

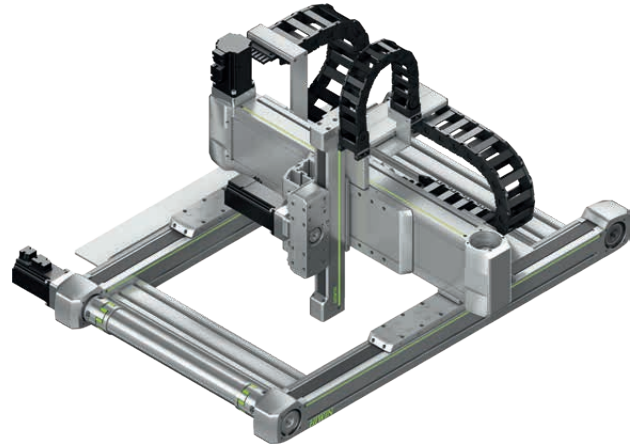
Linear axes & linear axis systems

Two-axis systems HS3

17. Two-axis systems HS3

17.1 Properties of three-axis systems HS3

HIWIN three-axis systems HS3 are flexible units for positioning along the X- Y- and Z-axis. They consist of a HIWIN double axis HD in the X direction, a HIWIN belt axis HT-B in the Y direction and a HIWIN cantilever axis HC-B in the Z direction. HIWIN HS32 three-axis systems are particularly suitable for three-dimensional movements.



Energy chain

Generously dimensioned energy chains provide space for safely carrying the supply lines. The energy chains are integrated into the complete system in a particularly compact and space-saving way.



Maximum axis speed in X direction

The maximum axis speed in the X direction depends on the size and the centre distance, which in the three-axis system HS3 results from the selected stroke in the Y direction. The dependence of the maximum axis speed on stroke length Y can be determined from the diagram in Fig. 17.1.

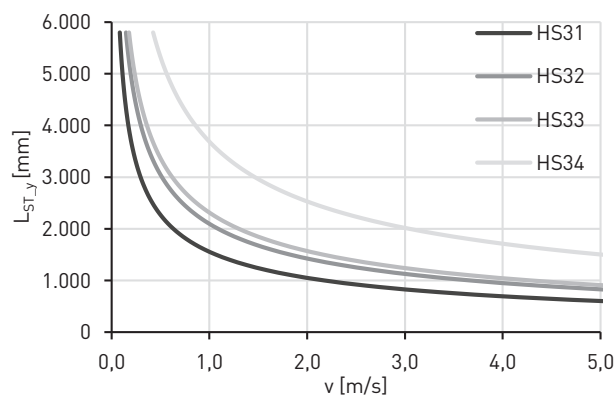
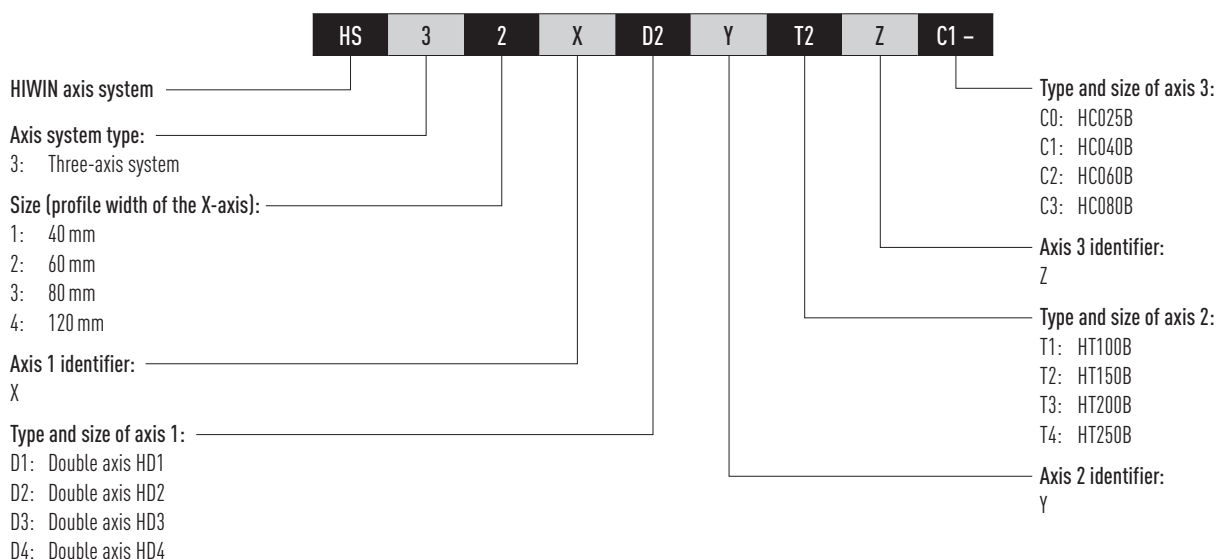
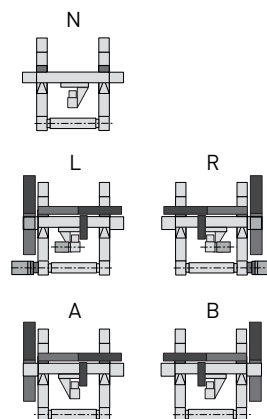
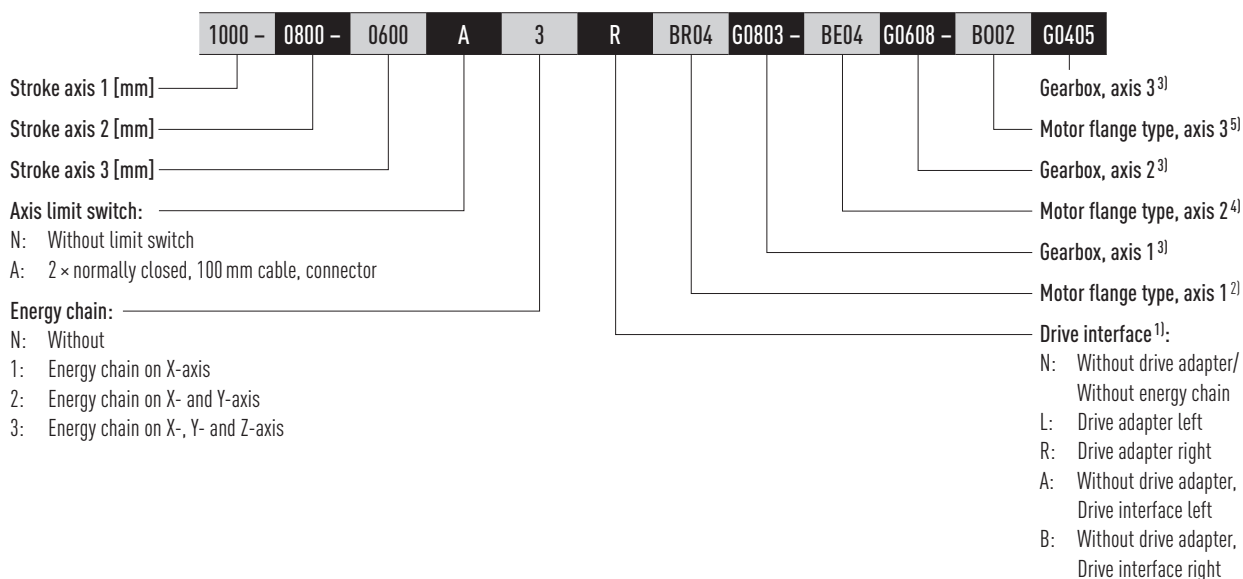


Fig. 17.1 Max. axis speed v in X direction, as a function of stroke L_{ST} in Y direction

17.2 Order code for three-axis systems HS3



Continuation, order code for three-axis systems HS3



¹⁾ If no drive interface is selected, the order code ends after this digit.

²⁾ You can find all flange types in [Table 22.1 from page 160](#). If no flange type is selected, the "Gearbox, axis 1" position is omitted.

³⁾ You can find matching gearboxes in section [22.1.5.5 from page 170](#).

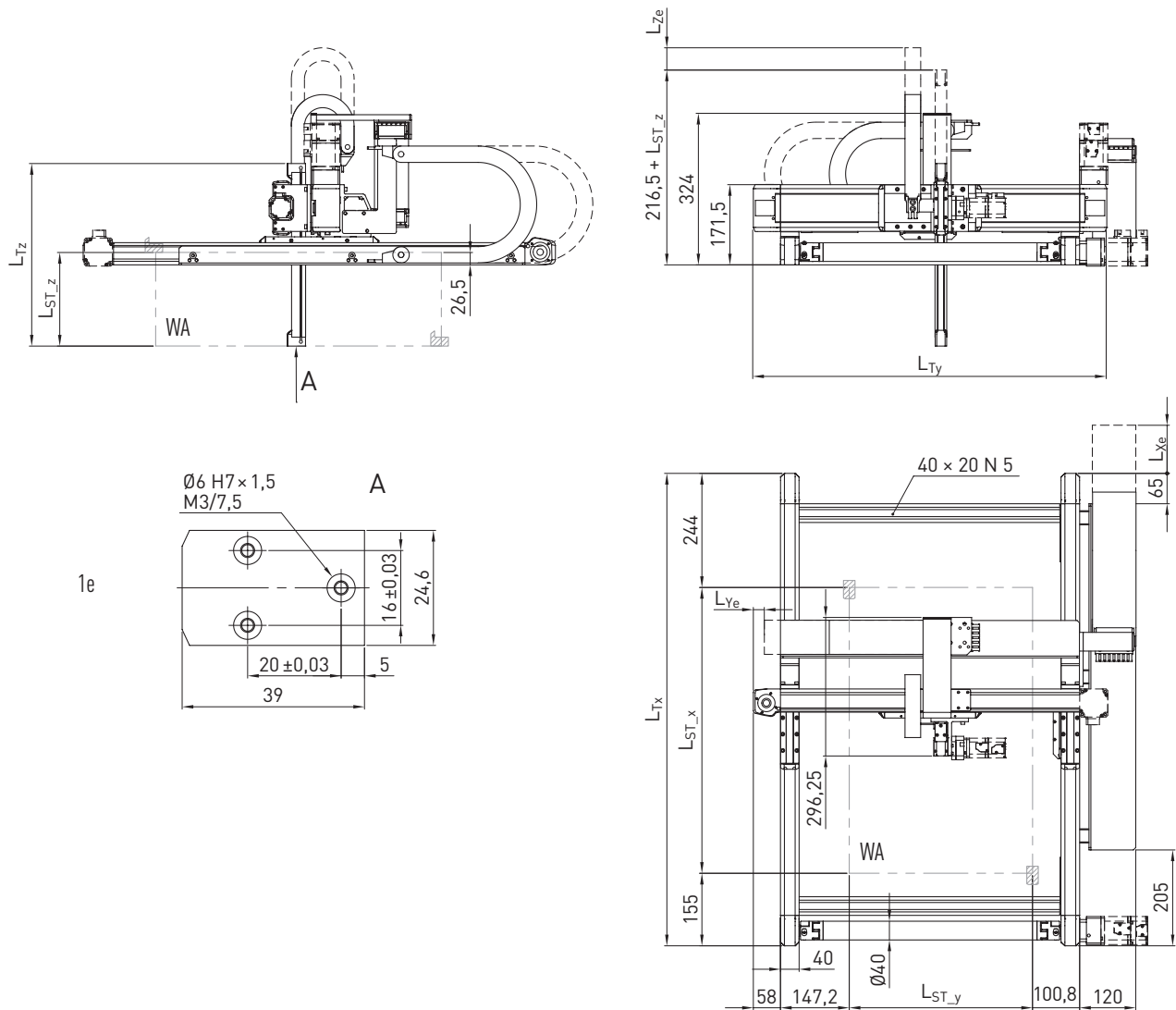
⁴⁾ You can find all flange types in [Table 22.2 from page 161](#). If no flange type is selected, the "Gearbox, axis 2" position is omitted.

⁵⁾ You can find all flange types in [Table 22.4 from page 163](#). If no flange type is selected, the order code ends after this digit.

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17.3 Dimensions and specifications of HS31-D-T-C



L_{ST} Stroke
 WA Working space
 $1e$ Interface application

Table 17.1 HS31-D-T-C dimensions

Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST_x} + 399$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST_y} + 364$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST_z} + 190$

Table 17.2 Energy chain

	X-axis	Y-axis	Z-axis
Inner cross section $W \times H$ [mm]	77×25	57×25	20×21
Bending radius [mm]	100	75	48
End position at electrical zero F [mm]	$L_{Xe} = 195$	$L_{Ye} = -23.5$	$L_{Ze} = 151.0 - L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = 200$	$L_{Ye} = -16.0$	$L_{Zm} = 147.5 - L_{ST}/2$

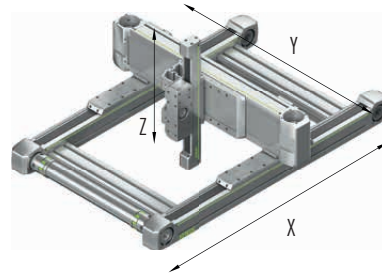


Table 17.3 General technical data

	X-axis	Y-axis	Z-axis
Axis type	HD1N	HT100B-C	HC025B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	450	813	241
Max. speed ¹⁾ [m/s]	5		
Max. acceleration ¹⁾ [m/s ²]	30		
Max. drive torque M_{A_max} [Nm]	7.9	13.6	3.1
Max. stroke [mm]	3,000	1,300	300
Typical load capacity [kg]	2		

¹⁾ Restrictions possible with variant with energy chain depending on the stroke

Note: Dimensions and specifications of double axis HD1 can be found in section 15.3 on page 106

Dimensions and specifications of single axis HT100B can be found in section 7.3 on page 46

Dimensions and specifications of single axis HC025B can be found in section 13.3 on page 88

Table 17.4 Drive

	X-axis	Y-axis	Z-axis
Toothed belt drive element	B15HTD3	B25HTD5	B12HTD3
Feed constant [mm/U]	111	105	81
Toothed belt effective diameter [mm]	35.33	33.42	25.78

Table 17.5 Mechanical properties

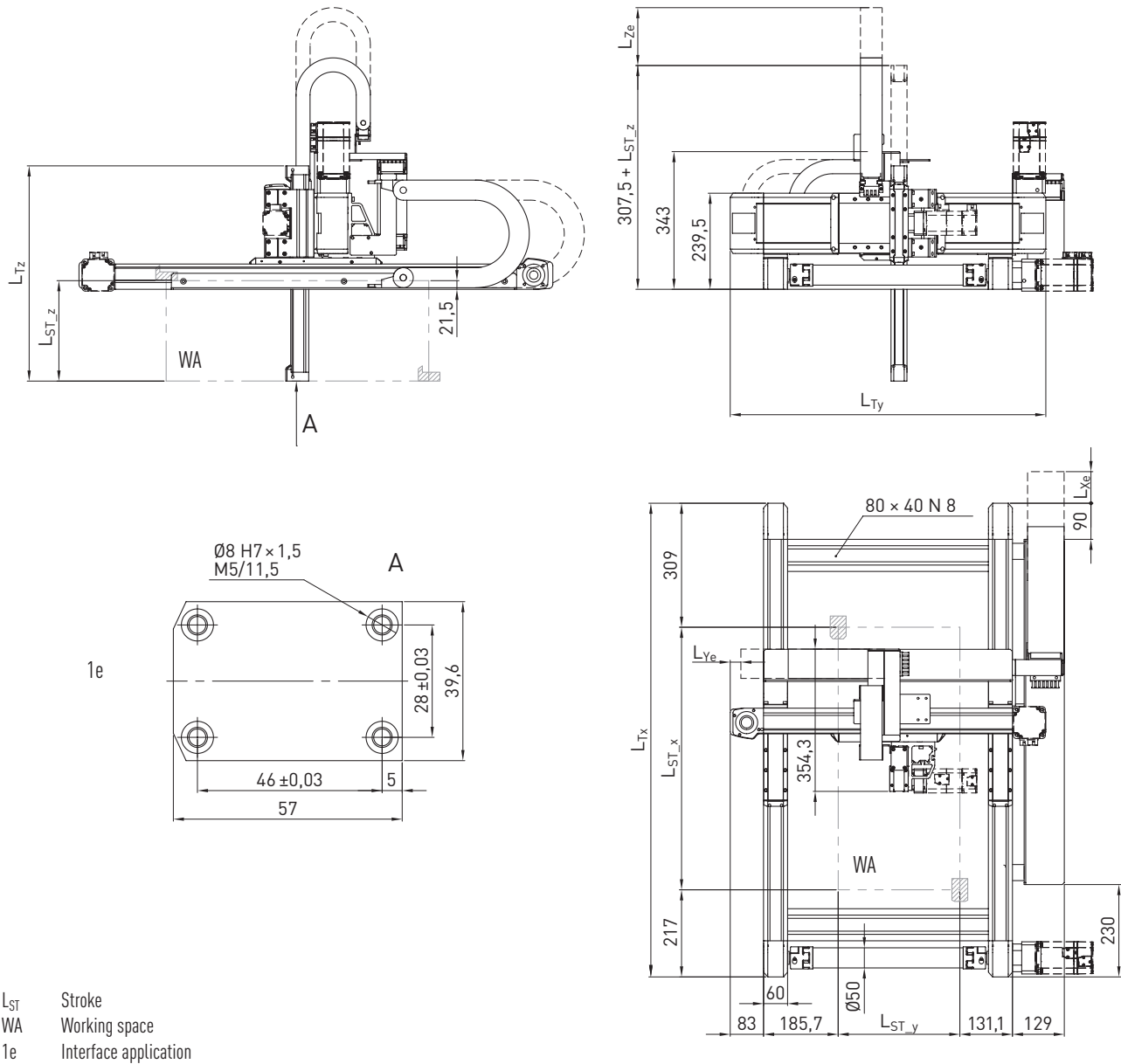
Moving mass Z-axis at 0-stroke [kg]	0.30
Moving mass Z-axis per 1 m stroke [kg/m]	1.27
Moving mass Y-axis at 0-stroke Z-axis [kg]	2.61
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	7.53
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	6.65
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	11.33
Mass of total system per 1 m stroke X-axis [kg/m]	6.20
Mass of total system per 1 m stroke Y-axis [kg/m]	9.41
Mass of total system per 1 m stroke Z-axis [kg/m]	1.27

Note: All values without energy chain and without drive

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17.4 Dimensions and specifications of HS32-D-T-C



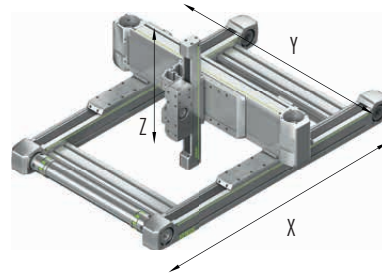
L_{ST} Stroke
 WA Working space
 $1e$ Interface application

Table 17.6 HS32-D-T-C dimensions

Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{STx} + 526$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{STy} + 483$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{STz} + 286$

Table 17.7 Energy chain

	X-axis	Y-axis	Z-axis
Inner cross section $W \times H$ [mm]	75 x 35	57 x 25	38 x 25
Bending radius [mm]	100	75	75
End position at electrical zero F [mm]	$L_{Xe} = 200$	$L_{Ye} = -46.5$	$L_{Ze} = 274.0 - L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = 210$	$L_{Ym} = -36.5$	$L_{Zm} = 269.0 - L_{ST}/2$


Table 17.8 General technical data

	X-axis	Y-axis	Z-axis
Axis type	HD2N	HT150B-C	HC040B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	1,343	1,300	404
Max. speed¹⁾ [m/s]	5		
Max. acceleration¹⁾ [m/s²]	30		
Max. drive torque M_{A_max} [Nm]	33.1	32.1	7.9
Max. stroke [mm]	5,000	1,650	500
Typical load capacity [kg]	8		

¹⁾ Restrictions possible with variant with energy chain depending on the stroke

Note: Dimensions and specifications of double axis HD2 can be found in section 15.4 on page 107

Dimensions and specifications of single axis HT150B can be found in section 7.4 on page 48

Dimensions and specifications of single axes HC040B can be found in section 13.4 on page 90

Table 17.9 Drive

	X-axis	Y-axis	Z-axis
Toothed belt drive element	B25HTD5	B40HTD5	B20HDT3
Feed constant [mm/U]	155		123
Toothed belt effective diameter [mm]	49.34		39.15

Table 17.10 Mechanical properties

Moving mass Z-axis at 0-stroke [kg]	0.91
Moving mass Z-axis per 1 m stroke [kg/m]	2.75
Moving mass Y-axis at 0-stroke Z-axis [kg]	6.74
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	18.07
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	11.13
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	28.18
Mass of total system per 1 m stroke X-axis [kg/m]	10.96
Mass of total system per 1 m stroke Y-axis [kg/m]	21.39
Mass of total system per 1 m stroke Z-axis [kg/m]	2.75

Note: All values without energy chain and without drive

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17.5 Dimensions and specifications of HS33-D-T-C

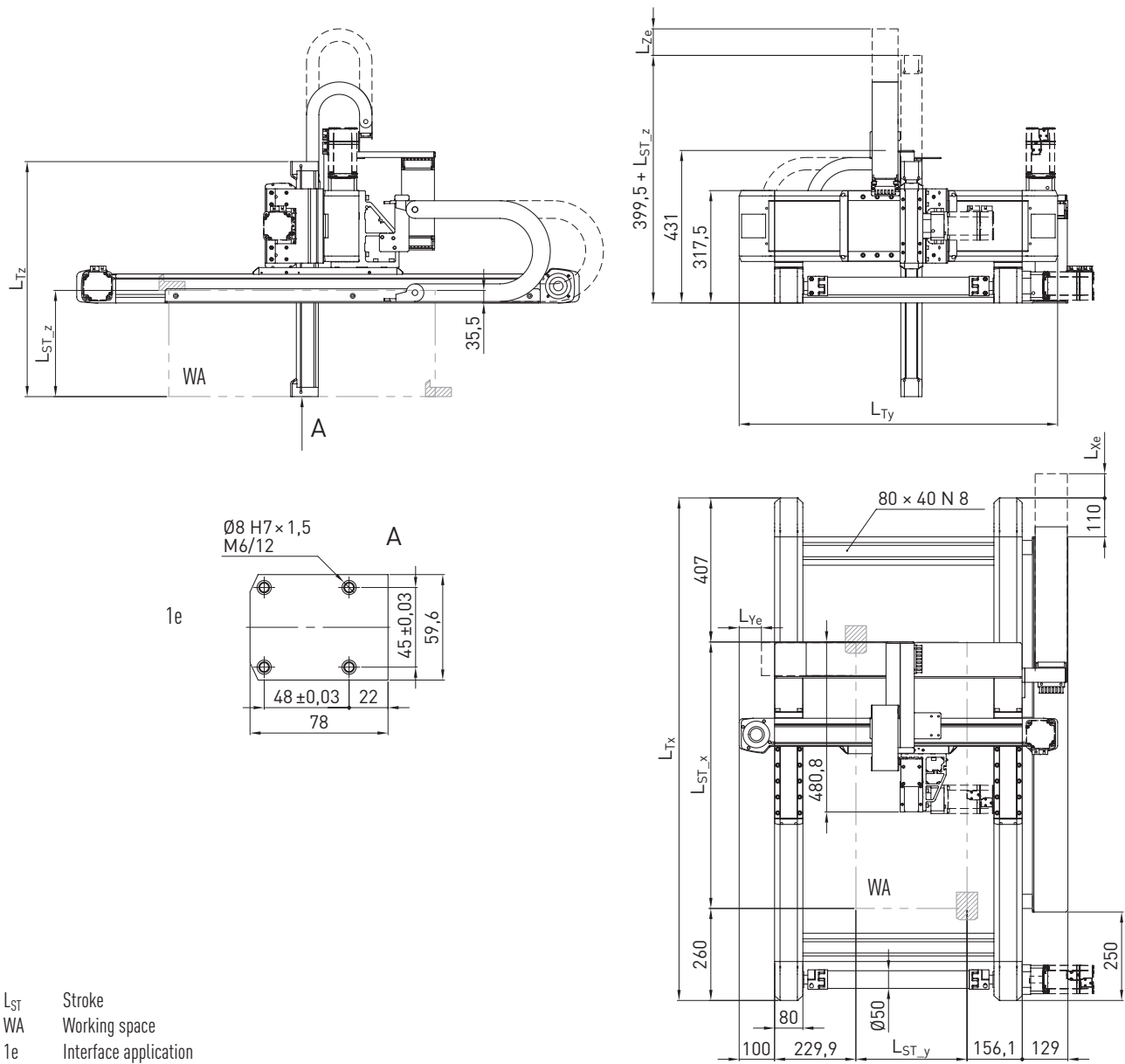


Table 17.11 HS33-D-T-C dimensions

Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{ST_x} + 667$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{ST_y} + 586$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{ST_z} + 364$

Table 17.12 Energy chain

	X-axis	Y-axis	Z-axis
Inner cross section $W \times H$ [mm]	75 × 35	77 × 25	57 × 25
Bending radius [mm]	100	100	75
End position at electrical zero F [mm]	$L_{Xe} = 160$	$L_{Ye} = -53.0$	$L_{Ze} = 282.5 - L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = 170$	$L_{Ym} = -38.0$	$L_{Zm} = 275.0 - L_{ST}/2$

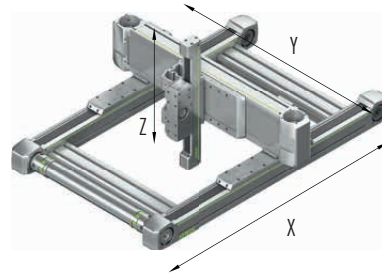


Table 17.13 General technical data

	X-axis	Y-axis	Z-axis
Axis type	HD3N	HT200B-C	HC060B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	1,880	3,000	997
Max. speed ¹⁾ [m/s]	5		
Max. acceleration ¹⁾ [m/s ²]	30		
Max. drive torque M_{A_max} [Nm]	56.8	87.9	27
Max. stroke [mm]	5,000	1,550	800
Typical load capacity [kg]	16		

¹⁾ Restrictions possible with variant with energy chain depending on the stroke

Note: Dimensions and specifications of double axis HD3 can be found in section 15.5 on page 108

Dimensions and specifications of single axis HT200B can be found in section 7.5 on page 50

Dimensions and specifications of single axes HC060B can be found in section 13.5 on page 92

Table 17.14 Drive

	X-axis	Y-axis	Z-axis
Toothed belt drive element	B35HTD5	B50HTD8	B30HTD5
Feed constant [mm/U]	190	184	170
Toothed belt effective diameter [mm]	60.48	58.57	54.11

Table 17.15 Mechanical properties

Moving mass Z-axis at 0-stroke [kg]	2.23
Moving mass Z-axis per 1 m stroke [kg/m]	5.18
Moving mass Y-axis at 0-stroke Z-axis [kg]	13.12
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	36.77
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	17.75
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	55.46
Mass of total system per 1 m stroke X-axis [kg/m]	19.88
Mass of total system per 1 m stroke Y-axis [kg/m]	28.00
Mass of total system per 1 m stroke Z-axis [kg/m]	5.18

Note: All values without energy chain and without drive

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17.6 Dimensions and specifications of HS34-D-T-C

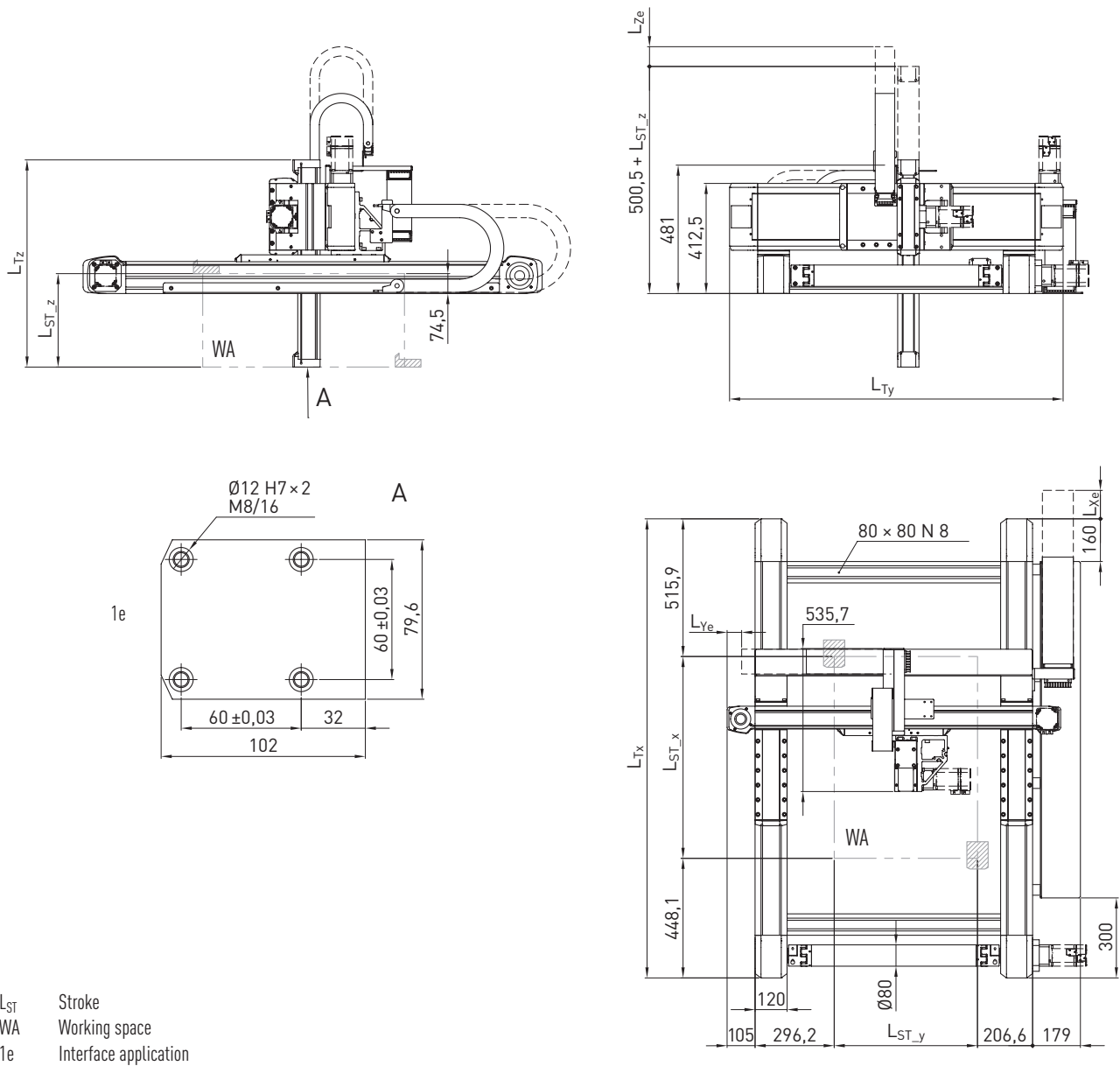


Table 17.16 HS34-D-T-C dimensions

Total length X-axis L_{Tx} [mm]	$L_{Tx} = L_{STx} + 964$
Total length Y-axis L_{Ty} [mm]	$L_{Ty} = L_{STy} + 713$
Total length Z-axis L_{Tz} [mm]	$L_{Tz} = L_{STz} + 426$

Table 17.17 Energy chain

	X-axis	Y-axis	Z-axis
Inner cross section $W \times H$ [mm]	100 × 35	77 × 25	57 × 25
Bending radius [mm]	125	100	100
End position at electrical zero F [mm]	$L_{Xe} = 120$	$L_{Ye} = -116.5$	$L_{Ze} = 259.0 - L_{ST}/2$
End position at mechanical zero [mm]	$L_{Xm} = 140$	$L_{Ye} = -96.5$	$L_{Zm} = 249.0 - L_{ST}/2$

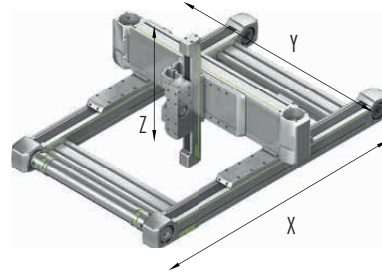


Table 17.18 General technical data

	X-axis	Y-axis	Z-axis
Axis type	HD4N	HT250B-C	HC080B
Sledge type	L	S	
Max. feed force F_{x_max} [N]	4,385	4,500	1,330
Max. speed¹⁾ [m/s]	5		
Max. acceleration¹⁾ [m/s²]	30		
Max. drive torque M_{A_max} [Nm]	201	149	42.3
Max. stroke [mm]	5,000	1,400	1,200
Typical load capacity [kg]	30		

¹⁾ Restrictions possible with variant with energy chain depending on the stroke

Note: Dimensions and specifications of double axis HD4 can be found in section 15.6 on page 109

Dimensions and specifications of single axis HT250B can be found in section 7.6 on page 52

Dimensions and specifications of single axes HC080B can be found in section 13.6 on page 94

Table 17.19 Drive

	X-axis	Y-axis	Z-axis
Toothed belt drive element	B60HTD8	B75HTD8	B40HTD5
Feed constant [mm/U]	288	208	200
Toothed belt effective diameter [mm]	91.67	66.21	63.66

Table 17.20 Mechanical properties

Moving mass Z-axis at 0-stroke [kg]	4.35
Moving mass Z-axis per 1 m stroke [kg/m]	9.01
Moving mass Y-axis at 0-stroke Z-axis [kg]	26.20
Moving mass X-axis at 0-stroke Y- and Z-axis [kg]	73.50
Moving mass X-axis per 1 m stroke Y-axis [kg/m]	23.09
Mass of total system at 0-stroke X-, Y- and Z-axis [kg]	125.83
Mass of total system per 1 m stroke X-axis [kg/m]	42.06
Mass of total system per 1 m stroke Y-axis [kg/m]	40.78
Mass of total system per 1 m stroke Z-axis [kg/m]	9.01

Note: All values without energy chain and without drive