Linear Motion Systems with Ball Screw Drive and Ball Guide

Overview

PowerLine WM

WM80

Features

- Can be installed in any orientation
- Patented guide system
- Patented self-adjusting plastic cover band[1]
- Patented screw support system

Parameter		WM40S	WM40D	WM60D	WM60S	WM60X	WM80D	WM80S	WM120D
Profile size (width × height)	[mm]	40 × 40	40 × 40	60 × 60	60 × 60	60 × 60	80 × 80	80 × 80	120 × 120
Stroke length (Smax), maximum	[mm]	2000	1950	11000	10390	10340	11000	10540	11000
Linear speed, maximum	[m/s]	0,25	0,25	2,5	2,5	0,25	2,5	2,5	2,0
Dynamic carriage load (Fz), maximum	[N]	600	600	2000	1400	2000	3000	2100	6000
Remarks		single ball nut	double ball nuts	double ball nuts	single ball nut	left/right screw	double ball nuts	single ball nut	double ball nuts
Page		14	16	18	20	22	24	26	28

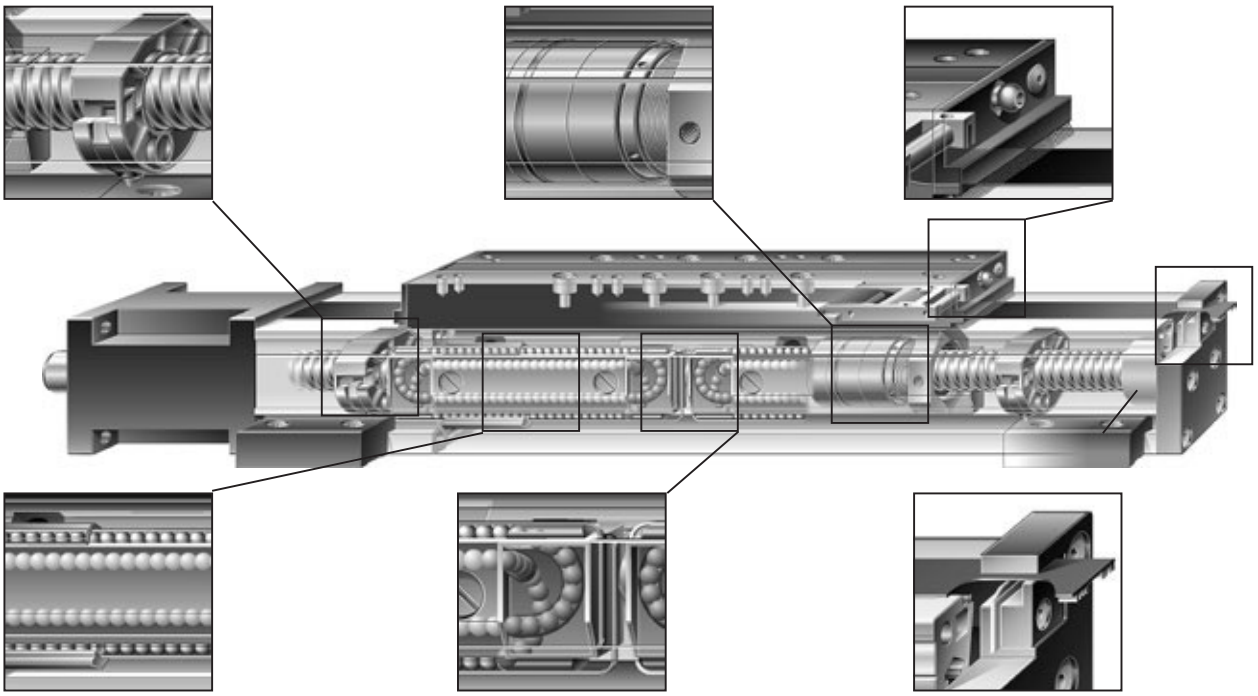
[1] Not on WM40 units

WM-Series Technical Presentation

Screw support
Patented screw support system permits high speeds at long stroke lengths while reducing the available stroke with a minimum.

Double ball nuts
Double pre-tensioned ball nuts improve the accuracy and allow re-tensioning, increasing the lifetime of the unit.

Central lubrication
One central lubrication point on the carriage services the entire unit resulting in a minimum maintenance requirement.



Ball guides
Integrated patented ball guides with hardened steel tracks for optimum performance.

Ball cages
The balls in the ball guides are protected by a ball cage which ensures a long life.

Cover band
The patented self-adjusting cover band protect the unit from the penetration of dirt, dust and liquids.

Note! the unit is pictured without a RediMount™ flange

WM40S

Ball Screw Drive, Ball Guide, Single Ball Nut

» Ordering key - see page 176
» Accessories - see page 117
» Additional data - see page 172

General Specifications

Parameter	WM40S
Profile size (w × h) [mm]	40 × 40
Type of screw	ball screw with single nut
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

Performance Specifications

for Units with Single Standard Carriage (N)[1]

Parameter		WM40S
Stroke length (Smax), maximum	[mm]	2000
Total length (L tot), maximum	[mm]	2300
Linear speed, maximum	[m/s]	0,25
Acceleration, maximum	[m/s²]	20
Repeatability	[± mm]	0,02
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	1000
Dynamic load (Fy), maximum	[N]	450
Dynamic load (Fz), maximum	[N]	600
Dynamic load torque (Mx), maximum	[Nm]	10
Dynamic load torque (My), maximum	[Nm]	30
Dynamic load torque (Mz), maximum	[Nm]	30
Drive shaft force (Frd), maximum [2]	[N]	100
Input/drive shaft torque (Mta), maximum	[Nm]	3
Ball screw diameter (d0)	[mm]	12
Ball screw lead (p)	[mm]	5
Weight	[kg]	
of unit with zero stroke		1,50
of every 100 mm of stroke		0,30
of each carriage		0,36

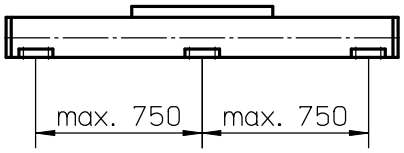
[1] See next page for deviating values of units with other carriage types.
[2] Only relevant for units without RediMount flange.

Carriage Idle Torque (M idle) [Nm]

Input speed [rpm]	Screw lead [mm]
	p = 5
150	0,3
1500	0,5
3000	0,8

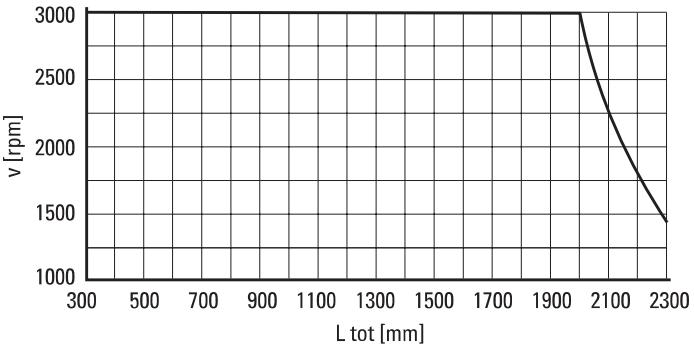
M idle = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

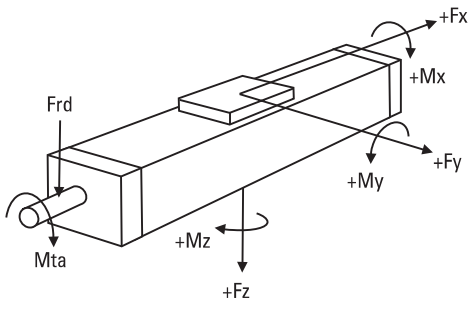


A mounting clamp must be installed at least every 750 mm to be able to operate at maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Critical Speed



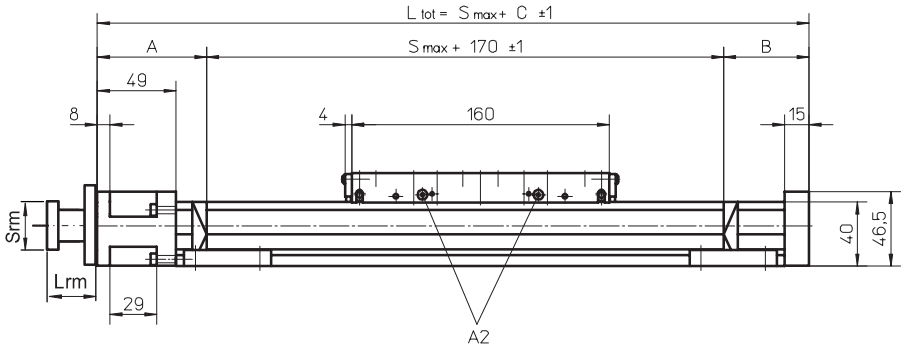
Definition of Forces

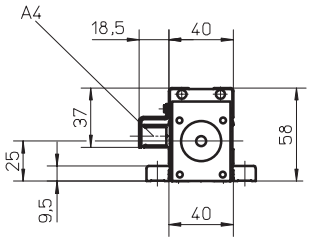


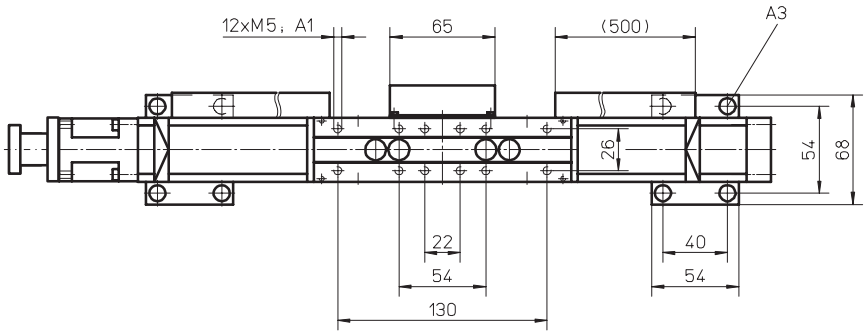
WM40S

Dimensions	Projection	Online Sizing & Selection!
METRIC		www.LinearMotioneering.com

Ball Screw Drive, Ball Guide, Single Ball Nut







RediMount Flange Specifications			
Parameter		**Min**	**Max**
Flange length (Lrm)	[mm]	59	94
Flange square (Srm)	[mm]	60	139
Flange weight *	[kg]	1,86	

* Max. weight including coupling and fastening screws

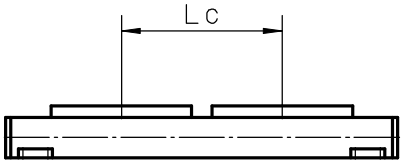
A1: depth 7
A2: lubricating nipple on both sides DIN3405 D 1/A
A3: socket cap screw ISO4762-M5×12 8.8
A4: ENF inductive sensor rail kit (optional - see page 150)

Stroke length (Smax) [mm]	A [mm]	B [mm]	C [mm]
0 – 500	65	35	270
501 – 1100	65	45	280
1101 – 2000	70	60	300

Performance Specifications
for Units with Double Standard Carriage (Z)

Parameter		WM40S
Stroke length (Smax), maximum	[mm]	1825
Total length (L tot), maximum	[mm]	2300
Minimum distance between carriages (L c)	[mm]	175
Dynamic load (Fy), maximum	[N]	900
Dynamic load (Fz), maximum	[N]	1200
Dynamic load torque (My), maximum	[Nm]	L c[1] × 0,45
Dynamic load torque (Mz), maximum	[Nm]	L c[1] × 0,6
Force required to move second carriage	[N]	4
Total length (L tot)	[mm]	Smax + C + L c

[1] Value in mm



WM40D

Ball Screw Drive, Ball Guide, Double Ball Nuts, Long Carriage

» Ordering key - see page 176
» Accessories - see page 117
» Additional data - see page 172

General Specifications

Parameter	WM40D
Profile size (w × h) [mm]	40 × 40
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

Performance Specifications

for Units with Single Long Carriage (L)[1]

Parameter		WM40D
Stroke length (Smax), maximum	[mm]	1950
Total length (L tot), maximum	[mm]	2300
Linear speed, maximum	[m/s]	0,25
Acceleration, maximum	[m/s²]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	1000
Dynamic load (Fy), maximum	[N]	450
Dynamic load (Fz), maximum	[N]	600
Dynamic load torque (Mx), maximum	[Nm]	10
Dynamic load torque (My), maximum	[Nm]	30
Dynamic load torque (Mz), maximum	[Nm]	30
Drive shaft force (Frd), maximum [2]	[N]	100
Input/drive shaft torque (Mta), maximum	[Nm]	3
Ball screw diameter (d0)	[mm]	12
Ball screw lead (p)	[mm]	5
Weight	[kg]	
of unit with zero stroke		1,90
of every 100 mm of stroke		0,30
of each carriage		0,60

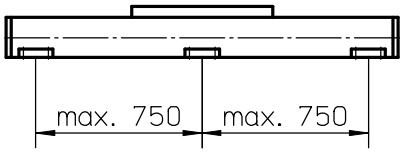
[1] See next page for deviating values of units with other carriage types.
[2] Only relevant for units without RediMount flange.

Carriage Idle Torque (M idle) [Nm]

Input speed [rpm]	Screw lead [mm]
	p = 5
150	0,4
1500	0,6
3000	0,9

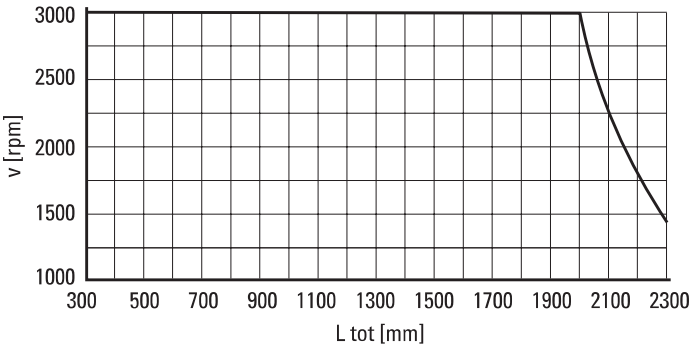
M idle = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

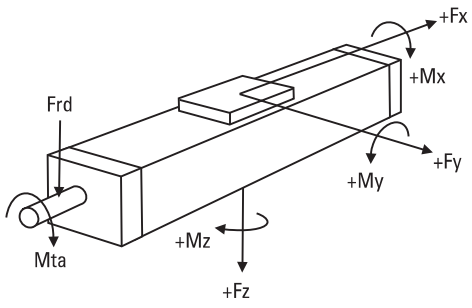


A mounting clamp must be installed at least every 750 mm to be able to operate at maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Critical Speed



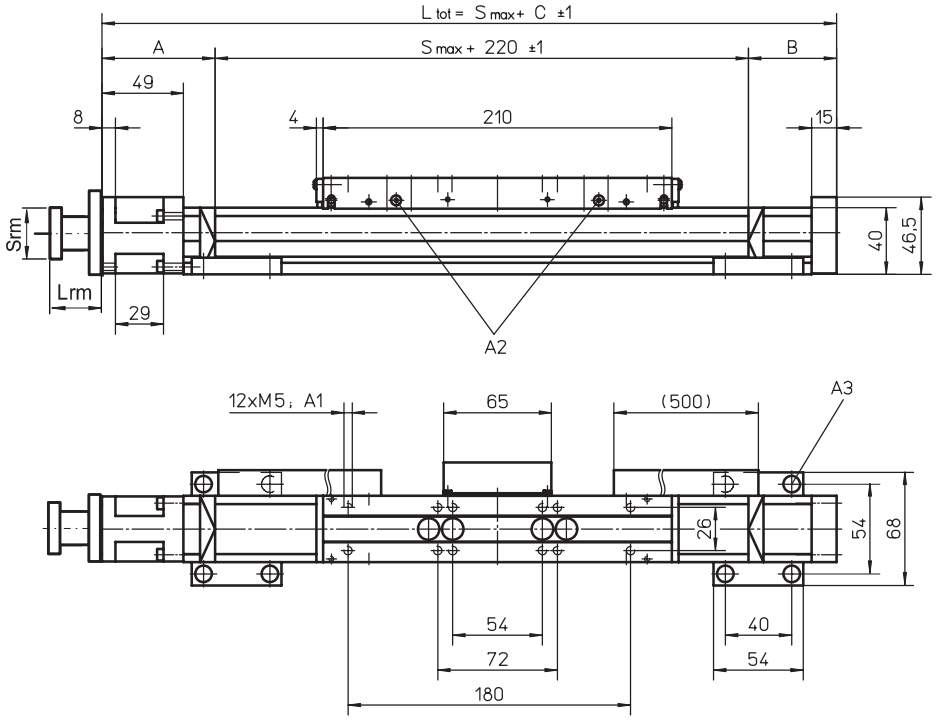
Definition of Forces

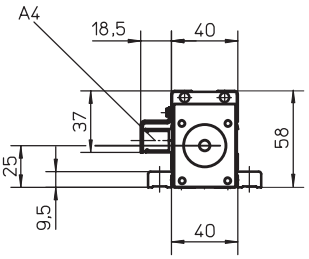


WM40D

Dimensions	Projection	Online Sizing & Selection!
METRIC		www.LinearMotioneering.com

Ball Screw Drive, Ball Guide, Double Ball Nuts, Long Carriage





RediMount Flange Specifications

Parameter		Min	Max
Flange length (Lrm)	[mm]	59	94
Flange square (Srm)	[mm]	60	139
Flange weight *	[kg]	1,86	

* Max. weight including coupling and fastening screws

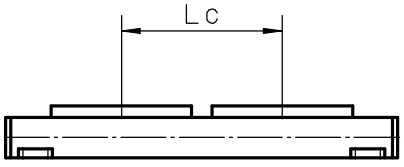
A1: depth 6
A2: lubricating nipple on both sides DIN3405 D 1/A
A3: socket cap screw ISO4762-M5×12 8.8
A4: ENF inductive sensor rail kit (optional - see page 150)

Stroke length (Smax) [mm]	A [mm]	B [mm]	C [mm]
0 – 450	65	35	320
451 – 1050	65	45	330
1051 – 1950	70	60	350

Performance Specifications
for Units with Double Long Carriage (M)

Parameter		WM40D
Stroke length (Smax), maximum	[mm]	1725
Total length (L tot), maximum	[mm]	2300
Minimum distance between carriages (Lc)	[mm]	225
Dynamic load (Fy), maximum	[N]	900
Dynamic load (Fz), maximum	[N]	1200
Dynamic load torque (My), maximum	[Nm]	L c[1] × 0,45
Dynamic load torque (Mz), maximum	[Nm]	L c[1] × 0,6
Force required to move second carriage	[N]	4
Total length (L tot)	[mm]	Smax + C + Lc

[1] Value in mm



Ordering Keys

Linear Motion Systems with Ball Screw Drive and Ball Guides

WM40S, WM40D, WM60S, WM60D, WM60X, WM80S, WM80D, WM120D

1	2	3	4	5	6	7	8	9	10
WM06D	20	LX	ZZ6	-02545	-03715	A	Z	0520	S1

1. Type of unit
WM04S = WM40S unit with single ball nut
WM04D = WM40D unit with double ball nuts
WM06S = WM60S unit with single ball nut
WM06D = WM60D unit with double ball nuts
WM06X = WM60X unit with left/right screw
WM08S = WM80S unit with single ball nut
WM08D = WM80D unit with double ball nuts
WM12D = WM120D unit with double ball nuts

2. Screw lead[1]
05 = 5 mm
10 = 10 mm
20 = 20 mm
40 = 40 mm
50 = 50 mm

3. Transmission type
LX = inline style, directly coupled, RediMount flange
SX = inline style, directly coupled, no RediMount flange

4. RediMount motor ID code
vvw = 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

5. Maximum stroke (Smax)
- xxxxx = distance in mm

6. Total length of unit (L tot)
- yyyyy = distance in mm

7. Drive shaft / RediMount configuration[2]
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[3]

8. Carriage configuration[4]
N = single standard carriage
S = single short carriage
L = single long carriage
Z = double standard carriages
Y = double short carriages
M = double long carriages

9. Distance between double carriages (Lc)
0000 = always for single carriages
zzzz = distance in mm

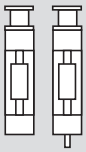
10. Protection option[5]
S1 = wash down protection (not available for WM04 units)

[1] See table below for available combinations of units and ball screw leads.

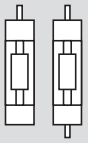
Type of unit	Available screw leads [mm]				
	5	10	20	40	50
WM04S	x				
WM04D	x				
WM06S	x		x		x
WM06D	x		x		x
WM06X	x				
WM08S	x	x	x		x
WM08D	x	x	x		x
WM12D	x	x	x	x	

[2] See below for the definition of shafts.

Single and double shafts with RediMount



Single and double shafts without RediMount



[3] Drive shaft configuration I not available for WM 40.

[4] See table below for available combinations of units and carriage types.

Type of unit	Available carriage types					
	N	S	L	Z	Y	M
WM04S	x			x		
WM04D			x			x
WM06S		x			x	
WM06D	x		x	x		
WM06X	x	x	x			
WM08S		x			x	
WM08D	x		x	x		
WM12D	x		x	x		

[5] Leave position blank if no additional protection is required.

Note! for ordering of options type EN, ES, KRG, RT, ADG and MGK, see accessory index on page 131.