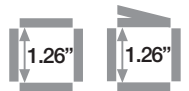


2828  
2928  
R7728



# Energy Chain System® E4/4 Series 2828/2928/R7728



### Price Index



Series 2828

Series 2928

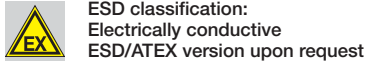


Series R7728

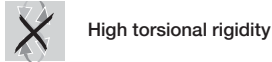
### Special Features / Options



Side-mounted - unsupported



ESD classification:  
Electrically conductive  
ESD/ATEX version upon request



High torsional rigidity

### Assembly Tips



Opening Energy Chains®: Remove cross-bars and clips - Insert screwdriver into the slot, push down, release by lever action



Remove lids/bottoms (Energy Tubes) - Insert screwdriver into the slot, release by lever action

### Other Installation Methods

Vertical, hanging ≤ 230 ft (70 m)

Vertical, standing ≤ 16.4 ft (5 m)

Side-mounted, un\_supp. ≤ 6.56 ft (2 m)

Rotary requires further calculation

### Usage Guidelines



- If subject to high torsional or shearing forces
- If a side-mounted chain/tube with long unsupported lengths is required
- If subject to very damp environments consistently



- If a quieter version is required  
➤ Series 280/290/R770

### Features & Benefits

- 1 KMA mounting brackets with attachment points on all sides
- 2 Crossbars on Energy Chains® are removable along both radii
- 3 Hinged snap-open removable lids along outer radius of Energy Tube
- 4 Lateral glide surfaces for side-mounted operation
- 5 High side-mount stability due to undercut
- 6 Locking or pivoting mounting brackets available
- 7 Closed and open styles can be combined
- 8 High torsional rigidity
- 9 Removable lids along inner radius
- 10 Wide, rounded plastic crossbars - cable friendly
- 11 Energy Chain® also available with reverse bending radii



RoI E-Chain® Series  
2828R/7728R available  
upon request

### Order Example: Complete Energy Chain®

Please indicate chain length or number of links. Example:

9.84 ft (3 m) 2828-30-300-0

Energy Chain®

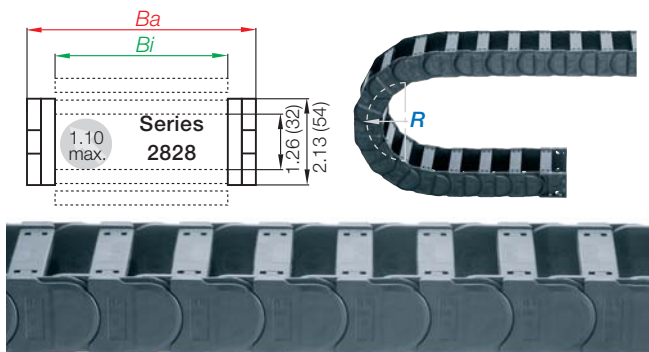
With 2 separators 281 assembled every 2nd link

Interior Separation

1 Set 282800-30-12P

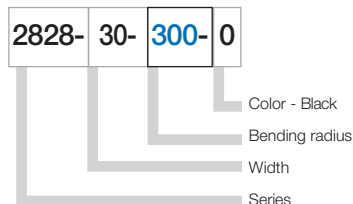
Mounting Bracket

### Series 2828 - Energy Chain® with crossbars every link

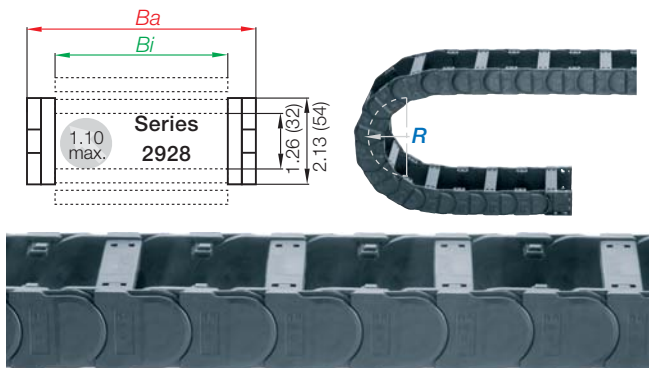


- Crossbars every link
- For use with rigid hydraulic hoses
- For particularly demanding applications
- Can be opened from both sides

#### Part Number Structure

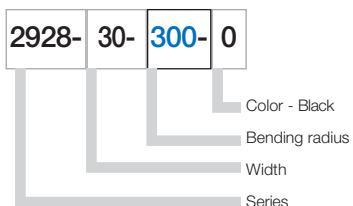


### Series 2928 - Energy Chain® with crossbars every other link

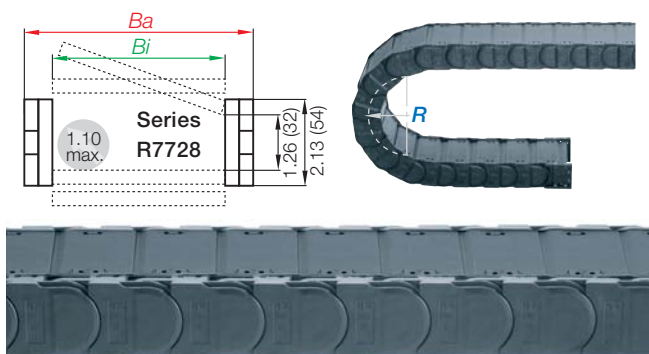


- Crossbars every other link
- Standard configuration
- For nearly every situation
- Can be opened from both sides
- Easy assembly
- Stable
- Cost-effective

#### Part Number Structure

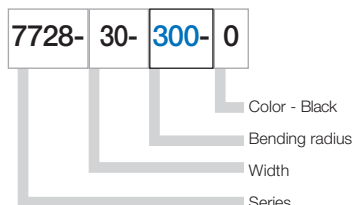


### Series R7728 - fully enclosed Energy Tube

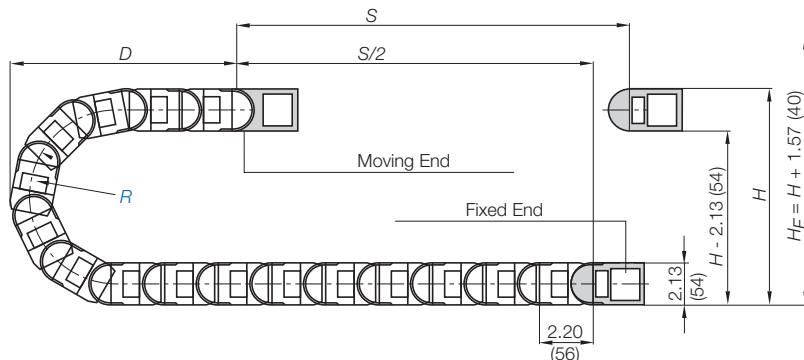
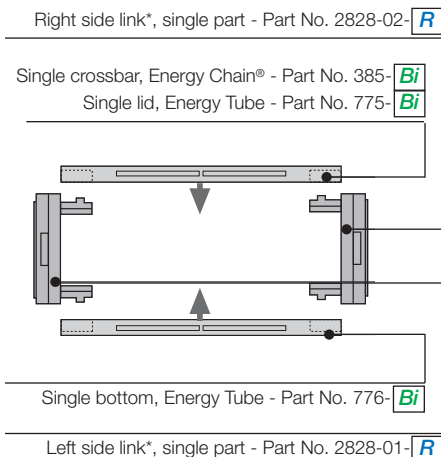


- Fully enclosed
- Excellent cable and hose protection against dirt
- Protection against hot chips up to 1652°F (900°C)
- Lids along inner radius are completely removable
- Lids along the outer radius are single-sided, snap open, hinged on one side as well as completely removable

#### Part Number Structure



### Energy Chain® as separate parts, links and side plates



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

# Energy Chain System® E4/4 Series 2828/2928/R7728



2828  
2928  
R7728

Supplement part number with required radius. Example: 2828-30-300-0  
Pitch: 2.20 in. (56mm) per link links/ft(m) = 5.49 (18)

Part Number			Weight					
Crossbars Every Link	Crossbars Every Other	Tube Version	<i>Bi</i> in. (mm)	<i>Ba</i> in. (mm)	2828 lbs/ft (kg/m)	2928 lbs/ft (kg/m)	R7728 lbs/ft (kg/m)	
2828-05-	2928-05-	*7728-05- <input type="text"/> -0	1.97 (50)	2.91 (74)	≈ 1.16 (1.73)	≈ 1.10 (1.64)	≈ 1.76 (2.63)	
2828-06-	2928-06-	<input type="text"/> -0	2.68 (68)	3.62 (92)	≈ 1.20 (1.79)	≈ 1.12 (1.67)	–	
2828-07-	2928-07-	7728-07- <input type="text"/> -0	2.95 (75)	3.90 (99)	≈ 1.24 (1.84)	≈ 1.14 (1.69)	≈ 1.84 (2.75)	
2828-087-	2928-087-	<input type="text"/> -0	3.43 (87)	4.37 (111)	≈ 1.30 (1.93)	≈ 1.16 (1.73)	–	
2828-10-	2928-10-	7728-10- <input type="text"/> -0	3.94 (100)	4.88 (124)	≈ 1.36 (2.02)	≈ 1.20 (1.78)	≈ 1.90 (2.83)	
2828-11-	2928-11-	7728-11- <input type="text"/> -0	4.25 (108)	5.20 (132)	≈ 1.40 (2.08)	≈ 1.22 (1.81)	≈ 1.98 (2.94)	
2828-112-	2928-112-	<input type="text"/> -0	4.41 (112)	5.39 (137)	≈ 1.44 (2.15)	≈ 1.24 (1.84)	–	
2828-12-	2928-12-	7728-12- <input type="text"/> -0	4.92 (125)	5.87 (149)	≈ 1.48 (2.20)	≈ 1.26 (1.87)	≈ 2.04 (3.03)	
2828-137-	2928-137-	<input type="text"/> -0	5.39 (137)	6.38 (162)	≈ 1.54 (2.29)	≈ 1.28 (1.91)	–	
2828-15-	2928-15-	7728-15- <input type="text"/> -0	5.91 (150)	6.85 (174)	≈ 1.60 (2.38)	≈ 1.32 (1.96)	≈ 2.14 (3.19)	
2828-162-	2928-162-	<input type="text"/> -0	6.38 (162)	7.36 (187)	≈ 1.64 (2.44)	≈ 1.34 (1.99)	–	
2828-17-	2928-17-	7728-17- <input type="text"/> -0	6.61 (168)	7.56 (192)	≈ 1.69 (2.51)	≈ 1.36 (2.02)	≈ 2.28 (3.39)	
2828-18-	2928-18-	<input type="text"/> -0	6.89 (175)	7.83 (199)	≈ 1.72 (2.56)	≈ 1.38 (2.05)	–	
2828-187-	2928-187-	<input type="text"/> -0	7.36 (187)	8.35 (212)	≈ 1.78 (2.65)	≈ 1.40 (2.09)	–	
2828-20-	2928-20-	7728-20- <input type="text"/> -0	7.87 (200)	8.82 (224)	≈ 1.84 (2.74)	≈ 1.44 (2.14)	≈ 2.41 (3.59)	
2828-212-	2928-212-	<input type="text"/> -0	8.35 (212)	9.33 (237)	≈ 1.93 (2.87)	≈ 1.48 (2.20)	–	
2828-23-	2928-23-	<input type="text"/> -0	8.86 (225)	9.80 (249)	≈ 1.96 (2.92)	≈ 1.49 (2.22)	–	
2828-237-	2928-237-	<input type="text"/> -0	9.33 (237)	10.31 (262)	≈ 2.05 (3.05)	≈ 1.54 (2.29)	–	
2828-25-	2928-25-	7728-25- <input type="text"/> -0	9.84 (250)	10.79 (274)	≈ 2.08 (3.10)	≈ 1.56 (2.32)	≈ 2.72 (4.04)	
2828-262-	2928-262-	<input type="text"/> -0	10.31 (262)	11.26 (286)	≈ 2.14 (3.19)	≈ 1.59 (2.36)	–	
2828-28	2928-28-	<input type="text"/> -0	10.83 (275)	11.77 (299)	≈ 2.20 (3.28)	≈ 1.62 (2.41)	–	
2828-29-	2928-29-	<input type="text"/> -0	11.30 (287)	12.28 (312)	≈ 2.26 (3.37)	≈ 1.65 (2.45)	–	
2828-30-	2928-30-	7728-30- <input type="text"/> -0	11.81 (300)	12.76 (324)	≈ 2.33 (3.46)	≈ 1.68 (2.50)	≈ 2.98 (4.43)	
2828-312-	2928-312-	<input type="text"/> -0	12.28 (312)	13.27 (337)	≈ 3.86 (3.59)	≈ 1.72 (2.56)	–	
2828-325-	2928-325-	<input type="text"/> -0	12.79 (325)	13.74 (349)	≈ 2.47 (3.68)	≈ 1.75 (2.60)	–	
2828-337-	2928-337-	<input type="text"/> -0	13.27 (337)	14.25 (362)	≈ 2.53 (3.77)	≈ 1.78 (2.65)	–	
2828-350-	2928-350-	<input type="text"/> -0	13.78 (350)	14.72 (374)	≈ 2.59 (3.86)	≈ 1.81 (2.69)	–	
2828-362-	2928-362-	<input type="text"/> -0	14.25 (362)	15.24 (387)	≈ 2.65 (3.95)	≈ 1.84 (2.74)	–	
2828-375-	2928-375-	<input type="text"/> -0	14.76 (375)	15.71 (399)	≈ 2.72 (4.04)	≈ 1.88 (2.79)	–	
2828-387-	2928-387-	<input type="text"/> -0	15.24 (387)	16.22 (412)	≈ 2.76 (4.11)	≈ 1.90 (2.82)	–	
2828-400	2928-400-	<input type="text"/> -0	15.75 (400)	16.69 (424)	≈ 2.81 (4.18)	≈ 1.92 (2.86)	–	

Choose from the radii below for all of the above sizes

Radius (mm) Example: 2828-30-300-0

	063**	075**	100**	125	150	175	200	220	250	300
R	2.48 (063)	2.95 (075)	3.94 (100)	4.92 (125)	5.91 (150)	6.89 (175)	7.87 (200)	8.66 (220)	9.84 (250)	11.81 (300)
H* $\frac{D}{20}$	7.09 (180)	8.07 (205)	10.04 (255)	12.01 (305)	13.98 (355)	15.94 (405)	17.91 (455)	19.49 (495)	21.85 (555)	25.79 (655)
D	5.12 (130)	5.91 (150)	6.89 (175)	7.87 (200)	8.86 (225)	9.84 (250)	10.83 (275)	11.61 (295)	12.80 (325)	14.76 (375)
K	13.39 (340)	14.96 (380)	18.31(465)	21.65 (550)	24.41 (620)	27.56 (700)	30.70 (780)	33.46 (850)	37.01 (940)	43.70 (1110)

\*\* This radius is not available for the R7728 Series

\*Removable lid only, no hinged option

0=Standard color black. For other colors see Chapter 1

For wider chains see page 6.13. For large diameter hoses see page 6.13

PDF: [www.igus.com/e-chain-pdfs](http://www.igus.com/e-chain-pdfs)  
 Specs/CAD/RFQ: [www.igus.com/e-chains](http://www.igus.com/e-chains)  
 RoHS info: [www.igus.com/RoHS](http://www.igus.com/RoHS)

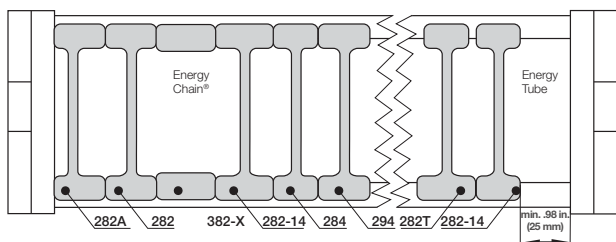




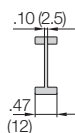
#### Option 1: Vertical separators and spacers

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 .98 in. (25mm) for Energy Tubes



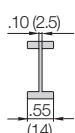
**STANDARD**  
Vertical separator  
280



**Separator (chain/tube)**  
Unassembled **Part No. 280**  
Assembled **Part No. 281**



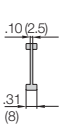
Vertical separator  
280 -14



**Separator (chain/tube)**  
Unassembled **Part No. 280-14**  
Assembled **Part No. 281-14**



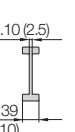
Vertical separator  
283



**Separator (chain only)**  
Unassembled **Part No. 283**  
Assembled **Part No. 284**



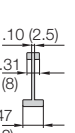
Locking separator  
293



**Locking Separator (chain only)**  
Unassembled **Part No. 293**  
Assembled **Part No. 294**



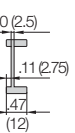
Vertical separator  
281T



**Vertical Separator (tubes only)**  
Unassembled **Part No. 281T**  
Assembled **Part No. 282T**



Asymmetric separator  
281A



**Asymmetric separator (chain only)**  
Unassembled **Part No. 280A**  
Assembled **Part No. 281A**



Spacers  
381-XX



**Spacer (chain only)**  
Unassembled **Part No. 381-XX**  
Assembled **Part No. 382-XX**  
XX = width of the spacer

- **Standard separator 280 for Energy Chains® and Energy Tubes**  
This separator offers safe stability due to its wide base design, also when used with thick cables or hoses.
- **Vertical separator 280-14 for Energy Chains® and Energy Tubes**  
This separator offers safe stability due to its broad base design when used with thick cables or hoses.
- **Vertical separator 283 for Energy Chains®**  
This separator features a narrow base for use in applications where a large number of small cables need to be individually separated.
- **Locking separator 293 for Energy Chains®**  
This separator is used in applications with very high relative humidity. It features increased retention force which is produced by asymmetrical retention "clamps" attached to the chain's crossbar. Please ensure that they are properly aligned.
- **Vertical separator 281T for Energy Tubes**  
It clamps to the fixed radius and remains free along the other radius to facilitate lid removal.
- **Asymmetrical separator 281A for Energy Chains®**  
This separator features a (12mm) base. It can be used in combination with spacers of different widths and vertical separators in side mounted applications.

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

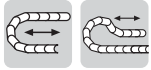
# Energy Chain System® E4/4

## Series 2828/2928/R7728

### Mounting Brackets - KMA



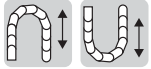
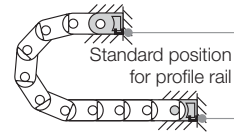
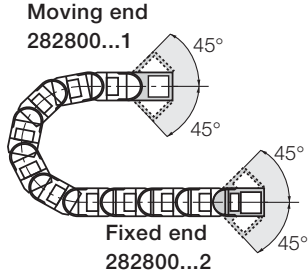
2828  
2928  
R7728



**Standard**

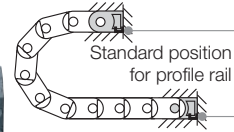
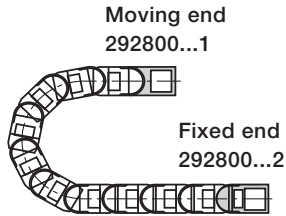
#### Option 1: pivoting

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

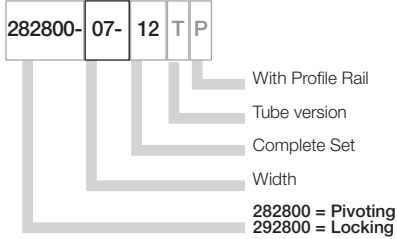


#### Option 2: locking

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



#### Part Number Structure



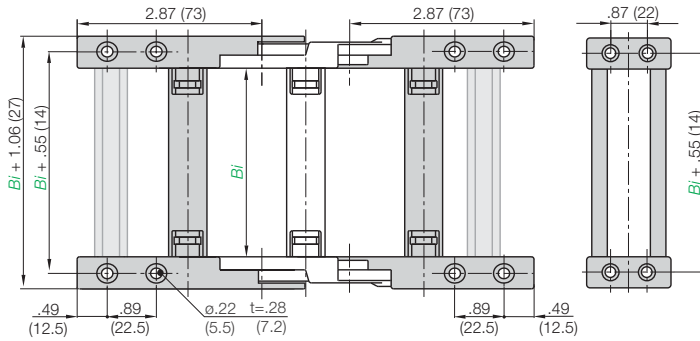
Full set, for both ends:

282800-07-12 Full set, each part with pin/bore

Single-part order:

282800-07-1 Mounting bracket with bore

282800-07-2 Mounting bracket with pin



Part number examples are shown for pivoting brackets. For locking brackets change part number to 292800

Part No. Full Set (pivoting)  
Series 2828 or 2928:  
282800-Width-12

Part No. Full Set (pivoting)  
with profile rail  
Series 2828 or 2928  
282800-Width-12P

Part No. Full Set (pivoting)  
Tube Series R7728  
282800-Width-12T

Part No. Full Set (pivoting)  
with Profile Rail  
Tube Series R7728  
282800-Width-12TP

Width	Part No. Full Set		Tube Option	With Profile Rail	Bi in. (mm)	
	Pivoting	Locking				
-05*	282800	292800	-05-12	T	P	1.97 (50)
-06	282800	292800	-06-12		P	2.68 (68)
-07	282800	292800	-07-12	T	P	2.95 (75)
-087	282800	292800	-087-12		P	3.43 (87)
-10	282800	292800	-10-12	T	P	3.94 (100)
-11	282800	292800	-11-12	T	P	4.25 (108)
-112	282800	292800	-112-12		P	4.41 (112)
-12	282800	292800	-12-12	T	P	4.92 (125)
-137	282800	292800	-137-12		P	5.39 (137)
-15	282800	292800	-15-12	T	P	5.91 (150)
-162	282800	292800	-162-12		P	6.38 (162)
-17	282800	292800	-17-12	T	P	6.61 (168)
-18	282800	292800	-18-12		P	6.89 (175)
-187	282800	292800	-187-12		P	7.36 (187)
-20	282800	292800	-20-12	T	P	7.87 (200)
-212	282800	292800	-212-12		P	8.35 (212)

Width	Part No. Full Set		Tube Option	With Profile Rail	Bi in. (mm)	
	Pivoting	Locking				
-23	282800	292800	-23-12		P	8.86 (225)
-237	282800	292800	-237-12		P	9.33 (237)
-25	282800	292800	-25-12	T	P	9.84 (250)
-262	282800	292800	-262-12		P	10.31 (262)
-28	282800	292800	-28-12		P	10.83 (275)
-29	282800	292800	-29-12		P	11.30 (287)
-30	282800	292800	-30-12	T	P	11.81 (300)
-312	282800	292800	-312-12		P	12.28 (312)
-325	282800	292800	-325-12		P	12.79 (325)
-337	282800	292800	-337-12		P	13.27 (337)
-350	282800	292800	-350-12		P	13.78 (350)
-362	282800	292800	-362-12		P	14.25 (362)
-375	282800	292800	-375-12		P	14.76 (375)
-387	282800	292800	-387-12		P	15.24 (387)
-400	282800	292800	-400-12		P	15.75 (400)

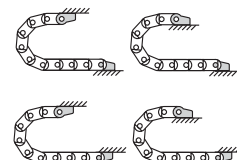
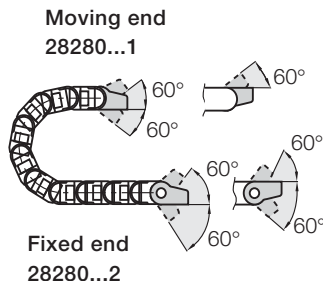
PDF: [www.igus.com/e-chain-pdfs](http://www.igus.com/e-chain-pdfs)  
Specs/CAD/RFQ: [www.igus.com/e-chains](http://www.igus.com/e-chains)  
RoHS info: [www.igus.com/RoHS](http://www.igus.com/RoHS)





#### Option 1: pivoting

- For pivoting connections
- One part (two-piece) for all chain widths
- Electrically conductive



Possible installation configurations -

#### Part No. Mounting Brackets Full Set

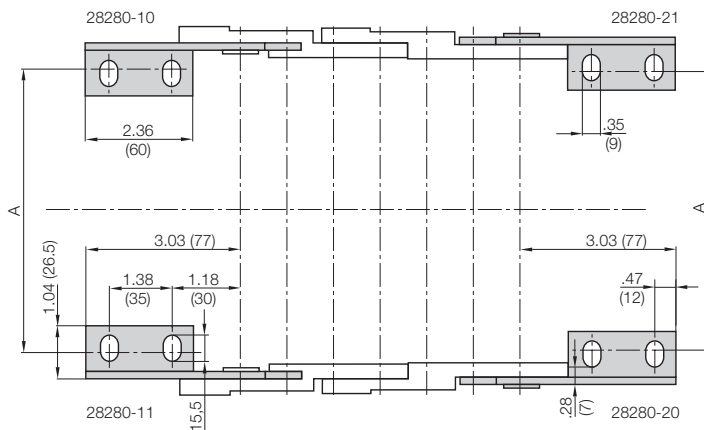
4 parts, 2 with pin, 2 with bore  
Series 2828, 2928 or R7728:  
**28280-12**

#### Part No. Mounting Bracket Moving End

2 parts, 1 left & 1 right  
Series 2828, 2928 or R7728:  
**28280-1**

#### Part No. Mounting Bracket Fixed End

2 parts, 1 left & 1 right  
Series 2828, 2928 or R7728:  
**28280-2**



Width of Chain <i>Bi</i>	Mounting Brackets				Mounting Dimension A in. (mm)	Width of Chain <i>Bi</i>	Mounting Brackets				Mounting Dimension A in. (mm)
	Part Number	Full Set	Moving End Only	Fixed End Only			Part Number	Full Set	Moving End Only	Fixed End Only	
1.97 (50)	28280	-12	-1	-2	1.18 (30)	8.86 (225)	28280	-12	-1	-2	8.07 (205)
2.56 (65)	28280	-12	-1	-2	1.77 (45)	9.33 (237)	28280	-12	-1	-2	8.54 (217)
2.95 (75)	28280	-12	-1	-2	2.16 (55)	9.84 (250)	28280	-12	-1	-2	9.05 (230)
3.94 (100)	28280	-12	-1	-2	3.15 (80)	10.31 (262)	28280	-12	-1	-2	9.53 (242)
3.94 (100)	28280	-12	-1	-2	3.15 (80)	10.83 (275)	28280	-12	-1	-2	10.04 (255)
4.41 (112)	28280	-12	-1	-2	3.62 (92)	11.30 (287)	28280	-12	-1	-2	10.51 (267)
3.94 (100)	28280	-12	-1	-2	3.15 (80)	11.81 (300)	28280	-12	-1	-2	11.02 (280)
4.92 (125)	28280	-12	-1	-2	4.13 (105)	12.28 (312)	28280	-12	-1	-2	11.49 (292)
5.39 (137)	28280	-12	-1	-2	4.61 (117)	12.79 (325)	28280	-12	-1	-2	12.00 (305)
5.91 (150)	28280	-12	-1	-2	5.12 (130)	13.27 (337)	28280	-12	-1	-2	12.48 (317)
6.38 (162)	28280	-12	-1	-2	5.59 (142)	13.78 (350)	28280	-12	-1	-2	12.99 (330)
6.89 (175)	28280	-12	-1	-2	6.10 (155)	14.25 (362)	28280	-12	-1	-2	13.46 (342)
7.36 (187)	28280	-12	-1	-2	6.57 (167)	14.76 (375)	28280	-12	-1	-2	13.97 (355)
7.36 (187)	28280	-12	-1	-2	6.57 (167)	15.24 (387)	28280	-12	-1	-2	14.45 (367)
7.87 (200)	28280	-12	-1	-2	7.09 (180)	15.75 (400)	28280	-12	-1	-2	14.96 (380)
8.35 (212)	28280	-12	-1	-2	7.56 (192)						