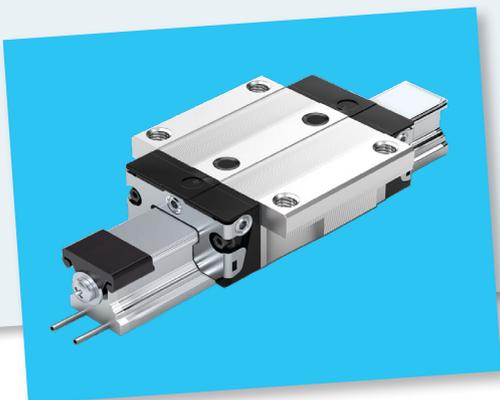
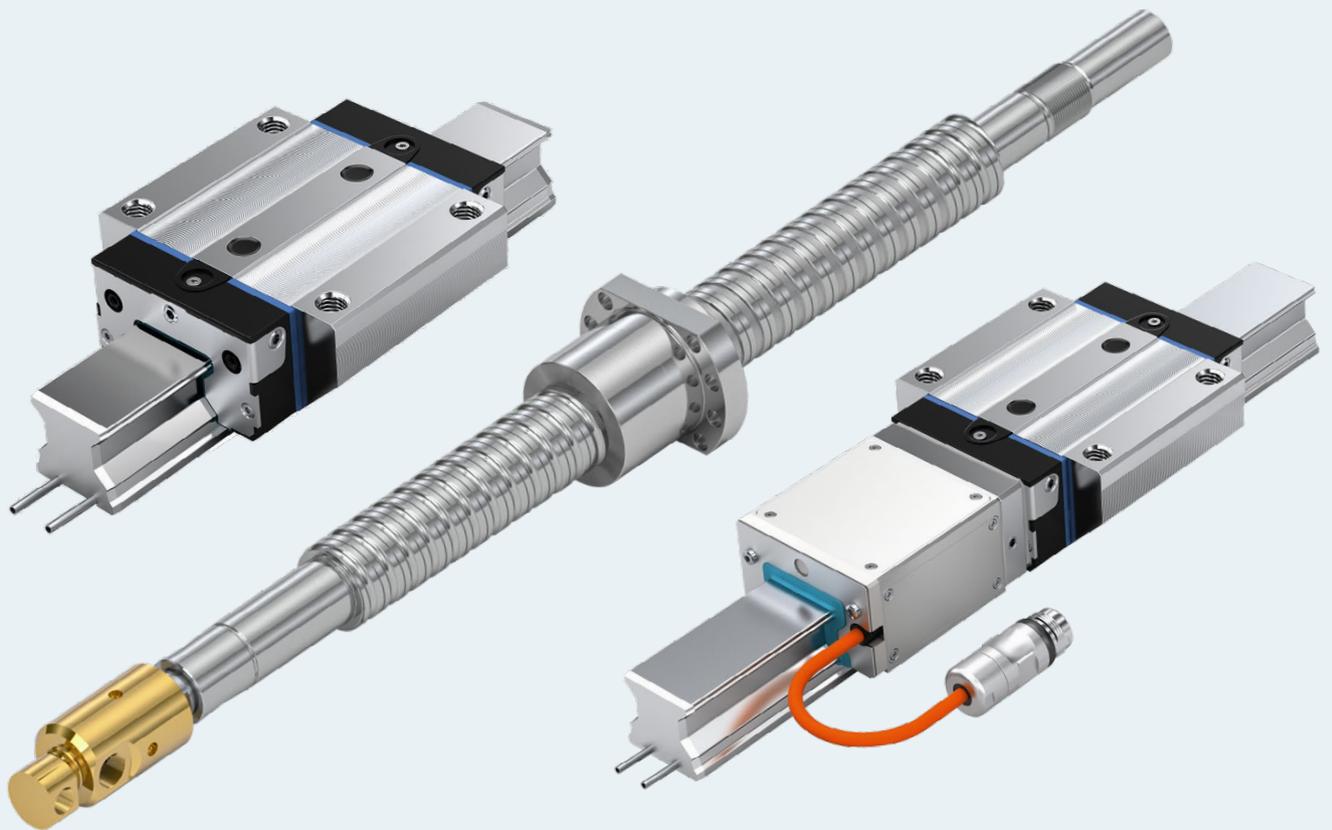
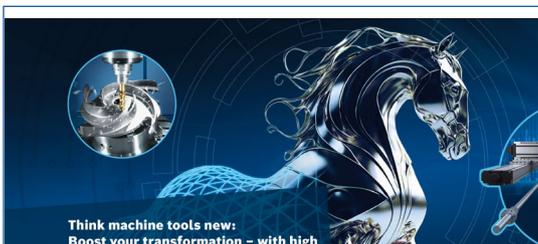


Thermal compensation for profiled rail systems and screw drives



Rethinking machine tools

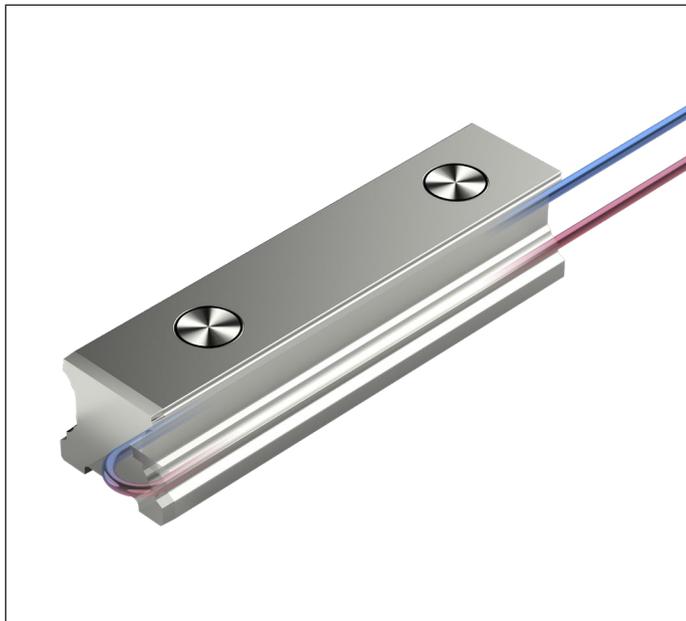


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At a glance

Temperature-controlled ball guide rail



Temperature-controlled roller guide rail



Temperature-controlled measuring system IMS



Temperature-controlled screw drive



Product description

Compensating for thermal effects

Any company that is determined to remain a key player in high-precision processing over the long term needs innovations with which processes can be mapped more stably without excessively affecting costs. One approach to reach this goal in areas such as high-speed and precision milling is to optimize the thermal behavior of all the linear components involved in the process – without using external cooling systems, which would increase development and operating costs. The patented Thermo Compensating Rail System TCRS from Bosch Rexroth offers a low-cost yet flexible solution. With the help of TCRS, for instance, energy loss caused by friction can be directly dissipated from the linear guide. In both cases, the rapidly produced thermal stability minimizes waste and increases productivity. In addition, there is no need for repeated readjustment in the process. As a result, the machine achieves higher precision, increased dynamics and higher throughput with constant process conditions.

With the integrated temperature function, which Bosch Rexroth offers for ball and roller rail systems, integrated measuring systems and screw drives, needs-based precision packages can be offered or retrofitted. The key advantage compared to traditional temperature control solutions is that no additional space is required for external components. The piping is fitted directly into the incorporated slots of the guide rail, integrated into the hollow-drilled shaft of the screw drive and connected to the central cooling circuit. As a result, the temperature function can be realized under the same mechanical conditions and with minimal construction and operating costs.

Guidance, measuring and tempering in a system

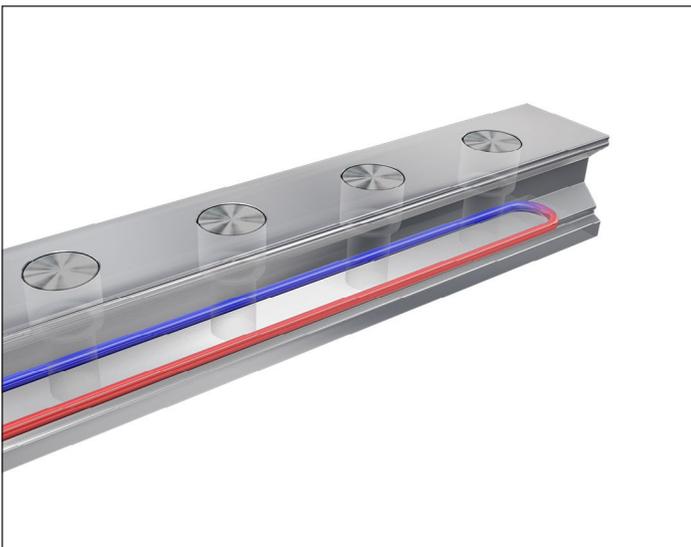
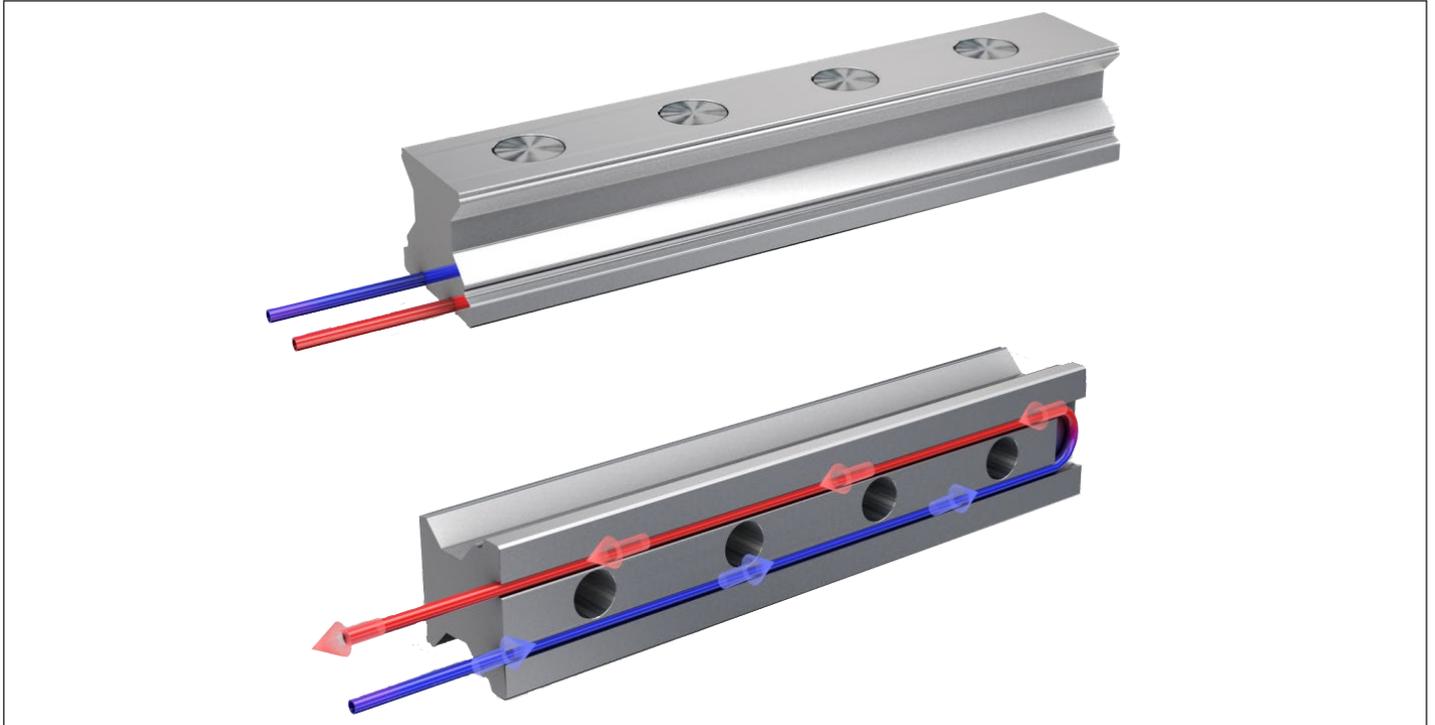
Bosch Rexroth has also found a robust and space-saving solution for position measurements. With the help of the integrated measuring system (IMS), the "guiding" and "measuring" functions can be combined in the linear guide. Unlike glass scales, which offer comparable precision and repeatability, the IMS is not susceptible to dirt or sensitive to shocks. The encoder function of the IMS also requires no sealing air or external components. Thanks to cyclically readable acceleration sensors, the system is even suitable for active vibration damping in linear axes, as well as position-determination in combination with linear motors. The IMS with inductive measuring system becomes can do even more when combined with the TCRS temperature control option: The latter can be used to rule out measurement errors which can occur due to minimal deformations of the rail. The result is increased process speed and stability, and there is no need to readjust the process. The linear guide thus combines the two functions of measuring and temperature control into one unit.

Profile rails with temperature control

Characteristic features

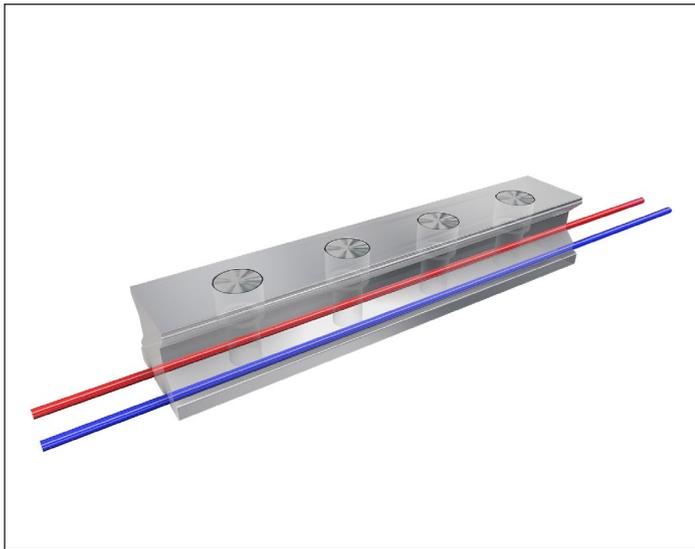
Faster starting, more precise movement, simple conversion

What used to only be possible with a lot of effort and special solutions is now available for the first time as a standard: Rexroth has integrated temperature control into the guide rail. Wherever fast travel cycles and the highest precision are required, guide rails can now be started without any run-in time. Always at the perfect temperature and thermally stable. And with less waste. Ideal for retrofitting: Simply replace the rail and connect to the existing cooling circuit. You can turn your standard machines into precision machines in no time at all!



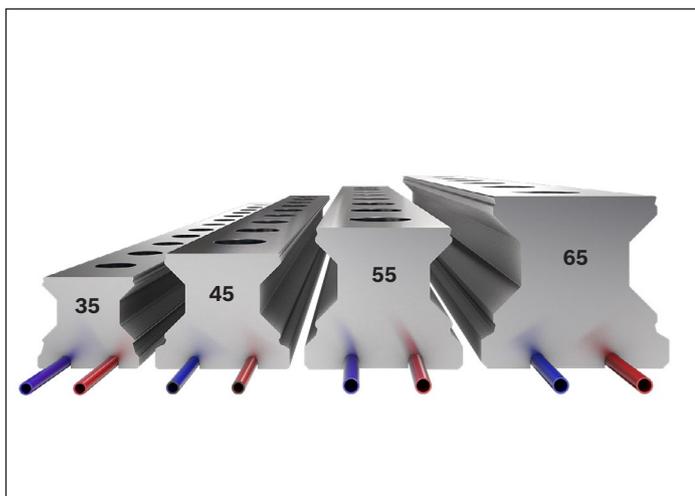
Extremely precise movement, flexible adjustment

As the new Rexroth guide rails dissipate or supply the heat where it is created or used, you have all the freedoms: No matter where your machine stands or from what material the machine bed is made, the linear guides work with high precision and thermal stability. No run-in time, with good parts right from the first part onwards. This ensures the greatest availability and increases part accuracy by up to 75%. Even with existing machines: Just connect the rails to existing cooling circuits. Done.



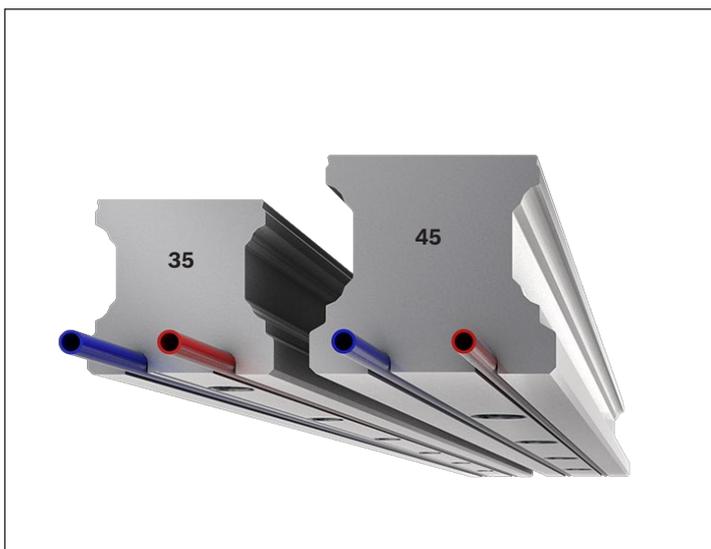
Further highlights

- ▶ High precision: Up to 75% higher part accuracy, regardless of environment
- ▶ Always available: No run-in to the operating temperature
- ▶ Flexible: Can be adjusted to changes as required
- ▶ Can be retrofitted: compatible with existing systems
- ▶ Simple: Uses existing cooling circuits



Technical features

- ▶ Roller guide sizes: 35/45/55/65
- ▶ Formats: R1805/R1806
- ▶ Rail covers: Cover strip, caps
- ▶ Series with/without groove
- ▶ Accuracy classes: P/GP/SP
- ▶ Rail lengths: Up to max. 4000 mm
- ▶ Redirecting temperature control: To the rails or universal
- ▶ Patented

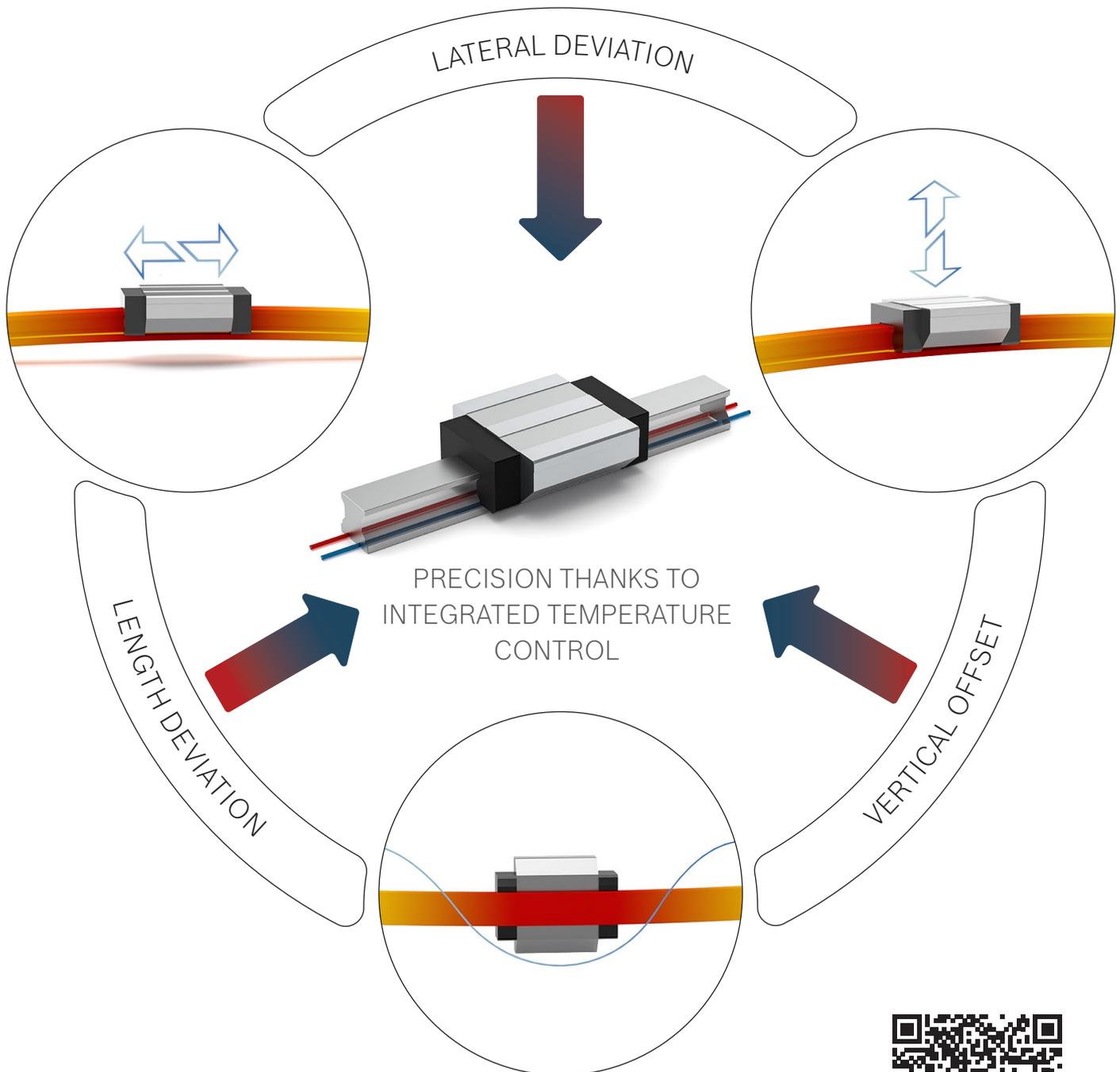


- ▶ Ball guide sizes: 35/45/55*/65*
- ▶ Formats: R1605/R1606
- ▶ Rail covers: Cover strip, caps
- ▶ Series with/without groove
- ▶ Accuracy classes: P/SP
- ▶ Rail lengths: Up to max. 4000 mm
- ▶ Redirecting temperature control: To the rails or universal
- ▶ Patented

*) on request

Increasing machine precision

- ▶ Machine accuracy improved by up to 75% thanks to temperature control of linear axes
- ▶ Improved component accuracy thanks to a thermally stable travel range of the axes
- ▶ Defined temperature control of the linear axis in short-stroke applications (no bimetal effect!)
- ▶ Better machining results and surface quality thanks to thermal stability of the feed axis

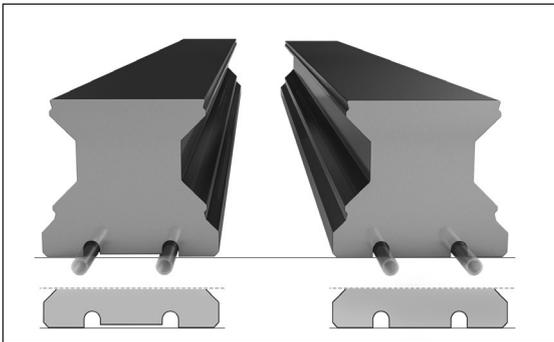
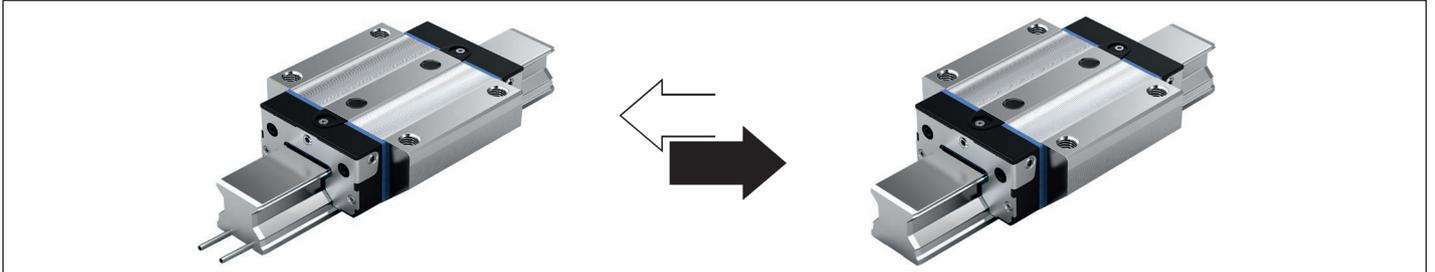


[Innovative Linear Motion Technology solutions for thermal compensation](#)



Precision replacement construction

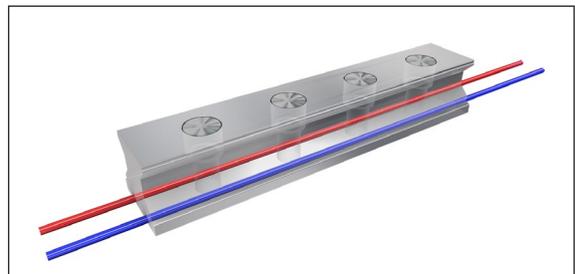
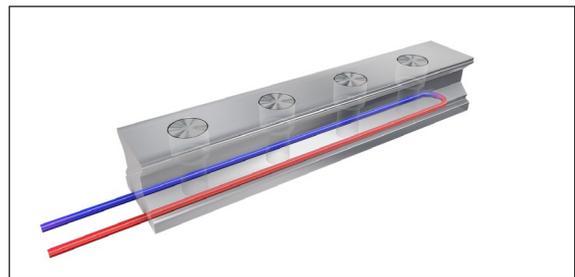
- ▶ Can be retrofitted to existing machines at any time (replacement construction across all accuracy classes)
- ▶ Increase in machine accuracy flexibly expandable according to customer requirements by replacing the linear guides.



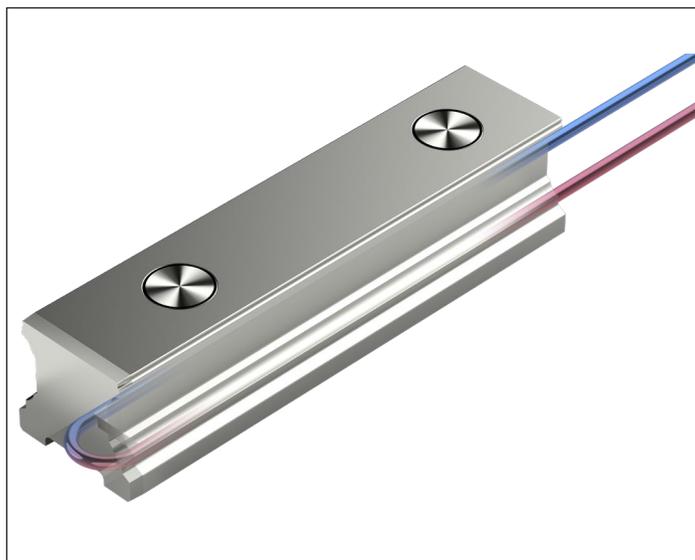
- ▶ Rails with or without bottom groove

Plug and Fluid

- ▶ Without tubing (do it yourself)
- ▶ Deflection of the temperature control circuit in the guide rail
- ▶ Continuous temperature control circuit
- ▶ Miscellaneous push-in fittings



SNS/SNO ball guide rail R1605 000 10



Screwable from top with cover strip or caps

Notes

- ▶ For technical data and dimensions, see [catalog "Ball rail systems"](#)
- ▶ Observe the instruction for mounting!
Please request the "Mounting instructions for ball rail systems"
- ▶ Additional ordering data (not configured): Rail length

T	C	R	S	K	S	A	-	0	4	5	-	S	N	S	-	P	-	M	A	-	A	K	-	1	-	0	0
				1				2				3				4			5			6		7			8

1 Mechanical system

Characteristic	Designation
KSA	Ball guide rail

2 Size

Characteristic	Designation
035	Size 35
045 ¹⁾	Size 45
055 ²⁾	Size 55
065 ²⁾	Size 65

3 Format

Characteristic	Designation
SNS	Slimline, normal, standard height
SNO	SNS without bottom groove

4 Accuracy class

Characteristic	Designation
P	Precision
S	Super precision SP

5 Fastening

Characteristic	Designation
MA	Bolting from above

6 Cover

Characteristic	Designation
AB	Cover strip and protective caps
AK	Plastic caps
AS	Steel caps

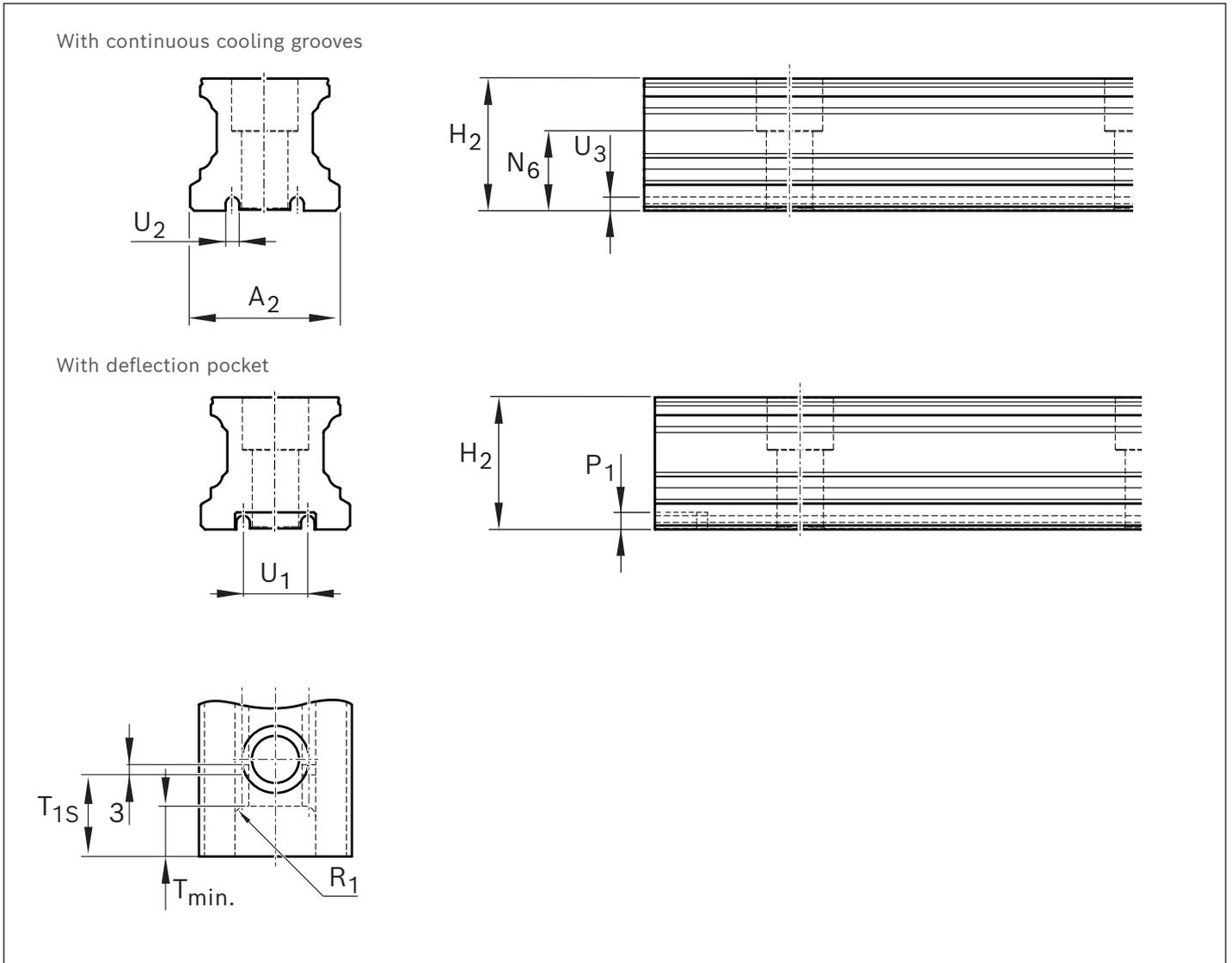
7 Number of sections

Characteristic	Designation
1	Sections

8 Deflection pocket

Characteristic	Designation
00	without deflection pocket
1E	at rail end T1
2E	at both rail ends

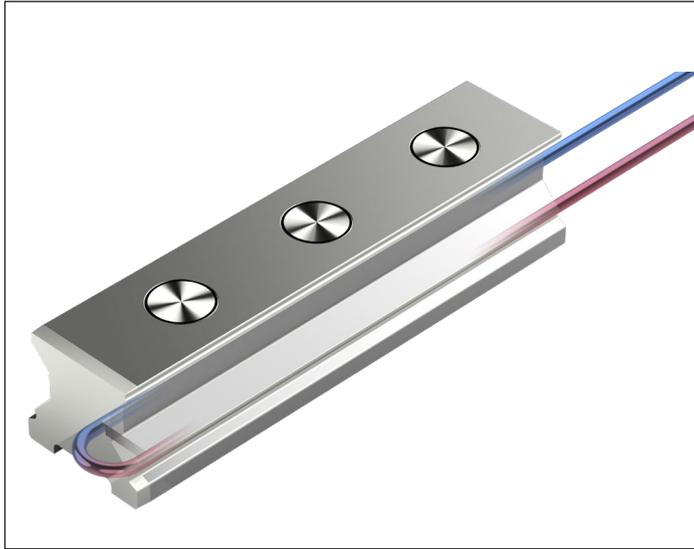
1) SNS format only
2) on request


Dimensions (mm)

Size	A ₂	U ₁ ±0.1	U ₂ +0.1	U ₃ ±0.05	H ₂ ¹⁾	L _{max}	N ₆ ±0.5	P ₁	R ₁	T _{min}	T _{1S} ± 0.75	Tube Ø	Mass (kg/m)
35	34	15	4.08	4.15	32.15	3 836	20.5	5	3	11	18.0	4.0	6.8
45	45	20	4.08	4.15	40.15	3 776	23.5	5	3	13	24.25	4.0	10.5

1) Dimension H₂ with cover strip 0.3 mm

SNS/SNO roller guide rail R1805 000 10



Screwable from top with cover strip or caps

Notes

- ▶ For technical data and dimensions, see [Roller rail systems catalog](#)
- ▶ Observe the instruction for mounting!
- ▶ Please ask for the "Mounting Instructions for Roller Rail Systems"
- ▶ Additional ordering data (not configured): Rail length

T	C	R	S	R	S	A	-	0	4	5	-	S	N	S	-	P	-	M	A	-	A	K	-	1	-	0	0	
				1				2				3				4			5			6			7			8

1 Mechanical system	
Characteristic	Designation
RSA	Roller guide rail

3 Format	
Characteristic	Designation
SNS	Slimline, normal, standard height
SNO	SNS without bottom groove

5 Fastening	
Characteristic	Designation
MA	Bolting from above

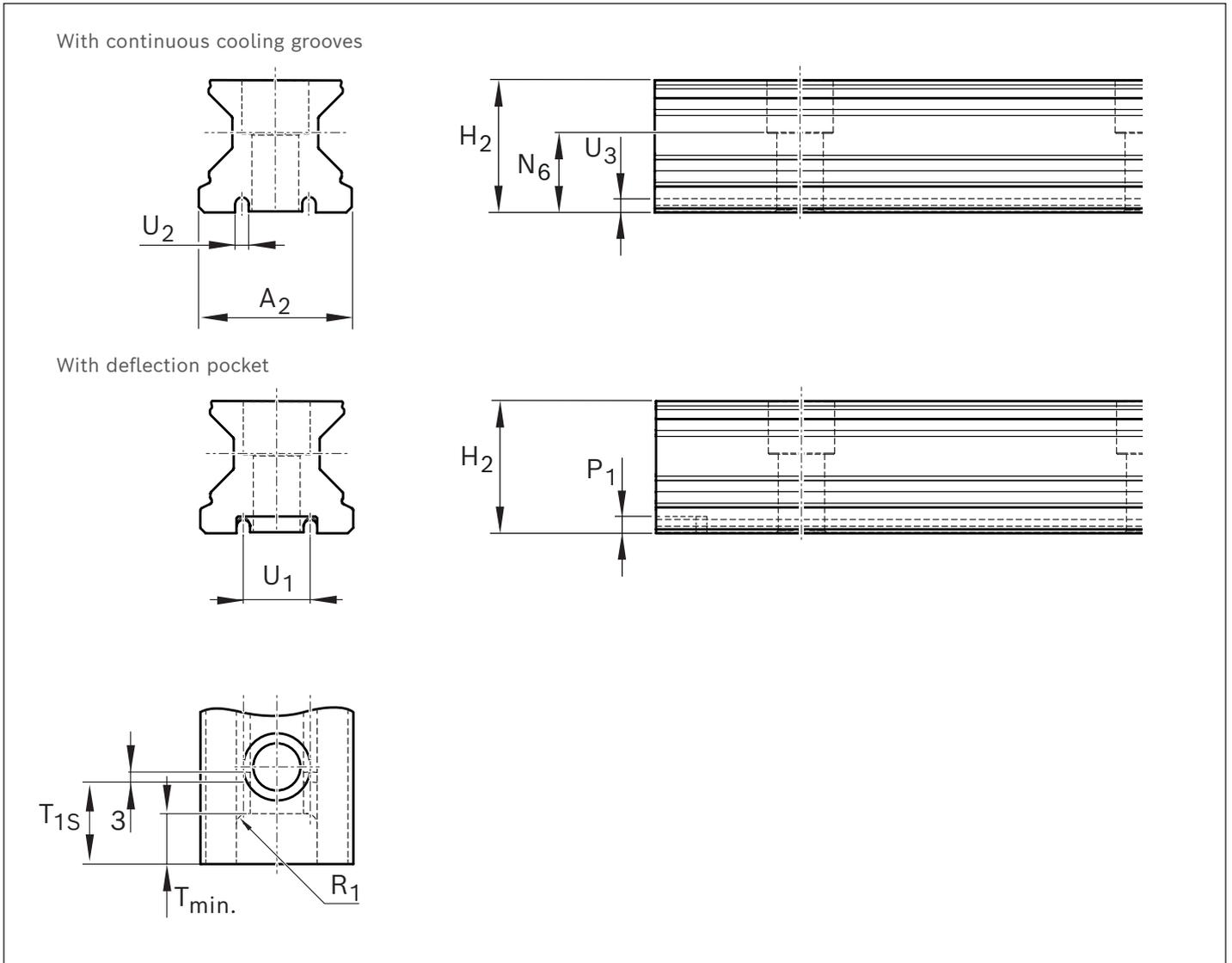
7 Number of sections	
Characteristic	Designation
1	Sections

2 Size	
Characteristic	Designation
035	Size 35
045	Size 45
055	Size 55
065	Size 65

4 Accuracy class	
Characteristic	Designation
P	Precision
S	Super precision SP
G	Sorted by height GP

6 Cover	
Characteristic	Designation
AB	Cover strip and protective caps
AK	Plastic caps
AS	Steel caps

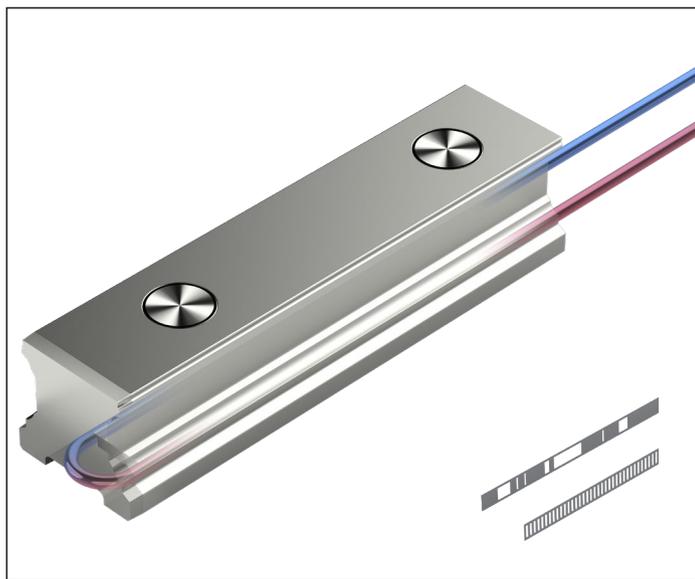
8 Deflection pocket	
Characteristic	Designation
00	without deflection pocket
1E	at rail end T1
2E	at both rail ends


Dimensions (mm)

Size	A_2	U_1 ± 0.1	U_2 $+0.1$	U_3 ± 0.05	$H_2^{1)}$	L_{\max}	N_6 ± 0.5	P_1	R_1	T_{\min}	T_{1S} ± 0.75	Tube \varnothing	Mass (kg/m)
35	34	15	4.08	4.15	31.10	3 996	19.4	5	3	11	18.0	4.0	6.3
45	45	20	4.08	4.15	39.10	3 986	22.4	5	3	13	24.25	4.0	10.3
55	53	24	6.08	6.15	47.85	3 956	28.7	7	4	17	28.0	6.0	13.1
65	63	26	6.08	6.15	58.15	3 971	36.5	7	4	18	35.5	6.0	17.4

1) Dimension H_2 with cover strip 0.3 mm

IMS ball guide rail SNS



Screwable from top with cover strip or caps and integrated scale

Notes:

- ▶ For technical data, dimensions and scope of delivery, see [Integrated measuring system IMS catalog](#)
- ▶ Observe the instruction for mounting!
- ▶ Additional ordering data (not configured): Rail length

I	M	S	2	A	K	S	A	-	0	4	5	-	S	N	S	-	P	-	M	A	-	A	K	-	1	-	A	C	-	A	5	-	D	-	0	0
					1				2				3				4		5		6			7		8		9		10		11				

1 Mechanical system

Characteristic	Designation
IMS2A KSA	IMS-A ball guide rail

3 Format

Characteristic	Designation
SNS	Slimline, normal, standard height
SNO	SNS without bottom groove

5 Fastening

Characteristic	Designation
MA	Bolting from above

7 Number of sections

Characteristic	Designation
1	Sections

9 Accuracy scale

Characteristic	Designation
A3	3 µm
A5	5 µm

2 Size

Characteristic	Designation
035	Size 35
045 ¹⁾	Size 45

4 Accuracy class

Characteristic	Designation
P	Precision
S	Super precision SP

6 Cover

Characteristic	Designation
AB	Cover strip and protective caps
AK	Plastic caps

8 Coding

Characteristic	Designation
AC	with absolute code band

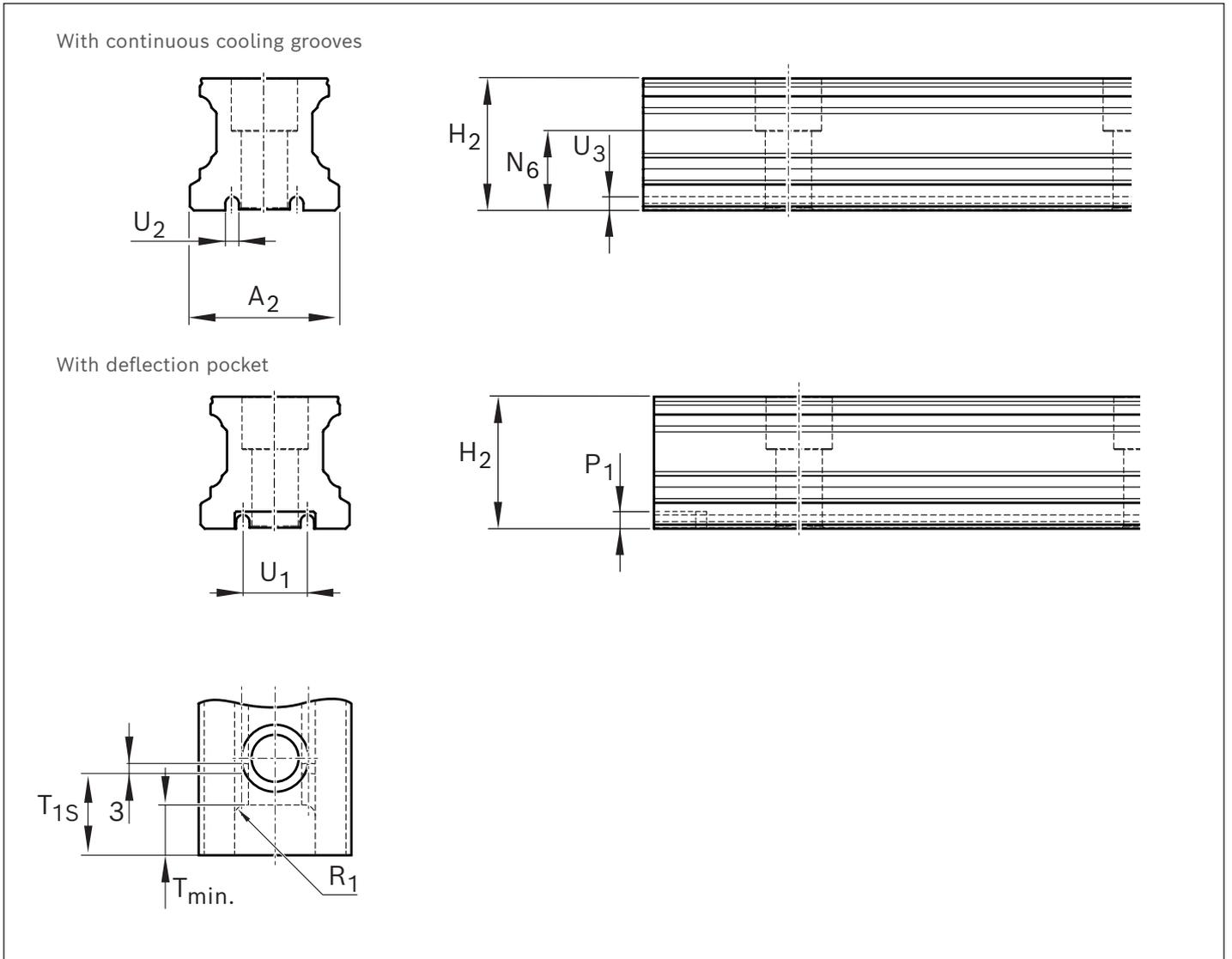
10 Documentation

Characteristic	Designation
D	Standard

11 Deflection pocket

Characteristic	Designation
00	without deflection pocket
2E	at both rail ends
X	standard without TCRS

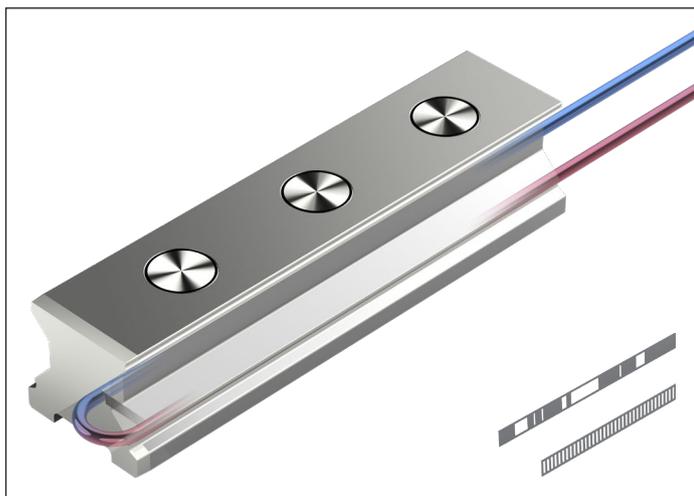
1) SNS format only


Dimensions (mm)

Size	A_2	U_1 ± 0.1	U_2 $+0.1$	U_3 ± 0.05	$H_2^{1)}$	L_{\max}	N_6 ± 0.5	P_1	R_1	T_{\min}	T_{1S} ± 0.75	Tube \varnothing	Mass (kg/m)
35	34	15	4.08	4.15	32.15	4 500	20.5	5	3	11	18.0	4.0	6.8
45	45	20	4.08	4.15	40.15	4 500	23.5	5	3	13	24.25	4.0	10.5

 1) Dimension H_2 with cover strip 0.3 mm

IMS Roller guide rail SNS



Screwable from top with cover strip or caps and integrated scale

Notes

- ▶ For technical data, dimensions and scope of delivery, see [Integrated measuring system IMS catalog](#)
- ▶ Observe the instructions for mounting! see chapter "Instructions for mounting"
- ▶ Additional ordering data (not configured): Rail length

I	M	S	2	A	R	S	A	-	0	4	5	-	S	N	S	-	P	-	M	A	-	A	K	-	1	-	A	C	-	A	5	-	D	-	0	0
					1				2				3				4		5		6				7		8		9		10				11	

1 Mechanical system

Characteristic	Designation
IMS2A RSA	IMS-A roller guide rail

3 Format

Characteristic	Designation
SNS	Slimline, normal, standard height
SNO ¹⁾	SNS without bottom groove

5 Fastening

Characteristic	Designation
MA	Bolting from above

7 Number of sections

Characteristic	Designation
1	Sections

9 Accuracy scale

Characteristic	Designation
A3	3 µm
A5	5 µm

2 Size

Characteristic	Designation
035	Size 35
045	Size 45
055 ¹⁾	Size 55
065 ¹⁾	Size 65

4 Accuracy class

Characteristic	Designation
P	Precision
S	Super precision SP

6 Cover

Characteristic	Designation
AB	Cover strip and protective caps
AK	Plastic caps
AS	Steel caps

8 Coding

Characteristic	Designation
AC	with absolute code band

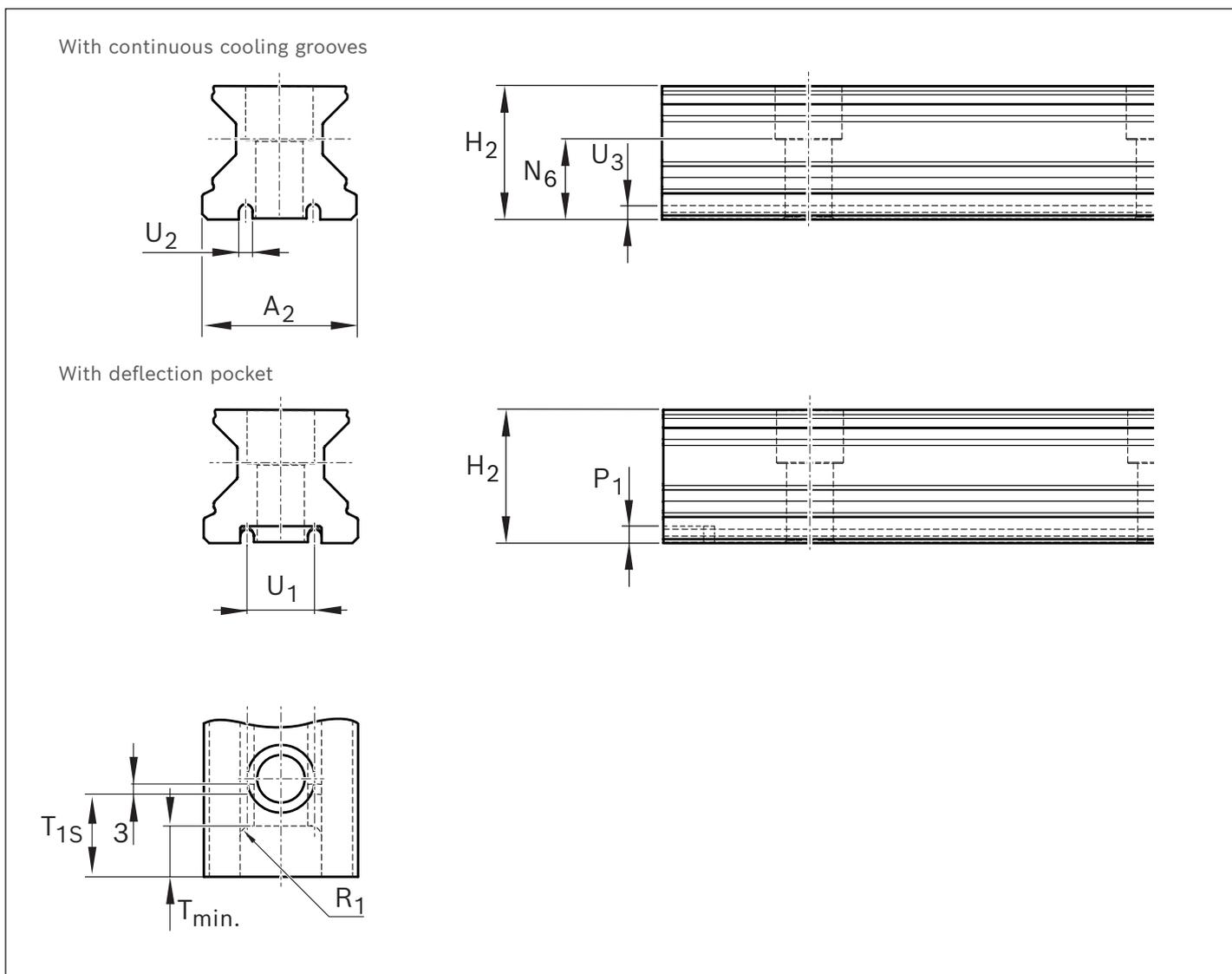
10 Documentation

Characteristic	Designation
D	Standard

11 Deflection pocket

Characteristic	Designation
00	without deflection pocket
2E	at both rail ends
X	standard without TCRS

1) on request

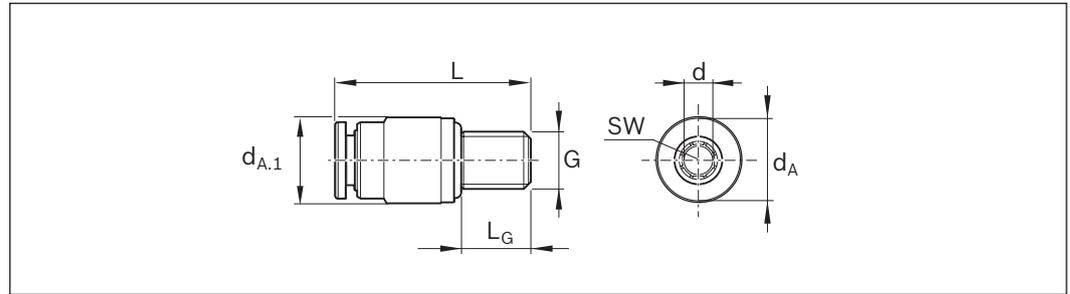

Dimensions (mm)

Size	A_2	U_1 ± 0.1	U_2 $+0.1$	U_3 ± 0.05	$H_2^{1)}$	L_{\max}	N_6 ± 0.5	P_1	R_1	T_{\min}	T_{1S} ± 0.75	Tube \varnothing	Mass (kg/m)
35	34	15	4.08	4.15	31.10	3 996	19.4	5	3	11	18.0	4.0	6.3
45	45	20	4.08	4.15	39.10	3 986	22.4	5	3	13	24.25	4.0	10.3
55	53	24	6.08	6.15	47.85	3 956	28.7	7	4	17	28.0	6.0	13.1
65	63	26	6.08	6.15	58.15	3 971	36.5	7	4	18	35.5	6.0	17.4

 1) Dimension H_2 with cover strip 0.3 mm

Push-in fittings for tubes

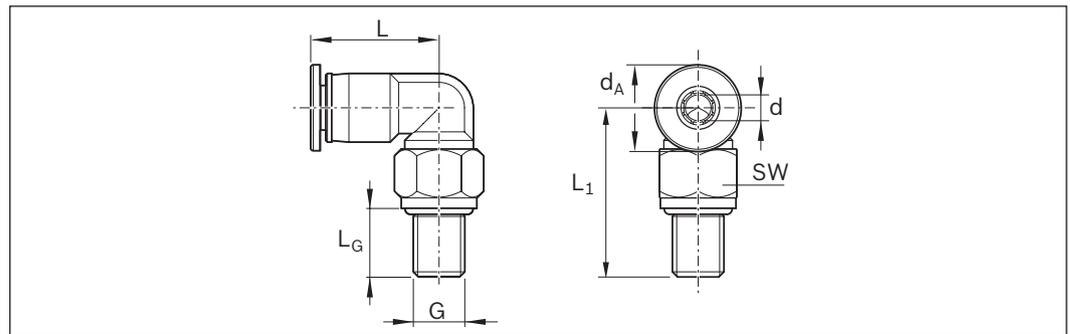
Straight connectors



Material numbers	Dimensions (mm)							Tightening torque (Nm) M_{t1}	Mass (g)
	d_A	$d_{A.1}$	$d^{1)}$	G	L	L_G	$SW^{2)}$		
R3417 075 09	9.0	9.0	4	M6	24.5	8	2.5	1.8	4.9
R3417 076 09	11.0	11.0	6	M6	26.0	8	2.5	1.8	6.2

- 1) Tube diameter
- 2) Internal width across flats

Elbow plug-in connections rotatable



Material numbers	Dimensions (mm)							Tightening torque (Nm) M_{t1}	Mass (g)
	d_A	$d^{1)}$	G	L	L_1	L_G	$SW^{2)}$		
R3417 078 09	9.0	4	M6	18.1	18.1	8	9	1.8	10.8
R3417 079 09	11.0	6	M6	20.8	18.1	8	9	1.8	12.9

- 1) Tube diameter
- 2) External width across flats

Calculated values

Heat transfer coefficient between guide rail or plate and ambient air

Heat transfer coefficient: $\alpha = 31.32 \text{ W}/(\text{m}^2 \cdot \text{K})$

Technical notes

- ▶ Cooling medium: Mix of water and additive (e.g. glycol)
- ▶ No stiffness losses due to temperature control groove
- ▶ No difference between SNS and SNO rails

Tube specifications

Tube material:

Precision steel tubes - Seamless, cold-drawn tubes for hydraulic and pneumatic pressure lines according to DIN EN 10305-4 E235 + N (1.0308)

Tube diameter:

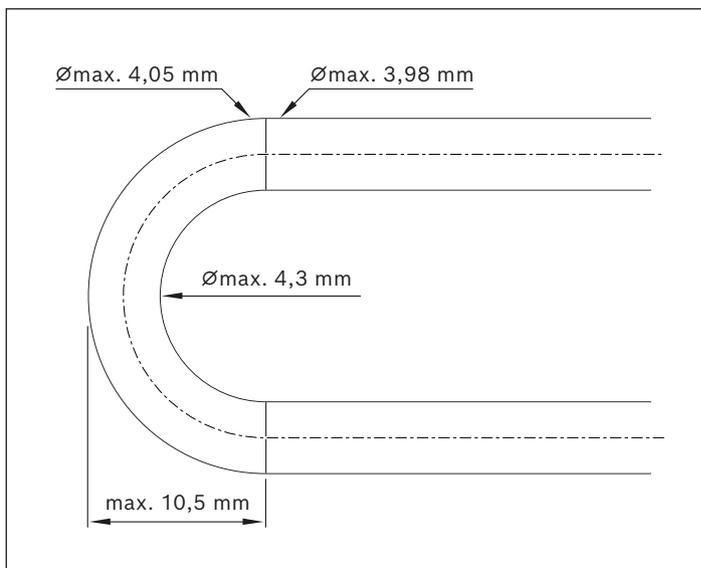
- ▶ Size 35 and 45: 4.0 x 0.5 mm (O \varnothing x wall thickness)
- ▶ Size 55 and 65: 6.0 x 0.7 mm

Bending radius neutral fiber:

- ▶ Size 35: 7.5 mm
- ▶ Size 45: 10 mm
- ▶ Size 55: 12 mm
- ▶ Size 65: 13 mm

Groove center distance:

- ▶ Size 35: 15 mm
- ▶ Size 45: 20 mm
- ▶ Size 55: 24 mm
- ▶ Size 65: 26 mm



- ▶ Tube thickness increases in the marked area by 0.5 mm
- ▶ After the bend, no further \varnothing increase can be measured.
- ▶ In the area of the bend, there is an increase to a maximum of 4.3 mm. This change in the cross-section lies in the region of the provided deflection pocket.

Removable heat

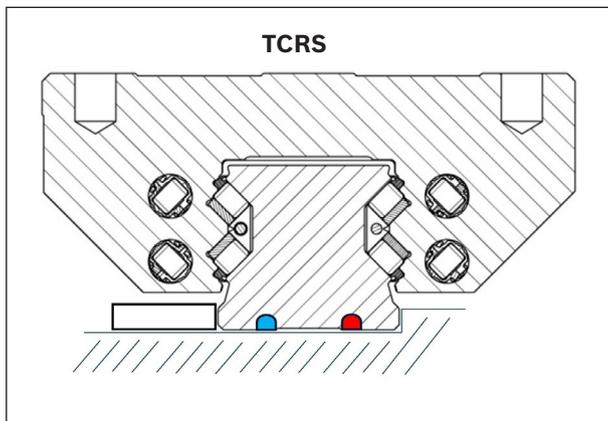
Medium 70% water 30% glysantine

Size	35 + 45		55 + 65		
Q	2	1.5	4	3	l/min
Rail length	1 000	2 000	1 000	2 000	mm
Cable length	2 000	4 000	2 000	4 000	mm
Removable heat P with delta T = 3 K	40	30	70	55	W
Removable heat P with delta T = 13 K	180	130	300	250	W

Q = Flow

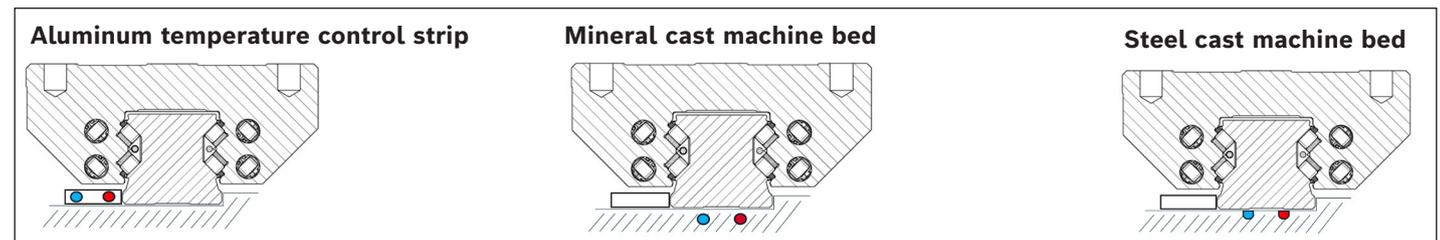
Delta T = T rail - T cooling medium

Rail temperature control, market view



Advantages of the TCRS:

- ▶ High precision: Up to 75% higher part precision
- ▶ Ready for immediate use: No run-in to the operating temperature required
- ▶ Inexpensive: No additional installation space required
- ▶ Interchangeable: Compatible with existing systems
- ▶ Simple: Uses existing cooling circuits
- ▶ Thermal effect: Heat dissipation directly in the center of where it is generated
- ▶ Flexible: Can be adjusted to changing requirements and upgraded with the IMS integrated measuring system



Disadvantages of other systems on the market:

- ▶ Inflexible: Cannot be adapted to changing requirements as needed
- ▶ Precision: Part precision only increased by up to 30%
- ▶ Cost-intensive: Additional installation space required (complicated special processing!)
- ▶ Incompatible: Cannot be retrofitted with or used to replace parts in existing systems
- ▶ Thermal effect: Heat dissipation only on one side or not in close proximity to where it is generated

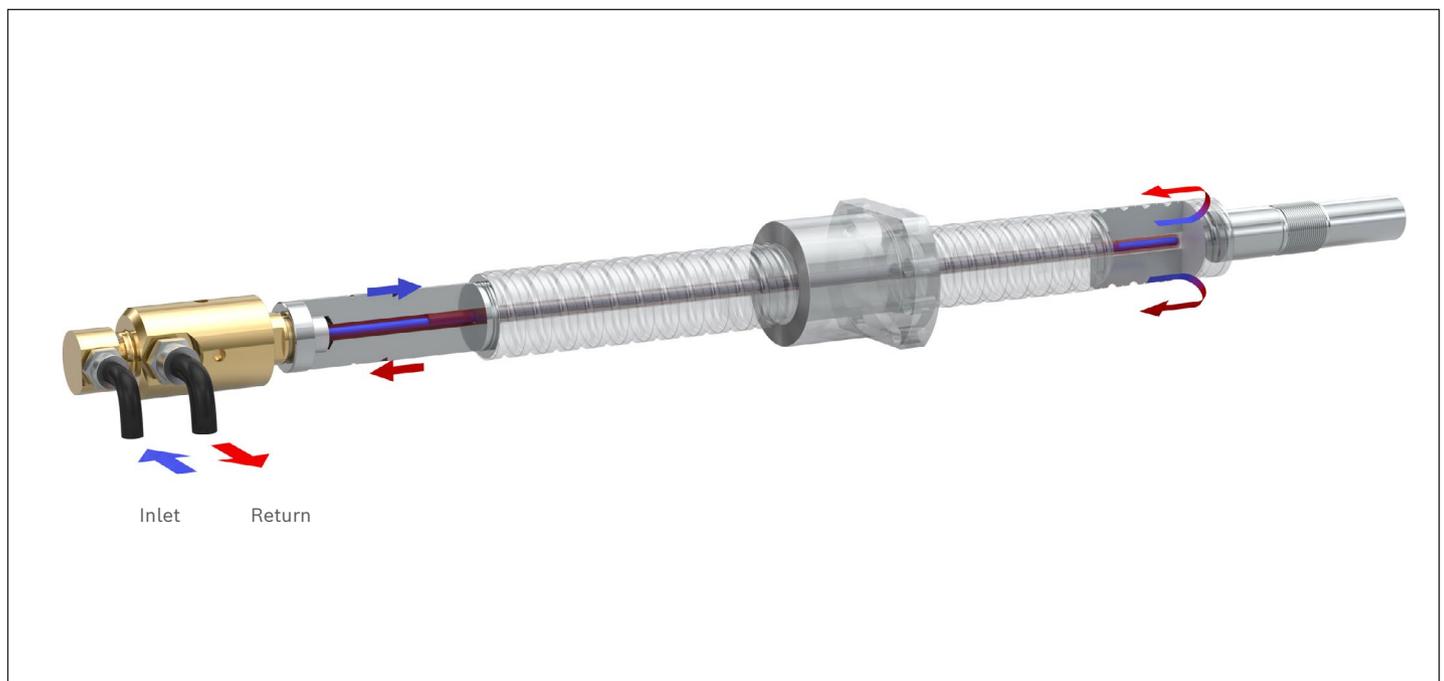
Ball or planetary screw assembly - screw drilled hollow with rotary lead-through

Due to ever increasing demands on accuracy in applications such as the machine tool, it makes sense to control the temperature of the guide and drive elements.

Temperature control is used precisely where temperature differences can arise due to friction and thus internal stresses and distortions are generated in the machine. Furthermore, the "warm-up phase" of the machine tool is eliminated or significantly reduced.

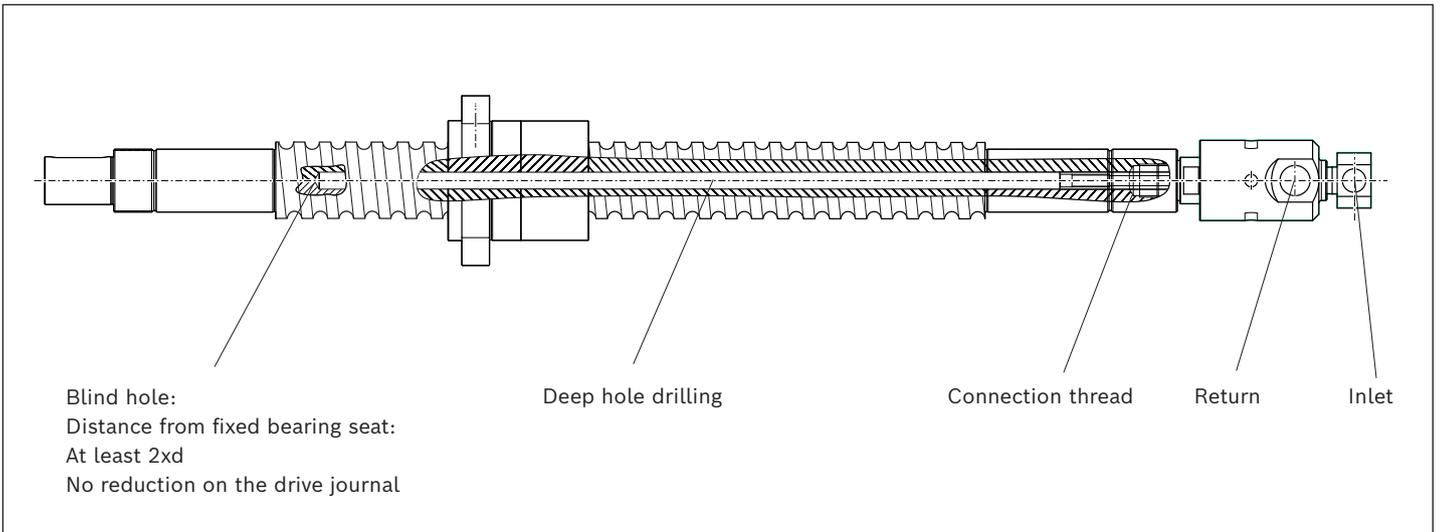
Schematic structure:

Screw drilled hollow, media supply and return through the rotary lead-through



Advantages:

- ▶ No additional longitudinal expansion of the screw thanks to consistent temperature
- ▶ Consistent stretching forces for fixed-fixed bearing
- ▶ Consistent rigidity in the system
- ▶ Greater dynamics possible with cooled screw drives
- ▶ Optimized lubrication thanks to constant temperature
- ▶ Preventing heat input into the machine tool by means of screw temperature control



BASA	PLSA	combined inlet/outlet pipe			Tubing	Deep hole drilling		Connections	
d0 (mm)		Connection thread	Depth (mm)	max. rotary speed	Dimension (mm)	Diameter (mm)	max. length (mm)	Inlet	Return
32	30	G 3/8"	13	3 500 rpm	6x1	8	2 000	G 1/4"	G 3/8"
40	39	G 1/2"	13		8x1.5	11	2 750	G 3/8"	G 1/2"
50	48	G 1/2"	13		8x1.5	12	3 000	G 3/8"	G 1/2"
63	60	G 3/4"	16	3 000 rpm	10x1.5	13.5	3 375	G 1/2"	G 3/4"
80	75	G 3/4"	16		10x1.5	15	3 750	G 1/2"	G 3/4"

- ▶ Size 20 and 25 possible on request (insertion of an adapter to have sufficient wall thickness available).
- ▶ Observe the speed limits of the remaining components!
- ▶ Max. operating pressure 50 bar
- ▶ Max. temperature 130 °C
- ▶ If longer lengths are required, a drill hole is possible.

Attention: This may weaken the drive journal, please contact us.

You can find your local contact person at:

www.boschrexroth.com/contact



Notes

General notes

- ▶ Combinations of different accuracy classes
Combining ball guide rails and ball runner blocks of different accuracy classes results in different tolerances for the dimensions H and A3. See "Accuracy classes and their tolerances."

Intended use

- ▶ The ball rail systems are linear guideways capable of absorbing forces from all transverse directions and moments about all axes. The ball rail system is intended exclusively for guiding and positioning tasks when installed in a machine.
- ▶ The product is intended exclusively for professional use and not for private use.
- ▶ Use for the intended purpose also includes the requirement that users must have read and understood the related documentation completely, in particular the "Safety instructions".

Misuse

Use of the product in any other way than as described under "Intended use" is considered to be misuse and is therefore not permitted. If unsuitable products are installed or used in safety-critical applications, this may lead to uncontrolled operating statuses in the application which can cause personal injury and/or damage to property.

The product may only be used in safety-critical applications if this use has been expressly specified and permitted in the product documentation.

Bosch Rexroth AG will not accept any liability for injury or damage caused by misuse of the product. The risks associated with any misuse of the product shall be borne by the user alone.

Misuse of the product includes:

- ▶ The transport of persons

General safety instructions

- ▶ The safety rules and regulations of the country in which the product is used must be observed.
- ▶ All current and applicable accident prevention and environmental regulations must be adhered to.
- ▶ The product may only be used when it is in technically perfect condition.
- ▶ The technical data and environmental conditions stated in the product documentation must be complied with.
- ▶ The product must not be put into service until it has been verified that the final product (for example a machine or system) into which the product has been installed complies with the country-specific requirements, safety regulations and standards for the application.
- ▶ Rexroth ball rail systems may not be used in zones with potentially explosive atmospheres as defined in ATEX directive 94/9/EC.
- ▶ Rexroth ball rail systems must never be altered or modified. The user may only perform the work described in the "Quick User Guide" or the "Mounting instructions for ball rail systems".
- ▶ The product is never allowed to be disassembled.
- ▶ At high travel speeds a certain amount of noise is caused by the product. If necessary, appropriate measures should be taken to protect hearing.
- ▶ The special safety requirements for specific sectors (e.g. crane construction, theaters, food technology) set forth in laws, directives and standards must be complied with.
- ▶ In all cases, the provisions of the following standard should be noted and followed. DIN 637, Safety regulations for dimensioning and operation of Profiled Rail Systems with recirculating rolling elements.

Directives and standards

Rexroth profiled rail systems are suitable for dynamic linear applications requiring reliability and high precision. The machine tool industry and other sectors must observe a series of standards and directives. These requirements can vary significantly worldwide. It is therefore essential to understand the legislation and standards that apply in each particular region.

DIN EN ISO 12100

This standard describes the safety of machinery – general principles for design, risk assessment and risk reduction. It gives a general overview and contains a guide to the major developments governing machines and their intended use.

Directive 2006/42/EC

The European Machinery Directive describes the basic safety and health requirements for the structural design and manufacture of machinery. The manufacturer of a machine or his authorized representative has a duty to ensure that a risk assessment has been performed in order to determine the health and safety requirements which have to be fulfilled for that machine. The machine must be designed and built taking into account the results of the risk assessment.

Directive 2001/95/EC

This directive covers general safety requirements for any product placed on the market and intended for consumers, or likely to be used by consumers under reasonably foreseeable conditions, including products that are made available to consumers in the context of service provision for use by them

Directive 1999/34/EC

This directive concerns the liability for defective products and applies to industrially manufactured movable objects, irrespective of whether or not they have been incorporated into another movable or immovable object.

REGULATION (EC) No. 1907/2006 (REACH)

This directive describes the restrictions on the marketing and use of certain dangerous substances and preparations. "Substances" means chemical elements and their compounds as they occur in the natural state or as produced by industry. "Preparations" means mixtures or solutions composed of two or more substances.

Further information

Separate catalogs are available for other products in the field of Linear Motion Technology:



High-precision ball rail systems



Compact Line ball rail systems



Miniature ball rail systems



High-precision roller rail systems



IMS integrated measuring system



IMScompact integrated measuring system



Cam roller guides



Ball rail system NRRG



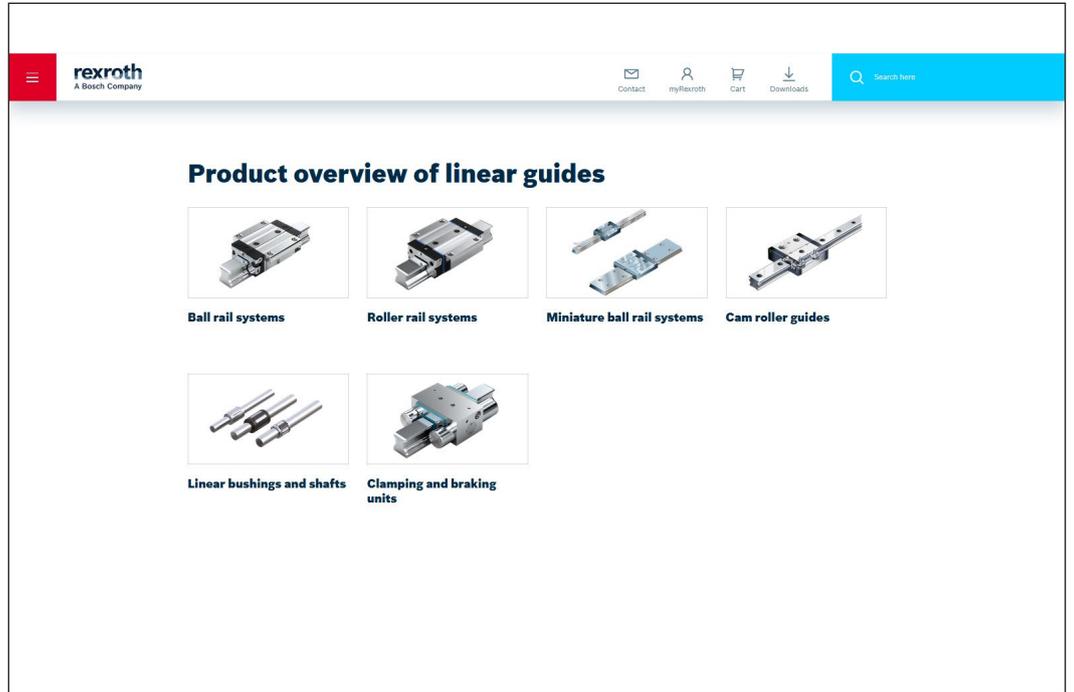
Screw drives



Linear bushings

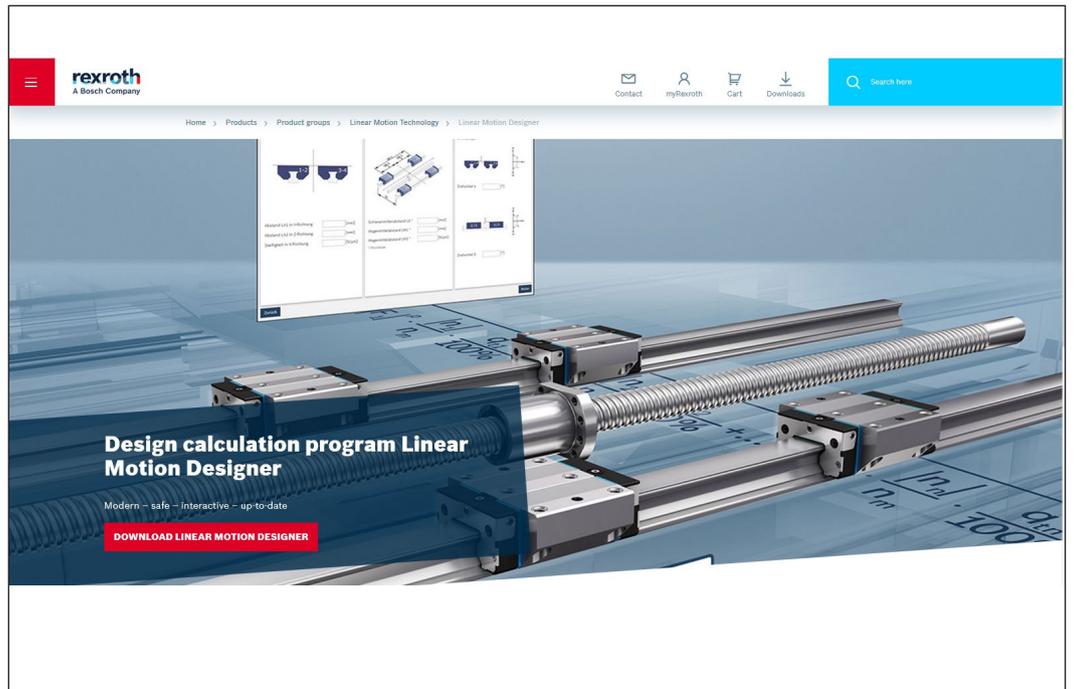
Bosch Rexroth Linear Motion Technology homepage

<https://www.boschrexroth.com/web/a74aa994-0afe-4a3b-9e3f-3e615572d31a>



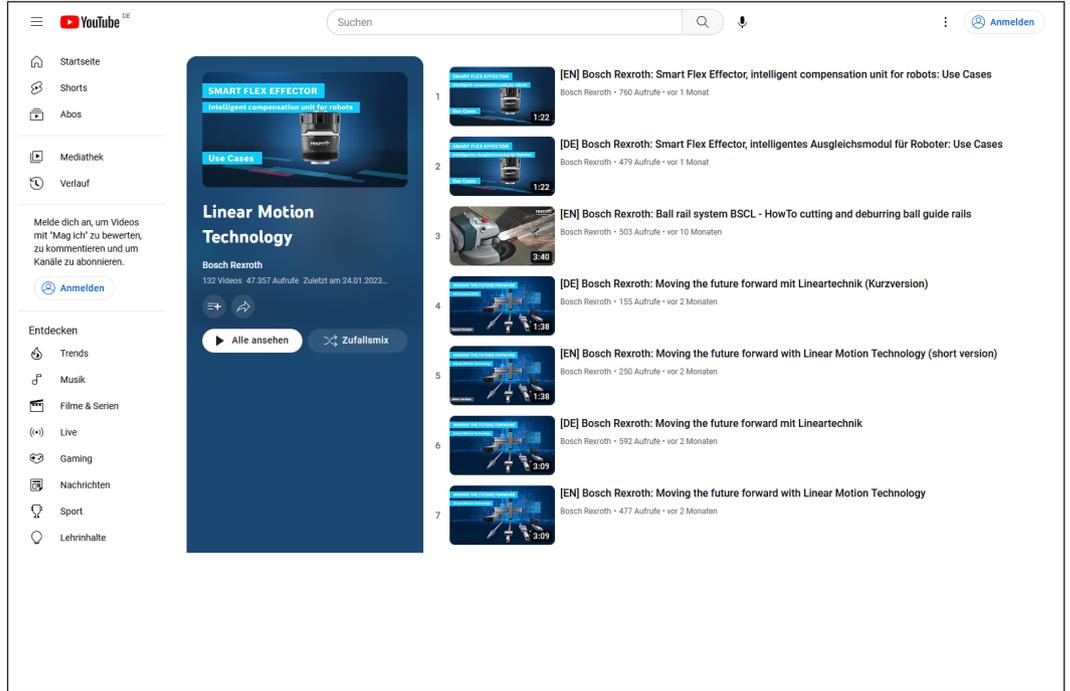
Linear Motion Designer calculation tool

www.boschrexroth.com/lmd



How-to: Linear Motion Technology

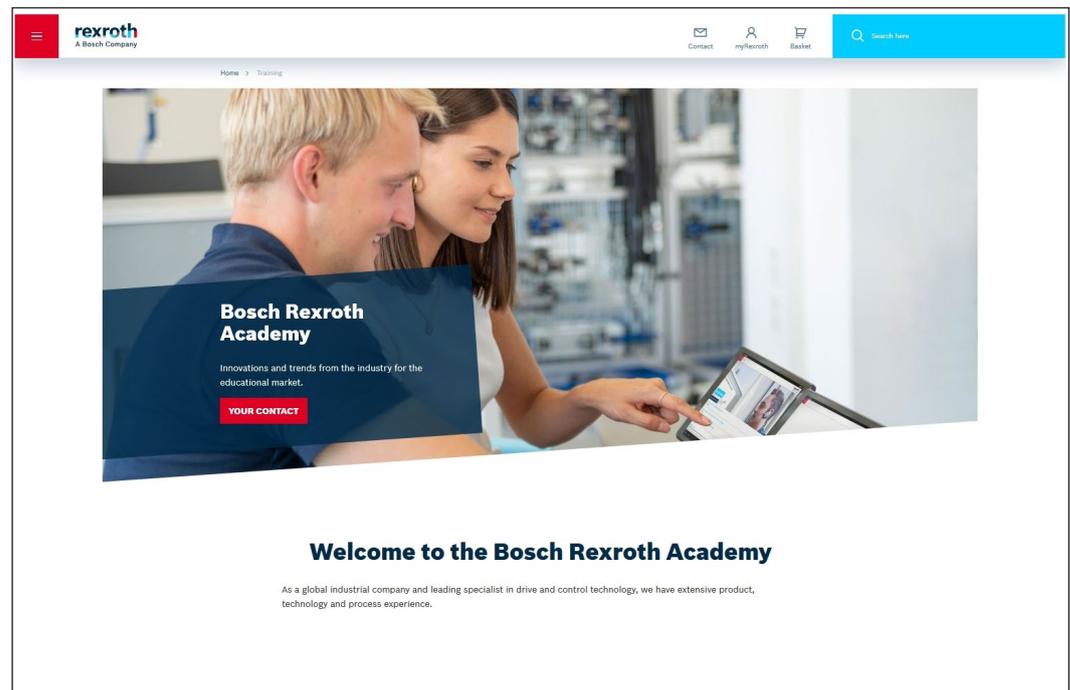
<https://www.youtube.com/playlist?list=PLRO3LeFQeLyNYHTLzi-PeoiuRTpNREvZ>



The screenshot shows a YouTube playlist page for 'Linear Motion Technology' by Bosch Rexroth. The main video featured is 'SMART FLEX EFFECTOR - intelligent compensation unit for robots: Use Cases'. Below it, a list of seven videos is shown, including 'Ball rail system BSCL - HowTo cutting and deburring ball guide rails' and 'Moving the future forward with Lineartechnik' in both English and German versions.

Academy

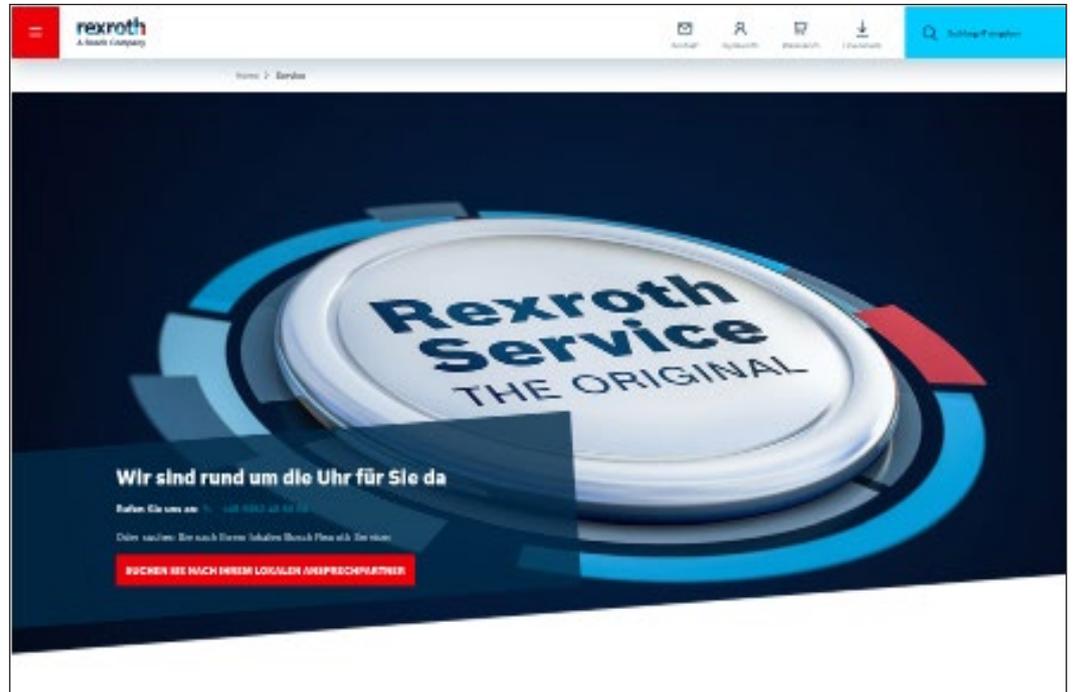
<https://www.boschrexroth.com/en/de/academy/>



The screenshot displays the Bosch Rexroth Academy website. The header includes the 'rexroth' logo and navigation icons for 'Contact', 'myrexroth', and 'Basket'. The main content area features a large image of a man and a woman looking at a tablet. Below the image, the text reads 'Bosch Rexroth Academy' and 'Innovations and trends from the industry for the educational market.' A red button labeled 'YOUR CONTACT' is visible. At the bottom, a section titled 'Welcome to the Bosch Rexroth Academy' includes a brief description of the company's expertise.

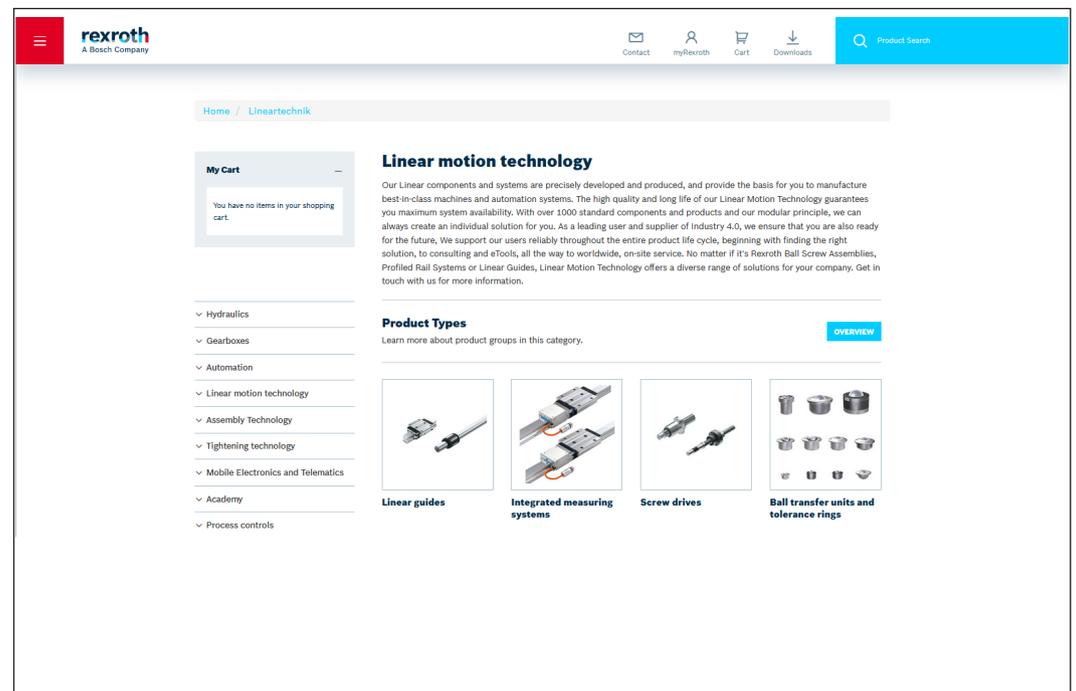
Service

<https://www.boschrexroth.com/en/de/service/>



Rexroth Store

<https://store.boschrexroth.com/>



Bosch Rexroth AG

Ernst-Sachs-Straße 100
97424 Schweinfurt, Germany
Tel. +49 9721 937-0
Fax +49 9721 937-275
www.boschrexroth.com

Find your local contact person here:

www.boschrexroth.com/contact

