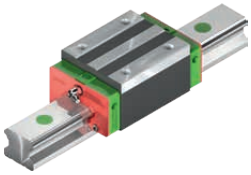
7. Linear tables HT-B

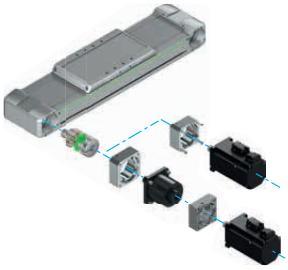
7.1 Properties of linear tables HT-B with toothed belt drive

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.

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.

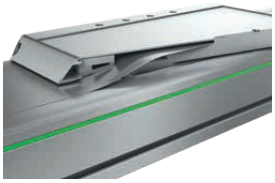


Drive adaptation
Thanks to its symmetrical design, the HIWIN linear table with toothed belt drive allows motors and gears to be mounted on all four sides of the drive blocks. You can find suitable adapters for all common motors in section 22.1.2 from page 165.



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 231.
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 223.

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

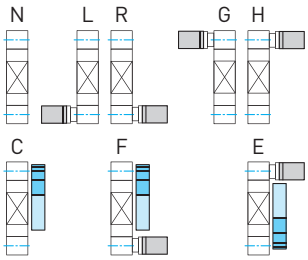
Toothed belt:
N: Standard belt

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]

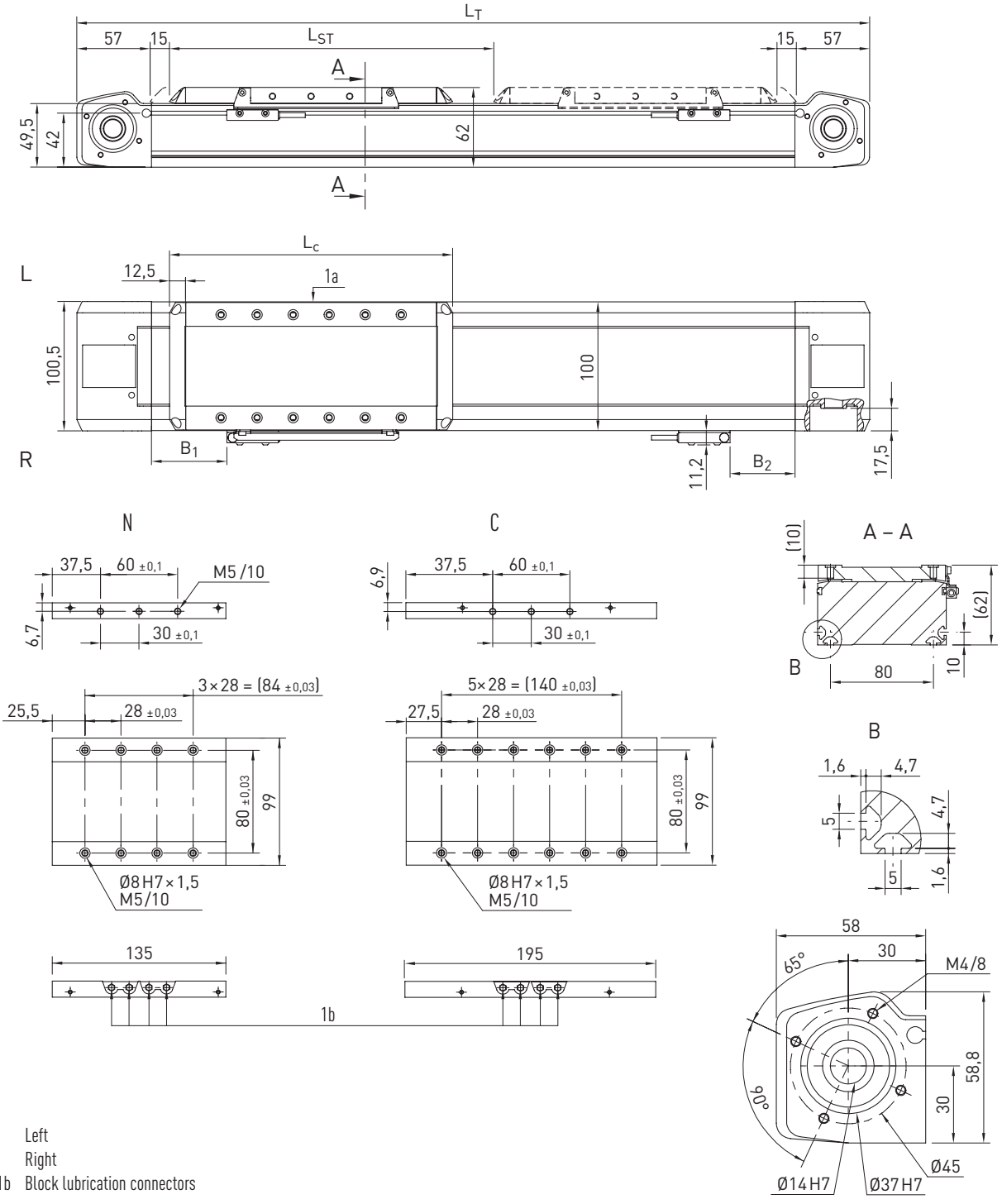
Flange type[3]

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 166. 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 195.
[5] Additional reference switches on request.
[6] Dimensions of the drive interface and the energy chain can be found on Page 223.

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**

	Variant without cover	Variant with cover
$F_{ydynmax}$ [1] [N]	3,350	
$F_{zdynmax}$ [1] [N]	3,575	
$M_{xdynmax}$ [Nm]	92.9	
$M_{ydynmax}$ [Nm]	159.1	205.5
$M_{zdynmax}$ [Nm]	149.1	192.6
z [2] [mm]	38.6	

[1] Force must only act free of torque
[2] Carriage upper edge – centre guide
See section 3.3.2 on page 17 (lifetime reference value)

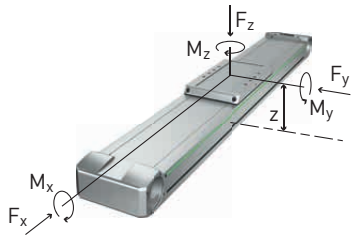


Table 7.3 **General technical data**

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**

Guide type	QEH15CA
Static load rating C_0 [N]	15,280
Dynamic load rating C_{dyn} [N]	12,530

Table 7.5 **Drive**

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

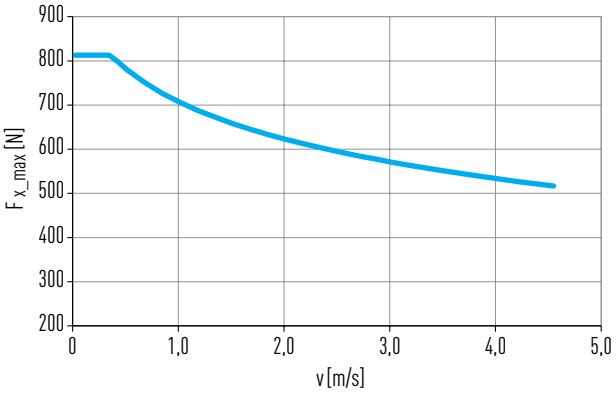


Fig. 7.1 **Max. feed force F_{x_max} as a function of axis speed v**

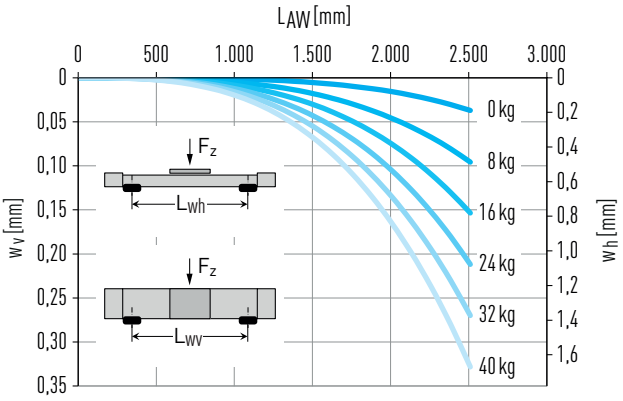


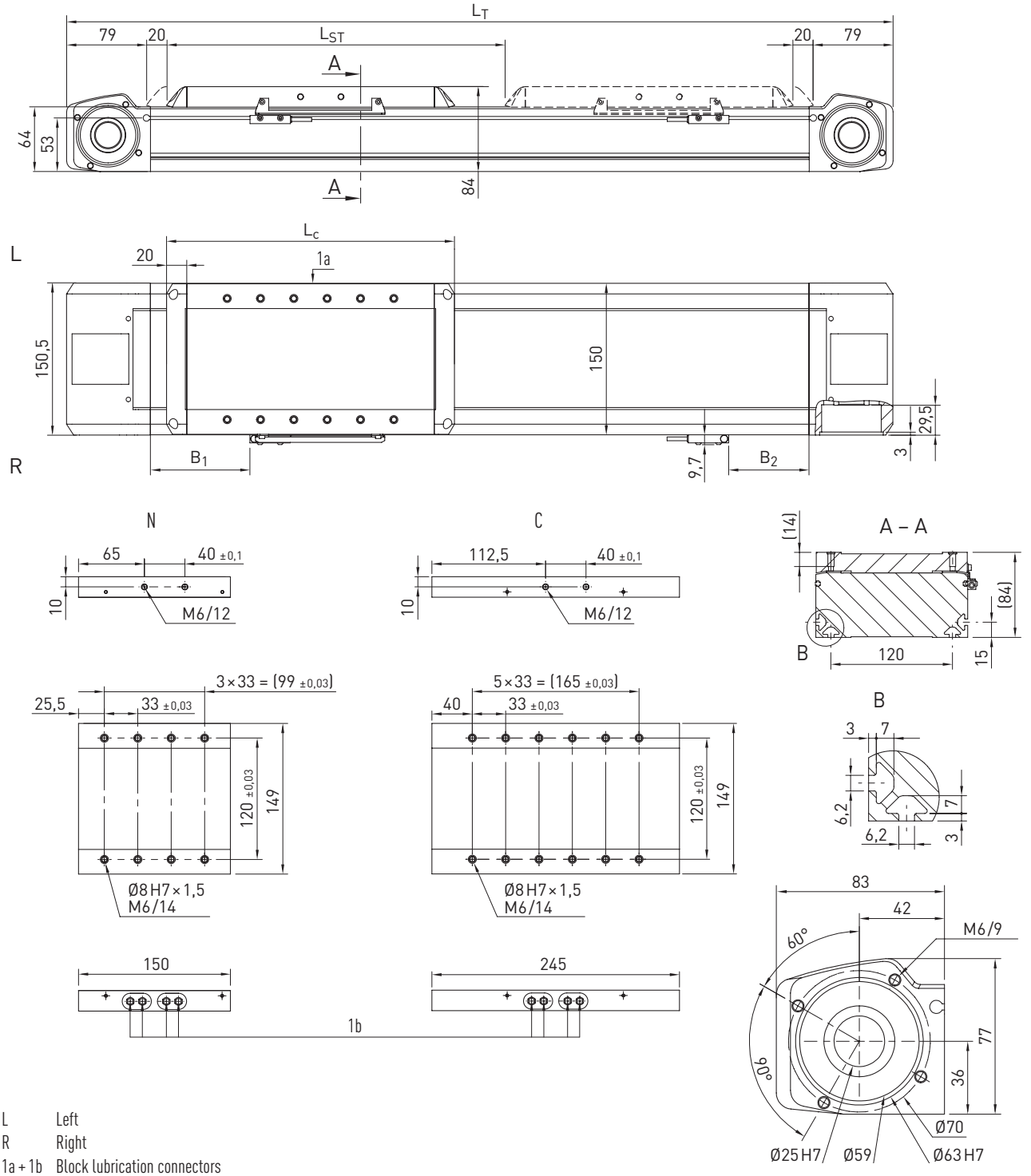
Fig. 7.2 **Deflection w over unsupported axis length L_{AW} under load capacity F_z**

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**

	Variant without cover	Variant with cover
$F_{ydynmax}$ [1] [N]	3,350	
$F_{zdynmax}$ [1] [N]	5,233	
$M_{xdynmax}$ [Nm]	245.9	
$M_{ydynmax}$ [Nm]	245.9	345.3
$M_{zdynmax}$ [Nm]	157.5	221.1
z [2] [mm]	51.48	

[1] Force must only act free of torque
[2] Carriage upper edge – centre guide
See section 3.3.2 on page 17 (lifetime reference value)

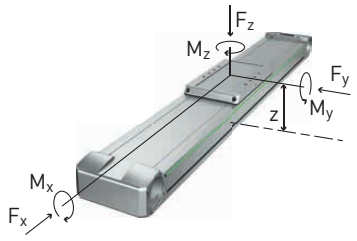


Table 7.9 **General technical data**

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
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**

Guide type	QEH15CA
Static load rating C_0 [N]	15,280
Dynamic load rating C_{dyn} [N]	12,530

Table 7.11 **Drive**

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

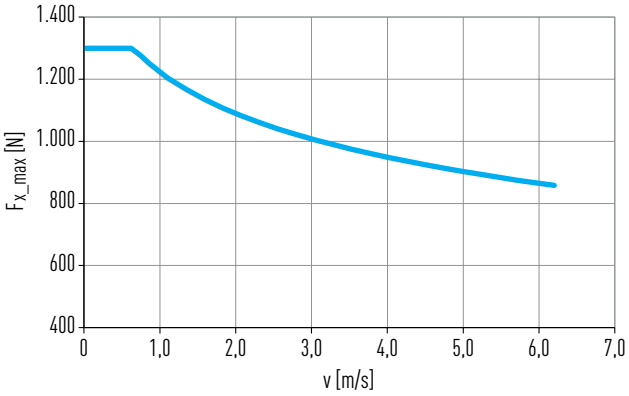


Fig. 7.3 **Max. feed force F_{x_max} as a function of axis speed v**

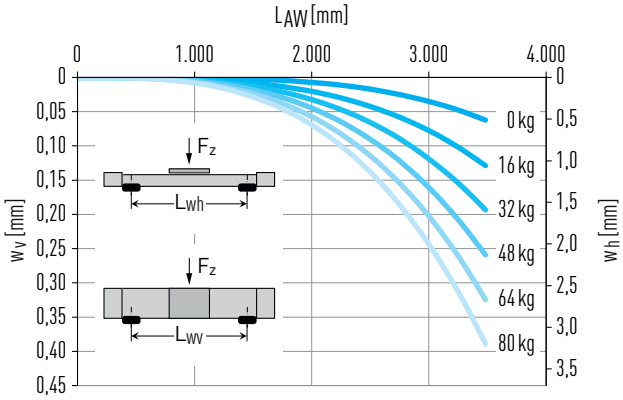


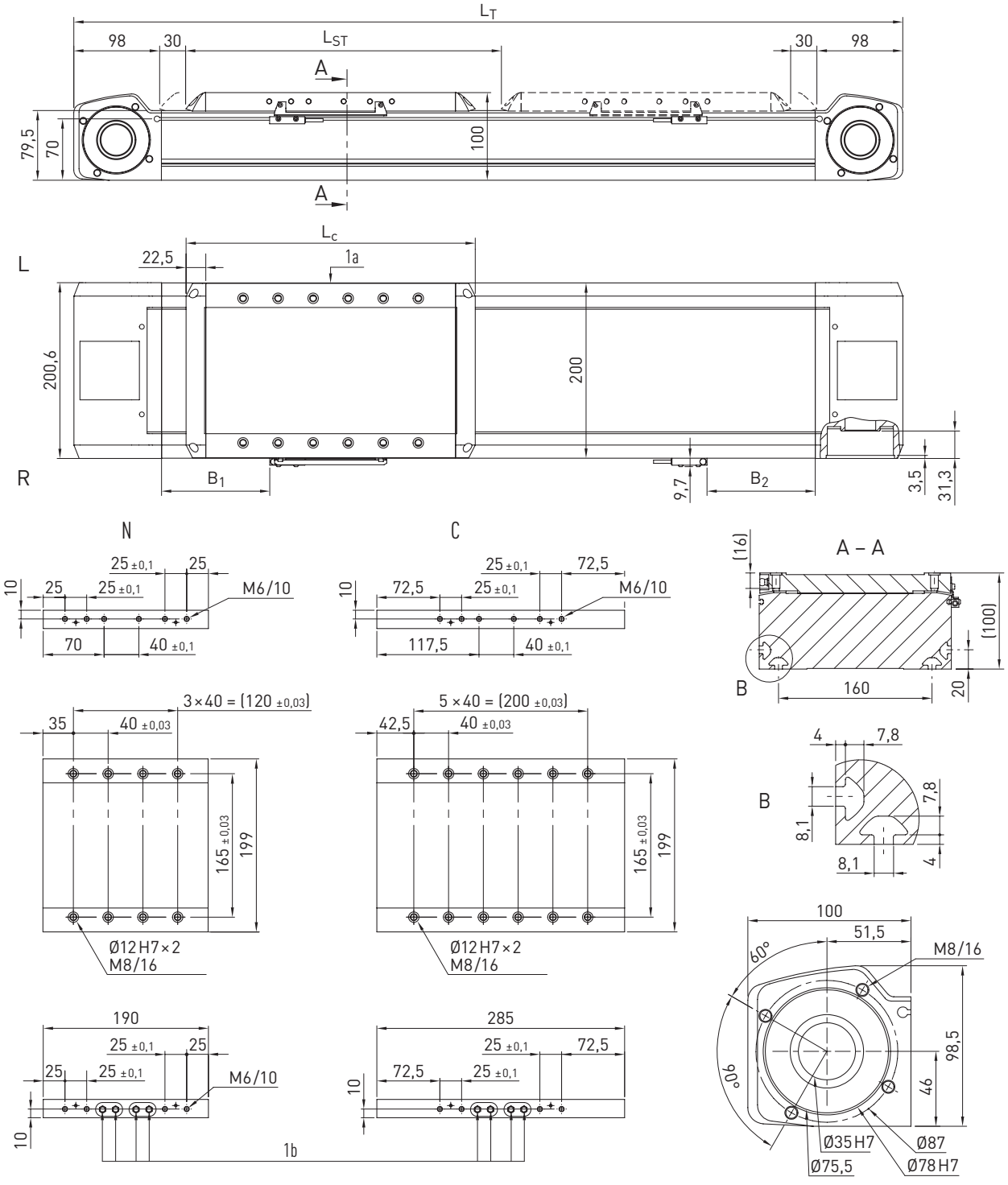
Fig. 7.4 **Deflection w over unsupported axis length L_{AW} under load capacity F_z**

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]	8.33	10.03
Mass per 1 m stroke [kg/m]	10.87	11.16
$J_{rot.}$ [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**

	Variant without cover	Variant without cover
$F_{ydynmax}$ [1] [N]	7,800	
$F_{zdynmax}$ [1] [N]	12,528	
$M_{xdynmax}$ [Nm]	851.9	
$M_{ydynmax}$ [Nm]	707.8	1002.2
$M_{zdynmax}$ [Nm]	440.7	624.0
z [2] [mm]	58.48	

[1] Force must only act free of torque
[2] Carriage upper edge – centre guide
See section 3.3.2 on page 17 (lifetime reference value)

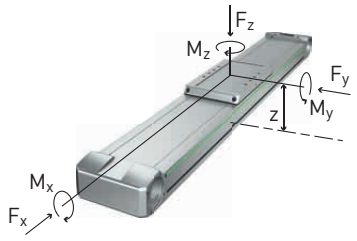


Table 7.15 **General technical data**

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]	88
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**

Guide type	QHH20CA
Static load rating C_0 [N]	33,860
Dynamic load rating C_{dyn} [N]	30,000

Table 7.17 **Drive**

Drive element	B50HTD8
Feed constant [mm/U]	184
Toothed belt effective diameter [mm]	58.57

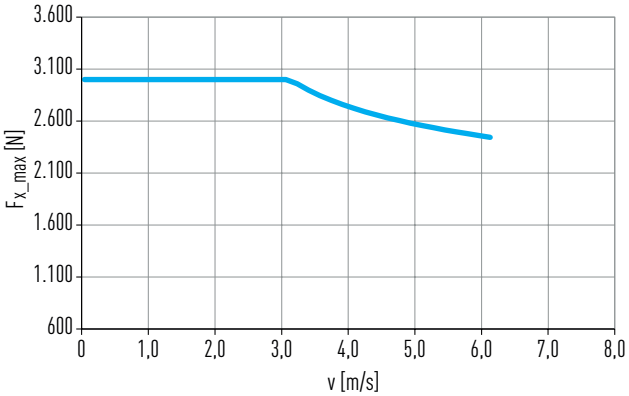


Fig. 7.5 **Max. feed force F_{x_max} as a function of axis speed v**

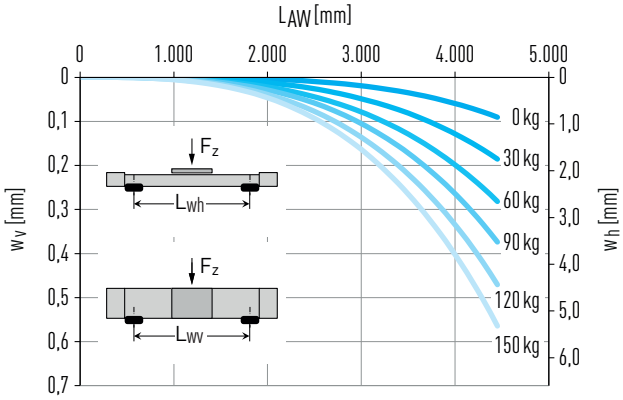


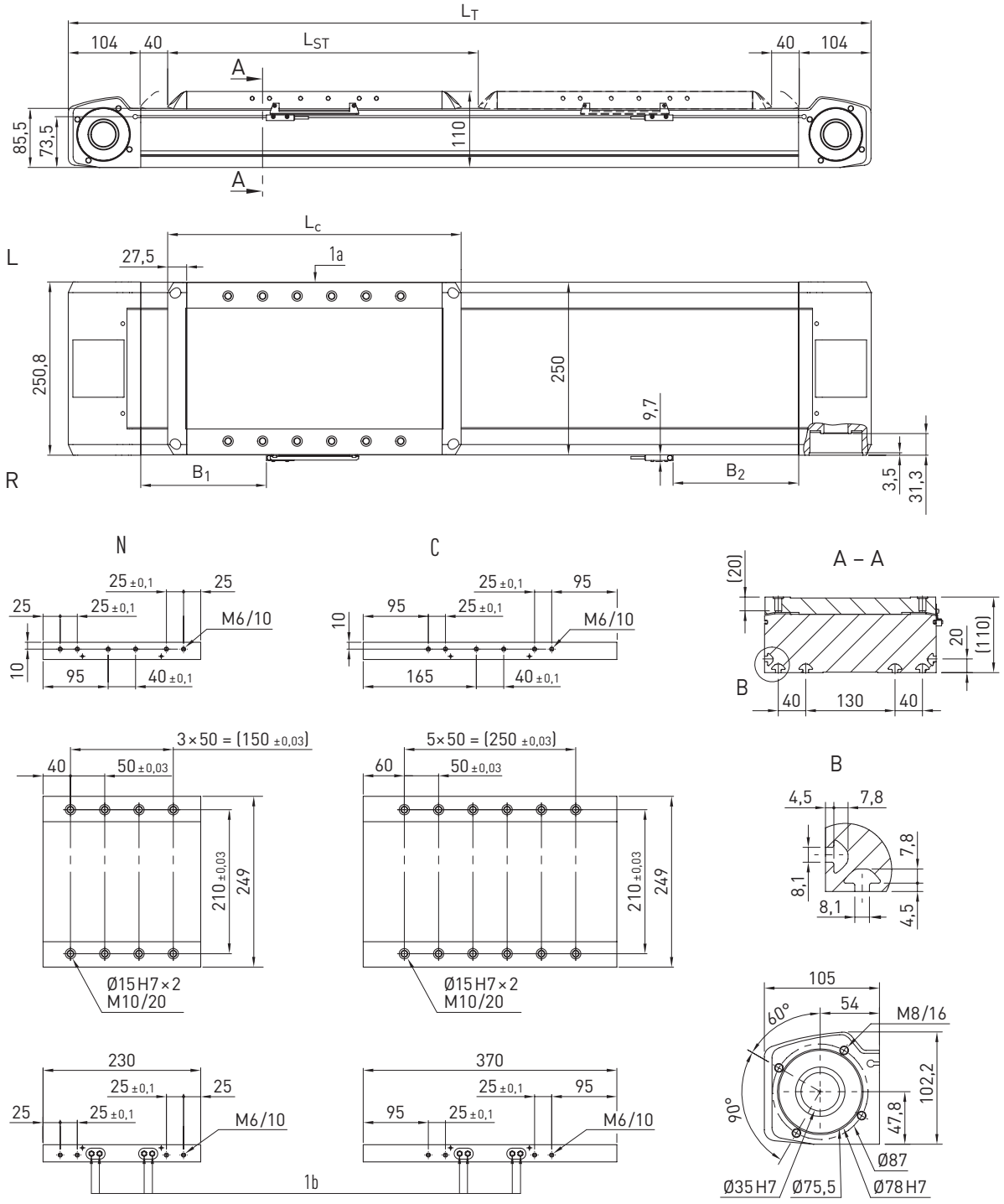
Fig. 7.6 **Deflection w over unsupported axis length L_{AW} under load capacity F_z**

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]	17.15	19.65
Mass per 1 m stroke [kg/m]	17.25	17.57
$J_{rot.}$ [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**

	Variant without cover	Variant with cover
$F_{ydynmax}$ [1] [N]	11,600	
$F_{zdynmax}$ [1] [N]	17,498	
$M_{xdynmax}$ [Nm]	1,496	
$M_{ydynmax}$ [Nm]	1,356.1	1,706.0
$M_{zdynmax}$ [Nm]	440.7	624.0
z [2] [mm]	68.07	

[1] Force must only act free of torque
[2] Carriage upper edge – centre guide
See section 3.3.2 on page 17 (lifetime reference value)

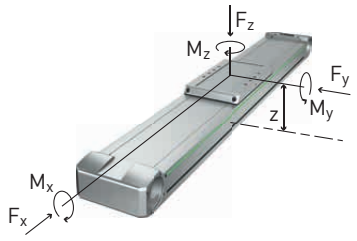


Table 7.21 **General technical data**

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**

Guide type	QHH25CA
Static load rating C_0 [N]	48,750
Dynamic load rating C_{dyn} [N]	41,900

Table 7.23 **Drive**

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

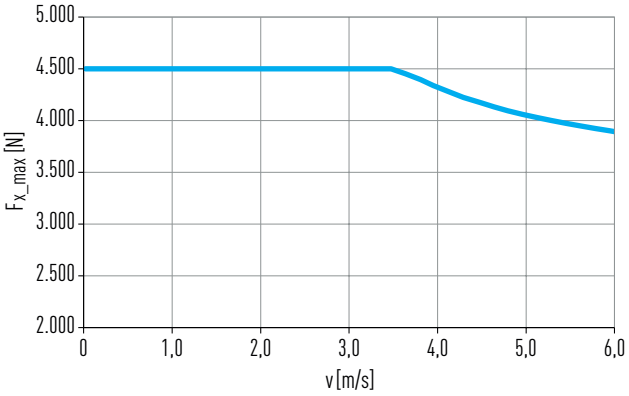


Fig. 7.7 **Max. feed force F_{x_max} as a function of axis speed v**

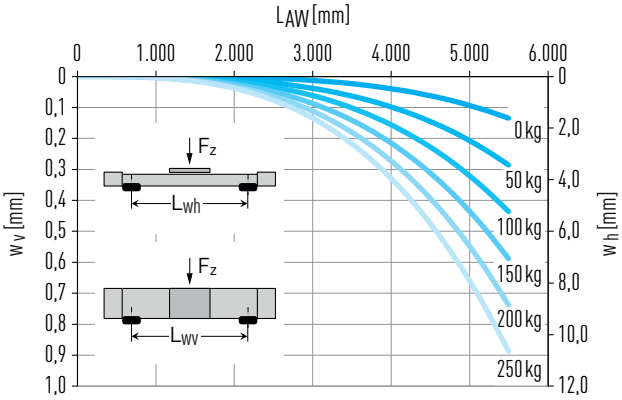


Fig. 7.8 **Deflection w over unsupported axis length L_{AW} under load capacity F_z**

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]	28.71	33.69
Mass per 1 m stroke [kg/m]	22.48	22.87
$J_{rot.}$ [1] [kgcm²]	36.38	36.38
Idle torque at 0-stroke [Nm]	4.00	4.50

[1] Rotational moment of inertia