



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:

- **RSE-RSEC linear** Compact retraction system, linear
- **RSEL** Cost-effective retraction system, linear
- **RS** Modular retraction system
- **RSP** Pneumatic retraction system
- **RSE w/deflection** Cost-effective retraction system with deflection

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.

System overview and advantages



RSE-RSEC linear compact retraction system
► From page 1044

⊕ Benefits:

- Special linear guide with no small bend radii
- Simple, linear retraction without sags, fiber rods, or guide rollers
- Up to 19.29" (490mm) retraction length
- Space-saving
- Maintenance-free igus® drylin® W linear unit
- For series TRC·TRE·TRCF with ø index 1.57"-3.94" (40-100mm)



RSEL cost-effective retraction system, linear
► From page 1054

⊕ Benefits:

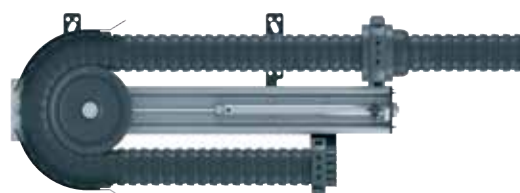
- Linear guidance even for highly dynamic applications
- For robots with high and medium payloads
- Up to 14.96" (380mm) retraction length possible
- Cost-effective
- For series TRC·TRE·TRCF with a ø index of 2.36"-3.94" (60-100mm)



RS modular retraction system
► From page 1062

⊕ Benefits:

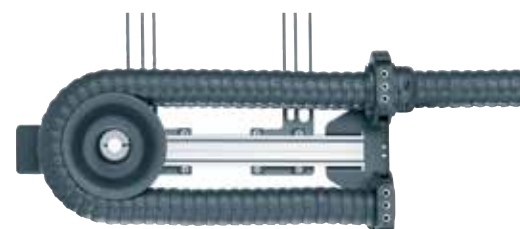
- For use with adverse environmental influences
- Retraction force provided by integrated fiber-rods
- For robots with a load capacity from approx. 10kg
- Up to 26.38" (670mm) retraction length
- If a linear guide system is not needed
- For series TRC·TRE with ø index 1.57"-3.94" (40-100mm)



RSP pneumatic retraction system
► From page 1070

⊕ 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. 50kg and up
- Up to 30.71" (780mm) retraction length
- For series TRC·TRE·TRCF with a ø index of 2.36"-4.92" (60-125mm)



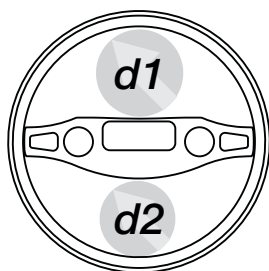
RSE w/deflection cost-effective retraction system with deflection ► From page 1078

⊕ Benefits:

- For small robots, very light
- Up to 19.69" (500mm) retraction length
- For highly dynamic movements
- Cost-effective
- Maintenance-free igus® drylin® W linear unit
- For series TRC·TRE with ø index 1.57"-1.97" 1.57"-1.97" (40-50mm)

Choosing the right e-chain® size ...

1

Largest single cable
diameter $\varnothing$...Max. cable $\varnothing$

1. chamber

2. chamber

 $d1$ in. (mm) $d2$ in. (mm)

–

–

< .59 (15)

< .51 (13)

< .74 (18.8)

< .64 (16.2)

< .86 (22.5)

< .77 (19.5)

–

–

< 1.10 (28)

< .94 (24)

< 1.30 (33)

< 1.10 (28)

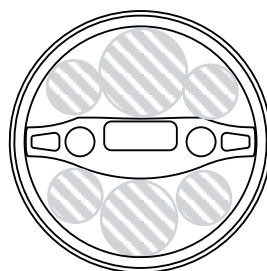
< 1.48 (37.5)

< 1.28 (32.5)

< 1.69 (43)

< 1.69 (43)

2

... and max. usable e-chain®
cross section area ...Coverage of
the entire area

in. (mm²)

–

< 19.69 (500)

< 29.53 (750)

< 39.37 (1,000)

–

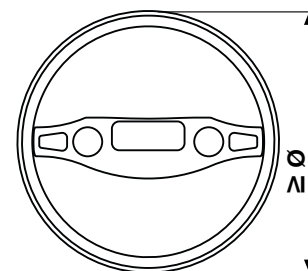
< 68.90 (1,750)

< 98.43 (2,500)

< 118.11 (3,000)

< 177.17 (4,500)

3

... determine the necessary
 $\varnothing$ index of the triflex® R ...Minimum
 $\varnothing$ index
triflex® R e-chain®

30.

40.

50.

60.

65.

70.

85.

100.

125.

Possible $\varnothing$ index for triflex® R retraction systems

For series	RSE·RSEC linear $\varnothing$ index	RSEL $\varnothing$ index	RS $\varnothing$ index	RSP $\varnothing$ index	RSE w/deflection $\varnothing$ index
TRC	40 - 100	60 - 100	40 - 100	60 - 125	40 - 50
TRE	40 - 100	60 - 100	40 - 100	60 - 125	40 - 50
TRCF	65 - 100	65 - 100	–	65 - 100	–
TRL*	–	–	–	–	–
TRLF*	–	–	–	–	–

*Retraction systems not available for this series

... and retraction system

4

... select from 5 retraction systems options:


RSE·RSEC linear
space-saving

RSEL
cost-effective

RS
modular

RSP
pneumatic

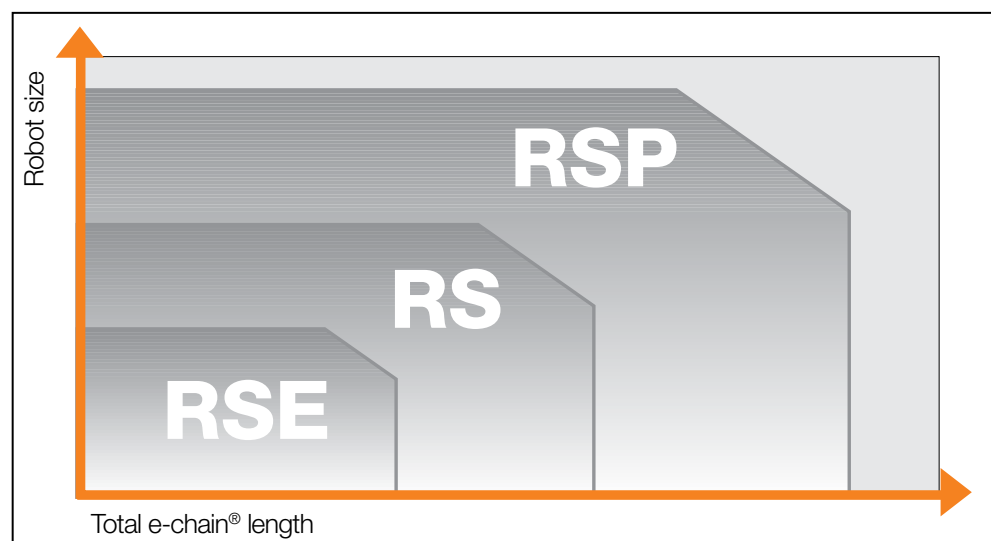
RSE with deflection

—	—	—	—	—
●	—	●	—	●
●	—	●	—	●
●	●	●	●	—
●	●	—	●	—
●	●	●	●	—
●	●	●	●	—
●	●	●	●	—
—	—	—	●	—

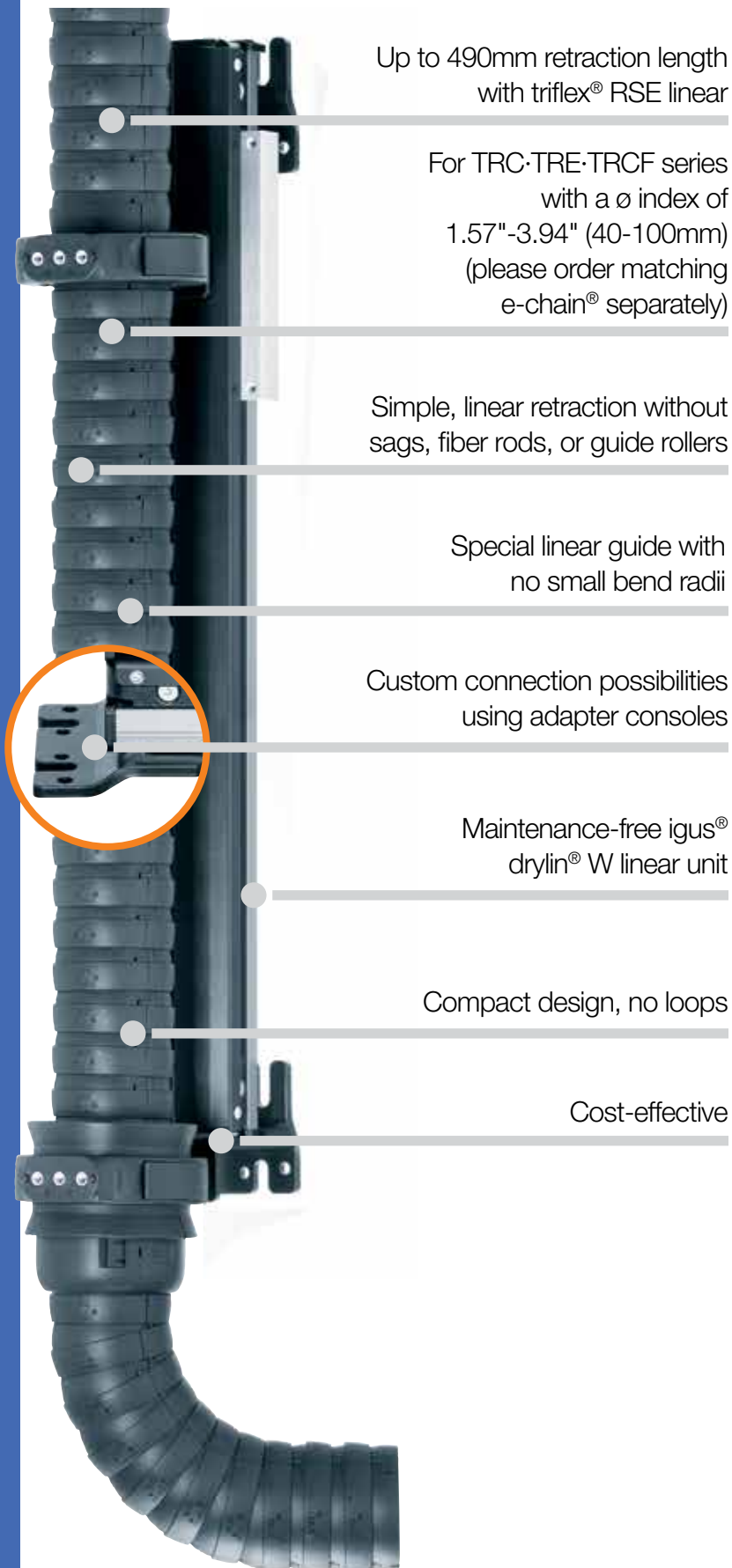


If you want to select a suitable retraction system yourself, please ensure that you observe the maximum cable diameter and usage data.

Selection tool for triflex® R retraction systems with deflection



Compact retraction system, linear



Up to 490mm retraction length
with triflex® RSE linear

For TRC·TRE·TRCF series
with a $\varnothing$ index of
1.57"-3.94" (40-100mm)
(please order matching
e-chain® separately)

Simple, linear retraction without
sags, fiber rods, or guide rollers

Special linear guide with
no small bend radii

Custom connection possibilities
using adapter consoles

Maintenance-free igus®
drylin® W linear unit

Compact design, no loops

Cost-effective

Compact retraction system - triflex® RSE and RSEC linear

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 sags, fiber rods, or guide rollers
- For series TRC·TRE·TRCF with $\varnothing$ -index 1.57"-3.94" (40-100mm)
- Special linear guide with no small bend radii
- Up to 490mm retraction length
- Space-saving and cost-effective
- Maintenance-free drylin® W linear unit

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, TR.RSEC.60, TR.RSEC.65 and TR.RSEC.65.200 ► **From page 1048**



Linear retraction system for sizes 60-100 with attachment brackets for a wide variety of robot models. RSE linear sizes TR.RSE.60 up to TR.RSE.100 ► **From page 1050**

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®) +

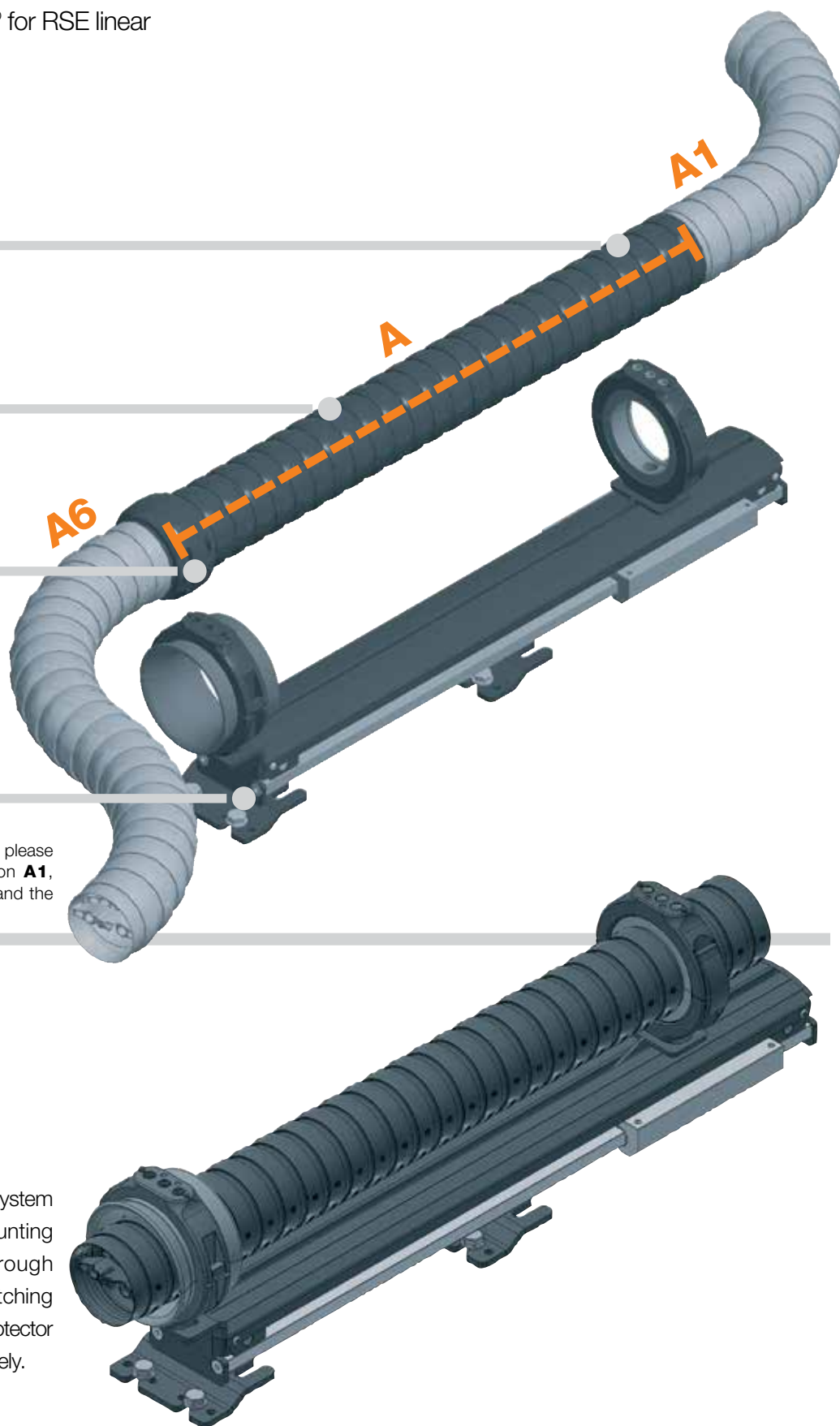
Mounting bracket +

Gliding feed-through =

TR.RSE.XX

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

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



Sample order of a retraction system including e-chain®



Sample order of a complete TR.RSE linear system,
Ø index 1.57" (40), and e-chain® length: 6.56" (2 m)

System	Insert Ø index XX	TR.RSE.XX
+ e-chain®	Insert Ø index XX / Insert bend radius R / Insert standard length LLLL in meters	2 m TRC.XX. R .0
+ protector	Protector with quick-lock fastener	TR.XX.30
Order text:	TR.RSE.40. + 6.56" (2 m) TRC.40. 058 .0 + TR.40.30	



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 retraction system



RSE linear support
for lateral deflection
of the triflex® R, optional
► Page 1048



Protectors
with screw connections or
quick release
► Page 1017



Adapter consoles
for custom mounting options
► Page 1093



Axis 6 clamp
for triflex® R mounting
bracket
► Page 1096



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

ø Index	Part No. RSE linear	Retraction length ¹⁾ ≤ in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Weight lb (kg)	Part No. RSE support
30.	–	–	–	–	–	–	–
40.	▶ TR.RSE.40	11.42 (290)	17.99 (457)	5.51 (140)	5.63 (143)	3.09 (1.4)	TR.919.540.40.02
50.	▶ TR.RSE.50	11.42 (290)	18.70 (475)	5.51 (140)	5.94 (151)	3.75 (1.7)	TR.919.540.50.02
60.	▶ TR.RSEC.60	9.84 (250)	18.74 (476)	5.51 (140)	7.05 (179)	4.85 (2.2)	TR.919.540.60.02
65.	▶ TR.RSEC.65	9.84 (250)	19.21 (488)	5.51 (140)	7.05 (179)	4.85 (2.2)	TR.919.540.65.02
65.	▶ TR.RSEC.65.200	9.84 (250)	19.21 (488)	5.51 (140)	7.05 (179)	4.85 (2.2)	–



For lateral
deflection of
energy supply

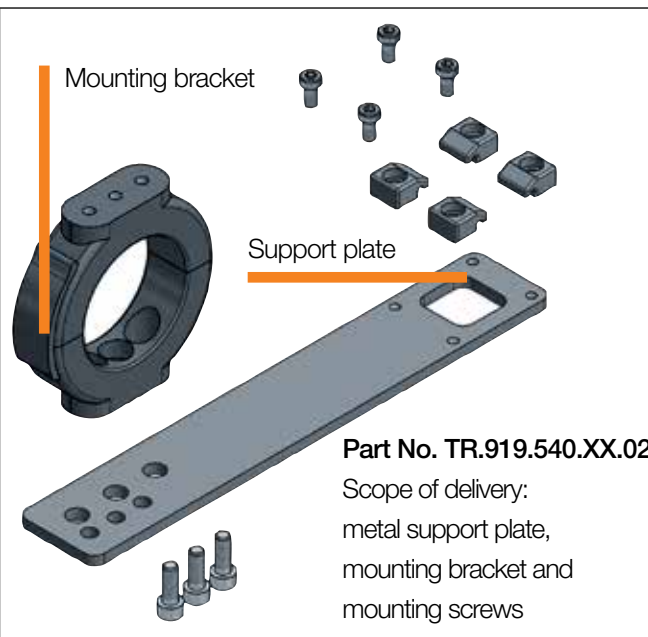
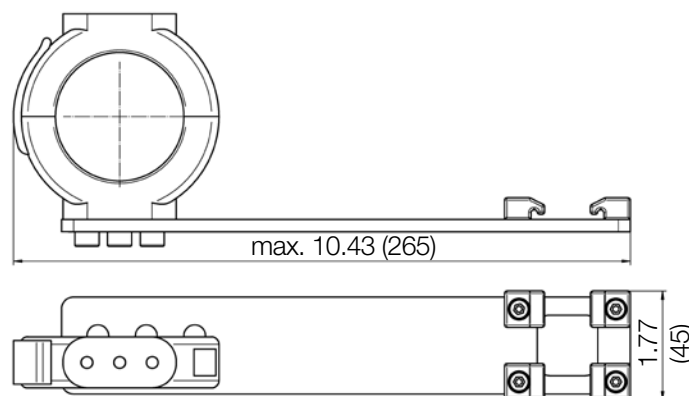
Please order matching triflex® R e-chain® separately.

1) Max. retraction length. Optional RSE support must be ordered separately.

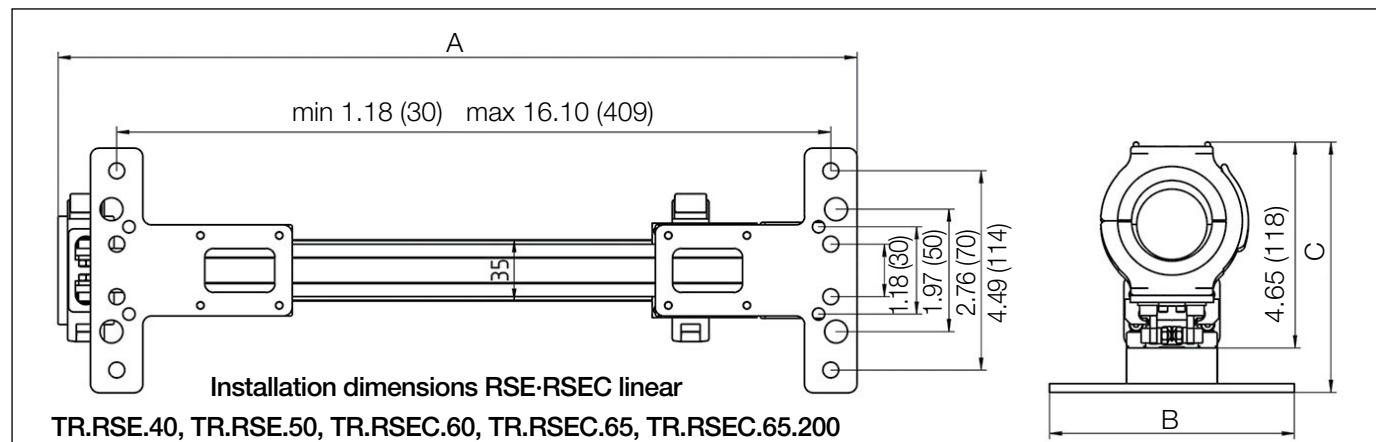
RSE linear sizes TR.RSE.60 up to TR.RSE.100 ▶ From page 1050

Product range | RSE linear support, optional

RSE linear support to support
and anchor a fixed end loop



TR.RSE.40, TR.RSE.50, TR.RSEC.60, TR.RSEC.65 & TR.RSEC.65.200



RSE-RSEC linear retraction system

Mounting bracket and gliding feed-through are included.
Please order matching triflex® R e-chain® separately.





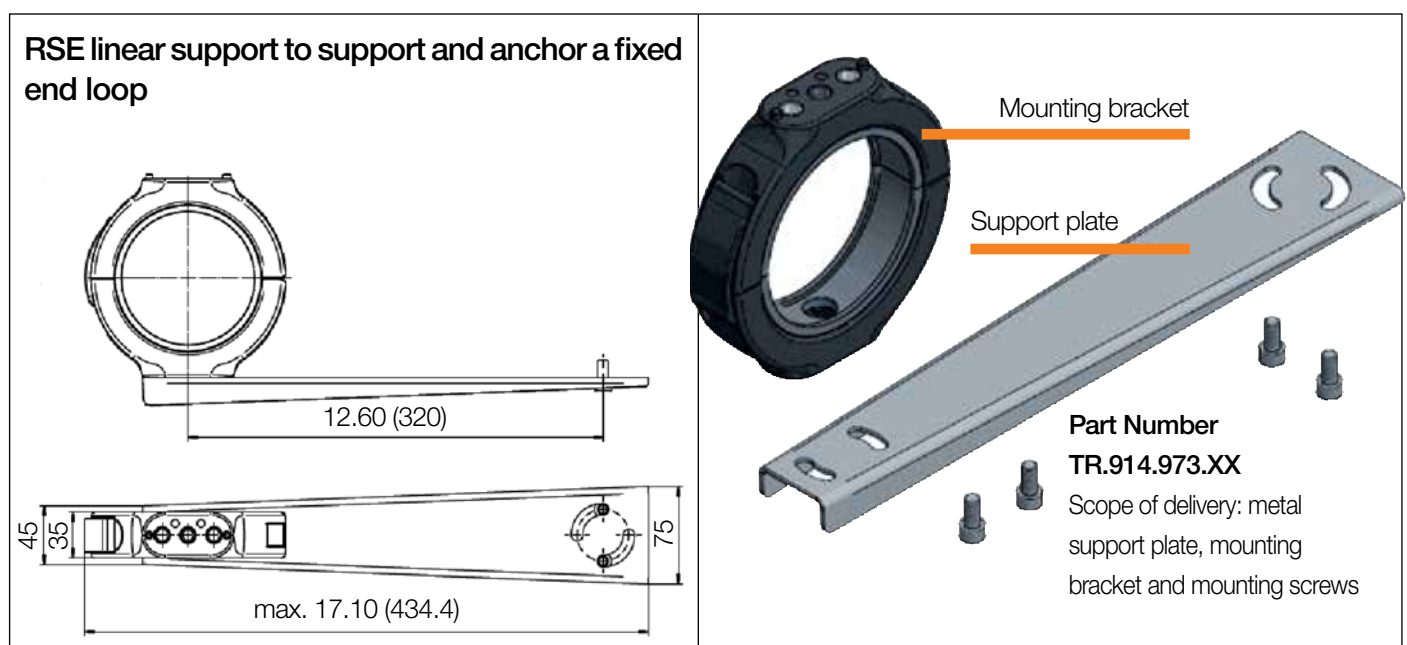
Product range | RSE linear TR.RSE.60 - TR.RSE.100

ø Index	Part No. RSE linear	Retraction length ¹⁾ ≤ in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Weight lb (kg)	Part No. RSE support	Principle sketch
60.	▶ TR.RSE.60	19.29 (490)	34.17 (868)	5.28 (134)	9.09 (231)	21.83 (9.9)	TR.914.973.60	
65.	▶ TR.RSE.65	19.29 (490)	34.65 (880)	5.28 (134)	9.09 (231)	22.04 (10.0)	TR.914.973.65	
65. (R 200)	▶ TR.RSE.65.200	19.29 (490)	34.65 (880)	5.28 (134)	9.09 (231)	22.04 (10.0)	TR.919.991	
70.	▶ TR.RSE.70	19.29 (490)	34.57 (878)	6.10 (155)	1.02 (258)	22.04 (10.0)	TR.914.973.70	
85.	▶ TR.RSE.85	19.29 (490)	34.84 (885)	6.10 (155)	1.02 (258)	22.04 (10.0)	TR.914.973.85	For lateral
85. (R 240)	▶ TR.RSE.85.240	19.29 (490)	34.84 (885)	6.10 (155)	1.02 (258)	22.04 (10.0)	TR.919.220	deflection of
100.	▶ TR.RSE.100	19.29 (490)	34.88 (886)	6.69 (170)	1.04 (264)	22.49 (10.2)	TR.914.973.100	energy supply
125.	▶ -	-	-	-	-	-	-	

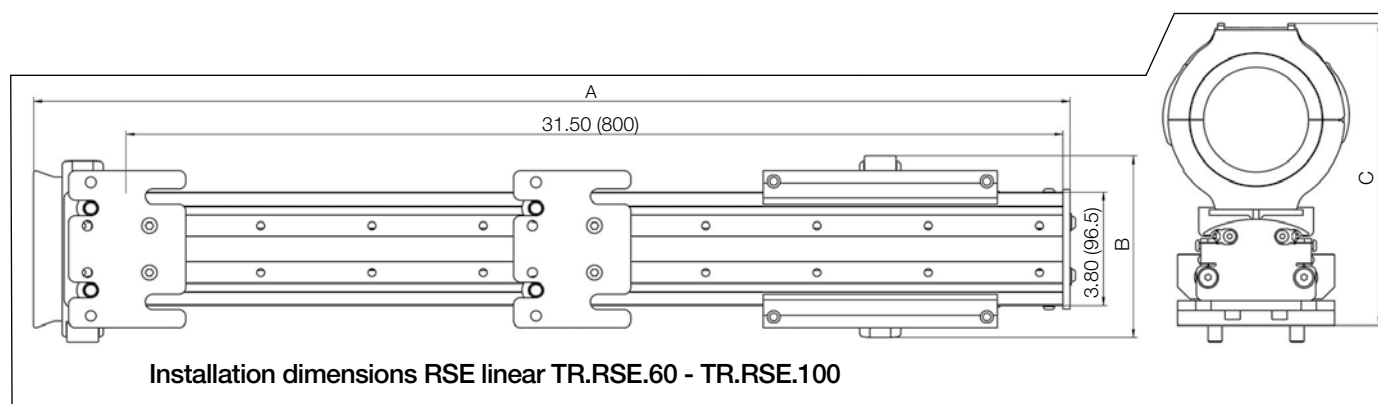
Please order matching triflex® R e-chain® separately. 1) Max. retraction length. Optional RSE support must be ordered separately.

RSE linear sizes TR.RSE.40, TR.RSE.50, TR.RSEC.60, TR.RSEC.65, TR.RSEC.65.200 ▶ From page 1048

Product range | RSE linear support, optional



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.





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/C	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	TR.65.30	
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	
125.	▶ –	–	More information about protectors ▶ Page 1017

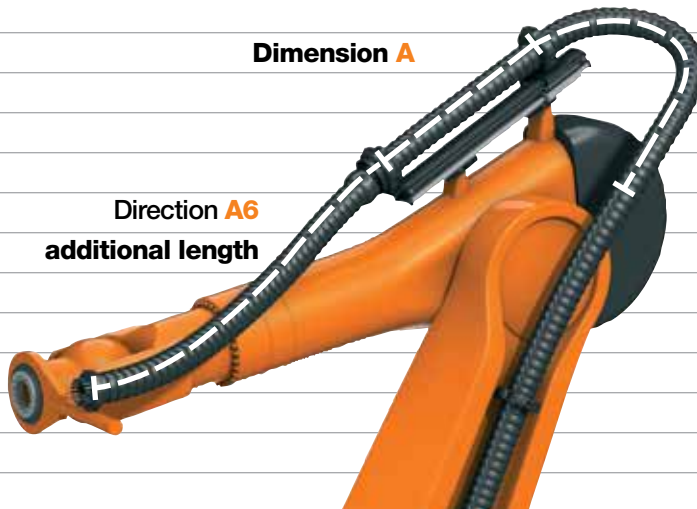
* Available upon request Delivery time upon request.

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

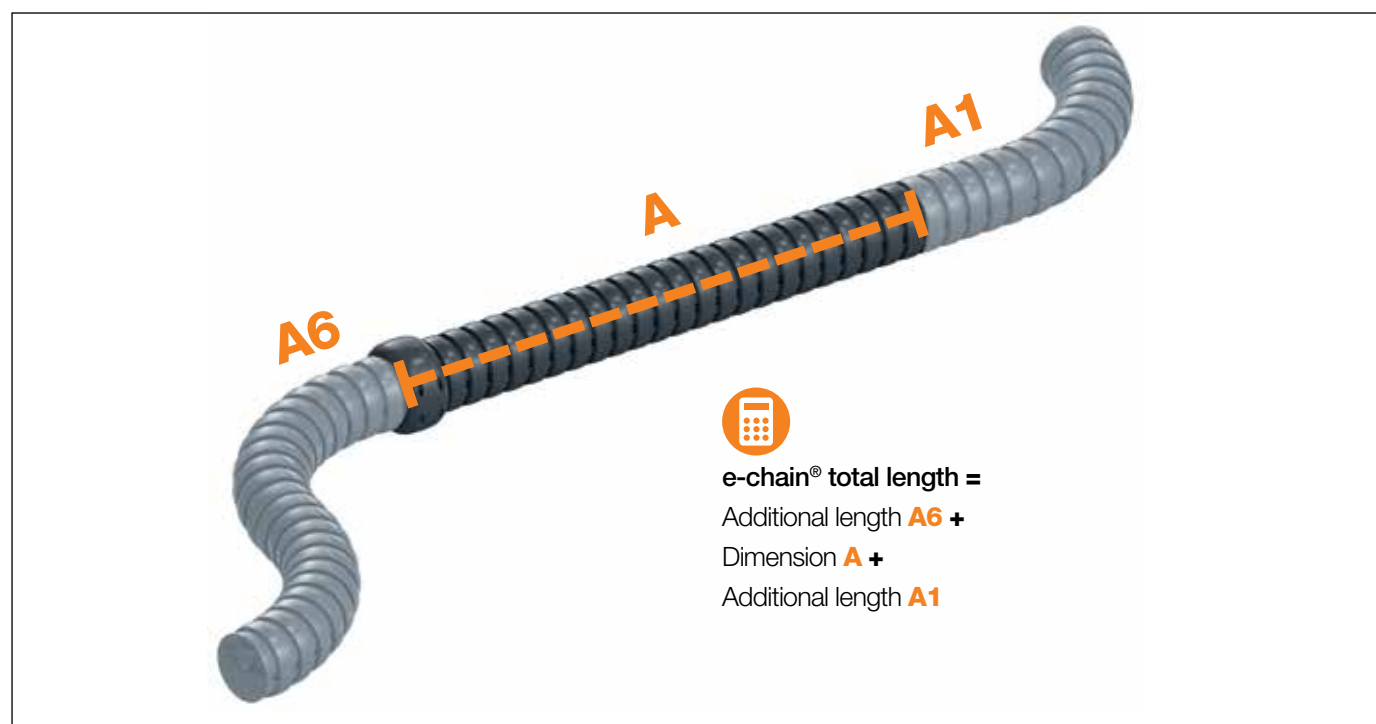
Cable length calculation

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

Series	ø		Bend radius <i>R</i>	Dimension <i>A</i>	Principle sketch	Direction <i>A1</i>
	Index		in. (mm)	in. (mm)	e-chains® total length	excess length
RSE	30.	▶	–	–		
RSE	40.	▶	2.28 (058)	15.35 (390)		Dimension <i>A</i>
RSE	50.	▶	3.15 (080)	15.35 (390)		
RSEC	60.	▶	3.15 (080)	15.35 (390)		
RSE	60.	▶	3.43 (087)	29.53 (750)		
RSE	65.	▶	3.94 (100)	29.53 (750)		
RSE	65. (<i>R 200</i>)	▶	7.87 (200)	29.53 (750)		Direction <i>A6</i> additional length
RSE	70.	▶	4.33 (110)	29.53 (750)		
RSE	85.	▶	5.31 (135)	29.53 (750)		
RSE	85. (<i>R 240</i>)	▶	9.45 (240)	29.53 (750)		
RSE	100.	▶	5.71 (145)	29.53 (750)		
RSE	125.	▶	–	–		



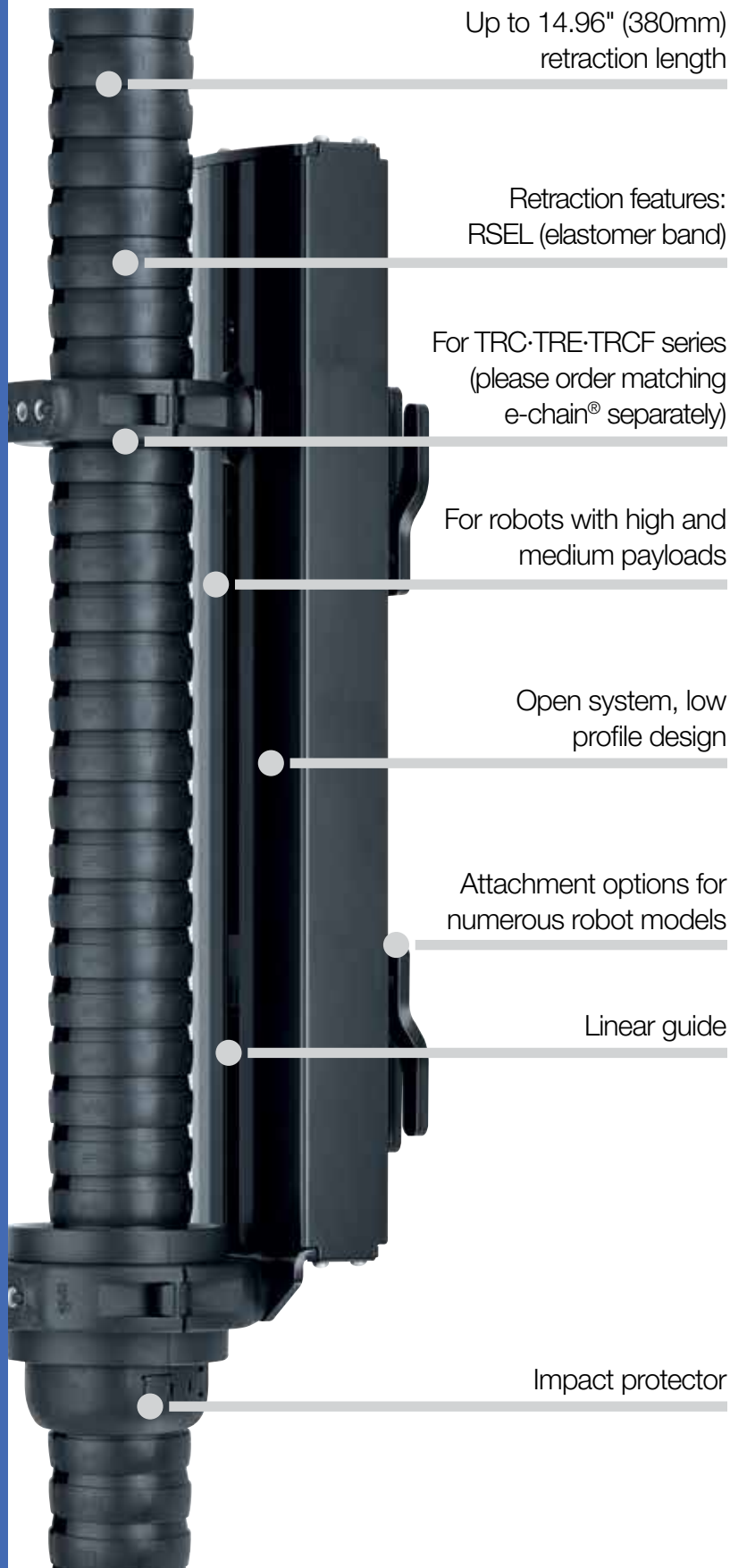
To calculate the e-chain® total length: please add the additional length *A1*, the additional length *A6* and the dimension *A*. Additionally, at least 1 limit protector must be ordered



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

- **TRC series** - closed design, chip protection, smooth outer contour ▶ From page 998
- **TRE series** - "easy" design, very easy to fill, simply press cables in ▶ From page 1000
- **TRCF series** - closed design with snap-lock mechanism, chip protection, smooth outer contour ▶ Page 1002

Cost-effective linear retraction system



Cost-effective, linear retraction system - triflex® RSEL

Avoid loops forming on the robot head - more cost-effective - with the RSEL retraction system. Especially designed for robots with medium to high payload, the igus® triflex® RSEL 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-optimized retraction system, easy to retrofit
- Due to standard dimensions and the very compact design, the RSEL retraction systems can be mounted directly on the 3rd axis of all common types of robots
- Retraction element with elastomer band - triflex® RSEL
- Prevents hanging e-chain® from hindering or blocking movement, even in highly dynamic applications
- Short design
- 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 RSEL retraction systems

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

Matching triflex® R e-chain® for RSEL

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®) +

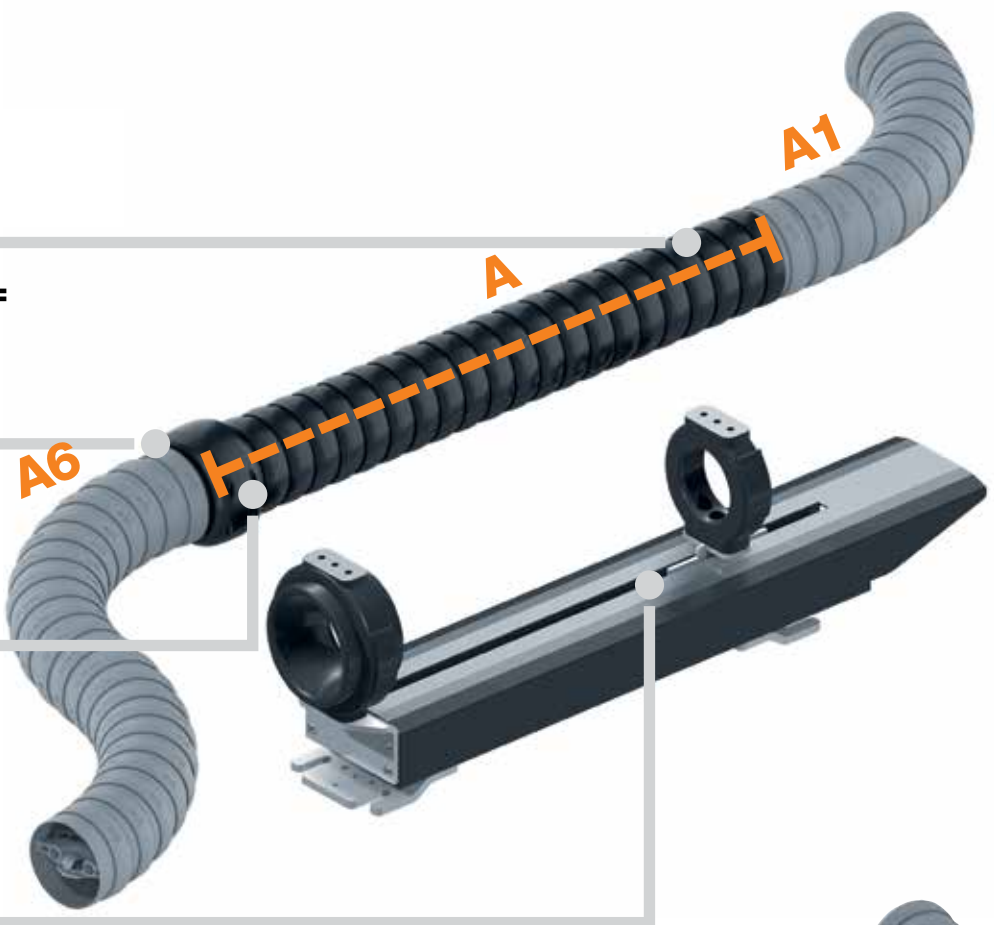
Mounting bracket +

Gliding feed-through =

TR.RSEL.XX

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

Complete RSEL linear retraction system with TRC triflex® R series. Mounting bracket and gliding feed-through are included. Please order matching triflex® R e-chains® and limiting protectors separately.



RSEL retraction system

Sample order of a retraction system including e-chain®



Sample order of a complete TR.RSEL system,
Ø index 3.35" (85), and e-chain® length: 6.56" (2 m)

System	Insert Ø index XX	TR.RSEL.85
+ e-chain®	Insert Ø index XX / Insert bend radius R / Insert length in meters	6.56" (2m) TRC.85. 135.0
+ protector	Insert protector variant / Insert Ø index	TR.85.30
Order text:	TR.RSEL.85. + 6.56" (2m) TRCF.85. 135.0 + TR.85.30	



Retraction system
order key

TR.RSEL.85



e-chains®
order key

TRC .85.**135.0**
TRE .85.**135.0.B**
TRCF.85.**135.0**



Optional accessories | RSEL modular retraction system



Protectors

with screw connections or
quick release

► Page 1017



Adapter consoles

for custom mounting options

► Page 1093



Axis 6 clamp

for triflex® R mounting
bracket

► Page 1096



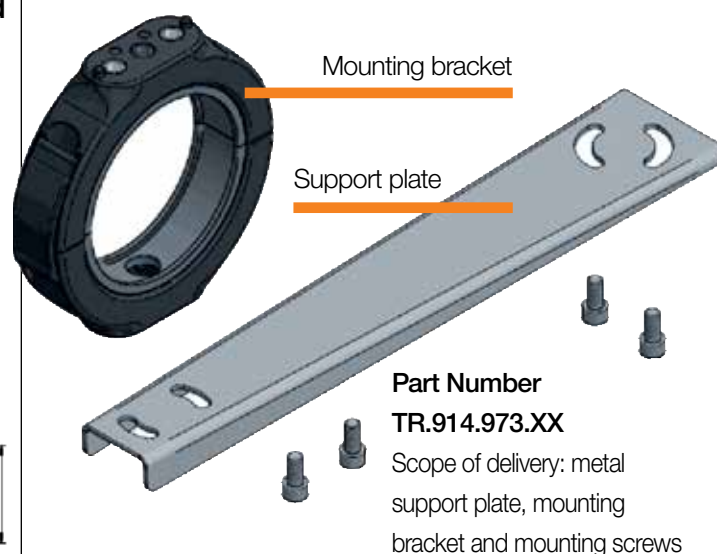
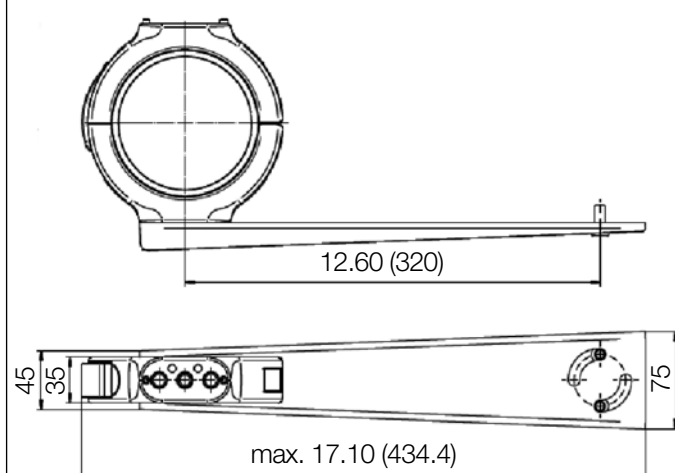
Product range | RSEL retraction system

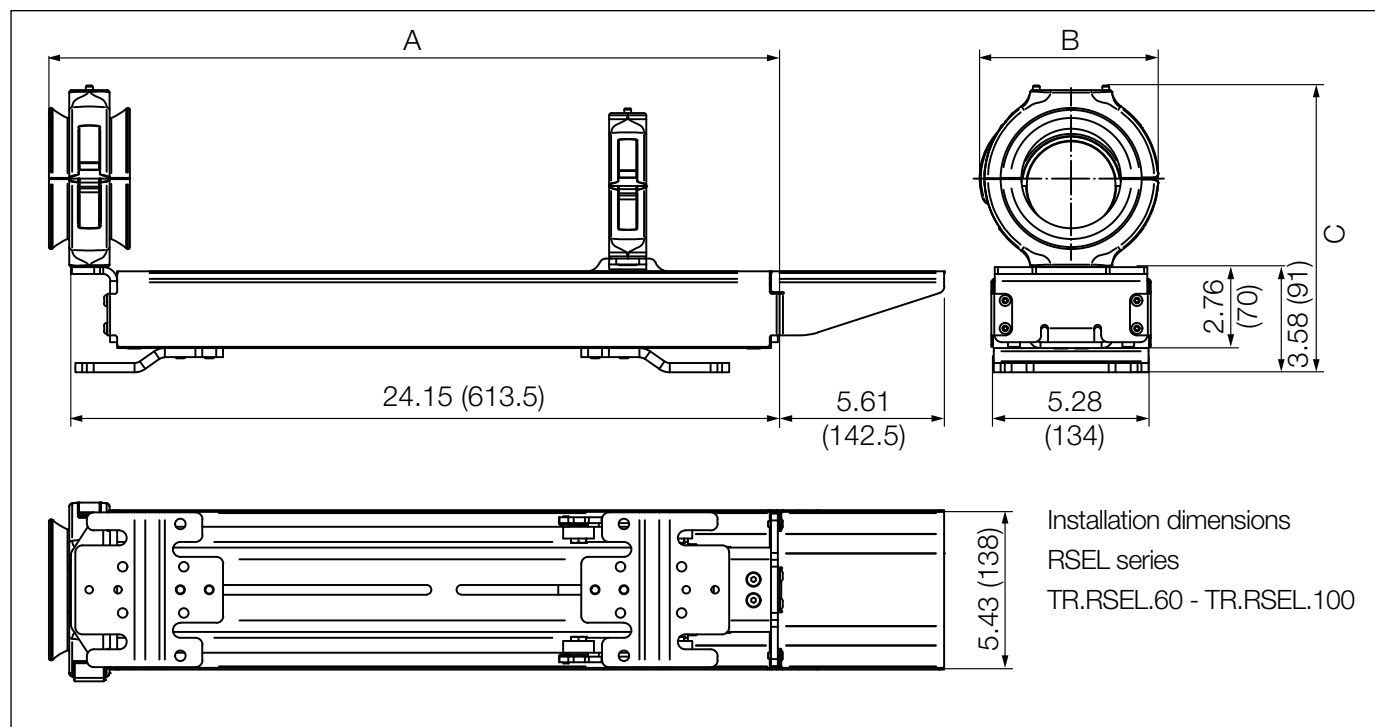
ø	Part No.	Retraction length ¹⁾	A	B	C	Weight	Part No.	Principle sketch
Index	RSEL	≤ in. (mm)	in. (mm)	in. (mm)	in. (mm)	lbs (kg)	RSE support	
30.	▶ –	–	–	–	–	–		
40.	▶ –	–	–	–	–	–		
50.	▶ –	–	–	–	–	–		
60.	▶ TR.RSEL.60	14.96 (380)	24.84 (631)	4.96 (126)	8.98 (228)	7.12 (10.6)	TR.914.973.60	
65.	▶ TR.RSEL.65	14.96 (380)	24.84 (631)	4.96 (126)	8.98 (228)	7.12 (10.6)	TR.914.973.65	
65. (R 200)	▶ TR.RSEL.65.200	14.96 (380)	24.84 (631)	6.10 (155)	9.76 (248)	7.12 (10.6)	TR.919.991	
70.	▶ TR.RSEL.70	14.96 (380)	24.84 (631)	6.10 (155)	9.76 (248)	7.19 (10.7)	TR.914.973.70	
85.	▶ TR.RSEL.85	14.96 (380)	25.12 (638)	6.10 (155)	10.04 (255)	7.26 (10.8)	TR.914.973.85	
85. (R 240)	▶ TR.RSEL.85.240	14.96 (380)	25.12 (638)	6.10 (155)	10.04 (255)	7.26 (10.8)	TR.919.220	For lateral
100.	▶ TR.RSEL.100	14.96 (380)	25.12 (638)	6.69 (170)	10.04 (255)	7.39 (11.0)	TR.914.973.100	deflection of
125.	▶ –	–	–	–	–	–		energy supply

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

Product range | RSE linear support, optional

RSE linear support to support and anchor a fixed end loop





RSEL retraction system

Mounting bracket and gliding feed-through are included.
Please order matching triflex® R e-chain® separately.





Product range | Matching e-chains® for RSEL

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/C	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 RSEL

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	TR.65.30	
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	
125.	▶ –	–	More information about protectors ▶ Page 1017

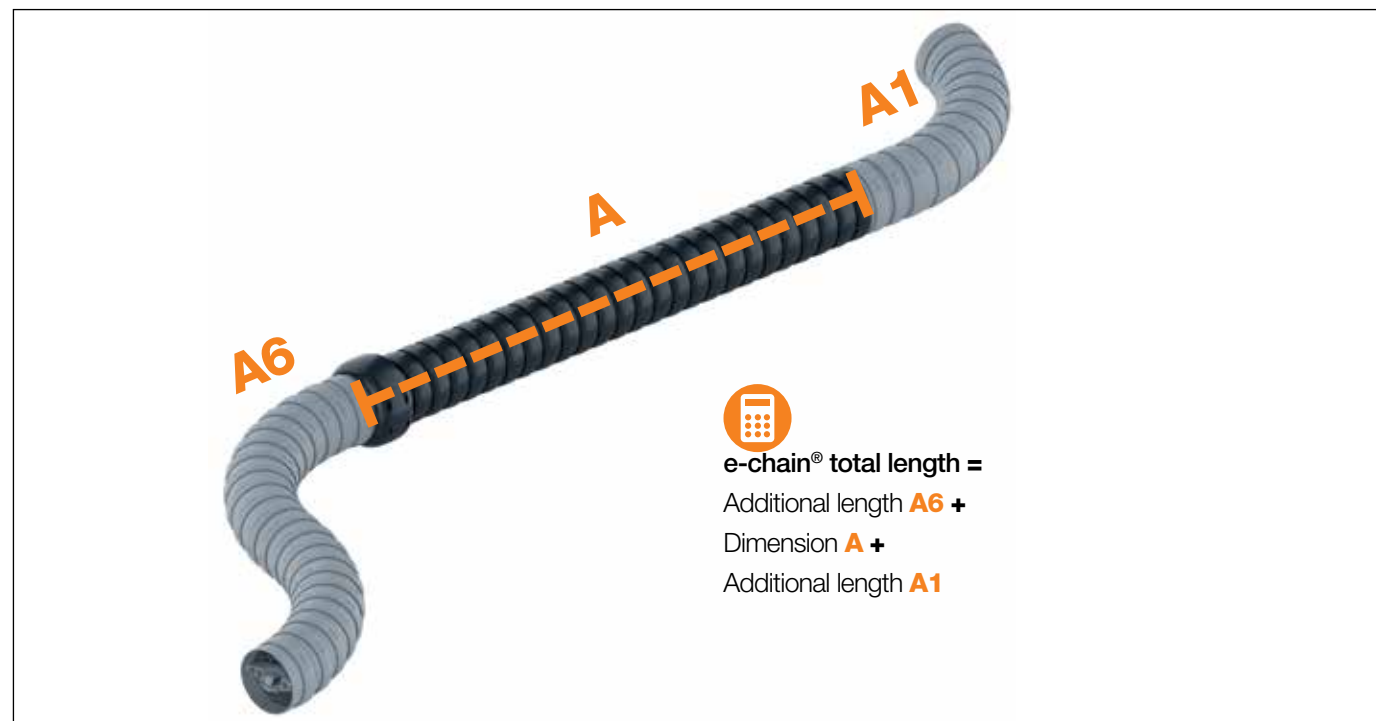
* Available upon request Delivery time upon request.

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

Cable length calculation

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

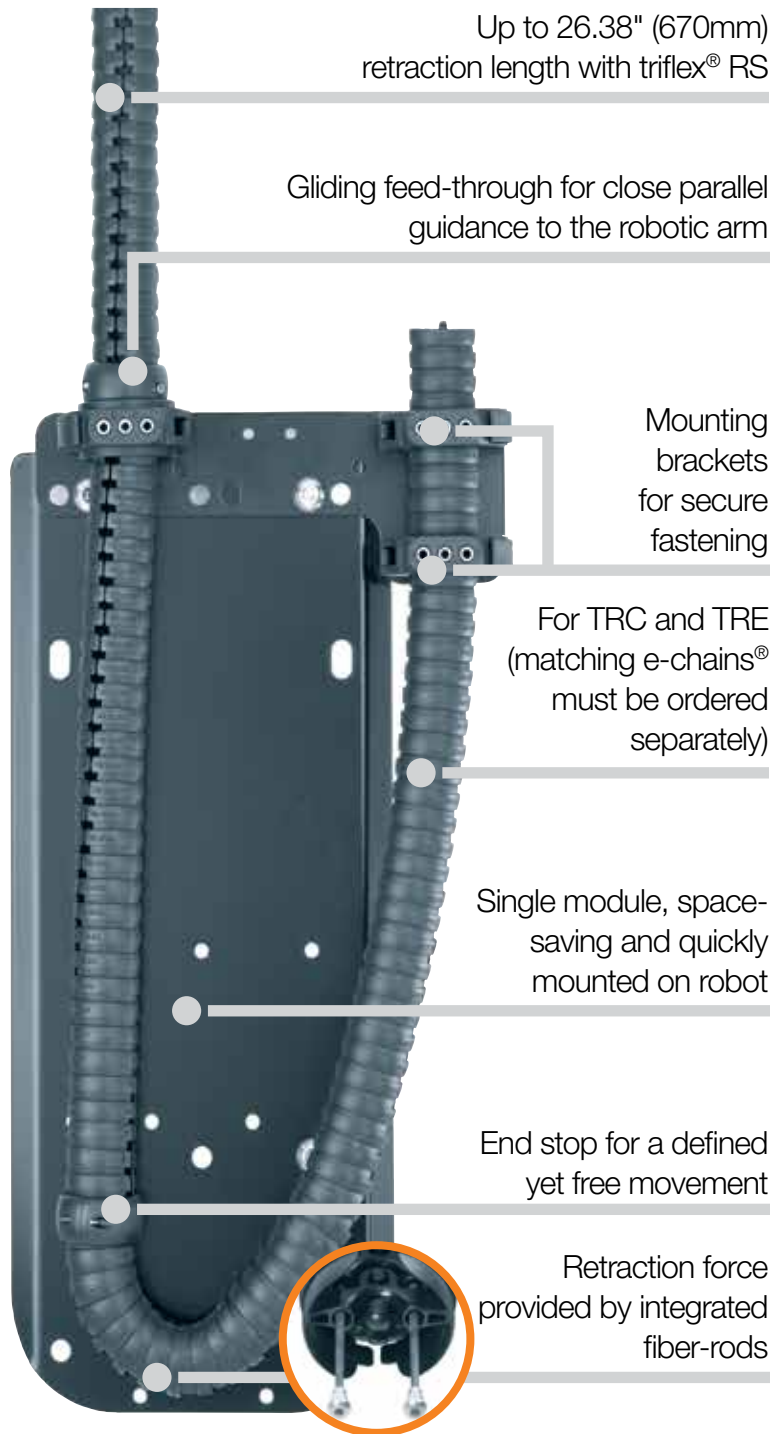
ø		Bend radius <i>R</i>	Dimension <i>A</i>	Principle sketch	Direction <i>A1</i>
Index		in. (mm)	in. (mm)	e-chains® total length	excess length
30.	▶	–	–		Dimension <i>A</i>
40.	▶	–	–		
50.	▶	–	–		Direction <i>A6</i>
60.	▶	3.43 (087)	20.87 (530)	additional length	
65.	▶	3.94 (100)	20.87 (530)		
65. (<i>R 200</i>)	▶	7.87 (200)	20.87 (530)		
70.	▶	4.33 (110)	20.87 (530)		
85.	▶	5.31 (135)	20.87 (530)		
85. (<i>R 240</i>)	▶	9.45 (240)	20.87 (530)		
100.	▶	5.71 (145)	20.87 (530)		
125.	▶	–	–		



More information and installation height | RSEL e-chains®

- **TRC series** - closed design, chip protection, smooth outer contour ▶ **From page 998**
- **TRE series** - "easy" design, very easy to fill, simply press cables in ▶ **From page 1000**
- **TRCF series** - closed design with snap-lock mechanism, chip protection, smooth outer contour ▶ **Page 1002**

Modular retraction system



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 fiber 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 minimizing downtimes.

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

RS - R(etraction) S(ystem)



triflex® RS for a low profile retraction system.
With triflex® RS, the multi-axis triflex® R
e-chain® is routed parallel to the robot arm



Option: triflex® RS with cover
for more mounting space

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

Matching triflex® R e-chains® for RS
with integrated fiber-rods

TRC.RS.XX.R.LLLL.0

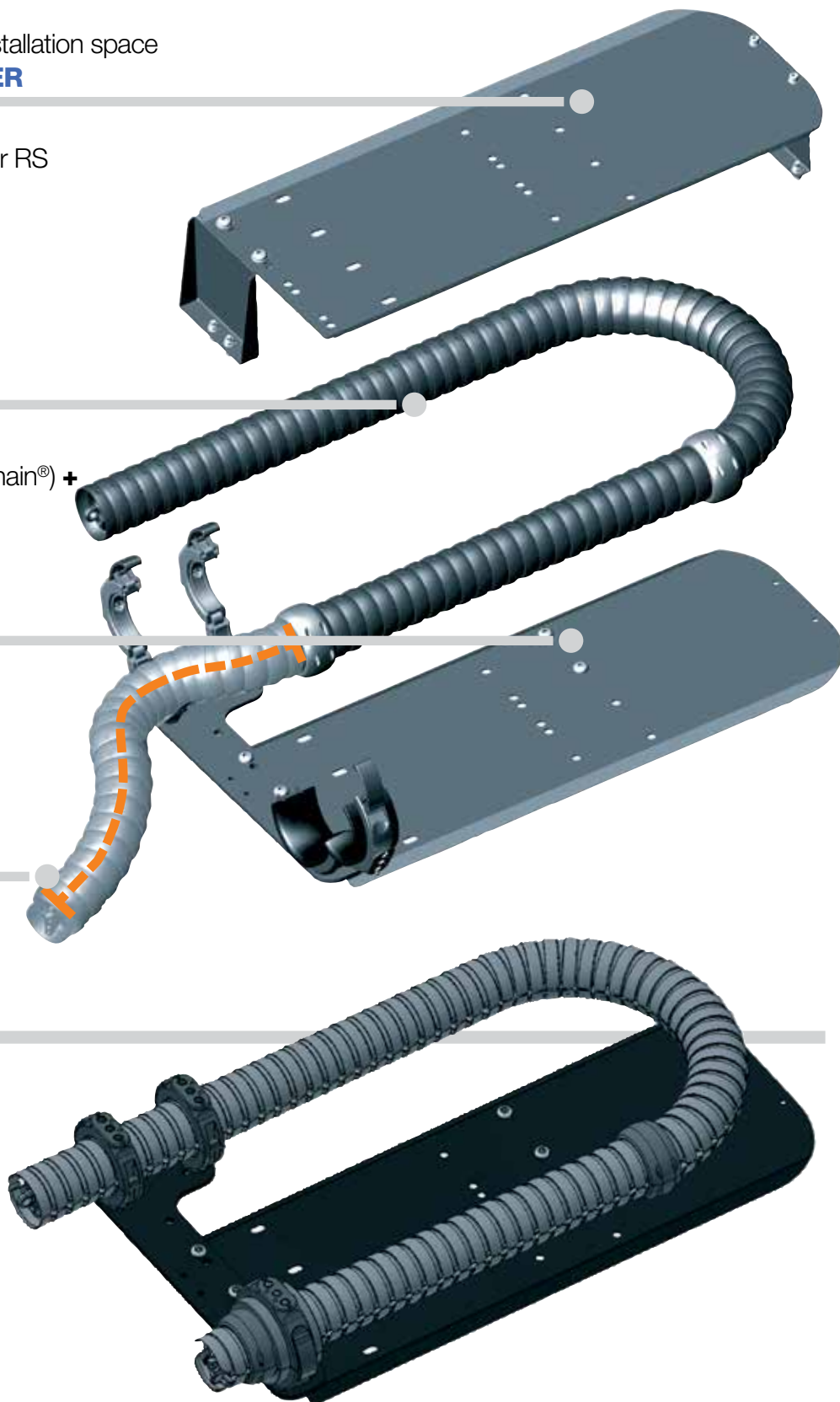
TRE.RS.XX.R.LLLL.0.B



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
right and TRE triflex® R series.
Mounting bracket and gliding
feed-through are included. Please
order matching triflex® R e-chain®
and optional cover separately.



Sample order of a retraction system including e-chain®



Sample order of a complete TR.RS system,
Ø index 2.36" (60), and e-chain® length: 6.56" (2 m)

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 left or
R = Fixed end right
ø index
Retraction system
Series



e-chains® order key

TRC.RS.60.**087.0500.0**
TRE.RS.60.**087.0500.0.B**



Default color 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 1066



Adjustment unit
for accurate adjustment of
the system position
► Page 1092



Adapter consoles
for custom mounting options
► Page 1093



Axis 6 clamp
for triflex® R mounting
bracket
► Page 1096



Optional cover
for additional
installation space

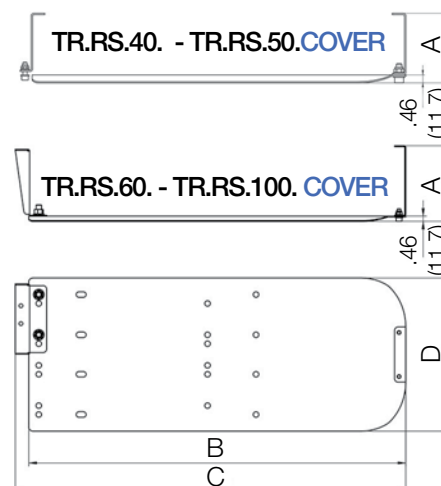
Product range | RS modular retraction system

ø Index	Part No. fixed end left	Part No. fixed end right	Retraction length ¹⁾ ≤ in. (mm)	A (in. (mm))	B in. (mm)	C in. (mm)	D in. (mm)	Weight lb (kg)
30.	▶ –	–	–	–	–	–	–	–
40.	▶ TR.RS.40.L	TR.RS.40.R	18.11 (460)	22.68 (576)	11.85 (301)	3.74 (95)	2.01 (51)	7.72 (3.5)
50.	▶ TR.RS.50.L	TR.RS.50.R	18.11 (460)	(625)	(421)	(103)	(100)	(3.9)
60.	▶ TR.RS.60.L	TR.RS.60.R	21.65 (550)	35.43 (900)	20.79 (528)	5.91 (150)	2.56 (65)	19.18 (8.7)
65.	▶ –	–	–	–	–	–	–	–
65. (R 200)	▶ –	–	–	–	–	–	–	–
70.	▶ TR.RS.70.L	TR.RS.70.R	24.41 (620)	35.43 (900)	21.46 (545)	6.57 (167)	2.56 (65)	20.28 (9.2)
85.	▶ TR.RS.85.L	TR.RS.85.R	26.38 (670)	35.43 (900)	22.24 (565)	6.57 (167)	2.56 (65)	20.94 (9.5)
85. (R 240)	▶ –	–	–	–	–	–	–	–
100.	▶ TR.RS.100.L	TR.RS.100.R	22.83 (580)	36.93 (938)	24.17 (614)	6.57 (167)	4.25 (108)	25.35 (11.5)
125.	▶ –	–	–	–	–	–	–	–

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

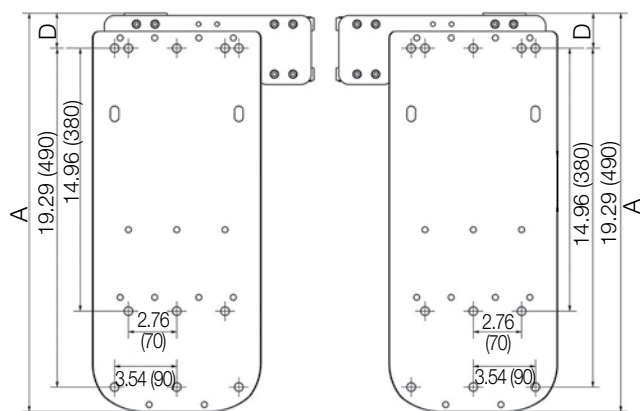
Product range | Cover, optional

ø Index	Optional cover retrofit kit	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	Load* ≤ lb (kg)	Weight lb (kg)
30.	▶ –	–	–	–	–	–	–
40.	▶ TR.RS.40.COVER	4.00 (101.7)	21.65 (550)	22.34 (567.5)	9.63 (244.6)	1.01 (1.5)	1.75 (2.6)
50.	▶ TR.RS.50.COVER	4.00 (101.7)	21.65 (550)	22.34 (567.5)	9.63 (244.6)	1.01 (1.5)	1.75 (2.6)
60.	▶ TR.RS.60.COVER	6.72 (170.7)	33.46 (850)	34.65 (880)	13.57 (344.6)	2.35 (3.5)	4.84 (7.2)
65.	▶ –	–	–	–	–	–	–
65. (R 200)	▶ –	–	–	–	–	–	–
70.	▶ TR.RS.70.COVER	6.72 (170.7)	33.46 (850)	34.65 (880)	13.57 (344.6)	2.35 (3.5)	4.84 (7.2)
85.	▶ TR.RS.85.COVER	6.72 (170.7)	33.46 (850)	34.65 (880)	13.57 (344.6)	2.35 (3.5)	4.84 (7.2)
85. (R 240)	▶ –	–	–	–	–	–	–
100.	▶ TR.RS.100.COVER	6.77 (172)	33.58 (853)	35.85 (910.5)	15.65 (397.6)	2.35 (3.5)	4.77 (7.1)
125.	▶ –	–	–	–	–	–	–



Fixed end left
TR.RS.40.L / TR.RS.50.L

Fixed end right
TR.RS.50.R / TR.RS.50.R



Fixed end

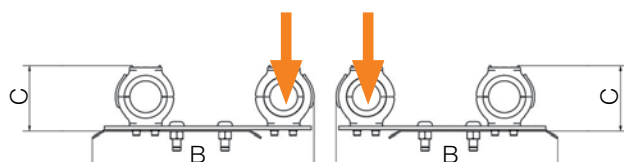
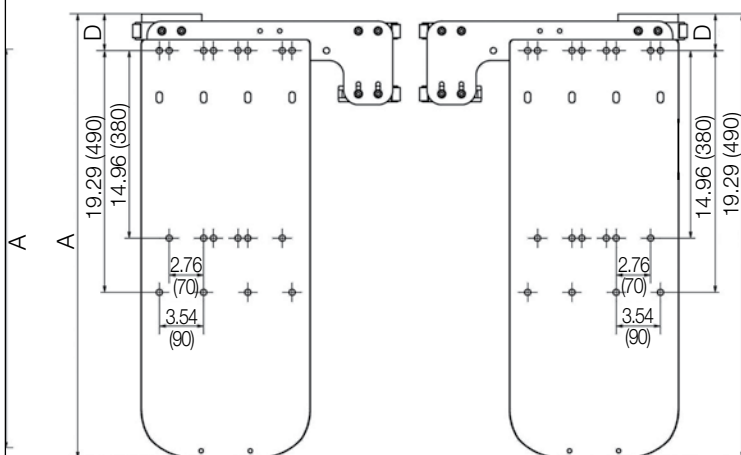


Diagram shows triflex® RS ø index: 40 & 50

Fixed end left
TR.RS.60.L - TR.RS.100.L

Fixed end right
TR.RS.60.R - TR.RS.100.R



Fixed end

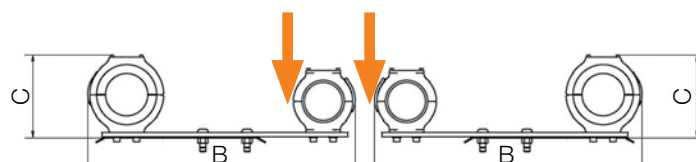


Diagram shows triflex® RS ø index: 60 - 100

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.



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.	▶	TRC.RS.50. 080 . LLLL .0	TRE.RS.50. 080 . LLLL .0.B
60.	▶	TRC.RS.60. 087 . LLLL .0	TRE.RS.60. 087 . LLLL .0.B
65.	▶	–	–
65. (<i>R 200</i>)	▶	–	–
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/C
85. (<i>R 240</i>)	▶	–	–
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**

Cable length calculation

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

ø Index		Bend radius <i>R</i> in. (mm)	e-chain® length* in. (mm)	Number of e-chains® links	e-chains® total length in. (mm)
30.	▶	–	–	–	–
40.	▶	2.28 (058)	49.25 (1,251)	90	LLLL + 1,251
50.	▶	3.15 (080)	55.47 (1,409)	81	LLLL + 1,409
60.	▶	3.42 (087)	68.27 (1,734)	85	LLLL + 1,734
65.	▶	–	–	–	–
65. (<i>R 200</i>)	▶	–	–	–	–
70.	▶	4.33 (110)	74.60 (1,895)	74	LLLL + 1,895
85.	▶	5.31 (135)	81.89 (2,080)	68	LLLL + 2,080
85. (<i>R 240</i>)	▶	–	–	–	–
100.	▶	571 (145)	82.87 (2,105)	61	LLLL + 2,105
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

Pneumatic retraction system

Up to 30.71: (780mm) retraction length with TRC, TRE and TROF e-chains® (please order matching e-chain® separately)

Increased protection against failure by optional end position monitoring

Standard pneumatic components for easy integration

Pressure compensation unit for an adjustable retraction force

Open system, low profile design

Custom connection possibilities using adapter consoles

Double retraction distance relative to the overall length

Pneumatic retraction system - triflex® RSP

triflex® RSP prevents loops on the robot head, with a continuously adjustable retraction force. Extension lengths of up to 30.71" (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.

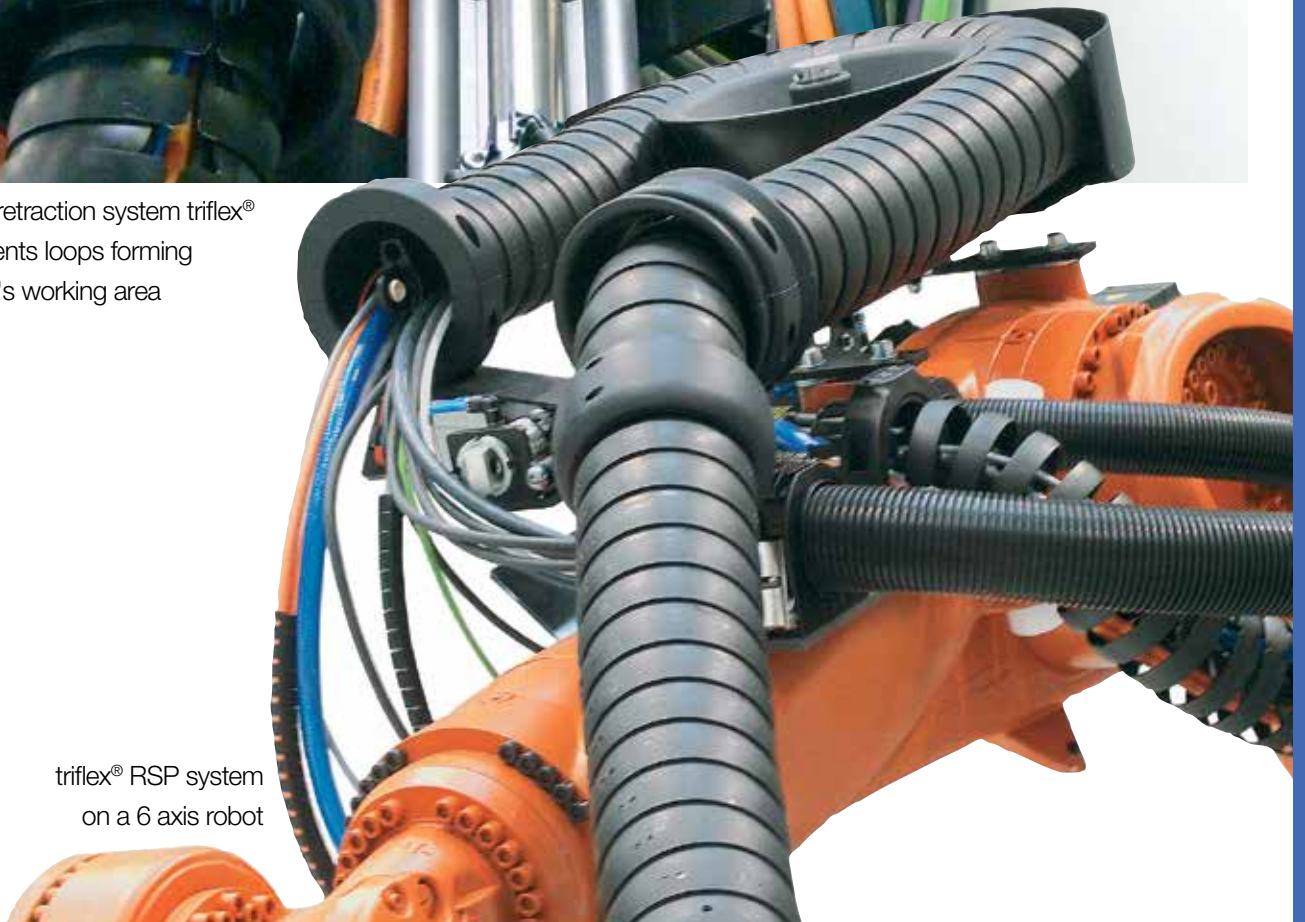
- For axis 3-6 on industrial robots
- Larger retraction forces than RS system
- Even larger e-chains® up to Ø 4.92" (125mm) can be guided safely
- Almost constant force over the complete travel, even with heavy fill weights
- The end position can be monitored so damage can be prevented
- Mounting options for numerous robot models and manufacturers with adapter consoles
- Very low energy consumption with integrated air reservoir

RSP - R(etraction) S(ystem) P(neumatic)



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

triflex® RSP system
on a 6 axis robot



Matching triflex® R e-chain® for RSP

TRC .RSP.XX.**R**.**LLLL**.0

TRE .RSP.XX.**R**.**LLLL**.0.(B)

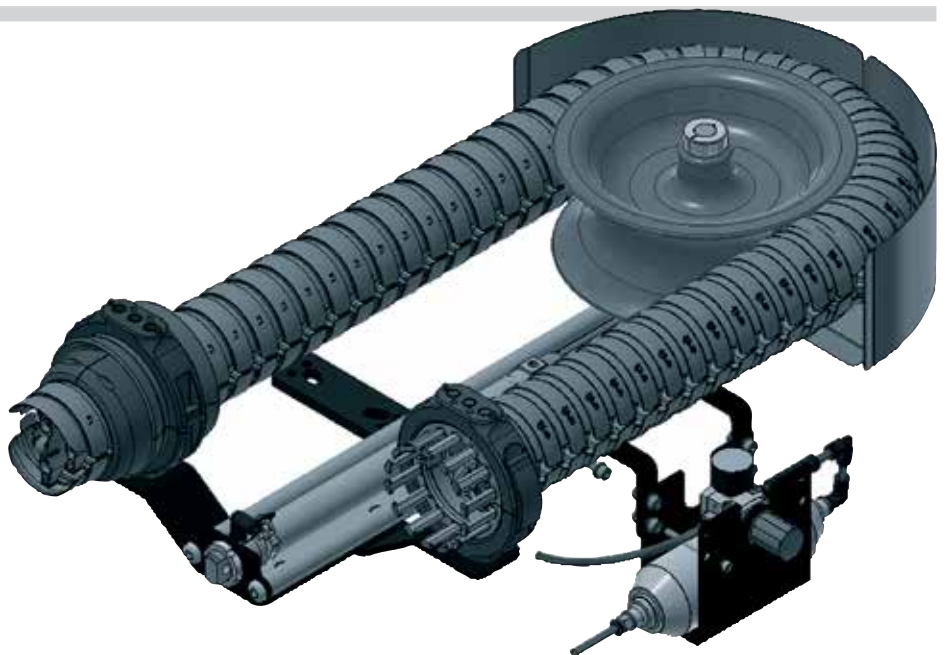
TRCF.RSP.XX.**R**.**LLLL**.0



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.



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 1092



Adapter consoles
for custom mounting options
► Page 1093



Axis 6 clamp
for triflex® R mounting
bracket
► Page 1096

Product range



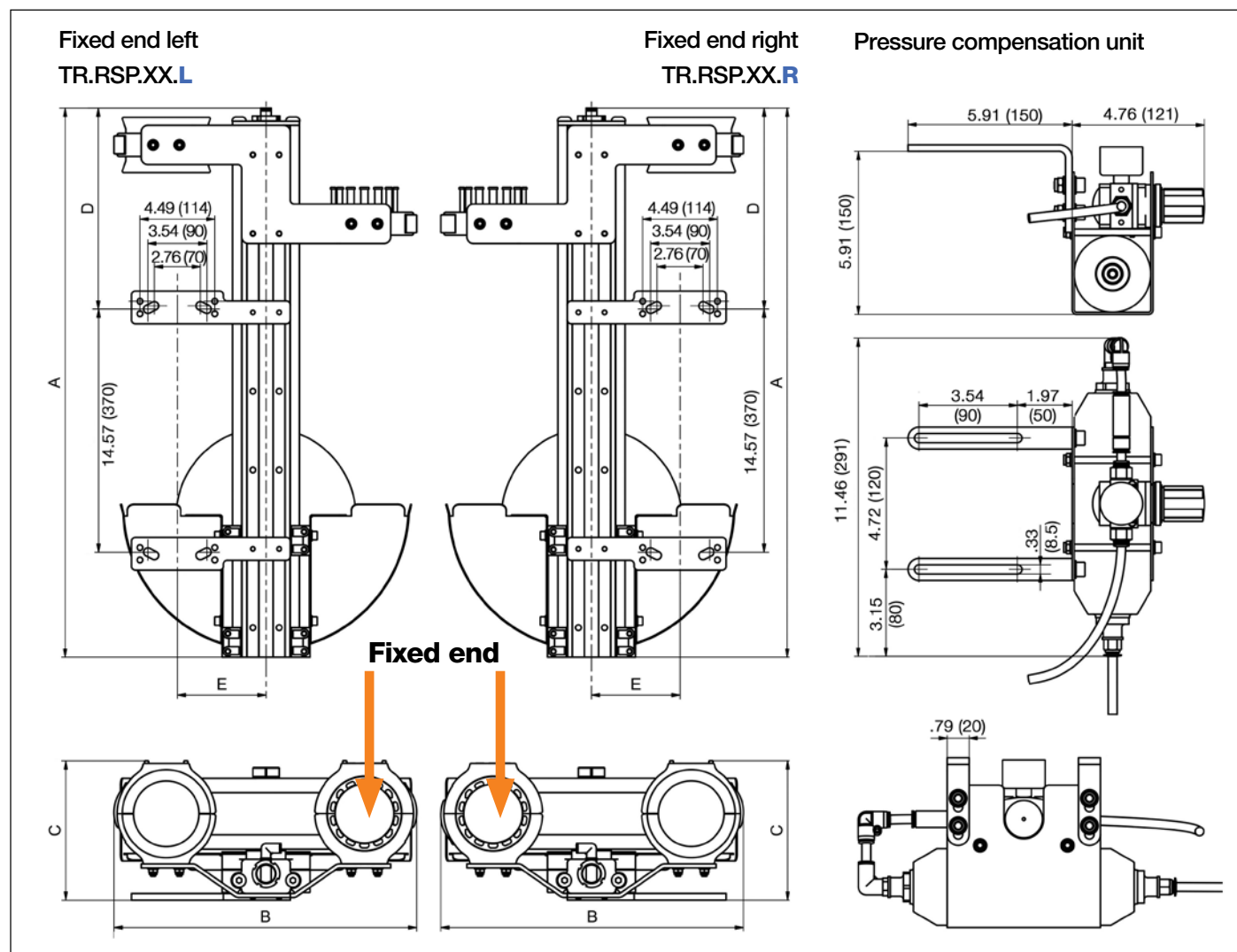
Product range | RSP pneumatic retraction system

ø index	Part. No. fixed end left	Part. No. fixed end right	Retraction length ¹⁾ ≤ in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	Weight lb. (kg)
.30.	▶ —	—	—	—	—	—	—	—	—
.40.	▶ —	—	—	—	—	—	—	—	—
.50.	▶ —	—	—	—	—	—	—	—	—
.60.	▶ TR.RSP.60.L	TR.RSP.60.R	22.83 (580)	31.18 (792)	15.59 (396)	6.97 (177)	10.91 (277)	5.31 (135)	35.49 (16.1)
.65.	▶ TR.RSP.65.L	TR.RSP.65.R	22.83 (580)	31.18 (792)	15.59 (396)	6.97 (177)	10.91 (277)	5.31 (135)	35.49 (16.1)
.65.(R200)	▶ —	—	—	—	—	—	—	—	—
.70.	▶ TR.RSP.70.L	TR.RSP.70.R	22.83 (580)	31.18 (792)	15.59 (396)	6.97 (177)	10.91 (277)	5.31 (135)	35.71 (16.2)
.85.	▶ TR.RSP.85.L	TR.RSP.85.R	24.41 (620)	32.91 (836)	18.15 (461)	8.39 (213)	12.05 (306)	5.31 (135)	42.77 (19.4)
.85.(R240)	▶ —	—	—	—	—	—	—	—	—
.100.	▶ TR.RSP.100.L	TR.RSP.100.R	24.41 (620)	33.27 (845)	18.39 (467)	8.39 (213)	12.05 (306)	5.31 (135)	42.99 (19.5)
.125.	▶ TR.RSP.125.L	TR.RSP.125.R	30.71 (780)	41.06 (1043)	22.44 (570)	9.65 (245)	15.94 (405)	5.31 (135)	53.13 (24.1)

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

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

Installation dimensions

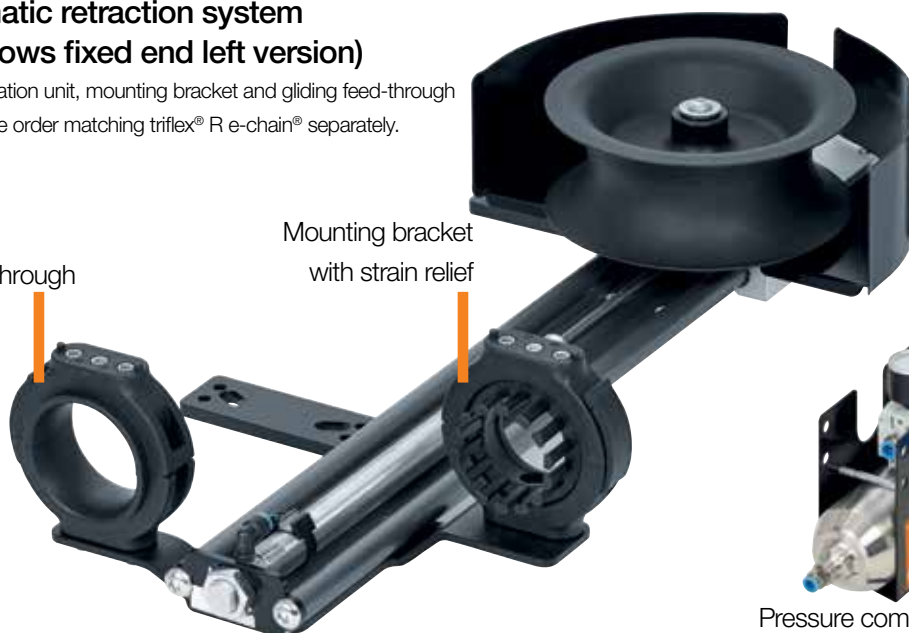


RSP pneumatic retraction system (diagram shows fixed end left version)

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

Gliding feed-through

Mounting bracket
with strain relief



Pressure compensation unit

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/C	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

Cable length calculation

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

ø Index		Bend radius <i>R</i> in. (mm)	e-chain® length* in. (mm)	Number of e-chains® links	e-chains® total length (mm)
30.	▶	–	–	–	–
40.	▶	–	–	–	–
50.	▶	–	–	–	–
60.	▶	3.42 (087)	58.62 (1,489)	73	LLLL + 1,489
65.	▶	3.94 (100)	56.38 (1,432)	62	LLLL + 1,432
65. (<i>R 200</i>)	▶	–	–	–	–
70.	▶	4.33 (110)	58.43 (1,484)	58	LLLL + 1,484
85.	▶	5.31 (135)	63.86 (1,622)	53	LLLL + 1,622
85. (<i>R 240</i>)	▶	–	–	–	–
100.	▶	5.71 (145)	65.20 (1,656)	48	LLLL + 1,656
125.	▶	7.17 (182)	77.24 (1,962)	44	LLLL + 1,962

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

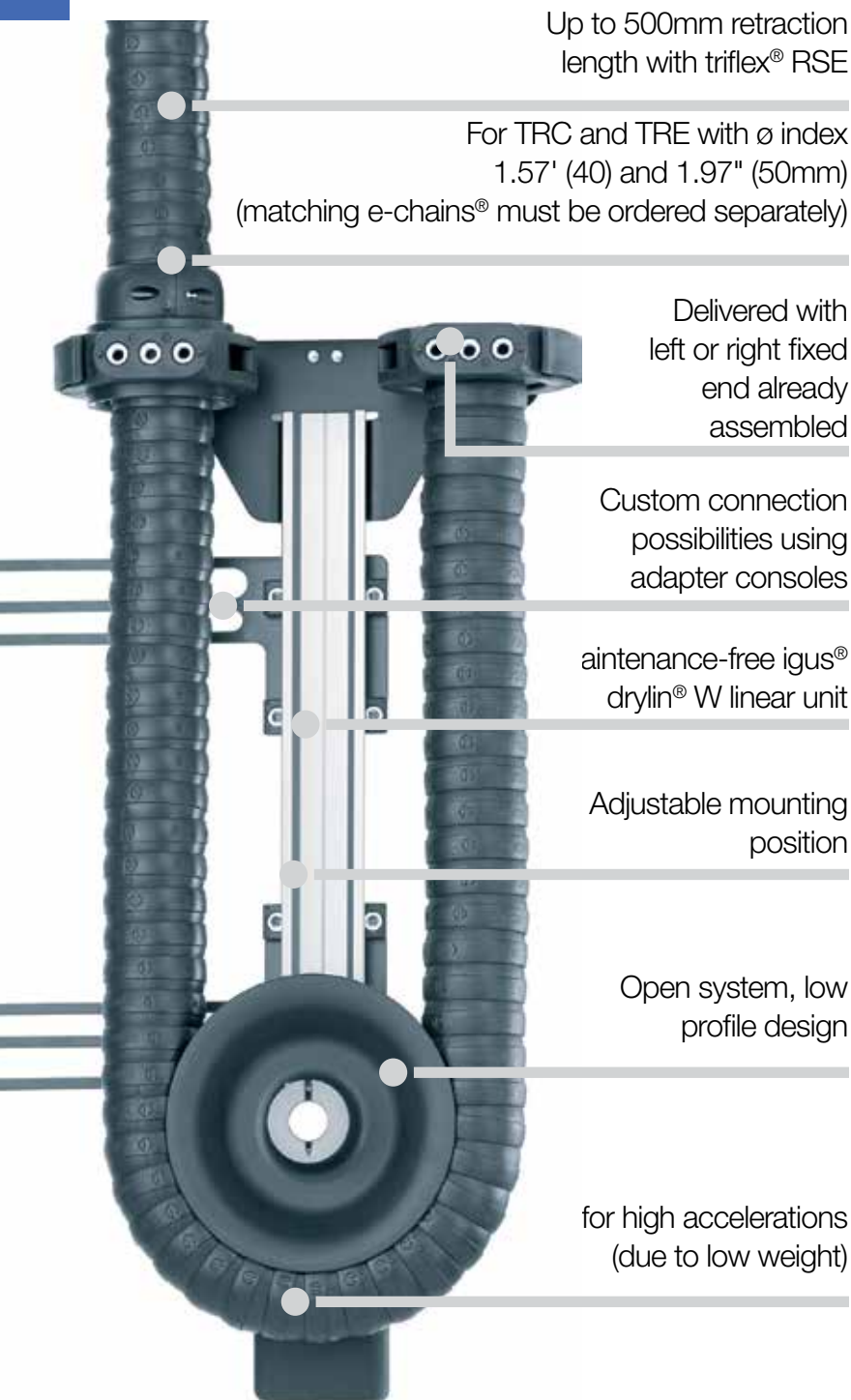
To calculate the total e-chain® length: please add the e-chain® length* within the system to the LLLL standard additional length (measured from the gliding feed-through)



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

triflex® R | RSE retraction system with deflection

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 $\varnothing$ index 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 .74" (18.8mm)

triflex® R | RSE retraction system with deflection

triflex® R
RSE

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 with deflection

System design with matching e-chains®

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

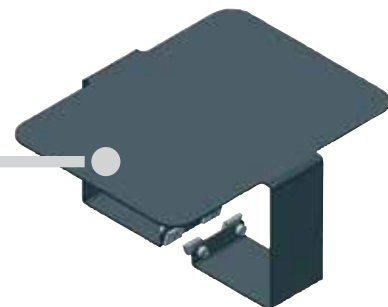
Matching triflex® R e-chains® for RSE
with integrated fiber-rods
TRC.RSE.XX.R.LLLL.0
TRE.RSE.XX.R.LLLL.0.B



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.



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 | RSE retraction system with deflection



Cover

for additional installation space and complex movements

► Page 1082



Adapter consoles

for custom mounting options

► Page 1093

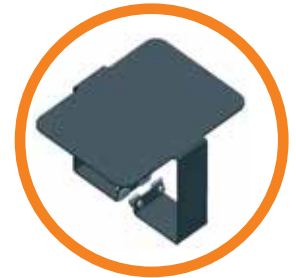
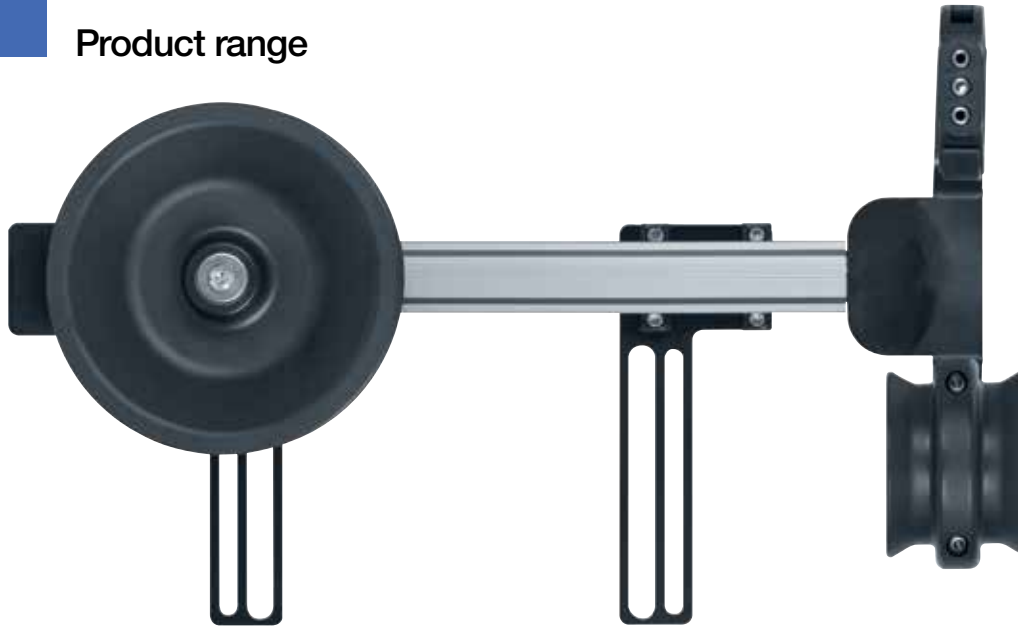


Axis 6 clamp

for triflex® R mounting bracket

► Page 1096

Product range



Optional cover
for additional
installation space

Product range | RSP pneumatic retraction system

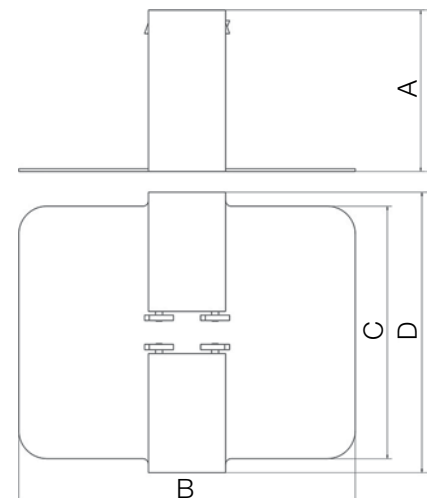
ø index	Part. No. fixed end left	Part. No. fixed end right	Retraction length ¹⁾ ≤ in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	Weight lb. (kg)
.30.	▶ —	—	—	—	—	—	—	—	—
.40.	▶ TR.RSE.02.40 .L	TR.RSE.02.40 .R	19.69 (500)	31.18 (792)	15.59 (396)	6.97 (177)	10.91 (277)	5.31 (135)	10.82 (16.1)
.50.	▶ TR.RSE.50.L	TR.RSE.50.R	19.69 (500)	31.18 (792)	15.59 (396)	6.97 (177)	10.91 (277)	5.31 (135)	10.82 (16.1)
.60.	▶ —	—	—	—	—	—	—	—	—
.65.	▶ —	—	—	—	—	—	—	—	—
.65.(R200)	▶ —	—	—	—	—	—	—	—	—
.70.	▶ —	—	—	—	—	—	—	—	—
.85.	▶ —	—	—	—	—	—	—	—	—
.85.(R240)	▶ —	—	—	—	—	—	—	—	—
.100.	▶ —	—	—	—	—	—	—	—	—
.125.	▶ —	—	—	—	—	—	—	—	—

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

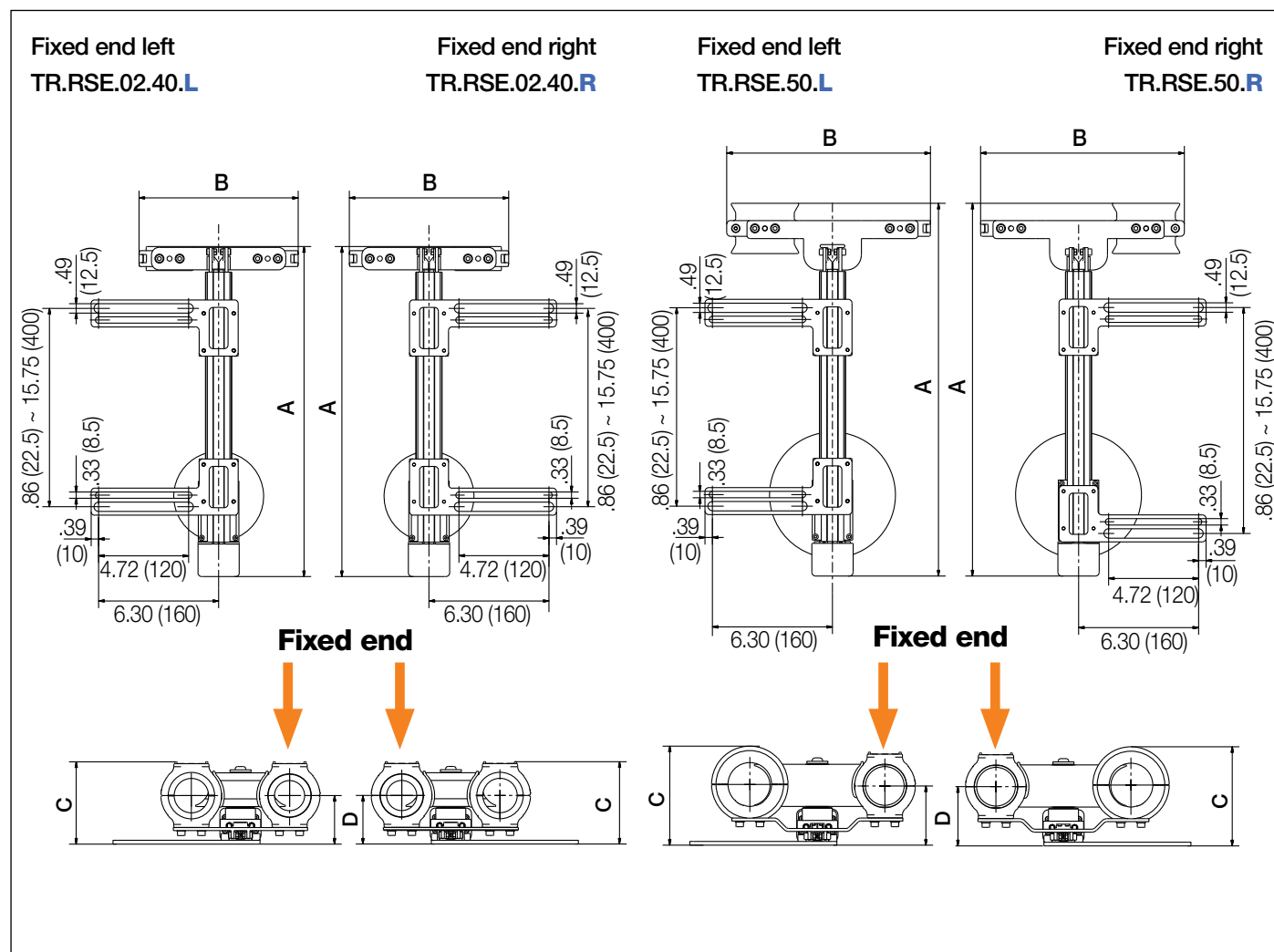
Product range | Cover, optional

ø Index	Optional cover retrofit kit	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	Load* ≤ lb (kg)	Weight lb (kg)
30.	▶ —	—	—	—	—	—	—
40.	▶ TR.RSE.40.COVER	4.53 (115)	9.45 (240)	7.09 (180)	7.87 (200)	1.008 (1.5)	0.739 (1.1)
50.	▶ TR.RSE.50.COVER	4.96 (126)	11.81 (300)	9.76 (248)	9.76 (248)	1.008 (1.5)	1.142 (1.7)
60.	▶ —	—	—	—	—	—	—
65.	▶ —	—	—	—	—	—	—
65. (R 200)	▶ —	—	—	—	—	—	—
70.	▶ —	—	—	—	—	—	—
85.	▶ —	—	—	—	—	—	—
85. (R 240)	▶ —	—	—	—	—	—	—
100.	▶ —	—	—	—	—	—	—
125.	▶ —	—	—	—	—	—	—

*Maximum fill weight to be used with the cover



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.



Product range



Product range | Matching e-chains® for RSE

ø		Part No. TRC	Part No. TRE
Index		enclosed	"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

Cable length calculation

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

ø Index	Bend radius <i>R</i> in. (mm)	e-chain® length* in. (mm)	Number of e-chains® links	e-chains® total length in. (mm)
30. ▶	–	–	–	–
40. ▶	2.28 (058)	35.59 (904)	90	LLLL + 904
50. ▶	3.15 (080)	41.10 (1,044)	60	LLLL + 1,044
60. ▶	–	–	–	–
65. ▶	–	–	–	–
65. (<i>R 200</i>) ▶	–	–	–	–
70. ▶	–	–	–	–
85. ▶	–	–	–	–
85. (<i>R 240</i>) ▶	–	–	–	–
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

Telescopic and twistable



Video animation
online: Please scan
the QR code or visit
the webpage

Parallel routing of the
cables due to strain relief
at the end and center

Adjustable
retraction
force

Easy filling and
replacement
of cables

Defined
torsion
stop-dog

Adjustable
retraction
length

Telescopic and twistable combined in one e-chain® - triflex® TRX

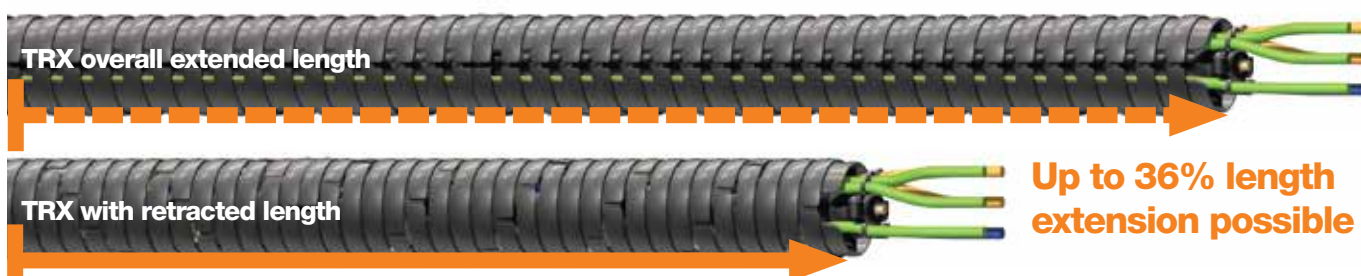
The telescopic triflex® R TRX combines the triflex® R energy chain and a retraction system in one. The combination enables a space-saving installation with length extension of up to 36%. The length extension also prevents loop formation at the robot. The round shape of the 'easy' design is highly resilient and makes it possible to insert and remove harnessed cables easily.

- The TRX complements the functions of the triflex® R series and now also makes them telescopic
- The rubber band inside the TRX retracts the e-chains® links back to their starting point and the retraction force can be adjusted via the rubber band
- Weight reduction of up to 83% compared to a solution with a retraction system (RSP)
- Chain is constructed with left and right links on either side of the center strain relief link
- Equal number of left and right links to make a chain

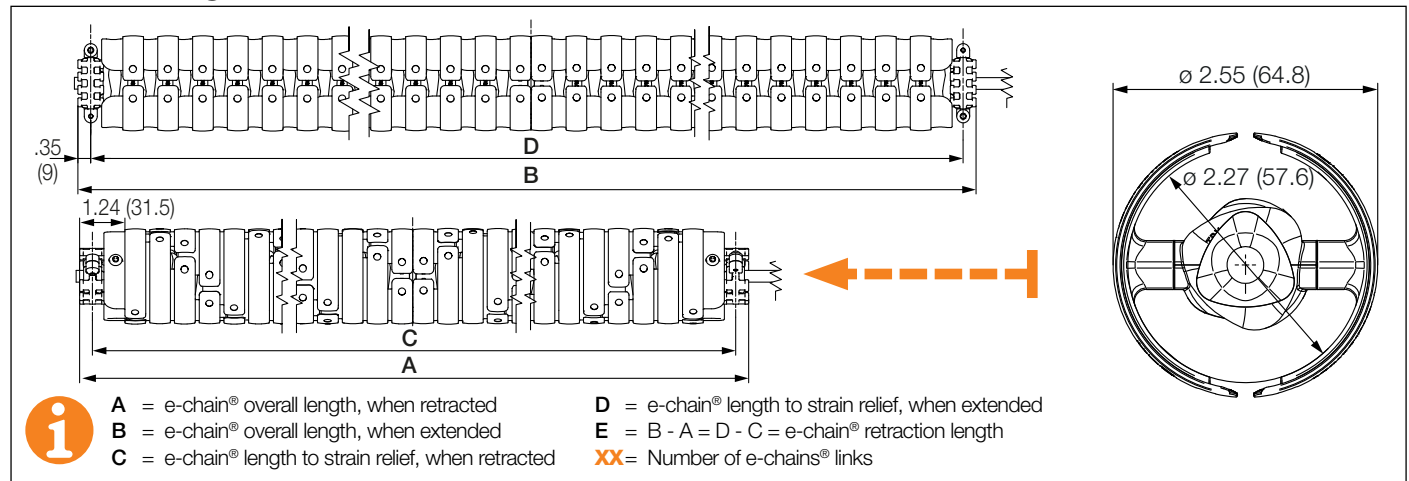
Functional principle | triflex® R TRX



red dot winner 2022



Product range



Installation dimensions depending on the number of links XX | Version 02, easy cable connection

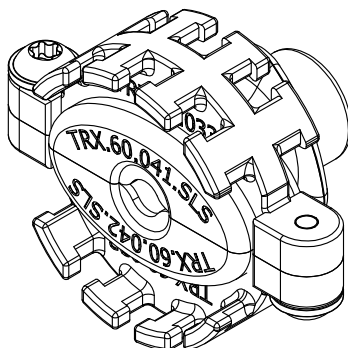
XX Number of links* (piece)	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	Retraction length E in. (mm)	Weight lb (kg)
13	19.96 (507)	27.13 (689)	19.25 (489)	26.42 (671)	7.17 (182)	≈ 0.503 (0.75)
15	22.68 (576)	30.94 (786)	21.97 (558)	30.24 (768)	8.27 (210)	≈ 0.571 (0.85)
17	25.39 (645)	34.76 (883)	24.69 (627)	34.06 (865)	9.37 (238)	≈ 0.638 (0.95)
19	28.11 (714)	38.58 (980)	27.40 (696)	37.87 (962)	10.47 (266)	≈ 0.705 (1.05)
21	30.83 (783)	42.40 (1,077)	30.12 (765)	41.69 (1,059)	11.57 (294)	≈ 0.772 (1.15)
23	33.54 (852)	46.22 (1,174)	32.83 (834)	45.51 (1,156)	12.68 (322)	≈ 0.759 (1.13)
25	36.26 (921)	50.04 (1,271)	35.55 (903)	49.33 (1,253)	13.78 (350)	≈ 0.914 (1.36)
27	38.98 (990)	53.86 (1,368)	38.27 (972)	53.15 (1,350)	14.88 (378)	≈ 0.981 (1.46)
29	41.69 (1,059)	57.68 (1,465)	40.98 (1,041)	56.97 (1,447)	15.98 (406)	≈ 1.048 (1.56)
31	44.37 (1,127)	61.46 (1,561)	43.70 (1,110)	60.79 (1,544)	17.09 (434)	≈ 1.115 (1.66)
33	47.09 (1,196)	65.287 (1,658)	46.42 (1,179)	64.61 (1,641)	18.19 (462)	≈ 1.182 (1.76)
35	49.80 (1,265)	69.09 (1,755)	49.09 (1,247)	68.39 (1,737)	19.29 (490)	≈ 1.25 (1.86)
37	52.52 (1,334)	72.91 (1,852)	51.81 (1,316)	72.20 (1,834)	20.39 (518)	≈ 1.317 (1.96)
39	55.24 (1,403)	76.73 (1,949)	54.53 (1,385)	76.02 (1,931)	21.50 (546)	≈ 1.384 (2.06)
41	57.95 (1,472)	80.55 (2,046)	57.24 (1,454)	79.84 (2,028)	22.60 (574)	≈ 1.458 (2.17)
42	59.33 (1,507)	82.48 (2,095)	58.62 (1,489)	81.77 (2,077)	23.15 (588)	≈ 1.492 (2.22)

XX = left and right link count on either side of the center strain relief link

Complete Part No. with required number of e-chains® links. Example: TRXE.60.120.42.02.0

Further amount of e-chains® links possible.

The end piece of the triflex® R TRX version 02 is a strain relief option for quick and easy attachment of cables and hoses.



e-chain® order key

(Total number of links is 84 links + center strain relief and 2 end strain relief links)

TRXE.60.120.42.02.0



Default color black

End piece

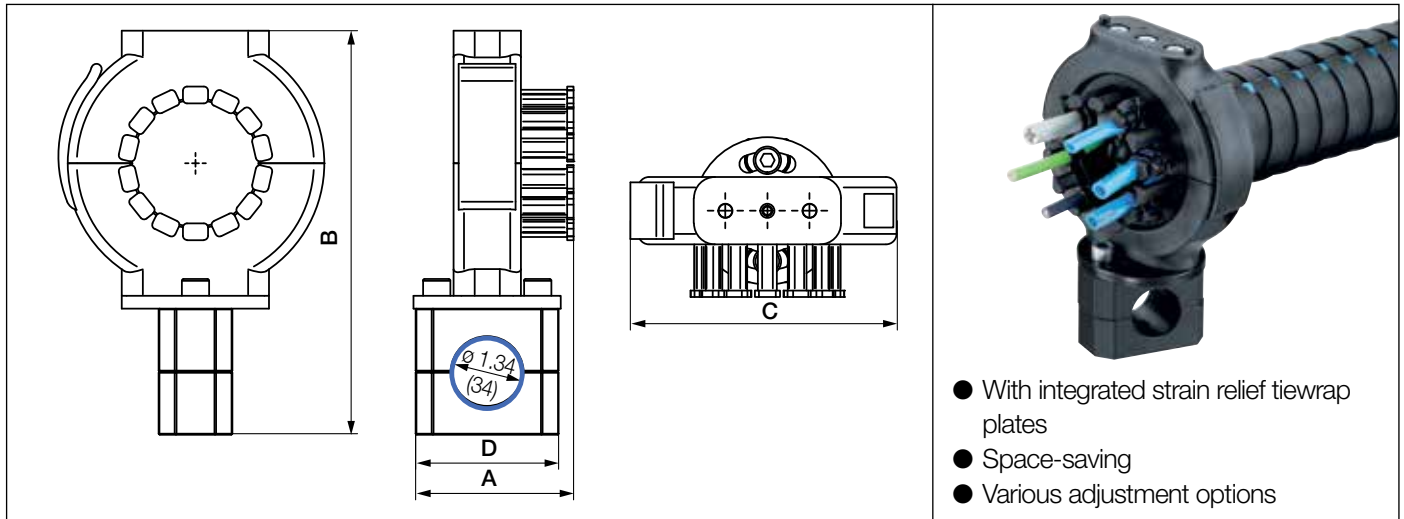
Number of e-chains® links

B Bend radius

ø index

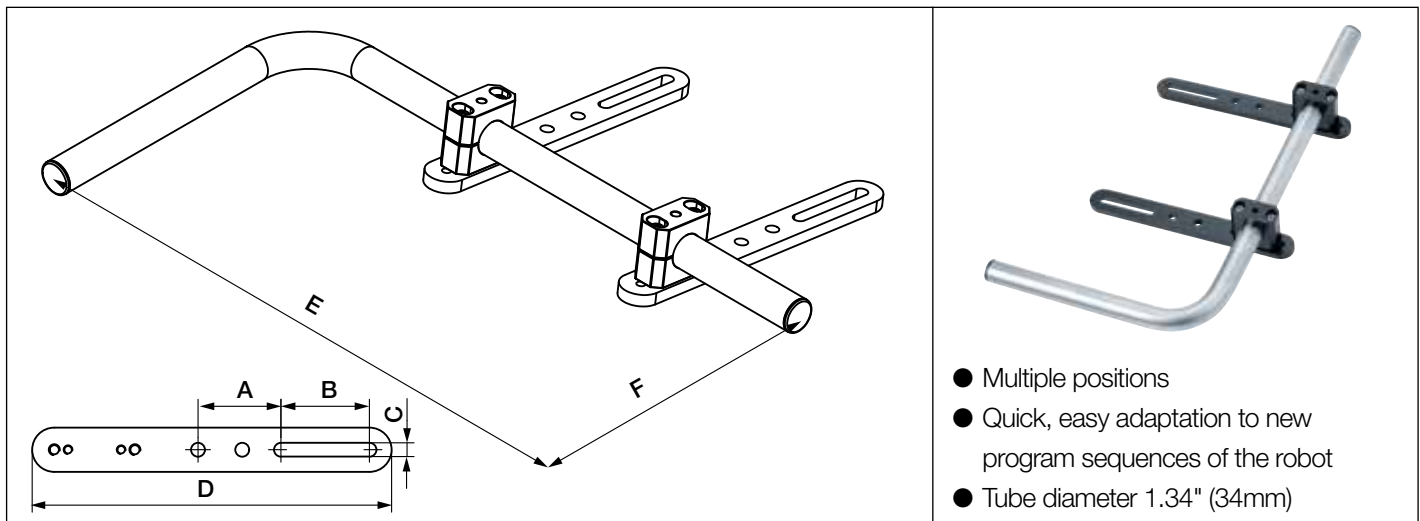
e-chains® series

Compact connection to angled tube on axis 3



Product range | Angled tube connection | For TRC.60·TRE.60·TRXE.60

Index	Part No. Compact connection	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)
60.	TR.920.237.60.01	(75)	(191.5)	(126)	(68)

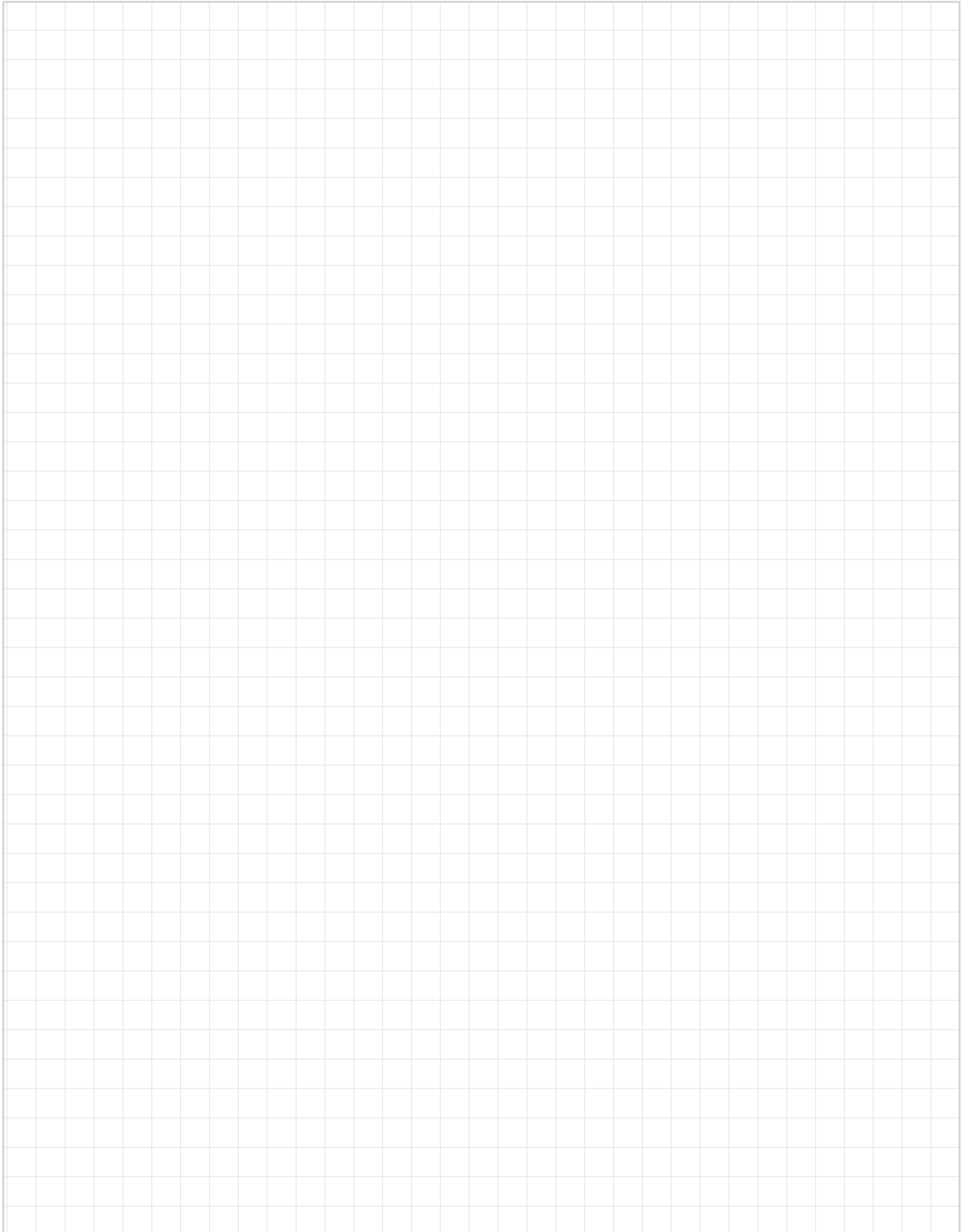


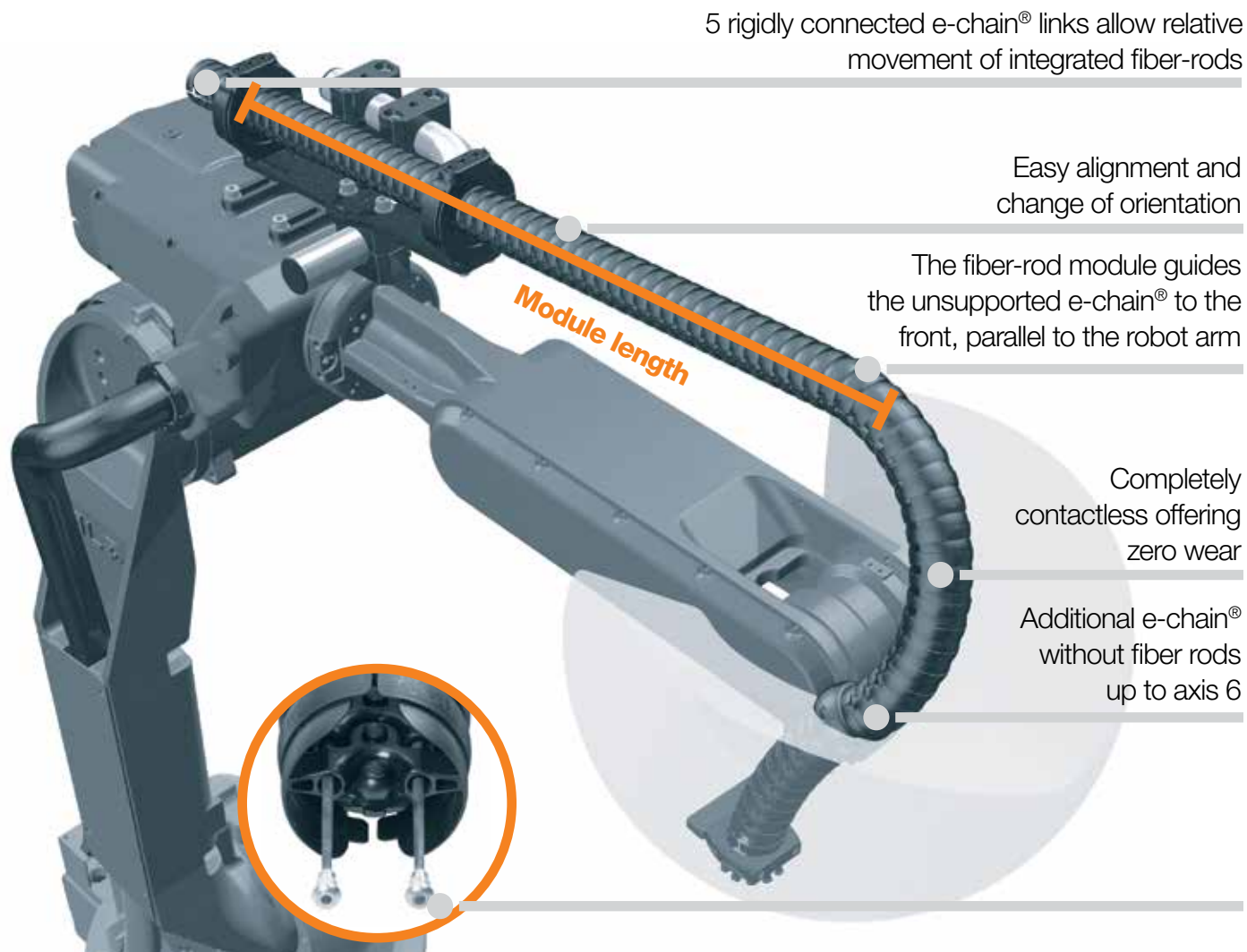
Product range | Angled tube with adapter consoles

Index	Part No. Angled tube	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)
60.	TR.912.099	2.95 (75)	3.15 (80)	.49 (12.5)	12.80 (325)	24.61 (625)	12.83 (326)

The compact connection **TR.920.237.60.01** in combination with the angled tube **TR.912.099** offers the greatest possible degree of freedom when connecting to the robot. The elongated holes in the adapter consoles of the angled tube enable direct attachment to a large number of robot models without additional adapters. In addition, the compact connection has a space-saving design for an optimal connection point even in confined cells.

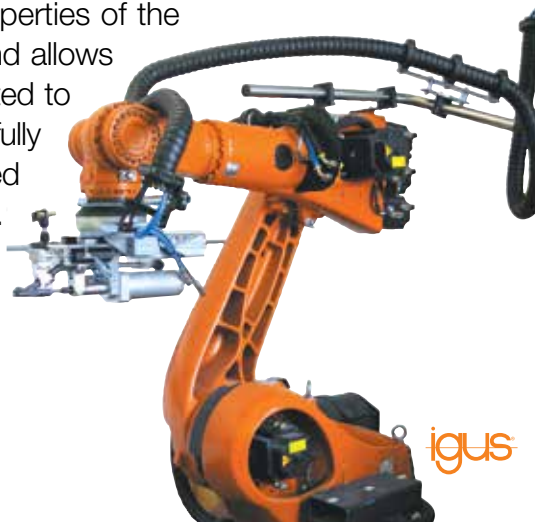
Notes





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

We supply fully assembled fiber-rod modules for triflex® R e-chain® Series TRC and TRE. The integrated fiber-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 fiber-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 fiber-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 fiber-rods for the final axis area needs to be ordered separately.



Fiber-rod module | Universal mounting kits

Part. No. fiber rod modules for TRC / TRE		Approx. length ft. (m)
TRC.30	TRE.30	
TRC.F.30.0800.1.0	TRE.F.30.0800.1.0.B	2.62 (0.8)
TRC.F.30.0700.1.0	TRE.F.30.0700.1.0.B	2.30 (0.7)
TRC.F.30.0600.1.0*	TRE.F.30.0600.1.0.B*	1.97 (0.6)
TRC.F.30.0500.1.0	TRE.F.30.0500.1.0.B	1.64 (0.5)
TRC.F.30.0400.1.0	TRE.F.30.0400.1.0.B	1.31 (0.4)
TRC.F.30.0300.1.0	TRE.F.30.0300.1.0.B	.98 (0.3)
TRC.40	TRE.40	
TRC.F.40.1000.1.0	TRE.F.40.1000.1.0.B	3.28 (1.0)
TRC.F.40.0900.1.0	TRE.F.40.0900.1.0.B	2.95 (0.9)
TRC.F.40.0800.1.0*	TRE.F.40.0800.1.0.B*	2.62 (0.8)
TRC.F.40.0700.1.0	TRE.F.40.0700.1.0.B	2.30 (0.7)
TRC.F.40.0600.1.0	TRE.F.40.0600.1.0.B	1.97 (0.6)
TRC.F.40.0500.1.0	TRE.F.40.0500.1.0.B	1.64 (0.5)
TRC.F.40.0400.1.0	TRE.F.40.0400.1.0.B	1.31 (0.4)
TRC.50	TRE.50	
TRC.F.50.1400.1.0	TRE.F.50.1400.1.0.B	4.59 (1.4)
TRC.F.50.1200.1.0	TRE.F.50.1200.1.0.B	3.94 (1.2)
TRC.F.50.1000.1.0*	TRE.F.50.1000.1.0.B*	3.28 (1.0)
TRC.F.50.0800.1.0	TRE.F.50.0800.1.0.B	2.62 (0.8)
TRC.F.50.0600.1.0	TRE.F.50.0600.1.0.B	1.97 (0.6)
TRC.F.50.0400.1.0	TRE.F.50.0400.1.0.B	1.31 (0.4)
TRC.60	TRE.60	
TRC.F.60.1400.1.0	TRE.F.60.1400.1.0.B	4.59 (1.4)
TRC.F.60.1200.1.0	TRE.F.60.1200.1.0.B	3.94 (1.2)
TRC.F.60.1000.1.0*	TRE.F.60.1000.1.0.B*	3.28 (1.0)
TRC.F.60.0800.1.0	TRE.F.60.0800.1.0.B	2.62 (0.8)
TRC.F.60.0600.1.0	TRE.F.60.0600.1.0.B	1.97 (0.6)
TRC.F.60.0400.1.0	TRE.F.60.0400.1.0.B	1.31 (0.4)

Part. No. fiber rod modules for TRC / TRE		Approx. length ft. (m)
TRC.70	TRE.70	
TRC.F.70.1800.1.0	TRE.F.70.1800.1.0.B	5.91 (1.8)
TRC.F.70.1600.1.0	TRE.F.70.1600.1.0.B	5.25 (1.6)
TRC.F.70.1400.1.0	TRE.F.70.1400.1.0.B	4.59 (1.4)
TRC.F.70.1200.1.0*	TRE.F.70.1200.1.0.B*	3.94 (1.2)
TRC.F.70.1000.1.0	TRE.F.70.1000.1.0.B	3.28 (1.0)
TRC.F.70.0800.1.0	TRE.F.70.0800.1.0.B	2.62 (0.8)
TRC.85	TRE.85	
TRC.F.85.2000.1.0	TRE.F.85.2000.1.0.B / C	6.56 (2.0)
TRC.F.85.1800.1.0	TRE.F.85.1800.1.0.B / C	5.91 (1.8)
TRC.F.85.1600.1.0	TRE.F.85.1600.1.0.B / C*	5.25 (1.6)
TRC.F.85.1400.1.0*	TRE.F.85.1400.1.0.B / C*	4.59 (1.4)
TRC.F.85.1200.1.0	TRE.F.85.1200.1.0.B / C	3.94 (1.2)
TRC.F.85.1000.1.0	TRE.F.85.1000.1.0.B / C	3.28 (1.0)
TRC.F.85.0800.1.0	TRE.F.85.0800.1.0.B / C	2.62 (0.8)
TRC.100	TRE.100	
TRC.F.100.2000.1.0	TRE.F.100.2000.1.0.B / C	6.56 (2.0)
TRC.F.100.1800.1.0	TRE.F.100.1800.1.0.B / C	5.91 (1.8)
TRC.F.100.1600.1.0	TRE.F.100.1600.1.0.B / C	5.25 (1.6)
TRC.F.100.1400.1.0*	TRE.F.100.1400.1.0.B / C*	4.59 (1.4)
TRC.F.100.1200.1.0	TRE.F.100.1200.1.0.B / C	3.94 (1.2)
TRC.F.100.1000.1.0	TRE.F.100.1000.1.0.B / C	3.28 (1.0)
TRC.125	TRE.125	
TRC.F.125.2000.1.0	TRE.F.125.2000.1.0	6.56 (2.0)
TRC.F.125.1800.1.0*	TRE.F.125.1800.1.0*	5.91 (1.8)
TRC.F.125.1600.1.0	TRE.F.125.1600.1.0	5.25 (1.6)
TRC.F.125.1400.1.0	TRE.F.125.1400.1.0	4.59 (1.4)
TRC.F.125.1200.1.0	TRE.F.125.1200.1.0	3.94 (1.2)
TRC.F.125.1000.1.0	TRE.F.125.1000.1.0	3.28 (1.0)

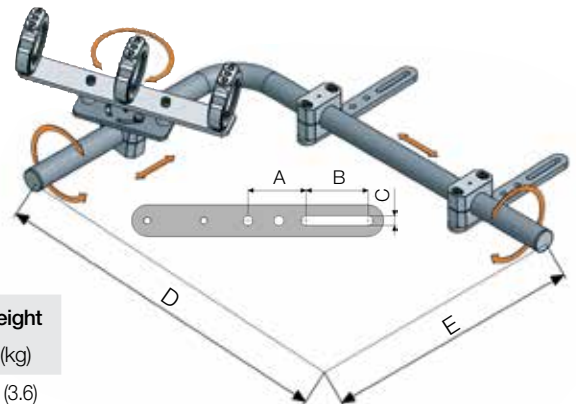
*Maximum recommended length for fiber rod modules
For the C version, please add the index .C

Universal assembly kit - for TRC, TRE

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

Product range - Universal mounting kit

For Series ø	Part No.	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	Weight lb (kg)
40. ▶	TR.40.80	2.91 (74)	1.57 (40)	.33 (8.4)	18.70 (475)	12.80 (325)	7.9 (3.6)
50. ▶	TR.50.80	2.91 (74)	1.57 (40)	.33 (8.4)	18.70 (475)	12.80 (325)	7.9 (3.6)
60. ▶	TR.60.80	2.91 (74)	1.57 (40)	.33 (8.4)	24.61 (625)	12.80 (325)	10.4 (4.7)
70. ▶	TR.70.80	2.95 (75)	3.15 (80)	.50 (12.6)	34.45 (875)	22.64 (575)	13.0 (5.9)
85. ▶	TR.85.80	2.95 (75)	3.15 (80)	.50 (12.6)	34.45 (875)	22.64 (575)	13.9 (6.3)
100. ▶	TR.100.80	2.95 (75)	3.15 (80)	.50 (12.6)	34.45 (875)	22.64 (575)	13.9 (6.3)
125. ▶	TR.125.80	2.95 (75)	3.15 (80)	.50 (12.6)	34.45 (875)	22.64 (575)	18.74 (8.5)



Adjustment unit for retraction systems

Wide adjustment
range of $\pm 250\text{mm}$

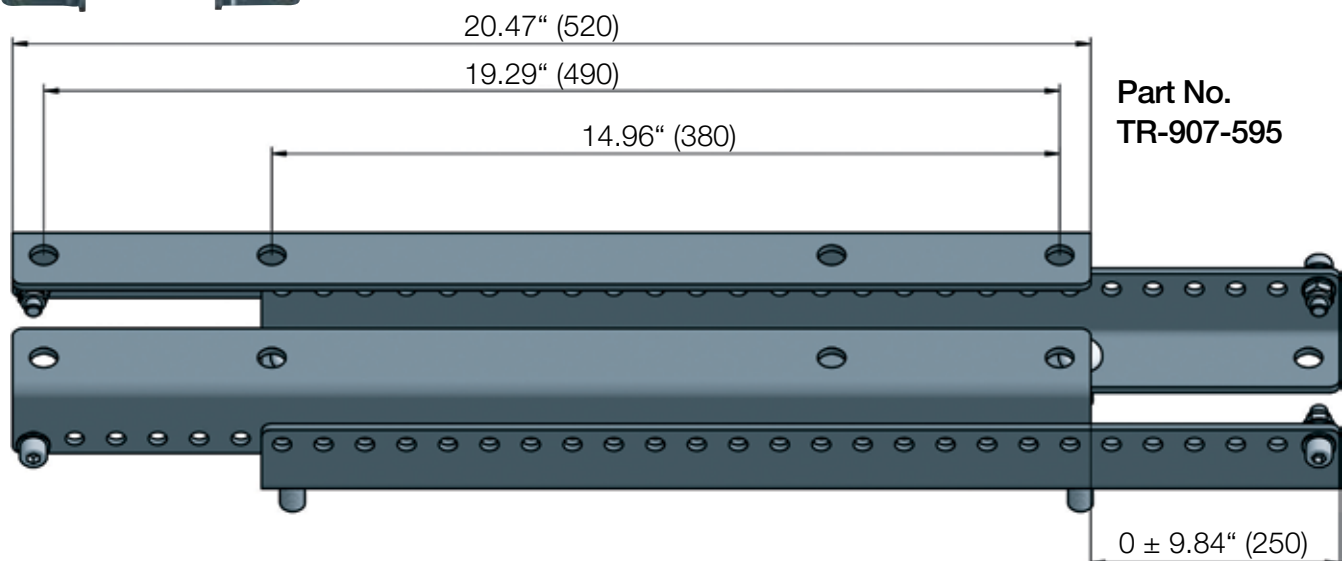
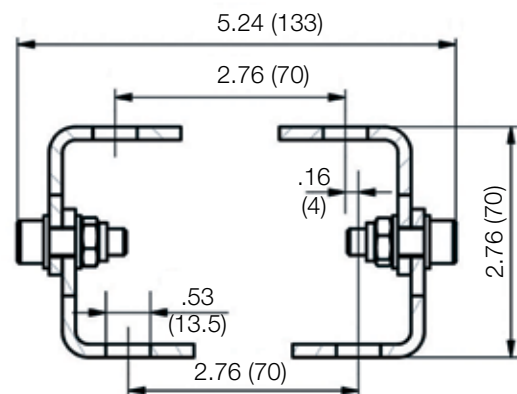
Can be combined with
igus® adapter brackets

Simplifies alignment
for robot cells with
restricted space

Part No. TR.907.595
weight: 11 lb.

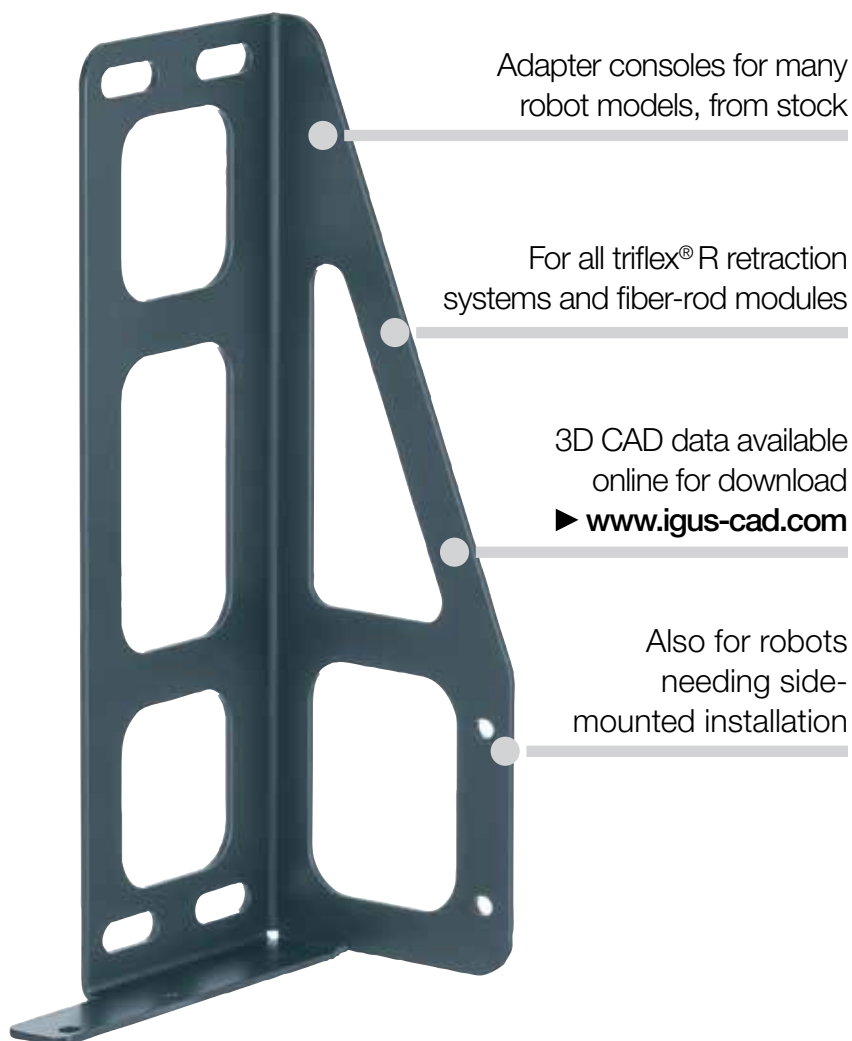
Adjustment unit for RSP and RS retraction systems

The optionally available adjustment unit is installed between the robot arm and the retraction system, and supports accurate adjustments of the assembly position of our igus® retraction systems on the robot arm. Particularly recommended when various large robots will be equipped with a uniform cable package.



Part No.
TR-907-595

Adapter consoles for retraction systems



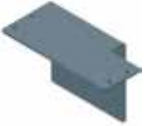
Adapter consoles for all igus® retraction systems

The retraction systems provide all widely used drill patterns for attachment: 380 x 70 mm and 490 x 90 mm (in Ø12.5 mm). We also supply a wide range of manufacturer and model-dependent adapters 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 brackets for many robot models, from stock. Product range ► next page**



Application example with RS system on ABB Series 6600

Adapter consoles for retraction systems, from stock

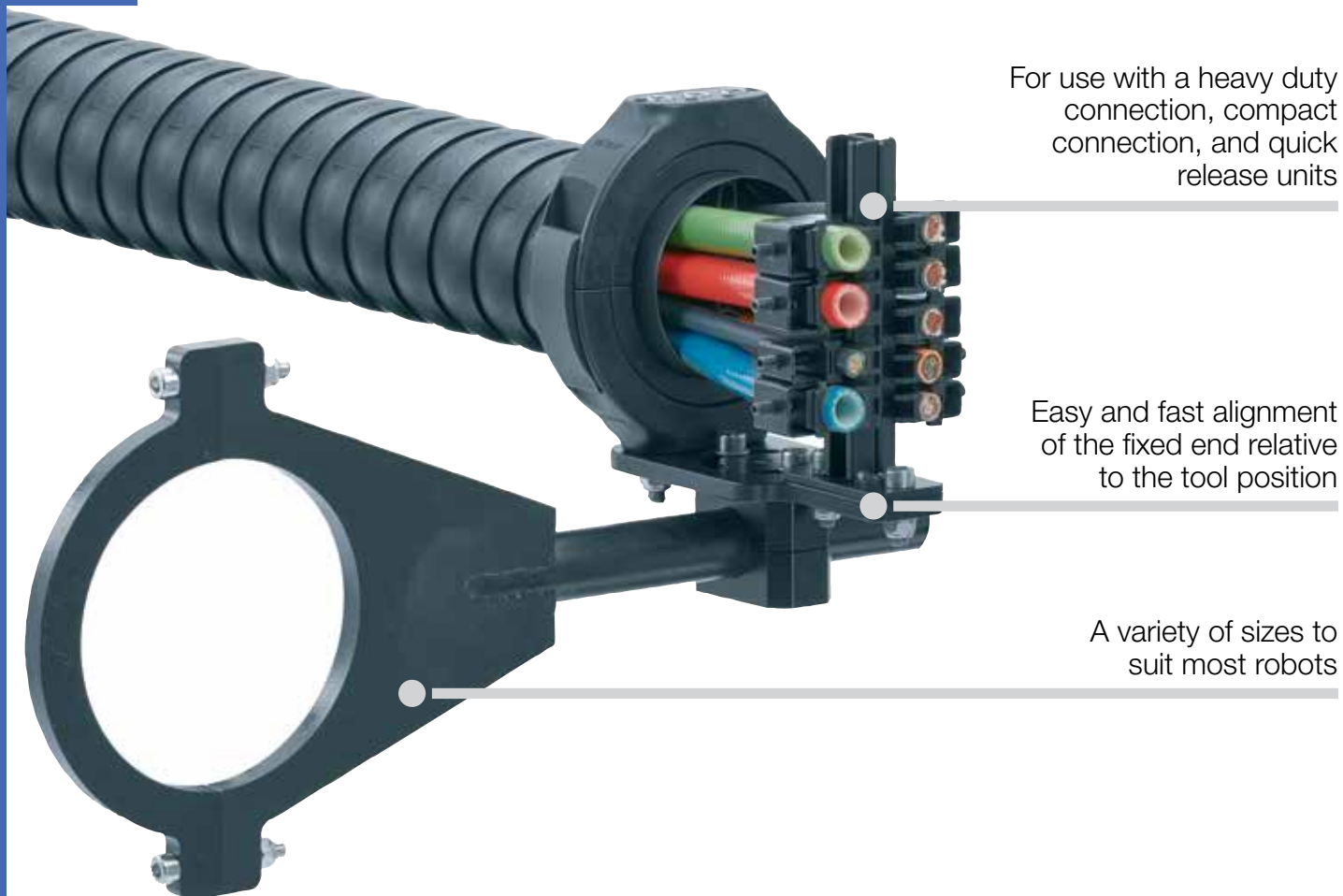
Adapter bracket	Part No.	For manufacturer	Example for robot type		Weight lb (kg)
	TR.907.347	ABB	IRB 6600 IRB 6640 IRB 6650		8.8 (4.0)
	TR.907.468	ABB	IRB 6400		21.6 (9.8)
	TR.907.448	ABB	IRB 4400		11 (5.0)
	TR.907.381	ABB	IRB 2400/10 IRB 2400/16		11.5 (5.2)
	TR.907.905	ABB	IRB 6620		6.2 (2.8)
	TR.908.494	ABB	IRB 4600 IRB 2600		6.4 (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	10.4 (4.7)
	TR.907.447	Comau	NM 45-2.0 NM 16-3.1		7.5 (3.4)
	TR.908.493	Comau	Smart six		4.9 (2.2)
	TR.907.327	Yaskawa	UP 20 UP 165 UP 50 ES 165 UP 130 ES 200	ES 280 MH6 HP 20 HP 165 HP 50	1.9 (3.6)
	TR.909.641	Yaskawa	MH50		4.4 (2.0)

More adapter consoles upon request. CAD data online.

Offerings from the product range

Adapter bracket	Part No.	For manufacturer	Example for robot type		Weight lb (kg)
	TR.911.220	Fanuc	M-710iC 50 M-710iC 70		4.4 (2.0)
	TR.908.973	Fanuc	M-710iB 45		2.4 (1.1)
	TR.907.270	Fanuc	R-2000iB R-2000iA R-1000iA R-2000iC	S 430 S 420	9.9 (4.5)
	TR.907.470.12	Fanuc	M-900iA 260L M-900iA 350		15.0 (6.8)
	TR.907.902.12	Fanuc	M-900iA 600		19.6 (8.9)
	TR.910.876	Fanuc	M900-IB700		10.1 (4.6)
	TR.907.599	Kuka	KR5 KR5arc	KR6 KR16	5.5 (2.5)
	TR.908.113	Kuka	KR-1000		11.5 (5.2)
	TR.908.014	Kuka	KR 60 (HA) KR 30 (HA)		9.5 (4.3)
	TR.907.706	Reis	RV30-26 RV10-16 RV20-16 RV60-16	RV60-26 RV60-40 RV60-60 RV130	9.5 (4.3)
	TR.911.223 Spacer bolt	Kuka	Series Quantec (4 piece kit)		1.3 (0.6)

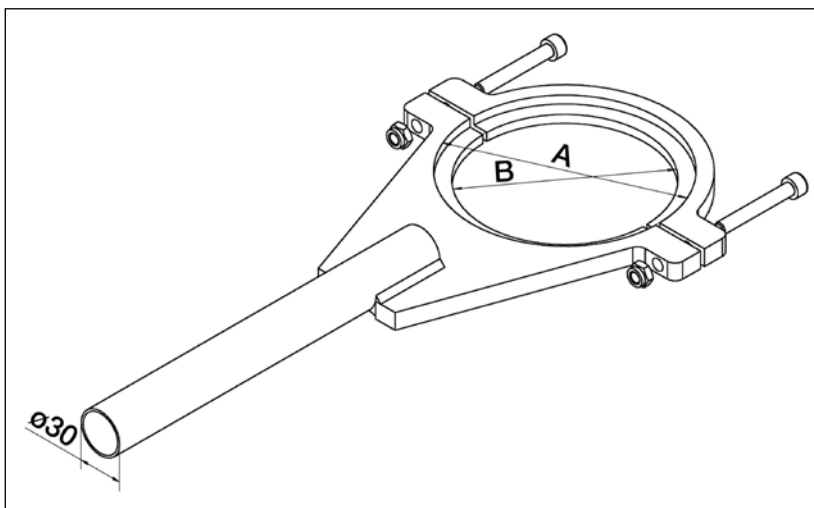
More adapter consoles upon request. CAD data online.



Clamps for attachment to axis 6

The clamp is used to attach a mounting bracket to axis 6, with a handle (Ø 30mm) . 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**



Offerings from the product range

Part No.	Example for robot type	With recess	A in. (mm)	B in. (mm)	Weight lb (kg)
TR-907-857	KUKA KR 30-3 (HA)	yes	5.12 (130)	4.53 (115)	4.2 (1.90)
	KUKA KR 60-3 (HA)	yes	5.12 (130)	4.53 (115)	4.2 (1.90)
	KUKA KR 60 L45-3 (HA)	yes	5.12 (130)	4.53 (115)	4.2 (1.90)
	KUKA KR 60 L30-3 (HA)	yes	5.12 (130)	4.53 (115)	4.2 (1.90)
TR-907-901	KUKA Quantec, large flange	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
	KUKA Quantec-2, large flange	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
	KUKA KR 125/3	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
	KUKA KR 150/3	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
	KUKA KR 200/3	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
	KUKA KR 150/2 Series 2000	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
	KUKA KR 180/2 Series 2000	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
	KUKA KR 210/2 Series 2000	yes	8.07 (205)	7.48 (190)	5.5 (2.50)
TR-907-992	Fanuc R-2000iA	yes	6.50 (165)	6.30 (160)	5.3 (2.40)
	Fanuc R-2000iB	yes	6.50 (165)	6.30 (160)	5.3 (2.40)
	Fanuc R-2000iC	yes	6.50 (165)	6.30 (160)	5.3 (2.40)
TR-908-065	Fanuc M-710iC 45	yes	5.12 (130)	4.88 (124)	4.9 (2.20)
	Fanuc M-710iC 45M	yes	5.12 (130)	4.88 (124)	4.9 (2.20)
	Fanuc M-710iC 50	yes	5.12 (130)	4.88 (124)	4.9 (2.20)
	Fanuc M-710iC 70	yes	5.12 (130)	4.88 (124)	4.9 (2.20)
TR-908-115	KUKA KR 1000 Titan	yes	9.84 (250)	9.53 (242)	6.7 (3.05)
TR-908-347	Stäubli TX 200	yes	5.71 (145)	4.92 (125)	4.2 (1.90)
TR-909-387	Yaskawa UP 50	yes	4.92 (125)	3.94 (100)	4.2 (1.90)
	Yaskawa HP 50	yes	4.92 (125)	3.94 (100)	4.2 (1.90)
	Yaskawa MH 50	yes	4.92 (125)	3.94 (100)	4.2 (1.90)
TR.912.328	KUKA Fortec	yes	9.25 (235)	8.66 (220)	6.0 (2.70)
TR.917.378	KUKA KR 16-3	yes	3.54 (90)	2.48 (63)	2.6 (1.20)
	KUKA KR 20-3	yes	3.54 (90)	2.48 (63)	2.6 (1.20)
TR.919.171	KUKA Iontec	yes	4.80 (122)	5.71 (145)	4.0 (1.80)
TR-907-667-140	KUKA Quantec small flange	no	5.51 (140)	similar to A	4.9 (2.20)
	KUKA Quantec-2, small flange	no	5.51 (140)	similar to A	4.9 (2.20)
TR-907-667-142	Hyundai HX 165	no	5.59 (142)	similar to A	5.0 (2.25)
TR-907-667-150	Comau NJ 130	no	5.91 (150)	similar to A	5.3 (2.40)
TR-907-667-160	ABB IRB 6400	no	6.30 (160)	similar to A	5.4 (2.45)
	Yaskawa GP180	no	6.30 (160)	similar to A	5.4 (2.45)
TR-907-667-180	Yaskawa GP250	no	7.09 (180)	similar to A	5.6 (2.55)
TR-907-667-190	Comau NH3	no	7.48 (190)	similar to A	5.7 (2.60)
TR-907-667-200	ABB IRB 6640	no	7.87 (200)	similar to A	6.0 (2.70)
	ABB IRB 6620	no	7.87 (200)	similar to A	6.0 (2.70)
	ABB IRB 6650	no	7.87 (200)	similar to A	6.0 (2.70)
	ABB IRB 6700	no	7.87 (200)	similar to A	6.0 (2.70)
TR-907-667-220	KUKA KR 360-2	no	8.66 (220)	similar to A	6.2 (2.82)
	KUKA KR 500-2	no	8.66 (220)	similar to A	6.2 (2.82)
	KUKA KR 360-3	no	8.66 (220)	similar to A	6.2 (2.82)
	KUKA KR 500-3	no	8.66 (220)	similar to A	6.2 (2.82)
	Fanuc M900iB 360	no	8.66 (220)	similar to A	
TR-907-667-250	ABB IRB 7600	no	9.84 (250)	similar to A	7.7 (3.50)
	Fanuc M900iA 350	no	9.84 (250)	similar to A	7.1 (3.20)
	Fanuc M900iA 260L	no	9.84 (250)	similar to A	7.1 (3.20)
	Fanuc M900iB 280	no	9.84 (250)	similar to A	7.1 (3.20)
	Fanuc M900iB 280L	no	9.84 (250)	similar to A	7.1 (3.20)
TR-907-667-275	Fanuc M900iA 200P	no	10.83 (275)	similar to A	7.5 (3.40)
TR-907-667-315	Fanuc M900iA 600	no	12.40 (315)	similar to A	7.9 (3.60)
	Fanuc M900iA 400L	no	12.40 (315)	similar to A	7.9 (3.60)
	Fanuc M900iB 400L	no	12.40 (315)	similar to A	7.9 (3.60)
	Fanuc M900iB 700	no	12.40 (315)	similar to A	7.9 (3.60)
TR.918.002	Universal Robot UR10(e)	no	3.54 (90)	similar to A	.55 (0.25)
TR.918.012	Universal Robot UR5(e)	no	2.95 (75)	similar to A	.51 (0.23)
TR.918.027	Universal Robot UR3(e)	no	2.48 (63)	similar to A	.44 (0.20)