





New generation: robust,
low-noise, for high loads

twisterchain[®] new

New generation - twisterchain® new: robust, low-noise, for high loads

Higher loads and smoother running

igus® new generation of twisterchain® new circular e-chains® significantly improved smoothness, stability and strength. The twisterchain® new has a modular construction for width, height and radius and therefore provides very flexible use in applications where rotating movements up to 540° are required.

- Sturdier through intermediate link - more additional load possible
- 25% less weight than existing twisterchain®
- Rotary speeds up to 2 m/s and more
- Rotary/Spiral movements up to 540°
- Highly dynamic and smoother running (with a new guide trough)
- Cable-friendly, smooth interior
- Crossbars snap-open along inner radius
- Over 1 million cycles tested successfully in the igus® laboratory (03/2010)

Typical industries and applications

- Robots, handling machines
- Packaging machines
- Glass machines
- General mechanical engineering etc.



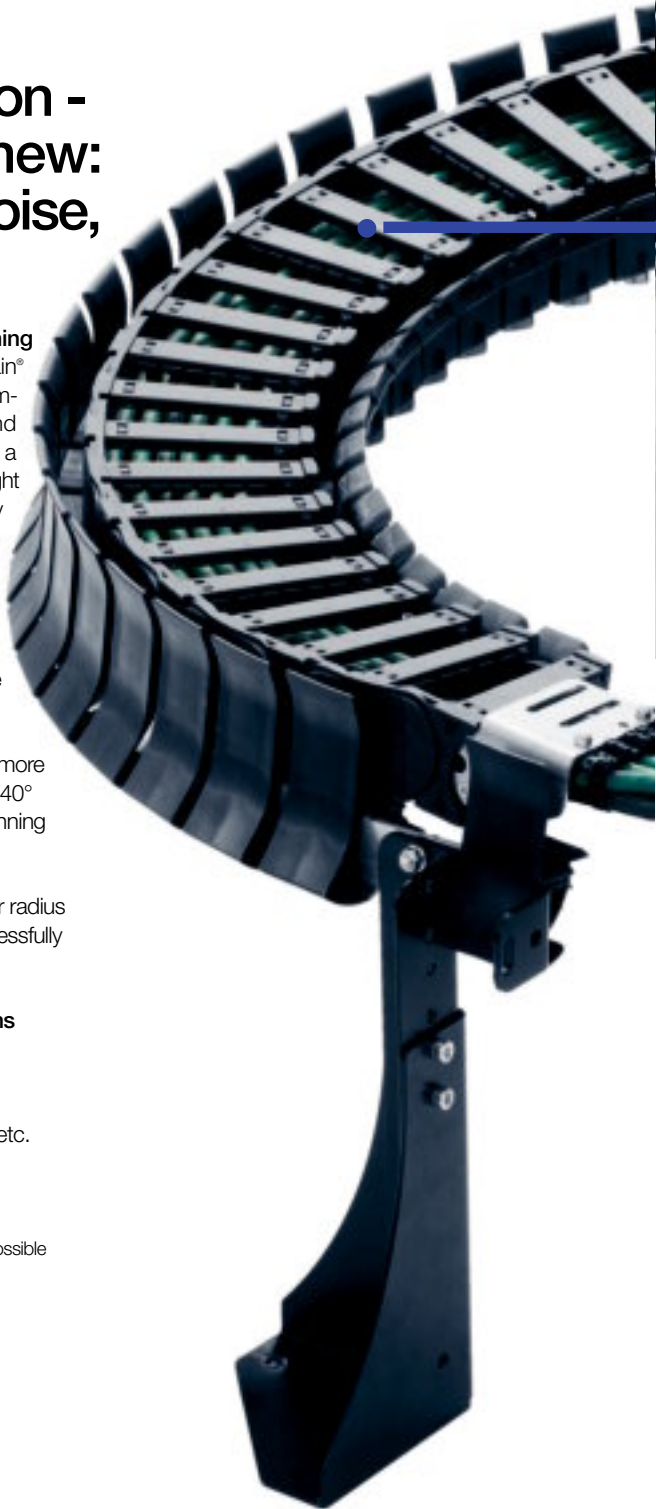
Circular movements up to 540° possible
(with special attachments)



UL94-V2 classifications
upon request

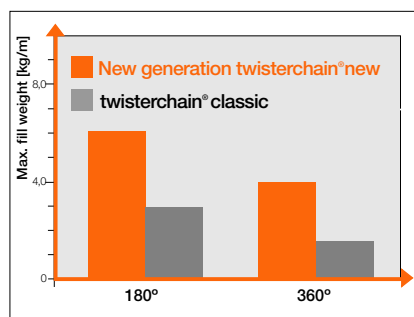


New Guide Trough
System available





igus® twisterchain®new - over 1 million cycles tested successfully in the igus® laboratory (03/2010)



100% more additional loads with the new generation of igus® twisterchain®new



The cable-optimized intermediate link increases the stability of twisterchain®new several times. It also serves as interior separation and divides the filling space into two chambers

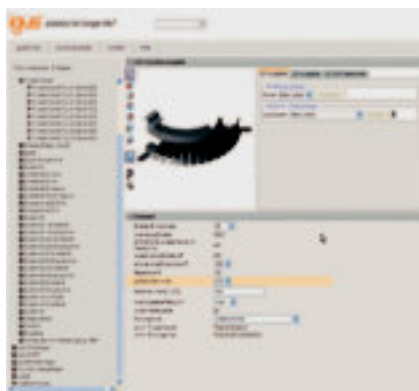


twisterchain® new
for circular movements up to
540°, crossbars snap-open
along inner radius

Series	Inner height <i>hi</i> [mm]	Inner width <i>Bi</i> [mm]	Outer width <i>Ba</i> [mm]	Outer height [mm]	Bending Radii <i>R</i> [mm]	Circular radii <i>AR</i> [mm]	Page
TC32	32	87,5 - 150	108,5 - 171	54	100 - 250	400 - 600	2.66
TC42	42	87,5 - 200	110,5 - 223	64	100 - 250	400 - 850	2.68
TC56	56	125 - 200	155 - 230	84	150 - 400	650 - 850	2.70

Quickly generate complete twisterchain® models with guide trough and accessories

► www.igus.eu/twisterconfigurator



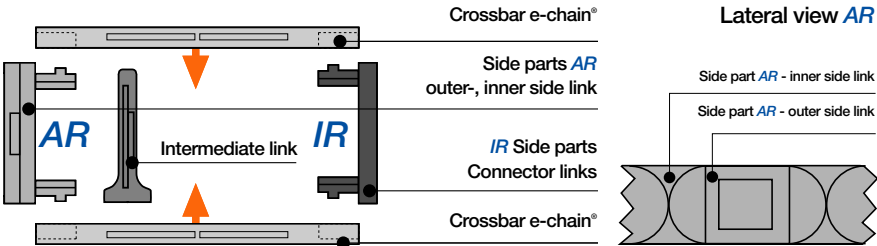
- Preparing of 3D-models only with input of chosen e-chain® radii and installation area
- Free positioning of the e-chain® moving end along the travel lengths
- Generation of twisterchain® optionally as single part or with guide trough and base support
- Fast download of the CAD files without registration
- CAD models in 11 different 3D CAD formats and 8 different 2D CAD formats



Technical Data - System twisterchain® new

	Speed / acceleration	max. 1,0 [m/s] / max. 2,0 [m/s²]
	Material - permitted temperature °C	igumid G / -40° up to +120° C
	Flammability class, igumid G	VDE 0304 IIC UL94 HB

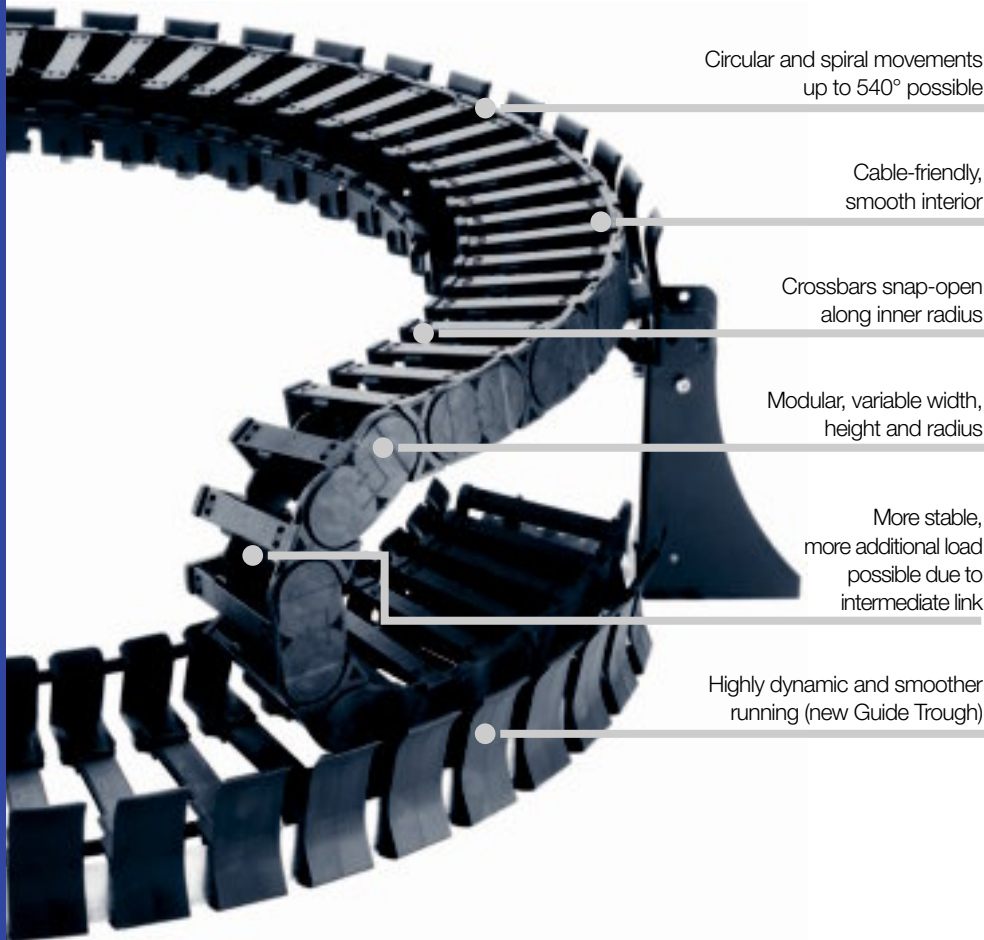
 Part No. of e-chain® links as single parts - System twisterchain® new



	Series	Crossbar e-chain® ¹)	Side parts AR outer side link ²)	Side parts AR inner side link ³)	Side parts IR Connector links	Intermediate link
	TC32	385. Bi	E4.32.01	TC32.02. R.AR	2808.03	TC32.04
	TC42	385. Bi	E4.42.01	TC42.02. R.AR	3808.03	TC42.04
	TC56	450. Bi	E4.56.01	TC56.02. R.AR	4008.03	TC56.04

No linking possible in combination with QuickLock crossbars!

- 1) Supplement Part No. of crossbar with required width index (**Bi**) e.g. **450.150**
- 2) Outer side link - fit for each radius (only for outer radius **AR**)
- 3) Inner side link - supplement Part No. with required radius (**R**)
e.g. **TC56.02.100.AR** (only for outer radius **AR**)



Circular and spiral movements
up to 540° possible

Cable-friendly,
smooth interior

Crossbars snap-open
along inner radius

Modular, variable width,
height and radius

More stable,
more additional load
possible due to
intermediate link

Highly dynamic and smoother
running (new Guide Trough)

+ New design, higher loads, circular movements up to 540°

When to use the System twisterchain®:

- If a robust, low-noise system is required, appropriate for high loads
- Rotatory speeds up to 1 m/s and more
- At rotatory/spiral movements up to 540°
- If a variable interior separation is desired
- If two-sided opening is desired



When to use a different igus® Series:

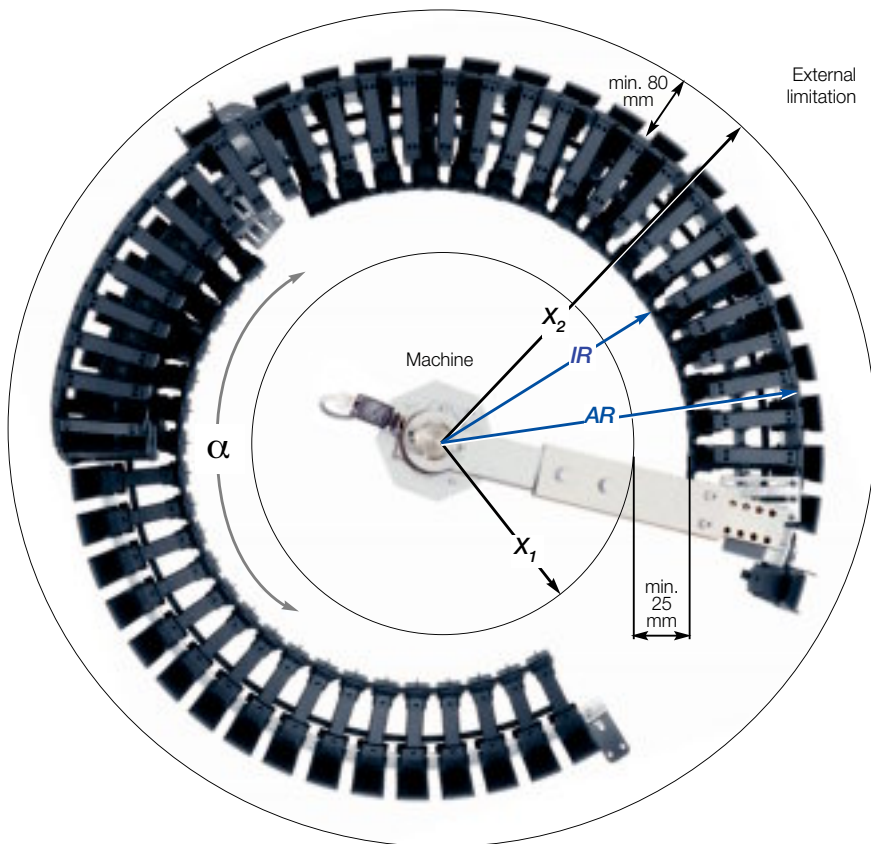
- For larger rotations
- **igus® RBR-solutions, Design, chapter 1**
- For rotation angles higher than 360° please consult igus®



Available from stock. Delivery in 24h or today!*

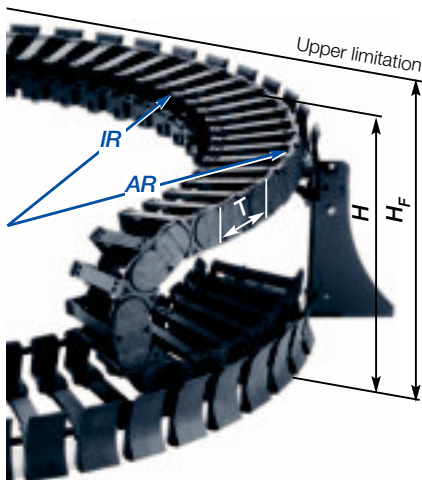
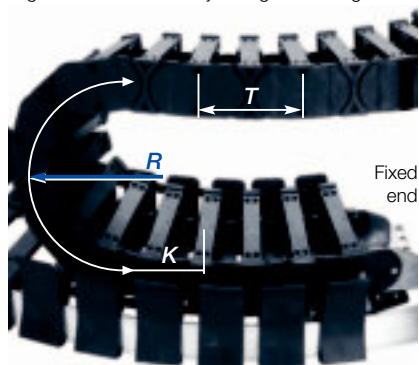
*Delivery time means time until shipping of goods





twisterchain® definition

In the case of machine elements which both move to the left and to the right following a circular path, the rotation angle can be determined by adding the two angles!



AR = Outer radius, e-chain®
IR = Inner radius, e-chain®
R = Bending radius

X₁ = Inner machine construction space
X₂ = Outer radius **AR**, incl. clearance
T = Pitch

H_F = Height incl. 50 mm clearance
H = Nominal clearance height
K = Add-on for bending radius

hi = Inner height e-chain®
ha = Outer height e-chain®
α = Rotation angle

Example: Guidance on the interpretation of twisterchain® new

If you would like us to design your twisterchain® application, simply supply us with your requirements. Please use the igus® system design form at the end of this chapter. If you would like to specify the e-chain® and the guide trough yourself, please work through the following points and enter the results on the calculation sheet at the end of the chapter.

1. Determine the series and e-chain® width - Example of client data:

- Available construction space outer radius = 592 mm ● inner radius = 311 mm
- α Rotation angle = 220° ● Installation height = 466 mm ● max. Ø cable of client = 22 mm (7,5xd)

Estimate the dimensions of the e-chain® by means of the internal separation with filling and select the series, or verify the max. cable diameter and select the series using the next larger permissible Ø. (For the inner height, we recommend the consideration of a cable clearance of approximately 20% of the chain's inner height and width.)

Max. Ø cable twisterchain®: TC32 = 25 mm | TC42 = 39 mm | TC56 = 53 mm

Example: max. Ø cable of client 22 mm => Series TC32 (next larger)

2. Specify the outer radius AR

Select the next smaller X_2 of the e-chain® from the available installation space of the outer radius.

From the dimension X_2 please subtract 80 mm, which results in the necessary outer radius AR..

Selection of the chain outer radii, see table; dimension X_2 of the corresponding series

Formula: $AR = X_2 - 80 \text{ mm}$

- Example:**
1. Available construction space outer radius 592 mm => 580 mm (X_2)
 2. X_2 580 mm - 80 mm => **AR 500** mm (next smaller selected)

3. Specify the outer radius IR

Add the allowance of 25 mm to the available installation space of the inner radius and select the next larger X_1 of the e-chain®. The maximum width Bi results from the selected value.

Selection from the table of the corresponding series

Formula: $IR_{\min} = X_1 + 25 \text{ mm}$

Example: Available installation space inner radius 311 mm + 25 mm = 336 mm => X_1 350 mm = **Bi 11** (108 mm)

4. Specify the bending radius R

Basically, the chain's bending radius R is determined by the smallest bending radius of the cables.

Selection from the table of the corresponding series

- Example:**
1. Ø 22 mm (7,5xd) => 22 mm x 7,5 = 165 mm cable's bending radius min.
 2. 165 => **R 175** mm (next higher selected) ► results => **Part No. TC32.11.175/500**

5. Specify the required installation height H

An allowance of 170 mm is added to twice the value of the selected chain's bending radius R .

Example: **R 175** mm x 2 + 170 mm = **H 520** mm

6. Calculate the required number of links

Formula: $n = \frac{\pi \times AR \times a}{360^\circ \times T} + \frac{K}{T}$

Please note: The resulting number of links must always be rounded up! The mounting brackets may be attached only to the outside plates of the twisterchain®. Consequently, the number of links **must always be rounded up to the next higher odd number!** **Definition:** In the case of machine elements which both move to the left and to the right following a circular path, the rotation angle can be determined by adding the two angles!



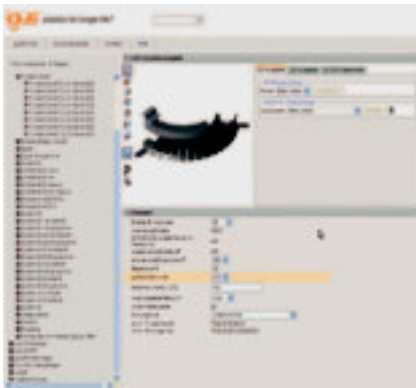
Recommendations for design without additional components

Series	AR [mm]	FZ_{max} [kg/m] α 0°- 180°	FZ_{max} [kg/m] α 180°- 360°	v an AR zulässig [m/s]	a an AR max. [m/s²]
TC32	400	4,0	2,0	1,0	2,0
	500	4,0	2,0	1,0	2,0
	600	4,0	2,0	1,0	2,0
TC42	400	6,0	3,6	1,0	2,0
	500	6,0	3,6	1,0	2,0
	600	6,0	3,6	1,0	2,0
	650	5,0	2,7	1,0	1,5
	750	4,0	1,8	1,0	1,0
	850	4,0	1,8	1,0	1,0
TC56	650	8,0	5,0	1,0	2,0
	750	8,0	5,0	1,0	2,0
	850	8,0	5,0	11,0	2,0

If your calculations exceed our recommendations, please talk to us. We offer special solutions and many additional components!

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AR = Outer radius
 IR = Inner radius
 R = Bending radius

X_1 = Inner machine construction space
 X_2 = Outer radius AR , incl. clearance
 T = Pitch

H_F = Height incl. 50 mm clearance
 H = Nominal clearance height
 K = Add-on for bending radius

hi = Inner height
 ha = Outer height
 α = Rotation angle

a = Acceleration
 n = Number of links
 FZ_{max} = Max. additional load

Series TC32 | Snap-open along inner radius from both sides

AR [mm]	Bi [mm]	Ba [mm]	X ₂ [mm]	X ₁ [mm]	R 100 [mm] TC32...	R 125 [mm] TC32...	R 150 [mm] TC32...	R 175 [mm] TC32...	R 200 [mm] TC32...	R 250 [mm] TC32...	Weight [kg/m]
400	87,5	108,5	480	270	087.100/400	087.125/400	087.150/400	087.175/400	087.200/400	087.250/400	≈ 1,82
400	100	121	480	250	–	–	10. 150/400	10. 175/400	10. 200/400	10. 250/400	≈ 1,90
400	108	129	480	250	–	–	–	11. 175/400	11. 200/400	11. 250/400	≈ 1,95
400	125	146	480	220	–	–	–	12. 175/400	12. 200/400	12. 250/400	≈ 2,05
400	137,5	158,5	480	210	–	–	–	–	–	137.250/400	≈ 2,13
400	150	171	480	200	–	–	–	–	–	15. 250/400	≈ 2,21
500	100	121	580	350	10. 100/500	10. 125/500	10. 150/500	10. 175/500	10. 200/500	10. 250/500	≈ 1,90
500	108	129	580	350	–	11. 125/500	11. 150/500	11. 175/500	11. 200/500	11. 250/500	≈ 1,95
500	125	146	580	320	–	12. 125/500	12. 150/500	12. 175/500	12. 200/500	12. 250/500	≈ 2,05
500	137,5	158,5	580	310	–	–	137.150/500	137.175/500	137.200/500	137.250/500	≈ 2,13
500	150	171	580	300	–	–	15. 150/500	15. 175/500	15. 200/500	15. 250/500	≈ 2,21
600	108	129	680	450	11. 100/600	11. 125/600	11. 150/600	–	–	–	≈ 1,95
600	125	146	680	420	–	12. 125/600	12. 150/600	12. 175/600	12. 200/600	12. 250/600	≈ 2,05
600	137,5	158,5	680	410	–	137.125/600	137.150/600	137.175/600	137.200/600	137.250/600	≈ 2,13
600	150	171	680	400	–	–	15. 150/600	15. 175/600	15. 200/600	15. 250/600	≈ 2,21

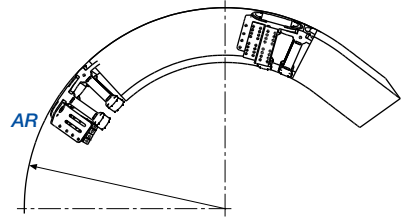
R	100	125	150	175	200	250
H + ²⁰ ₀	254	304	354	404	454	554
K	430	505	585	665	745	900

Pitch *T* = 56 mm/link
Links/m = 18 (1008 mm)

Dimension A1 depending on outer radius AR

AR [mm]	R 100 $A1$ [mm]	R 125 $A1$ [mm]	R 150 $A1$ [mm]	R 175 $A1$ [mm]	R 200 $A1$ [mm]	R 250 $A1$ [mm]
400	51	51	52	53	53	58
500	65	65	66	67	69	71
600	79	80	81	81	82	85

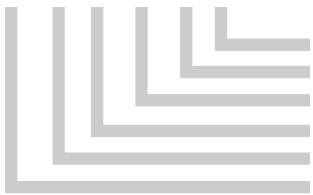
Dimension A1 always with tolerance of $\pm 2,5$ mm



Note: Outer radius AR (see drawing) determines **dimension A1**!

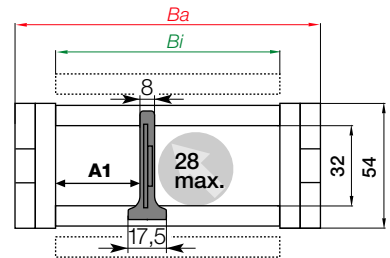
Order key

TC32.10.150/400.0



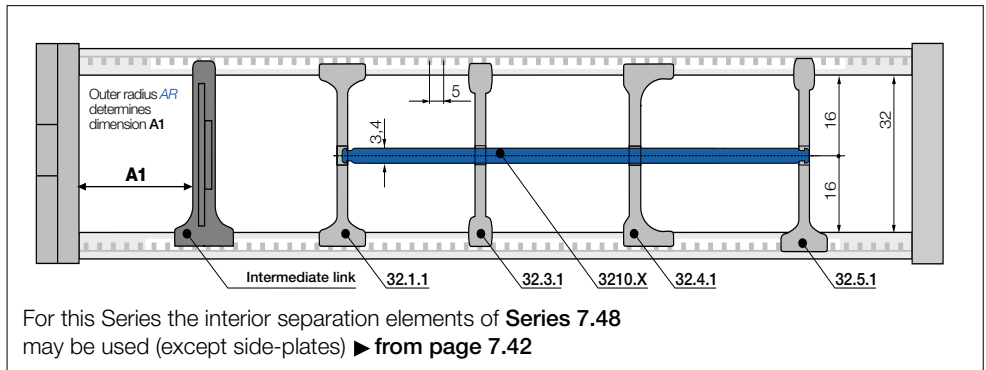
- Standard color black
- Outer radius AR
- Bending radius R
- Width index (depends on B)
- Inner height
- Series

Dimensioning



TC32.10.150/400.0 = e-chain® snap-open along inner radius from both sides
 Bi 87,5 mm inner width, R 150 mm bending radius / AR 400 mm outer radius, color black

twisterchain® | **Series TC32** | Interior separation | **Standard**



i AR = Outer radius X_1 = Inner machine construction space Ba = Outer width H = Nominal clearance height $A1$ = Distance intermediate link
 R = Bending radius X_2 = Outer radius AR , incl. clearance Bi = Inner width K = Add-on for bending radius T = Pitch

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 *Delivery time means time until shipping of goods

Series TC42 | Snap-open along inner radius from both sides

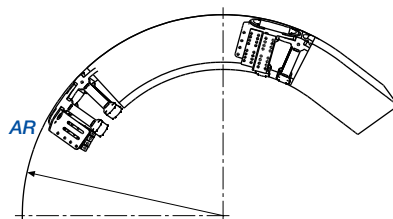
AR [mm]	Bi [mm]	Ba [mm]	X ₂ [mm]	X ₁ [mm]	R 100 [mm] TC42...	R 125 [mm] TC42...	R 150 [mm] TC42...	R 175 [mm] TC42...	R 200 [mm] TC42...	R 250 [mm] TC42...	Weight [kg/m]
400	87,5	110,5	480	270	087.100/400	087.125/400	087.150/400	087.175/400	087.200/400	087.250/400	≈ 1,97
400	100	123	480	250	10. 100/400	10. 125/400	10. 150/400	10. 175/400	10. 200/400	10. 250/400	≈ 2,03
400	108	131	480	250	–	11. 125/400	11. 150/400	11. 175/400	11. 200/400	11. 250/400	≈ 2,07
400	125	148	480	220	–	12. 125/400	12. 150/400	12. 175/400	12. 200/400	12. 250/400	≈ 2,16
400	137,5	160,5	480	210	–	137.125/400	137.150/400	137.175/400	137.200/400	137.250/400	≈ 2,22
400	150	173	480	200	–	–	–	15. 175/400	15. 200/400	15. 250/400	≈ 2,29
400	162,5	185,5	480	190	–	–	–	–	162.200/400	162.250/400	≈ 2,35
400	168	191	480	190	–	–	–	–	–	17. 250/400	≈ 2,38
400	175	198	480	180	–	–	–	–	–	18. 250/400	≈ 2,41
500	100	123	580	350	10. 100/500	10. 125/500	10. 150/500	10. 175/500	10. 200/500	10. 250/500	≈ 2,03
500	108	131	580	350	–	11. 125/500	11. 150/500	11. 175/500	11. 200/500	11. 250/500	≈ 2,07
500	125	148	580	320	–	12. 125/500	12. 150/500	12. 175/500	12. 200/500	12. 250/500	≈ 2,16
500	137,5	160,5	580	310	–	–	137.150/500	137.175/500	137.200/500	137.250/500	≈ 2,22
500	150	173	580	300	–	–	15. 150/500	15. 175/500	15. 200/500	15. 250/500	≈ 2,29
500	162,5	185,5	580	290	–	–	162.150/500	162.175/500	162.200/500	162.250/500	≈ 2,35
500	168	191	580	290	–	–	–	17. 175/500	17. 200/500	17. 250/500	≈ 2,38
500	175	198	580	280	–	–	–	–	18. 200/500	18. 250/500	≈ 2,41
500	187,5	210,5	580	280	–	–	–	–	187.200/500	187.250/500	≈ 2,48
500	200	223	580	250	–	–	–	–	20. 200/500	20. 250/500	≈ 2,54
600	108	131	680	450	11. 100/600	11. 125/600	11. 150/600	11. 175/600	11. 200/600	–	≈ 2,07
600	125	148	680	420	12. 100/600	12. 125/600	12. 150/600	12. 175/600	12. 200/600	12. 250/600	≈ 2,16
600	137,5	160,5	680	410	137.100/600	137.125/600	137.150/600	137.175/600	137.200/600	137.250/600	≈ 2,22
600	150	173	680	400	15. 100/600	15. 125/600	15. 150/600	15. 175/600	15. 200/600	15. 250/600	≈ 2,29
600	162,5	185,5	680	390	–	162.125/600	162.150/600	162.175/600	162.200/600	162.250/600	≈ 2,35
600	168	191	680	390	–	–	17. 150/600	17. 175/600	17. 200/600	17. 250/600	≈ 2,38
600	175	198	680	380	–	–	18. 150/600	18. 175/600	18. 200/600	18. 250/600	≈ 2,41
600	187,5	210,5	680	380	–	–	187.150/600	187.175/600	187.200/600	187.250/600	≈ 2,48
600	200	223	680	350	–	–	20. 150/600	20. 175/600	20. 200/600	20. 250/600	≈ 2,54
650	125	148	730	470	12. 100/650	12. 125/650	12. 150/650	12. 175/650	12. 200/650	12. 250/650	≈ 2,16
650	137,5	160,5	730	460	137.100/650	137.125/650	137.150/650	137.175/650	137.200/650	137.250/650	≈ 2,22
650	150	173	730	450	15. 100/650	15. 125/650	15. 150/650	15. 175/650	15. 200/650	15. 250/650	≈ 2,29
650	162,5	185,5	730	440	–	162.125/650	162.150/650	162.175/650	162.200/650	162.250/650	≈ 2,35
650	168	191	730	430	–	17. 125/650	17. 150/650	17. 175/650	17. 200/650	17. 250/650	≈ 2,38
650	175	198	730	430	–	–	18. 150/650	18. 175/650	18. 200/650	18. 250/650	≈ 2,41
650	187,5	210,5	730	420	–	–	187.150/650	187.175/650	187.200/650	187.250/650	≈ 2,48
650	200	223	730	400	–	–	20. 150/650	20. 175/650	20. 200/650	20. 250/650	≈ 2,54
750	137,5	160,5	830	560	137.100/750	137.125/750	137.150/750	137.175/750	137.200/750	137.250/750	≈ 2,22
750	150	173	830	550	15. 100/750	15. 125/750	15. 150/750	15. 175/750	15. 200/750	15. 250/750	≈ 2,29
750	162,5	185,5	830	540	–	162.125/750	162.150/750	162.175/750	162.200/750	162.250/750	≈ 2,35
750	168	191	830	540	–	17. 125/750	17. 150/750	17. 175/750	17. 200/750	17. 250/750	≈ 2,38
750	175	198	830	530	–	18. 125/750	18. 150/750	18. 175/750	18. 200/750	18. 250/750	≈ 2,41
750	187,5	210,5	830	520	–	187.125/750	187.150/750	187.175/750	187.200/750	187.250/750	≈ 2,48
750	200	223	830	500	–	20. 125/750	20. 150/750	20. 175/750	20. 200/750	20. 250/750	≈ 2,54
850	150	173	930	650	15. 100/850	15. 125/850	15. 150/850	15. 175/850	15. 200/850	15. 250/850	≈ 2,29
850	162,5	185,5	930	640	162.100/850	162.125/850	162.150/850	162.175/850	162.200/850	162.250/850	≈ 2,35
850	168	191	930	630	17. 100/850	17. 125/850	17. 150/850	17. 175/850	17. 200/850	17. 250/850	≈ 2,38
850	175	198	930	630	–	18. 125/850	18. 150/850	18. 175/850	18. 200/850	18. 250/850	≈ 2,41
850	187,5	210,5	930	620	–	187.125/850	187.150/850	187.175/850	187.200/850	187.250/850	≈ 2,48
850	200	223	930	600	–	20. 125/850	20. 150/850	20. 175/850	20. 200/850	20. 250/850	≈ 2,54

R	100	125	150	175	200	250
H ₊₂₅	264	314	364	414	464	564
K	450	530	610	685	765	920

Pitch T = 67 mm/link
Links/m = 15 (1005 mm)

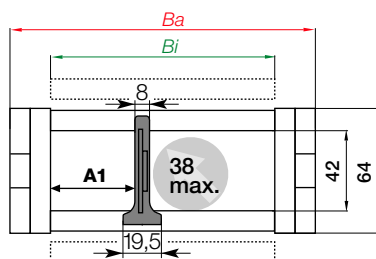
Dimension A1 depending on outer radius *AR*

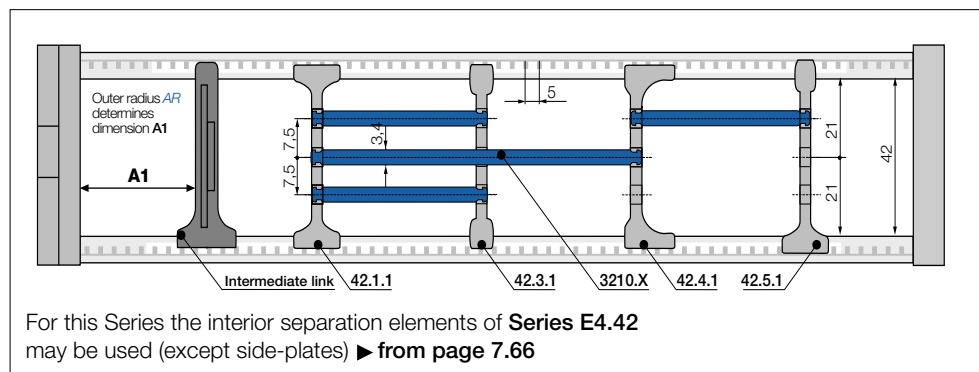
<i>AR</i> [mm]	<i>R</i> 100 A1 [mm]	<i>R</i> 125 A1 [mm]	<i>R</i> 150 A1 [mm]	<i>R</i> 175 A1 [mm]	<i>R</i> 200 A1 [mm]	<i>R</i> 250 A1 [mm]
400	49	50	51	53	53	53
500	64	65	66	67	68	71
600	79	79	80	81	82	85
650	86	87	87	88	89	92
750	101	101	102	103	104	106
850	116	116	117	118	118	120

Dimension A1 always with tolerance of $\pm 2,5$ mm

Note: Outer radius *AR* (see drawing) determines **dimension A1**!

Order key
TC42.10.250/400.0

- Standard color black
- Outer radius *AR*
- Bending radius *R*
- Width index (depends on *Bi*)
- Inner height
- Series

Dimensioning

TC42.10.250/400.0 = e-chain® snap-open along inner radius from both sides
Bi 87,5 mm inner width, *R* 250 mm bending radius / *AR* 400 mm outer radius, color black

twisterchain® | **Series TC42** | Interior separation | **Standard**


i *AR* = Outer radius *X*₁ = Inner machine construction space *Ba* = Outer width *H* = Nominal clearance height *A1* = Distance intermediate link
R = Bending radius *X*₂ = Outer radius *AR*, incl. clearance *Bi* = Inner width *K* = Add-on for bending radius *T* = Pitch

Available from stock. Delivery in 24h or today!*
*Delivery time means time until shipping of goods

Series TC56 | Snap-open along inner radius from both sides

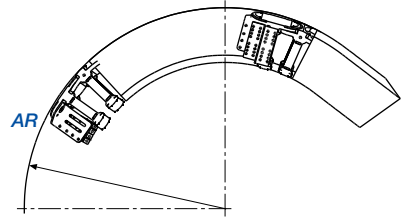
AR [mm]	Bi [mm]	Ba [mm]	X ₂ [mm]	X ₁ [mm]	R 150 [mm] TC56...	R 200 [mm] TC56...	R 250 [mm] TC56...	R 300 [mm] TC56...	R 400 [mm] TC56...	Weight [kg/m]
650	125	155	730	470	12. 150/650	12. 200/650	12. 250/650	12. 300/650	–	≈ 3,45
650	137,5	168	730	460	–	13. 200/650	13. 250/650	13. 300/650	13. 400/650	≈ 3,54
650	150	180	730	450	–	–	15. 250/650	15. 300/650	15. 400/650	≈ 3,62
650	162,5	193	730	440	–	–	16. 250/650	16. 300/650	16. 400/650	≈ 3,7
650	175	205	730	430	–	–	–	17. 300/650	17. 400/650	≈ 3,78
650	187,5	218	730	420	–	–	–	18. 300/650	18. 400/650	≈ 3,87
650	200	230	730	400	–	–	–	– 300/650	20. 400/650	≈ 3,95
750	137,5	168	830	560	13. 150/750	13. 200/750	13. 250/750	13. 300/750	–	≈ 3,54
750	150	180	830	550	–	15. 200/750	15. 250/750	15. 300/750	15. 400/750	≈ 3,62
750	162,5	193	830	540	–	16. 200/750	16. 250/750	16. 300/750	16. 400/750	≈ 3,7
750	175	205	830	530	–	–	17. 250/750	17. 300/750	17. 400/750	≈ 3,78
750	187,5	218	830	520	–	–	18. 250/750	18. 300/750	18. 400/750	≈ 3,87
750	200	230	830	500	–	–	20. 250/750	20. 300/750	20. 400/750	≈ 3,95
850	150	180	930	650	15. 150/850	15. 200/850	15. 250/850	15. 300/850	15. 400/850	≈ 3,62
850	162,5	193	930	640	16. 150/850	16. 200/850	16. 250/850	16. 300/850	16. 400/850	≈ 3,7
850	175	205	930	630	17. 150/850	17. 200/850	17. 250/850	17. 300/850	17. 400/850	≈ 3,78
850	187,5	218	930	620	–	18. 200/850	18. 250/850	18. 300/850	18. 400/850	≈ 3,87
850	200	230	930	600	–	–	20. 250/850	20. 300/850	20. 400/850	≈ 3,95

R	150	200	250	300	400
H ₊₂₅ ⁻⁰	384	484	584	684	884
K	655	815	970	1125	1440

Pitch T = 91 mm/link
Links/m = 11 (1001 mm)

AR	R 150	R 200	R 250	R 300	R 400
[mm]	A1 [mm]	A1 [mm]	A1 [mm]	A1 [mm]	A1 [mm]
650	83	85	88	90	97
750	101	101	102	103	110
850	116	116	117	118	124

Dimension A1 always with tolerance of $\pm 2,5$ mm



Note: Outer radius **AR** (see drawing) determines **dimension A1**!



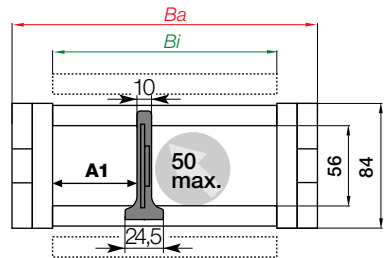
Order key

TC56.12.250/650.0



- Standard color black
- Outer radius **AR**
- Bending radius **R**
- Width index (depends on **B**)
- Inner height
- Series

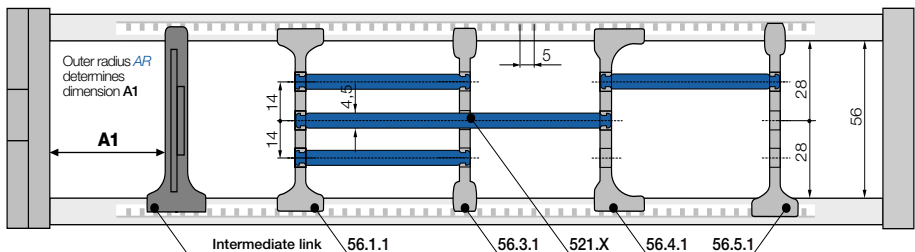
Dimensioning



TC32.12.250/650.0 = e-chain® snap-open along inner radius from both sides

Bi 125 mm inner width, **R 250** mm bending radius / **AR 650** mm outer radius, color black

twisterchain® | **Series TC56** | Interior separation | **Standard**



For this Series the interior separation elements of **Series E4.56** may be used (except side-plates) ► from page 7.84

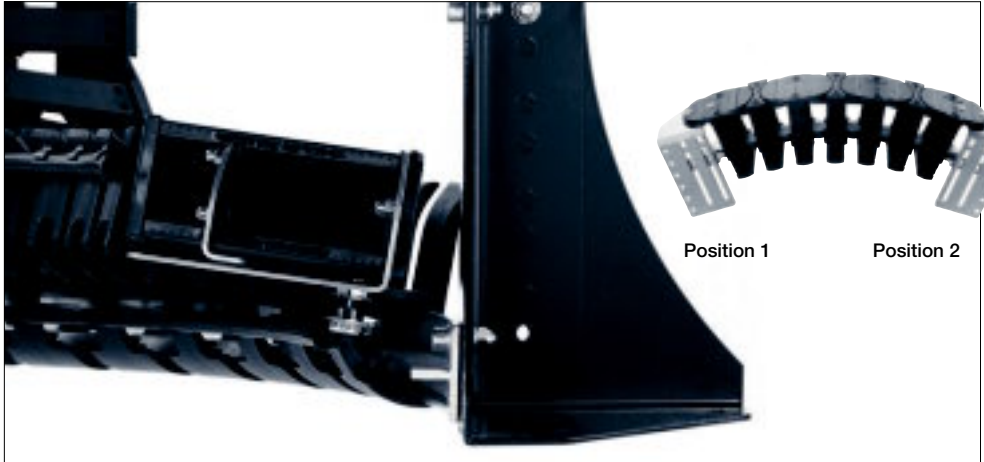


AR = Outer radius **X₁** = Inner machine construction space **Ba** = Outer width **H** = Nominal clearance height **A1** = Distance intermediate link
R = Bending radius **X₂** = Outer radius **AR**, incl. clearance **Bi** = Inner width **K** = Add-on for bending radius **T** = Pitch



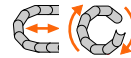
Available from stock. Delivery in 24h or today!*

*Delivery time means time until shipping of goods



Steel, one-piece | Recommended for unsupported and rotatory applications

Für Series	Part No. full set	Part No. position 1	Part No. position 2
TC32 ▶	TC3200.34.VS.E	TC3200.30.VS.E	TC3200.40.VS.E
TC42 ▶	TC4200.34.VS.E	TC4200.30.VS.E	TC4200.40.VS.E
TC56 ▶	TC5600.34.VS.E	TC5600.30.VS.E	TC5600.40.VS.E



- One part for all e-chain® widths
- Electrically conductive
- Universal use
- Material: Stainless steel: 1.4301

The guide trough must be mounted at the fixed point of the twisterchain®.
The following bolted connections are permitted:
● Bore Hole: 4 x Ø 6,6 - 7 mm ● Mounting only with bolts: 4 x bolts M6
Other connection dimensions for mounting
the guide trough Type 01 ▶ from page 2.74

Part No. structure

TC3200.34.VS.E



Single-part order

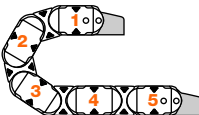
Position 1

TC3200.30.VS.E

Position 1

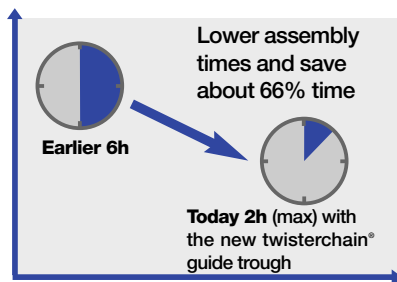
TC3200.40.VS.E

Note: twisterchain® e-chains® must always end with an outer side link. At the moving end an outer side link always forms the first e-chain® link.
Please note when calculating!



Save assembly time and costs - Better guidance for circular motion - increase cycle life!

New Guide Trough System - Type 01 ▶ from page 2.74



With the new twisterchain® trough, the previously complex adjustment work is clearly minimized. Assembly time is reduced from 6h to 2h. While reducing noise levels, travel speed and service life can be increased, thanks to an almost all-plastic design ▶ www.igus.eu/en/TCtroughnew



Guide Trough Type 02 - continues to be available for special applications. Product Range ▶ page 2.100 or at ▶ www.igus.eu/en/TCtroughclassic

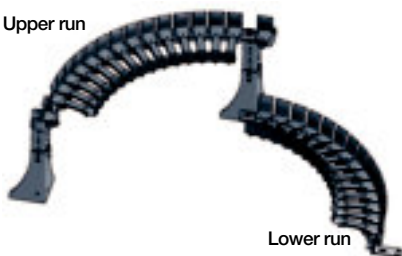
New generation of twisterchain® guide troughs - Save assembly time and costs - increase cycle life!



With the new twisterchain® trough type 01, the previously complex adjustment work is clearly minimized. Assembly time is reduced from 6 h to 2 h. While reducing noise levels, travel speed and service life can be increased, thanks to an almost all-plastic design. Available for all twisterchain® of the new and previous range.

- Suitable for high dynamics, because of the full and all-side guidance of the twisterchain®
- Much smoother and quieter motion of the twisterchain® in the trough due to continuous guidance of upper run
- Upper run guided in the new polymer trough over the full width
- Preassembled delivery possible
- Easy adjustment and alignment and handling
- Assembly time reduced from 6 hours to 2 hours

Upper run



Lower run



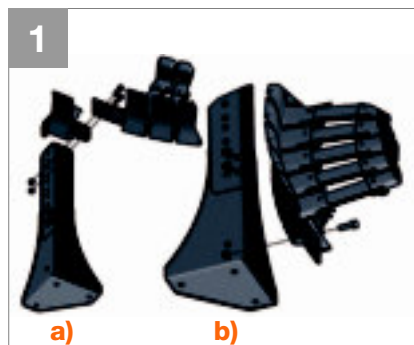
Less parts, easier handling -
Illustration shows a 180° application

Easy adjustment and alignment on the robot, predefined
angles and predrilled mounting holes for height fixation



Available from stock. Delivery in 24h or today!*

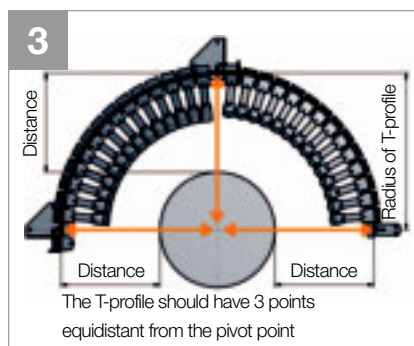
*Delivery time means time until shipping of goods



Check order for completeness. Screw together individual parts according to instructions...



...then assemble the complete guide trough with upper run and lower run



Align trough on the pivot point and then screw on



Alignment by defined angular and hole matrix for easy height fixing

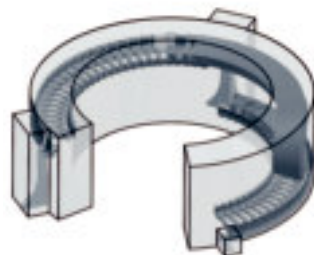
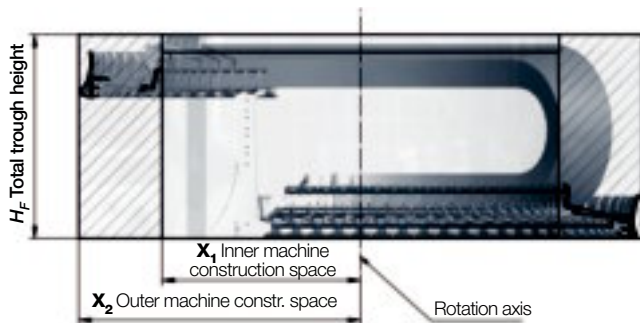


twisterchain® installation in the trough - screw the fixed end of e-chain® onto the trough



Attachment of the e-chain® on the customer's moving end arm by screwing (moving arm provided by customer)

i Guide Trough Type 02 - continues to be available for special applications. Product Range ► page 2.100 or at ► www.igus.eu/en/TCtroughclassic



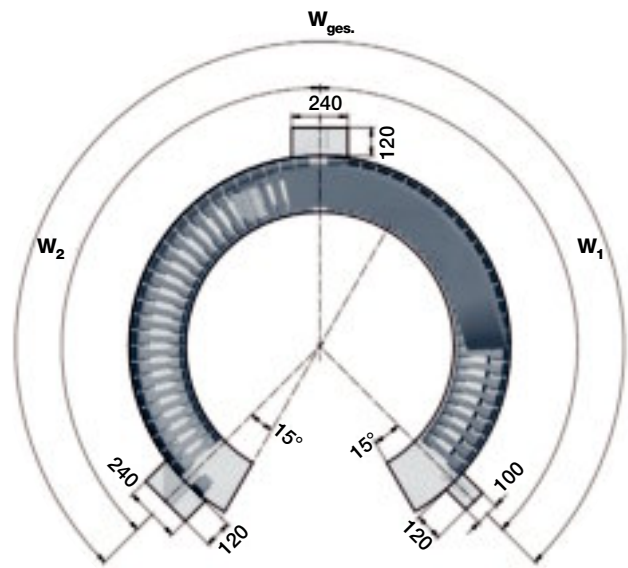
Min. required construction space of twisterchain®-Guide Trough system

Installation Dimensions | X_1 Inner machine construction space and X_2 Outer machine construction space of Guide Trough

AR [mm]	X_2 [mm]	X_1 [mm] depending on Bi [mm]														
TC32		87,5	100	108	125	137,5	150									
400	480	270	250	250	220	210	200									
500	580	–	350	350	320	310	300									
600	680	–	–	450	420	410	400									
TC42		87,5	100	108	125	137,5	150	162,5	168	175	187,5	200				
400	480	270	250	250	220	210	200	190	190	180	–	–				
500	580	–	350	350	320	310	300	290	290	280	280	250				
600	680	–	–	450	420	410	400	390	390	380	380	350				
TC56		–	–	–	125	137,5	150	162,5	–	175	187	200				
650	730	–	–	–	470	460	450	440	–	430	420	400				
750	830	–	–	–	–	560	550	540	–	530	520	500				
850	930	–	–	–	–	–	650	640	–	630	620	600				
2808		50	68	75	87,5	100	108	125	137,5	150						
400	480	290	280	270	270	250	250	220	210	200						
500	580	390	380	370	370	350	350	320	310	300						
600	680	490	480	470	470	450	450	420	410	400						
3808		50	68	75	87,5	100	108	125	137,5	150	162,5	168	175	187,5	200	
400	480	290	280	270	270	250	250	220	210	200	190	190	180	180	150	
500	580	390	380	370	370	350	350	320	310	300	290	290	280	280	250	
600	680	490	480	470	470	450	450	420	410	400	390	390	380	380	350	
4008		50	65	75	100	112	125	137,5	150	162,5	175	187,5	200			
650	730	540	530	520	500	490	470	460	450	440	430	420	400			
750	830	640	630	620	600	590	570	560	550	540	530	520	500			

Construction height | H_F depending on bending radius of twisterchain® Guide Trough

R [mm]	100	125	150	175	200	250	300	400
Series	H_F Construction height [mm]							
TC32	370	420	470	520	570	670	–	–
TC42	380	430	480	530	580	680	–	–
TC56	–	–	500	–	600	700	800	1000
2808	370	420	470	520	570	670	–	–
3808	380	430	480	–	580	680	–	–
4008	–	–	500	–	600	700	800	1000



Rotation angle | $W_1 + W_{ges.}$

$W_{ges.}$ rotation angle System [°]	W_1 rotation angle of lower run trough [°]
90°	45°
180°	90°
270°	135°
360°	180°

Rotation angle for 360° | W_2 angle of upper run [°] twisterchain® Guide Trough

AR	Series	R [mm]	100	125	150	175	200	250	300	400
[mm]						W_2 Rotation angle [°]				
400	TC32/TC42/2808/3808		90°	90°	90°	90°	90°	90°	90°	90°
500	TC32/TC42/2808/3808		90°	90°	90°	90°	90°	90°	90°	90°
600	TC32/TC42/2808/3808		135°	135°	135°	135°	90°	90°	90°	90°
650	TC56/4008		135°	135°	135°	135°	90°	90°	90°	90°
750	TC56/4008		135°	135°	135°	135°	135°	135°	90°	90°
850	TC56/4008		135°	135°	135°	135°	135°	135°	135°	135°



AR = Outer radius e-chain®
IR = Inner radius e-chain®
R = Bending radius

X_1 = Inner machine construction space
 X_2 = Outer radius AR, incl. clearance
 H_F = Total trough height

W_1 = Angle of lower run
 W_2 = Angle of upper run
 $W_{ges.}$ = Rotation angle of system

twisterchain® Guide Trough options


9XXX.31
Complete troughs

(with base support, height adjustment and attachment angles)


9XXX.32
Upper and lower run trough

(without base support and height adjustment)

Special variant: Customer builds base support

9XXX.30
Lower run trough

(with attachment angles)

Special variant: Customer builds upper run trough

Product Range | twisterchain® Guide troughs Type 01

Part No. Series	Outer radius AR [mm]	Rotation angle from-up to α [°]	 Part No. complete trough	Part No. upper/lower run trough	Part No. lower run trough
TC32 / TC42 / 2808 / 3808	400	0 - 90°	9XXX.31.90 .400/Bi.R	9XXX.32.90 .400/Bi.R	9XXX.30.90 .400/Bi.R
		90° - 180°	9XXX.31.180.400/Bi.R	9XXX.32.180.400/Bi.R	9XXX.30.180.400/Bi.R
		180° - 270°	9XXX.31.270.400/Bi.R	9XXX.32.270.400/Bi.R	9XXX.30.270.400/Bi.R
		270° - 360°	9XXX.31.360.400/Bi.R	9XXX.32.360.400/Bi.R	9XXX.30.360.400/Bi.R
	500	0 - 90°	9XXX.31.90 .500/Bi.R	9XXX.32.90 .500/Bi.R	9XXX.30.90 .500/Bi.R
		90° - 180°	9XXX.31.180.500/Bi.R	9XXX.32.180.500/Bi.R	9XXX.30.180.500/Bi.R
		180° - 270°	9XXX.31.270.500/Bi.R	9XXX.32.270.500/Bi.R	9XXX.30.270.500/Bi.R
		270° - 360°	9XXX.31.360.500/Bi.R	9XXX.32.360.500/Bi.R	9XXX.30.360.500/Bi.R
	600	0 - 90°	9XXX.31.90 .600/Bi.R	9XXX.32.90 .600/Bi.R	9XXX.30.90 .600/Bi.R
		90° - 180°	9XXX.31.180.600/Bi.R	9XXX.32.180.600/Bi.R	9XXX.30.180.600/Bi.R
		180° - 270°	9XXX.31.270.600/Bi.R	9XXX.32.270.600/Bi.R	9XXX.30.270.600/Bi.R
		270° - 360°	9XXX.31.360.600/Bi.R	9XXX.32.360.600/Bi.R	9XXX.30.360.600/Bi.R
TC56 / 4008	650	0 - 90°	9XXX.31.90 .650/Bi.R	9XXX.32.90 .650/Bi.R	9XXX.30.90 .650/Bi.R
		90° - 180°	9XXX.31.180.650/Bi.R	9XXX.32.180.650/Bi.R	9XXX.30.180.650/Bi.R
		180° - 270°	9XXX.31.270.650/Bi.R	9XXX.32.270.650/Bi.R	9XXX.30.270.650/Bi.R
		270° - 360°	9XXX.31.360.650/Bi.R	9XXX.32.360.650/Bi.R	9XXX.30.360.650/Bi.R
	750	0 - 90°	9XXX.31.90 .750/Bi.R	9XXX.32.90 .750/Bi.R	9XXX.30.90 .750/Bi.R
		90° - 180°	9XXX.31.180.750/Bi.R	9XXX.32.180.750/Bi.R	9XXX.30.180.750/Bi.R
		180° - 270°	9XXX.31.270.750/Bi.R	9XXX.32.270.750/Bi.R	9XXX.30.270.750/Bi.R
		270° - 360°	9XXX.31.360.750/Bi.R	9XXX.32.360.750/Bi.R	9XXX.30.360.750/Bi.R
	850	0 - 90°	9XXX.31.90 .850/Bi.R	9XXX.32.90 .850/Bi.R	9XXX.30.90 .850/Bi.R
		90° - 180°	9XXX.31.180.850/Bi.R	9XXX.32.180.850/Bi.R	9XXX.30.180.850/Bi.R
		180° - 270°	9XXX.31.270.850/Bi.R	9XXX.32.270.850/Bi.R	9XXX.30.270.850/Bi.R
		270° - 360°	9XXX.31.360.850/Bi.R	9XXX.32.360.850/Bi.R	9XXX.30.360.850/Bi.R

Supplement Part No. **9XXX** with required Series (TC32, TC42, TC56, 2808, 3808, 4008),

value **Bi** and required bending radius **R** ► **9XXX.31.180.600/06.250**

9TC32.31.180.600/12.250

9XXXX.31.180.600/Bi. R



Order key
Guide trough



R - Bending radius, please add appropriate value

Bi - Width index, please add appropriate value

Outer radius e-chain®

Rotation angle of application (90°, 180°, 270°, 360°)

Trough version

Guide Trough of selected Series

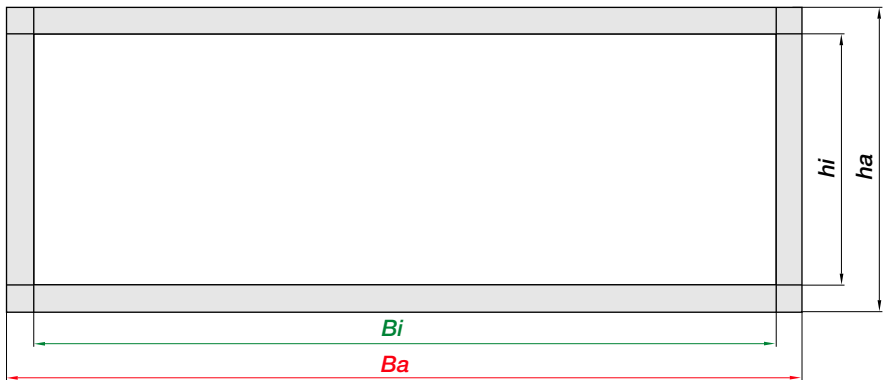
More order examples

● Complete trough	Part No. 94008.31.180.600/12.250
● Lower run trough only	Part No. 94008.30.180.600/12.250
● Upper and lower run trough without base support	Part No. 94008.32.180.600/12.250



twisterchain® in a guide trough for rotary movements
on an articulated robot - long service life and robust:
more than 1.000.000 cycles tested successfully with
prototype (issue 04/2009)

This calculation sheet should help you to select the right igus® twisterchain® System for your application.



Rotation angle

Please sketch the cable and hose layout within the e-chain®. **Note:** To find the correct Series, refer to the thickest cable diameter, plus cable clearance of approx. 20% of the e-chain® interior.

twisterchain® Series

☐

TC32

☐

TC42

☐

TC56

Existing installation space

X_1 max. X_2 max. H_F max.

e-chain® data

Outer radius AR Inner radius IR

Bending radius R

Rotation angle [°]

Guide trough

☐

yes

☐

no

Part No. trough Type 01 9TC _ _ . _ _ _ . _ _ _ / _ _ . _ _ _

Order example

9TC32.31.180.600/06.250

Supporting structure
necessary

☐

yes

☐

no

The guide trough part number includes all the necessary elements for proper operation. The rotation angle is dependent upon support for the upper run and should be assembled on-site. If on-site assembly is not possible, we will deliver a supporting structure which can be assembled on the floor and is based on the height of the lower trough run. If necessary, we will design a supporting structure specially adapted to your installation!

Date:	Phone: +49- (0) 22 03 96 49 - 800 Fax: +49- (0) 22 03 96 49 - 222
From: Phone: Fax:	To: igus® GmbH - Technical Sales e-chainsystems® P.O. Box 90 61 23 51147 Cologne (Porz-Lind)

Please supply us with your application data. We will then send you a full analysis with cable/layout suggestion and a quotation immediately. Please consult igus® should you have any questions.

Individual components

☐ twisterchain® ☐ chainflex® high-flex cables ☐ Guide Trough ☐ Preamsembled

Filling - twisterchain® classic

Number	Type	Ø [mm]	Weight [kg/m]	Permitted bending radius <i>R</i> [mm]

Dimensions

X_1 [mm]
 X_2 [mm]
 H_F [mm]
Rotation angle α^* [°]

* On machine elements which move to the left and to the right following a circular path, the rotation angle can be determined by adding the two angles

Operating data

Rotations/day
Days/year
Speed [°/s]
Acceleration [°/s²]

Environment

Temperature [°C]

Moisture ☐ yes ☐ no

