

# Linear Motion Systems with Ball Screw Drive and Slide Guide

## Overview

### Movopart M



#### Features

- Can be installed in any orientation
- Self-adjusting stainless steel cover band
- Patented internal self-adjusting prism slide guides
- Wash down protected versions available.

Parameter		M55	M75	M100
Profile size (width × height)	[mm]	58 × 55	86 × 75	108 × 100
Stroke length (Smax), maximum	[mm]	3000	4000	6000
Linear speed, maximum	[m/s]	1,0	1,6	1,6
Dynamic carriage load (Fz), maximum	[N]	400	1485	3005
Remarks		single ball nut	single ball nut	single ball nut
Page		70	72	74

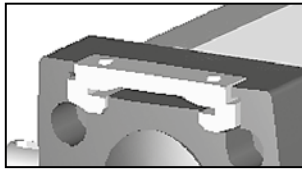
# Linear Motion Systems with Ball Screw Drive and Slide Guide

## Overview

### M-Series Technical Presentation

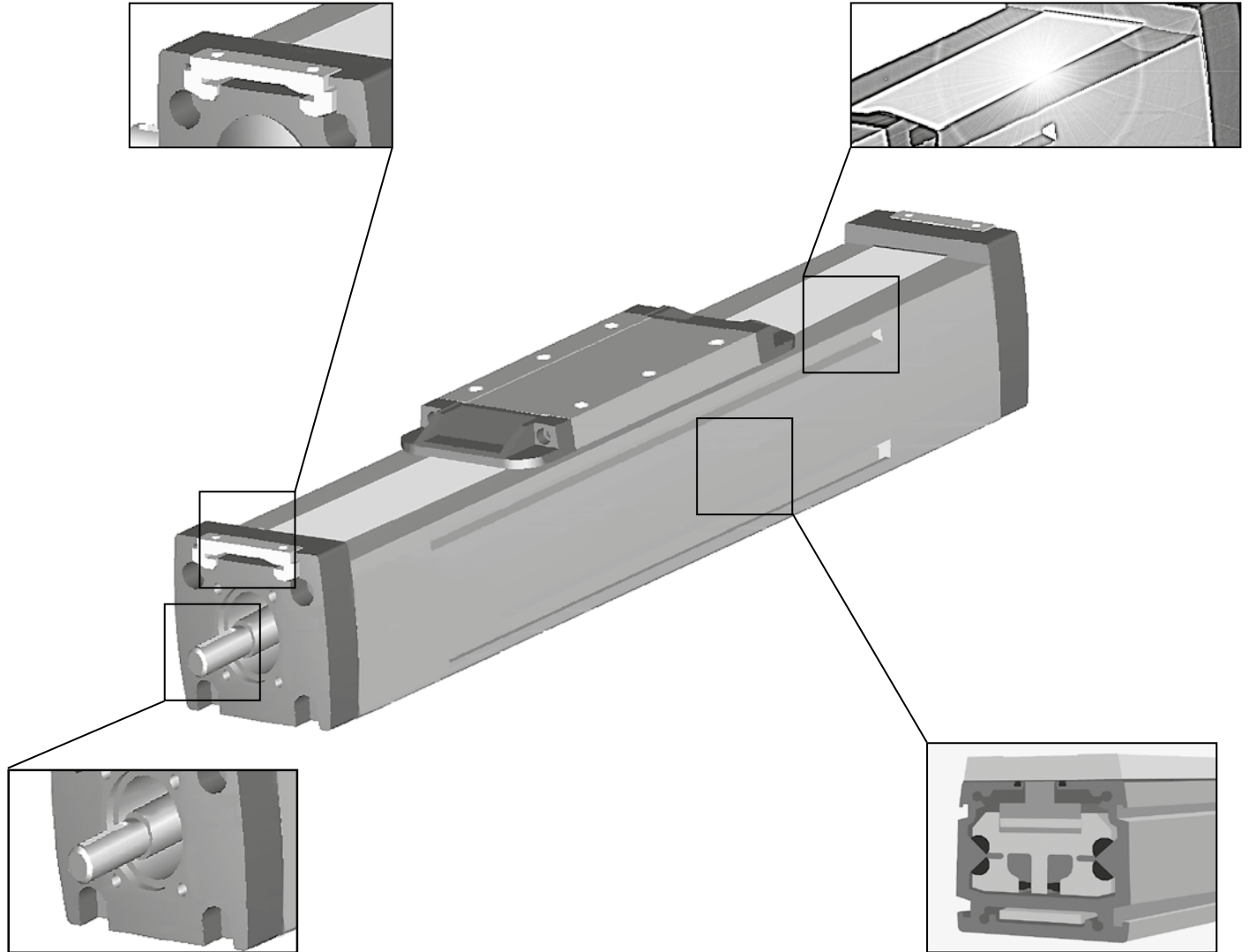
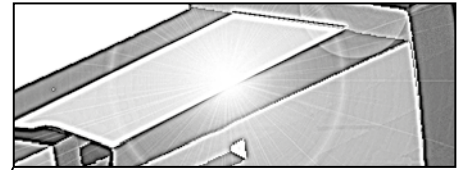
**Cover band**

The self-adjusting magnetically sealed stainless steel cover band protects the unit from the penetration of dirt, dust and liquids.



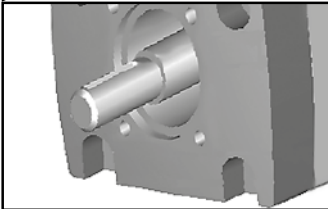
**Environmental protection**

The standard unit can operate in harsh environments but is also available in a wash down version for environments that are dusty, dirty and/or wet.



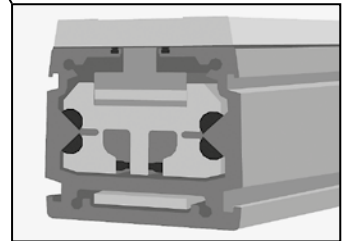
**Ball screw drive**

The ball screw ensures high accuracy and efficiency and the optional screw supports enable higher speeds.



**Prism slide guides**

The patented self-aligning prism slide guides are accurate, durable and are resistant to vibrations and shock loads.



# M55

## Ball Screw Drive, Slide Guide

» Ordering key - see page 195  
» Accessories - see page 131  
» Additional data - see page 179

### General Specifications

Parameter	M55
Profile size (w × h) [mm]	58 × 55
Type of screw	ball screw with single nut
Carriage sealing system	self-adjusting steel cover band
Screw supports	number of screw supports to be specified by customer at order
Lubrication	lubrication of ball screw
Included accessories	none

### Performance Specifications

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

Parameter		M55
Stroke length (Smax), maximum	[mm]	3000
Linear speed, maximum	[m/s]	1,0
Acceleration, maximum	[m/s <sup>2</sup> ]	8
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	1000
Dynamic load (Fy), maximum	[N]	400
Dynamic load (Fz), maximum	[N]	400
Dynamic load torque (Mx), maximum	[Nm]	9
Dynamic load torque (My), maximum	[Nm]	23
Dynamic load torque (Mz), maximum	[Nm]	23
Drive shaft force (Frd), maximum	[N]	200
Drive shaft torque (Mta), maximum	[Nm]	12
Screw diameter (d0)	[mm]	16
Screw lead (p)	[mm]	5, 10, 20
Weight	[kg]	
of unit with zero stroke		3,06
of every 100 mm of stroke		0,44
of carriage		1,20
of option single screw support		0,83
of option double screw supports		1,88

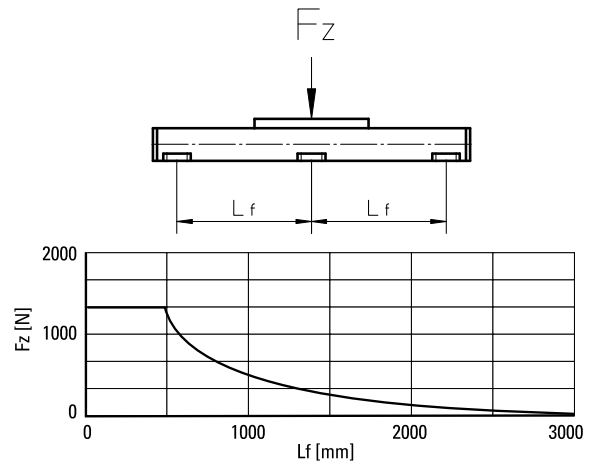
<sup>1</sup> See next page for deviating values of units with other carriage types.

### Carriage Idle Torque (M<sub>idle</sub>) [Nm]

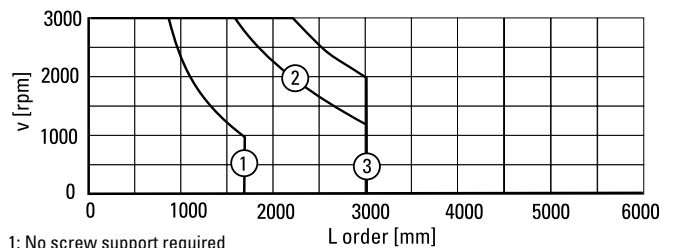
Input speed [rpm]	Screw lead [mm]		
	p = 5	p = 10	p = 20
500 - no screw supports	0,10	0,15	0,30
500 - with screw supports	0,13	0,27	0,45

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

### Deflection of the Profile

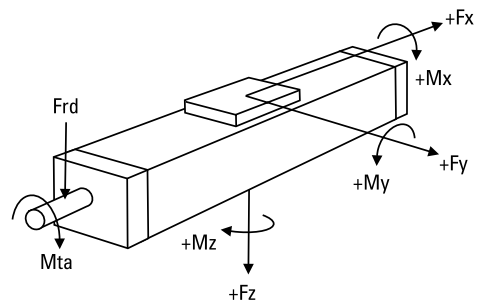


### Critical Speed



- 1: No screw support required
- 2: Single screw support required
- 3: Double screw supports required

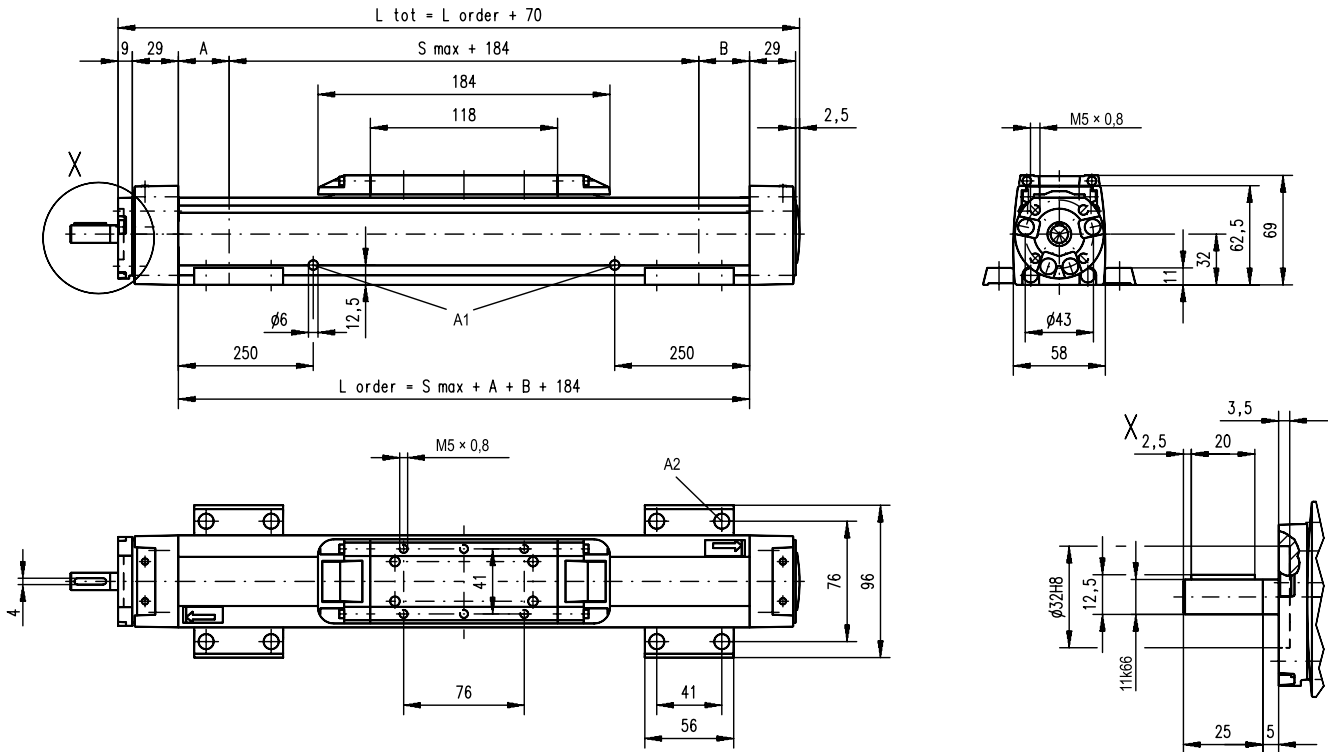
### Definition of Forces



# M55

## Ball Screw Drive, Slide Guide

<b>Dimensions</b>	<b>Projection</b>
<b>METRIC</b>	



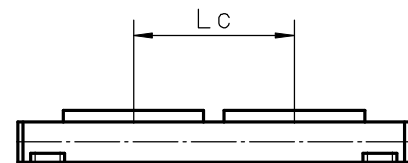
A1: lubrication holes  
 A2:  $\varnothing 9,5/\varnothing 5,5$  for socket head cap screw M5

Screw support configuration	A [mm]	B [mm]	Ordering length (L order) [mm]	Total length (L tot) [mm]
No screw support	6	6	$L_{order} = S_{max} + A + B + 184$	$L_{tot} = L_{order} + 70$
Single screw support	32	32	$L_{order} = S_{max} + A + B + 184$	$L_{tot} = L_{order} + 70$
Double screw supports	83	83	$L_{order} = S_{max} + A + B + 184$	$L_{tot} = L_{order} + 70$

### Performance Specifications

for Units with Double Standard Carriage (C)

Parameter	M55
Stroke length (Smax), maximum [mm]	2800
Minimum distance between carriages (Lc) [mm]	200
Dynamic load (Fy), maximum [N]	600
Dynamic load (Fz), maximum [N]	600
Dynamic load torque (My), maximum [Nm]	$L_c^1 \times 0,3$
Dynamic load torque (Mz), maximum [Nm]	$L_c^1 \times 0,3$
Force required to move second carriage [N]	35
Weight of unit with zero stroke of carriages [kg]	5,14 2,40



Screw support configuration	A [mm]	B [mm]	Ordering length (L order) [mm]	Total length (L tot) [mm]
No screw support	6	6	$L_{order} = S_{max} + A + B + L_c + 184$	$L_{tot} = L_{order} + 70$
Single screw support	32	32	$L_{order} = S_{max} + A + B + L_c + 184$	$L_{tot} = L_{order} + 70$
Double screw supports	83	83	$L_{order} = S_{max} + A + B + L_c + 184$	$L_{tot} = L_{order} + 70$

<sup>1</sup> Value in mm

# M75

## Ball Screw Drive, Slide Guide

» Ordering key - see page 195  
» Accessories - see page 131  
» Additional data - see page 179

### General Specifications

Parameter	M75
Profile size (w × h) [mm]	86 × 75
Type of screw	ball screw with single nut
Carriage sealing system	self-adjusting steel cover band
Screw supports	number of screw supports to be specified by customer at order
Lubrication	lubrication of ball screw
Included accessories	none

### Performance Specifications

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

Parameter		M75
Stroke length (Smax), maximum	[mm]	4000
Linear speed, maximum	[m/s]	1,6
Acceleration, maximum	[m/s <sup>2</sup> ]	8
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	5000
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	2500
Dynamic load (Fy), maximum	[N]	1485
Dynamic load (Fz), maximum	[N]	1485
Dynamic load torque (Mx), maximum	[Nm]	49
Dynamic load torque (My), maximum	[Nm]	85
Dynamic load torque (Mz), maximum	[Nm]	85
Drive shaft force (Frd), maximum	[N]	600
Drive shaft torque (Mta), maximum	[Nm]	30
Screw diameter (do)	[mm]	20
Screw lead (p)	[mm]	5, 12,7, 20
Weight	[kg]	
of unit with zero stroke		6,07
of every 100 mm of stroke		0,82
of carriage		1,70
of option single screw support		1,70
of option double screw supports		3,58

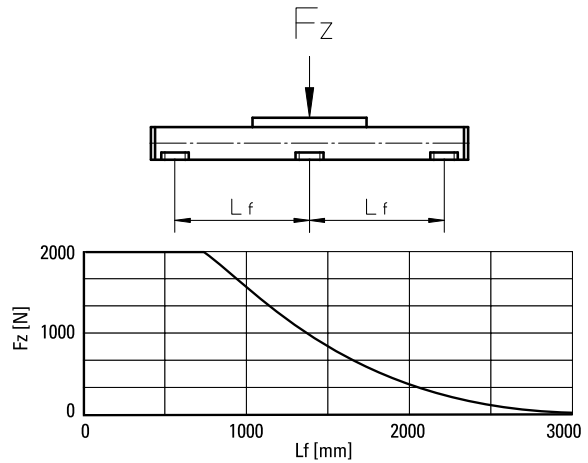
<sup>1</sup> See next page for deviating values of units with other carriage types.

### Carriage Idle Torque (M<sub>idle</sub>) [Nm]

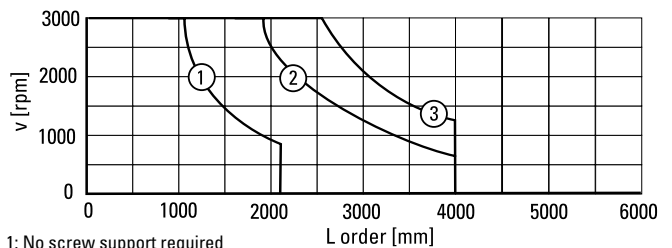
Input speed [rpm]	Screw lead [mm]		
	p = 5	p = 12,7	p = 20
500 - no screw supports	0,10	0,24	0,37
500 - with screw supports	0,15	0,39	0,57

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

### Deflection of the Profile

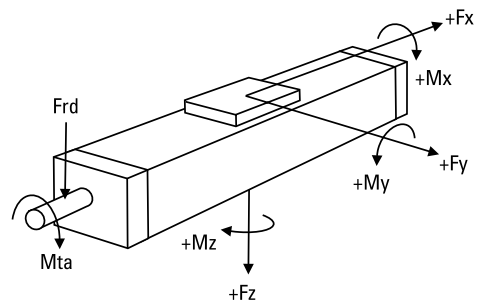


### Critical Speed



1: No screw support required  
2: Single screw support required  
3: Double screw supports required

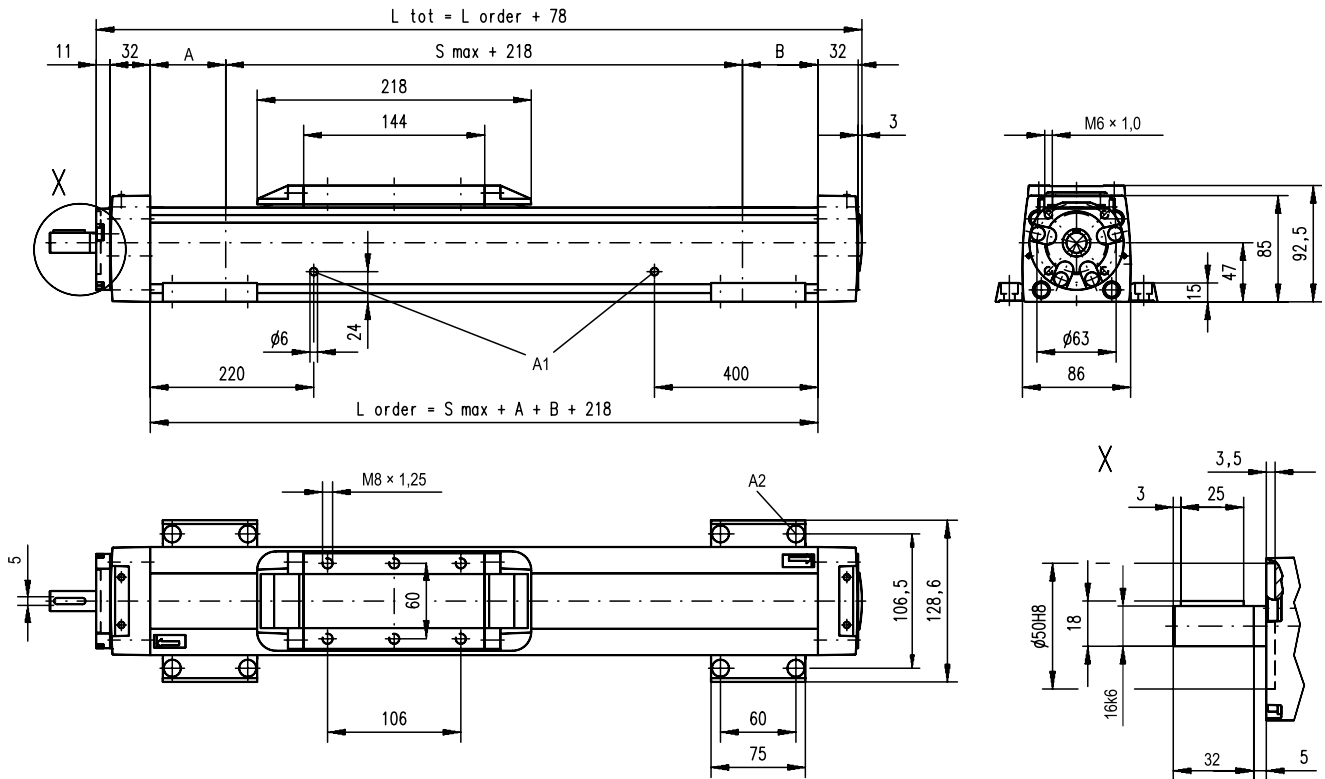
### Definition of Forces



# M75

## Ball Screw Drive, Slide Guide

<b>Dimensions</b>	<b>Projection</b>
<b>METRIC</b>	



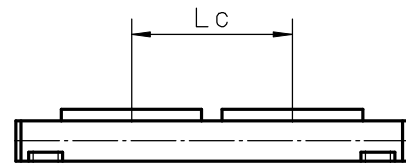
A1: lubrication holes  
 A2: ø13,5/ø8,5 for socket head cap screw M8

Screw support configuration	A [mm]	B [mm]	Ordering length (L_order) [mm]	Total length (L_tot) [mm]
No screw support	5	5	$L_{order} = S_{max} + A + B + 218$	$L_{tot} = L_{order} + 78$
Single screw support	60	60	$L_{order} = S_{max} + A + B + 218$	$L_{tot} = L_{order} + 78$
Double screw supports	126	126	$L_{order} = S_{max} + A + B + 218$	$L_{tot} = L_{order} + 78$

### Performance Specifications

for Units with Double Standard Carriage (C)

Parameter		M75
Stroke length (S <sub>max</sub> ), maximum	[mm]	3750
Minimum distance between carriages (L <sub>c</sub> )	[mm]	250
Dynamic load (F <sub>y</sub> ), maximum	[N]	2227
Dynamic load (F <sub>z</sub> ), maximum	[N]	2227
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	$L_c^1 \times 1,114$
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	$L_c^1 \times 1,114$
Force required to move second carriage	[N]	40
Weight of unit with zero stroke of carriages	[kg]	9,82 3,40



Screw support configuration	A [mm]	B [mm]	Ordering length (L_order) [mm]	Total length (L_tot) [mm]
No screw support	5	5	$L_{order} = S_{max} + A + B + L_c + 218$	$L_{tot} = L_{order} + 78$
Single screw support	60	60	$L_{order} = S_{max} + A + B + L_c + 218$	$L_{tot} = L_{order} + 78$
Double screw supports	126	126	$L_{order} = S_{max} + A + B + L_c + 218$	$L_{tot} = L_{order} + 78$

<sup>1</sup> Value in mm

# M100

## Ball Screw Drive, Slide Guide

- » Ordering key - see page 195
- » Accessories - see page 131
- » Additional data - see page 179

### General Specifications

Parameter	M100
Profile size (w × h) [mm]	108 × 100
Type of screw	ball screw with single nut
Carriage sealing system	self-adjusting steel cover band
Screw supports	number of screw supports to be specified by customer at order
Lubrication	lubrication of ball screw
Included accessories	none

### Performance Specifications

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

Parameter		M100
Stroke length (Smax), maximum	[mm]	6000
Linear speed, maximum	[m/s]	1,6
Acceleration, maximum	[m/s <sup>2</sup> ]	8
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	4000
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	5000
Dynamic load (Fy), maximum	[N]	3005
Dynamic load (Fz), maximum	[N]	3005
Dynamic load torque (Mx), maximum	[Nm]	117
Dynamic load torque (My), maximum	[Nm]	279
Dynamic load torque (Mz), maximum	[Nm]	279
Drive shaft force (Frd), maximum	[N]	1000
Drive shaft torque (Mta), maximum	[Nm]	45
Screw diameter (do)	[mm]	25
Screw lead (p)	[mm]	5, 10, 25
Weight	[kg]	
of unit with zero stroke		12,87
of every 100 mm of stroke		1,42
of carriage		3,50
of option single screw support		1,86
of option double screw supports		4,42

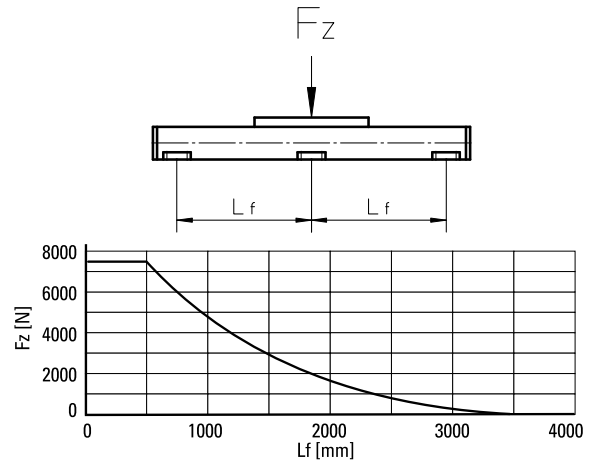
<sup>1</sup> See next page for deviating values of units with other carriage types.

### Carriage Idle Torque (M<sub>idle</sub>) [Nm]

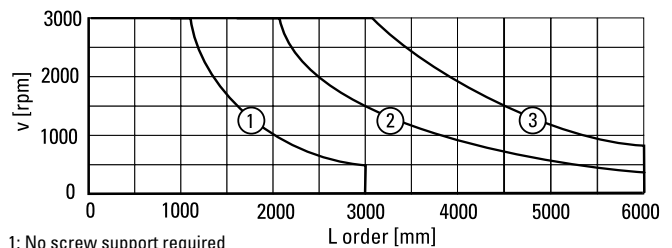
Input speed [rpm]	Screw lead [mm]		
	p = 5	p = 10	p = 25
500 - no screw supports	0,15	0,25	0,55
500 - with screw supports	0,25	0,40	0,85

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

### Deflection of the Profile



### Critical Speed



- 1: No screw support required
- 2: Single screw support required
- 3: Double screw supports required

### Definition of Forces

