igus®

Energy Chain Systems®
Classic Carriers

- Series 20/25
- Series 30/35/36
- Series 22/23/R76
- Series 28/29/R77
- Series 38/39/R78
- Series 40/41/R88
- Series 50/51/R98

A collection of carriers from the past still available to our customers of today

Series 15 “Zipper”

.67

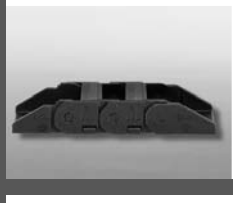
Price Index

4 Widths
7 Bending Radii

Interior separation possible

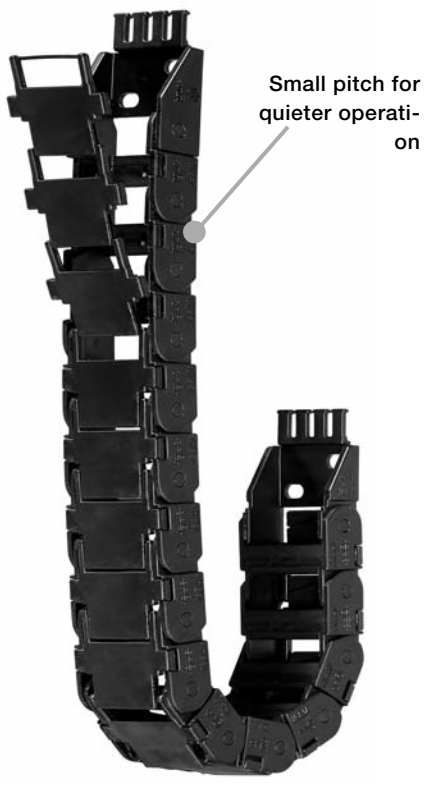
2 options for mounting brackets

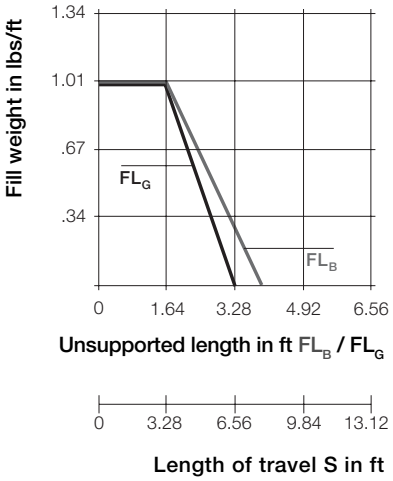
Mounting bracket with or without strain relief tiewrap plates



Quicksnap: the complete unit, detachable by hand
Call for availability

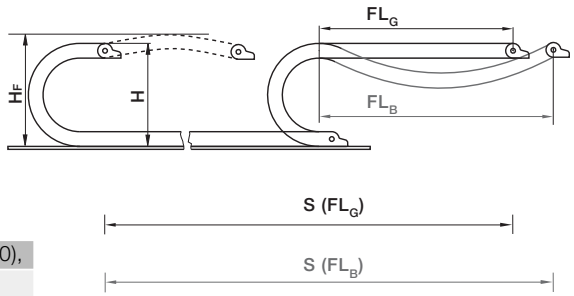
Quickfix: mounting bracket with pin
Call for availability





Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range:

Inner Widths (Bi) inches (mm):	.59 (15), .98 (25), 1.50 (38), 1.97 (50),
Bending Radii (R) inches (mm):	1.50 (038), 1.89 (048), 2.95 (075),
	4.33 (110), 5.70 (145), 7.09 (180)
Pitch:	1.20 (30.5 mm)/link
	10.06 links/ft (33 links/m)

The inner widths 63, 80, 100, see Page 4.12, New Series 15 “Zipper”

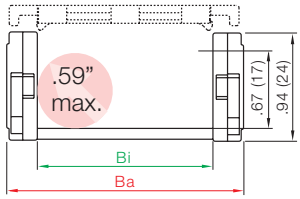
When to use the Series 15 “Zipper”:

- If extremely quick, zipper-like access to cables is required
- If connection options are required (Quicksnap, Quickfix, etc.)
- If interior separation is required
- If high stability and long service life are required

When not to use the Series 15 “Zipper”:

- If access to cables via individual links is not required
  ▶ New Series 10 “mini”, **Chapter 4, Energy Chain® Catalog**
- If torsion occurs
  ▶ Series E14 “E-Z Chain”, **Chapter 2, Energy Chain® Catalog**
- If the chain must be snap-open along the inner radius
  ▶ New B15i, **Chapter 4, Energy Chain® Catalog**

Series 15 “Zipper”

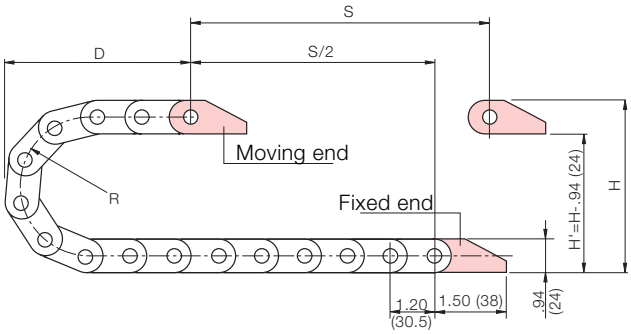


Part No.	Bi	Ba
15-1	.59 (15)	1.02 (26)
15-2	.98 (25)	1.42 (36)
15-3	1.50 (38)	1.93 (49)
15-4	1.97 (50)	2.40 (61)

Bending Radii for ALL Widths
1.50 (038)
1.89 (048)
2.95 (075)
4.33 (110)
5.71 (145)
7.09 (180)

Supplement part number with required radius for example, 15-2-100-0

Installation Dimensions



R	1.50 (038)	1.89 (048)	2.95 (075)
H*	3.94 (100)	4.72 (120)	6.89 (175)
D	3.15 (80)	3.54 (90)	4.72 (120)
K	7.28 (185)	8.46 (215)	11.81 (300)

R	04.33 (110)	5.71 (145)	7.09 (180)
H*	09.65 (245)	12.40 (315)	15.16 (385)
D	06.10 (155)	7.48 (190)	8.86 (225)
K	016.14 (410)	20.47 (520)	24.80 (630)

*The required clearance height is HF = H + .79 (20) with .67 lbs/ft (1 kg/m) fill weight. Please consult igus® if space is particularly restricted.

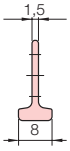
Pitch: = 1.20 (30.5 mm) per link
Links per ft (m): = 10.06 (33)
Chain length: = $\frac{S}{2}$ + K

Interior Separation

One option is available for the interior separation of the Series 15 “Zipper”:

Vertical separators

These separators are used if only a vertical subdivision is required. A slotted separator is used for this subdivision. This separator can also be used with full-width shelves for a continuous horizontal subdivision.



Vertical Separator

Unassembled	**Part No. 150**
Assembled	**Part No. 151**

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
1-401-438-7270
Fax
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 15 "Zipper"

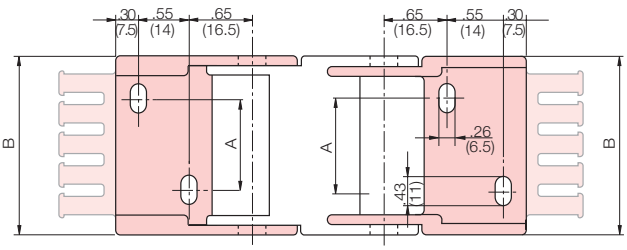
Mounting Brackets (3 options for all applications)

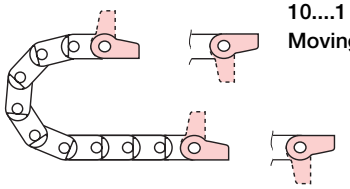
Option 1: polymer, one-piece

- Mounting bracket with or without pivoting strain relief tiewrap plates

- One-piece, locked mounting bracket
- Corrosion-resistant
- Available pre-assembled
- Inner and outer attachment possible
- Flush mounting
- Integrated strain relief available

10....1 10....2





10....1
Moving end

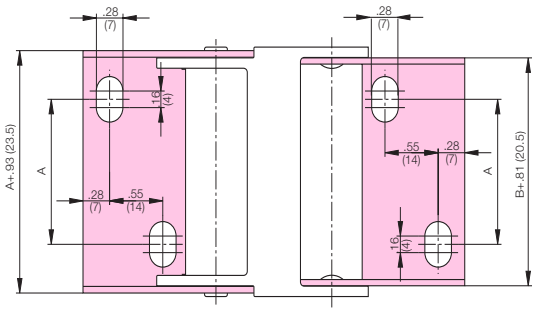
10....2
Fixed end

101-12-P(Z) and 104-12-P(Z)

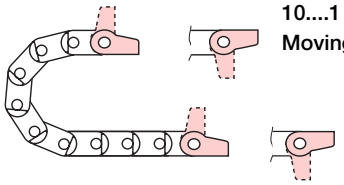
Chain Type	Part No. Full set with Tiewrap Plate	Part No. Mounting Bracket Set	Dimension A in.	(mm)
15-1	**101-12PZ**	**101-12P**		(0)
15-2	**102-12PZ**	**102-12P**	.39	(10)
15-3	**103-12PZ**	**103-12P**	.91	(23)
15-4	**104-12PZ**	**104-12P**	1.38	(35)

10…12 = Full set, each part with pin/bore
10… 1 = Mounting bracket with bore
10... 2 = Mounting bracket with pin

Option 2: steel, one-piece



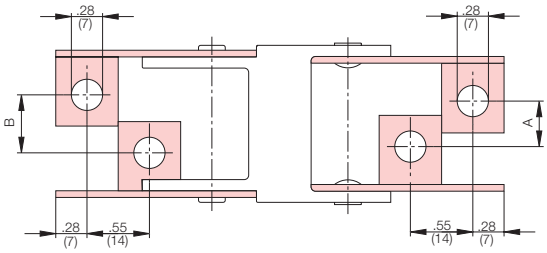
- One-piece, locked mounting bracket
- Available pre-assembled
- Inner and outer attachment possible



10....1
Moving end

10....2
Fixed end

Option 3: steel, two-piece



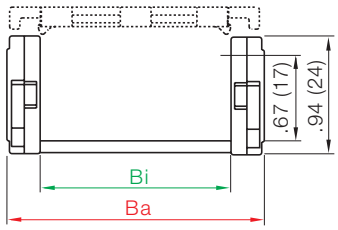
- 1 set, suitable for all widths

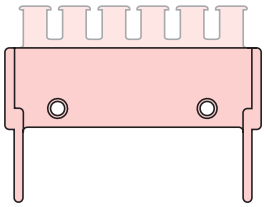
Chain Type	Part No. Set One-Piece	Part No. Set Two-Piece	Dimension A in.	(mm)	Dimensions B in.	(mm)
15-1	**101-12**	**100-12**		(0)	.12	(3)
15-2	**102-12**	**100-12**	.39	(10)	.51	(13)
15-3	**103-12**	**100-12**	.91	(23)	1.02	(26)
15-4	**104-12**	**100-12**	1.38	(35)	1.50	(38)

10…12 = Full set, each part with pin/bore
10… 1 = Mounting bracket with bore
10... 2 = Mounting bracket with pin

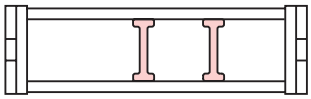
Order Example and Technical Data: Series 15 “Zipper”

Order example





15-15...



1. Chain selection:

15-2-038-0

- Color
- Radius
- Width
- Chain Type

2. Mounting brackets:

102-12PZ

- Full set
- Chain width

3. Interior separation:

2 separators unassembled
(Part No. 150),
or assembled every other link
(Part No. 151).
Alternative interior separation configurati-
on sccording to design layout possible.

For 16.4 ft (5 m) chain, color black, with mounting brackets:
16.4 ft (5 m) 15-2-038-0 and 102-12PZ

- 165 links — 10.06 links/ft (33 links/m)

Technical data

Chain Type	Weight Per Link (oz.)	Weight Per Link (g)	Weight Per Meter (lbs)	Weight Per Meter (kg)
15-1	.35	(≈ 10)	.24	(≈ 0.35)
15-2	.42	(≈ 12)	.27	(≈ 0.40)
15-3	.49	(≈ 14)	.31	(≈ 0.46)
15-4	.56	(≈ 16)	.35	(≈ 0.52)

Material	igumid G
Permitted temperature	-40°F/266°F (-40°C/+130°C)
Gliding speed max.	9.8 ft/s (3 m/s)
Unsupported v max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

● **Details of material properties**

▶ **Design, Chapter 1, Energy Chain® Catalog**

Telephone 1-800-521-2747
Fax 1-401-438-7270

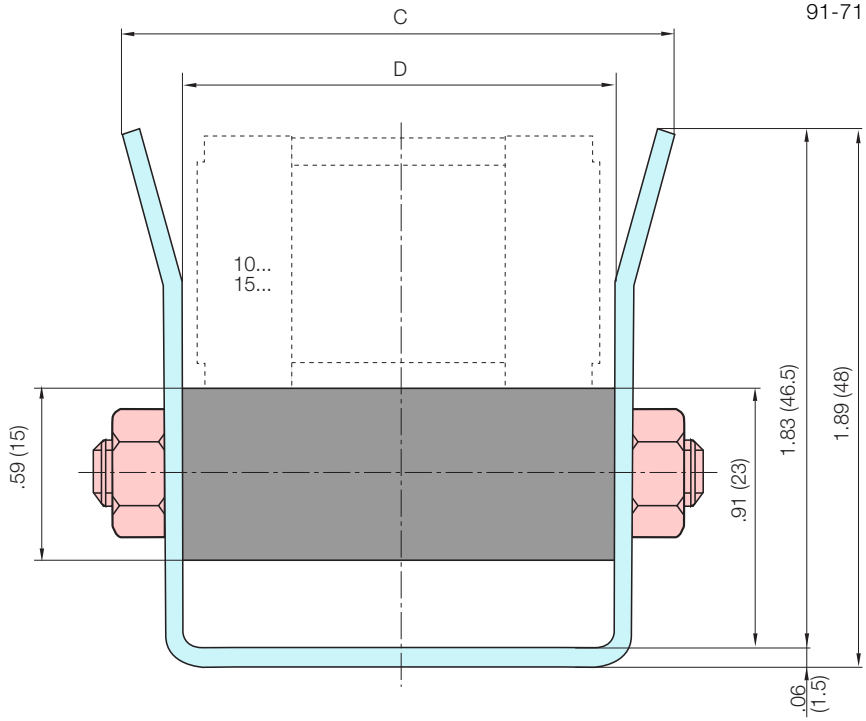
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

One-piece guide troughs made of steel are available for the following Energy Chains®: Series 10, 15 and B15. These guide troughs are available from stock for outer chain widths up to 2.36 in. (60 mm). For wider Energy Chains® and Tubes, special solutions are possible with short lead times.

No installation sets are required for these trough sizes since the guide troughs consist of a one-piece U-profile. The joint connection with this type of guide trough is specified individually for every application.

Part No. for guide troughs

Energy Chain® 10/15/B15-1:
91-10, Trough, 6.56 ft (2 m piece)
91-11, Glide bar
Energy Chain® 10/15/B15-2:
91-20, Trough, 6.56 ft (2 m piece)
91-21, Glide bar
Energy Chain® 10/15/B15-3:
91-30, Trough, 6.56 ft (2 m piece)
91-31, Glide bar
Energy Chain® 10/15/B15-4:
91-40, Trough, 6.56 ft (2 m piece)
91-41, Glide bar
Energy Chain® 10/B15-5
91-50, Trough, 6.56 ft (2 m piece)
91-51, Glide bar
Energy Chain® 10/B15-6
91-60, Trough, 6.56 ft (2 m piece)
91-61, Glide bar
Energy Chain® 10/B15-7
91-70, Trough, 6.56 ft (2 m piece)
91-71, Glide bar



Dimensions Guide troughs 91-10 — 91-71

	C	D
91-10/91-11	1.59 (40.5)	1.18 (30)
91-20/91-21	1.99 (50.5)	1.57 (40)
91-30/91-31	2.46 (62.5)	2.05 (52)
91-40/91-41	2.85 (72.5)	2.44 (62)
91-50/91-51	3.60 (91.5)	3.19 (81)
91-60/91-61	4.27 (108.5)	3.86 (98)
91.70/91-71	5.06 (128.5)	4.65 (118)

Weights 91-10 — 91-41

Trough			Glide Bar		
Part No.	**lbs/ft**	**(kg/m)**	**Part No.**	**lbs/ft**	**(kg/m)**
91-10	1.01	(1.50)	**91-11**	.30	(.45)
91-20	1.11	(1.65)	**91-21**	.38	(.57)
91-30	1.21	(1.80)	**91-31**	.46	(.68)
91-40	1.28	(1.90)	**91-41**	.61	(.91)
91-50	1.52	(2.26)	**91-51**	.84	(1.25)
91-60	1.83	(2.72)	**91-61**	.91	(1.35)
91-70	2.13	(3.17)	**91-71**	1.14	(1.70)

Trough material
in general: St 1203 galvanized

igus® Energy Chain System®

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus®, inc.
USA/Canada
Mexico

Internet: http://www.igus.com
email: webmaster@igus.com

Series 10 E2 “mini”

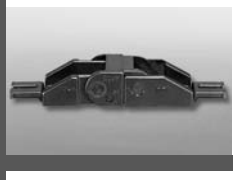
.71

Price Index

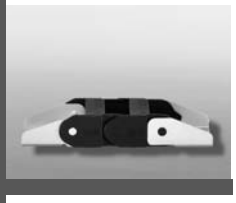
4 Widths
8 Bending Radii

Interior separation possible

Mounting bracket with or without strain relief tiewrap plates

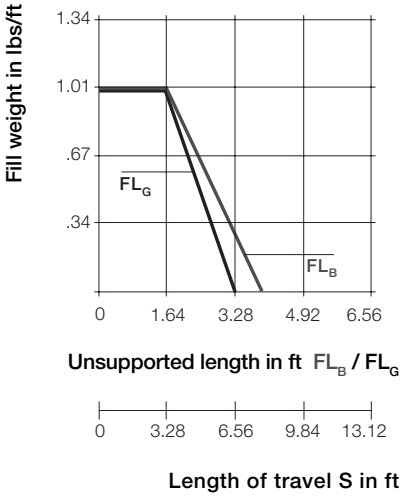


2 options for steel mounting brackets



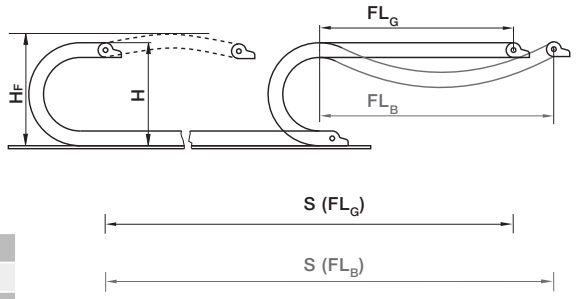
Quickfix: mounting bracket with pin
Call for availability

Minimum pitch for quiet operation



Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range:

Inner widths (Bi) inches (mm):	.59 (15), .98 (25), 1.50 (38), 1.97 (50),
Bending Radii (R) inches (mm):	1.10 (028), 1.50 (038), 1.89 (048), 2.95 (75),
Pitch:	1.20 (30.5 mm)/link = 10.06 links/ft (33 links/m)

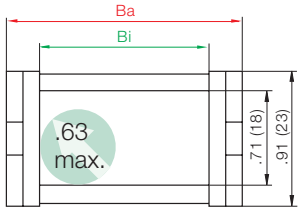
When to use the Series 10 E2 “mini”:

- If snap-open links are not necessary
- If connection options are required (Quicksnap, Quickfix, etc.)

When not to use the Series 10 E2 “mini”:

- If snap-open links are required
  ▶ New Series 15 “Zipper”, **Chapter 3, Energy Chain® Catalog**
- If quick insertion of cables with pre-assembled connectors is required
  ▶ New Series E14 “E-Z Chain”, **Chapter 2, Energy Chain® Catalog**

Series 10 E2 “mini”

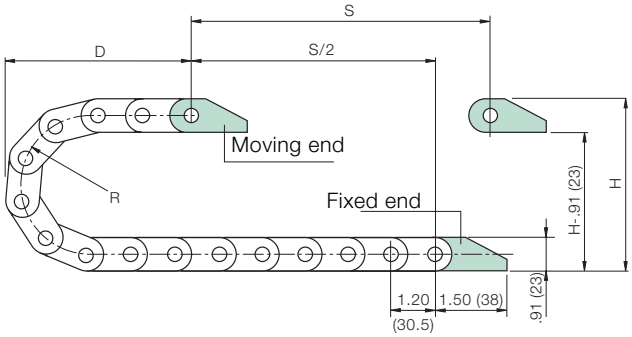


Part No.	Bi	Ba
10-1	.59 (15)	1.02 (26)
10-2	.98 (25)	1.42 (36)
10-3	1.50 (38)	1.93 (49)
10-4	1.97 (50)	2.40 (61)

Bending Radii for ALL Widths
1.10 (028)
1.50 (038)
1.89 (048)
2.95 (075)

Supplement part number with required radius for example, 10-2-038-0

Installation Dimensions



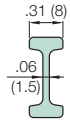
R	1.10 (28)	1.50 (38)	1.89 (48)	2.95 (75)
H*	3.15 (80)	3.94 (100)	4.72 (120)	6.89 (175)
D	2.76 (70)	3.15 (80)	3.54 (90)	4.72 (120)
K	5.91 (150)	7.28 (185)	8.46 (215)	11.81 (300)

*The required clearance height is HF = H + .79 (20) with 1.01 lbs/ft (1.5 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Pitch: = 1.20 (30.5 mm per link
Links per ft (m): = 10.06 (33)
Chain length: = $\frac{S}{2}$ + K

Interior separation

These separators are used when vertical subdivision is required.



Vertical Separators

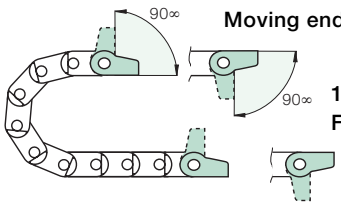
Unassembled	**Part No. 101**
Assembled	**Part No. 111**

Mounting Brackets

Option 1: polymer, one-piece

- Mounting bracket with or without strain relief tiewrap plates

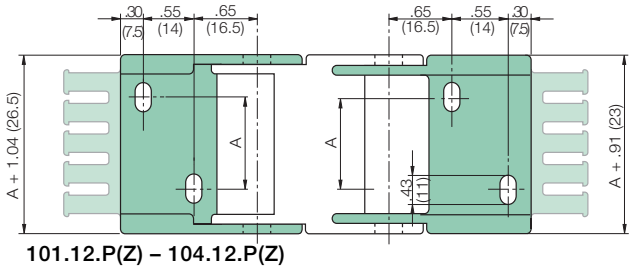
- One-piece mounting bracket
- Corrosion resistant
- Available pre-assembled
- Inner and outer attachment possible
- Flush mounting



10....1
Moving end

10....2
Fixed end

10....1 **10....2**



101.12.P(Z) – 104.12.P(Z)

Chain Type	Part No. Full Set with Tiewrap Plates	Part No. Set Mounting Brackets	Dimension A in.	(mm)
10-1	**101-12PZ**	**101-12P**		(0)
10-2	**102-12PZ**	**102-12P**	.39	(10)
10-3	**103-12PZ**	**103-12P**	.91	(23)
10-4	**104-12PZ**	**104-12P**	1.38	(35)

10…12 = Full set, each part with pin/bore
10… 1 = Mounting bracket with bore
10... 2 = Mounting bracket with pin

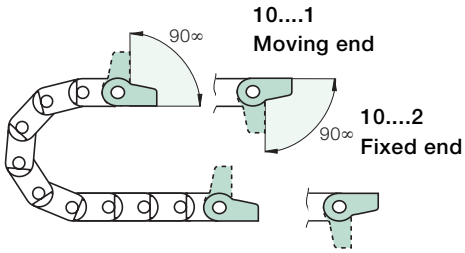
Telephone 1-800-521-2747
Fax 1-401-438-7270

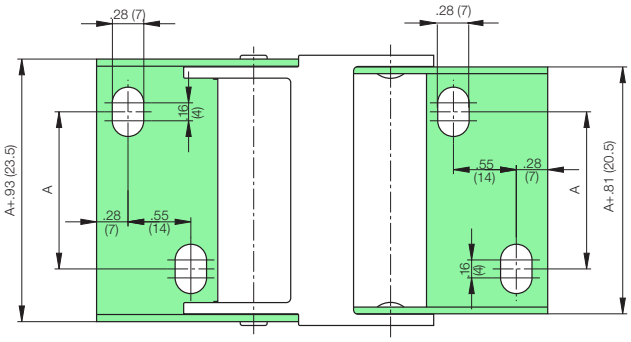
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Mounting Brackets

Option 2: steel, one-piece

- One-piece mounting bracket
- Available pre-assembled
- Inner and outer attachment possible





101-12 – 104-12

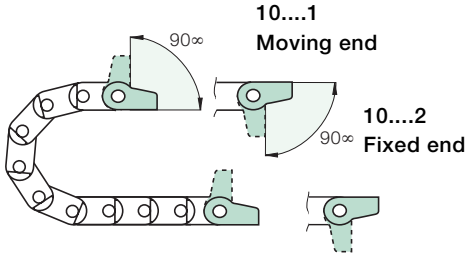
Chain Type	Part No. One-Piece	Dimension A in.	(mm)	Dimension B	
10-1	**101-12**		(0)	.12	(3)
10-2	**102-12**	.39	(10)	.51	(13)
10-3	**103-12**	.91	(23)	1.02	(26)
10-4	**104-12**	1.38	(35)	1.50	(38)

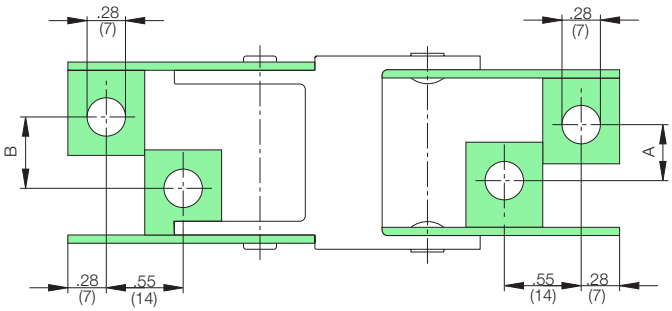
101…12 = Full set, each part with pin/bore
101… 1 = Mounting bracket with bore
101.. 2 = Mounting bracket with pin

Mounting Brackets

Option 3: steel, two-piece

- One set, suitable for all widths



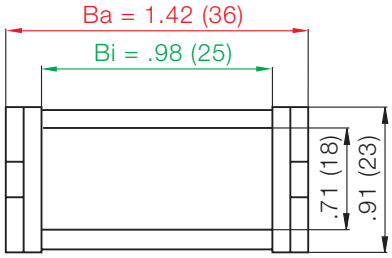


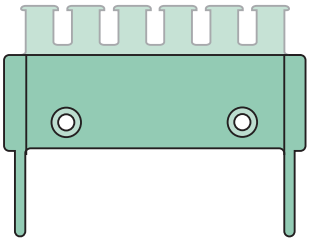
101-12 – 104-12

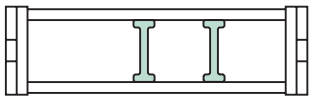
Chain Type	Part No. One-Piece	Dimension A in.	(mm)	Dimension B	
10-1	**100-12**		(0)	.12	(3)
10-2	**100-12**	.39	(10)	.51	(13)
10-3	**100-12**	.91	(23)	1.02	(26)
10-4	**100-12**	1.38	(35)	1.50	(38)

Order Example and Technical Data: Series 10 E2 “mini”

Order example







1. Chain selection:

10-2-038-0

- Color
- Radius
- Width
- Chain type

2. Mounting brackets:

102-12PZ

- Full set
- Chain width

3. Interior separation:

2 separators, unassembled, (Part No. 101),
or
assembled every other link (Part No. 111).
Alternative interior separation configuration according to design layout possible.

For 16.4 ft (5 m) chain, color black, with mounting brackets and two separators:
16.4 ft (5 m) 10-2-038-0 and 102-12PZ and two separators 111 assembled every other link

- 165 links — 10.06 links/ft (33 links/m)

Technical data

Chain Type	Weight Per Link (oz.)	(g)	Weight Per Meter (lbs)	(kg)
10-1	.35	(≈ 10)	.24	(≈ 0.35)
10-2	.42	(≈ 12)	.27	(≈ 0.40)
10-3	.49	(≈ 14)	.31	(≈ 0.46)
10-4	.56	(≈ 16)	.35	(≈ 0.52)

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

● **Details of material properties**

▶ **Design, Chapter 1, Energy Chain® Catalog**

Telephone 1-800-521-2747
Fax 1-401-438-7270

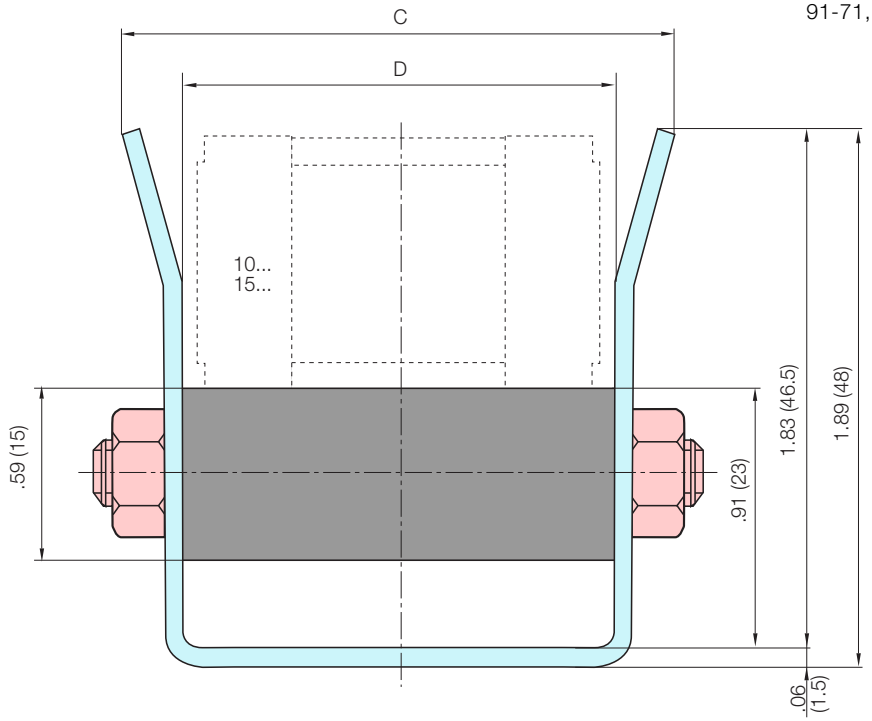
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

One-piece guide troughs made of steel are available for the following Energy Chains®: Series 10, 15 and B15. These guide troughs are available from stock for outer chain widths up to 2.36 in. (60 mm). For wider Energy Chains® and Tubes, special solutions are possible with short lead times.

No installation sets are required for these trough sizes since the guide troughs consist of a one-piece U-profile. The joint connection with this type of guide trough is specified individually for every application.

Part No. for guide troughs

Energy Chain® 10/15/B15-1:
91-10, Trough, 6.56 ft (2 m piece)
91-11, Glide bar
Energy Chain® 10/15/B15-2:
91-20, Trough, 6.56 ft (2 m piece)
91-21, Glide bar
Energy Chain® 10/15/B15-3:
91-30, Trough, 6.56 ft (2 m piece)
91-31, Glide bar
Energy Chain® 10/15/B15-4:
91-40, Trough, 6.56 ft (2 m piece)
91-41, Glide bar
Energy Chain® 10/B15-5
91-50, Trough, 6.56 ft (2 m piece)
91-51, Glide bar
Energy Chain® 10/B15-6
91-60, Trough, 6.56 ft (2 m piece)
91-61, Glide bar
Energy Chain® 10/B15-7
91-70, Trough, 6.56 ft (2 m piece)
91-71, Glide bar



Dimensions Guide troughs 91-10 — 91-71

	C	D
91-10/91-11	1.59 (40.5)	1.18 (30)
91-20/91-21	1.99 (50.5)	1.57 (40)
91-30/91-31	2.46 (62.5)	2.05 (52)
91-40/91-41	2.85 (72.5)	2.44 (62)
91-50/91-51	3.60 (91.5)	3.19 (81)
91-60/91-61	4.27 (108.5)	3.86 (98)
91.70/91-71	5.06 (128.5)	4.65 (118)

Weights 91-10 — 91-41

Trough			Glide Bar		
Part No.	**lbs/ft**	**(kg/m)**	**Part No.**	**lbs/ft**	**(kg/m)**
91-10	1.01	(1.50)	**91-11**	.30	(.45)
91-20	1.11	(1.65)	**91-21**	.38	(.57)
91-30	1.21	(1.80)	**91-31**	.46	(.68)
91-40	1.28	(1.90)	**91-41**	.61	(.91)
91-50	1.52	(2.26)	**91-51**	.84	(1.25)
91-60	1.83	(2.72)	**91-61**	.91	(1.35)
91-70	2.13	(3.17)	**91-71**	1.14	(1.70)

Trough material
in general: St 1203 galvanized

igus® Energy Chain System®

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus®, inc.
USA/Canada
Mexico

Internet: http://www.igus.com
email: webmaster@igus.com

Series 11 E2 “mini”

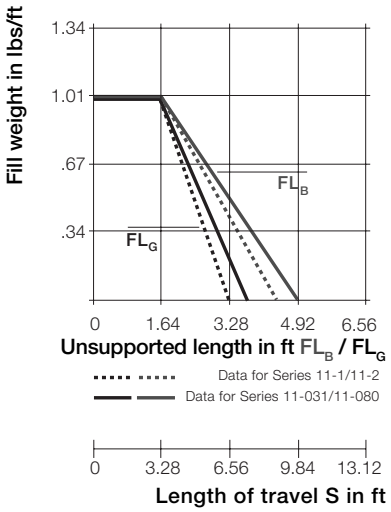
.91 | 1.10 | 1.61

Price Index

3 Inner Heights
4 Widths
8 Bending Radii

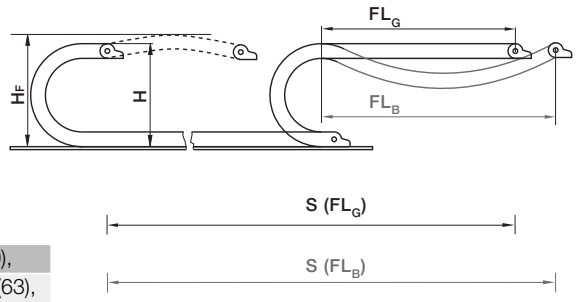
Mounting bracket with or without strain relief tiewrap plates

New version with larger pins and double stop dog for long service life and long unsupported length



Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range:

Inner widths (Bi) inches (mm):	.59 (15), .98 (25), 1.22 (31), 3.15 (80),
Bending Radii (R) inches (mm):	1.50 (38), 1.57 (40), 1.77 (45), 2.48 (63),
	2.76 (70), 2.95 (75), 3.94 (100)
Pitch:	1.20 (30.5 mm)/link =
	10.06 links/ft (33 links/m)
	39.6 (1006.5 mm)

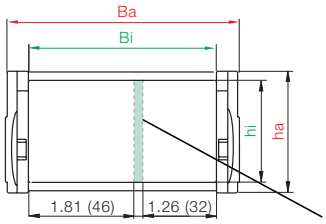
When to use the Series 11 E2 “mini”:

- If space is restricted
- If many cables are arranged vertically and adjacent to one another

When not to use the Series 11 E2 “mini”:

- If snap-open links are required
  ▶ Series B17, **Chapter 4, Energy Chain® Catalog**
- If quick insertion of cables with pre-assembled connectors is required
  ▶ Series “E-Z Chain”, **Chapter 2, Energy Chain® Catalog**

Series 11 E2 “mini”



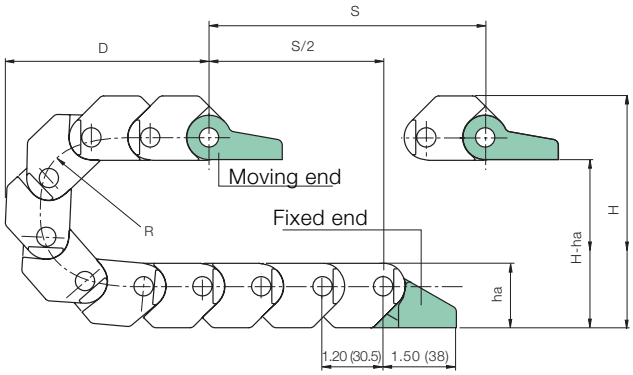
only 11-080

Part No.	Bi	Ba	hi	ha
11-031	1.22 (31)	1.62 (41.2)	.91 (23)	1.10 (28)
11-080	3.15 (80)	3.66 (93)	1.10 (28)	1.31 (33.4)

Bending Radii for ALL Widths
1.50 (038)
1.77 (045)
2.76 (070)

Supplement Part No. with required radius for example, 11-031-070-0

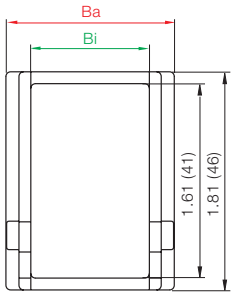
Installation Dimensions



Series	11-080	11-031	
R	1.50 (038)	1.77 (045)	2.76 (070)
H*	4.69 (119)	4.92 (125)	6.89 (175)
D	3.62 (92)	4.92 (125)	4.72 (120)
K	7.28 (185)	8.46 (215)	12.01 (305)

*The required clearance height is HF = H + .79 (20) with .34 lbs/ft (0.5 kg/m) fill weight. Please consult igus® is space is particularly restricted.

Pitch: = 1.20 (30.5 mm) per link
Links/ft (m): = 10.06 (33)
Chain length: = $\frac{S}{2}$ + K

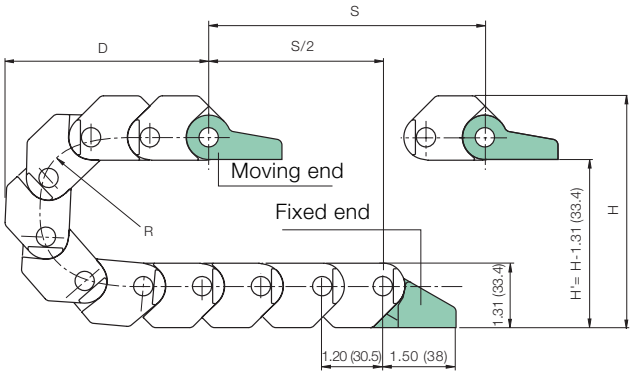


Part No.	Bi	Ba
11-1	.59 (15)	1.00 (25.5)
11-2	.98 (25)	1.40 (35.5)

Bending Radii for ALL Widths
1.57 (040)
2.48 (063)
2.95 (075)
3.94 (100)

Supplement Part No. with required radius for example, 11-031-070-0

Installation Dimensions



R	1.57 (040)	2.48 (063)	2.95 (075)	3.94 (100)
H*	5.87 (149)	7.68 (195)	8.62 (219)	10.59 (269)
D	4.13 (105)	5.04 (128)	5.51 (140)	6.50 (165)
K	8.34 (212)	10.83 (275)	12.01 (305)	15.55 (395)

*The required clearance height is HF = H + .98 (25) with .34 lbs/ft (0.5 kg/m) fill weight. Please consult igus® is space is particularly restricted.

Pitch: = 1.20 (30.5 mm) per link
Links per ft (m): = 10.06 (33)

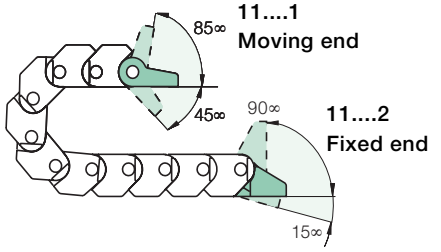
Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

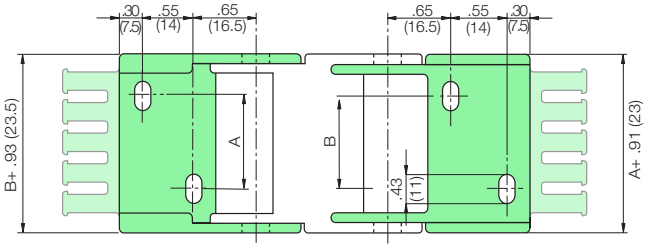
Mounting Brackets

Option 1: polymer, one-piece

- One-piece mounting bracket
- Corrosion resistant
- Available pre-assembled
- Flush mounting
- Inner and outer attachment possible



11....1 11....2



11-031-12P(Z) and 11-080-12P(Z)

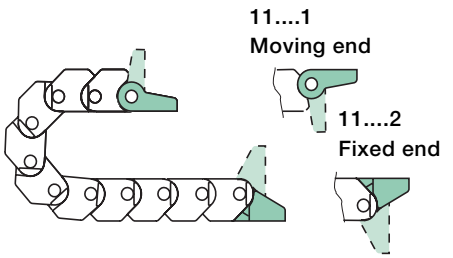
Chain Type	Part No. Full set with Tiewrap Plate	Part No. Mounting Bracket Set	Dimension A in.	(mm)	Dimensions B in.	(mm)
11-031	**11-031-12PZ**	**11-031-12P**	.63	(16)	1.65	(42)
11-080	**11-080-12PZ**	**11-080-12P**	2.56	(65)	3.70	(94)
11-1	**101-12PZ**	**101-12P**		(0)	1.00	(25.5)
11-2	**102-12PZ**	**101-12P**	.39	(10)	1.40	(35.5)

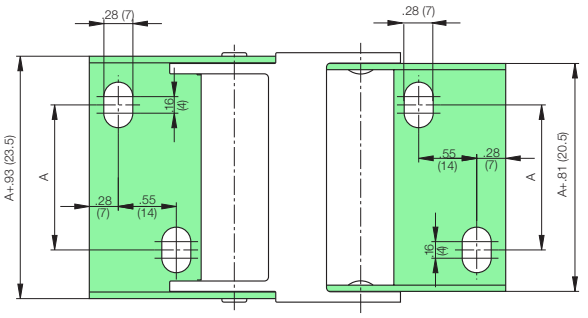
* A may be equal to B due to slot

1...12 = Full set, each part with pin/bore
1... 1 = Mounting bracket with bore
1... 2 = Mounting bracket with pin

Option 2: steel, one-piece (Chain type 11-1 and 11-2)

- One-piece mounting bracket
- Available pre-assembled
- Inner and outer attachment possible





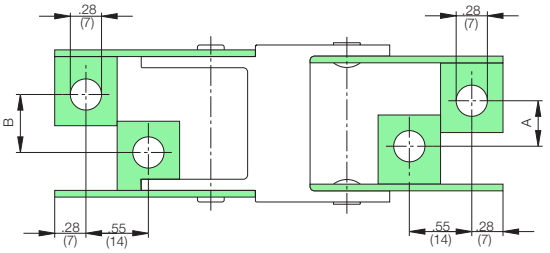
101-12 — 104-12

Chain Type	Part No. One-Piece Tiewrap Plate	Dimension A in.	(mm)	Dimensions B in.	(mm)
11-1	**101-12**		(0)	.12	(3)
11-2	**102-12**	.39	(10)	.51	(13)

*A may be equal to B due to slot

Option 3: steel, two-piece

- 1 set, suitable for all widths



100-12

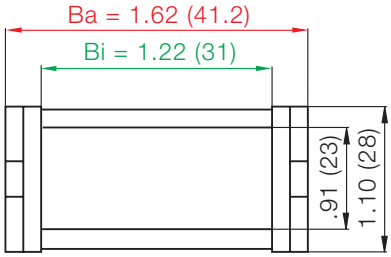
Chain Type	Part No. Two-Piece Tiewrap Plate	Dimension A in.	(mm)	Dimensions B in.	(mm)
11-1	**100-12**		(0)	.12	(3)
11-2	**100-12**	.39	(10)	.51	(13)

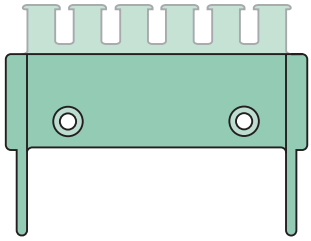
*A may be equal to B due to slot

10...12 = Full set, each part with pin/bore
10... 1 = Mounting bracket with bore
10... 2 = Mounting bracket with pin

Order example and Technical Data: Series 11 E2 “mini”

Order example





1. Chain selection:

11-031-070-0

- Color
- Radius
- Width
- Chain type

2. Mounting brackets:

11-031-12PZ

- Full set
- Chain width

For 16.4 ft (5 m) chain, color black, with mounting brackets and one separator:
16.4 ft (5 m) 11-031-070-0 and 11-031-12PZ

- 165 links — 10.06 links/ft (33 links/m)

Technical data

Chain Type	Weight Per Link		Weight Per Meter	
	(oz.)	(g)	(lbs)	(kg)
11-031	.46	(≈ 13)	.29	(≈ 0.43)
11-080	.77	(≈ 22)	.49	(≈ 0.73)
11-1	.53	(≈ 15)	.34	(≈ 0.50)
11-2	.56	(≈ 16)	.36	(≈ 0.53)

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

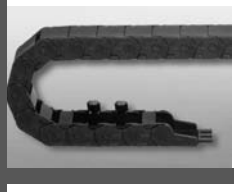
Telephone 1-800-521-2747
Fax 1-401-438-7270

Series 14

.79

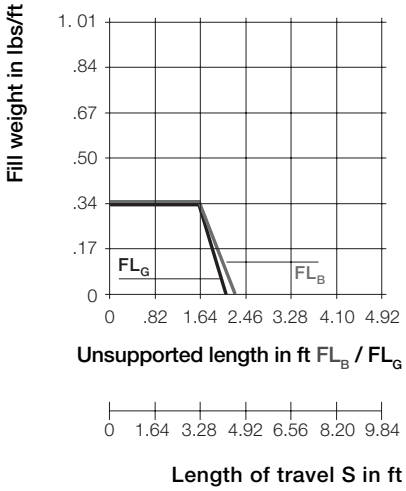
Price Index

4 Widths
6 Bending Radii



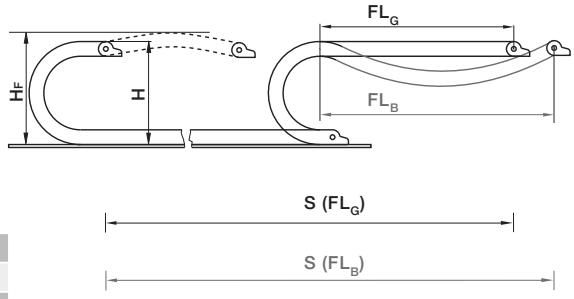
Mounting bracket with or without strain relief tiewrap plates

Quickfix: mounting bracket with dowel



Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range:

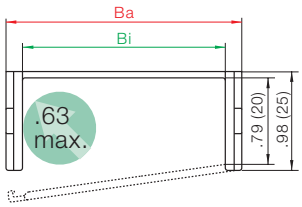
Inner Widths (Bi) inches (mm):	.59 (15), .98 (25), 1.50 (38), 1.97 (50)
Bending Radii (R) inches (mm):	1.10 (28), 1.50 (38), 1.89 (48),
	2.95 (75), 3.94 (100), 4.92 (125)
Pitch:	1.20 (30.5 mm)/link =
	10.06 links/ft (33 links/m)
	39.6 (1006.5 mm)

When to use the Series 14:

- For applications with low loads
- Fast installation of the cables

When not to use the Series 14:

- Gliding applications
  ▶ New Series 15 “Zipper”, **Chapter 3, Energy Chain® Catalog**
- For long unsupported lengths
  ▶ New Series 15 “Zipper”, **Chapter 3, Energy Chain® Catalog**

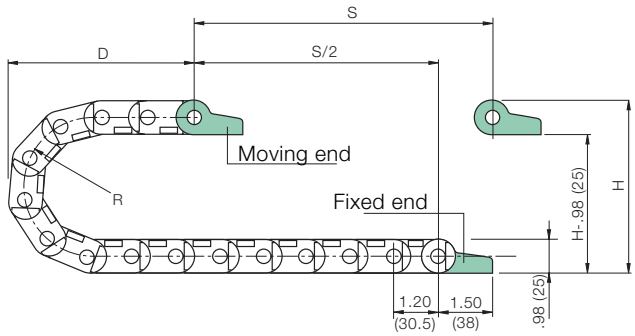


Part No.	Bi	Ba
14-1	.59 (15)	1.02 (26)
14-2	.98 (25)	1.42 (36)
14-3	1.50 (38)	1.93 (49)
14-4	197 (50)	2.40 (61)

Bending Radii for ALL Widths
1.10 (028)
1.50 (038)
1.89 (048)
2.95 (075)
3.94 (100)
4.92 (125)

Supplement part no. with required radius for example, 14-4-100-0

Installation Dimensions



R*	1.10 (028)	1.50 (038)	1.89 (048)
H	3.23 (82)	4.01 (102)	4.80 (122)
D	2.80 (71)	3.19 (81)	3.58 (91)
K	5.91 (150)	7.28 (185)	8.46 (215)

R*	2.95 (75)	3.94 (100)	4.92 (125)
H	6.97 (177)	8.94 (227)	10.91 (277)
D	4.72 (120)	5.71 (145)	6.69 (170)
K	11.81 (300)	14.76 (375)	17.91 (455)

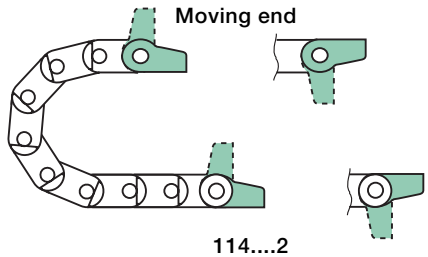
*The required clearance height is HF = H + .79 (20) with .34 lbs/ft (0.5 kg/m) fill weight. Please consult igus® is space is particularly restricted.

Pitch: = 1.20 (30.5 mm) per link
Links per ft (m): = 10.06 (33)
Chain length: = $\frac{S}{2}$ + K

Mounting Brackets

polymer, one-piece

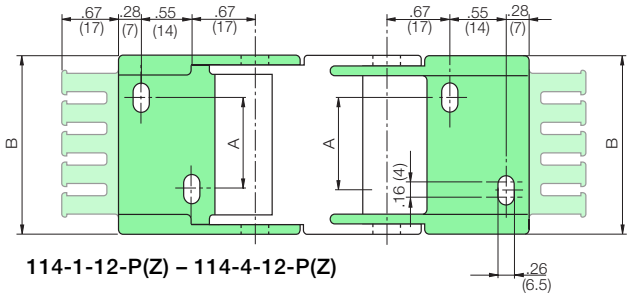
- Attachment top or bottom
- Corrosion resistant
- With or wihtout strain relief tiewrap plate
- Flush mounting



114....1
Moving end

114....2
Fixed end

114....1 **114....2**



114-1-12-P(Z) – 114-4-12-P(Z)

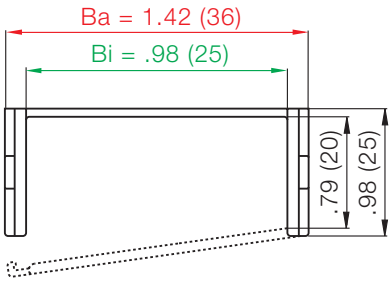
Chain Type	Part No. Full Set with Tiewrap Plates	Part No. Set Mounting Brackets	Dimension A in.	(mm)	Dimension B in.	(mm)
14-1	**114-1-12PZ**	**114-1-12P**		(0)	1.04	(26.5)
14-2	**114-2-12PZ**	**114-2-12P**	.39	(10)	1.44	(36.5)
14-3	**114-3-12PZ**	**114-3-12P**	.91	(23)	1.95	(49.5)
14-4	**114-4-12PZ**	**114-4-12P**	1.38	(35)	2.42	(61.5)

114…12 = Full set, each part with pin/bore
114… 1 = Mounting bracket with bore
114... 2 = Mounting bracket with pin

Series 14
Telephone 1-800-521-2747
Fax 1-401-438-7270

Order Example and Technical Data: Series 14

Order example

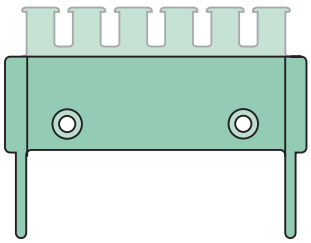


1. Chain selection:

14-2-038-0

- Color
- Radius
- Width
- Chain type

114-2...



2. Mounting brackets:

114-2-12PZ

- Ful set
- Chain width

For 3.28 ft (1 m) chain, color black, with mounting brackets:
3.28 ft (1 m) 14-2-038-0 and 114-2-12PZ

- 33 links — 10.06 links/ft (33 links/m)

Technical data

Chain Type	Weight Per Link (oz.)	Weight Per Link (g)	Weight Per Meter (lbs)	Weight Per Meter (kg)
14-1	.32	(≈ 9)	.21	(≈ 0.31)
14-2	.35	(≈ 10)	.22	(≈ 0.32)
14-3	.42	(≈ 12)	.27	(≈ 0.40)
14-4	.46	(≈ 13)	.30	(≈ 0.44)

Material	igumid G
Permitted temperature	-22°/+212°F (-30°/+100°C)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 V2

● Details of material properties

▶ Design, Chapter 1, Energy Chain® Catalog

igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

igus® Energy Chain System®

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus®, inc.
USA/Canada
Mexico

Internet: http://www.igus.com
email: webmaster@igus.com

Series B15/B15i E2 “mini”

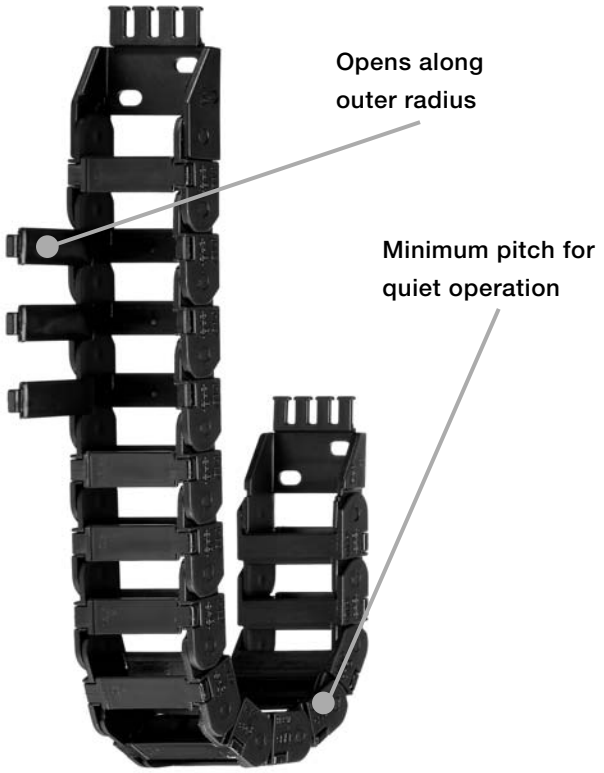
.67 .67

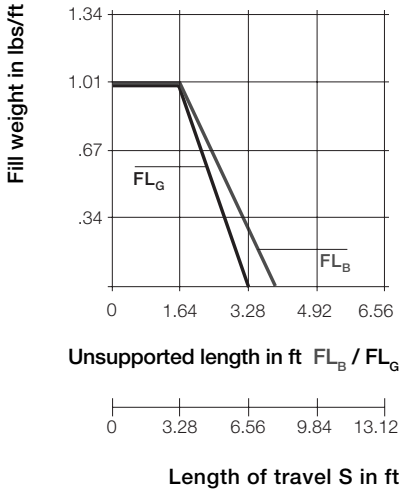
Price Index

4 Widths
9 Bending Radii

Interior separation possible

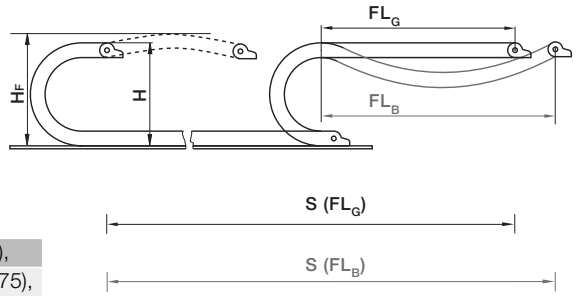
Mounting bracket with or without strain relief tiewrap plates





Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range:

Inner Widths (Bi) inches (mm):	.59 (15), .98 (25), 1.50 (38), 1.97 (50),
Bending Radii (R) inches (mm):	1.10 (28), 1.50 (38), 1.89 (48), 2.95 (75),
	3.94 (100), 4.33 (110), 4.92 (125),
	5.71 (145), 7.09 (180)
Pitch:	1.20 (30.5 mm)/link =
	10.06 links/ft (33 links/m)
	39.6 (1006.5 mm)

For inner widths 63, 80, 100 see Page 5.44, Series B15/B15i New E2 “mini”

When to use the Series B15/B15i:

- If snap-open accessibility is required
- If connection options are required (Quicksnap, Quickfix, etc.)
- If reverse bending radius is required

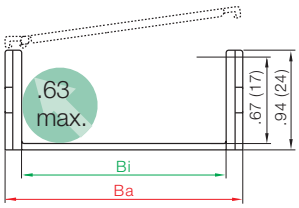
When not to use the Series B15/B15i:

- If snap-open accessibility is not required
  ▶ Series 10 New, **Chapter 4, Energy Chain® Catalog**
- If quick insertion of cables with pre-assembled connectors is required
  ▶ Series E14 “E-Z Chain”, **Chapter 2, Energy Chain® Catalog**

Series B15/B15i E2 “mini”

Series B15 Energy Chain®

(snap-open along outer radius)

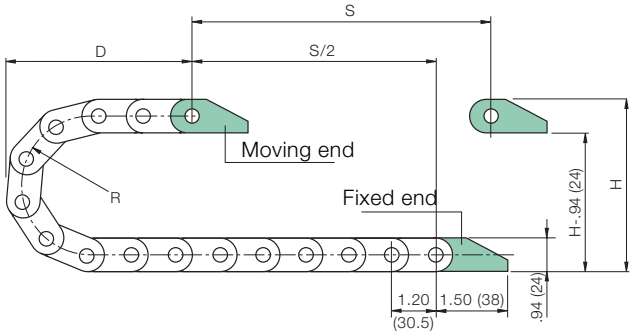


Part No.	Bi	Ba
B15-1	.59 (15)	1.02 (26)
B15-2	.98 (25)	1.42 (36)
B15-3	1.50 (38)	1.93 (49)
B15-4	1.97 (50)	2.40 (61

Supplement part no. with required radius for example, B15-025-100-0

Bending Radii for ALL Widths
1.50 (038)
1.89 (048)
2.95 (075)
3.94 (100)
7.09 (180)

Installation Dimensions



R	1.10 (028)	1.50 (038)	1.89 (048)	2.95 (075)	3.94 (100)
H*	3.15 (80)	3.94 (100)	4.72 (120)	6.89 (175)	8.86 (225)
D	2.76 (70)	3.15 (80)	3.54 (90)	4.72 (120)	5.71 (145)
K	5.91 (150)	7.28 (185)	8.46 (215)	11.81 (300)	14.76 (375)

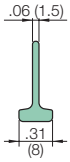
R	4.33 (110)	4.92 (125)	5.71 (145)	7.09 (180)
H*	9.65 (245)	10.83 (275)	12.40 (315)	15.16 (385)
D	6.10 (155)	6.69 (170)	7.48 (190)	8.86 (225)
K	16.14 (410)	17.91 (455)	20.47 (520)	24.80 (630)

*The required clearance height is HF = H + .79 (20) with .34 lbs/ft (0.5 kg/m) fil weight. Please consult igus® is space is particularly restricted.

Pitch: = 1.20 (30.5 mm) per link
Links per ft (m): = 10.06 (33)
Chain length: = $\frac{S}{2} + K$

Vertical separators

Separators are used in order to vertically partition the interior of the Energy Chain®. Separators are removable and adjustable for a variety of chamber widths.



Vertical Separator

Unassembled	**Part No. 150**
Assembled	**Part No. 151**

Telephone 1-800-521-2747
Fax 1-401-438-7270

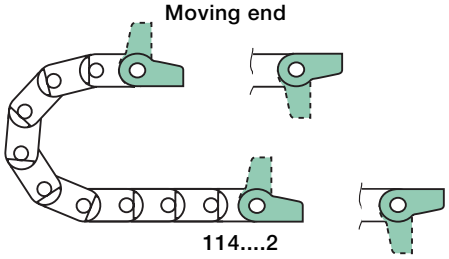
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Series B15 E2 "mini"

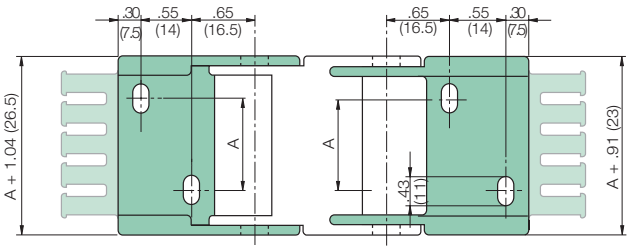
Mounting Brackets

Option 1: polymer, one-piece

- one-piece mounting bracket
- Corrosion resistant
- Available pre-assembled
- Inner and outer attachment possible
- Flush mounting



10....1 10....2



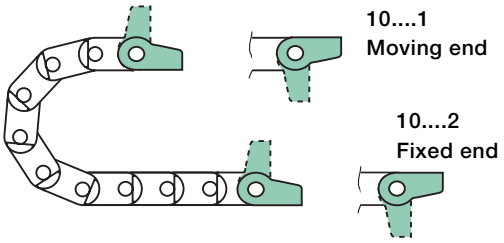
101-12P(Z) – 104-12P(Z)

Chain Type	Part No. Full Set with Tiewrap Plates	Part No. Set Mounting Brackets	Dimension A in.	(mm)
B15-1	**101-12PZ**	**101-12P**		(0)
B15-2	**102-12PZ**	**102-12P**	.39	(10)
B15-3	**103-12PZ**	**103-12P**	.91	(23)
B15-4	**104-12PZ**	**104-12P**	1.38	(35)

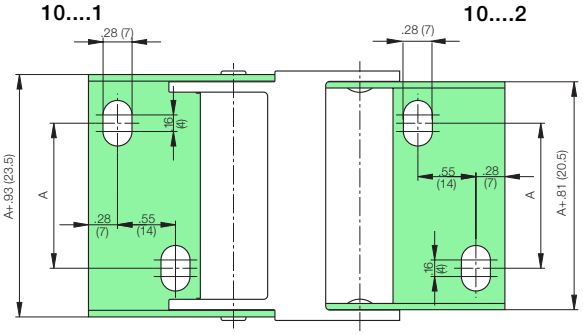
10…12 = Full set, each part with pin/bore
10… 1 = Mounting bracket with bore
10... 2 = Mounting bracket with pin

Option 2: steel, one-piece

- one-piece mounting bracket
- Available pre-assembled
- Inner and outer attachment possible



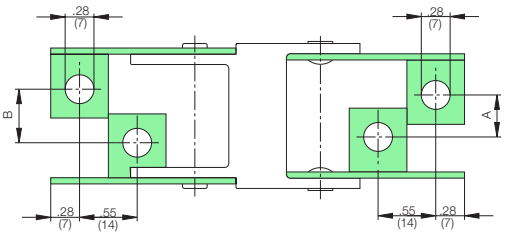
10....1 10....2



101-12P(Z) – 104-12P(Z)

Chain Type	Part No. One-Piece	Dimension A in.	(mm)	Dimension B in.	(mm)
B15-1	**101-12**		(0)	.12	(3)
B15-2	**102-12**	.39	(10)	.51	(13)
B15-3	**103-12**	.91	(23)	1.02	(26)
B15-4	**104-12**	1.38	(35)	.51	(13)

Option 3: steel, one-piece



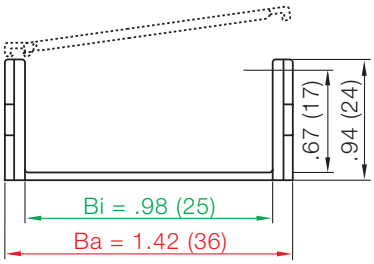
Chain Type	Part No. Two-Piece	Dimension A in.	(mm)	Dimension B in.	(mm)
B15-1	**100-12**		(0)	.12	(3)
B15-2	**100-12**	.39	(10)	.51	(13)
B15-3	**100-12**	.91	(23)	1.02	(26)
B15-4	**100-12**	1.38	(35)	.51	(13)

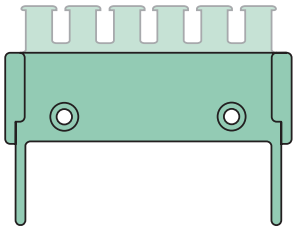
10…12 = Full set, each part with pin/bore
10… 1 = Mounting bracket with bore
10... 2 = Mounting bracket with pin

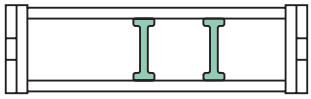
Order Example and Technical Data: Series B15 E2 “mini”

Order example

B15-2...







1. Chain selection:

B15-2-038-0

- Color
- Radius
- Width
- Chain type

2. Mounting brackets:

102-12PZ

- Full set
- Chain width

3. Interior separation:
2 separators, unassembled, (Part No. 153),
or
assembled every other link (Part No. 154).
Alternative interior separation configuration according to design layout possible.

For 16.4 ft (5 m) chain, color black, with mounting brackets and two separators:
16.4 ft (5 m) B15-2-038-0 and 102-12PZ and two separators 154 assembled every other link

- 165 links — 10.06 links/ft (33 links/m)

Technical data

Chain Type	Weight Per Link (oz.)	Weight Per Link (g)	Weight Per Meter (lbs)	Weight Per Meter (kg)
B15-1	.35	(≈ 10)	.24	(≈ 0.35)
B15-2	.42	(≈ 12)	.27	(≈ 0.40)
B15-3	.49	(≈ 14)	.31	(≈ 0.46)
B15-4	.56	(≈ 16)	.35	(≈ 0.52)

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

● **Details of material properties**

▶ **Design, Chapter 1, Energy Chain® Catalog**

Telephone 1-800-521-2747
Fax 1-401-438-7270

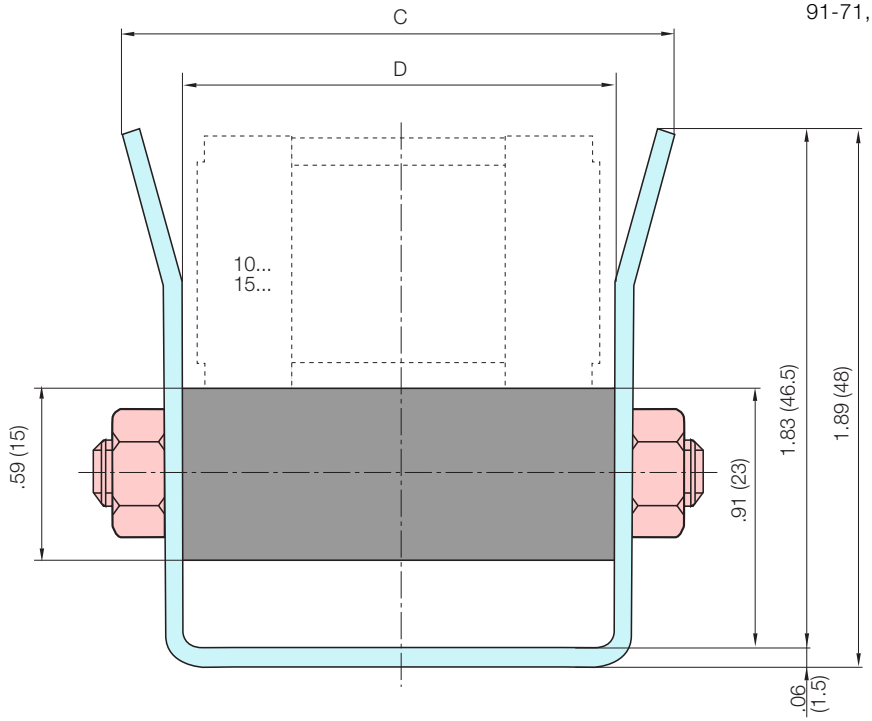
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Telephone 1-800-521-27
Internet: http://www.igus.com
email: webmaster@igus.com

One-piece guide troughs made of steel are available for the following Energy Chains®: Series 10, 15 and B15. These guide troughs are available from stock for outer chain widths up to 2.36 in. (60 mm). For wider Energy Chains® and Tubes, special solutions are possible with short lead times.

No installation sets are required for these trough sizes since the guide troughs consist of a one-piece U-profile. The joint connection with this type of guide trough is specified individually for every application.

Part No. for guide troughs

Energy Chain® 10/15/B15-1:
91-10, Trough, 6.56 ft (2 m piece)
91-11, Glide bar
Energy Chain® 10/15/B15-2:
91-20, Trough, 6.56 ft (2 m piece)
91-21, Glide bar
Energy Chain® 10/15/B15-3:
91-30, Trough, 6.56 ft (2 m piece)
91-31, Glide bar
Energy Chain® 10/15/B15-4:
91-40, Trough, 6.56 ft (2 m piece)
91-41, Glide bar
Energy Chain® 10/B15-5
91-50, Trough, 6.56 ft (2 m piece)
91-51, Glide bar
Energy Chain® 10/B15-6
91-60, Trough, 6.56 ft (2 m piece)
91-61, Glide bar
Energy Chain® 10/B15-7
91-70, Trough, 6.56 ft (2 m piece)
91-71, Glide bar



Dimensions Guide troughs 91-10 — 91-71

	C	D
91-10/91-11	1.59 (40.5)	1.18 (30)
91-20/91-21	1.99 (50.5)	1.57 (40)
91-30/91-31	2.46 (62.5)	2.05 (52)
91-40/91-41	2.85 (72.5)	2.44 (62)
91-50/91-51	3.60 (91.5)	3.19 (81)
91-60/91-61	4.27 (108.5)	3.86 (98)
91.70/91-71	5.06 (128.5)	4.65 (118)

Weights 91-10 — 91-41

Trough			Glide Bar		
Part No.	**lbs/ft**	**(kg/m)**	**Part No.**	**lbs/ft**	**(kg/m)**
91-10	1.01	(1.50)	**91-11**	.30	(.45)
91-20	1.11	(1.65)	**91-21**	.38	(.57)
91-30	1.21	(1.80)	**91-31**	.46	(.68)
91-40	1.28	(1.90)	**91-41**	.61	(.91)
91-50	1.52	(2.26)	**91-51**	.84	(1.25)
91-60	1.83	(2.72)	**91-61**	.91	(1.35)
91-70	2.13	(3.17)	**91-71**	1.14	(1.70)

Trough material
in general: St 1203 galvanized

igus® Energy Chain System®

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus®, inc.
USA/Canada
Mexico

Internet: http://www.igus.com
email: webmaster@igus.com

Series 20/25 "E2 Medium"

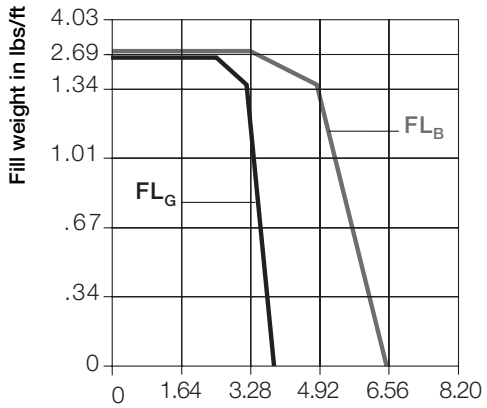
.98

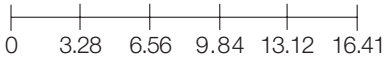
Price Index

5 Widths
7 Bending Radii

2 options for mounting brackets

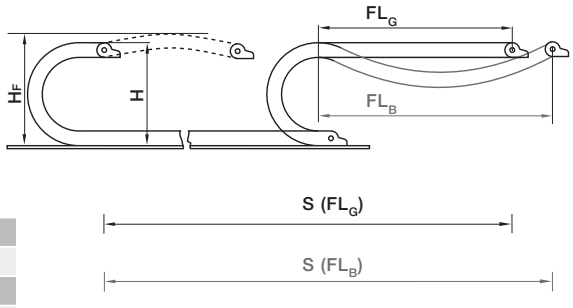
2 options for interior separation





Unsupported Length

- FL_B =unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range

Inner Widths (Bi) inches (mm):	.43 (11), 1.50 (38), 2.24 (57),
	3.03 (77), 4.06 (103)
Bending Radii (R) inches (mm):	2.16 (055), 2.95 (075), 3.94(100),
	4.92 (125), 5.91 (150), 7.87 (200),
	9.84 (250)
Pitch:	1.81 (46 mm)/link =
	6.71 links/ft (22 links/m)
	39.84 (1012 mm)

When to use the Series 20/25:

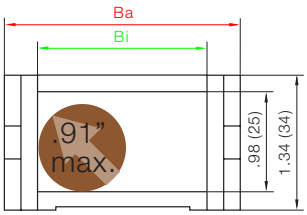
- If you are repairing or maintaining an existing system

When not to use the Series 20/25:

- If you are installing a new system
  ▶ Series 250, **Chapter 4, Energy Chain® Catalog**

Series 20/25 "E2 Medium"

Series 20 Energy Chain®

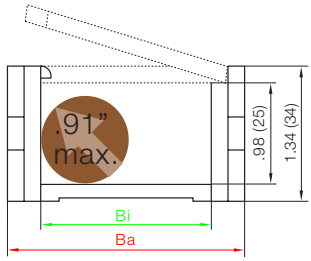


Part No.	Bi	Ba
20-1-	.43 (11)	1.06 (27)
20-2-	1.50 (38)	2.09 (53)
20-3-	2.24 (57)	2.83 (72)
20-4-	3.03 (77)	3.62 (92)
20-5-	4.06 (103)	4.65 (118)

Bending Radii for ALL Widths
2.16 (055)
2.95 (075)
3.94 (100)
4.92 (125)
5.91 (150)
7.87 (200)
9.84 (250)

Supplement part number with required radius for example, 20-2-100-0

Series 25 (snap-open along outer radius)

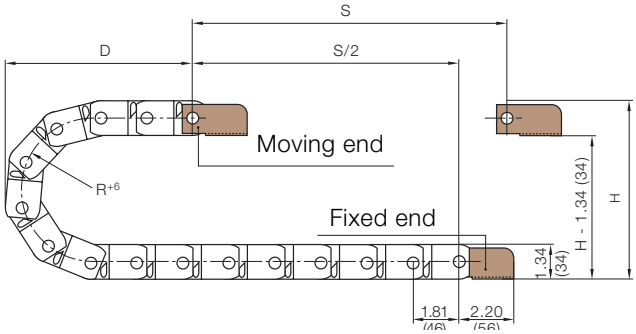


Part No.	Bi	Ba
25-2-	1.50 (38)	2.09 (53)
25-3-	2.24 (57)	2.83 (72)
25-4-	3.03 (77)	3.62 (92)
25-5-	4.06 (103)	4.65 (118)

Bending Radii for ALL Widths
2.16 (055)
2.95 (075)
3.94 (100)
4.92 (125)
5.91 (150)
7.87 (200)
9.84 (250)

Supplement part number with required radius for example, 25-2-100-0

Installation dimensions



Pitch: = 1.81 (46) per link
Links per ft (m): = 6.71 (22)
Chain length: = $\frac{S}{2}$ + K

R	2.16 (55)	2.95 (75)	3.94 (100)	4.92 (125)
H*)$^{+4}_{0}$	5.71 (145)	7.28 (185)	9.25 (235)	11.22 (285)
D	4.92 (125)	5.91 (150)	6.69 (170)	7.68 (195)
K	10.87 (276)	13.62 (346)	16.29 (414)	18.74 (476)

R	5.91 (150)	7.87 (200)	9.84 (250)	
H*)$^{+4}_{0}$	13.19 (335)	17.13 (435)	21.06 (535)	
D	8.66 (220)	10.63 (270)	12.60(320)	
K	23.54 (598)	28.98 (736)	36.22 (920)	

*The required clearance height is HF = H + .98 (25) with 1.01 lbs/ft (1.5 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Telephone 1-800-521-2747
Fax 1-401-438-7270

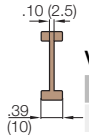
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Series 20/25 "E2 Medium"

Interior Separation

Option 1: vertical separators

Separators are the only option for compartmentalizing the interior of the non-snap-open chain (Series 20).

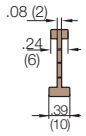


Vertical Separator

Unassembled	**Part No. 201**
Assembled	**Part No. 211**

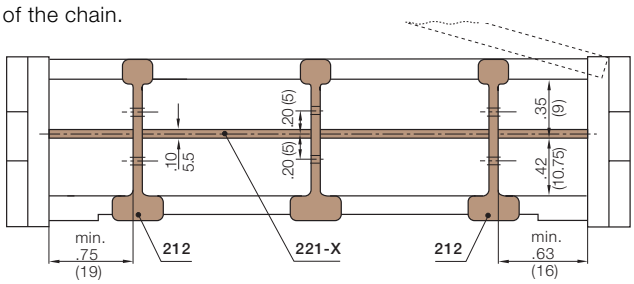
Option 2: full-width shelf

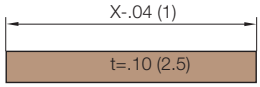
This possibility also exists for the snap-open chains 25-3, 25-4, and 25-5, of the Series 25. It is ideal for use in applications involving many thin cables with similar or identical diameters. This shelf slides into place and spans the entire width of the chain.



Vertical Separator, Slotted

Unassembled	**Part No. 202**
Assembled	**Part No. 212**



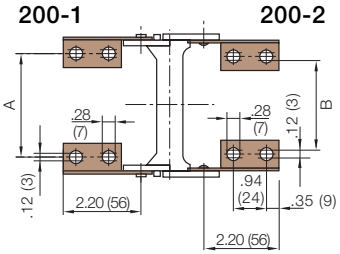


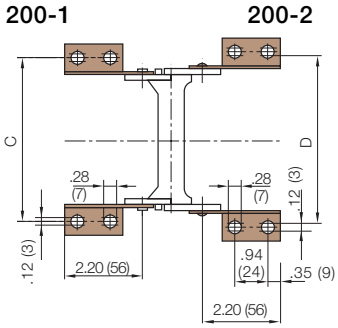
Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
2.24	(57)	**220-57**	**221-57**
3.03	(77)	**220-77**	**221-77**
4.06	(103)	**220-103**	**221-103**

Mounting Brackets

Option 1: steel, two piece

- One part for all chain widths
- Electrically conductive



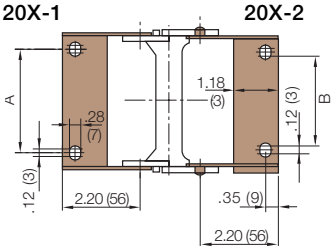


200-12 = Full set, 4 parts, 2 with pin, 2 with bore
200-1 = Mounting bracket with bore, 1 part left/right
200-2 = Mounting bracket with pin, 1 part left/right

Chain Type	Part No. Full Set	Dimension A in.	mm	Dimension B in.	mm	Dimension C in.	mm	Dimension D in.	mm
20-1	200-12	-	-	-	-	1.69	(43)	2.01	(51)
20/25-2	200-12	1.06	(27)	.87	(22)	2.80	(71)	3.11	(79)
20/25-3	200-12	1.77	(45)	1.61	(41)	3.50	(89)	3.82	(97)
20/25-4	200-12	2.60	(66)	2.40	(61)	4.29	(109)	4.61	(117)
20/25-5	200-12	3.62	(92)	3.43	(87)	5.31	(135)	5.63	(143)

Option 2: steel, one piece

- Good availability in pre-assembled form
- Electrically conductive

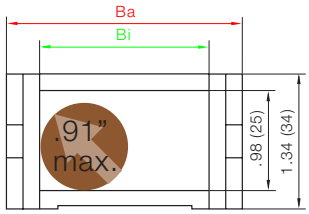


Chain Type	Part No. Full Set	Dimension A in.	mm	Dimension B in.	mm
20-1	–		–		–
20/25-2	202-12 (A=B)	1.06	(27)	.87	(22)
20/25-3	203-12 (A=B)	1.77	(45)	1.61	(41)
20/25-4	204-12 (A=B)	2.60	(66)	2.40	(61)
20/25-5	205-12 (A=B)	3.62	(92)	3.43	(87)

20X-12 = Full set, each with pin/bore
20X-1 = Mounting brackets with bore
20X-2 = Mounting bracket with pin
X = Use width numbers 2, 3, 4, or 5

Order Example and Technical Data: Series 20/25 "E2 Medium"

Order example



1. Chain selection:

20-2-100-0

- Color black
- Radius
- Width
- Chain type

2. Mounting brackets:

202-12

- Full set
- Braacket Part No.

3. Interior Separation:

2 separators, assembled every other chain link (Part No. 211). Alternative interior separation configuration according to design layout possible.

For 6.56 ft (2 m) chain, color black with full set two piece mounting brackets:
6.56 ft (2 m) 20-2-100-0 and 202-12 and 2 Part No. 211, assembled every other link

- 44 links — 6.71 links/ft (22 links/m)

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required:

- Full travel length of guide trough
  Part Number 92-30
- 1/2 travel length of glide bars
  Part Number 92-01
- Installation sets as end connectors
  Part Number 92-50-XX

-XX indicates the length of the profile rail on which the guide trough is mounted. The values and part numbers are specified in the table on the left. The standard length of the trough components and glide bars is 6.56 ft (2 m.) The required overall length of the guide trough directly correlates to the length of travel.

Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 92-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 92-01

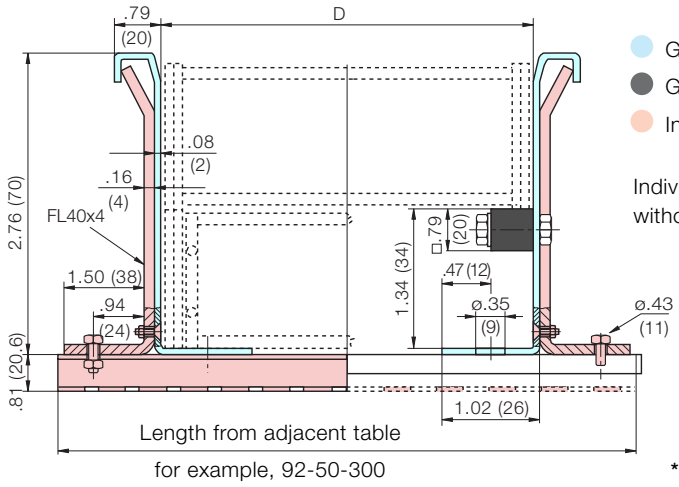
Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets

Example: 92-50-400 for 15.75" (400 mm) long profile rail.

Width of Crossbar
25-**05**-200-0
Dimension D
Installation Part No.

-2	2.32 (59)	92-50-175
-3	3.07 (78)	92-50-175
-4	3.86 (98)	92-50-200
-5	4.88 (124)	92-50-250

Standard length profile rail



- Guide trough
- Glide bars
- Installation set

Individual attachment without profile rail

* Specialized guide trough available upon request

Telephone 1-800-521-2747
Fax 1-401-438-7270

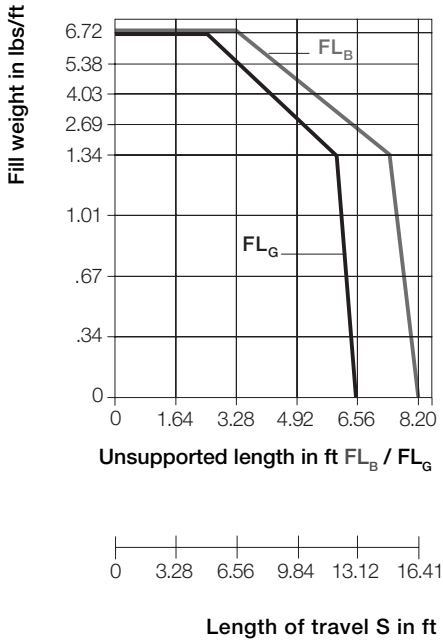
Series 30/35/36 “E2 Medium”

Price Index

3 Widths
7 Bending Radii

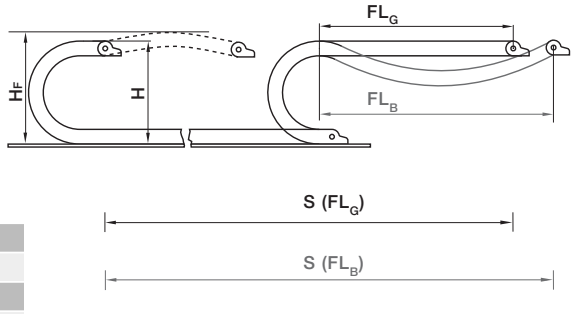
2 options for mounting brackets

2 options for interior separation



Unsupported Length

- FL_B =unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range:

Inner Widths (Bi) inches (mm):	2.95 (75), 4.53 (115), 6.89 (175)
Bending Radii (R) inches (mm):	2.95 (075), 3.94 (100), 4.92 (125),
	5.91 (150), 7.87 (200), 9.84 (250),
	11.81 (300)
Pitch:	2.64 (67 mm)/link =
	4.57 links/ft (15 links/m)
	39.57 (1005 mm)

When to use the Series 30/35:

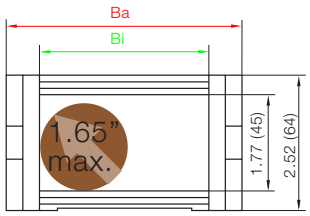
- If you are repairing or maintaining an existing system

When not to use the Series 30/35:

- If you are installing a new system
  ▶ Series 250, **Chapter 4, Energy Chain® Catalog**

Series 30/35/36 “E2 Medium”

Series 30 Energy Chain® (non-snap-open)

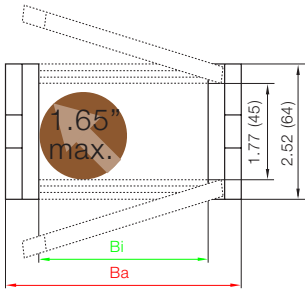


Part No.	Bi	Ba
30-1	2.95 (75)	3.66 (93)
30-2	4.53 (115)	5.24 (133)
30-3	6.89 (175)	7.68 (195)

Bending Radii for ALL Widths
2.95 (075)
3.94 (100)
4.92 (125)
5.91 (150)
7.87 (200)
9.84 (250)

Supplement part number with required radius for example, 30-1-150-0

Series 35 Energy Chain® (snap-open on one side)

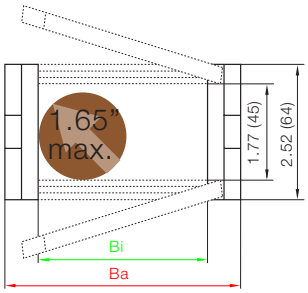


Part No.	Bi	Ba
35-1	2.95 (75)	3.66 (93)
35-2	4.53 (115)	5.24 (133)
35-3	6.89 (175)	7.68 (195)

Bending Radii for ALL Widths
2.95 (075)
3.94 (100)
4.92 (125)
5.91 (150)
7.87 (200)
9.84 (250)
11.81 (300)

Supplement part number with required radius for example, 35-1-150-0

Series 36 Energy Chain® (snap-open on one side)

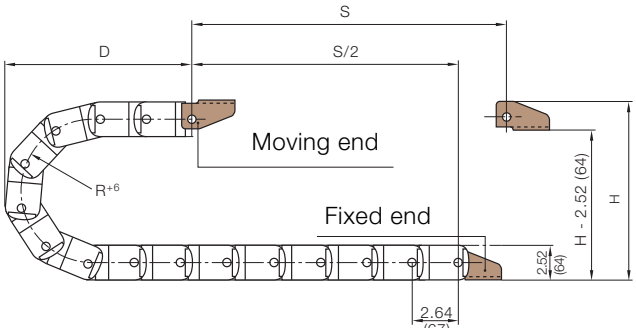


Part No.	Bi	Ba
36-1	2.95 (75)	3.66 (93)
36-2	4.53 (115)	5.24 (133)
36-3	6.89 (175)	7.68 (195)

Bending Radii for ALL Widths
2.95 (075)
3.94 (100)
4.92 (125)
5.91 (150)
7.87 (200)
9.84 (250)
11.81 (300)

Supplement part number with required radius for example, 36-1-150-0

Installation dimensions



R*	2.95 (75)	3.94 (100)	4.92 (125)	5.91 (150)
H)$^{+5}_{0}$	8.46 (215)	10.43 (265)	12.40 (315)	14.37 (365)
D	5.91 (150)	7.87 (200)	8.86 (225)	9.84 (250)
K	15.75 (400)	19.69 (500)	25.59 (650)	28.54 (725)

R*	7.87 (200)	9.84 (250)	11.81(300)	
H)$^{+5}_{0}$	18.31 (465)	22.24 (565)	26.18 (665)	
D	11.81 (300)	13.78 (350)	15.75 (400)	
K	34.45 (875)	41.34 (1050)	48.23 (1225)	

*The req uired clearance height is HF = H + 1.57 (40 mm) with 1.68 lbs/ft (2.5 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Pitch: = 2.64 (67 mm)
Links per ft (m): = 4.57 (15)
Chain length = $\frac{S}{2}$ + K

Telephone 1-800-521-2747
Fax 1-401-438-7270

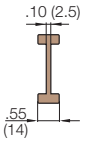
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Series 30/35/36 "E2 Medium"

Interior Separation

Option 1: vertical separators

They are used if only a vertical separation is required.

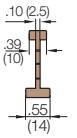


Vertical Separator

Unassembled	**Part No. 301**
Assembled	**Part No. 311**

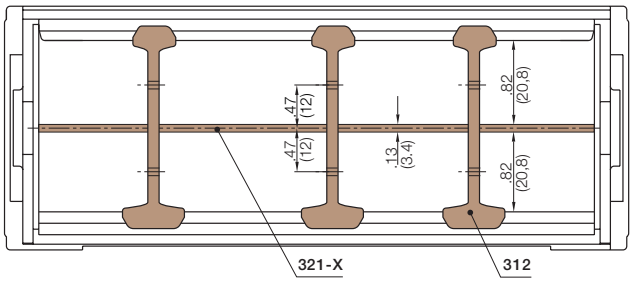
Option 2: full-width shelf

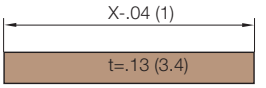
The use of full-width shelves is worthwhile when several thin cables with similar or identical diameters are used. These options always fill the entire chain width.



Vertical Separator, Slotted

Unassembled	**Part No. 302**
Assembled	**Part No. 312**



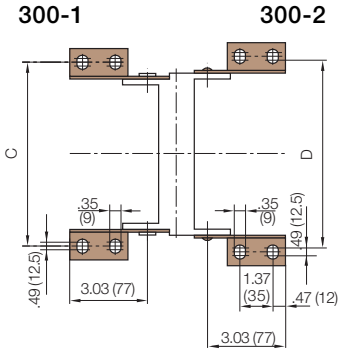


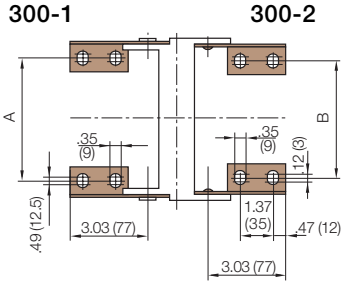
Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
2.95	(75)	**320-075**	**321-075**
4.53	(115)	**320-115**	**321-115**
6.89	(175)	**320-175**	**321-175**

Mounting Brackets

Option 1: steel, two piece

- One part for all chain widths
- Electrically conductive

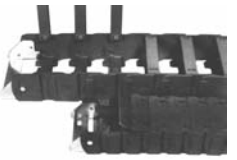




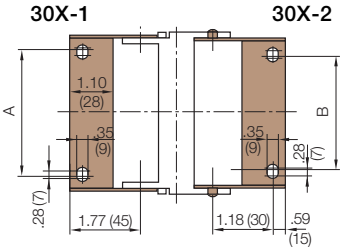
300-12 = Full set, 4 parts, 2 with pin, 2 with bore
300-1 = Mounting bracket with bore, 1 part left/right
300-2 = Mounting bracket with pin, 1 part left/right

Chain Type	Part No. Full Set	Dimension A in.	mm	Dimension B in.	mm	Dimension C in.	mm	Dimension D in.	mm
30/35/36-1	**300-12**	2.36	(60)	2.13	(54)	4.37	(111)	4.80	(122)
30/35/36-2	**300-12**	3.94	(100)	3.70	(94)	5.95	(151)	6.38	(162)
30/35/36-3	**300-12**	6.34	(161)	6.10	(155)	8.35	(212)	8.82	(224)

Option 2: steel, one piece



- Good availability in pre-assembled form
- Electrically conductive



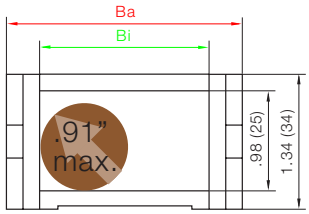
Chain Type	Part No. Full Set	Dimension A in.	mm	Dimension B in.	mm
30/35/36-1	**301-12 (A=B)**	2.36	(60)	1.81	(46)
30/35/36-2	**302-12 (A=B)**	3.94	(100)	3.39	(86)
30/35/36-3	**303-12 (A=B)**	6.34	(161)	5.79	(147)

30X-12 = Full set each with pin/bore
30X-1 = Mounting bracket with bore
30X-2 = Mounting bracket with pin
X = Use width numbers 1, 2 or 3

Telephone 1-800-521-2747
Fax 1-401-438-7270

Order Example and Technical Data: Series 30/35/36 "E2 Medium"

Order example



1. Chain selection:

30-2-100-0

- Color black
- Radius
- Width
- Chain type

2. Mounting brackets:

302-12

- Full set
- Braacket Part No.

3. Interior Separation:
2 separators, assembled every other chain link (Part No. 311). Alternative interior separation configuration according to design layout possible.

For 6.56 ft (2 m) chain, color black with full set two piece mounting brackets:
6.56 ft (2 m) 30-2-100-0 and 302-12 and 2 Part No. 211, assembled every other link

- 30 links — 4.57 links/ft (15 links/m)

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required:

- Full travel length of guide trough
  Part Number 93-30
- 1/2 travel length of glide bars
  Part number 93-01
- Installation sets as end connectors
  Part Number 93-50 -XX

-XX indicates the length of the profile rail on which the guide trough is mounted. The values and part numbers are specified in the table on the left. The standard length of the trough components and glide bars is 6.56 ft (2 m.) The required overall length of the guide trough directly correlates to the length of travel.

Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 93-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 93-01
Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets

Example: 93-50-300 for 15.75" (400 mm) long profile rail.

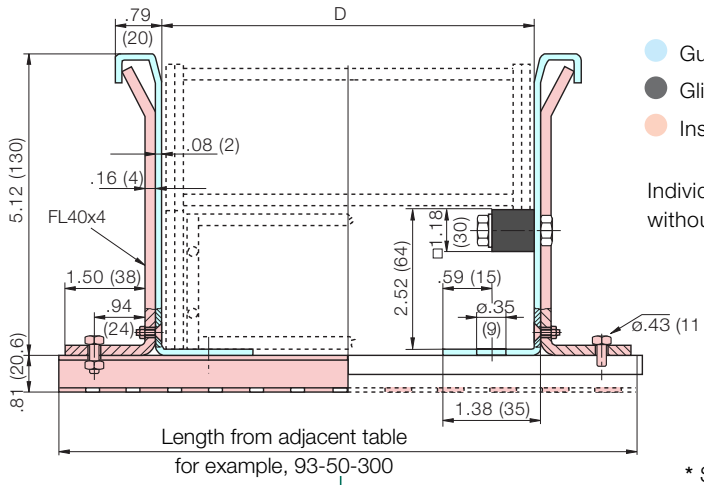
Width of Crossbar
35-**075**-200-0

Dimension D

Installation Part No.

-075	3.94 (100)	**93-50-200**
-115	5.51 (140)	**93-50-250**
-175	7.87 (200)	**93-50-300**

Standard length profile rail



- Guide trough
- Glide bars
- Installation set

Individual attachment without profile rail

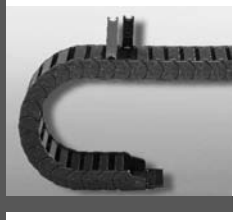
* Specialized guide trough available upon request

Series 255 E2 “medium”

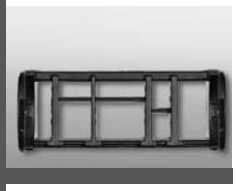
.94

Price Index

4 Widths
9 Bending Radii

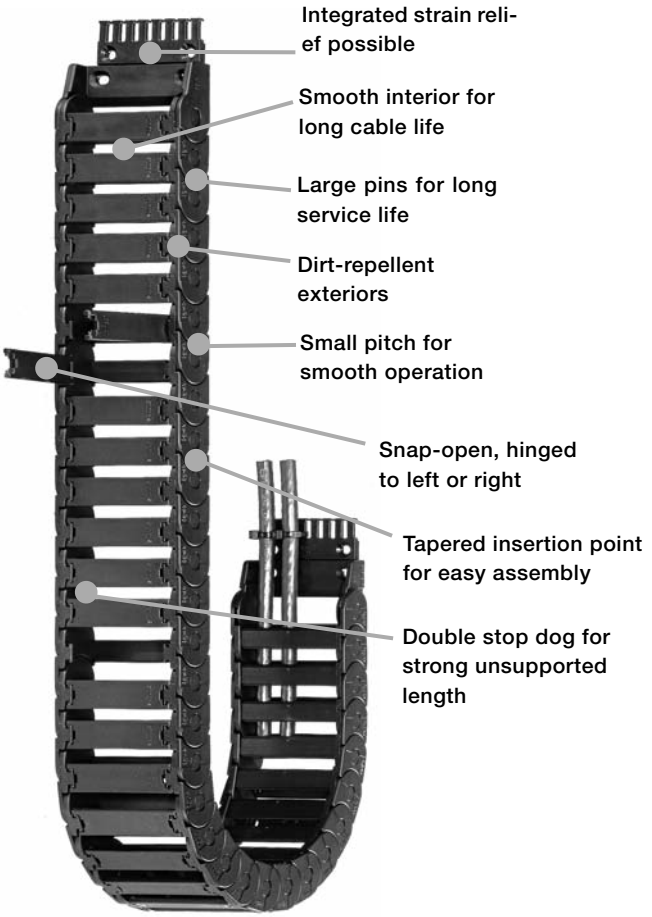


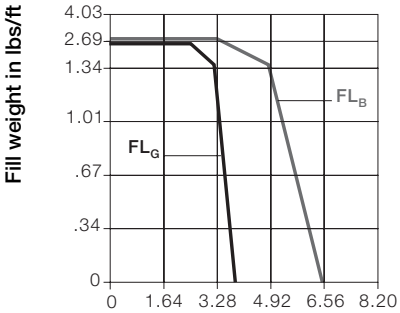
3 options for interior separation



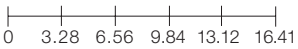
2 options for mounting brackets

Various strain relief options





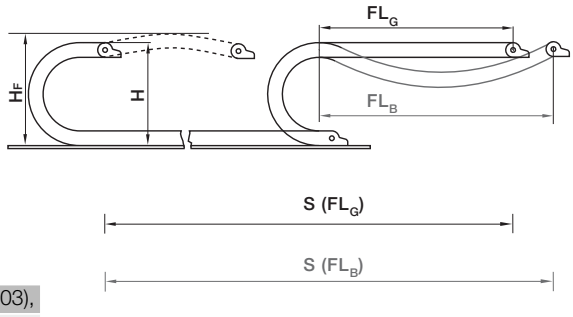
Unsupported length in ft FL_B / FL_G



Length of travel S in ft

Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range:

Inner Widths (Bi) inches (mm):	1.50 (38), 2.95 (75), 3.03 (77), 4.06 (103),
Bending Radii (R) inches (mm):	2.16 (55), 2.95 (75), 3.94 (100),
	4.92 (125), 5.91 (150), 6.89 (175),
	7.87 (200), 8.86 (225), 9.84 (250)
Pitch:	1.09 (27.8 mm)/link =
	10.97 links/ft (36 links/m)
	39.4 (1000.8 mm)

Unsupported Energy Chains® ▶ **Design, Chapter 1; Energy Chain® Catalog** feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1; Energy Chain® Catalog** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System**, **Chapter 9; Energy Chain® Catalog.**

When to use the Series 255:

- If quieter operation at very high speeds is required
- If integrated strain relief is required at the connection point
- If modular interior separation is required
- If easy installation is required

When not to use the Series 255:

- If each link requires snap-open accessibility on both sides
  ▶ System E4, Series 220 etc., **Chapter 6, Energy Chain® Catalog**
- If maximum stability is required
  ▶ System E4, Series 220 etc., **Chapter 6, Energy Chain® Catalog**
- If chip protection is required
  ▶ Energy Tube E4, Series R760, **Chapter 6, Energy Chain® Catalog**
- If the application is very simple
  ▶ E-Z Chain, Series E200, **Chapter 2, Energy Chain® Catalog**

Other Installation Methods:

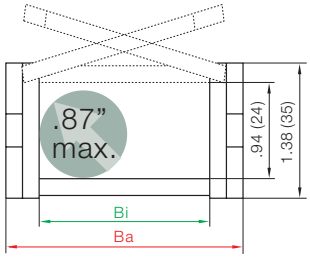
Vertical, hanging
= max 131 (40 m)
Vertical, standing
= max 9.84 (3 m)
Side-mounted, unsupported
= max 3.28 (1 m)
Rotary
= requires further calculation

- **Long travel Max: 328 ft (100 m)**

Series 255 E2 “medium”

Series 255 Energy Chain®

(snap-open along outer radius)

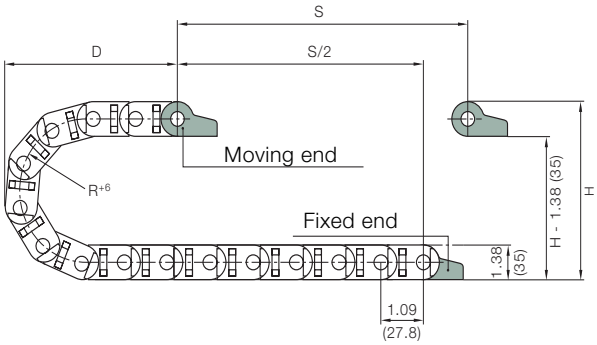


Part No.	Bi	Ba
255-03	1.50 (38)	2.13 (54.2)
255-05	2.24 (57)	2.88 (73.2)
255-07	3.03 (77)	3.67 (93.2)
255-10	4.06 (103)	4.69 (119.2)

Supplement part no. with required radius for example, 255-10-100-0

Bending Radii for ALL Widths
2.17 (055)
2.95 (075)
3.94 (100)
4.92 (125)
5.91 (150)
6.89 (175)
7.87 (200)
8.86 (225)
9.84 (250)

Installation Dimensions



R	1.10 (55)	2.95 (75)	3.94 (100)	4.92 (125)	5.91 (150)
H*)	5.71 (145)	7.28 (185)	9.25 (235)	11.22 (285)	13.19 (335)
D	4.25 (108)	5.24 (133)	6.02 (153)	7.01 (178)	7.99 (203)
K	9.53 (242)	12.28 (312)	14.96 (380)	18.18 (462)	21.42 (544)

R	6.89 (175)	7.87 (200)	8.86 (225)	9.84 (250)
H*)	15.16 (385)	17.13 (435)	19.09 (485)	21.06 (535)
D	8.98 (228)	9.96 (253)	10.94 (278)	11.93 (303)
K	24.65 (626)	27.87 (708)	30.71 (780)	34.88 (886)

Pitch: = 1.09 (27.8 mm) per link
Links per ft (m): = 10.97 (36)
Chain length: = $\frac{S}{2}$ + K

*The required clearance height is HF = H + .98 (25) with 1.01 lbs/ft (1.5 kg/m) fill weight. Please consult igus® if space is particularly restricted.

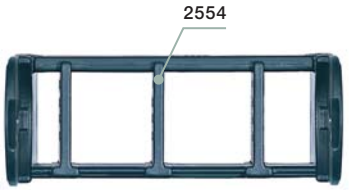
Telephone 1-800-521-2747
Fax 1-401-438-7270

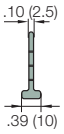
Series 255 E2 “medium”

Interior Separation

Option 1: vertical separators

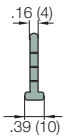
The slotted separators from options 2 and 3 can also be used for vertical interior separation only. Determining which type of separator to use is dependent on any potential retrofit requirements.





Vertical Separator, Slotted

Unassembled	**Part No. 2551**
Assembled	**Part No. 2552**

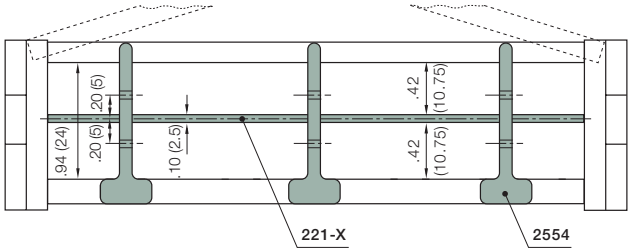


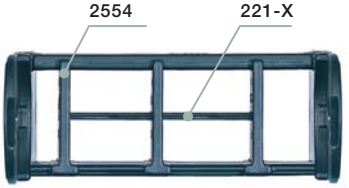
Vertical Separator, Slotted

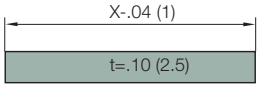
Unassembled	**Part No. 2553**
Assembled	**Part No. 2554**

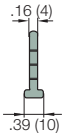
Option 2: full-width shelf

This option is ideal for applications involving many thin cables with similar or identical diameters. This shelf slides into place and spans the entire width of the chain. Separators can be adjusted horizontally for placement anywhere along the shelf.









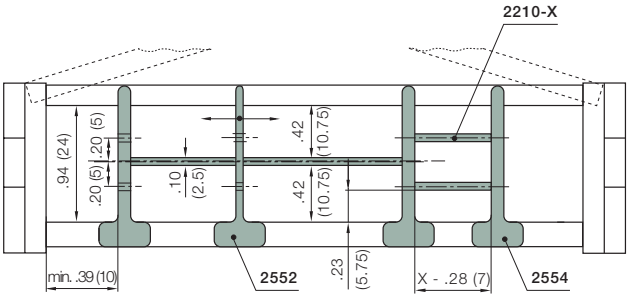
Side Plates

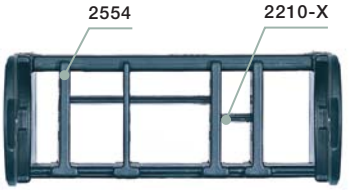
Unassembled	**Part No. 2553**
Assembled	**Part No. 2554**

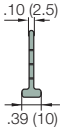
Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
1.50	(38)	**220-38**	**221-38**
2.24	(57)	**220-57**	**221-57**
3.03	(77)	**220-77**	**221-77**
4.06	(103)	**220-103**	**221-103**

Option 3: shelves

This option is most often used with applications involving many cables with different diamters. It allows for variable compartment heights and widths across the chain width, but can also be used for level separation across the entire width. Option 3 shelves can be combined with Option 1 separators. Slotted separators can also be used as adjustable vertical separators without shelves.

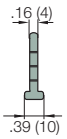






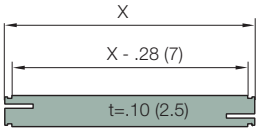
Vertical Separator

Unassembled	**Part No. 2551**
Assembled	**Part No. 2552**



Vertical Separator

Unassembled	**Part No. 2553**
Assembled	**Part No. 2554**



Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
.71	(18)	**2200-18**	**2210-18**
.91	(23)	**2200-23**	**2210-23**
1.10	(28)	**2200-28**	**2210-28**
1.30	(33)	**2200-33**	**2210-33**
1.50	(38)	**2200-38**	**2210-38**
1.69	(43)	**2200-43**	**2210-43**
1.89	(48)	**2200-48**	**2210-48**
2.28	(58)	**2200-58**	**2210-58**
2.68	(68)	**2200-68**	**2210-68**
2.87	(73)	**2200-73**	**2210-73**
3.46	(88)	**2200-88**	**2210-88**

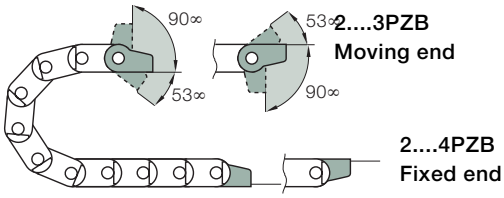
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Series 255 E2 “medium”

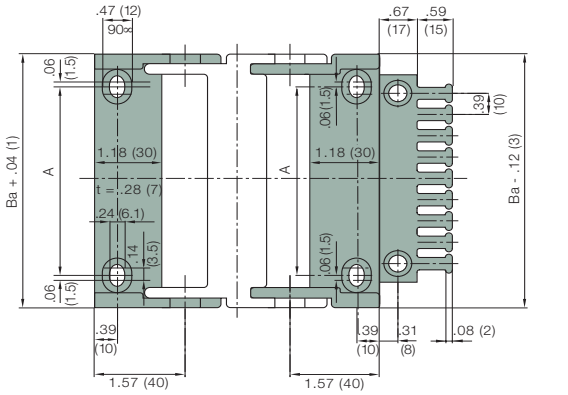
Mounting Brackets

Option 1: pivoting

- Pivoting
- Short and long travels
- Space-restricted conditions
- Corrosion-resistant



2....3PZB 2....4PZB

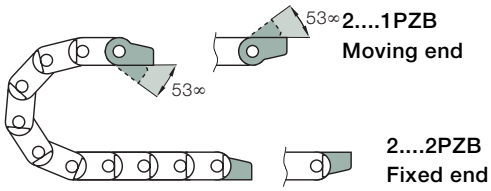


Chain Type	Part No. Full Set with Tiewrap Plates	Part No. Set with Tiewrap Plates and 10 Cable Tiewraps	Part No. Mounting Bracket Set	Dimension A in.	(mm)
255-03	2035-34PZB	2035-34PZBK1	2035-34PZ	.98	(25)
255-05	2055-34PZB	2055-34PZBK1	2055-34PZ	1.73	(44)
255-07	2075-34PZB	2075-34PZBK1	2075-34PZ	2.52	(64)
255-10	2105-34PZB	2105-34PZBK1	2105-34PZ	3.54	(90)

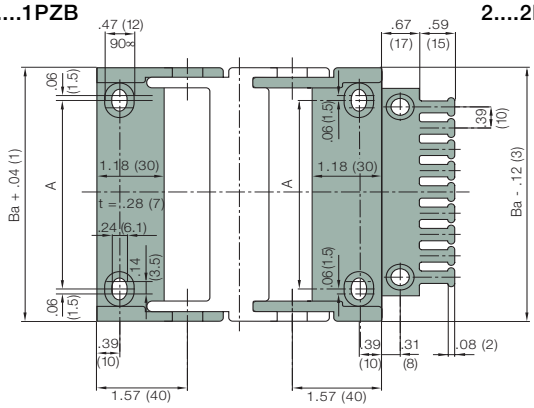
2...34 PZB = Full set, each part with pin/bore, including tiewrap plates
2...3 PZB = Mounting bracket with bore, including tiewrap plates
2...4 PZB = Mounting bracket with pin, including tiewrap plates

Option 2: locking

- Locked connections
- Vertical hanging/standing travels
- Extreme accelerations
- Corrosion-resistant



2....1PZB 2....2PZB



Chain Type	Part No. Full Set with Tiewrap Plates	Part No. Set with Tiewrap Plates and 10 Cable Tiewraps	Part No. Mounting Bracket Set	Dimension A in.	(mm)
255-03	2035-12PZB	2035-12PZBK1	2035-12PZ	.98	(25)
255-05	2055-12PZB	2055-12PZBK1	2055-12PZ	1.73	(44)
255-07	2075-12PZB	2075-12PZBK1	2075-12PZ	2.52	(64)
255-10	2105-12PZB	2105-12PZBK1	2105-12PZ	3.54	(90)

2...12 PZB = Full set, each part with pin/bore, including tiewrap plates
2...1 PZB = Mounting bracket with bore, including tiewrap plates
2...2 PZB = Mounting bracket with pin, including tiewrap plates

Telephone 1-800-521-2747
Fax 1-401-438-7270

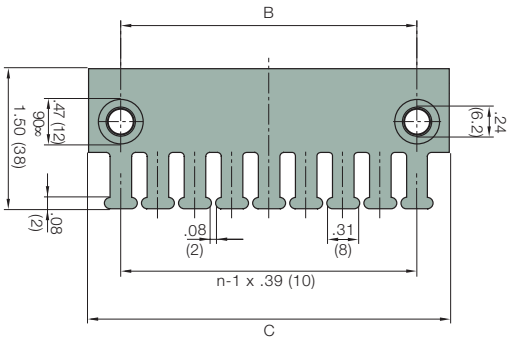
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

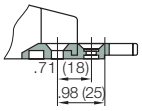
Series 255 E2 “medium”

Strain Relief for Polymer Mounting Brackets (pivoting or locking)

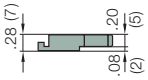
The strain relief plates can be snapped directly onto the mounting bracket without additional hardware. When the mounting brackets are bolted into place, the strain relief plates re also firmly connected to the machine surface. No separate installation is necessary. Cable tiewraps secure cables using the “teeth” of the tiewrap plate for time-saving, effective strain relief.

Tiewrap plate as an individual part





Shown assembled



Single tiewrap plate

Tiewrap Plates	n Number of Teeth	C Overall Width	B Distance Between Bore Holes
2030-ZB	4	1.57 (40)	.79 (20)
2040-ZB	5	1.97 (50)	1.18 (30)
2050-ZB	6	2.36 (60)	1.57 (40)
2070-ZB	8	3.15 (80)	2.36 (60)
2090-ZB	9	3.54 (90)	2.76 (70)
2100-ZB	10	3.94 (100)	3.15 (80)
2120-ZB	12	4.72 (120)	3.94 (100)

Cable tiewraps as individual parts

Cable tiewraps 100 pieces/bag	Width x Length in.	(mm)	Maximum Ø in.	(mm)	Tensile Strength lbs	(N)
CFB-001	.19 x 5.91	(4.8 x 150)	1.42	(36)	50	(222)

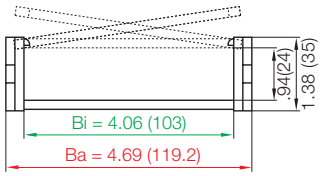
● Other strain relief elements

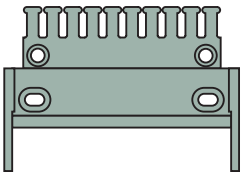
▶ Strain Relief, Chapter 10

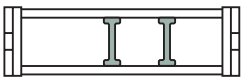
Order Example: Series 255 E2 “medium”

Order example

255-10...







1. Chain selection:

255-10-100-0

- Color black
- Radius
- Width
- Chain type

2. Mounting brackets:

2100-34PZB

- With tiewrap plates
- Full set, pivoting
- Chain width

3. Interior separation:

2 separators unassembled (Part No. 2553), or assembled every other link (Part No. 2554).
Alternative interior separation configuration according to design layout possible.

For 16.4 ft (5 m) chain, color black, with pivoting mounting brackets:
16.4 ft (5 m) 255-10-100-0 and 2100-34PZB

- 180 links —10.97 links/ft (36 links/m)

Technical Data:
Series 255 E2 “medium”

Technical data

Chain Type	Weight Per Link (oz.)	Weight Per Link (g)	Weight Per Meter (lbs)	Weight Per Meter (kg)
255-03	.081	(0.037)	.54	(0.81)
255-05	.090	(0.041)	.60	(0.90)
255-07	.101	(0.046)	.68	(1.01)
255-10	.128	(0.058)	.77	(1.15)

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 1HB

- **Accessories for**
  - ▶ **Guide Troughs, Chapter 9, Energy Chain® Catalog**
- **Further information**
  - ▶ **Design, Chapter 1, Energy Chain® Catalog**

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required:

- Full travel length of guide trough
  Part Number 92-30
- 1/2 travel length of glide bars
  Part Number 92-01
- Installation sets as end connectors
  Part Number 92-50-XX

-XX indicates the length of the profile rail on which the guide trough is mounted. The values and part numbers are specified in the table on the left. The standard length of the trough components and glide bars is 6.56 ft (2 m.) The required overall length of the guide trough directly correlates to the length of travel.

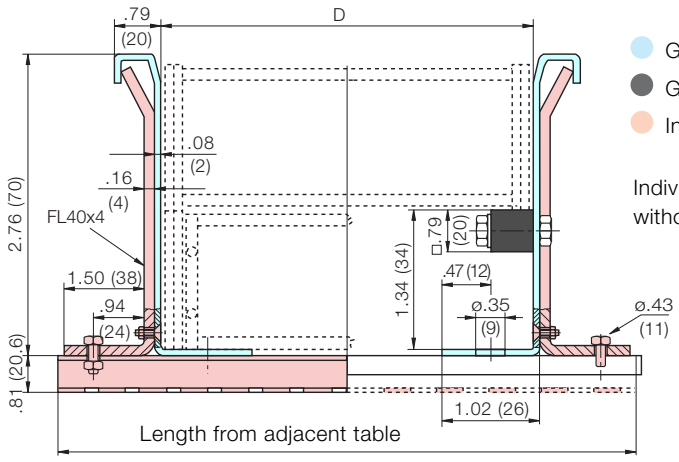
Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 92-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 92-01

Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets

Example: 92-50-400 for 15.75” (400 mm) long profile rail.

Width of Crossbar
255-**05**-200-0
Dimension D
Installation Part No.

-03	2.32 (59)	**92-50-175**
-05	3.07 (78)	**92-50-175**
-07	3.86 (98)	**92-50-200**
-10	4.88 (124)	**92-50-250**



- Guide trough
- Glide bars
- Installation set

Individual attachment without profile rail

Standard length profile rail

* Specialized guide trough available upon request

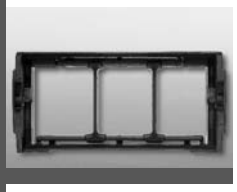
Telephone 1-800-521-2747
Fax 1-401-438-7270

Series R58 "E2 Tubes"

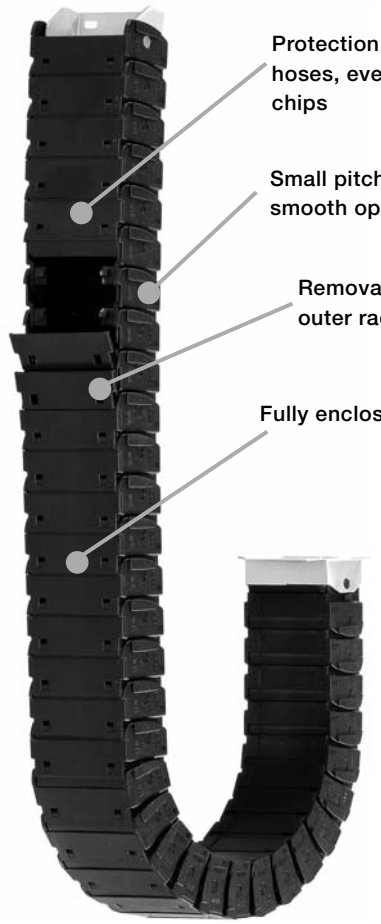
Price Index

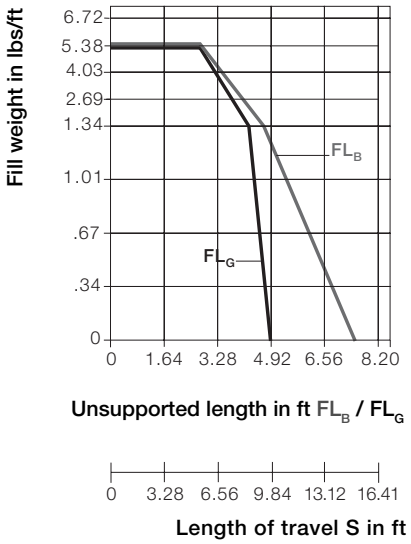
2 Widths
6 Bending Radii

interior separation possible



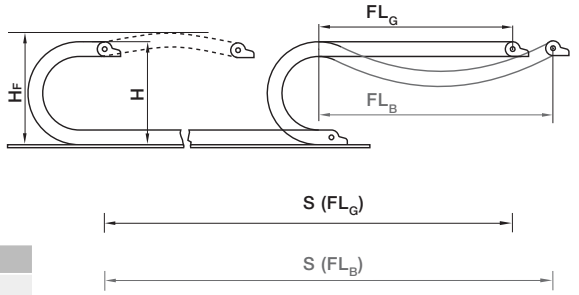
3 options for mounting brackets





Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range

Inner Widths (Bi) inches (mm):	1.97 (050), 2.95 (075),
Bending Radii (R) inches (mm):	2.95 (075), 3.94 (100), 4.92 (125),
	5.91 (150),
	7.87 (200), 9.84 (250)
Pitch:	1.31 (33.3 mm)/link =
	9.14 links/ft (30 links/m)
	39.3 (999.9 mm)

Unsupported Energy Tubes ▶ **Design, Chapter 1; Energy Chain Catalog,** feature a positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for more details.

If the unsupported length is exceeded, the Energy Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1; Energy Chain Catalog.**

When to use the Series R58:

- If very high speeds are required
- If chip protection is subject to stringent requirements

When not to use the Series R58:

- If a particularly low-cost solution is the main factor
  ▶ Series R157/158, **Chapter 5, Energy Chain Catalog**
- If no chip protection is required
  ▶ E2 medium, Series 26/27/27i, **Chapter 4, Energy Chain Catalog**
- For new applications
  ▶ Series R58 New, **Chapter 5, Energy Chain Catalog**

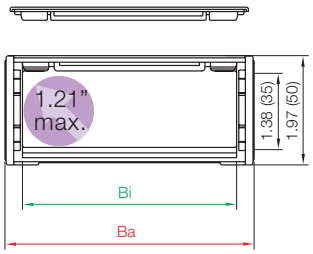
Other Installation Methods:

Vertical, hanging
= max 131 ft (40 m)
Vertical, standing
= max 13.12 ft (4 m)
Side-mounted, unsupported
= max 3.28 ft (1 m)
Rotary
= requires further calculation

Series R58 "E2 Tubes"

Series R58

(snap-open lids along outer radius)

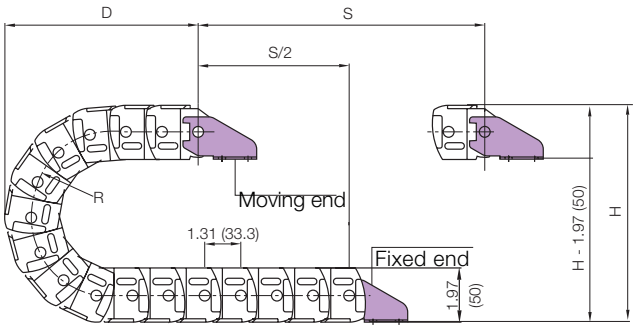


Part No.	Bi	Ba
58-05	1.97 (050)	2.60 (066)
58-1	2.95 (075)	3.62 (092)

Bending Radii for ALL Widths
2.95 (075)
3.94 (100)
4.92 (125)
5.71 (150)
7.87 (200)
9.84 (250)

Supplement part number with required radii for example, 58-05-100-0

Installation Dimensions



R	2.95 (075)	3.94 (100)	4.92 (125)
H*	7.87 (200)	9.84 (250)	11.81 (300)
D	5.91 (150)	6.89 (175)	7.87 (200)
K	14.76 (375)	18.70 (475)	21.65 (550)

R	5.91 (150)	7.87 (200)	9.84 (250)
H*	13.78 (350)	17.72 (450)	21.65 (550)
D	8.86 (225)	10.83 (275)	12.80 (325)
K	25.59 (650)	32.48 (825)	36.42 (925)

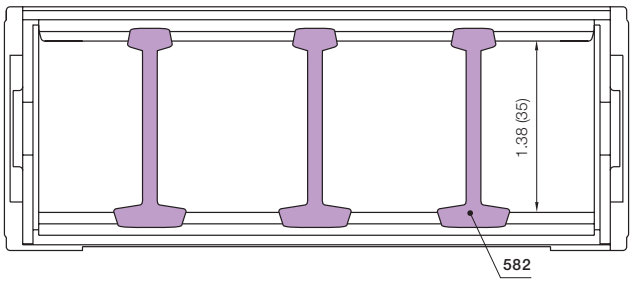
* The required clearance height is HF = H + 1.38 (35 mm) with .34 lbs/ft (0.5 kg/m) fill weight. Please consult igus® if space is particularly restricted.

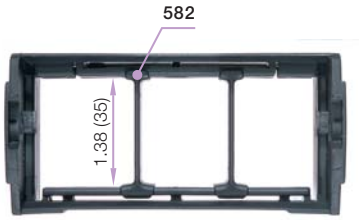
Pitch: = 1.31 (33.3 mm) per link
Links per ft (m): = 9.14 (30)
Tube length: = $\frac{S}{2}$ + K

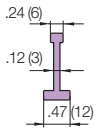
Interior Separation

Option 1: vertical separators

Vertical separators are used to divide the interior of the Energy Tube. They most commonly perform the tasks of distributing the carrier's fill weight evenly and keeping dissimilar cables and hoses apart. Separators are removable and adjustable for a variety of chamber widths.







Vertical Separator

Unassembled	**Part No. 581**
Assembled	**Part No. 582**

Telephone 1-800-521-2747
Fax 1-401-438-7270

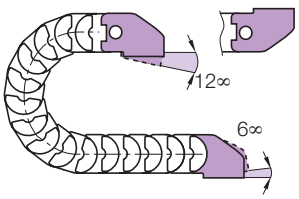
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Series R58 "E2 Tubes"

Mounting Brackets

Option 1: steel, one-piece

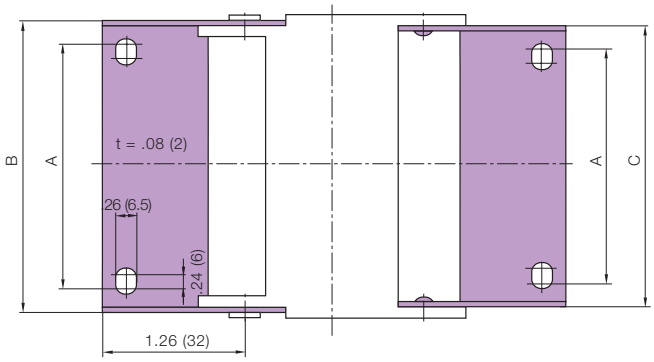
- Pivoting
- Short and long travels



585-1
Moving end

585-2
Fixed end

585-1 585-2



585...12 = Full set, each part with pin/bore
585...1 = Mounting bracket with bore
585...2 = Mounting bracket with pin

The following parts are required for attachment of the mounting brackets:

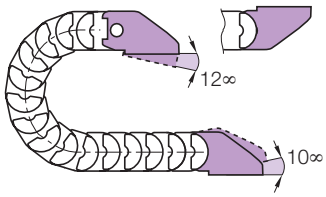
- **Socket head cap bolt M6* DIN 912-8.8 4 pieces/set**
- **Washer 6.3 DIN 125-ST 8 pieces/set**
- **Hexagon nut M6 DIN 934-8 4 pieces/set**

* The length of the socket head cap bolt is dependent on the thickness of the attachment base.

Chain Type	Part No. Full Set	Dimension A in.	(mm)	Dimension B in.	(mm)	Dimension C in.	(mm)
58-05	**585-12**	1.44	(36.5)	2.38	(60.5)	2.22	(56.5)
58-1	**590-12**	2.44	(62)	3.39	(86)	3.23	(82)

Option 2: steel, two-piece

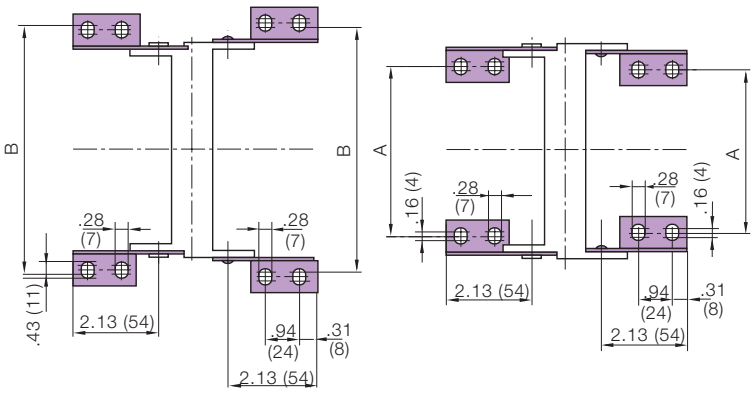
- One part for all tube widths
- Electrically conductive
- Short and long travels possible



580-1
Moving end

580-2
Fixed end

580-1 580-2 580-1 580-2



580...12 = Full set, each part with pin/bore
580...1 = Mounting bracket with bore
580...2 = Mounting bracket with pin

The following parts are required for attachment of the mounting brackets:

- **Socket head cap bolt M6* DIN 912-8.8 4 pieces/set**
- **Washer 6.3 DIN 125-ST 8 pieces/set**
- **Hexagon nut M6 DIN 934-8 4 pieces/set**

* The length of the socket head cap bolt is dependent on the thickness of the attachment base.

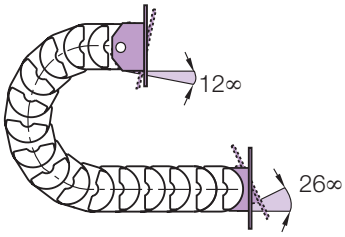
Tube Type	Part No. Full set	Dimension A in.	(mm)	Dimensions B in.	(mm)
58-05	**580-12**	1.44	(36.5)	3.31	(84)
58-1	**580-12**	2.44	(62)	4.25	(108)

Series R58 "E2 Tubes"

Mounting Brackets

Option 3: steel, flange

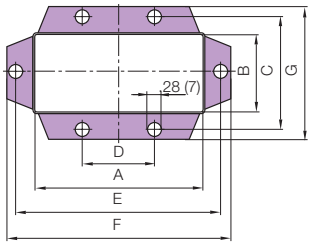
- Flush mounitng
- Creates efrfective seal



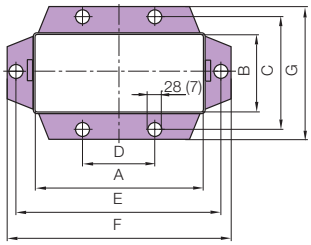
58...1
Moving end

58...2
Fixed end

58...1



58...2



580...12 = Full set, 1 each part with pin/bore
580...1 = Mounting bracket with bore
580...2 = Mounting bracket with pin

The following parts are required for attachment of the mounting brackets:

- **Socket head cap bolt M6* DIN 912-8.8**
  6 pieces/set
- **Washer 6.3 DIN 125-ST**
  12 pieces/set
- **Hexagon nut M6 DIN 934-8**
  6 pieces/set

* The length of the socket head cap bolt is dependent on the thickness of the attachment base.

Tube Type	Part Number Full Set
58-05	58-05-12
58-1	58-1-12

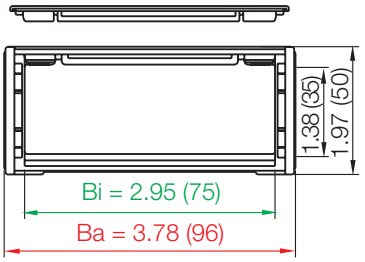
Flange	Dimension A in. (mm)	Dimension B in. (mm)	Dimension C in. (mm)	Dimension D in. (mm)	Dimension E in. (mm)	Dimension F in. (mm)	Dimension G in. (mm)
580-05-1	2.24 (57)	1.91 (48.5)	2.68 (68)	.79 (20)	3.10 (78.5)	3.56 (90.5)	3.23 (82)
580-05-2	2.05 (52)	1.65 (42)	2.68 (68)	.79 (20)	3.10 (78.5)	3.56 (90.5)	3.23 (82)
580-1-1	3.25 (82.5)	1.91 (48.5)	2.68 (68)	1.18 (30)	4.10 (104)	4.57 (116)	3.23 (82)
580-1-2	3.05 (77.5)	1.65 (42)	2.68 (68)	1.18 (30)	4.10 (104)	4.57 (116)	3.23 (82)

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Order Example and Technical Data: Series R58 "E2 Tubes"

Order example



1. Tube selection:

58-1-100-0

- Color black
- Radius
- Width index
- Tube type

2. Mounting brackets:

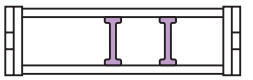
580-1-12

- Full set, pivoting (2 ea.)
- Tube width

For 16.4 ft (5 m) tube, color black, with pivoting mounting brackets:
16.4 ft (5 m) 58-1-100-0 and 580-1-12

- 150 links – 10.06 links/ft (33 links/m)

58...1



3. Interior separation:
2 vertical separators, unassembled (Part No. 581) or,
assembled every other link (Part No. 582).
Alternative interior separation configuration according to design layout possible.

Technical data

Chain Type	Weight Per Link (oz.)	Weight Per Link (g)	Weight Per Meter (lbs)	Weight Per Meter (kg)
58-05	.002	(≈ 0,050)	1.01	(≈ 1,50)
58-1	.002	(≈ 0,059)	1.19	(≈ 1,77)

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 1H

- Accessories for
  - ▶ Guide Troughs, Chapter 9, Energy Chain® Catalog
- Further information
  - ▶ Design, Chapter 1, Energy Chain® Catalog

Telephone 1-800-521-2747
Fax 1-401-438-7270

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus steel guide troughs, the following components are required:

- Full travel length of guide trough
  Part number 95-30
- 1/2 travel length glide bars
  Part number 92-01
- Installation sets as end connectors
  Part number 95-50-XX

-XX indicates the length of the profile rails on which the guide trough is mounted. The values and part numbers are specified in the table on the right. The standard length of the trough components and glide bars is 6.56 ft (2 m). The required overall length of the guide trough directly correlates to the length of travel.

Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough without glide bar
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 95-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 92-01
Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets
95-50-XXX
Example:
95-50-250 for 9.84" (250 mm) long profile rail.

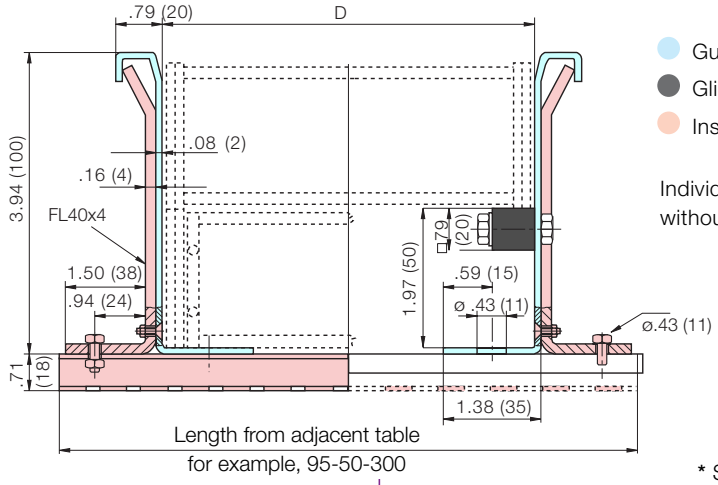
Example:

Width of Crossbar
58-**075**-200-0

Dimension D

Part No. Installation Set

-05	2.99 (76)	**95-50-200**
-1	3.98 (101)	**95-50-200**



Guide trough
Glide bars
Installation set

Individual attachment without profile rail

Standard length profile rail

* Specialized guide trough available upon request

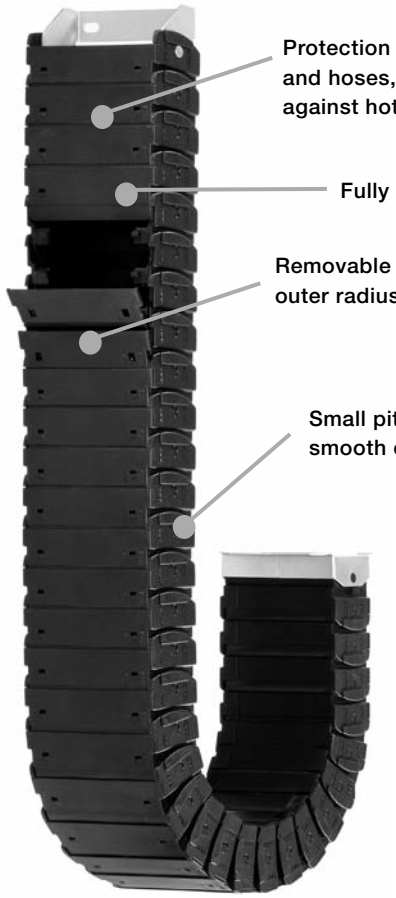
Series R68 "E2 Tubes"

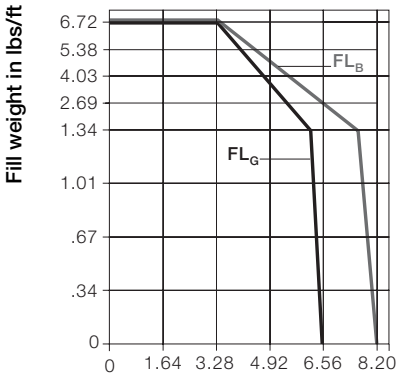
Price Index

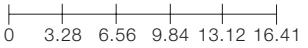
3 Widths
7 Bending Radii

3 options for interior separation

3 options for mounting brackets

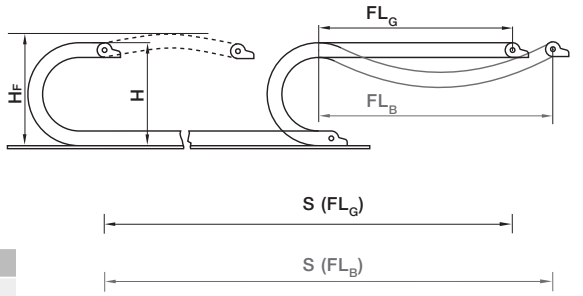






Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product Range

Inner Widths (Bi) inches (mm):	2.95 (075), 4.53 (115), 6.89 (175),
Bending Radii (R) inches (mm):	3.94 (100), 4.92 (125), 5.91 (150),
	7.87 (200),
	8.86 (225), 9.84 (250), 11.81 (300)
Pitch:	1.42 (36 mm)/link =
	8.53 links/ft (28 links/m)
	39.7 (1008 mm)

Unsupported Energy Tubes ▶ **Design, Chapter 1; Energy Chain® Catalog,** feature a positive camber over short travels. This must be accounted for when planning the clearance height. Please refer to **Installation dimensions** for more details.

When to use the Series R68:

- If high speeds are required
- If chip protection is subject to stringent requirements

When not to use the Series R68:

- If a particularly low-cost solution is the main factor
  ▶ Series R167/168, **Chapter 5, Energy Chain® Catalog**
- If no chip protection is required
  ▶ E2 medium, Series 340/350, **Chapter 4, Energy Chain® Catalog**
- For new applications
  ▶ Series 68 New, **Chapter 5, Energy Chain® Catalog**

If the unsupported length is exceeded, the Energy Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1; Energy Chain® Catalog.**

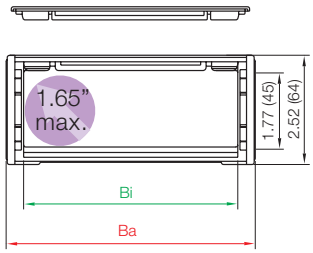
Other Installation Methods:

Vertical, hanging
= max 164 ft (50 m)
Vertical, standing
= max 13.12 ft (4 m)
Side-mounted, unsupported
= max 4.92 ft (1.5 m)
Rotary
= requires further calculation

Series R68 "E2 Tubes"

Series R68

(snap-open lids along outer radius)

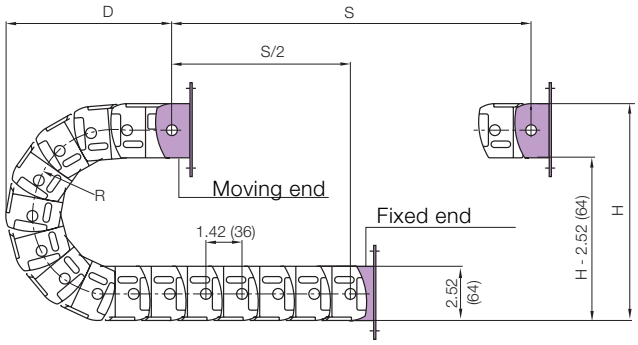


Part No.	Bi	Ba
68-1-	2.95 (075)	3.66 (093)
68-2-	4.53 (115)	5.24 (133)
68-3-	6.89 (175)	7.60 (193)

Bending Radii for ALL Widths
3.94 (100)
4.92 (125)
5.71 (150)
7.87 (200)
8.86 (225)
9.84 (250)
11.81 (300)

Supplement part number with required radius for example, 68-1-150-0

Installation Dimensions



R	3.94 (100)	4.92 (125)	5.91 (150)	7.87 (200)
H*	10.43 (265)	12.40 (315)	14.37 (365)	18.31 (465)
D	7.87 (200)	8.86 (225)	9.84 (250)	11.81 (300)
K	19.68 (500)	25.59 (650)	28.54 (725)	34.45 (875)

R	8.86 (225)	9.84 (250)	11.81 (300)	
H*	20.28 (515)	22.24 (565)	26.18 (665)	
D	12.79 (325)	13.78 (350)	15.75 (400)	
K	38.38 (975)	41.34 (1050)	48.23 (1225)	

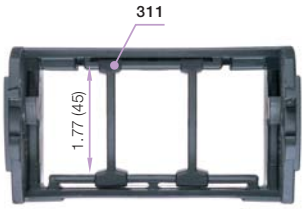
Pitch: = 1.42 (36 mm) per link
Links per ft (m): = 8.53 (28)
Tube length: = $\frac{S}{2}$ + K

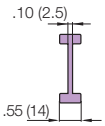
* The required clearance height is HF = H + 1.57 (40 mm) with 1.68 lbs/ft (2.5 kg/m) fill weight.
Please consult igus® if space is particularly restricted.

Interior Separation

Option 1: vertical separators

Vertical separators are used to divide the interior of the Energy Tube. They most commonly perform the tasks of distributing the carrier's fill weight evenly and keeping dissimilar cables and hoses apart. Separators are removable and adjustable for a variety of chamber widths.



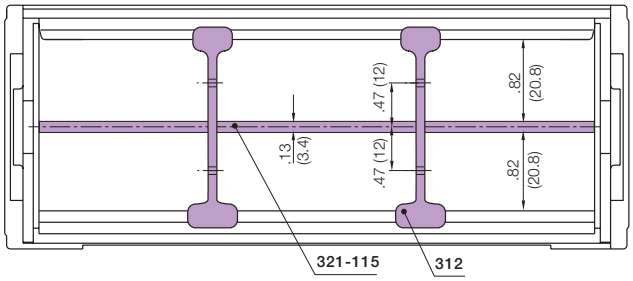


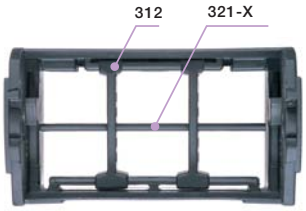
Vertical Separator

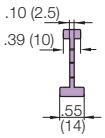
Unassembled	**Part No. 301**
Assembled	**Part No. 311**

Option 2: full-width shelf

This option is ideal for applications involving many thin cables with similar or identical diameters. Slotted separators divide the carrier into chambers and serve as support for the shelf. For the interior separation of the R68 Series, at least 2 separators **(Part No. 302)** must be provided in each link. Shelves can be inserted at 3 different heights. The most common combination is 2 slotted separators and 1 full-width shelf in the center, providing 6 separate chambers.

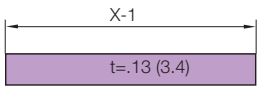






Slotted Separator

Unassembled	**Part No. 302**
Assembled	**Part No. 312**



Width X in. (mm)	Part No. Unassembled	Part No. Assembled
2.95 (075)	**320-075**	**321-075**
4.53 (115)	**320-115**	**321-115**
6.89 (175)	**320-175**	**321-175**

Telephone 1-800-521-2747
Fax 1-401-438-7270

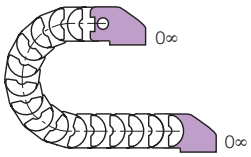
igus® Energy Chain Systems®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Series R68 "E2 Tubes"

Mounting Brackets

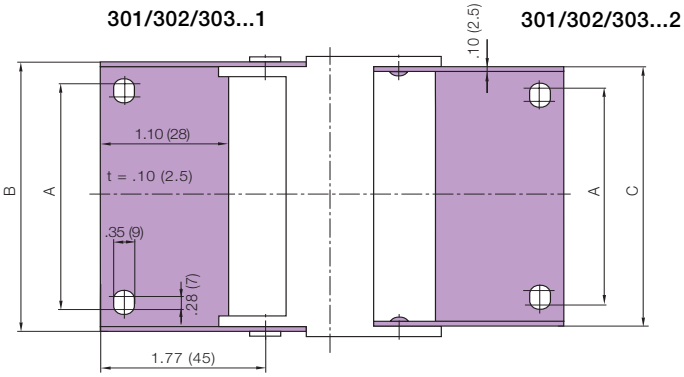
Option 1: steel, one-piece

- Locking
- Quick assembly
- Long travels



301/302/303...1
Moving end

301/302/303...2
Fixed end



301/302/303...12 = Full set, each part with pin/bore
301/302/303...1 = Mounting bracket with bore
301/302/303...2 = Mounting bracket with pin

The following parts are required for attachment of the mounting brackets:

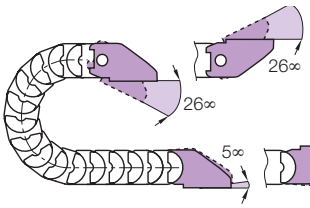
- **Socket head cap bolt M6* DIN 912-8.8 4 pieces/set**
- **Washer 6.3 DIN 125-ST 8 pieces/set**
- **Hexagon nut M6 DIN 934-8 4 pieces/set**

* The length of the socket head cap bolt is dependent on the thickness of the attachment base.

Chain Type	Part No. Full Set	Dimension A in.	(mm)	Dimension B in.	(mm)	Dimension C in.	(mm)
68-1	**301-12**	2.36	(60)	3.46	(88)	3.27	(83)
68-2	**302-12**	3.94	(100)	5.04	(128)	4.84	(123)
68-3	**303-12**	6.34	(161)	7.44	(189)	7.24	(184)

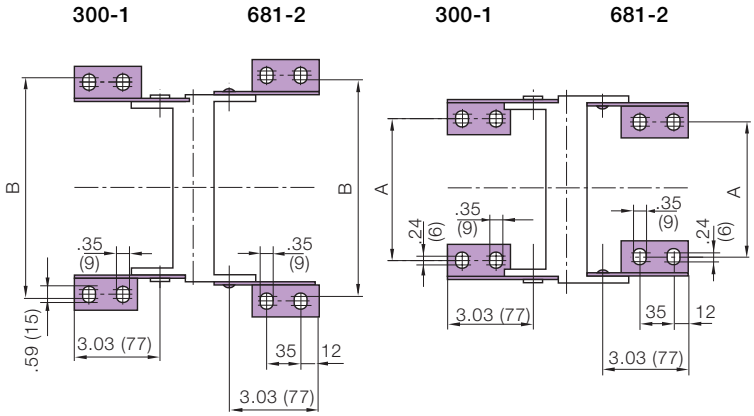
Option 2: steel, two-piece

- Pivoting
- One part for all tube widths
- Electrically conductive
- Short and long travels possible



580-1
Moving end

580-2
Fixed end



681...12 = Full set, each part with pin/bore
300...1 = Mounting bracket with bore
681...2 = Mounting bracket with pin

The following parts are required for attachment of the mounting brackets:

- **Socket head cap bolt M6* DIN 912-8.8 4 pieces/set**
- **Washer 6.3 DIN 125-ST 8 pieces/set**
- **Hexagon nut M6 DIN 934-8 4 pieces/set**

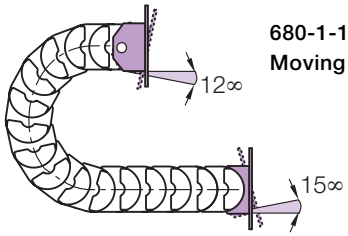
* The length of the socket head cap bolt is dependent on the thickness of the attachment base.

Tube Type	Part No. Full set	Dimension A in.	(mm)	Dimensions B in.	(mm)
58-05	**580-12**	1.44	(36.5)	3.31	(84)
58-1	**580-12**	2.44	(62)	4.25	(108)

Mounting Brackets

Option 3: steel, flange

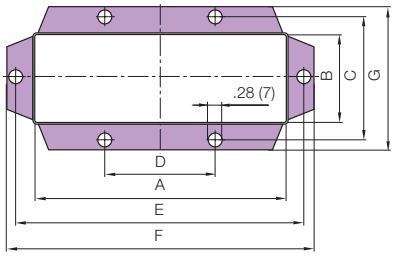
- Pivoting
- Short and long travels
- Flush mounting



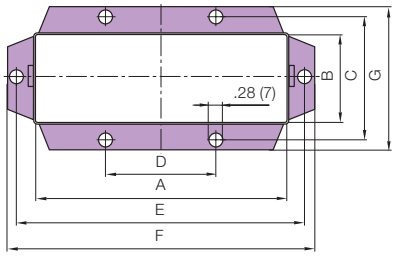
680-1-1/680-2-1/680-3-1
Moving end

680-1-2/680-2-2/680-3-2
Fixed end

680-1-1/680-2-1/680-3-1



680-1-1/680-2-1/680-3-2



680-1/680-2/680-3...12 = Full set, each part with pin/bore
680-1/680-2/680-3...1 = Mounting bracket with bore
680-1/680-2/680-3...2 = Mounting bracket with pin

The following parts are required for attachment of the mounting brackets:

- **Socket head cap bolt**
  M6* DIN 912-8.8
  6 pieces/set
- **Washer**
  6.3 DIN 125-ST
  12 pieces/set
- **Hexagon nut**
  M6 DIN 934-8
  6 pieces/set

The length of the socket head cap bolt is dependent on the thickness of the attachment base.

Tube Type	Part Number Full Set
68-1	**680-1-12**
68-2	**680-2-12**
68-3	**680-3-12**

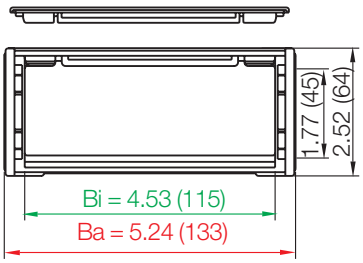
Flange	Dimension A in. (mm)	Dimension B in. (mm)	Dimension C in. (mm)	Dimension D in. (mm)	Dimension E in. (mm)	Dimension F in. (mm)	Dimension G in. (mm)
680-1-1	3.27 (83)	2.44 (62)	3.15 (80)	1.18 (30)	4.09 (104)	4.57 (116)	3.70 (94)
680-2-1	4.84 (123)	2.44 (62)	3.15 (80)	1.97 (50)	5.67 (144)	6.14 (156)	3.70 (94)
680-3-1	7.24 (184)	2.44 (62)	3.15 (80)	3.94 (100)	8.03 (204)	8.50 (216)	3.70 (94)
680-1-2	3.07 (78)	2.16 (55)	3.15 (80)	1.18 (30)	4.09 (104)	4.57 (116)	3.70 (94)
680-2-2	4.65 (118)	2.16 (55)	3.15 (80)	1.97 (50)	5.67 (144)	6.14 (156)	3.70 (94)
680-3-2	7.05 (179)	2.16 (55)	3.15 (80)	3.94 (100)	8.03 (204)	8.50 (216)	3.70 (94)

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain Systems®
Telephone 1-800-521-2747
1-401-438-7270 Fax
igus®, inc. USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Order Example and Technical Data: Series R68 "E2 Tubes"

Order example



1. Tube selection:

68-2-100-0

- Color black
- Radius
- Width
- Tube type

2. Mounting brackets:

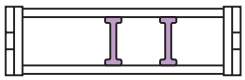
680-2-12

- Pivoting, full set (2 ea.)
- Tube width

For 16.4 ft (5 m) tube, color black, with flanged mounting brackets:
16.4 ft (5 m) 68-1-100-0 and 680-2-12

- 140 links – 8.53 links/ft (28 links/m)

68-2...



3. Interior separation:
2 vertical separators, unassembled (Part No. 301) or,
assembled every other chain link (Part No. 302)
Alternative interior separation configuration according to design layout possible.

Technical data

Chain Type	Weight Per Link (oz.)	Weight Per Link (g)	Weight Per Meter (lbs)	Weight Per Meter (kg)
68-1	.003	(≈ 0.078)	1.48	(≈ 2.20)
68-2	.003	(≈ 0.098)	1.84	(≈ 2.74)
68-3	.005	(≈ 0.128)	2.27	(≈ 3.38)

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 1H

- Accessories for
  - ▶ Guide Troughs, Chapter 9, Energy Chain® Catalog
- Further information
  - ▶ Design, Chapter 1, Energy Chain® Catalog

Series R68 "E2 Tubes"

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Tube glides on the lower run. If using igus steel guide troughs, the following components are required:

- Full travel length of guide trough
  Part number 93-30
- 1/2 travel length glide bars
  Part number 93-01
- Installation sets as end connectors
  Part number 93-50-XX

-XX indicates the length of the profile rail on which the guide trough is mounted. The values and part numbers are specified in the table on the right. The standard length of the trough components and glide bars is 6.56 ft (2 m). The required overall length of the guide trough directly correlates to the length of travel.

Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough, 82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough **Part No. 93-30**
= 13 sections of 6.56 ft (2 m) glide bar **Part No. 93-01**
Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets
93-50-XXX
Example:
93-50-250 for 9.84" (250 mm) long profile rail.

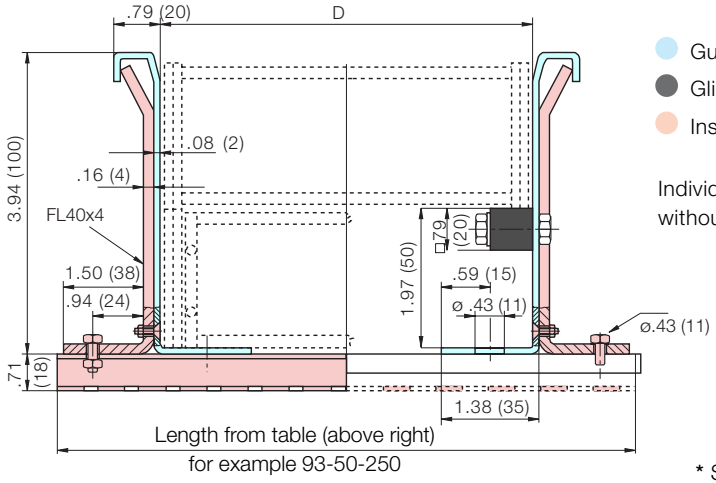
Width of Crossbar
68-**075**-200-0

Dimension D

Installation Part No.

-075	3.98 (101)	**93-50-200**
-115	5.55 (141)	**93-50-250**
-175	7.91 (201)	**93-50-300**

Standard length profile rail



- Guide trough
- Glide bars
- Installation set

Individual attachment without profile rail

* Specialized guide trough available upon request

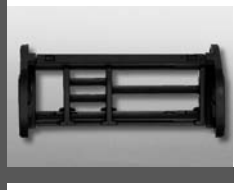
Telephone 1-800-521-2747
Fax 1-401-438-7270

Series 22/23/R76 “E4/0”

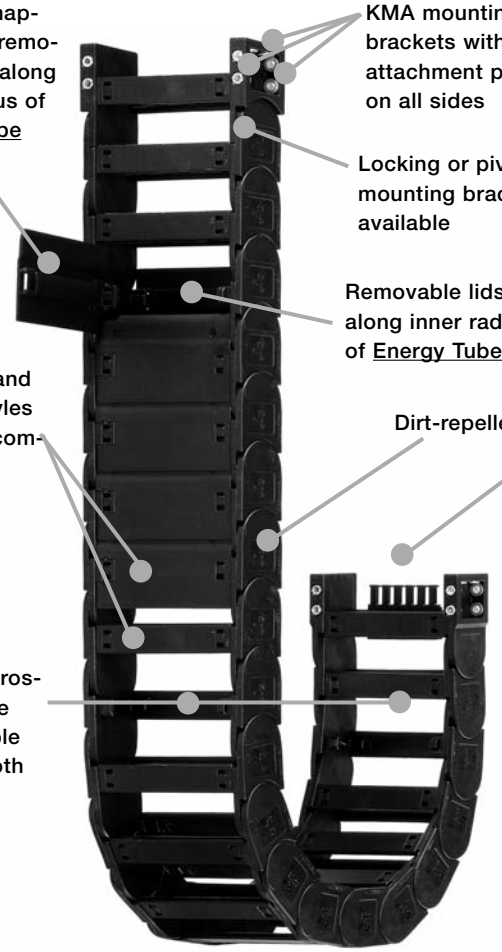
Price Index

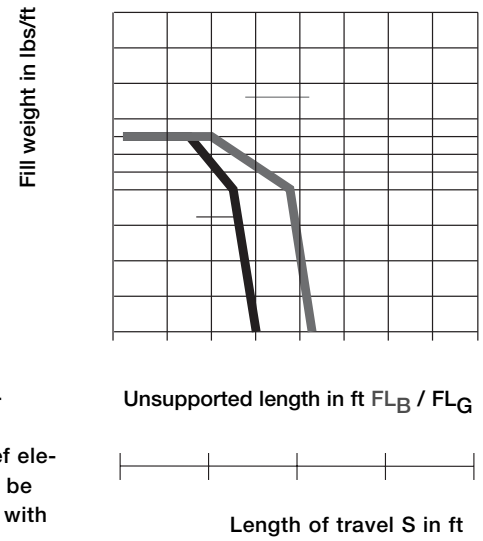
14 Widths
9 Bending Radii

Full range of interior separation options

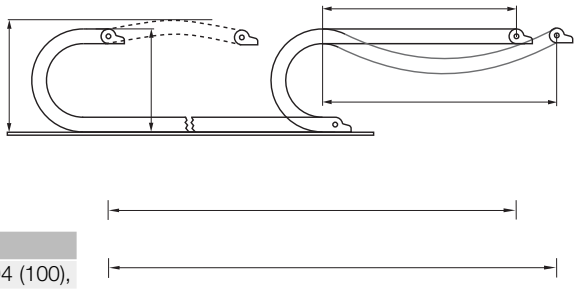


2 options for mounting brackets





Unsupported length
- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Inner Widths (Bi) inches (mm):	1.57 - 11.81 (40 - 300)
Bending Radii (R) inches (mm):	2,17 (55), 2.48 (63), 2.95 (75), 3.94 (100),
	4.92 (125), 5.91 (150), 6.89 (175),
	7.87 (200), 9.84 (250)
Pitch:	1.81 (46 mm/link) =
	6.71 links/ft (22 links/m)
	39.8 (1012 mm)

Unsupported Energy Chains® ▶ **Design, Chapter 1; Energy Chain® Catalog,** feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for details.

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1, Energy Chain® Catalog** or incorporation of igus®exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System, Chapter 9; Energy Chain® Catalog.**

When to use the Series 22/23/R76:

- If a simpler system is sufficient
- If a particularly low-cost solution is required (Series 23)
- Zig-zag lift applications

When not to use the Series 22/23/R76:

- If a quieter version is required ▶ Series 220/ R760, **Chapter 6, Energy Chain® Catalog**
- Short and long travels with high loads ▶ Series 220 - R760, **Chapter 6, Energy Chain® Catalog**

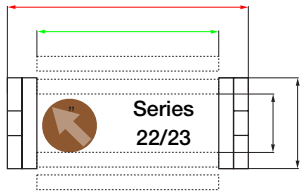
Other Installation Methods:

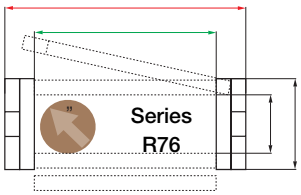
Vertical, hanging
= max 197 ft (60 m)
Vertical, standing
= max 16.4 ft (5 m)
Side-mounted, unsupported
= max 4.92 ft (1.5 m)
Rotary
= requires further calculation

- **Long travel Max: 492 ft (150 m)**

Series 22/23/R76 “E4/0”

Series 220/R760 Energy Chain®





Part No.	Bi	Ba+4
22/ 23-040	1.57 (40)	2.36 (60)
22/ 23/ R76-050	1.97 (50)	2.76 (70)
22/ 23-062	2.44 (62)	3.23 (82)
22/ 23-070	2.76 (70)	3.54 (90)
22/ 23/ R76-075	2.95 (75)	3.74 (95)
22/ 23/ R76-100	3.94 (100)	4.72 (120)
22/ 23/ R76-125	4.92 (125)	5.71 (145)
22/ 23/ R76-150	5.91 (150)	6.69 (170)
22/ 23/ R76-175	6.89 (175)	7.68 (195)
22/ 23/ R76-200	7.87 (200)	8.66 (220)
22/ 23/ R76-225	8.86 (225)	9.65 (245)
22/ 23/ R76-250	9.84 (250)	10.63 (270)
22/ 23-275	10.83 (275)	11.61 (295)
22/ 23/ R76-300	11.81 (300)	12.60 (320)

Supplement part number with required radius
for example, 22-040-150-0

Bending Radii for ALL Widths
2.17 (055)*
2.48 (063)*
2.95 (075)
3.94 (100)
4.92 (125)
5.91 (150)
6.89 (175)
7.87 (200)
9.84 (250)

* Not available for R76

For crossbar selection please visit www.igus.com and use the “E-Chain Helper”

Price Index

Series 22, Energy Chain
(with crossbars every link)

Select Energy Chains® with crossbars every link when using rigid hydraulic hoses or if an application is particularly demanding.

Standard

Price Index

Series 23, Energy Chain
(with crossbars every other link)

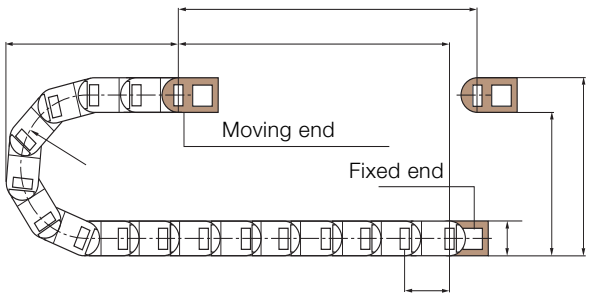
This design is the **standard** Energy Chain® for this size range. For almost all applications, the Series 23 offers the easiest assembly and best stability for the price.

Price Index

Series R76, Energy Tube
(fully enclosed)

Energy Tubes offer excellent cable and hose protection against dirt, debris and other contaminants, as well as hot chips. This design offers cable and hose accessibility along both radii. Lids along the entire inner radius are completely removable. Lids along the entire outer radius are single sided, snap-open, with a hinge on the other side to keep them attached to the chain, or completely removable.

Installation Dimensions



R	2.17 (055)	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)
H*+20	6.06 (154)	6.69 (170)	7.64 (194)	9.61 (244)	11.57 (294)
D	4.92 (125)	5.24 (133)	5.71 (145)	6.69 (170)	7.68 (195)
K	10.43 (265)	11.42 (290)	12.99 (330)	16.14 (410)	19.09 (485)

R	5.91 (150)	6.89 (175)	7.87 (200)	9.84 (250)
H*+20	13.54 (344)	15.51 (394)	17.48 (444)	21.42 (544)
D	8.66 (220)	9.65 (245)	10.63 (270)	12.60 (320)
K	22.24 (565)	25.39 (645)	28.54 (725)	34.65 (880)

Pitch: = 1.81 (46 mm) per link
Links per ft (m): = 6.71 (22)
Total travel: = S
Chain length: = $\frac{S}{2}$ + K

* The required clearance height is HF = H +1.57 (40 mm) with .67 lbs/ft (1 kg/m) fill weight.
Please consult igus® if space is particularly restricted.

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 22/23/R76 "E4/0"

Interior Separation All interior separation options are also used for Series 22/23/R76

Option 1: vertical separators

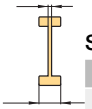
Vertical separators are adjustable and can be placed at any point along the chain cross-section.

The standard separator Part No. 2201, is used for vertical subdivision. Because they are slotted, separators can also be used horizontally to form simple compartments. The **7601 Separator** performs the same functions for the R760 Energy Tube.

All separators are adjustable, but may be fixed in place with spacers (chains only). Spacers are most often necessary with side-mounted applications.

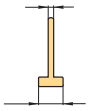
Series R760 Energy Chain® vertical separator 7601

Series 220 Energy Chain® vertical separator 2201



Spacer

Unassembled	**Part No. 2201**
Assembled	**Part No. 2211**



Vertical Separator

Unassembled	**Part No. 7601**
Assembled	**Part No. 7611**

Spacer

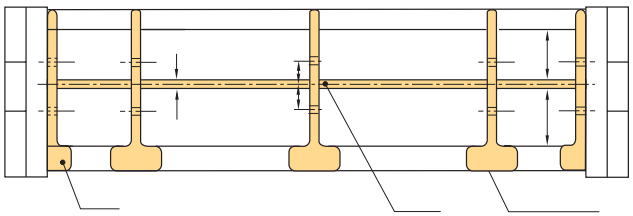
Unassembled	**Part No. 205-09**
Assembled	**Part No. 215-09**

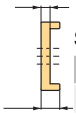
Option 2: full-width shelf

This option is ideal for applications involving many thin cables with similar or identical diameters. A **separator (part number 2201) 7601** for the Series R760 Energy Tube is put in place and the shelf is inserted into the separator's slots. If no separators are desired, a side plate (part number 2203) must be used with the Series 220 Energy Chain®. This solution is not available for Energy Tubes.

Series R760 Energy Chain® vertical separator 2201 with full-width shelf

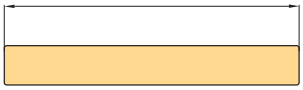
Series R760 Energy Chain® vertical separator 7601 with full-width shelf





Side Plate

Unassembled	**Part No. 2203**
Assembled	**Part No. 2213**



Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
.98	(25)	**220-25**	**221-25**
1.50	(38)	**220-38**	**221-38**
2.24	(57)	**220-57**	**221-57**
3.03	(77)	**220-77**	**221-77**
3.54	(90)	**220-90**	**221-90**
4.06	(103)	**220-103**	**221-103**
4.92	(125)	**220-125**	**221-125**

Option 3: shelves

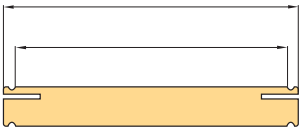
This option is ideal for applications involving many cables with a wide range of diameters. When specifying interior shelving, a minimum clearance of 10 mm on one side, with respect to the side wall of the chain link, is required.

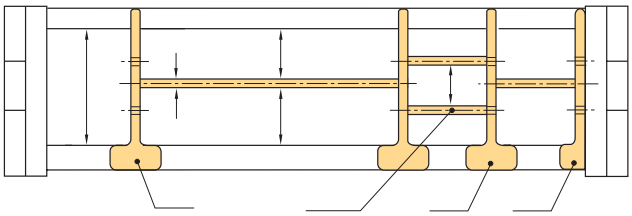
A **vertical separator (part number 2202)** is used to divide the carrier into compartments and to accomodate the shelves **(part number 2200-XXX.)** The side plate (part number 2204) accomodates the shelves directly at the sides of the carrier.

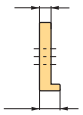
A vertical separator with a different part number **(7601)** is available for the Energy Tube. Side plates are not available for the Energy Tube.

Series R760 Energy Chain® Vertical separator 7602 with shelves

Series 220 Energy Chain® **Vertical separator 2202 with shelves**

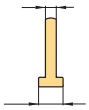






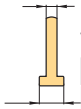
Side Plate

Unassembled	**Part No. 2204**
Assembled	**Part No. 2214**



Vertical Separator

Unassembled	**Part No. 2202**
Assembled	**Part No. 2212**



Vertical Separator

Unassembled	**Part No. 7602**
Assembled	**Part No. 7612**

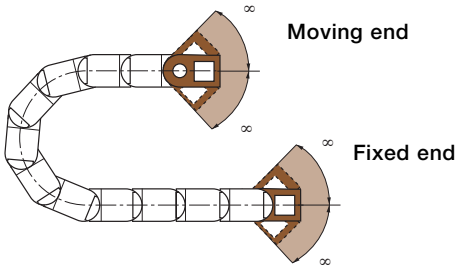
Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
.71	(18)	**2200-18**	**2210-18**
.91	(23)	**2200-23**	**2210-23**
1.10	(28)	**2200-28**	**2210-28**
1.30	(33)	**2200-33**	**2210-33**
1.50	(38)	**2200-38**	**2210-38**
1.69	(43)	**2200-43**	**2210-43**
1.89	(48)	**2200-48**	**2210-48**
2.28	(58)	**2200-58**	**2210-58**
2.68	(68)	**2200-68**	**2210-68**
2.87	(73)	**2200-73**	**2210-73**
3.46	(88)	**2200-88**	**2210-88**
3.90	(99)	**2200-99**	**2210-99**

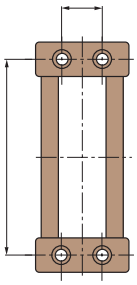
Series 22/23/R76 “E4/0”

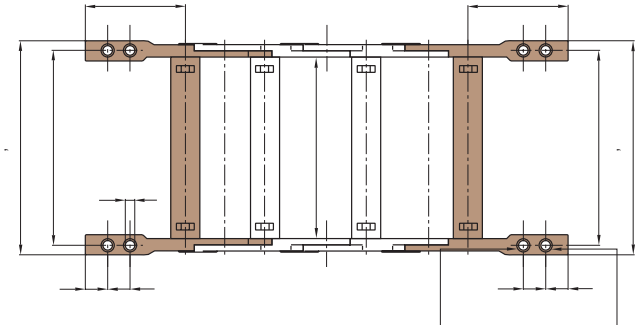
Mounting Brackets

Option 1: pivoting

- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions







Mounting with socket head cap bolts M5 DIN 912-8.8

Strain relief tiewrap plates can be snapped into or onto the last chain link crossbar.

▶ **Strain Relief, Chapter 10, Energy Chain® Catalog**

A	A’	B	C	D	E	F	
Bi +.47 (12)	Bi +.94 (24)	.59 (15)	.49 (12.5)	.67 (17)	2.30 (58.5)	.22 (5.5)	in. (mm)

Part No., full set
Series 22

2220-__-12

Please insert width of selected Energy Chain®.
For example 2220-125-12 for Energy Chain® 22-125.....

Part no., full set
Series R76

2220-__-12T

Please insert width of selected Energy Tube.
For example 2220-125-12T for Energy Tube 76-125.....

Chain/ Tube Width	Bi
-040	1.57 (40)
-050	1.97 (50)
-062	2.44 (62)
-070	2.76 (70)
-075	2.95 (75)
-100	3.94 (100)
-125	4.92 (125)
-150	5.91 (150)
-175	6.89 (175)
-200	7.87 (200)
-225	8.86 (225)
-250	9.84 (250)
-275	10.83 (275)
-300	11.81 (300)

2220-__-12/ 2220-__-12T = Full set, each part with pin/bore
2220-__-1/ 2220-__-1T = Mounting bracket with bore
2220-__-2/ 2220-__-2T = Mounting bracket with pin

Telephone 1-800-521-2747
Fax 1-401-438-7270

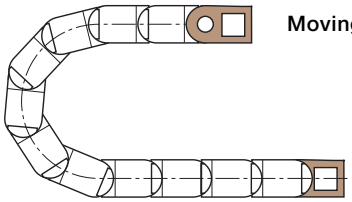
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

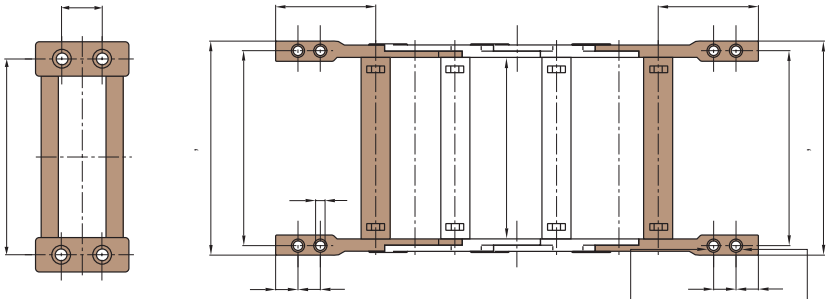
Series 22/23/R76 “E4/0”

Mounting Brackets

Option 2: locking

- Universal use
- Corrosion resistant
- Locked connections
- Extreme accelerations
- Vertical hanging/standing travels





Mounting with socket head cap bolts M5 DIN 912-8.8

Strain relief tiewrap plates can be snapped into or onto the last chain link crossbar.

▶ **Strain Relief, Chapter 10, Energy Chain® Catalog**

A	A’	B	C	D	E	F	
Bi +.47 (12)	Bi +.94 (24)	.59 (15)	.49 (12.5)	.67 (17)	2.30 (58.5)	.22 (5.5)	in. (mm)

Part No., full set
Series 23

2230-__-12

Please insert width of selected Energy Chain®.
For example 2230-125-12 for Energy Chain® 23-125.....

Part No., full set
Series R76

2230-__-12T

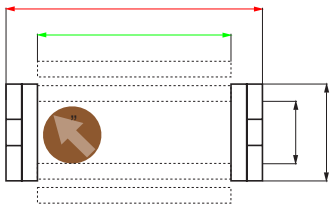
Please insert width of selected Energy Tube.
For example, 2230-125-12T for Energy Tube 76-125.....

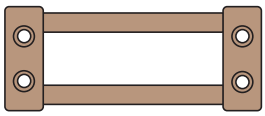
Chain/ Tube Width	Bi
-040	1.57 (40)
-050	1.97 (50)
-062	2.44 (62)
-070	2.76 (70)
-075	2.95 (75)
-100	3.94 (100)
-125	4.92 (125)
-150	5.91 (150)
-175	6.89 (175)
-200	7.87 (200)
-225	8.86 (225)
-250	9.84 (250)
-275	10.83 (275)
-300	11.81 (300)

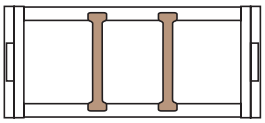
2230-__-12/ 2230-__-12T = Full set, each part with pin/bore
2230-__-1/ 2230-__-1T = Mounting bracket with bore
2230-__-2/ 2230-__-2T = Mounting bracket with pin

Order Example and Technical Data: Series 22/23/R76 “E4/0”

Order example







1. Chain selection:

22-040-055-0

- Color black
- Radius
- Width
- Chain type

2. Mounting brackets:

2220-00-12

- Full set, 1 part with pin
- 1 part with bore
- Chain width
- Pivoting

3. Interior separation:
2 locking separators, assembled every other link (part no. 2211). Alternative interior separation configuration according to design layout possible.

For 6.56 ft (2 m) chain, color black, with pivoting mounting brackets:
6.56 ft (2 m) 22-040-055-0 and 2220-040-12 and 2 Part No. 2211, assembled every other link

- 44 links — 6.71 links/ft (22 links/m)

Technical Data

Chain/ Tube Width	Weight Per Link lbs (kg) 22		23	R76		Weight lbs/ft (kg/m) 22		23		R76	
-040	.11	(0.048)			-	.71	(1.06)	.65	(0.96)		-
-050	.11	(0.05)		.22	(0.1)	.74	(1.10)	.67	(0.99)	1.48	(2.20)
-062	.11	(0.052)			-	.77	(1.14)	.69	(1.02)		-
-070	.12	(0.054)			-	.79	(1.18)	.70	(1.04)		-
-075	.12	(0.055)		.22	(0.10)	.81	(1.21)	.71	(1.05)	1.55	(2.30)
-100	.13	(0.06)		.24	(0.11)	.89	(1.32)	.75	(1.11)	1.71	(2.54)
-125	.14	(0.065)		.26	(0.12)	.96	(1.43)	.78	(1.17)	1.87	(2.78)
-150	.15	(0.07)		.31	(0.14)	1.03	(1.54)	.83	(1.23)	2.03	(3.02)
-175	.17	(0.075)		.33	(0.15)	1.11	(1.65)	.87	(1.29)	2.19	(3.26)
-200	.18	(0.08)		.35	(0.16)	1.18	(1.76)	.91	(1.35)	2.35	(3.50)
-225	.19	(0.085)		.37	(0.17)	1.26	(1.87)	.95	(1.41)	2.51	(3.74)
-250	.20	(0.09)		.40	(0.18)	1.33	(1.98)	.99	(1.47)	2.67	(3.98)
-275	.21	(0.095)			-	1.40	(2.09)	1.03	(1.53)		-
-300	.22	(0.1)		.44	(0.20)	1.48	(2.20)	1.07	(1.59)	3.00	(4.46)

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

- **Accessories for**
  - ▶ **Guide Troughs, Chapter 9, Energy Chain® Catalog**
- **Further information**
  - ▶ **Design, Chapter 1, Energy Chain® Catalog**

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 22/23/R76 "E4/0"

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required:

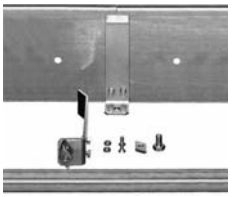
Full travel length of guide trough
Part No. 96-30
1/2 travel length of glide bars
Part No. 92-01
Installation sets as end connectors
Part No. 95-50-XX

-XX indicates the length of the profile rail on which the guide trough is mounted. The values and part numbers are specified in the table on the left. Standard length of the trough components and glide bars is 6.56 ft (2m). The required overall length of the guide trough directly correlates to the length of travel.

Example:
Length of travel 164 ft. (50 m)
Center mounted

Required guide troughs:
164 ft (50 m) guide trough,
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 96-30
= 13 sections of 6.56 ft. (2 m) glide bar
Part No. 92-01
Required number of installation sets
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets
95-50-XXX
Example: 95-50-400 for 15.75 (400 mm) long profile rail

Left: Guide trough with glide bars
Right: Guide troughs without glide bars



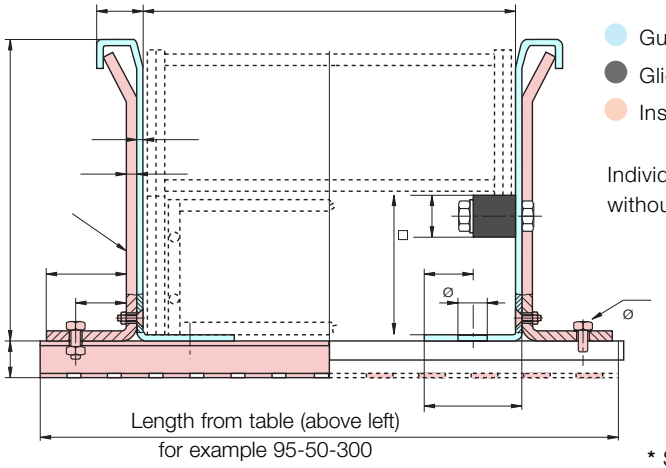
Installation sets as section connectors

Width of Crossbar
220-**040**-200-0

Dimension D

Installation Part No.

-040	2.60 (66)	**95-50-200**
-050	2.99 (76)	**95-50-200**
-062	3.46 (88)	**95-50-200**
-070	3.78 (96)	**95-50-200**
-075	3.98 (101)	**95-50-200**
-100	4.96 (126)	**95-50-250**
-125	5.94 (151)	**95-50-250**
-150	6.93 (176)	**95-50-300**
-175	7.91 (201)	**95-50-300**
-200	8.90 (226)	**95-50-350**
-225	9.88 (251)	**95-50-350**
-250	10.87 (276)	**95-50-400**
-275	11.85 (301)	**95-50-400**
-300	12.83 (326)	**95-50-450**



Standard length profile rail

* Specialized guide trough available upon request

igus® Energy Chain System®

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus®, inc.
USA/Canada
Mexico

Internet: http://www.igus.com
email: webmaster@igus.com

Series 28/29/R77 “E4/0”

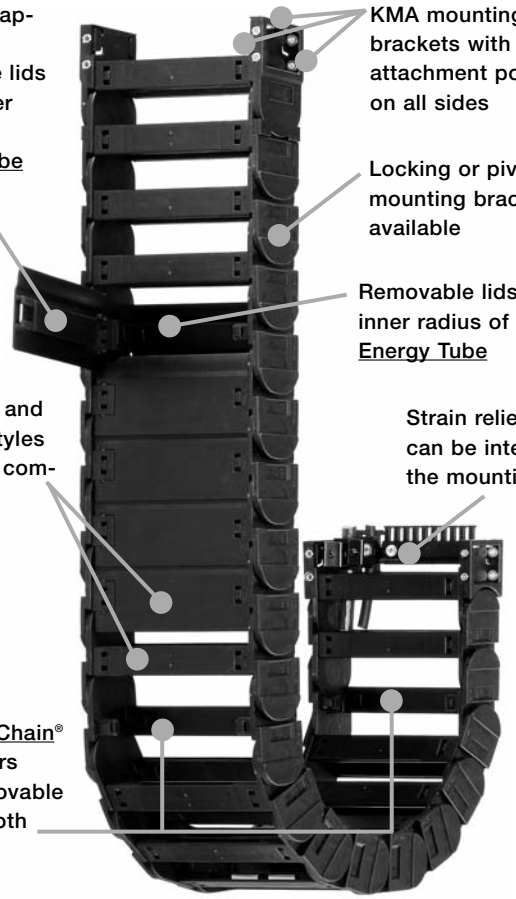
Price Index

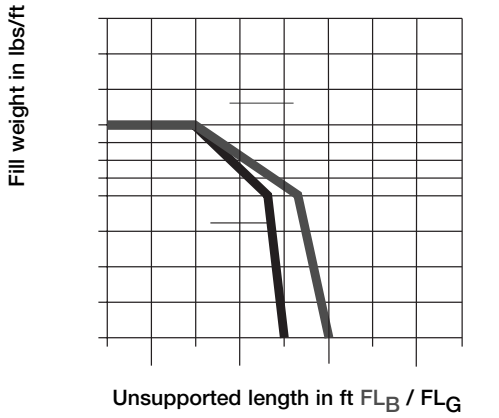
21 Widths
10 Bending Radii

Extension links for variable width

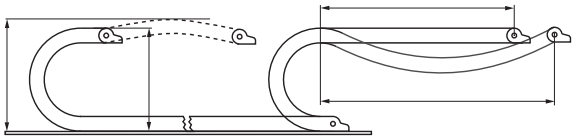
KMA mounting brackets available

Steel mounting brackets available





Unsupported length
- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product range

Inner Widths (Bi) inches (mm):	1.97 - 15.75 (50 - 400)
Bending Radii (R) inches (mm):	2.48 (63), 2.95 (75), 3.94 (100),
	4.92 (125), 5.91 (150), 6.89 (175),
	7.87 (200), 8.66 (220), 9.84 (250),
	11.81 (300)
Pitch:	2.20 (56 mm/link) =
	5.5 links/ft (18 links/m)
	39.6 (1008 mm)

Unsupported Energy Chains® ▶ **Design, Chapter 1; Energy Chain® Catalog**, feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1, Energy Chain® Catalog** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System, Chapter 9; Energy Chain® Catalog.**

When to use the Series 28/29/R77:

- If a simpler system is sufficient
- Zig-zag applications

When not to use the Series 28/29/R77:

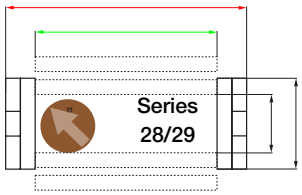
- If a quieter version is required ▶ Series 280/ 290/ R770, **Chapter 6, Energy Chain® Catalog**
- If a side-mounted chain/tube with a long unsupported length is required ▶ Series 2828/ 2928/ R7728, **Chapter 6, Energy Chain® Catalog**

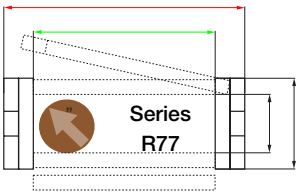
Other Installation Methods:

Vertical, hanging
= **max 197 ft (60 m)**
Vertical, standing
= **max 16.4 ft (5 m)**
Side-mounted, unsupported
= **max 4.92 ft (1.5 m)**
Rotary
= **requires further calculation**

- **Long travel Max: 656 ft (200 m)**

Series 28/29/R77 “E4/0”





For crossbar selection please visit www.igus.com and use the “E-Chain Helper”

Increased inner height also as Series:
2822

Increased inner height

The Series 2822 Energy Chain®, with an increased inner height of 1.57 (40 mm), is available for unsupported applications. Please consult igus® for delivery time and availability. We recommend the use of steel mounting brackets for this series.

Part No.	Bi	Ba+2
28/ 29/ 77-05*	1.97 (50)	2.87 (73)
28/ 29-06	2.68 (68)	3.58 (91)
28/ 29/ 77-07	2.95 (75)	3.86 (98)
28/ 29-087	3.43 (87)	4.33 (110)
28/ 29/ 77-10	3.94 (100)	4.84 (123)
28/ 29/ 77-11	4.25 (108)	5.16 (131
28/ 29-112	4.41 (112)	5.35 (136)
28/ 29/ 77-12	4.92 (125)	5.83 (148)
28/ 29-137	5.39 (137)	6.34 (161)
28/ 29/ 77-15	5.91 (150)	6.81 (173)
28/ 29-162	6.38 (162)	7.32 (186)
28/ 29/ 77-17	6.61 (168)	7.52 (191)
28/ 29-18	6.89 (175)	7.80 (198)
28/ 29-187	7.36 (187)	8.31 (211)
28/ 29/ 77-20	7.87 (200)	8.78 (223)
28/ 29-212	8.35 (212)	9.29 (236)
28/ 29-23	8.86 (225)	9.76 (248
28/ 29-237	9.33 (237)	10.28 (261)
28/ 29/ 77-25	9.84 (250)	10.75 (273)
28/ 29-262	10.31 (262)	11.26 (286)
28/ 29-28	10.83 (275)	11.73 (298)
28/ 29-29	11.30 (287)	12.24 (311)
28/ 29/ 77-30	11.81 (300)	12.72 (323)
28/ 29-312	12.28 (312)	13.23 (336)
28/ 29-325	12.79 (325)	13.70 (348)
28/ 29-337	13.27 (337)	14.21 (361)
28/ 29-350	13.78 (350)	14.69 (373)
28/ 29-362	14.25 (362)	15.20 (386)
28/ 29-375	14.76 (375)	15.67 (398)
28/ 29-387	15.24 (387)	16.18 (411)
28/ 29-400	15.75 (400)	16.65 (423)

Supplement part number with required radius for example, 28-07-150-0

Bending Radii for ALL Widths
2.48 (063)**
2.95 (075)**
3.94 (100)
4.92 (125)
5.91 (150)
6.89 (175)
7.87 (200)
8.66 (220)
9.84 (250)
11.81 (300)

* Removable lid only, no hinged option
** Not available for R77

Extender crossbar for large diameter hoses
▶ See following pages

For wider chains
▶ See following pages

Price Index

Series 28, Energy Chain
(with crossbars every link)

Select Energy Chains® with crossbars every link when using rigid hydraulic hoses or if an application is particularly demanding.

Standard

Price Index

Series 29, Energy Chain
(with crossbars every other link)

This design is the **standard** Energy Chain® for this size range. For almost all applications, the Series 29 offers the easiest, assembly and best stability for the price.

Price Index

Series R77, Energy Tube
(fully enclosed)

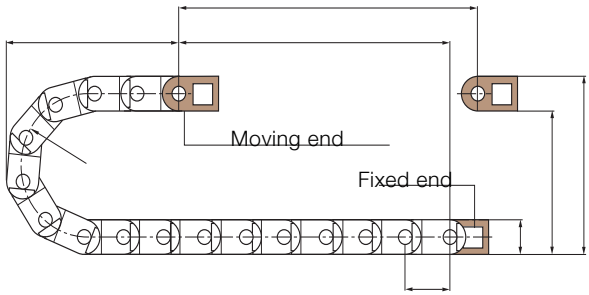
Energy Tubes offer excellent cable and hose protection against dirt, debris and other contaminants, as well as hot chips. This design offers cable and hose accessibility along both radii. Lids along the entire inner radius are completely removable. Lids along the entire outer radius are single-sided, snap-open, with a hinge on the other side to keep them attached to the chain, or completely removable.

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 28/29/R77 “E4/0”

Installation Dimensions



R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)
H*$^{-0}_{+20}$	7.09 (180)	8.07 (205)	10.04 (255)	12.01 (305)	13.98 (355)
D	5.12 (130)	5.91 (150)	6.89 (175)	7.87 (200)	8.86 (225)
K	13.39 (340)	14.96 (380)	18.31 (465)	21.65 (550)	24.41 (620)

R	6.89 (175)	7.87 (200)	8.66 (220)	9.84 (250)	11.81 (300)
H*$^{-0}_{+20}$	15.94 (405)	17.91 (455)	19.49 (495)	21.85 (555)	25.79 (655)
D	9.84 (250)	10.83 (275)	11.61 (295)	12.80 (325)	14.76 (375)
K	27.56 (700)	30.70 (780)	33.46 (850)	37.01 (940)	43.70 (1110)

*The required clearance height is HF = H + 1.57 (40) with 1.34 (2 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Pitch: = 2.20 (56 mm) per link
Links per ft (m): = 5.49 (18)
Total travel: = S
Chain length: = $\frac{S}{2}$ + K

Extension Link

The extension link has been developed for applications in which particularly high fill weights necessitate extremely wide Energy Chains®. The extension link design allows virtually limitless side-by-side attachment of chains. In addition, the unsupported length of a chain can be increased. Using extension links also allows for additional fill weights.

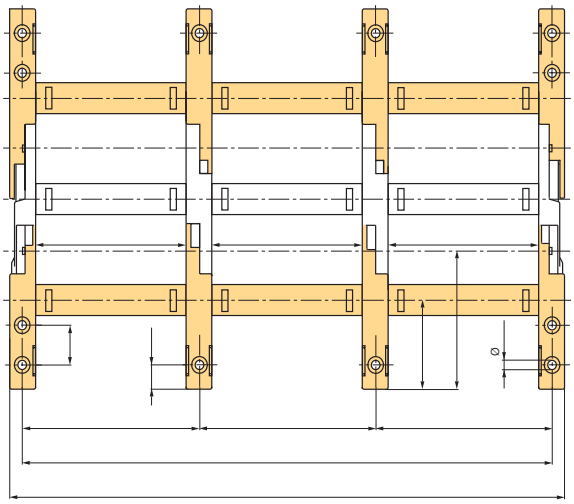
Extension links can be used with Energy Chains®, Energy Tubes or a combination of chains and tubes. They are equally suitable for unsupported applications and gliding applications in a guide trough.

Energy Chains® with extension links are attached with KMA mounting brackets or steel mounting brackets. We strongly recommend on-site consultation with an igus technician for individual advice regarding mounting brackets, guide troughs and other design details.

- **Chain widths up to 118” (3000 mm) can be achieved**
- **Also available as Energy Tube**

All nominal widths from the preceding page are available in all combinations.

Part number example for Energy Chain®
28-10/20/10-200-0

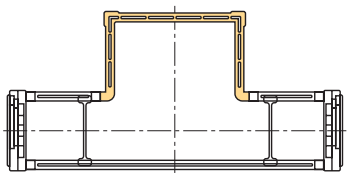


Telephone 1-800-521-2747
Fax 1-401-438-7270

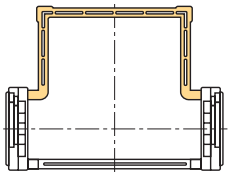
Extender Crossbars

The extender crossbars were developed specifically for applications in which a hose or large diameter cable must be guided carefully. It is intended for hoses and cables with a maximum outer diameter of 11.81 (300 mm). The extender crossbar can be placed either along the outer or inner radius. In most applications, the inner radius is preferred. However, the chain/tube cannot glide on itself in this case. If gliding operation is required, the crossbars are assembled along the outer radius and a speciall guide trough is required. The extender crossbar can either be attached to the side links directly or can be used in combination with two standard snap-open crossbars.

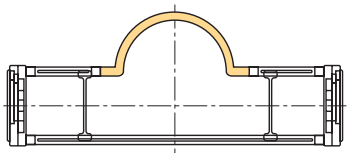
Part No.	Max Ø Hose	Style	Installation Side Link	Combined with Snap-Open Crossbars
385-15-RHD115	By request	Round	No	Yes
385-18-RD115	By request	Round	Yes	No



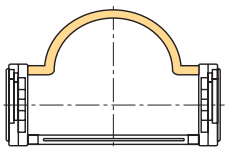
Square extender crossbar combined with standard snap-open crossbars.



Square extender crossbars attached directly to the side link.



Round extender crossbar combined with standard snap-open crossbars.



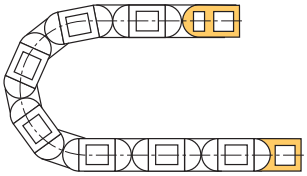
Round extender crossbar attached directly to the side link.

Consult igus® for your extender crossbar applications. We are happy to assist you with your design layout.

Hinged Crossbars

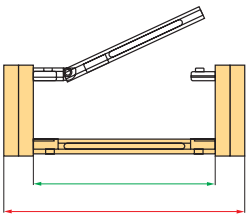
Typically, Energy Chain® crossbars are completely removable. In cases where it is preferrable that the opening crossbars remain on the Energy Chain®, a hinged design has been developed.

4 hinged crossbar options are available.
Please consult igus for design assistance.

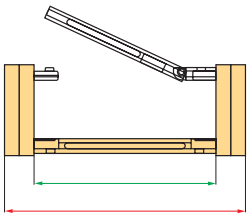


All views shown from fixed end perspective

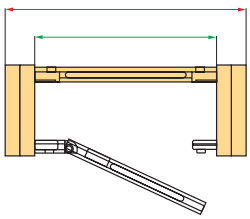
Option 1



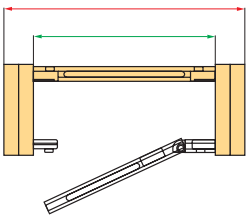
Option 2



Option 3



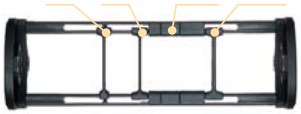
Option 4



igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Interior Separation

Option 1: separators



Separators can be placed at any point along the chain’s cross-section. **igus®’ standard separator (Part No. 281**) offers safe stability due to its broad “foot” design, even when used with large diameter cables or hoses. If the distance needed between separators is greater than this separator’s dimension, we offer the 281-14 separator.

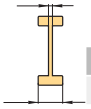
With applications where a large number of small cables need to be individually separated, our **separator with a narrow foot (Part No. 283)** can be used (for Energy Chains only).

A **locking separator (Part No. 293)** is used in applications with very high relative humidity, such as composting plants. The increased retention force needed for these types of applications is produced by assymetrical retention “clamps” attached to the chain’s crossbar. If installing these yourself, please ensure that they are identically aligned.

The **281T separator** is used with Energy Tubes only. It clamps to the fixed radius and remains free along the other radius to facilitate lid removal.

All separators are adjustable, but may be fixed in place with spacers (chains only). Spacers are most often necessary with side-mounted applications.

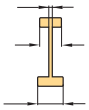
Separator 281



Separator Chain/Tube

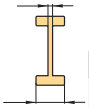
Unassembled	**Part No. 280**
Assembled	**Part No. 281**

Separator 281T



Separator (Tube Only)

Unassembled	**Part No. 281T**
Assembled	**Part No. 282T**

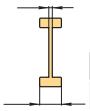


Separator Chain/Tube

Unassembled	**Part No. 281-14**
Assembled	**Part No. 282-14**

Spacer (Chain Only)

Unassembled	**Part No. 381-10**
Assembled	**Part No. 382-10**



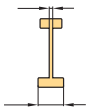
Separator (Chain Only)

Unassembled	**Part No. 283**
Assembled	**Part No. 284**

Spacer (Chain Only)

Unassembled	**Part No. 381-15**
Assembled	**Part No. 382-15**

Separator 293



Locking Separator (Chain Only)

Unassembled	**Part No. 293**
Assembled	**Part No. 294**

Spacer (Chain Only)

Unassembled	**Part No. 381-20**
Assembled	**Part No. 382-20**

Note:
The available inner height is decreased by .08 (2 mm) per spacer, (for example, if one spacer is placed on each side of a separator, the overall inner height is reduced by .16 (4 mm). In order to avoid this, place the spacers on the **outside** of the opening crossbar.

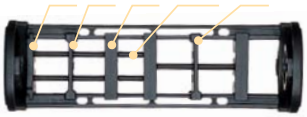
Telephone 1-800-521-2747
Fax 1-401-438-7270

Option 2: shelves

Energy Chains® and Energy Tubes can be subdivided both vertically and horizontally using the various interior separation elements.

Side plates, separators and shelves form the basic pattern of a shelf system. Shelves of various widths can be arranged at 5 different heights in .28 (7 mm) increments ▶ **Design, Chapter 1** for layout recommendations. If open, slotted separators are used, only the middle slot is available for shelves.

For special applications, a separator with an integrated injection-molded shelf 2.26 or 1.77 (57.5 or 45 mm) is available.

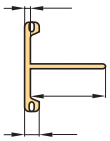


Side Plate

Unassembled	**Part No. 286**
Assembled	**Part No. 287**

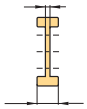
Vertical Separator

Unassembled	**Part No. 288**
Assembled	**Part No. 289**



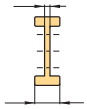
Separators w/Integrated Shelf

Unassembled	**Part No. 281-S-57**
Assembled	**Part No. 282-S-57**
Unassembled	**Part No. 281-S-45**
Assembled	**Part No. 282-S-45**



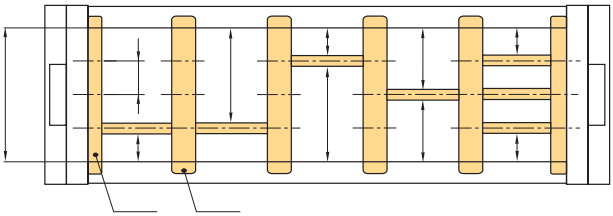
Slotted Separators

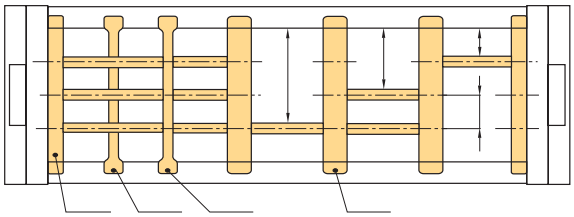
Unassembled	**Part No. 291**
Assembled	**Part No. 292**



Slotted Separators, Open

Unassembled	**Part No. 297**
Assembled	**Part No. 298**



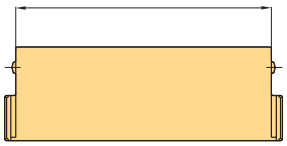


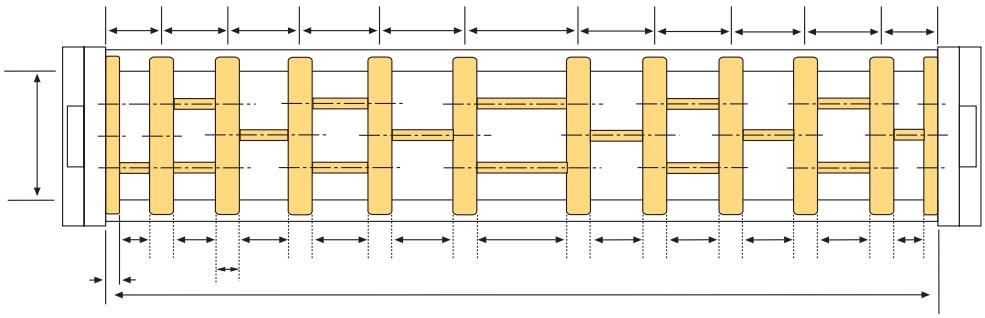
Width X in.	(mm)	Usable Width in.	(mm)	Part No. Unassembled	Part No. Assembled
.71	(18)	.39	(10)	**386-18**	**387-18**
.91	(23)	.59	(15)	**386-23**	**387-23**
.98	(25)	.67	(17)	**386-25**	**387-25**
1.10	(28)	.79	(20)	**386-28**	**387-28**
1.30	(33)	.98	(25)	**386-33**	**387-33**
1.69	(43)	1.38	(35)	**386-43**	**387-43**
1.97	(50)	1.65	(42)	**386-50**	**387-50**
2.13	(54)	1.81	(46)	**386-54**	**387-54**
2.44	(62)	2.13	(54)	**386-62**	**387-62**
2.95	(75)	2.64	(67)	**386-75**	**387-75**
3.43	(87)	3.12	(87)	**386-87**	**387-87**
3.94	(100)	3.62	(92)	**386-100**	**387-100**
4.25	(108)	3.94	(100)	**386-108**	**387-108**
4.92	(125)	4.61	(117)	**386-125**	**387-125**
5.91	(150)	5.59	(142)	**386-150**	**387-150**
6.89	(175)	6.57	(167)	**386-175**	**387-175**
7.87	(200)	7.56	(192)	**386-200**	**387-200**
8.19	(208)	7.87	(200)	**386-208**	**387-208**

Slotted separators (Part No. 291) are used for complex subdivisions. However, they cannot be retrofitted into an existing interior separation system without removing the shelves first.

The **open slotted separator (Part No. 297)** can be retrofitted into an existing interior separation system without removing the shelves, as long as these shelves fit into the middle slot only.

Shelves 386-XX





igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

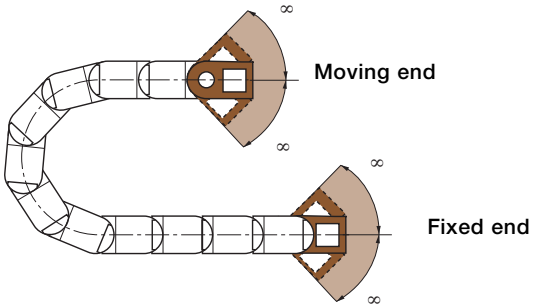
Series 28/29/R77 “E4/0”

Mounting Brackets

Option 1: pivoting

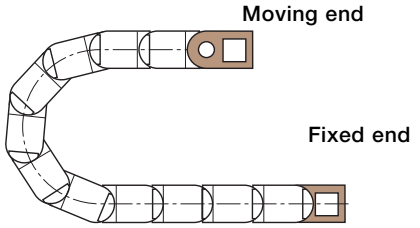
Standard

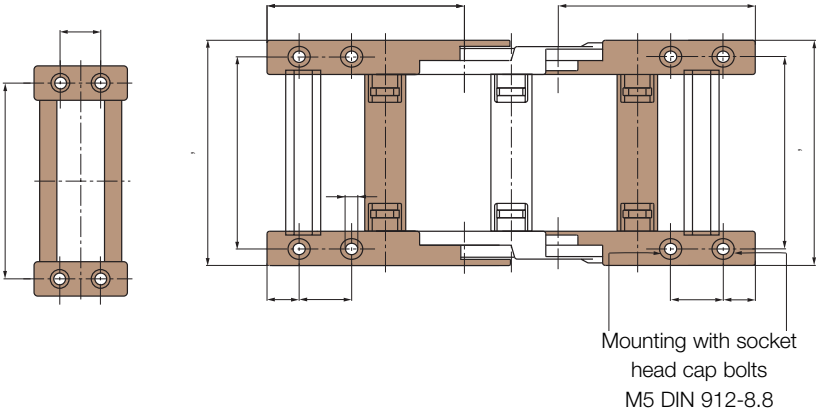
- Profile rail option
- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions



Option 2: locking

- Profile rail option
- Universal use
- Corrosion resistant
- Extreme accelerations
- Vertical hanging/standing travels





igus® tiewrap plates attached to a profile rail used for strain relief. Tiewraps are available as a specific part no. upon request.

▶ **Strain Relief, Chapter 10, Energy Chain® Catalog**

A	A’	B	C	D	E	F	
Bi +.55 (14)	Bi +1.06 (27)	.86 (22.5)	.49 (12.5)	.87 (22)	2.87 (73)	.22 (5.5)	in. (mm)

Series 28/29/R77 “E4/0”

Part No., full set
Series 28/ 29

2800-__-12 pivoting
2900-__-12 locking

2800 pivoting

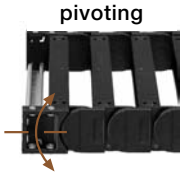
2900 locking

Please insert width of selected Energy Chain®.
For example 2800-112-12 for Energy Chain® 28/ 29-112.....

Part No., full set, with profile rail
Series 28/ 29

2800-__-12P pivoting
2900-__-12P locking

2800 pivoting



2900 locking

Please insert width of selected Energy Chain®.
For example 2800-112-12P for Energy Chain® 28/ 29-112.....

Part No., full set
Series 77

2800-__-12T pivoting
2900-__-12T locking

2800 pivoting

2900 locking

Please insert width of selected Energy Tube.
For example 2800-112-12T for Energy Tube 77-112-__

Part No., full set, with profile rail
Series 77

2800-__-12TP pivoting
2900-__-12TP locking

2800 pivoting

2900 locking

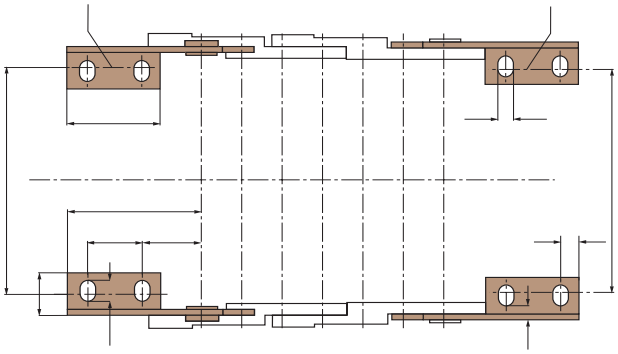
Please insert width of selected Energy Tube.
For example 2800-112-12TP for Energy Tube 77-112-__

2800-__-12/ 2800-__-12T(P)	= Full set, each part with pin/bore
2800-__-1/ 2800-__-1T(P)	= Mounting bracket with bore
2800-__-2/ 2800-__-2T(P)	= Mounting bracket with pin

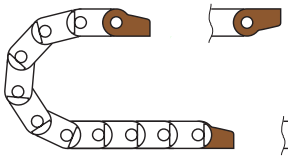
Chain/ Tube Width	Bi
-05	1.97 (50)
-06	2.68 (68)
-07	2.95 (75)
-087	3.43 (87)
-10	3.94 (100)
-11	4.25 (108)
-112	4.41 (112)
-12	4.92 (125)
-137	5.39 (137)
-15	5.91 (150)
-162	6.38 (162)
-17	6.61 (168)
-18	6.89 (175)
-187	7.36 (187)
-20	7.87 (200)
-212	8.35 (212)
-23	8.86 (225)
-237	9.33 (237)
-25	9.84 (250)
-262	10.31 (262)
-28	10.83 (275)
-29	11.30 (287)
-30	11.81 (300)
-312	12.28 (312)
-325	12.79 (325)
-337	13.27 (337)
-350	13.78 (350)
-362	14.25 (362)
-375	14.76 (375)
-387	15.24 (387)
-400	15.75 (400)

Option 3: steel

- One part for all chain widths
- Electrically conductive



Moving end



Fixed end

280-12	= Full set, 4 parts, 2 parts with pin, 2 parts with bore
280-1	= Mounting bracket with bore, 1 part left/right
280-2	= Mounting bracket with pin, 1 part left/right

Strain relief package
▶ Strain Relief, Chapter 10, Energy Chain® Catalog

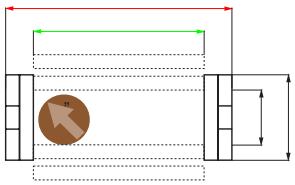
A = B	C	D	E	F	G	H	I	K	M	
Bi - .71 (18)	.35 (9)	2.36 (60)	3.03 (77)	.47 (12)	1.38 (35)	1.18 (30)	1.04 (26.5)	.61 (15.5)	.28 (7)	in. (mm)

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Order Example and Technical Data: Series 28/29/R77 “E4/0”

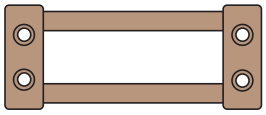
Order example



1. Chain selection:

28-30-300-0

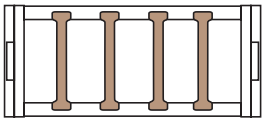
- Color black
- Radius
- Width
- Chain type



2. Mounting brackets:

2800-12-12P

- With profile rails
- Full set, 1 with pin, 1 with bore
- Chain width
- Pivoting



3. Interior Separation:
4 separators, assembled every other link (part no. 281). Alternative interior separation configuration according to design layout possible.

For 6.56 ft (2 m) chain, color black, with pivoting mounting brackets and integrated profile rails:
6.56 ft (2 m) 28-30-300-0 and 2800-30-12P and 4 Part No. 281, assembled every other link

- 36 links — 5.49 links/ft (18 links/m)

Technical Data

Chain/ Tube Width	Weight Per Link lbs (kg) 28		29	R77		Weight lbs/ft (kg/m) 28		29		R77	
-05	.189	(0.086)		–		1.04	(1.55)	.97	(1.45)	–	
-06	.196	(0.089)		–		1.08	(1.60)	.99	(1.48)	–	
-07	.203	(0.092)		.311	(0.141)	1.12	(1.66)	1.01	(1.50)	1.71	(2.54)
-087	.214	(0.097)		–		1.18	(1.75)	1.05	(4.54)	–	
-10	.225	(0.102)		.324	(0.147)	1.24	(1.84)	1.07	(1.59)	1.78	(2.65)
-11	.232	(0.105)		.337	(0.153)		(1.89)	1.09	(1.62)	1.85	(2.75)
-112	.240	(0.109)		–		1.32	(1.96)	1.11	(1.65)	–	
-12	.247	(0.112)		.348	(0.158)	1.36	(2.02)	1.13	(1.68)	1.91	(2.84)
-137	.258	(0.117)		–		1.42	(2.11)	1.16	(1.72)	–	
-15	.269	(0.122)		.368	(0.167)	1.48	(2.20)	1.19	(1.77)	2.02	(3.01)
-162	.276	(0.125)		–		1.51	(2.25)	1.21	(1.80)	–	
-17	.284	(0.129)		.392	(0.178)	1.56	(2.32)	1.23	(1.83)	2.15	(3.20)
-18	.291	(0.132)		–		1.60	(2.38)	1.25	(1.86)	–	
-187	.302	(0.137)		–		1.66	(2.47)	1.28	(1.80)	–	
-20	.313	(0.142)		.417	(0.189)	1.72	(2.56)	1.31	(1.95)	2.28	(3.40)
-212	.329	(0.149)		–		1.80	(2.68)	1.35	(2.01)	–	
-23	.335	(0.152)		–		1.84	(2.74)	1.36	(2.03)	–	
-237	.351	(0.159)		–		1.92	(2.86)	1.41	(2.10)	–	
-25	.357	(0.162)		.472	(0.214)	1.96	(2.92)	1.43	(2.13)	2.59	(3.85)
-262	.368	(0.167)		–		2.02	(3.01)	1.46	(2.17)	–	
-28	.379	(0.172)		–		2.08	(3.10)	1.49	(2.22)	–	
-29	.390	(0.177)		–		2.14	(3.19)	1.52	(2.26)	–	
-30	.401	(0.182)		.520	(0.236)	2.20	(3.28)	1.55	(2.31)	2.86	(4.25)
-312	.417	(0.189)		–		2.28	(3.40)	1.59	(2.37)	–	
-325	.428	(0.194)		–		2.35	(3.49)	1.62	(2.41)	–	
-337	.439	(0.199)		–		2.41	(3.58)	1.65	(2.46)	–	
-350	.450	(0.204)		–		2.47	(3.67)	1.68	(2.50)	–	
-362	.461	(0.209)		–		2.53	(3.76)	1.71	(2.55)	–	
-375	.472	(0.214)		–		2.59	(3.85)	1.75	(2.60)	–	
-387	.481	(0.218)		–		2.63	(3.92)	1.77	(2.63)	–	
-400	.490	(0.222)		–		2.69	(4.00)	1.79	(2.67)	–	

● Weight data tolerance: **+/- 5%**

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

● Accessories for
▶ **Guide Troughs, Chapter 9, Energy Chain® Catalog**

● Further information
▶ **Design, Chapter 1, Energy Chain® Catalog**

Telephone 1-800-521-2747
Fax 1-401-438-7270

Guide Troughs

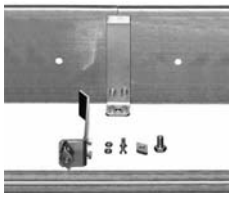
Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required:

- Full travel length of guide trough
  Part Number 98-30
- 1/2 travel length of glide bars
  Part number 92-01
- Installation sets as end connectors
  Part Number 93-50-XX

-XX indicates the length of the profile rail on which the guide trough is mounted. The values and part numbers are specified in the table on the left. The standard length of the trough components and glide bars is 6.56 ft (2 m.) The required overall length of the guide trough directly correlates to the length of travel.

Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 98-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 92-01
Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets
93-50-XXX
Example: 93-50-400 for 15.75 (400 mm) long profile rail.

Left: Guide trough with glide bars
Right: Guide troughs without glide bars



Installation sets as section connectors

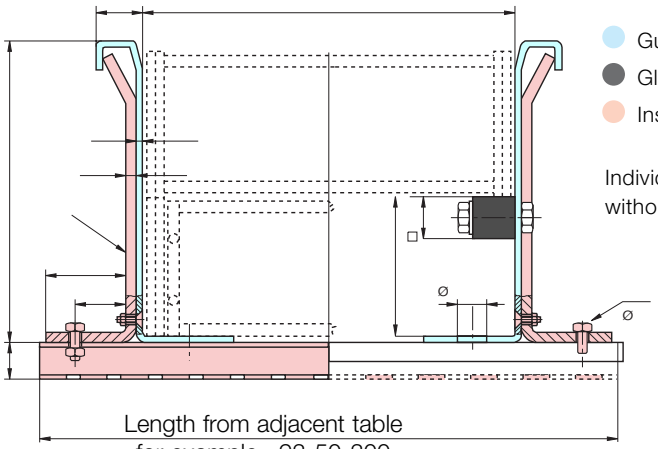
Width of Crossbar
280-**05**-200-0

Dimension D

Installation Part No.

-05	3.15 (80)	**93-50-200**
-06	3.86 (98)	**93-50-250**
-07	4.13 (105)	**93-50-250**
-087	4.61 (117)	**93-50-250**
-10	5.12 (130)	**93-50-300**
-11	5.43 (138)	**93-50-300**
-112	5.59 (142)	**93-50-300**
-12	6.10 (155)	**93-50-300**
-137	6.57 (167)	**93-50-350**
-15	7.09 (180)	**93-50-350**
-162	7.56 (192)	**93-50-350**
-17	7.80 (198)	**93-50-350**
-18	8.07 (205)	**93-50-400**
-187	8.54 (217)	**93-50-400**
-20	9.06 (230)	**93-50-400**
-212	9.53 (242)	**93-50-400**
-23	10.04 (255)	**93-50-450**
-237	10.51 (267)	**93-50-450**
-25	11.02 (280)	**93-50-450**
-262	11.50 (292)	**93-50-450**
-28	12.01 (305)	**93-50-500**
-29	12.48 (317)	**93-50-500**
-30	12.99 (330)	**93-50-500**
-312	13.46 (342)	**93-50-500**
-325	13.98 (355)	**93-50-550**
-337	14.45 (367)	**93-50-550**
-350	14.96 (380)	**93-50-550**
-362	15.43 (392)	**93-50-550**
-375	15.94 (405)	**93-50-600**
-387	16.42 (417)	**93-50-600**
-400	16.93 (430)	**93-50-600**

Standard length profile rail



- Guide trough
- Glide bars
- Installation set

Individual attachment without profile rail

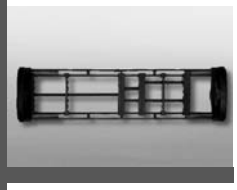
* Specialized guide trough available upon request

Series 38/39/R78 “E4/0”

Price Index

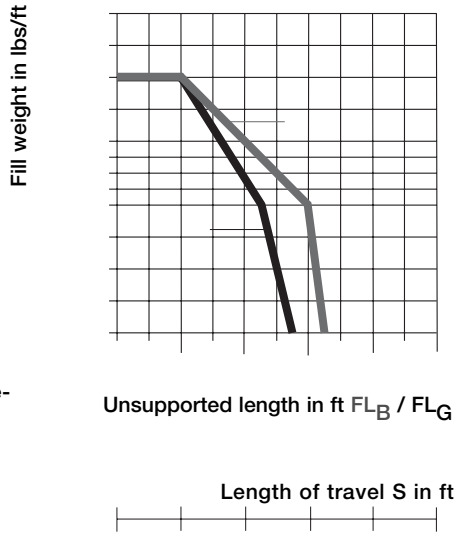
31 Widths
11 Bending Radii

Wide range of interior separation

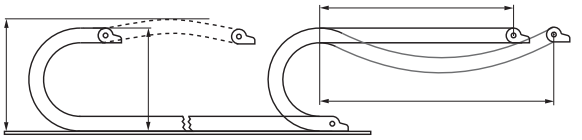


3 options for mounting brackets

Extension links for variable width



Unsupported length
- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product range

Inner Widths (Bi) inches (mm):	1.97 - 15.75 (50 - 400)
Bending Radii (R) inches (mm):	2.95 (75), 3.94 (100), 4.52 (115),
	4.92 (125), 5.91 (150), 6.69 (170),
	7.87 (200), 8.46 (215), 9.84 (250),
	11.81 (300), 13.78 (350)
Pitch:	2.64 (67 mm/link) =
	4.57 links/ft (15 links/m)
	39.6 (1005 mm)

Unsupported Energy Chain® ▶ **Design, Chapter 1; Energy Chain® Catalog** feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1; Energy Chain® Catalog** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System**, **Chapter 9; Energy Chain® Catalog**.

When to use the Series 38/39/R78:

- If a simpler system is sufficient
- Zig-zag applications

When not to use the Series 38/39/R78

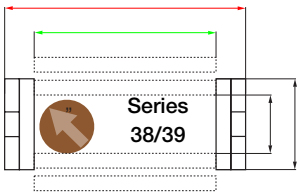
- If a quieter version is required
  ▶ Series 380/ 390/ R780, **Chapter 6, Energy Chain® Catalog**
- If a side-mounted chain/tube with a long unsupported length is required
  ▶ Series 3838/ 3938/ R7838, **Chapter 6, Energy Chain® Catalog**
- If one-sided hinged crossbars are sufficient
  ▶ Series 340/ 350, **Chapter 4, Energy Chain® Catalog**

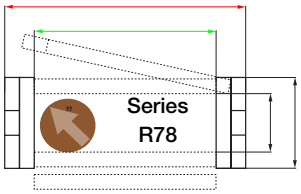
Other Installation Methods:

Vertical, hanging
= max 197 ft (60 m)
Vertical, standing
= max 19.69 ft (6 m)
Side-mounted, unsupported
= max 6.56 ft (2 m)
Rotary
= requires further calculation

- **Long travel Max: 820 ft (250 m)**

Series 38/39/R78 “E4/0”





For crossbar selection please visit www.igus.com and use the “E-Chain Helper”

Increased inner height also as Series:
3822

Increased inner height

The Series 3822 Energy Chain®, with an increased inner height of 2.05 (52 mm) is available for unsupported applications. Please consult igus® for delivery time and availability. We recommend the use of steel mounting brackets for this series.

Part No.	Bi	Ba+2
38/ 39/ 78-05*	1.97 (50)	3.07 (78)
38/ 39-06	2.68 (68)	3.78 (96)
38/ 39/ 78-07	2.95 (75)	4.06 (103)
38/ 39-087	3.43 (87)	4.57 (116)
38/ 39/ 78-10	3.94 (100)	5.04 (128)
38/ 39/ 78-11	4.25 (108)	5.35 (136)
38/ 39-112	4.41 (112)	5.55 (141)
38/ 39/ 78-12	4.92 (125)	6.02 (153)
38/ 39-137	5.39 (137)	6.54 (166)
38/ 39/ 78-15	5.91 (150)	7.01 (178)
38/ 39-162	6.38 (162)	7.52 (191)
38/ 39/ 78-17	6.61 (168)	7.72 (196)
38/ 39-18	6.89 (175)	7.99 (203)
38/ 39-187	7.36 (187)	8.50 (216)
38/ 39/ 78-20	7.87 (200)	8.98 (228)
38/ 39-212	8.35 (212)	9.49 (241)
38/ 39-23	8.86 (225)	9.96 (253)
38/ 39-237	9.33 (237)	10.47 (266)
38/ 39/ 78-25	9.84 (250)	10.94 (278)
38/ 39-262	10.31 (262)	11.46 (291)
38/ 39-28	10.83 (275)	11.93 (303)
38/ 39-29	11.30 (287)	12.44 (316)
38/ 39/ 78-30	11.81 (300)	12.91 (328)
38/ 39-312	12.28 (312)	13.43 (341)
38/ 39-325	13.79 (325)	13.90 (353)
38/ 39-337	13.27 (337)	14.41 (366)
38/ 39-350	13.78 (350)	14.88 (378)
38/ 39-362	14.25 (362)	15.39 (391)
38/ 39-375	14.76 (375)	15.87 (403)
38/ 39-387	15.24 (387)	16.38 (416)
38/ 39-400	15.75 (400)	16.85 (428)

Supplement part number with required radius for example, 38-07-150-0

Bending Radii for ALL Widths
2.95 (075)**
3.94 (100)**
4.52 (115)**
4.92 (125)
5.91 (150)
6.69 (170)
7.87 (200)
8.46 (215)
9.84 (250)
11.81 (300)
13.78 (350)

* Removable lid only, no hinged option
** Not available for R77

Extender crossbar for large diameter hoses
▶ See following pages

For wider chains
▶ See following pages

Price Index

Series 38, Energy Chain
(with crossbars every link)

Select Energy Chains® with crossbars every link when using rigid hydraulic hoses or if an application is particularly demanding.

Standard

Price Index

Series 39, Energy Chain
(with crossbars every other link)

This design is the **standard** Energy Chain® for this size range. For almost all applications, the Series 39 offers the easiest assembly and best stability for the price.

Price Index

Series R78, Energy Tube
(fully enclosed)

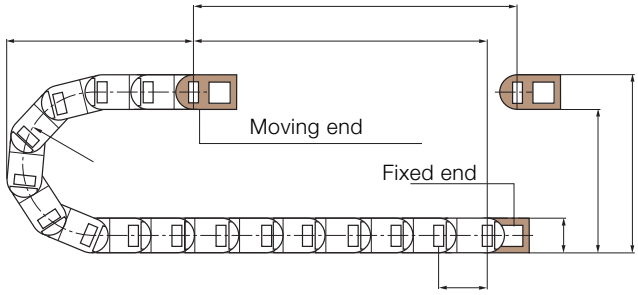
Energy Tubes offer excellent cable and hose protection against dirt, debris and other contaminants, as well as hot chips. This design offers cable and hose accessibility along both radii. Lids along the entire inner radius are completely removable. Lids along the entire outer radius are single-sided, snap-open, with a hinge on the other side to keep them attached to the chain, or completely removable.

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 38/39/R78 “E4/0”

Installation Dimensions



R	2.95 (075)	3.94 (100)	4.52 (115)	4.92 (125)
H*$^{0}_{+.25}$	8.46 (215)	10.43 (265)	11.61 (295)	12.40 (315)
D	5.91 (150)	7.87 (200)	8.46 (215)	8.86 (225)
K	15.75 (400)	19.69 (500)	23.62 (600)	25.59 (650)

R	5.91 (150)	6.69 (170)	7.87 (200)	8.46 (215)
H*$^{0}_{+.25}$	14.37 (365)	15.94 (405)	18.31 (465)	19.49 (495)
D	9.84 (250)	10.63 (270)	11.81 (300)	12.40 (315)
K	28.54 (725)	30.71 (780)	34.45 (875)	36.22 (920)

R	9.84 (250)	11.81 (300)	13.78 (350)	
H*$^{0}_{+.25}$	22.24 (565)	26.18 (665)	30.12 (765)	
D	13.78 (350)	15.75 (400)	17.72 (450)	
K	41.34 (1050)	48.23 (1225)	53.12 (1350)	

Pitch: = 2.64 (67 mm) per link
Links per ft (m): = 4.57 (15)
Total travel: = S
Chainlength: = $\frac{S}{2}$ + K

*The required clearance height is HF = H +1.57 (40) with 1.34 (2 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Extension Link

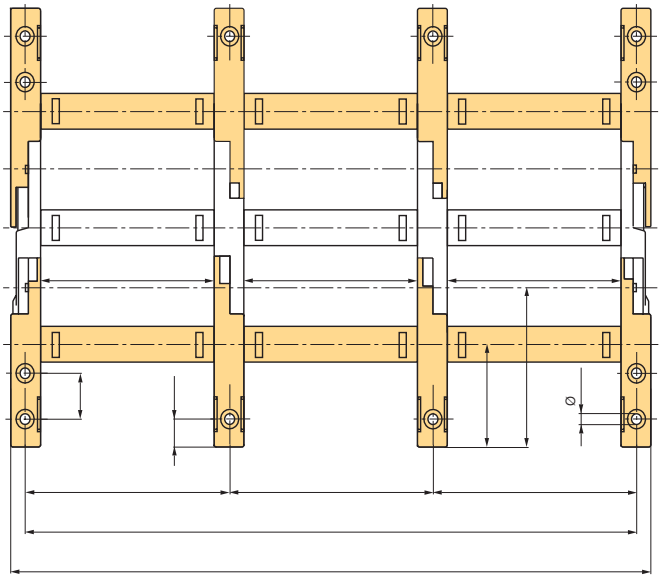
The extension link has been developed for applications in which particularly high fill weights necessitate extremely wide Energy Chains®. The extension link design allows virtually limitless side-by-side attachment of chains. In addition, the unsupported length of a chain can be increased. Using extension links also allows for additional fill weights.

Extension links can be used with Energy Chains®, Energy Tubes or a combination of chains and tubes. They are equally suitable for unsupported and gliding applications in a guide trough.

Energy Chains® with extension links are attached with KMA or steel mounting brackets. We strongly recommend on-site consultation with an igus technician for individual advice regarding mounting brackets, guide troughs and other design details.

All nominal widths fromf the preceding page available in all combinations.

- **Chain widths up to 118 in. (3000 mm) can be achieved**
- **Also available as Energy Tube**



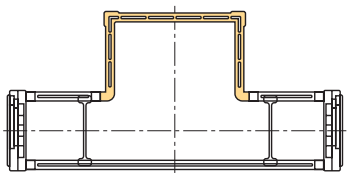
Part number example for
Energy Chain®
38-10/ 20/10-200-0

Telephone 1-800-521-2747
Fax 1-401-438-7270

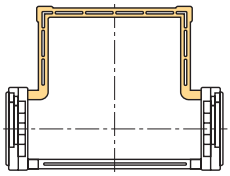
Extender Crossbars

The extender crossbars were developed specifically for applications in which a hose or large diameter cable must be guided carefully. It is intended for hoses and cables with a maximum outer diameter of 11.81 (300 mm). The extender crossbar can be attached either along the outer or inner radius. In most applications the inner radius is preferred. However, the chain/tube cannot glide on itself in this case. If gliding operation is required, the crossbars are assembled along the outer radius and a special guide trough is required. The extender crossbar can either be attached to the side links directly or can be used in combination with two standard snap-open crossbars.

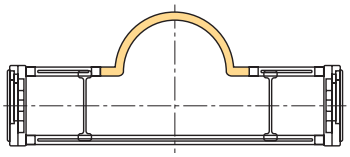
Part No.	Max Ø Hose	Style	Installation Side Link	Combined with Snap-Open Crossbars
385-15-RHD115	By request	Round	No	Yes
385-18-RD115	By request	Round	Yes	No



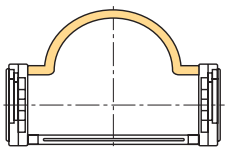
Square extender crossbar combined with standard snap-open crossbars.



Square extender crossbars attached directly to the side link.



Round extender crossbar combined with standard snap-open crossbars.

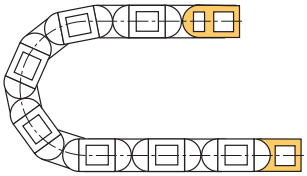


Round extender crossbar attached directly to the side link.

Consult igus® for your extender crossbar applications. We are happy to assist you with your design layout.

Hinged Crossbars

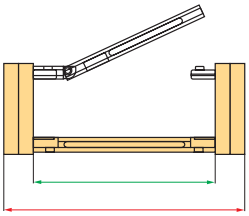
Typically, Energy Chain® crossbars are completely removable. In cases where it is preferrable that the opening crossbars remain on the Energy Chain®, a hinged design has been developed.



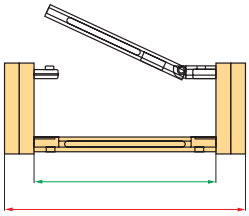
All views shown from fixed end perspective

4 hinged crossbar options are available.
Please consult igus for design assistance.

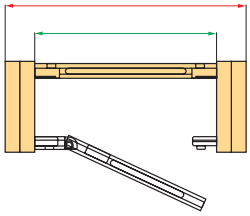
Option 1



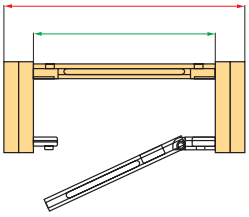
Option 2



Option 3



Option 4



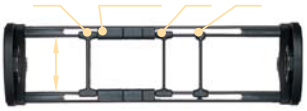
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 38/39/R78 “E4/0”

Interior Separation

Option 1: separators

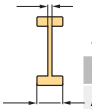
Separators can be placed at any point along the chain’s cross-section. **igus® standard separator (Part No. 381**) offers safe stability due to its broad “foot” design, even when used with large diameter cables or hoses.



A **locking separator (Part No. 383)** is used in applications with very high relative humidity, such as composting plants. The increased retention force needed for these types of applications is produced by asymmetrical retention “clamps” attached to the chain’s crossbar. If installing these yourself, please ensure that they are identically aligned.

The **381T separator** is designed for Energy Tubes incorporating several separators. It clamps to the fixed radius and remains free along the other radius to facilitate lid removal. Again, uniform alignment of the separators is critical. The injection-molded part number can be used as an orientation guide.

All separators are adjustable, but may be fixed in place with spacers (chains only). Spacers are most often necessary with side-mounted applications.

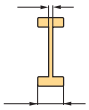


Separator Chain/Tube

Unassembled	**Part No. 380**
Assembled	**Part No. 381**

Spacer (Chain Only)

Unassembled	**Part No. 381-10**
Assembled	**Part No. 382-10**

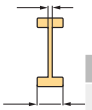


Locking Separator

Unassembled	**Part No. 383**
Assembled	**Part No. 384**

Spacer (Chain Only)

Unassembled	**Part No. 381-15**
Assembled	**Part No. 382-15**



Separator (Tube Only)

Unassembled	**Part No. 381T**
Assembled	**Part No. 382T**

Spacer (Chain Only)

Unassembled	**Part No. 381-20**
Assembled	**Part No. 382-20**

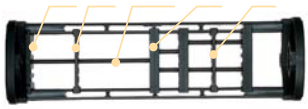
Note:
The available inner height is decreased by .08 (2 mm) **per spacer** (for example, if one spacer is placed on either side of the separator, the overall inner height is reduced by .16 (4 mm). To avoid this, place the spacers on the **outside** of the opening crossbar.

Interior Separation: Series 38/39/R78 “E4/0”

Option 2: shelves

Energy Chains® and Energy Tubes can be subdivided both vertically and horizontally using the various interior separation elements.

Side plates, separators and shelves form the basic pattern of a shelf system. Shelves of various widths can be arranged at 5 different heights in. 28 (7 mm) increments ▶ **Design, Chapter 1** for layout recommendations. If open, slotted separators are used, only the middle slot is available for shelves.

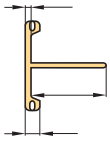


Side Plate

Unassembled	**Part No. 386**
Assembled	**Part No. 387**

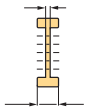
Vertical Separator

Unassembled	**Part No. 388**
Assembled	**Part No. 389**



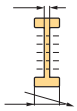
Separators w/Integrated Shelf

Unassembled	**Part No. 281-S-57**
Assembled	**Part No. 282-S-57**
Unassembled	**Part No. 281-S-45**
Assembled	**Part No. 282-S-45**



Slotted Separators

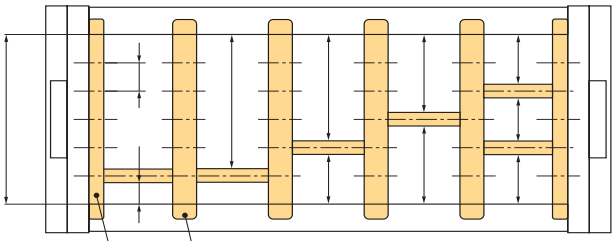
Unassembled	**Part No. 391**
Assembled	**Part No. 392**

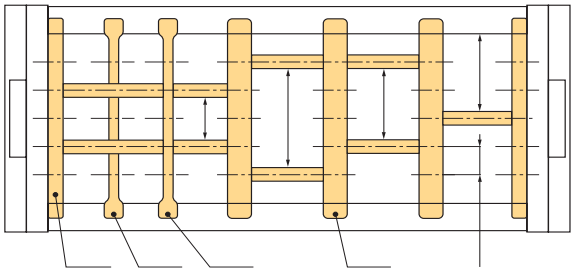


Slotted Separators, Open

Unassembled	**Part No. 397**
Assembled	**Part No. 398**

Width X in.	(mm)	Usable Width in.	(mm)	Part No. Unassembled	Part No. Assembled
.71	(18)	.39	(10)	**386-18**	**387-18**
.91	(23)	.59	(15)	**386-23**	**387-23**
.98	(25)	.67	(17)	**386-25**	**387-25**
1.10	(28)	.79	(20)	**386-28**	**387-28**
1.30	(33)	.98	(25)	**386-33**	**387-33**
1.69	(43)	1.38	(35)	**386-43**	**387-43**
1.97	(50)	1.65	(42)	**386-50**	**387-50**
2.13	(54)	1.81	(46)	**386-54**	**387-54**
2.44	(62)	2.13	(54)	**386-62**	**387-62**
2.95	(75)	2.64	(67)	**386-75**	**387-75**
3.43	(87)	3.12	(87)	**386-87**	**387-87**
3.94	(100)	3.62	(92)	**386-100**	**387-100**
4.25	(108)	3.94	(100)	**386-108**	**387-108**
4.92	(125)	4.61	(117)	**386-125**	**387-125**
5.91	(150)	5.59	(142)	**386-150**	**387-150**
6.89	(175)	6.57	(167)	**386-175**	**387-175**
7.87	(200)	7.56	(192)	**386-200**	**387-200**
8.19	(208)	7.87	(200)	**386-208**	**387-208**

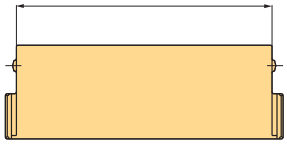


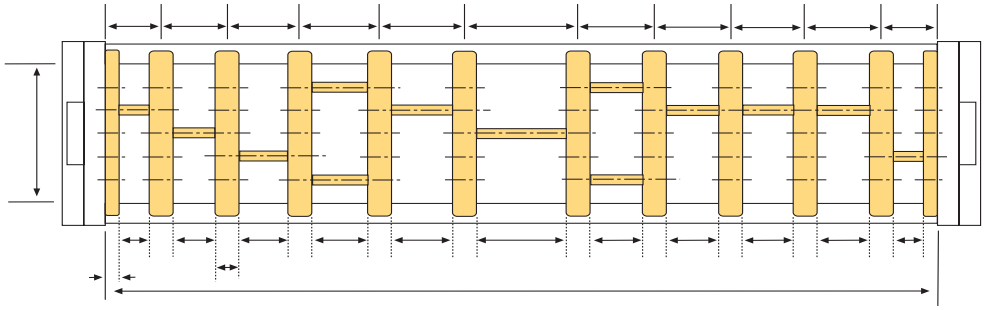


Slotted separators (Part No. 391) are used for complex subdivision. However, they cannot be retrofitted in an existing interior separation system without removing the shelves first.

The **open, slotted separator (Part No. 397)** can be retrofitted into an existing interior separation system without removing the shelves as long as these shelves fit into any of the 3 middle slots.

Shelves 386-XX





Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

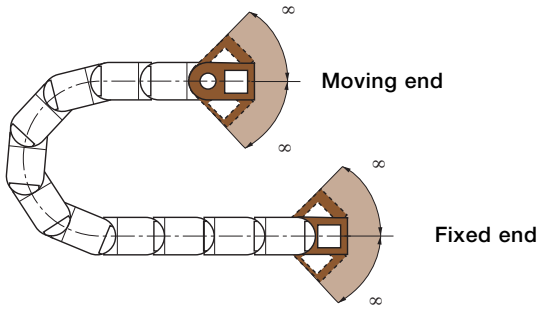
Series 38/39/R78 “E4/0”

Mounting Brackets

Option 1: pivoting

Standard

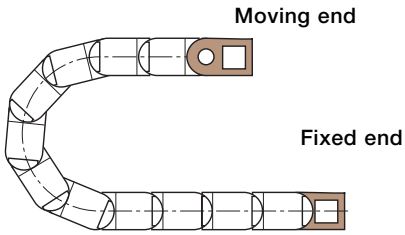
- Profile rail option
- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions

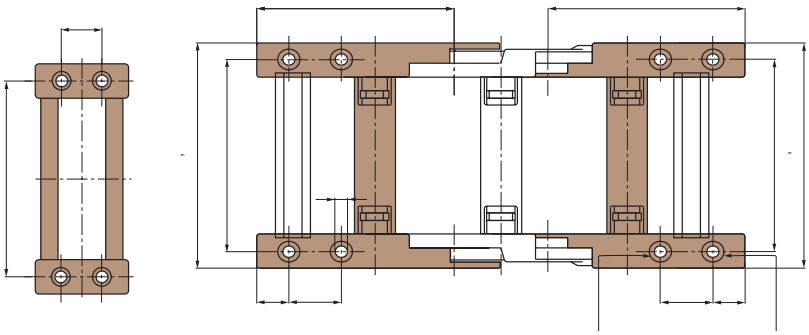


Installation dimensions

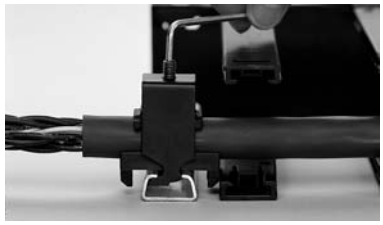
Option 2: locking

- Profile rail option
- Universal use
- Corrosion resistant
- Extreme accelerations
- Vertical hanging/standing travels





Mounting with socket head cap bolts M5 DIN 912-8.8



An integrated strain relief system using the profile rail is an option
▶ **Strain Relief, Chapter 10, Energy Chain® Catalog**

A	A’	B	C	D	E	F	
Bi +.62 (16)	Bi +1.26 (32)	.89 (22.5)	.59 (15)	.87 (22)	3.23 (82)	.26 (6.5)	in. (mm)

Series 38/39/R78 E4/0

Part No., full set
Series 38/ 39

3800-__-12 **pivoting**
3900-__-12 **locking**

3800 pivoting

3900 locking

Please insert width of selected Energy Chain®.
For example, 3800-112-12 for Energy Chain® 38/ 39-112-__

Part No., full set, with profile rail
Series 38/ 39

3800-__-12P **pivoting**
3900-__-12P **locking**

3800 pivoting

3900 locking

Please insert width of selected Energy Chain®.
For example, 3800-112-12P for Energy Chain® 38/ 39-112-__

Part No., full set
Series 78

3800-__-12T **pivoting**
3900-__-12T **locking**

3800 pivoting

3900 locking

Please insert width of selected Energy Tube.
For example, 3800-112-12T for Energy Tube 78-112-__

Part No., full set, with profile rail
Series 78

3800-__-12TP **pivoting**
3900-__-12TP **locking**

3800 pivoting

3900 locking

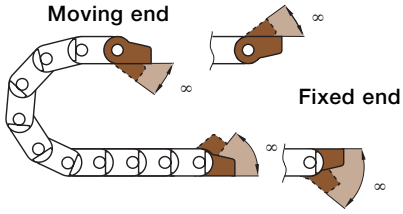
Please insert width of selected Energy Tube.
For example, 3800-112-12TP for Energy Tube 78-112-__

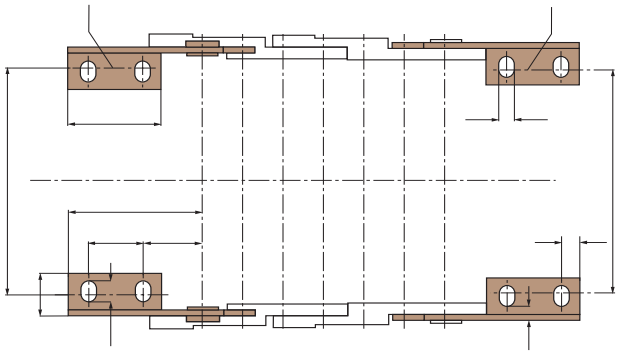
3800-__-12/ 3800-__-12T(P) = Full set, each part with pin/bore
3800-__-1/ 3800-__-1T(P) = Mounting bracket with bore
3800-__-2/ 3800-__-2T(P) = Mounting bracket with pin

Chain/ Tube Width	Bi
-05	1.97 (50)
-06	2.68 (68)
-07	2.95 (75)
-087	3.43 (87)
-10	3.94 (100)
-11	4.25 (108)
-112	4.41 (112)
-12	4.92 (125)
-137	5.39 (137)
-15	5.91 (150)
-162	6.38 (162)
-17	6.61 (168)
-18	6.89 (175)
-187	7.36 (187)
-20	7.87 (200)
-212	8.35 (212)
-23	8.86 (225)
-237	9.33 (237)
-25	9.84 (250)
-262	10.31 (262)
-28	10.83 (275)
-29	11.30 (287)
-30	11.81 (300)
-312	12.28 (312)
-325	12.79 (325)
-337	13.27 (337)
-350	13.78 (350)
-362	14.25 (362)
-375	14.76 (375)
-387	15.24 (387)
-400	15.75 (400)

Option 3: steel

- One part for all chain widths
- Electrically conductive





380-12 = Full set, 4 parts, 2 parts with pin, 2 parts with bore
380-1 = Mounting brackets with bore. 1 part left/right
380-2 = Mounting bracket with pin, 1 part left/right

Strain relief package
▶ Strain Relief, Chapter 10, Energy Chain® Catalog

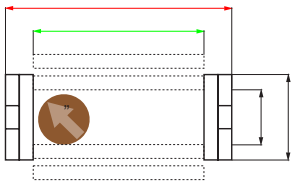
A = B	C	D	E	F	G	H	I	K	M	
Bi - .71 (18)	.35 (9)	2.36 (60)	3.03 (77)	.47 (12)	1.38 (35)	1.18 (30)	1.26 (32)	.75 (19)	.33 (8.5)	in. (mm)

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Order Example and Technical Data: Series 38/39/R78 “E4/0”

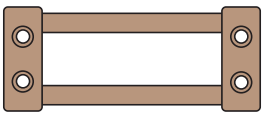
Order example



1. Chain selection:

38-30-300-0

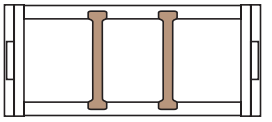
- Color black
- Radius
- Width
- Chain type



2. Mounting brackets:

380-12-12P

- With profile rail
- Full set, 1 with pin, 1 with bore
- Chain width
- Pivoting



3. Interior separation:
2 separators, assembled every other link (part no. 381). Alternative interior separation configuration according to design layout possible.

For 6.56 ft (2 m) chain, color black, with pivoting mounting brackets and integrated profile rails:
6.56 ft (2 m) 38-30-300-0 and 380-12-12P and 2 Part No. 381, assembled every other link

- 30 Links — 4.57 links/ft (15 links/m)

Technical Data

Chain/ Tube Width	Weight Per Link lbs (kg) 38		39	R78		Weight lbs/ft (kg/m) 38		39		R78	
-05	.273	(0.124)		–		1.25	(1.86)	1.20	(1.78)	–	
-06	.278	(0.126)		–		1.27	(1.89)	1.21	(1.80)	–	
-07	.282	(0.128)		.322	(0.146)	1.29	(1.92)	1.22	(1.81)	1.47	(2.19)
-087	.291	(0.132)		–		1.34	(1.99)	1.24	(1.84)	–	
-10	.302	(0.137)		.353	(0.160)	1.38	(2.06)	1.26	(1.88)	1.62	(2.41)
-11	.309	(0.140)		.362	(0.164)	1.41	(2.10)	1.28	(1.90)	1.65	(2.46)
-112	.309	(0.140)		–		1.42	(2.11)	1.28	(1.90)	–	
-12	.313	(0.142)		.384	(0.174)	1.48	(2.20)	1.31	(1.95)	1.75	(2.61)
-137	.331	(0.150)		–		1.51	(2.24)	1.32	(1.97)	–	
-15	.344	(0.156)		.423	(0.192)	1.57	(2.33)	1.36	(2.02)	1.93	(2.87)
-162	.346	(0.157)		–		1.58	(2.35)	1.36	(2.02)	–	
-17	.355	(0.161)		.448	(0.203)	1.63	(2.42)	1.38	(2.06)	2.04	(3.04)
-18	.357	(0.162)		–		1.63	(2.43)	1.38	(2.06)	–	
-187	.368	(0.167)		–		1.68	(2.50)	1.41	(2.10)	–	
-20	.377	(0.171)		.490	(0.222)	1.73	(2.57)	1.44	(2.14)	2.24	(3.33)
-212	.388	(0.176)		–		1.77	(2.64)	1.46	(2.17)	–	
-23	.399	(0.181)		–		1.83	(2.72)	1.49	(2.21)	–	
-237	.405	(0.184)		–		1.85	(2.76)	1.50	(2.23)	–	
-25	.419	(0.190)		.609	(0.276)	1.92	(2.85)	1.53	(2.28)	2.78	(4.13)
-262	.421	(0.191)		–		1.93	(2.87)	1.53	(2.28)	–	
-28	.437	(0.198)		–		2.00	(2.97)	1.57	(2.34)	–	
-29	.439	(0.199)		–		2.01	(2.99)	1.58	(2.35)	–	
-30	.459	(0.208)		.690	(0.313)	2.10	(3.13)	1.62	(2.41)	3.15	(4.69)
-312	.461	(0.209)		–		2.11	(3.14)	1.63	(2.42)	–	
-325	.472	(0.214)		–		2.16	(3.22)	1.65	(2.46)	–	
-337	.478	(0.217)		–		2.19	(3.26)	1.67	(2.48)	–	
-350	.512	(0.232)		–		2.34	(3.48)	1.74	(2.59)	–	
-362	.520	(0.236)		–		2.38	(3.54)	1.76	(2.62)	–	
-375	.527	(0.239)		–		2.41	(3.59)	1.78	(2.65)	–	
-387	.536	(0.243)		–		2.45	(3.65)	1.80	(2.68)	–	
-400	.545	(0.247)		–		2.49	(3.71)	1.81	(2.70)	–	

● Weight data tolerance: **+/- 5%**

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

● **Accessories for**
▶ **Guide Troughs, Chapter 9, Energy Chain® Catalog**

● **Further information**
▶ **Design, Chapter 1, Energy Chain® Catalog**

Series 38/39/R78 “E4/0”

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required:

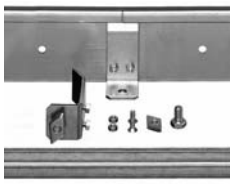
- Full travel length of guide trough
  Part No. 93-30
- 1/2 travel length of glide bars
  Part No. 93-01
- Installation sets as end connectors
  Part No. 93-50-XX

-XX indicates the length of the prodile rail on which the guide trough is mounted. The values and part numbers are specified in the table to the left. The standard length of the trough components and glide bars is 6.56 ft (2 m). The required overall length of the guide trough directly correlates to the length of travel

Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough,
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 93-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 93-01

Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part No. of the installation sets **93-50-XXX**
Example: 93-50-400 for 15.75 (400 mm) long profile rail

Left: Guide trough with glide bars
Right: Guide troughs without glide bars



Installation sets as section connectors

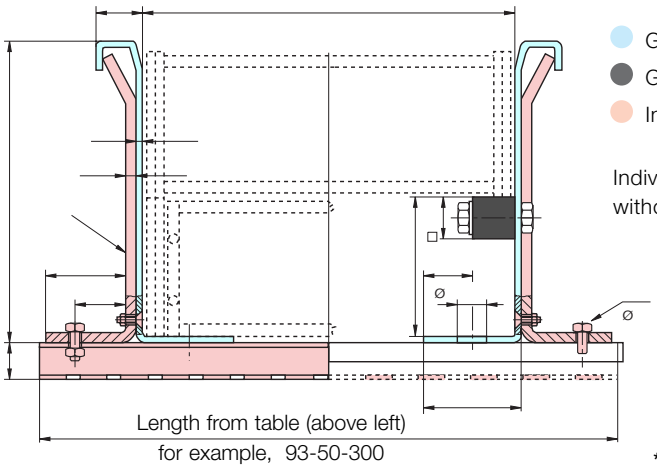
Width of Crossbar
380-**05**-200-0

Dimension D

Installation Part No.

-05	3.27 (83)	**93-50-200**
-06	3.98 (101)	**93-50-250**
-07	4.25 (108)	**93-50-250**
-087	4.76 (121)	**93-50-250**
-10	5.24 (133)	**93-50-300**
-11	5.55 (141)	**93-50-300**
-112	5.75 (146)	**93-50-300**
-12	6.22 (158)	**93-50-300**
-137	6.73 (171)	**93-50-300**
-15	6.81 (173)	**93-50-300**
-162	7.72 (196)	**93-50-300**
-17	7.91 (201)	**93-50-350**
-18	8.19 (208)	**93-50-400**
-187	8.70 (221)	**93-50-400**
-20	9.17 (233)	**93-50-400**
-212	9.69 (246)	**93-50-400**
-23	10.16 (258)	**93-50-450**
-237	10.67 (271)	**93-50-450**
-25	11.14 (283)	**93-50-450**
-262	11.65 (296)	**93-50-450**
-28	12.13 (308)	**93-50-500**
-29	12.64 (321)	**93-50-500**
-30	13.11 (333)	**93-50-500**
-312	13.62 (346)	**93-50-500**
-325	14.09 (358)	**93-50-550**
-337	14.61 (371)	**93-50-550**
-350	15.08 (383)	**93-50-550**
-362	15.59 (396)	**93-50-550**
-375	16.06 (408)	**93-50-600**
-387	16.57 (421)	**93-50-600**
-400	17.05 (433)	**93-50-600**

Standard length profile rail



* Specialized guide trough available upon request

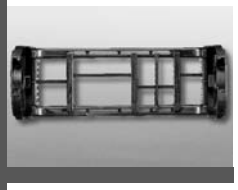
Telephone 1-800-521-2747
Fax 1-401-438-7270

Series 40/41/R88 “E4/0”

Price Index

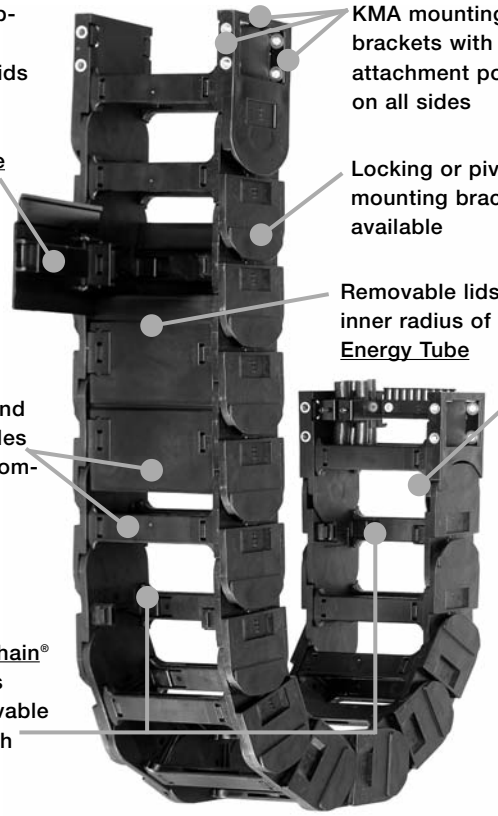
41 Widths
10 Bending Radii

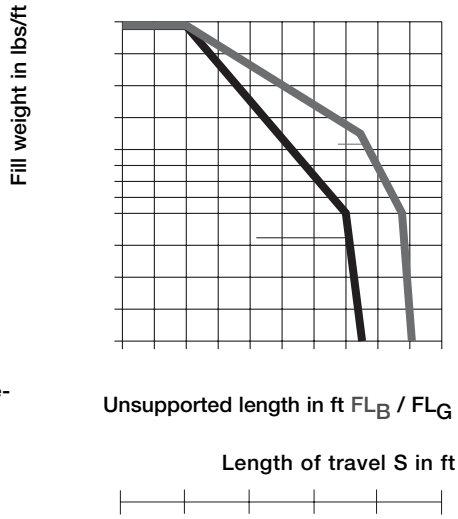
Wide range of interior separation



3 options for mounting brackets

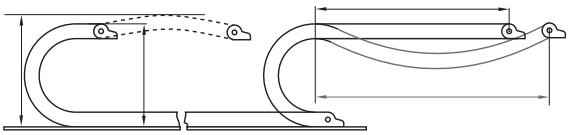
Extension links for variable width





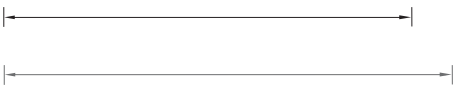
Unsupported length

- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product range

Inner Widths (Bi) inches (mm):	1.97 - 23.62 (50 - 600) + extension links
Bending Radii (R) inches (mm):	5.31 (135), 5.91 (150), 6.89 (175),
	7.87 (200), 9.45 (240), 9.84 (250),
	11.81 (300), 13.78 (350),15.75 (400),
	19.69 (500)
Pitch:	3.58 (91 mm/link) =
	3.35 links/ft (11 links/m)
	39.4 (1001 mm)



Unsupported Energy Chains® ▶ **Design, Chapter 1; Energy Chain® Catalog,** feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1; Energy Chain® Catalog** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System, Chapter 9; Energy Chain® Catalog.**

When to use the Series 40/41/R88:

- If a simpler system is required

When not to use the Series 40/41/R88:

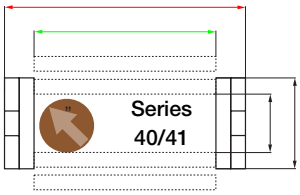
- If a quieter version is required
  ▶ Series 400/ 410/ R880, **Chapter 6, Energy Chain® Catalog**
- If a side-mounted chain/tube with a long unsupported travel is required
  ▶ Series 4040 / 4140/ R8840, **Chapter 6, Energy Chain® Catalog**
- If a simpler low-cost solution is required
  ▶ Series 140/ R188, **Chapter 6, Energy Chain® Catalog**

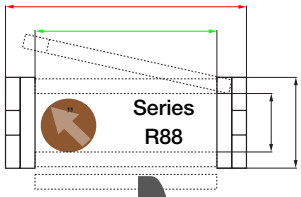
Other Installation Methods:

Vertical, hanging
= **max 262 ft (80 m)**
Vertical, standing
= **max 19.69 ft (6 m)**
Side-mounted, unsupported
= **max 6.56 ft (2 m)**
Rotary
= **requires further calculation**

- **Long travel Max: 1148 ft (350 m)**

Series 40/41/R88 “E4/0”





For crossbar selection please visit www.igus.com and use the “E-Chain Helper”

Part No.	Bi	Ba+4
40/ 41-05	1.97 (50)	3.39 (86)
40/ 41-06	2.56 (65)	3.98 (101)
40/ 41/ 88-07*	2.95 (75)	4.37 (111)
40/ 41/ 88-10	3.94 (100)	5.35 (136)
40/ 41-11	4.41 (112)	5.87 (149)
40/ 41/ 88-12	4.92 (125)	6.34 (161)
40/ 41-13	5.39 (137)	6.85 (174)
40/ 41/ 88-15	5.91 (150)	7.32 (186)
40/ 41-16	6.38 (162)	7.83 (199)
40/ 41-17	6.89 (175)	8.31 (211)
40/ 41-18	7.36 (187)	8.81 (224)
40/ 41/ 88-20	7.87 (200)	9.29 (236)
40/ 41-21	8.35 (212)	9.80 (249)
40/ 41-22	8.86 (225)	10.28 (261)
40/ 41-23	9.33 (237)	10.79 (274)
40/ 41/ 88-25	9.84 (250)	11.26 (286)
40/ 41-26	10.31 (262)	11.77 (299)
40/ 41-27	10.83 (275)	12.24 (311)
40/ 41-28	11.30 (287)	12.76 (324)
40/ 41/ 88-30	11.81 (300)	13.23 (336)
40/ 41-31	12.28 (312)	13.74 (349)

Bending Radii
for ALL Widths
5.31 (135)**
5.91 (150)
6.89 (175)
7.87 (200)
9.45 (240)
9.84 (250)
11.81 (300)
13.78 (350)
15.75 (400)
19.69 (500)

* Removable lid only, no hinged option

** Not available for R9850

Part No.	Bi	Ba+4
40/ 41-32	12.79 (325)	14.21 (361)
40/ 41-33	13.27 (337)	14.72 (374)
40/ 41/ 88-35	13.78 (350)	15.20 (386)
40/ 41-36	14.25 (362)	15.71 (399)
40/ 41-37	14.76 (375)	16.18 (411)
40/ 41-38	15.24 (387)	16.69 (424)
40/ 41/ 88-40	15.75 (400)	17.17 (436)
40/ 41-41	16.22 (412)	17.68 (449)
40/ 41-42	16.73 (425)	18.15 (461)
40/ 41-43	17.20 (437)	18.66 (474)
40/ 41-45	17.72 (450)	19.13 (486)
40/ 41/ 88-46	18.19 (462)	19.65 (499)
40/ 41-47	18.70 (475)	20.12 (511)
40/ 41-48	19.17 (487)	20.63 (524)
40/ 41-50	19.69 (500)	21.10 (536)
40/ 41-51	20.16 (512)	21.61 (549)
40/ 41-52	20.67 (525)	22.09 (561)
40/ 41-53	21.14 (537)	22.60 (574)
40/ 41-55	21.65 (550)	23.07 (586)
40/ 41-60	23.62 (600)	25.04 (636)

For wider chains, See following pages

Supplement part number with required radius for example, 40-07-150-0

Extender crossbar for large diameter hoses, See following pages

Price Index

Series 40, Energy Chain
(with crossbars every link)

Select Energy Chains® with crossbars every link when using rigid hydraulic hoses or if an application is particularly demanding.

Standard

Price Index

Series 41, Energy Chain
(with crossbars every other link)

This design is the **standard** Energy Chain® for this size range. For almost all applications, the Series 41 offers the easiest assembly and best stability for the price.

Price Index

Series R88, Energy Tube
(fully enclosed)

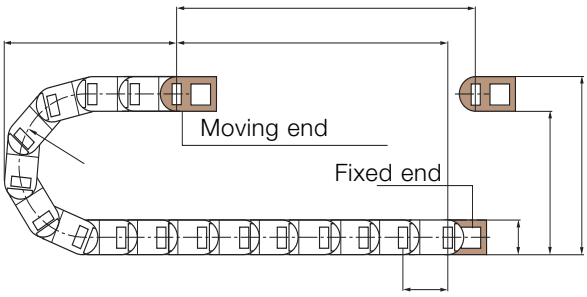
Energy Tubes offer excellent cable and hose protection against dirt, debris and other contaminants, as well as hot chips. This design offers cable and hose accessibility along both radii. Lids along the entire inner radius are completely removable. Lids along the entire outer radius are single-sided, snap-open, with a hinge on the other side to keep them attached to the chain, or completely removable.

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 40/41/R88 “E4/0”

Installation dimensions



R	5.31 (135)	5.91 (150)	6.89 (175)	7.87 (200)	9.44 (240)
H*) $^{-0}_{+25}$	14.17 (360)	15.16 (385)	17.13 (435)	19.09 (485)	22.24 (565)
D	10.63 (270)	11.22 (285)	12.20 (310)	13.19 (335)	14.76 (375)
K	25.59 (650)	29.53 (750)	32.48 (825)	35.43 (900)	40.16 (1020)

R	9.84 (250)	11.81 (300)	13.78 (350)	15.75 (400)	19.69 (500)
H*) $^{-0}_{+25}$	23.03 (585)	26.97 (685)	30.91 (785)	34.84 (885)	42.72 (1085)
D	15.16 (385)	17.13 (435)	19.09 (485)	21.06 (535)	25.00 (635)
K	41.34 (1050)	48.23 (1225)	52.76 (1340)	57.09 (1450)	69.88 (1775)

*The required clearance height is HF = H + 1.97 (50) with 1.34 lbs/ft (2 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Pitch: = 3.58 (91 mm) per link
Links per ft (m): = 3.35 (11)
Total travel: = S
Chain length: = $\frac{S}{2}$ + K

Extension Link

The extension link has been developed for applications in which particularly high fill weights necessitate extremely wide Energy Chains®. The extension link design allows virtually limitless side-by-side attachment of chains. In addition, the unsupported length of a chain can be increased. Using extension links also allows for additional fill weights.

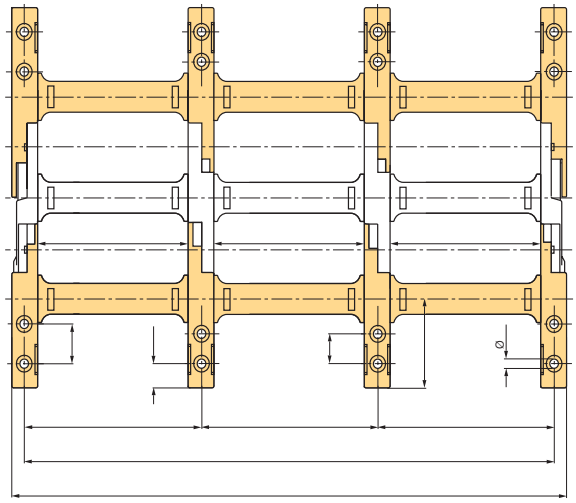
Extension links can be used with Energy Chains®, Energy Tubes or a combination of chains and tubes. They are equally suitable for unsupported and gliding applications in a guide trough.

Energy Chains® with extension links are attached with KMA or steel mounting brackets. We strongly recommend on-site consultation with an igus® technician for individual advice regarding mounting brackets, guide troughs and other design details.

- **Chain widths up to 118 in. (3000 mm) can be achieved**
- **Also available as Energy Tube**

All nominal widths fromf the preceding page available in all combinations.

Part number example for Energy Chain®
40-10/ 20/10-200-0



Extender Crossbars

The extender crossbars were developed specifically for applications in which a hose or large diameter cable must be guided carefully. It is intended for hoses and cables with a maximum outer diameter of 11.81 (300 mm). The extender crossbar can be attached either along the outer or inner radius. In most applications, the inner radius is preferred. However, the chain/tube cannot glide on itself in this case. If gliding operation is required, the crossbars are assembled along the outer radius and a special guide trough is required. The extender crossbar can either be attached to the side links directly or can be used in combination with two standard snap-open crossbars.

Part No.	Max Ø Hose	Style	Installation Side Link	Combined with Snap-Open Crossbars
450-15-RHD115	By request	Round	Yes	No
450-17-RD115	By request	Round	No	Yes
450-25-D150	By request	Square	Yes	No
450-30-D200	By request	Square	Yes	No
450-35-D250	By request	Square	Yes	No
450-40-D300	By request	Square	Yes	No
450-20-HD150	By request	Square	No	Yes
450-25-HD200	By request	Square	No	Yes
450-30-HD250	By request	Square	No	Yes
450-B12*	By request	Clip	No	No
450-B12-200**	By request	Tie Clip	No	No

* Clip
** Clip with Cable tie clip 12 x 1.5 x 200 mm

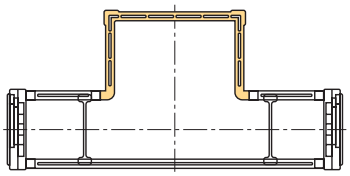
Consult igus® for your extender crossbar applications. We are happy to assist you with your design layout.

E4 Tie Clip

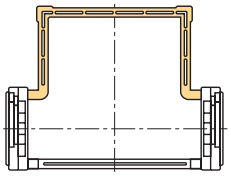
New!

For side-mounted E4/4 Energy Chains®

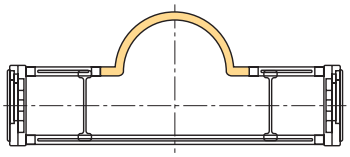
For Energy Chain® with exterior link - holds hoses or other conduits on the outside of the chain



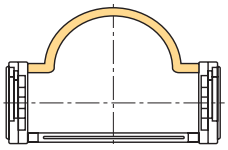
Square extender crossbar combined with standard snap-open crossbars.



Square extender crossbars attached directly to the side link.



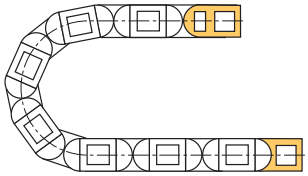
Round extender crossbar combined with standard snap-open crossbars.



Round extender crossbar attached directly to the side link.

Hinged Crossbars

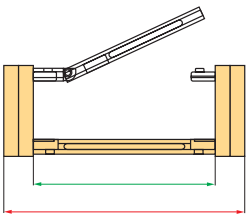
Typically, Energy Chain® crossbars are completely removable. In cases where it is preferrable that the opening crossbars remain on the Energy Chain®, a hinged design has been developed.



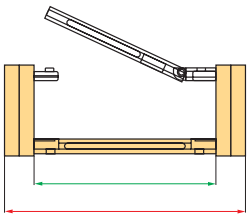
All views shown from fixed end perspective

4 hinged crossbar options are available. Please consult igus for design assistance.

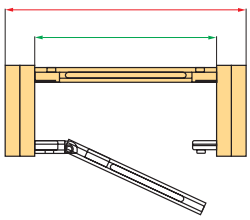
Option 1



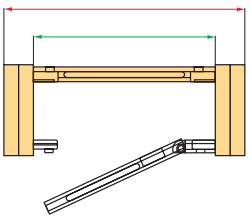
Option 2



Option 3



Option 4



igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 40/41/R88 "E4/0"

Interior Separation

Option 1: separators

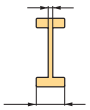
Separators can be placed at any point along the chain's cross-section. **igus® Standard Separator (Part No. 401)** offers safe stability due to its broad "foot" design, when used with large diameter cables or hoses.

For applications using a large number of small cables a **separator with a narrow "foot" (Part No. 483)** can be used.

The **separators 401 and 483** can be used both with the Series 400/410 Energy Chains® and R880 Energy Tubes.

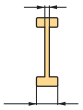
A **locking separator (Part No. 404)** with increased retention force is also available for chains only. This separator is used in applications with very high relative humidity, such as composting plants, or in applications subject to extreme loads. It is more difficult to open the Energy Chain® when using a locking separator.

All separators are adjustable, but may be fixed in place with spacers (chains only). Spacers are most often necessary with side-mounted applications.



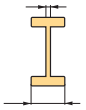
Separator — STANDARD

Unassembled	**Part No. 401**
Assembled	**Part No. 411**



Separator

Unassembled	**Part No. 483**
Assembled	**Part No. 484**



Locking Separator (Chain Only)

Unassembled	**Part No. 404**
Assembled	**Part No. 414**

Note:
The available inner height is decreased by .08 (2 mm) **per spacer** (for example, if one spacer is placed on either side of the separator, the overall inner height is reduced by .16 (4 mm). To avoid this, place the spacers on the **outside** of the opening crossbar.

Spacer (Chain Only)

Unassembled	**Part No. 405-15**
Assembled	**Part No. 415-15**

Spacer (Chain Only)

Unassembled	**Part No. 405-20**
Assembled	**Part No. 415-20**

Spacer (Chain Only)

Unassembled	**Part No. 405-30**
Assembled	**Part No. 415-30**

Spacer (Chain Only)

Unassembled	**Part No. 405-40**
Assembled	**Part No. 405-40**

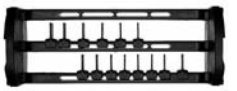
Spacer (Chain Only)

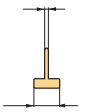
Unassembled	**Part No. 405-10**
Assembled	**Part No. 415-10**

Other elements for interior separation:

Center crossbar

The center crossbar was developed for applications in which a very large number of thin cables are laid in the chain, individually separated. The center crossbar offers the option of subdividing the Energy Chain® into upper and lower halves, with mutually independent separators. The center crossbar can be inserted into any chain width.
Please consult igus® if your application requires a center crossbar.



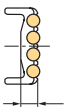


Vertical Separator for Center Crossbar

Unassembled	**Part No. 405**
Assembled	**Part No. 415**

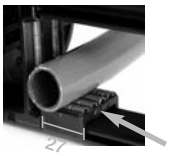
Rollclip

The Rollclip has ben developed to minimize abrasion of particularly sensitive hoses or cables in an Energy Chain®. The Rollclip is simply clamped onto the opening crossbar of the chain link. The integrated rollers compensate for relative movement between the chain and the hose or cable. This reduces the abrasion of the hoses or cables. Consult igus® if you have questions regarding the Rollclip.



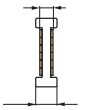
Rollclip

Unassembled	**Part No. 488-27**
Assembled	**Part No. 489-27**



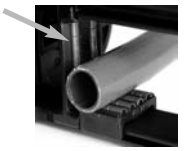
Roller Separator

The roller separator performs a similar function to the Rollclip, but doubles as a separator. Consult igus® if you have any questions regarding the roller separator.



Roller Separator

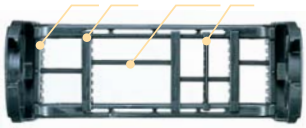
Unassembled	**Part No. 429**
Assembled	**Part No. 430**



Telephone 1-800-521-2747
Fax 1-401-438-7270

Option 2: shelves

Energy Chains® and Energy Tubes can be subdivided both vertically and horizontally using the various interior separation elements.
Side plates, separators and shelves form the basic pattern of a shelf system. Shelves of various widths can be arranged at 7 different heights in .28 (7 mm) increments ▶ **Design, Chapter 1** for layout recommendations. If the open, slotted separators are used, only the middle slot is available for shelves.

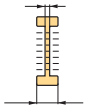


Side Plate

Unassembled	**Part No. 402**
Assembled	**Part No. 412**

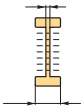
Vertical Separator

Unassembled	**Part No. 403**
Assembled	**Part No. 413**



Slotted Separators

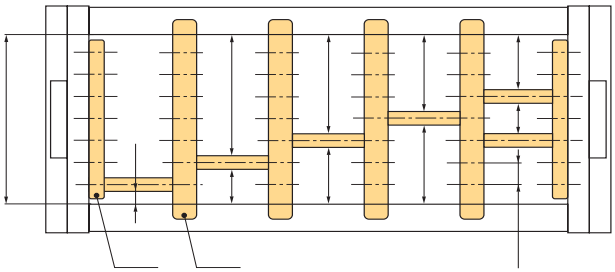
Unassembled	**Part No. 408**
Assembled	**Part No. 418**

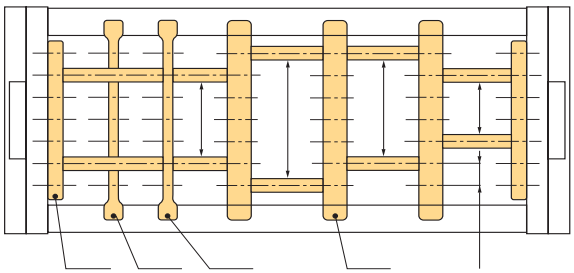


Slotted Separators, Open

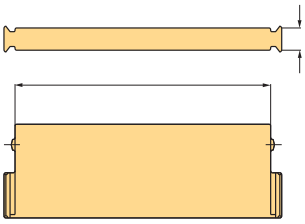
Unassembled	**Part No. 409**
Assembled	**Part No. 419**

Width X in.	Width X (mm)	Usable Width in.	Usable Width (mm)	Part No. Unassembled	Part No. Assembled
.71	(18)	.39	(10)	**420-18**	**421-18**
.91	(23)	.59	(15)	**420-23**	**421-23**
.98	(25)	.67	(17)	**420-25**	**421-25**
1.10	(28)	.79	(20)	**420-28**	**421-28**
1.30	(33)	.98	(25)	**420-33**	**421-33**
1.69	(43)	1.38	(35)	**420-43**	**421-43**
1.97	(50)	1.65	(42)	**420-50**	**421-50**
2.44	(62)	2.13	(54)	**420-62**	**421-62**
2.95	(75)	2.64	(67)	**420-75**	**421-75**
3.94	(100)	3.62	(92)	**420-100**	**421-100**
4.92	(125)	4.61	(117)	**420-125**	**421-125**
5.91	(150)	5.59	(142)	**420-150**	**421-150**
6.89	(175)	6.57	(167)	**420-175**	**421-175**
7.36	(187)	7.05	(179)	**420-187**	**421-187**
7.87	(200)	7.56	(192)	**420-200**	**421-200**



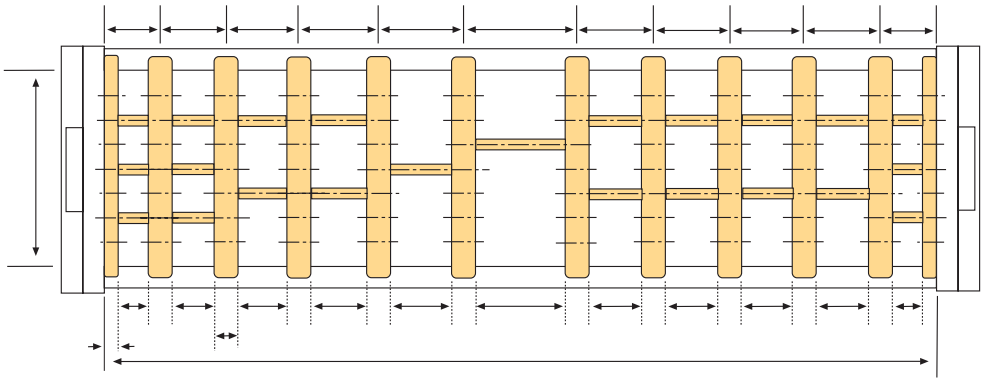


Shelves 386-XX



Slotted separators (Part No. 408) are used for very complex subdivisions. However, they cannot be retrofitted into an existing interior separation system without removing the shelves first.

The **open, slotted separator (Part No. 409)** can be retrofitted into an existing interior separation system without removing the shelves, as long as these shelves fit into any of the 3 middle slots.



igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

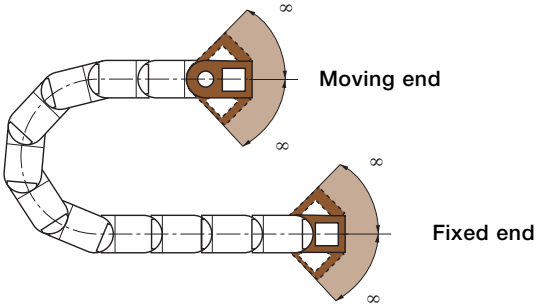
Product Range: Series 40/41/R88 E4/0

Mounting Brackets

Option 1: pivoting

Standard

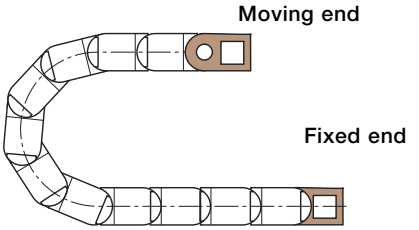
- Profile rail option
- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions

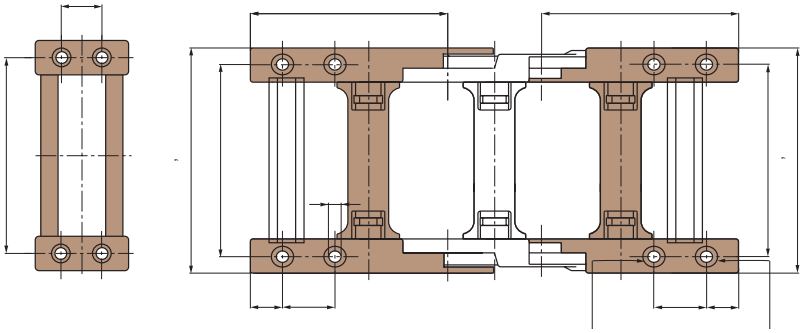


Installation dimensions

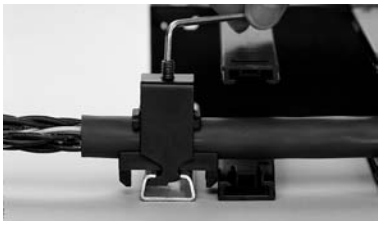
Option 2: locking

- Profile rail option
- Universal use
- Corrosion resistant
- Extreme accelerations
- Vertical hanging/standing travels





Mounting with socket head cap bolts M5 DIN 912-8.8



An integrated strain relief system using the profile rail is an option
▶ **Strain Relief, Chapter 10, Ene3rgy Chain® Catalog**

A	A'	B	C	D	E	F	
Bi + .91 (23)	Bi +1.61 (41)	1.38 (35)	.79 (20)	1.77 (45)	4.92 (125)	.35 (9)	in. (mm)

Series 40/41/R88 E4/0

Part No., full set
Series 40/ 41

4000-__-12 **pivoting**
4100-__-12 **locking**

4000 pivoting

4100 locking

Please insert width of selected Energy Chain®.
For example, 4000-13-12 for Energy Chain® 40/ 41-13-__

Part No., full set, with profile rail
Series 40/ 41

4000-__-12P **pivoting**
4100-__-12P **locking**

4000 pivoting

4100 locking

Please insert width of selected Energy Chain®.
For example, 4000-13-12P for Energy Chain® 40/ 41-13-__

Part No., full set
Series R88

4000-__-12T **pivoting**
4100-__-12T **locking**

4000 pivoting

4100 locking

Please insert width of selected Energy Tube.
For example, 4000-13-12T for Energy Tube 88-13-__

Part No., full set, with profile rail
Series R88

4000-__-12TP **pivoting**
4100-__-12TP **locking**

4000 pivoting

4100 locking

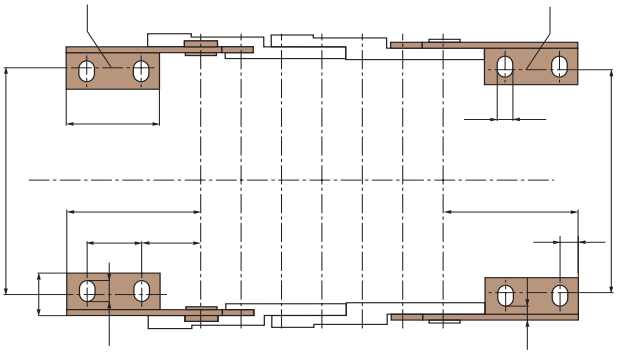
Please insert width of selected Energy Tube.
For example, 4000-13-12TP for Energy Tube 88-13-__

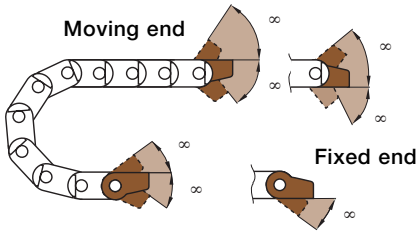
4000-__-12/ 4000-__-12T(P) = Full set, each part with pin/bore
4000-__-1/ 4000-__-1T(P) = Mounting bracket with bore
4000-__-2/ 4000-__-2T(P) = Mounting bracket with pin

Chain/ Tube Width	Bi
-05	1.97 (50)
-06	2.56 (65)
-07	2.95 (75)
-10	3.94 (100)
-11	4.41 (112)
-12	4.92 (125)
-13	5.39 (137)
-15	5.91 (150)
-16	6.38 (162)
-17	6.89 (175)
-18	7.36 (187)
-20	7.87 (200)
-21	8.35 (212)
-22	8.86 (225)
-23	9.33 (237)
-25	9.84 (250)
-26	10.31 (262)
-27	10.83 (275)
-28	11.30 (287)
-30	11.81 (300)
-31	12.28 (312)
-32	12.79 (325)
-33	13.27 (337)
-35	13.78 (350)
-36	14.25 (362)
-37	14.76 (375)
-38	15.24 (387)
-40	15.75 (400)
-41	16.22 (412)
-42	16.73 (425)
-43	17.20 (437)
-45	17.72 (450)
-46	18.19 (462)
-47	18.70 (475)
-48	19.17 (487)
-50	19.69 (500)
-51	20.16 (512)
-52	20.67 (525)
-53	21.14 (537)
-55	21.65 (550)
-60	23.62 (600)

Option 3: steel

- One part for all chain widths
- Electrically conductive





400-12 = Full set, 4 parts, 2 parts with pin, 2 parts with bore
400-1 = Mounting bracket with bore, 1 part left/right
400-2 = Mounting bracket with pin, 1 part left/right

An integrated strain relief system with
a profile rail is an option
▶ **Strain Relief, Chapter 10**

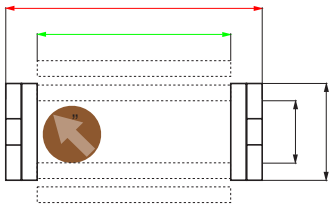
A = B	C	D	E	F	G	H	I	K	M	
Bi - .79 (20)	.47 (12)	2.76 (70)	3.94 (100)	.59 (15)	1.57 (40)	1.77 (45)	1.38 (35)	.71 (18)	.43 (11)	in. (mm)

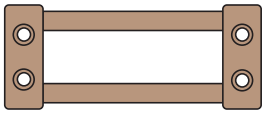
Telephone 1-800-521-2747
Fax 1-401-438-7270

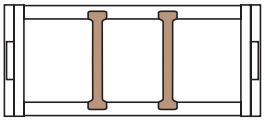
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Order Example and Technical Data: Series 40/41/R88 “E4/0”

Order example







1. Chain selection:

40-30-300-0

- Color black
- Radius
- Width
- Chain type

2. Mounting brackets:

4000-30-12P

- With profile rail
- Full set 1 with pin, 1 with bore
- Chain width
- Pivoting

3. Interior separation:

2 locking separators assembled every other link (Part No.411). Alternative interior separation configuration according to design layout possible.

For 6.56 ft (2 m) chain, color black, with pivoting mounting brackets and integrated profile rail:
6.56 ft (2 m) 40-30-300-0 and 4000-30-12P and 2 part no. 411, assembled every other link

- 22 links — 3.35 links/ft (11links/m)

Technical Data

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

- Accessories for
  - ▶ Guide Troughs, Chapter 9, Energy Chain® Catalog
- Further information
  - ▶ Design, Chapter 1, Energy Chain® Catalog

Technical Data:
Series 40/41/R88 “E4/0”

Technical Data (continued)

Chain/Tube Width	Weight Per Link lbs (kg) 400	410	R880	Weight lbs/ft (kg/m) 400	410	R880
-05	.690 (0.313)		–	2.31 (3.44)	–	–
-06	.706 (0.320)		–	2.35 (3.50)	2.15 (3.20)	–
-07	.708 (0.321)		.798 (0.362)	2.37 (3.53)	2.31 (3.44)	2.67 (3.98)
-10	.743 (0.337		.855 (0.388)	2.49 (3.71)	2.37 (3.53)	2.87 (4.27)
-11	.770 (0.349)		–	2.58 (3.84)	2.42 (3.60)	–
-12	.783 (0.355)		.928 (0.421)	2.63 (3.91)	2.44 (3.63)	3.11 (4.63)
-13	.809 (0.367)		–	2.72 (4.04)	2.49 (3.70)	–
-15	.822 (0.373)		1.014 (0.46)	2.76 (4.10)	2.51 (3.73)	3.40 (5.06)
-16	.845 (0.383)		–	2.83 (4.21)	2.54 (3.78)	–
-17	.867 (0.393)		–	2.90 (4.32)	2.58 (3.84)	–
-18	.887 (0.403)		–	2.98 (4.43)	2.61 (3.89)	–
-20	.893 (0.405)		1.129 (0.512)	3.00 (4.46)	2.63 (3.91)	3.78 (5.63)
-21	.915 (0.415)		–	3.07 (4.57)	2.66 (3.96)	–
-22	.928 (0.421)		–	3.11 (4.63)	2.68 (3.99)	–
-23	.955 (0.433)		–	3.20 (4.76)	2.73 (4.06)	–
-25	.972 (0.441)		1.274 (0.578)	3.26 (4.85)	2.76 (4.10)	4.27 (6.36)
-26	.990 (0.449)		–	3.32 (4.94)	2.79 (4.15)	–
-27	1.012 (0.459)		–	3.39 (5.05)	2.82 (4.20)	–
-28	1.017 (0.461)		–	3.41 (5.07)	2.83 (4.21)	–
-30	1.060 (0.481)		1.407 (0.638)	3.56 (5.29)	2.90 (4.32)	4.72 (7.02)
-31	1.061 (0.481)		–	3.56 (5.29)	2.90 (4.32)	–
-32	1.078 (0.489)		–	3.62 (5.38)	2.94 (4.37)	–
-33	1.114 (0.505)		–	3.74 (5.56)	3.00 (4.46)	–
-35	1.144 (0.519)		1.557 (0.706)	3.84 (5.71)	3.04 (4.53)	5.22 (7.77)
-36	1.144 (0.519)		–	3.84 (5.71)	3.04 (4.53)	–
-37	1.149 (0.521)		–	3.85 (5.73)	3.05 (4.54)	–
-38	1.166 (0.529)		–	3.91 (5.82)	3.08 (4.59)	–
-40	1.206 (0.547)		1.749 (0.793)	4.05 (6.02)	3.15 (4.69)	5.86 (8.72)
-41	1.237 (0.561)		–	4.15 (6.17)	3.20 (4.76)	–
-42	1.268 (0.575)		–	4.25 (6.33)	3.25 (4.84)	–
-43	1.281 (0.581)		–	4.29 (6.39)	3.27 (4.87)	–
-45	1.294 (0.587)		–	4.34 (6.46)	3.30 (4.91)	–
-46	1.298 (0.589)		1.841 (0.835)	4.35 (6.48)	3.31 (4.92)	6.18 (9.19)
-47	1.325 (0.601)		–	4.44 (6.61)	3.35 (4.98)	–
-48	1.332 (0.604)		–	4.47 (6.65)	3.37 (5.01)	–
-50	1.352 (0.613)		–	4.53 (6.74)	3.39 (5.05)	–
-51	1.356 (0.615)		–	4.55 (6.77)	3.40 (5.06)	–
-52	1.365 (0.619)		–	4.58 (6.81)	3.41 (5.08)	–
-53	1.396 (0.633)		–	4.68 (6.96)	3.47 (5.16)	–
-55	1.493 (0.677)		–	5.01 (7.45)	3.63 (5.40)	–
-60	1.532 0.695)		–	5.14 (7.65)	3.70 (5.50)	–

Weight data tolerance:
+/- 5%

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required.

- Full travel length of guide trough
  Part No. 94-30
- 1/2 travel length glide bars
  Part No. 93-01
- Installation sets as end connectors
  Part No. 94-50-XX

Width of Crossbar
400-**05**-200-0

Dimension D

Installation Part No.

-05	3.62 (92)	**94-50-200**
-06	4.21 (107)	**94-50-250**
-07	4.61 (117)	**94-50-250**
-10	5.59 (142)	**94-50-250**
-11	6.06 (154)	**94-50-300**
-12	6.57 (167)	**94-50-300**
-13	7.05 (179)	**94-50-300**
-15	7.56 (192)	**94-50-300**
-16	8.03 (204)	**94-50-350**
-17	8.54 (217)	**94-50-350**
-18	9.02 (229)	**94-50-350**
-20	9.53 (242)	**94-50-350**
-21	10.00 (254)	**94-50-400**
-22	10.51 (267)	**94-50-400**
-23	10.98 (279)	**94-50-400**
-25	11.50 (292)	**94-50-400**
-26	11.97 (304)	**94-50-450**
-27	12.48 (317)	**94-50-450**
-28	12.95 (329)	**94-50-450**
-30	13.46 (342)	**94-50-450**
-31	13.94 (354)	**94-50-500**
-32	14.45 (367)	**94-50-500**
-33	14.92 (379)	**94-50-500**
-35	15.43 (392)	**94-50-500**
-36	15.91 (404)	**94-50-550**
-37	16.42 (417)	**94-50-550**
-38	16.88 (429)	**94-50-550**
-40	17.40 (442)	**94-50-550**
-41	17.87 (454)	**94-50-600**
-42	18.39 (467)	**94-50-600**
-43	18.86 (479)	**94-50-600**
-45	19.37 (492)	**94-50-600**
-46	19.84 (504)	**94-50-650**
-47	20.35 (517)	**94-50-650**
-48	20.82 (529)	**94-50-650**
-50	21.34 (542)	**94-50-650**
-51	21.81 (554)	**94-50-700**
-52	22.32 (567)	**94-50-700**
-53	22.80 (579)	**94-50-700**
-55	23.31 (592)	**94-50-700**
-60	25.28 (642)	**94-50-750**

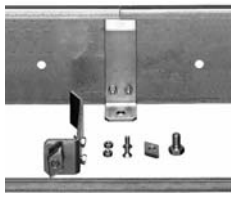
Standard length profile rail

.XX indicates the length of the profile rails on which the guide trough is mounted. The values and part numbers are specified in the table on the left. The standard length of the trough components and glide bars is 6.56 ft (2 m). The required overall length of the guide trough directly correlates to the length of travel.

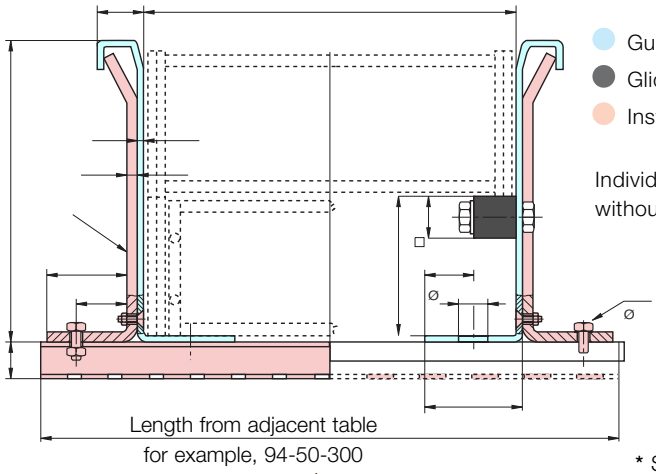
Example:
Length of travel 164 ft (50 m)
Center mounted

Required guide troughs:
164 ft (50 m) guide trough
82 ft (25 m) glide bars
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 94-30
= 13 sections of 6.56 ft (2 m) glide bars
Part No. 93-01
Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets
94-50-XXX
Example:
94-50-400 for 15.75 (400 mm) long profile rail

Left: Guide trough with glide bars
Right: Guide troughs without glide bars



Installation sets as section connectors



* Specialized guide trough available upon request

igus® Energy Chain System®

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus®, inc.
USA/Canada
Mexico

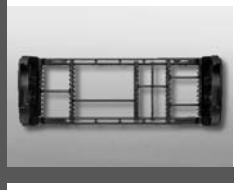
Internet: http://www.igus.com
email: webmaster@igus.com

Series 50/51/R98 “E4/0”

Price Index

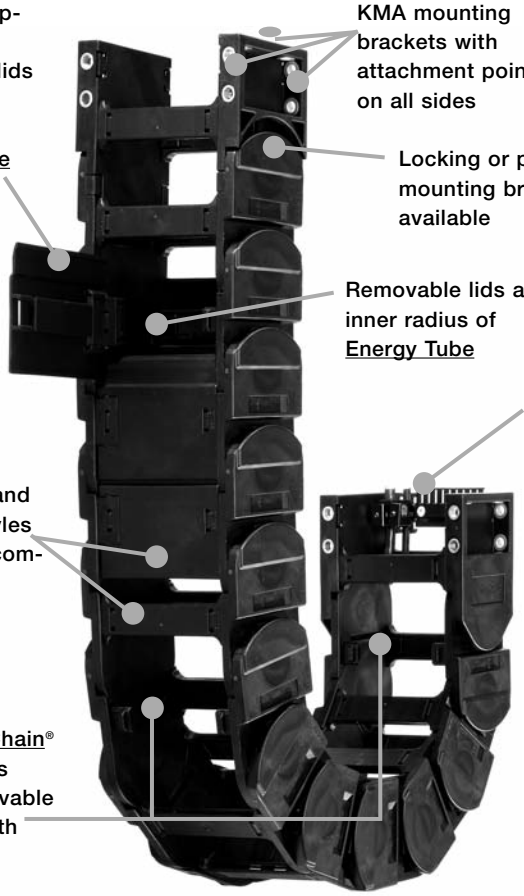
40 Widths
11 Bending Radii

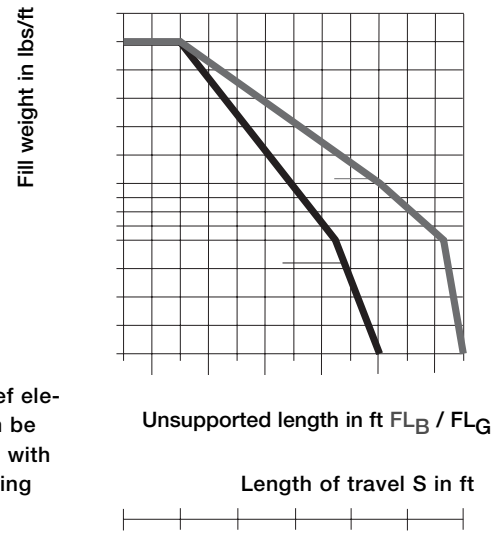
Wide range of interior separation



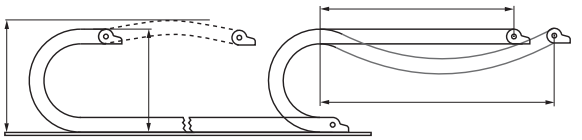
KMA mounting brackets available

Extension links for variable width





Unsupported length
- FL_B = unsupported with permitted sag
- FL_G = unsupported with straight upper run



Product range

Inner Widths (Bi) inches (mm):	1.97 - 23.62 (50 - 600) + (extension links)
Bending Radii (R) inches (mm):	5.91 (150), 7.87 (200), 9.84 (250),
	11.81 (300), 13.78 (350),15.75 (400),
	19.69 (500), 21.65 (550), 23.62 (600),
	25.59 (650), 39.37 (1000)
Pitch:	3.58 (91 mm/link) =
	3.35 links/ft (11 links/m)
	39.4 (1001 mm)

Unsupported Energy Chains® ▶ **Design**, **Chapter 1, Energy Chain® Catalog** feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough ▶ **Design, Chapter 1; Energy Chain® Catalog** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System**, **Chapter 9; Energy Chain® Catalog**

When to use the Series 50/51/R98:

- If a simpler system is sufficient

When not to use the Series 50/51/R98:

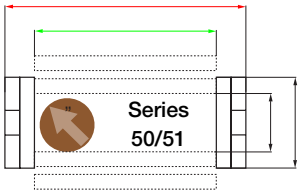
- If a side-mounted chain/tubes with a long unsupported length is required
  ▶ Series 5050/ 5150/ R9850, **Chapter 6, Energy Chain® Catalog**
- If a simpler low-cost solution is required
  ▶ Series 150 - R198, **Chapter 6, Energy Chain® Catalog**

Other Installation Methods:

Vertical, hanging
= max 328 ft (100 m)
Vertical, standing
= max 19.69 ft (6 m)
Side-mounted, unsupported
= max 6.56 ft (2 m)
Rotary
= requires further calculation

● **Long travel Max: 984 ft (300 m)**

Series 50/51/R98 “E4/0”



For crossbar selection please visit www.igus.com and use the “E-Chain Helper”

Part No.	Bi	Ba+4
50/ 51-05	1.97 (50)	3.94 (100)
50/ 51/ 98-07*	2.95 (75)	4.92 (125)
50/ 51/ 98-10	3.94 (100)	5.91 (150)
50/ 51-11	4.41 (112)	6.42 (163)
50/ 51/ 98-12	4.92 (125)	6.89 (175)
50/ 51-13	5.39 (137)	7.40 (188)
50/ 51/ 98-15	5.91 (150)	7.87 (200)
50/ 51-16	6.38 (162)	8.35 (213)
50/ 51-17	6.89 (175)	8.86 (225)
50/ 51-18	7.36 (187)	9.37 (238)
50/ 51/ 98-20	7.87 (200)	9.84 (250)
50/ 51-21	8.35 (212)	10.35 (263)
50/ 51-22	8.86 (225)	10.83 (275)
50/ 51-23	9.33 (237)	11.34 (288)
50/ 51/ 98-25	9.84 (250)	11.81 (300)
50/ 51-26	10.31 (262)	12.32 (313)
50/ 51-27	10.83 (275)	12.80 (325)
50/ 51-28	11.30 (287)	13.31 (338)
50/ 51/ 98-30	11.81 (300)	13.78 (350)
50/ 51-31	12.28 (312)	14.29 (363)

Bending Radii
for ALL Widths
5.91 (150)**
7.87 (200)
9.84 (250)
11.81 (300)
13.78 (350)
15.75 (400)
19.69 (500)
21.65 (550)
23.62 (600)
25.59 (650)
39.37 (1000)

* Removable lid only, no hinged option

** Not available for R98

Part No.	Bi	Ba+4
50/ 51-32	12.80 (325)	14.76 (375)
50/ 51-33	13.27 (337)	15.28 (388)
50/ 51/ 98-35	13.78 (350)	15.75 (400)
50/ 51-36	14.25 (362)	16.26 (413)
50/ 51-37	14.76 (375)	16.73 (425)
50/ 51-38	15.24 (387)	17.24 (438)
50/ 51/ 98-40	15.75 (400)	17.72 (450)
50/ 51-41	16.22 (412)	18.22 (463)
50/ 51-42	16.73 (425)	18.70 (475)
50/ 51-43	17.20 (437)	19.21 (488)
50/ 51-45	17.72 (450)	19.69 (500)
50/ 51/ 98-46	18.19 (462)	20.20 (513)
50/ 51-47	18.70 (475)	20.67 (525)
50/ 51-48	19.17 (487)	21.18 (538)
50/ 51-50	19.69 (500)	21.65 (550)
50/ 51-51	20.16 (512)	22.17 (563)
50/ 51-52	20.67 (525)	22.64 (575)
50/ 51-53	21.14 (537)	23.15 (588)
50/ 51-55	21.65 (550)	23.62 (600)
50/ 51-60	23.62 (600)	25.59 (650)

For wider chains, see
See following pages

Supplement part number with required radius
for example, 50-07-150-0

Extender crossbar for
large diameter hoses,
See following pages

Price Index

Series 50, Energy Chain
(with crossbars every link)

Select Energy Chains® with crossbars every link when using rigid hydraulic hoses or if an application is particularly demanding.

Standard

Price Index

Series 51, Energy Chain
(with crossbars every other link)

This design is the **standard** Energy Chain® for this size range. For almost all applications, the Series 51 offers the easiest assembly and best stability for the price.

Price Index

Series R98, Energy Tube
(fully enclosed)

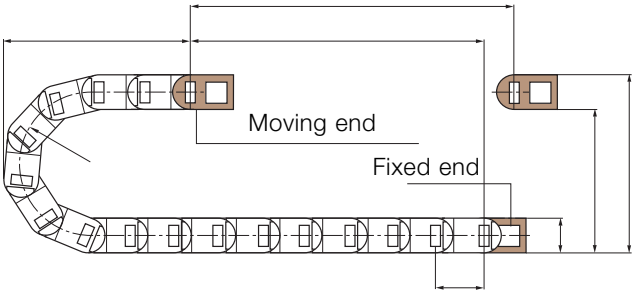
Energy Tubes offer excellent cableand hose protection against dirt, debris and other contaminants, as well as hot chips. This design offers cable and hose accessibility along both radii. Lids along the entire inner radius are completely removable. Lids along the entire outer radius are single-sided, snap-open, with a hinge on the other side to keep them attached to the chain, or completely removable.

Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 50/51/R98 “E4/0”

Installation dimensions



R	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)
H*$^{-0}_{+25}$	1614 (410)	20.08 (510)	24.02 (610)	27.95 (710)
D	11.81 (300)	13.78 (350)	15.75 (400)	17.72 (450)
K	29.53 (750)	35.43 (900)	41.34 (1050)	48.23 (1225)

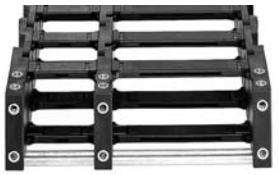
R	13.78 (350)	15.75 (400)	19.69 (500)	21.65 (550)
H*$^{-0}_{+25}$	31.89 (810)	35.83 (910)	43.70 (1110)	47.64 (1210)
D	19.69 (500)	21.65 (550)	25.59 (650)	27.56 (700)
K	54.13 (1375)	57.09 (1450)	65.94 (1675)	72.83 (1850)

R	23.62 (600)	25.59 (650)	39.37 (1000)	
H*$^{-0}_{+25}$	51.57 (1310)	55.51 (1410)	83.07 (2110)	
D	29.53 (750)	31.50 (800)	45.28 (1150)	
K	84.65 (2150)	88.58 (2250)	131.89 (3350)	

*The required clearance height is HF = H + 2.36 (60) with 2.02 (3 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Pitch: = 3.58 (91 mm) per link
Links per ft (m): = 3.35 (11)
Total travel: = S
Chain length: = $\frac{S}{2}$ + K

Extension Link



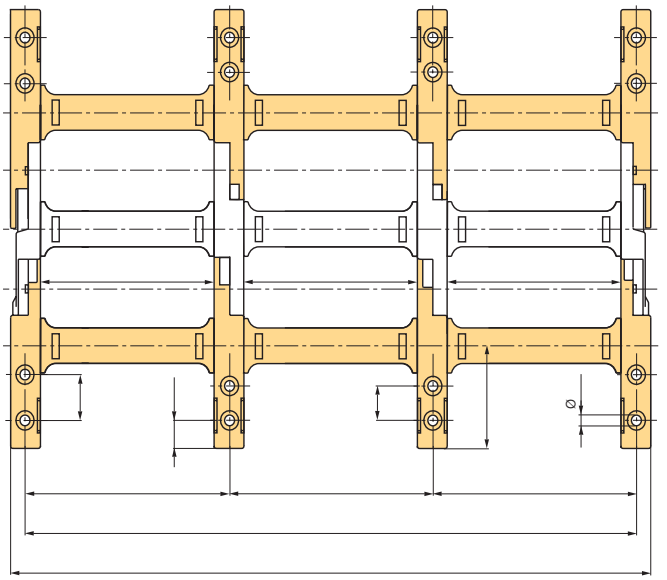
The extension link has been developed for applications in which particularly high fill weights necessitate extremely wide Energy Chains®. The extension link design allows virtually limitless side-by-side attachment of chains. In addition, the unsupported length of a chain can be increased. Using extension links also allows for additional fill weights.

Extension links can be used with Energy Chains®, Energy Tubes or a combination of chains and tubes. They are equally suitable for unsupported and gliding applications in a guide trough.

Energy Chains® with extension links are attached with KMA or steel mounting brackets. We strongly recommend on-site consultation with an igus technician for individual advice regarding mounting brackets, guide troughs and other design details.

All nominal widths from the preceding page available in all combinations.

- **Chain widths up to 118 (3000 mm) can be achieved**
- **Also available as Energy Tube**



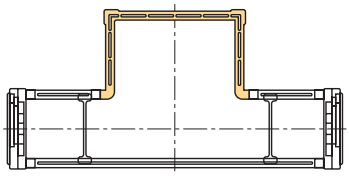
Part number example for
Energy Chain®
5050-10/ 20/10-200-0

Telephone 1-800-521-2747
Fax 1-401-438-7270

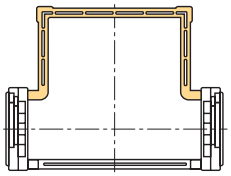
Extender Crossbars

The extender crossbars were developed specifically for applications in which large diameter hose or cable must be guided carefully. It is intended for hoses or cables with a maximum outer diameter of 11.81 (300 mm.) The extender crossbar can be attached along either the outer or inner radius. In most applications, the inner radius is preferred. However, the chain cannot glide on itself in this case. If gliding operation is required, the crossbars are assembled along outer radius and a special guide trough is required. The extender crossbar can either be attached to the side link directly or can be used in combination with two standard snap-open crossbars.

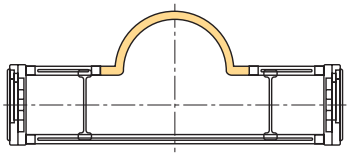
Part No.	Max Ø Hose	Style	Installation Side Link	Combined with Snap-Open Crossbars
450-15-RHD115	By Request	Round	No	Yes
450-17-RD115	By Request	Round	Yes	No
450-25-D150	By Request	Square	Yes	No
450-30-D200	By Request	Square	Yes	No
450-35-D250	By Request	Square	Yes	No
450-40-D300	By Request	Square	Yes	No
450-20-HD150	By Request	Square	No	Yes
450-25-HD200	By Request	Square	No	Yes
450-30-HD250	By Request	Square	No	Yes



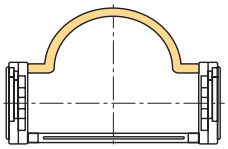
Square extender crossbar combined with standard snap-open crossbars.



Square extender crossbars attached directly to the side link.



Round extender crossbar combined with standard snap-open crossbars.



Round extender crossbar attached directly to the side link.

Consult igus® for your extender crossbar applications. We are happy to assist you with your design layout.

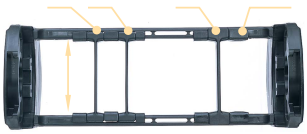
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

Series 50/51/R98 “E4/0”

Option 1: separators

Option 1: separators

Separators can be placed at any point along the chain’s cross-section. The **standard separator (Part No. 501)** offers safe stability due to its broad “foot” design, even when used with large diameter or hoses.

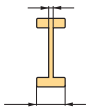


Vertical separators can be used with both Energy Chains® and Energy Tubes for the Series listed above.

A **locking separator (Part No. 504)** with increased retention force is available for chains only. This separator is used with applications subject to extreme loads.

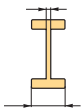
The **asymmetrical locking separator (Part No. 508)** is used with applications involving high relative humidity, such as composting plants. The clamp at the side serves to uniformly align the separators. In order to avoid destroying the separators when opening the Energy Chain®, make sure all separators are identically aligned.

All separators are adjustable, but may be fixed in place with spacers (chains only). Spacers are most often necessary with side-mounted applications.



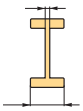
Separator

Unassembled	**Part No. 501**
Assembled	**Part No. 511**



Locking Separator (Chain only)

Unassembled	**Part No. 504**
Assembled	**Part No. 514**



Locking Separator (Chain Only)

Unassembled	**Part No. 508**
Assembled	**Part No. 518**

Note:
The available inner height is decreased by .08 (2 mm) **per spacer** (for example, if one spacer is placed on either side of the separator, the overall inner height is reduced by .16 (4 mm). To avoid this, place the spacers on the **outside** of the opening crossbar.

Spacer (Chain Only)

Unassembled	**Part No. 405-10**
Assembled	**Part No. 415-10**

Spacer (Chain Only)

Unassembled	**Part No. 405-15**
Assembled	**Part No. 415-15**

Spacer (Chain Only)

Unassembled	**Part No. 405-20**
Assembled	**Part No. 415-20**

Spacer (Chain Only)

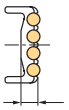
Unassembled	**Part No. 405-30**
Assembled	**Part No. 415-30**

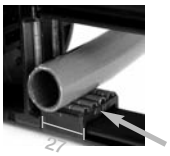
Spacer (Chain Only)

Unassembled	**Part No. 405-40**
Assembled	**Part No. 405-40**

Rollclip

The Rollclip has ben developed to minimize abrasion of particularly sensitive hoses or cables in an Energy Chain®. The Rollclip is simply clamped onto the opening crossbar of the chain link. The integrated rollers compensate for relative movement between the chain and the hose or cable. This reduces the abrasion of the hoses or cables. Consult igus® if you have questions regarding the Rollclip.



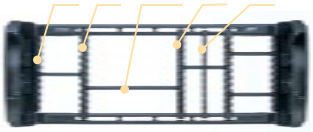


Rollclip

Unassembled	**Part No. 488-27**
Assembled	**Part No. 489-27**

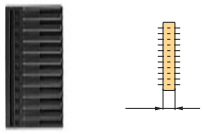
Series 50/51/R98 “E4/0”

Option 2: shelves



Energy Chains® and Energy Tubes can be subdivided both vertically and horizontally using the various interior separation elements.

Side plates, separators and shelves form the basic pattern of a shelf system. Shelves of various widths can be arranged at 11 different heights at .28 (7mm) increments ▶ **Design, Chapter 1** for layout recommendations. If the open slotted separators are used, only the middle slot is available for shelves.

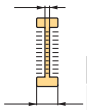


Side Plate

Unassembled	**Part No. 502**
Assembled	**Part No. 512**

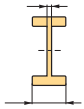
Vertical Separator

Unassembled	**Part No. 503**
Assembled	**Part No. 513**



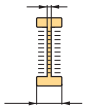
Slotted Separator

Unassembled	**Part No. 505**
Assembled	**Part No. 515**



Locking Separators with Slot

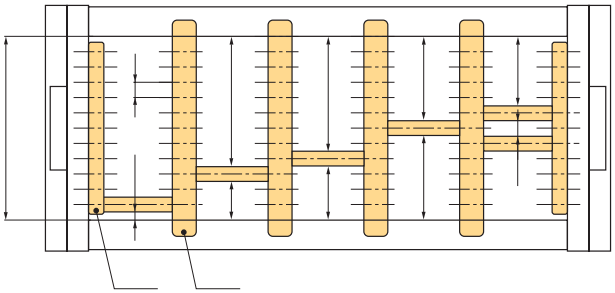
Unassembled	**Part No. 507**
Assembled	**Part No. 517**

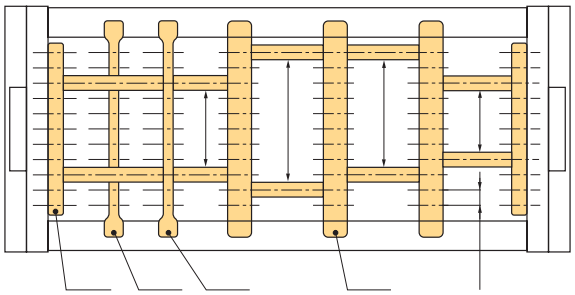


Slotted Separators, Open

Unassembled	**Part No. 509**
Assembled	**Part No. 519**

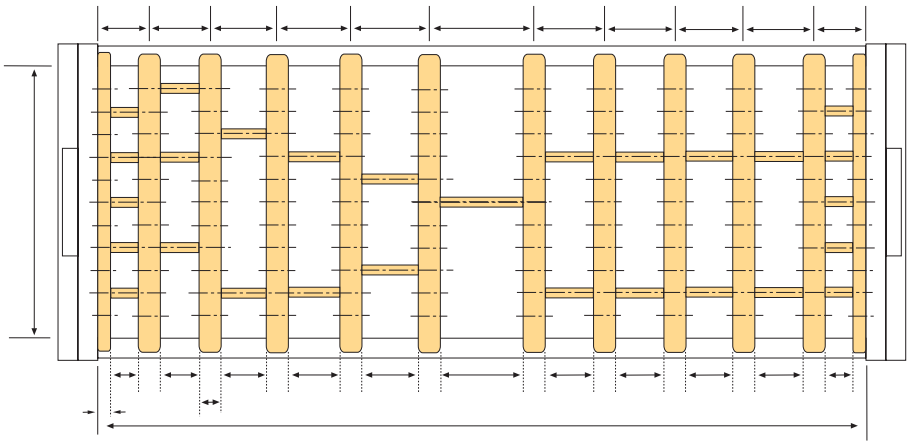
Width X in.	Width X (mm)	Usable Width in.	Usable Width (mm)	Part No. Unassembled	Part No. Assembled
.71	(18)	.39	(10)	**420-18**	**421-18**
.91	(23)	.59	(15)	**420-23**	**421-23**
.98	(25)	.67	(17)	**420-25**	**421-25**
1.10	(28)	.79	(20)	**420-28**	**421-28**
1.30	(33)	.98	(25)	**420-33**	**421-33**
1.69	(43)	1.38	(35)	**420-43**	**421-43**
1.97	(50)	1.65	(42)	**420-50**	**421-50**
2.44	(62)	2.13	(54)	**420-62**	**421-62**
2.95	(75)	2.64	(67)	**420-75**	**421-75**
3.94	(100)	3.62	(92)	**420-100**	**421-100**
4.92	(125)	4.61	(117)	**420-125**	**421-125**
5.91	(150)	5.59	(142)	**420-150**	**421-150**
6.89	(175)	6.57	(167)	**420-175**	**421-175**
7.36	(187)	7.05	(179)	**420-187**	**421-187**
7.87	(200)	7.56	(192)	**420-200**	**421-200**

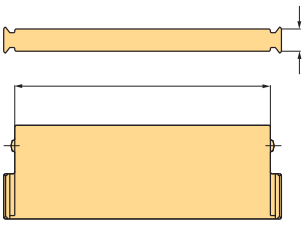




Slotted separators (Part No. 505) are used for complex subdivisions. However, they cannot be retrofitted into an existing interior separation system without removing the shelves first.

The open **slotted separator (Part No. 509)** can be retrofitted into an existing interior separation system without removing the existing shelves as long as these shelves fit into any of the 7 middle slots.





Telephone 1-800-521-2747
Fax 1-401-438-7270

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Mexico
Internet: http://www.igus.com
email: webmaster@igus.com

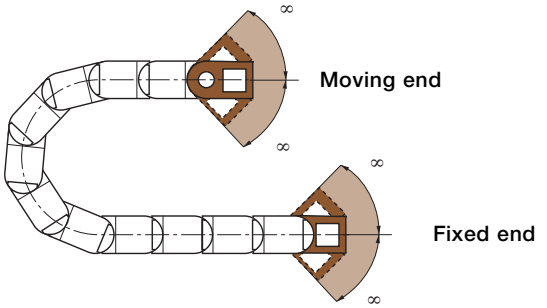
Series 50/51/R98 “E4/0”

Mounting Brackets

Option 1: pivoting

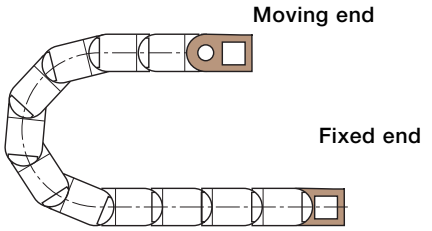
Standard

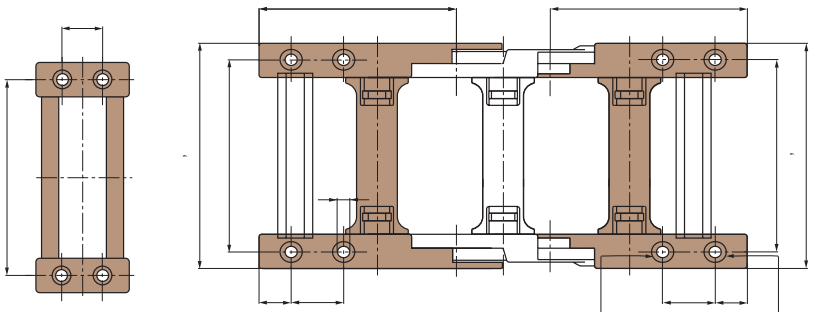
- Profile rail option
- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions



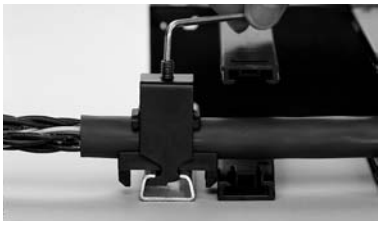
Option 2: locking

- Profile rail option
- Universal use
- Corrosion resistant
- Extreme accelerations
- Vertical hanging/standing travels





Mounting with socket head cap bolts M5 DIN 912-8.8



An integrated strain relief system using the profile rail is an option
▶ **Strain Relief, Chapter 10, Energy Chain® Catalog**

A	A’	B	C	D	E	F	
Bi + 1.14 (29)	Bi +2.17 (55)	1.38 (35)	.79 (20)	2.56 (65)	4.92 (125)	.43 (11)	in. (mm)

Series 50/51/R98 “E4/0”

Part No., full set
Series 50/ 51

5000-__-12 pivoting
5100-__-12 locking

5000 pivoting

5100 locking

Please insert width of selected Energy Chain®.
For example, 5000-15-12 for Energy Chain® 50/ 51-15-__

Part No., full set, with profile rail
Series 50/ 51

5000-__-12P pivoting
5100-__-12P locking

5000 pivoting

5100 locking

Please insert width of selected Energy Chain®.
For example, 5000-15-12P for Energy Chain® 50/ 51-15-__

Part No., full set
Series 98

5000-__-12T pivoting
5100-__-12T locking

5000 pivoting

5100 locking

Please insert width of selected Energy Tube.
For example, 5000-15-12T for Energy Tube 98-15-__

Part No., full set, with profile rail
Series 98

5000-__-12TP pivoting
5100-__-12TP locking

5000 pivoting

5100 locking

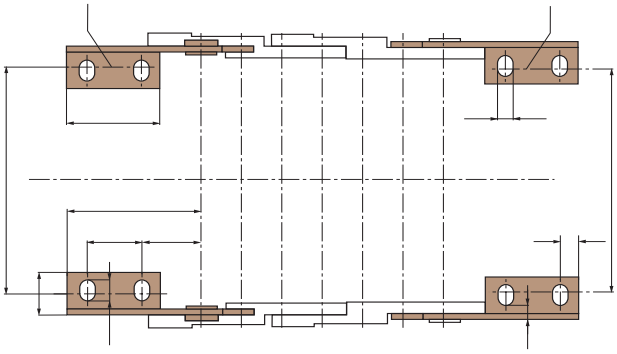
Please insert width of selected Energy Tube,
For example, 5000-15-12TP for Energy Tube 98-15-__

5000-__-12/ 5000-__-12T(P) = Full set, each part with pin/bore
5000-__-1/ 5000-__-1T(P) = Mounting bracket with bore
5000-__-2/ 5000-__-2T(P) = Mounting bracket with pin

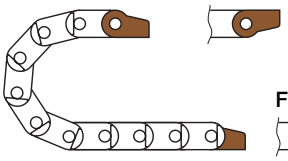
Chain/ Tube Width	Bi
-05	1.97 (50)
-07	2.95 (75)
-10	3.94 (100)
-11	4.41 (112)
-12	4.92 (125)
-13	5.39 (137)
-15	5.91 (150)
-16	6.38 (162)
-17	6.89 (175)
-18	7.36 (187)
-20	7.87 (200)
-21	8.35 (212)
-22	8.86 (225)
-23	9.33 (237)
-25	9.84 (250)
-26	10.31 (262)
-27	10.83 (275)
-28	11.30 (287)
-30	11.81 (300)
-31	12.28 (312)
-32	12.80 (325)
-33	13.27 (337)
-35	13.78 (350)
-36	14.25 (362)
-37	14.76 (375)
-38	15.24 (387)
-40	15.75 (400)
-41	16.22 (412)
-42	16.73 (425)
-43	17.20 (437)
-45	17.72 (450)
-46	18.19 (462)
-47	18.70 (475)
-48	19.17 (487)
-50	19.69 (500)
-51	20.16 (512)
-52	20.67 (525)
-53	21.14 (537)
-55	21.65 (550)
-60	23.62 (600)

Option 3: steel

- One part for all chain widths
- Electrically conductive



Moving end



Fixed end

500-12 = Full set, 4 parts, 2 parts with pin, 2 parts with bore
500-1 = Mounting brackets with bore, 1 part left/right
500-2 = Mounting brackets with pin, 1 part left/right

Strain relief package
▶ **Strain Relief, Chapter 10, Energy Chain® Catalog**

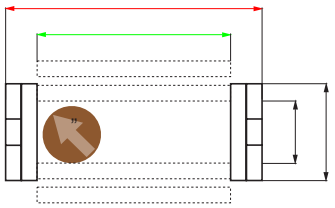
A = B	C	D	E	F	G	H	I	K	M	
Bi - .79 (20)	.47 (12)	2.76 (70)	3.94 (100)	.59 (15)	1.57 (40)	1.77 (45)	1.50 (38)	.71 (18)	.55 (14)	in. (mm)

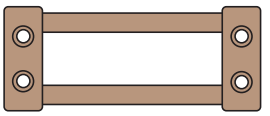
Telephone 1-800-521-2747
Fax 1-401-438-7270

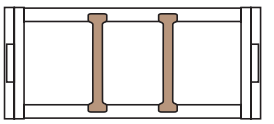
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
igus®, inc.
USA/Canada
Internet: http://www.igus.com
email: webmaster@igus.com

Order Example and Technical Data: Series 50/51/R98 “E4/0”

Order example







1. Chain selection:

50-30-300-0

- Color black
- Radius
- Width
- Chain type

2. Mounting brackets:

5000-30-12P

- With profile rails
- Full set, 1 with pin
- 1 with bore
- Chain width
- Pivoting

3. Interior Separation:

2 separators, assembled every other chain link (Part No. 511). Alternative interior separation configuration according to design layout possible.

For 6.56 ft (2 m) chain, color black with pivoting mounting brackets and integrated profile rails:
6.56 ft (2 m) 50-30-300-0 and 5000-30-12P and 2 Part No. 511, assembled every other link

- 22 links — 3.35 links/ft (11 links/m)

4. Additional information on guide troughs

▶ **Series 500/510/R980, Page 6.88**

For information on weights

▶ **Series 5050, Page 6.87**

Technical Data

Material	igumid G
Permitted temperature	-40°/+266°F (-40°/+130°C)
Gliding speed max.	16.4 ft/s (5 m/s)
Unsupported V max.	32.8 ft/s (10 m/s)
Flammability class	VDE 0304 IIC UL94 HB

● Accessories for

▶ **Guide Troughs, Chapter 9, Energy Chain® Catalog**

● Further information

▶ **Design, Chapter 1, Energy Chain® Catalog**

Telephone 1-800-521-2747
Fax 1-401-438-7270

Guide Troughs

Guide troughs are used with applications where the upper run of the Energy Chain® glides on the lower run. If using igus® steel guide troughs, the following components are required:

- Full travel length of guide trough
  Part No. 99-30
- 1/2 travel length glide bars
  Part No. 93-01
- Installation sets as end connectors
  Part No. 96-50-XX

-XX indicates the length of the profile rails on which the guide trough is mounted. The values and part numbers are specified in the table on the right. The standard length of the trough components and glide bars is 6.56 ft (2 m). The overall length of the guide trough directly correlates to the length of travel.

Example:
Length of travel 164 ft (50 m)
Center-mounted

Required guide troughs:
164 ft (50 m) guide trough, 82 ft. (25 m) glide bar

= 25 sections of 6.56 ft (2 m) guide trough

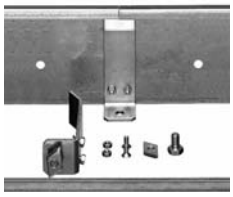
Part No. 99-30

= 13 sections of 6.56 ft (2 m) glide bar

Part No. 93-01

Required number of installation set:
= Number of guide trough components + 1
= 25 + 1 = 26
Part No. of the installation sets **96-50-XXX**
Example: 96-50-400 for 15.75 (400 mm) long profile rail

Left: Guide trough with glide bars
Right: Guide troughs without glide bars

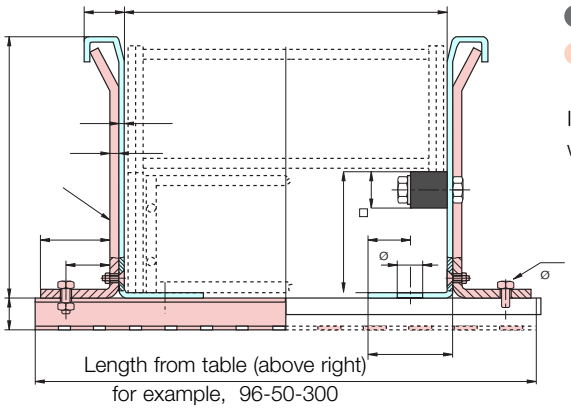


Installation sets as section connectors

Width of Crossbar
5050-**05**-200-0
Dimension D
Installation Part No.

-05	4.25 (108)	**96-50-200**
-06	4.84 (123)	**96-50-200**
-07	5.24 (133)	**96-50-250**
-10	6.22 (158)	**96-50-250**
-11	6.69 (170)	**96-50-300**
-12	7.20 (183)	**96-50-300**
-13	7.68 (195)	**96-50-300**
-15	8.18 (208)	**96-50-300**
-16	8.66 (220)	**96-50-350**
-17	9.17 (233)	**96-50-350**
-18	9.65 (245)	**96-50-350**
-20	10.16 (258)	**96-50-350**
-21	10.63 (270)	**96-50-400**
-22	11.14 (283)	**96-50-400**
-23	11.61 (295)	**96-50-400**
-25	12.13 (308)	**96-50-400**
-26	12.60 (320)	**96-50-450**
-27	13.11 (333)	**96-50-450**
-28	13.58 (345)	**96-50-450**
-30	14.09 (358)	**96-50-450**
-31	14.57 (370)	**96-50-500**
-32	15.08 (383)	**96-50-500**
-33	15.55 (395)	**96-50-500**
-35	16.06 (408)	**96-50-500**
-36	16.54 (420)	**96-50-550**
-37	17.05 (433)	**96-50-550**
-38	17.52 (445)	**96-50-550**
-40	18.03 (458)	**96-50-550**
-41	18.50 (470)	**96-50-600**
-42	19.02 (483)	**96-50-600**
-43	19.49 (495)	**96-50-600**
-45	20.00 (508)	**96-50-600**
-46	20.47 (520)	**96-50-600**
-47	20.98 (533)	**96-50-650**
-48	21.46 (545)	**96-50-650**
-50	21.97 (558)	**96-50-650**
-51	22.44 (570)	**96-50-700**
-52	22.95 (583)	**96-50-700**
-53	23.43 (595)	**96-50-700**
-55	23.94 (608)	**96-50-700**
-60	25.91 (658)	**96-50-750**

Standard length profile rail



- Guide trough
- Glide bars
- Installation set

Individual attachment without profile rail

* Specialized guide trough available upon request