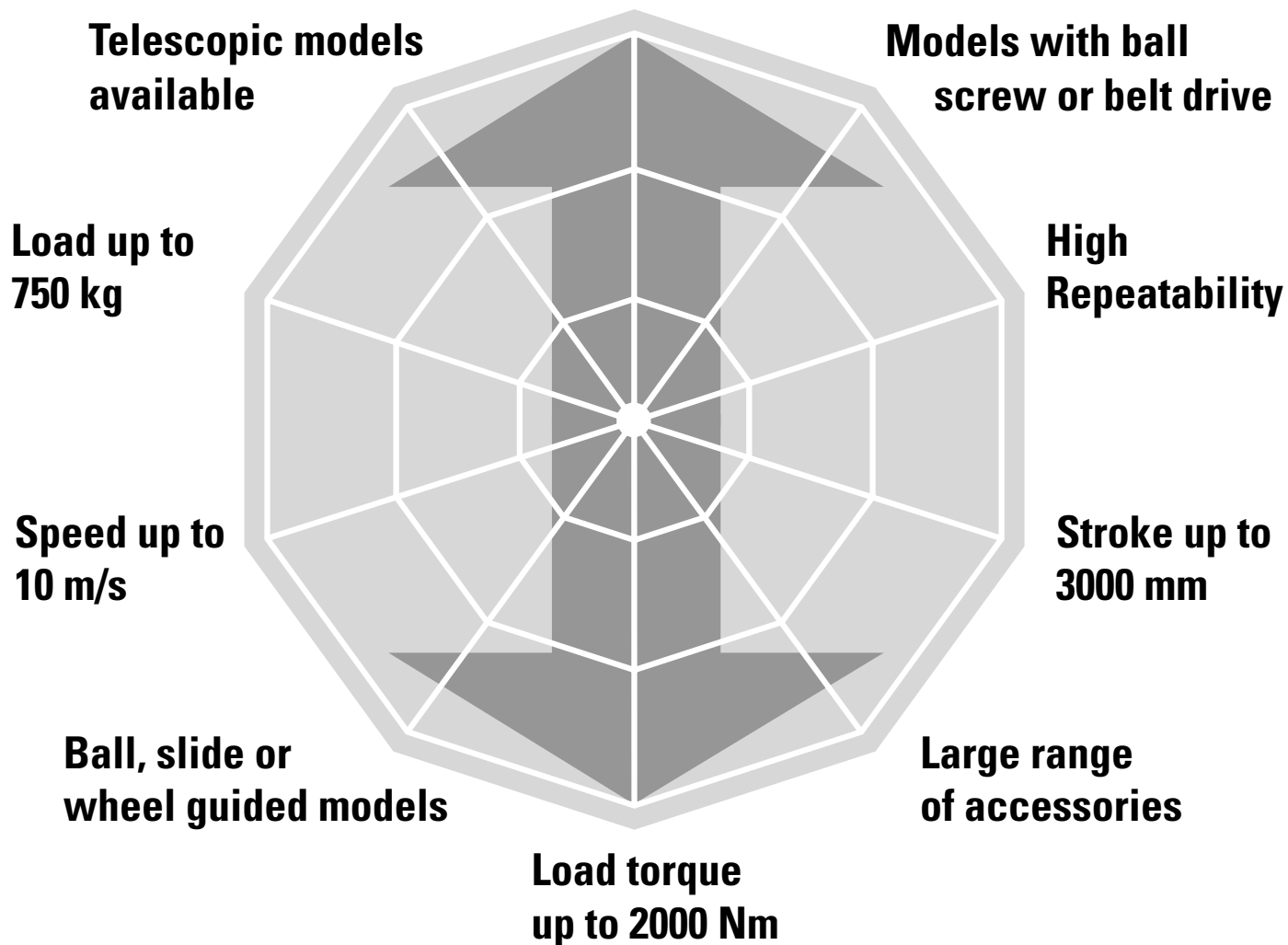


## Linear Lifting Units

SpeedLine, Movo Z

**Developed for lifting applications**



### Typical Applications

Typical applications are found in most industries where light, medium or heavy loads need to be lifted. Examples are pick and place operations, materials handling, electronic assembly and for lifting equipment in automotive assembly lines.

## SpeedLine WHZ



### Features

- Can be installed in all directions
- Belt drive
- External wheel guides
- Speed up to 10 m/s
- Acceleration up to 40 m/s<sup>2</sup>

Parameter		WHZ50	WHZ80
Profile size (width × length)	[mm]	50 × 50	80 × 80
Stroke length (S max), maximum	[mm]	1500	3000
Linear speed, maximum	[m/s]	6,5	10,0
Dynamic load (Fx), maximum	[N]	670	1480
Remarks		the load is always attached to the end of the lifting profile	the load is always attached to the end of the lifting profile
Page		114	116

## Movo Z



### Features

- Telescopic movement
- Ball screw drive
- Internal slide guides
- Load up to 7500 N
- Load torque up to 2000 Nm
- Two end stop limit switches (Z2 only)

Parameter		Z2	Z3
Profile size (width × height)	[mm]	188 × 150	188 × 150
Stroke length (S max), maximum	[mm]	1500	1500
Linear speed, maximum	[m/s]	1,25	1,25
Dynamic load (Fz), maximum	[N]	7500	7500
Remarks		Can be installed in any direction. The load must be attached at the end of the lifting profile	Can only be installed vertically. The load must be attached at the end of the lifting profile.
Page		118	120

## Movo ZB



### Features

- Can be installed in all directions
- Belt drive
- Internal ball guides
- Stroke up to 2,5 m

Parameter		ZB
Profile size (width × height)	[mm]	88 × 88
Stroke length (S max), maximum	[mm]	2500
Linear speed, maximum	[m/s]	3,0
Dynamic load (Fz), maximum	[N]	500
Remarks	the load is always attached to the end of the lifting profile	
Page		122

# WHZ50

## Belt Drive, Wheel Guide

- » Ordering key - see page 216
- » Accessories - see page 137
- » Additional data - see page 194

### General Specifications

Parameter	WHZ50
Profile size (w × h) [mm]	50 × 50
Type of belt	16 ATL 5
Carriage sealing system	none
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubrication of carriage and guide surfaces
Included accessories	-

### Performance Specifications

Parameter		WHZ50
Stroke length (S max), maximum	[mm]	1500
Linear speed, maximum	[m/s]	6,5
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	3250
Operation temperature limits	[°C]	0 – 80
Dynamic load (Fx), maximum	[N]	670 <sup>3</sup>
Dynamic load (Fy), maximum	[N]	415 <sup>1</sup> / 2820 <sup>2</sup>
Dynamic load (Fz), maximum	[N]	730 <sup>1</sup> / 5080 <sup>2</sup>
Dynamic load torque (Mx), maximum	[Nm]	16 <sup>1</sup> / 100 <sup>2</sup>
Dynamic load torque (My), maximum	[Nm]	87 <sup>1</sup> / 500 <sup>2</sup>
Dynamic load torque (Mz), maximum	[Nm]	50 <sup>1</sup> / 280 <sup>2</sup>
Drive shaft force (Frd), maximum	[N]	150
Drive shaft torque (Mta), maximum	[Nm]	17
Pulley diameter	[mm]	38,2
Stroke per shaft revolution	[mm]	120
Weight	[kg]	
of unit with zero stroke		4,50
of every 100 mm of stroke		0,42
of each drive station box		2,90

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

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

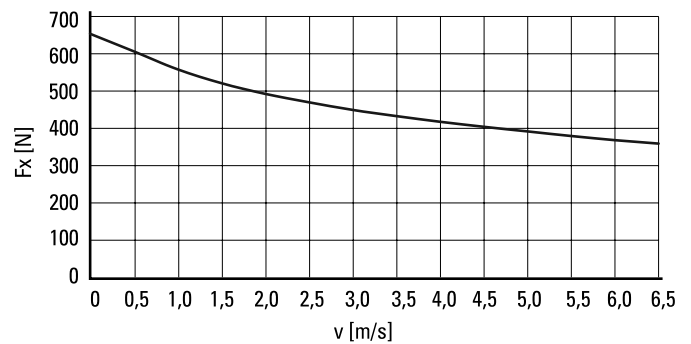
<sup>3</sup> See diagram Force Fx

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

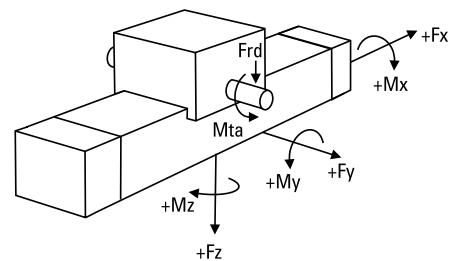
Input speed [rpm]	Idle torque [Nm]
150	1,7
1500	2,4
3250	3,8

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

### Force Fx as a Function of the Speed

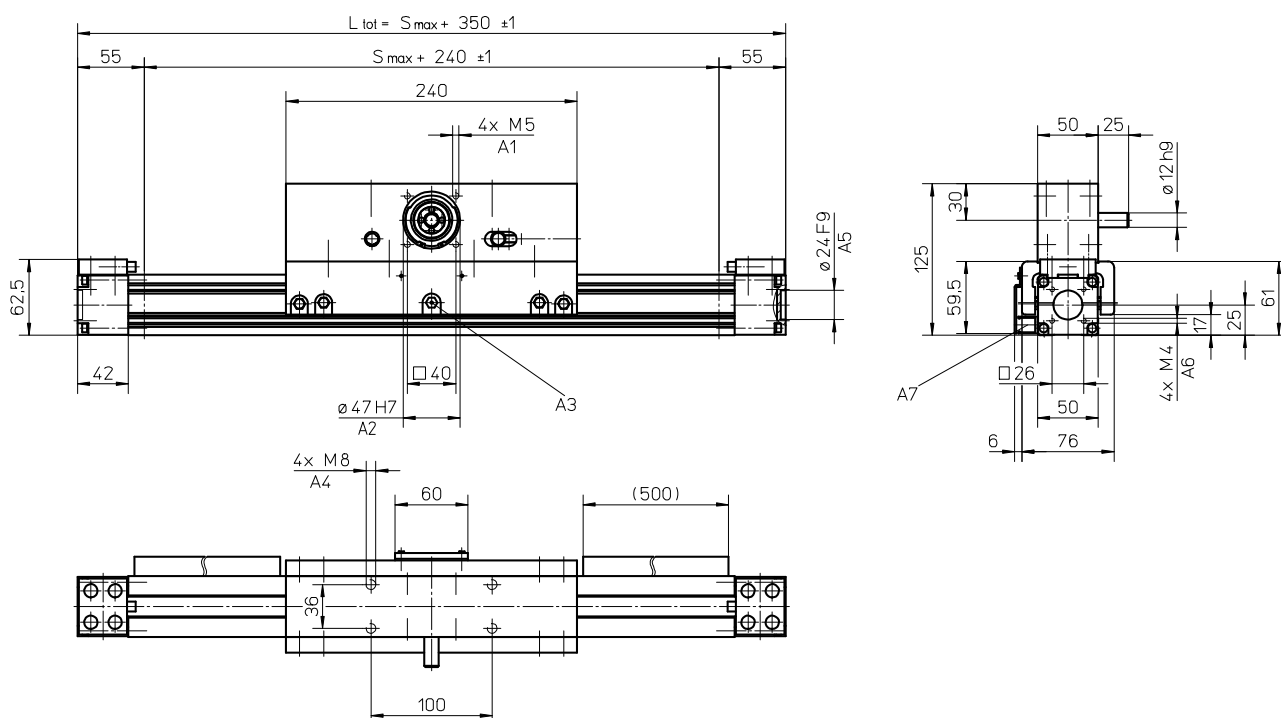


### Definition of Forces



# WHZ50

## Belt Drive, Wheel Guide

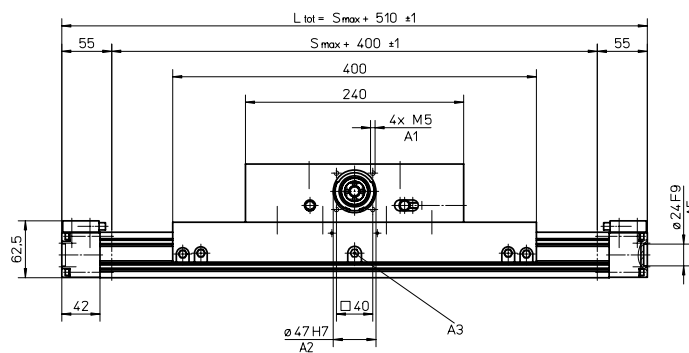


A1: depth 12  
 A2: depth 3,5  
 A3: funnel type lubricating nipple DIN3405-M6x1-D1  
 A4: depth 16

A5: depth 4  
 A6: depth 8  
 A7: ENF inductive sensor rail option kit (optional)

### Long Carriage

Parameter	WHZ50	
Carriage length	[mm]	400
Dynamic load torque (My), maximum	[Nm]	130
Dynamic load torque (Mz), maximum	[Nm]	75
Weight	[kg]	3,3

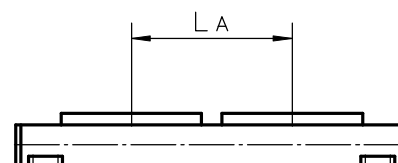


A1: depth 12  
 A2: depth 3,5

A3: funnel type lubricating nipple DIN3405-M6x1-D1  
 A5: depth 4

### Double Carriages<sup>2</sup>

Parameter	WHZ50	
Minimum distance between carriages (LA)	[mm]	260
Dynamic load (Fy), maximum	[N]	830
Dynamic load (Fz), maximum	[N]	1460
Dynamic load torque (My), maximum	[Nm]	$L A^1 \times 0,415$
Dynamic load torque (Mz), maximum	[Nm]	$L A^1 \times 0,73$
Force required to move second carriage	[N]	16
Total length (L tot)	[mm]	$S_{max} + 350 + L A$



<sup>1</sup> Value in mm

<sup>2</sup> Second carriage is always a long carriage

# WHZ80

## Belt Drive, Wheel Guide

- » Ordering key - see page 216
- » Accessories - see page 137
- » Additional data - see page 194

### General Specifications

Parameter	WHZ80
Profile size (w × h) [mm]	80 × 80
Type of belt	32 ATL 5
Carriage sealing system	none
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubrication of carriage and guide surfaces
Included accessories	-

### Performance Specifications

Parameter		WHZ80
Stroke length (S max), maximum	[mm]	3000
Linear speed, maximum	[m/s]	10,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,05
Input speed, maximum	[rpm]	3000
Operation temperature limits	[°C]	0 – 80
Dynamic load (F <sub>x</sub> ), maximum	[N]	1480 <sup>3</sup>
Dynamic load (F <sub>y</sub> ), maximum	[N]	882 <sup>1</sup> / 8160 <sup>2</sup>
Dynamic load (F <sub>z</sub> ), maximum	[N]	2100 <sup>1</sup> / 14680 <sup>2</sup>
Dynamic load torque (M <sub>x</sub> ), maximum	[Nm]	75 <sup>1</sup> / 480 <sup>2</sup>
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	230 <sup>1</sup> / 1610 <sup>2</sup>
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	100 <sup>1</sup> / 900 <sup>2</sup>
Drive shaft force (F <sub>rd</sub> ), maximum	[N]	500
Drive shaft torque (M <sub>ta</sub> ), maximum	[Nm]	50
Pulley diameter	[mm]	63,66
Stroke per shaft revolution	[mm]	200
Weight	[kg]	
of unit with zero stroke		11,20
of every 100 mm of stroke		0,91
of each drive station box		6,65

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

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

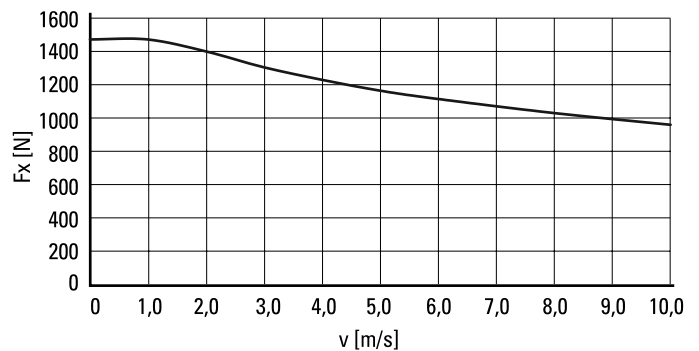
<sup>3</sup> See diagram Force F<sub>x</sub>

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

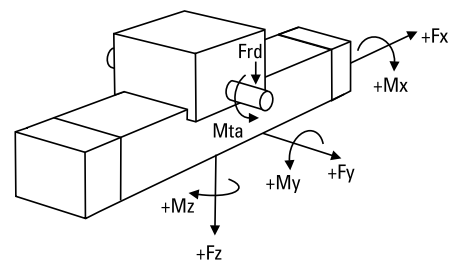
Input speed [rpm]	Idle torque [Nm]
150	2,4
1500	3,5
3000	5,0

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

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

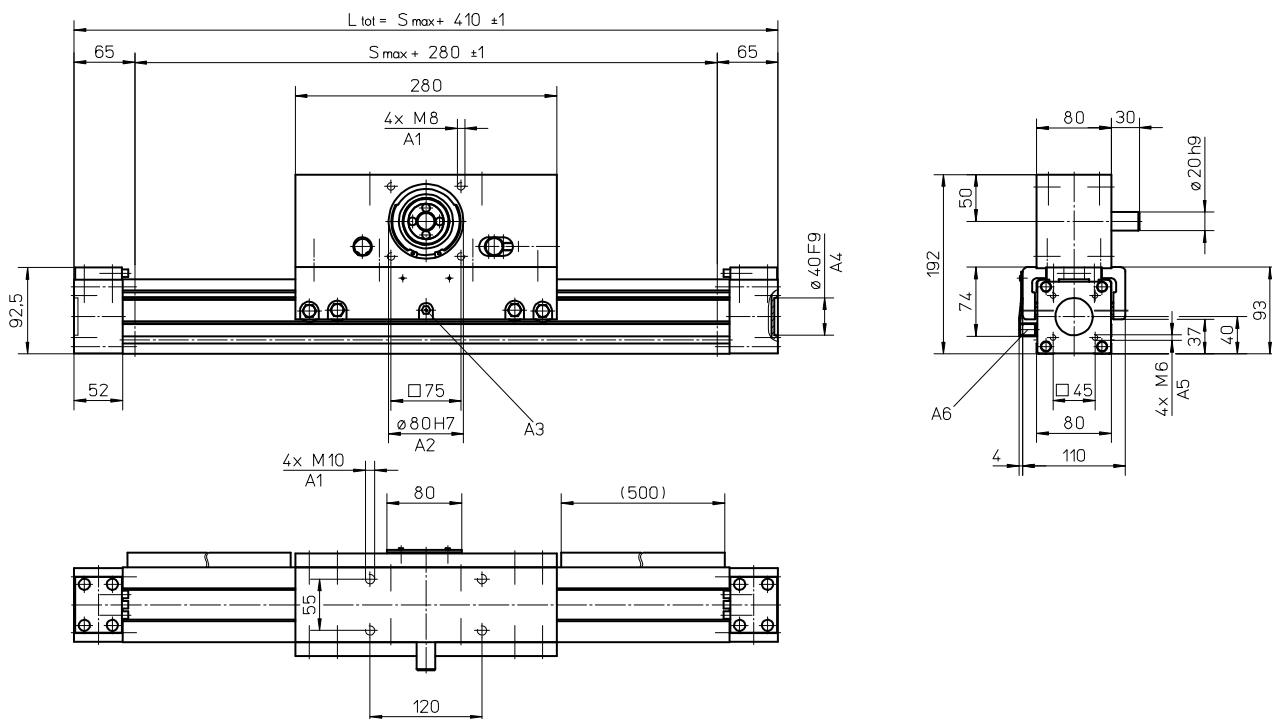


### Definition of Forces



# WHZ80

## Belt Drive, Wheel Guide

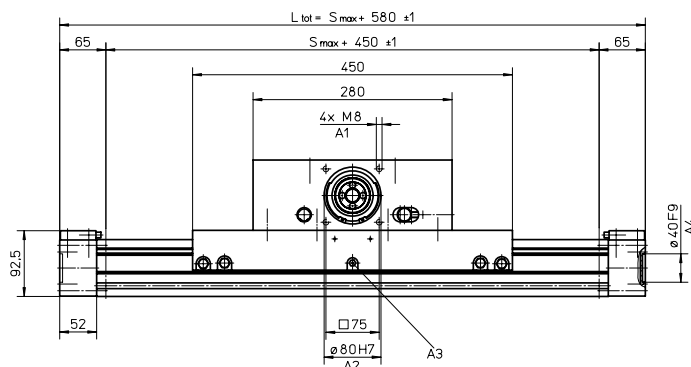


A1: depth 20  
 A2: depth 3,5  
 A3: funnel type lubricating nipple DIN3405-M6x1-D1

A4: depth 4  
 A5: depth 15  
 A6: ENF inductive sensor rail option kit (optional)

### Long Carriage

Parameter		WHZ80
Carriage length	[mm]	450
Dynamic load torque (My), maximum	[Nm]	345
Dynamic load torque (Mz), maximum	[Nm]	150
Weight	[kg]	7,4

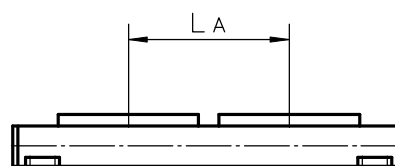


A1: depth 20  
 A2: depth 3,5

A3: funnel type lubricating nipple DIN3405-M6x1-D1  
 A4: depth 4

### Double Carriages<sup>2</sup>

Parameter		WHZ80
Minimum distance between carriages (L <sub>A</sub> )	[mm]	300
Dynamic load (F <sub>y</sub> ), maximum	[N]	1764
Dynamic load (F <sub>z</sub> ), maximum	[N]	4200
Dynamic load torque (M <sub>y</sub> ), maximum	[Nm]	L <sub>A</sub> <sup>1</sup> × 0,882
Dynamic load torque (M <sub>z</sub> ), maximum	[Nm]	L <sub>A</sub> <sup>1</sup> × 2,1
Force required to move second carriage	[N]	20
Total length (L <sub>tot</sub> )	[mm]	S <sub>max</sub> + 410 + L <sub>A</sub>



<sup>1</sup> Value in mm

<sup>2</sup> Second carriage is always a long carriage



# Z2

## Ball Screw Drive, Slide Guide

» Ordering key - see page 216  
 » Accessories - see page 137  
 » Additional data - see page 194

### General Specifications

Parameter	Z2
Profile size (w × h) [mm]	188 × 150
Type of screw	ball screw with single nut
Sealing system	none
Screw supports	none
Lubrication	lubrication of screw and slide surfaces
Included accessories	none

### Performance Specifications

Parameter	Z2
Stroke length (S max), maximum [mm]	1500
Linear speed, maximum [m/s]	1,25
Acceleration, maximum [m/s <sup>2</sup> ]	8
Repeatability [± mm]	0,1
Input speed, maximum screw diameter/lead [mm] 25/10, 25/25 [rpm]	3000
screw diameter/lead [mm] 32/20	2500
Operation temperature limits [°C]	-20 – 70
Dynamic load (Fz), maximum screw diameter/lead [mm] 25/10, 25/25 [N]	5000
screw diameter/lead [mm] 32/20	7500
Dynamic load torque (Mx), maximum [Nm]	700 <sup>1</sup>
Dynamic load torque (My), maximum [Nm]	700 <sup>1</sup>
Dynamic load torque (Mz), maximum [Nm]	330 <sup>1</sup>
Drive shaft force (Frd), maximum screw diameter/lead [mm] 25/10, 25/25 [N]	1000
screw diameter/lead [mm] 32/20	1200
Drive shaft torque (Mta), maximum screw diameter/lead [mm] 25/10, 25/25 [Nm]	45
screw diameter/lead [mm] 32/20	93
Screw versions, diameter (d <sub>0</sub> ) / lead (p) [mm]	25/10, 25/25, 32/20
Weight [kg]	
of unit with zero stroke, ball screw ø 25 mm	19,00
of unit with zero stroke, ball screw ø 32 mm	23,64
of every 100 mm of stroke, ball screw ø 25 mm	2,50
of every 100 mm of stroke, ball screw ø 32 mm	2,80

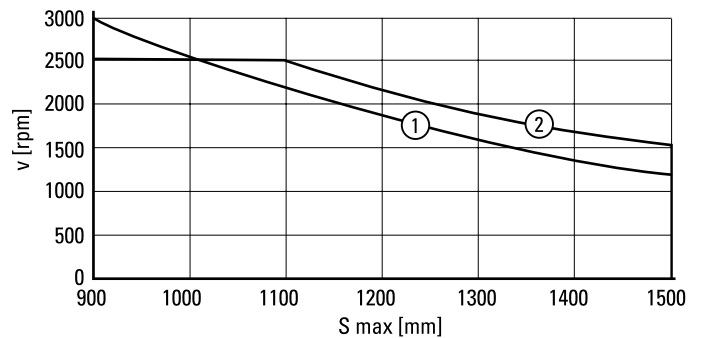
<sup>1</sup> Value for the complete unit

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

Input speed [rpm]	Screw diameter/lead [mm]		
	d <sub>0</sub> = 25 / p = 10	d <sub>0</sub> = 25 / p = 25	d <sub>0</sub> = 32 / p = 20
500	0,7	1,9	1,5

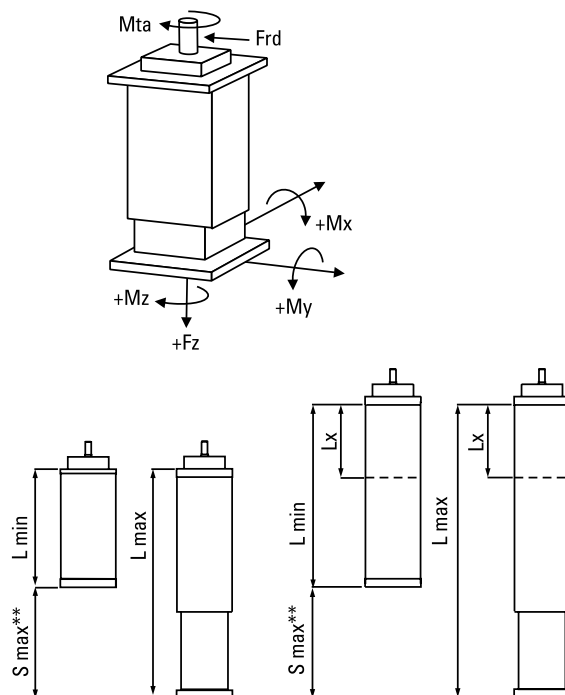
M<sub>idle</sub> = the input torque needed to move the lifting profiles without any load.

### Critical Speed



1: screw diameter 25 mm  
 2: screw diameter 32 mm

### Definition of Forces and Stroke

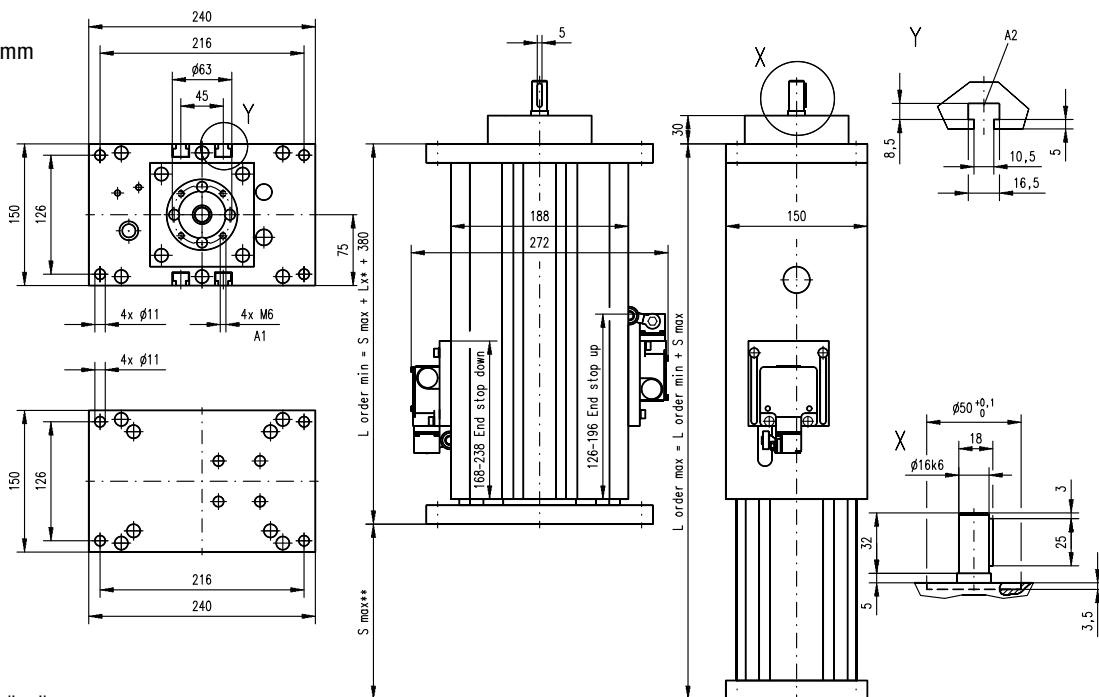


\*\* S<sub>max</sub> = maximum stroke between the mechanical ends of the unit. The practical stroke is normally 100 mm shorter to avoid running into the ends of the unit.

# Z2

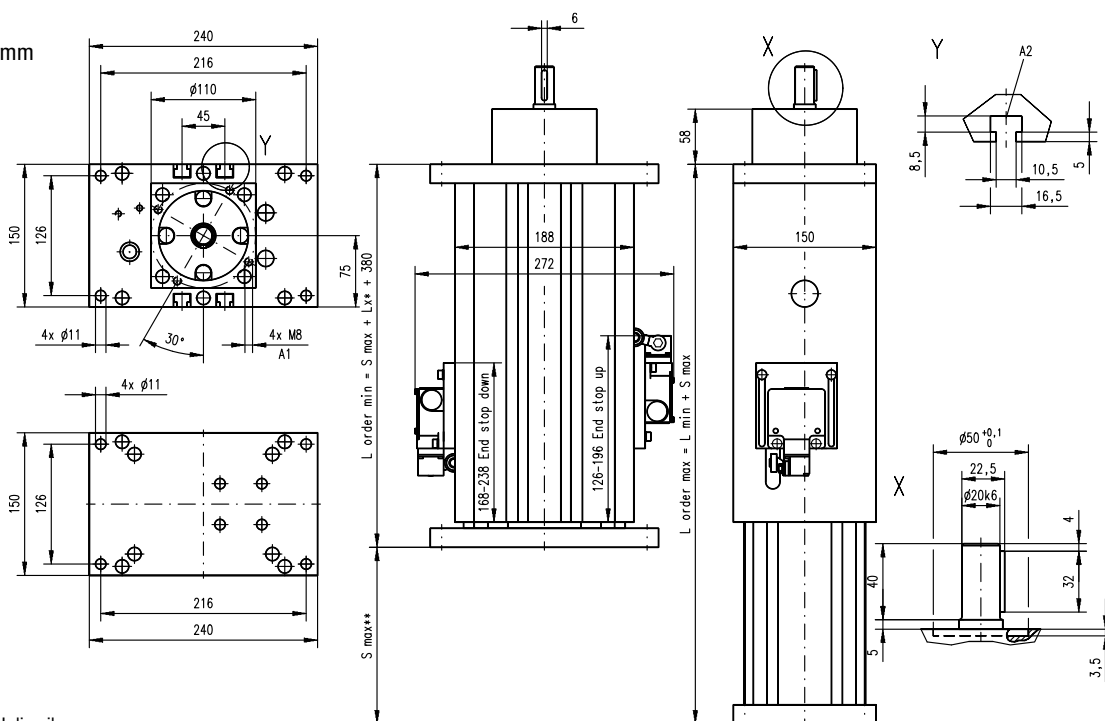
## Ball Screw Drive, Slide Guide

MGZ2K25  
screw  $\varnothing 25$  mm



A1: depth 9, Heli coil  
A2: T-slot

MGZ2K32  
screw  $\varnothing 32$  mm



A1: depth 12, Heli coil  
A2: T-slot

Type of unit	Minimum retracted length (L min) [mm]	Maximum extended length (L max) [mm]
Standard	$L_{min} = S_{max} + 380$	$L_{max} = L_{min} + S_{max}$
Elongated*	$L_{min} = S_{max} + 380 + L_x$	$L_{max} = L_{min} + S_{max}$

\* Elongated versions have an extra length (Lx) added to the total length of the unit which makes the unit longer but does not add any extra length to the stroke (S max).

# Z3

## Ball Screw Drive, Slide Guide

» Ordering key - see page 216  
 » Accessories - see page 137  
 » Additional data - see page 194

### General Specifications

Parameter	Z3
Profile size (w × h) [mm]	188 × 150
Type of screw	ball screw with single nut
Sealing system	none
Screw supports	none
Lubrication	lubrication of screw and slide surfaces
Included accessories	none

### Performance Specifications

Parameter	Z3
Stroke length (S max), maximum [mm]	1500
Linear speed, maximum [m/s]	1,25
Acceleration, maximum [m/s <sup>2</sup> ]	8
Repeatability [± mm]	0,1
Input speed, maximum screw diameter/lead [mm] 25/10, 25/25 [rpm]	3000
screw diameter/lead [mm] 32/20	2500
Operation temperature limits [°C]	-20 – 70
Dynamic load (Fz), maximum screw diameter/lead [mm] 25/10, 25/25 [N]	5000
screw diameter/lead [mm] 32/20	7500
Dynamic load torque (Mx), maximum [Nm]	2000 <sup>1</sup>
Dynamic load torque (My), maximum [Nm]	2000 <sup>1</sup>
Dynamic load torque (Mz), maximum [Nm]	330 <sup>1</sup>
Drive shaft force (Frd), maximum screw diameter/lead [mm] 25/10, 25/25 [N]	1000
screw diameter/lead [mm] 32/20	1200
Drive shaft torque (Mta), maximum screw diameter/lead [mm] 25/10, 25/25 [Nm]	45
screw diameter/lead [mm] 32/20	93
Screw versions, diameter (do) / lead (p) [mm]	25/10, 25/25, 32/20
Weight [kg]	
of unit with zero stroke, ball screw ø 25 mm	21,14
of unit with zero stroke, ball screw ø 32 mm	22,65
of every 100 mm of stroke, ball screw ø 25 mm	4,20
of every 100 mm of stroke, ball screw ø 32 mm	4,50

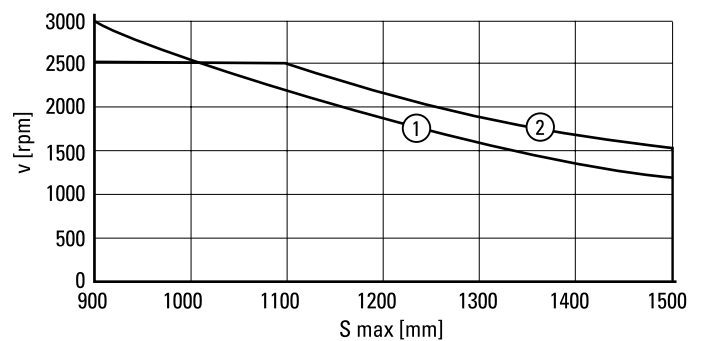
<sup>1</sup> Value for the complete unit

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

Input speed [rpm]	Screw diameter/lead [mm]		
	do = 25 / p = 10	do = 25 / p = 25	do = 32 / p = 20
500	1,1	2,7	2,2

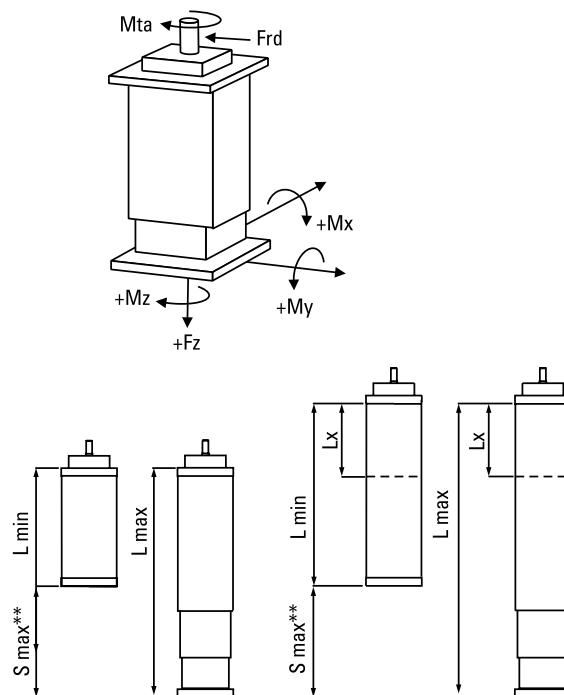
M idle = the input torque needed to move the lifting profiles without any load.

### Critical Speed



1: screw diameter 25 mm  
 2: screw diameter 32 mm

### Definition of Forces and Stroke

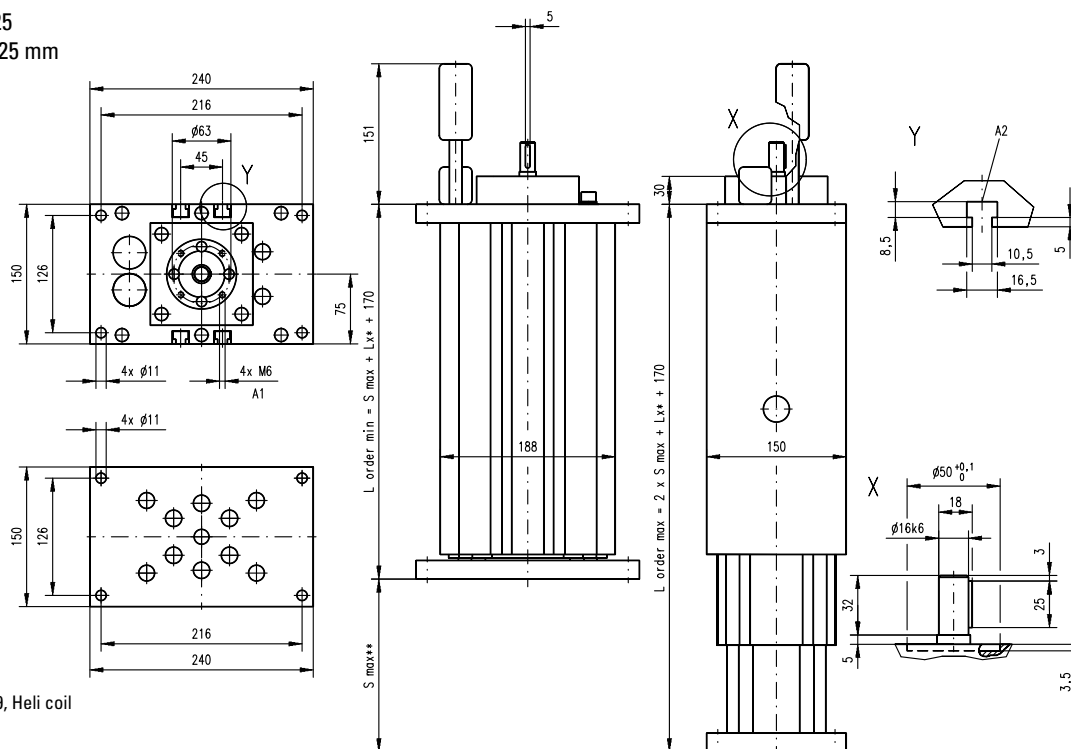


\*\* S max = maximum stroke between the mechanical ends of the unit. The practical stroke is normally 100 mm shorter to avoid running into the ends of the unit.

# Z3

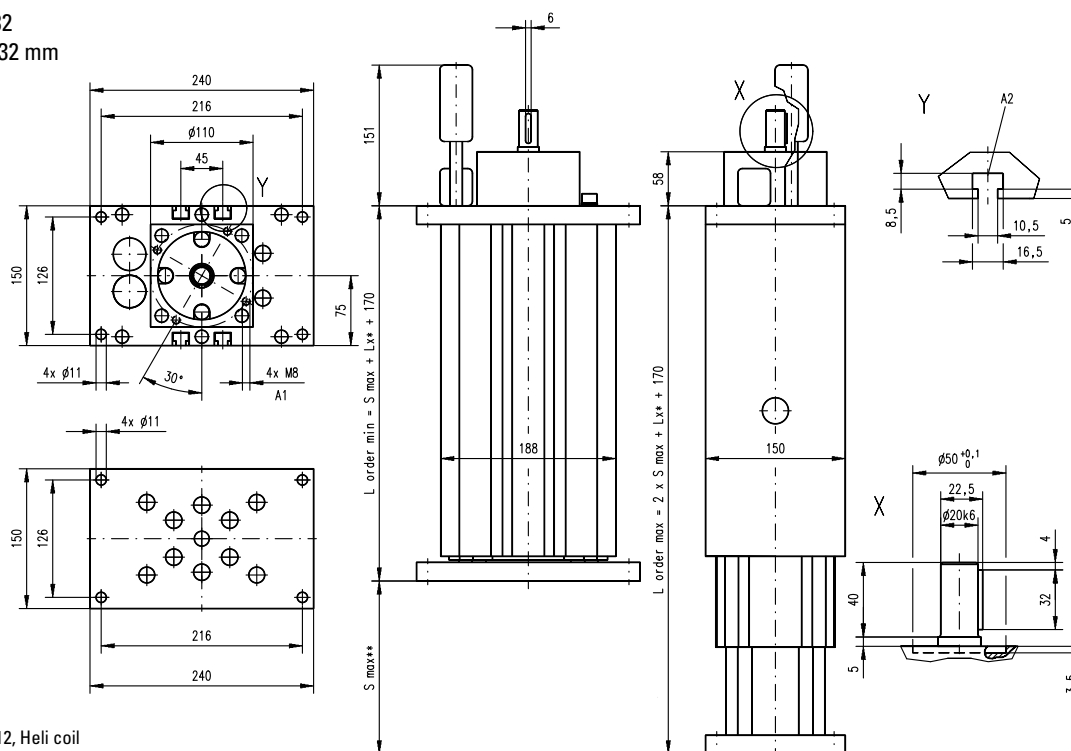
## Ball Screw Drive, Slide Guide

MGZ3K25  
screw  $\varnothing 25$  mm



A1: depth 9, Heli coil  
A2: T-slot

MGZ3K32  
screw  $\varnothing 32$  mm



A1: depth 12, Heli coil  
A2: T-slot

Type of unit	Minimum retracted length (L min) [mm]	Maximum extended length (L max) [mm]
Standard	$L_{min} = S_{max} + 170$	$L_{max} = L_{min} + S_{max}$
Elongated*	$L_{min} = S_{max} + 170 + L_x$	$L_{max} = L_{min} + S_{max}$

\* Elongated versions have an extra length (Lx) added to the total length of the unit which makes the unit longer but does not add any extra length to the stroke (S max).

# ZB

## Belt Drive, Ball Guide

» Ordering key - see page 217  
 » Accessories - see page 137  
 » Additional data - see page 194

### General Specifications

Parameter	ZB
Profile size (w × h) [mm]	88 × 88
Type of belt	50 AT 10
Carriage sealing system	none
Adjustable belt tensioning	the belt can be retensioned by the customer if necessary
Lubrication	lubrication of drive station in two points
Included accessories	none

### Performance Specifications

Parameter		ZB
Stroke length (S max), maximum	[mm]	2500
Linear speed, maximum	[m/s]	3,0
Acceleration, maximum	[m/s <sup>2</sup> ]	40
Repeatability	[± mm]	0,1
Input speed, maximum	[rpm]	900
Operation temperature limits	[°C]	-20 – 70
Dynamic load (Fz), maximum	[N]	500
Dynamic load torque (Mx), maximum	[Nm]	445 <sup>1</sup> / 3340 <sup>2</sup>
Dynamic load torque (My), maximum	[Nm]	445 <sup>1</sup> / 3340 <sup>2</sup>
Dynamic load torque (Mz), maximum	[Nm]	35 <sup>1</sup> / 262 <sup>2</sup>
Drive shaft force (Frd), maximum	[N]	600
Drive shaft torque (Mta), maximum	[Nm]	34
Pulley diameter	[mm]	63,66
Stroke per shaft revolution	[mm]	200
Weight of unit with zero stroke	[kg]	15,50
of every 100 mm of stroke		0,86
of the drive station box		16,20

<sup>1</sup> Value for the complete unit  
<sup>2</sup> Value for the ball guide only

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

Input speed [rpm]	Idle torque [Nm]
500	6,4

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

### Definition of Forces

