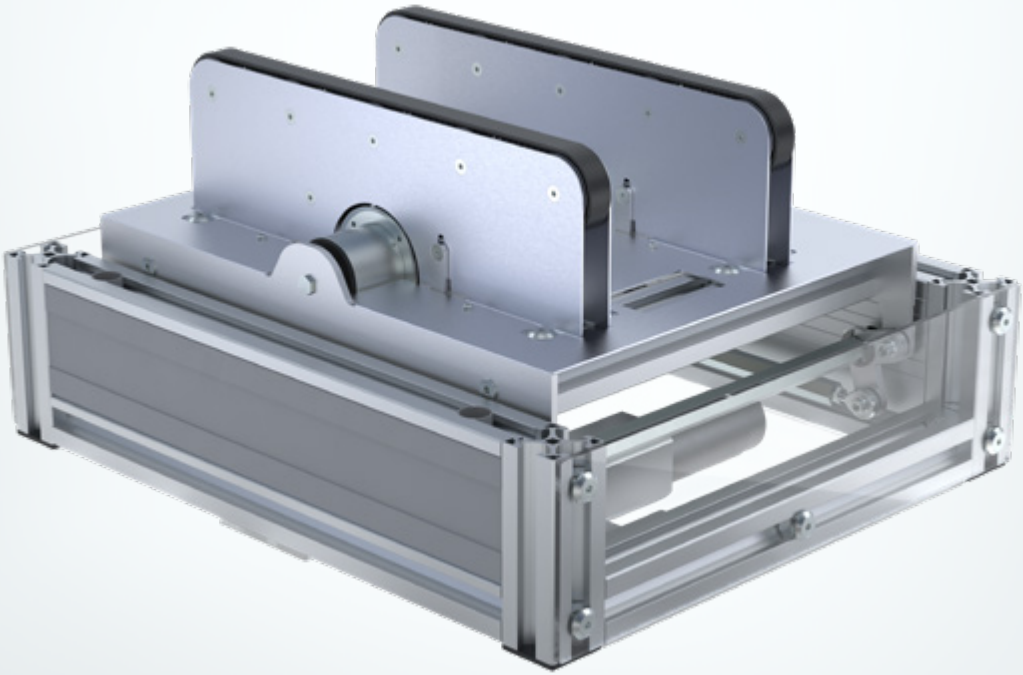
ROBOTUNITS®

Project:



Transfer Unit 90°, 50

Assembly Instructions

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1. General information

1.1 System manufacturer

Robotunits GmbH
Dr. Walter Zumtobel Str. 2
A-6850 Dornbirn
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Fax +43 5572 22000 9200
www.robotunits.com

1.2 Version

Version	Type	Date
01	New document	2022-09-16
02	Redesign	2025-04-25

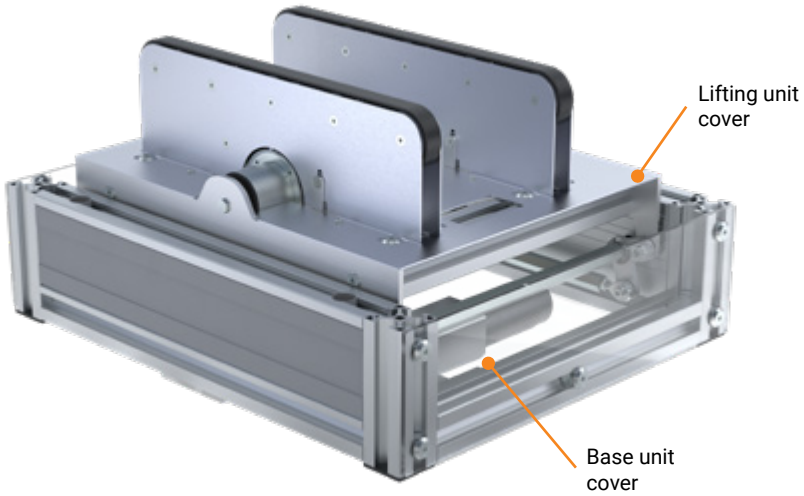
2. Safety

2.1 Intended use

The Transfer Unit 90° complements the Robotunits Powered Roller Conveyor system, enabling a 90° transfer of conveyed material. For technical data, see chapter 3.

As the Transfer Unit 90° is supplied without a control system, it is 'partly completed machinery' as described in the Machinery Directive 2006/42/EC.
See appendix for Declaration of Incorporation.

The Transfer Unit 90° is mechanically designed with the appropriate covers.



2.2 Safety instructions for transportation

- Do not store outdoors
- Consider the center of gravity when lifting
- Standing under the load is prohibited.
- Use a suitable means of transportation.

3. Technical data

3.1 Mechanical

- Weight of conveyed material: kg (max. 50 kg)
- Weight of Transfer Unit 90°: max. 30 kg (depending on version)
- Roller pitch: mm
- Stroke: 14 mm
- Transfer lane width: 24 mm
- Belt width: 16 mm
- Speed*: ≤ 20 kg: 48 m/min
  ≤ 40 kg: 33 m/min
  ≤ 50 kg: 26 m/min
- Airborne noise emission: 67 dBA

* ...set the speed of the motor rollers 25% lower than of the powered roller conveyor before or after. Reasoning: larger pitch diameter of the toothed belt pulley

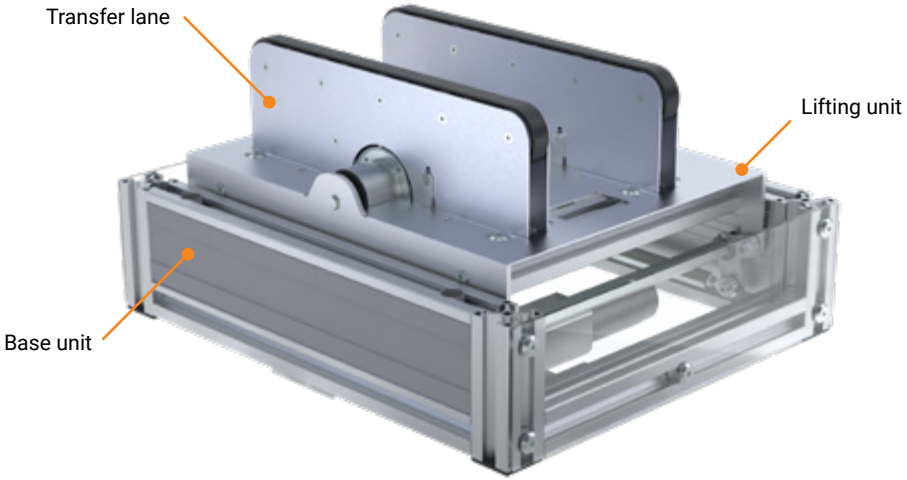
3.2 Conveyed material

- Dimension: mm
- Material:

3.3 Ambient conditions

- Ambient temperature: + 2°C to + 40°C
  (avoid thermal shocks)
- Humidity: < 90%
- Vibrations: < 0.5g

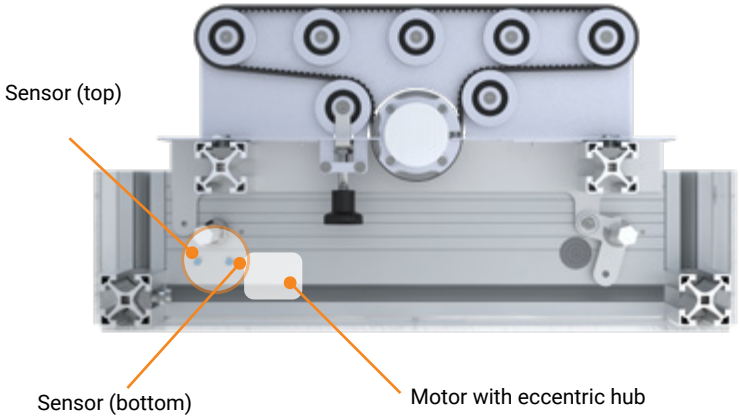
4. Mechanical design



5. Functions

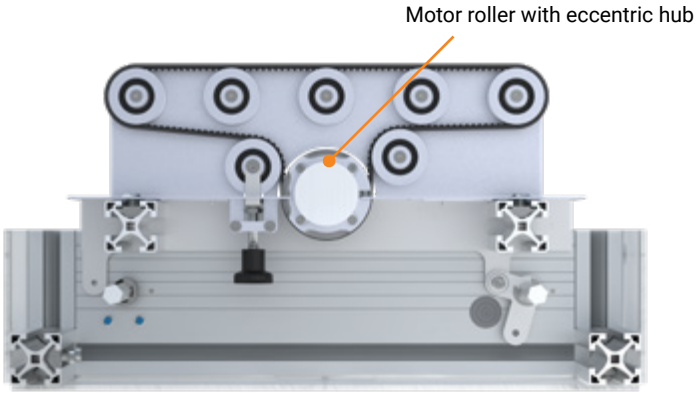
5.1 Lifting unit

The lift of the Transfer Unit 90° unit is achieved electrically via a 24V motor and an eccentric cam. The monitoring of the upper and lower dead centres is achieved via 2 monitoring sensors.



5.2 Transfer lane

The transfer lanes are driven electrically via a 24V motor roller and timing belt pulleys.



5.3 Motor settings

Connection data for Transfer Unit 90° (without power supply)
• Control voltage: 24 VDC

Connection data for Transfer Unit 90° (with power supply)
• Connection: CEE plug (16 A) / Schuko plug
• Input voltage: 400 VAC / 230 VAC
• Power supply frequency: 50 Hz

When using a power supply with a 20 A power supply unit, a maximum of 12 motor rollers can be driven. With a 40 A power supply unit, a maximum of 24 motor rollers can be driven.

The exact number of motor rollers depends on the speed, acceleration, weight and the simultaneous start of multiple motor rollers.

Performance data – Transfer Lane					
Speed Code	Mode	Belt speed [m/min]*	Transported weight [kg]	Current [A]	
				Duration	Start
35	Boost	48	≤ 20	3.5	5.0
25	Boost	33	≤ 40	3.5	5.0
20	Boost	26	≤ 50	3.5	5.0

*Software input speed = $\frac{\text{Transfer lane speed}}{1.32}$

Performance data – Lifting Unit				
Gearbox ratio	Boost (50 W)			
	Duration of lifting movement [s]	Revolutions [rpm]	Acceleration [pulses]	Deceleration [pulses]
67 : 1	0.6	40	120	120

5.4 Normal operation

In order to ensure optimum process reliability, the Transfer Unit 90° must be controlled as follows:

Starting with transfer lane in lower position	Stroke	Belt	Lower end position sensor	Upper end position sensor
Lower limit position (starting point)	STOP (servo brake)	STOP	ON	OFF
Upward stroke (UP)[1)]	Rotation	STOP	OFF	OFF
Upper limit position	STOP (servo brake)	STOP	OFF	ON
Transfer	STOP (servo brake)	Rotation	OFF	ON
Downward stroke (DOWN)	Rotation	STOP	OFF	OFF

[1)]The lifting movement may only take place when the zone after the Transfer Unit 90° is empty.

Starting with transfer lane in upper position	Stroke	Belt	Lower end position sensor	Upper end position sensor
Upper limit position (starting point)	STOP (servo brake)	STOP	OFF	ON
Downward stroke (DOWN)[2)]	Rotation	STOP	OFF	OFF
Lower limit position	STOP (servo brake)	STOP	ON	OFF
Transfer	STOP (servo brake)	Rotation	ON	OFF
Upward stroke (UP)	Rotation	STOP	OFF	OFF

[2)] The lifting movement must take place directly after the conveyed material has been transferred onto the Transfer Unit 90°.

The upper and lower positions must be held by the dynamic brake of the motor.

6. Maintenance, servicing and cleaning

Proper maintenance of the machine is essential for reliable operation and a long service life.

Work to be performed by the operating personnel:

- Machine shutdown
- Clean with dry or slightly damp, soft cloths
  (Polycarbonate panels are susceptible to scratches)
- Use a vacuum cleaner to remove larger quantities of contamination.
- Clean sensors, if necessary.
- Check tension of timing belt
- Visual inspection for damage; if necessary, request repair from the plant maintenance department

7. Maintenance, repair and troubleshooting

The spare parts list can be found in the appendix.
Work to be carried out by trained specialists from the plant maintenance department:

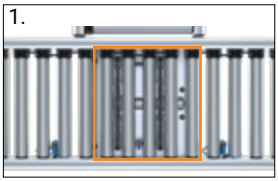
Maintenance schedule

Maintenance Point / Activity	Maintenance interval	Info
Electrical installations	every 6 months	visual inspection for damages and check for tight fit
Timing belt	every 3 months	visual inspection for damages (such as tears or porosity)
Screw connections after initial commissioning	1 month after initial commissioning	check for tight fit
Screw connections	once a year	check for tight fit
Sensor	as required	remove any dirt that may be present

7.1 Transfer lane belt / Motor roller (belt module)

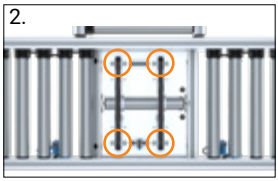
Belt replacement / motor roller replacement

1.



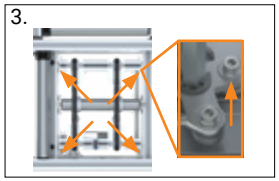
Remove rollers in the area of the Transfer Unit 90°

2.



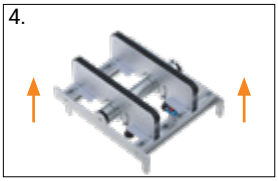
Loosen screws and remove covers

3.



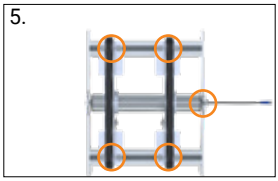
Remove the 4 connecting screws

4.



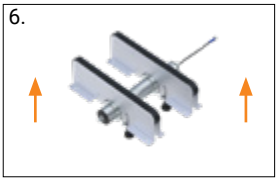
Remove the lifting unit

5.



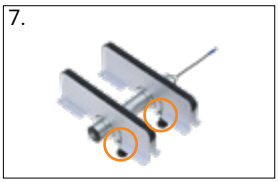
Mark the position of the transfer lanes, unscrew the connecting screws and disconnect the motor roller

6.



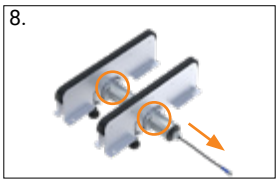
Lift out the transfer lanes and motor roller

7.



Release the tension on the transfer lane belt

8.

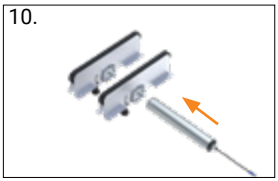


Loosen the clamping rings and remove the motor roller

9.

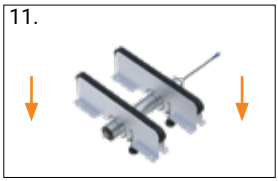
Remove the side panel and replace the belt

10.



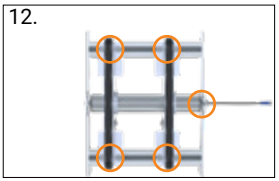
Insert the new motor roller

11.



Insert the transfer lane and the motor roller

12.



Insert the transfer lanes, tighten the connecting screws and connect the motor roller

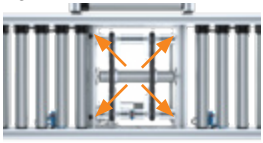
13.

Tension the transfer lane belt with 50N

14.

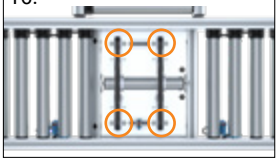
Insert the lifting unit

15.



Tighten the 4 connecting screws

16.



Insert and fasten the covers

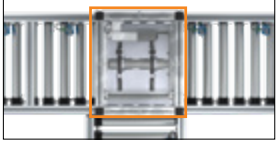
17.

Insert rollers in the area of the Transfer Unit 90°

7.3 Motor (lifting unit)

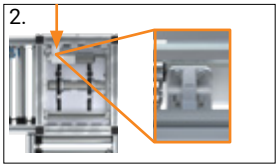
Motor replacement (from below)

1.



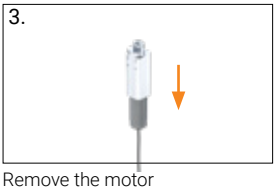
Remove screws and cover

2.



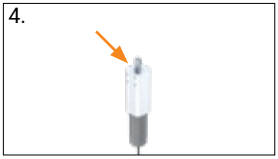
Remove the 4 connecting screws

3.



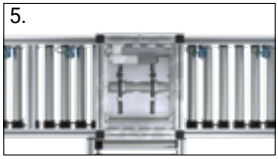
Remove the motor

4.



Remove the eccentric hub and replace the motor

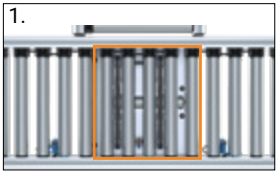
5.



Steps 5 to 1: repeat in reverse order

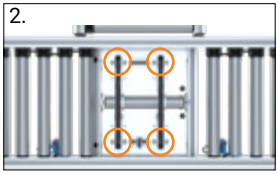
Motor replacement (from above)

1.



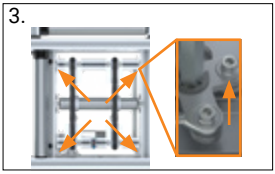
Remove rollers in the area of the Transfer Unit 90°

2.



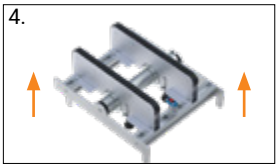
Loosen screws and remove covers

3.



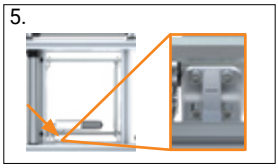
Remove the 4 connecting screws

4.



Remove the lifting unit

5.

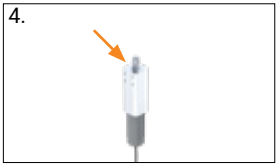


Loosen the connecting screw of the motor

6.

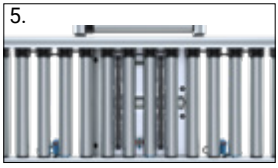
Remove the motor

4.



Remove the eccentric hub and replace the motor

5.

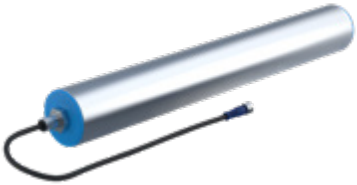


Steps 6 to 1: repeat in reverse order

8. Components used

8.1 Motor roller

Motor roller for belt drive



Item number: Motor roller for transfer lane			
SC	m	V	Item no.
20	≤ 50 kg	26 m/min	373731
25	≤ 40 kg	33 m/min	383870
35	≤ 20 kg	48 m/min	383871

Motor for lifting unit

Item number: 306258

8.2 Motor controller

Motor controller for motor roller

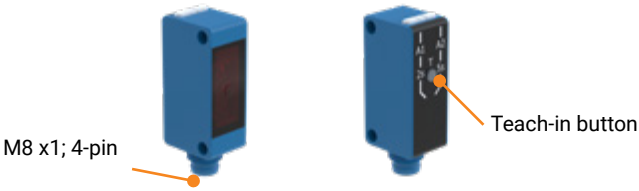
Item number: ConveyLinx Ai2 297340

MotionLinx Ai 297341

8.3 Zone sensor for Powered Roller Conveyor

Roller conveyor zone sensor in the zone with the Transfer Unit 90°

- for detecting products in the zone with the Transfer Unit 90°
- for checking if the product is in the right position



Type:	Laser (infrared)
Function:	Normally closed / Normally open contact
Scanning range:	1500 mm
Light spot diameter:	14 mm – 42 mm
Supply voltage:	10 V – 30 V
Power requirement:	< 15 mA
Item number:	319497

8.4 Monitoring sensor

Sensor for upper and lower position of the Transfer Unit 90°

Type:	Inductive
Function:	N/O contact
Switching distance:	2 mm
Supply voltage:	10 V – 30 V
Power requirement:	9 mA
Item number:	380896

8.5 Timing belt

- Belt for the transfer of the products

Item number: COL1651SNN

9. EU Declaration of Incorporation

(in accordance with 2006/42/EC from 09.06.2006, Annex VII, part B for the incorporation of partly completed machinery)

We, as the manufacturer of the partly completed machinery, hereby declare under our sole responsibility that for the machine specified below:

- the essential requirements of the harmonized directive 2006/42/EC listed below were applied and complied with
- the specific technical documentation was created in accordance with Annex VII, Part B
- this specific technical documentation will be transmitted in accordance with Annex VII, Part B, in response to a reasoned request, to the national authorities in printed form or electronically (pdf)

Manufacturer: Robotunits GmbH
Dr. Walter Zumtobel Strasse 2
6850 Dornbirn, AUSTRIA

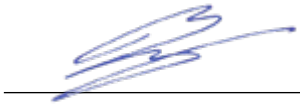
Product:

Harmonized regulation (directive):
2006/42/EC (09/06/2006) Applied and fulfilled essential requirements:
1.1.2., 1.1.3., 1.1.5., 1.3.1., 1.3.2, 1.5.8, 1.5.9, 1.5.13
2014/35/EU Low Voltage Directive
2014/30/EU EMC Directive

Authorized representative for the technical documentation: Robotunits GmbH
Dr. Walter Zumtobel Straße 2
6850 Dornbirn, AUSTRIA

This partly completed machinery must not be put into service until the machine or system into which this partly completed machinery is to be incorporated has been declared in conformity with the regulations of the Machinery Directive 2006/42/EC.

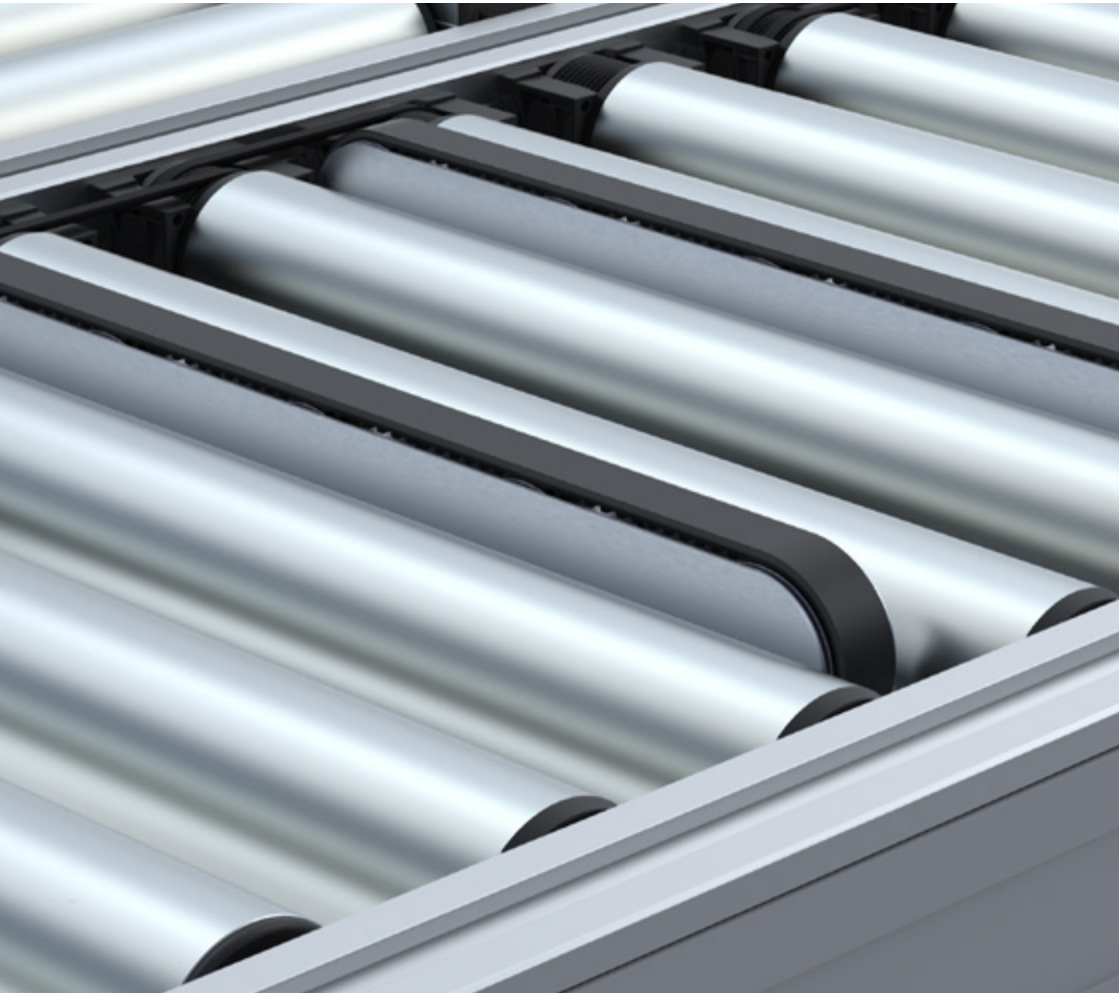
Signed for and on behalf of: Robotunits GmbH



Christian Beer
Managing Partner

Dornbirn, 25.04.2025

ROBOTUNITS®



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