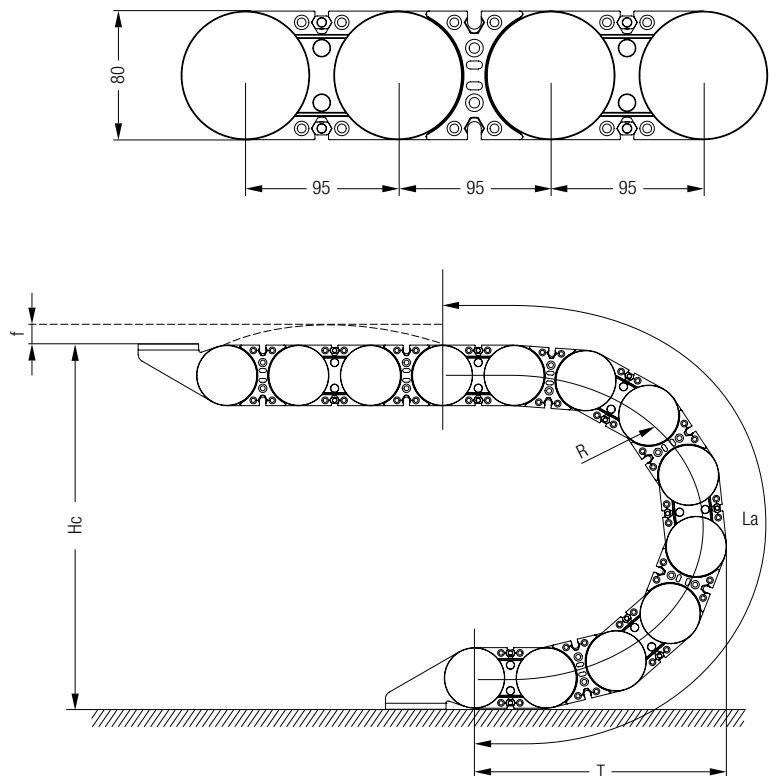
Sidebands

LF58 sidebands are built up of alternating single-thickness and double-thickness links, connected with two orange-colored pins. All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LF58
	Chain height Hm (mm):	80
	Link pitch Lp (mm):	95
	Cavity width Li (mm):	Le - 40

Le = Chain width

R (mm)	La (mm)	T (mm)	Hc (mm)
140	820	370	360
170	915	400	420
200	1008	430	480
260	1197	490	600
290	1291	520	660
320	1385	550	720
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$

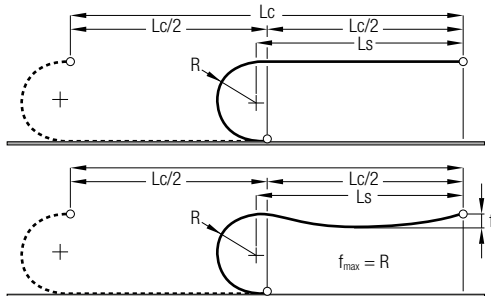


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr). Value **f** depending on travel lengths and additional weights.

Nylon & Metal Energy Guiding Chains Series LF58

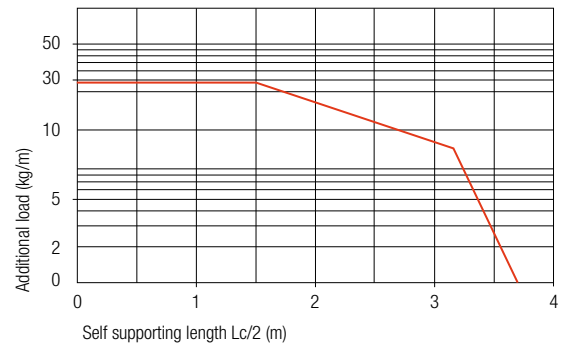
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 3.2 kg/m and a cavity width of 86 mm.

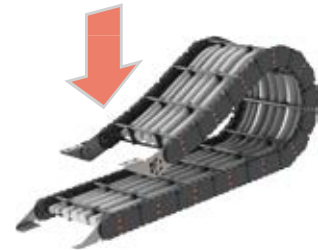


Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the A stay configuration, width $Le = 126$ mm.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.



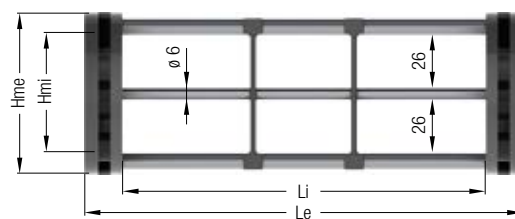
Frame Stay Types

The LF58 Series is available in several configurations, depending on the frame stay design:

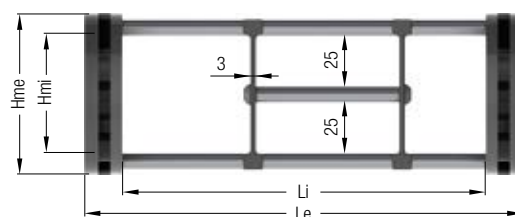
- **Type A:** Extruded aluminum profile stays with hexagonal cross section, snap-on system jointed to the sidebands
- **Type T:** By request, we can design hose carriers with lower, screw-mounted aluminum profiles with a rounded upper steel profile

Le (mm)	Type A	
	Li (mm)	Weight (kg/m)
89	49	3.14
113	73	3.18
120	80	3.20
145	105	3.23
170	130	3.27
195	155	3.31
220	180	3.35
270	230	3.44
295	255	3.48
345	305	3.56
447	407	3.72
500	460	3.8
Custom	Le -40	
max. Le (mm)	500	
Hmi (mm)	58	

Type A (with horizontal separators in full width)



Type A (with horizontal separators not in full width)



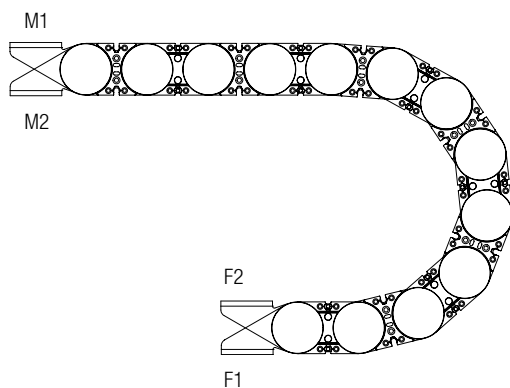
Standard configuration with stays mounted on every other link (half frame). Available by request with stays mounted on every link (full frame).

Nylon & Metal Energy Guiding Chains Series LF58

End Brackets

The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). Brackets can only be mounted on double thickness links.

Possible mounting positions



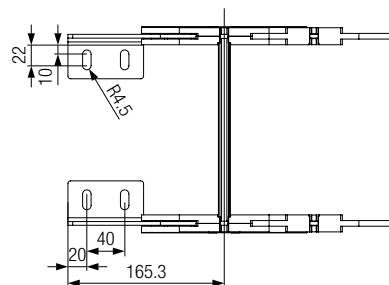
M1 Mobile point standard outside radius

M2 Mobile point standard inside radius

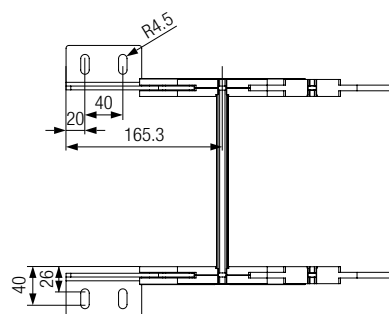
F1 Fixed point standard outside radius

F2 Fixed point standard inside radius

Mounting holes inside



Mounting holes outside



Frontal Brackets



Special frontal brackets can be supplied for nylon/metal chains. These brackets reduce the necessary installation length (e.g. when connecting the chain directly to a junction box).

Nylon & Metal Energy Guiding Chains

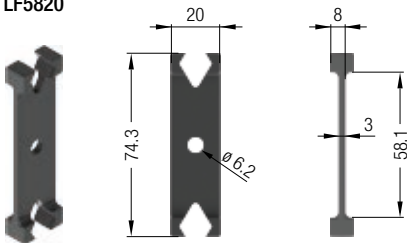
Series LF58

Vertical and Horizontal Separators

By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and diameter (item LF5822)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
A	Nylon	LF5820	3	Aluminum	ø 6 mm	10.79 x 7 mm

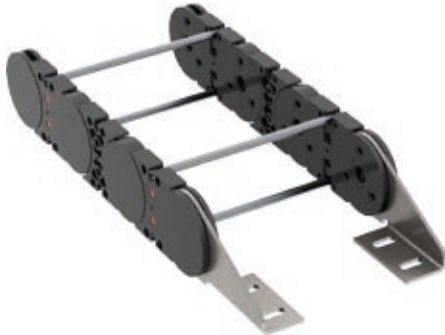
LF5820



Nylon & Metal Energy Guiding Chains

Series LF73

General Description



Energy Guiding Chain with nylon sidebands and metal frame stays.

This chain is the ideal solution for applications when the chain needs to be flexible and light with maximum robustness.

Main applications:

- Stage technology
- Elevators
- Car wash systems
- Applications with very long travel lengths and heavy loads (e.g. recycling facilities, landfills, dumps)
- Machine tools
- Cranes

Application parameters:

- Maximum speed: 6 m/s
- Maximum acceleration: 20 m/s²
- Working temperature: -30 °C / +80 °C (frame stay types A, T, and R)

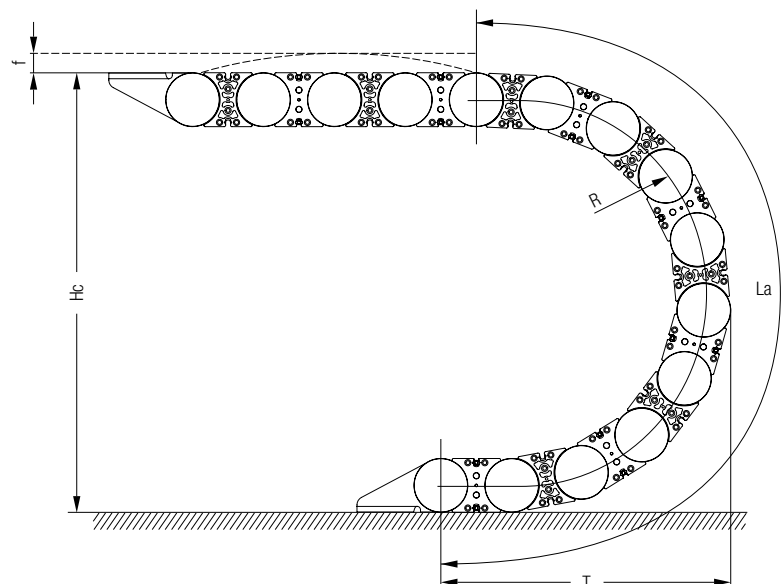
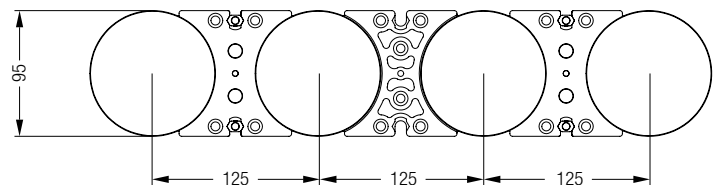
Sidebands

LF73 sidebands are built up of alternating single-thickness and double-thickness links, connected with two orange-colored pins. All sidebands are made of fiberglass reinforced polyamide PA6 (ATEX zone 2 compliant versions are available by request).

Sideband technical features	Program	LF73
	Chain height Hm (mm):	95
	Link pitch Lp (mm):	125
	Cavity width Li (mm):	Le -42

Le = Chain width

R (mm)	La (mm)	T (mm)	Hc (mm)
180	1065	477	455
220	1191	517	535
260	1316	557	615
300	1442	597	695
340	1568	637	775
380	1693	677	855
Custom	$\pi R + 4 \text{ links}$	$R + 2 Lp + Hmi/2$	$2 R + Hm$

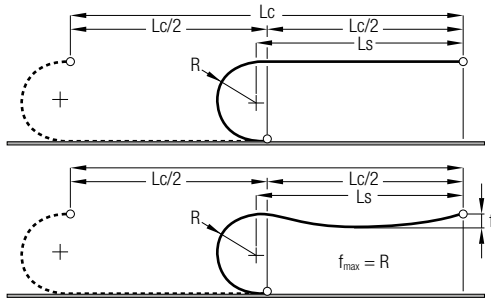


The connecting height should be at least **Hm/2** more than **Hc**. For circular movement, the chain can be equipped with customized reverse-bending radius links (Rbr). Value **f** depending on travel lengths and additional weights.

Nylon & Metal Energy Guiding Chains Series LF73

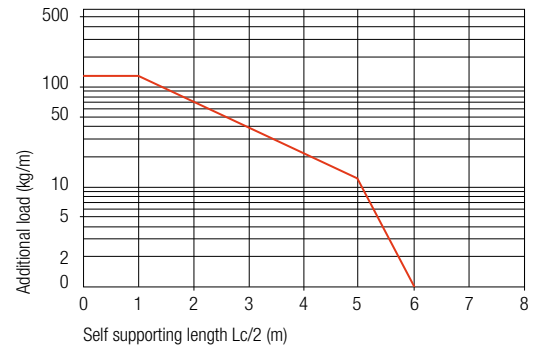
Sidebands

This self-support diagram refers to a chain self-weight (q_0) of 4 kg/m and a cavity width of 89 mm.

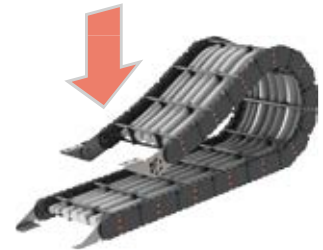


Length of the chain: $L \cong Lc/2 + La$ (multiple of Lp) + 2 Lp

Diagram base line calculated for the A stay configuration, width $LE = 131$ mm.



Additional loads cause the extended part of the chain to sag. Functionality of the chain is not compromised, if the chain sag is smaller than the radius.



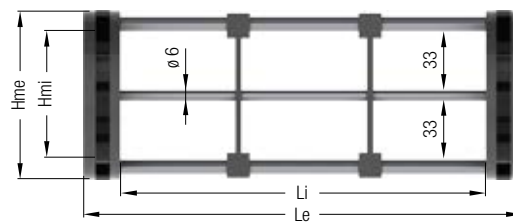
Frame Stay Types

The LF73 Series is available in several configurations, depending on the frame stay design:

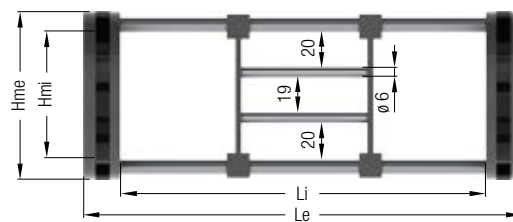
- **Type A:** Extruded aluminum profile stays with hexagonal cross section, snap-on system jointed to the sidebands
- **Type R:** Extruded aluminum profile stays, reinforced, with hexagonal cross section, mounted with screws either outside or inside the radius
- **Type T:** By request, we can design hose carriers with lower, screw-mounted aluminum profiles with a rounded upper steel profile

Le (mm)	Type A		Type R	
	Li (mm)	Weight (kg/m)	Li (mm)	Weight (kg/m)
150	108	4.20	108	4.38
175	133	4.24	133	4.44
200	158	4.26	158	4.5
225	183	4.3	183	4.56
275	233	4.38	233	4.68
300	258	4.42	258	4.74
350	308	4.5	308	4.86
400	358	4.58	358	4.98
450	408	4.66	408	5.1
500	458	4.74	458	5.22
550	508	4.82	508	5.34
600	558	4.9	558	5.46
Custom	Le -42		Le -42	
max. Le (mm)	600		800	
Hmi (mm)	73		72	

Type A



Type R



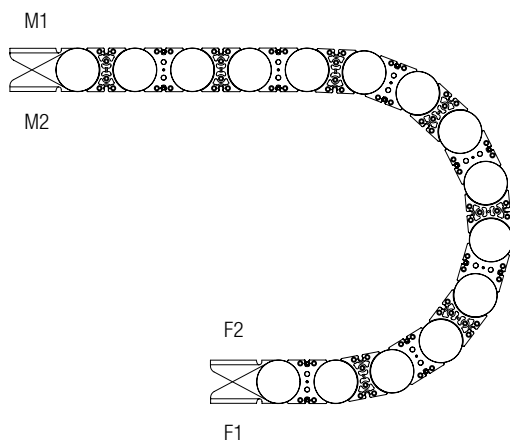
Standard configuration with stays mounted on every other link (half frame). Available by request with stays mounted on every link (full frame).

Nylon & Metal Energy Guiding Chains Series LF73

End Brackets

The end brackets are permanently mounted on the chain. When the chain works in a sliding configuration, it is necessary to supply it with swivel-mounted brackets at the movable point (see page 58). Brackets can only be mounted on double thickness links.

Possible mounting positions



M1 Mobile point standard outside radius

M2 Mobile point standard inside radius

F1 Fixed point standard outside radius

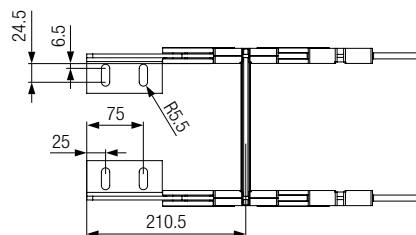
F2 Fixed point standard inside radius

Frontal Brackets

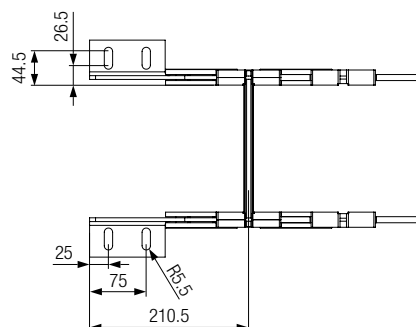


Special frontal brackets can be supplied for nylon/metal chains.

Mounting holes inside



Mounting holes outside



Nylon & Metal Energy Guiding Chains

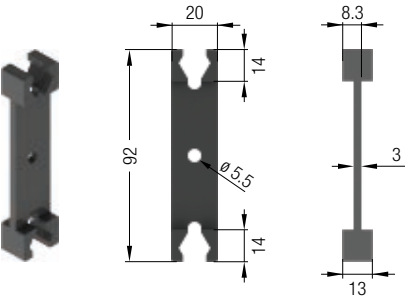
Series LF73

Vertical and Horizontal Separators

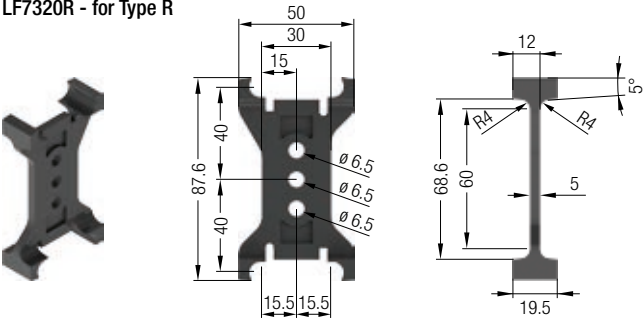
By request, the chain can be supplied with vertical and/or horizontal separators. These components hold cables in the right position, minimize the stress of chain movement, and prevent the cables from twisting.

Frame Stay Type	Vertical Separators Material, items, and thickness			Horizontal Separators # Material and diameter (item LZ9522)		
	Material	Part No.	(mm)	Material	Full Width	Partial Width
A	Nylon	LF7320	3	Aluminum	ø 6 mm	10.79 x 7 mm
R		LF7320R	5		ø 8 mm	12.15 x 8 mm

LF7320 - for Type A



LF7320R - for Type R



Accessories

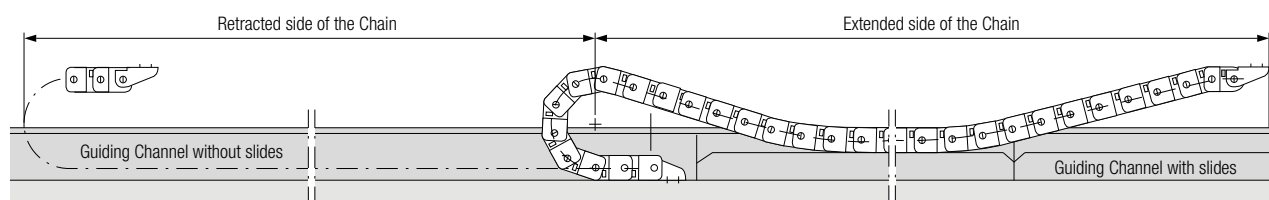
Guiding Channels

In applications where the total travel length exceeds the self-supporting length of a nylon chain, we recommend installing the chain with a Guiding Channel. This accessory guides chains that have long travel distances. For the retracted side of the travel length, the Guiding Channel just helps the chain in the movement. For the extended side of the travel length, it's necessary to install slides on the side walls to support the chain during the run.

Conductix-Wampfler offers three different types of Guiding Channels: LCCG102, 158, and 208. The numeric part of the Part No. identifies the side wall height of the Guiding Channel itself. It is strongly recommended to use Guiding Channels with side walls that are at least two times the height of the installed chain.

Conductix-Wampfler Guiding Channels are available in galvanized steel, stainless steel AISI304, and stainless steel AISI316L.

Guiding Channel with slides installed:



To choose the correct Guiding Channel starting from the external height of the chain:

Side wall height (mm) Guiding Channel	Chain Series	Part No.	
		Guiding Channel without slides (retracted side)	Guiding Channel with slides (extended side)
102	LC25	LCCG102	LCCGA102
102	LC27	LCCG102	LCCGA102
102	LC31	LCCG102	LCCGA102
102	LC32	LCCG102	LCCGA102
158	LF38	LCCG158	LCCGA158
158	LC43	LCCG158	LCCGA158
158	LC55	LCCG158	LCCGA158
208	LC85	LCCG208	LCCGA208
208	LF58	LCCG208	LCCGA208
208	LF73	LCCG208	LCCGA208

Swivel-mounted Brackets

For long travel distance applications where the nylon chains work in a sliding configuration, it is very important to install a Swivel-mounted Bracket at the moveable point. This simple system compensates for the pushing forces of the towing arm and reduces the stress on the first links of the chain.

Swivel-mounted Brackets are available in:

- Galvanized steel
- Stainless steel AISI304
- Stainless steel AISI316

for the chain LC25-27-31-32-43-55-85 and LF programs.



Accessories

Misalignment Recovery System (MRS)

The Misalignment Recovery System is a good solution for exceptional travel lengths.

For exceptionally long travel lengths (up to 200 meters), we strongly recommend that a Misalignment Recovery System be added at the movable point between the towing arms and the brackets of the chain.

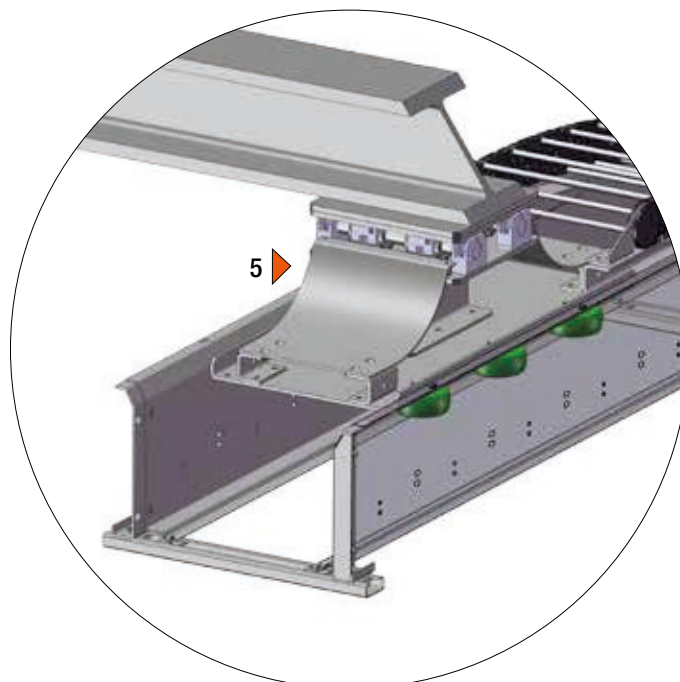
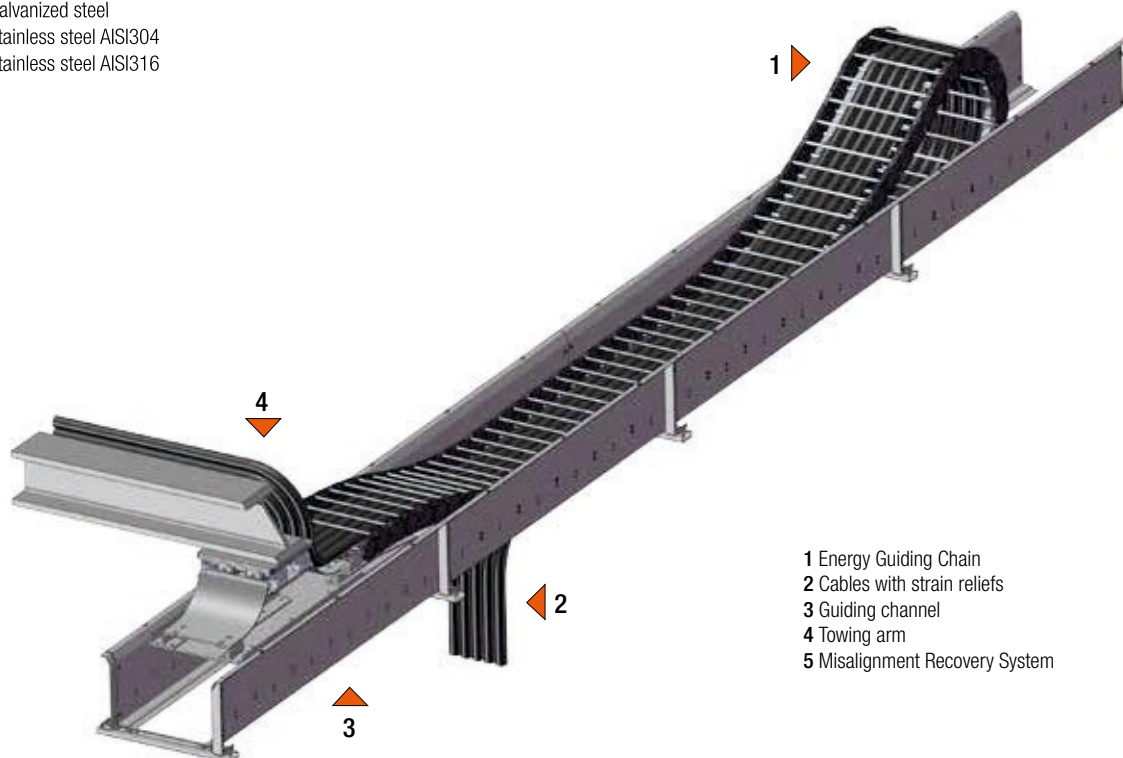
The MRS compensates for the forces and vibrations that can cause damage to the chain, such as breaking of the sidebands, chain jumping out of the guiding channel, etc.

MRS's are custom-made according to the application's features.

Easy to install and suitable for all our chain series, an MRS is required for applications where long travel length, high speed and/or acceleration can present a risk to the integrity of the chain system.

Misalignment Recovery Systems are available in:

- Galvanized steel
- Stainless steel AISI304
- Stainless steel AISI316



Accessories

Strain Reliefs

Cables installed inside an Energy Guiding Chain must be anchored at both the mobile and fixed ends. For this purpose, Conductix-Wampfler can supply a complete program of Strain Reliefs by request. With the Strain Reliefs, Conductix-Wampfler supplies a specially designed support bar to hold the Strain Reliefs.

Strain Reliefs are available in:

- Galvanized steel
- Stainless steel AISI304
- Stainless steel AISI316



Ground Channels

In some situations, the retracted side of the travel distance needs to be supported or driven without touching the ground. When required, the chains can be supplied with a Ground Channel. The standard Ground Channel segment length is 2.0 meters. Other custom lengths are available by request. Channel widths are available in multiples of 10 mm. Channel widths **Lec** can accommodate a range of chain widths **Le** according to the table below.

Lec	Le	Lec	Le	Lec	Le	Lec	Le	Lec	Le	Lec	Le	Lec	Le	Lec	Le
80	61-70	140	121-130	200	181-190	260	241-250	320	301-310	380	361-370	440	421-430	500	481-490
90	71-80	150	131-140	210	191-200	270	251-260	330	311-320	390	371-380	450	431-440	510	491-500
100	81-90	160	141-150	220	201-210	280	261-270	340	321-330	400	381-390	460	441-450		
110	91-100	170	151-160	230	211-220	290	271-280	350	331-340	410	391-400	470	451-460		
120	101-110	180	161-170	240	221-230	300	281-290	360	341-350	420	401-410	480	461-470		
130	111-120	190	171-180	250	231-240	310	291-300	370	351-360	430	411-420	490	471-480		

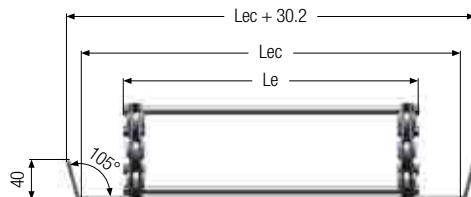
Standard Ground Channels are formed from a single steel layer, bent on the sides (see picture below left). By request, we can supply Ground Channels with traverses, to avoid dust or liquid deposits inside the Channels (see picture below middle).



LZCG



LZCG-AP



Assembly and Disassembly Tools

For fast assembly and disassembly of the chain sidebands, Conductix-Wampfler offers special tools to help customers install link junction pins. Those tools can also be used to disassemble the sidebands to change the length of the chain.

Assembly tools are available for the following chains:

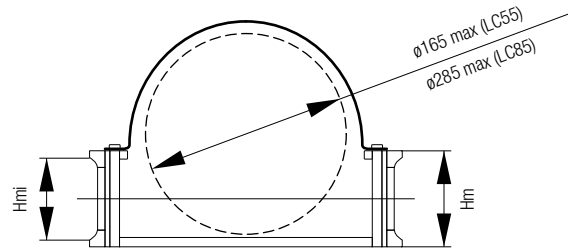
- LC1700 (Part No. LC1740)
- LC3200 and LC4300 (Part No. LC4340)
- LC5500 (Part No. LC5540)
- LC8500 (Part No. LC8540)



Accessories / How to Order

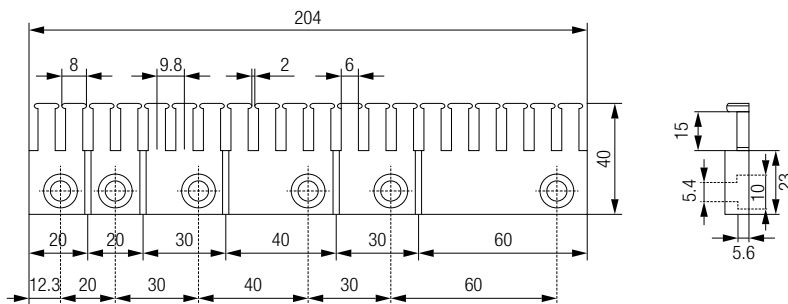
Hose Support Chains

Chains for hoses require bent steel frame stays screwed to the sidebands. Flexible hoses and cables can be placed in the same chain. Available for LC32, LC43, LC55, and LC85.



Cable Combs

Cable Combs are used to separate the cables at the movable and fixed points and help the installation by fixing all the cable's ends with a plastic support and clamps. Cable Combs can be cut and adapted to the required dimensions according to the number of cables and the available free space.



How to Order

Here is an example of how to order the chain, using our standard part number scheme:

LC85.250.300R. a-7000-F2/M2-V5/S1/01.50 c-Pa6

- | | |
|---|---|
| • Series | • Chain material (specify if ATEX compliant) |
| • Bending radius (mm) | • c = cover with stainless steel; if present, mounting sequence of frame stays is "type a" (every other link) |
| • Cavity width Li (mm) | • Number of horizontal separators in partial width (with length of one separator, here: 50 mm) (if present) |
| • Frame stay configuration | • Number of horizontal separators in full width (if present) |
| • Frame stay mounting sequence:
a = every other link; t = every link | • Number of vertical separators (if present) |
| • Chain length (multiple of the link pitch) | • Mobile end fitting position (if present) |
| | • Fixed end fitting position (if present) |

Mandatory section of the Part No. ←

→ Optional section of the Part No.

The part numbering scheme can be used for standard configurations only. For special solutions or complete applications, please contact our technical office. An offer drawing will be prepared and its number will be used as reference code for the order.

Custom services!

Conductix-Wampfler is a customer-focused, market-driven company. Our customers can rely on us to provide service for their specific needs and requirements.

With Conductix-Wampfler anything is possible, from the initial design and development to long-term service contracts. Whatever your needs are, we can deliver!

For complicated systems, high expectations for extended service life, and absolute need for operational reliability, it makes sense to take advantage of our after-sales service. When it comes to service, you can count on Conductix-Wampfler to perform.

During the design and development phase we:

- Determine initial requirements
- Define the correct energy guiding chain solution
- Select the optimum energy guiding system, considering the cost, service life, operating parameters, installation, and site conditions.

At preliminary assembly we:

- Prepare the cables
- Assign cables to chains as a function of design drawings and EMC requirements
- Install separators and frame stays
- Secure cable ends
- Prepare the energy guiding chain system for transport by suitable means

During final assembly we:

- Supervise the assembly on site or
- Complete the assembly using our trained specialists.

If we install your system and you contract for our service package, we provide an additional six-month warranty. We also:

- Inspect your systems at regular intervals
- Take appropriate measures to ensure long-term reliability
- Provide services required on site in the event of an incident, including materials



Conductix-Wampfler's specialists provide complete support from initial programming and design to final assembly on site – worldwide!



Your Applications – our Solutions

Energy Guiding Chains from Conductix-Wampfler represent only one of the many solutions made possible by the broad spectrum of Conductix-Wampfler components for the transport of energy, data, and fluid media. The solutions we deliver for your applications are based on your specific requirements. In many cases, a combination of several different Conductix-Wampfler systems can prove advantageous. You can count on all of Conductix-Wampfler's Business Units for hands-on engineering support, coupled with the perfect solution to meet your energy management and control needs.



Cable reels

Motorized reels and spring reels by Conductix-Wampfler hold their own wherever energy, data and media have to cover the most diverse distances within a short amount of time – in all directions, fast and safe.



Festoon systems

It's hard to imagine Conductix-Wampfler cable trolleys not being used in virtually every industrial application. They're reliable and robust and available in an enormous variety of dimensions and designs.



Conductor rails

Whether they're enclosed conductor rails or expandable single-pole systems, the proven conductor rails by Conductix-Wampfler reliably move people and material.



Non-insulated conductor rails

Extremely robust, non-insulated conductor rails with copper heads or stainless steel surfaces provide the ideal basis for rough applications, for example in steel mills or shipyards.



Energy guiding chains

The "Jack of all trades" when it comes to transferring energy, data, air, and fluid hoses. With their wide range, these energy guiding chains are the ideal solution for many industrial applications.



Slip ring assemblies

Whenever things are really "moving in circles", the proven slip ring assemblies by Conductix-Wampfler ensure the flawless transfer of energy and data. Here, everything revolves around flexibility and reliability!



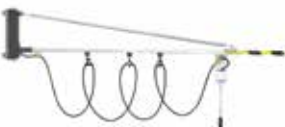
Inductive Power Transfer IPT®

The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear.



Reels, retractors and balancers

Whether for hoses or cables, as classical reels or high-precision positioning aids for tools, our range of reels and spring balancers take the load off your shoulders.



Jib booms

Complete with tool transporters, reels, or an entire media supply system – here, safety and flexibility are key to the completion of difficult tasks.



Conveyor systems

Whether manual, semiautomatic or with Power & Free – flexibility is achieved with fully customized layouts and locations.

www.conductix.com

Conductix-Wampfler

has just one critical mission:

To provide you with energy and data transmission systems that will keep your operations up and running 24/7/365.

To contact your nearest sales office, please refer to:

**[www.conductix.com/
contact-search](http://www.conductix.com/contact-search)**

