



Novotného lávka 7.12.2022 ing. Dalibor Cába

We move everything

Linear motion technology – precise, reliable, future-proof

Four business sectors

Key figures 2020*

Bosch Group	€ 71.6 billion euros Sales revenue	 394,500 associates
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-  **Mobility Solutions**
 - ▶ One of the world's leading providers of mobility solutions
-  **Industrial Technology**
 - ▶ Leading in drive and control technology, packaging, and process technology
-  **Energy and Building Technology**
 - ▶ One of the leading manufacturers of security and communication technology
 - ▶ Leading manufacturer of energy-efficient heating products and hot-water solutions
-  **Consumer Goods**
 - ▶ Leading supplier of power tools and accessories
 - ▶ Leading supplier of household appliances



Excerpt Presentation of the Bosch Group | February 2021 | * As of 12.20, preliminary figures

Bosch Rexroth – WE MOVE. YOU WIN.

To be global, we go local



Bosch Rexroth in the Czech Republic

Our History

1.1.1990



Foundation of company
Rexroth, spol. s r.o.

1997

New manufacturing hall and company headquarters at
Hviezdoslavova street in the district Brno Slatina

2001



Mannesmann Rexroth becomes
Bosch Rexroth

2007–2008



Comanufacturing construction of the new
hall and company headquarters
in the industrial zone
Cernovicke terasy

25.6.2008



Gala opening of the new headquarters
and manufacturing facilities

Fact Slide – Bosch Rexroth in the Czech Republic



226 Employees

Since 1990



1+2 | Brno
3+4 | Production

KEY INDUSTRIES

- Construction Machinery
- Automotive
- Stage Technology
- Energy Technology
- Metallurgy
- Machine Tools
- Presses

SALES LOCATIONS

- Praha, Ostrava, Brno

SERVICE CENTERS

- Brno, Ostrava

PRODUCTION LOCATION

- Brno
customizing power units and complete systems, manifolds & stacking assembly plates

CERTIFIED PARTNERS

- Krivá – MTS
- Žilina – TBH Technik
- Brno – Inodo
- Tábor – PK Servis
- Soběslav - Autoservis Rada
- Mariánské Lázně – Betz Technik
- Val. Meziříčí – CBG Automation
- Mladá Boleslav – Montana
- Jihlava – MTS System



HEAD OFFICE

- Brno

Bosch Rexroth – WE MOVE. YOU WIN.

Many technologies. One right solution



Assembly Technology



Electric Drive and Control Technology



Gear Technology



Industrial Hydraulics



Linear Motion Technology



Mobile Hydraulics, Electronics and IOT



Mobile Robotics



Moulding and Casting Technology



Production Assistants (APAS)



Resistance Welding Technology



Tightening and Joining Technology



Xtreme Engineering

Solve linear motion applications professionally

Core competences

Reliable partner

Locations

Core competences in linear motion technology

Product portfolio

Components

Linear motion systems

Applications

Service

Videos & animations

Homepage



Linear motion technology from Rexroth - the best precondition for precision, process reliability and efficiency

Core competences

- Component and system know-how
- Complete technological expertise
- Maximum production reliability
- Wide range of performance in a vertical integration
- Complete solutions with maximum connectivity

Components

Core competences

Product portfolio

Components

Linear bushings and shafts

Profiled guide rails

Screw drives

Linear motion systems

Applications

Service

Videos & animations

Homepage

Linear bushings and shafts



Compact and super linear bushings

Profiled guide rails



Ball rail systems

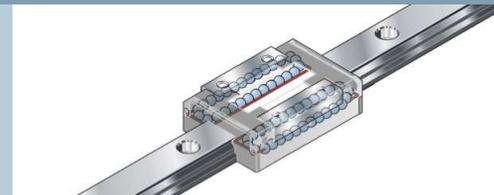


Roller rail systems

Profiled guide rails



Cam roller guides



Miniature ball rail systems



Integrated measuring systems

Screw drives



Ball screw drives



Planetary screw assemblies

Ball transfer units



Ball transfer units

Linear motion systems

- Core competences
- Product portfolio
- Components
- Linear motion systems**
- Linear modules
- Actuators
- Multiaxis systems
- Applications
- Service
- Videos & animations
- Homepage

Compact modules



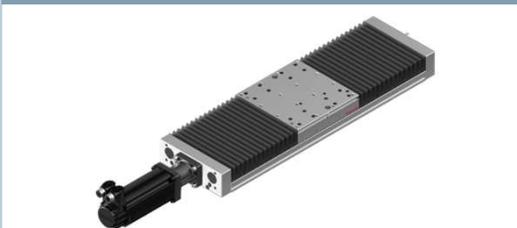
Linear modules



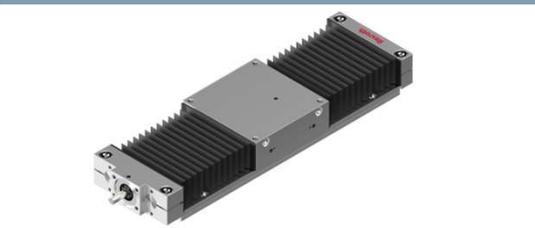
Precision modules



Ball rail tables



Linear motion slides



Omega modules, Feed modules



Multiaxis systems



Drive units



Actuators



Screw drives

- Core competences
- Product portfolio
- Components**
- Linear bushings and shafts
- Profiled guide rails
- Screw drives**
- Ball screw drives (BASA)
- Planetary screw assemblies (PLSA)
- Linear motion systems
- Applications
- Service
- Videos & animations
- Homepage**

Ball screw drives



Planetary screw assemblies



BASA ball screw drives

Core competences

Product portfolio

Components

Linear bushings and shafts

Profiled guide rails

Screw drives

Ball screw drives (BASA)

Planetary screw assemblies (PLSA)

Linear motion systems

Applications

Service

Videos & animations

Homepage



Key technical data

- Diameter: 6 - 80 mm
- Lead: 1 - 64 mm
- Accuracy: T3, T5, T7, T9 according to ISO 3408
- Load ratings: up to C (dynamic) = 262 kN up to C0 (static) = 534 kN
- Lengths: no limit
- D x n value: 150,000 for all nuts
- All nut types with preload available
- Standard, low-friction and reinforced seal in all D x P variants

Advantages resulting from special product features

- Particularly smooth running due to optimal ball pick-up and recirculation geometries
- High load rating due to large number of balls
- Short nut length
- Easy nut installation, mounting orientations according to individual specifications
- Adjustable pre-tensioned single nuts
- Special production process makes any screw length possible
- Matching supplementary components such as nut housings, end bearings, etc.
- End machining according to customer specifications

PLSA planetary screw assemblies

Core competences

Product portfolio

Components

Linear bushings and shafts

Profiled guide rails

Screw drives

Ball screw drives (BASA)

Planetary screw assemblies (PLSA)

Linear motion systems

Applications

Service

Videos & animations

Homepage



Key technical data

- Principle: Synchronized planets
- Diameter: 15 to 75 mm
- Single nut with clearance or preload
- Lead: depending on the diameter, 5/10 or 10/20 mm
- Accuracy: T5, T7, T9 according to ISO 3408
- Load ratings:
 - Up to C = 544 kN (dynamic),
 - up to C0 = 1,496 kN (static)
- Lengths: up to 5,000 mm
- D x n value: 150,000
- Interchangeability with competitors is usually guaranteed

Advantages resulting from special product features

- High load-bearing capacity and rigidity due to numerous, large contact surfaces
- Smaller installation space due to increased power density
- Low-noise operation due to guided planets
- Different nut types available
- Reduced lubricant consumption thanks to effective seals
- Economic solution realized by rolled spindle

Support - engineering

Core competences

Product portfolio

Components

Linear motion systems

Applications

Service

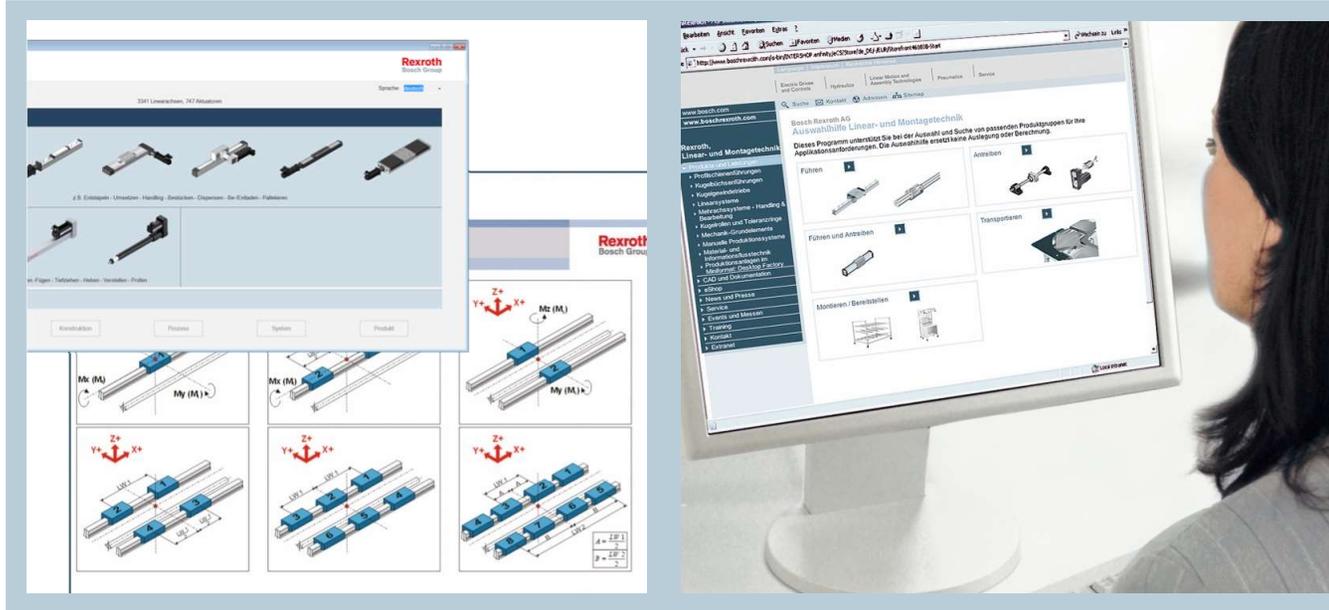
Support - engineering

Logistics

Service for linear motion technology

Videos & animations

Homepage



eTools

Use the calculation and size selection tools free of charge and conveniently access them online. Carry out the selection and configuration through to operation quickly and economically.

<https://www.boschrexroth.com/cs/cz/produkty/ekonfigurator-a-nastroje/>

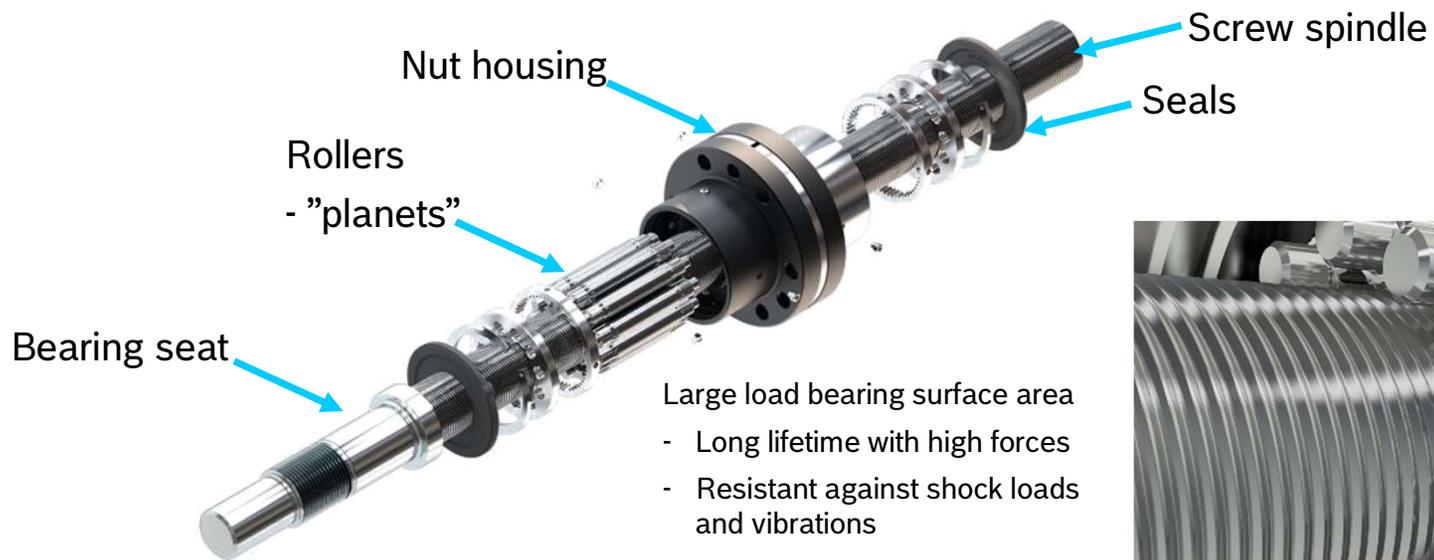
CAD models

In the design system, you can easily implement your plans using the ready-made, free-of-charge CAD models.

eShop / EDI

With the help of EDI (Electronic Data Interchange), manual order processing can be replaced by electronic, standardized processes.

Planetary roller screw assembly



- Large load bearing surface area
- Long lifetime with high forces
 - Resistant against shock loads and vibrations



Rexroth - Planetary Screw Assemblies PLSA

Benefits at a Glance

- High axial load capacity
- High axial rigidity
- High travel speeds
- High positioning and repeat accuracy
- Long service life
- Silent operation
- High efficiency
- Effective sealing



Rexroth - Planetary Screw Assemblies PLSA

Technical Key Figures - Nut Types



Cylindrical single nut



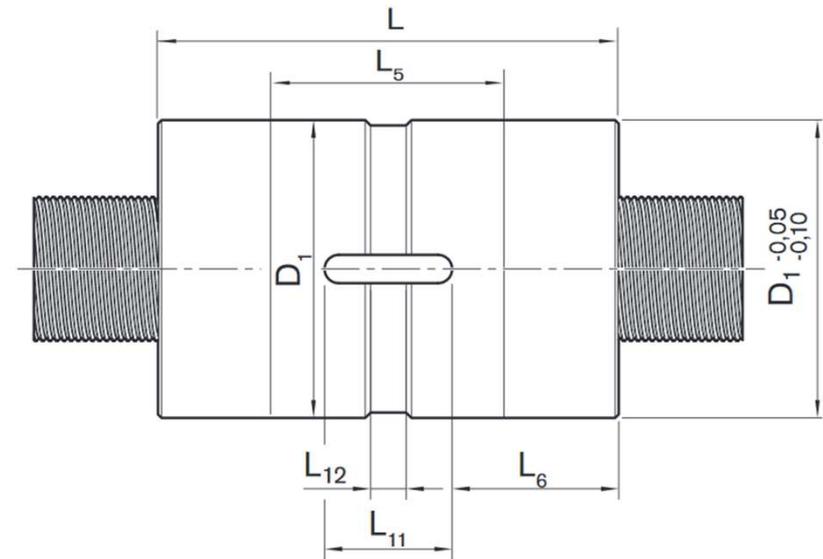
Flange single nut

Rexroth - Planetary Screw Assemblies PLSA

Designs/Product Types - Overview of Sizes



Screw \varnothing (mm)	d_0	Lead (mm)	Centering- \varnothing = Outer \varnothing D_1 (mm)	Nut length L (mm)	Load rating	
					C (kN)	C_0 (kN)
20		5	42	65	55	80
		5	45	64	55	80
25		5	53	78	65	122
		10	53	78	74	118
30		5	64	85	87	178
		10	64	85	101	174
39		5	80	100	123	269
		10	80	100	145	271
48		5	100	127	188	481
		10	100	127	220	475
60		10	122	152	322	780
		20	122	152	375	786
75		10	150	191	480	1487
		20	150	191	544	1496

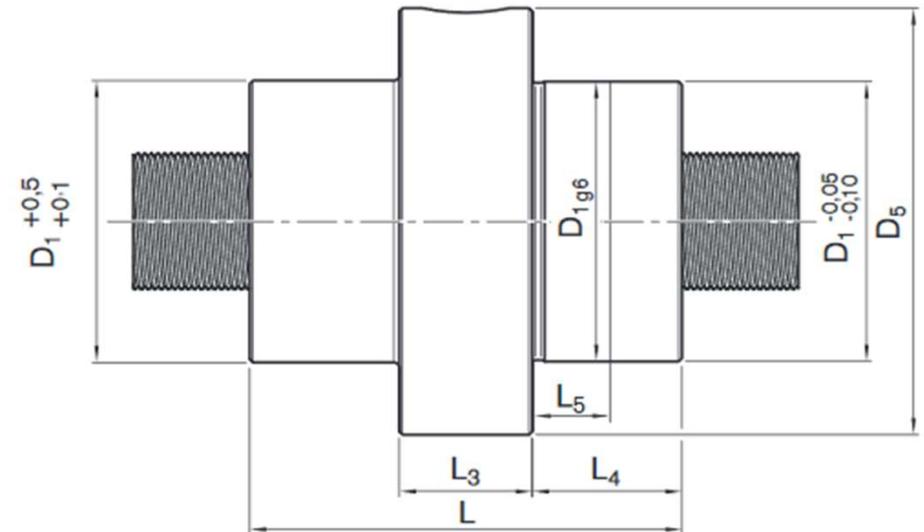


Rexroth - Planetary Screw Assemblies PLSA

Designs/Product Types - Overview of Sizes



Screw- \emptyset d_0 (mm)	Lead (mm)	Centering- \emptyset D_1 (mm)	Outer- \emptyset D_5 (mm)	Nut length L (mm)	Load rating	
					C (kN)	C_0 (kN)
20	5	42	64	65	55	80
	5	45	68	64	55	80
25	5	53	84	78	65	122
	10	53	84	78	74	118
30	5	64	97	85	87	178
	10	64	97	85	101	174
39	5	82	124	100	123	269
	10	82	124	100	145	271
48	5	105	150	127	188	481
	10	105	150	127	220	475
60	10	122	180	152	322	780
	20	122	180	152	375	786
75	10	150	210	191	480	1487
	20	150	210	191	544	1496



Rexroth - Planetary Screw Assemblies PLSA

Field of Application/Target Industries

Medium to heavy-duty machine construction:

- Plastic injection molding
- Broaching machines
- Valves and flaps for special machine construction
- Machine tools
- Presses
- Bonding, filling, joining
- Automatic manipulators
- Aerospace
- Steel industry
- Tire industry
- Stage technology
- Simulators
- Measuring technology
- Construction machinery

Rexroth - Planetary Screw Assemblies PLSA

Online Tools

- The **CAD configurator** can be used at **www.boschrexroth.de**.
- 2D and/or 3D models of system applications can be created and output in different formats in the **CAD configurator**.

The screenshot displays the Rexroth CAD configurator interface. At the top, the Rexroth Bosch Group logo is visible, along with language and contact options. The breadcrumb trail indicates the user is in the Planetary Screw Assemblies section. A 3D model of a planetary screw assembly is shown. Below the model, a table lists available nominal diameters (d₀) with expandable options for each.

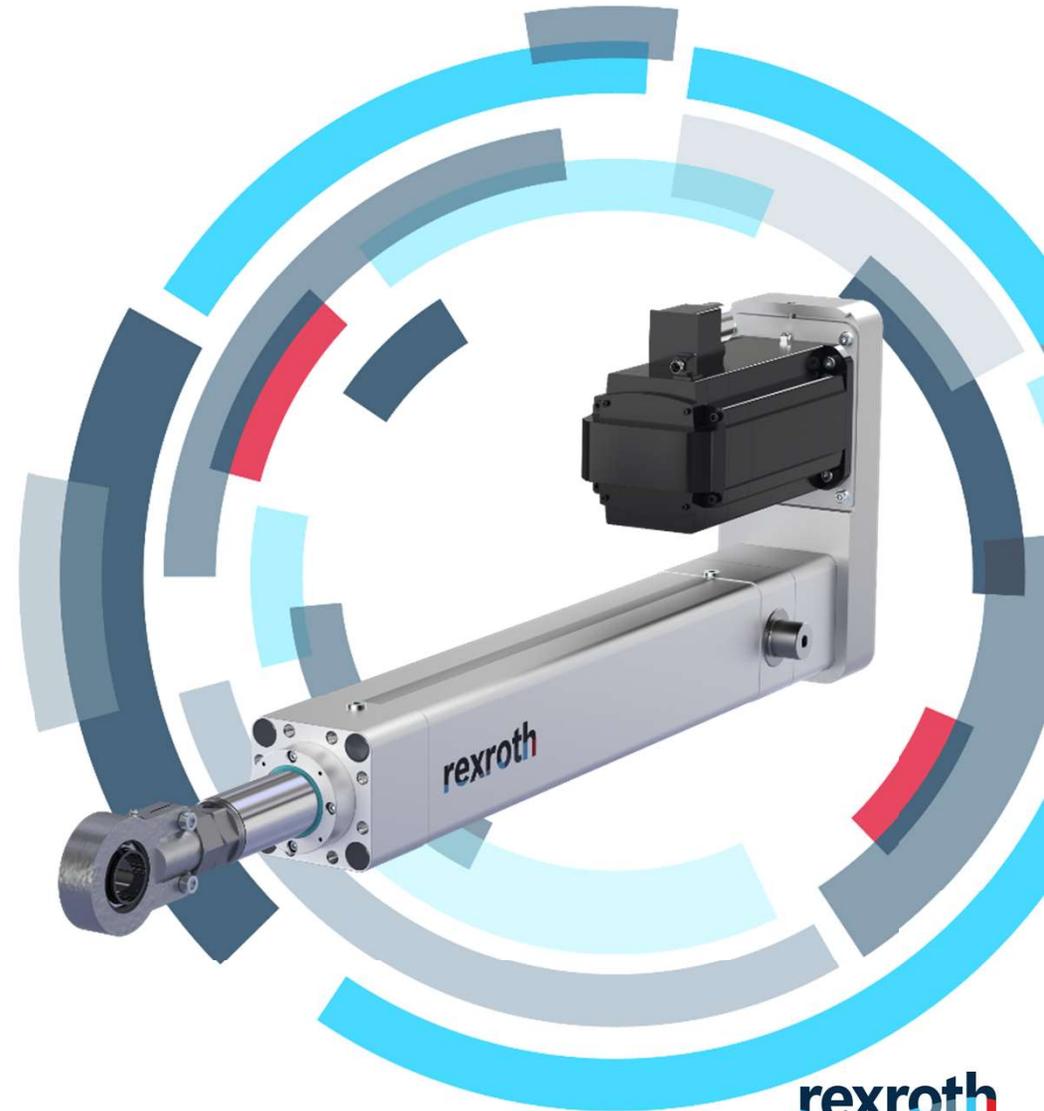
Nominal Diameter	
20 d ₀ = 20 mm	25 d ₀ = 25 mm
30 d ₀ = 30 mm	39 d ₀ = 39 mm
48 d ₀ = 48 mm	60 d ₀ = 60 mm
75 d ₀ = 75 mm	

On the right side, a sidebar menu provides navigation options under 'Product Information', 'myConfiguration', and 'Configuration'.

EMC-HP

New fetures

- Three sizes
 - EMC-115-HP (F_{\max} 44kN)
 - EMC-130-HP (F_{\max} 70kN)
 - EMC-160-HP (F_{\max} 100kN)
- Planetary roller screw drives
 - Long life times with high forces
- Compact and lightweight aluminium design
- Optional oil bath lubrication
- Optional liquid drive cooling
- Field replaceable piston rod seal cartridge
 - Optionally with a metal scraper for dirty environments



EMC-HP

Typical applications



Pressing



Press-fitting



Deep drawing



Crimping



Testing



Sawing



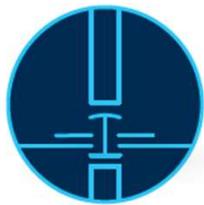
Lifting



Punching



Cutting



Riveting



Mounting



Tensioning



Bending



Forming



Clinching

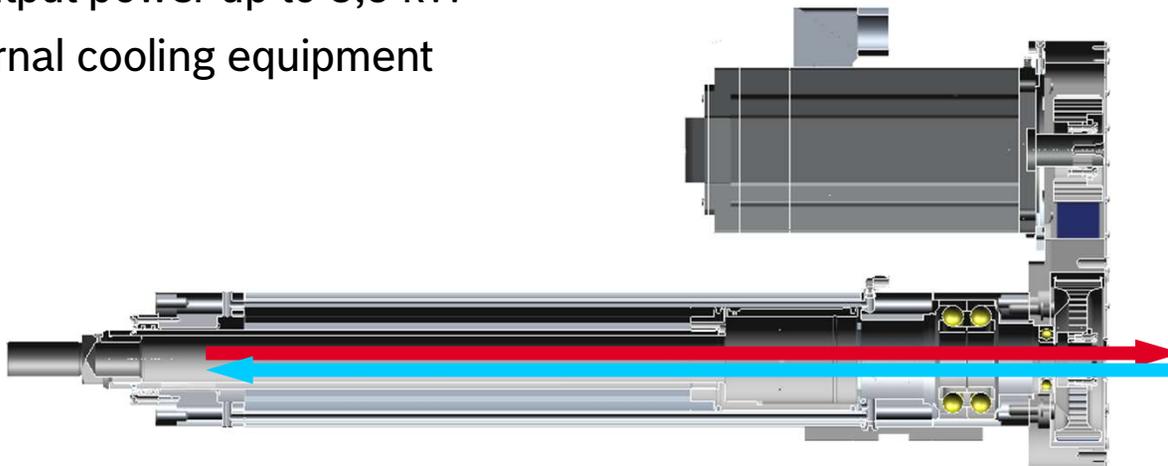


Straightening

EMC-HP

Direct spindle liquid cooling

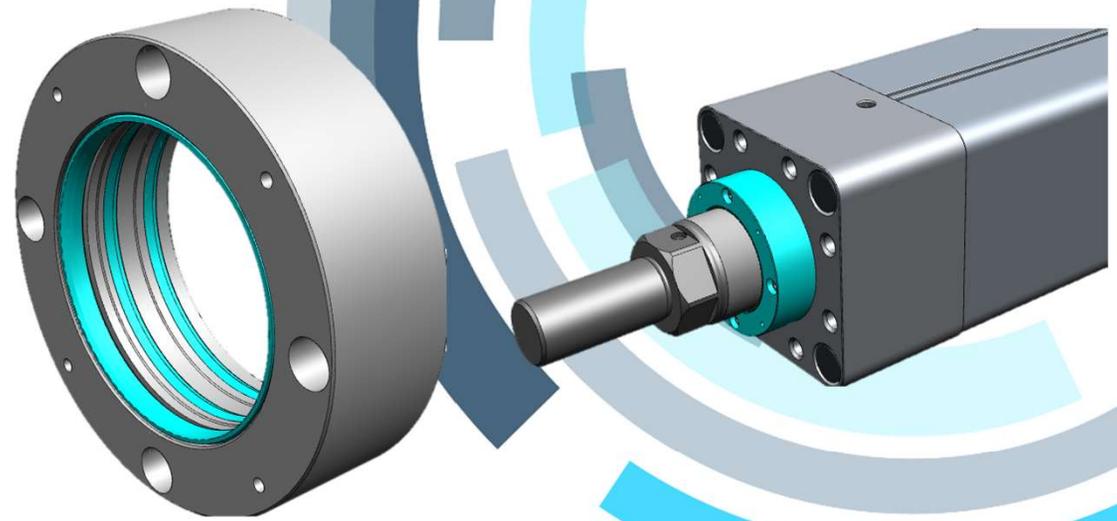
- For very demanding applications or warm environments
- Continuous output power up to 3,5 kW
- Requires external cooling equipment



EMC-HP

Sealing concept, piston rod

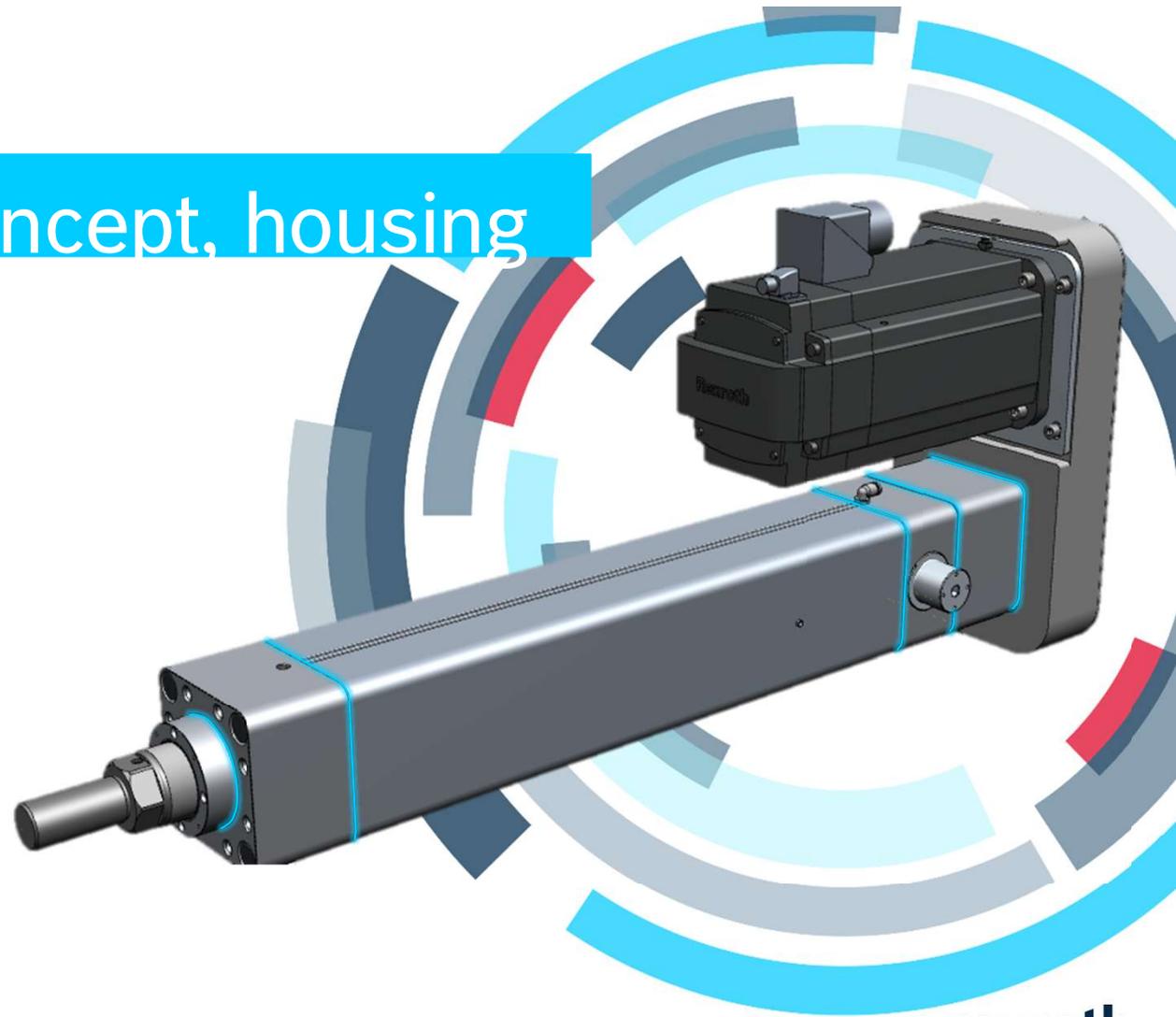
- Easily exchangeable seal unit
- Extremely good sealing action
- Polymer scraper and double seals
- Interface for additional seals or scrapers



EMC-HP

Sealing concept, housing

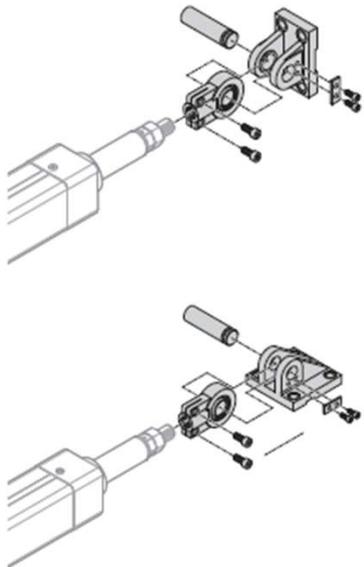
- Gaskets in all joints
- IP65 housing
 - Washable with low pressure water



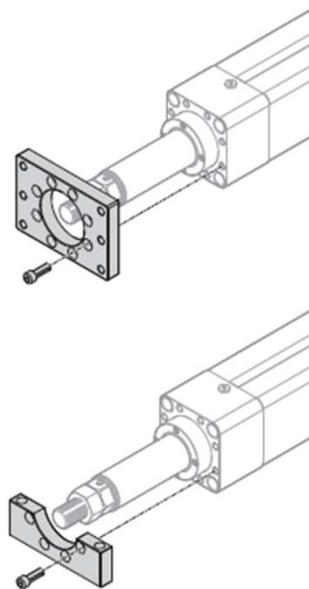
EMC-HP

Mounting elements

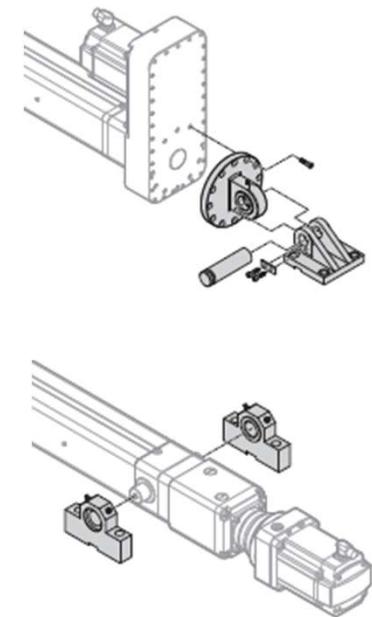
Piston rod



Front body



Rear body



EMC-HP

Switches (optional)

- 4x PNP NC/NO and NPN NC/NO limit & reference switches are possible
- T-groove on housing
- Extension cables
- Connectors



Use	Limit switch	Reference switch	Limit switch	Reference switch
Part number	R913037445	R913037444	R913037443	R913037446
Designation	MZT8-03VPO-KRDS14	MZT8-03VPS-KRDS13	MZT8-03VNO-KRDS16	MZT8-03VNS-KRDS15
Functional principle	magnetic			
Operating voltage	10 - 30 VDC			
Load current	≅ 200 mA			
Switching function	PNP/NC	PNP/NO	NPN/NC	NPN/NO
Connection type	0.5 m cable and M8x1 connector, 3-pin with knurled screw connection			
Function indicator	✓			
Short-circuit protection	✓			
Reverse polarity protection	✓			
Switch-on suppression	✓			
Switching frequency	3 kHz			
Pulse elongation (off delay)	20 ms			
Max. permissible starting speed	5 m/s			
Suitable for drag chains	✓			
Twistable*	✓			
Welding spark-resistant*	-			
Cable cross-section*	3x0.14 mm ²			
Cable diameter D*	2.9 ± 0.15 mm			
Static bending radius*	≅ 5xD			
Dynamic bending radius*	≅ 10xD			
Bending cycles*	> 2 mil.			
Max. permissible travel velocity*	5 m/s			
Max. permissible acceleration*	≅ 5 m/s ²			
Ambient temperature	-30 °C to +80 °C			
IP rating	IP68			
MTTFd (per EN ISO 13849-1)	MTTFd = 2,339.0 years			
Certifications and Licenses**	  			

EMC-HP

Load measuring pin (optional)

- For tensile and compressive forces
- +/-10V signal
 - 4 – 20 mA versions available on request
- IP65, corrosion-resistant stainless steel design
- Integrated amplifier
- Small temperature drift
- Good long-term stability
- Shock and vibration resistant
- For dynamic or static measurements
- Excellent reproducibility
- Simple assembly



EMC-HP

Load measuring pin specifications

Measuring range (MR)	EMC-115-HP: 50 kN
	EMC-130-HP: 80 kN
	EMC-160-HP: 110 kN
IP-rating	IP65
Hardness	38 HRC
Operating load	150% MR
Breaking load	300% MR
Nonlinearity	±0,5% MR
Repeatability	±0,25% MR
Hysteresis	±0,2% MR
Temperature drift, zero point	±0,05% MR/K
Temperature drift over MR	±0,05% MR/K
Compensated temperature range	+10°C ... +40°C
Operating temperature	-20°C ... +60°C
Output signal	-10 ... 10V ±0,2V
Supply voltage	19 ... 28V
Current consumption	50 mA (24V)
Bandwidth	2,5 kHz ±0,2

EMC-HP

Drive packages

- All you need from single source
- Matched components, guaranteed performance



Actuators – Motors – Cables – Drives – Safety – Connectivity

EMC-HP

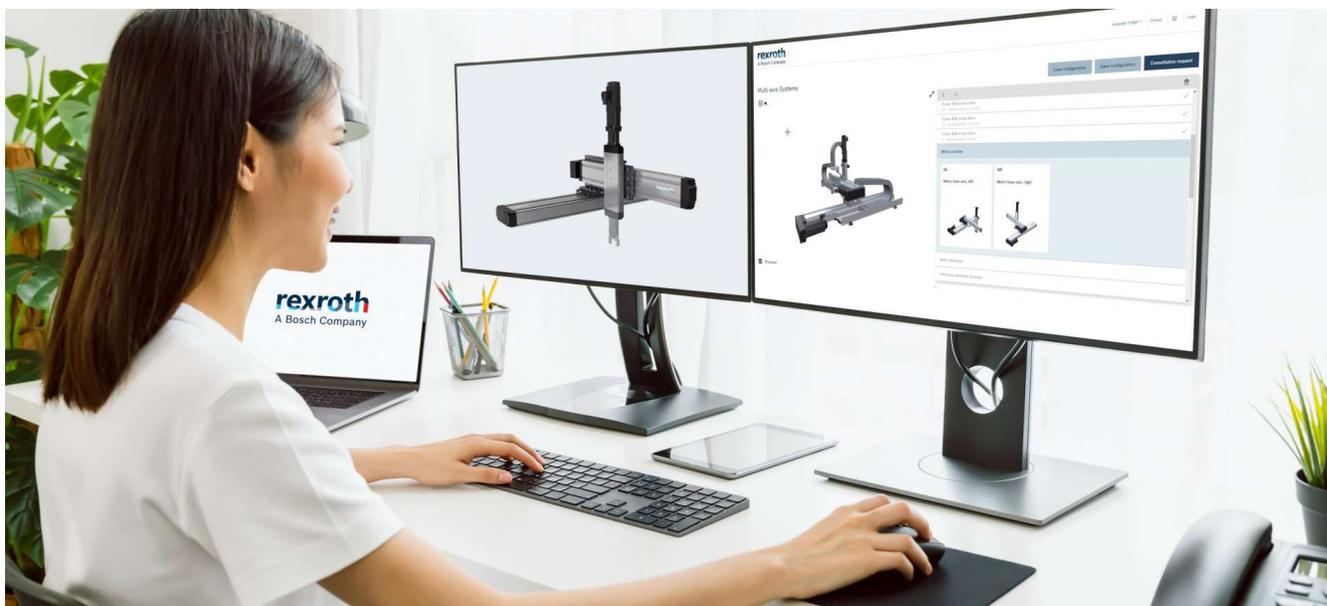
Drive packages

	Motor	Drive	Controller		Cables	
EMC-115-HP	MS2N07-D1BNN	IndraDrive HCS01-W054	Basic Universal MultiEthernet	Basic Universal MultiEthernet + S4 Safe Motion	1-cable, 5 m, 10 m, 15 m	2-cables, 5 m, 10 m, 15 m
	MS2N07-D0BHA					
	MS2N10-C0BNN					
	MS2N10-D0BHA					
EMC-130-HP	MS2N07-D0BHA	IndraDrive HCS01-W054	Basic Universal MultiEthernet	Basic Universal MultiEthernet + S4 Safe Motion	-	2-cables, 5 m, 10 m, 15 m
	MS2N10-D0BHA					
	MS2N10-E0BHA	IndraDrive HCS03-W0100				
EMC-160-HP	MS2N10-C0BNN	IndraDrive HCS01-W054	Basic Universal MultiEthernet	Basic Universal MultiEthernet + S4 Safe Motion	-	2-cables, 5 m, 10 m, 15 m
	MS2N10-D0BHA					
	MS2N10-E0BHA	IndraDrive HCS03-W0100				

EMC-HP

Drive packages

- Aplikace LinSelect
- <https://www.boschrexroth.com/cs/cz/produkty/skupiny-produktu/linearni-technika/temata/linselect/>



EMC-HP

Application



Flight simulator - VUT Brno
Linear actuators EMC 80 and
Servo drives MSK 60C

PLSA

Application



Volvo - Excavator
Rexroth components - 2018

PLSA

Application



Bobcat - Ssloader -2021

PLSA

Application



Komatsu - wheel loader
2022