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.*

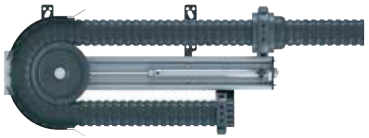
*Average time before the ordered goods are dispatched.





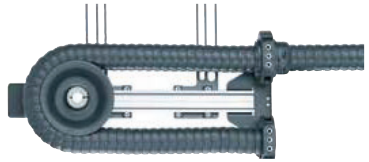
**RS modular retraction system**
▶ From page 1010

**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

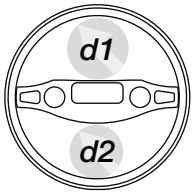
**Benefits:**
- Linear guidance even for highly dynamic applications
- For robots with high and medium payloads
- Up to 380mm retraction length
- Cost-effective
- For series TRC·TRE·TRCF with a ø-index of 60-100mm

*New in this catalogue

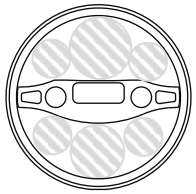
# triflex® R | Retraction systems | Accessories

## Choosing the right e-chain® size ...

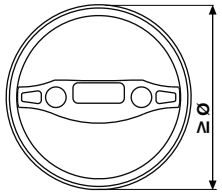
**1** Largest single cable diameter ø ...




**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

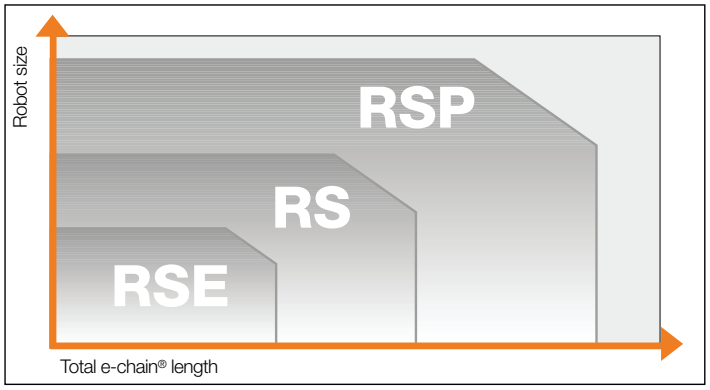
If you want to select a suitable retraction system yourself, please ensure that you observe the maximum cable diameter and usage data.

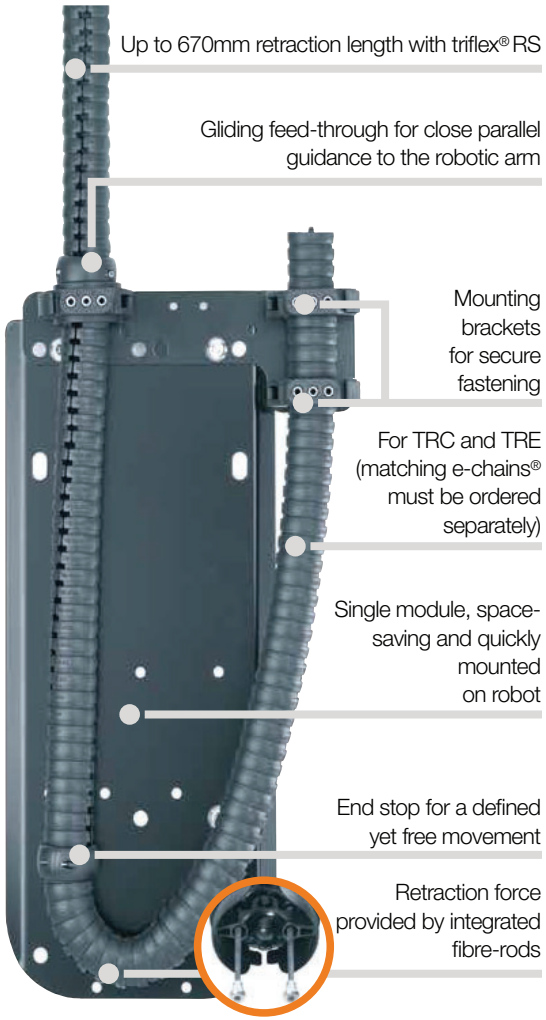
## Possible Ø-index for triflex® R retraction systems

| 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.

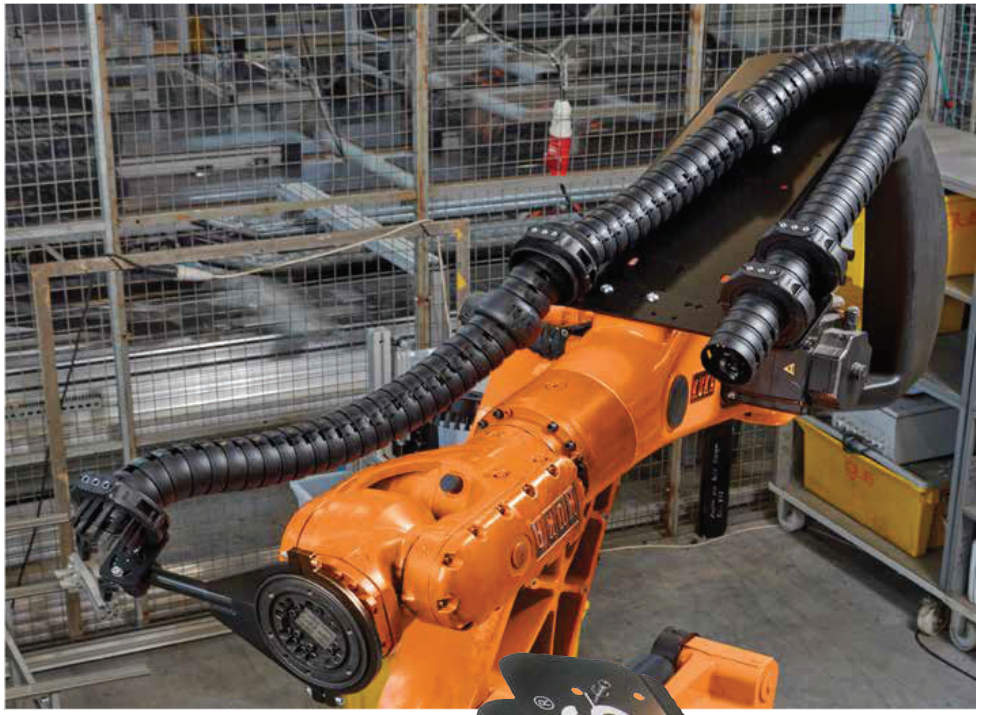
- Space-saving, closely routed on the robot arm
- A system solution proven and tested in thousands of applications
- Universal installation
- Integrated fibre-rods - no external mechanical components such as springs or steel cables required!

**Video online**
**► www.igus.eu/RS_movie**





triflex® R
RS



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

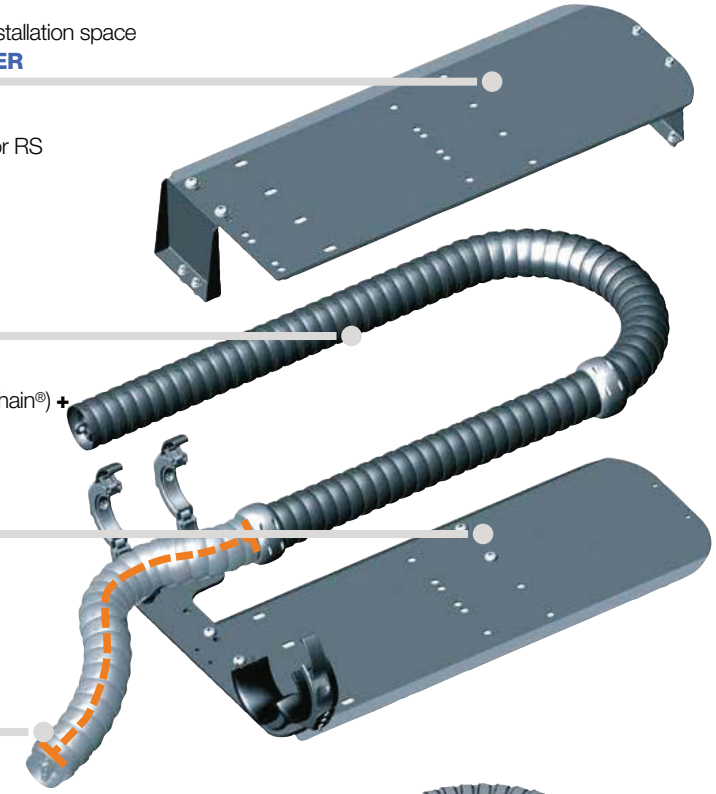
## System design with matching e-chains®

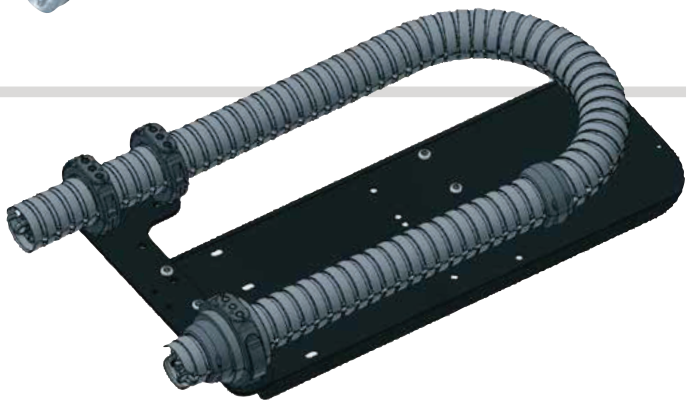
Optional cover for additional installation space on the robot: **TR.RS.XX.COVER**

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

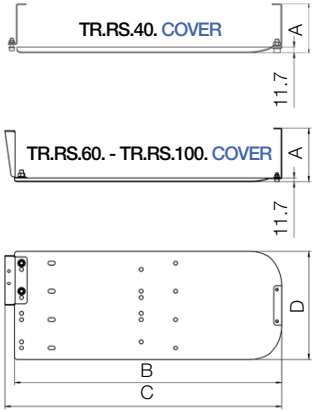
| Ø Index | | Part No. fixed end **left** | Part No. fixed end **right** | Retraction length[1] ≤ [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|
| 30. | ▶ | – | – | – | – | – | – | – | – |
| 40. | ▶ | TR.RS.40.**L** | TR.RS.40.**R** | 460 | 576 | 301 | 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

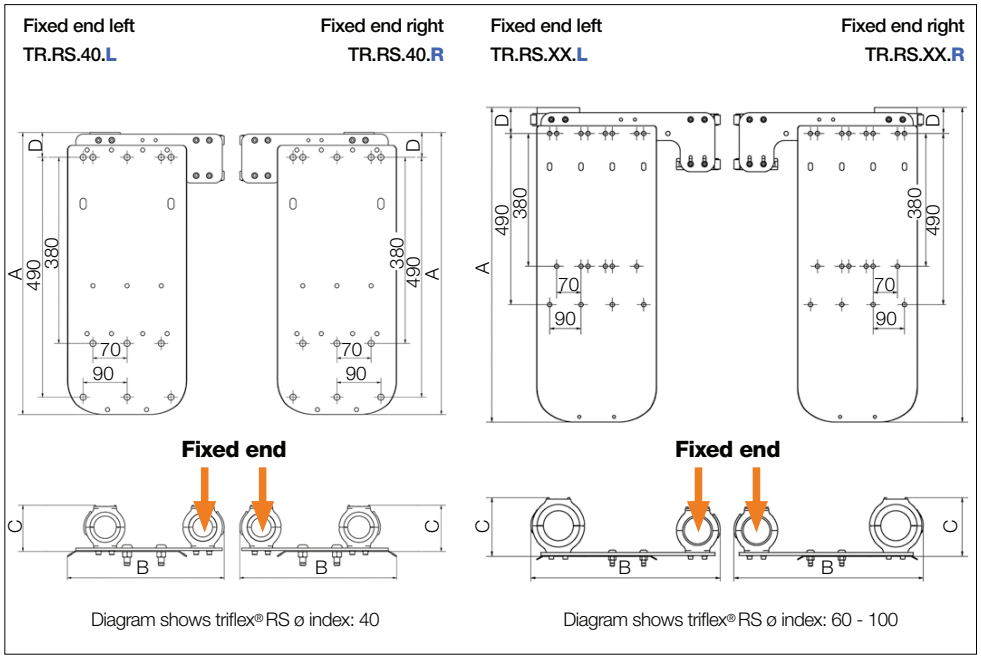



Diagram shows triflex® RS ø index: 40

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 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. ▶ | – | – | – | – |

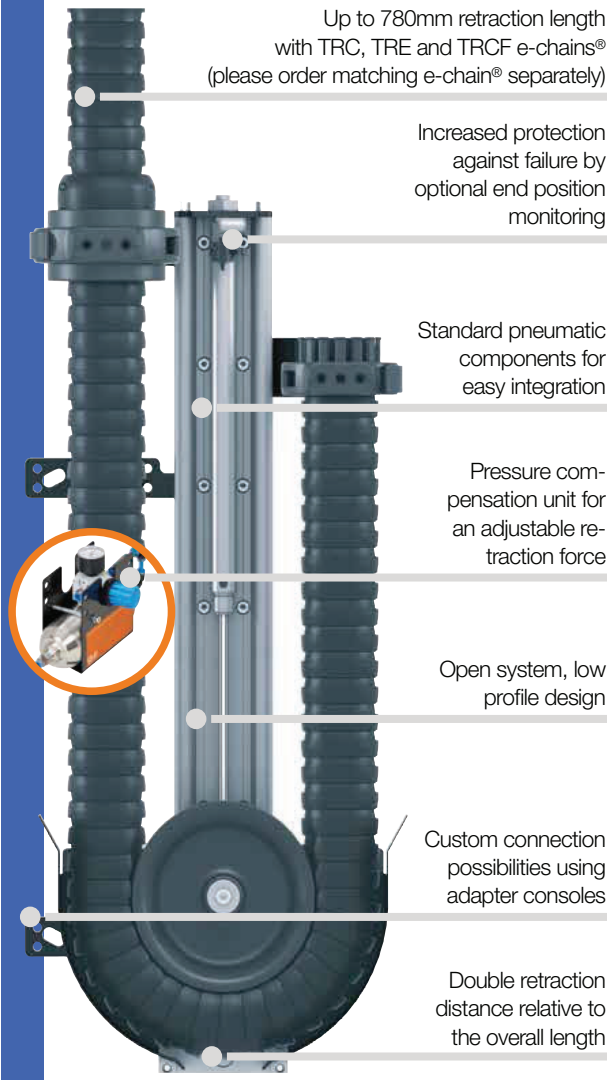
*Values are related to the e-chain® length within the system

**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





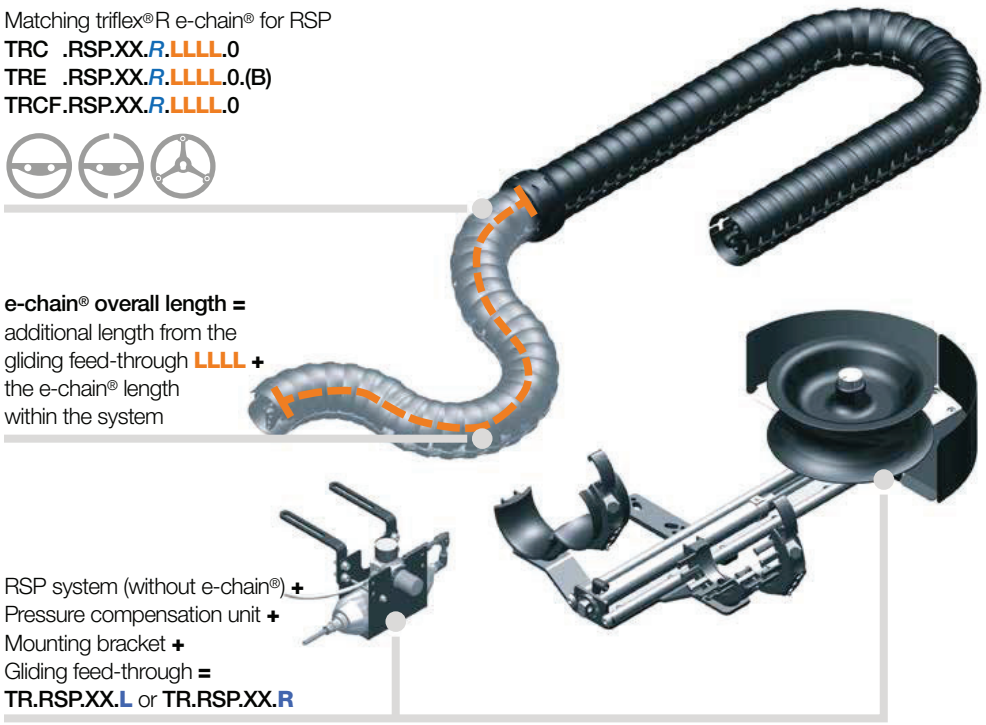
Pneumatic retraction system triflex® RSP - prevents loops forming in the robot's working area

triflex® RSP system on a 6 axis robot

# triflex® R | RSP retraction system

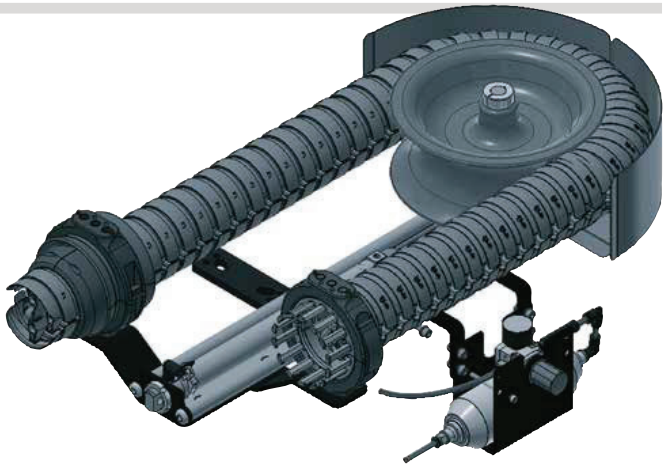
## System design with matching e-chains®

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

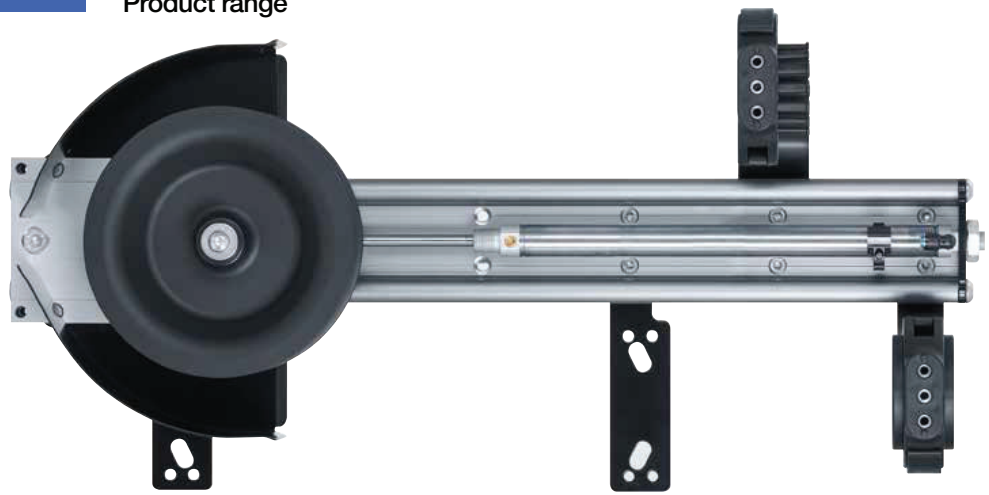
**Adjustment unit**
for accurate adjustment of the system position
▶ Page 1054

**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.

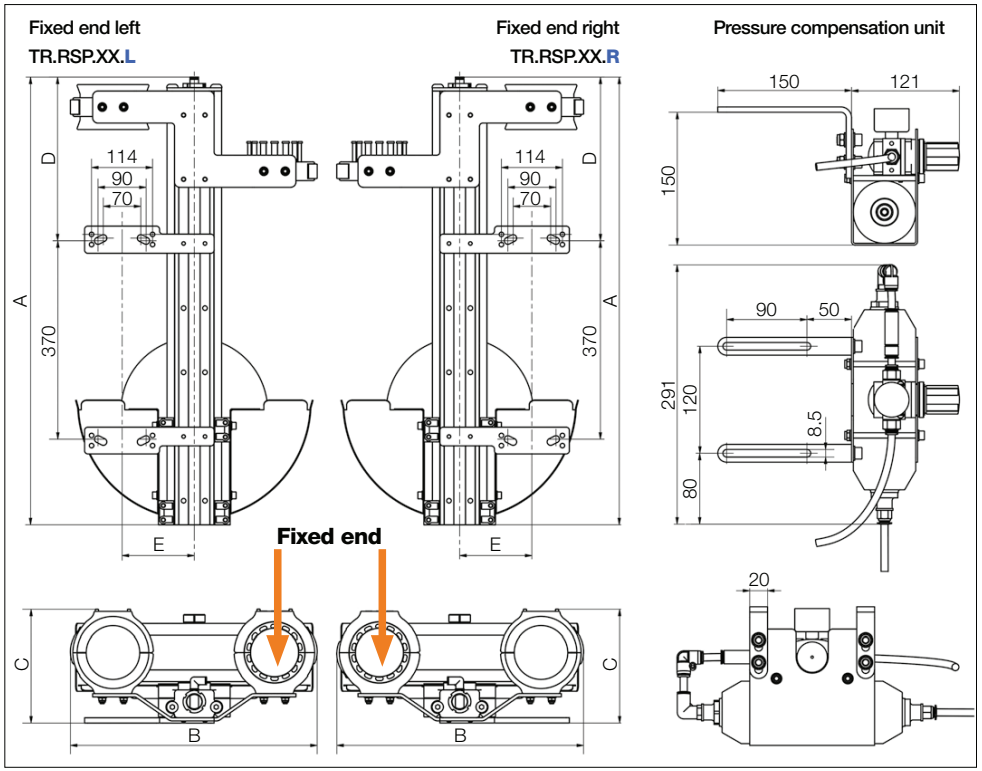
1) Max. retraction length 2) Plus 2.3 kg for pressure compensation unit





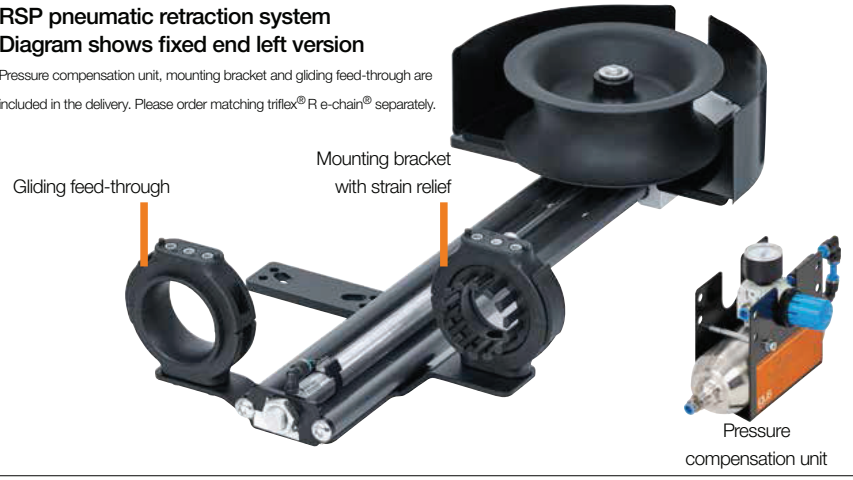
# triflex® R | RSP retraction system

## 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<br>Index | Part No. **TRC**<br>enclosed | Part No. **TRE**<br>"easy" design | Part No.**TRCF**<br>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<br>Index | Bend radius<br>*R* [mm] | e-chain® length*<br>[mm] | Number of<br>e-chains® links | e-chains® total length<br>[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)

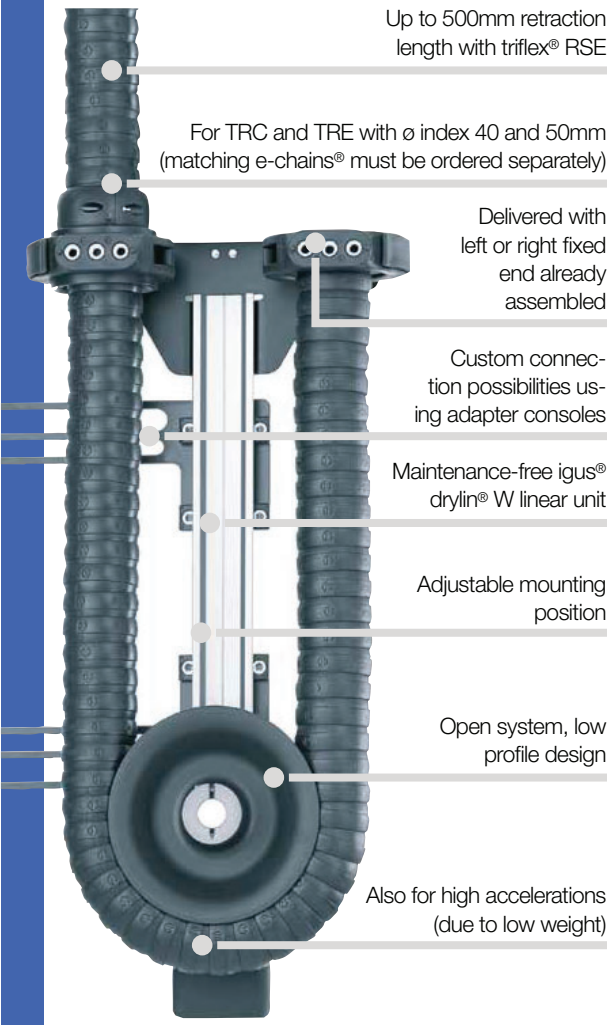
**e-chain® overall length =**
additional length from the gliding feed-through **LLLL** +
the e-chain® length within the system

### 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

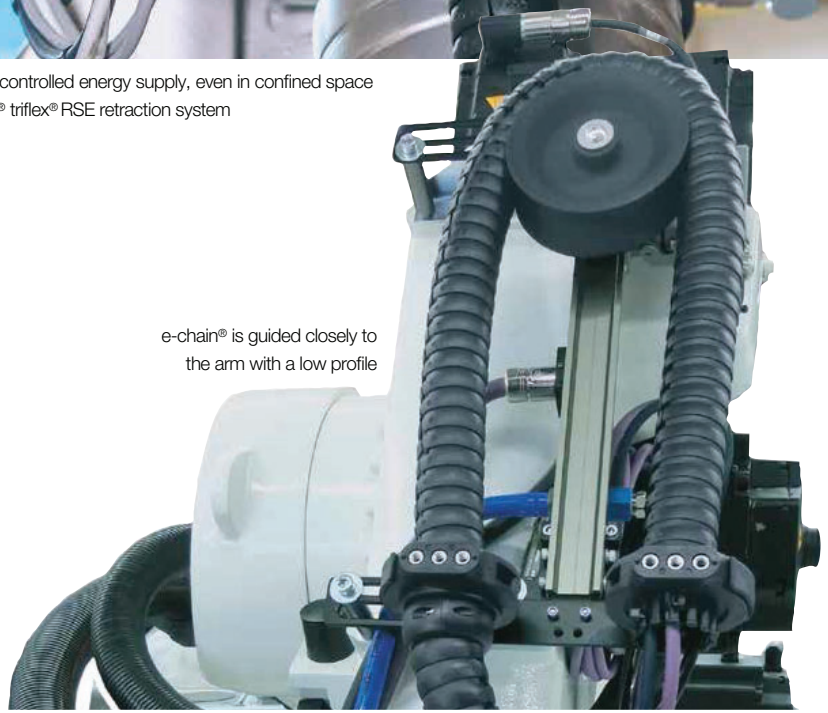




# triflex® R | RSE retraction system | Application examples

**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

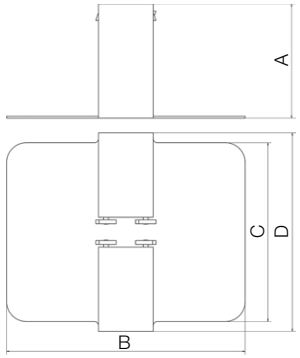
| Ø Index | Part No. fixed end **left** | Part No. fixed end **right** | Retraction length[1] ≤ [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|
| 30. | – | – | – | – | – | – | – | – |
| 40. | TR.RSE.02.40.L | TR.RSE.02.40.R | 500 | 440 | 220 | 110 | 64.7 | 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

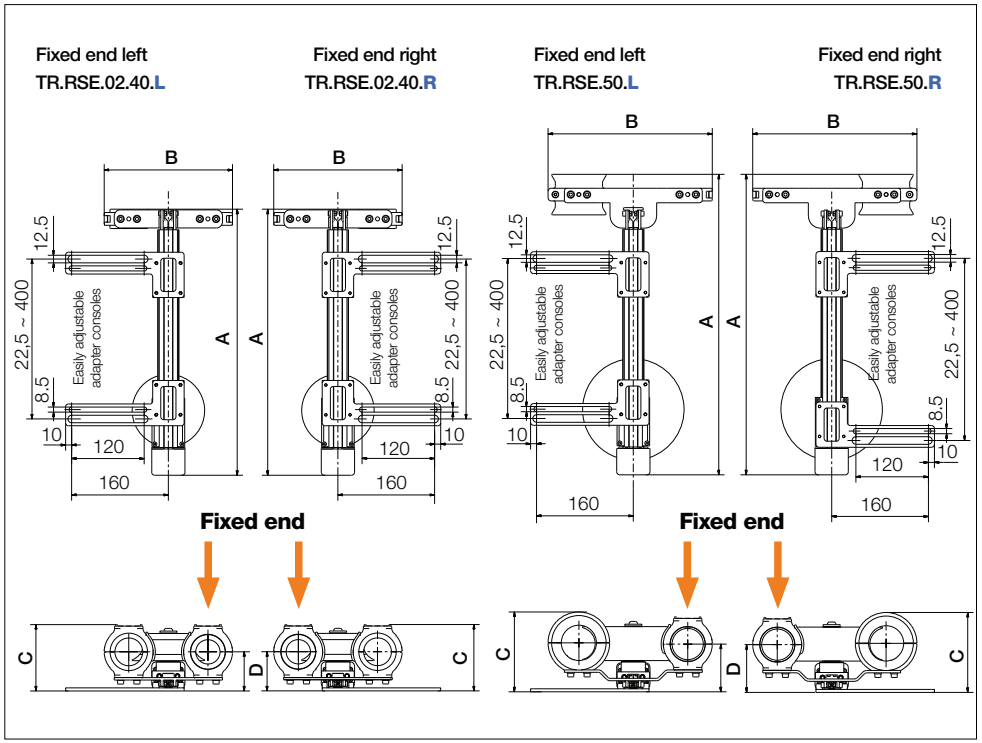







# triflex® R | RSE retraction system

## 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. ▶ | – | – | – | – |

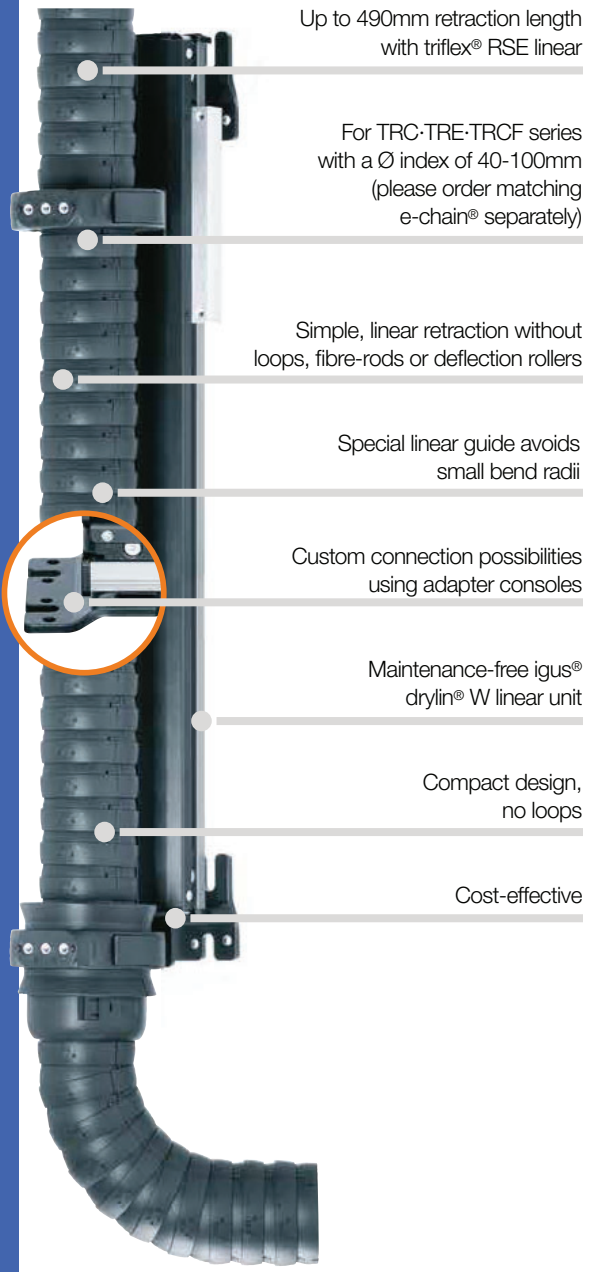
*Values are related to the e-chain® length within the system

**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 - 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®

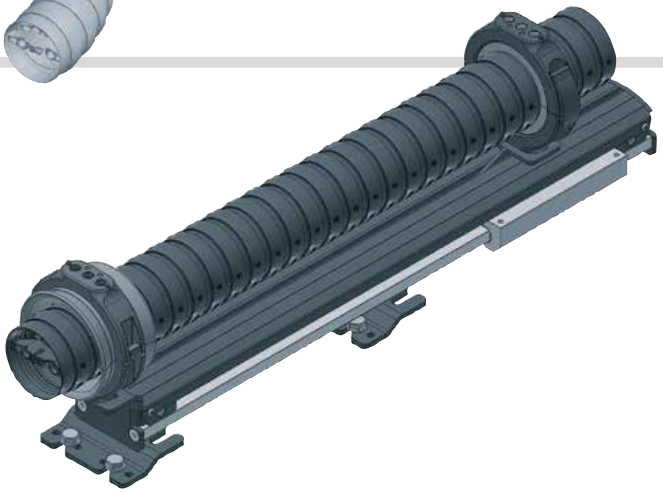
Matching triflex® R e-chain® for RSE linear
**TRC .XX.*R*.0**
**TRE .XX.*R*.0.B**
**TRCF.XX.*R*.0**

**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

# 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

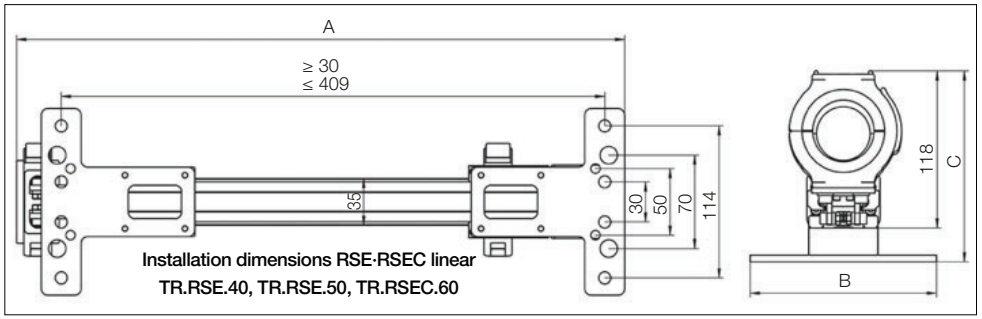
RSE linear sizes TR.RSE.60 up to TR.RSE.100 ▶ From page 1040



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. | ▶ | – | – | – | – | – | – | – | |

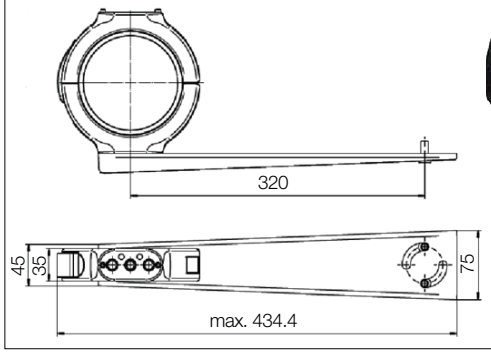
*Available upon request. Please consult igus® for delivery time.

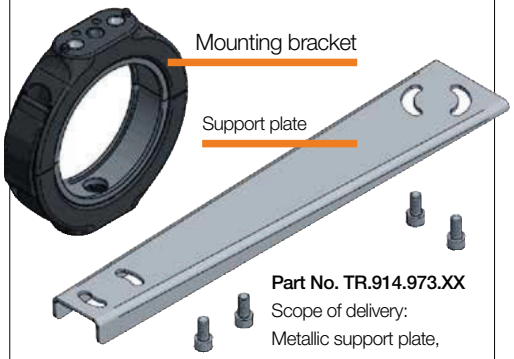
Please order matching triflex® R e-chain® separately. 1) Max. retraction length. Optional RSE support must be ordered separately.

**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**



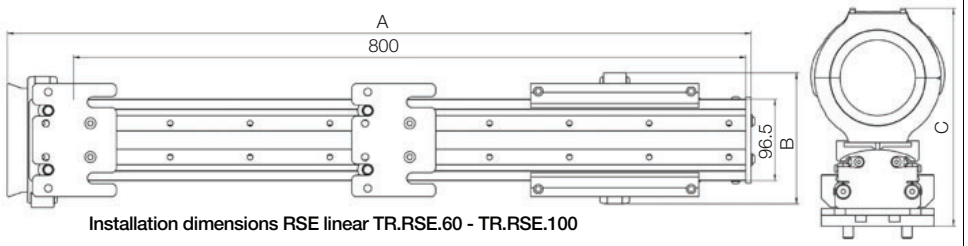

**Part No. TR.914.973.XX**
Scope of delivery:
Metallic support plate, mounting bracket and mounting screws





# 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
linear

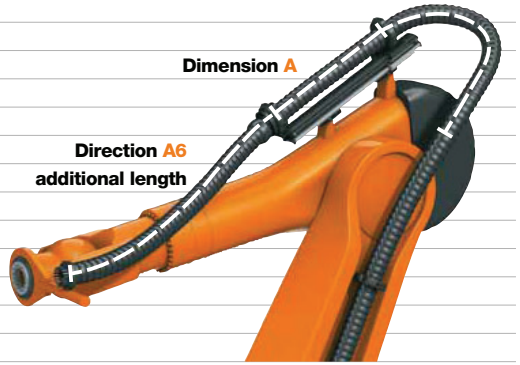
# triflex® R | RSE·RSEC linear retraction system

## Cable length calculation

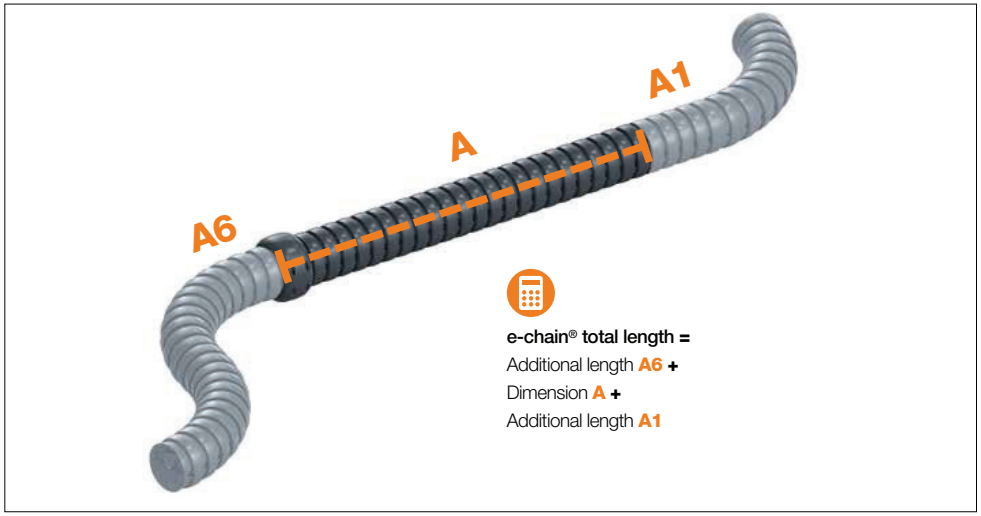
### Calculation of the e-chain® total length | RSE·RSEC linear e-chain®

| Series | Ø Index | Bend radius R [mm] | Dimension A [mm] |
|---|---|---|---|
| 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. | – | – |

Principle sketch e-chains® total length




**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

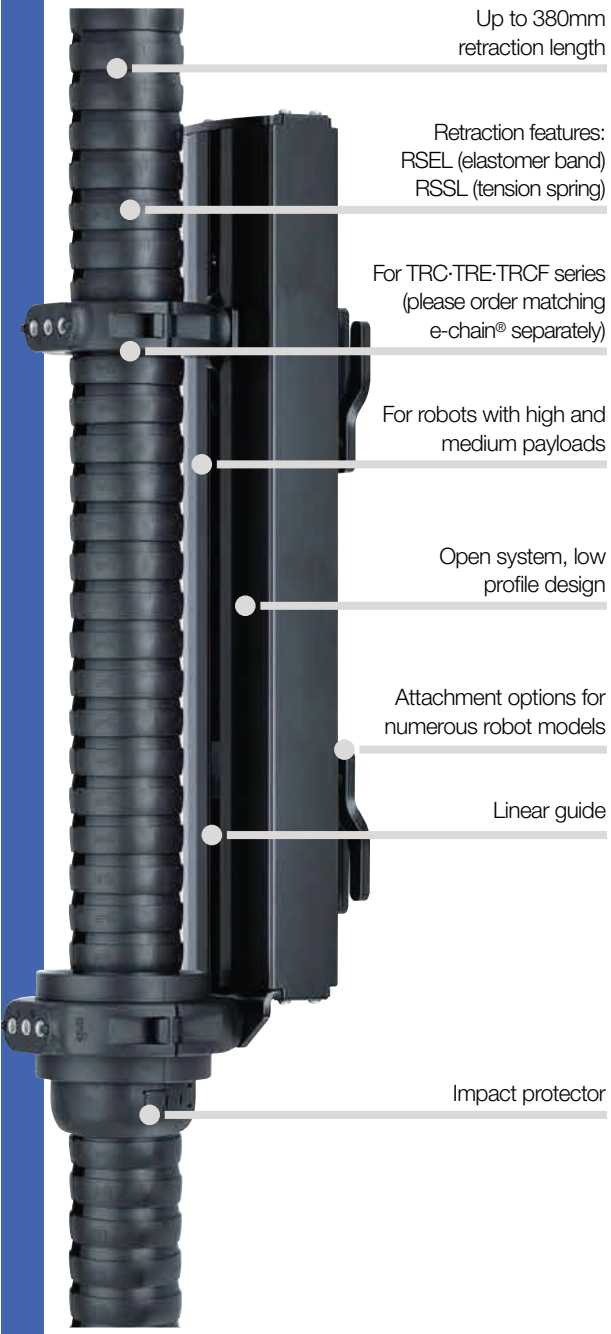



### More information and installation height | RSE linear e-chains®

- **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.

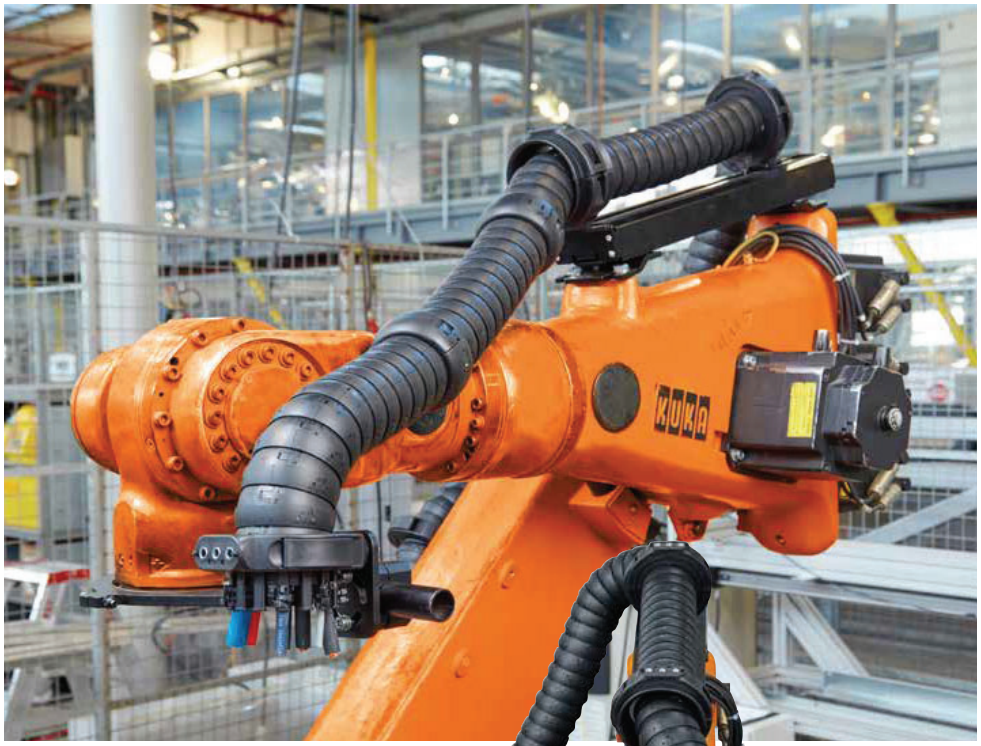
- Cost-optimised retraction system, easy to retrofit
- Due to standard dimensions and the very compact design, the RSEL and RSSL retraction systems can be mounted directly on the 3rd axis of all common types of robots
- Retraction element with elastomer band - triflex® RSEL
- Retraction element with 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



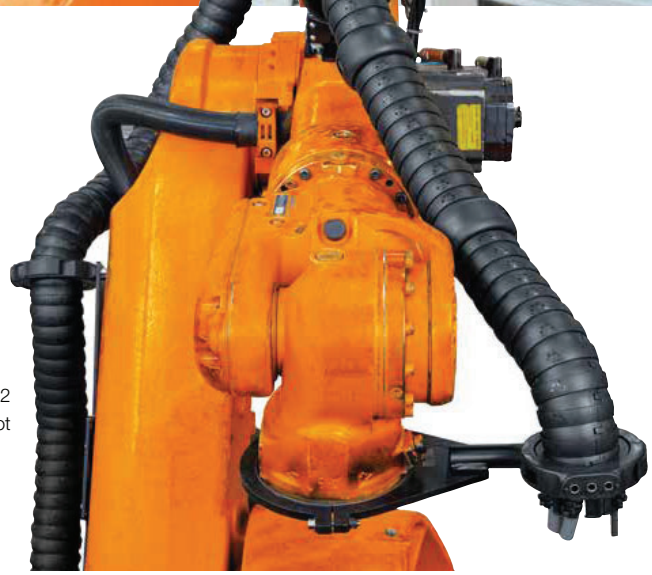


# RSEL·RSSL retraction systems | Application examples

**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

# 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<br>Index | | Part No.<br>RSEL | Retraction length[1]<br>≤ [mm] | A<br>[mm] | B<br>[mm] | C<br>[mm] | Weight<br>[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<br>Index | | Part No.<br>RSEL | Retraction length[1]<br>≤ [mm] | A<br>[mm] | B<br>[mm] | C<br>[mm] | Weight<br>[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. | ▶ | – | – | – | – | – | – |

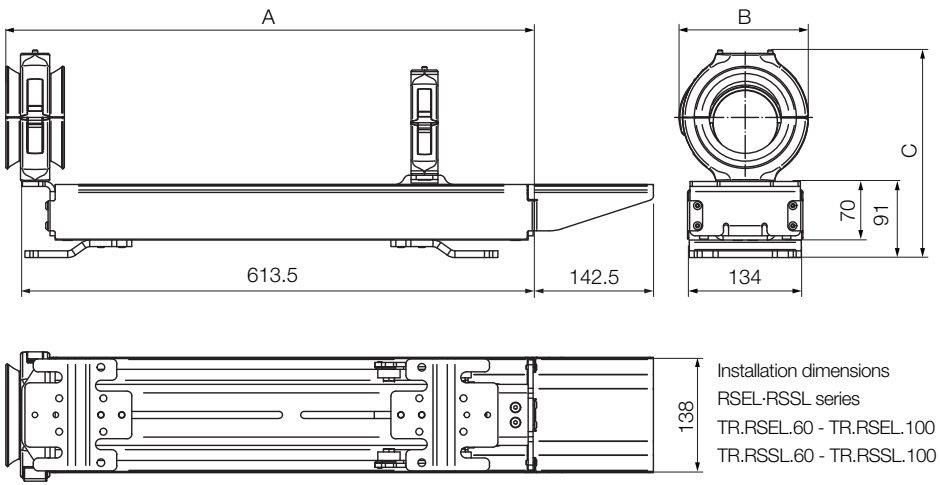
Please order matching triflex® R e-chain® separately. 1) Max. retraction length. *Available upon request. Please consult igus® for delivery time.



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.**

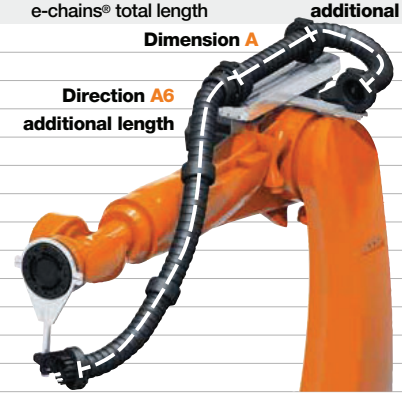


triflex® R | RSEL·RSSL e-chains®

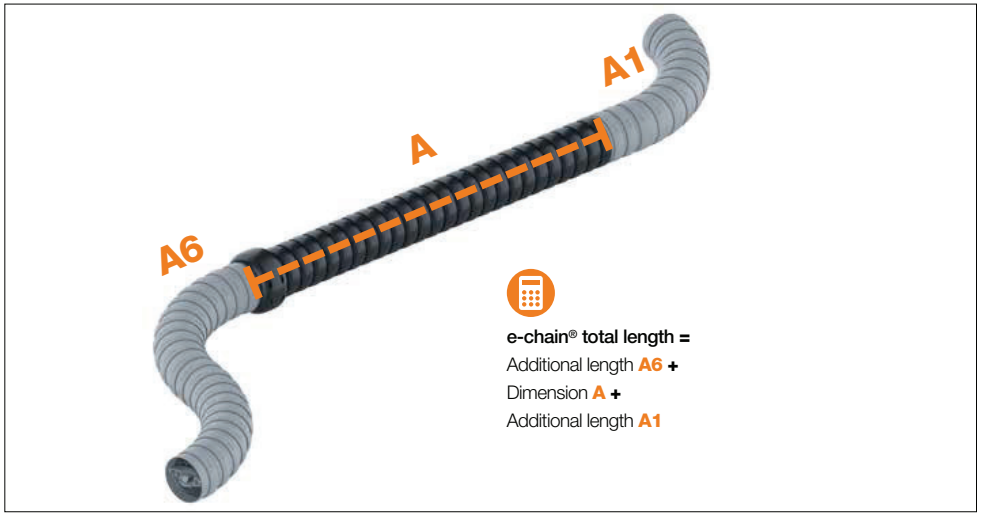
## Cable length calculation

### 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. | – | – | | |

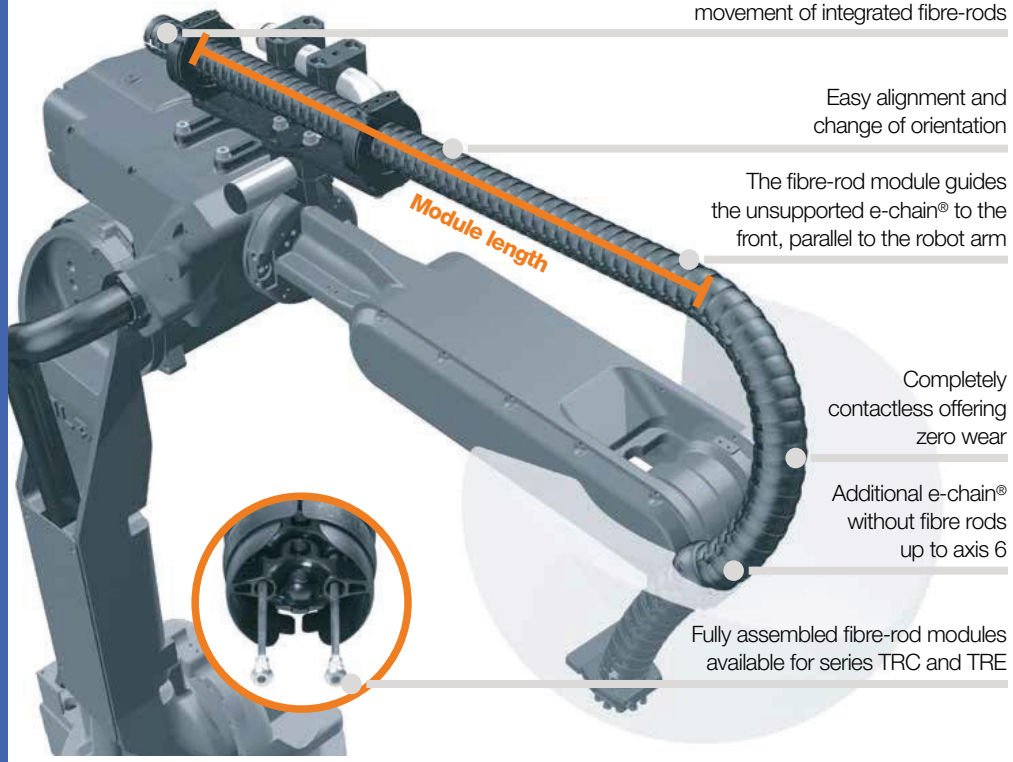



**To calculate the e-chain® total length:** please add the additional length **A1**, the additional length **A6** and the dimension **A**. Additionally, at least 1 limit protector must be ordered



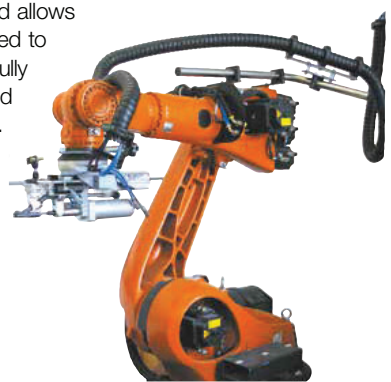

### More information and installation dimensions | RSEL·RSSL e-chains®

- **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 |

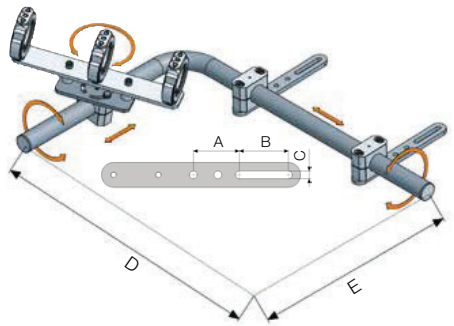
| Part No. fibre-rod modules for TRC / TRE | | Length [m] |
|---|---|---|
| **TRC.85** | **TRE.85** | |
| TRC.F.**85**.2000.1.0 | TRE.F.**85**.2000.1.0.B | ≈ 2.0 |
| TRC.F.**85**.1800.1.0 | TRE.F.**85**.1800.1.0.B | ≈ 1.8 |
| TRC.F.**85**.1600.1.0 | TRE.F.**85**.1600.1.0.B | ≈ 1.6 |
| TRC.F.**85**.1400.1.0* | 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

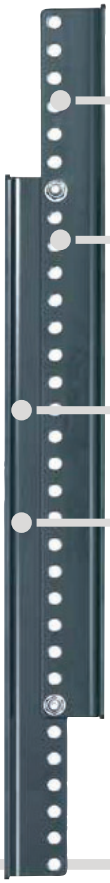
## Universal mounting kit | For TRC·TRE

● 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

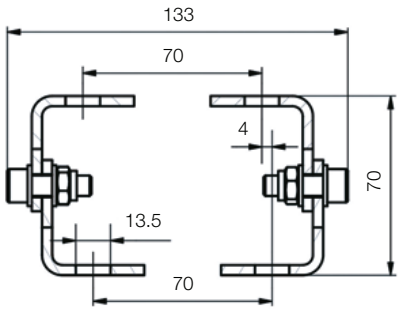
Can be combined with igus® adapter consoles

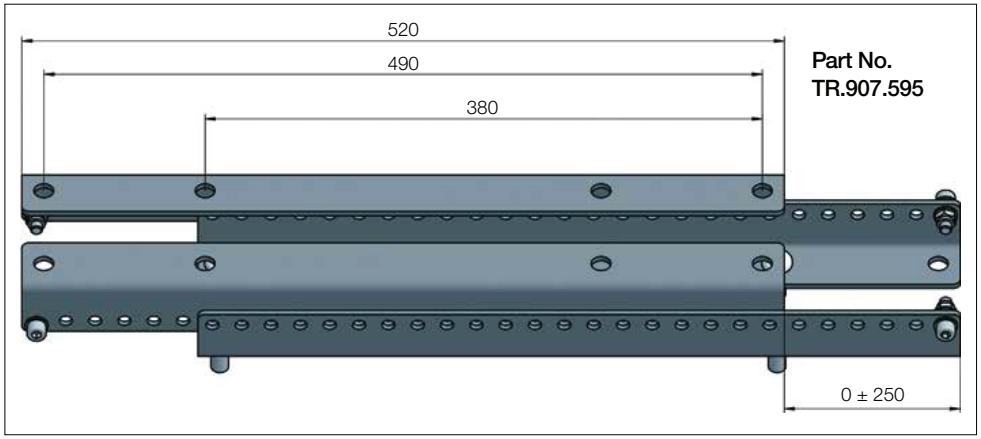
Simplifies alignment for robot cells with restricted space

**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

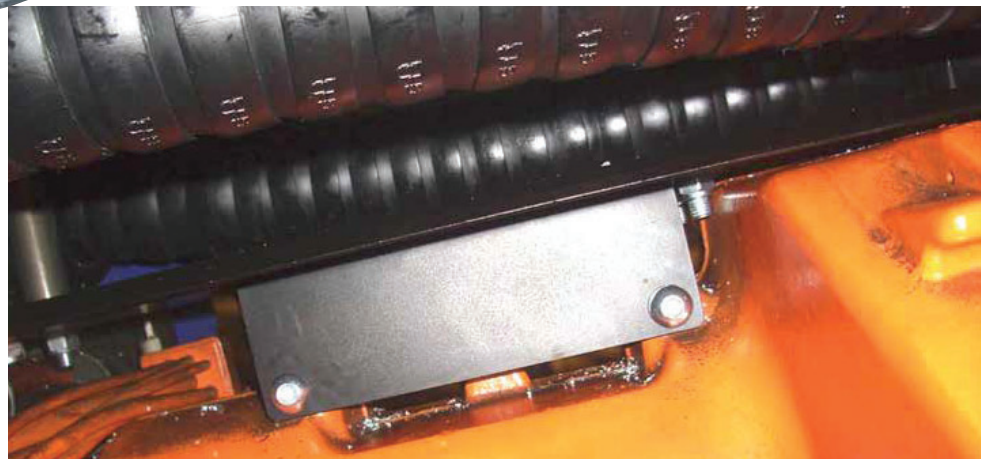
3D CAD data available online for download
▶ **www.igus.eu/consoles**

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<br>IRB 6640<br>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<br>IRB 2400/16 | 5.2 |
|  | TR.907.905 | **ABB** | IRB 6620 | 2.8 |
|  | TR.908.494 | **ABB** | IRB 4600<br>IRB 2600 | 2.9 |
|  | TR.907.374 | **Comau** | NH1 130-2.6<br>NH3 165-2.7<br>NH3 220-2.7<br>NJ 110-3.0<br>NJ 110-2.6<br>SMART5 NJ 165 3.0 | 4.7 |
|  | TR.907.447 | **Comau** | NM 45-2.0<br>NM 16-3.1 | 3.4 |
|  | TR.908.493 | **Comau** | Smart six | 2.2 |
|  | TR.907.327 | **Yaskawa** | UP 20<br>UP 50<br>UP 130<br>UP 165<br>ES 165<br>ES 200<br>ES 280<br>HP 20<br>HP 50<br>MH6<br>HP 165 | 3.6 |
|  | TR.909.641 | **Yaskawa** | MH50 | 2.0 |

More adapter consoles upon request. CAD data online.



triflex® R

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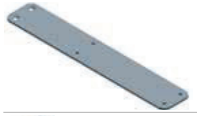
## Excerpt from the product range

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

More adapter consoles upon request. CAD data online.