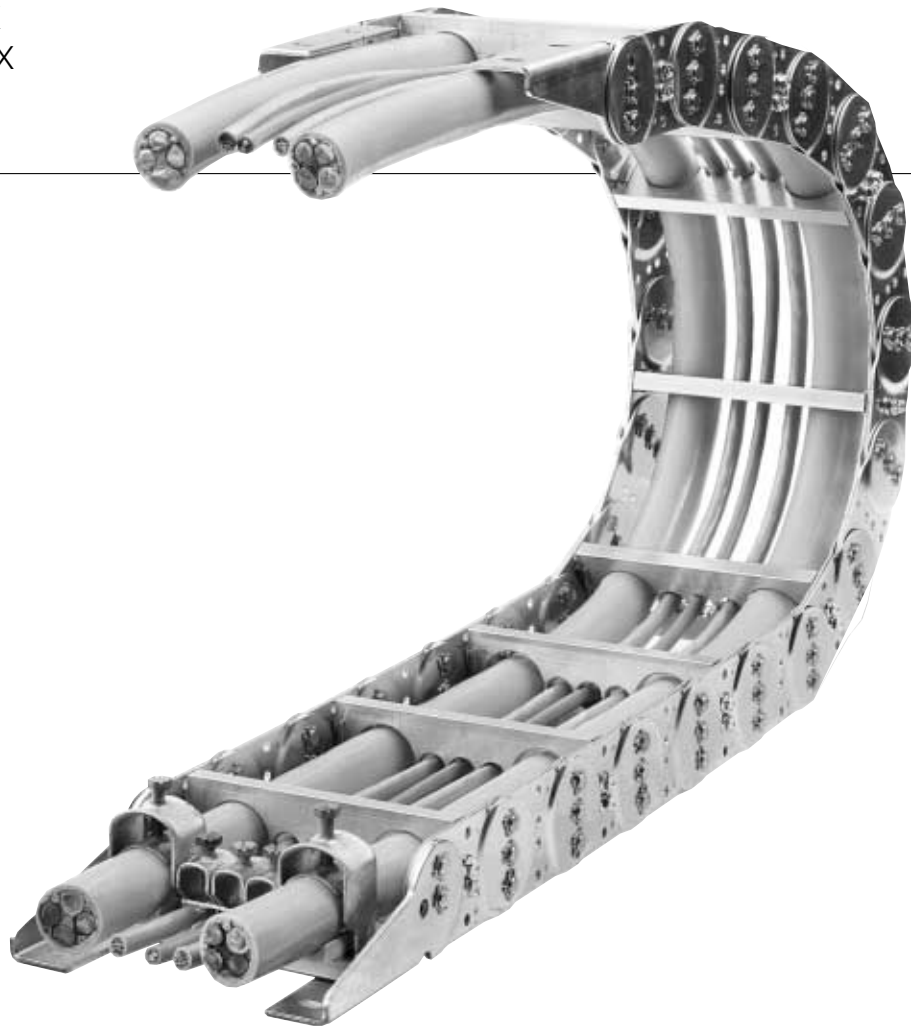


Energy Guiding Chains

Series 3116/3117 Boa

3116 Boa 31 S
3116 Boa 46 S
3116 Boa 72 S
3116 Boa 109 S
3117 Boa 31 SX
3117 Boa 72 SX
3117 Boa 109 SX



Energy Guiding Chains

Series 3116/3117 Boa

Heavy-duty **Boa** Energy Guiding Chains make it possible to configure the ideal solution for operation under extreme conditions.

Main applications

- Steel mill cranes
- Portal cranes in foundries and rolling mills
- Stacker-reclaimers
- Transfer cars in foundries and rolling mills
- Offshore installations
- Transport means in nuclear installations
- Transport of fluid media in the chemical industry



Series 3112
Viper



Series 3113/3114
Cobra

Ordering guide (Example)
Galvanized steel **Boa 72S** RMRS2 full frame energy guiding chain system, aluminum frame stays, inside width

$B_i = 400$ mm, bending radius $KR = 260$ mm, with desired length of 8.2 meters, eight vertical separators preinstalled in every second link, steel connector.



System components for energy guiding chains

Text for order

1. Chain

Boa 72 S RMRS2 full frame with inside width $B_i = 400$ mm with bending radius $KR = 260$ mm

Quantity **Article number³**

8.25 m¹ 311672-400-RMRS2-260

2. Vertical separators

8 vertical separators TS 0 in every second link, preassembled

66.00 m² 311672-TS0-RS2-MT

3. Connectors

Boa 72 S connector, steel angle with C profile

1 set 311672-ASS-C

System components for guiding elements

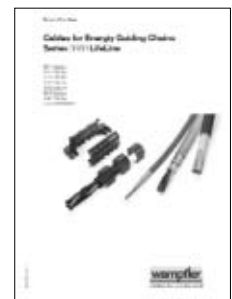
See technical data sheets for Series 3110

System components for cables

See technical data sheets for Series 3000



Series 3110
Guiding Elements



Series 3000
Cables

¹ Rounded up to 125 mm pitch.

² Eight separators x chain length.

³ It is not necessary to provide article numbers when ordering systems. They are, however, necessary when ordering individual or replacement parts.

Energy Guiding Chain

3116 Boa 31 S / 3117 Boa 31 SX

Chain type

Duo-link steel chain with narrow RS aluminum frame stays, installed with two screws.

Materials

Chain: Galvanized steel or stainless steel.
Frame stays: Aluminum alloy.

Inside height

31 mm

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

RS2 Half frame



Energy Guiding Chain

3116 Boa 31 S / 3117 Boa 31 SX

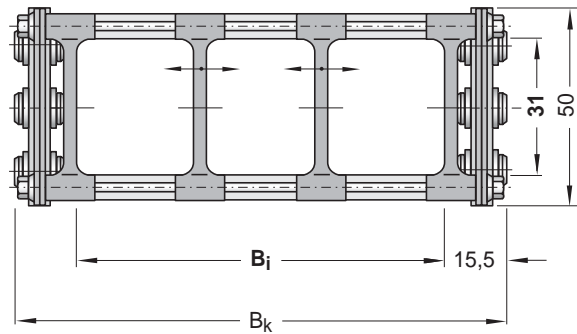
RS2 Half frame

Chain types

Inside width	Outside width	Weight	Article number ¹	KR ²
B_i (mm)	B_k (mm)	G_k (kg/m)		
69	100	3.80	311631-069-RS2-	
100	131	3.95	311631-100-RS2-	
150	181	4.15	311631-150-RS2-	
200	231	4.35	311631-200-RS2-	
250	281	4.60	311631-250-RS2-	

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.

² = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	075	115	145	175	200	250	
Length of bend	L_B	496	621	716	810	888	1045	
Projected length of bend	\ddot{U}_B	230	270	300	330	355	405	
Connector height	H	200	280	340	400	450	550	
Chain pitch	t						65	
Inside height	H_i						31	
Link height	h_G						50	
Connector length	l_1	Steel connector						95
Self-supporting length ²	L_f	Galvanized steel: $L_f = 4.34 \text{ m} - 0.061 q_z - 0.0046 B_i$						
		Stainless steel: $L_f = 3.24 \text{ m} - 0.040 q_z - 0.0046 B_i$						
Additional load	q_z	max. 30 kg/m						

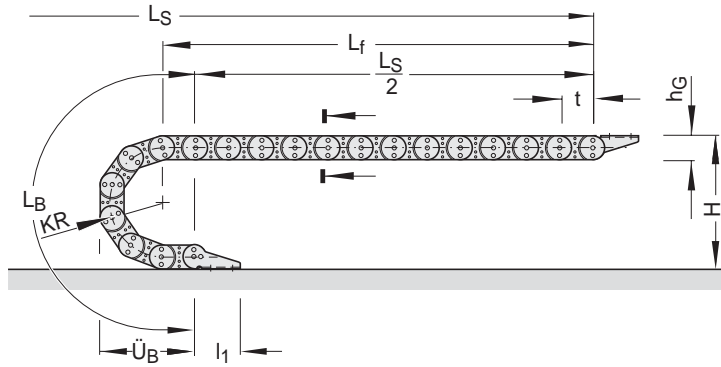
¹ = All dimensions in mm except for the self-supporting length.

² = Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 31 S / 3117 Boa 31 SX

RS2 Half frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_s/2 + L_B + 2t$$

Important:

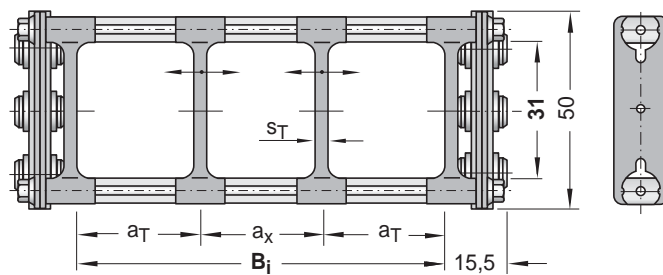
If the length L_f is exceeded ($L_s/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_s = Travel distance

Vertical separators TS 0

Article	Article number ¹
Vertical separators TS 0 for Boa 31 RS2, preassembled	311631-TS0-RS2-MT
Vertical separators TS 0 for Boa 31 RS2, separate	311631-TS0-RS2-LS

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.



Boa 31 with TS 0

Separator thickness	s_T	3 mm
Min. distance middle	$a_{x\min}$	13 mm
Min. distance edge	$a_{T\min}$	11.5 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 31 S / 3117 Boa 31 SX

RS2 Half frame

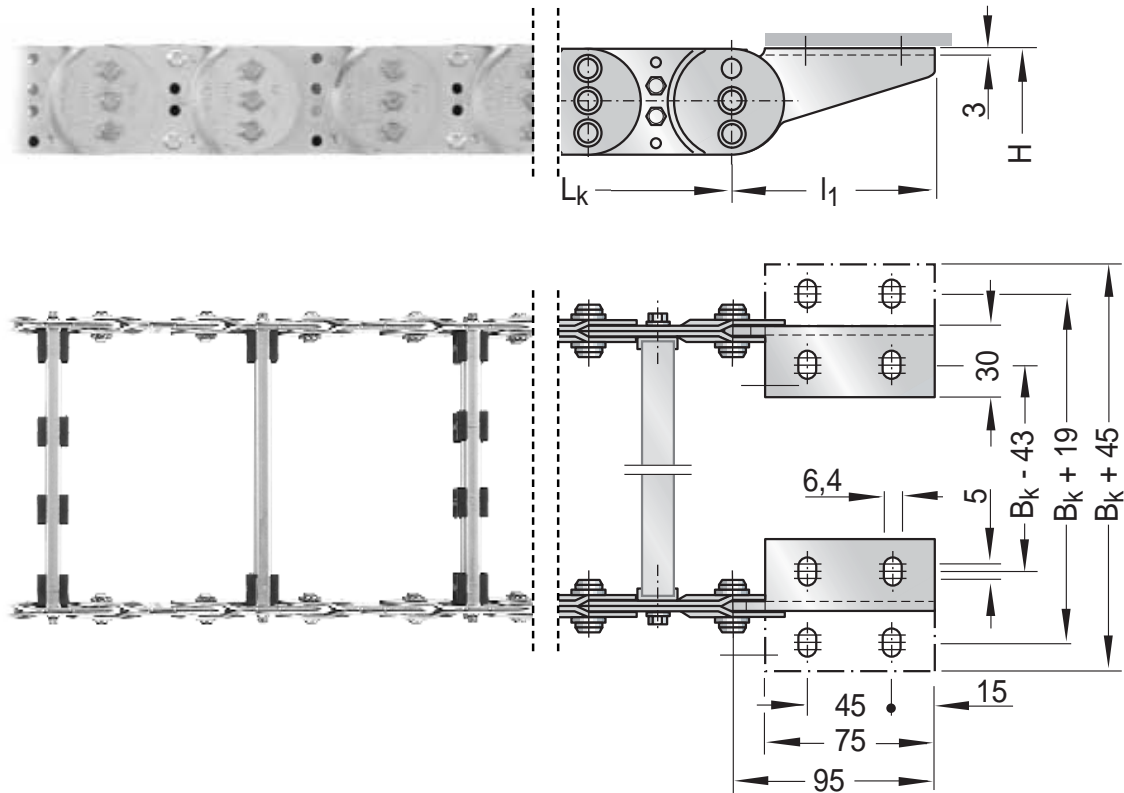
Connectors	Steel	
	Article	Article number
	Connectors for Boa 31 S, steel angle	311631-ASS
	Connectors for Boa 31 S, steel angle with C profile	311631-ASS-C
	Connectors for Boa 31 SX, stainless steel angle ER1	311731-ASS

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 46 S

Chain type

Duo-link steel chain with narrow RS aluminum frame stays, installed with two screws.

Materials

Chain: Galvanized steel.
Frame stays: Aluminum alloy.

Inside height

46 mm

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

RS2 Half frame



Energy Guiding Chain

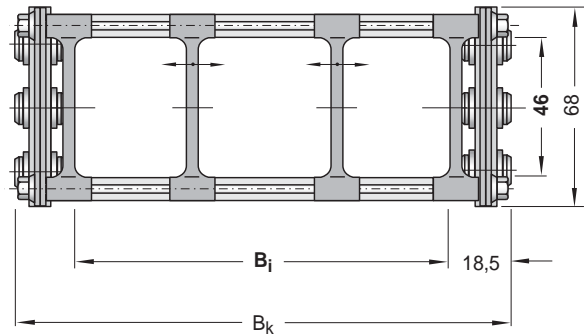
3116 Boa 46 S

RS2 Half frame

Chain types

Inside width	Outside width	Weight	Article number	KR ¹
B_i (mm)	B_k (mm)	G_k (kg/m)		
200	237	7.70	311646-200-RS2-	
250	287	7.80	311646-250-RS2-	
300	337	7.95	311646-300-RS2-	
350	387	8.20	311646-350-RS2-	

¹  = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	125	170	200	260	290
Length of bend	L_B	773	914	1008	1197	1291
Projected length of bend	\ddot{U}_B	350	395	425	485	515
Connector height	H	318	408	468	588	648
Chain pitch	t					95
Inside height	H_i					46
Link height	h_G					68
Connector length	l_1	Steel connector				125
Self-supporting length ²	L_f	$L_f = 5.34 \text{ m} - 0.061 q_z - 0.0026 B_i$				
Additional load	q_z	max. 40 kg/m				

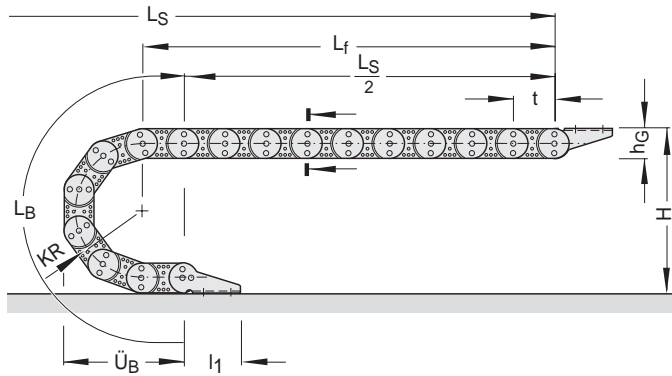
¹ = All dimensions in mm except for the self-supporting length.

² = Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 46 S

RS2 Half frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_s/2 + L_B + 2t$$

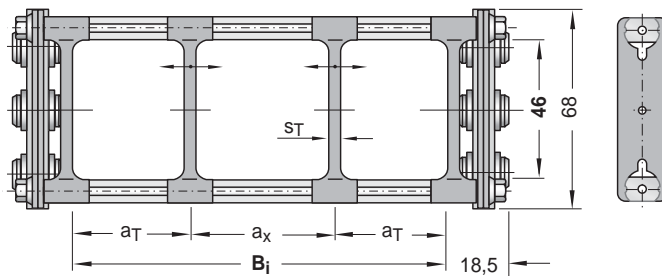
Important:

If the length L_f is exceeded ($L_s/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_s = Travel distance

Vertical separators TS 0

Article	Article number
Vertical separators TS 0 for Boa 46 RS2, preassembled	311646-TS0-RS2-MT
Vertical separators TS 0 for Boa 46 RS2, separate	311646-TS0-RS2-LS



Boa 46 S with TS 0

Separator thickness	s_T	3 mm
Min. distance middle	$a_{x\min}$	14 mm
Min. distance edge	$a_{T\min}$	12 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 46 S

RS2 Half frame

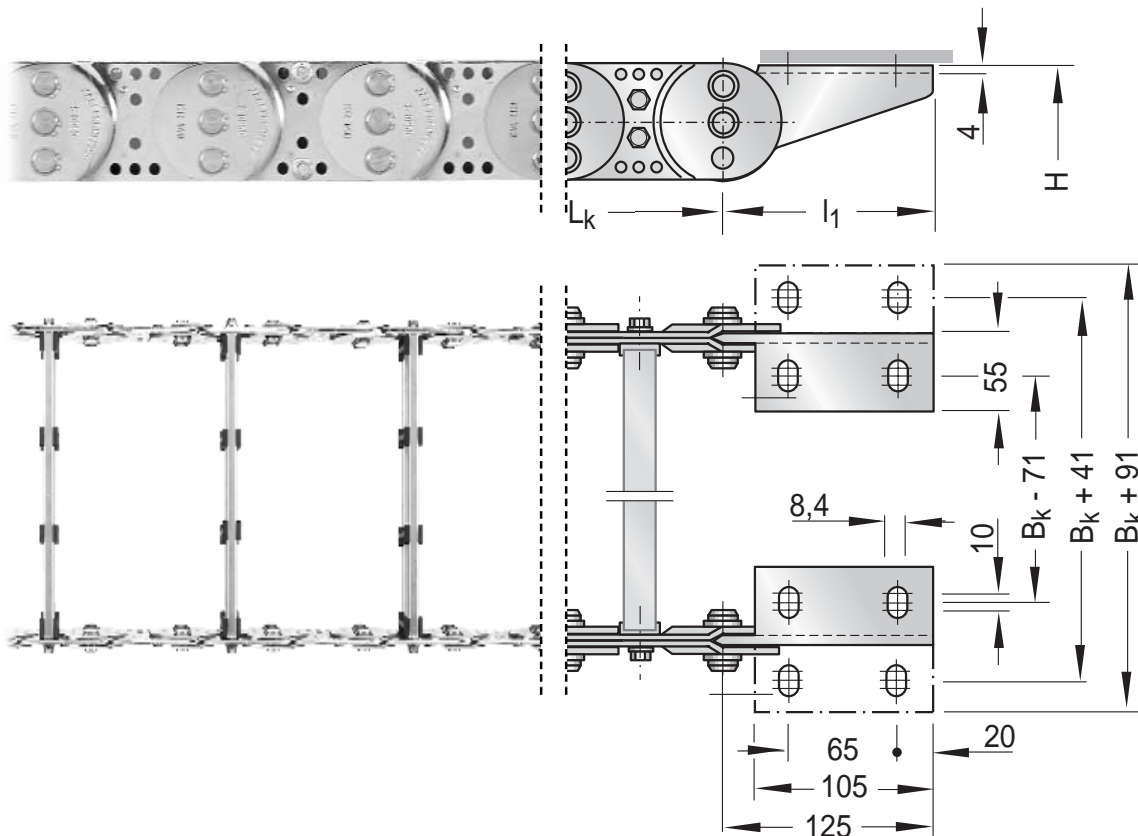
Connectors	Steel	
	Article	Article number
	Connectors for Boa 46 S, steel angle	311646-ASS
	Connectors for Boa 46 S, steel angle with C profile	311646-ASS-C

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 46 S

Chain type

Duo-link steel chain with solid RM aluminum frame stays, installed with four screws.

Materials

Chain: Galvanized steel.
Frame stays: Aluminum alloy.

Inside height

43 mm

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

RM Half frame




Energy Guiding Chain

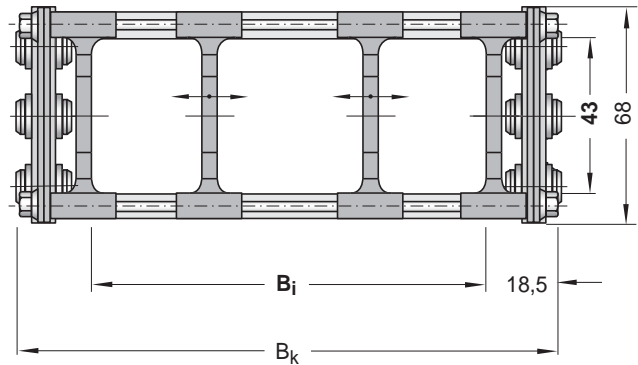
3116 Boa 46 S

RM Half frame

Chain types

Inside width	Outside width	Weight	Article number	KR ¹
B_i (mm)	B_k (mm)	G_k (kg/m)		
200	237	8.30	311646-200-RM-	
250	287	8.60	311646-250-RM-	
300	337	8.85	311646-300-RM-	
350	387	9.20	311646-350-RM-	
400	437	9.50	311646-400-RM-	

¹  = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	125	170	200	260	290
Length of bend	L_B	773	914	1008	1197	1291
Projected length of bend	\ddot{U}_B	350	395	425	485	515
Connector height	H	318	408	468	588	648
Chain pitch	t					95
Inside height	H_i					43
Link height	h_G					68
Connector length	l_1	Steel connector				125
Self-supporting length ²	L_f	$L_f = 5.34 \text{ m} - 0.061 q_z - 0.0028 B_i$				
Additional load	q_z	max. 40 kg/m				

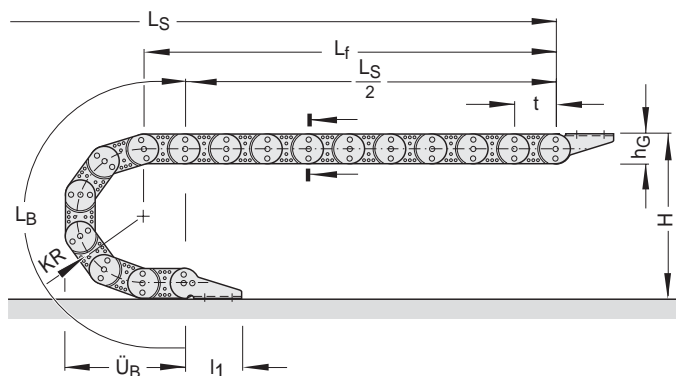
¹ = All dimensions in mm except for the self-supporting length.

² = Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 46 S

RM Half frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_S/2 + L_B + 2t$$

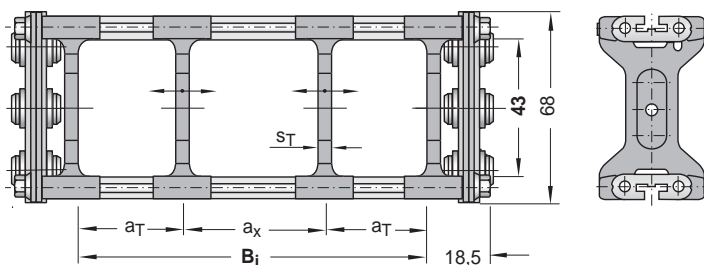
Important:

If the length L_f is exceeded ($L_S/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_S = Travel distance

Vertical separators TS 0

Article	Article number
Vertical separators TS 0 for Boa 46 RM, preassembled	311646-TS0-RM-MT
Vertical separators TS 0 for Boa 46 RM, separate	311646-TS0-RM-LS



Boa 46 S with TS 0

Separator thickness	s_T	4 mm
Min. distance middle	$a_{x\min}$	14 mm
Min. distance edge	$a_{T\min}$	10 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 46 S

RM Half frame

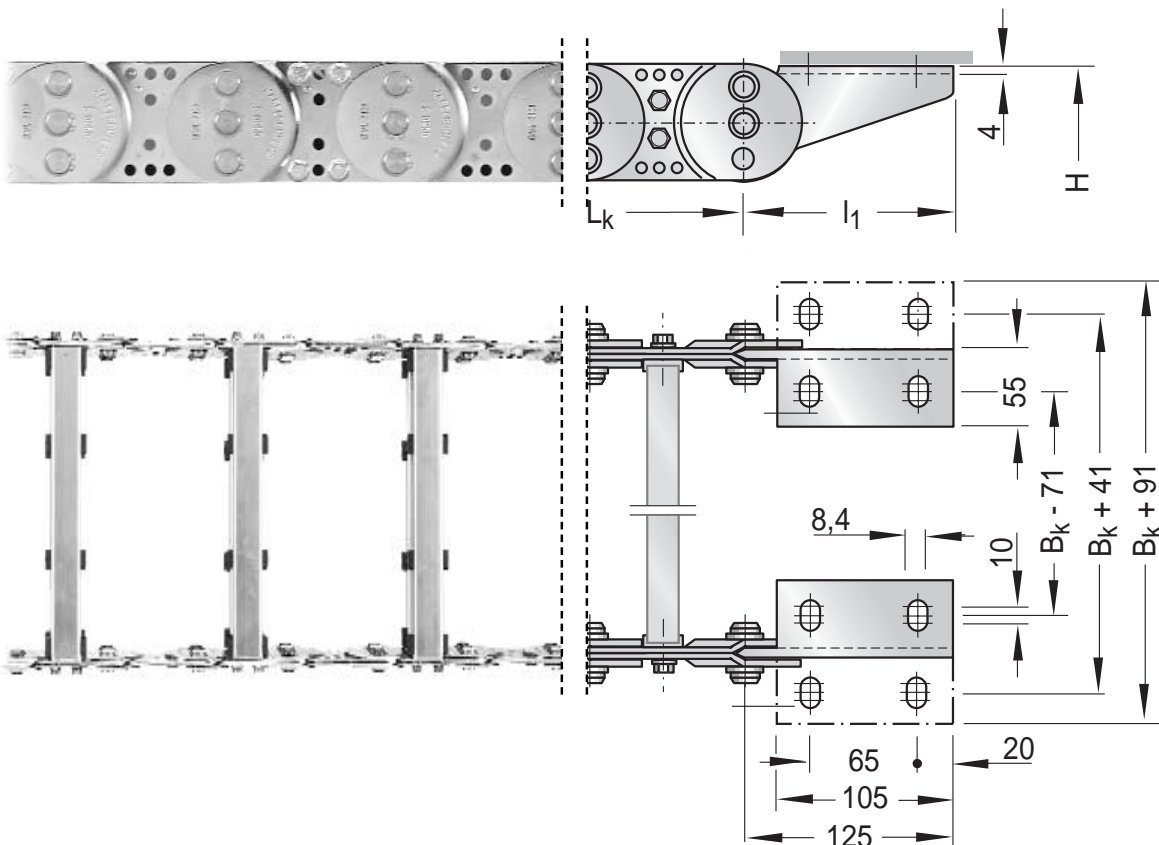
Connectors	Steel	
	Article	Article number
	Connectors for Boa 46 S, steel angle	311646-ASS
	Connectors for Boa 46 S, steel angle with C profile	311646-ASS-C

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 46 S

Chain type

Duo-link steel chain with solid RM aluminum frame stays, installed with four screws, alternating with narrow RS frame stays, installed with two screws.

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

Materials

Chain: Galvanized steel.
Frame stays: Aluminum alloy.

Inside height

43 mm

RMRS2 Full frame




Energy Guiding Chain

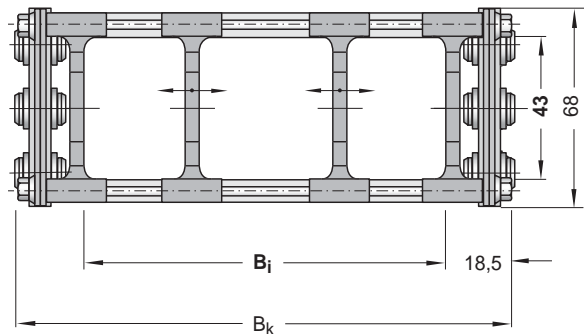
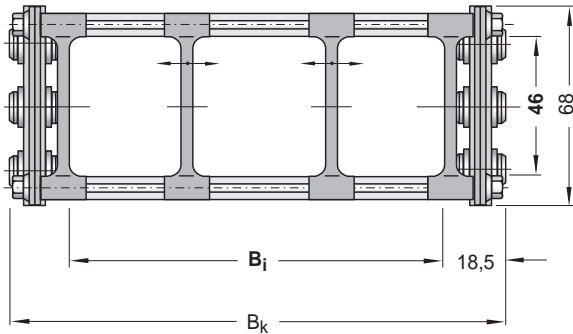
3116 Boa 46 S

RMRS2 Full frame

Chain types

Inside width	Outside width	Weight	Article number	KR ¹
B_i (mm)	B_k (mm)	G_k (kg/m)		
200	237	8.30	311646-200-RMRS2-	
250	287	8.60	311646-250-RMRS2-	
300	337	8.85	311646-300-RMRS2-	
350	387	9.20	311646-350-RMRS2-	
400	437	9.50	311646-400-RMRS2-	

¹  = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	125	170	200	260	290
Length of bend	L_B	773	914	1008	1197	1291
Projected length of bend	\ddot{U}_B	350	395	425	485	515
Connector height	H	318	408	468	588	648
Chain pitch	t					95
Inside height	H_i					43
Link height	h_G					68
Connector length	l_1	Steel connector				125
Self-supporting length ²	L_f	$L_f = 5.34 \text{ m} - 0.061 q_z - 0.0028 B_i$				
Additional load	q_z	max. 40 kg/m				

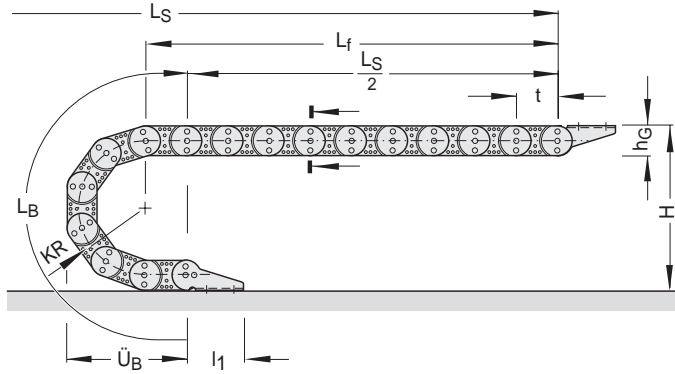
¹ = All dimensions in mm except for the self-supporting length.

² = Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 46 S

RMRS2 Full frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_S/2 + L_B + 2t$$

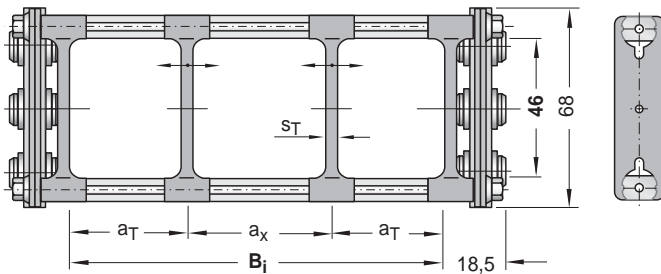
Important:

If the length L_f is exceeded ($L_S/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_S = Travel distance

Vertical separators TS 0

Article	Article number
Vertical separators TS 0 for Boa 46 RS2, preassembled	31 1646-TS0-RS2-MT
Vertical separators TS 0 for Boa 46 RS2, separate	31 1646-TS0-RS2-LS



Boa 46 S with TS 0

Separator thickness	s_T	4 mm
Min. distance middle	$a_{x\min}$	14 mm
Min. distance edge	$a_{T\min}$	12 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 46 S

RMRS2 Full frame

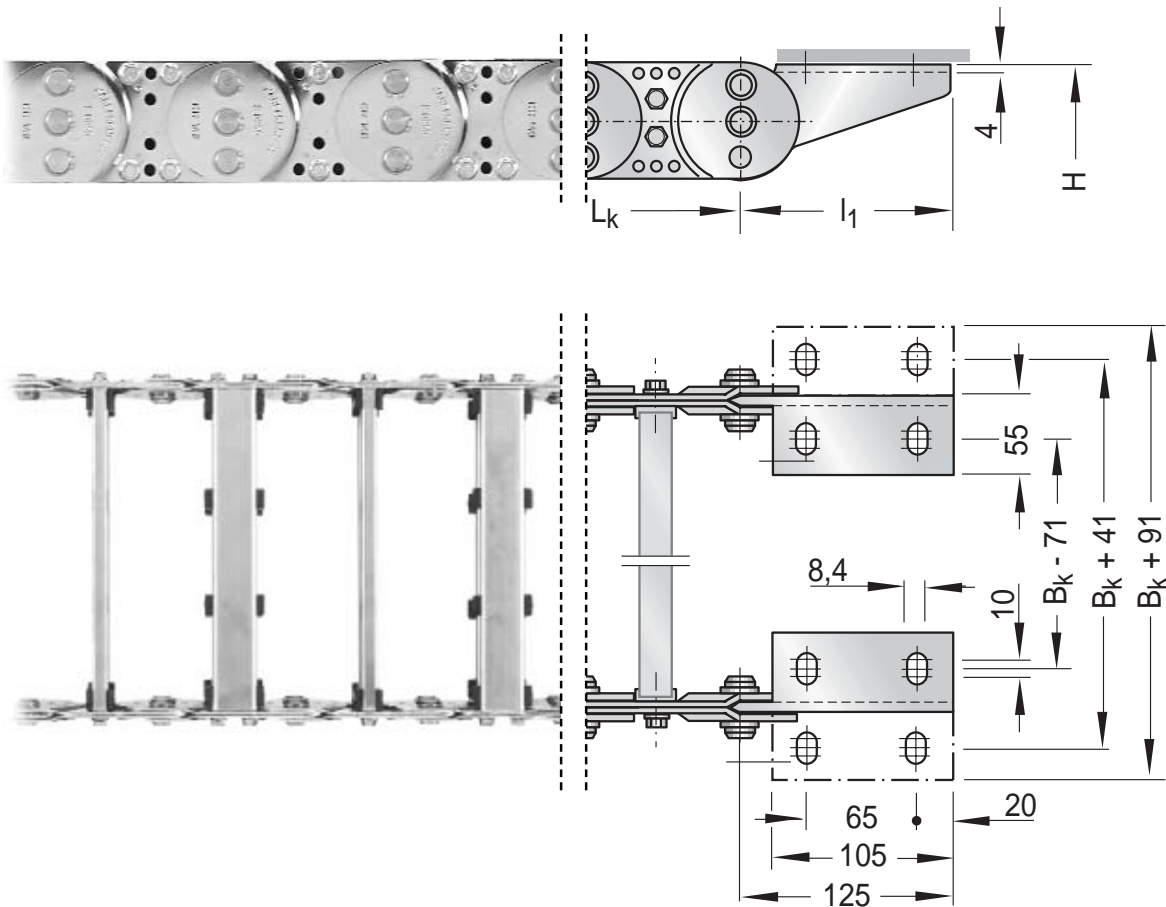
Connectors	Steel	
	Article	Article number
	Connectors for Boa 46 S, steel angle	311646-ASS
	Connectors for Boa 46 S, steel angle with C profile	311646-ASS-C

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

Chain type

Duo-link steel chain with narrow RS aluminum frame stays, installed with two screws.

Materials

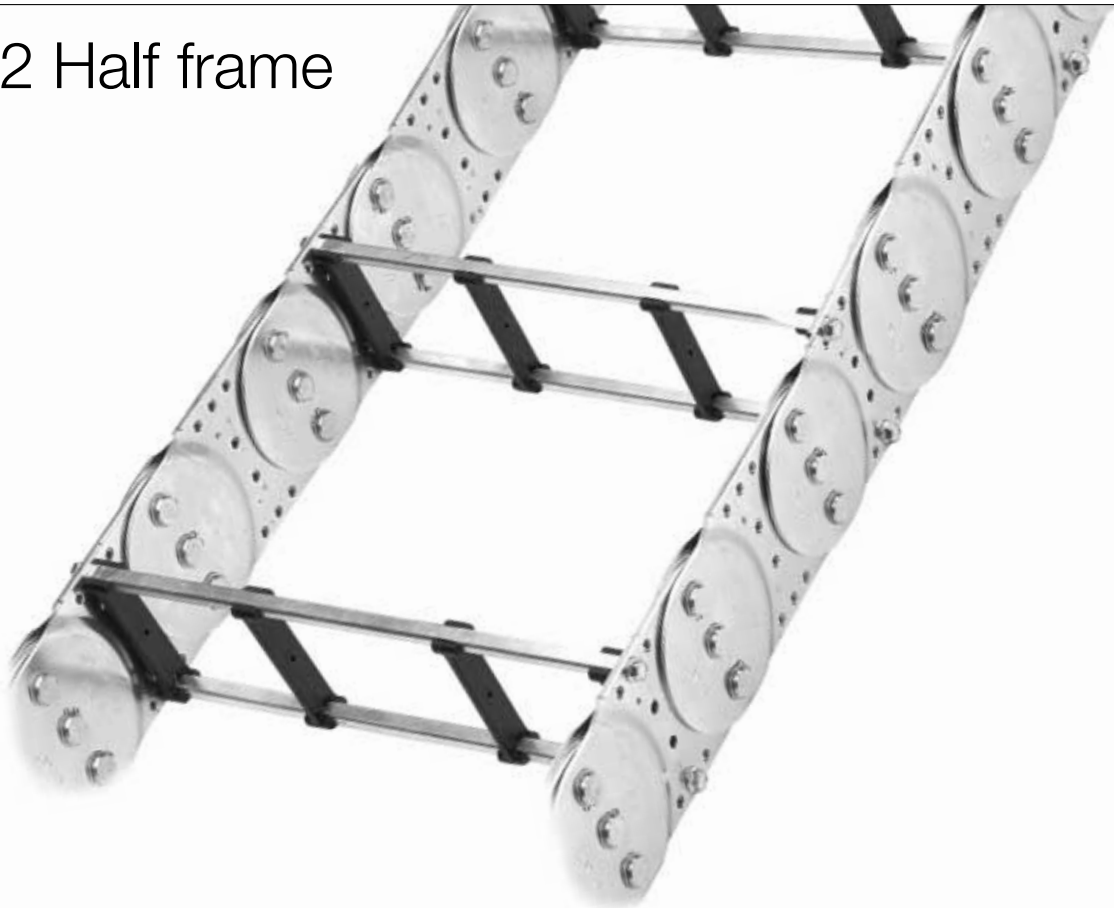
Chain: Galvanized steel or stainless steel.
Frame stays: Aluminum alloy.

Inside height

72 mm

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

RS2 Half frame



Energy Guiding Chain

3116 **Boa 72 S** / 3117 **Boa 72 SX**

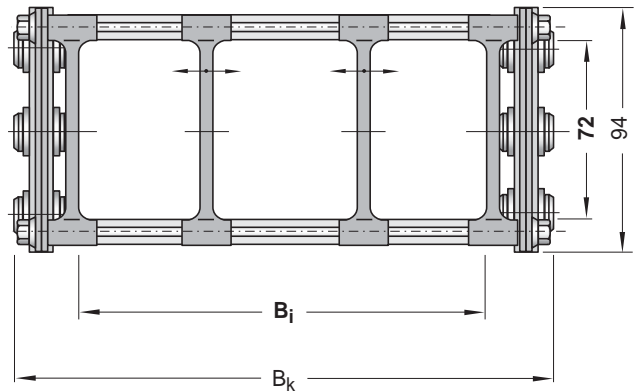
RS2 Half frame

Chain types

Inside width	Outside width	Weight	Article number ¹	KR ²
B_i (mm)	B_k (mm)	G_k (kg/m)		
300	344	13.20	311672-300-RS2-	
350	394	13.40	311672-350-RS2-	
400	444	13.55	311672-400-RS2-	

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.

² = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	145	200	260	300
Length of bend	L_B	955	1128	1317	1442
Projected length of bend	\ddot{U}_B	442	497	557	597
Connector height	H	384	494	614	694
Chain pitch	t				125
Inside height	H_i				72
Link height	h_G				94
Connector length	l_1	Steel connector			155
Self-supporting length ²	L_f	Galvanized steel: $L_f = 7.36 \text{ m} - 0.066 q_z - 0.0046 B_i$			
		Stainless steel: $L_f = 5.16 \text{ m} - 0.041 q_z - 0.0036 B_i$			
Additional load	q_z	max. 50 kg/m			

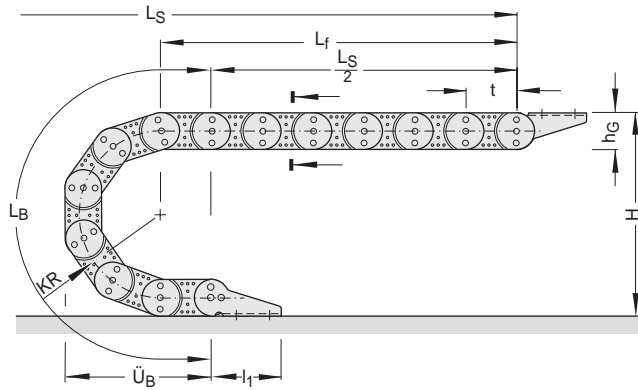
¹ = All dimensions in mm except for the self-supporting length.

² = Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

RS2 Half frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_s/2 + L_B + 2t$$

Important:

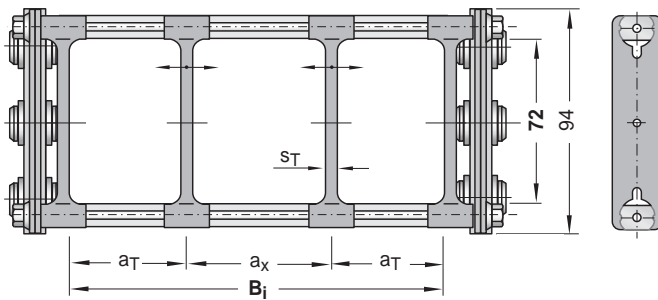
If the length L_f is exceeded ($L_s/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_s = Travel distance

Vertical separators TS 0

Article	Article number ¹
Vertical separators TS 0 for Boa 72 RS2, preassembled	311672-TS0-RS2-MT
Vertical separators TS 0 for Boa 72 RS2, separate	311672-TS0-RS2-LS

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.



Boa 72 with TS 0

Separator thickness	s_T	5 mm
Min. distance middle	$a_{x \min}$	15 mm
Min. distance edge	$a_{T \min}$	12.5 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

RS2 Half frame

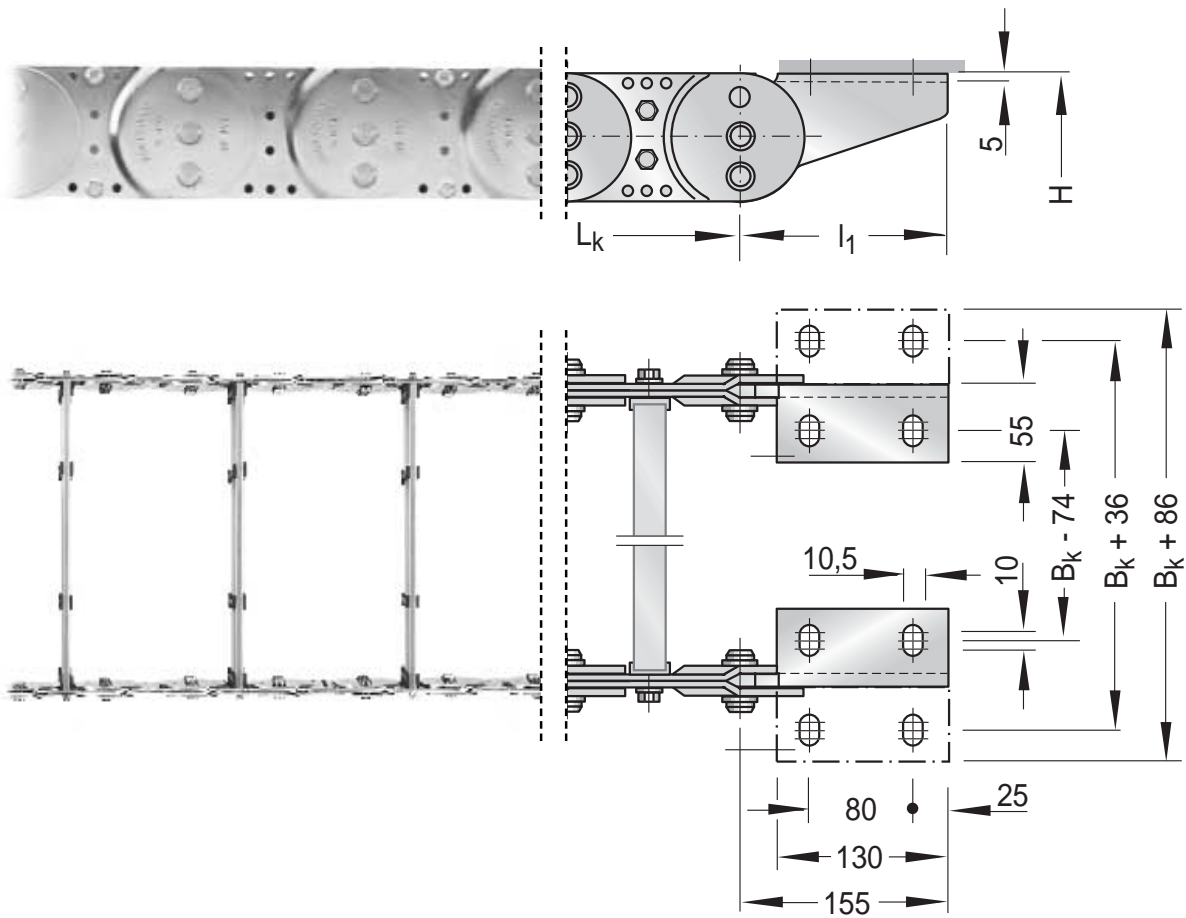
Connectors	Steel	
	Article	Article number
	Connectors for Boa 72 S, steel angle	311672-ASS
	Connectors for Boa 72 S, steel angle with C profile	311672-ASS-C
	Connectors for Boa 72 SX, stainless steel angle ER1	311772-ASS

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

Chain type

Duo-link steel chain with solid RM frame stays, installed with four screws.

Materials

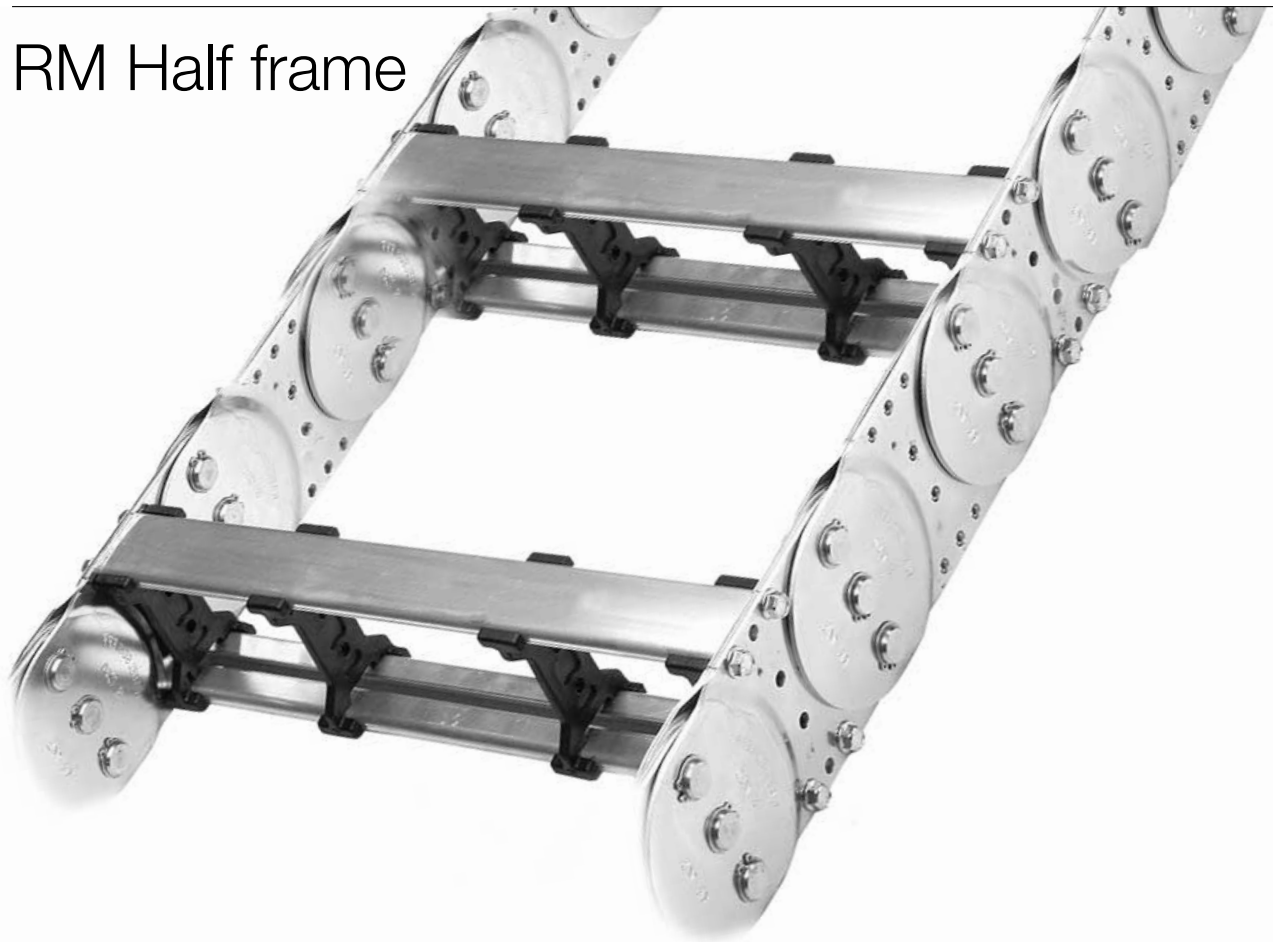
Chain: Galvanized steel or stainless steel.
Frame stays: Aluminum alloy.

Inside height

69 mm

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

RM Half frame



Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

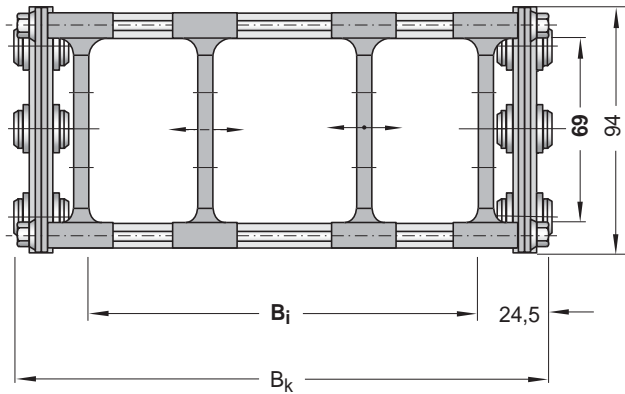
RM Half frame

Chain types

Inside width	Outside width	Weight	Article number ¹	KR ²
B_i (mm)	B_k (mm)	G_k (kg/m)		
300	344	14.00	311672-300-RM-	
350	394	14.30	311672-350-RM-	
400	444	14.60	311672-400-RM-	
500	544	15.20	311672-500-RM-	

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.

² = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	145	200	260	300
Length of bend	L_B	955	1128	1317	1442
Projected length of bend	\ddot{U}_B	442	497	557	597
Connector height	H	384	494	614	694
Chain pitch	t				125
Inside height	H_i				69
Link height	h_G				94
Connector length	l_1	Steel connector			155
Self-supporting length ²	L_f	Galvanized steel: $L_f = 7.36 \text{ m} - 0.066 q_z - 0.0049 B_i$ Stainless steel: $L_f = 5.16 \text{ m} - 0.041 q_z - 0.0038 B_i$			
Additional load	q_z	max. 50 kg/m			

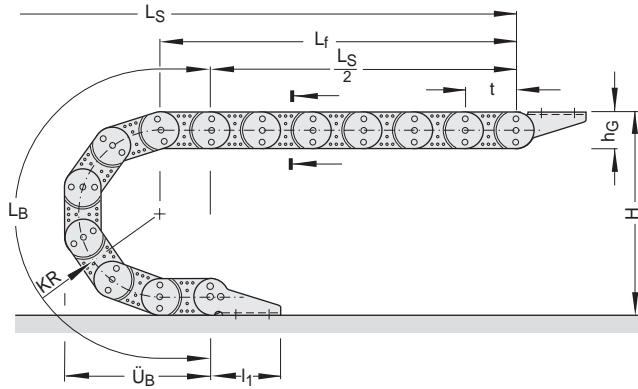
¹ = All dimensions in mm except for the self-supporting length.

² = Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

RM Half frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_s/2 + L_B + 2t$$

Important:

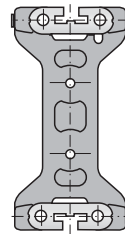
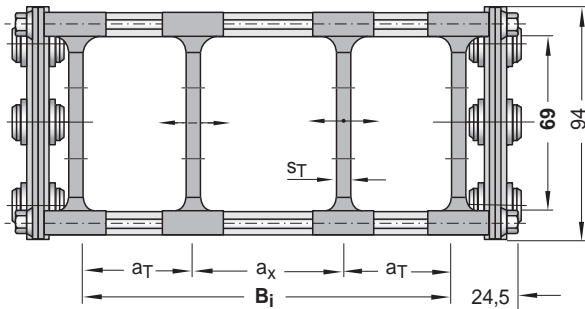
If the length L_f is exceeded ($L_s/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_s = Travel distance

Vertical separators TS 0

Article	Article number ¹
Vertical separators TS 0 for Boa 72 RM, preassembled	311672-TS0-RM-MT
Vertical separators TS 0 for Boa 72 RM, separate	311672-TS0-RM-LS

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.



Boa 72 S with TS 0

Separator thickness	s_T	5 mm
Min. distance middle	$a_{x \min}$	20 mm
Min. distance edge	$a_{T \min}$	17.5 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

RM Half frame

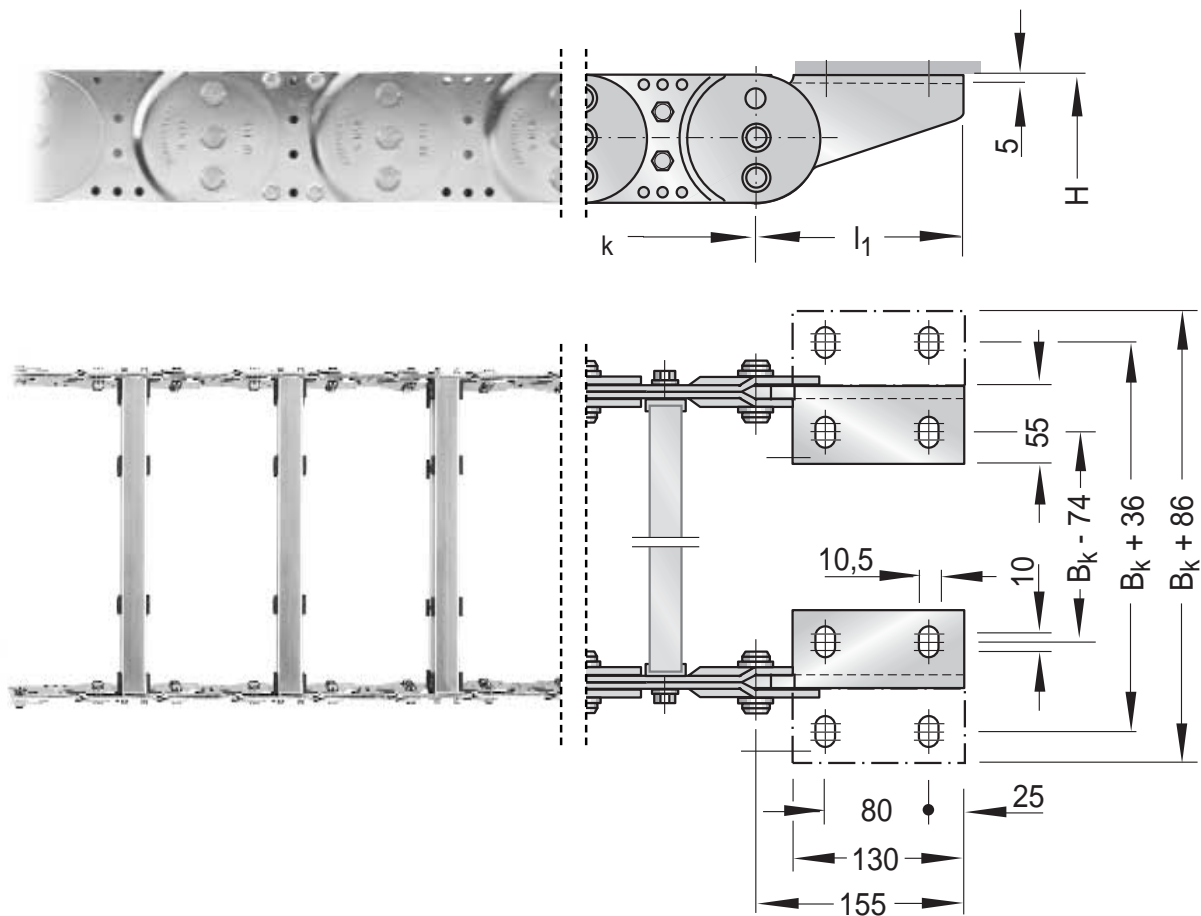
Connectors	Steel	
	Article	Article number
	Connectors for Boa 72 S, steel angle	311672-ASS
	Connectors for Boa 72 S, steel angle with C profile	311672-ASS-C
	Connectors for Boa 72 SX , stainless steel angle ER1	311772-ASS

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

Chain type

Duo-link steel chain with solid RM aluminum frame stays, installed with four screws, alternating with narrow RS frame stays, installed with two screws.

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

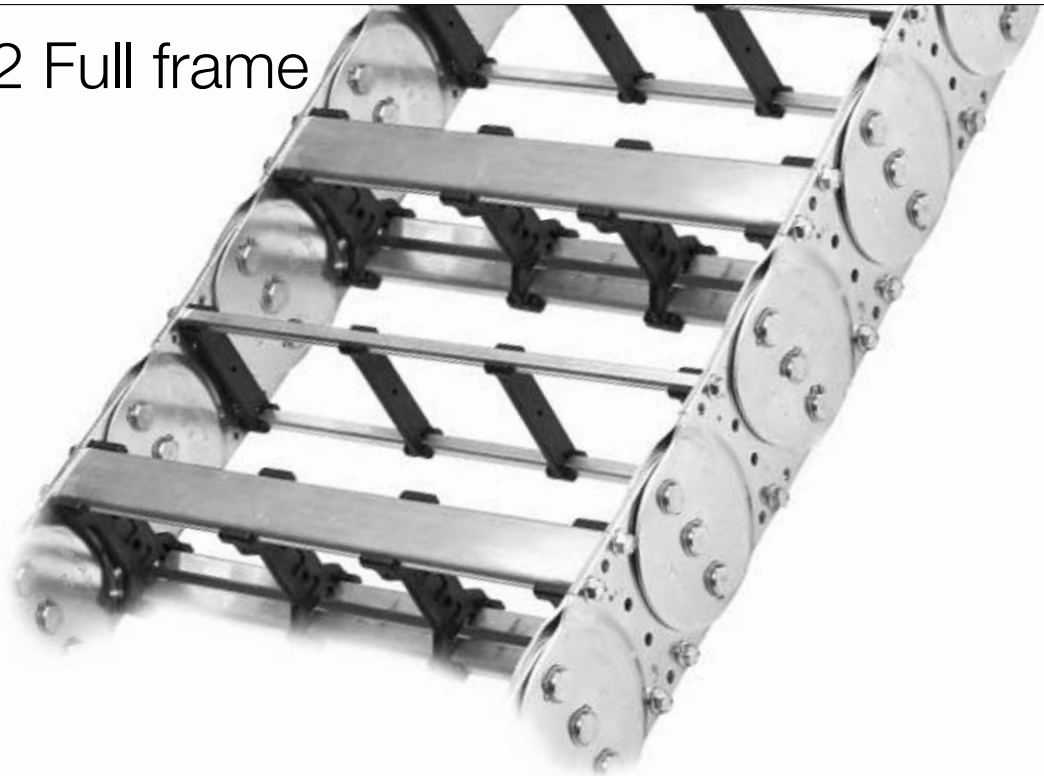
Inside height

69 mm

Materials

Chain: Galvanized steel or stainless steel.
Frame stays: Aluminum alloy.

RMRS2 Full frame



Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

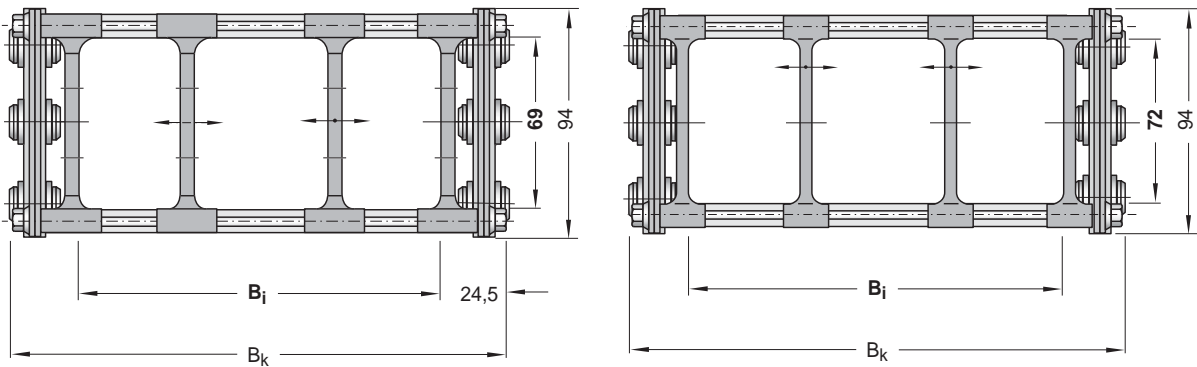
RMRS2 Full frame

Chain types

Inside width B_i (mm)	Outside width B_k (mm)	Weight G_k (kg/m)	Article number ¹	KR ²
300	344	14.00	311672-300-RMRS2-	
350	394	14.30	311672-350-RMRS2-	
400	444	14.60	311672-400-RMRS2-	
500	544	15.20	311672-500-RMRS2-	

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.

² = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	145	200	260	300
Length of bend	L_B	955	1128	1317	1442
Projected length of bend	\ddot{U}_B	442	497	557	597
Connector height	H	384	494	614	694
Chain pitch	t				125
Inside height	H_i				69
Link height	h_G				94
Connector height	l_1	Steel connector			155
Self-supporting length ²	L_f	Galvanized steel: $L_f = 7.36 \text{ m} - 0.066 q_z - 0.0050 B_i$			
		Stainless steel: $L_f = 5.16 \text{ m} - 0.041 q_z - 0.0038 B_i$			
Additional load	q_z	max. 50 kg/m			

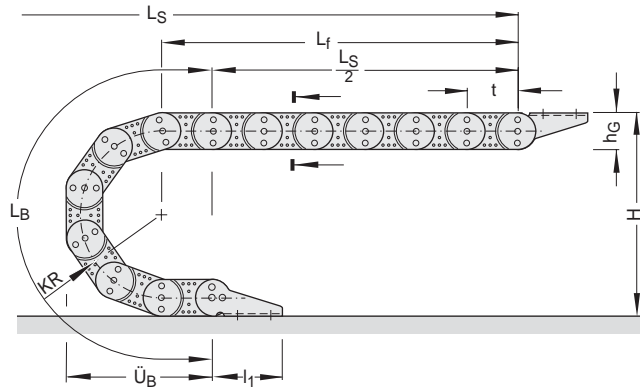
¹ = All dimensions in mm except for the self-supporting length.

² = Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

RMRS2 Full frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_s/2 + L_B + 2t$$

Important:

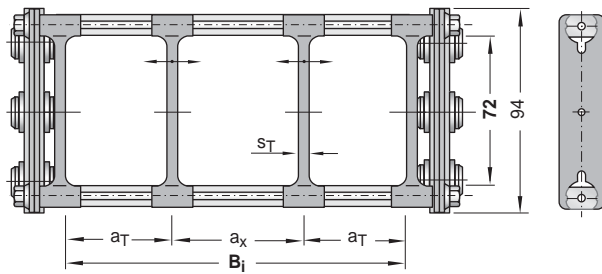
If the length L_f is exceeded ($L_s/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_s = Travel distance

Vertical separators TS 0

Article	Article number ¹
Vertical separators TS 0 for Boa 72 RS2, preassembled	311672-TS0-RS2-MT
Vertical separators TS 0 for Boa 72 RS2, separate	311672-TS0-RS2-LS

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.



Boa 72 with TS 0

Separator thickness	s_T	5 mm
Min. distance middle	$a_{x\min}$	15 mm
Min. distance edge	$a_{T\min}$	12.5 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 72 S / 3117 Boa 72 SX

RMRS2 Full frame

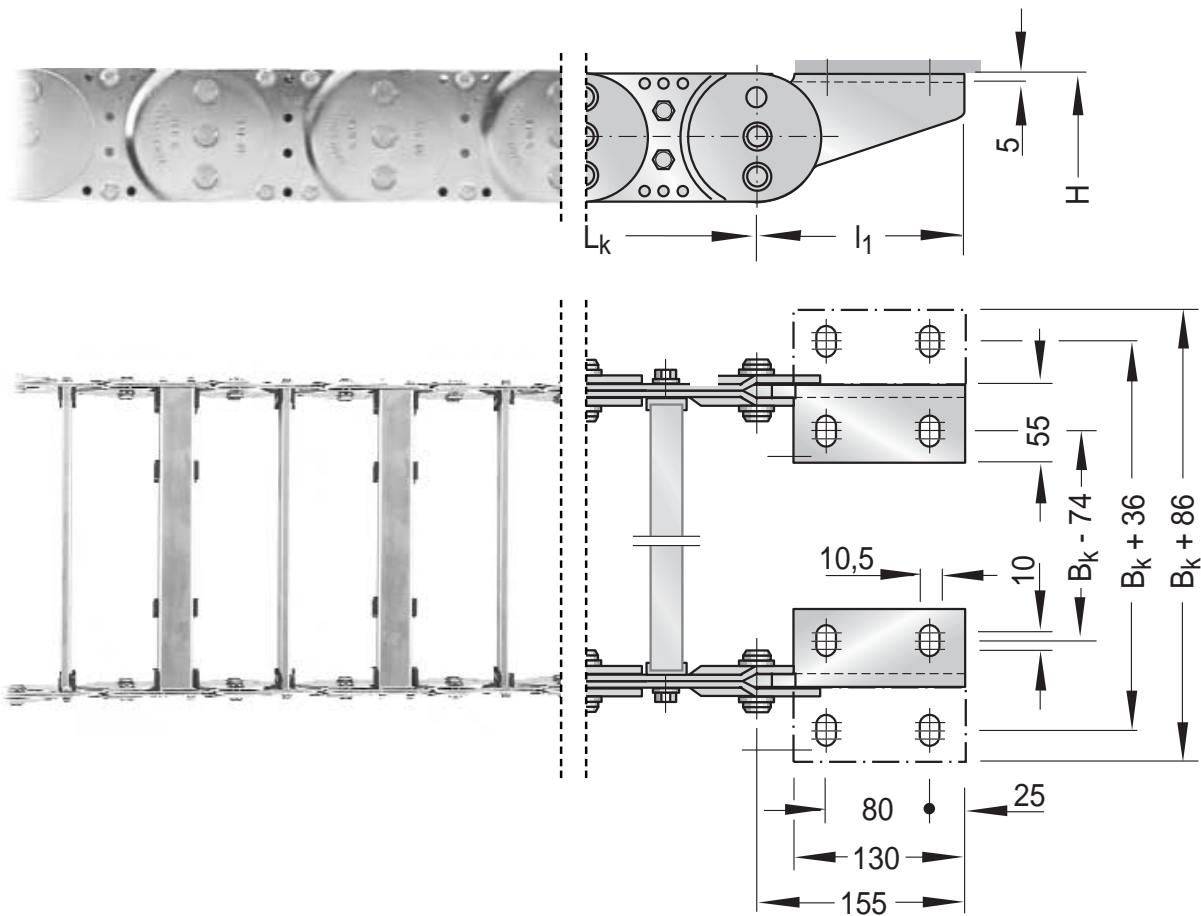
Connectors	Steel	
	Article	Article number
	Connectors for Boa 72 S, steel angle	311672-ASS
	Connectors for Boa 72 S, steel angle with C profile	311672-ASS-C
	Connectors for Boa 72 SX, stainless steel angle ER1	311772-ASS

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

Chain type

Duo-link steel chain with solid RM aluminum frame stays, installed with four screws.

Materials

Chain: Galvanized steel or stainless steel.
Frame stays: Aluminum alloy.

Inside height

109 mm

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

RM Half frame



Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

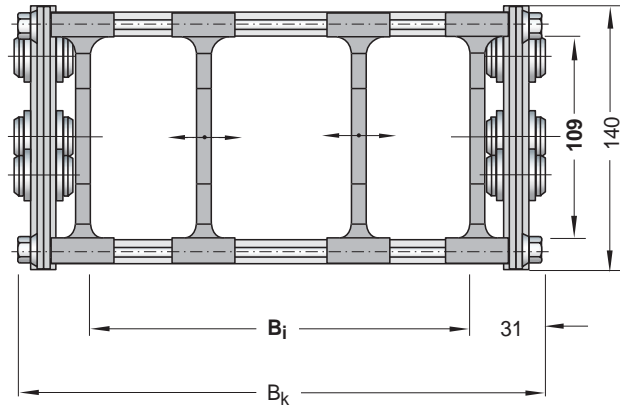
RM Half frame

Chain types

Inside width	Outside width	Weight	Article number ¹	KR ²
B_i (mm)	B_k (mm)	G_k (kg/m)		
300	362	24.30	311609-300-RM-	
350	412	24.60	311609-350-RM-	
400	462	24.90	311609-400-RM-	
450	512	25.20	311609-450-RM-	
500	562	25.50	311609-500-RM-	
600	662	26.10	311609-600-RM-	

1 Please use 3117 (instead of 3116) in the Article number for stainless steel chains.

2 = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	265	320	375
Length of bend	L_B	1552	1725	1898
Projected length of bend	\ddot{U}_B	695	750	805
Connector height	H	670	780	890
Chain pitch	t			180
Inside height	H_i			109
Link height	h_G			140
Connector length	l_f	Steel connector		210
Self-supporting length ²	L_f	Galvanized steel: $L_f = 12.94 \text{ m} - 0.060 q_z - 0.0058 B_i$	Stainless steel: $L_f = 10.24 \text{ m} - 0.044 q_z - 0.0058 B_i$	
Additional load	q_z	max. 60 kg/m		

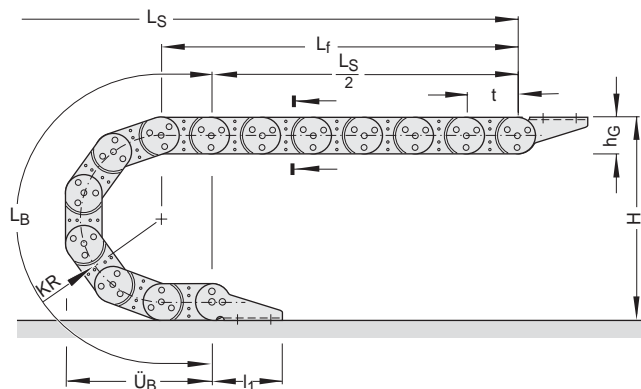
1= All dimensions in mm except for the self-supporting length.

2= Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

RM Half frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_s/2 + L_B + 2t$$

Important:

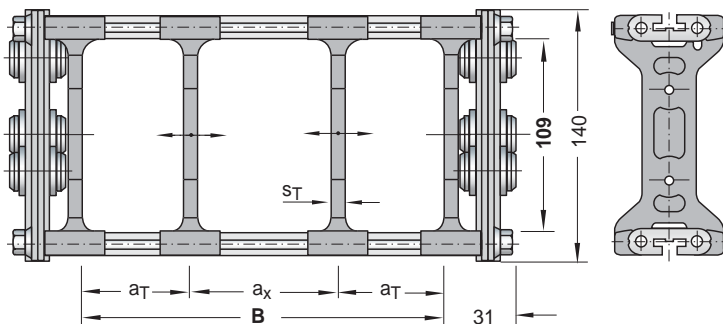
If the length L_f is exceeded ($L_s/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_s = Travel distance

Vertical separators TS 0

Article	Article number ¹
Vertical separators TS 0 for Boa 109 RM, preassembled	311609-TS0-RM-MT
Vertical separators TS 0 for Boa 109 RM, separate	311609-TS0-RM-LS

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.



Boa 109 with TS 0

Separator thickness	s_T	7.5 mm
Min. distance middle	$a_{x \min}$	25 mm
Min. distance edge	$a_{T \min}$	21.5 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

RM Half frame

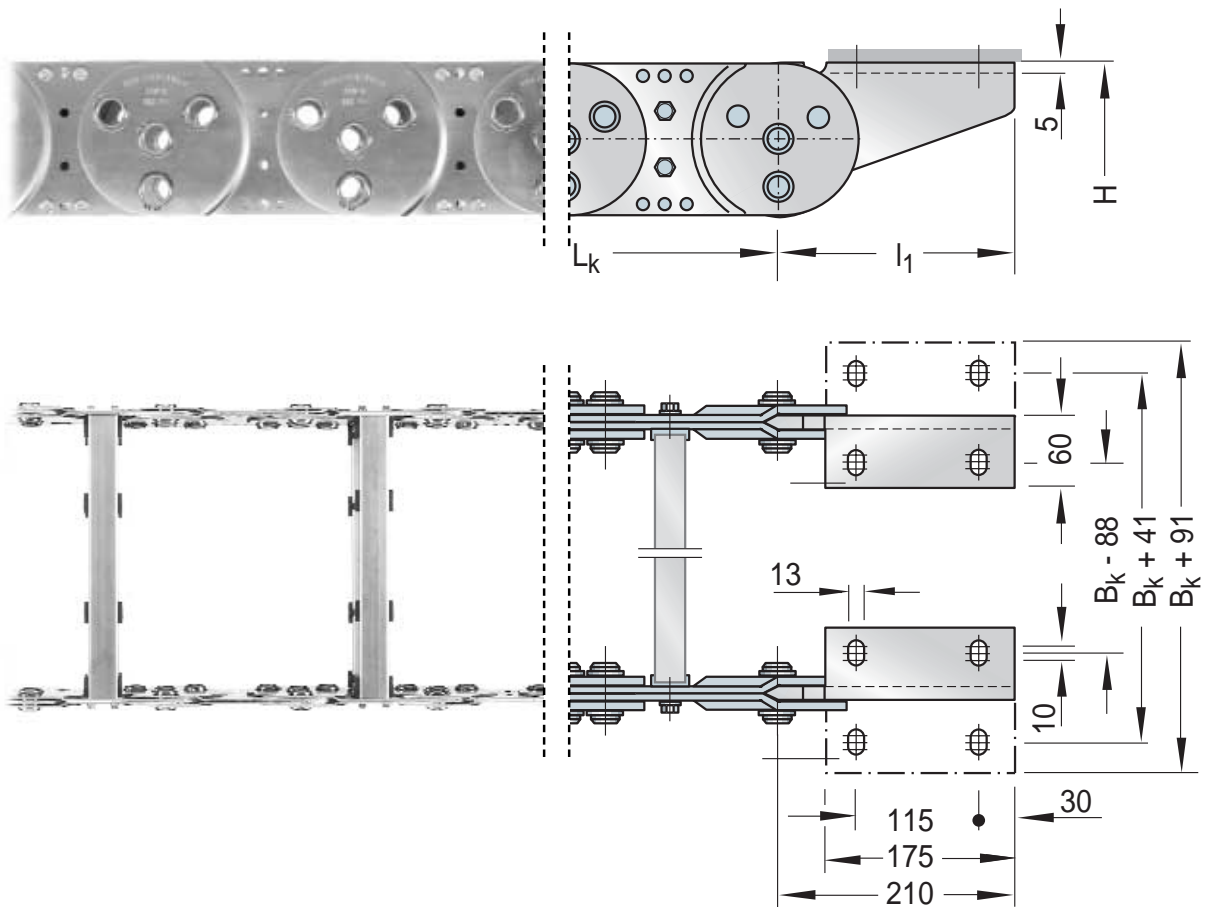
Connectors	Steel	
	Article	Article number
	Connectors for Boa 109 S, steel angle	311609-ASS
	Connectors for Boa 109 S, steel angle with C profile	311609-ASS-C
	Connectors for Boa 109 SX, stainless steel angle ER1	311709-ASS

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".

Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

Chain type

Duo-link steel chain with solid RM aluminum frame stays, installed with four screws.

Materials

Chain: Galvanized steel or stainless steel.
Frame stays: Aluminum alloy.

Inside height

109 mm

Energy guiding chain for use under extreme operating conditions and long self-supporting configurations.

RMRM Full frame



Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

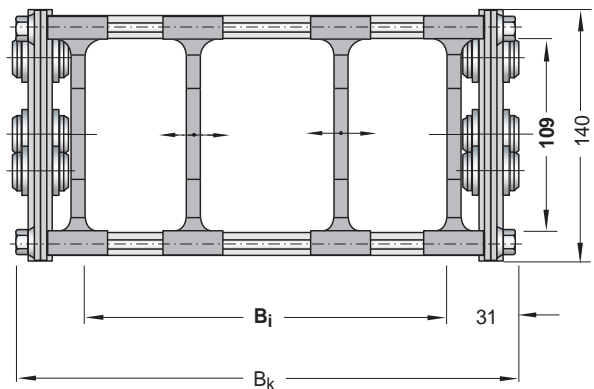
RMRM Full frame

Chain types

Inside width	Outside width	Weight	Article number ¹	KR ²
B_i (mm)	B_k (mm)	G_k (kg/m)		
300	362	24.30	311609-300-RMRM-	
350	412	24.60	311609-350-RMRM-	
400	462	24.90	311609-400-RMRM-	
450	512	25.20	311609-450-RMRM-	
500	562	25.50	311609-500-RMRM-	
600	662	26.10	311609-600-RMRM-	

1 Please use 3117 (instead of 3116) in the Article number for stainless steel chains.

2 = Space for the bending radius KR of the chain.



Design parameters¹

Bending radius	KR	265	320	375
Length of bend	L_B	1552	1725	1898
Projected length of bend	\ddot{U}_B	695	750	805
Connector height	H	670	780	890
Chain pitch	t			180
Inside height	H_i			109
Link height	h_G			140
Connector length	l_1	Steel connector		210
Self-supporting length ²	L_f	Galvanized steel: $L_f = 12.94 \text{ m} - 0.060 q_z - 0.0060 B_i$	Stainless steel: $L_f = 10.24 \text{ m} - 0.044 q_z - 0.0060 B_i$	
Additional load	q_z	max. 60 kg/m		

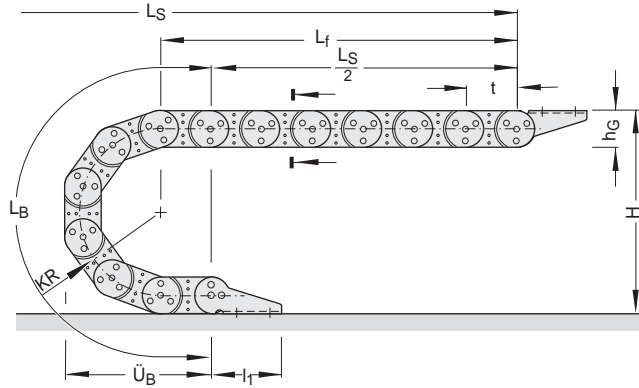
1= All dimensions in mm except for the self-supporting length.

2= Apply q_z in kg/m, B_i in mm.

Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

RMRM Full frame



To determine the length of the chain L_k for a self-supporting chain:

$$L_k = L_s/2 + L_B + 2t$$

Important:

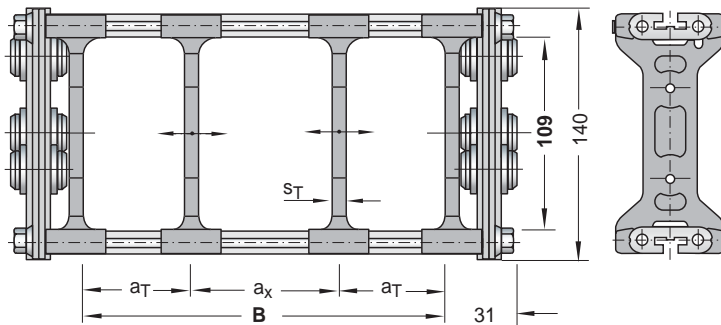
If the length L_f is exceeded ($L_s/2 > L_f$), the use of SRO support rollers may be appropriate. We recommend consulting our design engineers.

L_s = Travel distance

Vertical separators TS 0

Article	Article number ¹
Vertical separators TS 0 for Boa 109 RM, preassembled	311609-TS0-RM-MT
Vertical separators TS 0 for Boa 109 RM, separate	311609-TS0-RM-LS

¹ Please use 3117 (instead of 3116) in the Article number for stainless steel chains.



Boa 109 with TS 0

Separator thickness	s_T	7.5 mm
Min. distance middle	$a_{x\min}$	25 mm
Min. distance edge	$a_{T\min}$	21.5 mm

The separators can be moved horizontally and are normally provided on every second link.

Energy Guiding Chain

3116 Boa 109 S / 3117 Boa 109 SX

RMRM Full frame

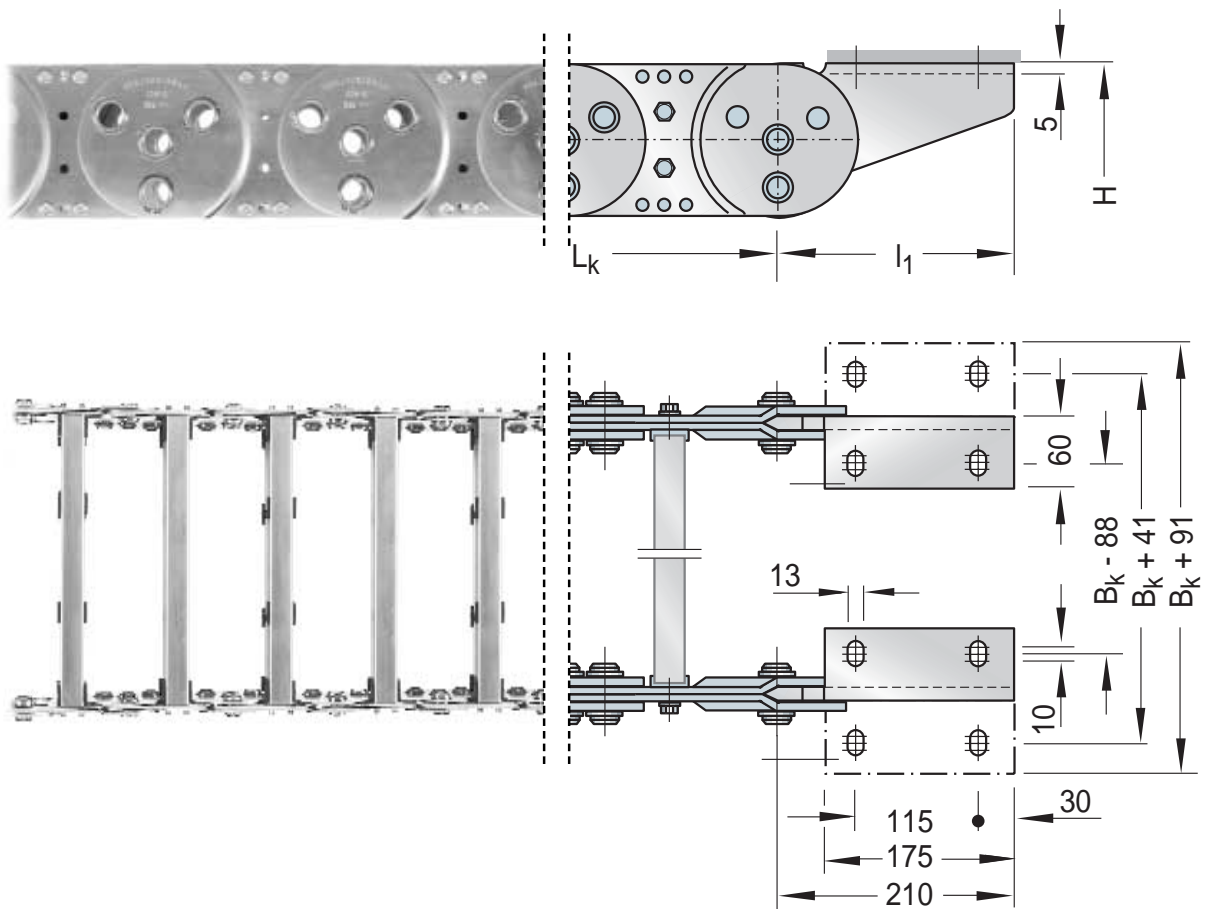
Connectors	Steel	
	Article	Article number
	Connectors for Boa 109 S, steel angle	311609-ASS
	Connectors for Boa 109 S, steel angle with C profile	311609-ASS-C
	Connectors for Boa 109 SX, stainless steel angle ER1	311709-ASS

The steel connector is optionally available with a C profile that is used to hold the strain-relief elements.

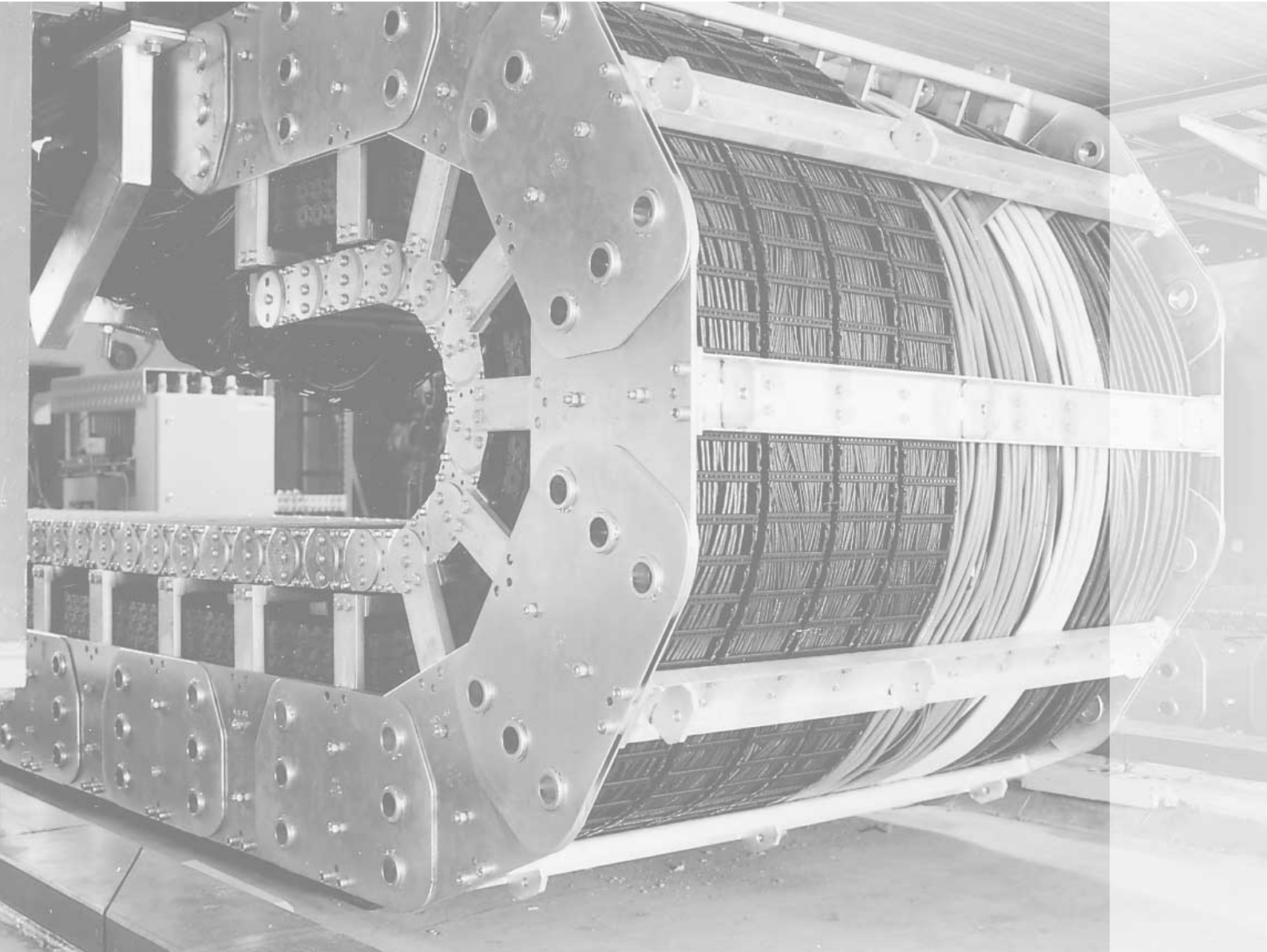
The dimensions of the elements for the fixed point and driver element connectors are identical.

The orientation of the connector elements can be modified at any time.

A complete set is supplied that contains both the fixed point and driver element connectors.



See p.2 for "Ordering guide".



3116 Boa 31 S
3116 Boa 46 S
3116 Boa 72 S
3116 Boa 109 S
3117 Boa 31 SX
3117 Boa 72 SX
3117 Boa 109 SX

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