

# ROBOTRAX

Cable Carrier System For 3D Movement



Quickly replaceable • **cable and hose protection** • easy to service

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## Cable Carrier System For 3D Movement

The new ROBOTRAX cable and hose carrier system offers unprecedented safety and efficiency on robotic equipment. Cables are simply pressed into the open carrier even if the cables have already been completely harnessed. All cables and hoses can then be easily inspected and even individually replaced whenever necessary.

A further advantage is the multi-axis application of the ROBOTRAX carrier, since only one carrier installed in a space-saving guide channel in the robot base, is required for swiveling and rotating movements.



### The ROBOTRAX design mimics a human spinal column.

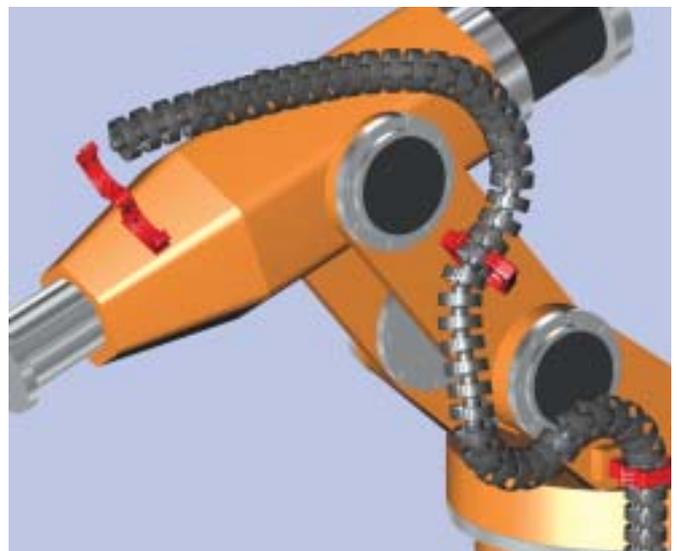
- ◆ A steel wire in the core provides extreme tensile strength.
- ◆ Optimum protection for the longevity of your cables and/or hoses:
  - Minimum bend radius can be maintained
  - Cables and/or hoses are properly partitioned in three compartments.

Flexibility with 3D movement • easy to service • cable and hose protection • quickly replaceable • [QUICK-INFO](#)

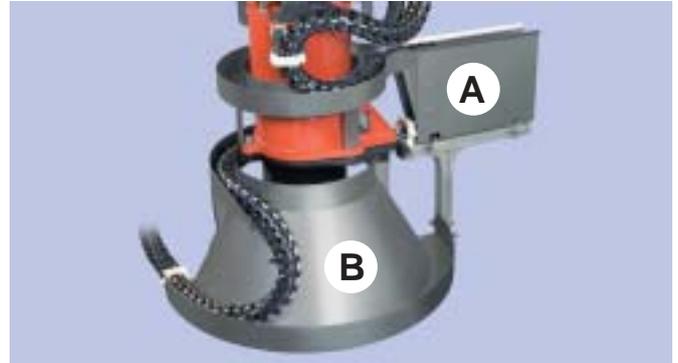
When required, the complete cable and hose carrier system can be replaced in minutes – no time consuming screwing, no replacing of cable ties.

Just open the mounting brackets, take out the carrier system and install the new unit!

**That's how we save you time and money!**



## Uses Significantly Less Space and Provides More Protection for Your Cables and/or Hoses



### Ready to use:

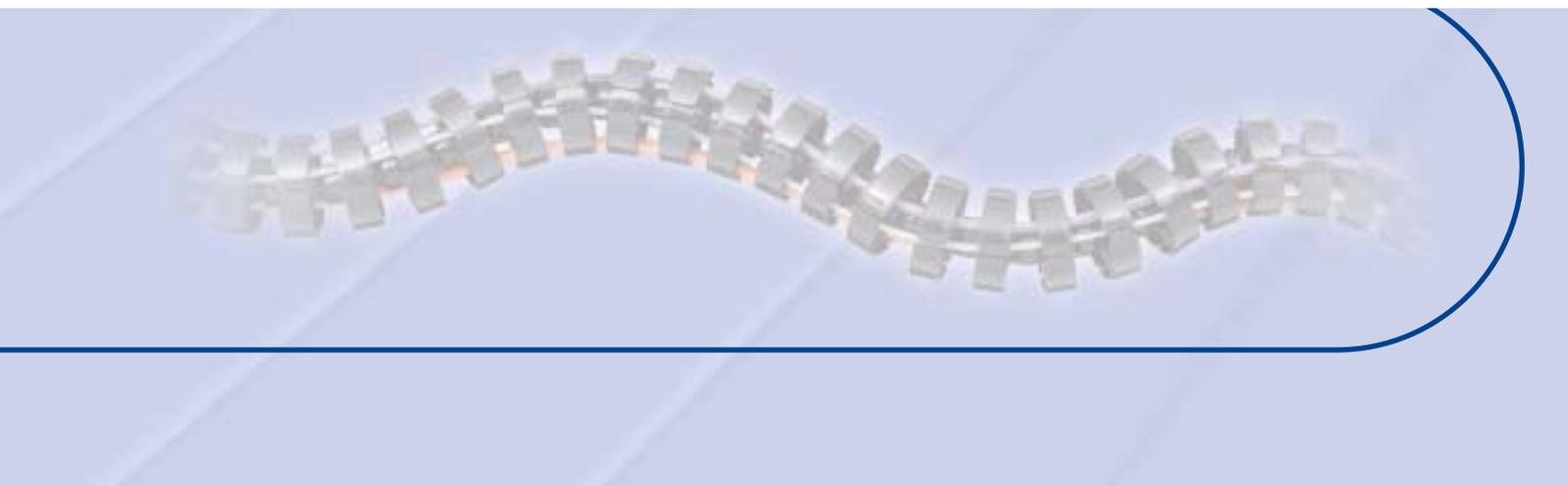
Our fully harnessed KABELSCHLEPP carrier system with guide channels, cables and hoses, connectors and clamps is the complete turnkey solution from one supplier.

### You may choose between two guide channel systems:

**Option 1:** linear movement for rotation angle up to 700°

**Option 2:** conical arrangement for rotation angle up to 360°

Both perfectly matched guide channel systems provide secure support and guidance of the ROBOTRAX system with smallest space requirements (see page 10).



### Replacing individual cables:

Completely harnessed cables and hoses are simply pressed into the carrier system and can be easily inspected or individually replaced whenever necessary.

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## An Engineered Solution with Perfectly Matched Components

The revolutionary basic structure of the new ROBOTRAX carrier system is comprised of individual nylon "vertebra" links with integral ball and socket style snap-together connectors on each link. These allow individual links to be easily snapped together to a complete cable carrier chain that matches the application's desired length requirement.



ROBOTRAX's unique design allows for radial link rotating movement.

The minimum bend radius is maintained for all rotation movements.

Quick movements of articulating arm robots result in high acceleration forces, exerting extreme pulling forces on the cable carrier system.

To address this challenge, all ROBOTRAX links are also designed with a central hole running through the length of the system assembly which can accept a braided steel wire that is fixed at both ends by metal shim bolts. This reinforces the entire assembly to withstand such acceleration forces whenever needed. With the steel braided wire installed, ROBOTRAX allows for **acceleration forces of up to 10 g.**



### **Longevity of cables and hoses:**

Since the forces are absorbed by the cable carrier system itself and not through the cables and hoses, your machine's lifelines are perfectly protected.

The shim bolts are used to safely tighten the steel wire as well as the complete assembly.

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To affix a ROBOTRAX carrier to the robot's articulating arm, KABELSCHLEPP has designed quick-opening mounting brackets that can be attached to any link of the ROBOTRAX system to the robot arm.

The ROBOTRAX system's mounting points depend on the widely varying movements of the robot arms and are best



determined through testing and assessment of each individual application.

### **Easy to service:**

Simply release the hinge bolt, pull it out and open the hinged-opening mounting bracket.

## ROBOTRAX Accessories: The appropriate accessory for every application



### Impact protection:

When a robot is moving the striking of ROBOTRAX against machine parts often cannot be avoided.

An impact protective device made of elastomer plastic can easily be attached to each link using a cable tie.



### Protective Sheaths

**Protective Heat Sleeve:** The sleeve made out of textile fibres layered with Aluminium protects the cable carrier and the cables within from heat and sparks. We recommend its use with ROBOTRAX on welding robots.

**Protective Dirt Sleeve:** The layered polyester sleeve offers protection against aggressive cutting and hydraulic oils as well as fine dust particles and spray painters. (not illustrated)

## ROBOTRAX Accessories:

### Impact protection, Protective Sheaths, Strain Relief and Chucking Device



### Strain Relief:

For securing the cables and hoses.

The strain relief device cannot be used in combination with a chucking device.

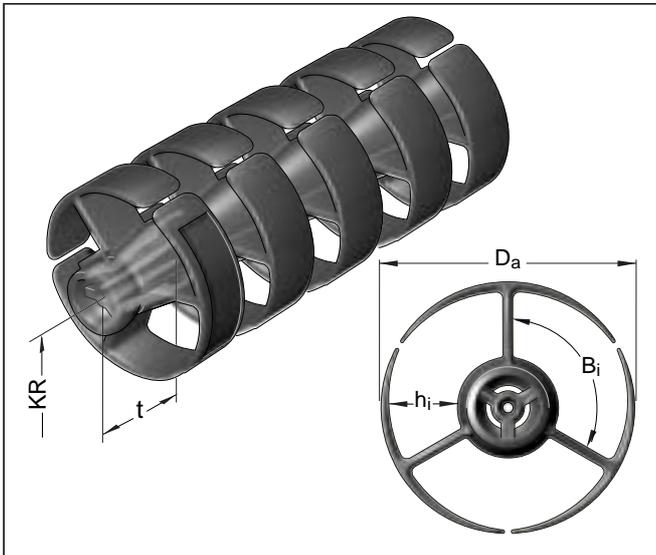


### Chucking Device:

For setting the steel wire to the required tension quickly and easily.

# ROBOTRAX

## Dimensions and Technical Information



### Dimensions for cable carrier system

ROBOTRAX has three individually separated compartments for the safe segregation of cables and hoses.

Dimensions in mm

Type	R 040	R 056	R 075	R 085	R 100
Cable diameter	2 – 8.5	2 – 11	3 – 18	3 – 20	3 – 27
Bend radius (mm)	80	115	145	175	195
Radial link rotation over 1 m length	± 450°	± 300°	± 215°	± 215°	± 215°
$D_a$	40	56	75	85	100
$B_i$	27	39	52	54	64
$h_i$	10	14	22	24	31
t	21.5	32	40	40	40

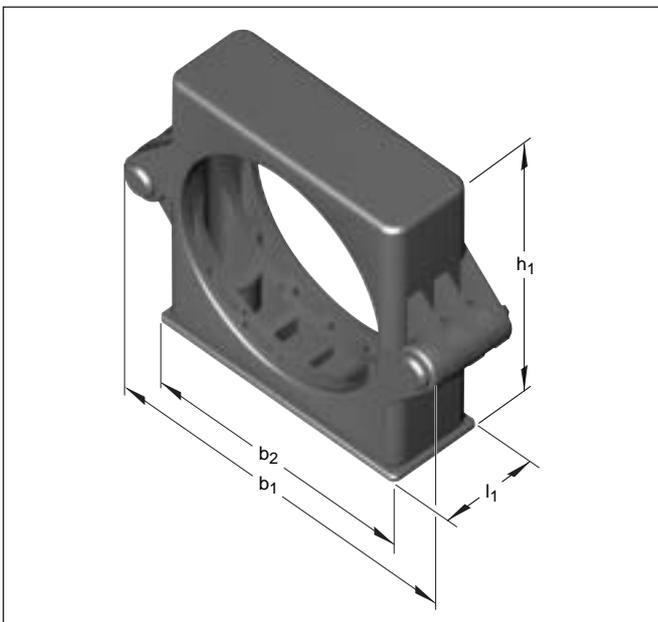
### Tightening of the mounting brackets

R 040, R 056: with hex socket screws M4

R 075: with hex socket screws M6

R 085, R 100: with hex socket screws M8

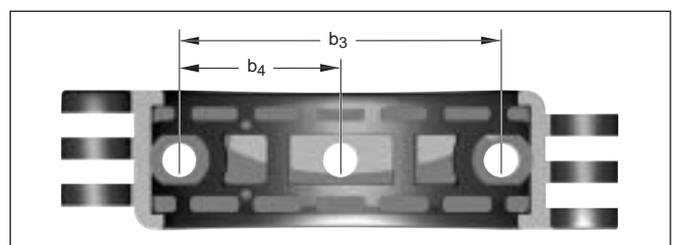
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### Dimensions of the hinged-opening mounting brackets

Dimensions in mm

Type	R 040	R 056	R 075	R 085	R 100
$h_1$	54	70	86	105	120
$l_1$	15	22	28	30	32
$b_1$	82	86	110	133	150
$b_2$	50	63	82	96	112
$b_3$	36	48	64	72	70
$b_4$	18	24	32	36	35



## Ordering a Complete ROBOTRAX Carrier System



### ROBOTRAX Cable Carrier

Completely assembled with metal shim bolts and steel wire installed (see order key below).

### How to order complete ROBOTRAX cable carrier system and mounting brackets

Cable carrier system ROBOTRAX R 075 (open style), KR 145 mm, length 1000 mm

R075. 010.145 - 1000



The correct order number for a completely assembled ROBOTRAX cable carrier system is composed of type, style, KR as well as carrier length. At present the open style 010 is available.

## Ordering Individual or Assembled Link Sections



### Carrier links, assembled

Type	R 040	R 056	R 075	R 085	R 100
Bend radius (mm)	80	115	145	175	195
Number of links	47	31	25	25	25
Ident. Number	60301	60401	60501	60601	60701

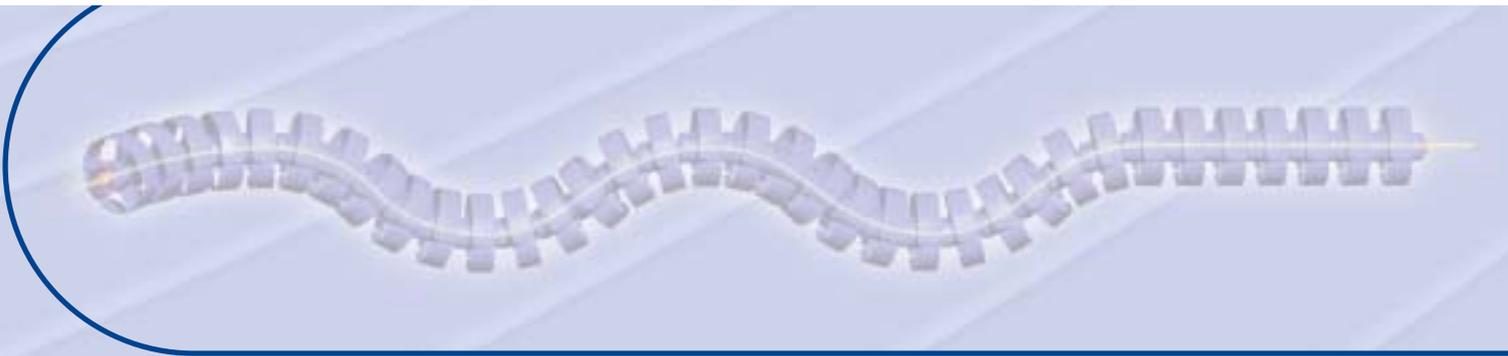
# ROBOTRAX

## Ordering Mounting Brackets



### Mounting Brackets

Type	R 040	R 056	R 075	R 085	R 100
Ident. Number	260410	260510	260110	260210	260310



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## Ordering Metal Shim Bolts and Steel Wire



### Metal Shim Bolt

2 pieces (a pair)

Type	R 040	R 056	R 075	R 085	R 100
Ident. Number	260420	260520	260220	260220	260320



### Steel Wire

Please specify total length or individual length segments

Type	R 040	R 056	R 075	R 085	R 100
Diameter	1.8 mm	2.5 mm	3.0 mm	3.0 mm	4.0 mm
Ident. Number	60583	60584	60580	60580	60581

## Ordering Accessories



**Impact protection:** Packed in units of 5 pieces  
Consisting of 10 semi-circular shells and 5 cable ties

Type	R 075	R 085	R 100
Ident. Number	260120	260240	260340



### Protective Sheaths:

Heat sleeve see Ident.- Number A  
Dirt sleeve see Ident.- Number B (not illustrated)  
Please state total length and / or unit lengths when ordering.

Type	R 040	R 056	R 075	R 085	R 100
Ident.- Number A	60801	60802	60803	60804	60805
Ident.- Number B	60806	60807	60808	60809	60810



### Strain Relief:

1 piece

Type	R 040	R 056	R 075	R 085	R 100
Ident. Number	60658	60657	60659	60659	60659



### Chucking Equipment:

1 chucking device and 1 shim bolt

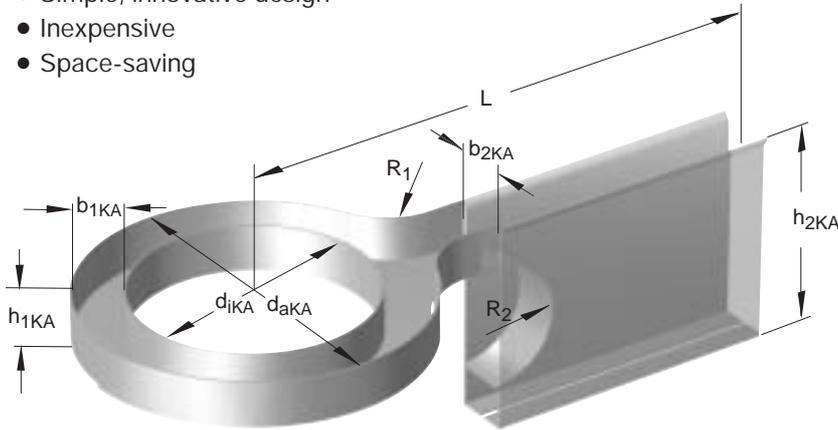
Type	R 040	R 056	R 075	R 085	R 100
Ident. Number	260430	260530	260230	260230	260330

# ROBOTRAX

## Guide Channel Systems

### Option A: Linear Movement

- Allows rotation angles up to 700°
- Simple, innovative design
- Inexpensive
- Space-saving



$D_a$  : outer diameter ROBOTRAX  
 $KR$  : bend radius ROBOTRAX  
 $d_{iKA}$  : inner diameter guide channel  
 (dependent on robot base diameter)

$$d_{iKA \min} = 2 KR - D_a - 10 \text{ mm}$$

$$b_{1KA} = D_a + 10 \text{ mm}$$

$$h_{1KA} = D_a + 5 \text{ mm}$$

$$R_1 = KR - \frac{1}{3} D_a$$

$$b_{2KA} = D_a + 10 \text{ mm}$$

$$d_{aKA} = d_{iKA} + 2 b_{1KA}$$

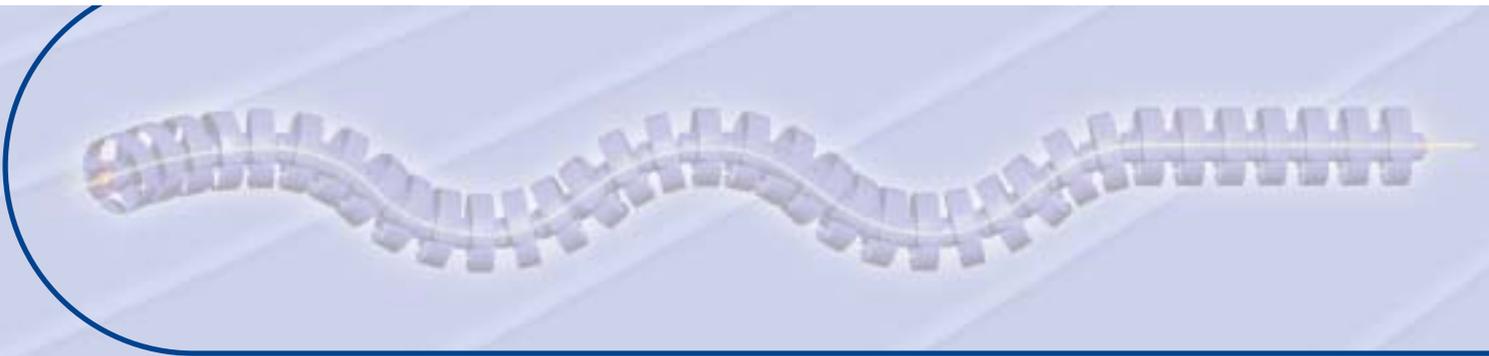
$$h_{2KA} = 2 KR + D_a + 10 \text{ mm}$$

$$R_2 = KR - \frac{1}{2} D_a$$

for rotation angles  $\leq \pm 180^\circ$ :

$$L \geq \frac{d_{aKA} + d_{iKA}}{8} (2 + \pi) + 2 KR \text{ (no spare links)}$$

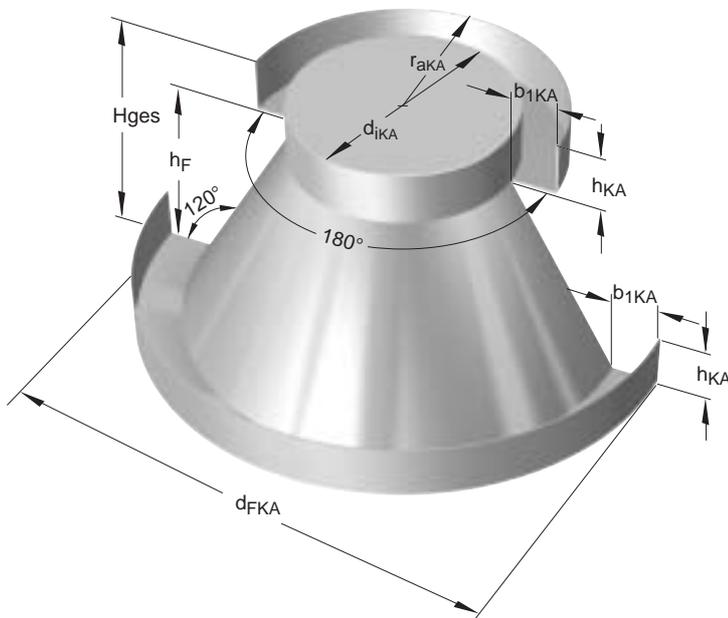
All measurements are guide dimensions:  
wall thickness was omitted.



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### Option B: Conical Arrangement

- Allows rotation angles up to 360°



$D_a$  : outer diameter ROBOTRAX  
 $KR$  : bend radius ROBOTRAX  
 $d_{iKA}$  : inner diameter guide channel  
 (dependent on robot base diameter)

$H_{ges}$  : total height of the guide channel  
 $d_{FKA}$  : base diameter of guide channel system

$$d_{iKA \min} = 2 KR - D_a$$

$$h_F = 2 KR + D_a$$

$$H_{ges} = h_{KA} + h_F$$

$$b_{1KA} = D_a + 10 \text{ mm}$$

$$h_{KA} = D_a + 30 \text{ mm}$$

$$r_{aKA} = \frac{d_{iKA}}{2} + b_{1KA}$$

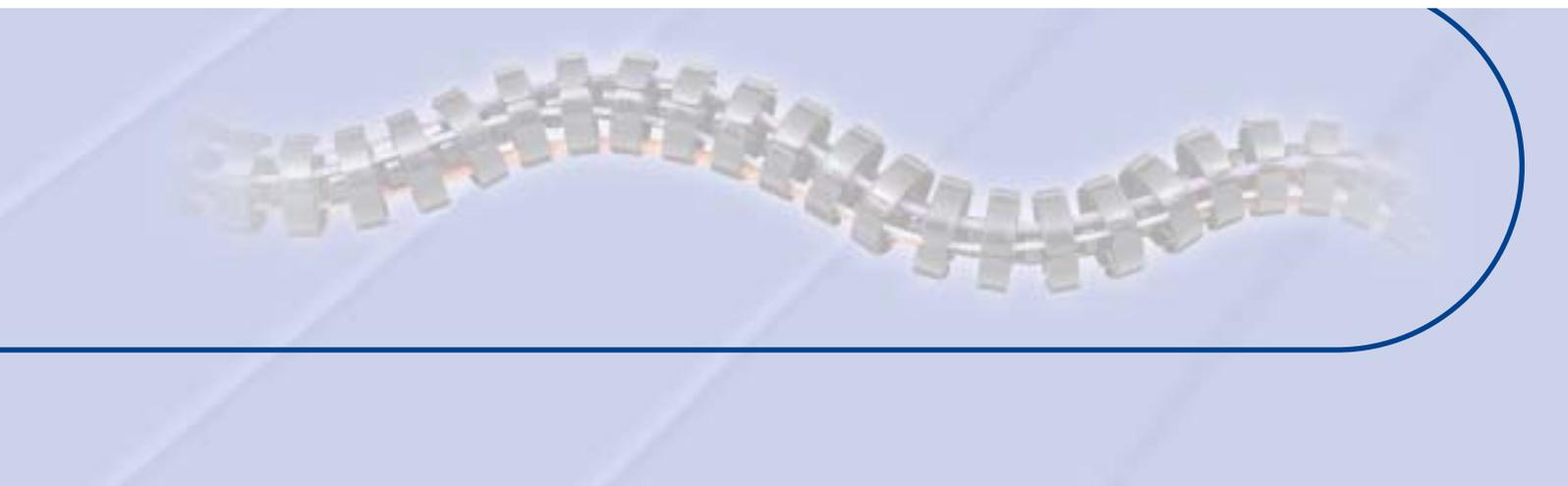
$$d_{FKA} = d_{iKA} + 2 KR + 2 b_{1KA}$$

All measurements are guide dimensions:  
wall thickness was omitted.

## Application Examples ROBOTRAX



Rotation angle of approximately 180° without a guide channel on an articulating arm robot application  
Photo: Reis Robotics - Arthur Bräuer GmbH & Co. KG



Photos: Güdel AG Langenthal



Photo: ENGEL Automatisierungstechnik Gesellschaft m.b.H.

## Product Range

**KABELSCHLEPP**

Cables in Motion

### Cable and Hose Carrier Systems

Cable carriers  
Flexible conduits  
QUANTUM Cable and hose carrier system  
PROTUM Cable and hose carrier system  
PROFILE Cable and hose carrier system  
ROBOTRAX Cable and hose carrier system  
FLEXBALL Cable and hose carrier system  
LIFE-LINE Cable systems

### Guideway Protection Systems

Telescopic covers  
Link apron covers  
Way wipers  
Conical spring covers  
Bellows

### Conveyor Systems

Hinged belt conveyors  
Scraper conveyors  
Belt conveyors

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