



Linear Motion. Optimized.

Thomson -
Linear Motion. Optimized.

Often the ideal design solution is not about finding the fastest, sturdiest, most accurate or even the least expensive option. Rather, the ideal solution is the optimal balance of performance, life and cost.

Thomson is best positioned to help you most quickly configure the optimal linear motion solution for your application.

- Thomson invented anti-friction linear bearing technology. We own the broadest standard product offering of mechanical motion technologies in the industry.
- Modified versions of standard product are routine. White sheet design solutions available across our entire portfolio.
- Choose Thomson and gain access to over 70 years of global application experience in diverse industries including packaging, factory automation, material handling, medical, clean energy, printing, automotive, machine tool, aerospace and defense.
- As part of Danaher Corporation, we are financially strong and unique in our ability to bring together control, drive, motor, power transmission and precision linear motion technologies.

Thomson is the name you can trust for quality, innovation, on-time delivery, controlled costs, and reduced risk.

In addition to the information contained in this document, a wealth of product and application information is available online at www.thomsonlinear.com. Also online are downloadable 3D models, software tools, our distributor locator and global contact information for Thomson. For immediate assistance in North America contact us at 1-540-633-3549 or email us at Thomson@thomsonlinear.com.

Talk to us early in the design process to see how Thomson can help identify the optimal balance of performance, life and cost for your next application. And, call us or any of our 2000+ distribution partners around the world for fast delivery of replacement parts.

The Danaher Business System -
Building sustainable competitive advantage into your business

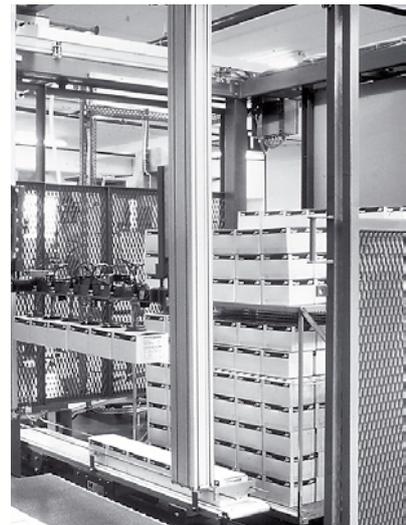
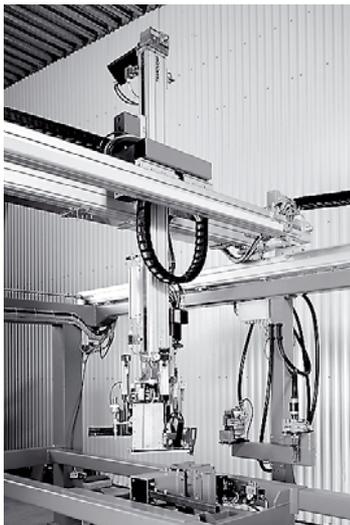
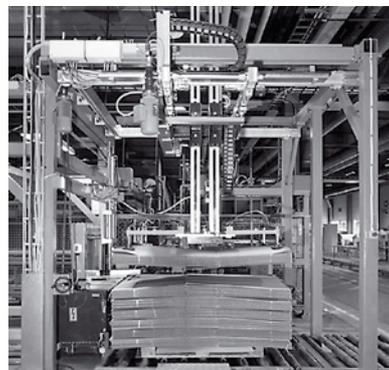
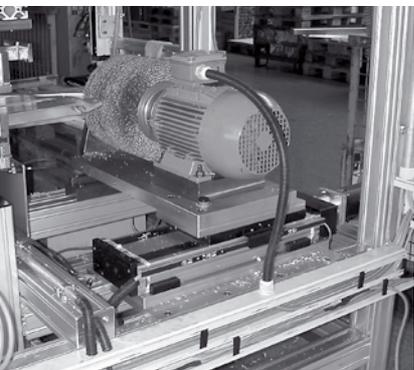
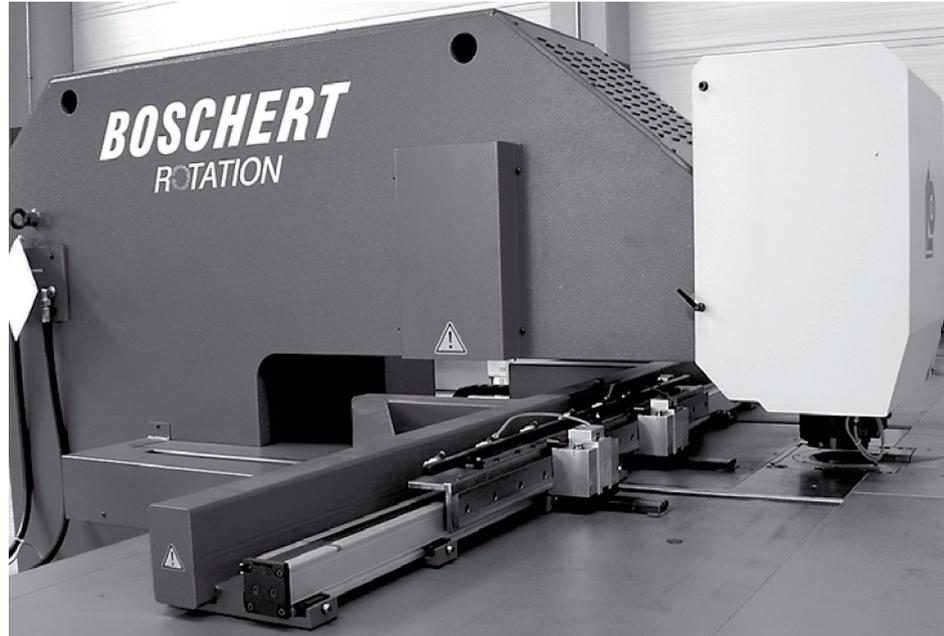
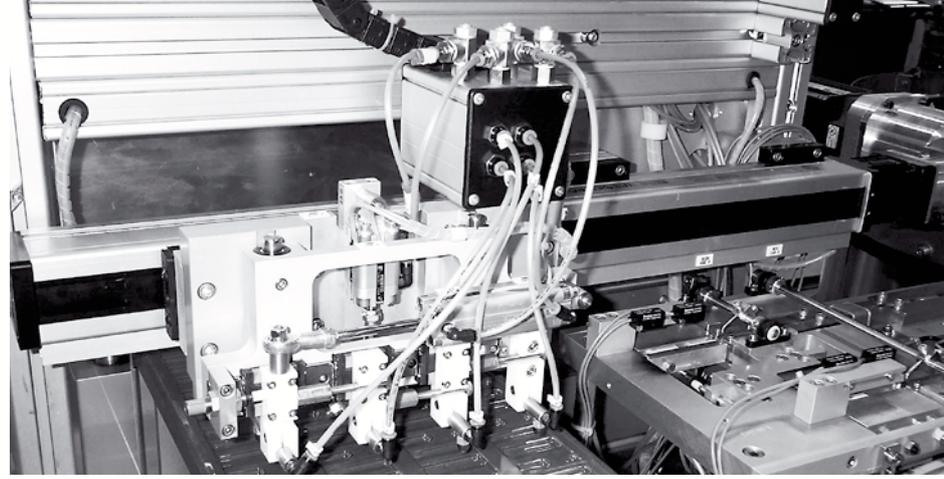
The Danaher Business System (DBS) was established to increase the value we bring to customers. It is a mature and successful set of tools we use daily to continually improve manufacturing operations and product development processes. DBS is based on the principles of Kaizen which continuously and aggressively eliminate waste in every aspect of our business. DBS focuses the entire organization on achieving breakthrough results that create competitive advantages in quality, delivery and performance – advantages that are passed on to you. Through these advantages Thomson is able to provide you faster times to market as well as unsurpassed product selection, service, reliability and productivity.

Local Support Around the Globe
Application Centers Global Manufacturing Operations Global Design & Engineering Centers



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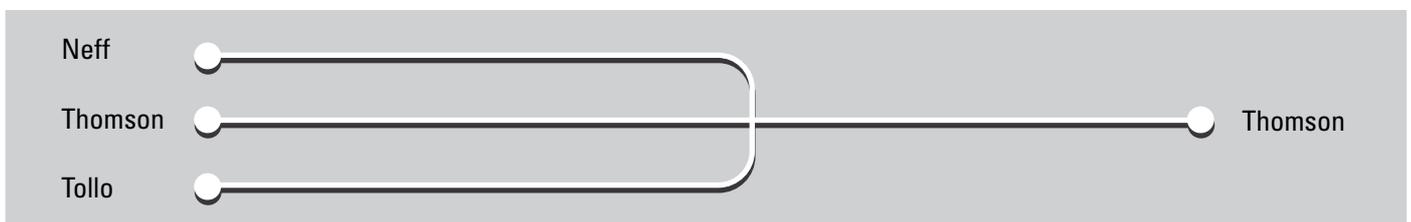
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Introduction

Company Introduction

The unmatched breadth of the Thomson linear motion system product line comes from the consolidation of three world-reknowned brands: Thomson, Neff and Tollo. We are product innovators with decades of application experience. Unbiased ownership of the multiple motion system technologies enable Thomson to provide you with the optimal balance of performance versus installed cost for your application.



Founded in 1905, Neff offered products for the linear motion market and, over the decades, became a market leader in ball screw technology. The first linear motion system from Neff was presented in 1981 at the FAMETA show in Stuttgart.

Thomson introduced the first ball screw actuator into an aviation application in 1939 and invented the anti-friction Linear Ball Bushing® Bearing in 1945. Thomson has been a market lead with an increasing portfolio of linear motion technologies ever since.

Tollo began in 1981 as a lifting equipment manufacturer. The product line grew rapidly thereafter and, in 1982, Tollo presented their first linear motion system at the Technical Fair in Stockholm.

Thomson has consolidated the most competitive and complementary products from each brand into the most advanced, most comprehensive product portfolio available today. The range covers the smallest and most compact linear motion systems to the biggest and most robust. Our wide range of guide and drive systems can be configured economically and can also work in harsh environments, at high speeds, and in high precision applications.

Thomson is linear motion, optimized.



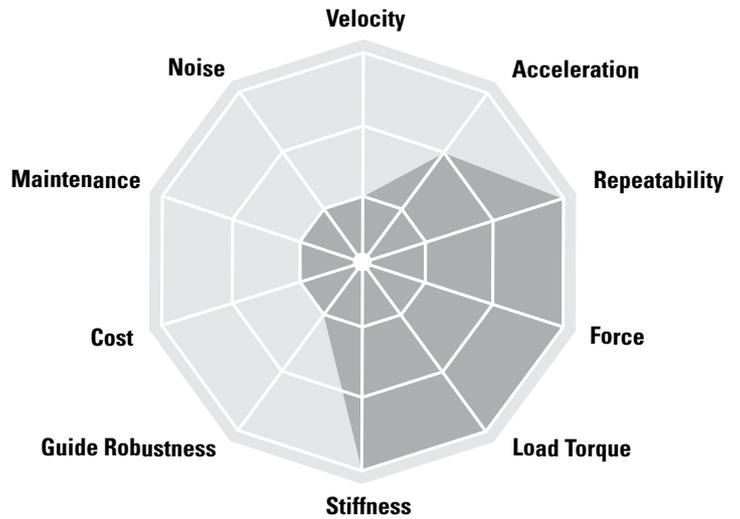
Introduction

How To Choose a Linear Motion System

Thomson offer a wide range of linear units, each designed for a specific purpose and with its own unique features. On www.thomsonlinear.com/selectors you can find a product advisor that will help you specify the unit you need, and our application engineers will be happy to help you with further technical advice.

The diagrams shown here give you a brief overview of the key strengths of each group.

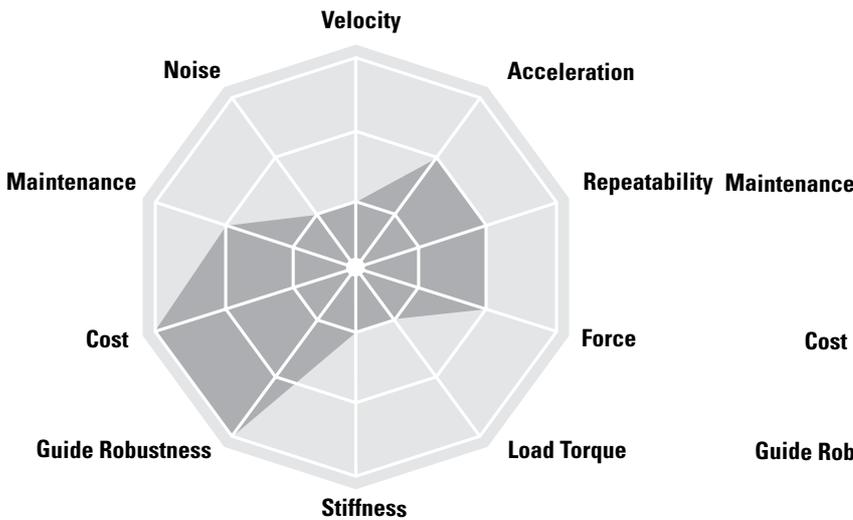
Ball Screw Driven, Ball Guided Units



Units designed for high thrust, payload, high precision and stiffness.

- Force up to 12000 N
- Repeatability down to 0,005mm

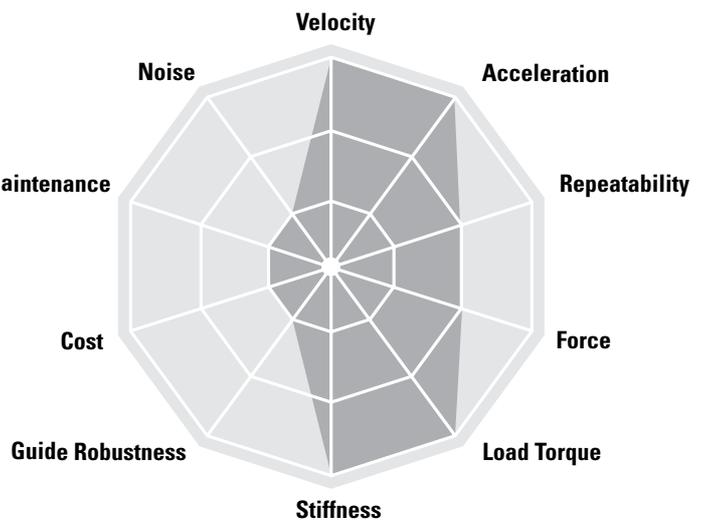
Ball Screw Driven, Slide Guided Units



Designed for low cost, high thrust operations in demanding environments.

- Cost efficient units
- Washdown protected versions
- Durable guide system

Belt Driven, Ball Guided Units



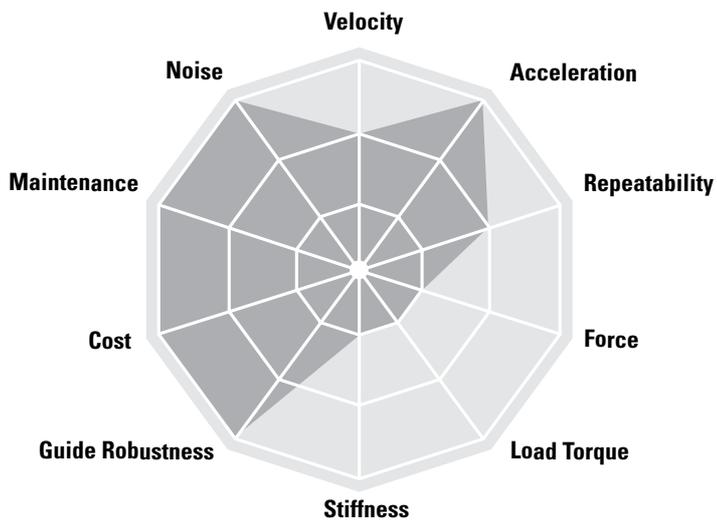
Smooth running units for dynamic applications with high speed, high acceleration and high loads requiring a long lifetime.

- Speed up to 5 m/s
- Acceleration up to 40 m/s²

Introduction

How To Choose a Linear Motion System

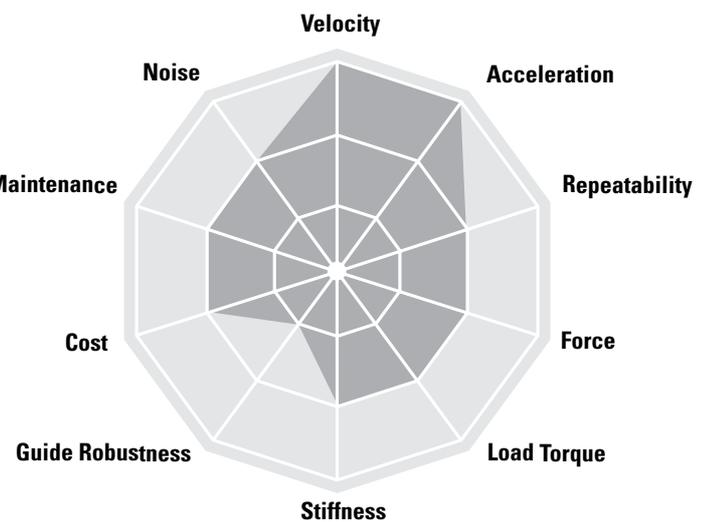
Belt Driven, Slide Guided Units



Units for dynamic applications requiring high speed, high acceleration, low maintenance and smooth travel.

- Cost efficient guide system
- Chemically protected versions

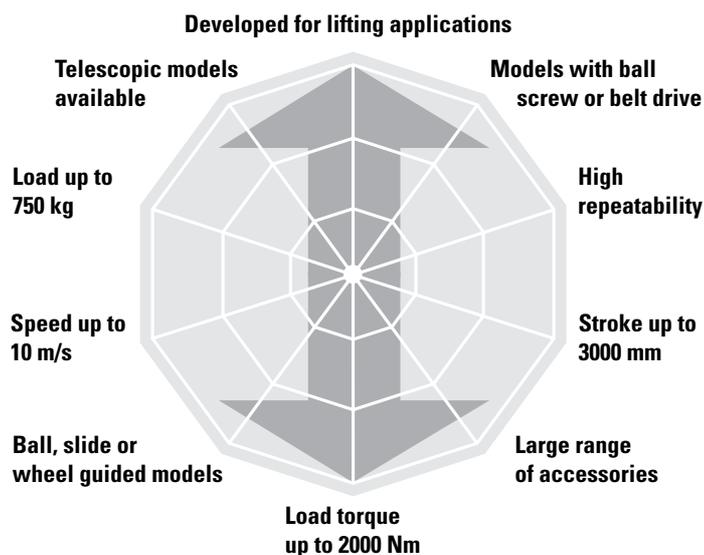
Belt Driven, Wheel Guided Units



Units for dynamic applications with high speed, high acceleration, smooth motion and medium to high loads.

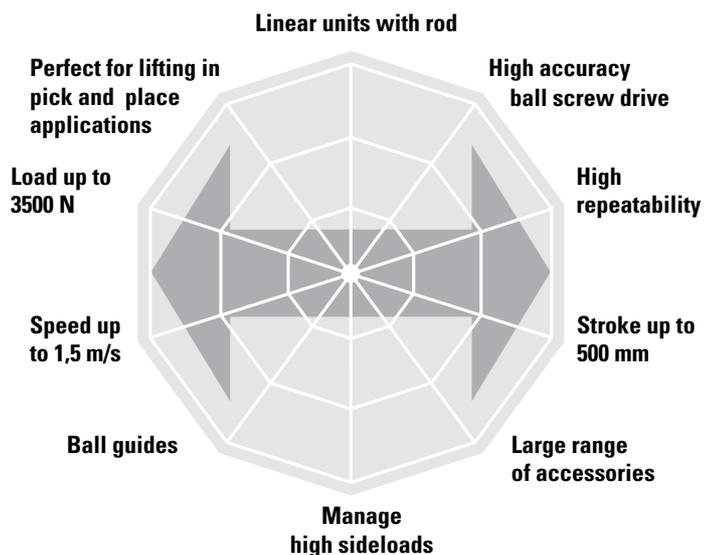
- Speed up to 10 m/s
- Acceleration up to 40 m/s²

Linear Lifting Systems



Units for lifting applications. Often used in X-Y configurations in combination with other linear units.

Linear Rod Units

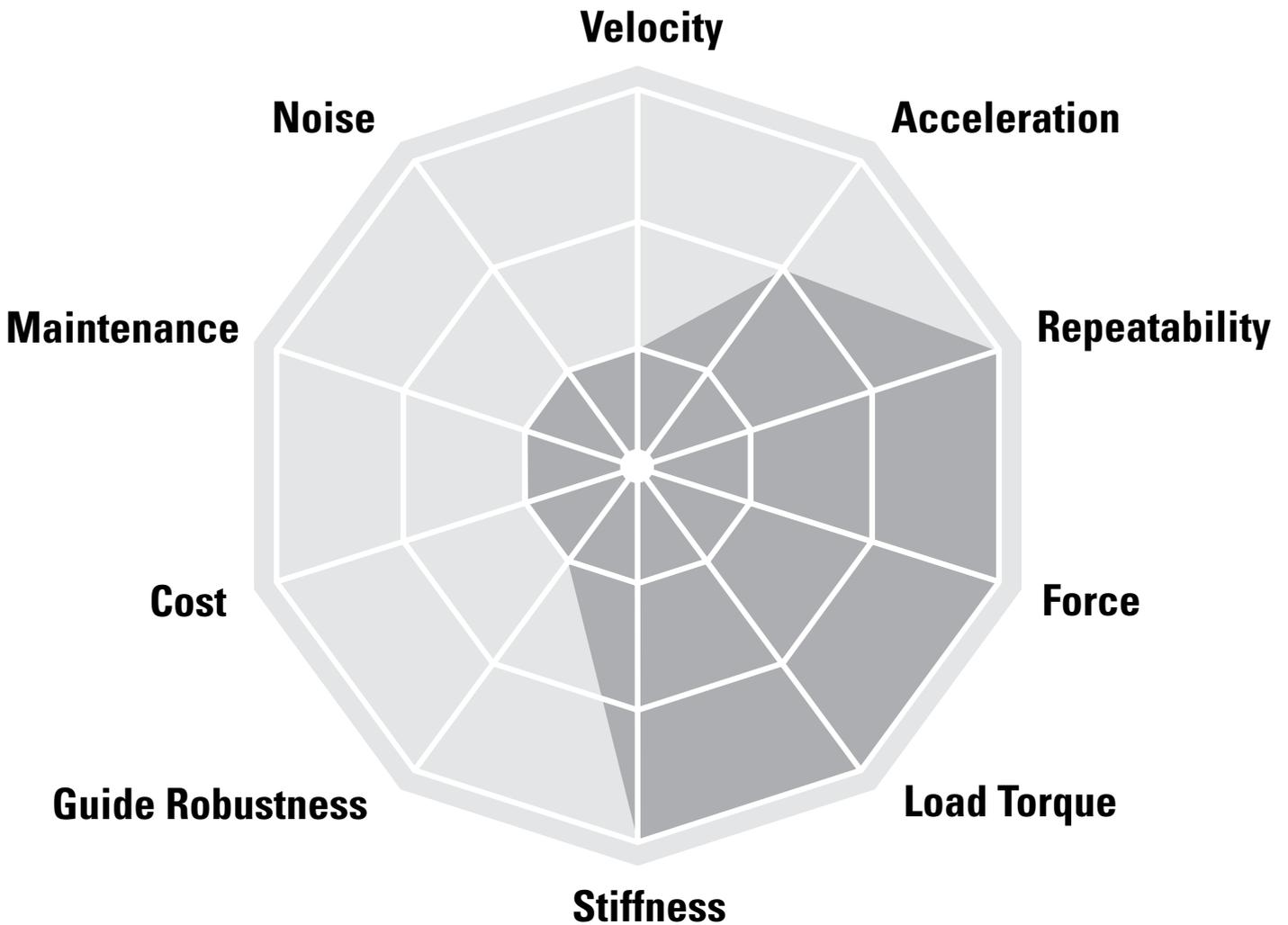


Units designed for lifting applications or for the replacement of hydraulic and pneumatic cylinders.



Linear Motion Systems with Ball Screw Drive and Ball Guide

PowerLine, ForceLine



Typical Applications

Typical applications are where high accuracy and load capability is required but where speed is less important. Typical examples are machining operations and in the handling of heavy goods that need accurate positioning.

Linear Motion Systems with Ball Screw Drive and Ball Guide

Overview

PowerLine WM



Features

- Can be installed in all directions
- Patented guide system
- Patented self-adjusting plastic cover band
- 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 (S max), maximum	[mm]	2000	2000	11000	5000	10340	11000	5000	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		12	14	16	18	20	22	24	26

PowerLine WV



Features

- Can be installed in all directions
- Patented self-adjusting plastic cover band
- Patented screw support system
- The units require external guides

Parameter		WV60	WV80	WV120
Profile size (width × height)	[mm]	60 × 60	80 × 80	120 × 120
Stroke length (S max), 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		28	30	32

Linear Motion Systems with Ball Screw Drive and Ball Guide

Overview

ForceLine MLSM



Features

- Can be installed in all directions
- 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 (S max), maximum	[mm]	5500	5200
Linear speed, maximum	[m/s]	2,5	2,0
Dynamic carriage load (Fz), maximum	[N]	6000	8000
Remarks		double ball nuts	double ball nuts
Page		34	36

WM-Series Technical Presentation

Screw support

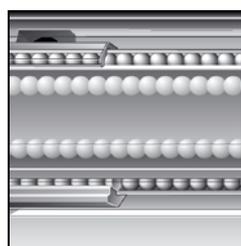
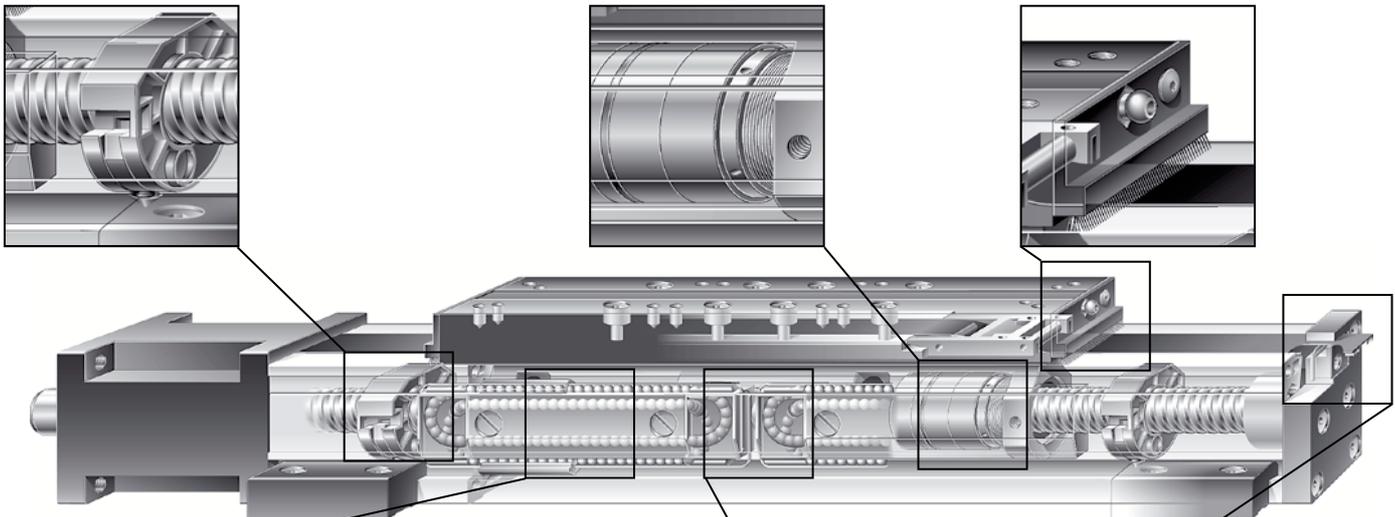
Patented screw support system permits high speed at long stroke lengths while reducing the stroke with a minimum.

Double ball nuts

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

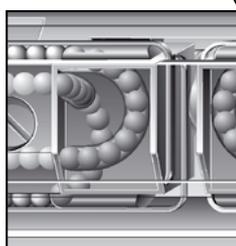
Central lubrication

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



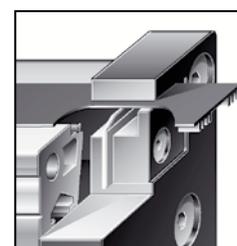
Ball guides

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.

WM40S

Ball Screw Drive, Ball Guide, Single Ball Nut

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM40S
Profile size (w × h) [mm]	40 × 40
Type of screw	ball screw with single nut
Carriage sealing system	self-adjusting 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

Parameter		WM40S
Stroke length (S max), maximum	[mm]	2000
Linear speed, maximum	[m/s]	0,25
Acceleration, maximum	[m/s ²]	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 ¹ / 5300 ²
Dynamic load (Fz), maximum	[N]	600 ¹ / 6790 ²
Dynamic load torque (Mx), maximum	[Nm]	10 ¹ / 30 ²
Dynamic load torque (My), maximum	[Nm]	30 ¹ / 230 ²
Dynamic load torque (Mz), maximum	[Nm]	30 ¹ / 230 ²
Drive shaft force (Frd), maximum	[N]	100
Drive shaft torque (Mta), maximum	[Nm]	3
Ball screw diameter (do)	[mm]	12
Ball screw lead (p)	[mm]	5
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	1,50 0,30 0,36

¹ Value for the complete unit

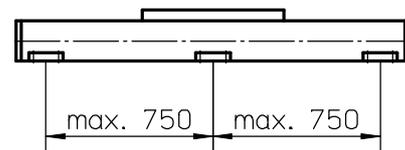
² Value for the ball guide only

Carriage Idle Torque (M idle) [Nm]

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

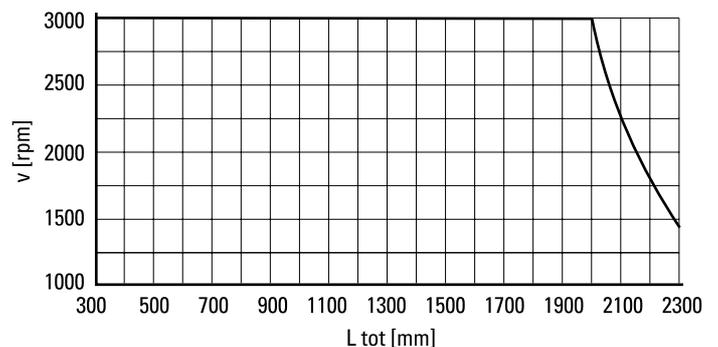
M idle = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

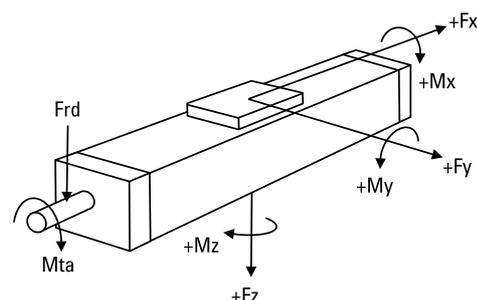


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Critical Speed

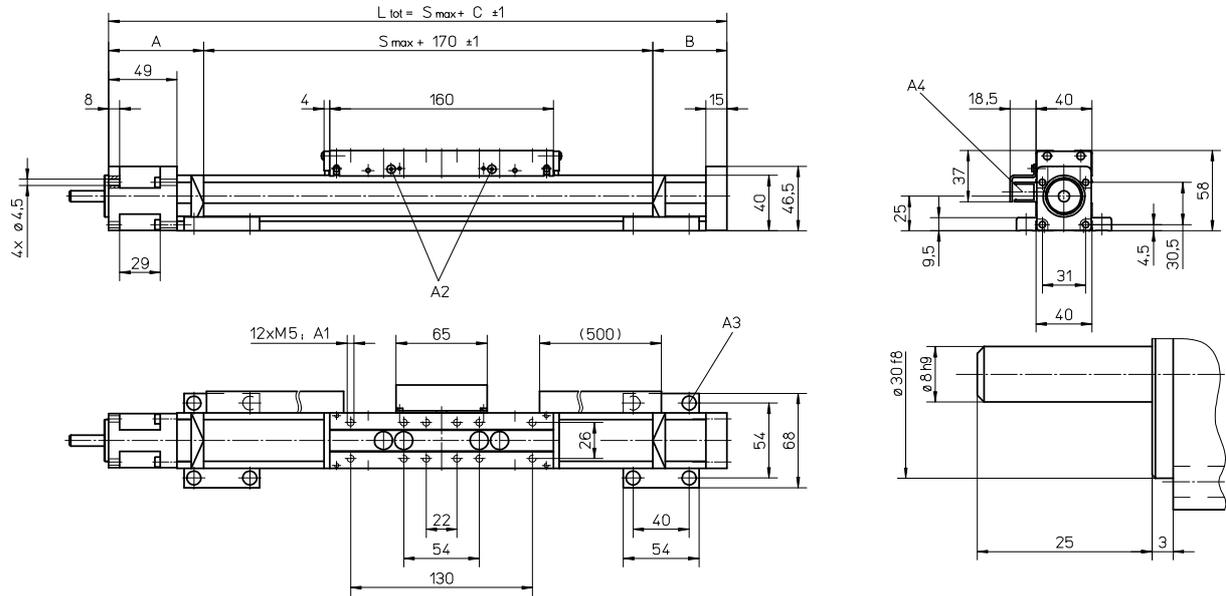


Definition of Forces



WM40S

Ball Screw Drive, Ball Guide, Single Ball Nut



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 option kit (optional)

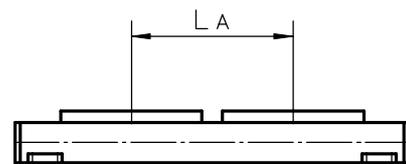
Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 – 500 (0 – 450)	65	35	270 (320)
501 – 1100 (451 – 1050)	65	45	280 (330)
1101 – 2000 (1051 – 1950)	70	60	300 (350)

Values between brackets = for units with long carriage

Double Carriages

Parameter	WM40S
Minimum distance between carriages (L _A) [mm]	175
Dynamic load (F _y), maximum [N]	900
Dynamic load (F _z), maximum [N]	1200
Dynamic load torque (M _y), maximum [Nm]	L A ¹ × 0,45
Dynamic load torque (M _z), maximum [Nm]	L A ¹ × 0,6
Force required to move second carriage [N]	4
Total length (L _{tot}) [mm]	S max + C + L A

¹ Value in mm



WM40D

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

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM40D
Profile size (w × h) [mm]	40 × 40
Type of screw	ball screw with double nuts
Carriage sealing system	self-adjusting 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

Parameter		WM40D
Stroke length (S max), maximum	[mm]	1950
Linear speed, maximum	[m/s]	0,25
Acceleration, maximum	[m/s ²]	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 ¹ / 5300 ²
Dynamic load (Fz), maximum	[N]	600 ¹ / 6790 ²
Dynamic load torque (Mx), maximum	[Nm]	10 ¹ / 30 ²
Dynamic load torque (My), maximum	[Nm]	30 ¹ / 230 ²
Dynamic load torque (Mz), maximum	[Nm]	30 ¹ / 230 ²
Drive shaft force (Frd), maximum	[N]	100
Drive shaft torque (Mta), maximum	[Nm]	3
Ball screw diameter (d ₀)	[mm]	12
Ball screw lead (p)	[mm]	5
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	1,90 0,30 0,60

¹ Value for the complete unit

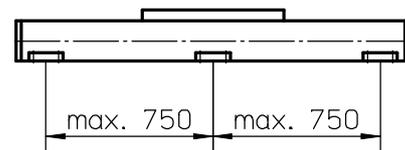
² Value for the ball guide only

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

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

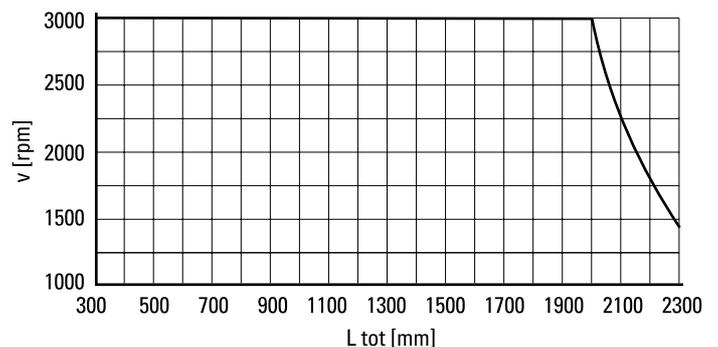
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

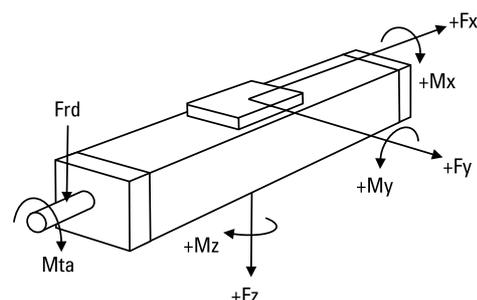


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Critical Speed

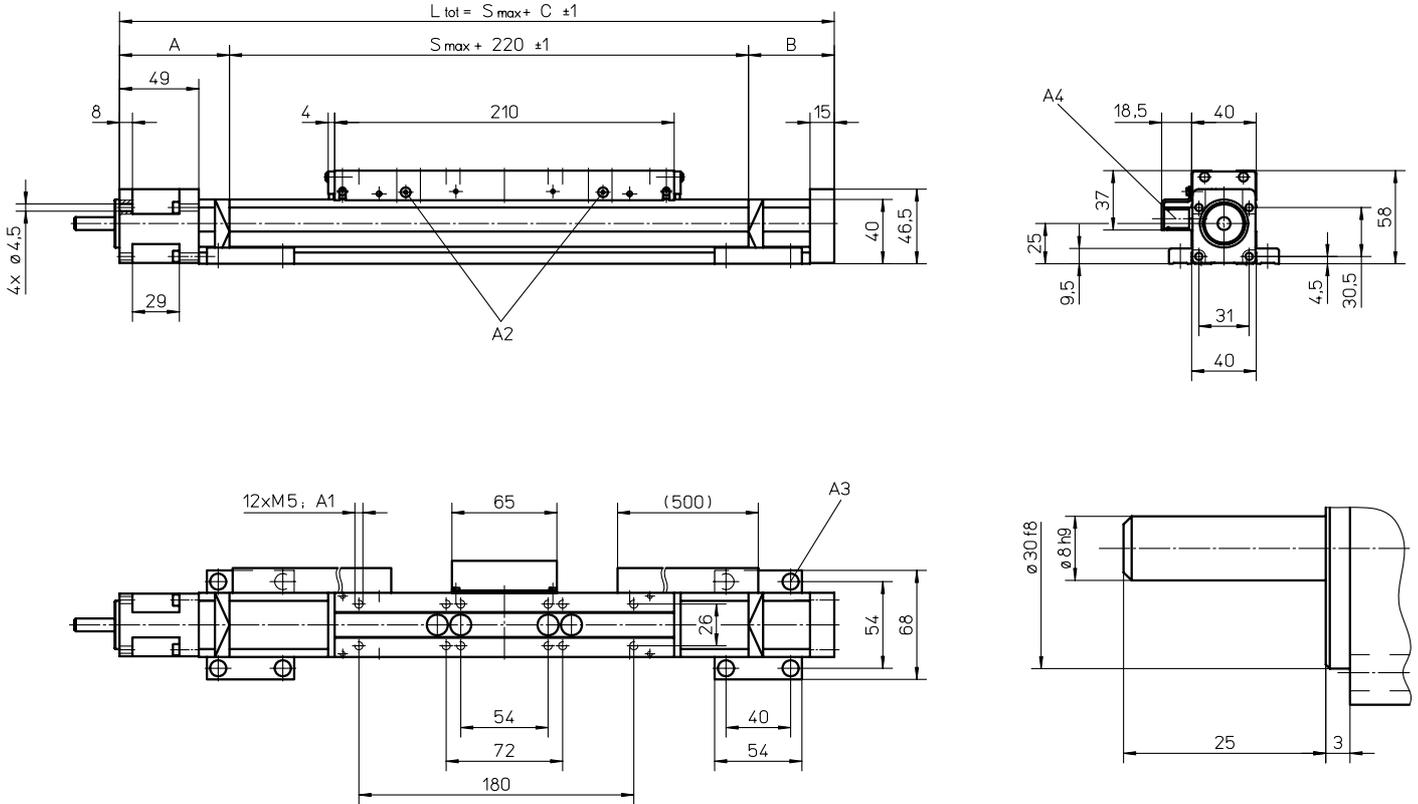


Definition of Forces



WM40D

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



A1: depth 6
 A2: lubricating nipple on both sides DIN3405 D 1/A

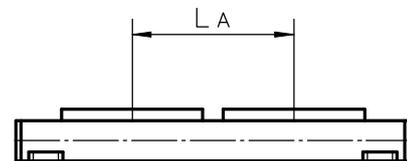
A3: socket cap screw ISO4762-M5×12 8.8
 A4: ENF inductive sensor rail option kit (optional)

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 – 500	65	35	320
501 – 1100	65	45	330
1101 – 2000	70	60	350

Double Long Carriages

Parameter	WM40D
Minimum distance between carriages (L _A) [mm]	225
Dynamic load (F _y), maximum [N]	900
Dynamic load (F _z), maximum [N]	1200
Dynamic load torque (M _y), maximum [Nm]	L A ¹ × 0,45
Dynamic load torque (M _z), maximum [Nm]	L A ¹ × 0,6
Force required to move second carriage [N]	4
Total length (L _{tot}) [mm]	S max + C + L A

¹ Value in mm



WM60D

Ball Screw Drive, Ball Guide, Double Ball Nuts

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM60D
Profile size (w × h) [mm]	60 × 60
Type of screw	ball screw with double nut
Carriage sealing system	self-adjusting 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

Parameter		WM60D
Stroke length (S max), maximum screw lead 5, 20 mm screw lead 50 mm	[mm]	11000 5000
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum	[N]	4000
Dynamic load (F _y), maximum	[N]	2000 ¹ / 45980 ²
Dynamic load (F _z), maximum	[N]	2000 ¹ / 42320 ²
Dynamic load torque (M _x), maximum	[Nm]	100 ¹ / 740 ²
Dynamic load torque (M _y), maximum	[Nm]	200 ¹ / 2990 ²
Dynamic load torque (M _z), maximum	[Nm]	200 ¹ / 3250 ²
Drive shaft force (F _{rd}), maximum	[N]	500
Drive shaft torque (M _{ta}), maximum	[Nm]	35
Ball screw diameter (d _o)	[mm]	20
Ball screw lead (p)	[mm]	5, 20, 50
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	6,16 0,65 1,99

¹ Value for the complete unit

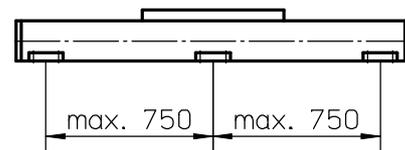
² Value for the ball guide only

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

Input speed [rpm]	Screw lead [mm]		
	p = 5	p = 20	p = 50
150	0,8	1,3	1,6
1500	1,4	2,0	2,4
3000	1,8	2,3	2,6

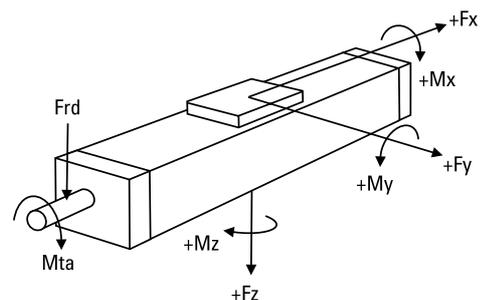
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



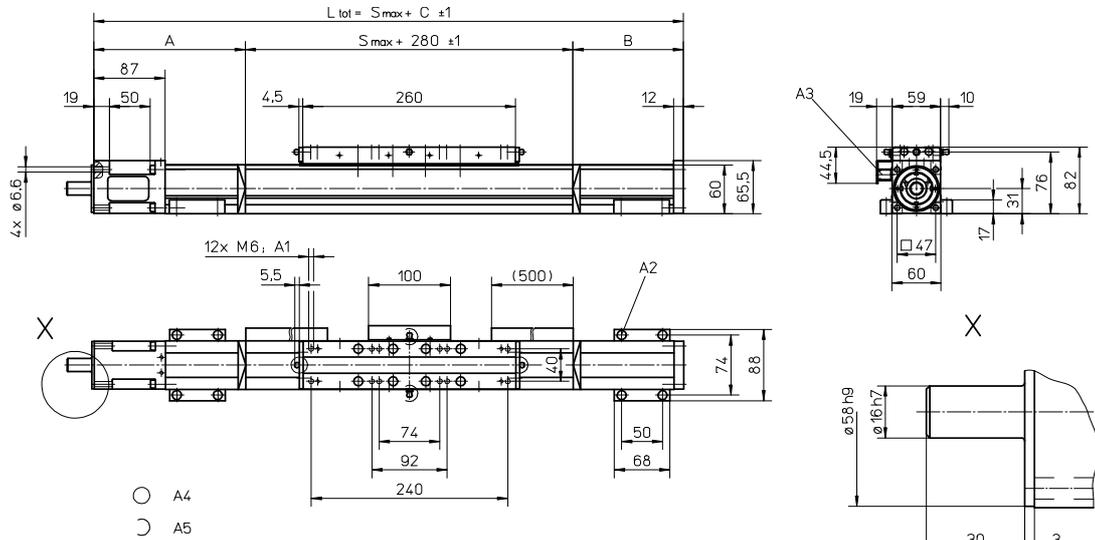
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information. Units with a profile length over 6300 mm consists of two profiles where the joint between the two profiles must be adequately supported on both sides.

Definition of Forces



WM60D

Ball Screw Drive, Ball Guide, Double Ball Nuts



A1: depth 11
 A2: socket cap screw ISO4762-M6x20 8.8
 A3: ENF inductive sensor rail option kit (optional)

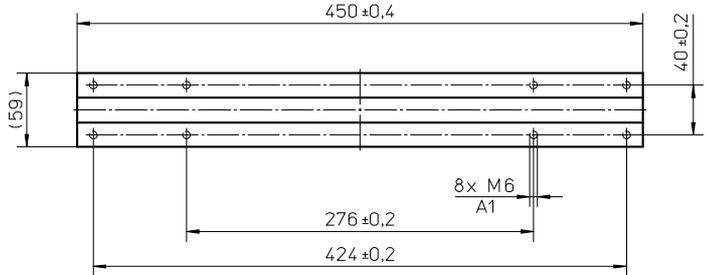
A4: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
 A5: can be changed over to one of the three alternative lubricating points by the customer

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 695 (0 - 505)	115	65	460 (650)
696 - 1335 (506 - 1145)	165	115	560 (750)
1336 - 2075 (1146 - 1885)	185	135	600 (790)
2076 - 2780 (1886 - 2590)	210	160	650 (840)

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
2781 - 3545 (2591 - 3355)	230	180	690 (880)
3546 - 4285 (3366 - 4095)	250	200	730 (920)
4286 - 5015 (4096 - 4825)	275	225	780 (970)
5016 - 11000 (4826 - 10810)	contact customer service		

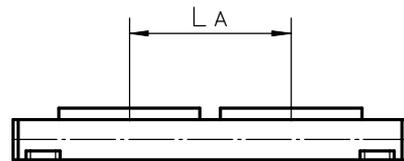
Values between brackets = for units with long carriage

Long Carriage		
Parameter		WM60D
Carriage length	[mm]	450
Dynamic load torque (My), maximum	[Nm]	500
Dynamic load torque (Mz), maximum	[Nm]	500
Weight	[kg]	3,1



A1: depth 11

Double Carriages		
Parameter		WM60D
Minimum distance between carriages (LA)	[mm]	335
Dynamic load (Fy), maximum	[N]	4000
Dynamic load (Fz), maximum	[N]	4000
Dynamic load torque (My), maximum	[Nm]	L A ¹ × 2
Dynamic load torque (Mz), maximum	[Nm]	L A ¹ × 2
Force required to move second carriage	[N]	20
Total length (L tot)	[mm]	S max + C + L A



¹ Value in mm

WM60S

Ball Screw Drive, Ball Guide, Single Ball Nut, Short Carriage

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM60S
Profile size (w × h) [mm]	60 × 60
Type of screw	ball screw with single nut
Carriage sealing system	self-adjusting 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

Parameter		WM60S
Stroke length (S max), maximum	[mm]	5000
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	10
Repeatability	[± mm]	0,02
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum	[N]	2800
Dynamic load (F _y), maximum	[N]	1400 ¹ / 25920 ²
Dynamic load (F _z), maximum	[N]	1400 ¹ / 23860 ²
Dynamic load torque (M _x), maximum	[Nm]	50 ¹ / 410 ²
Dynamic load torque (M _y), maximum	[Nm]	100 ¹ / 320 ²
Dynamic load torque (M _z), maximum	[Nm]	100 ¹ / 320 ²
Drive shaft force (F _{rd}), maximum	[N]	500
Drive shaft torque (M _{ta}), maximum	[Nm]	35
Ball screw diameter (d ₀)	[mm]	20
Ball screw lead (p)	[mm]	5, 20, 50
Weight	[kg]	
of unit with zero stroke		3,80
of every 100 mm of stroke		0,65
of each carriage		1,00

¹ Value for the complete unit

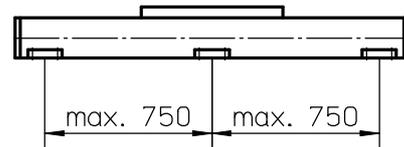
² Value for the ball guide only

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

Input speed [rpm]	Screw lead [mm]		
	p = 5	p = 20	p = 50
150	0,7	1,0	1,4
1500	1,1	1,6	2,0
3000	1,5	1,8	2,2

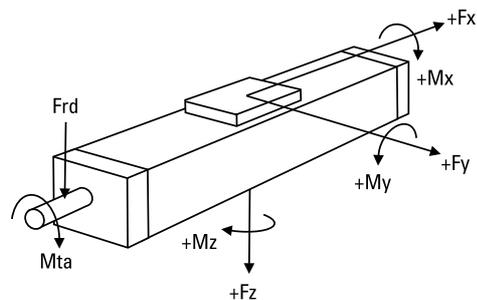
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



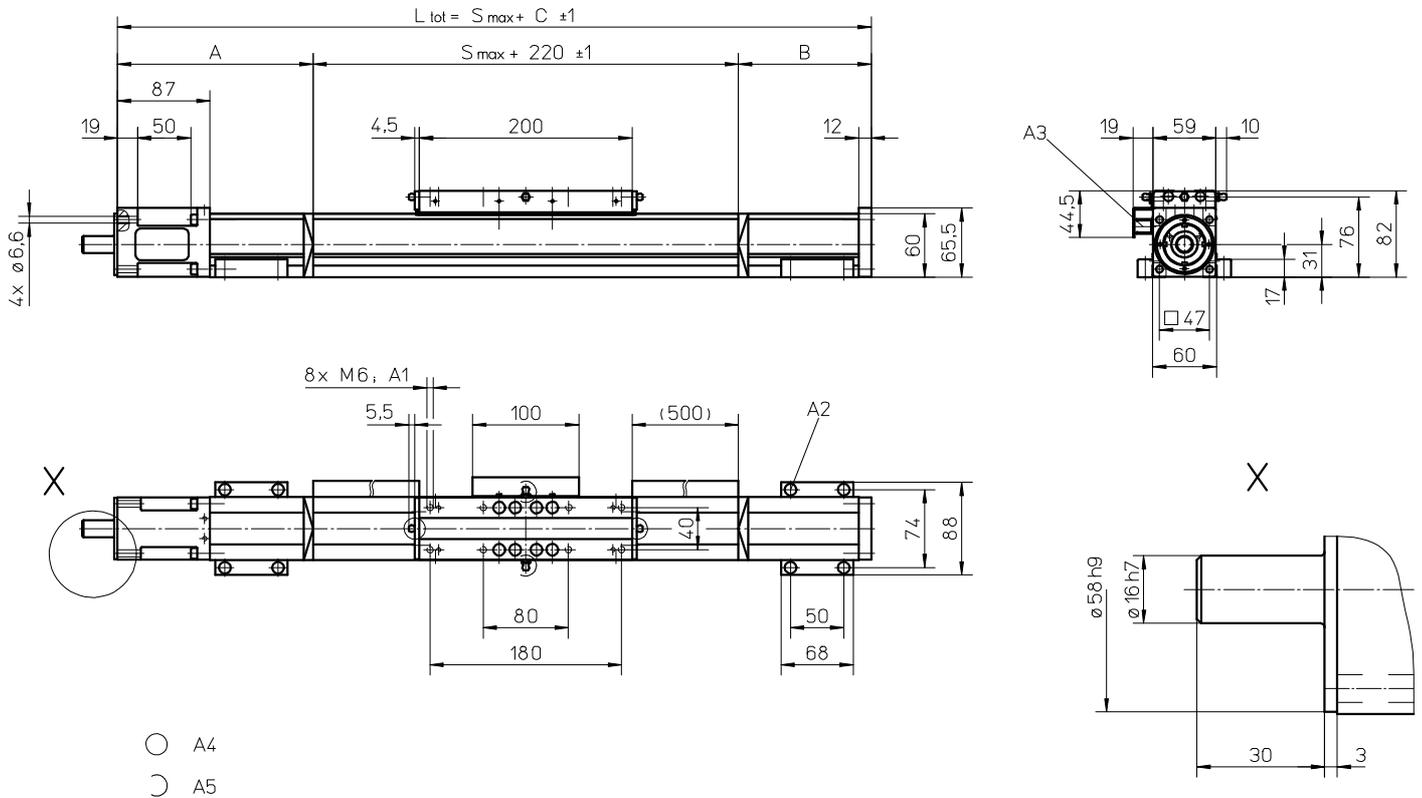
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Definition of Forces



WM60S

Ball Screw Drive, Ball Guide, Single Ball Nut, Short Carriage



A1: depth 11
 A2: socket cap screw ISO4762-M6x20 8.8
 A3: ENF inductive sensor rail option kit (optional)

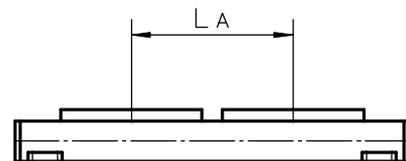
A4: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
 A5: can be changed over to one of the three alternative lubricating points by the customer

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 580	95	20	335
581 - 1140	110	60	390
1141 - 1805	130	80	430
1806 - 2460	155	105	480

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
2461 - 3125	175	125	520
3126 - 3780	200	150	570
3781 - 4445	220	170	610
4446 - 5000	240	190	650

Double Short Carriages

Parameter	WM60S
Minimum distance between carriages (L _A) [mm]	255
Dynamic load (F _y), maximum [N]	2800
Dynamic load (F _z), maximum [N]	2800
Dynamic load torque (M _y), maximum [Nm]	L _A ¹ × 1,4
Dynamic load torque (M _z), maximum [Nm]	L _A ¹ × 1,4
Force required to move second carriage [N]	18
Total length (L _{tot}) [mm]	S max + C + L _A



¹ Value in mm

WM60X

Ball Screw Drive, Ball Guide, Left/right Moving Carriages

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM60X
Profile size (w × h) [mm]	60 × 60
Type of screw	ball screw with double nut
Carriage sealing system	self-adjusting 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

Parameter		WM60X
Stroke length (S max), maximum	[mm]	10340
Linear speed, maximum	[m/s]	0,25
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum	[N]	4000
Dynamic load (F _y), maximum	[N]	2000 ¹ / 45980 ²
Dynamic load (F _z), maximum	[N]	2000 ¹ / 42320 ²
Dynamic load torque (M _x), maximum	[Nm]	100 ¹ / 740 ²
Dynamic load torque (M _y), maximum	[Nm]	200 ¹ / 2990 ²
Dynamic load torque (M _z), maximum	[Nm]	200 ¹ / 3250 ²
Drive shaft force (F _{rd}), maximum	[N]	500
Drive shaft torque (M _{ta}), maximum	[Nm]	35
Ball screw diameter (d ₀)	[mm]	20
Ball screw lead (p)	[mm]	5
Weight of unit with zero stroke	[kg]	10,33
of every 100 mm of stroke		0,65
of each carriage		1,99

¹ Value for the complete unit

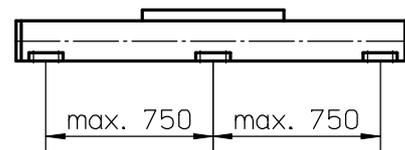
² Value for the ball guide only

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

Input speed [rpm]	Screw lead [mm]
	p = 5
150	1,6
1500	2,8
3000	3,6

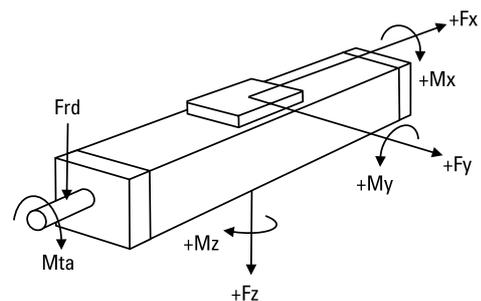
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



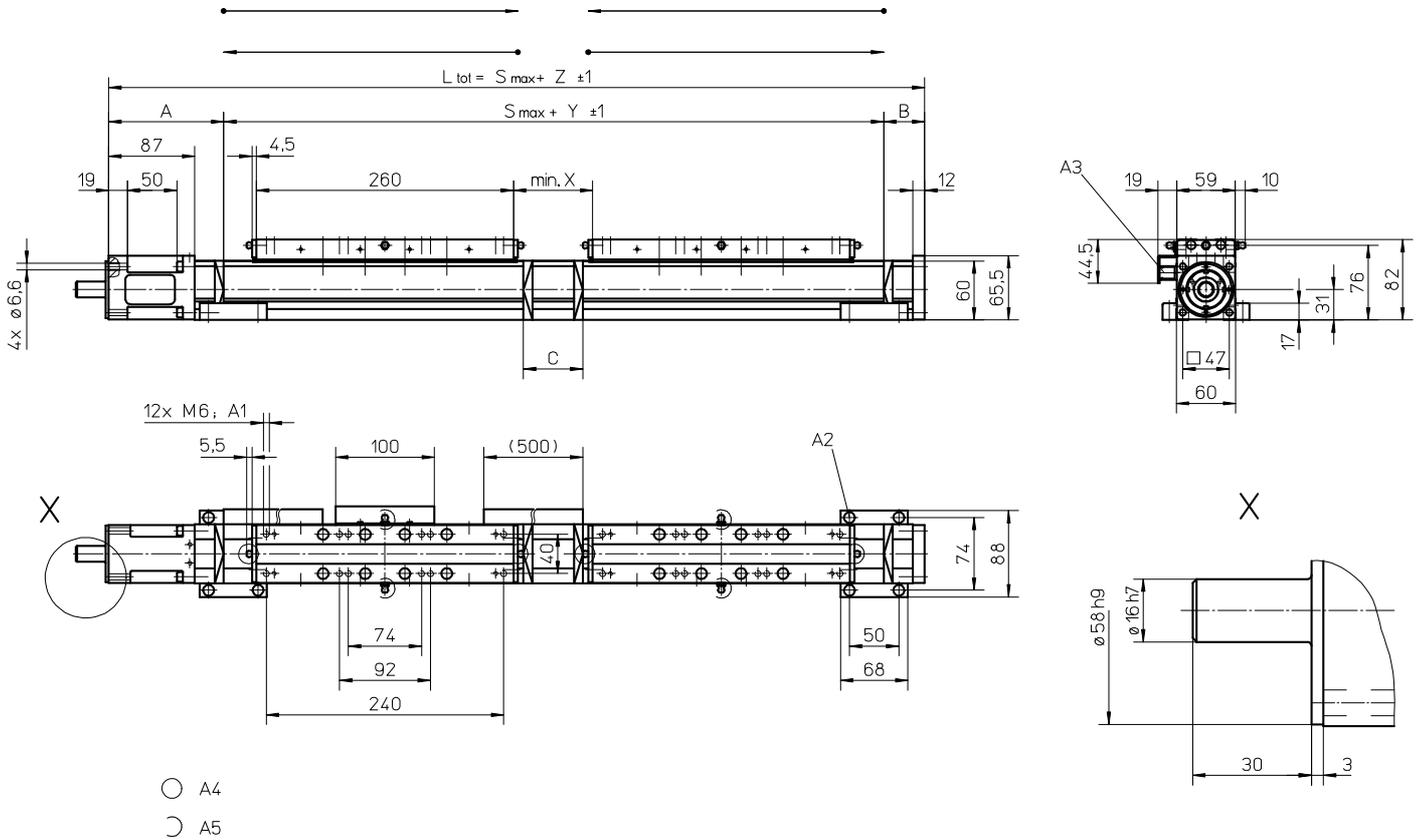
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information. Units with a profile length over 5400 mm consists of two profiles where the joint between the two profiles must be adequately supported on both sides.

Definition of Forces



WM60X

Ball Screw Drive, Ball Guide, Left/right Moving Carriages



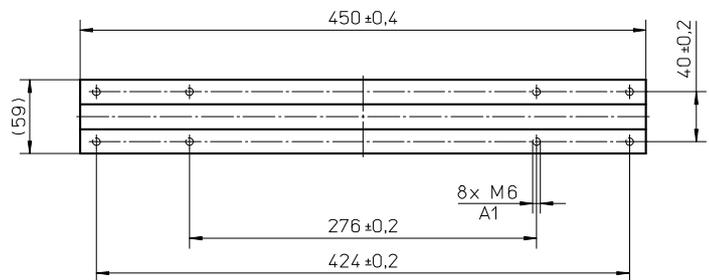
A1: depth 11
 A2: socket cap screw ISO4762-M6x20 8.8
 A3: ENF inductive sensor rail option kit (optional)

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

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]	X [mm]	Y [mm]	Z [mm]
0 - 1390 (0 - 1200)	115	65	60	80	620	800
1391 - 2670 (1201 - 2480)	165	115	210	230	770	1050
2671 - 4150 (2481 - 3960)	185	135	250	270	810	1130
4151 - 5560 (3961 - 5370)	210	160	300	320	860	1230
5561 - 10340 (5371 - 10150)	contact customer service					

Values between brackets = for units with long carriage

Long Carriage		WM60X
Parameter		
Carriage length	[mm]	450
Dynamic load torque (My), maximum	[Nm]	500
Dynamic load torque (Mz), maximum	[Nm]	500
Weight	[kg]	3,1



A1: depth 11

WM80D

Ball Screw Drive, Ball Guide, Double Ball Nuts

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM80D
Profile size (w × h) [mm]	80 × 80
Type of screw	ball screw with double nuts
Carriage sealing system	self-adjusting 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

Parameter		WM80D
Stroke length (S max), maximum screw lead 5, 10, 20 mm screw lead 50 mm	[mm]	11000 5000
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	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]	3000 ¹ / 57420 ²
Dynamic load (F _z), maximum	[N]	3000 ¹ / 54950 ²
Dynamic load torque (M _x), maximum	[Nm]	350 ¹ / 1360 ²
Dynamic load torque (M _y), maximum	[Nm]	300 ¹ / 4230 ²
Dynamic load torque (M _z), maximum	[Nm]	300 ¹ / 4220 ²
Drive shaft force (F _{rd}), maximum	[N]	700
Drive shaft torque (M _{ta}), maximum	[Nm]	55
Ball screw diameter (d ₀)	[mm]	25
Ball screw lead (p)	[mm]	5, 10, 20, 50
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	11,57 1,08 4,26

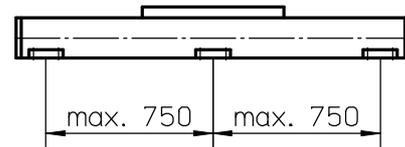
¹ Value for the complete unit
² Value for the ball guide only

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

Input speed [rpm]	Screw lead [mm]			
	p = 5	p = 10	p = 20	p = 50
150	1,1	1,5	1,8	2,3
1500	1,7	2,1	2,3	3,0
3000	2,1	2,5	2,6	3,6

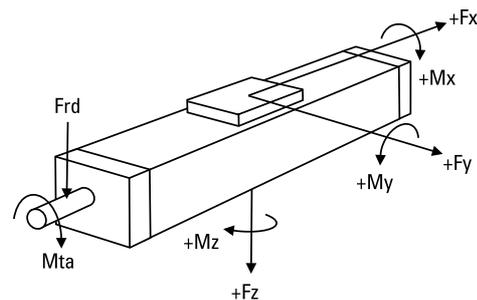
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



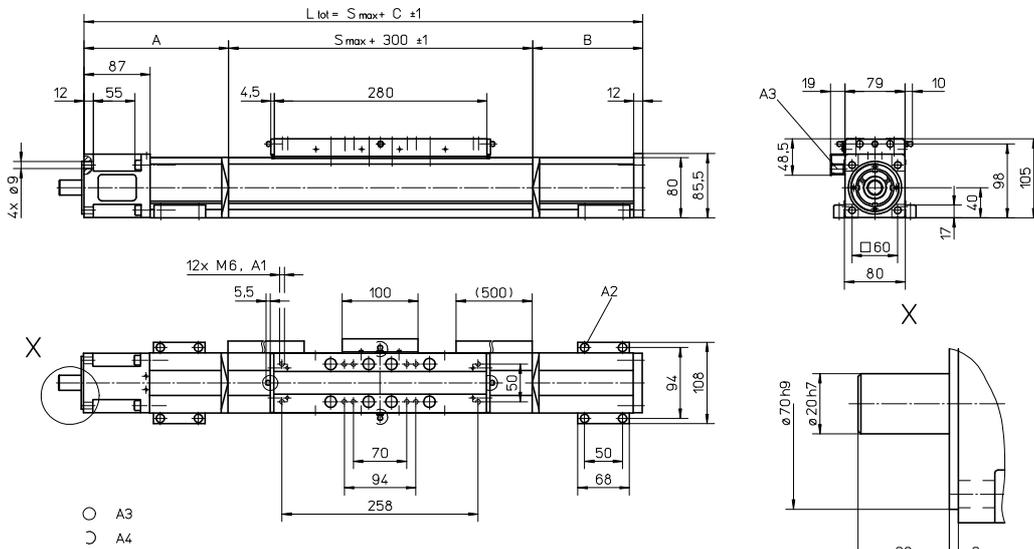
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information. Units with a profile length over 6300 mm consists of two profiles where the joint between the two profiles must be adequately supported on both sides.

Definition of Forces



WM80D

Ball Screw Drive, Ball Guide, Double Ball Nuts



A1: depth 12 mm
 A2: socket cap screw ISO4762-M6x20 8.8
 A3: ENF inductive sensor rail option kit (optional)

A4: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
 A5: can be changed over to one of three alternative lubrication points by customer

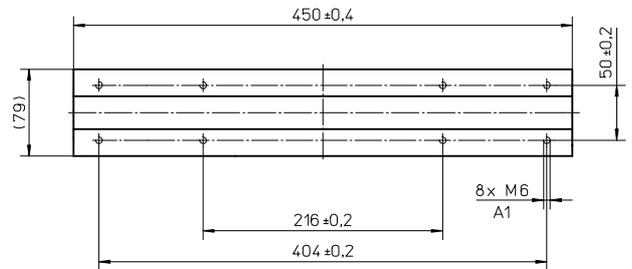
Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 780 (0 - 610)	120	80	500 (670)
781 - 1535 (611 - 1365)	170	125	595 (765)
1536 - 2375 (1366 - 2205)	190	145	635 (805)
2376 - 3205 (2206 - 3035)	215	170	685 (855)

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
3206 - 4045 (3036 - 3875)	235	190	725 (895)
4046 - 4885 (3876 - 4715)	255	210	765 (935)
4886 - 5000 (4716 - 4830)	280	235	815 (985)
5001 - 11000 (4717 - 10830)	contact customer service		

Values between brackets = for units with long carriage

Long Carriage

Parameter	WM80D
Carriage length [mm]	450
Dynamic load torque (My), maximum [Nm]	750
Dynamic load torque (Mz), maximum [Nm]	750
Weight [kg]	6,4

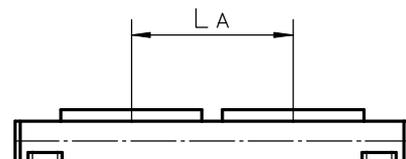


A1: depth 12 mm

Double Carriages

Parameter	WM80D
Minimum distance between carriages (LA) [mm]	360
Dynamic load (Fy), maximum [N]	6000
Dynamic load (Fz), maximum [N]	6000
Dynamic load torque (My), maximum [Nm]	$L A^1 \times 3$
Dynamic load torque (Mz), maximum [Nm]	$L A^1 \times 3$
Force required to move second carriage [N]	25
Total length (L tot) [mm]	$S \text{ max} + C + L A$

¹ Value in mm



WM80S

Ball Screw Drive, Ball Guide, Singel Ball Nut, Short Carriage

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM80S
Profile size (w × h) [mm]	80 × 80
Type of screw	ball screw with single nut
Carriage sealing system	self-adjusting 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

Parameter		WM80S
Stroke length (S max), maximum	[mm]	5000
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,02
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum	[N]	3500
Dynamic load (F _y), maximum	[N]	2100 ¹ / 37440 ²
Dynamic load (F _z), maximum	[N]	2100 ¹ / 35830 ²
Dynamic load torque (M _x), maximum	[Nm]	150 ¹ / 890 ²
Dynamic load torque (M _y), maximum	[Nm]	180 ¹ / 580 ²
Dynamic load torque (M _z), maximum	[Nm]	180 ¹ / 600 ²
Drive shaft force (F _{rd}), maximum	[N]	700
Drive shaft torque (M _{ta}), maximum	[Nm]	55
Ball screw diameter (d ₀)	[mm]	25
Ball screw lead (p)	[mm]	5, 10, 20, 50
Weight	[kg]	
of unit with zero stroke		7,0
of every 100 mm of stroke		1,1
of each carriage		1,6

¹ Value for the complete unit

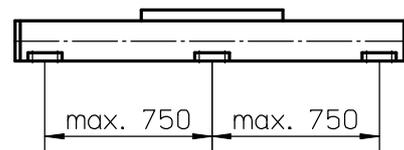
² Value for the ball guide only

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

Input speed [rpm]	Screw lead [mm]			
	p = 5	p = 10	p = 20	p = 50
150	0,9	1,1	1,3	2,0
1500	1,3	1,5	1,8	2,4
3000	1,7	1,8	2,0	2,9

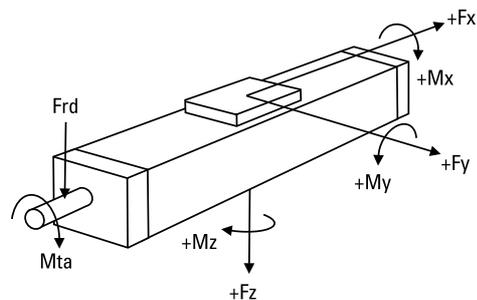
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



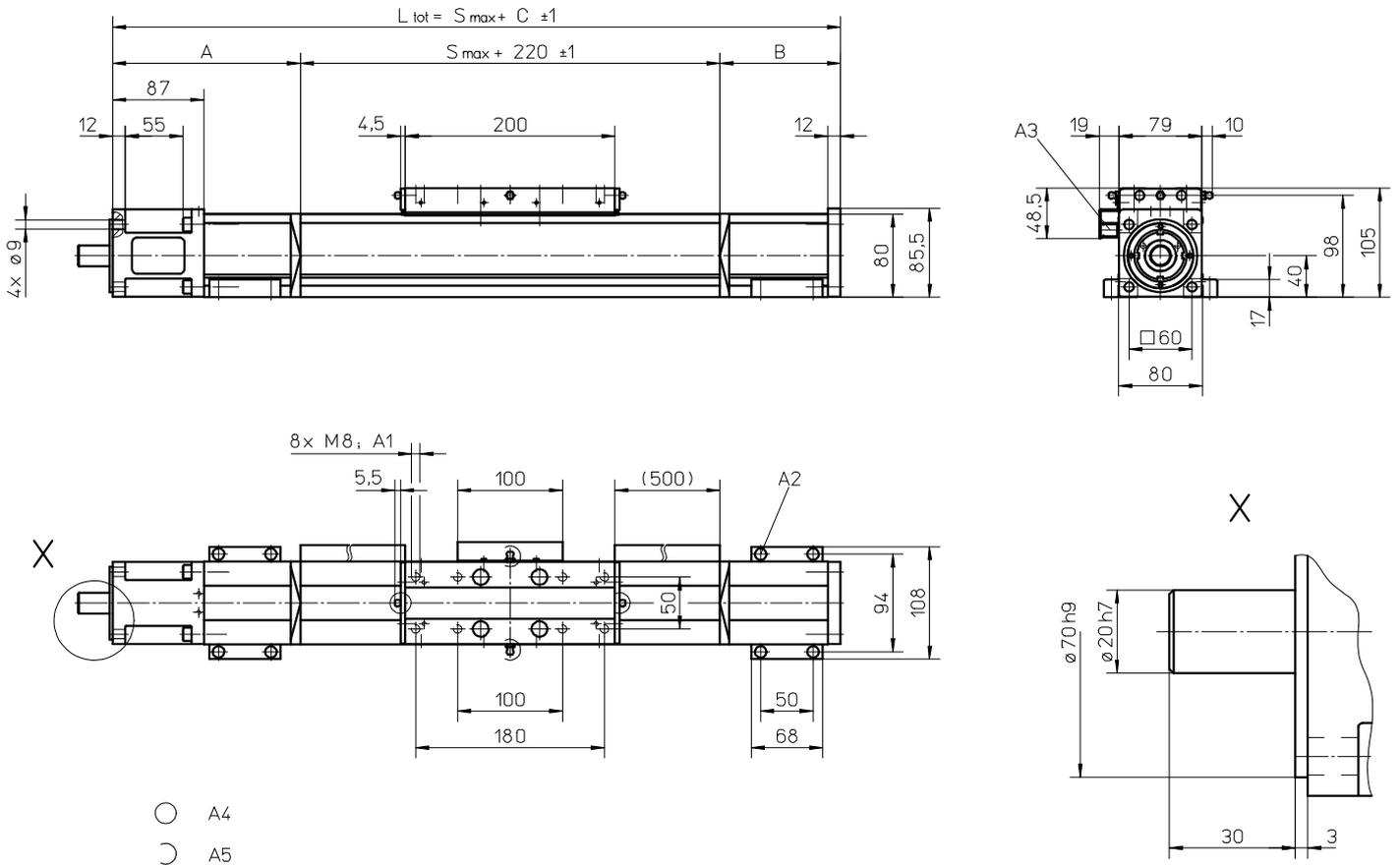
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Definition of Forces



WM80S

Ball Screw Drive, Ball Guide, Singel Ball Nut, Short Carriage



A1: depth 12 mm
 A2: socket cap screw ISO4762-M6x20 8.8
 A3: ENF inductive sensor rail option kit (optional)

A4: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
 A5: can be changed over to one of three alternative lubrication points by customer

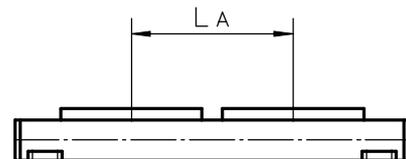
Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 680	95	35	350
681 - 1310	125	80	425
1311 - 2065	150	105	475
2066 - 2830	170	125	515

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
2831 - 3590	195	150	565
3591 - 4355	215	170	605
4356 - 5000	235	190	645

Double Carriages

Parameter		WM80S
Minimum distance between carriages (L _A)	[mm]	280
Dynamic load (F _y), maximum	[N]	4200
Dynamic load (F _z), maximum	[N]	4200
Dynamic load torque (M _y), maximum	[Nm]	L A ¹ × 2,1
Dynamic load torque (M _z), maximum	[Nm]	L A ¹ × 2,1
Force required to move second carriage	[N]	22,5
Total length (L _{tot})	[mm]	S max + C + L A

¹ Value in mm



WM120D

Ball Screw Drive, Ball Guide, Double Ball Nuts

- » Ordering key - see page 182
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WM120D
Profile size (w × h) [mm]	120 × 120
Type of screw	ball screw with double nuts
Carriage sealing system	self-adjusting 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

Parameter		WM120D
Stroke length (S max), maximum screw lead 5, 10, 20 mm screw lead 40 mm	[mm]	11000 5000
Linear speed, maximum	[m/s]	2,0
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum screw lead 5, 10, 20 mm screw lead 40 mm	[N]	12000 8000
Dynamic load (F _y), maximum	[N]	6000 ¹ / 74890 ²
Dynamic load (F _z), maximum	[N]	6000 ¹ / 71670 ²
Dynamic load torque (M _x), maximum	[Nm]	500 ¹ / 2890 ²
Dynamic load torque (M _y), maximum	[Nm]	600 ¹ / 6660 ²
Dynamic load torque (M _z), maximum	[Nm]	600 ¹ / 6960 ²
Drive shaft force (F _{rd}), maximum	[N]	1000
Drive shaft torque (M _{ta}), maximum	[Nm]	80
Ball screw diameter (d ₀)	[mm]	32
Ball screw lead (p)	[mm]	5, 10, 20, 40
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	25,91 1,93 9,25

¹ Value for the complete unit

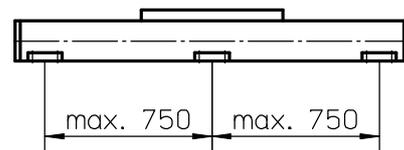
² Value for the ball guide only

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

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

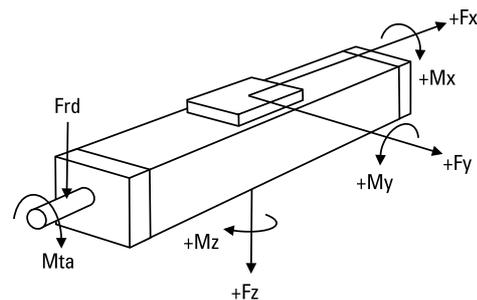
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



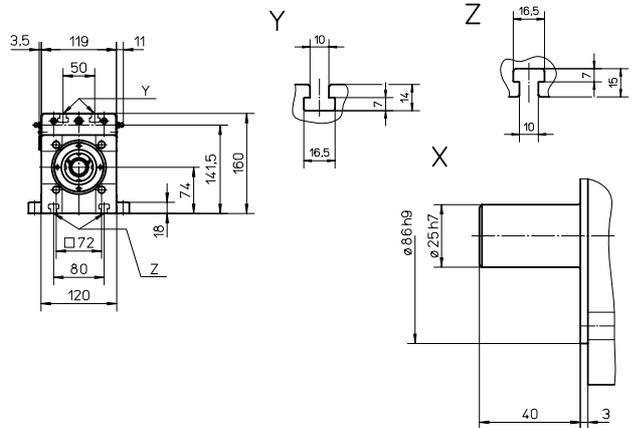
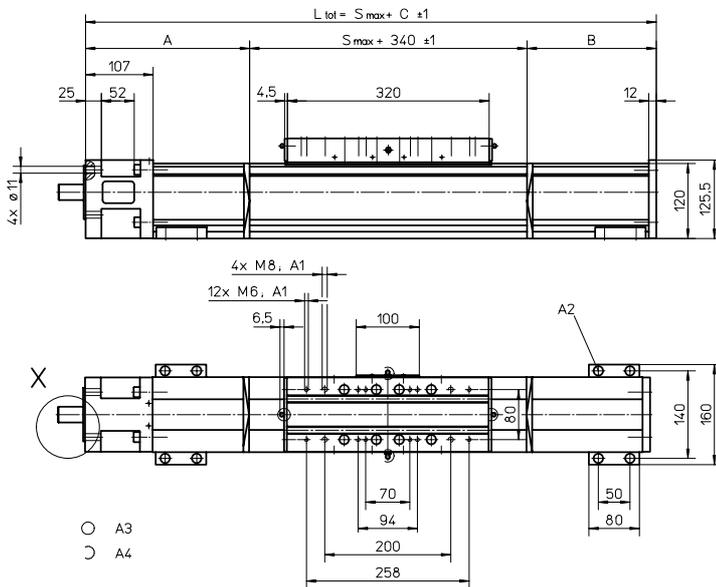
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information. Units with a profile length over 5400 mm consists of two profiles where the joint between the two profiles must be adequately supported on both sides.

Definition of Forces



WM120D

Ball Screw Drive, Ball Guide, Double Ball Nuts



A1: depth 22
 A2: socket cap screw ISO4762-M8x20 8.8

A3: tapered lubricating nipple to DIN71412 M8x1 on fixed-bearing side as standard feature
 A4: can be changed over to one of the three alternative lubricating points by the customer

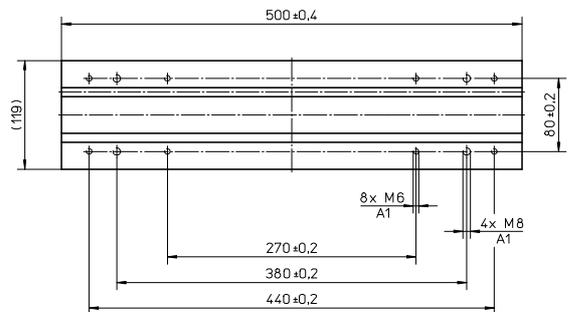
Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 890 (0 - 710)	155	100	595 (775)
891 - 1695 (711 - 1515)	225	170	735 (815)
1696 - 2625 (1516 - 2445)	260	205	805 (985)
2626 - 3555 (2446 - 3375)	295	240	875 (1055)

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
3556 - 4485 (3376 - 4305)	330	275	945 (1125)
4486 - 5000 (4306 - 4820)	365	310	1015 (1195)
5001 - 11000 (4307 - 10820)	contact customer service		

Values between brackets = for units with long carriage

Long Carriage

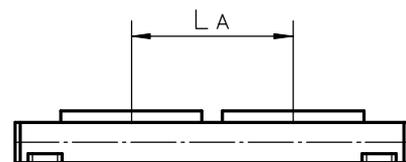
Parameter	WM120D
Carriage length [mm]	500
Dynamic load torque (My), maximum [Nm]	1500
Dynamic load torque (Mz), maximum [Nm]	1500
Weight [kg]	14,2



A1: depth 22

Double Carriages

Parameter	WM120D
Minimum distance between carriages (LA) [mm]	450
Dynamic load (Fy), maximum [N]	12000
Dynamic load (Fz), maximum [N]	12000
Dynamic load torque (My), maximum [Nm]	$L A^1 \times 6$
Dynamic load torque (Mz), maximum [Nm]	$L A^1 \times 6$
Force required to move second carriage [N]	30
Total length (L tot) [mm]	$S_{max} + C + L A$



¹ Value in mm

WV60

Ball Screw Drive, No Guides

- » Ordering key - see page 183
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WV60
Profile size (w × h) [mm]	60 × 60
Type of screw	ball screw with double nut
Carriage sealing system	self-adjusting 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

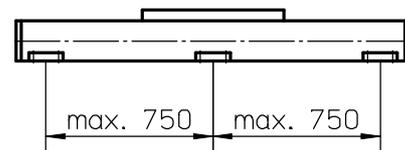
Parameter		WV60
Stroke length (S max), maximum screw lead 5, 20 mm screw lead 50 mm	[mm]	11000 5000
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum	[N]	4000
Dynamic load (F _y), maximum	[N]	0
Dynamic load (F _z), maximum	[N]	0
Dynamic load torque (M _x), maximum	[Nm]	0
Dynamic load torque (M _y), maximum	[Nm]	0
Dynamic load torque (M _z), maximum	[Nm]	0
Drive shaft force (F _{rd}), maximum	[N]	500
Drive shaft torque (M _{ta}), maximum	[Nm]	35
Ball screw diameter (d ₀)	[mm]	20
Ball screw lead (p)	[mm]	5, 20, 50
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	4,72 0,55 1,42

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

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

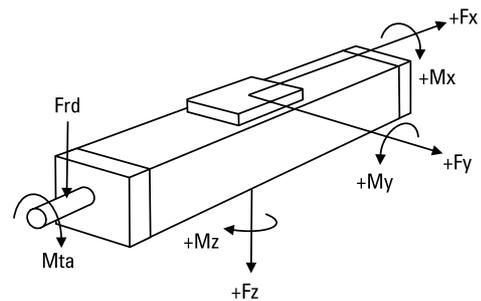
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



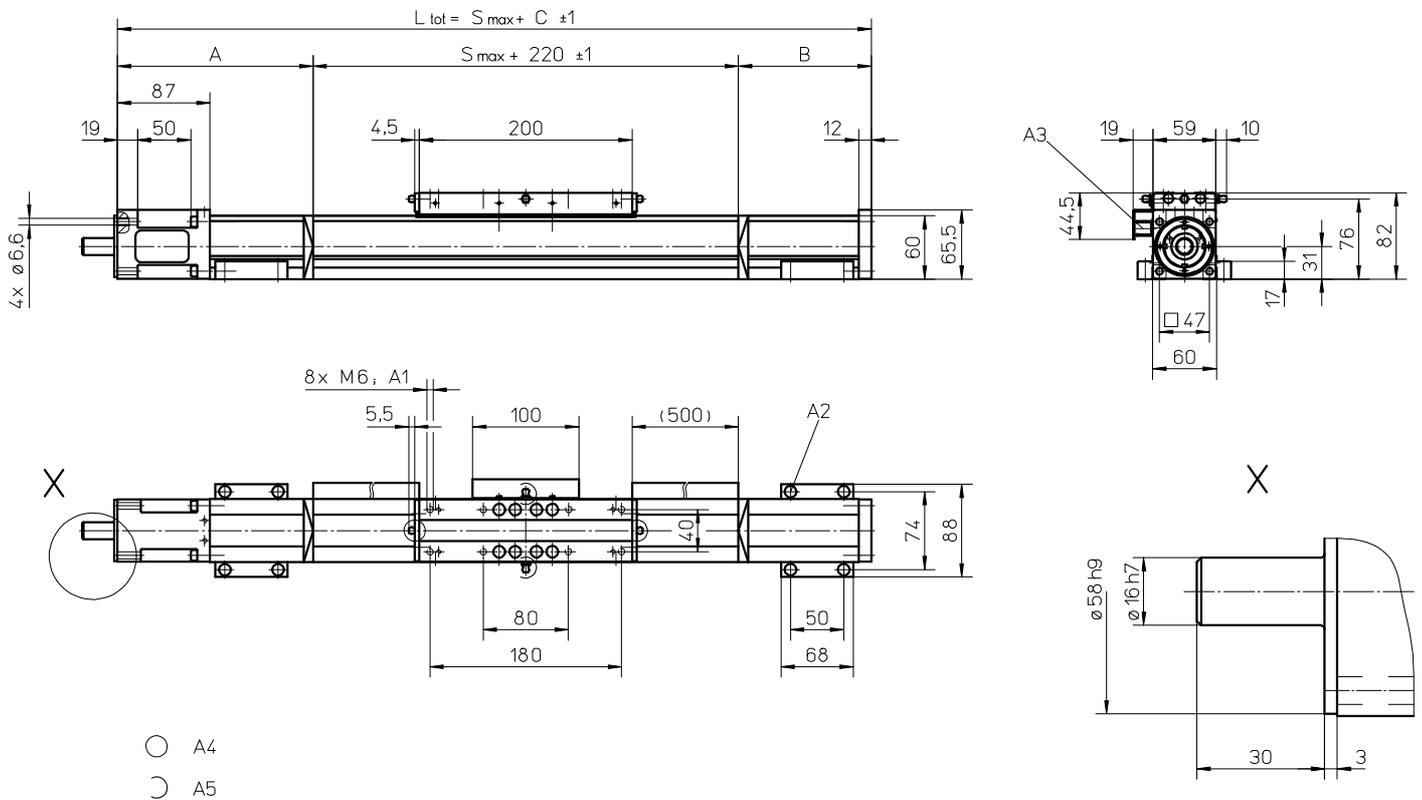
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information. Units with a profile length over 6300 mm consists of two profiles where the joint between the two profiles must be adequately supported on both sides.

Definition of Forces



WV60

Ball Screw Drive, No Guides



- A4
- A5

A1: depth 11

A2: socket cap screw ISO4762-M6×20 8.8

A3: ENF inductive sensor rail option kit (optional)

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

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 690	130	80	430
691 - 1415	155	105	480
1416 - 2155	175	125	520
2156 - 2885	200	150	570

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
2886 - 3625	220	170	610
3626 - 4355	245	195	660
4256 - 5095	265	215	700
5096 - 11000	contact customer service		

WV80

Ball Screw Drive, No Guides

- » Ordering key - see page 183
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WV80
Profile size (w × h) [mm]	80 × 80
Type of screw	ball screw with double nuts
Carriage sealing system	self-adjusting 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

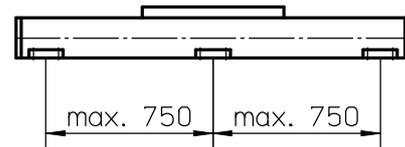
Parameter		WV80
Stroke length (S max), maximum screw lead 5, 10, 20 mm screw lead 50 mm	[mm]	11000 5000
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum	[N]	5000
Dynamic load (F _y), maximum	[N]	0
Dynamic load (F _z), maximum	[N]	0
Dynamic load torque (M _x), maximum	[Nm]	0
Dynamic load torque (M _y), maximum	[Nm]	0
Dynamic load torque (M _z), maximum	[Nm]	0
Drive shaft force (F _{rd}), maximum	[N]	700
Drive shaft torque (M _{ta}), maximum	[Nm]	55
Ball screw diameter (d ₀)	[mm]	25
Ball screw lead (p)	[mm]	5, 10, 20, 50
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	7,95 0,99 2,25

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

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

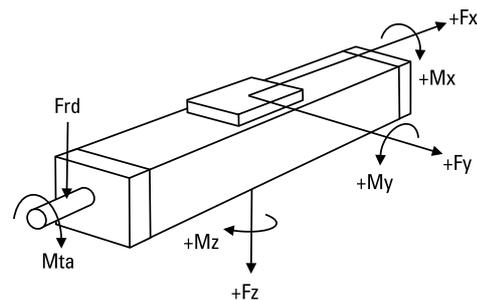
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



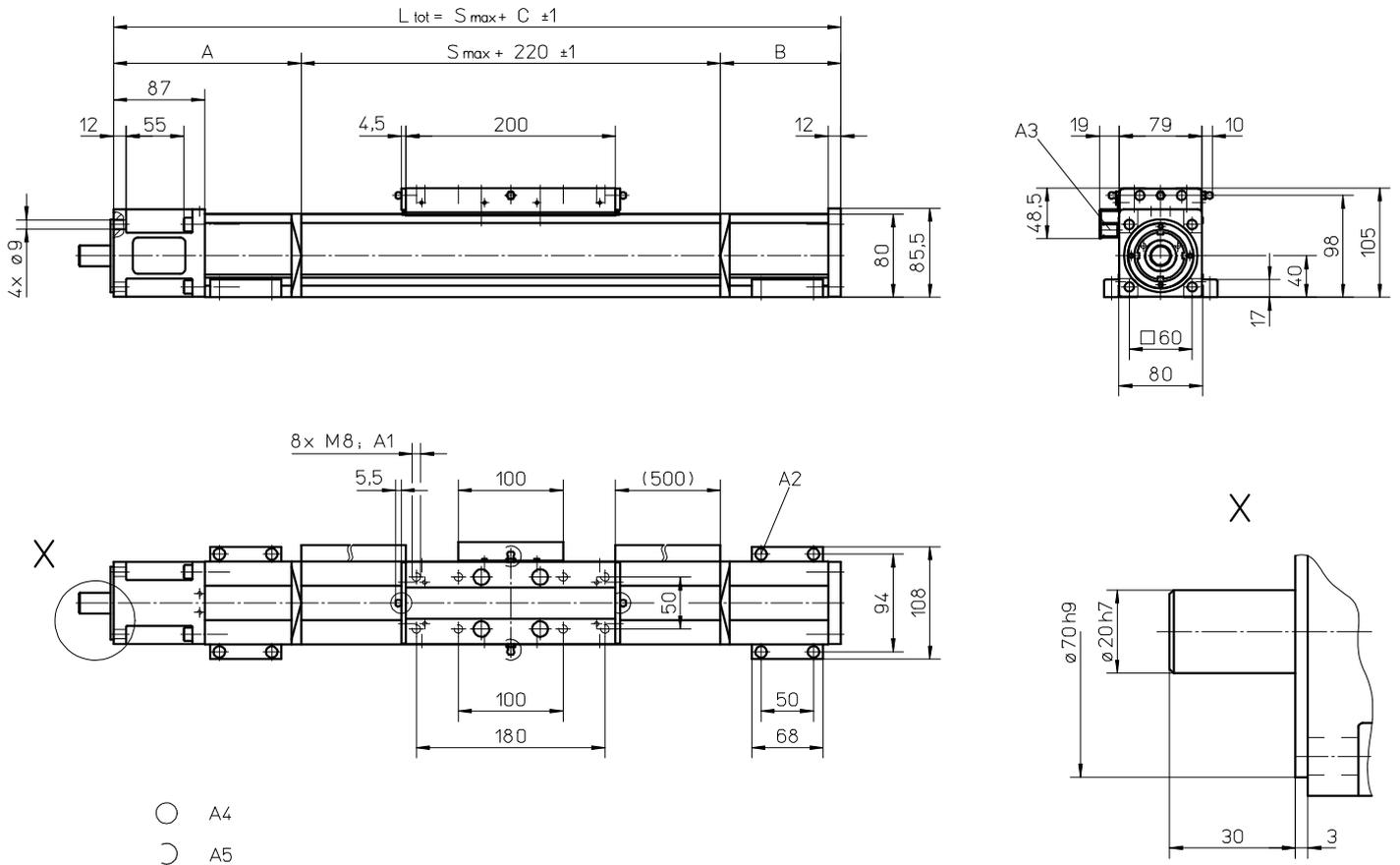
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information. Units with a profile length over 6300 mm consists of two profiles where the joint between the two profiles must be adequately supported on both sides.

Definition of Forces



WV80

Ball Screw Drive, No Guides



- A4
- ⊂ A5

A1: depth 12 mm
 A2: socket cap screw ISO4762-M6×20 8.8
 A3: ENF inductive sensor rail option kit (optional)

A4: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
 A5: can be changed over to one of three alternative lubrication points by customer

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 775	125	50	395
776 - 1670	145	95	460
1671 - 2505	170	115	505
2506 - 3340	190	140	550

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
3341 - 4175	210	160	590
4176 - 5015	235	180	635
5016 - 11000	contact customer service		

WV120

Ball Screw Drive, No Guides

- » Ordering key - see page 183
- » Accessories - see page 125
- » Additional data - see page 171

General Specifications

Parameter	WV120
Profile size (w × h) [mm]	120 × 120
Type of screw	ball screw with double nuts
Carriage sealing system	self-adjusting 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

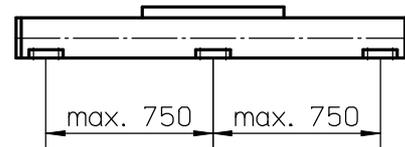
Parameter		WV120
Stroke length (S max), maximum screw lead 5, 10, 20 mm screw lead 40 mm	[mm]	11000 5000
Linear speed, maximum	[m/s]	2,0
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,01
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum screw lead 5, 10, 20 mm screw lead 40 mm	[N]	12000 8000
Dynamic load (F _y), maximum	[N]	0
Dynamic load (F _z), maximum	[N]	0
Dynamic load torque (M _x), maximum	[Nm]	0
Dynamic load torque (M _y), maximum	[Nm]	0
Dynamic load torque (M _z), maximum	[Nm]	0
Drive shaft force (F _{rd}), maximum	[N]	1000
Drive shaft torque (M _{ta}), maximum	[Nm]	80
Ball screw diameter (d ₀)	[mm]	32
Ball screw lead (p)	[mm]	5, 10, 20, 40
Weight of unit with zero stroke of every 100 mm of stroke of each carriage	[kg]	18,10 1,94 4,75

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

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

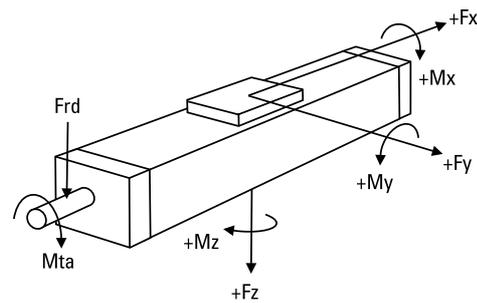
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



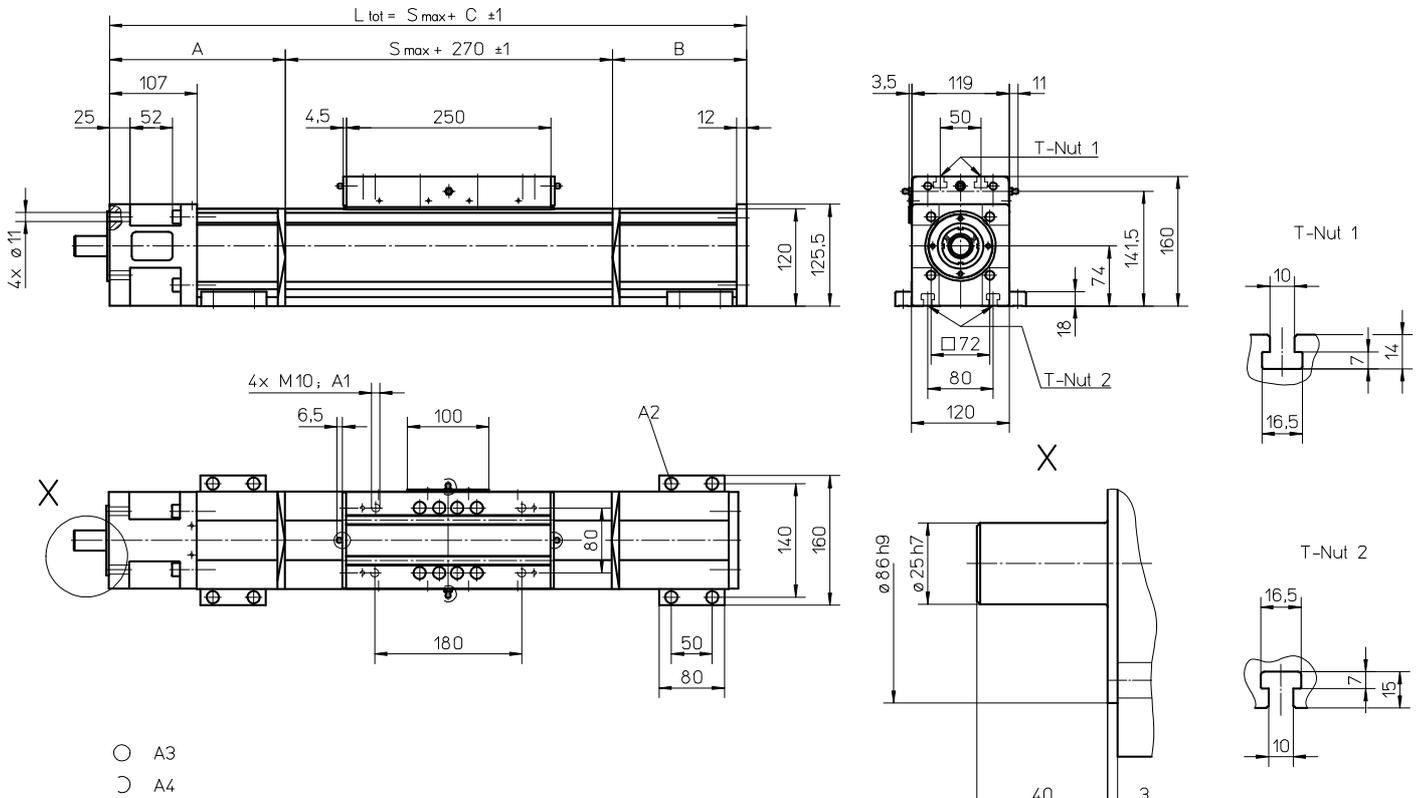
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information. Units with a profile length over 5400 mm consists of two profiles where the joint between the two profiles must be adequately supported on both sides.

Definition of Forces



WV120

Ball Screw Drive, No Guides



- A3
- A4

A1: depth 22
 A2: socket cap screw ISO4762-M8x20 8.8

A3: tapered lubricating nipple to DIN71412 M8x1 on fixed-bearing side as standard feature
 A4: can be changed over to one of the three alternative lubricating points by the customer

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 940	145	50	465
941 - 1860	180	120	570
1861 - 2790	215	155	640
2791 - 3720	250	190	710

Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
3721 - 4650	285	225	780
4651 - 5000	320	255	845
5001 - 11000	contact customer service		

MLSM60D

Ball Screw Drive, Ball Guide

- » Ordering key - see page 184
- » Accessories - see page 125
- » Additional data - see page 171

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

Performance Specifications

Parameter		MLSM60D
Stroke length (S max), maximum	[mm]	5500
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	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 ¹ / 55090 ²
Dynamic load (F _z), maximum	[N]	6000 ¹ / 55090 ²
Dynamic load torque (M _x), maximum	[Nm]	400 ¹ / 2890 ²
Dynamic load torque (M _y), maximum	[Nm]	460 ¹ / 4490 ²
Dynamic load torque (M _z), maximum	[Nm]	460 ¹ / 4490 ²
Drive shaft force (F _{rd}), maximum	[N]	350
Drive shaft torque (M _{ta}), maximum	[Nm]	60
Ball screw diameter (d ₀)	[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

¹ Value for the complete unit

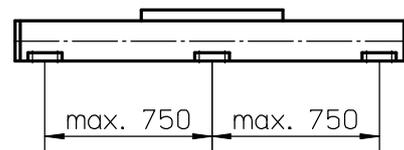
² Value for the ball guide only

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

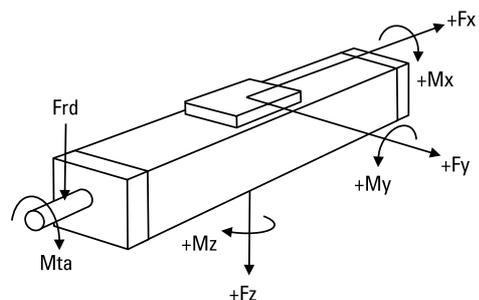
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



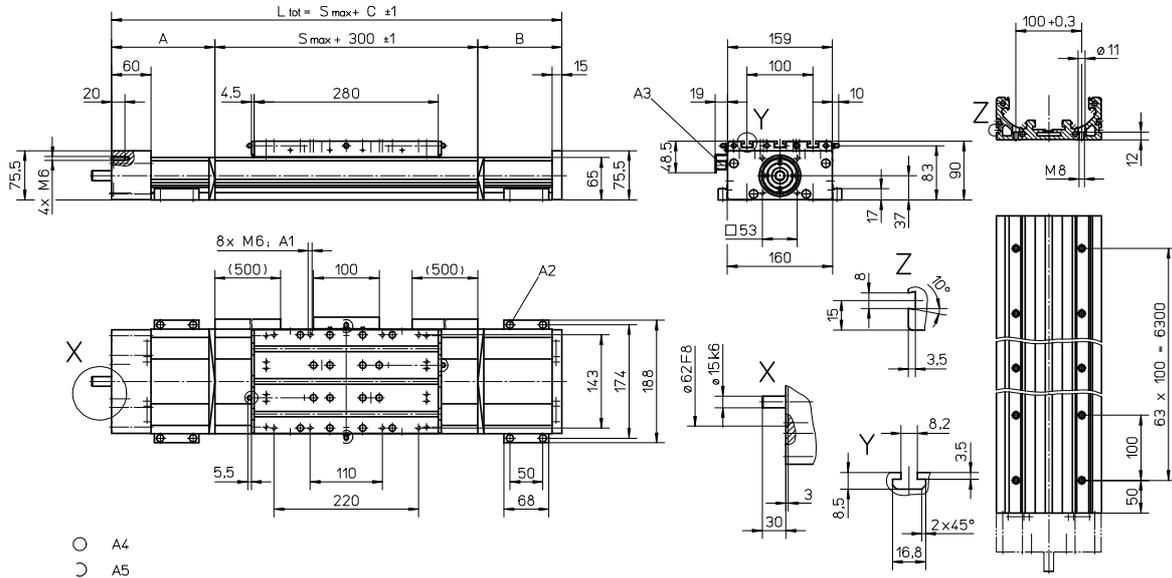
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Definition of Forces



MLSM60D

Ball Screw Drive, Ball Guide



A1: depth 10
 A2: socket cap screw ISO4762-M6x20 8.8
 A3: ENF inductive sensor rail option kit (optional)

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

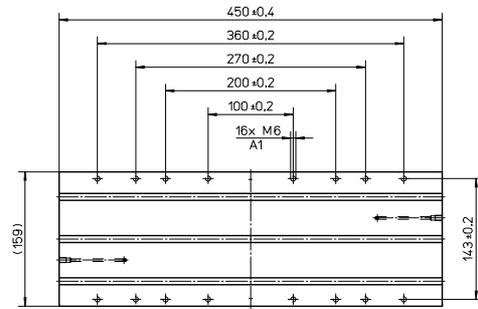
Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 750 (0 - 580)	90	45	435 (605)
751 - 1220 (581 - 1050)	105	90	495 (665)
1221 - 1980 (1051 - 1810)	125	110	535 (705)
1981 - 2730 (1811 - 2560)	150	135	585 (765)

Stroke length (S max) [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)

Values between brackets = for units with long carriage

Long Carriage

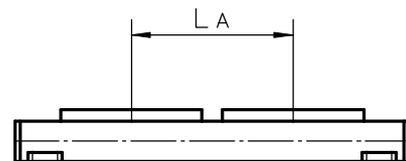
Parameter	MLSM60D
Carriage length [mm]	450
Dynamic load torque (My), maximum [Nm]	940
Dynamic load torque (Mz), maximum [Nm]	940
Weight [kg]	6,5



A1: depth 10

Double Carriages

Parameter	MLSM60D
Minimum distance between carriages (LA) [mm]	320
Dynamic load (Fy), maximum [N]	12000
Dynamic load (Fz), maximum [N]	12000
Dynamic load torque (My), maximum [Nm]	L A' × 6
Dynamic load torque (Mz), maximum [Nm]	L A' × 6
Force required to move second carriage [N]	27
Total length (L tot) [mm]	S max + C + L A



¹ Value in mm

MLSM80D

Ball Screw Drive, Ball Guide

- » Ordering key - see page 184
- » Accessories - see page 125
- » Additional data - see page 171

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

Performance Specifications

Parameter		MLSM80D
Stroke length (S max), maximum	[mm]	5200
Linear speed, maximum	[m/s]	2,0
Acceleration, maximum	[m/s ²]	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 ¹ / 71860 ²
Dynamic load (F _z), maximum	[N]	8000 ¹ / 71860 ²
Dynamic load torque (M _x), maximum	[Nm]	780 ¹ / 5890 ²
Dynamic load torque (M _y), maximum	[Nm]	900 ¹ / 6640 ²
Dynamic load torque (M _z), maximum	[Nm]	900 ¹ / 6640 ²
Drive shaft force (F _{rd}), maximum	[N]	700
Drive shaft torque (M _{ta}), maximum	[Nm]	85
Ball screw diameter (d ₀)	[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

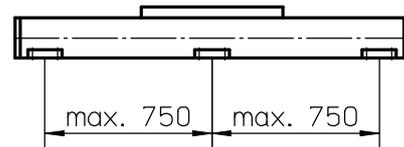
¹ Value for the complete unit
² Value for the ball guide only

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

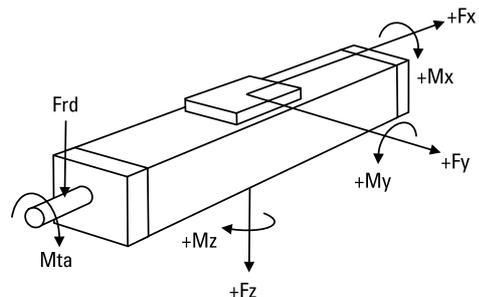
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



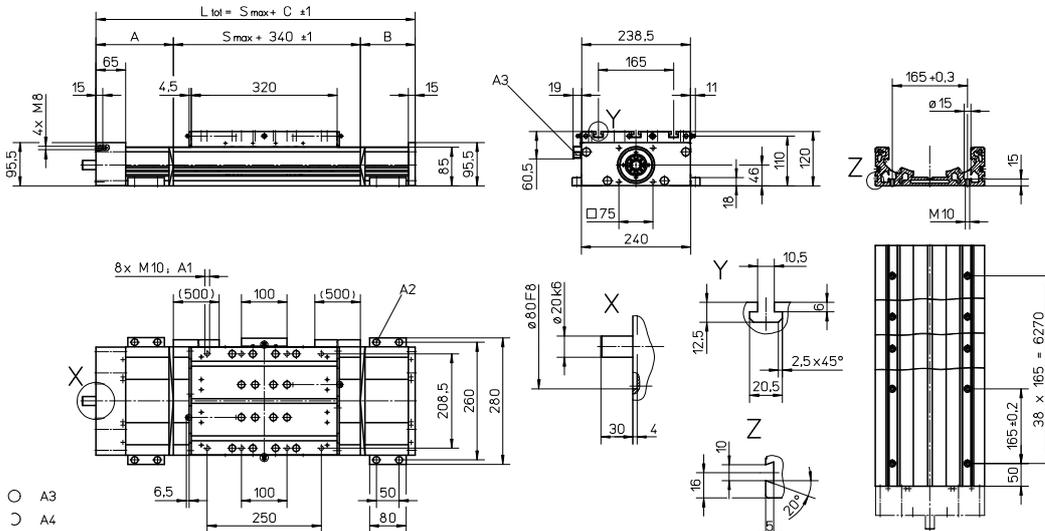
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Definition of Forces



MLSM80D

Ball Screw Drive, Ball Guide



- A1: depth 15
- A2: socket cap screw ISO4762-M8x20 8.8
- A3: ENF inductive sensor rail option kit (optional)

- 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

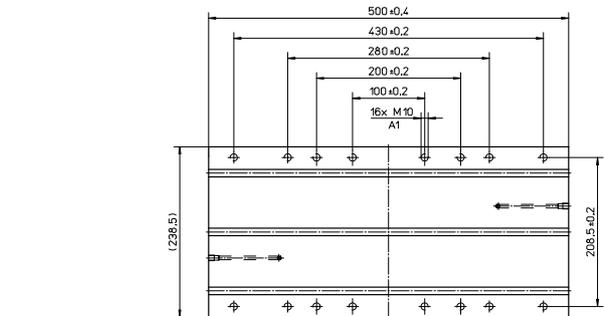
Stroke length (S max) [mm]	A [mm]	B [mm]	C [mm]
0 - 750 (0 - 570)	100	90	530 (710)
751 - 1140 (571 - 960)	130	120	590 (770)
1141 - 1880 (961 - 1700)	160	150	650 (830)
1881 - 2620 (1701 - 2440)	190	180	710 (890)

Stroke length (S max) [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

Long Carriage

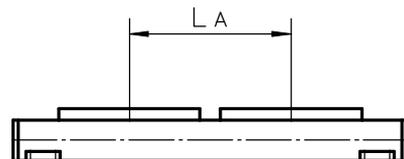
Parameter	MLSM80D	
Carriage length	[mm]	500
Dynamic load torque (My), maximum	[Nm]	1750
Dynamic load torque (Mz), maximum	[Nm]	1750
Weight	[kg]	16



A1: depth 15

Double Carriages

Parameter	MLSM80D	
Minimum distance between carriages (L A)	[mm]	400
Dynamic load (Fy), maximum	[N]	16000
Dynamic load (Fz), maximum	[N]	16000
Dynamic load torque (My), maximum	[Nm]	L A ¹ × 8
Dynamic load torque (Mz), maximum	[Nm]	L A ¹ × 8
Force required to move second carriage	[N]	35
Total length (L tot)	[mm]	S max + C + L A

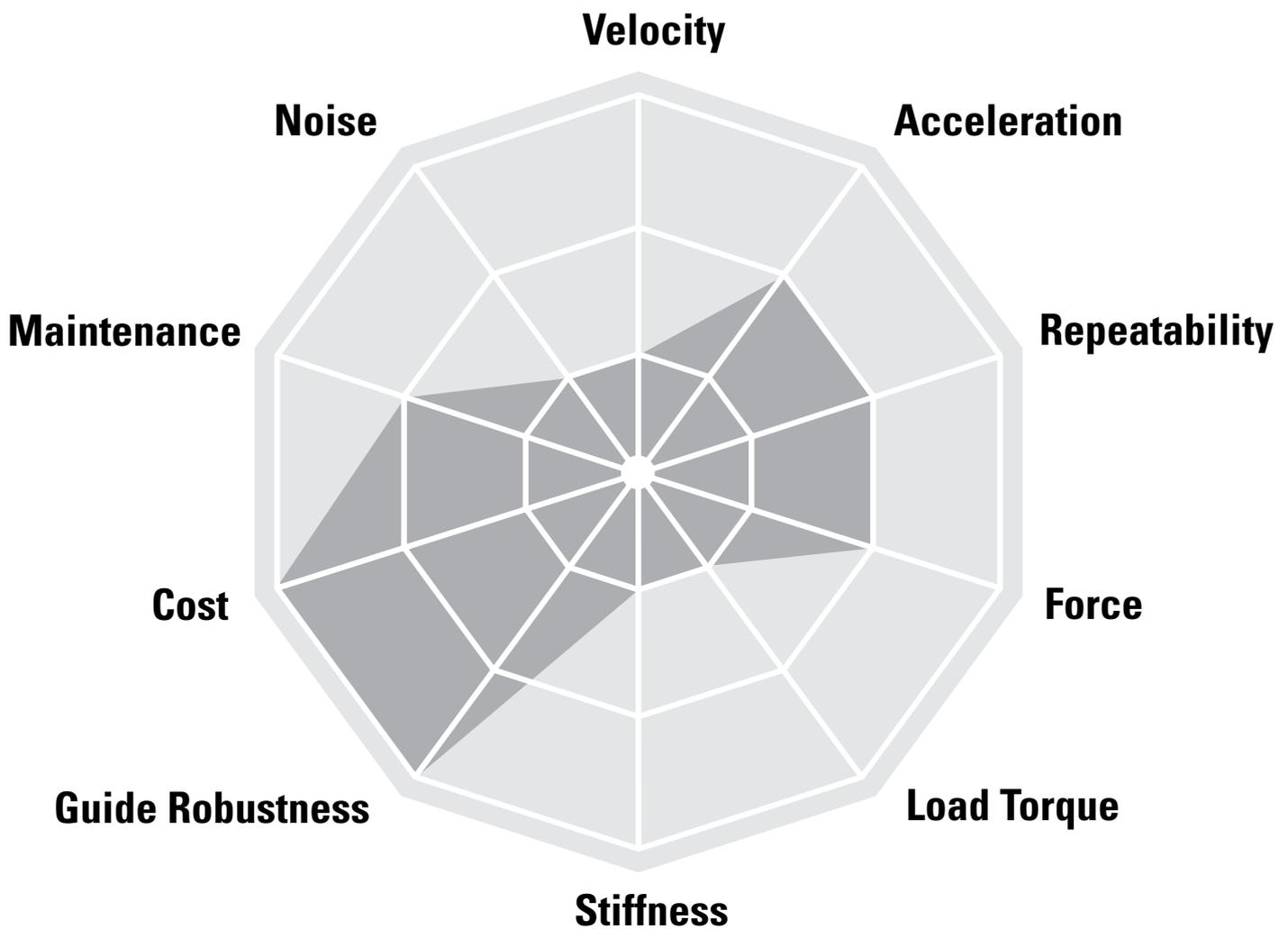


¹ Value in mm



Linear Motion Systems with Ball Screw Drive and Slide Guide

BaseLine, Movopart



Typical Applications

Typical applications are where low to medium loads need to be moved at low to medium speed. These units are also suited for harsh environments. Typical examples are all types of machines in the food, chemical, paper and wood working industry. Materials handling is another area where these units are ideal.

Linear Motion Systems with Ball Screw Drive and Slide Guide

Overview

BaseLine WB



Features

- Can be installed in all directions
- Plastic cover band
- Robust external slide guides
- Ball screw or lead screw drive

Parameter		WB40	WB60
Profile size (width × height)	[mm]	40 × 37	60 × 59
Stroke length (S max), maximum	[mm]	1000	5200
Linear speed, maximum	[m/s]	0,25	1,0
Dynamic carriage load (Fz), maximum	[N]	250	650
Remarks		ball screw or lead screw drive	ball screw or lead screw drive
Page		42	44

Movopart M



Features

- Can be installed in all directions
- 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 (S max), 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 or composite nut	single ball nut or composite nut	single ball nut or composite nut
Page		46	48	50

Linear Motion Systems with Ball Screw Drive and Slide Guide

Overview

Movopart MD



Features

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

Parameter		M75D	M100D
Profile size (width × height)	[mm]	86 × 75	108 × 100
Stroke length (S max), maximum	[mm]	3550	6000
Linear speed, maximum	[m/s]	1,6	1,6
Dynamic carriage load (Fz), maximum	[N]	1485	3005
Remarks		double ball nuts	double ball nuts
Page		52	54

WB-Series Technical Presentation

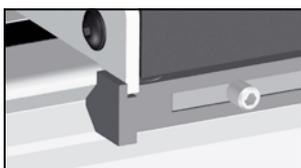
Cover band

The durable plastic cover band protect the interior of the unit from the penetration of dirt, dust and liquids.



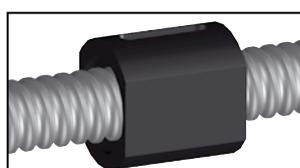
Central lubrication

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



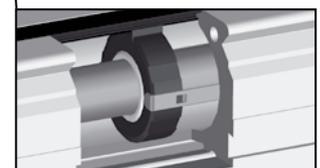
Slide guides

The robust and accurate slide guides can be easily replaced by the user whenever needed.



Drive

Select between the fast high precision ball screw or the robust lead screw with composite nut.



Screw support

The screw support system reduce noise and vibrations and permits high speed at long stroke lengths.

WB40

Ball Screw or Lead Screw Drive, Slide Guide

» Ordering key - see page 185
» Accessories - see page 125
» Additional data - see page 172

General Specifications

Parameter	WB40
Profile size (w × h) [mm]	40 × 37
Type of screw	ball or lead screw with single nut
Carriage sealing system	plastic cover band
Screw supports	none
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

Performance Specifications

Parameter	WB40
Stroke length (S max), maximum [mm]	1000
Linear speed, maximum [m/s]	0,25
Acceleration, maximum [m/s ²]	5
Repeatability [± mm]	0,05
Input speed, maximum [rpm]	
Ball screw units	3000
Lead screw units with composite nut	1500
Operation temperature limits [°C]	0 – 80
Dynamic load (F _x), maximum ball screw units / lead screw units [N]	200 / 500
Dynamic load (F _y), maximum [N]	200 ¹
Dynamic load (F _z), maximum [N]	250 ¹
Dynamic load torque (M _x), maximum [Nm]	6 ¹
Dynamic load torque (M _y), maximum [Nm]	15 ¹
Dynamic load torque (M _z), maximum [Nm]	10 ¹
Drive shaft force (F _{rd}), maximum [N]	80
Drive shaft torque (M _{ta}), maximum [Nm]	1
Screw diameter (d ₀) [mm]	12
Screw lead (p) ball screw units / lead screw units [mm]	5 / 4, 8
Weight [kg]	
of unit with zero stroke	1,07
of every 100 mm of stroke	0,30
of each carriage	0,45

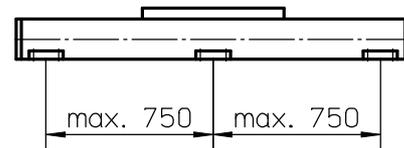
¹ Value for the complete unit

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

Input speed [rpm]	Screw lead [mm]		
	p = 4	p = 5	p = 8
150	-	0,02	-
1500	-	0,35	-
3000	-	0,50	-

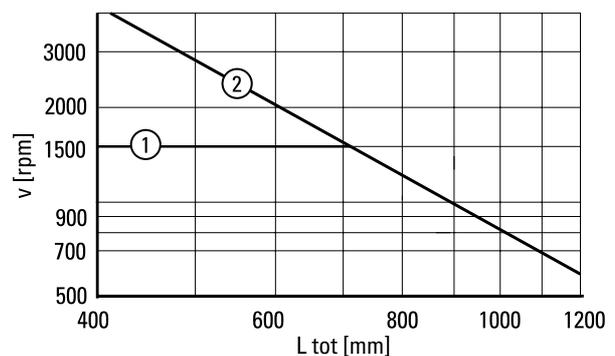
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



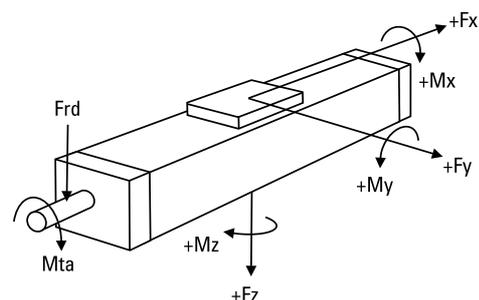
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Critical Speed



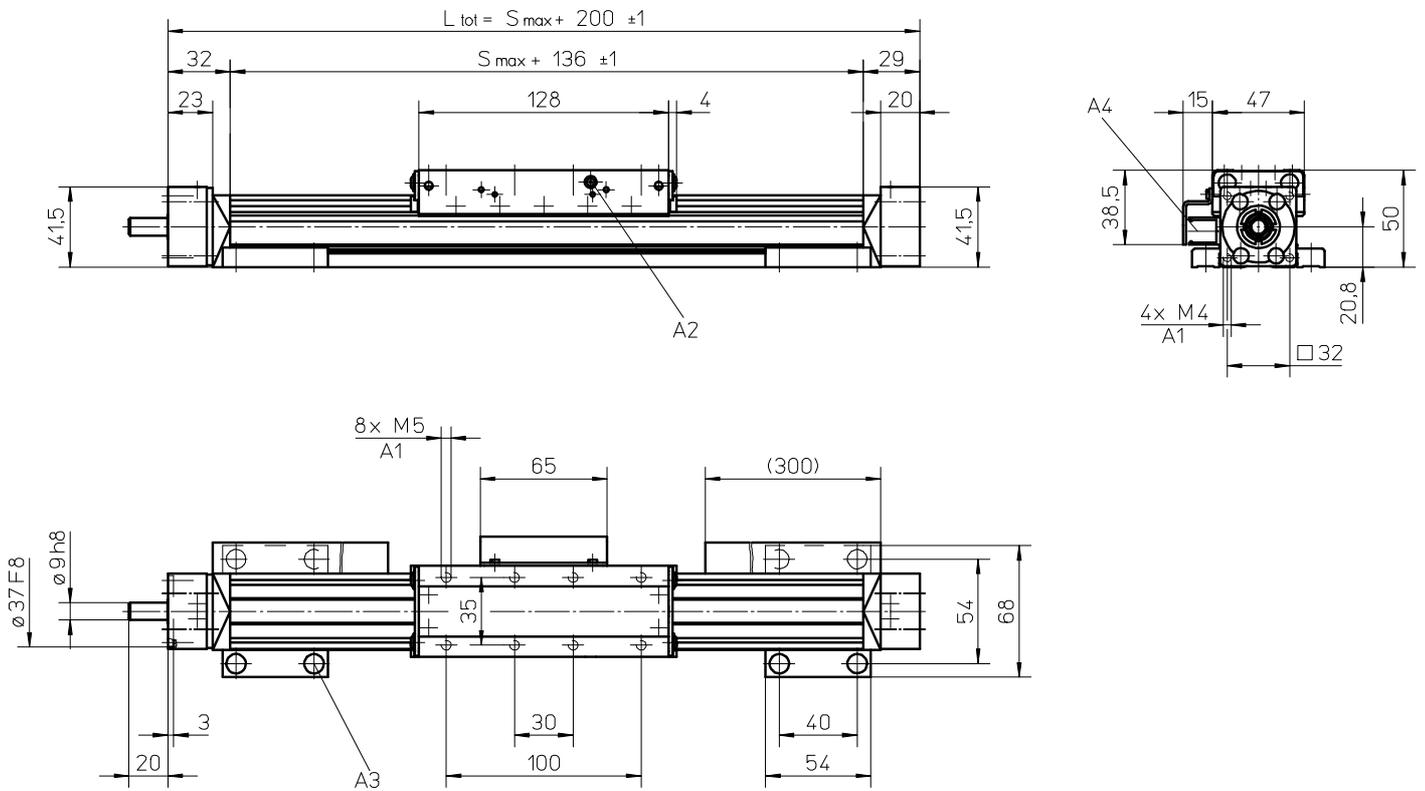
1: For lead screw units
2: For ball screw units

Definition of Forces



WB40

Ball Screw or Lead Screw Drive, Slide Guide



A1: depth 10
 A2: lubricating nipple DIN3405 D 1/A

A3: socket cap screw ISO4762-M5x20 8.8
 A4: ENF inductive sensor rail option kit (optional)

WB60

Ball Screw or Lead Screw Drive, Slide Guide

» Ordering key - see page 185
» Accessories - see page 125
» Additional data - see page 172

General Specifications

Parameter	WB60
Profile size (w × h) [mm]	60 × 59
Type of screw	ball or lead screw with single nut
Carriage sealing system	plastic cover band
Screw supports	number of screw supports to be specified by customer at order
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

Performance Specifications

Parameter	WB60
Stroke length (S max), maximum [mm]	5200
Linear speed, maximum [m/s]	1,0
Acceleration, maximum [m/s ²]	5
Repeatability [± mm]	0,05
Input speed, maximum [rpm]	
Ball screw units	3000
Lead screw units with composite nut	1500
Operation temperature limits [°C]	0 – 80
Dynamic load (F _x), maximum ball screw units / lead screw units [N]	2500 / 2500
Dynamic load (F _y), maximum [N]	500 ¹
Dynamic load (F _z), maximum [N]	650 ¹
Dynamic load torque (M _x), maximum [Nm]	30 ¹
Dynamic load torque (M _y), maximum [Nm]	70 ¹
Dynamic load torque (M _z), maximum [Nm]	50 ¹
Drive shaft force (F _{rd}), maximum [N]	150
Drive shaft torque (M _{ta}), maximum [Nm]	17
Screw diameter (d ₀) [mm]	20
Screw lead (p) ball screw units / lead screw units [mm]	5, 20 / 8
Weight [kg]	
of unit with zero stroke	3,63
of every 100 mm of stroke	0,72
of each carriage	1,17

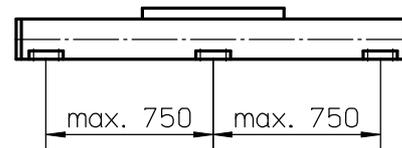
¹ Value for the complete unit

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

Input speed [rpm]	Screw lead [mm]		
	p = 5	p = 8	p = 20
150	0,5	-	0,7
1500	1,0	-	1,35
3000	1,5	-	1,8

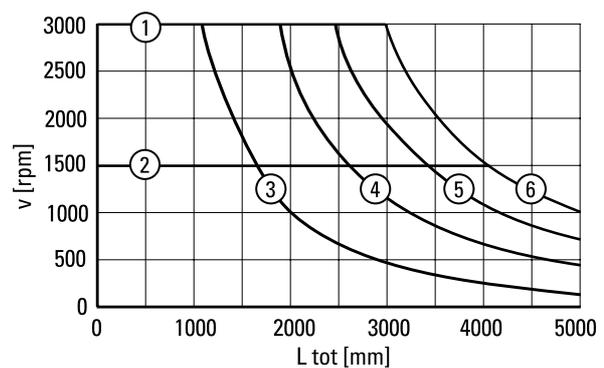
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile



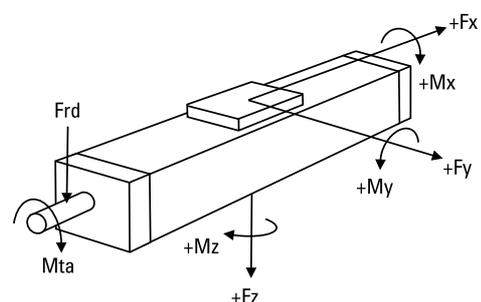
A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Critical Speed



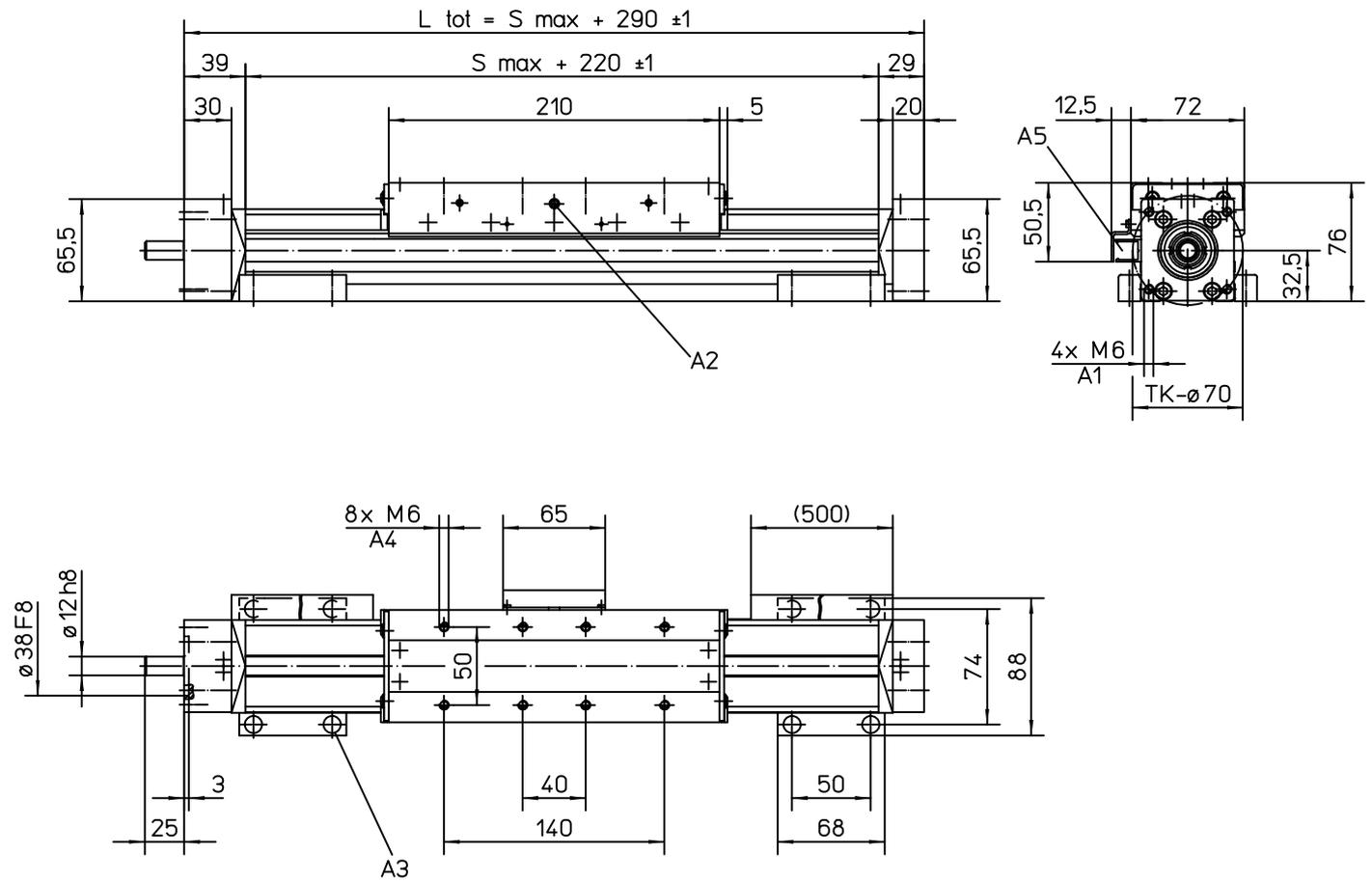
- 1: Max. input speed for ball screw units
- 2: Max. input speed for lead screw units
- 3: No screw supports required
- 4: One pair of screw supports required
- 5: Two pairs of screw supports required
- 6: Three pairs of screw supports required

Definition of Forces



WB60

Ball Screw or Lead Screw Drive, Slide Guide



A1: depth 12
 A2: lubricating nipple DIN3405 D 1/A
 A3: socket cap screw ISO4762-M6x20 8.8

A4: depth 10
 A5: ENF inductive sensor rail option kit (optional)

M55

Ball Screw Drive, Slide Guide

» Ordering key - see page 186
» Accessories - see page 125
» Additional data - see page 172

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

Parameter		M55
Stroke length (S max), maximum	[mm]	3000
Linear speed, maximum	[m/s]	1,0
Acceleration, maximum	[m/s ²]	8
Repeatability	[± mm]	0,05
Input speed, maximum ball nut units / composite nut units	[rpm]	3000 / 1500
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum ball nut units / composite nut units	[N]	1000 / 500
Dynamic load (Fy), maximum	[N]	400 ¹
Dynamic load (Fz), maximum	[N]	400 ¹
Dynamic load torque (Mx), maximum	[Nm]	9 ¹
Dynamic load torque (My), maximum	[Nm]	23 ¹
Dynamic load torque (Mz), maximum	[Nm]	23 ¹
Drive shaft force (Frd), maximum	[N]	200
Drive shaft torque (Mta), maximum	[Nm]	12
Screw diameter (d0)	[mm]	16
Screw lead (p) ball nut units / composite nut units	[mm]	5, 5,08, 10, 20 / 32
Weight of unit with zero stroke of every 100 mm of stroke of carriage of option single screw support of option double screw supports	[kg]	3,06 0,44 1,20 0,83 1,88

¹ Value for the complete unit

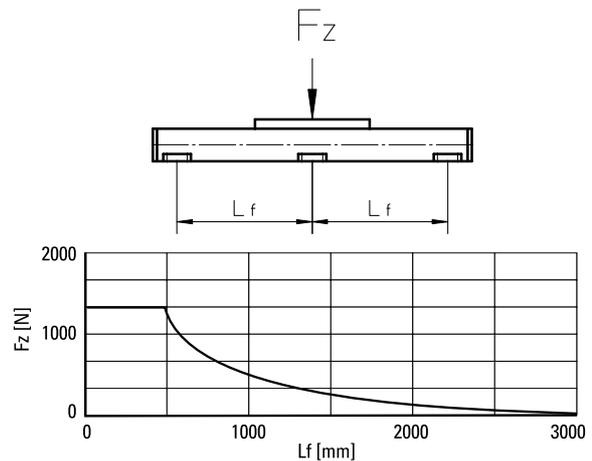
Carriage Idle Torque (M_{idle}) [Nm]

Input speed [rpm]	Screw lead [mm]				
	p = 5	p = 5,08	p = 10	p = 20	p = 32 ¹
500 - no screw supports	0,10	0,10	0,15	0,30	0,80
500 - with screw supports	0,13	0,13	0,27	0,45	1,00

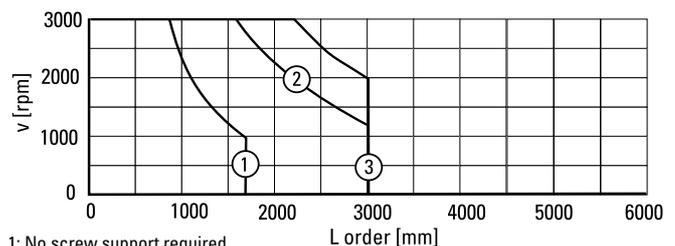
¹ Value for composite nut.

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

Deflection of the Profile

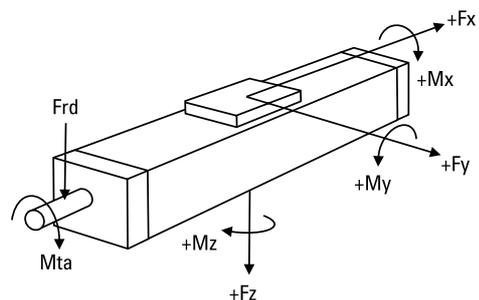


Critical Speed



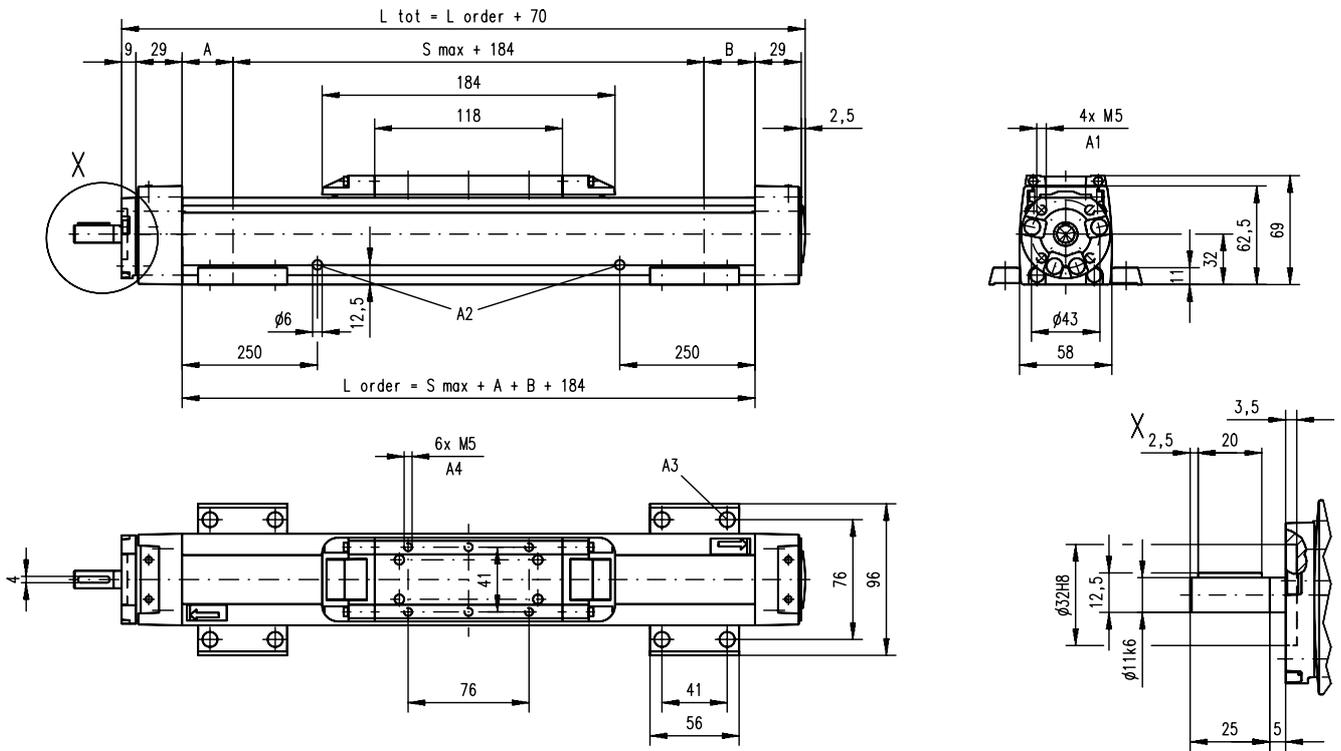
- 1: No screw support required
- 2: Single screw support required
- 3: Double screw supports required

Definition of Forces



M55

Ball Screw Drive, Slide Guide



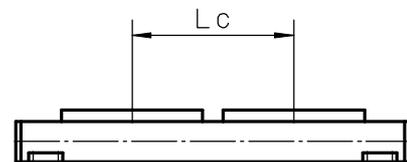
A1: depth 7,5, Heli coil
A2: lubrication holes

A3: $\varnothing 9,5/\varnothing 5,5$ for socket head cap screw M5
A4: depth 7,5, Heli coil

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	$L_{order} = S_{max} + A + B + 184$	$L_{tot} = L_{order} + 70$

Double Carriages

Parameter	M55	
Minimum distance between carriages (Lc) [mm]	[mm]	200
Dynamic load (Fy), maximum [N]	[N]	600
Dynamic load (Fz), maximum [N]	[N]	600
Dynamic load torque (My), maximum [Nm]	[Nm]	$L_c^1 \times 0,3$
Dynamic load torque (Mz), maximum [Nm]	[Nm]	$L_c^1 \times 0,3$
Force required to move second carriage [N]	[N]	35
Weight of unit with zero stroke of carriages [kg]	[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	$L_{order} = S_{max} + A + B + L_c + 184$	$L_{tot} = L_{order} + 70$

¹ Value in mm

M75

Ball Screw Drive, Slide Guide

» Ordering key - see page 186
» Accessories - see page 125
» Additional data - see page 172

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

Parameter		M75
Stroke length (S max), maximum	[mm]	4000
Linear speed, maximum	[m/s]	1,6
Acceleration, maximum	[m/s ²]	8
Repeatability	[± mm]	0,05
Input speed, maximum ball nut units / composite nut units	[rpm]	5000 / 1500
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum ball nut units / composite nut units	[N]	2500 / 1250
Dynamic load (Fy), maximum	[N]	1485 ¹
Dynamic load (Fz), maximum	[N]	1485 ¹
Dynamic load torque (Mx), maximum	[Nm]	49 ¹
Dynamic load torque (My), maximum	[Nm]	85 ¹
Dynamic load torque (Mz), maximum	[Nm]	85 ¹
Drive shaft force (Frd), maximum	[N]	600
Drive shaft torque (Mta), maximum	[Nm]	30
Screw diameter (d ₀)	[mm]	20
Screw lead (p) ball nut units / composite nut units	[mm]	5, 12,7, 20 / 5
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

¹ Value for the complete unit

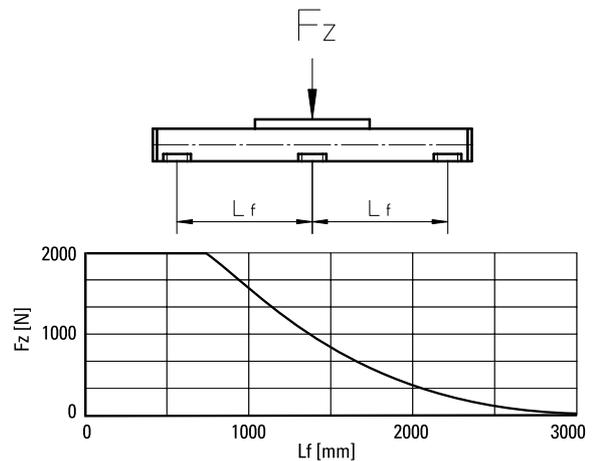
Carriage Idle Torque (M_{idle}) [Nm]

Input speed [rpm]	Screw lead [mm]			
	p = 5	p = 5 ¹	p = 12,7	p = 20
500 - no screw supports	0,10	0,20	0,24	0,37
500 - with screw supports	0,15	0,50	0,39	0,57

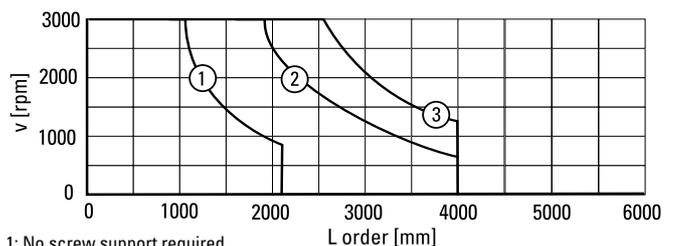
¹ Value for composite nut.

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

Deflection of the Profile



Critical Speed

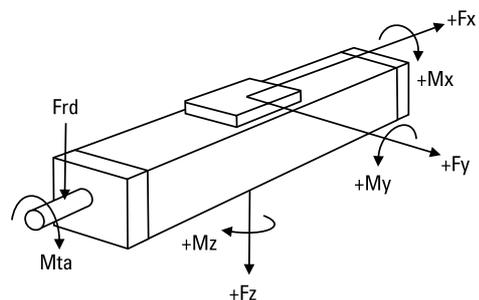


1: No screw support required

2: Single screw support required

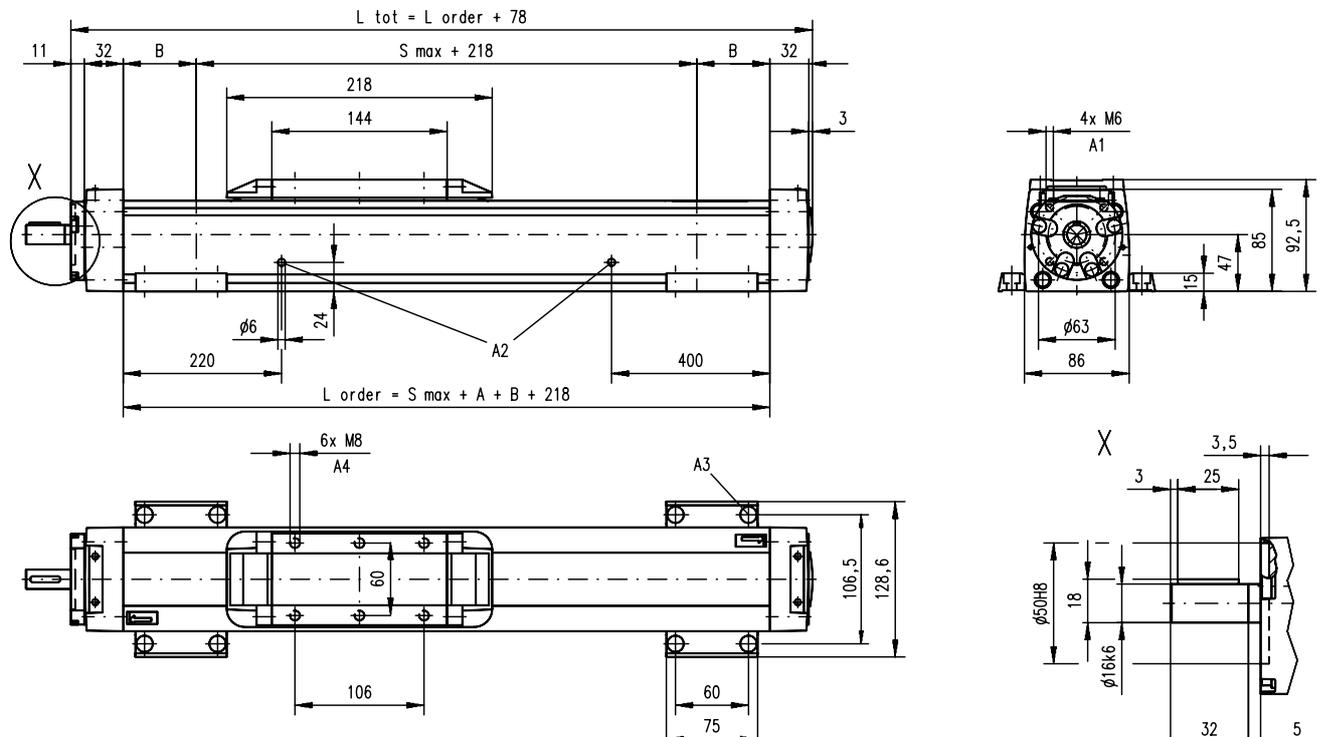
3: Double screw supports required

Definition of Forces



M75

Ball Screw Drive, Slide Guide



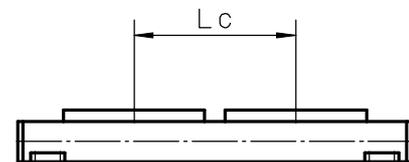
A1: depth 9, Heli coil
A2: lubrication holes

A3: ø13,5/ø8,5 for socket head cap screw M8
A4: depth 8, Heli coil

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	$L_{order} = S_{max} + A + B + 218$	$L_{tot} = L_{order} + 78$

Double Carriages

Parameter		M75
Minimum distance between carriages (Lc)	[mm]	250
Dynamic load (Fy), maximum	[N]	2227
Dynamic load (Fz), maximum	[N]	2227
Dynamic load torque (My), maximum	[Nm]	$L_c^1 \times 1,114$
Dynamic load torque (Mz), 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	$L_{order} = S_{max} + A + B + L_c + 218$	$L_{tot} = L_{order} + 78$

¹ Value in mm

M100

Ball Screw Drive, Slide Guide

» Ordering key - see page 186
» Accessories - see page 125
» Additional data - see page 172

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

Parameter		M100
Stroke length (S max), maximum	[mm]	6000
Linear speed, maximum	[m/s]	1,6
Acceleration, maximum	[m/s ²]	8
Repeatability	[± mm]	0,05
Input speed, maximum ball nut units / composite nut units	[rpm]	4000 / 1500
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum ball nut units / composite nut units	[N]	5000 / 2000
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 (d ₀)	[mm]	25
Screw lead (p) ball nut units / composite nut units	[mm]	5, 10, 25 / 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

¹ Value for the complete unit

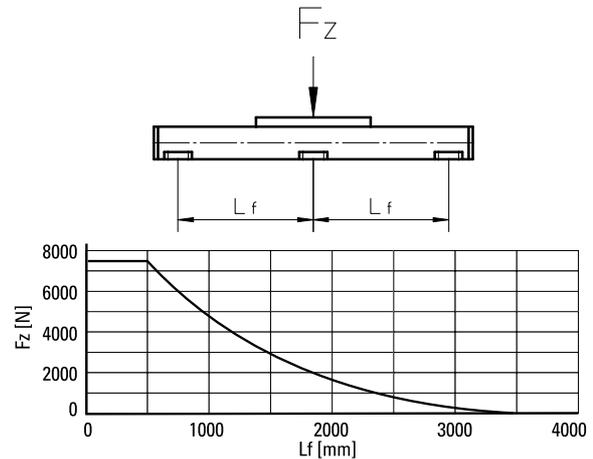
Carriage Idle Torque (M_{idle}) [Nm]

Input speed [rpm]	Screw lead [mm]				
	p = 5	p = 10	p = 10 ¹	p = 25	p = 25 ¹
500 - no screw supports	0,15	0,25	0,50	0,55	1,00
500 - with screw supports	0,25	0,40	0,80	0,85	1,30

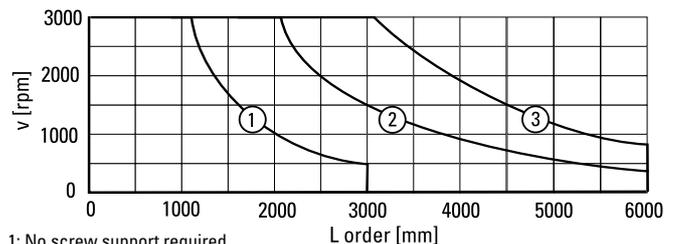
¹ Value for composite nut.

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

Deflection of the Profile



Critical Speed

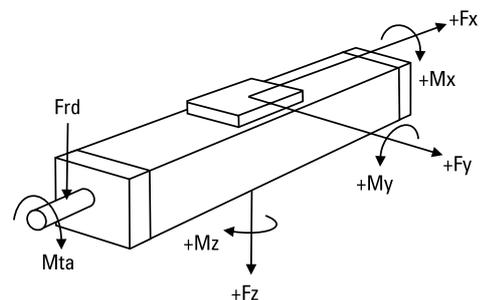


1: No screw support required

2: Single screw support required

3: Double screw supports required

Definition of Forces



M75D

Ball Screw Drive, Slide Guide, Double Ball Nuts

» Ordering key - see page 187
» Accessories - see page 125
» Additional data - see page 172

General Specifications

Parameter	M75D
Profile size (w × h) [mm]	86 × 75
Type of screw	ball screw with double 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

Parameter		M75D
Stroke length (S max), maximum	[mm]	3550
Linear speed, maximum	[m/s]	1,6
Acceleration, maximum	[m/s ²]	8
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	5000
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	2500 ¹
Dynamic load (Fy), maximum	[N]	1485 ¹
Dynamic load (Fz), maximum	[N]	1485 ¹
Dynamic load torque (Mx), maximum	[Nm]	49 ¹
Dynamic load torque (My), maximum	[Nm]	85 ¹
Dynamic load torque (Mz), maximum	[Nm]	85 ¹
Drive shaft force (Frd), maximum	[N]	600
Drive shaft torque (Mta), maximum	[Nm]	30
Screw diameter (d ₀)	[mm]	20
Screw lead (p)	[mm]	5, 20
Weight	[kg]	
of unit with zero stroke		6,57
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

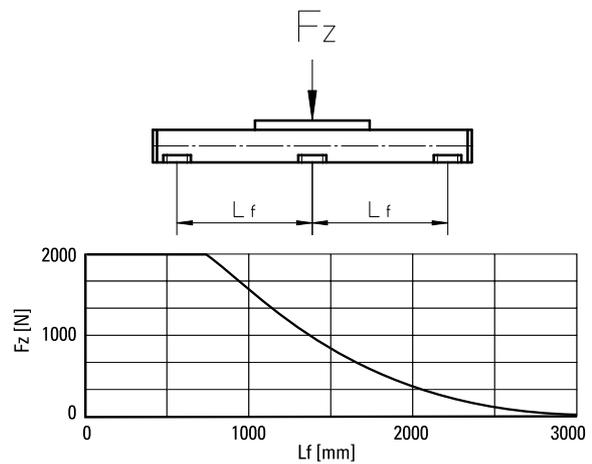
¹ Value for the complete unit

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

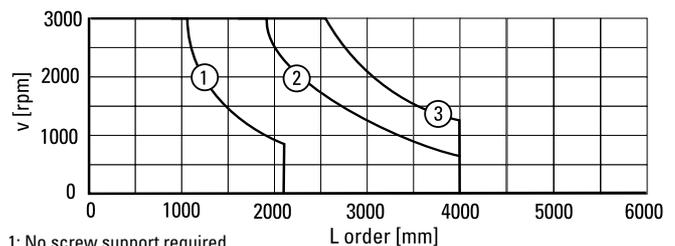
Input speed [rpm]	Screw lead [mm]	
	p = 5	p = 20
500 - no screw supports	0,15	0,5
500 - with screw supports	0,2	0,8

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

Deflection of the Profile

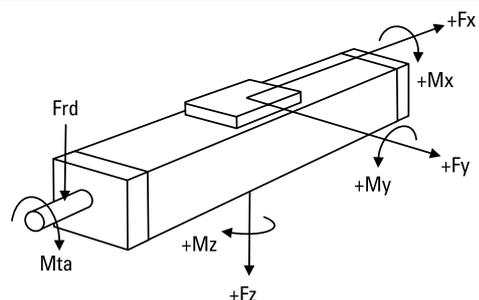


Critical Speed



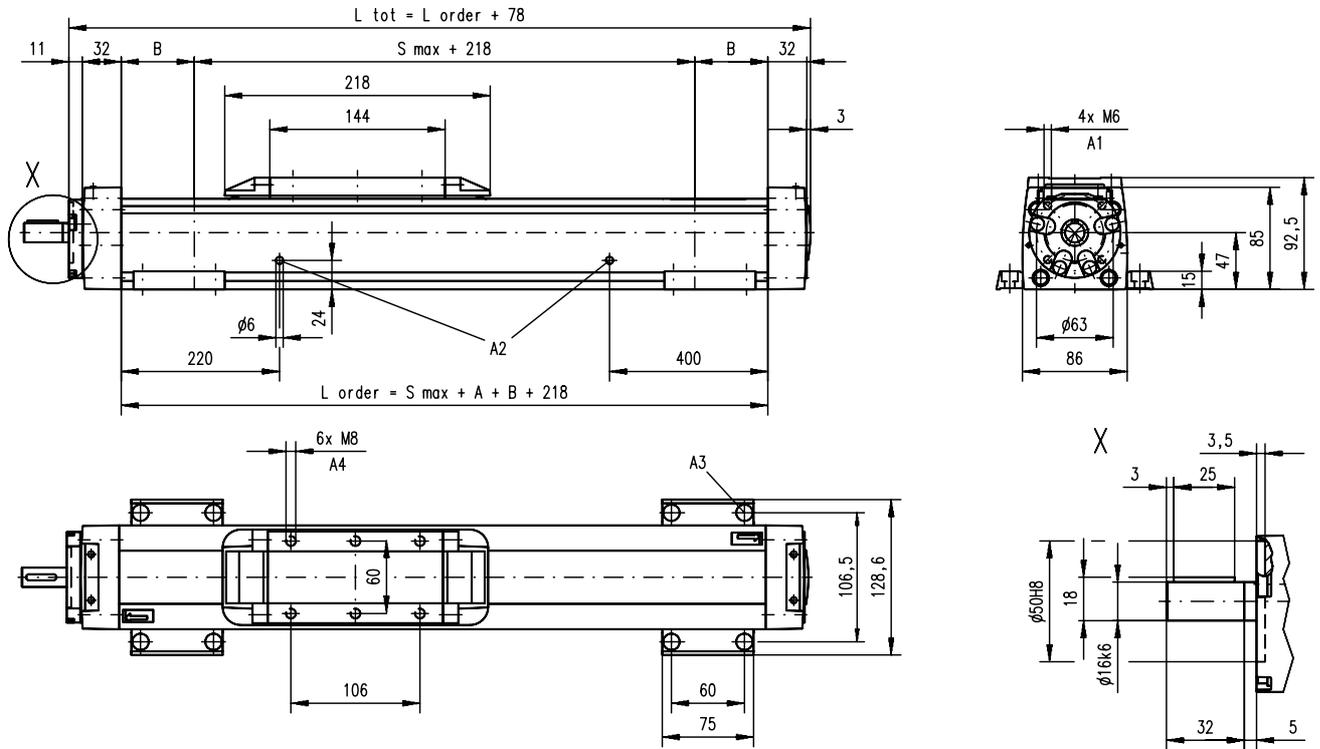
1: No screw support required
2: Single screw support required
3: Double screw supports required

Definition of Forces



M75D

Ball Screw Drive, Slide Guide, Double Ball Nuts



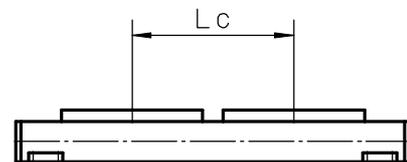
A1: depth 9, Heli coil
A2: lubrication holes

A3: ø13,5/ø8,5 for socket head cap screw M8
A4: depth 8, Heli coil

Screw support configuration	A [mm]	B [mm]	Ordering length (L order) [mm]	Total length (L tot) [mm]
No screw support	5	76	$L_{order} = S_{max} + A + B + 218$	$L_{tot} = L_{order} + 78$
Single screw support	60	151	$L_{order} = S_{max} + A + B + 218$	$L_{tot} = L_{order} + 78$
Double screw supports	126	216	$L_{order} = S_{max} + A + B + 218$	$L_{tot} = L_{order} + 78$

Double Carriages

Parameter	M75D
Minimum distance between carriages (Lc) [mm]	250
Dynamic load (Fy), maximum [N]	2227
Dynamic load (Fz), maximum [N]	2227
Dynamic load torque (My), maximum [Nm]	$L_c \times 1,114$
Dynamic load torque (Mz), maximum [Nm]	$L_c \times 1,114$
Force required to move second carriage [N]	40
Weight of unit with zero stroke of carriages [kg]	10,32 3,40



Screw support configuration	A [mm]	B [mm]	Ordering length (L order) [mm]	Total length (L tot) [mm]
No screw support	5	76	$L_{order} = S_{max} + A + B + L_c + 218$	$L_{tot} = L_{order} + 78$
Single screw support	60	151	$L_{order} = S_{max} + A + B + L_c + 218$	$L_{tot} = L_{order} + 78$
Double screw supports	126	216	$L_{order} = S_{max} + A + B + L_c + 218$	$L_{tot} = L_{order} + 78$

¹ Value in mm

M100D

Ball Screw Drive, Slide Guide, Double Ball Nuts

» Ordering key - see page 187
» Accessories - see page 125
» Additional data - see page 172

General Specifications

Parameter	M100D
Profile size (w × h) [mm]	108 × 100
Type of screw	ball screw with double 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

Parameter		M100D
Stroke length (S max), maximum	[mm]	6000
Linear speed, maximum	[m/s]	1,6
Acceleration, maximum	[m/s ²]	8
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	4000
Operation temperature limits	[°C]	-20 – 70
Dynamic load (F _x), maximum	[N]	5000
Dynamic load (F _y), maximum	[N]	3005 ¹
Dynamic load (F _z), maximum	[N]	3005 ¹
Dynamic load torque (M _x), maximum	[Nm]	117 ¹
Dynamic load torque (M _y), maximum	[Nm]	279 ¹
Dynamic load torque (M _z), maximum	[Nm]	279 ¹
Drive shaft force (F _{rd}), maximum	[N]	100
Drive shaft torque (M _{ta}), maximum	[Nm]	45
Screw diameter (d ₀)	[mm]	25
Screw lead (p)	[mm]	5, 10, 25
Weight	[kg]	
of unit with zero stroke		13,87
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

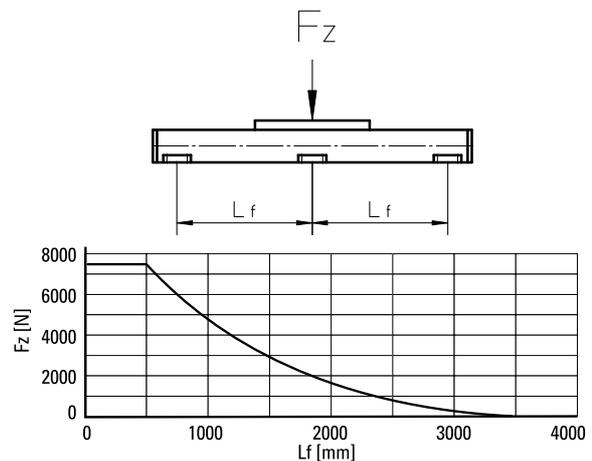
¹ Value for the complete unit

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

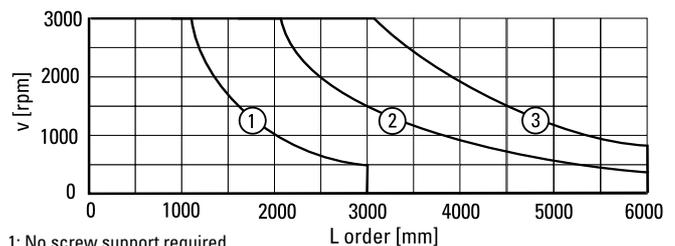
Input speed [rpm]	Screw lead [mm]		
	p = 5	p = 10	p = 25
500 - no screw supports	0,2	0,4	0,8
500 - with screw supports	0,4	0,6	1,3

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

Deflection of the Profile

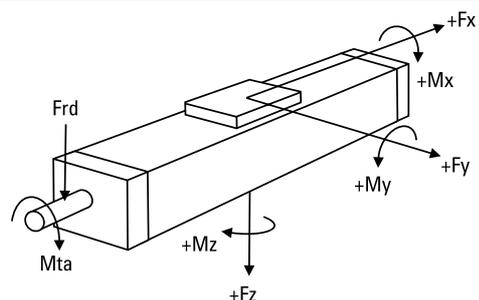


Critical Speed



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

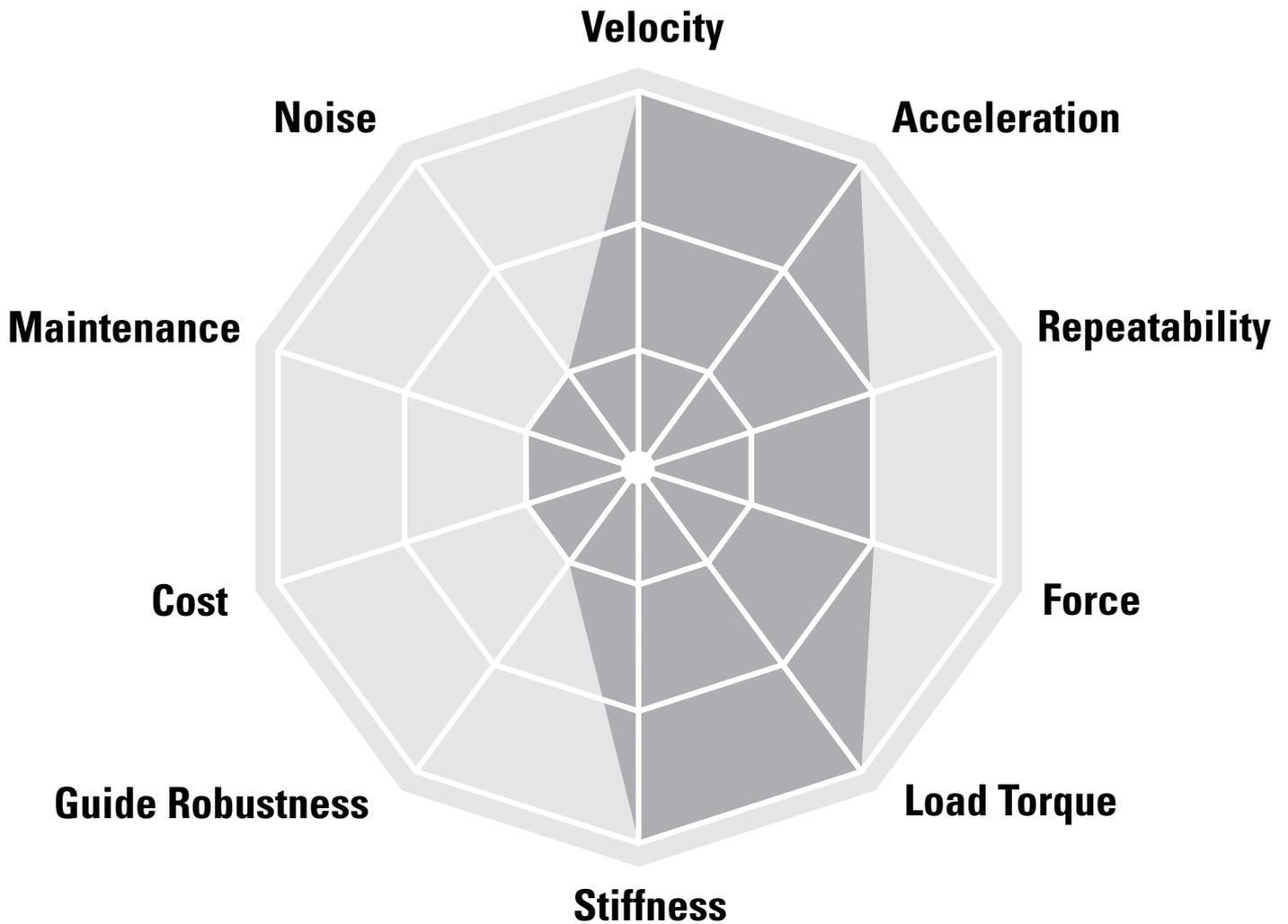
Definition of Forces





Linear Motion Systems with Belt Drive and Ball Guide

SpeedLine, Movopart, ForceLine



Typical Applications

Typical applications are where medium accuracy, speed and load capability is required. Typical examples are cutting, welding, glueing and assembly operations and in materials handling applications such as palletizing and pick and place operations.

Linear Motion Systems with Belt Drive and Ball Guide

Overview

SpeedLine WH



Features

- Can be installed in all directions
- Stroke up to 2 m
- Acceleration up to 40 m/s²
- Compact

Parameter		WH40
Profile size (width × height)	[mm]	40 × 40
Stroke length (S max), maximum	[mm]	2000
Linear speed, maximum	[m/s]	3,0
Dynamic carriage load (Fz), maximum	[N]	600
Remarks		no cover band
Page		60

PowerLine WMZ



Features

- Can be installed in all directions
- Stroke up to 5,5 m
- Speed up to 5 m/s
- Patented plastic cover band

Parameter		WM60Z	WM80Z
Profile size (width × height)	[mm]	60 × 60	80 × 80
Stroke length (S max), maximum	[mm]	4000	5500
Linear speed, maximum	[m/s]	2,5	5,0
Dynamic carriage load (Fz), maximum	[N]	1400	2100
Remarks		-	-
Page		62	64

Movopart M



Features

- Can be installed in all directions
- Self-adjusting stainless steel cover band
- Stroke up to 12 m
- Wash down protected versions available

Parameter		M55	M75	M100
Profile size (width × height)	[mm]	58 × 55	86 × 75	108 × 100
Stroke length (S max), maximum	[mm]	7000	12000	12000
Linear speed, maximum	[m/s]	5,0	5,0	5,0
Dynamic carriage load (Fz), maximum	[N]	750	1750	4000
Remarks		-	-	-
Page		68	70	72

Linear Motion Systems with Belt Drive and Ball Guide

Overview

ForceLine MLSM



Features

- Can be installed in all directions
- Patented plastic cover band
- High load capabilities
- Low profile height

Parameter		MLSM80Z
Profile size (width × height)	[mm]	240 × 85
Stroke length (S max), maximum	[mm]	5900
Linear speed, maximum	[m/s]	5,0
Dynamic carriage load (Fz), maximum	[N]	6400
Remarks		-
Page		74

WMZ-Series Technical Presentation

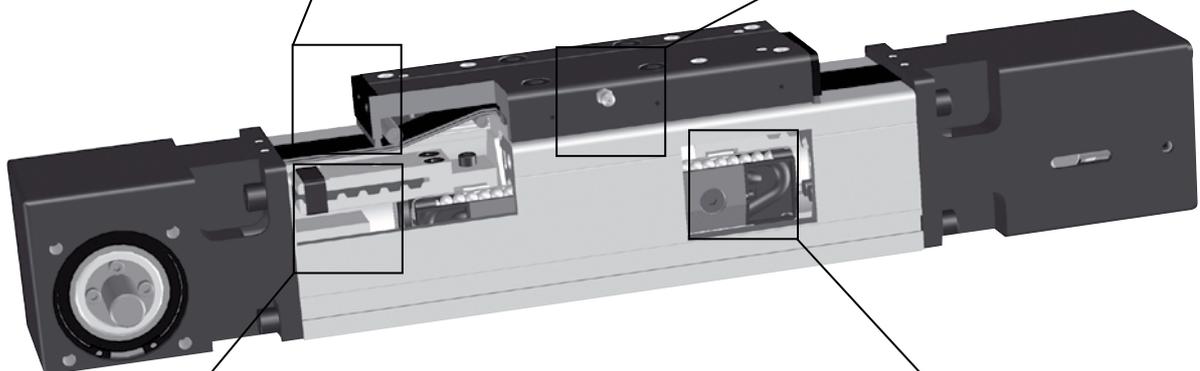
Cover band

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



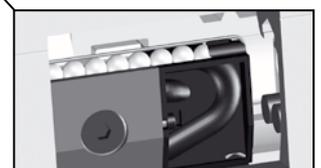
Central lubrication

One central lubrication point on the carriage services the entire unit resulting in a minimum maintenace required.



Belt drive

The belt is protected from the outside ensuring long, accurate and safe operation.



Ball guides

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

WH40

Belt Drive, Ball Guide

- » Ordering key - see page 188
- » Accessories - see page 125
- » Additional data - see page 172

General Specifications

Parameter	WH40
Profile size (w × h) [mm]	40 × 40
Type of belt	10 AT 5
Carriage sealing system	none
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

Performance Specifications

Parameter		WH40
Stroke length (S max), maximum	[mm]	2000
Linear speed, maximum	[m/s]	3,0
Acceleration, maximum	[m/s ²]	40
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	1800
Operation temperature limits	[°C]	0 – 80
Dynamic load (F _x), maximum	[N]	315 ¹
Dynamic load (F _y), maximum	[N]	450 ¹ / 5300 ²
Dynamic load (F _z), maximum	[N]	600 ¹ / 6790 ²
Dynamic load torque (M _x), maximum	[Nm]	10 ¹ / 32 ²
Dynamic load torque (M _y), maximum	[Nm]	30 ¹ / 190 ²
Dynamic load torque (M _z), maximum	[Nm]	30 ¹ / 190 ²
Drive shaft force (F _{rd}), maximum	[N]	100
Drive shaft torque (M _{ta}), maximum	[Nm]	6
Pulley diameter	[mm]	31,83
Stroke per shaft revolution	[mm]	100
Weight	[kg]	
of unit with zero stroke		1,19
of every 100 mm of stroke		0,15
of each carriage		0,28

¹ Value for the complete unit, also see diagram Force F_x

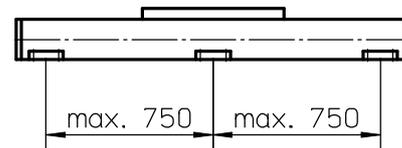
² Value for the ball guide only

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

Input speed [rpm]	Idle torque [Nm]
150	0,1
900	0,3
1800	0,6

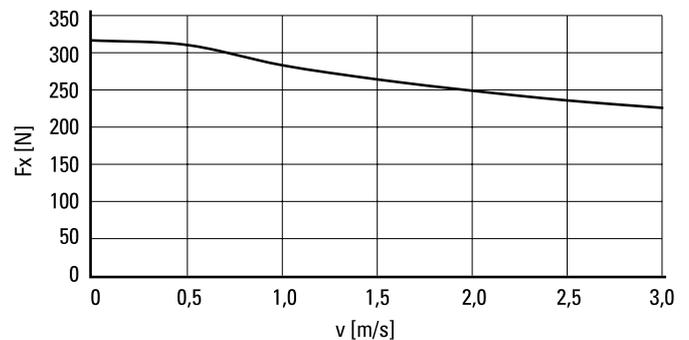
M_{idle} = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

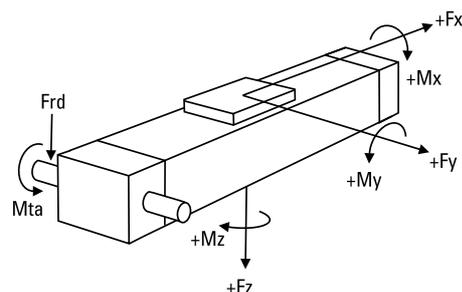


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Force F_x as a Function of the Speed

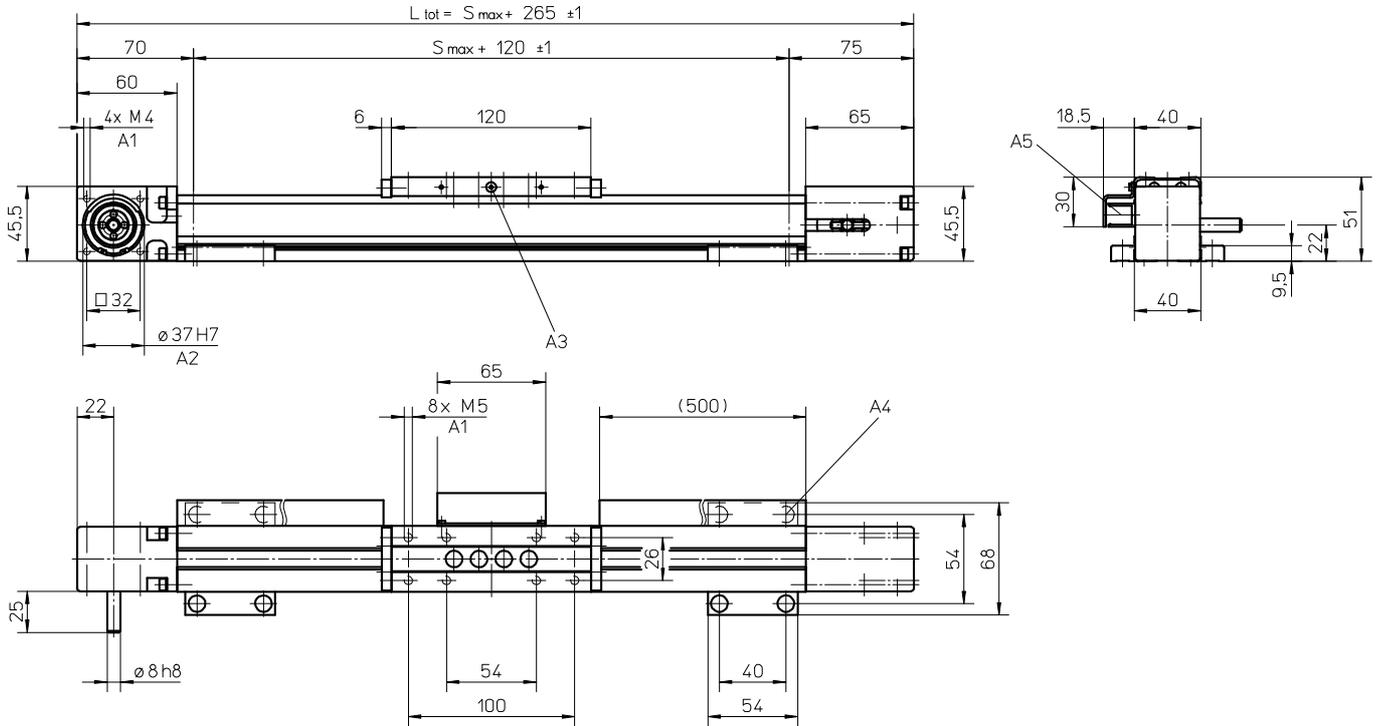


Definition of Forces



WH40

Belt Drive, Ball Guide

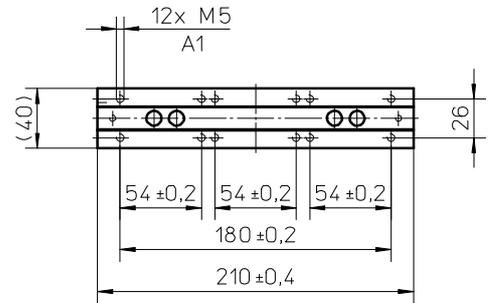


A1: depth 10
 A2: depth 3
 A3: lubricating nipple on both sides

A4: socket cap screw ISO4762-M5x12 8.8
 A5: ENF inductive sensor rail option kit (optional)

Long Carriage

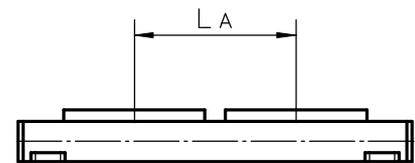
Parameter	WH40	
Carriage length	[mm]	210
Dynamic load torque (My), maximum	[Nm]	50
Dynamic load torque (Mz), maximum	[Nm]	50
Weight	[kg]	0,43



A1: depth 10

Double Carriages

Parameter	WH40	
Minimum distance between carriages (LA)	[mm]	135
Dynamic load (Fy), maximum	[N]	900
Dynamic load (Fz), maximum	[N]	1200
Dynamic load torque (My), maximum	[Nm]	$L A^1 \times 0,45$
Dynamic load torque (Mz), maximum	[Nm]	$L A^1 \times 0,60$
Force required to move second carriage	[N]	2
Total length (L tot)	[mm]	$S_{max} + 265 + L A$



¹ Value in mm

WM60Z

Belt Drive, Ball Guide, Short Carriage

- » Ordering key - see page 189
- » Accessories - see page 125
- » Additional data - see page 172

General Specifications

Parameter	WM60Z
Profile size (w × h) [mm]	60 × 60
Type of belt	20 ATL 5
Carriage sealing system	self-adjusting plastic cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

Performance Specifications

Parameter		WM60Z
Stroke length (S max), maximum	[mm]	4000
Linear speed, maximum	[m/s]	2,5
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	1250
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	850
Dynamic load (Fy), maximum	[N]	1400 ¹ / 25930 ²
Dynamic load (Fz), maximum	[N]	1400 ¹ / 23870 ²
Dynamic load torque (Mx), maximum	[Nm]	25 ¹ / 420 ²
Dynamic load torque (My), maximum	[Nm]	50 ¹ / 330 ²
Dynamic load torque (Mz), maximum	[Nm]	50 ¹ / 360 ²
Drive shaft force (Frd), maximum	[N]	150
Drive shaft torque (Mta), maximum	[Nm]	17
Pulley diameter	[mm]	38,20
Stroke per shaft revolution	[mm]	120
Weight	[kg]	
of unit with zero stroke		4,30
of every 100 mm of stroke		0,45
of each carriage		1,25

¹ Value for the complete unit, also see diagram Force Fx

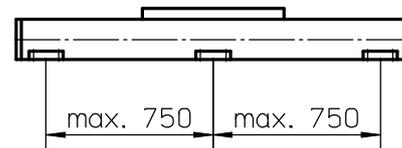
² Value for the ball guide only

Carriage Idle Torque, (M idle) [Nm]

Input speed [rpm]	Idle torque [Nm]
150	1,6
600	2,5
1250	3,0

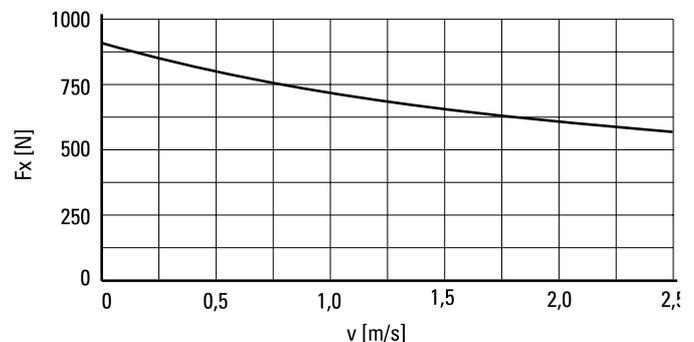
M idle = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

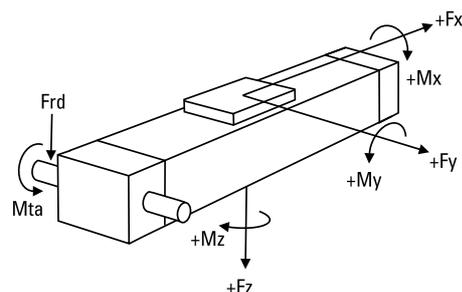


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Force Fx as a Function of the Speed

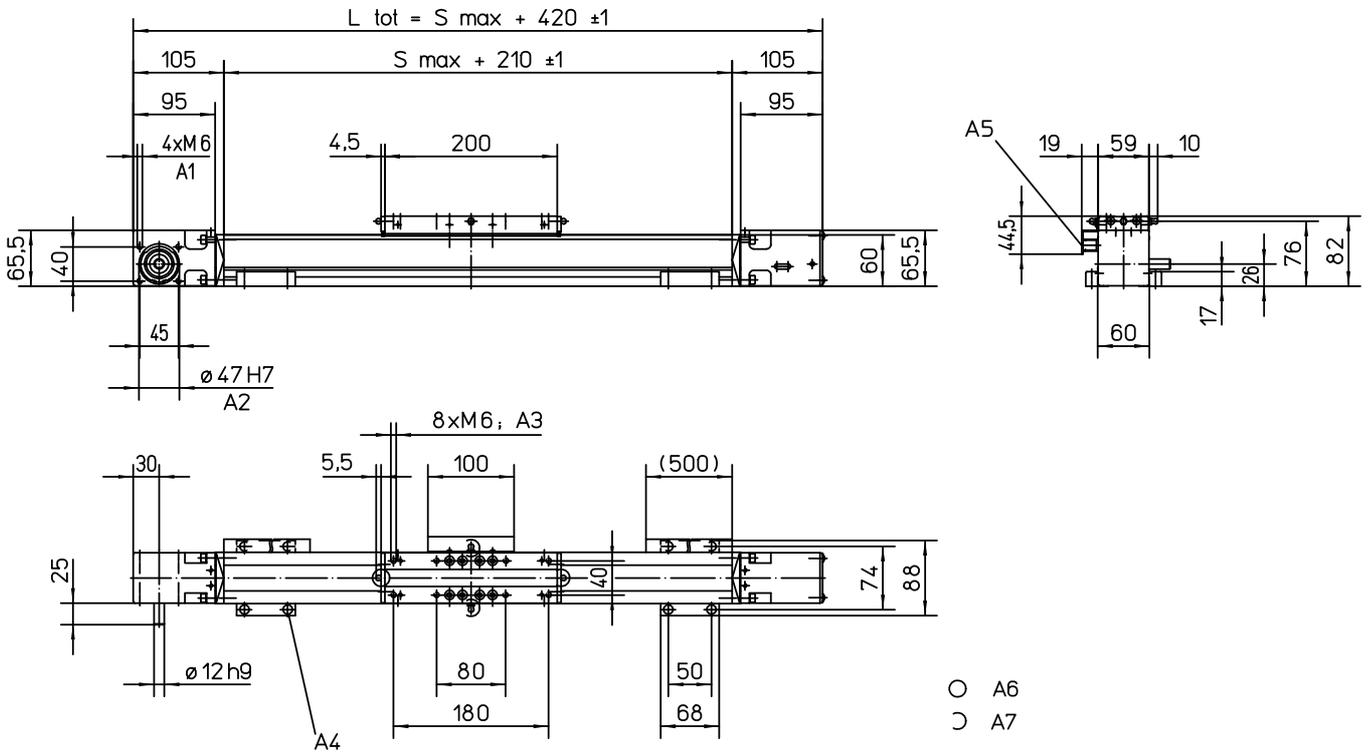


Definition of Forces



WM60Z

Belt Drive, Ball Guide, Short Carriage



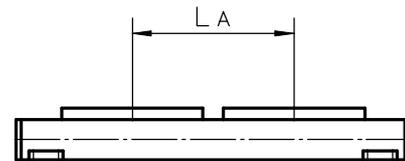
- A1: depth 15
- A2: depth 4
- A3: depth 11
- A4: socket cap screw ISO4762-M6x20 8.8

- A5: ENF inductive sensor rail option kit (optional)
- A6: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
- A7: can be changed over to one of three alternative lubrications points by the customer

Double Short Carriages

Parameter		WM60Z
Minimum distance between carriages (L _A)	[mm]	255
Dynamic load (F _y), maximum	[N]	2800
Dynamic load (F _z), maximum	[N]	2800
Dynamic load torque (M _y), maximum	[Nm]	L A ¹ × 1,4
Dynamic load torque (M _z), maximum	[Nm]	L A ¹ × 1,4
Force required to move second carriage	[N]	18
Total length (L _{tot})	[mm]	S _{max} + 420 + L A

¹ Value in mm



WM80Z

Belt Drive, Ball Guide, Standard Carriage

- » Ordering key - see page 189
- » Accessories - see page 125
- » Additional data - see page 172

General Specifications

Parameter	WM80Z
Profile size (w × h) [mm]	80 × 80
Type of belt	25 AT 10
Carriage sealing system	self-adjusting plastic cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

Performance Specifications

Parameter		WM80Z
Stroke length (S max), maximum	[mm]	5400
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	885
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	1470
Dynamic load (Fy), maximum	[N]	3000 ¹ / 57420 ²
Dynamic load (Fz), maximum	[N]	3000 ¹ / 54960 ²
Dynamic load torque (Mx), maximum	[Nm]	150 ¹ / 1370 ²
Dynamic load torque (My), maximum	[Nm]	300 ¹ / 4200 ²
Dynamic load torque (Mz), maximum	[Nm]	300 ¹ / 4390 ²
Drive shaft force (Frd), maximum	[N]	600
Drive shaft torque (Mta), maximum	[Nm]	40
Pulley diameter	[mm]	54,11
Stroke per shaft revolution	[mm]	170
Weight	[kg]	
of unit with zero stroke		11,2
of every 100 mm of stroke		0,8
of each carriage		3,4

¹ Value for the complete unit, also see diagram Force Fx

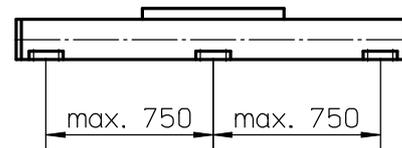
² Value for the ball guide only

Carriage Idle Torque, (M idle) [Nm]

Input speed [rpm]	Idle torque [Nm]
150	6,5
450	7,7
885	9,3

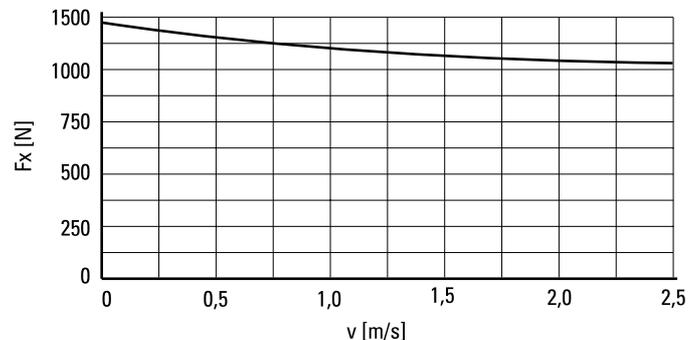
M idle = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

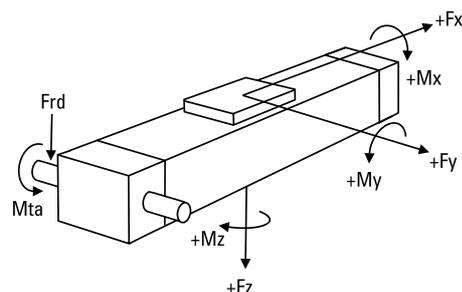


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Force Fx as a Function of the Speed

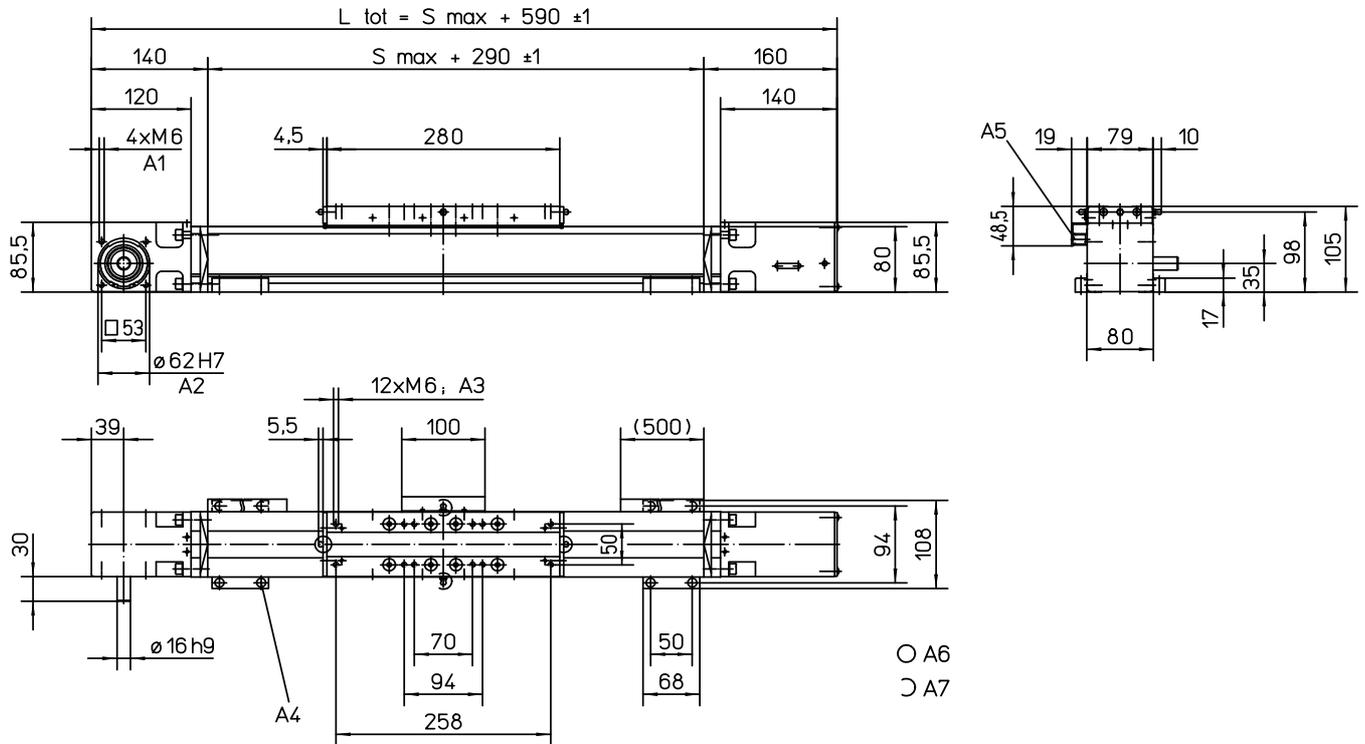


Definition of Forces



WM80Z

Belt Drive, Ball Guide, Standard Carriage

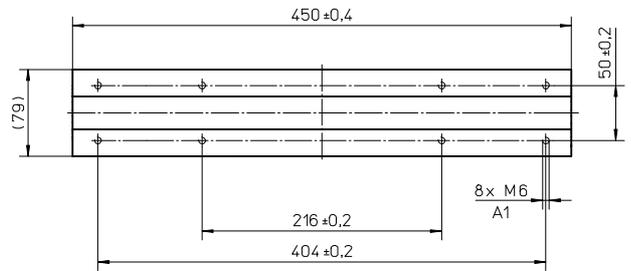


- A1: depth 15
- A2: depth 2,5
- A3: depth 12
- A4: socket cap screw ISO4762-M6x20 8.8

- A5: ENF inductive sensor rail option kit (optional)
- A6: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
- A7: can be changed over to one of three alternative lubrications points by the customer

Long Carriage

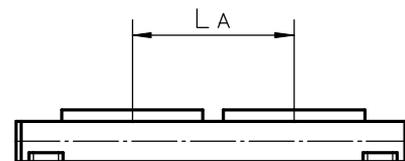
Parameter		WM80Z
Carriage length	[mm]	450
Dynamic load torque (My), maximum	[Nm]	750
Dynamic load torque (Mz), maximum	[Nm]	750
Weight	[kg]	5,1



A1: depth 12 mm

Double Carriages

Parameter		WM80Z
Minimum distance between carriages (L _A)	[mm]	360
Dynamic load (F _y), maximum	[N]	6000
Dynamic load (F _z), maximum	[N]	6000
Dynamic load torque (M _y), maximum	[Nm]	$L_{A^1} \times 3$
Dynamic load torque (M _z), maximum	[Nm]	$L_{A^1} \times 3$
Force required to move second carriage	[N]	25
Total length (L _{tot})	[mm]	$S_{max} + 590 + L_{A^1}$



¹ Value in mm

WM80Z

Belt Drive, Ball Guide, Short Carriage

- » Ordering key - see page 189
- » Accessories - see page 125
- » Additional data - see page 172

General Specifications

Parameter	WM80Z
Profile size (w × h) [mm]	80 × 80
Type of belt	25 AT 10
Carriage sealing system	self-adjusting plastic cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	central lubrication of all parts that require lubrication
Included accessories	4 × mounting clamps

Performance Specifications

Parameter		WM80Z
Stroke length (S max), maximum	[mm]	5500
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s ²]	20
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	885
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	1470
Dynamic load (Fy), maximum	[N]	2100 ¹ / 37450 ²
Dynamic load (Fz), maximum	[N]	2100 ¹ / 35840 ²
Dynamic load torque (Mx), maximum	[Nm]	68 ¹ / 890 ²
Dynamic load torque (My), maximum	[Nm]	135 ¹ / 580 ²
Dynamic load torque (Mz), maximum	[Nm]	135 ¹ / 610 ²
Drive shaft force (Frd), maximum	[N]	600
Drive shaft torque (Mta), maximum	[Nm]	40
Pulley diameter	[mm]	54,11
Stroke per shaft revolution	[mm]	170
Weight	[kg]	
of unit with zero stroke		9,2
of every 100 mm of stroke		0,8
of each carriage		2,1

¹ Value for the complete unit, also see diagram Force Fx

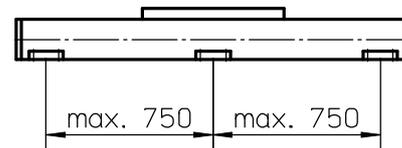
² Value for the ball guide only

Carriage Idle Torque, (M idle) [Nm]

Input speed [rpm]	Idle torque [Nm]
150	4,0
450	5,4
885	6,2

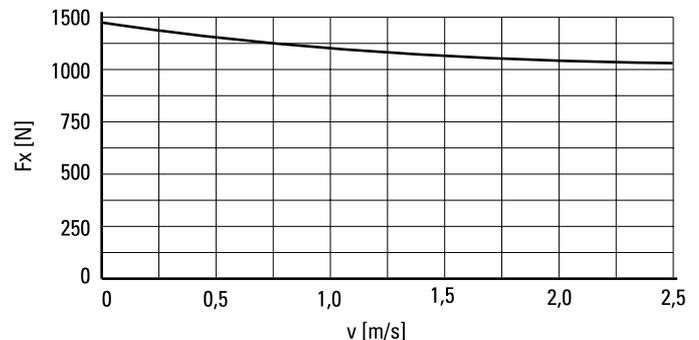
M idle = the input torque needed to move the carriage with no load on it.

Deflection of the Profile

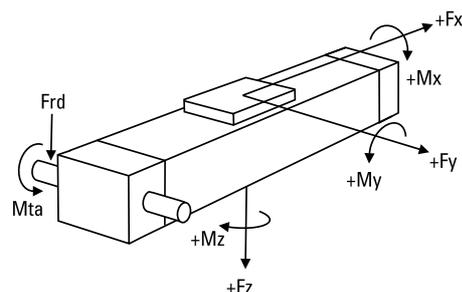


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

Force Fx as a Function of the Speed

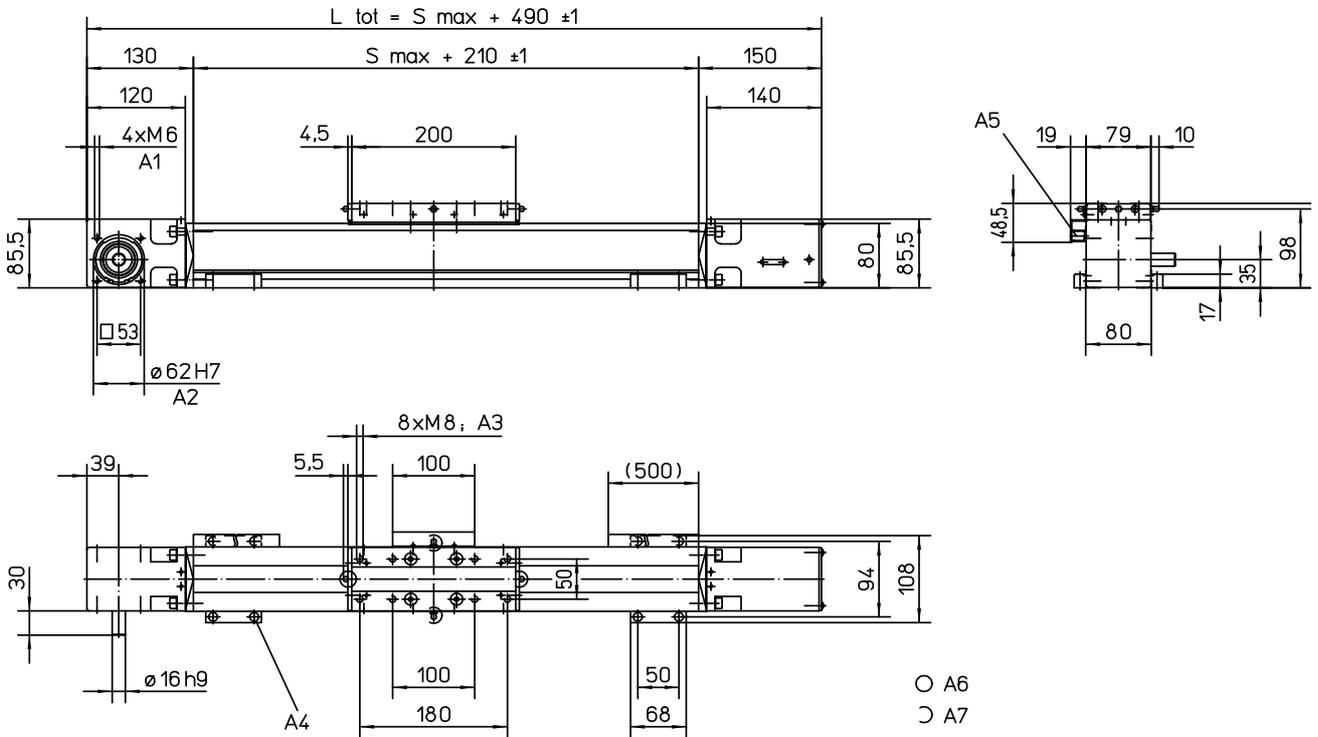


Definition of Forces



WM80Z

Belt Drive, Ball Guide, Short Carriage



A1: depth 15
 A2: depth 2,5
 A3: depth 12
 A4: socket cap screw ISO4762-M6x20 8.8

A5: ENF inductive sensor rail option kit (optional)
 A6: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
 A7: can be changed over to one of three alternative lubrications points by the customer

Double Short Carriages

Parameter		WM80Z
Minimum distance between carriages (L _A)	[mm]	280
Dynamic load (F _y), maximum	[N]	4200
Dynamic load (F _z), maximum	[N]	4200
Dynamic load torque (M _y), maximum	[Nm]	L A ¹ × 2,1
Dynamic load torque (M _z), maximum	[Nm]	L A ¹ × 2,1
Force required to move second carriage	[N]	22,5
Total length (L _{tot})	[mm]	S _{max} + 490 + L A

¹ Value in mm

