



## Additional Technical Data

### Linear Motion Systems with Lead or Ball Screw Drive and Ball Guides

Technical Data									
Parameter		WM40S	WM40D	WM60D	WM60S	WM60X	WM80D	WM80S	WM120D
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	10,8 × 10 <sup>4</sup>	10,8 × 10 <sup>4</sup>	5,8 × 10 <sup>5</sup>	5,8 × 10 <sup>5</sup>	5,8 × 10 <sup>5</sup>	1,85 × 10 <sup>6</sup>	1,85 × 10 <sup>6</sup>	7,7 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	13,4 × 10 <sup>4</sup>	13,4 × 10 <sup>4</sup>	5,9 × 10 <sup>5</sup>	5,9 × 10 <sup>5</sup>	5,9 × 10 <sup>5</sup>	1,94 × 10 <sup>6</sup>	1,94 × 10 <sup>6</sup>	9,4 × 10 <sup>6</sup>
Friction factor of the guide system (μ)		0,05	0,05	0,1	0,1	0,1	0,1	0,1	0,1
Efficiency of the unit		0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Bending factor (b)		0,0003	0,0003	0,0003	0,0003	0,0003	0,0003	0,0003	0,0003
Inertia of ball screw (jsp)	[kgm <sup>2</sup> /m]	1,13 × 10 <sup>-5</sup>	1,13 × 10 <sup>-5</sup>	8,46 × 10 <sup>-5</sup>	8,46 × 10 <sup>-5</sup>	8,46 × 10 <sup>-5</sup>	2,25 × 10 <sup>-4</sup>	2,25 × 10 <sup>-4</sup>	6,34 × 10 <sup>-4</sup>
Dynamic load rating of ball screw (Cx)	[N]								
05 mm lead		4400	4400	10500	10500	10500	12300	12300	21500
10 mm lead		-	-	-	-	-	13200	13200	33400
20 mm lead		-	-	11600	11600	-	13000	13000	29700
40 mm lead		-	-	-	-	-	-	-	14900
50 mm lead		-	-	8400	8400	-	15400	15400	-
Dynamic load rating of ball guide (Cy)	[N]	2 × 2650	2 × 2650	4 × 11495	2 × 12964	4 × 11495	4 × 14356	2 × 18723	4 × 18723
Dynamic load rating of ball guide (Cz)	[N]	2 × 3397	2 × 3397	4 × 10581	2 × 11934	4 × 10581	4 × 13739	2 × 17919	4 × 17919
Distance between ball guide carriages (Lx)	[mm]	87	136	141,7	-	141,7	154	-	186
Distance between ball guide carriages (Ly)	[mm]	-	-	35	35	35	49,75	49,75	80,75

Parameter		WV60	WV80	WV120	MLSM60D	MLSM80D
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	5,8 × 10 <sup>5</sup>	1,85 × 10 <sup>6</sup>	7,7 × 10 <sup>6</sup>	1,19 × 10 <sup>6</sup>	3,77 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	5,9 × 10 <sup>5</sup>	1,94 × 10 <sup>6</sup>	9,4 × 10 <sup>6</sup>	1,08 × 10 <sup>7</sup>	4,71 × 10 <sup>7</sup>
Friction factor of the guide system (μ)		no guides	no guides	no guides	0,1	0,1
Efficiency of the unit		0,8	0,8	0,8	0,8	0,8
Bending factor (b)		0,0003	0,0003	0,0003	0,0003	0,0003
Inertia of ball screw (jsp)	[kgm <sup>2</sup> /m]	8,46 × 10 <sup>-5</sup>	2,25 × 10 <sup>-4</sup>	6,34 × 10 <sup>-4</sup>	2,25 × 10 <sup>-4</sup>	6,34 × 10 <sup>-4</sup>
Dynamic load rating of ball screw (Cx)	[N]					
05 mm lead		10500	12300	21500	12300	21500
10 mm lead		-	13200	33400	13200	33400
20 mm lead		11600	13000	29700	13000	29700
25 mm lead		-	-	14900	-	-
40 mm lead		-	-	-	-	14900
50 mm lead		8400	15400	-	15400	-
Dynamic load rating of ball guide (Cy)	[N]	no guides	no guides	no guides	4 × 13770	4 × 17965
Dynamic load rating of ball guide (Cz)	[N]	no guides	no guides	no guides	4 × 13770	4 × 17965
Distance between ball guide carriages (Lx)	[mm]	no guides	no guides	no guides	163	185
Distance between ball guide carriages (Ly)	[mm]	no guides	no guides	no guides	105	164

## Additional Technical Data

### Linear Motion Systems with Ball Screw and Slide Guides

Technical Data		M55	M75	M100
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	4,27 × 10 <sup>5</sup>	1,9 × 10 <sup>6</sup>	5,54 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	3,4 × 10 <sup>5</sup>	1,15 × 10 <sup>6</sup>	3,86 × 10 <sup>6</sup>
Friction factor of the guide system (μ)		0,15	0,15	0,15
Efficiency				
ball nut unit		0,8	0,8	0,8
composite nut unit		0,5	0,5	0,5
Bending factor (b)		0,0005	0,0005	0,0005
Inertia of ball screw (J <sub>sp</sub> )	[kgm <sup>2</sup> /m]	4,1 × 10 <sup>-5</sup>	1,6 × 10 <sup>-4</sup>	2,5 × 10 <sup>-4</sup>
Dynamic load rating of ball screw (C <sub>x</sub> )	[N]			
05 mm lead		9300	10400	12500
05,8 mm lead		5420	-	-
08 mm lead		-	-	-
10 mm lead		15400	-	20600
12,7 mm lead		-	17960	-
20 mm lead		1900	10400	-
25 mm lead		-	-	11800
32 mm lead		2000	-	-

### Linear Motion Systems with Belt Drive and Ball Guides

Technical Data		WH40	WM60Z	WM80Z	M55	M75	M100	MLSM80Z
Geometrical moment of inertia of the profile (I <sub>y</sub> )	[mm <sup>4</sup> ]	12,6 × 10 <sup>4</sup>	5,62 × 10 <sup>5</sup>	1,85 × 10 <sup>6</sup>	4,59 × 10 <sup>5</sup>	1,9 × 10 <sup>6</sup>	5,54 × 10 <sup>6</sup>	3,77 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (I <sub>z</sub> )	[mm <sup>4</sup> ]	15,3 × 10 <sup>4</sup>	5,94 × 10 <sup>5</sup>	1,94 × 10 <sup>6</sup>	3,56 × 10 <sup>5</sup>	1,15 × 10 <sup>6</sup>	3,86 × 10 <sup>6</sup>	4,71 × 10 <sup>7</sup>
Friction factor of the guide system (μ)		0,05	0,1	0,1	0,02	0,02	0,02	0,1
Efficiency of the unit		0,85	0,85	0,85	0,95	0,95	0,95	0,85
Bending factor (b)		0,0005	0,0005	0,0005	0,0005	0,0005	0,0005	0,0005
Specific mass of belt	[kg/m]	0,032	0,074	0,14	0,09	0,16	0,31	0,517
Inertia of pulleys (J <sub>syn</sub> )	[kgm <sup>2</sup> ]	8,8 × 10 <sup>-6</sup>	2,13 × 10 <sup>-5</sup>	1,12 × 10 <sup>-4</sup>	1,7 × 10 <sup>-5</sup>	6,8 × 10 <sup>-5</sup>	8,5 × 10 <sup>-5</sup>	5,077 × 10 <sup>-4</sup>
Dynamic load rating of ball guide (C <sub>y</sub> )	[N]	2 × 2650	2 × 12964	4 × 18723 (2 × 18723) <sup>1</sup>	2 × 2717	2 × 8206	2 × 13189	4 × 17965
Dynamic load rating of ball guide (C <sub>z</sub> )	[N]	2 × 3397	2 × 11934	4 × 13739 (2 × 17919)	2 × 3484	2 × 15484	2 × 24885	4 × 17965
Distance between ball guide carriages (L <sub>x</sub> )	[mm]	72	-	154 (-)	78	96	140	185
Distance between ball guide carriages (L <sub>y</sub> )	[mm]	-	35	49,75	-	-	-	164

<sup>1</sup> Value in brackets = for short carriage.

## Additional Technical Data

### Linear Motion Systems with Belt Drive and Slide Guides

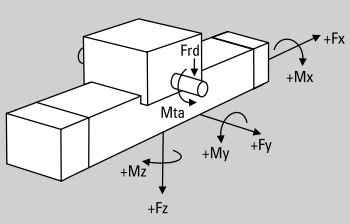
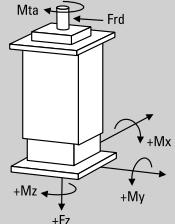
Technical Data		M50	M55	M75	M100
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	$2,61 \times 10^5$	$4,59 \times 10^5$	$1,9 \times 10^6$	$5,54 \times 10^6$
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	$2,44 \times 10^5$	$3,56 \times 10^5$	$1,15 \times 10^6$	$3,86 \times 10^6$
Friction factor of the guide system ( $\mu$ )		0,15	0,15	0,15	0,15
Efficiency of the unit		0,85	0,85	0,85	0,85
Bending factor (b)		0,0005	0,0005	0,0005	0,0005
Specific mass of belt	[kg/m]	0,086	0,09	0,16	0,31
Inertia of pulleys (Jsyn)	[kgm <sup>2</sup> ]	$3,1 \times 10^{-5}$	$1,7 \times 10^{-5}$	$6,8 \times 10^{-5}$	$8,5 \times 10^{-5}$

### Linear Motion Systems with Belt Drive and Wheel Guides

Technical Data		WH50	WH80	WH120	MLSH60Z
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	$3,3 \times 10^5$	$1,93 \times 10^6$	$6,69 \times 10^6$	$1,29 \times 10^6$
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	$2,65 \times 10^5$	$1,8 \times 10^6$	$6,88 \times 10^6$	$1,2 \times 10^7$
Friction factor of the guide system ( $\mu$ )		0,1	0,1	0,1	0,1
Efficiency of the unit		0,85	0,85	0,85	0,85
Bending factor (b)		0,0005	0,0005	0,0005	0,0005
Specific mass of belt	[kg/m]	0,055	0,21	0,34	0,119
Inertia of pulleys (Jsyn)	[kgm <sup>2</sup> ]	$1,928 \times 10^{-5}$	$2,473 \times 10^{-4}$	$1,004 \times 10^{-3}$	$4,604 \times 10^{-5}$
Dynamic load rating of wheel guide (Cy)	[N]	-	-	-	$4 \times 1266$
Dynamic load rating of wheel guide (Cz)	[N]	$4 \times 1270$	$4 \times 3670$	$4 \times 16200$	$4 \times 1266$
Distance between carriage wheels (Lx)	[mm]	198	220	180	109
Distance between carriage wheels (Ly)	[mm]	39	65	97	102,5

## Additional Technical Data

### Linear Lifting Systems

Technical Data					
Parameter		WHZ50	WHZ80	Z2	Z3
Geometrical moment of inertia of the profile (Ix)	[mm <sup>4</sup> ]	-	-	1,87 × 10 <sup>7</sup>	1,87 × 10 <sup>7</sup>
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	3,3 × 10 <sup>5</sup>	1,93 × 10 <sup>6</sup>	2,19 × 10 <sup>7</sup>	2,19 × 10 <sup>7</sup>
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	2,65 × 10 <sup>5</sup>	1,8 × 10 <sup>6</sup>	-	-
Dynamic load rating of ball screw (Fx)	[N]	belt drive	belt drive	-	-
Dynamic load rating of ball screw (Fz)	[N]				
ball screw ø 25 lead 10 mm				21248	21248
ball screw ø 25 lead 25 mm				11182	11182
ball screw ø 32 lead 10 mm				47200	47200
Friction factor of the guide system (μ)		0,1	0,1	0,15	0,15
Efficiency of the unit		0,85	0,85	0,8	0,8
Specific mass of belt	[kg/m]	0,055	0,119	-	-
Inertia of pulleys (Jsyn)	[kgm <sup>2</sup> ]	6,906 × 10 <sup>-5</sup>	5,026 × 10 <sup>-4</sup>	-	-
Inertia of ball screw (jsp)	[kgm <sup>2</sup> /m]				
ball screw ø 25 lead 10		-	-	2,1 × 10 <sup>-4</sup>	2,1 × 10 <sup>-4</sup>
ball screw ø 25 lead 25		-	-	2,6 × 10 <sup>-4</sup>	2,6 × 10 <sup>-4</sup>
ball screw ø 32 lead 10		-	-	6,43 × 10 <sup>-4</sup>	6,43 × 10 <sup>-4</sup>
Dynamic load rating of ball guide (Cx)	[N]	-	-	slide guide	slide guide
Dynamic load rating of ball guide (Cy)	[N]	4 × 1270	4 × 3670	slide guide	slide guide
Distance between ball guide carriages (Lx)	[mm]	198	220	-	-
Distance between ball guide carriages (Ly)	[mm]	39	65	slide guide	slide guide
Distance between ball guide carriages (Lz)	[mm]	-	-	slide guide	slide guide
Definition of forces					

## Additional Technical Data

### Linear Rod Units

Technical Data			
Parameter		WZ60	WZ80
Geometrical moment of inertia of the profile (Iy)	[mm <sup>4</sup> ]	5,8 × 10 <sup>5</sup>	1,85 × 10 <sup>6</sup>
Geometrical moment of inertia of the profile (Iz)	[mm <sup>4</sup> ]	5,9 × 10 <sup>5</sup>	1,94 × 10 <sup>6</sup>
Friction factor of the guide system (μ)		0,1	0,1
Efficiency of the unit		0,8	0,8
Inertia of ball screw (jsp)	[kgm <sup>2</sup> /m]		
05 mm lead		8,46 × 10 <sup>-5</sup>	2,25 × 10 <sup>-4</sup>
10 mm lead		-	2,25 × 10 <sup>-4</sup>
20 mm lead		8,46 × 10 <sup>-5</sup>	2,25 × 10 <sup>-4</sup>
25 mm lead		-	-
32 mm lead		-	-
40 mm lead		-	-
50 mm lead		8,46 × 10 <sup>-5</sup>	2,25 × 10 <sup>-4</sup>
Dynamic load rating of ball screw (Cx)	[N]		
05 mm lead		10500	12300
10 mm lead		-	13200
20 mm lead		11600	13000
25 mm lead		-	-
32 mm lead		-	-
40 mm lead		-	-
50 mm lead		8400	15400
Dynamic load rating of ball guide (Cy)	[N]	2 × 12964	2 × 18723
Dynamic load rating of ball guide (Cz)	[N]	2 × 11943	2 × 17919
Distance between ball guide carriages (Lx)	[mm]	-	-
Distance between ball guide carriages (Ly)	[mm]	35	50
Dynamic rating of the ball bushing	[N]	8300	13700