HIWIN®

LINEAR AXES &
LINEAR AXIS SYSTEMS

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LINEAR AXES & LINEAR AXIS SYSTEMS

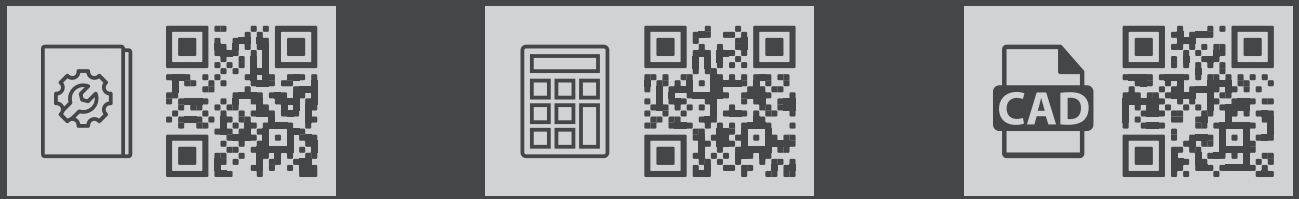
Linear axes and linear axis systems are used in many industrial areas, e.g. to transport or position components. HIWIN offers linear axes with toothed belt drive for applications requiring high dynamic responses and speeds. The HIWIN modular system is a flexible solution for combining toothed belt axes into twin and multi-axis systems, depending on the application. HIWIN linear axes with ballscrew drive are available for applications requiring high feed forces and precision. HIWIN linear axes with linear motor drive fulfil the highest demands on dynamics, accuracy and synchronism. Due to their compact design and low moving mass the HIWIN cantilever axes are particularly suitable for vertical applications.

DOWNLOADS AND **APPLICATIONS**

Assembly instructions

Sizing tool

CAD configurator

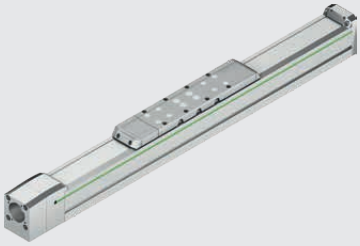


Contents

1. Product overview

Linear modules HM-B with toothed belt drive Page 24

- High velocity
- High acceleration
- Long stroke lengths



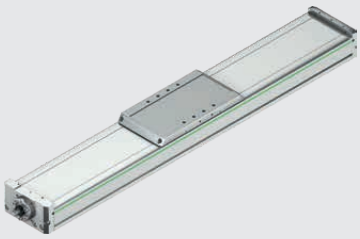
Linear modules HM-S with ballscrew Page 34

- High positioning accuracy
- High feed force
- High drive rigidity

Linear tables HT-B with toothed belt drive Page 44

- High velocity
- High acceleration
- High rigidity and torque load capacity

  due to double guide



Linear table HT-S with ballscrew Page 54

- High positioning accuracy
- High feed force
- High rigidity and torque load capacity

  due to double guide

Linear tables HT-L with linear motor Page 64

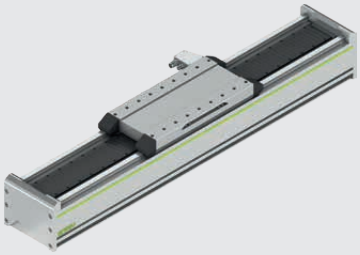
- Maximum positioning accuracy
- Maximum dynamics
- Wear-free drive

HB-B bridge axes with toothed belt drive Page 74

- Maximum rigidity due to closed profile
- High speed
- High feed force

HB-R bridge axes with rack and pinion drive Page 78

- Maximum rigidity due to closed profile
- High speed
- High positioning accuracy



HB-L bridge axes with linear motor Page 82

- Maximum rigidity due to closed profile
- Highest positioning accuracy
- High dynamics

Cantilever axis HC-B with toothed belt drive Page 86

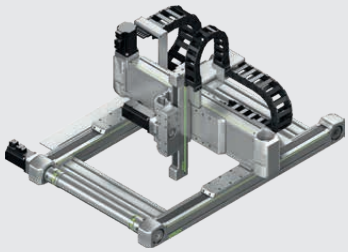
- Compact design
- Low moving mass
- High dynamism

Cantilever axis HC-R with rack and pinion drive Page 100

- Compact design
- High feed force
- High rigidity

Double axes HD Page 104

- Two toothed belt axes HM-B connected to synchronous shaft
- Completely assembled unit
- Can be individually assembled

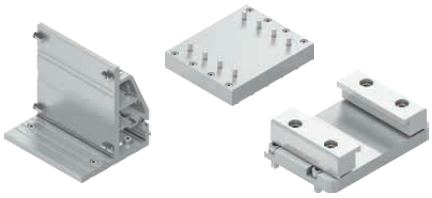


Multi-axis systems HS Page 110

- X-Y-, X-Z- and X-Y-Z-systems with toothed belt axes
- Individual stroke length
- Ready-to-install complete system

Linear axes & linear axis systems

Product overview

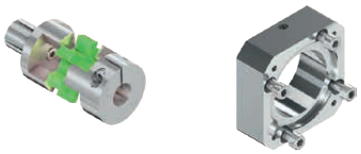


Adapters for cross tables and multi-axis systems Page 146

- Flexible connection of two or more axes
- Components for building complete individual systems
- Secure positioning thanks to form and force closure

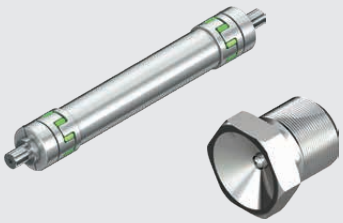
Adapters for robot axes Page 155

- For mounting lightweight robots on linear axes HT
- Quick and safe connection
- Sets include mounting material



Drive adaptation Page 159

- Adapter for flexible motor connection
- Gearbox/Belt drive
- Energy supply



Accessories Page 190

- Mounting and adaptation material
- Sensors and cables
- Lubrication accessories

2. General information

2.1 Properties of linear modules HM

HIWIN linear axes HM are compact positioning systems available with a toothed belt drive or with a ballscrew. They are based on a heavy-duty and low-wear linear guideway, combined with a sturdy and lightweight aluminium profile. Thanks to a freely adjustable stroke in millimetre increments as well as a variety of options (e.g. steel cover strip, limit switch, distance measuring system and additional carriages in various sizes), the linear axes can be individually adapted to the respective application requirements.

Advantages of linear modules HM

- Aluminium profile with large grooves for stable mounting of the linear axis on the machine frame
- Stable and reproducible mounting of the load capacity due to carriages with threaded holes and additional close-tolerance centring holes
- Convenient relubrication in any installation position thanks to grease nipples on both sides
- Limit switches can be mounted directly in a profile groove and positioned freely
- Options, such as belt cover, flexible mounting of the drive, adapters for all common motor types and distance measuring system are available as standard

2.2 Properties of linear tables HT

HIWIN linear stages HT are compact positioning systems with integrated double guide for high rigidity as well as high torque load capacity around the X-axis. Depending on the application requirements, three drive types are available: Toothed belt for dynamic applications, ballscrew for high feed forces and linear motor drive for the highest demands on speed and precision. The stroke can be freely selected in millimetre steps for all three drive types.

Advantages of linear tables HT

- High rigidity and high torque load capacity around the X-axis
- Integrated HIWIN double guide
- Very smooth running thanks to SynchMotion™ technology
- Sturdy steel cover strip, included as standard

2.3 Properties of HB bridge axes

HIWIN HB bridge axes are rigid positioning systems with a closed aluminium profile and external double guide in O-arrangement. Three drive types are available depending on the application requirements: Toothed belt for high speeds, rack and pinion drive for high positioning accuracy and linear motor drive for the highest demands on dynamics and precision. The stroke can be freely selected in millimetre increments for all three drive types.

Advantages of HB bridge axes

- Maximum rigidity and maximum moment load capacity thanks to closed aluminium profile
- HIWIN double guide in O-arrangement
- High load capacity
- High feed forces

2.4 Properties of cantilever axis HC

HIWIN cantilever axes HC are flexible linear units with an omega toothed belt drive. The compact drive block with motor and gearbox is stationary while the lightweight cantilever moves. Thanks to the sophisticated structure of the aluminium profile, the cantilever features high torsional rigidity despite its low weight and is therefore suitable for dynamic applications, especially vertical ones. The stroke can be freely selected in millimetre steps.

Advantages of cantilever axis HC

- Compact design
- High cantilever rigidity
- Low moving mass

2.5 Properties of double axes HD

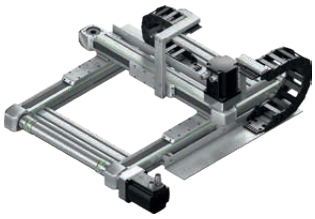
HIWIN double axes HD are positioning modules with two toothed belt axes of the HM-B series, which are connected to each other via a synchronous shaft. The stroke and the distance between the two axes can be adjusted in millimetre steps. HIWIN double axes are particularly suitable for applications where a wide mounting surface or an additional carriage is required for support in the Y direction. They are also ideally suited as a basis for multi-axis systems.

Advantages of double axes HD

- Only minor design work needed thanks to standardised units with flexible configuration options
- Low assembly effort due to ready-to-install system
- Options, such as belt cover, flexible mounting of the drive, adapters for all common motor types and distance measuring system are available as standard

2.6 Properties of double axis systems HS2

HIWIN two-axis systems HS2 are flexible units for positioning along the X- and Y-axes. The X-axis is based on a HIWIN HD double axis. In the Y direction, you can choose between a HIWIN HM-B belt drive axis (module) or HT-B (table) for dynamic positioning. HIWIN two-axis systems are suitable for two-dimensional handling tasks.

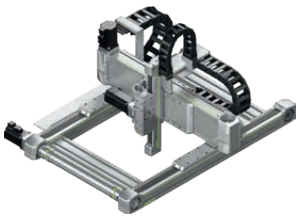


Advantages of double axis systems HS2

- Stroke in both axial directions can be freely selected in millimetre steps
- Low assembly effort due to ready-to-install complete system
- Optionally with drive adaptation and energy chains

2.7 Properties of three-axis systems HS3

HIWIN three-axis systems HS3 are flexible units for positioning along the X- Y- and Z-axis. The X-axis is based on a HIWIN HD double axis. In the Y direction, a linear table HT-B with toothed belt drive ensures dynamic positioning.
The cantilever axis HC with omega toothed belt drive and particularly light cantilever ensures fast and precise movements in the Z direction.

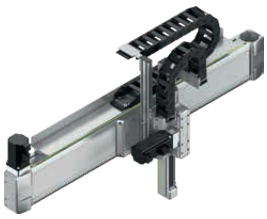


Advantages of three-axis systems HS3

- Stroke in all three axial directions can be freely selected in millimetre steps
- Low assembly effort due to ready-to-install complete system
- Optionally with drive adaptation and energy chains

2.8 Properties of linear gantries HSL

HIWIN linear gantries HSL are flexible units for positioning along the X- and Z-axis. The basis in the X-axis is a linear table HT-B with toothed belt drive. The cantilever axis HC with omega toothed belt drive and particularly light cantilever ensures dynamic positioning in the Z direction.

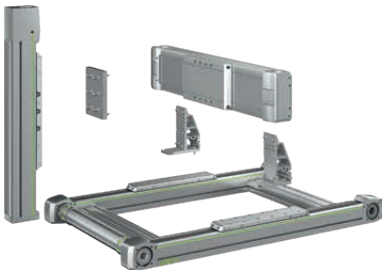


Advantages of linear gantries HSL

- Stroke in both axial directions can be freely selected in millimetre steps
- Low assembly effort due to ready-to-install complete system
- Optionally with drive adaptation and energy chains

2.9 Properties of adapters for cross tables and multi-axis systems

With the HIWIN adapters for cross tables and multi-axis systems, two or more axes can be flexibly combined. This allows individual multi-axis systems to be designed quickly and easily. Forces and torques are safely transmitted through force and form closure. Centring sleeves allow for precise and reproducible connection.



Advantages of the adapters

- Quick and easy assembly of individual multi-axis systems
- Rigid and safe power transmission
- Only minor construction work needed thanks to standardised sets including mounting material

2.10 Properties of adapters for robot axes

The HIWIN adapters for robot axes allow a lightweight robot and a HIWIN HT linear axis to be combined. This makes it quick and easy to design a 7th axis system. The adapters are designed so that the robots can rotate freely in the lower axis even with axes with an energy chain attached. Centring sleeves allow for precise and reproducible connection.

Advantages of the adapters

- Quick and easy robot mounting
- Only minor construction work needed thanks to standardised sets
- Including mounting material

2.11 Installation location requirements

- Temperature range: +5 °C to +40 °C
- Dry
- Non-explosive
- No vacuum

3. Calculation basis

3.1 Calculation of the required drive torque for HM-B, HM-S, HT-B, HT-S, HB-B, HB-R and HC

The maximum drive torque of axes HM-B, HM-S, HT-B, HT-S, HB-B, HB-R and HC is based on the technical data of the drive elements (toothed belt or ballscrew). Motors and gears must be dimensioned so that the maximum drive torque is not exceeded during operation. The required drive torque is calculated according to the formula F 3.1. Basically, all individual movements that the axis goes through in a cycle should be calculated and compared with the limit values of the axis. In simplified form, for preselection of the axis, the required drive torque M_A can be calculated from the travel movement with the highest load and compared with the maximum drive torque of the axis.

F 3.1

$$M_A = M_{dyn} + M_{stat} + M_{leer}$$

M_A Required drive torque [Nm]
M_{dyn} Dyn. Drive torque [Nm] (see formula F 3.2)
M_{stat} Stat. Drive torque [Nm] (see formula F 3.5)
M_{Leer} Idle torque [Nm] (see technical data of axis)

The dynamic drive torque M_{dyn} is calculated from the rotational moment of inertia of the axis and the translationally moved mass.

F 3.2

$$M_{dyn} = \frac{J_{rot} \times a}{10 \times r} + \frac{F_{x\_dyn} \times r}{1.000}$$

J_{rot} Rotational moment of inertia of the axis [kgcm²] (see technical data of the axis, at HM-S/HT-S: J_{rot} = J_{rot} 0-stroke + J_{rot} stroke)
a Max. acceleration [m/s²]
r Effective radius [mm] (see formula F 3.4)
F_{x_dyn} Dynamic feed force [N] (see formula F 3.3)

F 3.3

$$F_{x\_dyn} = (m_{Last} + m_{Schlitten}) \times a$$

m_{Load} Externally moving mass [kg]
$m_{Carriage}$ Mass of the moving carriage [kg]. (see technical data of the axis)

F 3.4

$$r = \frac{P}{2 \times \pi}$$

P Feed constant (HM-B/HT-B) [mm]; spindle pitch (HM-S/HT-S) [mm]

The static drive torque M_{stat} takes into account the drive torque required to hold the load when the axis is not horizontal.

F 3.5

$$M_{stat} = \frac{F_{x\_stat} \times r}{1.000}$$

F_{x_stat} Gravitational force [N] (see formula F 3.6) Is exerted on the drive element by the moving mass when not arranged horizontally

F 3.6

$$F_{x\_stat} = (m_{Last} + m_{Schlitten}) \times g \sin (A)$$

g Gravitational acceleration [m/s²]
A Angle by which the linear axis deviates horizontally in the direction of travel (see Fig. 3.1)

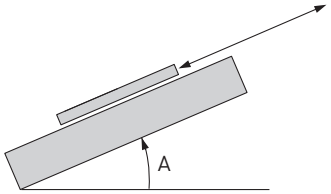


Fig. 3.1 **Angle A**

3.2 Calculation of the required feed force for HT-L and HB-L

The required feed force F_v for applications with linear tables HT-L with linear motor drive is calculated according to the formula F 3.7. For an exact design, the travel profile must be recorded as a whole; the individual movements as well as the resulting effective force, which occurs over the entire cycle time, must be calculated. The effective force must not exceed the permanent force specified in chapter 9. In addition, it should be noted that the peak force must not be exceeded during the complete cycle and must not be generated for longer than 1 second for thermal reasons. To preselect the axis for an application, the required maximum feed force must be matched with the maximum peak force of the motor.

F 3.7

$$F_v = F_{x\_dyn} + F_{x\_stat} + F_l$$

F_v Required feed force [N]
F_{x_dyn} Dynamic feed force [N] (see formula F 3.8)
F_{x_stat} Gravitational force [N] (see formula F 3.9)
Is exerted on the drive element by the moving mass when not arranged horizontally
F_l Carriage displacement force [N]
(see technical data of the axis)

F 3.8

$$F_{x\_dyn} = (m_{Last} + m_{Schlitten}) \times a$$

m_{Load} Externally moving mass [kg]
$m_{Carriage}$ Mass of the moving carriage [kg].
(see technical data of the axis)
a Max. acceleration [m/s²]

F 3.9

$$F_{x\_stat} = (m_{Last} + m_{Schlitten}) \times g \sin (A)$$

g Gravitational acceleration [m/s²]
A Angle by which the linear axis deviates horizontally in the direction of travel (see Fig. 3.1)

3.3 Lifetime calculation

The lifetime L of a linear axis is defined as the total mileage of the linear axis in kilometres until the first material fatigue occurs on the components of the linear axis (excluding wear parts).
For multi-axis systems HS, the lifetime must be calculated separately for each axis.

3.2.1 Load application point and load distance

The specified dynamic forces and torques are related to the linear axis carriage. The load application point is defined as the centre of the carriage surface.
The load distance z is the distance from the top edge of the carriage to the centre of the profile rail guide.

3.3.1 Forces and torques on the linear axis

The specified maximum dynamic forces and torques for the respective axis type must not be exceeded during operation.

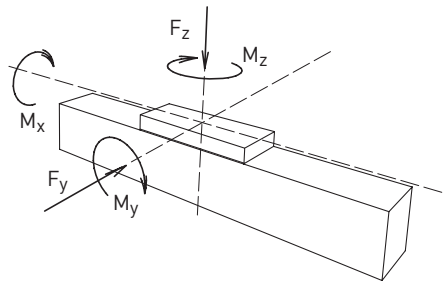


Fig. 3.2 **Illustration of the forces and torques on linear axes HM, HT and HB**

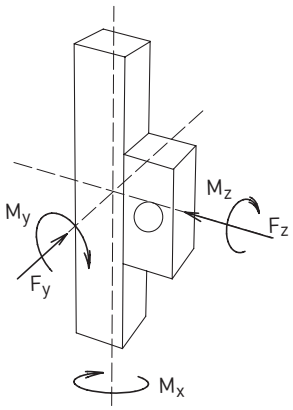


Fig. 3.3 **Illustration of the forces and torques on cantilever axis HC**

3.3.2 Reference lifetime and load comparison factor

If there is a combined load from several forces and torques, the load comparison factor f_v is first calculated according to the formula F 3.10. With the load comparison factor, the application-specific lifetime can be calculated from the respective lifetime L characteristic curves. (Fig. 3.4 to Fig. 3.11). At $f_v = 1$ the predefined reference lifetime is reached in each case.
The reference service life is the service life of the linear axis at a load comparison factor $f_v = 1$. The reference service life depends on the axis type and axis size and can be found in the service life characteristic curves (Fig. 3.4 to Fig. 3.11). For a load comparison factor f_v greater than 1, please contact HIWIN.

F 3.10

$$f_v = \frac{|F_y|}{F_{ydynmax}} + \frac{|F_z|}{F_{zdynmax}} + \frac{|M_x|}{M_{xdynmax}} + \frac{|M_y|}{M_{ydynmax}} + \frac{|M_z|}{M_{zdynmax}} \leqslant 1$$

f_v Load comparison factor
L Lifetime [km]

Effective load in the application:
F_y Effective force in Y direction [N]
F_z Effective force in Z direction [N]
M_x Effective torque around the X-axis [Nm]
M_y Effective torque around the Y-axis [Nm]
M_z Effective torque around the Z-axis [Nm]

Permissible load data of the linear axis:
$F_{ydynmax}$ Maximum dynamic force in Y direction [N]
$F_{zdynmax}$ Maximum dynamic force in Z direction [N]
$M_{xdynmax}$ Maximum dynamic moment around the X-axis [Nm]
$M_{ydynmax}$ Maximum dynamic moment around the Y-axis [Nm]
$M_{zdynmax}$ Maximum dynamic moment around the Z-axis [Nm]

3.3.3 Lifetime characteristic curve of the linear axis with toothed belt drive HM-B, HT-B, HC and the linear axis with linear motor drive HT-L

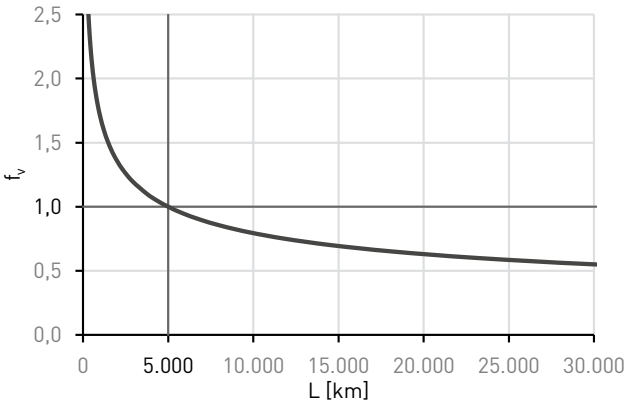


Fig. 3.4 **Lifetime characteristic curve HC025B**

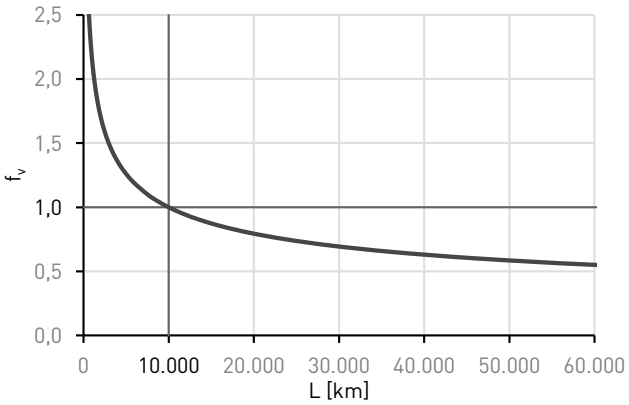


Fig. 3.5 **Lifetime characteristic curve HC040B, HT100L**

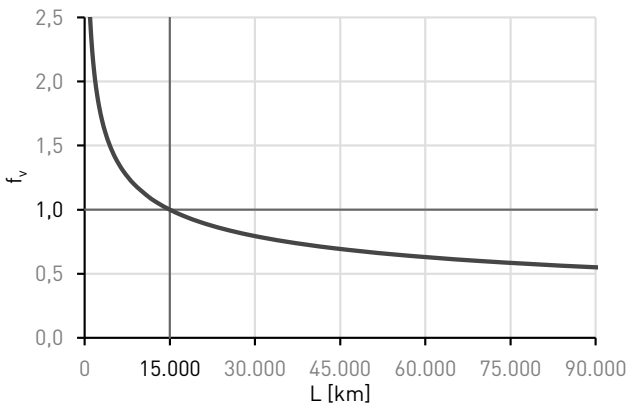


Fig. 3.6 **Lifetime characteristic curve HC060B, HC080B, HC100B, HC150**

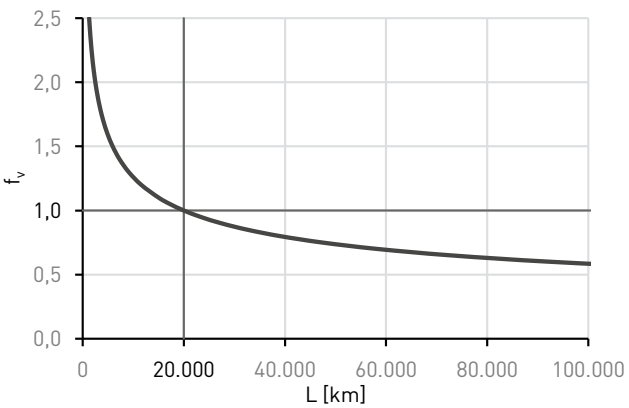


Fig. 3.7 **Lifetime characteristic curve HM-B, HT-B, HT150L, HT200L, HT250L, HB250B, HB250R, HB250L**

At $f_v = 1$ the predefined reference lifetime is reached in each case.
Please contact HIWIN for more information.

3.3.4 Lifetime characteristic curve of linear axis with ballscrew HM-S and HT-S

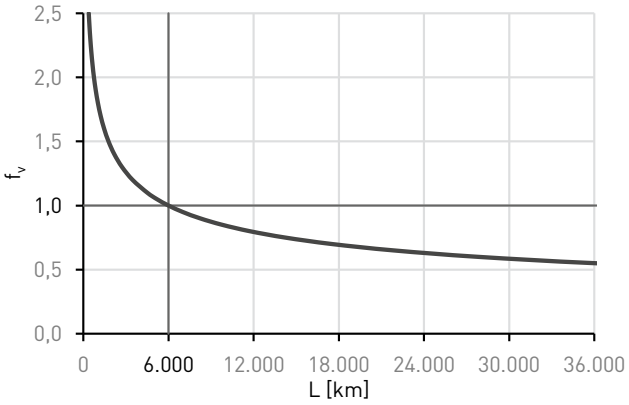


Fig. 3.8 **Lifetime characteristic curve HM040S, HT100S**

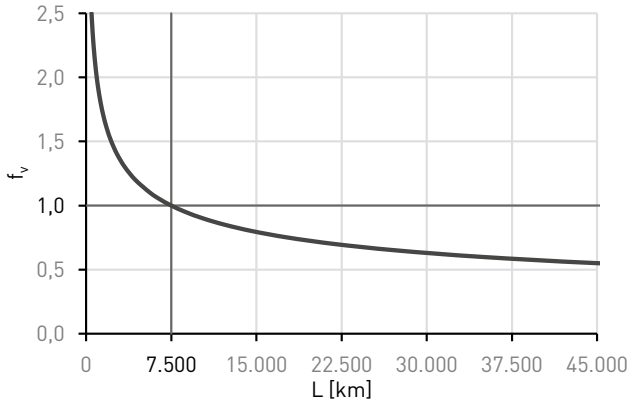


Fig. 3.9 **Lifetime characteristic curve HM060S, HM080S, HT150S**

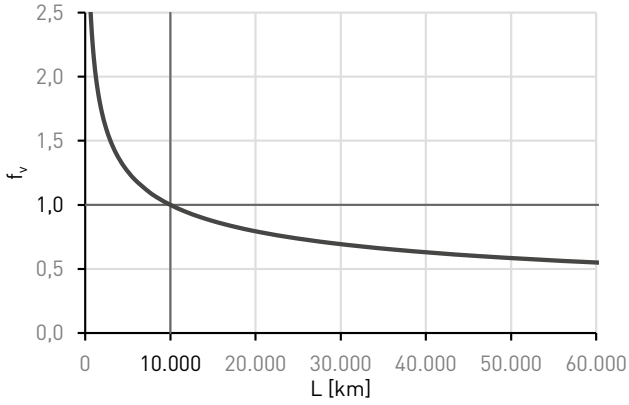


Fig. 3.10 **Lifetime characteristic curve HM120S, HT200S**

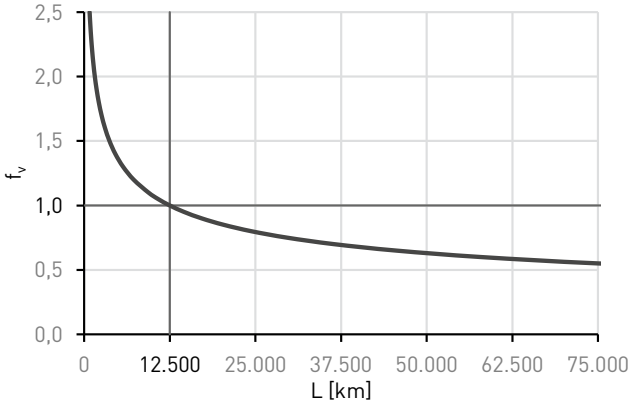


Fig. 3.11 **Lifetime characteristic curve HT250S**

At $f_v = 1$ the predefined reference lifetime is reached in each case.
Please contact HIWIN for more information.

3.4 Calculation of the support distance

The linear axes should ideally be mounted on a continuous, stable and level surface. If this is not possible, at least one support point must be provided on each side, in each case at the end of the profile. The max. permissible support distance L_{SUP} as a function of load F_y and F_z according to the following diagrams must not be exceeded. Additional support points may have to be provided to ensure this. For more information on mounting the linear axis, see the assembly instructions at hiwin.de.

3.4.1 Maximum support distance L_{SUP} of the linear modules with toothed belt drive HM-B in unsupported applications

Axis position lying horizontal:

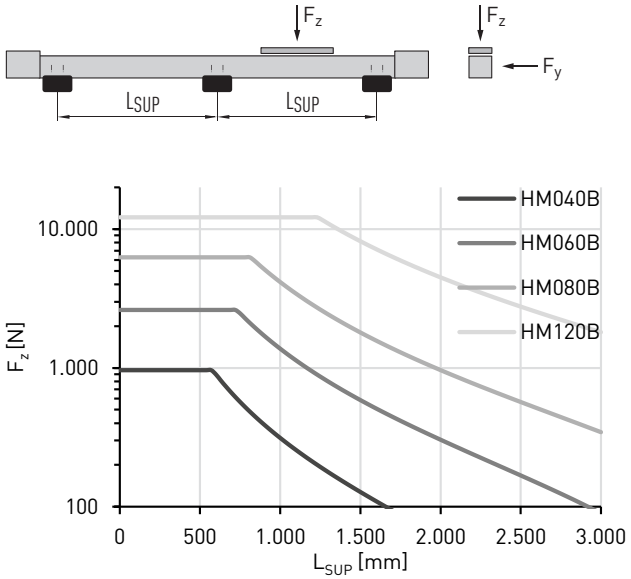


Fig. 3.12 **HM-B: Maximum support distance L_{SUP} as a function of force F_z**

Axis position standing horizontal:

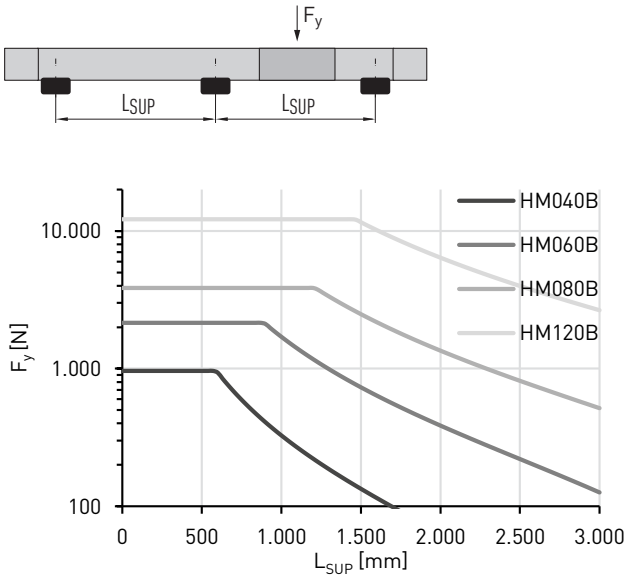


Fig. 3.13 **HM-B: Maximum support distance L_{SUP} as a function of force F_y**

3.4.2 Maximum support distance of the linear modules with ballscrew HM-B in unsupported applications

Axis position lying horizontal:

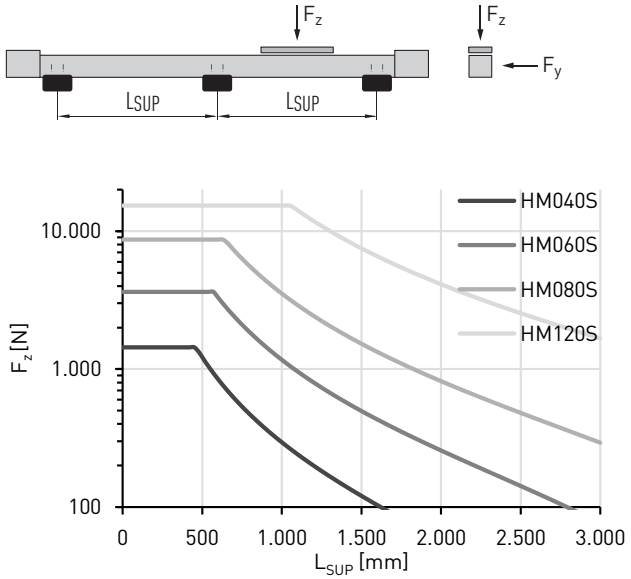


Fig. 3.14 **HM-S: Maximum support distance L_{SUP} as a function of force F_z**

Axis position standing horizontal:

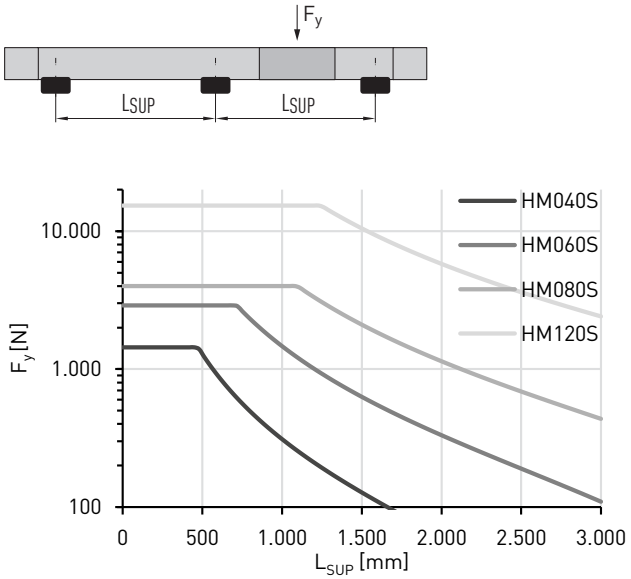
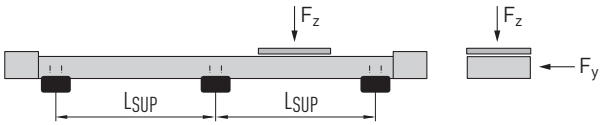


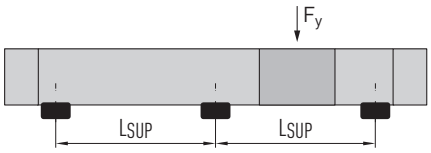
Fig. 3.15 **HM-S: Maximum support distance L_{SUP} as a function of force F_y**

3.4.3 Maximum support distance of linear tables HT-B, HT-S, HT-L, HB in supported applications

Axis position lying horizontal:



Axis position standing horizontal:



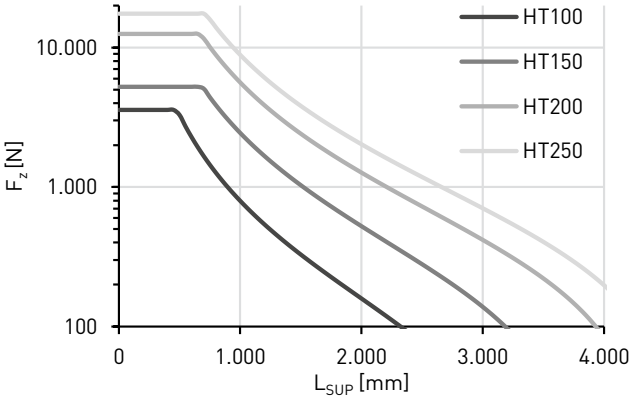


Fig. 3.16 **HT-B, HT-S: Maximum support distance L_{SUP} as a function of force F_z**

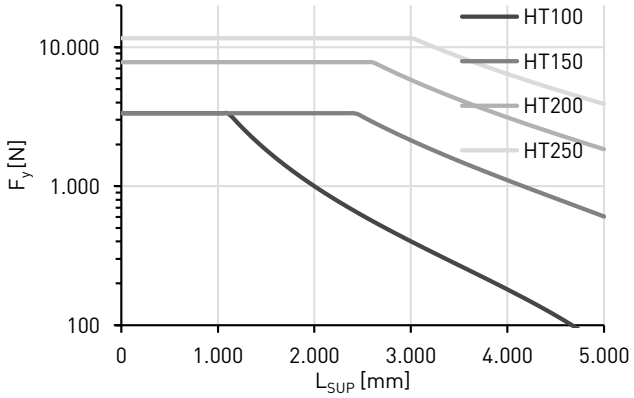


Fig. 3.17 **HT-B, HT-S: Maximum support distance L_{SUP} as a function of force F_y**

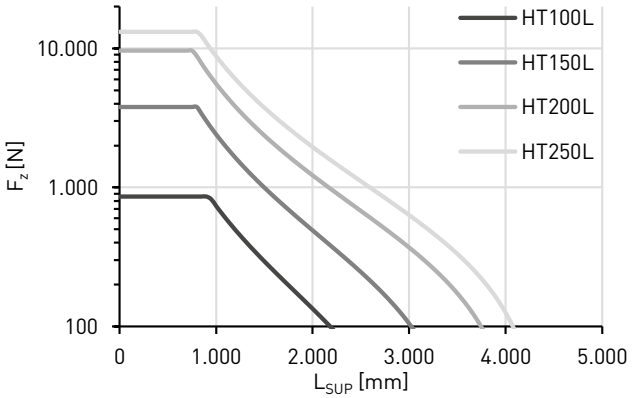


Fig. 3.18 **HT-L: Maximum support distance L_{SUP} as a function of force F_z**

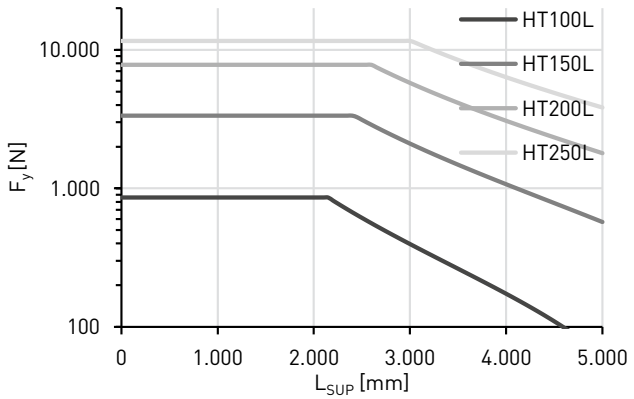


Fig. 3.19 **HT-L: Maximum support distance L_{SUP} as a function of force F_y**

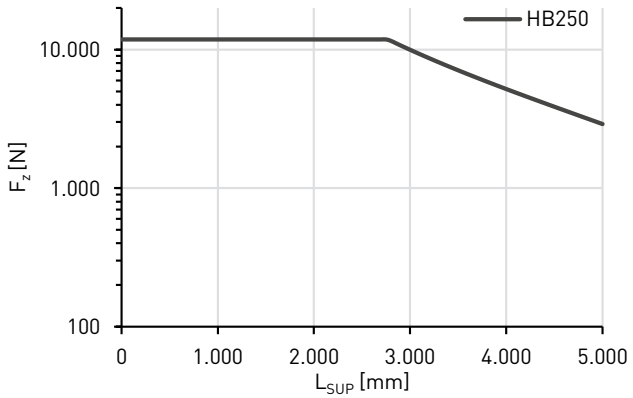


Fig. 3.20 **HB: Maximum support distance L_{SUP} as a function of force F_z**

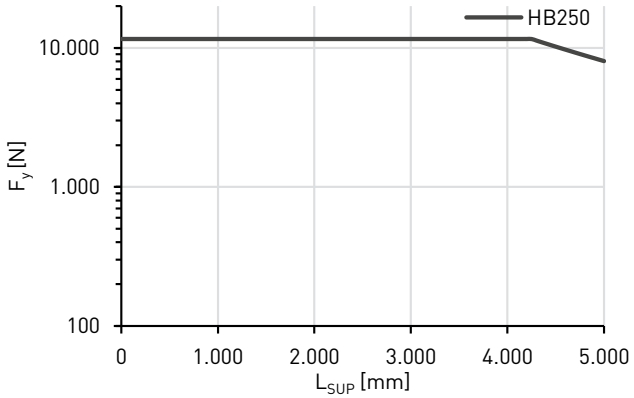


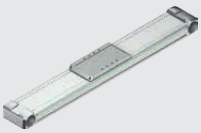
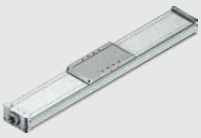
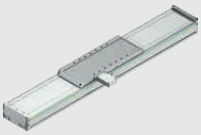
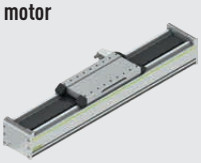
Fig. 3.21 **HB: Maximum support distance L_{SUP} as a function of force F_y**

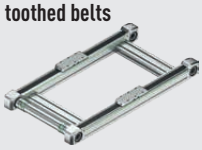
4. Product selection

4.1 Linear axes

Linear axes for positioning in one axis direction.

Table 4.1 **Product selection diagram**

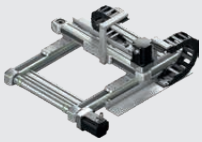
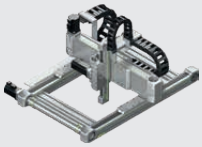
Drive element	Typical properties	Typical load capacity [kg]	Max, feed force [N]	Max, torque M_x [Nm]	Max, travel speed [m/s]	Max, standard stroke [1] [mm]	Repeatability [2] [mm]	Axis	Page
Module with toothed belt 	– High velocity – High acceleration – Long stroke lengths	10	300	7.8	5.00	3,000	± 0.05	**HM040B**	Page 26
		25	895	21	5.00	5,700	± 0.05	**HM060B**	Page 28
		60	1,253	48	5.00	5,600	± 0.05	**HM080B**	Page 30
		120	4,000	138	5.00	5,500	± 0.05	**HM120B**	Page 32
Module with ballscrew 	– High positioning accuracy – High feed force – High drive rigidity	10	1,271	12	0.50	1,200	± 0.02	**HM040S**	Page 36
		25	2,541	28	0.80	2,950	± 0.02	**HM060S**	Page 38
		60	3,186	67	1.00	4,050	± 0.02	**HM080S**	Page 40
		120	6,592	139	1.60	4,700	± 0.02	**HM120S**	Page 42
Table with toothed belt 	– High velocity – High acceleration – Long stroke lengths – High torque load capacity	40	813	93	5.00	5,600	± 0.05	**HT100B**	Page 46
		80	1,300	246	5.00	5,550	± 0.05	**HT150B**	Page 48
		150	3,000	852	5.00	5,500	± 0.05	**HT200B**	Page 50
		250	4,500	1,496	5.00	5,500	± 0.05	**HT250B**	Page 52
Table with ballscrew 	– High positioning accuracy – High feed force – High drive rigidity – High torque load capacity	40	2,541	139	0.80	3,000	± 0.02	**HT100S**	Page 56
		80	3,186	341	1.00	4,750	± 0.02	**HT150S**	Page 58
		150	3,535	1,073	1.25	4,850	± 0.02	**HT200S**	Page 60
		250	5,300	1,750	1.60	4,750	± 0.02	**HT250S**	Page 62
Table with linear motor 	– Maximum positioning accuracy – Maximum dynamics – Wear-free drive – Largest stroke lengths	20	224	35	5.00	5,500	± 0.005	**HT100L**	Page 66
		80	868	201	5.00	5,450	± 0.005	**HT150L**	Page 68
		150	1,535	721	5.00	5,400	± 0.005	**HT200L**	Page 70
		250	2,469	1,249	4.50	5,450	± 0.005	**HT250L**	Page 72
Bridge axis with toothed belt 	– Maximum rigidity and maximum torque load capacity – High speed – High feed force	350	5,775	1,674	5.00	5,280	± 0.05	**HB250B**	Page 76
Bridge axis with rack and pinion drive 	– Maximum rigidity and maximum torque load capacity – High speed – High positioning accuracy	350	4,300	1,371	3.00	5,160	± 0.05	**HB250R**	Page 80
Bridge axis with linear motor 	– Maximum rigidity and maximum torque load capacity – Highest positioning accuracy – High dynamics	350	3,292	1,125	4.5	5,160	± 0.005	**HB250L**	Page 84

Cantilever axis with toothed belt 	– High velocity – Compact design – Low moving mass	2	241	2.8	5.00	300	± 0.05	**HC025B**	Page 88
		8	404	9.8	5.00	500	± 0.05	**HC040B**	Page 90
		16	997	27	5.00	800	± 0.05	**HC060B**	Page 92
		30	1,330	63	5.00	1,200	± 0.05	**HC080B**	Page 94
		60	2,667	91	5.00	1,800	± 0.05	**HC100B**	Page 96
		80	4,000	446	5.00	2,000	± 0.05	**HC150B**	Page 98
Cantilever axis with rack and pinion drive 	– Compact design – High feed force – High rigidity	80	4,300	446	3.00	2,000	± 0.05	**HC150R**	Page 102
Double axis with toothed belts 	– High torque load capacity – Screw-on surface width – Synchronous axis movement	25	450	–	5.00	3,000	± 0.1	**HD1**	Page 106
		63	1,343	–	5.00	5,700	± 0.1	**HD2**	Page 107
		150	1,880	–	5.00	5,600	± 0.1	**HD3**	Page 108
		300	6,000	–	5.00	5,500	± 0.1	**HD4**	Page 109

[1] Restrictions due to energy chain, installation position and/or distance measuring system may apply. Longer strokes on request.
[2] Repeatability depends on the selected distance measuring system (see chapter 21 from page 156)
[3] Peak force of the drive
[4] Applies to vertical installation position; for max. stroke for horizontal installation, see chapter 13

4.2 Multi-axis systems
Axis systems for positioning in two or three axis directions.

Table 4.2 **Product selection diagram**

System	Typical properties	Typical load capacity [kg]	Max. travel speed [m/s]	Basis	Working space [mm] [1] [2]	Axis	Page :
Two-axis system 	– Two-dimensional movements – Compact system – Large working space	5	5	X: HD1 Y: HM040B	X: 3000 Y: 1350	**HS21-D-M**	Page 112
		20	5	X: HD1 Y: HT100B	X: 3000 Y: 1600	**HS21-D-T**	Page 114
		12	5	X: HD2 Y: HM060B	X: 5554 Y: 1950	**HS22-D-M**	Page 116
		40	5	X: HD2 Y: HT150B	X: 5554 Y: 1950	**HS22-D-T**	Page 118
		30	5	X: HD3 Y: HM080B	X: 5453 Y: 2150	**HS23-D-M**	Page 120
		80	5	X: HD3 Y: HT200B	X: 5453 Y: 2200	**HS23-D-T**	Page 122
		130	5	X: HD4 Y: HT250B	X: 5256 Y: 2100	**HS24-D-T**	Page 124
Three-axis system 	– Three-dimensional movements – Compact system – Large working space	2	5	X: HD1 Y: HT100B Z: HC025B	X: 3000 Y: 1600 Z: 300	**HS31-D-T-C**	Page 128
		8	5	X: HD2 Y: HT150B Z: HC040B	X: 5554 Y: 1950 Z: 500	**HS32-D-T-C**	Page 130
		16	5	X: HD3 Y: HT200B Z: HC060B	X: 5453 Y: 2150 Z: 800	**HS33-D-T-C**	Page 132
		30	5	X: HD4 Y: HT250B Z: HC080B	X: 5256 Y: 2100 Z: 1200	**HS34-D-T-C**	Page 134
Linear gantry 	– Two-dimensional movements – Compact system – Large working space	2	5	X: HT100B Z: HC025B	X: 5552 Z: 300	**HSL1-T-C**	Page 138
		8	5	X: HT150B Z: HC040B	X: 5483 Z: 500	**HSL2-T-C**	Page 140
		16	5	X: HT200B Z: HC060B	X: 5414 Z: 800	**HSL3-T-C**	Page 142
		30	5	X: HT250B Z: HC080B	X: 5397 Z: 1200	**HSL4-T-C**	Page 144

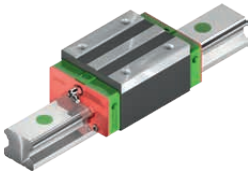
[1] Restrictions due to energy chain may apply. Larger strokes available on request.
[2] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.

5. Linear modules HM-B

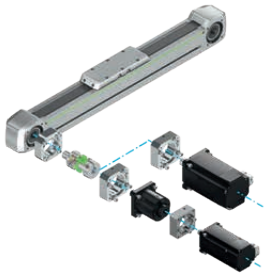
5.1 Properties of linear modules HM-B with toothed belt drive

The HIWIN linear axes with toothed belt drive are compact positioning modules that can be used flexibly. They are ideal in particular for applications requiring high dynamic responses and high speeds. In addition, large travel distances can be realised with these linear axes.
Cleanroom-compatible linear motor axes HT-L up to ISO class 2 are available on request.

Linear guideway
High-quality HIWIN linear guideways safely transfer forces and torques from the carriage to the axis profile. Two blocks are used per carriage, which are guided on a high-precision profile rail. The SynchMotion™ technology with ball chain also ensures good synchronisation and smooth running in the HM060B, HM080B and HM120B sizes.

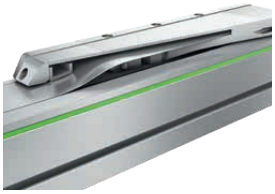


Drive connection
Thanks to its symmetrical design, the HIWIN toothed belt axis allows motors and gears to be mounted on all four sides of the drive blocks.
Additional journals, which are available as accessories (see Page 199), can be used to mount additional drives and outputs at any point.



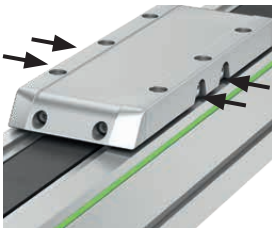
Toothed belt
The toothed belt with modern high performance profiles (HTD shape) and reinforced steel tension members enables high power transmission while offering high skip resistance.

Cover strip
The steel cover strip prevents dirt and dust from entering the axis interior. In addition, the cover strip allows the axes to be used in areas with coarse, sharp-edged or hot foreign bodies. The magnetic strips integrated in the axis profile hold the belt securely in position and increase the sealing effect.



Carriage
HIWIN toothed belt modules are available with three different carriage lengths depending on the size and dimensions of the load to be transported. In order to ensure ideal, reproducible alignment of the adjacent structure, each threaded hole has an additional bore hole via which the load capacity can be fixed with centring sleeves. You will find the matching centring sleeves in the accessories on Page 192.

Lubrication
For convenient maintenance of the linear axis, a separate grease nipple is fitted to the left and right of the carriage for each lubrication point. This ensures optimum accessibility for relubrication, even under difficult installation conditions.



5.2 Order code for linear modules HM-B

HM	060	B	155	N	0755	S	000

HIWIN linear module

Size (profile width):
040: 40 mm
060: 60 mm
080: 80 mm
120: 120 mm

Drive type:
B: Toothed belt drive

Feed constant [mm/rev]:
111: HM040B
155: HM060B
190: HM080B
288: HM120B

Clearance between two carriages [mm]:
(000: Only one carriage)

Carriage length:
E: Extra short[6]
S: Short
M: Medium
L: Long
H: Long – Heavy load[7]

Stroke length [mm]

Cover strip:
N: Without cover strip
C: With steel cover strip

Continuation, order code for linear modules HM-B

A	N	N	R	BR07	G0605

Axis limit switch[5]:
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector
B: 2 × normally open, 100 mm cable, connector
C: 2 × normally closed, 4 m open cable end
D: 2 × normally open, 5 m open cable end

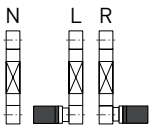
Toothed belt:
N: Standard belt

Distance measuring system option[1]:
N: Without distance measuring system
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos, 5 m open cable end
D: HIWIN MAGIC, digital, TTL 5 V, 5 m open cable end

Gearbox[4]

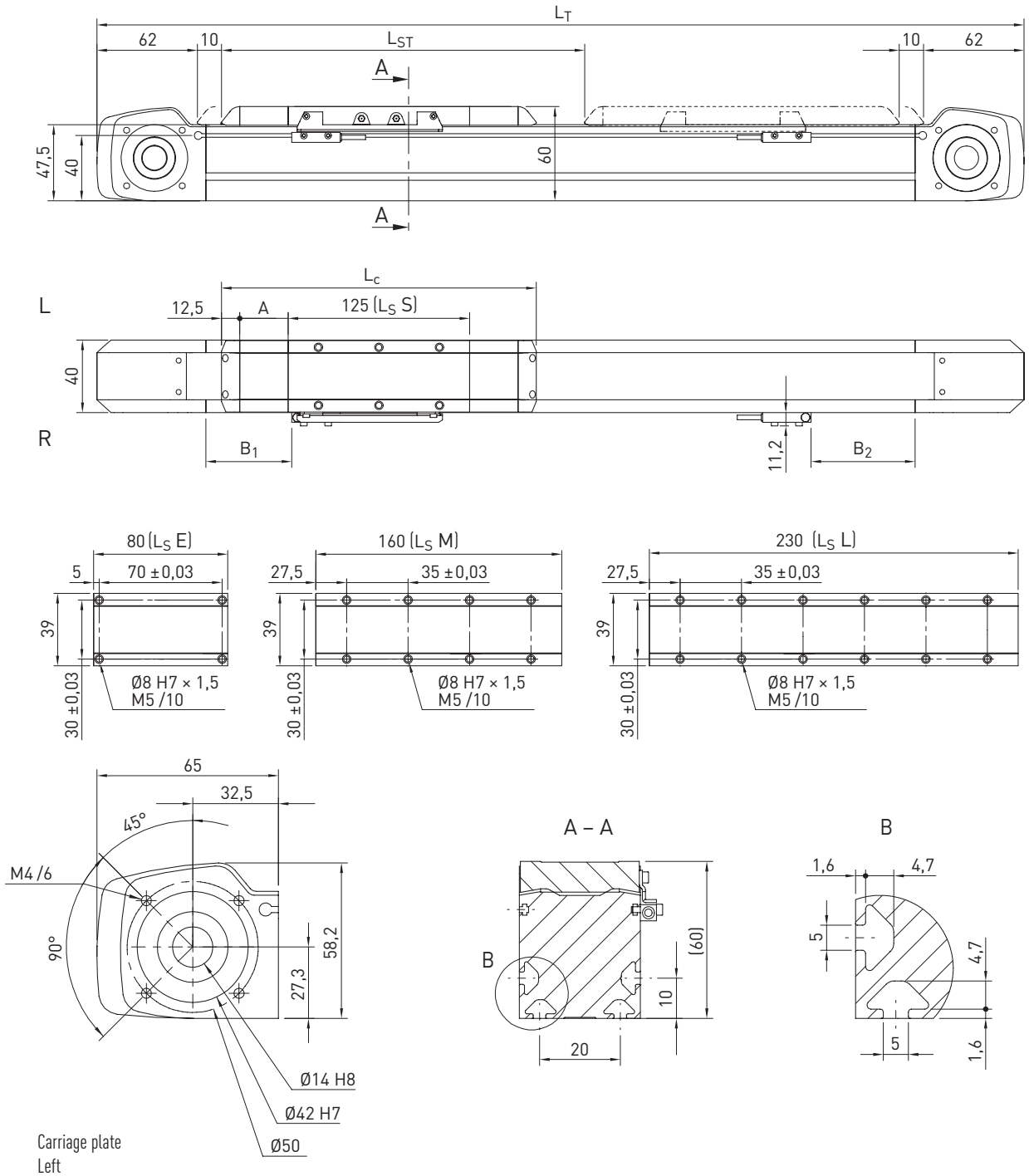
Flange type[3]

Drive interface[2]:
N: Without
L: Left
R: Right



[1] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[2] If no drive interface is selected, the order code ends after this digit.
[3] You can find all flange types in Table 22.1 from page 160. If no gearbox is selected, the order code ends after this digit.
[4] You can find the right gearbox for the HIWIN axes in section 22.1.5.5 from page 170.
[5] Additional reference switches on request.
[6] Only available for HM040B.
[7] Only available for HM120B.

5.3 Dimensions and specifications of HM040B



L_s Carriage plate
L Left
R Right

Table 5.1 **HM040B dimensions**

	Variant without cover				Variant with cover		
Sledge type	E	S	M	L	S	M	L
Total carriage length L_c [mm]	105	150	185	255	230	265	335
Cover strip deflection A [mm]	0	0	0	0	40	40	40
Switch distance B_1 [mm]	23	24	24	24	64	64	64
Switch distance B_2 [mm]	23	9	44	114	49	84	154
Max. stroke length L_{ST} [mm]	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Total length L_T [mm]	$L_T = L_{ST} + 249$	$L_T = L_{ST} + 294$	$L_T = L_{ST} + 329$	$L_T = L_{ST} + 399$	$L_T = L_{ST} + 374$	$L_T = L_{ST} + 409$	$L_T = L_{ST} + 479$

Table 5.2 **Load data**

	Permissible load data				Theoretical load data			
Lifetime reference value	20,000 km				100 km			
Sledge type	E	S	M	L	E	S	M	L
$F_{ydynmax}$ [1] [N]	665	963	963	963	5,056	7,318	7,318	7,318
$F_{zdynmax}$ [1] [N]	665	963	963	963	5,056	7,318	7,318	7,318
$M_{xdynmax}$ [Nm]	5.4	7.8	7.8	7.8	41	59	59	59
$M_{ydynmax}$ [Nm]	4.2	35	51	85	32	263	392	648
$M_{zdynmax}$ [Nm]	4.2	35	51	85	32	263	392	648
Load distance z [mm]	34	34	34	34	34	34	34	34

[1] Force must only act free of torque

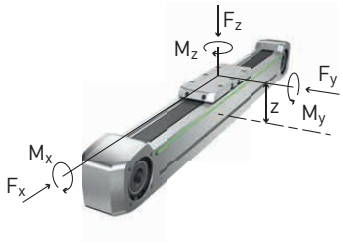


Table 5.3 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	300
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	5.3
Typical load capacity [kg]	10 [1]
Maximum total length [mm]	3,479
Area moment of inertia of profile cross section I_x [mm⁴]	117,795
Area moment of inertia of profile cross section I_y [mm⁴]	122,922

[1] Carriage type E: 4 kg

Table 5.4 **Guide**

Sledge type	E	S/M/L
Type of carriage	MGN15H × 1	MGN15C × 2
Static load rating C_0 [N]	9,110 × 1	5,590 × 2
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	6,370 × 1	4,610 × 2

Table 5.5 **Drive**

Drive element	b15HTD3
Feed constant [mm/U]	111
Toothed belt effective diameter [mm]	35.332

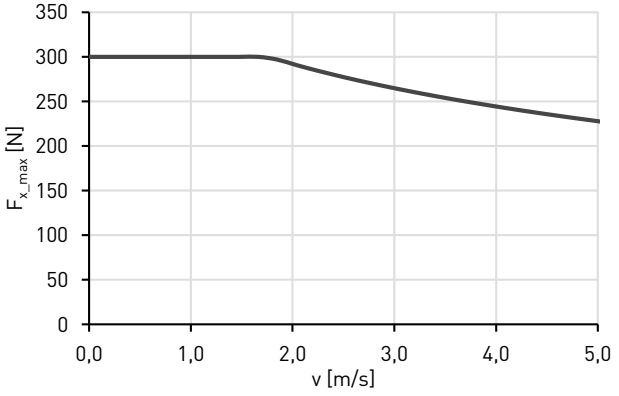


Fig. 5.1 **Max. feed force F_{x_max} as a function of axis speed v**

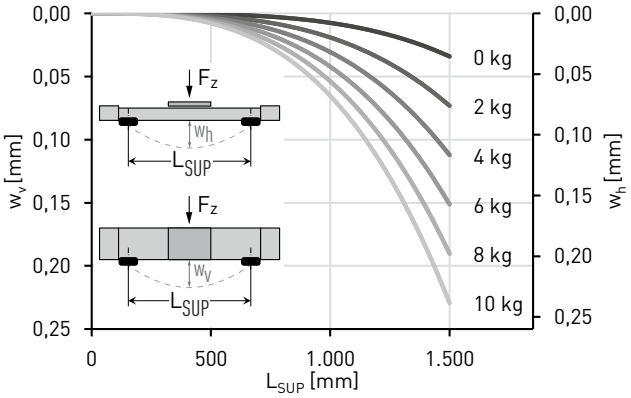


Fig. 5.2 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

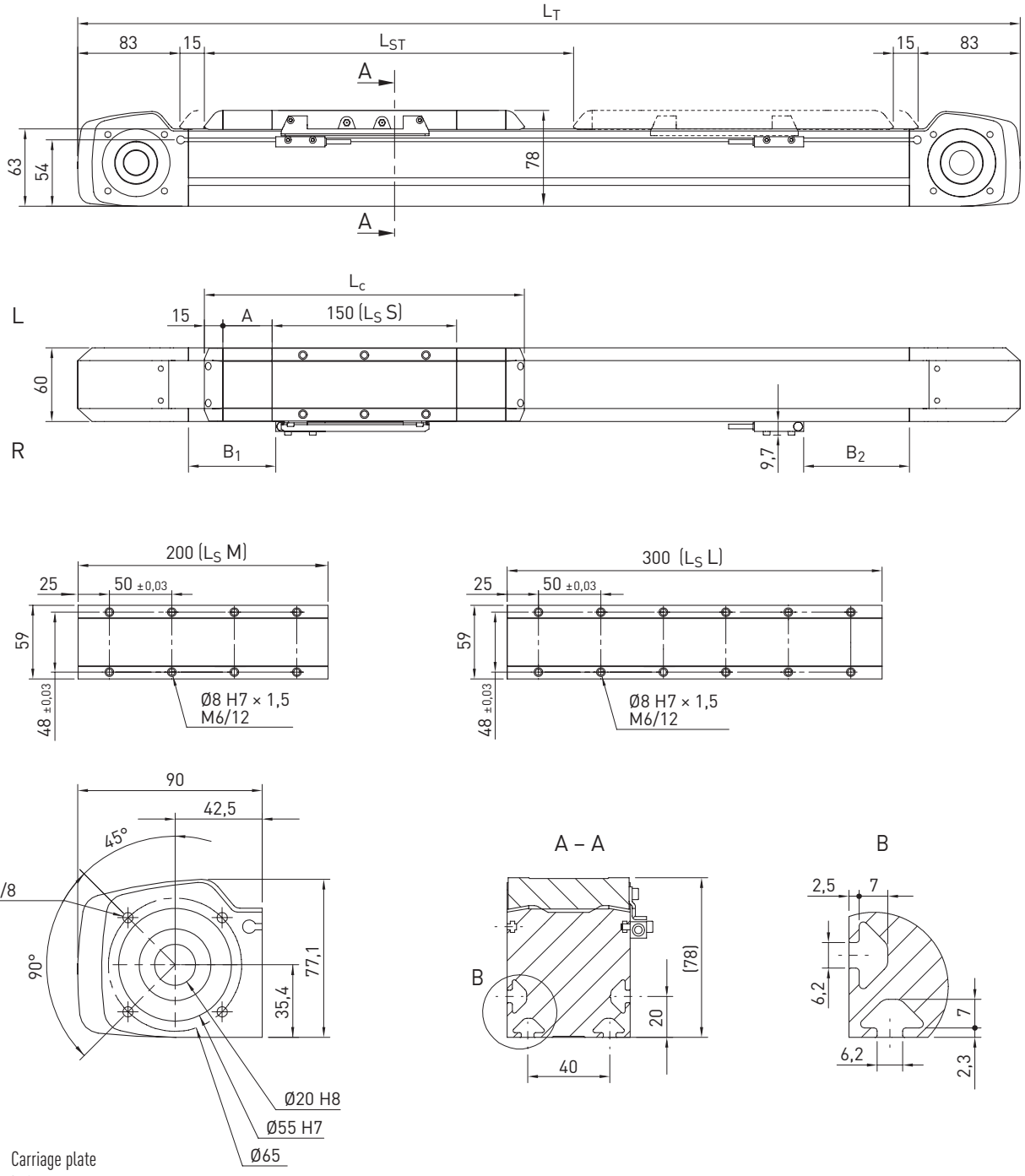
Table 5.6 **Mechanical properties**

	Variant without cover				Variant with cover		
Sledge type	E	S	M	L	S	M	L
Mass of the carriage [kg]	0.25	0.35	0.41	0.52	0.42	0.48	0.59
Mass at 0-stroke [2] [kg]	1.21	1.45	1.62	1.95	1.82	1.99	2.32
Mass per 1 m stroke [kg/m]	3.10	3.10	3.10	3.10	3.16	3.16	3.16
$J_{rot.}$ [1] [kgcm²]	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Idle torque at 0-stroke [Nm]	0.15	0.18	0.18	0.18	0.25	0.25	0.25

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages, add the following: Mass of carriage + mass per 1 m stroke x (Clearance between the carriages (in m) + carriage length L_C (in m))

5.4 Dimensions and specifications of HM060B



L_S Carriage plate
L Left
R Right

Table 5.7 **HM060B dimensions**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Total carriage length L_c [mm]	180	230	330	260	310	410
Cover strip deflection A [mm]	0	0	0	40	40	40
Switch distance B_1 [mm]	25	25	25	65	65	65
Switch distance B_2 [mm]	40	90	190	80	130	230
Max. stroke length L_{ST} [mm]	5,704	5,654	5,554	5,624	5,574	5,474
Total length L_T [mm]	$L_T = L_{ST} + 376$	$L_T = L_{ST} + 426$	$L_T = L_{ST} + 526$	$L_T = L_{ST} + 456$	$L_T = L_{ST} + 506$	$L_T = L_{ST} + 606$

Table 5.8 **Load data**

	Permissible load data			Theoretical load data		
Lifetime reference value	20,000 km			100 km		
Sledge type	S	M	L	S	M	L
$F_{ydynmax}$ [1] [N]	2,152	2,152	2,152	19,890	19,890	19,890
$F_{zdynmax}$ [1] [N]	2,616	2,616	2,616	19,890	19,890	19,890
$M_{xdynmax}$ [Nm]	21	21	21	156	156	156
$M_{ydynmax}$ [Nm]	98	164	294	746	1,243	2,238
$M_{zdynmax}$ [Nm]	81	135	242	746	1,243	2,238
Load distance z [mm]	45,5	45,5	45,5	45,5	45,5	45,5

[1] Force must only act free of torque

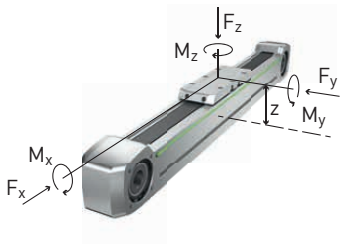


Table 5.9 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	895
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	22
Typical load capacity [kg]	25
Maximum total length [1] [mm]	6,080
Area moment of inertia of profile cross section I_x [mm⁴]	507,521
Area moment of inertia of profile cross section I_y [mm⁴]	625,920

[1] Long axes on request

Table 5.10 **Guide**

Type of carriage	QEH15CA × 2
Static load rating C_0 [N]	15,280 × 2
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	12,530 × 2

Table 5.11 **Drive**

Drive element	b25HTD5
Feed constant [mm/U]	155
Toothed belt effective diameter [mm]	49:338

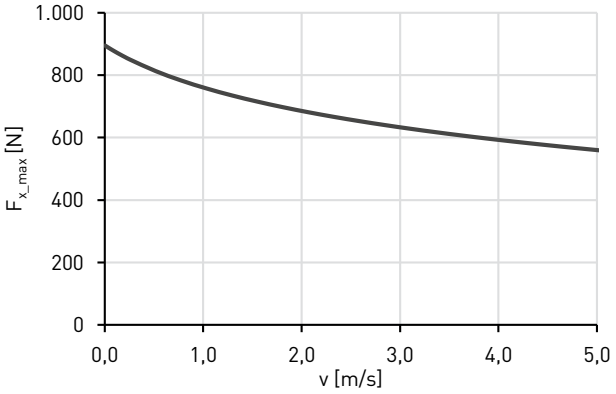


Fig. 5.3 **Max. feed force F_{x_max} as a function of axis speed v**

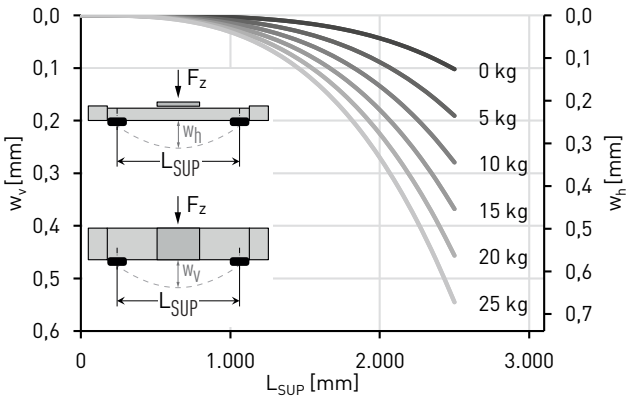


Fig. 5.4 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

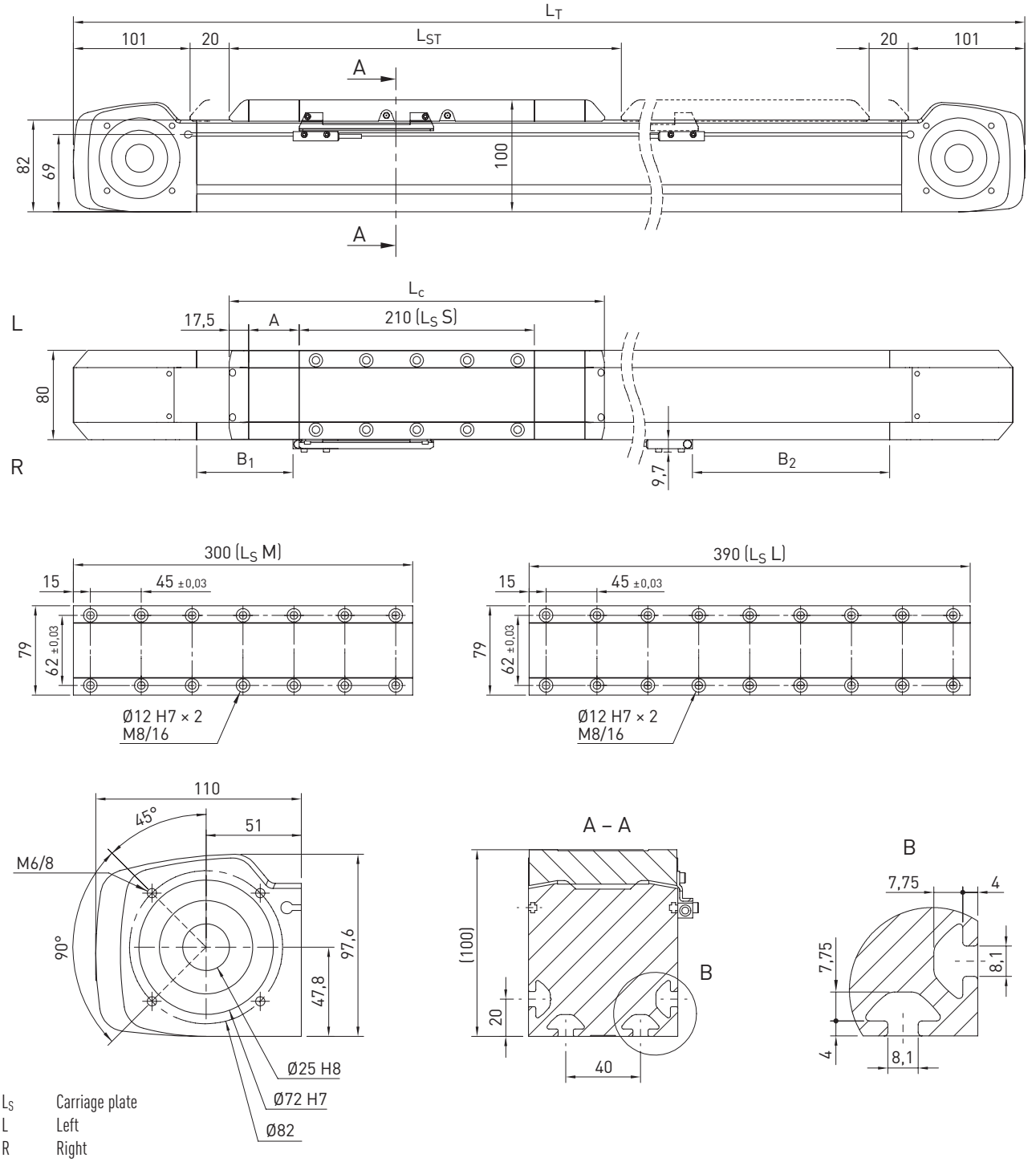
Table 5.12 **Mechanical properties**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Mass of the carriage [kg]	0.79	0.93	1.22	0.89	1.03	1.32
Mass at 0-stroke [2] [kg]	3.48	3.90	4.74	4.07	4.50	5.34
Mass per 1 m stroke [kg/m]	5.48	5.48	5.48	5.58	5.58	5.58
$J_{rot.}$ [1] [kgcm²]	1.92	1.92	1.92	1.92	1.92	1.92
Idle torque at 0-stroke [Nm]	0.47	0.47	0.47	0.80	0.80	0.80

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages, add the following: Mass of carriage + mass per 1 m stroke x (Clearance between the carriages (in m) + carriage length L_C (in m))

5.5 Dimensions and specifications of HM080B



L_S Carriage plate
L Left
R Right

Table 5.13 **HM080B dimensions**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Total carriage length L_c [mm]	245	335	425	335	425	515
Cover strip deflection A [mm]	0	0	0	45	45	45
Switch distance B_1 [mm]	23	23	23	68	68	68
Switch distance B_2 [mm]	113	203	293	158	248	338
Max. stroke length L_{ST} [mm]	5,633	5,543	5,453	5,543	5,453	5,363
Total length L_T [mm]	$L_T = L_{ST} + 487$	$L_T = L_{ST} + 577$	$L_T = L_{ST} + 667$	$L_T = L_{ST} + 577$	$L_T = L_{ST} + 667$	$L_T = L_{ST} + 757$

Table 5.14 **Load data**

	Permissible load data			Theoretical load data		
Lifetime reference value	20,000 km			100 km		
Sledge type	S	M	L	S	M	L
$F_{ydynmax}$ [1] [N]	3,855	3,855	3,855	47,622	47,622	47,622
$F_{zdynmax}$ [1] [N]	6,264	6,264	6,264	47,622	47,622	47,622
$M_{xdynmax}$ [Nm]	48	48	48	366	366	366
$M_{ydynmax}$ [Nm]	357	639	921	2,714	4,857	7,000
$M_{zdynmax}$ [Nm]	220	393	567	2,714	4,857	7,000
Load distance z [mm]	53.4	53.4	53.4	53.4	53.4	53.4

[1] Force must only act free of torque

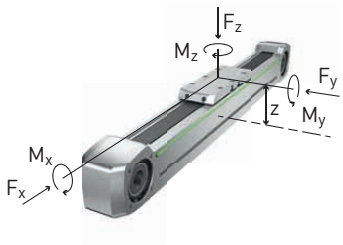


Table 5.15 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	1,253
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	38
Typical load capacity [kg]	60
Maximum total length [1] [mm]	6,120
Area moment of inertia of profile cross section I_x [mm⁴]	1,522,057
Area moment of inertia of profile cross section I_y [mm⁴]	2,081,321

[1] Long axes on request

Table 5.16 **Guide**

Type of carriage	QHH20CA × 2
Static load rating C_0 [N]	33,860 × 2
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	30,000 × 2

Table 5.17 **Drive**

Drive element	b35HTD5
Feed constant [mm/U]	190
Toothed belt effective diameter [mm]	60.479

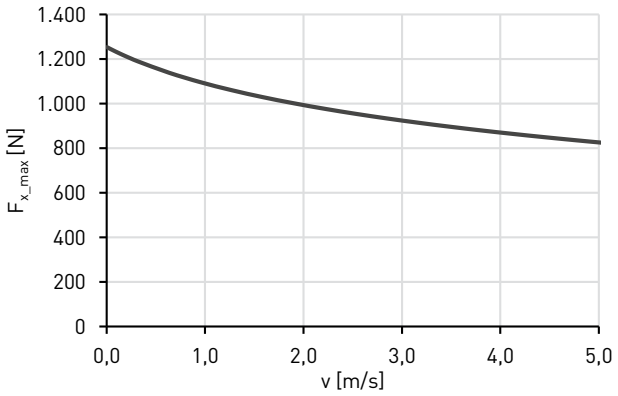


Fig. 5.5 **Max. feed force F_{x_max} as a function of axis speed v**

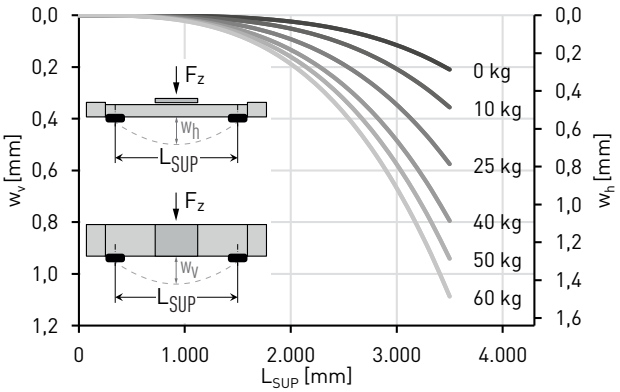


Fig. 5.6 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

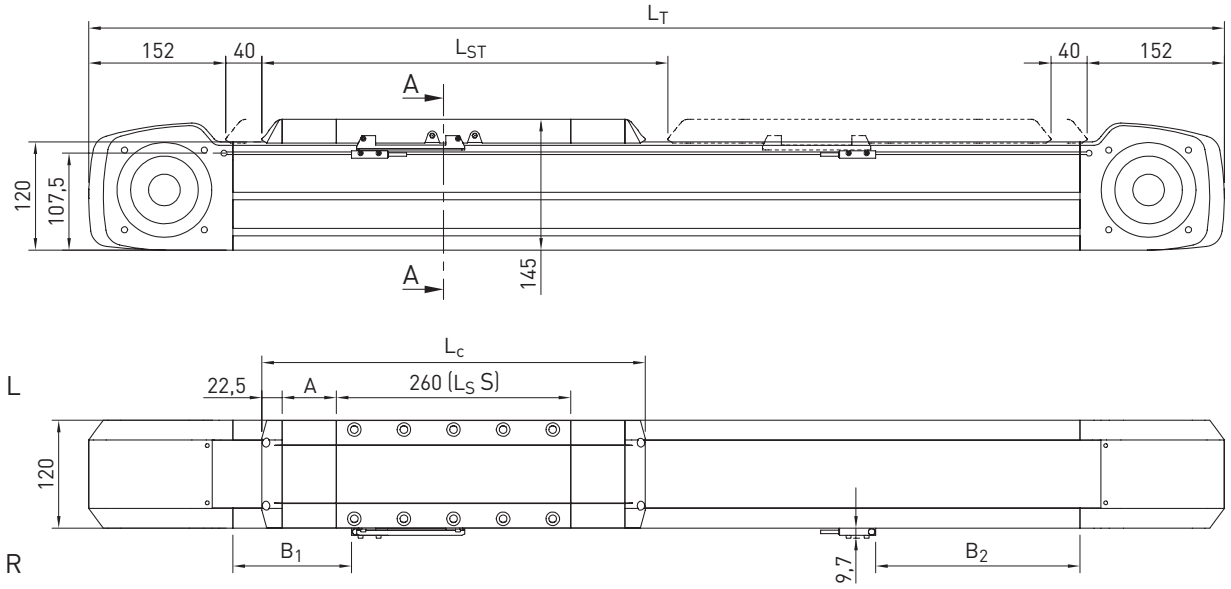
Table 5.18 **Mechanical properties**

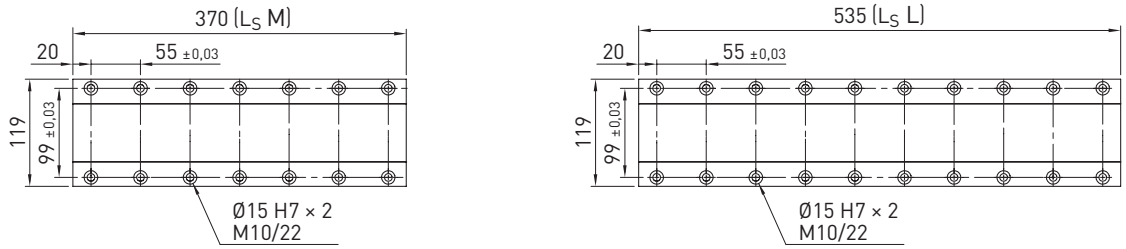
	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Mass of the carriage [kg]	1.61	2.02	2.43	1.81	2.22	2.63
Mass at 0-stroke [2] [kg]	7.46	8.76	10.07	8.72	10.03	11.34
Mass per 1 m stroke [kg/m]	9.94	9.94	9.94	10.08	10.08	10.08
$J_{rot.}$ [1] [kgcm²]	6.03	6.03	6.03	6.03	6.03	6.03
Idle torque at 0-stroke [Nm]	1.20	1.20	1.20	1.30	1.30	1.30

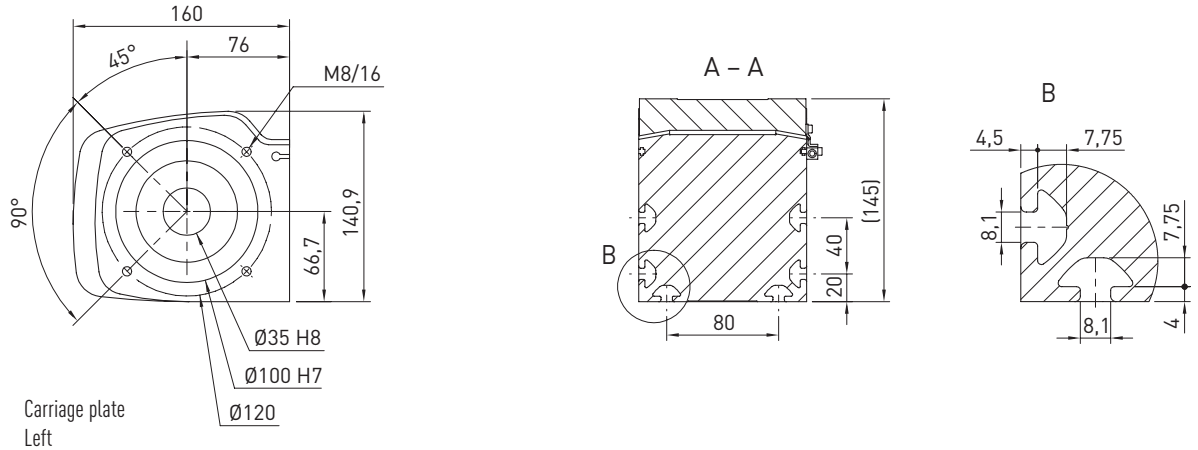
[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages, add the following: Mass of carriage + mass per 1 m stroke x (Clearance between the carriages (in m) + carriage length L_C (in m))

5.6 Dimensions and specifications of HM120B







L_S Carriage plate
L Left
R Right

Table 5.19 **HM120B dimensions**

	Variant without cover			Variant with cover		
Sledge type	S	M	L/H	S	M	L/H
Total carriage length L_c [mm]	305	415	580	425	535	700
Cover strip deflection A [mm]	0	0	0	60	60	60
Switch distance B_1 [mm]	71.5	71.5	71.5	131.5	131.5	131.5
Switch distance B_2 [mm]	166.5	276.5	441.5	226.5	336.5	501.5
Max. stroke length L_{ST} [mm]	5,531	5,421	5,256	5,411	5,301	5,136
Total length L_T [mm]	$L_T = L_{ST} + 689$	$L_T = L_{ST} + 799$	$L_T = L_{ST} + 964$	$L_T = L_{ST} + 809$	$L_T = L_{ST} + 919$	$L_T = L_{ST} + 1,084$

Table 5.20 **Load data**

	Permissible load data				Theoretical load data			
Lifetime reference value	20,000 km				100 km			
Sledge type	S	M	L	H	S	M	L	H
$F_{ydynmax}$ [1] [N]	12,165	12,165	12,165	12,165	92,482	92,482	92,482	111,626
$F_{zdynmax}$ [1] [N]	12,165	12,165	12,165	14,683	92,482	92,482	92,482	111,626
$M_{xdynmax}$ [Nm]	110	110	110	138	836	836	836	1,047
$M_{ydynmax}$ [Nm]	900	1,569	2,573	2,937	6,844	11,930	19,560	22,325
$M_{zdynmax}$ [Nm]	900	1,569	2,573	2,433	6,844	11,930	19,560	22,325
Load distance z [mm]	77	77	77	77	77	77	77	77

[1] Force must only act free of torque

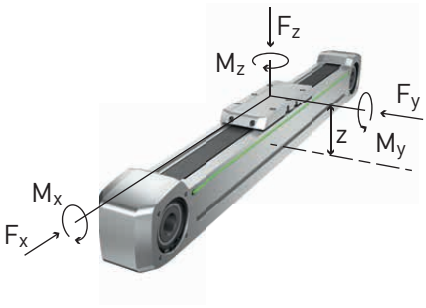


Table 5.21 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	4,000
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	183
Typical load capacity [kg]	120
Maximum total length [1] [mm]	6,220
Area moment of inertia of profile cross section I_x [mm⁴]	6,791,541
Area moment of inertia of profile cross section I_y [mm⁴]	9,553,626

[1] Long axes on request

Table 5.22 **Guide**

Sledge type	**S/M/L**	**H**
Type of carriage	QHW30CC × 2	QHW30HC × 2
Static load rating C_0 [N]	66,340 × 2	88,450 × 2
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	58,260 × 2	70,320 × 2

Table 5.23 **Drive**

Drive element	b60HTD8
Feed constant [mm/U]	288
Toothed belt effective diameter [mm]	91.673

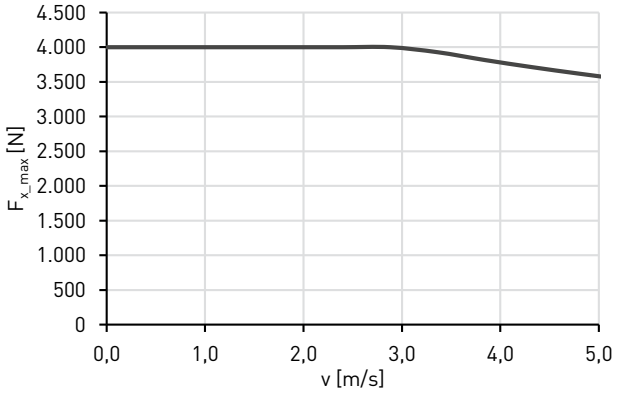


Fig. 5.7 **Max. feed force F_{x_max} as a function of axis speed v**

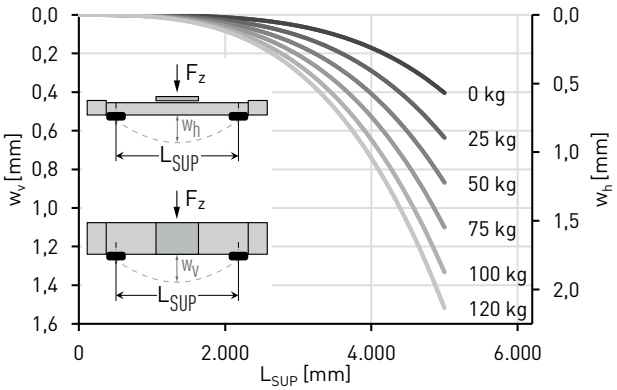


Fig. 5.8 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 5.24 **Mechanical properties**

	Variant without cover				Variant with cover			
Sledge type	S	M	L	H	S	M	L	H
Mass of the carriage [kg]	5.13	6.26	7.95	8.72	5.61	6.73	8.42	9.20
Mass at 0-stroke [2] [kg]	21.84	25.28	30.44	31.22	25.08	28.54	33.72	34.50
Mass per 1 m stroke [kg/m]	21.03	21.03	21.03	21.03	21.21	21.21	21.21	21.21
$J_{rot.}$ [1] [kgcm²]	42.42	42.42	42.42	46.42	42.42	42.42	42.42	46.42
Idle torque at 0-stroke [Nm]	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages, add the following: Mass of carriage + mass per 1 m stroke x (Clearance between the carriages (in m) + carriage length L_C (in m))

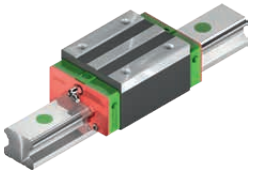
6. Linear modules HM-S

6.1 Properties of linear modules HM-S with ballscrew

The HIWIN linear axes with ballscrew are compact positioning modules that can be used flexibly. They are especially suitable for applications where high loads have to be moved with high precision.

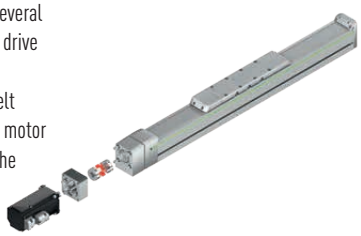
Linear guideway

High-quality HIWIN linear guideways safely transfer forces and torques from the carriage to the axis profile. Two blocks are used per carriage, which are guided on a high-precision profile rail. The SynchMotion™ technology with ball chain also ensures good synchronisation and smooth running in the HM060S, HM080S and HM120S sizes.



Motor connection and belt drive

The motor adapters are made up of several parts that offer an extremely flexible drive interface for attaching and modifying the drive installation. Optionally, a belt transmission can be used to turn the motor attachment through 180°, reducing the total length to a considerable extent.

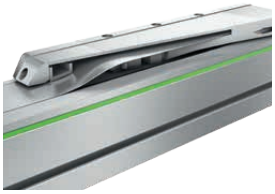


Ballscrew

The integrated HIWIN ballscrews ensure precise positioning thanks to their high pitch accuracy and rigidity. Different shaft pitches are available for each size in order to optimally meet the requirements for feed force and dynamics.

Cover strip

The steel cover strip prevents dirt and dust from entering the axis interior. In addition, the cover strip allows the axes to be used in areas with coarse, sharp-edged or hot foreign bodies. The magnetic strips integrated in the axis profile hold the belt securely in position and increase the sealing effect.

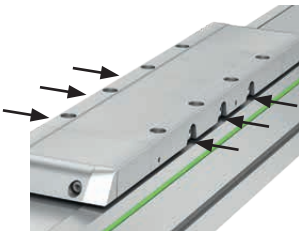


Carriage

HIWIN spindle axes are available with two different carriage lengths depending on the size and dimensions of the load to be transported. In order to ensure ideal, reproducible alignment of the adjacent structure, each threaded hole has an additional bore hole via which the load capacity can be fixed with centring sleeves. You will find the matching centring sleeves in the accessories on Page 192.

Lubrication

For convenient maintenance of the linear axis, a separate grease nipple is fitted to the left and right of the carriage for each lubrication point. This ensures optimum accessibility for relubrication, even under difficult installation conditions.



Spindle support

In applications with long travel distances and high velocity, the critical speed of the shaft is quickly reached, meaning an appropriate support is required to prevent the shaft from swinging up. In HIWIN spindle drive axes, up to three travelling shaft supports can be installed on each side of the carriage. This allows driving at full speed, even with large strokes.

6.2 Order code for linear modules HM-S

HM	060	S	010	C	0755	L	000

HIWIN linear module

Size (profile width):
040: 40 mm
060: 60 mm
080: 80 mm
120: 120 mm

Drive type:
S: Ballscrew

Spindle pitch [mm]:
005/010: HM040S
005/010/016: HM060S
005/010/020: HM080S
010/020/032: HM120S

Clearance between two carriages [mm]:
(000: Only one carriage)

Carriage length:
S: Short
L: Long

Stroke length [mm]

Cover strip:
C: With steel cover strip
N: Without cover strip

Continuation, order code for linear modules HM-S

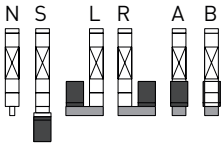
A	N	N	R	B002

Axis limit switch[4]**:**
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector
B: 2 × normally open, 100 mm cable, connector
C: 2 × normally closed, 4 m open cable end
D: 2 × normally open, 5 m open cable end

Spindle support:
N: Without spindle support
1: One spindle support per side (HM060/080/120)
2: Two spindle supports per side (HM060/080/120)
3: Three spindle supports per side (HM060/080/120)
4: Four spindle supports per side (HM120)

Motor flange type[3]

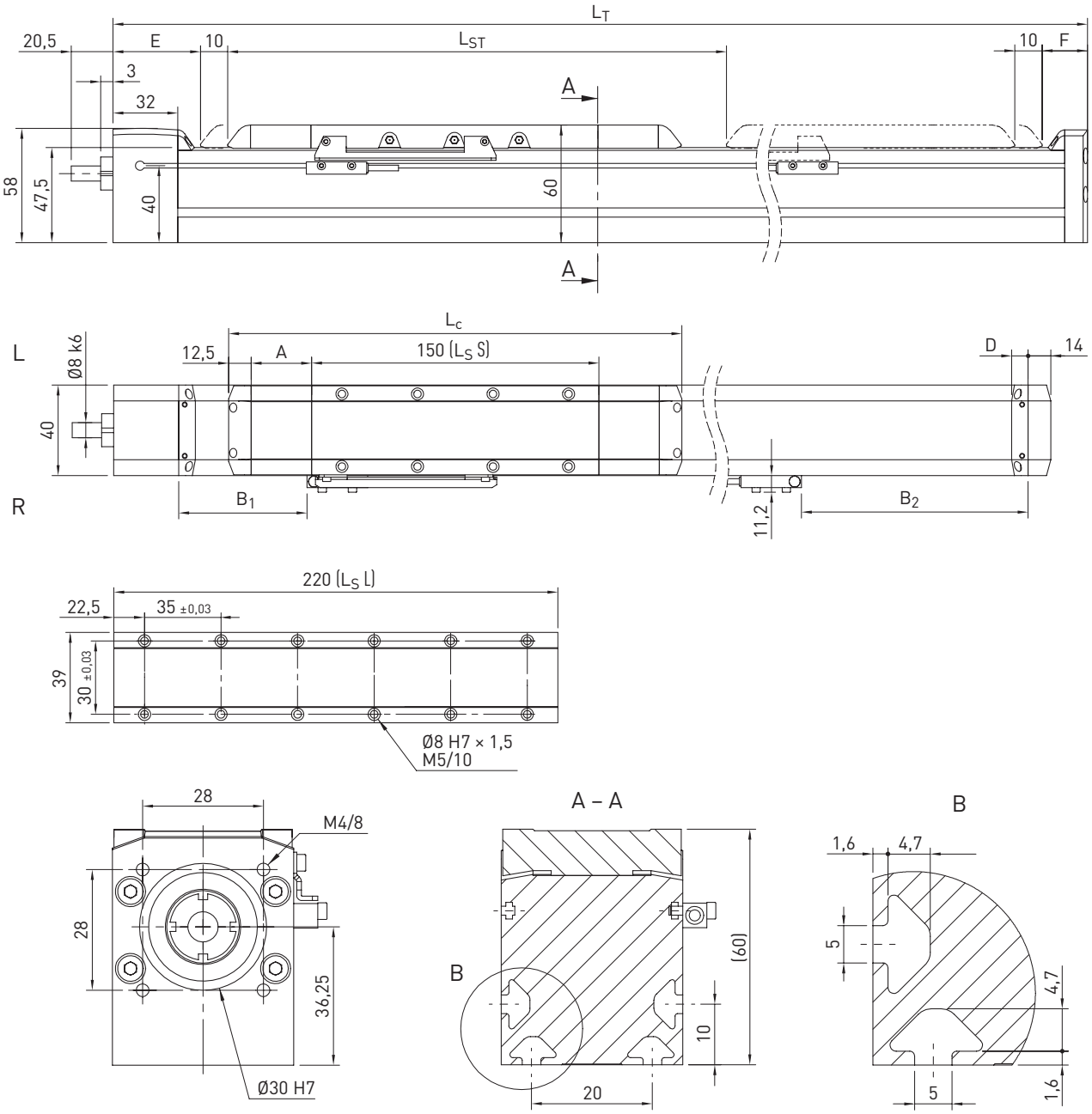
Drive interface[2]**:**
N: Without
S: Straight
L: Left
R: Right
A: Top
B: Bottom



Distance measuring system option[1]**:**
N: Without distance measuring system
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos, 5 m open cable end
D: HIWIN MAGIC, digital, TTL 5 V, 5 m open cable end

[1] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[2] If no drive interface is selected, the order code ends after this digit.
[3] You can find all flange types in Table 22.15 from page 175. If no gearbox is selected, the order code ends after this digit.
[4] Additional reference switches on request.

6.3 Dimensions and specifications of HM040S



L_S Carriage plate
L Left
R Right

Table 6.1 **HM040S dimensions**

	Variant without cover		Variant with cover	
Sledge type	S	L	S	L
Total carriage length L_c [mm]	175	245	255	325
Cover strip deflection A [mm]	0	0	40	40
Switch distance B_1 [mm]	33.5	33.5	83.5	83.5
Switch distance B_2 [mm]	42.5	112.5	92.5	162.5
Terminal box D [mm]	0	0	10	10
End position at mechanical zero E [mm]	37.5	37.5	47.5	47.5
End position at mechanical zero F [mm]	19.5	19.5	29.5	29.5
Max. stroke length L_{ST} [mm]	1,231	1,161	1,131	1,061
Total length L_T [mm]	$L_T = L_{ST} + 253$	$L_T = L_{ST} + 323$	$L_T = L_{ST} + 353$	$L_T = L_{ST} + 423$

Table 6.2 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	6,000 km		100 km	
Sledge type	S	L	S	L
$F_{ydynmax}$ [1] [N]	1.438	1.438	7.318	7.318
$F_{zdynmax}$ [1] [N]	1.438	1.438	7.318	7.318
$M_{xdynmax}$ [Nm]	12	12	59	59
$M_{ydynmax}$ [Nm]	80	130	406	662
$M_{zdynmax}$ [Nm]	80	130	406	662
Load distance z [mm]	40	40	40	40

[1] Force must only act free of torque

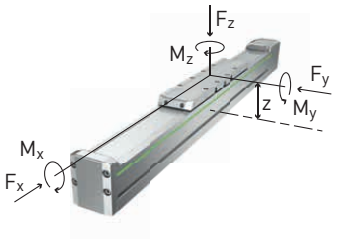


Table 6.4 **Guide**

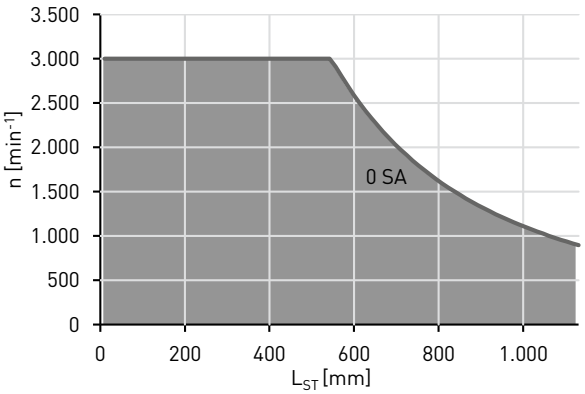
Type of carriage	MGN15C × 2
Static load rating C_0 [N]	5,590 × 2
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	4,610 × 2

Table 6.3 **General technical data**

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	10
Maximum total length [mm]	1,484
Area moment of inertia of profile cross section I_x [mm⁴]	111,032
Area moment of inertia of profile cross section I_y [mm⁴]	116,769

Table 6.5 **Drive**

	Spindle lead	
	5 mm	**10 mm**
Spindle diameter [mm]	12	
Axial play [mm]	0.02	
Max. feed force F_{x_max} [N]	1,271	792
Max. speed [m/s]	0.25	0.50
Max. drive torque M_{A_max} [Nm]	1.16	1.41
Static load rating ballscrew C_0 [N]	12,000	6,500
Dynamic load rating ballscrew C_{dyn} [N]	6,900	4,300



SA Spindle support

Fig. 6.1 **Critical speed n over axis stroke length L_{ST}**

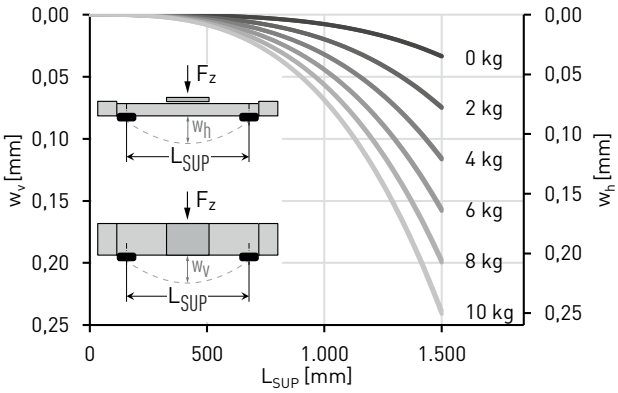


Fig. 6.2 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

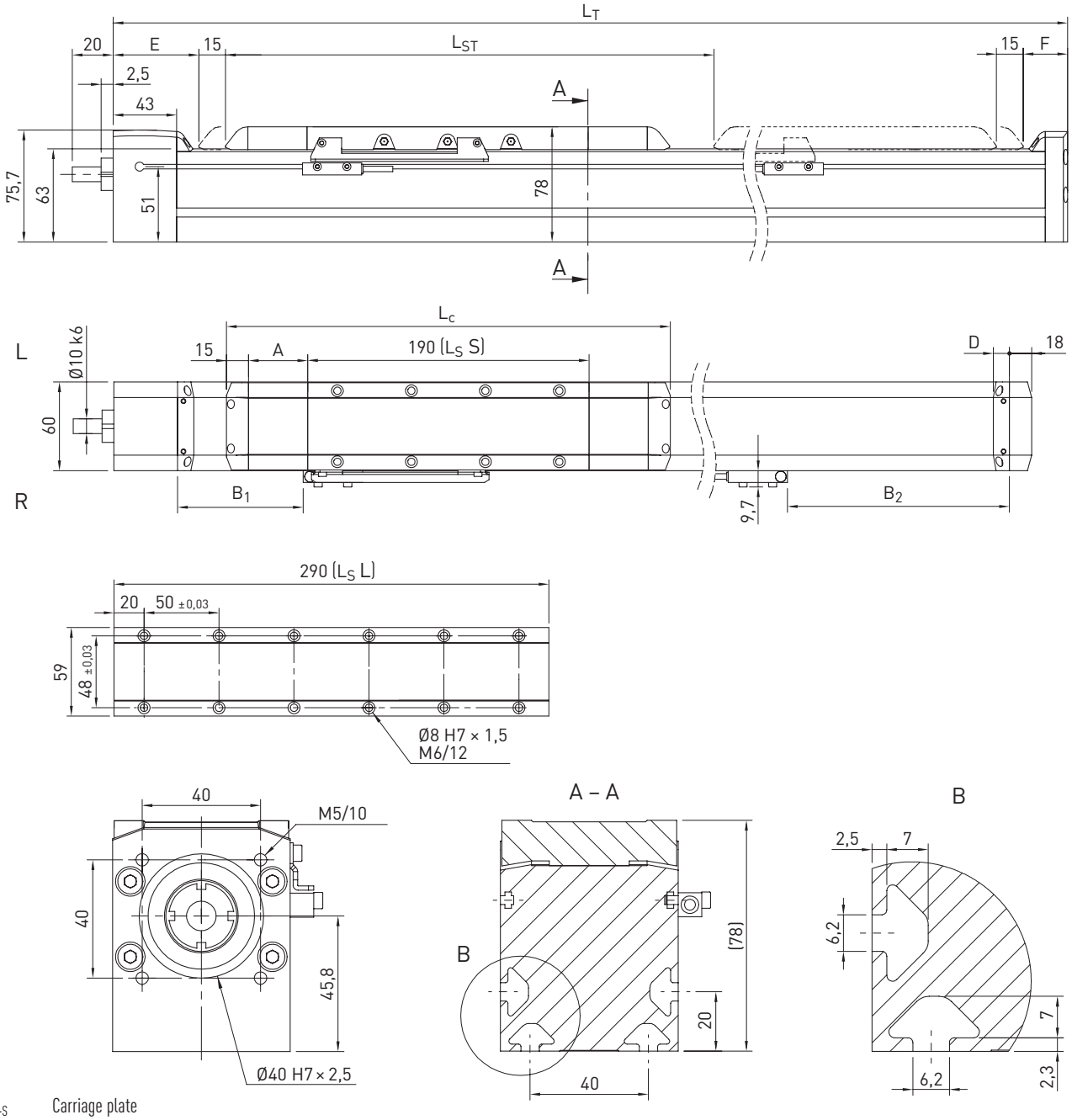
Table 6.6 **Mechanical properties**

	Variant without cover				Variant with cover			
Sledge type	S		L		S		L	
Spindle pitch [mm]	**5**	**10**	**5**	**10**	**5**	**10**	**5**	**10**
Mass of the carriage [kg]	0.44	0.44	0.56	0.56	0.51	0.51	0.63	0.63
Mass at 0-stroke [2] [kg]	1.58	1.57	1.95	1.95	2.06	2.05	2.43	2.43
Mass per 1 m stroke [kg/m]	3.65	3.65	3.65	3.65	3.71	3.71	3.71	3.71
$J_{rot.}$ [1] at 0-stroke [kgcm²]	0.07	0.07	0.08	0.08	0.08	0.08	0.09	0.09
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Idle torque at 0-stroke [Nm]	0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages, add the following: Mass of carriage + mass per 1 m stroke x (Clearance between the carriages (in m) + carriage length L_C (in m))

6.4 Dimensions and specifications of HM060S



L_S Carriage plate
L Left
R Right

Table 6.7 **HM060S dimensions**

	Variant without cover		Variant with cover	
Sledge type	S	L	S	L
Total carriage length L_c [mm]	220	320	300	400
Cover strip deflection A [mm]	–	–	40	40
Switch distance B_1 [mm]	35	35	86	86
Switch distance B_2 [mm]	98	198	149	249
Terminal box D [mm]	–	–	11	11
End position at mechanical zero E [mm]	50		61	
End position at mechanical zero F [mm]	25		36	
Max. stroke length L_{ST} [mm]	2,961	2,861	2,859	2,759
Total length L_T [mm]	$L_T = L_{ST} + 325$	$L_T = L_{ST} + 425$	$L_T = L_{ST} + 427$	$L_T = L_{ST} + 527$

Table 6.8 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	7,500 km		100 km	
Sledge type	S	L	S	L
$F_{ydynmax}$ [1] [N]	2.896	2.896	19.890	19.890
$F_{zdynmax}$ [1] [N]	3.628	3.628	19.890	19.890
$M_{xdynmax}$ [Nm]	28	28	156	156
$M_{ydynmax}$ [Nm]	239	421	1313	2307
$M_{zdynmax}$ [Nm]	191	336	1313	2307
Load distance z [mm]	57,3	57,3	57,3	57,3

[1] Force must only act free of torque

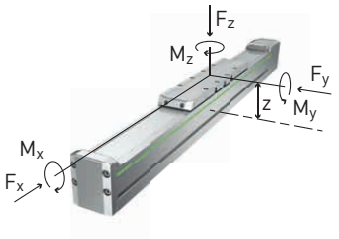


Table 6.9 **Guide**

Type of carriage	QEH15CA
Static load rating C_0 [N]	15,280
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	12,530

Table 6.10 **General technical data**

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	25
Maximum total length [mm]	3,286
Area moment of inertia of profile cross section I_x [mm⁴]	431,907
Area moment of inertia of profile cross section I_y [mm⁴]	539,706

Table 6.11 **Drive**

	Spindle lead		
	5 mm	**10 mm**	**16 mm**
Spindle diameter [mm]	15		
Axial play [mm]	0.02		
Max. feed force F_{x_max} [N]	2,541	1,989	1,915
Max. speed [m/s]	0.25	0.50	0.80
Max. drive torque M_{A_max} [Nm]	2.29	3.44	5.15
Static load rating ballscrew C_0 [N]	23,800	18,300	17,900
Dynamic load rating ballscrew C_{dyn} [N]	13,800	10,800	10,400

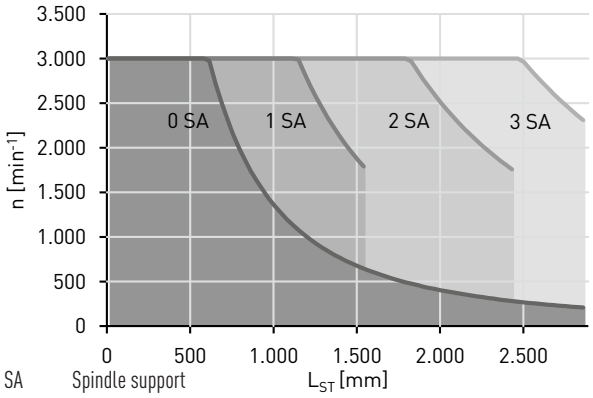


Fig. 6.3 **Critical speed n over axis stroke length L_{ST}**

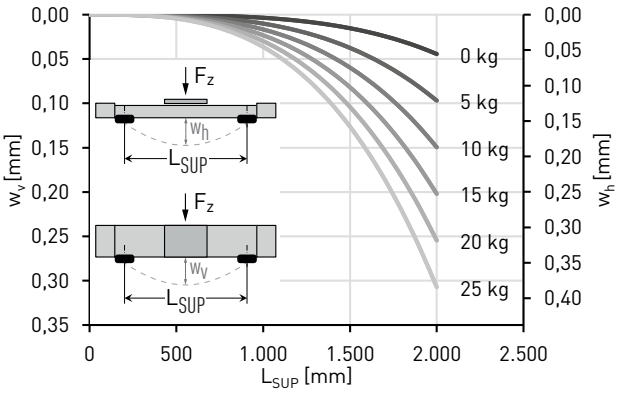


Fig. 6.4 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

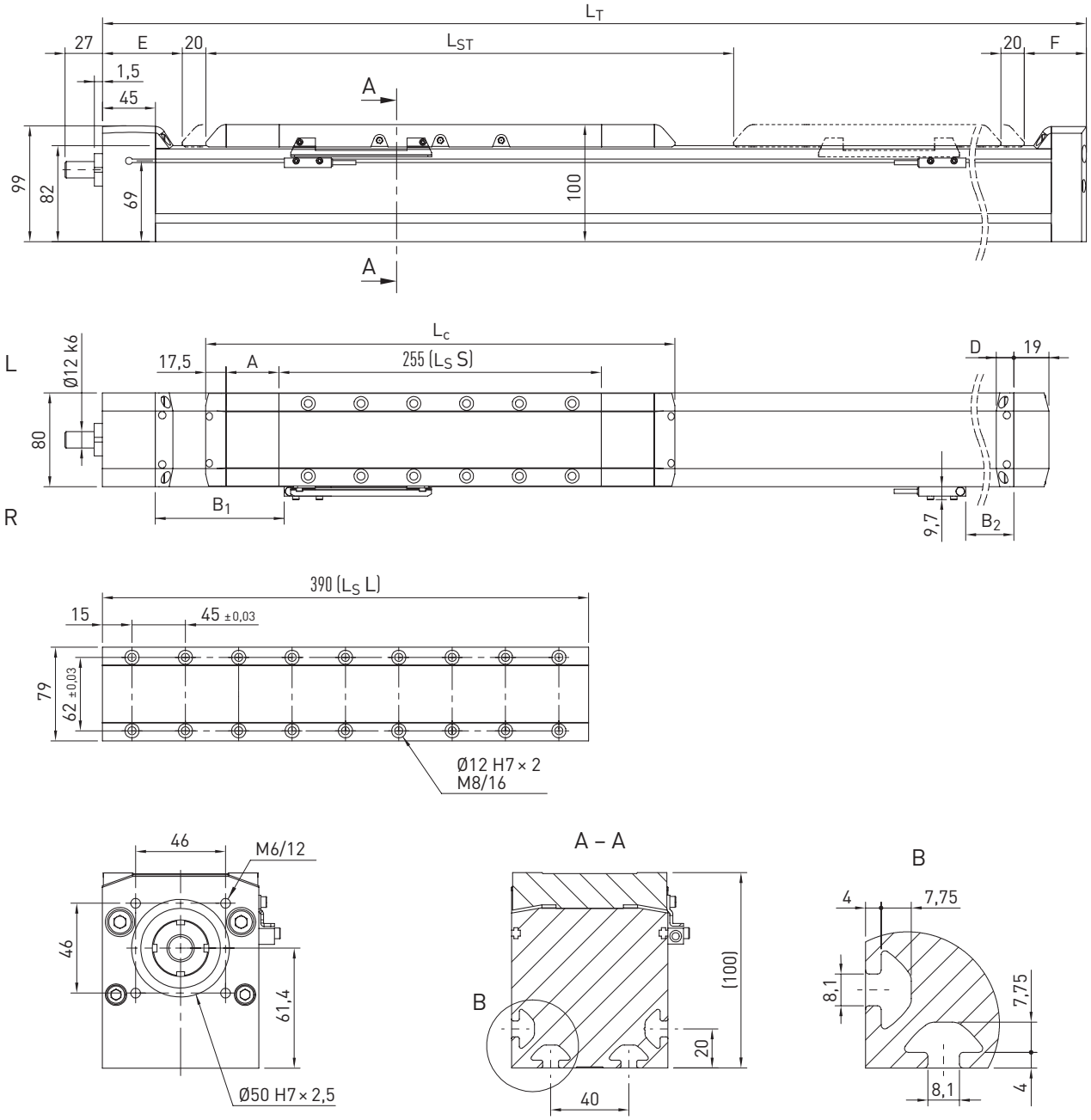
Table 6.12 **Mechanical properties**

	Variant without cover						Variant with cover					
Sledge type	S			L			S			L		
Spindle pitch [mm]	**5**	**10**	**16**	**5**	**10**	**16**	**5**	**10**	**16**	**5**	**10**	**16**
Mass of the carriage [kg]	1.05	1.05	1.14	1.37	1.37	1.46	1.15	1.15	1.24	1.47	1.47	1.56
Mass at 0-stroke [2] [kg]	3.51	3.51	3.60	4.43	4.42	4.51	4.29	4.29	4.38	5.22	5.21	5.30
Mass per 1 m stroke [kg/m]	5.92						6.02					
$J_{rot.}$ [1] at 0-stroke [kgcm²]	0.19			0.23			0.23			0.27		
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	0.39						0.39					
Idle torque at 0-stroke [Nm]	0.27						0.28					

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages. add the following: Mass of carriage + mass per 1 m stroke x (Clearance between the carriages (in m) + carriage length L_C (in m))

6.5 Dimensions and specifications of HM080S



L_S Carriage plate
L Left
R Right

Table 6.13 **HM080S dimensions**

	Variant without cover		Variant with cover	
Sledge type	S	L	S	L
Total carriage length L_c [mm]	290	425	380	515
Cover strip deflection A [mm]	–	–	45	45
Switch distance B_1 [mm]	40	40	100	100
Switch distance B_2 [mm]	175	310	235	370
Terminal box D [mm]	–	–	15	15
End position at mechanical zero E [mm]	53		68	
End position at mechanical zero F [mm]	27		42	
Max. stroke length L_{ST} [mm]	4,090	3,955	3,970	3,835
Total length L_T [mm]	$L_T = L_{ST} + 410$	$L_T = L_{ST} + 545$	$L_T = L_{ST} + 530$	$L_T = L_{ST} + 665$

Table 6.14 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	7,500 km		100 km	
Sledge type	S	L	S	L
$F_{ydynmax}$ [1] [N]	4,000	4,000	47,622	47,622
$F_{zdynmax}$ [1] [N]	8,686	8,686	47,622	47,622
$M_{xdynmax}$ [Nm]	67	67	366	366
$M_{ydynmax}$ [Nm]	766	1,352	4,198	7,412
$M_{zdynmax}$ [Nm]	353	623	4,198	7,412
Load distance z [mm]	68.5	68.5	68.5	68.5

[1] Force must only act free of torque

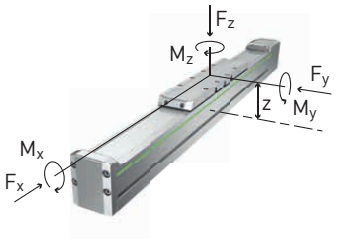


Table 6.15 **Guide**

Type of carriage	QHH20CA × 2
Static load rating C_0 [N]	33,860 × 2
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	30,000 × 2

Table 6.16 **General technical data**

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	60
Maximum total length [mm]	4,500
Area moment of inertia of profile cross section I_x [mm⁴]	1,293,796
Area moment of inertia of profile cross section I_y [mm⁴]	1,759,898

Table 6.17 **Drive**

	Spindle lead		
	5 mm	**10 mm**	**20 mm**
Spindle diameter [mm]	20		
Axial play [mm]	0.02		
Max. feed force F_{x_max} [N]	3,186	3,149	1,620
Max. speed [m/s]	0.25	0.50	1.00
Max. drive torque M_{A_max} [Nm]	2.89	5.36	5.51
Static load rating ballscrew C_0 [N]	33,800	33,600	16,000
Dynamic load rating ballscrew C_{dyn} [N]	17,300	17,100	8,800

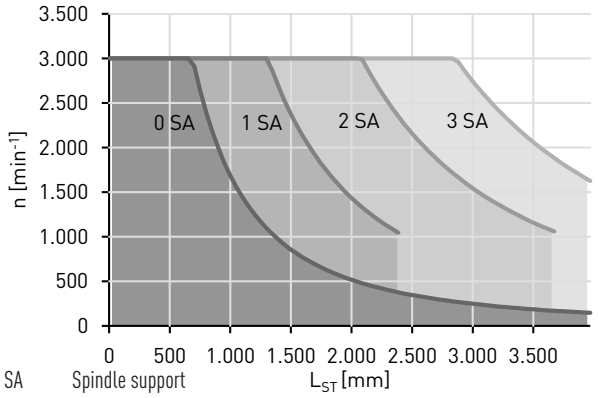


Fig. 6.5 **Critical speed n over axis stroke length L_{ST}**

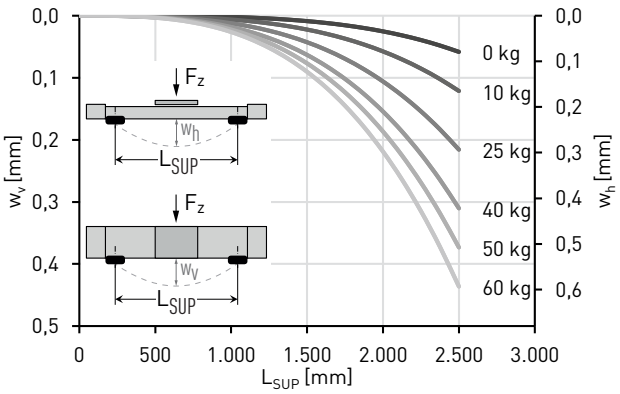


Fig. 6.6 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

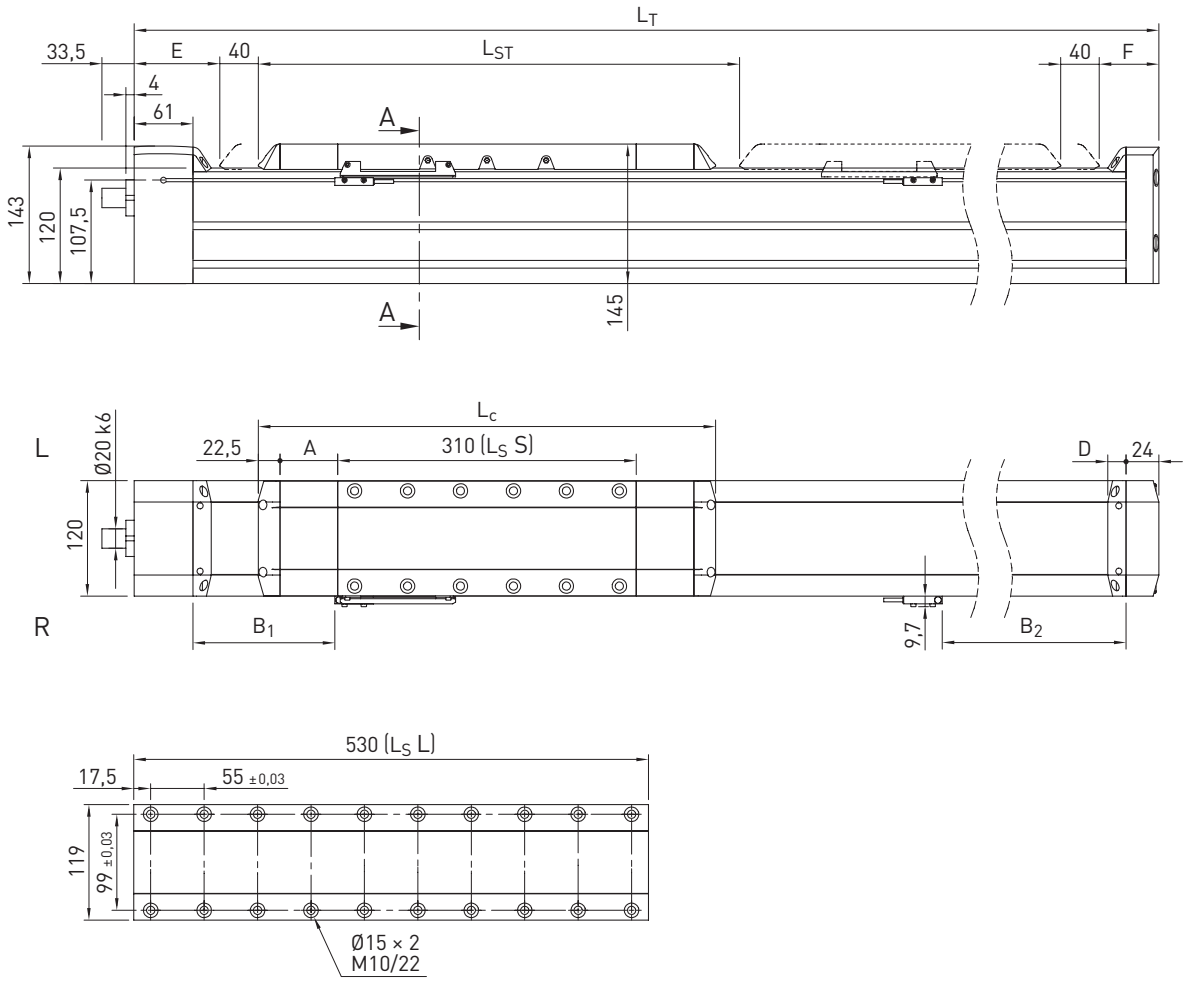
Table 6.18 **Mechanical properties**

	Variant without cover						Variant with cover					
Sledge type	S			L			S			L		
Spindle pitch [mm]	**5**	**10**	**20**	**5**	**10**	**20**	5	10	20	5	10	20
Mass of the carriage [kg]	1.97	2.11	2.20	2.65	2.79	2.87	2.17	2.31	2.39	2.85	2.99	3.07
Mass at 0-stroke [2] [kg]	7.36	7.50	7.58	9.48	9.63	9.71	8.99	9.14	9.22	11.14	11.28	11.37
Mass per 1 m stroke [kg/m]	10.67						10.72					
$J_{rot.}$ [1] at 0-stroke [kgcm²]	0.82			0.99			0.97			1.14		
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	1.23						1.23					
Idle torque at 0-stroke [Nm]	0.35						0.52					

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages. add the following: Mass of carriage + mass per 1 m stroke x (clearance between the carriages (in m) + carriage length L_C (in m))

6.6 Dimensions and specifications of HM120S



L_S Carriage plate
L Left
R Right

Table 6.19 **HM120S dimensions**

	Variant without cover		Variant with cover	
Sledge type	S	L	S	L
Total carriage length L_c [mm]	355	575	475	695
Cover strip deflection A [mm]	–	–	60	60
Switch distance B_1 [mm]	68.5	68.5	147.5	147.5
Switch distance B_2 [mm]	253.5	473.5	332.5	552.5
Terminal box D [mm]	–	–	19	19
End position at mechanical zero E [mm]	70		89	
End position at mechanical zero F [mm]	33		52	
Max. stroke length L_{ST} [mm]	4,936	4,716	4,778	4,558
Total length L_T [mm]	$L_T = L_{ST} + 538$	$L_T = L_{ST} + 758$	$L_T = L_{ST} + 696$	$L_T = L_{ST} + 916$

Table 6.20 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	10,000 km		100 km	
Sledge type	S	L	S	L
$F_{ydynmax}$ [1] [N]	15,327	15,327	92,482	92,482
$F_{zdynmax}$ [1] [N]	15,327	15,327	92,482	92,482
$M_{xdynmax}$ [Nm]	139	139	836	836
$M_{ydynmax}$ [Nm]	1,625	3,311	9,803	19,976
$M_{zdynmax}$ [Nm]	1,625	3,311	9,803	19,976
Load distance z [mm]	99	99	99	99

[1] Force must only act free of torque

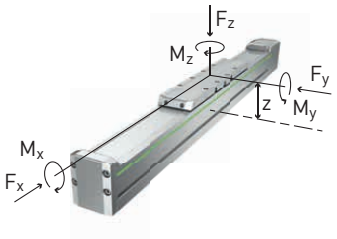


Table 6.21 **Guide**

Type of carriage	QHW30CC × 2
Static load rating C_0 [N]	66,340 × 2
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	58,260 × 2

Table 6.22 **General technical data**

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	120
Maximum total length [mm]	5,473
Area moment of inertia of profile cross section I_x [mm⁴]	6,235,456
Area moment of inertia of profile cross section I_y [mm⁴]	8,646,933

Table 6.23 **Drive**

	Spindle lead		
	10 mm	**20 mm**	**32 mm**
Spindle diameter [mm]	32		
Axial play [mm]	0.02		
Max. feed force F_{x_max} [N]	6,592	4,069	2,744
Max. speed [m/s]	0.5	1.0	1.6
Max. drive torque M_{A_max} [Nm]	11.34	13.80	14.82
Static load rating ballscrew C_0 [N]	88,000	50,600	32,800
Dynamic load rating ballscrew C_{dyn} [N]	35,800	22,100	14,900

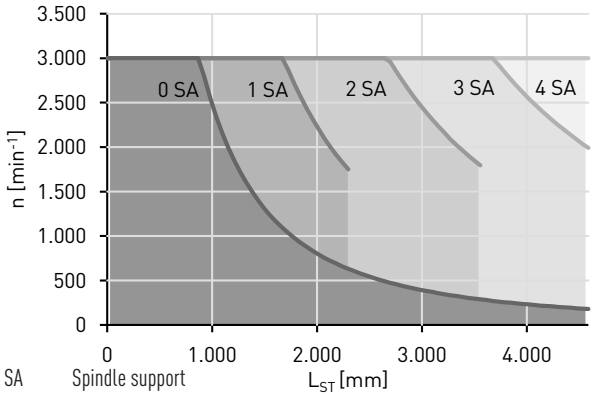


Fig. 6.7 **Critical speed n over axis stroke length L_{ST}**

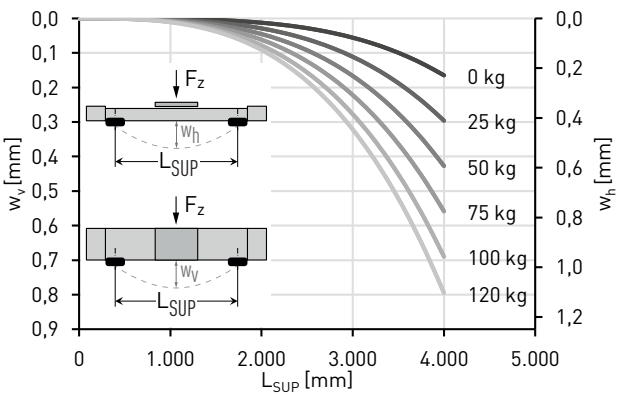


Fig. 6.8 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 6.24 **Mechanical properties**

	Variant without cover						Variant with cover					
Sledge type	S			L			S			L		
Spindle pitch [mm]	**10**	**20**	**32**	**10**	**20**	**32**	**10**	**20**	**32**	**10**	**20**	**32**
Mass of the carriage [kg]	6.04	6.18	6.19	8.41	8.56	8.57	6.52	6.67	6.68	8.91	9.05	9.07
Mass at 0-stroke [2] [kg]	21.90	22.04	22.06	29.61	29.76	29.77	26.46	26.60	26.62	34.22	34.36	34.38
Mass per 1 m stroke [kg/m]	24.01						24.10					
$J_{rot.}$ [1] at 0-stroke [kgcm²]	5.77			7.55			7.05			8.83		
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	8.08						8.08					
Idle torque at 0-stroke [Nm]	0.85						0.90					

[1] Rotational moment of inertia

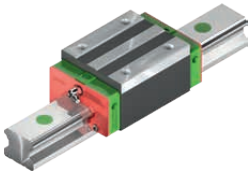
[2] The values apply to axes with one carriage. For axes with 2 carriages. add the following: Mass of carriage + mass per 1 m stroke x (Clearance between the carriages (in m) + carriage length L_C (in m))

7. Linear tables HT-B

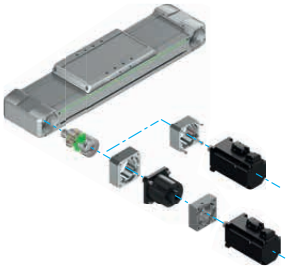
7.1 Properties of linear tables HT-B with toothed belt drive

The HIWIN linear tables with toothed belt drive are flexible positioning modules with integrated HIWIN double guide. They are ideal in particular for applications requiring high dynamic responses and high speeds.
Cleanroom-compatible linear motor axes HT-L up to ISO class 5 are available on request.

Linear guideway
A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The SynchMotion™ technology with ball chain also ensures good synchronisation and smooth running in all sizes.

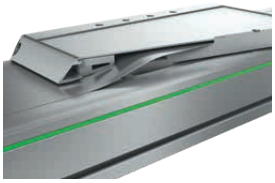


Drive adaptation
Thanks to its symmetrical design, the HIWIN linear table with toothed belt drive allows motors and gears to be mounted on all four sides of the drive blocks. You can find suitable adapters for all common motors in section 22.1.2 from page 160.



Toothed belt
The toothed belt with modern high performance profiles (HTD shape) and reinforced steel tension members enables high power transmission while offering high skip resistance.

Cover strip
The steel cover strip prevents dirt and dust from entering the axis interior. In addition, the cover strip allows the axes to be used in areas with coarse, sharp-edged or hot foreign bodies. The magnetic strips integrated in the axis profile hold the belt securely in position and increase the sealing effect.



Carriage
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.
A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.

Energy chain
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section 22.3 from page 186.

7.2 Order code for linear tables HT-B

HT	150	B	155	C	1234	S

HIWIN linear table

Size (profile width):
100: 100 mm
150: 150 mm
200: 200 mm
250: 250 mm

Drive type:
B: Toothed belt drive

Carriage length:
S: Short

Stroke length [mm]

Cover strip:
C: With steel cover strip
N: Without cover strip

Feed constant [mm/rev]:
105: HT100B
155: HT150B
184: HT200B
208: HT250B

Continuation, order code for linear tables HM-B

A	N	N	R	BR13	G0805

Axis limit switch[5]**:**
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector
B: 2 × normally open, 100 mm cable, connector
C: 2 × normally closed, 4 m open cable end
D: 2 × normally open, 5 m open cable end

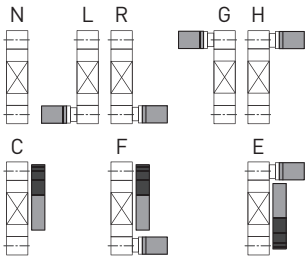
Toothed belt:
N: Standard belt

Distance measuring system option[1]**:**
N: Without distance measuring system
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos, 5 m open cable end
D: HIWIN MAGIC, digital, TTL 5 V, 5 m open cable end

Gearbox[4]

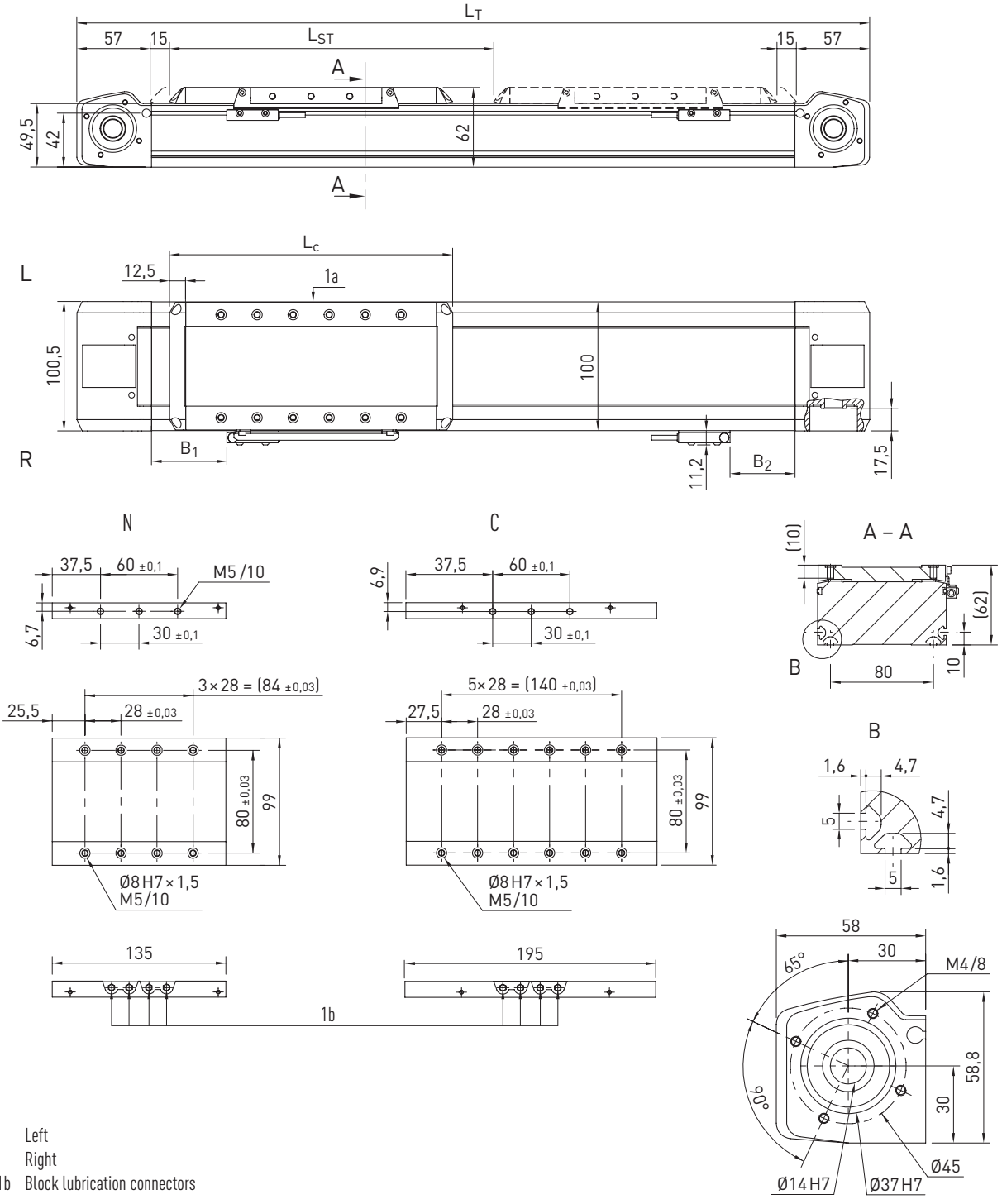
Flange type[3]

Drive interface[2] [6]**:**
N: Without
L: Left front
R: Right front
G: Left rear
H: Right rear
C: None, energy chain on the right
F: Right front, energy chain on the right
E: Right rear, energy chain on the right



[1] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[2] If no drive interface is selected, the order code ends after this digit.
[3] You can find all flange types in Table 22.2 from page 161. If no gearbox is selected, the order code ends after this digit.
[4] You can find the right gearbox for the HIWIN axes in section 22.1.5.5 from page 170.
[5] Additional reference switches on request.
[6] Dimensions of the drive interface and the energy chain can be found on Page 186.

7.3 Dimensions and specifications of HT100B



L Left
R Right
1a + 1b Block lubrication connectors

Table 7.1 **HT100B dimensions**

	Variant without cover N	Variant with cover C
Total carriage length L_c [mm]	160	220
Switch distance B_1 [mm]	28.5	58.5
Switch distance B_2 [mm]	20.5	50.5
Max. stroke length L_{ST} [mm]	5,612	5,552
Total length L_T [mm]	$L_T = L_{ST} + 304$	$L_T = L_{ST} + 364$

Table 7.2 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	20,000 km		100 km	
	Version without cover	Version with cover	Version without cover	Version with cover
$F_{ydynmax}$ [1] [N]	3,350	3,350	27,176	27,176
$F_{zdynmax}$ [1] [N]	3,575	3,575	27,176	27,176
$M_{xdynmax}$ [Nm]	93	93	707	707
$M_{ydynmax}$ [Nm]	159	206	1,209	1,563
$M_{zdynmax}$ [Nm]	149	193	1,209	1,563
Load distance z [mm]	38.6	38.6	38.6	38.6

[1] Force must only act free of torque

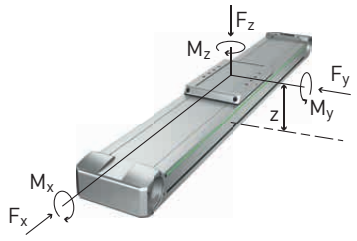


Table 7.3 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	813
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	14
Typical load capacity [kg]	40
Maximum total length [mm]	5,916
Area moment of inertia of profile cross section I_x [mm⁴]	299,377
Area moment of inertia of profile cross section I_y [mm⁴]	1,516,426

Table 7.4 **Guide**

Type of carriage	QEH15CA × 4
Static load rating C_0 [N]	15,280 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	12,530 × 4

Table 7.5 **Drive**

Drive element	B25HTD5
Feed constant [mm/U]	105
Toothed belt effective diameter [mm]	33.42

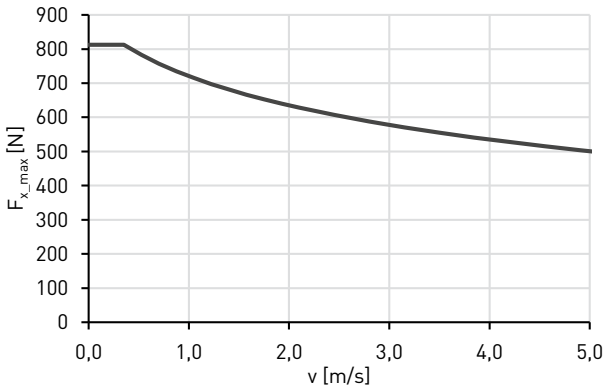


Fig. 7.1 **Max. feed force F_{x_max} as a function of axis speed v**

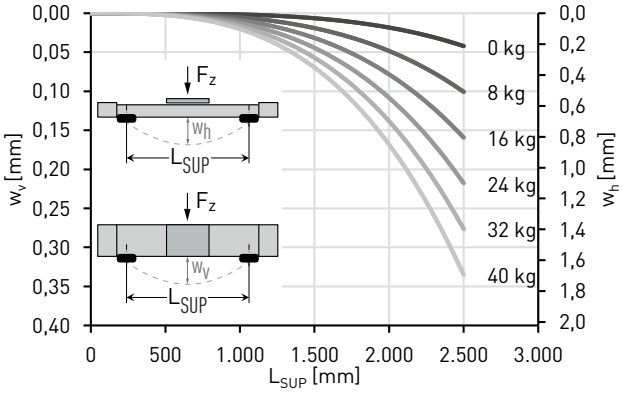


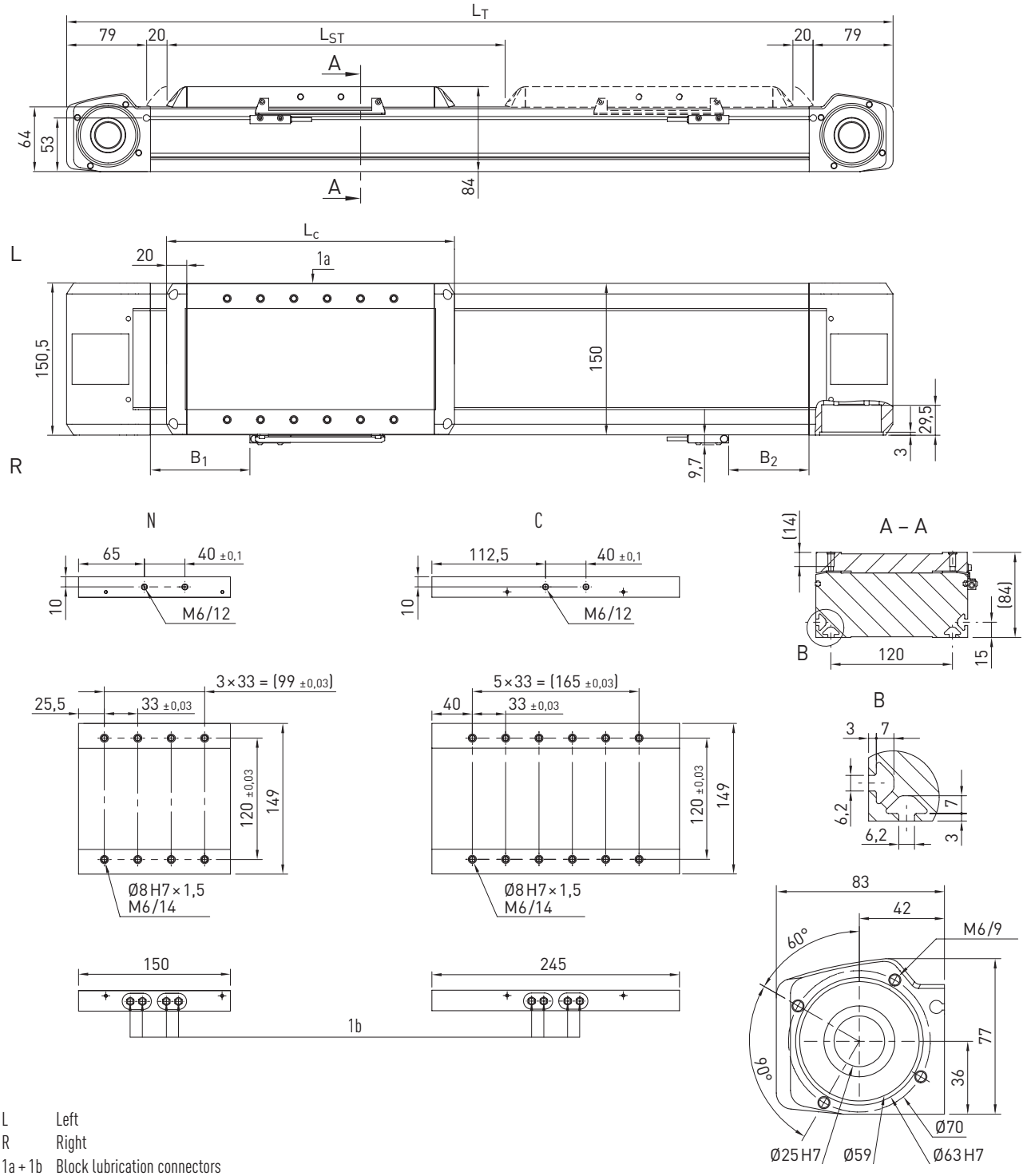
Fig. 7.2 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 7.6 **Mechanical properties**

	Variant without cover N	Variant with cover C
Mass of the carriage [kg]	1.34	1.53
Mass at 0-stroke [kg]	4.13	4.73
Mass per 1 m stroke [kg/m]	6.54	6.71
$J_{rot.}$ [1] [kgcm²]	0.63	0.63
Idle torque at 0-stroke [Nm]	1.00	1.50

[1] Rotational moment of inertia

7.4 Dimensions and specifications of HT150B



L Left
R Right
1a + 1b Block lubrication connectors

Table 7.7 **HT150B dimensions**

	Variant without cover N	Variant with cover C
Total carriage length L_c [mm]	190	285
Switch distance B_1 [mm]	51	98.5
Switch distance B_2 [mm]	32	79.5
Max. stroke length L_{ST} [mm]	5,578	5,483
Total length L_T [mm]	$L_T = L_{ST} + 388$	$L_T = L_{ST} + 483$

Table 7.8 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	20,000 km		100 km	
	Version without cover	Version with cover	Version without cover	Version with cover
$F_{ydynmax}$ [1] [N]	3,350	3,350	39,780	39,780
$F_{zdynmax}$ [1] [N]	5,233	5,233	39,780	39,780
$M_{xdynmax}$ [Nm]	246	246	1,870	1,870
$M_{ydynmax}$ [Nm]	246	345	1,870	2,625
$M_{zdynmax}$ [Nm]	157	221	1,870	2,625
Load distance z [mm]	51.4	51.4	51.4	51.4

[1] Force must only act free of torque

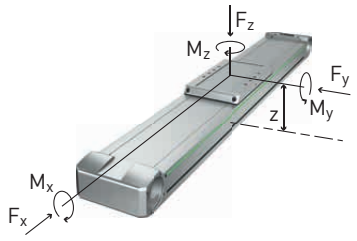


Table 7.9 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	1,300
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	32.1
Typical load capacity [kg]	80
Maximum total length [1] [mm]	5,966
Area moment of inertia of profile cross section I_x [mm⁴]	907,754
Area moment of inertia of profile cross section I_y [mm⁴]	7,417,610

[1] Long axes on request

Table 7.10 **Guide**

Type of carriage	QEH15CA × 4
Static load rating C_0 [N]	15,280 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	12,530 × 4

Table 7.11 **Drive**

Drive element	B40HTD5
Feed constant [mm/U]	155
Toothed belt effective diameter [mm]	49.34

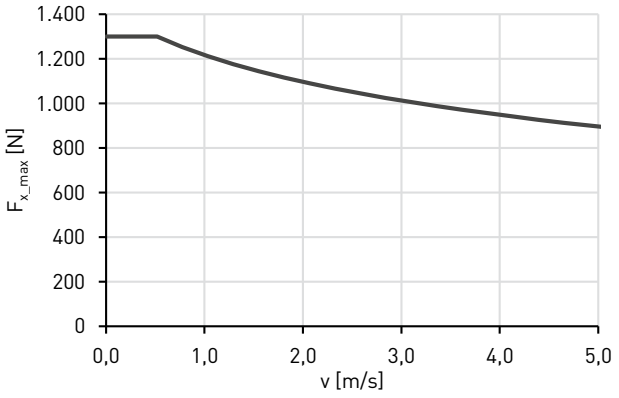


Fig. 7.3 **Max. feed force F_{x_max} as a function of axis speed v**

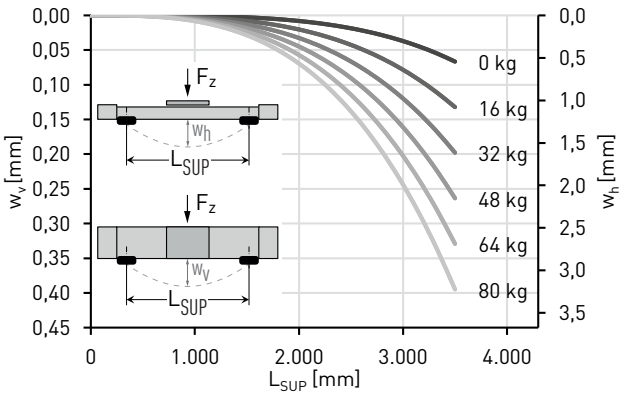


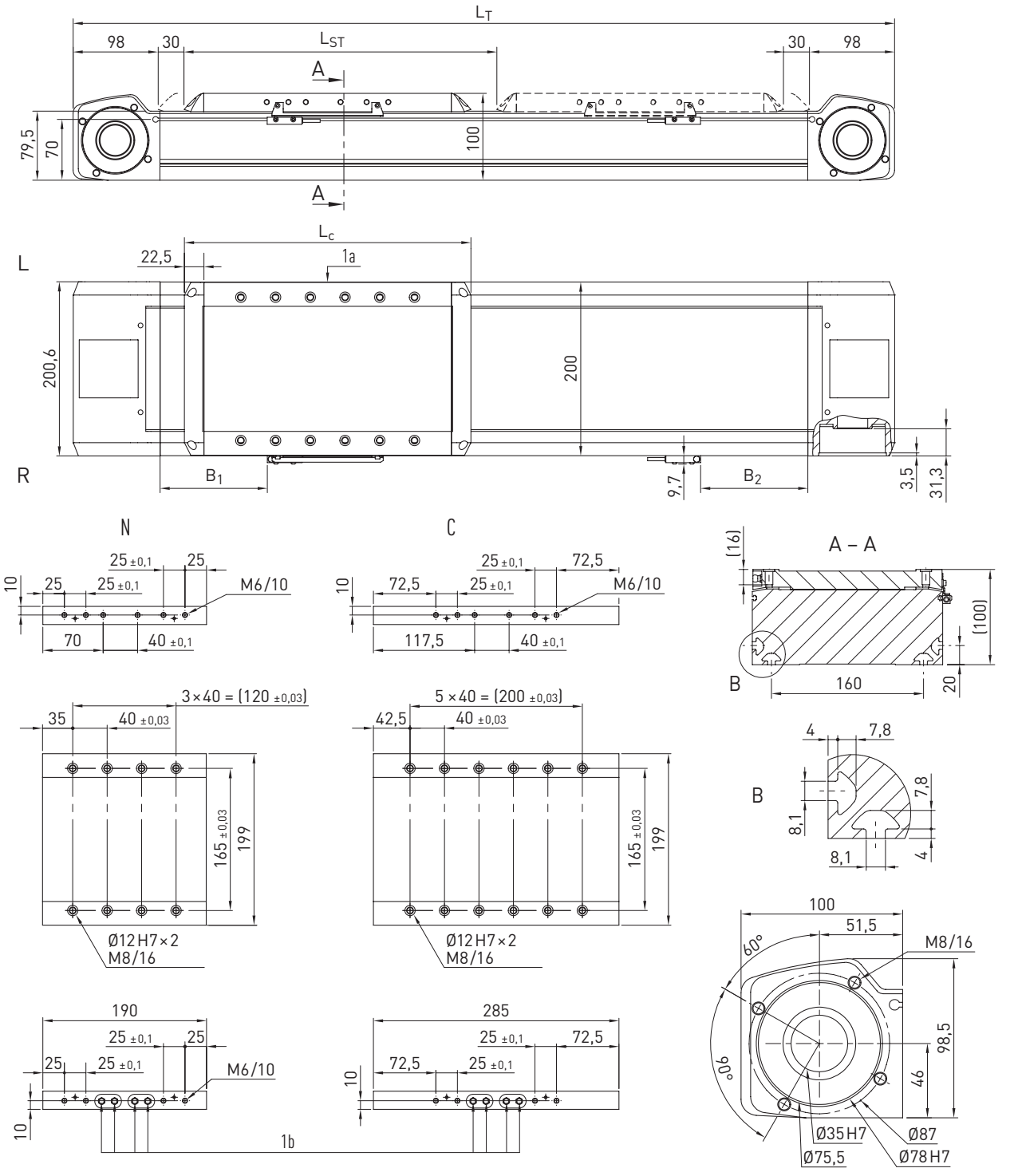
Fig. 7.4 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 7.12 **Mechanical properties**

	Variant without cover N	Variant with cover C
Mass of the carriage [kg]	2.33	2.94
Mass at 0-stroke [kg]	8.60	10.29
Mass per 1 m stroke [kg/m]	10.84	11.13
$J_{rot.}$ [1] [kgcm²]	5.09	5.09
Idle torque at 0-stroke [Nm]	1.00	1.50

[1] Rotational moment of inertia

7.5 Dimensions and specifications of HT200B



L Left
R Right
1a + 1b Block lubrication connectors

Table 7.13 **HT200B dimensions**

	Variant without cover N	Variant with cover C
Total carriage length L_c [mm]	235	330
Switch distance B_1 [mm]	76	123.5
Switch distance B_2 [mm]	76	123.5
Max. stroke length L_{ST} [mm]	5,509	5,414
Total length L_T [mm]	$L_T = L_{ST} + 491$	$L_T = L_{ST} + 586$

Table 7.14 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	20,000 km		100 km	
	Version without cover	Version with cover	Version without cover	Version with cover
$F_{ydynmax}$ [1] [N]	7,800	7,800	95,244	95,244
$F_{zdynmax}$ [1] [N]	12,528	12,528	95,244	95,244
$M_{xdynmax}$ [Nm]	852	852	6,477	6,477
$M_{ydynmax}$ [Nm]	708	1,002	5,381	7,620
$M_{zdynmax}$ [Nm]	441	624	5,381	7,620
Load distance z [mm]	58.5	58.5	58.5	58.5

[1] Force must only act free of torque

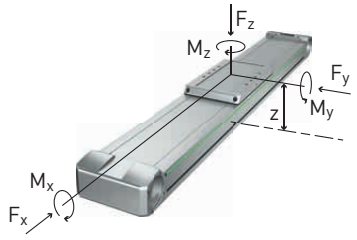


Table 7.15 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	3,000
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	87.9
Typical load capacity [kg]	150
Maximum total length [1] [mm]	6,000
Area moment of inertia of profile cross section I_x [mm⁴]	2,071,928
Area moment of inertia of profile cross section I_y [mm⁴]	19,658,810

[1] Long axes on request

Table 7.16 **Guide**

Type of carriage	QHH20CA × 4
Static load rating C_0 [N]	33,860 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	30,000 × 4

Table 7.17 **Drive**

Drive element	B50HTD8
Feed constant [mm/U]	184
Toothed belt effective diameter [mm]	58,57

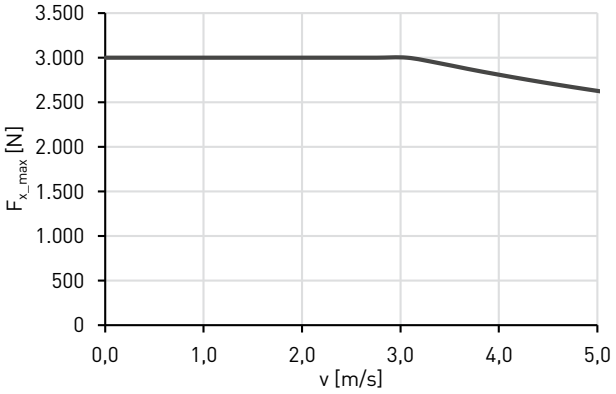


Fig. 7.5 **Max. feed force F_{x_max} as a function of axis speed v**

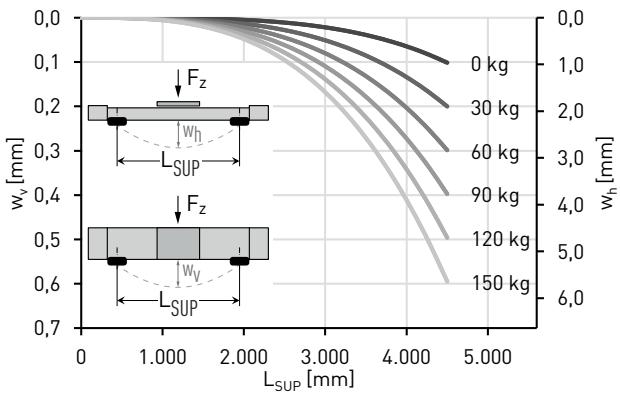


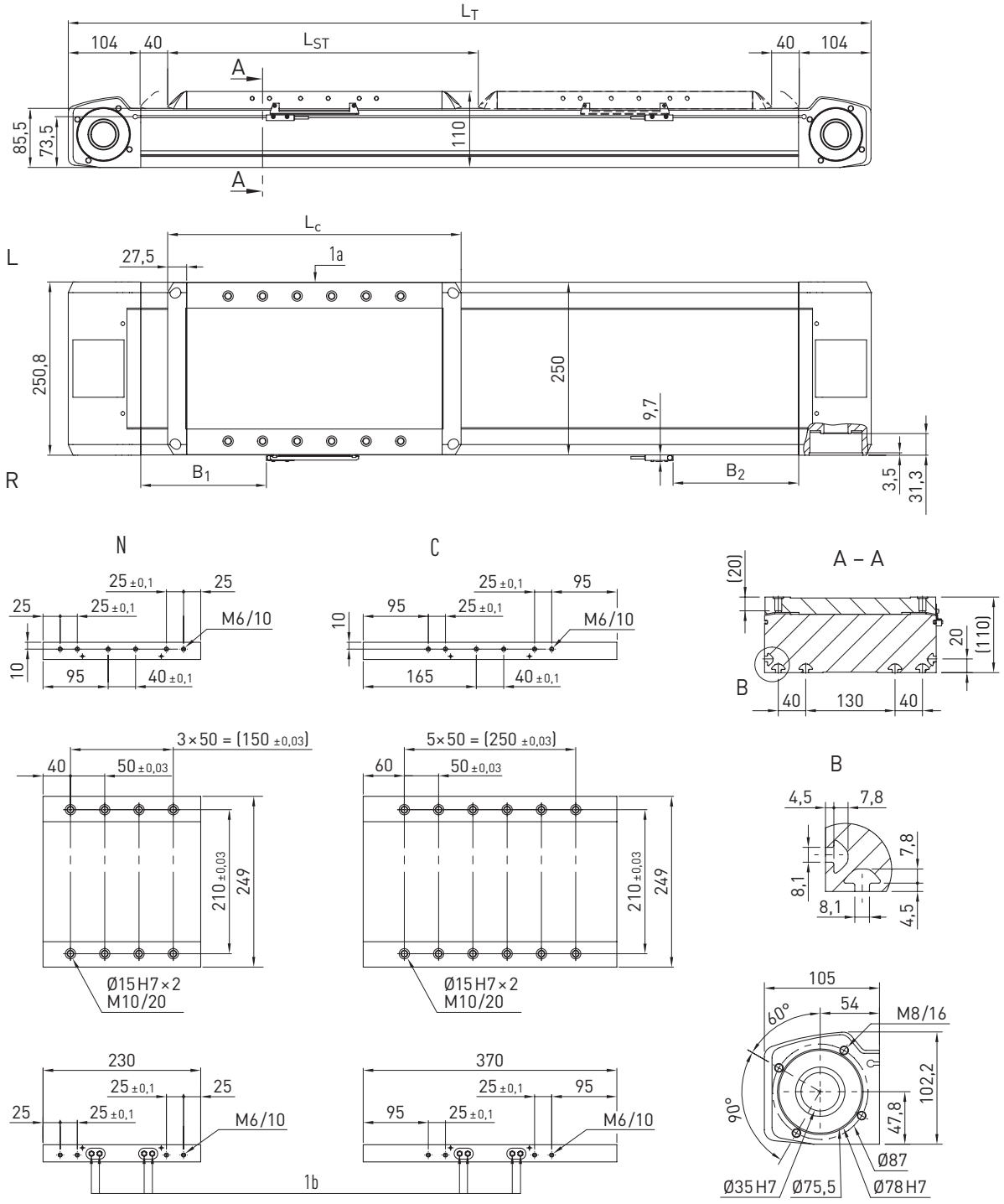
Fig. 7.6 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 7.18 **Mechanical properties**

	Variant without cover N	Variant with cover C
Mass of the carriage [kg]	4.40	5.19
Mass at 0-stroke [kg]	16.97	19.54
Mass per 1 m stroke [kg/m]	17.27	17.75
$J_{rot.}$ [1] [kgcm²]	18.37	18.37
Idle torque at 0-stroke [Nm]	2.00	2.50

[1] Rotational moment of inertia

7.6 Dimensions and specifications of HT250B



L Left
R Right
1a + 1b Block lubrication connectors

Table 7.19 **HT250B dimensions**

	Variant without cover N	Variant with cover C
Total carriage length L_c [mm]	285	425
Switch distance B_1 [mm]	112	182
Switch distance B_2 [mm]	112	182
Max. stroke length L_{ST} [mm]	5,537	5,397
Total length L_T [mm]	$L_T = L_{ST} + 573$	$L_T = L_{ST} + 713$

Table 7.20 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	20,000 km		100 km	
	Version without cover	Version with cover	Version without cover	Version with cover
$F_{ydynmax}$ [1] [N]	11,600	11,600	133,024	133,024
$F_{zdynmax}$ [1] [N]	17,498	17,498	133,024	133,024
$M_{xdynmax}$ [Nm]	1,496	1,496	11,374	11,374
$M_{ydynmax}$ [Nm]	1,356	1,706	10,309	12,970
$M_{zdynmax}$ [Nm]	899	1,131	10,309	12,970
Load distance z [mm]	68.01	68.01	68.01	68.01

[1] Force must only act free of torque

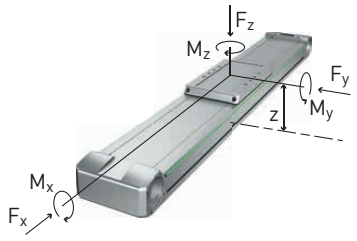


Table 7.21 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	4,500
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	149
Typical load capacity [kg]	250
Maximum total length [1] [mm]	6,110
Area moment of inertia of profile cross section I_x [mm⁴]	3,265,771
Area moment of inertia of profile cross section I_y [mm⁴]	39,262,043

[1] Long axes on request

Table 7.22 **Guide**

Type of carriage	QHH25CA × 4
Static load rating C_0 [N]	48,750 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	41,900 × 4

Table 7.23 **Drive**

Drive element	B75HTD8
Feed constant [mm/U]	208
Toothed belt effective diameter [mm]	66.21

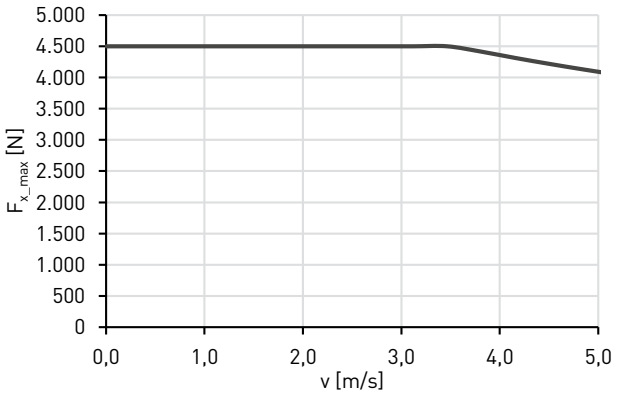


Fig. 7.7 **Max. feed force F_{x_max} as a function of axis speed v**

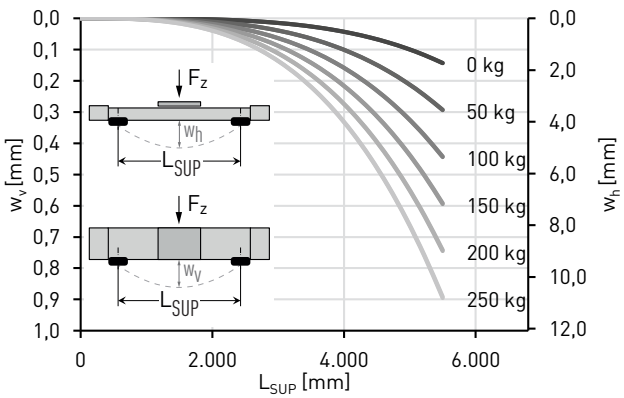


Fig. 7.8 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 7.24 **Mechanical properties**

	Variant without cover N	Variant with cover C
Mass of the carriage [kg]	7.93	9.67
Mass at 0-stroke [kg]	28.42	33.47
Mass per 1 m stroke [kg/m]	22.50	23.09
$J_{rot.}$ [1] [kgcm²]	36.38	36.38
Idle torque at 0-stroke [Nm]	4.00	4.50

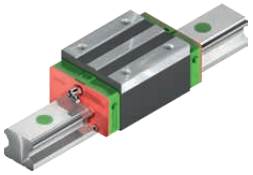
[1] Rotational moment of inertia

8. Linear tables HT-S

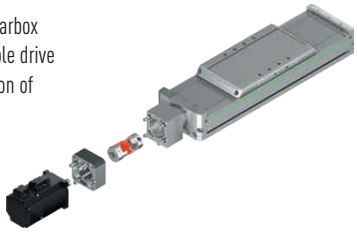
8.1 Properties of linear tables HT-S with ballscrew

The HIWIN linear tables with ballscrew are flexible positioning modules with integrated HIWIN double guide. They are especially suitable for applications where high loads are moved with high precision.

Linear guideway
A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The SynchMotion™ technology with ball chain also ensures good synchronisation and smooth running in all sizes.

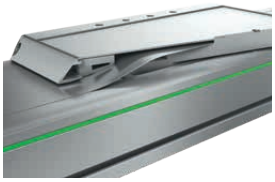


Motor connection and belt drive
The multi-part design of the motor/gearbox adaptation creates an extremely flexible drive interface for attachment and conversion of the drive technology.



Ballscrew
The integrated HIWIN ballscrews ensure precise positioning thanks to their high pitch accuracy and rigidity. Different shaft pitches are available for each size in order to optimally meet the requirements for feed force and dynamics.

Cover strip
The steel cover strip prevents dirt and dust from entering the axis interior. In addition, the cover strip allows the axes to be used in areas with coarse, sharp-edged or hot foreign bodies. The magnetic strips integrated in the axis profile hold the belt securely in position and increase the sealing effect.



Carriage
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.
A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.

Energy chain
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section 22.3 from page 186.

Spindle support
In applications with long travel distances and high velocity, the critical speed of the shaft is quickly reached, meaning an appropriate support is required to prevent the shaft from swinging up. In HIWIN spindle axes, up to four travelling spindle supports can be installed on each side of the carriage. This allows driving at full speed, even with large strokes.

8.2 Order code for linear tables HT-S

HT	150	S	010	C	1234	S

HIWIN linear table

Size (profile width):
100: 100 mm
150: 150 mm
200: 200 mm
250: 250 mm

Drive type:
S: Ballscrew

Carriage length:
S: Short

Stroke length [mm]

Cover strip:
C: With steel cover strip
N: Without cover strip

Spindle pitch [mm]:
005/010/016: HT100S
005/010/020: HT150S
005/010/025: HT200S
010/020/032: HT250S

Continuation, order code for linear tables HT-B

A	N	N	S	BR04

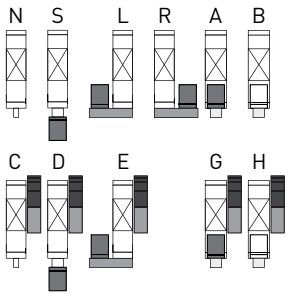
Axis limit switch[4]:
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector
B: 2 × normally open, 100 mm cable, connector
C: 2 × normally closed, 4 m open cable end
D: 2 × normally open, 5 m open cable end

Spindle support:
N: Without spindle support
1: One spindle support per side
2: Two spindle supports per side
3: Three spindle supports per side
4: Four spindle supports per side

Distance measuring system option[1]:
N: Without distance measuring system
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos, 5 m open cable end
D: HIWIN MAGIC, digital, TTL 5 V, 5 m open cable end

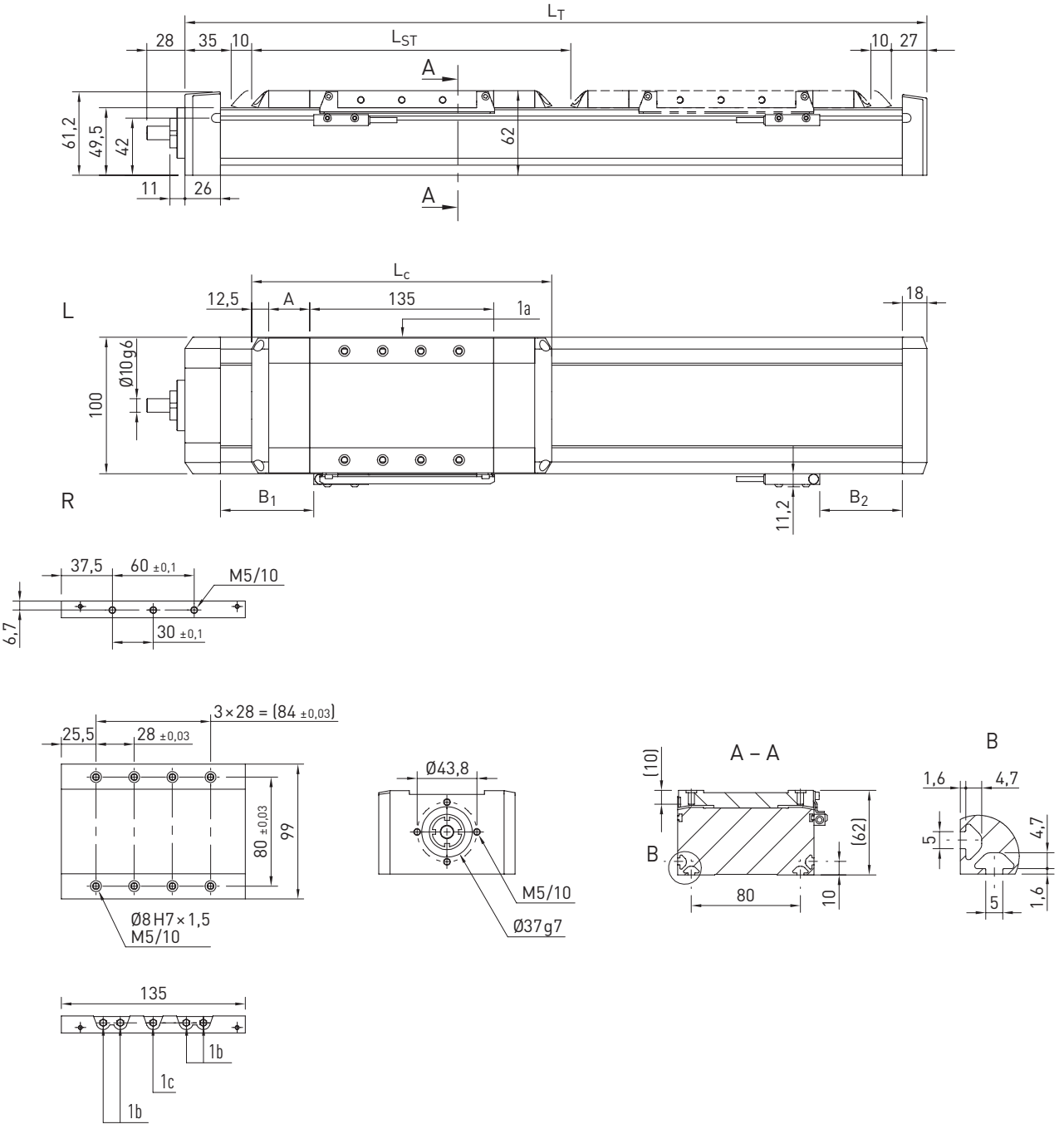
Motor flange type[3]

Drive interface[2] [5]:
N: Without
S: Straight
L: Left
R: Right
A: Top
B: Bottom
C: Without, energy chain right
D: Straight, energy chain right
E: Left, energy chain right
G: Top, energy chain right
H: Bottom, energy chain right



[1] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[2] If no drive interface is selected, the order code ends after this digit.
[3] You can find all flange types in Table 22.15 from page 175. If no motor is selected, the order code ends after this digit.
[4] Additional reference switches on request.
[5] Dimensions of the drive interface and the energy chain can be found on Page 186.

8.3 Dimensions and specifications of HT100S



L	Left
R	Right
1a + 1b	Block lubrication connectors
1c	Ballscrew lubrication connectors

Table 8.1 **HT100S dimensions**

	Variant without cover	Variant with cover
Total carriage length L_c [mm]	160	220
Cover strip deflection A [mm]	–	30
Switch distance B_1 [mm]	33.5	63.5
Switch distance B_2 [mm]	25.5	55.5
Max. stroke length L_{ST} [mm]	3,036	2,976
Total length L_T [mm]	$L_T = L_{ST} + 242$	$L_T = L_{ST} + 302$

Table 8.2 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	6,000 km	100 km
$F_{ydynmax}$ [1] [N]	3,350	27,176
$F_{zdynmax}$ [1] [N]	5,340	27,176
$M_{xdynmax}$ [Nm]	139	707
$M_{ydynmax}$ [Nm]	280	1,427
$M_{zdynmax}$ [Nm]	176	1,427
Load distance z [mm]	38.6	38.6

[1] Force must only act free of torque

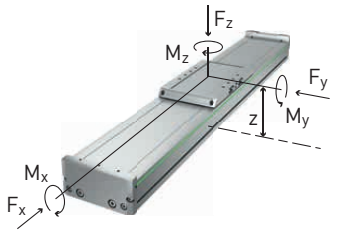


Table 8.3 **General technical data**

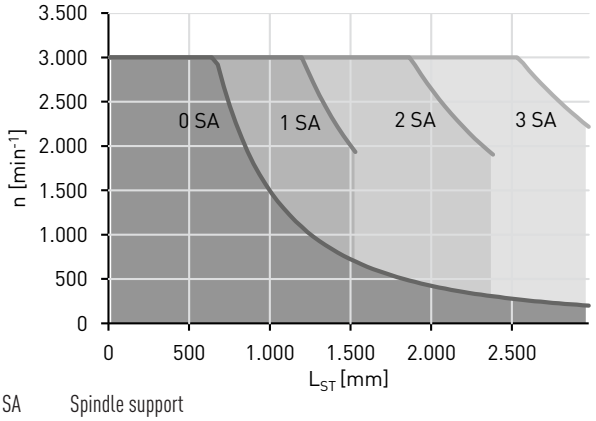
Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	40
Maximum total length [mm]	3,278
Area moment of inertia of profile cross section I_x [mm⁴]	299,377
Area moment of inertia of profile cross section I_y [mm⁴]	1,516,426

Table 8.4 **Guide**

Type of carriage	QEH15SA × 4
Static load rating C_0 [N]	8,790 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	8,560 × 4

Table 8.5 **Drive**

	Spindle lead		
	5 mm	**10 mm**	**16 mm**
Spindle diameter [mm]	15		
Axial play [mm]	0.02		
Max. feed force F_{x_max} [N]	2,541	1,989	1,915
Max. speed [m/s]	0.25	0.50	0.80
Max. drive torque M_{A_max} [Nm]	2.42	3.57	5.28
Static load rating ballscrew C_0 [N]	23,800	18,300	17,900
Dynamic load rating ballscrew C_{dyn} [N]	13,800	10,800	10,400



SA Spindle support

Fig. 8.1 **Critical speed n over axis stroke length L_{ST}**

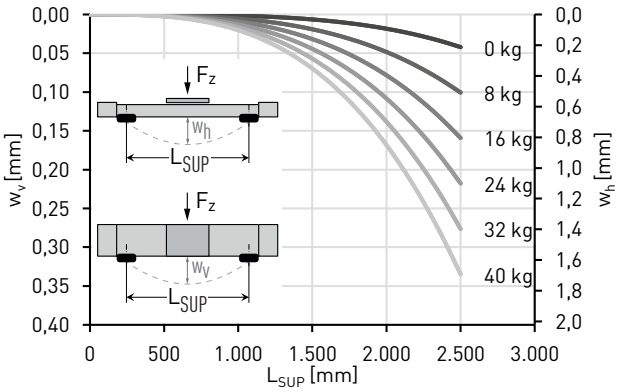


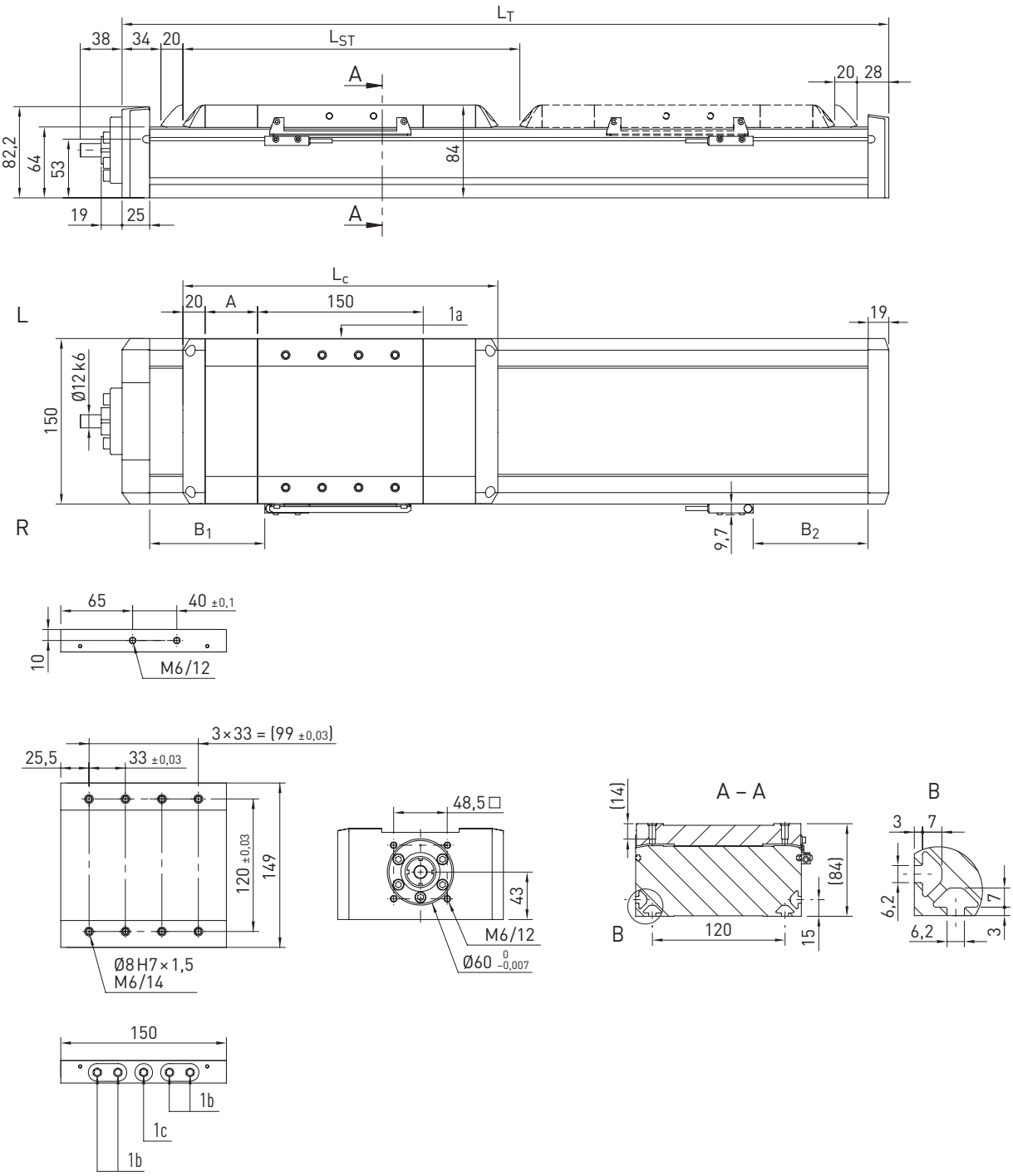
Fig. 8.2 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 8.6 **Mechanical properties**

	Variant without cover			Variant with cover		
Spindle pitch [mm]	**5**	**10**	**16**	**5**	**10**	**16**
Mass of the carriage [kg]	1.15	1.15	1.24	1.28	1.28	1.35
Mass at 0-stroke [kg]	3.52	3.52	3.61	4.19	4.18	4.26
Mass per 1 m stroke [kg/m]	7.68			7.83		
$J_{rot.}$ [1] at 0-stroke [kgcm²]	0.16			0.19		
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	0.39			0.39		
Idle torque at 0-stroke [Nm]	0.40			0.50		

[1] Rotational moment of inertia

8.4 Dimensions and specifications of HT150S



L	Left
R	Right
1a + 1b	Block lubrication connectors
1c	Ballscrew lubrication connectors

Table 8.7 **HT150S dimensions**

	Variant without cover	Variant with cover
Total carriage length L_c [mm]	190	285
Cover strip deflection A [mm]	–	47.5
Switch distance B_1 [mm]	54.5	102
Switch distance B_2 [mm]	54.5	102
Max. stroke length L_{ST} [mm]	5,176	5,081
Total length L_T [mm]	$L_T = L_{ST} + 292$	$L_T = L_{ST} + 387$

Table 8.8 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	7,500 km	100 km
$F_{ydynmax}$ [1] [N]	3,350	39,780
$F_{zdynmax}$ [1] [N]	7,256	39,780
$M_{xdynmax}$ [Nm]	341	1,870
$M_{ydynmax}$ [Nm]	337	1,850
$M_{zdynmax}$ [Nm]	156	1,850
Load distance z [mm]	51.4	51.4

[1] Force must only act free of torque

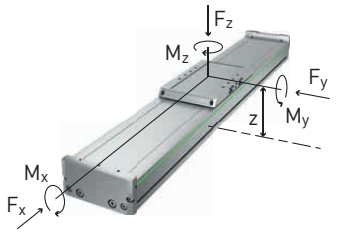


Table 8.9 **General technical data**

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	80
Maximum total length [mm]	5,042
Area moment of inertia of profile cross section I_x [mm⁴]	907,754
Area moment of inertia of profile cross section I_y [mm⁴]	7,417,610

Table 8.10 **Guide**

Type of carriage	QEH15CA × 4
Static load rating C_0 [N]	15,280 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	12,530 × 4

Table 8.11 **Drive**

	Spindle lead		
	5 mm	**10 mm**	**20 mm**
Spindle diameter [mm]	20		
Axial play [mm]	0.02		
Max. feed force F_{x_max} [N]	3,186	3,149	1,620
Max. speed [m/s]	0.25	0.50	1.00
Max. drive torque M_{A_max} [Nm]	3.14	5.61	5.76
Static load rating ballscrew C_0 [N]	33,800	33,600	16,000
Dynamic load rating ballscrew C_{dyn} [N]	17,300	17,100	8,800

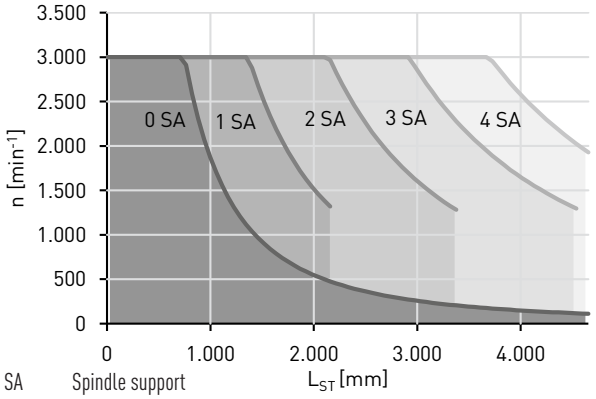


Fig. 8.3 **Critical speed n over axis stroke length L_{ST}**

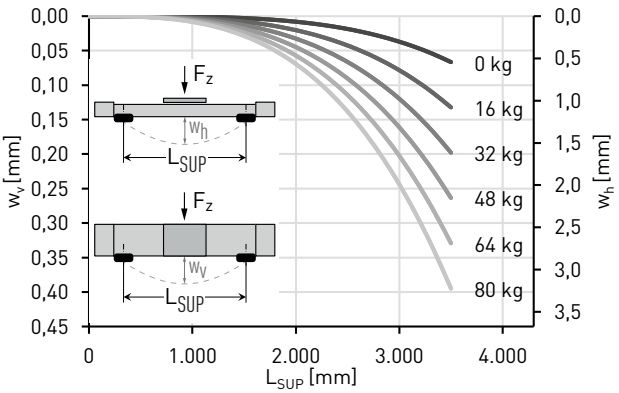


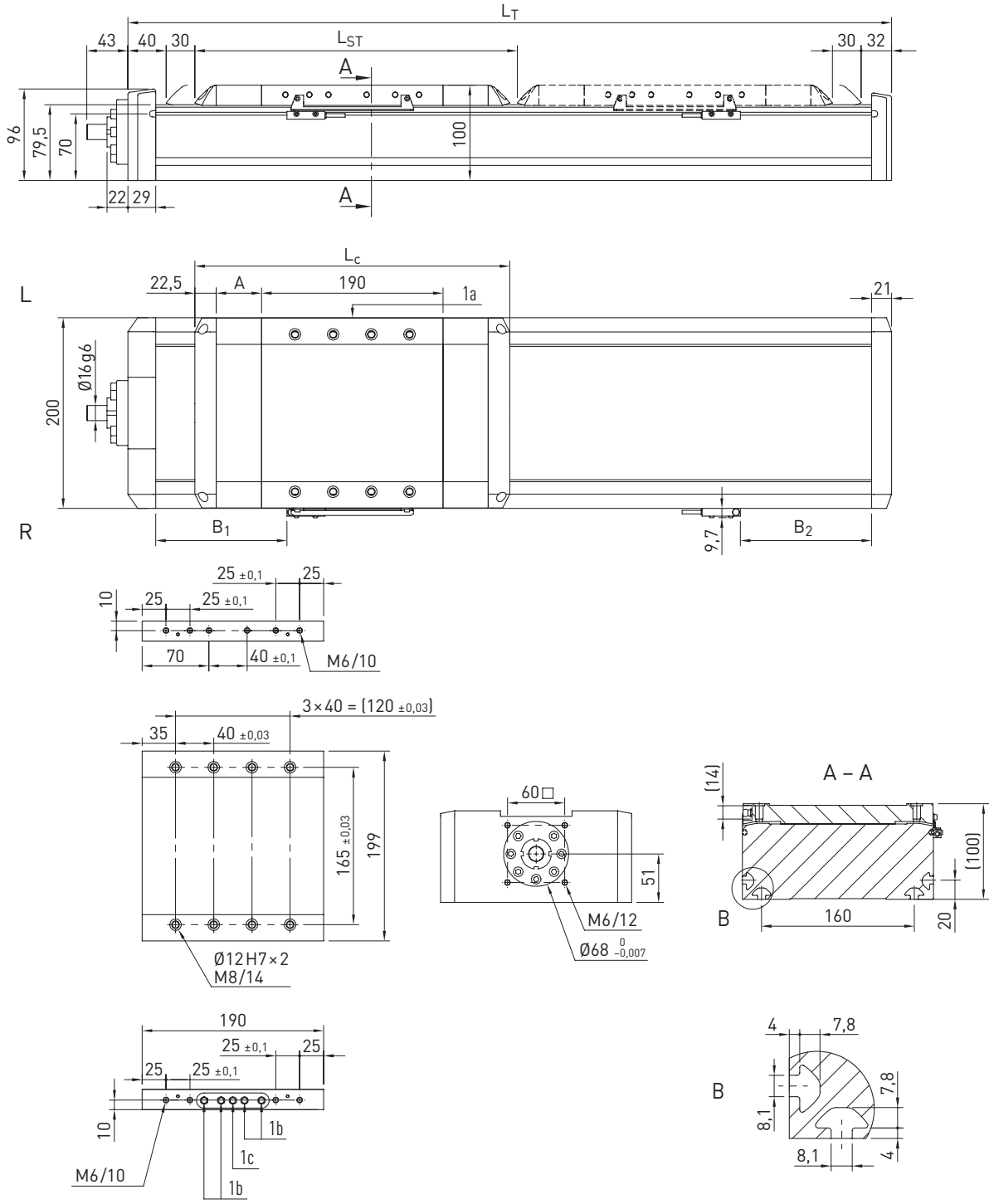
Fig. 8.4 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 8.12 **Mechanical properties**

	Variant without cover			Variant with cover		
Spindle pitch [mm]	**5**	**10**	**20**	**5**	**10**	**20**
Mass of the carriage [kg]	2.25	2.40	2.48	2.74	2.88	2.96
Mass at 0-stroke [kg]	7.40	7.54	7.62	9.28	9.42	9.50
Mass per 1 m stroke [kg/m]	12.99			13.28		
$J_{rot.}$ [1] at 0-stroke [kgcm²]	0.69			0.81		
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	1.23			1.23		
Idle torque at 0-stroke [Nm]	0.60			0.70		

[1] Rotational moment of inertia

8.5 Dimensions and specifications of HT200S



L Left
R Right

1a + 1b Block lubrication connectors
1c Ballscrew lubrication connectors

Table 8.13 **HT200S dimensions**

	Variant without cover	Variant with cover
Total carriage length L_c [mm]	235	330
Cover strip deflection A [mm]	–	47.5
Switch distance B_1 [mm]	89	136.5
Switch distance B_2 [mm]	89	136.5
Max. stroke length L_{ST} [mm]	4,883	4,788
Total length L_T [mm]	$L_T = L_{ST} + 367$	$L_T = L_{ST} + 462$

Table 8.14 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	10,000 km	100 km
$F_{ydynmax}$ [1] [N]	7,800	95,244
$F_{zdynmax}$ [1] [N]	15,784	95,244
$M_{xdynmax}$ [Nm]	1,073	6,477
$M_{ydynmax}$ [Nm]	892	5,381
$M_{zdynmax}$ [Nm]	441	5,381
Load distance z [mm]	58.5	58.5

[1] Force must only act free of torque

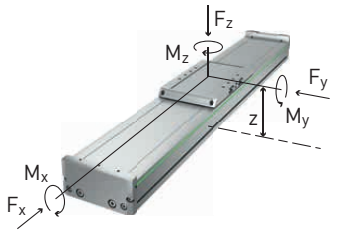


Table 8.15 **General technical data**

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	150
Maximum total length [mm]	5,250
Area moment of inertia of profile cross section I_x [mm⁴]	2,071,928
Area moment of inertia of profile cross section I_y [mm⁴]	19,658,810

Table 8.16 **Guide**

Type of carriage	QHH20CA × 4
Static load rating C_0 [N]	33,860 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	30,000 × 4

Table 8.17 **Drive**

	Spindle lead		
	5 mm	**10 mm**	**25 mm**
Spindle diameter [mm]	25		
Axial play [mm]	0.02		
Max. feed force F_{x_max} [N]	3,535	3,499	1,786
Max. speed [m/s]	0.25	0.50	1.25
Max. drive torque M_{A_max} [Nm]	3.61	6.37	7.91
Static load rating ballscrew C_0 [N]	42,900	42,600	20,200
Dynamic load rating ballscrew C_{dyn} [N]	19,200	19,000	9,700

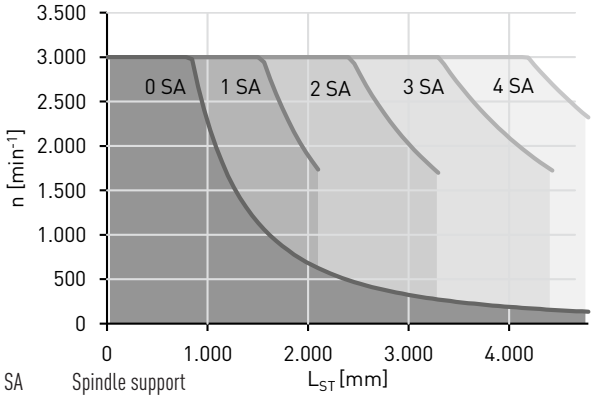


Fig. 8.5 **Critical speed n over axis stroke length L_{ST}**

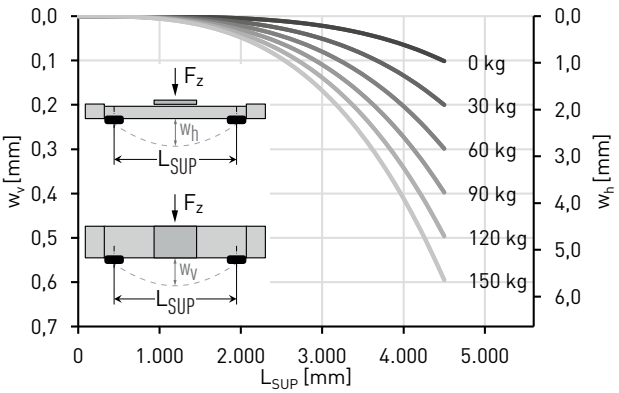


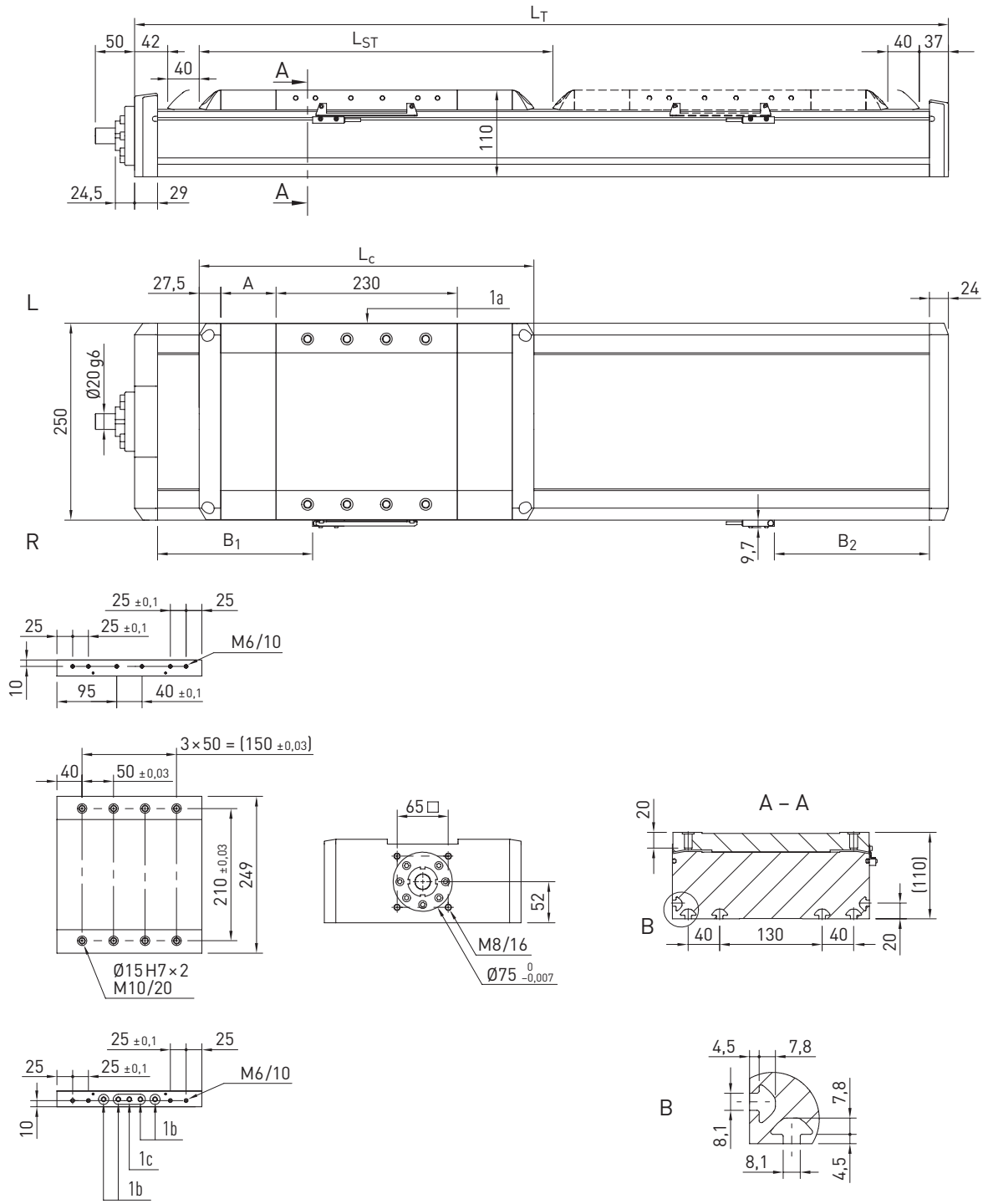
Fig. 8.6 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 8.18 **Mechanical properties**

	Variant without cover			Variant with cover		
Spindle pitch [mm]	**5**	**10**	**25**	**5**	**10**	**25**
Mass of the carriage [kg]	4.42	4.51	4.64	5.01	5.10	5.23
Mass at 0-stroke [kg]	14.24	14.33	14.46	17.11	17.21	17.34
Mass per 1 m stroke [kg/m]	20.49			20.97		
$J_{rot.}$ [1] at 0-stroke [kgcm²]	2.01			2.30		
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	3.01			3.01		
Idle torque at 0-stroke [Nm]	0.80			1.00		

[1] Rotational moment of inertia

8.6 Dimensions and specifications of HT250S



L Left
R Right

1a + 1b Block lubrication connectors
1c Ballscrew lubrication connectors

Table 8.19 **HT250S dimensions**

	Variant without cover	Variant with cover
Total carriage length L_c [mm]	285	425
Cover strip deflection A [mm]	–	70
Switch distance B_1 [mm]	126	196
Switch distance B_2 [mm]	126	196
Max. stroke length L_{ST} [mm]	4.790	4.650
Total length L_T [mm]	$L_T = L_{ST} + 444$	$L_T = L_{ST} + 584$

Table 8.20 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	12,500 km	100 km
$F_{ydynmax}$ [1] [N]	11,600	133,024
$F_{zdynmax}$ [1] [N]	20,465	133,024
$M_{xdynmax}$ [Nm]	1,750	11,374
$M_{ydynmax}$ [Nm]	1,514	9,844
$M_{zdynmax}$ [Nm]	858	9,844
Load distance z [mm]	68	68

[1] Force must only act free of torque

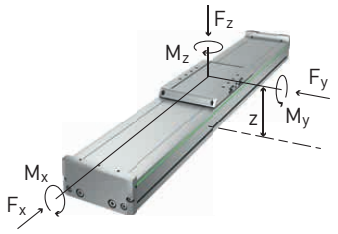


Table 8.21 **General technical data**

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	250
Maximum total length [mm]	5.234
Area moment of inertia of profile cross section I_x [mm⁴]	3,265,771
Area moment of inertia of profile cross section I_y [mm⁴]	39,262,043

Table 8.22 **Guide**

Type of carriage	QHH25CA × 4
Static load rating C_0 [N]	48,750 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	41,900 × 4

Table 8.23 **Drive**

	Spindle lead		
	10 mm	**20 mm**	**32 mm**
Spindle diameter [mm]	32		
Axial play [mm]	0.02		
Max. feed force F_{x_max} [N]	5,300	4,069	2,744
Max. speed [m/s]	0.50	1.00	1.60
Max. drive torque M_{A_max} [Nm]	9.94	14.45	15.47
Static load rating ballscrew C_0 [N]	88,000	50,600	32,800
Dynamic load rating ballscrew C_{dyn} [N]	28,782	22,100	14,900

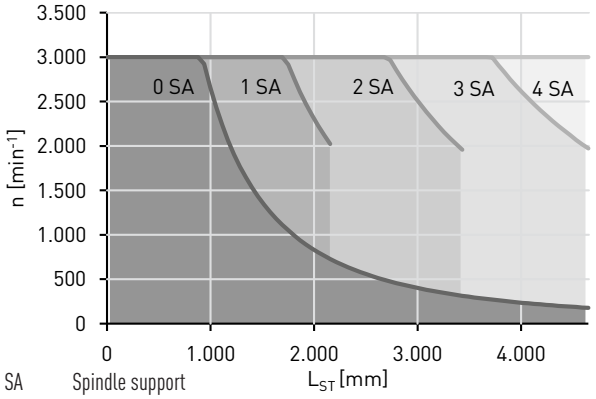


Fig. 8.7 **Critical speed n over axis stroke length L_{ST}**

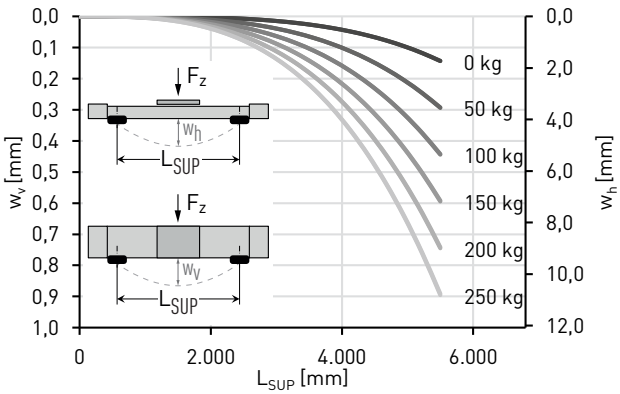


Fig. 8.8 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 8.24 **Mechanical properties**

	Variant without cover			Variant with cover		
Spindle pitch [mm]	**10**	**20**	**32**	**10**	**20**	**32**
Mass of the carriage [kg]	8.17	8.39	8.41	9.57	9.71	9.72
Mass at 0-stroke [kg]	23.83	24.05	24.06	29.75	29.89	29.90
Mass per 1 m stroke [kg/m]	27.86			28.45		
$J_{rot.}$ [1] At 0-stroke [kgcm²]	5.15			6.28		
$J_{rot.}$ [1] Per 1 m stroke [kgcm²/m]	8.08			8.08		
Idle torque at 0-stroke [Nm]	1.50			1.80		

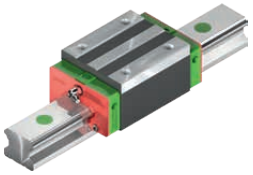
[1] Rotational moment of inertia

9. Linear tables HT-L

9.1 Properties of linear tables HT-S with linear motor

The HIWIN linear axes with linear motor are flexible positioning modules with integrated HIWIN double guide. They are especially suitable for precise positioning at high speed and with great dynamics.
Cleanroom-compatible linear motor axes HT-L up to ISO class 4 are available on request.

Linear guideway
A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The SynchMotion™ technology with ball chain also ensures good synchronisation and smooth running in the HT150L, HT200L and HT250L sizes.



Linear motor
The integrated HIWIN linear motors ensure dynamic and precise positioning. Two motor sizes are available for each size in order to optimally meet the requirements for the required feed force.

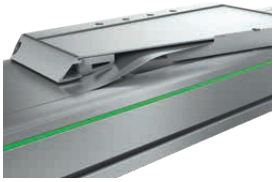
Carriage
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.
A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.

Positioning measuring systems
The distance measuring system is integrated into the inside of the axis to save space and determines the repeatability. Different measuring systems are available depending on the requirements for measuring method, interface and resolution. You can find more information on Page 156.
Optionally also with functional safety encoder.

Electric interface
The quick-release connectors allow motor and encoder cables to be connected quickly and easily to the side of the carriage without tools. Depending on the installation situation and the desired cable routing, two different orientations of the connector are available as options.

Energy chain
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section 22.4 from page 188.

Cover strip
The steel cover strip prevents dirt and dust from entering the axis interior. In addition, the cover strip allows the axes to be used in areas with coarse, sharp-edged or hot foreign bodies. The magnetic strips integrated in the axis profile hold the belt securely in position and increase the sealing effect.



9.2 Order code for linear tables HT-L

HT	150	L	A12	C	1234	S

HIWIN linear table

Size (profile width):
100: 100 mm
150: 150 mm
200: 200 mm
250: 250 mm

Drive type:
L: Linear motor

Carriage length:
S: Standard (short)

Stroke length [mm]

Cover strip:
C: With steel cover strip
N: Without cover strip

Motor size:
A01/A02: HT100L
A12/A13: HT150L
A22/A23: HT200L
A32/A33: HT250L

Continuation, order code for linear tables HT-L

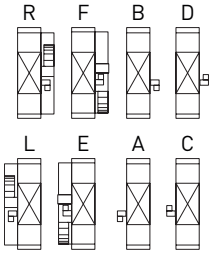
A	N	A	R

Axis limit switch[3]**:**
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector
B: 2 × normally open, 100 mm cable, connector
C: 2 × normally closed, 4 m open cable end
D: 2 × normally open, 5 m open cable end

Stator:
N: Standard

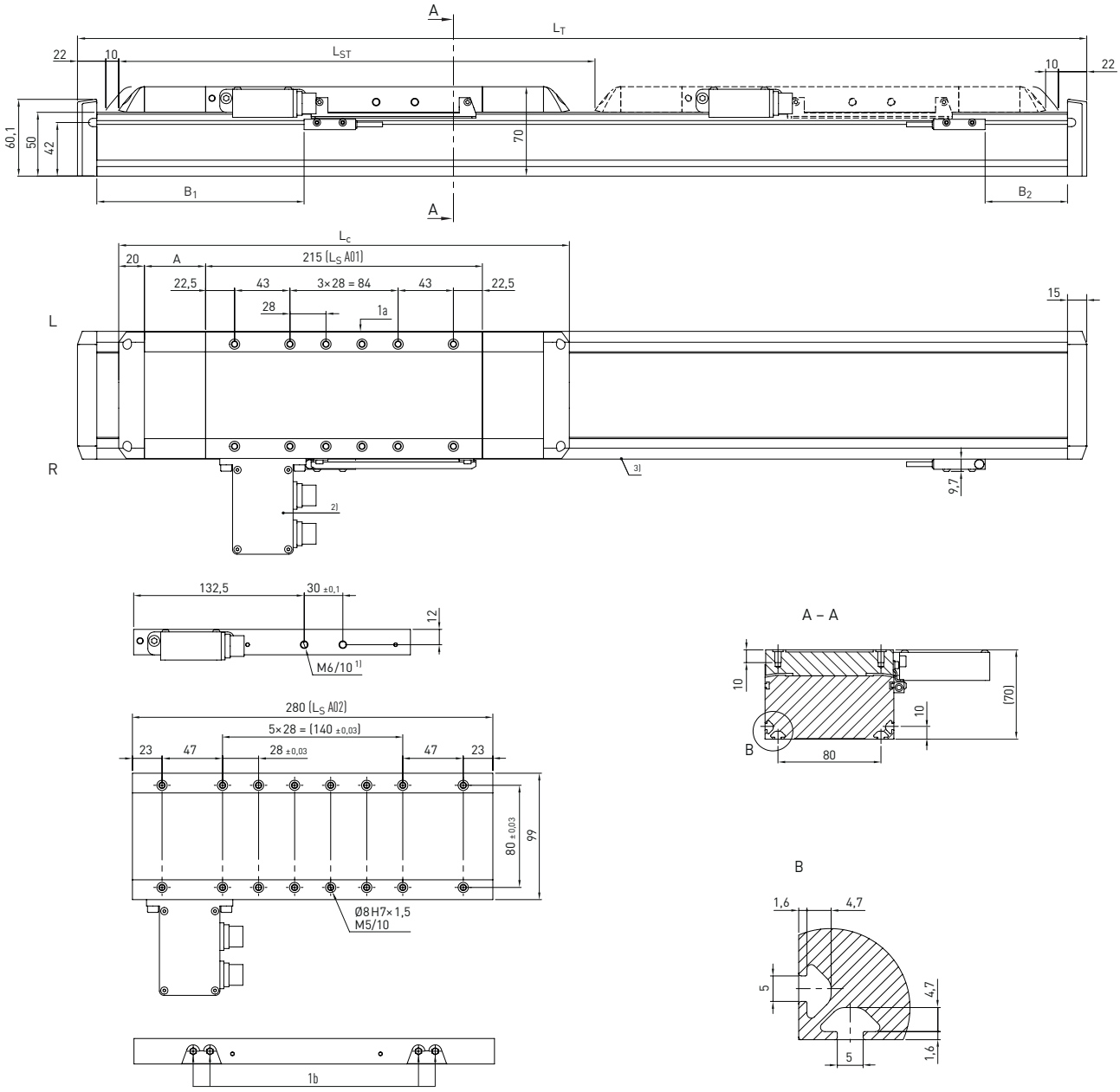
Distance measuring system option[1]**:**
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos
B: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos and digital hall sensor[8]
D: HIWIN MAGIC, digital, TTL 5 V
E: HIWIN MAGIC, digital, TTL 5 V and digital hall sensor[8]
H: LIC 211, absolute, EnDat 2.2[4][7]
R: BML-S1G0, absolute, BiSS-C, 1 V_{SS} sin/cos[5]
S: BML-S1G0, absolute, SSI[5]

Connection interface[2]**:**
R: With energy chain, connector right/front[6]
F: With energy chain, connector right/rear[6]
B: Without energy chain, connector right/front
D: Without energy chain, connector right/rear
L: With energy chain, connector left/front[6]
E: With energy chain, connector left/rear[6]
A: Without energy chain, connector left/front
C: Without energy chain, connector left/rear



[1] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[2] Details on connector orientation and position of the energy chain in section 22.4 from page 188.
[3] Additional reference switches on request.
[4] Limitations of the maximum stroke possible, see Table 21.1 on page 156.
[5] The distance measuring system has a safety-related, analogue, incremental real-time signal.
[6] Max. possible stroke: 5,000 mm.
[7] If the installation position is horizontal, the axis must be arranged so that the distance measuring system is at the top.
[8] Option not available for HT100L.

9.3 Dimensions and specifications of HT100L



L_S	Carriage plate	R	Right
L	Left	1a + 1b	Block lubrication connectors

1) Omitted for variant with energy chain 2) Drive interface shown: Option "D"; for other series, see section 22.4 from page 188

3) Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Table 9.1 **HT100L dimensions**

	Variant without cover		Variant with cover	
Motor size	**A01**	**A02**	**A01**	**A02**
Total carriage length L_c [mm]	255	320	350	415
Cover strip deflection A [mm]	—	—	47.5	47.5
Switch distance B_1 [mm]	113.5	113.5	161	161
Switch distance B_2 [mm]	36.5	101.5	84	149
Max. stroke length L_{ST} [mm]	5,511	5,446	5,416	5,351
Total length L_T [mm]	$L_T = L_{ST} + 319$	$L_T = L_{ST} + 384$	$L_T = L_{ST} + 414$	$L_T = L_{ST} + 479$

Table 9.2 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	10,000 km		100 km	
Motor size	**A01**	**A02**	**A01**	**A02**
$F_{ydynmax}$ [1] [N]	1,101	860	8,096	8,096
$F_{zdynmax}$ [1] [N]	1,101	860	8,096	8,096
$M_{xdynmax}$ [Nm]	35	27	255	255
$M_{ydynmax}$ [Nm]	96	103	704	967
$M_{zdynmax}$ [Nm]	96	103	704	967
Load distance z [mm]	53.5	53.5	53.5	53.5

[1] Force must only act free of torque

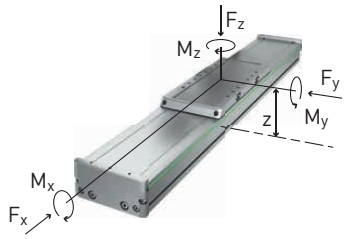


Table 9.3 **General technical data**

Repeatability [2] [mm]	± 0.005
Max. speed [m/s]	5
Typical load capacity [kg]	20
Maximum total length [2] [3] [mm]	5,830
Flatness [1] [mm/300 mm]	± 0.03
Straightness [1] (mm/300 mm]	± 0.03
Area moment of inertia of profile cross section I_x [mm⁴]	282,903
Area moment of inertia of profile cross section I_y [mm⁴]	1,541,419

[1] Values apply with correspondingly specified mounting surface
[2] Depending on distance measuring system (chapter 21) and energy chain (section 22.4)
[3] Long axes on request

Table 9.4 **Guide**

Type of carriage	MGN09H × 4
Static load rating C_0 [N]	4,020 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	2,550 × 4

Table 9.5 **Drive**

Motor size	**A01**	**A02**
Motor type	LMSA01	LMSA02
Continuous force [N]	52	104
Peak force [N]	112	224
Max. acceleration [m/s²]	30	50

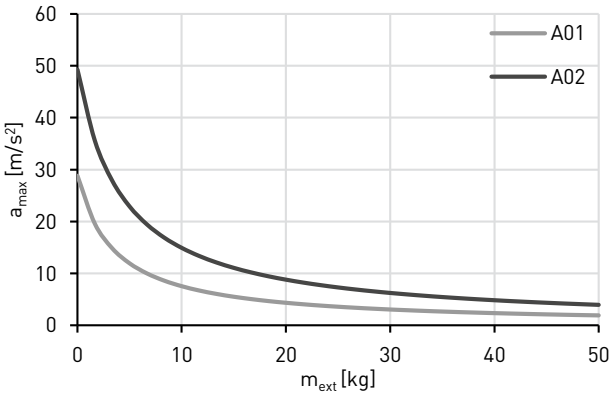


Fig. 9.1 **Max. acceleration a_{max} as a function of the external payload m_{ext}**

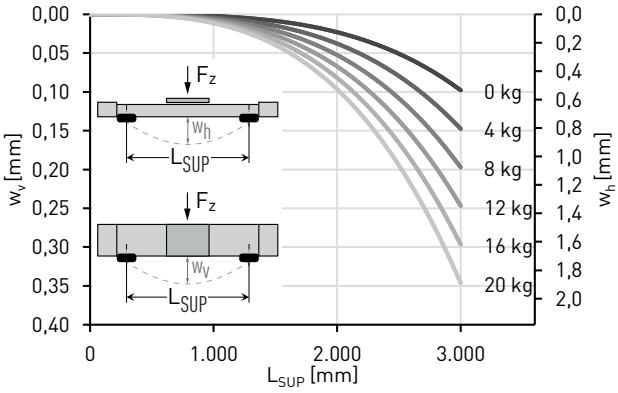
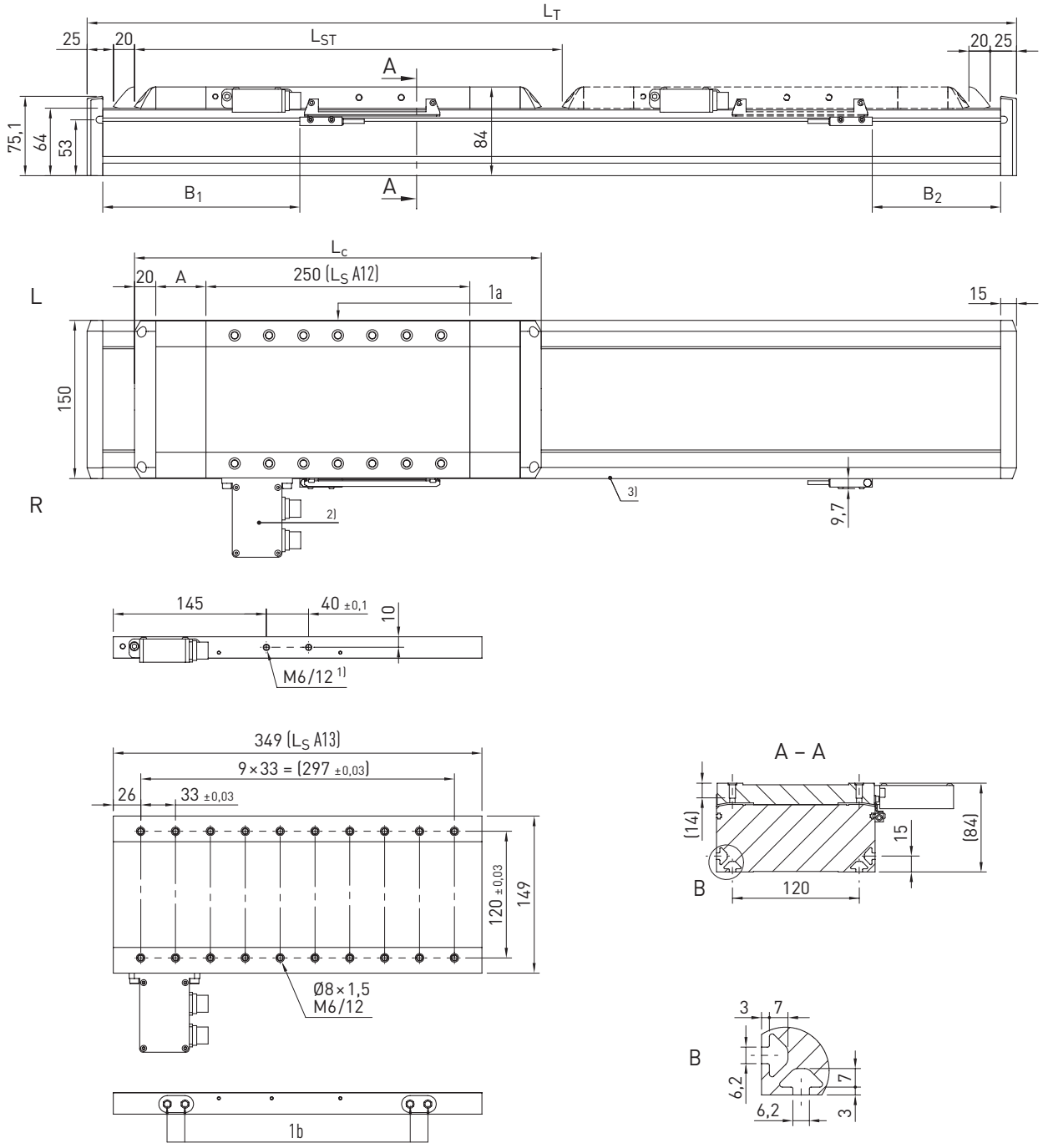


Fig. 9.2 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 9.6 **Mechanical properties**

	Variant without cover		Variant with cover	
Motor size	**A01**	**A02**	**A01**	**A02**
Mass of the carriage [kg]	1.97	2.78	2.26	3.06
Mass at 0-stroke [kg]	4.15	5.42	5.02	6.30
Mass per 1 m stroke [kg/m]	6.45		6.61	
Breakaway force F_L [N]	5.00		10.00	

9.4 Dimensions and specifications of HT150L



L_S	Carriage plate	R	Right
L	Left	1a + 1b	Block lubrication connectors

1) Does not apply to version with energy chain 2) Drive interface shown: Option "D"; for other versions, see section 22.4 from page 188

3) Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Table 9.7 **HT150L dimensions**

	Variant without cover		Variant with cover	
Motor size	**A12**	**A13**	**A12**	**A13**
Total carriage length L_c [mm]	290	389	385	484
Cover strip deflection A [mm]	–	–	48	48
Switch distance B_1 [mm]	138	138	185.5	185.5
Switch distance B_2 [mm]	73	172	121	220
Max. stroke length L_{ST} [mm]	5,450	5,351	5,355	5,256
Total length L_T [mm]	$L_T = L_{ST} + 380$	$L_T = L_{ST} + 479$	$L_T = L_{ST} + 475$	$L_T = L_{ST} + 574$

Table 9.8 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	20,000 km		100 km	
Motor size	**A12**	**A13**	**A12**	**A13**
$F_{ydynmax}$ [1] [N]	3,350	3,350	39,780	39,780
$F_{zdynmax}$ [1] [N]	4,270	3,789	39,780	39,780
$M_{xdynmax}$ [Nm]	201	178	1,870	1,870
$M_{ydynmax}$ [Nm]	414	555	3,859	5,828
$M_{zdynmax}$ [Nm]	325	491	3,859	5,828
Load distance z [mm]	51.4	51.4	51.4	51.4

[1] Force must only act free of torque

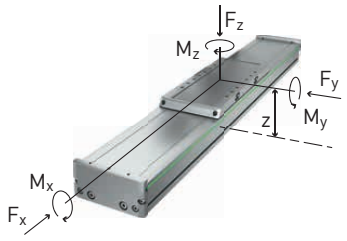


Table 9.9 **General technical data**

Repeatability [2] [mm]	± 0.005
Max. speed [m/s]	5
Typical load capacity [kg]	80
Maximum total length [2] [3] [mm]	5,830
Flatness [1] [mm/300 mm]	± 0.03
Straightness [1] [mm/300 mm]	± 0.03
Area moment of inertia of profile cross section I_x [mm⁴]	907,754
Area moment of inertia of profile cross section I_y [mm⁴]	7,417,610

[1] Values apply with correspondingly specified mounting surface
[2] Depending on distance measuring system (chapter 21) and energy chain (section 22.4)
[3] Long axes on request

Table 9.10 **Guide**

Type of carriage	QEH15CA × 4
Static load rating C_0 [N]	15,280 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	12,530 × 4

Table 9.11 **Drive**

Motor size	A12	A13
Motor type	LMSA12	LMSA13
Continuous force [N]	205	308
Peak force [N]	579	868
Max. acceleration [m/s²]	60	80

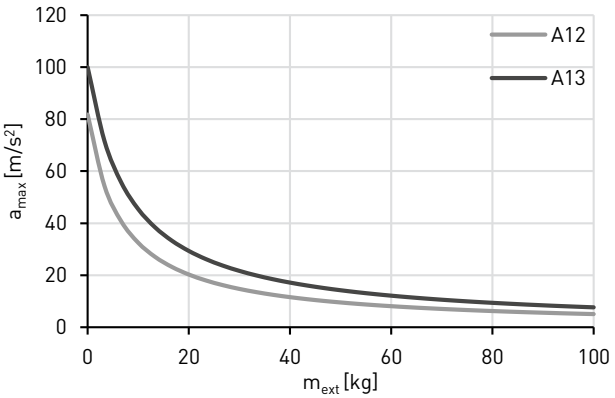


Fig. 9.3 **Max. acceleration a_{max} as a function of the external payload m_{ext}**

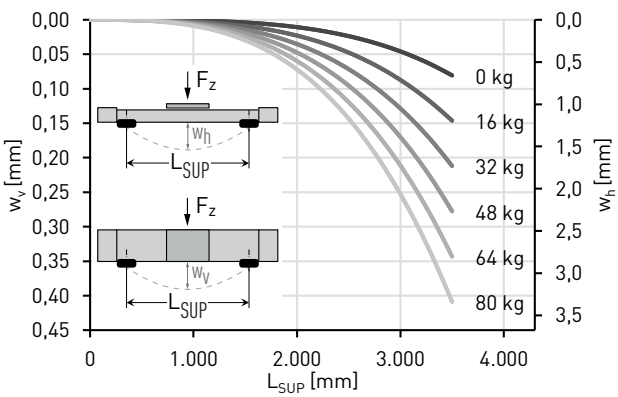
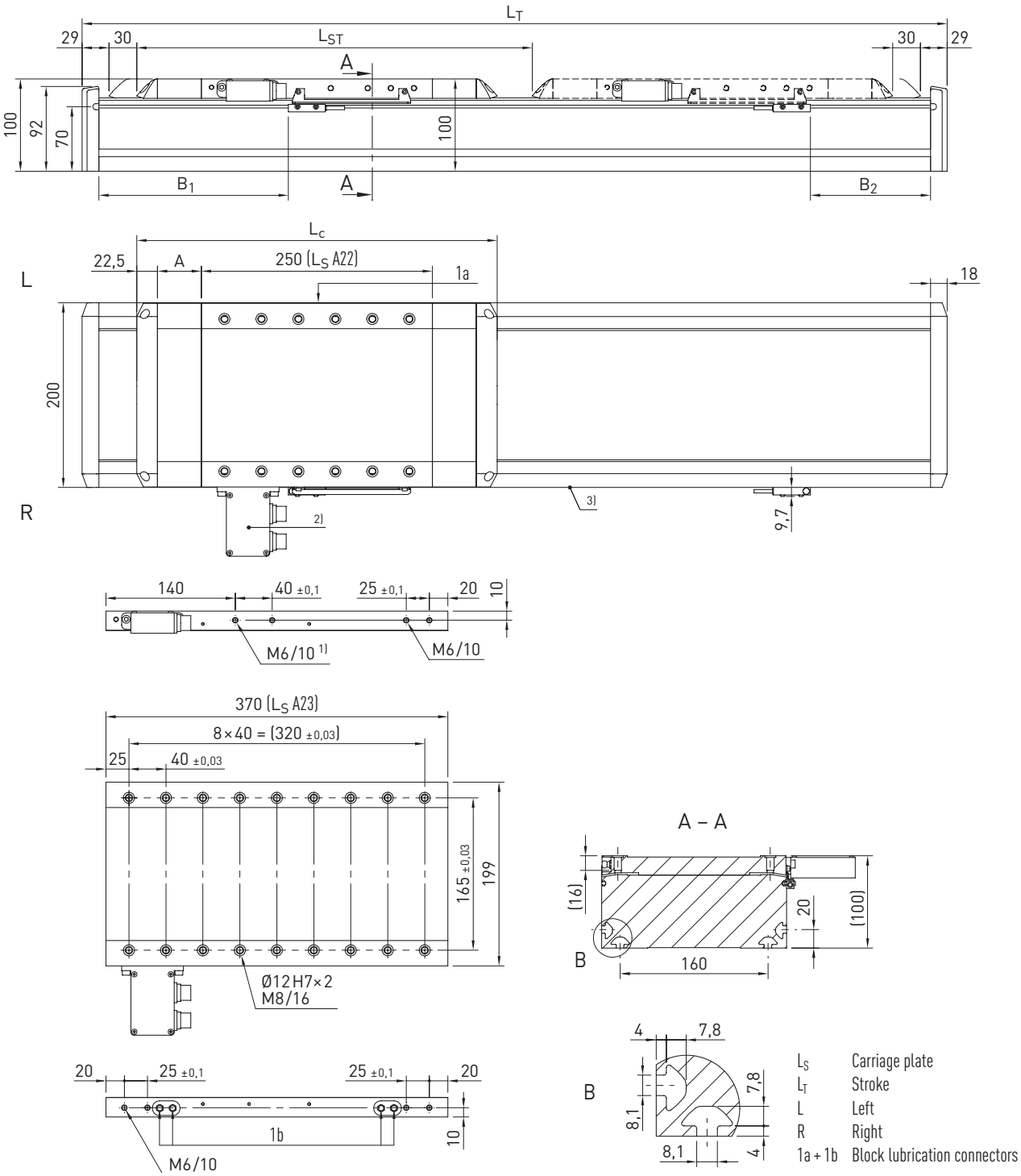


Fig. 9.4 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 9.12 **Mechanical properties**

	Variant without cover		Variant with cover	
Motor size	**A12**	**A13**	**A12**	**A13**
Mass of the carriage [kg]	4.24	5.87	4.72	6.35
Mass at 0-stroke [kg]	9.76	12.75	11.53	14.55
Mass per 1 m stroke [kg/m]	13.59		13.88	
Breakaway force F_L [N]	12.00		40.00	

9.5 Dimensions and specifications of HT200L



L_S	Carriage plate
L_T	Stroke
L	Left
R	Right
1a + 1b	Block lubrication connectors

1) Omitted for variant with energy chain 2) Drive interface shown: Option "D"; for other series, see section 22.4 from page 188

3) Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Table 9.13 **HT200L dimensions**

	Variant without cover		Variant with cover	
Motor size	**A22**	**A23**	**A22**	**A23**
Total carriage length L_c [mm]	295	415	390	510
Cover strip deflection A [mm]	–	–	48	48
Switch distance B_1 [mm]	156.5	156.5	204	204
Switch distance B_2 [mm]	81.5	201.5	129	249
Max. stroke length L_{ST} [mm]	5,423	5,303	5,328	5,208
Total length L_T [mm]	$L_T = L_{ST} + 413$	$L_T = L_{ST} + 533$	$L_T = L_{ST} + 508$	$L_T = L_{ST} + 628$

Table 9.14 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	20,000 km		100 km	
Motor size	**A22**	**A23**	**A22**	**A23**
$F_{ydynmax}$ [1] [N]	7,800	7,800	95,244	95,244
$F_{zdynmax}$ [1] [N]	10,602	9,640	95,244	95,244
$M_{xdynmax}$ [Nm]	721	656	6,477	6,477
$M_{ydynmax}$ [Nm]	1,007	1,494	9,048	14,763
$M_{zdynmax}$ [Nm]	741	1,209	9,048	14,763
Load distance z [mm]	58.5	58.5	58.5	58.5

[1] Force must only act free of torque

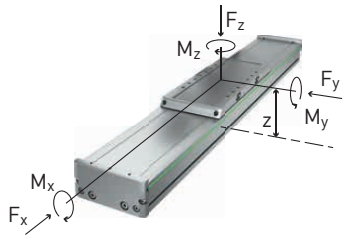


Table 9.15 **General technical data**

Repeatability [mm] [2]	± 0.005
Max. speed [m/s]	5
Typical load capacity [kg]	150
Maximum total length [2] [3] [mm]	5,836
Flatness [1] [mm/300 mm]	± 0.03
Straightness [1] [mm/300 mm]	± 0.03
Area moment of inertia of profile cross section I_x [mm⁴]	2,071,928
Area moment of inertia of profile cross section I_y [mm⁴]	19,658,810

[1] Values apply with correspondingly specified mounting surface
[2] Depending on distance measuring system (chapter 21) and energy chain (section 22.4)
[3] Long axes on request

Table 9.16 **Guide**

Type of carriage	QHH20CA × 4
Static load rating C_0 [N]	33,860 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	30,000 × 4

Table 9.17 **Drive**

Motor size	**A22**	**A23**
Motor type	LMSA22	LMSA23
Continuous force [N]	362	544
Peak force [N]	1,023	1,535
Max. acceleration [m/s²]	60	80

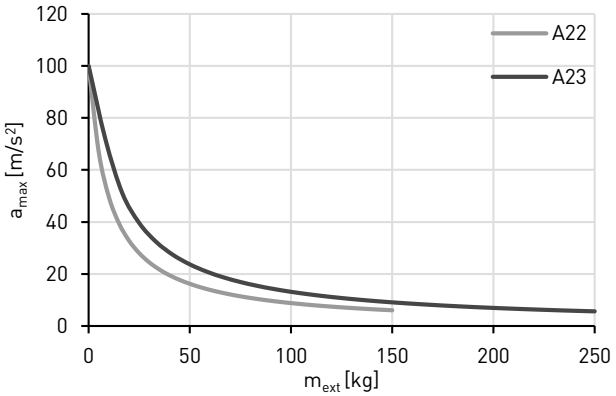


Fig. 9.5 **Max. acceleration a_{max} as a function of the external payload m_{ext}**

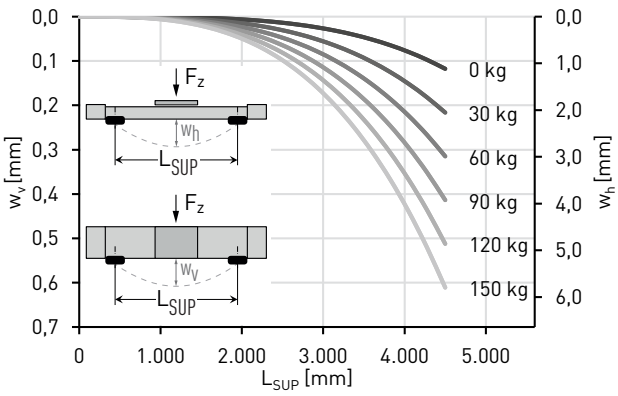
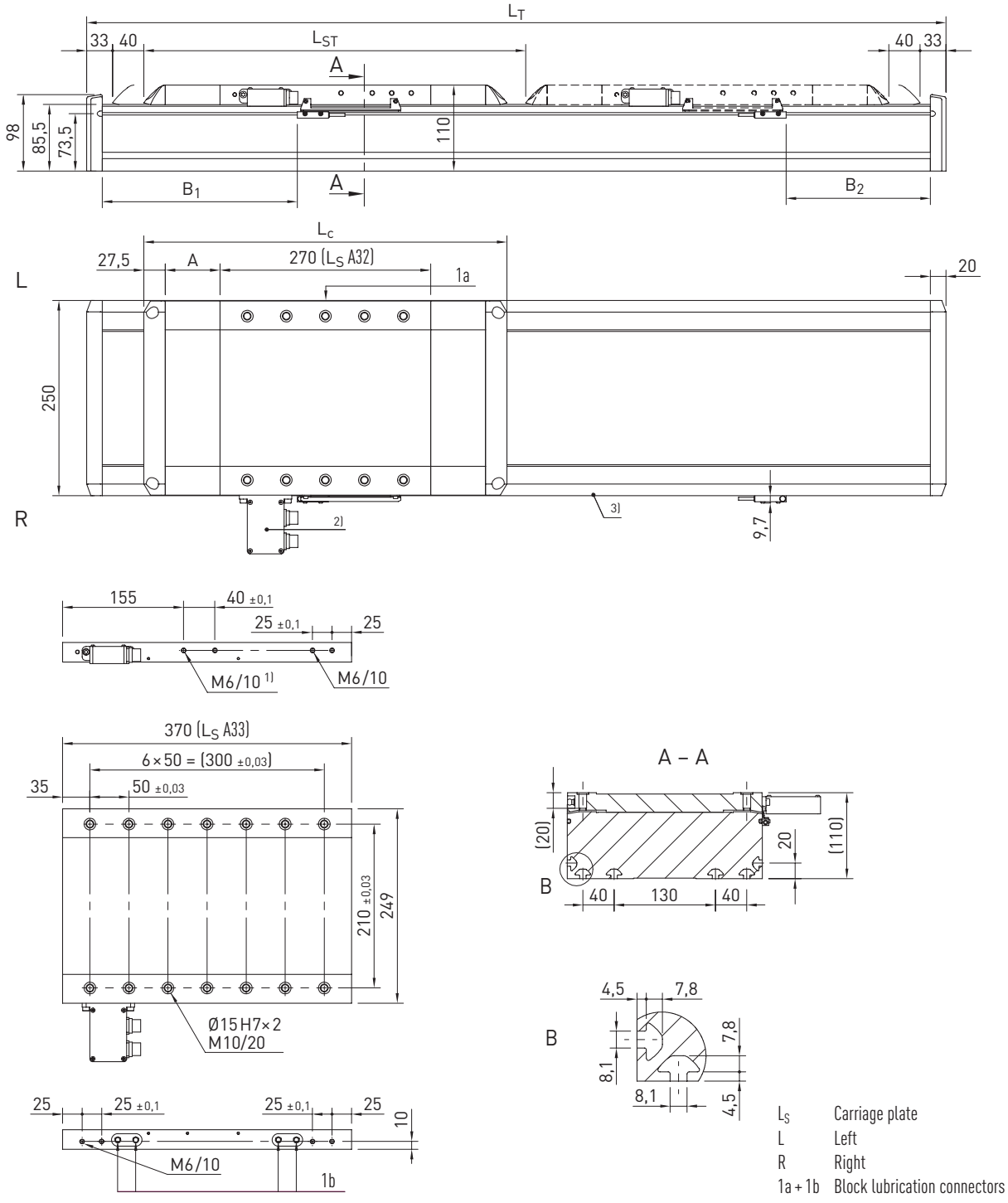


Fig. 9.6 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 9.18 **Mechanical properties**

	Variant without cover		Variant with cover	
Motor size	**A22**	**A23**	**A22**	**A23**
Mass of the carriage [kg]	6.69	9.46	7.28	10.14
Mass at 0-stroke [kg]	16.42	21.82	19.06	24.59
Mass per 1 m stroke [kg/m]	22.21		22.69	
Breakaway force F_L [N]	15.00		60.00	

9.6 Dimensions and specifications of HT250L



1) Omitted for variant with energy chain 2) Drive interface shown: Option "D"; for other series, see section 22.4 from page 188

3) Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Table 9.19 **HT250L dimensions**

	Variant without cover		Variant with cover	
Motor size	**A32**	**A33**	**A32**	**A33**
Total carriage length L_c [mm]	325	425	465	565
Cover strip deflection A [mm]	–	–	70	70
Switch distance B_1 [mm]	178.5	178.5	248.5	248.5
Switch distance B_2 [mm]	113.5	213.5	183.5	283.5
Max. stroke length L_{ST} [mm]	5,469	5,369	5,329	5,229
Total length L_T [mm]	$L_T = L_{ST} + 471$	$L_T = L_{ST} + 571$	$L_T = L_{ST} + 611$	$L_T = L_{ST} + 711$

Table 9.20 **Load data**

	Permissible load data		Theoretical load data	
Lifetime reference value	20,000 km		100 km	
Motor size	**A32**	**A33**	**A32**	**A33**
$F_{ydynmax}$ [1] [N]	11,600	11,600	133,024	133,024
$F_{zdynmax}$ [1] [N]	14,610	13,165	133,024	133,024
$M_{xdynmax}$ [Nm]	1,249	1,126	11,374	11,374
$M_{ydynmax}$ [Nm]	1,424	1,942	12,970	19,621
$M_{zdynmax}$ [Nm]	1,131	1,711	12,970	19,621
Load distance z [mm]	68	68	68	68

[1] Force must only act free of torque

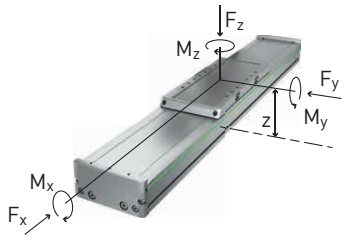


Table 9.21 **General technical data**

Repeatability [2] [mm]	± 0.005
Max. speed [m/s]	4.5
Typical load capacity [kg]	250
Maximum total length [2] [3] [mm]	5,940
Flatness [1] [mm/300 mm]	± 0.03
Straightness [1] [mm/300 mm]	± 0.03
Area moment of inertia of profile cross section I_x [mm⁴]	3,265,771
Area moment of inertia of profile cross section I_y [mm⁴]	39,262,043

[1] Values apply with correspondingly specified mounting surface
[2] Depending on distance measuring system (chapter 21) and energy chain (section 22.4)
[3] Long axes on request

Table 9.22 **Guide**

Type of carriage	QHH25CA × 4
Static load rating C_0 [N]	48,750 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	41,900 × 4

Table 9.23 **Drive**

Motor size	**A32**	**A33**
Motor type	LMSA32	LMSA33
Continuous force [N]	583	875
Peak force [N]	1,646	2,469
Max. acceleration [m/s²]	60	80

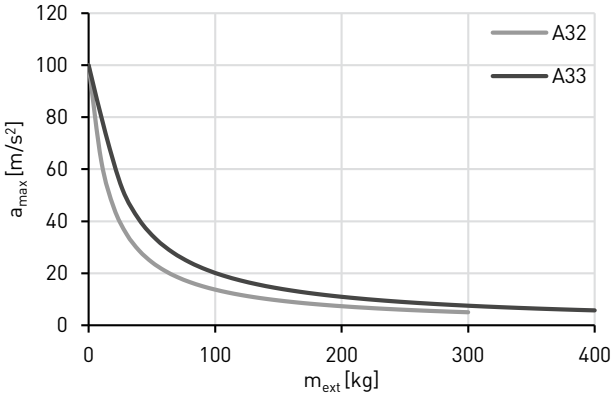


Fig. 9.7 **Max. acceleration a_{max} as a function of the external payload m_{ext}**

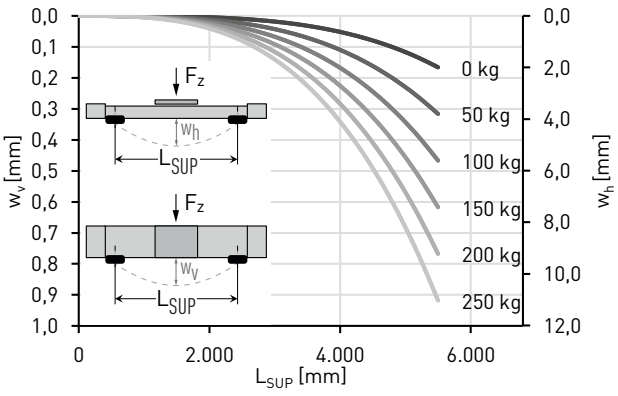


Fig. 9.8 **Deflection w over unsupported axis length L_{SUP} under load capacity F_z**

Table 9.24 **Mechanical properties**

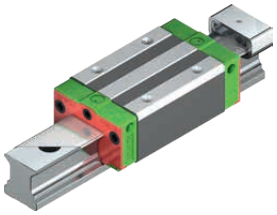
	Variant without cover		Variant with cover	
Motor size	**A32**	**A33**	**A32**	**A33**
Mass of the carriage [kg]	11.74	15.63	12.85	17.04
Mass at 0-stroke [kg]	26.72	33.72	31.83	39.18
Mass per 1 m stroke [kg/m]	30.82		31.41	
Breakaway force F_L [N]	20.00		70.00	

10. Bridge axes HB-B

10.1 Features of the HB-B bridge axes with toothed belt drive

The HIWIN bridge axes with toothed belt drive are flexible positioning modules with an integrated HIWIN double guide in O-arrangement. They are particularly suitable for applications where high feed force and high speeds are required.

Linear guideway
A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The O arrangement of the balls ensures high torque load capacity and high load ratings.



Drive adaptation
Thanks to its symmetrical design, the HIWIN the HIWIN bridge axis with toothed belt drive allows motors and gearboxes to be mounted on all four sides of the drive blocks. Suitable adapters for all common motors can be found in section 22.1 from page 159.

Toothed belt
The toothed belt with modern high performance profiles (HTD shape) and reinforced steel tension members enables high power transmission while offering high skip resistance.

Energy chain
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section 22.4 from page 188.

Carriage
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.
A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.

10.2 Order code for bridge axes HB-B

HB	250	B	392	N	1234	S

HIWIN bridge axes

Size (profile width):
250: 250 mm

Drive type:
B: Toothed belt drive

Carriage length:
S: Short

Stroke length [mm]

Cover strip:
N: Without cover strip

Feed constant [mm/U]:
392: HB250B

Continuation, order code for bridge axes HB-B

A	N	N	R	BR13	G1205

Axis limit switch[5]**:**
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector
B: 2 × normally open, 100 mm cable, connector
C: 2 × normally closed, 4 m open cable end
D: 2 × normally open, 5 m open cable end

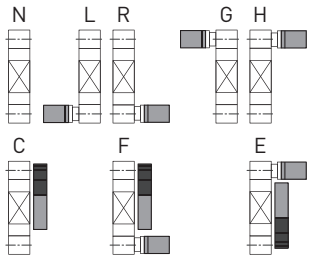
Toothed belt:
N: Standard belt

Distance measuring system option[1]**:**
N: Without distance measuring system
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos, 5 m open cable end
D: HIWIN MAGIC, digital, TTL 5 V, 5 m open cable end

Gearbox[4]

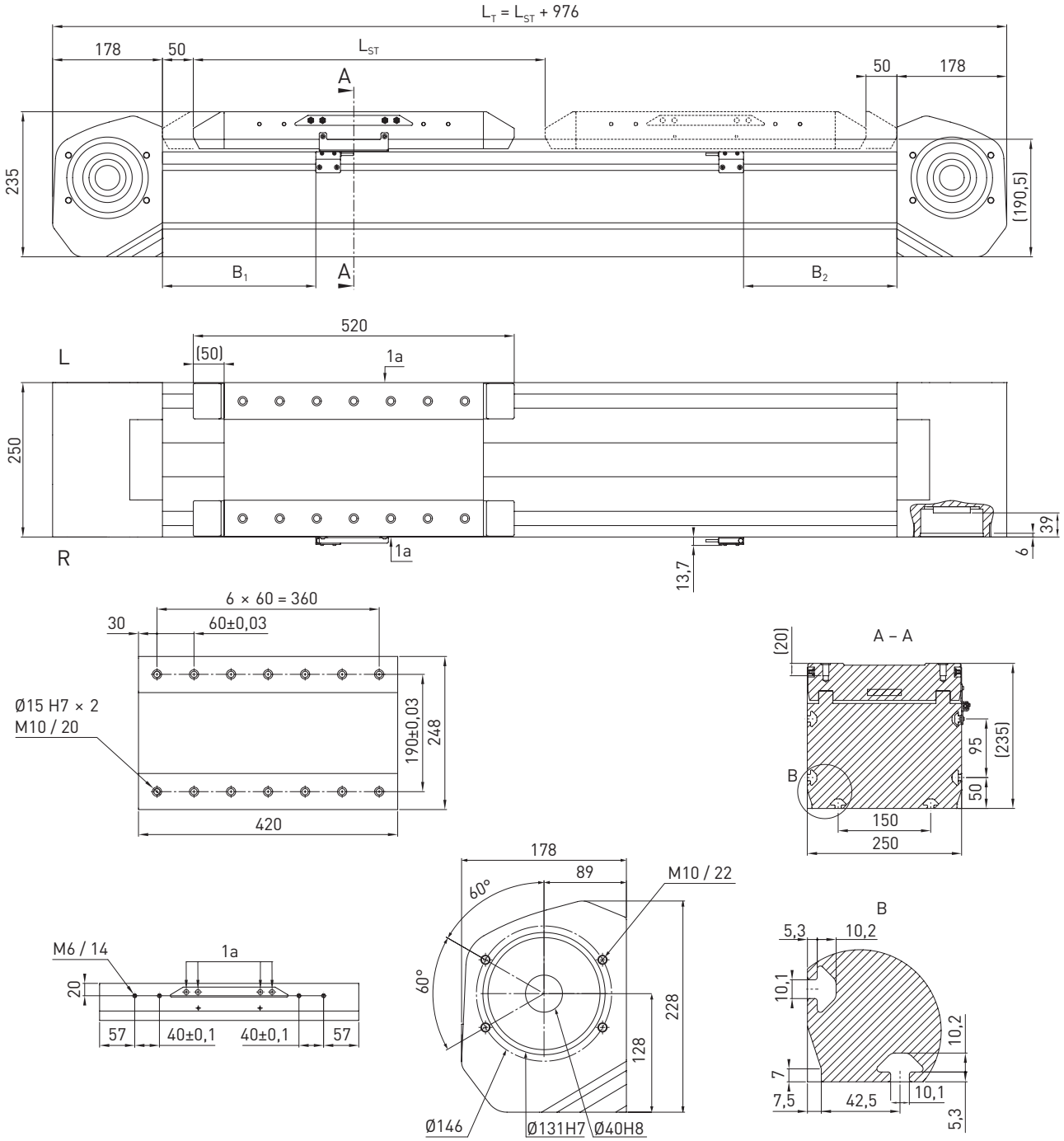
Flange type[3]

Drive interface[2) 6)]**:**
N: Without
L: Left front
R: Right front
G: Left rear
H: Right rear
C: Without, with energy chain on the rights
F: Right front, with energy chain on the right
E: Right rear, with energy chain on the right



1) More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
2) If no drive interface is selected, the order code ends after this point.
3) All flange types can be found in Table 22.2 from page 161. If no gearbox is selected, the order code ends after this point.
4) You can find suitable gearboxes for the HIWIN axes in Section 22.1.5.5 from page 170.
5) Additional reference switches on request.
6) Dimensions of the drive interface and the energy chain can be found on Page 186.

10.3 Dimensions and specifications of HB250B



L_S	Carriage plate	R	Right
L	Left	1a + 1b	Block lubrication connectors

[1] Omitted for variant with energy chain [2] Drive interface shown: Option "D"; for other series, see section 22.4 from page 188

[3] Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Table 10.1 **HB250B dimensions**

Total carriage length L_c [mm]	520
Switch distance B_1 [mm]	248.5
Switch distance B_2 [mm]	248.5
Max. stroke length L_{ST} [mm]	5,280
Total length L_T [mm]	$L_T = L_{ST} + 976$

Table 10.2 **Load data**		
	Permissible load data	Theoretical load data
Lifetime reference value	20,000 km	100 km
$F_{ydynmax}$ [1] [N]	11,600	133,977
$F_{zdynmax}$ [1] [N]	17,623	133,977
$M_{xdynmax}$ [Nm]	1,674	12,728
$M_{ydynmax}$ [Nm]	2,564	19,494
$M_{zdynmax}$ [Nm]	1,688	19,494
Load distance z [mm]	54.3	54.3

[1] Force must only act free of torque

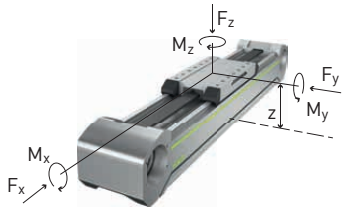


Table 10.3 **General technical data**	
Repeatability [mm]	± 0.05
Max. feed force Fx_{max} [N]	5,775
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque Ma_{max} [Nm]	360
Typical load capacity [kg]	350
Maximum total length [1] [mm]	6,256
Area moment of inertia of profile cross section I_x [mm⁴]	34,509,373
Area moment of inertia of profile cross section I_y [mm⁴]	80,997,444

[1] Longer axes on request

Table 10.4 **Guide**	
Type of carriage	CGH25HA × 4
Static load rating C_0 [N]	69,070 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	42,200 × 4

Table 10.5 **Drive**	
Drive element	b55HTD14
Feed constant [mm/U]	392
Effective diameter of toothed belt pulley [mm]	124.78

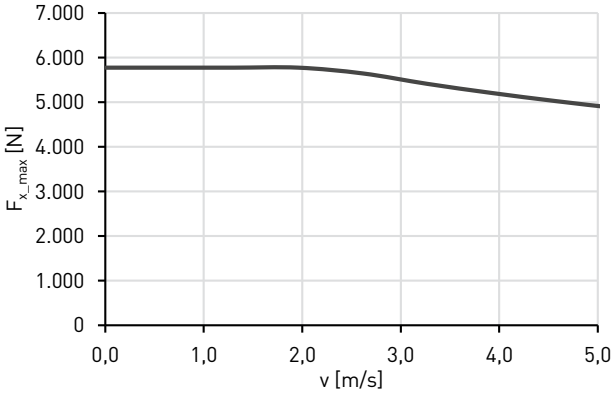


Fig. 10.1 **Max. Feed force Fx_{max} as a function of the axis speed v**

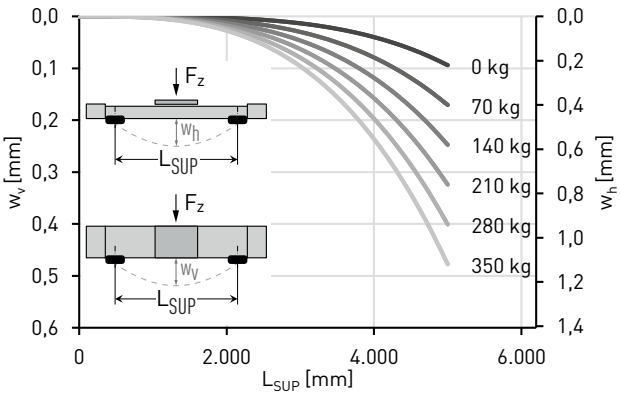


Fig. 10.2 **Deflection w over unsupported axle length L_{SUP} under payload F_z**

Table 10.6 **Mechanical properties**	
Mass of the carriage [kg]	12.92
Mass at 0-stroke [kg]	74.21
Mass per 1 m stroke [kg/m]	39.60
$J_{rot.}$ [1] [kgcm²]	155.51
Idle torque at 0-stroke [Nm]	7.17

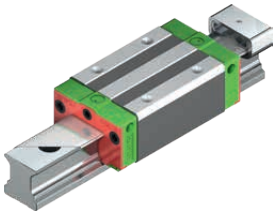
[1] Rotational moment of inertia

11. Bridge axes HB-R

11.1 Features of the HB-R bridge axes with rack and pinion drive

The HIWIN bridge axes with rack and pinion drive are flexible positioning modules with an integrated HIWIN double guide in O-arrangement. They are particularly suitable for applications where high positioning accuracy and high speeds are required.

Linear guideway
A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The O arrangement of the balls ensures high torque load capacity and high load ratings.



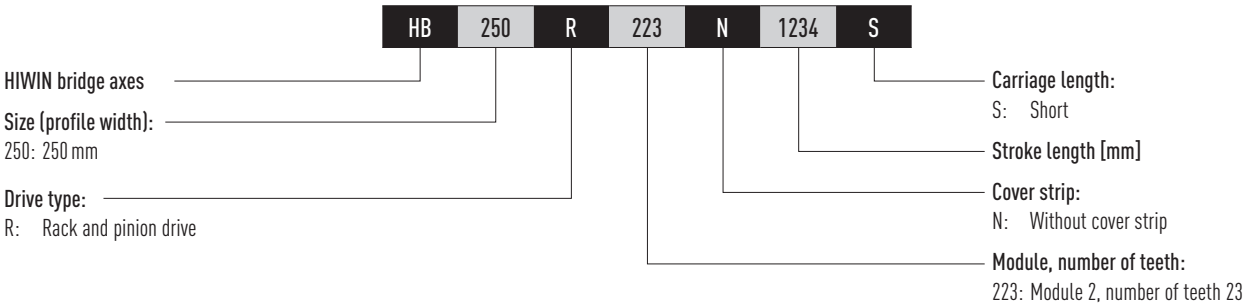
Drive adaptation
Thanks to its symmetrical design, the HIWIN the HIWIN bridge axis with toothed belt drive allows motors and gearboxes to be mounted on all four sides of the drive blocks. Suitable adapters for all common motors can be found in section 22.1 from page 159.

Rack and pinion
The rack and pinion ensures precise positioning, smooth running, high efficiency and maximum power density. The integrated lubrication pinion ensures that the rack and pinion drive is supplied with grease.

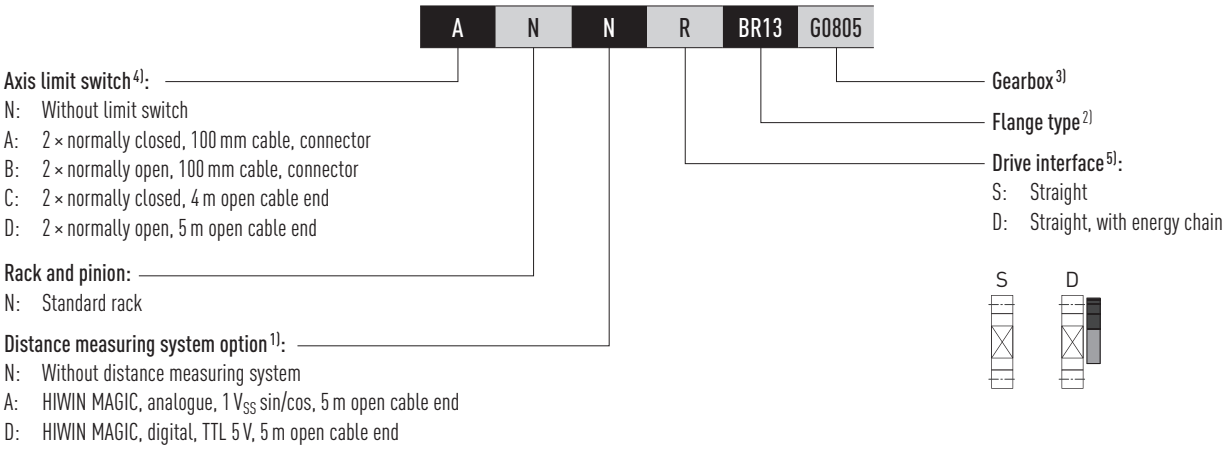
Energy chain
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section 22.4 from page 188.

Carriage
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.
A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.

11.2 Order code for bridge axes HB-R

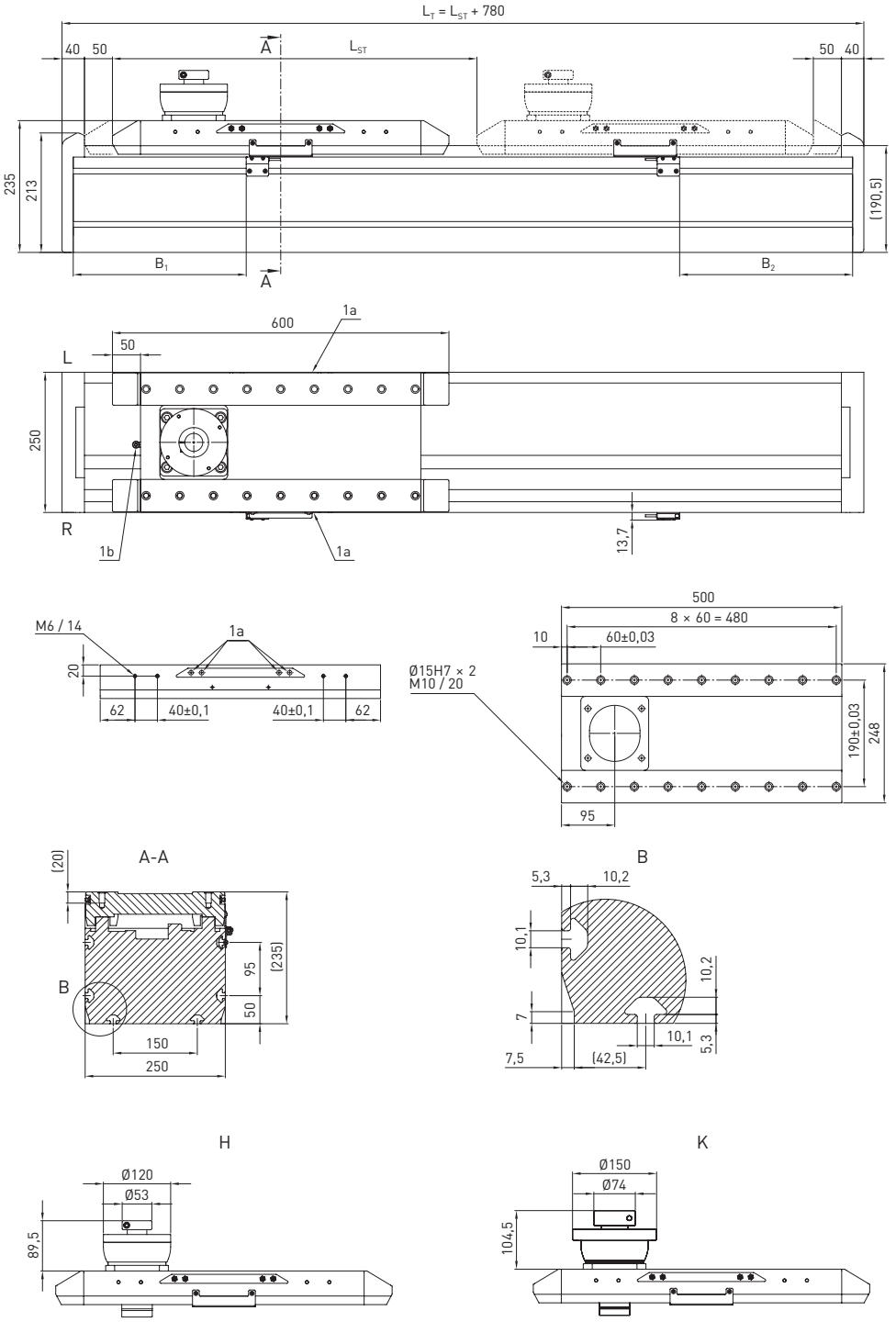


Continuation, order code for bridge axes HB-R



[1] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[3] All flange types can be found in Table 22.2 from page 161. If no gearbox is selected, the order code ends after this point.
[4] You can find suitable gearboxes for the HIWIN axes in section 22.1.5.5 from page 170.
[5] Additional reference switches on request.
[6] Dimensions of the drive interface and the energy chain can be found on Page 186.

11.3 Dimensions and specifications of HB250R



L_S	Carriage plate	R	Right
L	Left	1a + 1b	Block lubrication connectors

[1] Omitted for variant with energy chain [2] Drive interface shown: Option "D"; for other series, see section 22.4 from page 188

[3] Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Table 11.1 **HB250R dimensions**	
Total carriage length L_c [mm]	600
Switch distance B_1 [mm]	308.5
Switch distance B_2 [mm]	308.5
Max. stroke length L_{ST} [mm]	5,160
Total length L_T [mm]	$L_T = L_{ST} + 780$

Table 11.2 **Load data**		
	Permissible load data	Theoretical load data
Lifetime reference value	20,000 km	100 km
$F_{ydynmax}$ [1] [N]	11,600	133,977
$F_{zdynmax}$ [1] [N]	14,429	133,977
$M_{xdynmax}$ [Nm]	1,371	12,728
$M_{ydynmax}$ [Nm]	2,619	24,317
$M_{zdynmax}$ [Nm]	2,105	24,317
Load distance z [mm]	54.3	54.3

[1] Force must only act free of torque

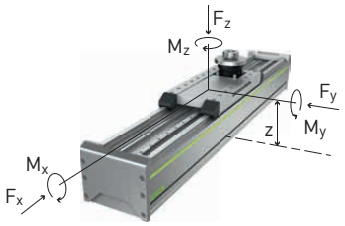


Table 11.3 **General technical data**	
Repeatability [mm]	± 0,05
Max. feed force Fx_{max} [N]	4,300
Max. speed [m/s]	3
Max. acceleration [m/s²]	50
Max. drive torque Ma_{max} [Nm]	104.9
Typical load capacity [kg]	350
Maximum total length [1] [mm]	5,160
Area moment of inertia of profile cross section I_x [mm⁴]	34,509,373
Area moment of inertia of profile cross section I_y [mm⁴]	80,997,444

[1] Longer axes on request

Table 11.4 **Guide**	
Type of carriage	CGH25HA × 4
Static load rating C_0 [N]	69,070 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	42,200 × 4

Table 11.5 **Rack and pinion**	
Toothing	Module 2, diagonally toothed
Feed constant [mm/U]	153.34
Effective diameter of pinion [mm]	48.81
Number of teeth pinion	23

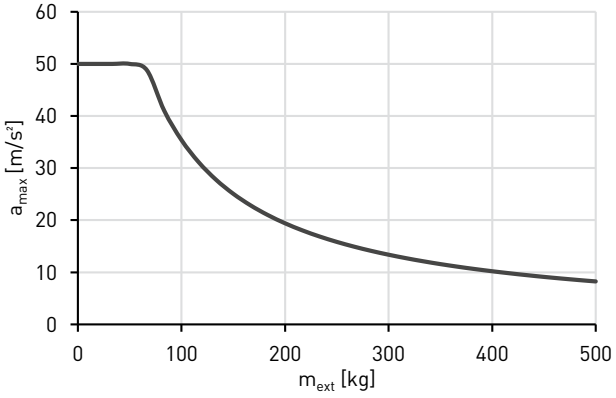


Fig. 11.1 **Max. Acceleration a_{max} as a function of the external payload m_{ext}**

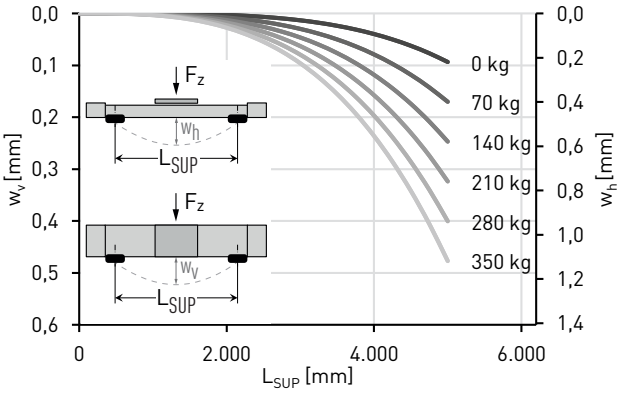
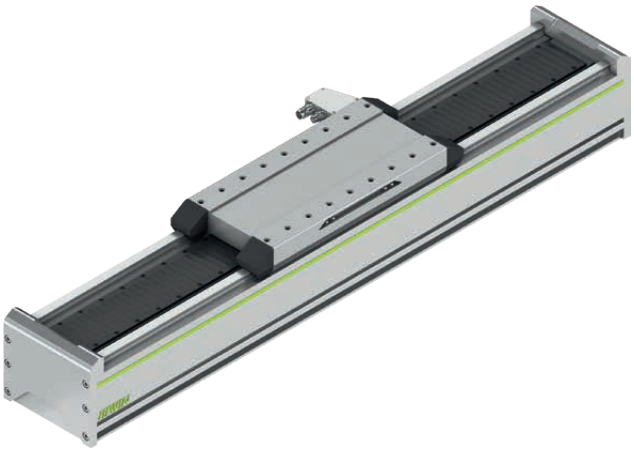


Fig. 11.2 **Deflection w over unsupported axle length L_{SUP} under payload F_z**

Table 11.6 **Mechanical properties**	
Mass of the carriage [kg]	12.43
Mass at 0-stroke [kg]	48.23
Mass per 1 m stroke [kg/m]	43.42
Breakaway force F_L [N]	20.00

[1] Rotational moment of inertia

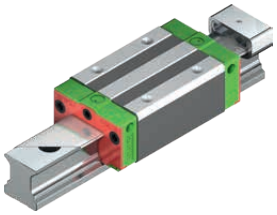
12. Bridge axes HB-L



12.1 Features of the HB-L bridge axes with linear motor

The HIWIN bridge axes with linear motor drive are flexible positioning modules with an integrated HIWIN double guide in O-arrangement. They are particularly suitable for precise positioning at high speed and high dynamics.

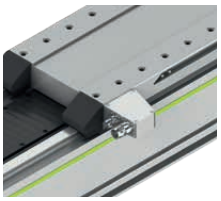
Linear guideway
A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The O arrangement of the balls ensures high torque load capacity and high load ratings.



Positioning measuring systems
The distance measuring system is integrated into the inside of the axis to save space and determines the repeatability. Different measuring systems are available depending on the requirements for measuring method, interface and resolution. You can find more information on Page 156.
Optionally also with functional safety encoder.

Linear motor
The integrated HIWIN linear motors ensure dynamic and precise positioning. Two motor sizes are available for each size in order to optimally meet the requirements for the required feed force.

Electric interface
The quick-release connectors allow motor and encoder cables to be connected quickly and easily to the side of the carriage without tools. Depending on the installation situation and the desired cable routing, two different orientations of the connector are available as options.



Carriage
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.
A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.

Energy chain
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section 22.4 from page 188.

12.2 Order code for bridge axes HB-L

HB	250	L	A34	N	1234	S

HIWIN bridge axes

Size (profile width):
250: 250 mm

Drive type:
R: Rack and pinion drive

Carriage length:
S: Short

Stroke length [mm]

Cover strip:
N: Without cover strip

Feed constant [mm/U]:
A34: HB250L

Continuation, order code for bridge axes HB-L

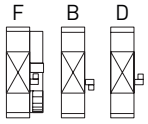
A	N	A	R

Axis limit switch [3]**:**
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector
B: 2 × normally open, 100 mm cable, connector
C: 2 × normally closed, 4 m open cable end
D: 2 × normally open, 5 m open cable end

Option clamping and braking element:
N: Without clamping and braking element (standard)

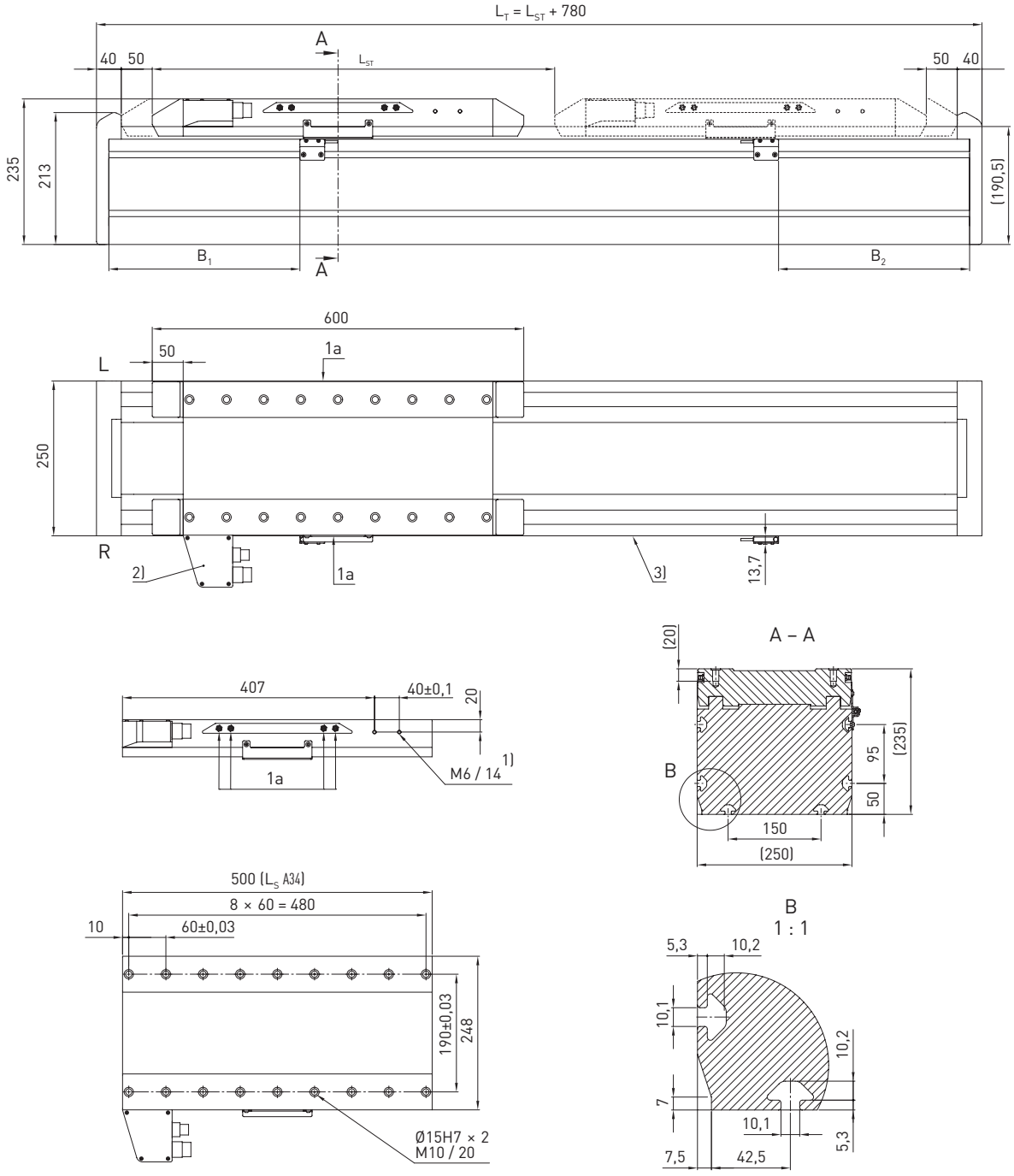
Distance measuring system option[1]**:**
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos
D: HIWIN MAGIC, digital, TTL 5 V
R: BML-S1G0, absolute, BiSS-C, 1 V_{SS} sin/cos [4]
S: BML-S1G0, absolute, SSI [5]

Drive interface [2]**:**
F: With energy chain, plug right/rear [5]
B: Without energy chain, plug right/front
D: Without energy chain, plug right/front



[1] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[2] Details on plug alignment and position of the energy chain in section 22.4 from page 188.
[3] Additional reference switches on request.
[4] The position measuring system has a safety-related, analogue, incremental real-time signal.
[5] Max. possible stroke: 5,000 mm.

12.3 Dimensions and specifications of HB250L



L_S	Carriage plate	R	Right
L	Left	1a + 1b	Block lubrication connectors

[1] Omitted for variant with energy chain [2] Drive interface shown: Option "D"; for other series, see section 22.4 from page 188

[3] Internal measuring system always on the right side of the axis. The positive direction of travel depends on the selected measuring system, see section 21.2 from page 158

Table 12.1 **HB250L dimensions**

Total carriage length L_c [mm]	600
Switch distance B_1 [mm]	308.5
Switch distance B_2 [mm]	308.5
Max. stroke length L_{ST} [mm]	5,160
Total length L_T [mm]	$L_T = L_{ST} + 780$

Table 12.2 **Load data**		
	Permissible load data	Theoretical load data
Lifetime reference value	20,000 km	100 km
$F_{ydynmax}$ [1] [N]	11,600	133,977
$F_{zdynmax}$ [1] [N]	11,846	133,977
$M_{xdynmax}$ [Nm]	1,125	12,728
$M_{ydynmax}$ [Nm]	1,777	20,096
$M_{zdynmax}$ [Nm]	1,740	20,096
Load distance z [mm]	54.3	54.3

[1] Force must only act free of torque

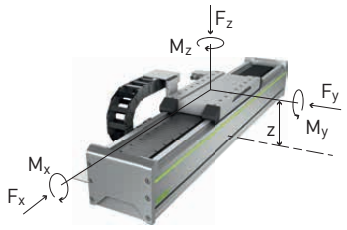


Table 12.3 **General technical data**	
Repeatability [1] [mm]	± 0.005
Max. speed [m/s]	4.5
Typical load capacity [kg]	350
Maximum total length [2] [3] [mm]	5,940
Flatness (mm/300mm) [1]	±0.03
Straightness (mm/300mm) [1]	±0.03
Area moment of inertia of profile cross section I_x [mm⁴]	34.509.373
Area moment of inertia of profile cross section I_y [mm⁴]	80.997.444

[1] Values apply with correspondingly specified mounting surface
[2] Dependent on stroke measuring system (chapter 17) and energy chain (section 18.4)
[3] Longer axes on request

Table 12.4 **Guide**	
Type of carriage	CGH25HA × 4
Static load rating C_0 [N]	69,070 × 4
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	42,200 × 4

Table 12.5 **Drive**	
Motor size	A34
Drive element	LMSA34
Continuous force [N]	1,166
Peak force [N]	3,292
Max. acceleration [m/s²]	80

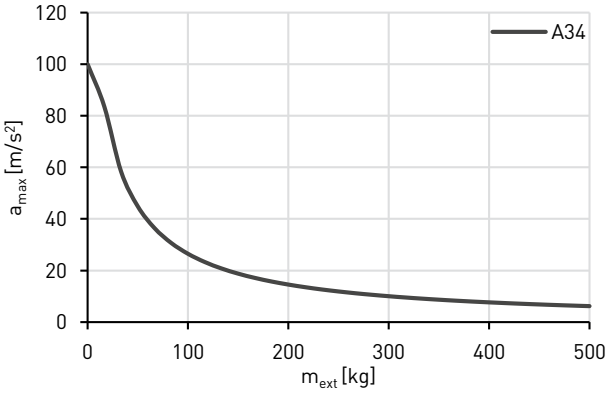


Fig. 12.1 **Max. Acceleration a_{max} as a function of the external payload m_{ext}**

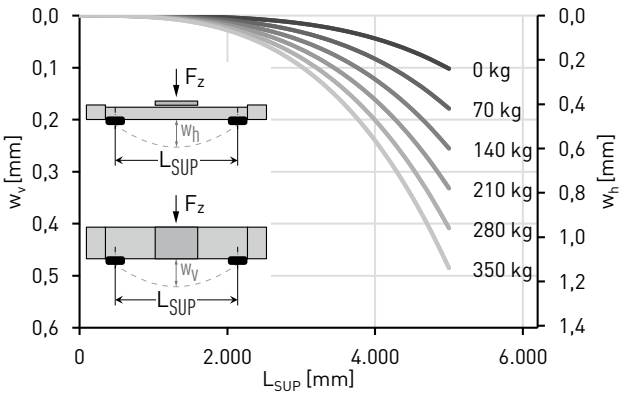


Fig. 12.2 **Deflection w over unsupported axle length L_{SUP} under payload F_z**

Table 12.6 **Mechanical properties**	
Mass of the carriage [kg]	20.2
Mass at 0-stroke [kg]	59.94
Mass per 1 m stroke [kg/m]	47.66
Breakaway force F_t [N]	60

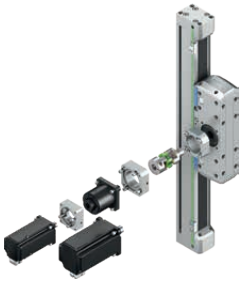
13. Cantilever axes HC-B

13.1 Properties of cantilever axes HC-B with toothed belt drive

The HIWIN cantilever axes with toothed belt drive are flexible linear units in which the drive block is stationary while the light cantilever moves. They are especially suitable for vertical applications where high dynamics and high speeds are required.

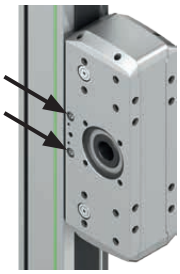
Linear guideway
High-quality HIWIN linear guideways with two blocks safely transfer forces and torques from the cantilever to the drive block.
The CG guide with O-arrangement of the ball track also ensures increased rigidity and high torque load capacity in the HC060B, HC080B and HC100B sizes.

Drive connection
Thanks to the symmetrical design, the HIWIN cantilever axis allows motors and gearboxes to be mounted on both sides of the drive block.
Additional journals, which are available as accessories (see Page 199), can be used to mount additional drives and outputs.



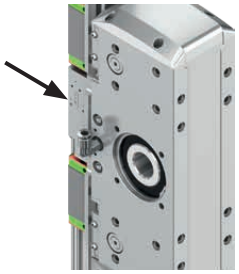
Toothed belt
The toothed belt with modern high performance profiles (HTD shape) and reinforced steel tension members enables high power transmission while offering high skip resistance.

Lubrication
For convenient maintenance of the linear axis, a separate grease nipple is installed on the left and right of the drive block for each lubrication point. This ensures optimum accessibility for relubrication, even under difficult installation conditions.



Mounting
The drive block as well as the interfaces for attaching the load capacity on both sides of the cantilever have additional bore holes on each mounting hole. This ensures ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.

Clamping and braking element
The clamping and braking element can be controlled via a pneumatic connection on the drive block. Clamping onto the profile rail is fail-safe as soon as there is no more compressed air at the connection. Particularly in vertical applications, clamping may be necessary to securely fix the axis at standstill.



13.2 Order code for cantilever axes HC-B

HC	060	B	170	N	1234	S

HIWIN cantilever axis

Size (profile width):
025: 25 mm
040: 40 mm
060: 60 mm
080: 80 mm
100: 100 mm
150: 150 mm

Drive type:
B: Toothed belt drive

Carriage length:
S: Short

Stroke length [mm]

Cover strip:
N: Without cover strip

Feed constant [mm/rev]:
081: HC025B
123: HC040B
170: HC060B
200: HC080B
280: HC100B
288: HC150B

Continuation, order code for cantilever axes HC-B

A	N	N	R	HW01	G0608

Axis limit switch[6]**:**
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector[1]
B: 2 × normally open, 100 mm cable, connector[1]
C: 2 × normally closed, 4 m open cable end[1]
D: 2 × normally open, 5 m open cable end[1]

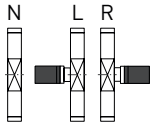
Clamping and braking element option:
N: Without holding brake (standard)
B: With 1 pneumatic clamping and sealing element (HC060B/HC080B/HC100B/HC150)
E: With 1 pneumatic clamping and sealing element (HC150)

Distance measuring system option[2]**:**
N: Without distance measuring system
A: HIWIN MAGIC, analogue, 1 V_{SS} sin/cos, 5 m open cable end
D: HIWIN MAGIC, digital, TTL 5 V, 5 m open cable end

Gearbox[5]

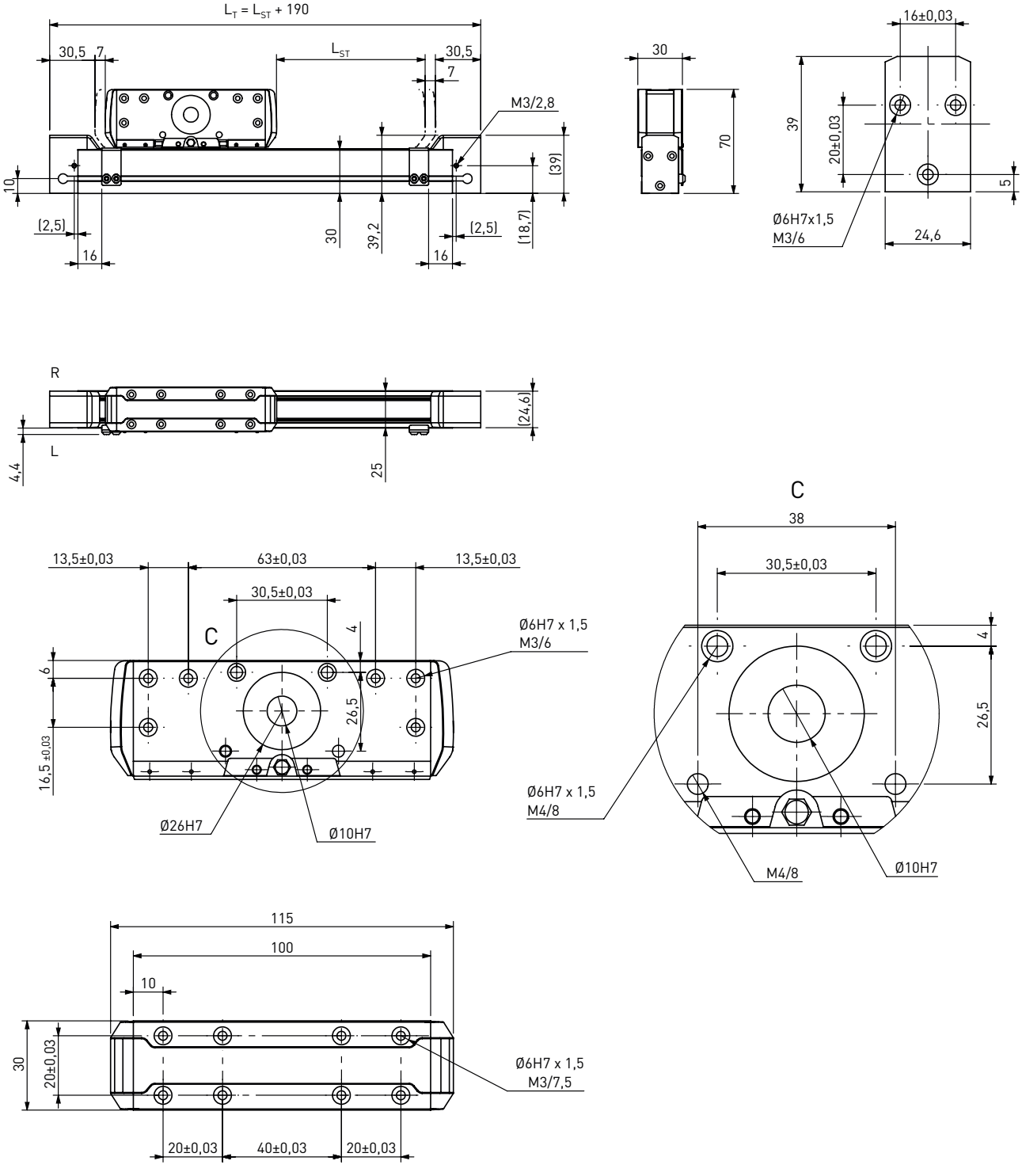
Motor flange type[4]

Drive interface[3]**:**
N: Without
L: Left
R: Right



[1] HC025B: A: 2 × normally closed, 200 mm cable, connector, C: 2 × normally closed, 2 m open cable end; B and D: not available.
[2] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[3] If no drive interface is selected, the order code ends after this digit.
[4] You can find all flange types in Table 22.1 from page 160. If no gearbox is selected, the order code ends after this digit.
[5] You can find the right gearbox for the HIWIN axes in section 22.1.5.5 from page 170.
[6] Additional reference switches on request.

13.3 Dimensions and specifications of HC025B



L_{ST} Stroke
L_T Total length
L Left
R Right

Table 13.1 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	5,000 km	100 km
$F_{ydynmax}$ [1] [N]	616	2,953
$F_{zdynmax}$ [1] [N]	616	2,953
$M_{xdynmax}$ [Nm]	2.8	14
$M_{ydynmax}$ [Nm]	21	99
$M_{zdynmax}$ [Nm]	21	99

[1] Force must only act free of torque

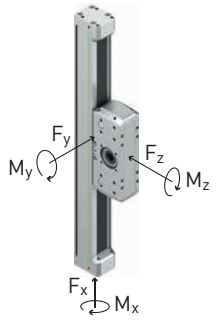


Table 13.2 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	241
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	3.1
Typical load capacity [kg]	2
Maximum vertical stroke length [1] [mm]	300
Maximum horizontal stroke length [1] [mm]	200
Area moment of inertia of profile cross section I_x [mm⁴]	18,706
Area moment of inertia of profile cross section I_y [mm⁴]	19,299

[1] Longer axes on request

Table 13.3 **Guide**

Type of carriage	MGN09C × 2
Static load rating C_0 [N]	2,550 × 2
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	1,860 × 2

Table 13.4 **Drive**

Drive element	B12HTD3
Feed constant [mm/U]	81
Toothed belt effective diameter [mm]	25.78

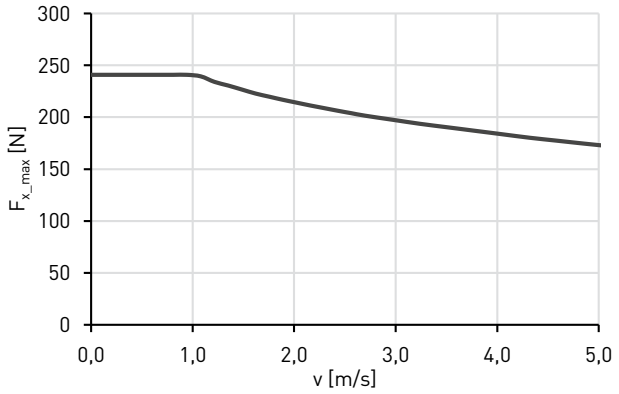


Fig. 13.1 **Max. feed force F_{x_max} depending on axis speed v**

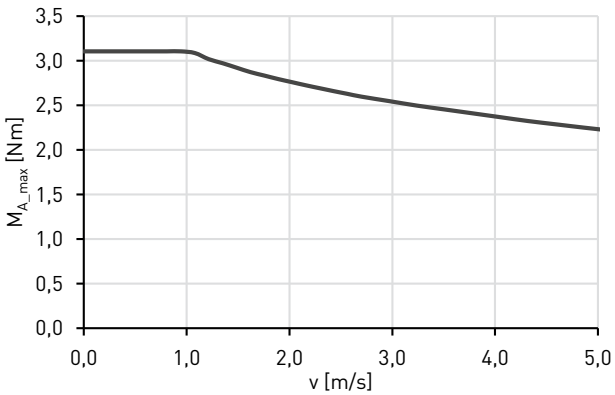


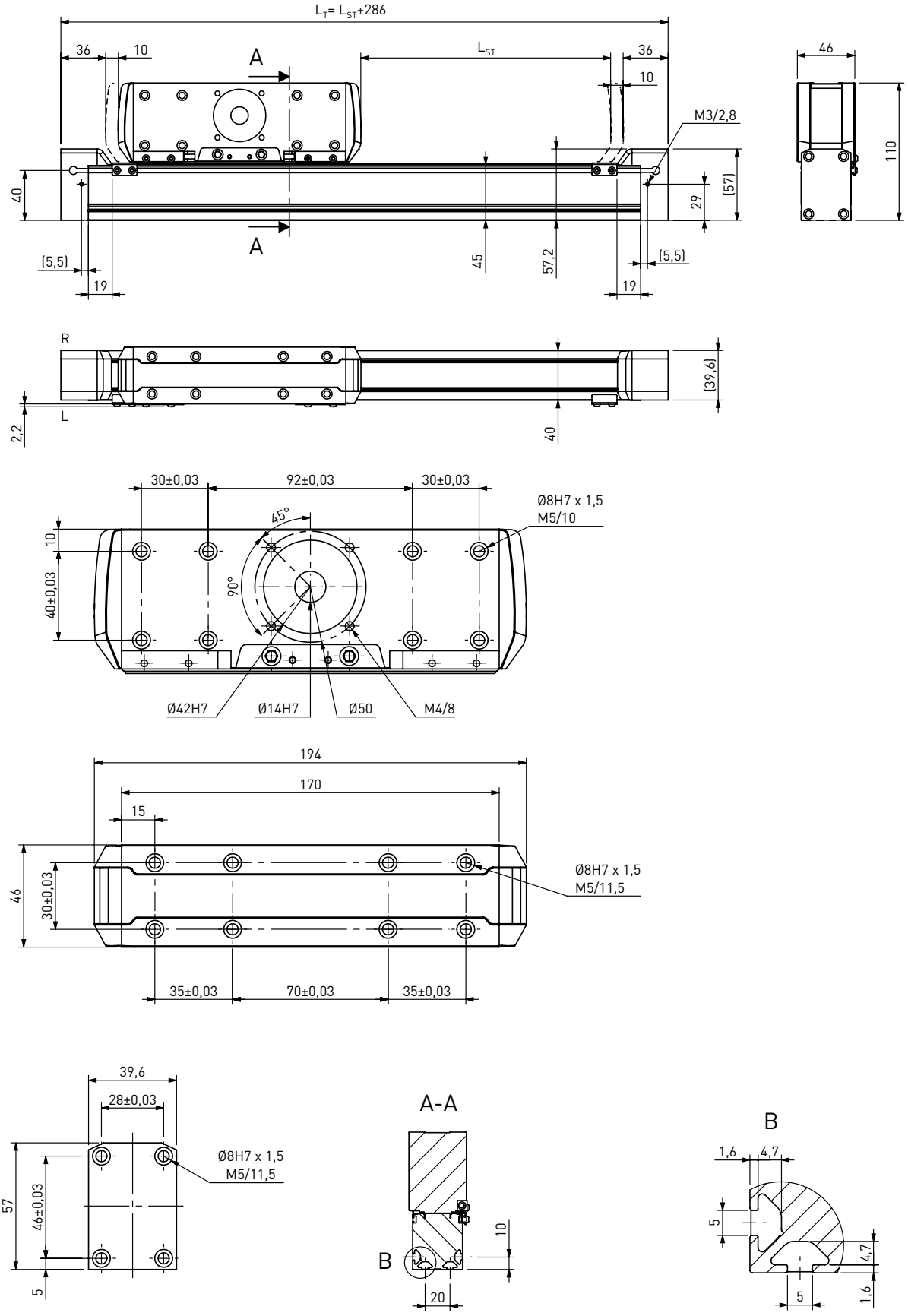
Fig. 13.2 **Max. drive force M_{A_max} depending on axis speed v**

Table 13.5 **Mechanical properties**

Mass at 0-stroke [kg]	0.72
Mass per 100 mm stroke [kg/100 mm]	0.13
Mass of cantilever at 0-stroke [kg]	0.30
Mass of cantilever per 100 mm stroke [kg/100 mm]	0.13
$J_{rot.}$ [1] [kgcm²]	0.16
Idle torque at 0-stroke [Nm]	0.15

[1] Rotational moment of inertia

13.4 Dimensions and specifications of HC040B



L_{ST}	Stroke	L_T	Total length	L	Left	R	Right

Table 13.6 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	10,000 km	100 km
$F_{ydynmax}$ [1] [N]	1,213	7,318
$F_{zdynmax}$ [1] [N]	1,213	7,318
$M_{xdynmax}$ [Nm]	9.8	59
$M_{ydynmax}$ [Nm]	78	468
$M_{zdynmax}$ [Nm]	78	468

[1] Force must only act free of torque

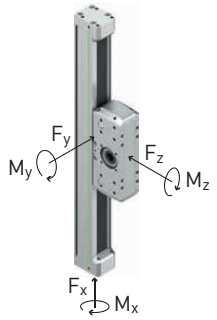


Table 13.7 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	404
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	7.9
Typical load capacity [kg]	8
Maximum vertical stroke length [1] [mm]	500
Maximum horizontal stroke length [1] [mm]	400
Area moment of inertia of profile cross section I_x [mm⁴]	94,400
Area moment of inertia of profile cross section I_y [mm⁴]	102,030

[1] Longer axes on request

Table 13.8 **Guide**

Type of carriage	MGN15C × 2
Static load rating C_0 [N]	5,590 × 2
Dynamic load rating $C_{dyn\ 50\ km}$ [N]	4,610 × 2

Table 13.9 **Drive**

Drive element	B20HTD3
Feed constant [mm/U]	123
Toothed belt effective diameter [mm]	39.15

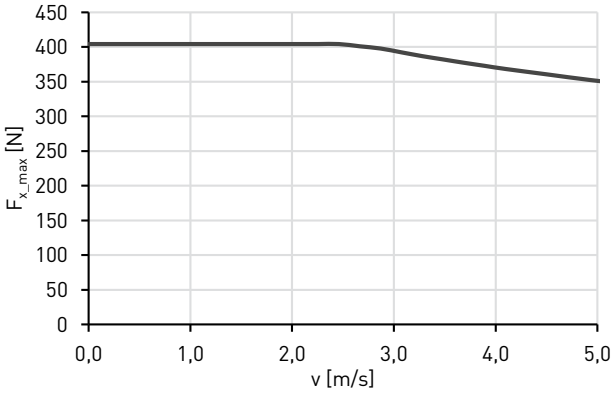


Fig. 13.3 **Max. feed force F_{x_max} depending on axis speed v**

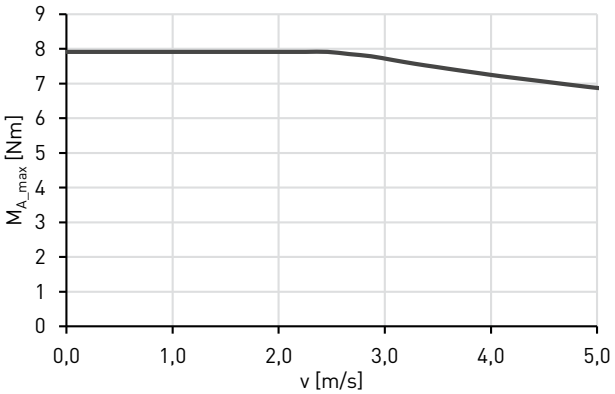


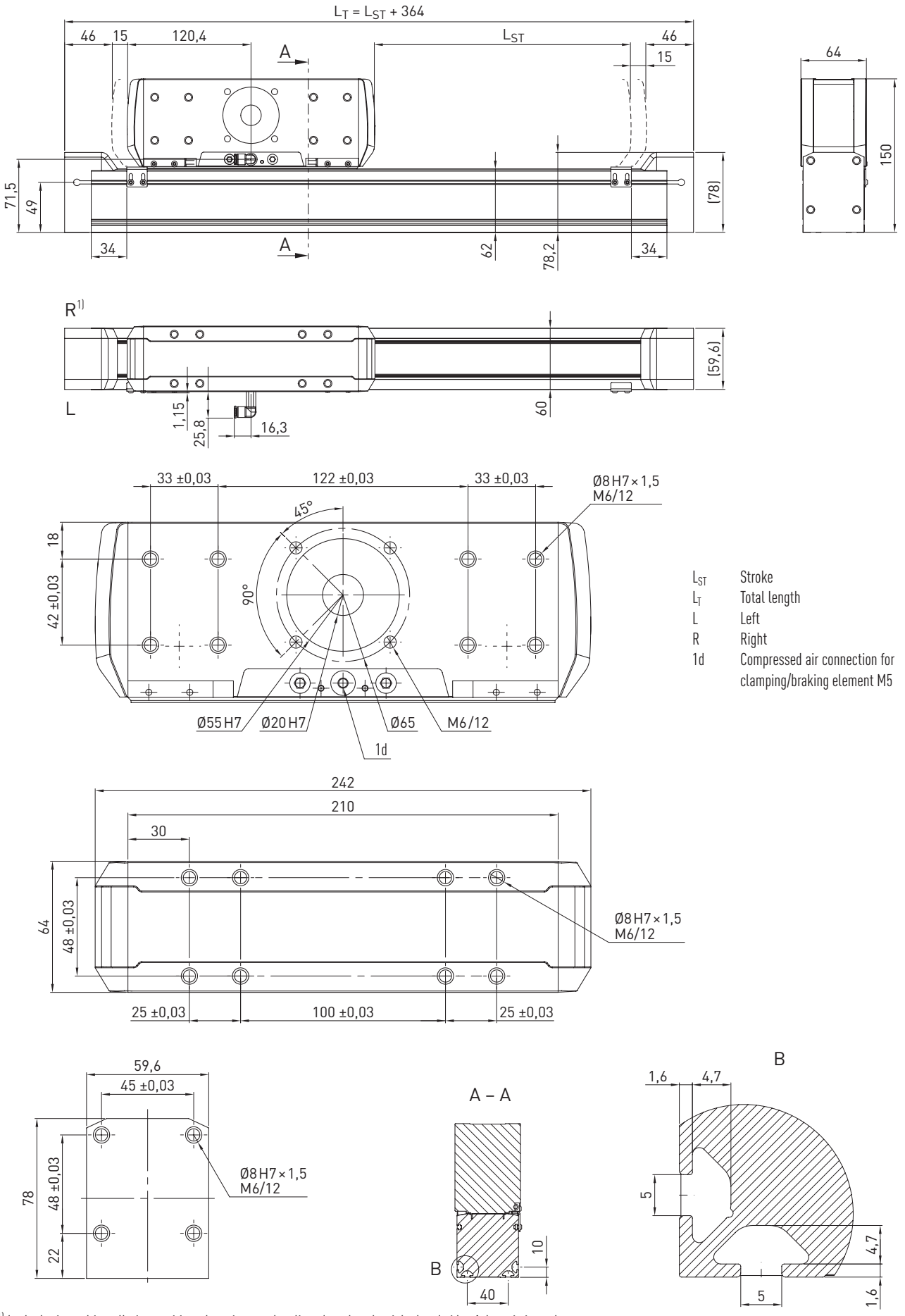
Fig. 13.4 **Max. drive force M_{A_max} depending on axis speed v**

Table 13.10 **Mechanical properties**

Mass at 0-stroke [kg]	2.33
Mass per 100 mm stroke [kg/100 mm]	0.28
Mass of cantilever at 0-stroke [kg]	0.91
Mass of cantilever per 100 mm stroke [kg/100 mm]	0.28
$J_{rot.}$ [1] [kgcm²]	0.44
Idle torque at 0-stroke [Nm]	0.20

[1] Rotational moment of inertia

13.5 Dimensions and specifications of HC060B



L_{ST}	Stroke
L_T	Total length
L	Left
R	Right
1d	Compressed air connection for clamping/braking element M5

[1] In the horizontal installation position, the axis must be aligned so that the right-hand side of the axis is at the top.

Table 13.11 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	15,000 km	100 km
$F_{ydynmax}$ [1] [N]	2,152	23,335
$F_{zdynmax}$ [1] [N]	3,378	23,335
$M_{xdynmax}$ [Nm]	27	189
$M_{ydynmax}$ [Nm]	243	1,680
$M_{zdynmax}$ [Nm]	155	1,680

[1] Force must only act free of torque

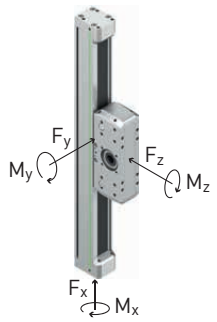


Table 13.12 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	997
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	27
Typical load capacity [kg]	16
Maximum vertical stroke length [1] [mm]	800
Maximum horizontal stroke length [1] [mm]	600
Area moment of inertia of profile cross section I_x [mm⁴]	431,271
Area moment of inertia of profile cross section I_y [mm⁴]	536,119

[1] Longer axes on request

Table 13.13 **Guide**

Type of carriage	CGL15CA × 2
Static load rating C_0 [N]	23,470 × 2
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	14,700 × 2

Table 13.14 **Drive**

Drive element	B30HTD5
Feed constant [mm/U]	170
Toothed belt effective diameter [mm]	54.11

Table 13.15 **Clamping/Braking element**

Holding force [N]	400
Operating pressure [bar]	5.5–6.5

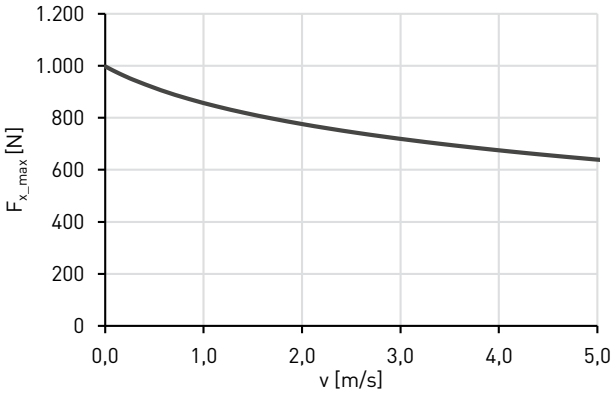


Fig. 13.5 **Max. feed force F_{x_max} depending on axis speed v**

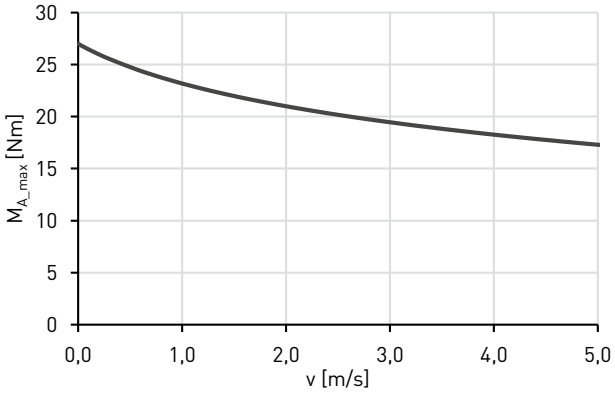


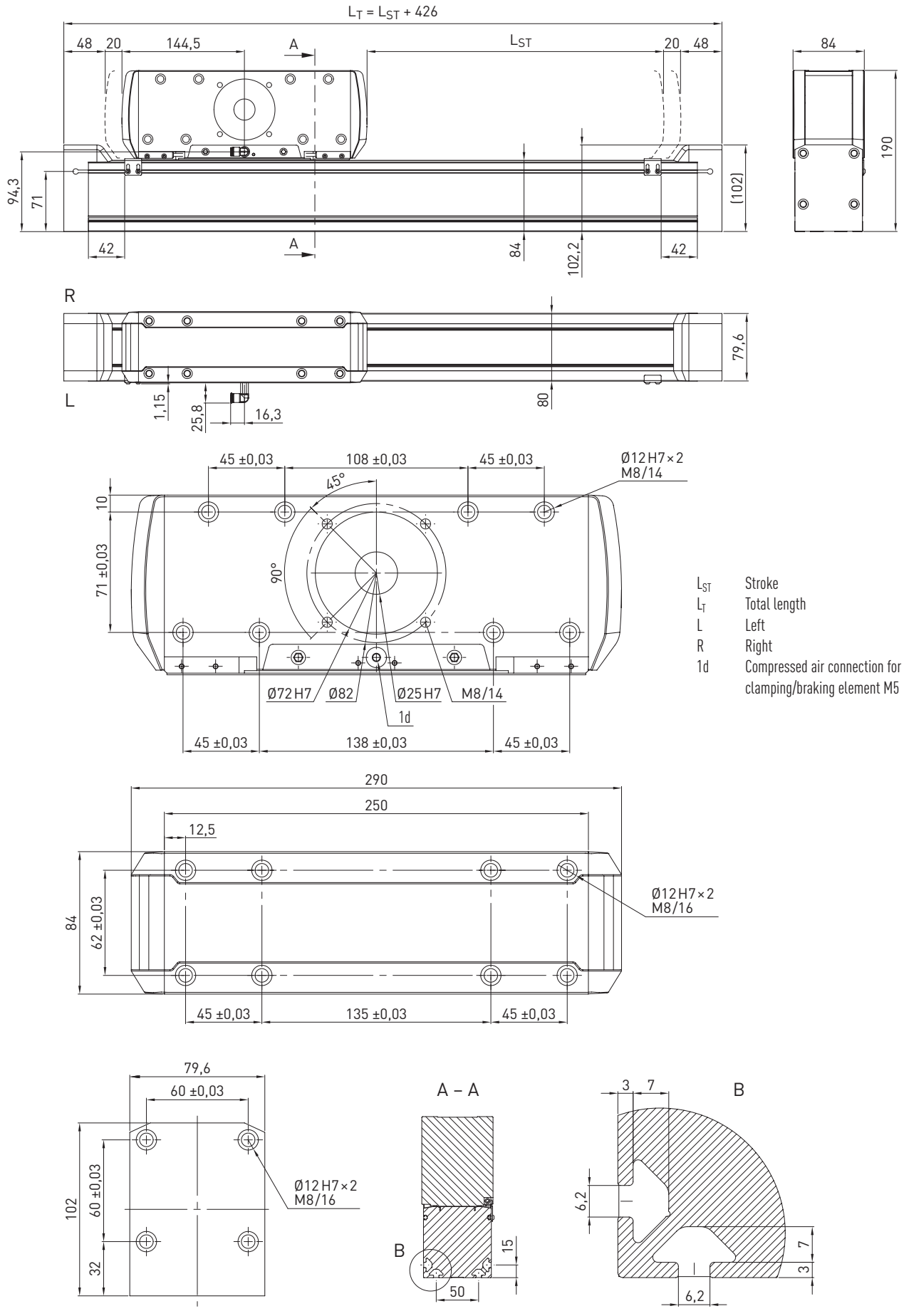
Fig. 13.6 **Max. drive force M_{A_max} depending on axis speed v**

Table 13.16 **Mechanical properties**

Mass at 0-stroke [kg]	5.44
Mass per 100 mm stroke [kg/100 mm]	0.52
Mass of cantilever at 0-stroke [kg]	2.23
Mass of cantilever per 100 mm stroke [kg/100 mm]	0.52
$J_{rot.}$ [1] [kgcm²]	2.41
Idle torque at 0-stroke [Nm]	0.60

[1] Rotational moment of inertia

13.6 Dimensions and specifications of HC080B



L_{ST}	Stroke
L_T	Total length
L	Left
R	Right
1d	Compressed air connection for clamping/braking element M5

Table 13.17 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	15,000 km	100 km
$F_{ydynmax}$ [1] [N]	3,855	43,019
$F_{zdynmax}$ [1] [N]	6,228	43,019
$M_{xdynmax}$ [Nm]	63	434
$M_{ydynmax}$ [Nm]	508	3,506
$M_{zdynmax}$ [Nm]	314	3,506

[1] Force must only act free of torque

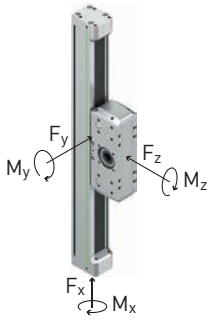


Table 13.18 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	1,330
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	42.3
Typical load capacity [kg]	30
Maximum vertical stroke length [1] [mm]	1,200
Maximum horizontal stroke length [1] [mm]	800
Area moment of inertia of profile cross section I_x [mm⁴]	1,394,922
Area moment of inertia of profile cross section I_y [mm⁴]	1,758,779

[1] Longer axes on request

Table 13.19 **Guide**

Type of carriage	CGH20CA × 2
Static load rating C_0 [N]	36,680 × 2
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	27,100 × 2

Table 13.20 **Drive**

Drive element	B40HTD5
Feed constant [mm/U]	200
Toothed belt effective diameter [mm]	63.66

Table 13.21 **Clamping/Braking element**

Holding force [N]	650
Operating pressure [bar]	5.5–6.5

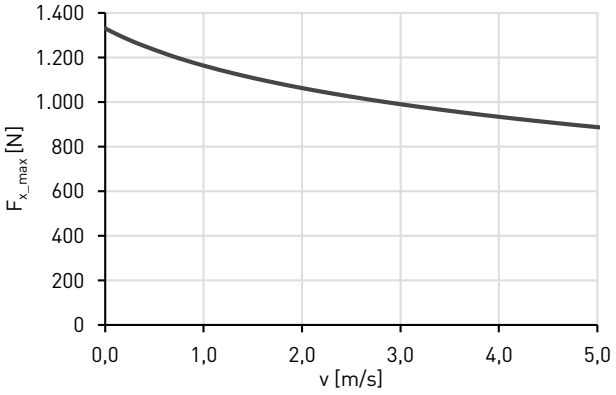


Fig. 13.7 **Max. feed force F_{x_max} as a function of axis speed v**

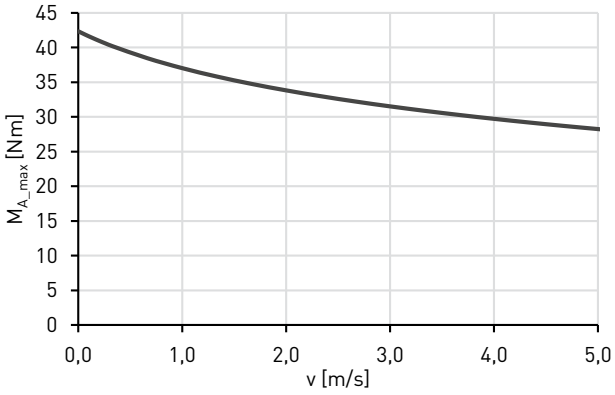


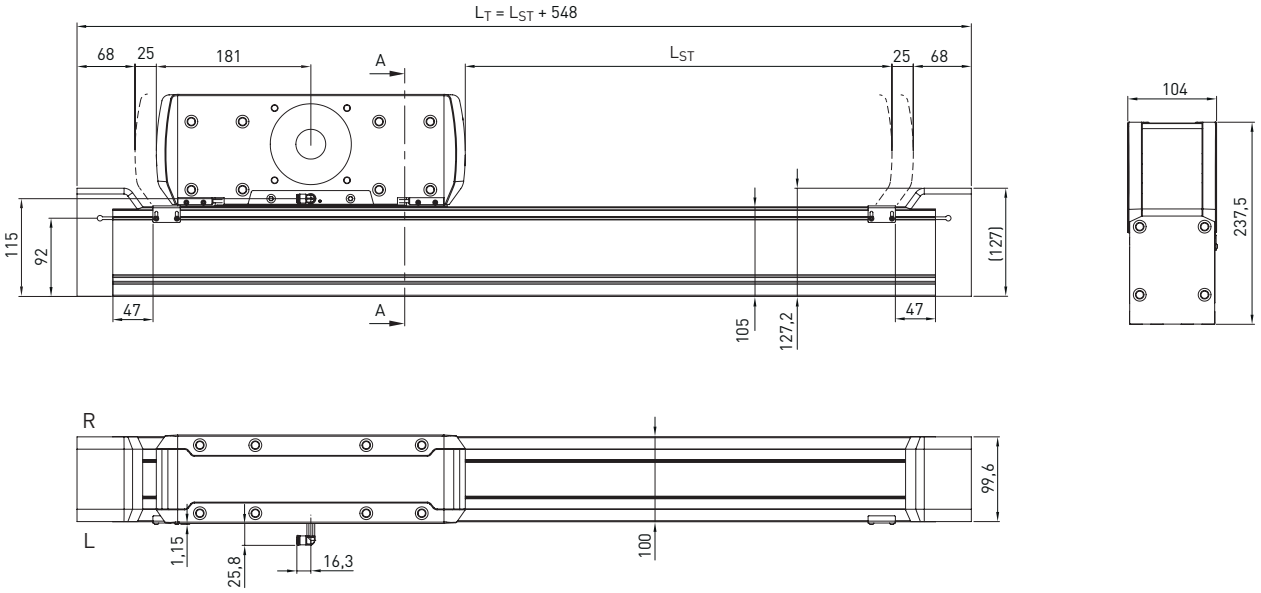
Fig. 13.8 **Max. drive force M_{A_max} as a function of axis speed v**

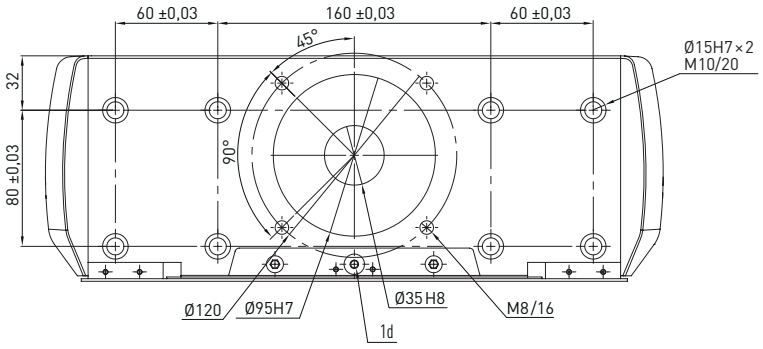
Table 13.22 **Mechanical properties**

Mass at 0-stroke [kg]	10.15
Mass per 100 mm stroke [kg/100 mm]	0.90
Mass of cantilever at 0-stroke [kg]	4.35
Mass of cantilever per 100 mm stroke [kg/100 mm]	0.90
$J_{rot.}$ [1] [kgcm²]	5.49
Idle torque at 0-stroke [Nm]	1.40

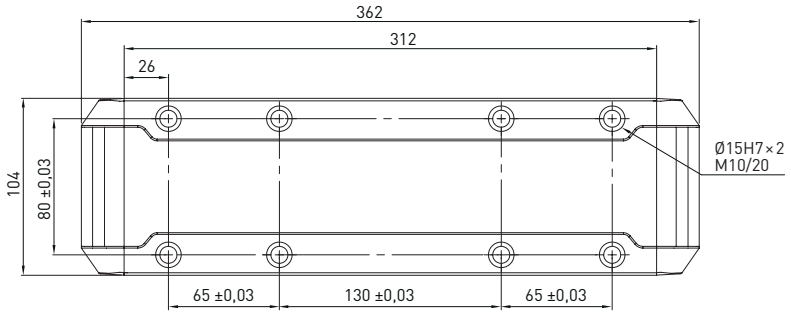
[1] Rotational moment of inertia

13.7 Dimensions and specifications of HC100B





L_{ST}	Stroke
L_T	Total length
L	Left
R	Right
1d	Compressed air connection for clamping/braking element M5



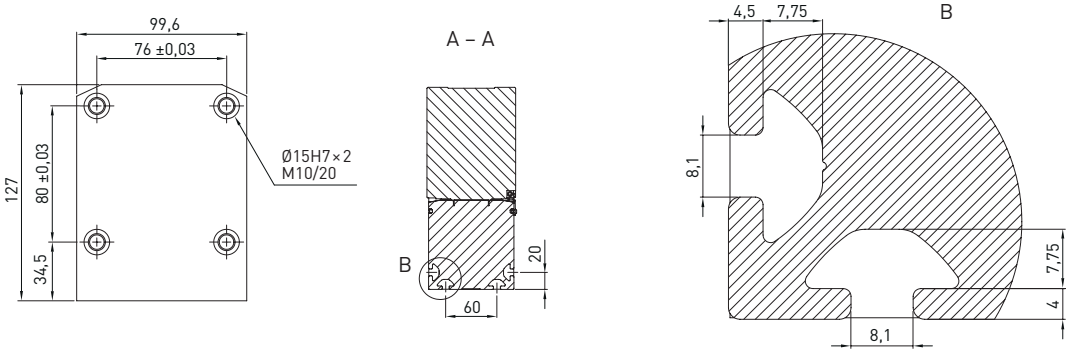


Table 13.23 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	15,000 km	100 km
$F_{ydynmax}$ [1] [N]	6,979	55,400
$F_{zdynmax}$ [1] [N]	8,021	55,400
$M_{xdynmax}$ [Nm]	91	629
$M_{ydynmax}$ [Nm]	842	5,817
$M_{zdynmax}$ [Nm]	733	5,817

[1] Force must only act free of torque

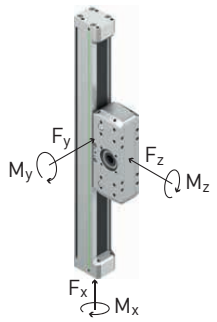


Table 13.24 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	2,667
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	118.8
Typical load capacity [kg]	60
Maximum vertical stroke length [1] [mm]	1,800
Maximum horizontal stroke length [1] [mm]	1,200
Area moment of inertia of profile cross section I_x [mm⁴]	3,290,845
Area moment of inertia of profile cross section I_y [mm⁴]	4,100,279

[1] Longer axes on request

Table 13.25 **Guide**

Type of carriage	CGL25CA × 2
Static load rating C_0 [N]	52,820 × 2
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	34,900 × 2

Table 13.26 **Drive**

Drive element	B40HTD8
Feed constant [mm/U]	280
Toothed belt effective diameter [mm]	89.13

Table 13.27 **Clamping/Braking element**

Holding force [N]	750
Operating pressure [bar]	5.5–6.5

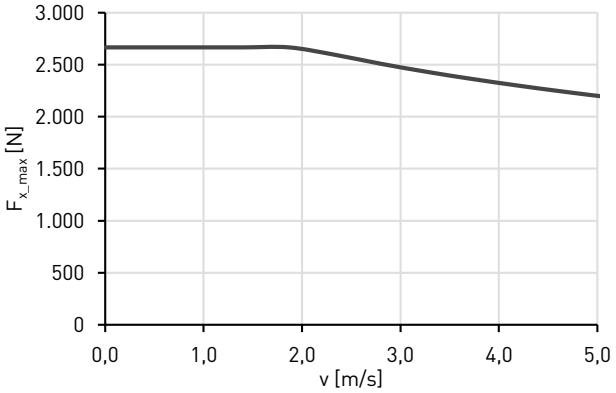


Fig. 13.9 **Max. feed force F_{x_max} depending on axis speed v**

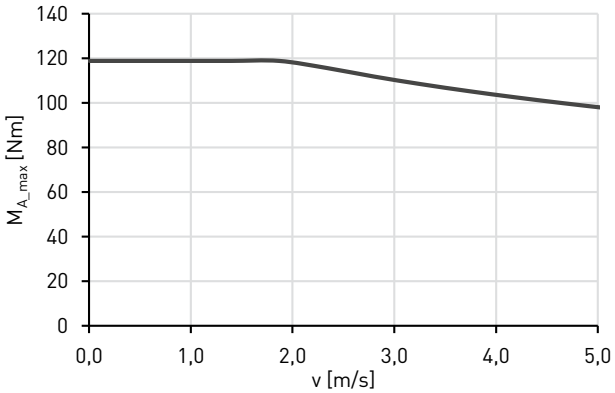


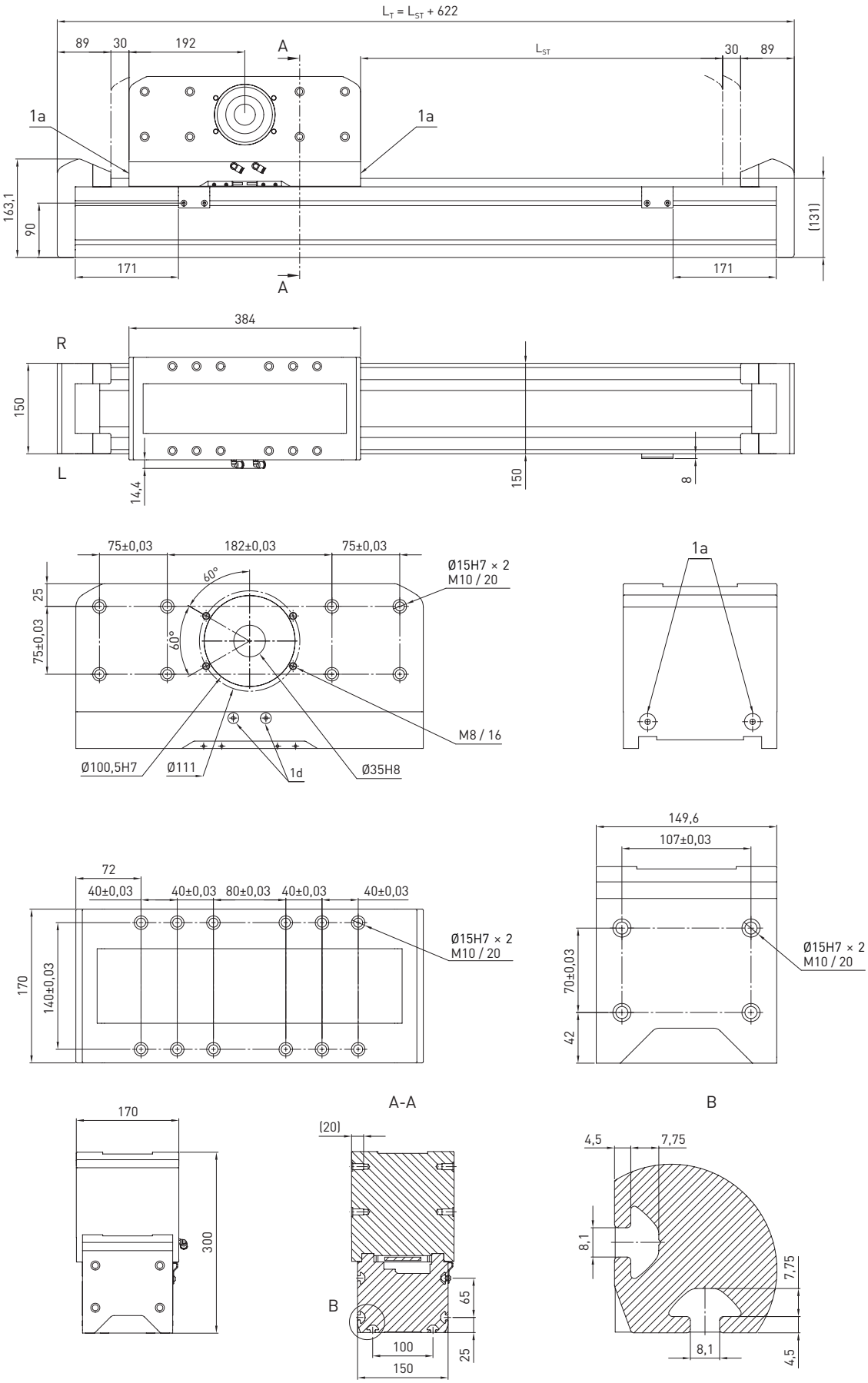
Fig. 13.10 **Max. drive force M_{A_max} depending on axis speed v**

Table 13.28 **Mechanical properties**

Mass at 0-stroke [kg]	20.12
Mass per 100 mm stroke [kg/100 mm]	1.32
Mass of cantilever at 0-stroke [kg]	8.40
Mass of cantilever per 100 mm stroke [kg/100 mm]	1.32
$J_{rot.}$ [1] [kgcm²]	28.99
Idle torque at 0-stroke [Nm]	3.00

[1] Rotational moment of inertia

13.8 Dimensions and specifications of HC150B



L_{ST}	Stroke	L	Left	1d	Compressed air connection for clamping/braking element M5
L_T	Total length	R	Right		

Table 13.29 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	15,000 km	100 km
$F_{ydynmax}$ [1] [N]	9,485	95,244
$F_{zdynmax}$ [1] [N]	13,789	95,244
$M_{xdynmax}$ [Nm]	446	5,524
$M_{ydynmax}$ [Nm]	1,755	12,125
$M_{zdynmax}$ [Nm]	1,207	12,125

[1] Force must only act free of torque

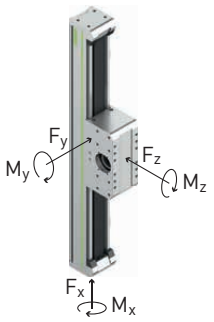


Table 13.30 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	4,000
Max. speed [m/s]	5
Max. acceleration [m/s²]	30
Max. drive torque M_{A_max} [Nm]	183.3
Typical load capacity [kg]	80
Maximum vertical stroke length [1] [mm]	2,000
Maximum horizontal stroke length [1] [mm]	1,400
Area moment of inertia of profile cross section I_x [mm⁴]	7,556,719
Area moment of inertia of profile cross section I_y [mm⁴]	13,470,080

[1] Longer axes on request

Table 13.31 **Guide**

Type of carriage	QHH20CA × 4
Static load rating C_0 [N]	33,860 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	30,000 × 4

Table 13.32 **Drive**

Drive element	b60HTD8
Feed constant [mm/U]	288
Toothed belt effective diameter [mm]	91.67

Table 13.33 **Clamping/Braking element**

Holding force [N]	650 / Element
Operating pressure [bar]	5.5–6.5

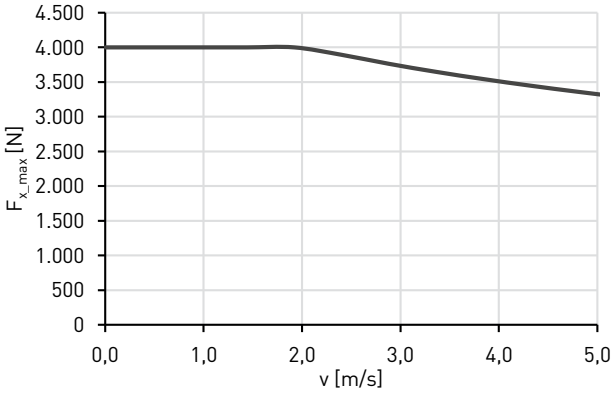


Fig. 13.11 **Max. feed force F_{x_max} depending on axis speed v**

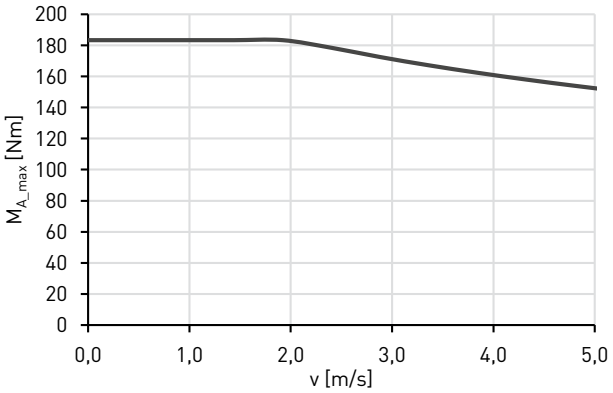


Fig. 13.12 **Max. drive force M_{A_max} depending on axis speed v**

Table 13.34 **Mechanical properties**

Mass at 0-stroke [kg]	36.69
Mass per 100 mm stroke [kg/100 mm]	1.83
Mass of cantilever at 0-stroke [kg]	13.88
Mass of cantilever per 100 mm stroke [kg/100 mm]	1.83
$J_{rot.}$ [1] [kgcm²]	48.37
Idle torque at 0-stroke [Nm]	5.50

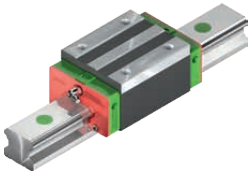
[1] Rotational moment of inertia

14. Cantilever axes HC-R

14.1 Features of the HC-R cantilever axes with rack and pinion drive

HIWIN cantilever axes with rack and pinion drive are flexible positioning modules with an integrated HIWIN double guide. They are particularly suitable for applications where high feed force and high speeds are required.

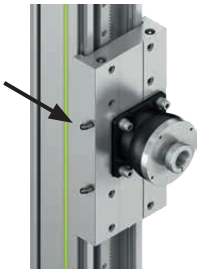
Linear guideway
A high-quality HIWIN double guide safely transfers forces and torques from the carriage to the axis profile. Four blocks are used per carriage, which are guided on a two parallel, high-precision profile rails. The SynchMotion™ technology with ball chain also ensures good synchronisation and smooth running.



Drive adaptation
HIWIN cantilever axes with rack and pinion drive are equipped with gearboxes as standard. Suitable adapters for all common motors can be found in section 22.1 from page 159.

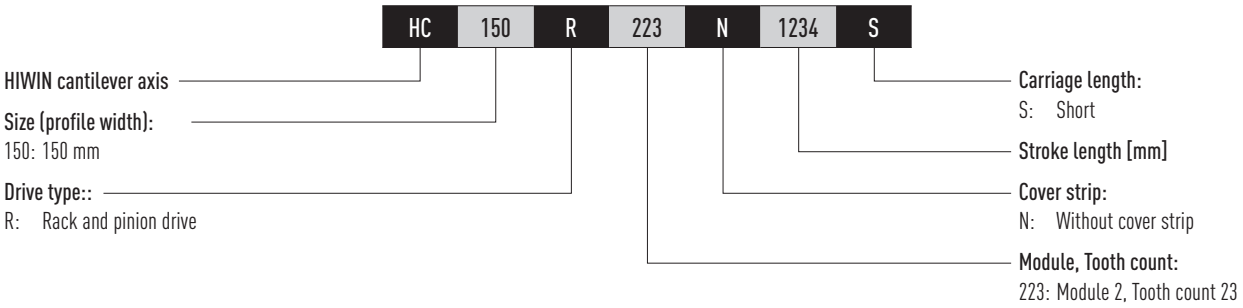
Rack and pinion
The rack and pinion ensures precise positioning, smooth running, high efficiency and maximum power density. The integrated lubrication pinion ensures that the rack and pinion drive is supplied with grease.

Clamping and braking element
The clamping and braking element can be controlled via a pneumatic connection on the drive block. Clamping onto the profile rail is fail-safe as soon as there is no more compressed air at the connection. Particularly in vertical applications, clamping may be necessary to securely fix the axis at standstill.

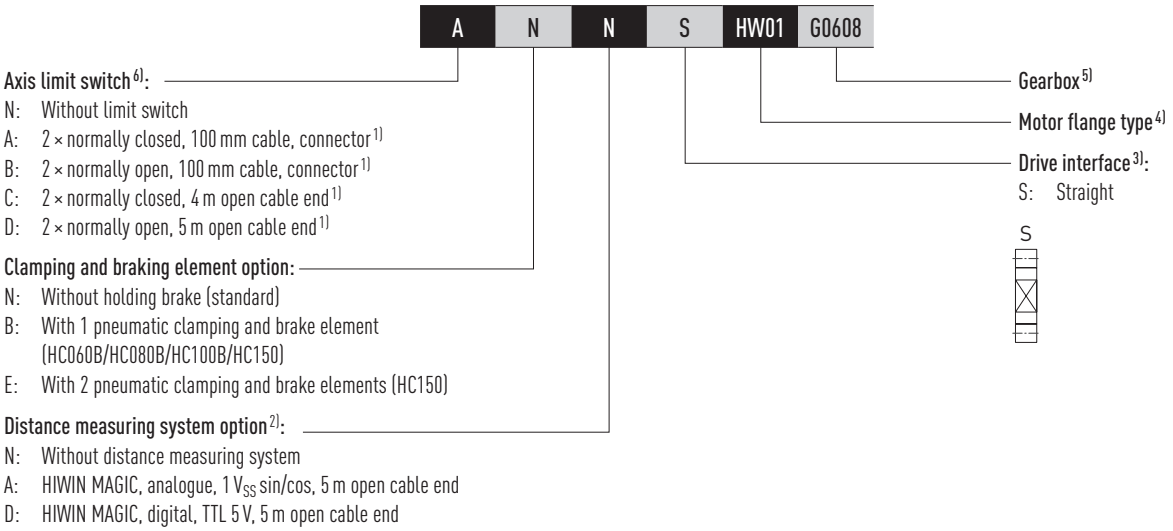


Mounting
The drive block as well as the interfaces for attaching the load capacity on both sides of the cantilever have additional bore holes on each mounting hole. This ensures ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on Page 192.

14.2 Order code for cantilever axes HC-R

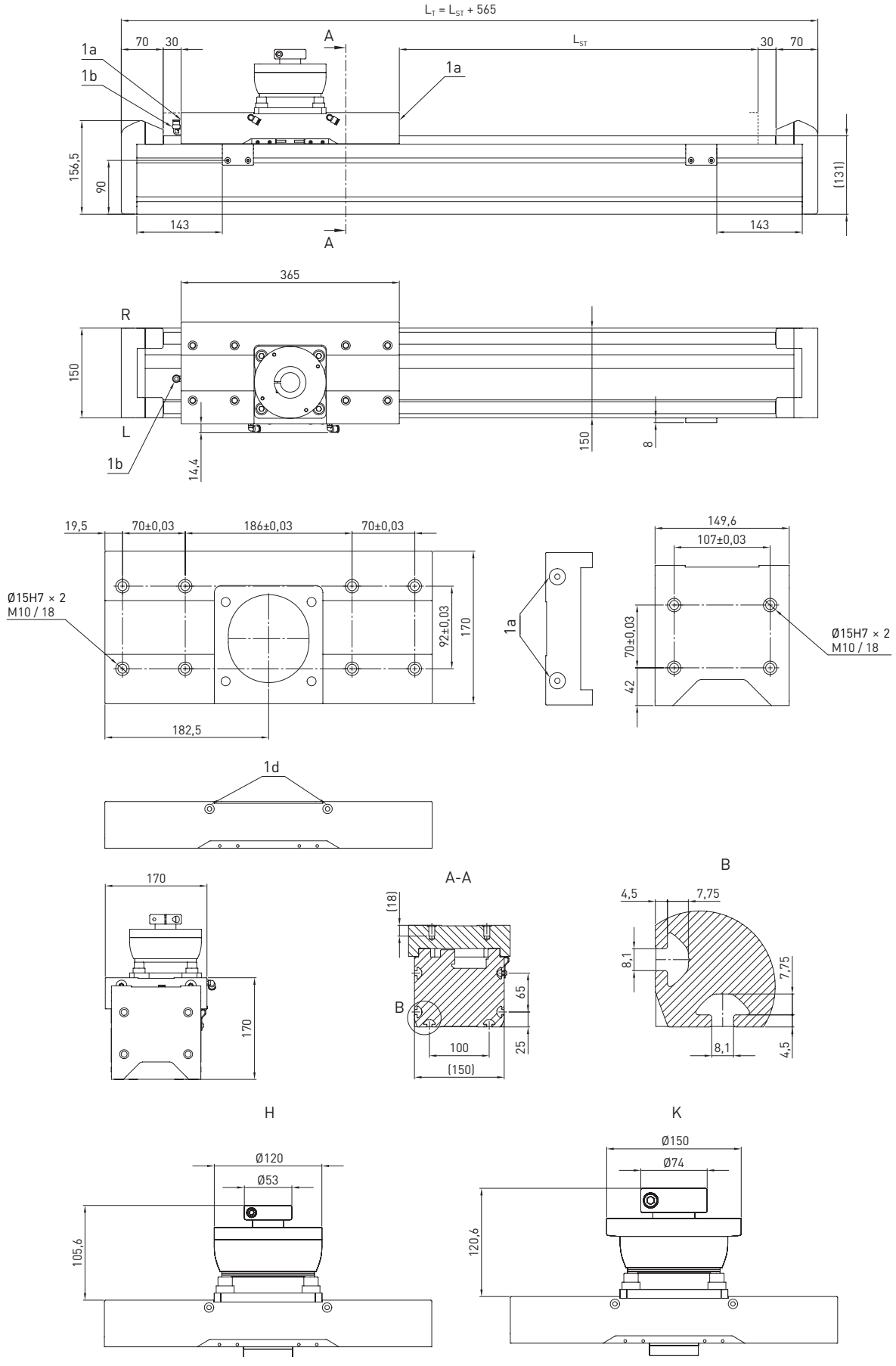


Continuation, order code for cantilever axes HC-R



[1] HC025B: A: 2 × normally closed, 200 mm cable, connector, C: 2 × normally closed, 2 m open cable end; B and D: not available.
[2] More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
[3] If no drive interface is selected, the order code ends after this digit.
[4] You can find all flange types in Table 22.1 from page 160. If no gearbox is selected, the order code ends after this digit.
[5] You can find the right gearbox for the HIWIN axes in section 22.1.5.5 from page 170.
[6] Additional reference switches on request.

14.3 Dimensions and specifications of HC150R



L_{ST}	Stroke	L	Left	1d	Compressed air connection for clamping/braking element M5
L_T	Total length	R	Right		

Table 14.1 **Load data**

	Permissible load data	Theoretical load data
Lifetime reference value	15,000 km	100 km
$F_{ydynmax}$ [1] [N]	9,485	95,244
$F_{zdynmax}$ [1] [N]	10,596	95,244
$M_{xdynmax}$ [Nm]	446	5,524
$M_{ydynmax}$ [Nm]	1,359	12,215
$M_{zdynmax}$ [Nm]	1,216	12,215

[1] Force must only act free of torque

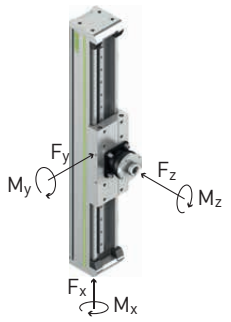


Table 14.2 **General technical data**

Repeatability [mm]	± 0.05
Max. feed force F_{x_max} [N]	4,300
Max. speed [m/s]	3
Max. acceleration [m/s²]	50
Max. drive torque M_{A_max} [Nm]	104.9
Typical load capacity [kg]	80
Maximum vertical stroke length [1] [mm]	2,000
Maximum horizontal stroke length [1] [mm]	1,400
Area moment of inertia of profile cross section I_x [mm⁴]	7,556,719
Area moment of inertia of profile cross section I_y [mm⁴]	13,470,080

[1] Longer axes on request

Table 14.3 **Guide**

Type of carriage	QHH20CA × 4
Static load rating C_0 [N]	33,860 × 4
Dynamic load rating $C_{dyn\ 50\,km}$ [N]	30,000 × 4

Table 14.4 **Rack and pinion**

Toothing	Modul 2, diagonally toothed
Feed constant [mm/U]	153.34
Effective diameter of pinion [mm]	48.81
Number of teeth pinion	23

Table 14.5 **Clamping/Braking element**

Holding force [N]	650 / Element
Operating pressure [bar]	5.5–6.5

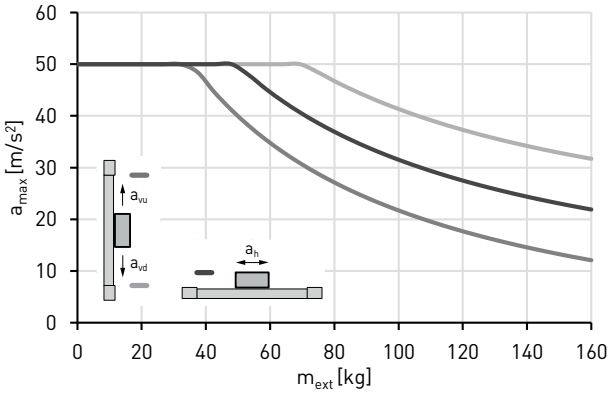


Fig. 14.1 **Max. Acceleration a_{max} as a function of the external payload m_{ext}**

Mechanical properties	
Mass at 0-stroke [kg]	18.55
Mass per 1 m stroke [kg/100 mm]	2.30
Mass of cantilever at 0-stroke [kg]	13.46
Mass of cantilever per 1 m stroke [kg/100 mm]	2.30
Breakaway force 0-stroke axis [N]	20.00

[1] Rotational moment of inertia

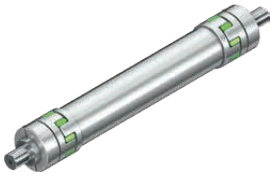
15. Double axes HD

15.1 Properties of double axes HD with toothed belt drive

The HIWIN double axes HD are linear modules for flexible use and consist of two toothed belt axes HM-B, which are connected to each other via a synchronous shaft. They are preferably used in applications where a single axis is not sufficient due to high torque loads or the dimensions of the loads to be transported. HIWIN double axes HD are also ideally suited as a basis for multi-axis systems.

Synchronous shaft

The synchronous shaft ensures safe and rigid power transmission for parallel movement of both axes. Due to the generously dimensioned diameter, the synchronous shaft is very torsionally stiff, meaning no additional bearing is required, even at higher speeds and longer axis distances.



Critical speed of the synchronous shaft

The critical speed depends on the length and diameter of the synchronous shaft and must not be exceeded during operation. The resulting maximum centre distance depending on the size and the axis speed of the HIWIN double axes can be calculated using the diagram in Fig. 15.1.

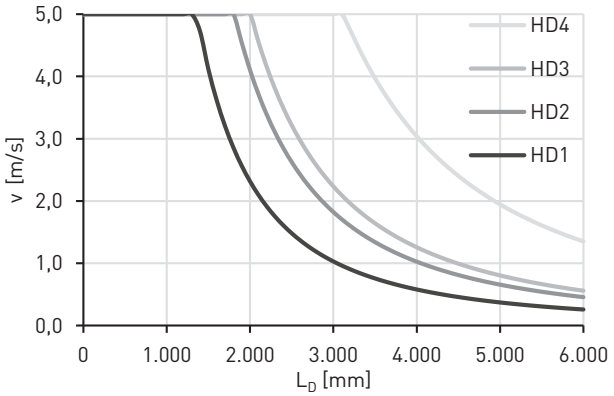
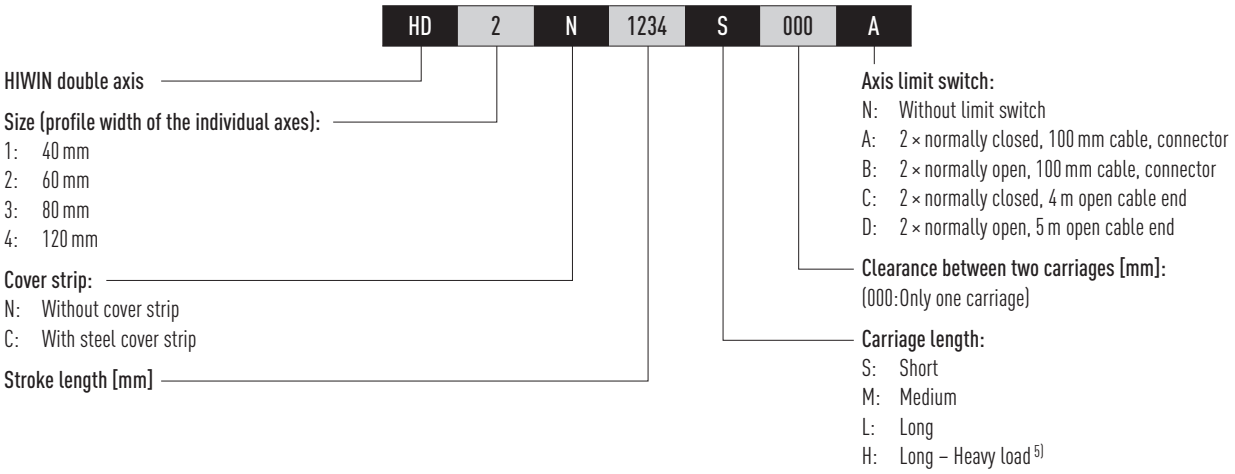
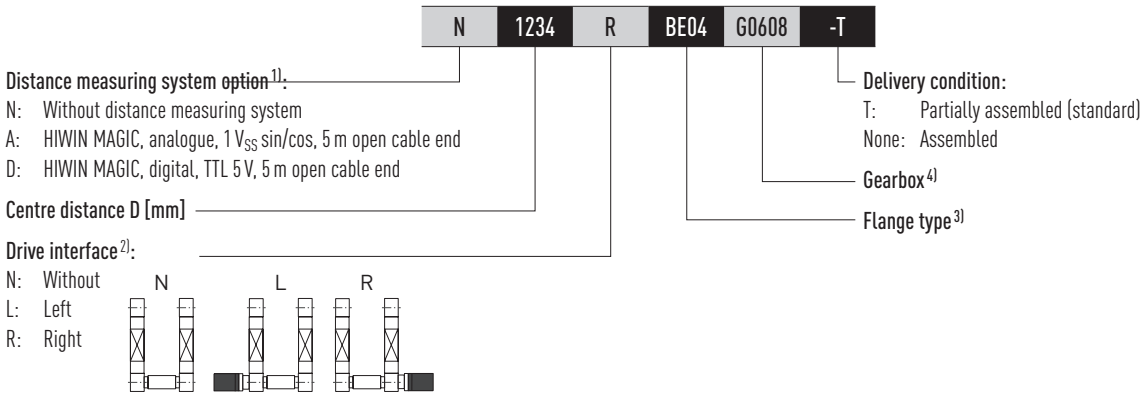


Fig. 15.1 **Maximum centre distance L_D as a function of axis speed v**

15.2 Order code for double axes HD



Continuation, order code for double axes HD



1) More detailed information in chapter 21 from page 156 or in the "HIWIN MAGIC Distance Measuring Systems" assembly instructions".
2) If no drive interface is selected, the order code ends after this digit.
3) You can find all flange types in Table 22.1 from page 160. If no gearbox is selected, the order code ends after this digit.
4) You can finding matching gearboxes in section 22.1.5.5 from page 170.
5) Only available for HD4

15.3 Dimensions and specifications of HD1

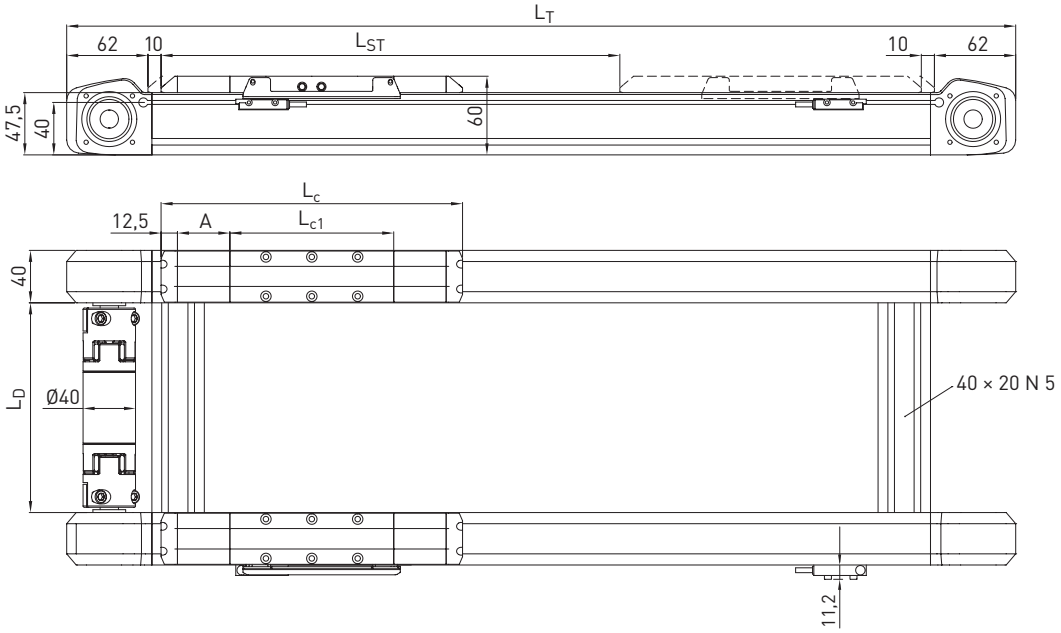


Table 15.1 **HD1 dimensions**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Carriage profile length L_c [mm]	125	160	230	125	160	230
Total carriage length L_c [mm]	150	185	255	230	265	335
Cover strip deflection A [mm]	–	–	–	40	40	40
Max. stroke length L_{ST} [mm]	3,000	3,000	3,000	3,000	3,000	3,000
Total length L_T [mm]	$L_T = L_{ST} + 294$	$L_T = L_{ST} + 329$	$L_T = L_{ST} + 399$	$L_T = L_{ST} + 374$	$L_T = L_{ST} + 409$	$L_T = L_{ST} + 479$
Centre distance L_D min. [mm]	160	160	160	160	160	160
Centre distance L_D max. [mm]	6,000	6,000	6,000	6,000	6,000	6,000

Table 15.2 **General technical data**

Max. feed force F_{x_max} [N]	450
Max. speed [m/s]	5
Max. drive torque M_{A_max} [Nm]	7.9
Typical load capacity [1] [kg]	25
Single axis	HM040B

[1] With equal load distribution on both axes

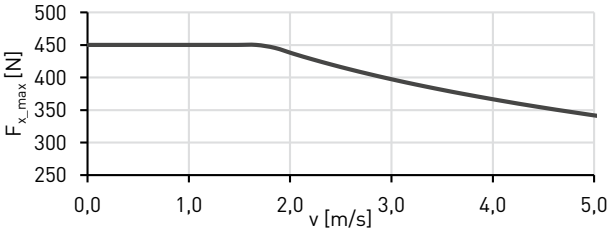


Fig. 15.2 **Max. feed force F_{x_max} as a function of axis speed v**

Table 15.3 **Mechanical properties**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Mass of the carriage [kg]	0.70	0.82	1.04	0.84	0.95	1.17
Mass at 0-stroke and centre distance L_D = 0 [2] [kg]	3.44	3.77	4.43	4.17	4.50	5.17
Mass per 1 m stroke [kg/m]	6.20			6.32		
Mass per 1 m centre distance L_D [kg/m]	2.76			2.76		
$J_{rot.}$ [1] at 0-stroke and centre distance L_D = 0 [kgcm²]	1.16			1.16		
$J_{rot.}$ [1] per 1 m stroke centre distance [kgcm²/m]	3.24			3.24		
Idle torque at 0-stroke [Nm]	0.35			0.50		

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages, add the following: Mass of carriage + mass per 1 m stroke x (clearance between the carriages (in m) + carriage length L_C (in m))

Note: For further dimensions and data, see toothed belt axis HM040B on Page 26.

15.4 Dimensions and specifications of HD2

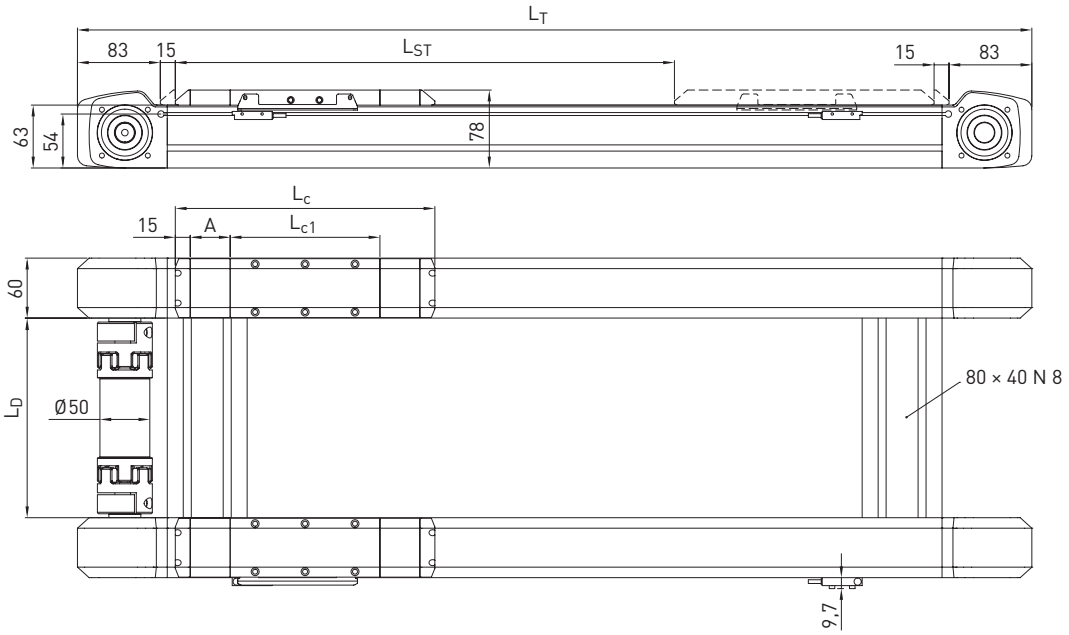


Table 15.4 **HD2 dimensions**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Carriage profile length L_c [mm]	150	200	300	150	200	300
Total carriage length L_c [mm]	180	230	330	260	310	410
Cover strip deflection A [mm]	–	–	–	40	40	40
Max. stroke length L_{ST} [mm]	5,704	5,654	5,554	5,624	5,574	5,474
Total length L_T [mm]	$L_T = L_{ST} + 376$	$L_T = L_{ST} + 426$	$L_T = L_{ST} + 526$	$L_T = L_{ST} + 456$	$L_T = L_{ST} + 506$	$L_T = L_{ST} + 606$
Centre distance L_D min. [mm]	190	190	190	190	190	190
Centre distance L_D max. [mm]	6,000	6,000	6,000	6,000	6,000	6,000

Table 15.5 **General technical data**

Max. feed force F_{x_max} [N]	1,323
Max. speed [m/s]	5
Max. drive torque M_{a_max} [Nm]	33.1
Typical load capacity [1] [kg]	62.5
Single axis	HM060B

[1] With equal load distribution on both axes

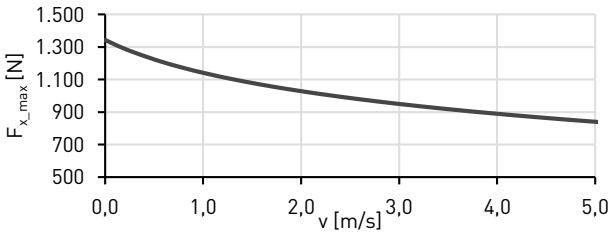


Fig. 15.3 **Max. feed force F_{x_max} as a function of axis speed v**

Table 15.6 **Mechanical properties**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Mass of the carriage [kg]	1,57	1,86	2,44	1,77	2,06	2,64
Mass at 0-stroke and centre distance L_D = 0 [2] [kg]	8,17	9,00	10,68	9,35	10,19	11,89
Mass per 1 m stroke [kg/m]	10.96			11.17		
Mass per 1 m centre distance L_D [kg/m]	10.26			10.26		
$J_{rot.}$ [1] at 0-stroke and centre distance L_D = 0 [kgcm²]	5.95			5.95		
$J_{rot.}$ [1] Per 1 m stroke centre distance [kgcm²/m]	6.63			6.63		
Idle torque at 0-stroke [Nm]	0.94			1.60		

[1] Rotational moment of inertia

[2] The values apply to axes with one carriage. For axes with 2 carriages, add the following: Mass of carriage + mass per 1 m stroke x (clearance between the carriages (in m) + carriage length L_C (in m))

Note: For further dimensions and data, see toothed belt axis HM060B on Page 28.

15.5 Dimensions and specifications of HD3

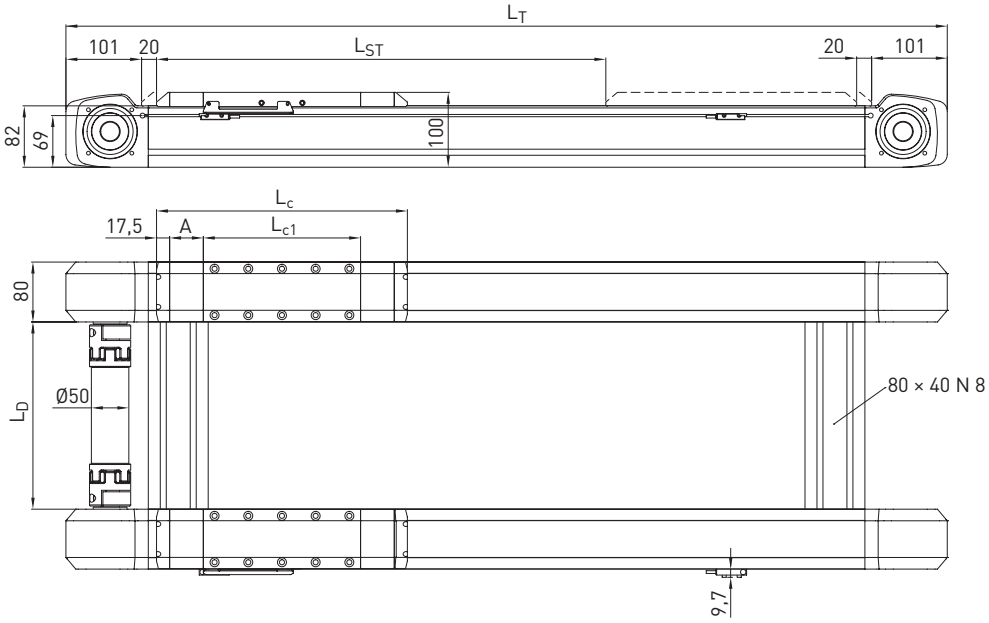


Table 15.7 **HD3 dimensions**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Carriage profile length L_c [mm]	210	300	390	210	300	390
Total carriage length L_c [mm]	245	335	425	335	425	515
Cover strip deflection A [mm]	–	–	–	45	45	45
Max. stroke length L_{ST} [mm]	5,633	5,543	5,453	5,543	5,453	5,363
Total length L_T [mm]	$L_T = L_{ST} + 487$	$L_T = L_{ST} + 577$	$L_T = L_{ST} + 667$	$L_T = L_{ST} + 577$	$L_T = L_{ST} + 667$	$L_T = L_{ST} + 757$
Centre distance L_D min. [mm]	200	200	200	200	200	200
Centre distance L_D max. [mm]	6,000	6,000	6,000	6,000	6,000	6,000

Table 15.8 **General technical data**

Max. feed force F_{x_max} [N]	1,880
Max. speed [m/s]	5
Max. drive torque M_{a_max} [Nm]	56.8
Typical load capacity [kg] 1)	150
Single axis	HM080B

1) With equal load distribution on both axes

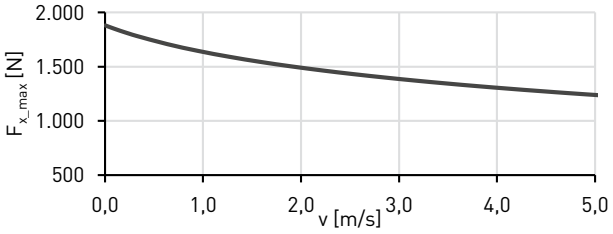


Fig. 15.4 **Max. feed force F_{x_max} as a function of axis speed v**

Table 15.9 **Mechanical properties**

	Variant without cover			Variant with cover		
Sledge type	S	M	L	S	M	L
Mass of the carriage [kg]	3.22	4.03	4.85	3.62	4.44	5.25
Mass at 0-stroke and centre distance L_D = 0 2) [kg]	16.28	18.88	21.49	18.79	21.42	24.05
Mass per 1 m stroke [kg/m]	19.88			20.15		
Mass per 1 m centre distance L_D [kg/m]	10.26			10.26		
$J_{rot.}$ 1) at 0-stroke and centre distance L_D = 0 [kgcm²]	13.37			13.37		
$J_{rot.}$ 1) Per 1 m stroke centre distance [kgcm²/m]	6.63			6.63		
Idle torque at 0-stroke [Nm]	2.40			2.60		

1) Rotational moment of inertia

2) The values apply to axes with one carriage. For axes with 2 carriages. add the following: Mass of carriage + mass per 1 m stroke x (clearance between the carriages (in m) + carriage length L_C (in m))

Note: For further dimensions and data, see toothed belt axis HM080B on Page 30.

15.6 Dimensions and specifications of HD4

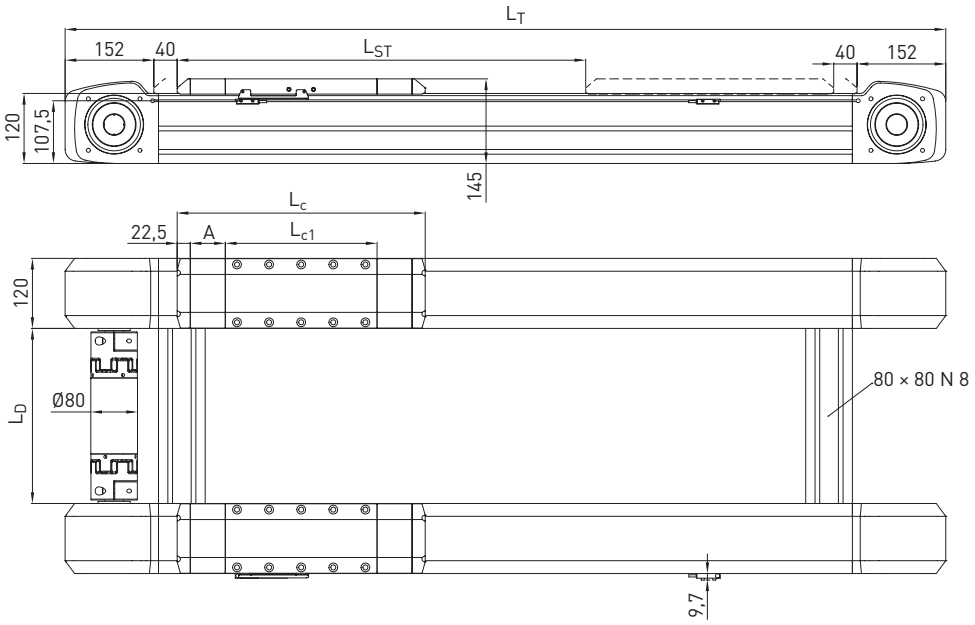


Table 15.10 **HD4 dimensions**

	Variant without cover			Variant with cover		
Sledge type	S	M	L/H	S	M	L/H
Carriage profile length L_c [mm]	260	370	535	260	370	535
Total carriage length L_c [mm]	305	415	580	425	535	700
Cover strip deflection A [mm]	–	–	–	60	60	60
Max. stroke length L_{ST} [mm]	5,531	5,421	5,256	5,411	5,301	5,136
Total length L_T [mm]	$L_T = L_{ST} + 689$	$L_T = L_{ST} + 799$	$L_T = L_{ST} + 964$	$L_T = L_{ST} + 809$	$L_T = L_{ST} + 919$	$L_T = L_{ST} + 1,084$
Centre distance L_D min. [mm]	260	260	260	260	260	260
Centre distance L_D max. [mm]	6,000	6,000	6,000	6,000	6,000	6,000

Table 15.11 **General technical data**

Sledge type	**S/M/L**	**H**
Max. feed force F_{x_max} [N]	4,385	6,000
Max. speed [m/s]	5	5
Max. drive torque M_{a_max} [Nm]	201	275
Typical load capacity [kg] 1)	300	400
Single axis	HM120B	HM120B

1) With equal load distribution on both axes

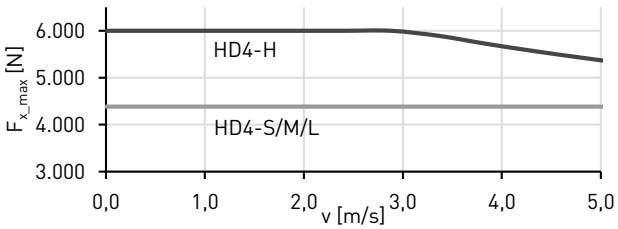


Fig. 15.5 **Max. feed force F_{x_max} as a function of axis speed v**

Table 15.12 **Mechanical properties**

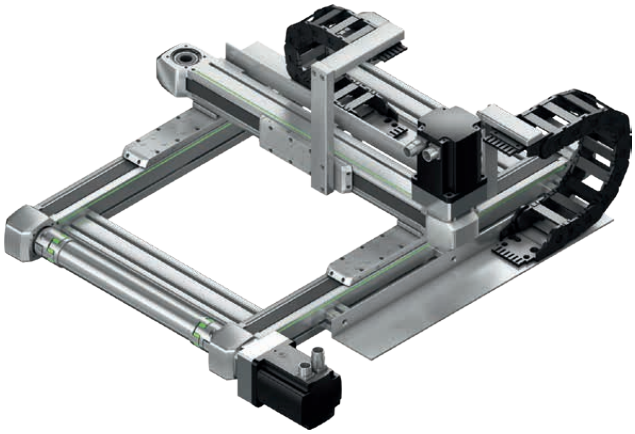
	Variant without cover				Variant with cover			
Sledge type	S	M	L	H	S	M	L/H	H
Mass of the carriage [kg]	10.27	12.52	15.89	17.44	11.21	13.46	16.84	18.39
Mass at 0-stroke and centre distance L_D = 0 2) [kg]	47.46	54.34	64.65	66.21	53.93	60.85	71.22	72.77
Mass per 1 m stroke [kg/m]	42.06				42.41			
Mass per 1 m centre distance L_D [kg/m]	17.69				17.69			
$J_{rot.}$ 1) at 0-stroke and centre distance L_D = 0 [kgcm²]	103.05				99.05			
$J_{rot.}$ 1) Per 1 m stroke centre distance [kgcm²/m]	44.93				44.93			
Idle torque at 0-stroke [Nm]	6.20				7.00			

1) Rotational moment of inertia

2) The values apply to axes with one carriage. For axes with 2 carriages. add the following: Mass of carriage + mass per 1 m stroke x (clearance between the carriages (in m) + carriage length L_C (in m))

Note: For further dimensions and data, see toothed belt axis HM120B on Page 32.

16. Two-axis systems HS2



16.1 Properties of the double axis systems HS2

HIWIN two-axis systems HS2 are flexible units for positioning along the X- and Y-axes. They consist of a HIWIN double axis HD in the X direction and a HIWIN toothed belt axis HM-B or HT-B in the Y direction. HIWIN two-axis systems HS2 are especially suitable for two-dimensional or flat movements in one plane and form the basis for three-axis systems.

Energy chain

Generously dimensioned energy chains provide space for safely carrying the supply lines. The energy chains are integrated into the complete system in a particularly compact and space-saving way.

Maximum axis speed in X direction

The maximum axis speed in the X direction depends on the size and the centre distance, which in the two-axis system HS2 results from the selected stroke in the Y direction. The dependence of the maximum axis speed on stroke length Y can be determined from the diagram in Fig. 16.1.

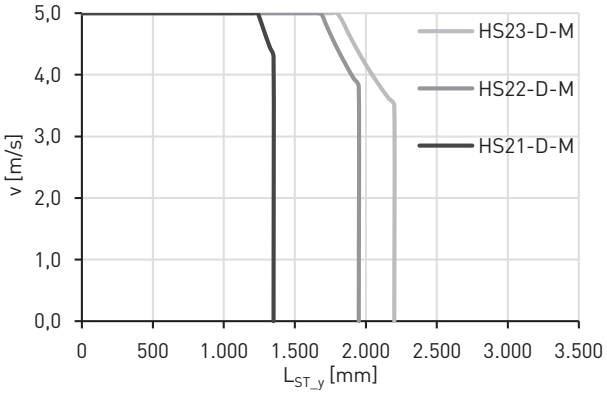


Fig. 16.1 **Max. axis speed v in X direction, as a function of stroke L_{ST} in Y direction**

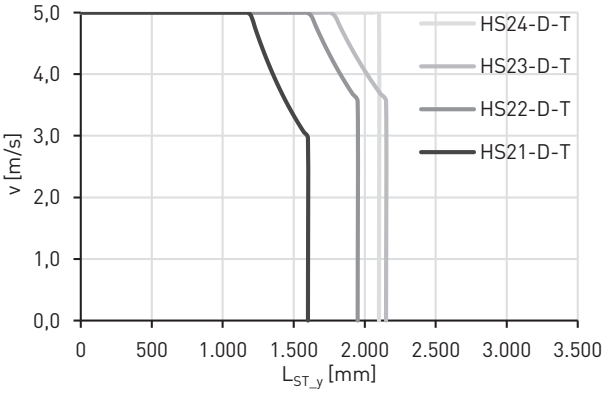


Fig. 16.2 **Max. axis speed v in X direction, as a function of stroke L_{ST} in Y direction**

16.2 Order code for two-axis systems HS2

HS	2	2	X	D2	Y	M2 –

HIWIN axis system

Axis system type:
2: Two-axis system

Size (profile width of the X-axis):
1: 40 mm
2: 60 mm
3: 80 mm
4: 120 mm

Axis 1 identifier:
X

Type and size of axis 2:
M1: HM040B
M2: HM060B
M3: HM080B
T1: HT100B
T2: HT150B
T3: HT200B
T4: HT250B

Axis 2 identifier:
Y

Type and size of axis 1:
D1: Double axis HD1
D2: Double axis HD2
D3: Double axis HD3
D4: Double axis HD4

Continuation, order code for two-axis systems HS2

1000 –	0800	A	2	R	BR04	G0803 –	BE04	G0608

Stroke axis 1 [mm]

Stroke axis 2 [mm]

Axis limit switch:
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector

Energy chain:
N: Without
1: Energy chain on X-axis
2: Energy chain on X- and Y-axis

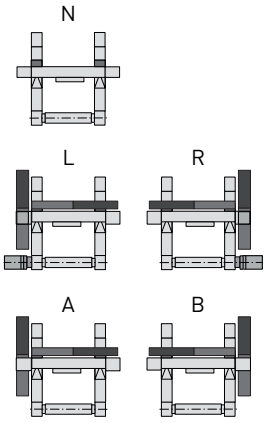
Gearbox, axis 2 [3]

Motor flange type, axis 2 [4]

Gearbox, axis 1 [3]

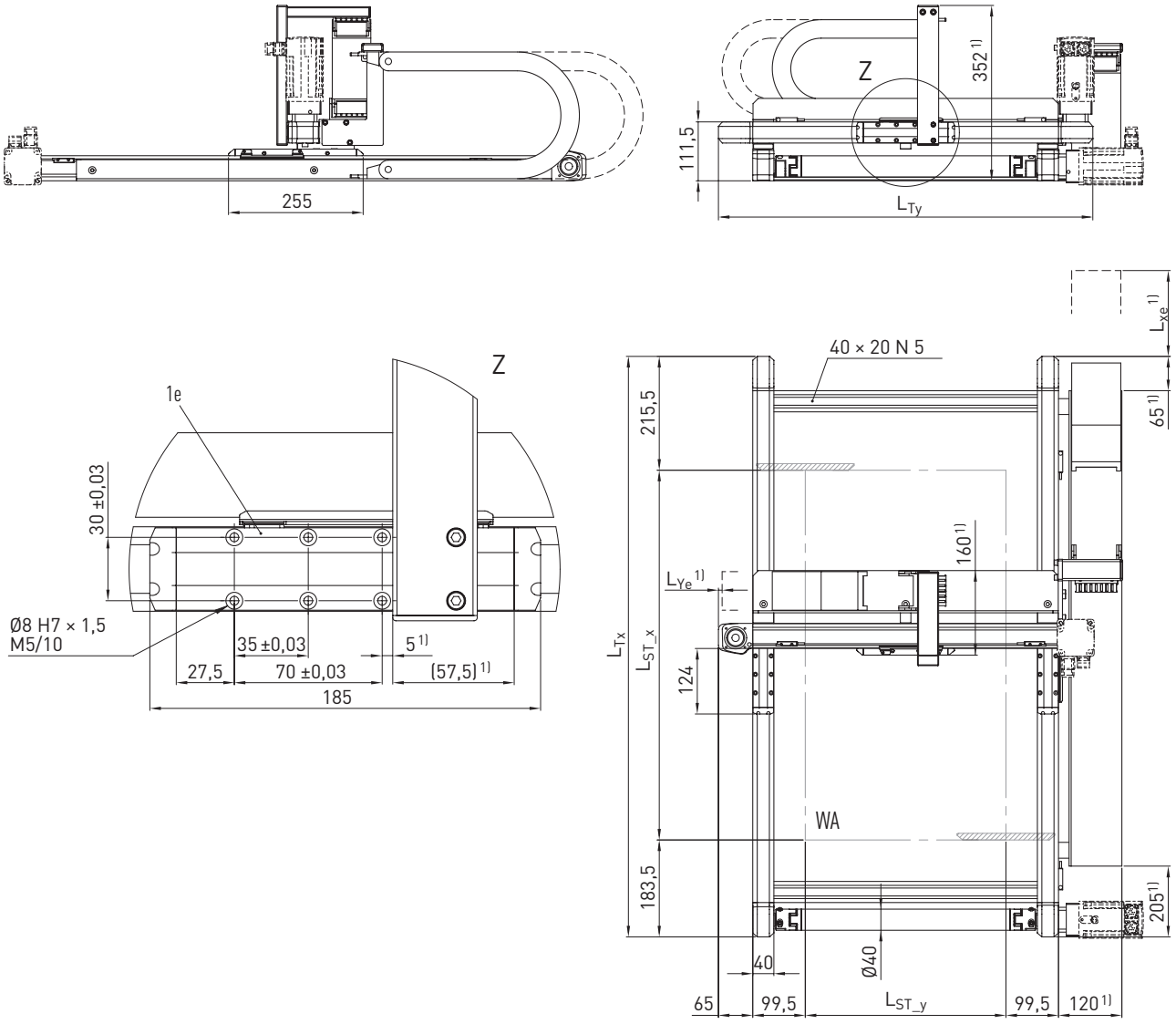
Motor flange type, axis 1 [2]

Drive interface [1]**:**
N: Without drive adapter/ without energy chain
L: Drive adapter left
R: Drive adapter right
A: Without drive adapter, Drive interface left
B: Without drive adapter, Drive interface right



[1] If no drive interface is selected, the order code ends after this digit.
[2] You can find all flange types in Table 22.1 from page 160. If no flange type is selected, the "Gearbox, axis 1" position is omitted.
[3] You can finding matching gearboxes in section 22.1.5.5 from page 170.
[4] All flange types for linear modules HM-B can be found in Table 22.1 from page 160, for linear tables HT-B in Table 22.2 from page 161
If no flange type is selected, the order code ends after this digit.

16.3 Dimensions and specifications of HS21-D-M



1) Omitted for variant without energy chain

L_{ST} Stroke
WA Working space
1e Interface application

Table 16.1 **HS21-D-M dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 399$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 329$

Table 16.2 **Energy chain**		
	X-axis	**Y-axis**
Inner cross section W × H [mm]	77 × 25	57 × 25
Bending radius [mm]	100	75
End position at electrical zero F [mm]	$L_{Xe} = 195$	$L_{Ye} = 4.5$
End position at mechanical zero [mm]	$L_{Xm} = 200$	$L_{Ye} = 9.5$

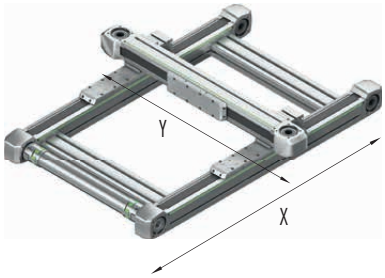


Table 16.3 **General technical data**

	X-axis	Y-axis
Axis type	HD1N	HM040B-N
Sledge type	L	M
Max. feed force F_{x_max} [N]	450	300
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	7.9	5.3
Max. stroke [1)2)] [mm]	3,000	1,350
Typical load capacity [kg]	5	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD1 can be found in section 15.3 on page 106
Dimensions and specifications of single axis HM040B can be found in section 5.3 on page 26

Table 16.4 **Drive**

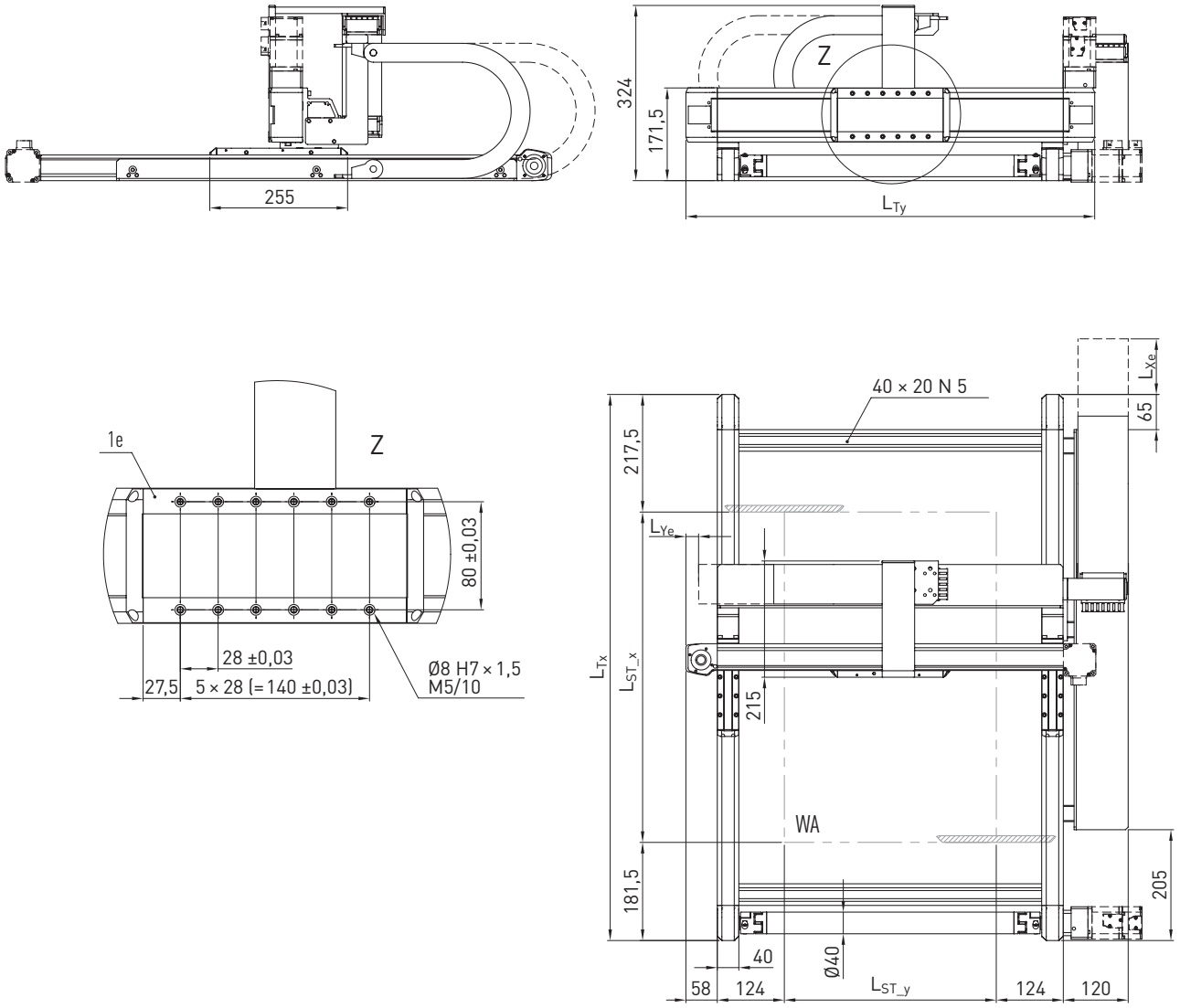
	X-axis	Y-axis
Toothed belt drive element	B15HTD3	
Feed constant [mm/U]	111	
Toothed belt effective diameter [mm]	35.33	

Table 16.5 **Mechanical properties**

Moving mass Y-axis [kg]	0.43
Moving mass X-axis at 0-stroke Y-axis [kg]	3.26
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	3.10
Mass of total system at 0-stroke X- and Y-axis [kg]	6.92
Mass of total system per 1 m stroke X-axis [kg/m]	6.20
Mass of total system per 1 m stroke Y-axis [kg/m]	5.86

Note: All values without energy chain and without drive

16.4 Dimensions and specifications of HS21-D-T



L_{ST} Stroke
WA Working space
1e Interface application

Table 16.6 **HS21-D-T dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 399$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 364$

Table 16.7 **Energy chain**

	X-axis	**Y-axis**
Inner cross section W × H [mm]	77 × 25	57 × 25
Bending radius [mm]	100	75
End position at electrical zero F [mm]	L_{Xe} = 195	L_{Ye} = -23.5
End position at mechanical zero [mm]	L_{Xm} = 200	L_{Ye} = -16.0

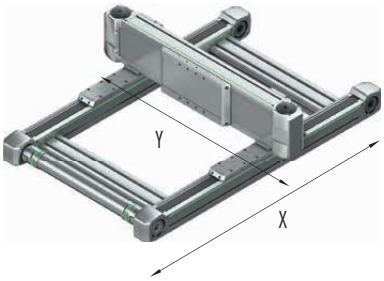


Table 16.8 **General technical data**

	X-axis	Y-axis
Axis type	HD1N	HT100B-C
Sledge type	L	S
Max. feed force F_{x_max} [N]	450	813
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	7.9	13.6
Max. stroke [1)2)] [mm]	3,000	1,600
Typical load capacity [kg]	20	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD1 can be found in section 15.3 on page 106
Dimensions and specifications of linear table HT100B can be found in section 7.3 on page 46

Table 16.9 **Drive**

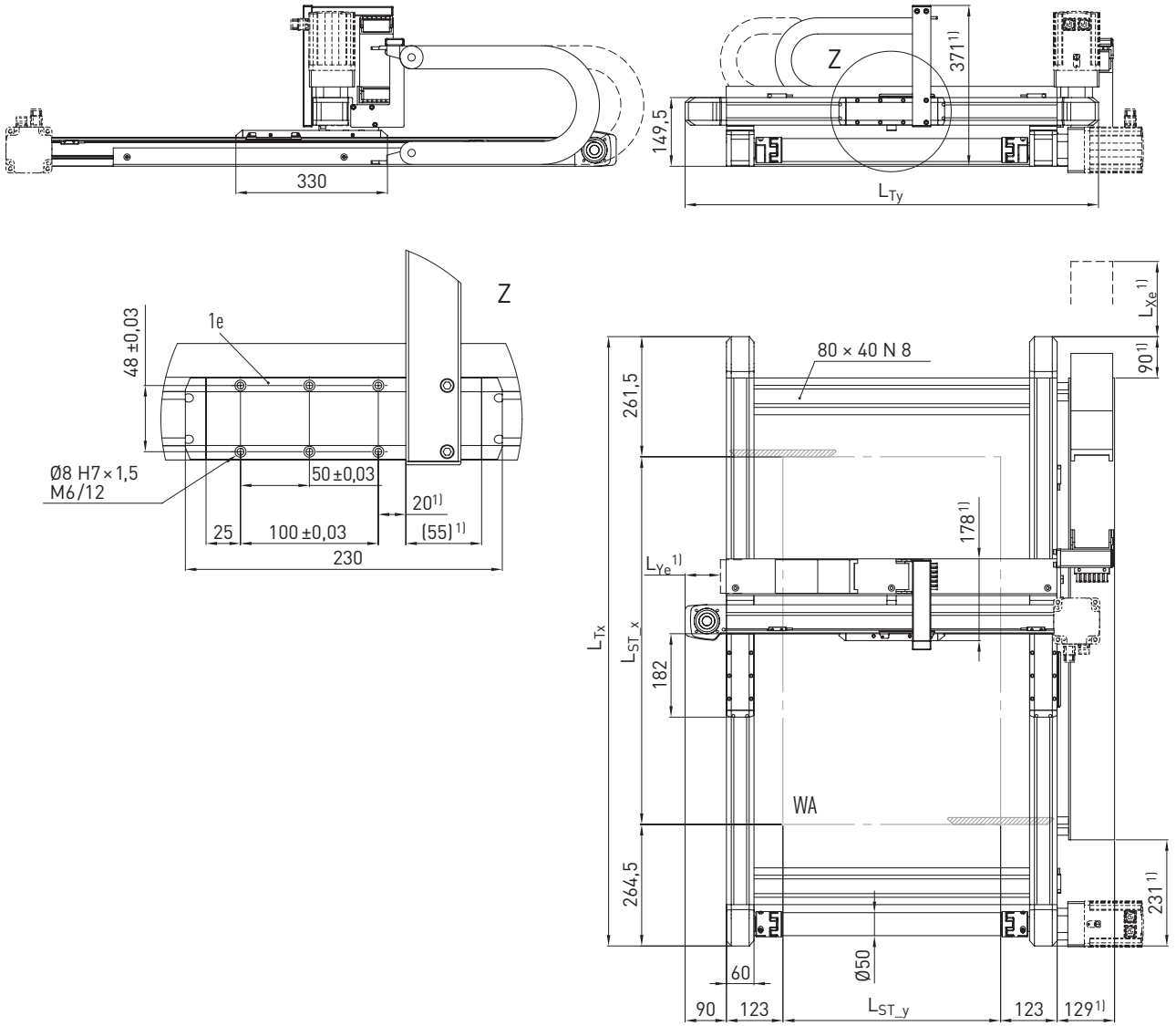
	X-axis	Y-axis
Toothed belt drive element	B15HTD3	B25HTD5
Feed constant [mm/U]	111	105
Toothed belt effective diameter [mm]	35.33	33.42

Table 16.10 **Mechanical properties**

Moving mass Y-axis [kg]	1.59
Moving mass X-axis at 0-stroke Y-axis [kg]	6.52
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	6.65
Mass of total system at 0-stroke X- and Y-axis [kg]	10.31
Mass of total system per 1 m stroke X-axis [kg/m]	6.20
Mass of total system per 1 m stroke Y-axis [kg/m]	9.41

Note: All values without energy chain and without drive

16.5 Dimensions and specifications of HS22-D-M



1) Omitted for variant without energy chain

L_{ST} Stroke
WA Working space
1e Interface application

Table 16.11 **HS22-D-M dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 526$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 426$

Table 16.12 **Energy chain**		
	X-axis	**Y-axis**
Inner cross section W × H [mm]	75 × 35	57 × 25
Bending radius [mm]	100	75
End position at electrical zero F [mm]	L_{Xe} = 200	L_{Ye} = -45.5
End position at mechanical zero [mm]	L_{Xm} = 210	L_{Ye} = -38.0

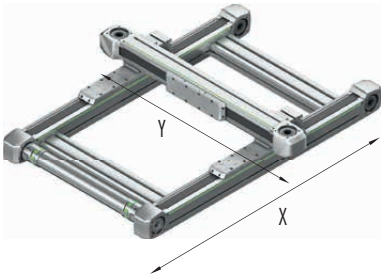


Table 16.13 **General technical data**

	X-axis	Y-axis
Axis type	HD2N	HM060B-N
Sledge type	L	M
Max. feed force F_{x_max} [N]	1,323	882
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	33.1	22.1
Max. stroke [1)2)] [mm]	5.554	1,950
Typical load capacity [kg]	12	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD2 can be found in section 15.4 on page 107
Dimensions and specifications of single axes HM060B can be found in section 5.4 on page 28

Table 16.14 **Drive**

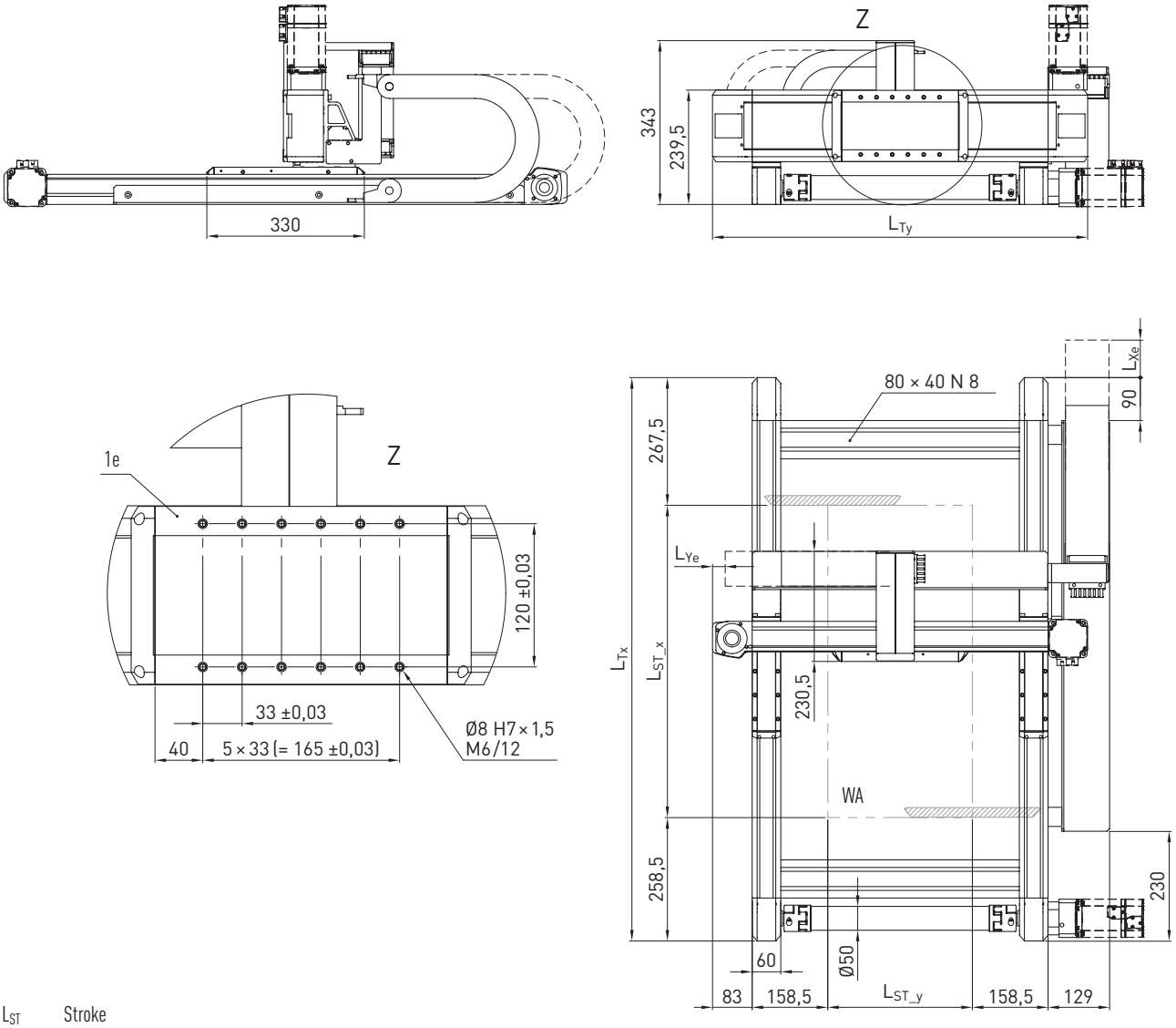
	X-axis	Y-axis
Toothed belt drive element	B25HTD5	
Feed constant [mm/U]	155	
Toothed belt effective diameter [mm]	49.34	

Table 16.15 **Mechanical properties**

Moving mass Y-axis [kg]	1.00
Moving mass X-axis at 0-stroke Y-axis [kg]	7.47
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	5.48
Mass of total system at 0-stroke X- and Y-axis [kg]	16.84
Mass of total system per 1 m stroke X-axis [kg/m]	10.96
Mass of total system per 1 m stroke Y-axis [kg/m]	15.74

Note: All values without energy chain and without drive

16.6 Dimensions and specifications of HS22-D-T



L_{ST} Stroke
WA Working space
1e Interface application

Table 16.16 **HS22-D-T dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 526$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 483$

Table 16.17 **Energy chain**

	X-axis	Y-axis
Inner cross section W × H [mm]	75 × 35	57 × 25
Bending radius [mm]	100	75
End position at electrical zero F [mm]	L_{Xe} = 200	L_{Ye} = -46.5
End position at mechanical zero [mm]	L_{Xm} = 210	L_{Ye} = -36.5

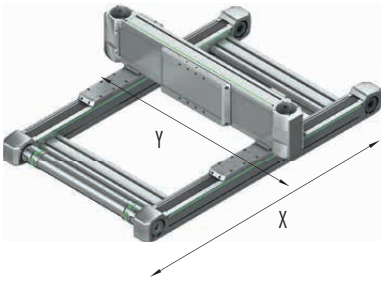


Table 16.18 **General technical data**

	X-axis	Y-axis
Axis type	HD2N	HT150B-C
Sledge type	L	S
Max. feed force F_{x_max} [N]	1,323	1,300
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	33.1	32.1
Max. stroke [1)2)] [mm]	5,554	1,950
Typical load capacity [kg]	40	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD2 can be found in section 15.4 on page 107
Dimensions and specifications of linear table HT150B can be found in section 7.4 on page 48

Table 16.19 **Drive**

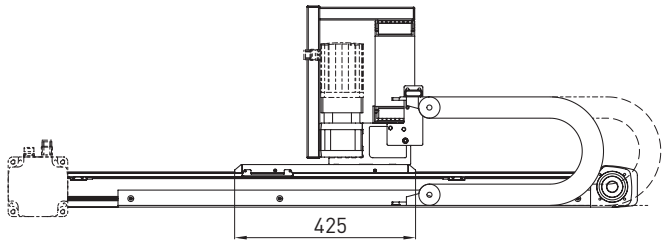
	X-axis	Y-axis
Toothed belt drive element	B25HTD5	B40HTD5
Feed constant [mm/U]	155	
Toothed belt effective diameter [mm]	49.34	

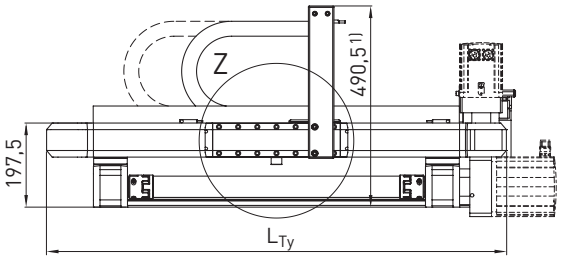
Table 16.20 **Mechanical properties**

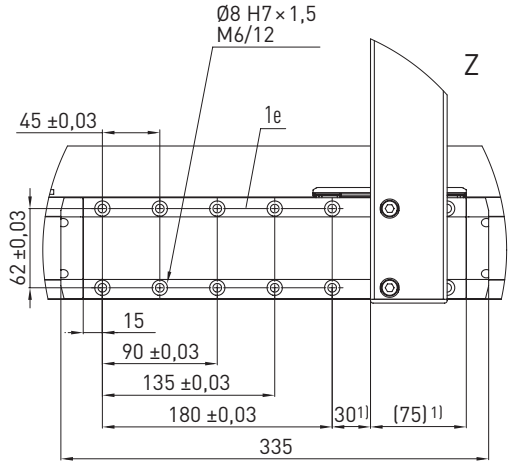
Moving mass Y-axis [kg]	3.08
Moving mass X-axis at 0-stroke Y-axis [kg]	14.41
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	11.13
Mass of total system at 0-stroke X- and Y-axis [kg]	24.51
Mass of total system per 1 m stroke X-axis [kg/m]	10.96
Mass of total system per 1 m stroke Y-axis [kg/m]	21.39

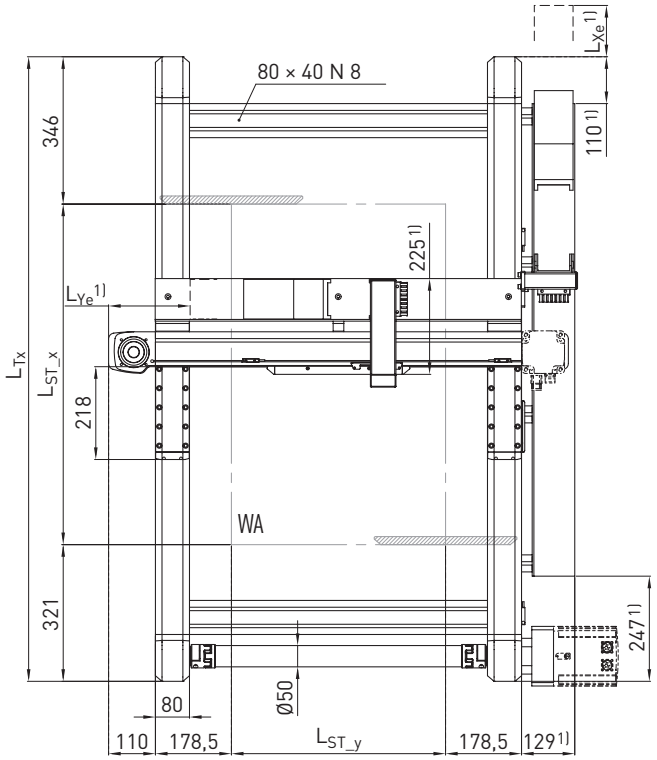
Note: All values without energy chain and without drive

16.7 Dimensions and specifications of HS23-D-M









1) Omitted for variant without energy chain

L_{ST} Stroke
WA Working space
1e Interface application

Table 16.21 **HS23-D-M dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 667$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 577$

Table 16.22 **Energy chain**		
	X-axis	**Y-axis**
Inner cross section W × H [mm]	75 × 35	77 × 25
Bending radius [mm]	100	100
End position at electrical zero F [mm]	$L_{Xe} = 160$	$L_{Ye} = -158.7$
End position at mechanical zero [mm]	$L_{Xm} = 170$	$L_{Ye} = -148.7$

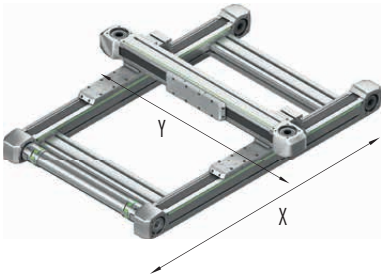


Table 16.23 **General technical data**

	X-axis	Y-axis
Axis type	HD3N	HM080B-N
Sledge type	L	M
Max. feed force F_{x_max} [N]	1,880	1,253
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	56.8	37.9
Max. stroke [1)2)] [mm]	5,453	2,200
Typical load capacity [kg]	30	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD3 can be found in section 15.5 on page 108
Dimensions and specifications of single axis HM080B can be found in section 5.5 on page 30

Table 16.24 **Drive**

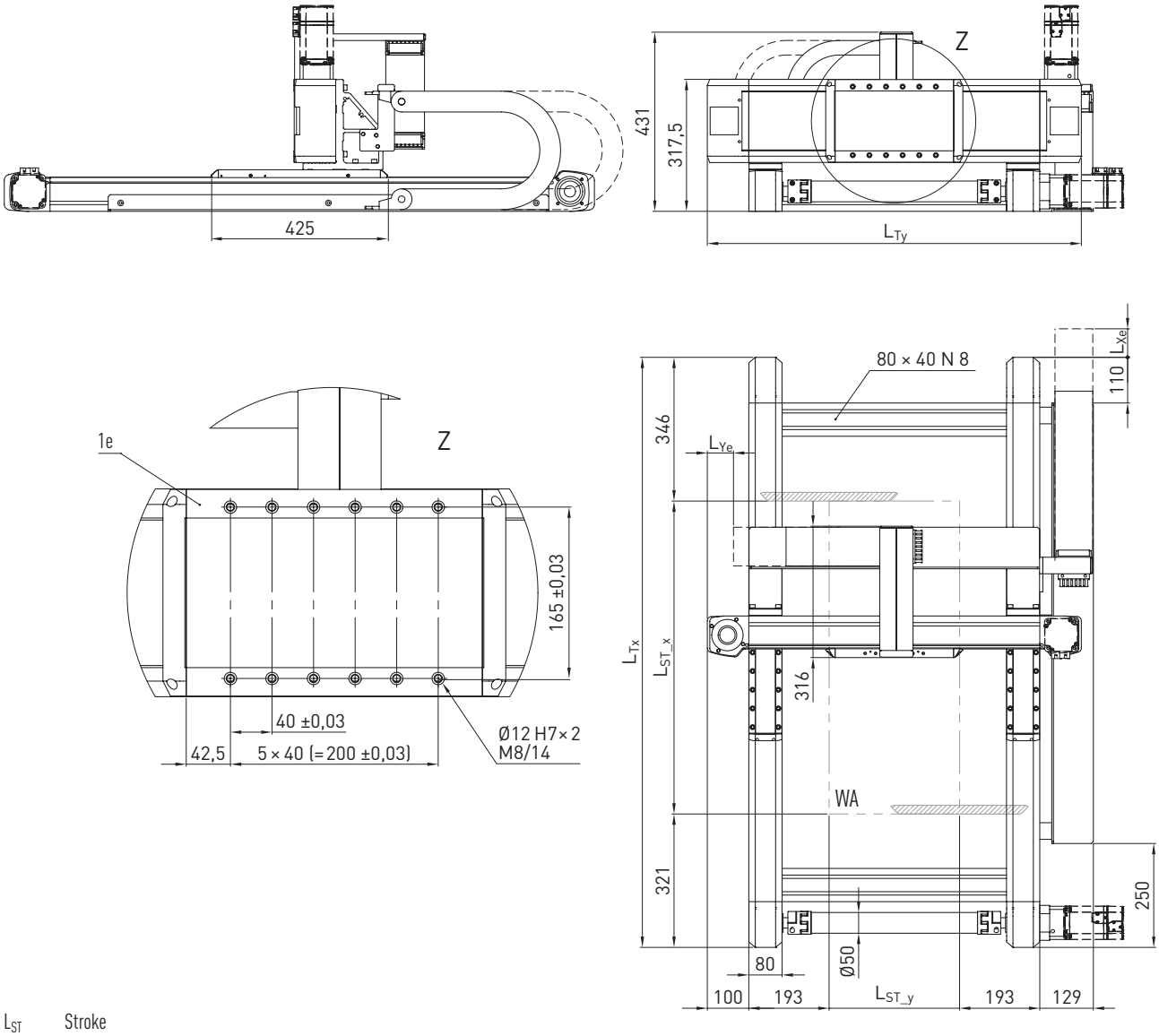
	X-axis	Y-axis
Toothed belt drive element	B35HTD5	
Feed constant [mm/U]	190	
Toothed belt effective diameter [mm]	60.48	

Table 16.25 **Mechanical properties**

Moving mass Y-axis [kg]	2.14
Moving mass X-axis at 0-stroke Y-axis [kg]	16.98
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	9.94
Mass of total system at 0-stroke X- and Y-axis [kg]	35.37
Mass of total system per 1 m stroke X-axis [kg/m]	19.88
Mass of total system per 1 m stroke Y-axis [kg/m]	20.20

Note: All values without energy chain and without drive

16.8 Dimensions and specifications of HS23-D-T



L_{ST} Stroke
WA Working space
1e Interface application

Table 16.26 **HS23-D-T dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 667$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 586$

Table 16.27 **Energy chain**		
	X-axis	**Y-axis**
Inner cross section W × H [mm]	75 × 35	77 × 25
Bending radius [mm]	100	100
End position at electrical zero F [mm]	L_{Xe} = 160	L_{Ye} = -53.0
End position at mechanical zero [mm]	L_{Xm} = 170	L_{Ye} = -38.0

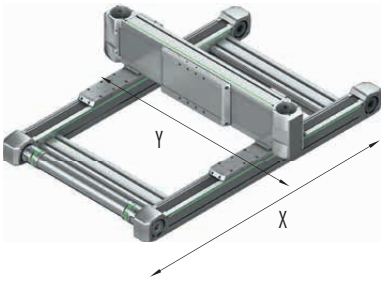


Table 16.28 **General technical data**

	X-axis	Y-axis
Axis type	HD3N	HT200B-C
Sledge type	L	S
Max. feed force F_{x_max} [N]	1,880	3,000
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	56.8	87.9
Max. stroke [1)2)] [mm]	5,453	2,150
Typical load capacity [kg]	80	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD3 can be found in section 15.5 on page 108
Dimensions and specifications of linear table HT200B can be found in section 7.5 on page 50

Table 16.29 **Drive**

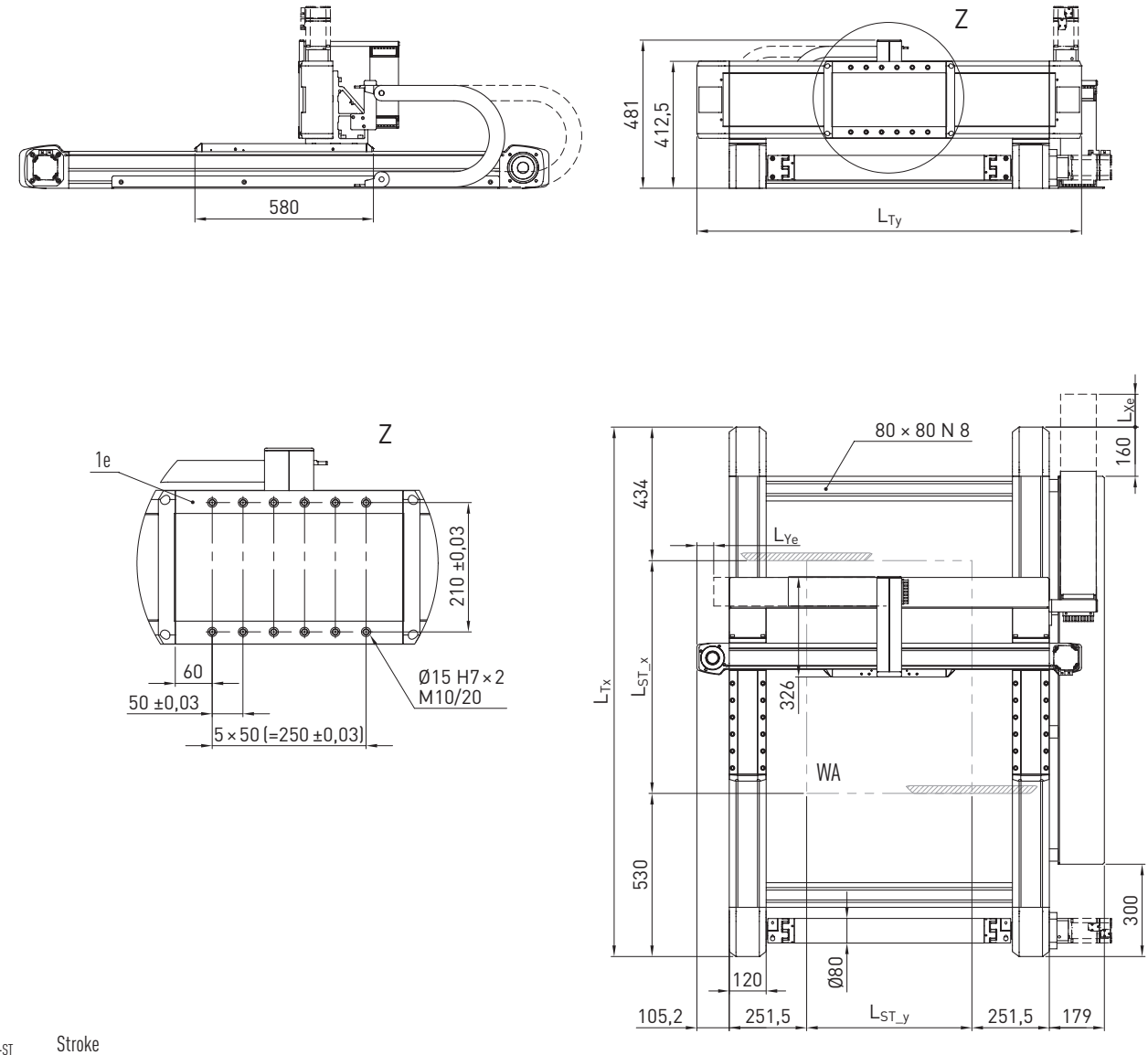
	X-axis	Y-axis
Toothed belt drive element	B35HTD5	B50HTD8
Feed constant [mm/U]	190	184
Toothed belt effective diameter [mm]	60.48	58.57

Table 16.30 **Mechanical properties**

Moving mass Y-axis [kg]	5.52
Moving mass X-axis at 0-stroke Y-axis [kg]	29.17
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	17.75
Mass of total system at 0-stroke X- and Y-axis [kg]	47.86
Mass of total system per 1 m stroke X-axis [kg/m]	19.88
Mass of total system per 1 m stroke Y-axis [kg/m]	28.00

Note: All values without energy chain and without drive

16.9 Dimensions and specifications of HS24-D-T



L_{ST} Stroke
WA Working space
1e Interface application

Table 16.31 **HS24-D-T dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 964$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 713$

Table 16.32 **Energy chain**		
	X-axis	**Y-axis**
Inner cross section W × H [mm]	100 × 35	77 × 25
Bending radius [mm]	125	100
End position at electrical zero F [mm]	L_{Xe} = 120	L_{Ye} = -116.5
End position at mechanical zero [mm]	L_{Xm} = 140	L_{Ye} = -96.5

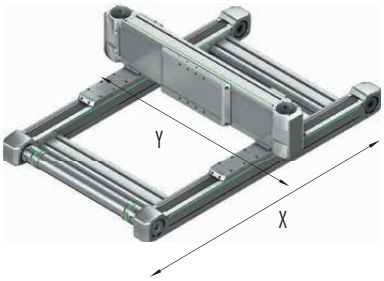


Table 16.33 **General technical data**

	X-axis	Y-axis
Axis type	HD4N	HT250B-C
Sledge type	L	S
Max. feed force F_{x_max} [N]	4,385	4,500
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	201	149
Max. stroke [1)2)] [mm]	5,256	2,100
Typical load capacity [kg]	130	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD4 can be found in section 15.6 on page 109
Dimensions and specifications of linear table HT250B can be found in section 7.6 on page 52

Table 16.34 **Drive**

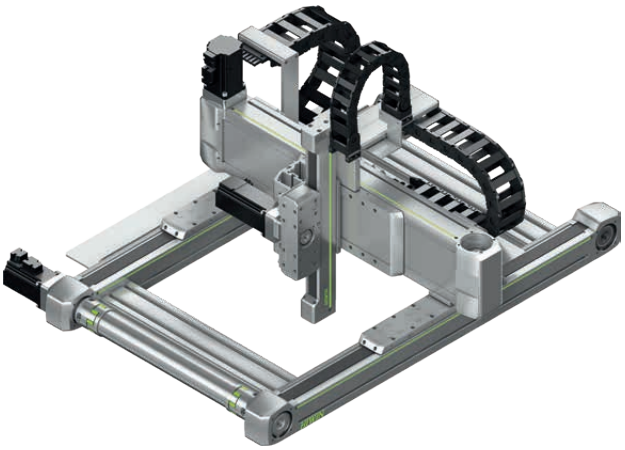
	X-axis	Y-axis
Toothed belt drive element	B60HTD8	B75HTD8
Feed constant [mm/U]	288	208
Toothed belt effective diameter [mm]	91.67	66.21

Table 16.35 **Mechanical properties**

Moving mass Y-axis [kg]	10.27
Moving mass X-axis at 0-stroke Y-axis [kg]	57.57
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	23.09
Mass of total system at 0-stroke X- and Y-axis [kg]	109.90
Mass of total system per 1 m stroke X-axis [kg/m]	42.06
Mass of total system per 1 m stroke Y-axis [kg/m]	40.78

Note: All values without energy chain and without drive

17. Two-axis systems HS3



17.1 Properties of three-axis systems HS3

HIWIN three-axis systems HS3 are flexible units for positioning along the X- Y- and Z-axis. They consist of a HIWIN double axis HD in the X direction, a HIWIN toothed belt axis HT-B in the Y direction and a HIWIN cantilever axis HC-B in the Z direction. HIWIN HS32 three-axis systems are particularly suitable for three-dimensional movements.

Energy chain

Generously dimensioned energy chains provide space for safely carrying the supply lines. The energy chains are integrated into the complete system in a particularly compact and space-saving way.

Maximum axis speed in X direction

The maximum axis speed in the X direction depends on the size and the centre distance, which in the three-axis system HS3 results from the selected stroke in the Y direction. The dependence of the maximum axis speed on stroke length Y can be determined from the diagram in Fig. 17.1.

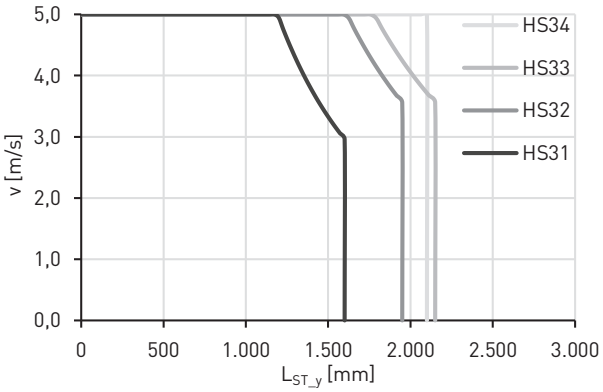


Fig. 17.1 **Max. axis speed v in X direction, as a function of stroke L_{ST} in Y direction**

17.2 Order code for three-axis systems HS3

HS	3	2	X	D2	Y	T2	Z	C1 –

HIWIN axis system

Axis system type:
3: Three-axis system

Size (profile width of the X-axis):
1: 40 mm
2: 60 mm
3: 80 mm
4: 120 mm

Axis 1 identifier:
X

Type and size of axis 1:
D1: Double axis HD1
D2: Double axis HD2
D3: Double axis HD3
D4: Double axis HD4

Type and size of axis 3:
C0: HC025B
C1: HC040B
C2: HC060B
C3: HC080B

Axis 3 identifier:
Z

Type and size of axis 2:
T1: HT100B
T2: HT150B
T3: HT200B
T4: HT250B

Axis 2 identifier:
Y

Continuation, order code for three-axis systems HS3

1000 –	0800 –	0600	A	3	R	BR04	G0803 –	BE04	G0608 –	B002	G0405

Stroke axis 1 [mm]

Stroke axis 2 [mm]

Stroke axis 3 [mm]

Axis limit switch:
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector

Energy chain:
N: Without
1: Energy chain on X-axis
2: Energy chain on X- and Y-axis
3: Energy chain on X-, Y- and Z-axis

Gearbox, axis 3 [3]

Motor flange type, axis 3 [5]

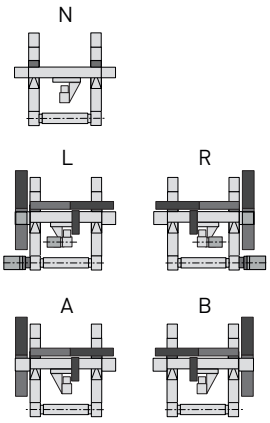
Gearbox, axis 2 [3]

Motor flange type, axis 2 [4]

Gearbox, axis 1 [3]

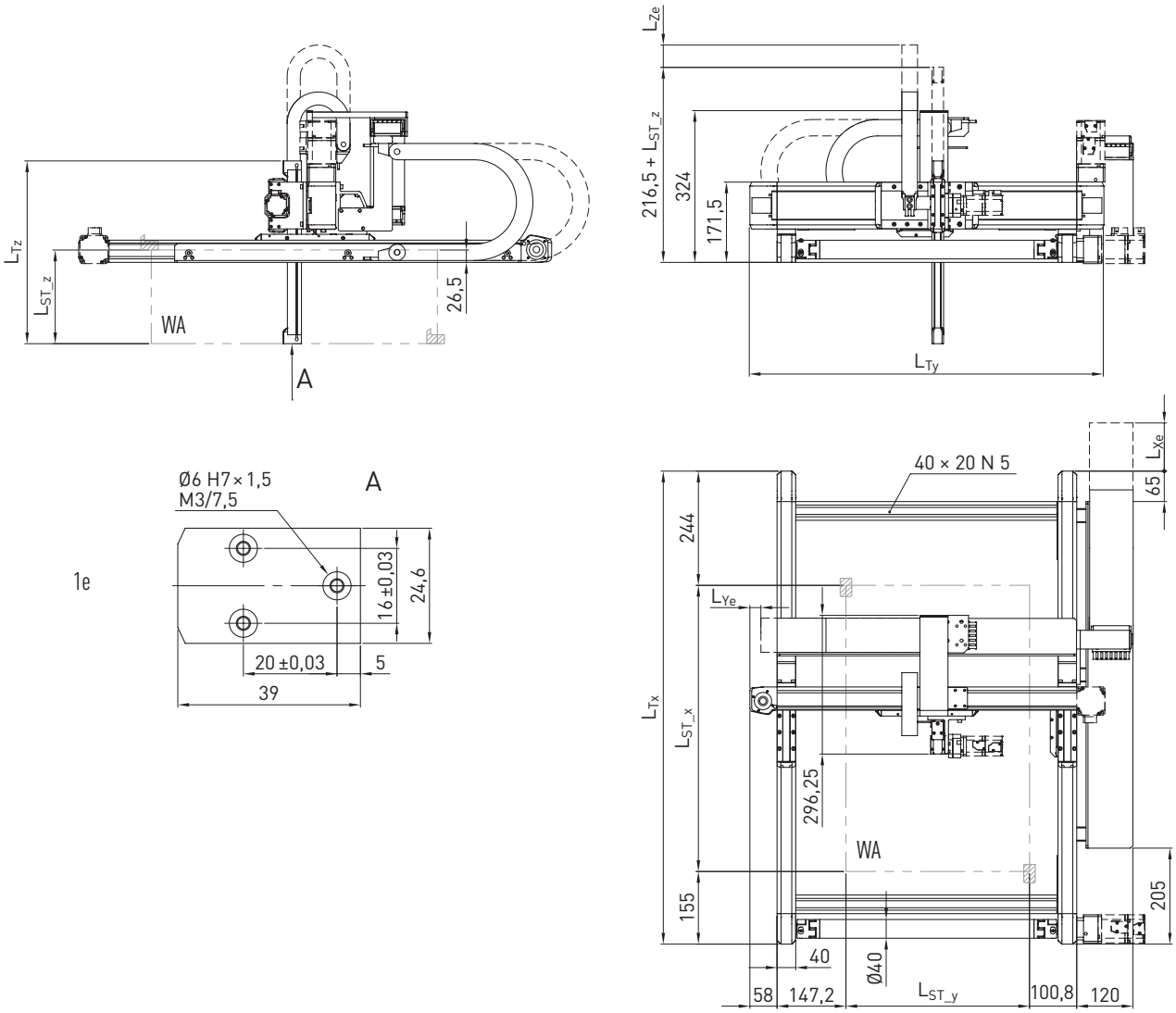
Motor flange type, axis 1 [2]

Drive interface [1]**:**
N: Without drive adapter/ Without energy chain
L: Drive adapter left
R: Drive adapter right
A: Without drive adapter, Drive interface left
B: Without drive adapter, Drive interface right



[1] If no drive interface is selected, the order code ends after this digit.
[2] You can find all flange types in Table 22.1 from page 160. If no flange type is selected, the "Gearbox, axis 1" position is omitted.
[3] You can finding matching gearboxes in section 22.1.5.5 from page 170.
[4] You can find all flange types in Table 22.2 from page 161. If no flange type is selected, the "Gearbox, axis 2" position is omitted.
[5] You can find all flange types in Table 22.4 from page 163. If no flange type is selected, the order code ends after this digit.

17.3 Dimensions and specifications of HS31-D-T-C



L_{ST} Stroke
WA Working space
1e Interface application

Table 17.1 **HS31-D-T-C dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 399$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 364$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 190$

Table 17.2 **Energy chain**			
	X-axis	**Y-axis**	**Z-axis**
Inner cross section W × H [mm]	77 × 25	57 × 25	20 × 21
Bending radius [mm]	100	75	48
End position at electrical zero F [mm]	$L_{Xe} = 195$	$L_{Ye} = -23.5$	$L_{Ze} = 151.0 - L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = 200$	$L_{Ye} = -16.0$	$L_{Zm} = 147.5 - L_{ST}/2$

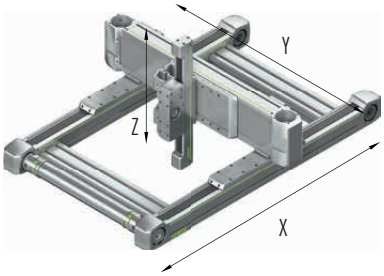


Table 17.3 **General technical data**

	X-axis	Y-axis	Z-axis
Axis type	HD1N	HT100B-C	HC025B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	450	813	241
Max. speed [m/s]	5		
Max. acceleration [m/s²]	30		
Max. drive torque M_{A_max} [Nm]	7.9	13.6	3.1
Max. stroke [1)2)] [mm]	3,000	1,600	300
Typical load capacity [kg]	2		

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD1 can be found in section 15.3 on page 106
Dimensions and specifications of single axis HT100B can be found in section 7.3 on page 46
Dimensions and specifications of single axis HC025B can be found in section 13.3 on page 88

Table 17.4 **Drive**

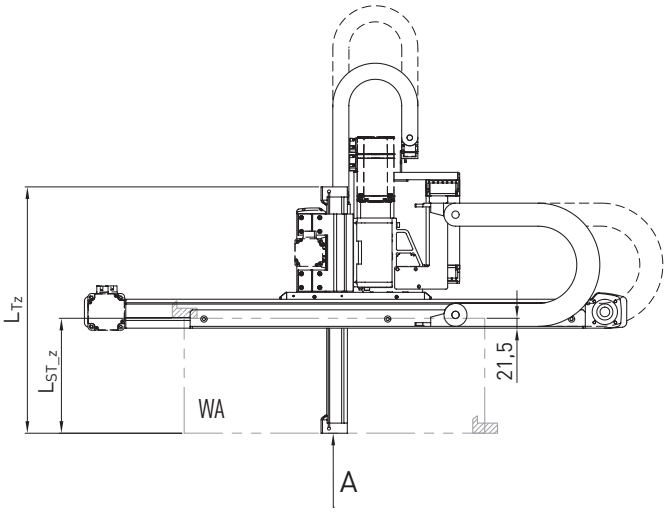
	X-axis	Y-axis	Z-axis
Toothed belt drive element	B15HTD3	B25HTD5	B12HTD3
Feed constant [mm/U]	111	105	81
Toothed belt effective diameter [mm]	35.33	33.42	25.78

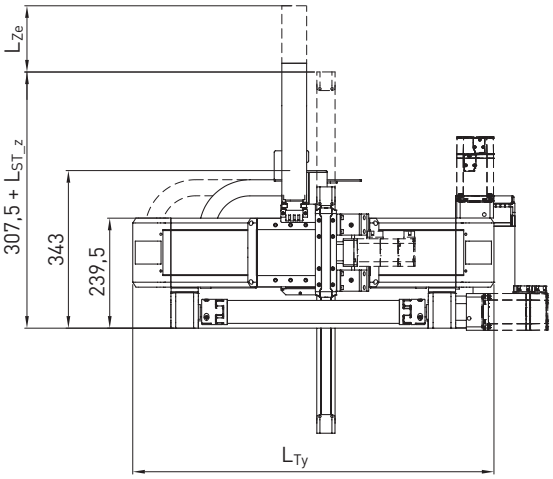
Table 17.5 **Mechanical properties**

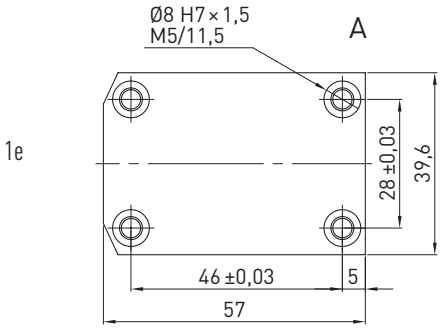
Moving mass Z-axis at 0-stroke [kg]	0.30
Moving mass Z-axis per 1 m stroke [kg/m]	1.27
Moving mass Y-axis at 0-stroke Z-axis [kg]	2.61
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	7.53
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	6.65
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	11.33
Mass of total system per 1 m stroke X-axis [kg/m]	6.20
Mass of total system per 1 m stroke Y-axis [kg/m]	9.41
Mass of total system per 1 m stroke Z-axis [kg/m]	1.27

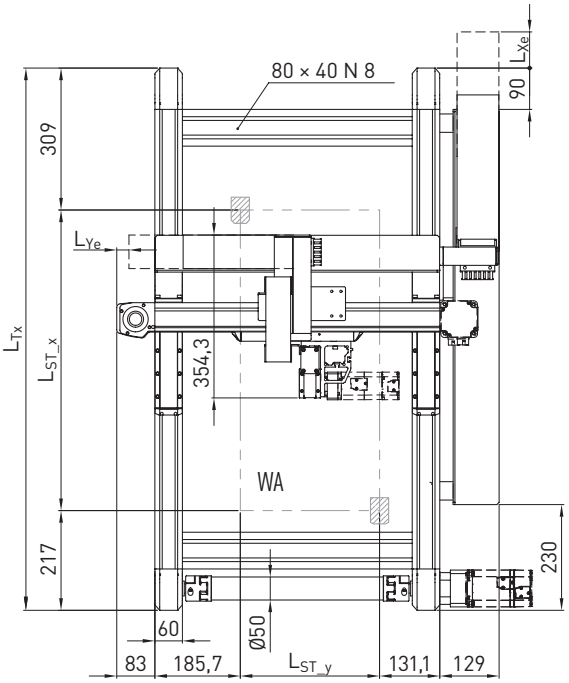
Note: All values without energy chain and without drive

17.4 Dimensions and specifications of HS32-D-T-C









L_{ST} Stroke
WA Working space
1e Interface application

Table 17.6 **HS32-D-T-C dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 526$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 483$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 286$

Table 17.7 **Energy chain**

	X-axis	Y-axis	Z-axis
Inner cross section W × H [mm]	75 × 35	57 × 25	38 × 25
Bending radius [mm]	100	75	75
End position at electrical zero F [mm]	L_{Xe} = 200	L_{Ye} = -46.5	L_{Ze} = 274.0 – L_{ST}/2
End position at mechanical zero [mm]	L_{Xm} = 210	L_{Ye} = -36.5	L_{Zm} = 269.0 – L_{ST}/2

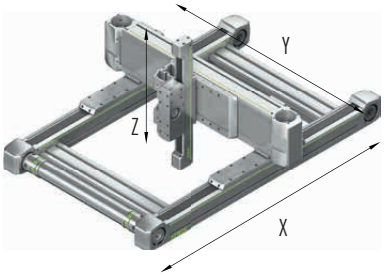


Table 17.8 **General technical data**

	X-axis	Y-axis	Z-axis
Axis type	HD2N	HT150B-C	HC040B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	1,343	1,300	404
Max. speed [m/s]	5		
Max. acceleration [m/s²]	30		
Max. drive torque M_{A_max} [Nm]	33.1	32.1	7.9
Max. stroke [1)2)] [mm]	5,554	1,950	500
Typical load capacity [kg]	8		

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD2 can be found in section 15.4 on page 107
Dimensions and specifications of single axis HT150B can be found in section 7.4 on page 48
Dimensions and specifications of single axes HC040B can be found in section 13.4 on page 90

Table 17.9 **Drive**

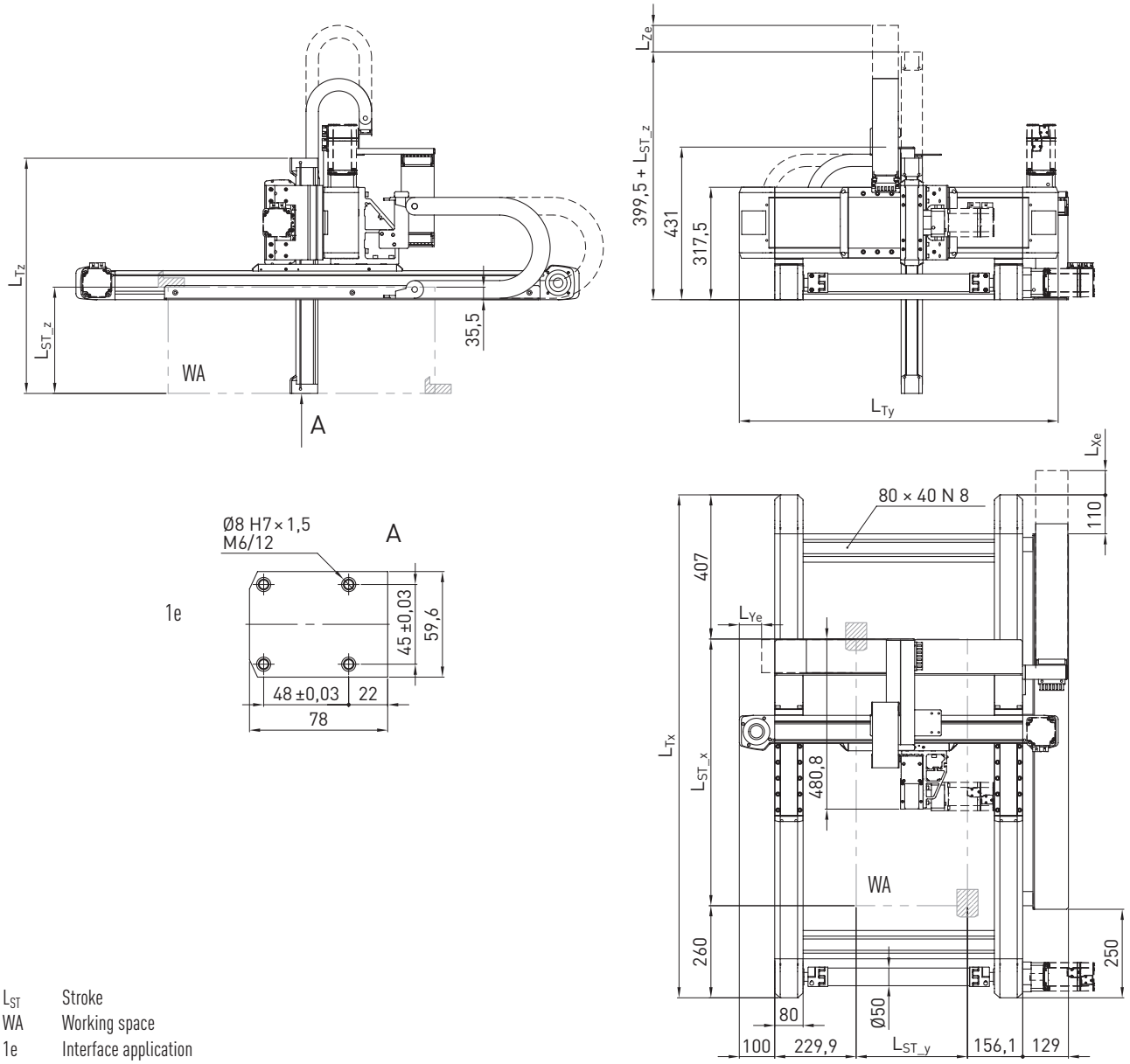
	X-axis	Y-axis	Z-axis
Toothed belt drive element	B25HTD5	B40HTD5	B20HDT3
Feed constant [mm/U]	155		123
Toothed belt effective diameter [mm]	49.34		39.15

Table 17.10 **Mechanical properties**

Moving mass Z-axis at 0-stroke [kg]	0.91
Moving mass Z-axis per 1 m stroke [kg/m]	2.75
Moving mass Y-axis at 0-stroke Z-axis [kg]	6.74
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	18.07
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	11.13
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	28.18
Mass of total system per 1 m stroke X-axis [kg/m]	10.96
Mass of total system per 1 m stroke Y-axis [kg/m]	21.39
Mass of total system per 1 m stroke Z-axis [kg/m]	2.75

Note: All values without energy chain and without drive

17.5 Dimensions and specifications of HS33-D-T-C



L_{ST} Stroke
WA Working space
1e Interface application

Table 17.11 **HS33-D-T-C dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 667$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 586$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 364$

Table 17.12 **Energy chain**			
	X-axis	**Y-axis**	**Z-axis**
Inner cross section W × H [mm]	75 × 35	77 × 25	57 × 25
Bending radius [mm]	100	100	75
End position at electrical zero F [mm]	$L_{Xe} = 160$	$L_{Ye} = -53.0$	$L_{Ze} = 282.5 – L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = 170$	$L_{Ye} = -38.0$	$L_{Zm} = 275.0 – L_{ST}/2$

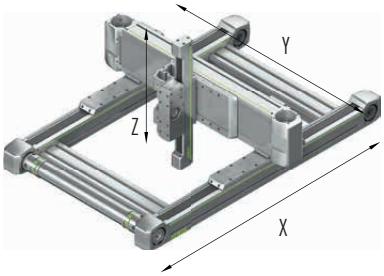


Table 17.13 **General technical data**

	X-axis	Y-axis	Z-axis
Axis type	HD3N	HT200B-C	HC060B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	1,880	3,000	997
Max. speed [m/s]	5		
Max. acceleration [m/s²]	30		
Max. drive torque M_{A_max} [Nm]	56.8	87.9	27
Max. stroke [1)2)] [mm]	5,453	2,150	800
Typical load capacity [kg]	16		

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD3 can be found in section 15.5 on page 108
Dimensions and specifications of single axis HT200B can be found in section 7.5 on page 50
Dimensions and specifications of single axes HC060B can be found in section 13.5 on page 92

Table 17.14 **Drive**

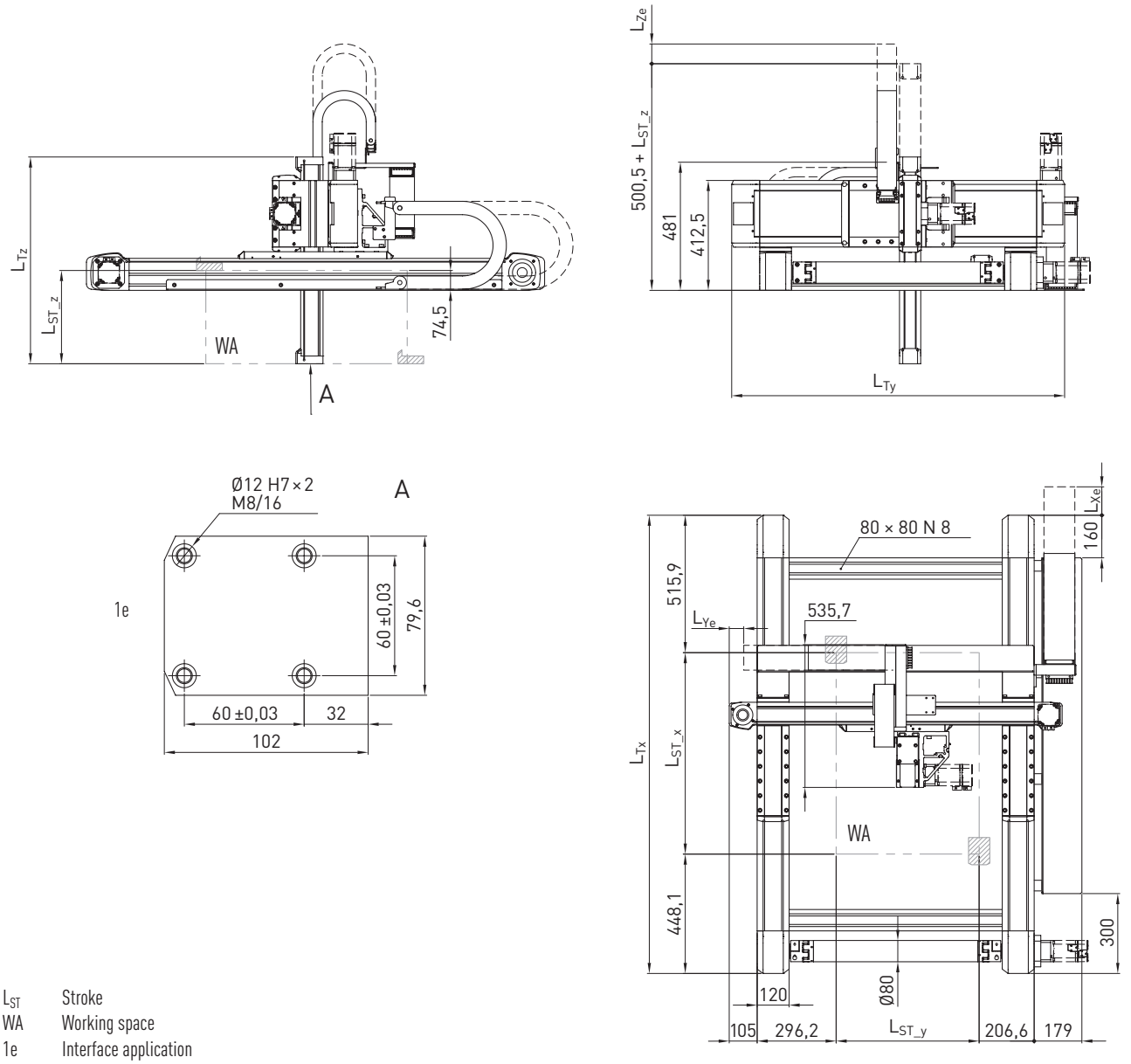
	X-axis	Y-axis	Z-axis
Toothed belt drive element	B35HTD5	B50HTD8	B30HTD5
Feed constant [mm/U]	190	184	170
Toothed belt effective diameter [mm]	60.48	58.57	54.11

Table 17.15 **Mechanical properties**

Moving mass Z-axis at 0-stroke [kg]	2.23
Moving mass Z-axis per 1 m stroke [kg/m]	5.18
Moving mass Y-axis at 0-stroke Z-axis [kg]	13.12
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	36.77
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	17.75
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	55.46
Mass of total system per 1 m stroke X-axis [kg/m]	19.88
Mass of total system per 1 m stroke Y-axis [kg/m]	28.00
Mass of total system per 1 m stroke Z-axis [kg/m]	5.18

Note: All values without energy chain and without drive

17.6 Dimensions and specifications of HS34-D-T-C



L_{ST} Stroke
WA Working space
1e Interface application

Table 17.16 **HS34-D-T-C dimensions**

Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 964$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST\_y} + 713$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 426$

Table 17.17 **Energy chain**

	X-axis	Y-axis	Z-axis
Inner cross section W × H [mm]	100 × 35	77 × 25	57 × 25
Bending radius [mm]	125	100	100
End position at electrical zero F [mm]	L_{Xe} = 120	L_{Ye} = -116.5	L_{Ze} = 259.0 – L_{ST}/2
End position at mechanical zero [mm]	L_{Xm} = 140	L_{Ye} = -96.5	L_{Zm} = 249.0 – L_{ST}/2

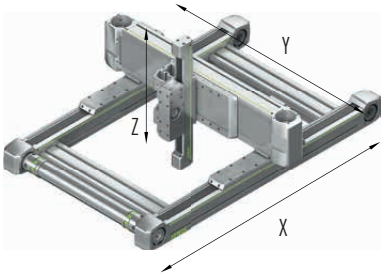


Table 17.18 **General technical data**

	X-axis	Y-axis	Z-axis
Axis type	HD4N	HT250B-C	HC080B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	4,385	4,500	1,330
Max. speed [m/s]	5		
Max. acceleration [m/s²]	30		
Max. drive torque M_{A_max} [Nm]	201	149	42.3
Max. stroke [1)2)] [mm]	5,256	2,100	1,200
Typical load capacity [kg]	30		

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of double axis HD4 can be found in section 15.6 on page 109
Dimensions and specifications of single axis HT250B can be found in section 7.6 on page 52
Dimensions and specifications of single axes HC080B can be found in section 13.6 on page 94

Table 17.19 **Drive**

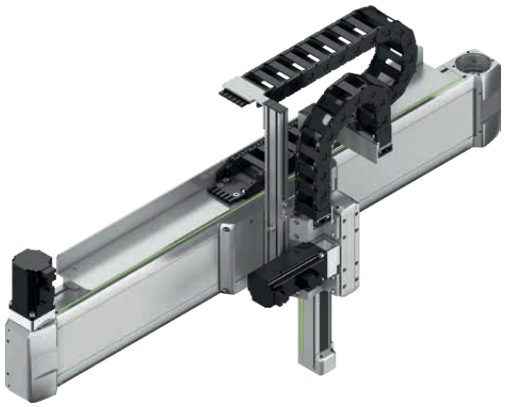
	X-axis	Y-axis	Z-axis
Toothed belt drive element	B60HTD8	B75HTD8	B40HTD5
Feed constant [mm/U]	288	208	200
Toothed belt effective diameter [mm]	91.67	66.21	63.66

Table 17.20 **Mechanical properties**

Moving mass Z-axis at 0-stroke [kg]	4.35
Moving mass Z-axis per 1 m stroke [kg/m]	9.01
Moving mass Y-axis at 0-stroke Z-axis [kg]	26.20
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	73.50
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	23.09
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	125.83
Mass of total system per 1 m stroke X-axis [kg/m]	42.06
Mass of total system per 1 m stroke Y-axis [kg/m]	40.78
Mass of total system per 1 m stroke Z-axis [kg/m]	9.01

Note: All values without energy chain and without drive

18. Linear gantries HSL



18.1 Properties of the linear gantries HS3

HIWIN linear gantries HSL are flexible units for positioning along the X- and Z-axis. They consist of a HIWIN toothed belt axis HT-B in the X direction and a HIWIN cantilever axis HC-B in the Z direction. HIWIN HSL linear gantries are particularly well suited for two-dimensional movements.

Energy chain

Generously dimensioned energy chains provide space for safely carrying the supply lines. The energy chains are integrated into the complete system in a particularly compact and space-saving way.

18.2 Order code for linear gantries HSL

HS	L	2	X	T2	Z	C1 –	1000 –

HIWIN axis system

Axis system type:
L: Linear gantry

Size (profile width of the X-axis):
1: 100 mm
2: 150 mm
3: 200 mm
4: 250 mm

Axis 1 identifier:
X

Stroke axis 1 [mm]

Type and size of axis 2:
C0: HC025B
C1: HC040B
C2: HC060B
C3: HC080B

Axis 2 identifier:
Z

Type and size of axis 1:
T1: HT100B
T2: HT150B
T3: HT200B
T4: HT250B

Continuation, order code for linear gantries HSL

0600	A	2	R	BE04	G0608 –	B002	G0405

Stroke axis 2 [mm]

Axis limit switch:
N: Without limit switch
A: 2 × normally closed, 100 mm cable, connector

Energy chain:
N: Without
1: Energy chain on X-axis
2: Energy chain on X- and Z-axis

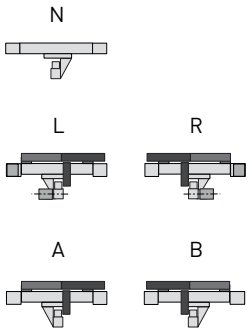
Gearbox, axis 2 [2)]

Motor flange type, axis 2 [4)]

Gearbox, axis 1 [2)]

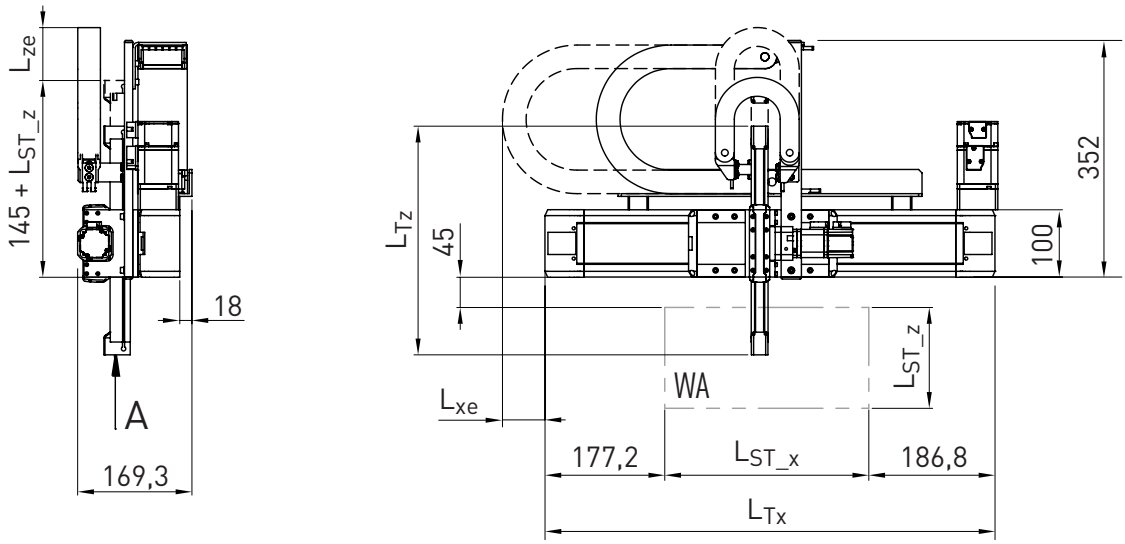
Motor flange type, axis 1 [3)]

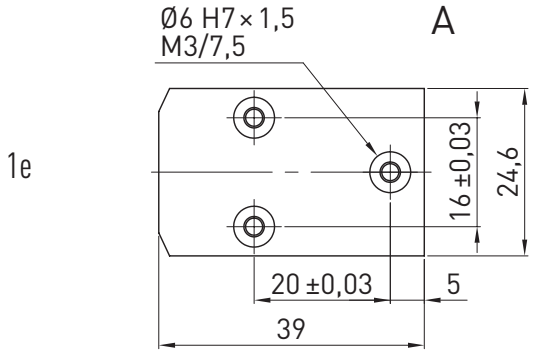
Drive interface [1)]:
N: Without drive adapter/ Without energy chain
L: Drive adapter left
R: Drive adapter right
A: Without drive adapter, Drive interface left
B: Without drive adapter, Drive interface right



[1] If no drive interface is selected, the order code ends after this digit.
[2)] You can finding matching gearboxes in section 22.1.5.5 from page 170.
[3)] You can find all flange types in Table 22.2 from page 161. If no flange type is selected, the "Gearbox, axis 1" position is omitted.
[4)] You can find all flange types in Table 22.4 from page 163. If no flange type is selected, the order code ends after this digit.

18.3 Dimensions and specifications of HSL1-T-C





L_{ST} Stroke
WA Working space
1e Interface application

Table 18.1 **HSL1-T-C dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 364$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 190$

Table 18.2 **Energy chain**		
	X-axis	**Z-axis**
Inner cross section W × H [mm]	57 × 25	20 × 21
Bending radius [mm]	75	48
End position at electrical zero F [mm]	$L_{Xe} = 7.5$	$L_{Ze} = 151.0 - L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = 15.0$	$L_{Zm} = 147.5 - L_{ST}/2$

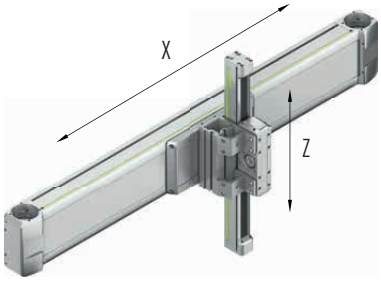


Table 18.3 **General technical data**

	X-axis	Z-axis
Axis type	HT100B-C	HC025B
Max. feed force F_{x_max} [N]	813	241
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	13.6	3.1
Max. stroke [1)2)] [mm]	5,552	300
Typical load capacity [kg]	2	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of single axes HT100B can be found in section 7.3 on page 46
Dimensions and specifications of single axis HC025B can be found in section 13.3 on page 88

Table 18.4 **Drive**

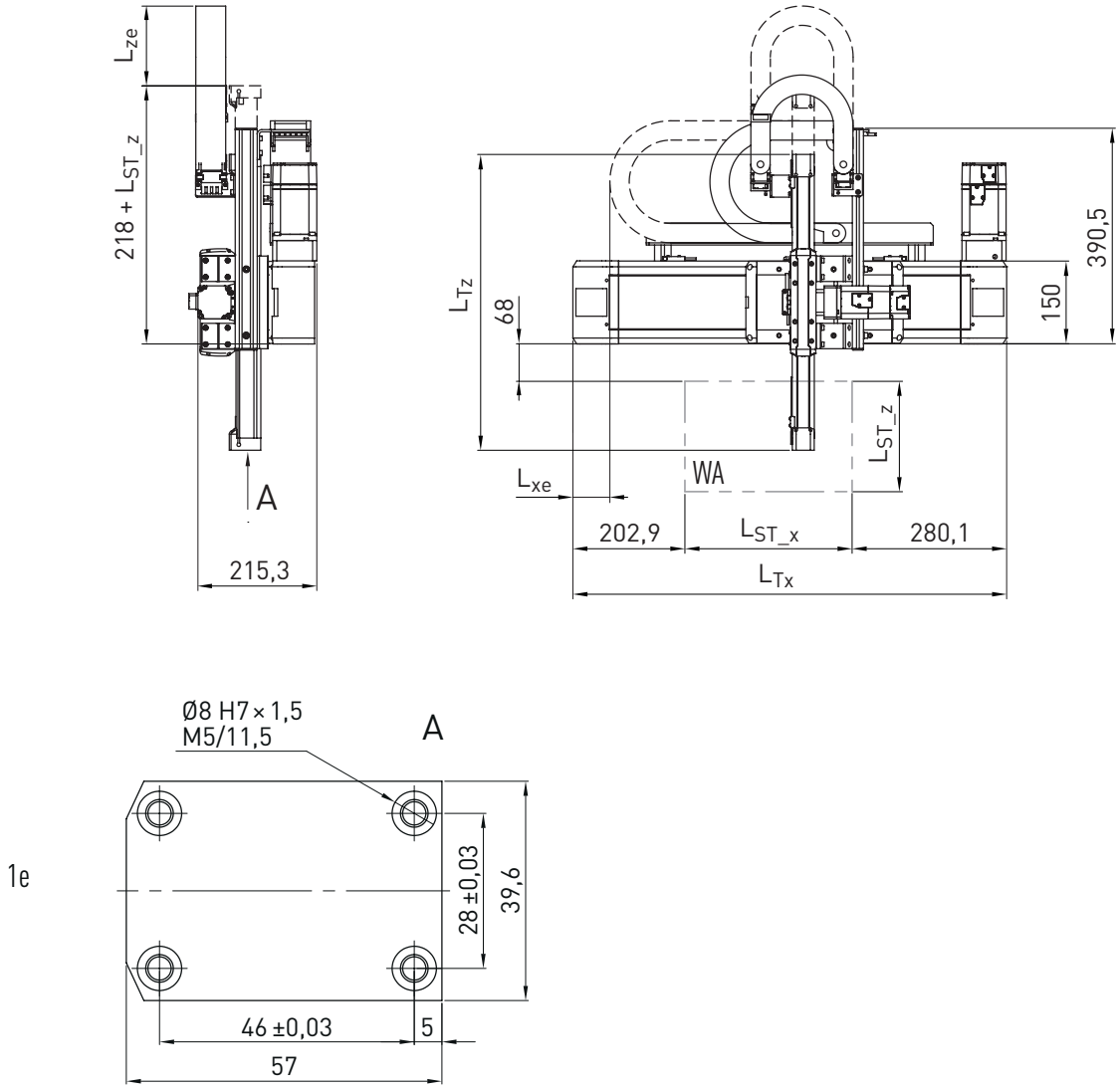
	X-axis	Z-axis
Toothed belt drive element	B25HTD5	B12HTD3
Feed constant [mm/U]	105	81
Toothed belt effective diameter [mm]	33.42	25.78

Table 18.5 **Mechanical properties**

Moving mass Z-axis at 0-stroke [kg]	0.30
Moving mass Z-axis per 1 m stroke [kg/m]	1.27
Moving mass X-axis at 0-stroke Z-axis [kg]	2.61
Moving mass X-axis per 1 m stroke Z-axis [kg/m]	1.27
Mass of total system at 0-stroke X- and Z-axis [kg]	5.68
Mass of total system per 1 m stroke X-axis [kg/m]	6.65
Mass of total system per 1 m stroke Z-axis [kg/m]	1.27

Note: All values without energy chain and without drive

18.4 Dimensions and specifications of HSL2-T-C



L_{ST} Stroke
WA Working space
1e Interface application

Table 18.6 **HSL2-T-C dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 483$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 286$

Table 18.7 **Energy chain**		
	X-axis	**Z-axis**
Inner cross section W × H [mm]	57 × 25	38 × 25
Bending radius [mm]	75	75
End position at electrical zero F [mm]	L_{Xe} = -68.0	$L_{Ze} = 274.0 - L_{ST}/2$
End position at mechanical zero [mm]	L_{Xm} = -58.0	$L_{Zm} = 269.0 - L_{ST}/2$

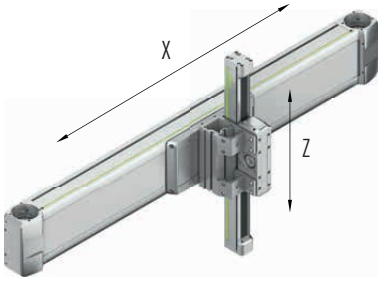


Table 18.8 **General technical data**

	X-axis	Z-axis
Axis type	HT150B-C	HC040B
Max. feed force F_{x_max} [N]	1,300	404
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	32.1	7.9
Max. stroke [1)2)] [mm]	5,483	500
Typical load capacity [kg]	8	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of single axes HT150B can be found in section 7.4 on page 48
Dimensions and specifications of single axis HC040B can be found in section 13.4 on page 90

Table 18.9 **Drive**

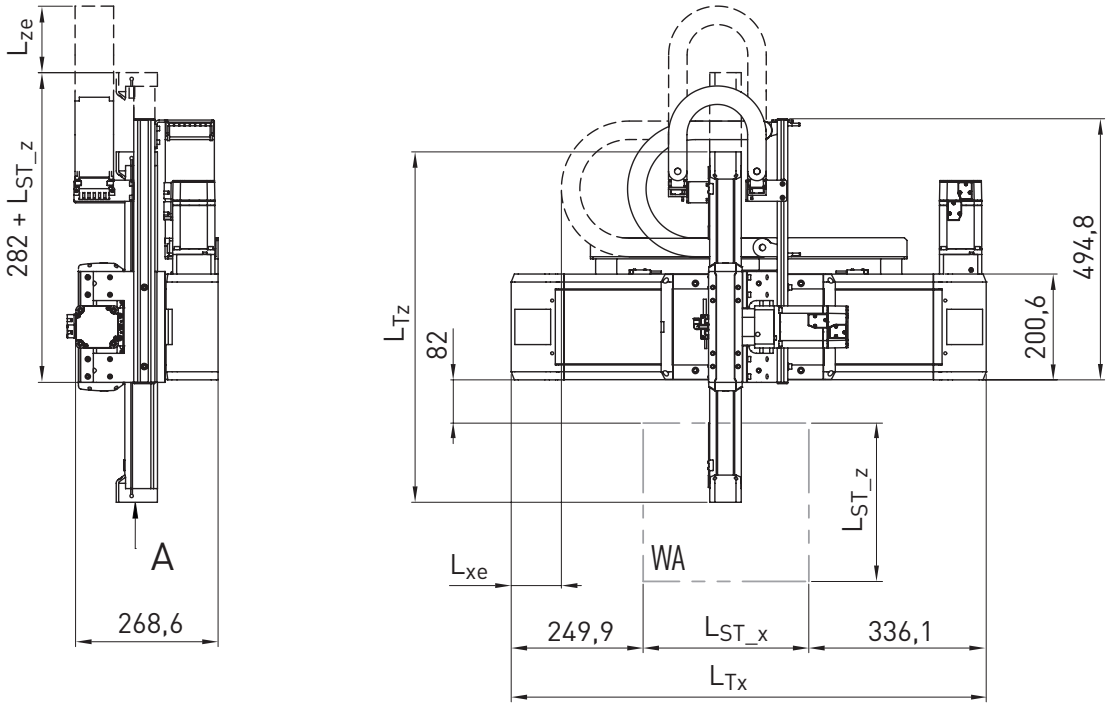
	X-axis	Z-axis
Toothed belt drive element	B40HTD5	B20HDT3
Feed constant [mm/U]	155	123
Toothed belt effective diameter [mm]	49.34	39.15

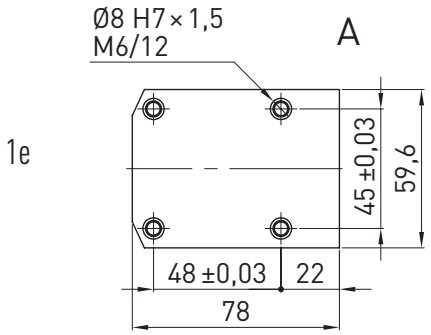
Table 18.10 **Mechanical properties**

Moving mass Z-axis at 0-stroke [kg]	0.91
Moving mass Z-axis per 1 m stroke [kg/m]	2.75
Moving mass X-axis at 0-stroke Z-axis [kg]	6.74
Moving mass X-axis per 1 m stroke Z-axis [kg/m]	2.75
Mass of total system at 0-stroke X- and Z-axis [kg]	13.96
Mass of total system per 1 m stroke X-axis [kg/m]	11.13
Mass of total system per 1 m stroke Z-axis [kg/m]	2.75

Note: All values without energy chain and without drive

18.5 Dimensions and specifications of HSL3-T-C





L_{ST} Stroke
WA Working space
1e Interface application

Table 18.11 **HSL3-T-C dimensions**

Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 586$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 364$

Table 18.12 **Energy chain**

	X-axis	Z-axis
Inner cross section W × H [mm]	77 × 25	57 × 25
Bending radius [mm]	100	75
End position at electrical zero F [mm]	$L_{Xe} = -94$	$L_{Ze} = 282.5 - L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = -79$	$L_{Zm} = 275.0 - L_{ST}/2$

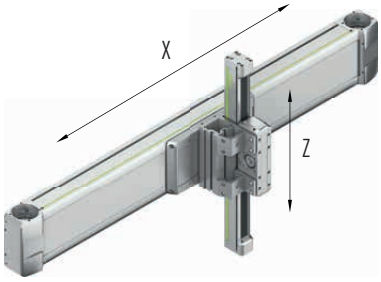


Table 18.13 **General technical data**

	X-axis	Z-axis
Axis type	HT200B-C	HC060B
Max. feed force F_{x_max} [N]	3,000	997
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	87,9	27
Max. stroke [1)2)] [mm]	5,414	800
Typical load capacity [kg]	16	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of single axes HT200B can be found in section 7.5 on page 50
Dimensions and specifications of single axis HC060B can be found in section 13.5 on page 92

Table 18.14 **Drive**

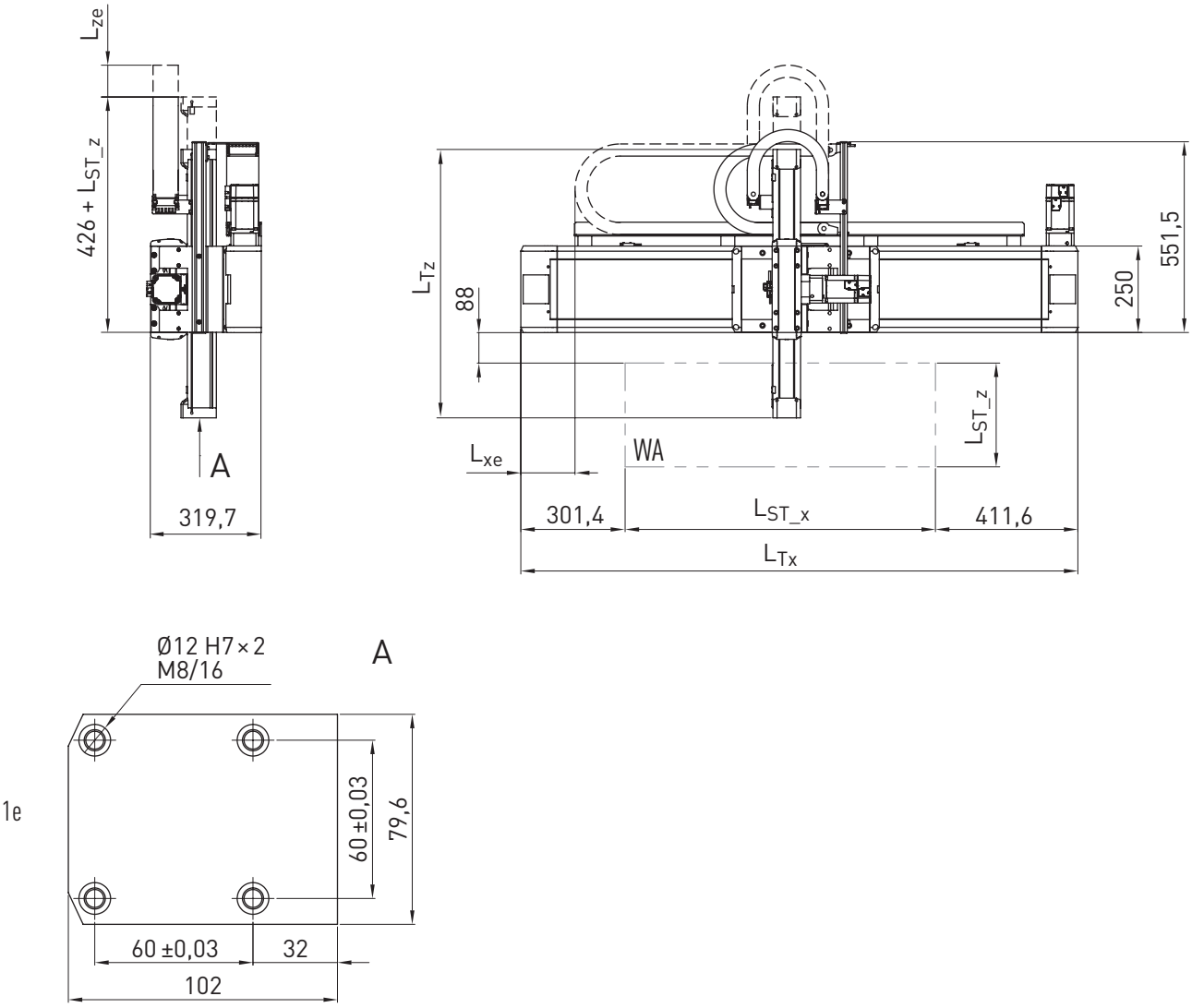
	X-axis	Z-axis
Toothed belt drive element	B50HTD8	B30HTD5
Feed constant [mm/U]	184	170
Toothed belt effective diameter [mm]	58.57	54.11

Table 18.15 **Mechanical properties**

Moving mass Z-axis at 0-stroke [kg]	2.23
Moving mass Z-axis per 1 m stroke [kg/m]	5.18
Moving mass X-axis at 0-stroke Z-axis [kg]	13.12
Moving mass X-axis per 1 m stroke Z-axis [kg/m]	5.18
Mass of total system at 0-stroke X- and Z-axis [kg]	27.14
Mass of total system per 1 m stroke X-axis [kg/m]	17.75
Mass of total system per 1 m stroke Z-axis [kg/m]	5.18

Note: All values without energy chain and without drive

18.6 Dimensions and specifications of HSL4-T-C



L_{ST} Stroke
WA Working space
1e Interface application

Table 18.16 **HSL4-T-C dimensions**	
Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST\_x} + 713$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST\_z} + 426$

Table 18.17 **Energy chain**		
	X-axis	**Z-axis**
Inner cross section W × H [mm]	77 × 25	57 × 25
Bending radius [mm]	100	100
End position at electrical zero F [mm]	L_{Xe} = -197.5	$L_{Ze} = 259.0 - L_{ST}/2$
End position at mechanical zero [mm]	L_{Xm} = -177.5	$L_{Zm} = 249.0 - L_{ST}/2$

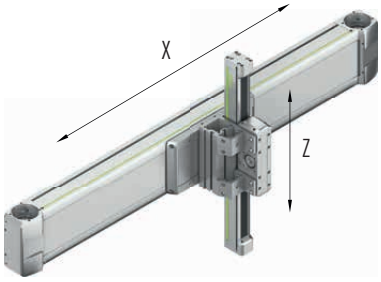


Table 18.18 **General technical data**

	X-axis	Z-axis
Axis type	HT250B-C	HC080B
Max. feed force F_{x_max} [N]	4,500	1,330
Max. speed [m/s]	5	
Max. acceleration [m/s²]	30	
Max. drive torque M_{A_max} [Nm]	149	42.3
Max. stroke [1)2)] [mm]	5,397	1200
Typical load capacity [kg]	30	

[1)] Restrictions due to energy chain may apply. Longer strokes available on request.
[2)] Depends on selected payload and dynamic response. For comprehensive application advice, please contact HIWIN.
Note: Dimensions and specifications of single axes HT250B can be found in section 7.6 on page 52
Dimensions and specifications of single axis HC080B can be found in section 13.6 on page 94

Table 18.19 **Drive**

	X-axis	Z-axis
Toothed belt drive element	B75HTD8	B40HTD5
Feed constant [mm/U]	208	200
Toothed belt effective diameter [mm]	66.21	63.66

Table 18.20 **Mechanical properties**

Moving mass Z-axis at 0-stroke [kg]	4.35
Moving mass Z-axis per 1 m stroke [kg/m]	9.01
Moving mass X-axis at 0-stroke Z-axis [kg]	26.20
Moving mass X-axis per 1 m stroke Z-axis [kg/m]	9.01
Mass of total system at 0-stroke X- and Z-axis [kg]	49.40
Mass of total system per 1 m stroke X-axis [kg/m]	23.09
Mass of total system per 1 m stroke Z-axis [kg/m]	9.01

Note: All values without energy chain and without drive

19. Adapters for cross tables and multi-axis systems

HIWIN adapters for cross tables and multi-axis systems allow two and more axes to be flexibly combined. This allows individual multi-axis systems to be designed quickly and easily. Forces and torques are safely transmitted through force and form closure. Centring sleeves allow for precise and reproducible connection. All adapters are supplied ready for installation including mounting material.
Depending on the desired alignment of the axes to be connected, four basic adapter types are available:

CPN: Adapter for connecting the axis profile of the upper axis to the carriage of the lower axis. Both carriages point in the same direction.

CPR: Adapter for connecting the axis profile of the upper axis with the carriage of the lower axis, with the two carriage rotated 90° in relation to each other.

CCN: Adapter for connecting the carriage of the upper axis to the carriage of the lower axis.

CCR: Adapter for connecting the drive block of the upper axis to the carriage of the lower axis, with the carriage and the drive block rotated 90° in relation to each other.

19.1 Product selection

19.1.1 Axis combinations depending on the size

Table 19.1 **Overview of possible combinations as a function of the size**

			Y-axis																	
			HM				HT				HC				KK					
			040	060	080	120	100	150	200	250	25	40	60	80	30	40	50	60	86	100
X-axis	HM	040	●[1] ■[1]				●[1] ■[1]								●▲	●▲				
		060	●[1]	●[1] ■[1]			●[1]	●[1] ■[1]								●▲	●▲			
		080		●[1]	●[1] ■[1]			●[1]	●[1] ■[1]								●▲	●▲		
		120			●[1]	●[1]			●[1]	●[1] ■[1]										
	HT	100	●■▲				●■▲				✸						●▲	●▲		
		150	●■▲	●■▲			●■▲	●■▲				✸						●▲	●▲	
		200		●■▲	●■▲			●■▲	●■▲				✸						●▲	●▲
		250			●■▲	●■▲			●■▲	●■▲				✸						

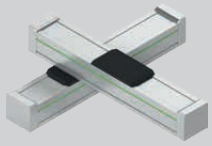
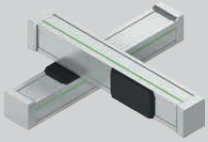
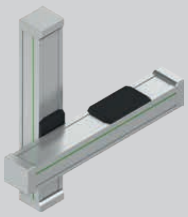
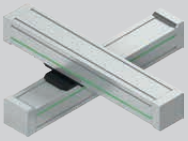
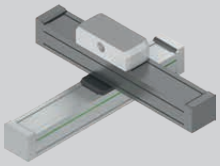
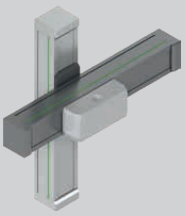
● CPN; ■ CPR; ▲ CCN; ✸ CCR

[1] Two single axes HM or one double axis HD are required in the X-axis.
Note: Depending on the selected axis configuration, collisions of attachments or covering of mounting holes may occur. This must be checked in each individual case.

19.1.2 Cross table

Cross table combinations made up of two single axes.

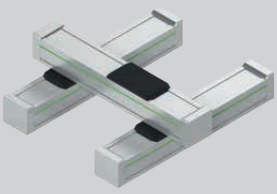
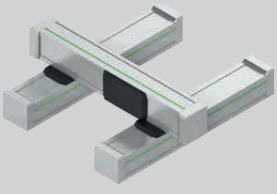
Table 19.2 **Product selection diagram**

Connection	X-Y	X-Z	Z-X	Page :
CPN adapter ● **Carriage – profile**				Page 149
CPR adapter ■ **Carriage – profile** **(rotated 90°)**				Page 151
CPN adapter ▲ **Carriage – carriage**				Page 153
CPN adapter ✸ **Carriage – drive block**				Page 154

19.1.3 Two-axis system

Two-axis systems with two single axis or one double axis as the foundation.

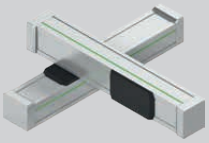
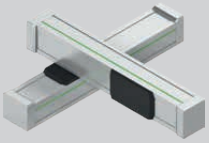
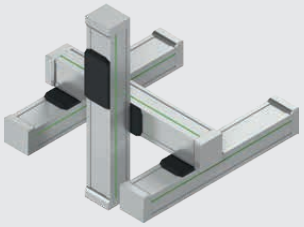
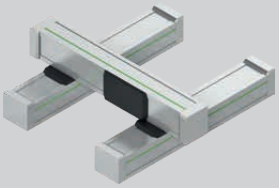
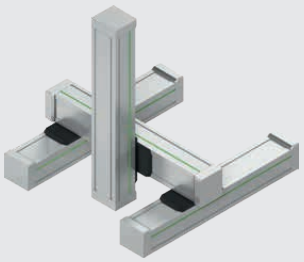
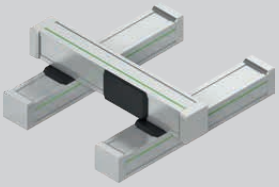
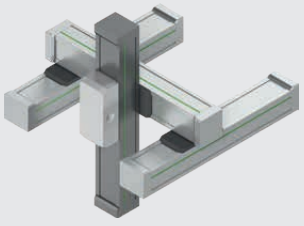
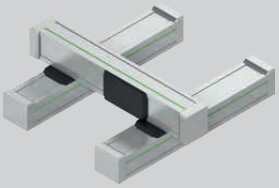
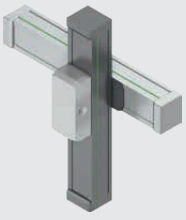
Table 19.3 **Product selection diagram**

Connection	X-Y	X-Z	Z-X	Page :
CPN adapter ● **Carriage – profile**				Page 150
CPR adapter ■ **Carriage – profile** **(rotated 90°)**				Page 152

19.1.4 Three- and multi-axis system

Three- and multi-axis systems can be created flexibly by combining several adapters from Table 19.2 and Table 19.3. Some examples follow.

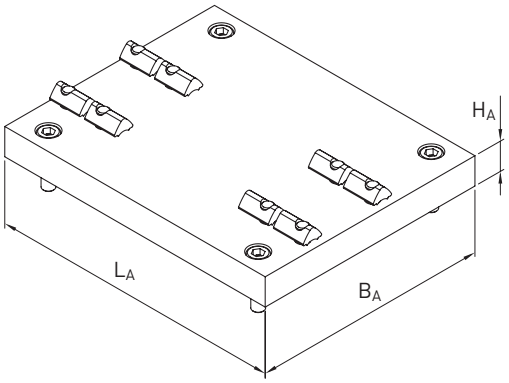
Table 19.4 **Example of multi-axis systems**

Complete system X-Y-Z	Adapter X-Y	Adapter Y-Z
	 Page 151	 Page 153
	 Page 151	 Page 154
	 Page 152	 Page 149
	 Page 152	 Page 153
	 Page 152	 Page 154

19.2 CPN adapters

19.2.1 CPN adapters for single axes

HIWIN adapters for combining two single axes (axis 1: HM/HT; axis 2: HM/HT/KK) via a carriage-profile connection.



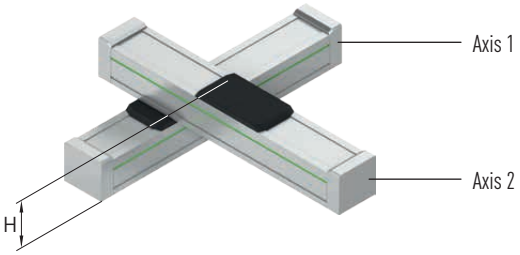
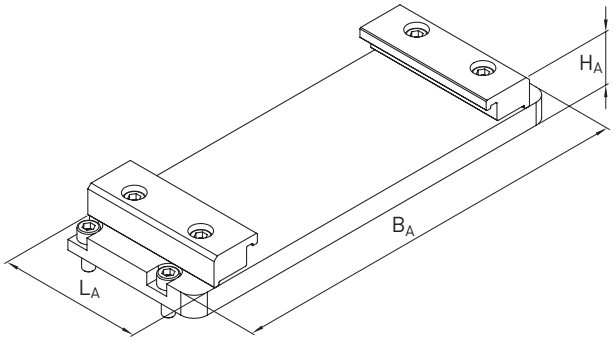


Table 19.5 **Specifications for CPN adapters for single axes**

Axis 1		Axis 2		L_A [mm]	B_A [mm]	H_A [mm]	H [mm]	Weight [kg]	Article number
Axis type	**Size (profile width)**	**Axis type**	**Size (profile width)**						
HM	040	**KK**	30	59	79	12	95.0	0.159	25-001622
	040		40	70	79	12	102.0	0.187	25-001623
	060		40	76	114	12	120.0	0.291	25-001626
	060		50	92	114	12	128.5	0.366	25-001627
	080		50	98	107	12	150.5	0.376	25-001630
	080		60	114	104	15	159.5	0.513	25-001631
HT	100B/100S	**HM**	040	99	72	12	134.0	0.265	25-001608
	100L		040	99	72	12	142.0	0.265	25-001608
	150		040	79	149	12	156.0	0.417	25-001609
	150		060	149	120	15	177.0	0.792	25-001610
	200		060	199	102	15	193.0	0.907	25-001611
	200		080	199	142	15	215.0	1.287	25-001612
	250		080	249	126	20	230.0	1.858	25-001613
	250		120	249	180	20	275.0	2.558	25-001614
	100B/100S	**HT**	100B/100S	158	100	12	136.0	0.547	25-001615
	100B/100S		100L	158	100	12	144.0	0.547	25-001615
	100L		100B/100S	158	100	12	144.0	0.547	25-001615
	100L		100L	158	100	12	152.0	0.547	25-001615
	150		100	210	100	15	161.0	0.882	25-001616
	150		150	222	150	15	183.0	1.420	25-001617
	200		150	274	150	15	199.0	1.756	25-001618
	200		200	294	200	15	215.0	2.519	25-001619
	250		200	348	200	20	230.0	3.918	25-001620
	250		250	296	250	20	240.0	4.146	25-001621
	100B/100S	**KK**	50	100	99	12	112.5	0.326	25-001624
	100L		50	100	99	12	120.5	0.326	25-001624
	100		60	108	99	12	118.5	0.371	25-001625
	150		60	149	118	15	143.5	0.724	25-001628
	150		86	149	118	15	163.0	0.732	25-001629
	200		86	199	142	15	179.0	1.170	25-001632
	200		100	199	142	15	187.0	1.193	25-001633

19.2.2 CPN adapters for double axes

HIWIN adapters for combining two single axes HM or a double axis HD with a single axis HM/HT via a carriage-profile connection.



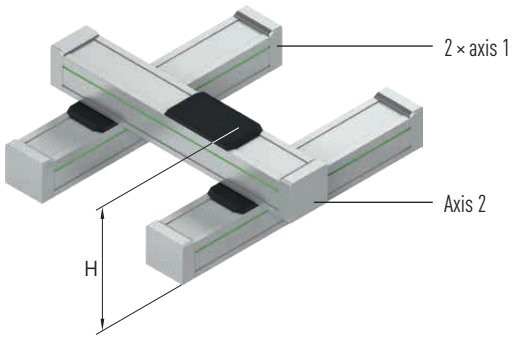


Table 19.6 **Specifications for CPN adapters for double axes**

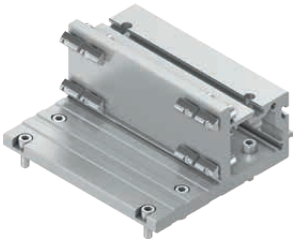
Axis 1		Axis 2		L_A [mm]	B_A [mm]	H_A [mm]	H [mm]	Weight [kg]	Article number
Axis type	**Size (profile width)**	**Axis type**	**Size (profile width)**						
HM (2 ×)[1]	040	**HM**	040	76	82	12	132	0.543	25-001594
	060		040	76	114	12	150	0.710	25-001595
	060		060	76	114	12	168	0.944	25-001596
	080		060	79	150	15	193	1.375	25-001597
	080		080	79	150	15	215	1.457	25-001598
	120		080	119	185	20	265	3.146	25-001599
	120		120	119	240	20	310	3.826	25-001600
	040[2]	**HT**	100B/100S	76	151	12	134	0.876	25-001601
	040[2]		100L	76	151	12	142	0.876	25-001601
	060[3]		100B/100S	76	164	12	152	0.944	25-001602
	060[3]		100L	76	164	12	160	0.944	25-001602
	060[2]		150	76	214	12	174	1.324	25-001603
	080[3]		150	79	244	12	196	1.568	25-001604
	080[3]		200	110	287	15	215	3.188	25-001605
	120[3]		200	119	296	20	265	4.498	25-001606
	120[3]		250	119	351	20	275	5.180	25-001607

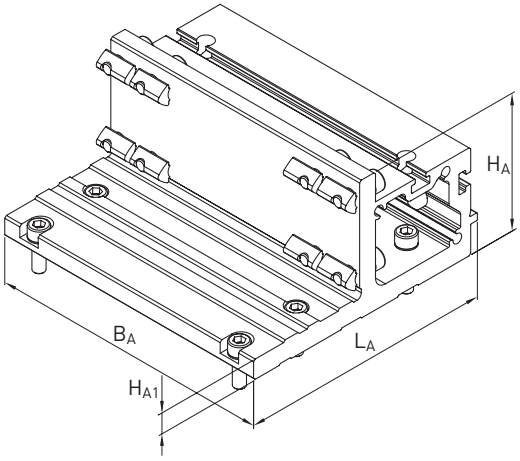
[1] Alternative: Double axis HD
[2] HM axis with carriage length L required
[3] HM axis with carriage length M or L required

19.3 CPN adapters

19.3.1 CPR adapters for single axes (rotated 90°)

HIWIN adapters for combining two single axes (axis 1: HT; axis 2: HM/HT) via a carriage-profile connection (axis 2 rotated 90°).





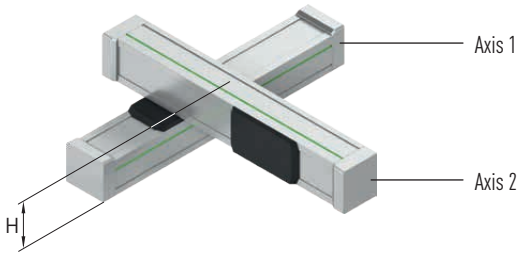
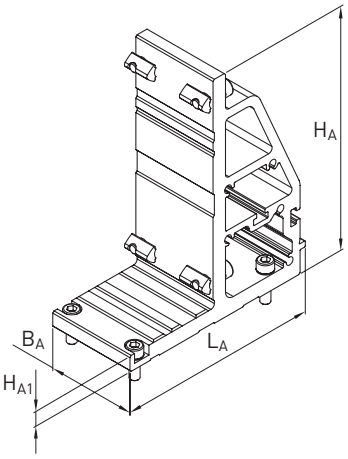


Table 19.7 **Specifications for CPR adapters for single axes**

Axis 1		Axis 2		L_A [mm]	B_A [mm]	H_A [mm]	H_{A1} [mm]	H [mm]	Weight [kg]	Article number
Axis type	**Size (profile width)**	**Axis type**	**Size (profile width)**							
HT	100B/100S	**HM**	040	122	99	56.0	11.5	118.0	0.684	25-001568
	100L		040	122	99	56.0	11.5	126.0	0.684	25-001568
	150		040	110	149	56.0	11.5	140.0	0.955	25-001569
	150		060	134	149	71.5	11.5	155.5	1.173	25-001570
	200		060	134	199	71.5	11.5	171.5	1.541	25-001571
	200		080	183	199	97.5	17.5	197.5	3.542	25-001572
	250		080	196	249	97.5	17.5	207.5	4.623	25-001573
	250		120	206	249	137.5	17.5	247.5	5.191	25-001574
	100B/100S	**HT**	100B/100S	122	99	111.5	11.5	173.5	0.956	25-001575
	100B/100S		100L	122	99	111.5	11.5	181.5	0.956	25-001575
	100L		100B/100S	122	99	111.5	11.5	181.5	0.956	25-001575
	100L		100L	122	99	111.5	11.5	189.5	0.956	25-001575
	150		100	111	149	111.5	11.5	195.5	1.366	25-001576
	150		150	134	149	161.5	11.5	245.5	1.836	25-001577
	200		150	190	199	167.5	17.5	267.5	4.131	25-001578
	200		200	190	199	217.5	17.5	317.5	5.428	25-001579
	250		200	196	249	217.5	17.5	327.5	6.881	25-001580
	250		250	206	249	236.0	17.5	377.5	7.190	25-001581

19.3.2 CPR adapters for double axes (rotated 90°)
HIWIN adapters for combining two single axes HM or a double axis HD with a single axis HM/HT (axis 2 rotated 90°) via a carriage-profile connection.



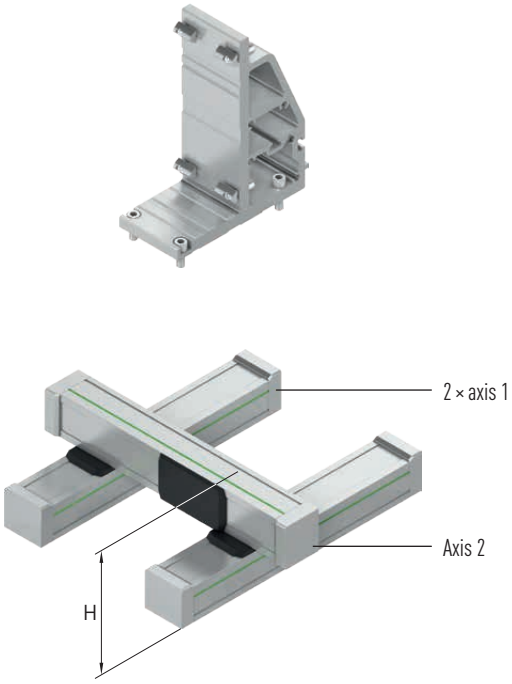


Table 19.8 **Specifications for CPR adapters for double axes**

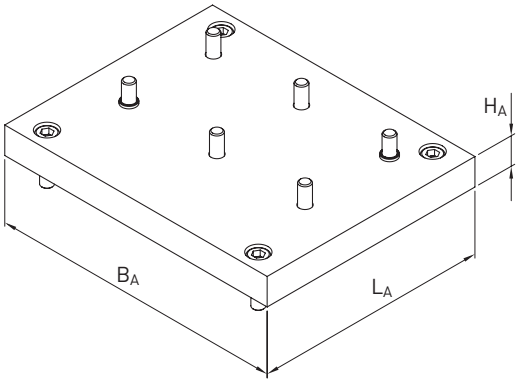
Axis 1		Axis 2		L_A [mm]	B_A [mm]	H_A [mm]	H_{A1} [mm]	H [mm]	Weight [kg]	Article number
Axis type	**Size (profile width)**	**Axis type**	**Size (profile width)**							
HM (2 ×)[1)]	040	**HM**	040	112	39	56.0	11.5	116.0	0.544	25-001561
	060		060	134	59	71.5	11.5	149.5	0.971	25-001562
	080		080	197	79	97.5	17.5	197.5	3.096	25-001563
	040	**HT**	100	112	39	111.5	11.5	171.5	0.760	25-001564
	060		150	134	59	161.5	11.5	239.5	1.520	25-001565
	080		200	197	79	217.0	17.5	317.5	4.516	25-001566
	120		250	207	119	236.0	17.5	412.5	7.125	25-001567

[1)] Alternative: Double axis HD

19.4 CCN adapters

19.4.1 CCN adapters for single axes

HIWIN adapters for combining two single axes (axis 1: HM/HT; axis 2: HM, HT, KK) via a carriage-carriage connection.



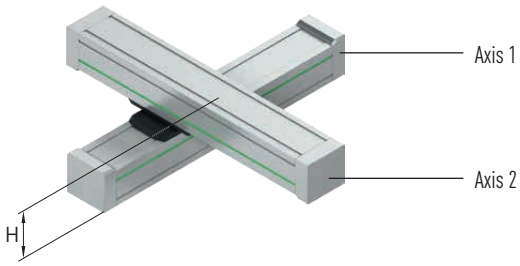


Table 19.9 **Specifications for CCN adapters for single axes**

Axis 1		Axis 2		L_A [mm]	B_A [mm]	H_A [mm]	H [mm]	Weight [kg]	Article number
Axis type	**Size (profile width)**	**Axis type**	**Size (profile width)**						
HM	040	**KK**	30	39	79	12	87	0.105	25-001634
	040		40	39	79	12	92	0.110	25-001635
	060		40	59	112	15	113	0.256	25-001638
	060		50	59	112	15	119	0.287	25-001639
	080		50	79	112	15	141	0.345	25-001642
	080		60	79	112	15	148	0.372	25-001643
HT	100B/100S	**HM**	040	97	99	12	134	0.335	25-001582
	100L		040	97	99	12	142	0.335	25-001582
	150		040	79	149	12	156	0.409	25-001583
	150		060	118	149	15	177	0.783	25-001584
	200		060	102	199	15	193	0.876	25-001585
	200		080	142	199	15	215	1.246	25-001586
	250		080	249	180	20	230	2.547	25-001587
	250		120	249	180	20	275	2.605	25-001646
	100B/100S	**HT**	100B/100S	99	134	12	148	0.894	25-001588
	100B/100S		100L	99	134	12	156	0.894	25-001588
	100L		100B/100S	99	134	12	156	0.894	25-001588
	100L		100L	99	134	12	164	0.894	25-001588
	150		100	149	142	15	176	1.758	25-001589
	150		150	149	182	15	198	2.257	25-001590
	200		150	199	194	15	214	3.196	25-001591
	200		200	199	240	15	230	3.958	25-001592
	250		200	249	249	20	250	6.803	25-001593
	250		250	249	296	20	260	8.109	25-001647

[1] KK axes with two blocks required

Table 19.9 **Specifications for CCN adapters for single axes**

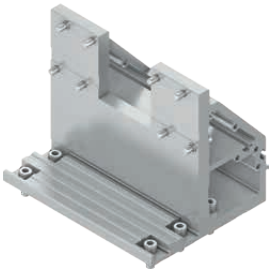
Axis 1		Axis 2		L_A [mm]	B_A [mm]	H_A [mm]	H [mm]	Weight [kg]	Article number
Axis type	**Size (profile width)**	**Axis type**	**Size (profile width)**						
HT	100B/100S	**KK**[1)]	50	98	104	12	100	0.339	25-001636
	100L		50	98	104	12	108	0.339	25-001636
	100B/100S		60	98	113	12	107	0.369	25-001637
	100L		60	98	113	12	115	0.369	25-001637
	150		60	116	149	15	132	0.675	25-001640
	150		86	114	168	15	145	0.808	25-001641
	200		86	140	199	15	161	1.164	25-001644
	200		100	140	199	15	170	1.206	25-001645

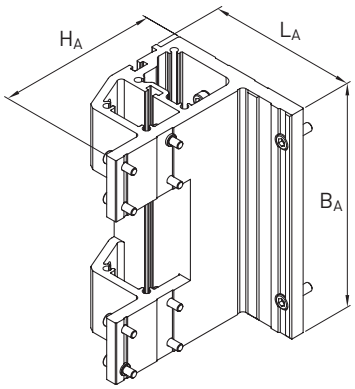
[1)] KK axes with two blocks required

19.5 CCR adapters

19.5.1 CCR adapters for single axes

HIWIN adapters for combining linear tables HT with cantilever axes HC. The connection is made between the carriage of linear table HT and the drive block of cantilever axis HC.





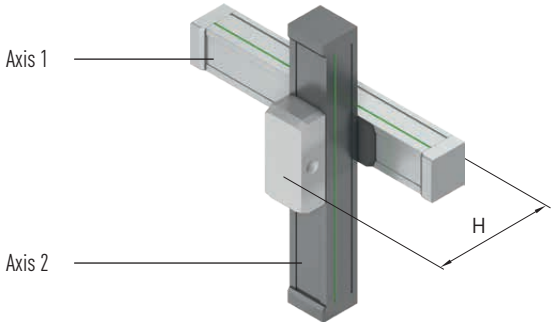


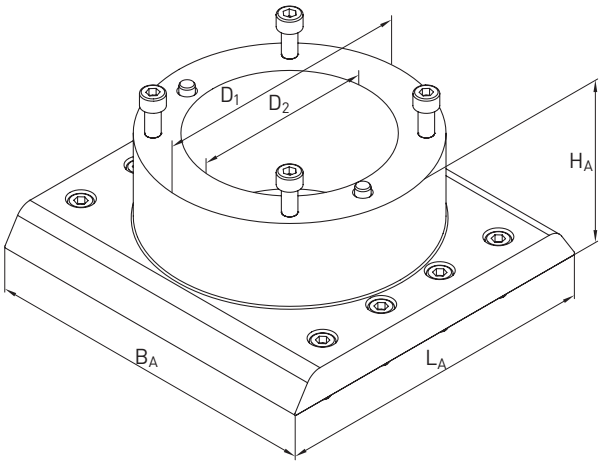
Table 19.10 **Specifications for CCR adapters for single axes**

Axis 1		Axis 2		L_A [mm]	B_A [mm]	H_A [mm]	H [mm]	Weight [kg]	Article number
Axis type	**Size (profile width)**	**Axis type**	**Size (profile width)**						
HT	100B/100S	**HC**	025	80	100	79.8	143.25	0.298	25-002359
	100L		025	80	100	79.8	151.25	0.298	25-002359
	150		040	112	168	120.8	207.3	1.333	25-002360
	200		060	131	210	161.3	264.8	2.161	25-002361
	250		080	198	249	209.7	319.7	5.780	25-002362
			100	207	312	235.7	365.7	7.705	80064588

20. Adapters for robot axes

With the HIWIN adapters for robot axes, a lightweight robot and a HIWIN linear axis HT can be combined. This makes it quick and easy to design a 7th axis system. The adapters are designed so that the robots can rotate freely in the lower axis even with axes with an energy chain attached. The HT linear axes with robot adapters are optimised for horizontal installation. Axes for vertical use on request.
All adapters are supplied ready for installation:

- Including mounting material for fastening the adapter on the carriage of the axis.
- Including mounting material for fastening the robot on the adapter



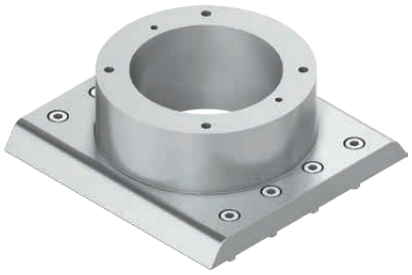


Table 20.1 **Specifications for adapters for robot axes**

Robot		Axis		L_A [mm]	W_A [mm]	H_A [mm]	Ø D_1 [mm]	Ø D_2 [mm]	Weight [kg]	Article number Adapter set
Manufacturer	**Size**	**Model**	**Size**							
Universal Robots	UR03	HTB, HTS	200	191	199	70	128	90	2.528	25-002658
	UR05			191	199	70	151	105	2.873	25-002657
	UR10 + UR16		250	231	249	60	190	95	5.100	25-002659
Techman	TM5-700 + TM5-900	HTB, HTS	200	190	199	90	177	120	4.242	25-002661
	TM12 + TM14		250	230	249	75	203	130	5.391	25-002664

21. Distance measuring system

If the precision of the linear axis given by the drive element is not sufficient for an application, the positioning and repeat accuracy of spindle and toothed belt axes can be increased by using a distance measuring system. On the linear axes HM-B, HM-S, HT-B, HT-S and HC-B, the distance measuring system is located externally, on the side of the carriage. See Fig. 21.1, Fig. 21.2 and Fig. 21.3. Linear motor axes HT-L are supplied with distance measuring system as standard.
The distance measuring system is integrated inside the axis to save space. Different measuring systems are available depending on the requirements for measuring principle, interface and resolution, see Table 21.1. For motionless commutation of linear motor axes HT-L, the HIWIN MAGIC distance measuring system can also be combined with the HIWIN digital hall sensor.

Table 21.1 **Selection of distance measuring system**

Order code	Description	Repeatability [mm]			Signal period [mm]	Resolution [µm]	Interface		Measuring principle	Max. stroke [mm]
		H_B	H_S	H_L						
A	MAGIC analog	± 0.02	± 0.01	± 0.005	1	—	Incremental	1 V_{SS} (analogue) [1]	Magnetic	—
B [2] [6]	MAGIC analog, Hall-Sensor digital	—	—	± 0.005	1	—	Incremental	1 V_{SS} (analogue) [1]	Magnetic	—
D	MAGIC digital	± 0.02	± 0.01	± 0.005	1	1	Incremental	TTL (digital) [1]	Magnetic	—
E [2] [6]	MAGIC digital, Hall-Sensor digital	—	—	± 0.005	1	1	Incremental	TTL (digital) [1]	Magnetic	—
H	LIC 211	—	—	± 0.005	—	0.1	Absolute, EnDat 2.2	EnDat 22	Optical	5,600 [3]
R [4]	BML-S1G0 BiSS-C	—	—	± 0.005	2	1	Absolute, 32-bit	BiSS-C, 1 V_{SS}	Magnetic	—
S [4]	BML-S1G0 SSI	—	—	± 0.005	2	1	Absolute, 26-bit	SSI	Magnetic	—

Other distance measuring systems on request

[1] Compatible with all common servo drives and the HIWIN servo drive ED1. For more information on HIWIN servo drives, see the "Servo drives and servo motors" catalogue or visit hiwin.de.

[2] With digital hall sensor for motionless commutation.

[3] Depending on the size and option, up to 5,900 mm possible on request

[4] The distance measuring system has a safety-related, analogue, incremental real-time signal

[5] depending on the size and option up to max. 3,800 mm possible on request

21.1 External distance measuring system HIWIN MAGIC for linear axes HM-B, HM-S, HT-B, HT-S and HC

The HIWIN MAGIC distance measuring system is located on the side of the carriage in linear modules HM-B and HM-S, linear tables HT-B and HT-S and cantilever axes HC-B. The dimensions can be found in Fig. 21.1, Fig. 21.2, Fig. 21.3 and Table 21.2. On linear modules HM-B and HM-S and on linear tables HT-B and HT-S, the distance measuring system is located on the opposite side of the drive adaptation or the limit switches. On linear axes without adaptation material and limit switches, the distance measuring system is located on the left-hand side by default. On cantilever axes HC, the distance measuring system is always located on the left-hand side by default, just like the limit switches. Other types are available on request.

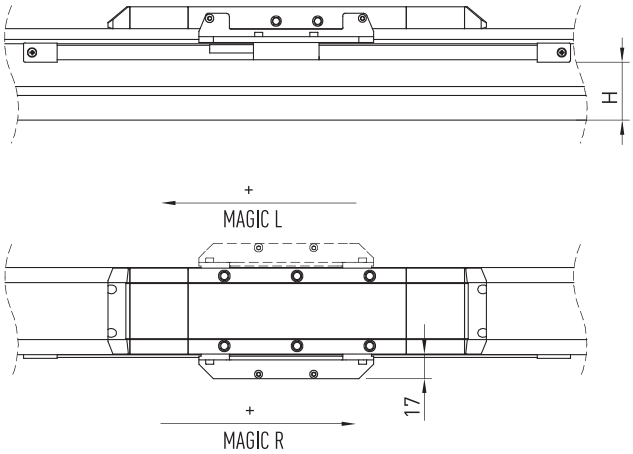


Fig. 21.1 **MAGIC distance measuring system – linear axes HM-B and HM-S**

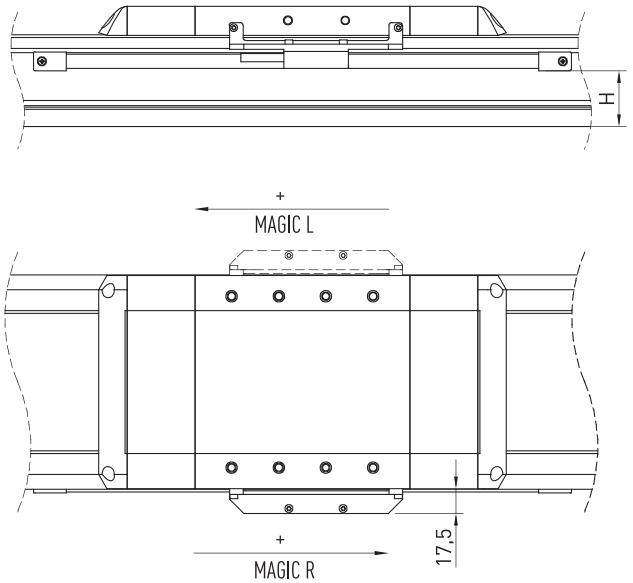


Fig. 21.2 **MAGIC distance measuring system – linear axes HT-B and HT-S**

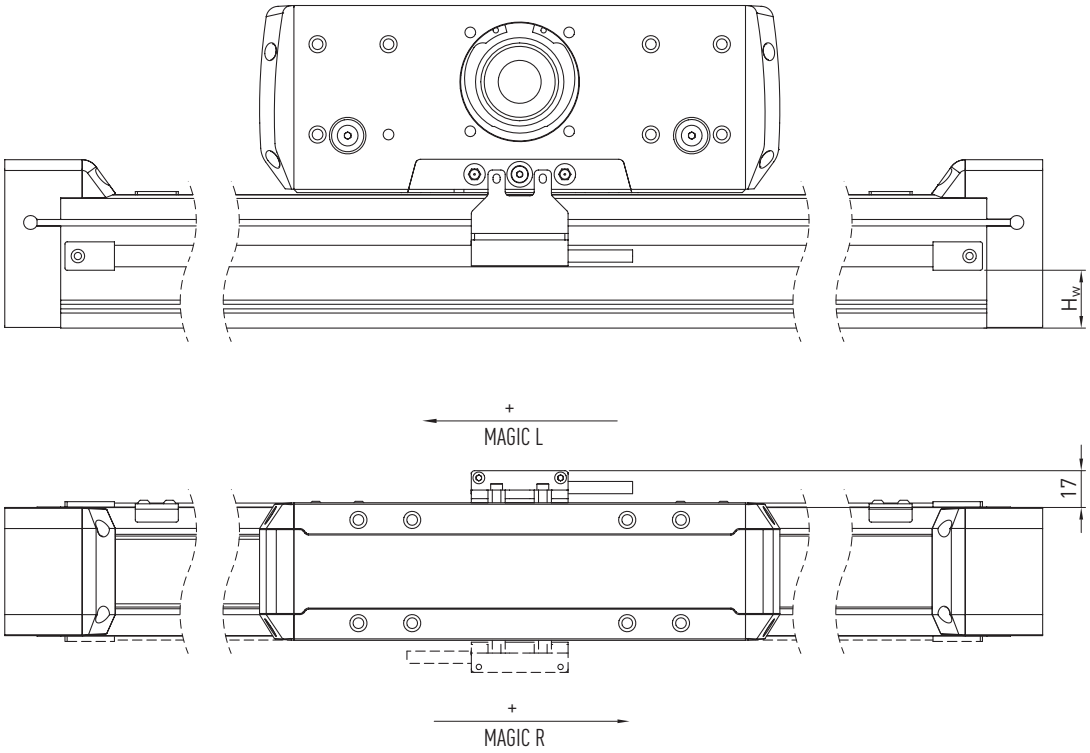


Fig. 21.3 **MAGIC distance measuring system – cantilever axes HC**

Table 21.2 **Dimensions of MAGIC distance measuring system for linear axes HM, HT and HC**

Linear axis	Distance H_w [mm]	Linear axis	Distance H_w [mm]	Linear axis	Distance H_w [mm]
HM040	25	**HT100**	27	**HC025B**	12
HM060	36	**HT150**	38	**HC040B**	22
HM080	54	**HT200**	55	**HC060B**	27
HM120	93	**HT250**	59	**HC080B**	49
				HC100B	71.5

21.2 Internal distance measuring system for linear axes HT-L

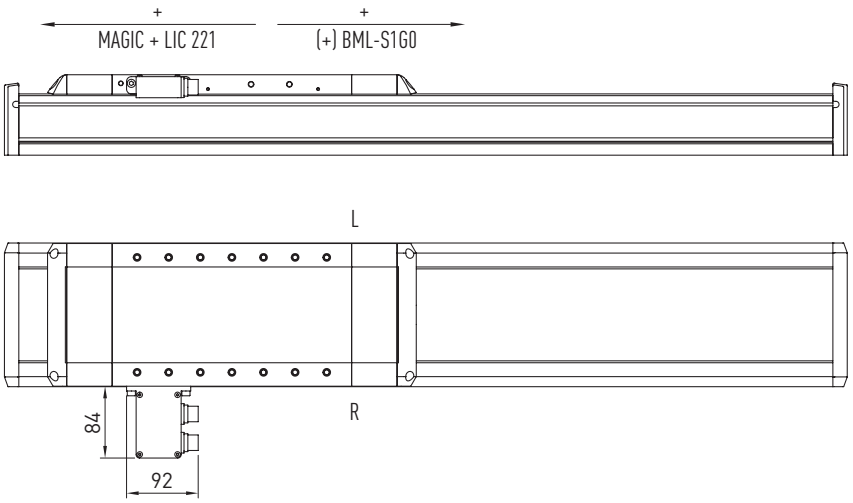


Fig. 21.4 **Linear axis HT-L: Connection interface "D" – connector right/rear**

22. Drive adaptation

22.1 Drive adaptation of linear modules HM-B, linear tables HT-B, bridge axes HB -B, cantilever axes HC and double axes HD

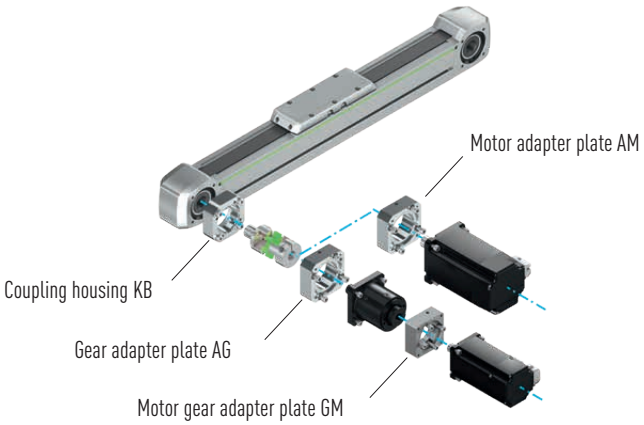
22.1.1 Motor adaptation of linear modules HM-B and double axes HD

Adaptation to the linear axis is of multi-sectional design to allow simple flange-mounting of all standard motors and gearboxes.
The flange type set comprises the following components:

- Coupling housing KB
- Coupling components
- Motor adapter plate AM or gearbox adapter plate AG and motor gearbox adapter plate GM (omitted in NG01 – NG07)

The dimensions of the coupling housing, motor adapter plate as well as the gear adapter plate can be found in section 22.1.5 from page 164. Adaptations for motors from other manufacturers can be found in the configurator at hiwin.de.

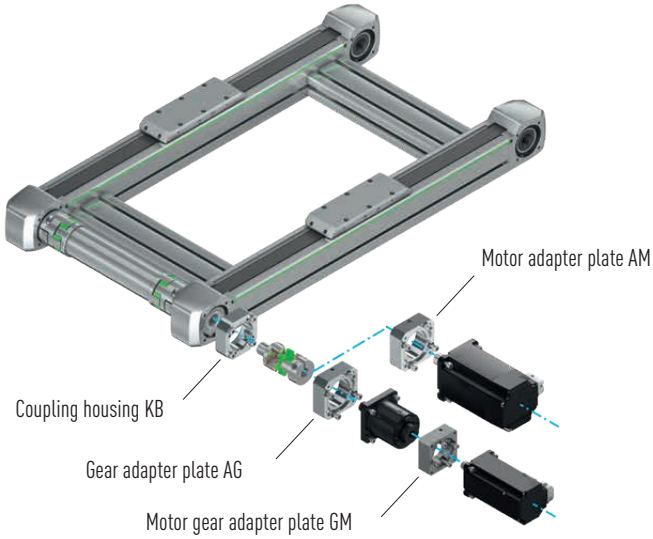
Motor adaptation of linear modules with toothed belt drive (HM-B)



Gear adapter plate AG:	Adapter from axis to gearbox
Motor gear adapter plate GM:	Adapter from gearbox to motor
Motor adapter plate AM:	Adapter from axis to motor

Fig. 22.1 **Motor adaptation of linear modules HM-B**

Motor adaptation of double axes (HD)



Gear adapter plate AG:	Adapter from axis to gearbox
Motor gear adapter plate GM:	Adapter from gearbox to motor
Motor adapter plate AM:	Adapter from axis to motor

Fig. 22.2 **Motor adaptation of double axes HD**

Motor adaptation of multi-axis systems (HS)

The suitable motor adapter for HIWIN multi-axis systems HS must be selected separately for each axis.

Table 22.1 **Order code for position flange type [1] – linear modules HM-B and double axes HD**

Drive Manufacturer/Type		HM040B/HD1			HM060B/HD2			HM080B/HD3			HM120B/HD4		HM120B-H/HD4-H		
		Only motor	**With PLE40**	**With PLQE60**	**Only motor**	**With PLQE60**	**With PLQE80**	**Only motor**	**With PLQE80**	**With PLQE120**	**Only motor**	**With PLQE120**	**Only Motor**	**With PLQE120**	**With PSBN142**
Gearbox adapter			NG01	NG02		NG03	NG04		NG05	NG06		NG07			
HIWIN	**EM1-C-M-05-2**		HW16	HW16		HW15									
	EM1-C-M-10-2		HW16	HW16		HW15									
	EM1-C-M-20-2	HW03		HW03		HW05	HW05		HW10						
	EM1-C-M-40-2	HW03		HW03		HW05	HW05		HW10						
	EM1-C-M-75-2				HW06		HW06		HW08						
	EM1-A-M-1K-2				HW25[2]			HW13		HW13		HW14		HW27[2]	HW27[2]
	EM1-D-M-1A-2				HW25[2]			HW13		HW13		HW14		HW27[2]	HW27[2]
	EM1-D-M-2K-2				HW25[2]			HW13		HW13	HW14	HW14		HW27[2]	HW27[2]

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[1] See order code Page 25 for linear modules HM-B and Page 105 double axes HD

[2] Drive not suitable for Y-axis of HIWIN multi-axis systems HS

22.1.2 Drive adaptation of linear tables HT-B

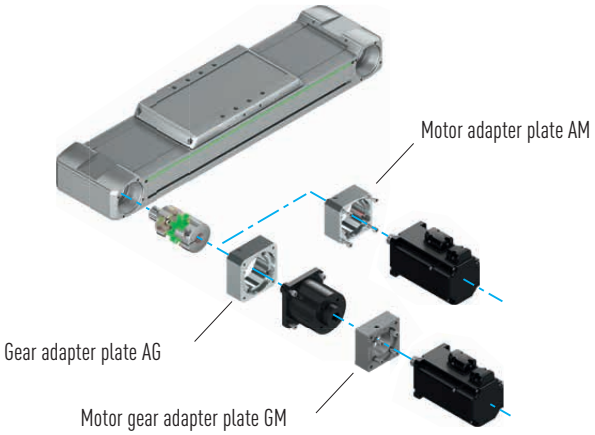
The drive adaptation of linear table HT-B is of multi-sectional design to allow for simple flange-mounting of all standard motors and gearboxes.

The flange type set comprises the following components:

- Coupling components
- Motor adapter plate AM or gearbox adapter plate AG and motor gearbox adapter plate GM (omitted in NG11-NG15)

The dimensions of the coupling housing, motor adapter plate as well as the gear adapter plate can be found in section 22.1.5 from page 164. Adaptations for motors from other manufacturers can be found in the configurator at hiwin.de.

Motor adaptation of linear tables with toothed belt drive (HT-B)



Gear adapter plate AG: Adapter from axis to gearbox

Motor gear adapter plate GM: Adapter from gearbox to motor

Motor adapter plate AM: Adapter from axis to motor

Fig. 22.3 **Motor adaptation of linear tables HT-B**

Table 22.2 **Order code for position flange type [1] – linear tables HT-B**

Drive Manufacturer/Type		HT100B			HT150B			HT200B		HT250B	
		Only motor	**With PLE40**	**With PLQE60**	**Only motor**	**With PLQE80**	**With PLQE120**	**Only motor**	**With PLQE120**	**Only motor**	**With PLQE120**
Gearbox adapter			NG11	NG12		NG13	NG14		NG15		NG15
HIWIN	**EM1-C-M-05-2**		HW16	HW16							
	EM1-C-M-10-2		HW16	HW16							
	EM1-C-M-20-2			HW03		HW10					
	EM1-C-M-40-2	HW03		HW03		HW10					
	EM1-C-M-75-2					HW08					
	EM1-A-M-1K-2				HW13[2]		HW13	HW14	HW14		HW14
	EM1-D-M-1A-2				HW13[2]		HW13	HW14	HW14		HW14
	EM1-D-M-2K-2				HW13[2]			HW14	HW14	HW14	HW14

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[1] See order code Page 45

[2] Drive not suitable for Y-axis of HIWIN multi-axis systems HS

22.1.3 Drive adaptation of bridge axes HB-B

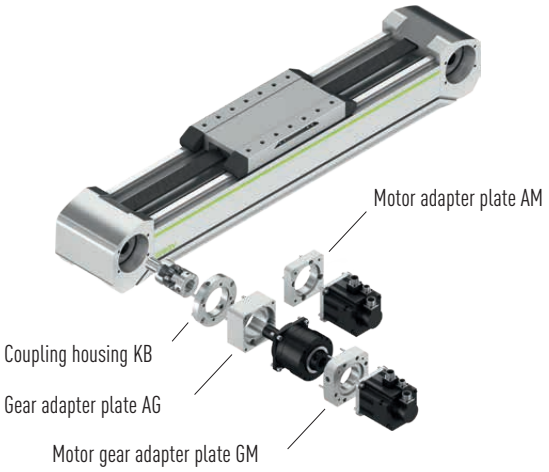
The drive adaptation of bridge axis HB-B is of multi-sectional design to allow for simple flange-mounting of all standard motors and gearboxes.

The flange type set comprises the following components:

- Coupling housing KB
- Coupling components
- Motor adapter plate AM or gearbox adapter plate AG and motor gearbox adapter plate GM (omitted in NG41 and NG42)

The dimensions of the coupling housing, motor adapter plate as well as the gear adapter plate can be found in section 22.1.5 from page 164. Adaptations for motors from other manufacturers can be found in the configurator at hiwin.de.

Motor adaptation of bridge axes with toothed belt drive (HB-B)



Gear adapter plate AG:	Adapter from axis to gearbox
Motor gear adapter plate GM:	Adapter from gearbox to motor
Motor adapter plate AM:	Adapter from axis to motor

Fig. 22.4 **Motor adaptation of bridge axes HB-B**

Table 22.3 **Order code for position flange type [1] – Bridge axes HB-B**

Drive Manufacturer/Type		HB250B		
		Only motor	**With PLQE120**	**With PSBN142**
Gearbox adapter			NG11	NG12
HIWIN	**EM1-A-M-1K-2**		HW27[2]	HW27[2]
	EM1-D-M-1A-2		HW27[2]	HW27[2]
	EM1-D-M-2K-2		HW27[2]	HW27[2]

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[1] See order code Page 45
[2] Drive not suitable for Y-axis of HIWIN multi-axis systems HS

22.1.4 Drive adaptation of cantilever axis HC-B

Adaptation to the linear axis is of multi-sectional design to allow simple flange-mounting of all standard motors and gearboxes.
The flange type set comprises the following components:

- Coupling housing KB
- Coupling components
- Motor adapter plate AM or gearbox adapter plate AG and motor gearbox adapter plate GM (omitted in NG21–NG27)

The dimensions of the coupling housing, motor adapter plate as well as the gear adapter plate can be found in section 22.1.5 from page 164. Adaptations for motors from other manufacturers can be found in the configurator at hiwin.de.

Motor adaptation of cantilever axes (HC-B)

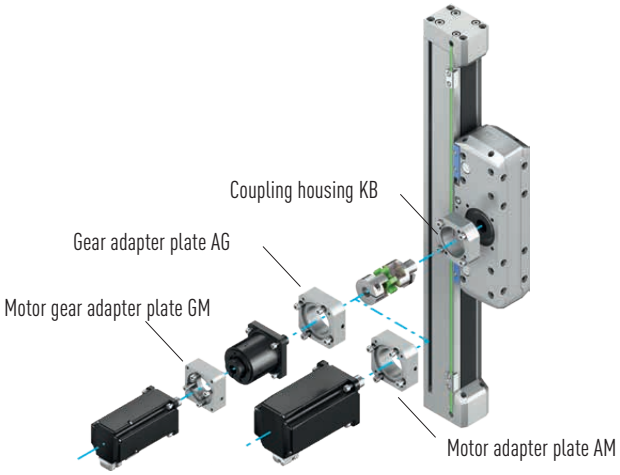

Fig. 22.5 **Motor adaptation of cantilever axes HC-B**

Gear adapter plate AG: Adapter from axis to gearbox

Motor gear adapter plate GM: Adapter from gearbox to motor

Motor adapter plate AM: Adapter from axis to motor

Table 22.4 **Order code for position flange type [1] – cantilever axes HC-B**

Drive Manufacturer/Type		HC025B		HC040B			HC060B			HC080B			HC100B			HC150B	
		Only motor	With PLE40	Only motor	With PLE40	With PLQE60	Only motor	With PLQE60	With PLQE80	Only motor	With PLQE80	With PLQE120	Only Motor	With PLQE80	With PLQE120	Only Motor	With PLQE120
Gearbox adapter			NG21		NG22	NG23		NG24	NG25		NG26	NG27		NG28	NG29		NG30
HIWIN	**EM1-C-M-05-2**		HW17[2]		HW16[2]	HW16[2]		HW15[2]									
	EM1-C-M-10-2	HW17[2]	HW17[2]		HW16[2]	HW16[2]		HW15[2]									
	EM1-C-M-20-2	HW24[2]				HW03[2]		HW05[2]	HW05[2]		HW10[2]			HW23[2]			
	EM1-C-M-40-2	HW24[2]		HW03[2]		HW03[2]		HW05[2]	HW05[2]		HW10[2]			HW23[2]			
	EM1-C-M-75-2								HW06[2]		HW08[2]			HW24[2]			
	EM1-A-M-1K-2						HW25[2]			HW13[2]		HW13[2]			HW14[2]		HW26[2]
	EM1-D-M-1A-2						HW25[2]			HW13[2]		HW13[2]			HW14[2]		HW26[2]
	EM1-D-M-2K-2						HW25[2]			HW13[2]		HW13[2]			HW14[2]		HW26[2]

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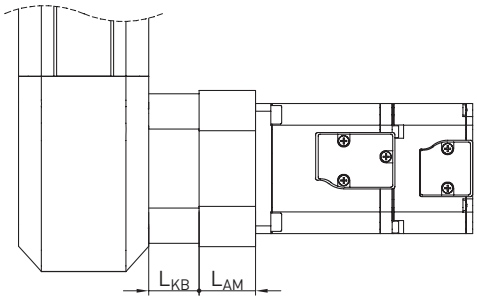
[1] See order code Page 87
[2] Drive not suitable for Y-axis of HIWIN multi-axis systems HS

22.1.5 Dimensions of motor adaptation of linear modules HM-B, linear tables HT-B, bridge axes HB-B, cantilever axes HC and double axes HD

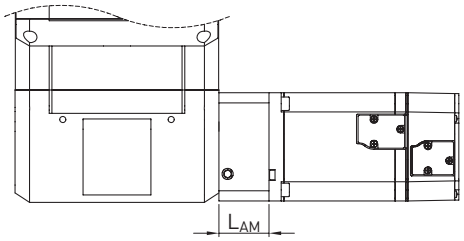
The total width of linear axes with toothed belt drive depends on the following factors:
- Adaptation material (coupling housing KB, motor adapter plate AM, gear adapter plate AG, motor gear adapter plate GM)
- Gearbox
- Motor

Linear axis without gearbox



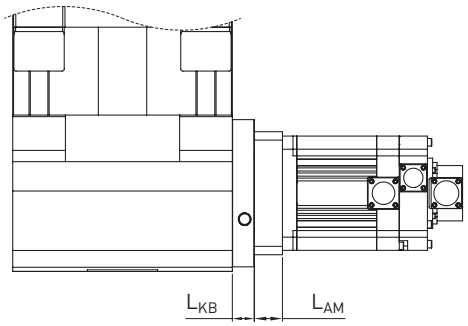
L_{KB} Length of coupling housing, see Table 22.5
L_{AM} Length of motor adapter plate, see Table 22.6

Fig. 22.6 **Motor connection of linear module HM-B without gearbox**



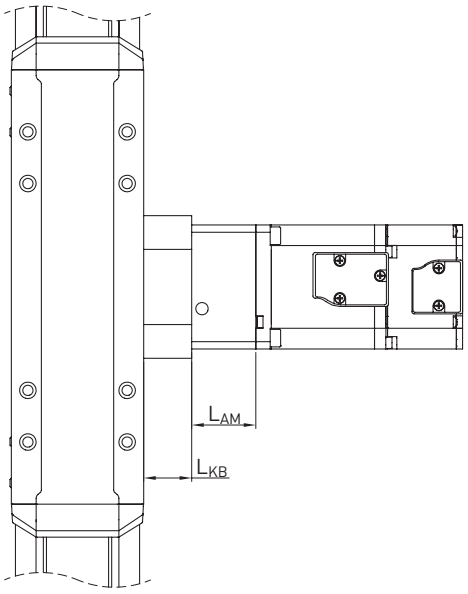
L_{AM} Length of motor adapter plate, see Table 22.7

Fig. 22.7 **Motor connection of linear table HT-B without gearbox**



L_{KB} Length of coupling housing, see Table 22.5
L_{AM} Length of motor adapter plate, see Table 22.6

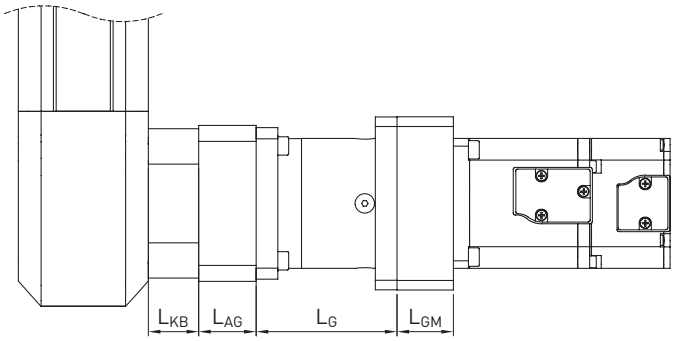
Fig. 22.8 **Motor connection of bridge axis HB-B without gearbox**



L_{KB} Length of coupling housing, see Table 22.5
L_{AM} Length of motor adapter plate, see Table 22.6

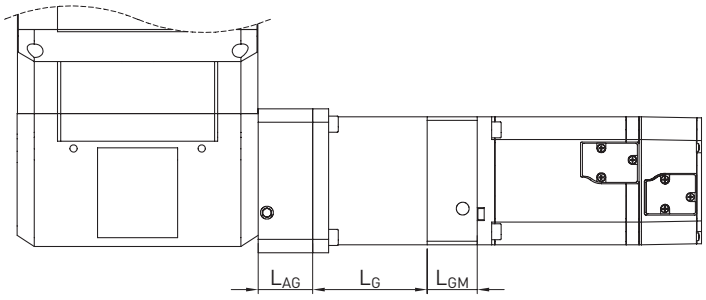
Fig. 22.9 **Motor connection of cantilever axis HC without gearbox**

Linear axis with gearbox



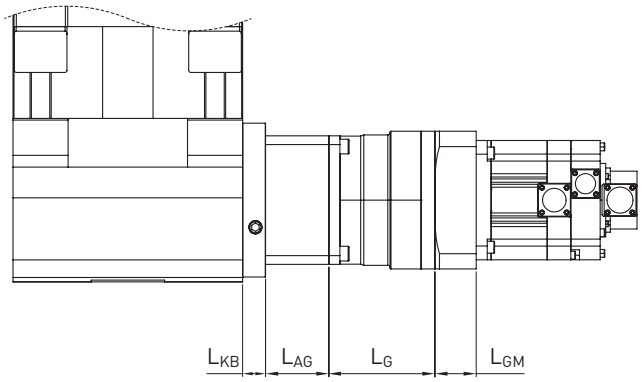
L_{KB} Length of coupling housing, see Table 22.5
L_{AG} Length of gearbox adapter plate, see Table 22.9
L_G Length of gearbox, see Table 22.11
L_{GM} Length of motor gearbox adapter plate, see Table 22.10

Fig. 22.10 **Motor connection of linear module HM-B with gearbox**



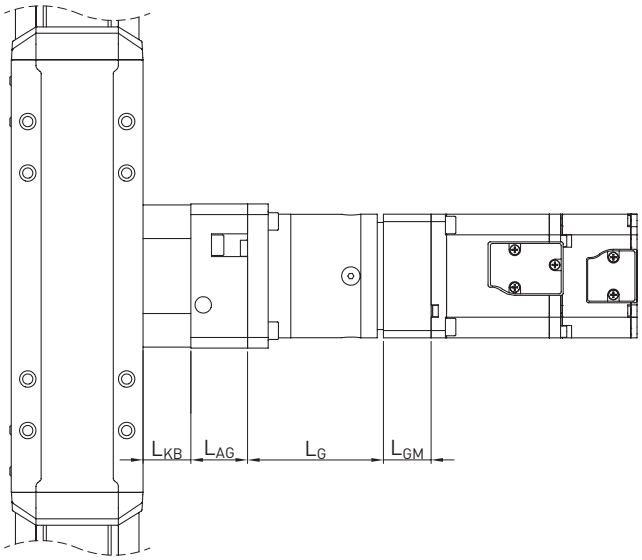
L_{AG} Length of gearbox adapter plate, see Table 22.9
L_G Length of gearbox, see Table 22.11
L_{GM} Length of motor gearbox adapter plate, see Table 22.10

Fig. 22.11 **Motor connection of linear table HT-B with gearbox**



L_{KB} Length of coupling housing, see Table 22.5
L_{AG} Length of gearbox adapter plate, see Table 22.9
L_G Length of gearbox, see Table 22.11
L_{GM} Length of motor gearbox adapter plate, see Table 22.10

Fig. 22.12 **Motor connection of bridge axis HB-B with gearbox**



L_{KB} Length of coupling housing, see Table 22.5
L_{AG} Length of gearbox adapter plate, see Table 22.9
L_G Length of gearbox, see Table 22.11
L_{GM} Length of motor gearbox adapter plate, see Table 22.10

Fig. 22.13 **Motor connection of cantilever axis HC with gearbox**

22.1.5.1 Coupling housing KB for linear modules HM-B and cantilever axes HC

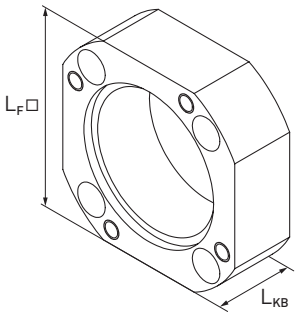


Fig. 22.14 **Coupling housing KB for linear modules HM-B and cantilever axes HC**

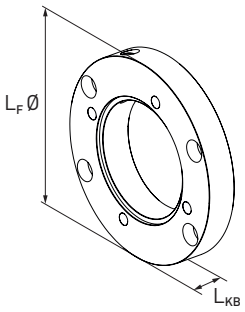


Fig. 22.15 **Coupling housing KB for bridge axes HB-B**

Table 22.5 **Dimensions of coupling housing KB for linear modules HM-B and cantilever axes HC**

Coupling housing for	L_F [mm]	L_{KB} [mm]	Article number
HC025B	50.0	17.0	25-002045
HM040B, HC040B	47.0	14.7	25-000798
HM060B, HC060B	69.0	23.2	25-000799
HM080B, HC080B	84.0	24.1	25-000800
HM120B	118.0	25.0	25-000801
HC100B	107.0	25.0	80043137
HM120B-H	140.0	57.7	80095835
HB250B	167.5	25.0	80073546

22.1.5.2 Motor adapter plate AM for linear modules HM-B, linear tables HT-B and cantilever axes HC without gearbox

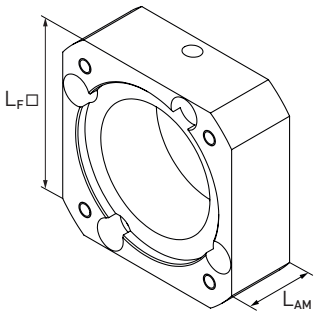


Fig. 22.16 **Motor adapter plate AM for linear modules HM-B, linear tables HT-B and cantilever axes HC without gearbox**

Table 22.6 **Motor adapter plate AM for linear modules HM-B without gearbox**

Linear axis	Manufacturer	Motors	L_F [mm]	L_{AM} [mm]	Article number
HM040B	HIWIN	EM1-C-M-20-2, EM1-C-M-40-2	60	30.5	25-000404
HM060B	HIWIN	EM1-C-M-75-2	80	37	25-000421
HM060B	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	52	25-001791
HM080B	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	51.5	25-000450
HM120B	HIWIN	EM1-D-M-2K-2	130	50.7	25-000647

Table 22.7 **Motor adapter plate AM for linear tables HT-B without gearbox**

Linear axis	Manufacturer	Motors	L_F [mm]	L_{AM} [mm]	Article number
HT100B	HIWIN	EM1-C-M-40-2	60	30.5	25-000404
HT150B	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	51.5	25-000450
HT200B	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	50.7	25-000647
HT250B	HIWIN	EM1-D-M-2K-2	130	50.7	25-000647

Table 22.8 **Motor adapter plate AM for cantilever axes HC-B without gearbox**

Linear axis	Manufacturer	Motors	L_F [mm]	L_{AM} [mm]	Article number
HC025B	HIWIN	EM1-C-M-10-2	50	27.3	25-002722
HC025B	HIWIN	EM1-C-M-20-2, EM1-C-M-40-2	60	32.3	80094829
HC040B	HIWIN	EM1-C-M-40-2	60	30.5	25-000404
HC060B	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	52	25-001791
HC080B	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	51.5	25-000450

22.1.5.3 Gearbox adapter plate AG for linear modules HM-B, linear tables HT-B and cantilever axes HC

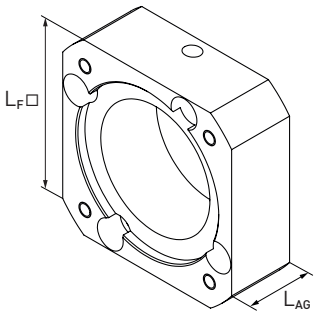


Fig. 22.17 **Gearbox adapter plate AG for linear modules HM-B, linear tables HT-B and cantilever axes HC**

Table 22.9 **Gearbox adapter plate AG for linear modules HM-B, linear tables HT-B, cantilever axes HC and bridge axes HB-B**

Linear axis	Gearbox[2)]	L_F [mm]	L_{AG} [mm]	Article number
HC025B	PLE040	50	27.0	25-002609[1)]
HM040B, HT100B, HC040B	PLE040	50	23.0	25-000735[1)]
HM040B, HT100B, HC040B	PLQE060	70	32.8	25-000387
HM060B, HC060B	PLQE060	70	27.5	25-000388
HM060B, HC060B	PLQE080	90	37.0	25-000389
HM080B, HT150B, HC080B	PLQE080	90	35.0	25-000390
HM080B, HT150B, HC080B	PLQE120	115	47.5	25-000391
HM120B, HT200B, HT250B, HC100B	PLQE120	115	43.6	25-000392
HM120B, HT200B, HT250B, HC100B	PLQE080	90	33.6	25-002638
HC150B	PLQE120	115	49.5	80077882
HM120B-H, HB250B	PSBN142	140	69.0	80077311
HM120B-H, HB250B	PLQE120	140	28.0	80096578

[1)] Adapter consists of two parts
[2)] PLE, PLQE and PSBN are registered trademarks of Neugart GmbH

22.1.5.4 Motor gearbox adapter plate GM for linear modules HM-B, linear tables HT-B and cantilever axes HC

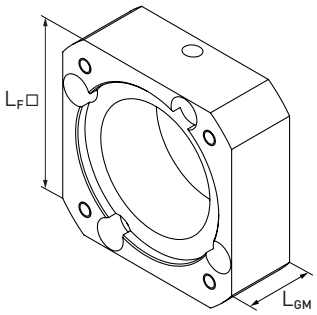


Fig. 22.18 **Motor gearbox adapter plate GM for linear modules HM-B, linear tables HT-B and cantilever axes HC**

Table 22.10 **Motor gearbox adapter plate GM for linear modules HM-B, linear tables HT-B and cantilever axes HC**

Gearbox	Manufacturer	Motors	L_F [mm]	L_{GM} [mm]	Article number
PLE040	HIWIN	EM1-C-M-05-2, EM1-C-M-10-2	40	19.0	25-002320
PLQE060	HIWIN	EM1-C-M-05-2, EM1-C-M-10-2	60	18.1	25-002298
PLQE060	HIWIN	EM1-C-M-20-2, EM1-C-M-40-2	60	23.1	25-000486
PLQE080	HIWIN	EM1-C-M-20-2, EM1-C-M-40-2	80	21.2	25-000494
PLQE080	HIWIN	EM1-C-M-75-2	80	31.2	25-000495
PLQE120	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	36.8	25-000690
PSBN142	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	150	45.0	80097837

PLE and PLQE are registered trademarks of Neugart GmbH

22.1.5.5 Gearboxes for linear modules HM-B, linear tables HT-B, cantilever axes HC and double axes HD

Gearbox[1] for optimal power transmission of the motor to the toothed belt drive.

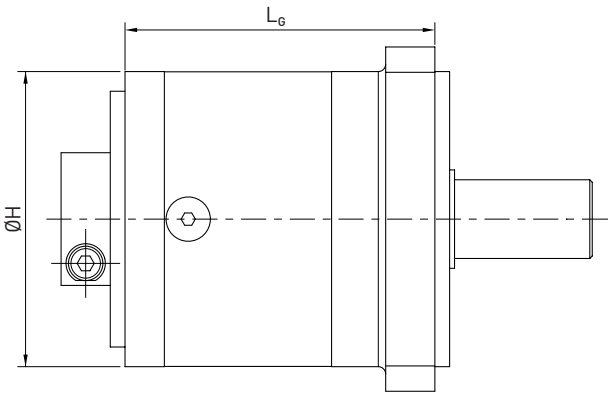


Fig. 22.19 **Gearbox dimensioned drawing for linear modules HM-B, linear tables HT-B, cantilever axes HC and double axes HD**

Table 22.11 **Gearbox for linear modules HM-B, linear tables HT-B, cantilever axes HC-B and bridge axes HB-B**

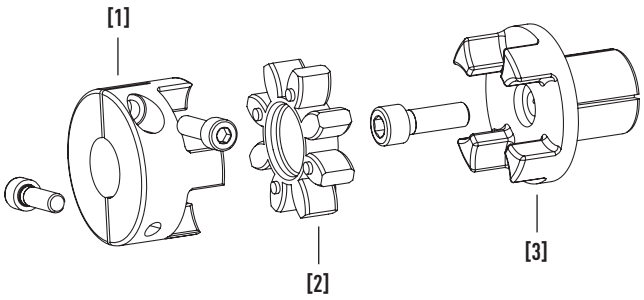
Linear axis	Ratio i	Ø H [mm]	L_G [mm]	Max. Ø motor shaft [mm] [3]	Gearbox [1]	Order code for position gearbox [2]
HM040B, HT100B, HC025B, HC040B	3	40	48,5	9 (11)	PLE040-3	G0403
	5	40	48,5	9 (11)	PLE040-5	G0405
	8	40	48,5	9 (11)	PLE040-8	G0408
	12	40	61,5	9 (11)	PLE040-12	G0412
HM040B, HM060B, HT100B, HC040B, HC060B	3	60	63,0	14 (19)	PLQE060-3	G0603
	5	60	63,0	14 (19)	PLQE060-5	G0605
	8	60	63,0	14 (19)	PLQE060-8	G0608
	12	60	75,5	14 (19)	PLQE060-12	G0612
HM060B, HM080B, HT150B, HT200B, HT250B, HC060B, HC080B, HC100B	3	80	83,5	19 (24)	PLQE080-3	G0803
	5	80	83,5	19 (24)	PLQE080-5	G0805
	8	80	83,5	19 (24)	PLQE080-8	G0808
	12	80	101,0	19 (24)	PLQE080-12	G0812
HM080B, HM120B, HM120B-H, HT150B, HT200B, HT250B, HC080B, HC100B, HC150B, HB250B	3	115	124,5	24 (35)	PLQE120-3	G1203
	5	115	124,5	24 (35)	PLQE120-5	G1205
	8	115	124,5	24 (35)	PLQE120-8	G1208
	12	115	152,5	24 (35)	PLQE120-12	G1212
HM120B-H, HB250B	3	150	115,5	35 (42)	PSBN142-3	G1403
	5	150	115,5	35 (42)	PSBN142-5	G1405
	8	150	115,5	35 (42)	PSBN142-8	G1408
	12	150	158,0	35	PSBN142-12	G1412

[1] PLE, PLQE und PSBN are registered trademarks of Neugart GmbH

[2] See order code Page 25 for linear modules HM-B, Page 45 linear tables HT-B, Page 87 cantilever axes HC and Page 105 double axes HD

[3] Values in brackets possible on request.

22.1.5.6 Coupling component for linear modules HM-B, linear tables HT-B, bridge axes HB-B and cantilever axes HC



[1] Clamping hub for motor side
[2] Sprocket
[3] Expansion hub for axis side

Fig. 22.20 **Coupling component for linear modules HM-B, linear tables HT-B, bridge axes HB-B and cantilever axes HC**

Expansion hub
Coupling element for the axis side.

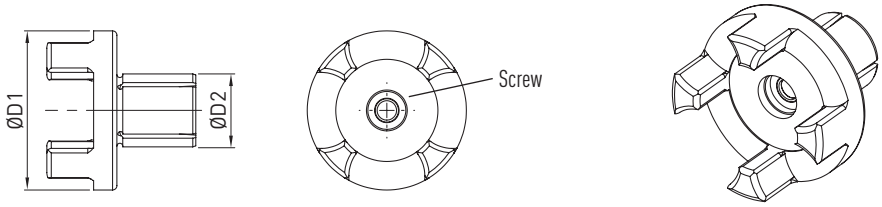


Fig. 22.21 **Expansion hub for linear modules HM-B, linear tables HT-B and cantilever axes HC**

Table 22.12 **Article numbers and dimensions of expansion hub**

Linear axis	Model	Ø D1 [mm]	Ø D2 [mm]	Thread size × length	Screw tightening torque [Nm]	Moment of inertia [kgmm²]	Frictional torque [Nm]	Article number
HC025B	Size 12	24.5	10	M4 × 14	4	2.9	11	25-002015
HM040B, HT100B, HC040B	Size 14	29.5	14	M5 × 18	10	4.4	31	25-002714
HM060B, HC060B	Size 19	40	20	M6 × 20	10	9.0	38	25-000199
HM080B, HT150B, HC080B	Size 24	55	25	M8 × 30	25	35.6	91	25-000200
HM120B, HT200B, HT250B, HC100B, HC150B	Size 28	65	35	M10 × 35	49	77.0	201	25-000201
HM120B-H	Size 38	80	35	M12 × 40	86	237,4	302	80092737
HB250B	Size 38	80	40	M12 × 40	95	264,8	374	80073105

Sprocket

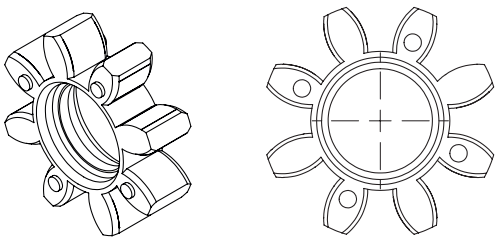


Fig. 22.22 **Sprocket for linear modules HM-B, linear tables HT-B and cantilever axes HC**

Table 22.13 **Sprocket article number**

Linear axis	Model	Article number
HC025B	Size 12	25-002709
HM040B, HT100B, HC040B	Size 14	25-002710
HM060B, HC060B	Size 19	25-002711
HM080B, HT150B, HC080B	Size 24	25-002712
HM120B, HT200B, HT250B, HC100B, HC150B	Size 28	25-002713
HM120B-H, HB250B	Size 38	80073071

Clamping hub
Coupling element for the motor side.

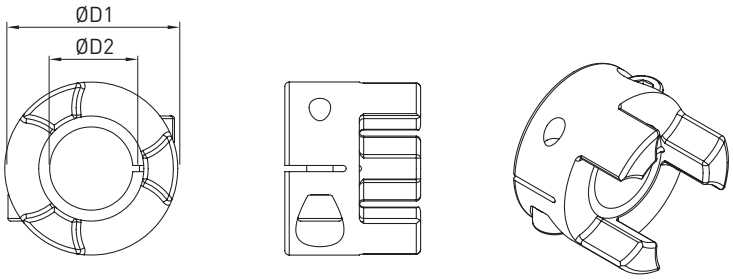


Fig. 22.23 **Clamping hub for linear modules HM-B, linear tables HT-B and cantilever axes HC**

Table 22.14 **Article numbers and specifications of clamping hub**

Linear axis	Model	Ø D1 [mm]	Ø D2 H7 [mm]	Thread size × length	Screw tightening torque [Nm]	Frictional torque [Nm]	Moment of inertia [kgmm²]	Article number
HC025B	Size 12	24.5	5	M3 × 12	2.1	5.2	1.46	25-002382
			6			6.1	1.46	25-002384
			6.35			6.4	1.46	25-002385
			8			8.1	1.45	25-002386
			9			9.1	1.45	25-002387
			10			10.1	1.44	25-002388
			11			11.1	1.43	25-002389
			12			12.1	1.41	25-002390
			14			14.1	1.41	25-002391
HM040B, HT100B, HC040B	Size 14	29.5	5	M4 × 12	5.0	10.1	2.70	25-002392
			6			12.2	2.69	25-002393
			6.35			13.2	2.69	25-002394
			8			16.5	2.68	25-002395
			9			18.6	2.68	25-002396
			10			20.8	2.67	25-002397
			11			23.0	2.66	25-002398
			12			25.1	2.65	25-002399
			13			27.2	2.63	25-002400
			14			29.4	2.61	25-002401
			16		4.0	28.0	6.11	25-002610
HM060B, HC060B	Size 19	39.5	6.35	M6 × 16	14.0	25.8	15.26	25-002403
			8			32.5	15.25	25-002404
			9			36.5	15.24	25-002405
			10			40.6	15.23	25-002406
			11			44.6	15.21	25-002407
			12			48.7	15.18	25-002408

Table 22.14 **Article numbers and specifications of clamping hub**

Linear axis	Model	Ø D1 [mm]	Ø D2 H7 [mm]	Thread size × length	Screw tightening torque [Nm]	Frictional torque [Nm]	Moment of inertia [kgmm²]	Article number
HM060B, HC060B	Size 19	39.5	14	M6 × 16	14.0	56.8	15.11	25-002409
			16			64.9	14.99	25-002410
			18			73.1	14.82	25-002411
			19			77.1	14.71	25-002412
			20			81.2	14.58	25-002413
			22	M5 × 16	10.0	71.5	13.95	25-002414
			24			75.6	13.52	25-002415
HM080B, HT150B, HC080B	Size 24	54.5	10	M6 × 20	15.0	41.0	53.30	80020239
			11			46.0	53.30	25-002456
			14			58.0	53.20	25-002416
			16			66.0	53.10	25-002417
			19			78.0	52.80	25-002418
			20			82.0	52.70	25-002419
			22			90.0	52.30	25-002420
			24			98.0	51.90	25-002422
			25			102.0	51.60	25-002423
			28			114.0	50.50	25-002424
			32			130.0	48.50	25-002425
HM120B, HT200B, HT250B, HC100B, HC150B	Size 28	64.5	16	M8 × 25	35.0	130.0	125.45	25-002426
			19			152.5	125.11	25-002427
			20			160.0	124.95	25-002428
			22			175.0	124.55	25-002429
			24			190.0	124.02	25-002430
			25			197.5	123.70	25-002431
			28			220.0	122.47	25-002432
			30			235.0	121.42	80108094
			32			240.0	120.08	25-002433
			35			262.5	117.59	25-002434
			38			285.0	118.33	25-002435
HM120B-H, HB250B	Size 38	80	19	M10 × 30	49.0	188.0	357.59	80109074
			22			217.0	357.46	80075344
			24			237.0	356.28	80075357
			25			247.0	359.43	80109084
			28			277.0	354.42	80075365
			30			296.0	353.12	80114285
			32			316.0	351.54	80075376
			35			346.0	349.08	80075389
			38			375.0	344.63	80075396
			40			395.0	341.05	80073112
			42			415.0	337.76	80075401

22.2 Drive adaptation of linear modules HM-S and linear tables HT-S

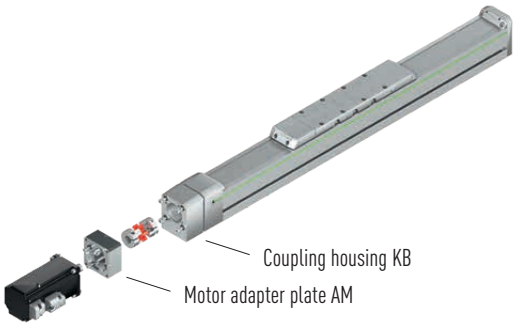
22.2.1 Motor adaptation of linear modules HM-S and linear tables HT-S

The drive adaptation of linear modules HM-S and linear tables HT-S is designed in two parts to ensure easy flange-mounting of all common motors.

The flange type set comprises the following components:
- Coupling housing KB
- Coupling components
- Motor adapter plate AM or belt drive RT

The dimensions of the coupling housing and motor adapter plate for HIWIN motors can be found in section 22.2.2 from page 176. Adaptations for motors from other manufacturers can be found in the configurator at hiwin.de.

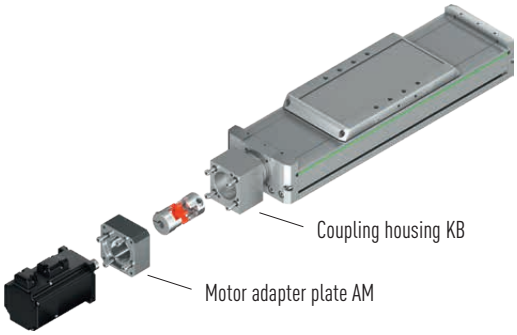
Motor adaptation of linear modules with ball screw – without belt drive



Motor adapter plate AM: Adapter from axis to motor

Fig. 22.24 **Motor adaptation of linear modules HM-S**

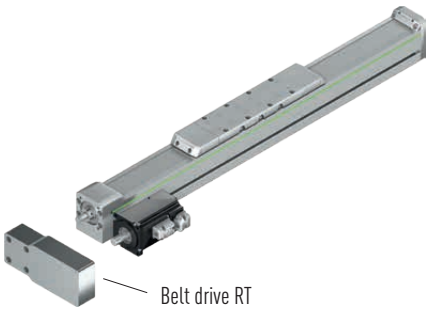
Motor adaptation of linear tables with ballscrew (HT-S)



Motor adapter plate AM: Adapter from axis to motor

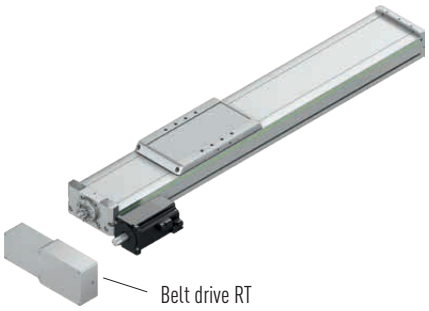
Fig. 22.25 **Motor adaptation of linear tables HT-S**

Motor adaptation of linear tables with ballscrew – with belt drive



Belt drive RT: For deflecting the drive 180°

Fig. 22.26 **Motor adaptation of linear modules HM-S with belt drive**



Belt drive RT: For deflecting the drive 180°

Fig. 22.27 **Motor adaptation of linear tables HT-S with belt drive**

Table 22.15 **Order code for position flange type [3] – linear modules HM-S and linear tables HT-S**

Drive Manufacturer/Type		Linear module HM-S				Linear table HT-S			
		HM040S	HM060S	HM080S	HM120S	HT100S	HT150S	HT200S	HT250S
		Motor only	**Motor only**	**Motor only**	**Motor only**	**Motor only**	**Motor only**	**Motor only**	**Motor only**
HIWIN	**EM1-C-M-05-2**	HW22[1]	HW16[1]						
	EM1-C-M-10-2	HW22[1]	HW16[1]			HW16[1]			
	EM1-C-M-20-2	HW21[1]	HW03[1]	HW05[1]		HW03[1]	HW05[1]		
	EM1-C-M-40-2		HW03[1]	HW05[1]		HW03[1]	HW05[1]	HW05[1]	
	EM1-C-M-75-2			HW06[1]	HW08[1]		HW06[1]	HW06[1]	HW08[1]
	EM1-A-M-1K-2				HW13[2]			HW25	HW13[2]
	EM1-D-M-1A-2				HW13[2]				HW13[2]
	EM1-D-M-2K-2								HW13[2]

[1] Possible belt drive V_1
[2] Possible belt drive V_2
[3] See order codes Page 35 for linear modules HM-S and Page 55 linear tables HT-S

22.2.2 Dimensions of motor adaptation of linear modules HM-S, linear tables HT-S

The total length of the spindle axis depends on the following factors:
- Adaptation material (coupling housing KB, motor adapter plate AM)
- Belt drive RT
- Motor

Linear axis without belt drive

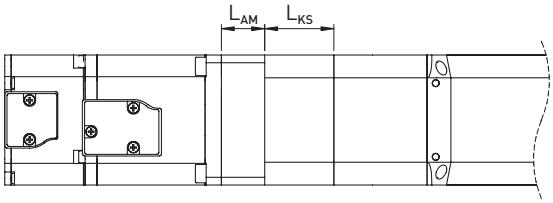


Fig. 22.28 **Motor connection of linear modules HM-S without belt drive**

L_{KS} Length of coupling housing, see Table 22.16
L_{AM} Length of motor adapter plate, see Table 22.17

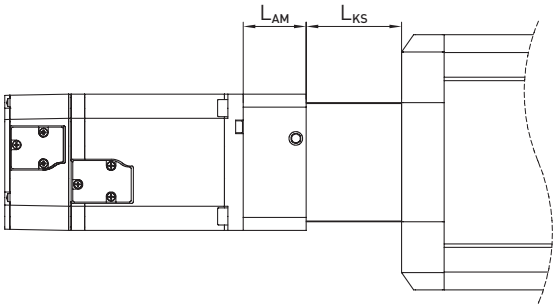


Fig. 22.29 **Motor connection of linear table HT-S without belt drive**

L_{KS} Length of coupling housing, see Table 22.16
L_{AM} Length of motor adapter plate, see Table 22.17

Linear axis with belt drive

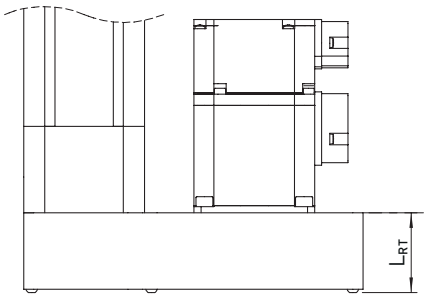


Fig. 22.30 **Motor connection of linear modules HM-S with belt drive**

L_{RT} Length of belt drive, see Table 22.19

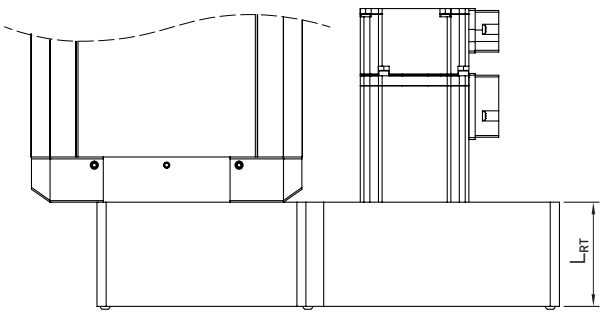


Fig. 22.31 **Motor connection of linear tables HT-S with belt drive**

L_{RT} Length of belt drive, see Table 22.19

22.2.2.1 Coupling housing KS for linear modules HM-S and linear tables HT-S

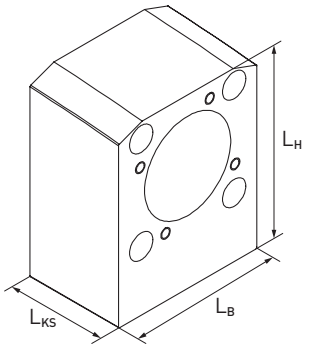


Fig. 22.32 **Coupling housing KS for linear modules HM-S**

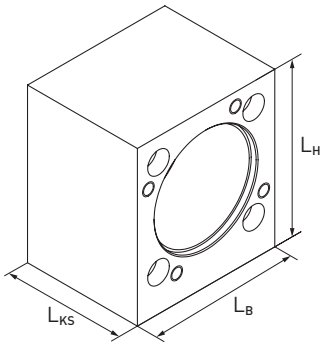


Fig. 22.33 **Coupling housing KS for linear tables HT-S**

Table 22.16 **Dimensions of coupling housing KS for linear modules HM-S and linear tables HT-S**

Coupling housing for	L_B [mm]	L_H [mm]	L_{KS} [mm]	Article number
HM040S	39.6	57.6	34	25-000305
HM060S	59.6	75.0	32	25-000306
HM080S	79.6	95.5	41	25-000307
HM120S	119.6	141.9	50	25-000308
HT100S	55.0	58.2	39	25-000952
HT150S	70.0	78.5	56	25-000951
HT200S	75.0	90.0	59	25-000950
HT250S	90.0	99.5	68	25-000949

22.2.2.2 Motor adapter plate AM for linear modules HM-S and linear tables HT-S

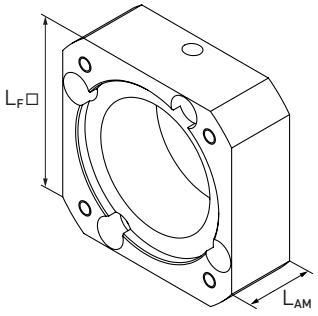


Fig. 22.34 **Motor adapter plate AM for linear modules HM-S and linear tables HT-S**

Table 22.17 **Motor adapter plate AM for linear modules HM-S**

Linear axis	Manufacturer	Motors	L_F [mm]	L_{AM} [mm]	Article number
HM040S	HIWIN	EM1-C-M-05-2, EM1-C-M-10-2	42	22,5	25-002721
		EM1-C-M-20-2	60	27,5	25-002871
HM060S	HIWIN	EM1-C-M-05-2, EM1-C-M-10-2	50	25,5	25-002736
		EM1-C-M-20-2, EM1-C-M-40-2	60	30,5	25-000404
HM080S	HIWIN	EM1-C-M-20-2, EM1-C-M-40-2	72	27	25-000414
		EM1-C-M-75-2	80	37	25-000421
HM120S	HIWIN	EM1-C-M-75-2	80	36,5	25-000438
		EM1-A-M-1K-2, EM1-D-M-1A-2	130	51,5	25-000450

Table 22.18 **Motor adapter plate AM for linear tables HT-S**

Linear axis	Manufacturer	Motors	L_F [mm]	L_{AM} [mm]	Article number
HT100S	HIWIN	EM1-C-M-10-2	50	25,5	25-002736
		EM1-C-M-20-2, EM1-C-M-40-2	60	30,5	25-000404
HT150S	HIWIN	EM1-C-M-20-2	72	27	25-000414
HT200S	HIWIN	EM1-A-M-1K-2	130	52	25-001791
HT250S	HIWIN	EM1-C-M-75-2	80	36,5	25-000438
		EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	130	51,5	25-000450

22.2.2.3 Belt drive RT for linear modules HM-S and linear tables HT-S

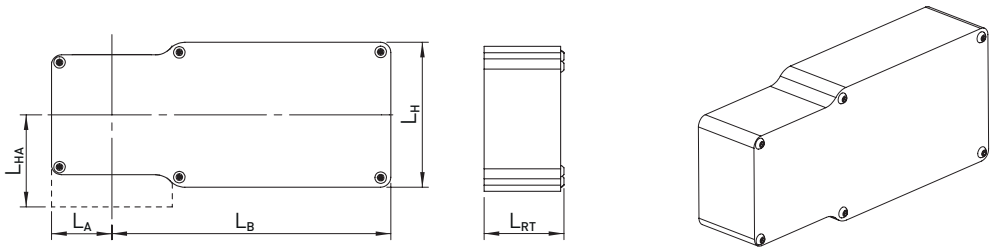


Fig. 22.35 **Belt drive for linear modules HM-S and linear tables HT-S**

Table 22.19 **Specifications of belt drive**

Linear axis	Type [1]	L_H	L_B	L_{RT}	L_A	L_{HA}	Translation
HM040S	V_1	72	138.5	40	30.0	36.25	1
HM060S	V_1	72	138.5	40	30.0	45.80	1
	V_2	102	171.5	40	30.0	45.80	1
HM080S	V_1	102	197.0	51	39.0	61.40	1
	V_2	131	226.0	61	39.0	61.40	1
HM120S	V_1	135	248.5	63	55.0	89.00	1
	V_2	175	288.0	73	55.0	89.00	1
HT100S	V_1	74	157.0	43	29.5	31.00	1
	V_2	102	196.0	43	29.5	31.00	1
HT150S	V_1	102	217.0	60	38.5	43.00	1
	V_2	131	251.0	70	38.5	43.00	1
HT200S	V_1	100	237.0	61	42.5	51.00	1
	V_2	131	268.5	71	42.5	51.00	1
HT250S	V_1	135	298.0	73	50.7	52.00	1
	V_2	175	349.5	83	50.7	52.00	1

[1] You can find the required type in Table 22.15

Note: Please note that the belt drive hangs over the lower edge of the axis if the following applies:

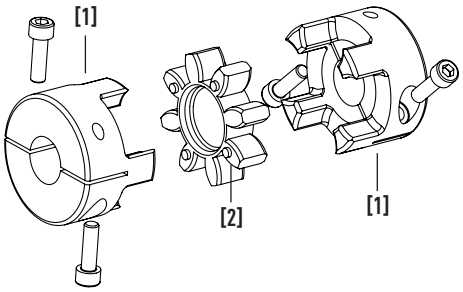
$$\frac{L_H}{2} > L_{HA}$$

Note: Please note that the belt drive can protrude over the side of the axis if the following applies:

$$L_A > \frac{L_B}{2}$$

L_B Axis profile width

22.2.2.4 Coupling component for linear modules HM-S and linear tables HT-S



[1] Clamping hubs (1 for axis side, 1 for motor side)
[2] Sprocket

Fig. 22.36 **Coupling component for linear modules HM-S, linear tables HT-S**

Clamping hub
Coupling element on motor and axis side.

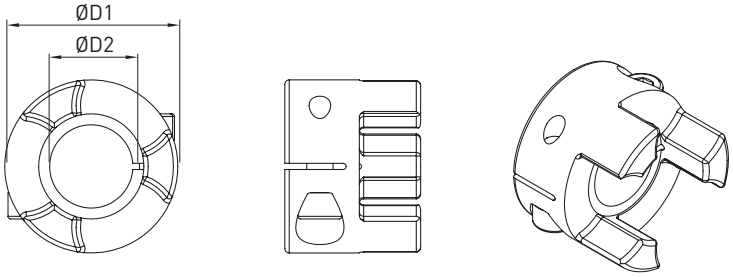


Fig. 22.37 **Clamping hub**

Table 22.20 **Article numbers and specifications of clamping hub**

Linear axis	Model	Ø D1 [mm]	Ø D2 H7 [mm]	Thread size × length	Screw tightening torque [Nm]	Frictional torque [Nm]	Moment of inertia [kgmm²]	Article number
HM040S	Size 12	24.5	5	M3 × 12	2.1	5.2	1.46	25-002382
			6			6.1	1.46	25-002384
			6.35			6.4	1.46	25-002385
			8			8.1	1.45	25-002386
			9			9.1	1.45	25-002387
			10			10.1	1.44	25-002388
			11			11.1	1.43	25-002389
			12			12.1	1.41	25-002390
			14			14.1	1.41	25-002391
HM060S, HT100S	Size 14	29.5	5	M4 × 12	5.0	10.1	2.70	25-002392
			6			12.2	2.69	25-002393
			6.35			13.2	2.69	25-002394
			8			16.5	2.68	25-002395
			9			18.6	2.68	25-002396
			10			20.8	2.67	25-002397
			11			23.0	2.66	25-002398
			12			25.1	2.65	25-002399
			13			27.2	2.63	25-002400
			14			29.4	2.61	25-002401
			16		4.0	28.0	6.11	25-002610

Table 22.20 **Article numbers and specifications of clamping hub**

Linear axis	Model	Ø D1 [mm]	Ø D2 H7 [mm]	Thread size × length	Screw tightening torque [Nm]	Frictional torque [Nm]	Moment of inertia [kgmm²]	Article number
HM080S, HT150S, HT200S	Size 19	39.5	6.35	M6 × 12	14.0	25.8	15.26	25-002403
			8			32.5	15.25	25-002404
			9			36.5	15.24	25-002405
			10			40.6	15.23	25-002406
			11			44.6	15.21	25-002407
			12			48.7	15.18	25-002408
			14			56.8	15.11	25-002409
			16			64.9	14.99	25-002410
			18			73.1	14.82	25-002411
			19			77.1	14.71	25-002412
			20			81.2	14.58	25-002413
			22	M5 × 16	10.0	71.5	13.95	25-002414
			24			75.6	13.52	25-002415
HM120S, HT250S	Size 24	54.5	11	M6 × 20	15.0	46.0	53.30	25-002456
			14			58.0	53.20	25-002416
			16			66.0	53.10	25-002417
			19			78.0	52.80	25-002418
			20			82.0	52.70	25-002419
			22			90.0	52.30	25-002420
			24			98.0	51.90	25-002422
			25			102.0	51.60	25-002423
			28			114.0	50.50	25-002424
			32			130.0	48.50	25-002425

Sprocket

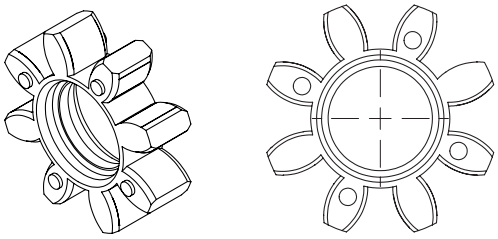


Fig. 22.38 **Sprocket**

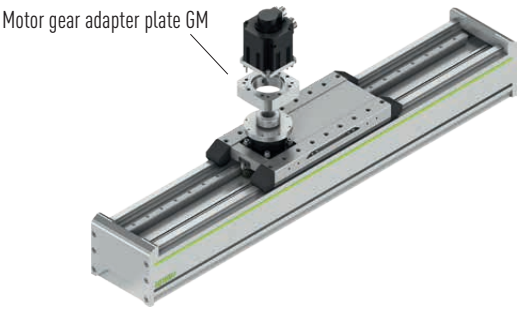
Table 22.21 **Sprocket article number**

Linear axis	Model	Article number
HM040S	Size 12	25-000202
HM060S, HT100S	Size 14	25-000203
HM080S, HT150S, HT200S	Size 19	25-000204
HM120S, HT250S	Size 24	25-000205

22.2.3 Drive adaptation of bridge axes HB-R

The drive adaptation of the HB-R bridge axis consists of a GM motor gear adapter plate to ensure that all standard motors can be easily flange-mounted.
The dimensions of the motor gearbox adapter plate for HIWIN motors can be found in section 22.1.5 from page 164. Adaptations for motors from other manufacturers can be found in the configurator at hiwin.de.

Motor adaptation of bridge axes with rack and pinion drive (HB-R)



Motor gear adapter plate GM: Adapter from gearbox to motor

Fig. 22.39 **Motor adaptation of bridge axes HB-R**

Table 22.22 **Order code for position flange type [1] – Bridge axes HB-R**

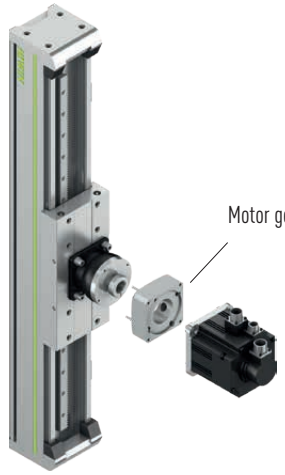
Drive Manufacturer/Type		**HB250R**
		With NPR035-H
Gearbox adapter		
HIWIN	**EM1-A-M-1K-2**	HW28[2]
	EM1-D-M-1A-2	HW28[2]
	EM1-D-M-2K-2	HW28[2]

NPR is a registered trademark of Wittenstein SE
[1] See order code Page 87
[2] Drive not suitable for Y-axis of HIWIN multi-axis systems HS

22.2.4 Drive adaptation of cantilever axes HC-R

The adaptation to the linear axis consists of a GM motor gear adapter plate to ensure that all standard motors can be easily flange-mounted.
The dimensions of the motor gearbox adapter plate for HIWIN motors can be found in section 22.1.5 from page 164. Adaptations for motors from other manufacturers can be found in the configurator at hiwin.de.

Motor adaptation of cantilever axes ack and pinion drive (HC-R)



Motor gear adapter plate GM: Adapter from gearbox to motor

Fig. 22.40 **Motor adaption of cantilever axes HC-R**

Table 22.23 **Order code for position flange type [1] – Cantilever axes HC-R**

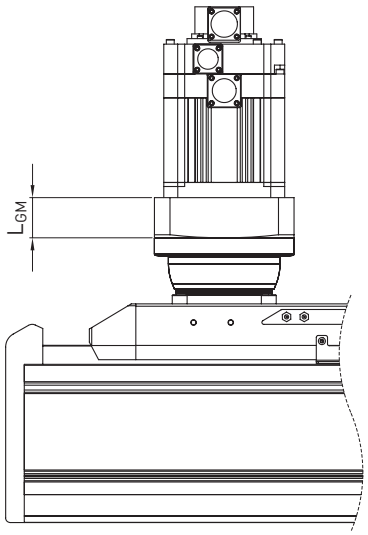
Drive Manufacturer/Type		HC150R
		With NPR035-H
Gearbox adapter		
HIWIN	**EM1-A-M-1K-2**	HW28[2]
HIWIN	**EM1-D-M-1A-2**	HW28[2]
HIWIN	**EM1-D-M-2K-2**	HW28[2]

NPR is a registered trademark of Wittenstein SE
[1] See order code Page 87
[2] Drive not suitable for Y-axis of HIWIN multi-axis systems HS

22.2.5 Dimensions of the motorised adaptation of the bridge axes HB-R and cantilever axles HC-R

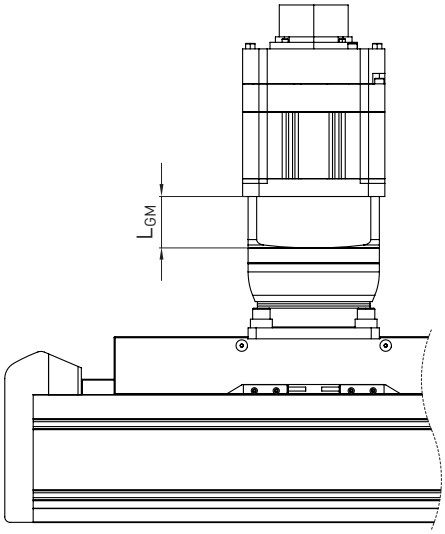
The total height of the linear axes with rack and pinion drive depends on the following factors:

- Gearbox
- Motor gearbox adapter plate GM
- Motor



L_{GM} Length of motor gearbox adapter plate, see Table 22.10

Fig. 22.41 **Motor connection of linear module HM-B without gearbox**



L_{GM} Length of motor gearbox adapter plate, see Table 22.10

Fig. 22.42 **Motor connection of linear table HT-B without gearbox**

22.2.6 Motor gearbox adapter plate GM for bridge axes HB-R and cantilever axes HC-R

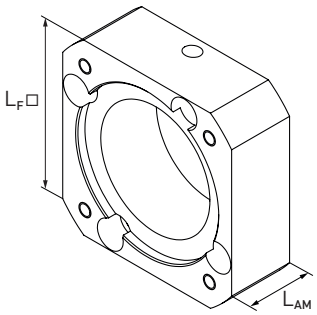


Fig. 22.43 **Motor gearbox adapter plate GM for bridge axes HB-R and cantilever axes HC-R**

Table 22.24 **Motor gearbox adapter plate GM for bridge axes HB-R and cantilever axes HC-R**

Gearbox	Manufacturer	Motors	L_F [mm]	L_{AM} [mm]	Item number
NPR035-H	HIWIN	EM1-A-M-1K-2, EM1-D-M-1A-2, EM1-D-M-2K-2	120	47,0	80098354

22.2.7 Gearbox for bridge axes HB-R and cantilever axes HC-R

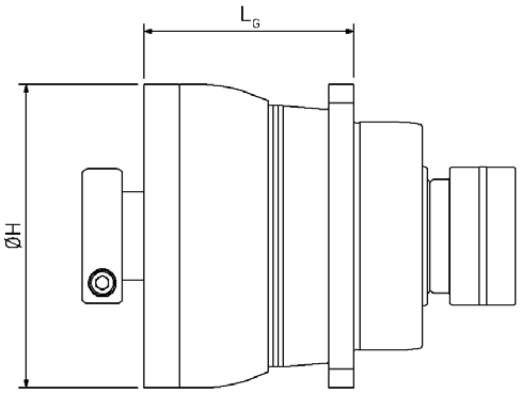


Fig. 22.44 **Gearbox for bridge axes HB-R and cantilever axes HC-R**

Table 22.25 **Gearbox for cantilever axes HC-R and bridge axes HB-R**

Linear axis	Transmission i	Ø H	L_G [mm]	Max. Ø motor shaft [mm]	Gearbox [1]	Order code for gearbox position [2]
HC150R, HB250R	3	120	83,1	28	NP035-H-3	G3503
	5	120	83,1	28	NP035-H-5	G3505
	7	120	83,1	28	NP035-H-7	G3507
	10	120	83,1	28	NP035-H-10	G3510
	3	150	89,1	38	NP035-K-3	G3503
	5	150	89,1	38	NP035-K-5	G3505
	7	150	89,1	38	NP035-K-7	G3507
	10	150	89,1	38	NP035-K-10	G3510

[1] NPR is a registered trademark of Wittenstein SE

[2] See order code Page 79 for bridge axes HB-R and Page 101 for cantilever HC-R

22.3 Energy supply for linear axes HT-B, HB-B, HT-S and HB-R

For safe carrying of supply lines, linear axes Linearachsen HT-B, HB-B, HT-S and HB-R up to a maximum stroke of 5,000 mm [1] are optionally supplied with generously dimensioned energy chains. They are extremely compact and save space when attached to the axis. The orientation of the energy chain can be selected according to the order codes in section 7.2 and section 8.2. The linear axes with energy chain are optimised for horizontal installation. Axes with energy chain for vertical use on request.
The dimensions of the energy chain are listed in Fig. 22.45, Fig. 22.46 and Table 22.26 as well as Table 22.27.

[1] For HT100B, the maximum stroke with energy chain is 4,000 mm

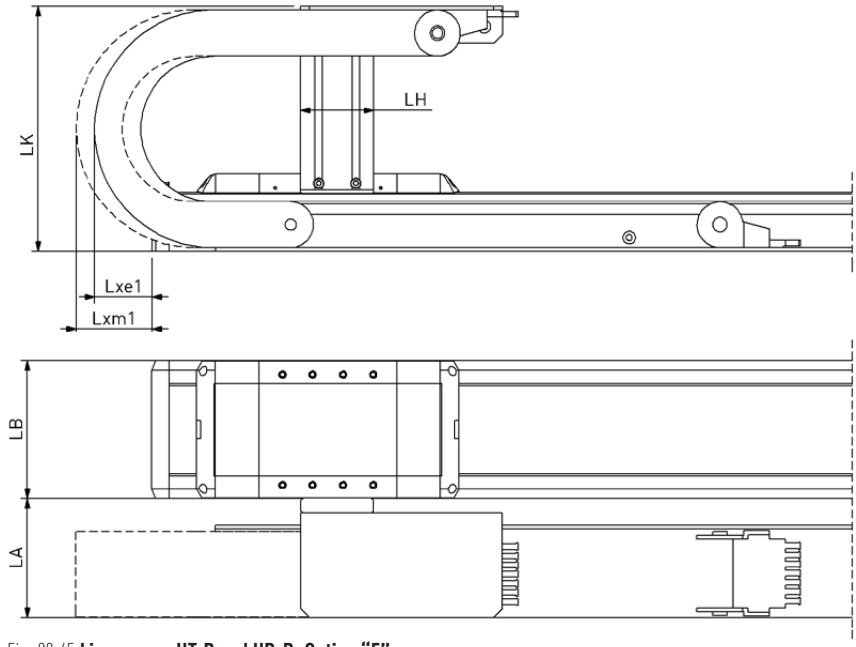


Fig. 22.45 **Linear axes HT-B and HB-B: Option "E"**

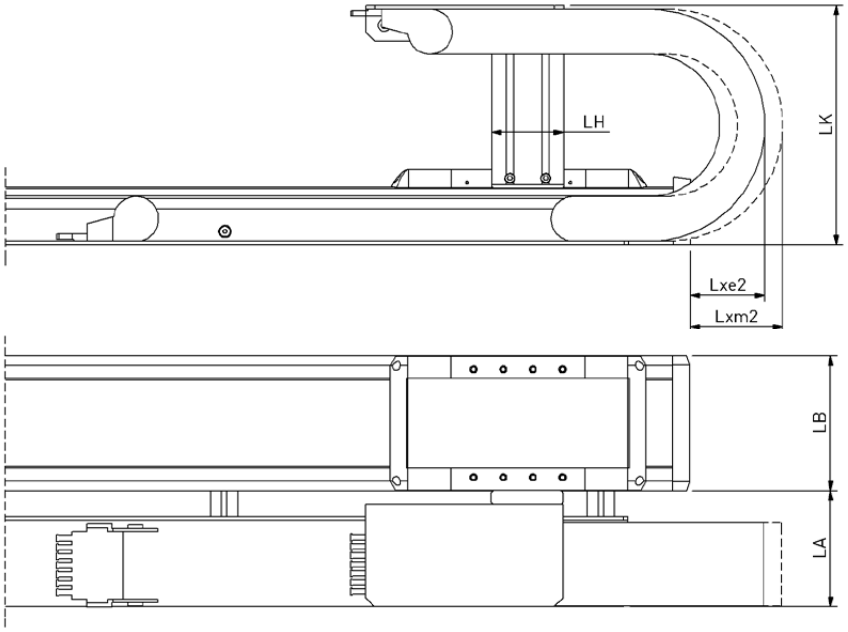


Fig. 22.46 **Linear axes HT-B: Option "C" and "F"**

Table 22.26 **Dimensions of drive interface with energy chain for linear axes HT-B and HB-B**

	Linear table – Variant without cover					Linear table – Variant with cover			
	HT100B	**HT150B**	**HT200B**	**HT250B**	**HB250B**	**HT100B**	**HT150B**	**HT200B**	**HT250B**
LB [mm]	100	150	200	250	250	100	150	200	250
Inner cross section W × H [mm]	57 × 25	75 × 35	75 × 35	75 × 35	75 × 35	57 × 25	75 × 35	75 × 35	75 × 35
Bending radius [mm]	75	100	100	100	100	75	100	100	100
LK [mm]	198	266	266	266	299	198	266	266	266
LA [mm]	100	129	129	129	139	100	129	129	129
LH [mm]	60	80	80	80	80	60	80	80	80
Lxe1 [mm] [1)]	3)	3)	3)	3)	3)	3)	3)	3)	3)
Lxe2 [mm] [1)]	3)	3)	3)	3)	3)	3)	3)	3)	3)
Lxm1 [mm] [2)]	15	3)	3)	3)	3)	3)	3)	3)	3)
Lxm2 [mm] [2)]	15	3)	3)	3)	3)	3)	3)	3)	3)

1) At electrical zero
2) At mechanical zero
3) Energy chain without overhang

Table 22.27 **Dimensions of drive interface with energy chain for linear axes HT-S**

	Linear table – Variant without cover				Linear table – Variant with cover			
	HT100S	**HT150S**	**HT200S**	**HT250S**	**HT100S**	**HT150S**	**HT200S**	**HT250S**
LB [mm]	100	150	200	250	100	150	200	250
Inner cross section W × H [mm]	57 × 25	75 × 35	75 × 35	75 × 35	57 × 25	75 × 35	75 × 35	75 × 35
Bending radius [mm]	75	100	100	100	75	100	100	100
LK [mm]	198	266	266	266	198	266	266	266
LA [mm]	100	129	129	129	100	129	129	129
LH [mm]	60	80	80	80	60	80	80	80
Lxe1 [mm] [1)]	3)	3)	3)	3)	3)	3)	3)	3)
Lxe2 [mm] [1)]	35	3)	3)	3)	5	3)	3)	3)
Lxm1 [mm] [2)]	3)	3)	3)	3)	3)	3)	3)	3)
Lxm2 [mm] [2)]	45	15	3)	3)	15	3)	3)	3)

1) At electrical zero
2) At mechanical zero
3) Energy chain without overhang

Table 22.28 **Dimensions of drive interface with energy chain for bridge axes HB250R**

	HB250R
LB [mm]	250
Inner cross section W × H [mm]	75 × 35
Bending radius [mm]	100
LK [mm]	299
LA [mm]	139
LH [mm]	80
Lxe2 [mm] [1)]	3)
Lxm2 [mm] [2)]	3)

1) At electrical zero
2) At mechanical zero
3) Energy chain without overhang

22.4 Connection interface and energy supply for linear motor axes HT-L and HB-L

Linear motor axes HT-L and HB-L have an interface for motor and encoder cables. These are located on the side of the carriage and can be connected quickly and easily without tools. Depending on the installation situation and the desired cable routing, two different orientations of the connector are available, see Fig. 22.47 and Fig. 22.48. For safe carrying of the supply cables, linear motor axes HT100L and HT150L up to a maximum stroke of 4,000 mm and linear motor axes HT200L, HT250L and HB250L up to a maximum stroke of 5,000 mm are optionally supplied with generously dimensioned energy chains. They are extremely compact and save space when attached to the axis. The orientation of the energy chain depends on the selected connector orientation. Linear tables HT-L and HB-L with energy chain are optimised for horizontal installation. Axes with energy chain for vertical use on request.

Dimensions of the energy chain and the electrical interface are listed in Fig. 22.47, Fig. 22.48 and Table 22.29.

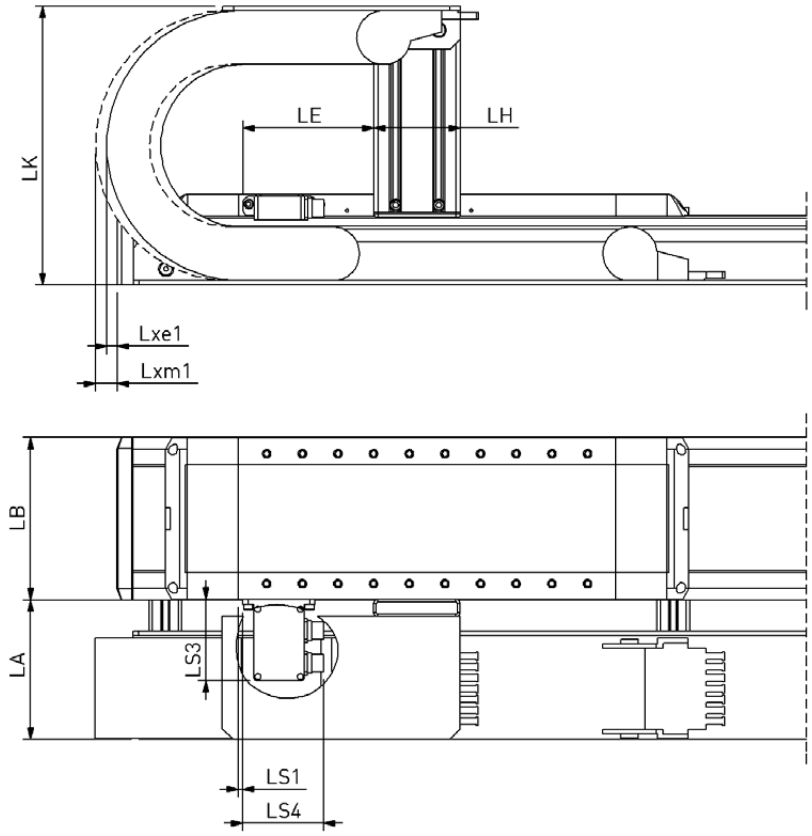


Fig. 22.47 **Linear motor axes HT-L and HB-L: Option "D" and "F" – connector right/rear, also applies mirrored to option "C" and "E" – connector left/rear**

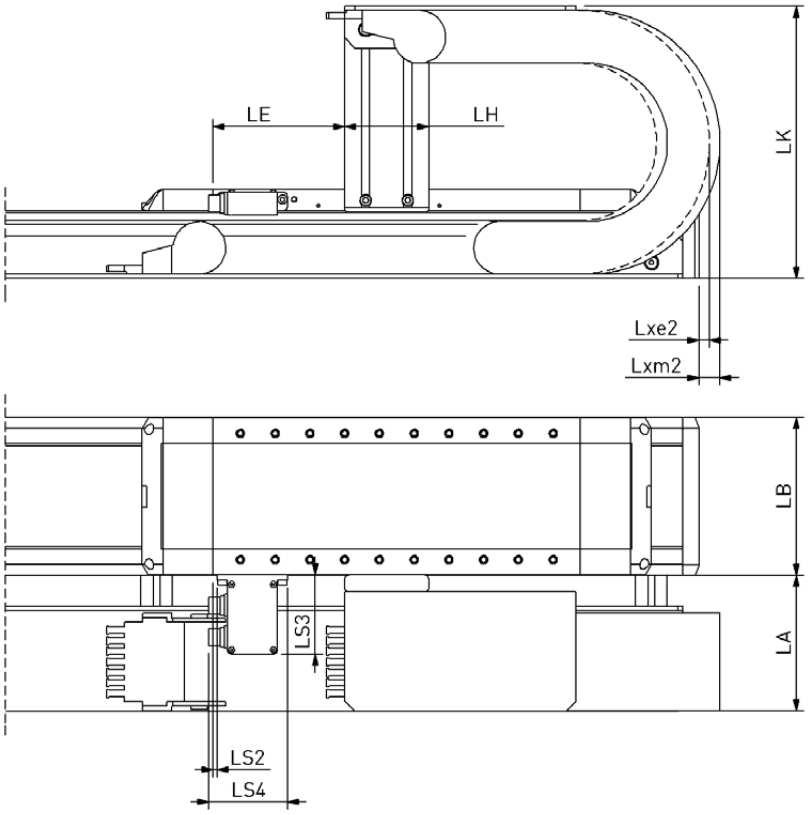


Fig. 22.48 **Linear motor axes HT-L and HB-L: Option "R" and "B" – connector right/front, also applies mirrored to option "L" and "A" – connector left/front**

Table 22.29 **Dimensions of drive interface and energy chain for linear motor axes HT-L and HB-L**

	Linear table – Variant without cover					Linear table – Variant with cover			
	HT100L	**HT150L**	**HT200L**	**HT250L**	**HB250L**	**HT100L**	**HT150L**	**HT200L**	**HT250L**
LB [mm]	100	150	200	250	250	100	150	200	250
Inner cross section W × H [mm]	57 × 25	77 × 25	75 × 35	75 × 35	75 × 35	57 × 25	77 × 25	75 × 35	75 × 35
Bending radius [mm]	75	100	100	100	100	75	100	100	100
LK [mm]	200	266	266	266	299	266	266	266	266
LA [mm]	100	129	129	129	139	129	129	129	129
LH [mm]	60	80	80	80	80	80	80	80	80
LE [mm] [4]	117,5	125	120	135	387	117,5	125	120	135
Lxe1 [mm] [1][4]	60	70	30	[3]	–	10	20	[3]	[3]
Lxe2 [mm] [1][4]	50	[3]	[3]	[3]	10	[3]	[3]	[3]	[3]
Lxm1 [mm] [2][4]	70	90	60	35	–	20	40	10	[3]
Lxm2 [mm] [2][4]	60	[3]	[3]	[3]	60	10	[3]	[3]	[3]
LS1 [mm]	11	15	17	25	–	11	15	17	25
LS2 [mm]	0	4	6	14	0	0	4	6	14
LS3 [mm]	75	84	84	84	84	84	84	84	84
LS4 [mm]	78	92	92	92	115	92	92	92	92

[1] At electrical zero
[2] At mechanical zero
[3] Energy chain without overhang
[4] Not applicable for variant without energy chain

23. Accessories

23.1 Clamping profiles

With the help of clamping profiles, the linear axis is attached to the machine frame from above. The clamping profiles can be swivelled laterally into the profile groove of the axis.

The required number of clamping profiles depends on the axis length and the load and can be found in the assembly instructions. Sets containing 4 clamping profiles are available.

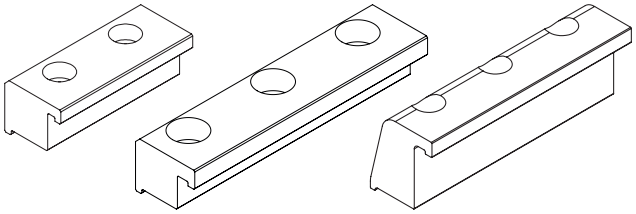


Fig. 23.1 **Clamping profiles short and long**

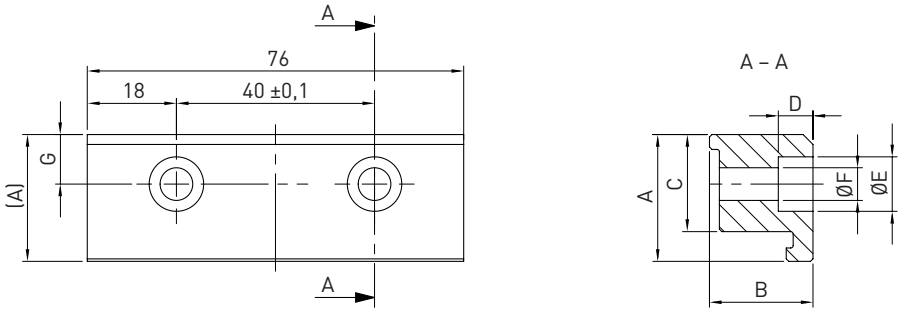


Fig. 23.2 **Dimensioned drawing of clamping profile short**

Table 23.1 **Article numbers and dimensions of clamping profiles short**

Suitable for linear axis	Model	A	B	C	D	ØE	ØF	G	Matching screw	Article number, 4 pieces
HM040/HT100	Size 5	18.0	10.5	14.1	6.0	10	5.5	6.85	DIN 912 M5	25-000517
HM060	Size 6	25.6	20.9	19.6	9.5	11	6.6	10.00	DIN 912 M6	25-000518
HT150	Size 6	26.1	15.9	19.6	8.5	11	6.6	10.00	DIN 912 M6	25-001023
HM080 [1]/HM120/ HT200/HT250	Size 8	28.0	22.0	19.5	8.0	15	9.0	10.00	DIN 912 M8	25-000519

[1] Standard
Unit: mm

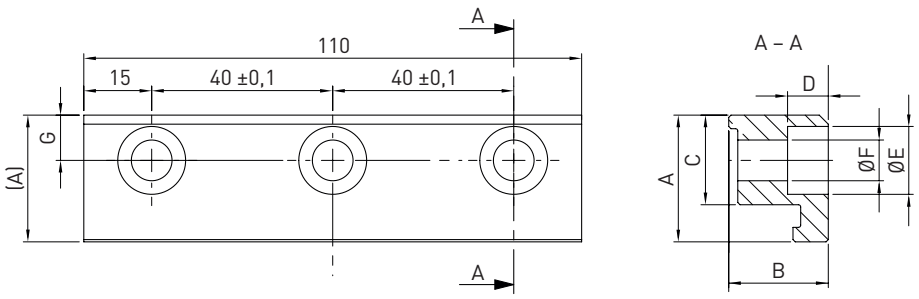


Fig. 23.3 **Dimensioned drawing of clamping profile long**

Table 23.2 **Article numbers and dimensions of clamping profiles long**

Suitable for linear axis	Model	A	B	C	D	ØE	ØF	G	Matching screw	Article number, 4 pieces
HM080/HM120 [1]/ HT200 [1]/HT250 [1]	Size 8	28.0	22.0	19.5	8.0	15.0	9.0	10.0	DIN 912 M8	25-000520

[1] Standard
unit: mm

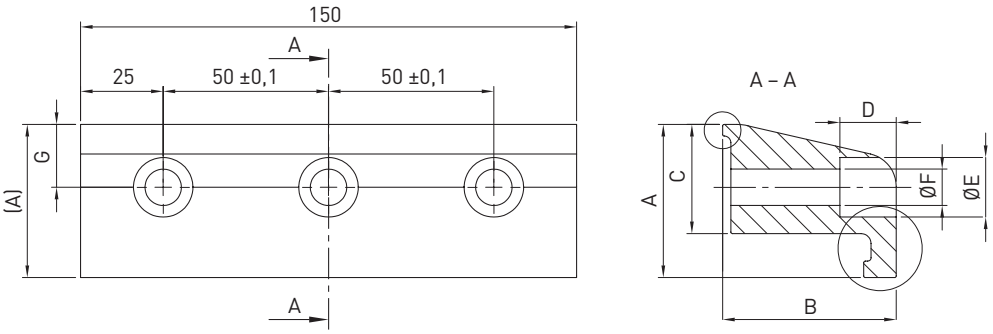


Fig. 23.4 **Dimensioned drawing of clamping profile HB**

Table 23.3 **Article numbers and dimensions of clamping profiles HB**

Suitable for bridge axes	Model	A	B	C	D	Ø E	Ø F	G	Matching screw	Article number, 4 pieces
HB250	Size 10	46.3	52.2	33	17	18.0	11.0	19.0	DIN912 M10	80113432

unit: mm

23.2 T nut

T nut for force-fit mounting of the linear axis. Flexible fastening option via the grooves on the side and underside of the axis profile. The required number of T nuts depends on the axis length and the load and can be found in the assembly instructions. Sets containing 10 T nuts are available.

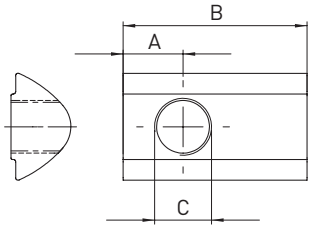


Fig. 23.5 **Dimensioned drawing of T nut**

Table 23.4 **Article numbers and dimensions of T nut**

Suitable for linear axis	Model	A	B	C	Article number, 10 pieces
HM040, HT100	Size 5 M4	3.5	12.0	M4	20-000528
HM040, HT100 [1)]	Size 5 M5	3.5	12.0	M5	20-000529
HM060, HT150	Size 6 M5	4.5	17.0	M5	20-000530
HM060, HT150 [1)]	Size 6 M6	5.5	17.0	M6	20-000531
HM080, HM120, HT200, HT250	Size 8 M5	7.5	23.0	M5	20-000532
HM080, HM120, HT200, HT250	Size 8 M6	6.5	23.0	M6	20-000533
HM080, HM120, HT200, HT250 [1)]	Size 8 M8	7.5	23.0	M8	20-000534
HB250	Size 10 M8	8.5	28.5	M8	80114686
HB250 [1)]	Size 10 M10	8.5	28.5	M10	80114691

[1)] Preferred type for axis mounting
unit: mm

23.3 Centring sleeve

Centring sleeves for insertion into the mounting holes of the carriage for exact and reproducible load pick-up. Sets containing 10 centring sleeves are available.

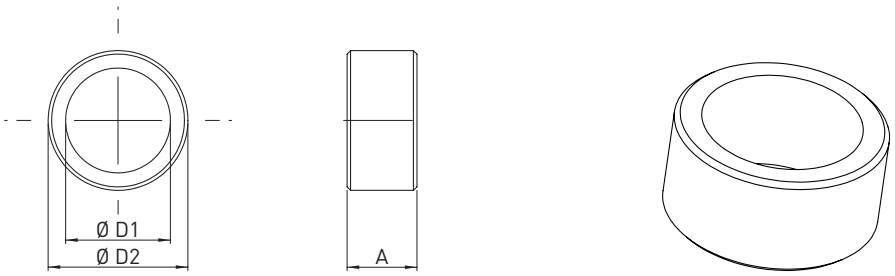


Fig. 23.6 **Dimensioned drawing of centring sleeve**

Table 23.5 **Article numbers and dimensions of centring sleeve**

Suitable for linear axis	A	Ø D1	Ø D2	Article number, 10 pieces
HC025	4	4.5	6 h6	25-002195
HM040, HM060, HT100, HT150, HC040, HC060	4	6.5	8 h6	25-000511
HM080, HT200, HC080	4	9.0	12 h6	25-000512
HM120, HT250, HC100B, HC150, HB250	4	11.0	15 h6	25-000513

Unit: mm

23.4 Groove cover

Groove cover for covering mounting groove. Length: 2 m. Sets of 5 groove covers are available.

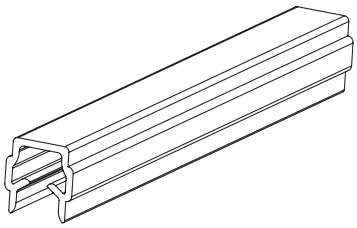


Fig. 23.7 **Groove cover for linear axes HM/HT/HC**

Table 23.6 **Article numbers for groove covers**

Suitable for linear axis	Model	Article number, 5 pieces
HM040, HT100, HC040, HC060	Size 5	25-000514
HM060, HT150, HC080	Size 6	25-000515
HM080, HM120, HT200, HT250, HC100B, HC150	Size 8	25-000516
HB250	Size 10	80114653

23.5 Limit switches

Inductive proximity switch, available in either a normally closed or a normally open version. By default, the limit switch is available with connector or open cable end. Set including mounting material.

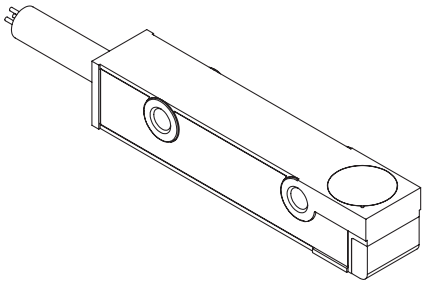


Fig. 23.8 **Limit switch for linear axes HM/HT/HC**

Table 23.7 **Options for limit switch**

Suitable for linear axis	Option	Article number
HM, HT, HC040B, HC060B, HC080B, HC100B, HC150	Limit switch with 100 mm cable, connector (normally open)	25-000786
HM, HT, HC040B, HC060B, HC080B, HC100B, HC150	Limit switch with 100 mm cable, connector (normally closed)	25-002766
HM, HT, HC040B, HC060B, HC080B, HC100B, HC150	Limit switch with 4 m cable (normally open)	25-000787
HM, HT, HC040B, HC060B, HC080B, HC100B, HC150	Limit switch with 5 m cable (normally closed)	25-000788
HC025B	Limit switch with 200 mm cable, connector (normally open)	25-002204
HC025B	Limit switch with 2 m cable (normally open)	25-002205
HB250	Limit switch with 100 mm cable, connector (normally open)	80073805
HB250	Limit switch with 300 mm cable, connector (normally closed)	80073846
HB250	Limit switch with 5 m cable (normally open)	80073857
HB250	Limit switch with 5 m cable (normally closed)	80073860

23.6 Extension cable for limit switches

Cable with 3-pin M8 round connector on the limit switch side and open wires at the other end of the cable.

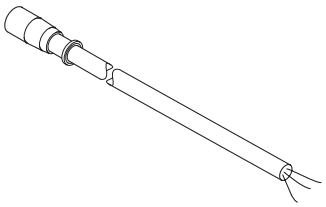


Fig. 23.9 **Extension cable for limit switch**

Table 23.8 **Extension cable for limit switch**

Length [m]	Max. cable diameter [mm]	Min. static bending radius [mm]	Min. dynamic bending radius [mm]	Article number
3	4.5	13.5	18.0	8-10-0275
5	4.5	13.5	18.0	8-10-0276
7	4.5	13.5	18.0	8-10-0277
10	4.5	13.5	18.0	8-10-0278
15	4.5	13.5	18.0	8-10-0279

23.7 Damping element

The damping element is used to switch the limit switch in the two carriage end positions (at stroke 0 and stroke max.). Set including mounting material.

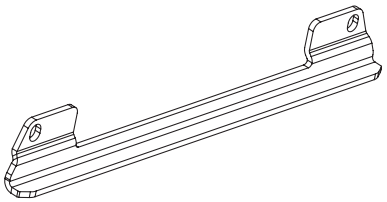


Fig. 23.10 **Damping element for linear axes HM/HT**

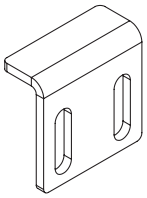


Fig. 23.11 **Damping element for cantilever axes HC**

Table 23.9 **Article numbers for damping element**

Suitable for linear axis	Article number
HM, carriage type E	25-001999
HM, carriage type S, M, L	25-000785
HT	25-001031
HC025	25-002196
HC040	25-002197
HC060, HC080	25-002198
HC100B	80056513
HC150	80077897
HB250	80073712

23.8 Motor cable for linear tables HT-L

Motor cable matching linear tables HT-L.

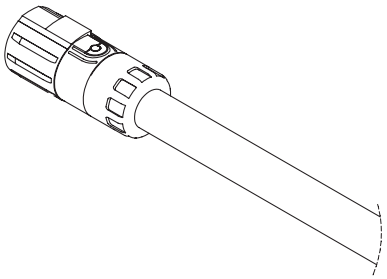


Fig. 23.12 **Motor cable for linear table HT100L**

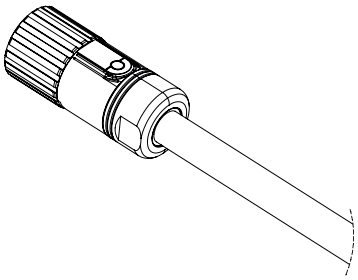


Fig. 23.13 **Motor cable for linear table HT150L, HT200L, HT250L, HB250L**

Table 23.10 **Motor cable for linear table HT-L**

Suitable for linear axis	Length [m]	Connection axis-side	End of cable	Article number
HT100L	**3**	Connector 915, 9-pin	Open	8-10-1214
HT100L	**5**	Connector 915, 9-pin	Open	8-10-1215
HT100L	**10**	Connector 915, 9-pin	Open	8-10-1217
HT150L, HT200L, HT250L, HB250L	**3**	Connector M23	Open	8-10-0069
HT150L, HT200L, HT250L, HB250L	**5**	Connector M23	Open	8-10-0070
HT150L, HT200L, HT250L, HB250L	**10**	Connector M23	Open	8-10-0072

23.9 Encoder cable for incremental distance measuring system for linear tables HT-L
Cable for incremental distance measuring system (option A, B, D, E) for linear axes HT-L.

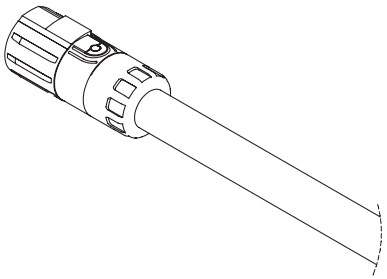


Fig. 23.14 **Encoder cable for incremental distance measuring system for linear tables HT100L**

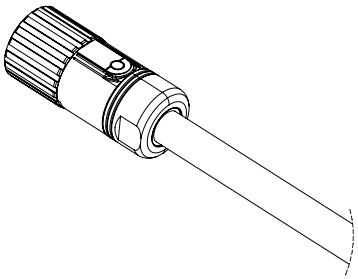


Fig. 23.15 **Encoder cable for incremental distance measuring system for linear tables HT150L, HT200L, HT250L, HB250L**

Table 23.11 **Encoder cable for incremental distance measuring system (A, B, D, E option)**

Suitable for linear axis	Length [m]	Suitable for option	Connection axis-side	End of cable	Article number
HT100L	**3**	A, B	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1838
HT100L	**5**	A, B	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1839
HT100L	**8**	A, B	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1840
HT100L	**10**	A, B	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1841
HT100L	**12**	A, B	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1842
HT100L	**15**	A, B	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1843
HT100L	**3**	D, E	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1844
HT100L	**5**	D, E	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1845
HT100L	**8**	D, E	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1846
HT100L	**10**	D, E	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1847
HT100L	**12**	D, E	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1848
HT100L	**15**	D, E	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1849
HT100L	**3**	A, D	Connector 915, 15-pin	Open	8-10-1207
HT100L	**5**	A, D	Connector 915, 15-pin	Open	8-10-1208
HT100L	**10**	A, D	Connector 915, 15-pin	Open	8-10-1210
HT100L	**3**	B, E	Connector 915, 15-pin	Open	8-10-1201
HT100L	**5**	B, E	Connector 915, 15-pin	Open	8-10-1202
HT100L	**10**	B, E	Connector 915, 15-pin	Open	8-10-1204
HT150L, HT200L, HT250L, HB250L	**3**	A, B	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1856
HT150L, HT200L, HT250L, HB250L	**5**	A, B	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1857
HT150L, HT200L, HT250L, HB250L	**8**	A, B	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1858
HT150L, HT200L, HT250L, HB250L	**10**	A, B	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1859
HT150L, HT200L, HT250L, HB250L	**12**	A, B	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1860
HT150L, HT200L, HT250L, HB250L	**15**	A, B	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1861
HT150L, HT200L, HT250L, HB250L	**3**	D, E	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1862
HT150L, HT200L, HT250L, HB250L	**5**	D, E	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1863
HT150L, HT200L, HT250L, HB250L	**8**	D, E	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1864
HT150L, HT200L, HT250L, HB250L	**10**	D, E	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1865
HT150L, HT200L, HT250L, HB250L	**12**	D, E	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1866
HT150L, HT200L, HT250L, HB250L	**15**	D, E	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1867
HT150L, HT200L, HT250L, HB250L	**3**	A, D	Connector M17	Open	8-10-0115
HT150L, HT200L, HT250L, HB250L	**5**	A, D	Connector M17	Open	8-10-0116
HT150L, HT200L, HT250L, HB250L	**10**	A, D	Connector M17	Open	8-10-0118
HT150L, HT200L, HT250L, HB250L	**3**	B, E	Connector M17	Open	80028093
HT150L, HT200L, HT250L, HB250L	**5**	B, E	Connector M17	Open	80028203
HT150L, HT200L, HT250L, HB250L	**10**	B, E	Connector M17	Open	80028218

23.10 Encoder cable for absolute distance measuring system for linear tables HT-L

Cable for absolute distance measuring system (option H, R, S, T) for linear axes HT-L.

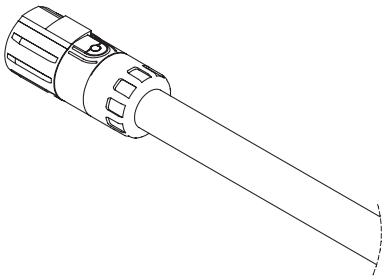


Fig. 23.16 **Encoder cable for absolute distance measuring system for linear tables HT100L**

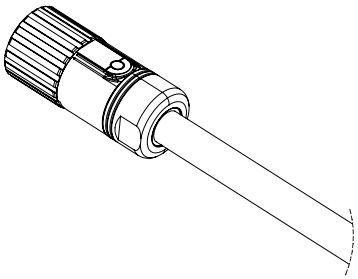


Fig. 23.17 **Encoder cable for absolute distance measuring system for linear tables HT150L, HT200L, HT250L, HB250L**

Table 23.12 **Encoder cable for absolute distance measuring system (H, T, R, S option)**

Suitable for linear axis	Length [m]	Suitable for option	Connection axis-side	End of cable	Article number
HT100L	**3**	H, R	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1850
HT100L	**5**	H, R	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1851
HT100L	**8**	H, R	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1852
HT100L	**10**	H, R	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1853
HT100L	**12**	H, R	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1854
HT100L	**15**	H, R	Connector 915, 15-pin	Connector suitable for ESC-SS for ED1	8-10-1855
HT100L	**3**	H, R, S, T	Connector 915, 15-pin	Open	8-10-1207
HT100L	**5**	H, R, S, T	Connector 915, 15-pin	Open	8-10-1208
HT100L	**10**	H, R, S, T	Connector 915, 15-pin	Open	8-10-1210
HT150L, HT200L, HT250L, HB250L	**3**	H, R	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1868
HT150L, HT200L, HT250L, HB250L	**5**	H, R	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1869
HT150L, HT200L, HT250L, HB250L	**8**	H, R	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1870
HT150L, HT200L, HT250L, HB250L	**10**	H, R	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1871
HT150L, HT200L, HT250L, HB250L	**12**	H, R	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1872
HT150L, HT200L, HT250L, HB250L	**15**	H, R	Connector M17	Connector suitable for ESC-SS for ED1	8-10-1873
HT150L, HT200L, HT250L, HB250L	**3**	H, T, R, S	Connector M17	Open	8-10-0315
HT150L, HT200L, HT250L, HB250L	**5**	H, T, R, S	Connector M17	Open	8-10-0316
HT150L, HT200L, HT250L, HB250L	**10**	H, T, R, S	Connector M17	Open	8-10-0318

23.11 Partitions for energy chain
Partitions for separating cables in the energy chain By default, the energy chain is equipped with a partition in every second chain link. Additional partitions are available in a set of 20.

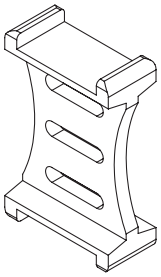


Fig. 23.19 **Partition for energy chains**

Table 23.13 **Article numbers for partitions**

Suitable for linear axis				Article number, 20 pcs.
HT/HB	**HS (X-axis)**	**HS (Y-axis)**	**HS (Z-axis)**	
—	—	—	31, L1	8-05-0393
100, 150L	21, 31, L1, L2, L3, L4	21, 22, 23, 24, 31, 32, 33, 34	32, 33, 34, L2, L3, L4	8-05-0336
150B, 150S, 200, 250	22, 23, 24, 32, 33, 34	—	—	8-05-0337

23.12 Belt for noise reduction of the energy chain
Cellular rubber tape, self-adhesive on one side, for attachment to the contact surface of the energy chain in order to reduce noise emissions. Suitable for all linear axes HT, HB and HS with energy chain (exception HT150L with drive interface E or F).
Roll of 10 m
Article number: 25-002485

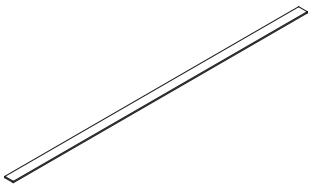


Fig. 23.18 **Belt for reduction of noise emissions from the energy chain**

23.13 Drive block cover

Cover plate for closing unneeded drives/outputs on linear axes with toothed belt drive HM-B, HT-B, HB-B and HC-B.
Set including mounting material.

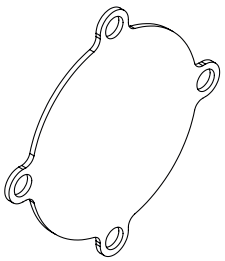


Fig. 23.20 **Cover for drive block**

Table 23.15 **Article numbers for drive block cover**

Suitable for linear axis	Article number
HC025B	25-002379
HM040B, HC040B	25-002375
HM060B, HC060B	25-002376
HM080B, HC080B	25-002377
HM120B, HC100B	25-002378
HT100B	25-002372
HT150B	25-002373
HT200B, HT250B	25-002374
HC150	80111835
HB250	80111787

23.14 Journals for linear axes HM-B and cantilever axes HC

The journal can be clamped to each side of the drive wheel. It can be used to adapt the drive/output, synchronous drive, encoder attachment or the like.

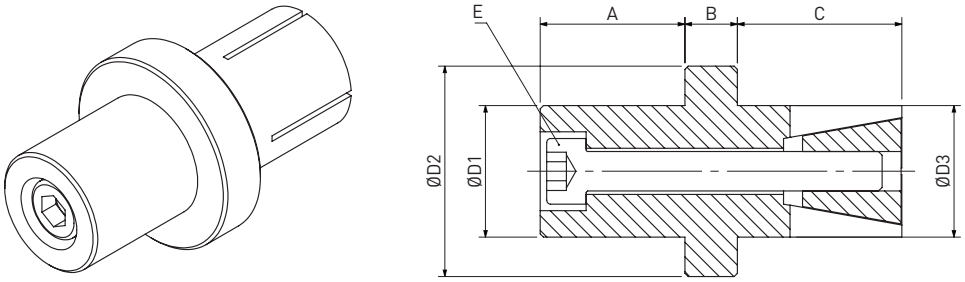


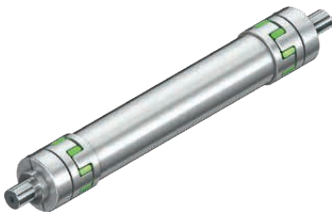
Fig. 23.21 **Journal dimensions**

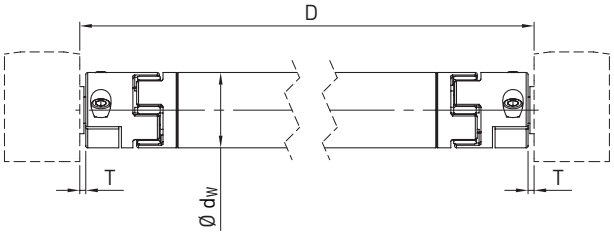
Table 23.14 **Article numbers and dimensions of journals**

Suitable for linear axis	A [mm]	B [mm]	C [mm]	E (screw)	Ø D1 [mm]	Ø D2 [mm]	Ø D3 [mm]	Screw tightening torque [Nm]	Moment of inertia [kgmm²]	Transmittable torque (arithmetic) [Nm]	Article number
HC025B	12	5.5	14	ISO 4762 M4 × 25	12 h7	17	10	2.9	0.24	7.7	25-002514
HM040B, HC040B	18	5.0	16	ISO 4762 M4 × 30	14 h7	25	14	4.5	1.21	17.0	25-000174
HM060B, HC060B	22	8.0	25	ISO 4762 M6 × 45	20 h7	32	20	10.0	5.37	36.0	25-000175
HM080B, HC080B	30	8.0	27	ISO 4762 M8 × 55	25 h7	45	25	25.0	17.70	81.0	25-000176
HM120B, HC100B, HC150B	30	10.0	32	ISO 4762 M10 × 60	32 h7	55	35	55.0	55.70	213.0	25-000177

23.15 Synchronous shaft

The synchronous shaft is used on double axes to transmit the drive torque from the driven axis to the rotating axis. In addition to the actual synchronous shaft, the set also includes the coupling elements and the adaptation material.





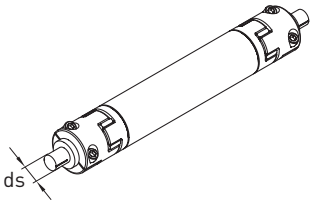
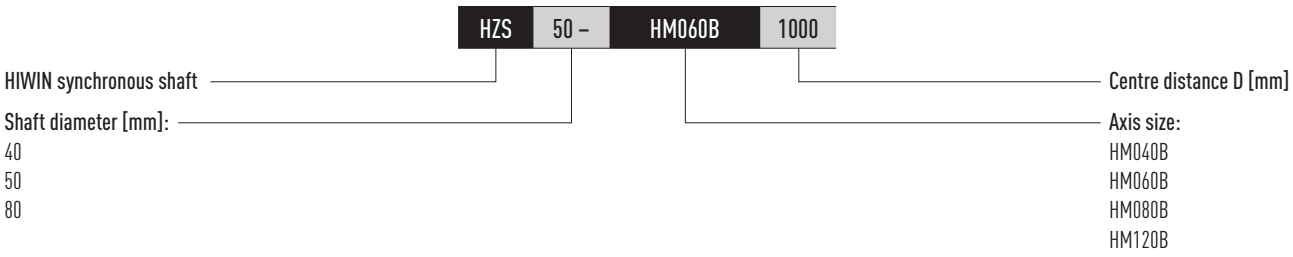


Table 23.17 **Dimensions of synchronous shaft**

Suitable for double axis	D min.	D max.	T	Ø shaft	Ø ds
HD1/HM040B	160	1,500	3.2	40	14
HD2/HM060B	186	2,000	7.2	50	20
HD3/HM080B	200	2,400	14.2	50	25
HD4/HM120B	256	3,000	5.7	80	35

Unit: mm

23.15.1 Order code for synchronous shaft



23.15.2 Spacer

The spacer is required when the synchronous shaft is not installed horizontally to prevent metal-on-metal contact in the lower coupling.

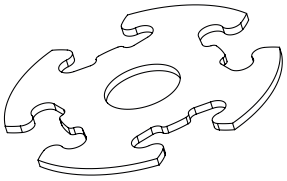


Table 23.16 **Article numbers for spacer**

Suitable for double axis	Suitable for synchronous shaft	Article number
HD1/HM040B	HZS40HM040Bxxxx [1)]	25-000730
HD2/HM060B	HZS50HM060Bxxxx [1)]	25-000731
HD3/HM080B	HZS50HM080Bxxxx [1)]	25-000731
HD4/HM120B	HZS80HM120Bxxxx [1)]	25-000733

[1)] xxxx = centre distance D

23.17 HIWIN lubricants

Table 23.19 **Recommended HIWIN grease**

Grease type	Area of application	Unit of measure	Article number
G04	Linear guideway Ball screw	Cartridge 400 g	20-000345
Grease rack	Rack and pinion	Cartridge 400 g	80076723

Table 23.20 **Recommended HIWIN grease gun**

Article number	Description	Scope of delivery	Comment
20-000333	Grease gun type GN-400C including lubrication adapter and nozzle set (see Fig. 23.22)	Grease gun type GN-400-C consisting of: – Grease gun – Hydraulic gripping coupling A1 suitable for conical grease nipples according to DIN 71412, outer diameter 15 mm – Hollow mouthpiece A2 for conical and ball grease nipples according to DIN 71412/ DIN 3402, outer diameter 10 mm – Set of lubrication adapters and nozzles	Suitable for 400 g cartridge or direct filling

Fig. 23.22 **Grease gun GN-400C**

23.16 HIWIN grease nipple

Grease nipple suitable for HM, HT, HB and HC, all sizes, all drive types.

Table 23.18 **Grease nipple M4 × 0.7**

Article number	Linear axes HM	Linear tables HT	Cantilever axes HC	Figure
20-000325	Standard	Standard: HT100B Option: HT150B, HT200B, HT250B	Standard: HC025B, HC040B, HC060B, HC080B, HC100B	
20-000538	Option	Standard: HT150B, HT200B, HT250B Option: HT100B	Option: HC025B, HC040B, HC060B, HC080B, HC100B	
20-000272	Option	Option	Option: HC025B, HC040B, HC060B, HC080B, HC100B	

Table 23.21 **Grease nipple M10 × 1**

Article number	Bridge axes HB	Cantilever axes HC	Figure
20-000279	Standard	Standard: HC150B, HC150R	

23.18 Push-in fittings and lubrication adapters

Table 23.22 **Push-in fittings and lubrication adapters M4 × 0,7 (Suitable for HM, HT, HC025B, HC040B, HC060B, HC080B, HC100B)**

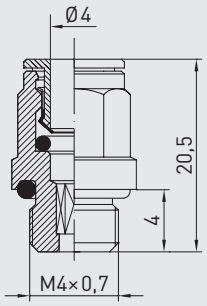
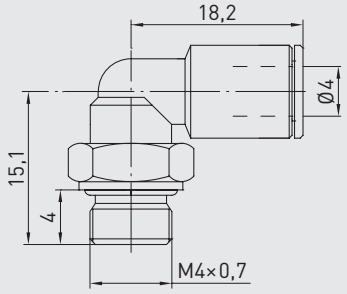
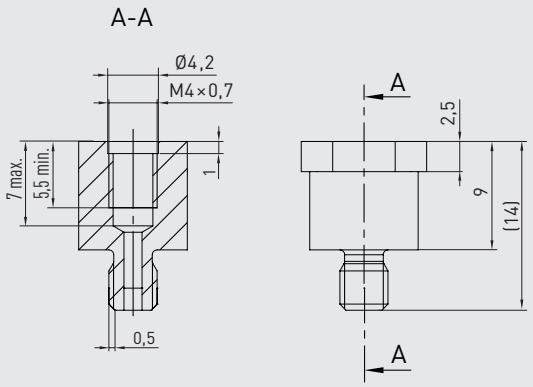
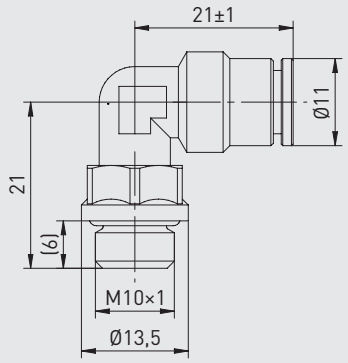
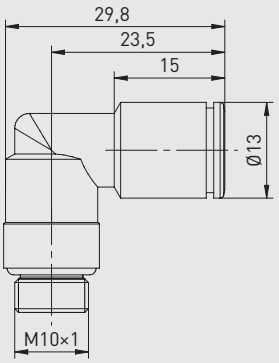
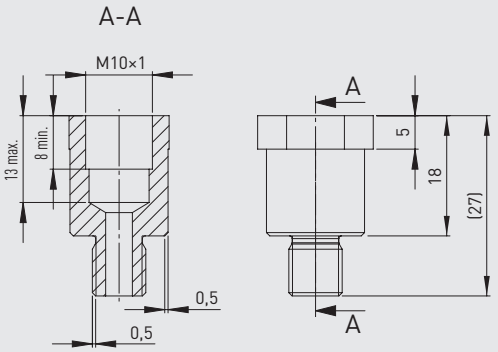
Article number	Description	Figure
8-12-0186	Push-in fitting straight Ø 4	
20-002116	Push-in fitting angled Ø 4	
20-002108	Lubrication adapter M4/M4 for extending the push-in fittings to avoid collisions (e.g. damping element)	

Table 23.23 **Hose connection piece and lubrication adapter M10 × 1 (Suitable for HB, HC150B, HC150R)**

Article number	Description	Figure
80090309	Hose fitting, 90°, M10 × 1, d6	
80074396	Hose fitting, 90°, M10 × 1, d8	
80112336	Lubrication adapter, M8 × 1 auf M10 × 1	

24. Glossary

Positioning accuracy
The positioning accuracy describes the maximum deviation between the actual and target position.
For toothed belt axes HM-B, HT-B and HC-B, the positioning accuracy depends on the manufacturing accuracy of the toothed belt (tooth pitch) and the belt pre-tension. Since this deviation is largely linear, it can be easily measured and compensated for via a correction factor. The correction factor is determined as a target/actual deviation, multiplied by the feed constant of the axis and stored accordingly in the control unit. Please contact HIWIN for more information.

Repeatability
The repeat accuracy indicates how accurately the carriage is positioned when approaching a position several times from the same direction (unidirectional). The maximum deviation between the actual positions reached is indicated.

Static load rating C_0
Static load rating C_0 corresponds to a static load that causes a permanent deformation of 0.0001 × ball diameter at the contact point that is most heavily loaded. It is fundamental for the calculation of static applications.

Dynamic load rating C_{dyn}
Dynamic load rating C_{dyn} describes the load at which 90% of similar linear guideways reach the life expectancy of 50 km. It is fundamental for the calculation of dynamic applications.

Permissible load data
The permissible load data are the relevant load data for the linear axis, taking into account the design properties of the linear axis, such as limitations from the screw connections or reaction forces of the drive elements. These permissible load data ensure a realistic reference service life of the linear axis between 5,000 km and 20,000 km, depending The service life L of the linear axis is calculated using the permissible load data and the load comparison factor f_v according to formula F3.10.

Theoretical load data
The theoretical load data refers to a service life of 100 km and is only used for comparability between different linear axis and profile rail manufacturers. It is not permissible to apply a load with the theoretical load data. There is a risk of damaging the linear axis.

Load capacity
The typical load capacity is used to pre-select the appropriate size based on experience and taking into account combined loads.

Feed constant
The feed constant corresponds to the distance in mm that the carriage travels during one revolution of the drive.

Flatness
Measure for the vertical straightness of a movement on the X-axis in X and Y direction. A deviation from absolute flatness is a displacement on the Z-axis when moving on the X-axis.

Straightness
Measure for the horizontal straightness of a movement on the X-axis. A deviation from absolute straightness is a displacement on the Y-axis when moving on the X-axis.

Continuous force F_c
Continuous force or nominal force that the linear motor of axes HT-L can deliver in continuous operation (duty cycle ED = 100%).

Peak force F_p
The peak force is the maximum force that a linear motor can generate for about one second when peak current I_p is applied.

Peak current I_p
Applied briefly to generate the peak force on linear axes with a linear motor. The maximum permissible duration of the peak current is one second. The linear motor must then cool down to the nominal temperature before the peak current can be applied again.

Stroke
The stroke is the travel distance that the carriage can cover between the two switching points of the limit switches.

Reserve stroke
Reserve stroke L_r corresponds to the distance that can be travelled in addition to the stroke on both sides of the end positions (stroke 0, stroke max.) before the carriage reaches the mechanical end position (mechanical 0) L_{C_mech0} at the built-in stop buffers. The reserve stroke is set at the factory for each axis size.
The reserve stroke for each axis size can be found in the "Dimensions and specifications" sections of the respective axis type.

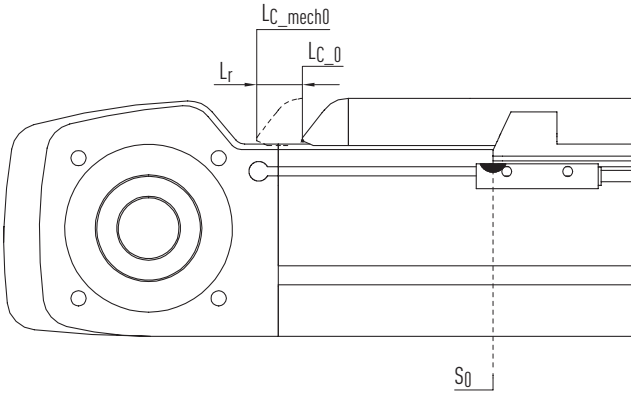


Fig. 23.23 **Illustration of reserve stroke (example: linear module HM-B)**

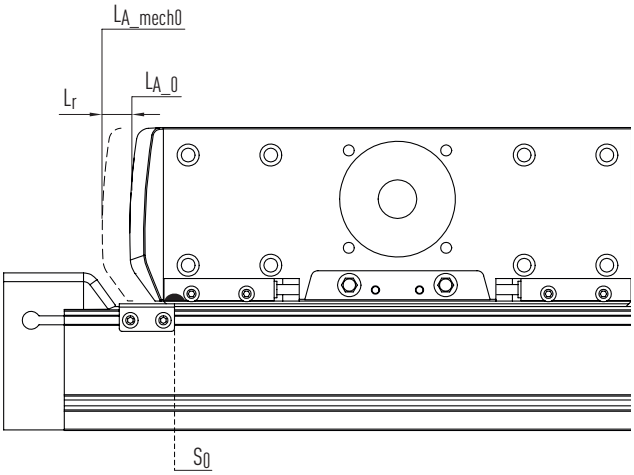


Fig. 23.24 **Illustration of reserve stroke (example: cantilever axis HC)**

L_{C_mech0}	Carriage position at mechanical 0 (rubber buffer stop)
L_{C_0}	Carriage position at stroke 0 (switching point sensor)
L_{A_mech0}	Position of the drive block at mechanical 0 (rubber buffer stop)
L_{A_0}	Position of the drive block at stroke 0 (switching point sensor)
S_0	Switching point sensor at stroke 0

WE LIVE MOTION

Note:
The technical data in this catalogue may be changed
without prior notice.