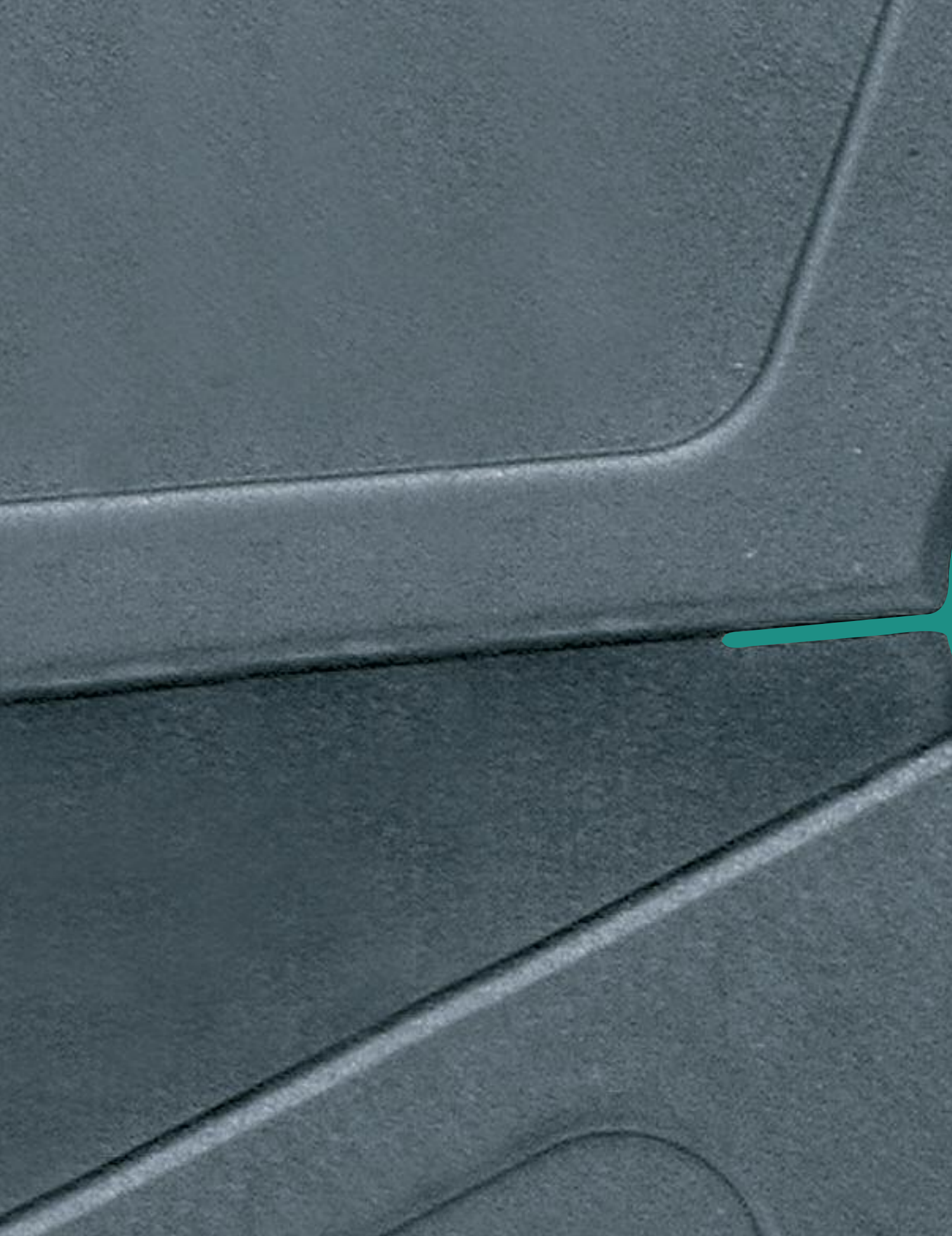
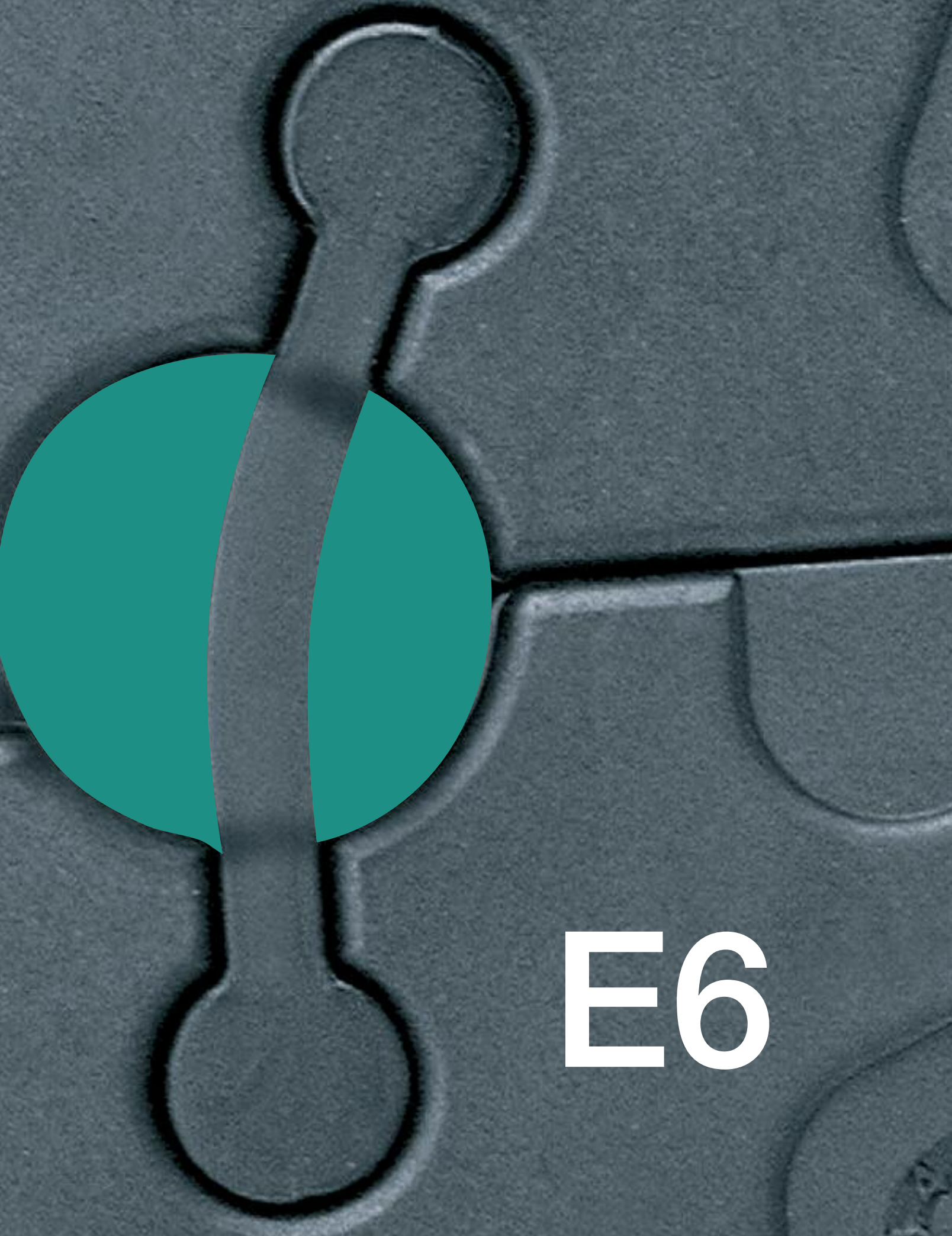



E6

E6 - 6-piece Energy Chains®- Extremely low-noise, minimum vibrations

The E6 Series offers numerous advantages in addition to long life cycles. It provides extremely quiet, low-vibration operation. It minimizes the polygon effect which can occur during the rolling motion of an Energy Chain®. The ultra-low noise levels have been confirmed in a recent report by the Rheinland Technical Inspection Agency. Our extensive delivery program offers the right chain size for any application; a wide range of interior separators are also available. The same applies to the mounting brackets. .

Typical industries and applications

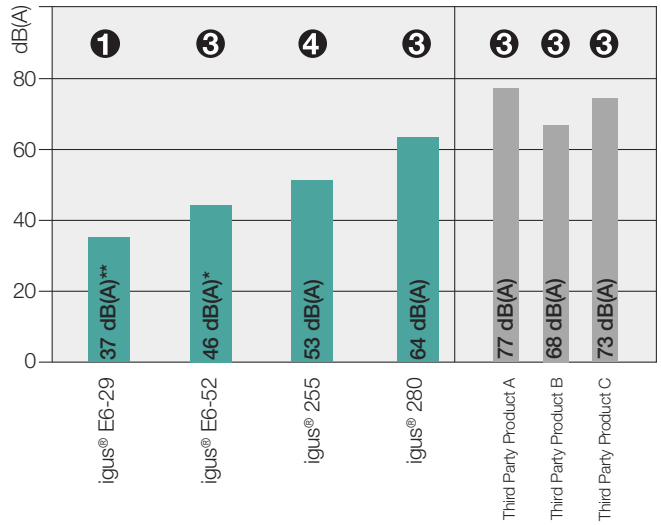
- Cleanroom
- Printing machines
- Handling & robot
- Machine Tools
- Measuring machines
- Semiconductor industries
- Medical industries
- Electronic industries
- General machinery

System E6 - Extremely low noise - TÜV certified

System E6 - 6-piece link-design

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institut according to SEMI E78-0998 for the E6 standard material. Special material "igumid ESD" for ESD/ATEX applications available on request. Continuously constant conductance value as there are no pin-bore connection (no air gaps).

A linear drive provides for highly dynamic feed of PCBs. This system is twice as fast as handling units with a toothed-belt drive; designed to withstand high dynamic loads, the E6 Energy Chains® ensure a supply of power, coolant and control data with ultra-low noise and vibration



averaging of the corrected sound pressure levels in dB(A), rounded

❶ unsupported 1.0 m/s
❷ unsupported 1.8 m/s
❸ unsupported 2.0 m/s
❹ unsupported 1.5 m/s

* Measurement by the TÜV Rheinland 46 dB(A) with 10 dB(A) outer noise

** Values permitted in the igus® laboratory according to DIN45635

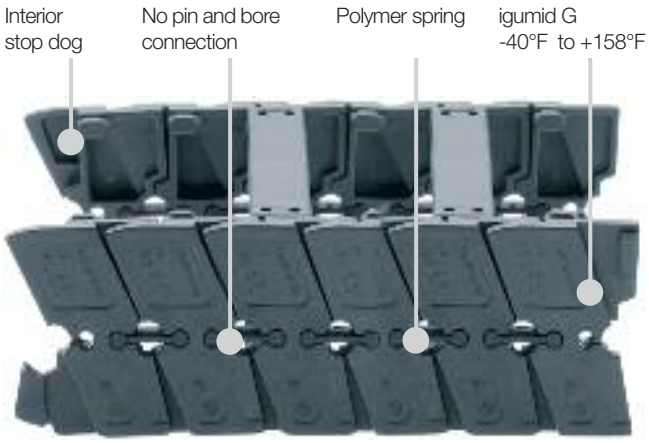
IPA Fraunhofer TESTED® DEVICE igus GmbH Energy chain / Cable systems Report No. IG 0704-400

IPA classification - Report IG0704-400:

- Special material "cleanroom" - **Class 1 according to standard DIN EN ISO 14644-1** - Note: None of the classes corresponding to the DIN EN ISO 14644-1 Class 1 is included in the US standard at v =(0.5 m/s), a = (1.0 m/s²) - Series E6-29-060-150-0-CR
- Standard material - **Class 3 according to standard DIN EN ISO 14644-1** (according to US Fed. Stand. 209E, Class 1) at v = (0.5 m/s), a = (1.0 m/s²) Series E6-29-060-150-0 and v= 1m/s, a = 2m/s² Series E6-29-050-055-0 with inserted cables CF34-15-04, CF9-05-12, CF11-02-01-02-PBA-LC-D

Energy Chain System® E6
Selection Guide

energy chain® configurator



E6 Energy Chain - 6 pieces per link

- Extremely low-noise operation - 37 dB(A)* depending on the speed
- Snap-open lids along both radii
- Available as closed tube for some types
- High stability "unsupported"
- For high speed and high accelerations
- Modular design, can be shortened and lengthened
- Minimum vibrations, high stability and tensile strength
- Various interior separations available
- KMA mounting brackets available with integrated strain relief
- E6 adapter link - for gliding applications - minimizes excess lengths in end positions - quick and easy assembly
- You can find more technical data about the material, chemical resistance, temperatures ➤ **Design, Chapter 1**

Series	Inner height *hi* in.	(mm)	Inner width *Bi* in.	(mm)	Outer width *Ba* in.	(mm)	Outer height *ha* in.	(mm)	Bending radius *R* in.	(mm)
E6-29	1.14	(29)	1.18-4.72	(30-120)	1.81-5.35	(46-136)	1.38	(35)	2.17-5.91	(55-150)
R6-29	1.10	(28)	1.18-4.72	(30-120)	1.81-5.35	(46-136)	1.38	(35)	2.17-5.91	(55-150)
E6-35	1.38	(35)	1.18-4.72	(30-120)	1.97-5.51	(50-140)	1.65	(42)	2.17-5.91	(55-100)
E6-40	1.57	(40)	1.57-11.81	(40-300)	2.36-12.60	(60-320)	2.12	(54)	2.48-7.87	(63-200)
R6-40	1.57	(40)	2.44	(62)	3.23	(82)	2.12	(54)	2.48-7.87	(63-200)
E6-52	2.05	(52)	1.57-11.81	(40-300)	2.52-12.76	(64-324)	2.56	(65)	2.95-9.84	(75-250)
R6-52	2.05	(52)	1.97-6.89	(50-175)	2.91-7.83	(74-199)	2.56	(65)	2.95-9.84	(75-250)
E6-62	2.44	(62)	1.97-15.75	(50-400)	3.39-17.17	(86-436)	3.31	(84)	4.53-13.78	(115-350)
E6-80L	3.15	(80)	3.53-21.65	(87-550)	4.53-22.76	(115-578)	4.25	(108)	6.89	(175)
E6-80	3.15	(80)	1.97-23.62	(50-600)	3.94-25.59	(100-650)	4.25	(108)	5.91-17.72	(150-450)

Selected noise tests - External noise corrected measurement values

E-Chain® Series	Averaging of the corrected sound pressure levels	Test method
igus® Series E6-29*	≈ **37 dB(A)**	unsupported v = 3.28 ft/s (1.0 m/s)
igus® Series E6-52*	≈ **41 dB(A)**	unsupported, side mounted v = 1.64 ft/s (0.5 m/s)
igus® Series E6-52	≈ **46 dB(A)**	unsupported v = 6.56 ft/s (2.0 m/s)
Chain 1 Third-party product	≈ 77 dB(A)	unsupported v = 6.56 ft/s (2.0 m/s)
Chain 2 Third-party product	≈ 68 dB(A)	unsupported v = 6.56 ft/s (2.0 m/s)
Chain 3 Third-party product	≈ 73 dB(A)	unsupported v = 6.56 ft/s (2.0 m/s)

Source: TÜV Rheinland *Source: igus® laboratory

Noise level ≤ 46 dB(A)

A measurement conducted by the Rhineland Technical Inspection Authority (TÜV Rheinland) in May 2002 indicates a value of ≤ 46 dB(A) at 6.56 ft/s (2 m/s) and with an unsupported length of 4..92 ft (1.5 m) with **Series E6-52-100-100-0**, and all this with at least 10 dB(A) sound pressure level generated by external noise. **We have received an official noise certificate from the Rhineland Technical Inspection Authority (TÜV Rheinland Berlin Brandenburg) and we are happy to provide you with a copy upon request.**

Energy Chain System® E6
Assembly Instructions

System E6 Energy Chains® - Assembling

Position side links ...

... gently twist and snap in

Gently insert connector by using a hammer

Position crossbars.
Push down and snap in

Energy Tubes - Assembling Lids

Insert lid ...

... push down and snap in

Energy Tubes - Separating Lids

Lever with screwdriver ...

... and remove lids by hand

System E6 Energy Chains® - Separating

Lever crossbars with screwdriver

Tap gently to remove connectors

Twist and ...

... separate side links

Energy Chain System® E6
Series E6-29

Price Index

Series E6-29

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system
(Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

To close, push and click shut

Other Installation Methods

Vertical, hanging ≤ 98.4 ft (30 m)
Vertical, standing ≤ 6.56 ft (2 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

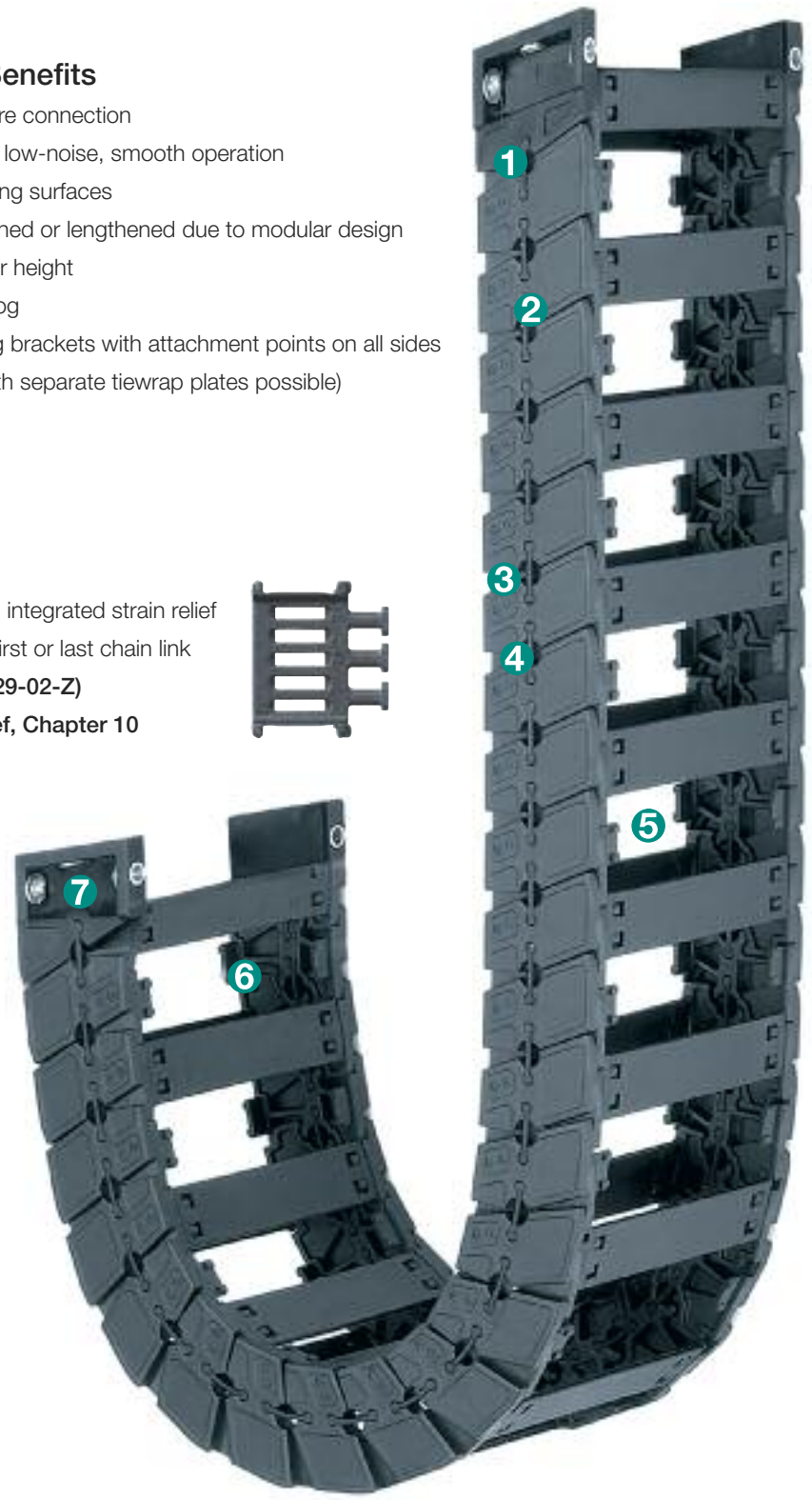
Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side-mounted applications
  ➤ **Series 200240/250 E2 Medium**
- For RBR (reverse bending radii)
  ➤ **Series 200240/250 E2 Medium**
- For high additional loads
  ➤ **Series 200240/250 E2 Medium**
- For very dirty environments
  ➤ **Series R6-29**

Features & Benefits

1. No pin and bore connection
2. Small pitch for low-noise, smooth operation
3. Very large gliding surfaces
4. Can be shortened or lengthened due to modular design
5. Increased inner height
6. Interior stop dog
7. KMA mounting brackets with attachment points on all sides (strain relief with separate tiewrap plates possible)



● Also available:
Separator with integrated strain relief for use in the first or last chain link
(Part No. E6-29-02-Z)
➤ **Strain Relief, Chapter 10**

Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **E6-29-100-075-0**	**Energy Chain®**
With 2 separators **E6-29-11** assembled every 2nd link	**Interior Separation**
1 Set **E6-290-100-12**	**Mounting Bracket**

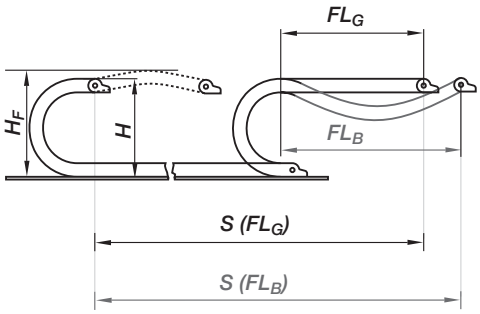
Energy Chain System® E6
Series E6-29
Installation Dimensions

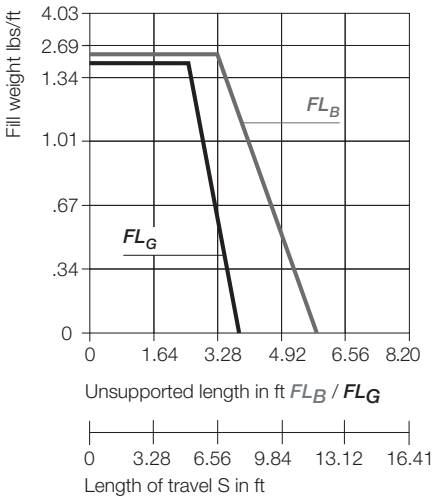
energy chain® configurator

Short travel, unsupported length

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

Further information ➤ Design, Chapter 1



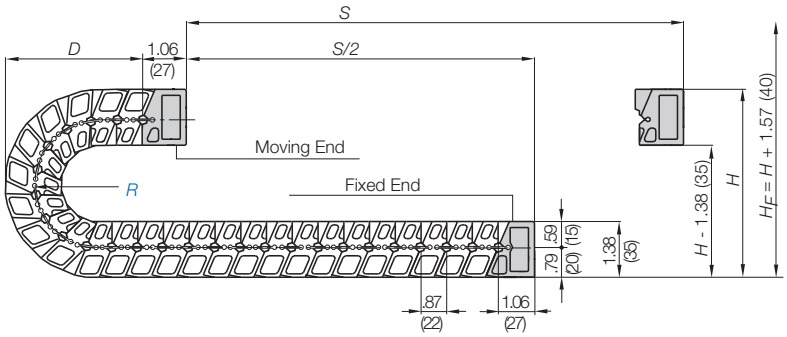


Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
$K = \pi \bullet R +$ *"safety buffer"*
H_F = Required clearance height



Pitch per link: = .87" (22 mm)
Links per ft (m): = 13.79 (46)
For center mount applications:
Chain length = $S/2 + K$

The required clearance height: $H_F = H$ **+ 1.57 in. (40 mm)** (with 1.34 lbs/ft (2.0 kg/m) fill weight.
Please consult igus® if space is particularly restricted.

R	2.17 (055)	2.95 (075)	3.94 (100)	5.91 (150)
H	7.09 (180)	8.66 (220)	10.63 (270)	14.57 (370)
D	3.82 (97)	4.61 (117)	5.59 (142)	7.56 (192)
K	8.66 (220)	11.02 (280)	14.17 (360)	20.47 (520)

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

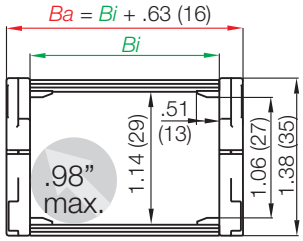
Details of material properties
➤ **Design, Chapter 1**

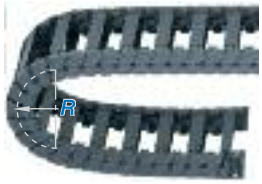
igus® Energy Chain System®

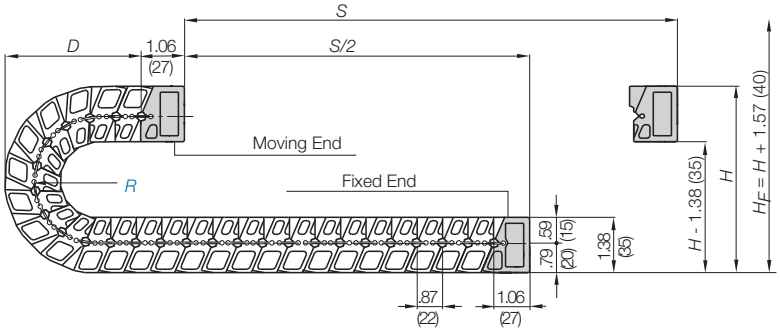
Telephone 1-800-521-2747
Fax 1-401-438-7270

Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series E6-29 - Energy Chain® with crossbars every link







Part Number Structure

E6-29-100-100-0

- Color - Black
- Bending radius
- Width
- Series

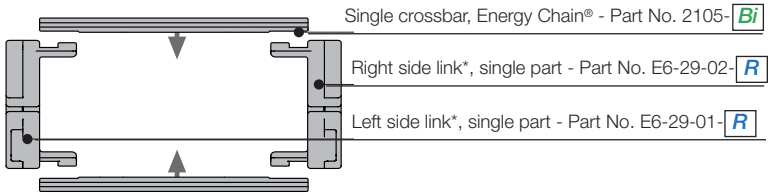
Supplement part number with required radius. Example: E6-29-100-100-0
Pitch: .87 in. (22 mm) per link links/ft (m) = 13.79 (46)

Part Number	Bi in. (mm)	Ba in. (mm)	Weight lbs/ft (kg/m)
E6-29-030-□-0	1.18 (30)	1.81 (46)	≈ 0.49 (0.73)
E6-29-040-□-0	1.57 (40)	2.20 (56)	≈ 0.50 (0.75)
E6-29-050-□-0	1.97 (50)	2.60 (66)	≈ 0.52 (0.78)
E6-29-060-□-0	2.36 (60)	2.99 (76)	≈ 0.54 (0.80)
E6-29-070-□-0	2.76 (70)	3.39 (86)	≈ 0.56 (0.83)
E6-29-080-□-0	3.15 (80)	3.78 (96)	≈ 0.57 (0.85)
E6-29-090-□-0	3.54 (90)	4.17 (106)	≈ 0.59 (0.88)
E6-29-100-□-0	3.94 (100)	4.57 (116)	≈ 0.60 (0.90)
E6-29-110-□-0	4.33 (110)	4.96 (126)	≈ 0.62 (0.93)
E6-29-120-□-0	4.72 (120)	5.35 (136)	≈ 0.64 (0.95)

Choose from the radii below for all of the above sizes
Radius (mm) Example: E6-29-100-100-0

	055	075	100	150
R	2.17 (055)	2.95 (075)	3.94 (100)	5.91 (150)
H	7.09 (180)	8.66 (220)	10.63 (270)	14.57 (370)
D	3.82 (97)	4.61 (117)	5.59 (142)	7.56 (192)
K	8.66 (220)	11.02 (280)	14.17 (360)	20.47 (520)

Energy Chain® as separate parts, links and side plates



Polymer spring as single part - Part No. E6-29-140

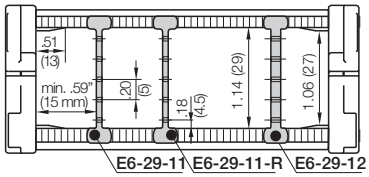
*View from the fixed point of the Energy Chain®/Energy Tube

Energy Chain System® E6
Series E6-29
Interior Separation

energy chain® configurator

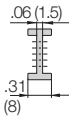
Option 1: Vertical separators

Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



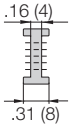
STANDARD

- **Slotted vertical separator E6-29-01**
  This separator is used for general subdivision of Energy Chains®. Can be used in combination with full-width shellf 111-X



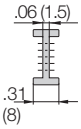
Vertical Separator	
Unassembled	**Part No. E6-29-01**
Assembled	**Part No. E6-29-11**

- **Vertical separator E6-29-02**
  For use with side plate E6-29-13, full-width shelf 221-X and shelf 2210-X



Vertical Separator	
Unassembled	**Part No. E6-29-02**
Assembled	**Part No. E6-29-12**

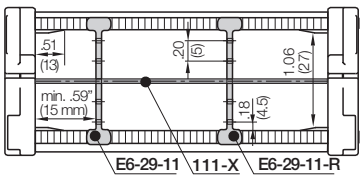
- **Locking separator E6-29-01R**
  Can be locked onto crossbars in .08" (2mm) increments. For side-mounted applications use with full-width shelf 111-X

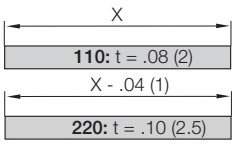


Vertical Separator	
Unassembled	**Part No. E6-29-01R**
Assembled	**Part No. E6-29-11R**

Option 2: Full-width shelf

For applications involving many thin cables with similar or identical diameters.
Full-width shelf **111-X** can be used with vertical separator **E6-29-11** and locking separator **E6-29-11-R.**
Full-width shelf **221-X** can be used with vertical separator **E6-29-12**, side plate **E6-29-13**



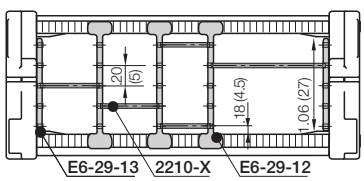


Shelves 110-X/220-XX
Shelves can be inserted at 5 different heights in .20" (5mm) increments

Width X in. (mm)	Part No. Unassembled 110-X	Part No. Unassembled 220-X	Part No. Assembled 111-X	Part No. Assembled 221-X
1.18 (030)	**110-30**	**220-30**	**111-30**	**221-30**
1.57 (040)	**110-40**	**220-40**	**111-40**	**221-40**
1.97 (050)	**110-50**	**220-50**	**111-50**	**221-50**
2.36 (060)	**110-60**	**220-60**	**111-60**	**221-60**
2.76 (070)	**110-70**	**220-70**	**111-70**	**221-70**
3.15 (080)	**110-80**	**220-80**	**111-80**	**221-80**
3.54 (090)	**110-90**	**220-90**	**111-90**	**221-90**
3.94 (100)	**110-100**	**220-100**	**111-100**	**221-100**
4.33 (110)	**110-110**	**220-110**	**111-110**	**221-110**
4.72 (120)	**110-120**	**220-120**	**111-120**	**221-120**

Option 3: Shelves

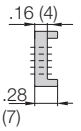
These components form the basic pattern of a shelf system.
Shelves of various widths can be arranged at 5 different heights in .20" (5mm) increments



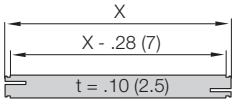
Shelves 2200-XX
Shelf 2210-X can be used with **vertical separator E6-29-12** and **side plate E6-29-13**

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

- **Side plate, slotted**
  This separator is used for general subdivision of Energy Chains®.



Slotted Separator	
Unassembled	**Part No. E6-29-03**
Assembled	**Part No. E6-29-13**



Energy Chain System® E6
Series E6-29
Mounting Brackets - KMA

energy chain® configurator

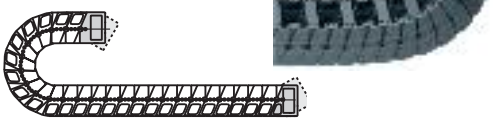
Telephone 1-800-521-2747
Fax 1-401-438-7270

Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

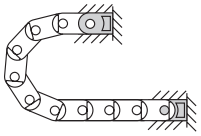
Option 1: KMA - Pivoting

- Bolted connection outside of the chain cross-section
- Recomended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides

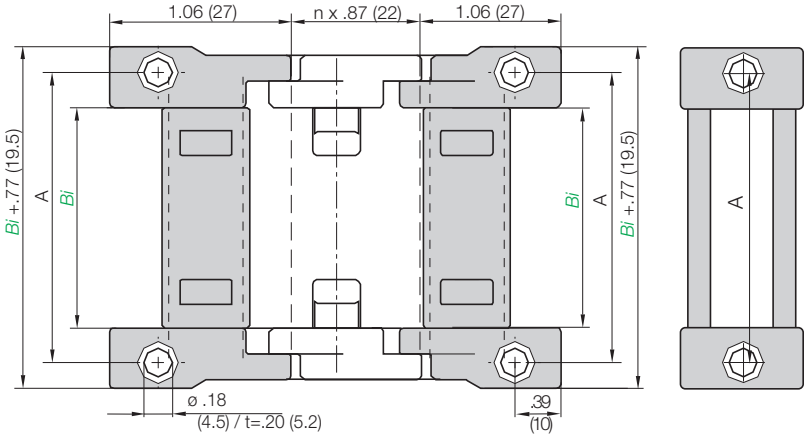
Moving end
E6-290...2



Fixed end
E6-290...1



Possible installation configurations -



Part Number Structure

E6-290-	030-	12

12 — Complete Set
030- — Width
E6-290- — Mounting brackets for selected chain type

Full set, for both ends:

E6-290- 030- 12 Full set, **both fixed and moving end**

Single-part order:

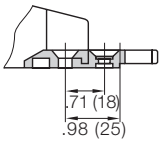
E6-290 - 030- 1 Mounting bracket **fixed end**

E6-290 - 030- 2 Mounting bracket **moving end**

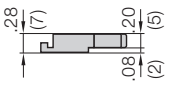
For Series	Part No. Full Set	Dimension A in.	(mm)
E6-290-030	**E6-290-030-12**	1.57	(40)
E6-290-040	**E6-290-040-12**	1.97	(50)
E6-290-050	**E6-290-050-12**	2.36	(60)
E6-290-060	**E6-290-060-12**	2.76	(70)
E6-290-070	**E6-290-070-12**	3.15	(80)
E6-290-080	**E6-290-080-12**	3.54	(90)
E6-290-090	**E6-290-090-12**	3.94	(100)
E6-290-100	**E6-290-100-12**	4.33	(110)
E6-290-110	**E6-290-110-12**	4.72	(120)
E6-290-120	**E6-290-120-12**	5.12	(130)

Tiewrap Plates

Option 1:
Tiewrap plates as an individual part

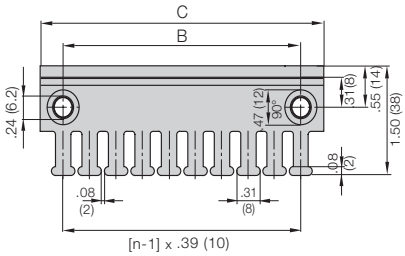


Shown assembled



Single tiewrap plate

Tiewrap Plates	n Number of Teeth	Dimension C	Dimension B
2020-ZB	3	1.18 (30)	.59 (15)
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)



Other strain relief elements - optional
➤ Strain Relief, Chapter 10

Energy Chain System® E6
Series E6-29
Guide Trough

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

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

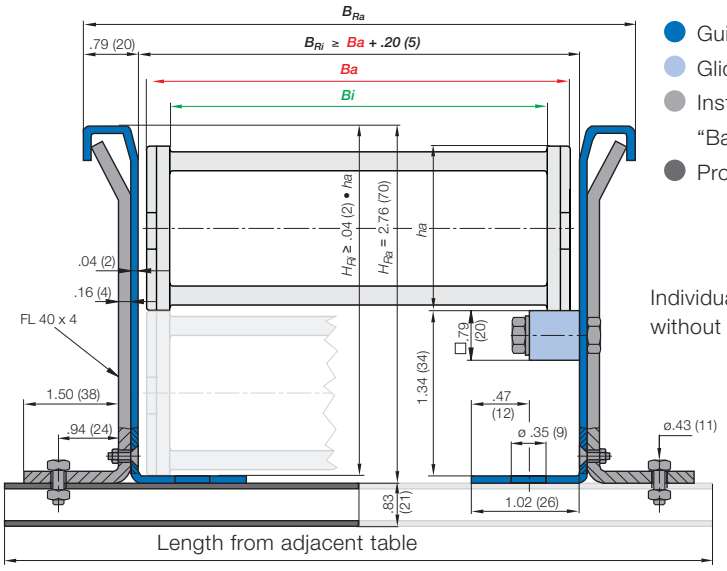
Example: 92-50-400 for 15.75" (400 mm) long profile rail.

Crossbar Width
E6-29-100-100-0

Dimension D

Installation Part No.

-030	2.01 (51)	*
-040	2.40 (61)	**92-50-175**
-050	2.80 (71)	**92-50-200**
-060	3.19 (81)	**92-50-200**
-070	3.58 (91)	**92-50-200**
-080	3.98 (101)	**92-50-225**
-090	4.37 (111)	**92-50-225**
-100	4.76 (121)	**92-50-250**
-110	5.16 (131)	**92-50-250**
-120	5.55 (141)	**92-50-250**



- Guide trough
- Glide bars
- Installation set "Basic"
- Profile rail

Individual attachment without profile rail

Standard length profile rail

* Specialized guide trough available upon request

Energy Chain System® E6
Series R6-29

Price Index

Series R6-29

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

Lever and remove lids

Other Installation Methods

Vertical, hanging ≤ 98.4 ft (30 m)
Vertical, standing ≤ 6.56 ft (2 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- Protection against dirt and chips
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side-mounted applications
  ➤ **Series 2480 E2 Tubes**
- For RBR (reverse bending radii)
  ➤ **Series 2480 E2 Tubes**
- For high additional loads
  ➤ **Series 2480 E2 Tubes**

Features & Benefits

1. Fully enclosed Energy Tube
2. No pin and bore connection
3. Interior stop dog
4. Very large gliding surfaces
5. KMA mounting brackets with attachment points on all sides (strain relief with separate tiewrap plates possible)
6. Can be shortened or lengthened due to modular design
7. Small pitch for low-noise, smooth operation

Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **R6-29-080-100-0**	**Energy Tube**
With 2 separators **R6-29-11** assembled every 2nd link	**Interior Separation**
1 Set **R6-290-080-12**	**Mounting Bracket**

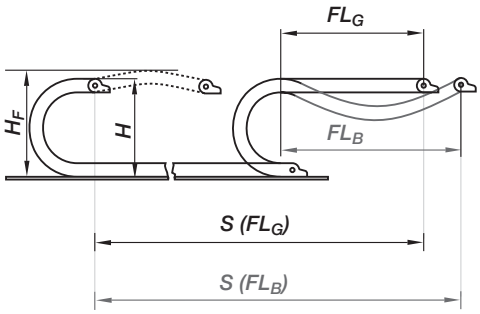
Energy Chain System® E6 Series R6-29 Installation Dimensions

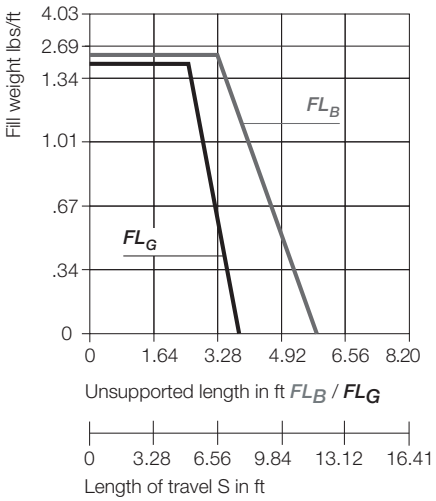
energy chain® configurator

Short travel, unsupported length

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

Further information ➤ Design, Chapter 1



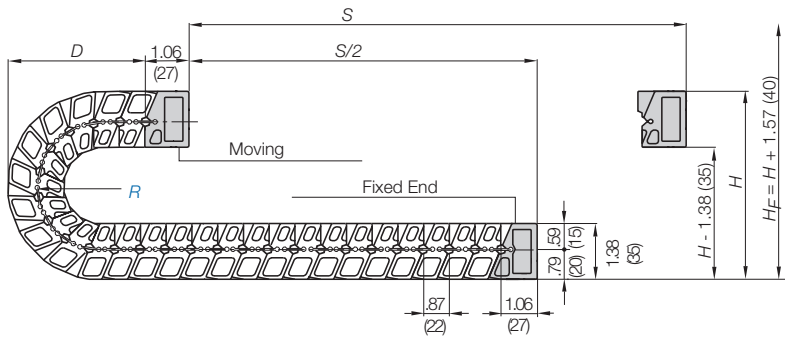


Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
K = π • *R* + *"safety buffer"*
H_F = Required clearance height



Pitch per link: = .87" (22 mm)
Links per ft (m): = 13.79 (46)
For center mount applications:
Chain length = $^{S}/_{2}$ + K

The required clearance height: $H_F = H + 1.57$ **in. (40 mm)** (with 1.34 lbs/ft (2.0 kg/m) fill weight.
Please consult igus® if space is particularly restricted.

R	2.17 (055)	2.95 (075)	3.94 (100)	5.91 (150)
H	7.09 (180)	8.66 (220)	10.63 (270)	14.57 (370)
D	3.82 (97)	4.61 (117)	5.59 (142)	7.56 (192)
K	8.66 (220)	11.02 (280)	14.17 (360)	20.47 (520)

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

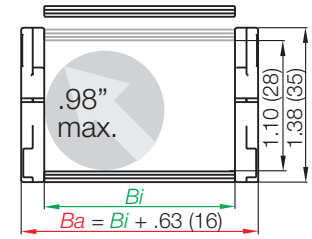
Details of material properties
➤ **Design, Chapter 1**

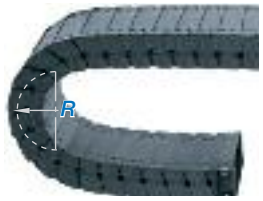
Energy Chain System® E6
Series R6-29
Interior Separation

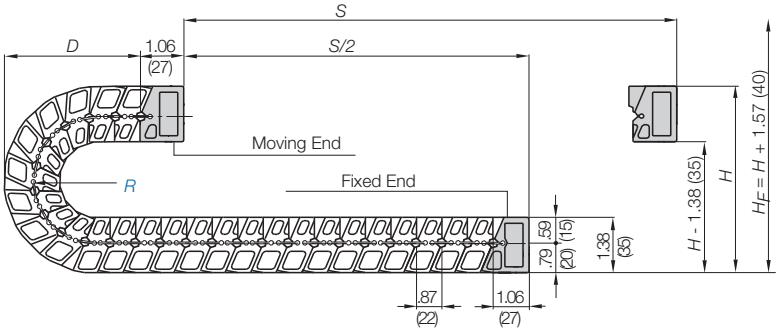
energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series R6-29 - Energy Tube, removable lids along the inner and outer radius







Part Number Structure

R6-29-	080-	100-	0

- 100 – Bending radius
- 080 – Width
- R6-29 – Series
- 0 – Color - Black

Supplement part number with required radius. Example: R6-29-080-100-0
Pitch: .87 in. (22 mm) per link links/ft (m) = 13.79 (46)

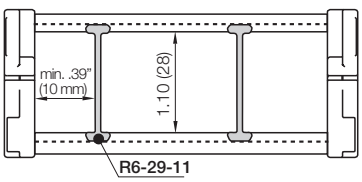
Part Number	Bi in. (mm)	Ba in. (mm)	Weight lbs/ft (kg/m)
R6-29-030-☐-0	1.18 (30)	1.81 (46)	≈ 0.54 (0.80)
R6-29-040-☐-0	1.57 (40)	2.20 (56)	≈ 0.57 (0.85)
R6-29-050-☐-0	1.97 (50)	2.60 (66)	≈ 0.60 (0.89)
R6-29-060-☐-0	2.36 (60)	2.99 (76)	≈ 0.63 (0.94)
R6-29-080-☐-0	3.15 (80)	3.78 (96)	≈ 0.69 (1.03)
R6-29-100-☐-0	3.94 (100)	4.57 (116)	≈ 0.76 (1.13)
R6-29-110-☐-0	4.33 (110)	4.96 (126)	≈ 0.79 (1.18)
R6-29-120-☐-0	4.72 (120)	5.35 (136)	≈ 0.82 (1.22)

Choose from the radii below for all of the above sizes
Radius (mm) Example: R6-29-080-100-0

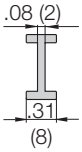
	055	075	100	150
R	2.17 (055)	2.95 (075)	3.94 (100)	5.91 (150)
H	7.09 (180)	8.66 (220)	10.63 (270)	14.57 (370)
D	3.82 (97)	4.61 (117)	5.59 (142)	7.56 (192)
K	8.66 (220)	11.02 (280)	14.17 (360)	20.47 (520)

Option 1: Vertical separators

Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



Vertical separator R6-29-01



Vertical Separator

Unassembled	**Part No. R6-29-01**
Assembled	**Part No. R6-29-11**

- **Vertical separator R6-29-01**
  This separator is used for general subdivision of Energy Tubes.
- Separator snaps onto either the bottom of the carrier or the lid. Stays attached to that side. Opposite side can be removed.

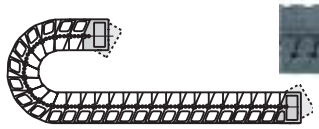
Energy Chain System® E6
Series R6-29
Mounting Bracket - KMA / Strain Relief

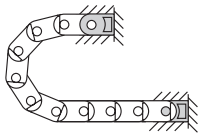
energy chain® configurator

Option 1: KMA - Pivoting

- Bolted connection outside of the chain cross-section
- Recomended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides

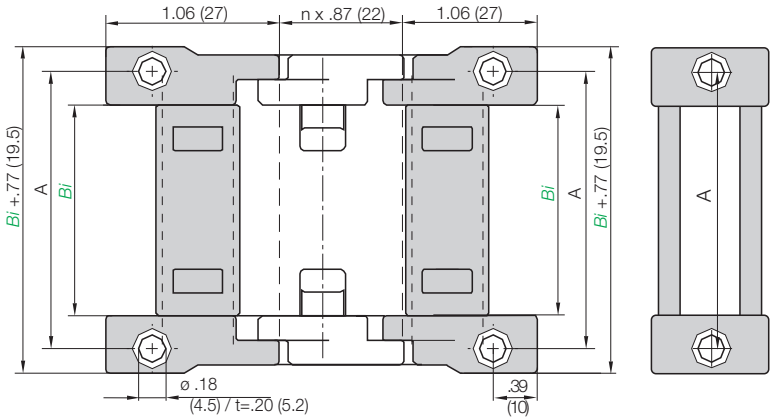
Moving end
R6-290...2





Possible installation configurations -

Fixed end
R6-290...1



Part Number Structure

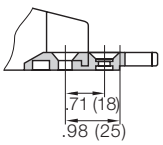
R6-290-	030-	12

12 – Complete Set
030 – Width
R6-290 – Mounting brackets for selected chain type

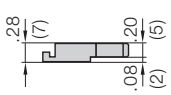
For Series	Part No. Full Set	Dimension A in.	(mm)
R6-290-030	**R6-290-030-12**	1.57	(40)
R6-290-040	**R6-290-040-12**	1.97	(50)
R6-290-050	**R6-290-050-12**	2.36	(60)
R6-290-060	**R6-290-060-12**	2.76	(70)
R6-290-080	**R6-290-080-12**	3.54	(90)
R6-290-100	**R6-290-100-12**	4.33	(110)
R6-290-110	**R6-290-110-12**	4.72	(120)
R6-290-120	**R6-290-120-12**	5.12	(130)

Full set, for both ends:
R6-290- 030- 12 Full set, **both fixed and moving end**
Single-part order:
R6-290 - 025- 1 Mounting bracket **fixed end**
R6-290 - 025- 2 Mounting bracket **moving end**

Tiewrap Plates



Shown assembled

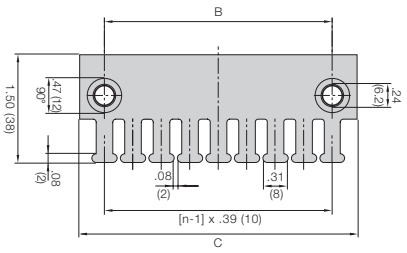


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plates	n Number of Teeth	Dimension C	Dimension B
2020-ZB	3	1.18 (30)	.59 (15)
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)



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 2020-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

igus® Energy Chain System®

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

Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

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

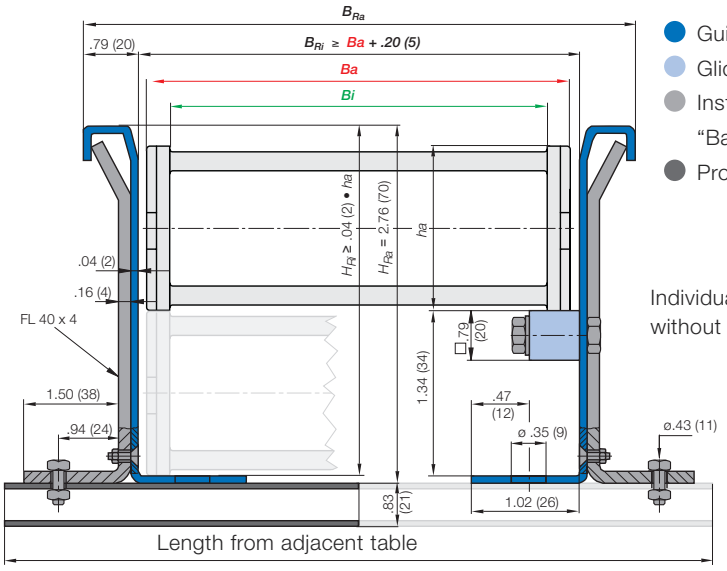
Example: 92-50-400 for 15.75" (400 mm) long profile rail.

Crossbar Width
E6-29-100-100-0

Dimension D

Installation Part No.

-030	2.01 (51)	*
-040	2.40 (61)	**92-50-175**
-050	2.80 (71)	**92-50-200**
-060	3.19 (81)	**92-50-200**
-070	3.58 (91)	**92-50-200**
-080	3.98 (101)	**92-50-225**
-090	4.37 (111)	**92-50-225**
-100	4.76 (121)	**92-50-250**
-110	5.16 (131)	**92-50-250**
-120	5.55 (141)	**92-50-250**



- Guide trough
- Glide bars
- Installation set "Basic"
- Profile rail

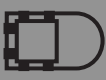
Individual attachment without profile rail

Standard length profile rail

* Specialized guide trough available upon request

PDF: www.igus.com/e-chain-pdfs
Specs/CAD/RFQ: www.igus.com/e-chains
RoHS info: www.igus.com/RoHS





Energy Chain System® E6
Series E6-35

1.38

Price Index

Series E6-35

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

To close, push and click shut

Other Installation Methods

Vertical, hanging ≤ 98.4 ft (30 m)
Vertical, standing ≤ 6.56 ft (2 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

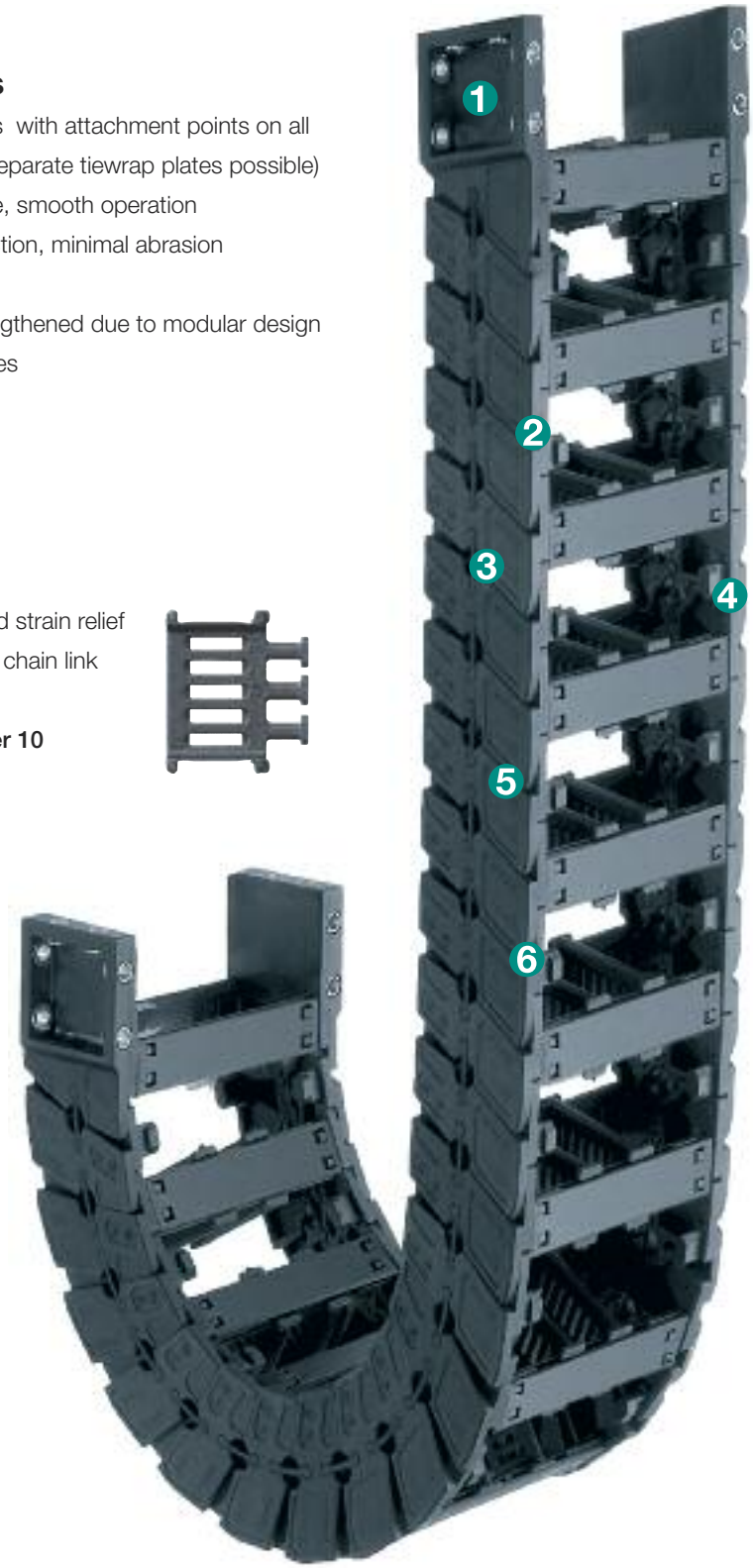
Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- If a fully enclosed tube is required
  ➤ **Series R58 E2 Tubes**
- For side mounted applications
  ➤ **Series 2828 E4/4**
- For RBR (Reverse Bending Radius)
  ➤ **Series 280 E4/100**
- For high additional loads
  ➤ **Series 2828 E4/4**
- For dirty environments
  ➤ **Series 2828 E4/4**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides (strain relief with separate tiewrap plates possible)
2. Small pitch for low-noise, smooth operation
3. No pin and bore connection, minimal abrasion
4. Interior stop dog
5. Can be shortened or lengthened due to modular design
6. Very large gliding surfaces



Also available:
Separator with integrated strain relief for use in the first or last chain link
(Part No. E6-35-02-Z)
➤ **Strain Relief, Chapter 10**

Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **E6-35-100-055-0**	**Energy Chain®**
With 2 separators **E6-35-11** assembled every 2nd link	**Interior Separation**
1 Set **E6-350-100-12**	**Mounting Bracket**

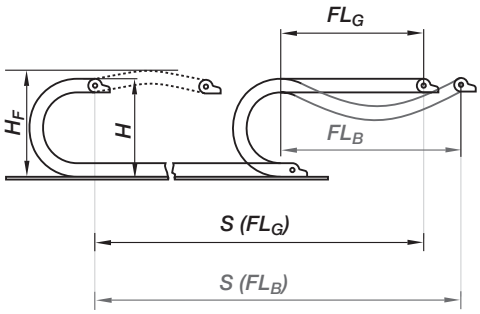
Energy Chain System® E6
Series E6-35
Installation Dimensions

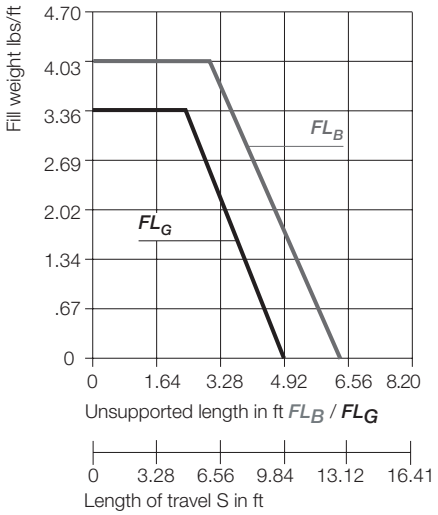
energy chain® configurator

Short travel, unsupported length

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

Further information ➤ Design, Chapter 1



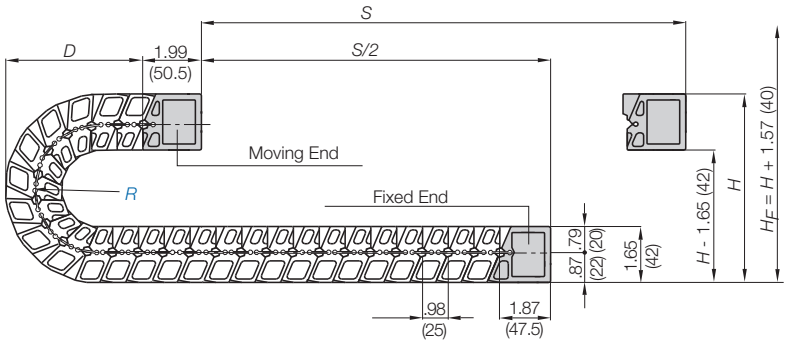


Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
$K = \pi \bullet R +$ *"safety buffer"*
H_F = Required clearance height



Pitch per link: = .98" (25 mm)
Links per ft (m): = 12.19 (40)
For center mount applications:
Chain length = $^{S}/_{2} + K$

The required clearance height: $H_F = H + 1.57$ **in. (40 mm)** (with 1.34 lbs/ft (2.0 kg/m) fill weight.
Please consult igus® if space is particularly restricted.

R	2.17 (055)	2.95 (100)
H	7.44 (189)	10.98 (279)
D	4.01 (102)	5.79 (147)
K	8.86 (225)	14.37 (365)

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

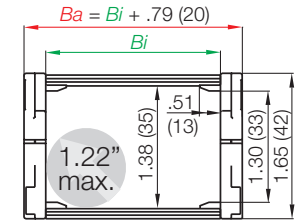
Details of material properties
➤ **Design, Chapter 1**

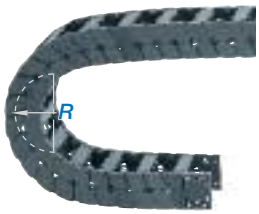
Energy Chain System® E6
Series E6-35

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series E6-35 - Energy Chain® with crossbars every other link



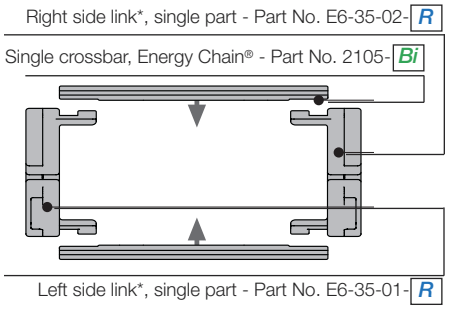


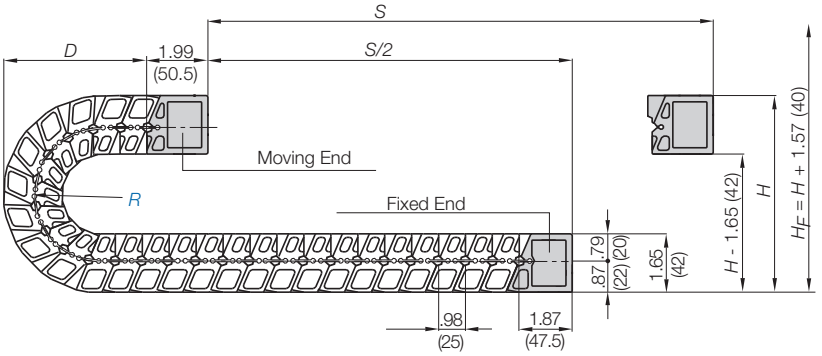
Part Number Structure

E6-35-100-055-0

- Color - Black
- Bending radius
- Width
- Series

Energy Chain® as separate parts, links and side plates





Polymer spring as single part - Part No. E6-35-150

*View from the fixed point of the Energy Chain®/Energy Tube

Supplement part number with required radius. Example: E6-35-100-[055]-0
Pitch: .98 in. (25 mm) per link links/ft (m) = 12.19 (40)

Part Number	Bi in. (mm)	Ba in. (mm)	Weight lbs/ft (kg/m)
E6-35-030-[ ]-0	1.18 (30)	1.97 (50)	≈ 0.59 (0.88)
E6-35-040-[ ]-0	1.57 (40)	2.36 (60)	≈ 0.54 (0.90)
E6-35-050-[ ]-0	1.97 (50)	2.76 (70)	≈ 0.90 (0.92)
E6-35-060-[ ]-0	2.36 (60)	3.15 (80)	≈ 0.63 (0.94)
E6-35-070-[ ]-0	2.76 (70)	3.54 (90)	≈ 0.65 (0.96)
E6-35-080-[ ]-0	3.15 (80)	3.94 (100)	≈ 0.66 (0.99)
E6-35-090-[ ]-0	3.54 (90)	4.33 (110)	≈ 0.68 (1.01)
E6-35-100-[ ]-0	3.94 (100)	4.72 (120)	≈ 0.69 (1.03)
E6-35-110-[ ]-0	4.33 (110)	5.12 (130)	≈ 0.76 (1.05)
E6-35-120-[ ]-0	4.72 (120)	5.51 (140)	≈ 0.72 (1.07)

Choose from the radii below for all of the above sizes
Radius (mm) Example: E6-35-100-[055]-0

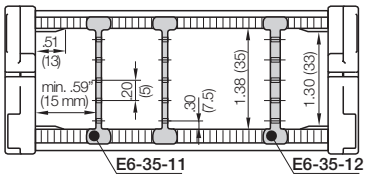
	055	100
R	2.17 (055)	2.95 (100)
H	7.44 (189)	10.98 (279)
D	4.01 (102)	5.79 (147)
K	8.86 (225)	14.37 (365)

Energy Chain System® E6
Series E6-35
Interior Separation

energy chain® configurator

Option 1: Vertical separators

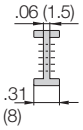
Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



STANDARD

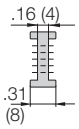
- **Slotted vertical separator E6-35-01**
  This separator is used for general subdivision of Energy Chains®. Can be used in combination with full-width shelf 111-X.

- **Vertical separator E6-35-02**
  For use with side plate E6-35-13, full-width shelf 221-X and shelf 2210-X



Vertical Separator, Slotted

Unassembled	**Part No. E6-35-01**
Assembled	**Part No. E6-35-11**

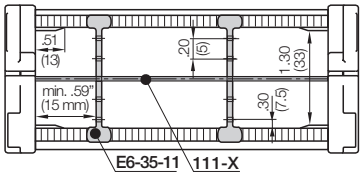


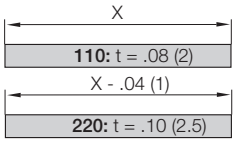
Vertical Separator

Unassembled	**Part No. E6-35-02**
Assembled	**Part No. E6-35-12**

Option 2: Full-width shelf

For applications involving many thin cables with similar or identical diameters.
Full-width shelf **111-X** can be used with vertical separator **E6-35-11**
Full-width shelf **221-X** can be used with vertical separator **E6-35-12**





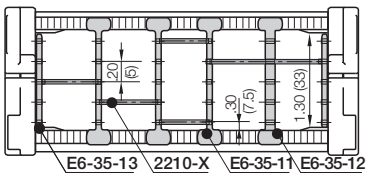
Shelves 110-X/220-XX
Shelves can be inserted at 5 different heights in .20" (5mm) increments

Width X in. (mm)	Part No. Unassembled 110-X	Part No. Unassembled 220-X	Part No. Assembled 111-X	Part No. Assembled 221-X
1.18 (030)	**110-30**	**220-30**	**111-30**	**221-30**
1.57 (040)	**110-40**	**220-40**	**111-40**	**221-40**
1.97 (050)	**110-50**	**220-50**	**111-50**	**221-50**
2.36 (060)	**110-60**	**220-60**	**111-60**	**221-60**
2.76 (070)	**110-70**	**220-70**	**111-70**	**221-70**

Width X in. (mm)	Part No. Unassembled 110-X	Part No. Unassembled 220-X	Part No. Assembled 111-X	Part No. Assembled 221-X
3.15 (080)	**110-80**	**220-80**	**111-80**	**221-80**
3.54 (090)	**110-90**	**220-90**	**111-90**	**221-90**
3.94 (100)	**110-100**	**220-100**	**111-100**	**221-100**
4.33 (110)	**110-110**	**220-110**	**111-110**	**221-110**
4.72 (120)	**110-120**	**220-120**	**111-120**	**221-120**

Option 3: Shelves

These components form the basic pattern of a shelf system.
Shelves of various widths can be arranged at 5 different heights in .20" (5mm) increments

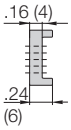


Shelves 2200-XX
Shelf 2210-X can be used with **vertical separator E6-35-12** and **side plate E6-35-13**

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**

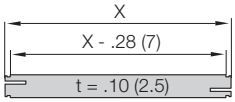
Width X in. (mm)	Part No. Unassembled	Part No. Assembled
1.89 (48)	**2200-48**	**2210-48**
2.28 (58)	**2200-58**	**2210-58**
2.68 (68)	**2200-68**	**2210-68**
2.87 (73)	**2200-73**	**2210-73**
3.46 (88)	**2200-88**	**2210-88**
3.90 (99)	**2200-99**	**2210-99**

- **Side plate**
  This separator is used for general subdivision of Energy Chains®.



Side Plate

Unassembled	**Part No. E6-35-03**
Assembled	**Part No. E6-35-13**



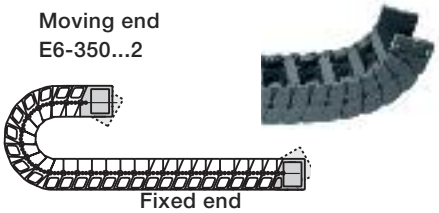
Energy Chain System® E6
Series E6-35
Mounting Bracket - KMA / Strain Relief

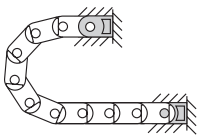
energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

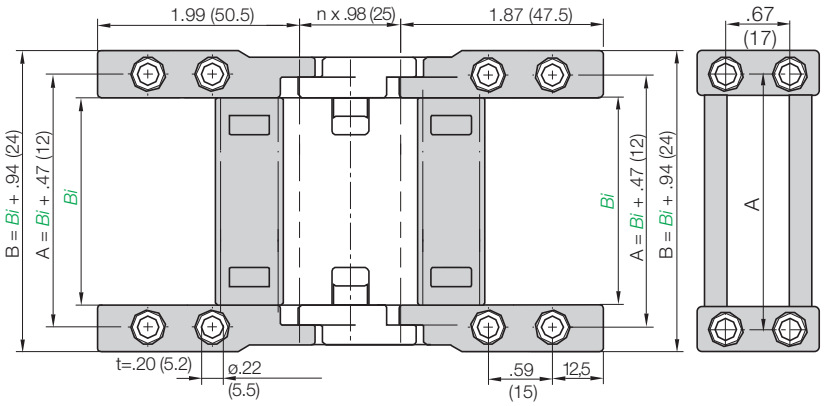
Option 1: KMA - Pivoting

- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides





Possible installation configurations -



Part Number Structure

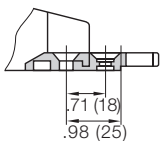
E6-350-	040-	12

12 = Complete Set
040 = Width
E6-350 = Mounting brackets for selected chain type

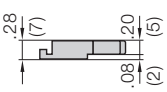
For Series	Part No. Full Set	Dimension B in.	(mm)	Dimension A in.	(mm)
E6-35-030	**E6-350-030-12**	2.13	(54)	1.65	(42)
E6-35-040	**E6-350-040-12**	2.52	(64)	2.05	(52)
E6-35-050	**E6-350-050-12**	2.91	(74)	2.44	(62)
E6-35-060	**E6-350-060-12**	3.31	(84)	2.83	(72)
E6-35-070	**E6-350-070-12**	3.70	(94)	3.23	(82)
E6-35-080	**E6-350-080-12**	4.09	(104)	3.62	(92)
E6-35-090	**E6-350-090-12**	4.49	(114)	4.02	(102)
E6-35-100	**E6-350-100-12**	4.88	(124)	4.41	(112)
E6-35-110	**E6-350-110-12**	5.28	(134)	4.80	(122)
E6-35-120	**E6-350-120-12**	5.67	(144)	5.20	(132)

Full set, for both ends:
E6-350- 040- 12 Full set, **both fixed and moving end**
Single-part order:
E6-350 - 040- 1 Mounting bracket **fixed end**
E6-350 - 040- 2 Mounting bracket **moving end**

Tiewrap Plates



Shown assembled

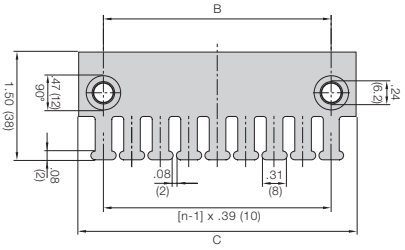


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plates	n Number of Teeth	Dimension C	Dimension B
2020-ZB	3	1.18 (30)	.59 (15)
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)



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 2020-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

Energy Chain System® E6
Series E6-35
Guide Trough

energy chain® configurator

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

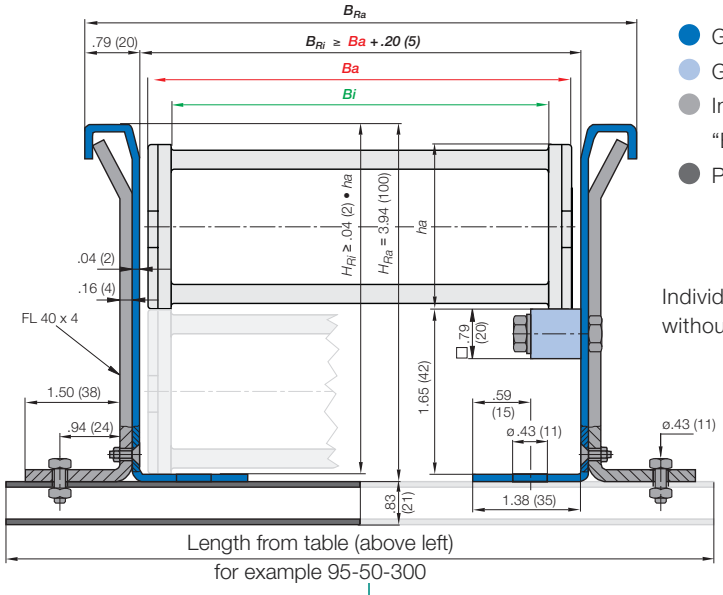
Required number of installation sets
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets
95-50-XXX
Example: 95-50-400 for 15.75 (400 mm) long profile rail

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

Installation sets as section connectors

Width of Crossbar
E6-35-**100**-055-0

	B_{Ri}	Installation Part No.
-030	1.18 (55)	*
-040	2.56 (65)	*
-050	2.95 (75)	**95-50-200**
-060	3.35 (85)	**95-50-200**
-070	3.74 (95)	**95-50-200**
-080	4.13 (105)	**95-50-225**
-090	4.53 (115)	**95-50-225**
-100	4.92 (125)	**95-50-250**
-110	5.31 (135)	**95-50-250**
-120	5.71 (145)	**95-50-250**



- Guide trough
- Glide bars
- Installation set "Basic"
- Profile rail

Individual attachment without profile rail

* Specialized guide trough available upon request

Standard length profile rail

Energy Chain System® E6
Series E6-40

1.57

Price Index

Series E6-40

Special Options Available

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

To close, push and click shut

Other Installation Methods

Vertical, hanging ≤ 98.4 ft (30 m)
Vertical, standing ≤ 6.56 ft (2 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

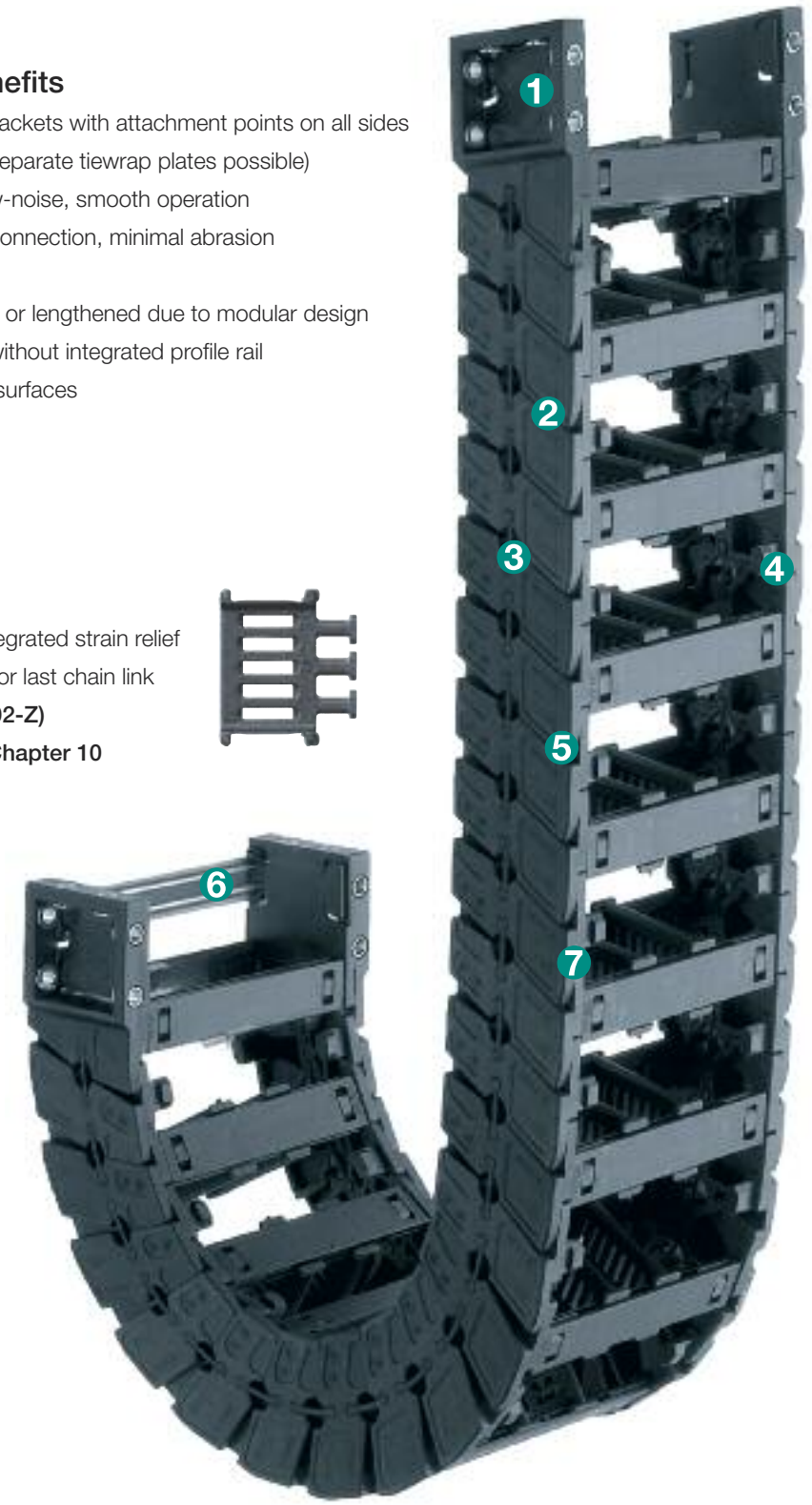
Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side mounted applications
  ➤ **Series 2828 E4/4**
- For RBR (Reverse Bending Radius)
  ➤ **Series 280 E4/100**
- For high additional loads
  ➤ **Series 2828 E4/4**
- For dirty environments
  ➤ **Series 2828 E4/4**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides (strain relief with separate tiewrap plates possible)
2. Small pitch for low-noise, smooth operation
3. No pin and bore connection, minimal abrasion
4. Interior stop dog
5. Can be shortened or lengthened due to modular design
6. Available with or without integrated profile rail
7. Very large gliding surfaces



● Also available:
Separator with integrated strain relief for use in the first or last chain link
(Part No. E6-40-02-Z)
➤ **Strain Relief, Chapter 10**

Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **E6-40-100-075-0**	**Energy Chain®**
With 2 separators **28222** assembled every 2nd link	**Interior Separation**
1 Set **E6-400-100-12**	**Mounting Bracket**

Energy Chain System® E6
Series E6-40
Installation Dimensions

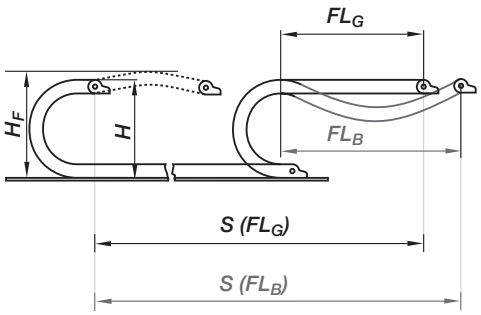
energy chain® configurator

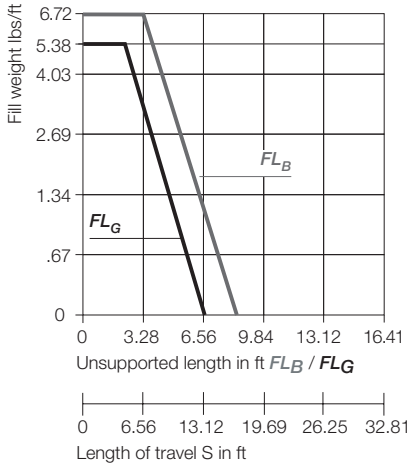
igus®

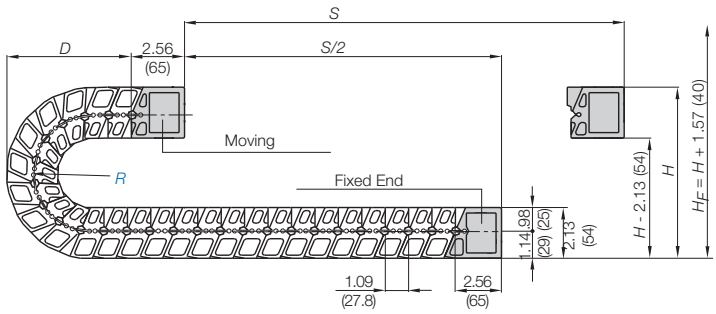
Short travel, unsupported length

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

Further information ➤ Design, Chapter 1







Pitch per link: = 1.09" (27.8 mm)
Links per ft (m): = 10.97 (36)
For center mount applications:
Chain length = $^{S}/_{2} + K$

The required clearance height: $H_F = H$ **+ 1.57 in. (40 mm)** (with 1.34 lbs/ft (2.0 kg/m) fill weight.
Please consult igus® if space is particularly restricted.

R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)	7.87 (200)
H	8.82 (224)	9.76 (248)	11.73 (298)	13.71 (348)	15.67 (398)	19.61 (498)
D	4.72 (120)	5.20 (132)	6.18 (157)	7.17 (182)	8.15 (207)	10.12 (257)
K	10.04 (255)	11.61 (295)	14.57 (370)	17.72 (450)	20.87 (530)	26.97 (685)

Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

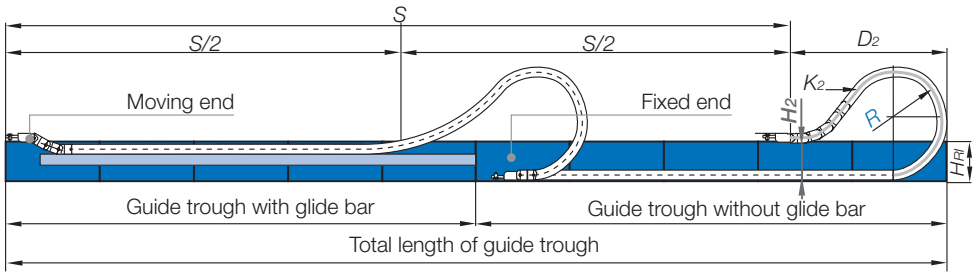
Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
$K = \pi \bullet R +$ *"safety buffer"*
H_F = Required clearance height
H_{RI} = Trough inner height
H_2 = *Mounting height
D_2 = Overlength - long travels, gliding
K_2 = *Add-on
*If the mounting bracket location is set lower

For long travels with lowered mounting height**

Long travel lengths from 19.6 ft.(6m) to max. 196.9 ft. (60m)

For center mount applications:
Chain length: = $^{S}/_{2} + K_2$



R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)	7.87 (200)
H_2^{+25}	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)
D_2	8.42 (214)	10.35 (263)	15.28 (388)	22.60 (574)	29.92 (760)	54.41 (1382)
K_2	4.41 (112)	12.05 (306)	29.25 (743)	28.46 (723)	38.31 (973)	58.03 (1474)

****If you intend to use this series on long travels, we request that you consult igus®**

Long Travels - Gliding

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

For support of the lower run, **see Chapter 9** for the **Support Tray tool kit**

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

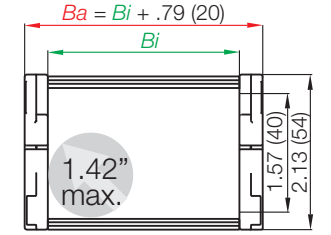
Details of material properties
➤ **Design, Chapter 1**

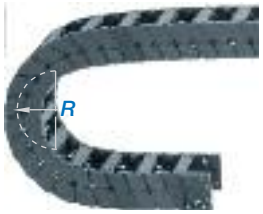
Energy Chain System® E6
Series E6-40

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series E6-40 - Energy Chain® with crossbars every other link



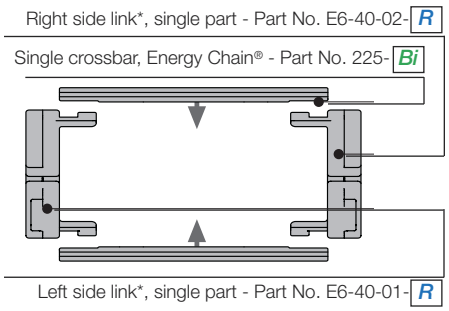


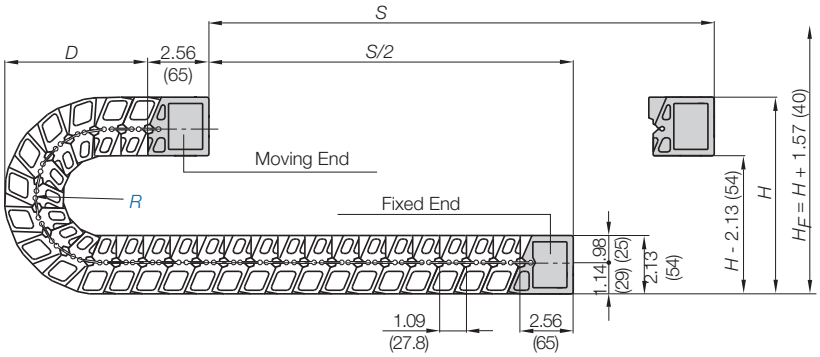
Part Number Structure

E6-40-100-100-0

- Color - Black
- Bending radius
- Width
- Series

Energy Chain® as separate parts, links and side plates





Polymer spring as single part -
Part No. E6-40-177

*View from the fixed point of the Energy Chain®/Energy Tube

Supplement part number with required radius. Example: E6-40-100-[100]-0
Pitch: 1.09 in. (27.8 mm) per link links/ft (m) = 10.97 (36)

Part Number	Bi in. (mm)	Ba in. (mm)	Weight lbs/ft (kg/m)
E6-40-040-[ ]-0	1.57 (40)	2.36 (60)	≈ 0.87 (1.29)
E6-40-050-[ ]-0	1.97 (50)	2.76 (70)	≈ 0.89 (1.33)
E6-40-062-[ ]-0	2.44 (62)	3.23 (82)	≈ 0.93 (1.38)
E6-40-070-[ ]-0	2.76 (70)	3.54 (90)	≈ 0.95 (1.41)
E6-40-075-[ ]-0	2.95 (75)	3.74 (95)	≈ 0.96 (1.43)
E6-40-087-[ ]-0	3.42 (87)	4.21 (107)	≈ 0.99 (1.48)
E6-40-100-[ ]-0	3.94 (100)	4.72 (120)	≈ 1.02 (1.53)
E6-40-125-[ ]-0	4.92 (125)	5.71 (145)	≈ 1.10 (1.63)
E6-40-150-[ ]-0	5.91 (150)	6.69 (170)	≈ 1.16 (1.73)
E6-40-175-[ ]-0	6.89 (175)	7.68 (195)	≈ 1.23 (1.83)
E6-40-200-[ ]-0	7.87 (200)	8.66 (220)	≈ 2.50 (1.93)
E6-40-225-[ ]-0	8.86 (225)	9.65 (245)	≈ 1.36 (2.02)
E6-40-250-[ ]-0	9.84 (250)	10.63 (270)	≈ 1.42 (2.12)
E6-40-275-[ ]-0	10.83 (275)	11.61 (295)	≈ 1.49 (2.22)
E6-40-300-[ ]-0	11.81 (300)	12.60 (320)	≈ 1.56 (2.32)

Choose from the radii below for all of the above sizes
Radius (mm) Example: E6-40-100-[100]-0

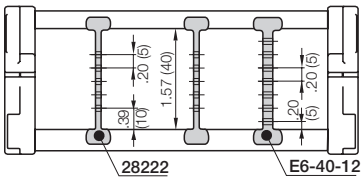
	063	075	100	125	150	200
R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)	7.87 (200)
H	8.82 (224)	9.76 (248)	11.73 (298)	13.71 (348)	15.67 (398)	19.61 (498)
D	4.72 (120)	5.20 (132)	6.18 (157)	7.17 (182)	8.15 (207)	10.12 (257)
K	10.04 (255)	11.61 (295)	14.57 (370)	17.72 (450)	20.87 (530)	26.97 (685)

Energy Chain System® E6
Series E6-40
Interior Separation

energy chain® configurator

Option 1: Vertical separators

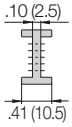
Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



STANDARD

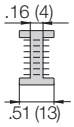
- **Slotted vertical separator**
  This separator is used for general subdivision of Energy Chains®. Can be used in combination with full-width shelf 221-X.

- **Locking vertical separator**
  For use with shelf 2210-X



Vertical Separator, Slotted

Unassembled	**Part No. 28221**
Assembled	**Part No. 28222**

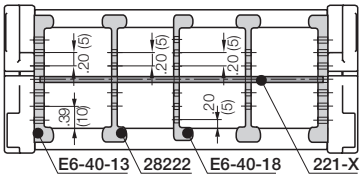


Locking Vertical Separator

Unassembled	**Part No. E6-40-02**
Assembled	**Part No. E6-40-12**

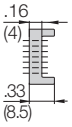
Option 2: Full-width shelf

For applications involving many thin cables with similar or identical diameters.
Full-width shelf **221-X** can be used with vertical separator **28222, side plate E6-40-13 and asymmetrical separator E6-40-18**



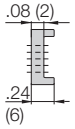
- **Side plate**
  This separator is used for general subdivision of Energy Chains®.

- **Asymmetrical separator**
  This separator is used for general subdivision of Energy Chains®.



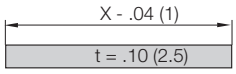
Side Plate

Unassembled	**Part No. E6-40-03**
Assembled	**Part No. E6-40-13**



Asymmetrical Separator

Unassembled	**Part No. E6-40-08**
Assembled	**Part No. E6-40-18**

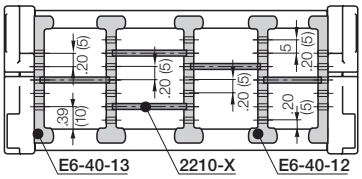


Shelves 220-XX
Shelves can be inserted at 5 different heights in .20" (5mm) increments

Width X in. (mm)	Part No. Unassembled	Part No. Assembled	Width X in. (mm)	Part No. Unassembled	Part No. Assembled
1.57 (040)	**220-40**	**221-40**	3.94 (100)	**220-100**	**221-100**
1.97 (050)	**220-50**	**221-50**	4.92 (125)	**220-125**	**221-125**
2.44 (062)	**220-62**	**221-62**	5.91 (150)	**220-150**	**221-150**
2.76 (070)	**220-70**	**221-70**	6.89 (175)	**220-175**	**221-175**
2.95 (075)	**220-75**	**221-75**	7.87 (200)	**220-200**	**221-200**
3.43 (087)	**220-87**	**221-87**			

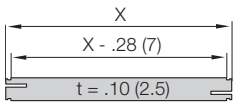
Option 3: Shelves

These components form the basic pattern of a shelf system.
Shelves of various widths can be arranged at 7 different heights in .20" (5mm) increments



Shelves 2200-XX
Shelf 2210-X can be used with **locking vertical separator E6-40-12** and **side plate E6-40-13**

Width X in. (mm)	Part No. Unassembled	Part No. Assembled	Width X in. (mm)	Part No. Unassembled	Part No. Assembled
.71 (18)	**2200-18**	**2210-18**	2.28 (58)	**2200-58**	**2210-58**
.91 (23)	**2200-23**	**2210-23**	2.28 (63)	**2200-65**	**2210-65**
1.10 (28)	**2200-28**	**2210-28**	2.68 (68)	**2200-68**	**2210-68**
1.30 (33)	**2200-33**	**2210-33**	2.87 (73)	**2200-73**	**2210-73**
1.50 (38)	**2200-38**	**2210-38**	3.46 (88)	**2200-88**	**2210-88**
1.69 (43)	**2200-43**	**2210-43**	3.90 (99)	**2200-99**	**2210-99**
1.89 (48)	**2200-48**	**2210-48**			



Energy Chain System® E6
Series E6-40
Mounting Bracket - KMA

energy chain® configurator

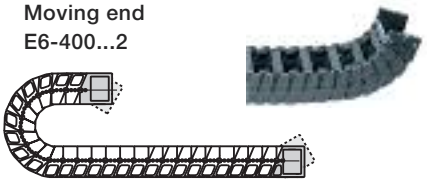
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Option 1: KMA - Pivoting

- Option - profile rail with integrated strain relief chainfix clip or tiewrap plates
- Profile rail can be mounted in the inner or outer radius of the Energy Chain®
- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides

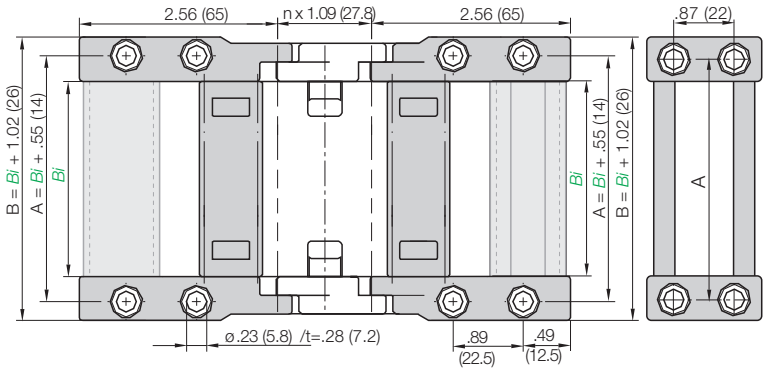
Adapters for gliding applications available upon request

Moving end
E6-400...2



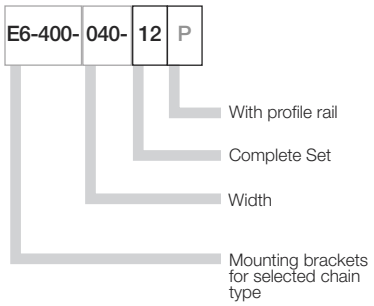
Fixed end
E6-400...1

Possible installation configurations -



For Series	Part No. Full Set Without Profile Rail	Part No. Full Set With Profile Rail	Dimension A in.	(mm)	Dimension B in.	(mm)
E6-40-040	**E6-400-040-12**	**E6-400-040-12P**	2.13	(54)	2.60	(66)
E6-40-050	**E6-400-050-12**	**E6-400-050-12P**	2.52	(64)	2.99	(76)
E6-40-062	**E6-400-062-12**	**E6-400-062-12P**	2.99	(76)	3.46	(88)
E6-40-070	**E6-400-070-12**	**E6-400-070-12P**	3.31	(84)	3.78	(96)
E6-40-075	**E6-400-075-12**	**E6-400-075-12P**	3.50	(89)	3.98	(101)
E6-40-087	**E6-400-087-12**	**E6-400-087-12P**	3.98	(101)	4.45	(113)
E6-40-100	**E6-400-100-12**	**E6-400-100-12P**	4.49	(114)	4.96	(126)
E6-40-125	**E6-400-125-12**	**E6-400-125-12P**	5.47	(139)	5.94	(151)
E6-40-150	**E6-400-150-12**	**E6-400-150-12P**	6.46	(164)	6.93	(176)
E6-40-175	**E6-400-175-12**	**E6-400-175-12P**	7.44	(189)	7.91	(201)
E6-40-200	**E6-400-200-12**	**E6-400-200-12P**	8.43	(214)	8.90	(226)
E6-40-225	**E6-400-225-12**	**E6-400-225-12P**	9.41	(239)	9.88	(251)
E6-40-250	**E6-400-250-12**	**E6-400-250-12P**	10.39	(264)	10.87	(276)
E6-40-275	**E6-400-275-12**	**E6-400-275-12P**	11.38	(289)	11.85	(301)
E6-40-300	**E6-400-300-12**	**E6-400-300-12P**	12.36	(314)	12.83	(326)

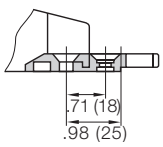
Part Number Structure



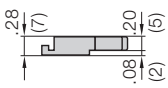
Full set, for both ends:
E6-400- 040- 12 Full set, **both fixed and moving end**

Single-part order:
E6-400 - 040- 1
Mounting bracket **fixed end**
E6-400 - 040- 2
Mounting bracket **moving end**

Tiewrap Plates



Shown assembled

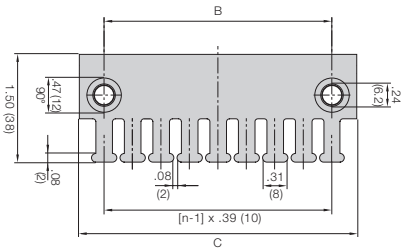


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plates	n Number of Teeth	Dimension C	Dimension B
2020-ZB	3	1.18 (30)	.59 (15)
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)



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 2020-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

Energy Chain System® E6
Series E6-40
Guide Trough

energy chain® configurator

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

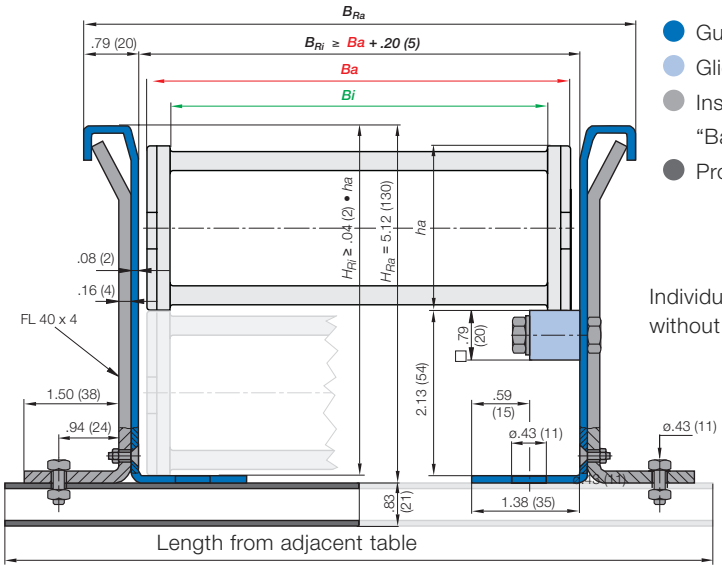
Required number of installation sets:
= Number of guide trough components + 1
= 25 + 1 = 26
Part number of the installation sets

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

Crossbar Width
E6-40-100-100-0

Dimension D
Installation
Part No.

-040	2.56 (65)	*
-050	2.95 (75)	**93-50-200**
-062	3.43 (87)	**93-50-200**
-070	3.74 (95)	**93-50-225**
-075	3.94 (100)	**93-50-225**
-087	4.41 (112)	**93-50-225**
-100	4.92 (125)	**93-50-250**
-125	5.91 (150)	**93-50-275**
-150	6.89 (175)	**93-50-300**
-175	7.87 (200)	**93-50-325**
-200	8.86 (225)	**93-50-350**
-225	9.84 (250)	**93-50-375**
-250	10.83 (275)	**93-50-400**
-275	11.81 (300)	**93-50-425**
-300	12.80 (325)	**93-50-450**



- Guide trough
- Glide bars
- Installation set "Basic"
- Profile rail

Individual attachment without profile rail

* Specialized guide trough available upon request

Standard length profile rail

Energy Chain System® E6
Series R6-40

1.57

Price Index

Series R6-40

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

Lever and remove lids

Other Installation Methods

Vertical, hanging ≤ 98.4 ft (30 m)
Vertical, standing ≤ 6.56 ft (2 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- Protection against hot chips
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side mounted applications
  ➤ **Series R7728 E4/4**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides (strain relief with separate tiewrap plates possible)
2. Fully enclosed Energy Tube
3. No pin and bore connection
4. Can be shortened or lengthened due to modular design
5. Very large gliding surfaces
6. Interior stop dog
7. Small pitch for low-noise, smooth operation

Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **R6-40-062-075-0**	**Energy Chain®**
With 2 separators **R6-40-11** assembled every 2nd link	**Interior Separation**
1 Set **R6-400-062-12**	**Mounting Bracket**

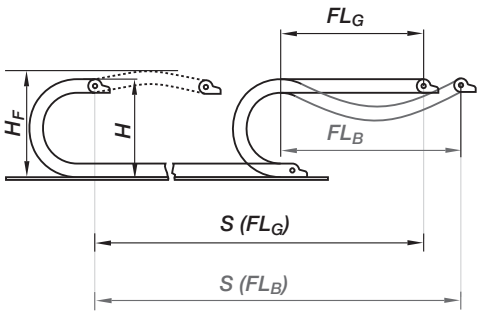
Energy Chain System® E6
Series R6-40
Installation Dimensions

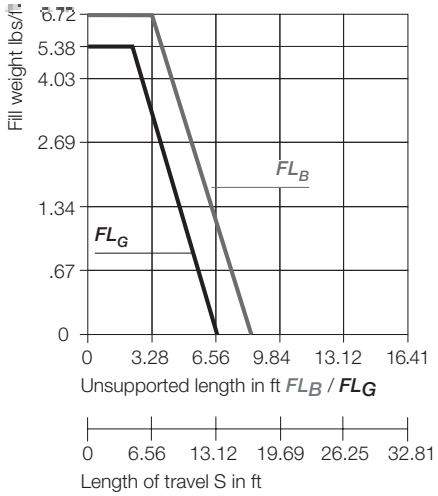
energy chain® configurator

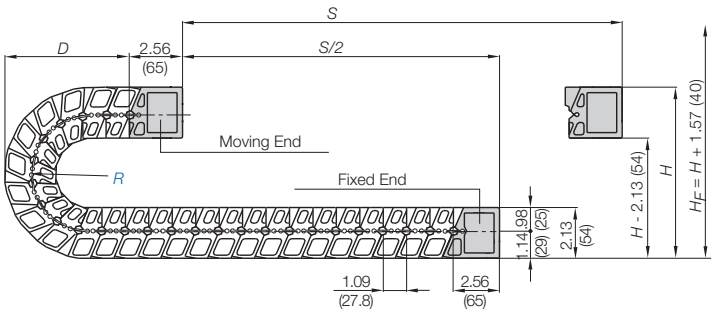
Short travel, unsupported length

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

Further information ➤ Design, Chapter 1







Pitch per link: = 1.09" (27.8 mm)
Links per ft (m): = 10.97 (36)
For center mount applications:
Chain length = $^{S}/_{2} + K$

The required clearance height: $H_F = H$ **+ 1.57 in. (40 mm)** (with 1.34 lbs/ft (2.0 kg/m) fill weight.
Please consult igus® if space is particularly restricted.

R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)	7.87 (200)
H	8.82 (224)	9.76 (248)	11.73 (298)	13.71 (348)	15.67 (398)	19.61 (498)
D	4.72 (120)	5.20 (132)	6.18 (157)	7.17 (182)	8.15 (207)	10.12 (257)
K	10.04 (255)	11.61 (295)	13.50 (343)	16.65 (423)	20.87 (530)	26.97 (685)

Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

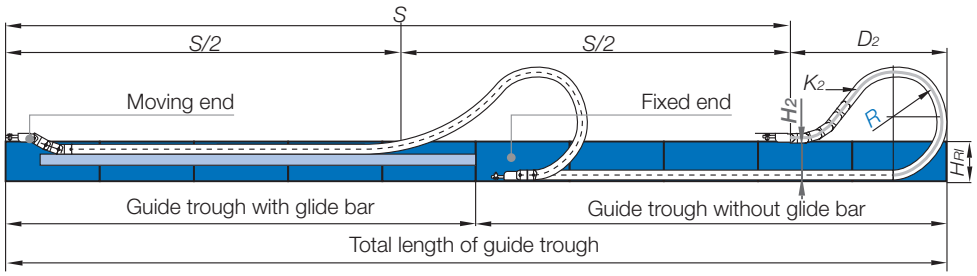
Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
K = $\pi \bullet R$ + *"safety buffer"*
H_F = Required clearance height
H_{RI} = Trough inner height
H_2 = *Mounting height
D_2 = Overlength - long travels, gliding
K_2 = *Add-on
*If the mounting bracket location is set lower

For long travels with lowered mounting height**

Long travel lengths from 19.6 ft.(6m) to max. 196.9 ft. (60m)

For center mount applications:
Chain length: = $^{S}/_{2} + K_2$



R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)	7.87 (200)
H_2+25	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)
D_2	8.42 (214)	10.35 (263)	15.28 (388)	22.60 (574)	29.92 (760)	54.41 (1382)
K_2	4.41 (112)	12.05 (306)	29.25 (743)	28.46 (723)	38.31 (973)	58.03 (1474)

**If you intend to use this series on long travels, we request that you consult igus®

Long Travels - Gliding

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

For support of the lower run, **see Chapter 9** for the **Support Tray tool kit**

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

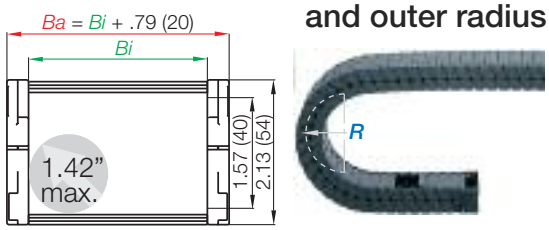
Details of material properties
➤ **Design, Chapter 1**

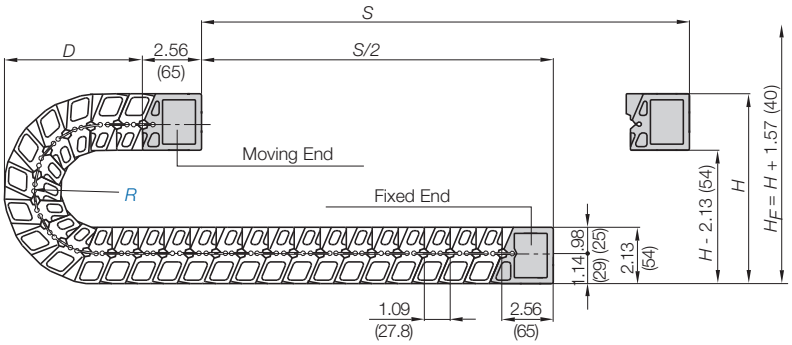
Energy Chain System® E6
Series R6-40

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series R6-40 - Energy Tube, removable lids along the inner and outer radius





Part Number Structure

R6-40- 062- 100- 0

- Color - Black
- Bending radius
- Width
- Series

Supplement part number with required radius. Example: R6-40-062-100-0
Pitch: 1.09 in. (27.8 mm) per link links/ft (m) = 10.97 (36)

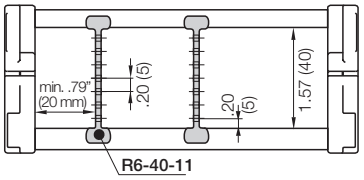
Part Number	Bi in. (mm)	Ba in. (mm)	Weight lbs/ft (kg/m)
R6-40-062- ☐ -0	2.44 (62)	3.23 (82)	≈ 0.97 (1.44)

Choose from the radii below for all of the above sizes
Radius (mm) Example: R6-40-062-100-0

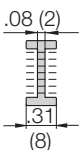
	063	075	100	125	150	200
R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)	7.87 (200)
H	8.82 (224)	9.76 (248)	11.73 (298)	13.71 (348)	15.67 (398)	19.61 (498)
D	4.72 (120)	5.20 (132)	6.18 (157)	7.17 (182)	8.15 (207)	10.12 (257)
K	10.04 (255)	11.61 (295)	13.50 (343)	16.65 (423)	20.87 (530)	26.97 (685)

Option 1: Vertical separators

Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



Vertical separator R6-40-01



Vertical Separator

Unassembled	**Part No. R6-40-01**
Assembled	**Part No. R6-40-11**

- **Vertical separator R6-40-01**
  This separator is used for general subdivision of Energy Tubes.
- Separator snaps onto either the bottom of the carrier or the lid. Stays attached to that side. Opposite side can be removed.

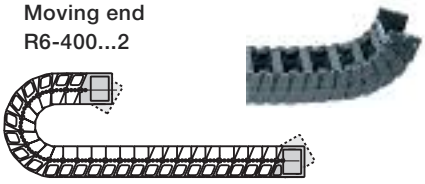
Energy Chain System® E6
Series R6-40
Mounting Bracket - KMA / Strain Relief

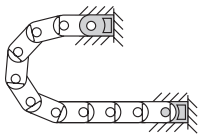
energy chain® configurator

Option 1: KMA - Pivoting

- Option - profile rail with integrated strain relief chainfix clip or tiewrap plates
- Profile rail can be mounted in the inner or outer radius of the Energy Chain®
- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides

Moving end
R6-400...2

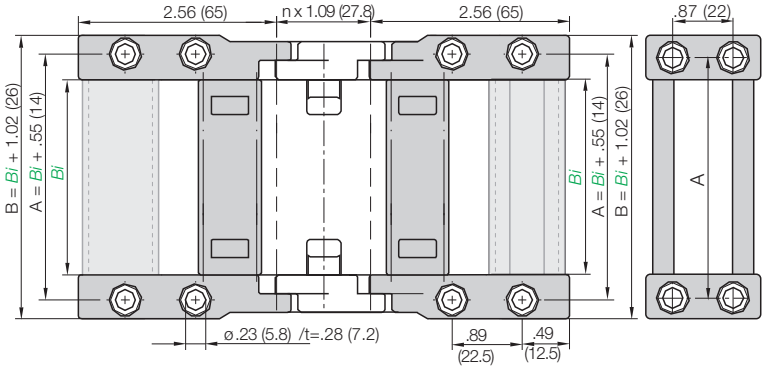




Possible installation configurations -

Fixed end
R6-400...1

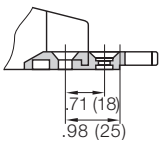
Adapters for gliding applications available upon request



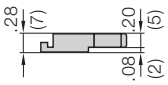
For Series	Part No. Full Set Without Profile Rail	Part No. Full Set With Profile Rail	Dimension A in.	(mm)	Dimension B in.	(mm)
R6-40-062	**R6-400-062-12**	**R6-400-062-12P**	2.99	(76)	3.46	(88)

Full set, for both ends:
R6-400- 062- 12 Full set, **both fixed and moving end**
Single-part order:
R6-400 - 062- 1 Mounting bracket **fixed end**
R6-400 - 062- 2 Mounting bracket **moving end**

Tiewrap Plates



Shown assembled

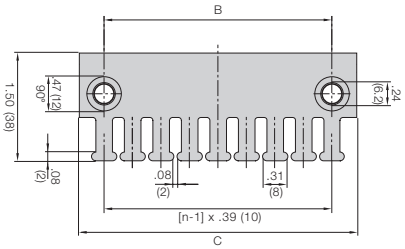


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plates	n Number of Teeth	Dimension C	Dimension B
2020-ZB	3	1.18 (30)	.59 (15)
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)



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 2020-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

Energy Chain System® E6
Series R6-40
Guide Trough

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

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.

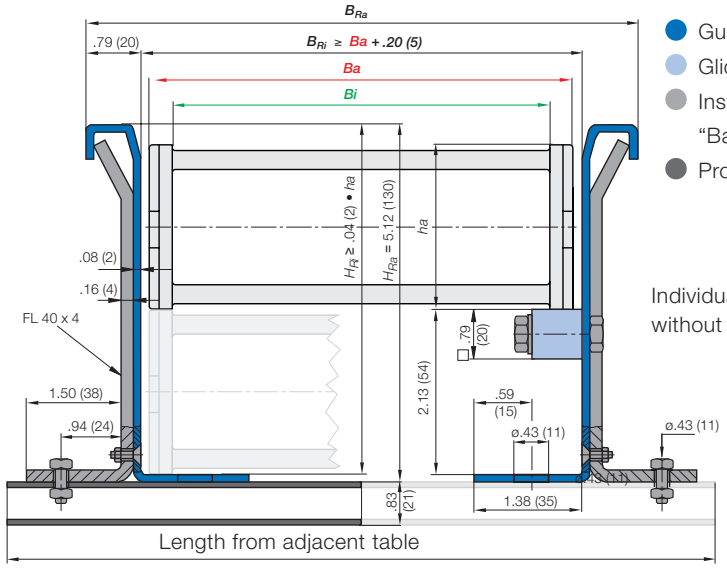
Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 98-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 92-01

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

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

Crossbar Width
E6-40-100-100-0
Dimension D
Installation Part No.

-040	2.56 (65)	*
-050	2.95 (75)	**93-50-200**
-062	3.43 (87)	**93-50-200**
-070	3.74 (95)	**93-50-225**
-075	3.94 (100)	**93-50-225**
-087	4.41 (112)	**93-50-225**
-100	4.92 (125)	**93-50-250**
-125	5.91 (150)	**93-50-275**
-150	6.89 (175)	**93-50-300**
-175	7.87 (200)	**93-50-325**
-200	8.86 (225)	**93-50-350**
-225	9.84 (250)	**93-50-375**
-250	10.83 (275)	**93-50-400**
-275	11.81 (300)	**93-50-425**
-300	12.80 (325)	**93-50-450**



PDF: www.igus.com/e-chain-pdfs
Specs/CAD/RFQ: www.igus.com/e-chains
RoHS info: www.igus.com/RoHS





Energy Chain System® E6
Series E6-52

2.05

Price Index

Series E6-52

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

To close, push and click shut

Other Installation Methods

Vertical, hanging ≤ 164 ft (50 m)
Vertical, standing ≤ 6.56 ft (2 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

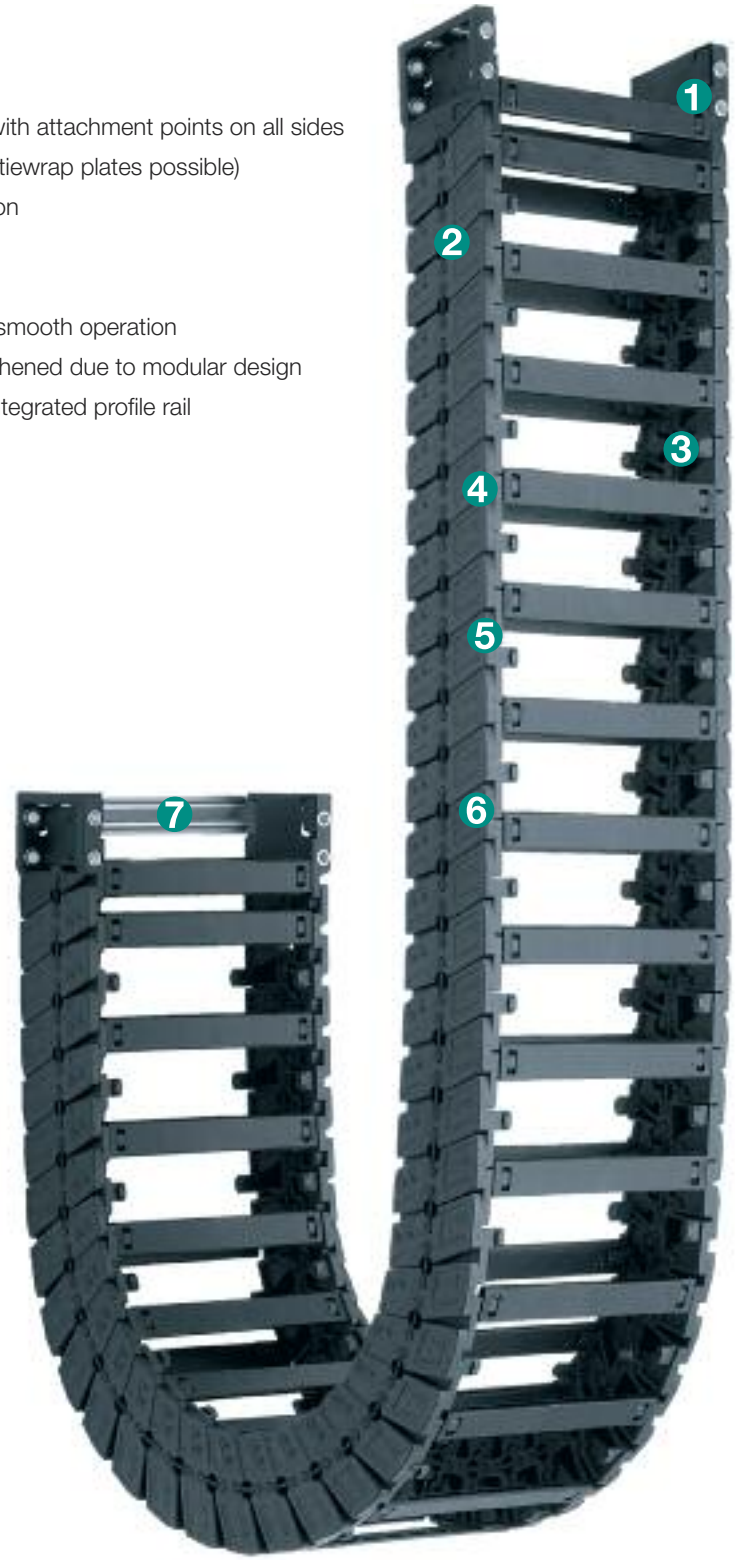
Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side mounted applications
  ➤ **Series 4040 E4/4**
- For RBR (Reverse Bending Radius)
  ➤ **Series 400 E4/4**
- For high additional loads
  ➤ **Series 4040 E4/100**
- For dirty environments
  ➤ **Series 4040 E4/4**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides (strain relief with separate tiewrap plates possible)
2. No pin and bore connection
3. Interior stop dog
4. Very large gliding surfaces
5. Small pitch for low-noise, smooth operation
6. Can be shortened or lengthened due to modular design
7. Available with or without integrated profile rail



Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **E6-52-100-175-0**	**Energy Chain®**
With 2 separators **38222** assembled every 2nd link	**Interior Separation**
1 Set **E6-520-100-12**	**Mounting Bracket**

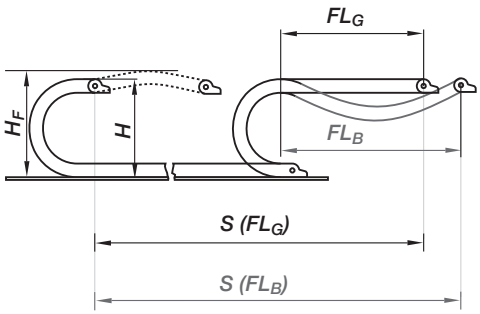
Energy Chain System® E6
Series E6-52
Installation Dimensions

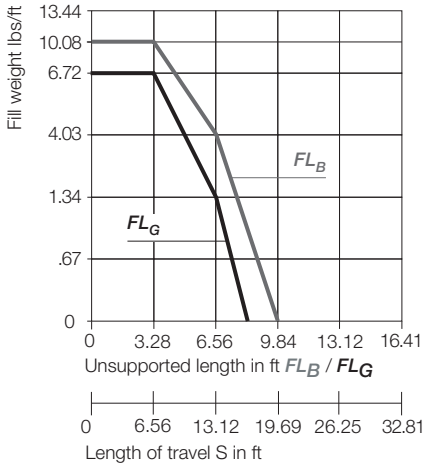
energy chain® configurator

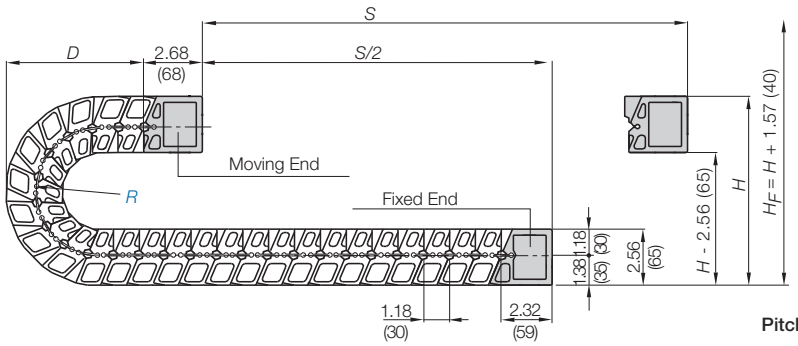
Short travel, unsupported length

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

Further information ➤ Design, Chapter 1







The required clearance height: $H_F = H + 1.57$ in. (40 mm) (with 1.34 lbs/ft (2.0 kg/m) fill weight. Please consult igus® if space is particularly restricted.

R	2.95 (075)	3.94 (100)	5.91 (150)	7.87 (200)	9.84 (250)
H	10.63 (270)	12.60 (320)	16.54 (420)	20.47 (520)	24.41 (620)
D	5.51 (140)	6.50 (165)	8.46 (215)	10.43 (265)	12.40 (315)
K	11.81 (300)	14.76 (375)	21.06 (535)	27.17 (690)	33.46 (850)

Pitch per link: = 1.18" (30 mm)
Links per ft (m): = 10.17 (34)
For center mount applications:
Chain length = $^{S}/_{2} + K$

Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

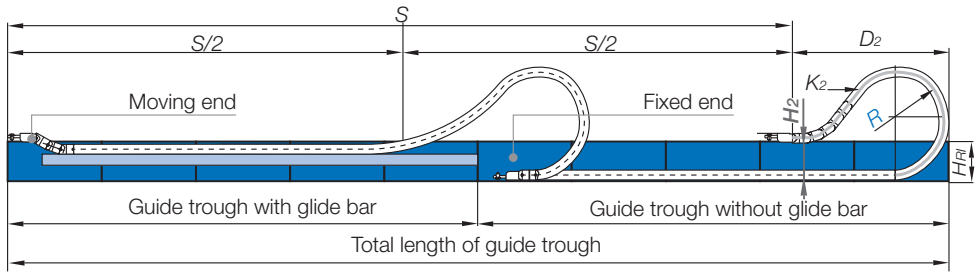
Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
$K = \pi \bullet R +$ *"safety buffer"*
H_F = Required clearance height
H_{RI} = Trough inner height
H_2 = *Mounting height
D_2 = Overlength - long travels, gliding
K_2 = *Add-on
*If the mounting bracket location is set lower

For long travels with lowered mounting height**

Long travel lengths from 19.6 ft.(6m) to max. 262 ft. (80m)

For center mount applications:
Chain length: = $^{S}/_{2} + K_2$



R	2.95 (075)	3.94 (100)	5.91 (150)	7.87 (200)	9.84 (250)
H_2	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)
$D_2{}^{+25}$	10.63 (270)	15.67 (398)	30.24 (768)	44.80 (1138)	59.37 (1508)
K_2	11.81 (300)	18.90 (480)	38.98 (990)	57.87 (1470)	76.77 (1950)

****If you intend to use this series on long travels, we request that you consult igus®**

Long Travels - Gliding

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough.

➤ Design, Chapter 1

For support of the lower run, **see Chapter 9** for the **Support Tray tool kit**

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

Details of material properties

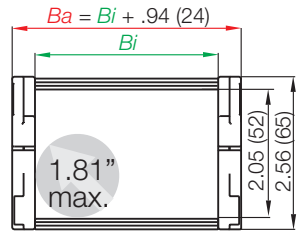
➤ Design, Chapter 1

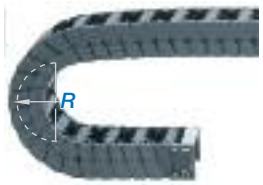
Energy Chain System® E6
Series E6-52

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series E6-52 - Energy Chain® with crossbars every other link



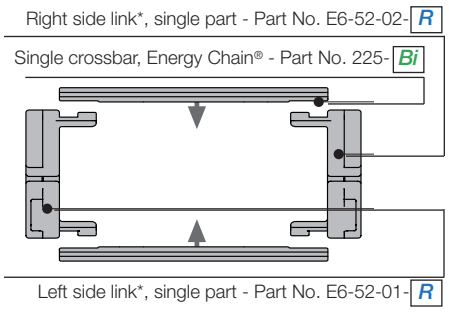


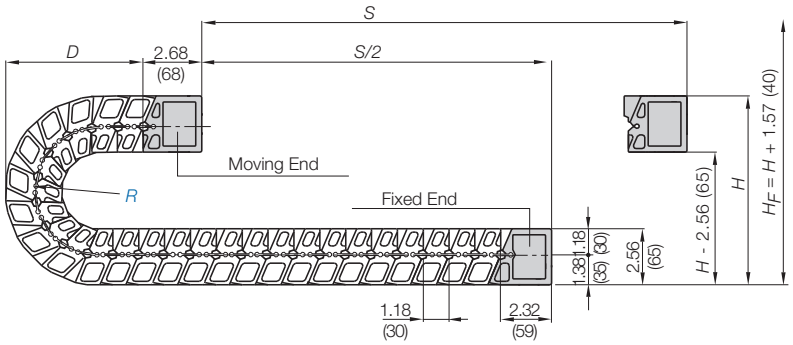
Part Number Structure

E6-52- 100- 075- 0

- 075 - Color - Black
- 100 - Bending radius
- E6-52- - Width
- 100- - Series

Energy Chain® as separate parts, side links and crossbars





Polymer spring as single part -
Part No. E6-52-195

*View from the fixed point of the Energy Chain®/Energy Tube

Supplement part number with required radius. Example: E6-52-100-[075]-0
Pitch: 1.18 in. (30 mm) per link links/ft (m) = 10.36 (34)

Part Number	*Bi* in. (mm)	*Ba* in. (mm)	Weight lbs/ft (kg/m)
E6-52-040-[ ]-0	1.57 (40)	2.51 (64)	≈1.18 (1.76)
E6-52-050-[ ]-0	1.97 (50)	2.91 (74)	≈1.21 (1.80)
E6-52-062-[ ]-0	2.44 (62)	3.39 (86)	≈1.24 (1.84)
E6-52-070-[ ]-0	2.76 (70)	3.70 (94)	≈1.26 (1.87)
E6-52-075-[ ]-0	2.95 (75)	3.90 (99)	≈2.40 (1.89)
E6-52-087-[ ]-0	3.42 (87)	4.37 (111)	≈1.30 (1.94)
E6-52-100-[ ]-0	3.94 (100)	4.88 (124)	≈1.33 (1.98)
E6-52-125-[ ]-0	4.92 (125)	5.87 (149)	≈1.39 (2.07)
E6-52-150-[ ]-0	5.91 (150)	6.85 (174)	≈1.46 (2.17)
E6-52-175-[ ]-0	6.89 (175)	7.83 (199)	≈1.52 (2.26)
E6-52-200-[ ]-0	7.87 (200)	8.82 (224)	≈1.59 (2.36)
E6-52-225-[ ]-0	8.86 (225)	9.80 (249)	≈1.65 (2.45)
E6-52-250-[ ]-0	9.84 (250)	10.79 (274)	≈1.71 (2.54)
E6-52-275-[ ]-0	10.83 (275)	11.77 (299)	≈1.77 (2.64)
E6-52-300-[ ]-0	11.81 (300)	12.76 (324)	≈1.83 (2.73)

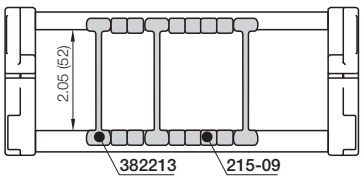
Choose from the radii below for all of the above sizes
Radius (mm) Example: E6-52-100-[075]-0

	075	100	150	200	250
R	2.95 (075)	3.94 (100)	5.91 (150)	7.87 (200)	9.84 (250)
H	10.63 (270)	12.60 (320)	16.54 (420)	20.47 (520)	24.41 (620)
D	5.51 (140)	6.50 (165)	8.46 (215)	10.43 (265)	12.40 (315)
K	11.81 (300)	14.76 (375)	21.06 (535)	27.17 (690)	33.46 (850)

Energy Chain System® E6
Series E6-52
Interior Separation

Option 1: Vertical separators and spacers

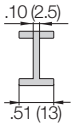
Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



STANDARD

- **Vertical separator**
  This separator is used for general subdivision of Energy Chains®.

- **Spacer**
  Used when a broad distance needs to be maintained between the separators. Generally used in side-mounted applications



Vertical Separator

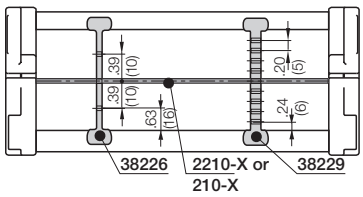
Unassembled	**Part No. 382212**
Assembled	**Part No. 382213**

Spacer

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

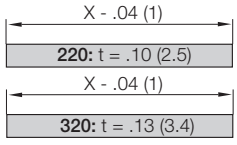
Option 2: Full-width shelf

For applications involving many thin cables with similar or identical diameters. Slotted separator **38226** and **38229** can be used in combination with full-width shelf **321-X**. Locking vertical separator **382215** can also be used with full-width shelf **221-X**.

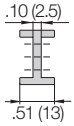


Width X in. (mm)	Part No. Unassembled		Part No. Assembled	
	220-X	320-X	221-X	321-X
1.57 (040)	**220-40**	**320-40**	**221-40**	**321-40**
1.97 (050)	**220-50**	**320-50**	**221-50**	**321-50**
2.44 (062)	**220-62**	**320-62**	**221-62**	**321-62**
2.76 (070)	**220-70**	**320-70**	**221-70**	**321-70**
2.95 (075)	**220-75**	**320-75**	**221-75**	**321-75**
3.43 (087)	**220-87**	**320-87**	**221-87**	**321-87**
3.94 (100)	**220-100**	**320-100**	**221-100**	**321-100**
4.92 (125)	**220-125**	**320-125**	**221-125**	**321-125**
5.91 (150)	**220-150**	**320-150**	**221-150**	**321-150**
6.89 (175)	**220-175**	**320-175**	**221-175**	**321-175**
7.87 (200)	**220-200**	**320-200**	**221-200**	**321-200**

Shelves 220-X/320-XX
Shelves can be inserted at 9 different heights in .20" (5mm) increments



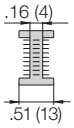
- **Vertical separator, slotted**
  This separator is used for general sub-division of Energy Chains®. Can be used in combination with full-width shelf 321-X.



Vertical Separator, slotted

Unassembled	**Part No. 38225**
Assembled	**Part No. 38226**

- **Locking vertical separator**
  This separator is used for general subdivision of Energy Chains®.

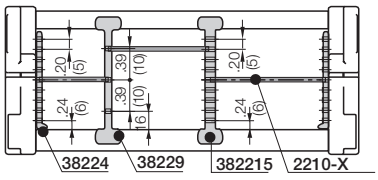


Locking Vertical Separator

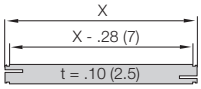
Unassembled	**Part No. 38228**
Assembled	**Part No. 38229**

Option 3: Shelves

These components form the basic pattern of a shelf system. Shelves of various widths can be arranged at 9 different heights in .20" (5mm) increments



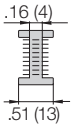
Shelves 2200-XX
Shelf 2210-X can be used with **vertical separator 38222, locking separator 382215** and **side plate 38224.**
Locking vertical separator **382215** can also be used with full-width shelf **221-X.**



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**

Width X in. (mm)	Part No. Unassembled	Part No. Assembled
2.28 (58)	**2200-58**	**2210-58**
2.28 (63)	**2200-65**	**2210-65**
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**

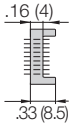
- **Locking vertical separator**
  This separator is used when higher retention force is needed.



Locking Vertical Separator

Unassembled	**Part No. 382214**
Assembled	**Part No. 382215**

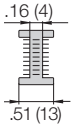
- **Side plate**
  This separator is used for general subdivision of Energy Chains®.



Side Plate

Unassembled	**Part No. 38223**
Assembled	**Part No. 38224**

- **Vertical separator, slotted**
  Can be used in combination with full-width shelf 321-X.



Vertical Separator, Slotted

Unassembled	**Part No. 38221**
Assembled	**Part No. 38222**

Energy Chain System® E6
Series E6-52
Mounting Brackets - KMA / Strain Relief

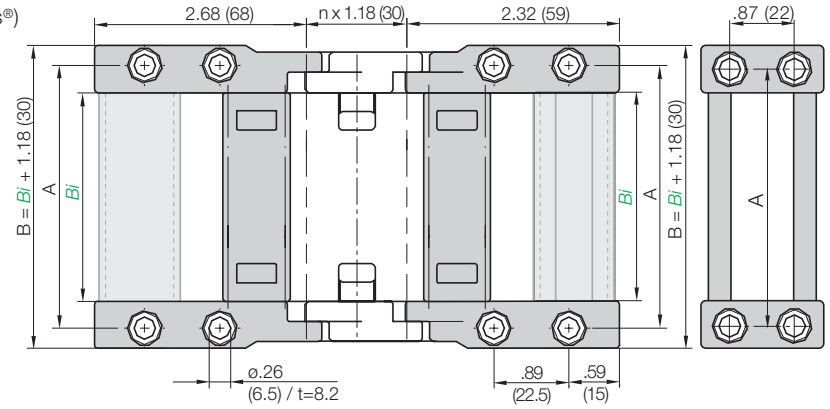
energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Option 1: KMA - Pivoting

- Option - profile rail with integrated strain relief chainfix clip or tiewrap plates
- Profile rail can be mounted in the inner or outer radius of the Energy Chain®
- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides

Adapters for gliding applications available upon request



For Series	Part No. Full Set Without Profile Rail	Part No. Full Set With Profile Rail	Dimension A in.	Dimension A (mm)	Dimension B in.	Dimension B (mm)
E6-52-040	**E6-520-040-12**	**E6-520-040-12P**	2.20	(56)	2.76	(70)
E6-52-050	**E6-520-050-12**	**E6-520-050-12P**	2.60	(66)	3.15	(80)
E6-52-062	**E6-520-062-12**	**E6-520-062-12P**	3.07	(78)	3.62	(92)
E6-52-070	**E6-520-070-12**	**E6-520-070-12P**	3.39	(86)	3.94	(100)
E6-52-075	**E6-520-075-12**	**E6-520-075-12P**	3.58	(91)	4.13	(105)
E6-52-087	**E6-520-087-12**	**E6-520-087-12P**	4.06	(103)	4.61	(117)
E6-52-100	**E6-520-100-12**	**E6-520-100-12P**	4.57	(116)	5.12	(130)
E6-52-125	**E6-520-125-12**	**E6-520-125-12P**	5.55	(141)	6.10	(155)
E6-52-150	**E6-520-150-12**	**E6-520-150-12P**	6.54	(166)	7.09	(180)
E6-52-175	**E6-520-175-12**	**E6-520-175-12P**	7.52	(191)	8.07	(205)
E6-52-200	**E6-520-200-12**	**E6-520-200-12P**	8.50	(216)	9.06	(230)
E6-52-225	**E6-520-225-12**	**E6-520-225-12P**	9.49	(241)	10.04	(255)
E6-52-250	**E6-520-250-12**	**E6-520-250-12P**	10.47	(266)	11.02	(280)
E6-52-275	**E6-520-275-12**	**E6-520-275-12P**	11.46	(291)	11.81	(300)
E6-52-300	**E6-520-300-12**	**E6-520-300-12P**	12.44	(316)	12.99	(330)

Part Number Structure

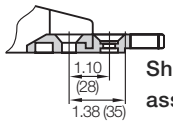
E6-520-	040-	12	P

- P: With profile rail
- 12: Complete Set
- 040-: Width
- E6-520-: Mounting brackets for selected chain type

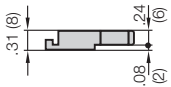
Full set, for both ends:
E6-520- 040- 12 Full set, **both fixed and moving end**

Single-part order:
E6-520 - 040- 1
Mounting bracket **fixed end**
E6-520 - 040- 2
Mounting bracket **moving end**

Tiewrap Plates



Shown assembled

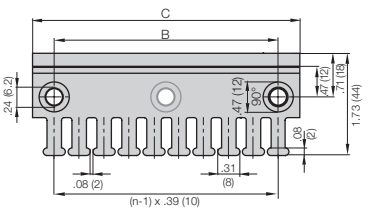


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plate	n Number of Teeth	C Overall Width in. (mm)	B Bore Width in. (mm)	Center Bore
3050-ZB	5	1.97 (50)	1.18 (30)	no
3075-ZB	7	2.95 (75)	2.16 (55)	no
3100-ZB	10	3.94 (100)	3.15 (80)	no
3115-ZB	11	4.53 (115)	3.74 (95)	no
3125-ZB	12	4.92 (125)	4.13 (105)	no
3150-ZB	15	5.91 (150)	5.12 (130)	no
3175-ZB	17	6.89 (175)	6.10 (155)	no
3200-ZB	20	7.87 (200)	7.09 (180)	yes
3225-ZB	22	8.86 (225)	8.07 (205)	yes
3250-ZB	25	9.84 (250)	9.06 (230)	yes



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 3050-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

Energy Chain System® E6
Series E6-52
Guide Trough

energy chain® configurator

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

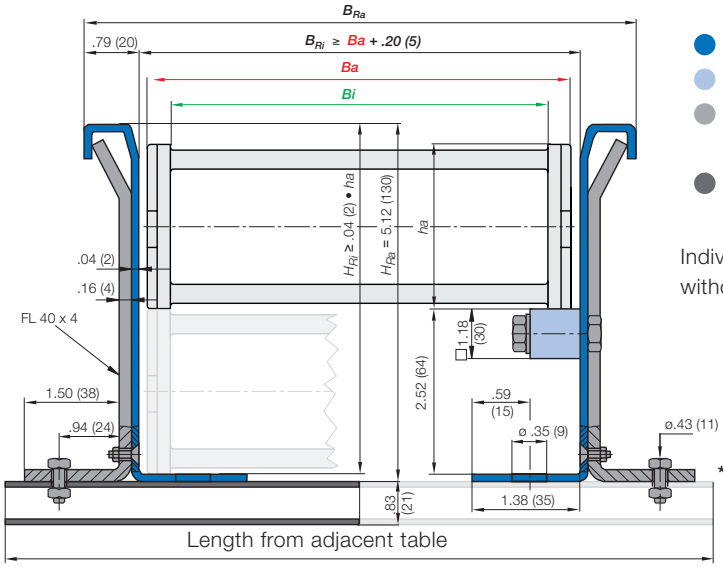
Example: 93-50-400 for 15.75" (400 mm) long profile rail.

Crossbar Width
E6-52-100-100-0

Dimension D

Installation Part No.

-040	2.72 (69)	*
-050	3.11 (79)	**93-50-200**
-075	4.09 (104)	**93-50-225**
-100	5.08 (129)	**93-50-250**
-125	6.06 (154)	**93-50-275**
-150	7.04 (179)	**93-50-300**
-175	8.03 (204)	**93-50-325**
-200	9.01 (229)	**93-50-350**
-225	10.00 (254)	**93-50-375**
-250	10.98 (279)	**93-50-400**
-275	11.97 (304)	**93-50-425**
-300	12.95 (329)	**93-50-450**



- Guide trough
- Glide bars
- Installation set "Basic"
- Profile rail

Individual attachment without profile rail

* Specialized guide trough available upon request

Standard length profile rail

Energy Chain System® E6
Series R6-52

2.05

Price Index

Series R6-52

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

Lever and remove lids

Other Installation Methods

Vertical, hanging ≤ 164 ft (50 m)
Vertical, standing ≤ 6.56 ft (2 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

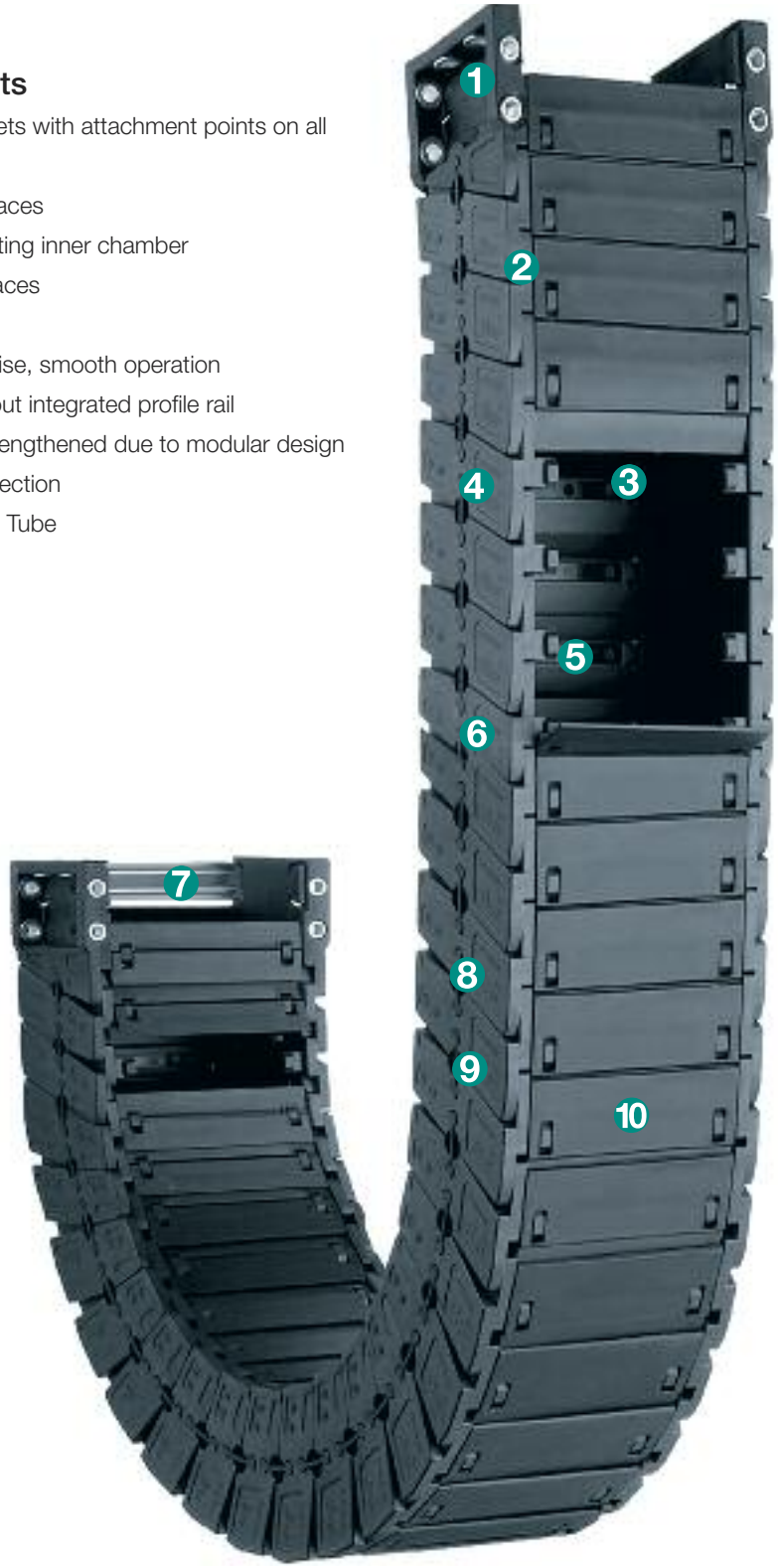
Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- Protection against dirt and chips
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side mounted applications
  ➤ **Series R8840 E4/4**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides
2. Very large gliding surfaces
3. Smooth, cable protecting inner chamber
4. Continuous glide surfaces
5. Interior stop dog
6. Small pitch for low-noise, smooth operation
7. Available with or without integrated profile rail
8. Can be shortened or lengthened due to modular design
9. No pin and bore connection
10. Fully enclosed Energy Tube



Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **R6-52-100-075-0**	**Energy Chain®**
With 2 separators **R6-52-11** assembled every 2nd link	**Interior Separation**
1 Set **R6-520-100-12**	**Mounting Bracket**

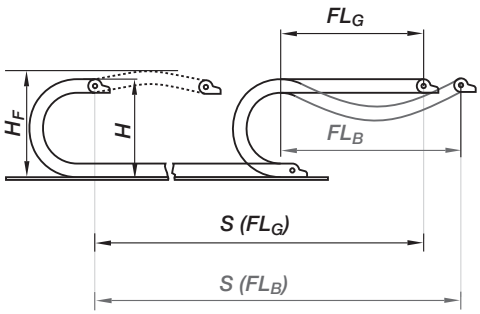
Energy Chain System® E6 Series R6-52 Installation Dimensions

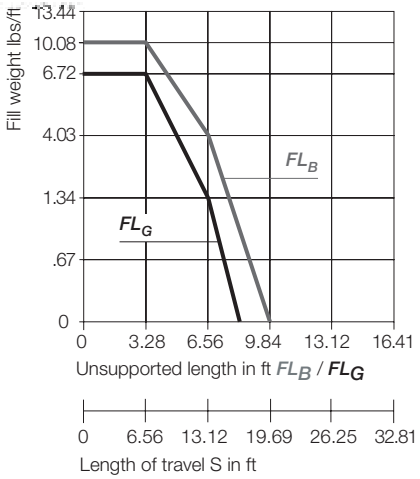
energy chain® configurator

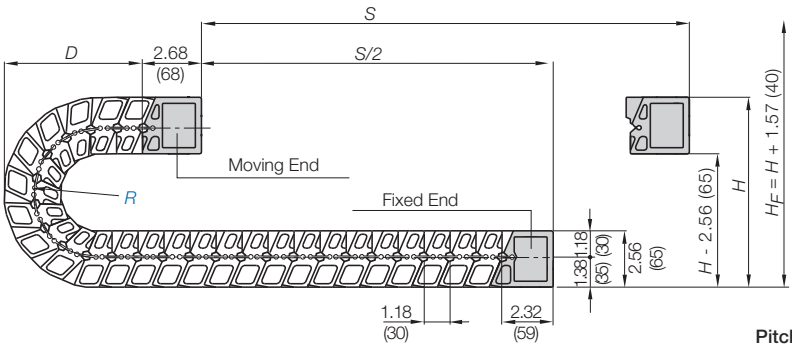
Short travel, unsupported length

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

Further information ➤ Design, Chapter 1







The required clearance height: $H_F = H + 1.57$ in. (40 mm) (with 1.34 lbs/ft (2.0 kg/m) fill weight. Please consult igus® if space is particularly restricted.

R	2.95 (075)	3.94 (100)	5.91 (150)	7.87 (200)	9.84 (250)
H	10.63 (270)	12.60 (320)	16.54 (420)	20.47 (520)	24.41 (620)
D	5.51 (140)	6.50 (165)	8.46 (215)	10.43 (265)	12.40 (315)
K	11.81 (300)	14.76 (375)	21.06 (535)	27.17 (690)	33.46 (850)

Pitch per link: = 1.18" (30 mm)
Links per ft (m): = 10.17 (34)
For center mount applications:
Chain length = $^{S}/_{2} + K$

Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

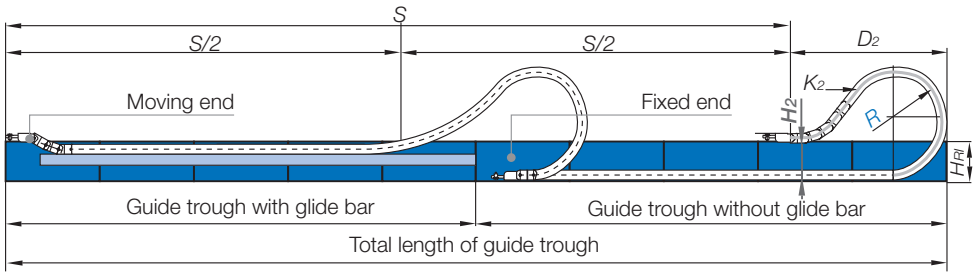
Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
K = $\pi \bullet R +$ *"safety buffer"*
H_F = Required clearance height
H_{RI} = Trough inner height
H_2 = *Mounting height
D_2 = Overlength - long travels, gliding
K_2 = *Add-on
*If the mounting bracket location is set lower

For long travels with lowered mounting height**

Long travel lengths from 19.6 ft.(6m) to max. 262 ft. (80m)

For center mount applications:
Chain length: = $^{S}/_{2} + K_2$



R	2.95 (075)	3.94 (100)	5.91 (150)	7.87 (200)	9.84 (250)
H_2	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)
D_2+25	10.63 (270)	15.67 (398)	30.24 (768)	44.80 (1138)	59.37 (1508)
K_2	11.81 (300)	18.90 (480)	38.98 (990)	57.87 (1470)	76.77 (1950)

**If you intend to use this series on long travels, we request that you consult igus®

Long Travels - Gliding

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough.

➤ **Design, Chapter 1**

For support of the lower run, **see Chapter 9** for the **Support Tray tool kit**

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

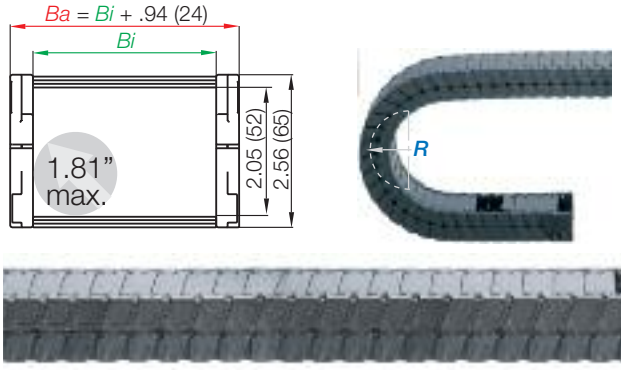
Details of material properties

➤ **Design, Chapter 1**

Energy Chain System® E6
Series R6-52

energy chain® configurator

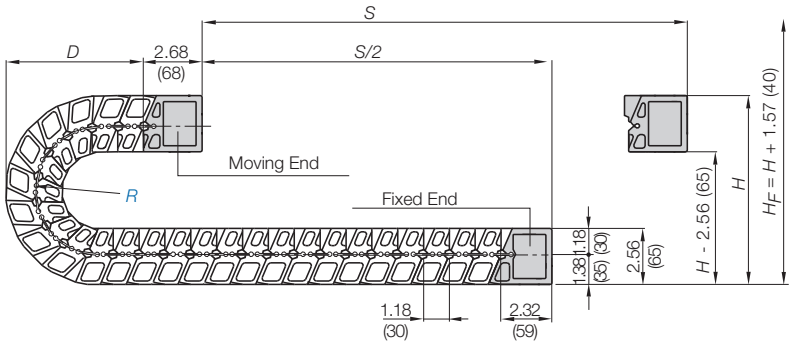
Series R6-52 - Energy Chain® with lids



Part Number Structure

R6-52- 100- 075- 0

- 075 – Color - Black
- 100 – Bending radius
- R6-52- – Width
- 0 – Series



Supplement part number with required radius. Example: R6-52-100-[075]-0
Pitch: 1.18 in. (30 mm) per link links/ft (m) = 10.36 (34)

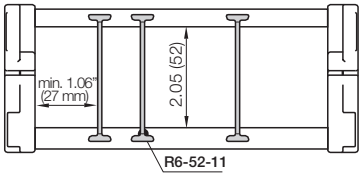
Part Number	*Bi* in. (mm)	*Ba* in. (mm)	Weight lbs/ft (kg/m)
R6-52-050-[ ]-0	1.97 (50)	2.91 (74)	≈1.27 (1.89)
R6-52-075-[ ]-0	2.95 (75)	3.90 (99)	≈1.42 (2.12)
R6-52-100-[ ]-0	3.94 (100)	4.88 (124)	≈1.58 (2.35)
R6-52-125-[ ]-0	4.92 (125)	5.87 (149)	≈1.73 (2.57)
R6-52-150-[ ]-0	5.91 (150)	6.85 (174)	≈1.88 (2.80)
R6-52-175-[ ]-0	6.89 (175)	7.83 (199)	≈2.04 (3.03)

Choose from the radii below for all of the above sizes
Radius (mm) Example: R6-52-100-[075]-0

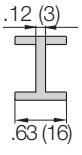
	075	100	150	200	250
R	2.95 (075)	3.94 (100)	5.91 (150)	7.87 (200)	9.84 (250)
H	10.63 (270)	12.60 (320)	16.54 (420)	20.47 (520)	24.41 (620)
D	5.51 (140)	6.50 (165)	8.46 (215)	10.43 (265)	12.40 (315)
K	11.81 (300)	14.76 (375)	21.06 (535)	27.17 (690)	33.46 (850)

Option 1: Vertical separators

Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



Vertical separator R6-52-01



Vertical Separator

Unassembled	**Part No. R6-52-01**
Assembled	**Part No. R6-52-11**

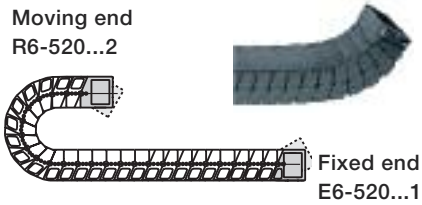
- **Vertical separator R6-52-01**
  This separator is used for general subdivision of Energy Tubes.
- Separator snaps onto either the bottom of the carrier or the lid. Stays attached to that side. Opposite side can be removed.

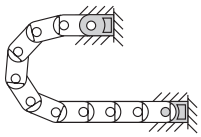
igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Energy Chain System® E6
Series R6-52
Mounting Bracket

Option 1: KMA - Pivoting

- Option - profile rail with integrated strain relief chainfix clip or tiewrap plates
- Profile rail can be mounted in the inner or outer radius of the Energy Chain®
- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides



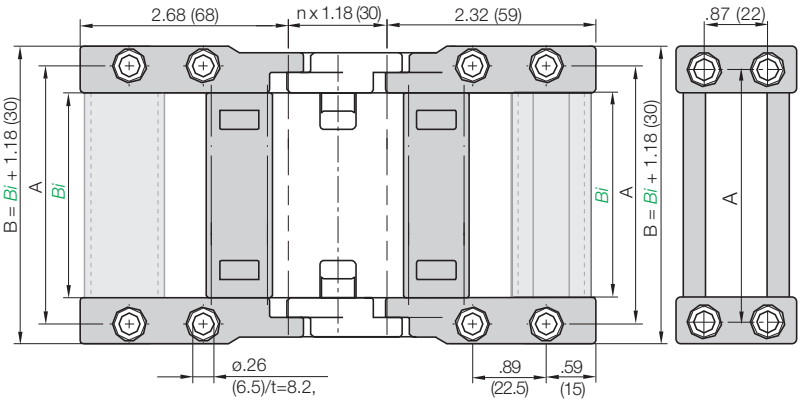


Possible installation configurations -

Part Number Structure

R6-520- | 040- | 12 | P

- With profile rail
- Complete Set
- Width
- Mounting brackets for selected chain type

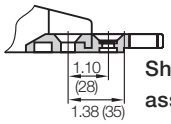


For Series	Part No. Full Set Without Profile Rail	Part No. Full Set With Profile Rail	Dimension A in.	(mm)	Dimension B in.	(mm)
R6-52-050	**R6-520-050-12**	**R6-520-050-12P**	2.60	(66)	3.15	(80)
R6-52-075	**R6-520-075-12**	**R6-520-075-12P**	3.58	(91)	4.13	(105)
R6-52-100	**R6-520-100-12**	**R6-520-100-12P**	4.57	(116)	5.12	(130)
R6-52-125	**R6-520-125-12**	**R6-520-125-12P**	5.55	(141)	6.10	(155)
R6-52-150	**R6-520-150-12**	**R6-520-150-12P**	6.54	(166)	7.09	(180)
R6-52-175	**R6-520-175-12**	**R6-520-175-12P**	7.52	(191)	8.07	(205)

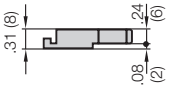
Full set, for both ends:
R6-520- | 040- | 12 | Full set, **both fixed and moving end**

Single-part order:
R6-520 - | 040- | 1 | Mounting bracket **fixed end**
R6-520 - | 040- | 2 | Mounting bracket **moving end**

Tiewrap Plates



Shown assembled

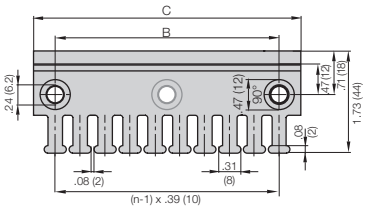


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plate	n Number of Teeth	C Overall Width in. (mm)	B Bore Width in. (mm)	Center Bore
3050-ZB	5	1.97 (50)	1.18 (30)	no
3075-ZB	7	2.95 (75)	2.16 (55)	no
3100-ZB	10	3.94 (100)	3.15 (80)	no
3115-ZB	11	4.53 (115)	3.74 (95)	no
3125-ZB	12	4.92 (125)	4.13 (105)	no
3150-ZB	15	5.91 (150)	5.12 (130)	no
3175-ZB	17	6.89 (175)	6.10 (155)	no
3200-ZB	20	7.87 (200)	7.09 (180)	yes
3225-ZB	22	8.86 (225)	8.07 (205)	yes
3250-ZB	25	9.84 (250)	9.06 (230)	yes



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 3050-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

Energy Chain System® E6
Series R6-52
Guide Trough

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

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.

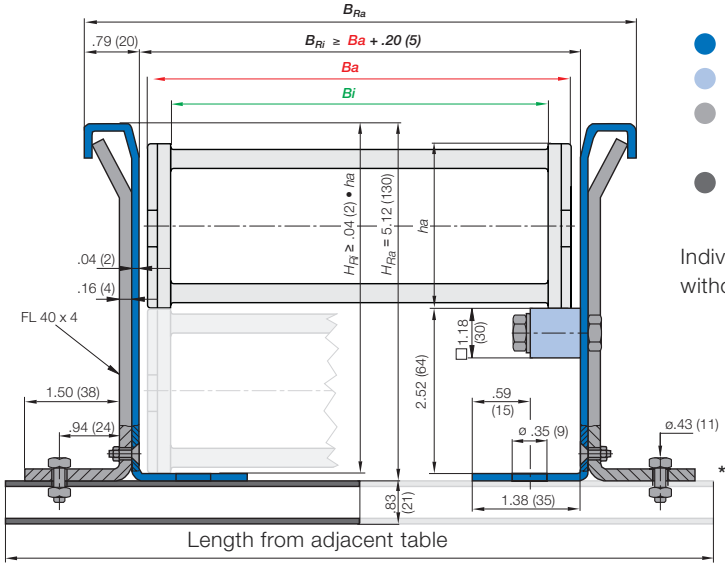
Example:
Length of travel 164 ft (50 m)
Center mounted
Required guide troughs:
164 ft (50 m) guide trough
82 ft (25 m) glide bar
= 25 sections of 6.56 ft (2 m) guide trough
Part No. 93-30
= 13 sections of 6.56 ft (2 m) glide bar
Part No. 93-01

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

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

Crossbar Width
E6-52-100-100-0
Dimension D
Installation Part No.

-040	2.72 (69)	*
-050	3.11 (79)	**93-50-200**
-075	4.09 (104)	**93-50-225**
-100	5.08 (129)	**93-50-250**
-125	6.06 (154)	**93-50-275**
-150	7.04 (179)	**93-50-300**
-175	8.03 (204)	**93-50-325**
-200	9.01 (229)	**93-50-350**
-225	10.00 (254)	**93-50-375**
-250	10.98 (279)	**93-50-400**
-275	11.97 (304)	**93-50-425**
-300	12.95 (329)	**93-50-450**



- Guide trough
- Glide bars
- Installation set "Basic"
- Profile rail

Individual attachment without profile rail

* Specialized guide trough available upon request

Standard length profile rail

Energy Chain System® E6
Series E6-62

2.44

Price Index

Series E6-62

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

To close, push and click shut

Other Installation Methods

Vertical, hanging ≤ 196.8 ft (60 m)
Vertical, standing ≤ 9.84 ft (3 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side mounted applications
  ➤ **Series 4040 E4/4**
- For RBR (Reverse Bending Radius)
  ➤ **Series 400 E4/100**
- For high additional loads
  ➤ **Series 4040 E4/4**
- For dirty environments
  ➤ **Series 4040 E4/4**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides
2. Interior stop dog
3. No pin and bore connection
4. Small pitch for low-noise, smooth operation
5. Can be shortened or lengthened due to modular design
6. Available with or without integrated profile rail
7. Very large gliding surfaces
8. Increased inner height

Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

6.56 ft (2 m) **E6-62-10-200-0**	**Energy Chain®**
With 2 separators **E6-62-11** assembled every 2nd link	**Interior Separation**
1 Set **E6-620-10-12P**	**Mounting Bracket**

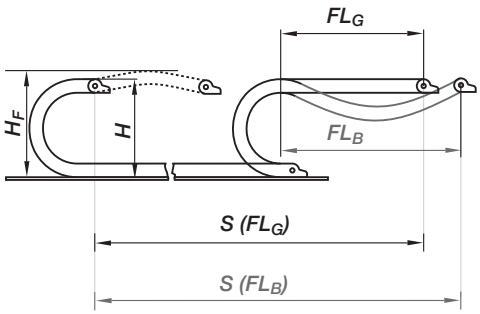
Energy Chain System® E6 Series E6-62 Installation Dimensions

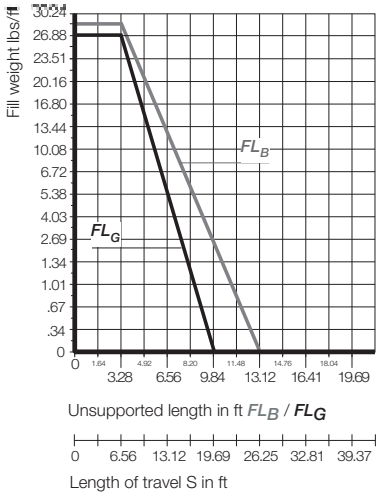
energy chain® configurator

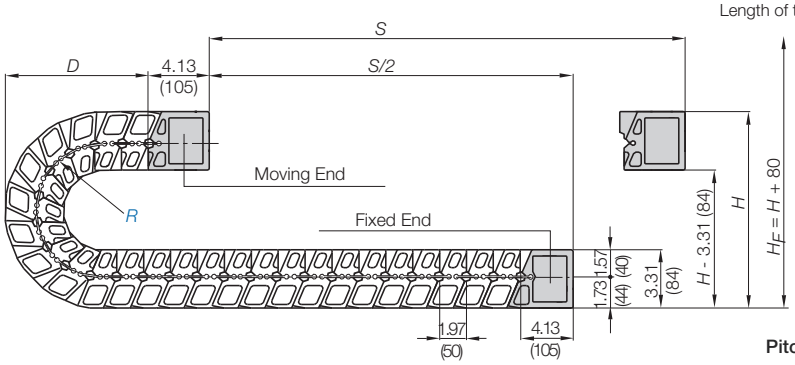
Short travel, unsupported length

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

Further information ➤ Design, Chapter 1







The required clearance height: $H_F = H + 3.15$ in. (80 mm) (with 1.34 lbs/ft (2.0 kg/m) fill weight. Please consult igus® if space is particularly restricted.

R	4.53 (115)	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)	13.78 (350)
H	15.28 (388)	18.03 (458)	21.97 (558)	25.91 (658)	29.84 (758)	33.78 (858)
D	8.22 (209)	9.61 (244)	11.57 (294)	13.54 (344)	15.51 (394)	17.48 (444)
K	18.31 (465)	22.64 (575)	28.74 (730)	35.04 (890)	41.14 (1045)	47.24 (1200)

Pitch per link: = 1.97" (50 mm)
Links per ft (m): = 6.1 (20)
For center mount applications:
Chain length = $^{S}/_{2} + K$

Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

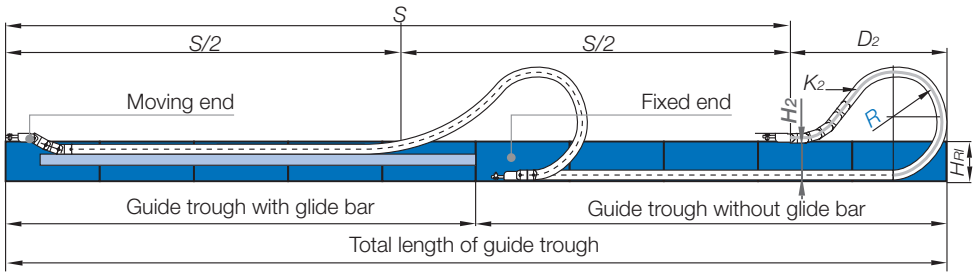
Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
K = $\pi \bullet R$ + *"safety buffer"*
H_F = Required clearance height
H_{RI} = Trough inner height
H_2 = *Mounting height
D_2 = Overlength - long travels, gliding
K_2 = *Add-on
*If the mounting bracket location is set lower

For long travels with lowered mounting height**

Long travel lengths from 19.6 ft.(6m) to max. 262 ft. (80m)

For center mount applications:
Chain length: = $^{S}/_{2} + K_2$



Long Travels - Gliding

If the unsupported length is exceeded, the Energy Chain®/Tube must glide on itself. This requires a guide trough.

➤ Design, Chapter 1

R	4.53 (115)	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)	13.78 (350)
H*	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)	5.51 (140)
D +25	18.23 (463)	19.61 (498)	39.84 (1012)	51.73 (1314)	63.62 (1616)	75.51 (1918)
K2	21.65 (550)	25.59 (650)	51.18 (1300)	66.93 (1700)	84.65 (2150)	102.36 (2600)

****If you intend to use this series on long travels, we request that you consult igus®**

For support of the lower run, **see Chapter 9** for the **Support Tray tool kit**

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

Details of material properties

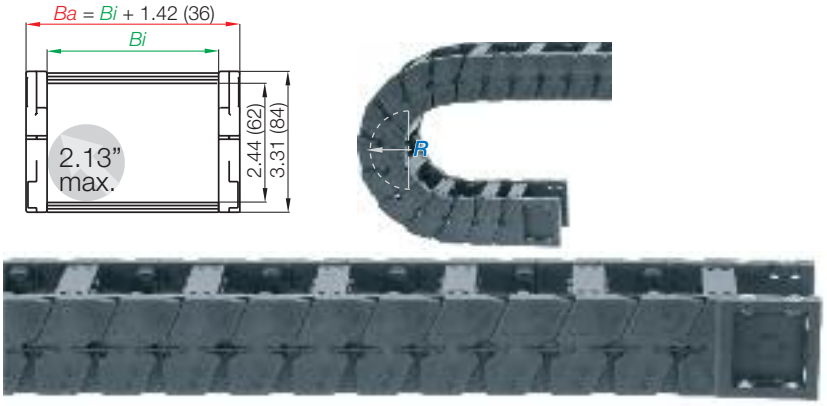
➤ Design, Chapter 1

Energy Chain System® E6
Series E6-62

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series E6-62 - Energy Chain® with crossbars every other link

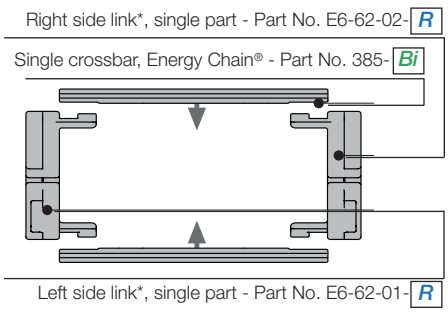


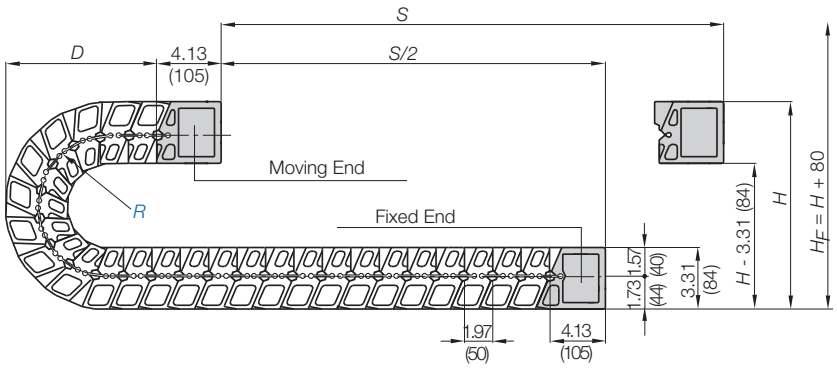
Part Number Structure

E6-62-	10-	200-	0

- 0 – Color - Black
- 200 – Bending radius
- 10 – Width
- E6-62 – Series

Energy Chain® as separate parts, links and side plates





*View from the fixed point of the Energy Chain®/Energy Tube

Polymer spring as single part - Part No. E6-62-340

Energy Chain System® E6
Series E6-62

energy chain® configurator

Supplement part number with required radius. Example: E6-62-10-[200]-0
Pitch: 1.97 in. (50 mm) per link links/ft (m) = 6.1 (20)

Part Number	*Bi* in. (mm)	*Ba* in. (mm)	Weight lbs/ft (kg/m)
E6-62-05-[ ]-0	1.97 (50)	3.39 (86)	≈ 2.16 (3.22)
E6-62-06-[ ]-0	2.67 (68)	4.09 (104)	≈ 2.20 (3.28)
E6-62-07-[ ]-0	2.95 (75)	4.37 (111)	≈ 2.22 (3.31)
E6-62-087-[ ]-0	3.43 (87)	4.84 (123)	≈ 2.25 (3.35)
E6-62-10-[ ]-0	3.94 (100)	5.35 (136)	≈ 2.28 (3.39)
E6-62-11-[ ]-0	4.25 (108)	5.67 (144)	≈ 2.30 (3.42)
E6-62-112-[ ]-0	4.41 (112)	5.83 (148)	≈ 2.30 (3.43)
E6-62-12-[ ]-0	4.92 (125)	6.34 (161)	≈ 2.34 (3.48)
E6-62-137-[ ]-0	5.39 (137)	6.81 (173)	≈ 2.37 (3.52)
E6-62-15-[ ]-0	5.91 (150)	7.32 (186)	≈ 2.40 (3.57)
E6-62-162-[ ]-0	6.38 (162)	7.80 (198)	≈ 2.43 (3.61)
E6-62-17-[ ]-0	6.61 (168)	8.03 (204)	≈ 2.44 (3.63)
E6-62-18-[ ]-0	6.89 (175)	8.31 (211)	≈ 2.45 (3.65)
E6-62-187-[ ]-0	7.36 (187)	8.78 (223)	≈ 2.48 (3.69)
E6-62-20-[ ]-0	7.87 (200)	9.29 (236)	≈ 2.51 (3.74)
E6-62-212-[ ]-0	8.35 (212)	9.76 (248)	≈ 2.54 (3.78)
E6-62-23-[ ]-0	8.86 (225)	10.28 (261)	≈ 2.57 (3.83)
E6-62-237-[ ]-0	9.33 (237)	10.75 (273)	≈ 2.60 (3.87)
E6-62-25-[ ]-0	9.84 (250)	11.26 (286)	≈ 2.63 (3.91)
E6-62-262-[ ]-0	10.31 (262)	11.73 (298)	≈ 2.65 (3.95)
E6-62-28-[ ]-0	10.83 (275)	12.24 (311)	≈ 2.69 (4.00)
E6-62-29-[ ]-0	11.30 (287)	12.72 (323)	≈ 2.71 (4.04)
E6-62-30-[ ]-0	11.81 (300)	13.23 (336)	≈ 2.75 (4.09)
E6-62-312-[ ]-0	12.28 (312)	13.70 (348)	≈ 2.78 (4.13)
E6-62-325-[ ]-0	12.80 (325)	14.21 (361)	≈ 2.80 (4.17)
E6-62-337-[ ]-0	13.27 (337)	14.69 (373)	≈ 2.83 (4.21)
E6-62-350-[ ]-0	13.78 (350)	15.20 (386)	≈ 2.86 (4.26)
E6-62-362-[ ]-0	14.25 (362)	15.67 (398)	≈ 2.89 (4.30)
E6-62-375-[ ]-0	14.76 (375)	16.18 (411)	≈ 2.92 (4.35)
E6-62-387-[ ]-0	15.24 (387)	16.65 (423)	≈ 2.95 (4.39)
E6-62-400-[ ]-0	15.75 (400)	17.16 (436)	≈ 2.98 (4.43)

Choose from the radii below for all of the above sizes
Radius (mm) Example: E6-62-10-[200]-0

	115	150	200	250	300	350
R	4.53 (115)	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)	13.78 (350)
H	15.28 (388)	18.03 (458)	21.97 (558)	25.91 (658)	29.84 (758)	33.78 (858)
D	8.22 (209)	9.61 (244)	11.57 (294)	13.54 (344)	15.51 (394)	17.48 (444)
K	18.31 (465)	22.64 (575)	28.74 (730)	35.04 (890)	41.14 (1045)	47.24 (1200)

PDF: www.igus.com/e-chain-pdfs
Specs/CAD/RFQ: www.igus.com/e-chains
RoHS info: www.igus.com/RoHS

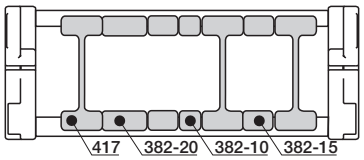
Energy Chain System® E6
Series E6-62
Interior Separation

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Option 1: Vertical separators and spacers

Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.



STANDARD

- **Vertical separator**

  This separator is used for general subdivision of Energy Chains®.

Vertical Separator

Unassembled	**Part No. 407**
Assembled	**Part No. 417**

Spacer*

*For side-mounted applications

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

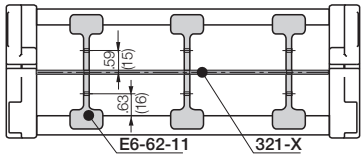
XX = width of the spacer

Spacers available in the following sizes:

Part No. Unassembled	Part No. Assembled	in.	(mm)
381 -10	**382 -10**	.39"	(10)
381 -15	**382 -15**	.59"	(15)
381 -20	**382 -20**	.79"	(20)

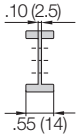
Option 2: Full-width shelf

For applications involving many thin cables with similar or identical diameters. Vertical separator **E6-62-11** can be used in combination with full-width shelf **321-X**.



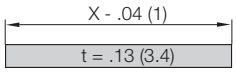
- **Vertical separator, slotted**

  This separator is used for general subdivision of Energy Chains®.



Vertical Separator

Unassembled	**Part No. E6-62-01**
Assembled	**Part No. E6-62-11**

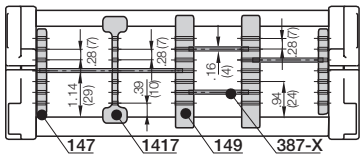


Width X in.	(mm)	Part No. Unassem.	Part No. Assem.
1.97	(050)	**320-50**	**321-50**
2.68	(068)	**320-68**	**321-68**
2.95	(075)	**320-75**	**321-75**
3.43	(087)	**320-87**	**321-87**
3.94	(100)	**320-100**	**321-100**
4.25	(108)	**320-108**	**321-108**
4.41	(112)	**320-112**	**321-112**
4.92	(125)	**320-125**	**321-125**
5.39	(137)	**320-137**	**321-137**
5.91	(150)	**320-150**	**321-150**

Width X in.	(mm)	Part No. Unassem.	Part No. Assem.
6.38	(162)	**320-162**	**321-162**
6.61	(168)	**320-168**	**321-168**
2.95	(175)	**320-175**	**321-175**
7.36	(187)	**320-187**	**321-187**
7.87	(200)	**320-200**	**321-200**
8.35	(212)	**320-212**	**321-212**
8.86	(225)	**320-225**	**321-225**
9.33	(237)	**320-237**	**321-237**
9.84	(250)	**320-250**	**321-250**

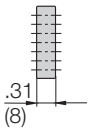
Option 3: Shelves

These components form the basic pattern of a shelf system. Shelves of various widths can be arranged at 7 different heights in .28" (7mm) increments



- **Vertical separator**

  This separator is used when higher retention force is needed.

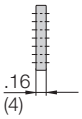


Vertical Separator

Unassembled	**Part No. 148**
Assembled	**Part No. 149**

- **Side plate**

  This separator is used for general subdivision of Energy Chains®.

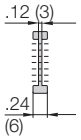


Side Plate

Unassembled	**Part No. 146**
Assembled	**Part No. 147**

- **Vertical separator , slotted**

  This separator is used for general subdivision of Energy Chains®.



Vertical Separator, Slotted

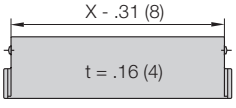
Unassembled	**Part No. 1407**
Assembled	**Part No. 1417**

Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
.71	(18)	**386-18**	**387-18**
.91	(23)	**386-23**	**387-23**
.98	(25)	**386-25**	**387-25**
1.10	(28)	**386-28**	**387-28**
1.30	(33)	**386-33**	**387-33**
1.69	(43)	**386-43**	**387-43**
1.97	(50)	**386-50**	**387-50**
2.13	(54)	**386-54**	**387-54**
2.44	(62)	**386-62**	**387-62**

Width X in.	(mm)	Part No. Unassembled	Part No. Assembled
2.95	(75)	**386-75**	**387-75**
3.43	(87)	**386-87**	**387-87**
3.94	(100)	**386-100**	**387-100**
4.25	(108)	**386-108**	**387-108**
4.92	(125)	**386-125**	**387-125**
5.91	(150)	**386-150**	**387-150**
6.89	(175)	**386-175**	**387-175**
7.87	(200)	**386-200**	**387-200**
8.19	(208)	**386-208**	**387-208**

Shelves 387-XX

Shelf 387-XX can be used with **vertical separator 149** and **side plate 147**

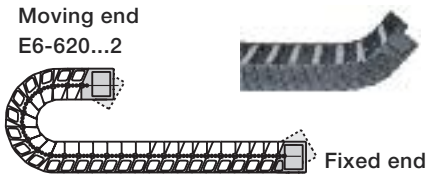


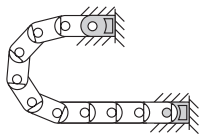
Energy Chain System® E6
Series E6-62
Mounting Brackets - KMA

energy chain® configurator

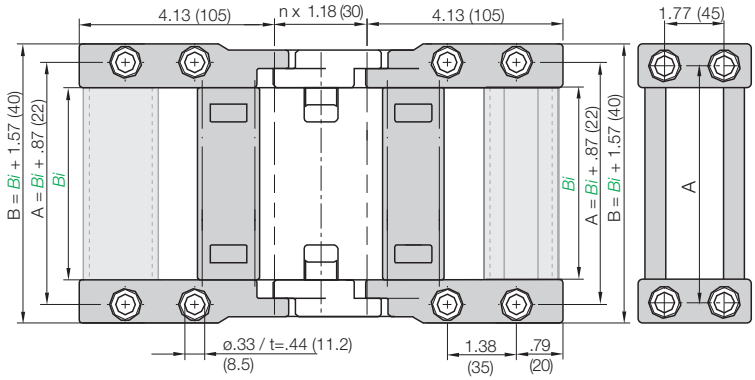
Option 1: KMA - Pivoting

- Option - profile rail with integrated strain relief chainfix clip or tiewrap plates
- Profile rail can be mounted in the inner or outer radius of the Energy Chain®
- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications (for gliding applications please contact igus®)
- Confined installation conditions
- Attachment capability on all sides



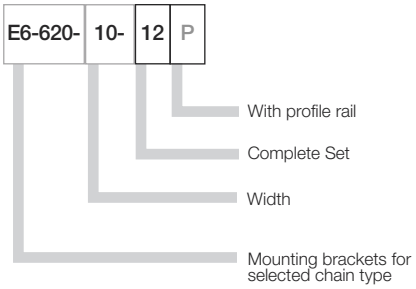


Possible installation configurations -



For Series	Part No. Full Set Without Profile Rail	Part No. Full Set With Profile Rail	*Bi* in.	(mm)
E6-62-05	**E6-620-05-12**	**E6-620-05-12P**	1.97	(50)
E6-62-06	**E6-620-06-12**	**E6-620-06-12P**	2.67	(68)
E6-62-07	**E6-620-07-12**	**E6-620-07-12P**	2.95	(75)
E6-62-087	**E6-620-087-12**	**E6-620-087-12P**	3.43	(87)
E6-62-10	**E6-620-10-12**	**E6-620-10-12P**	3.94	(100)
E6-62-11	**E6-620-11-12**	**E6-620-11-12P**	4.25	(108)
E6-62-112	**E6-620-112-12**	**E6-620-112-12P**	4.41	(112)
E6-62-12	**E6-620-12-12**	**E6-620-12-12P**	4.92	(125)
E6-62-137	**E6-620-137-12**	**E6-620-137-12P**	5.39	(137)
E6-62-15	**E6-620-15-12**	**E6-620-15-12P**	5.91	(150)
E6-62-162	**E6-620-162-12**	**E6-620-162-12P**	6.38	(162)
E6-62-17	**E6-620-17-12**	**E6-620-17-12P**	6.61	(168)
E6-62-18	**E6-620-18-12**	**E6-620-18-12P**	6.89	(175)
E6-62-187	**E6-620-187-12**	**E6-620-187-12P**	7.36	(187)
E6-62-20	**E6-620-20-12**	**E6-620-20-12P**	7.87	(200)
E6-62-212	**E6-620-212-12**	**E6-620-212-12P**	8.35	(212)
E6-62-23	**E6-620-23-12**	**E6-620-23-12P**	8.86	(225)
E6-62-237	**E6-620-237-12**	**E6-620-237-12P**	9.33	(237)
E6-62-25	**E6-620-25-12**	**E6-620-25-12P**	9.84	(250)
E6-62-262	**E6-620-262-12**	**E6-620-262-12P**	10.31	(262)
E6-62-28	**E6-620-28-12**	**E6-620-28-12P**	10.83	(275)
E6-62-29	**E6-620-29-12**	**E6-620-29-12P**	11.30	(287)
E6-62-30	**E6-620-30-12**	**E6-620-30-12P**	11.81	(300)
E6-62-312	**E6-620-312-12**	**E6-620-312-12P**	12.28	(312)
E6-62-325	**E6-620-325-12**	**E6-620-325-12P**	12.80	(325)
E6-62-337	**E6-620-337-12**	**E6-620-337-12P**	13.27	(337)
E6-62-350	**E6-620-350-12**	**E6-620-350-12P**	13.78	(350)
E6-62-362	**E6-620-362-12**	**E6-620-362-12P**	14.25	(362)
E6-62-375	**E6-620-375-12**	**E6-620-375-12P**	14.76	(375)
E6-62-387	**E6-620-387-12**	**E6-620-387-12P**	15.24	(387)
E6-62-400	**E6-620-400-12**	**E6-620-400-12P**	15.75	(400)

Part Number Structure



Full set, for both ends:
E6-620- | 10- | 12 | Full set, **both fixed and moving end**

Single-part order:
E6-620 - | 10- | 1 | Mounting bracket **fixed end**
E6-620 - | 10- | 2 | Mounting bracket **moving end**

Adapters for gliding applications available upon request

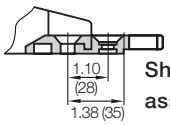
PDF: www.igus.com/e-chain-pdfs
Specs/CAD/RFQ: www.igus.com/e-chains
RoHS info: www.igus.com/RoHS

Energy Chain System® E6
Series E6-62
Strain Relief

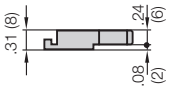
energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Tiewrap Plates



Shown assembled

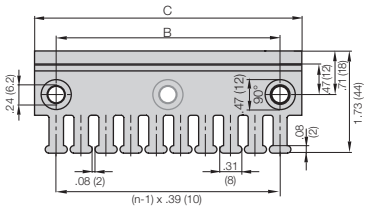


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plate	n Number of Teeth	C Overall Width in. (mm)	B Bore Width in. (mm)	Center Bore
3050-ZB	5	1.97 (50)	1.18 (30)	no
3075-ZB	7	2.95 (75)	2.16 (55)	no
3100-ZB	10	3.94 (100)	3.15 (80)	no
3115-ZB	11	4.53 (115)	3.74 (95)	no
3125-ZB	12	4.92 (125)	4.13 (105)	no
3150-ZB	15	5.91 (150)	5.12 (130)	no
3175-ZB	17	6.89 (175)	6.10 (155)	no
3200-ZB	20	7.87 (200)	7.09 (180)	yes
3225-ZB	22	8.86 (225)	8.07 (205)	yes
3250-ZB	25	9.84 (250)	9.06 (230)	yes



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 3050-ZBKMA

Other strain relief elements
➤ Strain Relief, Chapter 10

Energy Chain System® E6
Series E6-62
Guide Trough

energy chain® configurator

Crossbar Width
E6-62-10-115-0

Dimension D

Installation Part No.

-05	3.58 (91)	*
-06	4.29 (109)	**94-50-225**
-07	4.57 (116)	**94-50-225**
-087	5.04 (128)	**94-50-250**
-10	5.55 (141)	**94-50-250**
-11	5.87 (149)	**94-50-275**
-112	6.02 (153)	**94-50-275**
-12	6.54 (165)	**94-50-275**
-137	7.01 (178)	**94-50-300**
-15	7.52 (191)	**94-50-300**
-162	7.99 (203)	**94-50-325**
-17	8.23 (209)	**94-50-325**
-18	8.50 (216)	**94-50-325**
-187	8.98 (228)	**94-50-350**
-20	9.49 (241)	**94-50-350**
-212	9.96 (253)	**94-50-375**
-23	10.47 (266)	**94-50-375**
-237	10.95 (278)	**94-50-400**
-25	11.46 (291)	**94-50-400**
-262	11.93 (303)	**94-50-425**
-28	12.44 (316)	**94-50-425**
-29	12.91 (328)	**94-50-450**
-30	13.43 (341)	**94-50-450**
-312	13.90 (353)	**94-50-475**
-325	14.41 (366)	**94-50-475**
-337	14.88 (378)	**94-50-500**
-350	15.39 (391)	**94-50-500**
-362	15.87 (403)	**94-50-525**
-375	16.38 (416)	**94-50-525**
-387	16.85 (428)	**94-50-550**
-400	17.36 (441)	**94-50-550**

Standard length profile rail

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:

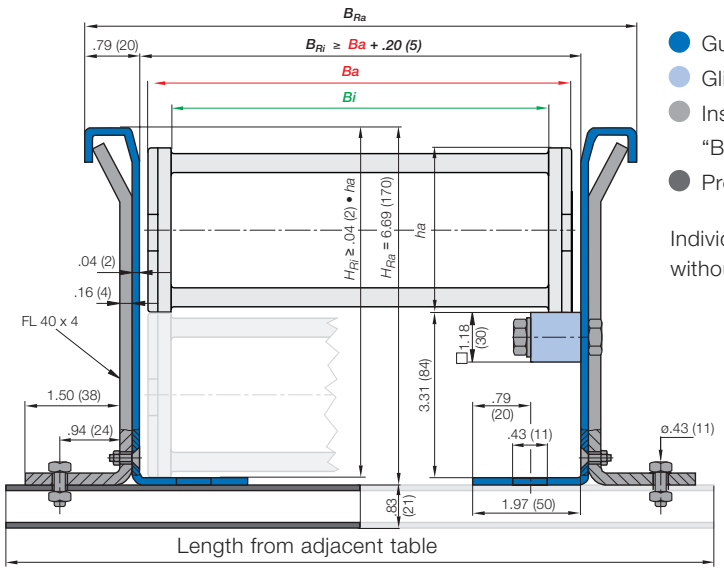
- Full travel length of guide trough
  Part Number 94-30
- 1/2 travel length of glide bars
  Part Number 93-01
- Installation sets as end connectors
  Part Number 94-50-XX

-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. 94-30
= 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: 94-50-400 for 15.75" (400 mm) long profile rail.



- Guide trough
- Glide bars
- Installation set "Basic"
- Profile rail

Individual attachment without profile rail

* Specialized guide trough available upon request

Energy Chain System® E6
Series E6-80L

Price Index

Series E6-80L

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

To close, push and click shut

Other Installation Methods

Vertical, hanging ≤ 196.8 ft (60 m)
Vertical, standing ≤ 13.12 ft (4 m)
Side-mounted, unsupp. =
possible to a limited extent
Unsupported length of upper run upon
request

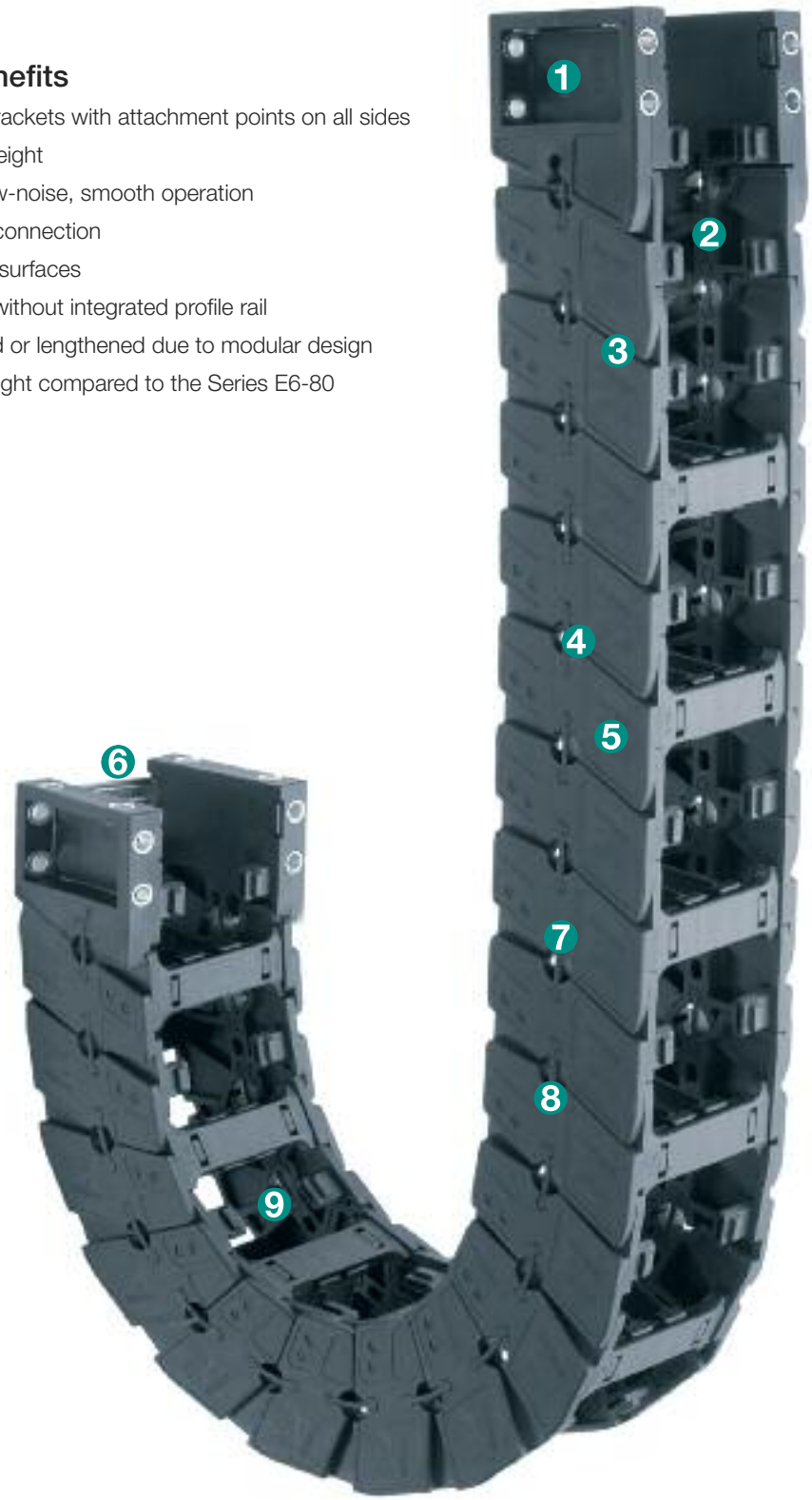
Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side mounted applications
  ➤ **Series 15050 E4/Light**
- For RBR (Reverse Bending Radius)
  ➤ **Series 15050 E4/Light**
- For high additional loads
  ➤ **Series 15050 E4/Light**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides
2. Increased inner height
3. Small pitch for low-noise, smooth operation
4. No pin and bore connection
5. Continuous glide surfaces
6. Available with or without integrated profile rail
7. Can be shortened or lengthened due to modular design
8. 45% lighter in weight compared to the Series E6-80
9. Interior stop dog



Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

16.4 ft (5 m) **E6-80L-15-175-0**	**Energy Chain®**
With 2 separators **511** assembled every 2nd link	**Interior Separation**
1 Set **E6-800L-15-12**	**Mounting Bracket**

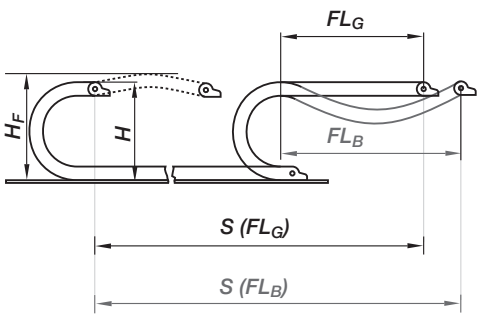
Energy Chain System® E6 Series E6-80L Installation Dimensions

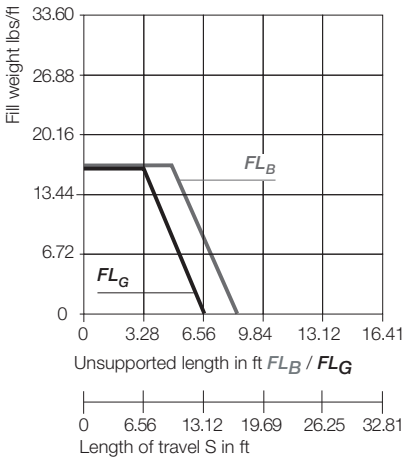
energy chain® configurator

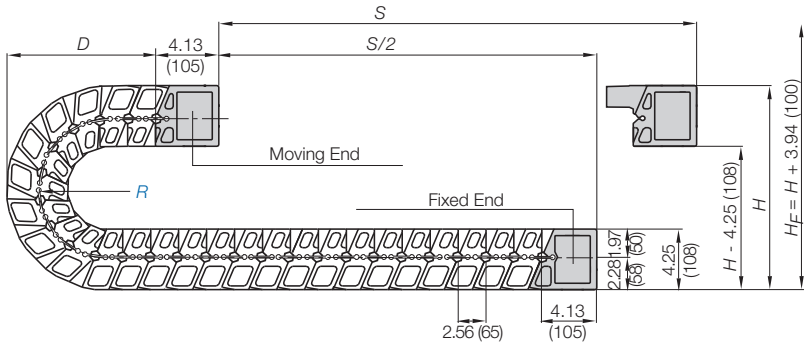
Short travel, unsupported length

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

Further information ➤ Design, Chapter 1







The required clearance height: $H_F = H + 3.94$ **in. (100 mm)** (with 3.36 lbs/ft (5.0 kg/m) fill weight. Please consult igus® if space is particularly restricted.

R	6.89 (175)
H	22.28 (566)
D	11.73 (298)
K	26.77 (680)

Pitch per link: = 2.56" (65 mm)
Links per ft (m): = 4.68 (16)
For center mount applications:
Chain length = $^{S}/_{2} + K$

Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
$K = \pi \bullet R +$ *"safety buffer"*
H_F = Required clearance height

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Technical Data

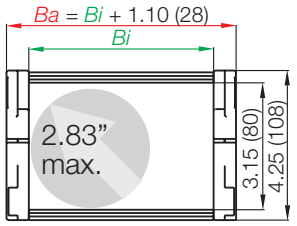
Details of material properties
➤ **Design, Chapter 1**

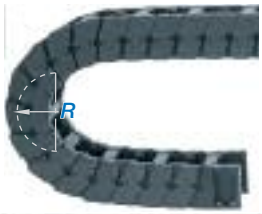
Energy Chain System® E6
Series E6-80L

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Series E6-80L - Energy Chain® with crossbars every other link

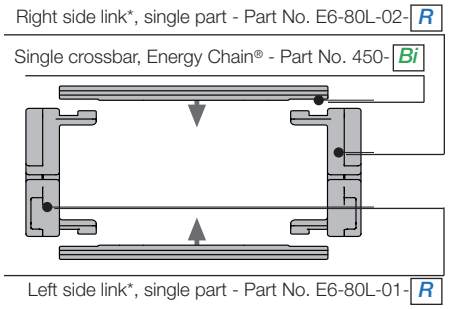


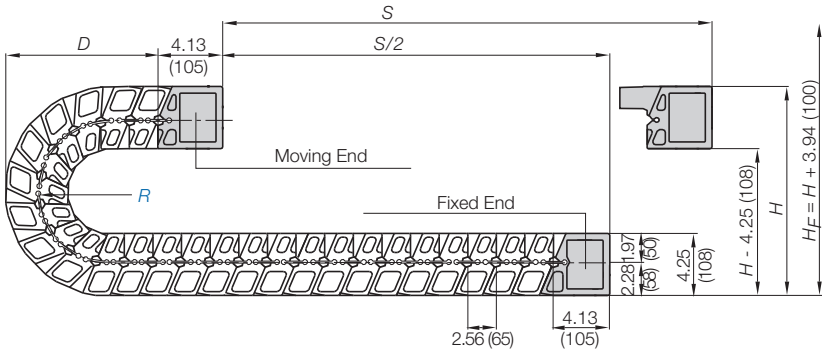


Part Number Structure

E6-80L-	15-	175-	0
			Color - Black
		Bending radius	
	Width		
Series			

Energy Chain® as separate parts, side links and crossbars





*View from the fixed point of the Energy Chain®/Energy Tube

Polymer spring as single part - Part No. E6-80-350

Energy Chain System® E6
Series E6-80L

energy chain® configurator

Supplement part number with required radius. Example: E6-80L-15-[175]-0
Pitch: 2.56 in. (65 mm) per link links/ft (m) = 4.68 (16)

Part Number	*Bi* in. (mm)	*Ba* in. (mm)	Weight lbs/ft (kg/m)
E6-80L-08-[ ]-0	3.43 (87)	4.53 (115)	≈ 2.20 (3.28)
E6-80L-10-[ ]-0	3.94 (100)	5.04 (128)	≈ 2.24 (3.33)
E6-80L-11-[ ]-0	4.41 (112)	5.51 (140)	≈ 2.26 (3.38)
E6-80L-12-[ ]-0	4.92 (125)	6.02 (153)	≈ 2.30 (3.43)
E6-80L-13-[ ]-0	5.39 (137)	6.50 (165)	≈ 2.35 (3.49)
E6-80L-15-[ ]-0	5.91 (150)	7.01 (178)	≈ 2.39 (3.55)
E6-80L-16-[ ]-0	6.38 (162)	7.48 (190)	≈ 2.43 (3.61)
E6-80L-17-[ ]-0	6.89 (175)	7.99 (203)	≈ 2.47 (3.67)
E6-80L-18-[ ]-0	7.36 (187)	8.46 (215)	≈ 2.51 (3.73)
E6-80L-20-[ ]-0	7.87 (200)	8.98 (228)	≈ 2.55 (3.79)
E6-80L-21-[ ]-0	8.35 (212)	9.45 (240)	≈ 2.59 (3.85)
E6-80L-22-[ ]-0	8.86 (225)	9.96 (253)	≈ 2.63 (3.91)
E6-80L-23-[ ]-0	9.33 (237)	10.43 (265)	≈ 2.67 (3.97)
E6-80L-25-[ ]-0	9.84 (250)	10.94 (278)	≈ 2.70 (4.02)
E6-80L-26-[ ]-0	10.31 (262)	11.42 (290)	≈ 2.75 (4.09)
E6-80L-27-[ ]-0	10.83 (275)	11.93 (303)	≈ 2.78 (4.14)
E6-80L-28-[ ]-0	11.30 (287)	12.40 (315)	≈ 2.82 (4.20)
E6-80L-30-[ ]-0	11.81 (300)	12.91 (328)	≈ 2.86 (4.26)
E6-80L-31-[ ]-0	12.28 (312)	13.39 (340)	≈ 2.90 (4.32)
E6-80L-32-[ ]-0	12.80 (325)	13.90 (353)	≈ 2.94 (4.38)
E6-80L-33-[ ]-0	13.27 (337)	14.37 (365)	≈ 2.98 (4.44)
E6-80L-35-[ ]-0	13.78 (350)	14.88 (378)	≈ 3.02 (4.50)
E6-80L-36-[ ]-0	14.25 (362)	15.35 (390)	≈ 3.06 (4.56)
E6-80L-37-[ ]-0	14.76 (375)	15.87 (403)	≈ 3.10 (4.62)
E6-80L-38-[ ]-0	15.24 (387)	16.34 (415)	≈ 3.14 (4.68)
E6-80L-40-[ ]-0	15.75 (400)	16.85 (428)	≈ 3.19 (4.74)
E6-80L-41-[ ]-0	16.22 (412)	17.32 (440)	≈ 3.23 (4.80)
E6-80L-42-[ ]-0	16.73 (425)	17.83 (453)	≈ 3.26 (4.85)
E6-80L-43-[ ]-0	17.20 (437)	18.31 (465)	≈ 3.31 (4.92)
E6-80L-45-[ ]-0	17.72 (450)	18.82 (478)	≈ 3.38 (5.03)
E6-80L-46-[ ]-0	18.19 (462)	19.29 (490)	≈ 3.42 (5.09)
E6-80L-47-[ ]-0	18.70 (475)	19.80 (503)	≈ 3.46 (5.15)
E6-80L-48-[ ]-0	19.17 (487)	20.28 (515)	≈ 3.50 (5.21)
E6-80L-50-[ ]-0	19.69 (500)	20.79 (528)	≈ 3.54 (5.27)
E6-80L-51-[ ]-0	20.16 (512)	21.26 (540)	≈ 3.58 (5.33)
E6-80L-52-[ ]-0	20.67 (525)	21.77 (553)	≈ 3.62 (5.39)
E6-80L-53-[ ]-0	21.14 (537)	22.24 (565)	≈ 3.66 (5.45)
E6-80L-55-[ ]-0	21.65 (550)	22.76 (578)	≈ 3.70 (5.51)

Choose from the radii below for all of the above sizes
Radius (mm) Example: E6-80L-15-[175]-0

175	
R	6.89 (175)
H	22.28 (566)
D	11.73 (298)
K	26.77 (680)

PDF: www.igus.com/e-chain-pdfs
Specs/CAD/RFQ: www.igus.com/e-chains
RoHS info: www.igus.com/RoHS

Energy Chain System® E6
Series E6-80L
Interior Separation

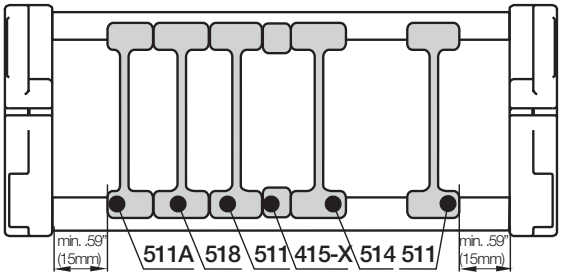
energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Option 1: Vertical separators and spacers

Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.

NOTE: Observe a lateral spacing of at least 1.30 in. (33mm) for Energy Tubes and .63 in. (16mm) for Energy Chain®. There is no minimum spacing needed for side plates



STANDARD
Vertical separator 501

Vertical separator

Unassembled	**Part No. 501**
Assembled	**Part No. 511**

- **Standard separator 501 for Energy Chains®**
  This separator offers safe stability due to its wide base design, also when used with thick cables or hoses.

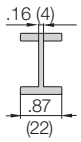
Locking separator 504

Locking separator

Unassembled	**Part No. 504**
Assembled	**Part No. 514**

- **Locking separator 504**
  This separator features increased retention force for applications exposed to very high humidity and extreme loads. If locking separators are used, the Energy Chain® is more difficult to open.

Locking separator 508

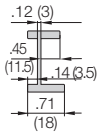


Locking separator

Unassembled	**Part No. 508**
Assembled	**Part No. 518**

- **Locking separator 508**
  This separator is used for applications that are exposed to extremely high humidity. 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.

Asymmetric separator 501A



Asymmetrical separator

Unassembled	**Part No. 501A**
Assembled	**Part No. 511A**

- **Asymmetrical separator 501A**
  This separator features an (18mm) base. It can be used in combinations between spacers of different widths and vertical separators in side mounted applications.

Spacers 405-XX

Spacer

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

XX = width of the spacer

- **NOTE ON SPACERS**
  Vertical separators are adjustable, but can be fixed in position by means of a spacer. Spacers are most often necessary for side mounted applications. The available inner height is reduced by .08" (2mm) **per spacer** (for example if one spacer is placed on either side of the separator, the overall inner height is reduced by .16" (4mm). To avoid this, place the spacers on the **outside** of the opening crossbar **(not for long travels)**.

Spacers available in the following sizes:

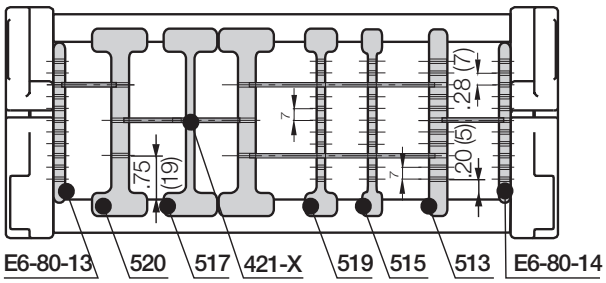
Part No. Unassembled	Part No. Assembled	in.	(mm)
405 -10	**415 -10**	.39"	(10)
405 -15	**415 -15**	.59"	(15)
405 -20	**415 -20**	79"	(20)
405 -30	**415 -30**	1.18"	(30)
405 -40	**415 -40**	1.57"	(40)

Energy Chain System® E6
Series E6-80L
Interior Separation

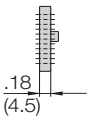
Option 2: Shelves

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

➤ **Design, Chapter 1** for layout recommendations.



- **Side plates E6-80-03/E6-80-04**
  This component is used to form the basic pattern of a shelf system.



Side plate (left)

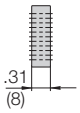
Unassembled	**Part No. E6-80-03**
Assembled	**Part No. E6-80-13**

Side plate (right)

Unassembled	**Part No. E6-80-04**
Assembled	**Part No. E6-80-14**

Side plate
E6-80-03 (left)
E6-80-04 (right)

- **Vertical separator 503**
  This component is used to form the basic pattern of a shelf system.

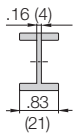


Vertical separator

Unassembled	**Part No. 503**
Assembled	**Part No. 513**

Vertical separator
503

- **Locking separator, slotted 507**
  This separator features increased retention force for applications exposed to very high humidity and extreme loads. The extra retention force is achieved by asymmetric claws for the crossbar. Take care to ensure proper alignment.

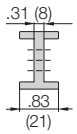


Locking separator, slotted

Unassembled	**Part No. 507**
Assembled	**Part No. 517**

Locking separator,
slotted
507

- **Locking vertical separator 510**
  This separator is slotted and able to be combined with shelves.

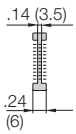


Locking vertical separator

Unassembled	**Part No. 510**
Assembled	**Part No. 520**

Locking vertical
separator
510

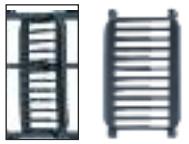
- **Slotted separators 505**
  These are used for very complex subdivisions. However, they cannot be retrofitted into an existing separation system without removing the shelves first.



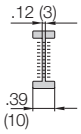
Slotted separators, closed

Unassembled	**Part No. 505**
Assembled	**Part No. 515**

Closed slotted
separator
505



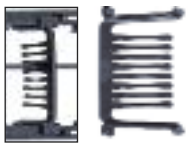
- **Slotted separator 509**
  This separator can be retrofitted into an existing interior separation system without removing the shelves, as long as these shelves fit into any of the 7 middle slots



Slotted separators, open

Unassembled	**Part No. 509**
Assembled	**Part No. 519**

Open slotted
separator
509

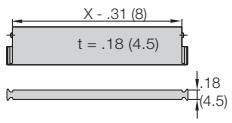


Shelves 420-XX

These components form the basic pattern of a shelf system. Shelves of various widths can be arranged at 11 different heights in .28" (7mm) increments

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**

Width X in.	Width X (mm)	Usable Width in.	Usable Width (mm)	Part No. Unassembled	Part No. Assembled
2.95	(75)	2.64	(67)	**420-75**	**421-75**
3.46	(88)	3.15	(80)	**420-88**	**421-88**
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**



Energy Chain System® E6
Series E6-80L
Moumting Brackets - KMA

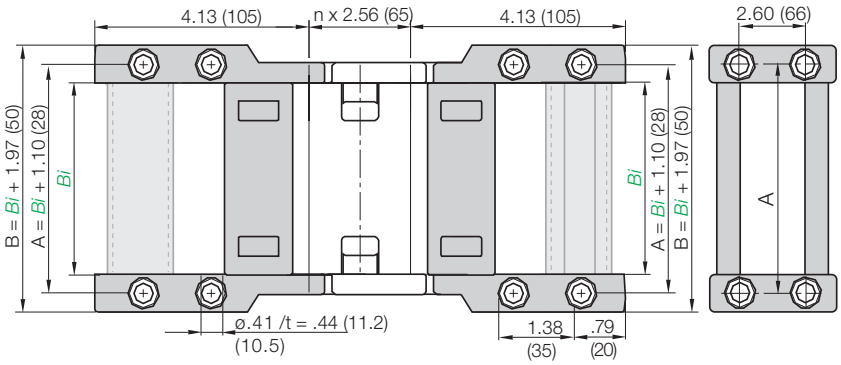
energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Option 1: KMA - Pivoting

- Option - profile rail with integrated strain relief chainfix clip or tiewrap plates
- Profile rail can be mounted in the inner or outer radius of the Energy Chain®
- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications
- Confined installation conditions
- Attachment capability on all sides

Possible installation configurations -



Part Number Structure

E6-800L- | 10- | 12 | P

- 12: With profile rail
- 10-: Complete Set
- E6-800L-: Width
- P: Mounting brackets for selected chain type

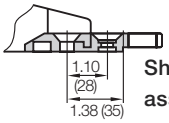
Full set, for both ends:
E6-800L- 10- 12 Full set,
both fixed and moving end

Single-part order:
E6-800L- 10- 1
Mounting bracket **fixed end**
E6-800L- 10- 2
Mounting bracket **moving end**

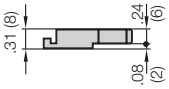
For Series	Part No. Full Set W/O Profile Rail	Part No. Full Set With Profile Rail	*Bi* in.	*Bi* (mm)
E6-80L-08	**E6-800L-08-12**	**E6-800L-08-12P**	3.43	(87)
E6-80L-10	**E6-800L-10-12**	**E6-800L-10-12P**	3.94	(100)
E6-80L-11	**E6-800L-11-12**	**E6-800L-11-12P**	4.41	(112)
E6-80L-12	**E6-800L-12-12**	**E6-800L-12-12P**	4.92	(125)
E6-80L-13	**E6-800L-13-12**	**E6-800L-13-12P**	5.39	(137)
E6-80L-15	**E6-800L-15-12**	**E6-800L-15-12P**	5.91	(150)
E6-80L-16	**E6-800L-16-12**	**E6-800L-16-12P**	6.38	(162)
E6-80L-17	**E6-800L-18-12**	**E6-800L-18-12P**	6.89	(175)
E6-80L-18	**E6-800L-18-12**	**E6-800L-18-12P**	7.36	(187)
E6-80L-20	**E6-800L-20-12**	**E6-800L-20-12P**	7.87	(200)
E6-80L-21	**E6-800L-21-12**	**E6-800L-21-12P**	8.35	(212)
E6-80L-22	**E6-800L-23-12**	**E6-800L-23-12P**	8.86	(225)
E6-80L-23	**E6-800L-23-12**	**E6-800L-23-12P**	9.33	(237)
E6-80L-25	**E6-800L-25-12**	**E6-800L-25-12P**	9.84	(250)
E6-80L-26	**E6-800L-26-12**	**E6-800L-26-12P**	10.31	(262)
E6-80L-27	**E6-800L-28-12**	**E6-800L-28-12P**	10.83	(275)
E6-80L-28	**E6-800L-29-12**	**E6-800L-29-12P**	11.30	(287)
E6-80L-30	**E6-800L-30-12**	**E6-800L-30-12P**	11.81	(300)
E6-80L-31	**E6-800L-31-12**	**E6-800L-31-12P**	12.28	(312)

For Series	Part No. Full Set W/O Profile Rail	Part No. Full Set With Profile Rail	*Bi* in.	*Bi* (mm)
E6-80L-32	**E6-800L-32-12**	**E6-800L-32-12P**	12.80	(325)
E6-80L-33	**E6-800L-33-12**	**E6-800L-33-12P**	13.27	(337)
E6-80L-35	**E6-800L-35-12**	**E6-800L-35-12P**	13.78	(350)
E6-80L-36	**E6-800L-36-12**	**E6-800L-36-12P**	14.25	(362)
E6-80L-37	**E6-800L-37-12**	**E6-800L-37-12P**	14.76	(375)
E6-80L-38	**E6-800L-38-12**	**E6-800L-38-12P**	15.24	(387)
E6-80L-40	**E6-800L-40-12**	**E6-800L-40-12P**	15.75	(400)
E6-80L-41	**E6-800L-41-12**	**E6-800L-41-12P**	16.72	(412)
E6-80L-42	**E6-800L-42-12**	**E6-800L-42-12P**	16.73	(425)
E6-80L-43	**E6-800L-43-12**	**E6-800L-43-12P**	17.20	(437)
E6-80L-45	**E6-800L-45-12**	**E6-800L-45-12P**	17.72	(450)
E6-80L-46	**E6-800L-46-12**	**E6-800L-46-12P**	18.19	(462)
E6-80L-47	**E6-800L-47-12**	**E6-800L-47-12P**	18.70	(475)
E6-80L-48	**E6-800L-48-12**	**E6-800L-48-12P**	19.17	(487)
E6-80L-50	**E6-800L-50-12**	**E6-800L-50-12P**	19.69	(500)
E6-80L-51	**E6-800L-51-12**	**E6-800L-51-12P**	20.16	(512)
E6-80L-52	**E6-800L-52-12**	**E6-800L-52-12P**	20.67	(525)
E6-80L-53	**E6-800L-53-12**	**E6-800L-53-12P**	21.14	(537)
E6-80L-55	**E6-800L-55-12**	**E6-800L-55-12P**	21.65	(550)

Tiewrap Plates



Shown assembled

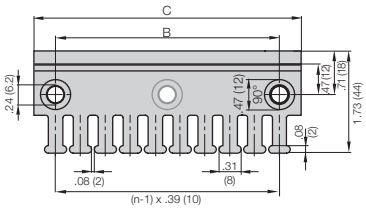


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plate	n Number of Teeth	C Overall Width in. (mm)	B Bore Width in. (mm)	Center Bore
3050-ZB	5	1.97 (50)	1.18 (30)	no
3075-ZB	7	2.95 (75)	2.16 (55)	no
3100-ZB	10	3.94 (100)	3.15 (80)	no
3115-ZB	11	4.53 (115)	3.74 (95)	no
3125-ZB	12	4.92 (125)	4.13 (105)	no
3150-ZB	15	5.91 (150)	5.12 (130)	no
3175-ZB	17	6.89 (175)	6.10 (155)	no
3200-ZB	20	7.87 (200)	7.09 (180)	yes
3225-ZB	22	8.86 (225)	8.07 (205)	yes
3250-ZB	25	9.84 (250)	9.06 (230)	yes



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 3050-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

Energy Chain System® E6
Series E6-80

Price Index

Series E6-80

Special Features / Options

Extremely low noise
Test results upon request

IPA Certificate: Class 1, according to standard DIN EN ISO 14644-1 for the E6 system (Series E6-29-060-150-0-CR, (v = 1.64 ft/s, a = 3.28 ft/s²)

LEVEL 1 absorption confirmed by IPA-Fraunhofer-Institute according to SEMI E78-0998 for the E6 standard material

Assembly Tips

To close, push and click shut

Other Installation Methods

Vertical, hanging ≤ 196.9 ft (60 m)
Vertical, standing ≤ 13.12 ft (4 m)
Side-mounted, unsupp. = possible to a limited extent
Unsupported length of upper run upon request

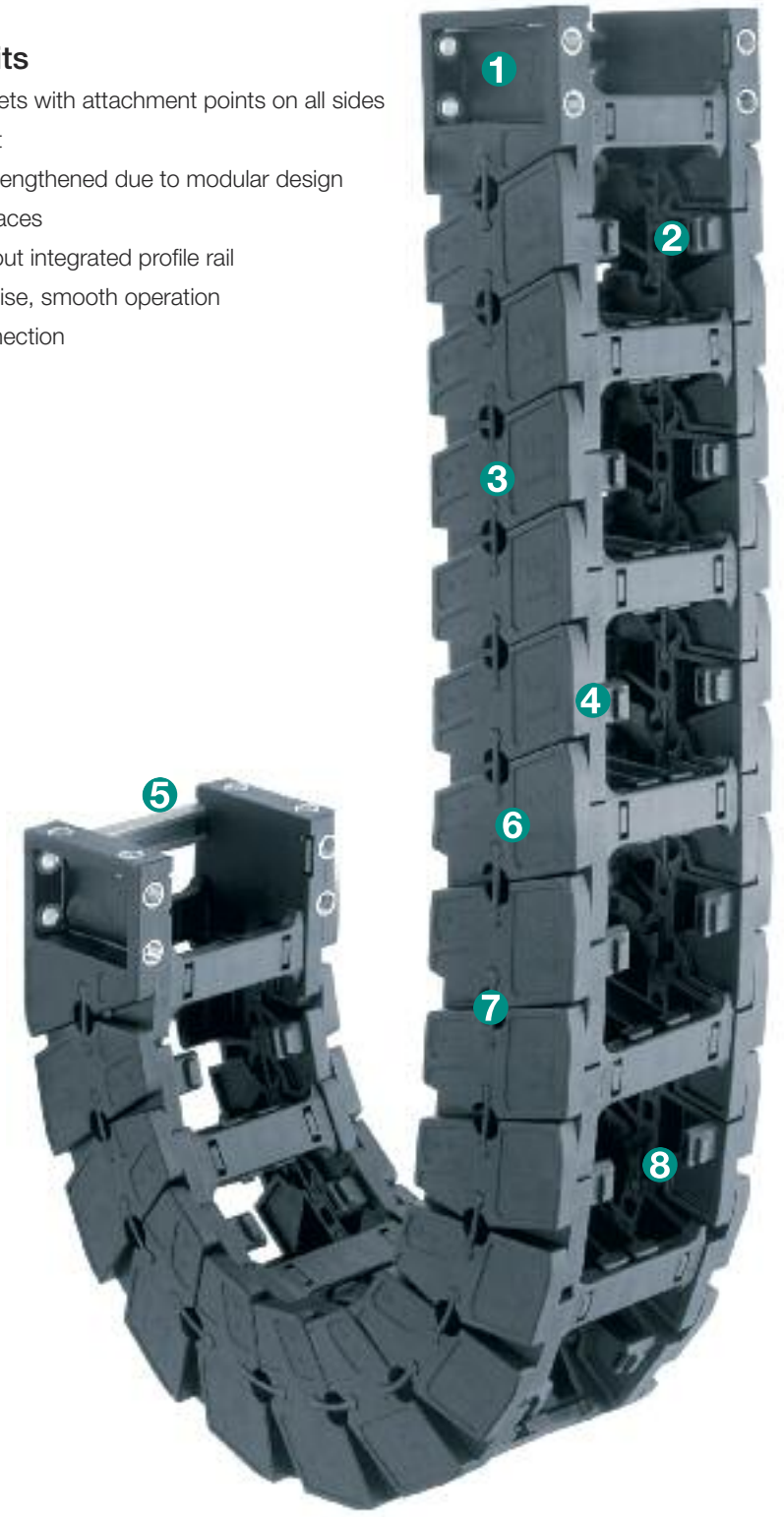
Usage Guidelines

- If a low-noise version is required
- For very high speeds and/or accelerations
- If large stresses and thrust forces are present
- For small bending radii
- If less vibration is required
- Minimal abrasion, suitable for cleanrooms

- For side mounted applications
  ➤ **Series 5050 E4/4**
- For RBR (Reverse Bending Radius)
  ➤ **Series 5050 E4/4**
- For high additional loads
  ➤ **Series 5050 E4/4**

Features & Benefits

1. KMA mounting brackets with attachment points on all sides
2. Increased inner height
3. Can be shortened or lengthened due to modular design
4. Very large gliding surfaces
5. Available with or without integrated profile rail
6. Small pitch for low-noise, smooth operation
7. No pin and bore connection
8. Interior stop dog



Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

energy chain® configurator

16.4 ft (5 m) **E6-80-10-200-0**	**Energy Chain®**
With 2 separators **511** assembled every 2nd link	**Interior Separation**
1 Set **E6-800-10-12**	**Mounting Bracket**

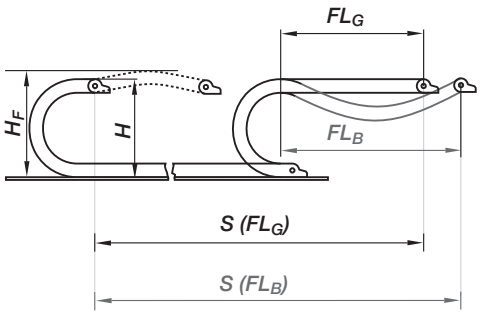
Energy Chain System® E6 Series E6-80 Installation Dimensions

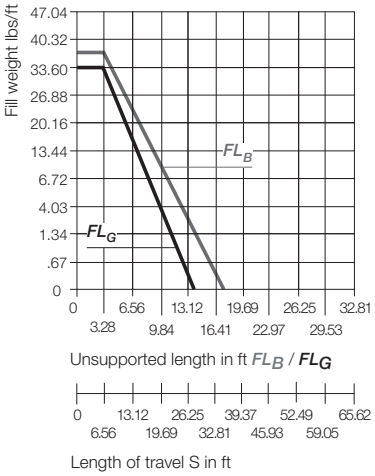
energy chain® configurator

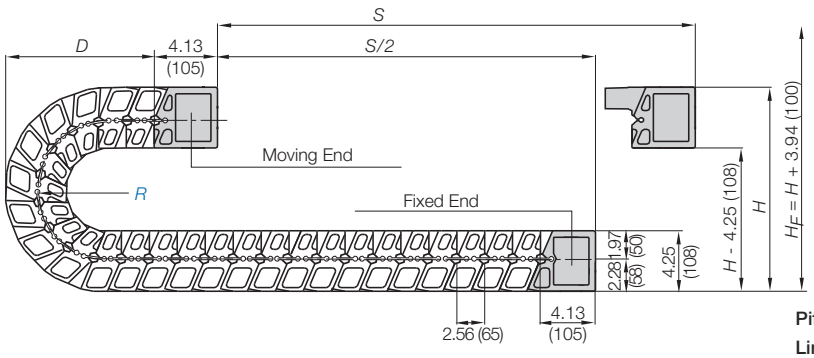
Short travel, unsupported length

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

Further information ➤ Design, Chapter 1







Pitch per link: = 2.56" (65 mm)
Links per ft (m): = 4.68 (16)
Chain length: = $^{S}/_{2} + K$

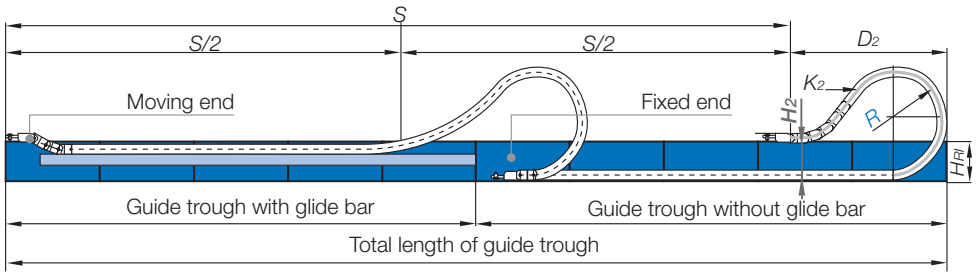
The required clearance height: $H_F = H + 3.94$ **in. (100 mm)** (with 3.36 lbs/ft (5.0 kg/m) fill weight. Please consult igus® if space is particularly restricted.

R	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)	13.78 (350)	15.75 (400)	17.71 (450)
H*	20.31 (516)	24.25 (616)	28.19 (716)	32.13 (816)	36.06 (916)	40.00 (1016)	43.94 (1116)
D	10.75 (273)	12.72 (323)	14.68 (373)	16.65 (423)	18.62 (473)	20.59 (523)	22.56 (573)
K	23.82 (605)	29.92 (760)	36.22 (920)	42.32 (1075)	48.43 (1230)	54.72 (1390)	60.83 (1545)

For long travels with lowered mounting height**

Long travel lengths from 32.8 ft. (10m) to max. 393.7 ft. (120m)

For center mount applications:
Chain length: = $^{S}/_{2} + K_2$



R	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)	13.78 (350)	15.75 (400)	17.71 (450)
H2*	9.53 (242)	9.53 (242)	9.53 (242)	9.53 (242)	9.53 (242)	9.53 (242)	9.53 (242)
D2 +25	20.63 (524)	36.85 (936)	53.11 (1349)	69.37 (1762)	85.63 (2175)	101.89 (2588)	118.11 (3000)
K2	25.59 (650)	46.06 (1170)	66.54 (1690)	89.57 (2275)	110.04 (2795)	130.51 (3315)	150.98 (3835)

**If you intend to use this series on long travels, we request that you consult igus®

For support of the lower run, **see Chapter 9** for the **Support Tray tool kit**

Speed / acceleration FL_G	max. 65.6 ft/s (20 m/s) / max. 656 ft/s² (200 m/s²)
Speed / acceleration FL_B	max. 9.84 ft/s (3 m/s) / max. 19.69 ft/s² (6 m/s²)
Gliding speed / acceleration (maximum)	upon request
Permitted temperature	-40°F (-40°C) up to +158°F (+70° C)
Flammability Class	VDE 0304 IIC UL94 HB

Short Travels - Unsupported

Unsupported Energy Chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height. Please refer to **Installation dimensions** for further details.

Legend

S = Length of travel
R = Bending radius
H = Nominal clearance height
D = Overlength Energy Chain® radius in final position
K = $\pi \bullet R$ + *"safety buffer"*
H_F = Required clearance height
H_{RI} = Trough inner height
H_2 = *Mounting height
D_2 = Overlength - long travels, gliding
K_2 = *Add-on
*If the mounting bracket location is set lower

Long Travels - Gliding

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

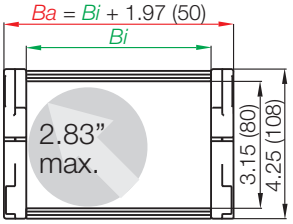
Technical Data

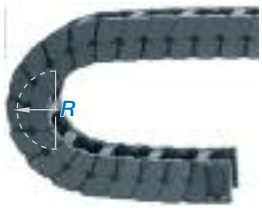
Details of material properties
➤ **Design, Chapter 1**

Energy Chain System® E6
Series E6-80

energy chain® configurator

Series E6-80 - Energy Chain® with crossbars every other link

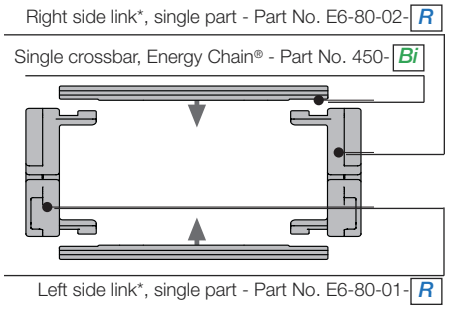


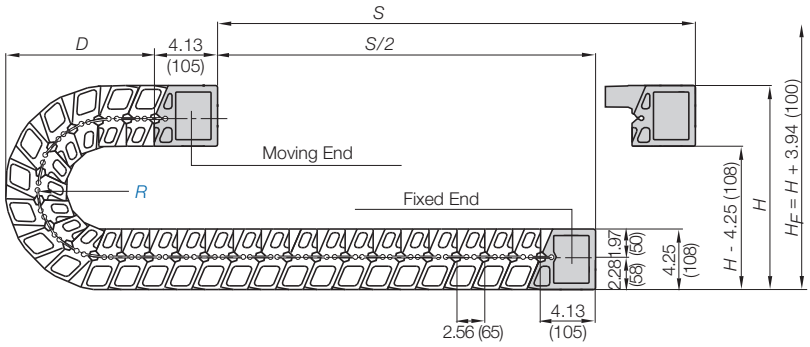


Part Number Structure

E6-80L-	15-	175-	0
			Color - Black
		Bending radius	
	Width		
Series			

Energy Chain® as separate parts, side links and crossbars





*View from the fixed point of the Energy Chain®/Energy Tube

Polymer spring as single part - Part No. E6-80-350

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Energy Chain System® E6
Series E6-80

energy chain® configurator

Supplement part number with required radius. Example: E6-80-10-[200]-0
Pitch: 2.56 in. (65 mm) per link links/ft (m) = 4.68 (16)

Part Number	*Bi* in. (mm)	*Ba* in. (mm)	Weight lbs/ft (kg/m)
E6-80-05-[ ]-0	1.97 (50)	3.94 (100)	≈3.50 (5.21)
E6-80-06-[ ]-0	2.56 (65)	4.53 (115)	≈3.55 (5.28)
E6-80-07-[ ]-0	2.95 (75)	4.92 (125)	≈3.58 (5.33)
E6-80-08-[ ]-0	3.43 (87)	5.91 (137)	≈3.62 (5.38)
E6-80-10-[ ]-0	3.94 (100)	5.91 (150)	≈3.66 (5.45)
E6-80-11-[ ]-0	4.41 (112)	6.38 (162)	≈3.70 (5.50)
E6-80-12-[ ]-0	4.92 (125)	6.89 (175)	≈3.74 (5.57)
E6-80-13-[ ]-0	5.39 (137)	7.36 (187)	≈3.78 (5.62)
E6-80-15-[ ]-0	5.91 (150)	7.87 (200)	≈3.82 (5.68)
E6-80-16-[ ]-0	6.38 (162)	8.35 (212)	≈3.86 (5.74)
E6-80-17-[ ]-0	6.89 (175)	8.86 (225)	≈3.90 (5.80)
E6-80-18-[ ]-0	7.36 (187)	9.33 (237)	≈3.94 (5.86)
E6-80-20-[ ]-0	7.87 (200)	9.84 (250)	≈3.98 (5.92)
E6-80-21-[ ]-0	8.35 (212)	10.31 (262)	≈4.02 (5.98)
E6-80-22-[ ]-0	8.86 (225)	10.83 (275)	≈4.06 (6.04)
E6-80-23-[ ]-0	9.33 (237)	11.30 (287)	≈4.10 (6.10)
E6-80-25-[ ]-0	9.84 (250)	11.81 (300)	≈4.14 (6.16)
E6-80-26-[ ]-0	10.31 (262)	12.28 (312)	≈4.17 (6.21)
E6-80-27-[ ]-0	10.83 (275)	12.80 (325)	≈4.22 (6.28)
E6-80-28-[ ]-0	11.30 (287)	13.27 (337)	≈4.25 (6.33)
E6-80-30-[ ]-0	11.81 (300)	13.78 (350)	≈4.29 (6.39)
E6-80-31-[ ]-0	12.28 (312)	14.25 (362)	≈4.33 (6.45)
E6-80-32-[ ]-0	12.80 (325)	14.76 (375)	≈4.37 (6.51)
E6-80-33-[ ]-0	13.27 (337)	15.24 (387)	≈4.41 (6.57)
E6-80-35-[ ]-0	13.78 (350)	15.75 (400)	≈4.46 (6.63)
E6-80-36-[ ]-0	14.25 (362)	16.22 (412)	≈4.50 (6.69)
E6-80-37-[ ]-0	14.76 (375)	16.73 (425)	≈4.54 (6.75)
E6-80-38-[ ]-0	15.24 (387)	17.20 (437)	≈4.57 (6.80)
E6-80-40-[ ]-0	15.75 (400)	17.72 (450)	≈4.62 (6.88)
E6-80-41-[ ]-0	16.22 (412)	18.19 (462)	≈4.65 (6.92)
E6-80-42-[ ]-0	16.73 (425)	18.70 (475)	≈4.70 (6.99)
E6-80-43-[ ]-0	17.20 (437)	19.17 (487)	≈4.73 (7.04)
E6-80-45-[ ]-0	17.72 (450)	19.69 (500)	≈4.77 (7.10)
E6-80-46-[ ]-0	18.19 (462)	20.16 (512)	≈4.81 (7.16)
E6-80-47-[ ]-0	18.70 (475)	20.67 (525)	≈4.85 (7.22)
E6-80-48-[ ]-0	19.17 (487)	21.14 (537)	≈4.89 (7.28)
E6-80-50-[ ]-0	19.69 (500)	21.65 (550)	≈4.93 (7.34)
E6-80-51-[ ]-0	20.16 (512)	22.13 (562)	≈4.97 (7.40)
E6-80-52-[ ]-0	20.67 (525)	22.64 (575)	≈5.01 (7.46)
E6-80-53-[ ]-0	21.14 (537)	23.11 (587)	≈5.05 (7.52)
E6-80-55-[ ]-0	21.65 (550)	23.62 (600)	≈5.09 (7.58)
E6-80-60-[ ]-0	23.62 (600)	25.59 (650)	≈5.25 (7.81)

Choose from the radii below for all of the above sizes
Radius (mm) Example: E6-80-10-[200]-0

	150	200	250	300	350	400	450
R	5.91 (150)	7.87 (200)	9.84 (250)	11.81 (300)	13.78 (350)	15.75 (400)	17.71 (450)
H*	20.31 (516)	24.25 (616)	28.19 (716)	32.13 (816)	36.06 (916)	40.00 (1016)	43.94 (1116)
D	10.75 (273)	12.72 (323)	14.68 (373)	16.65 (423)	18.62 (473)	20.59 (523)	22.55 (573)
K	23.82 (605)	29.92 (760)	36.22 (920)	42.32 (1075)	48.43 (1230)	54.72 (1390)	60.82 (1545)

Energy Chain System® E6
Series E6-80
Interior Separation

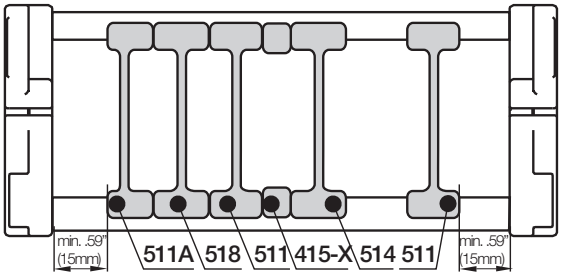
energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

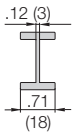
Option 1: Vertical separators and spacers

Vertical separators are used if a vertical subdivision of the Energy Chain® interior is required. By standard, vertical separators are assembled every other Energy Chain® link.

NOTE: Observe a lateral spacing of at least 1.30 in. (33mm) for Energy Tubes and .63 in. (16mm) for Energy Chain®. There is no minimum spacing needed for side plates



STANDARD
Vertical separator 501

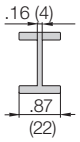


Vertical separator

Unassembled	**Part No. 501**
Assembled	**Part No. 511**

- **Standard separator 501**
  This separator offers safe stability due to its wide base design, also when used with thick cables or hoses.

Locking separator 504

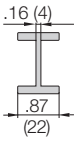


Locking separator

Unassembled	**Part No. 504**
Assembled	**Part No. 514**

- **Locking separator 504**
  This separator features increased retention force for applications exposed to very high humidity and extreme loads. If locking separators are used, the Energy Chain® is more difficult to open.

Locking separator 508

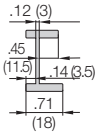


Locking separator

Unassembled	**Part No. 508**
Assembled	**Part No. 518**

- **Locking separator 508**
  This separator is used for applications that are exposed to extremely high humidity. 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.

Asymmetric separator 501A



Asymmetrical separator

Unassembled	**Part No. 501A**
Assembled	**Part No. 511A**

- **Asymmetrical separator 501A**
  This separator features an (18mm) base. It can be used in combinations between spacers of different widths and vertical separators in side mounted applications.

Spacers 405-XX

Spacer

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

XX = width of the spacer

- NOTE ON SPACERS
  Vertical separators are adjustable, but can be fixed in position by means of a spacer. Spacers are most often necessary for side mounted applications. The available inner height is reduced by .08" (2mm) **per spacer** (for example if one spacer is placed on either side of the separator, the overall inner height is reduced by .16" (4mm). To avoid this, place the spacers on the **outside** of the opening crossbar **(not for long travels)**.

Spacers available in the following sizes:

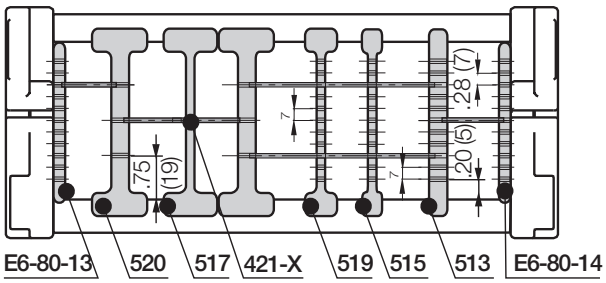
Part No. Unassembled	Part No. Assembled	in.	(mm)
405 -10	**415 -10**	.39"	(10)
405 -15	**415 -15**	.59"	(15)
405 -20	**415 -20**	79"	(20)
405 -30	**415 -30**	1.18"	(30)
405 -40	**415 -40**	1.57"	(40)

Energy Chain System® E6
Series E6-80
Interior Separation

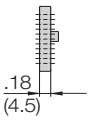
Option 2: Shelves

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

➤ **Design, Chapter 1** for layout recommendations.



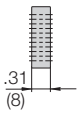
- **Side plates E6-80-03/E6-80-04**
  This component is used to form the basic pattern of a shelf system.



Side plate (left)
Unassembled **Part No. E6-80-03**
Assembled **Part No. E6-80-13**
Side plate (right)
Unassembled **Part No. E6-80-04**
Assembled **Part No. E6-80-14**

Side plate
E6-80-03 (left)
E6-80-04 (right)

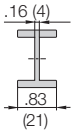
- **Vertical separator 503**
  This component is used to form the basic pattern of a shelf system.



Vertical separator
Unassembled **Part No. 503**
Assembled **Part No. 513**

Vertical separator
503

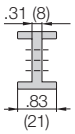
- **Locking separator, slotted 507**
  This separator features increased retention force for applications exposed to very high humidity and extreme loads. The extra retention force is achieved by asymmetric claws for the crossbar. Take care to ensure proper alignment.



Locking separator, slotted
Unassembled **Part No. 507**
Assembled **Part No. 517**

Locking separator,
slotted
507

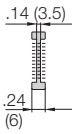
- **Locking vertical separator 510**
  This separator is slotted and able to be combined with shelves.



Locking vertical separator
Unassembled **Part No. 510**
Assembled **Part No. 520**

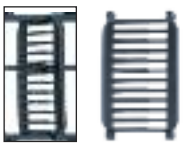
Locking vertical
separator
510

- **Slotted separators 505**
  These are used for very complex subdivisions. However, they cannot be retrofitted into an existing separation system without removing the shelves first.

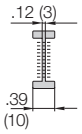


Slotted separators, closed
Unassembled **Part No. 505**
Assembled **Part No. 515**

Closed slotted
separator
505

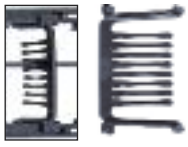


- **Slotted separator 509**
  This separator can be retrofitted into an existing interior separation system without removing the shelves, as long as these shelves fit into any of the 7 middle slots



Slotted separators, open
Unassembled **Part No. 509**
Assembled **Part No. 519**

Open slotted
separator
509

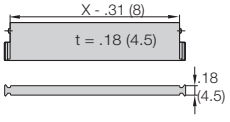


Shelves 420-XX

These components form the basic pattern of a shelf system. Shelves of various widths can be arranged at 11 different heights in .28" (7mm) increments

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**

Width X in.	Width X (mm)	Usable Width in.	Usable Width (mm)	Part No. Unassembled	Part No. Assembled
2.95	(75)	2.64	(67)	**420-75**	**421-75**
3.46	(88)	3.15	(80)	**420-88**	**421-88**
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**



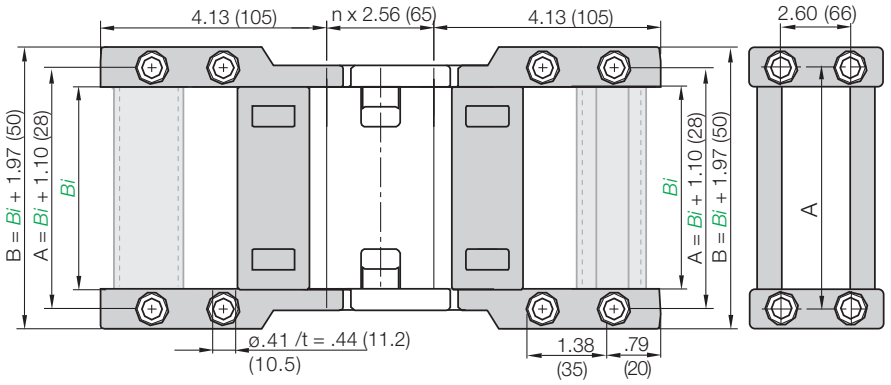
Energy Chain System® E6
Series E6-80
Mounting Brackets - KMA

energy chain® configurator

Option 1: KMA - Pivoting

- Option - profile rail with integrated strain relief chainfix clip or tiewrap plates
- Profile rail can be mounted in the inner or outer radius of the Energy Chain®
- Bolted connection outside of the chain cross-section
- Recommended for unsupported applications
- Confined installation conditions
- Attachment capability on all sides

Possible installation configurations -



Part Number Structure

E6-800-	05-	12	P

- 12: With profile rail
- 05-: Complete Set
- E6-800-: Width
- Mounting brackets for selected chain type

Full set, for both ends:
E6-800- 05- 12 Full set, **both fixed and moving end**

Single-part order:
E6-800- 05- 1
Mounting bracket **fixed end**

E6-800- 05- 2
Mounting bracket **moving end**

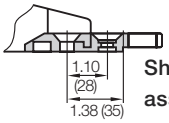
Adapters for gliding applications available upon request

For Series	Part No. Full Set W/O Profile Rail	Part No. Full Set With Profile Rail	*Bi* in.	*Bi* (mm)
E6-80-05	**E6-800-05-12**	**E6-800-05-12P**	1.97	(50)
E6-80-06	**E6-800-06-12**	**E6-800-06-12P**	2.56	(65)
E6-80-07	**E6-800-07-12**	**E6-800-07-12P**	2.95	(75)
E6-80-08	**E6-800-08-12**	**E6-800-08-12P**	3.43	(87)
E6-80-10	**E6-800-10-12**	**E6-800-10-12P**	3.94	(100)
E6-80-11	**E6-800-11-12**	**E6-800-11-12P**	4.41	(112)
E6-80-12	**E6-800-12-12**	**E6-800-12-12P**	4.92	(125)
E6-80-13	**E6-800-13-12**	**E6-800-13-12P**	5.39	(137)
E6-80-15	**E6-800-15-12**	**E6-800-15-12P**	5.91	(150)
E6-80-16	**E6-800-16-12**	**E6-800-16-12P**	6.38	(162)
E6-80-17	**E6-800-17-12**	**E6-800-17-12P**	6.89	(175)
E6-80-18	**E6-800-18-12**	**E6-800-18-12P**	7.36	(187)
E6-80-20	**E6-800-20-12**	**E6-800-20-12P**	7.87	(200)
E6-80-21	**E6-800-21-12**	**E6-800-21-12P**	8.35	(212)
E6-80-22	**E6-800-22-12**	**E6-800-22-12P**	8.86	(225)
E6-80-23	**E6-800-23-12**	**E6-800-23-12P**	9.33	(237)
E6-80-25	**E6-800-25-12**	**E6-800-25-12P**	9.84	(250)
E6-80-26	**E6-800-26-12**	**E6-800-26-12P**	10.31	(262)
E6-80-27	**E6-800-27-12**	**E6-800-27-12P**	10.83	(275)
E6-80-28	**E6-800-28-12**	**E6-800-28-12P**	11.30	(287)
E6-80-30	**E6-800-30-12**	**E6-800-30-12P**	11.81	(300)

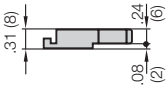
For Series	Part No. Full Set W/O Profile Rail	Part No. Full Set With Profile Rail	*Bi* in.	*Bi* (mm)
E6-80-31	**E6-800-31-12**	**E6-800-31-12P**	12.28	(312)
E6-80-32	**E6-800-32-12**	**E6-800-32-12P**	12.80	(325)
E6-80-33	**E6-800-33-12**	**E6-800-33-12P**	13.27	(337)
E6-80-35	**E6-800-35-12**	**E6-800-35-12P**	13.78	(350)
E6-80-36	**E6-800-36-12**	**E6-800-36-12P**	14.25	(362)
E6-80-37	**E6-800-37-12**	**E6-800-37-12P**	14.76	(375)
E6-80-38	**E6-800-38-12**	**E6-800-38-12P**	15.24	(387)
E6-80-40	**E6-800-40-12**	**E6-800-40-12P**	15.75	(400)
E6-80-41	**E6-800-41-12**	**E6-800-41-12P**	16.72	(412)
E6-80-42	**E6-800-42-12**	**E6-800-42-12P**	16.73	(425)
E6-80-43	**E6-800-43-12**	**E6-800-43-12P**	17.20	(437)
E6-80-45	**E6-800-45-12**	**E6-800-45-12P**	17.72	(450)
E6-80-46	**E6-800-46-12**	**E6-800-46-12P**	18.19	(462)
E6-80-47	**E6-800-47-12**	**E6-800-47-12P**	18.70	(475)
E6-80-48	**E6-800-48-12**	**E6-800-48-12P**	19.17	(487)
E6-80-50	**E6-800-50-12**	**E6-800-50-12P**	19.69	(500)
E6-80-51	**E6-800-51-12**	**E6-800-51-12P**	20.16	(512)
E6-80-52	**E6-800-52-12**	**E6-800-52-12P**	20.67	(525)
E6-80-53	**E6-800-53-12**	**E6-800-53-12P**	21.14	(537)
E6-80-55	**E6-800-55-12**	**E6-800-55-12P**	21.65	(550)
E6-80-60	**E6-800-60-12**	**E6-800-60-12P**	25.59	(600)

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Tiewrap Plates



Shown assembled

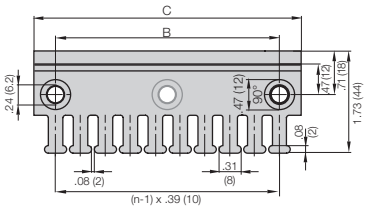


Single tiewrap plate

Option 1:
Tiewrap plates as an individual part

Available as an individual component, can be fixed onto a mounting bracket with the use of a profile rail.

Tiewrap Plate	n Number of Teeth	C Overall Width in. (mm)	B Bore Width in. (mm)	Center Bore
3050-ZB	5	1.97 (50)	1.18 (30)	no
3075-ZB	7	2.95 (75)	2.16 (55)	no
3100-ZB	10	3.94 (100)	3.15 (80)	no
3115-ZB	11	4.53 (115)	3.74 (95)	no
3125-ZB	12	4.92 (125)	4.13 (105)	no
3150-ZB	15	5.91 (150)	5.12 (130)	no
3175-ZB	17	6.89 (175)	6.10 (155)	no
3200-ZB	20	7.87 (200)	7.09 (180)	yes
3225-ZB	22	8.86 (225)	8.07 (205)	yes
3250-ZB	25	9.84 (250)	9.06 (230)	yes



If used with KMA brackets with profile rail please add “KMA” to the end of the part number.
Example: 3050-ZBKMA

Other strain relief elements
➤ **Strain Relief, Chapter 10**

Energy Chain System® E6
Series E6-80
Guide Trough

energy chain® configurator

igus® Energy Chain System®
Telephone 1-800-521-2747
Fax 1-401-438-7270
Internet: http://www.igus.com
email: sales@igus.com
QuickSpec: http://www.igus.com/quickspec

Crossbar Width
E6-80L-10-115-0
Dimension D
Installation Part No.

-05	4.13 (105)	96-50-225
-06	4.72 (120)	96-50-250
-07	5.12 (130)	96-50-250
-10	6.10 (155)	96-50-275
-11	6.57 (167)	96-50-300
-12	7.09 (180)	96-50-300
-13	7.56 (192)	96-50-325
-15	8.07 (205)	96-50-325
-16	8.54 (217)	96-50-350
-17	9.06 (230)	96-50-350
-18	9.53 (242)	96-50-375
-20	10.04 (255)	96-50-375
-21	10.51 (267)	96-50-400
-22	11.02 (280)	96-50-400
-23	11.50 (292)	96-50-425
-25	12.01 (305)	96-50-425
-26	12.48 (317)	96-50-450
-27	12.99 (330)	96-50-450
-28	13.46 (342)	96-50-475
-30	13.98 (355)	96-50-475
-31	14.45 (367)	96-50-500
-32	14.96 (380)	96-50-500
-33	15.43 (392)	96-50-525
-35	15.94 (405)	96-50-525
-36	16.42 (417)	96-50-550
-37	16.93 (430)	96-50-550
-38	17.40 (442)	96-50-575
-40	17.91 (455)	96-50-575
-41	18.39 (467)	96-50-600
-42	18.90 (480)	96-50-600
-43	19.37 (492)	96-50-625
-45	19.88 (505)	96-50-625
-46	20.35 (517)	96-50-650
-47	20.87 (530)	96-50-650
-48	21.34 (542)	96-50-675
-50	21.85 (555)	96-50-675
-51	22.32 (567)	96-50-700
-52	22.83 (580)	96-50-700
-53	23.31 (592)	96-50-725
-55	23.82 (605)	96-50-725
-60	25.79 (655)	96-50-775

Standard length profile rail

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:

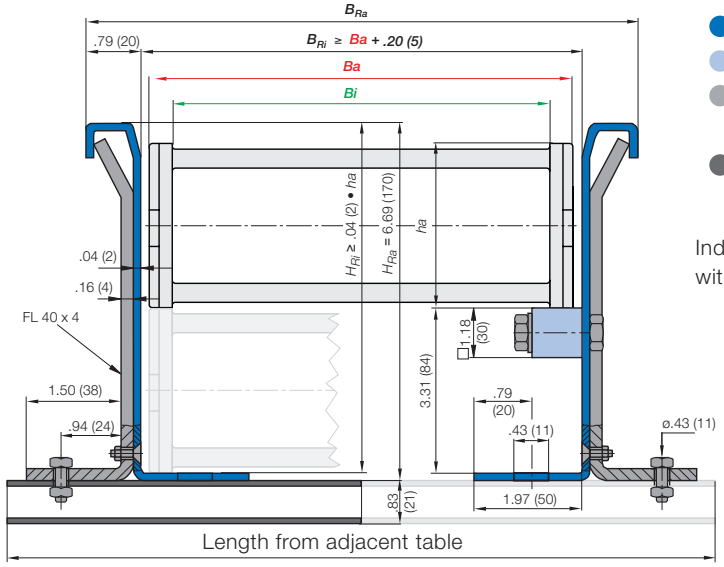
- Full travel length of guide trough
  Part Number 99-30
- 1/2 travel length of glide bars
  Part Number 93-01
- Installation sets as end connectors
  Part Number 96-50-XX

-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. 99-30
= 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: 96-50-400 for 15.75” (400 mm) long profile rail.



- Guide trough
- Glide bars
- Installation set “Basic”
- Profile rail

Individual attachment without profile rail

* Specialized guide trough available upon request