Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Positioning >> Lifting >> Traversing >> Transporting >> Palletizing >> Moving

Precision Technology USA, Inc. **WIESEL™**

Superior performance. Superior design.™

IN POSITION TECHNOLOGIES, LLC
Precision Positioning Systems

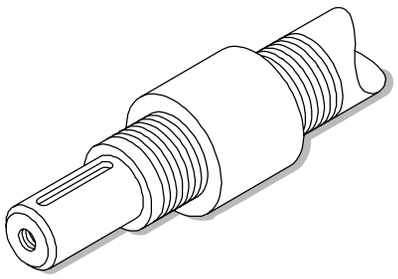
Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Selection of linear drive units

The best solution for every application

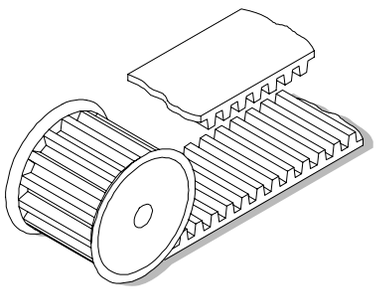
Drive

Ball screw



Fx	up to	12 kN	[1]	(2698 lbf)
Rep.	up to	± 0.01 mm	[1]	(0.0004 in)
v	up to	2.5 m/s	[1]	(8.2 ft/s)
a	up to	20 m/s²	[1]	(65 ft/s²)

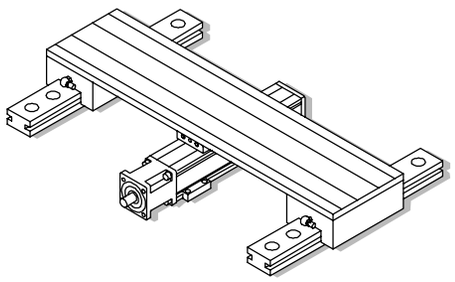
Toothed belt drive



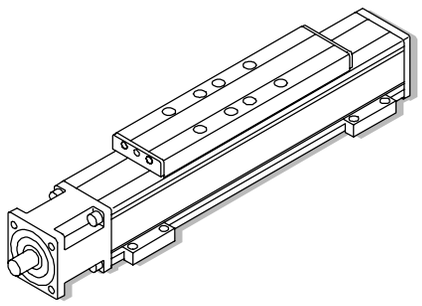
Fx	up to	5 kN	[1]	(1124 lbf)
Rep.	up to	± 0.05 mm	[1]	(0.002 in)
v	up to	10 m/s	[1]	(33 ft/s)
a	up to	40 m/s²	[1]	(131 ft/s²)

Guide system/load

External



Internal



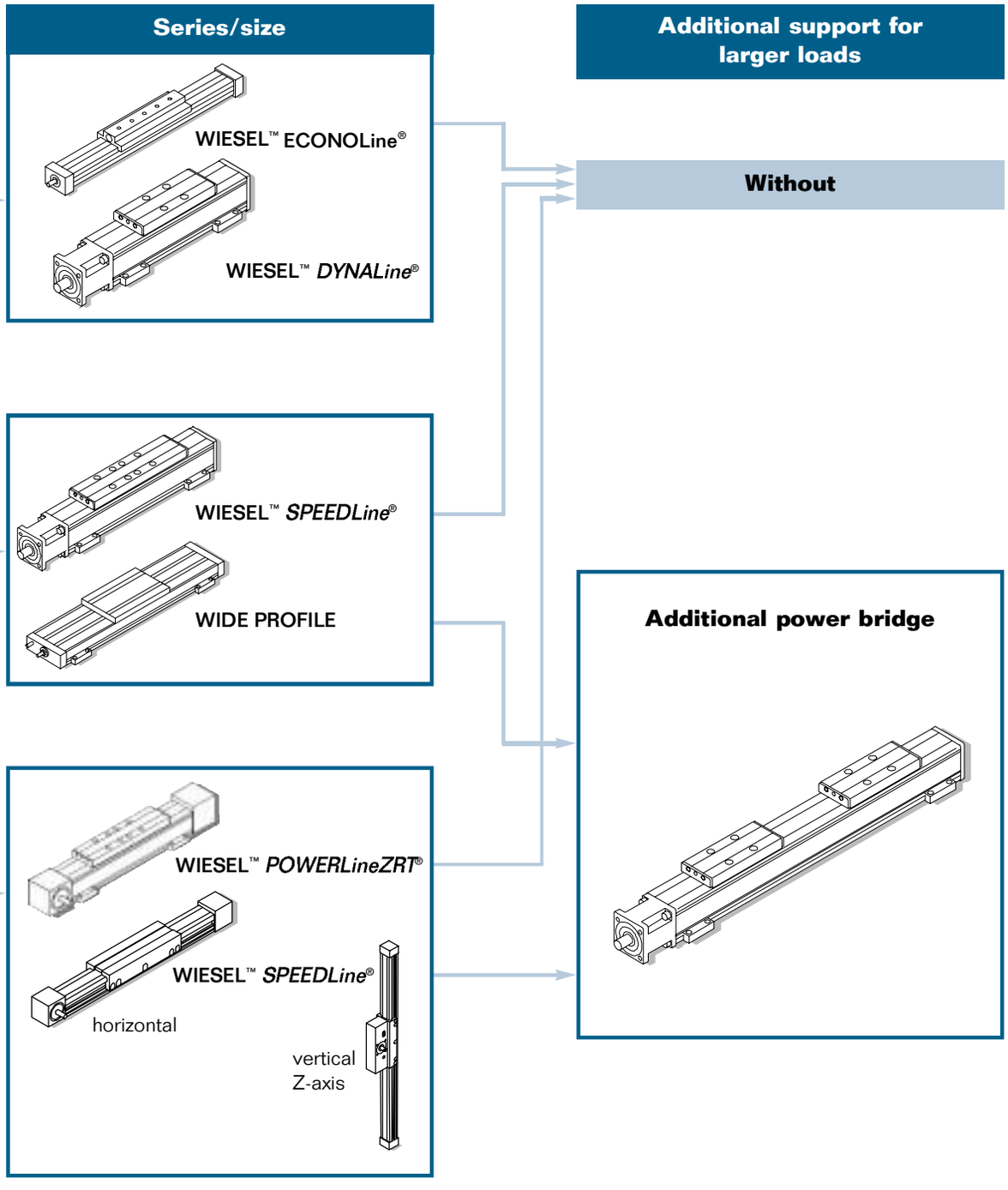
WIESEL™ Manager/CAD-data

Get the WIESEL™ Manager software package for the selection and planning of all Precision Technology USA, Inc. linear drive units as well as our CAD-data. Click to www.pt-usa.net or send the order form on page 102. Also benefit from technical consultation service.

Notes: Fx -Feed force
Rep.-Repeatability
v -Linear speed
a -Acceleration

[1] The performance values of the respective sizes can be found on page 12.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com



Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Summary of performance data, additional options and accessories

Summary of performance data

Type	Profile-cross-section [mm]	Drive element[1]	Lead [mm] Stroke per revolution [mm/rev.]	Feed force Fx [N]	Repea-tability[4] [mm]	Linear speed [m/s]	Load[2] Fz [N]	Other loads and moments Fy [N]	Mx [Nm]	My[3] [Nm]	Mz[3] [Nm]
WH40	40x40	ZRT[1] 10 AT5	100	315	± 0.05	3.0	600	450	10	30	30
WH50	50x50	ZRT[1] 16 ATL5	120	670	± 0.05	6.5	730	415	16	87	50
WH80	80x80	ZRT[1] 32 ATL10	200	2700	± 0.05	10	2100	882	75	230	100
WH120	120x110	ZRT[1] 50 ATL10	260	5000	± 0.05	10	9300	4980	500	930	500
WHZ50	50x50	ZRT[1] 16 ATL5	120	670	± 0.05	6.5	730	415	16	87	50
WHZ80	80x80	ZRT[1] 32 ATL5	200	1480	± 0.05	10	2100	882	75	230	100
WM40	40x40	KGT[1] ø 12 mm	5	1000	± 0.01	0.25	600	450	10	30	30
WM60-370 ZRT	60x60	ZRT[1] 20 ATL5	120	850	± 0.05	2.5	1400	1400	50	100	100
WM60-370	60x60	KGT[1] ø 20 mm	5/20/50	2800	± 0.02	2.5	1400	1400	50	100	100
WM60	60x60	KGT[1] ø 20 mm	5/20/50	4000	± 0.01	2.5	2000	2000	100	200	200
WM60-500	60x60	KGT[1] ø 20 mm	5/20/50	4000	± 0.01	2.5	2000	2000	100	200	200
WM80-370 ZRT	80x80	ZRT[1] 25 AT10	170	1470	± 0.05	2.5	2100	2100	150	180	180
WM80 ZRT	80x80	ZRT[1] 25 AT10	170	1470	± 0.05	2.5	3000	3000	300	300	300
WM80-370	80x80	KGT[1] ø 25 mm	5/10/20/50	3500	± 0.02	2.5	2100	2100	150	180	180
WM80	80x80	KGT[1] ø 25 mm	5/10/20/50	5000	± 0.01	2.5	3000	3000	350	300	300
WM120	120x120	KGT[1] ø 32 mm	5/10/20/40	12000[5]	± 0.01	2.0	6000	6000	500	600	600
WV60	60x60	KGT[1] ø 20 mm	5/20/50	4000	± 0.01	2.5	–	–	–	–	–
WV80	80x80	KGT[1] ø 25 mm	5/10/20/50	5000	± 0.01	2.5	–	–	–	–	–
WV120	120x120	KGT[1] ø 32 mm	5/10/20/40	12000[5]	± 0.01	2.0	–	–	–	–	–

[1] KGT = Ball screw
ZRT = Toothed belt drive
[2] All maximum forces and moments given refer to the center/top of the power bridge.
[3] Increase of admissible values possible by long or additional power bridge.
[4] Refers to the average positioning variation according to VDI/DGQ 3441.
[5] At 40 mm lead max 8000 N.

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Mechanical linear drive units

WIESEL™ *SPEEDLine*®

WIESEL™ *SPEEDLine*® WH40

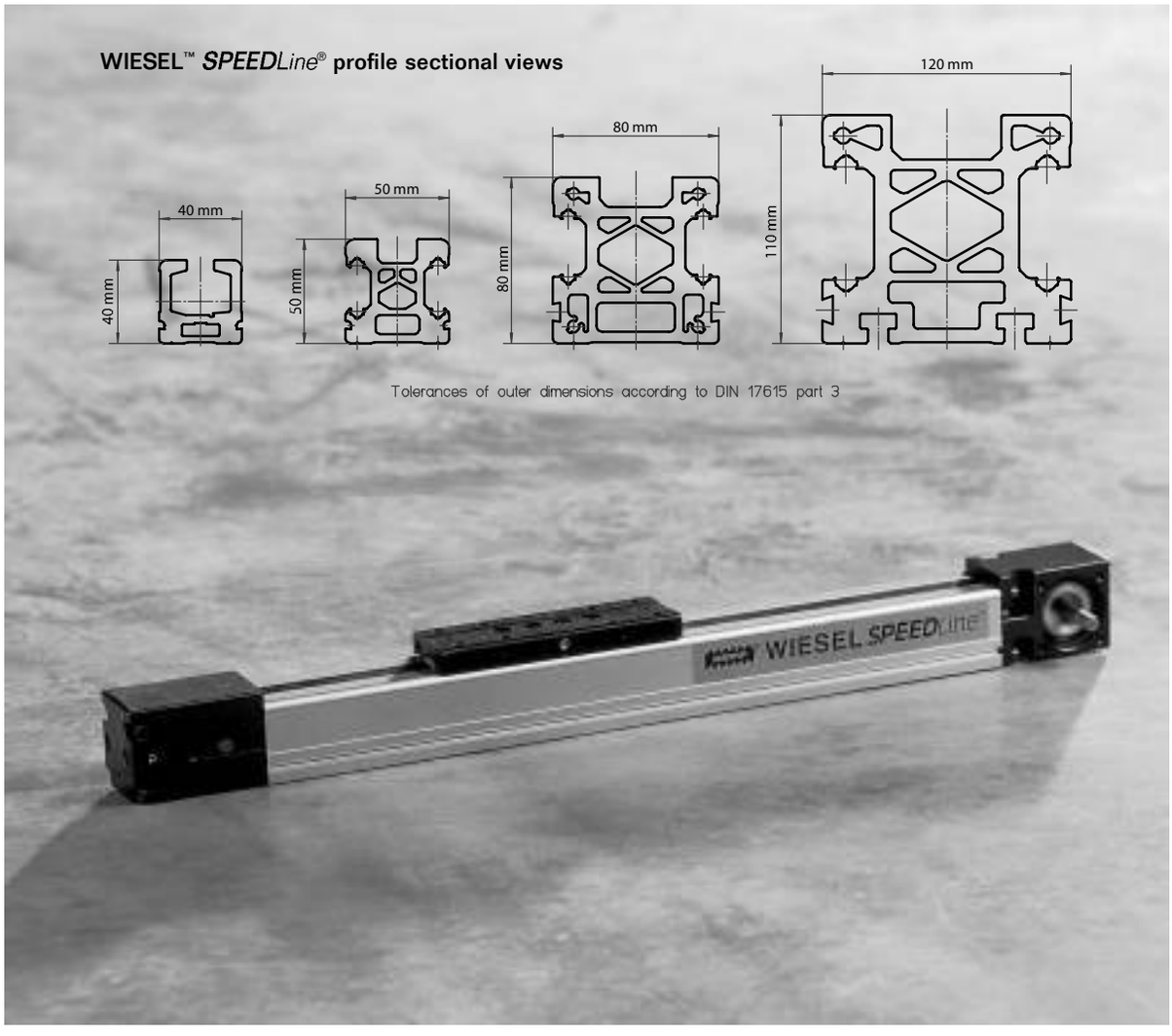
- Completely integrated miniaturized drive unit with linear guide and toothed belt drive.

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.

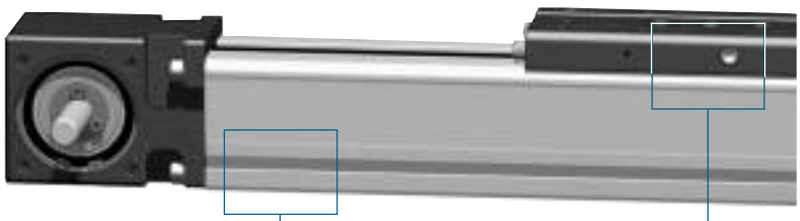


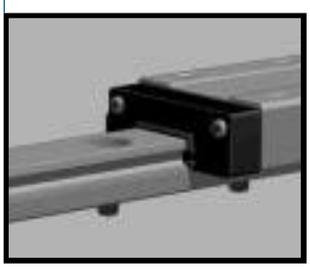
Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *SPEEDLine*®

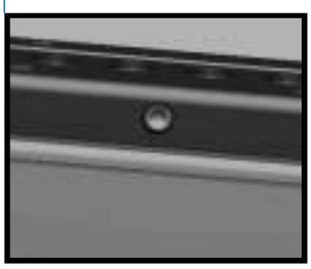
New technology right to the center.

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.



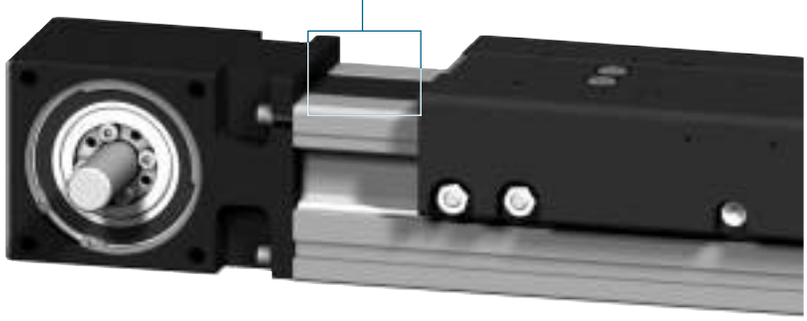
Central lubrication
The linear guide system is conveniently relubricated from a central point. Whether by hand or automatically, maintenance is now a simple matter.

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

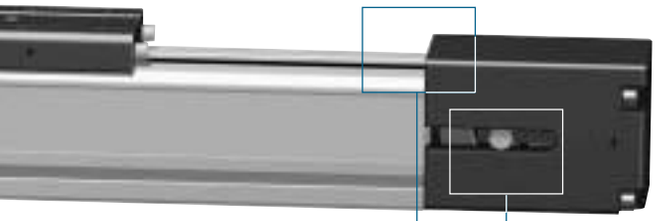
Completely new arrangement of the roller guideway
The H-Type arrangement of guidance allows high forces and moments and thereby the choice of a smaller size. Your benefit: lighter and more economical constructions.

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.

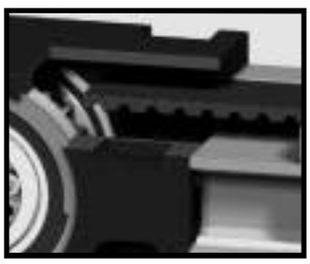
The WIESEL™ ***SPEEDLine***® Z-axis is especially suitable for vertical movements. The reduced mass to be moved together with the short design allow higher dynamics and loads.



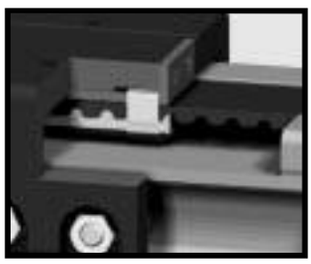
Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com



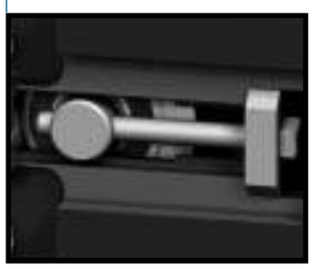
Powered by ATL belt



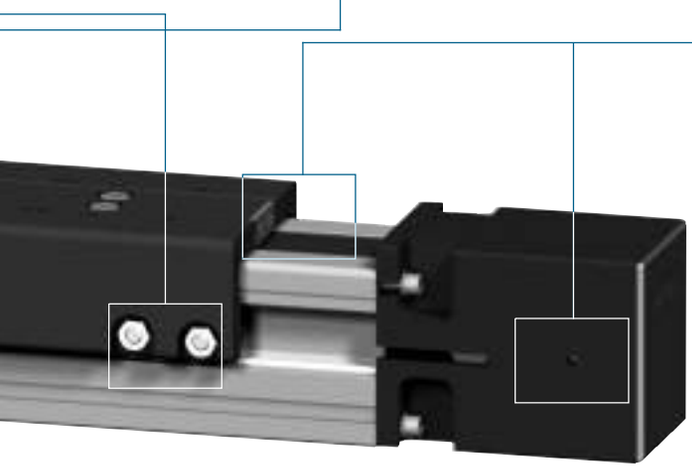
ATL toothed belt
- with steel reinforcement especially suitable for linear drive units
- higher performance
- repeatability of ± 0.05 mm even at high feed forces



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.



Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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.

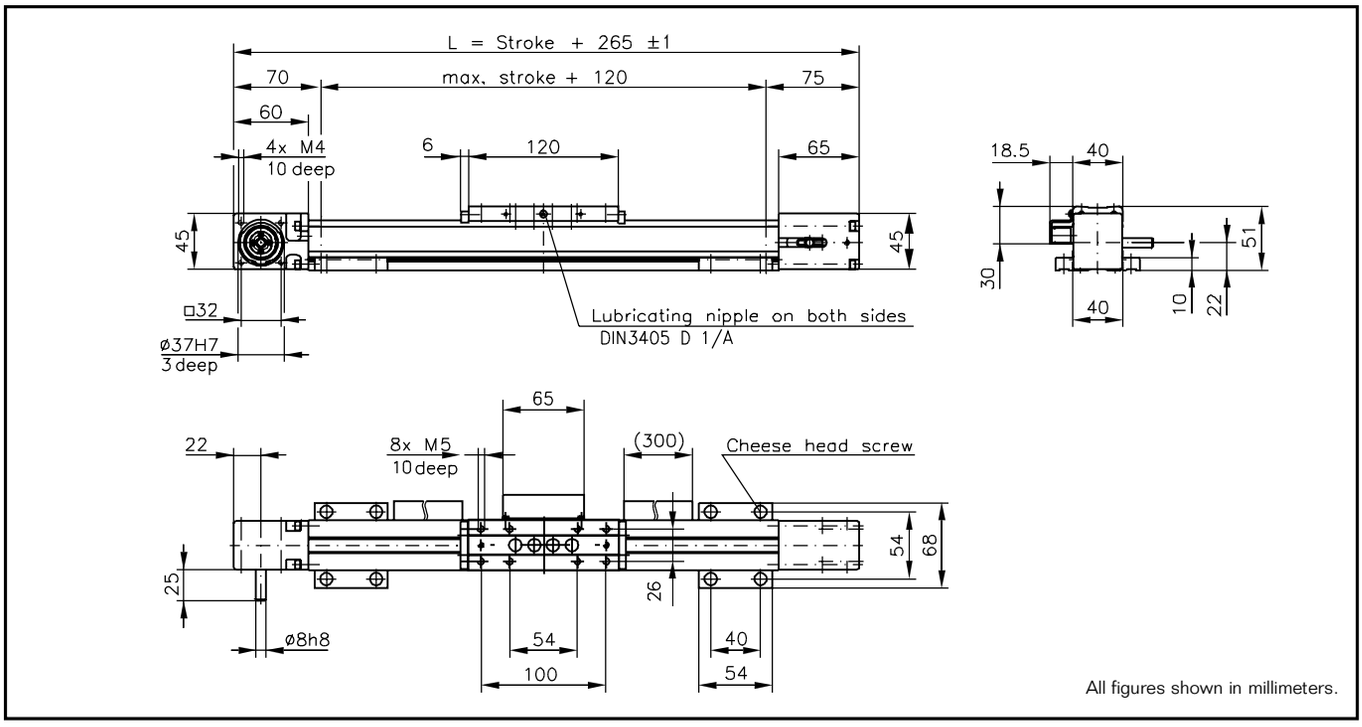
Tensioning of toothed belt
The tension of the toothed belt can be adjusted with the aid of the tensioning screws on the guide casing which are intended for this. The linear units are delivered with optimal tension values in order to guarantee security in function. Changes in this adjustment must only 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.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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

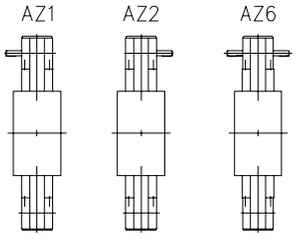
Weights
Basic unit with zero stroke: . . . . .1.19 kg
100 mm stroke: . . . . . .0.15 kg
Power bridge with rollers: . . . . . .0.28 kg
Provided: . . . . . .4 pieces KAO mounting brackets

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

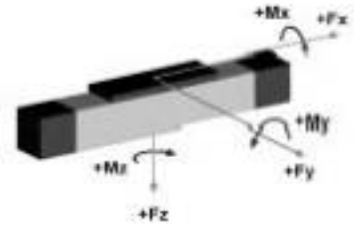
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

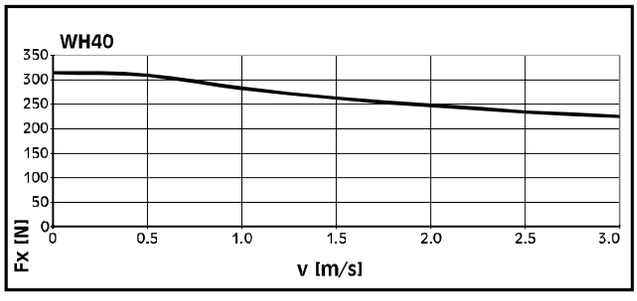
Mass:
1 kg=2.2 lb

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



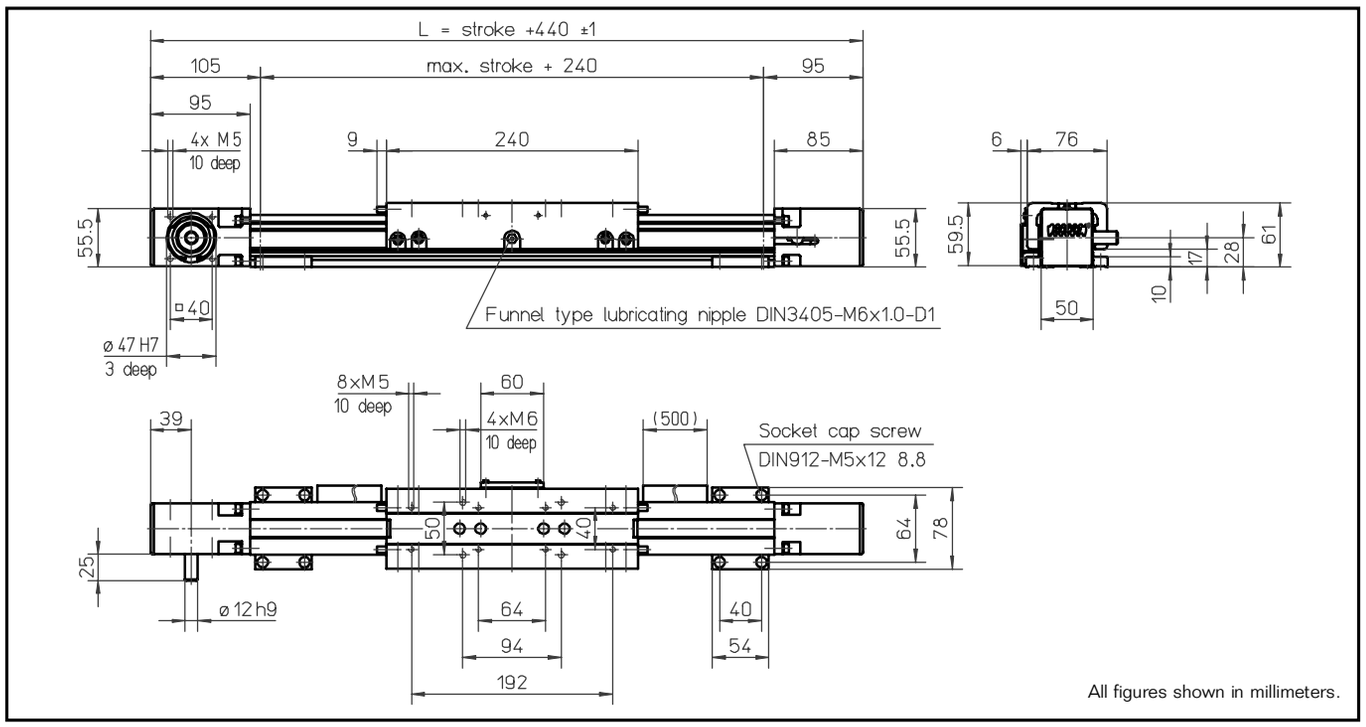
Order Code see page 99

[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).

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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: . . .Iy 3.30 x 10^5 mm^4
Iz 2.65 x 10^5 mm^4

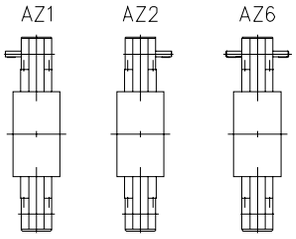
Weights
Basic unit with zero stroke: . . . . .3.50 kg
100 mm stroke: . . . . . .0.44 kg
Power bridge with rollers: . . . . . .0.90 kg
Provided: . . . . . .4 pieces KAO mounting brackets

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

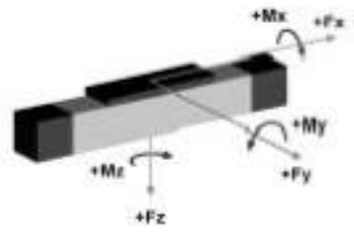
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 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

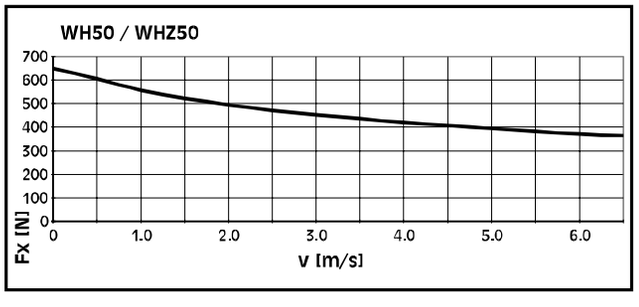
Mass:
1 kg=2.2 lb

Loads and load moments



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

Fx depending on the linear speed

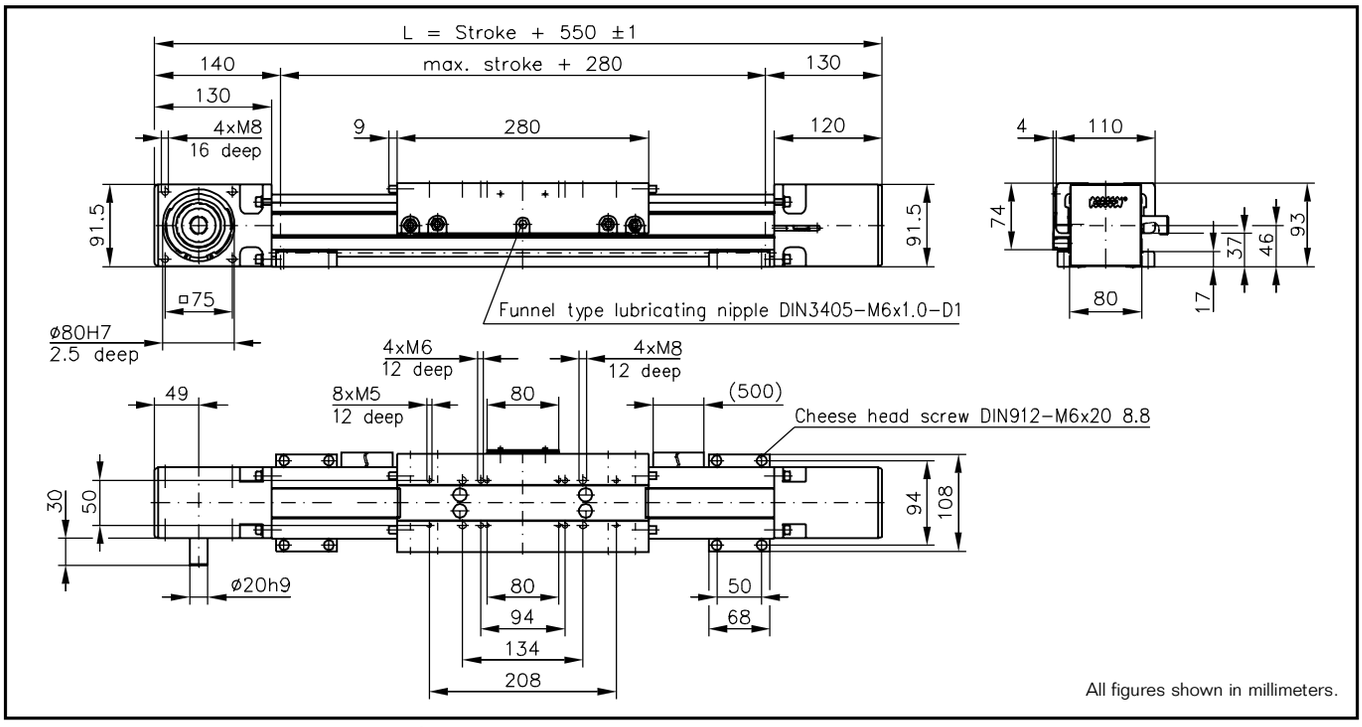


1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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

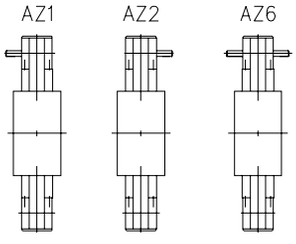
Weights
Basic unit with zero stroke: . . . . .8.63 kg
100 mm stroke: . . . . . .0.93 kg
Power bridge with carriage: . . . . .2.75 kg
Provided: . . . . . .4 pieces KAO mounting brackets

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

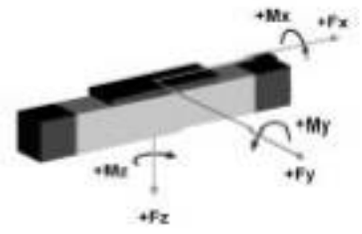
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

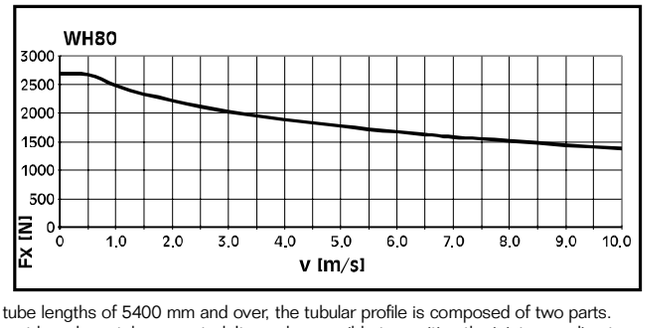
Mass:
1 kg=2.2 lb

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



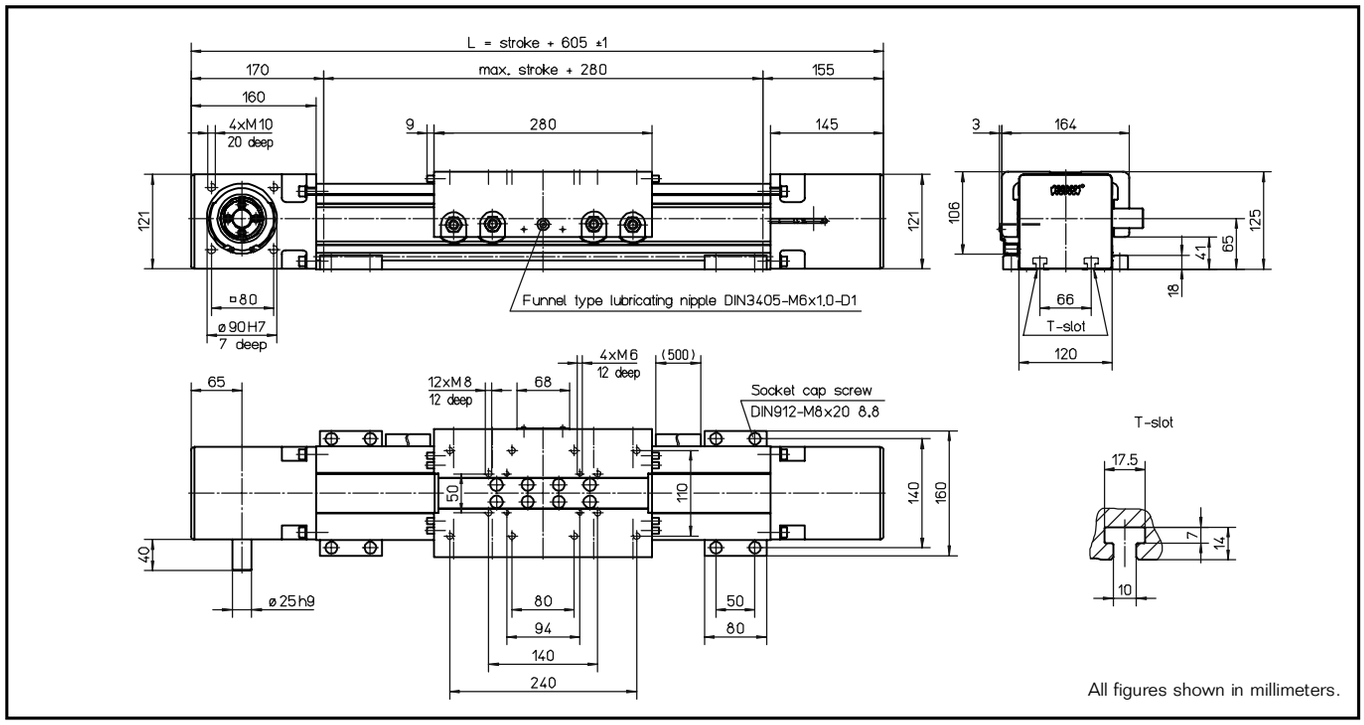
1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

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.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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

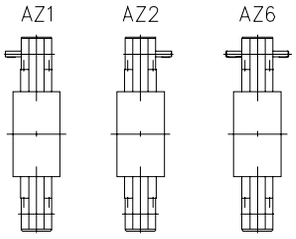
Weights
Basic unit with zero stroke: . . . . .17.00 kg
100 mm stroke: . . . . . .1.64 kg
Power bridge with carriage: . . . . .5.50 kg
Provided: . . . . . .4 pieces KAO mounting brackets

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

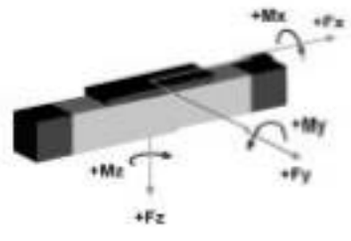
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

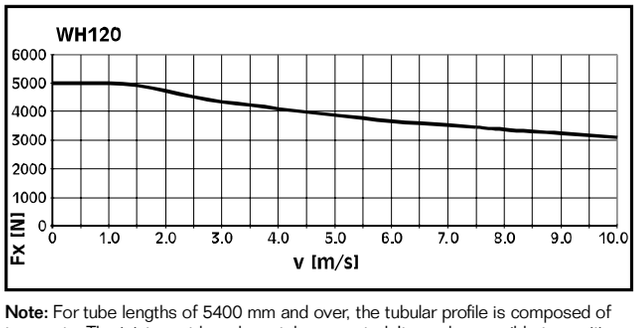
Loads and load moments



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



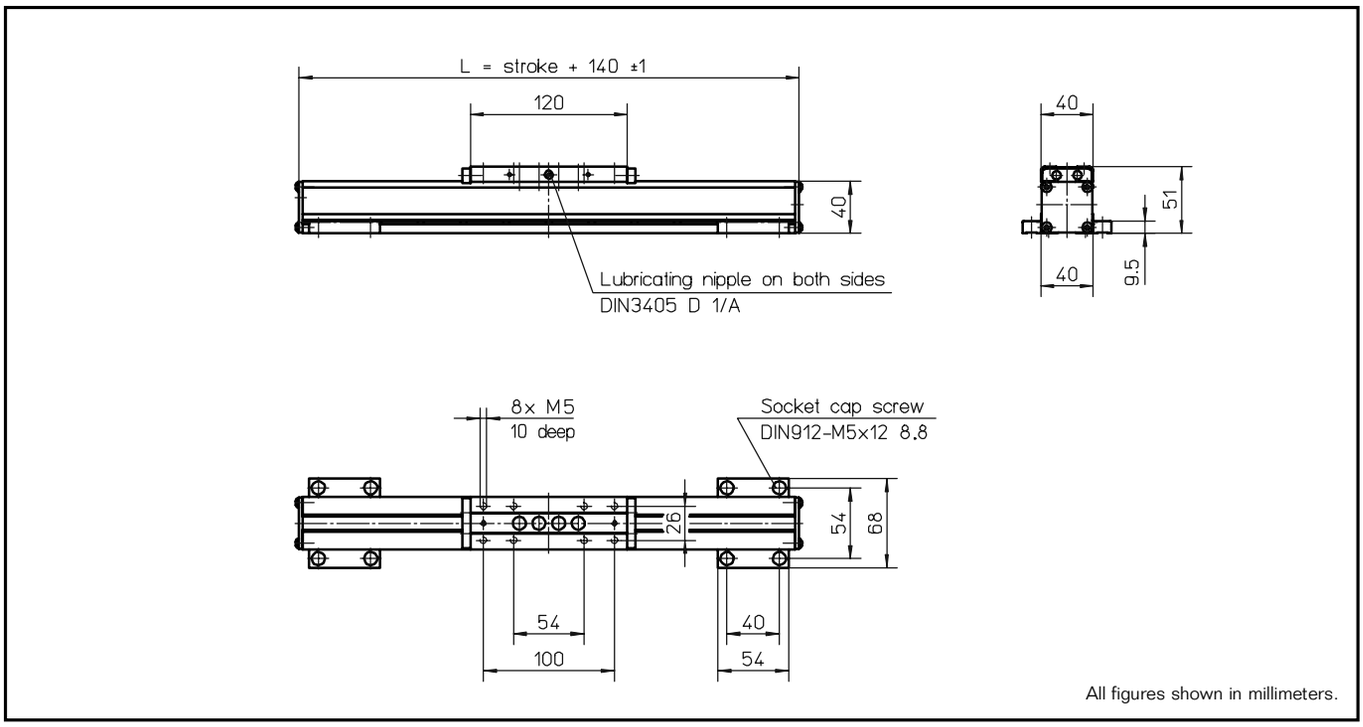
Note: For tube lengths of 5400 mm and over, the tubular profile is composed of two parts. The joint must be adequately supported. It may be possible to position the joint according to customer´s wishes.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ SPEEDLine®

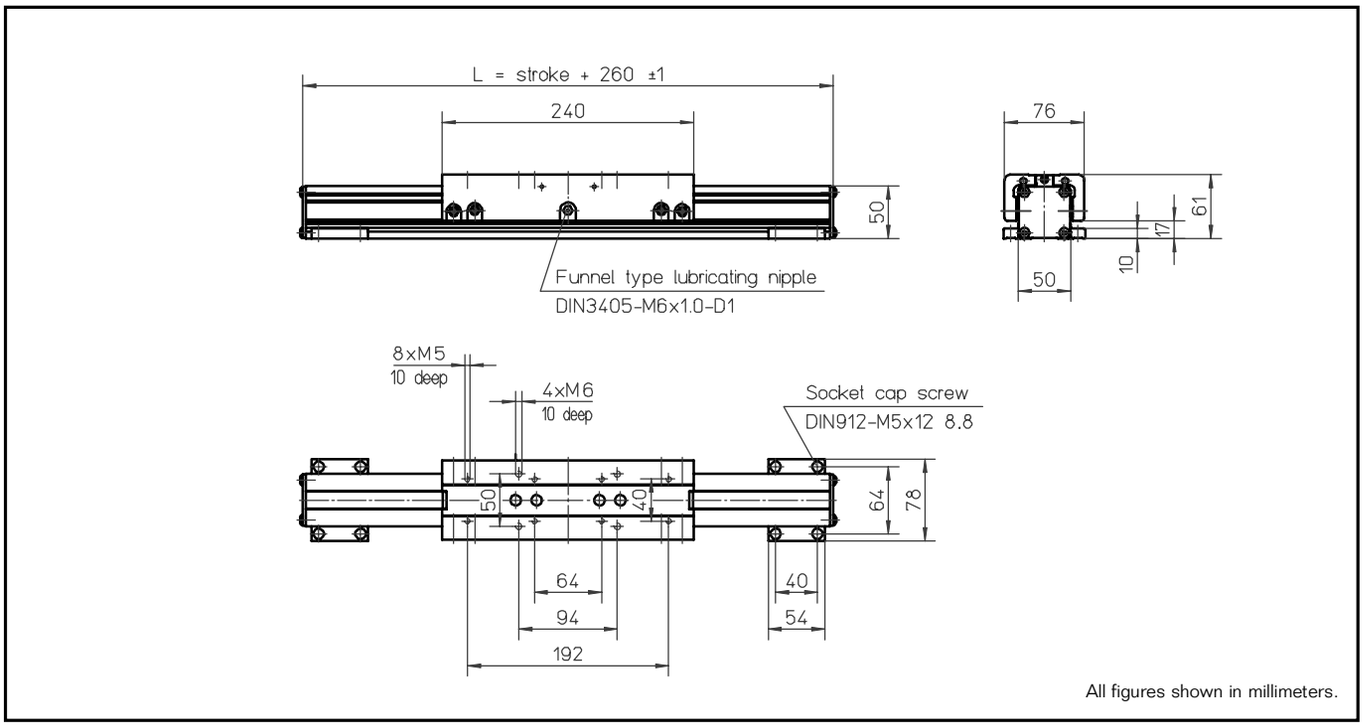
Guide tube

WH40-190



All figures shown in millimeters.

WH50-190



All figures shown in millimeters.

Unit conversions

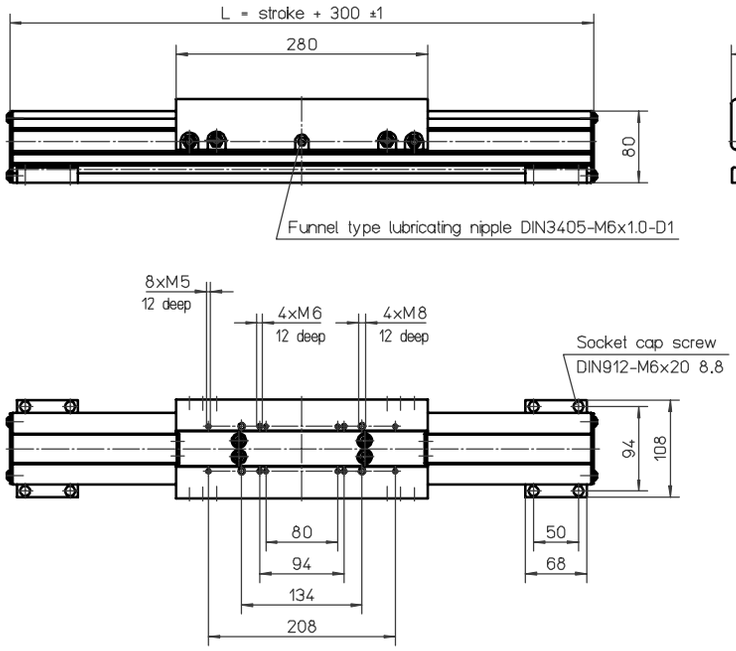
Length:	1 m=1000 mm=39.37 inches 1 inch=25.4 mm	**Geometrical moment of inertia:**	1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4
Force:	1 N=0.225 lbf 1 lbf=4.45 N	**Mass moment of inertia:**	1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2
Moment of Force:	1 Nm=0.738 lb • ft=8.85 lb • inches 1 lb •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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ SPEEDLine®

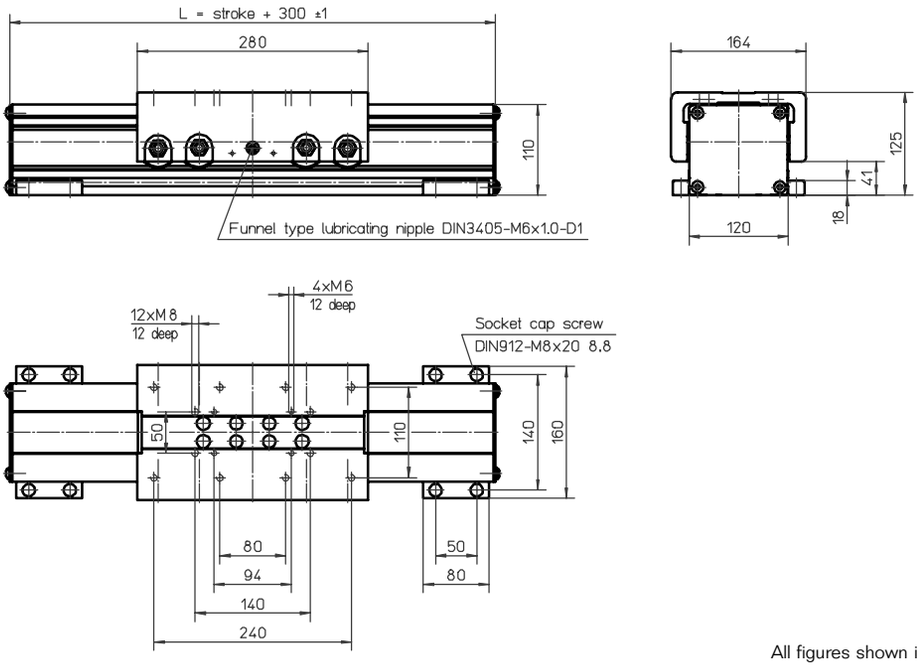
Guide tube

WH80-190



All figures shown in millimeters.

WH120-190



All figures shown in millimeters.

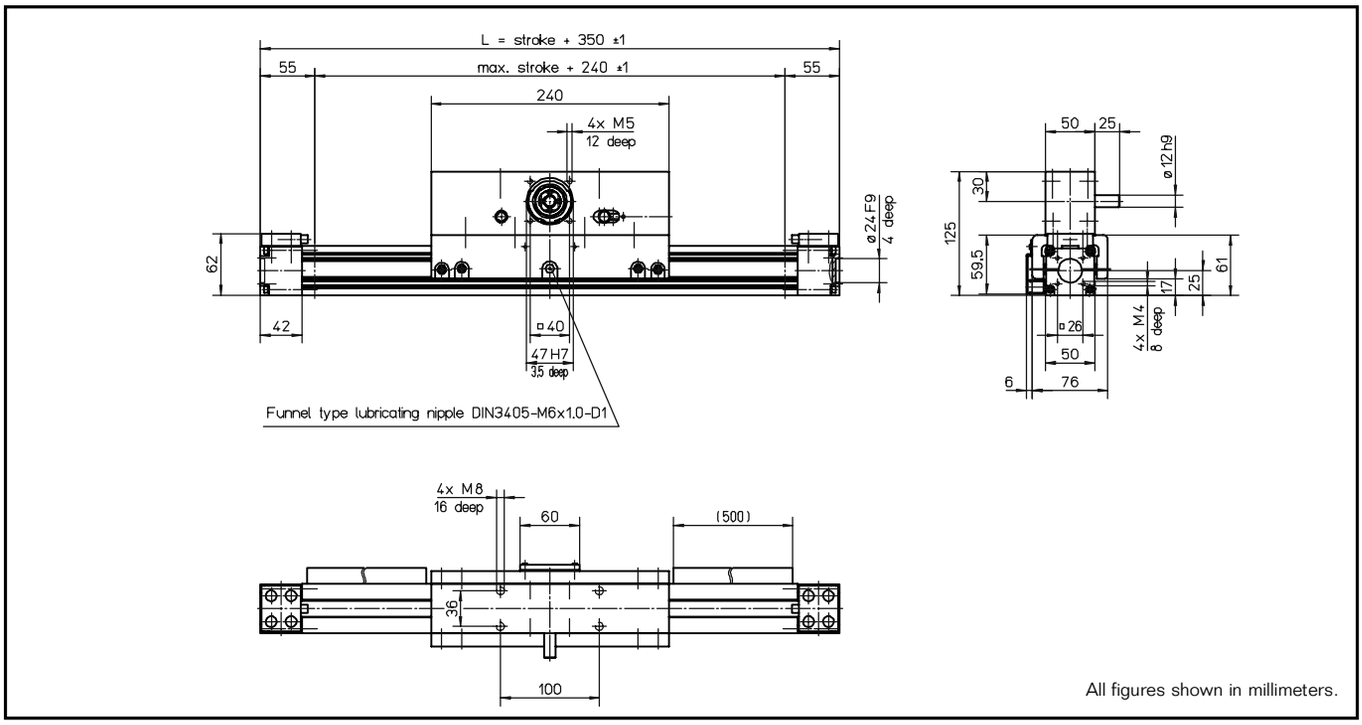
Unit conversions

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *SPEEDLine*® 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 mm^4
lz 2.65 x 10^5 mm^4

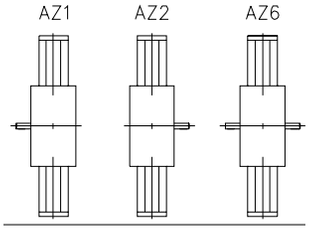
Weights
Basic unit with zero stroke: . . . . .4.50 kg
100 mm stroke: . . . . . .0.42 kg
Power bridge with carriage: . . . . .2.90 kg

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

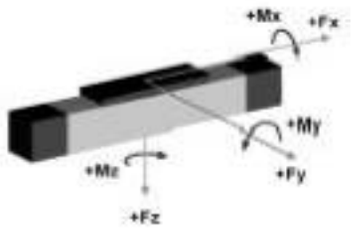
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

Geometrical moment of inertia:
1 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

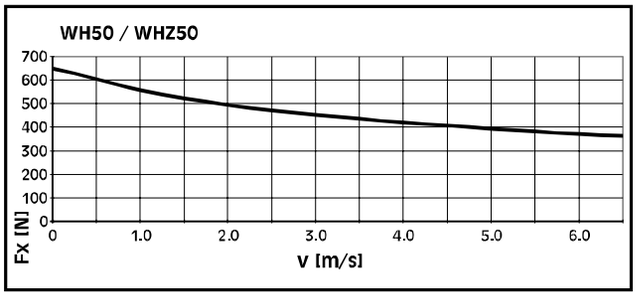
Mass:
1 kg=2.2 lb

Loads and load moments



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

Fx depending on the linear speed

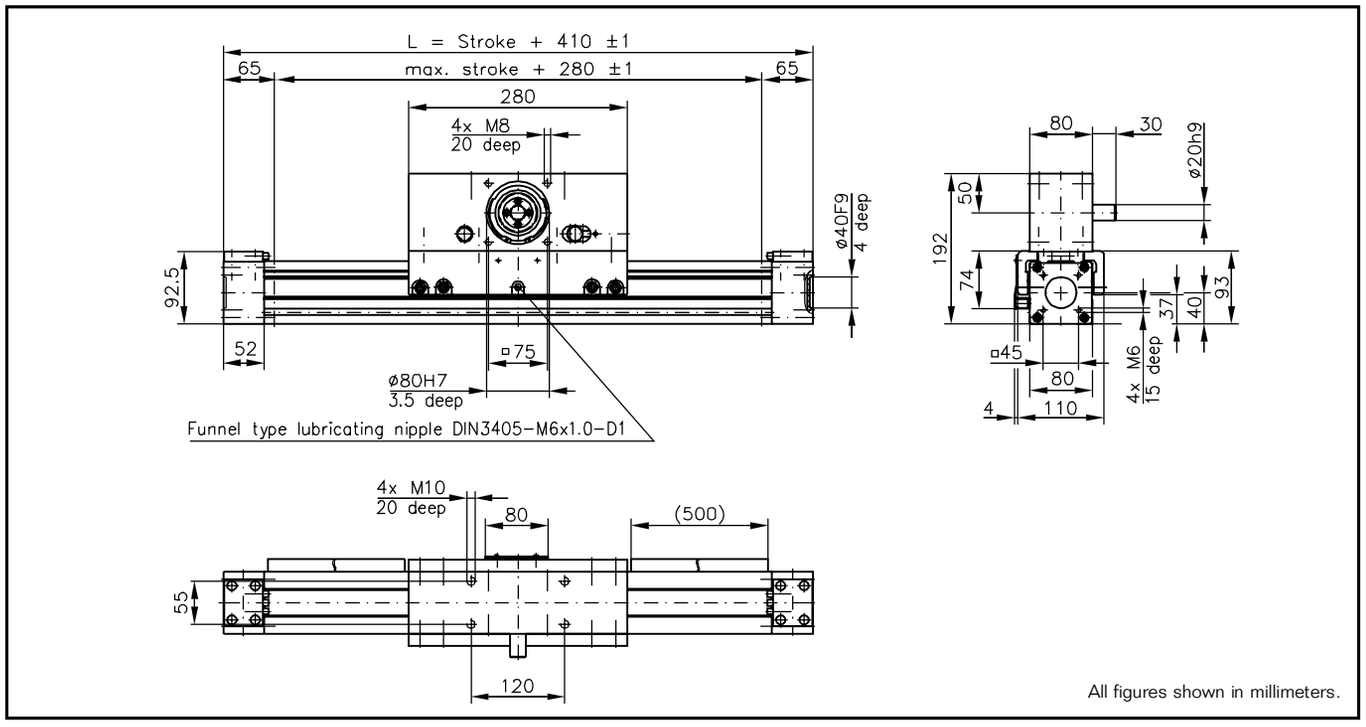


1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 28 and 29).

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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

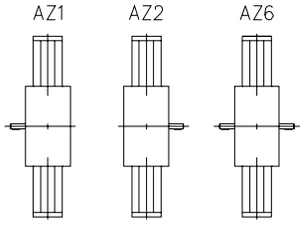
Weights
Basic unit with zero stroke: . . . . .11.20 kg
100 mm stroke: . . . . . .0.91 kg
Power bridge with carriage: . . . . .6.65 kg

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

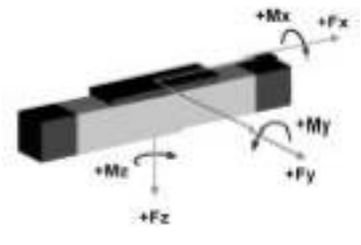
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

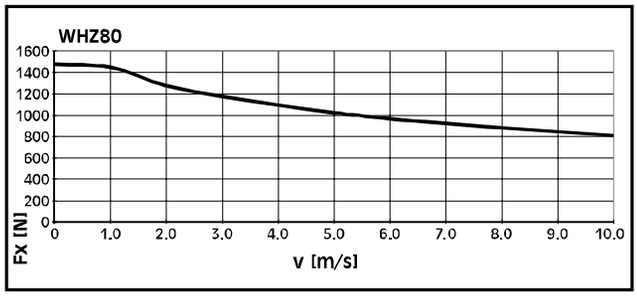
Mass:
1 kg=2.2 lb

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

Fx depending on the linear speed



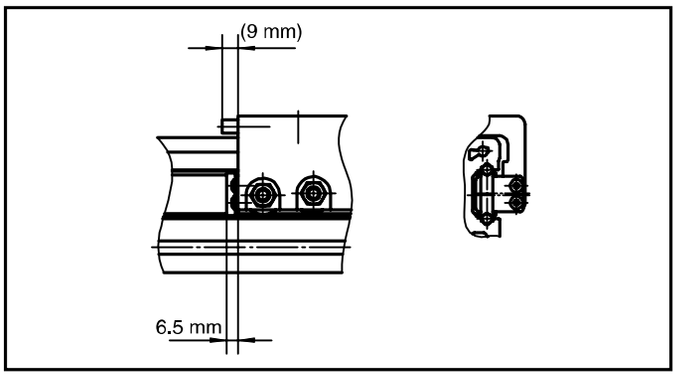
1) Depending on the speed, see respective chart.

).

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

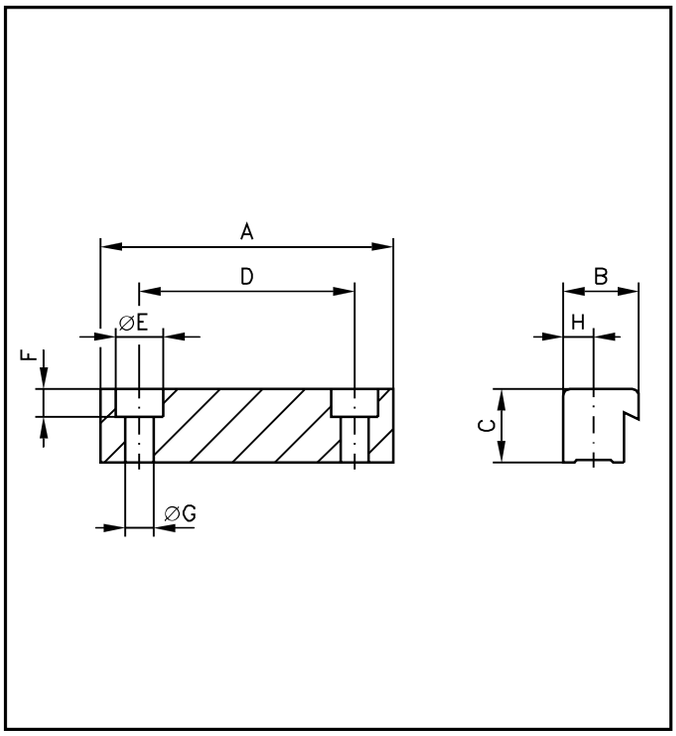
Accessories for WIESEL™ *SPEEDLine*®

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

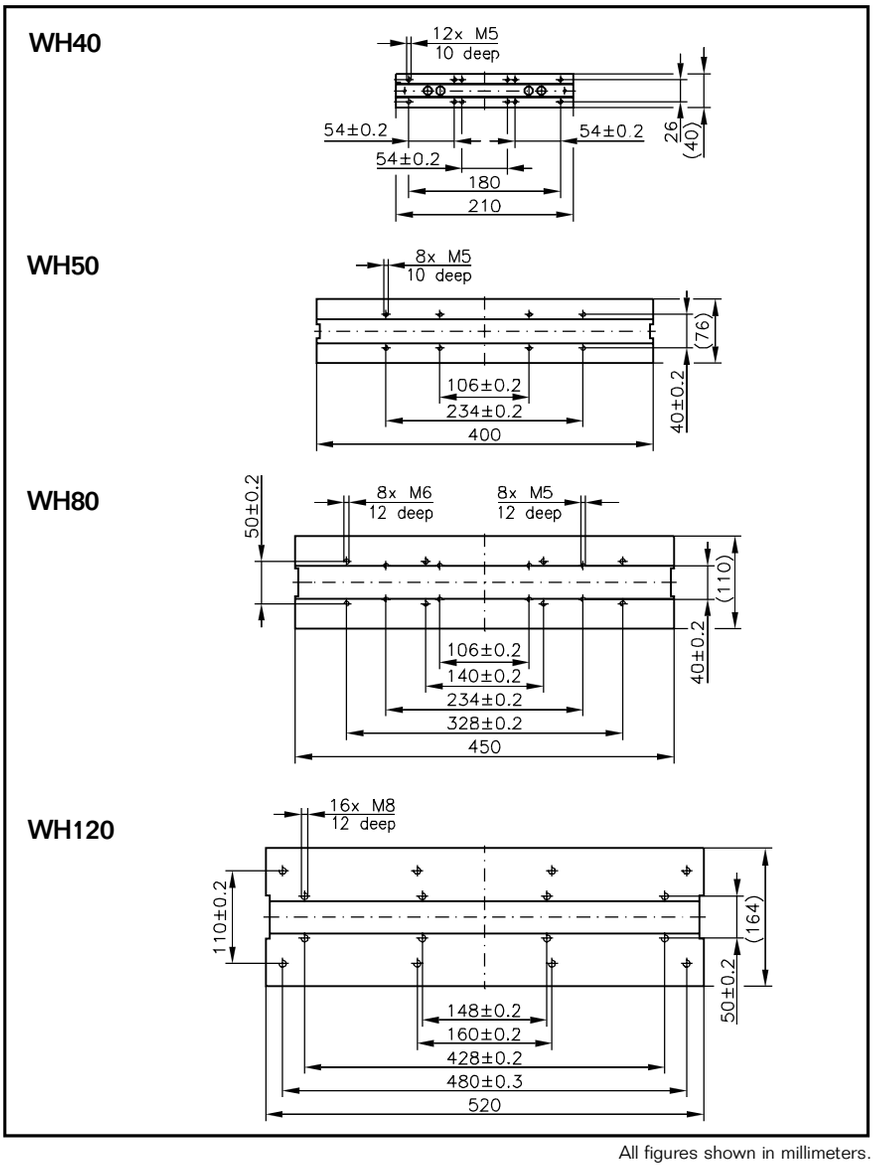
Unit conversions

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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

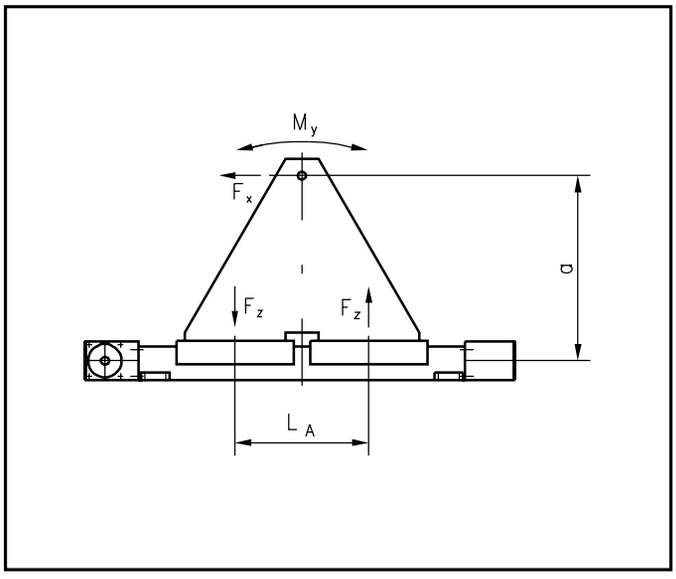
Mass moment of inertia: 1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2

Mass: 1 kg=2.2 lb

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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:

$$L_{tot} = \text{Stroke} + L_C + L_A$$

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.

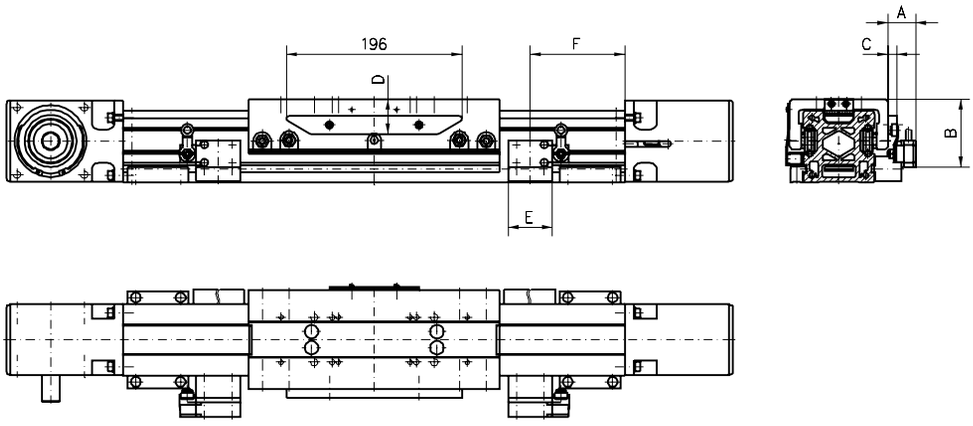
Unit conversions

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Mechanical linear drive units

WIESEL™ *POWERLine*®, WIESEL™ *DYNALine*®, WIESEL™ *VARIOLine*™

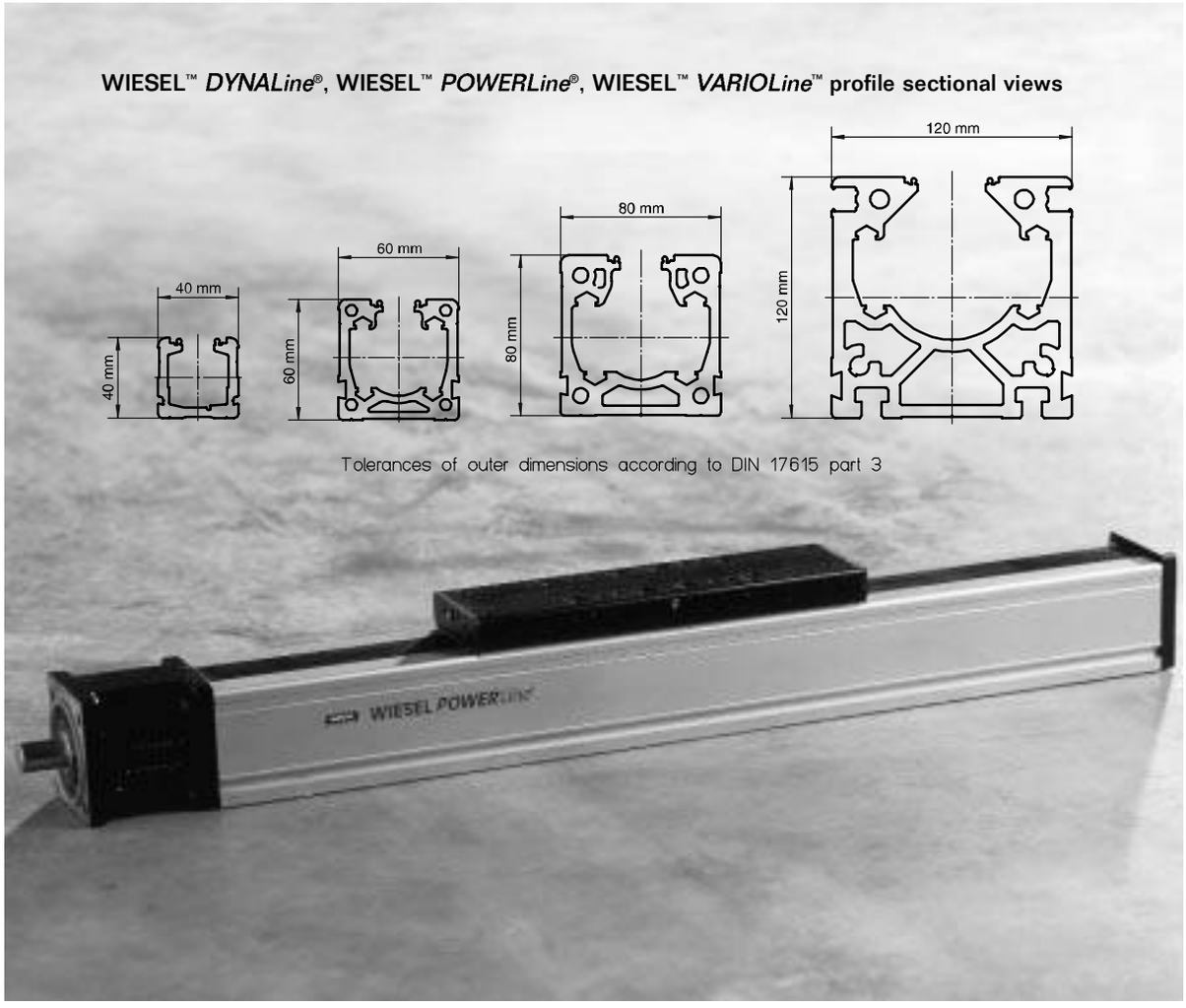
WIESEL™ *POWERLine*® WM40
- Fully integrated miniaturized linear drive unit with linear ball guide, ball screw drive and sealing strip.

WIESEL™ *POWERLine*® WM60/80 ZRT
- Fully integrated drive unit with tooth belt drive and linear bearing guide.
- Transmission of the feed force and handling of loads and load moments.

WIESEL™ *VARIOLine*™
- Fully integrated linear drive unit with ball screw and linear ball bearing guide and sealing strip.
- Transmission of the feed force and handling of loads through ram type piston.

WIESEL™ *POWERLine*® WM60/80/120
- Fully integrated linear drive unit with ball screw and linear ball bearing guide and sealing strip.
- Transmission of the feed force and handling of loads and load moments.
- Size WM60/80-370 with short guide system.

WIESEL™ *DYNALine*® WV60/80/120
- Fully integrated feed axis with ball screw.
- Transmission of the feed force.
- Used in combination with external linear guides.



Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

General technical data

WIESEL™ *POWER*Line®, *DYNA*Line®, *VARIO*Line™

Linear 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:

Drive element	Lead [mm]	n_{max} [rpm]	v_{max} [m/s]
TGT[1]	4	1500	0.1
	8	1500	0.2
	12	1500	0.3
	16	1500	0.4
KGT[2]	4	3000	0.2
	5	3000	0.25
	10	3000	0.5
	20	3000	1
	40	3000	2
	50	3000	2.5
VARIOLine™		3000	1.5
ZRT[3]20ATL5	120	1250	2.5
ZRT[3]25ATL10	170	882	2.5

1) TGT: Trapezoidal screw drive
2) KGT: Ball screw drive
3) ZRT: Toothed belt drive

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

Security advice
The ball screw drives in all three sizes are generally *not self-locking*. It is therefore advisable to install suitable motors with holding brake, particularly if the linear drive unit is installed vertically. If the toothed belt breaks, the load is released. Therefore safety precautions have to be taken for applications which are critical with regard to security.

Maximum forces
All maximum forces and moments provided 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.

Duty cycle
In practice, the following values have been proven.

Drive element:
For a trapezoidal screw the upper limit should be ≤ 30% per hour, linear ball guides allow duty cycles up to 100%. Extremely high loads in combination with high duty cycles can reduce the life.

Guidance element:
For a sliding guide the upper limit should be ≤ 30% per hour, linear ball guides allow duty cycles up to 100%.

Temperature
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 torques
The given values are means from a series of measurements. The effective values may differ in individual cases.

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 17 615. The deviations found in Precision Technology USA, Inc. linear drive units corresponding to these limits are worst case, but are normally well below. In order to obtain the required guide accuracy, the linear drive unit must be aligned with the aid of leveling 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.

Cover strip
for WIESEL™ *POWERLine*®
WIESEL™ *DYNALine*®
WIESEL™ *VARIOLine*™
™

Material: Polyamide 12

Characteristics:
- Resistant to alkaline solutions
- Conditionally resistant to acids
- Tough/rigid
- Abrasion-proof
- Little absorption of humidity
- Light resistant

Guide tube
All the components of a linear drive unit except the mechanical drive element are accommodated in a guide tube which is mounted either to the bottom of a driven WIESEL™ or is installed parallel to a driven WIESEL™. It takes higher loads and load moments. All WIESEL™ models are also available as guide tube (except WIESEL™ *DYNALine*®, *VARIOLine*™).

Stroke length
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, together with any overrun required. Entering the safety zone leads to mechanical collisions and must be prevented with suitable safety measures (safety limit switch, software queries, etc.)

Repeatability
The repeatability is defined as the capability of a linear drive unit to repeatedly reach an actual position it has reached before under the same conditions. It refers to the average position variation according to VDI/DGQ 3441. The repeatability is influenced, among other things, by:
- Load
- Speed
- Deceleration/acceleration
- Direction of travel
- Temperature

Aggressive working environments
The mechanical drive and the guidance of the WIESEL™ are well protected against dirt by means of the patented cover strip. In cases of heavy dirt and dust particles, an additional bellow is recommended. Available upon request.

Maintenance
The mechanical components (ball screw drive and linear ball bearing 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 three months. On the WM40, one lubrication nipple is used to lubricate the linear guideway, while the second lubrication point supplies the ball screw drive with grease. The cover strip should also be lubricated at the same time in order to prevent premature wear. Grease: rolling bearing grease (original grease Fuchs Lubritec URETHYN E/M1).

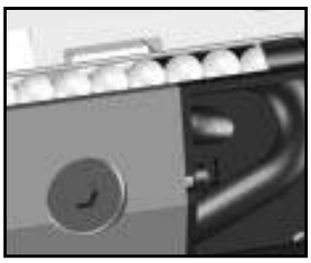
Tensioning of the toothed belt
The tensioning of the toothed belt can be adjusted with the aid of the tensioning screws on the guide casing which are intended for this. The linear units are delivered with optimal tension values in order to guarantee security and functionality. Changes in this adjustment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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

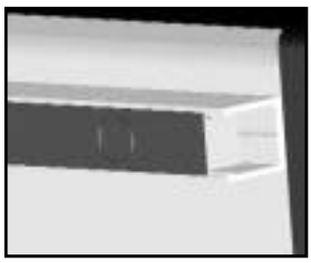
New: WIESEL™ *VARIO*Line™

Here's how to get to grips with things

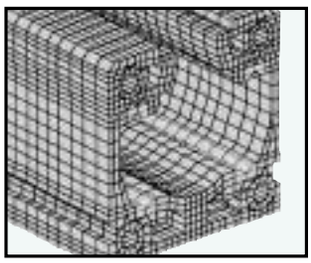
The new WIESEL™ *VARIO*Line™ really makes your decision for a handling unit with increased lateral forces easy. Precision Technology USA, Inc. has already integrated many functions perfectly in this ready-to-install solution. Ideal for changing workpieces, gripping or inserting – for all of these uses, the high screw leads now make it possible to combine high speed and high precision. This not only saves you in-house design effort, it also saves valuable space. So if you are looking for a particularly efficient way of feeding workpieces into a workspace, here is your chance.



Integrated guidance system
The integrated Precision Technology USA, Inc. linear ball bearing guidance system in the tubular section and the robust ball sleeve on the piston rod absorb high forces and moments.



Integrated design
Adjustable limit switches are already installed.

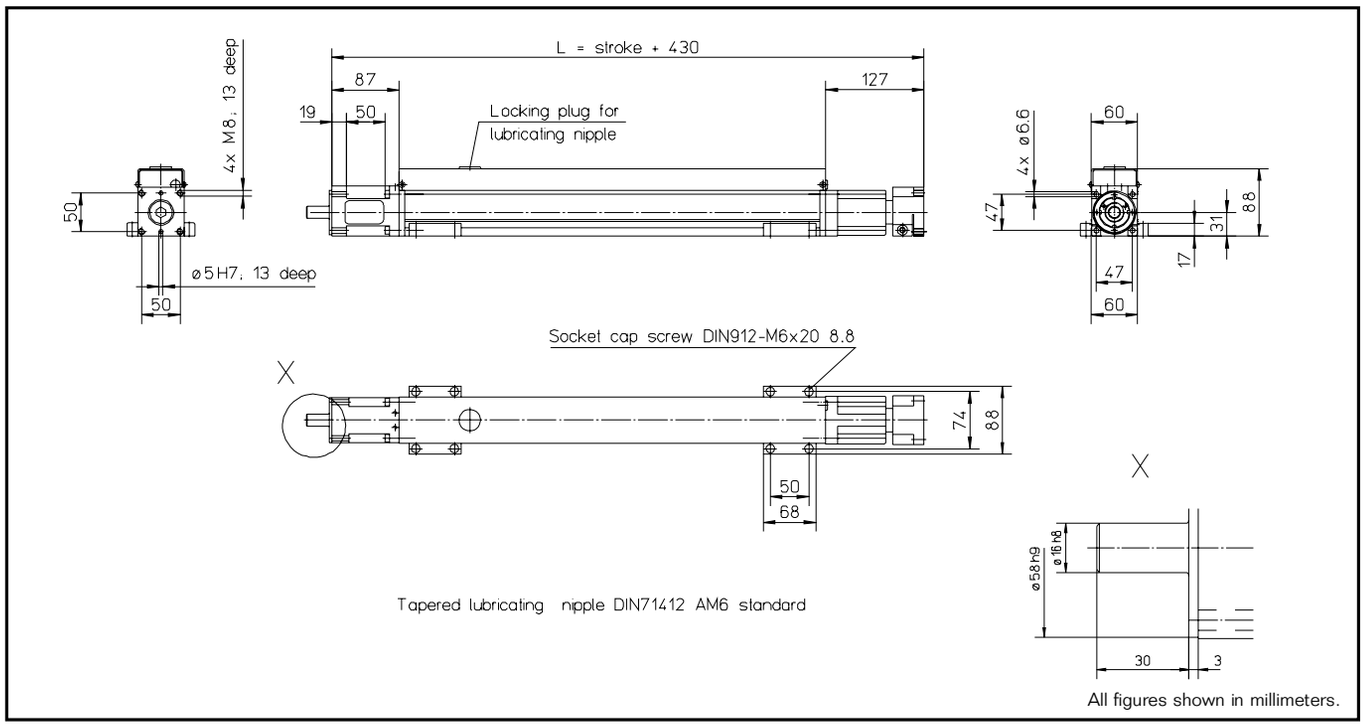


FEM optimized design
Maximum power density through FEM optimized design.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *VARIO*Line™ WZ60

with ball screw drive and integrated linear ball bearing drive



All figures shown in millimeters.

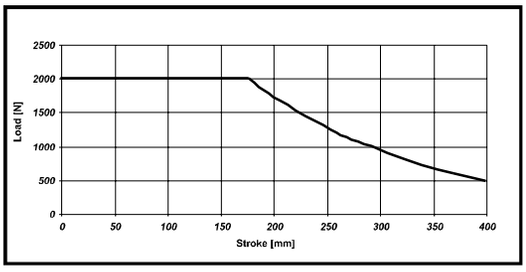
Technical data

Linear speed: . . . . . .max. 1.5 m/s
Repeatability: . . . . . .± 0.02 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .3000 rpm
Drive element: . . . . . .ball screw with backlash free single nut
Diameter: . . . . . .20 mm
Lead: . . . . . .5, 20, 50 mm
Stroke length: . . . . . .max 400 mm
Geometrical moment of inertia: . . . . . .Iy 5.8 x 10^5 mm⁴
Iz 5.9 x 10^5 mm⁴

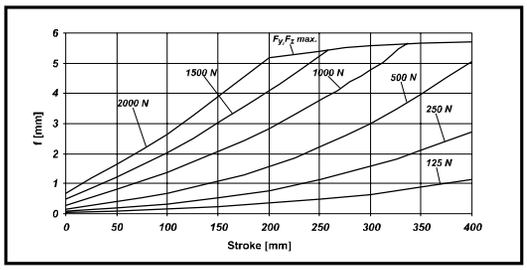
Weights
Basic unit with zero stroke: . . . . . .4.5 kg
100 mm stroke: . . . . . .0.77 kg
Mass to be moved without stroke: . . . . .1.8 kg
Mass to be moved per 100 mm stroke: .0.26 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	20	50
150	0.5	0.9	1.2
1500	0.9	1.4	1.8
3000	1.3	1.6	2.0

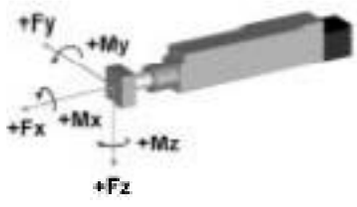


Max side load Fy, Fz

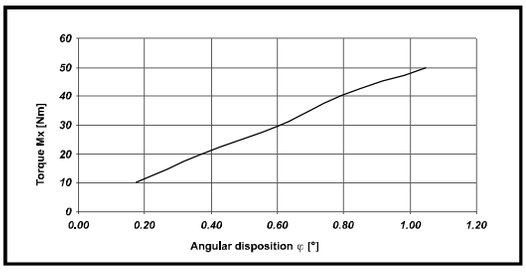


Deflection due to Fy, Fz

Loads and load moments



Load	dynam. [N]
Fx drive	2800
Fy	see diagram
±Fz	see diagram
Load moment	**dynam. [Nm]**
Mx	50



Torsion

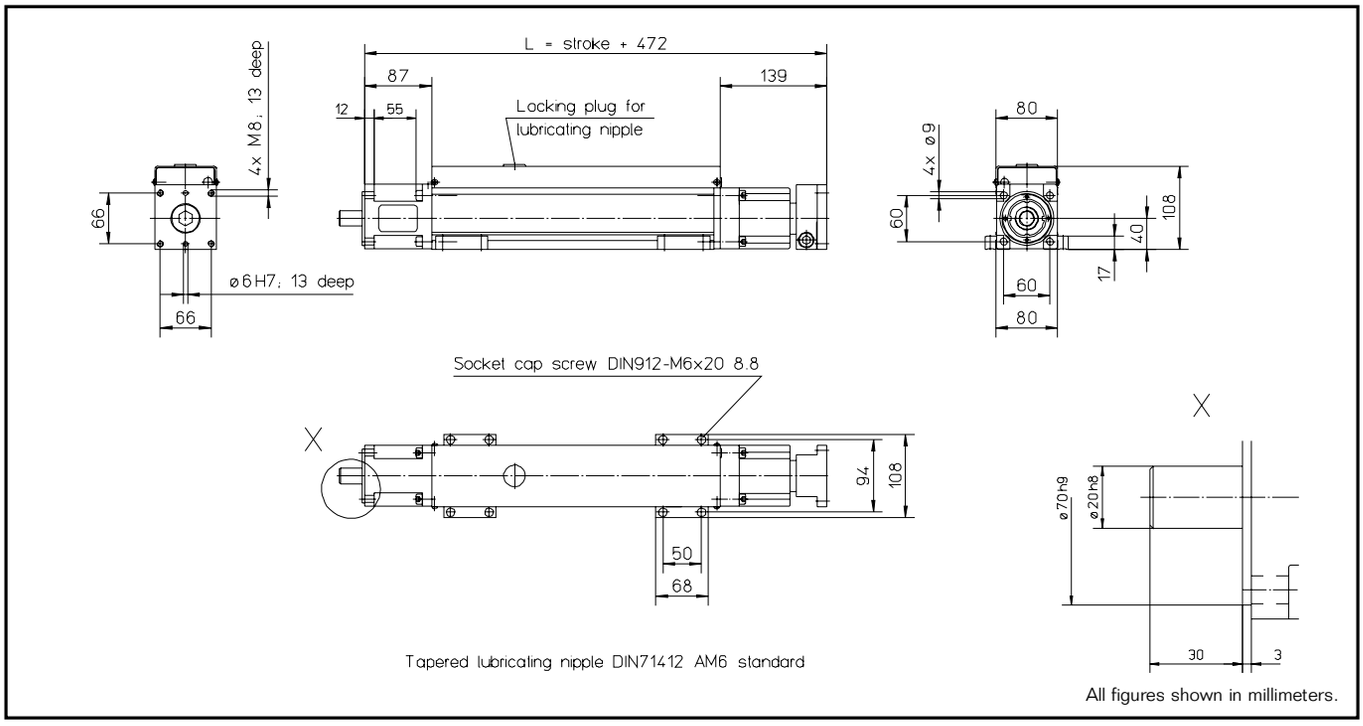
Unit conversions

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *VARIO*Line™ WZ80

with ball screw drive and integrated linear ball bearing drive



All figures shown in millimeters.

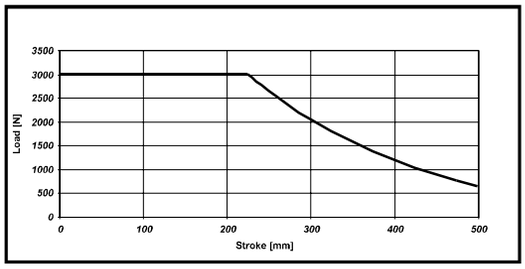
Technical data

Linear speed: . . . . . .max. 1.5 m/s
Repeatability: . . . . . .± 0.02 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .3000 rpm
Drive element: . . . . . .ball screw with backlash free single nut
Diameter: . . . . . .25 mm
Lead: . . . . . .5, 10, 20, 50 mm
Stroke length: . . . . . .max 500 mm
Geometrical moment of inertia: . . . . . .Iy 1.9 x 10^6 mm⁴
Iz 1.9 x 10^6 mm⁴

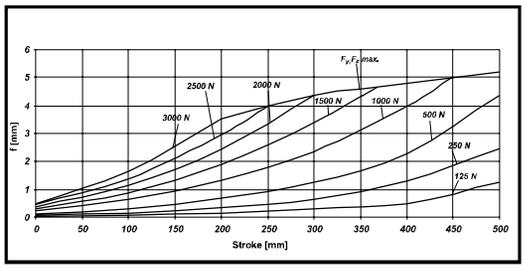
Weights
Basic unit with zero stroke: . . . . . .7.5 kg
100 mm stroke: . . . . . .1.35 kg
Mass to be moved without stroke: . . . . .3.0 kg
Mass to be moved per 100 mm stroke: .0.5 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

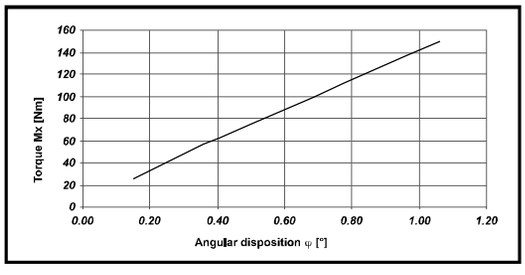
Rotational speed [rpm]	Lead P [mm] 5	10	20	50
150	0.6	1.1	1.3	1.8
1500	1.1	1.5	1.6	2.2
3000	1.4	1.8	1.8	2.7



Max side load Fy, Fz

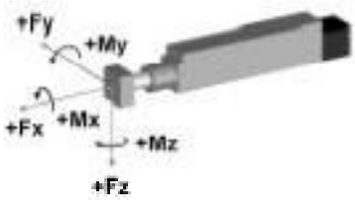


Deflection due to Fy, Fz



Torsion

Loads and load moments



Load	dynam. [N]
Fx drive	3500
Fy	see diagram
±Fz	see diagram
Load moment	**dynam. [Nm]**
Mx	150

Unit conversions

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

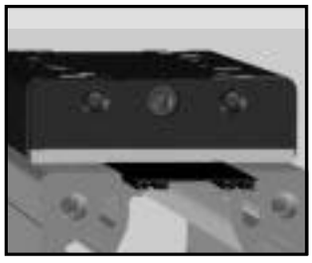
Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWERLine*®
with toothed belt drive

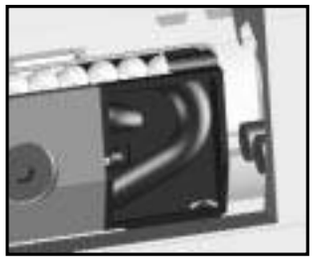
The best ideas make it simple for you.

The new WIESEL™ *POWERLine*® ZRT combines the high dynamics of the toothed belt drive with the powerful, fully integrated ball bearing guide of the *POWERLine*® system. The patented cover strip protects the guide system safely against dirt. The version 370 offers an attractive price reduction with its shorter guide system and the reduced length of the power bridge. So the *POWERLine*® ZRT brings higher dynamics to the tasks of engineering and handling.

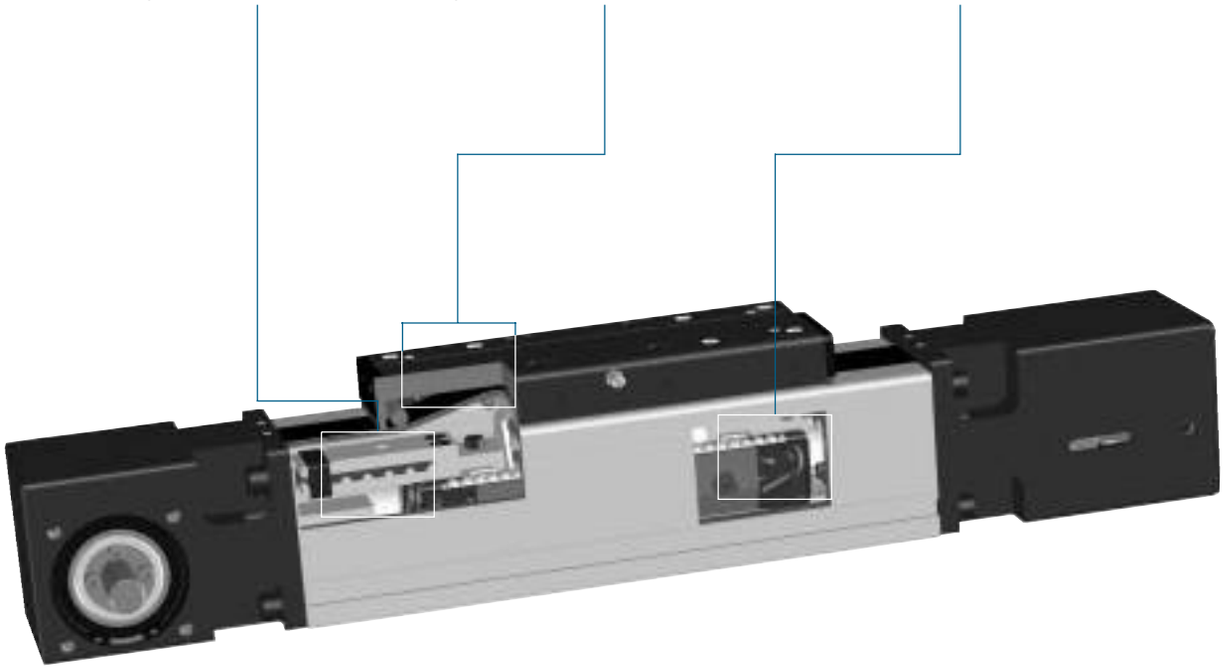
Toothed belt
The integrated toothed belt allows high dynamics and precision.



Patented cover strip
The patented, self-adjusting cover strip is a reliable protection from dirt.



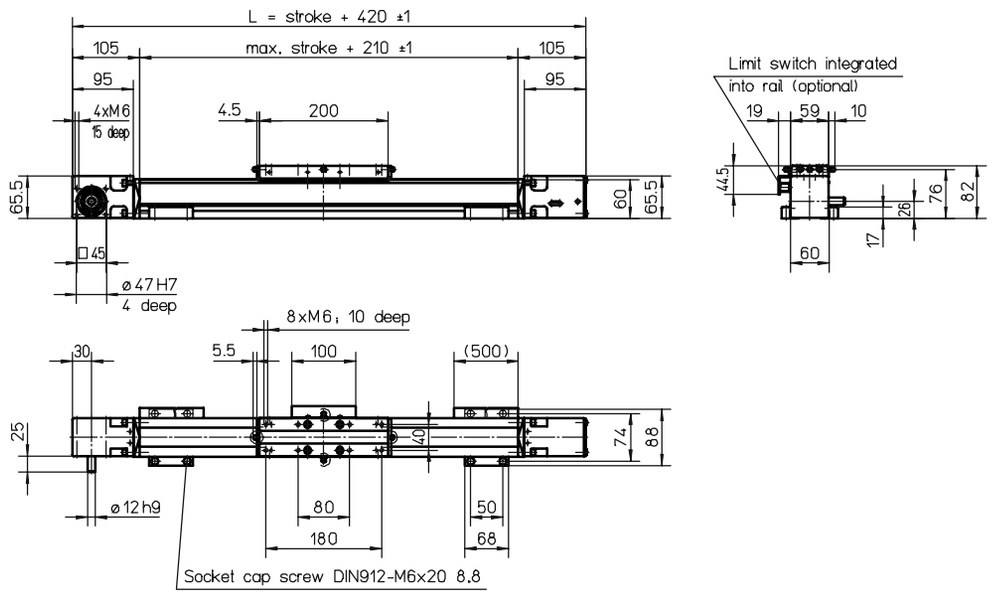
Integrated guide system
The integrated ball-bearing guide absorbs heavy forces and moments.



Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM60 – 370 ZRT

with toothed belt drive and integrated linear short ball-bearing guide system



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 20 m/s²
Drive element: . . . . . .Toothed belt 20ATL5
Diameter: . . . . . .38.20 mm
Stroke per revolution: . . . . . .120 mm
Stroke length: . . . . . .4000 mm
Length of power bridge: . . . . . .200 mm
Geometrical moment of inertia: . . .ly 5.62 x 10^5 mm⁴
lz 5.94 x 10^5 mm⁴

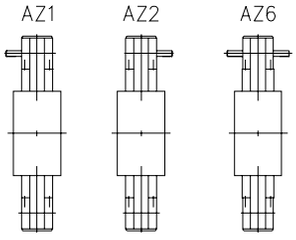
Weights
Basic unit with zero stroke: . . . . .4.30 kg
100 mm stroke: . . . . . .0.45 kg
Power bridge with carriage: . . . . .1.25 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	1.6
600	2.5
1250	3.0

Execution of drive shafts

(Detailed description see pg 100)
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

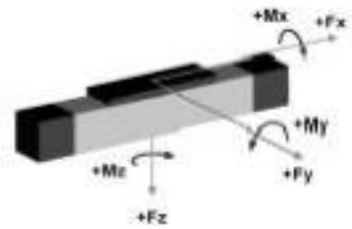
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

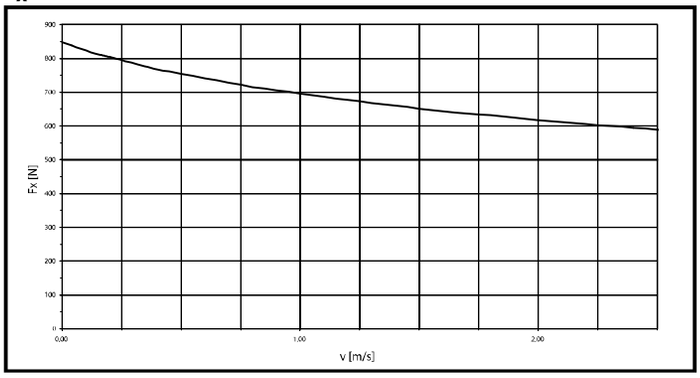
Mass:
1 kg=2.2 lb

Loads and load moments



Load	dynam. [N]
Fx drive[1]	850
Fy	1400
+/- Fz	1400
Load moment	**dynam. [Nm]**
Mx	25
My[2]	50
Mz[2]	50

F_x over the linear speed

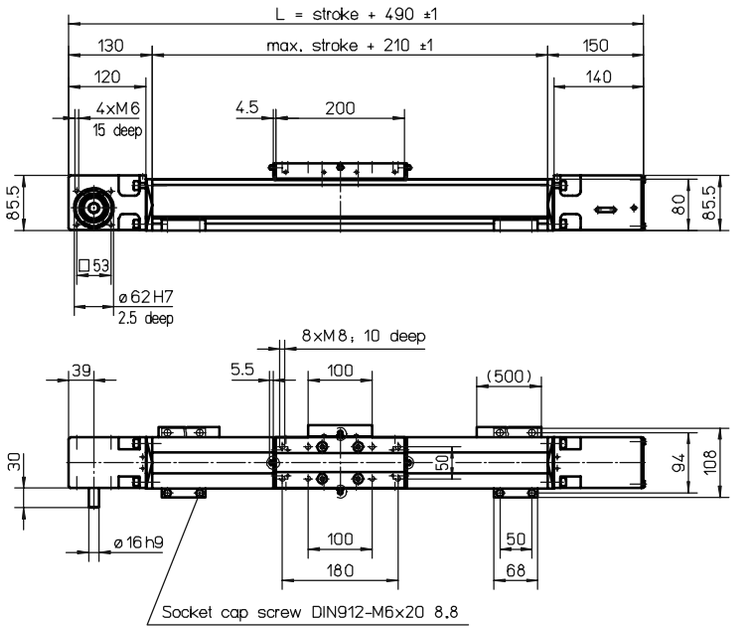


1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 62 and 63).

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM80 – 370 ZRT

with toothed belt drive and integrated linear short ball-bearing guide system



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 20 m/s²
Drive element: . . . . . .Toothed belt 25AT10
Diameter: . . . . . .54.11 mm
Stroke per revolution: . . . . . .170 mm
Stroke length: . . . . . .5500 mm
Length of power bridge: . . . . . .200 mm
Geometrical moment of inertia: . . .Iy 1.89 x 10⁶ mm⁴
Iz 1.97 x 10⁶ mm⁴

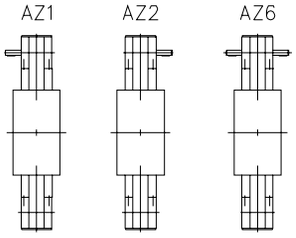
Weights
Basic unit with zero stroke: . . . . .9.20 kg
100 mm stroke: . . . . . .0.80 kg
Power bridge with carriage: . . . . .2.10 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	4.0
450	5.4
885	6.2

Execution of drive shafts

(Detailed description see pg 100)
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

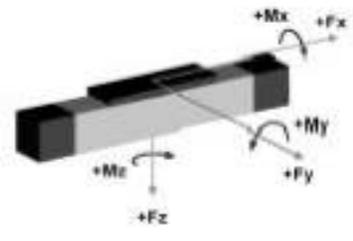
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

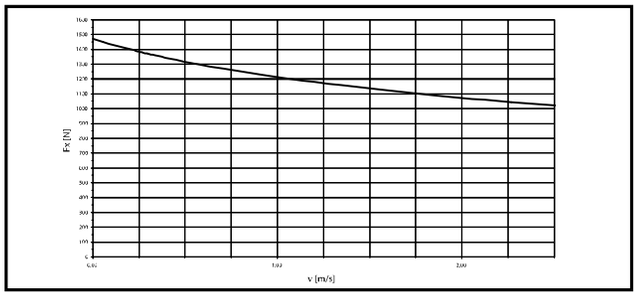
Mass:
1 kg=2.2 lb

Loads and load moments



Load	dynam. [N]
Fx drive[1]	1470
Fy	2100
+/- Fz	2100
Load moment	**dynam. [Nm]**
Mx	68
My[2]	135
Mz[2]	135

F_x over the linear speed

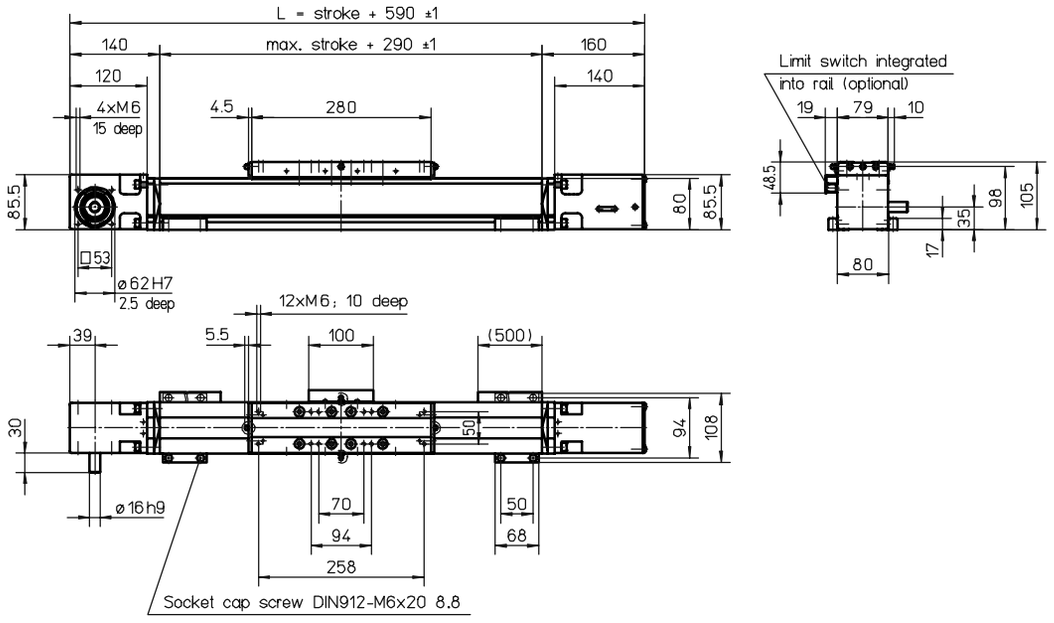


1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 62 and 63).

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM80 ZRT

with toothed belt drive and integrated linear ball-bearing guide



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.05 mm
Acceleration: . . . . . .max. 20 m/s²
Drive element: . . . . . .Toothed belt 25AT10
Diameter: . . . . . .54.11 mm
Stroke per revolution: . . . . . .170 mm
Stroke length: . . . . . .5400 mm
Length of power bridge: . . . . . .280 or 450 mm
Geometrical moment of inertia: . . .ly 1.89 x 10^6 mm⁴
lz 1.97 x 10^6 mm⁴

Weights
Basic unit with zero stroke: . . . . .11.20 kg
100 mm stroke: . . . . . .0.80 kg
Power bridge with carriage: . . . . .3.40 kg
Provided: . . . . . .4 pieces KAO mounting brackets

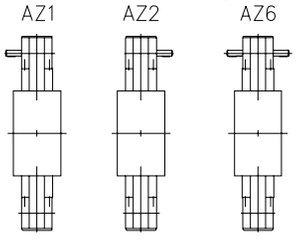
Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	*)
450	*)
885	*)

*) values in determination

Execution of drive shafts

(Detailed description see pg 100)
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

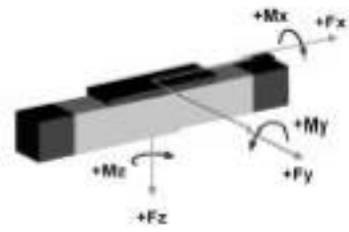
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

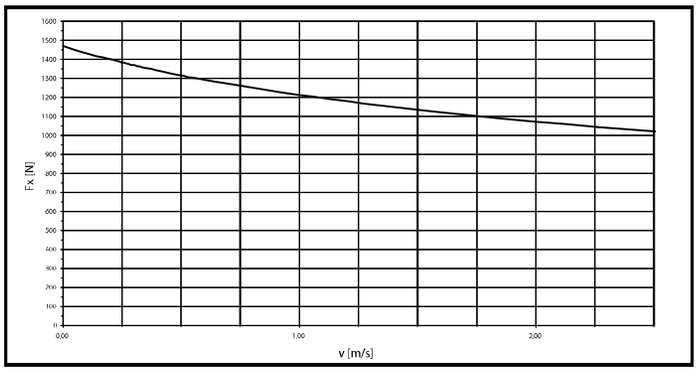
Mass:
1 kg=2.2 lb

Loads and load moments



Load	dynam. [N]
Fx drive[1]	1470
Fy	3000
+/- Fz	3000
Load moment	**dynam. [Nm]**
Mx	150
My[2]	300
Mz[2]	300

F_x over the linear speed



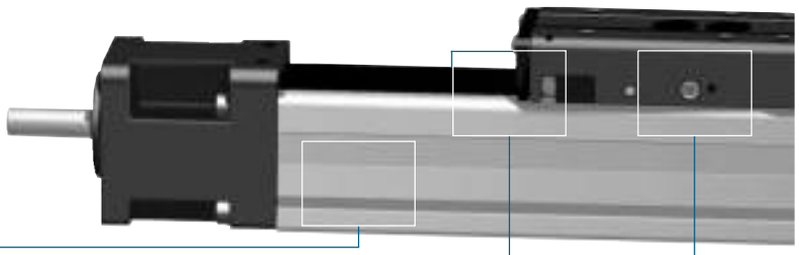
1) Depending on the speed, see respective chart.
2) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 62 and 63).

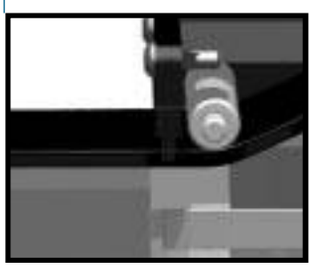
Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® and WIESEL™ *DYNA*Line® with ball screw drive

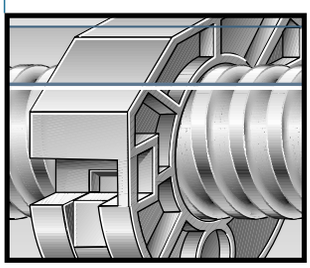
Innovative solutions, down to the very last detail.

WIESEL™ *POWER*Line® WM40
The linear drive unit for miniaturized applications. High performance with extremely small dimensions. The Precision Technology USA, Inc. ball screw drive in combination with the high precision linear guide allows precise positioning.

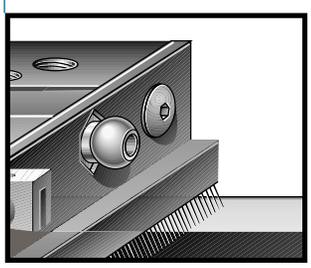




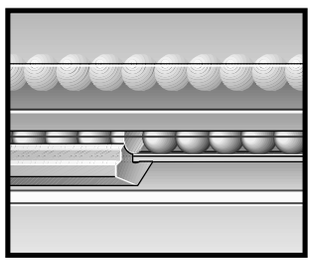
Patented sealing strip
The patented sealing strip protects the mechanism effectively from dirt. The friction for the deviation of the sealing strip is reduced to a minimum.



Screw support
The patented screw support system permits high speeds (max. input speed) at long strokes.

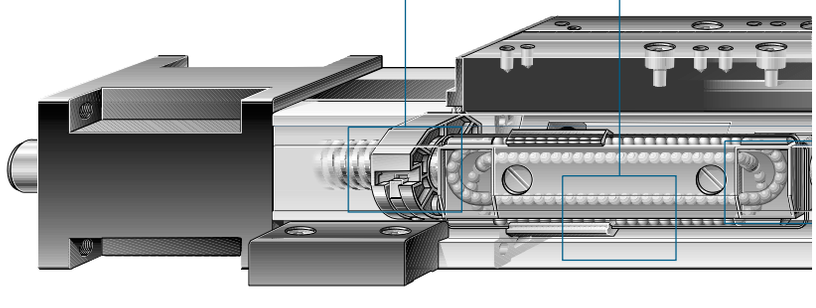


Central lubrication
A standard feature. The drive and guide systems are conveniently relubricated from a central point on the power bridge. Whether by hand or automatically, maintenance is now a simple matter.



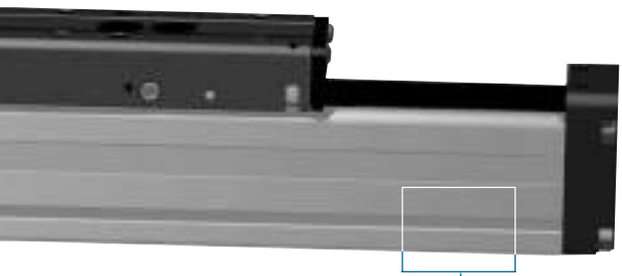
Well proven and patented guide system
The high-performance linear ball-bearing guide with hardened steel running tracks has been integrated into the aluminum profile. Optimum introduction of forces permits maximum force and torque, as well as optimizing the tensile stresses.

WIESEL™ *POWER*Line® WM60, WM80, WM120
The WIESEL™ *POWERLine*® is an extremely powerful linear drive unit with ball screw drive and integrated ball-bearing guide. It allows high feed forces and load moments in all directions.

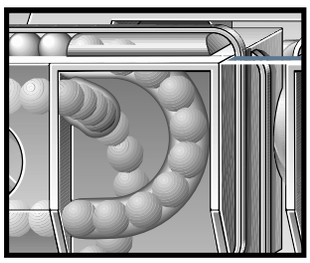


WIESEL™ *POWERLine*® detail

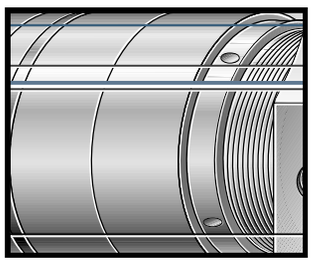
Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com



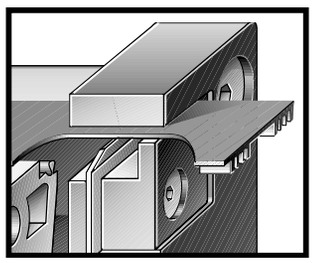
Linear guides
Precise positioning is made possible by a polished linear guide with a high degree of guide accuracy. A small motor can be added thanks to the low coefficient of friction. Rubber wipers protect the mechanism from dirt, thus increasing service life.



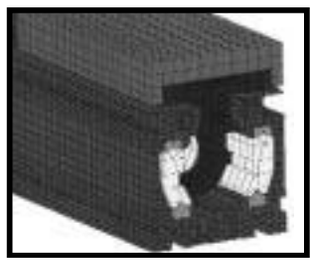
Ball cage
The ball bearings of the linear guides are protected by a ball cage. They can be replaced quickly and safely.



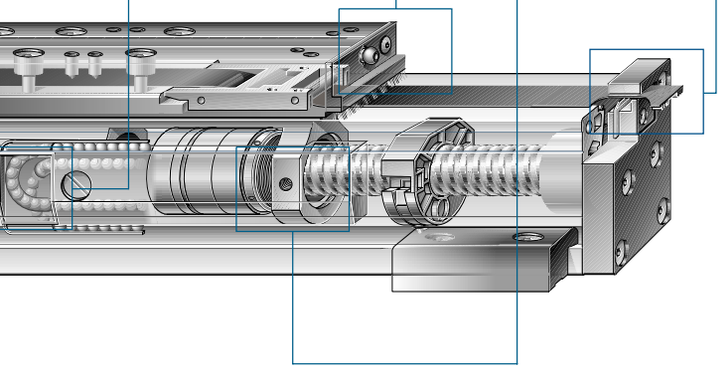
Optimized ball screw
The pre-tensioning of the nut unit can be adjusted by the Precision Technology USA, Inc. service team. This increases the lifetime of the axis.

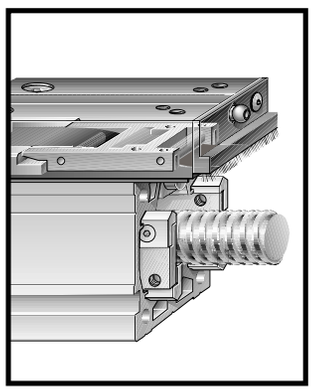


Self-adjusting third-generation cover strip
The patented sealing strip reliably protects the mechanical parts against excessive dirt and is retensioned automatically. Result: the maintenance effort is reduced to virtually zero.



FEA optimized design
Both the profile and the entire linear drive unit have been modeled and optimized by finite element analysis (FEA). Result: maximum performance density and reliability.





WIESEL™ *DYNA*Line® WV60, WV80, WV120
WIESEL™ *DYNA*Line® permits high feed forces, even in combination with long stroke lengths and high speeds. The supported, covered ball screw must be used in combination with external linear guides.

WIESEL™ *DYNA*Line® detail

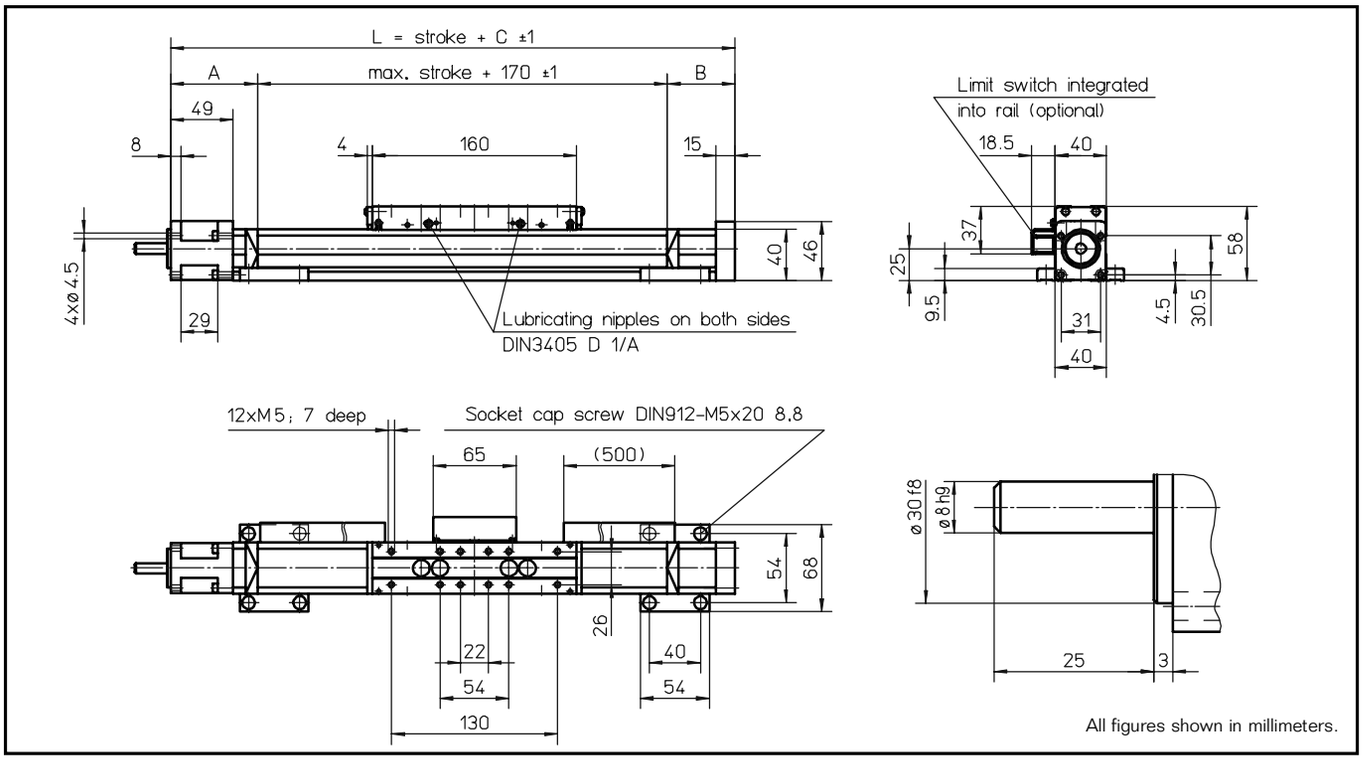
***only applies to WIESEL™ *POWER*Line® series**

Precision Technology

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM40

with ball screw drive and integrated linear guide



Technical data

Linear speed: . . . . . .max. 0.25 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Ball screw
Diameter: . . . . . .12 mm
Lead: . . . . . .5 mm
Stroke length: . . . . . .up to 2000 mm
Power bridge: . . . . . .160 or 210 mm long
see page 62
Geometrical moment of inertia: . . .ly 10.8 x 10^4 mm^4
lz 13.4 x 10^4 mm^4

Weights
Basic unit with zero stroke: . . . . .1.5 kg
100 mm stroke: . . . . . .0.3 kg
Power bridge with carriage: . . . . .0.36 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5
150	0.3
1500	0.5
3000	0.8

Additional lengths as a function of the stroke

Stroke length [mm]	A [mm]	B [mm]	Additional length [mm]
0-500	65	35	270
501-1100	65	45	280
1101-2000	70	60	300

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

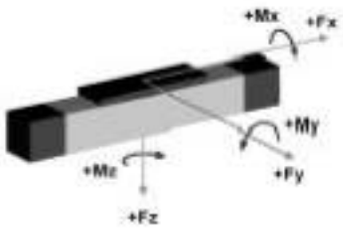
Moment of Force:
1 Nm=0.738 lb • ft=8.85 lb • inches
1 lb • ft=1.36 Nm

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

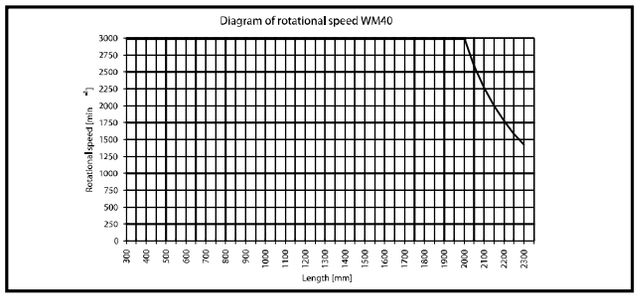
Loads and load moments



Load	dynam. [N]
Fx drive	1000
Fy	450
+/- Fz	600
Load moment	**dynam. [Nm]**
Mx	10
My[1)]	30
Mz[1)]	30

1) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 62 and 63).

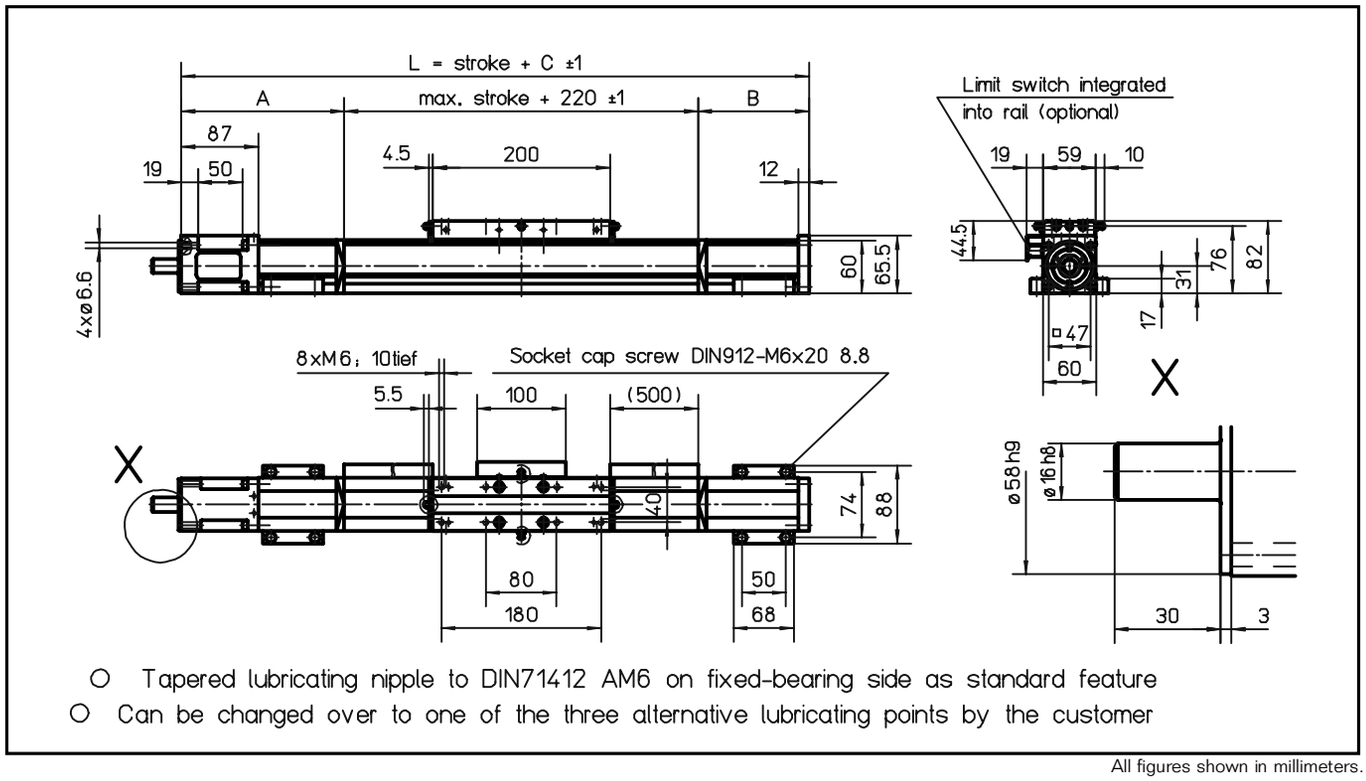
Rotational speed of the screw as a function of the total length



Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM60 – 370

with ball screw drive and integrated linear ball-bearing guide



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 10 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive with single nut, no backlash
Diameter: . . . . . .20 mm
Lead: . . . . . .5, 20, 50 mm
Stroke length: . . . . . .up to 5000 mm
Power bridge: . . . . . .200 mm long
Geometrical moment of inertia: . . .ly 5.8 x 10^5 mm⁴
lz 5.9 x 10^5 mm⁴

Weights
Basic unit with zero stroke: . . . .3.8 kg
100 mm stroke: . . . . . .0.65 kg
Power bridge with carriage: . . . . .1.00 kg
Provided: . . . . . .4 pieces KAO mounting brackets

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

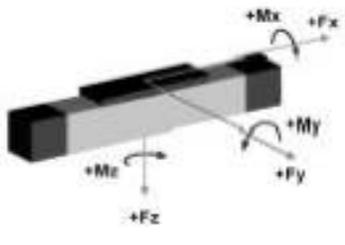
Mass moment of inertia:
1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2

Mass:
1 kg=2.2 lb

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	20	50
150	0.5	0.9	1.2
1500	0.9	1.4	1.8
3000	1.3	1.6	2

Loads and load moments



Load	dynam. [N]
Fx drive	2800
Fy	1400
± Fz	1400

Load moment	dynam. [Nm]
Mx	50
My	100
Mz	100

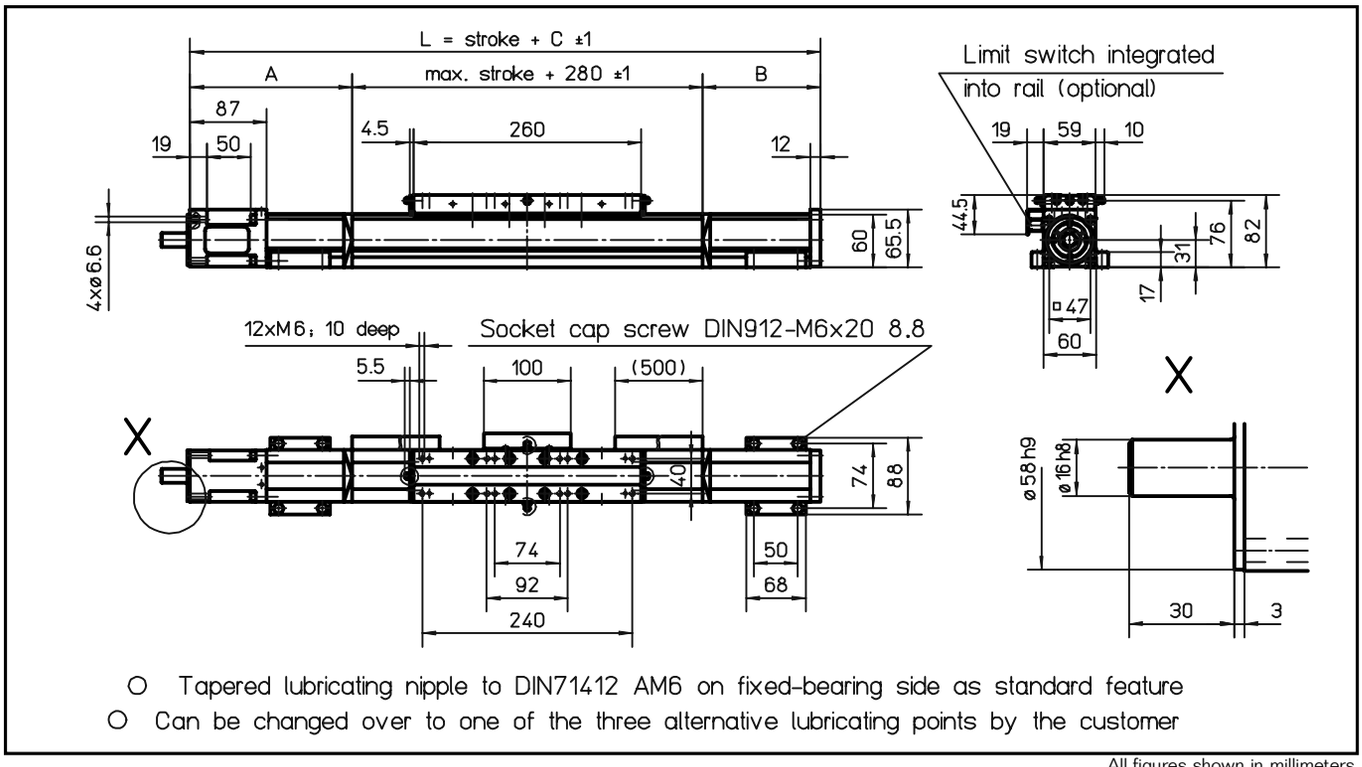
Additional lengths as a function of the stroke

Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–580	95	20	335
581-1140	110	60	390
1141-1805	130	80	430
1806-2460	155	105	480
2461-3125	175	125	520
3126-3780	200	150	570
3781-4445	220	170	610
4446-5000	240	190	650

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM60

with ball screw drive and integrated linear ball-bearing guide



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive
Diameter: . . . . . .20 mm
Lead: . . . . . .5, 20, 50 mm
Stroke length: . . . . . .up to 11.000 mm
with lead 50 mm
max. 5000 mm
Power bridge: . . . . . .260 or 450 mm long
see page 62
Geometrical moment of inertia: . . .ly 5.8 x 10^5 mm⁴
lz 5.9 x 10^5 mm⁴

Weights
Basic unit with zero stroke: . . . . .6.16 kg
100 mm stroke: . . . . . .0.64 kg
Power bridge with carriage: . . . . .1.99 kg
Provided: . . . . . .4 pieces KAO mounting brackets

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

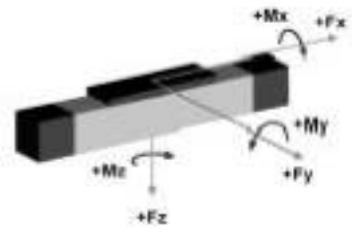
Mass moment of inertia:
1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2

Mass:
1 kg=2.2 lb

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	20	50
150	0.6	1.1	1.5
1500	1.1	1.8	2.3
3000	1.6	2.0	2.5

Loads and load moments



Load	dynam. [N]
Fx drive	4000
Fy	2000
± Fz	2000
Load moment	**dynam. [Nm]**
Mx	100
My[1)]	200
Mz[1)]	200

1) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 62 and 63).

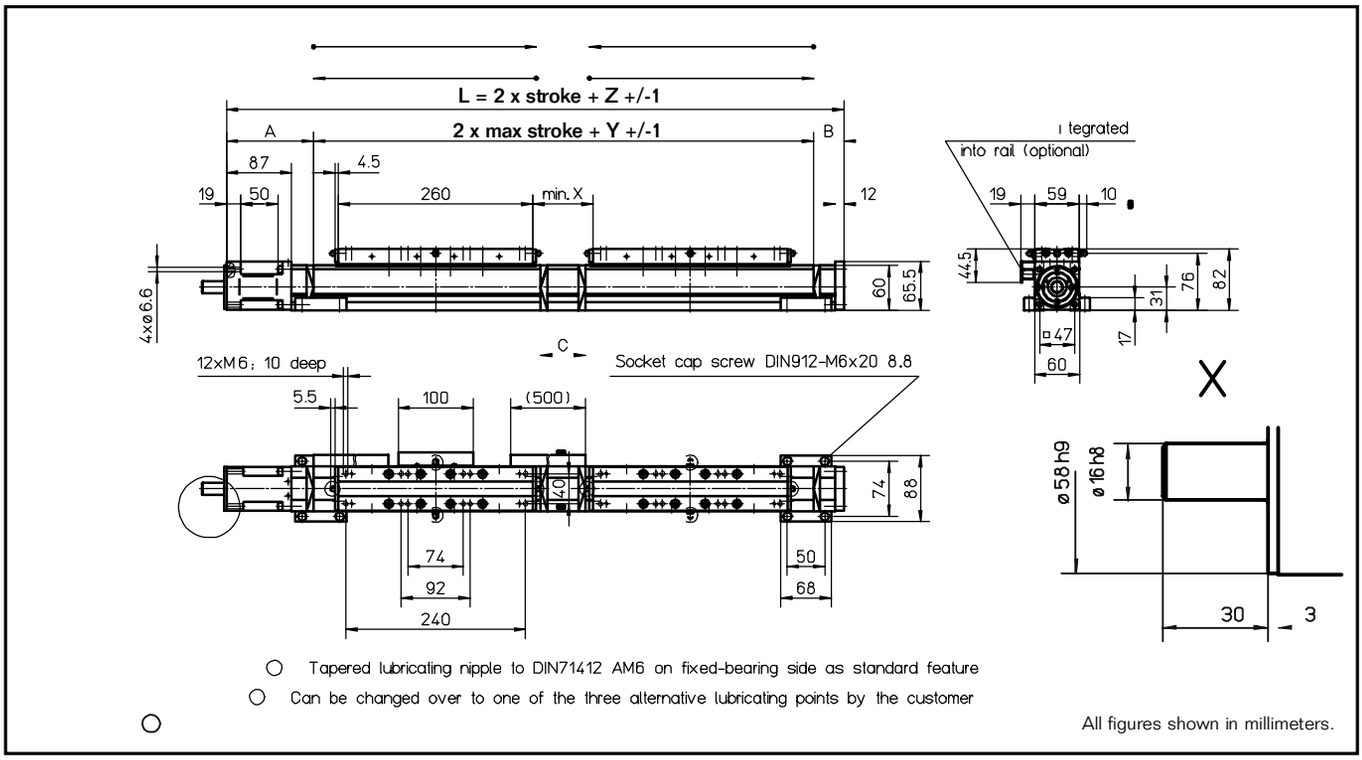
Additional lengths as a function of the stroke

Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–695	115	65	460
696-1335	165	115	560
1336-2075	185	135	600
2076-2780	210	160	650
2781-3545	230	180	690
3546-4285	250	200	730
4286-5015	275	225	780

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM60 – 500

with ball screw drive and integrated linear ball-bearing guide in right/left execution

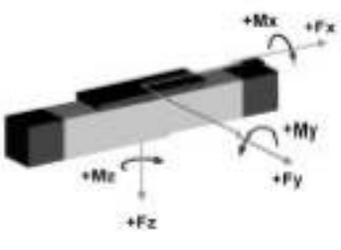


Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive
Diameter: . . . . . .20 mm
Lead: . . . . . .5 mm
Stroke length: . . . . . .up to 10340 mm referred to both power bridges. max. 5000 mm
Power bridge: . . . . . .260 or 450 mm long see page 62
Geometrical moment of inertia: . . .ly 5.8 x 10^5 mm⁴ lz 5.9 x 10^5 mm⁴

Weights
Basic unit with zero stroke: . . . . .10.33 kg
100 mm stroke: . . . . . .0.64 kg
Power bridge with carriage: . . . . .1.99 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Loads and load moments



Load	dynam. [N]
Fx drive	4000
Fy	2000
± Fz	2000
Load moment	**dynam. [Nm]**
Mx	100
My	200
Mz	200

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

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5
150	1.2
1500	2.2
3000	3.2

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. For screw leads > 20 mm, excess lengths cannot be implemented.

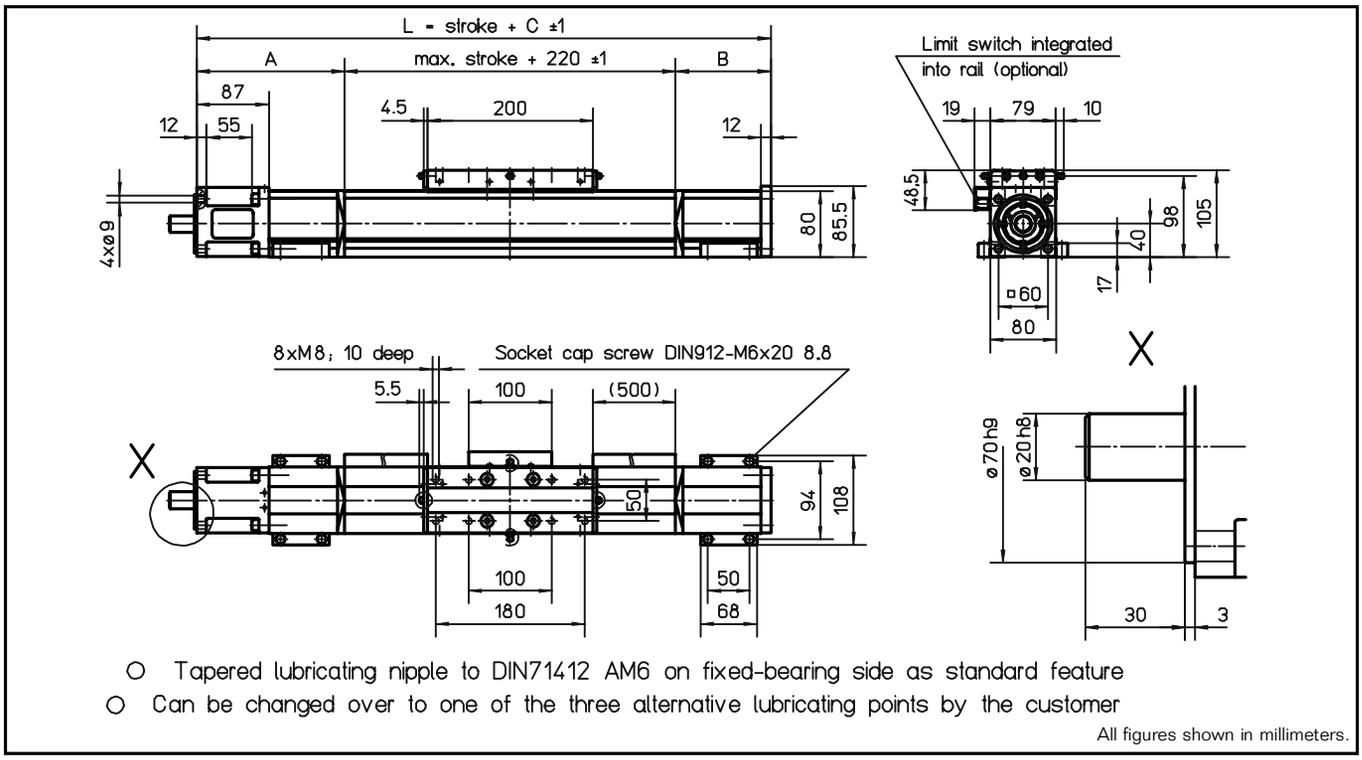
Additional lengths as a function of the stroke

Stroke length [mm]	A [mm]	B [mm]	C [mm]	X	Y	Z
0–1390	115	65	60	80	620	800
1391-2670	165	115	210	230	770	1050
2671-4150	185	135	250	270	810	1130
4151-5560	210	160	300	320	860	1230

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM80 – 370

with ball screw drive and integrated linear ball-bearing guide and short guide system



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed:	max. 2.5 m/s
Repeatability:	± 0.02 mm
Acceleration:	max. 10 m/s²
Rotational speed:	max. 3000 rpm
Drive element:	Pretensioned ball screw with single nut, no backlash
Diameter:	25 mm
Lead:	5, 10, 20, 50 mm
Stroke length:	up to 5000 mm
Power bridge:	200 mm long
Geometrical moment of inertia:	ly 1.9 x 10⁶ mm⁴
	lz 1.9 x 10⁶ mm⁴

Weights

Basic unit with zero stroke:	7.00 kg
100 mm stroke:	1.10 kg
Power bridge with carriage:	1.60 kg
Provided:	4 pieces KAO mounting brackets

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

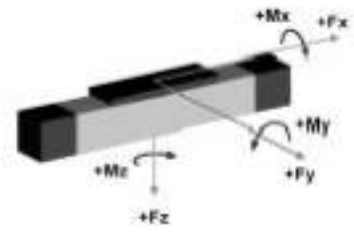
Mass moment of inertia:
1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2

Mass:
1 kg=2.2 lb

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	10	20	50
150	0.6	1.1	1.3	2.8
1500	1.1	1.5	1.6	2.2
3000	1.4	1.8	1.8	2.7

Loads and load moments



Load	dynam. [N]
Fx drive	3500
Fy	2100
± Fz	2100
Load moment	**dynam. [Nm]**
Mx	150
My	180
Mz	180

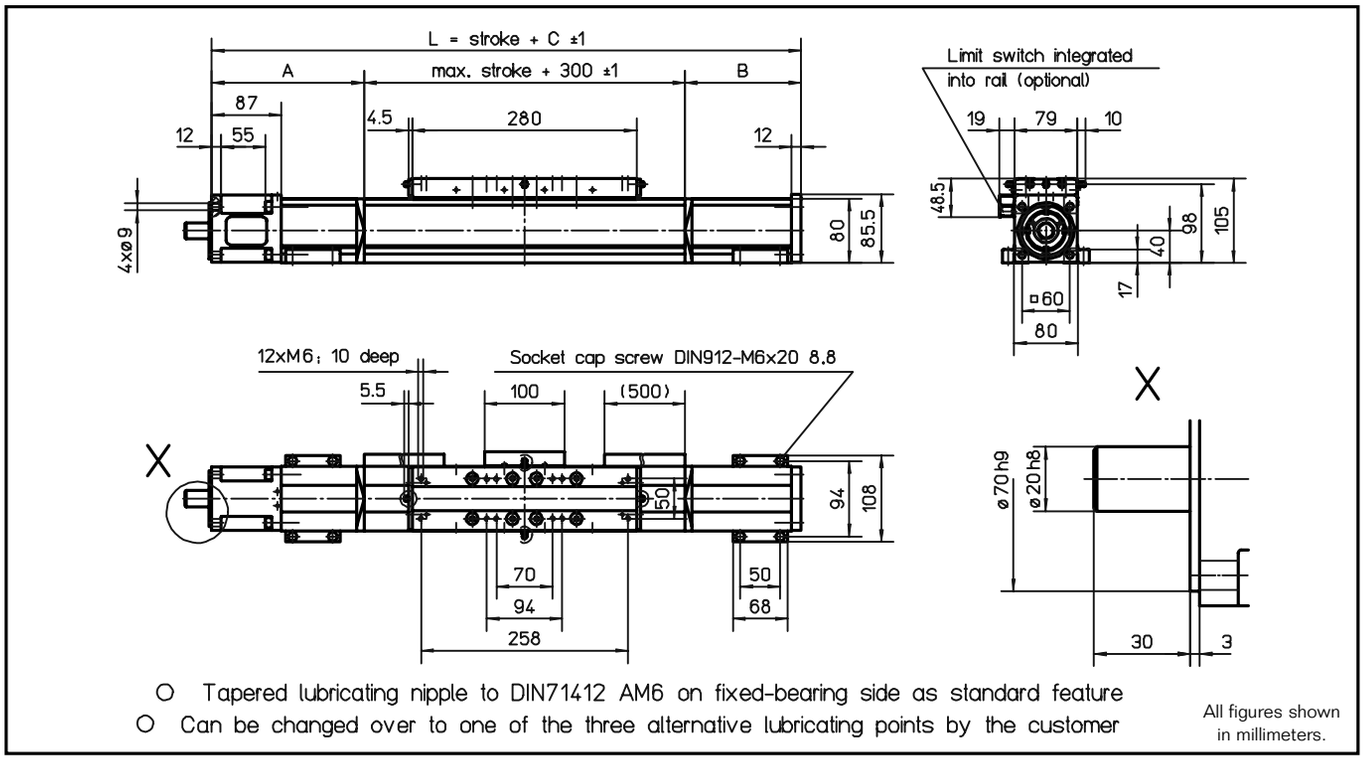
Additional lengths as a function of the stroke

Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–680	95	35	350
681-1310	125	80	425
1311-2065	150	105	475
2066-2830	170	125	515
2831-3590	195	150	565
3591-4355	215	170	605
4356-5000	235	190	645

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM80

with ball screw drive and integrated linear ball-bearing guide



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

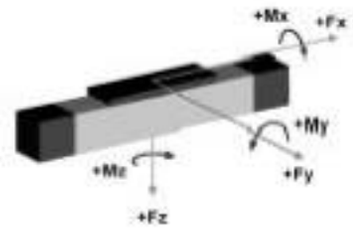
All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive
Diameter: . . . . . .25 mm
Lead: . . . . . .5, 10, 20, 50 mm
Stroke length: . . . . . .up to 11.000 mm
with lead 50 mm
max. 5000 mm
Power bridge: . . . . . .280 or 450 mm long
see page 62
Geometrical moment of inertia: . . .ly 1.9 x 10^6 mm⁴
lz 1.9 x 10^6 mm⁴

Weights
Basic unit with zero stroke: . . . . .11.57 kg
100 mm stroke: . . . . . .1.08 kg
Power bridge with carriage: . . . . .4.26 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Loads and load moments



Load	dynam. [N]
Fx drive	5000
Fy	3000
± Fz	3000
Load moment	**dynam. [Nm]**
Mx	350
My[1]	300
Mz[1]	300

1) Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (pages 62 and 63).

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 • m²=10^4 kg • cm²=0.738 lb • ft • s²

Mass:
1 kg=2.2 lb

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	10	20	50
150	0.8	1.4	1.6	2.3
1500	1.4	1.9	2.0	2.8
3000	1.8	2.3	2.3	3.4

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. For screw leads > 20 mm, excess lengths cannot be implemented.

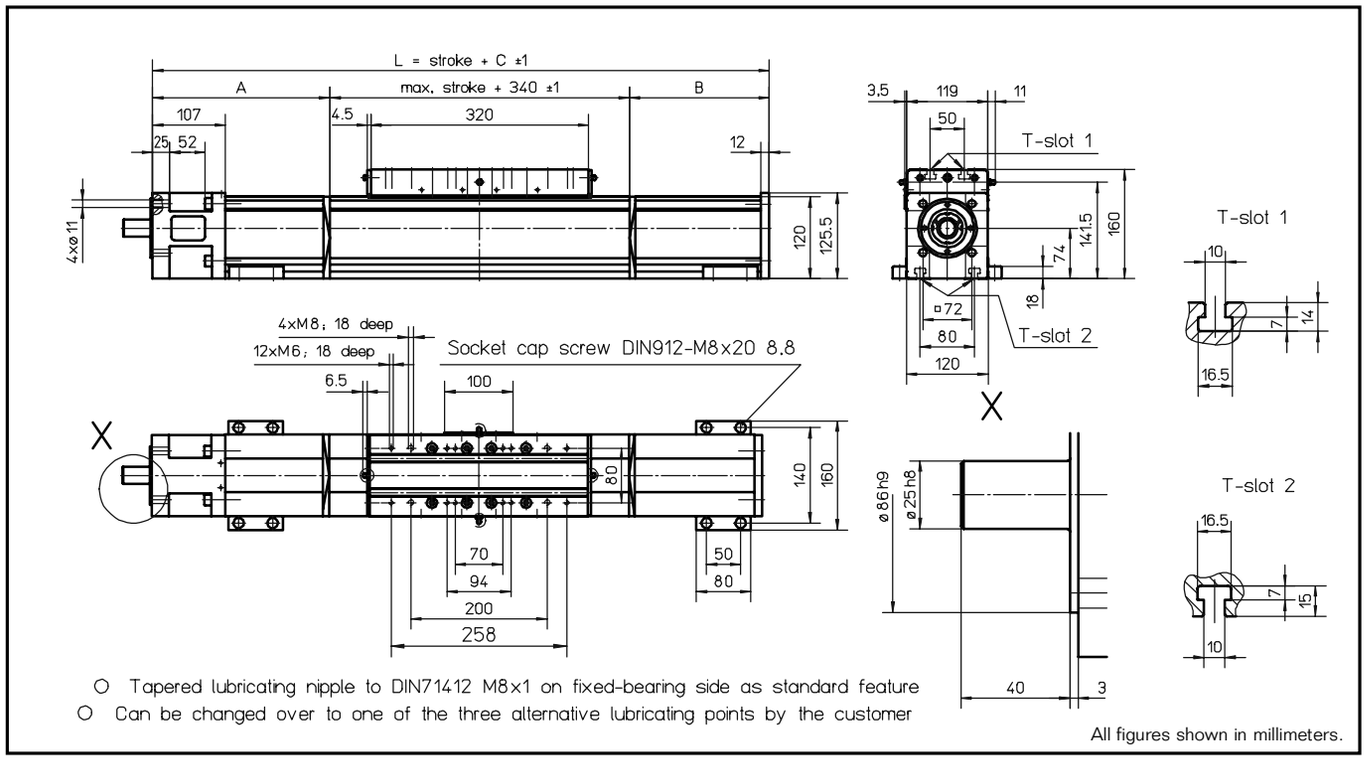
Additional lengths as a function of the stroke

Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–780	120	80	500
781-1535	170	125	595
1536-2375	190	145	635
2376-3205	215	170	685
3206-4045	235	190	725
4046-4885	255	210	765
4886-5000	280	235	815

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line® WM120

with ball screw drive and integrated linear ball-bearing guide



○ Tapered lubricating nipple to DIN71412 M8x1 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

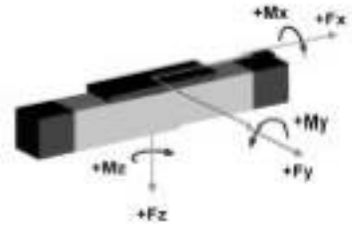
All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.0 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive
Diameter: . . . . . .32 mm
Lead: . . . . . .5, 10, 20, 40 mm
Stroke length: . . . . . .up to 11.000 mm
with lead 40 mm
max. 5000 mm
Power bridge: . . . . . .320 or 500 mm long
see page 62
Geometrical moment of inertia: . . .ly 7.7 x 10^6 mm⁴
lz 9.4 x 10^6 mm⁴

Weights
Basic unit with zero stroke: . . . . .25.91 kg
100 mm stroke: . . . . . .1.93 kg
Power bridge with carriage: . . . . .9.25 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Loads and load moments



Load	dynam. [N]
Fx drive	12000
Fx drive 3240	8000
Fy	6000
± Fz	6000
Load moment	**dynam. [Nm]**
Mx	500
My	600
Mz	600

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

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	10	20	40
150	1.2	2.1	1.8	2.4
1500	2.3	3.0	2.8	3.6
3000	2.8	3.8	3.5	4.0

Additional lengths as a function of the stroke

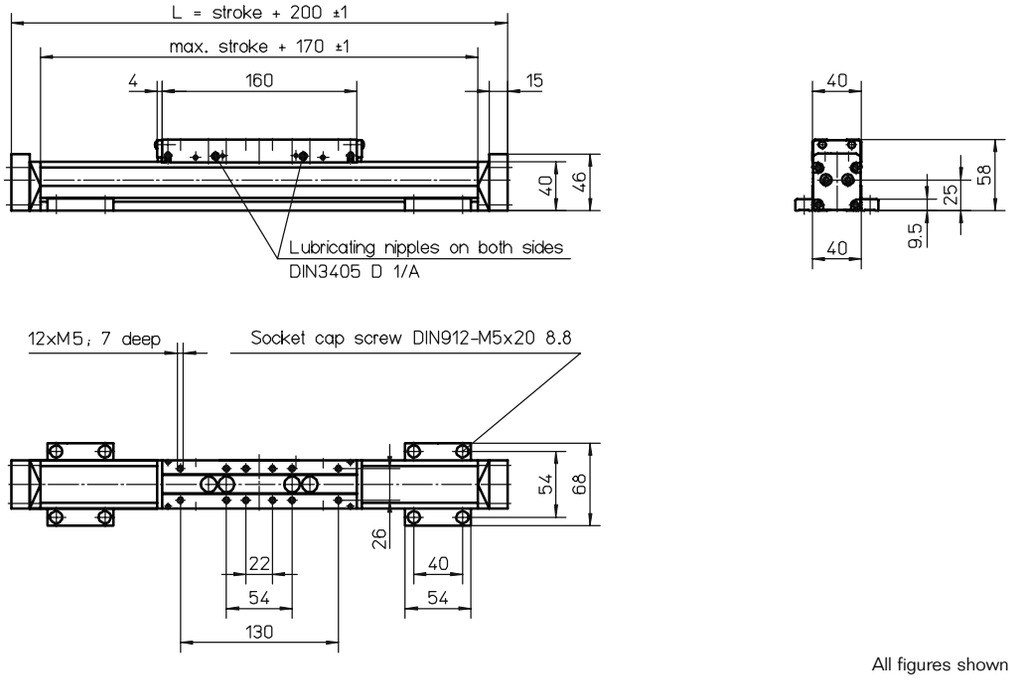
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–890	155	100	595
891-1695	225	170	735
1696-2625	260	205	805
2626-3555	295	240	875
3556-4485	330	275	945
4486-5000	365	310	1015

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line®

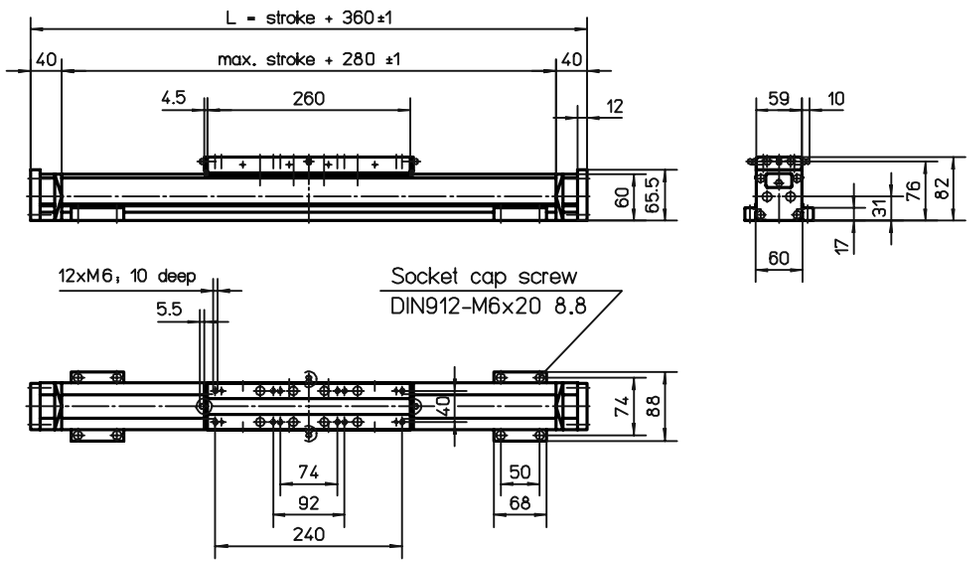
Guide tube

WM40-190



All figures shown in millimeters.

WM60-190



○ Tapered lubricating nipple DIN71412 AM6
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Unit conversions

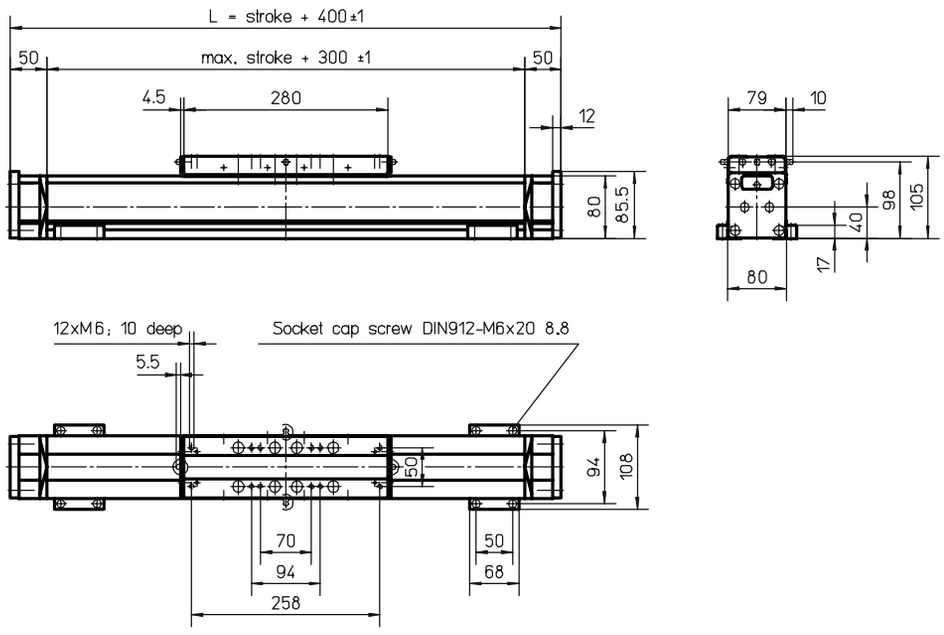
Length:	1 m=1000 mm=39.37 inches 1 inch=25.4 mm	**Geometrical moment of inertia:**	1 $m^4=10^{12}$ $mm^4=2.4025 \times 10^6$ in^4
Force:	1 N=0.225 lbf 1 lbf=4.45 N	**Mass moment of inertia:**	1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2
Moment of Force:	1 Nm=0.738 lb • ft=8.85 lb • inches 1 lb •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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *POWER*Line®

Guide tube

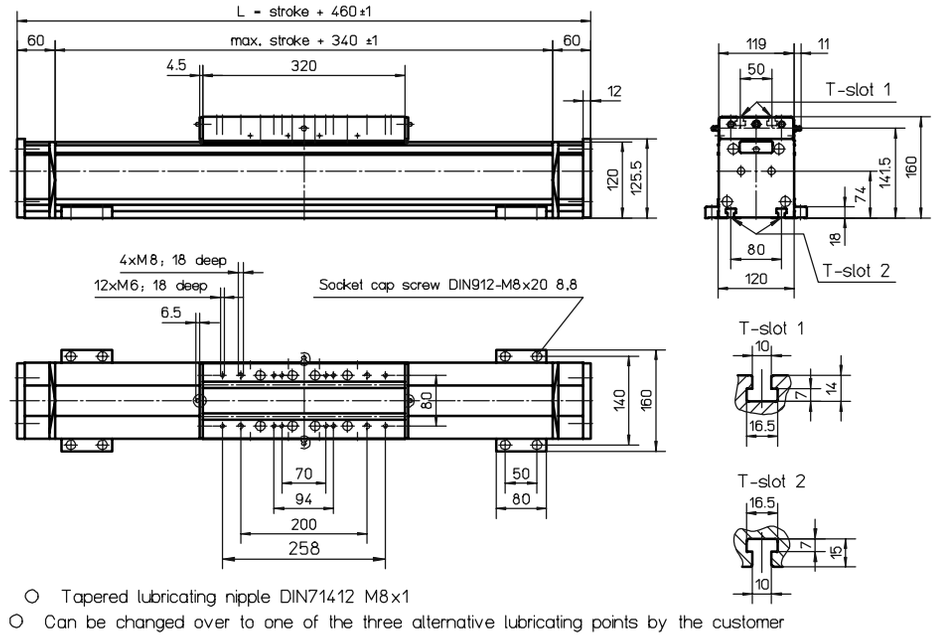
WM80-190



○ Tapered lubricating nipple DIN71412 AM6
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

WM120-190



○ Tapered lubricating nipple DIN71412 M8x1
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

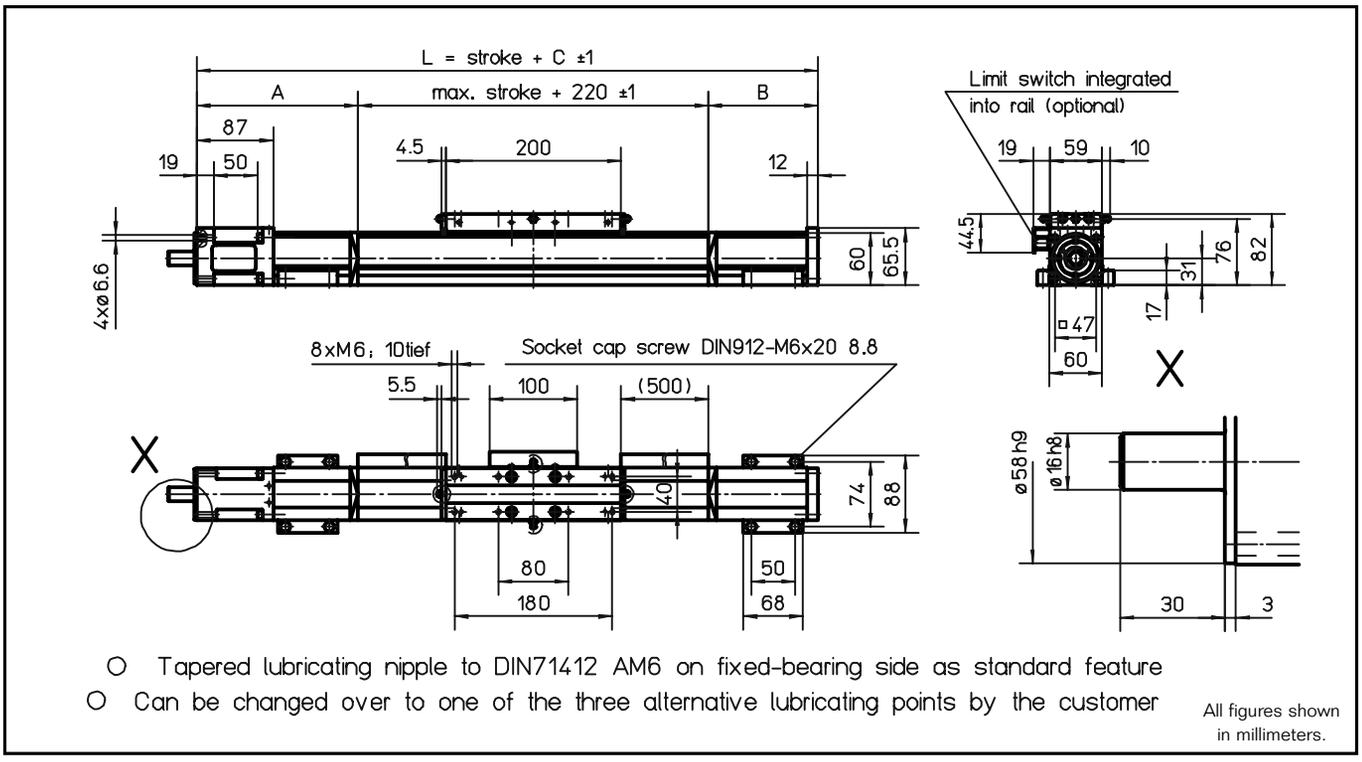
Unit conversions

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *DYNA*Line® WV60

with ball screw drive



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive
Diameter: . . . . . .20 mm
Lead: . . . . . .5, 20, 50 mm
Stroke length: . . . . . .up to 11.000 mm
with lead 50 mm
max. 5000 mm
Power bridge: . . . . . .200 mm long
Geometrical moment of inertia: . . .ly 5.8 x 10^5 mm⁴
Iz 5.9 x 10^5 mm⁴

Weights
Basic unit with zero stroke: . . . . .4.72 kg
100 mm stroke: . . . . . .0.55 kg
Power bridge with carriage: . . . . .1.42 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Feed force

Maximum feed force Fx:
4000 N

Note: All loads and load moments must be absorbed by external guides

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

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	20	50
150	0.6	0.7	0.8
1500	1.1	1.2	1.3
3000	1.5	1.7	1.9

Additional lengths as a function of the stroke

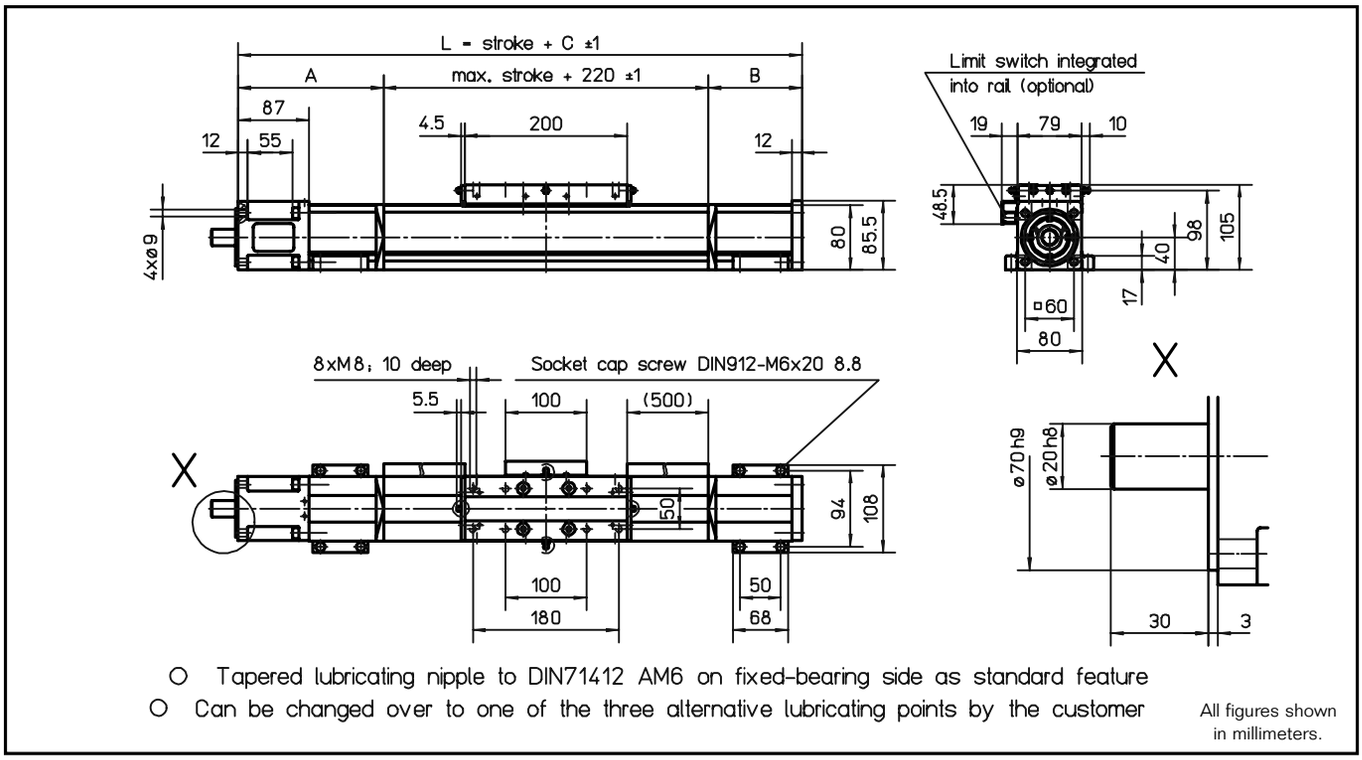
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–690	130	80	430
691-1415	155	105	480
1416-2155	175	125	520
2156-2885	200	150	570
2886-3625	220	170	610
3626-4355	245	195	660
4356-5095	265	215	700

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. For screw leads > 20 mm, excess lengths cannot be implemented.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *DYNA*Line® WV80

with ball screw drive



○ Tapered lubricating nipple to DIN71412 AM6 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

All figures shown in millimeters.

Technical data

Linear speed: . . . . . .max. 2.5 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive
Diameter: . . . . . .25 mm
Lead: . . . . . .5, 10, 20, 50 mm
Stroke length: . . . . . .up to 11000 mm
with lead 50 mm
max. 5000 mm
Power bridge: . . . . . .200 mm long
Geometrical moment of inertia: . . .ly 1.9 x 10^6 mm⁴
lz 1.9 x 10^6 mm⁴

Weights
Basic unit with zero stroke: . . . . .7.95 kg
100 mm stroke: . . . . . .0.99 kg
Power bridge with carriage: . . . . .2.25 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Feed force

Maximum feed force Fx:
5000 N

Note: All loads and load moments must be absorbed by external guides

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

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	10	20	50
150	1.0	1.0	1.1	1.2
1500	1.7	1.8	1.9	2.0
3000	2.2	2.3	2.4	2.6

Additional lengths as a function of the stroke

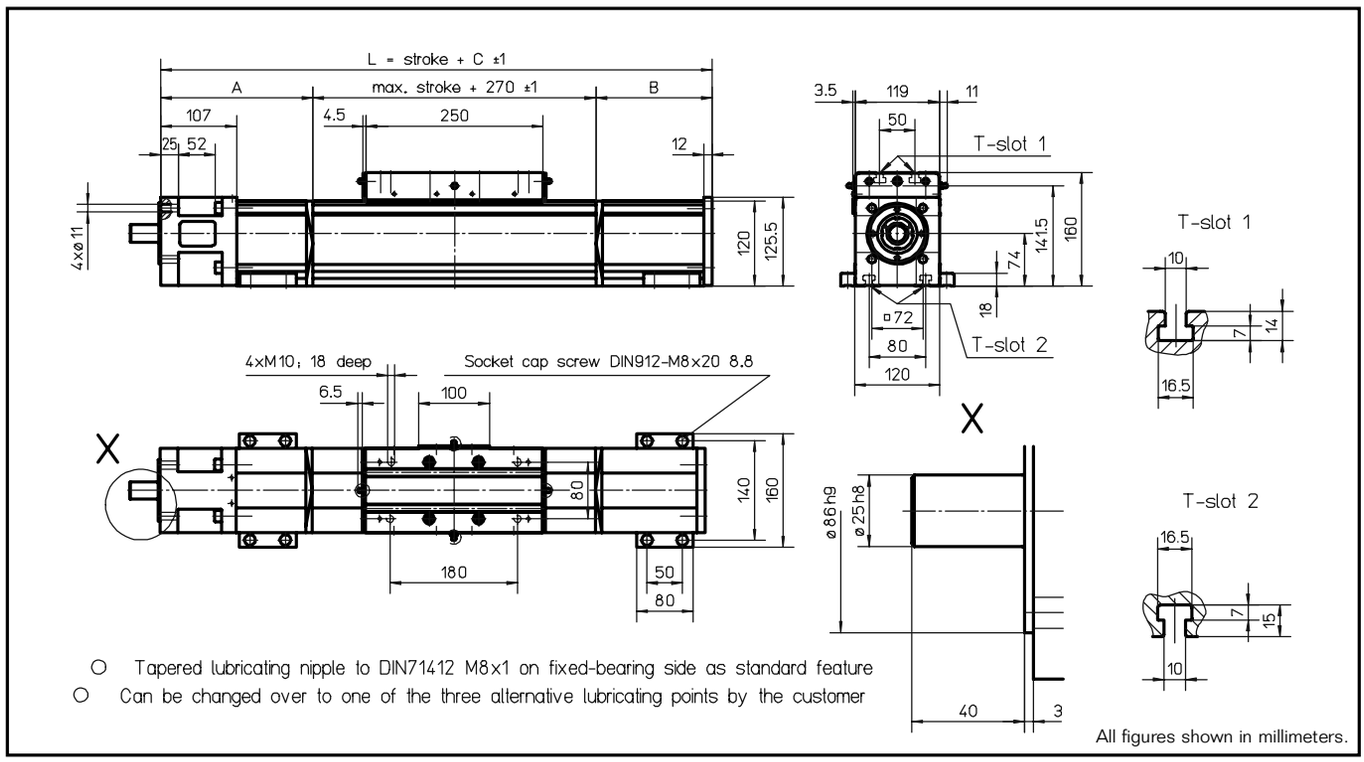
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–775	125	50	395
776-1670	145	95	460
1671-2505	170	115	505
2506-3340	190	140	550
3341-4175	210	160	590
4176-5015	235	180	635

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. For screw leads > 20 mm, excess lengths cannot be implemented.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

WIESEL™ *DYNA*Line® WV120

with ball screw drive



Technical data

Linear speed: . . . . . .max. 2.0 m/s
Repeatability: . . . . . .± 0.01 mm
Acceleration: . . . . . .max. 20 m/s²
Rotational speed: . . . . . .max. 3000 rpm
Drive element: . . . . . .Pretensioned ball screw drive
Diameter: . . . . . .32 mm
Lead: . . . . . .5, 10, 20, 40 mm
Stroke length: . . . . . .up to 11.000 mm
with lead 40 mm
max. 5000 mm
Power bridge: . . . . . .250 mm long
Geometrical moment of inertia: . . .ly 7.7 x 10^6 mm⁴
lz 9.4 x 10^6 mm⁴

Weights
Basic unit with zero stroke: . . . . .18.1 kg
100 mm stroke: . . . . . .1.94 kg
Power bridge with carriage: . . . . .4.75 kg
Provided: . . . . . .4 pieces KAO mounting brackets

Feed force

Maximum feed force Fx:
12000 N
8000 N with ball screw drive 3240

Note: All loads and load moments must be absorbed by external guides

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

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm] 5	10	20	40
150	1.0	1.0	1.1	1.2
1500	2.1	2.2	2.3	2.5
3000	2.4	2.6	2.7	3.0

Additional lengths as a function of the stroke

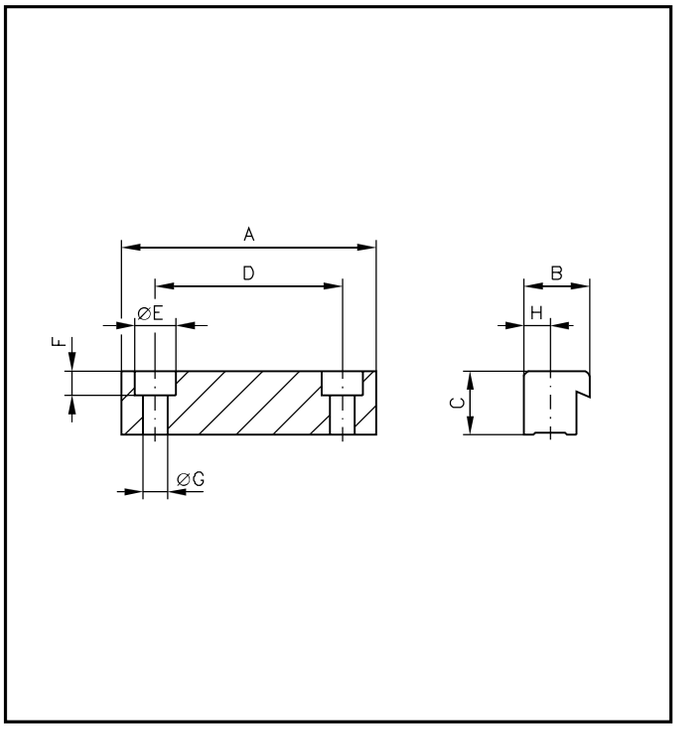
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–940	145	50	465
941-1860	180	120	570
1861-2790	215	155	640
2791-3720	250	190	710
3721-4650	285	225	780
4651-5000	320	255	845

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. For screw leads > 20 mm, excess lengths cannot be implemented.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Accessories for WIESEL™ *POWER*Line®

Mounting brackets



KAO Mounting brackets
The WIESEL™ unit is secured to mounting surface by means of the KAO mounting brackets which are inserted in the grooves provided in the sides of the tubular aluminum profile and screwed onto the mounting surface with the aid of socket head cap screws. The number of mounting brackets required depends on the load and overall length of the WIESEL™ unit. This is shown in the diagrams. Increasing side forces reduces the distance between supports. **Each unit is provided with 4 pieces KAO Mounting brackets.**

Maximum torque of mounting screws

Size	Moment [Nm]
WM40	7.3–12
WM/WV60	7.3–12
WM/WV80	7.3–12
WM/WV120	17–30

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

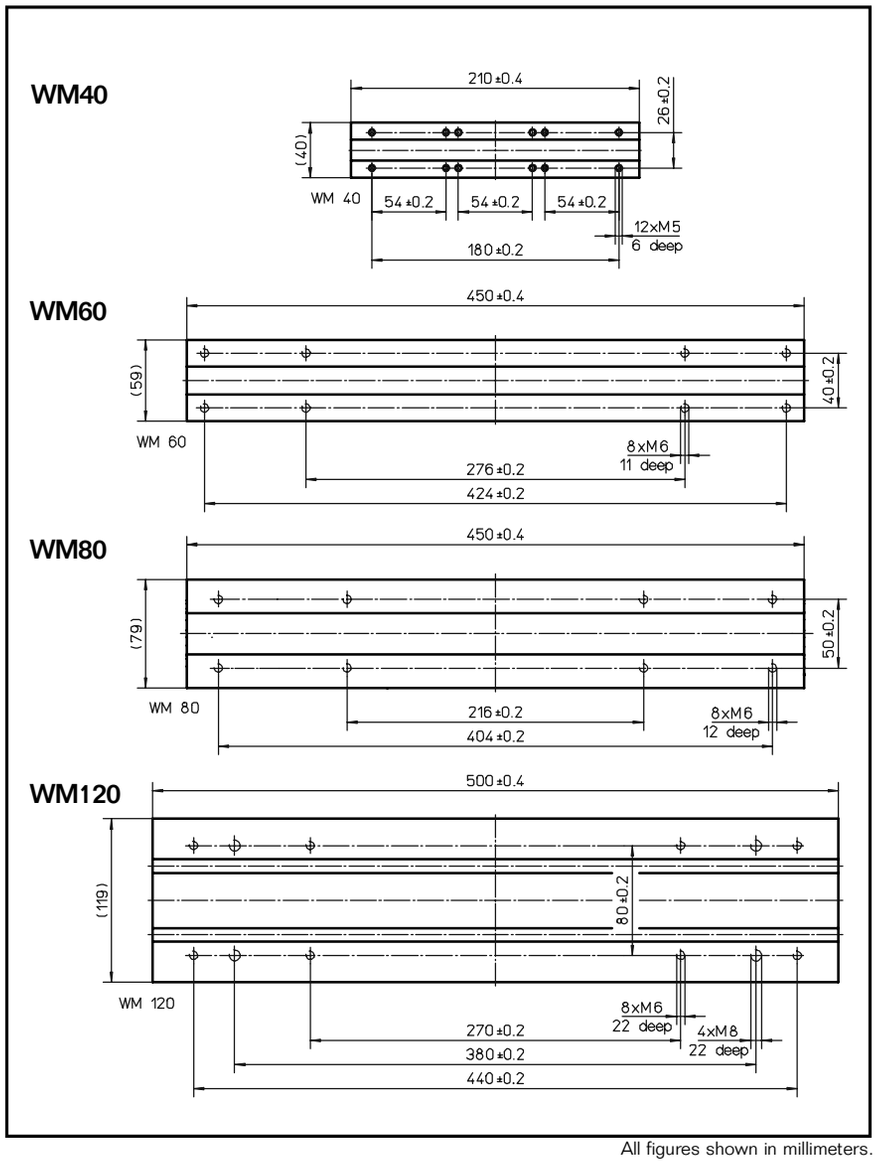
	Dimension [mm]							
Size	A	B	C	D	ø E	F	ø G	H
WM40	54	16	10	40	10	5.7	5.5	7
WM/WV60	54	17.5	17	50	11	6.5	6.6	7
WM/WV80	68	17.5	17	50	11	6.5	6.6	7
WM/WV120	80	25	18	50	15	8.5	9	10
WM40 System KAO	40	16	10	26	10	5.7	5.5	7
WM60 System KAO	58	17.5	17	40	11	6.5	6.6	7

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.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Accessories for WIESEL™ *POWER*Line®

Long power bridge



All figures shown in millimeters.

LKB Long power bridge
The long power bridge increases the maximum permissible load moments My and Mz of a WIESEL™ unit without requiring to step up a 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:

$$L_{tot} = \text{Stroke} + C + \Delta Kb$$

C* = Specific additional length
L_{tot} = Overall length WIESEL™ unit
Stroke = Required stroke length
ΔKb = Difference in length between long and standard power bridge

* Calculation in depency of stroke and ΔKb. The dimension C is shown in the charts of technical data of the corresponding actuator.

Size	Length of power bridge [mm]	My [Nm]	Mz [Nm]
WM40-000	210	50	50
WM60-000	450	500	500
WM80-000	450	750	750
WM120-000	500	1500	1500

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 on order to minimize this deformation.

Note: All other limit values according to executions with standard power bridge.

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

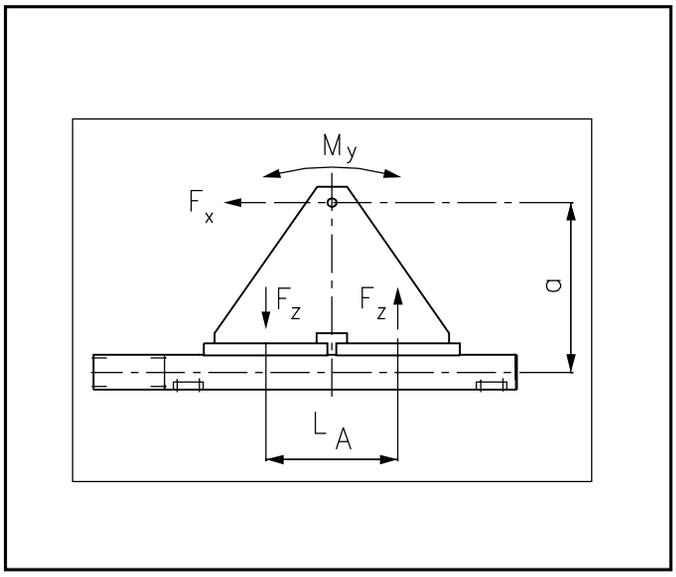
Mass moment of inertia: 1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2

Mass: 1 kg=2.2 lb

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Accessories for WIESEL™ *POWER*Line®

Additional free-sliding power bridge



OKB Additional free-sliding power bridge

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 = Distance between center of driven power bridge and center of free-sliding power bridge [mm]
M = Load moment My or Mz [mm]
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 [mm] between long and standard power bridge. (see technical data of the respective WIESEL™)

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

Size	L_A [mm]
WM40*	min 175 max 600
WM60	335
WM80	360
WM120	450

*For stroke lengths of more than 1700 mm please contact our product specialists for the maximum screw rotational speed.

The required force to move the additional free sliding power bridge must be taken into account when selecting the drive.

Size	F [N]
WM40	40
WM60	200
WM80	250
WM120	300

Note: High load moments lead to major deformation of the tubular aluminum profile. In order to minimize this deformation, the distance between the fixing points should be reduced.

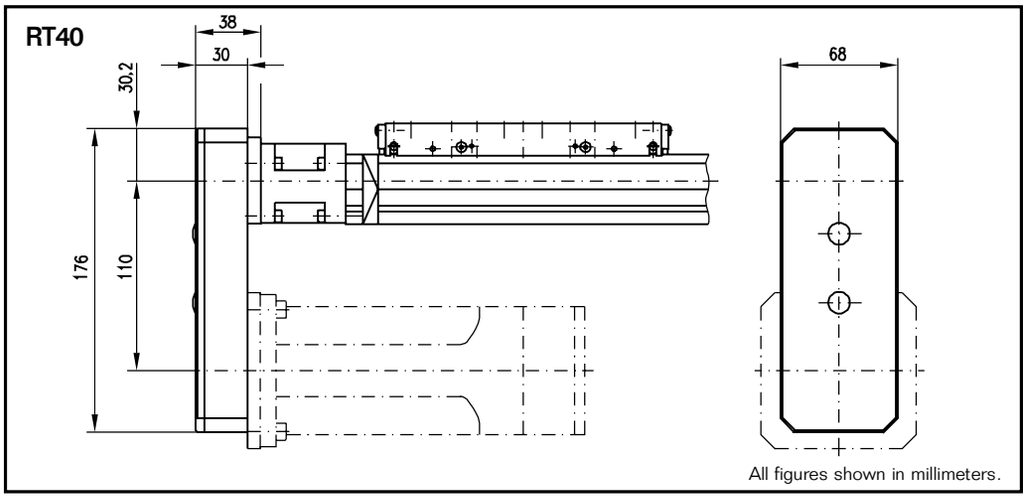
Unit conversions

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Accessories for WIESEL™ *POWER*Line®, *DYNA*Line®

Timing belt drive

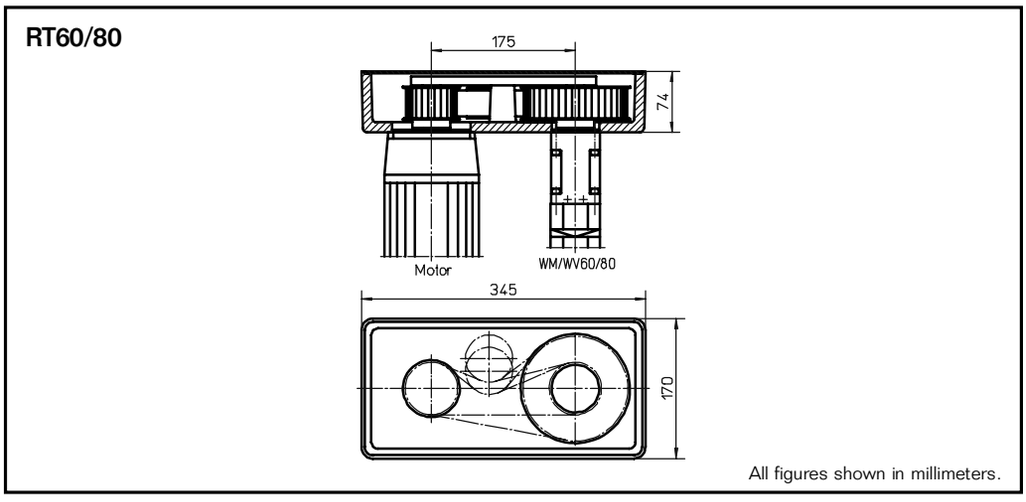


RT Belt drive
The RT 40/60/80 belt drive is a transmission designed to minimize the overall length. The RT housing (which is both belt guard and motor support) can be mounted in positions offset by 90°. The drive is provided via standard tooth belt drives.

Transmission ratios of i = 1 : 1 and i = 2 : 1 are possible. (RT 40 only i = 1:1)

Technical data

Size	M_{max} [Nm]	$n_{max\ input}$ [rpm]	M_{idle} [Nm]	Efficiency η	Mass inertia J [kgcm²] 1 : 1	Weight [kg] 1 : 1
RT40	1.75	3000	app. 0.3	0.8	0.25	0.62



Technical data

Size	M_{max} [Nm]	$n_{max\ input}$ [rpm]	M_{idle} [Nm]	Efficiency η	Mass inertia J [kgcm²] 1 : 1	2 : 1	Weight [kg] 1 : 1	2 : 1
RT60	15	3000	app. 0.7	0.85	4.38	10.11	5.6	7.1
RT80	30	3000	app. 0.7	0.85	4.65	10.38	5.5	7.0

M_{max} = Maximum torque at the output shaft [Nm]
n_{max} = Maximum input speed [rpm]
M_{idle} = Idle torque [Nm]
J = Mass inertia referred to input shaft [kgcm²]

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

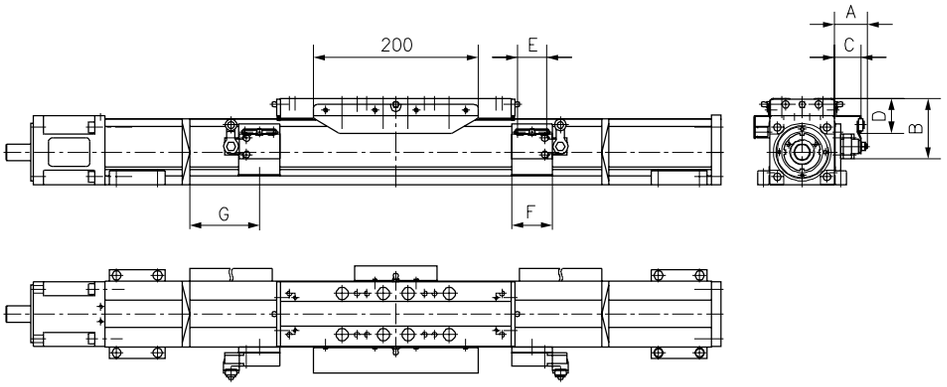
Mass moment of inertia: 1 kg • $m^2=10^4$ kg • $cm^2=0.738$ lb • ft • s^2

Mass: 1 kg=2.2 lb

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Accessories for WIESEL™ *POWERLine*®, *DYNALine*®

Mechanical limit switches



All figures shown in millimeters.

ES Mechanical limit switches
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 and can be adjusted by means of the oblong hole provided.

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: IP 67
Max. perm. starting speed: 1.5 m/s

Size	Dimensions [mm]							
	A	B	C	D	E	F	G for WM	G for WV
WM/WV60	40	70	32	38	35	50	94	64
WM/WV80	40	73	32	42	35	50	104	64
WM/WV120	40	90	32	58	35	50	119	84

Note: Fixing of the linear unit by means of the KAO mounting brackets is not possible in the area of the base plates of the mechanical limit switches.

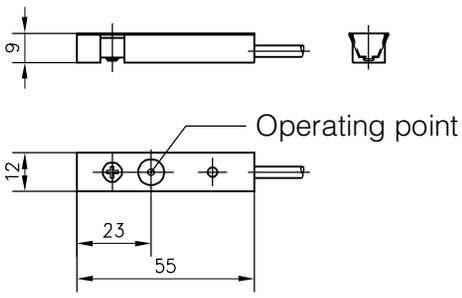
Unit conversions

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

General accessories

Inductive proximity switch



All figures shown in millimeters.

EN inductive proximity switch
Inductive proximity switches are used to shut down the electric drive before the mechanical limit position has been reached.

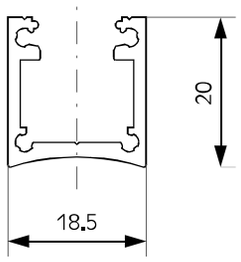
The braking path depends on the linear speed and time-lag. This path must at least be allowed between the operating point of the proximity switch and the actual mechanical limit position. Inductive proximity switches are also used to identify reference points or to signal operating points to the control system. Normally-closed versions are used for limit positions and normally-open versions for operating points.

The proximity switches can be infinitely adjusted in the guide rails.

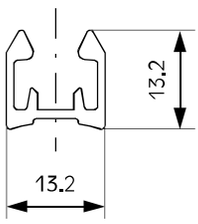
Technical data
Contactless inductive proximity switch with LED display in plastic housing.
Operating distance: 2 mm
Type of protection: IP 67
Power supply: 10–30 V DC
Max. load current: 200 mA
Screened connection cable, length 2 m or 10 m.

Size	Type	Cable length [m]	Weight [kg]
EN2	O-normally closed	2	0.04
EN2	S-normally open	2	0.04
EN2	O-normally closed	10	0.19
EN2	S-normally open	10	0.19

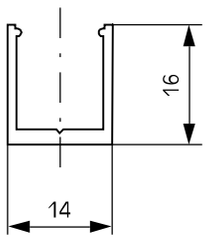
ENT 18.5x20



ENT 13.2x13.2



ENT 14x16



All figures shown in millimeters.

ENT limit switch bracket
A support profile for mounting and adjusting inductive proximity switch EN. The hollow provides space to route cables for the cable harness of a proximity switch and can be concealed with cover tape.

Size	Type
WH40/50/80/120	ENT 14x16
WHZ50/80	ENT 14x16
WM40/60/80/120	ENT 14x16
WV60/80	ENT 14x16

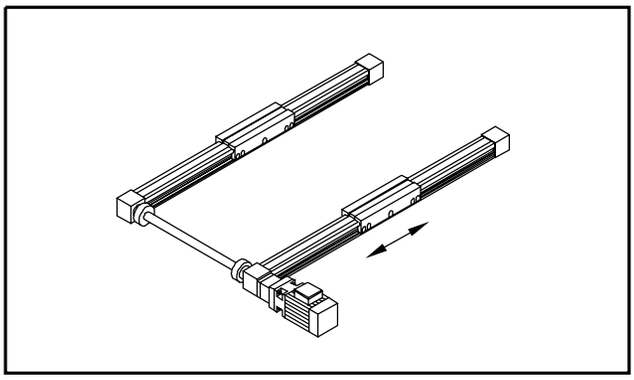
Unit conversions

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

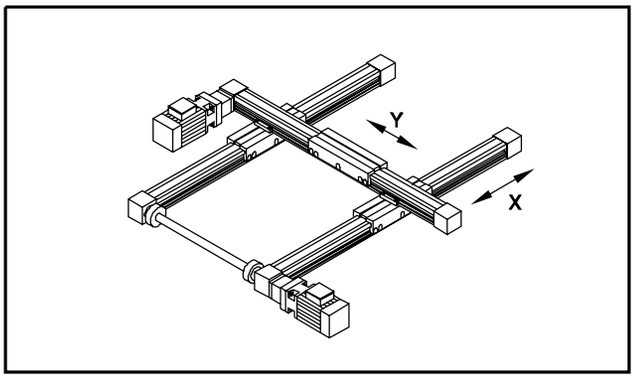
Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Precision Technology USA, Inc. WIESEL™ modular system

Examples

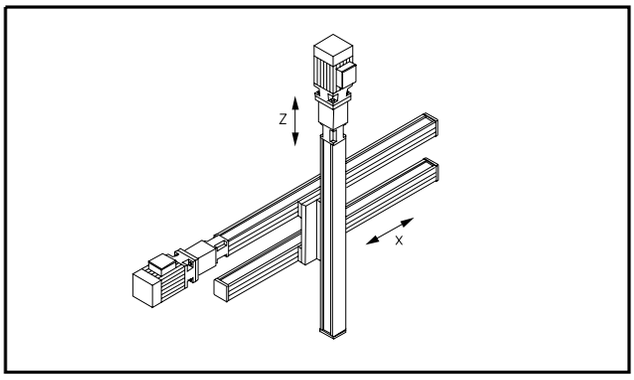


Parallel arrangement:
2 WIESEL™ *SPEEDLine®*
1 Universal joint shaft
1 Drive package



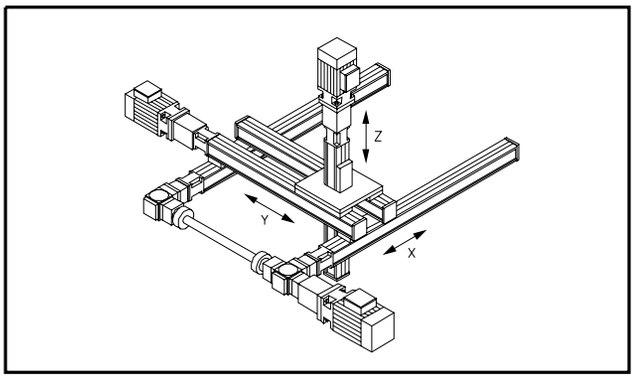
2-axis arrangement:
X-axis:
2 WIESEL™ *SPEEDLine®*
1 Universal joint shaft
1 Drive package

Y-axis:
1 WIESEL™ *SPEEDLine®*
1 Drive package



2-axis arrangement:
X-axis:
1 WIESEL™ *POWERLine®*
1 WIESEL™ *POWERLine®* as guide tube
1 Drive package

Z-axis:
1 WIESEL™ *POWERLine®*
1 Drive package



3-axis arrangement:
X-axis:
2 WIESEL™ *POWERLine®* with bevel gearbox
1 Universal joint shaft
1 Drive package

Y-axis:
1 WIESEL™ *POWERLine®*
1 WIESEL™ *POWERLine®* as guide tube
1 Drive package

Z-axis:
1 WIESEL™ *POWERLine®*
1 Drive package

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Load ratings WIESEL™

Dynamic load ratings
With the help of dynamic load ratings, it is possible to calculate the approximate lifetime, dependent on load. The figures shown are for the KGT, according to DIN 69051, Part 4, Draft 1989, and for the guide, according to DIN 636.

Type	C_{KGM} P=4 [N]	C_{KGM} P=5 [N]	C_{KGM} P=10 [N]	C_{KGM} P=20 [N]	C_{KGM} P=40 [N]	C_{KGM} P=50 [N]	C_{FS} Y [N]	C_{FS} Z [N]	L_{FS} X [mm]	L_{FS} Y [mm]
WH40	–	–	–	–	–	–	(2x) 2786	(2x) 3397	72	–
WH50	–	–	–	–	–	–	–	(4x) 1270	198	39
WH80	–	–	–	–	–	–	–	(4x) 3670	220	65
WH120	–	–	–	–	–	–	–	(4x) 16200	180	97
WHZ50	–	–	–	–	–	–	–	(4x) 1270	198	39
WHZ80	–	–	–	–	–	–	–	(4x) 3670	220	65
WM40	–	2393	–	–	–	–	(2x) 2786	(2x) 3397	87	–
WM60-370 ZRT	–	–	–	–	–	–	(2x) 12964	(2x) 11934	–	35
WM60-370	–	7552	–	8312	–	4677	(2x) 12964	(2x) 11934	–	35
WM60	–	7552	–	8312	–	4677	(4x) 11495	(4x) 10581	141.7	35
WM60-500	–	7552	–	8312	–	4677	(4x) 11495	(4x) 10581	141.7	35
WM80-370 ZRT	–	–	–	–	–	–	(2x) 18723	(2x) 17919	–	49.75
WM80 ZRT	–	–	–	–	–	–	(4x) 14356	(4x) 13739	153	49.75
WM80-370	–	8804	9311	9365	–	8572	(2x) 18723	(2x) 17919	–	49.75
WM80	–	8804	9311	9365	–	8572	(4x) 14356	(4x) 13739	154	49.75
WM120	–	15429	24049	20667	8341	–	(4x) 18723	(4x) 17919	186	80.75
WV60	–	7552	–	8312	–	4677	–	–	–	–
WV80	–	8804	9311	9365	–	8572	–	–	–	–
WV120	–	15429	24049	20667	8341	–	–	–	–	–

Important note: The permissible force and moment threshold values for the respective linear unit must not be exceeded at any time.

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

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Drive selection

for linear drive units with toothed belt drive

Feed force
F_x [N]

$$F_x = m \cdot g \cdot \mu$$

Acceleration force
F_a [N]

$$F_a = m \cdot a$$

In vertical applications, the mass acceleration **a** must be added to the acceleration due to gravity **g** [9.81 m/s²].

Power from torque and rotational speed
[kW]

$$P = \frac{M_A \cdot n_{max} \cdot 2 \cdot \pi}{60 \cdot 1000}$$

Definitions

M_A = Required drive moment [Nm]
M_{load} = Moment resulting from the various loads [Nm]
M_{idle} = Idle torque [Nm]
M_{rot} = Rotational acceleration moment [Nm]
M_{trans} = Translational acceleration moment [Nm]
F_x = Feed force [N]
F_a = Acceleration force [N]
g = Acceleration due to gravity [m/s²]
V_{max} = Maximum linear speed [m/s]
m = Mass to be transported [kg][1)]
a = Acceleration [m/s²]
d_o = Effective diam. of pulley [mm][2)]
P = Power [kW]
L = WIESEL™ length [mm]
J_{syn} = Idle torque of pulley [kgm²]
n_{max} = Maximum rotational speed [rpm]
μ = Friction factor

Calculating the drive moment M_A [Nm]

The required drive moment is composed of the "load moment", the "acceleration moment" and the "idle torque".

M_A = M_{load} + M_{trans} + M_{rot} + M_{idle}

The value for the respective idle torque can be found with the corresponding mechanical linear drive units.

$$M_{rot} = J_{syn} \cdot \frac{2 \cdot \pi \cdot n_{max}}{60} \cdot \frac{a}{V_{max}}$$

$$M_{trans} = \frac{F_a \cdot d_o}{1000 \cdot 2}$$

$$M_{load} = \frac{F_x \cdot d_o}{1000 \cdot 2}$$

M_A Total =

Type	μ	J_{syn} [kgm²]	Spec. weight tooth belt [kg/m]
WH40	0.05	8.800 E-06	0.032
WH50	0.1	1.928 E-05	0.055
WH80	0.1	2.473 E-04	0.210
WH120	0.1	1.004 E-03	0.340

Type	μ	J_{syn} [kgm²]	Spec. weight tooth belt [kg/m]
WHZ50	0.1	6.906 E-05	0.055
WHZ80	0.1	5.026 E-04	0.114

1) Total weight m = weight to be moved + weight of power bridge [3)] + weight of toothed belt
Weight of toothed belt = spec. weight of tooth belt [kg/m] · 2 [4)] · $\frac{\text{WIESEL™- length [mm]}}{1000}$

2) Values for the respective effective diameters, see at corresponding mechanical linear units.
3) For Z-axis moved dead weight to be taken into account.
4) To replace by 1 at Z-Axis

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Drive selections

for linear drive units with ball screw drive

Feed force F_x [N]

$$F_x = m \cdot g \cdot \mu$$

Acceleration force F_a [N]

$$F_a = m \cdot a$$

In vertical applications, the mass acceleration **a** must be added to the acceleration due to gravity **g** [9.81 m/s²].

Power from torque and rotational speed [kW]

$$P = \frac{M_A \cdot n_{max} \cdot 2 \cdot \pi}{60 \cdot 1000}$$

Definitions

M_A = Required drive moment [Nm]
M_{load} = Moment resulting from the various loads [Nm]
M_{idle} = Idle torque [Nm]
M_{rot} = Rotational acceleration moment [Nm]
M_{trans} = Translational acceleration moment [Nm]
F_x = Feed force [N]
F_a = Acceleration force [N]
g = Acceleration due to gravity [m/s²]
V_{max} = Maximum linear speed [m/s]
m = Mass to be transported [kg]
a = Acceleration [m/s²]
p = Screw pitch [mm]
P = Power [kW]
L = WIESEL™ length [mm]
n_{max} = Maximum rotational speed [rpm]
μ = Friction factor
j_{sp} = Mass moment of inertia of the screw per meter [kgm²/m]

Calculating the drive moment M_A [Nm]

The required drive moment is composed of the "load moment", the "acceleration moment" and the "idle torque".

$M_A = M_{load} + M_{trans} + M_{rot} + M_{idle}$

M_{idle}: The value for the respective idle torque can be found with the corresponding mechanical linear drive units.

$$M_{rot} = \frac{j_{sp} \cdot L \cdot n_{max} \cdot a \cdot 2 \cdot \pi}{V_{max} \cdot 60 \cdot 1000}$$

$$M_{trans} = \frac{F_a \cdot p}{2 \cdot \pi \cdot 1000}$$

$$M_{load} = \frac{F_x \cdot p}{2 \cdot \pi \cdot 1000}$$

M_A Total =

Friction factor μ

Values for μ	lubricated
WIESEL™ *POWERLine*®WM40	0.05
WIESEL™*POWERLine*®WM60/80/120	0.1
WIESEL™*DYNALine*®	Friction value of the external guide

Mass moment of inertia j_{sp}

Type	P [mm]	j_{sp}[kgm²/m]
WIESEL™WM/WV 60	5	8.46×10^{-5}
	20	8.83×10^{-5}
	50	8.45×10^{-5}
WIESEL ™*POWERLine*®/*DYNALine*®80	5, 10, 20, 50	2.25×10^{-4}
WIESEL ™*POWERLine*®/ *DYNALine*®120	5	6.41×10^{-4}
	10, 20, 40	6.28×10^{-4}
WIESEL™WM40	4,5	1.13×10^{-5}

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Order information

WIESEL™ *SPEEDLine*®

Structure of the order code:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
							/	/	

1. Product
WH = Standard axis
WHZ= Z-axis

2. Size
40, 50, 80 and 120[1)]

3. Design model
000 = Standard
190 = Guide tube

4. Drive type
ZR = toothed belt drive

5. Lead
Size 40 = 100 mm
Size 50 = 120 mm
Size 80 = 200 mm
Size 120= 260 mm

6. Maximum stroke
[mm]

7. Total length
[mm]

8. Execution of drive shaft
Standard: AZ1, AZ2 and AZ6
(varieties see below)

9. Mounted accessories
EN = Inductive proximity switches[2)]
ES = Mechanical limit switches[3)]
OKB= Additional free-sliding power bridge
LKB = Long power bridge
ADG= Mounted shaft encoder (specify number of pulses and version)
MGK= Mounted motor adapter flange and coupling
FA = Felt wipers[3)]
RT = Belt drive

10. Special execution
0 = No
1 = Yes, description in words

1) Size 40 and 120 not available as Z-axis
2) Size 50
EN/A = Limit switches mounted on axis
EN/L = Loose kit, enclosed to delivery
3) Not possible for WIESEL™ WH40

Ordering example:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
WH	50	000	ZR	120	1500	1940	AZ1/0	3EN/A	0

1. Product
WIESEL™ *SPEEDLine*® Standard

2. Size
50

3. Design model standard
Standard

4. Drive type
Toothed belt drive

5. Lead
120 mm/revolution

6. Max. stroke
1500 mm

7. Total length
1940 mm

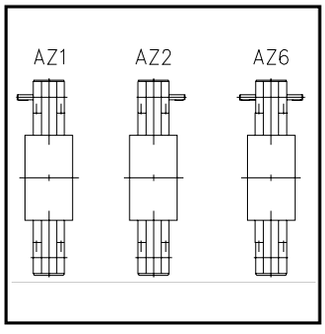
8. Execution of drive shaft
AZ1/plain

9. Mounted Accessories
3 pieces inductive proximity switches (normally 2 NC and 1 NO) mounted on WIESEL™

10. Special execution
No special execution

Definition of the drive shaft within the order code

Drive shaft execution



Execution varieties of the drive shaft:
0 = plain
N = with keyway
D = shaft end prepared for mounting of a shaft encoder

Definition of the drive shaft within the order code

Drive shaft execution AZ1
Drive shaft execution AZ2

Example:

AZ6/D/N
Drive shaft execution AZ6, side AZ1 prepared for mounting of a shaft encoder, side AZ2 with keyway.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Order information

WIESEL™ *POWERLine*®, WIESEL™ *DYNALine*®, WIESEL™ *VARIOLine*™

Structure of the order code:

	/		-		-		-		-		-		-		-	
1.		2.		3.		4.		5.		6.		7.		8.		9.

1. Product
WV = WIESEL™ *DYNALine*®
WM = WIESEL™ *POWERLine*®
WZ = WIESEL™ *VARIOLine*™

2. Size
40, 60, 80 and 120

3. Design model
000 = Standard
190 = Guide tube (only WM)
370 = Short guidance system

4. Drive type
M = Single nut (only for WM40)
MM = Ball screw drive with pretensioned nut unit
ZR = Belt drive

5. Lead
5, 10, 20, 40 or 50 mm
Size 60 = 120 mm
Size 80 = 170 mm

6. Max. linear travel
[mm]

7. Total length
[mm]

8. Mounted accessories
EN = Inductive proximity switches
ES = Mechanical limit switches (Not for WM40)
OKB = Additional power bridge (specify center distance to the driven power bridge)
LKB = Long power bridge
KRG = Mounted bevel gearbox (specify type and transmission ratio)
RT = Belt drive (specify transmission ratio)
ADG = Mounted shaft encoder (specify number of pulses and version)
MGK = Mounted motor adapter
PRT = Parallel belt drive system (only for WM 40)

9. Special model
0 = No
1 = briefly described in words

Ordering example:

WM	/	60	-	000	-	MM	-	20	-	700	-	1260	-	3EN-KRG	-	1
1.		2.		3.		4.		5.		6.		7.		8.		9.

1. Product
POWERLine®

2. Size
60

3. Design model
Standard

4. Drive type
Pretensioned nut unit
MM

5. Lead
20 mm

6. Max. linear travel
700 mm

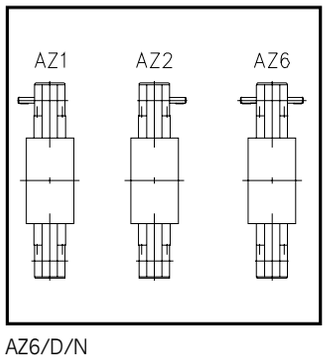
7. Total length
1260 mm

8. Mounted accessories
3 inductive proximity switches (normally 2 NC and 1 NO), mounted bevel gearbox

9. Special model
1 = mounted bevel gearbox VL1Ba40, transmission i = 1 : 1

Definition of the drive shaft within the order code

Drive shaft execution



AZ6/D/N

Execution varieties of the drive shaft:
0 = plain
N = with keyway
D = shaft end prepared for mounting of a shaft encoder

Definition of the drive shaft within the order code

Drive shaft execution AZ1
Drive shaft execution AZ2

Example: Drive shaft execution AZ6, side AZ1 prepared for mounting of a shaft encoder, side AZ2 with keyway.

Phone: 877-478-3241
Phone: 877-IP-Tech1
Fax: 877-IP-Tech2
www.iptech1.com

Inquiry data

Ask our specialists!

PRECISION™ TECHNOLOGY USA, INC.

Date: _____

Company: _____ Contact: _____

Street: _____ Department: _____

City/State: _____ Zip code: _____ Telephone: _____ Fax: _____

Your requirements

Path

Linear displacement [mm]: _____

Kinematics

Cycle time [s]: _____

or Velocity [m/s]: _____ Acceleration [m/s²]: _____

Duty cycle

DC [%]: _____

or number of cycles/h: _____

Accuracy

Required repeatability [± mm]: _____

Loads

a) Load

Mass [m] to be transported [kg]: _____

b) Additional load

[N]: _____

c) Installed position

❑ Horizontal ❑ Vertical

or angle of installation [degrees]: _____

d) Design model (only for WIESEL™ *SPEEDLine*®)

❑ Standard axis ❑ Z-axis

e) External guide

❑ No ❑ Yes

Friction value of the guide μ: _____

Forces and moments

Position of power bridge

❑ Top ❑ Bottom ❑ At side

Center of gravitiy:

Lx [mm]: _____ Ly [mm]: _____ Lz [mm]: _____

Ambient conditions

❑ Dust ❑ Chips Humidity [%]: _____

Temperature [degrees]: _____

Drive systems

❑ AC Servo ❑ DC Servo ❑ Step motor

❑ Three-phase synchronous motor and converter

Control system

Requirements: _____

Additional information on application

Accessories (please mark)

❑ FA Felt wipers (only for WH50/80/120)
❑ ABS Wipers (only for WH40)
❑ KAO Mounting brackets
❑ LKB Long power bridge
❑ OKB Additional free-sliding power bridge
❑ KRG Bevel gearbox (Specify type and transmission ratio)
❑ GX Universal joint shaft (specify center distance)
❑ MGK Motor adapter flange and coupling
❑ EN Inductive limit switch (specify number and version)
❑ PRT Parallel belt drive system
❑ RT Belt drive (Specify transmission ratio)
❑ ES Mechanical limit switch
❑ ADG Shaft encode attachment (specify number of pulses and version)