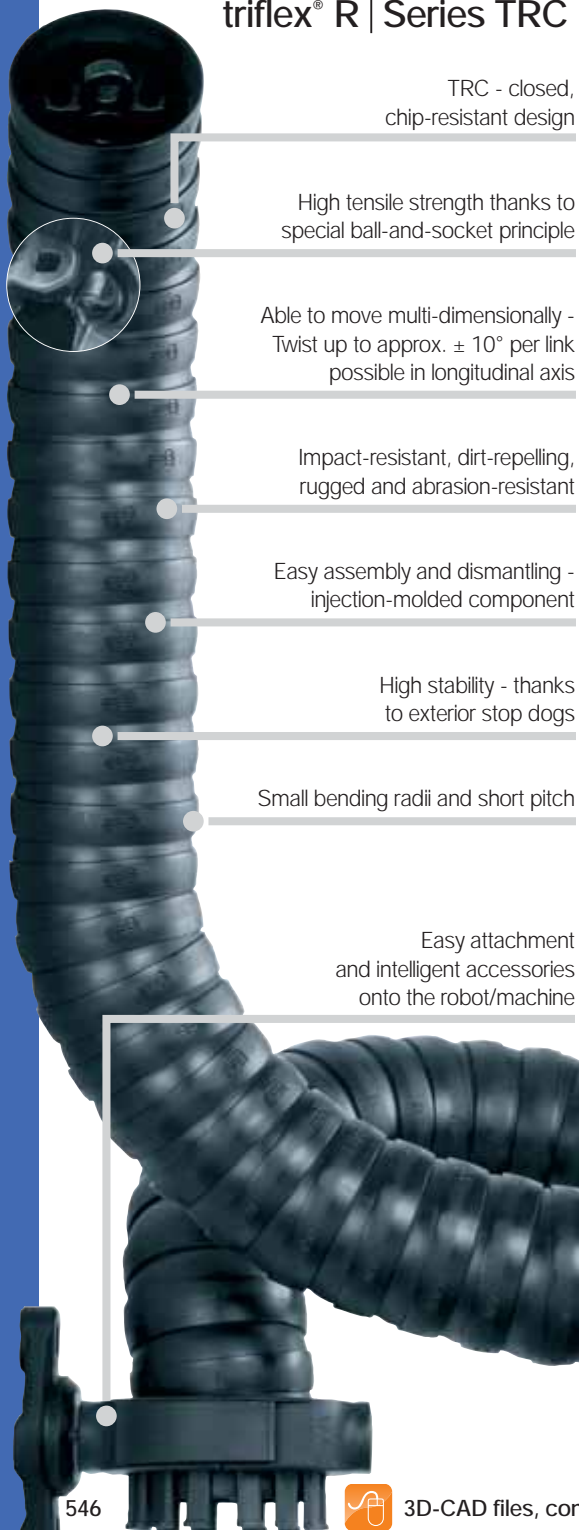


# igus® 3D e-chains®

robotic and  
circular movements



TRC - closed, chip-resistant design

High tensile strength thanks to special ball-and-socket principle

Able to move multi-dimensionally - Twist up to approx. ± 10° per link possible in longitudinal axis

Impact-resistant, dirt-repelling, rugged and abrasion-resistant

Easy assembly and dismantling - injection-molded component

High stability - thanks to exterior stop dogs

Small bending radii and short pitch

Easy attachment and intelligent accessories onto the robot/machine

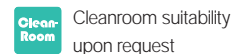
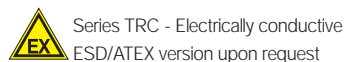
# 3D for robotic applications, closed and chip-resistant

triflex® R (R for "round") is the third generation of multi-axis e-chains\*.

- Secure, closed and chip-resistant energy supply for multi-dimensional (3D) movements
- Smooth and robust exterior against interfering edges
- Approximately ±10° twist per e-chain® link
- High tensile strength of the ball-and-socket joint
- High torsional stability
- Easy to shorten and lengthen

**Typical industries and applications**

- Robotics/Automation ● Machine tools ● Handling machines - 6-axis ● Packaging machines ● General mechanical engineering, etc.



Series	Inner height		max. cable ø		Outer width	Bending radii	Pitch	Links	Page
	<i>Bi 1</i>	<i>Bi 2</i>	<i>d1</i>	<i>d2</i>	<i>Ba</i> [mm]	<i>R</i> [mm]	[mm]	per m	



**Series "TRC" - closed design**  
dirt-resistant, smooth and robust exterior

TRC.30	12	10	10	8	34,5	50	11,3	89	548
TRC.40	15	13	13	11	43	58	13,9	72	548
TRC.60	22,5	19,5	20,5	17,5	65	87	20,4	49	548
TRC.70	28	24	26	22	81	110	25,6	39	548
TRC.85	33	28	31	26	94,5	135	30,6	33	548
TRC.100	37,5	32,5	35,5	30,5	108	145	34,5	29	548
TRC.125 <sup>2)</sup>	43,3	43,3	41	41	135	182	44,6	23	548

<sup>2)</sup> TRC.125 - max. cable diameter Ø 41 mm. Max. cable diameter changes to Ø 36 mm only, if shortening/lengthening of a filled triflex® R is required

## Technical Data

Speed / acceleration	upon request
Material - permitted temperature °C, igumid NB	-40° up to +80°C
Flammability class, igumid NB	VDE 0304 IIC UL94 V2

## Order example | Order key and color options

Order example for complete e-chain® (1,0 m), color black, with mounting brackets and intermediate links:

e-chain® (1,0 m) Please indicate e-chain® length or number of links: 1,0 m or 72 links **TRC.40.058.0**

+ Mounting brackets 1 mounting bracket with strain relief **TR.40.01**

+ 2 Intermediate links **TR.40.02**

Order text: 1,0 m TRC.40.058.0 + TR.40.01 + TR.40.02

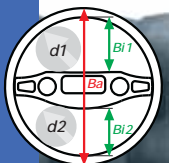
Order key **TRC.40.058.0**

Series / Closed design	┌───┐
Width index Ø	┌───┐
Bending radius <i>R</i>	┌───┐
Standard color black	┌───┐

TRC - Closed design, dirt-resistant, with *Bi* 15/13 mm inner width and *R* 058 mm radius, color black = Part No. **TRC.40.058.0**

# triflex® R | Series TRC | Delivery program

Robotic applications, closed, chip-resistant



...TRC Closed design

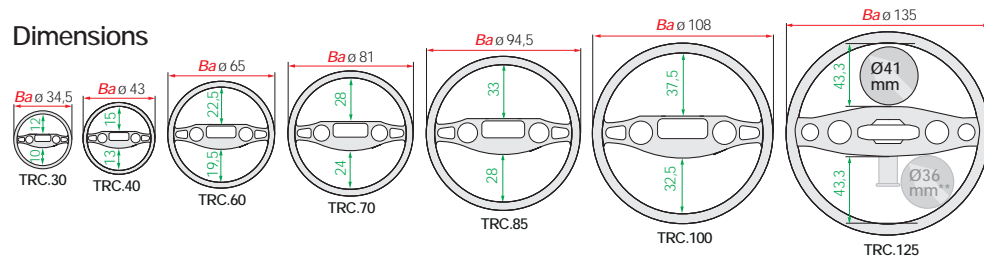


## triflex® R | Series TRC | Closed design, dirt-resistant

Series TRC "closed"	Bi 1 [mm]	Bi 2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links/m	Weight [kg/m]
TRC.30.050.0	12	10	34,5	050	10	8	11,3	89	≈ 0,27
TRC.40.058.0	15	13	43	058	13	11	13,9	72	≈ 0,37
TRC.60.087.0	22,5	19,5	65	087	20,5	17,5	20,4	49	≈ 0,85
TRC.70.110.0	28	24	81	110	26	22	25,6	39	≈ 1,32
TRC.85.135.0	33	28	94,5	135	31	26	30,6	33	≈ 1,75
TRC.100.145.0	37,5	32,5	108	145	35,5	30,5	34,5	29	≈ 2,38
TRC.125.182.0 <sup>3)</sup>	43,3	43,3	135	182	41	41 <sup>2)</sup>	44,6	23	≈ 4,70

2) Max. cable diameter Ø 41 mm. Max. cable diameter changes to Ø 36 mm only, if shortening/lengthening of a filled triflex® R is required  
 3) TRC.125: C-version is standard!

### Dimensions



### Simply configure interior separation for igus® triflex® R e-chains®

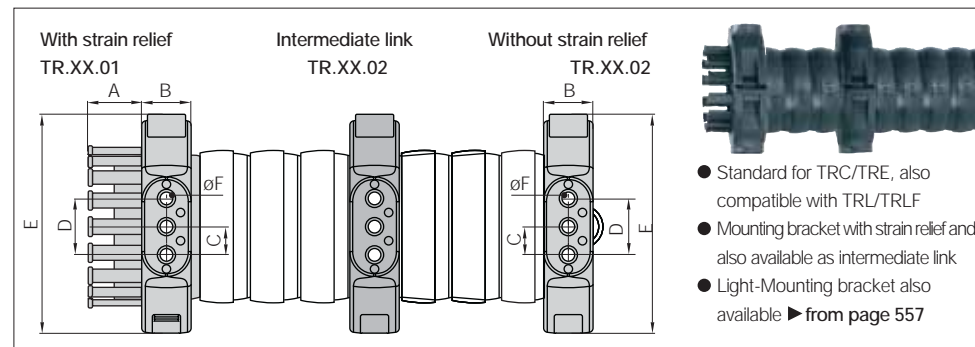
- Quick and easy inner configuration for triflex® R systems
- Takes the max. filling cross section and cable diameter into account
- Creating list of parts ● Simple inquiry and order function.

Interior separation configurator ► [www.igus.co.uk/en/quickchain100](http://www.igus.co.uk/en/quickchain100)



# triflex® R | Series TRC | Accessories

## Standard mounting bracket



- Standard for TRC/TRE, also compatible with TRL/TRLF
- Mounting bracket with strain relief and also available as intermediate link
- Light-Mounting bracket also available ► from page 557

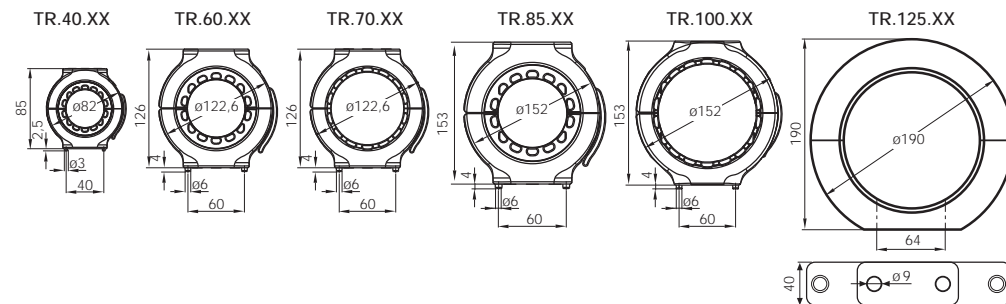
## Standard | Quick and easy fixing onto the robot/machine

(Light-mounting brackets ► from page 557)

Width Index	Part No. with strain relief	Part No. as intermediate link	Dim. A [mm]	Dim. B [mm]	Dim. C [mm]	Dim. D [mm]	Dim. E [mm]	Dim. F Ø [mm]
30.	Please use table for TL.30.01.XX		-	-	-	-	-	-
40.	TR.40.01. M6	TR.40.02. M6	17,8	21	13,5	27	85	6,5
60.	TR.60.01. M8	TR.60.02. M8	25	35	20	40	126	9
70.	TR.70.01. M8	TR.70.02. M8	25	35	20	40	126	9
85.	TR.85.01. M8	TR.85.02. M8	40	35	20	40	153	9
100.	TR.100.01.M8	TR.100.02.M8	38	35	20	40	153	9
125.	-	TR.125.02.M8	TR.125.XX - Dimensions please see drawing above					

Strain relief is possible on the moving end and/or the fixed end.

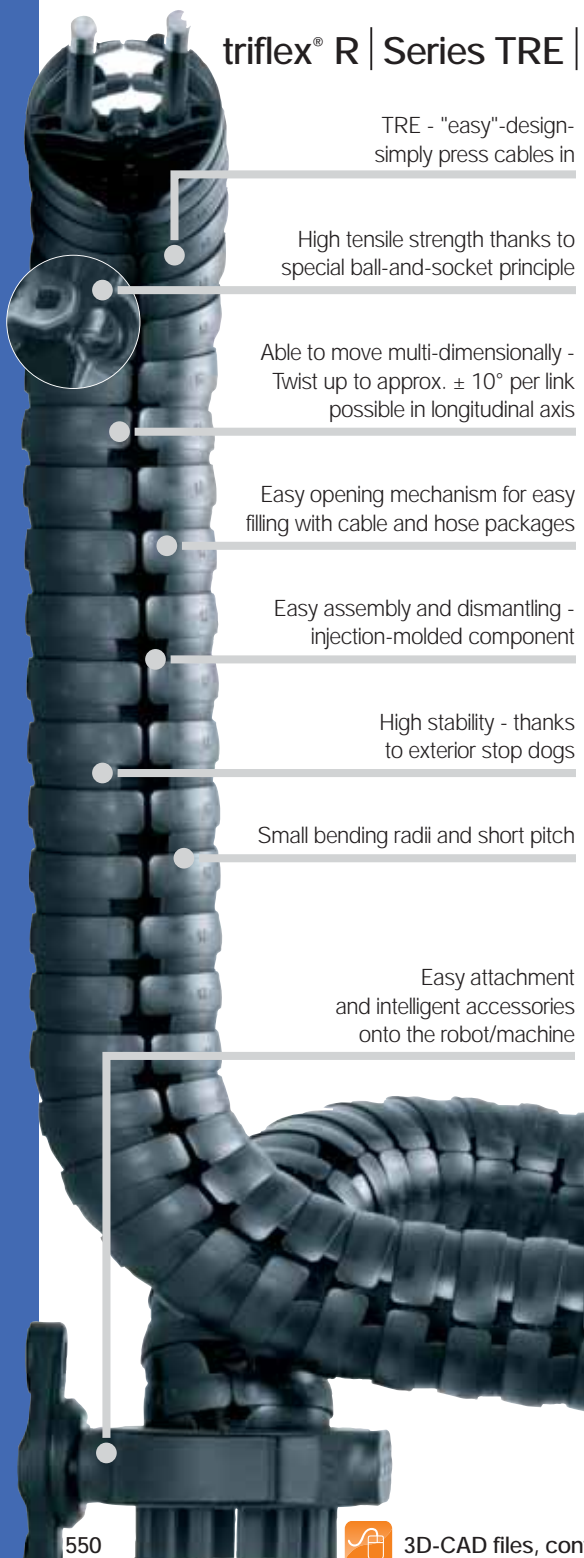
Standard: Trough holes in Ø F - Option: with insert nuts, steel, M6/M8



### All triflex® R accessories like:

- Swivel bearings for smooth motion
  - Protectors
  - Gliding feed-throughs
  - Strain relief systems: Quick exchange kit, Pivot bracket, triflex® R connection
  - TRE.LOCK clips
  - Back pull systems: RS triflex® R-Set the universal module and RSP the intelligent retraction system
  - Fiber rod module & Installation kit
  - Protective jackets.
- from page 562





TRE - "easy"-design - simply press cables in

High tensile strength thanks to special ball-and-socket principle

Able to move multi-dimensionally - Twist up to approx. ± 10° per link possible in longitudinal axis

Easy opening mechanism for easy filling with cable and hose packages

Easy assembly and dismantling - injection-molded component

High stability - thanks to exterior stop dogs

Small bending radii and short pitch

Easy attachment and intelligent accessories onto the robot/machine


## 3D for robotic applications, simply press cables in

triflex® R (R for "round") is the third generation of multi-axis e-chains®.

- Easy to fill energy supply for multi-dimensional (3D) movements
- Easy opening mechanism for easy filling with cable and hose packages
- Approximately ±10° twist per e-chain® link
- High tensile strength of the ball-and-socket joint
- High torsional stability
- Easy to shorten and lengthen

### Typical industries and applications

- Robotics/Automation
- Machine tools
- Handling machines - 6-axis
- Packaging machines
- General mechanical engineering, etc.

 Cleanroom suitability upon request






**Series "TRE" - "easy"-design**  
Fast installation of cables and hoses, simply press cables in


Series	Inner height		max. cable ø		Outer width	Bending radii	Pitch	Links per m	Page
	Bi 1	Bi 2	d1	d2	Ba [mm]	R [mm]	[mm]		
TRE.30	12	10	10 <sup>1)</sup>	8 <sup>1)</sup>	34,5	50	11,3	89	552
TRE.40	15	13	13 <sup>1)</sup>	11 <sup>1)</sup>	43	58	13,9	72	552
TRE.60	22,5	19,5	20,5 <sup>1)</sup>	17,5 <sup>1)</sup>	65	87	20,4	49	552
TRE.70	28	24	26 <sup>1)</sup>	22 <sup>1)</sup>	81	110	25,6	39	552
TRE.85	33	28	31 <sup>1)</sup>	26 <sup>1)</sup>	94,5	135	30,6	33	552
TRE.100	37,5	32,5	35,5 <sup>1)</sup>	30,5 <sup>1)</sup>	108	145	34,5	29	552
TRE.125 <sup>2)</sup>	43,3	43,3	41 <sup>1)</sup>	41 <sup>1)</sup>	135	182	44,6	23	552

1) For quick and easy insertion / removal of cables using the easy chain® principle, we recommend a maximum cable diameter of 70% of the specified value.  
2) TRE.125 - max. cable diameter Ø 41 mm. Max. cable diameter changes to Ø 36 mm only, if shortening/lengthening of a filled triflex® R is required

### Technical Data

 Speed / acceleration	upon request
 Material - permitted temperature °C, igumid NB	-40° up to +80°C
 Flammability class, igumid NB	VDE 0304 IIC UL94 V2

### Order example | Order key and color options

 Order example for complete e-chain® (1,0 m), color black, with mounting brackets and intermediate links:


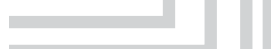



e-chain® (1,0 m) Please indicate e-chain® length or number of links: 1,0 m or 72 links **TRE.40.058.0**

+ Mounting brackets 1 mounting bracket with strain relief **TR.40.01**

+ 1 Intermediate link **TR.40.02**

Order text: 1,0 m TRE.40.058.0 + TR.40.01 + TR.40.02

 Order key **TRE.40.058.0.B**

Series / "easy"-design	
Width index Ø	
Bending radius R	
Standard color black	
Optional B-/C-version	

TRE - "easy"-design with Bi 15/13 mm inner width and R 058 mm radius, color black = Part No. TRE.40.058.0



## triflex® R | Series TRE | "easy"-design, simply press cables in

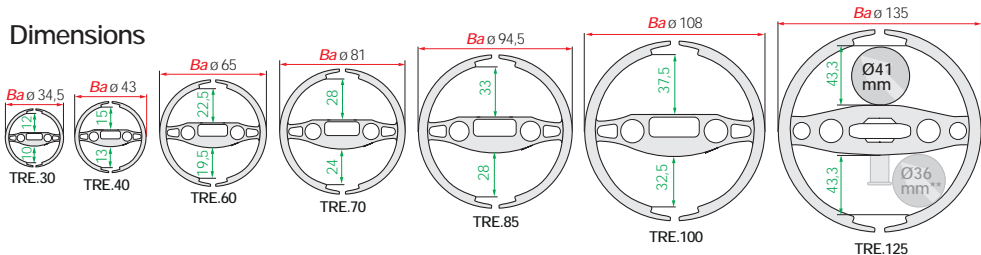
Series TRE "easy"-Design	Standard	Series TRE B-Version	Series TRE C-Version	Bi 1 [mm]	Bi 2 [mm]	Ba [mm]	R [mm]	d1 <sup>1)</sup> [mm]	d2 <sup>1)</sup> [mm]	Pitch [mm]	Links/m	Weight [kg/m]
TRE.30.050.0	-	-	-	12	10	34,5	050	10	8	11,3	89	≈ 0,26
TRE.40.058.0	TRE.40.058.0.B	-	-	15	13	43	058	13	11	13,9	72	≈ 0,36
TRE.60.087.0	TRE.60.087.0.B	-	-	22,5	19,5	65	087	20,5	17,5	20,4	49	≈ 0,83
TRE.70.110.0	TRE.70.110.0.B	-	-	28	24	81	110	26	22	25,6	39	≈ 1,30
TRE.85.135.0	TRE.85.135.0.B	-	-	33	28	94,5	135	31	26	30,6	33	≈ 1,67
TRE.100.145.0	TRE.100.145.0.B	TRE.100.145.0.C	-	37,5	32,5	108	145	35,5	30,5	34,5	29	≈ 2,35
TRE.125.182.0	-	X <sup>3)</sup>	-	43,3	43,3	135	182	41	41 <sup>2)</sup>	44,6	23	≈ 4,40

1) For quick and easy insertion / removal of cables using the easy chain\* principle, we recommend a maximum cable diameter of 70% of the specified value.

2) Max. cable diameter Ø 41 mm. Max. cable diameter changes to Ø 36 mm only, if shortening/lengthening of a filled triflex® R is required

3) TRE.125: C-version is standard!

## Dimensions



## B-version | 4 x higher torsion forces



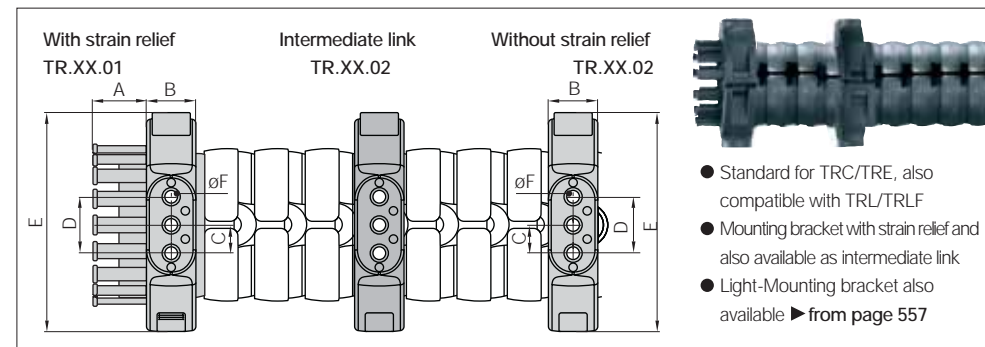
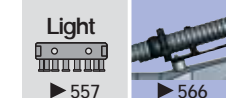
The advanced ball and socket connection now uses an additional arrester for even higher stability. Especially designed for heavy duty applications and all back pull systems (RS and RSP) with high accelerations and top speeds.

- Up to 4 times stronger with improved bending radius strength
- Able to handle even higher torsion forces
- Made of only one single part per e-chain\* link ▶ [www.igus.co.uk/en/triflexR-Bversion](http://www.igus.co.uk/en/triflexR-Bversion)

## C-version | Quick assembly, 50% higher forces



Now available with proven bolt connection for even faster assembly and disassembly ● Linear pull force capacity increased up to 4.000 N ● Up to 4 times stronger and improved bending radius strength ● C-version drastically reduces installation time ● Stronger lock for torsion limitation ● igubal® Spherical Bearing for non-slip traction ▶ [www.igus.co.uk/en/triflexR-Cversion](http://www.igus.co.uk/en/triflexR-Cversion)



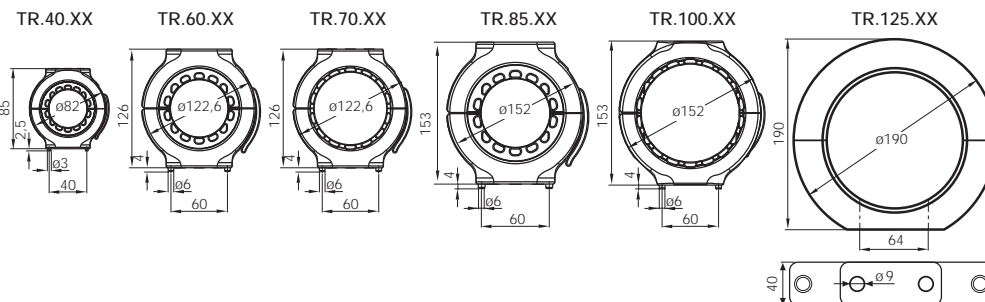
## Standard | Quick and easy fixing onto the robot/machine

(Light-mounting brackets ▶ from page 557)

Width Index	Part No. with strain relief	Part No. as intermediate link	Dim. A [mm]	Dim. B [mm]	Dim. C [mm]	Dim. D [mm]	Dim. E [mm]	Dim. F [mm]
30.	Please use table for TL.30.01.XX		-	-	-	-	-	-
40.	TR.40.01. M6	TR.40.02. M6	17,8	21	13,5	27	85	6,5
60.	TR.60.01. M8	TR.60.02. M8	25	35	20	40	126	9
70.	TR.70.01. M8	TR.70.02. M8	25	35	20	40	126	9
85.	TR.85.01. M8	TR.85.02. M8	40	35	20	40	153	9
100.	TR.100.01.M8	TR.100.02.M8	38	35	20	40	153	9
125.	-	TR.125.02.M8	TR.125.XX - Dimensions please see drawing above					

Strain relief is possible on the moving end and/or the fixed end.

Standard: Trough holes in Ø F - Option: with insert nuts, steel, M6/M8



## All triflex® R accessories like:

- Swivel bearings for smooth motion
  - Protectors
  - Gliding feed-throughs
  - Strain relief systems: Quick exchange kit, Pivot bracket, triflex® R connection
  - TRE.LOCK clips
  - Back pull systems: RS triflex® R-Set the universal module and RSP the intelligent retraction system
  - Fiber rod module & Installation kit
  - Protective jackets.
- ▶ from page 562



TRL - light and low-cost with "easy"-design

High tensile strength thanks to special ball-and-socket principle

Able to move multi-dimensionally - Twist up to approx. ± 10° per link possible in longitudinal axis

Easy opening mechanism for easy filling with cable and hose packages

Easy assembly and dismantling - injection-molded component

Extremely light due to one-piece design

Small bending radii and short pitch

Economical and light mounting bracket with strain relief or intermediate link

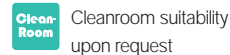
# 3D for robotic applications, light and economical

triflex® R (R for "round") is the third generation of multi-axis e-chains®.

- Easy to fill, economical 3D e-chain®
- 3D e-chain® for easily manageable operating conditions
- Approximately ±10° twist per e-chain® link
- High tensile strength of the ball-and-socket joint
- Easy to shorten and lengthen

### Typical industries and applications

- Robotics/Automation ● Machine tools ● Handling machines - 6-axis ● Packaging machines ● General mechanical engineering, etc.



Series	Inner height		max. cable ø		Outer width	Bending radii	Pitch	Links	Page
	Bi 1	Bi 2	d1	d2	Ba [mm]	R [mm]	[mm]	per m	



**Series "TRL" - 3-chamber system**  
The "light" variant of the "easy"-design simply press cables in

TRL.30*	12,5	11	10 <sup>1)</sup>	8 <sup>1)</sup>	34,5	50	11,3	89	556
TRL.40	15	-	13 <sup>1)</sup>	-	45	58	13,9	72	556
TRL.60	23	-	20,5 <sup>1)</sup>	-	65	87	20,4	49	556
TRL.70	28	-	26 <sup>1)</sup>	-	81	110	25,6	39	556
TRL.100	38	-	35,5 <sup>1)</sup>	-	108	145	34,5	29	556

1) For quick and easy insertion / removal of cables using the easy chain® principle, we recommend a maximum cable diameter of 70% of the specified value.

\* only with 2-chamber system

### Technical Data

Speed / acceleration	upon request
Material - permitted temperature °C, igumid NB	-40° up to +80°C
Flammability class, igumid NB	VDE 0304 IIC UL94 V2

### Order example | Order key and color options

Order example for complete e-chain® (1,0 m), color black, with mounting brackets:

e-chain® (1,0 m) Please indicate e-chain® length or number of links: 1,0 m or 72 links **TRL.40.058.0**

+ Light-mounting brackets 1 mounting bracket with strain relief **TL.40.01.Z1**

Order text: 1,0 m TRL.40.058.0 + TL.40.01.Z1

Order key **TRL.40.058.0**

Series / "easy"-design

Width index Ø

Bending radius R

Standard color black

TRL- The "light" variant of the "easy"-design with **Bi 15** mm inner width and **R 058** mm radius, color black = Part No. **TRL.40.058.0**

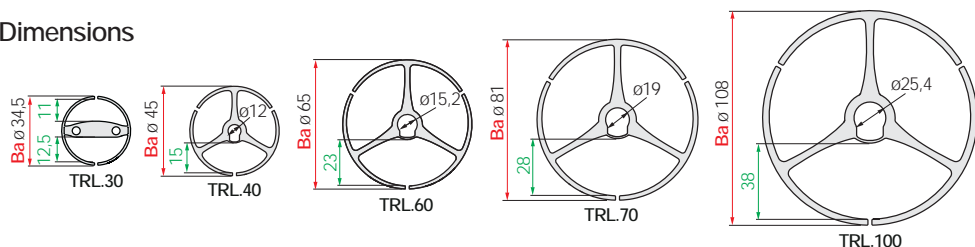


## triflex® R | Series TRL | Light alternative with "easy"-design

Series TRL "light"	Bi 1 [mm]	Bi 2 [mm]	Ba [mm]	R mm	d1 <sup>1)</sup> mm	d2 <sup>1)</sup> mm	Pitch [mm]	Links/m	Weight [kg/m]
TRL. 30. 050.0 <sup>2)</sup>	12,5	11	34,5	050	10	8	11,3	89	≈ 0,15
TRL. 40. 058.0	15	-	45	058	13	-	13,9	72	≈ 0,20
TRL. 60. 087.0	23	-	65	087	20,5	-	20,4	49	≈ 0,40
TRL. 70. 110.0	28	-	81	110	26	-	25,6	39	≈ 0,70
TRL. 100.145.0	38	-	108	145	35,5	-	34,5	29	≈ 1,20

1) For quick and easy insertion / removal of cables using the easy chain\* principle, we recommend a maximum cable diameter of 70% of the specified value.  
2) only with 2-chamber system

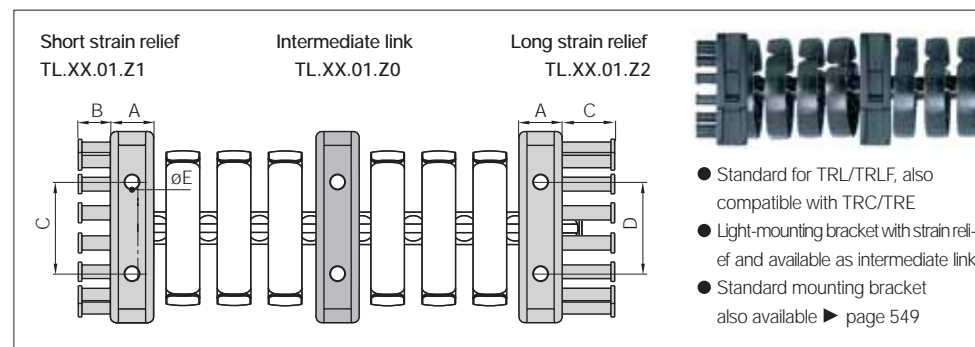
## Dimensions



## Simply configure interior separation for igus® triflex® R e-chains\*

- Quick and easy inner configuration for triflex® R systems
- Takes the max. filling cross section and cable diameter into account
- Creating list of parts ● Simple inquiry and order function.

Interior separation configurator ► [www.igus.co.uk/en/quickchain100](http://www.igus.co.uk/en/quickchain100)

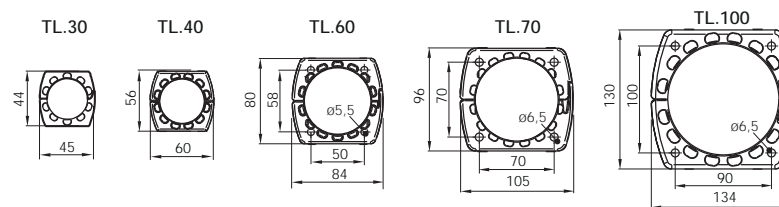


## Light | Quick and easy fixing onto the robot/machine

(Standard-mounting brackets ► from page 549)

Width Index	Part No. with short strain relief	Part No. with long strain relief	Part No. Intermediate link	Dim. A [mm]	Dim. B [mm]	Dim. C [mm]	Dim. D [mm]	Dim. E ø [mm]
30. ►	TL.30.01 .Z1	-	TL.30.01 .Z0	13	12,5	-	24	4,5
40. ►	TL.40.01 .Z1*	TL.40.01 .Z2	TL.40.01 .Z0	14	12,5	20	36	5,8
60. ►	TL.60.01 .Z1*	TL.60.01 .Z2	TL.60.01 .Z0	20	17	27	48	5,8
70. ►	TL.70.01 .Z1*	TL.70.01 .Z2	TL.70.01 .Z0	27	17,5	27,5	64	6,5
100. ►	TL.100.01.Z1*	TL.100.01.Z2	TL.100.01.Z0	30	22,5	42,5	64	6,5

\*For moving end (ball) suitable only Series TRL/TRLF



## All triflex® R accessories like:

- Swivel bearings for smooth motion
  - Protectors
  - Gliding feed-throughs
  - Strain relief systems: Quick exchange kit, Pivot bracket, triflex® R connection
  - TRE.LOCK clips
  - Back pull systems: RS triflex® R-Set the universal module and RSP the intelligent retraction system
  - Fiber rod module & Installation kit
  - Protective jackets.
- from page 562



New in this catalog

TRLF - light and low-cost with snap lock mechanism

High tensile strength thanks to special ball-and-socket principle

Able to move multi-dimensionally - Twist up to approx. ± 10° per link possible in longitudinal axis

Simply flip open for large, stiff hoses and/or many cables

Easy assembly and dismantling

Extremely light due to one-piece design

3-chamber principle for interior separation

Small bending radii and short pitch

Economical and light mounting bracket with strain relief or intermediate link

# Light-variant with snap lock mechanism. Openable by hand or with screwdriver

- Simply flip open manually or with screw driver for large, stiff hoses and/or many cables
- 3D e-chain® for easily manageable operating conditions
- Approximately ±10° twist per e-chain® link
- High tensile strength of the ball-and-socket joint
- Light and cost effective
- Easy to shorten and lengthen

### Typical industries and applications

- Light robot applications
- 3D motions
- Cable supply systems in furniture construction
- Robot applications - Axis 2+3



Snap lock mechanism to open by hand or screwdriver

[video online ▶](http://www.igus.co.uk/en/TRLF)

[www.igus.co.uk/en/TRLF](http://www.igus.co.uk/en/TRLF)



Series	Inner height <i>Bi</i>	max. cable ø <i>d1</i>	Outer width <i>Ba</i> [mm]	Bending radii <i>R</i> [mm]	Pitch [mm]	Links per m	Page
TRLF.65	New* 24,4	22	70,2	100	23,1	44	560
TRLF.85	New* 32,8	30	94,5	135	31	33	560
TRLF.100	New* 37,5	35,5	108	145	35,4	29	560



Series "TRLF" - Light-variant with snap lock mechanism light and low-cost

\* in this catalog

### Technical Data

Speed / acceleration	upon request
Material - permitted temperature °C, igumid G	-40° up to +120°C
Flammability class, igumid G	VDE 0304 IIC UL94 HB

### Order example | Order key and color options

Order example for complete e-chain® (1,0 m), color black, with mounting brackets:

e-chain® (1,0 m) Please indicate e-chain® length or number of links: 1,0 m or 29 links **TRLF.100.145.0**

+ Light-mounting brackets 1 mounting bracket with strain relief **TL.100.01.Z1**

Order text: 1,0 m TRLF.100.145.0 + TL.100.01.Z1

Order key **TRLF.100.145.0**

"Light-variant with snap lock mechanism  
Width index Ø  
Bending radius *R*  
Standard color black



TRLF - Light-variant with snap lock mechanism with *Bi* 37,5 mm inner width and *R* 145 mm radius, color black = Part No. TRLF.100.145.0

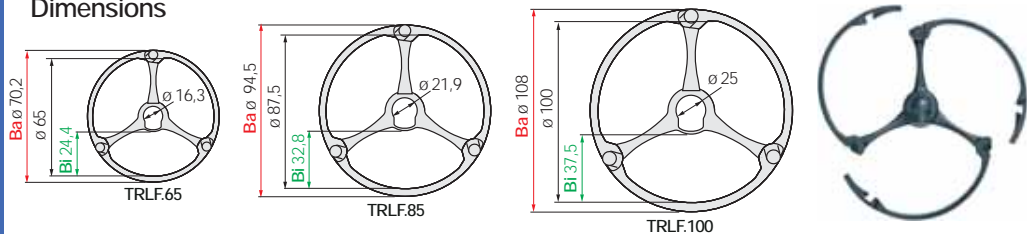


...TRLF  
Light with snap lock mechanism

triflex® R | Series TRLF | Light-variant with snap lock mechanism

Series TRLF light with snap lock	Bi [mm]	Ba [mm]	R mm	d1 mm	Pitch [mm]	Links/m	Weight [kg/m]
TRLF. 65. 100.0	24,4	70,2	100	22	23,1	44	≈ 0,79
TRLF. 85. 135.0	32,8	94,5	135	30	31	33	≈ 1,45
TRLF. 100.145.0	37,5	108	145	35,5	34,5	29	≈ 1,90

Dimensions



Simply configure interior separation for igus® triflex® R e-chains®

- Quick and easy inner configuration for triflex® R systems
- Takes the max. filling cross section and cable diameter into account
- Creating list of parts ● Simple inquiry and order function.

Interior separation configurator ► [www.igus.co.uk/en/quickchain100](http://www.igus.co.uk/en/quickchain100)



Short strain relief TL.XX.01.Z1  
Intermediate link TL.XX.01.Z0  
Long strain relief TL.XX.01.Z2

TL.100/ TL.65

TL.65 / TL.100

TR.85

With strain relief TR.85.01  
Intermediate link TR.85.02  
Without strain relief TR.85.02

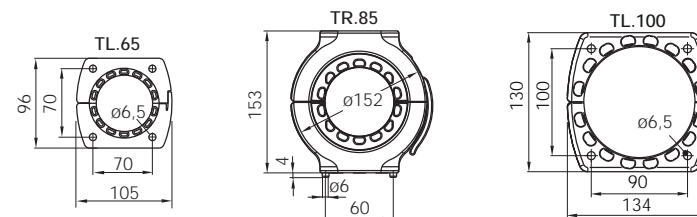
- Standard for TRL/TRLF, also compatible with TRC/TRE
- Light-mounting bracket with strain relief and available as intermediate link
- Standard mounting bracket also available ► page 549

Light | Quick and easy fixing onto the robot/machine

(Standard-mounting brackets ► from page 549)

Width Index	Part No. with short strain relief	Part No. with long strain relief	Part No. Intermediate link	Dim. A [mm]	Dim. B [mm]	Dim. C [mm]	Dim. D [mm]	Dim. E [mm]
					Z1	Z2		ø [mm]
65	TL.65.01.Z1**	-	TL.65.01.Z0	27	13,5	-	64	6,5
85	TR.85.01.M8*	-	TR.85.02.M8*	35	40	-	40	9
100	TL.100.01.Z1**	TL.100.01.Z2	TL.100.01.Z0	30	22,5	42,5	64	6,5

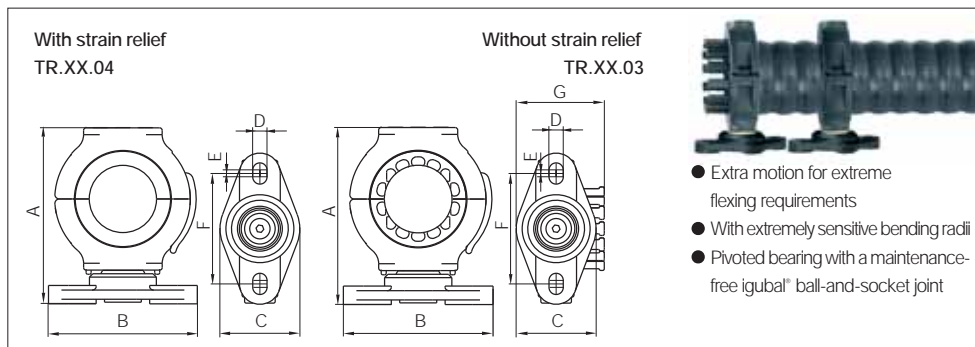
\*\*For moving end (ball) suitable only Series TRL/TRLE \*Option: with insert nuts, steel, M6/M8



All triflex® R accessories like:

- Swivel bearings for smooth motion
  - Protectors
  - Gliding feed-throughs
  - Strain relief systems: Quick exchange kit, Pivot bracket, triflex® R connection
  - TRE.LOCK clips
  - Back pull systems: RS triflex® R-Set the universal module and RSP the intelligent retraction system
  - Fiber rod module & Installation kit
  - Protective jackets.
- from page 562





- Extra motion for extreme flexing requirements
- With extremely sensitive bending radii
- Pivoted bearing with a maintenance-free igubal® ball-and-socket joint

Swivel bearing | Extra motion for extreme flexing requirements | for TRC/TRE/TRL/TRLF

Width index	Part No. with strain relief	Part No. intermediate link	Dim. A [mm]	Dim. B [mm]	Dim. C [mm]	Dim. D [mm]	Dim. E [mm]	Dim. F Ø [mm]	Dim. G* Ø [mm]
40.	▶ TR.40.03	TR.40.04	105	89	47	8,4	4,1	65	51,8
60.	▶ TR.60.03	TR.60.04	152	118	65	10,5	5,5	87,5	73,5
70.	▶ TR.70.03	TR.70.04	152	118	65	10,5	5,5	87,5	73,5
85.**	▶ TR.85.03	TR.85.04	179	118	65	10,5	5,5	87,5	88
100.	▶ TR.100.03	TR.100.04	179	118	65	10,5	5,5	87,5	88

\*only TR.XX.03

\*\*Width 85. not for Series TRL

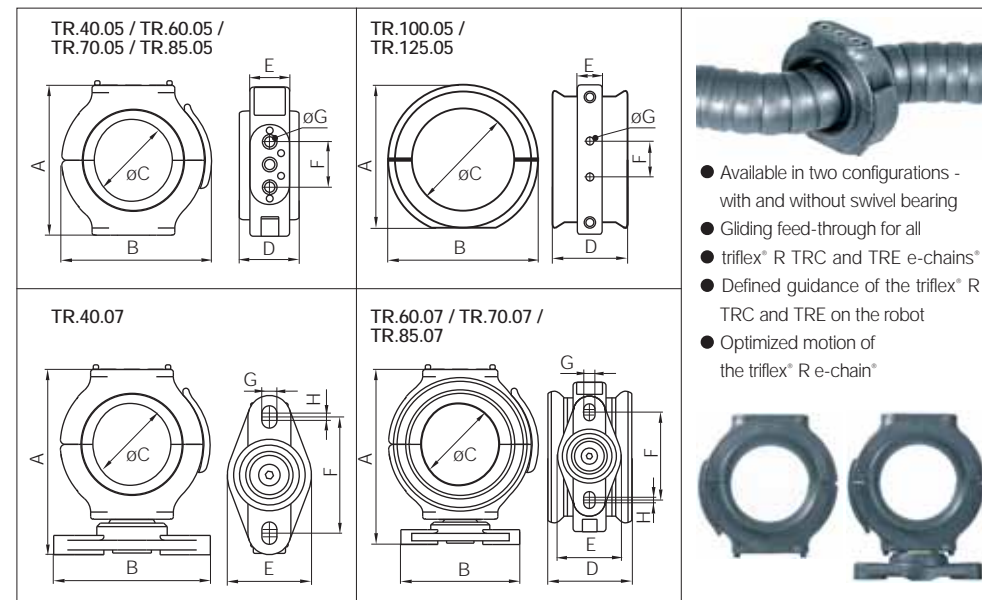
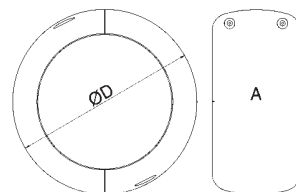
Protectors | High safety under extreme operating conditions | for TRC/TRE

- To achieve long life cycles under heavy loads resulting from impact or friction on the robot's e-chains®, optional protectors can be fitted at the contact points
- Easy assembly and quick replacement
- Abrasion-resistant TPU material
- Shock-resistant
- Light
- Easy gliding over edges
- Free positioning on any e-chain® link
- Protector with quick lock fastener available (Part No. TR.85.30 and TR.70.30)



Width index	Part No. TR.XX.10	Part No. with quick lock	Ø D [mm]	A [mm]
40.	▶ TR.40.10	TR.40.30*	55	27
60.	▶ TR.60.10	TR.60.30*	80	40
70.	▶ TR.70.10	TR.70.30	102	50
85.	▶ TR.85.10	TR.85.30	118	59
100.	▶ TR.100.10	TR.100.30*	133	67
125.	▶ TR.125.10	TR.125.30*	170	82

\*Available upon request, please consult igus® for delivery time!



- Available in two configurations - with and without swivel bearing
- Gliding feed-through for all
- triflex® R TRC and TRE e-chains®
- Defined guidance of the triflex® R TRC and TRE on the robot
- Optimized motion of the triflex® R e-chain®

Gliding feed-throughs | Without swivel bearing | for TRC/TRE

Width index	Part No. Gliding feed-throughs without swivel bearing	Dim. A [mm]	Dim. B [mm]	Dim. C Ø [mm]	Dim. D Ø [mm]	Dim. E Ø [mm]	Dim. F [mm]	Dim. G Ø [mm]
40.	▶ TR.40.05	85	84,5	46	32	21	27	6,5
60.	▶ TR.60.05	126	126	70	50	32	40	9
70.	▶ TR.70.05	153	155	86	70	35	40	9
85.	▶ TR.85.05	153	155	100	84	35	40	9
100.	▶ TR.100.05	162,5	169,5	115	85	28	40	8,5
125.	▶ TR.125.05	179	190	142	84	40	64	9

Gliding feed-throughs | With swivel bearing | for TRC/TRE

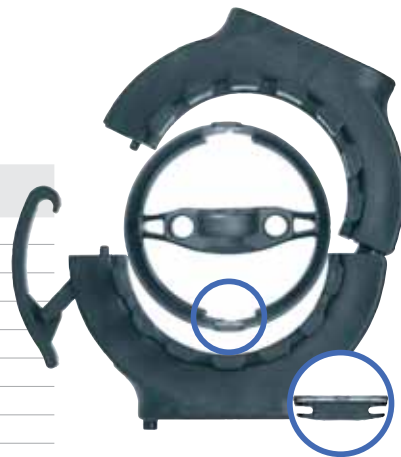
Width index	Part No. Gliding feed-throughs with swivel bearing	Dim. A [mm]	Dim. B [mm]	Dim. C Ø [mm]	Dim. D [mm]	Dim. E [mm]	Dim. F Ø [mm]	Dim. G [mm]	Dim. H [mm]
40.	▶ TR.40.07	108	89	46	32	47	65	8,4	4,1
60.	▶ TR.60.07	156	118	70	50	65	87,5	10,5	5,5
70.	▶ TR.70.07	183	118	86	70	65	87,5	10,5	5,5
85.	▶ TR.85.07	183	118	100	84	65	87,5	10,5	5,5

## triflex® R TRE.LOCK clip | for TRE

- The TRE.XX.LOCK clip is used to ensure a secure fit for the mounting bracket on TRE versions
- TRE.XX.LOCK clips are automatically supplied with each mounting bracket - please use the following Part No. for reordering:

Width index	Part No. TRE.LOCK clips*
.30	TRE.30/40.LOCK
.40	TRE.30/40.LOCK
.60	TRE.60.LOCK
.70	TRE.70.LOCK
.85	TRE.70.LOCK
.100	TRE.100.LOCK
.125	TRE.125.LOCK

\*not for Series TRC/TRL/TRLF



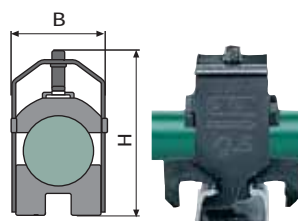
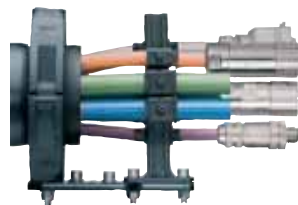
## Strain relief systems with igus® chainfix clamps | for TRC/TRE

- Secure mounting of large cross sections with igus® chainfix clamps
- Available in 3 options per size
- Multi-axially adjustable, for ideal positioning
- Suits all additional axles: Ø 30 mm, Ø 32 mm, Ø 34 mm

## CFX - Single clamp housing, incl. bottom saddles

Part No. Steel	Part No. Stainless steel*	Ø [mm]	B <sup>2</sup> [mm]	H [mm]	Part No. steel	Part No. Stainless steel*	Ø [mm]	B <sup>2</sup> [mm]	H [mm]
CFX12.1	CFX12.1.E	06 - 12	16	54	CFX26.1	CFX26.1.E	22 - 26	30	67
CFX14.1	CFX14.1.E	12 - 14	18	50	CFX30.1	CFX30.1.E	26 - 30	34	71
CFX16.1	CFX16.1.E	14 - 16	20	52	CFX34.1	CFX34.1.E	30 - 34	38	75
CFX18.1	CFX18.1.E	16 - 18	22	54	CFX38.1	CFX38.1.E	34 - 38	42	79
CFX20.1	CFX20.1.E	18 - 20	24	56	CFX42.1	CFX42.1.E	38 - 42	46	83
CFX22.1	CFX22.1.E	20 - 22	26	58					

\*Material stainless steel: 1.4301/AISI 304



 **Strain relief** e.g. clamps, tie-wrap plates, nuggets and plug-in clips are available from stock. The complete chainfix range with order options ► from page 616

### chainflex® robotic cables: CFROBOT & CF77.UL.D PUR control cable

**CFROBOT:** ● Available from stock ● UL and CSA certified ● From 1 m, no minimum requirements ● ±180° on 1 m ● 3.000.000 cycles tested. **CF77.UL.D PUR control cable:** ● Available from stock ● ± 180° twistable ● For twistable load requirements. **More information** ► [www.igus.co.uk/en/cfrobot](http://www.igus.co.uk/en/cfrobot)



## Quick exchange kit TR.60/70/85/100.22.XX | for TRC/TRE

- Ideal for triflex® R readychain®
- One-time-only alignment
- No repeat alignment upon exchange of readychain®
- Exchange of the triflex® R unit incl. cables without any tools

Width index	Part No. Quick exchange kit
60.**	TR.60 .22. <b>30 / 32 / 34*</b>
70.**	TR.70 .22. <b>30 / 32 / 34*</b>
85.**	TR.85 .22. <b>30 / 32 / 34*</b>
100.**	TR.100.22. <b>30 / 32 / 34*</b>

\*\*not for Series TRL/TRLF

\*Please add the appropriate index Ø 30, 32, 34 mm. Example: TR.100.22.30



## Pivot bracket TR.60/70/85/100.21.XX | for TRC/TRE

- Available in 2 options per size (with/without strain relief)
- Safe and simple securing of the cables with cable ties
- Possible also without strain relief (Strain relief in the application)

Width index	Part No. Pivot bracket with strain relief	Part No. Pivot bracket without strain relief
60.**	TR.60.21.01. <b>30 / 32 / 34*</b>	TR.60.21.02. <b>30 / 32 / 34*</b>
70.**	TR.70.21.01. <b>30 / 32 / 34*</b>	TR.70.21.02. <b>30 / 32 / 34*</b>
85.**	TR.85.21.01. <b>30 / 32 / 34*</b>	TR.85.21.02. <b>30 / 32 / 34*</b>
100.**	TR.100.21.01. <b>30 / 32 / 34*</b>	TR.100.21.02. <b>30 / 32 / 34*</b>

\*\*not for Series TRL/TRLF

\*Please add the appropriate index Ø 30, 32, 34 mm. Example: TR.100.21.01.30



## Connection TR.60/70/85/100/125.20.XX | for TRC/TRE

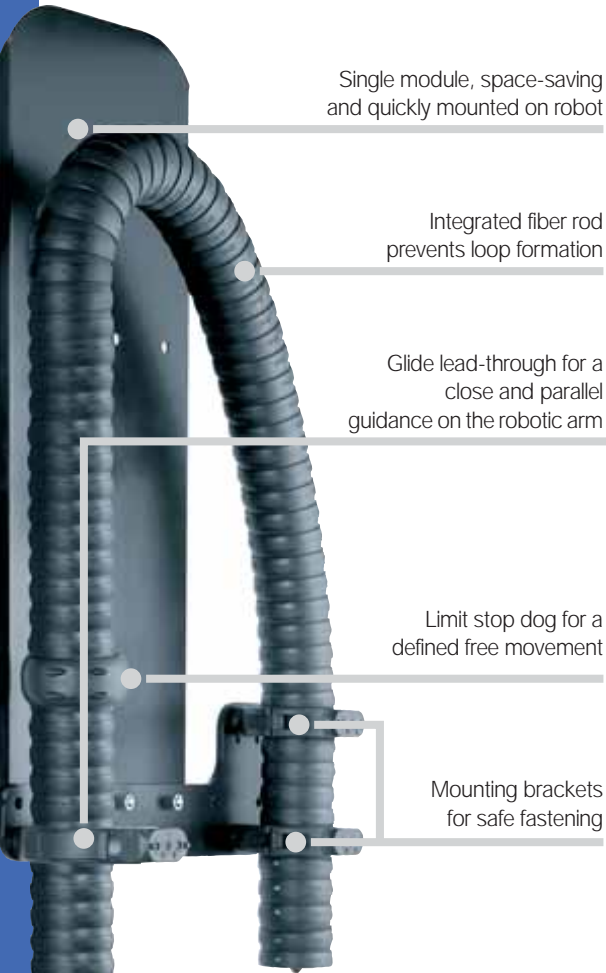
- For cables with large cross section, e.g. welding applications or in heavy hydraulic hoses, rugged strain relief in "heavy-duty" applications
- Double C-profile for igus® CFX clips
- igus® chainfix clamps made of stainless steel or steel can be used (see Table left)

Width index	Part No. triflex® R connection
60.**	TR.60 .20. <b>30 / 32 / 34*</b>
70.**	TR.70 .20. <b>30 / 32 / 34*</b>
85.**	TR.85 .20. <b>30 / 32 / 34*</b>
100.**	TR.100.20. <b>30 / 32 / 34*</b>
125.**	TR.125.20. <b>30 / 32 / 34*</b>

\*\*not for Series TRL/TRLF

\*Please add the appropriate index Ø 30, 32, 34 mm. Example: TR.100.20.30





Single module, space-saving and quickly mounted on robot

Integrated fiber rod prevents loop formation

Glide lead-through for a close and parallel guidance on the robotic arm

Limit stop dog for a defined free movement

Mounting brackets for safe fastening

### RS - Universal module for any robotic motion

triflex® RS is a very compact universal module that can be attached to the fastening points on the robot. Applications in very limited space can be realized, thanks to the small installation height and to the fact that triflex® RS can be installed parallel to the robotic arm. triflex® RS with integrated spring mechanism allows efficient energy supply to the robotic head, without stress on the cables.

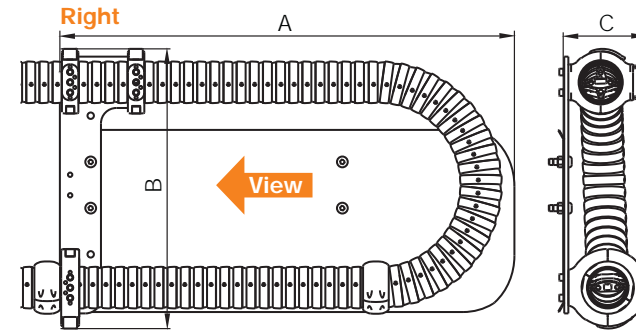
- Standard-package for all applications for immediate installation
- Integrated spring mechanism
- The first choice for robotic applications with limited space
- Saves space - small installation height and closely routed on the robotic arm
- Outstanding service life
- Universal installation



Integrated retraction spring prevents loop formation



RS with cover for the additional support of switch cabinets or valve terminals



Picture shows triflex® RS - Fastening point, right

### triflex® RS - Fastening point, right

Width Index	Part No. TRC	Part No. TRE	A [mm]	B [mm]	C [mm]
40. ▶	TRC.RS.40.R	TRE.RS.40.R.B	620	301	95
60. ▶	TRC.RS.60.R	TRE.RS.60.R.B	885	528	150
70. ▶	TRC.RS.70.R	TRE.RS.70.R.B	885	545	167
85. ▶	TRC.RS.85.R	TRE.RS.85.R.B	885	565	167
100. ▶	TRC.RS.100.R	TRE.RS.100.R.B	912,5	614	167

### triflex® RS - Fastening point, right, with cover

Width Index	Part No. TRC	Part No. TRE	A [mm]	B [mm]	C [mm]
40. ▶	TRC.RS.40.RC	TRE.RS.40.RC.B	620	301	95
60. ▶	TRC.RS.60.RC	TRE.RS.60.RC.B	885	528	150
70. ▶	TRC.RS.70.RC	TRE.RS.70.RC.B	885	545	167
85. ▶	TRC.RS.85.RC	TRE.RS.85.RC.B	885	565	167
100. ▶	TRC.RS.100.RC	TRE.RS.100.RC.B	912,5	614	167

### triflex® RS - Fastening point, left

Width Index	Part No. TRC	Part No. TRE	A [mm]	B [mm]	C [mm]
40. ▶	TRC.RS.40.L	TRE.RS.40.L.B	620	301	95
60. ▶	TRC.RS.60.L	TRE.RS.60.L.B	885	528	150
70. ▶	TRC.RS.70.L	TRE.RS.70.L.B	885	545	167
85. ▶	TRC.RS.85.L	TRE.RS.85.L.B	885	565	167
100. ▶	TRC.RS.100.L	TRE.RS.100.L.B	912,5	614	167

### triflex® RS - Fastening point, left, with cover

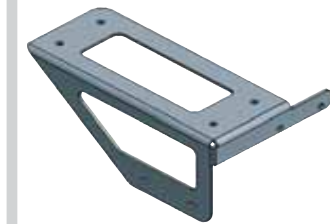
Width Index	Part No. TRC	Part No. TRE	A [mm]	B [mm]	C [mm]
40. ▶	TRC.RS.40.LC	TRE.RS.40.LC.B	620	301	95
60. ▶	TRC.RS.60.LC	TRE.RS.60.LC.B	885	528	150
70. ▶	TRC.RS.70.LC	TRE.RS.70.LC.B	885	545	167
85. ▶	TRC.RS.85.LC	TRE.RS.85.LC.B	885	565	167
100. ▶	TRC.RS.100.LC	TRE.RS.100.LC.B	912,5	614	167

### Further accessories



#### RS with cover (barrier)

- Creates more mounting space on robots - e.g. for switch cabinets or valve terminals
- For upside down applications
- Enables the use of RS in applications with extreme movements



#### 43 Adapter brackets from stock

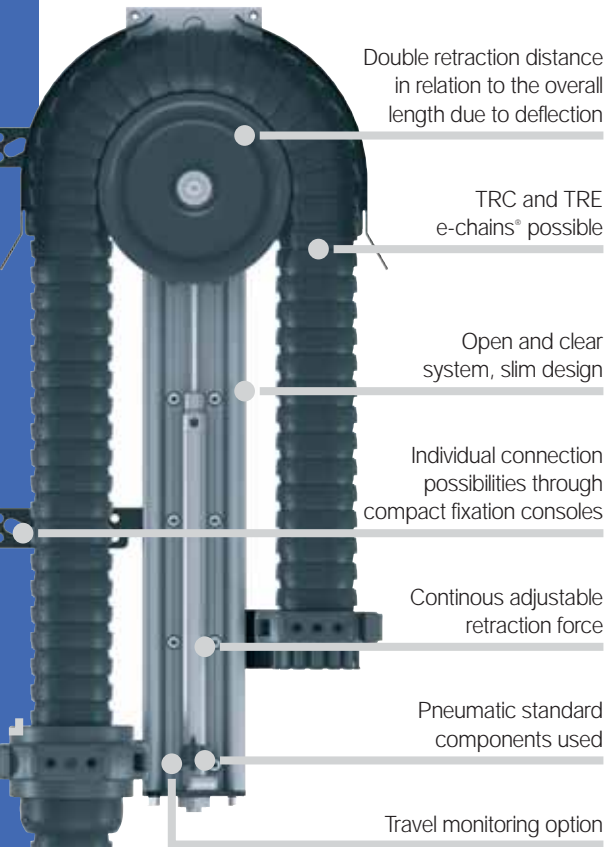
- 43 adapter bracket types for many different robots
- For all RS modules
- For assembly to the side or on top
- Free download of 3D CAD files for many brackets

▶ [www.igus.co.uk/en/triflexbrackets](http://www.igus.co.uk/en/triflexbrackets)



#### triflex® R fixation to 6-axis

- One axis diameter (Ø30 mm) for all robots
- Easy and fast assembly
- For triflex® R mounting bracket with CFX clamps and tie-wrap plates



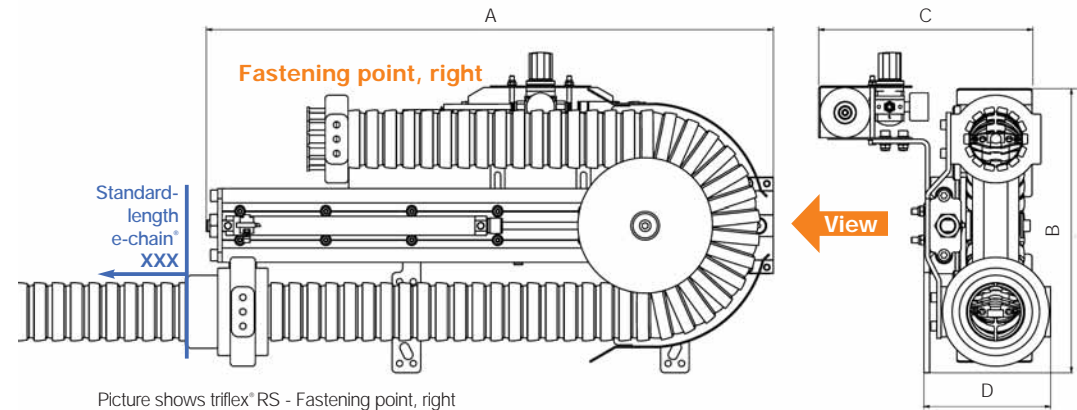
600 mm retraction distance

**RSP - Intelligent retraction system**  
Prevent creation of loops on robot head - now with continuously adjustable retraction force: **triflex® RSP**

Intelligent retraction system for multi-axial robot applications. Expansion lengths of 600 mm enable a secure guidance of the cables and hoses, even with large arm diameters and very complex movements. The retraction forces can be adjusted with the help of a pneumatic cylinder. Whether light or heavy fillings, long or short robot arms - with the igus® RSP retraction system the retraction force can always be adjusted to the individual application.

- Adjustable, variable retraction force with a pressure control valve
- Almost constant force path over the complete travel, even with heavy fillings
- The end position can be monitored and thereby damage can be prevented
- Greater retraction forces than RS system
- Mounting options for numerous robot types and manufacturers
- 3-6 axis on industrial robots

triflex® RSP system mounted on a 6-axis robot



Picture shows triflex® RS - Fastening point, right

**Delivery program - RSP pneumatic retraction system**

Width Index	Part No. RSP Right system*	Part No. RSP Left system*	Dim. A [mm]	Dim. B [mm]	Dim. C [mm]	Dim. D [mm]
60.	TR.RSP.60.R	TR.RSP.60.L	792	396	324	177
70.	TR.RSP.70.R	TR.RSP.70.L	792	396	324	177
85.	TR.RSP.85.R	TR.RSP.85.L	843	444	363	216
100.	TR.RSP.100.R	TR.RSP.100.L	843	444	363	216
125.	TR.RSP.125.R	TR.RSP.125.L	1031	560	373	226

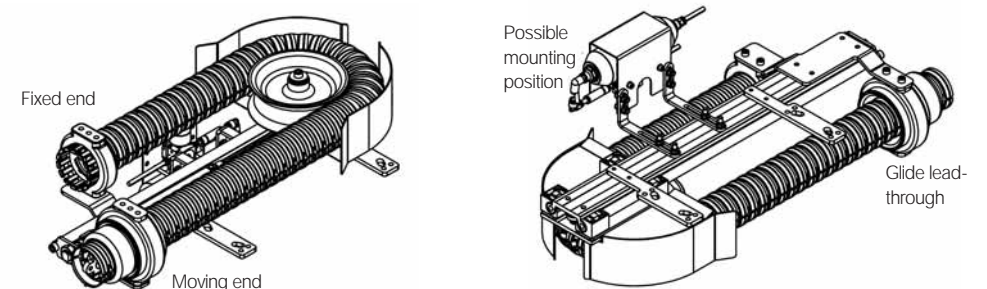
\*RSP without triflex® R e-chain\*

**Delivery program - e-chain® for RSP**

Width Index	Part No. TRC Closed design	Part No. TRE "easy"-design	e-chain® standard-length* [mm]			
60.	TRC.RSP.60.087. XXX.0	TRE.RSP.60.087. XXX.0.B	500	1000	1500	2000
70.	TRC.RSP.70.110. XXX.0	TRE.RSP.70.110. XXX.0.B	500	1000	1500	2000
85.	TRC.RSP.85.135. XXX.0	TRE.RSP.85.135. XXX.0.B	500	1000	1500	2000
100.	TRC.RSP.100.145. XXX.0	TRE.RSP.100.145. XXX.0.B	500	1000	1500	2000
125.	TRC.RSP.125.182. XXX.0	TRE.RSP.125.182. XXX.0.B	500	1000	1500	2000

Standard lengths (exceeded length from glide lead-through - outside of the system)

Please add the standard-length (measured from the glide lead-through). Example: TRC.RSP.60.087.500.0



# Series TRC/TRE | Accessories

Fiber rod module | Installation kit | For special applications



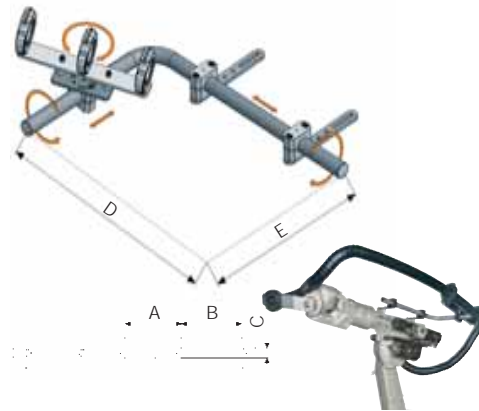
## Fiber rod module | for TRC/TRE

Fiber rod module, for applications where too much flexibility is not desired, intelligent problem solution through directed pretension



## Universal installation kit | for TRC/TRE

Universal installation kit allows the attachment of fiber rod modules in any given position, relative to the robotic arm, easy engineering



## Delivery program - Universal installation kit

Width index	Part No. kit for Series	A [mm]	B [mm]	D [mm]	E [mm]	C [mm]
.40	▶ TR.40.80	40	30	475	325	8,4
.60	▶ TR.60.80	40	30	475	325	8,4
.70	▶ TR.70.80	75	80	875	575	12,5
.85	▶ TR.85.80	75	80	875	575	12,5
.100	▶ TR.100.80	75	80	875	575	12,5

for width 125 upon request

## Delivery program - Fiber rods

Part No. TRC/TRE with mounted fiber rods	Length ca. [m]	
triflex® R 40	TRC.F.40.1000.1.0/TRE.F.40.1000.1.0	1,0
	TRC.F.40.0900.1.0/TRE.F.40.0900.1.0	0,9
	TRC.F.40.0800.1.0/TRE.F.40.0800.1.0*	0,8
	TRC.F.40.0700.1.0/TRE.F.40.0700.1.0	0,7
	TRC.F.40.0600.1.0/TRE.F.40.0600.1.0	0,6
	TRC.F.40.0500.1.0/TRE.F.40.0500.1.0	0,5
triflex® R 60	TRC.F.60.1400.1.0/TRE.F.60.1400.1.0	1,4
	TRC.F.60.1200.1.0/TRE.F.60.1200.1.0	1,2
	TRC.F.60.1000.1.0/TRE.F.60.1000.1.0*	1,0
	TRC.F.60.0800.1.0/TRE.F.60.0800.1.0	0,8
	TRC.F.60.0600.1.0/TRE.F.60.0600.1.0	0,6
	TRC.F.60.0400.1.0/TRE.F.60.0400.1.0	0,4
triflex® R 70	TRC.F.70.1800.1.0/TRE.F.70.1800.1.0	1,8
	TRC.F.70.1600.1.0/TRE.F.70.1600.1.0	1,6
	TRC.F.70.1400.1.0/TRE.F.70.1400.1.0	1,4
	TRC.F.70.1200.1.0/TRE.F.70.1200.1.0*	1,2
	TRC.F.70.1000.1.0/TRE.F.70.1000.1.0	1,0
	TRC.F.70.0800.1.0/TRE.F.70.0800.1.0	0,8
triflex® R 85	TRC.F.85.2000.1.0/TRE.F.85.2000.1.0	2,0
	TRC.F.85.1800.1.0/TRE.F.85.1800.1.0	1,8
	TRC.F.85.1600.1.0/TRE.F.85.1600.1.0	1,6
	TRC.F.85.1400.1.0/TRE.F.85.1400.1.0*	1,4
	TRC.F.85.1200.1.0/TRE.F.85.1200.1.0	1,2
	TRC.F.85.1000.1.0/TRE.F.85.1000.1.0	1,0
triflex® R 100	TRC.F.85.0800.1.0/TRE.F.85.0800.1.0	0,8
	TRC.F.100.2000.1.0/TRE.F.100.2000.1.0	2,0
	TRC.F.100.1800.1.0/TRE.F.100.1800.1.0	1,8
	TRC.F.100.1400.1.0/TRE.F.100.1400.1.0*	1,4
	TRC.F.100.1600.1.0/TRE.F.100.1600.1.0	1,6
	TRC.F.100.1200.1.0/TRE.F.100.1200.1.0	1,2
triflex® R 125	TRC.F.100.1000.1.0/TRE.F.100.1000.1.0	1,0
	TRC.F.125.2000.1.0/TRE.F.125.2000.1.0	2,0
	TRC.F.125.1800.1.0/TRE.F.125.1800.1.0*	1,8
	TRC.F.125.1400.1.0/TRE.F.125.1400.1.0	1,4
	TRC.F.125.1600.1.0/TRE.F.125.1600.1.0	1,6
	TRC.F.125.1200.1.0/TRE.F.125.1200.1.0	1,2
TRC.F.125.1000.1.0/TRE.F.125.1000.1.0	1,0	

\*recommended lengths of the fiber rods

# Series TRC/TRE/TRL/TRLF | Accessories

Protective jackets

## Standard protective jacket - TR.XX.16 | for TRC/TRE/TRL/TRLF

- Temperature up to room temp. ● Base support: Fabric ● Coating: None
- Easy to replace via longitudinally positioned velcro fastenings ● Elastic sealing strips
- Silicon-free ● Standard lengths available ex stock

Width index	Part No. TR.XX.16	Standard lengths** [mm]
40.	▶ TR.40.16. YY*	500 1000 1500 2000
60.	▶ TR.60.16. YY*	500 1000 1500 2000
70.	▶ TR.70.16. YY*	500 1000 1500 2000
85.	▶ TR.85.16. YY*	500 1000 1500 2000
100.	▶ TR.100.16. YY*	500 1000 1500 2000
125.	▶ TR.125.16. YY*	500 1000 1500 2000

\*Please add the jacket length. Example: TR.60.16.500  
\*\*special lengths upon request



## Heat shield protective jacket - TR.XX.18 | for TRC/TRE/TRL/TRLF

- Made from heat resistant, abrasion resistant Kevlar weave ● With aluminum laminate ● With zip-closure ● Velcro fasteners at the beginning and end ● Heavy-duty (thick) design ● Protects from perspiration and metal spatter briefly up to 540°C ● Easy to exchange or retrofit ● Silicone-free ● Asbestos-free ● Standard lengths from stock ● High abrasion resistance ● Very tight ● For heavy-duty environments

Width index	Part No. TR.XX.18	Standard lengths** [mm]
40.	▶ TR.40.18. YY*	500 1000 1500 2000
60.	▶ TR.60.18. YY*	500 1000 1500 2000
70.	▶ TR.70.18. YY*	500 1000 1500 2000
85.	▶ TR.85.18. YY*	500 1000 1500 2000
100.	▶ TR.100.18. YY*	500 1000 1500 2000
125.	▶ TR.125.18. YY*	500 1000 1500 2000

\*Please add the jacket length. Example: TR.60.18.500  
\*\*special lengths upon request



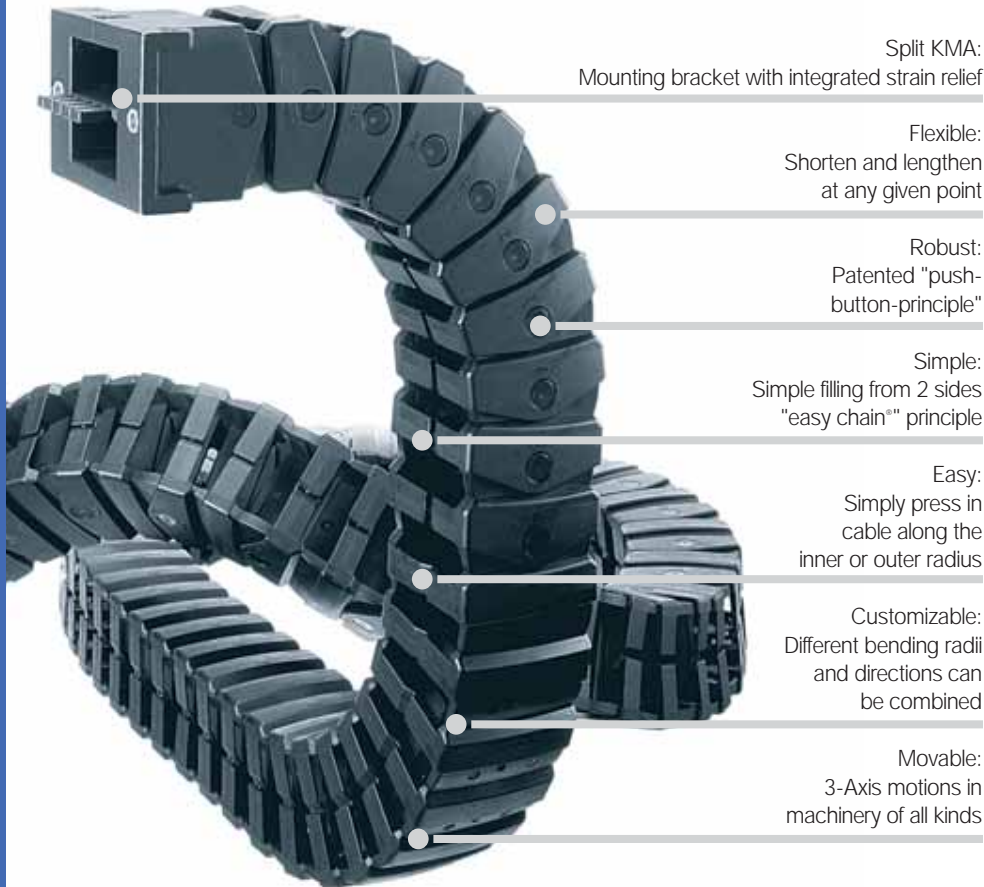
## Wear-resistant shield - TR.XX.19 | for TRC/TRE/TRL/TRLF

- Black leather material with zip-closure ● Velcro fasteners at the beginning and end
- Extremely high abrasion resistance ● For use in temperatures from -40°C to + 100°C ● Silicone-free
- Asbestos-free ● Standard lengths from stock ● Very flexible ● Easy to exchange or retrofit

Width index	Part No. TR.XX.19	Standard lengths** [mm]
40.	▶ TR.40.19. YY*	500 1000 1500 2000
60.	▶ TR.60.19. YY*	500 1000 1500 2000
70.	▶ TR.70.19. YY*	500 1000 1500 2000
85.	▶ TR.85.19. YY*	500 1000 1500 2000
100.	▶ TR.100.19. YY*	500 1000 1500 2000
125.	▶ TR.125.19. YY*	500 1000 1500 2000

\*Please add the jacket length. Example: TR.60.19.500  
\*\*special lengths upon request





Split KMA:  
Mounting bracket with integrated strain relief

Flexible:  
Shorten and lengthen  
at any given point

Robust:  
Patented "push-  
button-principle"

Simple:  
Simple filling from 2 sides  
"easy chain" principle

Easy:  
Simply press in  
cable along the  
inner or outer radius

Customizable:  
Different bending radii  
and directions can  
be combined

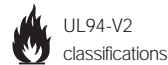
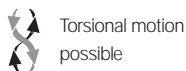
Movable:  
3-Axis motions in  
machinery of all kinds

## easy triflex® - for 3D-applications

The easy triflex® Series was developed to realize safe energy supply in the case of multi-dimensional movements. In doing so the flexibility of a hose was combined with the stability of an e-chain and its defined radii. With the easy triflex® the installation of cables, wires and hoses is very easy. In case of flexible cross-bars the cables are now simply pushed into the e-chain® from above or below. The unique modular program allows you to follow very complex movements. For Example: Combine 1-axis, 2-axis and 3-axis movement links in one e-chain®.

### Typical industries and applications

- Machine tools ● Robots ● Handling equipment ● Material handling
- Plastics machinery ● Construction machines ● Vehicles
- Machinery of all kinds ● Medical equipment ● Office furniture



Series	Inner height <i>Bi 1/Bi 2</i> [mm]	Inner width <i>Bi 3</i> [mm]	Outer width/ height <i>Ba</i> [mm]	Bending radii <i>R</i> [mm]	Pitch [mm]	Page
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**Single-axis movement.**  
For 3D-applications,  
simple filling from 2 sides

E332.25	13	25	34	048 - 200	14,5	576
E332.32	17	32	50	075 - 250	25	576
E332.50	26	50	68	100 - 250	30	576
E332.75	38,5	75	96	140 - 300	36	576



**Double-axis movement.**  
For 3D-applications,  
simple filling from 2 sides

E332.25	13	25	34	048 - 200	14,5	577
E332.32	17	32	50	075 - 250	25	577
E332.50	26	50	68	100 - 250	30	577
E332.75	38,5	75	96	140 - 300	36	577






**Triple-axis movement.**  
For 3D-applications,  
simple filling from 2 sides


E333.25	13	25	34	048 - 200	14,5	578
E333.32	17	32	50	075 - 250	25	578
E333.50	26	50	68	100 - 250	30	578
E333.75	38,5	75	96	140 - 300	36	578



Technical Data

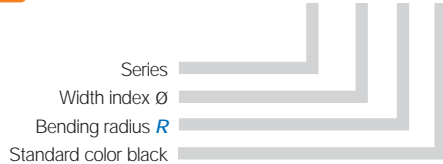
	Speed / acceleration	upon request
	Material - permitted temperature °C, igumid NB	-40° up to +80°C
	Flammability class, igumid NB	VDE 0304 IIC UL94 V2

Order example | Order key and color options based on Series E333

	Order example for complete e-chain® (1,0 m), color black, with mounting brackets:	
e-chain® (1,0 m)	Please indicate e-chain® length or number of links: 1,0 m or 27 links	E333.75.200/200.0
+ Mounting brackets	1 set mounting bracket with strain relief	333.75.12PZ


Order text: 1,0 m E333.75.200/200.0 + 333.75.12PZ

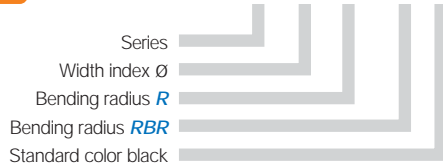
 Order key **E332.2.75.200.0**



**Single-axis movement**


Series E332 for simple filling from 2 sides with *Bi* 75 mm inner width and *R* 200 mm radius, color black  
= Part No. E332.2,75.200.0

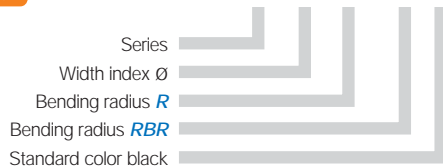
 Order key **E332.2.75.200/200.0**



**Double-axis movement**

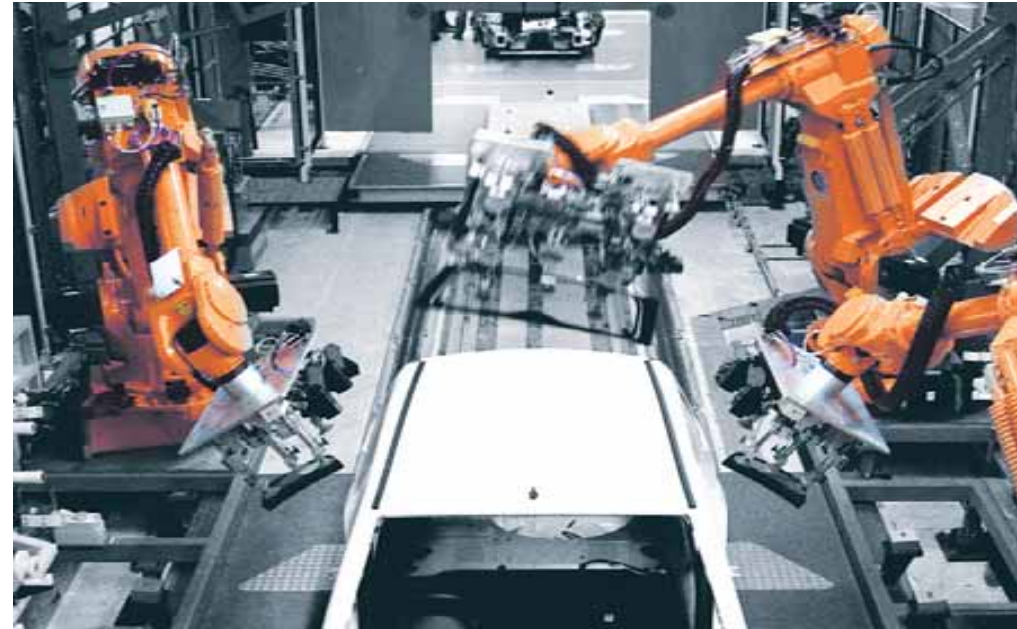
Series E332 for simple filling from 2 sides with *Bi* 75 mm inner width and *R* 200 mm radius, *RBR* 200 mm, color black  
= Part No. E332.2,75.200/200.0

 Order key **E333.75.200/200.0**



**Triple-axis movement**

Series E333 for simple filling from 2 sides with *Bi* 75 mm inner width and *R* 200 mm radius, *RBR* 200 mm, color black  
= Part No. E333.75.200/200.0



Robots with igus® easy triflex® e-chains® on an assembly line



easy triflex® e-chains® for multi-dimensional movements on a production line



easy triflex® e-chains® also for easy applications - here an aesthetic application

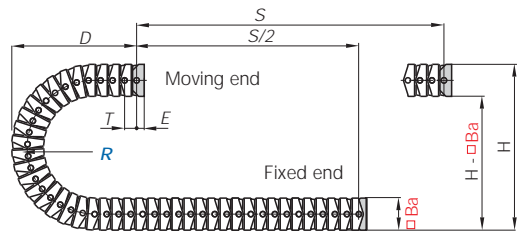


Series E332 | Single-axis movement

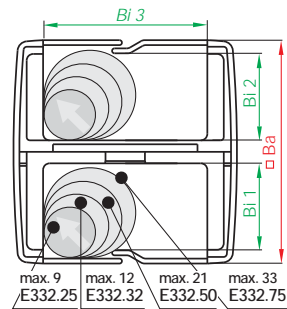
Simple filling from 2 sides	Bi1/Bi2 [mm]	Bi3 [mm]	Ba [mm]	R Bending radii [mm]							Pitch [mm]	Weight [kg/m]
E332.25.2 .R.0	13	25	34	048	075	100	125	150	175	200	14,5	≈ 0,70
E332.32.2 .R.0	17	32	50	075	100	125	150	200	250	25	≈ 0,90	
E332.50.2 .R.0	26	50	68	100	125	150	200	250	300	30	≈ 1,40	
E332.75.2 .R.0	38,5	75	96	140	175	200	250	300	360	36	≈ 2,35	

Supplement Part No. with required radius (R) Example: E332.75.2.200.0

Dimensions



Series	R	048	075	100	125	150	175	200
E332.25.2	H	130	185	235	285	335	385	435
	D	095	125	150	175	200	225	250
	K	195	280	360	440	515	595	675
E332.32.2	R	075	100	125	150	200	250	
	H	200	250	300	350	450	550	
	D	130	155	180	205	255	305	
	K	305	385	465	545	700	865	
E332.50.2	R	100	125	150	200	250		
	H	270	320	375	470	570		
	D	195	220	245	295	345		
	K	435	520	590	750	910		
E332.75.2	R	140	175	200	250	300		
	H	380	450	500	600	700		
	D	240	275	300	350	400		
	K	550	660	740	900	1060		



Series	Ba	Pitch T	Links/m	Dim. E	Chain length $S/2 + K$
Series E332.25.2.	34 mm	14,5 mm/link	69 (1000,5 mm)	10 mm	
Series E332.32.2.	50 mm	25 mm/link	40 (1000 mm)	20 mm	
Series E332.50.2.	68 mm	30 mm/link	34 (1020 mm)	25 mm	
Series E332.75.2.	96 mm	36 mm/link	28 (1008 mm)	25 mm	

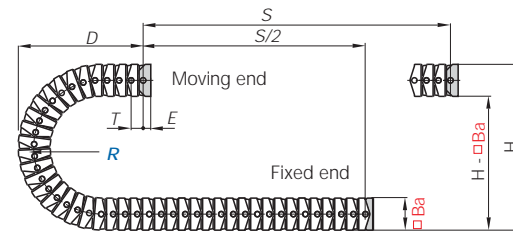


Series E332 | Double-axis movement | With RBR (Reversal Bending Radius)

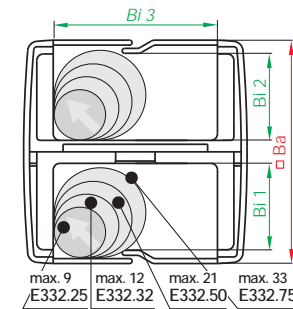
Simple filling from 2 sides	Bi1/Bi2 [mm]	Bi3 [mm]	Ba [mm]	R Bending radii [mm]							Pitch [mm]	Weight [kg/m]
E332.25.2 .R/R.0	13	25	34	048	075	100	125	150	175	200	14,5	≈ 0,70
E332.32.2 .R/R.0	17	32	50	075	100	125	150	200	250	25	≈ 0,90	
E332.50.2 .R/R.0	26	50	68	100	125	150	200	250	300	30	≈ 1,40	
E332.75.2 .R/R.0	38,5	75	96	140	175	200	250	300	360	36	≈ 2,35	

Supplement Part No. with required radius (R) Example: E332.75.2.200/200.0

Dimensions



Series	R	048	075	100	125	150	175	200
E332.25.2	H	130	185	235	285	335	385	435
	D	095	125	150	175	200	225	250
	K	195	280	360	440	515	595	675
E332.32.2	R	075	100	125	150	200	250	
	H	200	250	300	350	450	550	
	D	130	155	180	205	255	305	
	K	305	385	465	545	700	865	
E332.50.2	R	100	125	150	200	250		
	H	270	320	375	470	570		
	D	195	220	245	295	345		
	K	435	520	590	750	910		
E332.75.2	R	140	175	200	250	300		
	H	380	450	500	600	700		
	D	240	275	300	350	400		
	K	550	660	740	900	1060		



Series	Ba	Pitch T	Links/m	Dim. E	Chain length $S/2 + K$
Series E332.25.2.	34 mm	14,5 mm/link	69 (1000,5 mm)	10 mm	
Series E332.32.2.	50 mm	25 mm/link	40 (1000 mm)	20 mm	
Series E332.50.2.	68 mm	30 mm/link	34 (1020 mm)	25 mm	
Series E332.75.2.	96 mm	36 mm/link	28 (1008 mm)	25 mm	



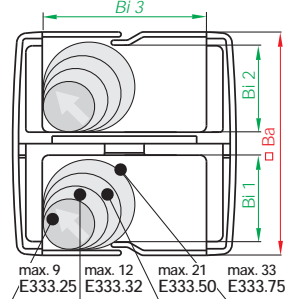
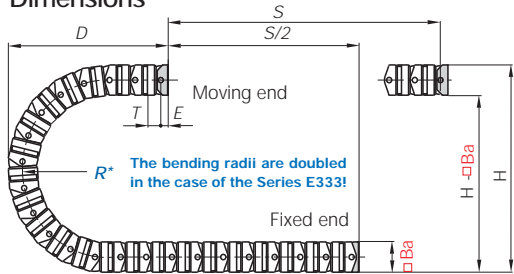
Series E333 | Triple-axis movement | With **RBR** (Reversal Bending Radius)

Simple filling from 2 sides	Bi1/Bi2 [mm]	Bi3 [mm]	Ba [mm]	R Bending radii [mm]						Pitch [mm]	Weight [kg/m]	
E333.25 .R/R.0	13	25	34	048	075	100	125	150	175	200	14,5	≈ 0,70
E333.32 .R/R.0	17	32	50	075	100	125	150	200	250	25	≈ 0,90	
E333.50 .R/R.0	26	50	68	100	125	150	200	250	300	30	≈ 1,40	
E333.75 .R/R.0	38,5	75	96	140	175	200	250	300		36	≈ 2,35	

The bending radii are doubled in the case of the Series E333 !

Supplement Part No. with required radius (R) Example: E333.75.200/200.0

Dimensions



E333.25.	R	048	075	100	125	150	175	200
	H	230	335	435	535	635	735	835
	D	145	200	250	300	350	400	450
	K	350	515	675	830	990	1150	1300
E333.32.	R	075	100	125	150	200	250	
	H	350	450	550	650	850	1050	
	D	205	255	305	355	455	555	
	K	545	700	860	1020	1300	1605	
E333.50.	R	100	125	150	200	250		
	H	470	570	670	870	1070		
	D	295	345	395	495	595		
	K	750	910	1070	1380	1690		
E333.75.	R	140	175	200	250	300		
	H	660	800	900	1100	1300		
	D	380	450	500	600	700		
	K	990	1210	1400	1700	2000		

Series E333.25

Ba	34 mm
Pitch T	14,5 mm/link
Links/m	69 (1000,5 mm)
Dim. E	10 mm
Chain length	$S/2 + K$

Series E333.32

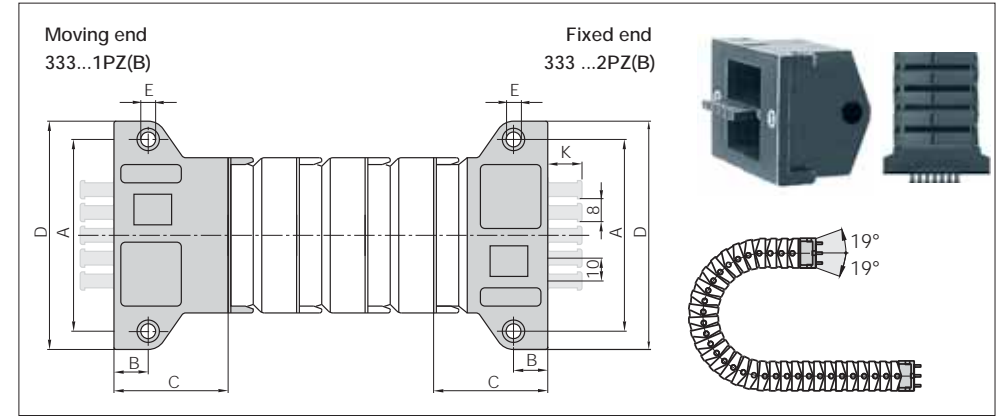
Ba	50 mm
Pitch T	25 mm/link
Links/m	40 (1000 mm)
Dim. E	20 mm
Chain length	$S/2 + K$

Series E333.50

Ba	68 mm
Pitch T	30 mm/link
Links/m	34 (1020 mm)
Dim. E	25 mm
Chain length	$S/2 + K$

Series E333.75

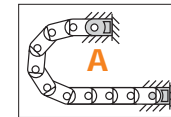
Ba	96 mm
Pitch T	36 mm/link
Links/m	28 (1008 mm)
Dim. E	25 mm
Chain length	$S/2 + K$



KMA, one side pivoting

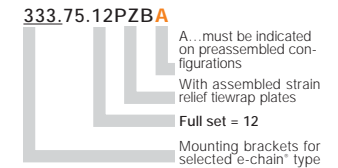
Width Index	Part No. full set with tie-wrap plates	Part No. full set without tie-wrap plates	Dim A [mm]	Dim B [mm]	Dim C [mm]	Dim D [mm]	Dim E [mm]	Dim F [mm]	Number of teeth
25.2 / 25. ▶	-	333.25.12PZ	43	7	22	52	4,5	-	-
32.2 / 32. ▶	333.32.12PZB	333.32.12PZ	66	15	46	82	6,5	15	3
50.2 / 50. ▶	333.50.12PZB	333.50.12PZ	84	15	50	100	6,5	15	5
75.2 / 75. ▶	333.75.12PZB	333.75.12PZ	109	15	55	125	6,5	15	7

(KMA = Polymer Metal Mounting Bracket)

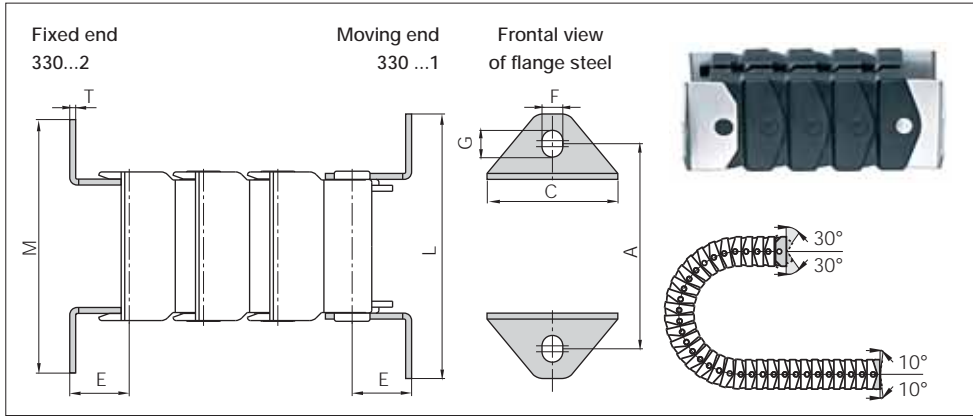


The KMA mounting bracket positions are fixed. For the preassembled mode please add index **A**.

Part No. structure

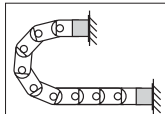


**Strain relief** e.g. clamps, tie-wrap plates, nuggets and plug-in clips are available from stock. The complete chainfix range with order options ▶ from page 616



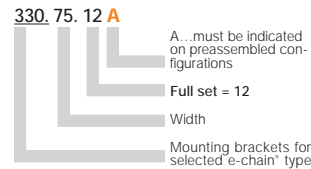
Flange steel | pivoting


Width Index	Part No. full set	Dim A [mm]	Dim M [mm]	Dim C [mm]	Dim L [mm]	Dim T [mm]	Dim E [mm]	Dim F [mm]	Dim G [mm]
25.2 / 25. ▶	330.25.12	44	55	29	55	1,5	10,5	6,5	9
32.2 / 32. ▶	330.32.12	66	84	44	88	2	20	7	9
50.2 / 50. ▶	330.50.12	84	102	62	106	2	25	7	9
75.2 / 75. ▶	330.75.12	109	127	90	131	2	25	7	9

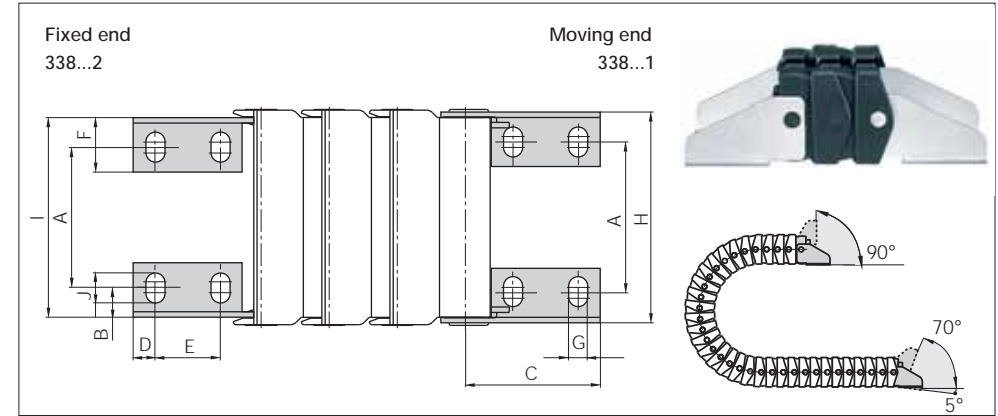


Frontal attachment option in the case of steel flange mounting brackets. For the preassembled mode please add index **A**.

Part No. structure

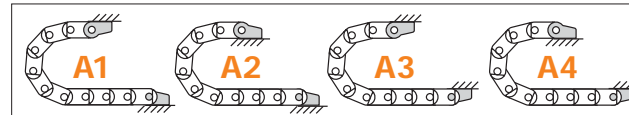


 **Strain relief** e.g. clamps, tiewrap plates, nuggets and plug-in clips are available from stock. The complete chainfix range with order options ▶ from page 616



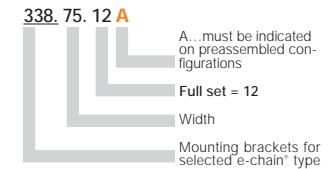
Angled steel bracket | pivoting

Width Index	Part No. full set	Dim A [mm]	Dim B [mm]	Dim C [mm]	Dim D [mm]	Dim E [mm]	Dim F [mm]	Dim G [mm]	Dim H [mm]	Dim I [mm]	Dim J [mm]
25.2 / 25. ▶	338.25.12	17	6,25	28	6	16	14	5,5	33,8	31	8,5
32.2 / 32. ▶	338.32.12	24	5,5	47	8	24	20	7	49	45	11
50.2 / 50. ▶	338.50.12	42	5,5	77	12	35	24	9	67	62	15
75.2 / 75. ▶	338.75.12	65	5,5	77	12	35	24	9	95	90	15

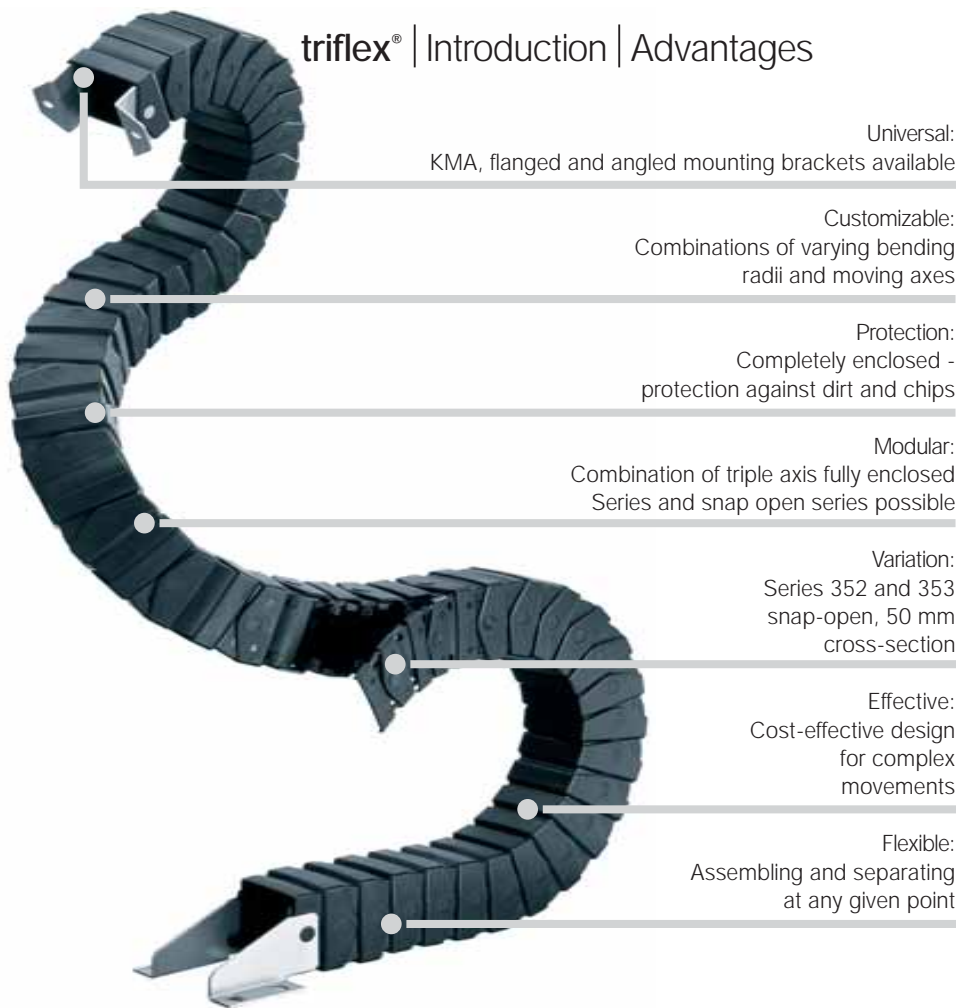


Possible installation conditions for assembled mounting brackets. For the preassembled mode please add index **A1... A4**.

Part No. structure



 **Strain relief** e.g. clamps, tiewrap plates, nuggets and plug-in clips are available from stock. The complete chainfix range with order options ▶ from page 616



Universal:  
KMA, flanged and angled mounting brackets available

Customizable:  
Combinations of varying bending radii and moving axes

Protection:  
Completely enclosed - protection against dirt and chips

Modular:  
Combination of triple axis fully enclosed Series and snap open series possible

Variation:  
Series 352 and 353 snap-open, 50 mm cross-section

Effective:  
Cost-effective design for complex movements

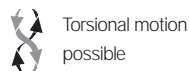
Flexible:  
Assembling and separating at any given point

## triflex® - enclosed for 3D-applications

triflex® - e-chain® for 3D-motion. The triflex® Series was developed to realize safe energy supply in the case of multi-dimensional movements. In doing so the flexibility of a hose was combined with the stability of an e-chain® and its defined radii. The unique modular program allows you to follow very complex movements. For example: Combine 1-axis, 2-axis and 3-axis movement links in one e-chain®.

### Typical industries and applications

- Machine tools ● Robots ● Handling equipment ● Material handling
- Plastics machinery ● Construction machines ● Vehicles
- Machinery of all kinds ● Medical equipment ● Office furniture



Series	Inner width/height □ $B_i$ [mm]	Outer width/height □ $B_a$ [mm]	Bending radii $R$ [mm]	Pitch [mm]	Page
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**Single-axis movement.**  
For 3D-applications,  
Series 332 fully enclosed - protection against dirt and chips.  
\*Series 352 snap-open

332.16	16	26	038 - 100	13,3	586
332.32	32	50	075 - 250	25	586
332.50	50	68	100 - 250	30	586
332.75	75	96	140 - 300	36	586
352.50*	50	68	100 - 250	30	586



**Double-axis movement.**  
For 3D-applications,  
Series 332 fully enclosed - protection against dirt and chips.  
\*Series 352 snap-open

332.16	16	26	038 - 100	13,3	588
332.32	32	50	075 - 250	25	588
332.50	50	68	100 - 250	30	588
332.75	75	96	140 - 300	36	588
352.50*	50	68	100 - 250	30	588




**Triple-axis movement.**  
For 3D-applications,  
Series 333 fully enclosed - protection against dirt and chips.  
\*Series 352 snap-open

333.16	16	26	038 - 100	13,3	589
333.32	32	50	075 - 250	25	589
333.50	50	68	100 - 250	30	589
333.75	75	96	140 - 300	36	589
353.50*	50	68	100 - 250	30	589

Technical Data


	Speed / acceleration	upon request
	Material - permitted temperature °C, igumid G	-40° up to +120°C
	Flammability class, igumid G	VDE 0304 IIC UL94 HB


Order example | Order key and color options based on Series 332


 Order example for complete e-chain® (1,0 m), color black, with mounting brackets:


e-chain® (1,0 m)	Please indicate e-chain® length or number of links: 1,0 m or 28 links	332.75.200/200.0
+ Mounting brackets	1 set mounting bracket with strain relief	333.75.12PZ
+ Interior separation	with 2 separators assembled every 2 <sup>nd</sup> link	351

Order text: 1,0 m 332.75.200/200.0 + 333.75.12PZ + 351

 Order key **332.75.200.0**  
**352.50.200.0**


Series 


Width index Ø 


Bending radius R 


Standard color black


**Single-axis movement**  
Series 332 fully enclosed with **Bi 75** mm inner width and **R 200** mm radius, color black = Part No. 332.75.200.0  
Series 352 snap-open with **Bi 50** mm inner width and **R 200** mm radius, color black = Part No. 352.50.200.0

 Order key **332.75.200/200.0**  
**352.75.200/200.0**

Series 


Width index Ø 


Bending radius R 


Bending radius RBR 


Standard color black

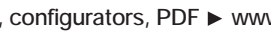
**Double-axis movement**  
Series 332 fully enclosed with **Bi 75** mm inner width and **R 200** mm radius, **RBR 200** mm, color black = Part No. 332.75.200/200.0  
Series 352 snap-open with **Bi 50** mm inner width and **R 200** mm radius, **RBR 200** mm, color black = Part No. 352.50.200/200.0

 Order key **333.75.200/200.0**  
**353.75.200/200.0**

Series 

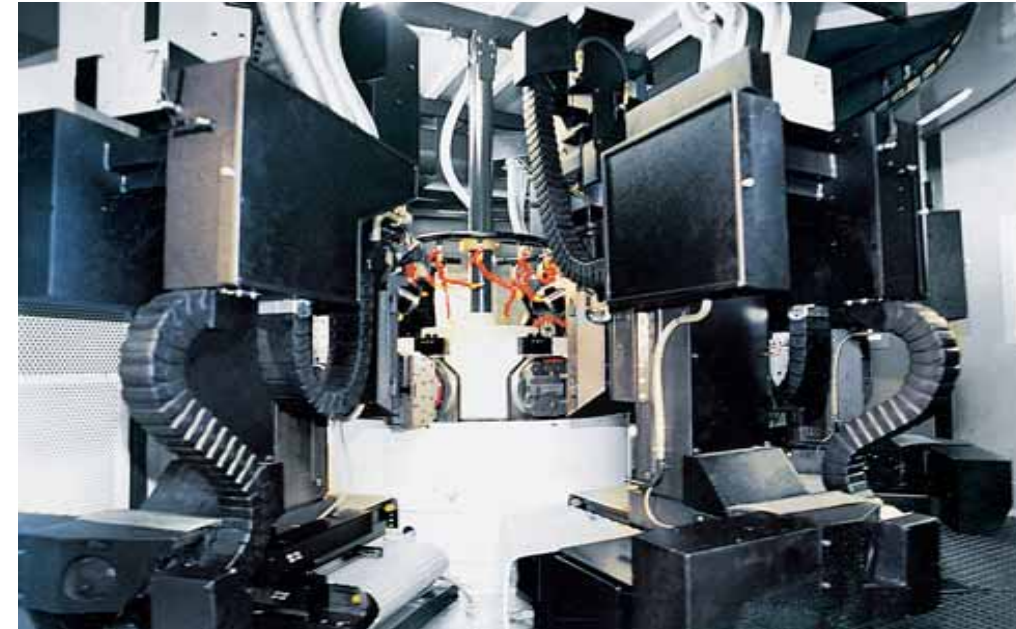
Width index Ø 

Bending radius R 

Bending radius RBR 

Standard color black

**Triple-axis movement**  
Series 333 fully enclosed with **Bi 75** mm inner width and **R 200** mm radius, **RBR 200** mm, color black = Part No. 333.75.200/200.0  
Series 353 snap-open with **Bi 50** mm inner width and **R 200** mm radius, **RBR 200** mm, color black = Part No. 353.50.200/200.0



Various triflex® e-tubes on the inside of a machining center



triflex® for 3 movement directions combined with triflex® for 1 movement direction



triflex® 332 as unsupported link from machines to control desk

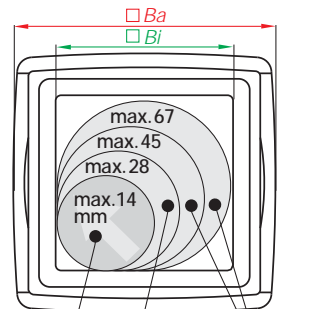
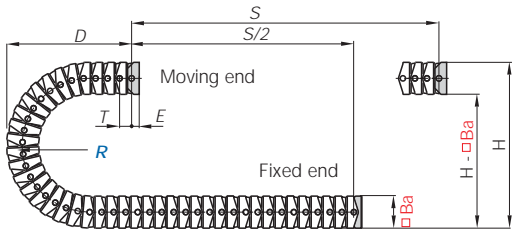


Series 332 | 352 | Single-axis movement

Series 332 Fully enclosed	Series 352 Snap-open	Bi [mm]	Ba [mm]	R Bending radii [mm]	Pitch [mm]	Weight [kg/m]
332.16 .R.0	-	16	26	038   048   075   100	13,3	0,33
332.32 .R.0	-	32	50	075   100   125   150   200   250	25	0,90
332.50 .R.0	352.50 .R.0	50	68	100   125   150   200   250	30	1,40
332.75 .R.0	-	75	96	140   175   200   250   300	36	2,35

Supplement Part No. with required radius (R) Example: 332.75.200.0

Dimensions

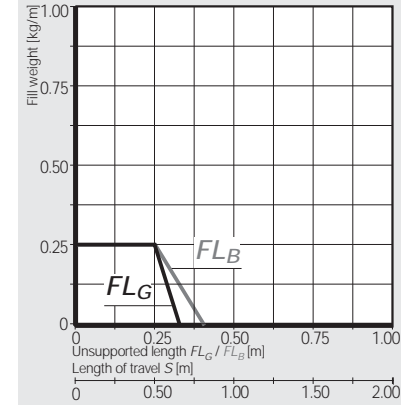


332.16 / 332.32 / 332./352.50 / 332.75

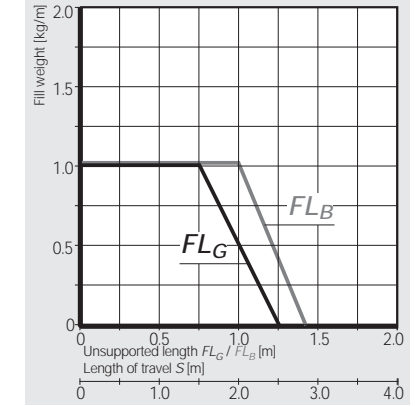
332.16	R	038	048	075	100		
	H	105	125	180	230		
	D	070	080	105	130		
	K	200	230	315	400		
332.32	R	075	100	125	150	200	250
	H	200	250	300	350	450	550
	D	130	155	180	205	255	305
	K	305	385	465	545	700	865
332.50/352.50	R	100	125	150	200	250	
	H	270	320	375	470	570	
	D	195	220	245	295	345	
	K	435	520	590	750	910	
332.75	R	140	175	200	250	300	
	H	380	450	500	600	700	
	D	240	275	300	350	400	
	K	550	660	740	900	1060	

Series 332.16	Series 332.32		
Ba	26 mm	Ba	50 mm
Pitch T	13,3 mm/link	Pitch T	25 mm/link
Links/m	76 (1011 mm)	Links/m	40 (1000 mm)
Dim. E	10 mm	Dim. E	20 mm
Chain length	$S/2 + K$	Chain length	$S/2 + K$
Series 332.50/352.50	Series 332.75		
Ba	68 mm	Ba	96 mm
Pitch T	30 mm/link	Pitch T	36 mm/link
Links/m	34 (1020 mm)	Links/m	28 (1008 mm)
Dim. E	25 mm	Dim. E	25 mm
Chain length	$S/2 + K$	Chain length	$S/2 + K$

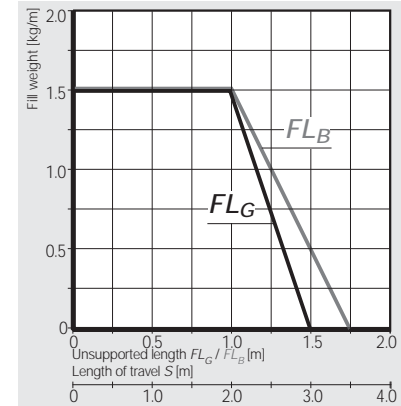
Unsupported length 332.16



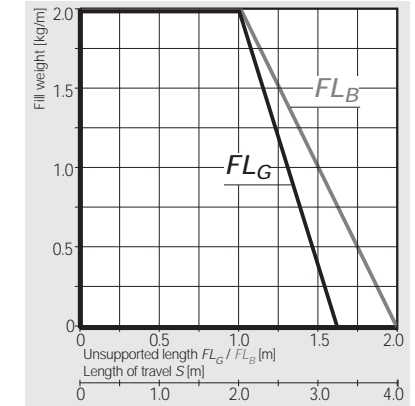
Unsupported length 332.32



Unsupported length 332.50/352.50



Unsupported length 332.75



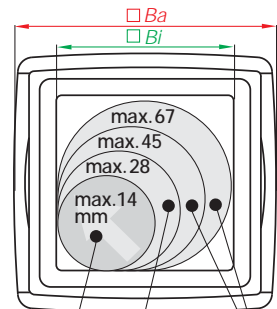
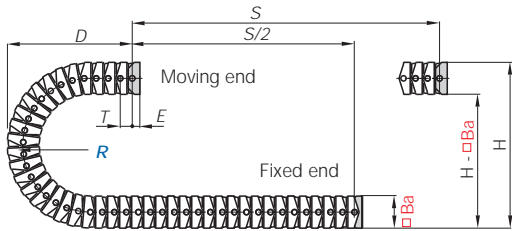


Series 332 | 352 | Double-axis movement | With **RBR** (Reversal Bending Radius)

Series 332 Fully enclosed	Series 352 Snap-open	<i>Bi</i> [mm]	<i>Ba</i> [mm]	<i>R</i> Bending radii [mm]	Pitch [mm]	Weight [kg/m]
332.16. <i>R/R.0</i>	-	16	26	038   048   075   100	13,3	0,33
332.32. <i>R/R.0</i>	-	32	50	075   100   125   150   200   250	25	0,90
332.50. <i>R/R.0</i>	352.50. <i>R/R.0</i>	50	68	100   125   150   200   250	30	1,40
332.75. <i>R/R.0</i>	-	75	96	140   175   200   250   300	36	2,35

Supplement Part No. with required radius (*R*) Example: 332.75.200/200.0

Dimensions



332.16 / 332.32 / 332./352.50 / 332.75

332.16	<i>R</i>	038	048	075	100		
	<i>H</i>	105	125	180	230		
	<i>D</i>	070	080	105	130		
	<i>K</i>	200	230	315	400		
332.32	<i>R</i>	075	100	125	150	200	250
	<i>H</i>	200	250	300	350	450	550
	<i>D</i>	130	155	180	205	255	305
	<i>K</i>	305	385	465	545	700	865
332.50/352.50	<i>R</i>	100	125	150	200	250	
	<i>H</i>	270	320	375	470	570	
	<i>D</i>	195	220	245	295	345	
	<i>K</i>	435	520	590	750	910	
332.75	<i>R</i>	140	175	200	250	300	
	<i>H</i>	380	450	500	600	700	
	<i>D</i>	240	275	300	350	400	
	<i>K</i>	550	660	740	900	1060	

Series 332.16

<i>Ba</i>	26 mm
Pitch <i>T</i>	13,3 mm/link
Links/m	76 (1011 mm)
Dim. <i>E</i>	10 mm
Chain length	$S/2 + K$

Series 332.32

<i>Ba</i>	50 mm
Pitch <i>T</i>	25 mm/link
Links/m	40 (1000 mm)
Dim. <i>E</i>	20 mm
Chain length	$S/2 + K$

Series 332.50/352.50

<i>Ba</i>	68 mm
Pitch <i>T</i>	30 mm/link
Links/m	34 (1020 mm)
Dim. <i>E</i>	25 mm
Chain length	$S/2 + K$

Series 332.75

<i>Ba</i>	96 mm
Pitch <i>T</i>	36 mm/link
Links/m	28 (1008 mm)
Dim. <i>E</i>	25 mm
Chain length	$S/2 + K$



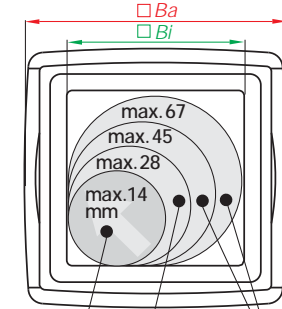
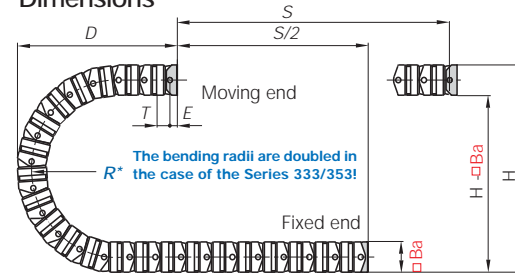
Series 333 | 353 | Triple-axis movement | With **RBR** (Reversal Bending Radius)

Series 332 Fully enclosed	Series 353 Snap-open	<i>Bi</i> [mm]	<i>Ba</i> [mm]	<i>R</i> Bending radii [mm]	Pitch [mm]	Weight [kg/m]
333.16. <i>R/R.0</i>	-	16	26	038   048   075   100	13,3	0,33
333.32. <i>R/R.0</i>	-	32	50	075   100   125   150   200   250	25	0,90
333.50. <i>R/R.0</i>	353.50. <i>R/R.0</i>	50	68	100   125   150   200   250	30	1,40
333.75. <i>R/R.0</i>	-	75	96	140   175   200   250   300	36	2,35

The bending radii are doubled in the case of the Series 333 !

Supplement Part No. with required radius (*R*) Example: 333.75.200/200.0

Dimensions



333.16 / 333.32 / 333./353.50 / 333.75

333.16.	<i>R</i>	038	048	075	100		
	<i>H</i>	180	220	330	430		
	<i>D</i>	105	125	180	230		
	<i>K</i>	320	380	550	710		
333.32.	<i>R</i>	075	100	125	150	200	250
	<i>H</i>	350	450	550	650	850	1050
	<i>D</i>	205	255	305	355	455	555
	<i>K</i>	545	700	860	1020	1300	1605
333.50./353.50.	<i>R</i>	100	125	150	200	250	
	<i>H</i>	470	570	670	870	1070	
	<i>D</i>	295	345	395	495	595	
	<i>K</i>	750	910	1070	1380	1690	
333.75.	<i>R</i>	140	175	200	250	300	
	<i>H</i>	660	800	900	1100	1300	
	<i>D</i>	380	450	500	600	700	
	<i>K</i>	990	1210	1400	1700	2000	

Series E333.16.

<i>Ba</i>	26 mm
Pitch <i>T</i>	13,3 mm/link
Links/m	76 (1011 mm)
Dim. <i>E</i>	10 mm
Chain length	$S/2 + K$

Series E333.32.

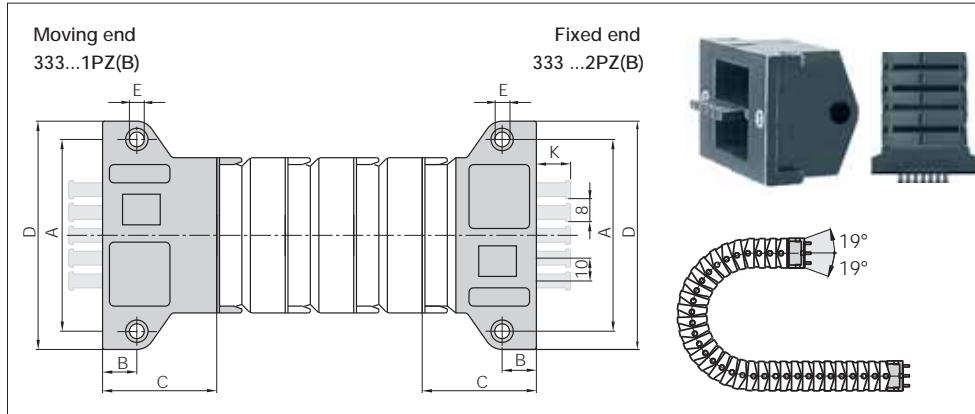
<i>Ba</i>	50 mm
Pitch <i>T</i>	25 mm/link
Links/m	40 (1000 mm)
Dim. <i>E</i>	20 mm
Chain length	$S/2 + K$

Series 333.50/353.50.

<i>Ba</i>	68 mm
Pitch <i>T</i>	30 mm/link
Links/m	34 (1020 mm)
Dim. <i>E</i>	25 mm
Chain length	$S/2 + K$

Series E333.75.

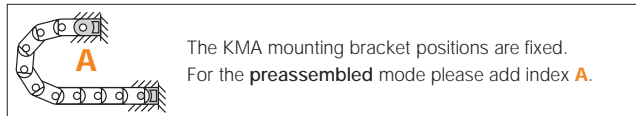
<i>Ba</i>	96 mm
Pitch <i>T</i>	36 mm/link
Links/m	28 (1008 mm)
Dim. <i>E</i>	25 mm
Chain length	$S/2 + K$



KMA, one side pivoting

Width Index	Part No. full set with tiewrap plates	Part No. full set without tiewrap plates	Dim A [mm]	Dim B [mm]	Dim C [mm]	Dim D [mm]	Dim E [mm]	Dim K [mm]	Number of teeth
32. ▶	333.32.12PZB	333.32.12PZ	66	15	46	82	6,5	15	3
50. ▶	333.50.12PZB	333.50.12PZ	84	15	50	100	6,5	15	5
75. ▶	333.75.12PZB	333.75.12PZ	109	15	55	125	6,5	15	7

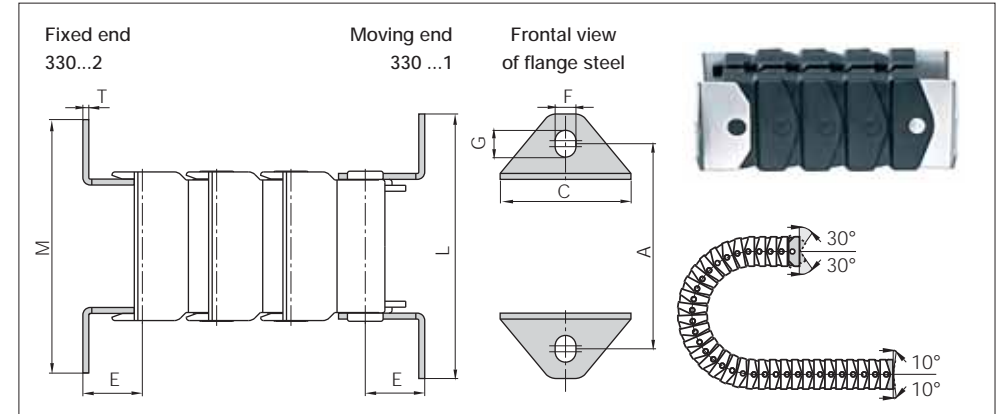
(KMA = Polymer Metal Mounting Bracket)



Part No. structure  
333.75. 12 PZB **A**

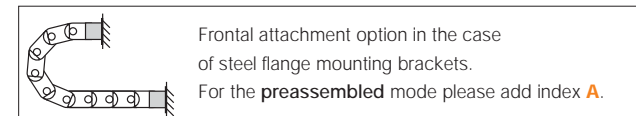
A... must be indicated on preassembled configurations  
With assembled strain relief tiewrap plates  
Full set = 12  
Mounting brackets for selected 'e-chain' type

**Strain relief** e.g. clamps, tiewrap plates, nuggets and plug-in clips are available from stock. The complete chainfix range with order options ▶ from page 616



Flange steel, pivoting

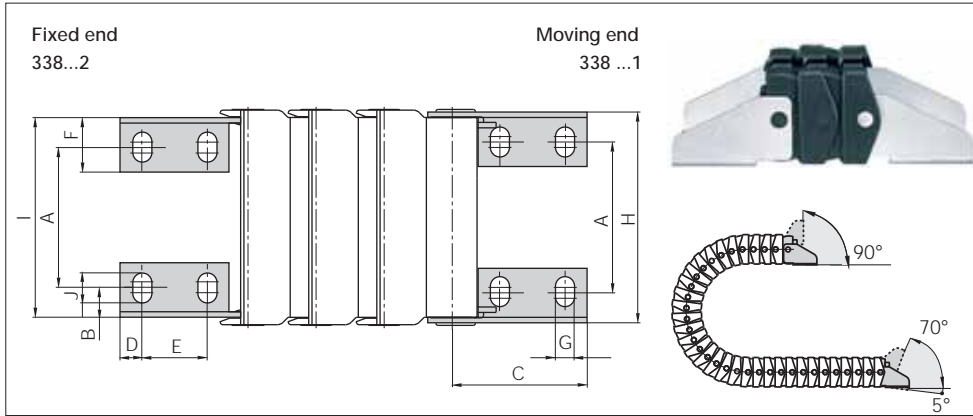
Width Index	Part No. full set	Dim A [mm]	Dim M [mm]	Dim C [mm]	Dim L [mm]	Dim T [mm]	Dim E [mm]	Dim F [mm]	Dim G [mm]
16. ▶	330.16.12	35	53	21	57	1	10	4,5	6
32. ▶	330.32.12	66	84	44	88	2	20	7	9
50. ▶	330.50.12	84	102	62	106	2	25	7	9
75. ▶	330.75.12	109	127	90	131	2	25	7	9



Part No. structure  
330. 75. 12 **A**

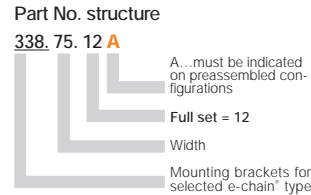
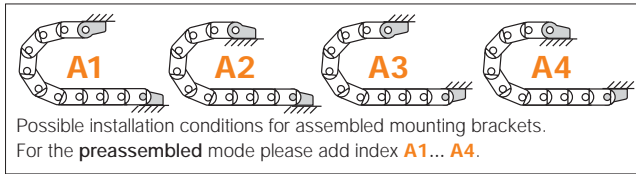
A... must be indicated on preassembled configurations  
Full set = 12  
Width  
Mounting brackets for selected 'e-chain' type

**Strain relief** e.g. clamps, tiewrap plates, nuggets and plug-in clips are available from stock. The complete chainfix range with order options ▶ from page 616

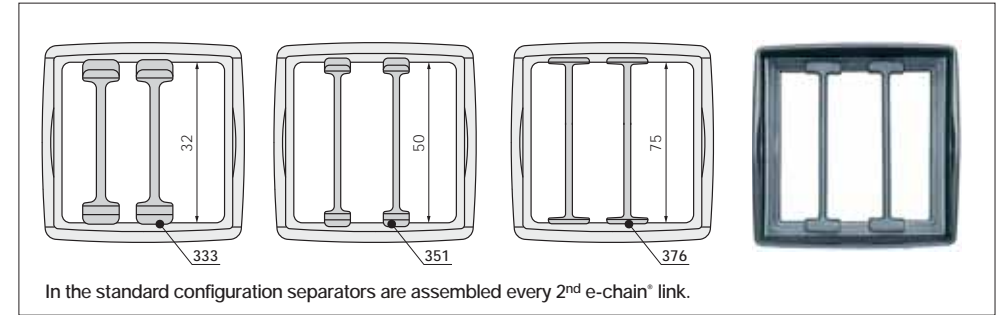



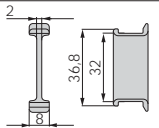

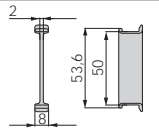

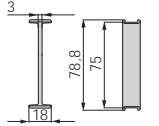
Angled steel bracket | pivoting

Width Index	Part No. full set	Dim A [mm]	Dim B [mm]	Dim C [mm]	Dim D [mm]	Dim E [mm]	Dim F [mm]	Dim G [mm]	Dim H [mm]	Dim I [mm]	Dim J [mm]
16. ▶	338.16.12	12	3	25	5	10	11	4,5	25	23	6
32. ▶	338.32.12	24	5,5	47	8	24	20	7	49	45	11
50. ▶	338.50.12	42	5,5	77	12	35	24	9	67	62	15
75. ▶	338.75.12	65	5,5	77	12	35	24	9	95	90	15



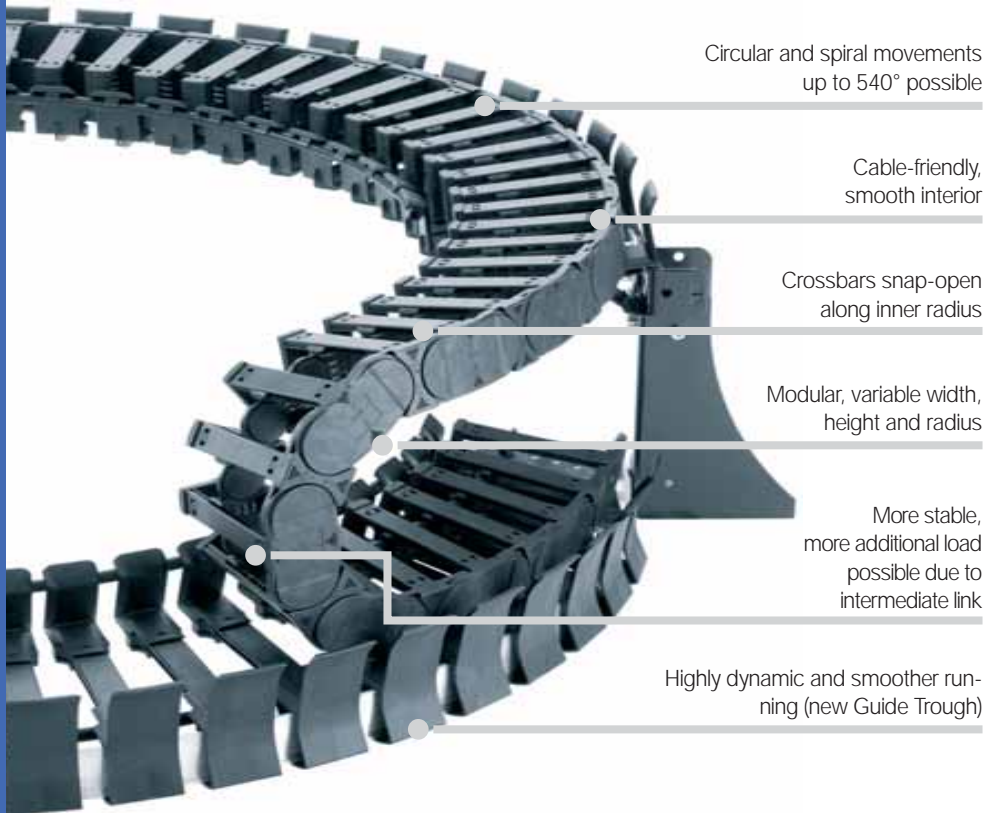
 **Strain relief** e.g. clamps, tiewrap plates, nuggets and plug-in clips are available from stock. The complete chainfix range with order options ▶ from page 616



		<b>332.32/333.32</b>	unassembled	<b>332</b>
			assembled	<b>333</b>
		<b>332.50/333.50/ 352.50/353.50</b>	unassembled	<b>350</b>
			assembled	<b>351</b>
		<b>332.75/333.75</b>	unassembled	<b>375</b>
			assembled	<b>376</b>

Vertical Separators

Modular separators are available as interior separation for the igus® triflex® System. They can be used for both vertical and horizontal subdivision. If the separators are assembled every other link and turned 90°, the e-tube can be subdivided into four segments. We recommend ordering the e-tube preassembled, as subsequent assembly of separators is only possible after dismantling the e-tube. Please note that assembled separators have a different part number than unassembled separators.



Circular and spiral movements up to 540° possible

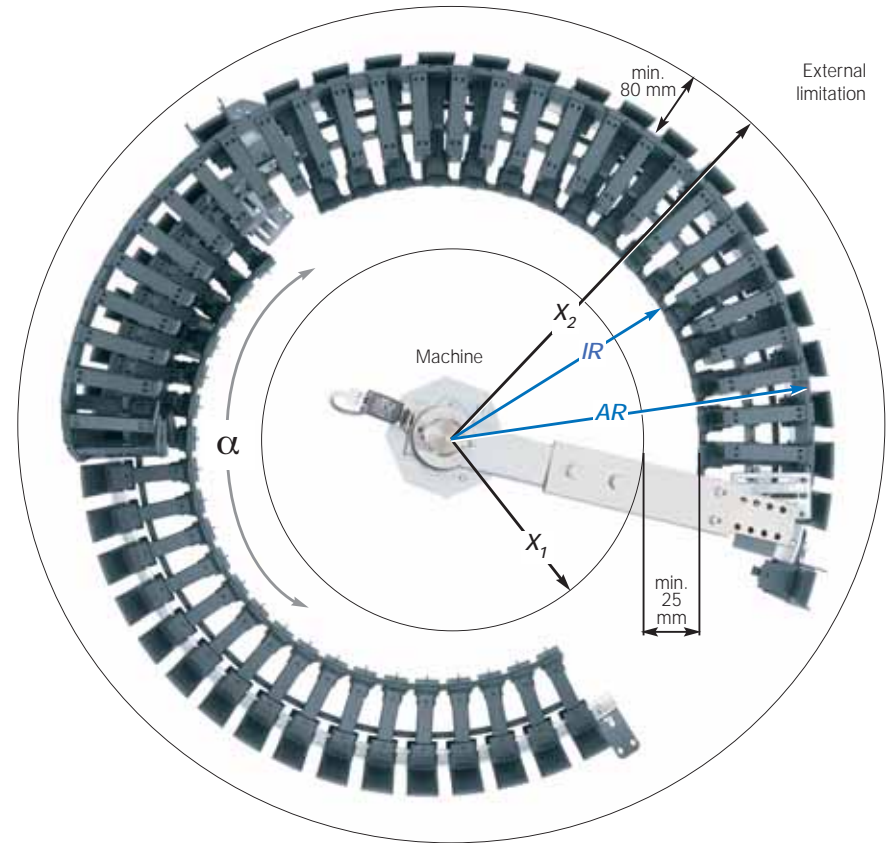
Cable-friendly, smooth interior

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 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 1 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

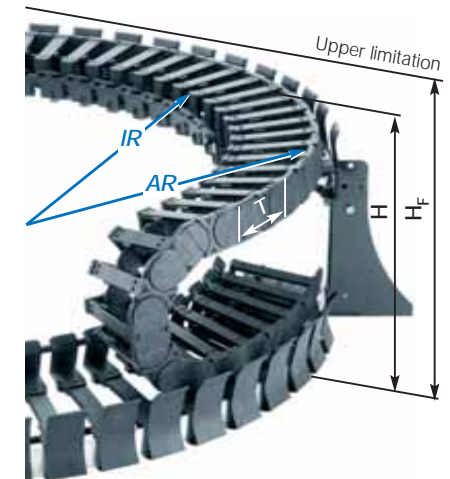
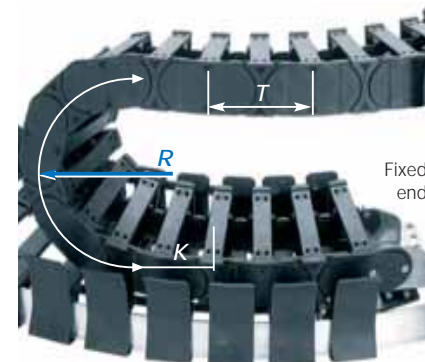
- Robots, handling machines ● Packaging machines ● Glass machines ● General mechanical engineering

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

UL94-V2 classifications upon request

### twisterchain® definition

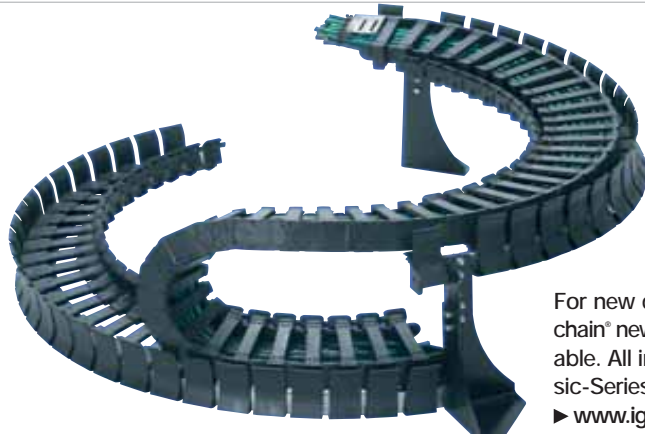
In the case of machine elements which both move to the left and to the right following a circular path, the rotation angle can be determined by adding the two angles!



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

Hf = 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®  
alpha = Rotation angle

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	598
TC42	42	87,5 - 200	110,5 - 223	64	100 - 250	400 - 850	600
TC56	56	125 - 200	155 - 230	84	150 - 400	650 - 850	602

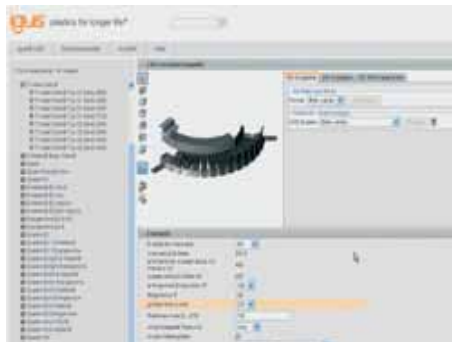


**twisterchain® new**  
for circular movements up to 540°, crossbars snap-open along inner radius

For new designs we recommend twisterchain® new! twisterchain® classic is still available. All information concerning this classic-Series at  
▶ [www.igus.co.uk/en/twisterchainClassic](http://www.igus.co.uk/en/twisterchainClassic)

### Quickly generate complete twisterchain® models with guide trough and accessories

▶ [www.igus-cad.com](http://www.igus-cad.com)



- 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

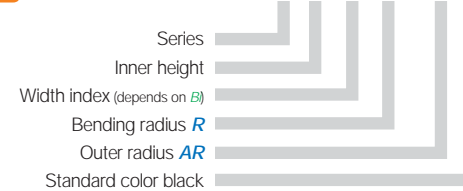
Speed / acceleration	upon request
Material - permitted temperature °C, igumid G / GLW	-40° up to +100°C
Flammability class, igumid G / GLW	VDE 0304 IIC UL94 HB

### Order example | Order key and color options based on Series TC56

Order example for complete e-chain® (1,0 m), color black, with mounting brackets:

e-chain® (1,0 m)	Please indicate e-chain® length or number of links: 1,0 m or 11 links	TC56.12.250/650.0
+ Mounting brackets	1 set	TC5600.34.VS.E
Order text: 1,0 m TC32.12.250/650.0 + TC5600.34.VS.E		

Order key **TC56.12.250/650.0**



TC56.12.250/650.0 = 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

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

AR [mm]	Bi [mm]	Ba [mm]	X <sub>2</sub> [mm]	X <sub>1</sub> [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 <sup>+20</sup>	254	304	354	404	454	554
K	465	550	620	700	780	940

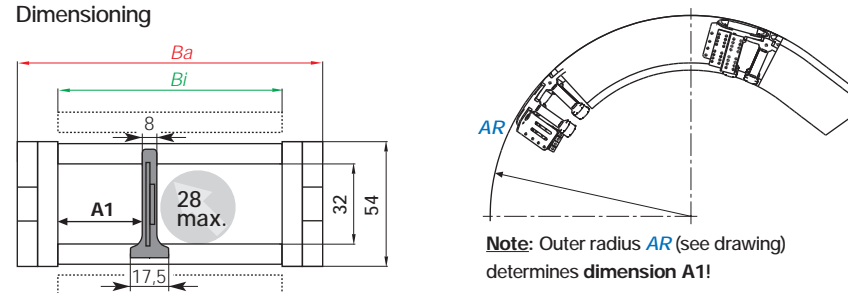
Pitch T = 56 mm/link  
Links/m = 18 (1008 mm)

Dimension A1 depending on outer radius AR

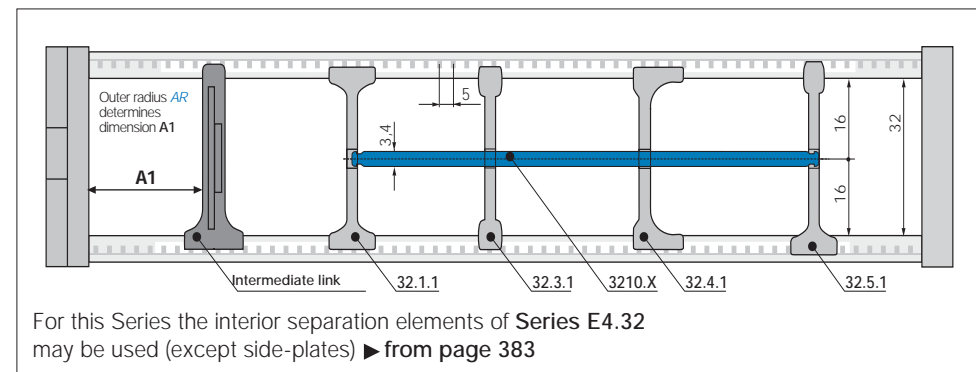
AR [mm]	R 100 A1 [mm]	R 125 A1 [mm]	R 150 A1 [mm]	R 175 A1 [mm]	R 200 A1 [mm]	R 250 A1 [mm]
400	51	51	52	53	53	58
500	65	65	66	67	69	71
600	79	80	81	81	82	85

Dimension A1 always with tolerance of ± 2,5 mm

Dimensioning



twisterchain® new | Series TC32 | Interior separation



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

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

AR [mm]	Bi [mm]	Ba [mm]	X <sub>2</sub> [mm]	X <sub>1</sub> [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	Pitch T	= 67 mm/link
H <sub>+25</sub> <sup>0</sup>	267	317	367	417	467	567	Links/m	= 15 (1005 mm)

K	500	650	725	800	875	1050
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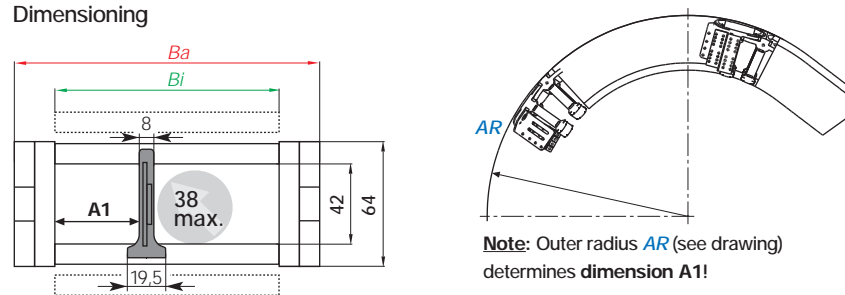
600 3D-CAD files, configurators, PDF ► www.igus.co.uk/en/TC42

Dimension A1 depending on outer radius AR

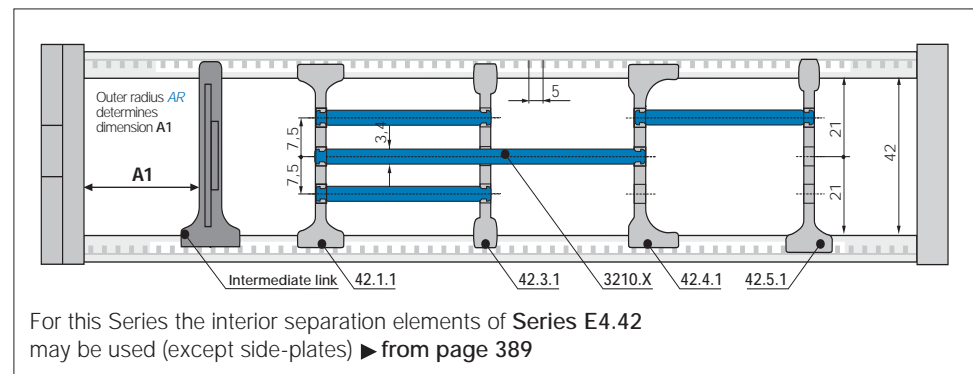
AR [mm]	R 100 A1 [mm]	R 125 A1 [mm]	R 150 A1 [mm]	R 175 A1 [mm]	R 200 A1 [mm]	R 250 A1 [mm]
400	49	50	51	53	54	58
500	64	65	66	67	68	71
600	79	79	80	81	82	85
650	86	87	87	88	89	92
750	101	101	102	103	104	106
850	116	116	117	118	118	120

Dimension A1 always with tolerance of ± 2,5 mm

Dimensioning



twisterchain® new | Series TC42 | Interior separation



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

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

AR [mm]	Bi [mm]	Ba [mm]	X <sub>2</sub> [mm]	X <sub>1</sub> [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	-	-	-	-	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 <sub>+25</sub> <sup>0</sup>	384	484	584	684	884
K	750	900	1050	1225	1450

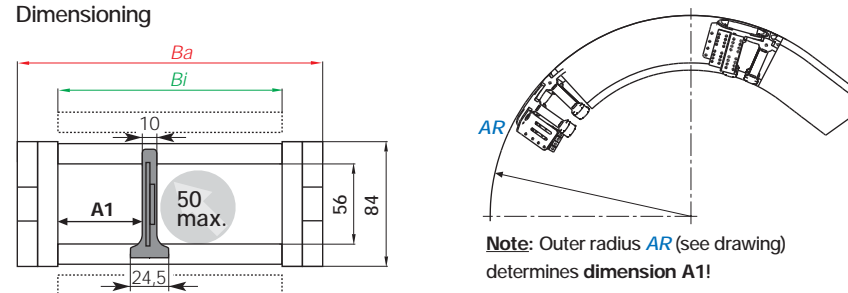
Pitch T = 91 mm/link  
Links/m = 11 (1001 mm)

Dimension A1 depending on outer radius AR

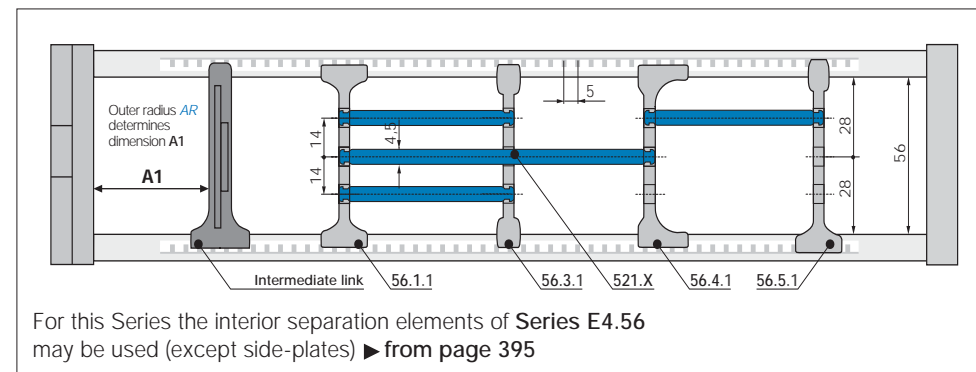
AR [mm]	R 150 A1 [mm]	R 200 A1 [mm]	R 250 A1 [mm]	R 300 A1 [mm]	R 400 A1 [mm]
650	83	85	88	90	97
750	98	101	102	103	110
850	113	116	117	118	124

Dimension A1 always with tolerance of ± 2,5 mm

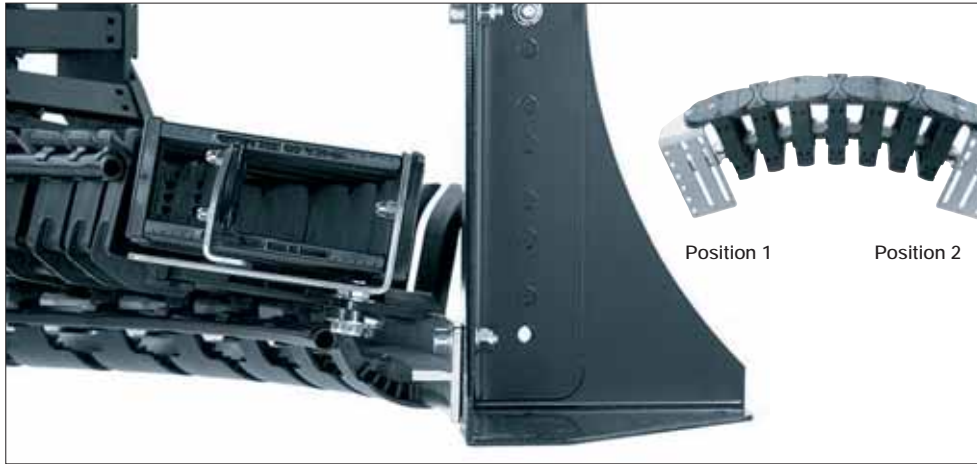
Dimensioning



twisterchain® new | Series TC56 | Interior separation



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



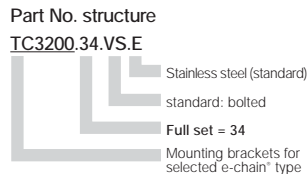
Steel, one-piece | Recommended for unsupported and rotatory applications

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



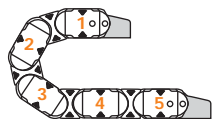
- One part for all e-chain® widths
- Electrically conductive
- Universal use
- Material: Stainless steel: 1.4301

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

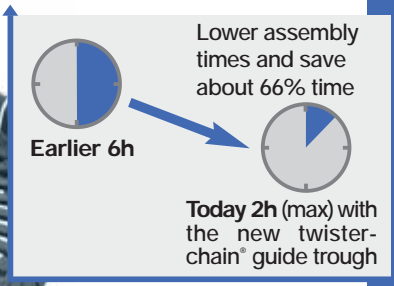
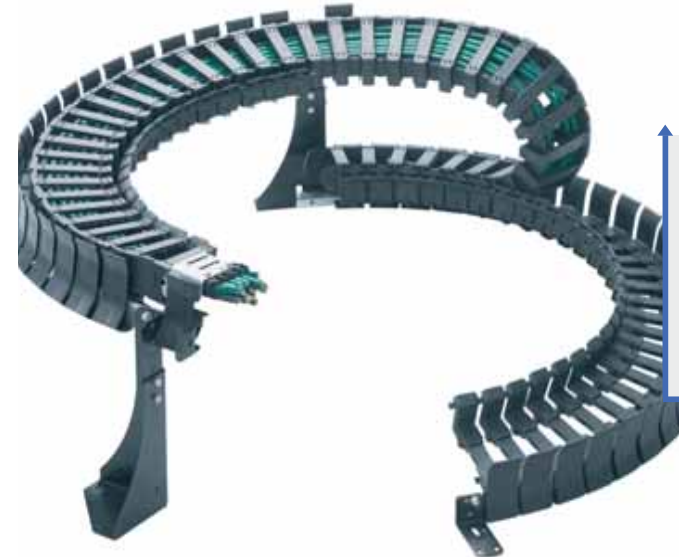


**Single-part order**  
 Position 1  
**TC3200.30.VS.E**  
 Position 2  
**TC3200.40.VS.E**

**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!

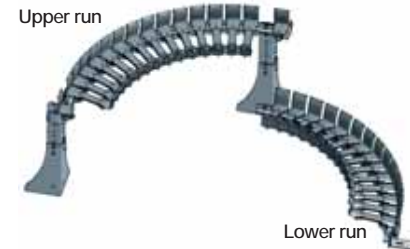


New generation of twisterchain® guide troughs -  
Save assembly time and costs - increase cycle life!



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. Detailed information ▶ [www.igus.co.uk/en/TCtroughnew](http://www.igus.co.uk/en/TCtroughnew)

- 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
- Preamsembled delivery possible
- Easy adjustment and alignment and handling
- Assembly time reduced from 6 hours to 2 hours

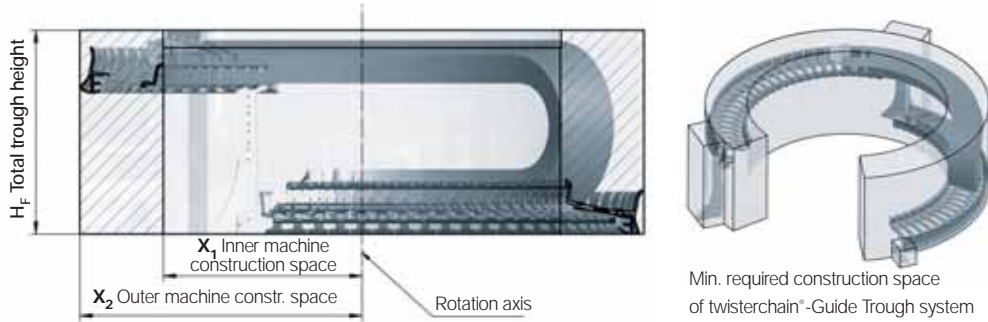


Less parts, easier handling -  
 Illustration shows a 180° application



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

**i** Guide Trough Type 02 - continues to be available for special applications.  
 Delivery program at ▶ [www.igus.co.uk/en/TCtroughclassic](http://www.igus.co.uk/en/TCtroughclassic)



Installation Dimensions | X<sub>1</sub> inner machine construction space and X<sub>2</sub> outer machine construction space of Guide Trough

AR [mm]	X <sub>2</sub> [mm]	X <sub>1</sub> [mm] depending on BI [mm]											
<b>TC32</b>													
400	480	87,5	100	108	125	137,5	150						
500	580	-	350	350	320	310	300						
600	680	-	-	450	420	410	400						
<b>TC42</b>													
400	480	87,5	100	108	125	137,5	150	162,5	168	175	187,5	200	
500	580	-	350	350	320	310	300	290	290	280	280	250	
600	680	-	-	450	420	410	400	390	390	380	380	350	
650	730	-	-	-	470	460	450	440	440	430	420	400	
750	830	-	-	-	-	560	550	540	540	530	520	500	
850	930	-	-	-	-	-	650	640	640	630	620	600	
<b>TC56</b>													
650	730	-	-	-	470	460	450	440	-	430	420	400	
750	830	-	-	-	-	560	550	540	-	530	520	500	
850	930	-	-	-	-	-	650	640	-	630	620	600	
<b>2808</b>													
400	480	50	68	75	87,5	100	108	125	137,5	150			
500	580	390	380	370	370	350	350	320	310	300			
600	680	490	480	470	470	450	450	420	410	400			
<b>3808</b>													
400	480	50	68	75	87,5	100	108	125	137,5	150	162,5	168	175
500	580	390	380	370	370	350	350	320	310	300	290	290	280
600	680	490	480	470	470	450	450	420	410	400	390	390	380
<b>4008</b>													
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

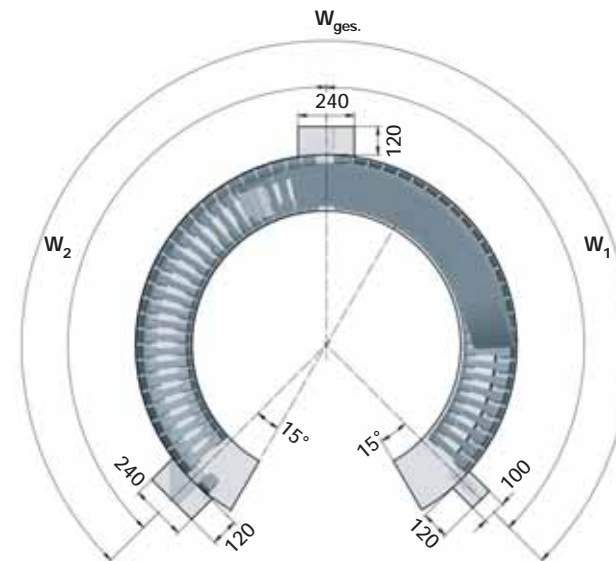


Construction height | H<sub>F</sub> depending on bending radius of twisterchain® Guide Trough

R [mm]	100	125	150	175	200	250	300	400
Series	H <sub>F</sub> 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 for 360° | W<sub>2</sub> angle of upper run [°] twisterchain® Guide Trough

AR [mm]	Series	R [mm]	100	125	150	175	200	250	300	400
W <sub>2</sub> Rotation angle [°]										
400	TC32/TC42/2808/3808	90°	90°	90°	90°	90°	90°	90°	90°	90°
500	TC32/TC42/2808/3808	90°	90°	90°	90°	90°	90°	90°	90°	90°
600	TC32/TC42/2808/3808	135°	135°	135°	135°	90°	90°	90°	90°	90°
650	TC42/TC56/4008	135°	135°	135°	135°	90°	90°	90°	90°	90°
750	TC42/TC56/4008	135°	135°	135°	135°	135°	135°	90°	90°	90°
850	TC42/TC56/4008	135°	135°	135°	135°	135°	135°	135°	135°	135°



Rotation angle | W<sub>1</sub> + W<sub>ges</sub>

W <sub>ges</sub> rotation angle System [°]	W <sub>1</sub> rotation angle of lower run trough [°]
90°	45°
180°	90°
270°	135°
360°	180°

i AR = Outer radius e-chain\* X<sub>1</sub> = Inner machine construction space W<sub>1</sub> = Angle of lower run  
 IR = Inner radius e-chain\* X<sub>2</sub> = Outer radius AR, incl. clearance W<sub>2</sub> = Angle of upper run  
 R = Bending radius H<sub>F</sub> = Total trough height W<sub>ges</sub> = 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

Delivery program | 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
TC42 / 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)



\*\*Base plate with strain relief

twisterband segment single part

4 sizes available

Some parts available with interior separation\*

Snap-open with film-hinge or to be opened with "easy"-design

\*\*Base with strain relief

## twisterband: compact, modular and cost-effective

### Rotary movements in minimum space - 20 times around its own axis

With the very compact igus® twisterband rotations can be implemented economically and with low wear and low maintenance in a confined space. Energy data and media are kept secure.

- 4 sizes available
- Rotary movements up to 7000° (Installation position, vertical: up to 3.000°, horizontal: 7.000° and more possible)
- Rotary speeds up to 360°/s possible
- Compact, modular and lightweight
- Ribbons can be shortened easily
- Minimum installation space, builds very close around the rotary axis
- Can be reliably used in various installation positions (horizontal or vertical)
- Cost-effective
- Easy filling
- chainflex® cables in very limited spaces

### Typical industries and applications

- Cable reels ● Robots (robot arms, 1/6 axis, scara robots) ● Tooling machines ● Leisure rides ● Medical equipment ● Radar and telescope equipment ● Aerospace, test, measurement, handling, lifting and installation equipment ● Wind turbines (e.g. blade adjustment) ● Wherever rotary unions are used



\*\*Bases and base plates are delivered by standard. They are part of the twisterband-module!

Series	Inner height hi (mm)	Inner width Bi (mm)	X <sub>1</sub> (mm)	X <sub>2</sub> (mm)	R min. (mm)	R max. (mm)	Interior separation	Opening principle	Page
TB12.23.09.X.01.0	9	23	40	140	24	35	-	"easy"-design	612
TB20.44.12.X.01.0	12	44	50	220	34	57	-	"easy"-design	612
TB20.44.18.X.01.0	18	44	50	220	34	57	yes	film-hinge	612
TB30.75.22.X.01.0	22	75	90	330	44	77	yes	film-hinge	612

More sizes available upon request! X<sub>1</sub> = Inner machine construction space X<sub>2</sub> = Outer machine construction space



**twisterband**  
Rotary movements in minimum space - 20 times around its own axis  
Installation position, vertical: up to 3.000°, horizontal: 7.000° and more possible

## twisterband Features



An axis is to be centrally installed for angles of rotation from 1500° rotary and horizontal



360°... 3000°

Max. rotation angle: As a rule of thumb: Each section gives 180° = 360° more rotation



Film hinge: Easy access and quick filling with cables and hoses (TB20.44.18. / TB30.75.22.)



igus® twisterband: Minimum installation space, builds very close around the rotary axis



Compact, modular, economical - up to 7.000° rotary\* motions in smallest spaces (\*Installation position, vertical: up to 3.000°, horizontal: 7.000° and more possible)



Can be reliably used in various installation positions (horizontal: 7.000° and more possible). Limited length compensation possible



twisterband | Snap-open with film-hinge or with "easy"-principle

Part No. twisterband	Inner width <i>Bi</i> [mm]	Inner height <i>hi</i> [mm]	<i>X</i> <sub>1</sub> [mm]	<i>X</i> <sub>2</sub> [mm]	<i>R min.</i> [mm]	<i>R max.</i> [mm]	Opening principle	<i>d1</i> [mm]
TB12.23.09.X.01.0	23	9	40	140	24	35	easy-principle	7
TB20.44.12.X.01.0	44	12	50	220	34	57	easy-principle	9
TB20.44.18.X.01.0	44	18	50	220	34	57	film-hinge	14
TB30.75.22.X.01.0	75	22	90	330	44	77	film-hinge	17

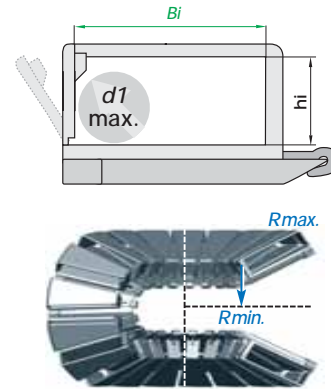
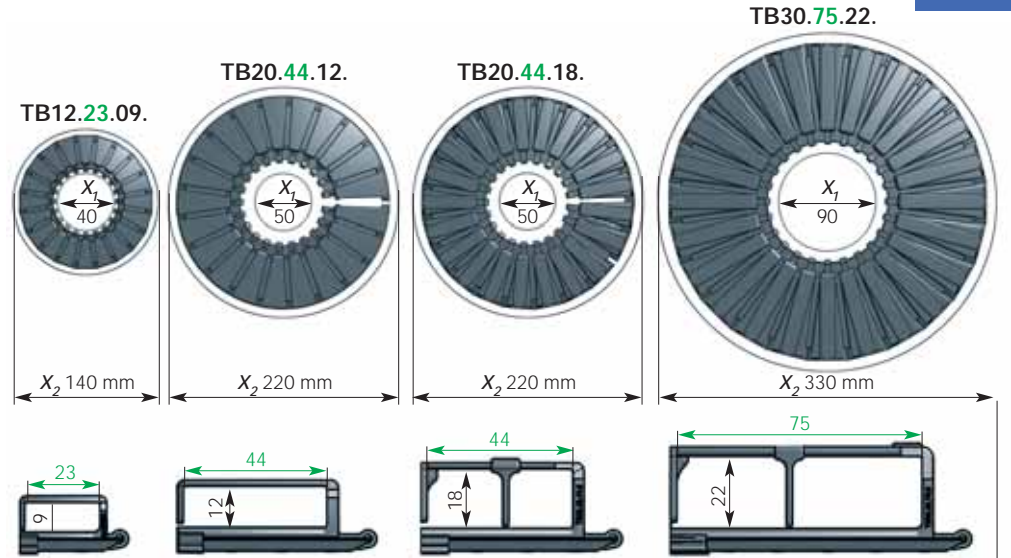
\*Bases and base plates are delivered by standard. They are part of the twisterband-module! more twisterband sizes upon request!  
Supplement Part No. with required number of ribbons *X* (see calculation box) e.g. TB20.44.12.6.01.0

**igus® e-spool - The alternative to cable drums.**  
Cable-friendly and guides various media safely

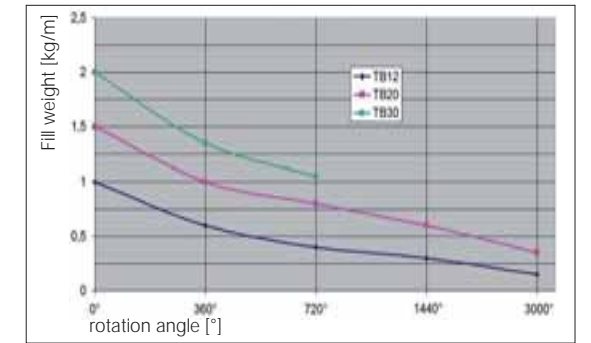
Guide many different cables in very narrow spaces. e-spool uniquely combines two different energy supply systems: One standard e-chain\* is guided by a roller and provides at any time the right length and tension of the energy supply system through an integrated retaining spring. In the starting position the e-chain\* is entirely rolled up to save space. The twisterband connects the roller with the shaft block, which serves as an interface to the permanently laid cables.

- Different media and diameters in the same drum are feasible
- Energy supply in all directions is possible (horizontal, vertical, diagonal ... all possible with one e-chain\*)
- Space-saving, no "chain junction"
- No lower run is left behind, the paths remain free
- For cable diameters up to 16 mm

Further information ► [www.igus.co.uk/en/e-spool](http://www.igus.co.uk/en/e-spool) Delivery time: upon request



Additional loads depending of the rotation angle



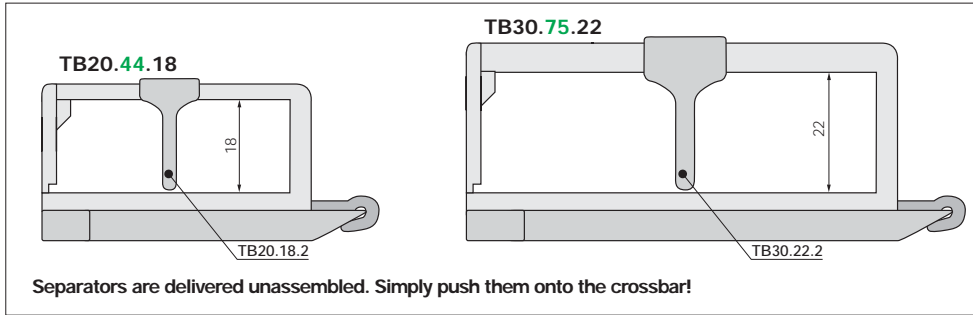
**Calculation: Number of ribbons depending on rotation angle**  
(please always round up number of ribbons)

TB12:  $X \approx \frac{\text{Rotation angle}}{360} + 2$  = Example:  $X \approx \frac{1200}{360} + 2$  = result: ***X* ≈ 6 ribbons**

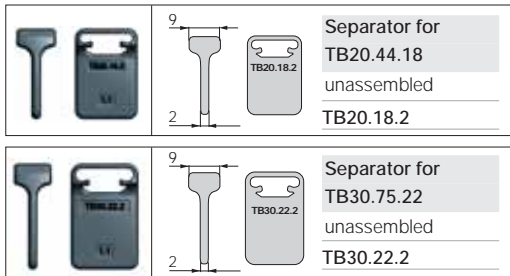
TB20:  $X \approx \frac{\text{Rotation angle}}{340} + 2$  = Example:  $X \approx \frac{1200}{340} + 2$  = result: ***X* ≈ 6 ribbons**

TB30:  $X \approx \frac{\text{Rotation angle}}{180} + 6$  = Example:  $X \approx \frac{1200}{180} + 6$  = result: ***X* ≈ 13 ribbons**

**i** *Bi* = Inner width e-chain\*    *X*<sub>1</sub> = Inner machine construction space    *R min.* = Min. bending radius    *d1* = Max. cable diameter  
*hi* = Inner height e-chain\*    *X*<sub>2</sub> = Outer machine construction space    *R max.* = Max. bending radius    *X* = Number of ribbons



Separators are delivered unassembled. Simply push them onto the crossbar!

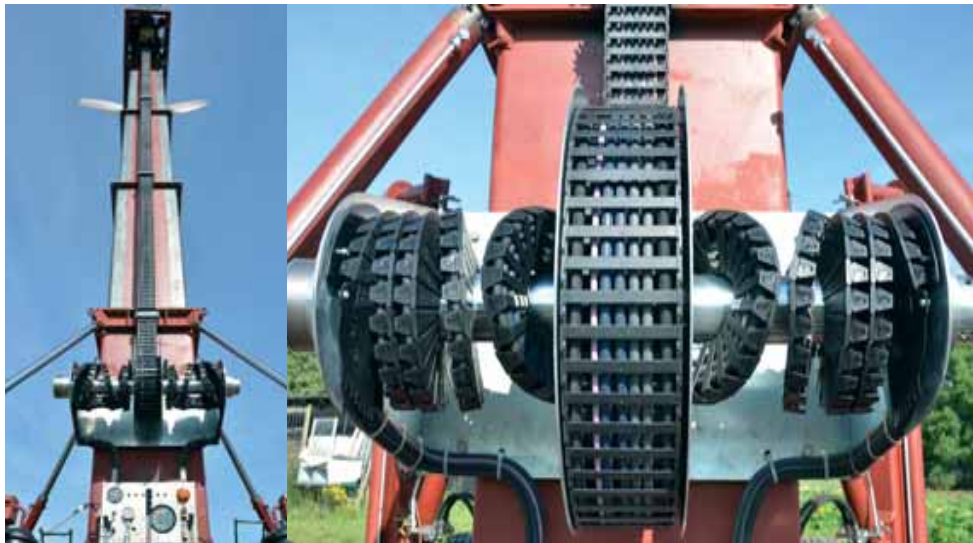


**Separators**

For Series TB20 with an inner height of 18 mm and Series TB30 (inner height: 22 mm). For installation simply open the e-chain\*, insert a cable and push the separator onto the crossbar. Then add more cables. The separators provide a clear, cablefriendly interior separation.

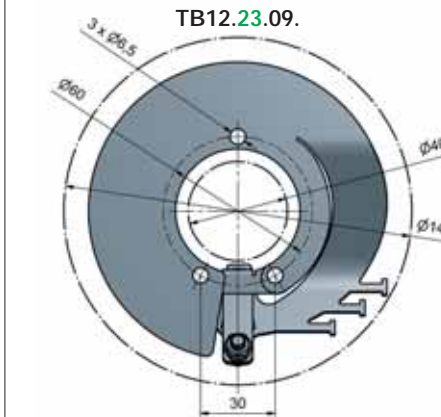


Easy opening and filling of the twisterbandes with a click or with the "easy"-principle. Simply push separators on and add more cables. The separators provide a clear, cable-friendly interior separation.

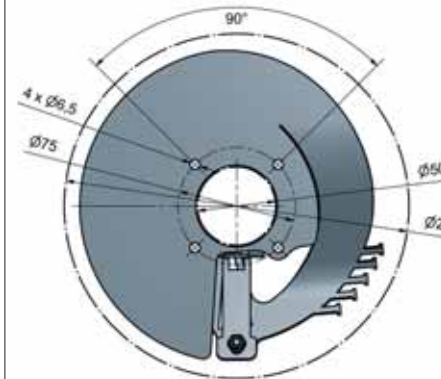


igus® e-spool in a telescoping wind shield machine ► [www.igus.co.uk/en/windshildmachine](http://www.igus.co.uk/en/windshildmachine)

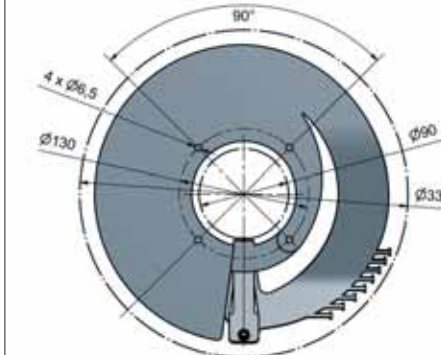
Dimensions - base / base plate made of steel with strain relief for the following Series:



**TB20.44.12. / TB20.44.18.**



**TB30.75.22.**



Base and base plate are delivered by standard. They are part of the twisterband-module!



twisterband application of two systems mounted above one another. This space-saving solution allows double filling space with a constant outer diameter of the system