Mechanical linear drive units

WIESEL™ *SPEEDLine*®

WIESEL™ *SPEEDLine*® WH40

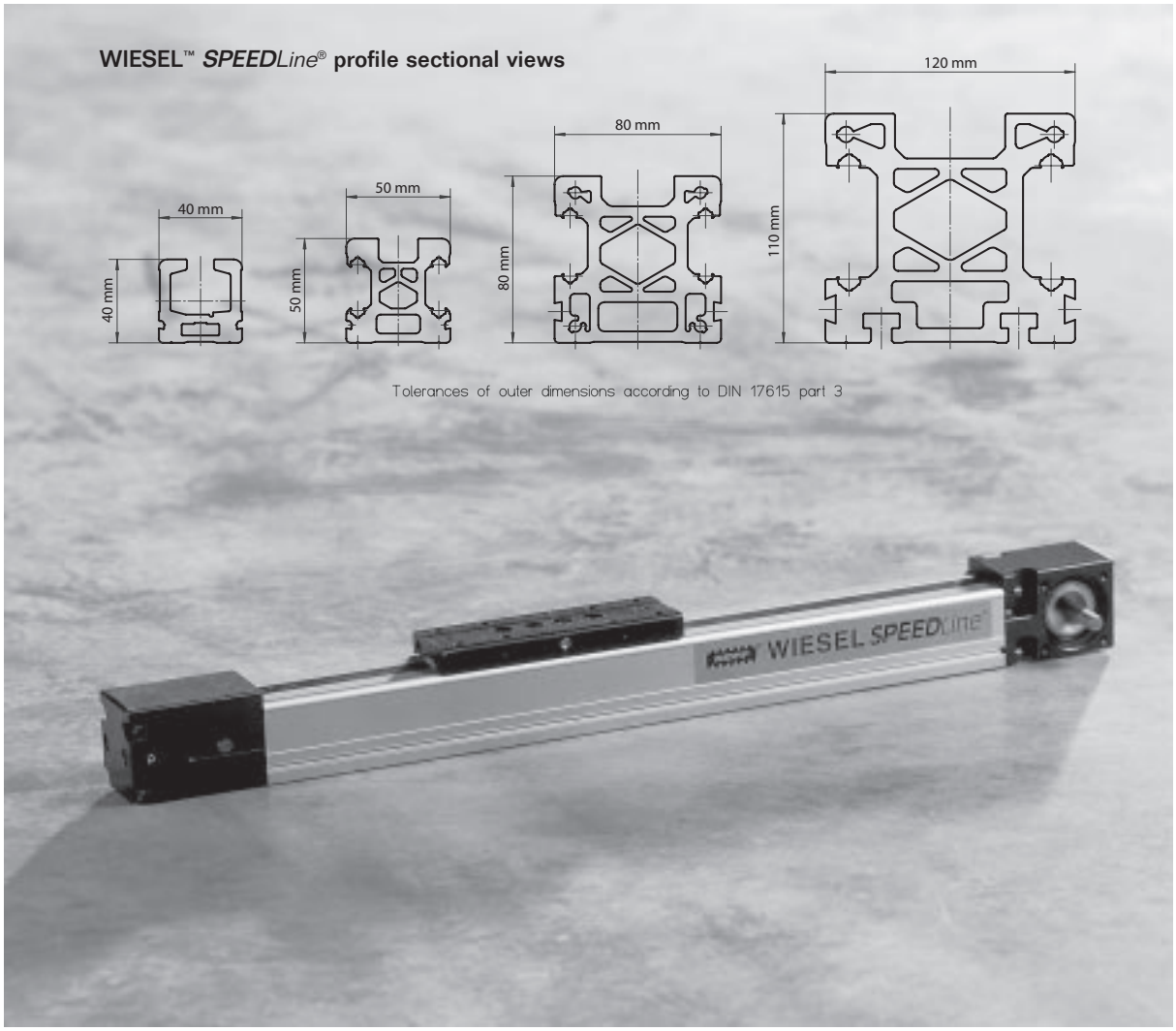
- Completely integrated miniaturized drive unit with linear guide and toothed belt drive.

WIESEL™ *SPEEDLine*® WH50/80/120

- Completely integrated linear axis with roller guideway and toothed belt drive.

WIESEL™ *SPEEDLine*® Z-axis

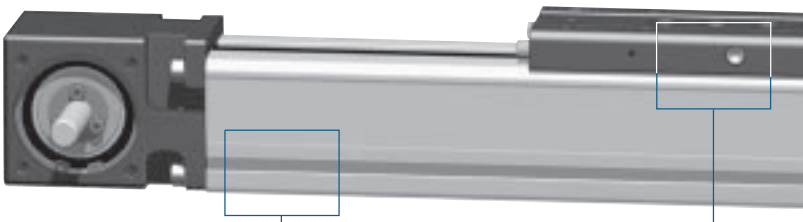
- Especially developed for vertical movements.
- Reduction in dead weight together with the short design allows high dynamics.

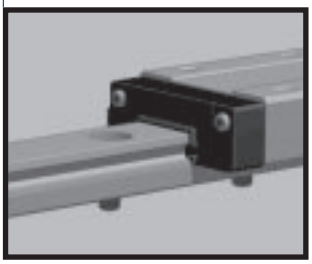


WIESEL™ *SPEEDLine*®

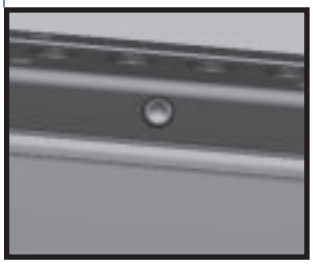
New technology right to the center.

WIESEL™ *SPEEDLine*® WH40
A linear drive unit for dynamic miniaturized applications. High performance with extremely small dimensions.





Linear guides
Precise positioning is made possible by a polished linear guide with a high degree of guide accuracy. A smaller motor can be added thanks to the low coefficient of friction. Rubber wipers protect the mechanism from dirt, thus increasing service life.



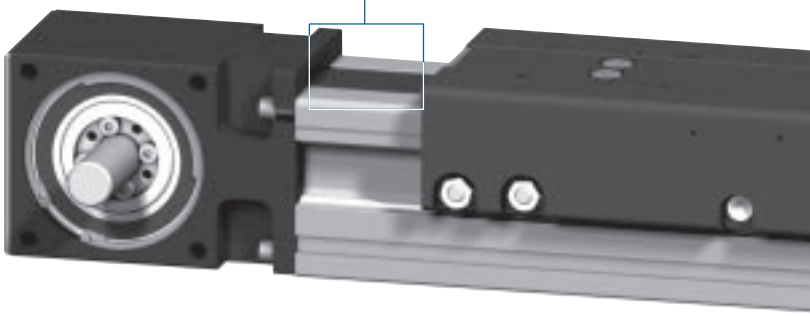
Central lubrication
The linear guide system is conveniently relubricated from a central point. Whether by hand or automatically, maintenance is now a simple matter.

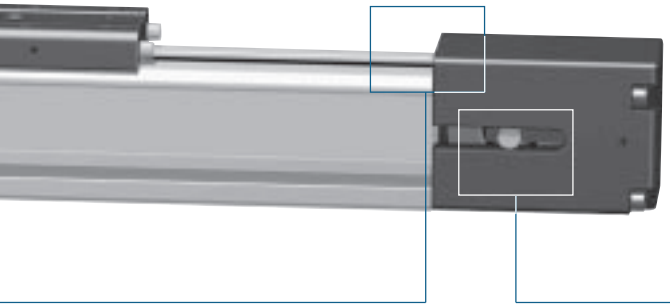
AT toothed belt
A proven drive element:
- high loading
- wear resistance
- high efficiency
- exact spacing
- low mass

Completely new arrangement of the roller guideway
The H-Type arrangement of guidance allows high forces and moments and thereby the choice of a smaller size. Your benefit: lighter and more economical constructions.

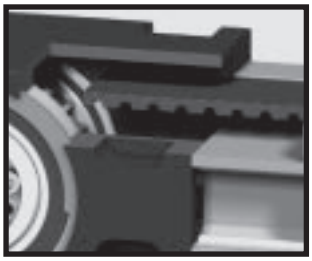
WIESEL™ *SPEEDLine*® WH50, WH80, WH120, WHZ50, WHZ80
With the WIESEL™ *SPEEDLine*® single-axle solutions can be realized as well as two- and three-dimensional handling systems.

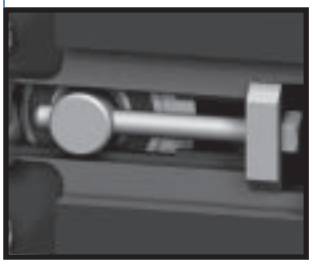
The WIESEL™ ***SPEEDLine***® Z-axis is especially suitable for vertical movements. The reduced mass to be moved together with the short design allow higher dynamics and loads.

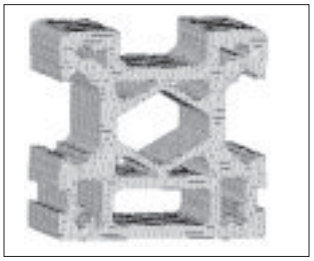




Powered by ATL belt







ATL toothed belt

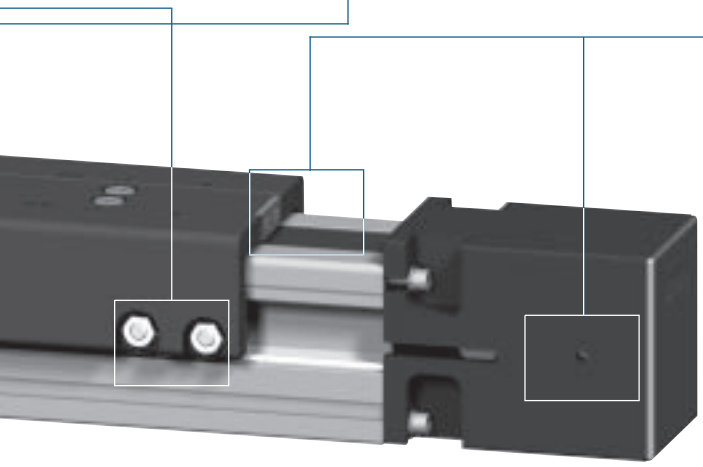
- with steel reinforcement especially suitable for linear drive units
- higher performance
- repeatability of ± 0.05 mm even at high feed forces

Tension and exchange of toothed belt

The toothed belt can be retensioned and exchanged comfortably without dismounting the load (only WH50/80/120), thus reducing your service costs.

FEA optimized design

FEA analysis helps model and optimize the profile and the whole linear axis. The result: highest performance and reliability.



General technical data

WIESEL™ *SPEEDLine*®

Speeds
The linear speed achieved by a linear drive unit depends on the lead of the mechanical drive element and on the input rotational speed. The various linear speeds which can be achieved by the individual sizes are listed in the following table:

Size	Lead [mm/rev.]	n_{max} [rpm]	v_{max} [m/s]
WH40	100	1800	3
WH50/WHZ50	120	3250	6.5
WH80/WHZ80	200	3000	10
WH120	260	2308	10

Installed position
The linear drive units can basically be installed in any position, provided that all the forces and moments occurring remain below the maximum values for the axis concerned.

Security advice
All sizes are generally *not self-locking*. It is therefore advisable to install suitable motors with holding brakes, particularly if the linear drive unit is installed vertically.

In case of a break of the toothed belt the load is released by toothed belt driven linear units. Therefore safety precautions have to be taken for applications which are critical with regard to security.

Loading
All specified maximum forces and moments refer to the center/top of the power bridge. Load overlay at several coordinates: If compound loads occur, with force and moment components in more than one direction, the maximum permissible loads must be reduced to 60% of the specified maximum values. When forces and moments are overlaid in two or three coordinates, it is necessary to reduce the maximum permissible load to 60% of the maximum value.

Load ratings
See page 96

Operating hours
The toothed belt as well as the roller guideway allow continuous operation up to 100%. Extremely high loads, combined with long operating hours, may reduce the lifetime.

Temperatures
All series are designed for continuous operation at ambient temperatures up to 80°C (176°F). Temperatures up to 100°C (212°F) are also permitted for brief periods. The linear drive units are not suitable for operation at subzero temperatures.

Idle torque
The indicated values for the idle torque are mean values determined in a rank. In individual cases these values can deviate.

Straightness/torsion
The aluminum profiles are extruded sections which may display deviations in straightness and torsion due to their manufacturing process. The tolerance of these deviations is defined in DIN 17615. The deviations found in Precision Technology USA, Inc. linear drive units correspond to these limits at least, but are normally well below. In order to obtain the required guide accuracy, the linear drive unit must be aligned with the aid of levelling plates or clamped from a mounting surface machined with sufficient accuracy. This ensures that tolerances of at least 0.1 mm/1000 mm are achieved.

Guide tube
A guide tube contains all elements of a linear drive unit except the mechanical drive element. It serves mainly as a support and holding device for higher loads and moments. For this purpose it is either mounted on the backside of a driven WIESEL™ or installed parallel to it. All WIESEL™ models are also available as guide tubes with guide.

Stroke lengths
The stroke length specified in the order code represents the maximum possible linear displacement. Acceleration and deceleration paths must be taken into account when designing the system, as well as any required over-run.

Repeatability
The repeatability is definded as the capability of a linear drive to get back to an actual position which was reached under the same conditions within the given tolerances. It refers to the average position variation according to VDI/DGQ 3441. The repeatability among others is influenced by:
- Load
- Speed
- Deceleration/acceleration
- Direction of travel
- Temperature

Aggressive working conditions
Because of their tough design WIESEL™ *SPEEDLine*® units can be used even in rough surroundings without additional covering. As a protection against coarse dirt optional wipers can be used. In case of extreme dirt, or fine dust/filings, a protective bellow is recommended and provided on request.

Maintenance
Lubrication WH40
The linear guide must be lubricated via the grease nipple on the power bridge with the aid of a grease gun after 400 hours of operation or at least every 3 months. Grease: rolling bearing grease (original grease: Fuchs Lubritech URETHYN E/M2).

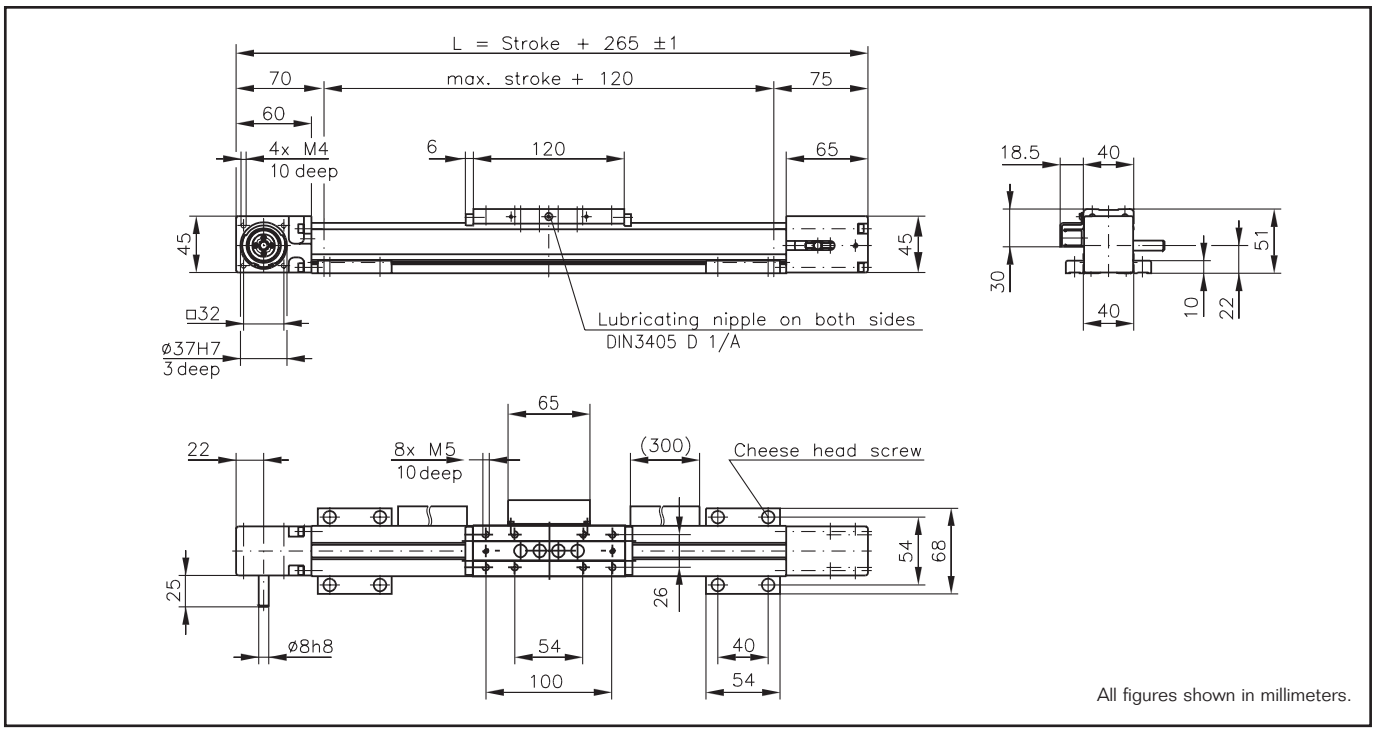
Lubrication WH50/80/120
To maximize the life of the guide system, the two guides should be permanently covered with a thin oil film. The two lubrication points which are arranged at the sides of the power bridge serve for lubrication.

Tensioning of toothed belt
The tension of the toothed belt can be adjusted with the aid of the tensioning screws on the guide casing which are intended for this. The linear units are delivered with optimal tension values in order to guarantee security in function. Changes in this adjustment must only be carried out in service cases and by Precision Technology USA, Inc. service engineers.

Pretensioning of the guide system
The WIESEL™ units leave the factory with optimal preloading values which guarantee optimum traveling characteristics as well as the necessary capacity in forces and moments. Changes in the preloading of the rollers must only be carried out after prior consultation with Precision Technology USA, Inc. service engineers.

WIESEL™ *SPEED*Line® WH40

with linear guide and AT toothed belt



Note: The use of a long power bridge increases the total length.

Technical data

Linear speed: . . . . . .max. 3.0 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 40 m/s²
Drive element: . . . . . .Toothed belt 10AT5
Diameter: . . . . . .31.83 mm
Stroke per revolution: . . . . . .100 mm
Stroke length: . . . . . .up to 2000 mm
Length of power bridge: . . . . . .120 or 210 mm
see page 28
Geometrical moment of inertia: . . .ly 12.6 x 10^4 mm⁴
lz 15.3 x 10^4 mm⁴

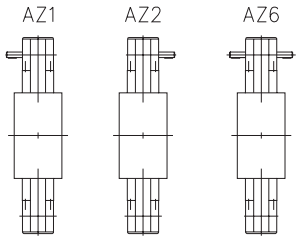
Weights
Basic unit with zero stroke: . . . . .1.19 kg
100 mm stroke: . . . . . .0.15 kg
Power bridge with rollers: . . . . . .0.28 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	0.1
900	0.3
1800	0.6

Execution of drive shafts

(Detailed description see pg 99)
Other executions on request.



Unit conversions

Length:
1 m=1000 mm=39.37 inches
1 inch=25.4 mm

Force:
1 N=0.225 lbf
1 lbf=4.45 N

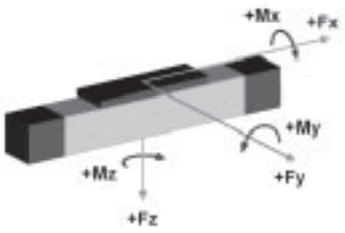
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 m⁴=10^{12} mm⁴=2.4025 x 10^6 in⁴

Mass moment of inertia:
1 kg • m²=10^4 kg • cm²=0.738 lb • ft • s²

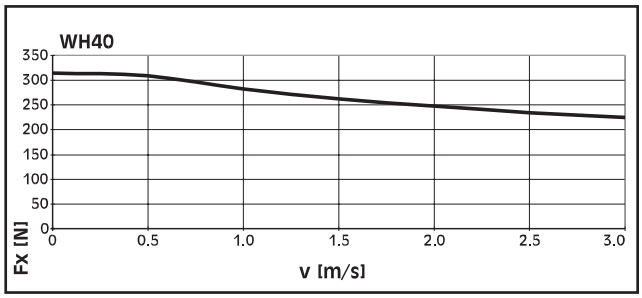
Mass:
1 kg=2.2 lb

Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 315
Fy	450
±Fz	600
Load moment	**dynam. [Nm]**
Mx	10
My[2]	30
Mz[2]	30

Fx depending on the linear speed

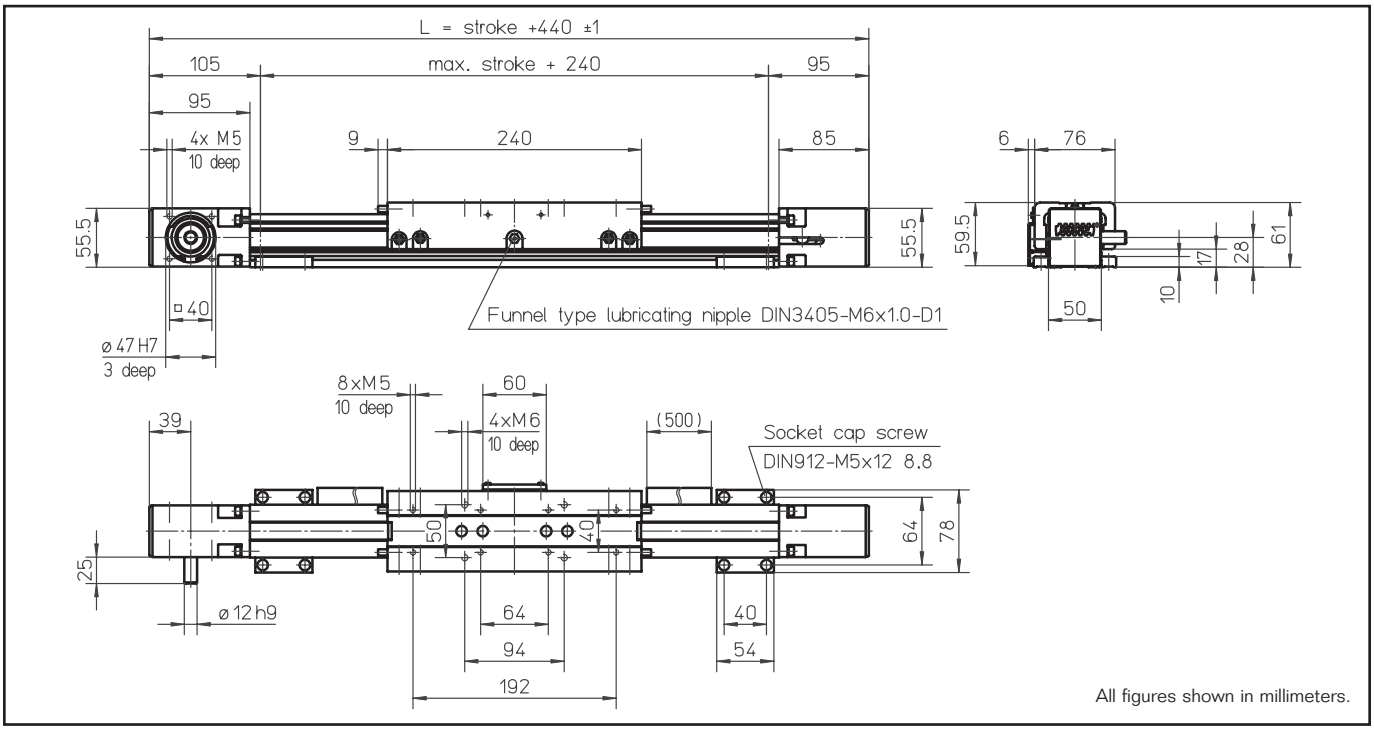


Order Code see page 99

[1] Depending on the speed, see respective chart.
[2] Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

WIESEL™ *SPEED*Line® WH50

with roller guideway and AT toothed belt



Note: In the section of the rail for the initiators the WIESEL™ cannot be fixed by means of KAO mounting brackets. Mounting kit for the lateral assembly of the initiators at the sides of the axis on request. Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

Linear speed: . . . . . .max. 6.5 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 40 m/s²
Drive element: . . . . . .Toothed belt 16ATL5
Diameter: . . . . . .38.20 mm
Stroke per revolution: . . . . . .120 mm
Stroke length: . . . . . .up to 3000 mm
Length of power bridge: . . . . . .240 or 400 mm
see page 28
Geometrical moment of inertia: . . .ly 3.30 x 10^5 mm⁴
lz 2.65 x 10^5 mm⁴

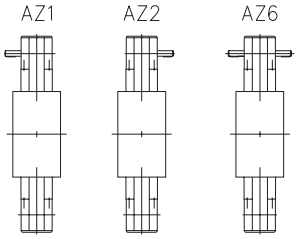
Weights
Basic unit with zero stroke: . . . . .3.50 kg
100 mm stroke: . . . . . .0.44 kg
Power bridge with rollers: . . . . . .0.90 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	1.7
1500	2.4
3250	3.8

Execution of drive shafts

(Detailed description see pg 99)
Other executions on request.



Unit conversions

Length:
1 m=1000 mm=39.37 inches
1 inch=25.4 mm

Force:
1 N=0.225 lbf
1 lbf=4.45 N

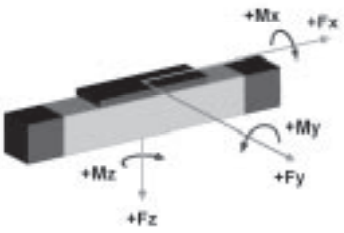
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 m⁴=10^{12} mm⁴=2.4025 x 10^6 in⁴

Mass moment of inertia:
1 kg • m²=10^4 kg • cm²=0.738 lb • ft • s²

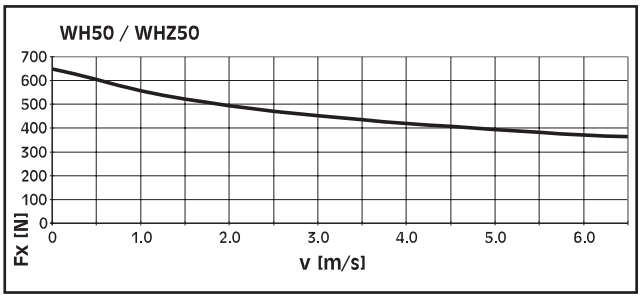
Mass:
1 kg=2.2 lb

Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 670
Fy	415
±Fz	730
Load moment	**dynam. [Nm]**
Mx	16
My[2]	87
Mz[2]	50

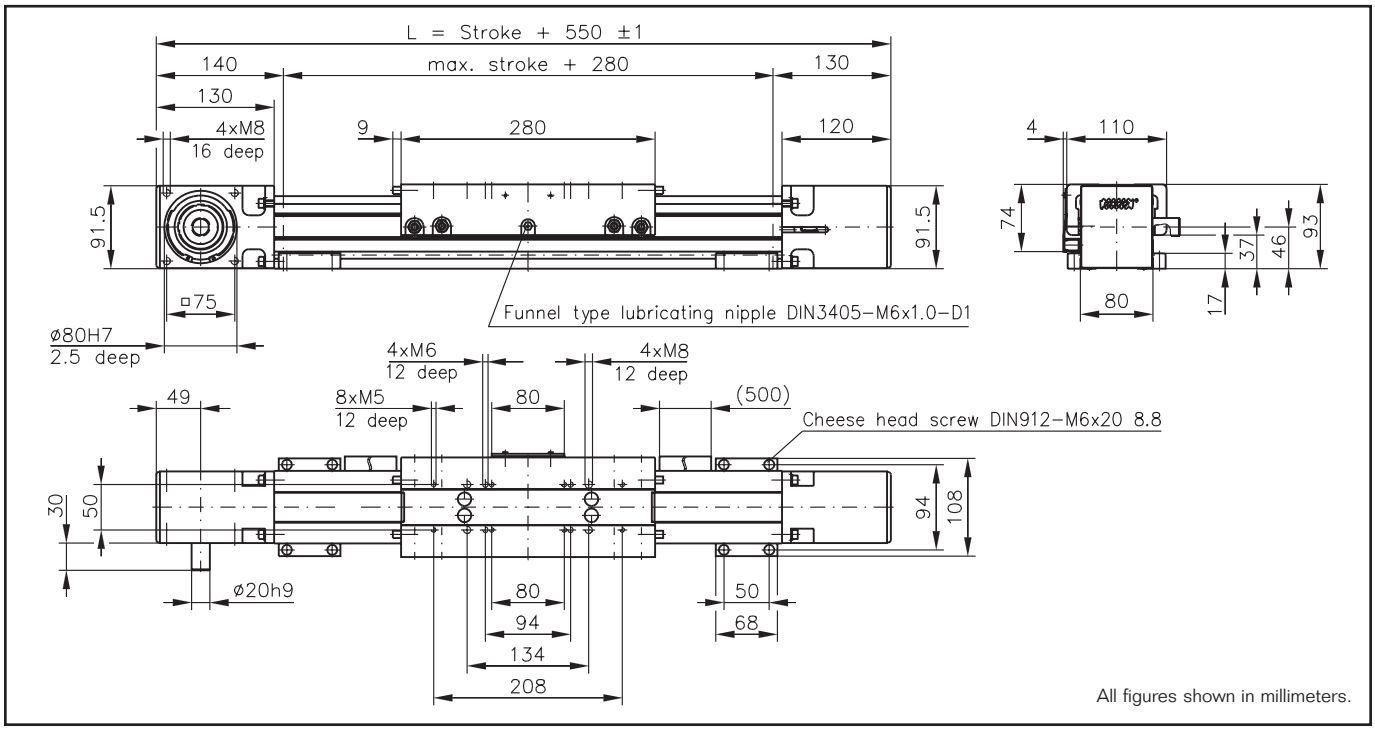
Fx depending on the linear speed



1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

WIESEL™ *SPEED*Line® WH80

with roller guideway and AT toothed belt



Note: Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

Linear speed: . . . . . .max. 10 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 40 m/s²
Drive element: . . . . . .Toothed belt 32ATL10
Diameter: . . . . . .63.66 mm
Stroke per revolution: . . . . . .200 mm
Stroke length: . . . . . .up to 11000 mm
Length of power bridge: . . . . . .280 or 450 mm
see page 28
Geometrical moment of inertia: . . .ly 1.93 x 10^6 mm⁴
lz 1.80 x 10^6 mm⁴

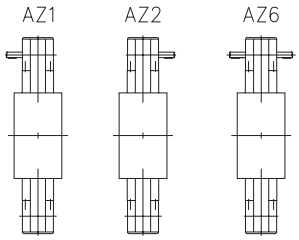
Weights
Basic unit with zero stroke: . . . . .8.63 kg
100 mm stroke: . . . . . .0.93 kg
Power bridge with carriage: . . . . .2.75 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	2.4
1500	3.5
3000	5.0

Execution of drive shafts

(Detailed description see pg 99)
Other executions on request.



Unit conversions

Length:
1 m=1000 mm=39.37 inches
1 inch=25.4 mm

Force:
1 N=0.225 lbf
1 lbf=4.45 N

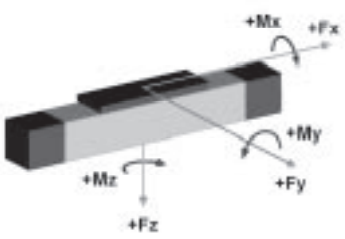
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 m⁴=10^{12} mm⁴=2.4025 x 10^6 in⁴

Mass moment of inertia:
1 kg • m²=10^4 kg • cm²=0.738 lb • ft • s²

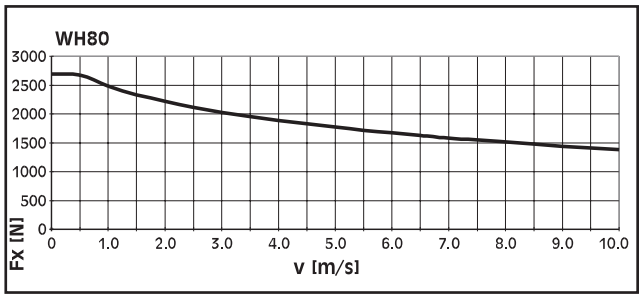
Mass:
1 kg=2.2 lb

Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 2700
Fy	882
±Fz	2100
Load moment	**dynam. [Nm]**
Mx	75
My[2]	230
Mz[2]	100

Fx depending on the linear speed

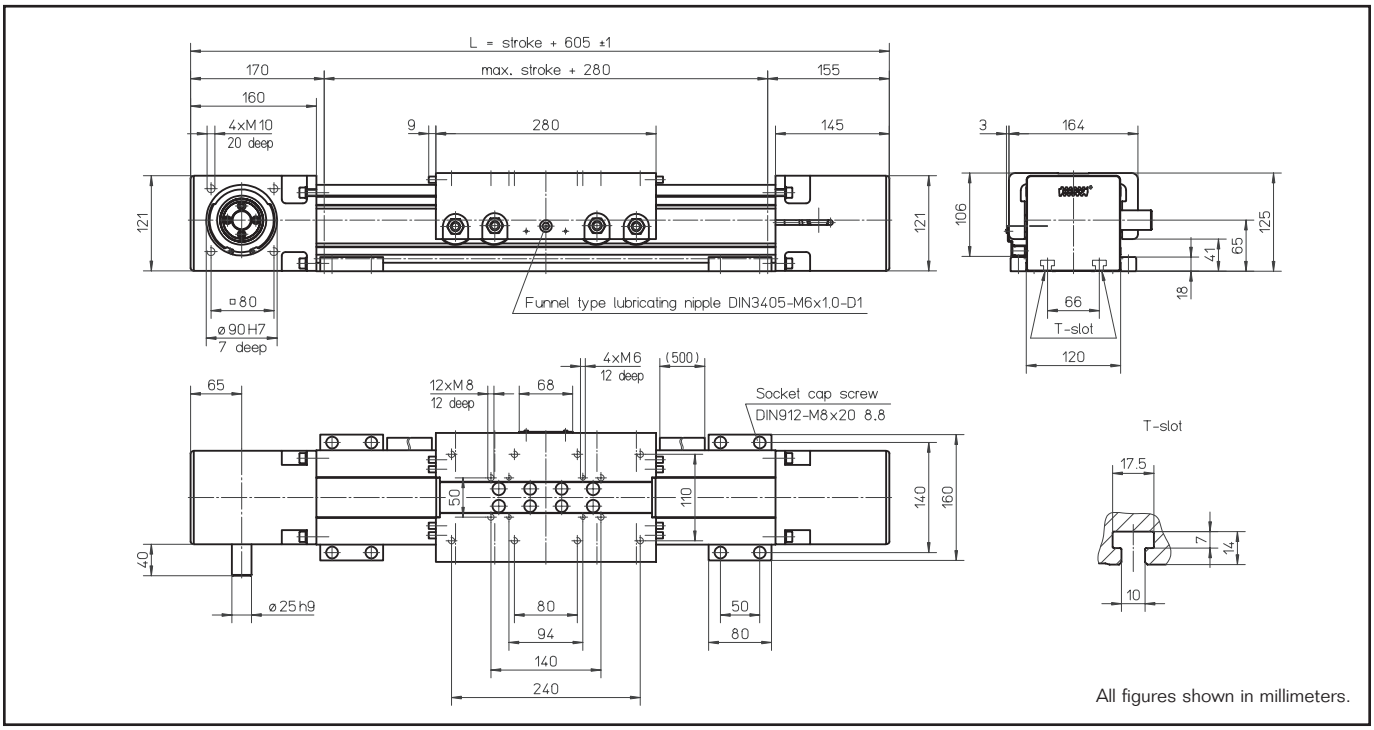


1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

Note: For tube lengths of 5400 mm and over, the tubular profile is composed of two parts. The joint must be adequately supported. It may be possible to position the joint according to customer´s wishes.

WIESEL™ *SPEED*Line® WH120

with roller guideway and AT toothed belt



Note: Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

Linear speed: . . . . . .max. 10 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 40 m/s²
Drive element: . . . . . .Toothed belt 50ATL10
Diameter: . . . . . .82.76 mm
Stroke per revolution: . . . . . .260 mm
Stroke length: . . . . . .up to 11000 mm
Length of power bridge: . . . . . .280 or 520 mm
see page 28
Geometrical moment of inertia: . . .ly 6.69 x 10^6 mm⁴
lz 6.88 x 10^6 mm⁴

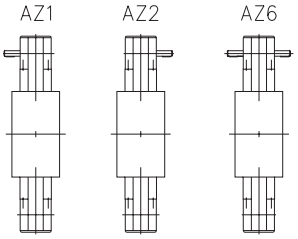
Weights
Basic unit with zero stroke: . . . . .17.00 kg
100 mm stroke: . . . . . .1.64 kg
Power bridge with carriage: . . . . .5.50 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	4.8
1500	7.0
3250	10.0

Execution of drive shafts

(Detailed description see pg 99)
Other executions on request.



Unit conversions

Length:
1 m=1000 mm=39.37 inches
1 inch=25.4 mm

Force:
1 N=0.225 lbf
1 lbf=4.45 N

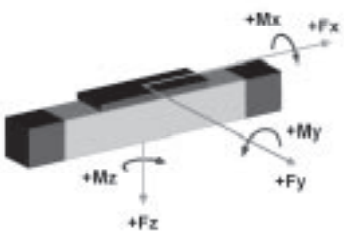
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 m⁴=10^{12} mm⁴=2.4025 x 10^6 in⁴

Mass moment of inertia:
1 kg • m²=10^4 kg • cm²=0.738 lb • ft • s²

Mass:
1 kg=2.2 lb

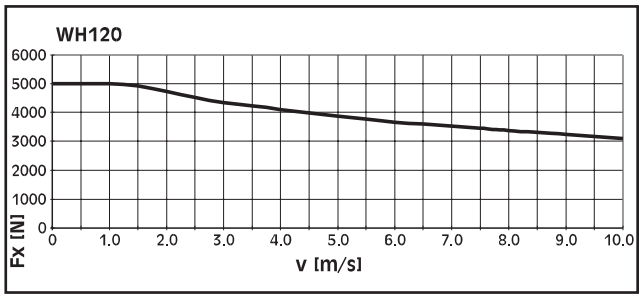
Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 5000
Fy	4980
±Fz	9300
Load moment	**dynam. [Nm]**
Mx	500
My[2]	930
Mz[2]	500

1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

Fx depending on the linear speed

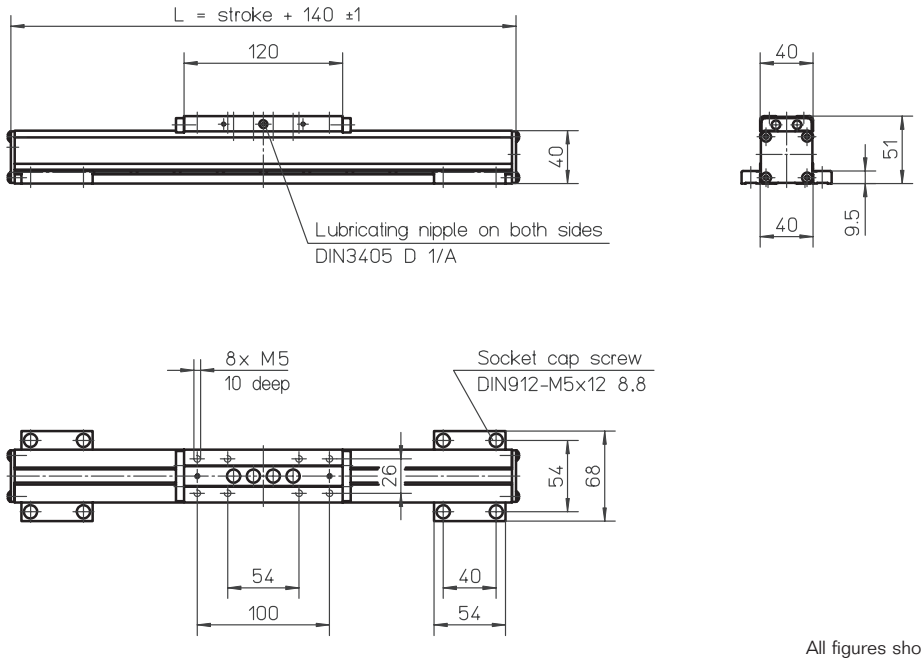


Note: For tube lengths of 5400 mm and over, the tubular profile is composed of two parts. The joint must be adequately supported. It may be possible to position the joint according to customer's wishes.

WIESEL™ *SPEED*Line®

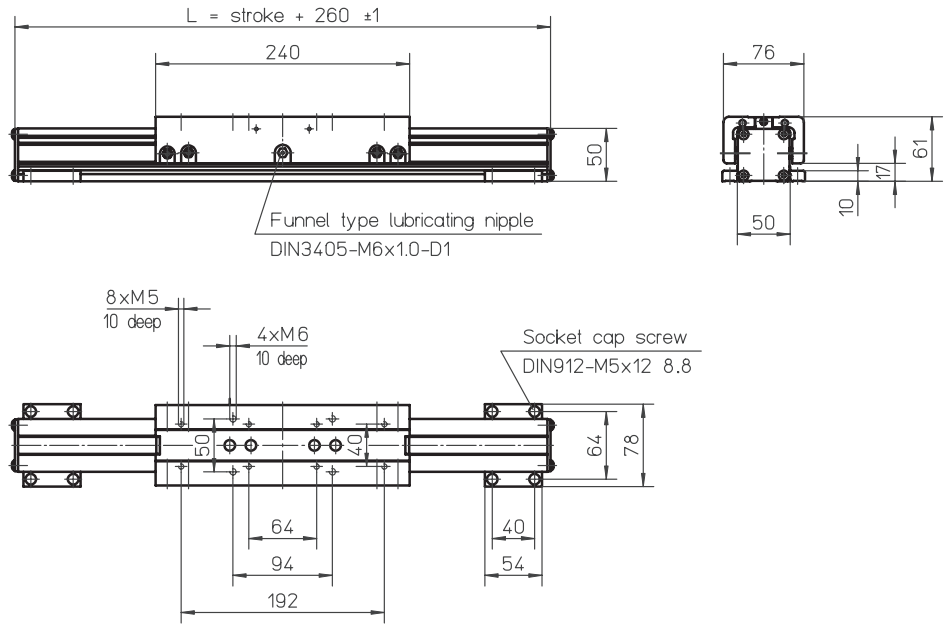
Guide tube

WH40-190



All figures shown in millimeters.

WH50-190



All figures shown in millimeters.

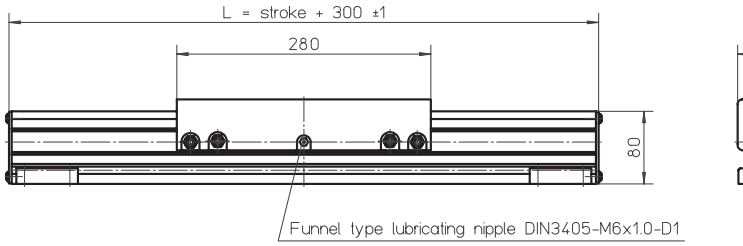
Unit conversions

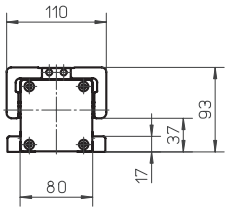
Length:	1 m=1000 mm=39.37 inches 1 inch=25.4 mm	**Geometrical moment of inertia:**	1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4
Force:	1 N=0.225 lbf 1 lbf=4.45 N	**Mass moment of inertia:**	1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2
Moment of Force:	1 Nm=0.738 lb • ft=8.85 lb • inches 1 lb • ft=1.36 Nm	**Mass:**	1 kg=2.2 lb

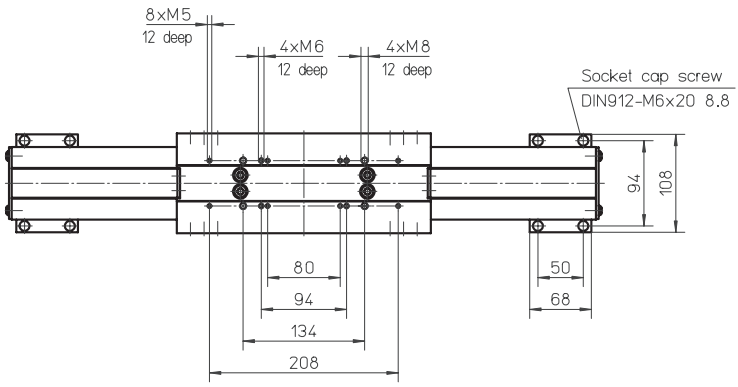
WIESEL™ *SPEED*Line®

Guide tube

WH80-190

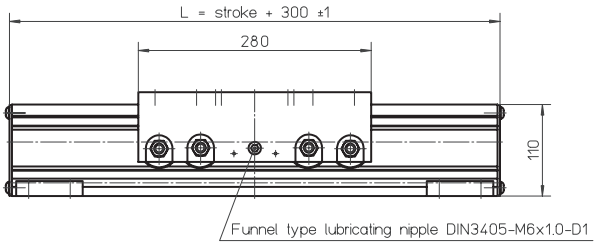


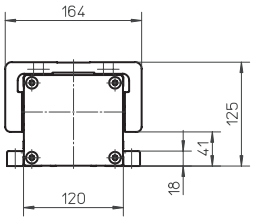


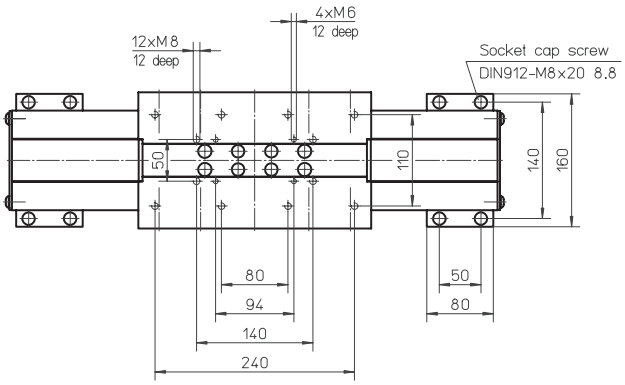


All figures shown in millimeters.

WH120-190







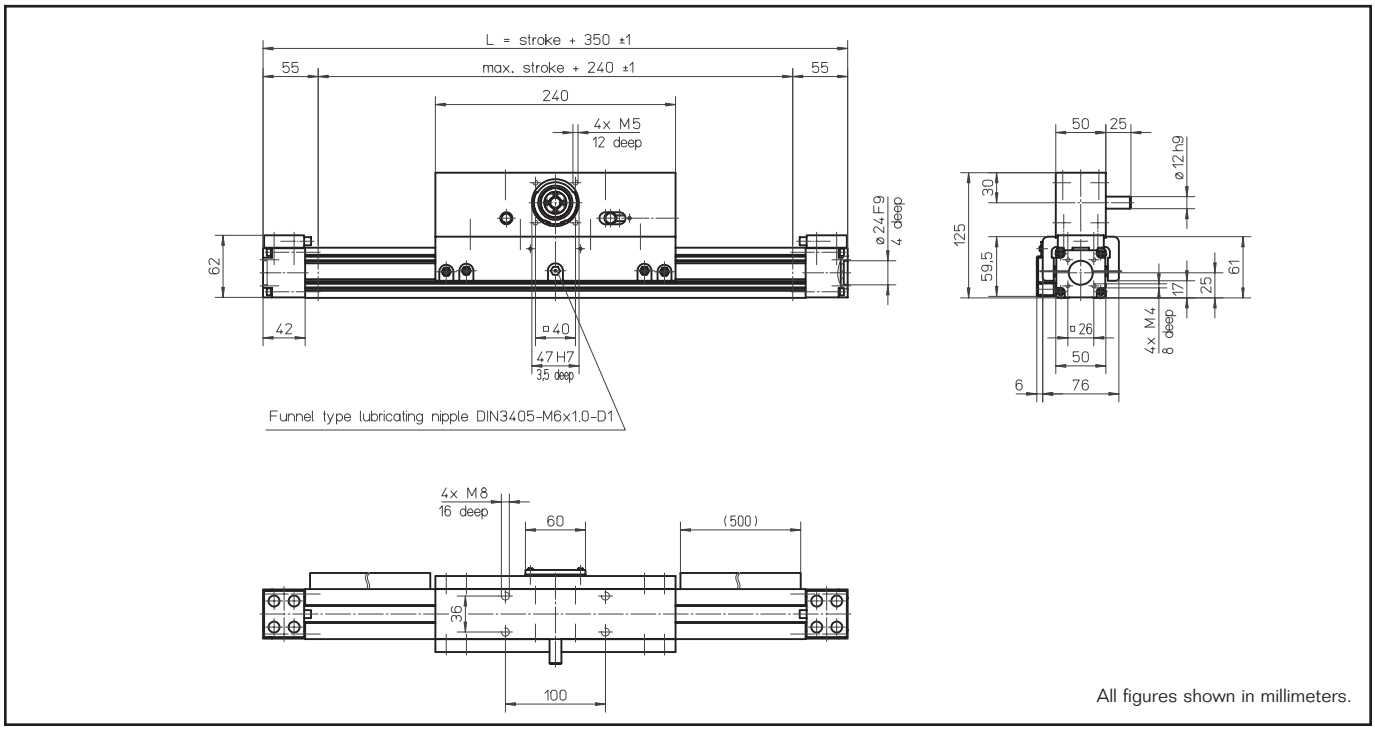
All figures shown in millimeters.

Unit conversions

Length:	1 m=1000 mm=39.37 inches 1 inch=25.4 mm	**Geometrical moment of inertia:**	1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4
Force:	1 N=0.225 lbf 1 lbf=4.45 N	**Mass moment of inertia:**	1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2
Moment of Force:	1 Nm=0.738 lb • ft=8.85 lb • inches 1 lb • ft=1.36 Nm	**Mass:**	1 kg=2.2 lb

WIESEL™ *SPEED*Line® WHZ50

with roller guideway and AT toothed belt



Note: Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

Linear speed: . . . . . .max. 6.5 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 40 m/s²
Drive element: . . . . . .Toothed belt 16ATL5
Diameter: . . . . . .38.20 mm
Stroke per revolution: . . . . . .120 mm
Stroke length: . . . . . .up to 1500 mm
Length of power bridge: . . . . . .240 or 400 mm
see page 28
Geometrical moment of inertia: . . .ly 3.30 x 10^5 mm⁴
lz 2.65 x 10^5 mm⁴

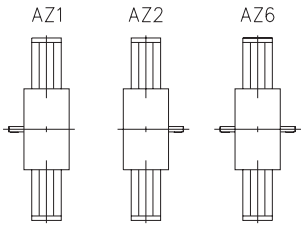
Weights
Basic unit with zero stroke: . . . . .4.50 kg
100 mm stroke: . . . . . .0.42 kg
Power bridge with carriage: . . . . .2.90 kg

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	1.7
1500	2.4
3250	3.8

Execution of drive shafts

(Detailed description see pg 99)
Other executions on request.



Unit conversions

Length:
1 m=1000 mm=39.37 inches
1 inch=25.4 mm

Force:
1 N=0.225 lbf
1 lbf=4.45 N

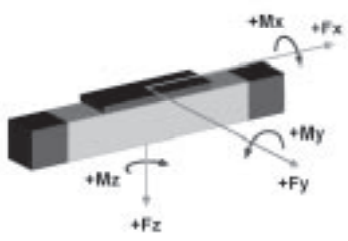
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 m⁴=10^{12} mm⁴=2.4025 x 10^6 in⁴

Mass moment of inertia:
1 kg • m²=10^4 kg • cm²=0.738 lb • ft • s²

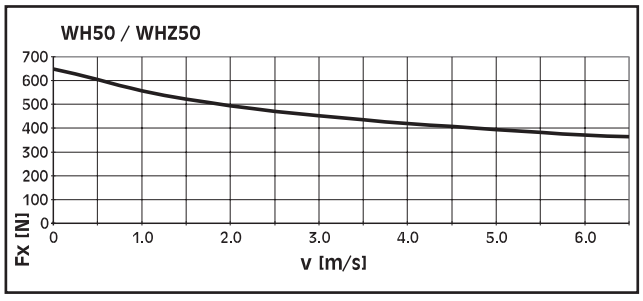
Mass:
1 kg=2.2 lb

Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 670
Fy	415
±Fz	730
Load moment	**dynam. [Nm]**
Mx	16
My[2]	87
Mz[2]	50

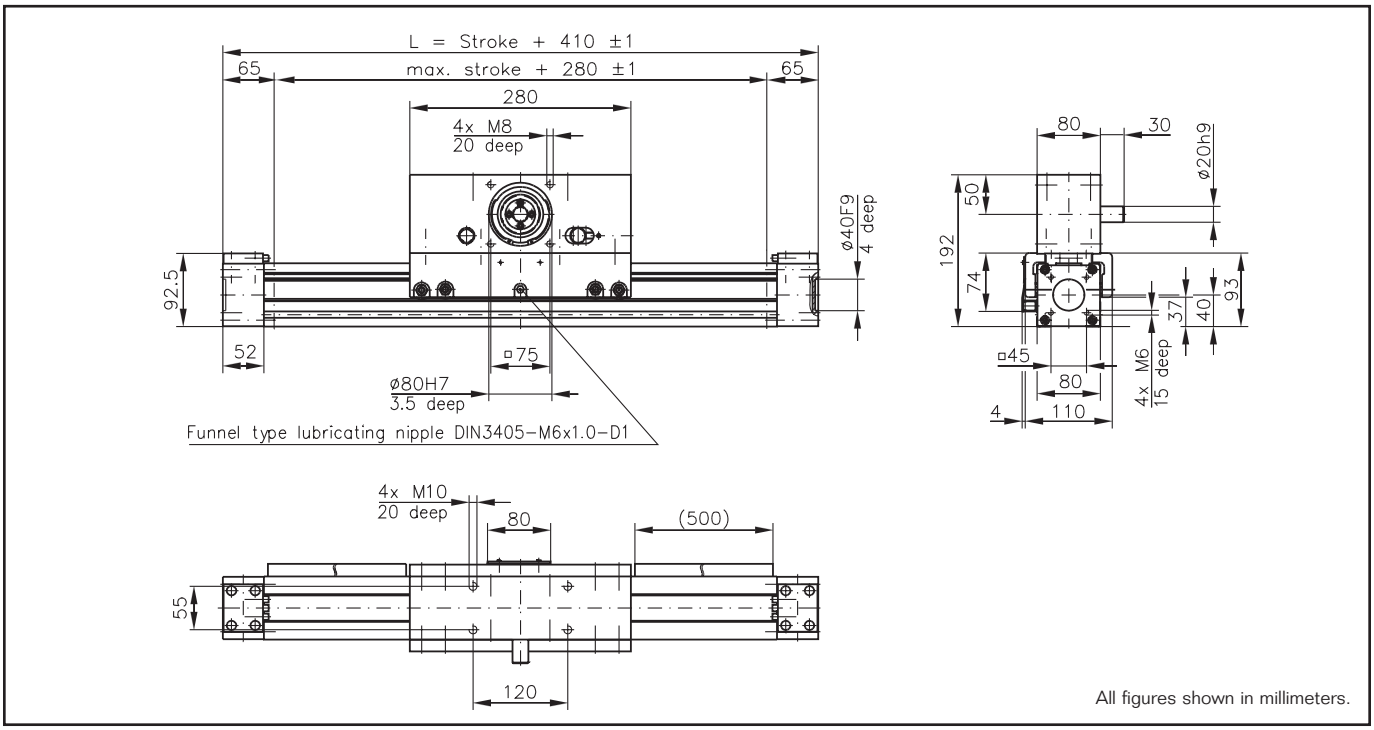
Fx depending on the linear speed



1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

WIESEL™ *SPEED*Line® WHZ80

with roller guideway and AT toothed belt



Note: Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

Linear speed: . . . . . .max. 10 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 40 m/s²
Drive element: . . . . . .Toothed belt 32ATL5
Diameter: . . . . . .63.66 mm
Stroke per revolution: . . . . . .200 mm
Stroke length: . . . . . .up to 3000 mm
Length of power bridge: . . . . . .280 or 450 mm
see page 28
Geometrical moment of inertia: . . .ly 1.93 x 10^6 mm^4
lz 1.80 x 10^6 mm^4

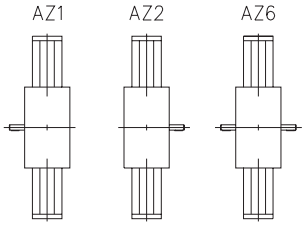
Weights
Basic unit with zero stroke: . . . . .11.20 kg
100 mm stroke: . . . . . .0.91 kg
Power bridge with carriage: . . . . .6.65 kg

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	2.4
1500	3.5
3000	5.0

Execution of drive shafts

(Detailed description see pg 99)
Other executions on request.



Unit conversions

Length:
1 m=1000 mm=39.37 inches
1 inch=25.4 mm

Force:
1 N=0.225 lbf
1 lbf=4.45 N

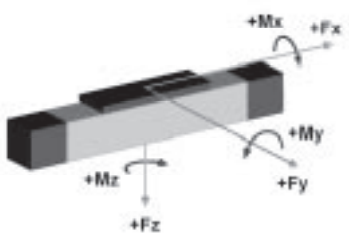
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 m^4=10^{12} mm^4=2.4025 x 10^6 in^4

Mass moment of inertia:
1 kg • m^2=10^4 kg • cm^2=0.738 lb • ft • s^2

Mass:
1 kg=2.2 lb

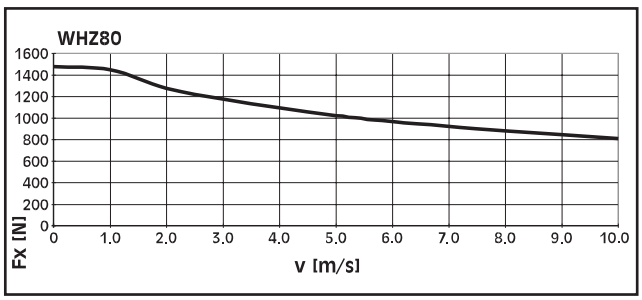
Loads and load moments



Load	dynam. [N]
Fx drive[1)]	max. 1480
Fy	882
±Fz	2100
Load moment	**dynam. [Nm]**
Mx	75
My[2)]	230
Mz[2)]	100

1) Depending on the speed, see respective chart.

Fx depending on the linear speed



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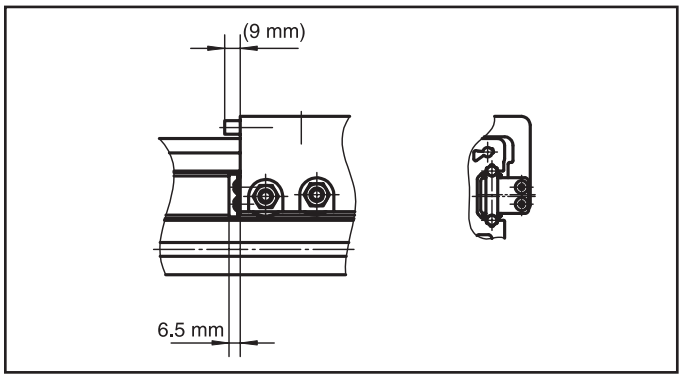
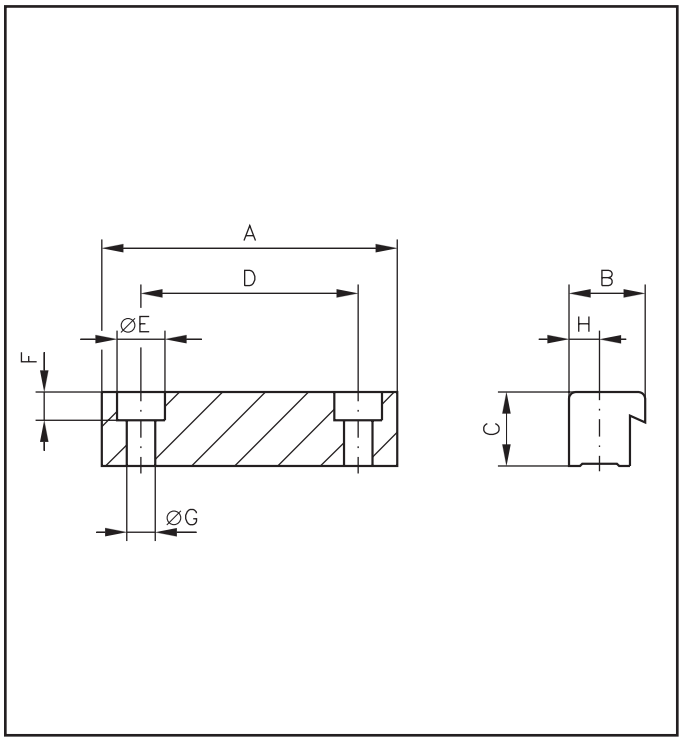
Accessories for WIESEL™ *SPEEDLine*®

Felt wipers/Mounting brackets



Felt wipers FA for WH50/80/120

The felt wipers are positioned directly in front of each of the rollers at the front next to the power bridge, so that they wipe coarse dirt off the guide shaft. This prevents dirt from being trapped between the roller and the guide rail. This means that the WIESEL™ *SPEEDLine*® units can also be used in environments in which the guide shafts are exposed to excessive dirt. Installing the felt wipers may increase the driving torque slightly. There is no loss of stroke length and no additional external interference contour. As a result, the felt wipers can also be fitted to existing systems as an optional extra.



Mounting brackets KAO

The mounting brackets KAO secure the WIESEL™ unit to a mounting surface. They are inserted in the grooves provided in the sides of the tubular aluminum profile and screwed onto the mounting surface with the aid of cheese head screws. The number of mounting brackets required depends on the load and overall length of the WIESEL™ unit. Increasing side forces reduces the admissible distance between the brackets.
4 pieces of mounting brackets are delivered with each unit.

System brackets KAO

Only needed for WH40. With multi-coordinate arrangements of several WIESEL™ units, this can be used to screw a WIESEL™ unit directly to the power bridge of a unit positioned immediately below it.

Moment of tightening screws

Size	Moment [Nm]
WH40	7.3–12
WH50	7.3–12
WH80	7.3–12
WH120	17–30

Note: It is advisable to secure the linear drive unit at intervals of at least 750 mm. This ensures that all the permissible loads can be absorbed without significantly deforming the tubular aluminum profile.

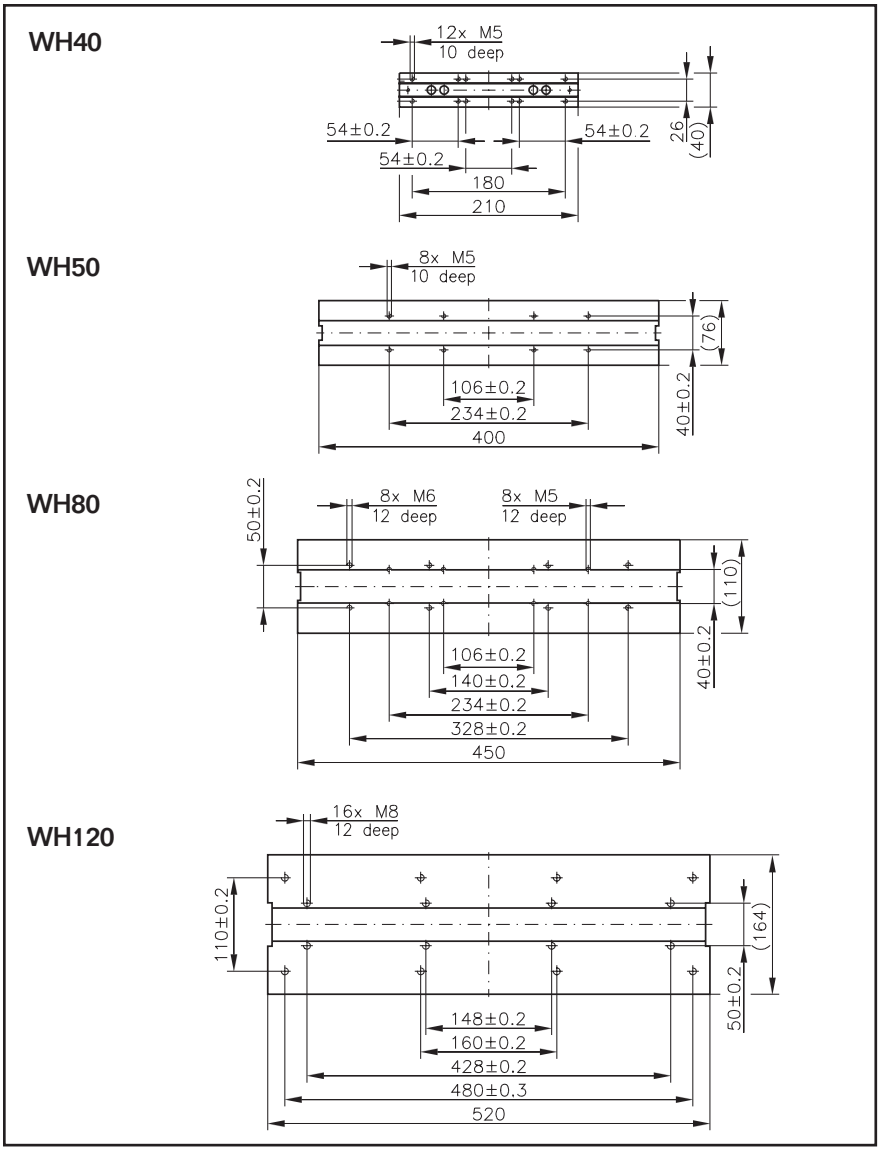
	Dimension [mm]							
Size	A	B	C	D	ø E	F	ø G	H
WH40	54	16	10	40	10	5.7	5.5	7
WH50	54	16	10	40	10	5.7	5.5	7
WH80	68	17.5	17	50	11	6.5	6.6	7
WH120	80	25	18	50	15	8.5	9	10
WH40 System KAO	40	16	10	26	10	5.7	5.5	7

Unit conversions

Length:	1 m=1000 mm=39.37 inches 1 inch=25.4 mm	**Geometrical moment of inertia:**	1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4
Force:	1 N=0.225 lbf 1 lbf=4.45 N	**Mass moment of inertia:**	1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2
Moment of Force:	1 Nm=0.738 lb • ft=8.85 lb • inches 1 lb • ft=1.36 Nm	**Mass:**	1 kg=2.2 lb

Accessories for WIESEL™ *SPEED*Line®

Long power bridge



All figures shown in millimeters.

Long power bridge LKB
The long power bridge increases the maximum permissible load moments My and Mz of a WIESEL™ unit without requiring a step up in size. The difference in length between the long power bridge and the standard power bridge must be taken into account when calculating the overall length of the WIESEL™ unit.

Overall length of the WIESEL™ unit:

L_{tot} = **stroke** + L_C + **ΔKb**

L_{tot} = Overall length WIESEL™ [mm]
L_C = Specific additional length [mm] (see technical data of the respective WIESEL™)
Stroke = Required stroke [mm]
ΔKb = Difference in length between long and standard power bridge

Size	Length of power bridge [mm]	My [Nm]	Mz [Nm]
WH40	210	50	50
WH50	400	130	75
WH80	450	345	150
WH120	520	1395	750
WHZ50	400	130	75
WHZ80	450	345	150

Note: All other limit values are comparable to those of versions with standard power bridge. High load moments lead to major deformation of the tubular aluminum profile. The distance between supports should be reduced in order to minimize this deformation.

Unit conversions

Length: 1 m=1000 mm=39.37 inches
1 inch=25.4 mm

Force: 1 N=0.225 lbf
1 lbf=4.45 N

Moment of Force: 1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

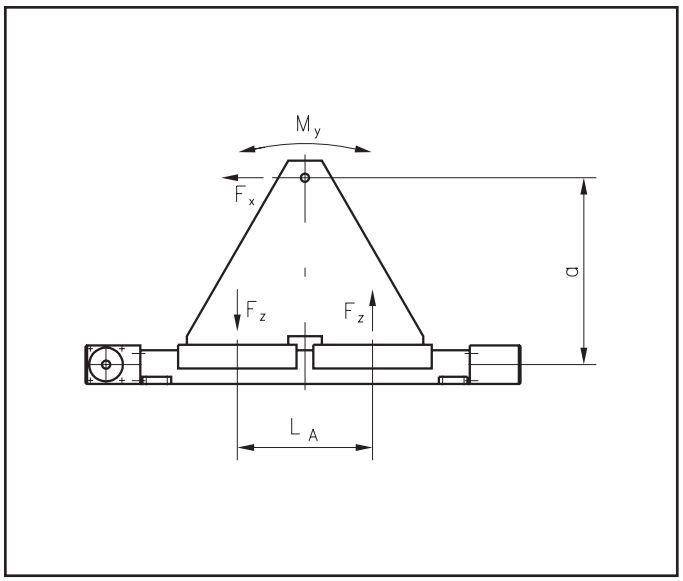
Geometrical moment of inertia: 1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4

Mass moment of inertia: 1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2

Mass: 1 kg=2.2 lb

Accessories for WIESEL™ *SPEED*Line®

Additional free-sliding power bridge



Additional free-sliding power bridge OKB

The additional free-sliding power bridge provides:

- Individual increase of the load moments My and Mz of a WIESEL™ unit. Load moment My is limited by force ± Fz, Mz is limited by force ±Fy.
- Longer and therefore improved guidance.
- Particularly suitable as a vertical guide and lifting module.

The required center distance between the driven and the free-sliding power bridge is calculated as follows:

$$L_A = \frac{M}{F_{max}}$$

L_A = Center distance between driven and free-sliding power bridge [mm]
M = Load moment My or Mz [Nm]
F_{max} = Maximum force Fz or Fy of the WIESEL™ unit concerned [N]

The center distance between the two power bridges must be taken into account when calculating the overall length of the WIESEL™ unit.

Overall length of WIESEL™ unit:

L_{tot} = **Stroke** + L_C + L_A

L_C = Specific additional length between long and standard power bridge [mm]. (see technical data of the respective WIESEL™)

Minimum center distance L_A between driven and free-sliding power bridge (given for standard power bridge).

Size	L_A [mm]
WH40	130
WH50/WHZ50	250
WH80/WHZ80	290
WH120	290

The force required for moving the additional free-sliding power bridge must be taken into account when selecting the drive.

Size	F [N]
WH40	2
WH50/WHZ50	16
WH80/WHZ80	20
WH120	30

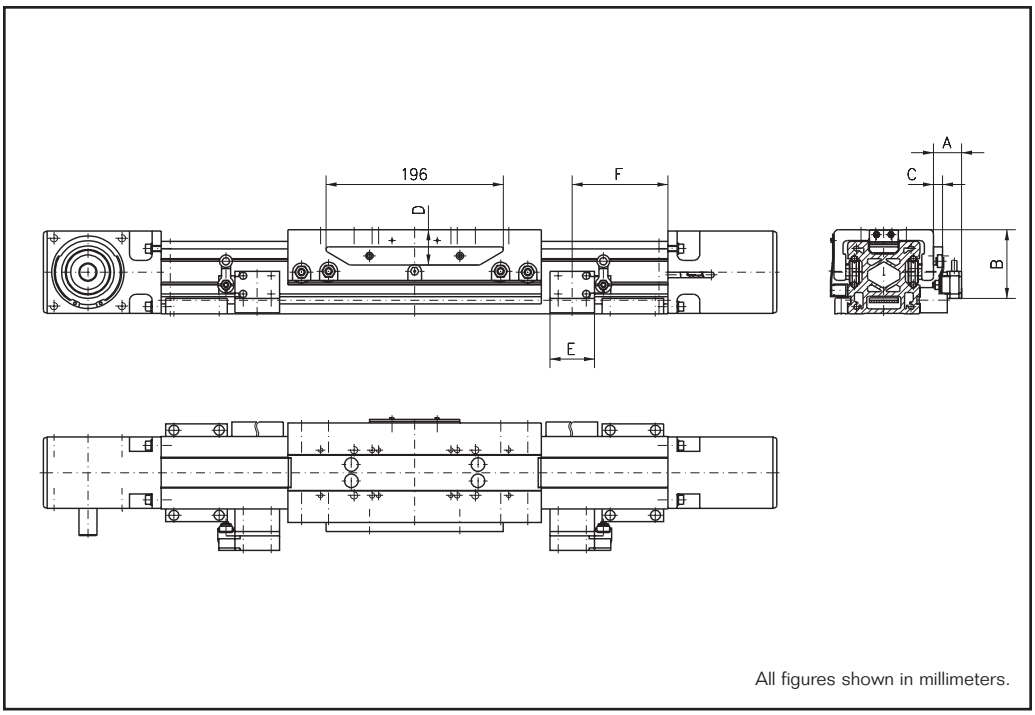
Note: High load moments lead to major deformation of the tubular aluminum profile. The distance between supports should be reduced in order to minimize this deformation.

Unit conversions

Length:	1 m=1000 mm=39.37 inches 1 inch=25.4 mm	**Geometrical moment of inertia:**	1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4
Force:	1 N=0.225 lbf 1 lbf=4.45 N	**Mass moment of inertia:**	1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2
Moment of Force:	1 Nm=0.738 lb • ft=8.85 lb • inches 1 lb • ft=1.36 Nm	**Mass:**	1 kg=2.2 lb

Accessories for WIESEL™ *SPEED*Line®

Mechanical limit switches



All figures shown in millimeters.

Mechanical limit switches ES
Mechanical limit switches must be used wherever people may be jeopardized if the electric drive does not cut out. They are fitted in the groove which also accommodates the KAO mounting brackets in the aluminum profile.

Technical data
Cam-actuated mechanical limit switch XCM-B516 with roller lever

Dual-circuit NC + NO

NC contact forcibly opened in accordance with DIN EN 60 204
Type of protection: IP67
Max. perm. starting speed: 1.5 m/s

Size	Dimensions [mm]					
	A	B	C	D	E	F
WH50	34	61	10	26	49	83
WH80	31	76	10	39	49	103
WH120	34	88	10	51	49	103
WHZ50	47	125	23	90	49	83
WHZ80	46	175	25	138	49	103

Note: The linear unit cannot be fixed by means of the mounting brackets KAO in the range of the fixing plates for the mechanical limit switches. Security limit switches ensure energy is cutoff from the drive. Whenever they are run against at high speeds, they cannot avoid driving over the admissible drive section. It is necessary to ensure by means of other drive and control measures that the limit areas are only approached with low speeds.

Unit conversions

Length:	1 m=1000 mm=39.37 inches 1 inch=25.4 mm	**Geometrical moment of inertia:**	1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4
Force:	1 N=0.225 lbf 1 lbf=4.45 N	**Mass moment of inertia:**	1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2
Moment of Force:	1 Nm=0.738 lb • ft=8.85 lb • inches 1 lb • ft=1.36 Nm	**Mass:**	1 kg=2.2 lb