



Price Index



14 Widths
9 Bending Radii

Hinged, snap-open and removable lids along outer radius of Energy Tube

KMA mounting brackets with attachment points on all sides

Locking or pivoting mounting brackets available

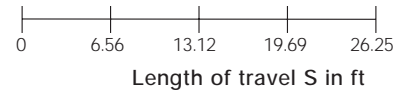
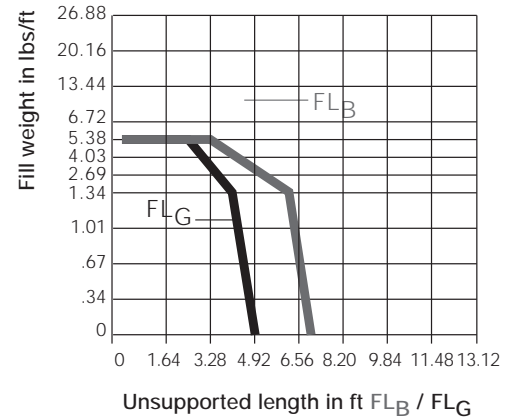
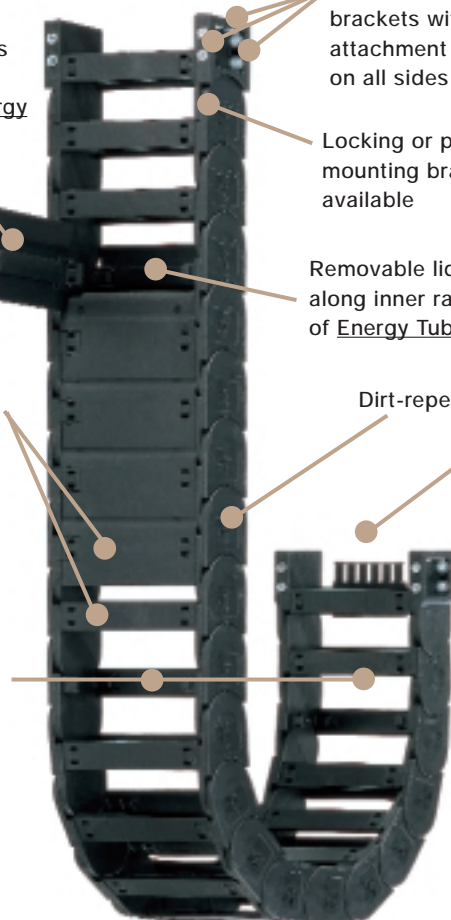
Removable lids along inner radius of Energy Tube

Closed and open styles can be combined

Dirt-repellent exterior

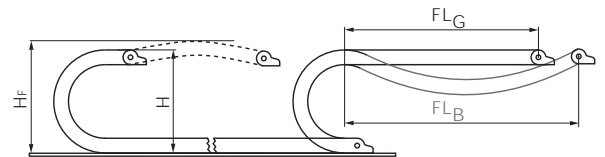
Strain relief elements can be integrated with mounting brackets

Energy Chain® crossbars are removable along both radii



Unsupported length

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



Full range of interior separation options



2 options for mounting brackets



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)



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
- Short and long travels with high loads
 - ▶ Series 220 - R760, Chapter 6

- Accessories for
 - ▶ Guide Troughs, Chapter 9
- Further information
 - ▶ Design, Chapter 1

Unsupported Energy Chains® ▶ **Design, Chapter 1** 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** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System, Chapter 9.**

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

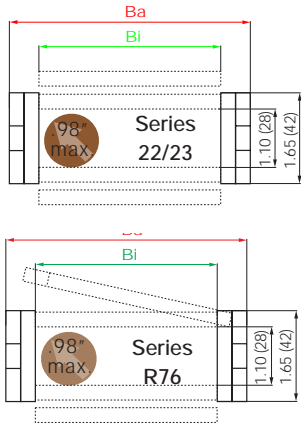
- Long travel Max: 492 ft (150 m)

Series 22/23/R76 "E4/0"



22
23
R76

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)

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

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

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

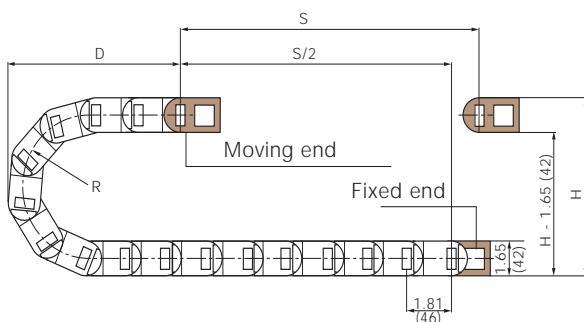


Series R76, Energy Tube (fully enclosed)

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



	2.17 (055)	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)
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)

	5.91 (150)	6.89 (175)	7.87 (200)	9.84 (250)
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.

Series 22/23/R76

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

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



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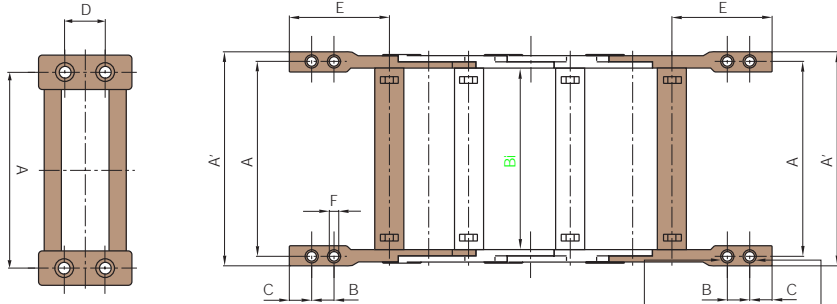
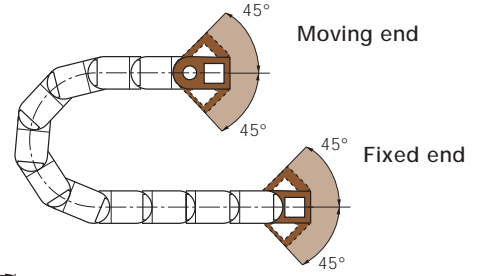


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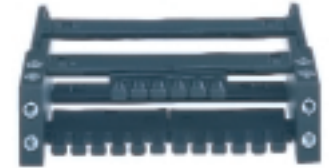
Mounting Brackets

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 tiwrap plates can be snapped into or onto the last chain link crossbar.

► **Strain Relief, Chapter 10**

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.....

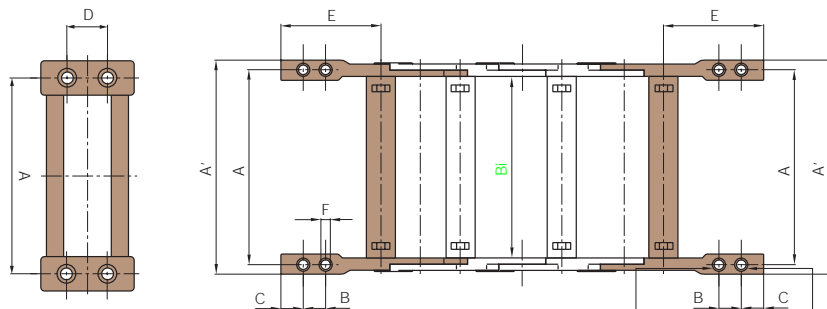
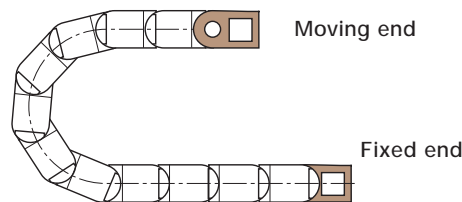
Chain/ Tube Width	Bi
-040	1.57 (40)
-050	1.97 (50)
-062	2.44 (62)
-070	2.76 (70)
-075	2.95 (75)
-100	3.94 (100)
-125	4.92 (125)
-150	5.91 (150)
-175	6.89 (175)
-200	7.87 (200)
-225	8.86 (225)
-250	9.84 (250)
-275	10.83 (275)
-300	11.81 (300)

- 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

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 tiwrap plates can be snapped into or onto the last chain link crossbar.

► Strain Relief, Chapter 10

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

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



► Page 6.6

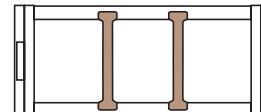
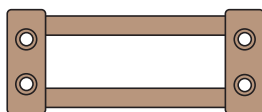
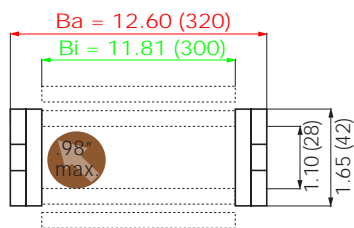


► Page 6.129



► Page 6.10

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)

4. Additional information on guide troughs

► Series 220/R760, Page 6.10

Technical Data

Chain/ Tube Width	Weight Per Link lbs (kg)			Weight lbs/ft (kg/m)		
	22	23	R76	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

● Details of material properties

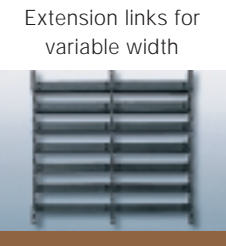
► Design, Chapter 1



Price Index



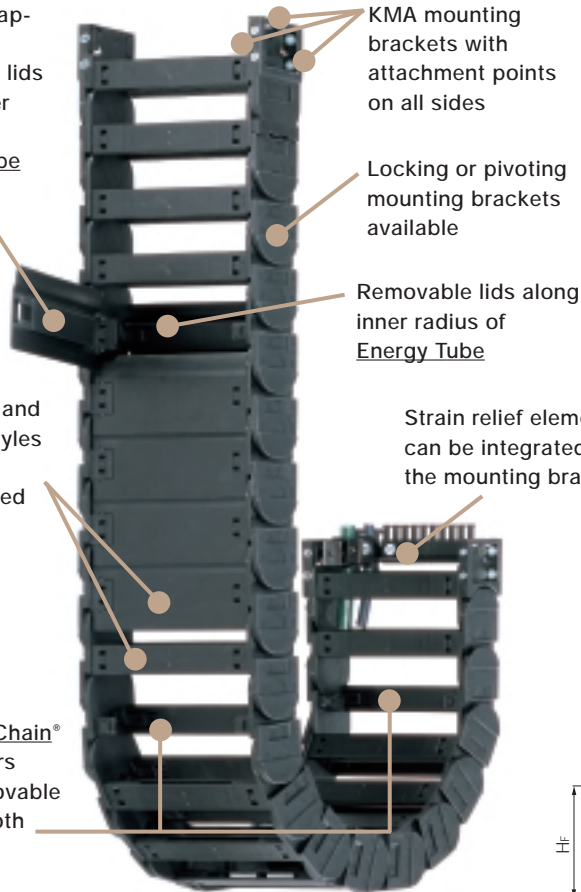
21 Widths
10 Bending Radii



Hinged snap-open and removable lids along outer radius of **Energy Tube**

Closed and open styles can be combined

Energy Chain® crossbars are removable along both radii

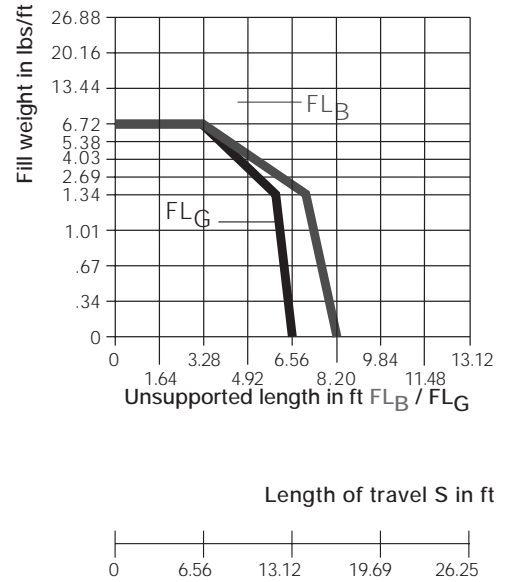


KMA mounting brackets with attachment points on all sides

Locking or pivoting mounting brackets available

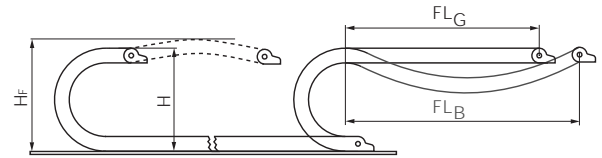
Removable lids along inner radius of **Energy Tube**

Strain relief elements can be integrated with the mounting bracket



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)



When to use the Series 28/29/R77:

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

- Accessories for Guide Troughs, Chapter 9
- Further information Design, Chapter 1



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

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

Unsupported Energy Chains® ▶ **Design, Chapter 1**, 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** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ▶ **AUTO-GLIDE System, Chapter 9**.

Other Installation Methods:

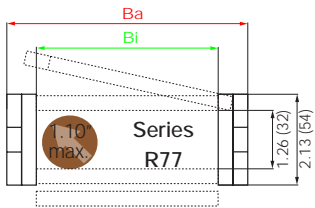
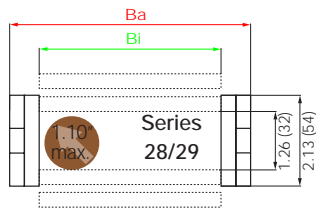
Vertical, hanging	= max 197 ft (60 m)
Vertical, standing	= max 16.4 ft (5 m)
Side-mounted, unsupported	= max 4.92 ft (1.5 m)
Rotary	= requires further calculation

- Long travel Max: 656 ft (200 m)

Series 28/29/R77 "E4/0"



28
29
R77



● 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)

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

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

i Extender crossbar for large diameter hoses
▶ Page 6.15

i For wider chains
▶ Page 6.14

Price Index

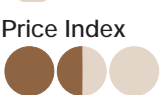


Series 28, Energy Chain (with crossbars every link)

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.



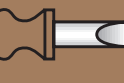
Series
28/29/R77

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



▶ Page 6.16

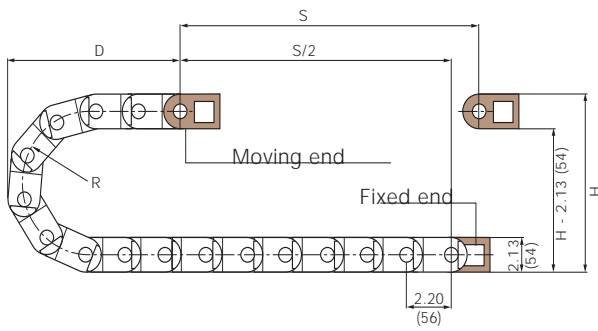


▶ Page 6.129



▶ Page 6.21

Installation Dimensions



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

R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)
H* _{4,20} ⁰	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* _{4,20} ⁰	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)

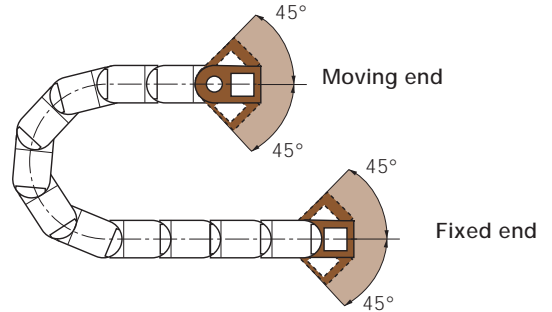
* The required clearance height is HF = H + 1.57 (40) with 1.34 (2 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Mounting Brackets

Option 1: pivoting

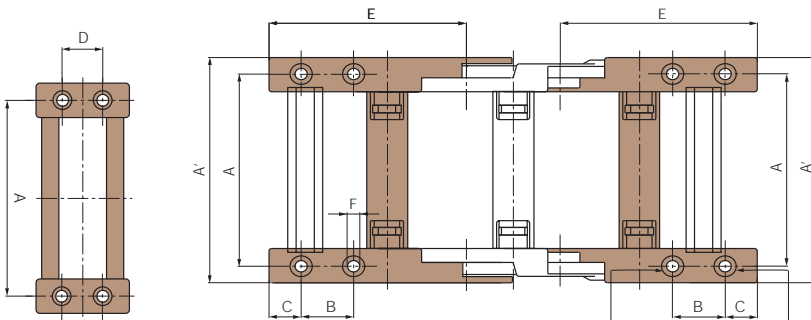
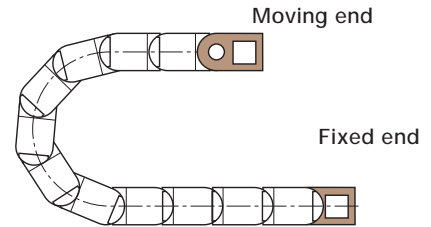
Standard

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

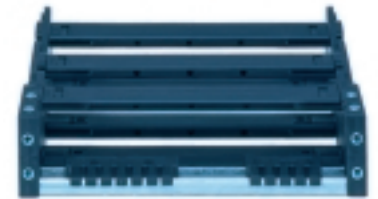


Option 2: locking

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



Mounting with socket head cap bolts M5 DIN 912-8.8



igus® tie-wrap plates attached to a profile rail used for strain relief. Tie-wraps are available as a specific part no. upon request.

Strain Relief, Chapter 10

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"

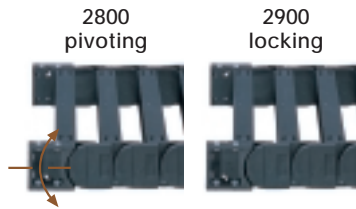


28
29
R77

Part No., full set
Series 28/ 29

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

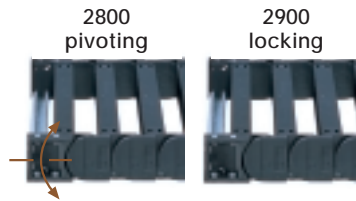
Please insert width of selected Energy Chain®.
For example 2800-112-12 for Energy Chain® 28/ 29-112.....



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

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

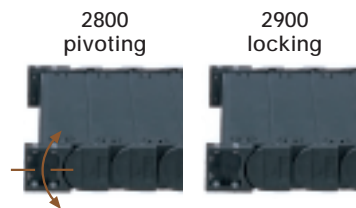
Please insert width of selected Energy Chain®.
For example 2800-112-12P for Energy Chain® 28/ 29-112.....



Part No., full set
Series 77

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

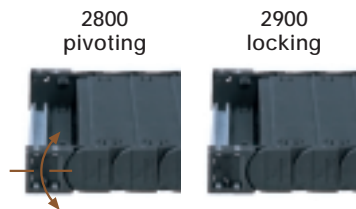
Please insert width of selected Energy Tube.
For example 2800-112-12T for Energy Tube 77-112-__



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

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

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)

Series
28/29/R77

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

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Fax 1-401-438-7270



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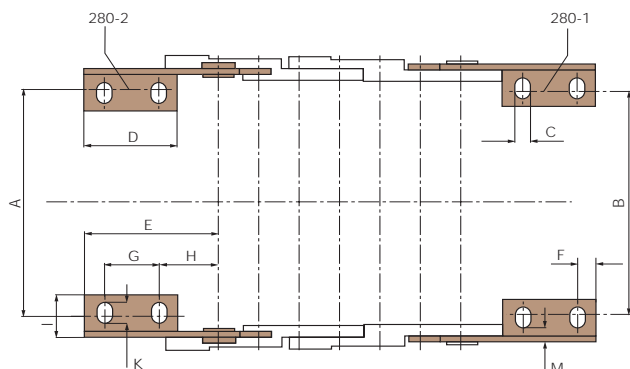
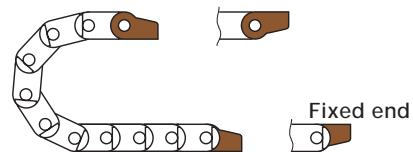
Page 6.21

Option 3: steel

- One part for all chain widths
- Electrically conductive



Moving end



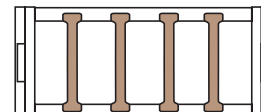
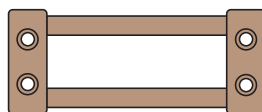
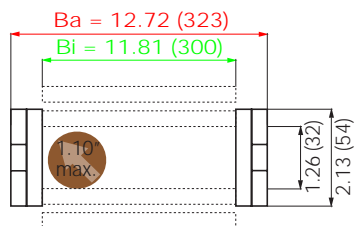
- 280-12 = Full set, 4 parts, 2 parts with pin, 2 parts with bore
- 280-1 = Mounting bracket with bore, 1 part left/right
- 280-2 = Mounting bracket with pin, 1 part left/right

Strain relief package

► Strain Relief, Chapter 10

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

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)

4. Additional information on guide troughs
Series 280/290/R770, Page 6.21

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

- Details of material properties
- ▶ Design, Chapter 1

Technical Data (Continued)

Chain/ Tube Width	Weight Per Link lbs (kg)			Weight lbs/ft (kg/m)		
	28	29	R77	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 (1.54)	-
-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)	-

Series
28/29/R77

Telephone 1-800-521-2747
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Price Index



31 Widths
11 Bending Radii



Wide range of interior separation



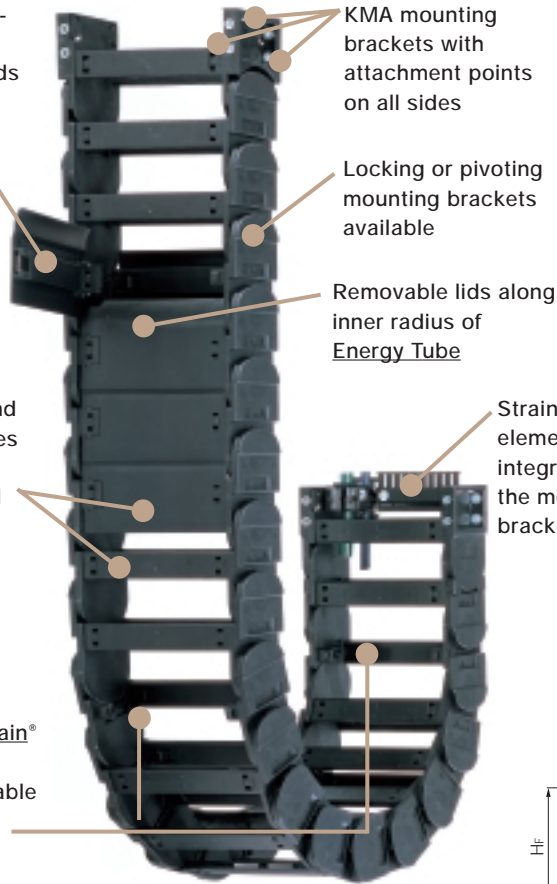
3 options for mounting brackets



Extension links for variable width



Hinged snap-open and removable lids along outer radius of **Energy Tube**



KMA mounting brackets with attachment points on all sides

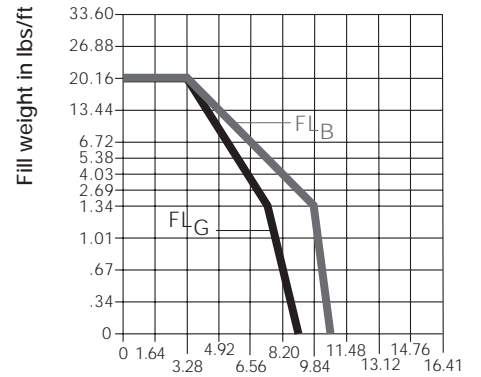
Locking or pivoting mounting brackets available

Removable lids along inner radius of **Energy Tube**

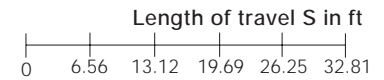
Closed and open styles can be combined

Strain relief elements can be integrated with the mounting bracket

Energy Chain[®] crossbars are removable along both radii

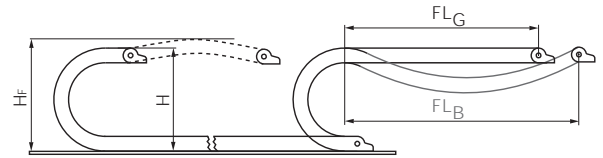


Unsupported length in ft FL_B / FL_G



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** 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** or incorporation of igus[®] exclusive AUTO-GLIDE System guide elements, which are available for this chain series ► **AUTO-GLIDE System, Chapter 9.**

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)



When to use the Series 38/39/R78:

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

- Accessories for ► Guide Troughs, Chapter 9
- Further information ► Design, Chapter 1



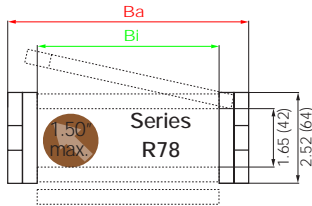
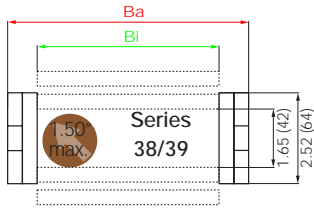
When not to use the Series 38/39/R78

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

Series 38/39/R78 "E4/0"



38
39
R78



● 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)

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

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

i Extender crossbar for large diameter hoses
▶ Page 6.31

i For wider chains
▶ Page 6.30

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.



Series
38/39/R78

Telephone 1-800-521-2747
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▶ Page 6.32

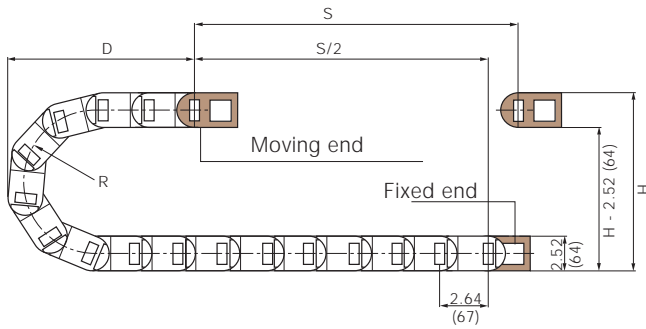


▶ Page 6.129



▶ Page 6.37

Installation Dimensions



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

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)	

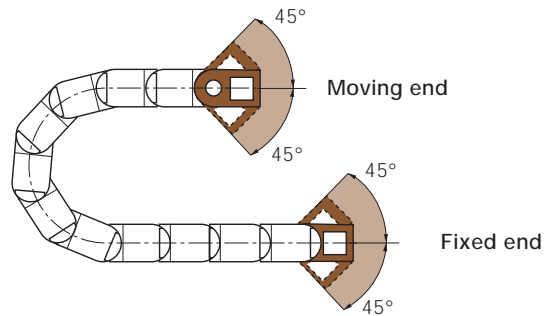
* The required clearance height is HF = H + 1.57 (40) with 1.34 (2 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Mounting Brackets

Option 1: pivoting

Standard

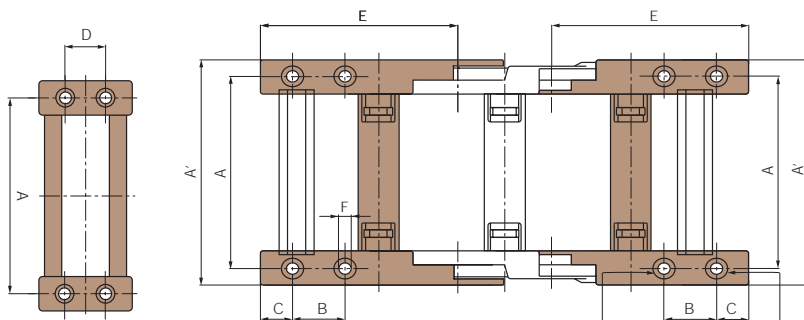
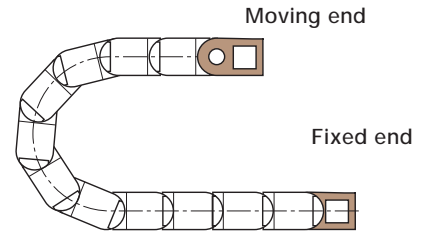
- Profile rail option
- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions



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

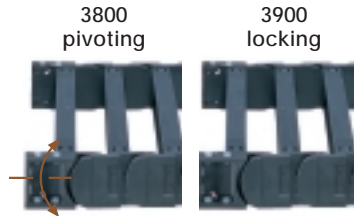
► **Strain Relief, Chapter 10**

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

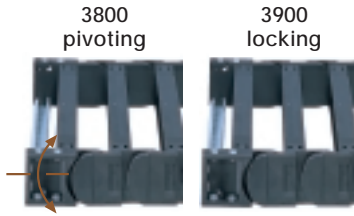
3800-__-12 pivoting
3900-__-12 locking



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

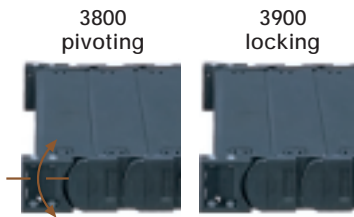
3800-__-12P pivoting
3900-__-12P locking



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

Part No., full set
Series 78

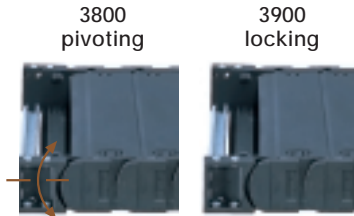
3800-__-12T pivoting
3900-__-12T locking



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



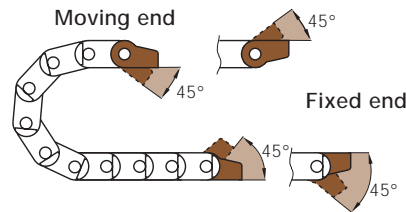
Please insert width of selected Energy Tube.
For example, 3800-112-12TP for Energy Tube 78-112-__

- 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

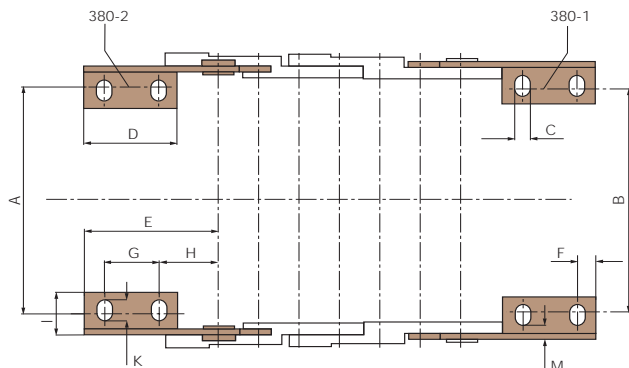
Chain/ Tube Width	Bi
-05	1.97 (50)
-06	2.68 (68)
-07	2.95 (75)
-087	3.43 (87)
-10	3.94 (100)
-11	4.25 (108)
-112	4.41 (112)
-12	4.92 (125)
-137	5.39 (137)
-15	5.91 (150)
-162	6.38 (162)
-17	6.61 (168)
-18	6.89 (175)
-187	7.36 (187)
-20	7.87 (200)
-212	8.35 (212)
-23	8.86 (225)
-237	9.33 (237)
-25	9.84 (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

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)

Series
38/39/R78

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► Page 6.32

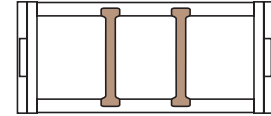
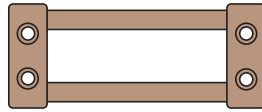
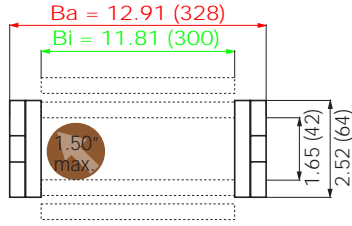


► Page 6.129



► Page 6.37

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)

4. Additional information on guide troughs
Series 380/390/R780, Page 6.37

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

- Details of material properties
- ▶ Design, Chapter 1

Technical Data (Continued)

Chain/ Tube Width	Weight Per Link lbs (kg)			Weight lbs/ft (kg/m)		
	38	39	R78	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%

Series
38/39/R78

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▶ Page 6.32



▶ Page 6.129



▶ Page 6.37



Price Index



41 Widths
10 Bending Radii



Wide range of interior separation



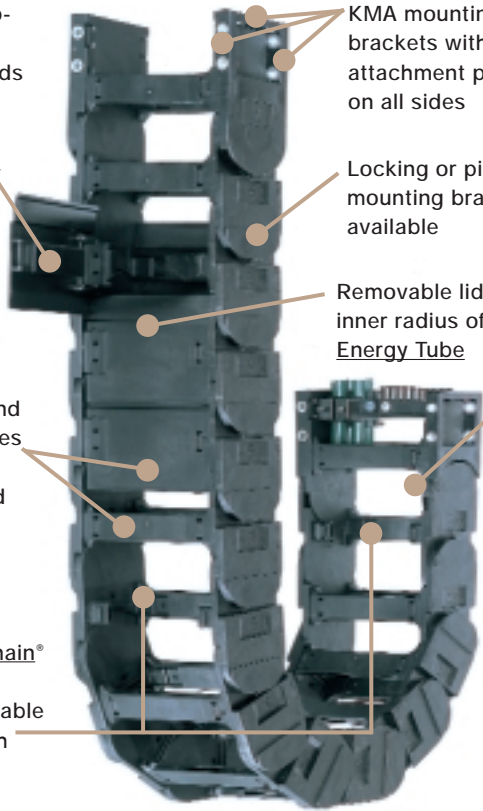
3 options for mounting brackets



Extension links for variable width



Hinged snap-open and removable lids along outer radius of Energy Tube



KMA mounting brackets with attachment points on all sides

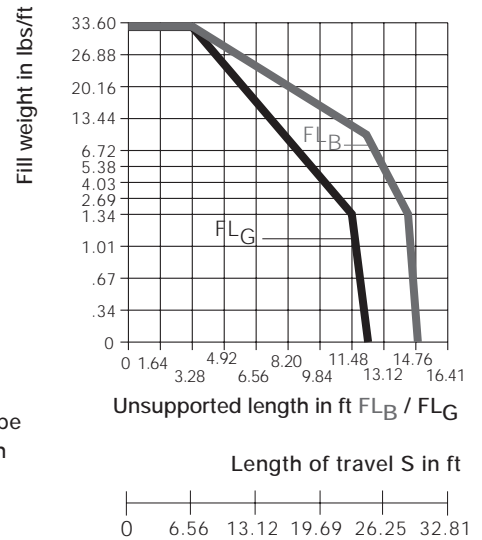
Locking or pivoting mounting brackets available

Removable lids along inner radius of Energy Tube

Closed and open styles can be combined

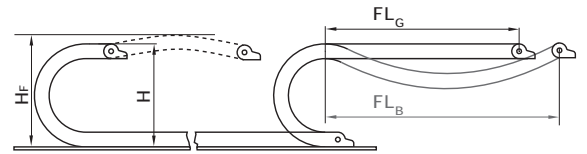
Strain relief elements can be integrated with the mounting bracket

Energy Chain® crossbars are removable along both radii



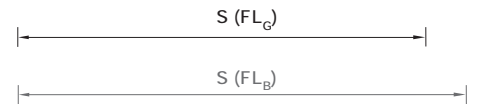
Unsupported length

- 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**, 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** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ► **AUTO-GLIDE System, Chapter 9**.

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)



When to use the Series 40/41/R88:

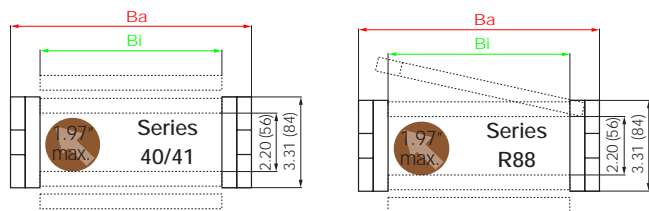
- If a simpler system is required



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

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

- Accessories for ► Guide Troughs, **Chapter 9**
- Further information ► **Design, Chapter 1**



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

Part No.	Bi	Ba ⁴	Bending Radii for ALL Widths	Part No.	Bi	Ba ⁴
40/ 41-05	1.97 (50)	3.39 (86)		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)	40/ 41-32	12.79 (325)
40/ 41-06	2.56 (65)	3.98 (101)	40/ 41-33		13.27 (337)	14.72 (374)
40/ 41/ 88-07*	2.95 (75)	4.37 (111)	40/ 41/ 88-35		13.78 (350)	15.20 (386)
40/ 41/ 88-10	3.94 (100)	5.35 (136)	40/ 41-36		14.25 (362)	15.71 (399)
40/ 41-11	4.41 (112)	5.87 (149)	40/ 41-37		14.76 (375)	16.18 (411)
40/ 41/ 88-12	4.92 (125)	6.34 (161)	40/ 41-38		15.24 (387)	16.69 (424)
40/ 41-13	5.39 (137)	6.85 (174)	40/ 41/ 88-40		15.75 (400)	17.17 (436)
40/ 41/ 88-15	5.91 (150)	7.32 (186)	40/ 41-41		16.22 (412)	17.68 (449)
40/ 41-16	6.38 (162)	7.83 (199)	40/ 41-42		16.73 (425)	18.15 (461)
40/ 41-17	6.89 (175)	8.31 (211)	40/ 41-43		17.20 (437)	18.66 (474)
40/ 41-18	7.36 (187)	8.81 (224)	40/ 41-45		17.72 (450)	19.13 (486)
40/ 41/ 88-20	7.87 (200)	9.29 (236)	40/ 41/ 88-46		18.19 (462)	19.65 (499)
40/ 41-21	8.35 (212)	9.80 (249)	40/ 41-47		18.70 (475)	20.12 (511)
40/ 41-22	8.86 (225)	10.28 (261)	40/ 41-48		19.17 (487)	20.63 (524)
40/ 41-23	9.33 (237)	10.79 (274)	40/ 41-50		19.69 (500)	21.10 (536)
40/ 41/ 88-25	9.84 (250)	11.26 (286)	40/ 41-51		20.16 (512)	21.61 (549)
40/ 41-26	10.31 (262)	11.77 (299)	40/ 41-52		20.67 (525)	22.09 (561)
40/ 41-27	10.83 (275)	12.24 (311)	40/ 41-53	21.14 (537)	22.60 (574)	
40/ 41-28	11.30 (287)	12.76 (324)	40/ 41-55	21.65 (550)	23.07 (586)	
40/ 41/ 88-30	11.81 (300)	13.23 (336)	40/ 41-60	23.62 (600)	25.04 (636)	
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

i For wider chains, Page 6.46

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

i Extender crossbar for large diameter hoses, Page 6.47

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.



▶ Page 6.129

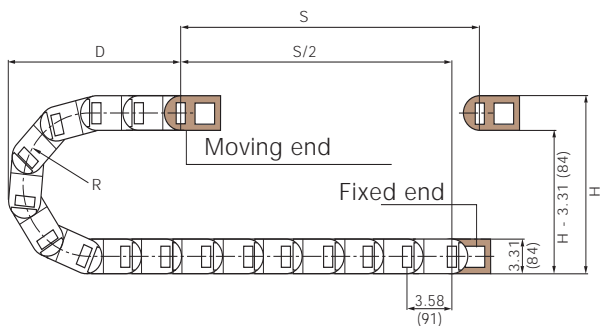


▶ Page 6.54

Series
40/41/R88

Telephone 1-800-521-2747
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Fax

Installation dimensions



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

R	5.31 (135)	5.91 (150)	6.89 (175)	7.87 (200)	9.44 (240)
H _{4,25} ⁰	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 _{4,25} ⁰	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)

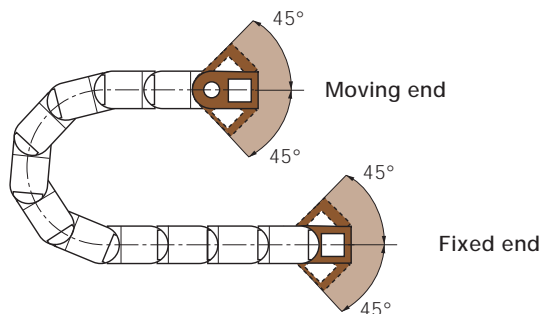
* The required clearance height is HF = H + 1.97 (50) with 1.34 lbs/ft (2 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Mounting Brackets

Option 1: pivoting



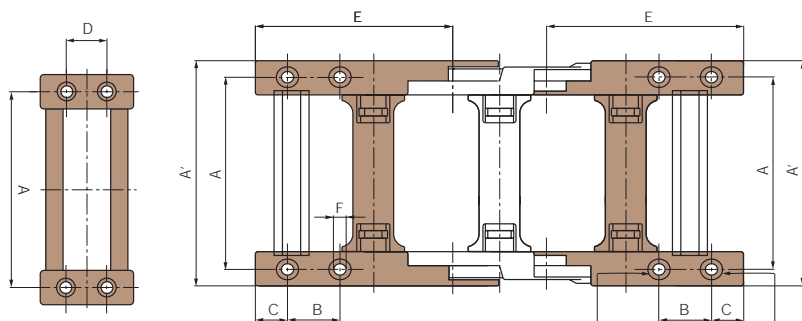
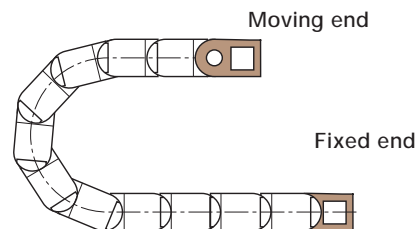
- Profile rail option
- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions



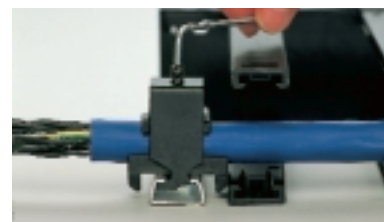
Installation dimensions

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

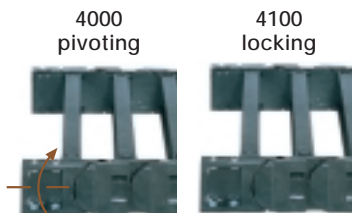
A	A'	B	C	D	E	F	in. (mm)
Bi + .91 (23)	Bi + 1.61 (41)	1.38 (35)	.79 (20)	1.77 (45)	4.92 (125)	.35 (9)	

Product Range

Part No., full set
Series 40/ 41

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

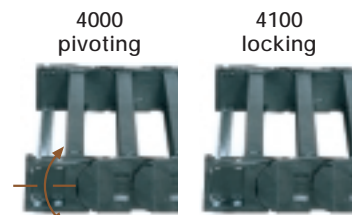
Please insert width of selected Energy Chain®.
For example, 4000-13-12 for Energy Chain® 40/ 41-13-__



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

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

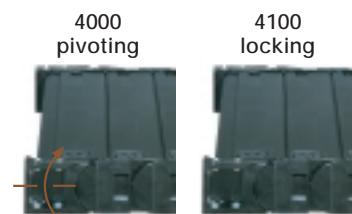
Please insert width of selected Energy Chain®.
For example, 4000-13-12P for Energy Chain® 40/ 41-13-__



Part No., full set
Series R88

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

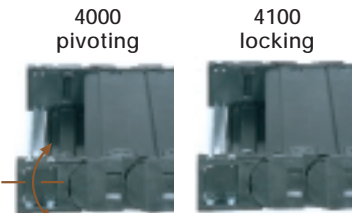
Please insert width of selected Energy Tube.
For example, 4000-13-12T for Energy Tube 88-13-__



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

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

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

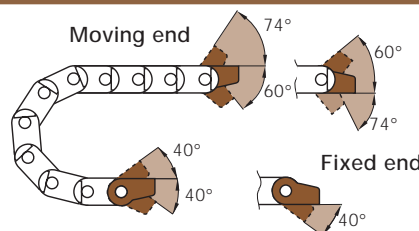


- 4000-__-12/ 4000-__-12T(P) = Full set, each part with pin/bore
- 4000-__-1/ 4000-__-1T(P) = Mounting bracket with bore
- 4000-__-2/ 4000-__-2T(P) = Mounting bracket with pin

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

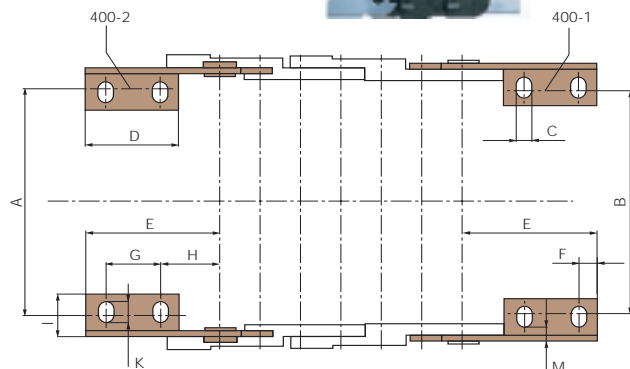
- One part for all chain widths
- Electrically conductive



- 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	in.	(mm)
Bi - .79	.47	2.76	3.94	.59	1.57	1.77	1.38	.71	.43		

Series
40/41/R88

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Fax



► Page 6.48

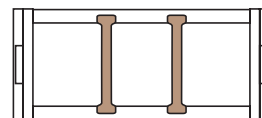
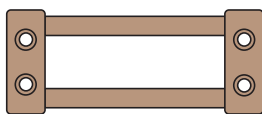
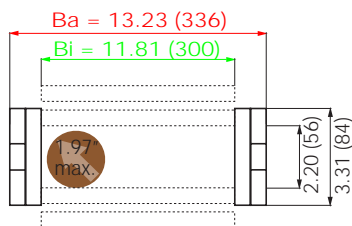


► Page 6.129



► Page 6.54

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)

4. Additional information on guide troughs

Series 400/410/R880, Page 6.54

For information on weights

Series 400, Page 6.53

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

- Details of material properties
- ▶ Design, Chapter 1



Price Index



40 Widths
11 Bending Radii

Hinged snap-open and removable lids along outer radius of **Energy Tube**

KMA mounting brackets with attachment points on all sides

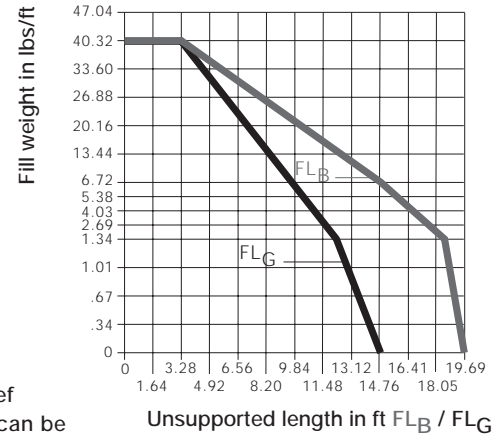
Locking or pivoting mounting brackets available

Removable lids along inner radius of **Energy Tube**

Strain relief elements can be integrated with the mounting bracket

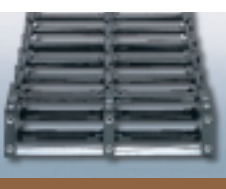
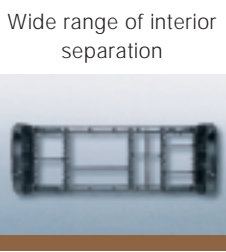
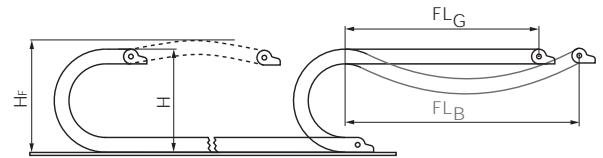
Closed and open styles can be combined

Energy Chain® crossbars are removable along both radii



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** 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** or incorporation of igus® exclusive AUTO-GLIDE System guide elements, which are available for this chain series ► **AUTO-GLIDE System, Chapter 9**

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)



When to use the Series 50/51/R98:

- If a simpler system is sufficient



When not to use the Series 50/51/R98:

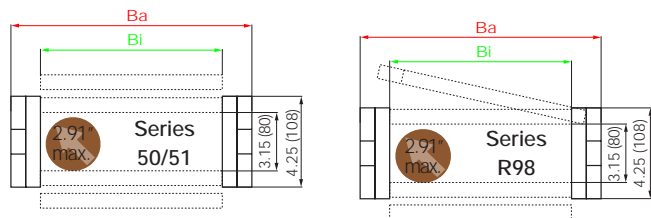
- If a side-mounted chain/tubes with a long unsupported length is required
 - Series 5050/ 5150/ R9850, **Chapter 6**
- If a simpler low-cost solution is required
 - Series 150 - R198, **Chapter 6**

- Accessories for
 - Guide Troughs, **Chapter 9**
- Further information
 - **Design, Chapter 1**

Series 50/51/R98 "E4/0"



50
51
R98



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

Part No.	Bi	Ba ⁺	Bending Radii for ALL Widths	Part No.	Bi	Ba ⁺
50/ 51-05	1.97 (50)	3.94 (100)		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)	50/ 51-32	12.80 (325)
50/ 51/ 98-07*	2.95 (75)	4.92 (125)	50/ 51-33		13.27 (337)	15.28 (388)
50/ 51/ 98-10	3.94 (100)	5.91 (150)	50/ 51/ 98-35		13.78 (350)	15.75 (400)
50/ 51-11	4.41 (112)	6.42 (163)	50/ 51-36		14.25 (362)	16.26 (413)
50/ 51/ 98-12	4.92 (125)	6.89 (175)	50/ 51-37		14.76 (375)	16.73 (425)
50/ 51-13	5.39 (137)	7.40 (188)	50/ 51-38		15.24 (387)	17.24 (438)
50/ 51/ 98-15	5.91 (150)	7.87 (200)	50/ 51/ 98-40		15.75 (400)	17.72 (450)
50/ 51-16	6.38 (162)	8.35 (213)	50/ 51-41		16.22 (412)	18.22 (463)
50/ 51-17	6.89 (175)	8.86 (225)	50/ 51-42		16.73 (425)	18.70 (475)
50/ 51-18	7.36 (187)	9.37 (238)	50/ 51-43		17.20 (437)	19.21 (488)
50/ 51/ 98-20	7.87 (200)	9.84 (250)	50/ 51-45		17.72 (450)	19.69 (500)
50/ 51-21	8.35 (212)	10.35 (263)	50/ 51/ 98-46		18.19 (462)	20.20 (513)
50/ 51-22	8.86 (225)	10.83 (275)	50/ 51-47		18.70 (475)	20.67 (525)
50/ 51-23	9.33 (237)	11.34 (288)	50/ 51-48		19.17 (487)	21.18 (538)
50/ 51/ 98-25	9.84 (250)	11.81 (300)	50/ 51-50		19.69 (500)	21.65 (550)
50/ 51-26	10.31 (262)	12.32 (313)	50/ 51-51		20.16 (512)	22.17 (563)
50/ 51-27	10.83 (275)	12.80 (325)	50/ 51-52		20.67 (525)	22.64 (575)
50/ 51-28	11.30 (287)	13.31 (338)	50/ 51-53		21.14 (537)	23.15 (588)
50/ 51/ 98-30	11.81 (300)	13.78 (350)	50/ 51-55		21.65 (550)	23.62 (600)
50/ 51-31	12.28 (312)	14.29 (363)	50/ 51-60	23.62 (600)	25.59 (650)	

* Removable lid only, no hinged option

** Not available for R98

i For wider chains, see page 6.80

Supplement part number with required radius for example, 50-07-150-0

i Extender crossbar for large diameter hoses, Page 6.81

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.



▶ Page 6.82

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 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.



▶ Page 6.129

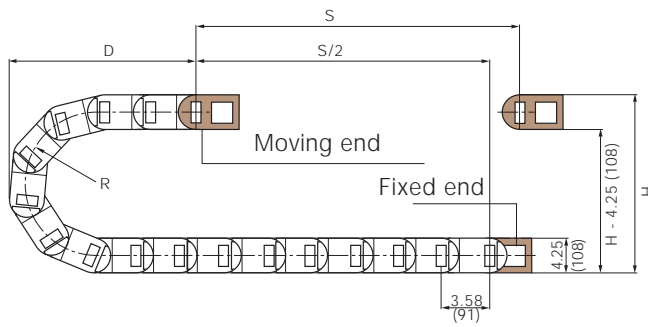


▶ Page 6.88

Series
50/51/R98

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

Installation dimensions



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

R	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)
H ₂₅ ⁰	16.14 (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 ₂₅ ⁰	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 ₂₅ ⁰	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)	

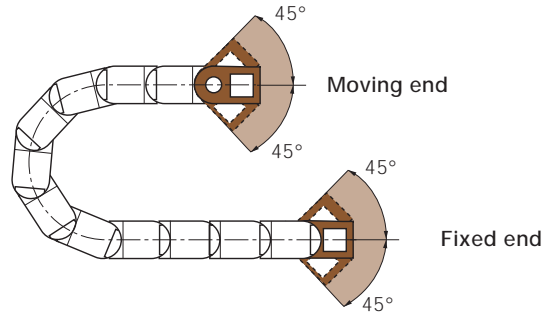
*The required clearance height is HF = H + 2.36 (60) with 2.02 (3 kg/m) fill weight. Please consult igus® if space is particularly restricted.

Mounting Brackets

Option 1: pivoting

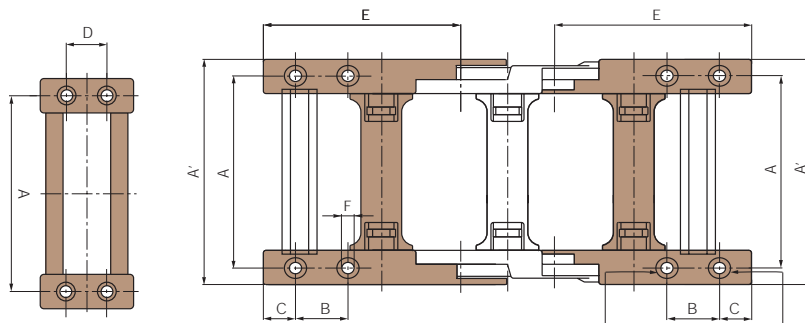
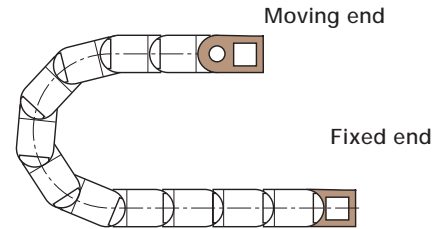


- Profile rail option
- Universal use
- Corrosion resistant
- Short and long travels
- Space-restricted conditions



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

A	A'	B	C	D	E	F	in. (mm)
Bi + 1.14 (29)	Bi + 2.17 (55)	1.38 (35)	.79 (20)	2.56 (65)	4.92 (125)	.43 (11)	

Series 50/51/R98 "E4/0"

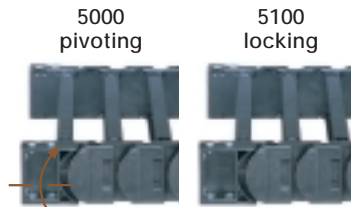


50
51
R98

Part No., full set
Series 50/ 51

5000-__-12 pivoting
5100-__-12 locking

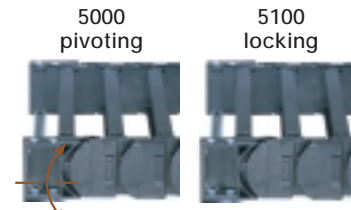
Please insert width of selected Energy Chain®.
For example, 5000-15-12 for Energy Chain® 50/ 51-15-__



Part No., full set, with profile rail
Series 50/ 51

5000-__-12P pivoting
5100-__-12P locking

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

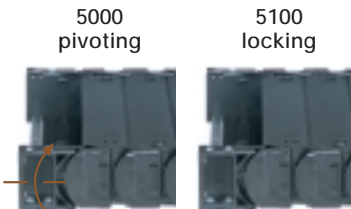
Please insert width of selected Energy Tube.
For example, 5000-15-12T for Energy Tube 98-15-__



Part No., full set, with profile rail
Series 98

5000-__-12TP pivoting
5100-__-12TP locking

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

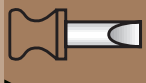
Chain/ Tube Width	Bi
-05	1.97 (50)
-07	2.95 (75)
-10	3.94 (100)
-11	4.41 (112)
-12	4.92 (125)
-13	5.39 (137)
-15	5.91 (150)
-16	6.38 (162)
-17	6.89 (175)
-18	7.36 (187)
-20	7.87 (200)
-21	8.35 (212)
-22	8.86 (225)
-23	9.33 (237)
-25	9.84 (250)
-26	10.31 (262)
-27	10.83 (275)
-28	11.30 (287)
-30	11.81 (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)

Series
50/51/R98

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



▶ Page 6.82



▶ Page 6.129



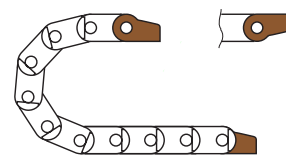
▶ Page 6.88

Option 3: steel

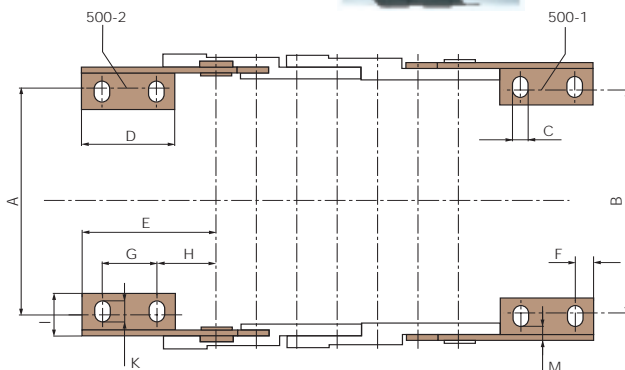
- One part for all chain widths
- Electrically conductive



Moving end



Fixed end

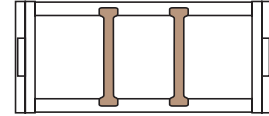
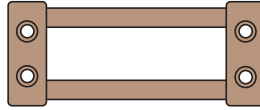
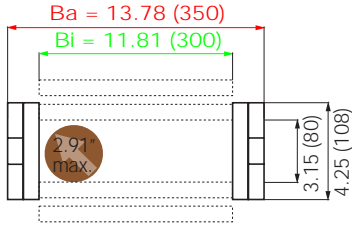


- 500-12 = Full set, 4 parts, 2 parts with pin, 2 parts with bore
- 500-1 = Mounting brackets with bore, 1 part left/right
- 500-2 = Mounting brackets with pin, 1 part left/right

Strain relief package
▶ Strain Relief, Chapter 10

A = B	C	D	E	F	G	H	I	K	M	in.	(mm)
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)		

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

- Details of material properties
- Design, Chapter 1