

Linear axes & linear axis systems

Cantilever axes HC-R

14. Cantilever axes HC-R

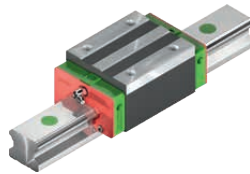
14.1 Features of the HC-R cantilever axes with rack and pinion drive

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 or 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.

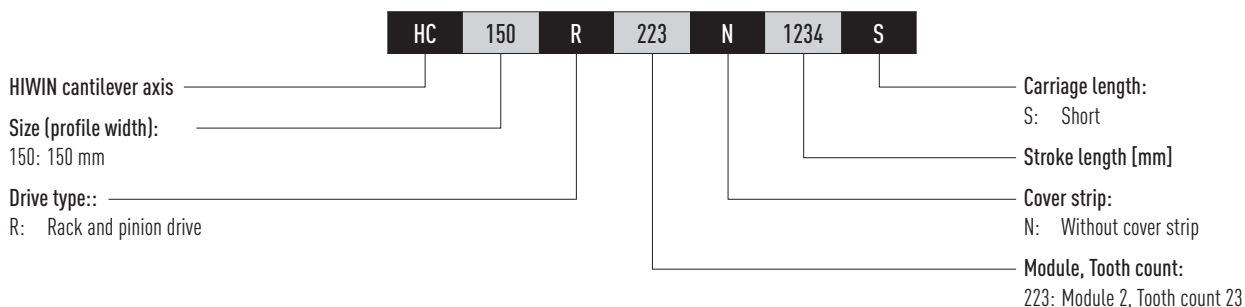


Mounting

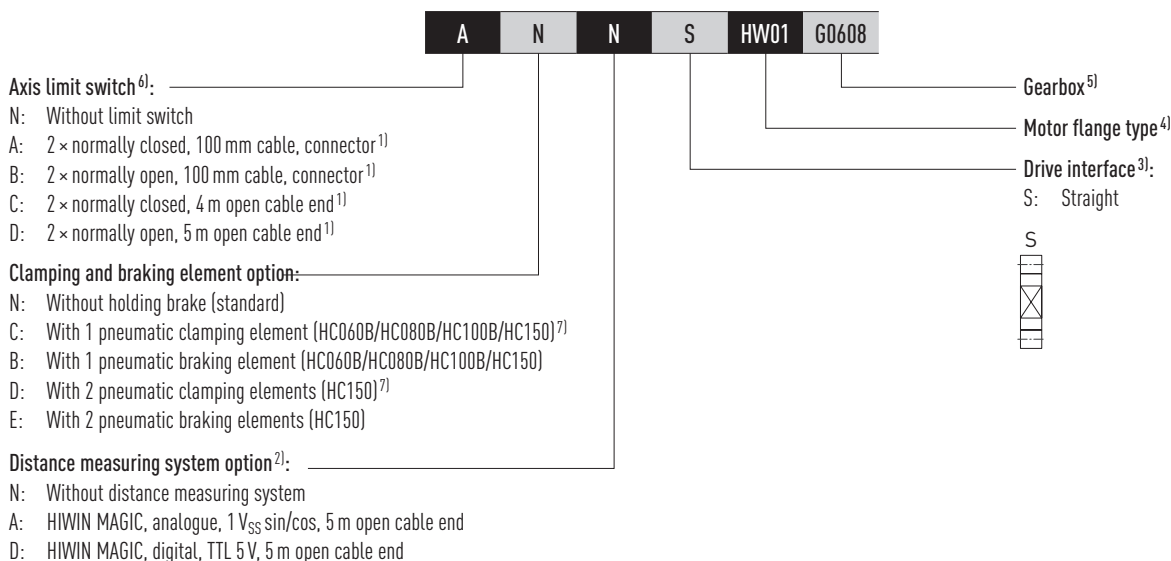
The drive block as well as the interfaces for attaching the load capacity on both sides of the cantilever have additional bore holes on each mounting hole. This ensures ideal, reproducible alignment of the adjacent construction. You will find the matching centring sleeves in the accessories on [Page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

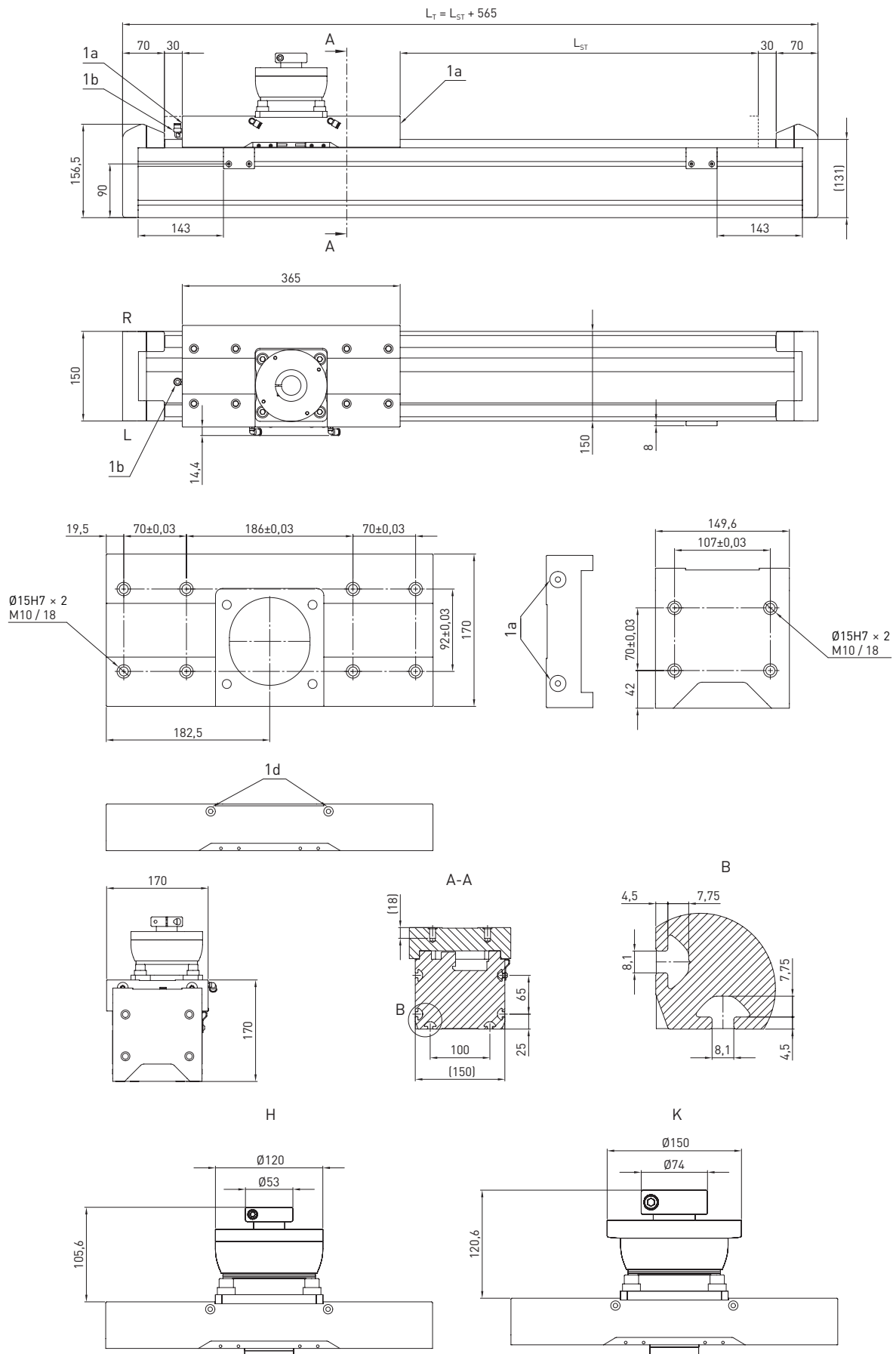
⁶⁾ Additional reference switches on request.

⁷⁾ The clamping element may only be used when the axis is stationary and not as a brake.

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14.3 Dimensions and specifications of HC150R



L_{ST} Stroke
 L_T Total length

L Left
 R Right

1d Compressed air connection for clamping/braking element M5

Table 14.1 Load data

	Permissible load data	Theoretical load data
Lifetime reference value	15,000 km	100 km
$F_{y\text{dynmax}}^{1)}$ [N]	9,485	95,244
$F_{z\text{dynmax}}^{1)}$ [N]	10,596	95,244
$M_{x\text{dynmax}}$ [Nm]	446	5,524
$M_{y\text{dynmax}}$ [Nm]	1,359	12,215
$M_{z\text{dynmax}}$ [Nm]	1,216	12,215

¹⁾ Force must only act free of torque

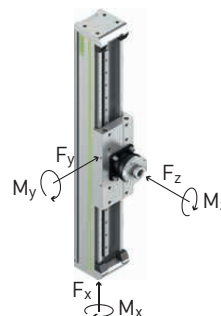


Table 14.2 General technical data

Repeatability [mm]	± 0.05
Max. feed force $F_{x\text{max}}$ [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]	80
Maximum vertical stroke length [mm]	2,000
Maximum horizontal stroke length [mm]	1,400
Area moment of inertia of profile cross section I_x [mm ⁴]	7,556,719
Area moment of inertia of profile cross section I_y [mm ⁴]	13,470,080

Table 14.3 Guide

Type of carriage	QHH20CA × 4
Static load rating C_0 [N]	33,860 × 4
Dynamic load rating $C_{\text{dyn } 50 \text{ km}}$ [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 ¹⁾

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

¹⁾ The clamping element may only be used when the axis is stationary and not as a brake.

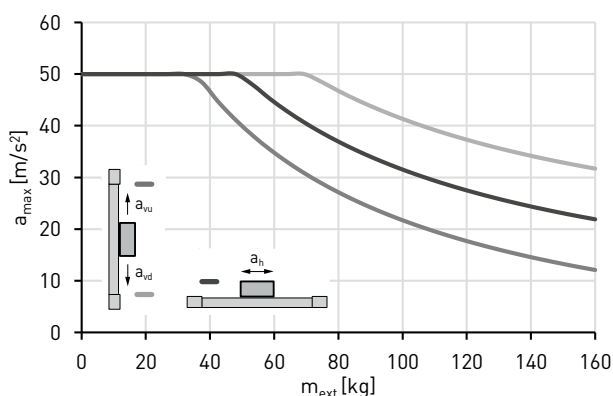


Fig. 14.1 Max. Acceleration a_{max} as a function of the external payload m_{ext}

Mechanical properties

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

¹⁾ Rotational moment of inertia