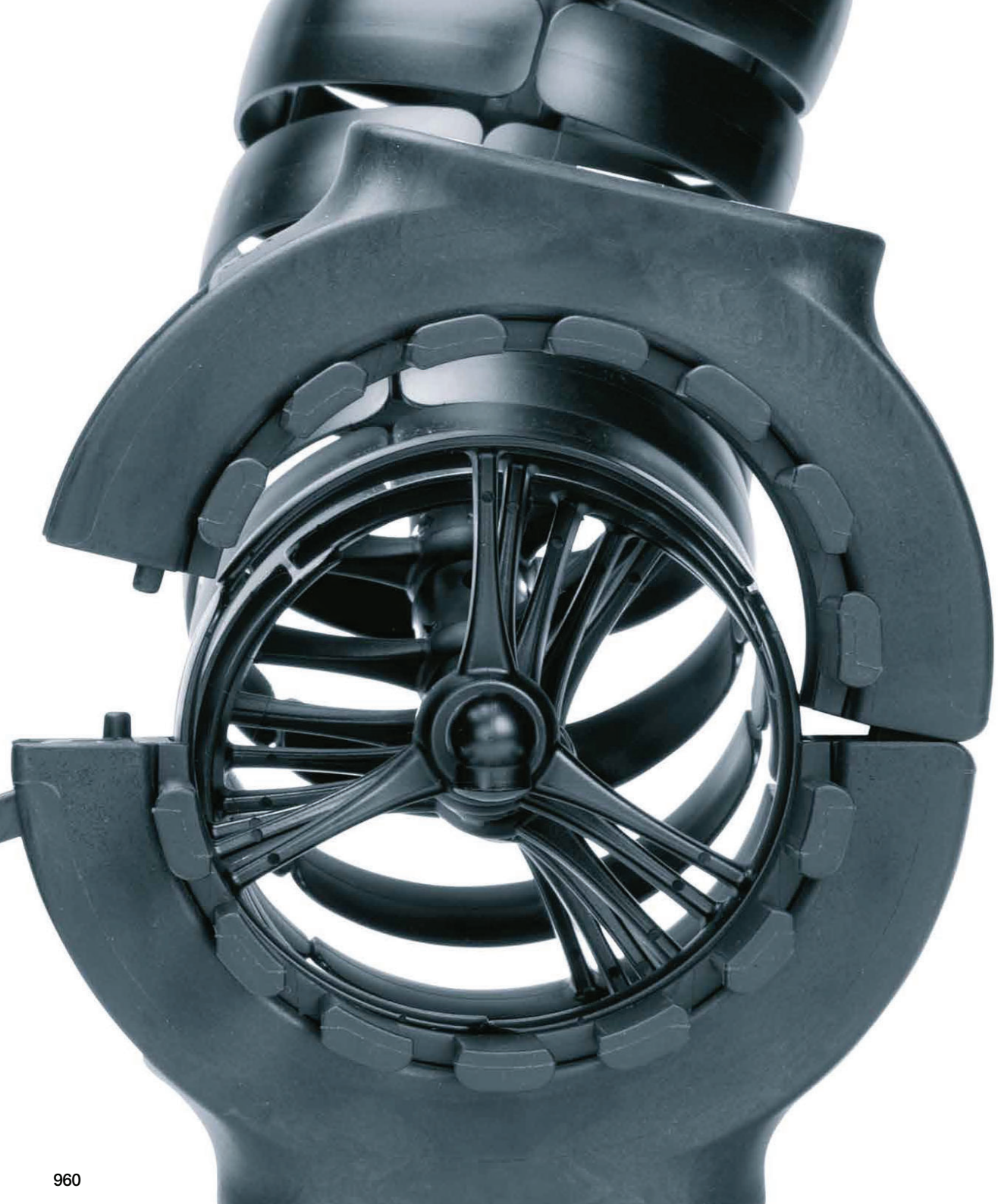


triflex® R

For multi-axis movements and robots

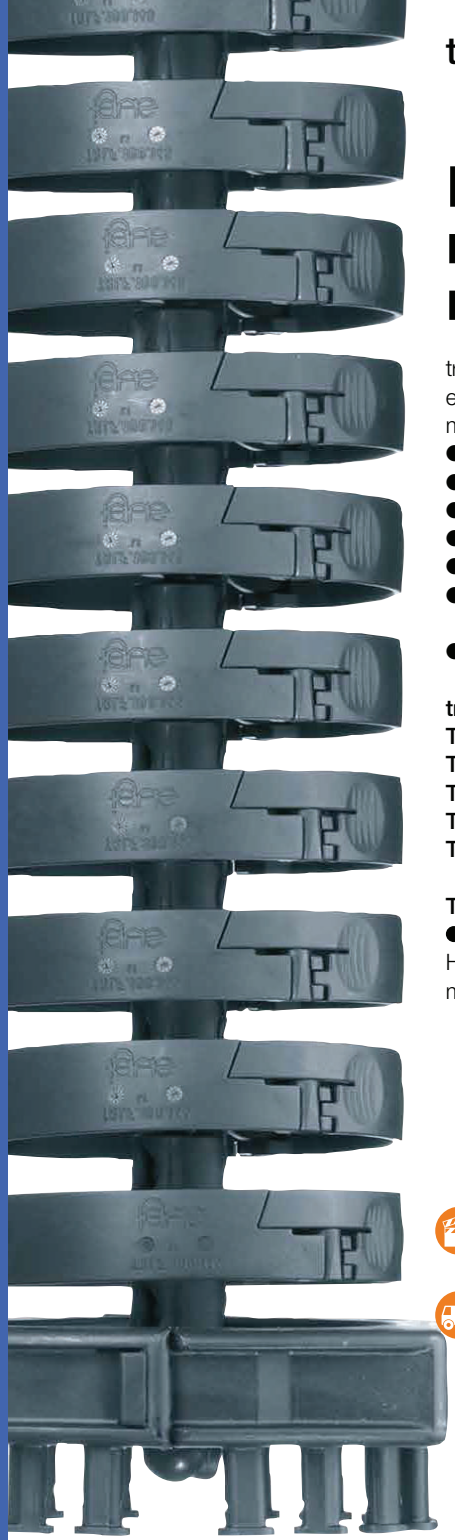
triflex® R advantages:

- For the most demanding multi-axis applications on industrial robots
- Defined torsion stop-dog
- Defined minimum bend radius
- Easy to lengthen and shorten
- Small bend radii and short pitch
- Fillable from the outside

When to use another 3D e-chain® series:

- For circular movements with high loads

► **twisterchain system, page 1086**



For multi-axis movements and robots - triflex® R

triflex® R (R for "round") is the third generation of multi-axis igus® e-chains®. The key design characteristics of igus® triflex® R have made this product very successful in the robot industry.

- Defined torsion stop-dog on each e-chain® link
- Defined minimum bend radius
- High tensile strength ball and socket joint
- Compact retraction system options to prevent loop formation
- Fibre-rod option for partial directional control and reinforcement
- No extra support elements required e.g. steel cables, spring suspensions etc.
- Wide range of accessories

triflex® R available in 5 versions from stock

TRC	closed design with smooth and robust exterior
TRE	"easy" design, easy to fill from outside
TRCF	closed design with snap lock mechanism
TRL	very lightweight, with "easy" design
TRLF	light version with snap lock mechanism

Typical industries and applications

● The first choice for multi-axis robots ● Machine tools ● Handling machines - 6-axis ● Conveyor systems ● Packaging machines ● General mechanical engineering, etc.

Assembly video available online at
► www.igus.eu/triflexR_assembly

Available from stock. Ready to ship in 24 - 48hrs.*
*Average time before the ordered goods are dispatched.

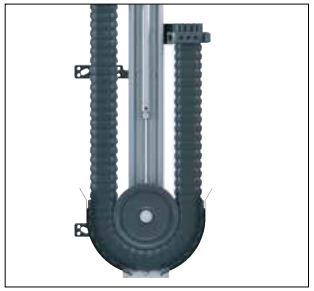
The defined torsion stop ensures an even distribution of the torsional load across the entire length

A tough, bend radius stop-dog actively prevents cables and hoses from kinking

Interior separation: two or three chamber design for reliable cable guidance

Openable - series TRCF and TRLF have snap lock mechanism for easy filling

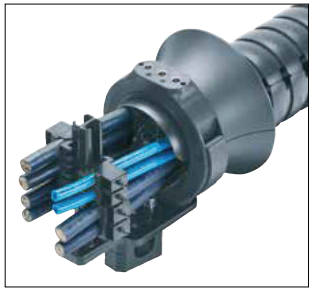
Tensile strength is absorbed directly by the e-chain® - no additional supports are necessary



4 retraction system options available to prevent formation of loops in the robot's working area

Standard and light mounting brackets available with or without integrated strain relief. Some versions available in ESD material, from stock

Mounting brackets options with gliding feed-through and swivel bearing. Bearing with a maintenance-free igubal® ball and socket joint

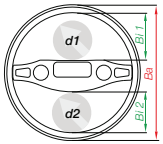
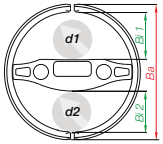
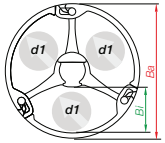


Various heavy duty and compact connections and quick-change units are available

Serie TRC - electrically conductive ESD e-chains® - several series available from stock

UL94-V2 classification

iF product design award
2004 for igus® series TRC
2007 for igus® series TRL
2013 for igus® series TRLF

Series	Inner width		Outer width	Bend radius	Max. cable ø		Pitch	Links	Page
	Bi1 [mm]	*Bi2* [mm]	*Ba* [mm]	*R* [mm]	*d1* [mm]	*d2* [mm]	[mm]	per m	
 **Series TRC - enclosed design** chip protection, smooth outer contour 									
TRC.30	12	10	34.5	050	10	8	11.3	89	968
TRC.40	15	13	43	058	13	11	13.9	72	968
TRC.50	18.8	16.2	54	080	16.5	14	17.4	58	968
TRC.60	22.5	19.5	65	087	20.5	17.5	20.4	49	968
TRC.70	28	24	81	110	26	22	25.6	39	968
TRC.85	33	28	94.5	135	31	26	30.6	33	968
TRC.100	37.5	32.5	108	145	35.5	30.5	34.5	29	968
TRC.125 [1]	43.3	43.3	135	182	41	41	44.1	23	968
 **Series TRE - "easy" design** very easy to fill, cables are simply pushed in 									
TRE.30	12	10	34.5	050	10	8	11.3	89	970
TRE.40	15	13	43	058	13	11	13.9	72	970
TRE.50	18.8	16.2	54	080	16.5	14	17.4	58	970
TRE.60	22.5	19.5	65	087	20.5	17.5	20.4	49	970
TRE.70	28	24	81	110	26	22	25.6	39	970
TRE.85	33	28	94.5	135	31	26	30.6	33	970
TRE.100	37.5	32.5	108	145	35.5	30.5	34.5	29	970
TRE.125 [1]	43.3	43.3	135	182	41	41	44.1	23	970
 **Series TRCF - closed design with snap lock mechanism** chip protection, smooth outer contour 									
TRCF.65	22.3	–	70.2	100	20	–	23.1	44	972
TRCF.65 [3]	22.3	–	70.2	200	20	–	23.1	44	972
TRCF.85	30	–	94.5	135	28	–	30.6	33	972
TRCF.85 [3]	30	–	94.5	240	28	–	30.6	33	972
TRCF.100	34.3	–	108	145	32	–	34.5	29	972

1) Max. cable diameter Ø 41mm. Max. cable diameter changes to Ø 36 mm, if lengthening or shortening an already populated triflex® R

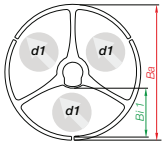
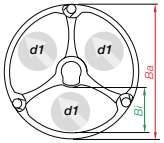
2) TRL 30 with 2-chamber design

3) Special size with larger bend radius and a special range of accessories

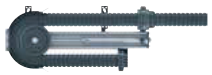
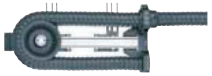
Available from stock. Ready to ship in 24 - 48hrs.*

*Average time before the ordered goods are dispatched.

triflex® R | Selection table

Series	Inner width		Outer width	Bend radius	Max. cable ø		Pitch	Links	Page
	Bi1 [mm]	*Bi2* [mm]	*Ba* [mm]	*R* [mm]	*d1* [mm]	*d2* [mm]	[mm]	per m	
 **Series TRL - light version with the "easy"-design** easy to fill and cost-effective 									
TRL.30 [2]	12.5	11	34.5	050	10	8	11.3	89	974
TRL.40	15	–	45	058	13	–	13.9	72	974
TRL.60	23	–	65	087	20.5	–	20.4	49	974
TRL.70	28	–	81	110	26	–	25.6	39	974
TRL.100	38	–	108	145	35.5	–	34.5	29	974
 **Series TRLF - light version with snap lock mechanism** lightweight and cost-effective 									
TRLF.65	24.4	–	70.2	100	22	–	23.1	44	976
TRLF.85	32.8	–	94.5	135	30	–	30.6	33	976
TRLF.100	37.5	–	108	145	35.5	–	34.4	29	976
TRLF.125	46.8	–	135	182	44.5	–	44.1	23	976

triflex® R retraction system | Overview

Series triflex® R	System triflex® R	For triflex® R e-chains®	For ø Index [mm]	Page
	**RS** modular retraction system	TRC·TRE	40 - 100	1010
	**RSP** pneumatic retraction system	TRC·TRE·TRCF	60 - 125	1018
	**RSE** cost-effective retraction system with deflection	TRC·TRE	40 - 50	1026
	**RSE·RSEC*** **linear** compact retraction system	TRC·TRE·TRCF	40 - 100	1034
	**RSEL*·RSSL*** linear, cost-effective retraction system *New in this catalogue	TRC·TRE·TRCF	60 - 100	1044

Technical data

Speed / acceleration	upon request
Material - permitted temperature °C, igumid G (TRLF/TRCF)	**-40°C / +120°C**
Material - permitted temperature °C, igumid NB (TRC/TRE/TRL)	**-40°C / +80°C**
Flammability class, igumid G (TRLF/TRCF)	**VDE 0304 IIC UL94-HB**
Flammability class, igumid NB (TRC/TRE/TRL)	**VDE 0304 IIC UL94-V2**

Reduce installation times with easy-to-use disassembly tools

Easy-to-use disassembly tools for triflex® TRE (B version) and TRCF. Easy disassembly at any point along the e-chain®, even when full.

More information
▶ www.igus.eu/triflex_B_disassemblytool

Assembly video available online at
▶ www.igus.eu/triflexR_assembly

For series TRE.B	Part No. Disassembly tool
TRE.40.B	MAT0050175
TRE.50.B	MAT0051190
TRE.60.B / TRE.70.B	MAT0051135
TRE.85.B	MAT0050170
TRE.100.B	MAT0050172

For series TRE.B	Part No. Disassembly tool
TRCF.65	MAT0051135
TRCF.85	MAT0050170
TRCF.100	MAT0050172

igus® triflex® R TRLF - light version, easily openable by hand or with a screwdriver

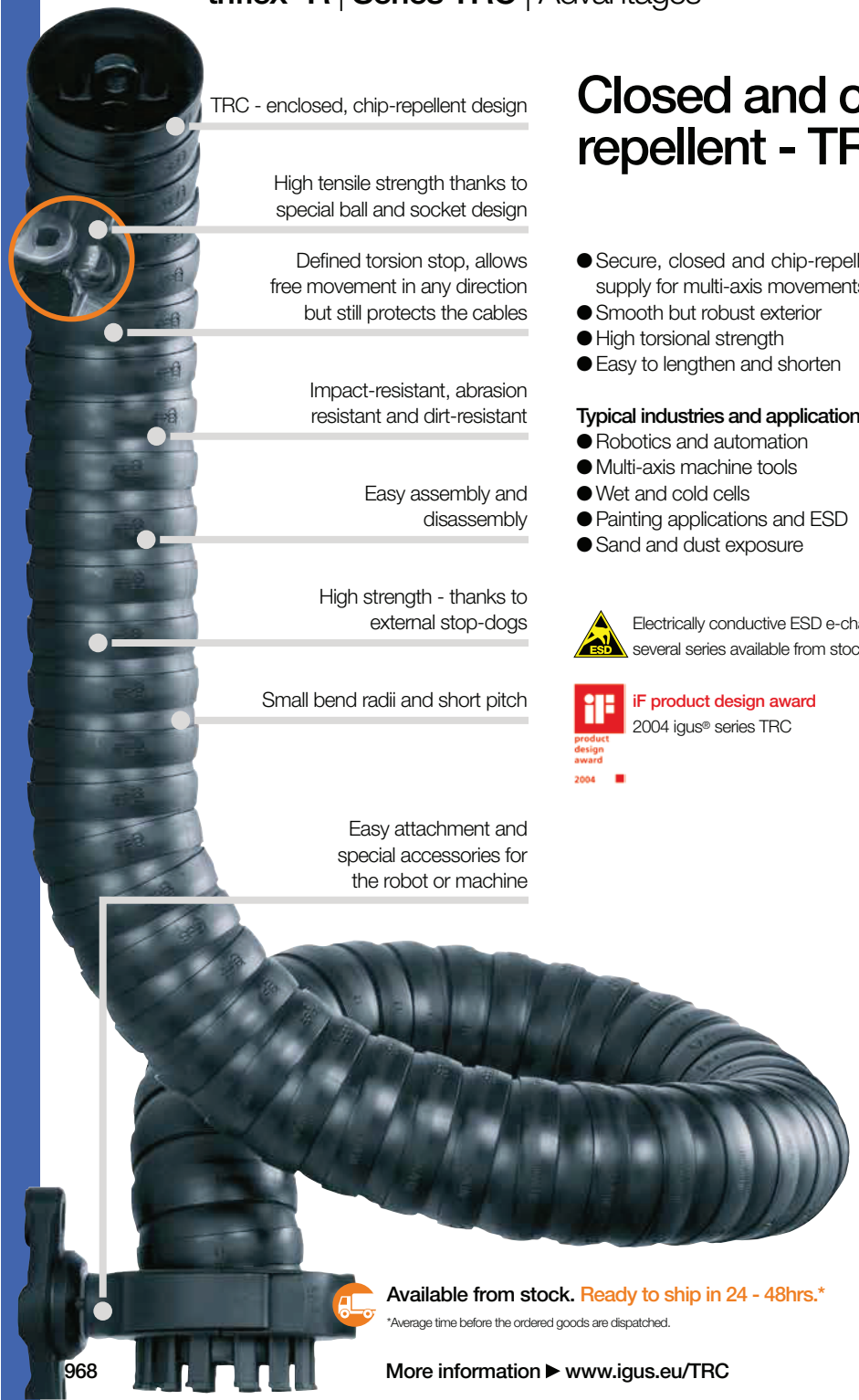
igus® triflex® R TRCF - closed version, openable with a screwdriver

triflex® RS for a low profile retraction system. Integrated fibre rods generate the directed pretension so that loops do not form in the working area

Pneumatic retraction system triflex® RSP - prevents loop forming on the robot

triflex® TR.RSE.40.L or R, cost-effective and lightweight retraction system with deflection roller, for small robots

TR.RSE linear retraction system for triflex® R, sizes 40-125



Closed and chip-repellent - TRC

- Secure, closed and chip-repellent energy supply for multi-axis movements
- Smooth but robust exterior
- High torsional strength
- Easy to lengthen and shorten

Typical industries and applications

- Robotics and automation
- Multi-axis machine tools
- Wet and cold cells
- Painting applications and ESD
- Sand and dust exposure

Electrically conductive ESD e-chains® - several series available from stock

iF product design award
2004 igus® series TRC

Available from stock. Ready to ship in 24 - 48hrs.*
*Average time before the ordered goods are dispatched.

More information ▶ www.igus.eu/TRC

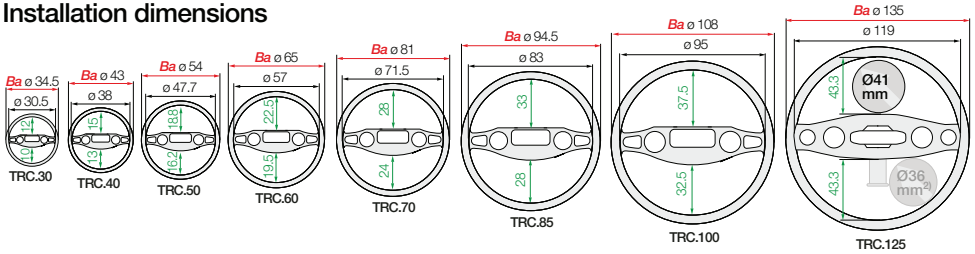
e-tubes | Series TRC | Totally enclosed, non-openable

Part No. e-tubes	Bi1 [mm]	Bi2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links per 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.50. 080.0	18.8	16.2	54	080	16.5	14	17.4	58	≈ 0.59
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	43.3	43.3	135	182	41	41 1)	44.1	23	≈ 4.70

▲ ESD version (Electro Static Discharge) available from stock. More information ▶ **From page 142**

1) TRE.125 max. cable diameter Ø 41mm. Max. cable diameter changes to Ø 36mm when an already populated e-chain needs to be shortened or lengthened

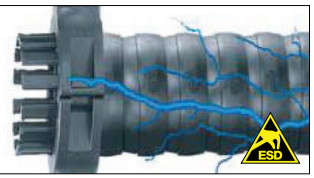
Installation dimensions



ESD - many sizes from stock

- Standardised product made from igumid ESD
- ESD material tested for over 10 million cycles for the toughest requirements
- Short delivery times including mounting brackets and interior separation; 24hrs, from stock

More information and the complete product range
▶ **From page 142 or at ▶ www.igus.eu/esd**



Easy to fill - simply press cables in - TRE

- Easy to fill energy supply for multi-axis movements
- High torsional strength
- Easy to shorten and lengthen
- **B version** - 4x increase in radial stability, allows larger torsion forces
- **C version and TRE.125** - fast assembly due to pin connection and spherical igubal® joint allowing 50% higher tensile forces

Typical industries and applications

- Robotics and automation
- Spot welding and pick and place applications
- When fast cable replacement is required

Electrically conductive ESD e-chains® upon request

Save time - easy disassembly tool available for triflex® R

TRE - very easy to fill, cables are simply pushed in

Available from stock. Ready to ship in 24 - 48hrs.*

*Average time before the ordered goods are dispatched.

More information ▶ www.igus.eu/TRE

e-chains® | Series TRE | "easy" design - simply press cables in

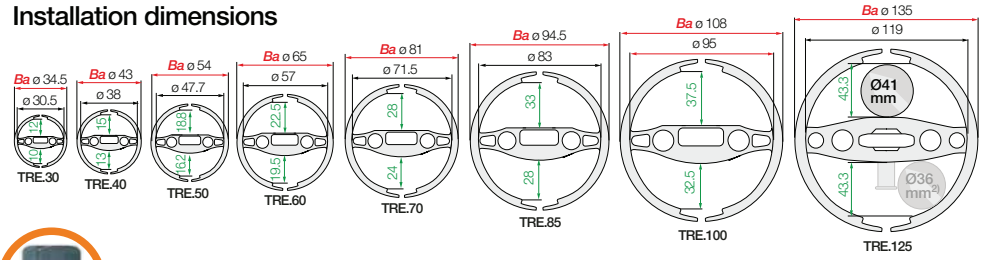
Part No. e-chains®	Bi1 [mm]	Bi2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links per m	Weight [kg/m]
TRE.30. 050.0.B	12	10	34.5	050	10	8	11.3	89	≈ 0.26
TRE.40. 058.0.B	15	13	43	058	13	11	13.9	72	≈ 0.36
TRE.50. 080.0.B	18.8	16.2	54	080	16.5	14	17.4	58	≈ 0.56
TRE.60. 087.0.B	22.5	19.5	65	087	20.5	17.5	20.4	49	≈ 0.83
TRE.70. 110.0.B	28	24	81	110	26	22	25.6	39	≈ 1.30
TRE.85. 135.0.B	33	28	94.5	135	31	26	30.6	33	≈ 1.67
TRE.100.145.0.B / C 1)	37.5	32.5	108	145	35.5	30.5	34.5	29	≈ 2.35
TRE.125.182.0	43.3	43.3	135	182	41	41 2)	44.1	23	≈ 4.40

B-Series = 4-x higher torsion forces **C-Series** = quick assembly, 50% higher forces

1) Available as **C-Version** Part No. **TRE.100.145.0.C**

2) TRE.125: max. cable diameter Ø 41mm. Max. cable diameter changes to Ø 36mm when an already populated e-chain needs to be shortened or lengthened TRE.LOCK

Installation dimensions

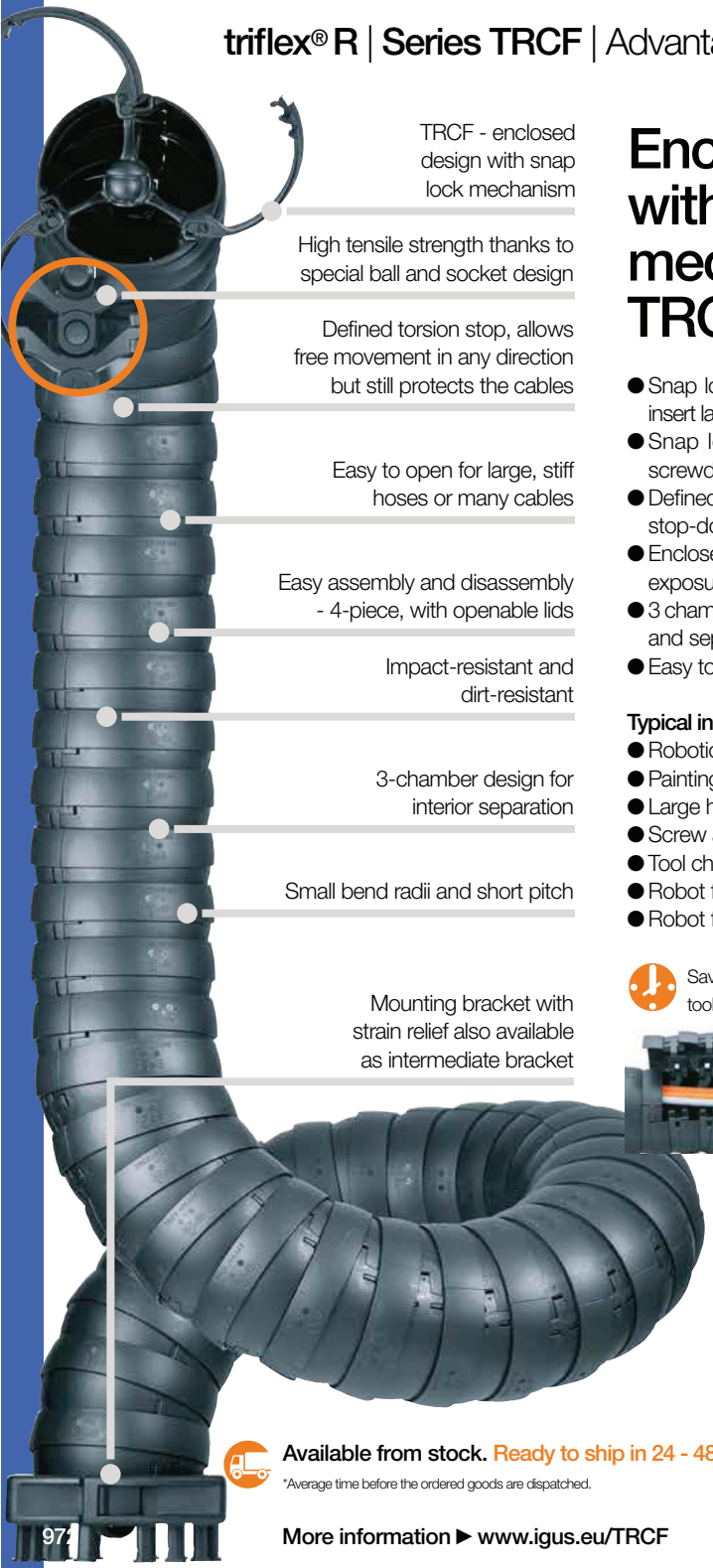


TRE locking clips

Clips for a secure fit in the mounting bracket. Supplied with every mounting bracket. Please use the Part No. on the right for reordering individual parts.

Part No. as an individual part	Size [mm]
MAT0072125	30/40
MAT0074101	50/60
MAT0072126	70/85

Part No. as an individual part	Size [mm]
MAT0072127	100
MAT0072128	125



Enclosed design with snap lock mechanism - TRCF

- Snap lock mechanism for fast opening to insert large cables or hoses
- Snap lock mechanism openable with a screwdriver
- Defined minimum bend radius and torsion stop-dog for optimum cable protection
- Enclosed version, for use with dirt and chip exposure
- 3 chamber design for ideal cable distribution and separation
- Easy to lengthen and shorten

Typical industries and applications

- Robotics and automation
- Painting applications
- Large hydraulic hoses
- Screw and rivet feeds
- Tool changer applications
- Robot for laser welding
- Robot for screw and rivet applications

Save time - easy disassembly tool available for triflex® R

Flip open, insert cable, and close snap lock mechanism - then ready to run!

Available from stock. Ready to ship in 24 - 48hrs.*

*Average time before the ordered goods are dispatched.

More information ▶ www.igus.eu/TRCF

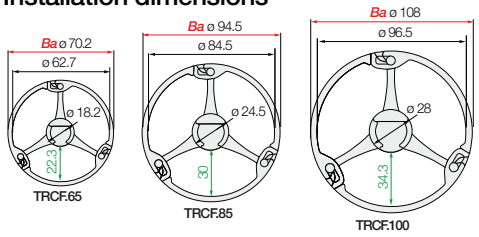
e-tubes | Series TRCF | Fully enclosed design, with snap lock mechanism

Part No. e-tubes	Bi1 [mm]	Ba [mm]	R [mm]	d1 [mm]	Pitch [mm]	Links per m	Weight [kg/m]
TRCF.65 100.0	22.3	70.2	100	20	23.1	44	≈ 1.10
TRCF.65 200.0 1)	22.3	70.2	200	20	23.1	44	≈ 1.10
TRCF.85. 135.0	30	94.5	135	28	30.6	33	≈ 2.10
TRCF.85. 240.0 2)	30	94.5	240	28	30.6	33	≈ 2.10
TRCF.100.145.0	34.3	108	145	32	34.5	29	≈ 2.70

1) Special size Part No. **TRCF.65.200.0** with 200mm bend radius and a range of accessories

2) Special size Part No. **TRCF.85.240.0** with 240mm bend radius and a range of accessories

Installation dimensions



Snap lock mechanism for fast opening, video online ▶ **www.igus.eu/TRLFlip**

Special sizes with larger bend radius

- The large bend radii 200/240mm increase the service life of laser light cables by preventing kinks
- Special range of accessories available
- Special sizes Part No. **TRCF.65.200.0** and **TRCF.85.240.0**

More information ▶ www.igus.eu/TRCF

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

High tensile strength thanks to special ball and socket design

Defined torsion stop, allows free movement in any direction but still protects the cables

"Easy" design for fast filling with cables and hoses

Easy assembly and disassembly

Extremely lightweight due to one-piece design

Small bend radii and short pitch

Mounting bracket with strain relief also available as intermediate bracket

Lightweight and cost-effective - TRL

- Very easy to fill
- Multi-axis e-chain® for simple applications
- Easy to lengthen and shorten

Typical industries and applications

- Robot axes 1-3
- Non-robotic applications
- Bundling cables for operator controls
- Filament feeds on 3D printers
- Office applications

iF product design award
2007 igus® Series TRL

Available from stock. Ready to ship in 24 - 48hrs.*

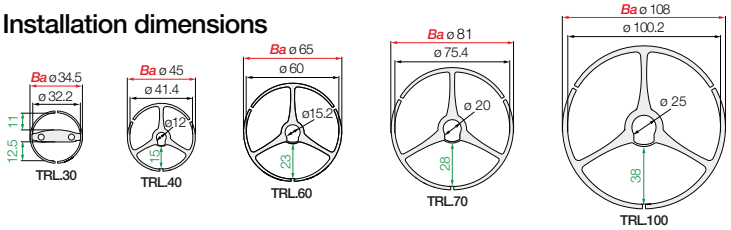
*Average time before the ordered goods are dispatched.

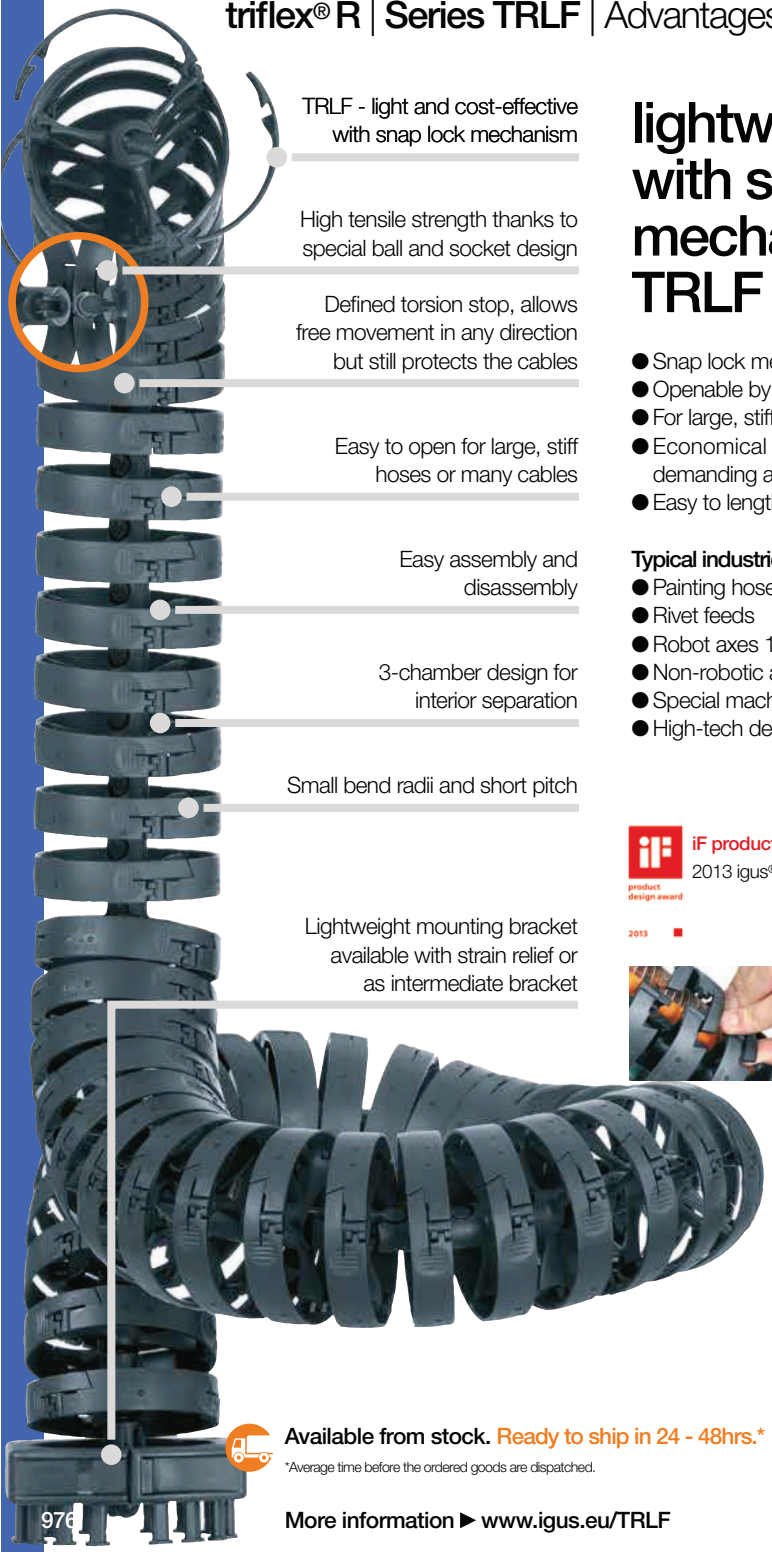
e-chains® | TRL series | Light version with "easy" design - simply press cables in

Part No. e-chains®	Bi1 [mm]	Bi2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links per m	Weight [kg/m]
TRL.30. 050.0 1)	12.5	11	34.5	050	10	8	11.3	89	≈ 0.26
TRL.40. 058.0	15	–	45	058	13	–	13.9	72	≈ 0.29
TRL.60. 087.0	23	–	65	087	20.5	–	20.4	49	≈ 0.49
TRL.70. 110.0	28	–	81	110	26	–	25.6	39	≈ 0.82
TRL.100.145.0	38	–	108	145	35.5	–	34.5	29	≈ 1.42

1) Only available with 2-chamber design

Installation dimensions





TRLF - light and cost-effective with snap lock mechanism

High tensile strength thanks to special ball and socket design

Defined torsion stop, allows free movement in any direction but still protects the cables

Easy to open for large, stiff hoses or many cables

Easy assembly and disassembly

3-chamber design for interior separation

Small bend radii and short pitch

Lightweight mounting bracket available with strain relief or as intermediate bracket

lightweight, with snap lock mechanism - TRLF

- Snap lock mechanism for fast opening
- Openable by hand or with a screwdriver
- For large, stiff hoses or many cables
- Economical multi-axis e-chain® for less demanding applications
- Easy to lengthen and shorten

Typical industries and applications

- Painting hoses
- Rivet feeds
- Robot axes 1-3
- Non-robotic applications
- Special machine construction
- High-tech design

iF product design award
2013 igus® series TRLF

Flip open, insert cable, and close snap lock mechanism - then ready to run!

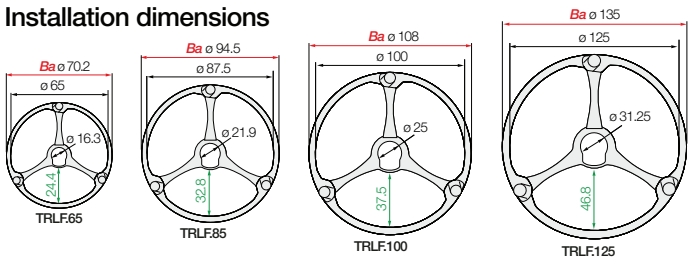
Available from stock. Ready to ship in 24 - 48hrs.*
*Average time before the ordered goods are dispatched.

More information ▶ www.igus.eu/TRLF

e-chains® | Series TRLF | Light version with snap lock mechanism

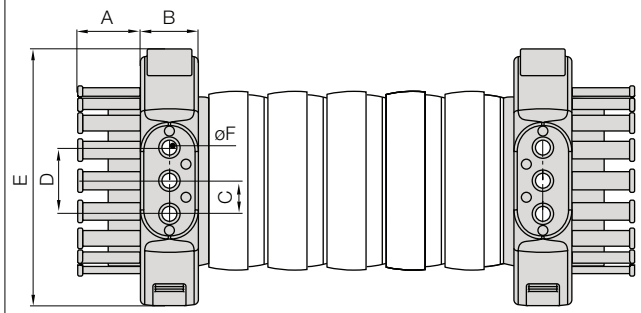
Part No. e-chains®	Bi1 [mm]	Ba [mm]	R [mm]	d1 [mm]	Pitch [mm]	Links per m	Weight [kg/m]
TRLF. 65. 100.0	24.4	70.2	100	22	23.1	44	≈ 0.79
TRLF. 85. 135.0	32.8	94.5	135	30	30.6	33	≈ 1.45
TRLF. 100.145.0	37.5	108	145	35.5	34.5	29	≈ 1.90
TRLF. 125.182.0	46.8	135	182	44.5	44.1	23	≈ 4.13

Installation dimensions



Snap lock mechanism for fast opening, video online
▶ www.igus.eu/TRLF

With integrated strain relief tiewrap plates
TR.40.01 - TR.100.01



- Recommended for TRC/TRE/TRCF, also compatible with TRL/TRLF
- Standard fixation onto the robot or machine, with strain relief

Standard mounting brackets | With strain relief

TR.40.01 - TR.100.01

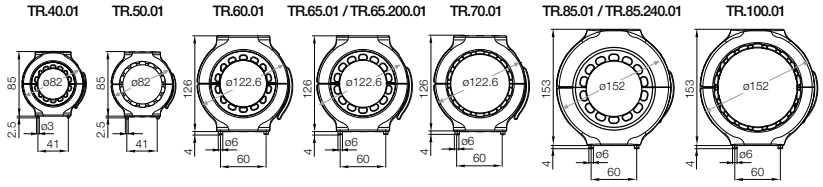
Ø Index		Part No. **with** strain relief	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
30.	▶	Alternative: light mounting bracket	–	–	–	–	–	–
40.	▶	**TR.40.01**.M6 1) 2)	17.8	21	13.5	27	84.5	6.5
50.	▶	**TR.50.01**.M6 1)	21	21	13.5	27	84.5	6.5
60.	▶	**TR.60.01**.M8 1) 2)	25	32	20	40	126	9
65.	▶	**TR.65.01**.M8 1)	25	32	20	40	126	9
65. (R 200)	▶	**TR.65.200.01**.M8 1) 4)	25	32	20	40	126	9
70.	▶	**TR.70.01**.M8 1) 2)	25	32	20	40	126	9
85.	▶	**TR.85.01**.M8 1)	38	35	20	40	155	9
85. (R 240)	▶	**TR.85.240.01**.M8 1) 4)	38	35	20	40	155	9
100.	▶	**TR.100.01**.M8 1)	38	35	20	40	155	9
125.	▶	Alternative: standard mounting bracket without strain relief						

Strain reliefs are for use on the fixed end and/or moving end.

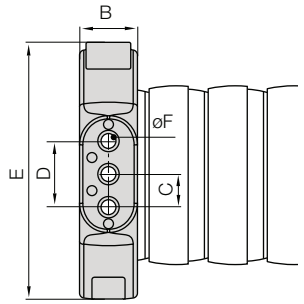
Standard: through holes in Ø F - 1) option: with threaded bushings, steel, M6/M8

2) ⚠ ESD version (Electro Static Discharge) available from stock. More information ▶ **From page 142**

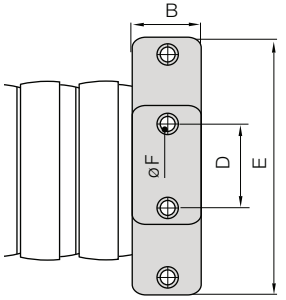
4) Only for special size with larger bend radius



Without strain relief, only for TR.40.02 - TR.100.02



Without strain relief, only for TR.125.02



- Recommended for TRC/TRE/TRCF, also compatible with TRL/TRLF
- Standard fixation onto the machine/robot, without strain relief
- Can also serve as intermediate bracket

Standard mounting brackets | Without strain relief

TR.40.02 - TR.100.02

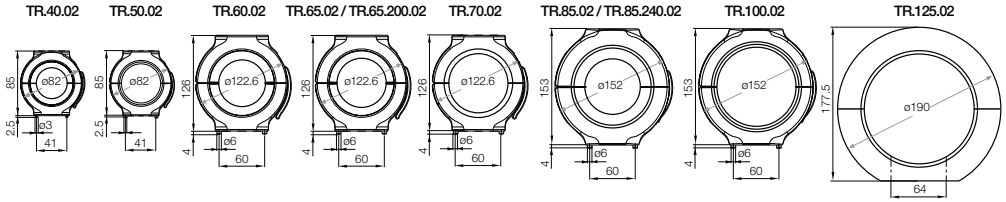
TR.125.02

Ø Index		Part No. **without** strain relief or as intermediate bracket	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
30.	▶	Alternative: light mounting bracket	–	–	–	–	–	–
40.	▶	**TR.40.02**.M6 1)	–	21	13.5	27	84.5	6.5
50.	▶	**TR.50.02**.M6 1)	–	21	13.5	27	84.5	6.5
60.	▶	**TR.60.02**.M8 1)	–	32	20	40	126	9
65.	▶	**TR.65.02**.M8 1)	–	32	20	40	126	9
65. (R 200)	▶	**TR.65.200.02**.M8 1) 4)	–	32	20	40	126	9
70.	▶	**TR.70.02**.M8 1)	–	32	20	40	126	9
85.	▶	**TR.85.02**.M8 1)	–	35	20	40	155	9
85. (R 240)	▶	**TR.85.240.02**.M8 1) 4)	–	35	20	40	155	9
100.	▶	**TR.100.02**.M8 1)	–	35	20	40	155	9
125.	▶	**TR.125.02**.M8 1)	–	40	–	64	190	9

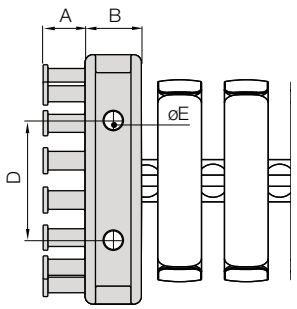
Standard: through holes in Ø F - 1) option: with threaded bushings, steel, M6/M8

2) ⚠ ESD version (Electro Static Discharge) available from stock. More information ▶ **From page 142**

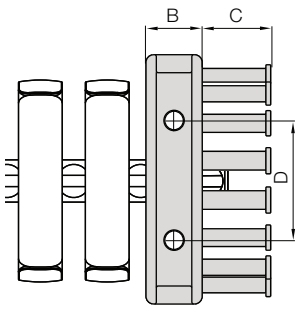
4) Only for special size with larger bend radius



Short strain relief
TL.30.01.Z1 - TL.100.01.Z1



Long strain relief
TL.40.01.Z2 - TL.100.01.Z2



- Recommended for TRL/TRLF, also compatible with TRC/TRE/TRCF
- Light fixation onto the machine/robot, with strain relief
- Options with long or short strain relief

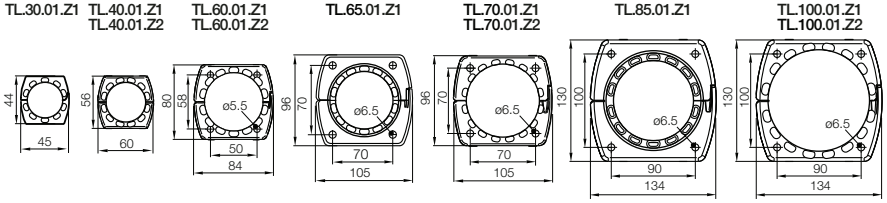
Light mounting brackets | With strain relief

TL.30.01.Z1 - TL.100.01.Z1

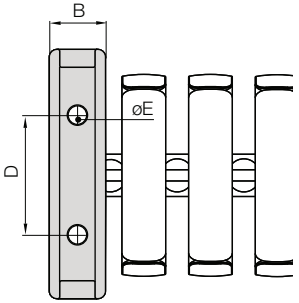
TL.40.01.Z2 - TL.100.01.Z2

Ø Index	Part No. with **short** strain relief	Part No. with **long** strain relief	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
30.	**TL.30.01.Z1**	–	12.5	13	–	24	4.5
40.	**TL.40.01.Z1** 1)	**TL.40.01.Z2**	12.5	14	20	36	5.8
50.	Alternative: standard mounting bracket		–	–	–	–	–
60.	**TL.60.01.Z1** 1)	**TL.60.01.Z2**	17	20	27	48	5.8
65.	**TL.65.01.Z1** 1)	–	13.5	27	–	64	6.5
65. (*R 200*)	Alternative: standard mounting bracket		–	–	–	–	–
70.	**TL.70.01.Z1** 1)	**TL.70.01.Z2**	17.5	27	27.5	64	6.5
85.	**TL.85.01.Z1**	–	26.5	30	–	64	6.5
85. (*R 240*)	Alternative: standard mounting bracket		–	–	–	–	–
100.	**TL.100.01.Z1** 1)	**TL.100.01.Z2**	22.5	30	42.5	64	6.5
125.	Alternative: standard mounting bracket		–	–	–	–	–

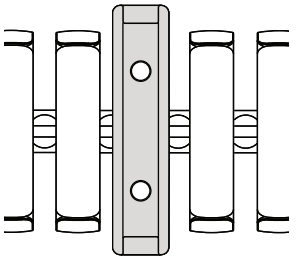
1) For moving end (ball) suitable only for series TRL/TRLF

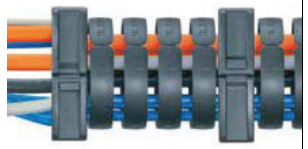


Without strain relief
TL.30.01.Z0 - TL.100.01.Z0



Intermediate bracket
TL.30.01.Z0 - TL.100.01.Z0



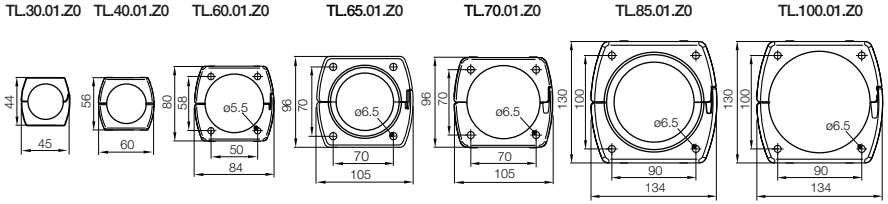


- Recommended for TRL/TRLF, also compatible with TRC/TRE/TRCF
- Light fixation onto the machine/robot, without strain relief
- Can also serve as intermediate bracket

Light mounting brackets | Without strain relief

TL.30.01.Z0 - TL.100.01.Z0

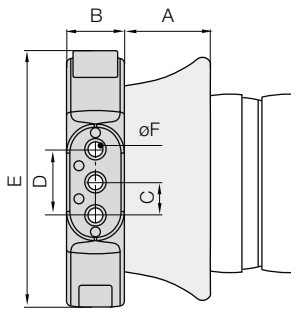
Ø Index	Part No. **without** strain relief or as intermediate bracket	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
30.	**TL.30.01.Z0**	–	13	–	24	4.5
40.	**TL.40.01.Z0**	–	14	–	36	5.8
50.	Alternative: standard mounting bracket	–	–	–	–	–
60.	**TL.60.01.Z0**	–	20	–	48	5.8
65.	**TL.65.01.Z0**	–	27	–	64	6.5
65. (*R 200*)	Alternative: standard mounting bracket	–	–	–	–	–
70.	**TL.70.01.Z0**	–	27	–	64	6.5
85.	**TL.85.01.Z0**	–	30	–	64	6.5
85. (*R 240*)	Alternative: standard mounting bracket	–	–	–	–	–
100.	**TL.100.01.Z0**	–	30	–	64	6.5
125.	Alternative: standard mounting bracket	–	–	–	–	–



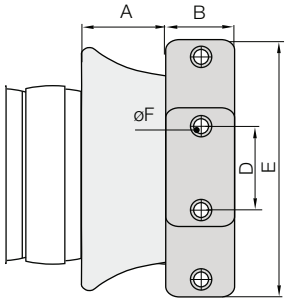
triflex® R | Series TRC·TRE·TRCF·TRL·TRLF | Accessories

Mounting brackets | With radius support

Mounting bracket with radius support, only for TR.40.09 - TR.100.09



Mounting bracket with radius support, only for TR.125.09



- The triflex® R radius support for triflex® R energy supply at the most highly stressed points (axis 6)
- Provides higher operational reliability for robotic applications

Mounting brackets | With radius support | For TRC·TRE·TRCF·TRL·TRLF

TR.40.09 - TR.100.09

TR.125.09

Ø Index		Part No. with radius support	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
30.	▶	–	–	–	–	–	–	–
40.	▶	**TR.40.09**.M6 1)	28	21	13.5	27	84.5	6.5
50.	▶	**TR.50.09**.M6 1)	38	21	13.5	27	84.5	6.5
60.	▶	**TR.60.09**.M8 1)	38	32	20	40	126	9
65.	▶	**TR.65.09**.M8 1)	45	32	20	40	126	9
65. (*R 200*)	▶	–	–	–	–	–	–	–
70.	▶	**TR.70.09**.M8 1)	43	32	20	40	126	9
85.	▶	**TR.85.09**.M8 1)	49	35	20	40	155	9
85. (*R 240*)	▶	–	–	–	–	–	–	–
100.	▶	**TR.100.09**.M8 1)	67	35	20	40	155	9
125.	▶	**TR.125.09**.M8 1)	72	40	–	64	190	9

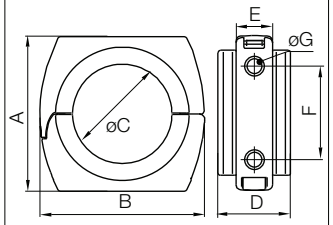
Standard: through holes in Ø F

1) Option: with threaded bushings, steel, M6/M8

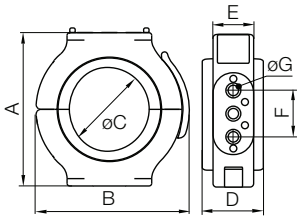
triflex® R | Series TRC·TRE·TRCF | Accessories

Gliding feed-throughs

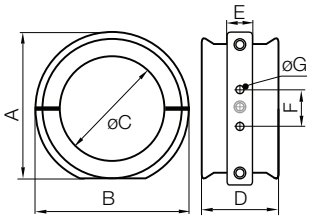
Gliding feed-through, only for TL.30.05



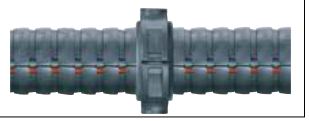
Gliding feed-through, only for TR.40.05 + TR.60-85.05



Gliding feed-through, only for TR.50.05 + TR.100.05-TR.125.05



- The gliding feed-through enables easy guidance of the e-chain® and can also be used as an additional guide
- Gliding feed-through with swivel bearing ▶Page 986



Gliding feed-through | For TRC·TRE·TRCF

TL.30.05

TR.40.05 + TR.60-85.05

TR.50.05 + TR.100.05 - TR.125.05

Ø Index		Part No. Gliding feed-through	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
30.	▶	**TL.30.05**	56	60	36	28	14	36	5.8
40.	▶	**TR.40.05**.M6 1)	85	84.5	46	32	21	27	6.5
50.	▶	**TR.50.05**.M6 1)	96	102	58	67	21	27	6.5
60.	▶	**TR.60.05**.M8 1)	126	126	70	50	32	40	9
65.	▶	**TR.65.05**.M8 1)	126	126	75	75	32	40	9
65. (*R 200*)	▶	**TR.65.05**.M8 1)	126	126	75	75	32	40	9
70.	▶	**TR.70.05**.M8 1)	153	155	86	70	35	40	9
85.	▶	**TR.85.05**.M8 1)	153	155	100	84	35	40	9
85. (*R 240*)	▶	**TR.85.05**.M8 1)	153	155	100	84	35	40	9
100.	▶	**TR.100.05**.M8 1) *	162.5	169.5	115	85	28	40	8.5
125.	▶	**TR.125.05**.M8 1)	179	190	142	84	40	64	9

*TR.100.05 with 3 holes

Standard: through holes in Ø G

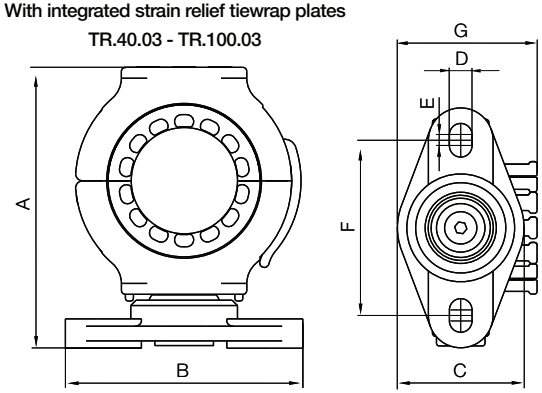
1) Option: with threaded bushings, steel, M6/M8

triflex® R | Series TRC·TRE·TRCF·TRL·TRLF | Accessories

Swivel bearing mounting brackets | **With** strain relief

With integrated strain relief tiewrap plates

TR.40.03 - TR.100.03



- Standard mounting bracket with strain relief and maintenance-free igubal® spherical bearing
- Pivoting mounting for extreme rotating and reverse bending movements
- For TRC·TRE·TRCF·TRL·TRLF

Swivel bearing-mounting brackets | With strain relief | For TRC·TRE·TRCF·TRL·TRLF

TR.40.03 - TR.100.03

Ø Index	Part No. **with** strain relief	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
30.	–	–	–	–	–	–	–	–
40.	**TR.40.03**	105	89	47	8.4	4.1	65	51.8
50.	**TR.50.03**	105	89	47	8.4	4.1	65	55
60.	**TR.60.03**	152	118	65	10.5	5.5	87.5	73.5
65.	**TR.65.03**	152	118	65	10.5	5.5	87.5	73.5
65. (*R 200*)	**TR.65.200.03** 4)	152	118	65	10.5	5.5	87.5	73.5
70.	**TR.70.03**	152	118	65	10.5	5.5	87.5	73.5
85.	**TR.85.03**	179	118	65	10.5	5.5	87.5	88
85. (*R 240*)	**TR.85.240.03** 4)	179	118	65	10.5	5.5	87.5	88
100.	**TR.100.03**	179	118	65	10.5	5.5	87.5	88
125.	–	–	–	–	–	–	–	–

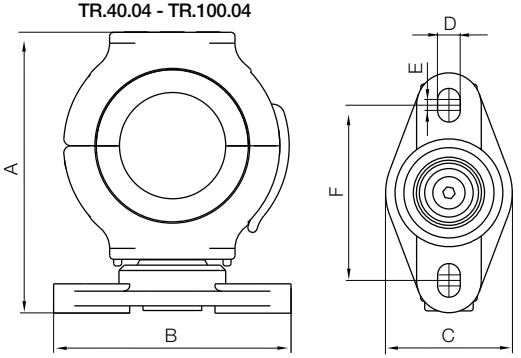
4) Only for special size with larger bend radius

triflex® R | Series TRC·TRE·TRCF | Accessories

Swivel bearing-mounting bracket | **Without** strain relief

Without strain relief

TR.40.04 - TR.100.04



- Standard mounting bracket without strain relief and maintenance-free igubal® spherical bearing
- Pivoting mounting for extreme rotating and reverse bending movements
- For TRC·TRE·TRCF·TRL·TRLF

Swivel bearing mounting brackets | Without strain relief | For TRC·TRE·TRCF·TRL·TRLF

TR.40.04 - TR.100.04

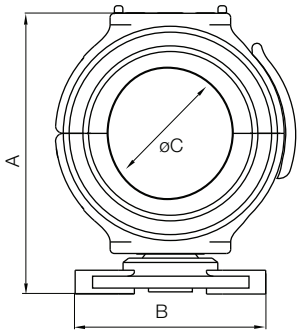
Ø Index	Part No. **without** strain relief	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
30.	–	–	–	–	–	–	–	–
40.	**TR.40.04**	105	89	47	8.4	4.1	65	–
50.	**TR.50.04**	105	89	47	8.4	4.1	65	–
60.	**TR.60.04**	152	118	65	10.5	5.5	87.5	–
65.	**TR.65.04**	152	118	65	10.5	5.5	87.5	–
65. (*R 200*)	**TR.65.200.04** 4)	152	118	65	10.5	5.5	87.5	–
70.	**TR.70.04**	179	118	65	10.5	5.5	87.5	–
85.	**TR.85.04**	179	118	65	10.5	5.5	87.5	–
85. (*R 240*)	**TR.85.240.04** 4)	179	118	65	10.5	5.5	87.5	–
100.	**TR.100.04**	–	–	–	–	–	–	–
125.	–							

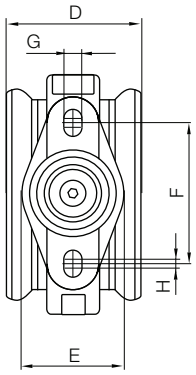
4) Only for special size with larger bend radius

triflex® R | Series TRC·TRE·TRCF | Accessories

Swivel bearing gliding feed-throughs

Swivel bearing gliding feed-throughs
TR.40.07 - TR.100.07





- Gliding feed-through with swivel bearing
- For TRC·TRE·TRCF e-chains®
- Pivoted mounting with maintenance-free igubal® spherical bearings

Swivel bearing gliding feed-throughs | For TRC·TRE·TRCF

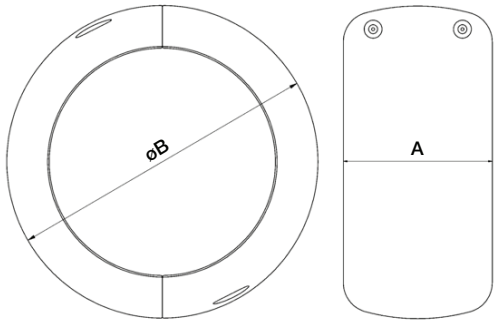
TR.40.07 - TR.100.07

Ø Index	Part No. with swivel bearing	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
30.	–	–	–	–	–	–	–	–
40.	TR.40.07	108	89	46	32	47	65	8.4
50.	TR.50.07	119	89	58	67	47	65	8.4
60.	TR.60.07	156	118	70	50	65	87.5	10.5
65.	TR.65.07	156	118	75	75	65	87.5	10.5
65. (R 200)	TR.65.07	156	118	75	75	65	87.5	10.5
70.	TR.70.07	183	118	86	70	65	87.5	10.5
85.	TR.85.07	183	118	100	84	65	87.5	10.5
85. (R 240)	TR.85.07	183	118	100	84	65	87.5	10.5
100.	TR.100.07	189	118	115	85	79	87.5	10.5
125.	–	–	–	–	–	–	–	–

triflex® R | Series TRC·TRE·TRCF | Accessories

Protectors

Protectors
TR.XX.10 / TR.XX.30



- Optional protectors can be fitted at contact points
- For extreme operations and long service life
- Easy gliding over edges
- Damping, light, freely positionable
- Easy to fit and quick replacement
- Protector with quick-release fastener also available

Protectors | For TRC·TRE·TRCF

TR.40.10 - TR.125.10

TR.40.30 - TR.100.30

Ø Index	Part No. with screw connection	Part No. with quick release	A [mm]	B [mm]
30.	–	–	–	–
40.	TR.40.10	TR.40.30 2)	27	55
50.	TR.50.10	TR.50.30	34	69
60.	TR.60.10	TR.60.30 2)	40	80
65.	TR.65.10	TR.65.30 5)	44	88
65. (R 200)	TR.65.200.10 5)	–	44	88
70.	TR.70.10	TR.70.30	50	102
85.	TR.85.10	TR.85.30	59	118
85. (R 240)	TR.85.240.10 4)	–	63	120
100.	TR.100.10	TR.100.30	67	133
125.	TR.125.10	–	82	170

2) TR.40.30, TR.60.30 without an additional locking clip

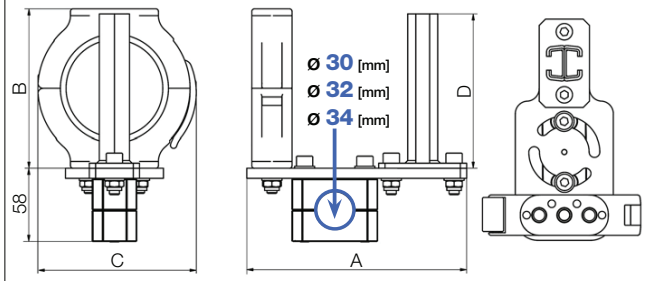
4) Only for special size with larger bend radius

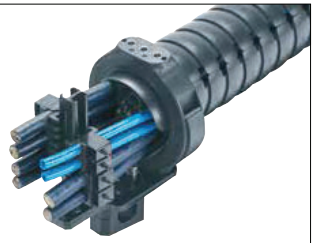
5) Available upon request. Please consult igus® for delivery time.

triflex® R | Series TRC·TRE·TRCF | Accessories

Heavy duty connections, for axis 6

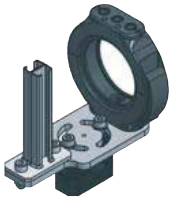
Heavy duty connection Standard
TR.60.20.XX - TR.125.20.XX





- Heavy duty connection - standard
- For cables with large cross section
- For heavy hydraulic hoses
- Double C-profile for CFX clamps
- igus® chainfix clamps must be ordered separately

Heavy duty connections | For TRC·TRE·TRCF



TR.60.20.XX - TR.125.20.XX

Ø Index		Part No. Standard	Clamp ø [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
30.	▶	–	–	–	–	–	–	–
40.	▶	–	–	–	–	–	–	–
50.	▶	–	–	–	–	–	–	–
60.	▶	TR.60.20.	| 30 | 32 | 34 |	175	126	126	122	–
65.	▶	TR.65.20.	| 30 | 32 | 34 |	175	126	126	122	–
65. (R 200)	▶	TR.65.200.20. 4)	| 30 | 32 | 34 |	175	126	126	122	–
70.	▶	TR.70.20.	| 30 | 32 | 34 |	175	126	126	122	–
85.	▶	TR.85.20.	| 30 | 32 | 34 |	175	153	155	149	–
85. (R 240)	▶	TR.85.240.20. 4)	| 30 | 32 | 34 |	175	153	155	149	–
100.	▶	TR.100.20.	| 30 | 32 | 34 |	175	153	155	149	–
125.	▶	TR.125.20.	| 30 | 32 | 34 |	180	190	190	175	–

Standard clamp for axis 6: ø 30mm

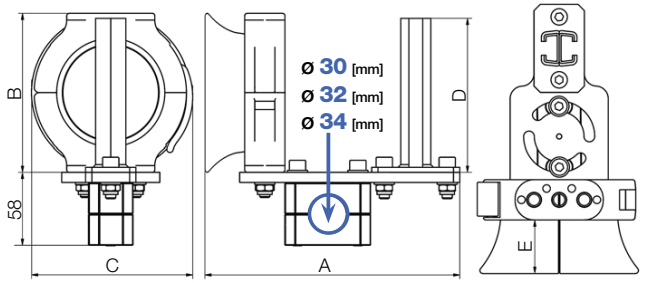
4) Only for special size with larger bend radius

Part No. with desired diameter for the axis 6 clamp | 30 | 32 | 34 | e.g. TR.100.20.30

triflex® R | Series TRC·TRE·TRCF | Accessories

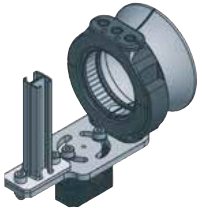
Heavy duty connections for axis 6 | With radius support

Heavy duty connection - with radius support
TR.60.23.XX - TR.125.23.XX



- With radius support
- For cables with large cross section
- For heavy hydraulic hoses
- Double C-profile for CFX clamps
- igus® chainfix clamps must be ordered separately

Heavy duty connections | With radius support | For TRC·TRE·TRCF



TR.60.23.XX - TR.125.23.XX

Ø Index		Part No. with radius support	Clamp ø [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
30.	▶	–	–	–	–	–	–	–
40.	▶	–	–	–	–	–	–	–
50.	▶	–	–	–	–	–	–	–
60.	▶	TR.60.23.	| 30 | 32 | 34 |	209	126	130	122	38
65.	▶	TR.65.23.	| 30 | 32 | 34 |	214	126	130	122	45
65. (R 200)	▶	–	–	–	–	–	–	–
70.	▶	TR.70.23.	| 30 | 32 | 34 |	214	126	130	122	43
85.	▶	TR.85.23.	| 30 | 32 | 34 |	222	155	155	149	49
85. (R 240)	▶	–	–	–	155	–	149	–
100.	▶	TR.100.23.	| 30 | 32 | 34 |	240	155	155	149	67
125.	▶	TR.125.23.	| 30 | 32 | 34 |	252	190	190	175	72

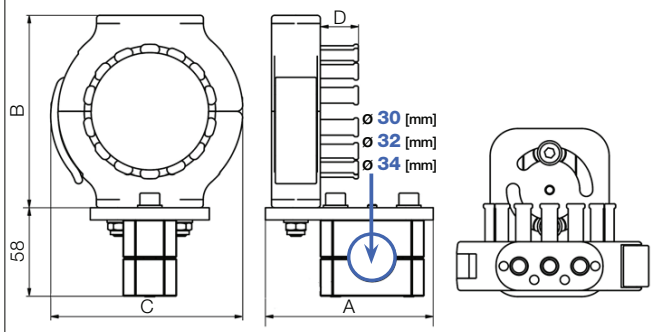
Standard clamp for axis 6: ø 30mm

Part No. with desired diameter for the axis 6 clamp | 30 | 32 | 34 | e.g. TR.100.23.30

triflex® R | Series TRC·TRE·TRCF | Accessories

Compact connections for clamp axis 6 | **With** strain relief

Compact connection **with** strain relief
TR.40.21.01.XX - TR.100.21.01.XX



- With integrated strain relief tiewrap plates
- Safe and simple securing of the cables with cable ties
- Various adjustment options

Compact connections | **With** strain relief | For TRC·TRE·TRCF

TR.40.21.01.XX - TR.100.21.01.XX

Ø Index	Part No. with strain relief	Clamp ø [mm]	A [mm]	B [mm]	C [mm]	D [mm]
30.	–	–	–	–	–	–
40.	TR.40.21.01.	| 30 | 32 | 34 |	110	85	84.5	17.8
50.	TR.50.21.01.	| 30 | 32 | 34 |	110	85	84.5	21
60.	TR.60.21.01.	| 30 | 32 | 34 |	110	126	126	25
65.	TR.65.21.01.	| 30 | 32 | 34 |	110	126	126	25
65. (R 200)	TR.65.200.21.01. 4)	| 30 | 32 | 34 |	110	126	126	25
70.	TR.70.21.01.	| 30 | 32 | 34 |	110	126	126	25
85.	TR.85.21.01.	| 30 | 32 | 34 |	110	153	155	38
85. (R 240)	TR.85.240.21.01. 4)	| 30 | 32 | 34 |	110	153	155	38
100.	TR.100.21.01.	| 30 | 32 | 34 |	110	153	155	38
125.	–	–	–	–	–	–

Standard clamp for axis 6: ø 30mm

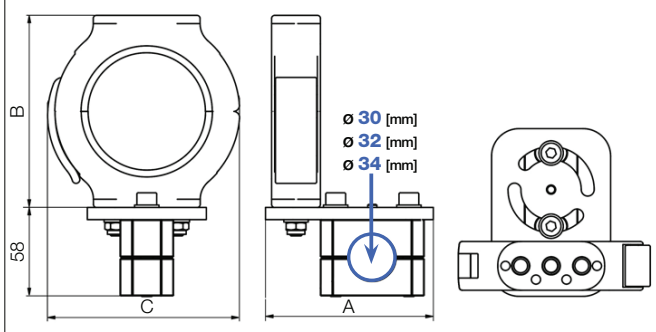
4) Only for special size with larger bend radius

Part No. with desired diameter for the axis 6 clamp | 30 | 32 | 34 | e.g. TR.100.21.01.30

triflex® R | Series TRC·TRE·TRCF | Accessories

Compact connections for clamp axis 6 | **Without** strain relief

Compact connection **without** strain relief
TR.40.21.02.XX - TR.100.21.02.XX



- Without strain relief
- Space-saving
- Various adjustment options

Compact connections | **Without** strain relief | For TRC·TRE·TRCF

TR.40.21.02.XX - TR.100.21.02.XX

Ø Index	Part No. without strain relief	Clamp ø [mm]	A [mm]	B [mm]	C [mm]	D [mm]
30.	–	–	–	–	–	–
40.	TR.40.21.02.	| 30 | 32 | 34 |	110	85	84.5	–
50.	TR.50.21.02.	| 30 | 32 | 34 |	110	85	84.5	–
60.	TR.60.21.02.	| 30 | 32 | 34 |	110	126	126	–
65.	TR.65.21.02.	| 30 | 32 | 34 |	110	126	126	–
65. (R 200)	TR.65.200.21.02. 4)	| 30 | 32 | 34 |	110	126	126	–
70.	TR.70.21.02.	| 30 | 32 | 34 |	110	126	126	–
85.	TR.85.21.02.	| 30 | 32 | 34 |	110	153	155	–
85. (R 240)	TR.85.240.21.02. 4)	| 30 | 32 | 34 |	110	153	155	–
100.	TR.100.21.02.	| 30 | 32 | 34 |	110	153	155	–
125.	–	–	–	–	–	–

Standard clamp for axis 6: ø 30mm

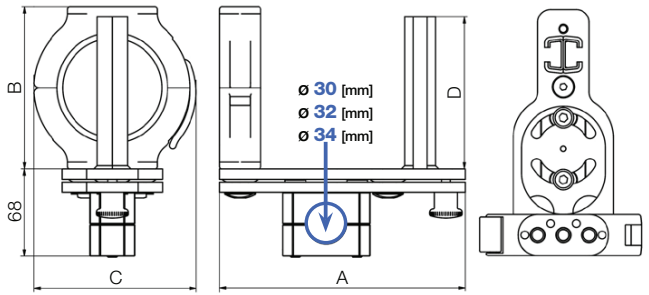
4) Only for special size with larger bend radius

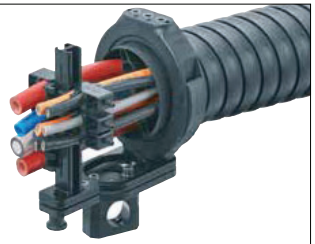
Part No. with desired diameter for the axis 6 clamp | 30 | 32 | 34 | e.g. TR.100.21.02.30

triflex® R | Series TRC·TRE·TRCF | Accessories

Quick exchange kit for clamp axis 6

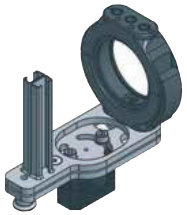
Quick exchange kit
TR.60.22.**XX** - TR.100.22.**XX**





- Exchange in seconds
- No repeat alignment required
- Exchange the triflex® R unit incl. cables without tools
- Option available with strain relief

Quick exchange kit | For TRC·TRE·TRCF



TR.60.22.XX -
TR.100.22.XX

Ø Index		Part No. quick-change unit	Clamp ø [mm]	A [mm]	B [mm]	C [mm]	D [mm]
30.	▶	–	–	–	–	–	–
40.	▶	–	–	–	–	–	–
50.	▶	–	–	–	–	–	–
60.	▶	TR.60.22.	| **30** | **32** | **34** |	191	126	126	126
65.	▶	TR.65.22.	| **30** | **32** | **34** |	191	126	126	126
65. (*R 200*)	▶	TR.65.200.22. 4)	| **30** | **32** | **34** |	191	126	126	126
70.	▶	TR.70.22.	| **30** | **32** | **34** |	191	126	126	126
85.	▶	TR.85.22.	| **30** | **32** | **34** |	191	153	155	153
85. (*R 240*)	▶	TR.85.240.22. 4)	| **30** | **32** | **34** |	191	153	155	153
100.	▶	TR.100.22.	| **30** | **32** | **34** |	191	153	155	153
125.	▶	–	–	–	–	–	–

Standard clamp for axis 6: ø 30mm

4) Only for special size with larger bend radius

Part No. with desired diameter for the axis 6 clamp | **30** | **32** | **34** | e.g. **TR.100.22.30**

triflex® R | Clamps | Accessories

chainfix clamps

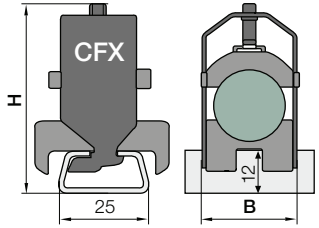
chainfix | Single clamp incl. bottom saddles

- For use with heavy-duty connection **TR.XX.20** / **TR.XX.23** and quick release unit **TR.XX.22**
- Reliably absorbs tensile forces even for larger cable diameters
- Specifically recommended for solid welding cables and rigid hydraulic hoses
- Space- and time-saving assembly onto the C-profile
- Simple assembly with hex head set screw
- High strength for dynamic applications with improved stacker elements
- Built-in ribs on the stacker elements give secure grip on the cables
- Built-in ribs on the stacker elements give secure grip on the cables
- Steel (material galvanised steel) or stainless steel (material 1.4301/AISI 304) available

Part No. steel	Part No. stainless steel*	≤ Ø [mm]	B+2 [mm]	H [mm]
CFX12.1	CFX12.1.E	06 - 12	16	54
CFX14.1	CFX14.1.E	12 - 14	18	50
CFX16.1	CFX16.1.E	14 - 16	20	52
CFX18.1	CFX18.1.E	16 - 18	22	54
CFX20.1	CFX20.1.E	18 - 20	24	56

Part No. steel	Part No. stainless steel*	≤ Ø [mm]	B+2 [mm]	H [mm]
CFX22.1	CFX22.1.E	20 - 22	26	58
CFX26.1	CFX26.1.E	22 - 26	30	67
CFX30.1	CFX30.1.E	26 - 30	34	71
CFX34.1	CFX34.1.E	30 - 34	38	75

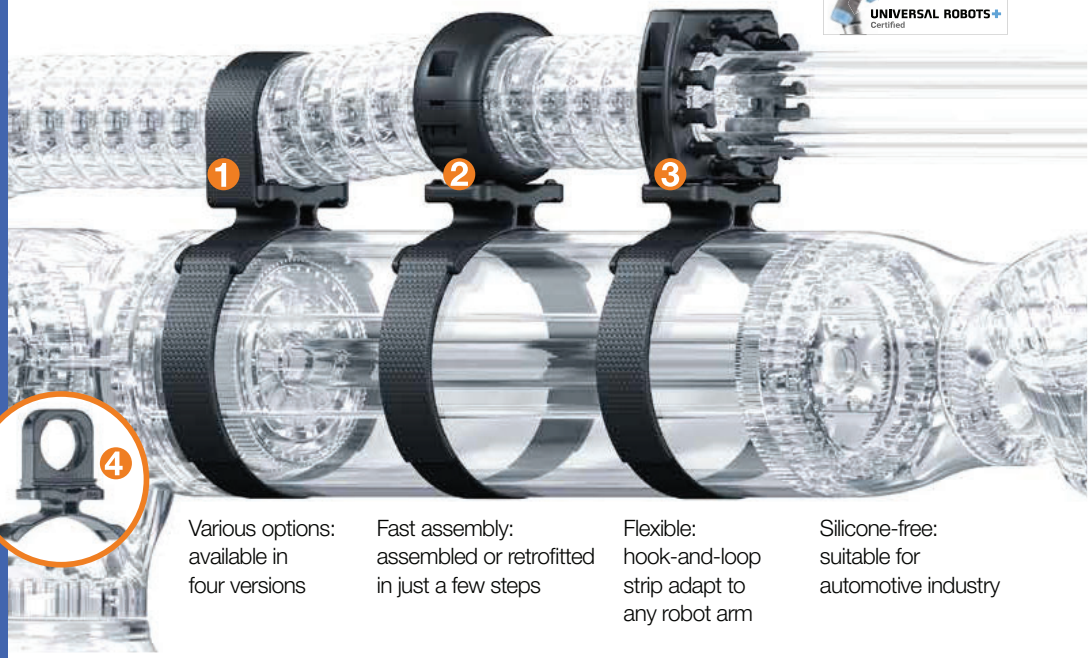
*Stainless steel material: 1.4301/AISI 304



Individual strain relief for every cable offers security and easy replacement

triflex® R | Series TRC·TRE·TRL | Accessories

Cobot universal mounting brackets New



Various options: available in four versions

Fast assembly: assembled or retrofitted in just a few steps

Flexible: hook-and-loop strip adapt to any robot arm

Silicone-free: suitable for automotive industry

Cost-effective, flexible and fast assembly - triflex® COB universal mounting brackets

For secure attachment of e-chains® or protective hoses to robots, users can now rely on the new Lean Robotics brackets from igus®. The universal mounting brackets with hook-and-loop strips are flexible and adapt to any robot arm. A slim design with rounded edges reduces the risk of injury if there is contact with the robot. The new Lean Robotics brackets are available in various designs and are suitable for use with the triflex® R TRC/TRE/TRL 30 and 40 series and for all commercially available protective hoses in various diameters.

- Compact, lightweight and smooth design
- For different robots arm diameters, universal applications
- Assembled or retrofitted in just a few steps
- Silicone-free, suitable for automotive industry
- Virtually no edges, minimal risk of injury
- The standard universal mounting brackets ❶ are suitable for all sizes of the triflex® R e-chain® series TRC/TRE/TRL
- The standard universal mounting brackets with hook-and-loop strips and protector ❷ or mounting bracket ❸ are suitable for triflex® R e-chain® series TRC/TRE/TRL 30 and 40
- The standard universal mounting brackets with PMA Clip ❹ are suitable for nominal widths 17, 23, 29, 36 and 48mm
- Low-cost addition to the igus® cobot accessories range

triflex® R | Series TRC·TRE·TRL | Accessories

Cobot universal mounting brackets overview

❶ Standard for maximum adaptability	❷ With triflex® R protector	❸ With triflex® R mounting bracket and optional strain relief	❹ With PMA Clip
Benefits: ● 1 x polymer bracket ● 1m hook-and-loop strip ● Most cost-effective clamp in the range ● Silicone-free ● Maximum freedom for cable management	**Benefits:** ● 1 x polymer bracket ● 1m hook-and-loop strip ● 1 x round protector size 40 ● Silicone-free	**Benefits:** ● 1 x polymer bracket ● 1m hook-and-loop strip ● 1 x lightweight mounting bracket size 30 or 40*, available with and without strain relief ● *Size 40, option with long or short strain relief teeth ● Silicone-free	**Benefits:** ● 1 x polymer bracket ● 1m hook-and-loop strip ● 1 x PMA Clip ● Available in 5 sizes for corrugated hoses ● Silicone-free
Suitable for: triflex® R e-chain® series TRC/TRE/TRL	**Suitable for:** triflex® R e-chain® series TRC/TRE/TRL, size 40	**Suitable for:** triflex® R e-chain® series TRC/TRE/TRL, size 30 and 40	**Suitable for:** Corrugated tube systems with nominal width 17, 23, 29, 36 and 48mm
▶ Page 996	▶ Page 996	▶ Page 996	▶ Page 997

UNIVERSAL ROBOTS+ Certified

Bracket for fibre-rod system ø 40 for UR10 and UR10e - New

Virtually contact-free management of cables on UR10 and UR10e

Easy retrofitting of cables and hoses

- Strong, defined cable management up to the tool
- Can be combined with our universal mounting brackets with hook-and-loop
- Individually adjustable plug-and-play for UR10 and UR10e

More information ▶ www.igus.eu/info/n20-newspage-ur-fibre-rod

triflex® R | Series TRC·TRE·TRL | Product range

Cobot universal mounting brackets

Product range | ❶ Standard for maximum adaptability
Universal for diameters from 15 to 55mm

Product	Part No. mounting brackets	Size ø [mm]	Specification
	TR.COB.01.00.0	15 - 55	Support + 1m hook-and-loop strip

Product range | ❷ With triflex® R protector
For triflex® R e-chain® series TRC/TRE/TRL, size 40

Product	Part No. mounting brackets	Index ø [mm]	Specification
	TR.COB.01.40.30.0	40	Protector size 40 + support + 1m hook-and-loop strip + plastic screw + protector

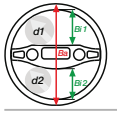
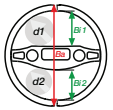
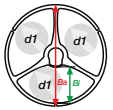
Product range | ❸ With triflex® R mounting bracket and optional strain relief
For triflex® R e-chain® series TRC/TRE/TRL, size 30 and 40

Product	Part No. mounting brackets	Index ø [mm]	Specification
	TR.COB.01.30.Z1.0	30	Lightweight mounting bracket, size 30 with short strain relief + support + 1m hook-and-loop strip
	TR.COB.01.40.Z1.0	40	Lightweight mounting bracket, size 40, with strain relief + support + 1m hook-and-loop strip + plastic screw TR AE
	TR.COB.01.40.Z2.0	40	Lightweight mounting bracket, size 40, with long strain relief + support + 1m hook-and-loop strip + plastic screw TR AE
	TR.COB.01.30.Z0.0	30	Lightweight mounting bracket, size 30, without strain relief + support + 1m hook-and-loop strip
	TR.COB.01.40.Z0.0	40	Lightweight mounting bracket, size 40, without strain relief + support + 1m hook-and-loop strip + plastic screw TR AE

triflex® R | Series TRC·TRE·TRL | Product range

Cobot universal mounting brackets

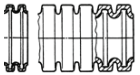
Overview triflex® R e-chains® | For TRC·TRE·TRL

Dimensions	Part No. series	Bi1 [mm]	Bi2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links per m
	**Series TRC - enclosed design**								
	TRC.30.050.0	12	10	34.5	050	10	8	11.3	89
	TRC.40.058.0	15	13	43	058	13	11	13.9	72
	**Series TRE - "easy" design**								
	TRE.30.050.0	12	10	34.5	050	10	8	11.3	89
	TRE.40.058.0.B	15	13	43	058	13	11	13.9	72
	**Series TRL - light version of the "easy"-design**								
	TRL.30.050.0	12.5	11	34.5	050	10	8	11.3	89
	TRL.40.058.0	15	–	45	058	13	–	13.9	72

Product range | ❹ With PMA Clip
Corrugated tube systems with nominal width 17, 23, 29, 36 and 48mm

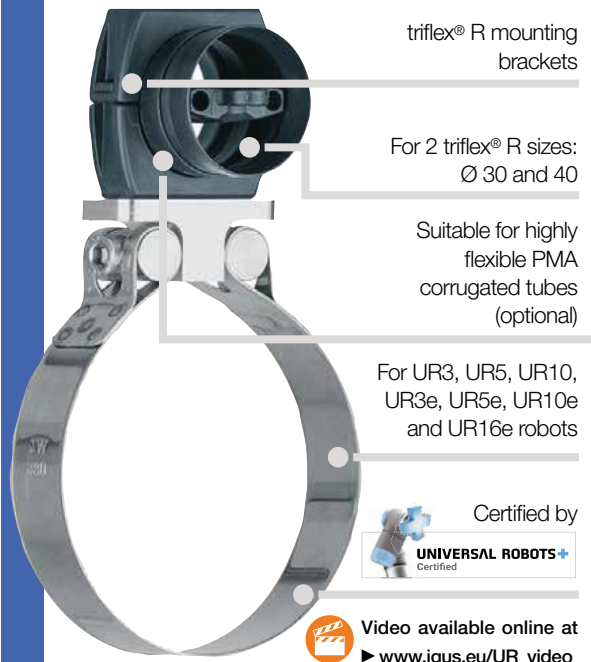
Product	Part No. mounting brackets	NW [mm]	Specification
	TR.COB.01.PMA.17.0	17	PMA clip, nominal width 17 + support + 1m hook-and-loop strip + plastic screw + protector
	TR.COB.01.PMA.23.0	23	PMA clip, nominal width 23 + support + 1m hook-and-loop strip + plastic screw + protector
	TR.COB.01.PMA.29.0	29	PMA clip, nominal width 29 + support + 1m hook-and-loop strip + plastic screw + protector
	TR.COB.01.PMA.36.0	36	PMA clip, nominal width 36 + support + 1m hook-and-loop strip + plastic screw + protector
	TR.COB.01.PMA.48.0	48	PMA clip, nominal width 48 + support + 1m hook-and-loop strip + plastic screw + protector

PMA hoses overview | For PMAFLEX corrugated tubes

Dimensions	Part No. series	Corrugated tube nominal width	Metric size [mm]	Inner Ø d1 [mm]	Outer Ø d2 [mm]	Static R [mm]*	Dynamic R [mm]**	VE [m]
	I-PIST-17B	17	20	16.4	21.1	30	65	50
	I-PIST-23B	23	25	22.6	28.4	35	90	50
	I-PIST-29B	29	32	29.0	34.3	45	110	50
	I-PIST-36B	36	40	36.5	42.5	60	180	50
	I-PIST-48B	48	50	46.7	54.2	70	200	50

*Static *R* = minimum recommended bend radius for static (fixed) installation

**Dynamic *R* = minimum recommended bend radius for dynamic (flexible) laying



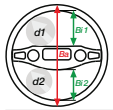
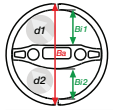
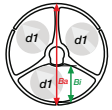
Video available online at
▶ www.igus.eu/UR_video

Mounting brackets for "Universal Robots" - UR brackets

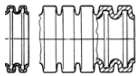
The "Universal Robots" company makes easy-to-use, lightweight robot systems. The triflex® R 30 and 40 sizes are a perfect fit for UR3, UR5, UR10, UR3e, UR5e, UR10e and UR16e robot systems, both technically and aesthetically. Connecting the system is quick and easy when using the UR brackets.

- Safe cable management with triflex® R for "universal robots"
- Easy connection with screw clips
- For TRC,TRE, TRL: Ø 30 and 40mm
- Suitable for PMA corrugated tube I-PIST-29B (optional)

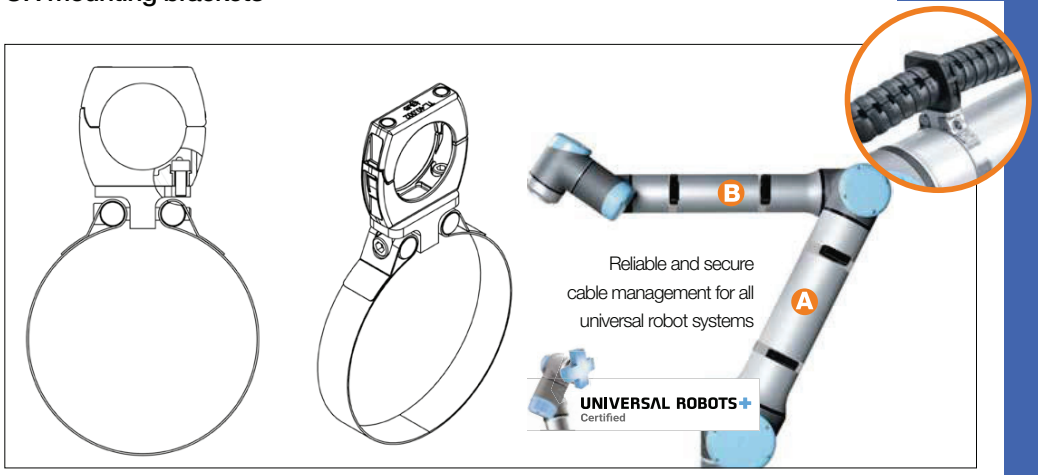
Overview triflex® R e-chains® | For TRC·TRE·TRL

Dimensions	Part No. series	Bi1 [mm]	Bi2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links per m
	**Series TRC - enclosed design**								
	TRC.30.050.0	12	10	34.5	050	10	8	11.3	89
	TRC.40.058.0	15	13	43	058	13	11	13.9	72
	**Series TRE - "easy" design**								
	TRE.30.050.0	12	10	34.5	050	10	8	11.3	89
	TRE.40.058.0.B	15	13	43	058	13	11	13.9	72
	**Series TRL - light version of the "easy"-design**								
	TRL.30.050.0	12.5	11	34.5	050	10	8	11.3	89
	TRL.40.058.0	15	–	45	058	13	–	13.9	72

PMA hoses overview | For PMAFLEX corrugated tubes

Dimensions	Part No. series	Corrugated tube nominal width	Metric size [mm]	Inner Ø d1 [mm]	Outer Ø d2 [mm]	Static R [mm]*	Dynamic R [mm]**	VE [m]
	I-PIST-29B	29	32	29.0	34.3	45	110	50

*Static *R* = minimum recommended bend radius for static (fixed) installation **Dynamic *R* = minimum recommended bend radius for dynamic (flexible) laying



Product range | Suitable for TRC.30 · TRE.30 · TRL.30 e-chains®

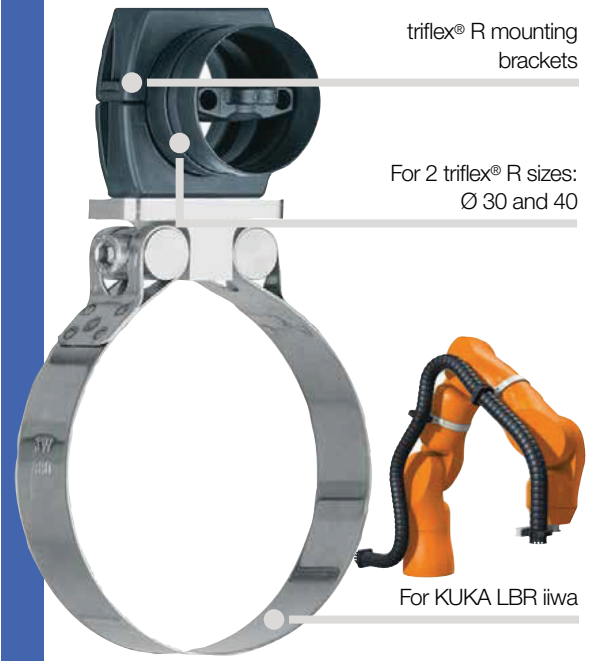
Part No. without strain relief	Part No. with strain relief	For UR-robot system	Ø [mm]	Position
TR.911.965.054.Z0	TR.911.965.054.Z1	UR3 / UR3e	054	B
TR.911.965.066.Z0	TR.911.965.066.Z1	UR3 / UR3e	066	A
TR.911.965.075.Z0	TR.911.965.075.Z1	UR5 / UR5e	075	B
TR.911.965.086.Z0	TR.911.965.086.Z1	UR5 / UR5e	086	A
TR.911.965.086.Z0	TR.911.965.086.Z1	UR10 / UR10e	086	B
TR.911.965.108.Z0	TR.911.965.108.Z1	UR10 / UR10e	108	A

Product range | Suitable for TRC.40 · TRE.40 · TRL.40 e-chains®

Part No. without strain relief	Part No. with strain relief	For UR-robot system	Ø [mm]	Position
TR.911.966.054.Z0	TR.911.966.054.Z1	UR3 / UR3e	054	B
TR.911.966.066.Z0	TR.911.966.066.Z1	UR3 / UR3e	066	A
TR.911.966.075.Z0	TR.911.966.075.Z1	UR5 / UR5e	075	B
TR.911.966.086.Z0	TR.911.966.086.Z1	UR5 / UR5e	086	A
TR.911.966.086.Z0	TR.911.966.086.Z1	UR10 / UR10e	086	B
TR.911.966.108.Z0	TR.911.966.108.Z1	UR10 / UR10e / UR16e	108	A

Product range | Suitable for PMA hose I-PIST-29B (optional)

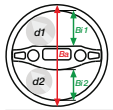
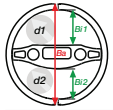
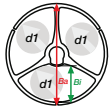
For PMA hose I-PIST-29B	Part No. without strain relief	For UR-robot system	Ø [mm]	Position
	TR.914.836.054.Z0	UR3 / UR3e	054	B
	TR.914.836.066.Z0	UR3 / UR3e	066	A
	TR.914.836.075.Z0	UR5 / UR5e	075	B
	TR.914.836.086.Z0	UR5 / UR5e	086	A
	TR.914.836.086.Z0	UR10 / UR10e	086	B
	TR.914.836.108.Z0	UR10 / UR10e / UR16e	108	A

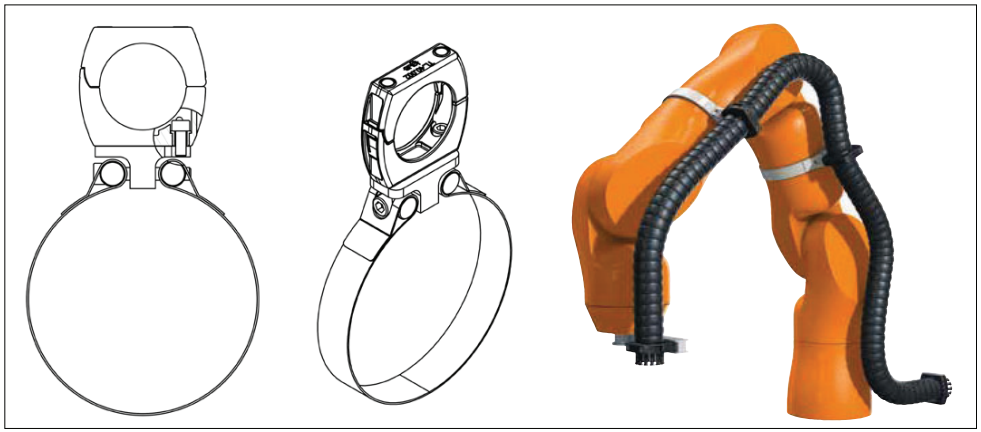


Mounting bracket for KUKA LBR iiwa

- Safe cable guidance with triflex® R for KUKA LBR iiwa robots
- For KUKA LBR iiwa 14 R820 and KUKA LBR iiwa 7 R800
- Easy connection with screw clips
- For 2 triflex® R sizes: Ø 30 and 40
- For TRC, TRE and TRL e-chains®

Overview triflex® R e-chains® | For TRC·TRE·TRL

Dimensions	Part No. series	Bi1 [mm]	Bi2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links per m
	**Series TRC - enclosed design**								
	TRC.30.050.0	12	10	34.5	050	10	8	11.3	89
	TRC.40.058.0	15	13	43	058	13	11	13.9	72
	**Series TRE - "easy" design**								
	TRE.30.050.0	12	10	34.5	050	10	8	11.3	89
	TRE.40.058.0.B	15	13	43	058	13	11	13.9	72
	**Series TRL - light version of the "easy"-design**								
	TRL.30.050.0	12.5	11	34.5	050	10	8	11.3	89
	TRL.40.058.0	15	–	45	058	13	–	13.9	72



Product range | Suitable for TRC.30 · TRE.30 · TRL.30 e-chains®

Part No. **without** strain relief	Part No. **with** strain relief	For KUKA LBR iiwa	Ø [mm]
TR.914.951.Z0	TR.914.951.Z1	LBR iiwa 14 R820 LBR iiwa 7 R800	136

Product range | Suitable for TRC.40 · TRE.40 · TRL.40 e-chains®

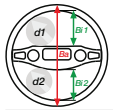
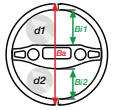
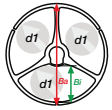
Part No. **without** strain relief	Part No. **with** strain relief	For KUKA LBR iiwa	Ø [mm]
TR.914.952.Z0	TR.914.952.Z1	LBR iiwa 14 R820 LBR iiwa 7 R800	136

For robot arms with human-robot collaboration - HRC clamps

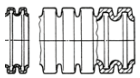
Moving energy for cobots made easy. Reliable multi-axis energy supply with the mounting bracket for our robotic triflex® R e-chains®. Also for collaborative robots.

- Plastic bracket
- Simple screw connection for attachment to the robot arm
- Bracket for triflex® R Ø 40 with quick release
- Rounded cobot style design
- For TRC, TRE and TRL e-chains®
- For UR and URe robot arms

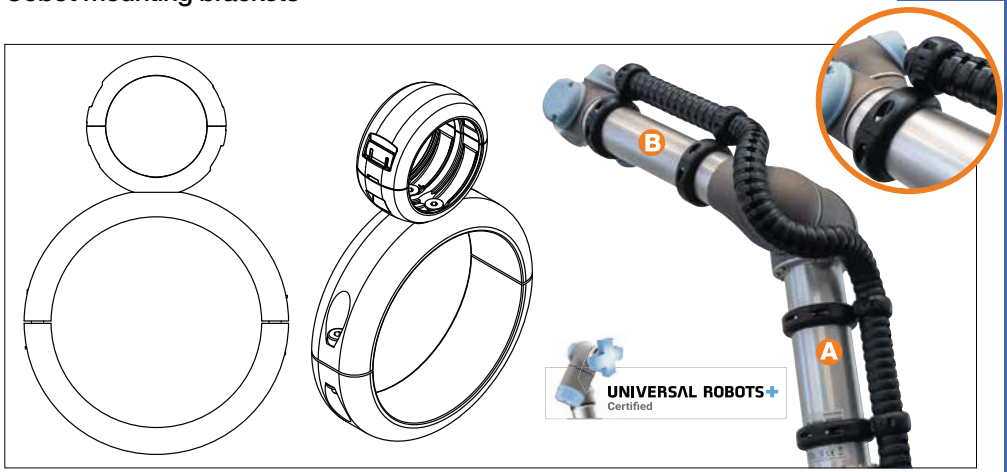
Overview triflex® R e-chains® | For TRC·TRE·TRL

Dimensions	Part No. series	Bi1 [mm]	Bi2 [mm]	Ba [mm]	R [mm]	d1 [mm]	d2 [mm]	Pitch [mm]	Links per m
	Series TRC - enclosed design								
	TRC.40.058.0	15	13	43	058	13	11	13.9	72
	Series TRE - "easy" design								
	TRE.40.058.0.B	15	13	43	058	13	11	13.9	72
	Series TRL - light version of the "easy"-design								
	TRL.40.058.0	15	–	45	058	13	–	13.9	72

PMA hoses overview | For PMAFLEX corrugated tubes

Dimensions	Part No. series	Corrugated tube nominal width	Metric size [mm]	Inner Ø d1 [mm]	Outer Ø d2 [mm]	Static R [mm]*	Dynamic R [mm]**	VE [m]
	I-PIST-29B	29	32	29.0	34.3	45	110	50

*Static R = minimum recommended bend radius for static (fixed) installation **Dynamic R = minimum recommended bend radius for dynamic (flexible) laying



Product range | Suitable for TRC.40 · TRE.40 · TRL.40 e-chains®

Part No. cobot mounting brackets	For UR-robot system	UR Ø [mm]	URe Ø [mm]	Position
TR.916.810.54	UR3 / UR3e	054	054	B
TR.916.810.66	UR3 / UR3e	066	066	A
TR.916.810.75	UR5 / UR5e	075	075	B
TR.916.810.86	UR5 / UR5e	086	086	A
TR.916.810.86	UR10 / UR10e	086	086	B
TR.916.810.108	UR10	108	–	A
TR.916.810.110	UR10e	–	110	A

Product range | Suitable for PMA hose I-PIST-29B (optional)

For PMA hose I-PIST-29B	Part No. cobot mounting brackets	For UR-robot system	UR Ø [mm]	URe Ø [mm]	Position
	TR.916.810.54	UR3 / UR3e	054	054	B
	TR.916.810.66	UR3 / UR3e	066	066	A
	TR.916.810.75	UR5 / UR5e	075	075	B
	TR.916.810.86	UR5 / UR5e	086	086	A
	TR.916.810.86	UR10 / UR10e	086	086	B
	TR.916.810.108	UR10	108	–	A
	TR.916.810.110	UR10e	–	110	A

triflex® R | Series TRC·TRE·TRCF·TRL·TRLF | Accessories

Protective jackets

Standard protective jacket

● Plastic coated fabric ● Easy to replace with hook-and-loop fastenings ● Elastic sealing strips ● Standard lengths available from stock ● For paint or sealing applications ● Material: PVC

Ø Index	Part No. Jacket	Standard lengths* XXXX [mm]
30.	–	–
40.	TR.40.14.	| 500 | 1000 | 1500 | 2000 |
50.	TR.50.14.	| 500 | 1000 | 1500 | 2000 |
60.	TR.60.14.	| 500 | 1000 | 1500 | 2000 |
65.	TR.65.14.	| 500 | 1000 | 1500 | 2000 |
70.	TR.70.14.	| 500 | 1000 | 1500 | 2000 |
85.	TR.85.14.	| 500 | 1000 | 1500 | 2000 |
100.	TR.100.14.	| 500 | 1000 | 1500 | 2000 |
125.	TR.125.14.	| 500 | 1000 | 1500 | 2000 |

*Special lengths upon request

Part No. with the desired standard value for the length **XXXX.**
Example: **TR.60.14.500**

Heat shield protective jacket

● Made from heat-resistant, wear-resistant Kevlar ● Short-term protection against welding and metal spatter, temperatures up to +540°C ● High abrasion resistance ● Sealed design ● For tough environments ● Easy to replace or retrofit with zipper closure ● Hook-and-loop at each end ● Tough design ● Silicone-free ● Asbestos-free ● Standard lengths from stock

Ø Index	Part No. Jacket	Standard lengths* XXXX [mm]
30.	–	–
40.	TR.40.18.	| 500 | 1000 | 1500 | 2000 |
50.	TR.50.18.	| 500 | 1000 | 1500 | 2000 |
60.	TR.60.18.	| 500 | 1000 | 1500 | 2000 |
65.	TR.65.18.	| 500 | 1000 | 1500 | 2000 |
70.	TR.70.18.	| 500 | 1000 | 1500 | 2000 |
85.	TR.85.18.	| 500 | 1000 | 1500 | 2000 |
100.	TR.100.18.	| 500 | 1000 | 1500 | 2000 |
125.	TR.125.18.	| 500 | 1000 | 1500 | 2000 |

*Special lengths upon request

Part No. with the desired standard value for the length **XXXX.**
Example: **TR.60.18.500**

Wear resistant protective jacket

● Extremely high abrasion resistance ● Black leather ● For use in temperatures from -40°C to +100°C ● Very flexible ● Easy to exchange or retrofit ● Silicone-free ● Asbestos-free ● Standard lengths from stock

Ø Index	Part No. Jacket	Standard lengths* XXXX [mm]
30.	–	–
40.	TR.40.19.	| 500 | 1000 | 1500 | 2000 |
50.	TR.50.19.	| 500 | 1000 | 1500 | 2000 |
60.	TR.60.19.	| 500 | 1000 | 1500 | 2000 |
65.	TR.65.19.	| 500 | 1000 | 1500 | 2000 |
70.	TR.70.19.	| 500 | 1000 | 1500 | 2000 |
85.	TR.85.19.	| 500 | 1000 | 1500 | 2000 |
100.	TR.100.19.	| 500 | 1000 | 1500 | 2000 |
125.	TR.125.19.	| 500 | 1000 | 1500 | 2000 |

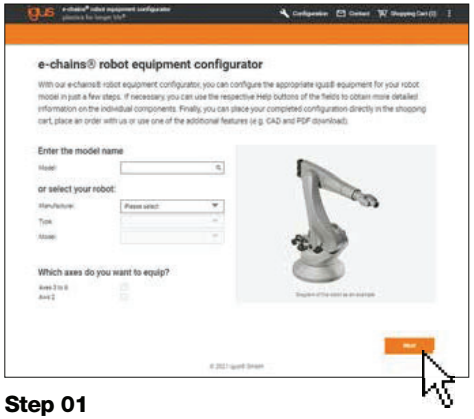
*Special lengths upon request

Part No. with the desired standard value for the length **XXXX.**
Example: **TR.60.19.500**

triflex® R | QuickRobot

The online robot equipment configurator

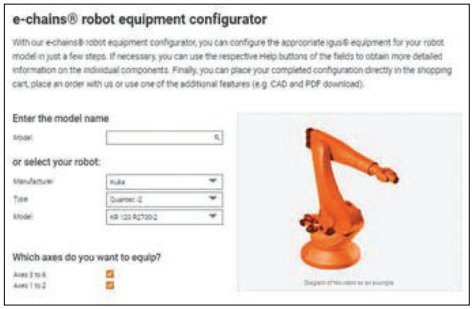
Energy supply for robots made configurable online: around 10,000 different options for component selection for the energy supply on a robot - configure online in just 5 steps with QuickRobot



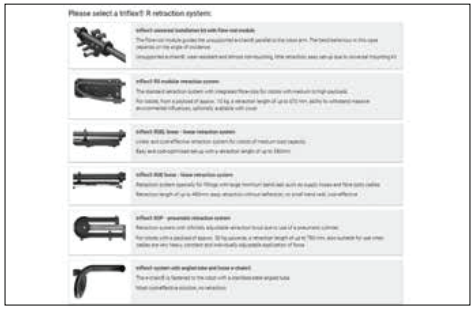
Step 01
The start page ▶ **www.igus.eu/quickrobot ...**

The QuickRobot robot equipment configurator from igus® contains around 10,000 different options for around 400 robot models. Find the right parts in seconds by entering just the robot manufacturer and model. The required e-chain® size can be selected by diameter.

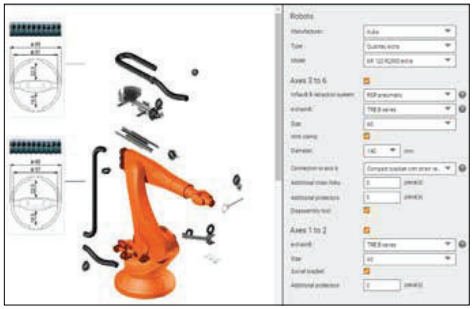
- Choose your robot from a large number of models from well-known manufacturers
- Provides a full parts list, total price and expected delivery time for your configuration
- Easy transfer to the shopping cart, complete configuration or individual parts, no minimum order quantity
- Save, download or reset your individual configuration
- Creation of PDF reports for your configuration



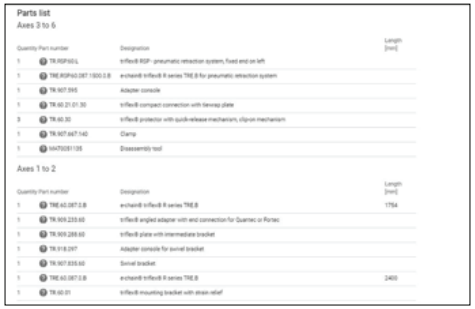
Step 02
Select robot manufacturer and model ...



Step 03
select retraction system ...



Step 04
chose parts and options ...



Step 05
Parts list displayed

The picture above shows the cost-effective RSEL retraction system

Prevent loop formation on robots - triflex® R retraction systems

The global growth in automation for industrial production is leading to more and more complex robotic applications. Target cycle times are getting shorter and downtime must also be reduced. To provide reliable protection against premature system failure and downtime, we recommend the use of a triflex® R e-chain® especially to bridge the last three axes on robots. The length change that results from the robot's movement is compensated by our triflex® R retraction systems. This constantly guides the igus® e-chain® in a controlled way to prevent the formation of loops in the robot's working area.

5 triflex® R retraction system types available from stock:

● **RS**	Modular retraction system
● **RSP**	Pneumatic retraction system
● **RSE**	Cost-effective retraction system with deflection
● **RSE·RSEC linear**	Compact retraction system, linear
● **RSEL·RSSL**	Cost-effective retraction system, linear

Typical industries and applications

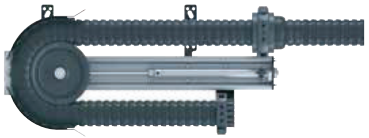
● Machine tools ● Handling machines - 6-axis ● Conveyor systems ● Packaging machines ● General mechanical engineering, etc.

Available from stock. Ready to ship in 24 - 48hrs.*

*Average time before the ordered goods are dispatched.

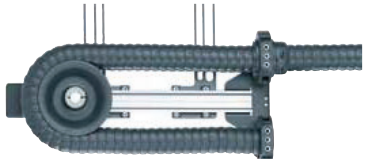
RS modular retraction system
▶ From page 1010

Benefits:
- For use with adverse environmental influences
- Retraction force provided by integrated fibre-rods
- For robots with a load capacity from approx. 10 kg
- Up to 670mm retraction length
- If a linear guide system is not needed
- For series TRC·TRE with ø-index 40-100mm



RSP pneumatic retraction system
▶ From page 1018

Benefits:
- Standard pneumatic components
- For a sensor-based monitoring
- For applications with a high fill weight
- Constant force over the complete travel
- For robots with a load capacity of approx. 50 kg
- Up to 780mm retraction length
- For series TRC·TRE·TRCF with a ø-index of 60-125mm



RSE cost-effective retraction system with deflection
▶ From page 1026

Benefits:
- For small robots, very light
- Up to 500mm retraction length
- For highly dynamic movements
- Cost-effective
- Maintenance-free igus® drylin® W linear unit
- For series TRC·TRE with ø-index 40-50mm

RSE·RSEC* linear compact retraction system
▶ From page 1034

Benefits:
- Special linear guide avoids small bend radii
- Simple, linear retraction without loops, fibre-rods or deflection rollers
- Up to 490mm retraction length
- Space-saving
- Maintenance-free igus® drylin® W linear unit
- For series TRC·TRE·TRCF* with ø-index 40-100mm

RSEL*·RSSL* cost-effective retraction system, linear
▶ From page 1044

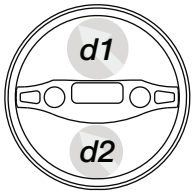
Benefits:
- Linear guidance even for highly dynamic applications
- For robots with high and medium payloads
- Up to 380mm retraction length
- Cost-effective
- For series TRC·TRE·TRCF with a ø-index of 60-100mm

*New in this catalogue

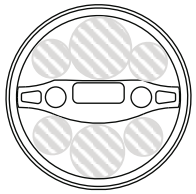
triflex® R | Retraction systems | Accessories

Choosing the right e-chain® size ...

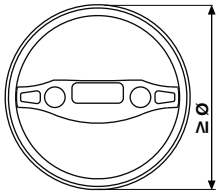
1 Largest single cable diameter ø ...



2 ... and max. usable e-chain® cross section area ...



3 ... determine the necessary Ø index of the triflex® R ...



Max. cable Ø 1. chamber *d1* [mm]	Max. cable Ø 2. chamber *d2* [mm]	Coverage of the entire area [mm²]	Minimum Ø index triflex® R e-chain®
–	–	–	30.
< 15	< 13	< 500	40.
< 18.8	< 16.2	< 750	50.
< 22.5	< 19.5	< 1,000	60.
–	–	–	65.
< 28	< 24	< 1,750	70.
< 33	< 28	< 2,500	85.
< 37.5	< 32.5	< 3,000	100.
< 43	< 43	< 4,500	125.

... and retraction system

4 ... select from 5 retraction systems options:

RS modular	RSP pneumatic	RSE with deflection	RSE·RSEC linear place-saving	RSEL·RSSL cost-effective
–	–	–	–	–
●	–	●	●	–
–	–	●	●	–
●	●	–	●	●
–	–	–	–	–
●	●	–	●	●
●	●	–	●	●
●	●	–	●	●
–	●	–	–	–
▶ Page 1010	▶ Page 1018	▶ Page 1026	▶ Page 1034	▶ Page 1044

● = yes, it is possible – = it is not possible

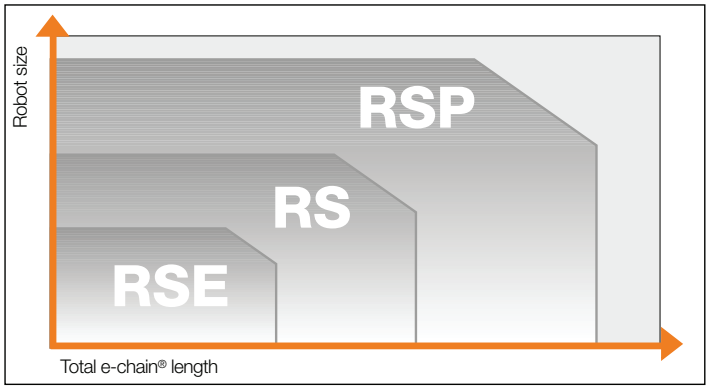
If you want to select a suitable retraction system yourself, please ensure that you observe the maximum cable diameter and usage data.

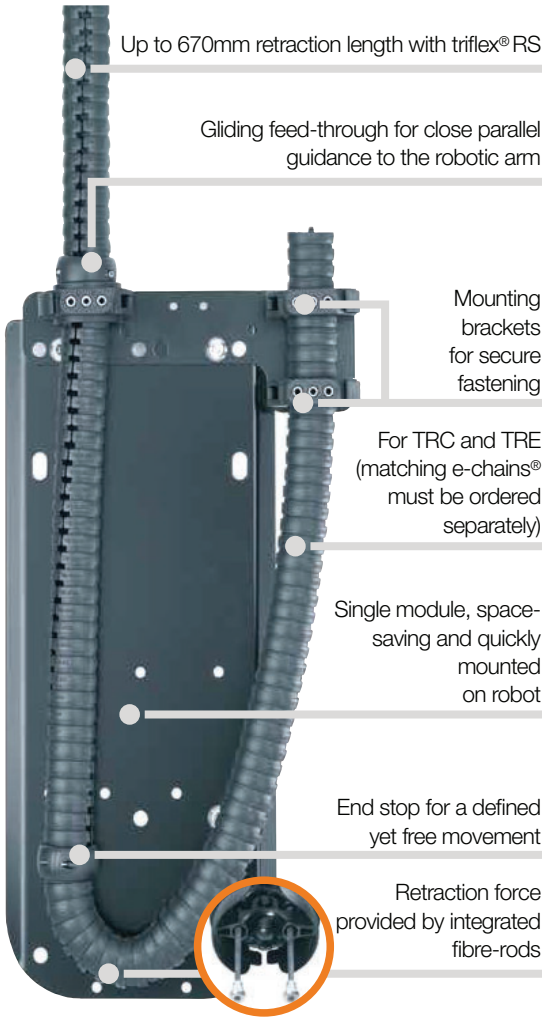
Possible Ø-index for triflex® R retraction systems

For series	RS Ø index	RSP Ø index	RSE Ø index	RSE·RSEC linear ø index	RSEL·RSSL Ø index
TRC	40 - 100	60 - 125	40 - 50	40 - 100	60 - 100
TRE	40 - 100	60 - 125	40 - 50	40 - 100	60 - 100
TRCF	–	65 - 100	–	65 - 100	65 - 100
TRL*	–	–	–	–	–
TRLF*	–	–	–	–	–

*Retraction systems not available for this series

Selection tool for triflex® R retraction systems with deflection



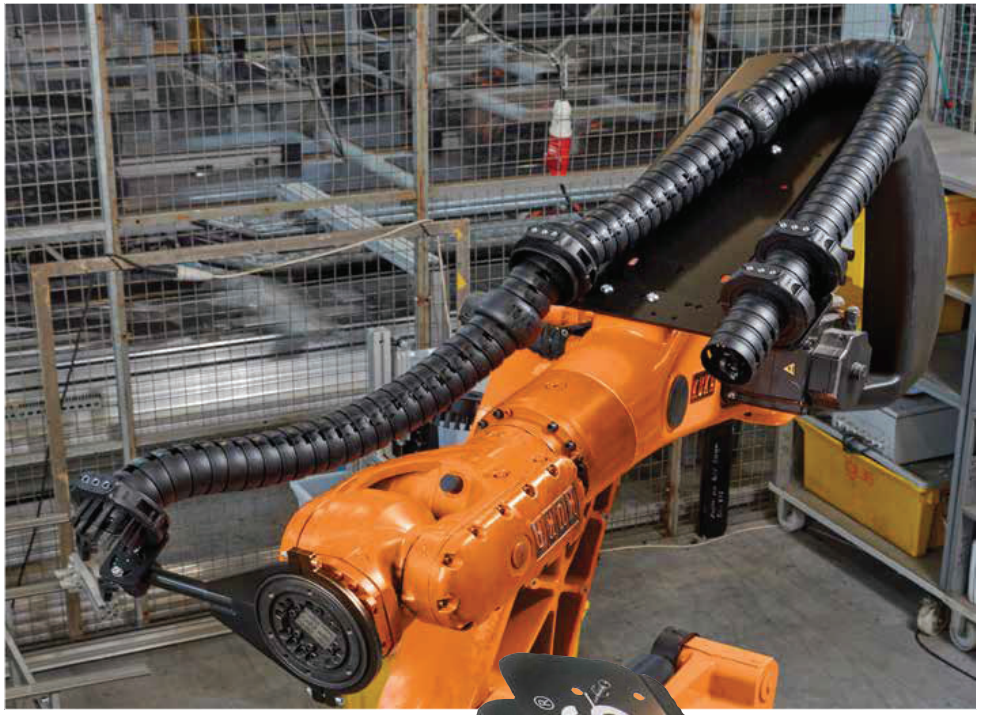


Modular retraction system - triflex® RS

triflex® RS is a retraction system for robots with medium to high payloads. With triflex® RS, the multi-axis triflex® R e-chain® is routed parallel to the robot arm. Integrated fibre rods produce a directed pretension, avoiding the formation of loops in the working area of the robot head. This also allows applications to be implemented in very limited space. triflex® RS offers safe energy supply for tools without stressing the cables, thus minimising downtimes.

- Space-saving, closely routed on the robot arm
- A system solution proven and tested in thousands of applications
- Universal installation
- Integrated fibre-rods - no external mechanical components such as springs or steel cables required!

Video online
► www.igus.eu/RS_movie



triflex® RS for a low profile retraction system. The triflex® RS retraction unit runs parallel to the robot arm

Option: triflex® RS with cover for more mounting space

triflex® R | RS retraction system

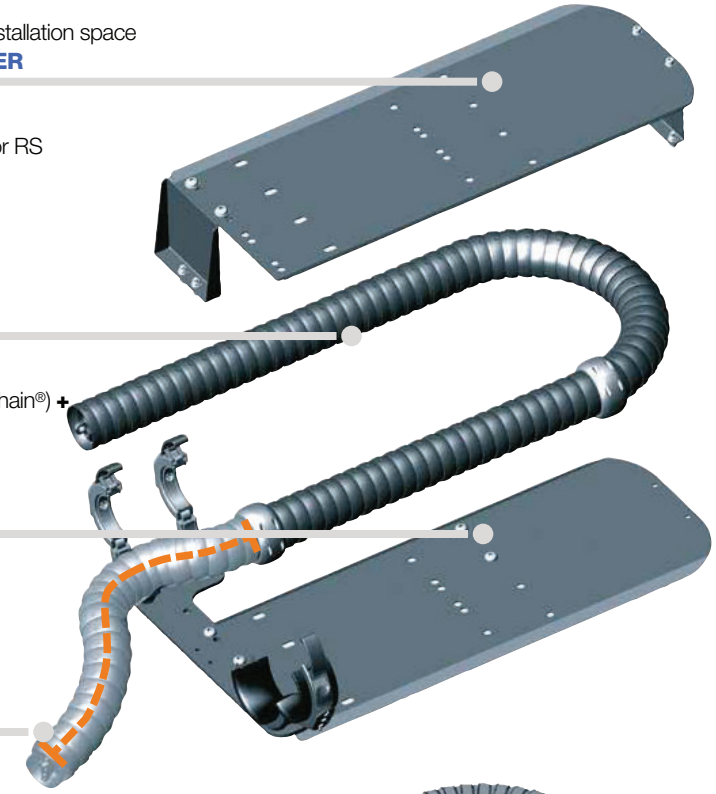
System design with matching e-chains®

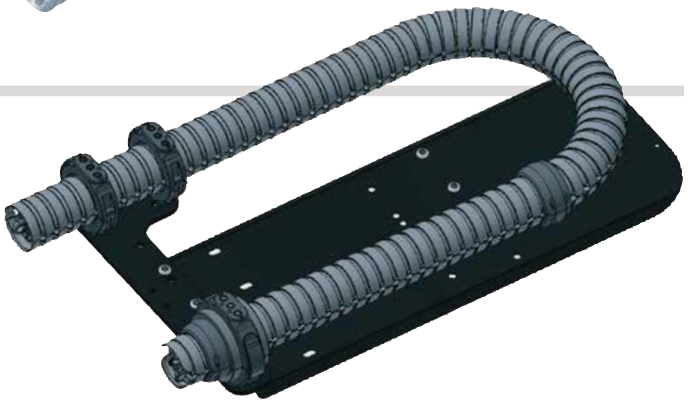
Optional cover for additional installation space on the robot: **TR.RS.XX.COVER**

Matching triflex® R e-chains® for RS with integrated fibre-rods
TRC.RS.XX.*R*.LLLL.0
TRE.RS.XX.*R*.LLLL.0.B

RSE linear system (without e-chain®) **+**
Support plate **+**
Mounting bracket **+**
Gliding feed-through **=**
TR.RS.XX.L or **TR.RS.XX.R**

e-chain® overall length =
additional length from the gliding feed-through **LLLL +**
the e-chain® length within the system





Complete, RS modular retraction system with fixed end on the left and TRE triflex® R series. Mounting bracket and gliding feed-through are included. Please order matching triflex® R e-chain® and optional cover separately.

triflex® R | RS retraction system

Sample order of a retraction system including e-chain®

Sample order of a complete TR.RS system, ø index 60, fixed end on the left, including cover and e-chain® (standard length: 500mm)

System	Insert Ø index / select fixed end **.L / .R**	**TR.RS.60.L**
+ Cover	Insert Ø index (cover optional)	**TR.RS.60.COVER**
+ e-chain®	Insert ø-index / Insert bend radius ***R*** / Insert standard length **LLLL**	**TRC.RS.60.087.0500.0**
Order text:	**TR.RS.60.L + TR.RS.60.COVER + TRC.RS.60.087.0500.0**	

Retraction system order key

TR.RS.60.L
TR.RS.60.R

- **L** = Fixed end right or
- **R** = Fixed end left
- Ø index
- Retraction system
- Series

e-chains® order key

TRC.RS.60.087.0500.0
TRE.RS.60.087.0500.0.B

- Default colour black
- **LLLL** = Additional length
- ***R*** Bend radius
- Ø index
- Retraction system
- e-chains® series

Optional accessories | RS modular retraction system

Cover
for additional installation space and complex movements
▶ Page 1014

Adjustment unit
for accurate adjustment of the system position
▶ Page 1054

Adapter consoles
for custom mounting options
▶ Page 1055

Axis 6 clamp
for triflex® R mounting bracket
▶ Page 1058

triflex® R | RS retraction system

Product range

Optional cover
for additional
installation space

Product range | RS modular retraction system

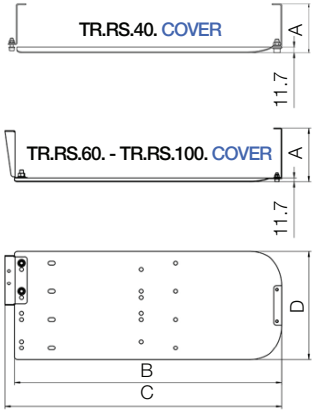
Ø Index		Part No. fixed end **left**	Part No. fixed end **right**	Retraction length[1] ≤ [mm]	A [mm]	B [mm]	C [mm]	D [mm]	Weight [kg]
30.	▶	–	–	–	–	–	–	–	–
40.	▶	TR.RS.40.**L**	TR.RS.40.**R**	460	576	301	95	51	3.5
50.	▶	–	–	–	–	–	–	–	–
60.	▶	TR.RS.60.**L**	TR.RS.60.**R**	550	900	528	150	65	8.7
65.	▶	–	–	–	–	–	–	–	–
65. (*R 200*)	▶	–	–	–	–	–	–	–	–
70.	▶	TR.RS.70.**L**	TR.RS.70.**R**	620	900	545	167	65	9.2
85.	▶	TR.RS.85.**L**	TR.RS.85.**R**	670	900	565	167	65	9.5
85. (*R 240*)	▶	–	–	–	–	–	–	–	–
100.	▶	TR.RS.100.**L**	TR.RS.100.**R**	580	938	614	167	108	11.5
125.	▶	–	–	–	–	–	–	–	–

Please order matching triflex® R e-chain® separately. 1) Max. retraction length

Product range | Cover, optional

Ø Index		Optional cover retrofit kit	A [mm]	B [mm]	C [mm]	D [mm]	Load* ≤ [kg]	Weight [kg]
30.	▶	–	–	–	–	–	–	–
40.	▶	TR.RS.40.COVER	101.7	550	567.5	244.6	1.5	2.6
50.	▶	–	–	–	–	–	–	–
60.	▶	TR.RS.60.COVER	170.7	850	880	344.6	3.5	7.2
65.	▶	–	–	–	–	–	–	–
65. (*R 200*)	▶	–	–	–	–	–	–	–
70.	▶	TR.RS.70.COVER	170.7	850	880	344.6	3.5	7.2
85.	▶	TR.RS.85.COVER	170.7	850	880	344.6	3.5	7.2
85. (*R 240*)	▶	–	–	–	–	–	–	–
100.	▶	TR.RS.100.COVER	172	853	910.5	397.6	3.5	7.1
125.	▶	–	–	–	–	–	–	–

*Maximum fill weight to be used with the cover



triflex® R | RS retraction system

Installation dimensions

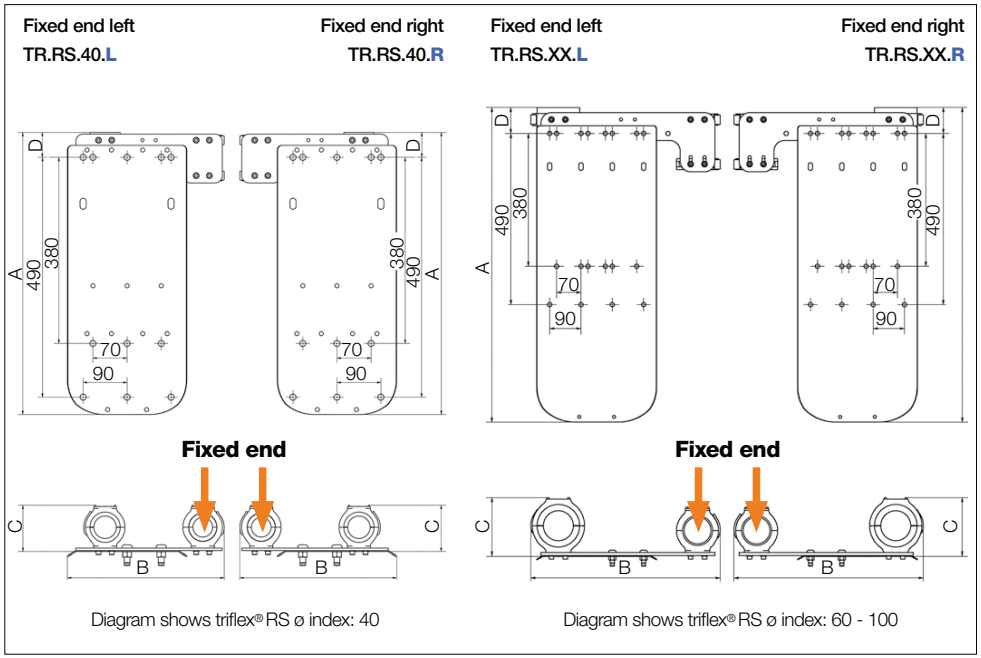


Diagram shows triflex® RS ø index: 40

Diagram shows triflex® RS ø index: 60 - 100

RS modular retraction system (diagram shows the fixed end on the left)

Mounting bracket and gliding feed-through are included.

Please order matching triflex® R e-chain® separately.

triflex® R | RS e-chains®

Product range

Product range | Matching e-chains® for RS

Ø Index		Part No. **TRC** enclosed	Part No. **TRE** "easy" design
30.	▶	–	–
40.	▶	TRC.RS.40.058. LLLL.0	TRE.RS.40.058. LLLL.0.B
50.	▶	–	–
60.	▶	TRC.RS.60.087. LLLL.0	TRE.RS.60.087. LLLL.0.B
65.	▶	–	–
65. (R 200)	▶	–	–
70.	▶	TRC.RS.70.110. LLLL.0	TRE.RS.70.110. LLLL.0.B
85.	▶	TRC.RS.85.135. LLLL.0	TRE.RS.85.135. LLLL.0.B
85. (R 240)	▶	–	–
100.	▶	TRC.RS.100.145.LLLL.0	TRE.RS.100.145.LLLL.0.B/C
125.	▶	–	–

1) Available for B- and C-versions

*Standard lengths from the gliding feed-through outside the system - special lengths upon request.

e-chains® standard lengths*

LLLL [mm] | **0500** | **1000** | **1500** | **2000** |

Part No. with **LLLL** standard length value (measured from the gliding feed-through) corresponds to the robot arm length from axis 3.

For example: TRC.RS.60.087.0500.0

triflex® R
RS

triflex® R | RS e-chains®

Cable length calculation

Calculation of the e-chain® total length | RS e-chain®

Ø Index		Bend radius *R* [mm]	e-chain® length* [mm]	Number of e-chains® links	e-chains® total length [mm]
30.	▶	–	–	–	–
40.	▶	058	1251	90	LLLL + 1251
50.	▶	–	–	–	–
60.	▶	087	1734	85	LLLL + 1734
65.	▶	–	–	–	–
65. (R 200)	▶	–	–	–	–
70.	▶	110	1895	74	LLLL + 1895
85.	▶	135	2080	68	LLLL + 2080
85. (R 240)	▶	–	–	–	–
100.	▶	145	2105	61	LLLL + 2105
125.	▶	–	–	–	–

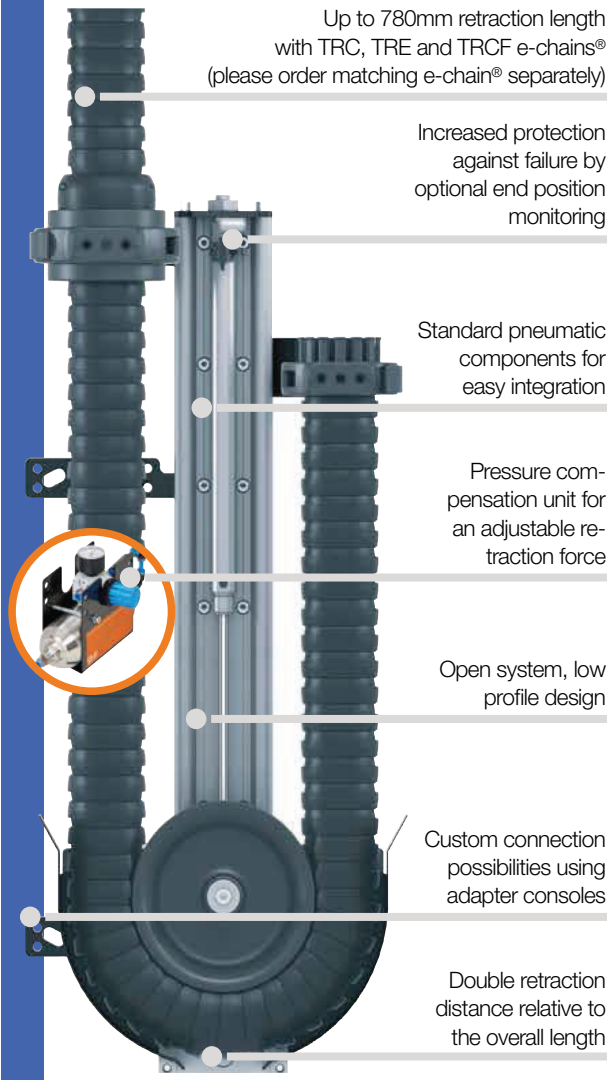
*Values are related to the e-chain® length within the system

To calculate the total e-chain® length: please add the e-chain® length* within the system to the **LLLL** standard additional length (measured from the gliding feed-through)

e-chain® overall length =
additional length from the gliding feed-through **LLLL +**
the e-chain® length within the system

More information and installation dimensions | RS e-chains®

- **TRC series** - closed design, chip protection, smooth outer contour ▶ **From page 968**
- **TRE series** - "easy" design, very easy to fill, simply press cables in ▶ **From page 970**



Pneumatic retraction system - triflex® RSP

triflex® RSP prevents loops on the robot head, with a continuously adjustable retraction force. Extension lengths of up to 780mm enable a secure guidance of the cables and hoses, even with large arm diameters and very complex movements. The retraction forces can be adjusted using a pneumatic cylinder. Whether light or heavy fill weights, long or short robot arms - with the igus® RSP retraction system the retraction force can be adjusted to the individual application.

- For axis 3-6 on industrial robots
- Larger retraction forces than RS system
- Even larger e-chains® up to Ø 125mm can be guided safely
- Almost constant force over the complete travel, even with heavy fill weights
- The end position can be monitored so damage can be prevented
- Mounting options for numerous robot models and manufacturers with adapter consoles
- Very low energy consumption with integrated air reservoir

triflex® R
RSP

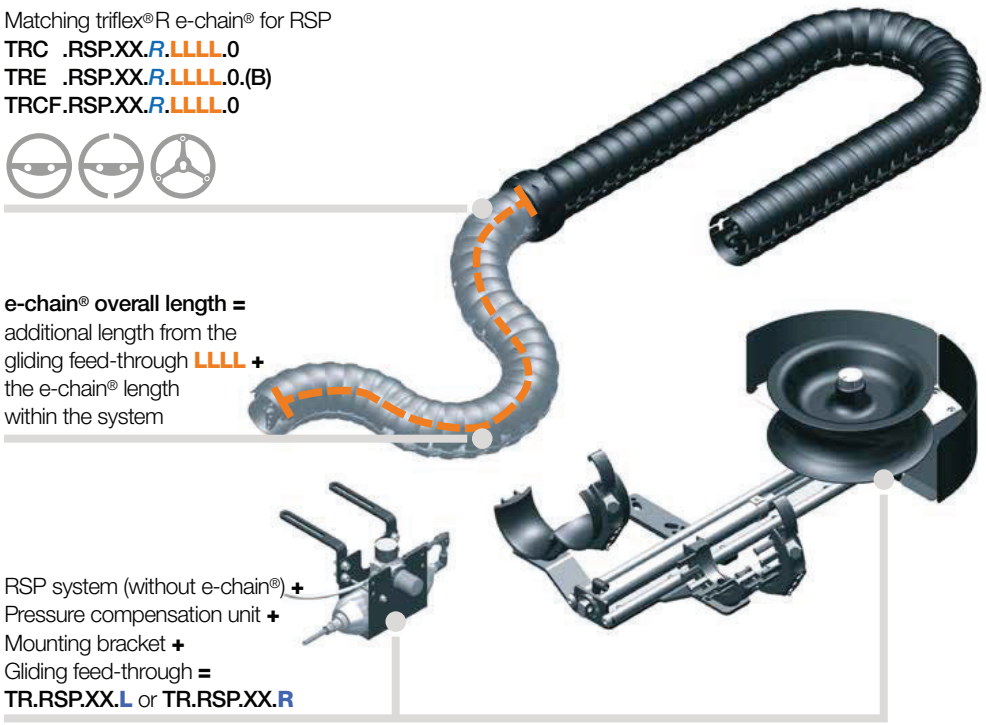
Pneumatic retraction system triflex® RSP - prevents loops forming in the robot's working area

triflex® RSP system on a 6 axis robot

triflex® R | RSP retraction system

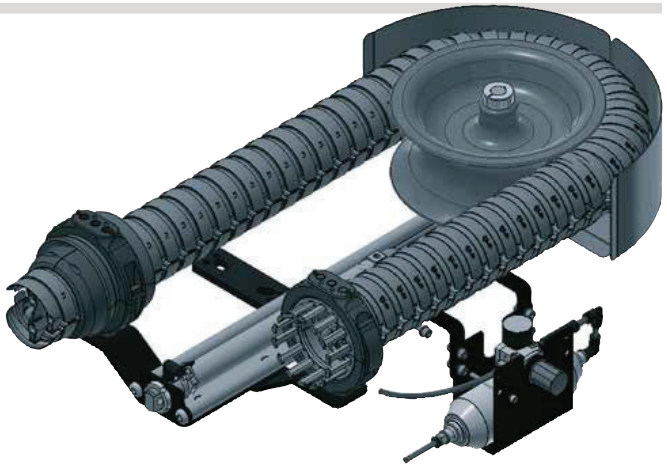
System design with matching e-chains®

Matching triflex® R e-chain® for RSP
TRC .RSP.XX.*R*.LLLL.0
TRE .RSP.XX.*R*.LLLL.0.(B)
TRCF.RSP.XX.*R*.LLLL.0



e-chain® overall length =
additional length from the gliding feed-through **LLLL** +
the e-chain® length
within the system

RSP system (without e-chain®) +
Pressure compensation unit +
Mounting bracket +
Gliding feed-through =
TR.RSP.XX.L or **TR.RSP.XX.R**



Complete, RSP pneumatic retraction system with fixed end on the left and TRE triflex® R series. Pressure compensation unit, mounting bracket and gliding feed-through are included in the delivery. Please order matching triflex® R e-chain® separately.

triflex® R
RSP

triflex® R | RSP retraction system

Sample order of a retraction system including e-chain®

Sample order of a complete TR.RSP system, ø-Index 85, fixed end on the left, and e-chain® (standard length: 500mm)

System	Insert Ø index / select fixed end **.L / .R**	TR.RSP.85.L
+ e-chain®	Insert ø-index / Insert bend radius *R* / Insert standard length LLLL	TRC.RSP.85.135.1000.0
Order text:	TR.RSP.85.L + TRC.RSP.85.135.1000.0	

Retraction system order key

TR.RSP.85.L
TR.RSP.85.R

- L = Fixed end right or
- R = Fixed end left
- Ø index
- Retraction system
- Series

e-chains® order key

TRC .RSP.85.135.1000.0
TRE .RSP.85.135.1000.0.B
TRCF.RSP.85.135.1000.0

- Default colour black
- LLLL = Additional length
- *R* Bend radius
- Ø index
- Retraction system
- e-chains® series

Optional accessories | RSP pneumatic retraction system

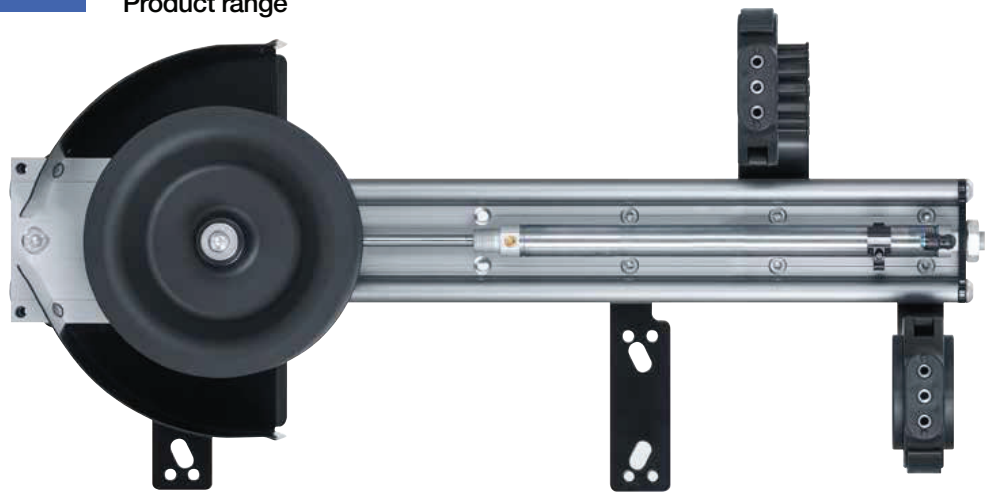
Adjustment unit
for accurate adjustment of the system position
▶ Page 1054

Adapter consoles
for custom mounting options
▶ Page 1055

Axis 6 clamp
for triflex® R mounting bracket
▶ Page 1058

triflex® R | RSP retraction system

Product range



Product range | RSP pneumatic retraction system

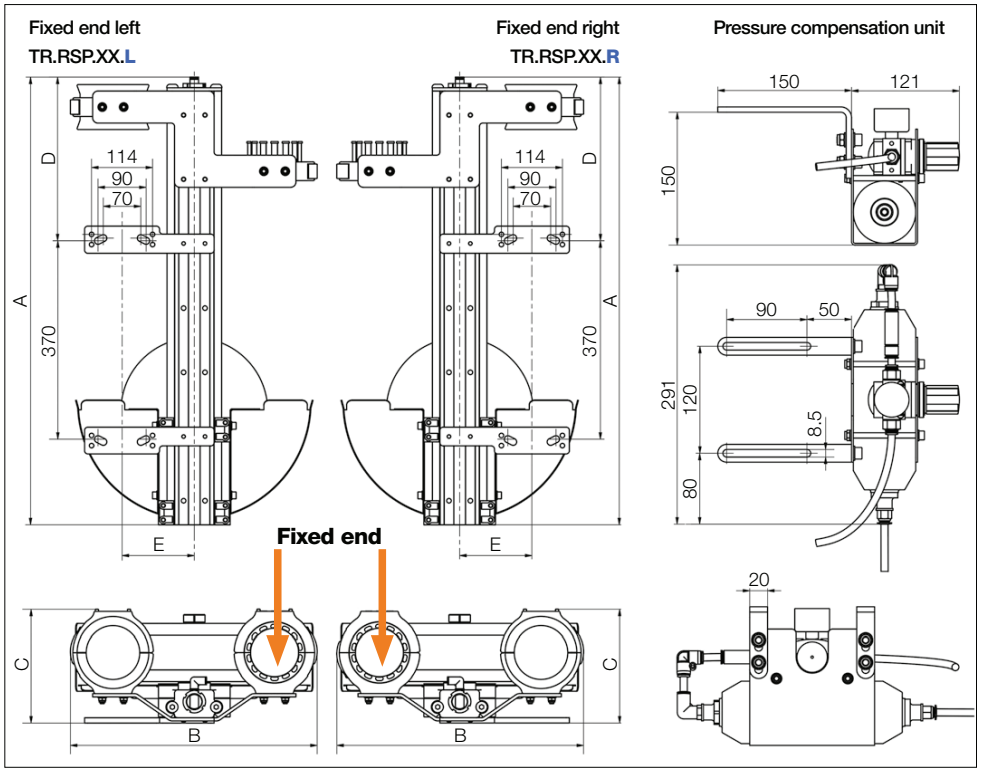
Ø Index	Part No. fixed end **left**	Part No. fixed end **right**	Retraction length[1] ≤ [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Weight[2] [kg]
30.	–	–	–	–	–	–	–	–	–
40.	–	–	–	–	–	–	–	–	–
50.	–	–	–	–	–	–	–	–	–
60.	**TR.RSP.60.L**	**TR.RSP.60.R**	580	792	396	177	277	135	16.1
65.	**TR.RSP.65.L**	**TR.RSP.65.R**	580	792	396	177	277	135	16.1
65. (*R 200*)	–	–	–	–	–	–	–	–	–
70.	**TR.RSP.70.L**	**TR.RSP.70.R**	580	792	396	177	277	135	16.2
85.	**TR.RSP.85.L**	**TR.RSP.85.R**	620	836	461	213	306	135	19.4
85. (*R 240*)	–	–	–	–	–	–	–	–	–
100.	**TR.RSP.100.L**	**TR.RSP.100.R**	620	845	467	213	306	135	19.5
125.	**TR.RSP.125.L**	**TR.RSP.125.R**	780	1043	570	245	405	135	24.1

Pressure compensation unit, mounting bracket and gliding feed-through are included in the delivery. Please order matching triflex® R e-chain® separately.

1) Max. retraction length 2) Plus 2.3 kg for pressure compensation unit

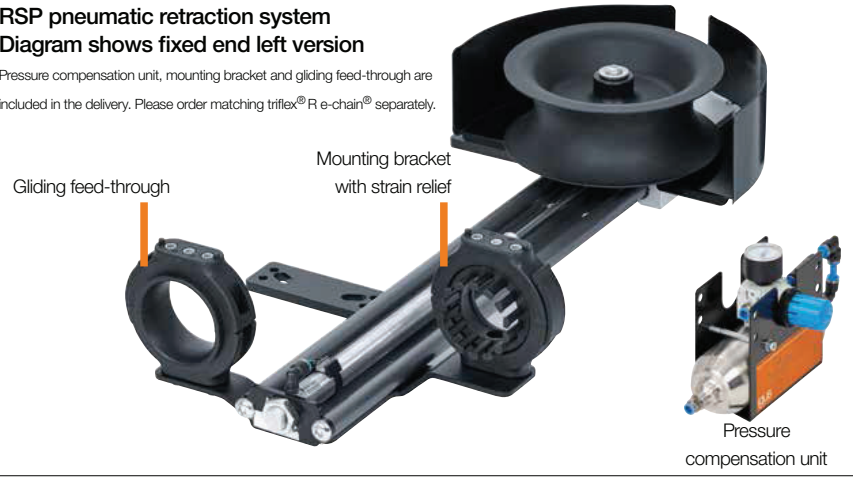
triflex® R | RSP retraction system

Installation dimensions



RSP pneumatic retraction system
Diagram shows fixed end left version

Pressure compensation unit, mounting bracket and gliding feed-through are included in the delivery. Please order matching triflex® R e-chain® separately.



triflex® R | RSP e-chains®

Product range

Product range | Matching e-chains® for RSP

Ø Index	Part No. **TRC** enclosed	Part No. **TRE** "easy" design	Part No.**TRCF** with snap lock mechanism
30.	–	–	–
40.	–	–	–
50.	–	–	–
60.	TRC.RSP.60.087.LLLL.0	TRE.RSP.60.087.LLLL.0.B	–
65.	–	–	TRCF.RSP.65.100.LLLL.0
65. (R 200)	–	–	–
70.	TRC.RSP.70.110.LLLL.0	TRE.RSP.70.110.LLLL.0.B	–
85.	TRC.RSP.85.135.LLLL.0	TRE.RSP.85.135.LLLL.0.B	TRCF.RSP.85.135.LLLL.0
85. (R 240)	–	–	–
100.	TRC.RSP.100.145.LLLL.0	TRE.RSP.100.145.LLLL.0.B/C [1]	TRCF.RSP.100.145.LLLL.0
125.	TRC.RSP.125.182.LLLL.0	TRE.RSP.125.182.LLLL.0	–

1) Available for B- and C-versions

*Standard lengths from the gliding feed-through outside the system - special lengths upon request.

e-chains® standard lengths*

LLLL [mm] | **0500** | **1000** | **1500** | **2000** |

Part No. with **LLLL** standard length value (measured from the gliding feed-through) corresponds to the robot arm length from axis 3.

For example: TRC.RSP.60.087.0500.0

triflex® R | RSP e-chains®

Cable length calculation

Calculation of the e-chain® total length | RSP e-chain®

Ø Index	Bend radius *R* [mm]	e-chain® length* [mm]	Number of e-chains® links	e-chains® total length [mm]
30.	–	–	–	–
40.	–	–	–	–
50.	–	–	–	–
60.	087	1489	73	LLLL + 1489
65.	100	1432	62	LLLL + 1432
65. (R 200)	–	–	–	–
70.	110	1484	58	LLLL + 1484
85.	135	1622	53	LLLL + 1622
85. (R 240)	–	–	–	–
100.	145	1656	48	LLLL + 1656
125.	182	1962	44	LLLL + 1962

*Values are related to the e-chain® length within the system

To calculate the total e-chain® length: please add the e-chain® length* within the system to the **LLLL** standard length (measured from the gliding feed-through)

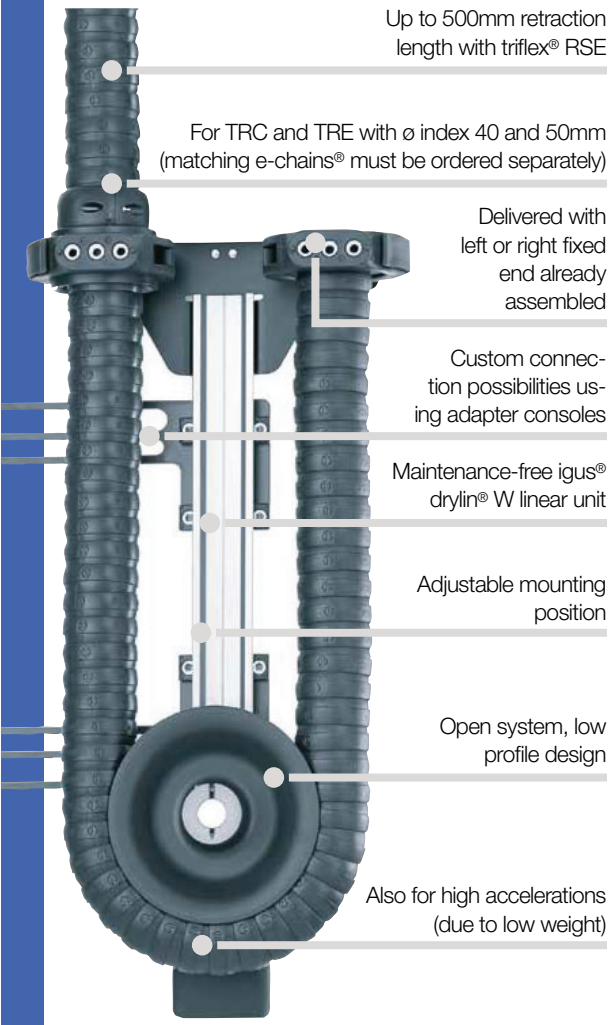
e-chain® overall length =
additional length from the gliding feed-through **LLLL** +
the e-chain® length within the system

More information and installation dimensions | RSP e-chains®

- **TRC series** - closed design, chip protection, smooth outer contour ▶ **From page 968**
- **TRE series** - "easy" design, very easy to fill, simply press cables in ▶ **From page 970**
- **TRCF series** - closed design with snap-lock mechanism, chip protection, smooth outer contour ▶ **Page 972**

triflex® R | RSE retraction system | Advantages

Cost-effective retraction system with deflection



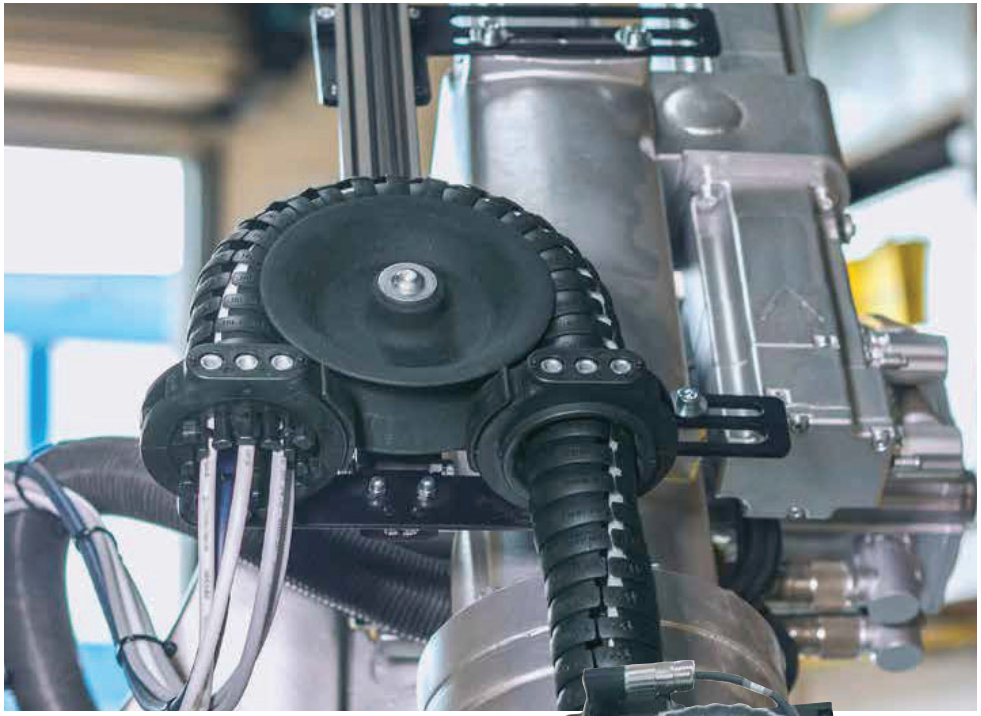
Cost-effective retraction system with deflection for small robots - triflex® RSE

Specially developed for robots with small to medium cable and hose filling, the igus® triflex® RSE retraction system offers a way to prevent loop formation in the workspace of the robot, even in highly dynamic applications.

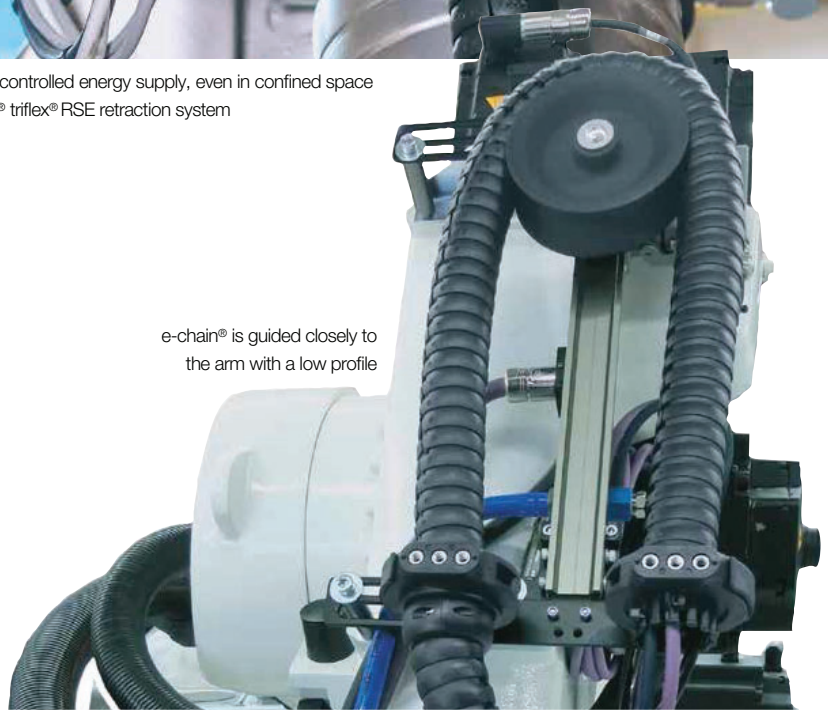
- For series TRC·TRE with sizes 40 and 50mm
- Extremely fast response, even in highly dynamic robot programs
- Low weight, very little reduction in robot handling capacity
- Universal adjustable installation brackets
- Maintenance and lubrication-free igus® drylin® W linear unit
- For maximum degrees of freedom
- For cable diameters up to 18.8mm

triflex® R | RSE retraction system | Application examples

RSE - R(etraction) S(ystem) E(lastic)



Reliable and controlled energy supply, even in confined space with the igus® triflex® RSE retraction system



e-chain® is guided closely to the arm with a low profile

triflex® R | RSE retraction system

System design with matching e-chains®

Optional cover for additional installation space on the robot: **TR.RSE.XX.COVER**

Matching triflex® R e-chains® for RSE with integrated fibre-rods
TRC.RSE.XX.*R*.LLLL.0
TRE.RSE.XX.*R*.LLLL.0.B

e-chain® overall length =
additional length from the gliding feed-through **LLLL +**
the e-chain® length within the system

RSE system (e-chain® not included) **+**
Mounting bracket **+**
Gliding feed-through **=**
TR.RSE.(02).XX.L or
TR.RSE.(02).XX.R

Complete RSE retraction system with deflection, with fixed end on the right and TRC triflex® R series. Mounting bracket and gliding feed-through are included. Please order matching triflex® R e-chain® and optional cover separately.

triflex® R | RSE retraction system

Sample order of a retraction system including e-chain®

Sample order of a complete TR.RSE system, Ø Index 50, fixed end on the left, including cover and e-chain® (standard length: 500mm)

System	Insert Ø index / select fixed end **.L / .R**	TR.RSE.50.**L**
+ Cover	Insert Ø index (cover optional)	TR.RSE.50.COVER
+ e-chain®	Insert ø-index / Insert bend radius ***R*** / Insert standard length **LLLL**	TRC.RSE.50.080.**0500**.0
Order text:	**TR.RSE.50.L + TR.RSE.50.COVER + TRC.RSE.50.080.0500.0**	

Retraction system order key

TR.RSE.50.L
TR.RSE.50.R

- **L** = Fixed end right or
- **R** = Fixed end left
- Ø index
- Retraction system
- Series

e-chains® order key

TRC.RSE.50.080.0500.0
TRE.RSE.50.080.0500.0.B

- Default colour black
- **LLLL** = Additional length
- ***R*** Bend radius
- Ø index
- Retraction system
- e-chains® series

Optional accessories | RS modular retraction system

Cover
for additional installation space and complex movements
▶ Page 1030

Adapter consoles
for custom mounting options
▶ Page 1055

Axis 6 clamp
for triflex® R mounting bracket
▶ Page 1058

triflex® R | RSE retraction system

Product range

Product range | RSE cost-effective retraction system with deflection

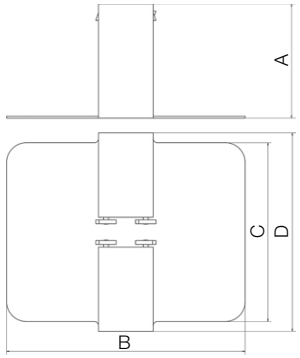
Ø Index	Part No. fixed end **left**	Part No. fixed end **right**	Retraction length[1] ≤ [mm]	A [mm]	B [mm]	C [mm]	D [mm]	Weight [kg]
30.	–	–	–	–	–	–	–	–
40.	TR.RSE.02.40.L	TR.RSE.02.40.R	500	440	220	110	64.7	1.6
50.	TR.RSE.50.L	TR.RSE.50.R	500	497	275	132	79	2.1
60.	–	–	–	–	–	–	–	–
65.	–	–	–	–	–	–	–	–
65. (R 200)	–	–	–	–	–	–	–	–
70.	–	–	–	–	–	–	–	–
85.	–	–	–	–	–	–	–	–
85. (R 240)	–	–	–	–	–	–	–	–
100.	–	–	–	–	–	–	–	–
125.	–	–	–	–	–	–	–	–

Please order matching triflex® R e-chain® separately. 1) Max. retraction length

Product range | RSE cover, optional

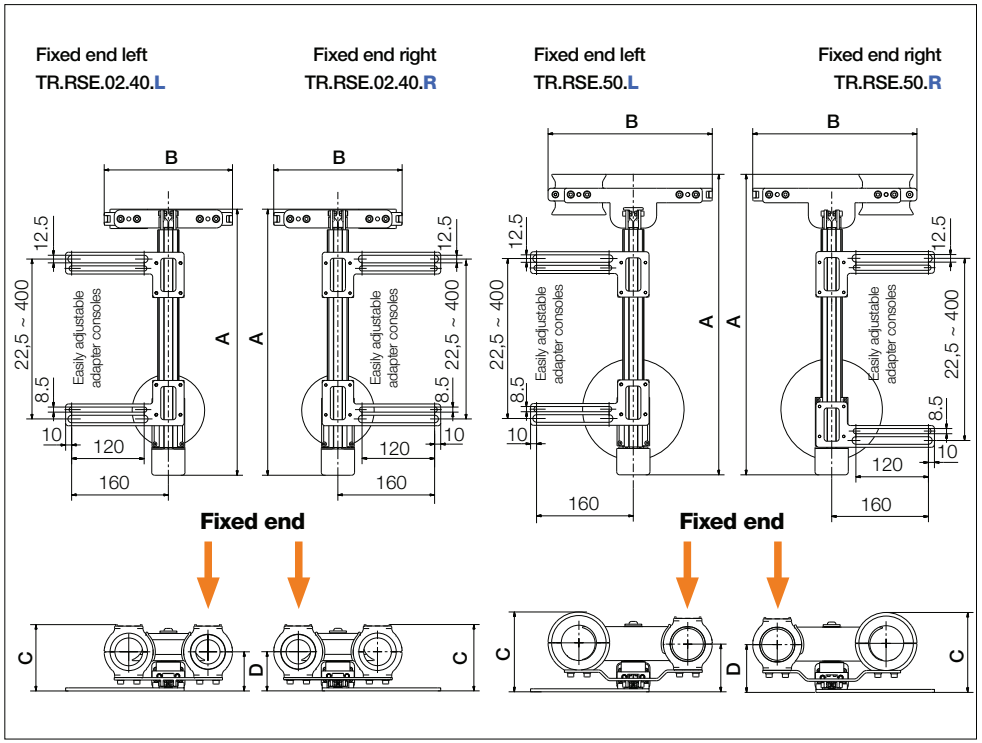
Ø Index	Optional cover retrofit kit	A [mm]	B [mm]	C [mm]	D [mm]	Load* ≤ [kg]	Weight [kg]
30.		–	–	–	–	–	–
40.	TR.RSE.40.COVER	115	240	180	200	1.5	1.1
50.	TR.RSE.50.COVER	126	300	248	248	1.5	1.7
60.		–	–	–	–	–	–
65.		–	–	–	–	–	–
65. (R 200)		–	–	–	–	–	–
70.		–	–	–	–	–	–
85.		–	–	–	–	–	–
85. (R 240)		–	–	–	–	–	–
100.		–	–	–	–	–	–
125.		–	–	–	–	–	–

*Maximum fill weight to be used with the cover



triflex® R | RSE retraction system

Installation dimensions



RSE - retraction system with deflection for small robots (diagram shows the fixed end on the left)

Mounting bracket and gliding feed-through are included.

Please order matching triflex® R e-chain® separately.

triflex® R | RSE e-chains®

Product range

Product range | Matching e-chains® for RSE

Ø Index	Part No. **TRC** enclosed	Part No. **TRE** "easy" design
30. ▶	–	–
40. ▶	TRC.RSE.40.058. LLLL.0	TRE.RSE.40.058. LLLL.0.B
50. ▶	TRC.RSE.50.080. LLLL.0	TRE.RSE.50.080. LLLL.0.B
60. ▶	–	–
65. ▶	–	–
65. (*R 200*) ▶	–	–
70. ▶	–	–
85. ▶	–	–
85. (*R 240*) ▶	–	–
100. ▶	–	–
125. ▶	–	–

*Standard lengths from the gliding feed-through outside the system - special lengths upon request.

e-chains® standard lengths*

LLLL [mm] | **0500** | **0750** | **1000** | **1250** |

Part No. with **LLLL** standard length value (measured from the gliding feed-through) corresponds to the robot arm length from axis 3.

For example: TRC.RSE.40.058.0500.0

triflex® R | RSE e-chains®

Cable length calculation

Calculation of the e-chain® total length | RSE e-chain®

Ø Index	Bend radius *R* [mm]	e-chain® length* [mm]	Number of e-chains® links	e-chains® total length [mm]
30. ▶	–	–	–	–
40. ▶	058	904	65	LLLL + 904
50. ▶	080	1044	60	LLLL + 1044
60. ▶	–	–	–	–
65. ▶	–	–	–	–
65. (*R 200*) ▶	–	–	–	–
70. ▶	–	–	–	–
85. ▶	–	–	–	–
85. (*R 240*) ▶	–	–	–	–
100. ▶	–	–	–	–
125. ▶	–	–	–	–

*Values are related to the e-chain® length within the system

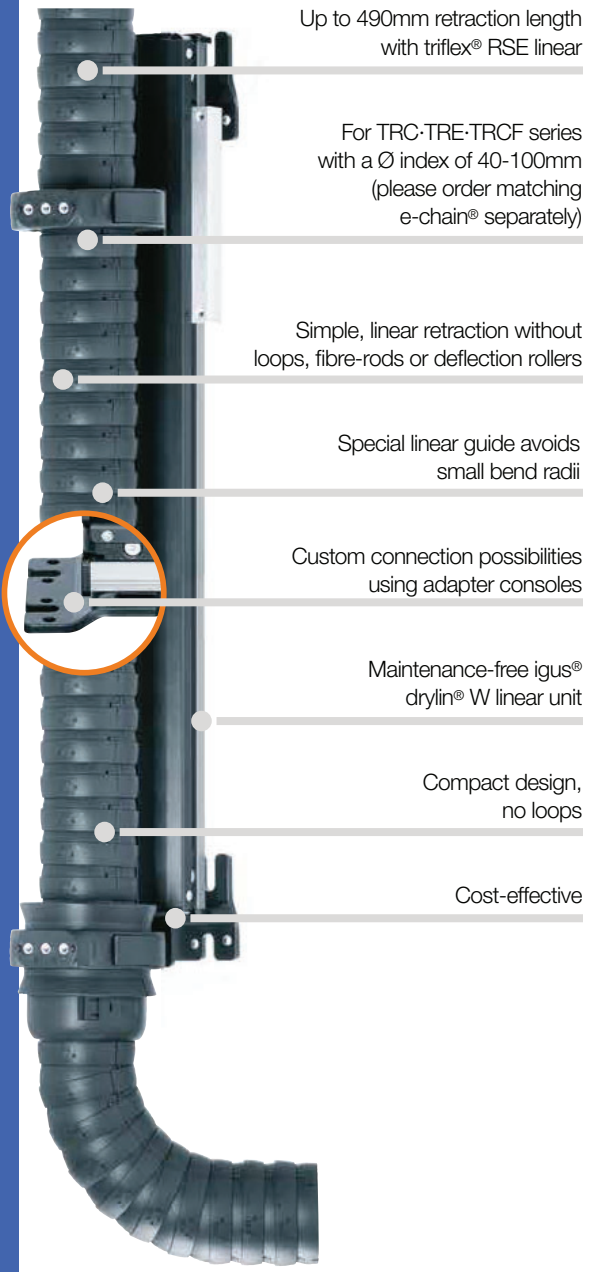
To calculate the total e-chain® length: please add the e-chain® length* within the system to the **LLLL** standard additional length (measured from the gliding feed-through)

e-chain® overall length =
additional length from the gliding feed-through **LLLL** +
the e-chain® length within the system

More information and installation dimensions | RSE e-chains®

- **TRC series** - closed design, chip protection, smooth outer contour ▶ **From page 968**
- **TRE series** - "easy" design, very easy to fill, simply press cables in ▶ **From page 970**

Compact retraction system, linear



Compact retraction system - triflex® RSE and RSEC linear

The more complex the automated production technology, the greater the requirements placed on the energy supply system. It is increasingly the case that not only electric power and fluids have to be supplied to production robots; but also laser cables and supply hoses for rivets, pins and screws. As these often cannot function with small bend radii, the new triflex® RSE and RSEC relies on very easy linear retraction without loops and spring rods or deflection rollers. The purpose of the triflex® RSE and RSEC retraction system is to hold the e-chain® as closely as possible to the robot arm in order to prevent the e-chain® from intruding upon or blocking the robot's movements.

- Simple, linear retraction without loops, fibre-rods or deflection rollers
- For series TRC·TRE·TRCF with a ø-index of 40-100mm
- Special linear guide avoids small bend radii
- Up to 490mm retraction length
- Space-saving and cost-effective
- Maintenance-free drylin® W linear unit

triflex® R
RSE
linear

RSE linear - R(etraction) S(ystem) E(lastic) linear
RSEC - R(etraction) S(ystem) E(lastic) C(ompact)

igus® TR.RSE system on test robot

Lightweight, linear retraction system for small robots. RSE·RSEC linear for sizes TR.RSE.40, TR.RSE.50 and TR.RSEC.60
▶ From page 1038

Linear retraction system for sizes 60-100 with attachment brackets for a wide variety of robot models. RSE linear for sizes TR.RSE.60 up to TR.RSE.100 ▶ From page 1040

triflex® R | RSE linear retraction system

System design with matching e-chains®

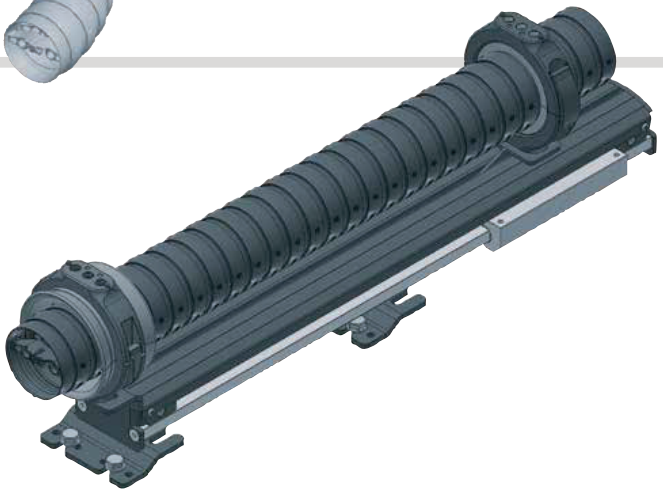
Matching triflex® R e-chain® for RSE linear
TRC .XX.*R*.0
TRE .XX.*R*.0.B
TRCF.XX.*R*.0

e-chain® total length* =
Additional length **A1** +
Dimension **A** +
Additional length **A6**

Limit protector

RSE linear system
(without e-chain®) +
Mounting bracket +
Gliding feed-through =
TR.RSE.XX

*To calculate the e-chain® total length: please add the additional length **A1**, the additional length **A6** and the dimension **A**.



Complete RSE linear retraction system and TRE triflex® R series. Mounting bracket and gliding feed-through are included. Please order matching triflex® R e-chain®, optional limit protectors and RSE linear support separately.

triflex® R | RSE linear retraction system

Sample order of a retraction system including e-chain®

Sample order of a complete TR.RSE linear system, Ø index 85, and e-chain® (length: 2m)

System	Insert Ø index	**TR.RSE.85**
+ e-chain®	Insert Ø index / Insert bend radius ***R*** / Insert length in metres	**2m TRC.85.135.0**
+ Protector	Insert protector variant / Insert Ø index	**TR.85.30**
Order text:	**TR.RSE.85. + 2m TRC.85.135.0 + TR.85.30**	

Retraction system order key

TR.RSE.85

- Ø index
- Retraction system
- Series

e-chains® order key

TRC .85.135.0
TRE .85.135.0.B
TRCF.85.135.0

- Default colour black
- ***R*** Bend radius
- Ø index
- e-chains® series

Optional accessories | RSE linear pneumatic retraction system

RSE linear support
for lateral deflection of the triflex® R, optional
▶ Page 1040

Protectors
with screw connections or quick release
▶ Page 987

Adapter consoles
for custom mounting options
▶ Page 1055

Axis 6 clamp
for triflex® R mounting bracket
▶ Page 1058

triflex® R | RSE·RSEC linear retraction system

TR.RSE.40, TR.RSE.50, TR.RSEC.60 product range

Product range | RSE·RSEC linear TR.RSE.40, TR.RSE.50, TR.RSEC.60

Ø Index		Part No. RSE·RSEC linear	Retraction length[1] ≤ [mm]	A [mm]	B [mm]	C [mm]	Weight [kg]
30.	▶	–	–	–	–	–	–
40.	▶	TR.RSE.40	290	457	140	143	1.4
50.	▶	TR.RSE.50	290	475	140	151	1.7
60.	▶	TR.RSEC.60	250	476	140	179	2.2

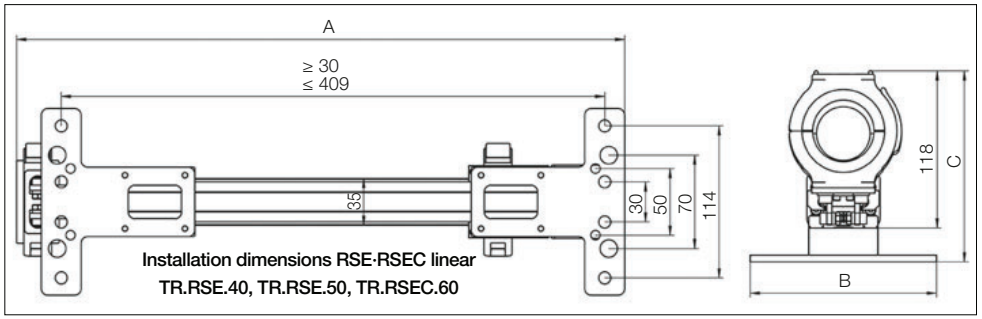
Please order matching triflex® R e-chain® separately. 1) Max. retraction length

RSE linear sizes TR.RSE.60 up to TR.RSE.100 ▶ From page 1040

triflex® R
RSE
linear

triflex® R | RSE·RSEC linear retraction system

Installation dimensions TR.RSE.40, TR.RSE.50, TR.RSEC.60



Installation dimensions RSE·RSEC linear
TR.RSE.40, TR.RSE.50, TR.RSEC.60

RSE·RSEC linear retraction system

Mounting bracket and gliding feed-through are included.

Please order matching triflex® R e-chain® separately.

triflex® R | RSE linear retraction system

Product range TR.RSE.60 - TR.RSE.100

Product range | RSE linear TR.RSE.60 - TR.RSE.100

Ø Index	Part No. RSE linear	Retraction length[1] ≤ [mm]	A [mm]	B [mm]	C [mm]	Weight [kg]	Part No. RSE support	Principle sketch
60.	TR.RSE.60	490	868	134	231	9.9	TR.914.973.60	
65.	TR.RSE.65	490	880	134	231	10.0	TR.914.973.65	
65. (R 200)	TR.RSE.65.200*	490	880	134	231	10.0	–	
70.	TR.RSE.70	490	878	155	258	10.0	TR.914.973.70	
85.	TR.RSE.85	490	885	155	258	10.0	TR.914.973.85	For lateral
85. (R 240)	TR.RSE.85.240	490	885	155	258	10.0	–	deflection of
100.	TR.RSE.100	490	886	170	264	10.2	TR.914.973.100	energy supply
125.	–	–	–	–	–	–	–	

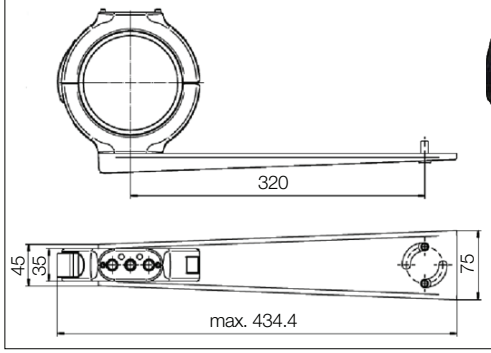
*Available upon request. Please consult igus® for delivery time.

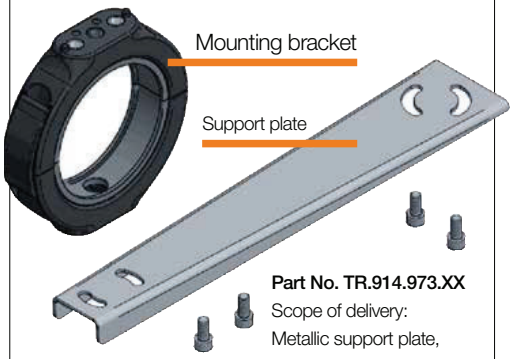
Please order matching triflex® R e-chain® separately. 1) Max. retraction length. Optional RSE support must be ordered separately.

RSE linear sizes TR.RSE.40, TR.RSE.50, TR.RSEC.60 ▶ From page 1038

Product range | RSE linear support, optional

RSE linear support for lateral deflection of the triflex® R energy supply and generation of the fixed end, optional

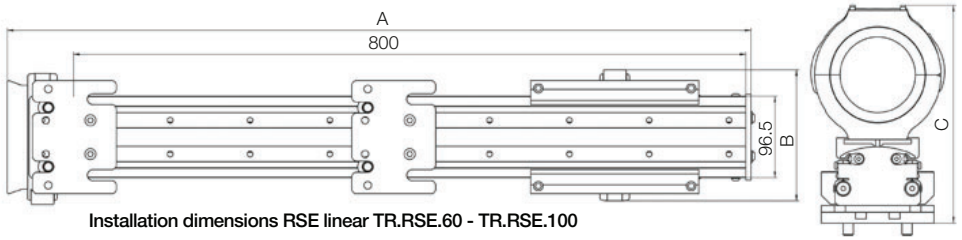




Part No. TR.914.973.XX
Scope of delivery:
Metallic support plate, mounting bracket and mounting screws

triflex® R | RSE linear retraction system

Installation dimensions TR.RSE.60 - TR.RSE.100



Installation dimensions RSE linear TR.RSE.60 - TR.RSE.100

RSE linear retraction system

Mounting bracket and gliding feed-through are included.

Please order matching triflex® R e-chain® separately.

triflex® R | RSE·RSEC linear retraction system

Product range

Product range | Matching e-chains® for RSE·RSEC linear

Ø Index	Part No. **TRC** enclosed	Part No. **TRE** "easy" design	Part No. **TRCF** with snap lock mechanism
30.	–	–	–
40.	TRC.40.058.0	TRE.40.058.0.B	–
50.	TRC.50.080.0	TRE.50.080.0.B	–
60.	TRC.60.087.0	TRE.60.087.0.B	–
65.	–	–	TRCF.65.100.0
65. (R 200)	–	–	TRCF.65.200.0
70.	TRC.70.110.0	TRE.70.110.0.B	–
85.	TRC.85.135.0	TRE.85.135.0.B	TRCF.85.135.0
85. (R 240)	–	–	TRCF.85.240.0
100.	TRC.100.145.0	TRE.100.145.0.B/C[1)]	TRCF.100.145.0
125.	–	–	–

1) Available for B- and C-versions

Please note that all triflex® R e-chains® can be lengthened and shortened individually and can be customized to meet the needs of your application.

Please order e-chains® as piece parts and purchase a protector for each one.

Product range | Matching protectors for RSE·RSEC linear

Ø Index	❶ Part No. Protector with screw fastener	❷ Part No. Protector with quick-lock fastener	Principle sketch protectors variants
30.	–	–	
40.	TR.40.10	TR.40.30	
50.	TR.50.10	TR.50.30	
60.	TR.60.10	TR.60.30	
65.	TR.65.10	–	
65. (R 200)	TR.65.200.10*	–	
70.	TR.70.10	TR.70.30	
85.	TR.85.10	TR.85.30	
85. (R 240)	TR.85.240.10	–	
100.	TR.100.10	TR.100.30	More information about
125.	–	–	protectors ▶ Page 987

*Available upon request. Please consult igus® for delivery time.

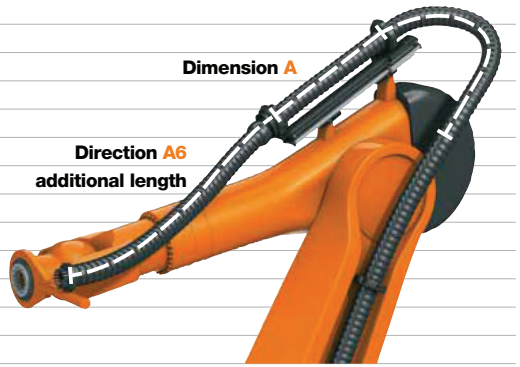
Please order protectors with screw connections or quick release as limit protectors.

triflex® R | RSE·RSEC linear retraction system

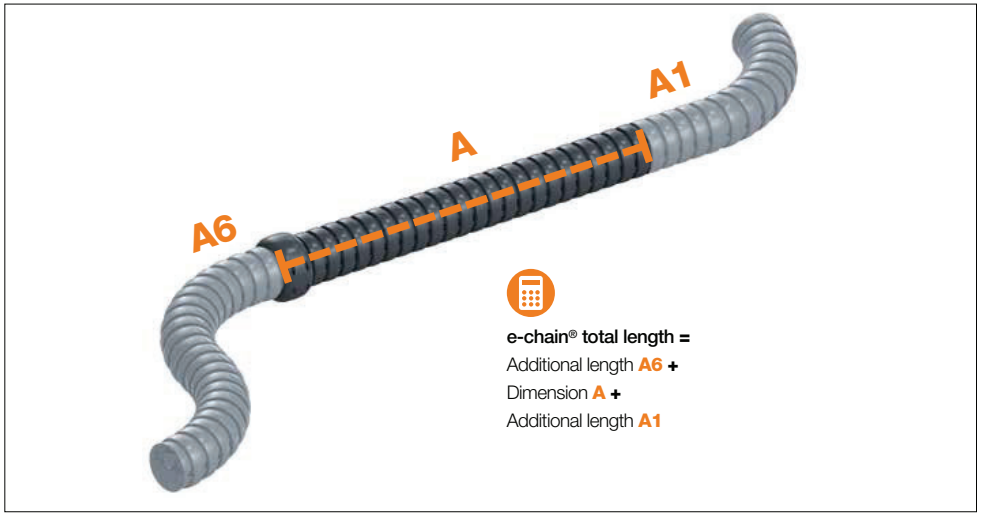
Cable length calculation

Calculation of the e-chain® total length | RSE·RSEC linear e-chain®

Series	Ø Index	Bend radius *R* [mm]	**Dimension A** [mm]	Principle sketch e-chains® total length	**Direction A1 additional length**
RSE	30.	–	–		
RSE	40.	058	390		
RSE	50.	080	390		
RSEC	60.	080	390		
RSE	60.	087	750		
RSE	65.	100	750		
RSE	65. (R 200)	200	750		
RSE	70.	110	750		
RSE	85.	135	750		
RSE	85. (R 240)	240	750		
RSE	100.	145	750		
RSE	125.	–	–		



To calculate the e-chain® total length: please add the additional length **A1**, the additional length **A6** and the dimension **A**. Additionally, at least 1 limit protector must be ordered

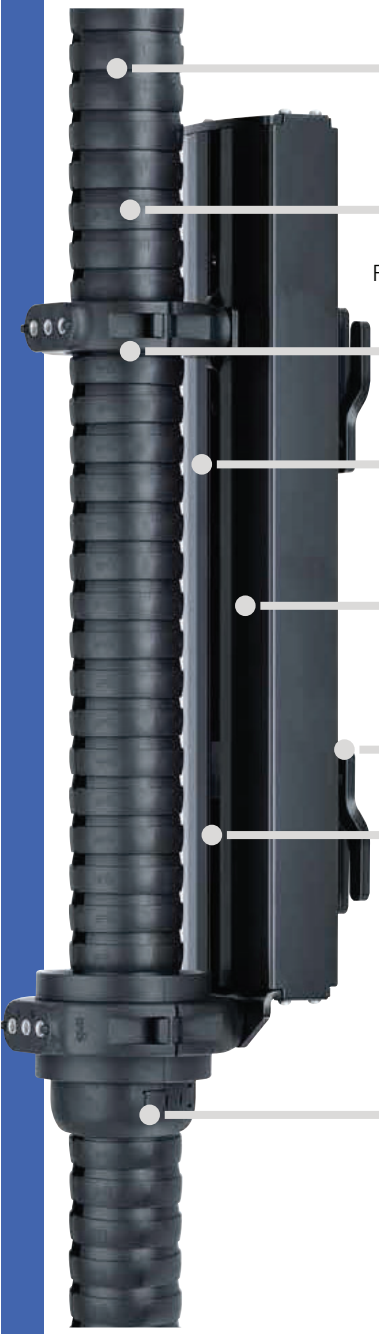


More information and installation height | RSE linear e-chains®

- **TRC series** - closed design, chip protection, smooth outer contour ▶ **From page 968**
- **TRE series** - "easy" design, very easy to fill, simply press cables in ▶ **From page 970**
- **TRCF series** - closed design with snap-lock mechanism, chip protection, smooth outer contour ▶ **Page 972**

triflex® R | RSEL·RSSL retraction systems | Advantages

Cost-effective linear retraction system New



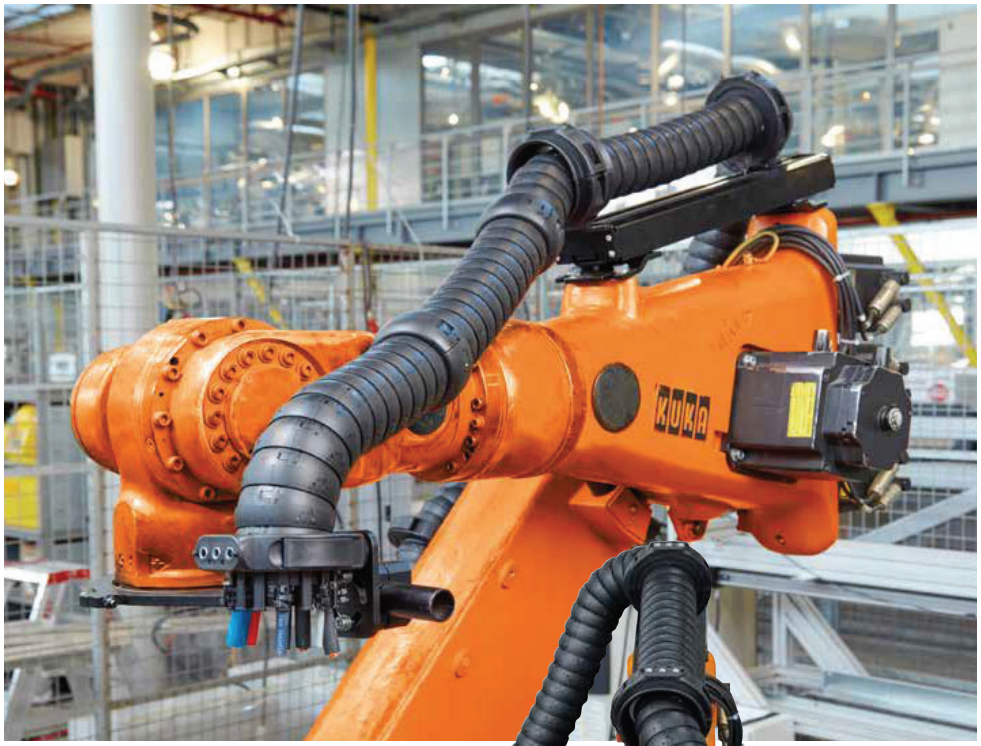
Cost-effective, linear retraction system - triflex® RSEL and RSSL

Avoid loops forming on the robot head - more cost-effective - with the RSEL or RSSL retraction system. Especially designed for robots with medium to high payload, the igus® triflex® RSEL and triflex® RSSL retraction systems offer an option to actively avoid loops forming in the working area of the robot by keeping the e-chain® as close as possible to the robot arm.

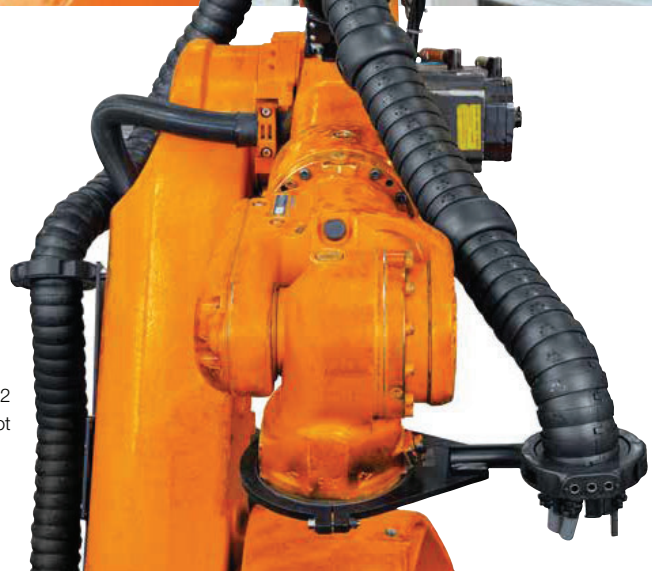
- Cost-optimised retraction system, easy to retrofit
- Due to standard dimensions and the very compact design, the RSEL and RSSL retraction systems can be mounted directly on the 3rd axis of all common types of robots
- Retraction element with elastomer band - triflex® RSEL
- Retraction element with tension spring - triflex® RSSL
- Prevents the e-chain® from loops forming or blocking the motion, even in highly dynamic applications
- Short type
- Attachment options for numerous robot models
- For robots with high and medium payloads
- The fixed end of the e-chain® can be placed freely due to the linear design of the RSE and RSSL retraction systems

RSEL·RSSL retraction systems | Application examples

RSEL - R(etraction) S(ystem) E(lastic) L(inear)
RSSL - R(etraction) S(ystem) S(pring) L(inear)



triflex® RSEL - cost-effective and space-saving guidance of the e-chain®



Cable routing from axis 2 to axis 6 on a 6-axis robot

triflex® R | RSEL·RSSL retraction system

System design with matching e-chains®

Matching triflex® R e-chain® for RSEL·RSSL
TRC .XX.*R*.0
TRE .XX.*R*.0.B
TRCF.XX.*R*.0

e-chain® total length* =
Additional length **A1** +
Dimension **A** +
Additional length **A6**

Limit protector

RSEL system
(without e-chain®) +
mounting bracket +
gliding feed-through =
TR.RSEL.XX

*To calculate the e-chain® total length: please add the additional length **A1**, the additional length **A6** and the dimension **A**.

Complete retraction system RSEL·RSSL and triflex® R e-chain® TRC series. Mounting bracket and gliding feed-through are included. Please order triflex® R e-chains® and limiting protectors separately!

triflex® R | RSEL·RSSL retraction system

Sample order of a retraction system including e-chain®

Sample order of a complete TR.RSEL system, Ø index 85, and e-chain® (length: 2m)

System	Insert Ø index	**TR.RSEL.85**
+ e-chain®	Insert Ø index / Insert bend radius *R* / Insert length in metres	**2m TRCF.85.135.0**
+ Protector	Insert protector variant / Insert Ø index	**TR.85.30**
Order text:	**TR.RSEL.85. + 2m TRCF.85.135.0 + TR.85.30**	

Retraction system order key

TR.RSEL.85
- Ø index
- Retraction system
- Series

e-chains® order key

TRC .85.135.0
TRE .85.135.0.B
TRCF.85.135.0
- Default colour black
- *R* Bend radius
- Ø index
- e-chains® series

Optional accessories | RSEL RSSL modular retraction system

Protectors
with screw connections
or quick release
▶ Page 987

Adapter consoles
for custom
mounting options
▶ Page 1055

Axis 6 clamp
for triflex® R
mounting bracket
▶ Page 1058

triflex® R | RSEL·RSSL retraction system

Product range

Product range | RSEL retraction system

Ø Index		Part No. RSEL	Retraction length[1] ≤ [mm]	A [mm]	B [mm]	C [mm]	Weight [kg]
30.	▶	–	–	–	–	–	–
40.	▶	–	–	–	–	–	–
50.	▶	–	–	–	–	–	–
60.	▶	**TR.RSEL.60**	380	631	126	228	10.6
65.	▶	**TR.RSEL.65**	380	631	126	228	10.6
65. *(R 200)*	▶	TR.RSEL.65.200*	380	631	155	248	10.6
70.	▶	**TR.RSEL.70**	380	631	155	248	10.7
85.	▶	**TR.RSEL.85**	380	638	155	255	10.8
85. *(R 240)*	▶	**TR.RSEL.85.240**	380	638	155	255	10.8
100.	▶	**TR.RSEL.100**	380	638	170	255	11.0
125.	▶	–	–	–	–	–	–

Please order matching triflex® R e-chain® separately. 1) Max. retraction length. *Available upon request. Please consult igus® for delivery time.

Product range | RSSL retraction system

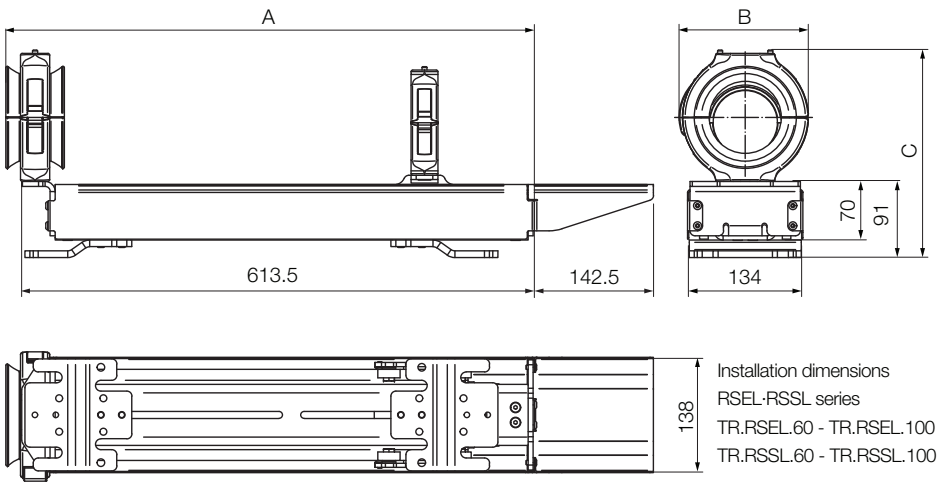
Ø Index		Part No. RSEL	Retraction length[1] ≤ [mm]	A [mm]	B [mm]	C [mm]	Weight [kg]
30.	▶	–	–	–	–	–	–
40.	▶	–	–	–	–	–	–
50.	▶	–	–	–	–	–	–
60.	▶	**TR.RSSL.60**	350	631	126	228	10.6
65.	▶	**TR.RSSL.65**	350	631	126	228	10.6
65. *(R 200)*	▶	TR.RSSL.65.200*	350	631	155	248	10.6
70.	▶	**TR.RSSL.70**	350	631	155	248	10.7
85.	▶	**TR.RSSL.85**	350	638	155	255	10.8
85. *(R 240)*	▶	**TR.RSSL.85.240**	350	638	155	255	10.8
100.	▶	**TR.RSSL.100**	350	638	170	255	11.0
125.	▶	–	–	–	–	–	–

Please order matching triflex® R e-chain® separately. 1) Max. retraction length. *Available upon request. Please consult igus® for delivery time.

triflex® R
RSEL
RSSL

triflex® R | RSEL·RSSL retraction system

Installation dimensions



Installation dimensions
RSEL·RSSL series
TR.RSEL.60 - TR.RSEL.100
TR.RSSL.60 - TR.RSSL.100

RSEL retraction system

Mounting bracket and gliding feed-through are included.

Please order matching triflex® R e-chain® separately.

triflex® R | RSEL·RSSL e-chains®

Product range

Product range | Matching e-chains® for RSEL and RSSL

Ø Index	Part No. **TRC** enclosed	Part No. **TRE** "easy" design	Part No. **TRCF** with snap lock mechanism
30. ▶	–	–	–
40. ▶	–	–	–
50. ▶	–	–	–
60. ▶	TRC.60.087.0	TRE.60.087.0.B	–
65. ▶	–	–	TRCF.65.100.0
65. *(R 200)* ▶	–	–	TRCF.65.200.0
70. ▶	TRC.70.110.0	TRE.70.110.0.B	–
85. ▶	TRC.85.135.0	TRE.85.135.0.B	TRCF.85.135.0
85. *(R 240)* ▶	–	–	TRCF.85.240.0
100. ▶	TRC.100.145.0	TRE.100.145.0.B	TRCF.100.145.0
125. ▶	–	–	–

1) Available for B- and C-versions

Please note that all triflex® R e-chains® can be lengthened and shortened individually and can be customized to meet the needs of your application.

Please order e-chains® as piece parts and purchase a protector for each one.

Product range | Matching protectors for RSEL and RSSL

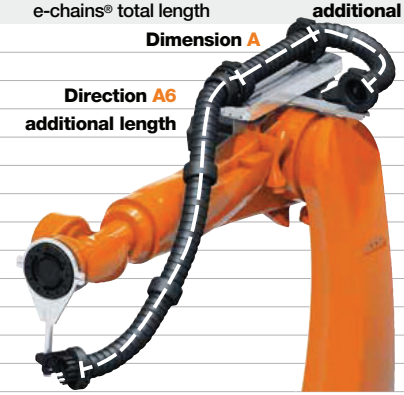
Ø Index	❶ Part No. Protector with screw fastener	❷ Part No. Protector with quick-lock fastener	Principle sketch protectors variants
30. ▶	–	–	
40. ▶	–	–	
50. ▶	–	–	
60. ▶	TR.60.10	TR.60.30	
65. ▶	TR.65.10	–	
65. *(R 200)* ▶	–	–	
70. ▶	TR.70.10	TR.70.30	
85. ▶	TR.85.10	TR.85.30	
85. *(R 240)* ▶	TR.85.240.10	–	
100. ▶	TR.100.10	TR.100.30	More information about
125. ▶	–	–	protectors ▶ Page 987

*Available upon request. Please consult igus® for delivery time.

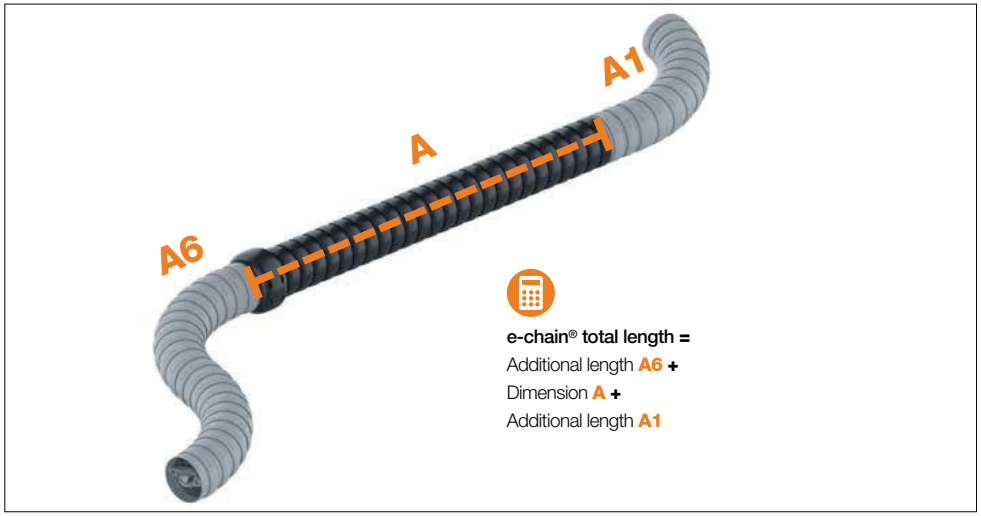
Please order protectors with screw connections or quick release as limit protectors.

Calculation of the e-chain® total length | RSEL and RSSL e-chain®

Ø Index	Bend radius *R* [mm]	**Dimension A** [mm]	Principle sketch e-chains® total length	**Direction A1** additional length
30. ▶	–	–		
40. ▶	–	–		
50. ▶	–	–		
60. ▶	087	530		
65. ▶	100	530		
65. *(R 200)* ▶	200	530		
70. ▶	110	530		
85. ▶	135	530		
85. *(R 240)* ▶	240	530		
100. ▶	145	530		
125. ▶	–	–		

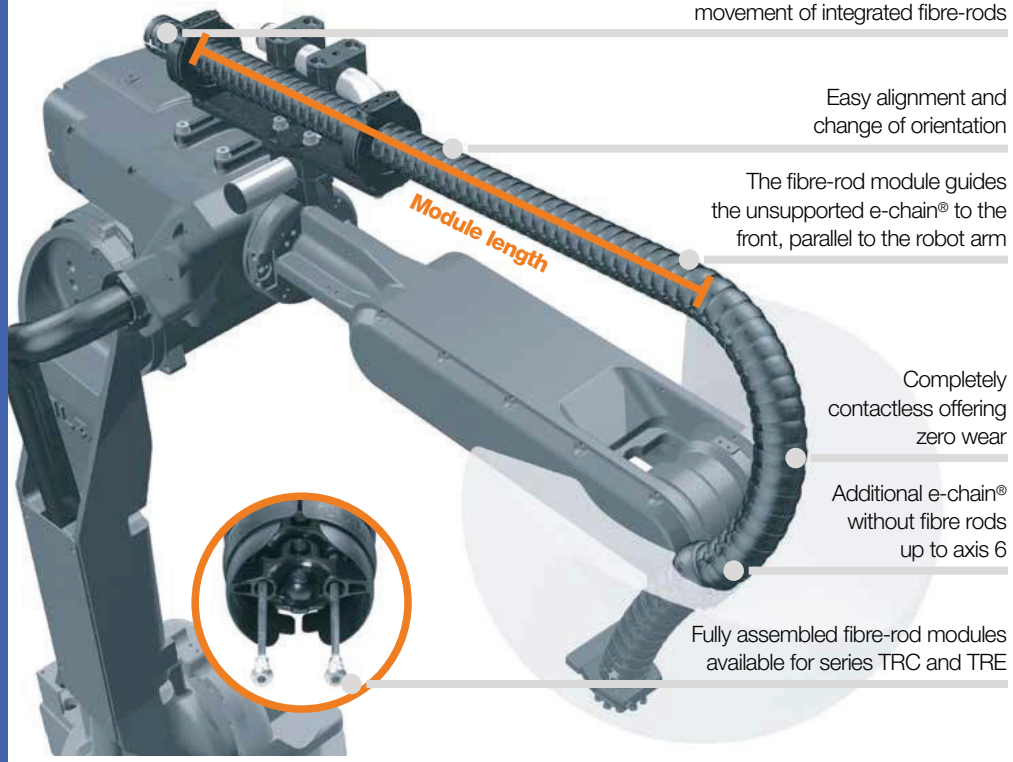


To calculate the e-chain® total length: please add the additional length **A1**, the additional length **A6** and the dimension **A**. Additionally, at least 1 limit protector must be ordered



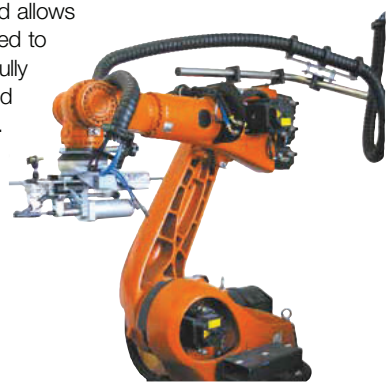
More information and installation dimensions | RSEL·RSSL e-chains®

- **TRC series** - closed design, chip protection, smooth outer contour ▶ **From page 968**
- **TRE series** - "easy" design, very easy to fill, simply press cables in ▶ **From page 970**
- **TRCF series** - closed design with snap-lock mechanism, chip protection, smooth outer contour ▶ **Page 972**



Fibre-rod modules for a directional pretension of the e-chain®

We supply fully assembled fibre-rod modules for triflex® R e-chain® Series TRC and TRE. The integrated fibre-rods generate a directional pretension for the e-chain®. This system creates a unique choice of movements for the energy supply system to the final axis of industrial robots. The fibre-rod module guides the unsupported e-chain® to the front, parallel to the robot arm. The bending properties of the modules depends on the installation orientation: only the front end allows flexible movement. The five rear e-chain® links are rigidly connected to allow relative movement of the integrated fibre-rods. This results in a fully contactless and therefore zero-wear energy supply system, designed for moderate movements with limited rotational motion of the axes. Additional e-chain® without fibre-rods for the final axis area needs to be ordered separately.



Part No. fibre-rod modules for TRC / TRE		Length [m]
TRC.40	**TRE.40**	
TRC.F.**40**.1000.1.0	TRE.F.**40**.1000.1.0.B	≈ 1.0
TRC.F.**40**.0900.1.0	TRE.F.**40**.0900.1.0.B	≈ 0.9
TRC.F.**40**.0800.1.0*	TRE.F.**40**.0800.1.0.B*	≈ 0.8
TRC.F.**40**.0700.1.0	TRE.F.**40**.0700.1.0.B	≈ 0.7
TRC.F.**40**.0600.1.0	TRE.F.**40**.0600.1.0.B	≈ 0.6
TRC.F.**40**.0500.1.0	TRE.F.**40**.0500.1.0.B	≈ 0.5
TRC.F.**40**.0400.1.0	TRE.F.**40**.0400.1.0.B	≈ 0.4
TRC.50	**TRE.50**	
TRC.F.**50**.1400.1.0	TRE.F.**50**.1400.1.0.B	≈ 1.4
TRC.F.**50**.1200.1.0	TRE.F.**50**.1200.1.0.B	≈ 1.2
TRC.F.**50**.1000.1.0*	TRE.F.**50**.1000.1.0.B*	≈ 1.0
TRC.F.**50**.0800.1.0	TRE.F.**50**.0800.1.0.B	≈ 0.8
TRC.F.**50**.0600.1.0	TRE.F.**50**.0600.1.0.B	≈ 0.6
TRC.F.**50**.0400.1.0	TRE.F.**50**.0400.1.0.B	≈ 0.4
TRC.60	**TRE.60**	
TRC.F.**60**.1400.1.0	TRE.F.**60**.1400.1.0.B	≈ 1.4
TRC.F.**60**.1200.1.0	TRE.F.**60**.1200.1.0.B	≈ 1.2
TRC.F.**60**.1000.1.0*	TRE.F.**60**.1000.1.0.B*	≈ 1.0
TRC.F.**60**.0800.1.0	TRE.F.**60**.0800.1.0.B	≈ 0.8
TRC.F.**60**.0600.1.0	TRE.F.**60**.0600.1.0.B	≈ 0.6
TRC.F.**60**.0400.1.0	TRE.F.**60**.0400.1.0.B	≈ 0.4
TRC.70	**TRE.70**	
TRC.F.**70**.1800.1.0	TRE.F.**70**.1800.1.0.B	≈ 1.8
TRC.F.**70**.1600.1.0	TRE.F.**70**.1600.1.0.B	≈ 1.6
TRC.F.**70**.1400.1.0	TRE.F.**70**.1400.1.0.B	≈ 1.4
TRC.F.**70**.1200.1.0*	TRE.F.**70**.1200.1.0.B*	≈ 1.2
TRC.F.**70**.1000.1.0	TRE.F.**70**.1000.1.0.B	≈ 1.0
TRC.F.**70**.0800.1.0	TRE.F.**70**.0800.1.0.B	≈ 0.8

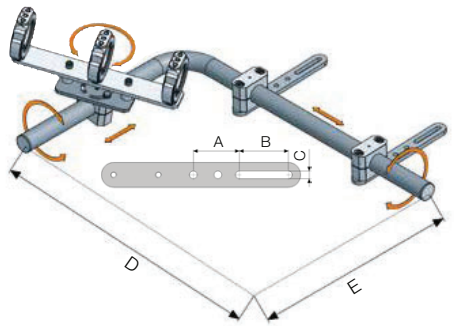
Part No. fibre-rod modules for TRC / TRE		Length [m]
TRC.85	**TRE.85**	
TRC.F.**85**.2000.1.0	TRE.F.**85**.2000.1.0.B	≈ 2.0
TRC.F.**85**.1800.1.0	TRE.F.**85**.1800.1.0.B	≈ 1.8
TRC.F.**85**.1600.1.0	TRE.F.**85**.1600.1.0.B	≈ 1.6
TRC.F.**85**.1400.1.0*	TRE.F.**85**.1400.1.0.B*	≈ 1.4
TRC.F.**85**.1200.1.0	TRE.F.**85**.1200.1.0.B	≈ 1.2
TRC.F.**85**.1000.1.0	TRE.F.**85**.1000.1.0.B	≈ 1.0
TRC.F.**85**.0800.1.0	TRE.F.**85**.0800.1.0.B	≈ 0.8
TRC.100	**TRE.100**	
TRC.F.**100**.2000.1.0	TRE.F.**100**.2000.1.0.B/.C[1]	≈ 2.0
TRC.F.**100**.1800.1.0	TRE.F.**100**.1800.1.0.B/.C[1]	≈ 1.8
TRC.F.**100**.1600.1.0	TRE.F.**100**.1600.1.0.B/.C[1]	≈ 1.6
TRC.F.**100**.1400.1.0*	TRE.F.**100**.1400.1.0.B/.C[1]*	≈ 1.4
TRC.F.**100**.1200.1.0	TRE.F.**100**.1200.1.0.B/.C[1]	≈ 1.2
TRC.F.**100**.1000.1.0	TRE.F.**100**.1000.1.0.B/.C[1]	≈ 1.0
TRC.125	**TRE.125**	
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**.1600.1.0	TRE.F.**125**.1600.1.0	≈ 1.6
TRC.F.**125**.1400.1.0	TRE.F.**125**.1400.1.0	≈ 1.4
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

*Maximum recommended length for fibre-rod modules

1) For die C version please add the index „C

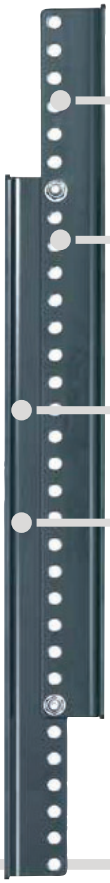
Universal mounting kit | For TRC·TRE

● Stainless steel angle tube with attachment brackets ● Freely positionable ● The energy supply system can be quickly and easily adapted to new programming sequences of the robot ● With 2 mounting brackets for sizes 40 and 60 - with 3 mounting brackets starting at size 70



Ø Index	Part No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Weight [kg]
40.	**TR.40.80**	74	40	8.4	475	325	3.9
50.	**TR.50.80**	74	40	8.4	475	325	3.9
60.	**TR.60.80**	74	40	8.4	625	325	5.1
70.	**TR.70.80**	75	80	12.6	875	575	13.2
85.	**TR.85.80**	75	80	12.6	875	575	13.5
100.	**TR.100.80**	75	80	12.6	875	575	13.5
125.	**TR.125.80**	75	80	12.6	875	575	14.4

Adjustment unit for retraction systems



Wide adjustment range of ± 250mm

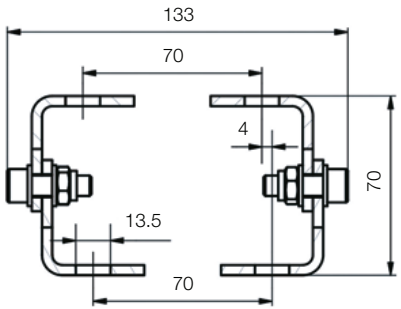
Can be combined with igus® adapter consoles

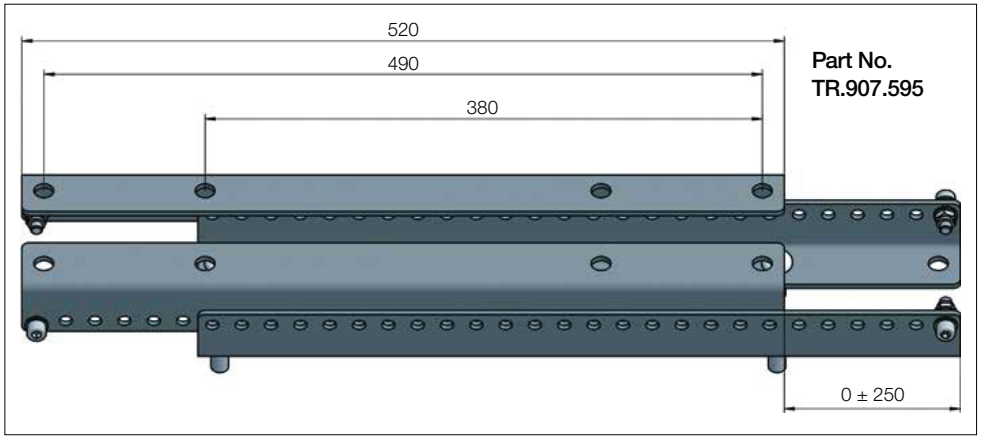
Simplifies alignment for robot cells with restricted space

Part No. TR.907.595
weight: 5.0kg

Adjustment unit for RSP and RS retraction systems

The optional adjustment unit is installed between the robot arm and the retraction system, and allows accurate adjustments of the position of the igus® retraction system on the robot arm. Particularly useful for multiple working programs using the same cable package.





Part No. TR.907.595

Adjustment unit to easily change the position of the retraction system

Adapter consoles for retraction systems

Adapter consoles for many robot models, from stock

For all triflex® R retraction systems and fibre-rod modules

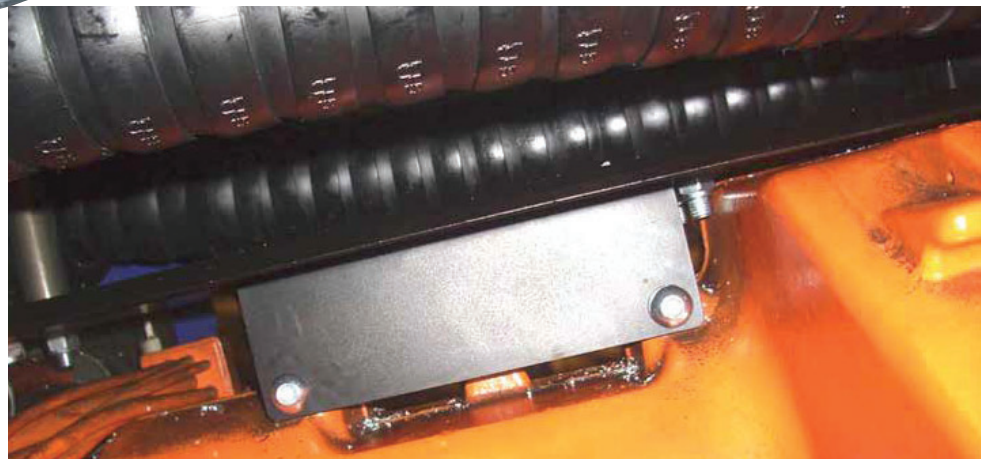
3D CAD data available online for download
▶ **www.igus.eu/consoles**

Also for robots needing side-mounted installation

Adapter consoles for all igus® retraction systems

The retraction systems provide all widely used drill patterns for attachment: 380 x 70mm and 490 x 90mm (in Ø12.5mm). We also supply a wide range of manufacturer and model-dependent adapter consoles from stock, in order to adapt to other robot variations. For example, many robot models are equipped from the factory with only side-mounted mounting options - in these cases, our adapter product range also supports simple installation of the retraction systems without additional engineering.

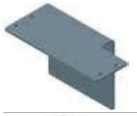
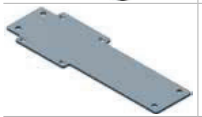
Adapter consoles for many robot models, from stock. Product range ▶ next page



Application example with RS system on ABB Series 6600

triflex® R | Adapter consoles | Accessories

Adapter consoles for retraction systems, from stock

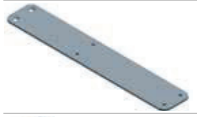
Adapter console	Part No.	Manufacturer	Robot model	Weight [kg]
	TR.907.347	**ABB**	IRB 6600 IRB 6640 IRB 6650	4.0
	TR.907.468	**ABB**	IRB 6400	9.8
	TR.907.448	**ABB**	IRB 4400	5.0
	TR.907.381	**ABB**	IRB 2400/10 IRB 2400/16	5.2
	TR.907.905	**ABB**	IRB 6620	2.8
	TR.908.494	**ABB**	IRB 4600 IRB 2600	2.9
	TR.907.374	**Comau**	NH1 130-2.6 NH3 165-2.7 NH3 220-2.7 NJ 110-3.0 NJ 110-2.6 SMART5 NJ 165 3.0	4.7
	TR.907.447	**Comau**	NM 45-2.0 NM 16-3.1	3.4
	TR.908.493	**Comau**	Smart six	2.2
	TR.907.327	**Yaskawa**	UP 20 UP 50 UP 130 UP 165 ES 165 ES 200 ES 280 HP 20 HP 50 MH6 HP 165	3.6
	TR.909.641	**Yaskawa**	MH50	2.0

More adapter consoles upon request. CAD data online.

triflex® R

triflex® R | Adapter consoles | Accessories

Excerpt from the product range

Adapter console	Part No.	Manufacturer	Robot model	Weight [kg]
	TR.911.220	**Fanuc**	M-710iC 50 M-710iC 70	2.0
	TR.908.973	**Fanuc**	M-710iB 45	1.1
	TR.907.270	**Fanuc**	IR-2000iB R-2000iA R-1000iA S 430 S 420	4.5
	TR.907.470.12	**Fanuc**	M-900iA 260L M-900iA 350	6.8
	TR.907.902.12	**Fanuc**	M-900iA 600	8.9
	TR.910.876	**Fanuc**	M900-IB700	4.6
	TR.907.599	**Kuka**	KR5 KR5arc KR6 KR16	2.5
	TR.908.113	**Kuka**	KR-1000	5.2
	TR.908.014	**Kuka**	KR 60 (HA) KR 30 (HA)	4.3
	TR.907.706	**Reis**	RV30-26 RV10-16 RV20-16 RV60-16 RV60-26 RV60-40 RV60-60 RV130	4.3
	TR.911.223 Spacer bolt	**Kuka**	Series Quantec (4 piece kit)	0.6

More adapter consoles upon request. CAD data online.

Attachment to axis 6

For use with a heavy duty connection, compact connection, and quick release units

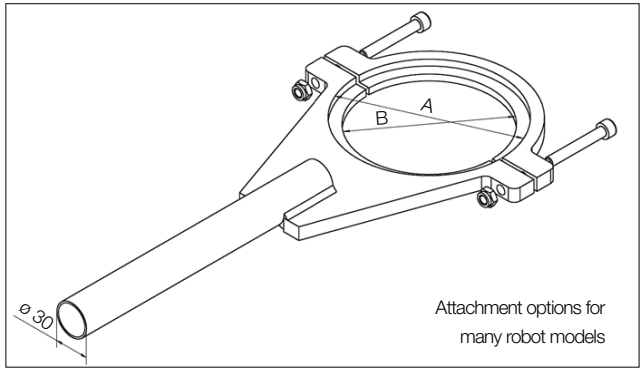
Easy and fast alignment of the fixed end relative to the tool position

Depending on robot design, with or without recess

Clamps for attachment to axis 6

The clamp is used to attach a mounting bracket to axis 6, with a bar (Ø 30mm) for all robots. They are easy and quick to assemble.

- For use with heavy duty connection **TR.XX.20.30** / **TR.XX.23.30**
- For use with compact connection **TR.XX.21.01.30** / **TR.XX.21.02.30**
- For use with quick exchange unit **TR.XX.22.30**



Attachment options for many robot models

Excerpt from the product range

Part No. Clamp	Robot model	With recess	A [mm]	B [mm]	Weight [kg]
TR.907.857	KUKA KR 30-3 (HA)	yes	130	115	1.90
	KUKA KR 60-3 (HA)	yes	130	115	1.90
	KUKA KR 60 L45-3 (HA)	yes	130	115	1.90
	KUKA KR 60 L30-3 (HA)	yes	130	115	1.90
TR.907.901	KUKA Quantec, large flange	yes	205	190	2.50
	KUKA Quantec-2, large flange	yes	205	190	2.50
	KUKA KR 125/3	yes	205	190	2.50
	KUKA KR 150/3	yes	205	190	2.50
	KUKA KR 200/3	yes	205	190	2.50
	KUKA KR 150/2 Series 2000	yes	205	190	2.50
	KUKA KR 180/2 Series 2000	yes	205	190	2.50
	KUKA KR 210/2 Series 2000	yes	205	190	2.50
TR.907.992	Fanuc R-2000iA	yes	165	160	2.40
	Fanuc R-2000iB	yes	165	160	2.40
	Fanuc R-2000iC	yes	165	160	2.40
TR.908.065	Fanuc M-710iC 50	yes	130	124	2.20
	Fanuc M-710iC 70	yes	130	124	2.20
TR.908.115	KUKA KR 1000 Titan	yes	250	242	3.05
TR.908.347	Stäubli TX 200	yes	145	125	1.90
TR.909.387	Yaskawa UP 50	yes	125	100	1.90
	Yaskawa HP 50	yes	125	100	1.90
	Yaskawa MH 50	yes	125	100	1.90
TR.912.328	KUKA Fortec	yes	235	220	2.70
TR.917.378	KUKA KR 16-3	yes	90	63	1.20
	KUKA KR 20-3	yes	90	63	1.20
TR.919.171	KUKA Iontec	yes	122	145	1.80
TR.907.667.140	KUKA Quantec, small flange	no	140	similar to A	2.20
	KUKA Quantec-2, small flange	no	140	similar to A	2.20
TR.907.667.142	Hyundai HX 165	no	142	similar to A	2.25
TR.907.667.150	Comau NJ 130	no	150	similar to A	2.40
TR.907.667.160	ABB IRB 6400	no	160	similar to A	2.45
	Yaskawa GP180	no	160	similar to A	2.45
TR.907.667.180	Yaskawa GP250	no	180	similar to A	2.55
TR.907.667.190	Comau NH3	no	190	similar to A	2.60
TR.907.667.200	ABB IRB 6640	no	200	similar to A	2.70
	ABB IRB 6620	no	200	similar to A	2.70
	ABB IRB 6650	no	200	similar to A	2.70
	ABB IRB 6700	no	200	similar to A	2.70
TR.907.667.220	KUKA KR 360-2	no	220	similar to A	2.82
	KUKA KR 500-2	no	220	similar to A	2.82
	KUKA KR 360-3	no	220	similar to A	2.82
	KUKA KR 500-3	no	220	similar to A	2.82
TR.907.667.250	ABB IRB 7600	no	250	similar to A	3.50
	Fanuc M900iA 350	no	250	similar to A	3.20
	Fanuc M900iA 260L	no	250	similar to A	3.20
TR.907.667.275	Fanuc M900iA 200P	no	275	similar to A	3.40
TR.907.667.315	Fanuc M900iA 600	no	315	similar to A	3.60
	Fanuc M900iA 400L	no	315	similar to A	3.60
TR.918.002	Universal Robot UR10(e)	no	90	similar to A	0.25
TR.918.012	Universal Robot UR5(e)	no	75	similar to A	0.23
TR.918.027	Universal Robot UR3(e)	no	63	similar to A	0.20

Other dimensions available upon request