

Linear axes and axis systems HX

Linear tables HT-S

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.



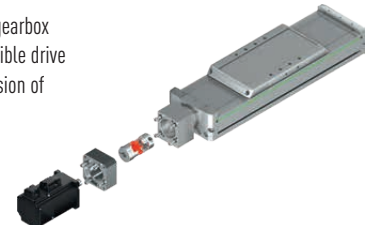
Linear guideway

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.



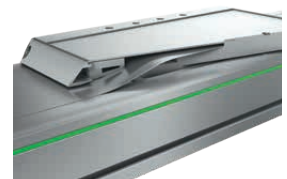
Ballscrew

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 231. A grease nipple is provided on the carriage for each lubrication point for convenient maintenance of the linear axis.



Energy chain

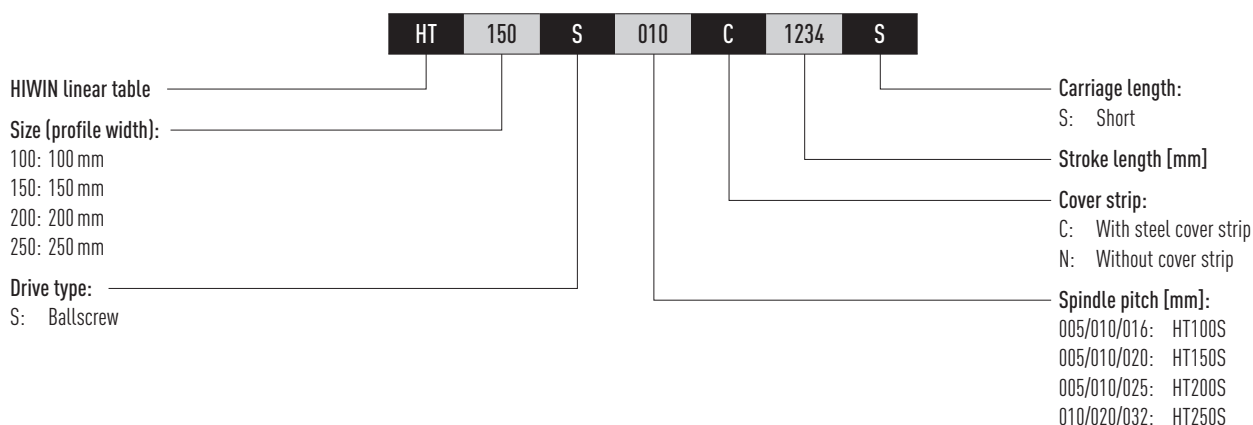
Generously dimensioned energy chains provide space for safely carrying the supply lines. They are extremely compact and save space when attached to the axis. For details on the orientation of the energy chain, see section 22.3 from page 223.



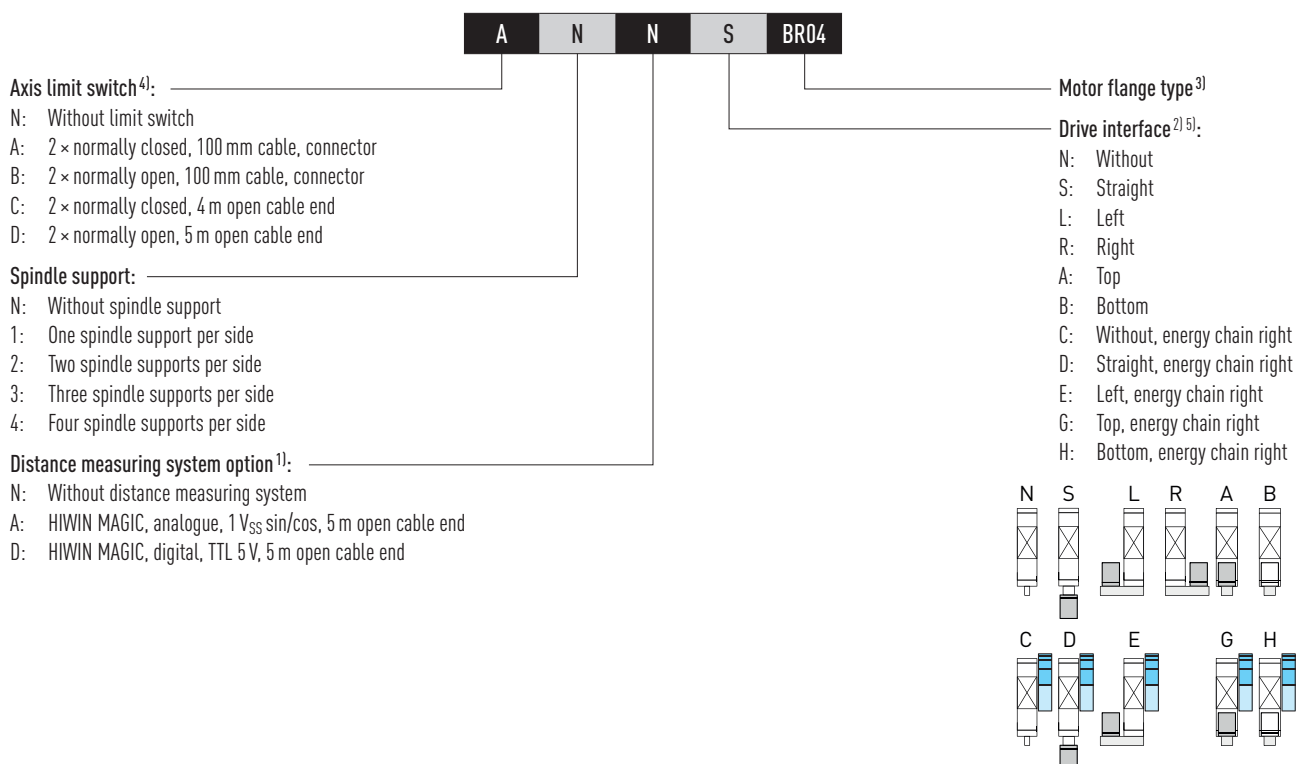
Spindle support

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



Continuation, order code for linear tables HT-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 digit.

³⁾ You can find all flange types in Table 22.15 from page 200. 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 223.

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8.3 Dimensions and specifications of HT100S

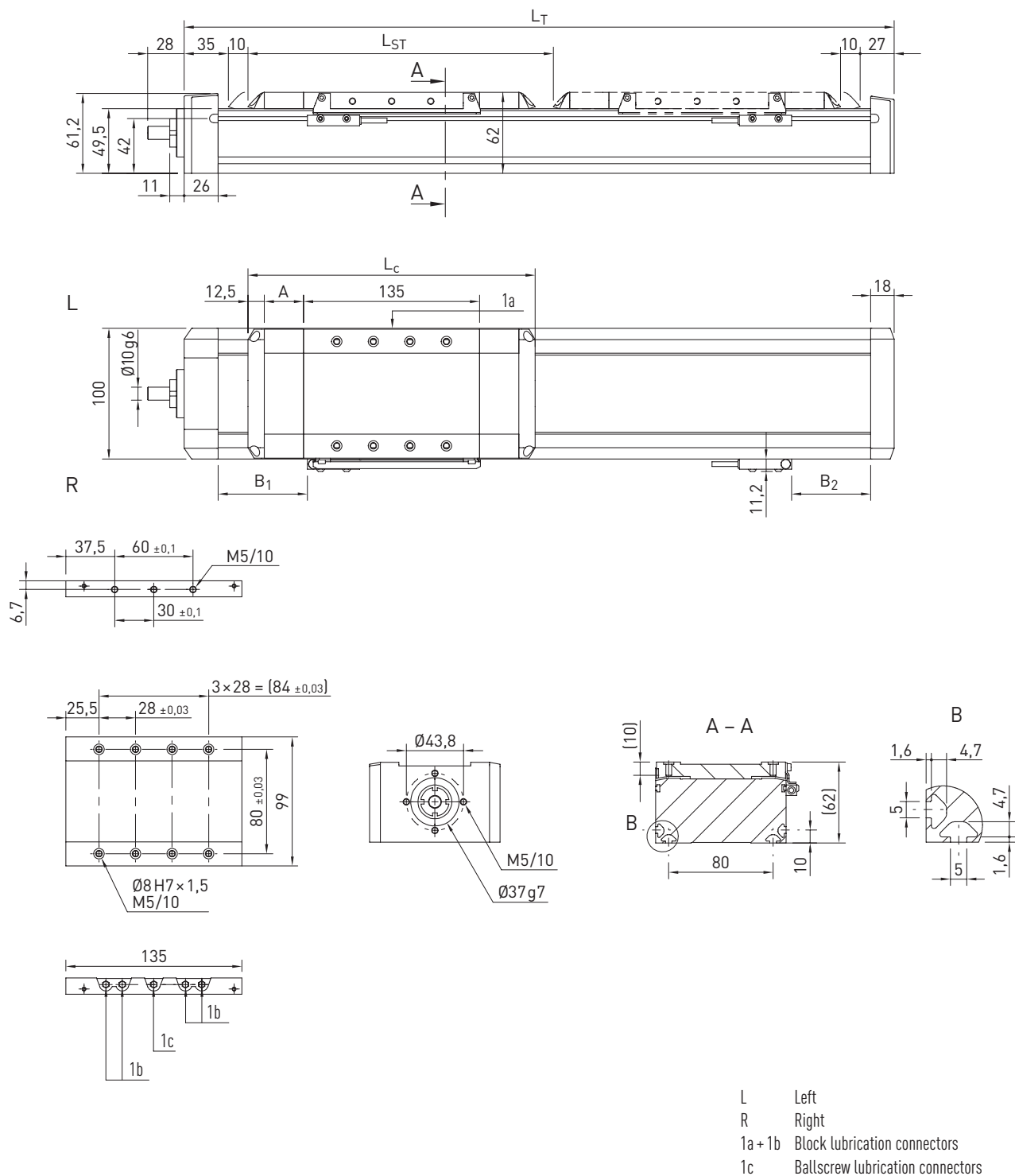


Table 8.1 HT100S dimensions

	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

$F_{y\text{dynmax}}^{1)} \text{ [N]}$	3,350
$F_{z\text{dynmax}}^{1)} \text{ [N]}$	5,340
$M_{x\text{dynmax}} \text{ [Nm]}$	139
$M_{y\text{dynmax}} \text{ [Nm]}$	280
$M_{z\text{dynmax}} \text{ [Nm]}$	176
$z^2) \text{ [mm]}$	36.6

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)

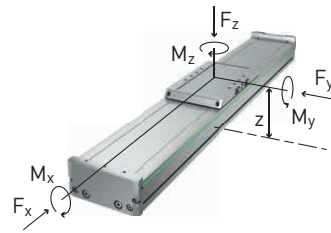


Table 8.3 General technical data

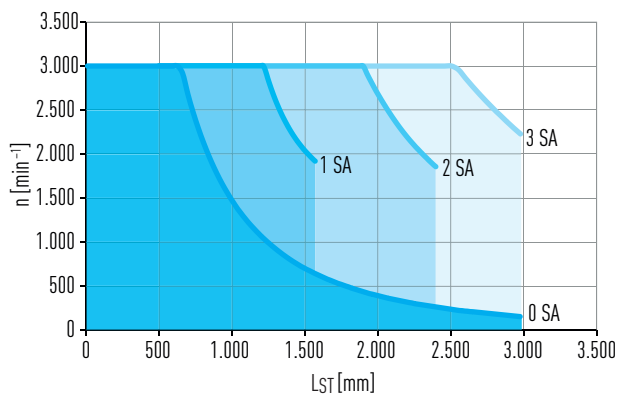
Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	40
Maximum total length [mm]	3,278
Area moment of inertia of profile cross section $I_x \text{ [mm}^4\text{]}$	299,377
Area moment of inertia of profile cross section $I_y \text{ [mm}^4\text{]}$	1,516,426

Table 8.4 Guide

Guide type	QEH15SA
Static load rating $C_0 \text{ [N]}$	8,790
Dynamic load rating $C_{dyn} \text{ [N]}$	8,560

Table 8.5 Drive

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



SA Spindle support

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

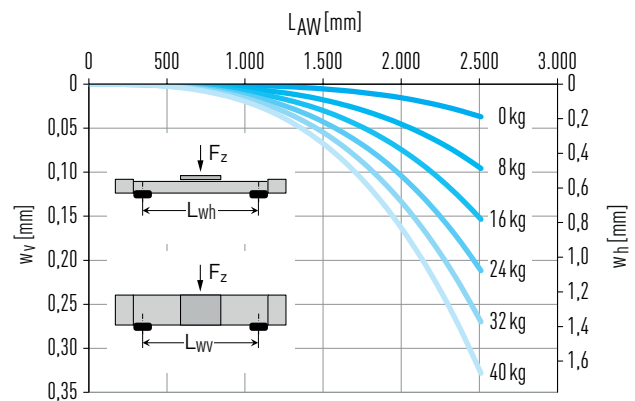


Fig. 8.2 Deflection w over unsupported axis length L_{AW} under load capacity F_z

Table 8.6 Mechanical properties

	Variant without cover			Variant with cover		
	5	10	16	5	10	16
Spindle pitch [mm]	5	10	16	5	10	16
Mass of the carriage [kg]	1.15	1.14	1.22	1.28	1.28	1.35
Mass at 0-stroke [kg]	3.79	3.79	3.86	4.26	4.25	4.33
Mass per 1 m stroke [kg/m]	7.67			7.85		
$J_{rot.}^{1)} \text{ at 0-stroke [kgcm}^2\text{]}$	0.16			0.19		
$J_{rot.}^{1)} \text{ Per 1 m stroke [kgcm}^2\text{/m]}$	0.39			0.39		
Idle torque at 0-stroke [Nm]	0.40			0.50		

¹⁾ Rotational moment of inertia

Linear tables HT-S

[illegible]

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

	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

$F_{y\text{dynmax}}^{1)} \text{ [N]}$	3,350
$F_{z\text{dynmax}}^{1)} \text{ [N]}$	7,256
$M_{x\text{dynmax}} \text{ [Nm]}$	341
$M_{y\text{dynmax}} \text{ [Nm]}$	337
$M_{z\text{dynmax}} \text{ [Nm]}$	156
$z^{2)} \text{ [mm]}$	54.5

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)

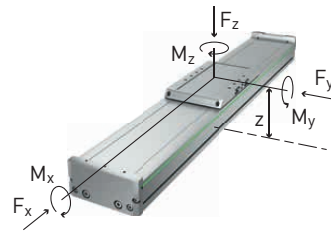


Table 8.9 General technical data

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	80
Maximum total length [mm]	5,468 ³⁾
Area moment of inertia of profile cross section $I_x \text{ [mm}^4\text{]}$	907,754
Area moment of inertia of profile cross section $I_y \text{ [mm}^4\text{]}$	7,417,610

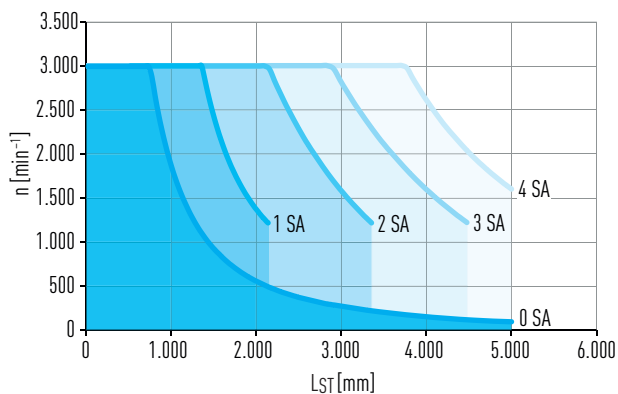
³⁾ Without cover strip 5,294

Table 8.10 Guide

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

Table 8.11 Drive

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



SA Spindle support

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

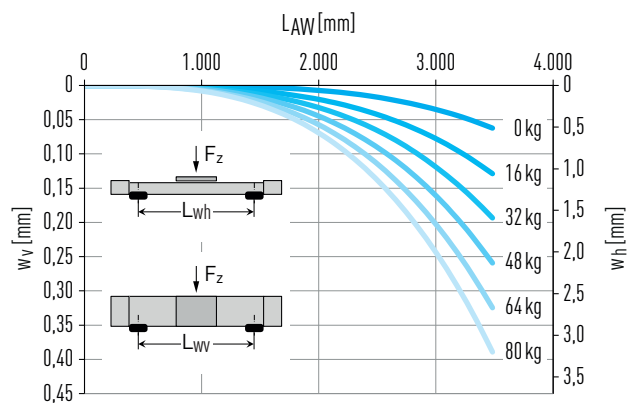


Fig. 8.4 Deflection w over unsupported axis length L_{AW} under load capacity F_z

Table 8.12 Mechanical properties

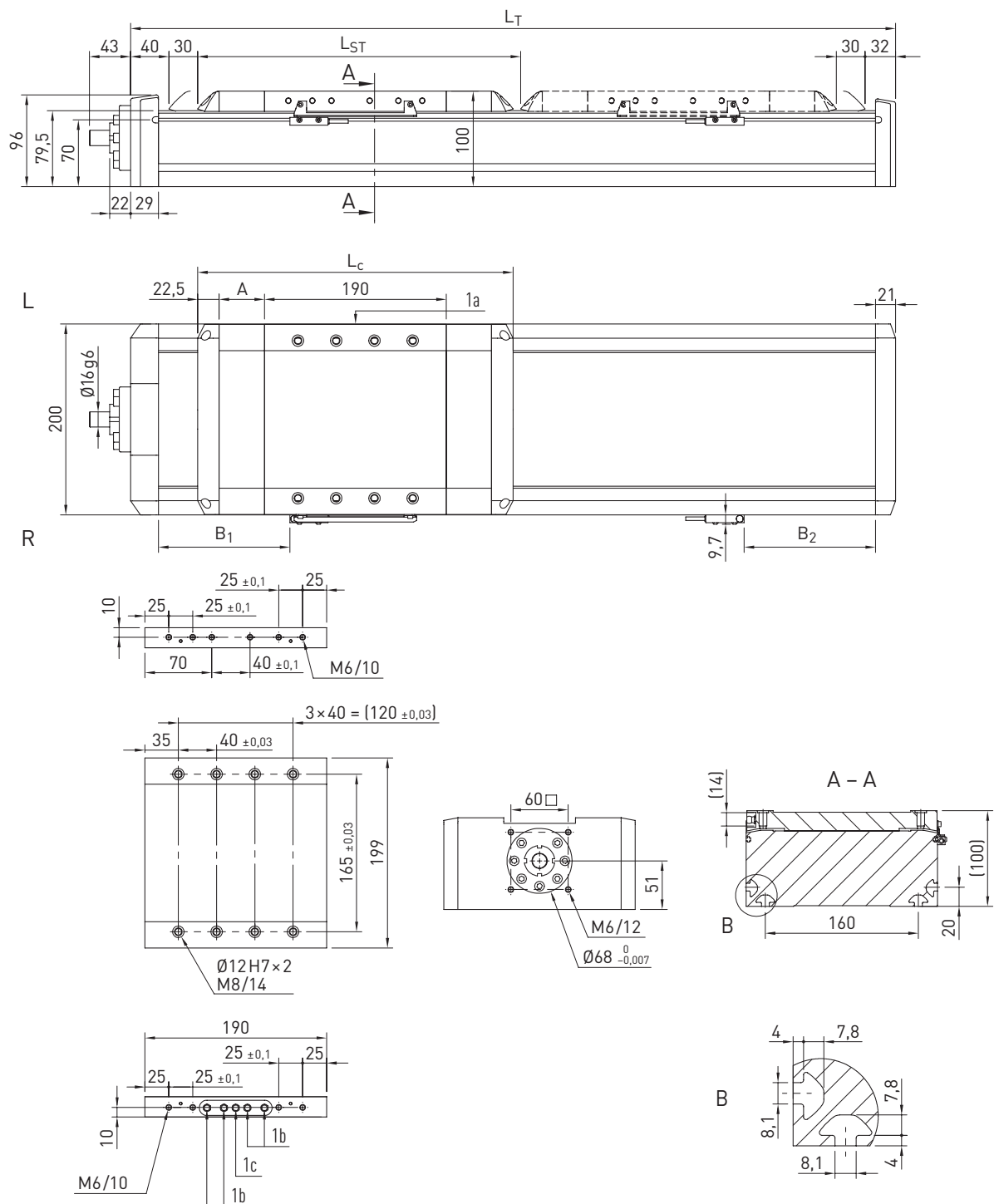
	Variant without cover			Variant with cover		
	5	10	20	5	10	20
Spindle pitch [mm]	5	10	20	5	10	20
Mass of the carriage [kg]	2.26	2.40	2.49	2.73	2.88	2.96
Mass at 0-stroke [kg]	7.66	7.80	7.88	9.29	9.43	9.52
Mass per 1 m stroke [kg/m]	12.89			13.17		
$J_{\text{rot.}}^{1)} \text{ at 0-stroke [kgcm}^2\text{]}$	0.69			0.81		
$J_{\text{rot.}}^{1)} \text{ Per 1 m stroke [kgcm}^2\text{/m]}$	1.23			1.23		
Idle torque at 0-stroke [Nm]	0.60			0.70		

¹⁾ Rotational moment of inertia

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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]	5,098	5,003
Total length L_T [mm]	$L_T = L_{ST} + 367$	$L_T = L_{ST} + 462$

Table 8.14 Load data

$F_{y\text{dynmax}}^{1)} \text{ [N]}$	7,800
$F_{z\text{dynmax}}^{1)} \text{ [N]}$	15,784
$M_{x\text{dynmax}} \text{ [Nm]}$	1,073
$M_{y\text{dynmax}} \text{ [Nm]}$	892
$M_{z\text{dynmax}} \text{ [Nm]}$	441
$z^{2)} \text{ [mm]}$	58

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)

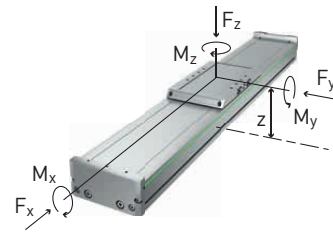


Table 8.15 General technical data

Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	150
Maximum total length [mm]	5,465 ³⁾
Area moment of inertia of profile cross section $I_x \text{ [mm}^4\text{]}$	2,071,928
Area moment of inertia of profile cross section $I_y \text{ [mm}^4\text{]}$	19,658,810

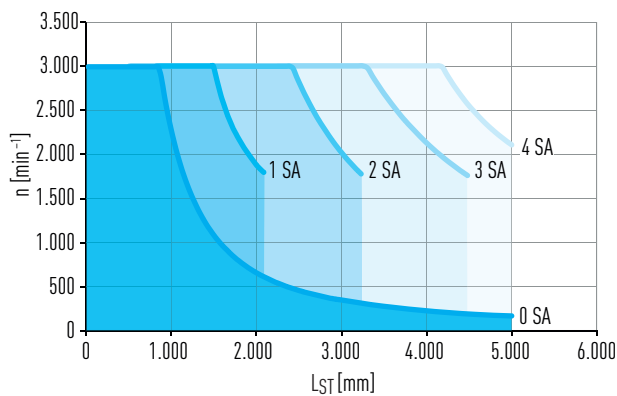
³⁾ Without cover strip 5,367

Table 8.16 Guide

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

Table 8.17 Drive

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



SA Spindle support

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

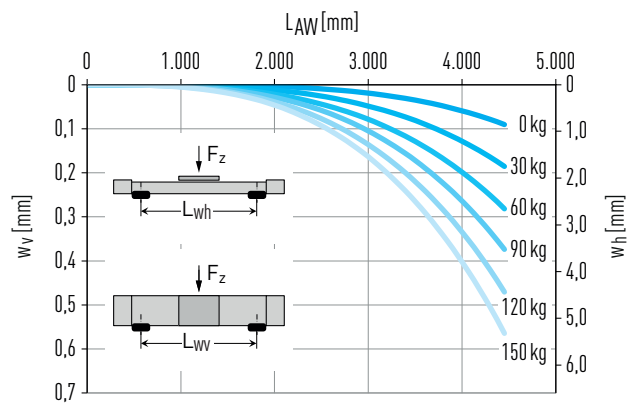


Fig. 8.6 Deflection w over unsupported axis length L_{AW} under load capacity F_z

Table 8.18 Mechanical properties

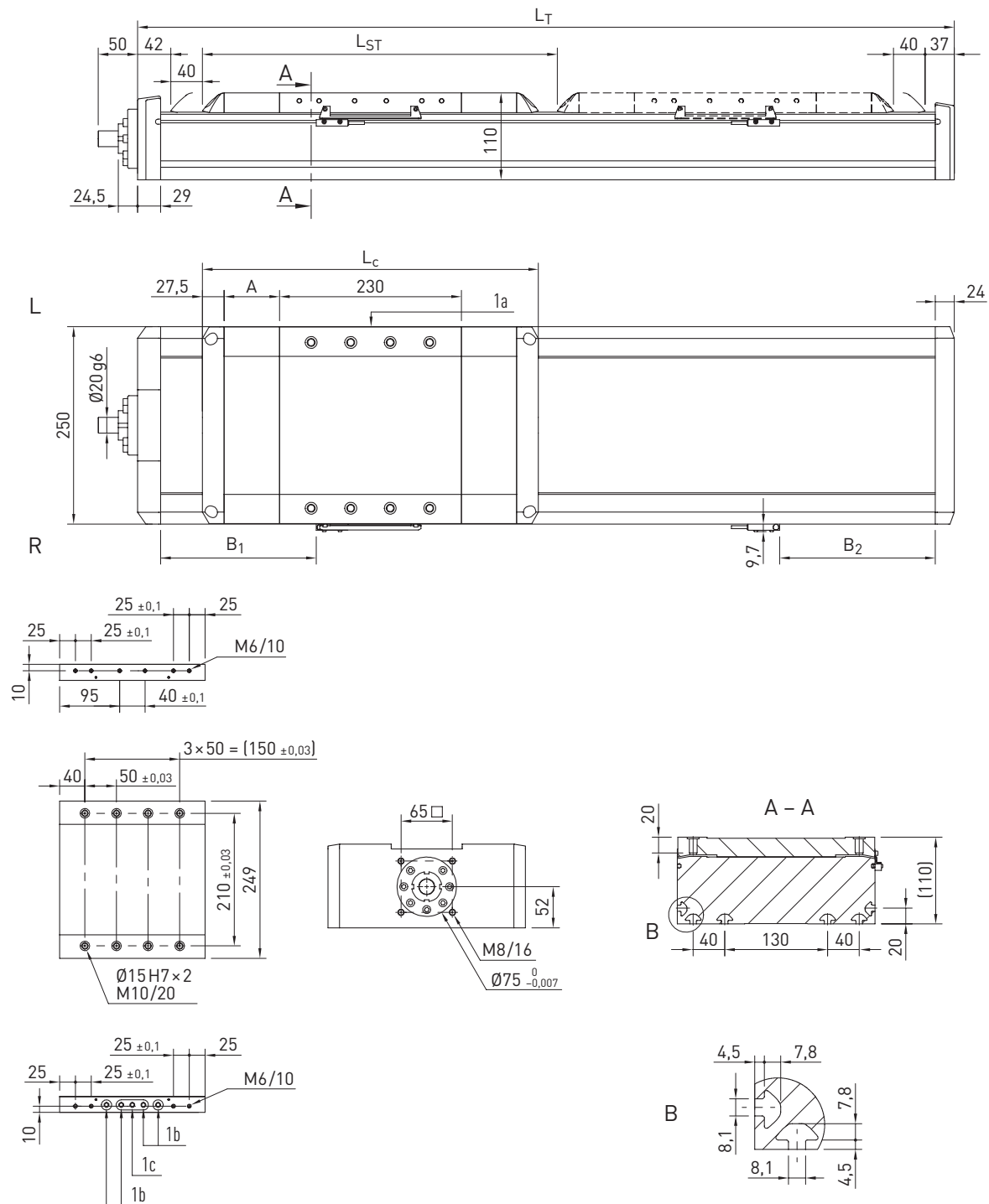
	Variant without cover			Variant with cover		
	5	10	25	5	10	25
Spindle pitch [mm]	5	10	25	5	10	25
Mass of the carriage [kg]	4.40	4.50	4.63	5.00	5.09	5.22
Mass at 0-stroke [kg]	14.24	14.33	14.46	16.90	16.99	17.12
Mass per 1 m stroke [kg/m]	20.30			20.61		
$J_{\text{rot.}}^{1)} \text{ at 0-stroke [kgcm}^2\text{]}$	2.01			2.30		
$J_{\text{rot.}}^{1)} \text{ Per 1 m stroke [kgcm}^2\text{/m]}$	3.01			3.01		
Idle torque at 0-stroke [Nm]	0.80			1.00		

¹⁾ Rotational moment of inertia

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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]	5,013	4,873
Total length L_T [mm]	$L_T = L_{ST} + 444$	$L_T = L_{ST} + 584$

Table 8.20 Load data	
$F_{y\text{dynmax}}^{1)} \text{ [N]}$	11,600
$F_{z\text{dynmax}}^{1)} \text{ [N]}$	20,465
$M_{x\text{dynmax}} \text{ [Nm]}$	1,750
$M_{y\text{dynmax}} \text{ [Nm]}$	1,514
$M_{z\text{dynmax}} \text{ [Nm]}$	858
$z^{2)} \text{ [mm]}$	68

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)

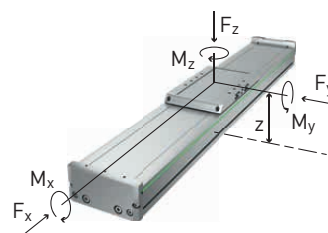
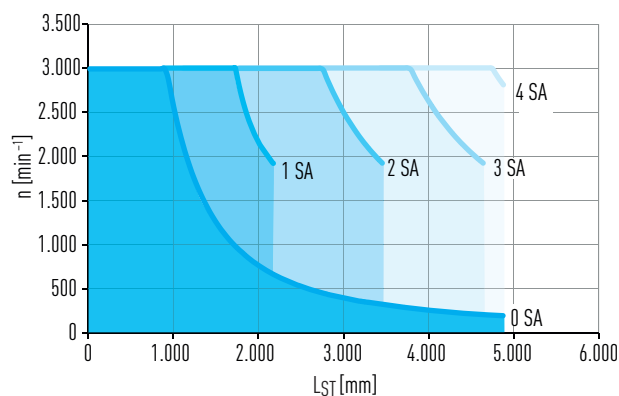


Table 8.21 General technical data	
Repeatability [mm]	± 0.02
Max. acceleration [m/s²]	15
Typical load capacity [kg]	250
Maximum total length [mm]	5,457 ³⁾
Area moment of inertia of profile cross section $I_x \text{ [mm}^4\text{]}$	3,265,771
Area moment of inertia of profile cross section $I_y \text{ [mm}^4\text{]}$	39,262,043

³⁾ Without cover strip 5,444

Table 8.22 Guide	
Guide type	QHH25CA
Static load rating $C_0 \text{ [N]}$	48,750
Dynamic load rating $C_{\text{dyn}} \text{ [N]}$	41,900

Table 8.23 Drive		Spindle lead		
		10 mm	20 mm	32 mm
Spindle diameter [mm]	32			
Axial play [mm]	0.02			
Max. feed force $F_{x\text{max}} \text{ [N]}$	5,300	4,069	2,744	
Max. speed [m/s]	0.50	1.00	1.60	
Max. drive torque $M_{A\text{max}} \text{ [Nm]}$	9.94	14.45	15.47	
Static load rating ballscrew $C_0 \text{ [N]}$	88,000	50,600	32,800	
Dynamic load rating ballscrew $C_{\text{dyn}} \text{ [N]}$	28,782	22,100	14,900	



SA Spindle support

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

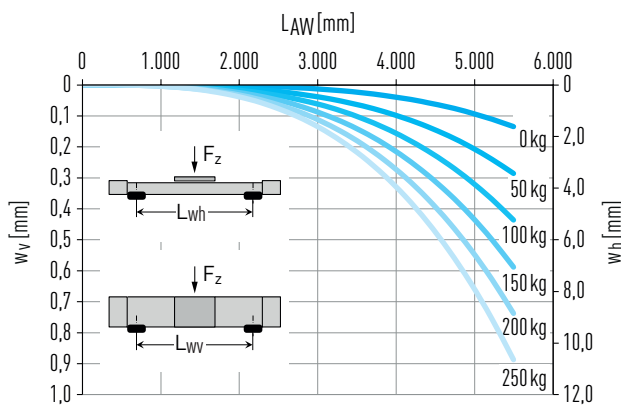


Fig. 8.8 Deflection w over unsupported axis length L_{AW} under load capacity F_z

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]	8.16	8.30	8.32	9.55	9.69	9.71
Mass at 0-stroke [kg]	23.86	24.00	24.02	29.49	29.63	29.64
Mass per 1 m stroke [kg/m]	27.73			28.12		
$J_{\text{rot.}}^{1)} \text{ At 0-stroke [kgcm}^2\text{]}$	5.15			6.28		
$J_{\text{rot.}}^{1)} \text{ Per 1 m stroke [kgcm}^2\text{/m]}$	8.08			8.08		
Idle torque at 0-stroke [Nm]	1.50			1.80		

¹⁾ Rotational moment of inertia