

Linear axes & linear axis systems

Bridge axes HB-R

11. Bridge axes HB-R

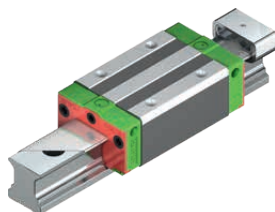
11.1 Features of the HB-R bridge axes with rack and pinion drive

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](#).

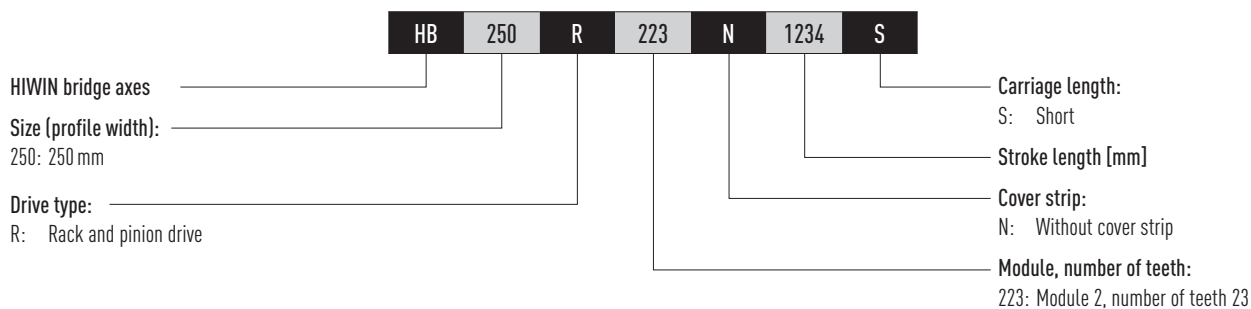


Carriage

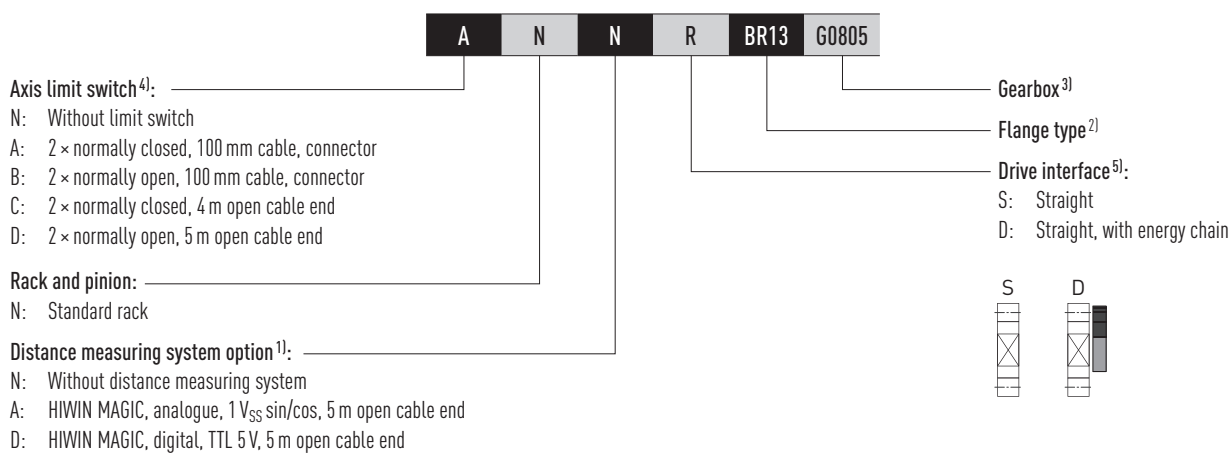
The carriages have additional bore holes on each mounting hole to ensure ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on [Page 192](#). A grease nipple is provided on the carriage for each lubrication point for convenient maintenance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

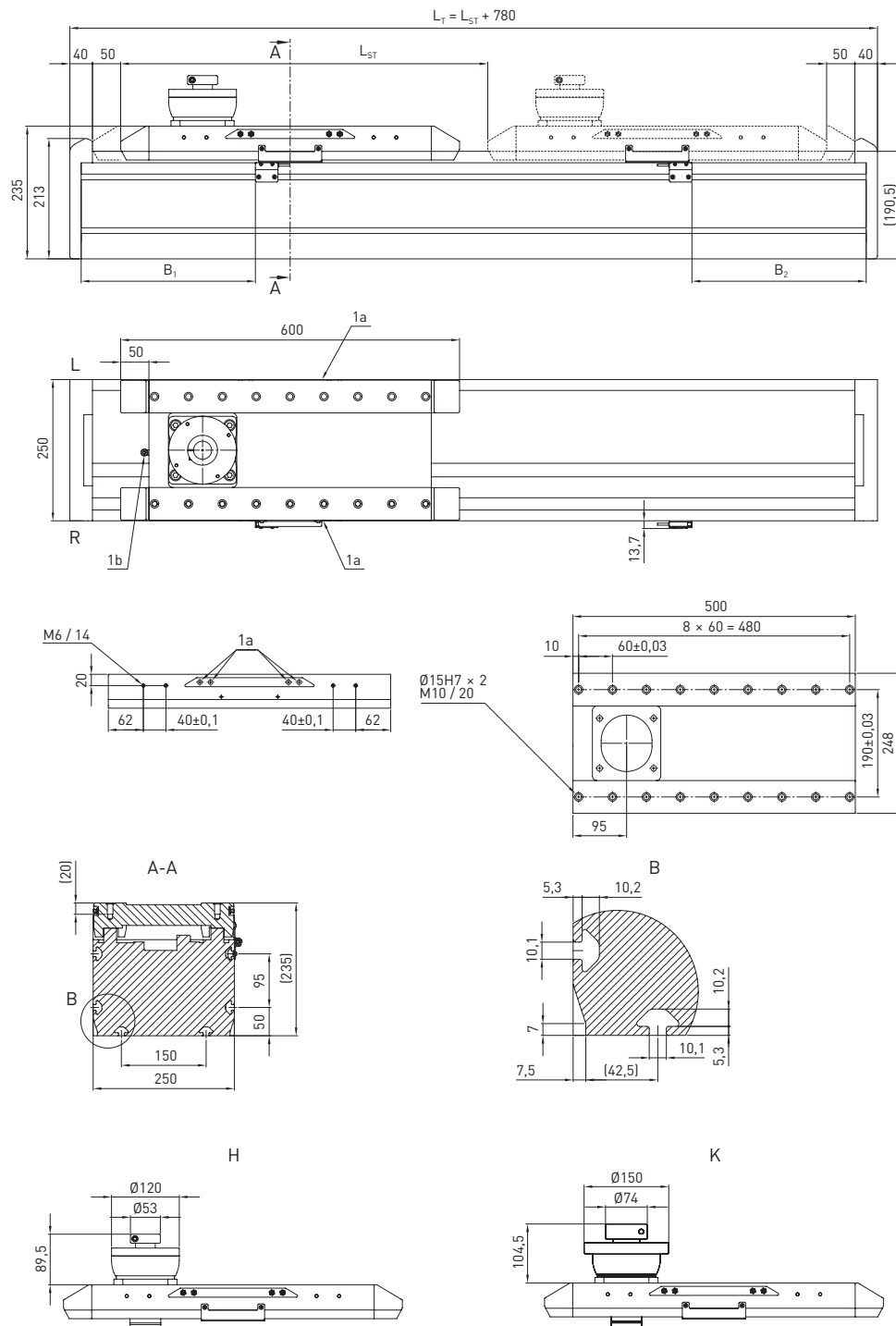
⁵⁾ Additional reference switches on request.

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

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11.3 Dimensions and specifications of HB250R



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 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
$F_{y\text{dynmax}}^{1)}$ [N]	11,600	133,977
$F_{z\text{dynmax}}^{1)}$ [N]	14,429	133,977
$M_{x\text{dynmax}}$ [Nm]	1,371	12,728
$M_{y\text{dynmax}}$ [Nm]	2,619	24,317
$M_{z\text{dynmax}}$ [Nm]	2,105	24,317
Load distance z [mm]	54.3	54.3

¹⁾ Force must only act free of torque

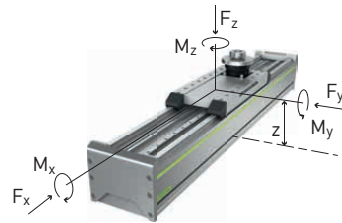


Table 11.3 General technical data

Repeatability ¹⁾ [mm]	± 0,05
Max. feed force $F_{x\text{max}}$ [N]	4,300
Max. speed [m/s]	5
Max. acceleration [m/s ²]	50
Max. drive torque $M_{a\text{max}}$ [Nm]	104.9
Typical load capacity [kg]	350
Maximum total length ^{2) 3)} [mm]	5,160
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

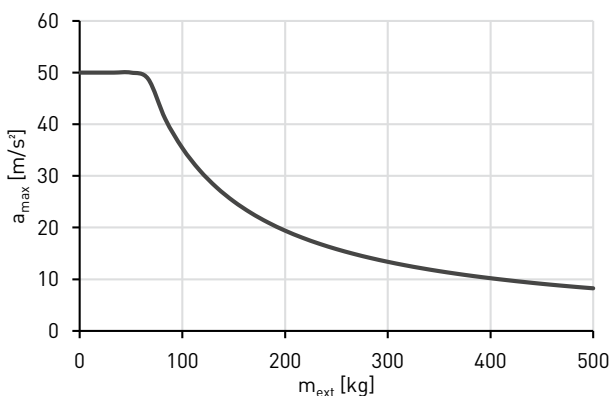


Fig. 11.1 Max. Acceleration a_{max} as a function of the external payload m_{ext}

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

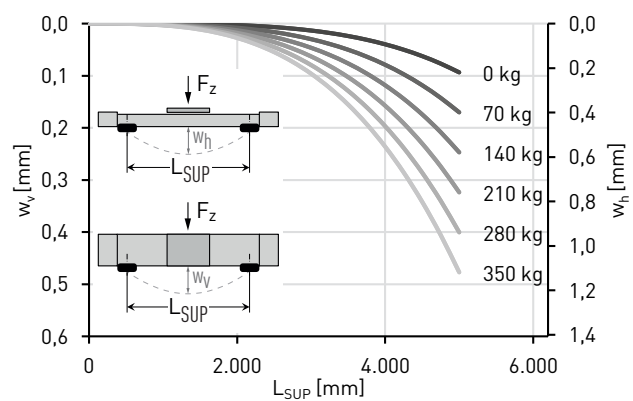


Fig. 11.2 Deflection w over unsupported axle length L_{SUP} under payload F_z

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