

Linear axes & linear axis systems

Bridge axes HB-B

10. Bridge axes HB-B

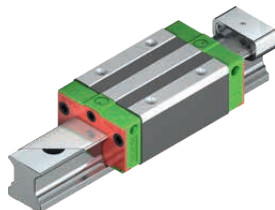
10.1 Features of the HB-B bridge axes with toothed belt drive

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](#).

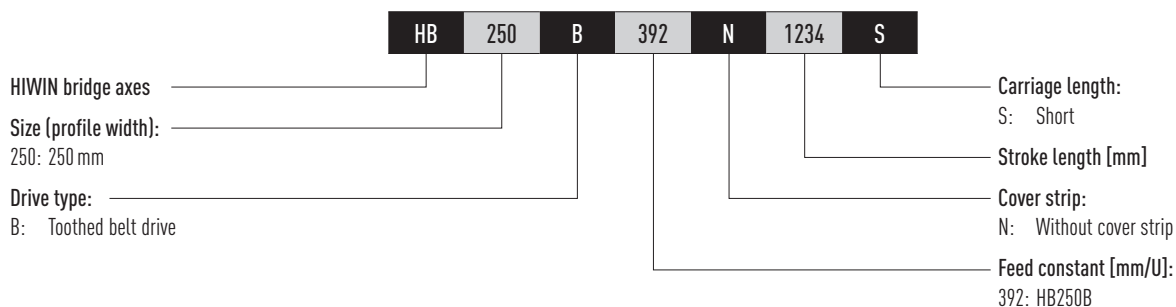


Carriage

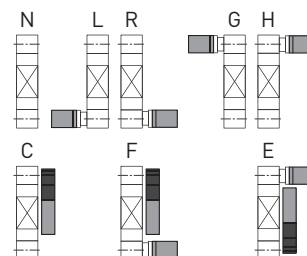
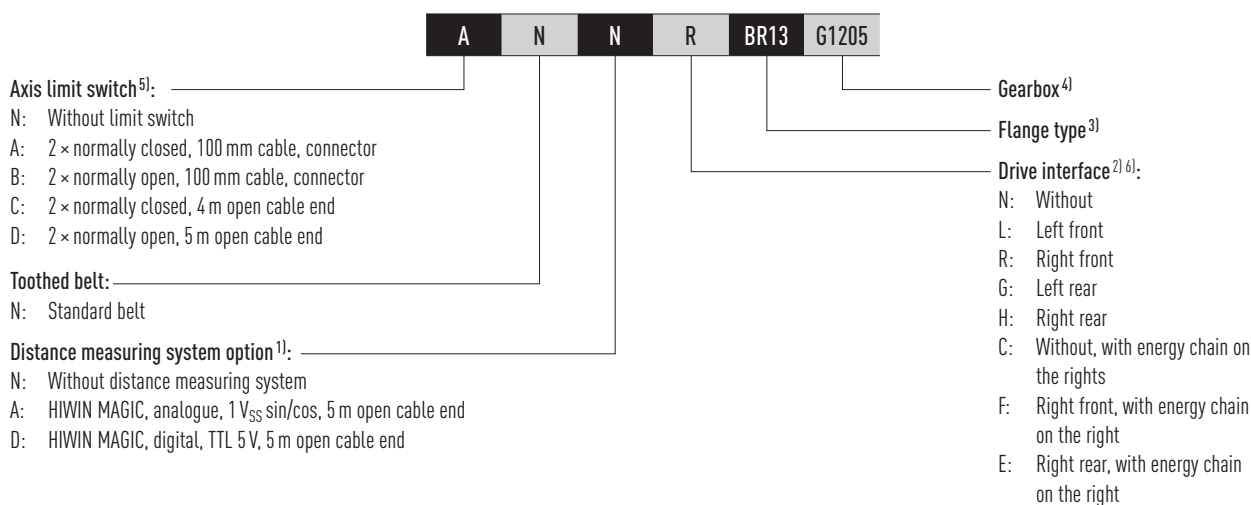
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on [Page 192](#). A grease nipple is provided on the carriage for each lubrication point for convenient maintenance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



10.2 Order code for bridge axes HB-B



Continuation, order code for bridge axes HB-B



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.

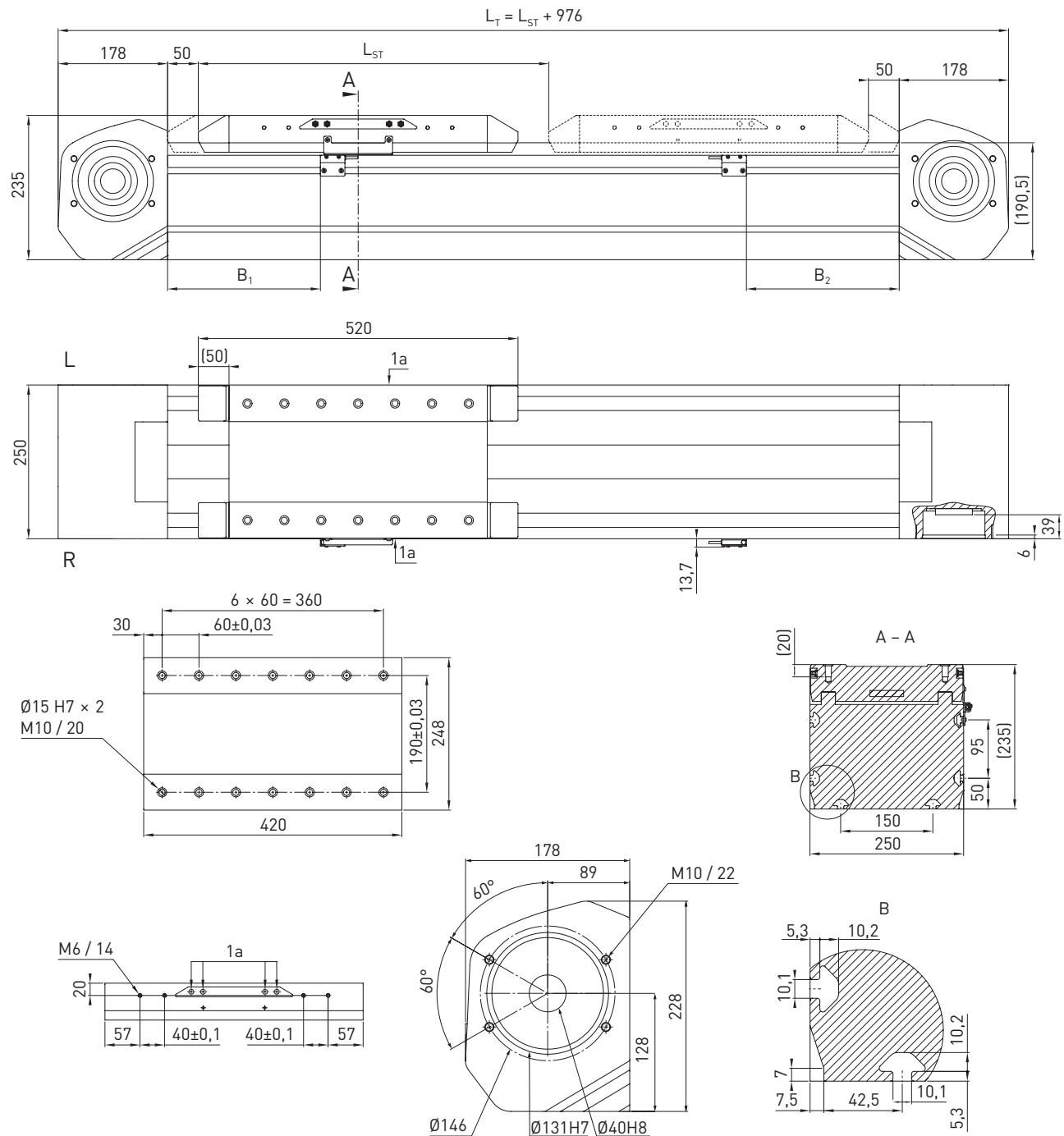
5) Additional reference switches on request.

6) Dimensions of the drive interface and the energy chain can be found on Page 186.

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10.3 Dimensions and specifications of HB250B



L_S Carriage plate
 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 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
$F_{y\text{dynmax}}^{1)}$ [N]	11,600	133,977
$F_{z\text{dynmax}}^{1)}$ [N]	17,623	133,977
$M_{x\text{dynmax}}$ [Nm]	1,674	12,728
$M_{y\text{dynmax}}$ [Nm]	2,564	19,494
$M_{z\text{dynmax}}$ [Nm]	1,688	19,494
Load distance z [mm]	54.3	54.3

¹⁾ Force must only act free of torque

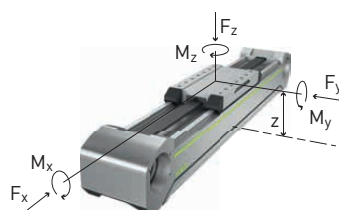


Table 10.3 General technical data

Repeatability ¹⁾ [mm]	± 0.05
Max. feed force $F_{x\text{max}}$ [N]	5,775
Max. speed [m/s]	5
Max. acceleration [m/s ²]	30
Max. drive torque $M_{a\text{max}}$ [Nm]	360
Typical load capacity [kg]	350
Maximum total length ^{2) 3)} [mm]	6,256
Area moment of inertia of profile cross section I_x [mm ⁴]	34,509,373
Area moment of inertia of profile cross section I_y [mm ⁴]	80,997,444

¹⁾ Values apply with correspondingly specified mounting surface or mounting plate

²⁾ Dependent on stroke measuring system (chapter 17) and energy chain (section 18.4)

³⁾ 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

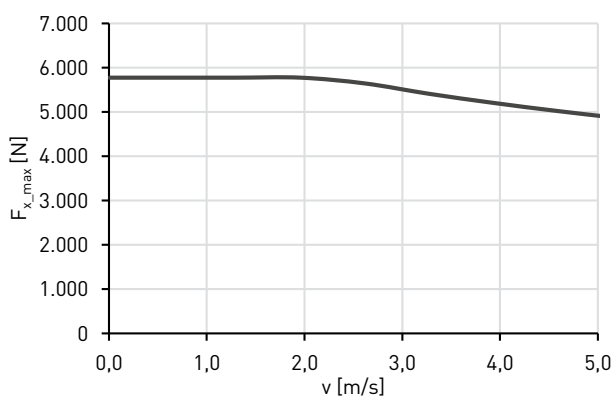


Fig. 10.1 Max. Feed force $F_{x\text{max}}$ as a function of the axis speed v

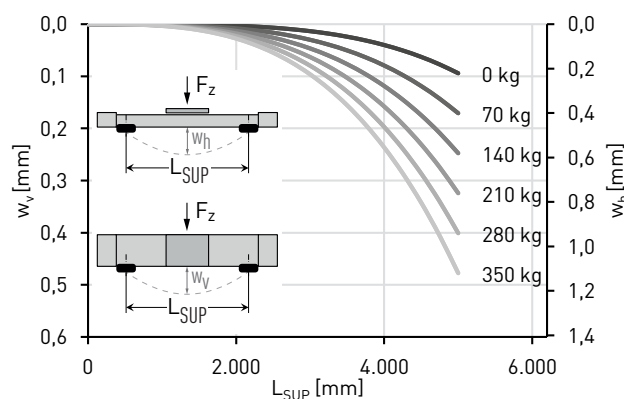


Fig. 10.2 Deflection w over unsupported axle length L_{SUP} under payload F_z

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
$J_{\text{rot.}}^{1)}$ [kgcm ²]	155.51
Idle torque at 0-stroke [Nm]	7.17

¹⁾ Rotational moment of inertia