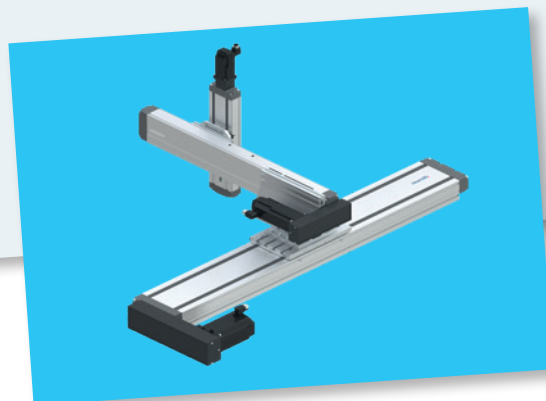# Multi-axis systems

Identification system for short product names

Example			CMS	-	3SB	-	30	-	2
System	=	**Multi-axis system**							

Combination of axes	=	3SA - 3D cantilever chamber **3SB - 3D gantry** 2HA - 2D cantilever surface 2HB - 2D area gantry 2VA - 2D linear gantry							
Size	=	20 / 21 / 22 / 23 / **30** / 31 / 32 / 33 / 40 / 41							
Generation	=	Product generation **2**							

Combination of axes / overview of types

Type 2HA	Type 2HB
Type 3SA	**Type 3SB**
Type 2VA	

Contents

Product overview

LINEAR MOTION TECHNOLOGY ONE GENERATION AHEAD:
TO THE COMPLETE SOLUTION WITHOUT ANY ENGINEERING
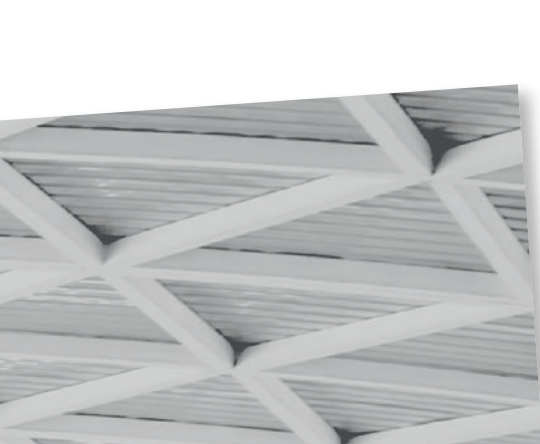
The Factory of the Future will be more profitable, sustainable and future-proof – despite increasingly individual and flexible production processes. The requirements are therefore defined. As a leading supplier of linear motion technology and mechatronic systems, Bosch Rexroth is already providing the answers today:
with a quick product selection by click without any engineering, with simple configuration and ordering processes and intuitive commissioning of the complete solutions without any programming knowledge. This ensures an extremely short time-to-market and high productivity during operation, even for highly complex multi-axis systems. Already today.

Factory of the Future

Now. Next. Beyond.
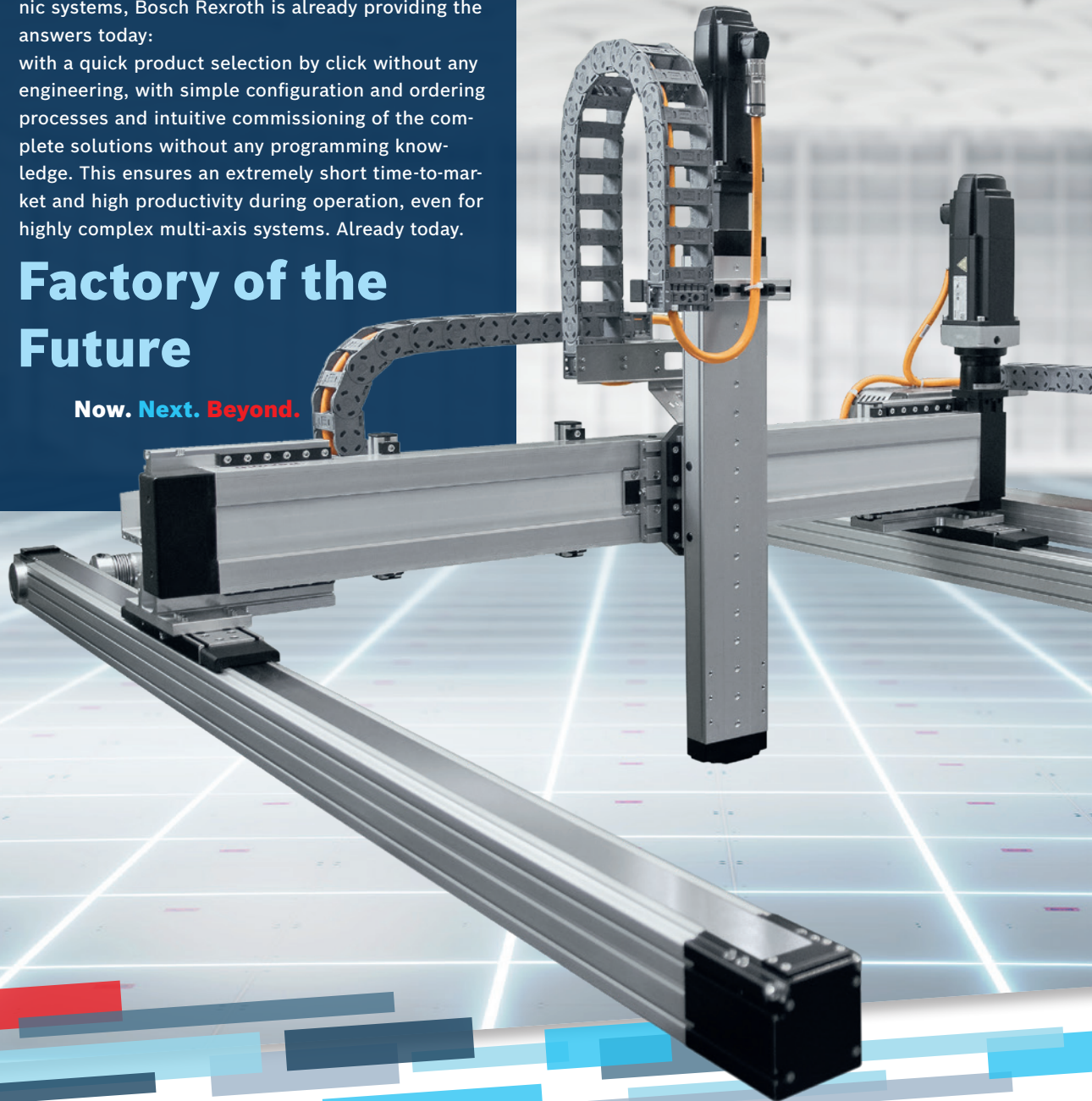
New standard for ready-to-install sub-systems: easier to select and configure, install faster and get started

MULTI-AXIS SYSTEMS MADE EASY. EVERYTHING FROM A SINGLE SOURCE

Bosch Rexroth now makes the path to a ready-to-install sub-system unbeatably simple. 30 years of linear axis expertise have gone into the new multi-axis modular system and the completely revised LinSelect selection tool. There is no easier or faster way to select, configure and commission Cartesian multi-axis systems from standardized best-in-class components. You'll benefit from the latest generation of multi-axis systems from Bosch Rexroth: You'll receive ready-to-install, scalable positioning and handling solutions made of proven and perfectly matched components, including all add-on parts, cable systems, motors and drive controllers – all from a single source, all from one company.

And if your fully assembled, fully integrable sub-system needs to be able to do even more, then take a look at the next step: Smart MechatroniX expands the components to include sensors, electronics and software – with completely new solution approaches and business models. **WE MOVE. YOU WIN.**

A smart solution as a complete kit – including sensors, electronics and software: Smart Function Kit for Handling.

Bosch Rexroth AG, R999001309/2021-03

To a customized multi-axis system with just a few clicks

You can easily check whether the latest generation of the LinSelect selection tool fulfills what is stated in the specifications – "simpler, faster and better than anything you know": Download LinSelect (see link below) and try the tool for yourself. Or find out about the most important innovations and highlights here in advance.

www.boschrexroth.com/linselect

30 YEARS OF LINEAR AXIS KNOW-HOW INSIDE

Experience the concentrated expert knowledge of a leading supplier in linear motion technology – and as part of the Bosch Group also as a leading user – in every selection step of the new LinSelect. You are graphically guided and asked for a few parameters. This way, you can easily and quickly generate the appropriate reference cycle for your application, receive detailed information and choices on running performance and repeatability, for example. You can easily put together your own system from standardized best-in-class components, including electrics, software, drive and motor, with just a few clicks and without any engineering effort.

As a result, you will receive a recommendation in different performance variants and price settings – just as you are used to in a private context from online shops. You can then transfer the system data directly to the configurator and place your order. The CAD models are automatically available at Bosch Rexroth. By the way, commissioning is similarly fast. Could it be any easier?
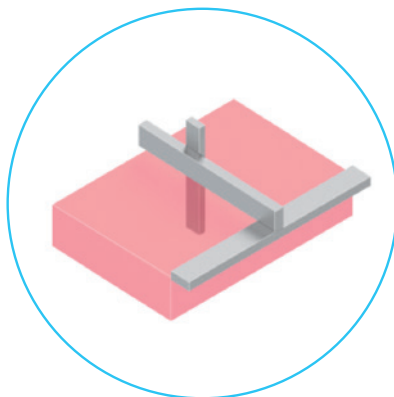
▲ **Simple selection via graphical interfaces instead of input fields**
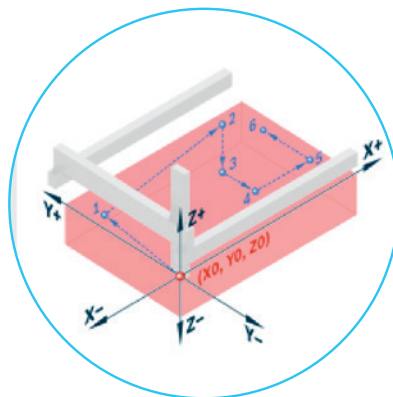
▲ **Simply select a reference cycle instead of creating complex travel profiles**
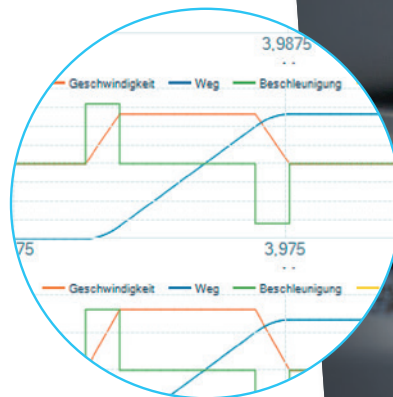
▲ **Simply use interactive graphics instead of confusing tables**

▲ Simply choose from clear recom-
mendations instead of time-con-
suming comparison and filtering

▲ Easy central access to all project
information and links instead of
long searches

LINSELECT – SIMPLY SELECT, NO ENGINEERING NECESSARY

FEW PARAMETERS, ALL POSSIBILITIES – MANY ADVANTAGES

Fast:
- ▶ Select mechanics/motors/drive controllers in a single tool
- ▶ Fast engineering, fast result, shorter time-to-market

Intuitive:
- ▶ Years of application experience implemented in easy-to-use interfaces
- ▶ Visual support through interactive graphics and animations

Intelligent:
- ▶ Input of few parameters – output of prepared complex results with all relevant data
- ▶ Transparent result overview with clear recommendation depending on performance requirements, delivery time or price

Interactive:
- ▶ Continuous tool chain: Automatically transfer result to the online configurator, finish configuration, order and generate CAD data
- ▶ Central project and link management and documentation, bundled access to all project information – no decentralized storage, no long searches
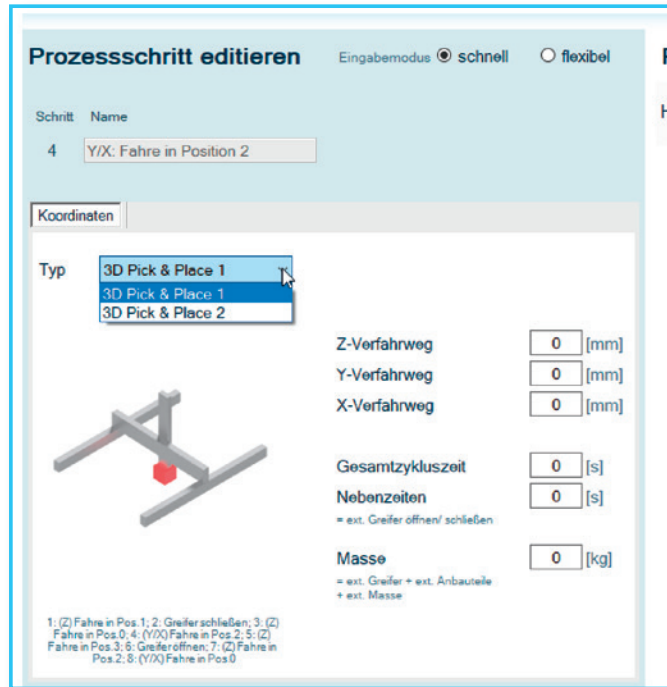
SIMPLE INPUT

Choose from 2 to 3 reference cycles – the system shows you the corresponding animation. Then simply define your desired system with 6 to 8 parameters for travel, time and mass – LinSelect does the rest.

▼ **DETAILED OUTPUT**

LinSelect transforms your inputs into detailed characteristic curves for each axis. You have at least two reference cycles to choose from per portal. And you can conveniently continue to customize and play through them.

Prozessschritte/ Zyklus

Anzeigemodus ◉ Z-Achse   ○ Y-Achse   ○ X-Achse   ○ 🗒   ◉ 📈

| Hubreserve s res. : | 0 | [mm] | Eff. Verfahrweg s eff. : | 200 [mm] | Max. Geschwindigkeit v max. : | 0,32 [m/s] | Gesamtzykluszeit t zykl. : | 8 [s] |
| | | | Max. Verfahrweg s max. : | 200 [mm] | Max. Beschleunigung a max. : | 2,56 [m/s²] | | |

— Geschwindigkeit   — Weg   — Beschleunigung   — Kraft

⊕ Prozessschritt einfügen   🗑 Zyklus komplett   ≫ VOR

S4H-3SB-21-2 / 200 / 500 /800 / 5 / 5 /3
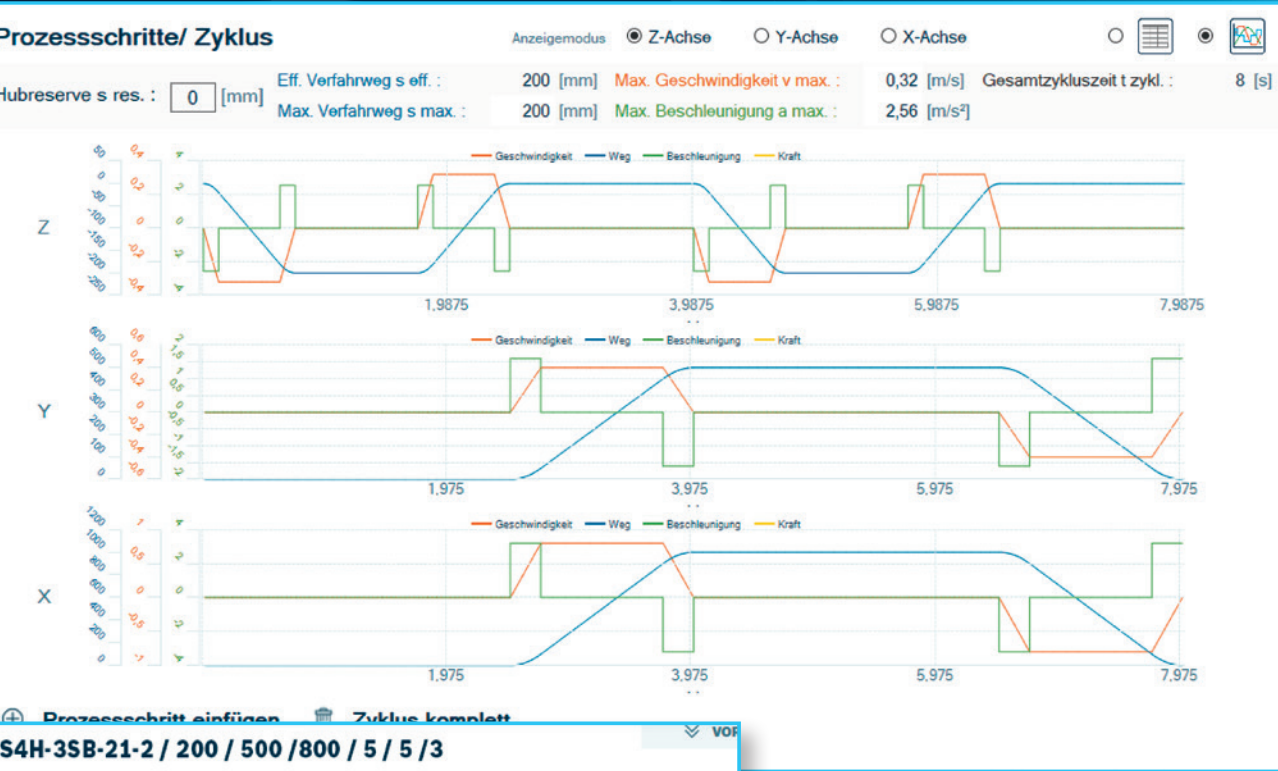
Konfiguration

Max. Verfahrweg Z		200	[mm] (Sub-Produkt CKK-090-NN-1)
Max. Verfahrweg Y		500	[mm] (Sub-Produkt CKR-110-NN-1)
Max. Verfahrweg X		800	[mm] (2 x Sub-Produkt MKR-065-NN-3)
Mechanischer Antrieb Z		5	Kugelgewindetrieb / BASA 12x5
Mechanischer Antrieb Y		5	Riementrieb / Getriebe PG005S-MF i=5
Mechanischer Antrieb X		3	Riementrieb / Getriebe PG060 i=3
Motor Z	MS2N03-B0BYN		MS2N03-B0BYN
Haltebremse Z		Y	mit Haltebremse 1-Kabel-Anschlusstechnik Konvektionskühlung
Motor Y	MS2N04-B0BTN		MS2N04-B0BTN
Haltebremse Y		Y	mit Haltebremse 1-Kabel-Anschlusstechnik Konvektionskühlung
Motor X	MS2N04-C0BTN		MS2N04-C0BTN
Haltebremse X		Y	mit Haltebremse 1-Kabel-Anschlusstechnik Konvektionskühlung
Automations- & Antriebspaket			CtrlX, PR21, WEB HMI
Funktionspaket			Handling

▼ **QUICK RESULT**

You will receive an overview of the possible variants – and a recommendation depending on performance requirements, price or delivery time.

ⓘ

You prefer to work differently? We will also show you other ways to select and configure – as individually as you like. ▶

Best-in-class components for first-class results
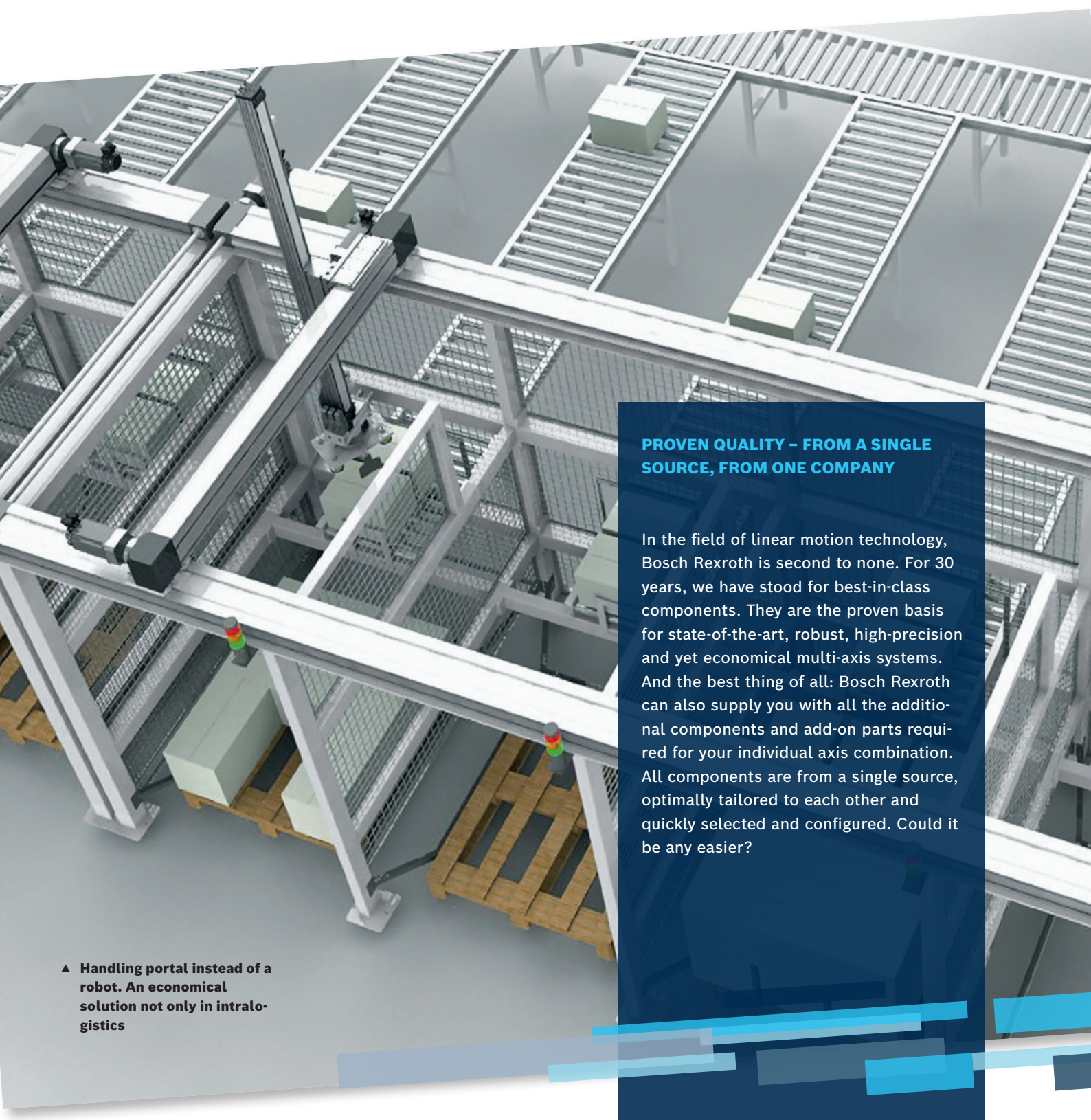
PROVEN QUALITY – FROM A SINGLE SOURCE, FROM ONE COMPANY

In the field of linear motion technology, Bosch Rexroth is second to none. For 30 years, we have stood for best-in-class components. They are the proven basis for state-of-the-art, robust, high-precision and yet economical multi-axis systems. And the best thing of all: Bosch Rexroth can also supply you with all the additional components and add-on parts required for your individual axis combination. All components are from a single source, optimally tailored to each other and quickly selected and configured. Could it be any easier?

▲ **Handling portal instead of a robot. An economical solution not only in intralogistics**

Linear axes

PROVEN BASIS – STANDARD LINEAR AXES FOR MOVE-MENTS IN SPACE

COMPACT MODULES

CKK – compact linear axis with two integrated ball rail systems and ball screw assembly
Properties

▶ 4 sizes from CKK-090 to CKK-200

▶ Precision aluminum profile with two preloaded ball rail systems

▶ Drive via precision ball screw assembly

▶ Protection of the installation elements by cover plate and cover strips

▶ Max. travel 1,800 mm

▶ High travel speeds of up to 1.6 m/s

▶ Any lengths available in mm steps
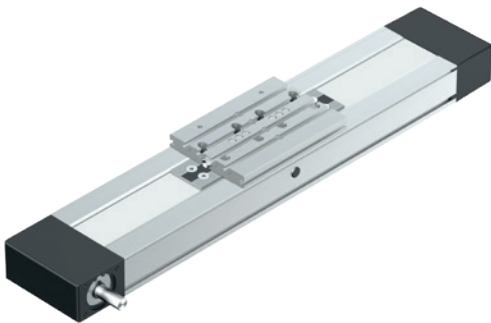
CKR – compact linear axis with two integrated ball rail systems and toothed belt drive
Properties

▶ 3 sizes from CKR-110 to CKR-200

▶ Precision aluminum profile with two preloaded ball rail systems

▶ Robust toothed belt drive (allows longer lengths than CKK module)

▶ Intelligent toothed belt guide protects internal components

▶ Max. travel 3,000 mm

▶ High travel speeds of up to 5 m/s

▶ Any lengths available in mm steps

LINEAR MODULE

MKR – compact linear module with integrated ball rail system and toothed belt drive

Properties

▶ 3 sizes from MKR-065 to MKR-110

▶ Extremely compact aluminum profile with preloaded ball rail system

▶ High-performance toothed belts for high travel speeds of up to 5 m/s

▶ Corrosion resistant steel cover strip

▶ Max. travel 3,000 mm

▶ Any lengths available in mm steps

Drive controllers and motors

ctrl**X** DRIVE – THE MOST COMPACT DRIVE SYSTEM

In addition to the proven drives such as from the HCS01 series, the world's most compact modular drive system is now available with ctrlX DRIVE. For absolutely future-proof multi-axis solutions. The ctrlX CORE control hardware is optionally integrated in the drive housing – saving you up to 50 percent space in the control cabinet. And even more in combination with the modern MS2N motors, as these offer up to 30 percent higher power density. It couldn't be more compact.

Complete performance package
Particularly in complex multi-axis machine systems, the multi-variant and scalable drive portfolio can demonstrate its strengths. With ctrlX DRIVE, all system components can be freely combined with each other – plus the option of comprehensive extensions of the hardware/software func-tions.

With a reaction time of around 4 ms, ctrlX DRIVE will offer one of the fastest SafeMotion solutions on the market in the future. Energy management functions ensure energy efficiency, and the patented Smart Energy Mode reduces peak drive loads by up to 70 percent. In addition, ctrlX DRIVE has an extremely robust EMC design.

▲ **ctrlX DRIVE: the new modular drive system, optionally with inte-grated control ctrlX CORE (left)**

▼ **Control and power in one: the proven IndraDrive Cs (HCS01 in 4 sizes) controls axes perfectly in the power range of multi-axis systems**

▲ **MS2N synchronous servo motors – for more torque and higher rotary speeds. With practical single-cable connection**

POWERFUL SERVOMOTORS

Our servo motors are the perfect team players in the ctrlX DRIVE portfolio. Boasting compact dimensions, they combine optimum dynamics with maximum precision of position, rotary speed, and torque values. Ideal for complex multi-axis systems.

Virtual commissioning
Developers have access to the digital twin of the motor, which is stored in a dimensioning tool and in the ctrlX DRIVE controller. Planning and dimensioning of even complex drive systems can therefore be virtualized quickly and reliably. Every motor is transformed into a data source for intelligent machines or i4.0 applications.

SERVO MOTORS MS2N
▶ Five sizes from MS2N03 to MS2N07
▶ Plain shaft without shaft seal ring
▶ Multi-turn encoder
▶ Advanced encoder (B) in conjunction with 1-cable connector (AcuroLink interface)
▶ IP64 rating
▶ With or without holding brake
▶ Special ground connection terminal near motor flange (used as needed)

Compact converter IndraDrive Cs (HCS01)
▶ Power range from 0.86 kW ... 6.2 kW
▶ Maximum currents from 8 A ... 28 A
▶ Direct power connection from 3 AC 200 V ... 500 V
▶ High overload capability
▶ Compact design
▶ Multi-Ethernet interface
▶ Optional safety technology (Safe Motion)

Good to know: all the details of a completely well thought-out system

Practicality does not only become apparent in the tough day-to-day industrial operation, it can already be recognized beforehand by the many clever details, predefined interfaces and add-on parts as well as flexible options. Typical Bosch Rexroth

GENERAL INFORMATION

Installation position
The multi-axis systems are designed for use in a horizontal installation position on a flat surface.
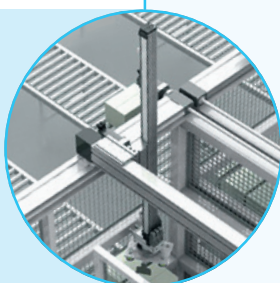
Ambient conditions
Please note for use:
▶ No extreme room temperatures
▶ No pollution
▶ Dry environment
▶ No chemical impact
▶ No shocks/vibrations

Lubrication/maintenance
Multi-axis systems come with initial greasing and are designed for grease lubrication.

Cable management
Multi-axis systems are optionally available with energy chains and cables (plug connection). With plenty of free cross-sections in the energy chains for your own cable routing.
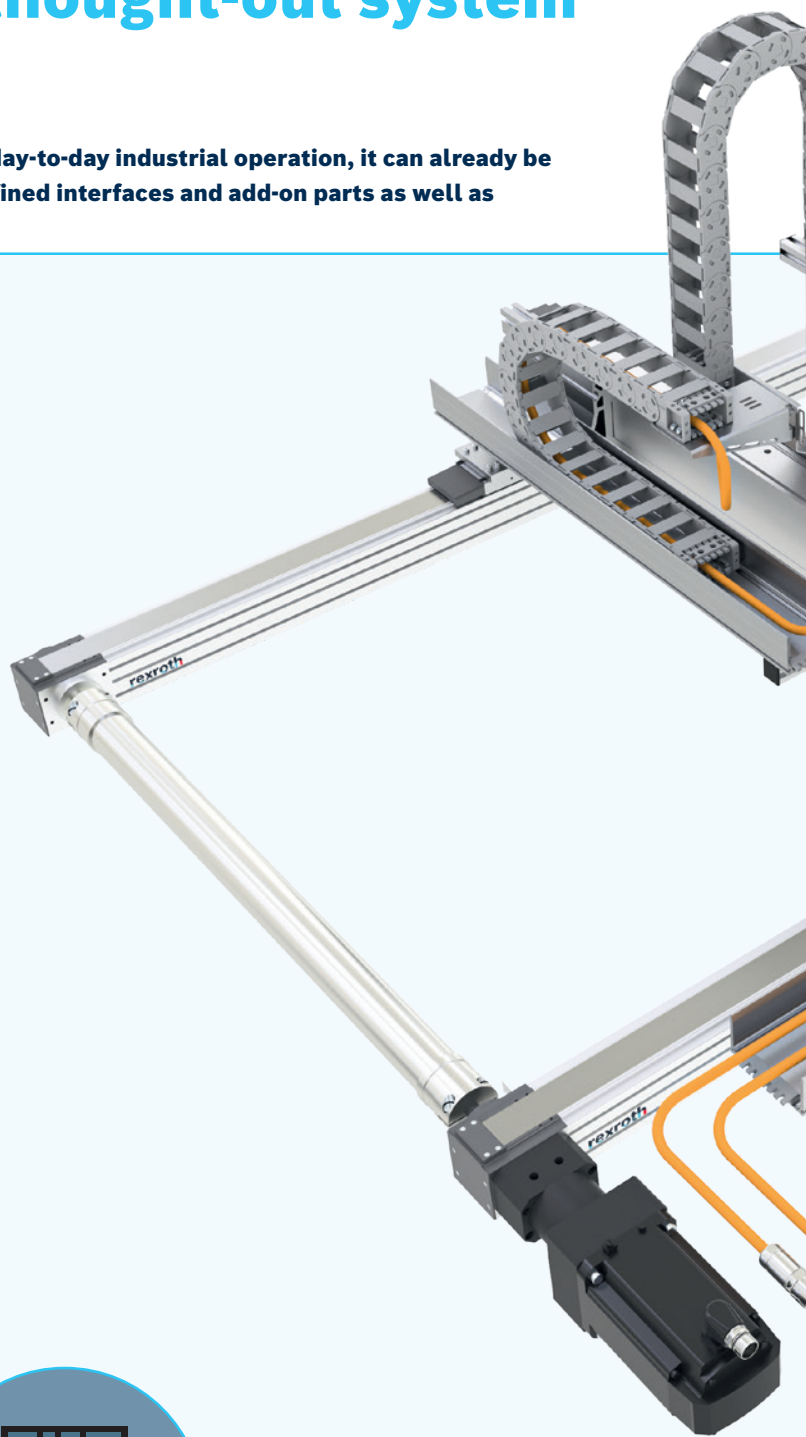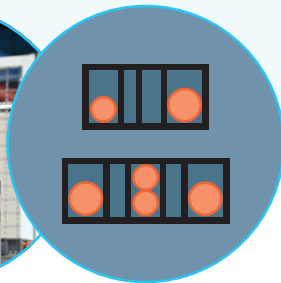
▲ **Example:**
3D room gantry
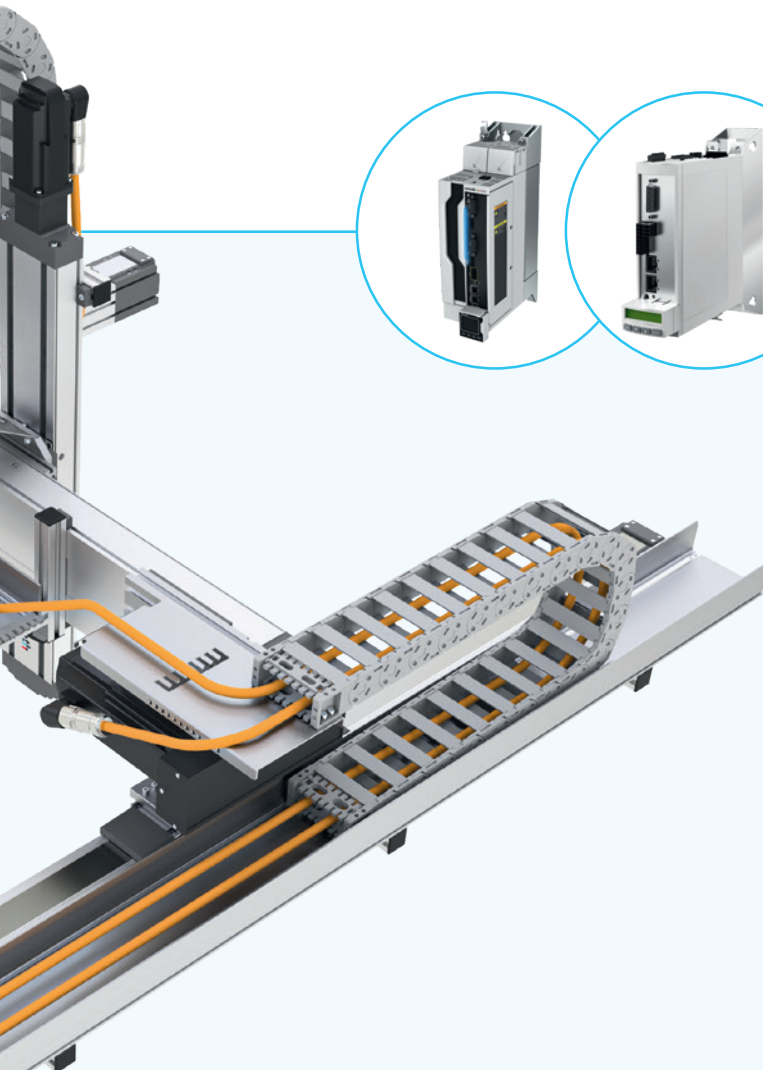
Tailored motor-controller combination
Predefined combinations of motor and controller (electrical drive package) optimally complement the mechanics to form a functional sub-system. The Smart Function Kits with pre-installed operating software offer even more. (Page 16).

Commissioning parameters on encoder memory in motor
Simple commissioning through automated readout of the parameters stored in the motor encoder memory.

Attachment parts, interfaces
Simple mounting of the axle unit on the substructure via clamping fixtures. Wide range of connection options for customer attachments.
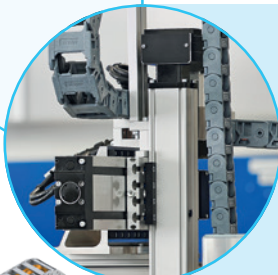
Scope of delivery
(depending on equipment)

Completely assembled: The multi-axis system is delivered fully assembled – including the energy chains and cables if cable management is selected as an option. The axis system is aligned on delivery and only needs to be adjusted to the substructure during installation.

Partially assembled: For transport or handling reasons, the multi-axis system is delivered partially assembled. The assembly is carried out by the customer according to instructions.
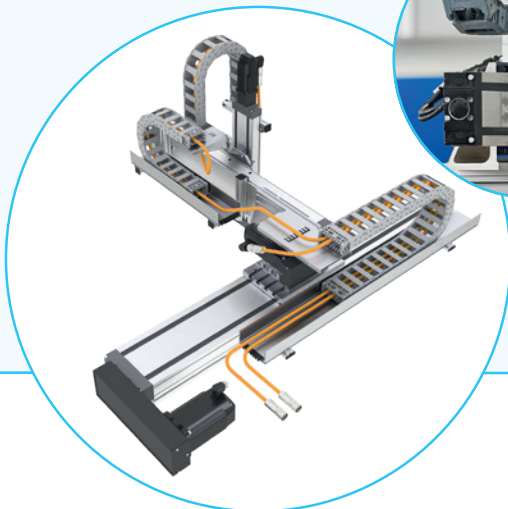
▶ **Example:**
3D cantilever space

Flexible in every respect:
5 axis combinations for precise handling

5 predefined axis combinations in 36 sizes offer you a lot of freedom for all common handling tasks. The travel ranges can be configured in all axial directions in mm increments. This allows you to make optimum use of installation space, obtain maximum flexibility during installation and adapt your sub-system perfectly to your application.

2D area gantry

3D room gantry

▶ 6 sizes
▶ Max. payload* 25-100 kg
▶ Travel range [mm]
  x-axis min. 60, max. 3,000
  y-axis min. 80, max. 2,869

* Depending on size, travel range and dynamics.
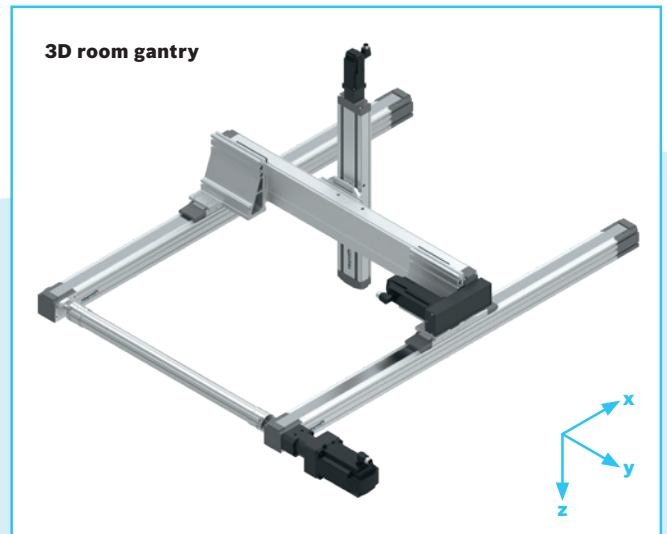
▶ 8 sizes
▶ Max. payload* 10-70 kg
▶ Travel range [mm]
  x-axis min. 60, max. 3,000
  y-axis min. 80, max. 2,753
  z-axis min. 60, max. 1,590

APPLICATION EXAMPLES FOR MULTI-AXIS SYSTEMS

Axis combinations for almost unlimited fields of application

Pick & place

Positioning

Palletizing

Feeding

Moving

Equipping

3D cantilever space

▶ 6 sizes
▶ Max. payload* 10-32.5 kg
▶ Travel range [mm]
  x-axis min. 150, max. 3,000
  y-axis min. 350, max. 880
  z-axis min. 40, max. 1,325

2D linear gantry
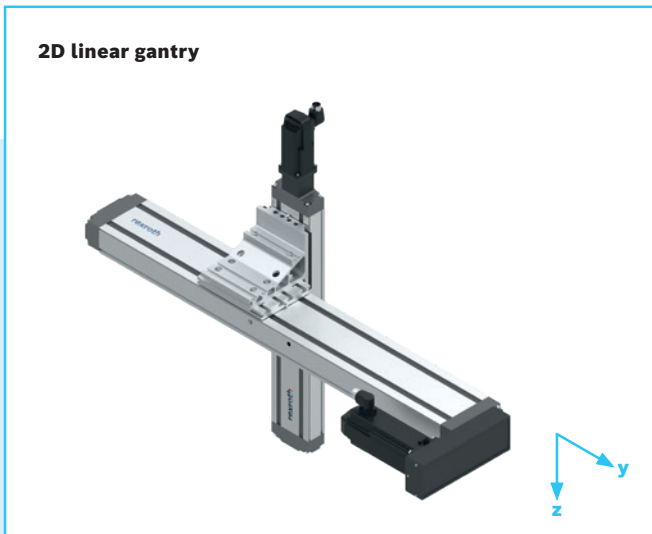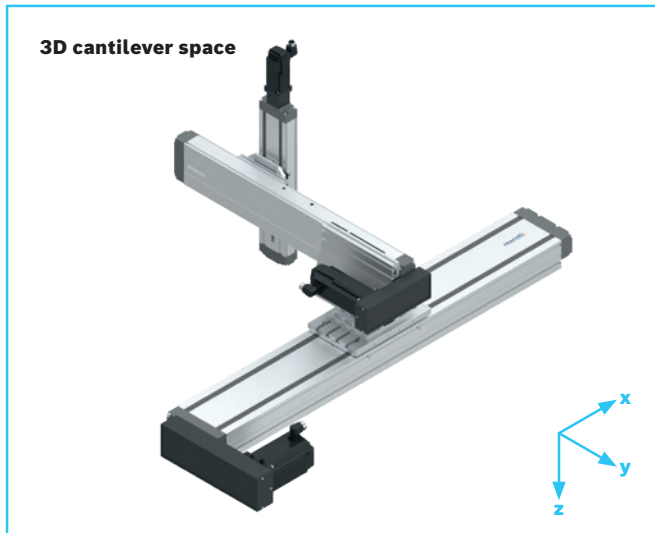
▶ 8 sizes
▶ Max. payload* 10-61 kg
▶ Travel range [mm]
  y-axis min. 210, max. 3,000
  z-axis min. 40, max. 1,590

2D cantilever surface

▶ 8 sizes
▶ Max. payload* 25-82 kg
▶ Travel range [mm]
  x-axis min. 150, max. 3,000
  y-axis min. 200, max. 1,200

Picking **Stacking** **Dispensing** **Discharging** **Sorting** **Checking** **Mounting** **Screwing**
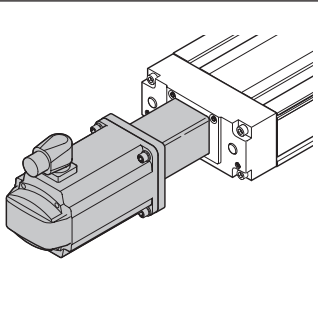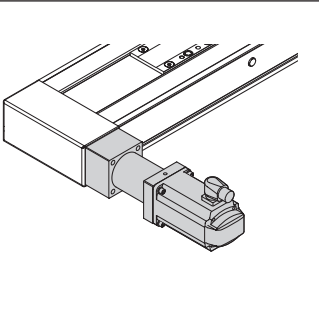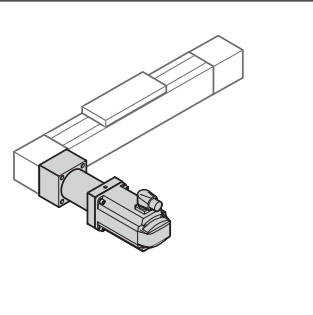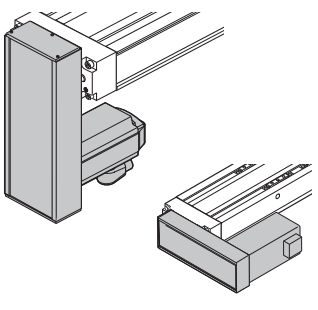
Example layout
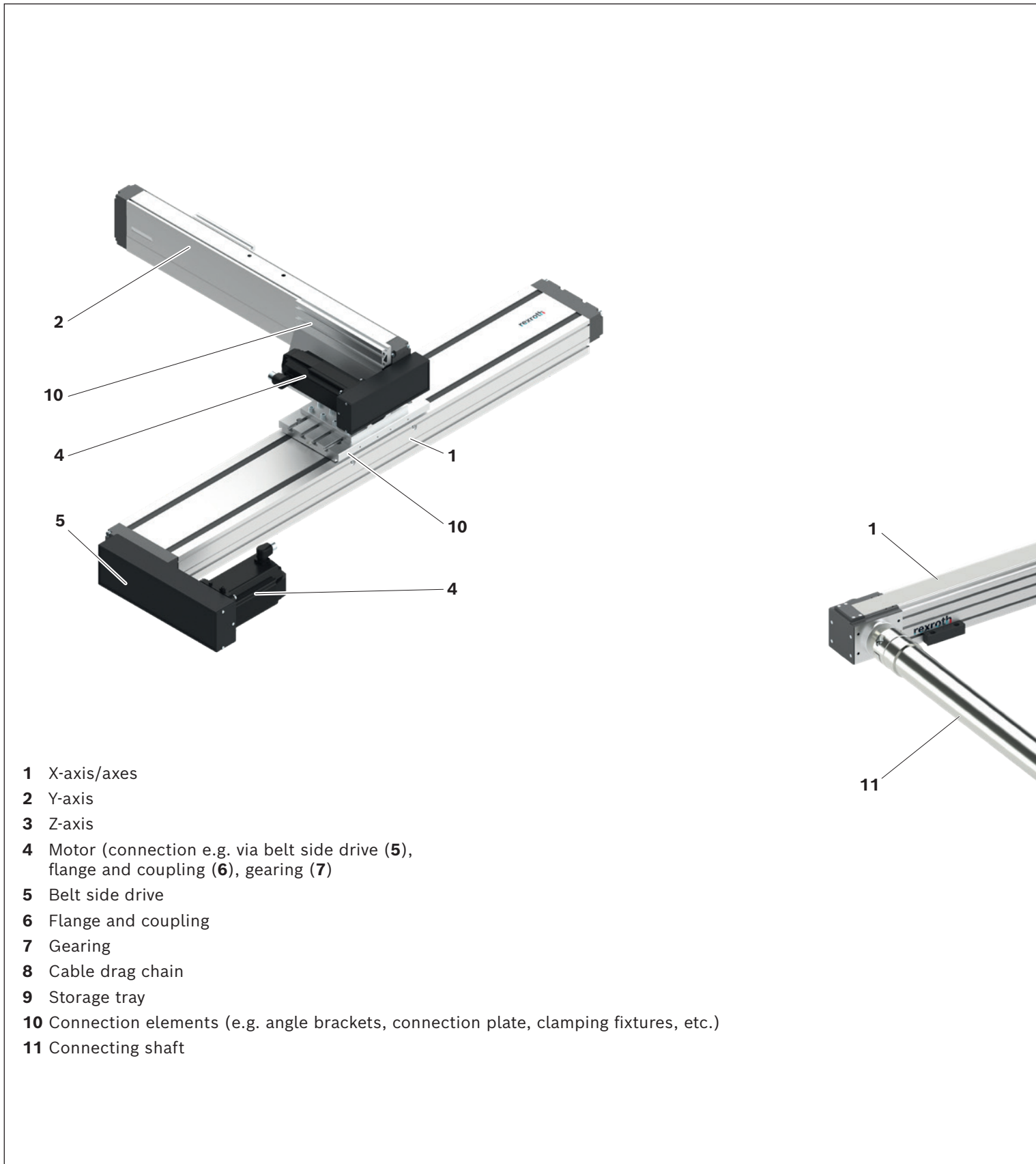
1 X-axis/axes

2 Y-axis

3 Z-axis

4 Motor (connection e.g. via belt side drive (**5**),
flange and coupling (**6**), gearing (**7**)

5 Belt side drive

6 Flange and coupling

7 Gearing

8 Cable drag chain

9 Storage tray

10 Connection elements (e.g. angle brackets, connection plate, clamping fixtures, etc.)

11 Connecting shaft

Rexroth linear axes provide for dynamic and precise movement in our multi-axis systems

Linear axes	Compact modules with ball screw assembly CKK	Compact modules with toothed belt drive CKR	Linear modules with toothed belt drive MKR
Sizes	CKK-090-NN-1 CKK-110-NN-1 CKK-145-NN-1 CKK-200-NN-1	CKR-110-NN-1 CKR-145-NN-1 CKR-200-NN-1	MKR-065-NN-3 MKR-080-NN-3 MKR-110-NN-3
Motor attachment	Flange/coupling	Gearing	Gearing
	Belt side drive		

Motor position basic axis

The constructive alignment of the multi-axis systems can be selected as an option.
Example: Combination of axes 3D gantry, type 3SB

Motor basic axis, left (ML)
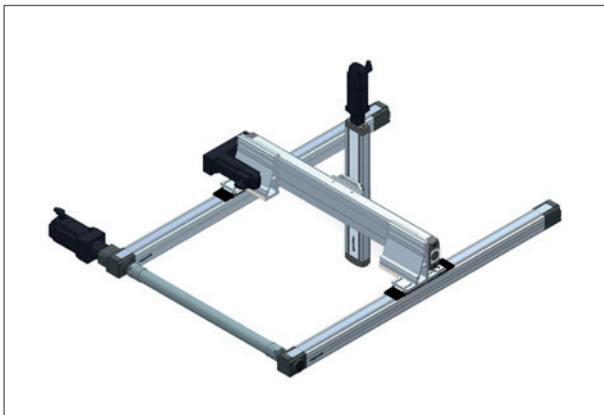
Motor basic axis, right (MR)
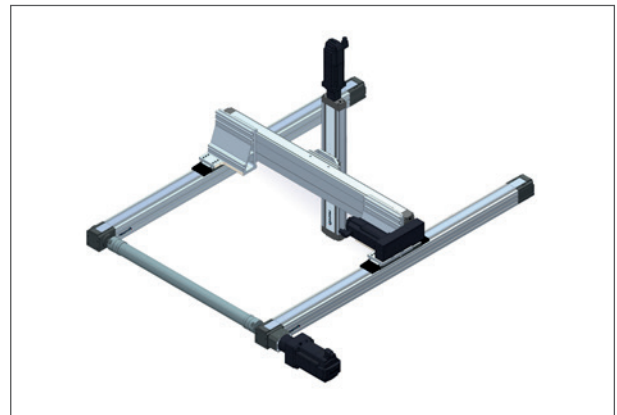
Technical notes

Maximum travel range

The travel ranges of the individual axes determine the maximum travel range of the multi-axis system as travel range limits without stroke reserves.
Any excess travel required as a safety distance in the end positions of the individual axes depends on the application and must therefore be taken into account accordingly by the user.
Therefore the effectively usable working range is usually smaller than the maximum available travel range.
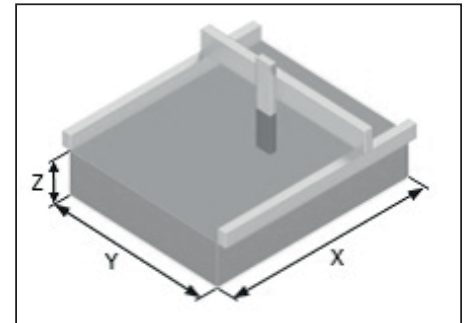
Example:
Travel range 3-axis combination

Technical data (maximum values)

Type	Axis	Linear Axis	BASA: d_o x P BELT: ratio i	v_{max} (m/s)	M_{P_max} (Nm)	a_{max} (m/s²)	s_{min} (mm)	s_{max} (mm)	Motor-attachment	Motor	m_{ex_max} (kg)
3SB - 20	Z	CKK-090-NN-1	12 x 2	0.23	0.79	15.0	40	600	flange/ coupling	MS2N03-B0	10,0
			12 x 5	0.57	2.39						
			12 x 10	1.13	4.42						
	Y	CKK-110-NN-1	16 x 5	0.38	6.76	15.0	300	1219	belt side drive, i = 1	MS2N04	
			16 x 10	0.77	7.66						
			16 x 16	1.23	7.66						
	X	MKR-065-NN-3	i = 3	5.00	4.00	15.0	170	3000	gearbox	MS2N04	
			i = 5	4.50	2.40						
			i = 10	2.30	1.20						

Example: Combination of axes 3D gantry, type 3SB
Values for maximum travel speed v_{max}, maximum drive torque M_{P_max} and maximum payload m_{ex_max} valid at minimum travel range.
For longer travels, length-dependent reduction for v_{max} and M_{P_max} for linear axes with ball screw drive as well as a reduction of m_{ex_max} depending on travel range and dynamics.

Abbreviations

Overview of abbreviations

Abbreviation/index	Designation	Unit
a_{max}	Maximum acceleration rate	(m/s²)
m_{ex_max}	Maximum permissible payload of the multi-axis system	(kg)
s_{min}	Minimum travel range	(mm)
s_{max}	Maximum travel	(mm)
M_{p_max}	Maximum drive torque	(Nm)
v_{max}	Maximum travel speed	(m/s)

Type 2HA
Product description
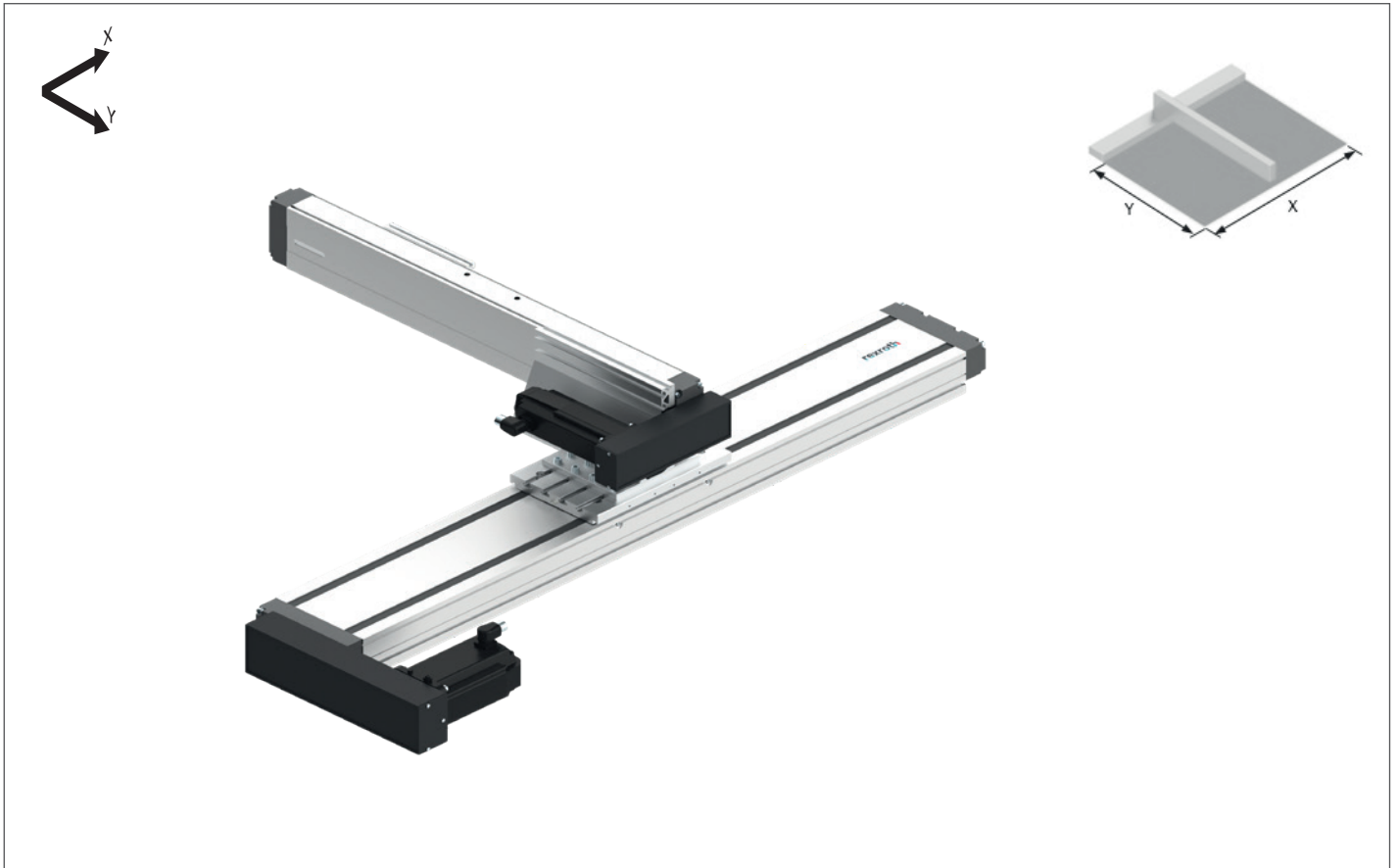
▶ The cantilever system 2D cantilever surface is particularly suitable for applications in which the axis system enters the working range from the outside.

▶ Compact modules with ball screw assembly or toothed belt drive are available for the X-axis.

▶ 8 sizes

Technical data

Type	Axis	Linear Axis	BASA: d_o x P BELT: ratio i	v_{max} (m/s)	M_{P_max} (Nm)	a_{max} (m/s²)	s_{min} (mm)	s_{max} (mm)	Motor-attachment	Motor	m_{ex_max} (kg)
2HA - 20	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	725	belt side drive, i = 1	MS2N04	25,0
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	550	1325	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
2HA - 21	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	725	belt side drive, i = 1	MS2N04	25,0
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKR-110-NN-1	---	---	---	15,0	220	3000	gearbox	MS2N04	
			i = 5	5,0	2,7						
			i = 10	5,0	1,3						
2HA - 22	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	1050	belt side drive, i = 1	MS2N04	44,5
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	565	1590	Riemenvor-gelege i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
2HA - 23	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	1050	belt side drive, i = 1	MS2N04	44,5
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKR-145-NN-1	i = 3	5,0	11,0	15,0	210	3000	gearbox	MS2N05	
			i = 5	5,0	6,7						
			i = 10	5,0	3,4						
2HA - 30	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	1050	belt side drive, i = 1	MS2N04	52,0
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	565	1590	belt side drive, i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
2HA - 31	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	1050	belt side drive, i = 1	MS2N04	52,0
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	CKR-145-NN-1	i = 3	5,0	11,0	15,0	210	3000	gearbox	MS2N05	
			i = 5	5,0	6,7						
			i = 10	5,0	3,4						
2HA - 32	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	1200	belt side drive, i = 1	MS2N04	82,0
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	CKK-200-NN-1	32 x 5	0,30	19,01	15,0	405	1825	belt side drive, i = 1	MS2N06	
			32 x 10	0,50	19,21						
			32 x 20	1,00	19,21						
			32 x 32	1,60	19,21						
2HA - 33	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	1200	belt side drive, i = 1	MS2N04	82,0
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	CKR-200-NN-1	i = 3	5,0	38,7	15,0	150	3000	gearbox	MS2N07	
			i = 5	5,0	23,2						
			i = 10	5,0	11,6						

Dimensional drawings

**Version:
X-axis as toothed
belt axis**

$L_X = S_{max} + R_x$

Type	Dimensions (mm)																
	R_x	R_y	X_a	X_s	B_{wx}	Y_1	X_u	Y_u	B_{wy}	B_{ez}	L_{x1}	L_{ma}	L_{rv1}	L_{Mx} (max)	L_{My} (max)	Z_1	Z_2
2HA-20	300.0	265	174.5	125.5	210.0	125.0	-75	110	130	113.5	51	145.0	62.0	226.5	226.5	294.0	396.0
2HA-21	366.5	265	161.0	155.5	210.0	125.0	-45	110	130	113.5	—	160.5	—	226.5	226.5	294.0	396.0
2HA-22	350.0	269	200.0	150.0	227.5	120.0	-70	110	142	101.0	51	157.5	55.0	258.5	226.5	313.0	415.0
2HA-23	400.5	269	196.5	204.0	227.5	120.0	-20	110	142	101.0	—	210.5	—	290.0	226.5	313.0	415.0
2HA-30	350.0	345	200.0	150.0	227.5	149.5	-70	105	127	135.0	51	157.5	55.0	258.5	258.5	350.0	450.0
2HA-31	400.5	345	196.5	150.0	227.5	149.5	-20	105	127	135.0	—	210.5	—	290.0	258.5	350.0	450.0
2HA-32	546.0	345	301.0	245.0	255.0	149.5	—	105	132	125.0	66	267.5	76.0	261.0	258.5	392.0	492.0
2HA-33	649.0	345	319.0	330.0	255.0	149.5	—	105	132	125.0	—	329.0	—	317.0	258.5	392.0	492.0

Type 2HB
Product description
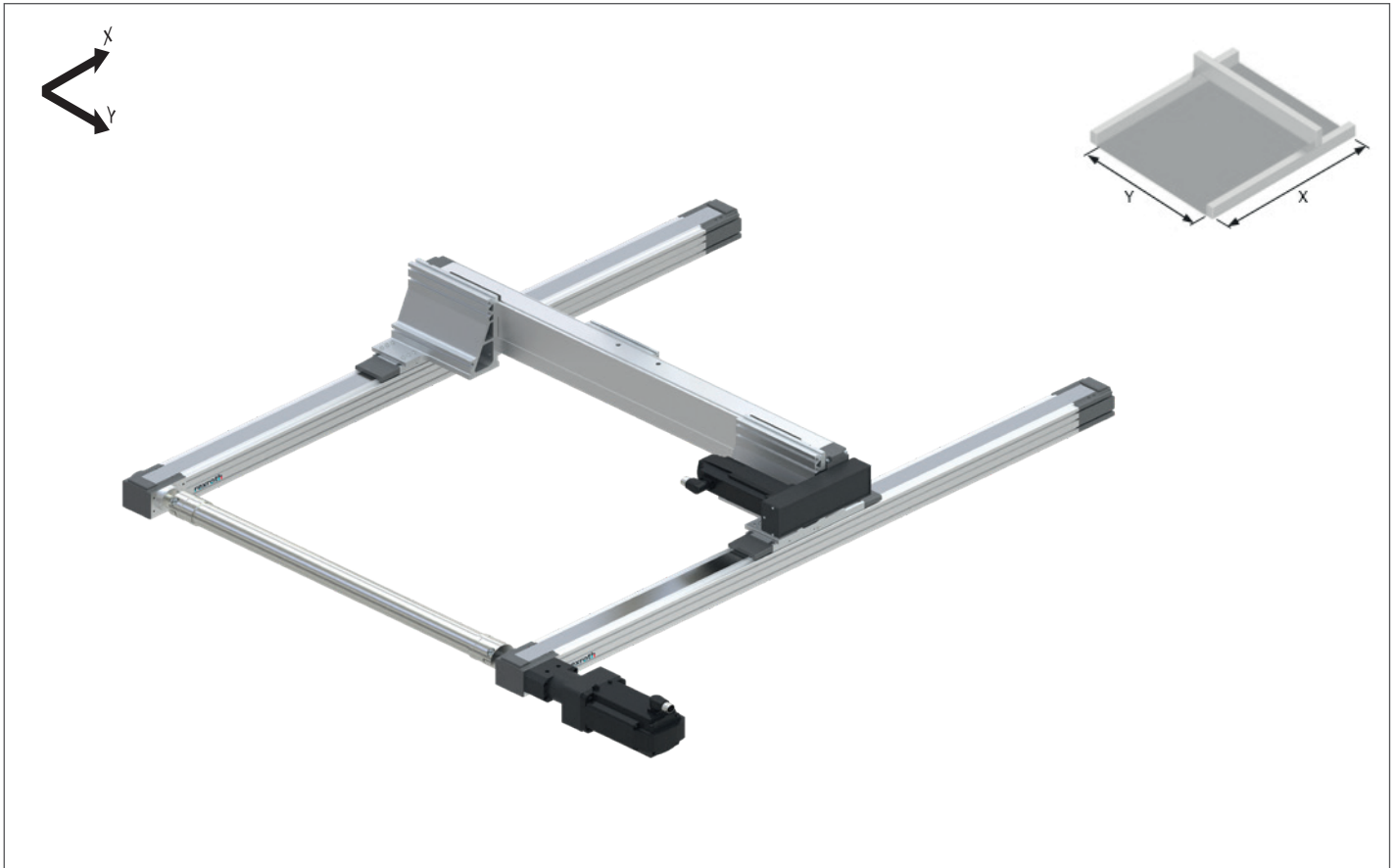
▶ The 2D area gantry is dynamically positioned in the x-axis via 2 mechanically coupled linear modules with toothed belt drive.
▶ The precise transverse motion in the y-axis is realized by compact modules with ball screw assembly or toothed belt drive.
▶ 6 sizes

Technical data

Type	Axis	Linear Axis	BASA: d_o x P BELT: ratio i	v_{max} (m/s)	M_{P_max} (Nm)	a_{max} (m/s²)	s_{min} (mm)	s_{max} (mm)	Motor-attachment	Motor	m_{ex_max} (kg)
2HB - 20	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	300	1219	belt side drive, i = 1	MS2N04	25,0
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	MKR-065-NN-3	i = 3	5,00	4,00	15,0	170	3000	gearbox	MS2N04	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
2HB - 21	Y	CKR-110-NN-1	i = 5	4,40	2,72	15,0	200	2869	gearbox	MS2N04	36,0
			i = 10	2,20	1,26						
	X	MKR-065-NN-3	i = 3	5,00	4,00	15,0	170	3000	gearbox	MS2N04	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
2HB - 30	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	1523	belt side drive, i = 1	MS2N04	69,0
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	MKR-080-NN-3	i = 3	5,00	4,00	15,0	100	3000	gearbox	MS2N06	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
2HB - 31	Y	CKR-145-NN-1	i = 3	5,00	11,00	15,0	140	2869	gearbox	MS2N05	82,0
			i = 5	5,00	6,70						
			i = 10	2,92	3,35						
	X	MKR-0080-NN-3	i = 3	5,00	4,00	15,0	100	3000	gearbox	MS2N06	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
2HB - 40	Y	CKK-200-NN-1	32 x 5	0,30	19,01	15,0	360	1770	belt side drive, i = 1	MS2N06	100,0
			32 x 10	0,50	19,21						
			32 x 20	1,00	19,21						
			32 x 32	1,60	19,21						
	X	MKR-110-NN-3	i = 3	5,00	33,30	15,0	60	3000	gearbox	MS2N07	
			i = 5	4,00	20,00						
			i = 10	2,00	10,00						
2HB - 41	Y	CKR-200-NN-1	i = 3	5,00	38,73	15,0	80	2869	gearbox	MS2N07	100,0
			i = 5	5,00	23,24						
			i = 10	2,50	11,62						
	X	MKR-110-NN-3	i = 3	5,00	33,30	15,0	60	3000	gearbox	MS2N07	
			i = 5	4,00	20,00						
			i = 10	2,00	10,00						

Dimensional drawings

$$L_X = S_{max} + R_x$$

$$X_a \quad X: S_{max}/2 \quad X: S_{max}/2 \quad Xs$$

B_{wy} B_{ez}

L_{x1}

$$L_Y = S_{max} + R_y$$

L_{ma}

L_{Mx}

B_{Wx}

Version: Y-axis as toothed belt axis
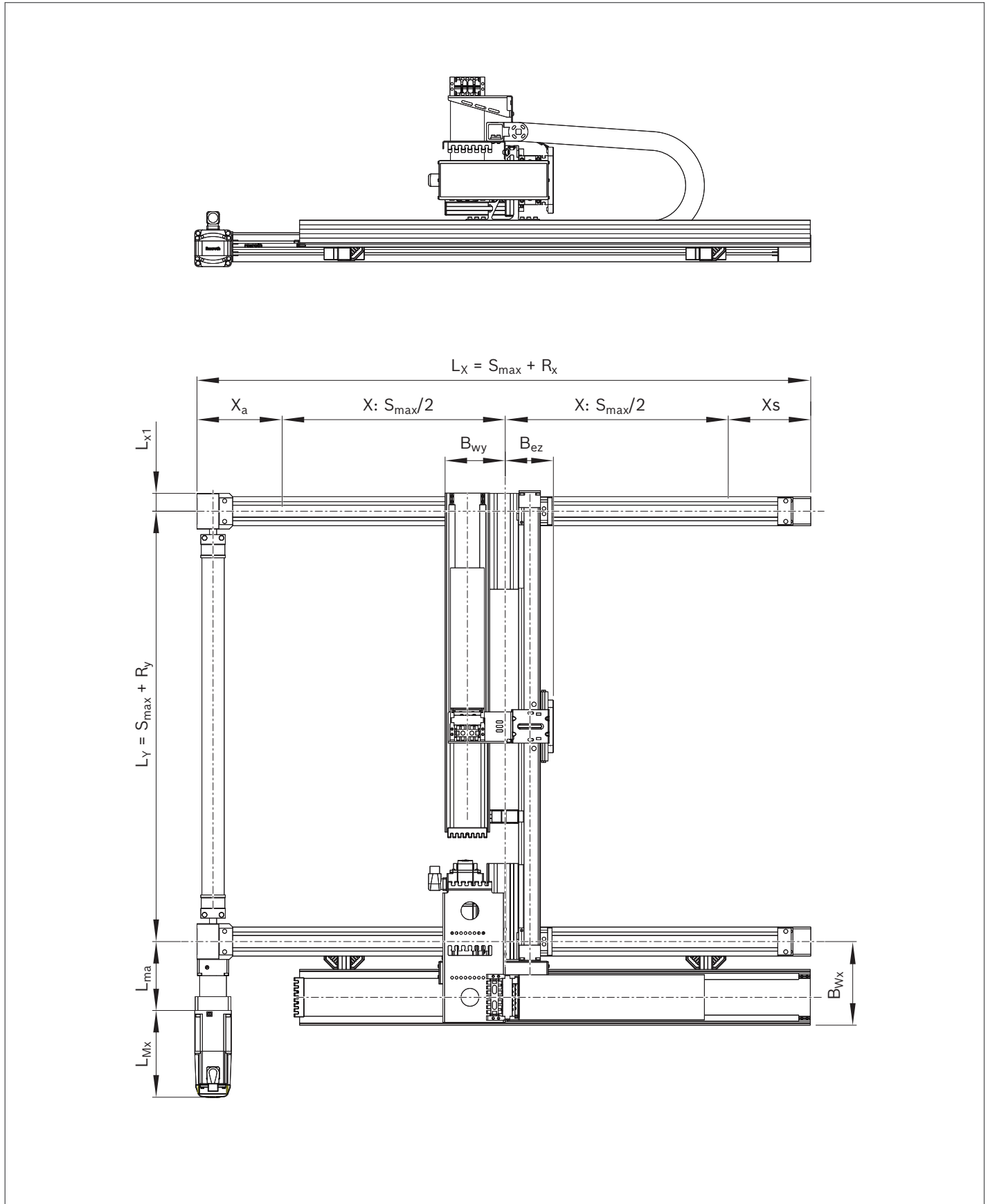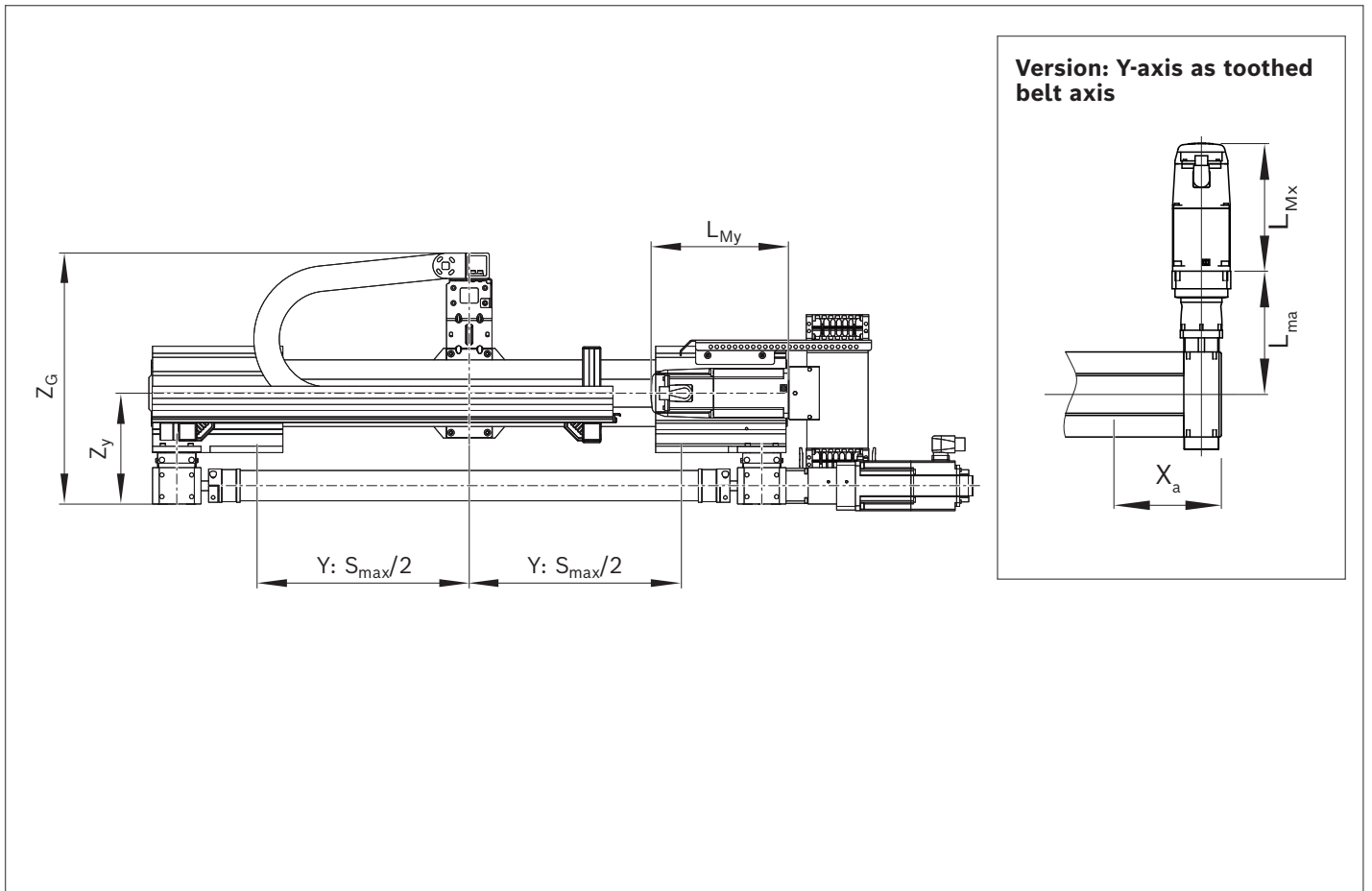
Type	Dimensions (mm)												
	R_x	R_y	X_a	X_s	B_{wx}	B_{wy}	B_{ez}	L_{x1}	L_{ma}	Z_y	Z_G	L_{Mx}	L_{My}
2HB-20	376	265	191.0	185.0	187.5	135	88.0	40	154.5	183.0	415	258.5	226.5
2HB-21	376	265	191.0	185.0	187.5	135	88.0	40	154.5	183.0	415	258.5	226.5
2HB-30	481	261	240.5	240.5	195.0	160	107.0	50	207.5	218.5	465	261.0	258.5
2HB-31	481	261	240.5	240.5	195.0	160	107.0	50	207.5	218.5	465	261.0	290.0
2HB-40	578	347	283.0	295.0	210.0	127	182.5	59	264.0	282.0	548	317.0	261.0
2HB-41	578	347	283.0	295.0	210.0	127	182.5	59	264.0	282.0	548	317.0	375.0

Type 3SA
Product description
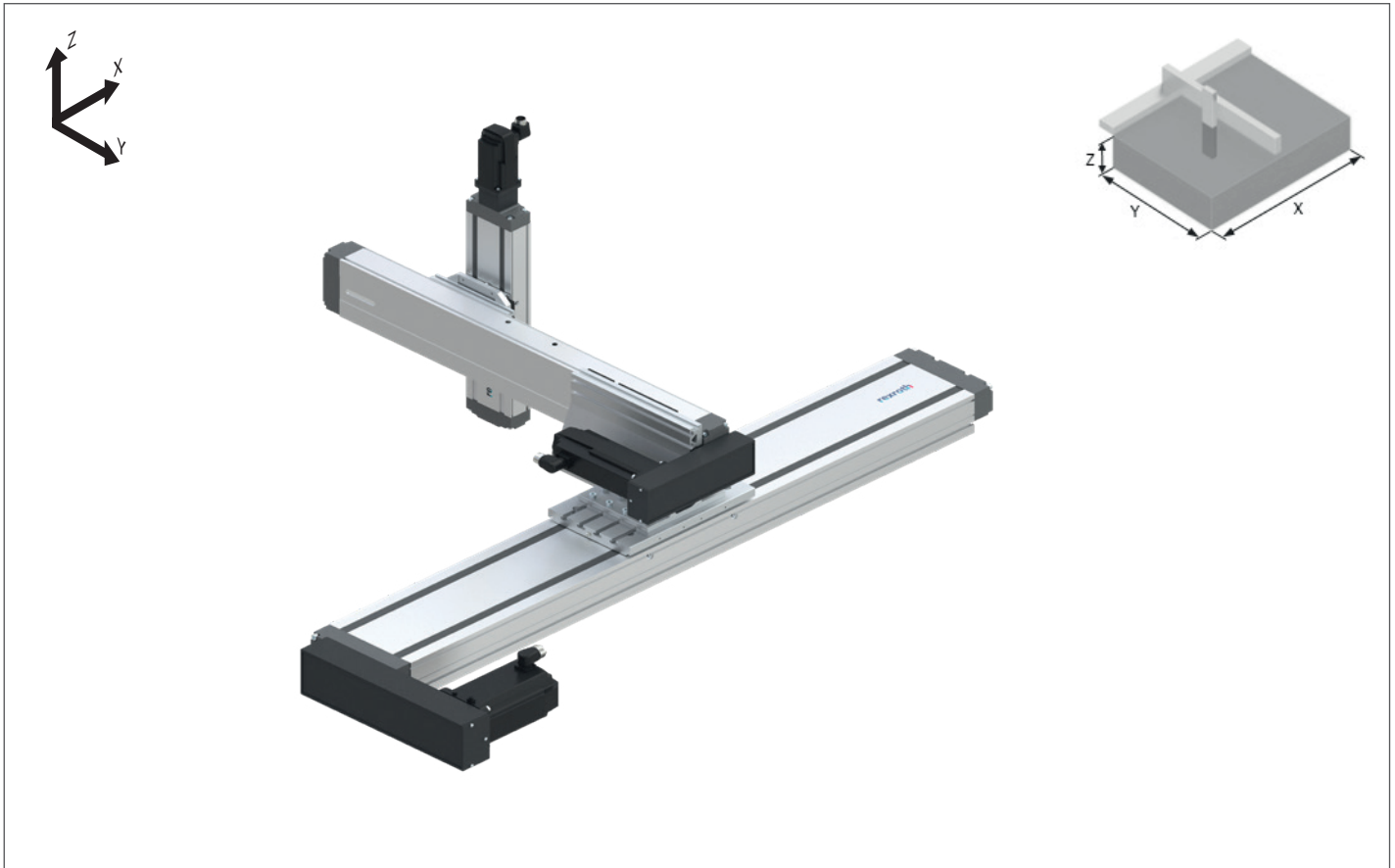
▶ For applications where a three-dimensional working range must be approached from the outside, the 3D cantilever chamber system is particularly suitable.
▶ In the basic axis compact modules with ball screw assembly or toothed belt drive.
▶ 6 sizes

Technical data

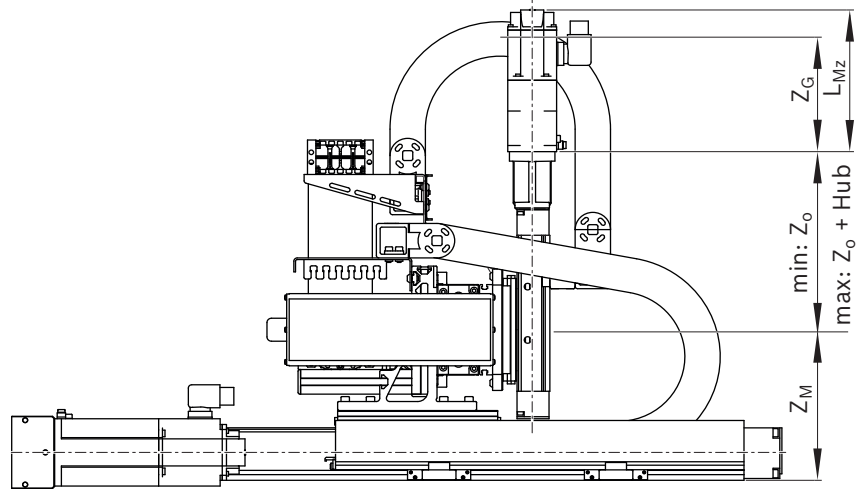| Type	Axis	Linear Axis	BASA: d_o x P / BELT: ratio i	v_{max} (m/s)	M_{P_max} (Nm)	a_{max} (m/s²)	s_{min} (mm)	s_{max} (mm)	Motor-attach-ment	Motor	m_{ex_max} (kg)
3SA - 20	Z	CKK-090-NN-1	12 x 2	0,23	0,79	15,0	40	600	flange/ coupling	MS2N03	10,0
			12 x 5	0,57	2,39						
			12 x 10	1,13	4,42						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	800	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	565	1590	belt side drive, i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
3SA - 21	Z	CKK-090-NN-1	12 x 2	0,23	0,79	15,0	40	600	flange/ coupling	MS2N03	10,0
			12 x 5	0,57	2,39						
			12 x 10	1,13	4,42						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	800	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKR-145-NN-1	i = 3	5,00	11,00	15,0	210	3000	gearbox	MS2N05	
			i = 5	5,00	6,70						
			i = 10	5,00	3,35						
3SA - 22	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	30,0
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,5						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	650	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	565	1590	Riemenvor-gelege i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
3SA - 23	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	30,0
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,5						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	350	650	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	CKR-145-NN-1	i = 3	5,00	11,00	15,0	210	3000	gearbox	MS2N05	
			i = 5	5,00	6,70						
			i = 10	5,00	3,35						
3SA - 30	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	32,5
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,5						
	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	880	belt side drive, i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	CKK-200-NN-1	32 x 5	0,30	19,01	15,0	405	1825	Riemenvor-gelege i = 1	MS2N06	
			32 x 10	0,50	19,21						
			32 x 20	1,00	19,21						
			32 x 32	1,60	19,21						
3SA - 31	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	32,5
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,5						
	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	880	belt side drive, i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	CKR-200-NN-1	i = 3	5,00	38,73	15,0	150	3000	gearbox	MS2N07	
			i = 5	5,00	23,24						
			i = 10	5,00	11,62						

Dimensional drawings

Version:
X-axis as toothed belt axis

Diagram labels: B_{Wz}, L_{My}, min: Z_u / max: $Z_u + Hub$, Z_M, Y_1, Y_u, Y: S_{max}, LY = $S_{max} + R_y$
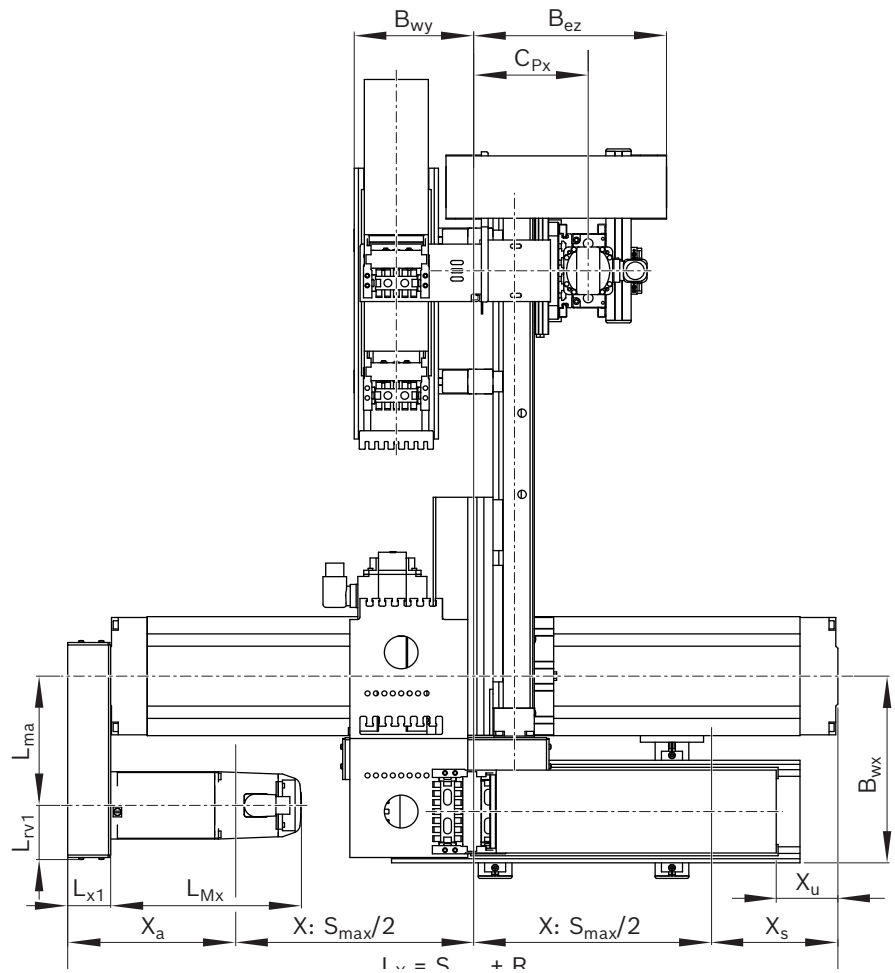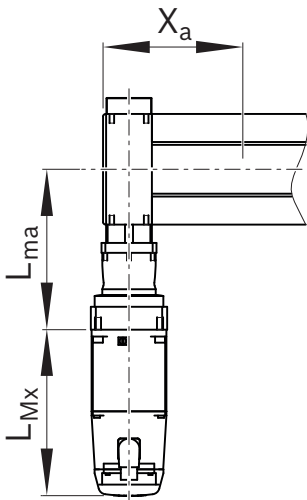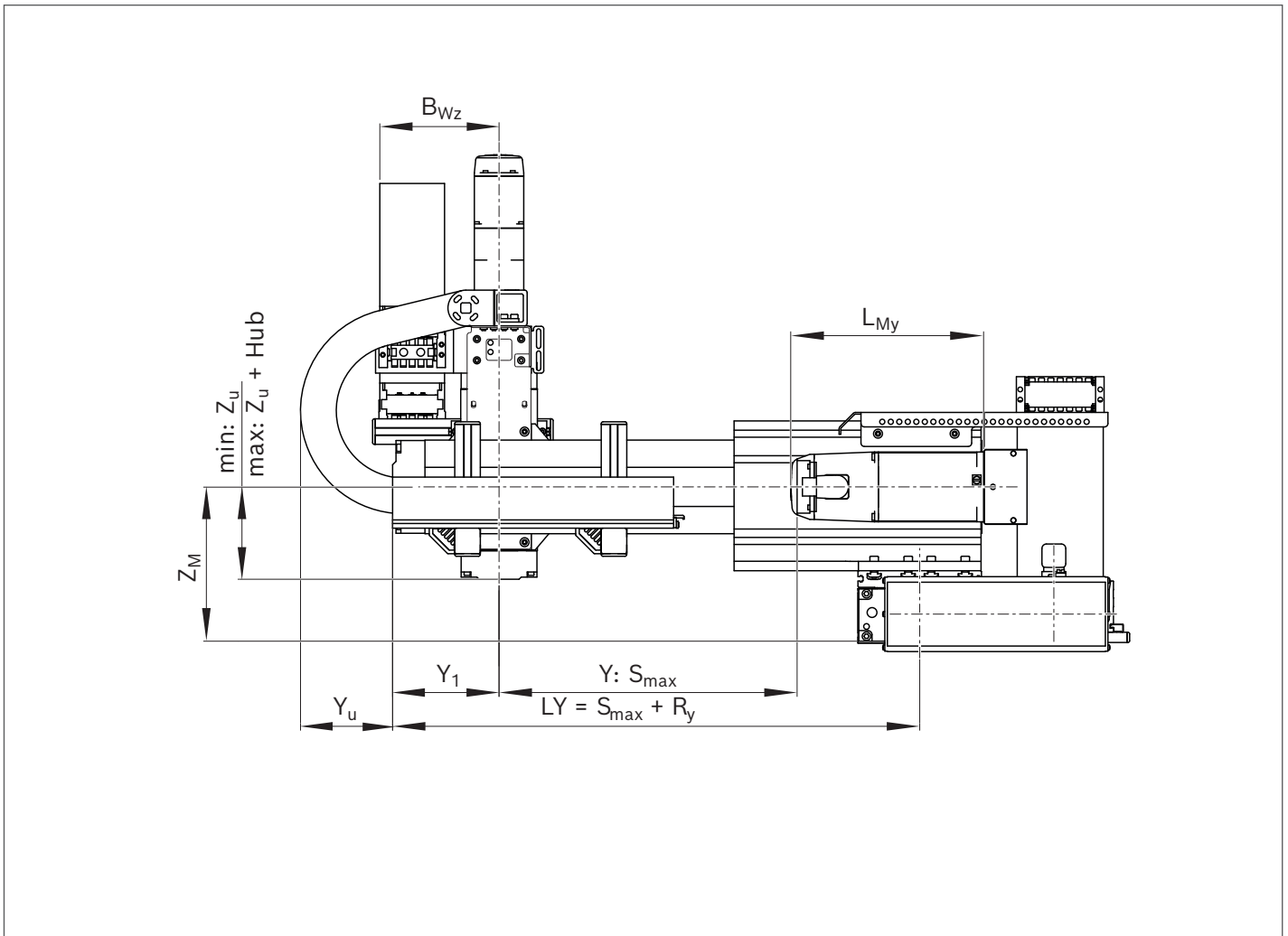
Type	Dimensions (mm)																					
	R_x	R_y	X_a	X_s	B_{wx}	B_{wy}	B_{wz}	B_{ez}	C_{Px}	L_{rv1}	L_{ma}	L_{x1}	Z_M	Z_u	Z_o	Z_G	Y_1	Y_u	X_u	L_{Mx} (max)	L_{My} (max)	L_{Mz} (max)
3SA-20	350.0	269	200.0	150	227.5	142	140	229.0	136.0	66	157.5	51	183.5	108.5	177.5	170	125.0	110	-70	258.5	226.5	192.0
3SA-21	400.5	269	196.5	204	227.5	142	140	229.0	136.0	−	210.0	−	183.5	108.5	177.5	170	125.0	110	-20	290.0	226.5	192.0
3SA-22	350.0	269	200.0	150	227.5	142	140	244.5	151.5	66	157.5	51	183.5	125.5	201	230	125.0	110	-70	258.5	226.5	258.5
3SA-23	400.5	269	196.5	204	227.5	142	140	244.5	151.5	−	210.0	−	183.5	125.5	201	230	125.0	110	-20	290.0	226.5	258.5
3SA-30	546.0	345	301.0	245	255.0	132	140	271.0	175.5	76	267.5	66	203.0	95.5	231	310	149.5	105	0	261.0	258.5	258.5
3SA-31	649.0	345	319.0	330	255.0	132	140	271.0	175.5	−	329.0	−	203.0	95.5	231	310	149.5	105	0	317.0	258.5	258.5

Type 3SB
Product description
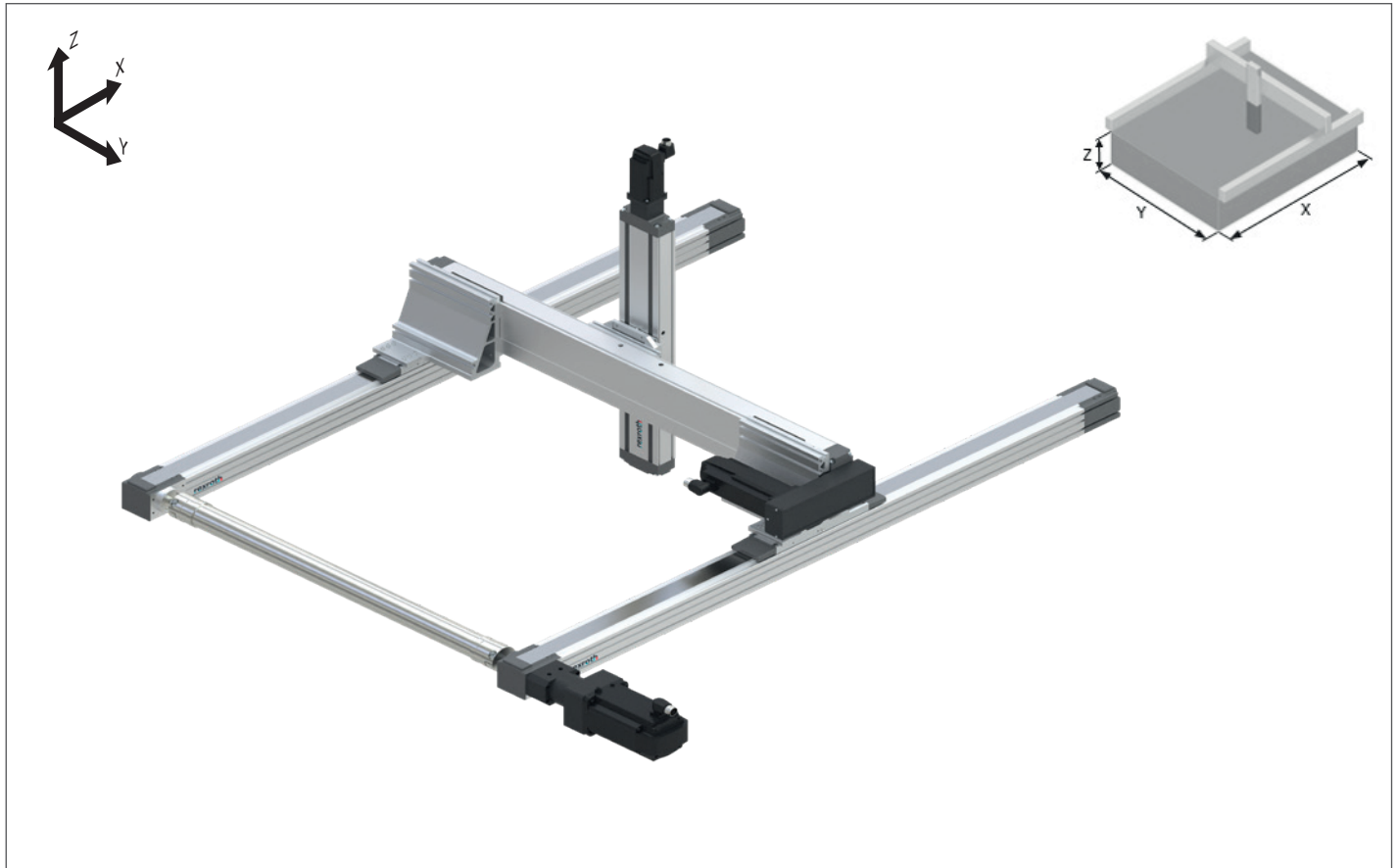
▶ 3D gantries are flexible units for positioning in the three-dimensional working range. They comprise mechanically coupled linear modules with toothed belt drive in the x-direction, compact modules with ball screw assembly or toothed belt drive in the y-direction and a compact module axis with ball screw assembly in the z-direction.

▶ 8 sizes

Technical data

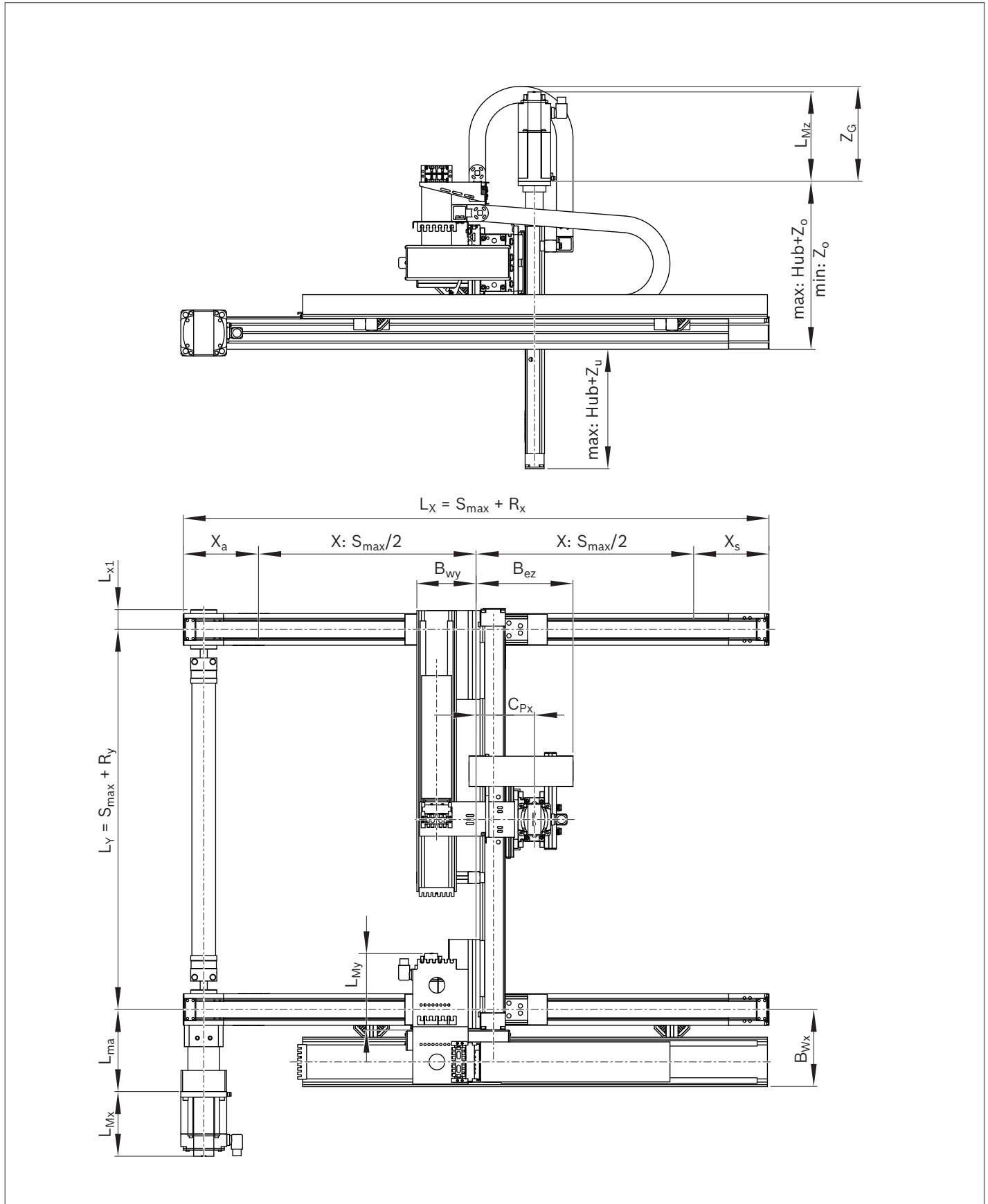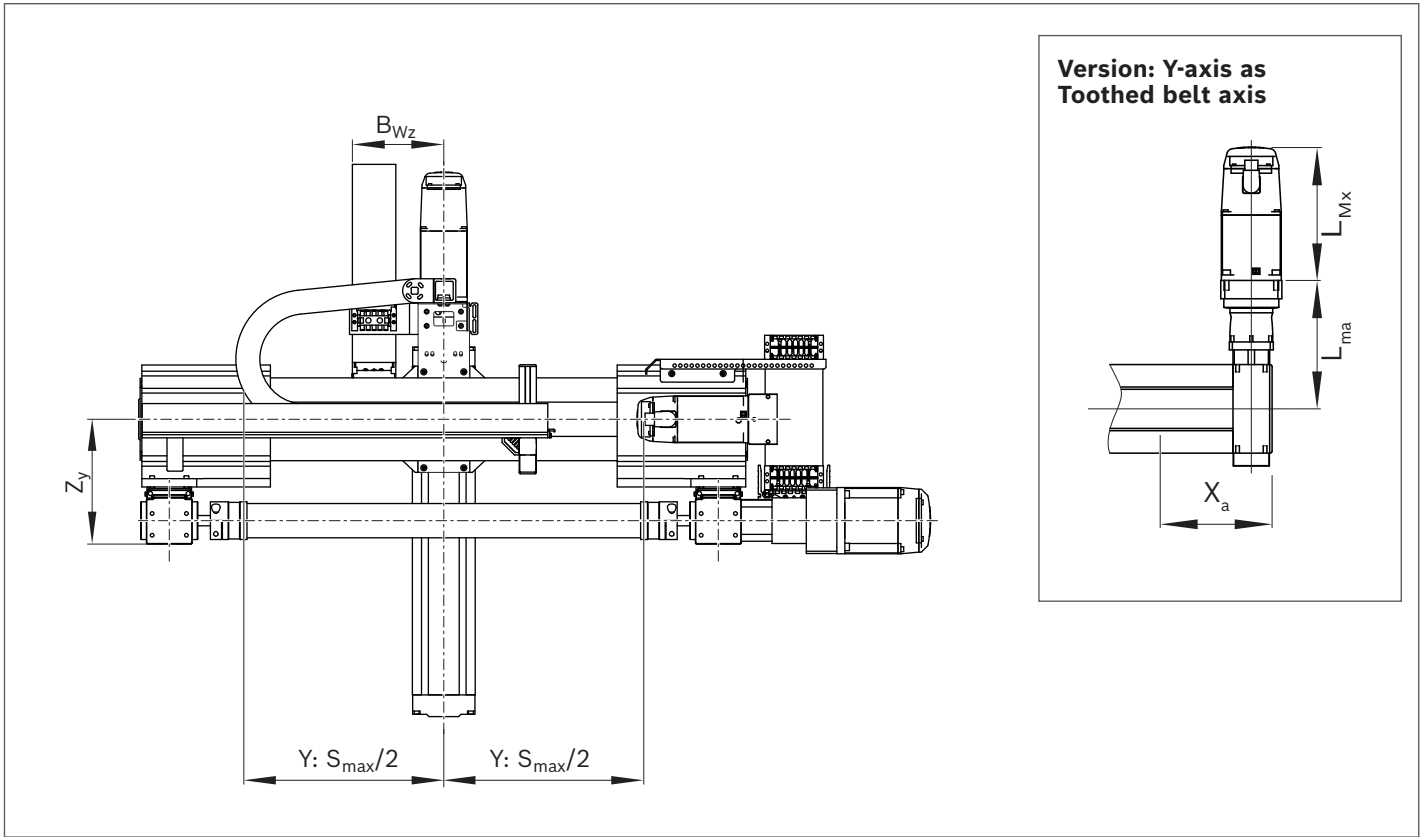| Type	Axis	Linear Axis	BASA: d_o x P BELT: ratio i	v_{max} (m/s)	M_{P_max} (Nm)	a_{max} (m/s²)	s_{min} (mm)	s_{max} (mm)	Motor-attachment	Motor	m_{ex_max} (kg)
3SB - 20	Z	CKK-090-NN-1	12 x 2	0,23	0,79	15,0	40	600	flange/ coupling	MS2N03-B0	10,0
			12 x 5	0,57	2,39						
			12 x 10	1,13	4,42						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	300	1219	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	MKR-065-NN-3	i = 3	5,00	4,00	15,0	170	3000	gearbox	MS2N04	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
3SB - 21	Z	CKK-090-NN-1	12 x 2	0,23	0,79	15,0	40	600	flange/ coupling	MS2N03-B0	10,0
			12 x 5	0,57	2,39						
			12 x 10	1,13	4,42						
	Y	CKR-110-NN-1	-	-	-	15,0	200	1409	Getriebe (NP 005)	MS2N04	
			i = 5	4,40	2,72						
			i = 10	2,20	1,26						
	X	MKR-065-NN-3	i = 3	5,00	4,00	15,0	170	3000	Getriebe	MS2N04	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
3SB - 22	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	17,0
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	300	1123	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
	X	MKR-065-NN-3	i = 3	5,00	4,00	15,0	170	3000	gearbox	MS2N04	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
3SB - 23	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	27,5
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKR-110-NN-1	-	-	-	15,0	200	1138	gearbox (NP 005)	MS2N04	
			i = 5	4,40	2,72						
			i = 10	2,20	1,26						
	X	MKR-065-NN-3	i = 3	5,00	4,00	15,0	170	3000	gearbox	MS2N04	
			i = 5	4,50	2,40						
			i = 10	2,30	1,20						
3SB - 30	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	35,0
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	400	1523	belt side drive, i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
	X	MKR-080-NN-3	i = 3	5,00	12,00	15,0	100	3000	gearbox	MS2N06	
			i = 5	3,00	7,20						
			i = 10	1,50	3,60						
3SB - 31	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	35,0
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKR-145-NN-1	i = 3	5,00	11,00	15,0	140	2753	gearbox (NP 015)	MS2N05	
			i = 5	5,00	6,70						
			i = 10	2,92	3,35						
	X	MKR-080-NN-3	i = 3	5,00	12,00	15,0	100	3000	gearbox	MS2N06	
			i = 5	3,00	7,20						
			i = 10	1,50	3,60						
3SB - 40	Z	CKK-145-NN-1	20 x 5	0,30	11,01	15,0	60	1590	flange/ coupling	MS2N04	70,0
			25 x 10	0,63	22,02						
			20 x 20	1,27	29,60						
	Y	CKK-200-NN-1	32 x 5	0,30	19,01	15,0	360	1770	belt side drive, i = 1	MS2N06	
			32 x 10	0,50	19,21						
			32 x 20	1,00	19,21						
			32 x 32	1,60	19,21						
	X	MKR-110-NN-3	i = 3	5,00	33,30	15,0	60	3000	gearbox	MS2N07	
			i = 5	5,00	20,00						
			i = 10	2,90	10,00						
3SB - 41	Z	CKK-145-NN-1	20 x 5	0,30	11,01	15,0	60	1590	flange/ coupling	MS2N04	70,0
			25 x 10	0,63	22,02						
			20 x 20	1,27	29,60						
	Y	CKR-200-NN-1	i = 3	5,00	38,73	15,0	80	2265	gearbox (NP 035)	MS2N07	
			i = 5	5,00	23,24						
			i = 10	2,50	11,62						
	X	MKR-110-NN-3	i = 3	5,00	33,30	15,0	60	3000	gearbox	MS2N07	
			i = 5	5,00	20,00						
			i = 10	2,90	10,00						

Dimensional drawings

$L_X = S_{max} + R_x$

$X: S_{max}/2$

$X: S_{max}/2$

X_a

X_s

L_{x1}

B_{wy}

B_{ez}

C_{Px}

$L_Y = S_{max} + R_y$

L_{My}

L_{ma}

B_{Wx}

L_{Mx}

L_{Mz}

Z_G

max: Hub+Z_o
min: Z_o

max: Hub+Z_u

Version: Y-axis as Toothed belt axis

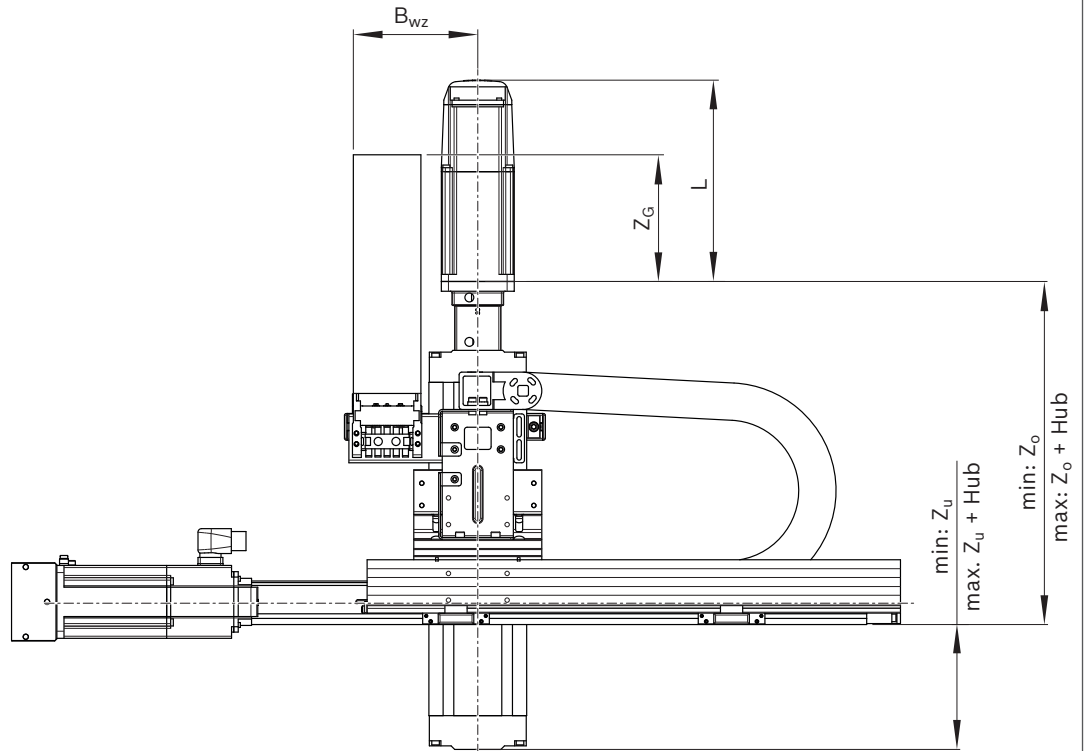| Type	Dimensions (mm)																	
	R_x	R_y	X_a	X_s	B_{wx}	B_{wy}	B_{ez}	C_{Px}	L_{X1}	L_{ma}	L_{Mx}	Z_u	Z_o	Z_G (max)	Z_y	L_{My}	L_{Mz}	B_{wz}
3SB-20	376	265	191.0	185.0	187.5	135	246.0	143.0	45	154.5	258.5	-74.5	360.0	185	183.0	226.5	194.5	140
3SB-21	376	265	191.0	185.0	187.5	135	246.0	143.0	45	154.5	258.5	-74.5	360.0	185	183.0	226.5	194.5	140
3SB-22	376	265	191.0	185.0	187.5	135	246.0	143.0	45	154.5	258.5	-57.5	384.0	170	183.0	226.5	258.5	140
3SB-23	376	265	191.0	185.0	187.5	135	246.0	143.0	45	154.5	258.5	-57.5	384.0	170	183.0	226.5	258.5	140
3SB-30	481	261	240.5	240.5	195.0	160	245.0	147.5	50	207.5	261.0	-88.0	419.5	200	218.5	258.5	258.5	160
3SB-31	481	261	240.5	240.5	195.0	160	245.0	147.5	50	207.5	261.0	-88.0	419.5	200	218.5	290.0	258.5	160
3SB-40	578	347	283.0	295.0	210.0	127	339.5	233.5	59	264.0	317.0	-132.0	515.5	210	282.0	261.0	258.5	160
3SB-41	578	347	283.0	295.0	210.0	127	339.5	233.5	59	264.0	317.0	-132.0	515.5	210	282.0	375.0	258.5	160

Type 2VA
Product description
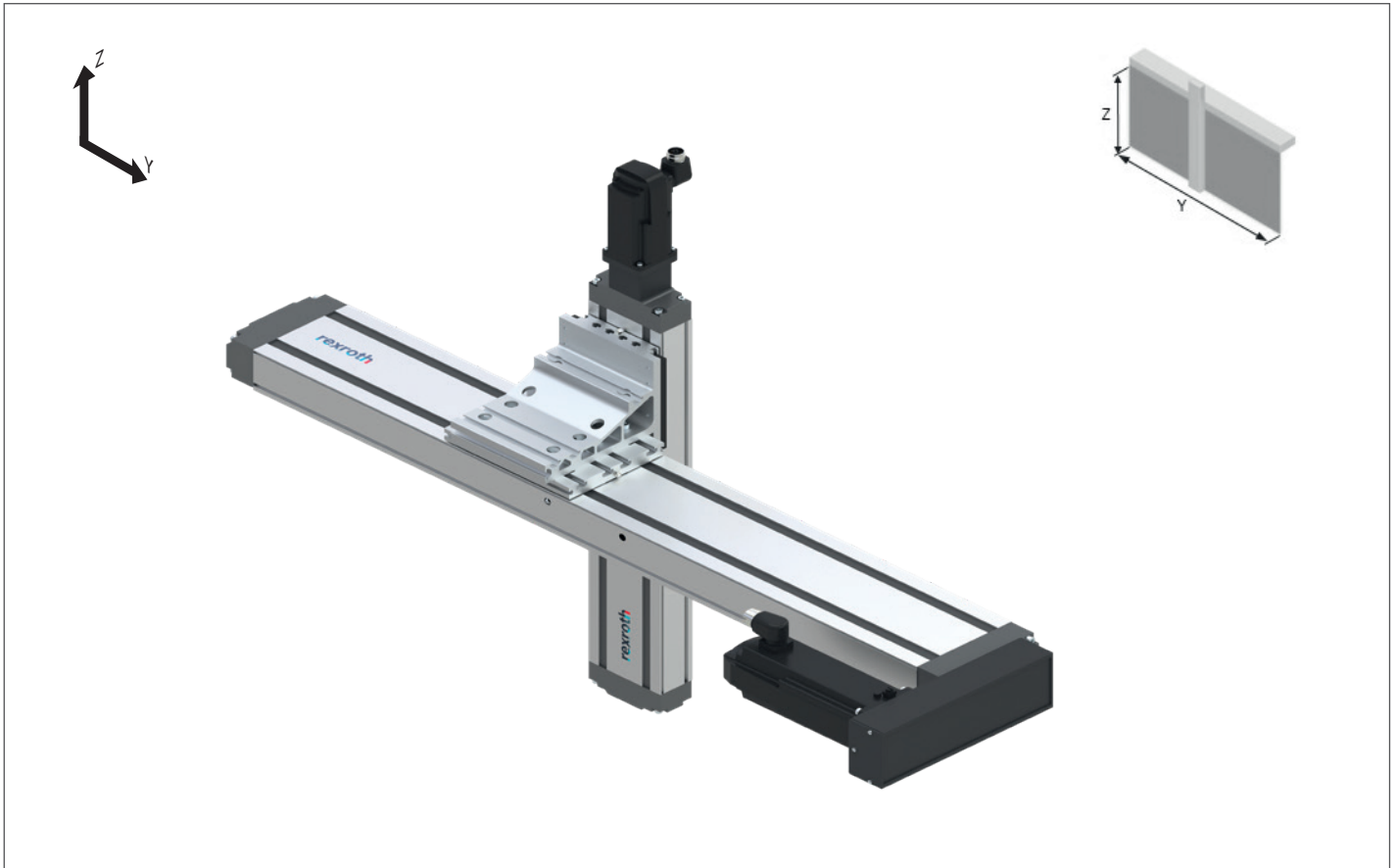
▶ 2D line gantries cover applications with horizontal and vertical motion direction.
▶ Compact modules with the drive versions of ball screw assembly or toothed belt drive are available for the x-axis.
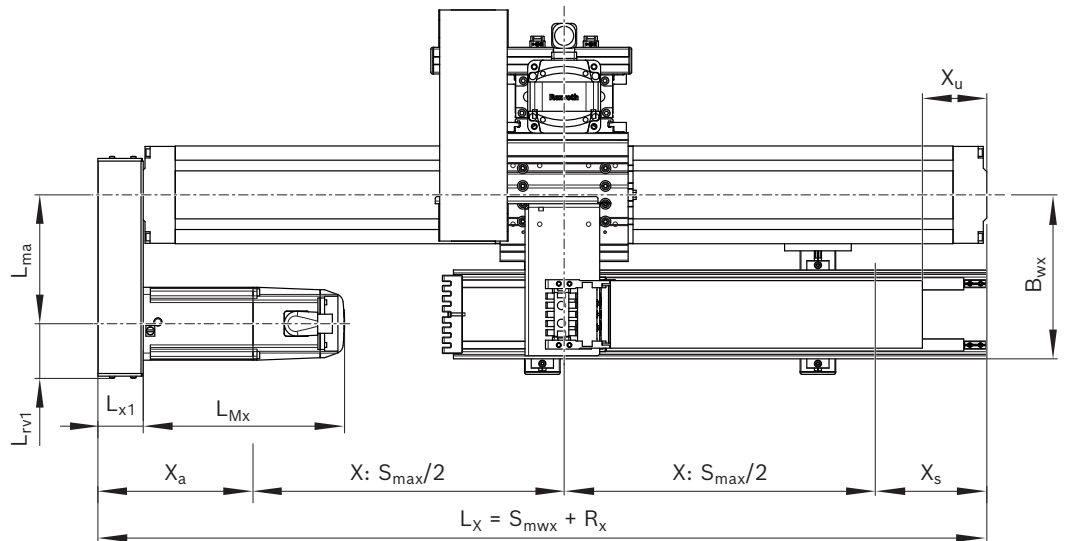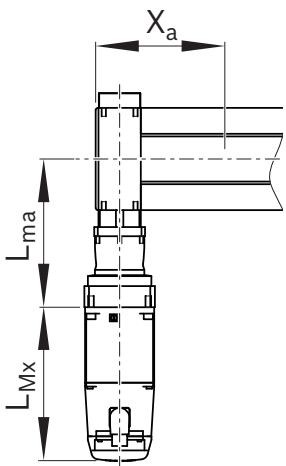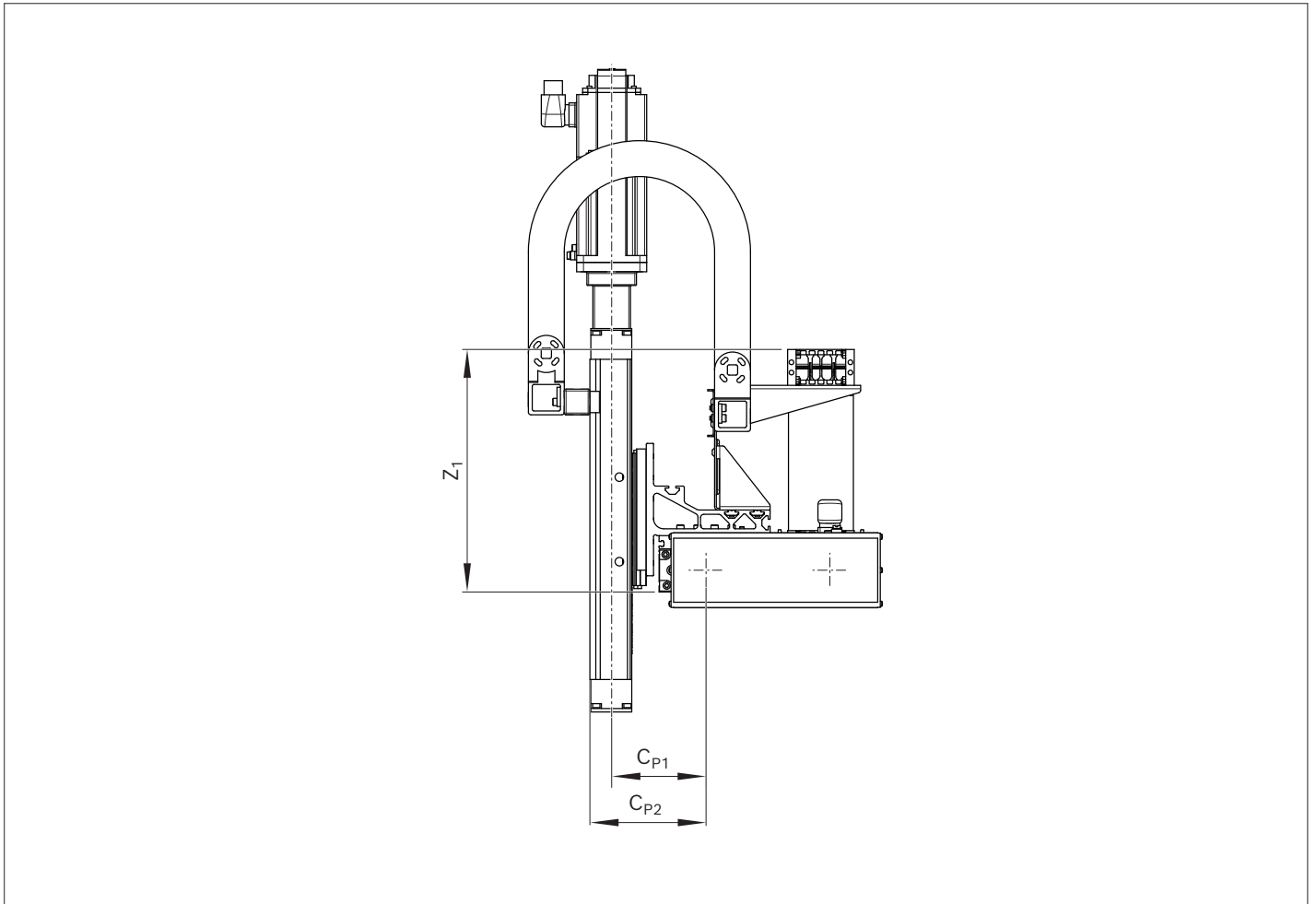▶ 8 sizes

Technical data

Type	Axis	Linear Axis	BASA: d_o x P BELT: ratio i	v_{max} (m/s)	M_{P_max} (Nm)	a_{max} (m/s²)	s_{min} (mm)	s_{max} (mm)	Motor-attach-ment	Motor	m_{ex_max} (kg)
2VA - 20	Z	CKK-090-NN-1	12 x 2	0,23	0,79	15,0	40	600	flange/ coupling	MS2N03	10,0
			12 x 5	0,57	2,39						
			12 x 10	1,13	4,42						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	480	1325	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
2VA - 21	Z	CKK-090-NN-1	12 x 2	0,23	0,79	15,0	40	600	flange/ coupling	MS2N03	10,0
			12 x 5	0,57	2,39						
			12 x 10	1,13	4,42						
	Y	CKR-110-NN-1	i = 5	5,00	2,70	15,0	220	3000	gearbox	MS2N04	
			i = 10	5,00	1,40						
2VA - 22	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	32,5
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	480	1325	belt side drive, i = 1	MS2N04	
			16 x 10	0,77	7,66						
			16 x 16	1,23	7,66						
2VA - 23	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	32,5
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKR-110-NN-1	i = 5	5,00	2,70	15,0	220	3000	gearbox	MS2N04	
			i = 10	5,00	1,40						
2VA - 30	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	32,5
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	495	1590	belt side drive, i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
2VA - 31	Z	CKK-110-NN-1	16 x 5	0,38	6,76	15,0	50	1325	flange/ coupling	MS2N04	32,5
			16 x 10	0,77	13,51						
			16 x 16	1,23	16,50						
	Y	CKR-145-NN-1	i = 3	5,00	10,8	15,0	210	3000	gearbox	MS2N05	
			i = 5	5,00	6,50						
			i = 10	5,00	3,30						
2VA - 32	Z	CKK-145-NN-1	20 x 5	0,30	11,01	15,0	60	1590	flange/ coupling	MS2N04	61,0
			25 x 10	0,63	22,02						
			20 x 20	1,27	29,60						
	Y	CKK-145-NN-1	20 x 5	0,30	8,22	15,0	495	1590	belt side drive, i = 1	MS2N04	
			25 x 10	0,63	8,22						
			20 x 20	1,27	8,22						
2VA - 33	Z	CKK-145-NN-1	20 x 5	0,30	11,01	15,0	60	1590	flange/ coupling	MS2N04	61,0
			25 x 10	0,63	22,02						
			20 x 20	1,27	29,60						
	Y	CKR-145-NN-1	i = 3	5,00	10,8	15,0	210	3000	gearbox	MS2N05	
			i = 5	5,00	6,50						
			i = 10	5,00	3,30						

Dimensional drawings

B_{wz}

Z_G

L

min: Z_u

max. Z_u + Hub

min: Z_o

max: Z_o + Hub

**Version:
X-axis as
toothed belt axis**

X_a

L_{ma}

L_{Mx}

L_{ma}

L_{rv1}

L_{x1}

L_{Mx}

X_a

X: $S_{max}/2$

X: $S_{max}/2$

X_s

X_u

B_{wx}

$L_X = S_{mwx} + R_x$
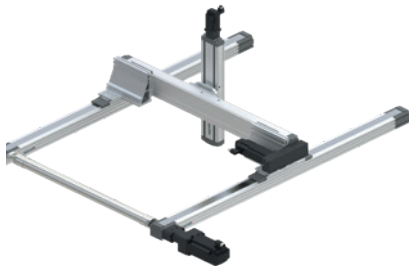
Type	Dimensions (mm)															
	R_x	X_a	X_s	B_{wx}	X_u	B_{wz}	CP_1	CP_2	Z_u	Z_o	Z_1	Z_G	L_{x1}	L_{rv1}	L_{ma}	L_{Mx} (max)	L_{Mz} (max)
2VA-20	300.0	174.5	125.5	184.5	-95	140	105.0	126.0	23.5	262.0	285	240	51	62	145.0	226.5	192.0
2VA-21	366.5	186.0	180.5	184.5	-45	140	105.0	126.0	23.5	262.0	285	240	—	—	160.5	226.5	192.0
2VA-22	300.0	174.5	125.5	184.5	-95	140	110.5	136.0	40.5	286.0	285	200	51	62	145.0	226.5	258.5
2VA-23	366.5	186.0	180.5	184.5	-45	140	110.5	136.0	40.5	286.0	285	200	—	—	160.5	226.5	258.5
2VA-30	349.5	199.5	150.0	207.0	-70	140	130.0	155.5	5.0	321.5	303	260	51	62	157.5	258.5	258.5
2VA-31	400.5	196.5	204.0	207.0	-20	140	130.0	155.5	5.0	321.5	303	260	—	—	210.5	290.0	258.5
2VA-32	349.5	199.5	150.0	207.0	-70	140	167.0	201.0	29.5	354.0	303	300	51	62	157.5	258.5	258.5
2VA-33	400.5	196.5	204.0	207.0	-20	140	167.0	201.0	29.5	354.0	303	300	—	—	210.5	290.0	258.5

Overview

Fastening options on the relevant axes depend on the type and size of the multi-axis system.
Example: 2D area gantry, type 2HB, size 30
According to the table, information on mounting the x-axis (basic axis) can be found in section "Fig. B2" for the required size MKR-080.

2D cantilever surface

TYPE	Size	Y-axis Fig.	Size	X-axis (basic axis) Fig.	Size
	20	H1	CKK-110	B1	CKX-110
	21	H1	CKK-110	B1	CKX-110
	22	H1	CKK-110	B1	CKX-145
2HA	23	H1	CKK-110	B1	CKX-145
	30	H2	CKK-145	B1	CKX-145
	31	H2	CKK-145	B1	CKX-145
	32	H2	CKK-145	B1	CKX-200
	33	H2	CKK-145	B1	CKX-200

2D area gantry

TYPE	Size	Y-axis Fig.	Size	X-axis (basic axis) Fig.	Size
	20	H1	CKX-110	B2	MKR-065
	21	H1	CKX-110	B2	MKR-065
2HB	30	H2	CKX-145	B2	MKR-080
	31	H2	CKX-145	B2	MKR-080
	40	H3	CKX-200	B2	MKR-110
	41	H3	CKX-200	B2	MKR-110

3D cantilever chamber

TYPE	Size	Z-axis Z-adapter Fig.	HK Fig.	Size	X-axis (basic axis) Fig.	Size
	20	V1-A	V1	CKK-090	B1	CKX-145
	21	V1-A	V1	CKK-090	B1	CKX-145
3SA	22	V1-A	V1	CKK-110	B1	CKX-145
	23	V1-A	V1	CKK-110	B1	CKX-145
	30	V1-A	V1	CKK-110	B1	CKX-200
	31	V1-A	V1	CKK-110	B1	CKX-200

3D gantry

TYPE	Size	Z-axis Z-adapter Fig.	HK Fig.	Size	X-axis (basic axis) Fig.	Size
	20	V1-A	V1	CKK-090	B2	MKR-065
	21	V1-A	V1	CKK-090	B2	MKR-065
	22	V1-A	V1	CKK-110	B2	MKR-065
3SB	23	V1-A	V1	CKK-110	B2	MKR-065
	30	V1-A	V1	CKK-110	B2	MKR-080
	31	V1-A	V1	CKK-110	B2	MKR-080
	40	V1-A	V1	CKK-145	B2	MKR-110
	41	V1-A	V1	CKK-145	B2	MKR-110

2D linear gantry

TYPE	Size	Z-axis Z-adapter Fig.	HK Fig.	Size	Y-axis (basic axis) Fig.	Size
	20	V1-A	V1	CKK-090	B1	CKX-110
	21	V1-A	V1	CKK-090	B1	CKX-110
	22	V1-A	V1	CKK-110	B1	CKX-110
2VA	23	V1-A	V1	CKK-110	B1	CKX-110
	30	V1-A	V1	CKK-110	B1	CKX-145
	31	V1-A	V1	CKK-110	B1	CKX-145
	32	V1-A	V1	CKK-145	B1	CKX-145
	33	V1-A	V1	CKK-145	B1	CKX-145

CKX = compact modules with ball screw assembly CKK or toothed belt drive CKR
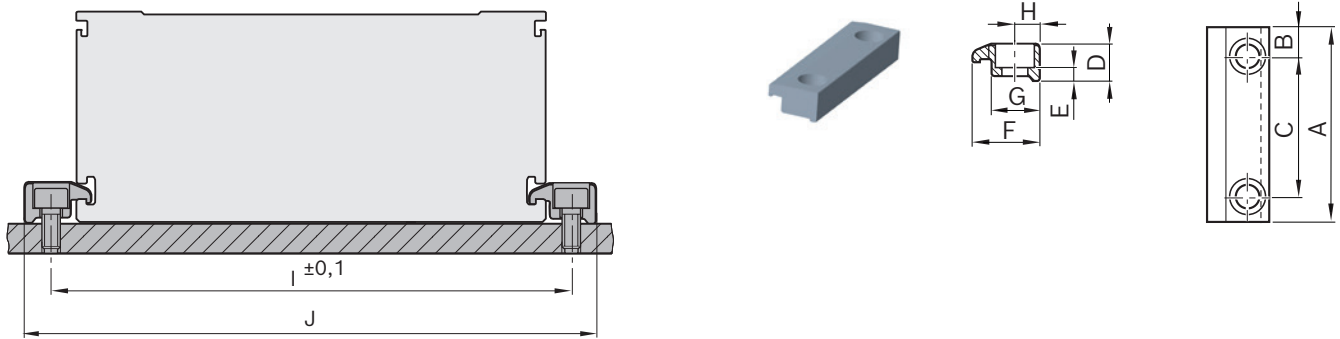**MKR = linear modules with toothed belt drive**

Fastening with clamping fixtures

Position and number of the clamping fixtures can be taken from the configured 3D CAD model

Fig. B1

⚠ **Do not secure or support the compact module at the end enclosures or cross ties! The frame is the load-bearing part!**
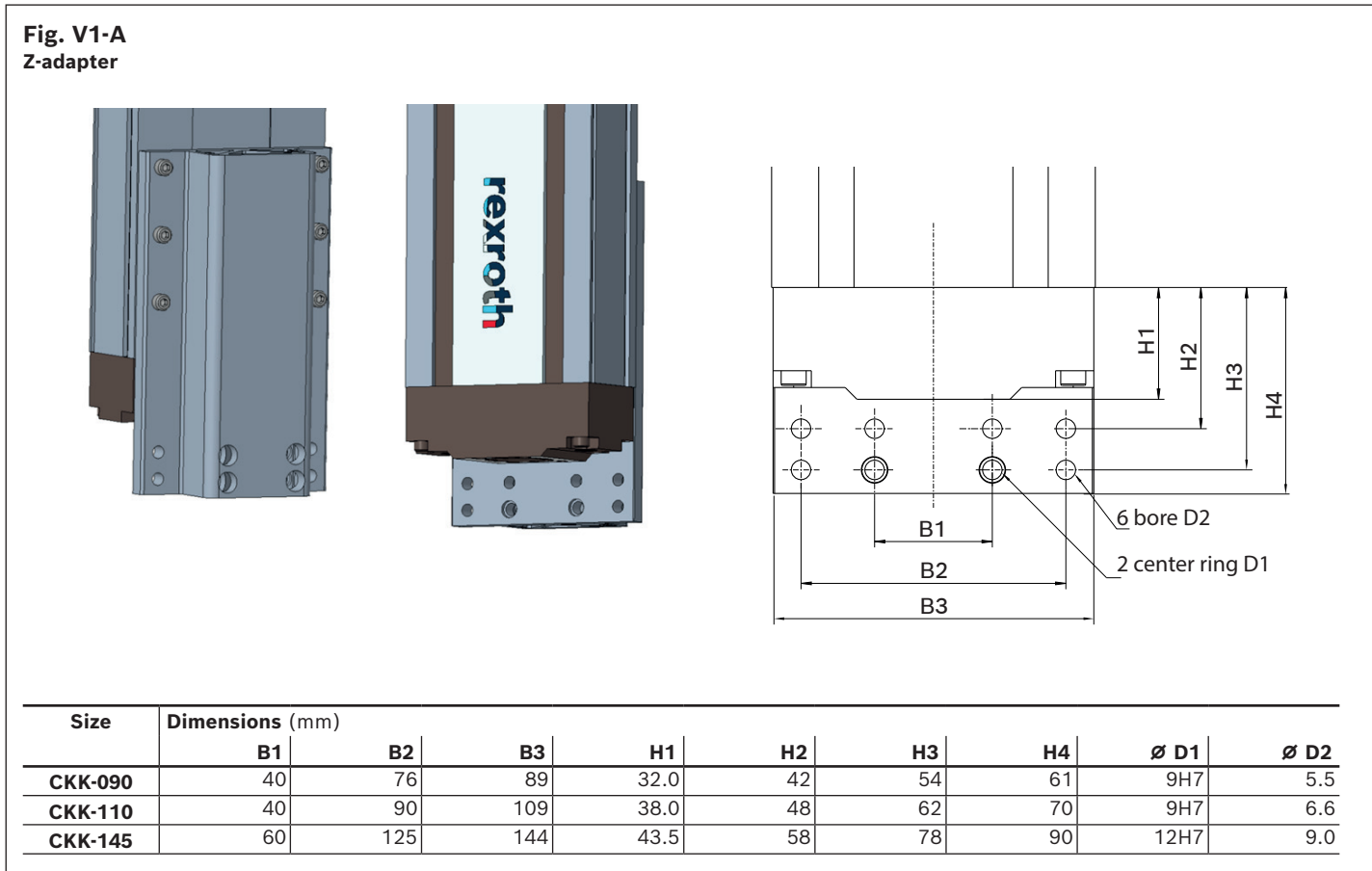
Countersink for thread M
ISO 4762, number N

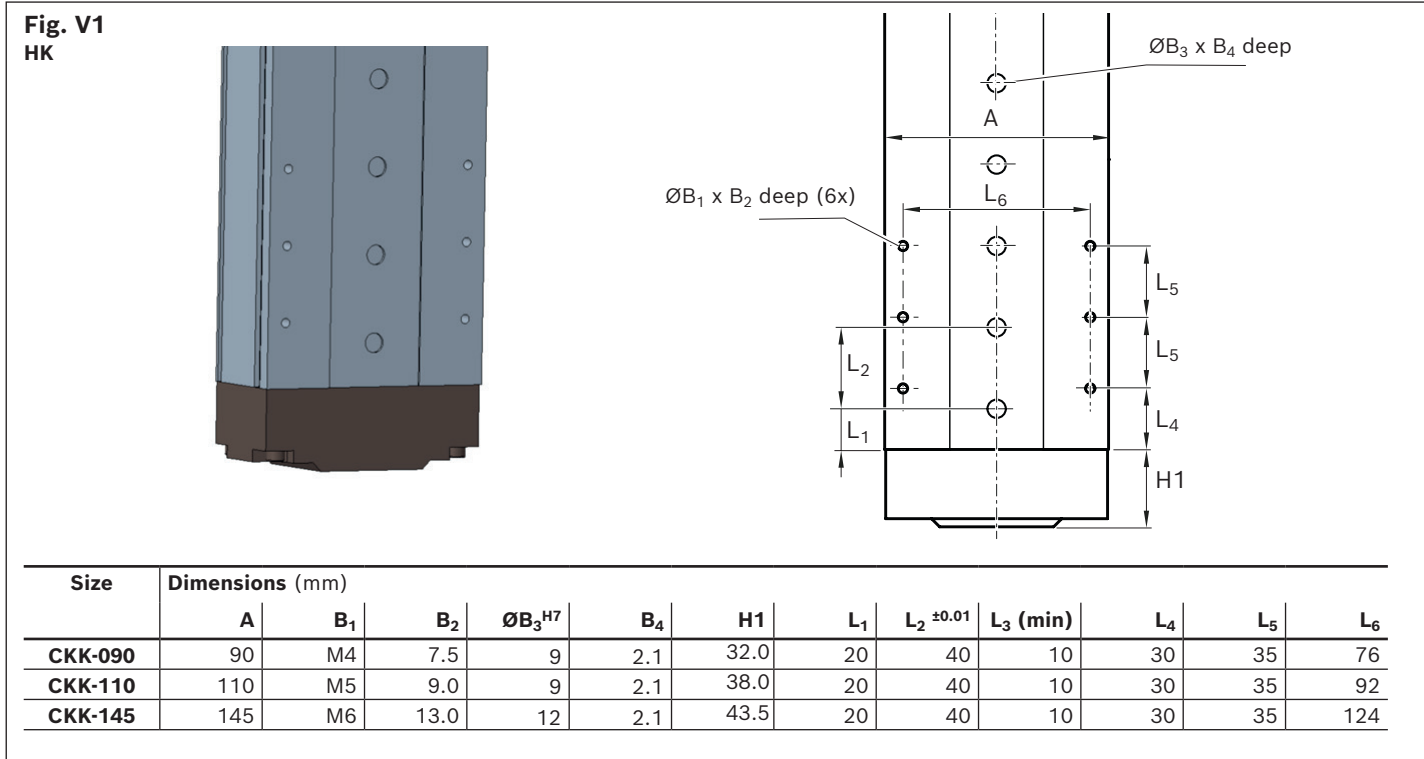| Size	For thread M	N	Dimensions (mm)										Material number
			A	B	C	D	E	F	G	H	I	J	
CKX-110	M6	2	62	11.0	40	11.5	5.3	19.3	14.0	7.0	126	140	R0375 510 34
CKX-145	M6	2	62	11.0	40	11.5	5.3	19.3	14.0	7.0	161	175	R0375 510 34
CKX-200	M8	2	78	19.0	40	27.5	14.8	29.0	19.0	9.0	222	240	R1175 290 97

Fig. B2

⚠ **Do not secure or support the linear module at the end enclosures! The frame is the load-bearing part!**

Countersink for thread M
ISO 4762, number N
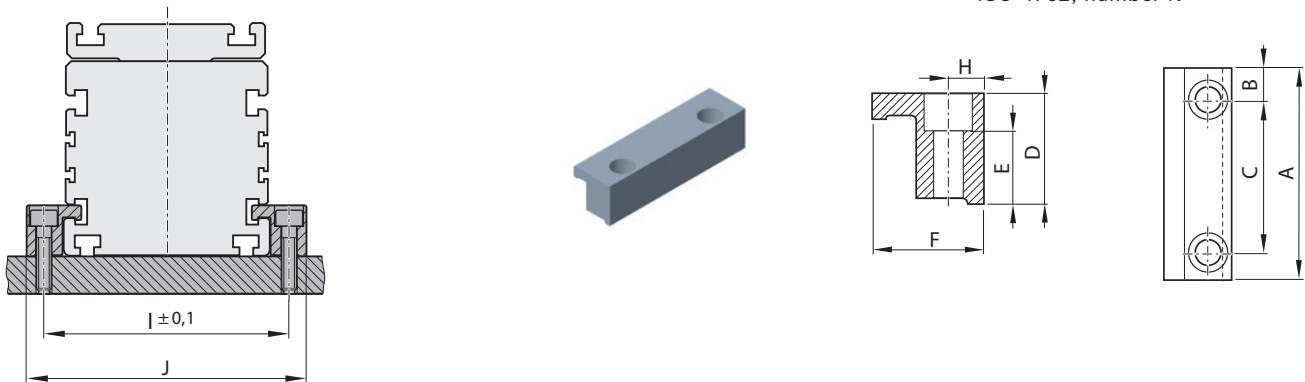
Size	Countersink ISO 4762 for	N	Dimensions (mm)								Material number
			A	B	C	D	E	F	H	I	J	
MKR-065	M6		78	14.0	50	20.0	11.5	20	7.0	81.0	95.0	R117519024
MKR-080	M6	2	78	14.0	50	20.0	11.5	20	7.0	96.0	110.0	R117519024
MKR-110	M8		108	19.0	70	27.5	16.5	29	9.0	132.0	150.0	R117529026

Z adaptation

Fig. V1
HK

Size	Dimensions (mm)											
	A	B_1	B_2	$\varnothing B_3{}^{H7}$	B_4	H1	L_1	L_2 ±0.01	L_3 (min)	L_4	L_5	L_6
CKK-090	90	M4	7.5	9	2.1	32.0	20	40	10	30	35	76
CKK-110	110	M5	9.0	9	2.1	38.0	20	40	10	30	35	92
CKK-145	145	M6	13.0	12	2.1	43.5	20	40	10	30	35	124

Fig. V1-A
Z-adapter

Size	Dimensions (mm)								
	B1	B2	B3	H1	H2	H3	H4	Ø D1	Ø D2
CKK-090	40	76	89	32.0	42	54	61	9H7	5.5
CKK-110	40	90	109	38.0	48	62	70	9H7	6.6
CKK-145	60	125	144	43.5	58	78	90	12H7	9.0

Connection plates

Fig. H1

Size CKX-110

Example presentation

118
92 ± 0,01 (2x Ø 5H7)
85
A A
2x Ø 5H7
42 ± 0,1 (2x Ø 5H7)
130
90
54
18
80 ± 0,01 (2x Ø 9H7)
109
148
M4 (12x) 8mm tief
60
102

A-A
76
4 x M6
2,2
12
2x Ø 9H7
2,1
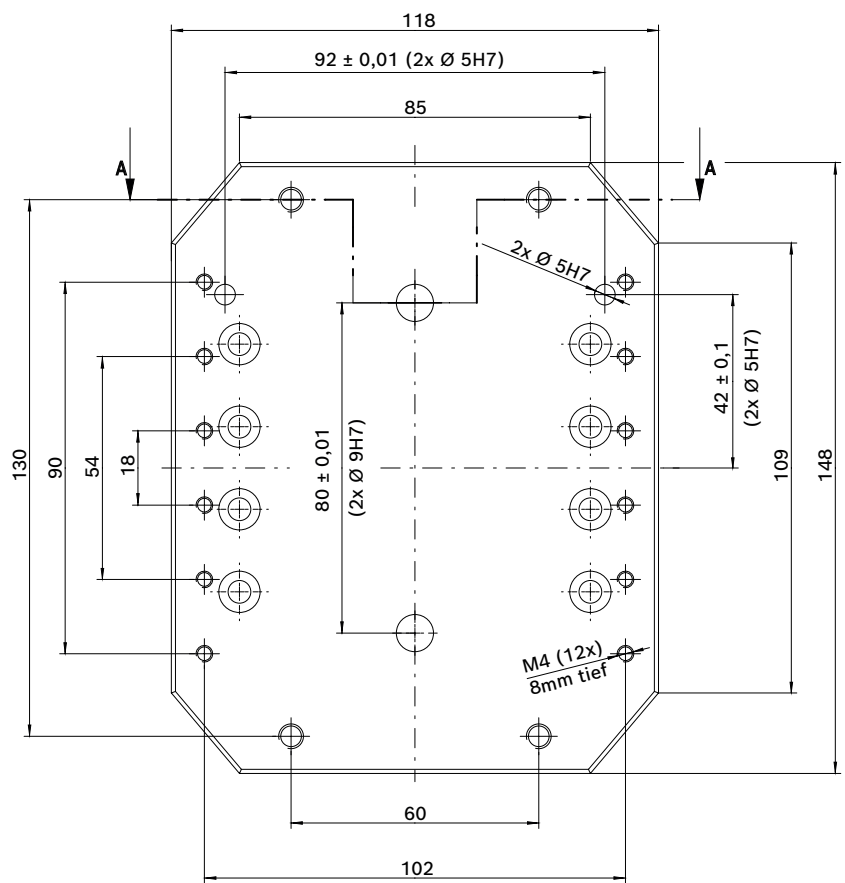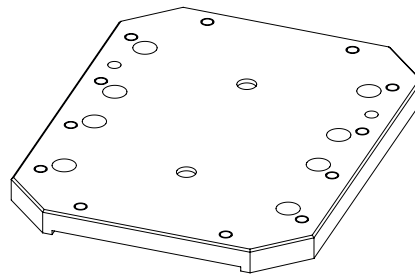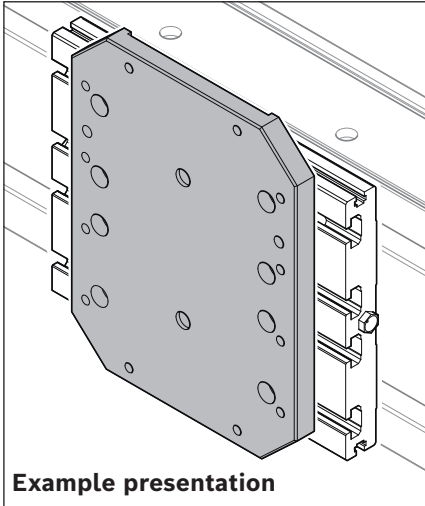
Connection plates

Fig. H2

Size CKX-145

Example presentation

146

124 ± 0,015 (2x Ø 6H7)

100

A   A

168
120
40

80 ± 0,01
(2x Ø 9H7)

(2x Ø 6H7)

35 ± 0,1
(2x Ø 6H7)

143

186

70

126

91

M6 (12x)

A-A

2,2

12

2,1

2x Ø 9 H7

Fig. H3

Size CKX-200

Example presentation

182

119 ± 0,015
(2x Ø 8H7)

100

A

A

220

168

88

40

120 ± 0,015
(2x Ø 12H7)

2x Ø 8 H7

41 ± 0,1
(2x Ø 8H7)

197

238

70

161

91

M6 (16x)

A-A

2,7

14

2,1

2x Ø 12H7
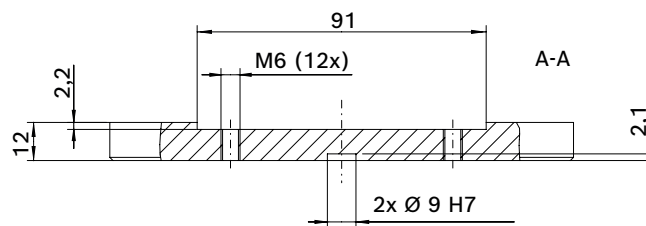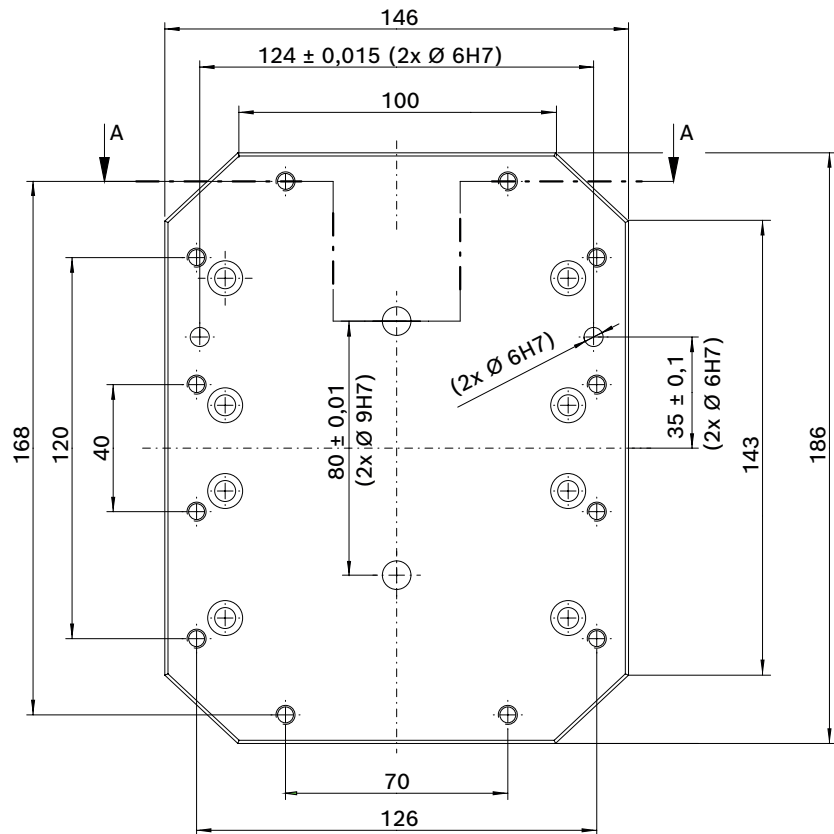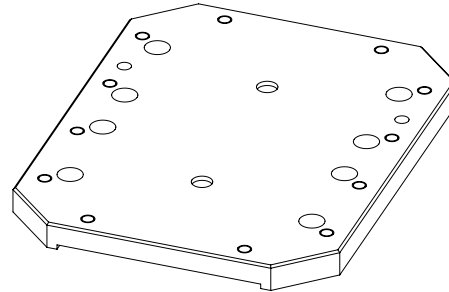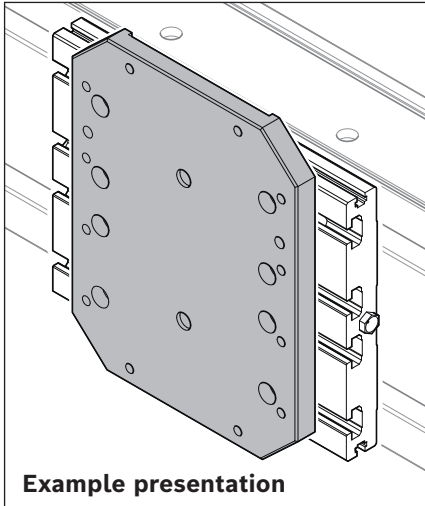
Cable drag chains

Features

▶ ESD-capable

▶ Smooth running

▶ High stability

▶ Flexible interior layout

▶ Chain connector with integrated strain relief

Bending radius

▶ Minimum bending radius 100 mm

▶ Customer cables or hoses: Observe the manufacturer's specifications
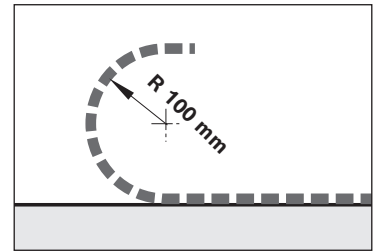
Cable drag chains can be selected as an option

**Cable drag chains with cable (for single-cable connection)**
The scope of delivery includes cable drag chains, storage trays
as well as all fastening material and is completely mounted on
the multi-axis system.
With cables connected (plug connection), which are routed in
the cable drag chains to the output of the storage tray of the
basic axis. The cable ends and the motor of the basic axis are
designed with a plug connection thus offering the option of
connecting cables to the controller.
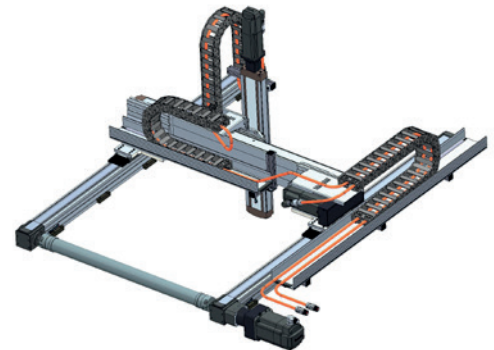
Cable drag chain without cable:
The scope of delivery includes cable drag chains, storage trays
as well as all fastening material and is completely mounted on
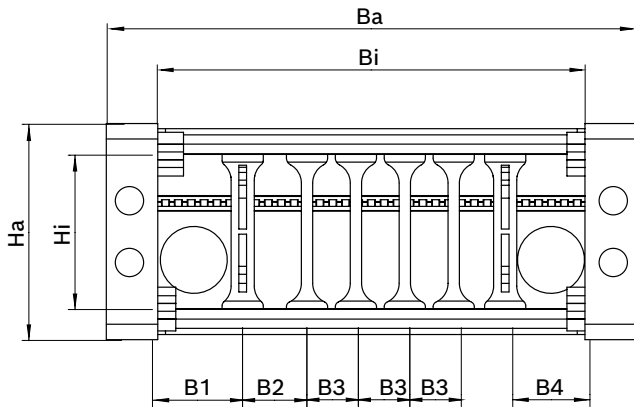the multi-axis system.
All motors without motor cable.
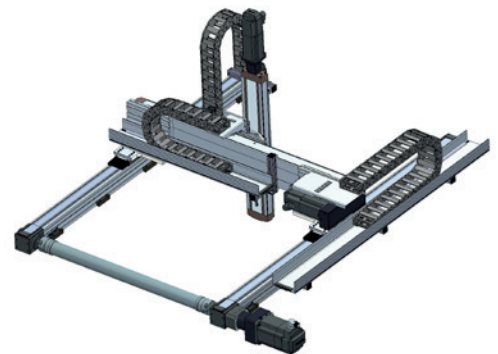
Without cable drag chain, without cable:
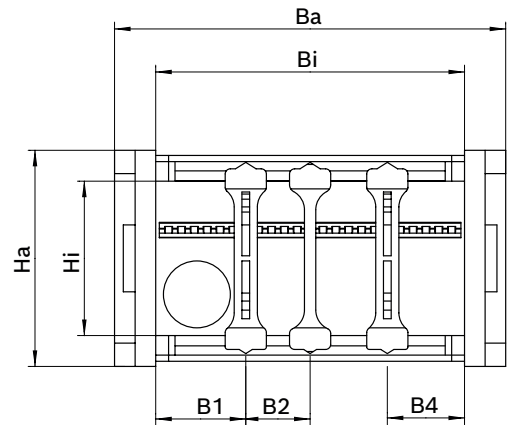The multi-axis system does not have cable drag chain and
cable
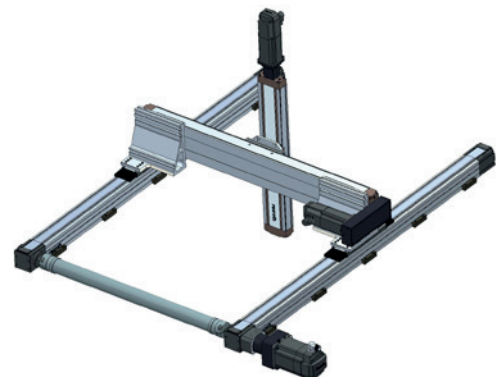
Illustrations are examples

EFK-085

EFK-060

EFK	Dimensions (mm)							
	Ba	**Bi**	**Ha**	**Hi**	**B1**	**B2**	**B3**	**B4**
EFK-085	103	85	42	30	17.5	12.5	10	15
EFK-060	78	58	42	30	17.5	12.5	–	15

Combination of axes (independent of size)	Allocation of cable drag chain		
	X-axis	**Y-axis**	**Z-axis**
3SA	EFK-085	EFK-060	EFK-060
3SB	EFK-085	EFK-060	EFK-060
2HA	EFK-085	EFK-060	–
2HB	EFK-085	EFK-060	–
2VA	–	EFK-085	EFK-060

Normal operating conditions

Ambient temperature with Bosch Rexroth servo motor	0 °C ... 40 °C, above 40 °C loss of performance
Ambient temperature for mechanical system (no dropping below dew point)	-10 °C ... 50 °C
Soiling	not permissible

Required and supplementary documentation

For further instructions and information, please refer to the documentation for this product.

PDF files of these documents can be found on the Internet at: www.boschrexroth.com/mediadirectory.

We would also be happy to send you the documents that you want.

If you are unsure about using this product, please contact Bosch Rexroth.
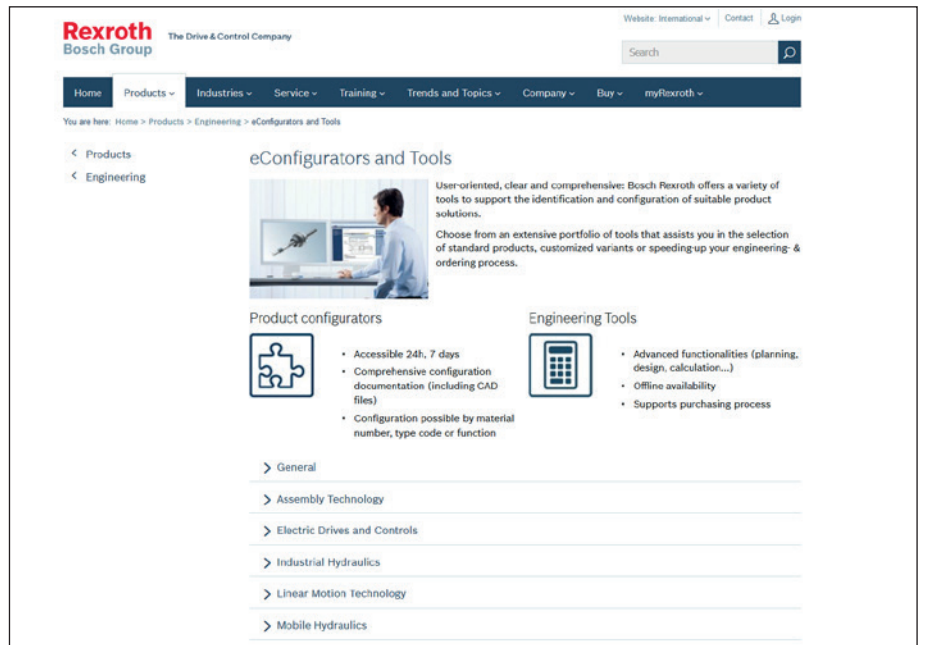
Bosch Rexroth Linear Motion Technology homepage

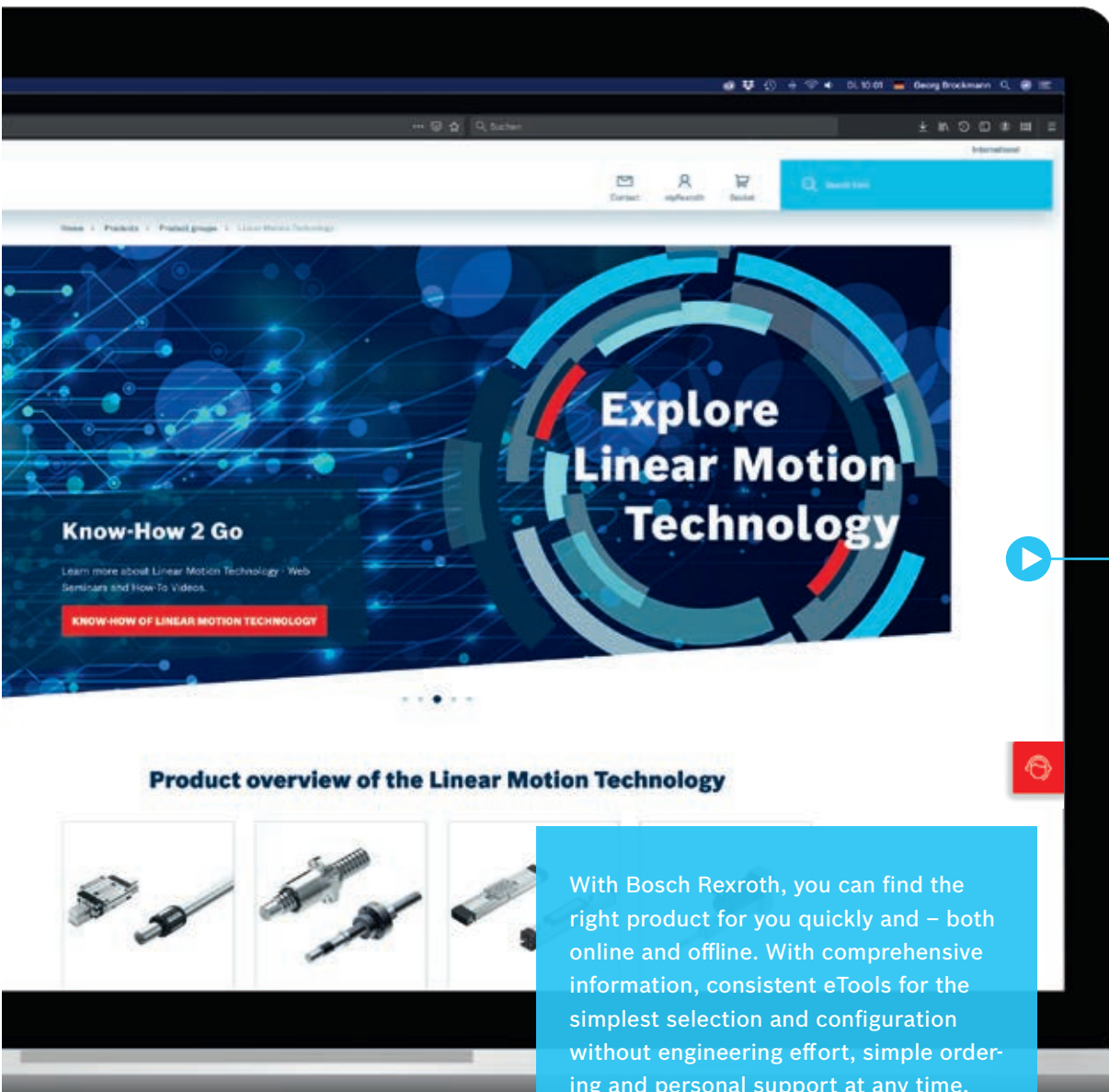https://www.boschrexroth.com/en/xc/products/product-groups/linear-motion-technology/index

Configurators and tools
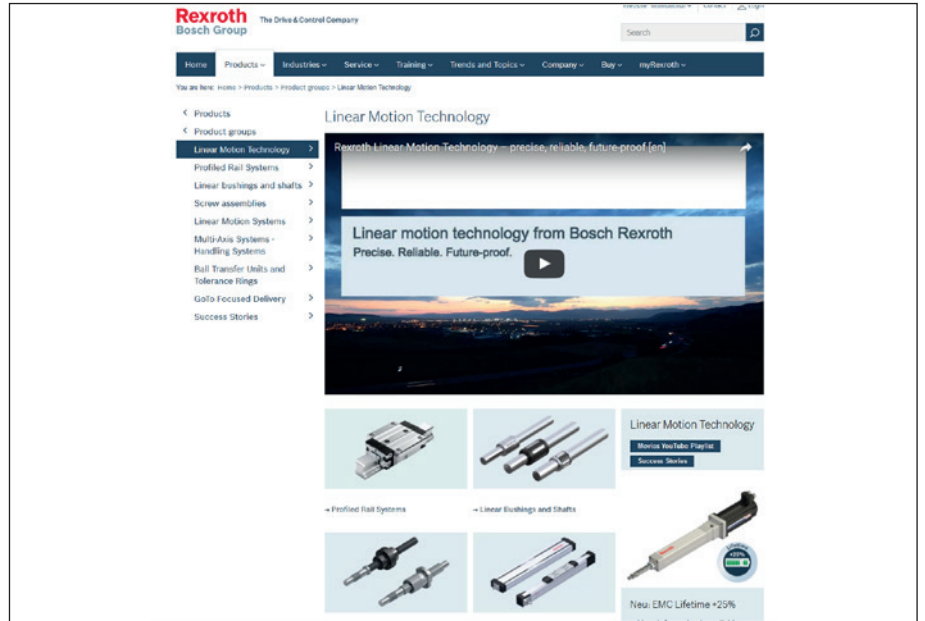
https://www.boschrexroth.com/en/xc/products/engineering/econfigurators-and-tools/econfigurators

Perfect fit:
Choose the best way to your product

ONLINE

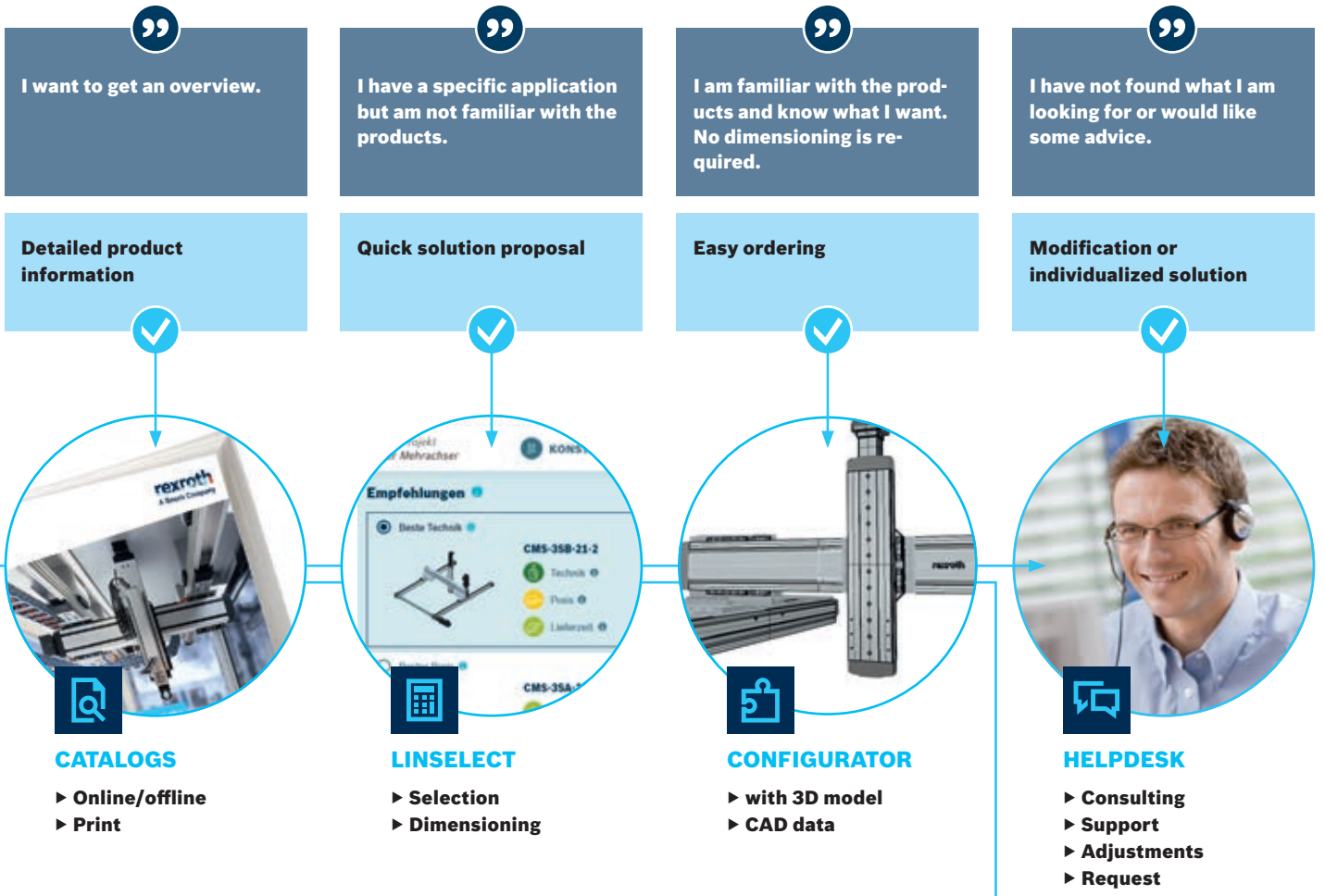**All selection aids are immediately available via the Bosch Rexroth website**

DIRECT CONTACT

▸ **Phone**
  +49 711 51046-0
▸ **E-mail address**
  info@boschrexroth.de
▸ **Contact form**
▸ **Chat**

With Bosch Rexroth, you can find the right product for you quickly and – both online and offline. With comprehensive information, consistent eTools for the simplest selection and configuration without engineering effort, simple ordering and personal support at any time. The perfect basis for building best-in-class multi-axis systems. Fast and economical.

**www.boschrexroth.com/
linear-motion-technology**

I want to get an overview.	I have a specific application but am not familiar with the products.	I am familiar with the products and know what I want. No dimensioning is required.	I have not found what I am looking for or would like some advice.
Detailed product information	**Quick solution proposal**	**Easy ordering**	**Modification or individualized solution**

CATALOGS
▸ **Online/offline**
▸ **Print**

LINSELECT
▸ **Selection**
▸ **Dimensioning**

CONFIGURATOR
▸ **with 3D model**
▸ **CAD data**

HELPDESK
▸ **Consulting**
▸ **Support**
▸ **Adjustments**
▸ **Request**

ORDER
▸ **eShop**
▸ **Price information**

SIMPLY SELECT, CONFIGURE, ORDER

We want you to reach your goal as easily and quickly as possible, depending on the level of information and requirements. That is our claim. With the latest generation of the central selection tool LinSelect, you can find the right product selection with just a few parameters, transfer it to the configurator, generate 3D models if required and order conveniently. You can also use the direct contact at any time!

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Rexroth servicing for linear motion technology means partnership over the entire life cycle of your systems. We are there to help you in 80 countries around the world. From emergency repairs to field service, with original spare parts, modernization and predictive maintenance services. And beyond that with an extensive training portfolio. Working together, we increase your productivity and ensure maximum availability.

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▶ Analysis
▶ Expert overhauls
▶ Cost control

SPARE PARTS
▶ Inexpensive
▶ Time-saving
▶ Spare parts from the original manufacturer
▶ Low storage costs

FIELD SERVICE
▶ Repairs on location
▶ Reduced downtimes
▶ Customer-specific service packages

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LINEAR MOTION TECHNOLOGY SERVICING GERMANY
▶ 24h hotline +49 9352 405060
▶ Direct hotline +49 9721 9378617 (workdays from 08:00 until 17:00)
▶ service.lt@boschrexroth.de