

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

## Overview

### PowerLine WV



WV80

#### Features

- Can be installed in any orientation
- Patented self-adjusting plastic cover band
- Patented screw support system
- Require external guides

Parameter		WV60	WV80	WV120
Profile size (width × height)	[mm]	60 × 60	80 × 80	120 × 120
Stroke length (Smax), maximum	[mm]	11000	11000	11000
Linear speed, maximum	[m/s]	2,5	2,5	2,0
Dynamic carriage load (Fz), maximum	[N]	-	-	-
Remarks		double ball nuts the units has no guides	double ball nuts the units has no guides	double ball nuts the units has no guides
Page		30	32	34

### ForceLine MLSM



MLSM60D

#### Features

- Can be installed in any orientation
- Patented guide system
- Patented plastic cover band
- Patented screw support system

Parameter		MLSM60D	MLSM80D
Profile size (width × height)	[mm]	160 × 65	240 × 85
Stroke length (Smax), maximum	[mm]	4985	4810
Linear speed, maximum	[m/s]	2,5	2,0
Dynamic carriage load (Fz), maximum	[N]	6000	8000
Remarks		double ball nuts	double ball nuts
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# MLSM60D

## Ball Screw Drive, Ball Guide

- » Ordering key - see page 178
- » Accessories - see page 117
- » Additional data - see page 172

### General Specifications

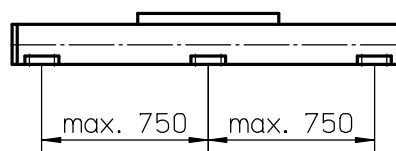
Parameter	MLSM60D
Profile size (w × h) [mm]	160 × 65
Type of screw	ball screw with double nuts
Carriage sealing system	plastic cover band
Screw supports	included in all units that require screw supports
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

### Carriage Idle Torque ( $M_{idle}$ ) [Nm]

Input speed [rpm]	Screw lead [mm]			
	p = 5	p = 10	p = 20	p = 50
150	1,0	1,6	1,9	2,7
1500	1,6	2,2	2,3	3,4
3000	2,0	2,6	2,6	4,0

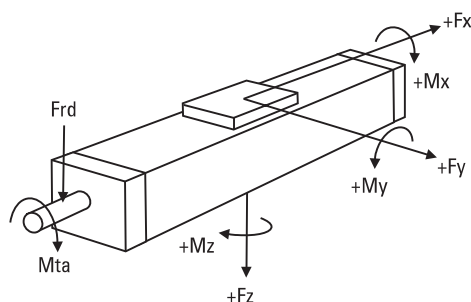
$M_{idle}$  = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile



A mounting clamp must be installed at least every 750 mm to be able to operate at maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

### Definition of Forces



### Performance Specifications

for Units with Single Standard Carriage (N)<sup>1</sup>

Parameter		MLSM60D
Stroke length ( $S_{max}$ ), maximum	[mm]	4985
Total length ( $L_{tot}$ ), maximum	[mm]	5700
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s <sup>2</sup> ]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load ( $F_x$ ), maximum	[N]	5000
Dynamic load ( $F_y$ ), maximum	[N]	6000
Dynamic load ( $F_z$ ), maximum	[N]	6000
Dynamic load torque ( $M_x$ ), maximum	[Nm]	400
Dynamic load torque ( $M_y$ ), maximum	[Nm]	460
Dynamic load torque ( $M_z$ ), maximum	[Nm]	460
Drive shaft force ( $F_{rd}$ ), maximum <sup>2</sup>	[N]	350
Input/drive shaft torque ( $M_{ta}$ ), maximum	[Nm]	60
Ball screw diameter ( $d_o$ )	[mm]	25
Ball screw lead (p)	[mm]	5, 10, 20, 50
Weight	[kg]	
of unit with zero stroke		14,40
of every 100 mm of stroke		1,65
of each carriage		5,70

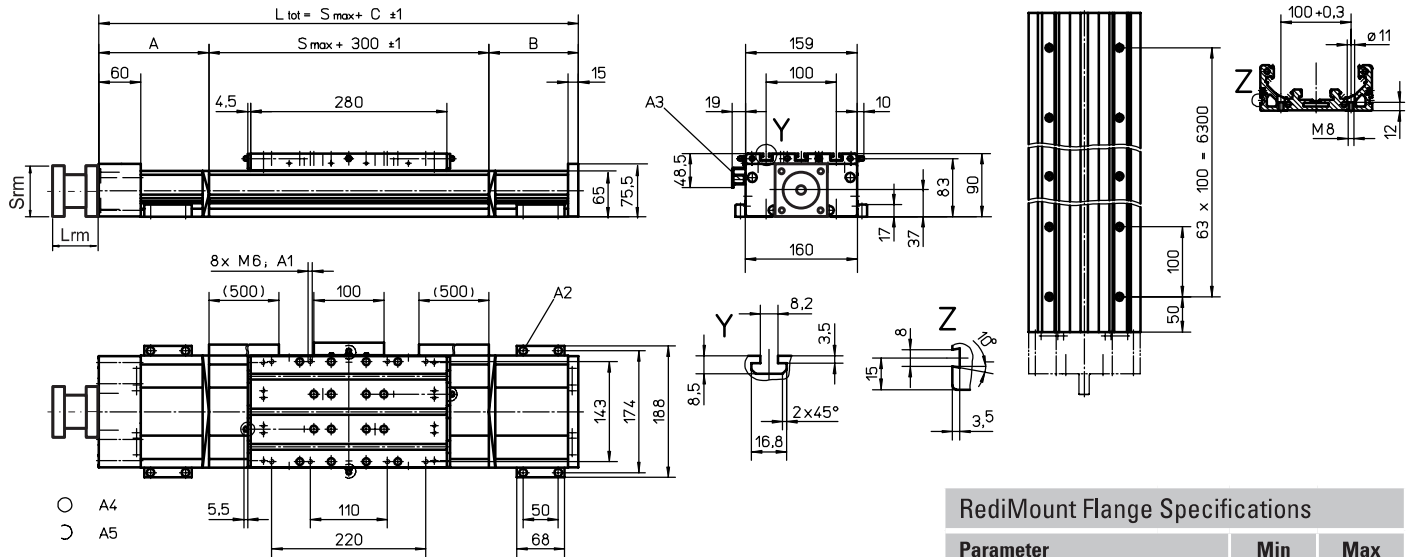
<sup>1</sup> See next page for deviating values of units with other carriage types.

<sup>2</sup> Only relevant for units without RediMount flange.

# MLSM60D

## Ball Screw Drive, Ball Guide

<b>Dimensions</b>	<b>Projection</b>	<b>Online Sizing &amp; Selection!</b>
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>



- A1: depth 10
- A2: socket cap screw ISO4762-M6x20 8.8
- A3: ENF inductive sensor rail kit (optional - see page 150)
- A4: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
- A5: can be changed over to one of the three alternative lubricating points by the customer

### RediMount Flange Specifications

Parameter	Min	Max
Flange length (Lrm) [mm]	81	143
Flange square (Srm) [mm]	90	200
Flange weight * [kg]	5,58	

\* Max. weight including coupling and fastening screws

Stroke length (Smax) [mm]	A [mm]	B [mm]	C [mm]
0 - 750 (0 - 580)	90	45	435 (605)
751 - 1220 (581 - 1050)	105	90	495 (665)
1221 - 1980 (1051 - 1810)	125	110	535 (705)
1981 - 2730 (1811 - 2560)	150	135	585 (765)

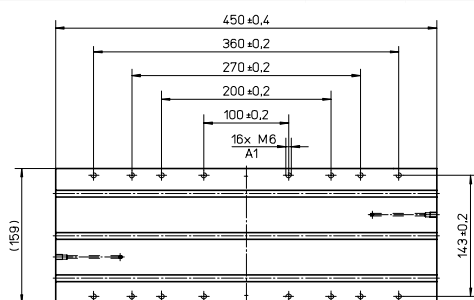
Values between brackets = for units with long carriage

Stroke length (Smax) [mm]	A [mm]	B [mm]	C [mm]
2731 - 3490 (2561 - 3320)	170	155	625 (795)
3491 - 4240 (3321 - 4070)	195	180	675 (845)
4241 - 5000 (4071 - 4830)	215	200	715 (885)
5001 - 5500 (4831 - 5330)	235	220	755 (925)

### Performance Specifications

for Units with Single Long Carriage (L)

Parameter	MLSM60D
Stroke length (Smax), maximum [mm]	4815
Total length (L tot), maximum [mm]	5700
Carriage length [mm]	450
Dynamic load torque (My), maximum [Nm]	940
Dynamic load torque (Mz), maximum [Nm]	940
Weight [kg]	6,5



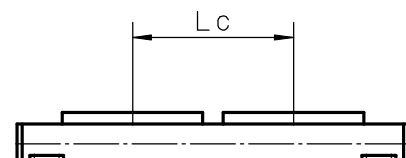
A1: depth 10

### Performance Specifications

for Units with Double Standard Carriage (Z)

Parameter	MLSM60D
Stroke length (Smax), maximum [mm]	4665
Total length (L tot), maximum [mm]	5700
Minimum distance between carriages (Lc) [mm]	320
Dynamic load (Fy), maximum [N]	12000
Dynamic load (Fz), maximum [N]	12000
Dynamic load torque (My), maximum [Nm]	L c <sup>1</sup> × 6
Dynamic load torque (Mz), maximum [Nm]	L c <sup>1</sup> × 6
Force required to move second carriage [N]	27
Total length (L tot) [mm]	Smax + C + Lc

<sup>1</sup> Value in mm





# MLSM80D

## Ball Screw Drive, Ball Guide

- » Ordering key - see page 178
- » Accessories - see page 117
- » Additional data - see page 172

### General Specifications

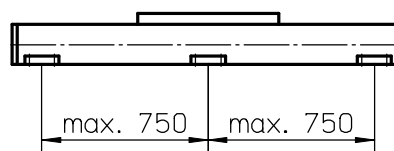
Parameter	MLSM80D
Profile size (w × h) [mm]	240 × 85
Type of screw	ball screw with double nuts
Carriage sealing system	plastic cover band
Screw supports	included in all units that require screw supports
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

### Carriage Idle Torque ( $M_{idle}$ ) [Nm]

Input speed [rpm]	Screw lead [mm]			
	p = 5	p = 10	p = 20	p = 40
150	1,6	2,2	2,5	2,8
1500	2,7	3,2	3,4	4,0
3000	3,2	4,0	4,2	4,5

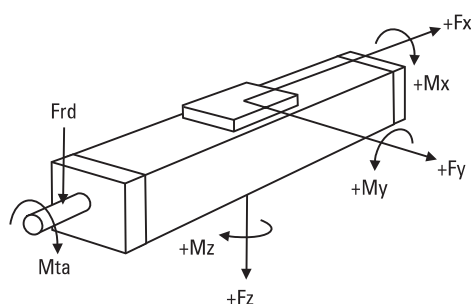
$M_{idle}$  = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile



A mounting clamp must be installed at least every 750 mm to be able to operate at maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

### Definition of Forces



### Performance Specifications

for Units with Single Standard Carriage (N)<sup>1</sup>

Parameter		MLSM80D
Stroke length ( $S_{max}$ ), maximum	[mm]	4810
Total length ( $L_{tot}$ ), maximum	[mm]	5700
Linear speed, maximum	[m/s]	2,0
Acceleration, maximum	[m/s <sup>2</sup> ]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load ( $F_x$ ), maximum	[N]	12000
screw lead 5, 10, 20 mm		8000
screw lead 40 mm		
Dynamic load ( $F_y$ ), maximum	[N]	8000
Dynamic load ( $F_z$ ), maximum	[N]	8000
Dynamic load torque ( $M_x$ ), maximum	[Nm]	780
Dynamic load torque ( $M_y$ ), maximum	[Nm]	900
Dynamic load torque ( $M_z$ ), maximum	[Nm]	900
Drive shaft force ( $F_{rd}$ ), maximum <sup>2</sup>	[N]	700
Input/drive shaft torque ( $M_{ta}$ ), maximum	[Nm]	85
Ball screw diameter ( $d_o$ )	[mm]	32
Ball screw lead (p)	[mm]	5, 10, 20, 40
Weight	[kg]	
of unit with zero stroke		29,5
of every 100 mm of stroke		2,7
of each carriage		11,5

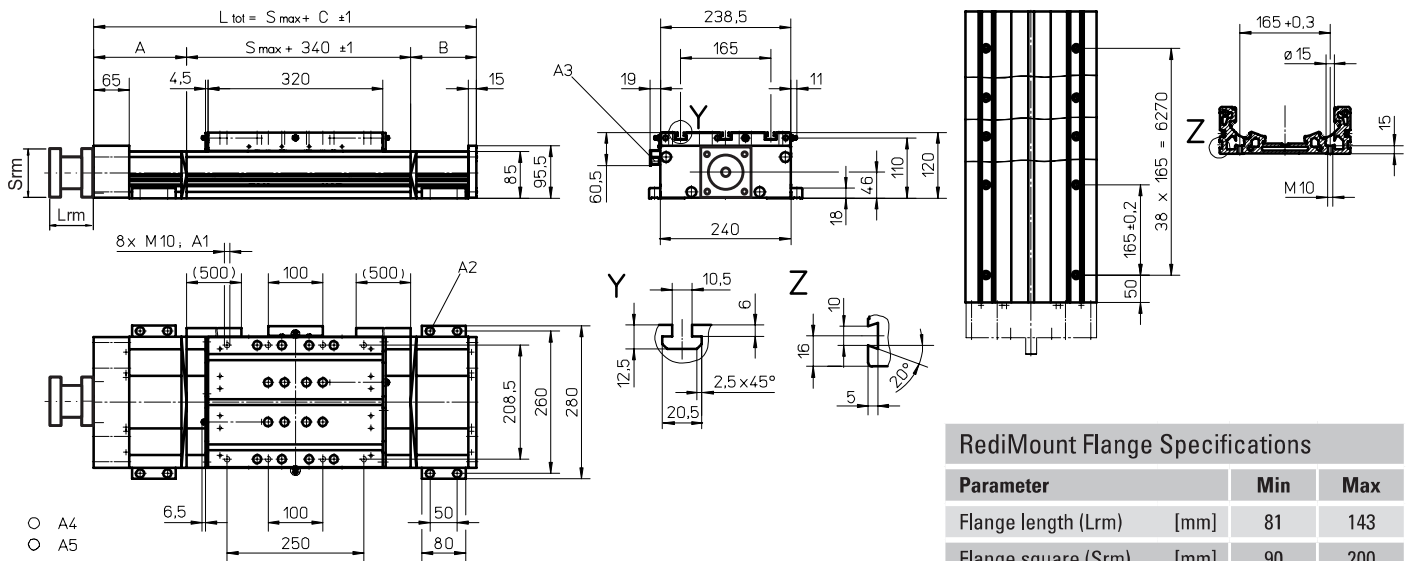
<sup>1</sup> See next page for deviating values of units with other carriage types.

<sup>2</sup> Only relevant for units without RediMount flange.

# MLSM80D

## Ball Screw Drive, Ball Guide

<b>Dimensions</b>	<b>Projection</b>	<b>Online Sizing &amp; Selection!</b>
METRIC		<a href="http://www.LinearMotioneering.com">www.LinearMotioneering.com</a>



Parameter	Min	Max
Flange length (Lrm) [mm]	81	143
Flange square (Srm) [mm]	90	200
Flange weight * [kg]	5,67	

\* Max. weight including coupling and fastening screws

- A1: depth 15
- A2: socket cap screw ISO4762-M8x20 8.8
- A3: ENF inductive sensor rail kit (optional - see page 150)
- A4: tapered lubricating nipple to DIN71412 M8x1 on fixed-bearing side as standard feature
- A5: can be changed over to one of the three alternative lubricating points by the customer

Stroke length (Smax) [mm]	A [mm]	B [mm]	C [mm]
0 - 750 (0 - 570)	100	90	530 (710)
751 - 1140 (571 - 960)	130	120	590 (770)
1141 - 1880 (961 - 1700)	160	150	650 (830)
1881 - 2620 (1701 - 2440)	190	180	710 (890)

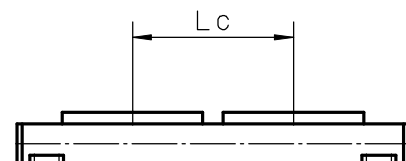
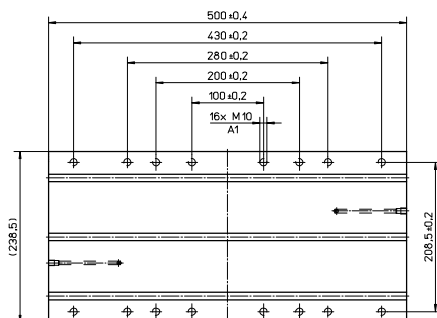
Stroke length (Smax) [mm]	A [mm]	B [mm]	C [mm]
2621 - 3360 (2441 - 3180)	220	210	770 (950)
3361 - 4100 (3181 - 3920)	250	240	830 (1010)
4101 - 4840 (3921 - 4660)	280	270	890 (1070)
4841 - 5000 (4661 - 4820)	310	300	950 (1130)

Values between brackets = for units with long carriage

Parameter	MLSM80D
Stroke length (Smax), maximum [mm]	4630
Total length (L tot), maximum [mm]	5700
Carriage length [mm]	500
Dynamic load torque (My), maximum [Nm]	1750
Dynamic load torque (Mz), maximum [Nm]	1750
Weight [kg]	16

Parameter	MLSM80D
Stroke length (Smax), maximum [mm]	4410
Total length (L tot), maximum [mm]	5700
Minimum distance between carriages (Lc) [mm]	400
Dynamic load (Fy), maximum [N]	16000
Dynamic load (Fz), maximum [N]	16000
Dynamic load torque (My), maximum [Nm]	L c <sup>1</sup> × 8
Dynamic load torque (Mz), maximum [Nm]	L c <sup>1</sup> × 8
Force required to move second carriage [N]	35
Total length (L tot) [mm]	Smax + C + Lc

<sup>1</sup> Value in mm

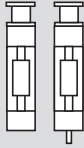
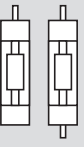


A1: depth 15



# Ordering Keys

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

MLSM60D, MLSM80D																															
1	2	3	4	5	6	7	8	9																							
MLSM06D	20	LX	PP1	-03800	-04645	C	L	0000																							
<p><b>1. Type of unit</b> MLSM06D = MLSM60 unit MLSM08D = MLSM80 unit</p> <p><b>2. Ball screw lead</b> 05 = 5 mm 10 = 10 mm 20 = 20 mm 40 = 40 mm 50 = 50 mm</p> <p><b>3. Transmission type</b> LX = inline style, directly coupled, RediMount flange SX = inline style, directly coupled, no RediMount flange</p> <p><b>4. RediMount motor ID code</b> vwv = alphanumeric motor code for suitable RediMount flange when motor is known 999 = RediMount code used when motor is unknown XXX = for units without RediMount flange</p>			<p><b>5. Maximum stroke (Smax)</b> - xxxxx = distance in mm</p> <p><b>6. Total length of unit (L tot)</b> - yyyyy = distance in mm</p> <p><b>7. Drive shaft / RediMount configuration<sup>2</sup></b> A = single shaft without key way C = single shaft with key way or RediMount G = double shafts, first without key way and second for encoder I = double shafts, first with key way or RediMount and second for encoder<sup>3</sup></p> <p><b>8. Carriage configuration</b> N = single standard carriage L = single long carriage Z = double standard carriages</p> <p><b>9. Distance between double carriages (Lc)</b> 0000 = always for single carriages zzzz = distance in mm</p>			<p><sup>1</sup> See table below for available combinations of units and ball screw leads.</p> <table border="1"> <thead> <tr> <th rowspan="2">Type of unit</th> <th colspan="5">Available screw leads [mm]</th> </tr> <tr> <th>5</th> <th>10</th> <th>20</th> <th>40</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>MLSM06D</td> <td>x</td> <td></td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>MLSM08D</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> </tr> </tbody> </table> <p><sup>2</sup> See below for the definition of shafts.</p> <p>Single and double shafts with RediMount</p>  <p>Single and double shafts without RediMount</p> 			Type of unit	Available screw leads [mm]					5	10	20	40	50	MLSM06D	x		x		x	MLSM08D	x	x	x	x	
Type of unit	Available screw leads [mm]																														
	5	10	20	40	50																										
MLSM06D	x		x		x																										
MLSM08D	x	x	x	x																											