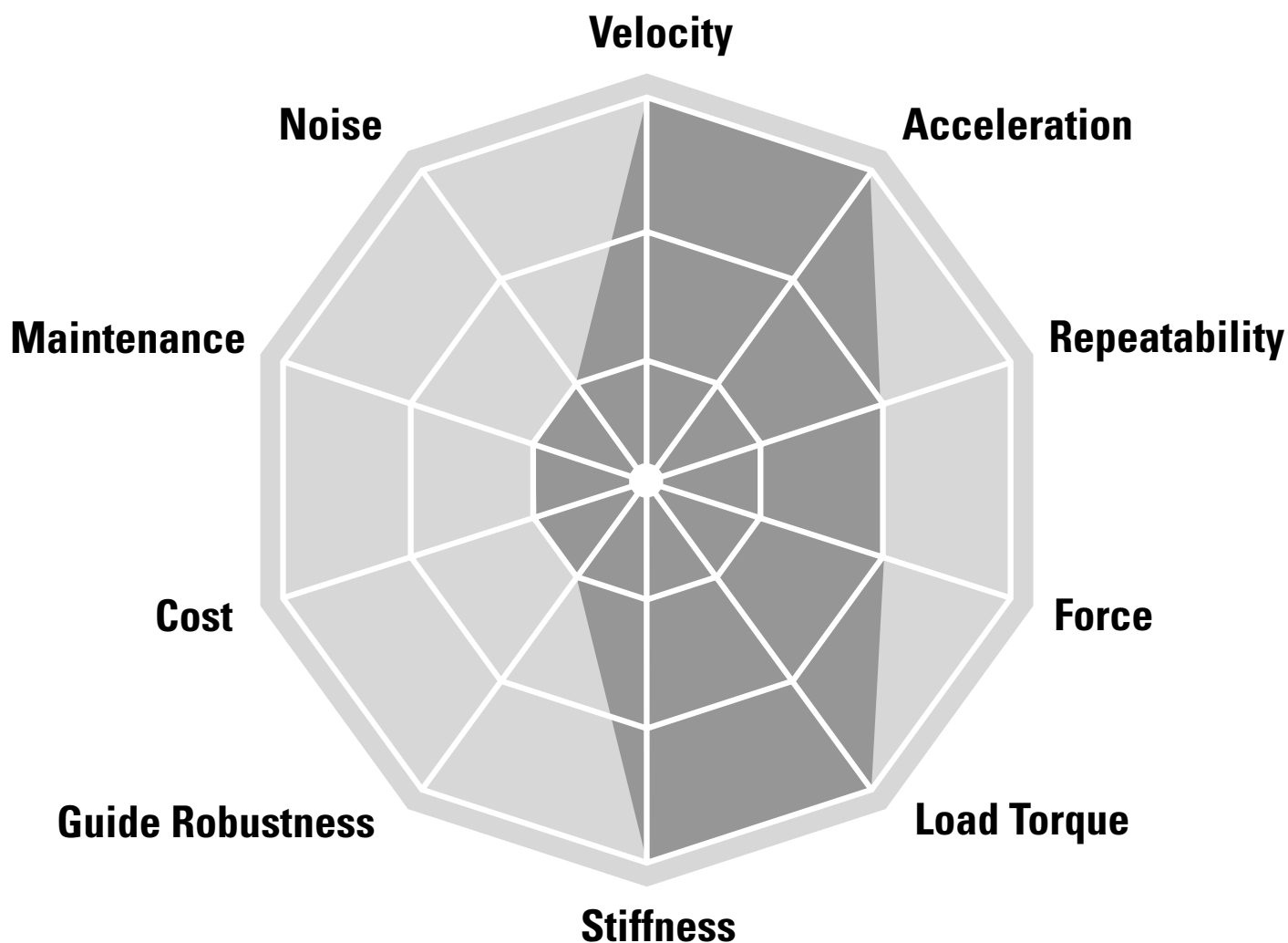




## Linear Units with Belt Drive and Ball Guide

SpeedLine, Movopart, ForceLine, Microstage



### 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.

## SpeedLine WH



### Features

- Can be installed in all directions
- Stroke up to 2 m
- Acceleration up to 40 m/s<sup>2</sup>
- 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		68

## 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		70	72

## 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		76	78	80

## 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		82

## WMZ-Series Technical Presentation

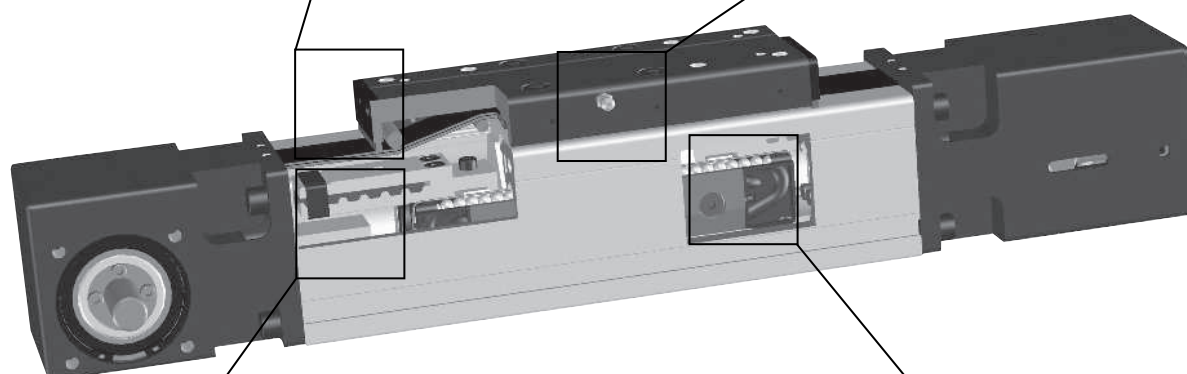
### Cover band

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 maintenance 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 209
- » Accessories - see page 137
- » Additional data - see page 192

### 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 <sup>2</sup> ]	40
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	1800
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	315 <sup>1</sup>
Dynamic load (Fy), maximum	[N]	450 <sup>1</sup> / 5300 <sup>2</sup>
Dynamic load (Fz), maximum	[N]	600 <sup>1</sup> / 6790 <sup>2</sup>
Dynamic load torque (Mx), maximum	[Nm]	10 <sup>1</sup> / 32 <sup>2</sup>
Dynamic load torque (My), maximum	[Nm]	30 <sup>1</sup> / 190 <sup>2</sup>
Dynamic load torque (Mz), maximum	[Nm]	30 <sup>1</sup> / 190 <sup>2</sup>
Drive shaft force (Frd), maximum	[N]	100
Drive shaft torque (Mta), 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

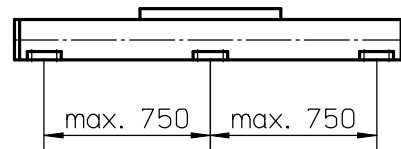
<sup>1</sup> Value for the complete unit, also see diagram Force Fx  
<sup>2</sup> Value for the ball guide only

### Carriage Idle Torque, (M idle) [Nm]

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

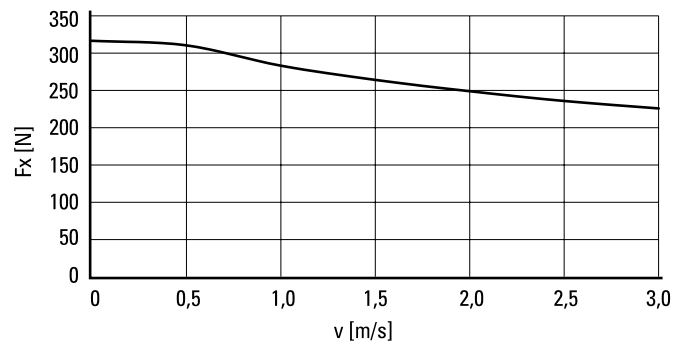
M idle = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile

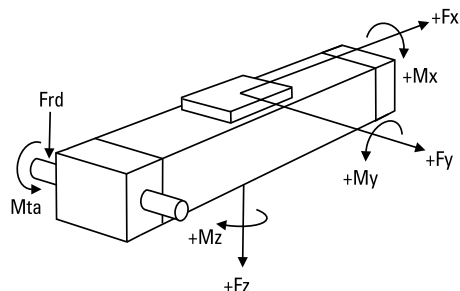


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

### Force Fx as a Function of the Speed

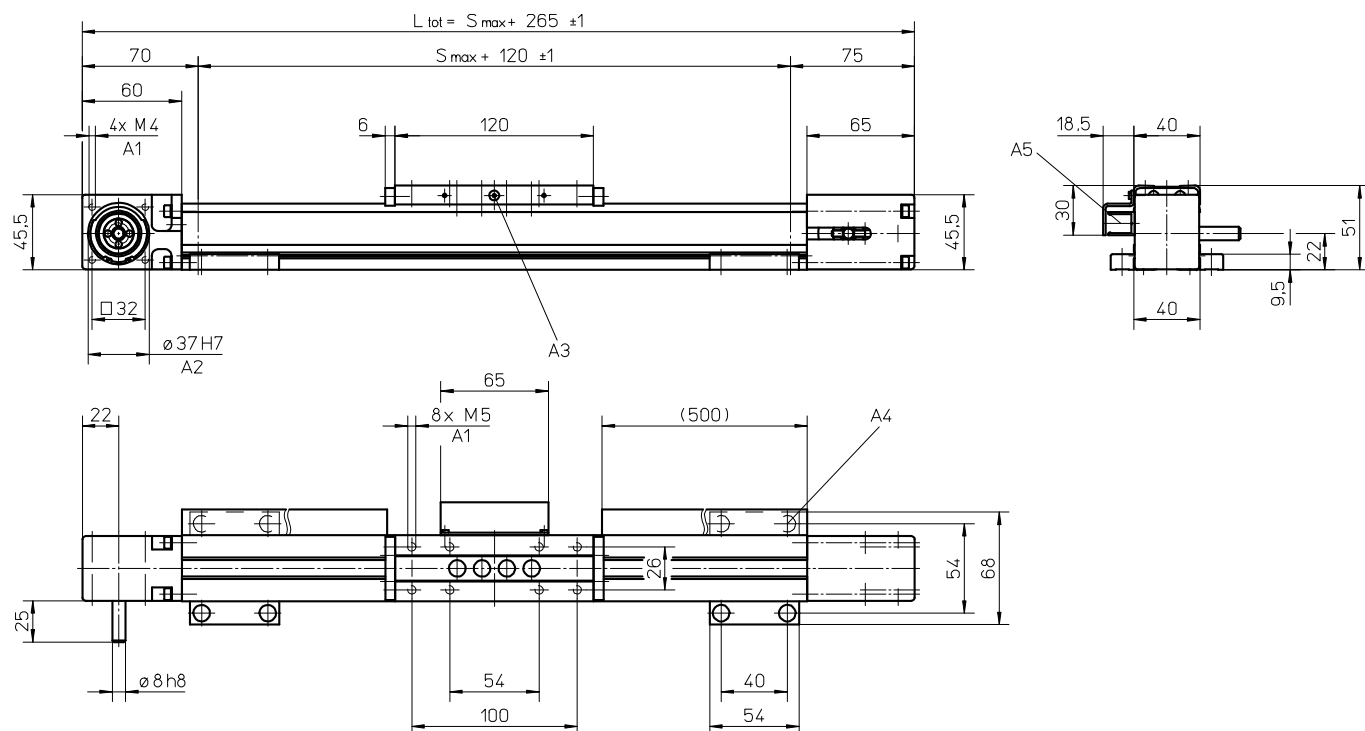


### Definition of Forces



# WH40

## Belt Drive, Ball Guide

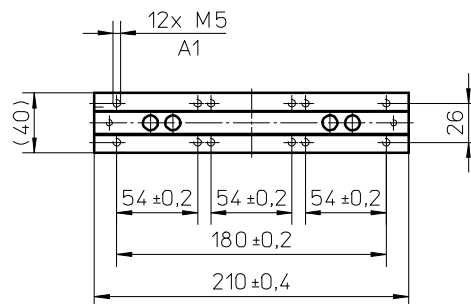


A1: depth 10  
 A2: depth 3  
 A3: lubricating nipple on both sides

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

### Long Carriage

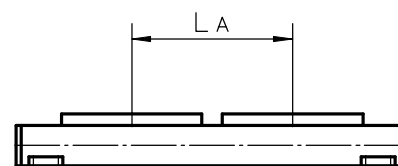
Parameter	WH40	
Carriage length	[mm]	210
Dynamic load torque (My), maximum	[Nm]	50
Dynamic load torque (Mz), maximum	[Nm]	50
Weight	[kg]	0,43



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]	$S_{max} + 265 + L A$



<sup>1</sup> Value in mm

# WM60Z

## Belt Drive, Ball Guide, Short Carriage

- » Ordering key - see page 210
- » Accessories - see page 137
- » Additional data - see page 192

### 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 <sup>2</sup> ]	20
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	1250
Operation temperature limits	[°C]	0 – 80
Dynamic load (F <sub>x</sub> ), maximum	[N]	850
Dynamic load (F <sub>y</sub> ), maximum	[N]	1400 <sup>1</sup> / 25930 <sup>2</sup>
Dynamic load (F <sub>z</sub> ), maximum	[N]	1400 <sup>1</sup> / 23870 <sup>2</sup>
Dynamic load torque (M <sub>x</sub> ), maximum	[Nm]	25 <sup>1</sup> / 420 <sup>2</sup>
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	50 <sup>1</sup> / 330 <sup>2</sup>
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	50 <sup>1</sup> / 360 <sup>2</sup>
Drive shaft force (F <sub>rd</sub> ), maximum	[N]	150
Drive shaft torque (M <sub>ta</sub> ), 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

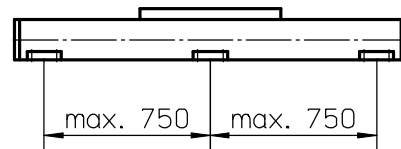
<sup>1</sup> Value for the complete unit, also see diagram Force F<sub>x</sub>  
<sup>2</sup> Value for the ball guide only

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

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

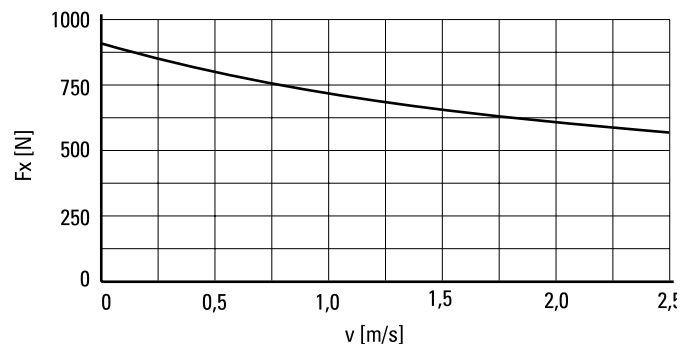
M<sub>idle</sub> = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile

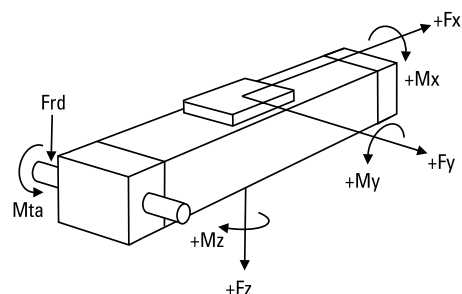


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

### Force F<sub>x</sub> as a Function of the Speed

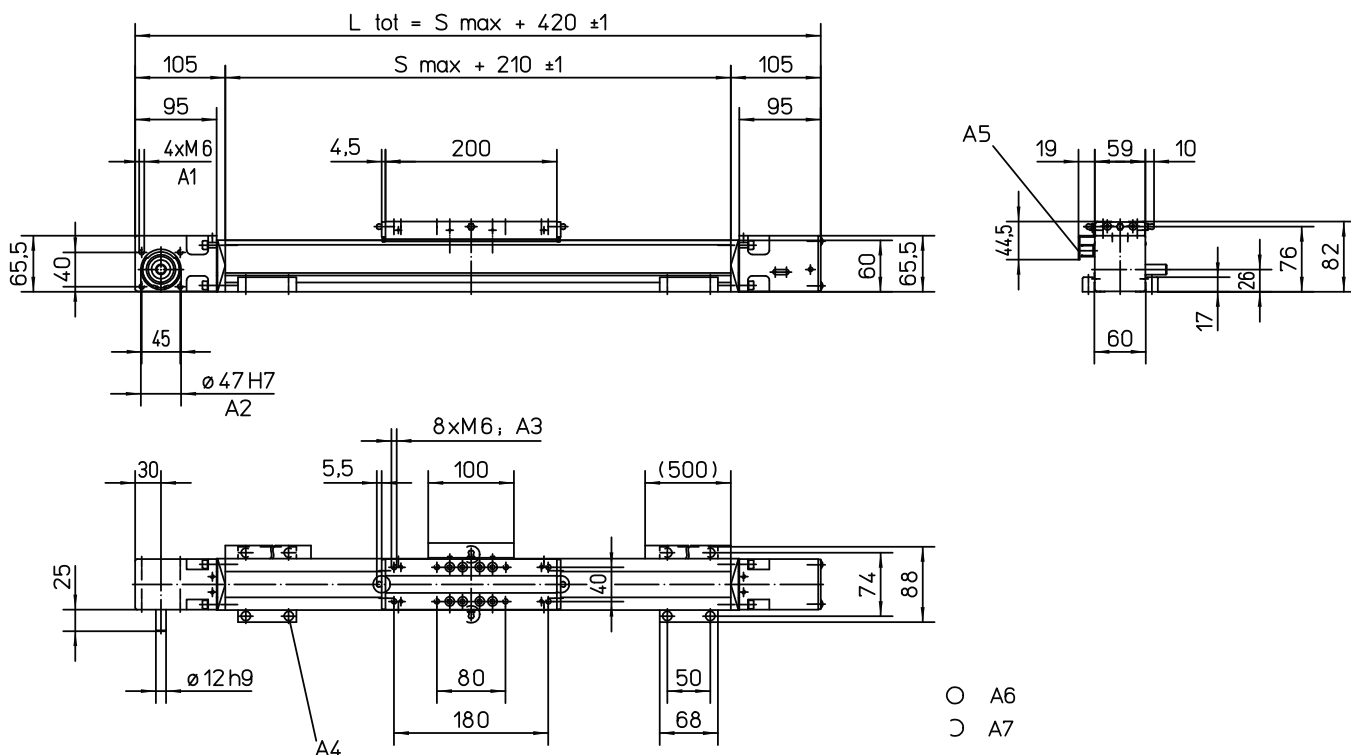


### Definition of Forces



# WM60Z

## Belt Drive, Ball Guide, Short Carriage



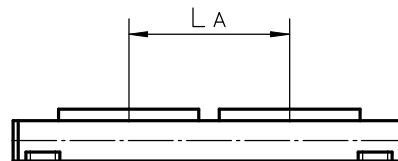
A1: depth 15  
 A2: depth 4  
 A3: depth 11  
 A4: socket cap screw ISO4762-M6x20 8.8

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 <sub>A</sub> )	[mm]	255
Dynamic load (F <sub>y</sub> ), maximum	[N]	2800
Dynamic load (F <sub>z</sub> ), maximum	[N]	2800
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	L A <sup>1</sup> × 1,4
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	L A <sup>1</sup> × 1,4
Force required to move second carriage	[N]	180
Total length (L <sub>tot</sub> )	[mm]	S max + 420 + L A

<sup>1</sup> Value in mm





# WM80Z

## Belt Drive, Ball Guide, Standard Carriage

- » Ordering key - see page 210
- » Accessories - see page 137
- » Additional data - see page 192

### 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 <sup>2</sup> ]	20
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	885
Operation temperature limits	[°C]	0 – 80
Dynamic load (F <sub>x</sub> ), maximum	[N]	1470
Dynamic load (F <sub>y</sub> ), maximum	[N]	3000 <sup>1</sup> / 57420 <sup>2</sup>
Dynamic load (F <sub>z</sub> ), maximum	[N]	3000 <sup>1</sup> / 54960 <sup>2</sup>
Dynamic load torque (M <sub>x</sub> ), maximum	[Nm]	150 <sup>1</sup> / 1370 <sup>2</sup>
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	300 <sup>1</sup> / 4200 <sup>2</sup>
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	300 <sup>1</sup> / 4390 <sup>2</sup>
Drive shaft force (F <sub>rd</sub> ), maximum	[N]	600
Drive shaft torque (M <sub>ta</sub> ), 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

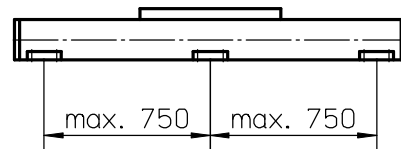
<sup>1</sup> Value for the complete unit, also see diagram Force F<sub>x</sub>  
<sup>2</sup> Value for the ball guide only

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

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

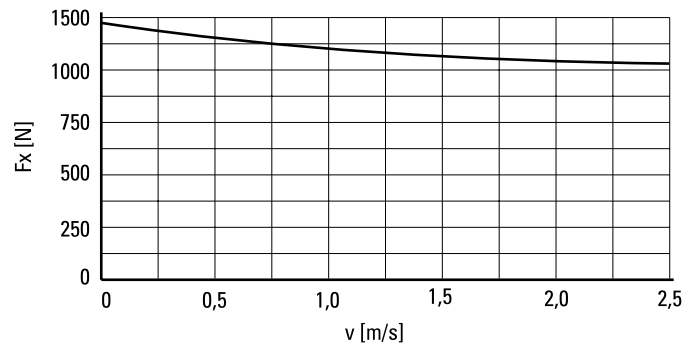
M<sub>idle</sub> = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile

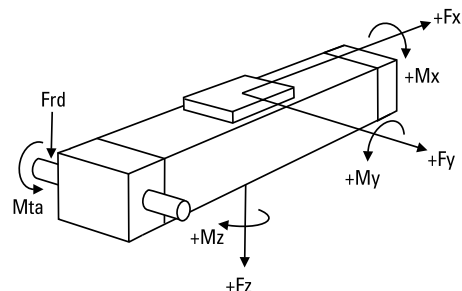


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

### Force F<sub>x</sub> as a Function of the Speed

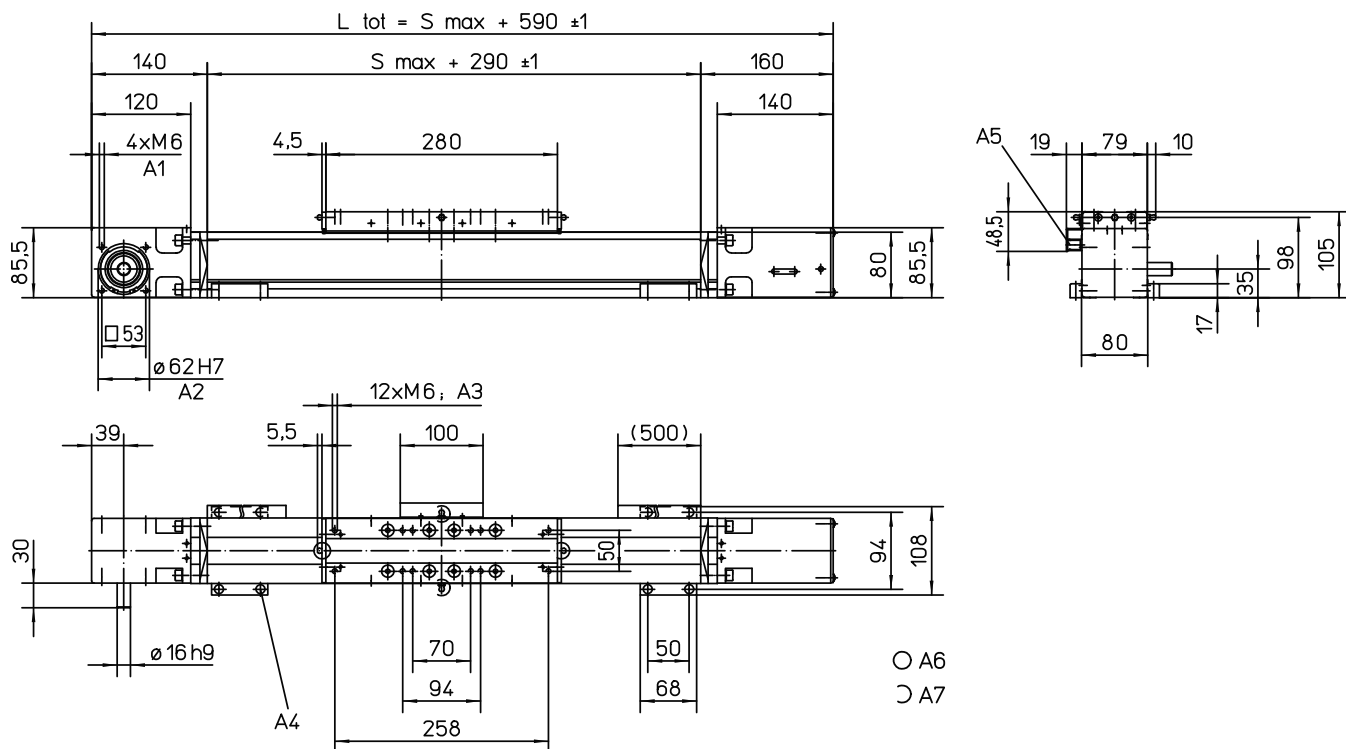


### Definition of Forces



# WM80Z

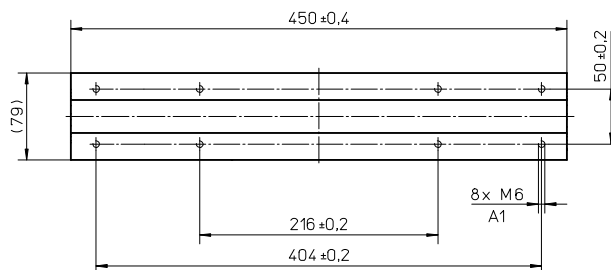
## Belt Drive, Ball Guide, Standard Carriage



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

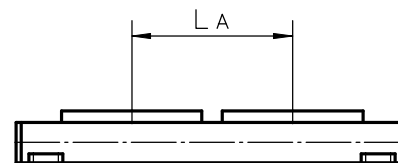
- A5: ENF inductive sensor rail option kit (optional)
- A6: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
- A7: can be changed over to one of three alternative lubrications points by the customer

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 (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]	250
Total length (L tot)	[mm]	$S_{max} + 590 + L A$



<sup>1</sup> Value in mm

# WM80Z

## Belt Drive, Ball Guide, Short Carriage

- » Ordering key - see page 210
- » Accessories - see page 137
- » Additional data - see page 192

### 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 <sup>2</sup> ]	20
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	885
Operation temperature limits	[°C]	0 – 80
Dynamic load (F <sub>x</sub> ), maximum	[N]	1470
Dynamic load (F <sub>y</sub> ), maximum	[N]	2100 <sup>1</sup> / 37450 <sup>2</sup>
Dynamic load (F <sub>z</sub> ), maximum	[N]	2100 <sup>1</sup> / 35840 <sup>2</sup>
Dynamic load torque (M <sub>x</sub> ), maximum	[Nm]	68 <sup>1</sup> / 890 <sup>2</sup>
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	135 <sup>1</sup> / 580 <sup>2</sup>
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	135 <sup>1</sup> / 610 <sup>2</sup>
Drive shaft force (F <sub>rd</sub> ), maximum	[N]	600
Drive shaft torque (M <sub>ta</sub> ), 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

<sup>1</sup> Value for the complete unit, also see diagram Force F<sub>x</sub>

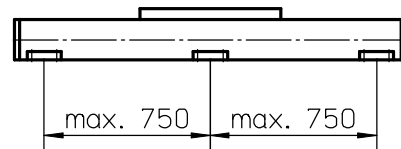
<sup>2</sup> Value for the ball guide only

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

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

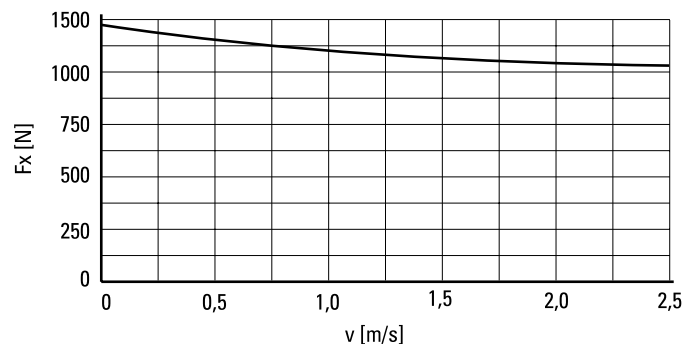
M<sub>idle</sub> = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile

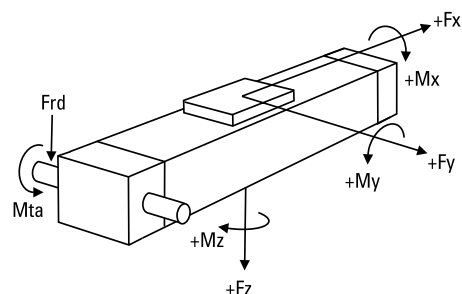


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

### Force F<sub>x</sub> as a Function of the Speed

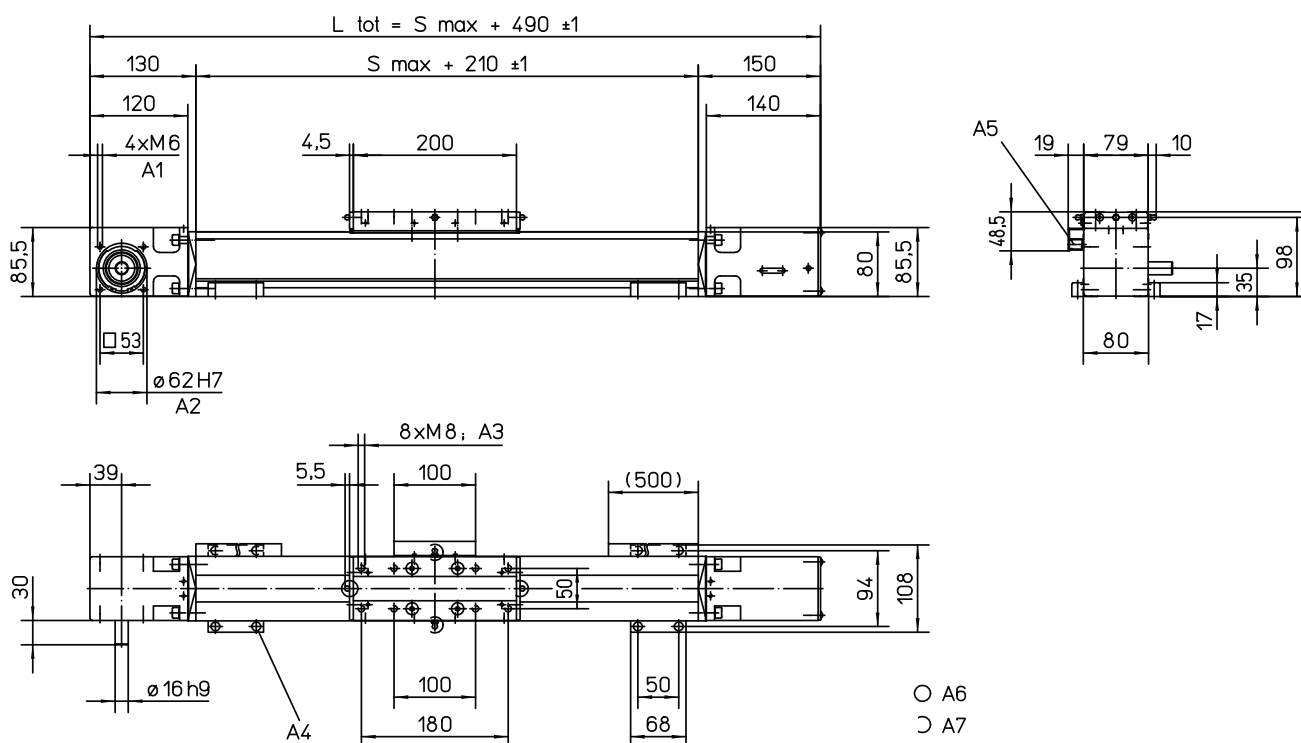


### Definition of Forces



# 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)

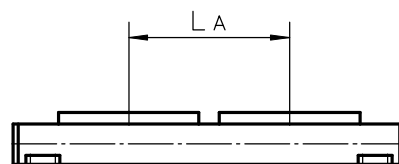
A6: tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature

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 <sub>A</sub> )	[mm]	280
Dynamic load (F <sub>y</sub> ), maximum	[N]	4200
Dynamic load (F <sub>z</sub> ), maximum	[N]	4200
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	L A <sup>1</sup> × 2,1
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	L A <sup>1</sup> × 2,1
Force required to move second carriage	[N]	225
Total length (L <sub>tot</sub> )	[mm]	S <sub>max</sub> + 490 + L A

<sup>1</sup> Value in mm



# M55

## Belt Drive, Ball Guide

- » Ordering key - see page 211
- » Accessories - see page 137
- » Additional data - see page 192

### General Specifications

Parameter	M55
Profile size (w × h) [mm]	58 × 55
Type of belt	22-STD SM5-HP
Carriage sealing system	self-adjusting steel cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubrication of ball guide carriages
Included accessories	none

### Performance Specifications

Parameter		M55
Stroke length (S max), maximum	[mm]	7000
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,1
Input speed, maximum	[rpm]	2850
Operation temperature limits	[°C]	-20 – 70
Dynamic load (F <sub>x</sub> ), maximum	[N]	
< 2,5 m/s		400
> 2,5 m/s		200
Dynamic load (F <sub>y</sub> ), maximum	[N]	750 <sup>1</sup> / 5435 <sup>2</sup>
Dynamic load (F <sub>z</sub> ), maximum	[N]	750 <sup>1</sup> / 6968 <sup>2</sup>
Dynamic load torque (M <sub>x</sub> ), maximum	[Nm]	5 <sup>1</sup> / 49 <sup>2</sup>
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	29 <sup>1</sup> / 212 <sup>2</sup>
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	29 <sup>1</sup> / 212 <sup>2</sup>
Drive shaft force (F <sub>rd</sub> ), maximum	[N]	200
Drive shaft torque (M <sub>ta</sub> ), maximum	[Nm]	12
Pulley diameter	[mm]	33,42
Stroke per shaft revolution	[mm]	105
Weight	[kg]	
of unit with zero stroke		4,80
of every 100 mm of stroke		0,53
of carriage		1,20

<sup>1</sup> Value for the complete unit

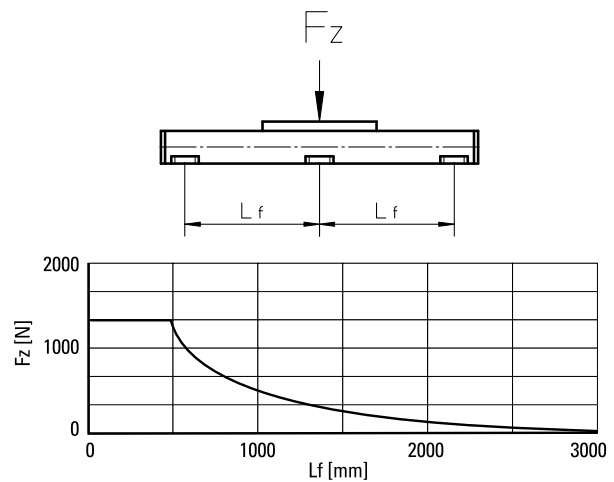
<sup>2</sup> Value for the ball guide only

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

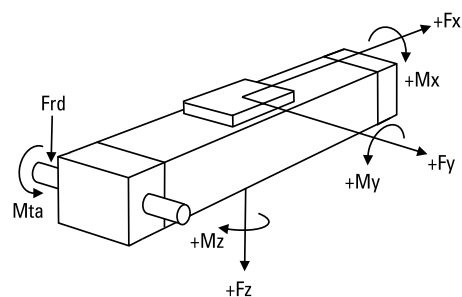
Input speed [rpm]	Single Carriage	Double Carriages
150	1,0	1,9

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

### Deflection of the Profile

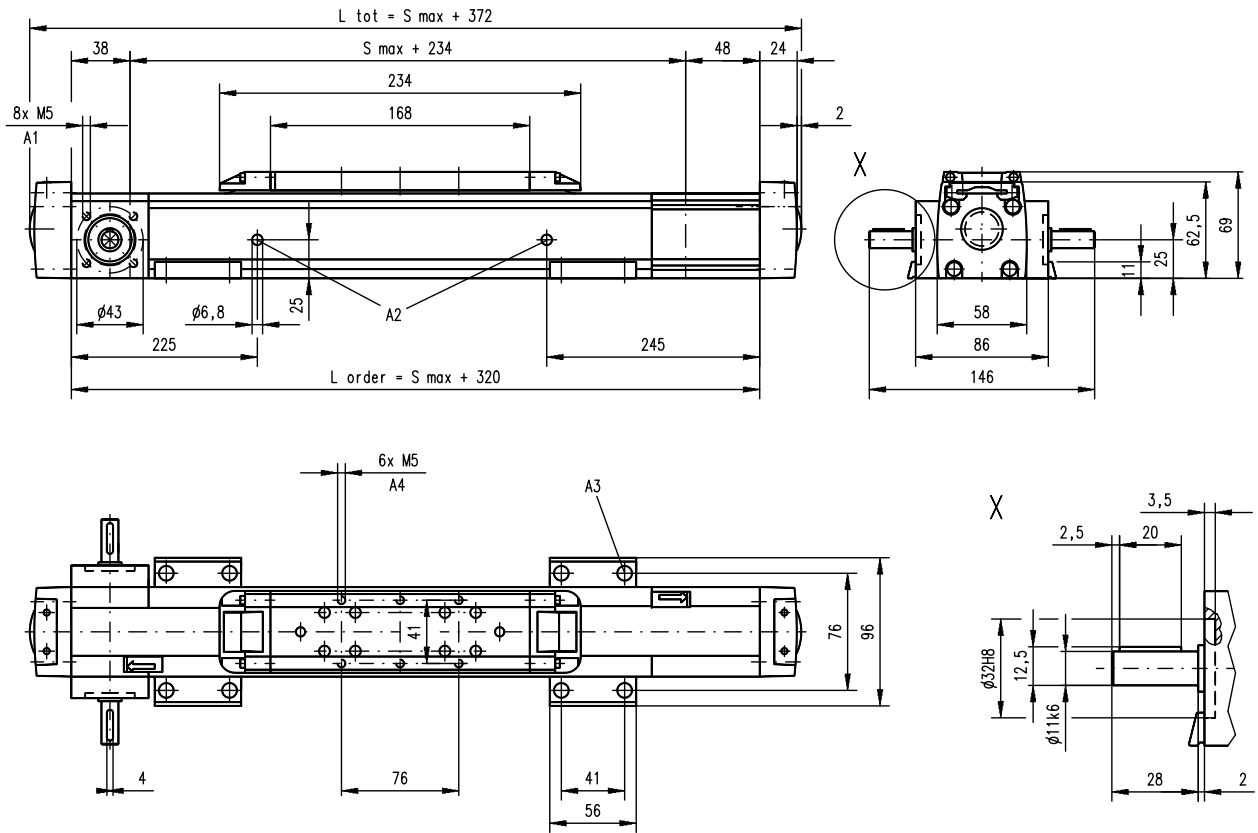


### Definition of Forces



# M55

## Belt Drive, Ball Guide

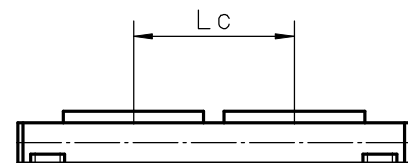


A1: depth 10, Heli coil  
 A2: lubrication holes

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

### Double Carriages

Parameter		M55
Minimum distance between carriages (Lc)	[mm]	250
Dynamic load (Fy), maximum	[N]	1125
Dynamic load (Fz), maximum	[N]	1125
Dynamic load torque (My), maximum	[Nm]	$Lc^1 \times 0,56$
Dynamic load torque (Mz), maximum	[Nm]	$Lc^1 \times 0,56$
Force required to move second carriage	[N]	2
Ordering length (L order)	[mm]	$S_{max} + Lc + 320$
Total length (L tot)	[mm]	$L_{order} + 52$
Weight of unit with zero stroke of carriages	[kg]	7,06 2,40



<sup>1</sup> Value in mm



# M75

## Belt Drive, Ball Guide

- » Ordering key - see page 211
- » Accessories - see page 137
- » Additional data - see page 192

### General Specifications

Parameter	M75
Profile size (w × h) [mm]	86 × 75
Type of belt	STD5-40
Carriage sealing system	self-adjusting steel cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubrication of ball guide carriages
Included accessories	none

### Performance Specifications

Parameter		M75
Stroke length (S max), maximum	[mm]	12000
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,1
Input speed, maximum	[rpm]	2300
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fx), maximum	[N]	
< 2,5 m/s		900
> 2,5 m/s		450
Dynamic load (Fy), maximum	[N]	1750 <sup>1</sup> / 16413 <sup>2</sup>
Dynamic load (Fz), maximum	[N]	1750 <sup>1</sup> / 30968 <sup>2</sup>
Dynamic load torque (Mx), maximum	[Nm]	16 <sup>1</sup> / 150 <sup>2</sup>
Dynamic load torque (My), maximum	[Nm]	84 <sup>1</sup> / 743 <sup>2</sup>
Dynamic load torque (Mz), maximum	[Nm]	84 <sup>1</sup> / 787 <sup>2</sup>
Drive shaft force (Frd), maximum	[N]	600
Drive shaft torque (Mta), maximum	[Nm]	30
Pulley diameter	[mm]	41,38
Stroke per shaft revolution	[mm]	130
Weight	[kg]	
of unit with zero stroke		7,50
of every 100 mm of stroke		0,88
of carriage		2,00

<sup>1</sup> Value for the complete unit

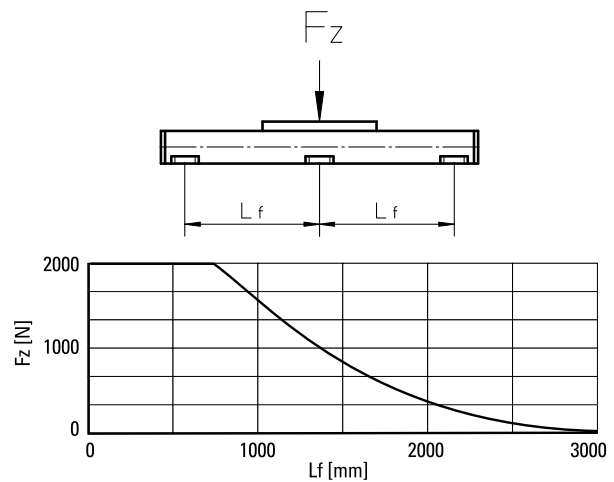
<sup>2</sup> Value for the ball guide only

### Carriage Idle Torque (M idle) [Nm]

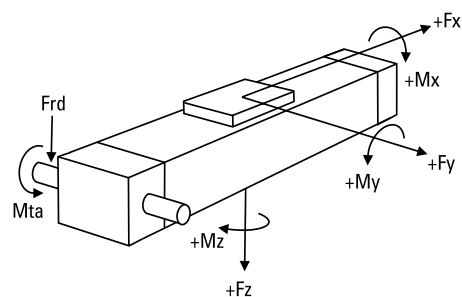
Input speed [rpm]	Single Carriage	Double Carriages
150	1,0	1,9

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

### Deflection of the Profile

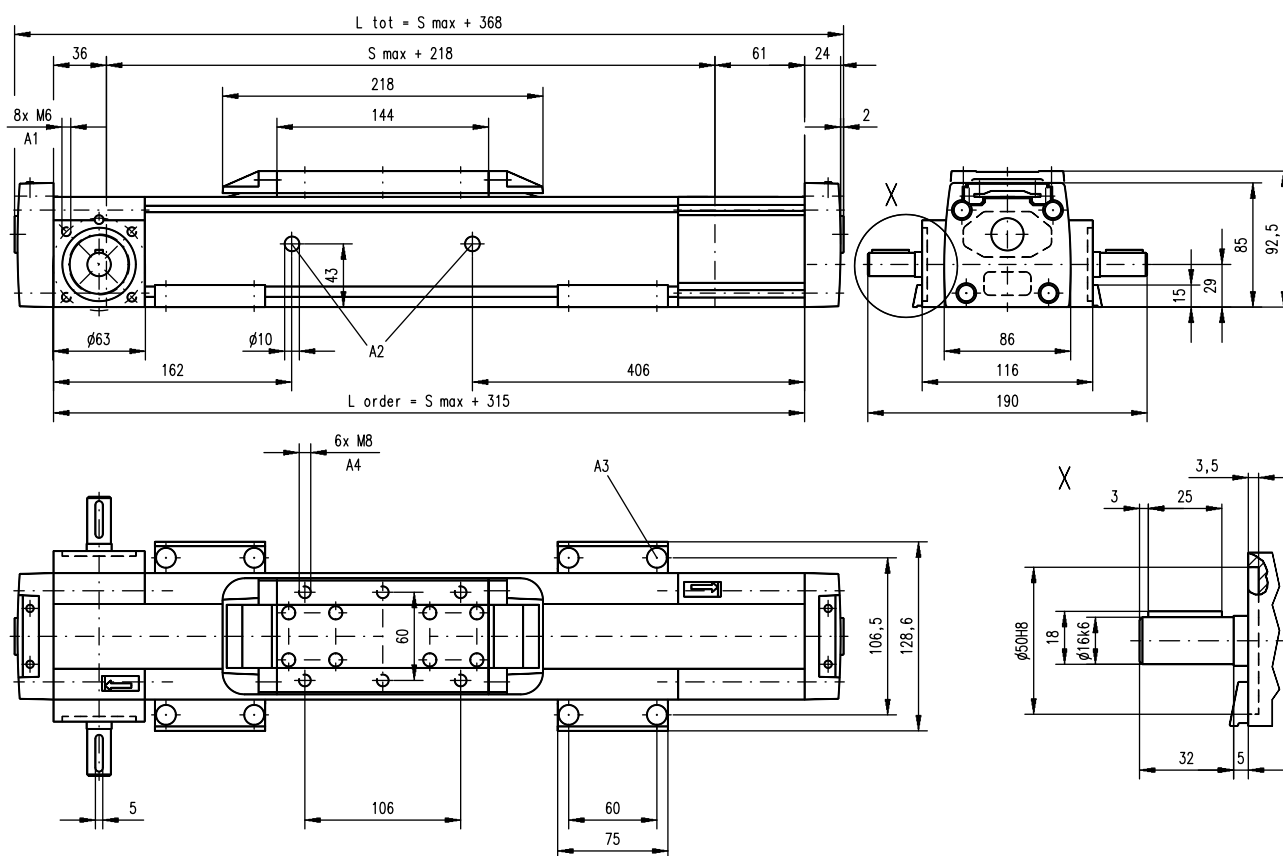


### Definition of Forces



# M75

## Belt Drive, Ball Guide



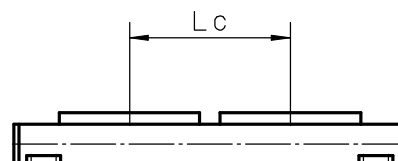
A1: depth 9, Heli coil  
A2: lubrication holes

A3:  $\phi 13,5/\phi 8,5$  for socket head cap screw M8  
A4: depth 8, Heli coil

### Double Carriages

Parameter		M75
Minimum distance between carriages (Lc)	[mm]	250
Dynamic load (Fy), maximum	[N]	2625
Dynamic load (Fz), maximum	[N]	2625
Dynamic load torque (My), maximum	[Nm]	$Lc^1 \times 1,313$
Dynamic load torque (Mz), maximum	[Nm]	$Lc^1 \times 1,313$
Force required to move second carriage	[N]	2
Ordering length (L order)	[mm]	$S_{max} + Lc + 315$
Total length (L tot)	[mm]	$L_{order} + 52$
Weight of unit with zero stroke of carriages	[kg]	11,67 4,00

<sup>1</sup> Value in mm



# M100

## Belt Drive, Ball Guide

- » Ordering key - see page 211
- » Accessories - see page 137
- » Additional data - see page 192

### General Specifications

Parameter	M100
Profile size (w × h) [mm]	108 × 100
Type of belt	STD8-50
Carriage sealing system	self-adjusting steel cover band
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubrication of ball guide carriages
Included accessories	none

### Performance Specifications

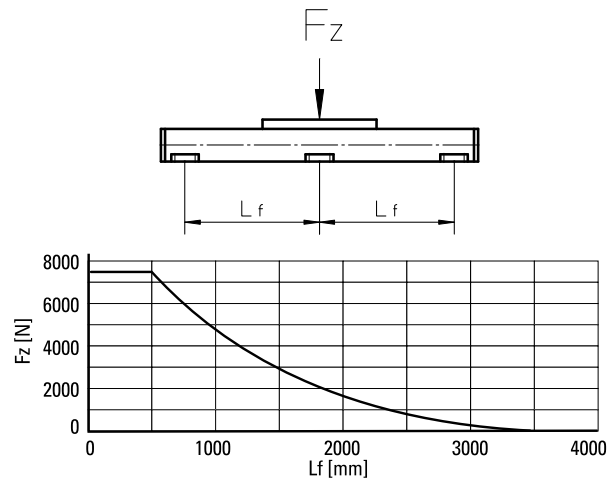
Parameter		M100
Stroke length (S max), maximum	[mm]	12000
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,1
Input speed, maximum	[rpm]	1700
Operation temperature limits	[°C]	-20 – 70
Dynamic load (F <sub>x</sub> ), maximum	[N]	
< 2,5 m/s		1250
> 2,5 m/s		625
Dynamic load (F <sub>y</sub> ), maximum	[N]	4000 <sup>1</sup> / 26378 <sup>2</sup>
Dynamic load (F <sub>z</sub> ), maximum	[N]	4000 <sup>1</sup> / 49770 <sup>2</sup>
Dynamic load torque (M <sub>x</sub> ), maximum	[Nm]	43 <sup>1</sup> / 283 <sup>2</sup>
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	280 <sup>1</sup> / 1742 <sup>2</sup>
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	280 <sup>1</sup> / 1846 <sup>2</sup>
Drive shaft force (F <sub>rd</sub> ), maximum	[N]	1000
Drive shaft torque (M <sub>ta</sub> ), maximum	[Nm]	45
Pulley diameter	[mm]	56,02
Stroke per shaft revolution	[mm]	176
Weight	[kg]	
of unit with zero stroke		11,61
of every 100 mm of stroke		1,43
of carriage		2,20

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

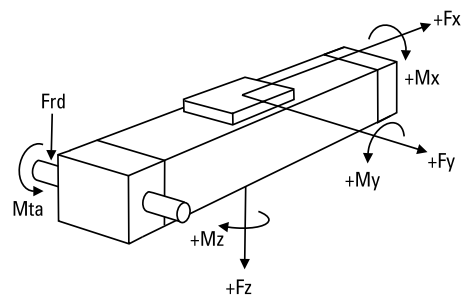
Input speed [rpm]	Single Carriage	Double Carriages
150	1,6	3,1

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

### Deflection of the Profile

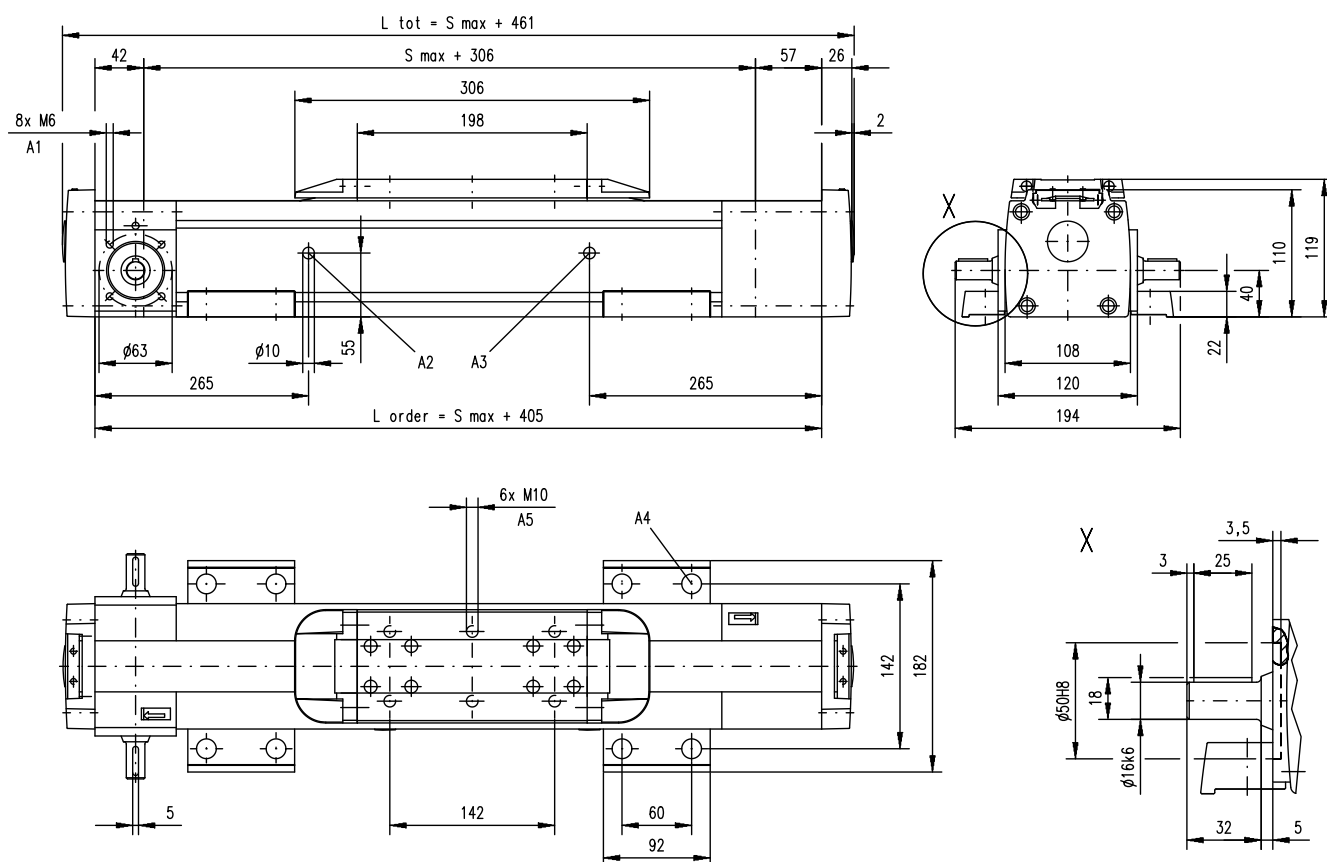


### Definition of Forces



# M100

## Belt Drive, Ball Guide



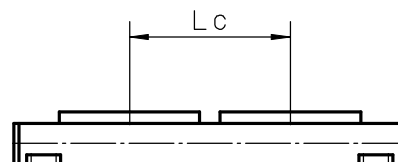
A1: depth 9, Heli coil  
A2: lubrication hole

A3: lubrication hole (no hole if L order is < 856 mm)  
A4:  $\phi 17/\phi 10,5$  for socket head cap screw M10

### Double Carriages

Parameter		M100
Minimum distance between carriages (Lc)	[mm]	350
Dynamic load (Fy), maximum	[N]	6000
Dynamic load (Fz), maximum	[N]	6000
Dynamic load torque (My), maximum	[Nm]	$Lc^1 \times 3$
Dynamic load torque (Mz), maximum	[Nm]	$Lc^1 \times 3$
Force required to move second carriage	[N]	2
Ordering length (L order)	[mm]	$S_{max} + Lc + 405$
Total length (L tot)	[mm]	$L_{order} + 56$
Weight of unit with zero stroke of carriages	[kg]	18,92 4,40

<sup>1</sup> Value in mm



# MLSM80Z

## Belt Drive, Ball Guide

- » Ordering key - see page 212
- » Accessories - see page 137
- » Additional data - see page 192

### General Specifications

Parameter	MLSM80Z
Profile size (w × h) [mm]	240 × 85
Type of belt	75 ATL 10
Carriage sealing system	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		MLSM80Z
Stroke length (S max), maximum	[mm]	5900
Linear speed, maximum	[m/s]	5,0
Acceleration, maximum	[m/s <sup>2</sup> ]	20
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	1500
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	5000 <sup>3</sup>
Dynamic load (Fy), maximum	[N]	6400 <sup>1</sup> / 71860 <sup>2</sup>
Dynamic load (Fz), maximum	[N]	6400 <sup>1</sup> / 71860 <sup>2</sup>
Dynamic load torque (Mx), maximum	[Nm]	600 <sup>1</sup> / 5890 <sup>2</sup>
Dynamic load torque (My), maximum	[Nm]	720 <sup>1</sup> / 6640 <sup>2</sup>
Dynamic load torque (Mz), maximum	[Nm]	720 <sup>1</sup> / 6640 <sup>2</sup>
Drive shaft force (Frd), maximum	[N]	700
Drive shaft torque (Mta), maximum	[Nm]	150
Pulley diameter	[mm]	63,66
Stroke per shaft revolution	[mm]	200
Weight	[kg]	
of unit with zero stroke		30,8
of every 100 mm of stroke		2,2
of each carriage		9,6

<sup>1</sup> Value for the complete unit

<sup>2</sup> Value for the ball guide only

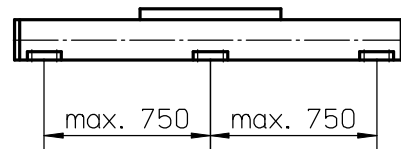
<sup>3</sup> See diagram Force Fx

### Carriage Idle Torque, (M idle) [Nm]

Input speed [rpm]	Idle torque [Nm]
150	8,5
750	12
1500	14,5

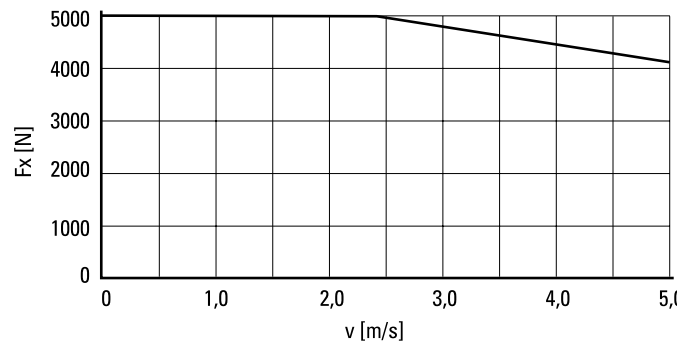
M idle = the input torque needed to move the carriage with no load on it.

### Deflection of the Profile

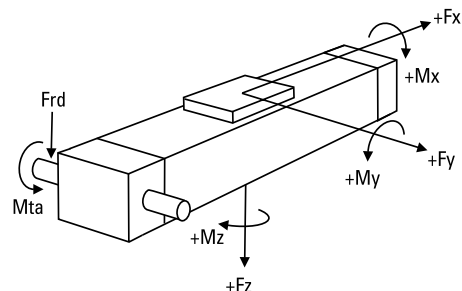


A mounting clamp must be installed at least at every 750 mm to be able to operate the maximum load. Less clamps may be required if less load is being operated, see the additional technical data for more information.

### Force Fx as a Function of the Speed

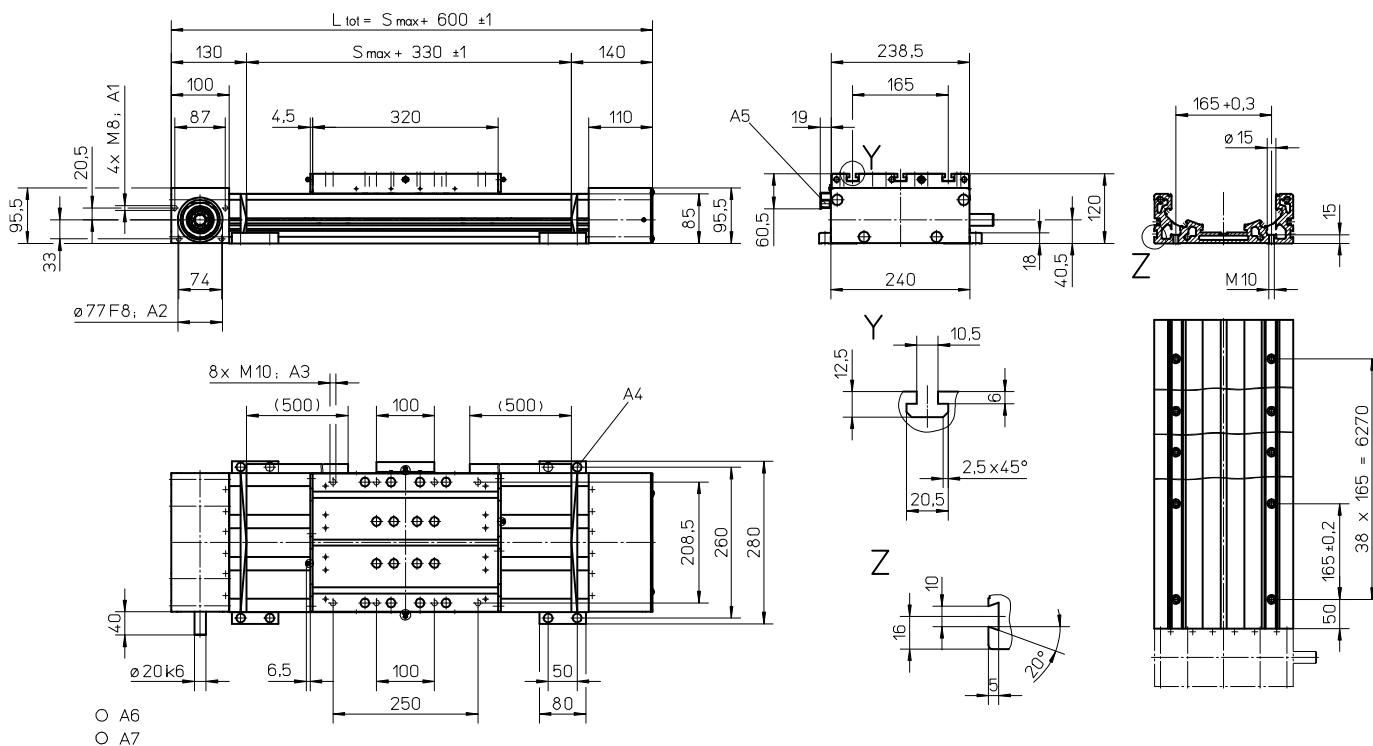


### Definition of Forces



# MLSM80Z

## Belt Drive, Ball Guide

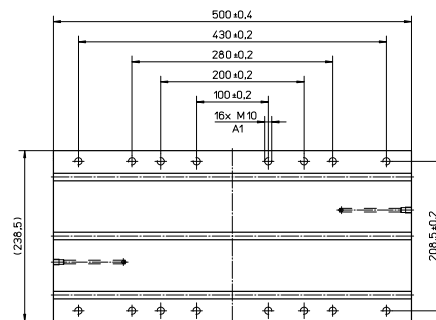


- A1: depth 18
- A2: depth 4
- A3: depth 15
- A4: socket cap screw ISO4762-M8x20 8.8

- A5: ENF inductive sensor rail option kit (optional)
- A6: tapered lubricating nipple to DIN71412 M8x1 on fixed-bearing side as standard feature
- A7: can be changed over to one of the three alternative lubricating points by the customer

### Long Carriage

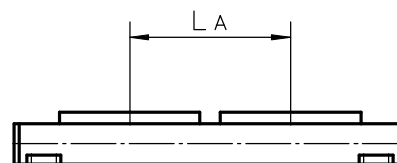
Parameter	MLSM80Z	
Carriage length	[mm]	500
Dynamic load torque (My), maximum	[Nm]	1400
Dynamic load torque (Mz), maximum	[Nm]	1400
Weight	[kg]	14



A1: depth 15

### Double Carriages

Parameter	MLSM80Z	
Minimum distance between carriages (LA)	[mm]	400
Dynamic load (Fy), maximum	[N]	12800
Dynamic load (Fz), maximum	[N]	12800
Dynamic load torque (My), maximum	[Nm]	$L A^1 \times 6,4$
Dynamic load torque (Mz), maximum	[Nm]	$L A^1 \times 6,4$
Force required to move second carriage	[N]	350
Total length (L tot)	[mm]	$S_{max} + 600 + L A$



<sup>1</sup> Value in mm