NEFF®
Antriebstechnik · Automation

Mechanical linear drive units

WIESEL®

Linear to success.

Movement starts in the head and then has to be consistently turned into innovative product solutions of a high technical standard. As a first-class supplier of components for electrically powered linear technology, NEFF offers carefully designed standard products that can be flexibly modified to suit individual customer requirements. In-house development and research, design and production combined with total quality management guarantee that our versatile product range and complete accessory programme meet the highest possible standards. Our international sales division with the NEFF Business Service is always ready to help – consulting advice, helping with product selection and carrying out repairs – worldwide.

Contents

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What are your requirements on a linear drive unit today?

Clocking, positioning, traversing, transporting, palletizing, moving ...

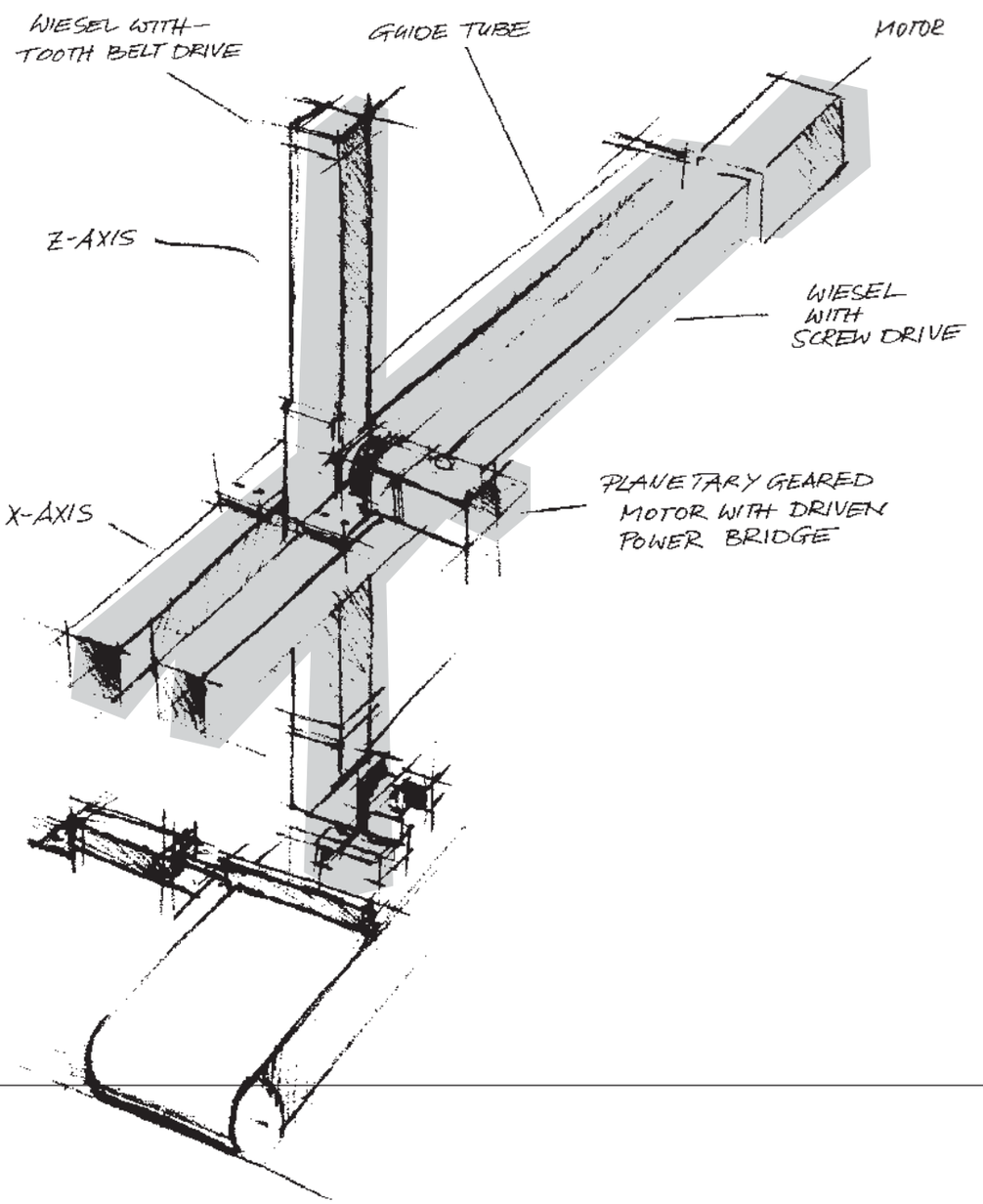
These are just some of the tasks that need linear drive units. Advances in technology and changes in the market are constantly creating new and different requirements for linear drive units. Besides technical requirements, economic aspects are becoming increasingly important. Manufacturers are faced with the following challenges:

How do I reach a higher cost effectiveness for my installation? Despite the reduction in investments, handling plants have to become more and more productive. Shorter cycle times for the same price!

How can I make my plant more reliable? Components are expected to display greater reliability and ensure lower maintenance costs.

How can I reduce the effort required in purchasing, production and assembly? The number of suppliers and the variety of parts purchased must be reduced continually. This can only be achieved with the aid of modular concepts using high quality integrated modules.

The success is mainly influenced by the subassemblies used such as linear drive units.



NEFF linear drive units
The ideal solution for your handling task

WIESEL® mechanical linear drive units have played a leading part in plant engineering for many years thanks to their innovative design details.

With its comprehensive product range, NEFF has the right linear drive unit in the right size for every application. All our linear drive units have a high-precision NEFF ball screw or toothed belt drive. The different types and sizes can be combined with suitable servo motors and servo amplifiers to implement single and multiple axis systems with complete drive packages.

The answer to your challenges:

NEFF linear drive units guarantee the optimum solution of technology and economy for every drive task due to their high load and moment carrying capability.

The uncompromising design of every NEFF linear drive unit and numerous innovative design characteristics guarantee reliable linear movement in your machinery and plant.

The high performance and modular design make it possible to replace a large number of individual components, thus permitting modular systems with lower costs and shorter lead times.

Mechanical linear drive units with toothed belt drive or ball screw drive

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Mechanical linear drive units are used wherever loads have to be moved quickly, precisely and safely in linear direction. Single-axis solutions as well as two and three-dimensional handling systems can be realized. Different guide systems can be used for supporting the loads:

- **simple sliding guideway**
- **sturdy roller guideway**
- **precise linear guideway**
- **heavy-duty ball recirculating guide**

Characteristics of NEFF linear drive units

- Stroke lengths up to 11 m.
- Highly integrated technology allows the use of solutions with numerous individual components.
- The aluminum profile with its high torsional and bending strength enables stiff systems.
- Extensive and optimized accessories.
- The patented self-adjusting cover strip protects the drive.
- The patented screw supports at the ball screw drives allow high speeds also at long strokes.

Ball screw drive

The ball screw drive is used where high forces and precision at average speed is needed.

Technical features[1]:
- max. speed 2.5 m/s
- min. repeatability[2] ± 0.01 mm res. ± 0.05 mm
- max. feed force 12 kN

Trapezoidal screw drive

The trapeziodal screw drive is used for applications with average requirements with respect to speed, force and precision and with a low duty cycle. Available for series W00, W02.

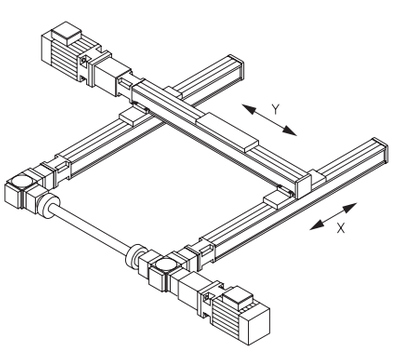
Technical features[1]:
- max. speed 0.4 m/s
- min. repeatability ± 0.1 mm
- max. feed force 1.5 kN

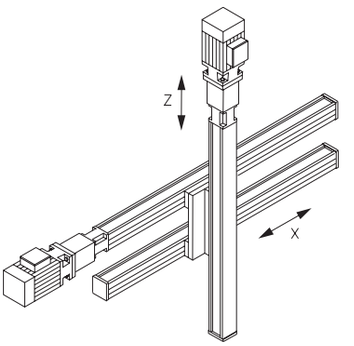
Toothed belt drive

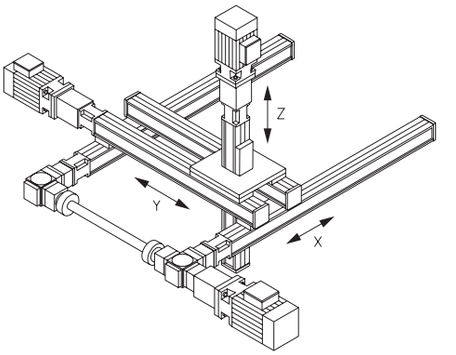
The toothed belt drive is used for applications that require high speeds at average force and precision.

Technical features[1]:
- max. speed 10 m/s
- max. acceleration 40 m/s^2
- min. repeatability ± 0.05 mm
- max. feed force 5 kN

[1] Refering to NEFF linear drive units.
[2] Refers to the average position variation according to VDI/DGQ 3441.







NEW: WIESEL*FORCE*Line®
Packs the power for mechanical engineering and handling

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The new WIESEL *FORCELine*® is a modular linear-axis system of great stiffness, suitable for applications in mechanical engineering and the handling industry. The high power density makes the new WIESEL series a powerful drive element.
Two different drive and guide systems have been integrated in the torsion-resistant aluminium tubular section: optionally, a version with a precise ball screw drive and extremely robust ball return duct or second a version with a drive through a dynamic ATL toothed belt and a robust roller guide. Both these axes have the same overall dimensions, which keeps design effort to a minimum.

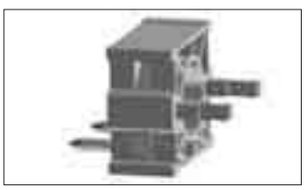
Pre-loaded ball screw drive with integrated ball recirculating guide system

The highly efficient ball recirculating guide system has been integrated in the profile at an angle of 45°. Together with the precise ball screw drive, this provides high power density and stiffness.

Toothed belt drive with robust roller guide

The robust roller guide has been integrated in the profile at an angle of 45°. Together with the ATL toothed belt this guarantees great dynamics.

Screw supports



The patented screw supports allow high speeds, and have been additionally optimised.

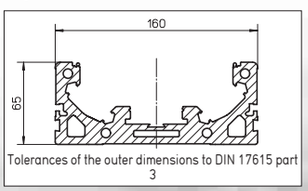
Cover strip

The patented cover strip is a reliable protection from dirt.

Central lubrication

The ball screw version can be conveniently lubricated via the central lubrication right on the sliding carriage. Maintenance – whether manual or automatic – is quite uncomplicated.

Equal outer dimensions



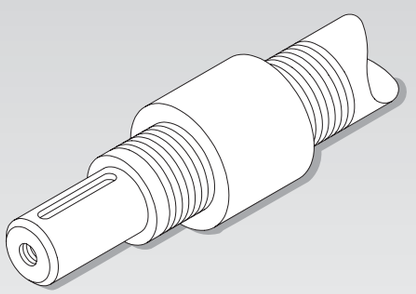
Both models have equal outer dimensions and therfore reduce the design expense.

Selection of linear drive units
The best solution for every application

Drive

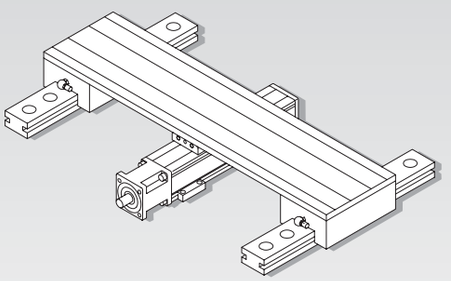
Guide system/load

Ball screw

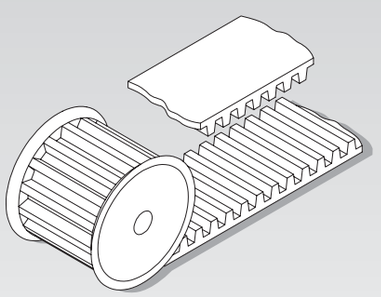


Fx	up to	12 kN	1)
Rep.	up to	± 0.01 mm	1)
v	up to	2.5 m/s	1)
a	up to	20 m/s²	1)

External

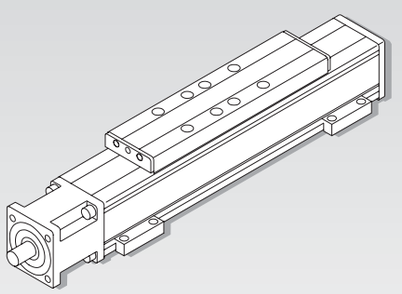


Toothed belt drive



Fx	up to	5 kN	1)
Rep.	up to	± 0.05 mm	1)
v	up to	10 m/s	1)
a	up to	40 m/s²	1)

Internal

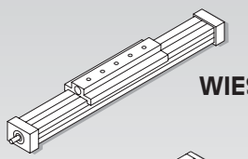


LNotes:
Fx – Feed force
Rep. – Repeatability
v – Linear speed
a – Acceleration

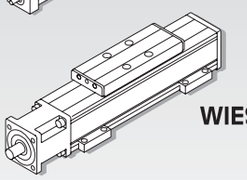
1) The performance values of the respective sizes can be found on page 10

WIESEL *Manager* /CAD-data
Get the software package WIESEL *Manager* for the choice and planning of all NEFF linear drive units as well as our CAD-data. Click to www.neffaa.de or send the order form on page 128.
Also benefit from technical consultation service.

Series	Optional internal support for external moments

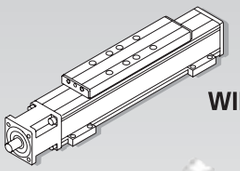


WIESEL® W0

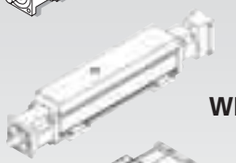


WIESEL *DYNA*Line®

Without



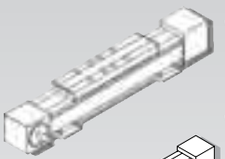
WIESEL *POWER*Line®



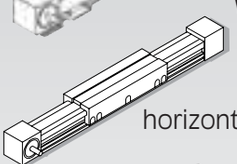
WIESEL *VARIO*Line®

WIESEL *FORCE*Line® MLSM

Additional power bridge



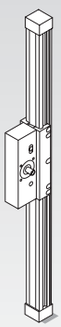
WIESEL *POWER*Line® ZRT

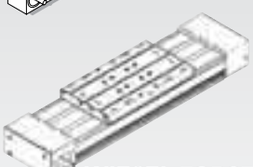


WIESEL *SPEED*Line®

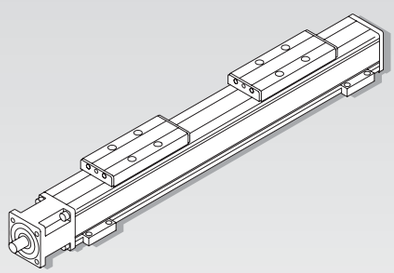
horizontal

vertical
Z-axis





WIESEL *FORCE*Line® MLSH



Summary of performance data, additional options and accessories

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Summary of performance data

Type	Profile-cross-section	Drive element[1]	Lead [mm] Stroke per revolution [mm/rev.]	Feed force Fx [N]	Repeatability[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
WM60-370 ZRT	60x60	ZRT[1] 20 ATL5	120	850	± 0.05	2.5	1400	1400	25	50	50
WM80-370 ZRT	80x80	ZRT[1] 25 AT10	170	1470	± 0.05	2.5	2100	2100	68	135	135
WM80 ZRT	80x80	ZRT[1] 25 AT10	170	1470	± 0.05	2.5	3000	3000	150	300	300
WM40	40x40	KGT[1] ø 12mm	5	1000	± 0.01	0.25	600	450	10	30	30
WM60-370	60x60	KGT[1] ø 20mm	5/20/50	2800	± 0.02	2.5	1400	1400	50	100	100
WM60	60x60	KGT[1] ø 20mm	5/20/50	4000	± 0.01	2.5	2000	2000	100	200	200
WM60-500	60x60	KGT[1] ø 20mm	5	4000	± 0.01	0.25	2000	2000	100	200	200
WM80-370	80x80	KGT[1] ø 25mm	5/10/20/50	3500	± 0.02	2.5	2100	2100	150	180	180
WM80	80x80	KGT[1] ø 25mm	5/10/20/50	5000	± 0.01	2.5	3000	3000	350	300	300
WM120	120x120	KGT[1] ø 32mm	5/10/20/40	12000[5]	± 0.01	2.0	6000	6000	500	600	600
WV60	60x60	KGT[1] ø 20mm	5/20/50	4000	± 0.01	2.5	–	–	–	–	–
WV80	80x80	KGT[1] ø 25mm	5/10/20/50	5000	± 0.01	2.5	–	–	–	–	–
WV120	120x120	KGT[1] ø 32mm	5/10/20/40	12000[5]	± 0.01	2.0	–	–	–	–	–
WZ60	60x60	KGT[1] ø 20mm	5/10/20/50	2800	± 0.02	1.5	s. p. 66	s. p. 66	50	–	–
WZ80	80x80	KGT[1] ø 25mm	5/10/20/50	3500	± 0.02	1.5	s. p. 67	s. p. 67	150	–	–
W00	37x37	KGT[1] ø 12mm	4/5	200	± 0.05	0.25	250	200	6	15	10
W02	59x59	KGT[1] ø 20mm	5/20	2500	± 0.05	1.0	650	500	30	70	50
MLSM60	160x90	KGT[1] ø 25mm	5/10/20/50	5000	± 0.01	2.5	6000	6000	400	460	460
MLSH60	160x90	ZRT[1] 32ATL5	135	1480	±0.05	6.5	3000	3000	165	310	310

[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 pitch max 8000N.

Summary of additional options and accessories for linear drive units with toothed belt drive

Type	Felt-wiper FA	Mounting-brackets KAO	Long power bridge LKB	Additional-freesliding-power bridge OKB	Guide tube	Universal joint shaft GX	Belt drive RT	Limit switches inductive EN	Limit switches mechanical ES	Shaft-encoder	Electric drives ADG	Motor-adapter flange MGK
WH40		• (p. 25)	• (p. 26)	• (p. 27)	• (p. 21)	• (p. 28)	• (p. 29)	• (p. 110)	• (p. 30)	• (p. 31)	• (p. 97)	
WH50	• (p. 25)	• (p. 25)	• (p. 26)	• (p. 27)	• (p. 21)	• (p. 28)		• (p. 110)	• (p. 30)	• (p. 31)	• (p. 97)	•
WH80	• (p. 25)	• (p. 25)	• (p. 26)	• (p. 27)	• (p. 22)	• (p. 28)		• (p. 110)	• (p. 30	• (p. 31)	• (p. 97)	•
WH120	• (p. 25)	• (p. 25)	• (p. 26)	• (p. 27)	• (p. 22)	• (p. 28)		• (p. 110)	• (p. 30)	• (p. 31)	• (p. 97)	•
WHZ50		• (p. 25)	• (p. 26)	• (p. 27)		• (p. 28)		• (p. 110)	• (p. 30)	• (p. 31)	• (p. 97)	•
WHZ80		• (p. 25)	• (p. 26)	• (p. 27)		• (p. 28)		• (p. 110)	• (p. 30)	• (p. 31)	• (p. 97)	•
WM60-370 ZRT		• (p. 54)		• (p. 27)	• (p. 22)	• (p. 28)		• (p. 110)		• (p. 31)	• (p. 97)	•
WM80-370 ZRT		• (p. 54)		• (p. 27)	• (p. 22)	• (p. 93)		• (p. 110)		• (p. 31)	• (p. 97)	•
WM80 ZRT		• (p. 54)	• (p. 26)	• (p. 27)	• (p. 22)	• (p. 93)		• (p. 110)		• (p. 31)	• (p. 97)	•
MLSH60 ZRT		• (p. 88)	• (p. 89)	• (p. 90)		• (p. 93)		• (p. 110)		• (p. 31)	• (p. 97)	•

Summary of additional options and accessoires for linear drive units with screw drive

Type	Mounting brackets KAO/WBL	Long power bridge LKB	Additional free-sliding power bridge OKB	Guide tube	Bevel gear box KRG	Universal joint shaft GX
WM40	• (p. 54)	• (p. 55)	• (p. 56)	• (p. 57)	• (p. 57)	• (p. 59)
WM60	• (p. 54)	• (p. 55)	• (p. 56)	• (p. 57)	• (p. 57)	• (p. 59)
WM60 ZRT	• (p. 54)		• (p. 56)	• (p. 57)	• (p. 57)	• (p. 60)
WM80	• (p. 54)	• (p. 55)	• (p. 56)	• (p. 57)	• (p. 57)	• (p. 59)
WM80 ZRT	• (p. 54)	• (p. 55)	• (p. 56)	• (p. 57)	• (p. 57)	• (p. 60)
WM120	• (p. 54)	• (p. 55)	• (p. 56)	• (p. 57)	• (p. 57)	• (p. 59)
WV60	• (p. 54)				• (p. 57)	• (p. 59)
WV80	• (p. 54)				• (p. 57)	• (p. 59)
WV120	• (p. 54)				• (p. 57)	• (p. 59)
WZ60	• (p. 68)				• (p. 69)	•
WZ80	• (p. 68)				• (p. 69)	•
W00	• (p. 76)			• (p. 57)		
W02	• (p. 76)			• (p. 57)	• (p. 78)	• (p. 79)
MLSM60 KGT	• (p. 88)	• (p. 89)	• (p. 90)		• (p. 92)	• (p. 93)

Type	Parallel belt drive PRT	Belt drive RT	Limit switches inductive EN	Limit switches mechanical ES	Shaft encoder ADG	Electric drives	Motor adapter flange MGK
WV60		• (p. 61)	• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WV80		• (p. 61)	• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WV120			• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WM40	• (p. 60)	• (p. 61)	• (p. 110)		• (p. 63)	• (p. 97)	•
WM60		• (p. 61)	• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WM80		• (p. 61)	• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WM60		• (p. 61)	• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WM80		• (p. 61)	• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WM120			• (p. 110)	• (p. 62)	• (p. 63)	• (p. 97)	•
WZ60		• (p. 71)	•	• (p. 71)		• (p. 97)	•
WZ80		• (p. 71)	•	• (p. 71)		• (p. 97)	•
W00	• (p. 78)	• (p. 80)	• (p. 110)		• (p. 81)	• (p. 97)	•
W02	• (p. 78)	• (p. 80)	• (p. 110)		• (p. 81)	• (p. 97)	•
MLSM60		• (p. 94)	• (p. 110)	• (p. 95)	• (p. 96)	• (p. 97)	•

Automated 2-axis-handling of a cleaning system for semiconductor production in clean room. Astec GmbH in Berg. Germany.

Mechanical linear drive units
WIESEL *SPEED*Line®

WIESEL *SPEED*Line®
WH40

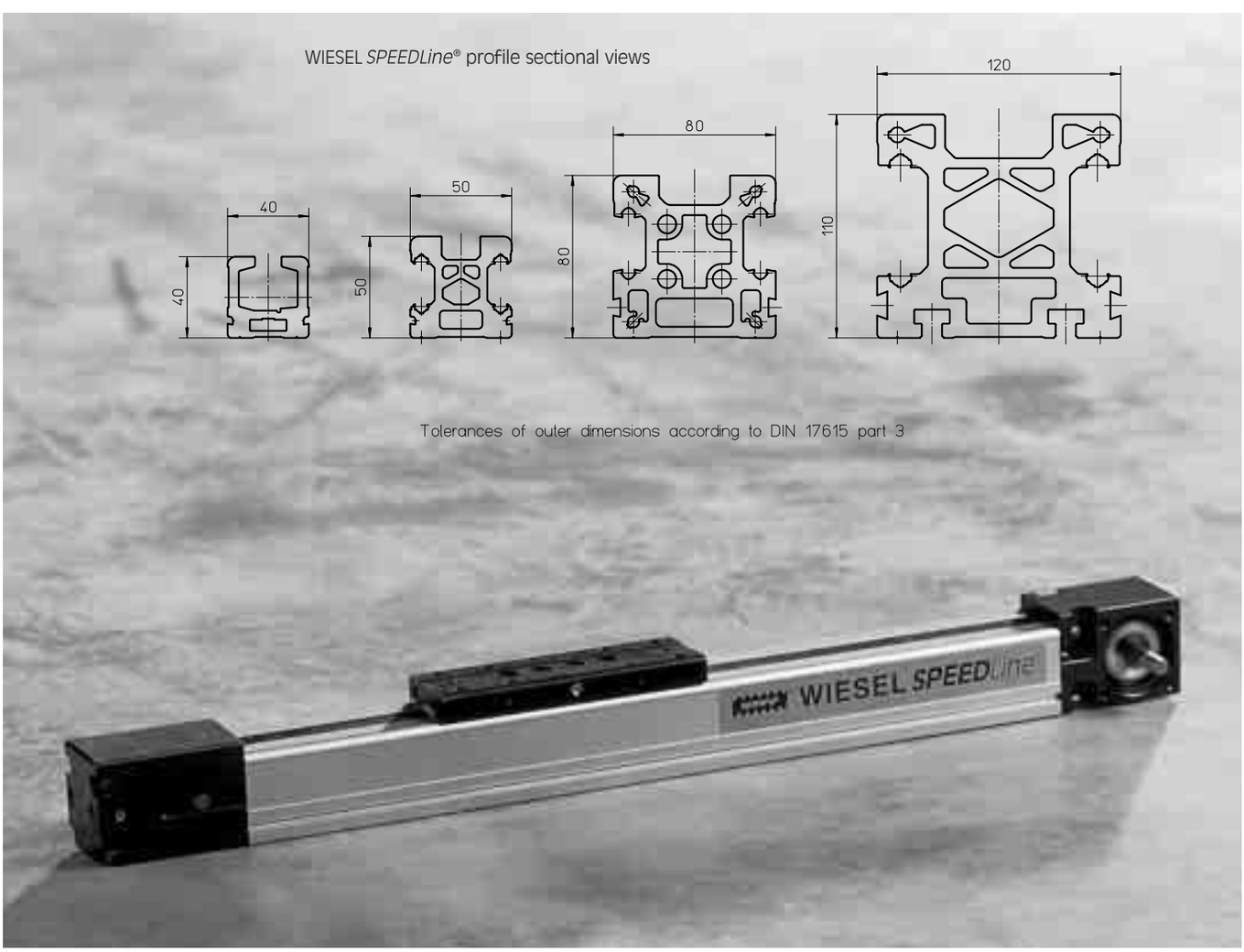
- Completely integrated miniaturized drive unit with linear guide and toothed belt drive.

WIESEL *SPEED*Line®
WH50/80/120

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

WIESEL *SPEED*Line®
Z-axis

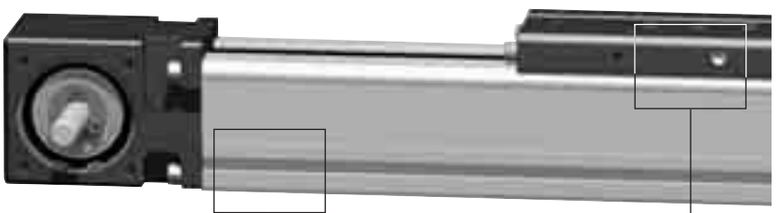
- Especially developed for vertical movements.
- Reduction in dead weight together with the short design allow high dynamics.

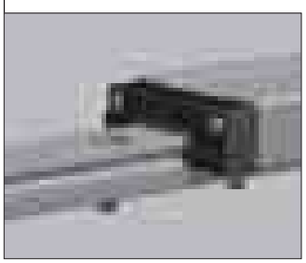


WIESEL *SPEED*Line®
New technology right to the centre!

WIESEL *SPEED*Line® 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.

Completely new arrangement of the roller guideway

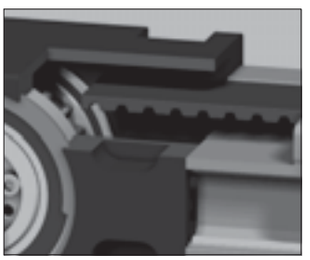
The H-Type arrangement of guidance allows high forces and moments and thereby the choice of a smaller size. Your benefit: lighter and more cost effective designs.

AT toothed belt

A proven drive element:

- high loading
- wear resistant
- high efficiency
- exact spacing
- low mass

Powered by ATL belt



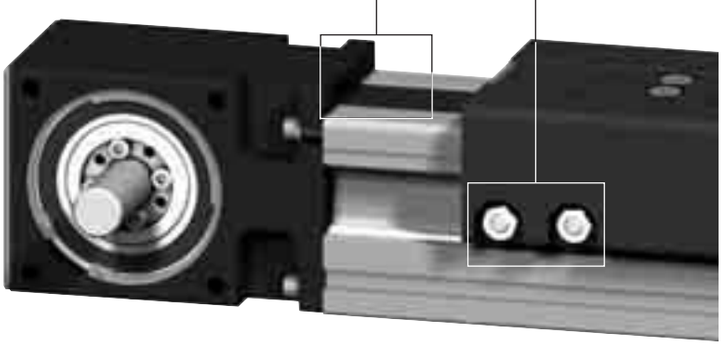
ATL toothed belt

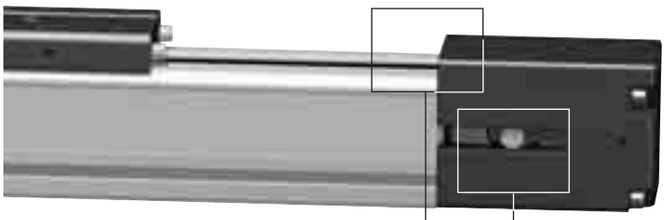
- with steel reinforcement especially suitable for linear drive units
- higher performance
- repeatability of ± 0.05 mm even at high feed forces

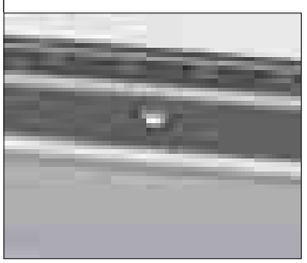
WIESEL *SPEED*Line® WH50. WH80. WH120 WHZ50. WHZ80

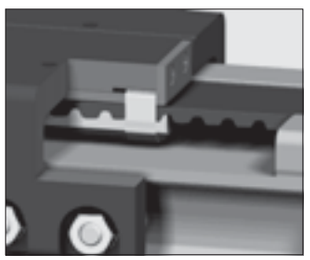
With the WIESEL *SPEEDLine*® single-axis solutions can be realized as well as two- and three-dimensional handling systems.

The WIESEL *SPEEDLine*® Z-axis is especially suitable for vertical movements. High dynamics and loads due to the reduced mass to be moved and the short design.









Central lubrication

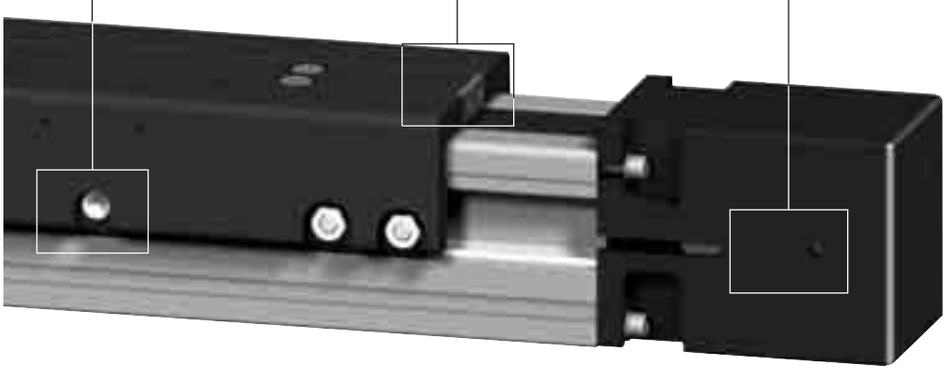
The linear guide system is conveniently relubricated from a central point. Whether by hand or automatically, maintenance is now a simple matter.

Tensioning and exchange of toothed belt

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

FEA optimized design

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



General technical data
WIESEL *SPEED*Line®

NEFF®
Antriebstechnik · Automation

Speeds
The linear speed achieved by a linear drive unit depends on the pitch 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:

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

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.

Safety 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 breakage of the toothed belt the load is released instantly. Therefore safety precautions have to be taken for applications which are critical with regard to safety.

Loading
All specified maximum forces and moments refer to the centre/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 120

Temperatures
All series are designed for continuous operation at ambient temperatures up to 80° C. Temperatures up to 100° C are also permitted for brief periods. The linear drive units are not suited 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 aluminium profiles (material AlMgSi 0.5) are extruded sections which may display deviations in straight-ness and torsion due to their manufacturing process. The tolerance of these deviations is defined in DIN 17615. The deviations found in NEFF 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 capacity 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. The repeatability amongst others is influenced by:

- Load
- Speed
- Deceleration
- Direction of travel
- Temperature

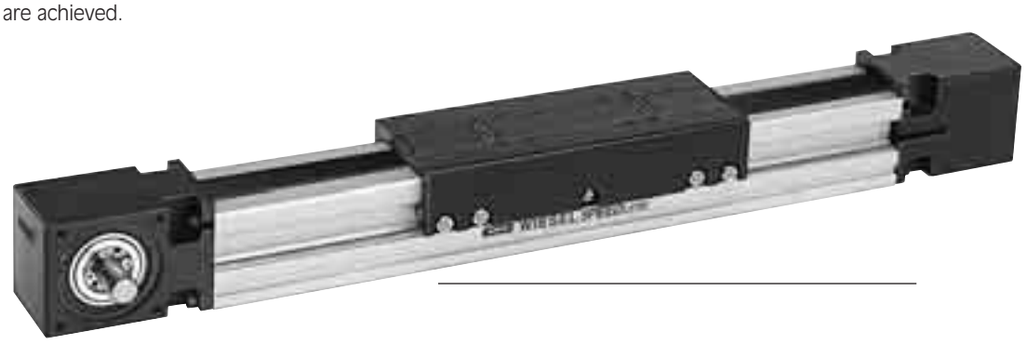
Aggressive working environment
Because of their tough design WIESEL *SPEEDLine*® units can be used even in rough surroundings without additional covering. As a protection against coarse dirt optional wipers can be offered. In case of extreme dirt or fine dust/ filings a protective bellow is recommended 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: roller bearing grease (original grease: Fuchs Lubritech URETHYN E/M2).

Lubrication WH50/80/120
In order to obtain a useful life-time of the guidance 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.

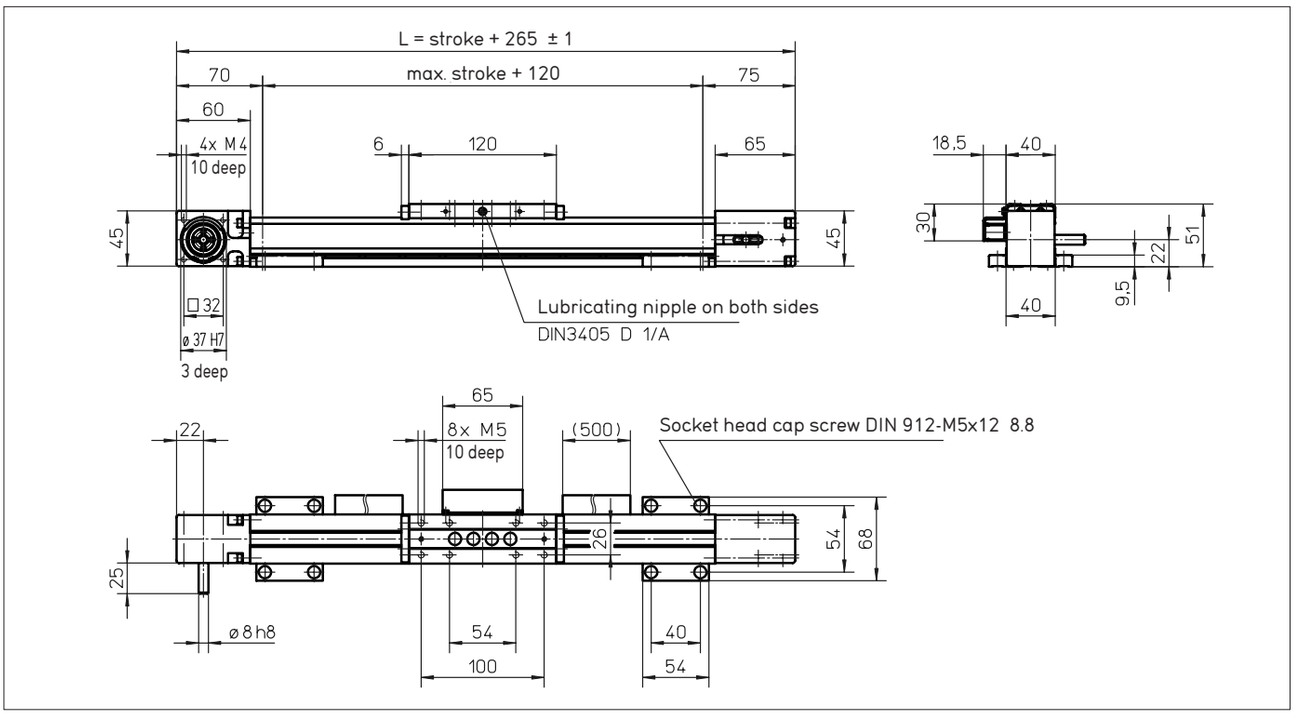
Tensioning of toothed belt
The tension of the toothed belt can be adjusted with the aid of the tensioning screws on the guide casing which are intended for this. The linear units are delivered with optimal tension values in order to guarantee security in function. Changes in this adjustment must only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

Pretensioning of the guidance system
The WIESEL® units leave the factory with optimal preloading values which guarantee optimum travelling 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 NEFF service engineers.



WIESEL *SPEED*Line® WH40
with linear guide and AT toothed belt

Antriebstechnik · Automation



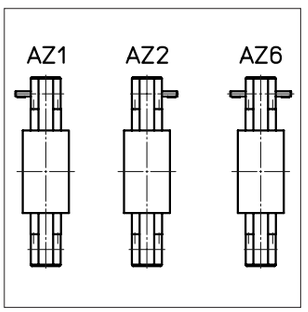
Note: The use of a long power bridge increases the total length.

Technical data

- Linear speed: max. 3.0 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 40 m/s²
- Drive element: Toothed belt 10AT5
- Pully 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 26
- Geometrical moment of inertia: Iy 12.6 · 10^4 mm⁴
  Iz 15.3 · 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: with 4 pieces KA0 mounting brackets

Execution of drive shafts

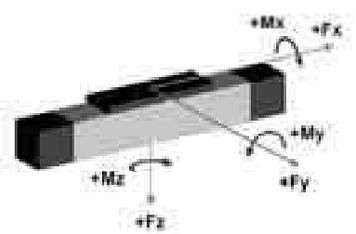
(Detailed description see page 123)
Other executions on request.



Idle torques [Nm]

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

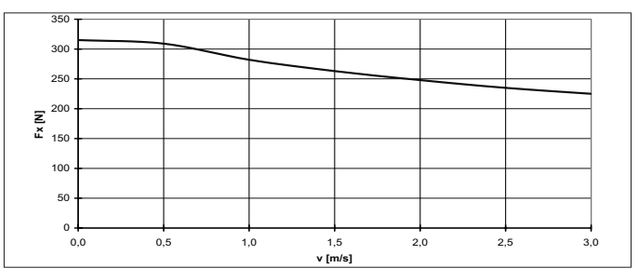
Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 315
Fy	450
±Fz	600

Load moment	dynam. [Nm]
Mx	10
My[2]	30
Mz[2]	30

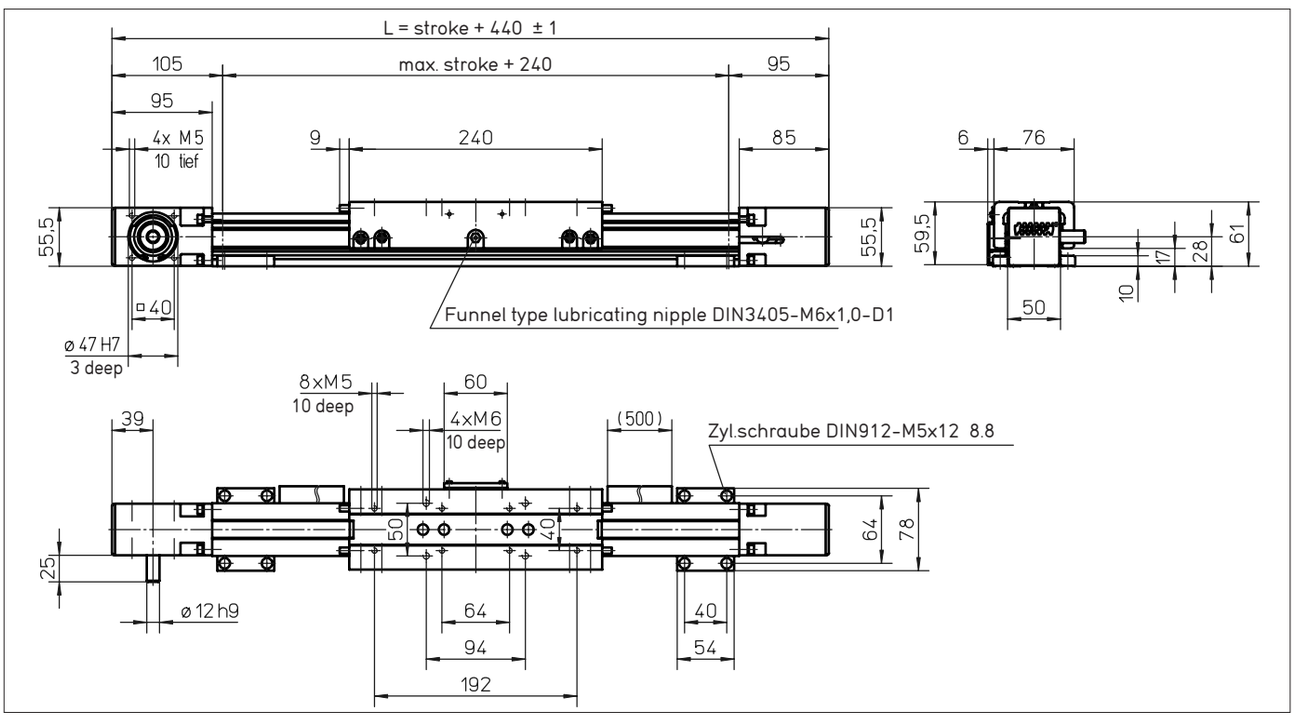
Fx depending on the linear speed



[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 (page 26 and 27).

Order Code see page 123

WIESEL *SPEED*Line® WH50
with roller guideway and ATL toothed belt



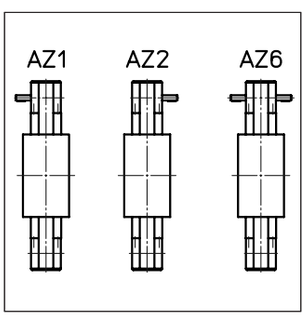
Note: In the section of the rail for the initiators the WIESEL® can not be fixed by means of KAO mounting brackets. Mounting kit for the lateral assembly of the initiators at the sides of the axis on request. Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

- Linear speed: max. 6.5 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 40 m/s²
- Drive element: Toothed belt 16ATL5
- Pulley 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 26
- Geometrical moment of inertia: ly 3.30 · 10^5 mm⁴ lz 2.65 · 10^5 mm⁴
- Weights
  Basic unit with zero stroke: 3.50 kg
  100 mm stroke: 0.44 kg
  Power bridge with rollers: 0.90 kg
- Provided: with 4 pieces KAO mounting brackets

Execution of drive shafts

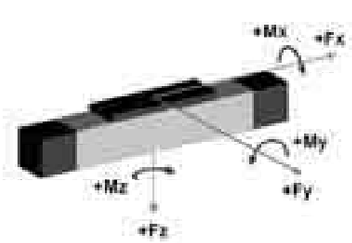
(Detailed description see page 123)
Other executions on request.



Idle torques [Nm]

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

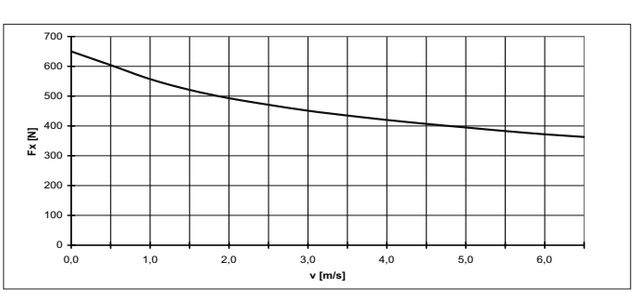
Loads and load moments



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



Order Code see page 123

[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 (page 26 and 27).

WIESEL *SPEED*Line® WH80
with roller guideway and ATL toothed belt

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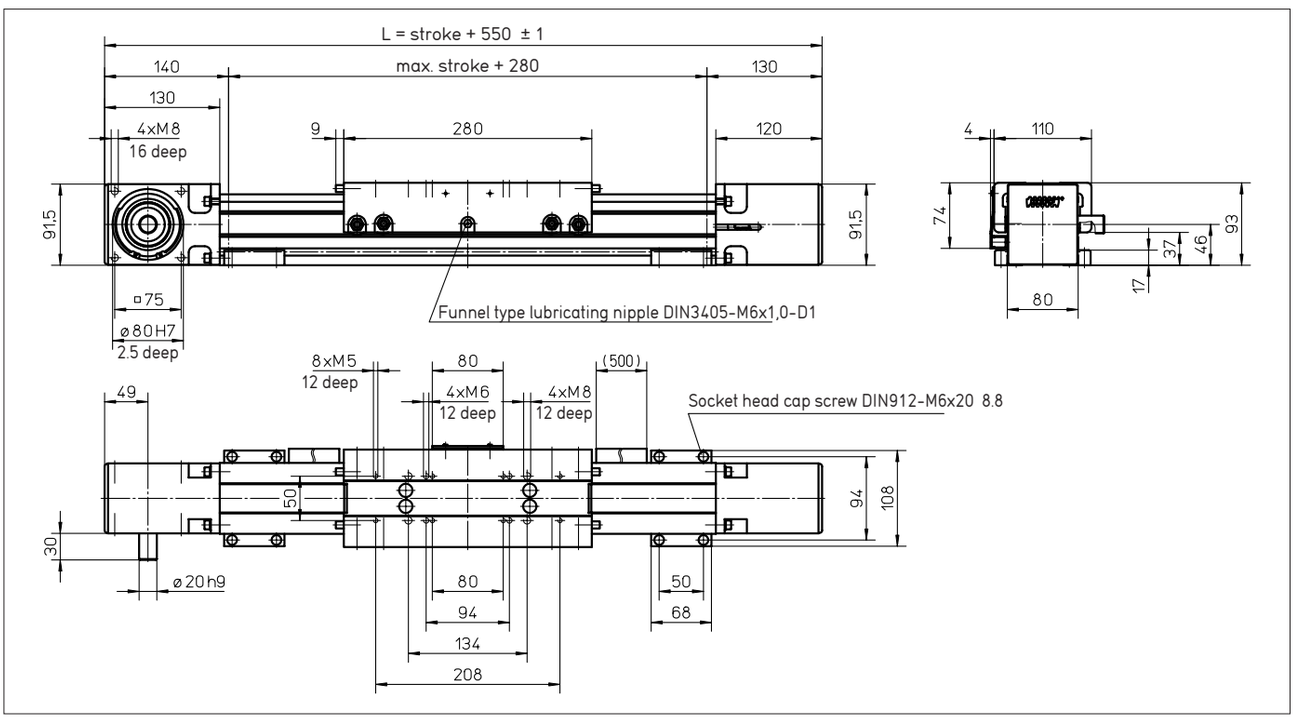


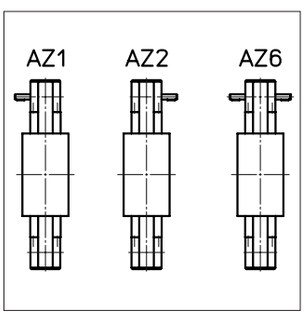
Note: Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

- Linear speed: max. 10 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 40 m/s²
- Drive element: Toothed belt 32ATL10
- Pully 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 26
- Geometrical moment of inertia: Iy 1.93 · 10^6 mm⁴, Iz 1.80 · 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: with 4 pieces KA0 mounting brackets

Execution of drive shafts

(Detailed description see page 123)
Other executions on request.

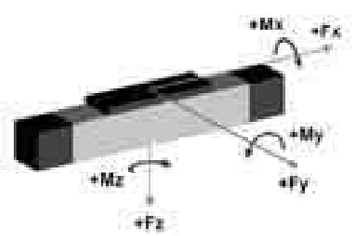


Idle torque [Nm]

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

Note: For tube lengths of 6300 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.

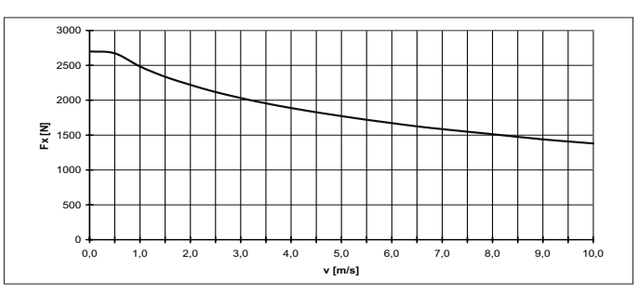
Loads and load moments



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



Order Code see page 123

[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 (page 26 and 27).

WIESEL *SPEED*Line® WH120
with roller guideway and ATL toothed belt

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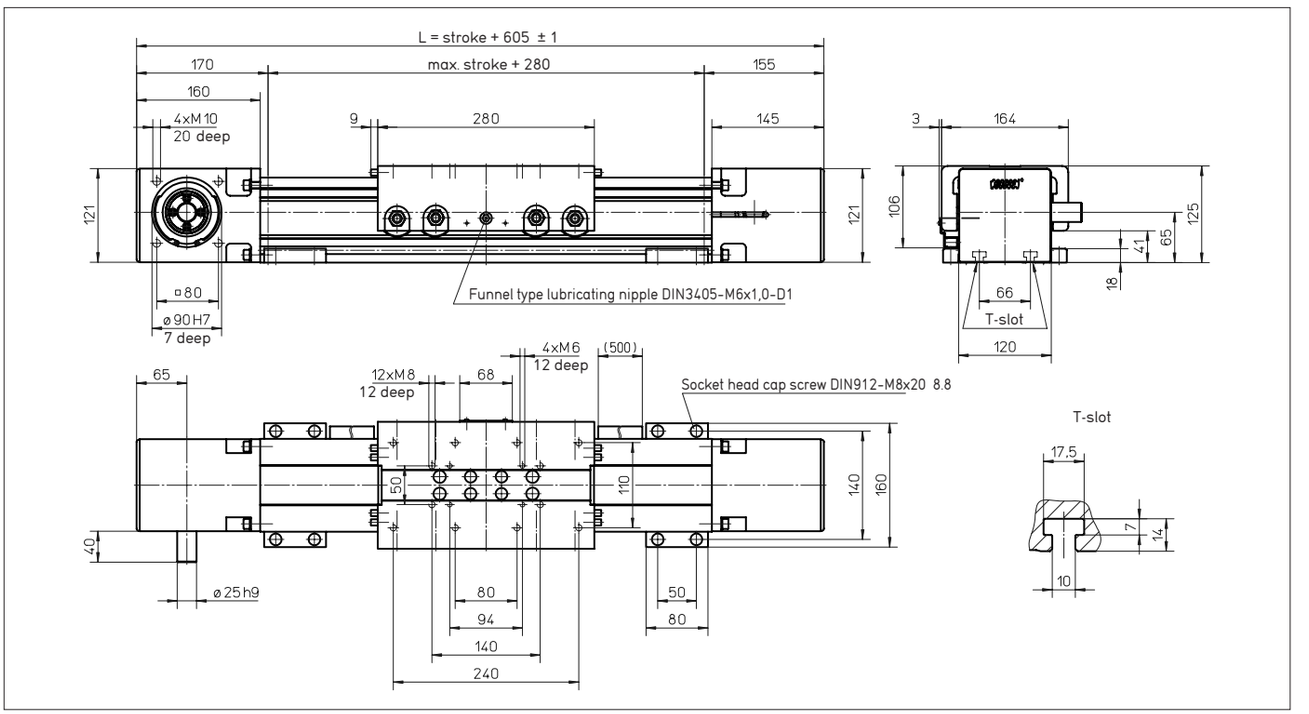


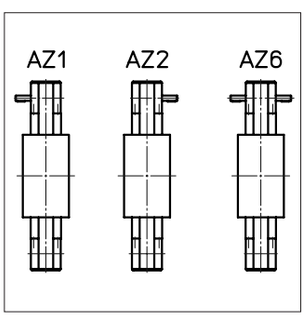
Note: Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

- Linear speed: max. 10 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 40 m/s²
- Drive element: Toothed belt 50ATL10
- Pully 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 26
- Geometrical moment of inertia: ly 6.69 · 10^6 mm^4 lz 6.88 · 10^6 mm^4
- Weights
  Basic unit with zero stroke: 17.00 kg
  100 mm stroke: 1.64 kg
  Power bridge with carriage: 5.50 kg
- Provided: with 4 pieces KA0 mounting brackets

Execution of drive shafts

(Detailed description see page 123)
Other executions on request.

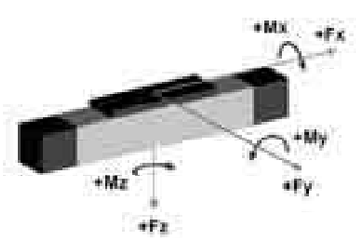


Idle torques [Nm]

Rotational speed [rpm]	M_{idle} [Nm]
150	4.8
1500	7.0
2308	10.0

Note: For tube lengths of 4900 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.

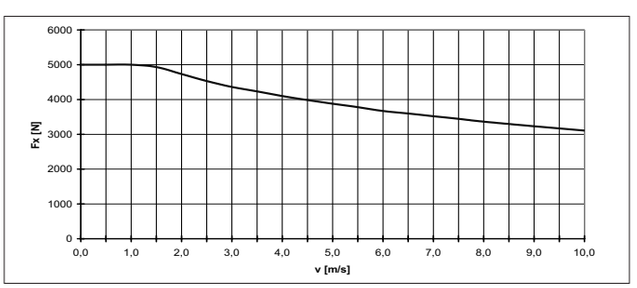
Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 5000
Fy	4980
±Fz	9300

Load moment	dynam. [Nm]
Mx	500
My[2]	930
Mz[2]	500

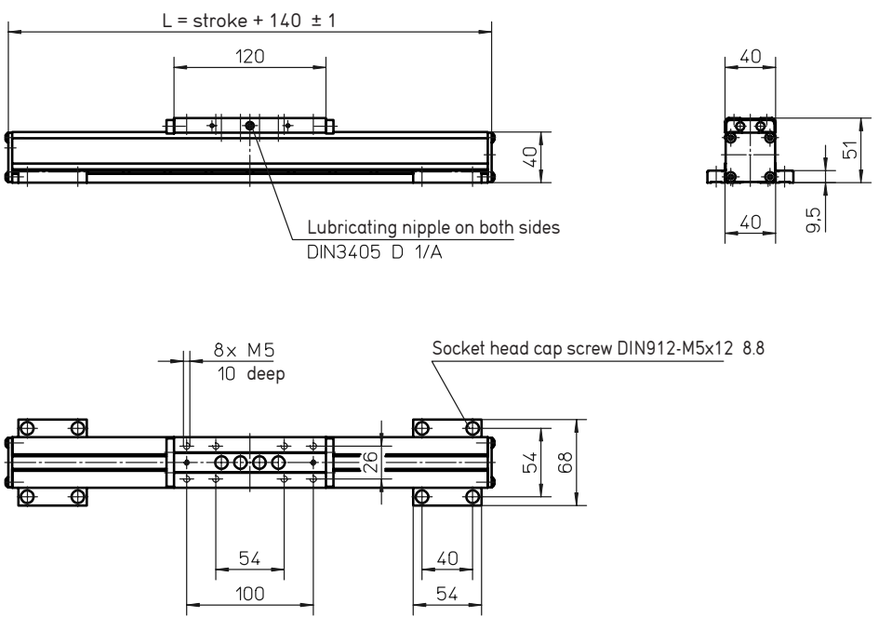
Fx depending on the linear speed



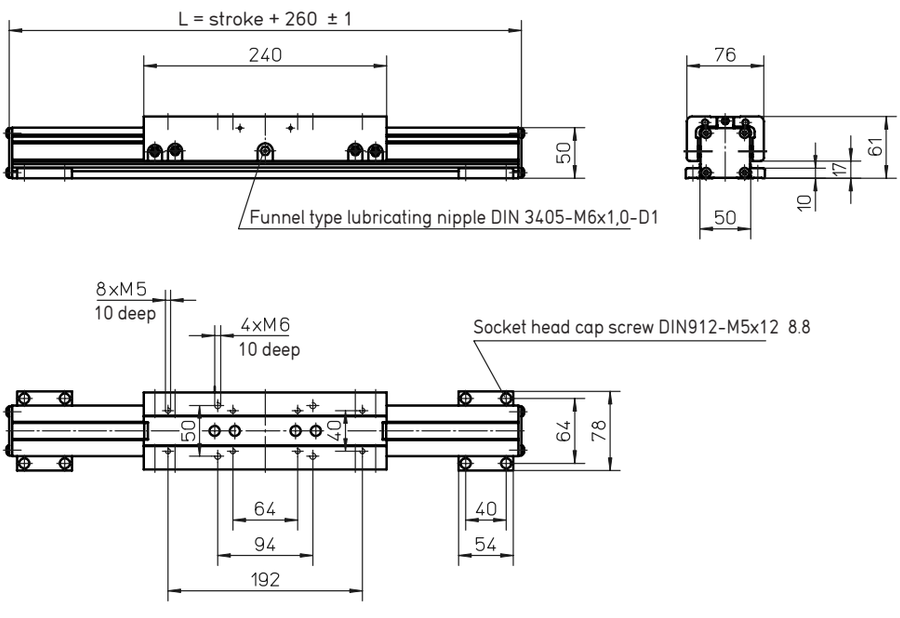
Order Code see page 123

[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 (page 26 and 27).

WH40-190

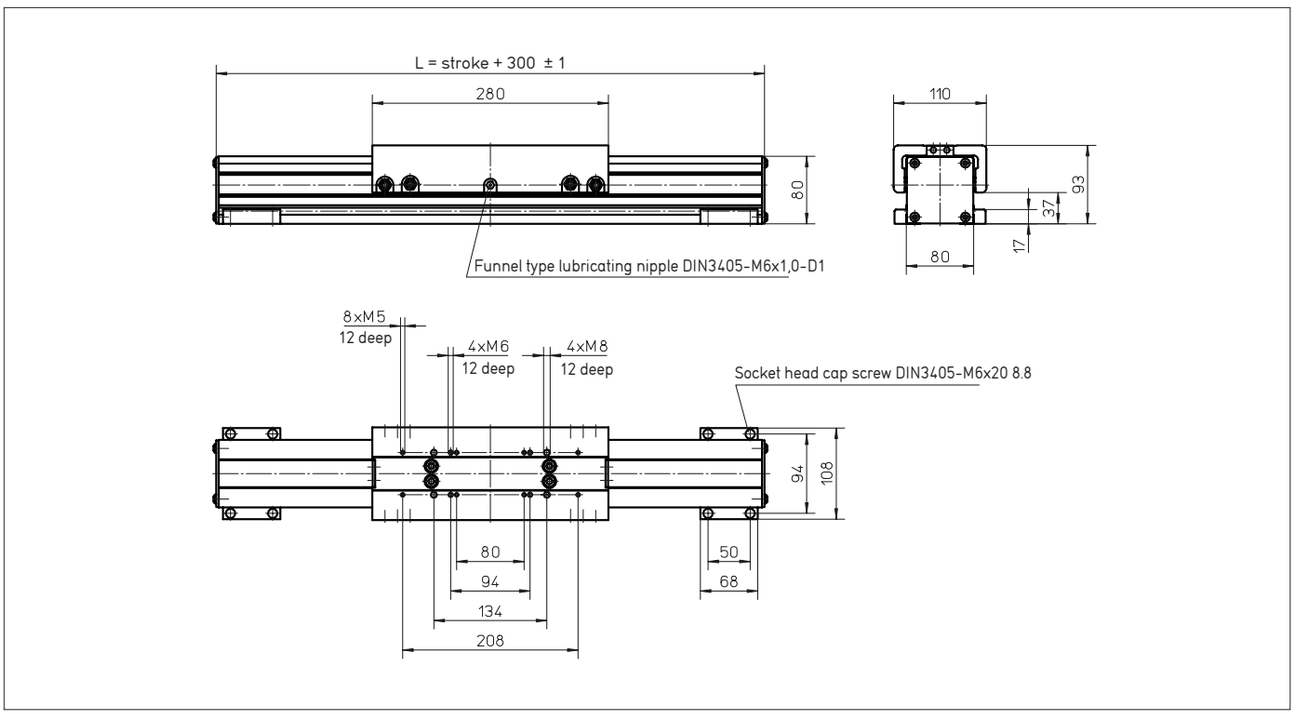


WH50-190

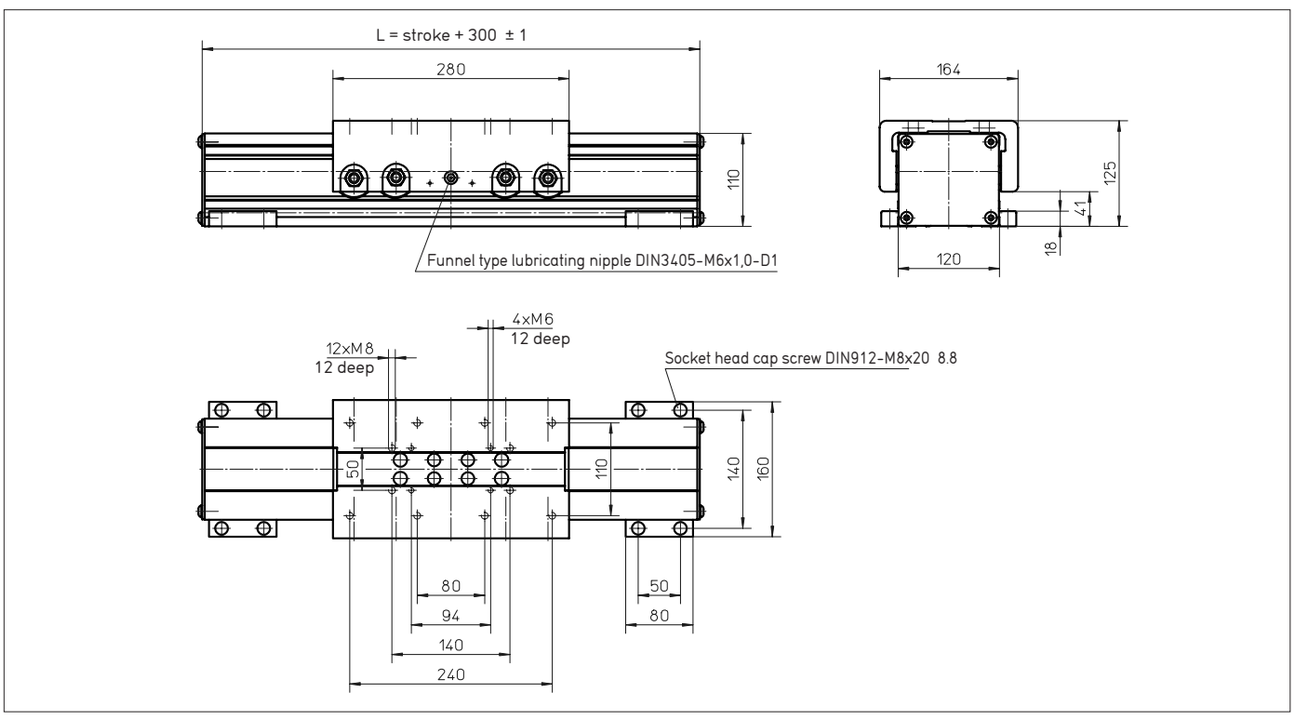


Order Code see page 123

WH80-190



WH120-190



Order Code see page 123

WIESEL *SPEED*Line® WHZ50
with roller guideway and ATL toothed belt

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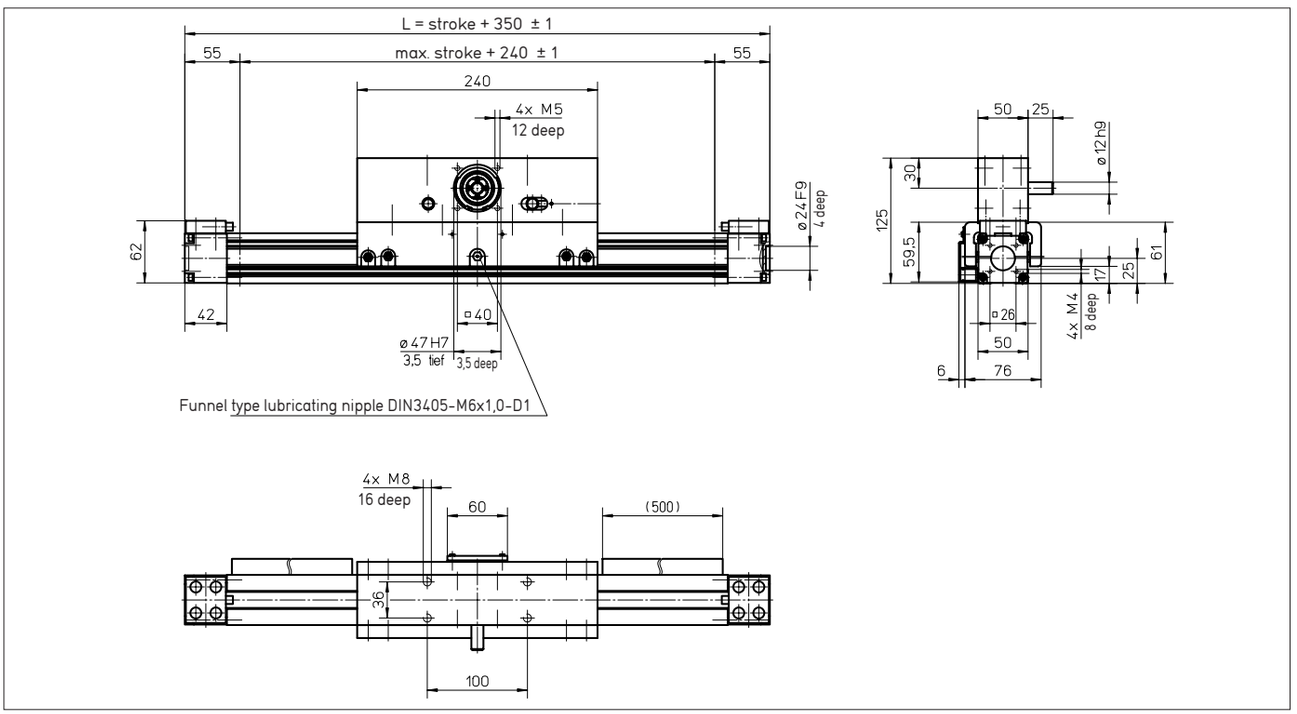


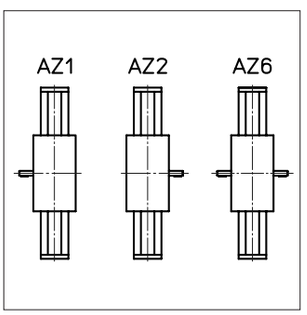
Note: In the section of the rail for the initiators the WIESEL® can not be fixed by means of KAO mounting brackets. Mounting kit for the lateral assembly of the initiators at the sides of the axis on request. Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

- Linear speed: max. 6.5 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 40 m/s²
- Drive element: Toothed belt 16ATL5
- Pully 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 26
- Geometrical moment of inertia: Iy 3.30 · 10^5 mm⁴ Iz 2.65 · 10^5 mm⁴
- Weights
  Basic unit with zero stroke: 4.50 kg
  100 mm stroke: 0.42 kg
  Power bridge with carriage: 2.90 kg

Execution of drive shafts

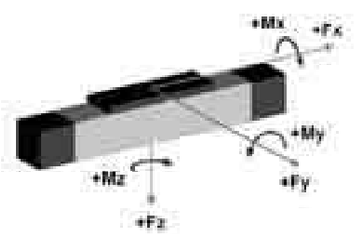
(Detailed description see page 123)
Other executions on request.



Idle torques [Nm]

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

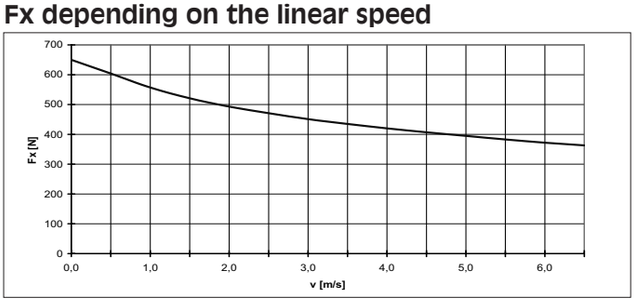
Loads and load moments



Load	dynam. [N]
Fx drive[1]	max. 670
Fy	415
±Fz	730

Load moment	dynam. [Nm]
Mx	16
My[2]	87
Mz[2]	50

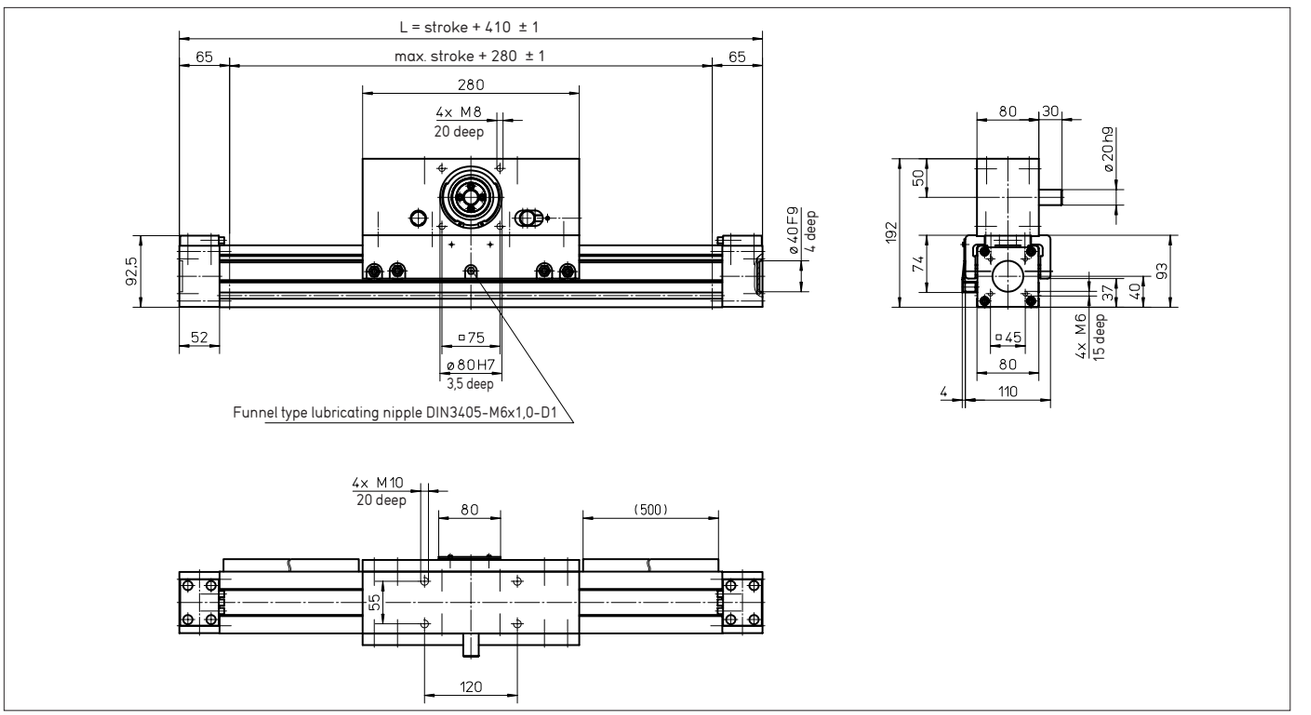
Fx depending on the linear speed



Bestell-Code Seite 123

[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 (page 26 and 27).

WIESEL *SPEED*Line® WHZ80
with roller guideway and ATL toothed belt



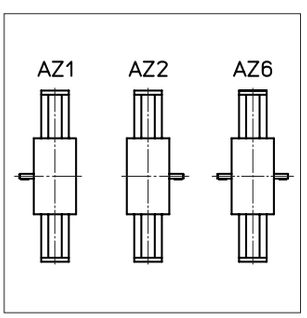
Note:Mounted wipers on request. The use of a long power bridge increases the total length.

Technical data

- Linear speed: _____ max. 10 m/s
- Repeatability: _____ ± 0.05 mm
- Acceleration: _____ max. 40 m/s²
- Drive element: _____ Toothed belt 32ATL5
- Pully 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 26
- Geometrical moment of inertia: Iy 1.93 · 10^6 mm^4 Iz 1.80 · 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

Execution of drive shafts

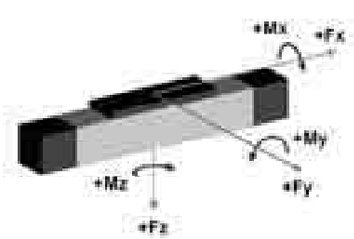
(Detailed description see page 123)
Other executions on request.



Idle torques [Nm]

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

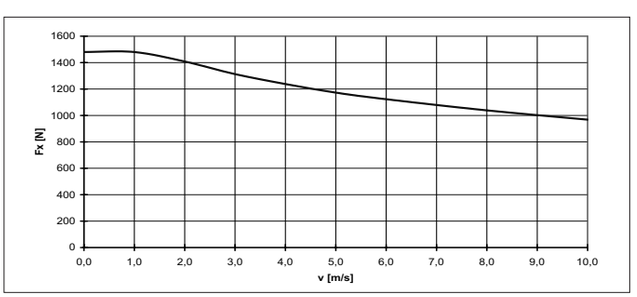
Loads and load moments



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



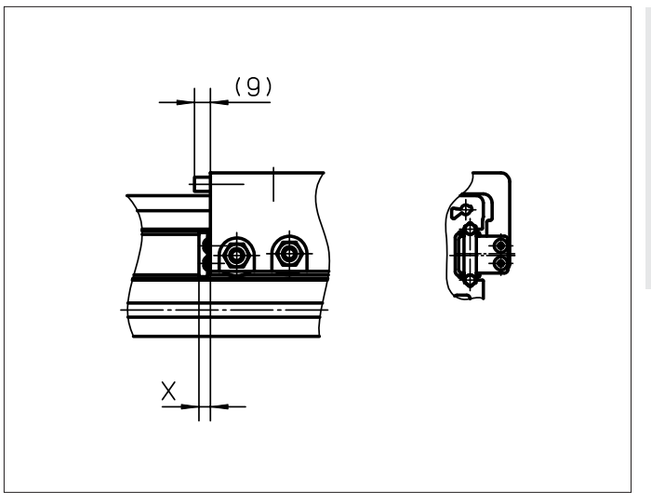
[1)] Depending on the speed, see respective chart.
[2)] Increase of the admissible values by the use of a long power bridge or additional free-sliding power bridge (page 26 and 27).

Order Code see page 123

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. In this way, dirt is prevented from getting cought between the roller and the guide rail. This means that the WIESEL *SPEEDLine*® units can also be used in environments in which the guide tubes are exposed to exessive 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.

Size	Dimension x
WH50	6
WH80	7
WH120	8



Mounting brackets KAO

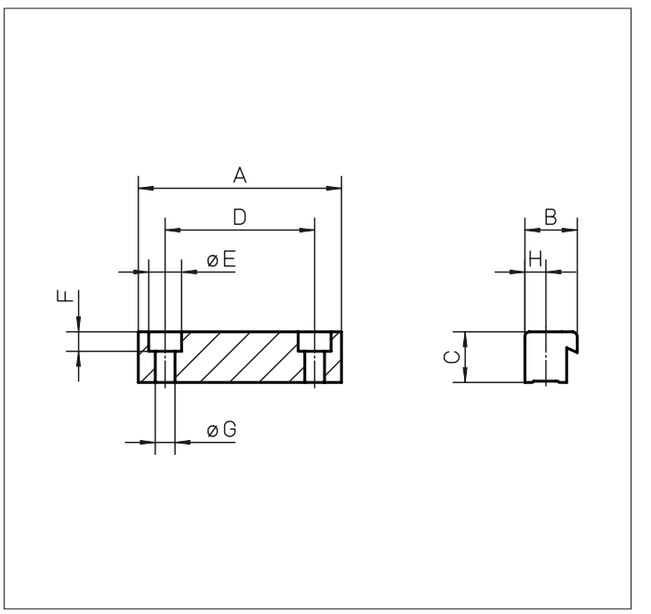
The mounting brackets KAO serve for mounting the WIESEL® unit to a mounting surface. They are inserted in the grooves provided in the sides of the tubular aluminium profile and screwed onto the mounting surface with the aid of cylinder head screws.
The number of mounting brackets required depends on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

Tightening torque of the attachment screws

Size	Torque [Nm]*
WH40	5.4
WH50	5.4
WH80	9
WH120	19–22

* for cylinder head screw DIN ISO 4762-8.8 unoiled on aluminium

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 borne without significantly deforming the tubular aluminium profile.



System brackets KAO

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

	Dimensions [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

Order Code see page 123

Accessories for WIESEL *SPEED*Line®
Long power bridge

NEFF Antriebstechnik · Automation

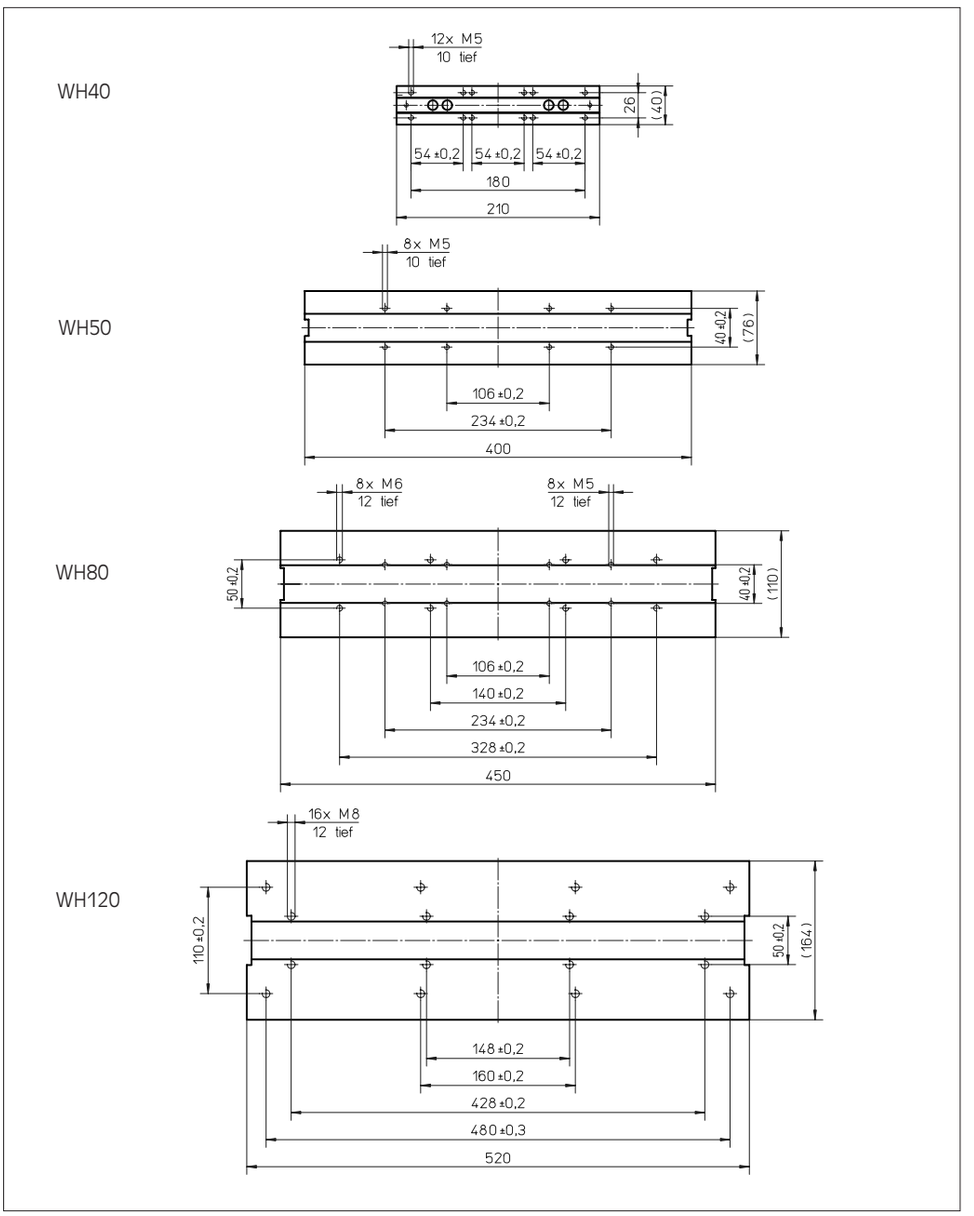
Long power bridge LKB

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} = stroke + C + ΔKb

L_{tot} = Overall length WIESEL® [mm]
C = Specific additional length [mm] (see technical data of the respective WIESEL®)
Example: WH80
L= Stroke + 550 (≙Lc) ±1
Stroke = Required stroke [mm]
ΔKb = Difference in length between long and standard power bridge [mm]



Size	Δ Kb	Length of power bridge [mm]	My [Nm]	Mz [Nm]
WH40	90	210	50	50
WH50	160	400	130	75
WH80	170	450	345	150
WH120	240	520	1395	750
WHZ50	160	400	130	75
WHZ80	170	450	345	150

Note: All other limit values are comparable to those versions with standard power bridge.

Note: High load moments lead to major deformation of the tubular aluminium profile. The distance between supports should be reduced in order to minimize this deformation. The force must be applied only in the area of the tapped holes.

Order Code see page 123

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 centre distance between the driven and the free-sliding power bridge is calculated as follows:

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

L_A = Centre 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 centre 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 + C + L_A

C = Specific additional length [mm]
(see technical data of the respective WIESEL®)
Example: WH80
L= Stroke + 550 (≙Lc) ±1

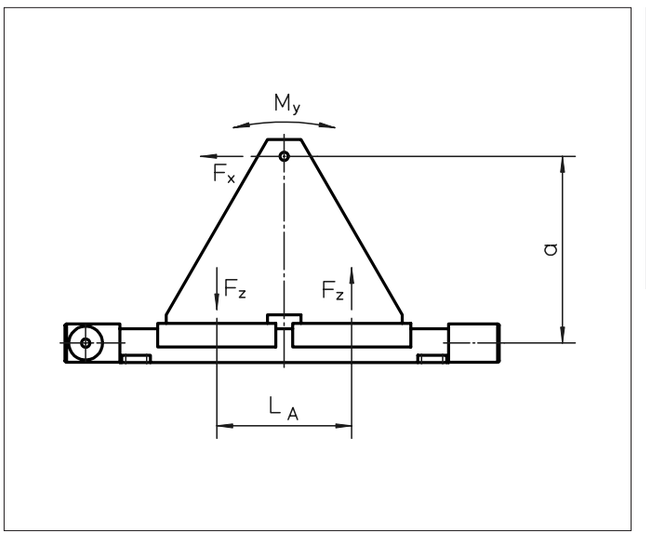
Minimum centre distance L_A between driven and free-sliding power bridge (given for standard power bridge).

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 aluminium profile. The distance between supports should be reduced in order to minimize this deformation.



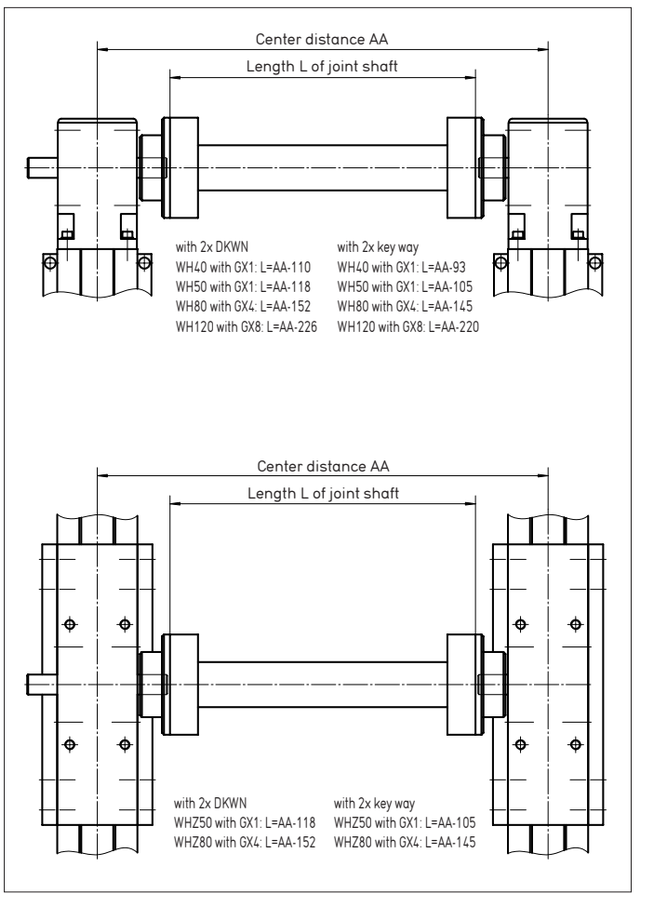
Order Code see page 123

Accessories for WIESEL *SPEED*Line®
Universal joint shaft

NEFF Antriebstechnik · Automation

Universal joint shaft GX

By means of the universal joint shaft GX two WIESEL® units with tooth belt drive are connected in parallel. The universal joint shaft transmits the torque from one WIESEL® unit to the other. Long connecting shafts should be supported over their length. The required pillow blocks are available on request.



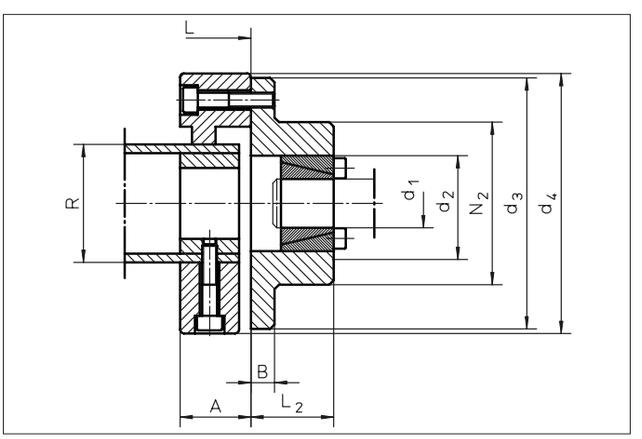
Technical data

Size	M1[1]	M2 [2]	m1[3]	m2[4]	J1[5]	J2[6]	M_A[7]
GX1	10	21	0.47	1.05	2.68	2.15	1.2
GX4	60	75	2.31	1.61	21.4	7.63	9.7
GX8	120	200	3.55	2.16	78	18.58	16.5

[1] Transmittable torque [Nm]
[2] Max. input torque at the input shaft of the linear drive unit [Nm]
[3] Weight without middle part [kg]
[4] Weight of middle part [kg/m]
[5] Mass inertia of the two connectors [kgcm²]
[6] Mass inertia of the shaft [kgcm²/m]
[7] Starting torque of the tensoring screws of the DKWN tensioning element [Nm]

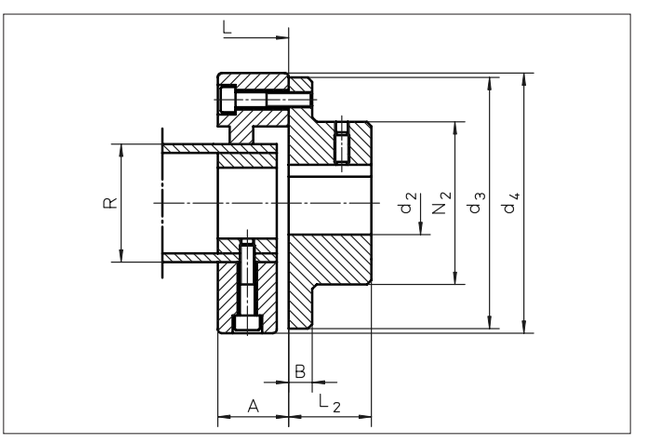
Execution with tensioner (standard feature)

Size	Dimensions [mm]								
	A	B	d_1	d_2	d_3	d_4	L_2	N_2	R
GX1	24	7	8	18	56	56	24	36	30
GX2	24	7	12	22	56	56	24	36	30
GX4	28	8	20	38	100	100	30	65	45
GX8	32	10	25	47	120	125	42	80	60



Execution with key way (on request)

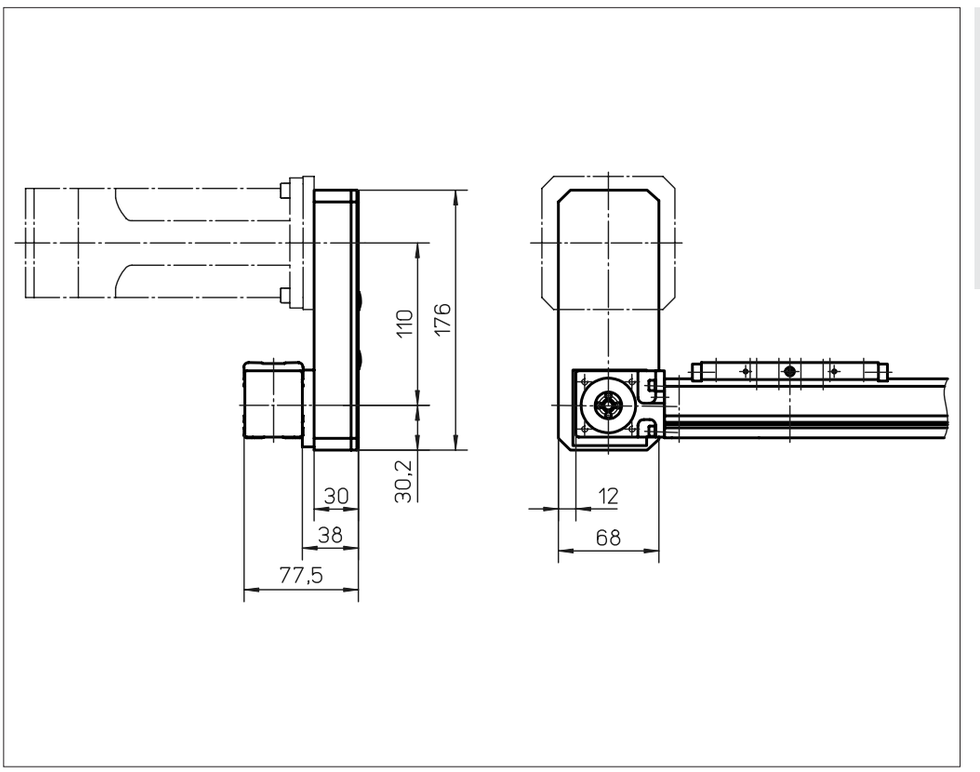
Size	Dimensions [mm]								
	A	B	$d_{2min.}$	$d_{2max.}$	d_3	d_4	L_2	N_2	R
GX1	24	7	10	25	56	56	24	36	30
GX4	28	8	16	45	100	100	30	65	45
GX8	32	10	20	55	120	125	42	80	60



Order Code see page 123

RT timing belt drive

The RT40 belt drive is a transmission designed to minimize the overall length. The RT housing is both belt guard and motor support.
Transmission ratios of 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	3.7	1800	0.3	0.8	0.25	0.62

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

Order Code see page 123

Accessories for WIESEL *SPEED*Line®
Mechanical limit switches

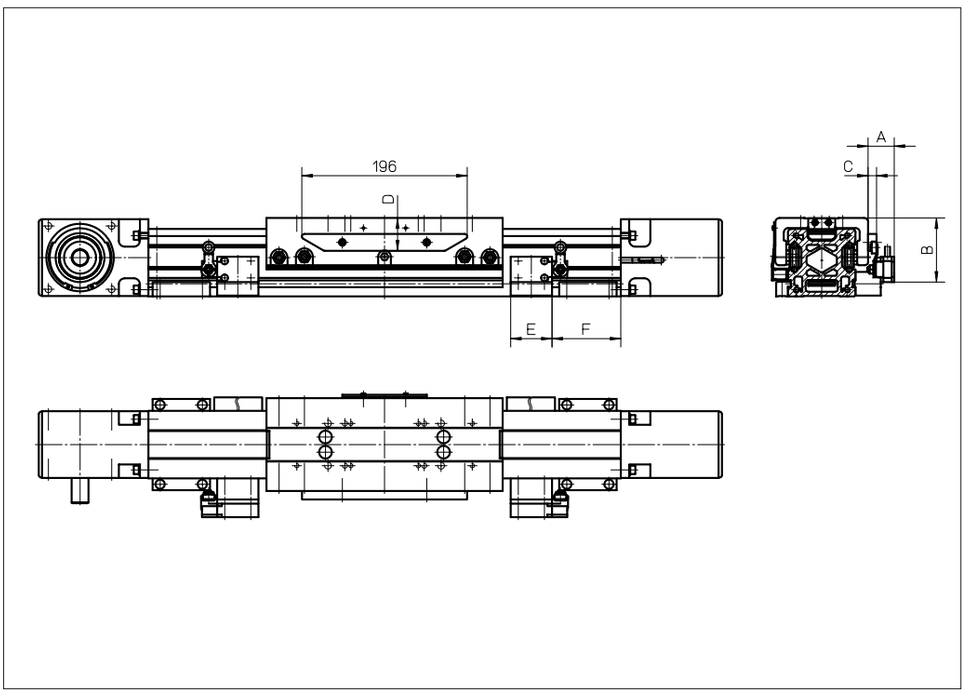
Antriebstechnik · Automation

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 fittet in the groove which also accommodates the KA0 mounting brackets in the aluminium 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
Cable length:
1 m. Id.-No.: 6715450281
5 m. Id.-No.: 6715450290
10 m. Id.-No.: 6715450299



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 can not be fixed by means of the mounting brackets KA0 in the range of the fixing plates for the mechanical limit switches.
Security limit switches serve to cut off energy from the drive for sure. Whenever they are running at high speeds, they can not 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 at low speeds.

Order Code see page 123

Shaft encoder attachment ADG

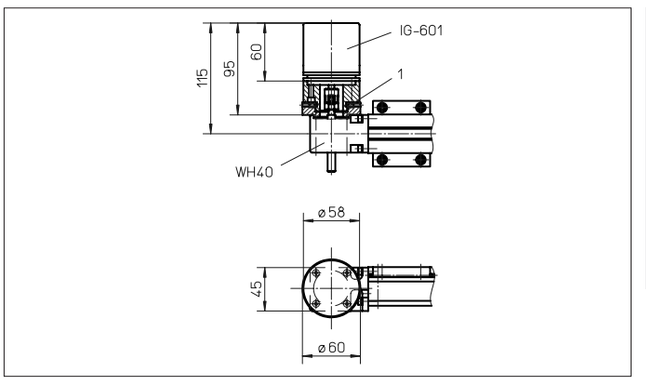
Incremental shaft encoders can be used in combination with mechanical drive elements to measure displacements. This is achieved by mounting the shaft encoder on the movable bearing end of the WIESEL® shaft. The mounting of the shaft encoder is possible only at the drive bearing housing, not at the tensioning bearing housing.

As a standard NEFF uses the incemental shaft encoder IG601 with impulse counts between 100 and 2500.
Two output circuits are basically possible:
GE = Push-pull output, 10–30 V
LD = Line Driver, antivalent
as per RS422 (5V± 10%)
Detailed information see chapter "shaft encoder" (page 109).

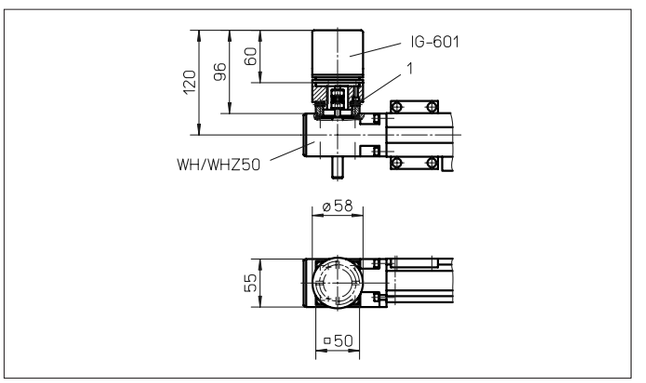
The shaft encoder is connected to the WIESEL® via a two-piece adapter flange and a coupling. It can be adjusted to the required reference point by loosening the threaded studs.

Absolute-value encoders on request.

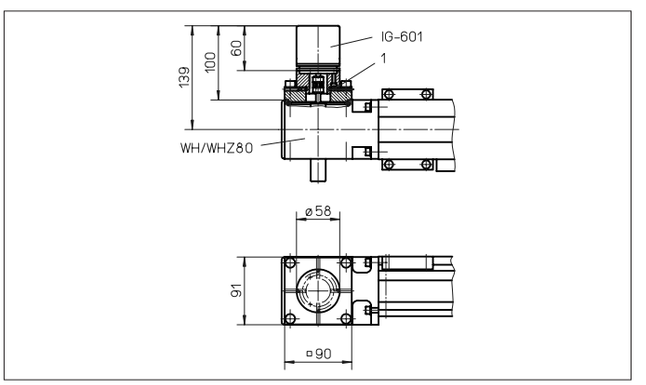
IG601 mounted on WH40



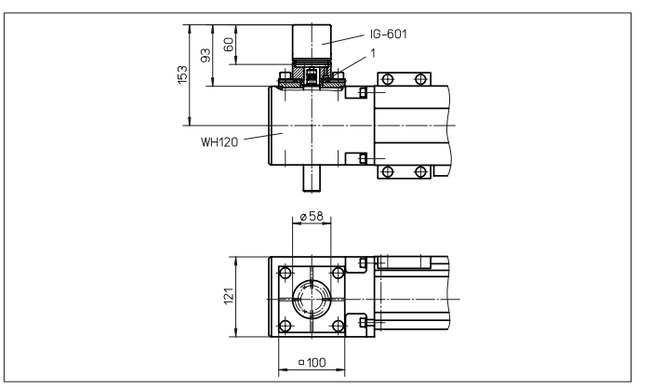
IG601 mounted on WH50



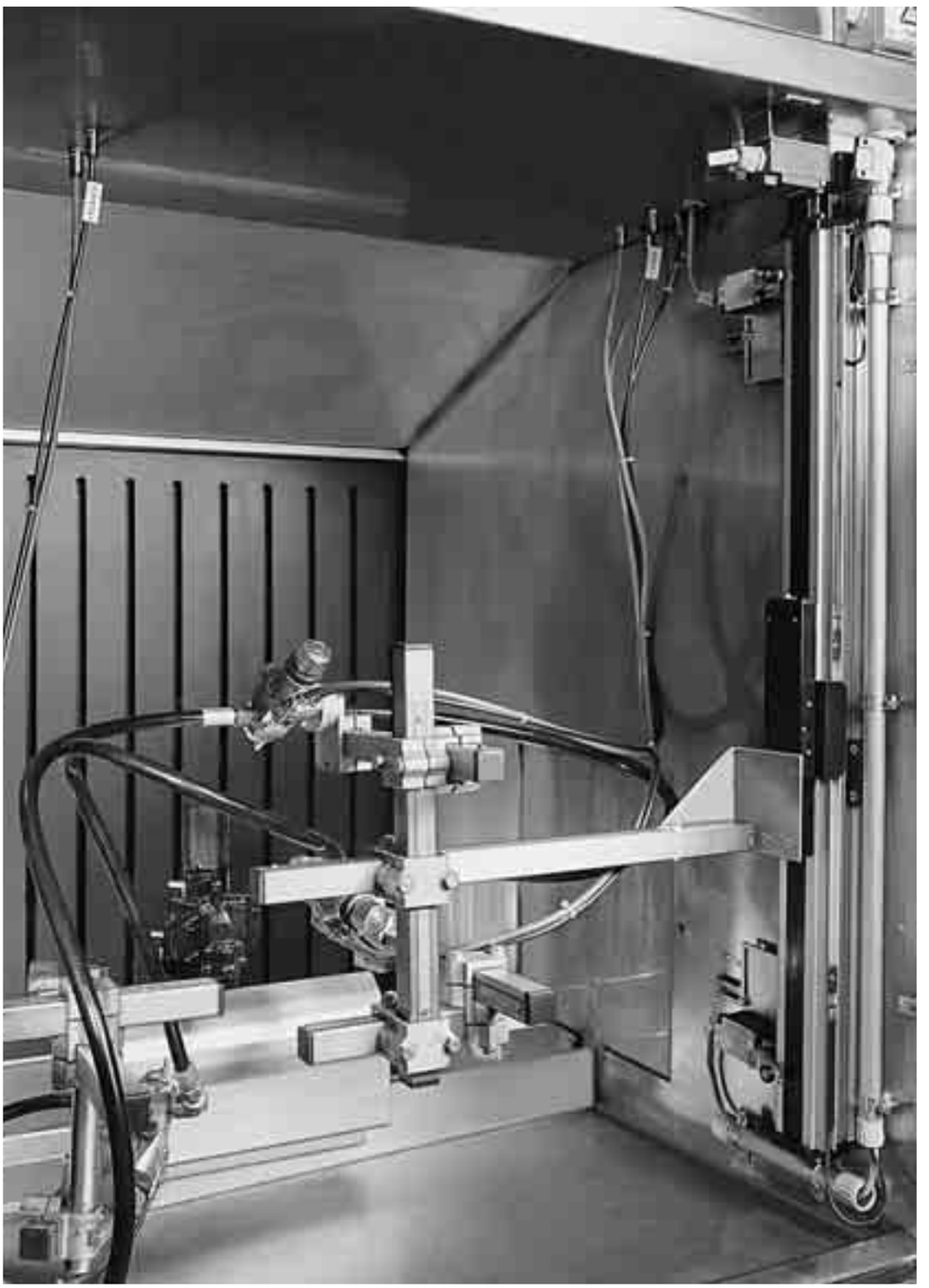
IG601 mounted on WH80



IG601 mounted on WH120



Order Code see page 123



Enameling line; Sturm
in Hankhofen, Germany

Mechanical linear drive units
WIESEL *POWER*Line®, WIESEL *DYNA*Line®

WIESEL *POWER*Line®
WM60/80 ZRT

- Fully integrated drive unit with toothed belt drive and linear ball-recirculating guide.
- Transmission of the feed force and handling of loads and load moments.

WIESEL *POWER*Line®
WM40

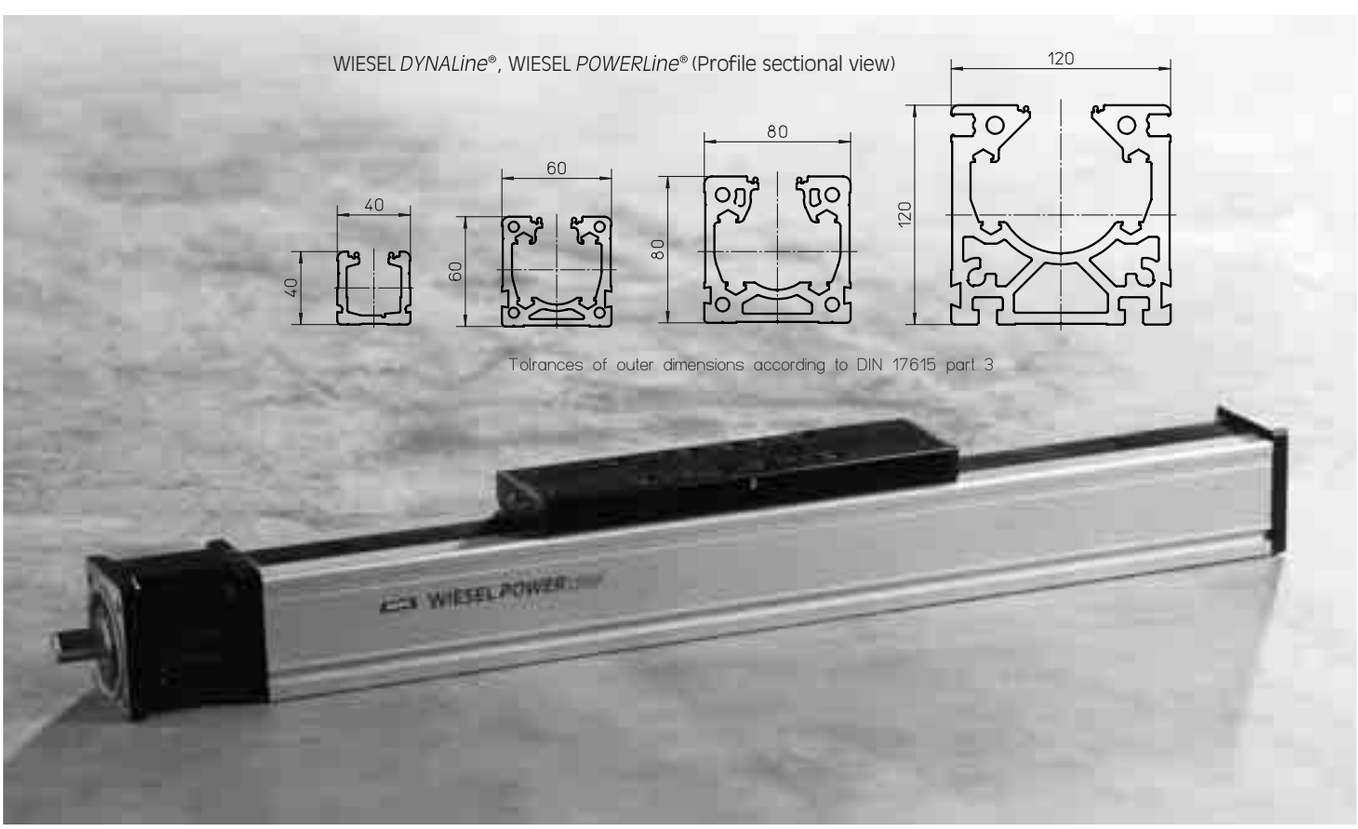
- Fully integrated miniaturized linear drive unit with linear guide, ball screw drive and sealing strip

WIESEL *POWER*Line®
WM60/80/120

- Fully integrated linear drive unit with ball screw and linear ball-recirculating guide
- Transmission of the feed force and handling of loads and load moments
- Size WM60/80-370 with short guide system.

WIESEL *DYNA*Line®
WV60/80/120

- Fully integrated feed axis with ball screw
- Transmission of the feed force
- Used in combination with external linear guides



Applications for linear drive units
Examples from actual practice

NEFF®
Antriebstechnik · Automation

General technical data
WIESEL *POWER*Line®, *DYNA*Line®, *FORCE*Line®, WO

NEFF® Antriebstechnik · Automation

Linear speeds

The linear speed achieved by a linear drive unit depends on the pitch 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]	5	3000	0.25
	10	3000	0.5
	20	3000	1
	40	3000	2
	50	3000	2.5
ZRT[3]20ATL5	120	1250	2.5
ZRT[3]25AT10	170	885	2.5
ZRT[3]32ATL5	135	2889	6.5

[1] TGT: Trapezoidal srew 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. In case of a break of the toothed belt, the load is released by timing belt driven linear units. Therefore safety precautions have to be taken for applications which are critical with regard to security.

Maximum forces

All maximum forces and moments given refer to the centre/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 120

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 time.

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. Temperatures up to 100° C 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 aluminium profiles (material AlMgSi 0.5) 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 NEFF 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 *FORCELine*®
Material: Polyamide 12
Characteristics:
- Resistant to alkaline solutions
- Conditionally resistant to acids
- Rigid
- Abrasionproof
- Little absorbtion of humidity
- Light-resisting

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 basically are also available as guide tube (exept WIESEL *DYNALine*® and *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 reapeatability is defined as the capability of a linear drive unit to reach an actual position that has once been reached again under the same conditions. It refers to the average position variation according to VDI/DGQ 3441. The repeatability is influenced, amongst others by:
- Load
- Speed
- Deceleration
- Direction of travel
- Temperature

Aggressive working environment

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. Upon request.

Maintenance

The mechanical components (ball screw drive and linear ball recirculating 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: roller bearing grease (original grease Fuchs Lubritec URETHYN E/M1).

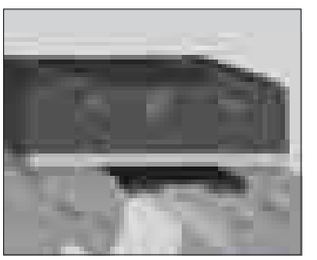
Tensioning of the toothed belt
The tensioning of the toothed belt can be adjusted with the aid of the tensioning screws on the guide casing which are intended for this. The linear units are delivered with optimal tension values in order to guarantee security in function. Changes in this adjustment must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

NEW: WIESEL*POWER*Line®
with toothed belt drive
The best ideas make it simple for you.

NEFF®
Antriebstechnik · Automation

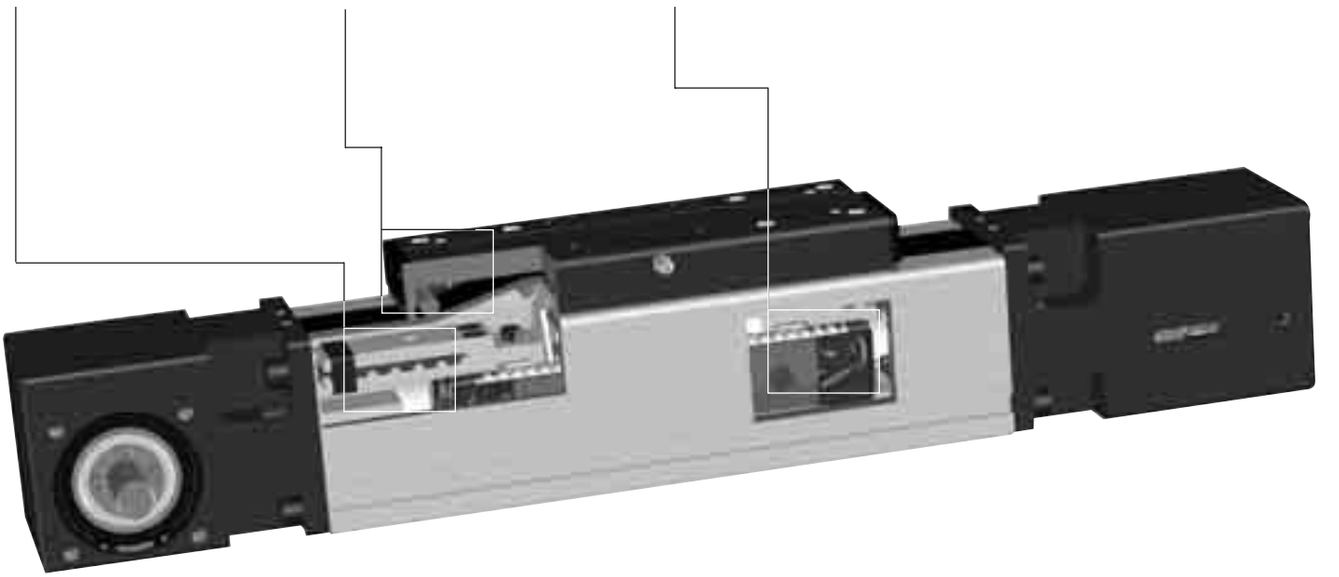
The new WIESEL *POWER*Line® ZRT combines the high dynamics of the toothed belt drive with the powerful fully integrated ball recirculating guide of the *POWERLine*® system. The pa-tented cover strip protects the guide system safely against dirt. The version 370 offers an attractive price reduction with 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.



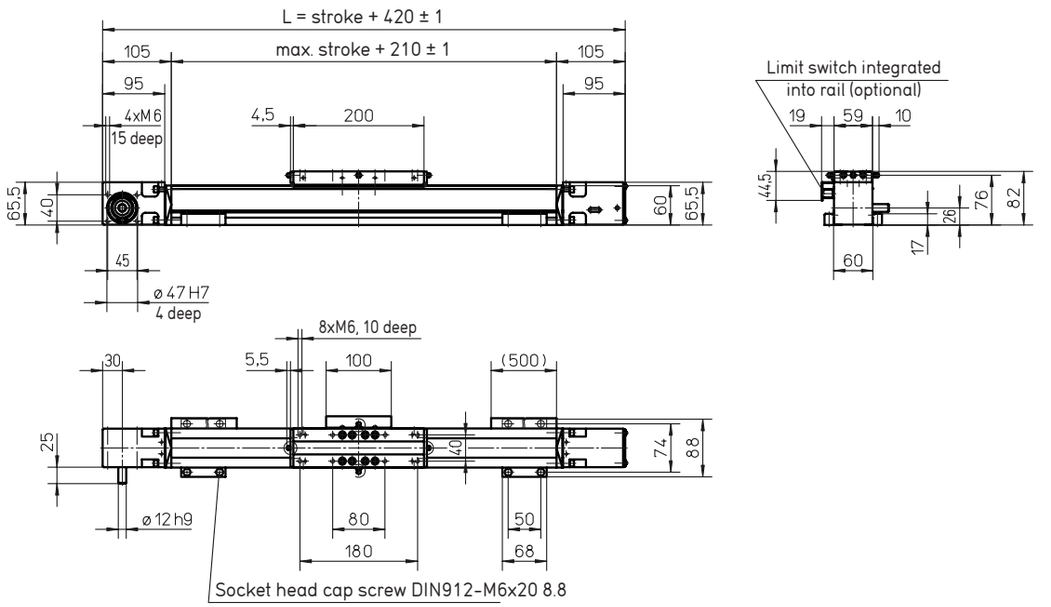
Patented cover strip
The patented, self-adjusting cover strip is a reliable protection from dirt.

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



WIESEL *POWER*Line® WM60-370 ZRT
with toothed belt drive and integrated short ball-recirculating guide system

NEFF® Antriebstechnik · Automation



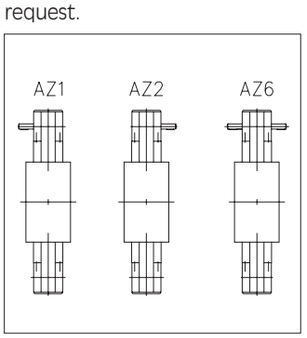
○ Tapered lubricating nipple to DIN 71412 AM6 on fixed-bearing side as standard feature
Ↄ Can be changed over to one of the three alternative lubricating points by the customer

Technical data

- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 20 m/s^2
- Drive element: Toothed belt 20ATL5
- Pully diameter: 38.20 mm
- Stroke per revolution: 120 mm
- Stroke length: 4000 mm
- Length of power bridge: 200 mm
- Geometrical moment of inertia: Iy 5.62 · 10^5 mm^4, Iz 5.94 · 10^5 mm^4
- Weights
  Basic unit with zero stroke: 4.30 kg
  100 mm stroke: 0.45 kg
  Power bridge with carriage: 1.25 kg
- Provided: with 4 pieces KA0 mounting brackets

Execution of drive shafts

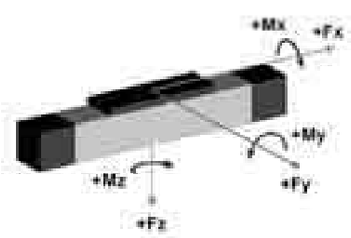
(Detailed description see page 123). Other executions on request.



Idle torques [Nm]

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

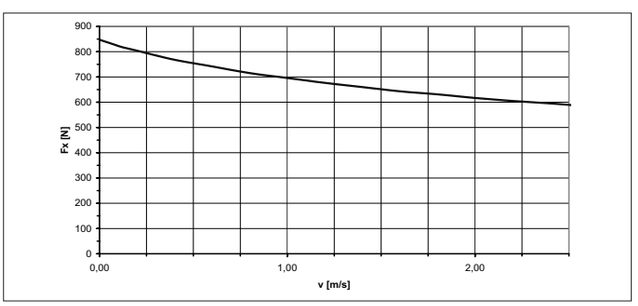
Loads and load moments



Load	dynam. [N]
Fx drive[1]	850
Fy	1400
+/- Fz	1400

Load moment	dynam. [Nm]
Mx	25
My[2]	50
Mz[2]	50

FX depending on the linear speed

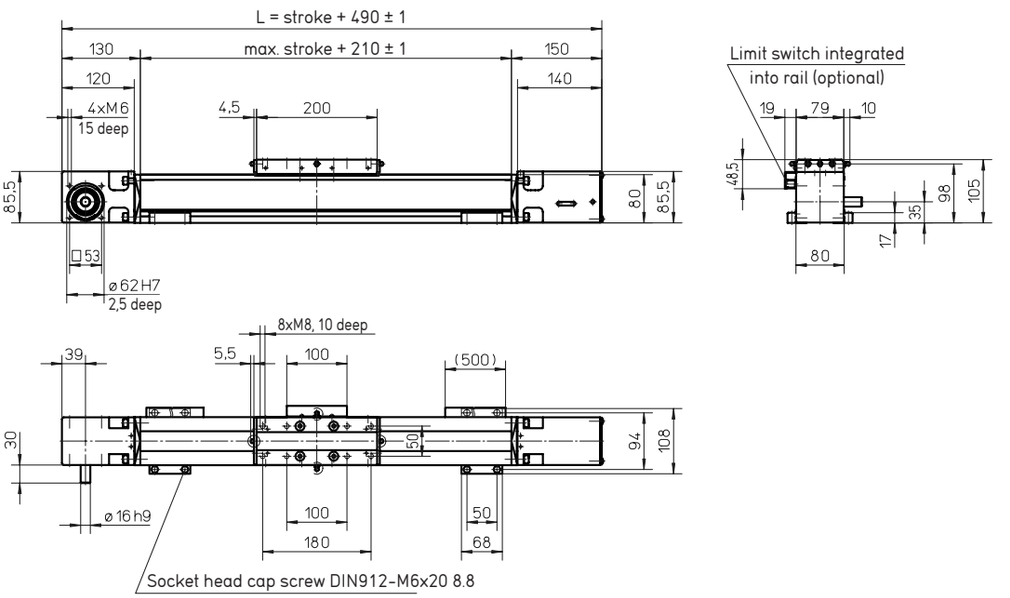


Order code see page 124

[1] Depending on the speed, see respective chart
[2] Increase of the admissable values by the use of an additional free-sliding power bridge (see page 55, 56).

WIESEL *POWER*Line® WM80-370 ZRT
with toothed belt drive and integrated short ball-recirculating guide system

Antriebstechnik · Automation



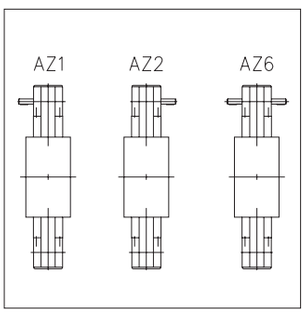
○ Tapered lubricating nipple to DIN 71412 on fixed-bearing side as standard feature
☽ Can be changed over to one of the three alternative lubricating points by the customer

Technical data

- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 20 m/s²
- Drive element: Toothed belt 25AT10
- Pully diameter: 54.11 mm
- Stroke per revolution: 170 mm
- Stroke length: 5500 mm
- Length of power bridge: 200 mm
  see page 55
- Geometrical moment of inertia: Iy 1.89 · 10^6 mm⁴
  Iz 1.97 · 10^6 mm⁴
- Weights
  Basic unit with zero stroke: 9.20 kg
  100 mm stroke: 0.80 kg
  Power bridge with carriage: 2.10 kg
- Provided: with 4 pieces KA0 mounting brackets

Execution of drive shafts

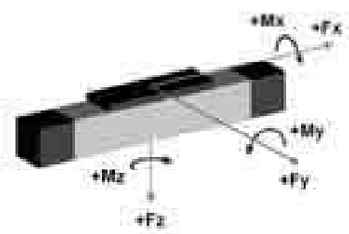
(Detailed description see page 123). Other executions on request.



Idle torques [Nm]

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

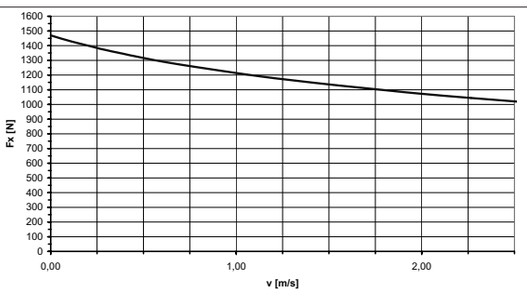
Loads and load moments



Load	dynam. [N]
Fx drive[1]	1470
Fy	2100
+/- Fz	2100

Load moment	dynam. [Nm]
Mx	68
My[2]	135
Mz[2]	135

FX depending on the linear speed

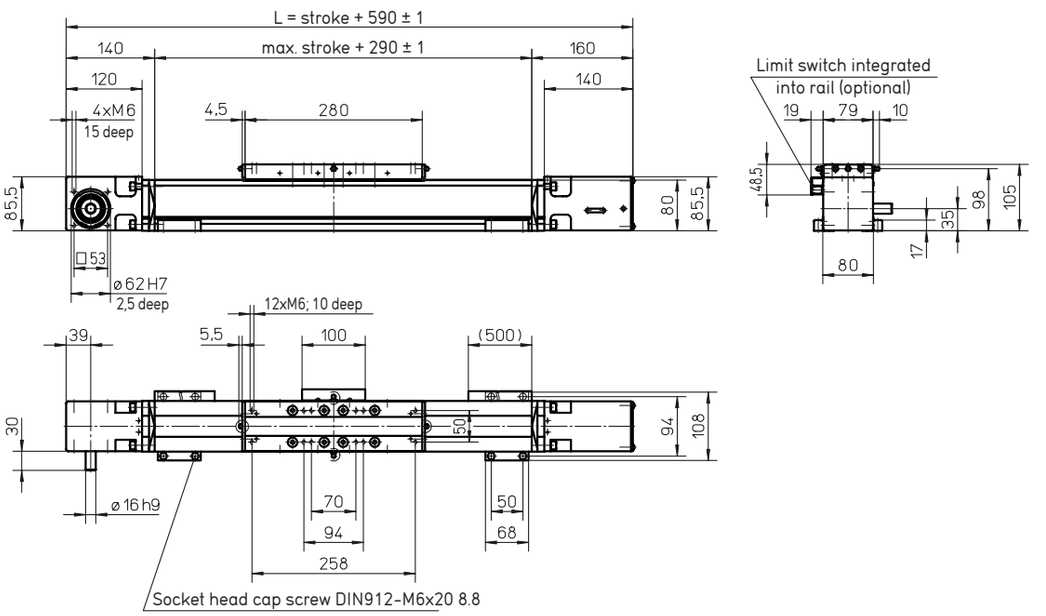


Order code see page 124

[1] Depending on the speed, see respective chart
[2] Increase of the admissable values by the use of an additional free-sliding power bridge (see page 55, 56).

WIESEL *POWER*Line® WM80 ZRT
with toothed belt drive and integrated ball-recirculating guide

Antriebstechnik · Automation



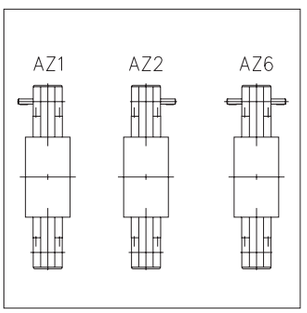
○ Tapered lubricating nipple to DIN 71412 AM6 on fixed-bearing side as standard feature
☽ Can be changed over to one of the three alternative lubricating points by the customer

Technical data

- Linear speed: max. 2,5 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 20 m/s²
- Drive element: Toothed belt 25AT10
- Pully diameter: 54.11 mm
- Stroke per revolution: 170 mm
- Stroke length: 5400 mm
- Length of power bridge: 280 or 450 mm
  see page 55
- Geometrical moment of inertia: Iy 1.89 · 10^6 mm⁴
  Iz 1.97 · 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: with 4 pieces KA0 mounting brackets

Execution of drive shafts

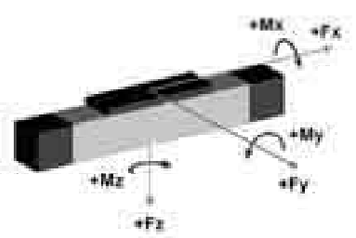
(Detailed description see page 123). Other executions on request.



Idle torques [Nm]

Rotation speed [rpm]	M_{idle} [Nm]
150	6.5
450	7.7
885	9.3

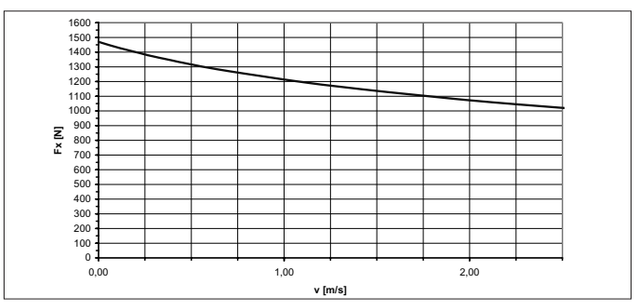
Loads and load moments



Load	dynam. [N]
Fx drive[1]	1470
Fy	3000
+/- Fz	3000

Load moment	dynam. [Nm]
Mx	150
My[2]	300
Mz[2]	300

FX depending the linear speed



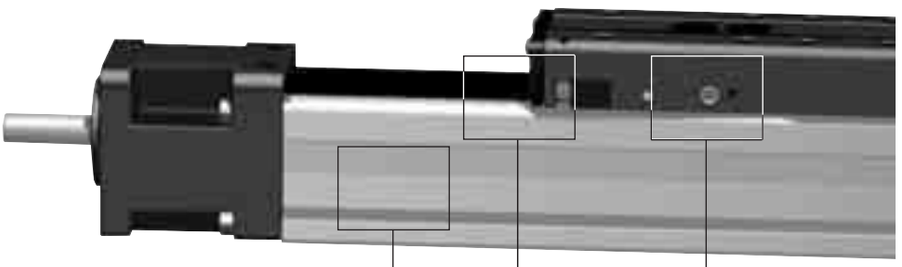
Order code see page 124

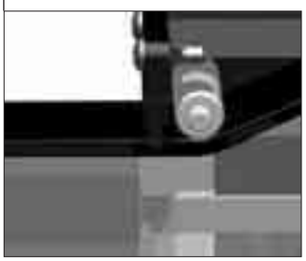
[1] Depending on the speed, see respective chart
[2] Increase of the admissable values by the use of a long power bridge or additional free-sliding power bridge (see page 55, 56).

WIESEL *POWER*Line®, WIESEL *DYNA*Line®
with ball screw drive
Innovative solutions, down to the very last detail

WIESEL *POWER*Line®
WM40

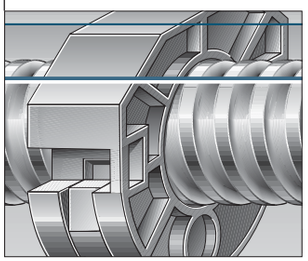
The linear drive unit for miniaturized applications. High performance with extremly small dimensions. The NEFF ball screw drive in combination with the high precision linear guide allows precise positioning.





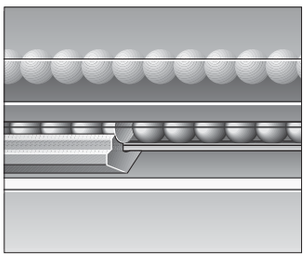
Patented sealing strip

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



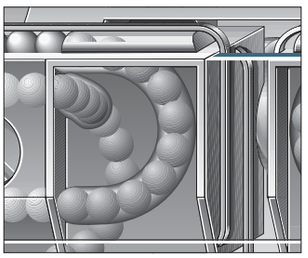
Screw support

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



Well proven and patented guide system*

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

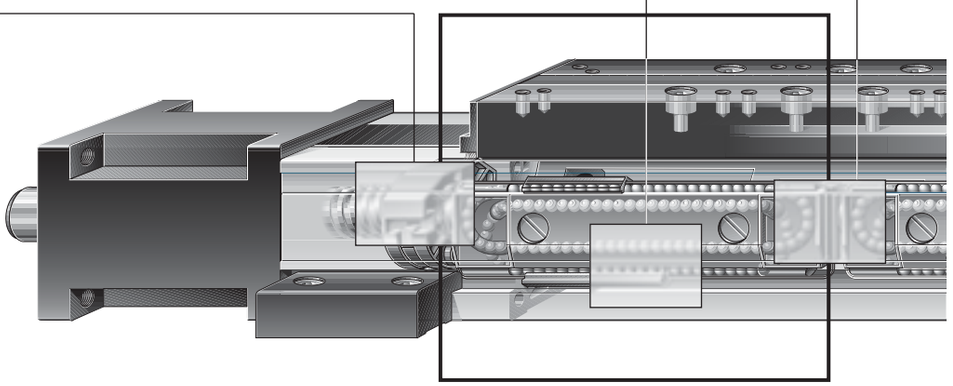


Ball cage*

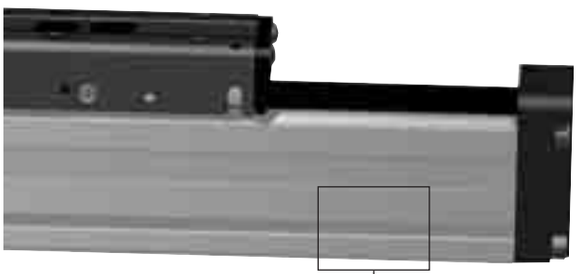
The ball's of the linear guides are protected by a ball cage. They can be replaced quickly and safely.

WIESEL *POWER*Line®
WM60, WM80, WM120

The **WIESEL *POWER*Line®** is an extremely powerful linear drive unit with ball screw drive and integrated ball-recirculating guide. It allows high feed forces and load moments in all directions.

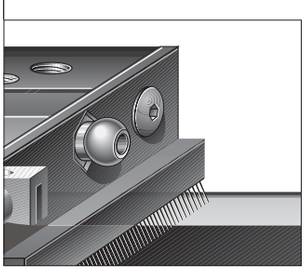


WIESEL *POWER*Line® detail



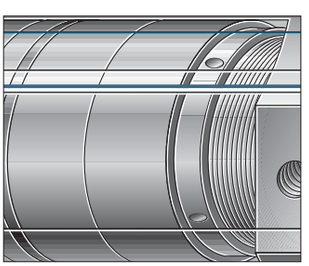
Linear guides

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.



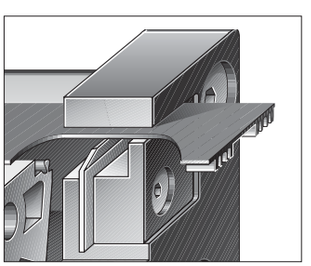
Central lubrication – a standard feature.

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.



Optimized ball screw drive

The pre-tensioning of the nut unit can be adjusted by the NEFF service. This increases the lifetime of the axis.

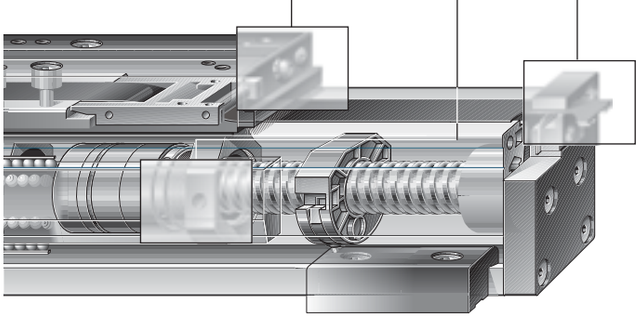


Self-adjusting third-generation cover strip

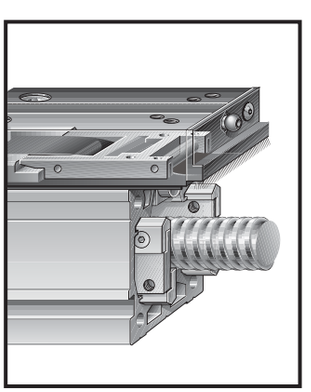
The patented cover strip reliably protects the mechanical parts against excessive dirt and is retensioned automatically. Result: the maintenance effort is reduced to virtually zero.

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.



*only applies to ***POWER***Line*®

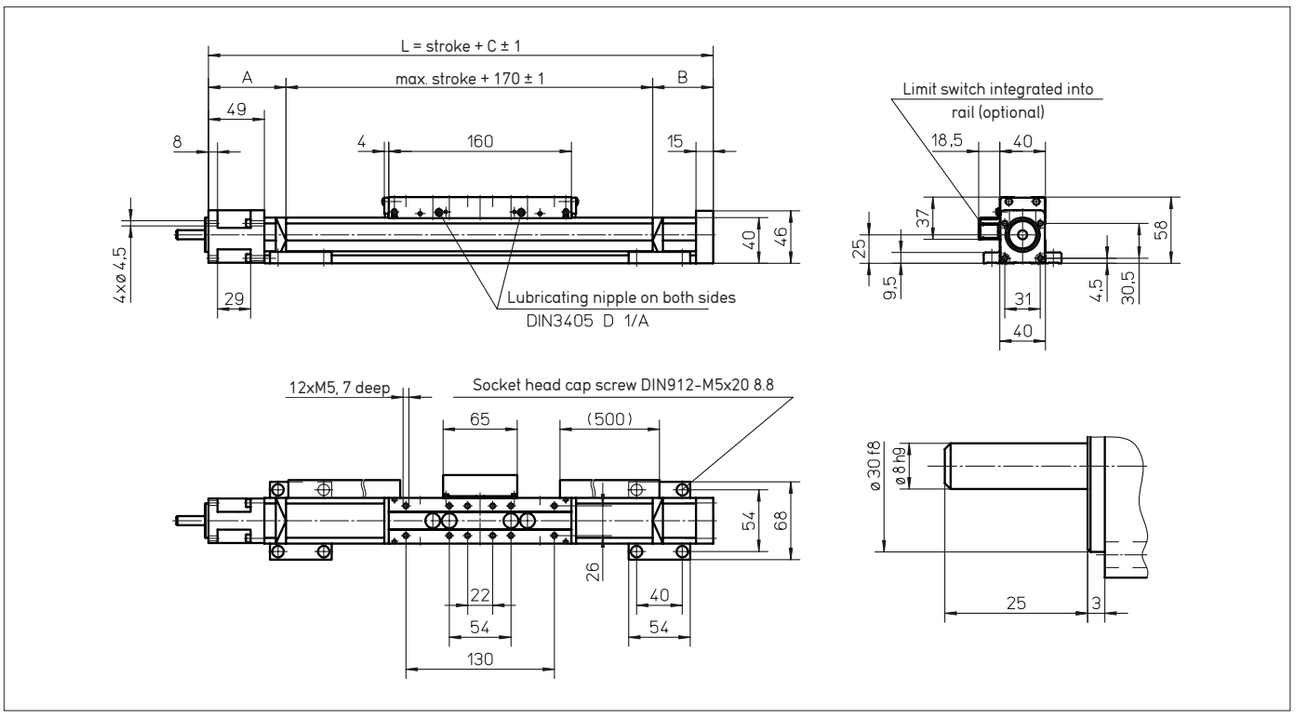


WIESEL *DYNA*Line® detail

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 *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 2.000 mm
- Power bridge: 160 or 210 mm long
  see page 55
- Geometrical moment of inertia: ly 10.8 · 10^4 mm⁴
  lz 13.4 · 10^4 mm⁴
- Weights
  Basic unit with zero stroke: 1.5 kg
  100 mm stroke: 0.3 kg
  Power bridge with carriage: 0.36 kg
- Provided: with 4 pieces KAO mounting brackets

*with double nut preloaded
**single nut with low backlash or double nut preloaded

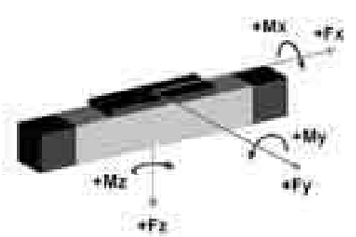
Idle torques [Nm]

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

Additional lenghts as a function of the stroke

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

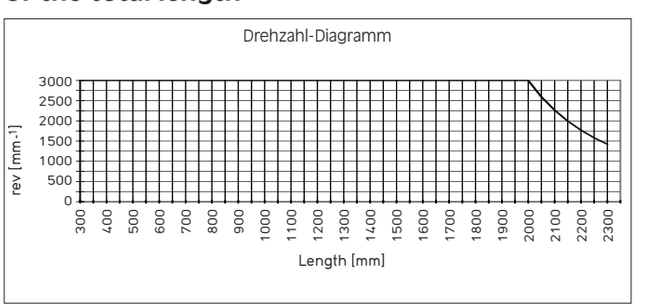
Loads and load moments



Load	dynam. [N]
Fx drive	1000
Fy	450
± Fz	600

Load moment	dynam. [Nm]
Mx	10
My[1)]	30
Mz[1)]	30

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

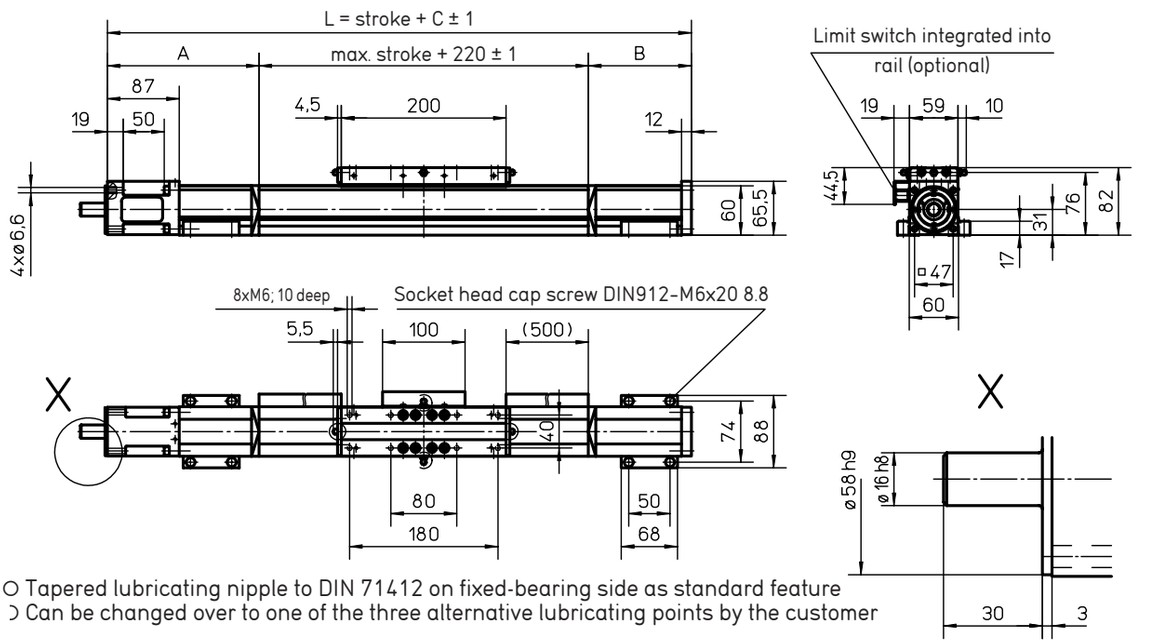


Order code see page 124

[1)] Increase of the admissable values by the use of a long power bridge or additional free-sliding power bridge (see page 55, 56).

WIESEL *POWER*Line® WM60 - 370
with ball screw drive and integrated
short ball-recirculating guide system

Antriebstechnik · Automation



○ Tapered lubricating nipple to DIN 71412 on fixed-bearing side as standard feature
☽ Can be changed over to one of the three alternative lubricating points by the customer

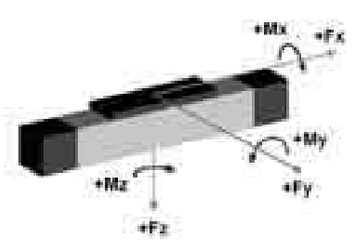
Technical data

- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.02 mm
- Acceleration: max. 10 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Ball screw with single nut, low backlash
  Diameter: 20 mm
  Lead: 5, 20, 50 mm
- Stroke length: up to 5000 mm
- Power bridge: 200 mm long see page 55
- Geometrical moment of inertia: Iy 5.8 · 10^5 mm⁴ Iz 5.9 · 10^5 mm⁴
- Weights
  Basic unit with zero stroke: 3.80 kg
  100 mm stroke: 0.65 kg
  Power bridge with carriage: 1.00 kg
- Provided: with 4 pieces KA0 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

Loads and load moments



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

Load moment	dynam. [Nm]
Mx	50
My[1)]	100
Mz[1)]	100

Additional lengths as a function of the stroke

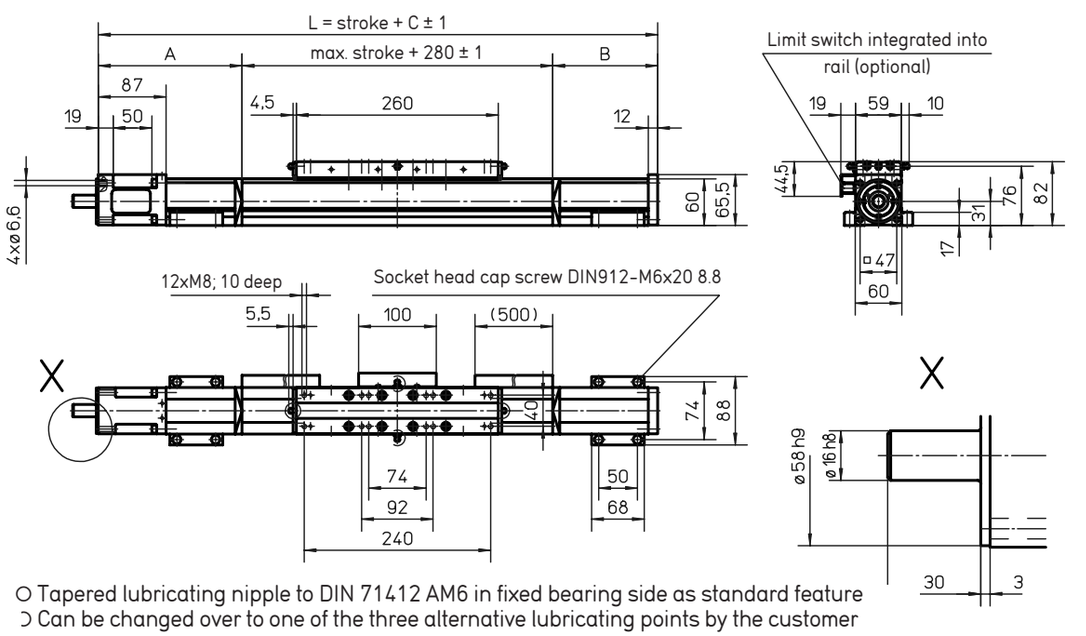
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–580	95	20	335
581–1140	110	60	390
1141–1805	130	80	430
1806–2460	155	105	480
2461–3125	175	125	520
3126–3780	200	150	570
3781–4445	220	170	610
4446–5000	240	190	650

Order code see page 124

[1)] Increase of the admissable values by the use of an additional free-sliding power bridge (see page 55).

WIESEL *POWER*Line® WM60
with ball screw drive and integrated ball-recirculating guide system

Antriebstechnik · Automation



○ Tapered lubricating nipple to DIN 71412 AM6 in fixed bearing side as standard feature
Ↄ Can be changed over to one of the three alternative lubricating points by the customer

Technical data

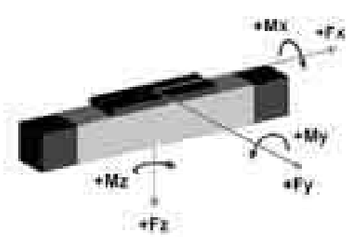
- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.01 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Pretensioned ball screw
  Diameter: 20 mm
  Lead: 5, 20, 50 mm
- Stroke length: up to 11.000 mm
  with pitch 50 mm
  max. 5000 mm
- Power bridge: 260 or 450 mm long
  see page 55
- Geometrical moment of inertia: Iy 5.8 · 10^5 mm⁴
  Iz 5.9 · 10^5 mm⁴
- Weights
  Basic unit with zero stroke: 6.16 kg
  100 mm stroke: 0.65 kg
  Power bridge with carriage: 1.99 kg
- Provided: with 4 pieces KAO mounting brackets

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

Note: For tube lengths of 6300 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 specification. For screw leads > 20 mm, excess lengths cannot be implemented.

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

Additional lengths as a function of the stroke

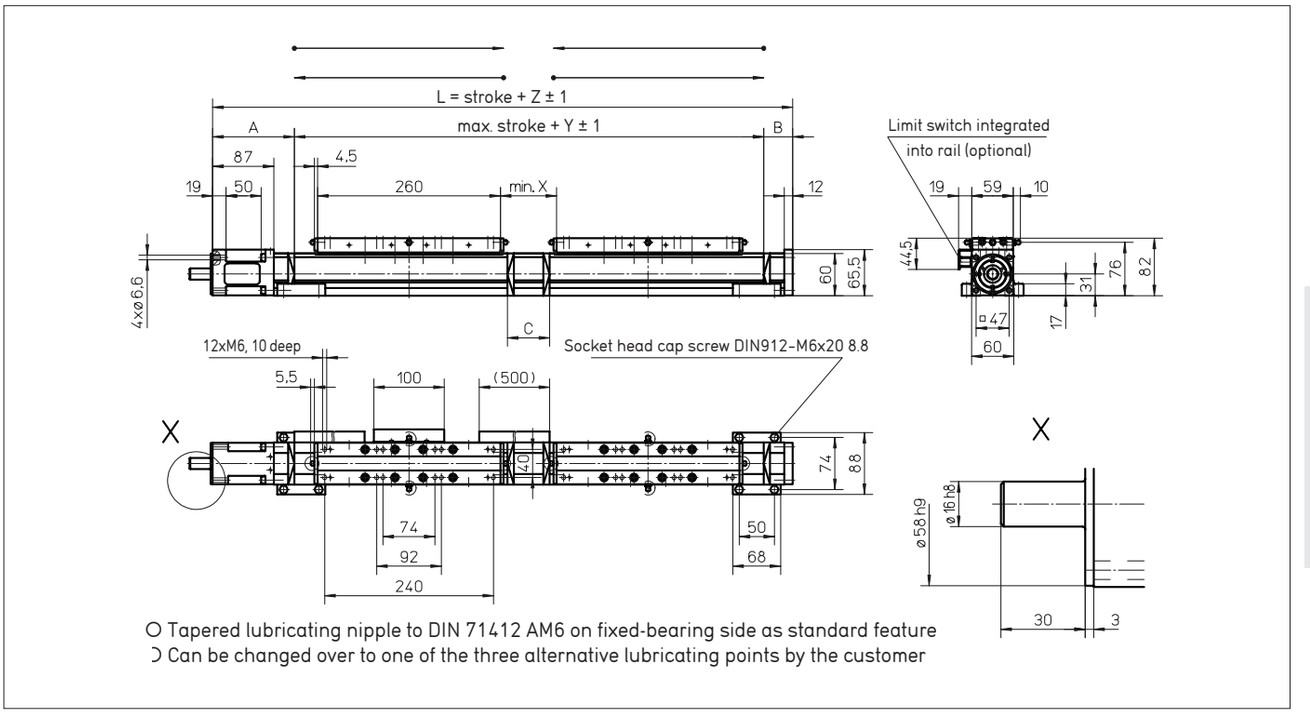
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–695	115	65	460
696–1335	165	115	560
1336–2075	185	135	600
2076–2780	210	160	650
2781–3545	230	180	690
3546–4285	250	200	730
4286–5015	275	225	780

Order code see page 124

[1)] Increase of the admissable values by the use of a long power bridge or additional free-sliding power bridge (see page 55, 56).

WIESEL *POWER*Line® WM60 - 500
with ball screw drive and integrated ball recirculating guide system in right-/left execution

Antriebstechnik · Automation



○ Tapered lubricating nipple to DIN 71412 AM6 on fixed-bearing side as standard feature
Ↄ Can be changed over to one of the three alternative lubricating points by the customer

Technical data

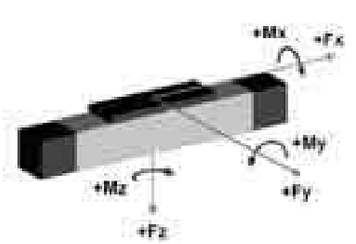
- Linear speed: max. 0.25 m/s
- Repeatability: ± 0.01 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Pretensioned ball screw
  Diameter: 20 mm
  Lead: 5 mm
- Stroke length: up to 10340 mm[1)]
  [1)]refered to both power bridges
- Power bridge: 260 or 450 mm long
  see page 55
- Geometrical moment of inertia: Iy 5.8 · 10^5 mm⁴
  Iz 5.9 · 10^5 mm⁴
- Weights
  Basic unit with zero stroke: 10.33 kg
  100 mm stroke: 0.65 kg
  Power bridge with carriage: 1.99 kg
- Provided: with 4 pieces KA0 mounting brackets

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

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

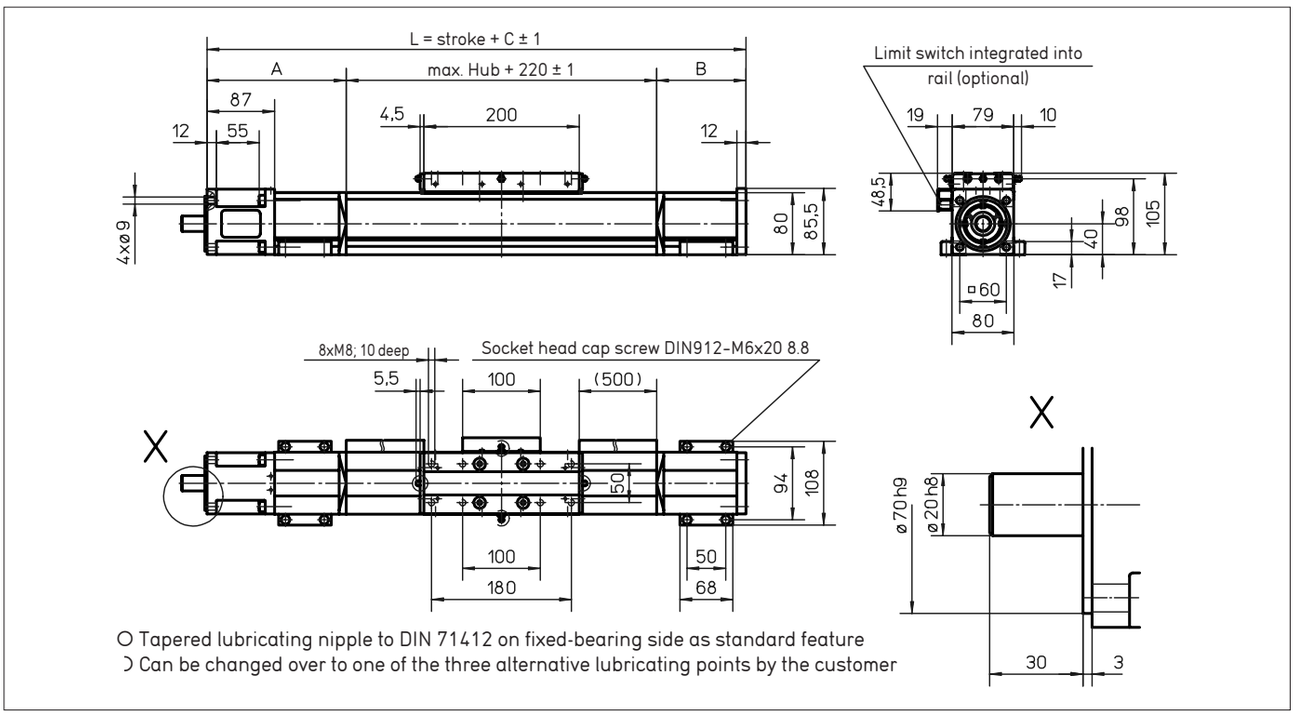
Additional lengths as a function of the stroke

Stroke length [mm]	A [mm]	B [mm]	C [mm]	X [mm]	Y [mm]	Z [mm]
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

Order code see page 124

WIESEL *POWER*Line® WM80 - 370
with ball screw drive and integrated short ball-recirculating guide system

Antriebstechnik · Automation



○ Tapered lubricating nipple to DIN 71412 on fixed-bearing side as standard feature
☽ Can be changed over to one of the three alternative lubricating points by the customer

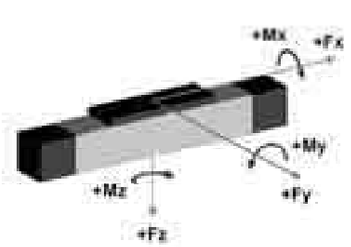
Technical data

- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.02 mm
- Acceleration: max. 10 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Ball screw with single nut, low backlash
  Diameter: 25 mm
  Lead: 5, 10, 20, 50 mm
- Stroke length: up to 5000 mm
- Power bridge: 200 mm long see page 55
- Geometrical moment of inertia: I_y 1.9 · 10^6 mm⁴ I_z 1.9 · 10^6 mm⁴
- Weights
  Basic unit with zero stroke: 7.00 kg
  100 mm stroke: 1.10 kg
  Power bridge with carriage: 1.60 kg
- Provided: with 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

Loads and load moments



Load	dynam. [N]
Fx drive	3500
Fy	2100
± Fz	2100

Load moment	dynam. [Nm]
Mx	150
My[1)]	180
Mz[1)]	180

Additional lengths as a function of the stroke

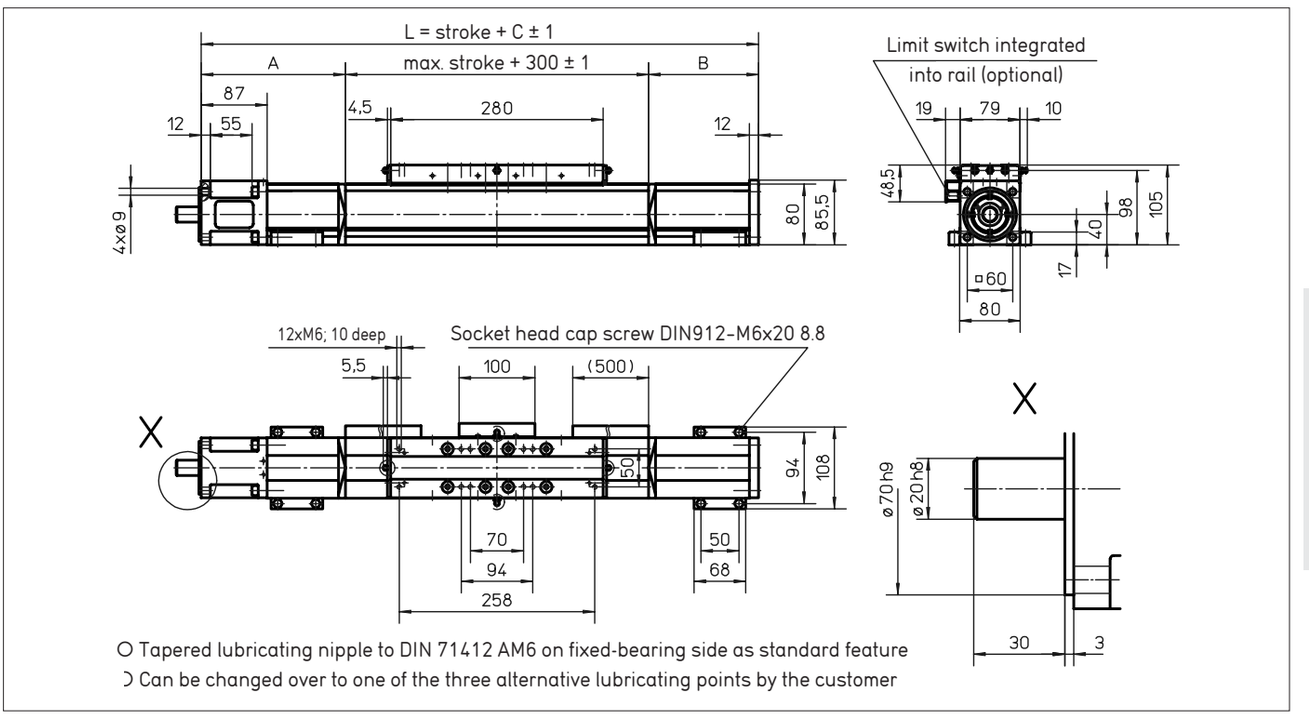
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–680	95	35	350
681-1310	125	80	425
1311-2065	150	105	475
2066-2830	170	125	515
2831-3590	195	150	565
3591-4355	215	170	605
4356-5000	235	190	645

Order code see page 124

[1)] Increase of the admissable values by the use of an additional free-sliding power bridge (see page 56).

WIESEL *POWER*Line® WM80
with ball screw drive and integrated linear ball-recirculating guide system

Antriebstechnik · Automation



○ Tapered lubricating nipple to DIN 71412 AM6 on fixed-bearing side as standard feature
☽ Can be changed over to one of the three alternative lubricating points by the customer

Technical data

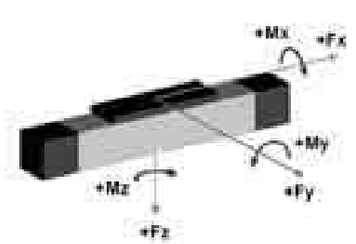
- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.01 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Pretensioned ball screw
  Diameter: 25 mm
  Lead: 5, 10, 20, 50 mm
- Stroke length: up to 11.000 mm
  with pitch 50 mm
  max. 5000 mm
- Power bridge: 280 or 450 mm long
  see page 55
- Geometrical moment of inertia: Iy 1.9 · 10⁶ mm⁴
  Iz 1.9 · 10⁶ mm⁴
- Weights
  Basic unit with zero stroke: 11.57 kg
  100 mm stroke: 1.08 kg
  Power bridge with carriage: 4.26 kg
- Provided: with 4 pieces KAO mounting brackets

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 6300 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 specification. For screw leads > 20 mm, excess lengths cannot be implemented.

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

Additional lengths as a function of the stroke

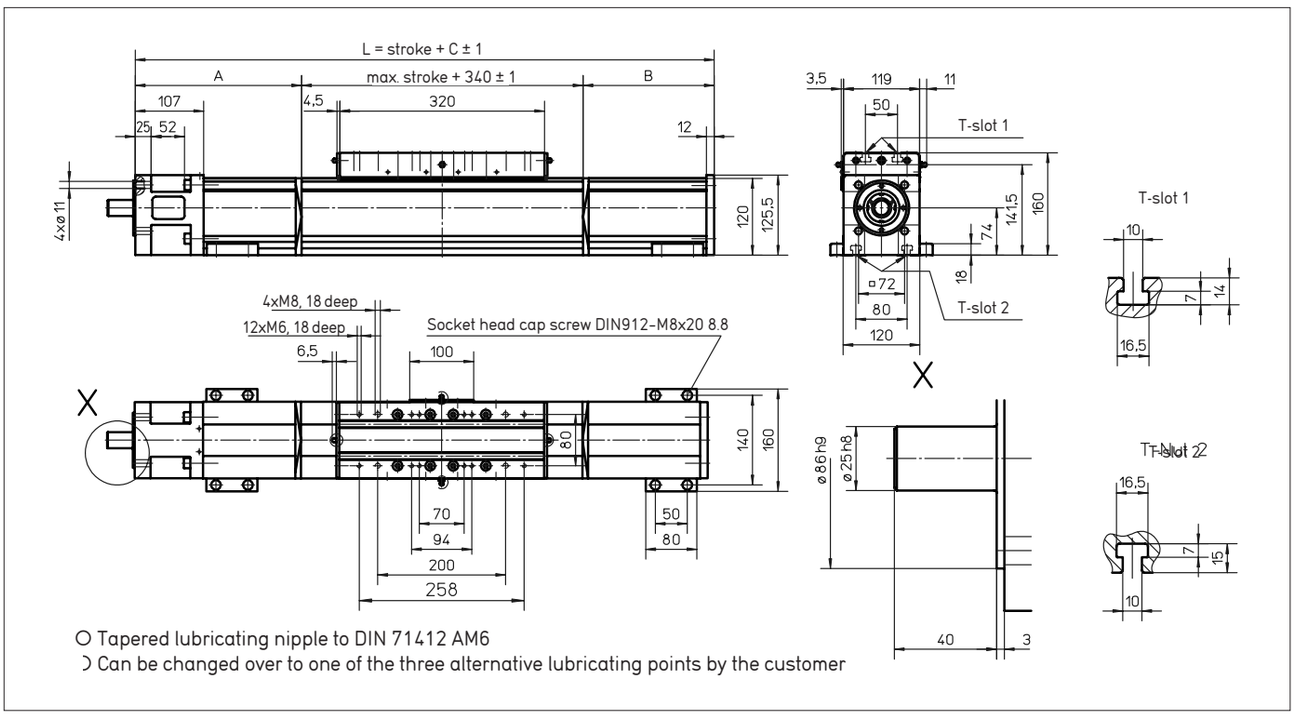
Stroke length [mm]	A [mm]	B [mm]	Additional length C [mm]
0–780	120	80	500
781–1535	170	125	595
1536–2375	190	145	635
2376–3205	215	170	685
3206–4045	235	190	725
4046–4885	255	210	765
4886–5000	280	235	815

Order code see page 124

[1)] Increase of the admissable values by the use of a long power bridge or additional free-sliding power bridge (see page 55, 56).

WIESEL *POWER*Line® WM120
with ball screw drive and integrated linear ball-recirculating guide system

Antriebstechnik · Automation



Technical data

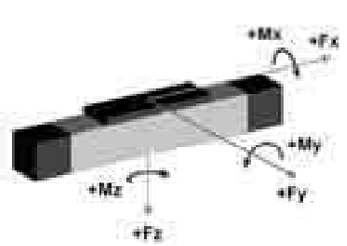
- Linear speed: max. 2.0 m/s
- Repeatability: ± 0.01 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Pretensioned ball screw
  Diameter: 32 mm
  Lead: 5, 10, 20, 40 mm
- Stroke length: up to 11.000 mm
  with pitch 40 mm
  max. 5000 mm
- Power bridge: 320 or 500 mm long
  see page 55
- Geometrical moment of inertia: Iy 7.7 · 10⁶ mm⁴
  Iz 9.4 · 10⁶ mm⁴
- Weights
  Basic unit with zero stroke: 25.91 kg
  100 mm stroke: 1.93 kg
  Power bridge with carriage: 9.25 kg
- Provided: with 4 pieces KAO mounting brackets

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

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

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[1)]	600
Mz[1)]	600

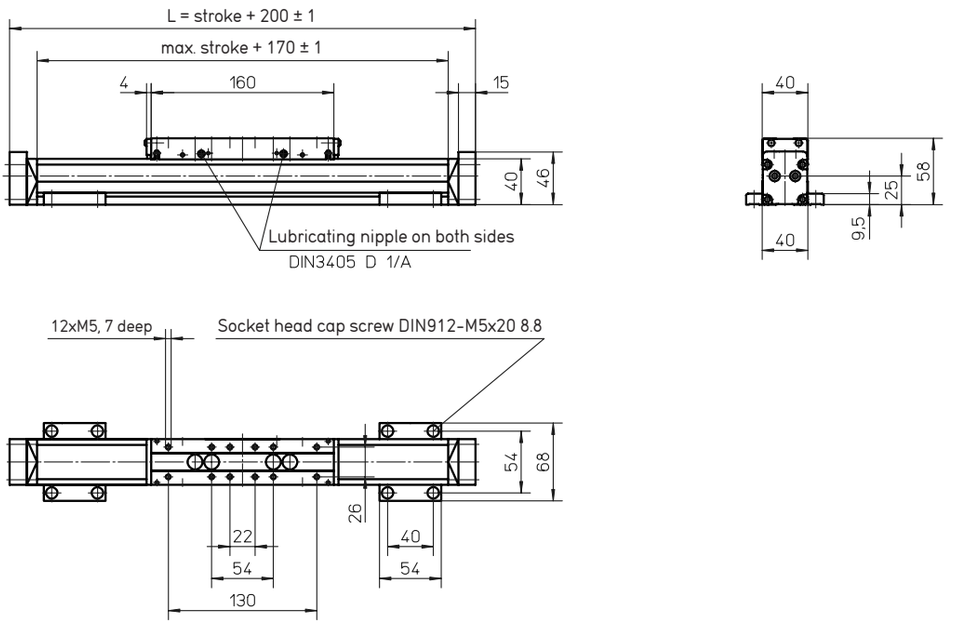
Additional lengths as a function of the stroke

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

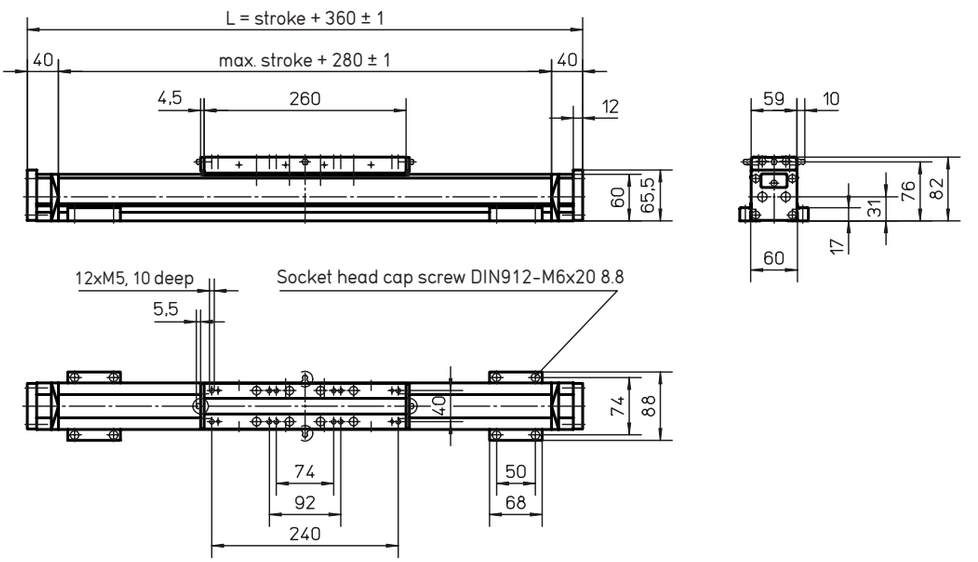
Order code Seite 124

[1)] Increase of the admissable values by the use of a long power bridge or additional free-sliding power bridge (see page 55, 56).

WM40-190



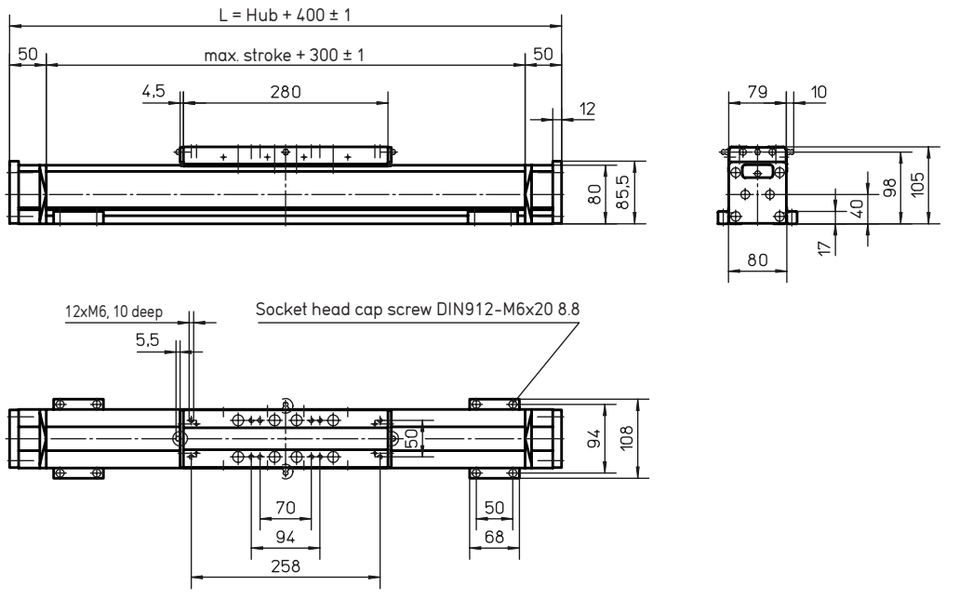
WM60-190



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

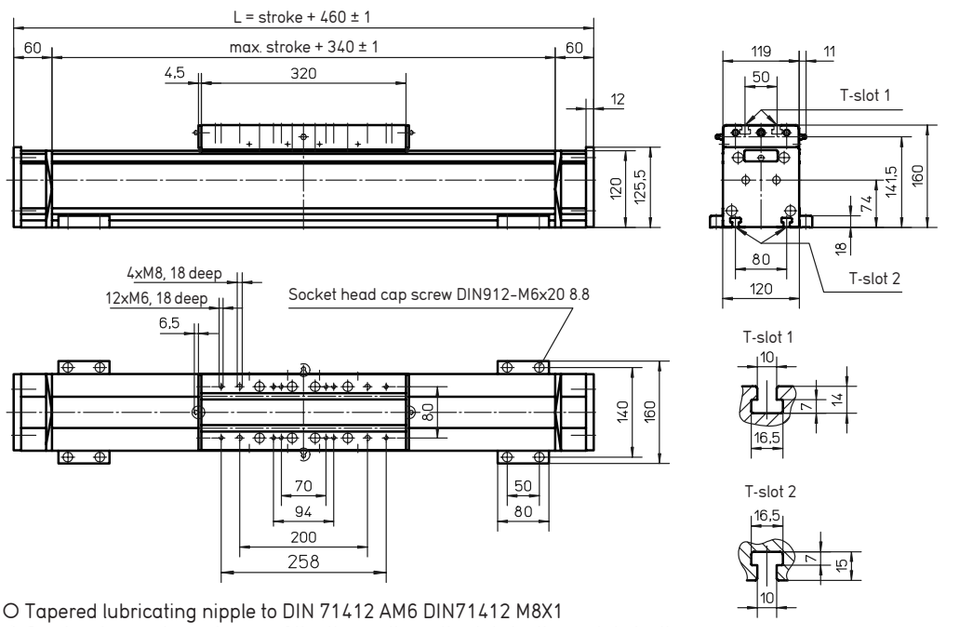
Order code see page 124

WM80-190



○ Tapered lubricating nipple DIN71412 AM6
❩ Umrüstung auf eine der 3 alternativen Schmierstellen kundenseitig möglich

WM120-190

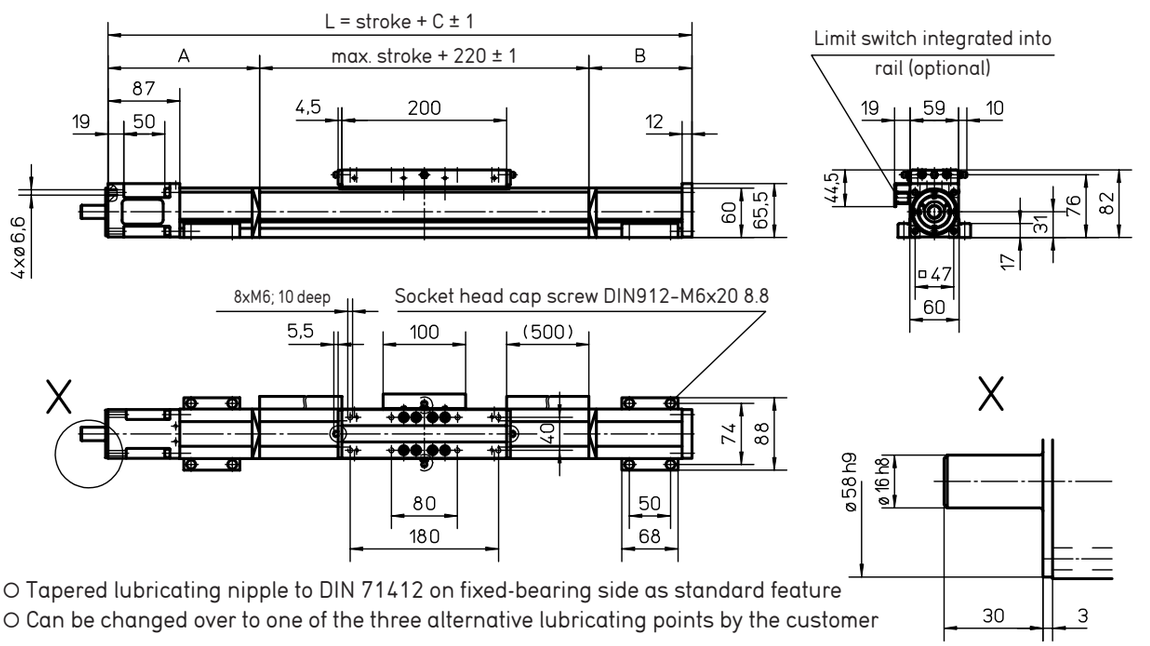


○ Tapered lubricating nipple to DIN 71412 AM6 DIN71412 M8X1
❩ Can be changed over to one of the three alternative lubricating points by the customer

Order code see page 124

WIESEL *DYNA*Line® WV60
with ball screw drive

Antriebstechnik · Automation



○ Tapered lubricating nipple to DIN 71412 on fixed-bearing side as standard feature
○ Can be changed over to one of the three alternative lubricating points by the customer

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
  Diameter: 20 mm
  Lead: 5, 20, 50 mm
- Stroke length: up to 11.000 mm
  with pitch 50 mm
  max. 5000 mm
- Power bridge: 200 mm long
  see page 55
- Geometrical moment of inertia: ly 5.8 · 10^5 mm⁴
  lz 5.9 · 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: with 4 pieces KA0 mounting brackets

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

Note: For tube lengths of 6300 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 specifications. For screw leads > 20 mm, excess lengths cannot be implemented.

Feed force

Maximum feed force Fx:
4.000 N

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

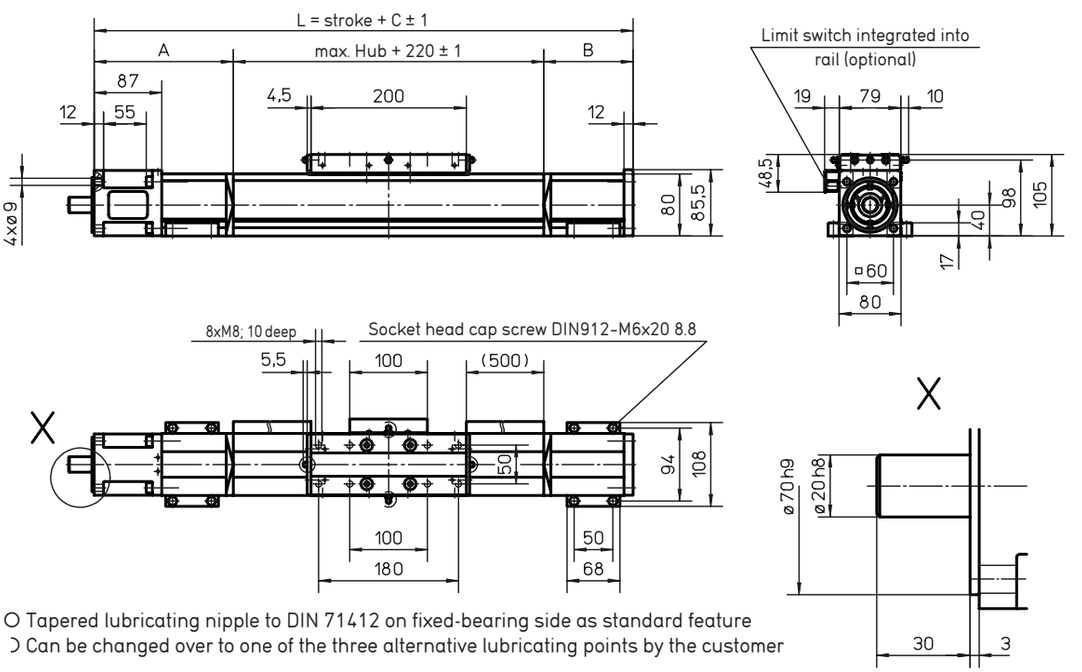
Additional lengths as a function of the stroke

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

Order code see page 124

WIESEL *DYNA*Line® WV80
with ball screw drive

Antriebstechnik · Automation



O Tapered lubricating nipple to DIN 71412 on fixed-bearing side as standard feature
❩ Can be changed over to one of the three alternative lubricating points by the customer

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
  Diameter: 25 mm
  Lead: 5, 10, 20, 50 mm
- Stroke length: up to 11.000 mm
  with pitch 50 mm
  max. 5000 mm
- Power bridge: 200 mm long
  see page 55
- Geometrical moment of inertia: Iy 1.9 · 10^6 mm⁴
  Iz 1.9 · 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: with 4 pieces KAO mounting brackets

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

Note: For tube lengths of 6300 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 specifications. For screw leads > 20 mm, excess lengths cannot be implemented.

Feed force

Maximum feed force Fx:

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

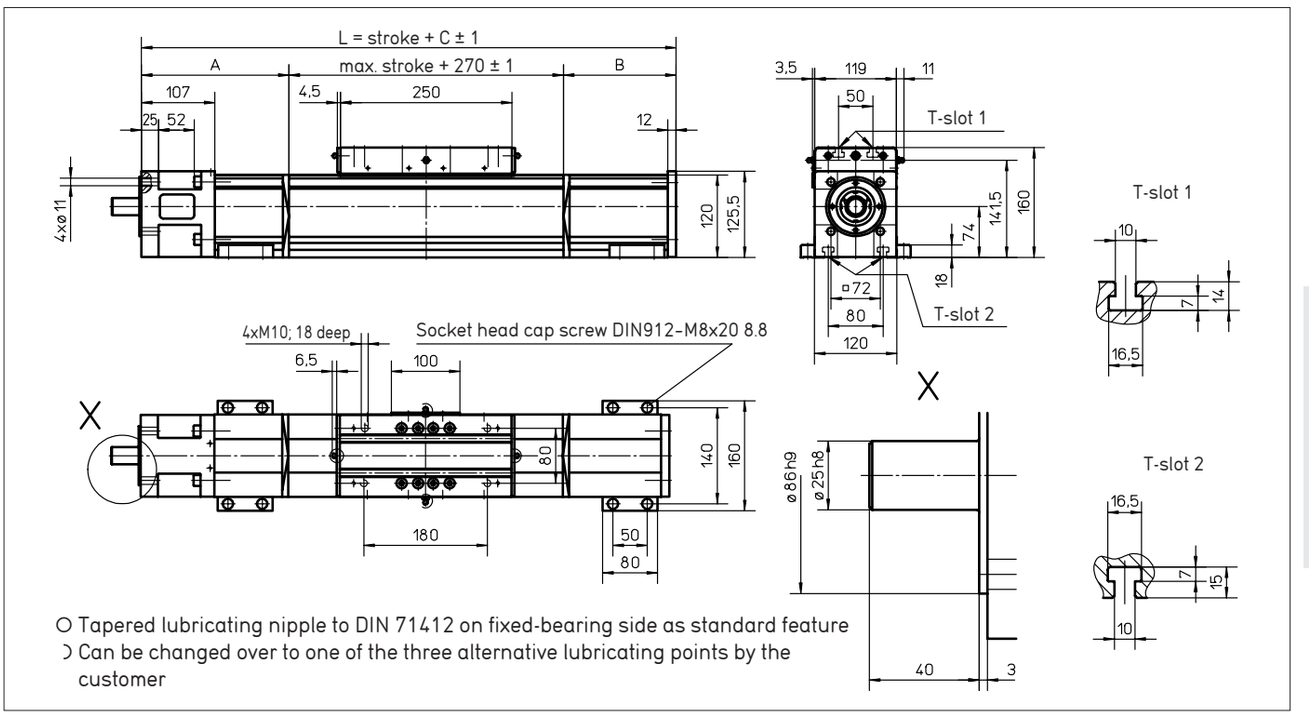
Additional lengths as a function of the stroke

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

Order code see page 124

WIESEL *DYNA*Line® WV120
with ball screw drive

Antriebstechnik · Automation



○ Tapered lubricating nipple to DIN 71412 on fixed-bearing side as standard feature
☽ Can be changed over to one of the three alternative lubricating points by the customer

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
- Diameter: 32 mm
  Lead: 5, 10, 20, 40 mm
- Stroke length: up to 11,000 mm with pitch 40 mm max. 5000 mm
- Power bridge: 250 mm long see page 55
- Geometrical moment of inertia: I_y 7.7 · 10^6 mm⁴ I_z 9.4 · 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: with 4 pieces KAO mounting brackets

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

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

Feed force

Maximum feed force Fx:
12.000 N
8.000 N drive 3240 with ball screw

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

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

Order code see page 124

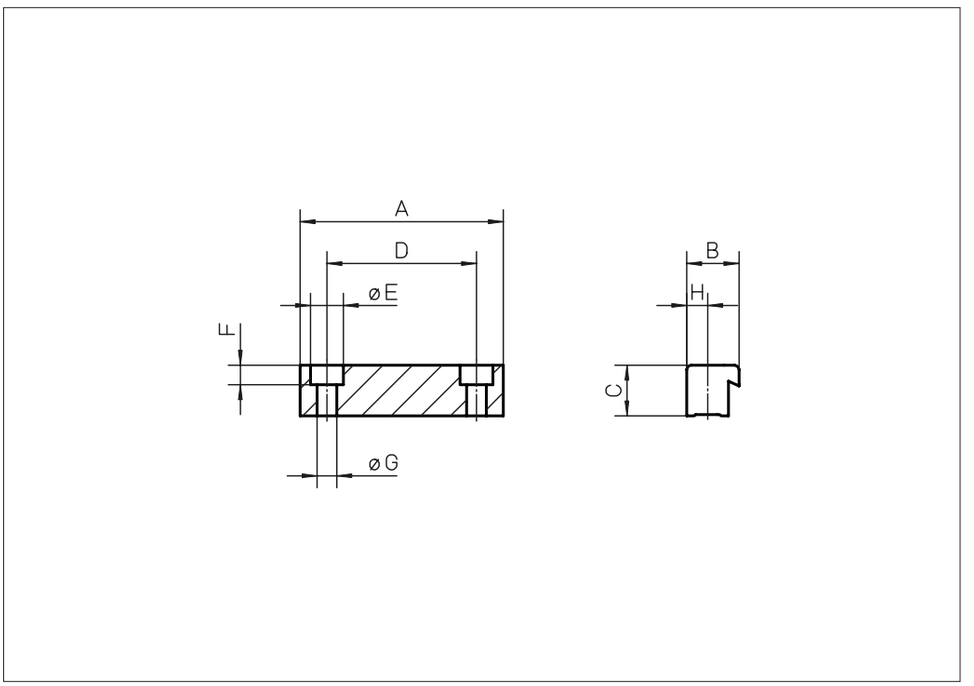
Accessories for WIESEL *POWER*Line®, WIESEL *DYNA*Line®
Mounting brackets

Antriebstechnik · Automation

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 aluminium profile and screwed onto the mounting surface with the aid of cylinder head screws.
The number of mounting brackets required depends on the load and overall length of the WIESEL® unit. It is shown in the diagrams. Increasing side forces reduce the distance between supports.

Each unit is provided with 4 pieces KAO Mounting brackets.



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 borne without significantly deforming the tubular aluminium profile.

Tightening torque of the attachment screws

Size	Torque [Nm]*
WM40	5.4
WM/WV60	9
WM/WV80	9
WM/WV120	19–22

* for cylinder head screw
DIN ISO 4762-8.8
unoiled on aluminium

KAO System brackets

Only needed for WH40 and WM60. 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.

	Dimensions [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	68	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

Order code see page 124

Accessories for WIESEL *POWER*Line®
Long power bridge

Antriebstechnik · Automation

LKB Long power bridge

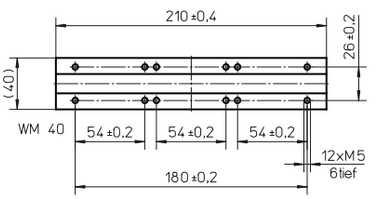
The long power bridge increases the maximum permissible load moments My and Mz of a WIESEL® unit without requiring to step up a size.
The difference in length between the long power bridge and the standard power bridge must be taken into account when calculating the overall length of the WIESEL® unit.

Overall length of WIESEL® unit:
L_{tot} = Stroke + C + ΔKb

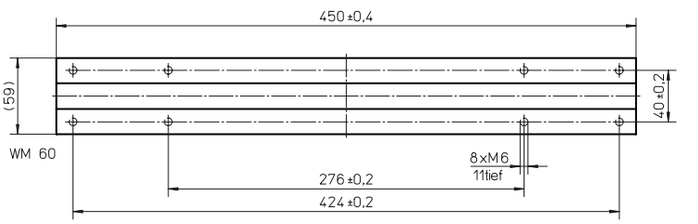
C* = Specific additional length
L_{tot} = Overall length of the WIESEL® unit
Stroke = Required stroke length
ΔKb = Difference in length between long and standard power bridge

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

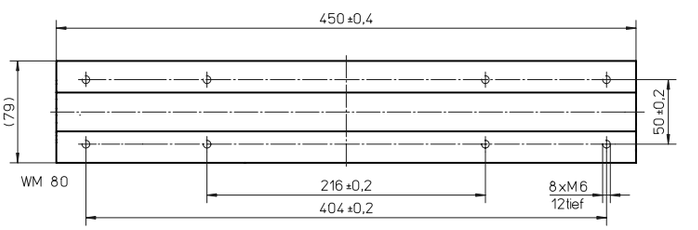
WM40



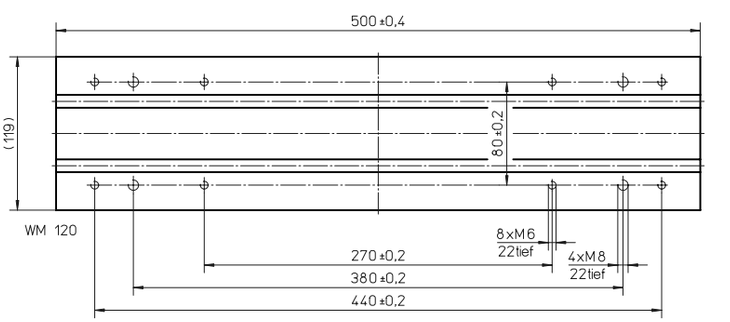
WM60



WM80



WM120



Size	Δ kB	Length of power bridge [mm]	My [Nm]	Mz [Nm]
WM40 – 000	50	210	50	50
WM60 – 000	190	450	500	500
WM80 – 000	170	450	750	750
WM120 – 000	180	500	1500	1500

Note:
All other limit values are comparable to those of versions with standard power bridge.

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. The force must be applied only in the area of the tapped holes.

Order code see page 124

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 the WIESEL®
L_{tot} = Stroke + C + L_A

C = Specific additional length [mm]
(see technical data of the respective WIESEL®)

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

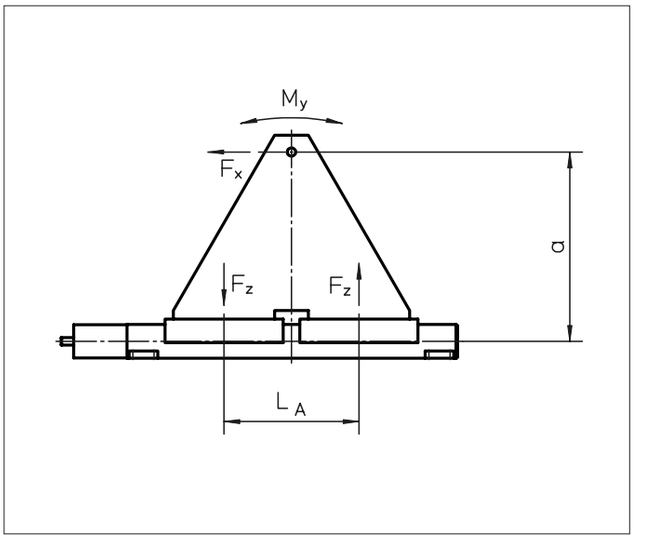
Size	L_A [mm]	
WM40*	min	max
	175	600
WM60	335	
WM60-370	255	
WM60-370 ZRT	215	
WM80	360	
WM80-370	280	
WM80-370 ZRT	215	
WM80 ZRT	310	
WM120	450	

* 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
WM60–370	180
WM60–370 ZRT	180
WM80	250
WM80–370	225
WM80–370 ZRT	225
WM80 ZRT	250
WM120	300

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

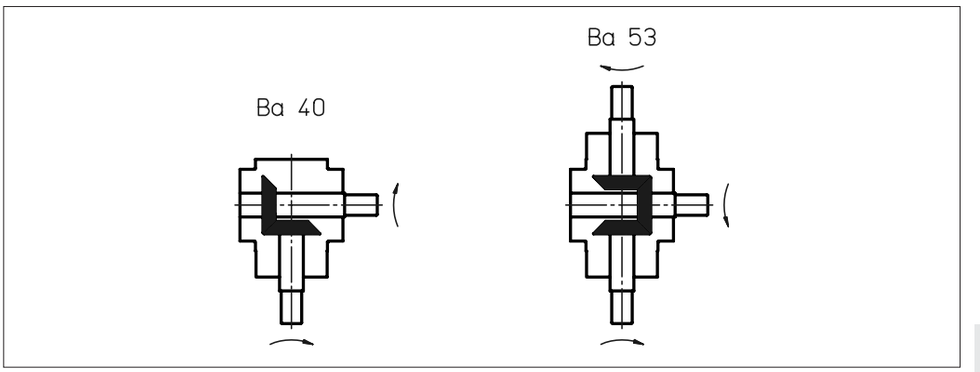


Accessories for WIESEL *POWER*Line®. WIESEL *DYNA*Line®
Bevel gearbox

NEFF® Antriebstechnik · Automation

KRG Bevel gearbox

Bevel gearboxes are used to install a motor at right angles to the linear drive unit or to operate two linear drive units in parallel.
A specific gearbox size is assigned to each WIESEL® model. The two gearbox sizes Ba 53 and Ba 40 with transmission ratios of 1:1 and 2:1 are available as standard.



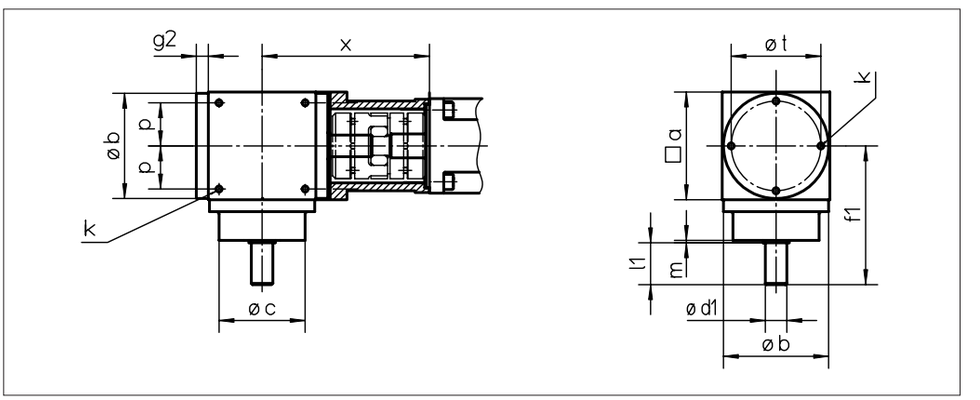
Technical data (for both versions)

Size	M_{max} Output [Nm]		n_{max} Input	M_{idle} [Nm]		Gear factor η	J [kgcm²] i = 1 : 1		J [kgcm²] i = 2 : 1		Weight [kg] i = 1 : 1		Weight [kg] i = 2 : 1		Max.angular backlash
	1 : 1	2 : 1	[1/min]	Ba 40	Ba 53		Ba 40	Ba 53	Ba 40	Ba 53	Ba 40	Ba 53	Ba 40	Ba 53	[angular min]
VL0	10	–	3000	0.10	0.20	0.97	0.62	0.88	0.20	0.41	2.0	2.50	2.00	2.50	10
VL1	28	28	3000	0.15	0.30	0.97	3.58	3.96	0.88	1.26	5.50	6.50	5.50	6.50	10
VL2	60	60	3000	0.30	0.50	0.97	12.02	13.69	4.21	5.88	12.00	15.00	12.00	15.00	10

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

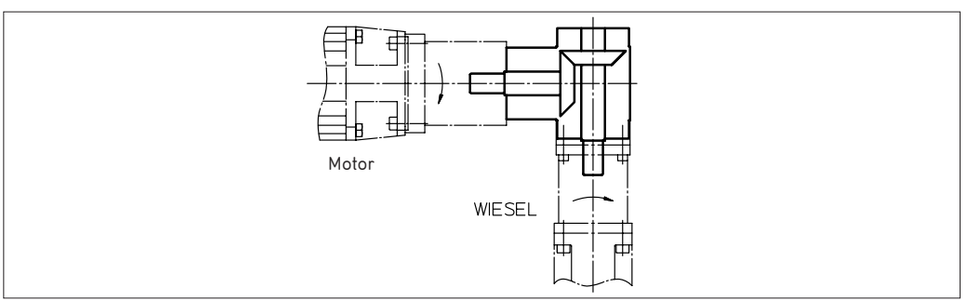
Mounting position

WIESEL® gearbox VL–Ba 40



WIESEL®- model/gearbox	Dimensions [mm] a	b	c	d1	f1	g2	k	l1	m	p	t	x
WM40-VL0-Ba 40	65	44	44	12	100	11.5	M6	26	2	22.5	54	113
WM/WV60-VL1-Ba 40	90	90	60	18	122	12	M8	35	2	35	75	144
WM/WV80-VL1-Ba 40	90	90	60	18	122	12	M8	35	2	35	75	144
WM/WV120-VL2-Ba 40	120	120	80	25	162	15	M10	45	2	50	100	185

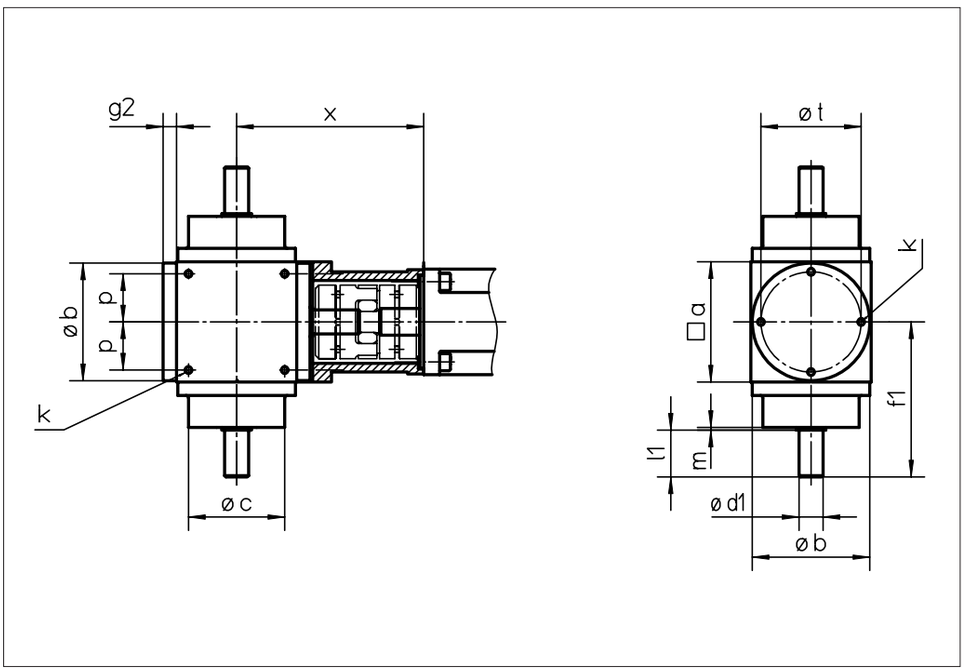
Direction of rotation



Order code see page 124

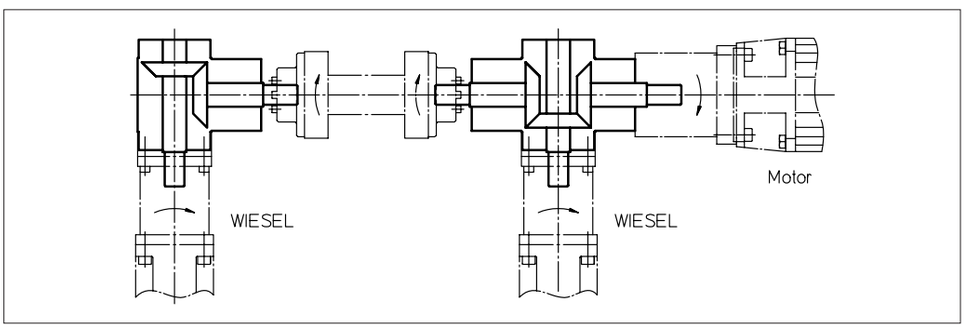
Accessories for WIESEL *POWER*Line®, WIESEL *DYNA*Line®
Bevel gearbox

Mounting position
WIESEL® gearbox VL-Ba 53

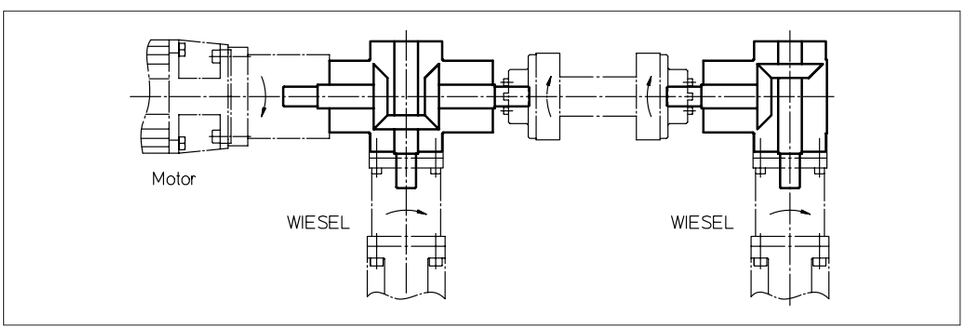


	Dimensions [mm]											
WIESEL®- model/gearbox	a	b	c	d1	f1	g2	k	l1	m	p	t	x
WM40-VL0-Ba 53	65	44	44	12	100	11.5	M6	26	2	22.5	54	113
WM/WV60-VL1-Ba 53	90	90	60	18	122	12	M8	35	2	35	75	144
WM/WV80-VL1-Ba 53	90	90	60	18	122	12	M8	35	2	35	75	144
WM/WV120-VL2-Ba 53	120	120	80	25	162	15	M10	45	2	50	100	185

Direction of rotation
Motor right



Motor left



Order code see page 126

Accessories for WIESEL *POWER*Line®, WIESEL *DYNA*Line®
Universal joint shaft

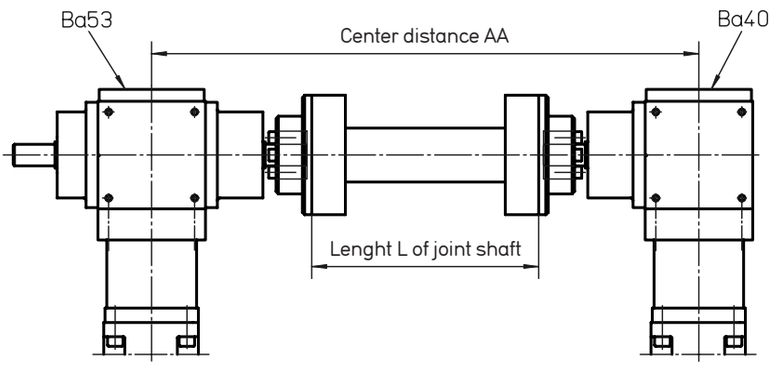
NEFF Antriebstechnik · Automation

GX Universal joint shaft

The GX universal joint shaft connects two WIESEL® units with ball screw drive and mounted bevel gearboxes in parallel.
The universal joint shaft transmits the torque from one WIESEL® to another.
Long connecting shafts should be supported over their length. The required pillow blocks are available on request.

Universal joint shaft GZ:
on request. For high demands on quiet running and speed (center part with essentric ring).

Calculation of the overall length as a function of the center distance.
All 4 models (size 40, 60, 80,120)



WM40-VL0 GX1 with DKWN tensioner L=AA-210
WM/WV60-VL1 Ba53/VL1 Ba40 GX2 with 2 DKWN tensioners L=AA-255
WM/WV80-VL1 Ba53/VL1 Ba40 GX4 with 2 DKWN tensioners L=AA-259
WM/WV120-VL2 Ba53/VL2 Ba40 GX8 with 2 DKWN tensioners L=AA-353
Dimensions AA for execution with key way on request

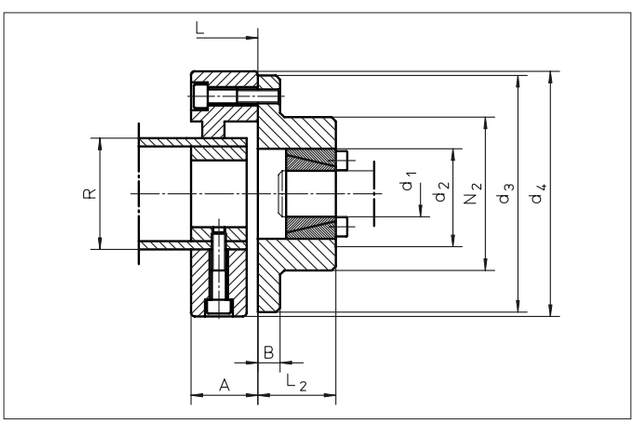
Technical Data

Size	M1[1]	M2[2]	m1[3]	m2[4]	J1[5]	J2[6]	M_A[7]
GX1	10	21	0.47	1.05	2.68	2.15	1.2
GX2	30	60	1.06	1.42	13.8	5.29	4.9
GX4	60	75	2.31	1.61	21.4	7.63	4.9
GX8	120	200	3.55	2.16	78	18.58	16.5

[1] Transmittable torque [Nm]
[2] Max. torque on the tensioning element [Nm]
[3] Weight without middle part [kg]
[4] Weight of middle part in [kg/m]
[5] Mass inertia of the two connectors [kgcm²]
[6] Mass inertia of the shaft [kgcm²/m]
[7] Starting torque of the tensioning screws of the DKWN tensioning element [Nm]

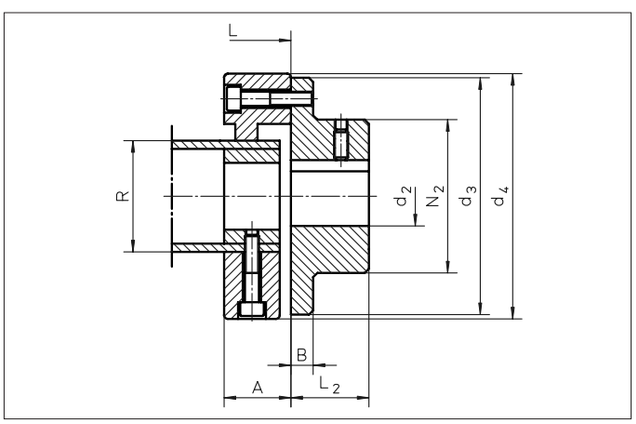
Execution with tensioner (standard)

Size	Dimensions [mm]								
	A	B	d_1	d_2	d_3	d_4	L_2	N_2	R
GX1	24	7	12	22	56	56	24	36	30
GX2	24	8	18	35	85	88	28	55	40
GX4	28	8	18	36	100	100	30	65	45
GX8	32	10	25	47	120	125	42	80	60



Execution with key way (on request)

Size	Dimensions [mm]								
	A	B	$d_{2min.}$	$d_{2max.}$	d_3	d_4	L_2	N_2	R
GX1	24	7	10	25	56	56	24	36	30
GX2	24	8	14	38	85	88	28	55	40
GX4	28	8	16	45	100	100	30	65	45
GX8	32	10	20	55	120	125	42	80	60

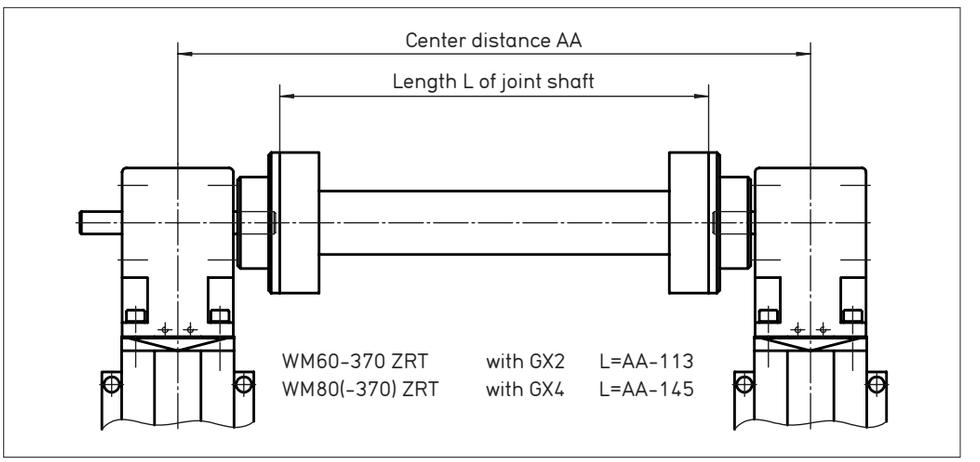


Order code see page 124

Accessories for WIESEL *POWER*Line®
Universal joint shaft/Parallel belt drive

NEFF® Antriebstechnik · Automation

GX Universal joint shaft for WM-ZRT



Technical data

Size	M1[1]	M2[2]	m1[3]	m2[4]	J1[5]	J2[6]	M_A[7]
GX2	30	60	1.06	1.42	13.8	5.29	4.9
GX4	60	75	2.31	1.61	21.4	7.63	4.9

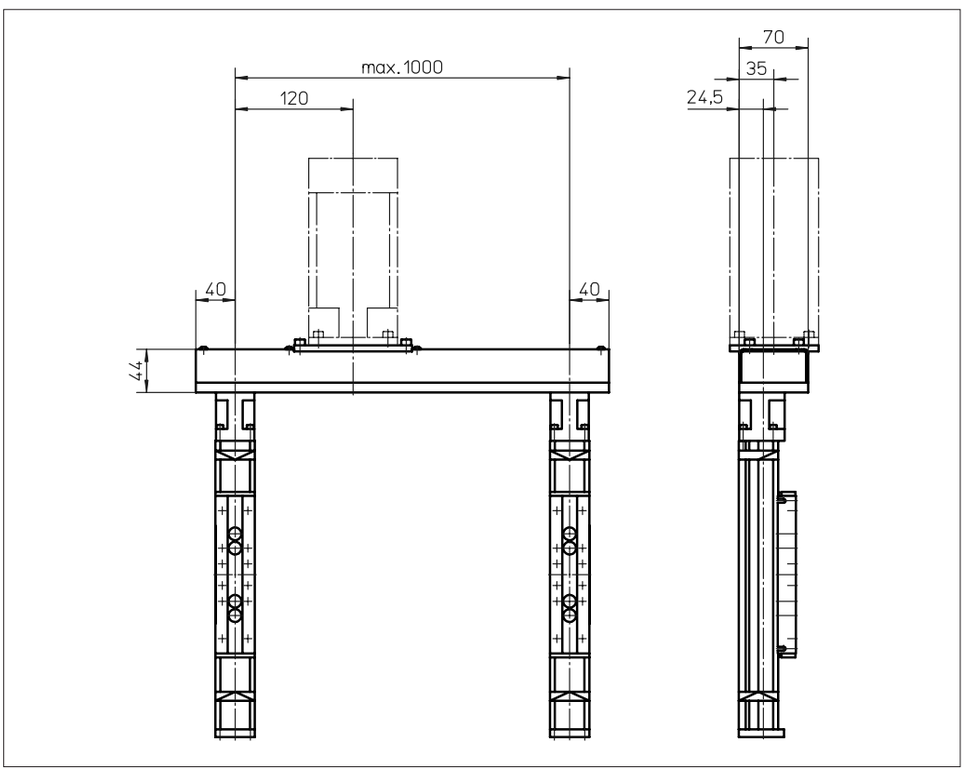
[1] Transmittable torque [Nm]
[2] Max. torque on the tensioning element [Nm]
[3] Weight without middle part [kg]
[4] Weight of middle part in [kg/m]
[5] Mass inertia of the two connectors [kgcm²]
[6] Mass inertia of the shaft [kgcm²/m]
[7] Starting torque of the tensioning screws of the DKWN tensioning element [Nm]

Parallel belt drive

With the parallel belt drive two WIESEL® WM 40 can be driven by one motor in parallel.

Application:

- In parallel, wide guide system with drive
- Basis for multi-coordinate solutions
- Adjustable in parallel stops



Technical data

Type	$M_{max.}$ [Nm]
PRT40	4.4

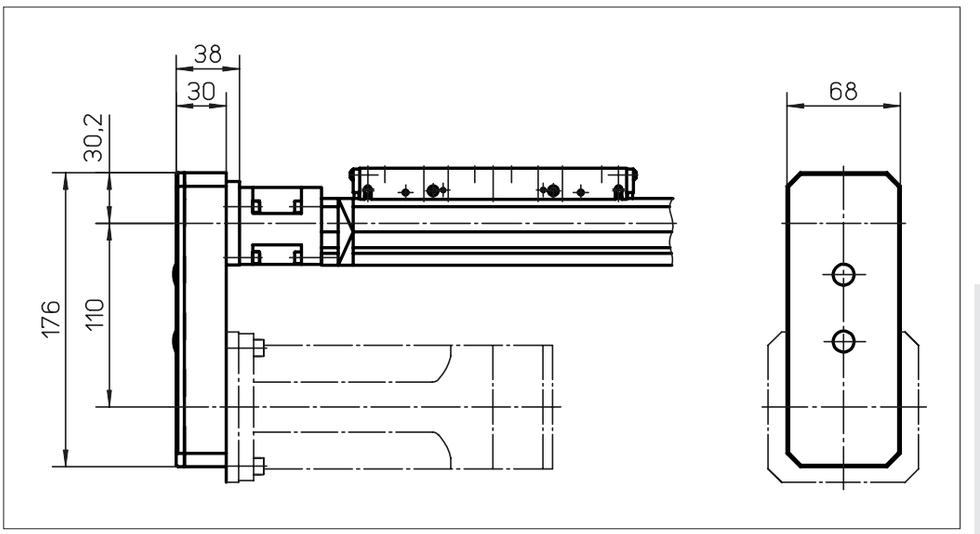
Order code see page 124

Accessories for WIESEL *POWER*Line®, WIESEL *DYNA*Line®
Timing belt drive

NEFF® Antriebstechnik · Automation

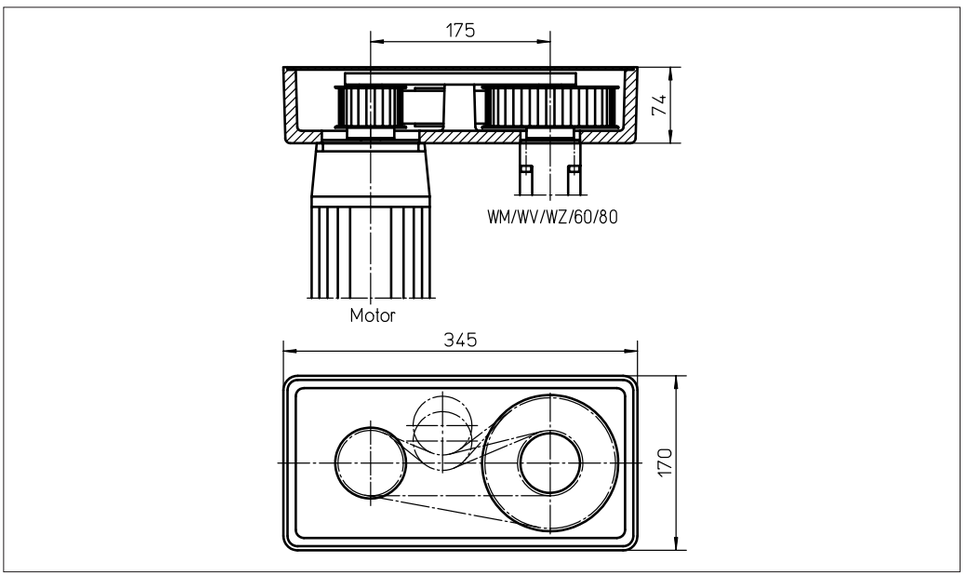
RT Timing belt drive

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 toothed 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 the input shaft [kgcm²]

Order code see page 124

Accessories for WIESEL *POWER*Line®, WIESEL *DYNA*Line®
Mechanical limit switches

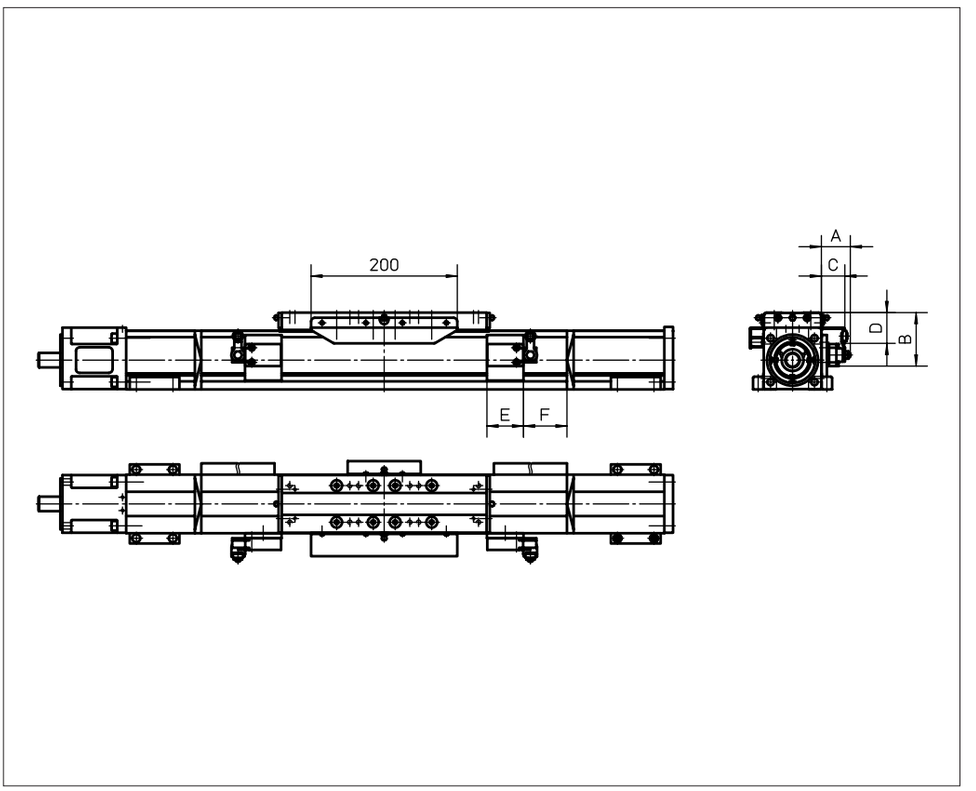
NEFF® Antriebstechnik · Automation

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 KA0 mounting brackets in the aluminium profile. Depending on the size, the switch is adjusted with the help of a slot (as shown) or by shifting the holder (with switch) in the groove for the KA0 strip.

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
Cable length:
1 m, Id.-Nr. 6715450281
5 m, Id.-Nr. 6715450290
10 m, Id.-Nr. 6715450299



Baugröße	Abmessungen [mm]						
	A	B	C	D	E	F	
						WM	WV
WM/WV60	40	69	32	38	50	63	33
WM/WV80	40	73	32	42	50	79	39
WM/WV120	40	89	32	58	50	94	59

Note:
The linear unit can not be fixed by means of the mounting brackets KA0 in the range of the fixing plates for the mechanical limit switches.
Security limit switches serve to cut off energy from the drive for sure. Whenever they are running at high speeds, they can not 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 at low speeds.

Order code see page 124

Accessories for WIESEL *POWER*Line®, WIESEL *DYNA*Line®
Shaft encoder attachment

Antriebstechnik · Automation

ADG Shaft encoder attachment for *POWER*Line® with ball screw drive on movable bearing side

Shaft encoder attachment for *POWER*Line® with tooth belt drive see p. 31.

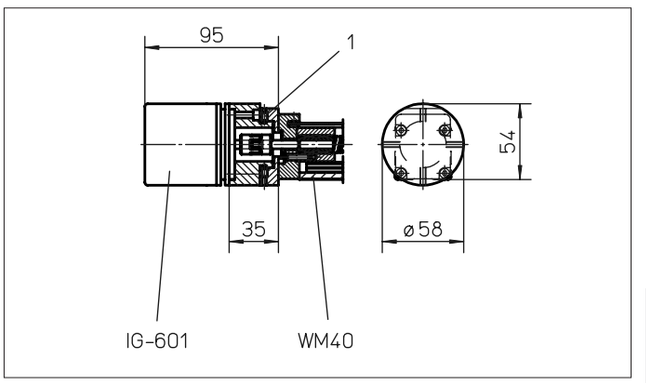
Incremental shaft encoders can be used in combination with screws to measure displacement. This is achieved by mounting the shaft encoder on the movable bearing end of the WIESEL® shaft.
IG601 incremental shaft encoders with pulse counts between 100 and 2500 are used by NEFF, as standard elements. Two output circuits are basically possible:
- GE = Push-pull output, 10 – 30 V
- LD = Line driver, antivalent, as per RS 422 (5V ± 10%)

Detailed information can be found on page 109.

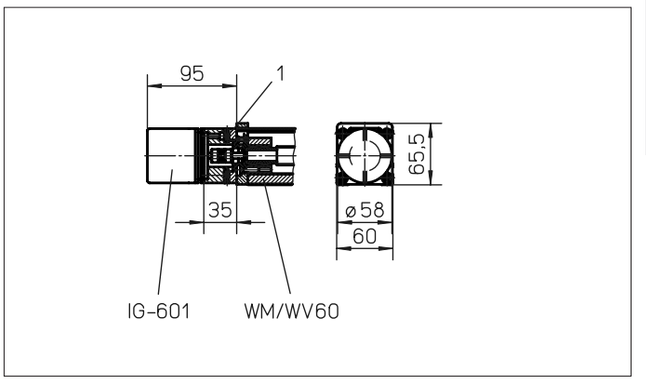
The shaft encoder is connected to the WIESEL® via a two-piece adapter flange and a coupling. It can be adjusted to the required reference point (1) by loosening the threaded studs.

Absolute-value encoders on request.

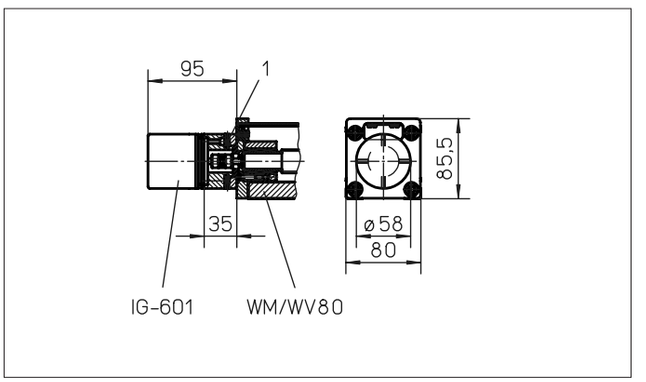
IG601 mounted on WM40



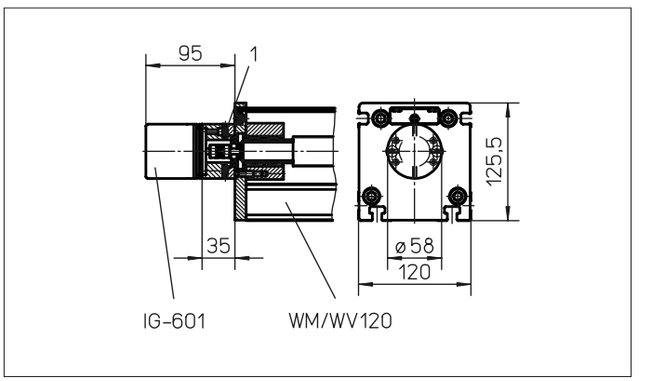
IG601 mounted on WM/WV60



IG601 mounted on WM/WV80



IG601 mounted on WM/WV120



Bestell-Code Seite 124

NEFF®
Antriebstechnik · Automation

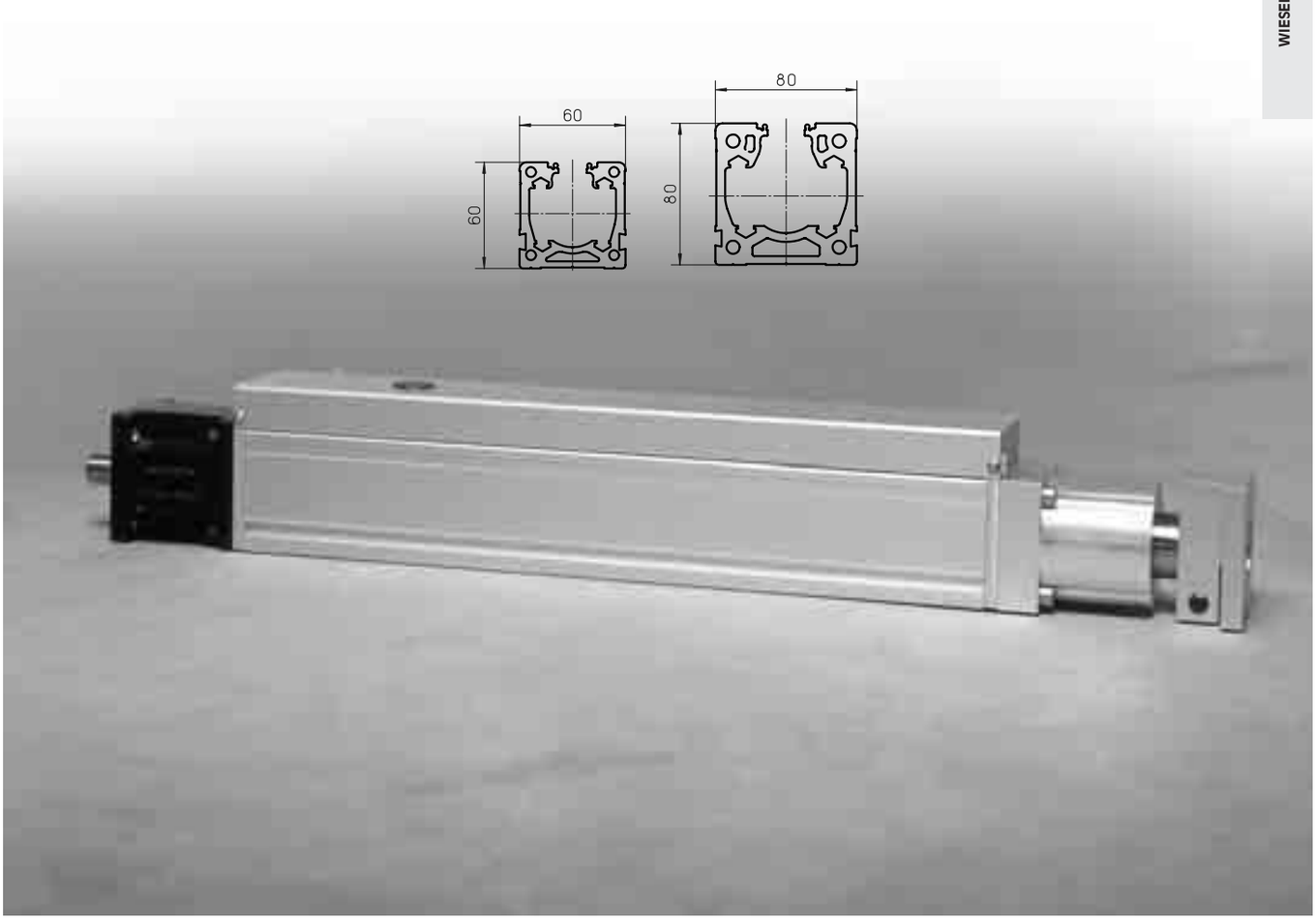
Equipment for blister packaging
for tooth brushes,
Koch Company,
Pfalzgrafenweiler, Germany

Mechanical linear drive units
WIESEL *VARIO*Line®

NEW WIESEL *VARIO*Line®

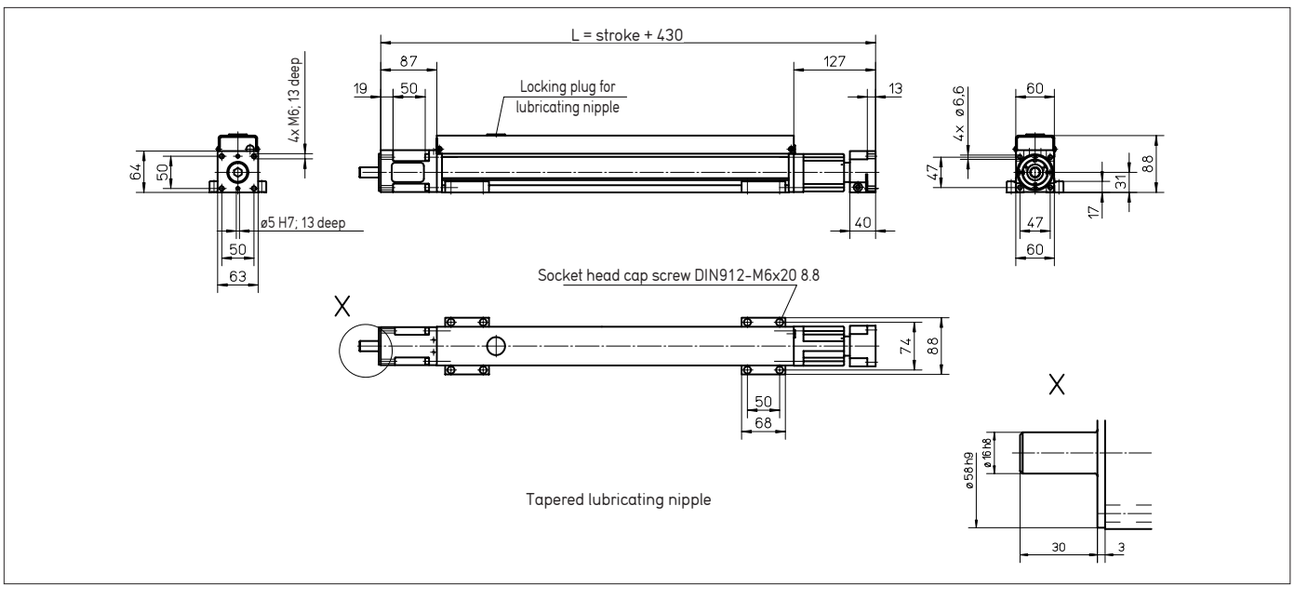
- Fully integrated handling unit with ball-recirculation guide system in the tabular section, robust ball bearing bushing on the piston rod and ball screw drive
- Absorption of high lateral forces
- Ready-to-install design with adjustable, integrated limit switches

WIESEL *VARIO*Line® (Profile sectional view)



WIESEL *VARIO*Line® WZ60
with ball screw drive and integrated ball recirculating guide

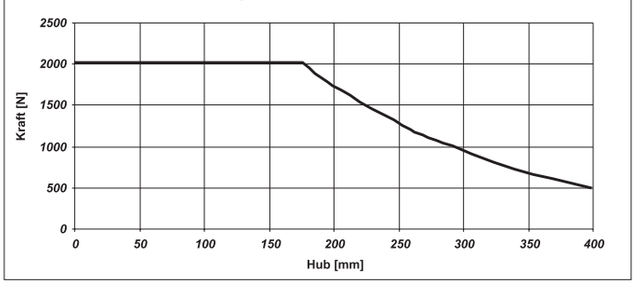
Antriebstechnik · Automation



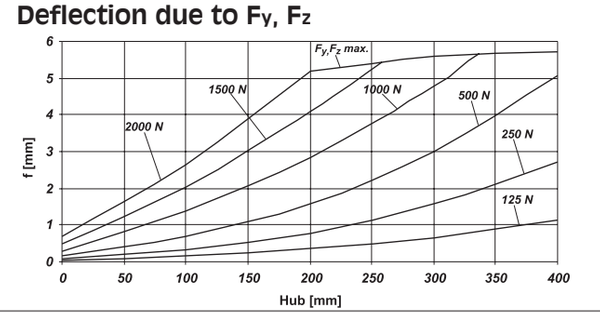
Technical data

- Linear speed: max. 1.5 m/s
- Repeatability: ± 0.02 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Single nut, low backlash
- Diameter: 20 mm
  Lead: 5, 20, 50 mm
- Stroke length: max. 400 mm
- Geometrical moment of inertia: $I_y = 5.8 \cdot 10^5$ mm⁴
  $I_z = 5.9 \cdot 10^5$ 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: with 4 pieces KAO mounting brackets

Max side load F_y, F_z



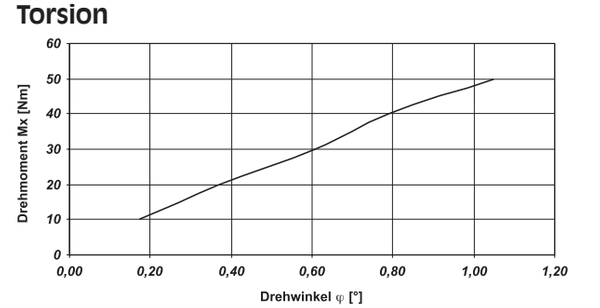
Deflection due to F_y, F_z



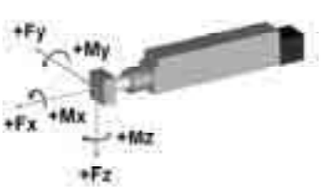
Idle torques [Nm]

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

Torsion



Loads and load moments



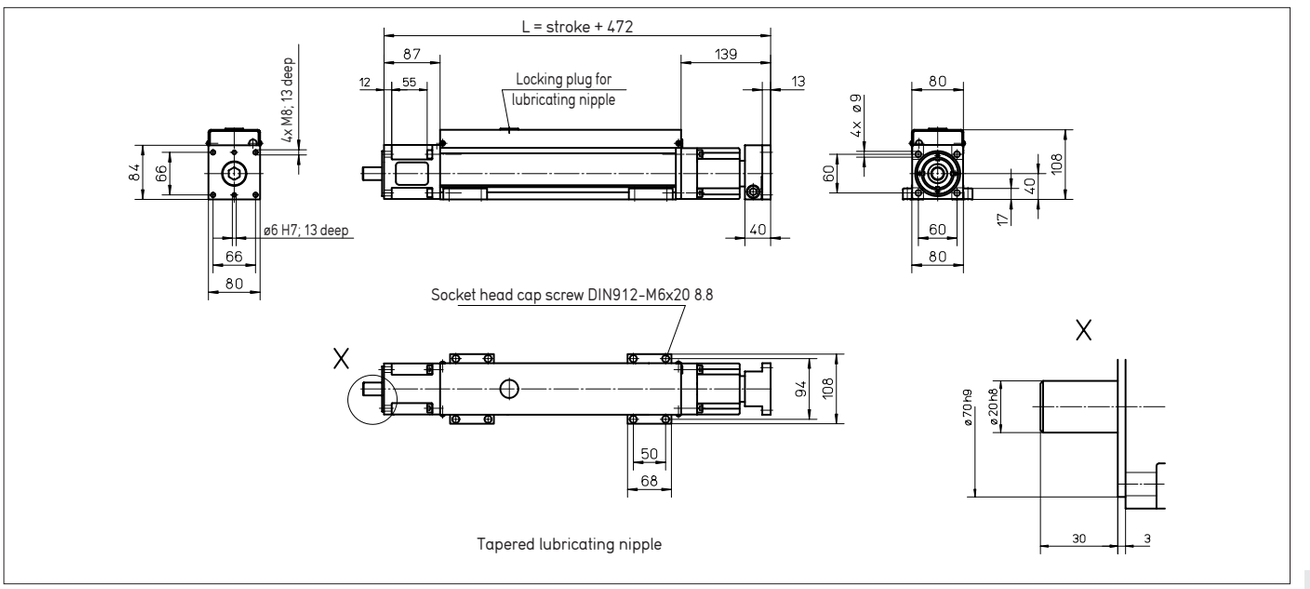
Load	dynam. [N]
Fx drive	2800
Fy	see diagram
Fz	see diagram

Load moment	dynam. [Nm]
Mx	50

Order code see page 124

WIESEL *VARIO*Line® WZ80
with ball screw drive and integrated ball recirculating guide

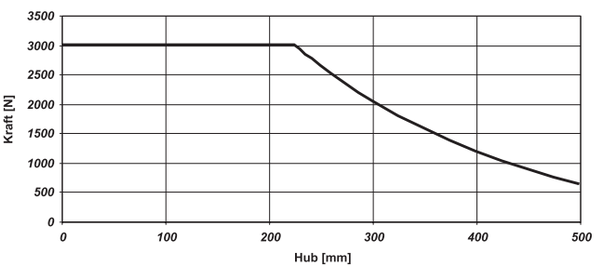
Antriebstechnik · Automation



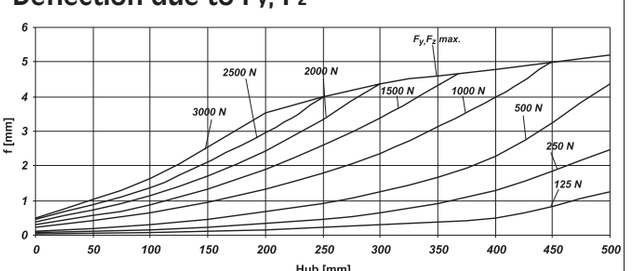
Technical data

- Linear speed: max. 1.5 m/s
- Repeatability: ± 0.02 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Single nut, low backlash
- Diameter: 25 mm
  Lead: 5, 10, 20, 50 mm
- Stroke length: max. 500 mm
- Geometrical moment of interia: Iy = 1.9 · 10^6 mm⁴
  Iz = 1.9 · 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: with 4 pieces KAO mounting brackets

Max side load F_y, F_z



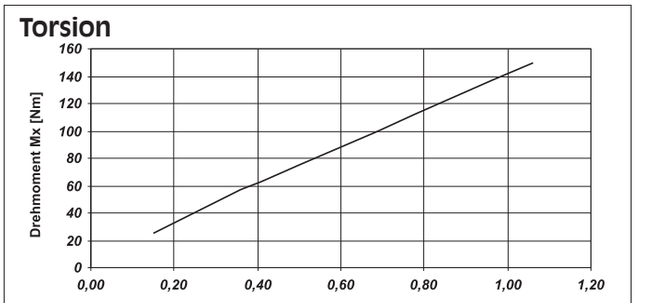
Deflection due to F_y, F_z



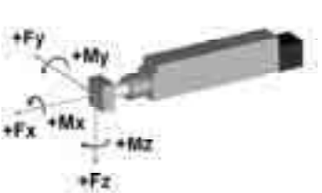
Idle torques [Nm]

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

Torsion



Loads and load moments



Load	dynam. [N]
Fx drive	3500
Fy	see diagram
Fz	see diagram

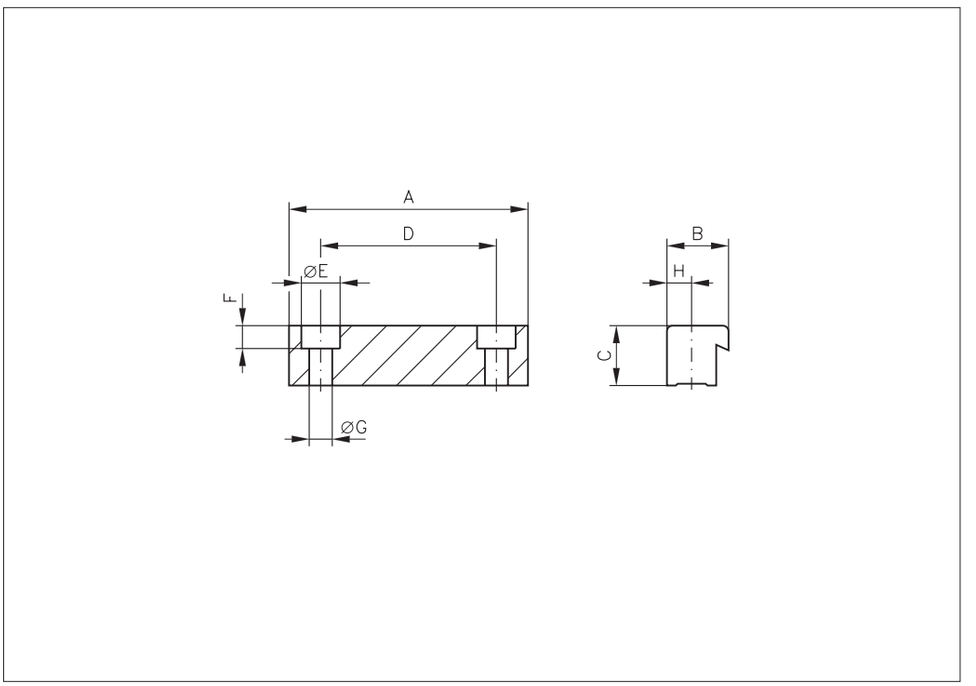
Load moment	dynam. [Nm]
Mx	150

Order code see page 124

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 aluminium profile and screwed onto the mounting surface with the aid of cylinder head screws.
The number of mounting brackets required depends on the load and overall length of the WIESEL® unit. It is shown in the diagrams. Increasing side forces reduce the distance between supports.

Each unit is provided with 4 pieces KAO Mounting brackets.



Tightening torque of the attachment screws

Size	Torque [Nm]*
WZ60	9.0
WZ80	9.0

* for cylinder head screw DIN ISO 4762-8.8 unoiled on aluminium

Size	Dimensions [mm]							
	A	B	C	D	øE	F	øG	H
WZ60	68	17.5	17	50	11	6.5	6.6	7
WZ80	68	17.5	17	50	11	6.5	6.6	7

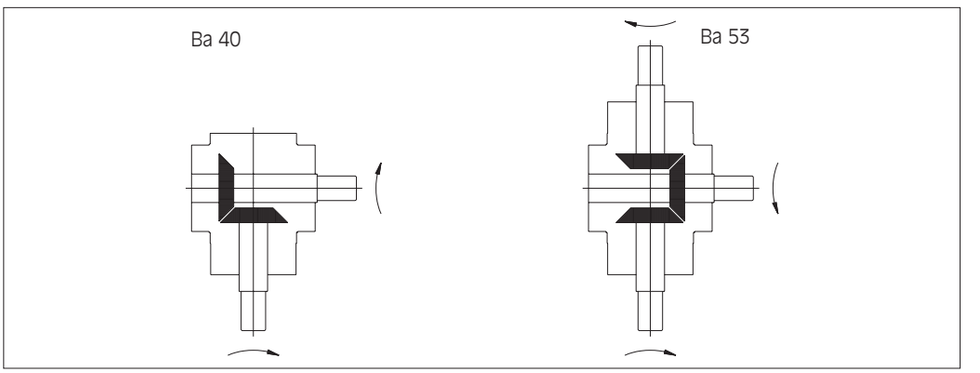
Order code see page 124

Accessories for WIESEL *VARIO*Line®
Bevel gearbox

NEFF® Antriebstechnik · Automation

KRG Bevel gearbox

Bevel gearboxes are used to install a motor at right angles to the linear drive unit or to operate two linear drive units in parallel.
A specific gearbox size is assigned to each WIESEL® model. The two gearbox sizes Ba 53 and Ba 40 with transmission ratios of 1:1 and 2:1 are available as standard.



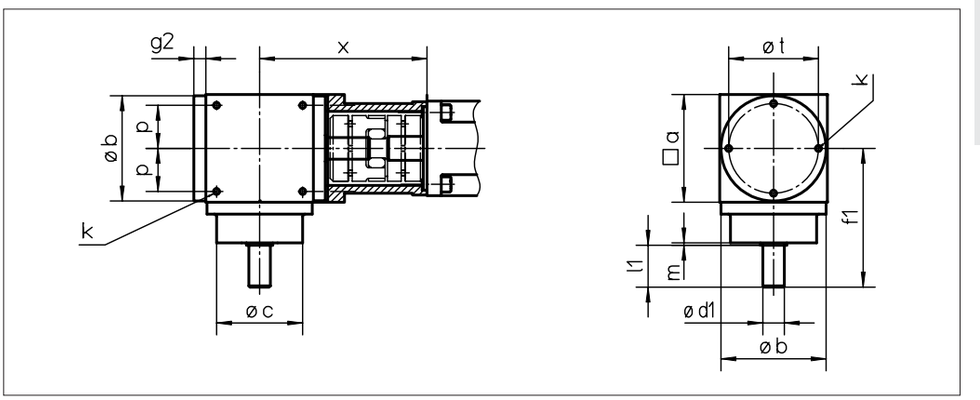
Technical data (for both versions)

Size	M_{max} Output [Nm]		n_{max} Input	M_{idle} [Nm]		Gear factor η	J [kgcm²] i = 1 : 1		J [kgcm²] i = 2 : 1		Weight [kg] i = 1 : 1		Weight [kg] i = 2 : 1		Max.angular backlash
	1 : 1	2 : 1	[1/min]	Ba 40	Ba 53		Ba 40	Ba 53	Ba 40	Ba 53	Ba 40	Ba 53	Ba 40	Ba 53	[angular min]
VL1	28	28	3000	0.15	0.30	0.97	3.58	3.96	0.88	1.26	5.50	6.50	5.50	6.50	10

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

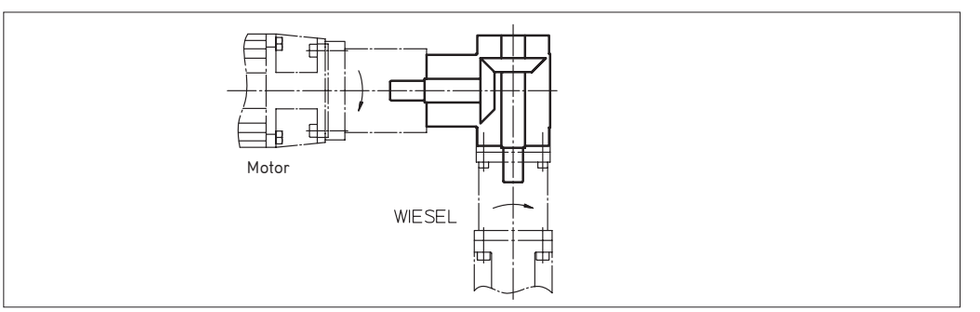
Mounting position

WIESEL®-gearbox VL-Ba 40



WIESEL®-model/gearbox	Dimensions [mm] a	b	c	d1	f1	g2	k	l1	m	p	t	x
WZ60-VL1-Ba 40	90	90	60	18	122	12	M8	35	2	35	75	144
WZ80-VL1-Ba 40	90	90	60	18	122	12	M8	35	2	35	75	144

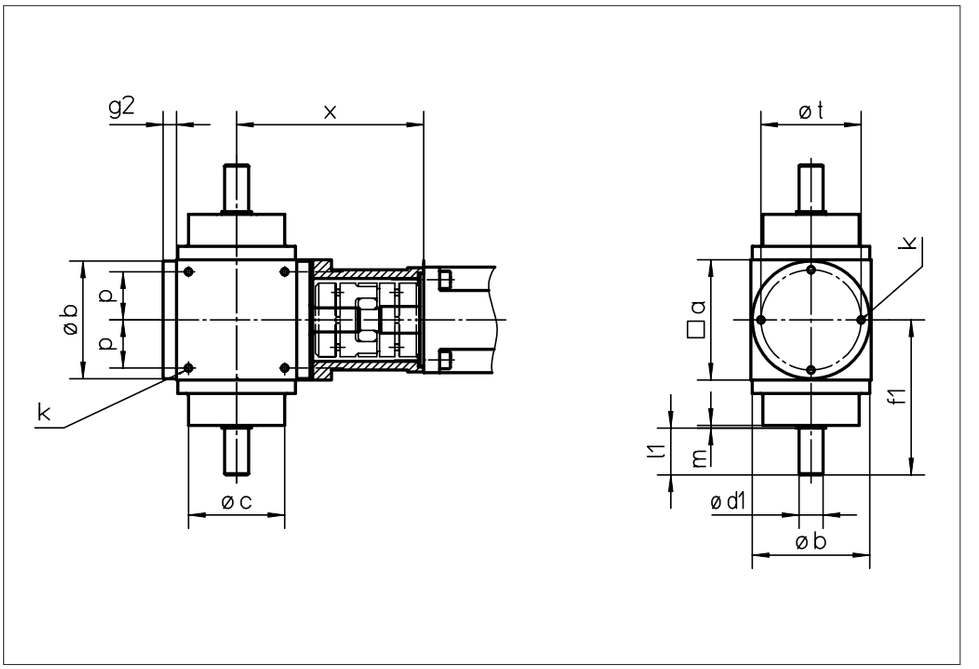
Direction of rotation



Order code see page 124

Mounting position

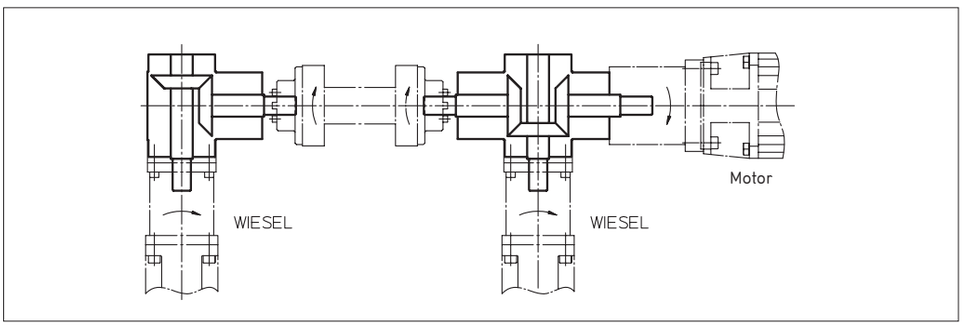
WIESEL® gearbox VL-Ba 53



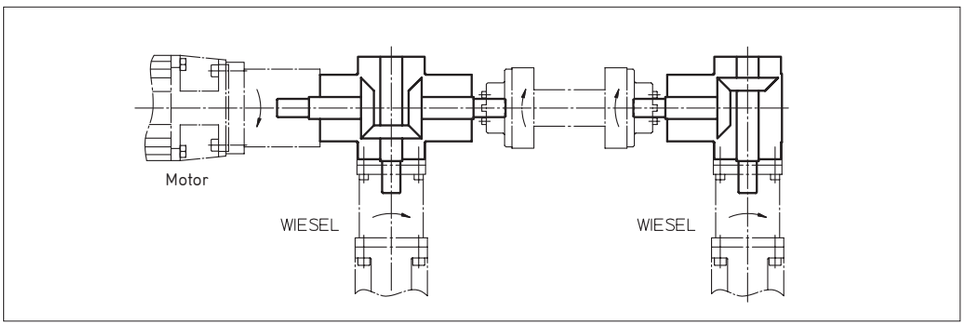
	Dimensions [mm]											
WIESEL® - model/gearbox	a	b	c	d1	f1	g2	k	l1	m	p	t	x
WZ60-VL1-Ba 53	90	90	60	18	122	12	M8	35	2	35	75	144
WZ80-VL1-Ba 53	90	90	60	18	122	12	M8	35	2	35	75	144

Direction of rotation

Motor right



Motor left



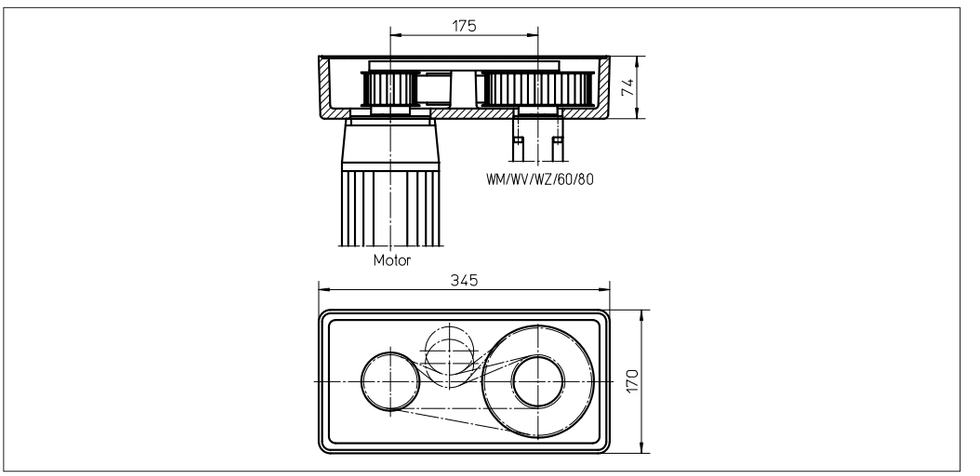
Order code see page 124

Accessories for WIESEL *VARIO*Line®
Timing belt drive/Mechanical limit switches

Antriebstechnik · Automation

RT Timing belt drive

The RT 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 toothed belt drives.
Transmission ratios of i = 1 : 1 and i = 2 : 1 are possible.



Technical data

Size	M_{max} [Nm]	n_{max} Input [rpm]	M_{Idle} [Nm]	Efficiency η	Mass interia 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

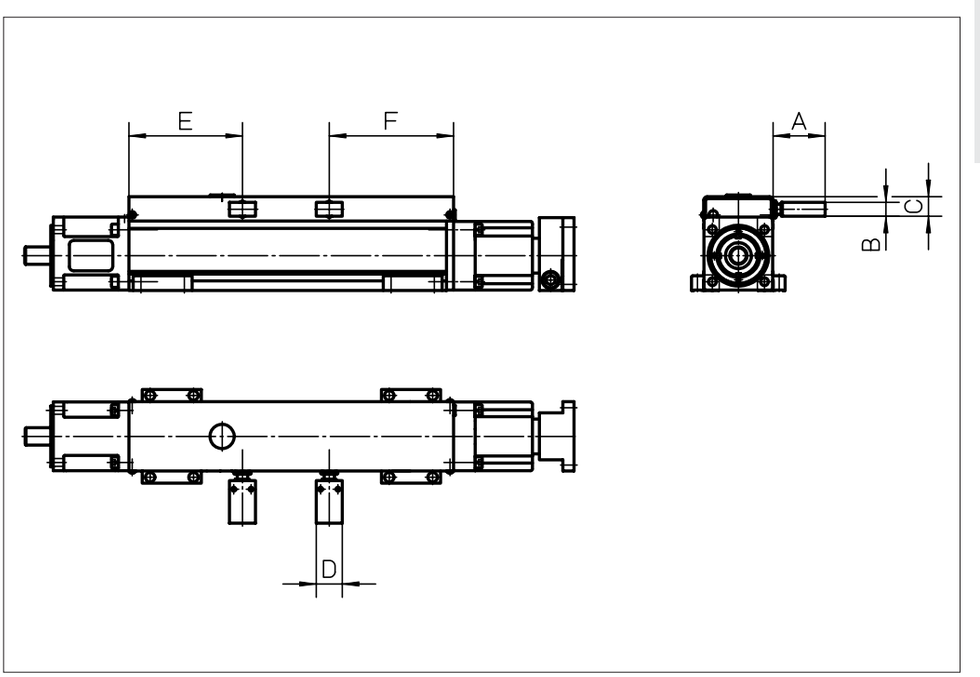
M_{max}= Maximum torque at the output shaft [Nm]
n_{max}= Maximum input speed [rpm]
M_{Idle}= Idle torque [Nm]
J = Mass inertia referred to the input shaft [kgcm2]

ES Mechanical limit switches

Mechanical limit switches must be used wherever people may be jeopardized if the electric drive does not cut out.
The position of the mechanical limit switches cannot be changed retroactively.

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
Cable length:
1 m, Id.-Nr. 6715450281
5 m, Id.-Nr. 6715450290
10 m, Id.-Nr. 6715450299

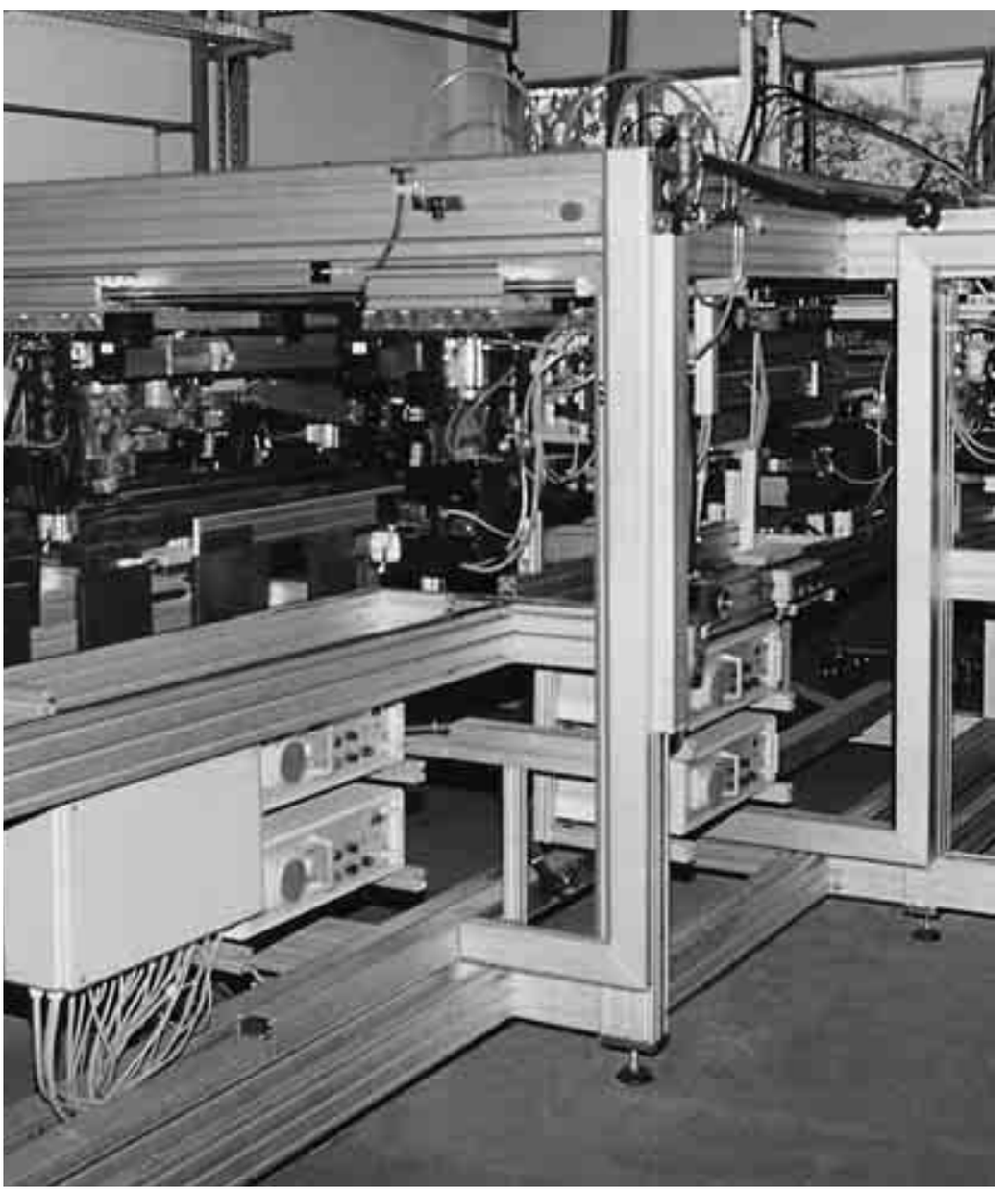


Note:
The linear unit can not be fixed by means of the mounting brackets KA0 in the range of the fixing plates for the mechanical limit switches. Security limit switches serve to cut off energy from the drive for sure. Whenever they are running at high speeds, they can not avoid driving over the admissible drive section. It is necessary to ensure by means of other drive and control measures that the limit areas are only approached at low speeds.

Size	Dimensions [mm]					
	A	B	C	D	E	F
WZ60	60	22.5	16	30	113	53
WZ80	60	22.5	16	30	112	84

Order code see page 124

NEFF®
Antriebstechnik · Automation

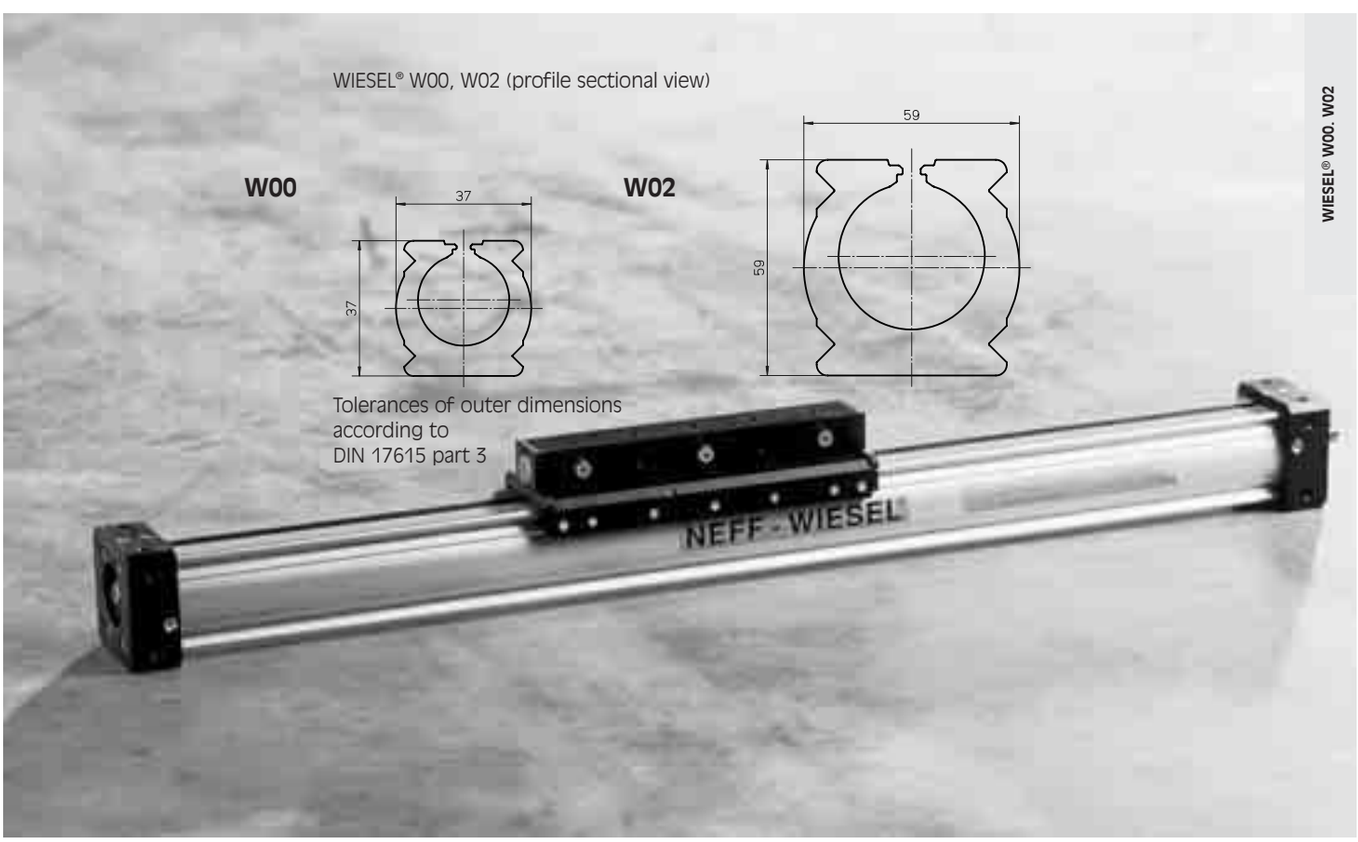


Mesh, eye-forming and welding system; Draht- und Metallwarenfabrik Rothfuß GmbH in Hemmingen, Germany

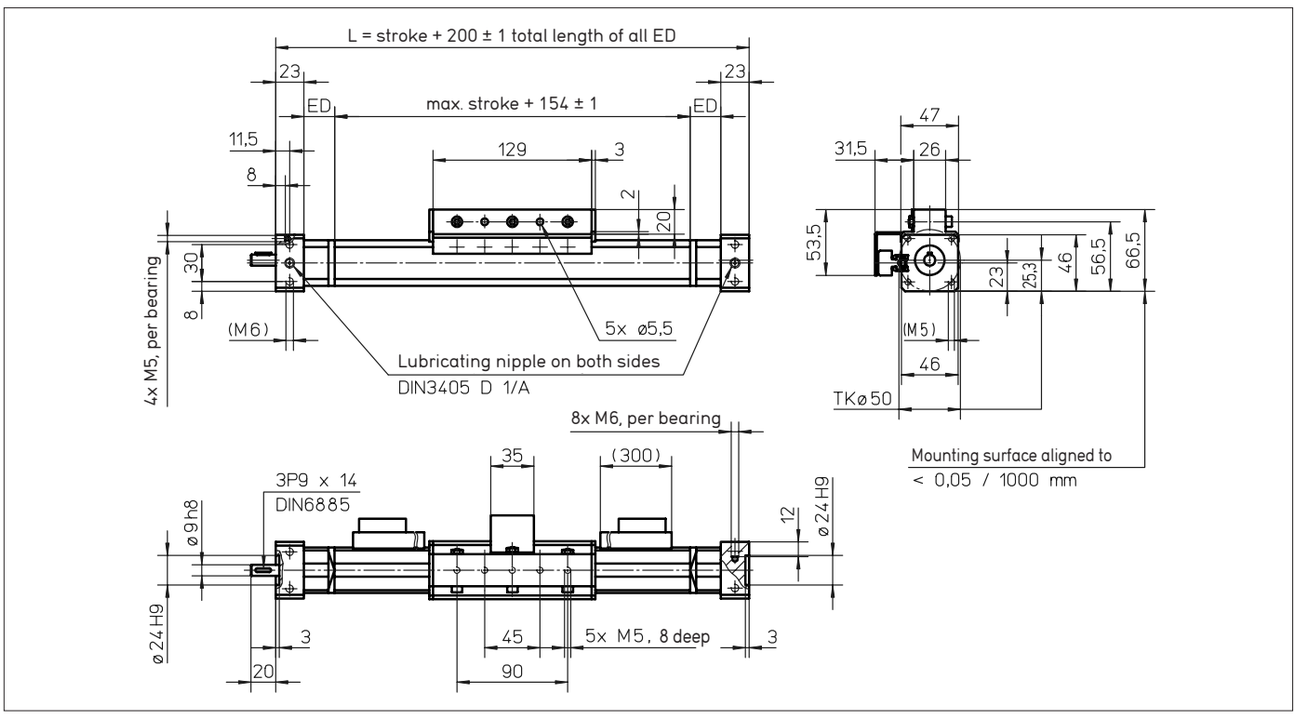
Mechanical linear drive unit WIESEL® W0

WIESEL® W00, W02

- Rigid aluminium profile with guide slot
- Power bridge with external sliding guide
- Completely protected precision screw drive
- High speeds thanks to patented spindle supports
- Available with ball screw drive or trapezoidal screw drive



WIESEL® W00
with ball screw drive and sliding guide



Technical data

- Linear speed: max. 0.25 m/s
- Repeatability: ± 0.05 mm
- Acceleration: max. 5 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Ball screw drive
  Diameter: 12 mm
  Lead: 5 mm
- Stroke length: 30 up to 1000 mm
- Power bridge: 129 mm long
- Geometrical moment of inertia: ly 9.76 · 10^4 mm⁴
  lz 9.26 · 10^4 mm⁴
- Weights
  Base without stroke: 2.00 kg
  100 mm stroke: 0.20 kg
  Carriage: 0.20 kg

Trapezoidal screw drive on request (4, 8 and 12 mm pitch)

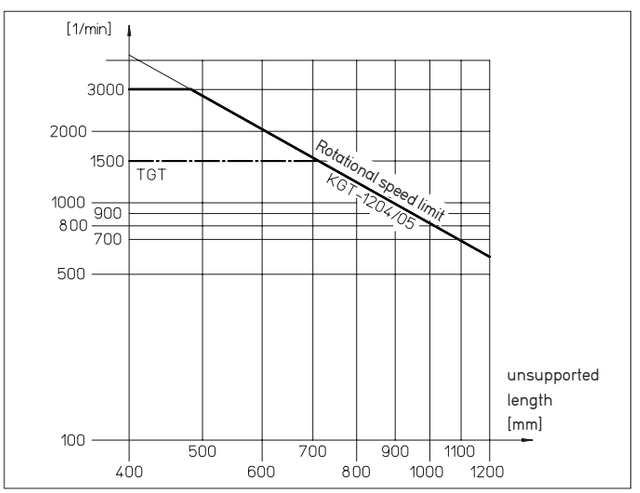
Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm]	
	4	5
150	0.20	0.20
1500	0.35	0.35
3000	0.5	0.5

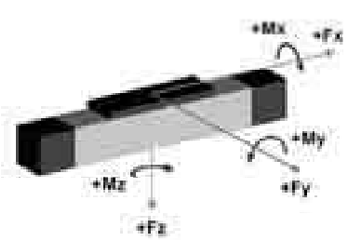
Extra length with end dampers

Length [mm]	L_{ED} [mm]
30	2 ED

Theoretical critical rotational speed



Load and load moments



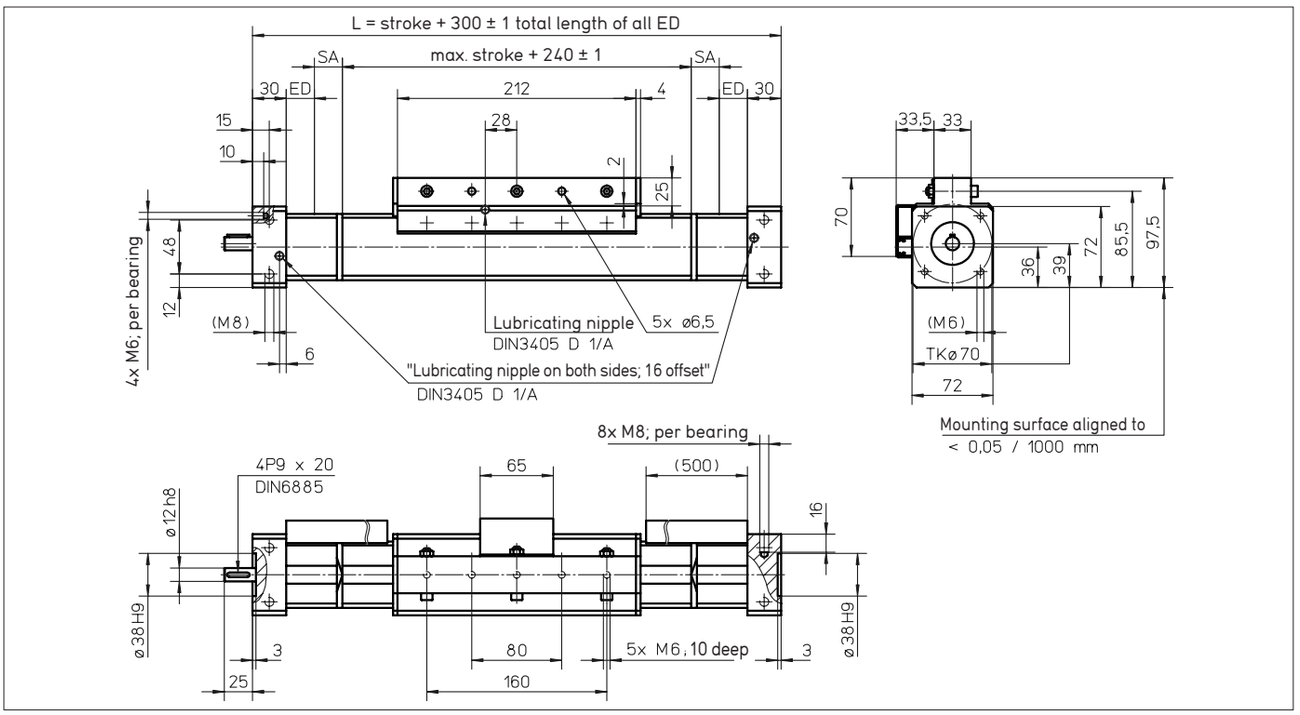
Load	dynam. [N]
Fx drive	200
Fy	200
± Fz	250

Load moment	dynam. [Nm]
Mx	6
My	15
Mz	10

Order code see page 126

WIESEL® W02
with ball screw drive and sliding guide

Antriebstechnik · Automation



Technical data

- Linear speed: max. 1 m/s
- Repeatability: ± 0.05 mm
- Acceleration:
  Single lead nut: max. 5 m/s²
  Double lead nut: max. 10 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Ball screw drive
  Diameter: 20 mm
  Lead: 5 or 20 mm
- Stroke length: 40 up to 5200 mm
- Power bridge: 212 mm long
- Geometrical moment of inertia: Iy 6.52 · 10^5 mm⁴
  Iz 5.99 · 10^5 mm⁴
- Weights
  Base without stroke: 3.60 kg
  100 mm stroke: 0.70 kg
  Carriage: 0.60 kg

Trapezoidal screw drive on request (4, 8 and 16 mm pitch)

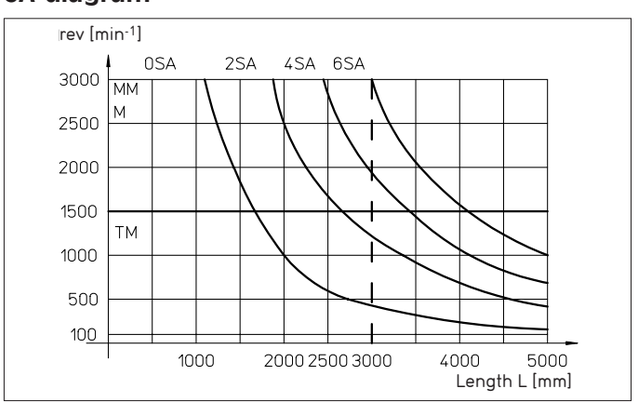
Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm]			
	MM 5	MM 20	M 5	M 20
150	0.75	1.00	0.50	0.70
1500	1.30	1.50	1.00	1.35
3000	1.75	2.00	1.50	1.80

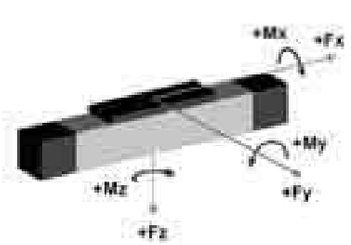
Additional length with spindle support and end dampers

Length [mm]	L_{SA} [mm]	L_{ED} [mm]
30	4 SA	–
60	6 SA	–
70	–	2 ED

SA-diagram



Load and load moments



Load	dynam. [N]
Fx drive 2005	2500
Fx drive 2020	1500
Fy	500
±Fz	650

Load moment	dynam. [Nm]
Mx	30
My	70
Mz	50

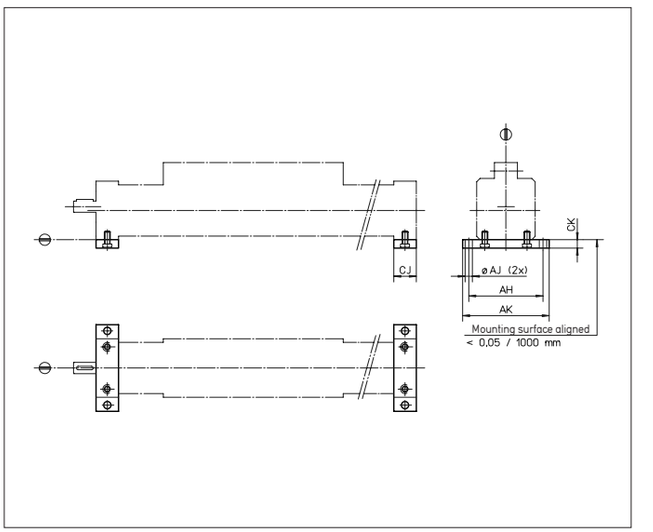
Order code see page 126

Accessories for WIESEL® W0
Mounting bracket

Antriebstechnik · Automation

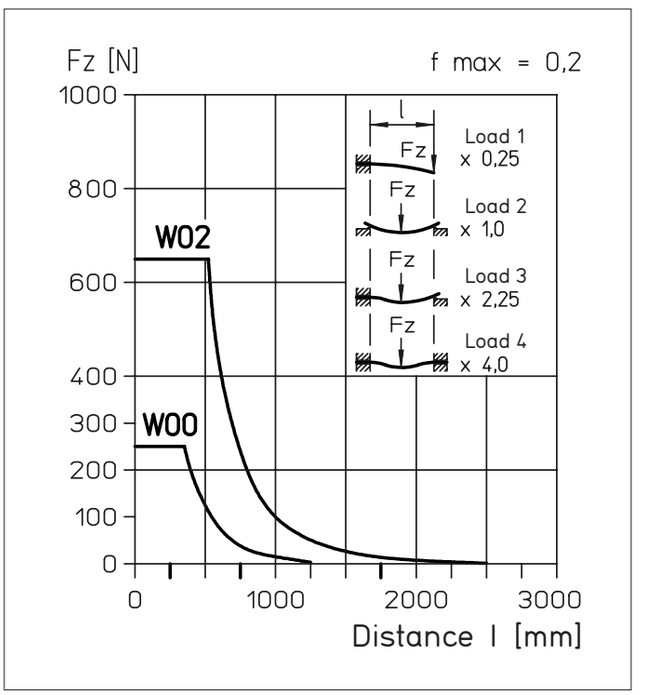
WBL Mounting brackets

The WBL mounting brackets are designed for situations where a screw connection from below is not possible.
They are to be used to mount WIESEL® units on pedestals and as a base for the MU central supports (2 WBL for 1 MU).



Size	Dimensions [mm]				
	AH	AJ	AK	CJ	CK
W00	60	7	72	20	10
W02	92	9	108	30	12

Deflection
W00, W02



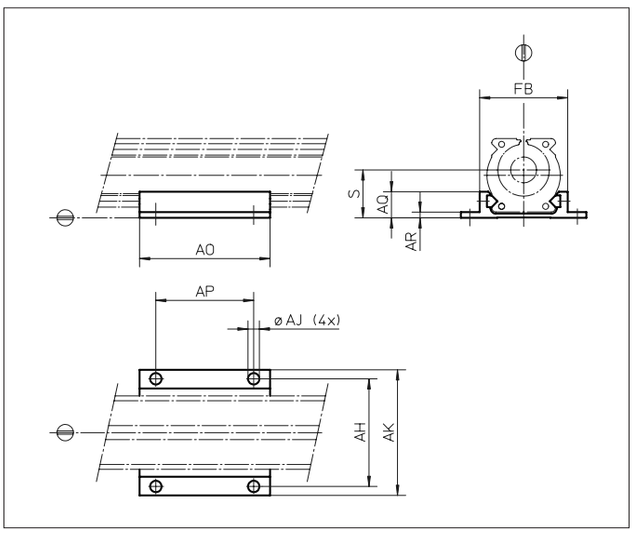
Accessories for WIESEL® W0
Central support

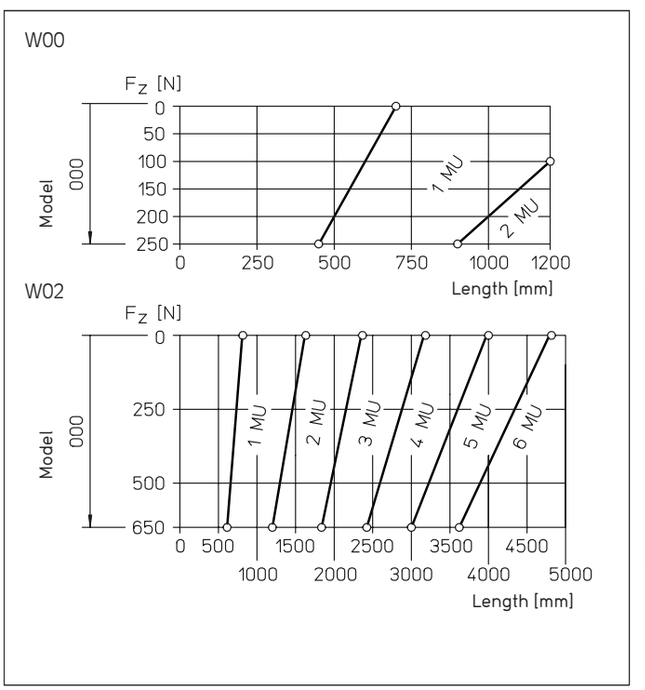
Antriebstechnik · Automation

MU Central support

The MU central support is an additional support for the WIESEL® cylinder, in order to prevent deflection.
In addition, the MU central support can also be used solely for mounting purposes, in which case it must be attached near to the fixed or moving bearing.

The number of central supports depends on the WIESEL® length (see MU diagram).
Increasing transverse forces (Fy, Fz) reduces the distance between supports.





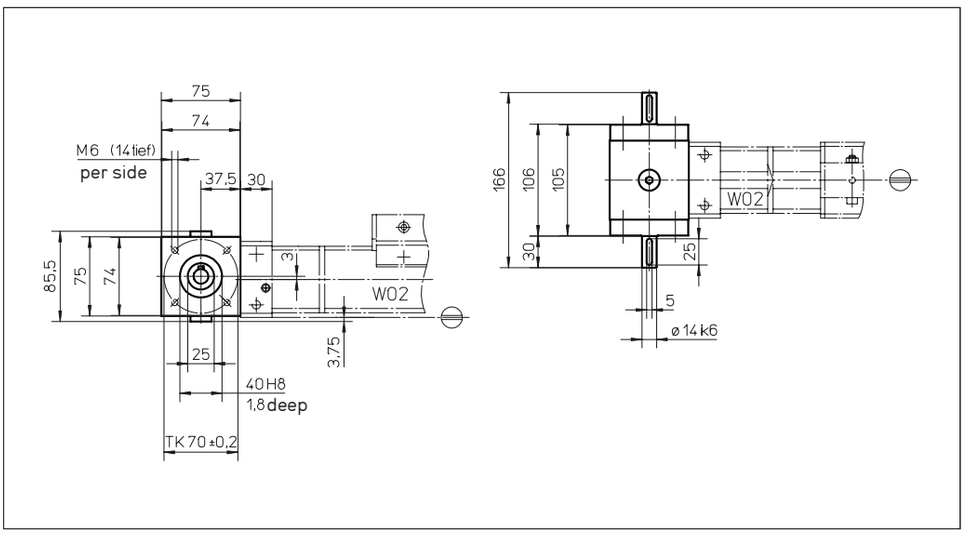
Size	Dimensions [mm]								
	AH	AJ	AK	AO	AP	AQ	AR	FB	S
W00	60	6.6	72	80	60	15.5	4.5	49	25.3
W02	92	9	108	120	90	24	6.5	74	39.0

Accessories for WIESEL® W0
Bevel gearbox/Parallel drive belt system

Antriebstechnik · Automation

KRG Bevel gearbox

Bevel gearboxes are used to install a motor at right angles to the linear drive units, or to drive two linear units parallel to each other.



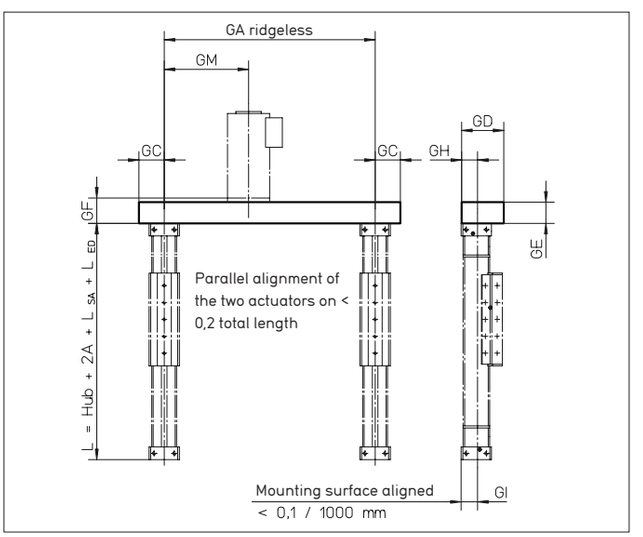
Technical data

Size	Torque [Nm]		Gear factor efficiency η	Noise [dBA]	Oil content ZGHVI 32
	idle	max.			
W02	0.60	25	0.80	65–75	60 ml

PRT 611 Parallel drive belt system for W00/W02

Two WIESEL® are connected by a parallel belt drive (PRT) to one motor.

Application:
- parallel, wide guides with drive
- Basis for multi-coordinate systems
- Stops slidable in parallel



Type	Dimensions [mm]									$M_{max.}$
	$GA_{min.}$	$GA_{max.}$	GC	GD	GE	GF	GH	GI	GM	[Nm]
W00	300	1000	35	50	30	61	25	25	0	12
W02	400	2000	60	100	50	60	38	39	200	12

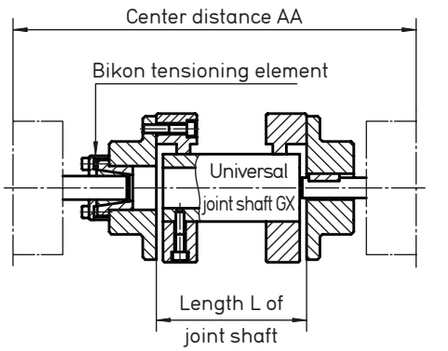
Accessories for WIESEL® W0
Parallel drive belt system/Universal joint shaft

Antriebstechnik · Automation

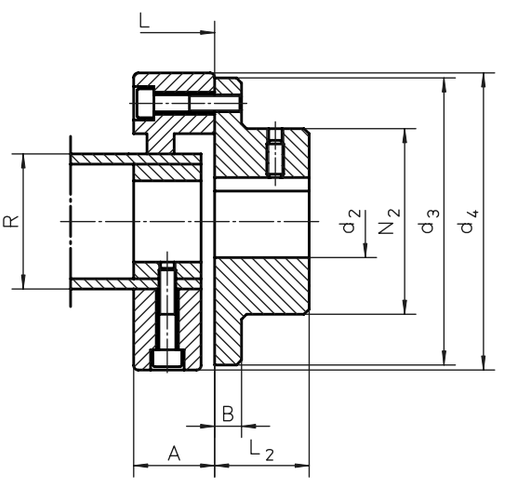
GX Universal joint shaft for W02

The GX universal joint shaft connects two WIESEL® units with ball screw drive and top-mounted bevel gearboxes in parallel.
The universal joint shaft transmits the torque from one WIESEL® to another.
Long connecting shafts should be supported over their length. The required pillow blocks are available on request.

Universal joint shaft GZ:
on request - for high demands on quiet running and speed (center part with essentric ring).



Gear KLL W02 GX2 with DKWN tensioner L = AA – 180



Technical data

Type	M1[1]	M2[2]	m1[3]	m2[4]	J1[5]	J2[6]	M_A[7]
GX2	20	20	1.06	1.42	13.8	5.29	9.7

[1] Transmittable torque [Nm]
[2] Max. input torque on the tensioning element [Nm]
[3] Weight without middle part [kg]
[4] Weight of middle part [kg]
[5] Mass inertia of the two connectors [kgcm²]
[6] Mass inertia of the shaft [kgcm²/m]
[7] Starting torque of the tensioning screws of the DKWN tensioning element [Nm]

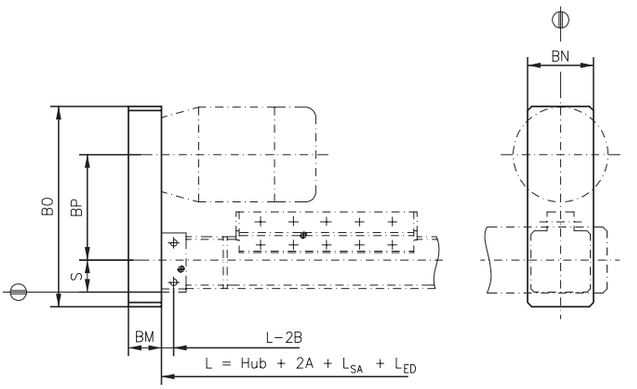
Type	Dimensions [mm]								
	A	B	$d_{2min.}$	$d_{2max.}$	d_3	d_4	L_2	N_2	R
GX 2	24	8	14	38	85	88	28	55	40

Accessories for WIESEL® W0
Timing belt drive

Antriebstechnik · Automation

RT 880 timing belt drive for W00/W02

The RT 880 timing 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 toothed belts.
Transmission ratios:
W00 i = 1 : 1
W02 i = 1 : 1
2 : 1
1 : 2
Permissible radial forces (without counter bearing)
W00 50 N
W02 150 N



Size	Dimensions [mm]				Technical data	
	BM[1]	BN	BO	BP	Max. Motor size	Transmission ratio i
W00	30	68	176	110	63 S B 14 – C 90[2]	1 : 1
W02	40	80	243	128	63 L B 14 – C 90	1 :1; 2 : 1[3]; 1 : 2

[1] Housing protrudes beyond fixed bearing

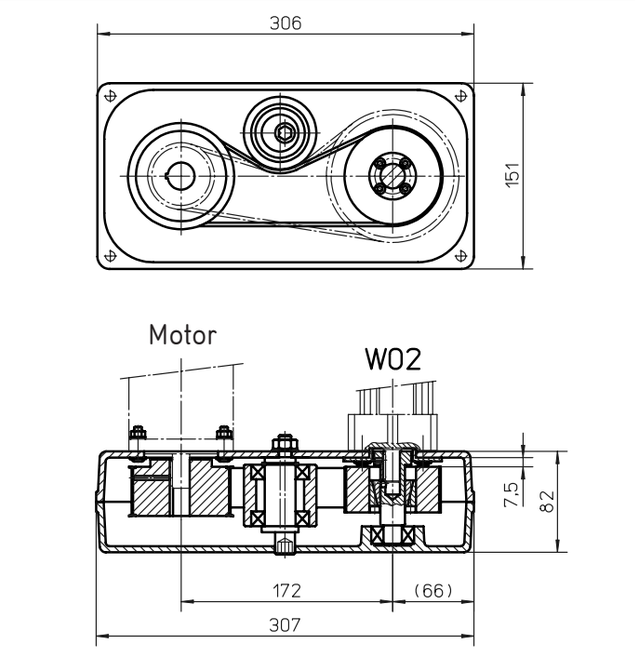
[2] W00: combined housing for motor size C80/90.
If no motor specified centering dia. 53 mm – no mounting bores

[3] Max. shaft dia. at motor: 12 mm

RT 890 timing belt drive for W02

Ratios:
i = 1 : 1
2 : 1
3 : 1

Transmittable drive torque:
max. 12 Nm



Size	$M_{max.}$	$n_{max.}$ Input	M_{idle}	Gear factor	Mass inertia			Weight [kg]		
	[Nm]	[1/min]	[Nm]	η	i = 1:1	i = 2:1	i = 3:1	i = 1:1	i = 2:1	i = 3:1
W02	12	3000	0.7	0.85	8.56	4.08	2.60	3.5	3.7	3.9

Accessories for WIESEL® W0
Cage attachment for IG 601 shaft encoder on mechanical linear drive unit, Motor cage

NEFF® Antriebstechnik · Automation

Cage attachment for IG 601 shaft encoder for W00/W02

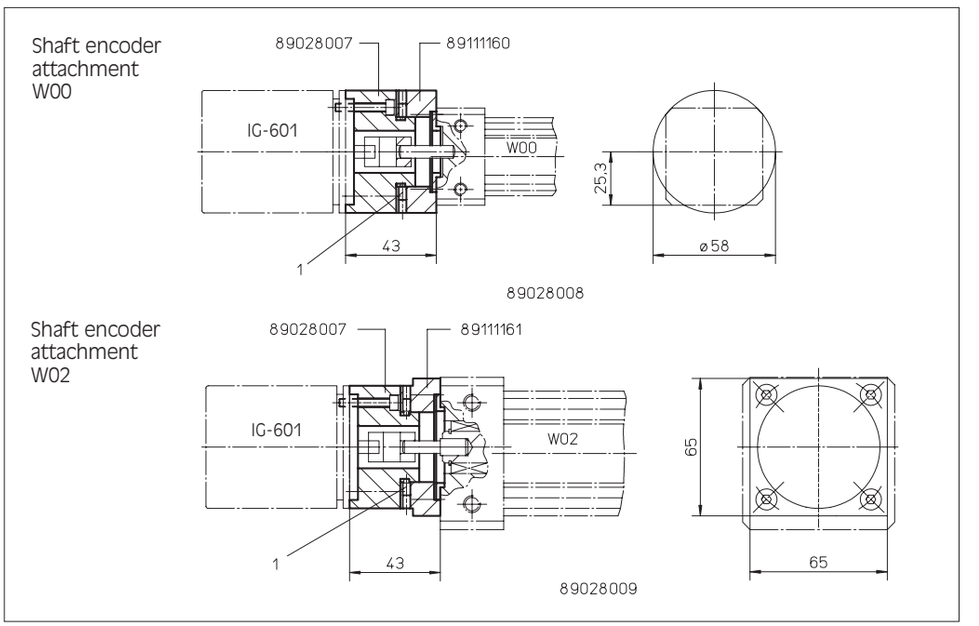
Incremental shaft encoders can be used in combination with screws to measure displacement. This is achieved by mounting the shaft encoder on the movable bearing end of the WIESEL® shaft.

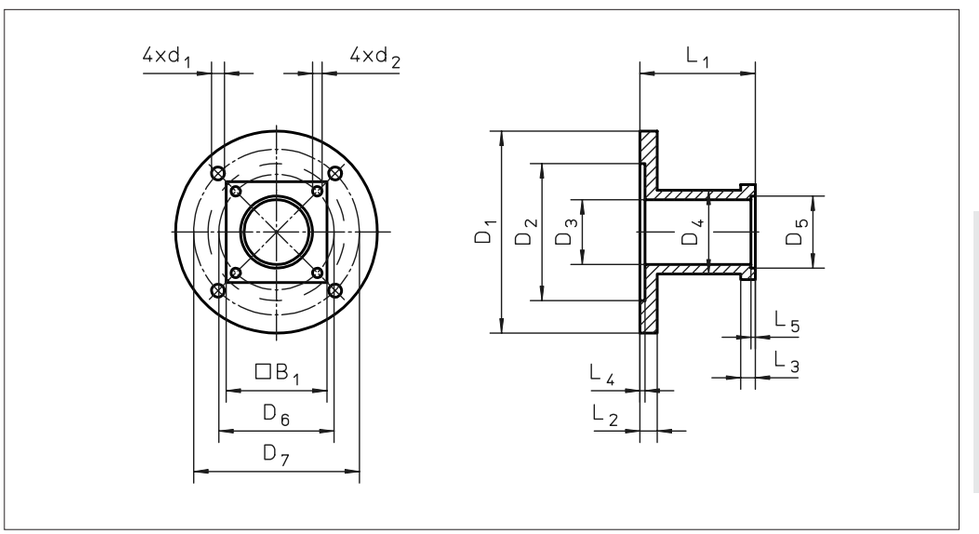
The IG601 incremental shaft encoders with pulse counts between 100 and 2500 are used by NEFF, as standard elements. Two output circuits are basically possible:
- GE = Push-pull output, 10–30 V
- LD = Line driver, as per RS 422 (phys.)

Detailed information see chapter "rotary encoder" page 109.

The shaft encoder is connected to the WIESEL® via a two-piece adapter flange and a coupling. It can be adjusted to the required reference point by loosening the threaded studs (1).

Absolute-value encoders on request.

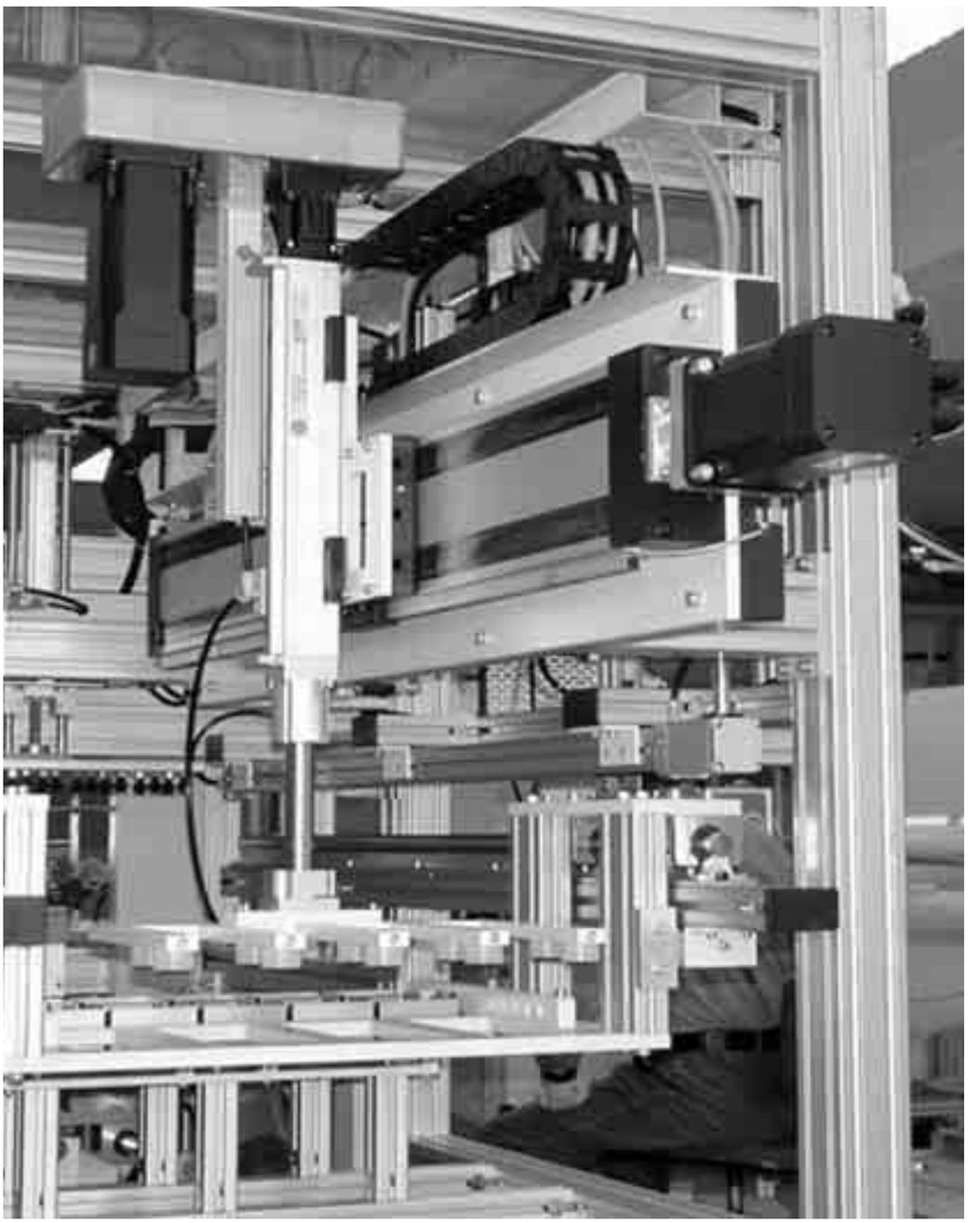




MG motor cage for W00/W02

The motor cages are used to mount motors on linear drive units, gearboxes, bearing units, pumps etc. They also serve as housings for couplings for connecting the motors and drive shafts of the units to be driven.

Product/Type/Size	Dimensions [mm]														
	B1	D_1	D_2	D_3	D_4	D_5	D_6	D_7	d_1	d_2	L_1	L_2	L_3	L_4	L_5
MG W00-C 80	45	80	50	33	40	38	50	65	5.5	5.5	45	10	9	3	3
MG W00-C 90	45	90	60	33	40	38	50	75	5.5	5.5	45	10	9	3	3
MG W02-C 80	66	80	50	46	56	50	65	70	5.5	6.6	70	10	10	3	3
MG W02-C 90	66	90	60	46	56	50	70	75	5.5	6.6	70	10	10	3	3
MG W02-C 105	66	100	70	46	56	50	70	85	6.6	6.6	70	10	10	3	3
MG W02-NMT 30	66	100	60	46	56	50	70	75	9.0	6.6	80	10	10	3.5	3
MG W02-C 120	66	120	80	46	56	50	70	100	6.6	6.6	80	10	10	3.5	3
MG W02-C 140	66	140	95	46	56	50	70	115	9.0	6.6	80	10	10	3.5	3
MG W00 blank	45	92	–	33	40	38	50	–	–	5.5	46	11	9	–	3
MG W02 blank	66	120	–	46	56	50	70	–	–	6.6	71	11	10	–	3
MG W02 blank	66	140	–	46	56	50	70	–	–	6.6	81	11	10	–	3



Packaging system for mint product
(Cool mint Listerine – Oral care strip)
Company Koch
Pfalzgrafenweiler/Germany

Modular linear system
WIESEL *FORCE*Line®

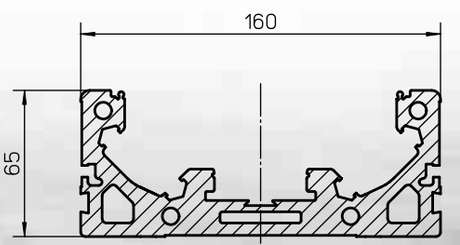
NEW **WIESEL *FORCE*Line®**
MLSH60 ZRT

- Fully integrated linear drive unit with toothed belt drive and roller guide
- High dynamics for the different requirements of the handling and assembly industry.

NEW **WIESEL *FORCE*Line®**
MLSM60 KGT

- Fully integrated linear drive unit with ball screw drive and linear ball recirculating guide
- Absorption of high loads and load moments for processing applications in mechanical engineering

WIESEL *FORCELine*® (Profile sectional view)

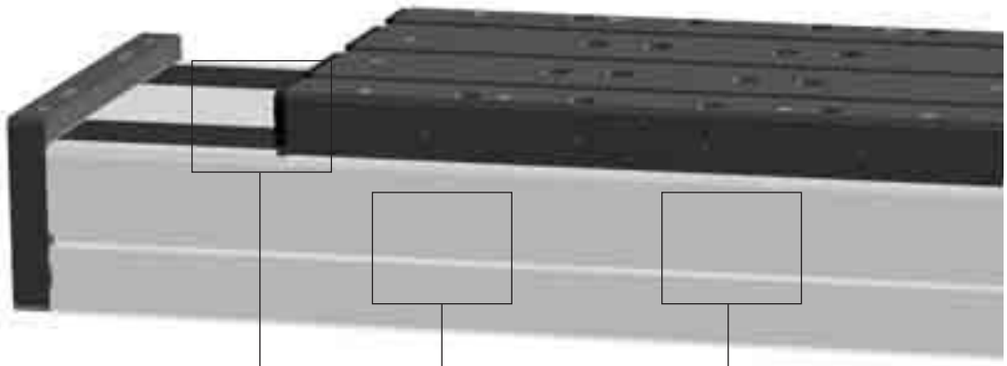


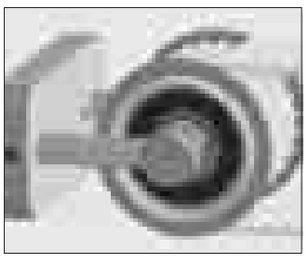
Tolerances of outer dimensions according to DIN 17615 part 3

WIESEL *FORCE*Line®
with ball screw drive or tooth belt drive

WIESEL *FORCE*Line®
MLSM60 KGT

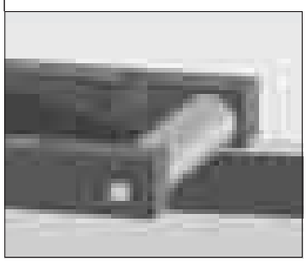
Fully integrated linear drive unit with ball screw drive and linear ball recirculating guide system for the absorption of high loads and load moments for processing applications in mechanical engineering.





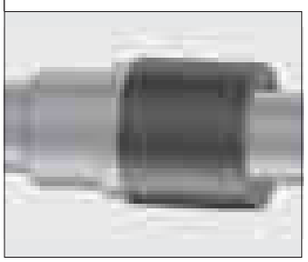
Tension of toothed belt

The toothed belt can be retensioned comfortably without dismounting the load. Thus reducing your service costs.



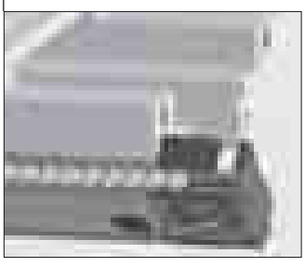
Patented sealing strip

The panteted sealing strip protects the mechanism effectively from dirt. This encreases the liability of your machine also under agressive environmental conditions.



Preloaded ball screw drive

Preloaded ball screw drive with double nut.

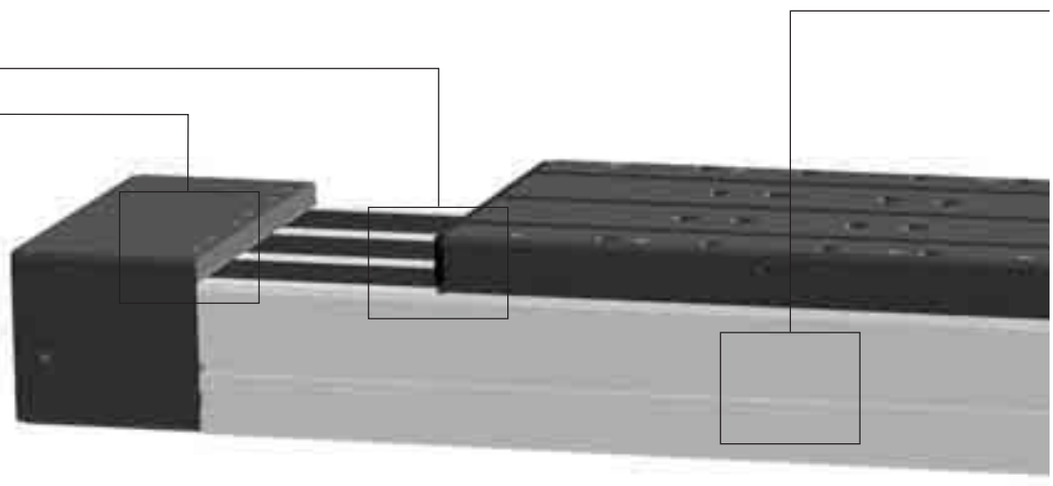


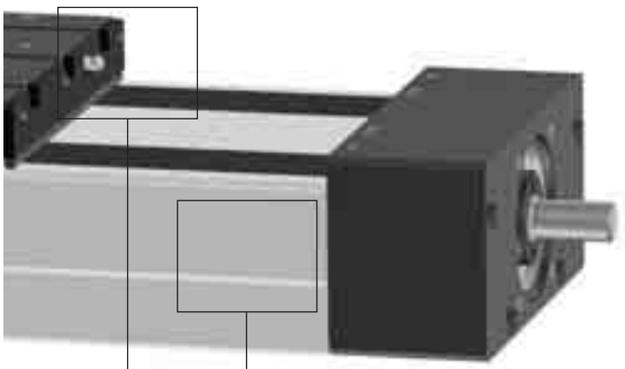
Integrated guide system

The powerfull ball recirculating guide system has been integrated into the profile in an angle of 45°. The optimum force introduction guarantees high forces and moments and give the axis high power density.

WIESEL *FORCE*Line®
MLSH60 ZRT

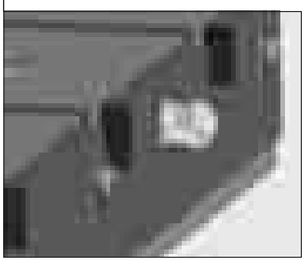
Fully integrated and protected linear drive unit with toothed belt drive and roller guide for the most varied applications in the area of handling and assembly.





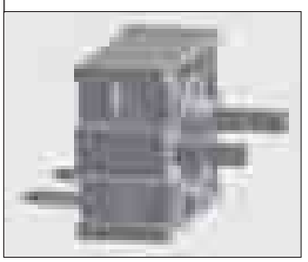
Preloaded ball screw drive with integrated ball recirculating system

The powerfull ball recirculating has been integrated into the profile at an angle of 45°. Together with the precise ball screw drive this ensures a high power density and stiffness.



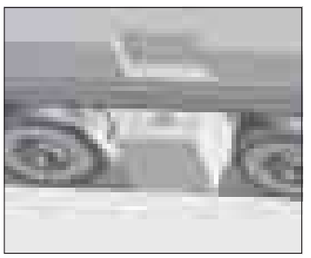
Central lubrication

The linear guide system of the ball screw type is conveniently relubricated from a central point. Whether by hand or automatically, maintenance is now a simple matter.



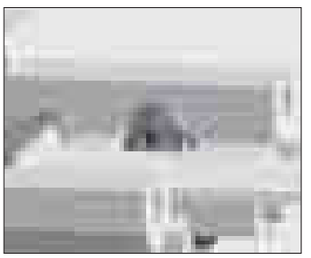
Screw support

The patented screw support system permits high speeds (max. input speed) at long strokes, and has been optimized even more.



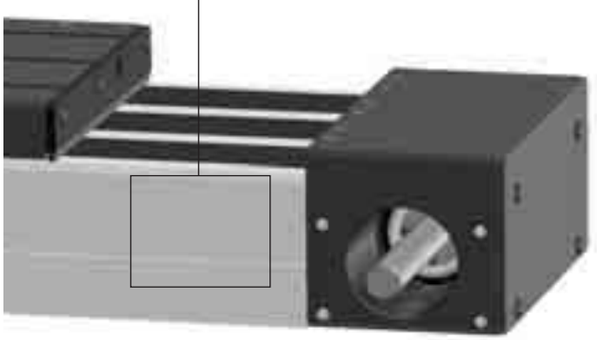
Roller guide

The reliable, robust roller guide system has been integrated into the profile at an angle of 45°. This allows high dynamics at high loads and load moments.



ATL toothed belt

The ATL toothed belt combines high dynamics and high precision. With its steel reinforcement it is specially suitable for linear drive units.

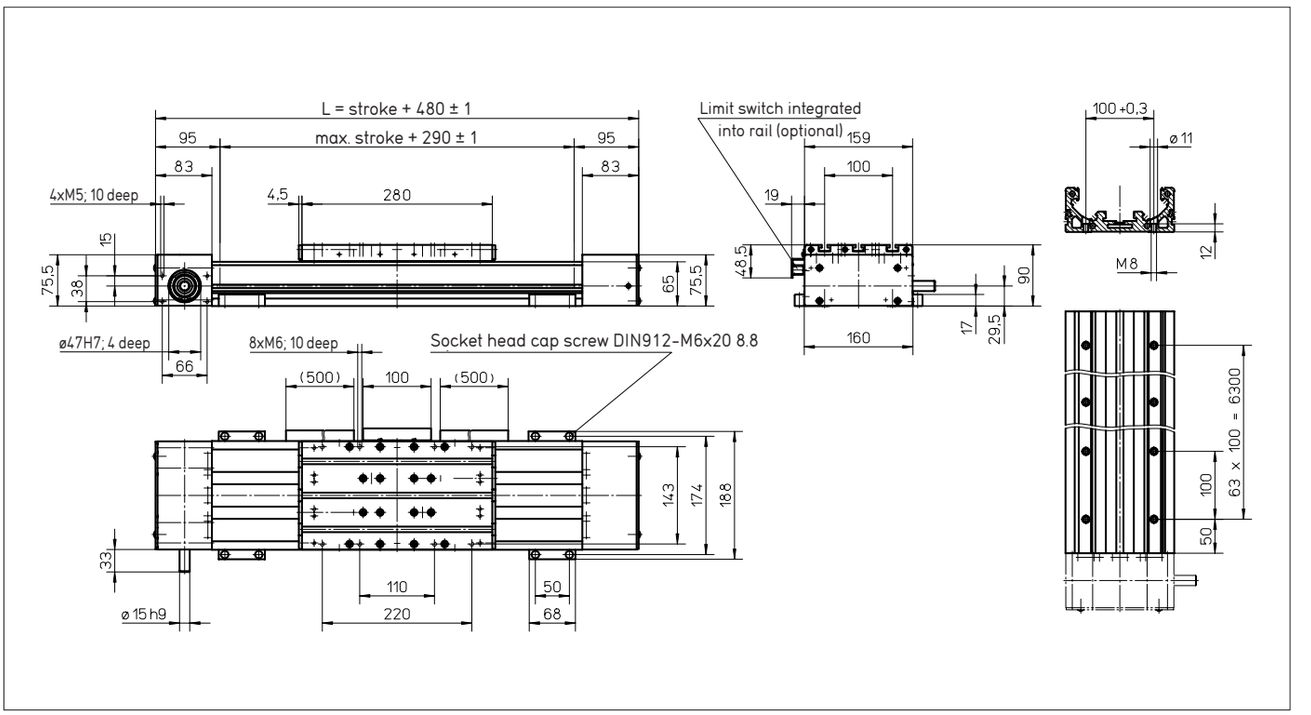


Dynamic toothed belt drive with robust roller guide

The robust roller guide system has been integrated at an angle of 45°. Together with the ATL toothed belt this ensures high dynamics. The overall protected design with the patented cover strip ensures the reliability of your machine.

WIESEL *FORCE*Line® MLSH60 ZRT
with roller guideway and ATL toothed belt

Antriebstechnik · Automation

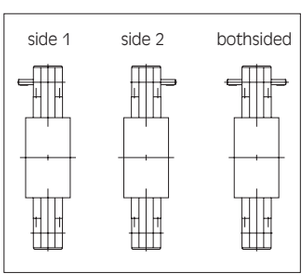


Technical data

- Linear speed: _____ max. 6.5 m/s
- Repeatability: _____ ± 0.05 mm
- Acceleration: _____ max. 40 m/s²
- Drive element: _____ Toothed belt 32 ATL5
- Pully Diameter: _____ 42.97 mm
- Stroke per revolution: _____ 135 mm
- Max. Stroke: _____ max. 5500 mm
- Power bridge: _____ 280 mm long, see page 89
- Geometrical moment of inertia: _ $I_y = 1.29 \cdot 10^6$ mm⁴ $I_z = 1.20 \cdot 10^7$ mm⁴
- Weights:
  Base unit with zero stroke: _____ 12.60 kg
  100 mm stroke: _____ 1.33 kg
  Power bridge with carriage: ____ 3.90 kg
- Provided: _____ with 4 pieces KA0 mounting brackets

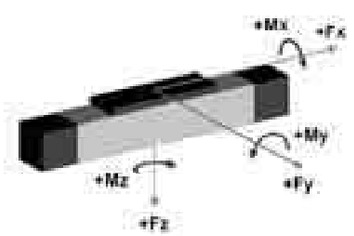
Execution of drive shafts:

Drive shafts (Detailed description see page 123)



Idle torques [Nm]

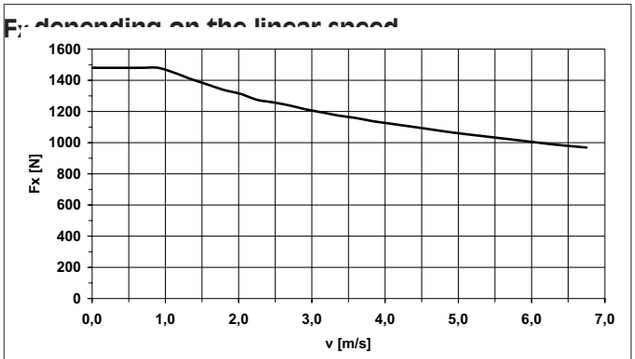
Rotational speed [rpm]	M_{idle} [Nm]
150	5
1500	9
3000	12



Load	dynam. [N]
Fx drive	1480
Fy	3000
± Fz	3000

Load moment	dynam. [Nm]
Mx	165
My	310
Mz	310

Fx depending on the linear speed



Order Code see page 125

WIESEL *FORCE*Line® MLSM60 KGT
with ball screw drive and integrated ball recirculating guide system

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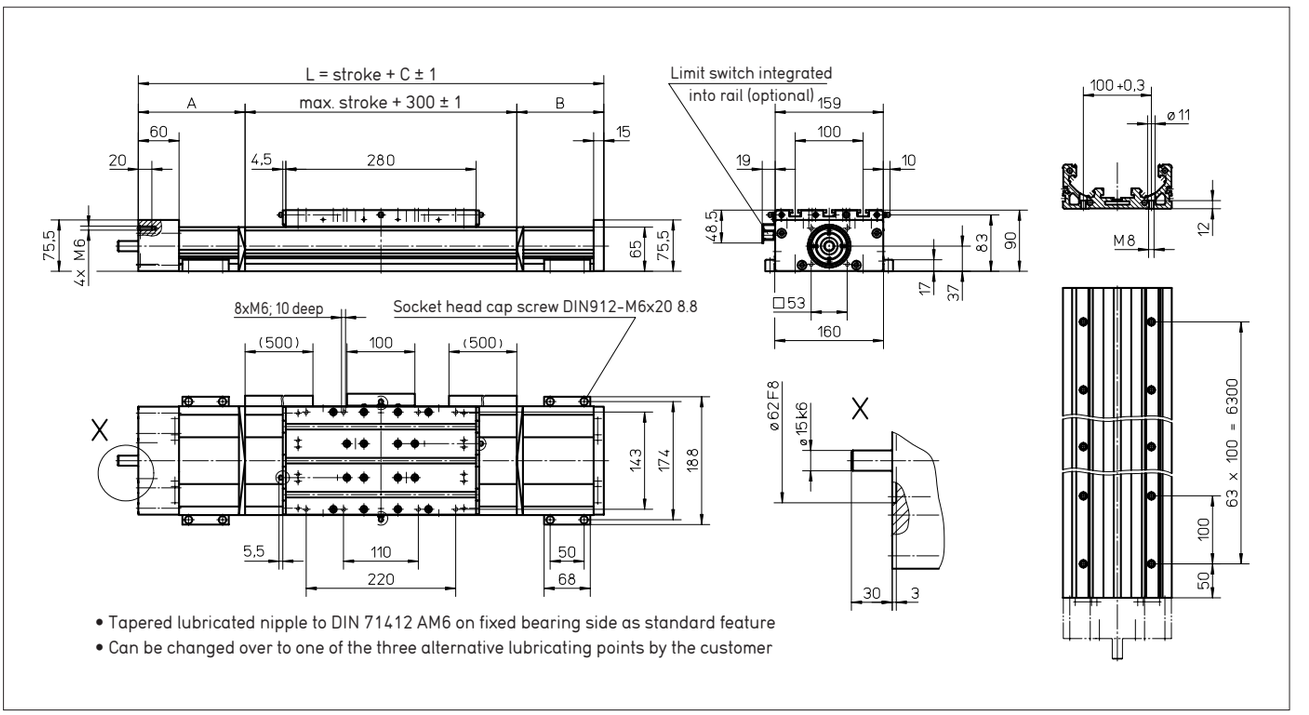
Antriebstechnik · Automation



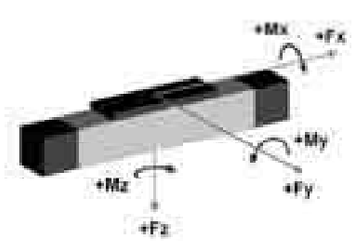
Technical data

- Linear speed: _____ max. 2.5 m/s
- Repeatability: _____ ± 0.01 mm
- Acceleration: _____ max. 20 m/s²
- Rotation speed: _____ max. 3000 1/min
- Drive element: _____ Pretensioned ball screw with double nut
- Diameter: _____ 25 mm
  Leads: _____ 5, 10, 20, 50 mm
- Max. Stroke: _____ max. 5500 mm
- Power bridge: _____ 280 mm long
  see page 89
- Geometrical moment of inertia: _ $I_y = 1.19 \cdot 10^6$ mm⁴
  $I_z = 1.08 \cdot 10^7$ mm⁴
- Weights:
  Base unit with zero stroke: _____ 14.40 kg
  Weight per 100 mm stroke: ____ 1.65 kg
  Power bridge with guide: _____ 5.70 kg
- Provided: _____ with 4 pieces KA0 mounting brackets

Idle torques [Nm]

Rotational speed [rpm]	Lead P [mm]			
	5	10	20	50
150	1.0	1.6	1.9	2.7
1500	1.6	2.2	2.3	3.2
3000	2.0	2.6	2.6	3.8

Loads and load moments



Load	dynam. [N]
Fx drive	5000
Fy	6000
± Fz	6000

Load moment	dynam. [Nm]
Mx	400
My	460
Mz	460

Additional lenghts as a function of the stroke

Stroke lenght [mm]	A [mm]	B [mm]	C [mm]
0 – 750	90	45	435
751 – 1220	105	90	495
1221 – 1980	125	110	535
1981 – 2730	150	135	585
2731 – 3490	170	155	625
3491 – 4240	195	180	675
4241 – 5000	215	200	715
5001 – 5500	235	220	755

Order Code see page 125

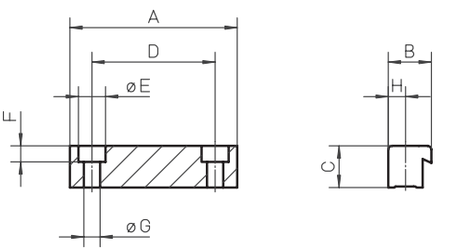
Mounting brackets KAO

The mounting brackets KAO serve for securing the WIESEL® unit to a mounting surface. They are inserted in the grooves provided in the sides of the tubular aluminium profile and screwed onto the mounting surface with the aid of cylinder head screws.
The number of mounting brackets required depends on the load and overall length of the WIESEL® unit. Increasing side forces reduce the admissible distance between the brackets.

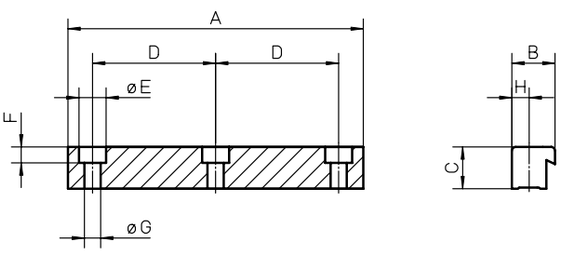
4 Pieces of mounting brackets are delivered with each unit.

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 borne without significantly deforming the tubular aluminium profile.

MLS 60 KAO Standard



MLS 60 KAO long



Tightening torque [Nm]* of the attachment screws

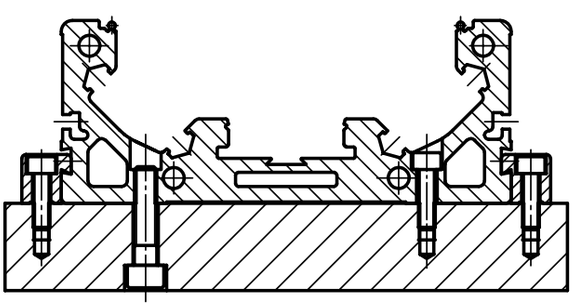
Size	Dimensions [mm] A	B	C	D	⌀ E	F	⌀ G	H	Torque [Nm]* [Nm]*
MLS 60 KAO Standard	68	17.5	17	50	11	6.5	6.6	7	7.3 - 12
MLS 60 KAO long	120	17.5	17	50	11	6.5	6.6	7	9.0

* for black grub screw threaded part way 8.8 unoiled on aluminium

Additional fixing of the tubular section

For an additional fixing there are holes drilled on the bottom of the tubular section.
The profile can be mounted:

- from below, threaded M8 (thread length 12mm)
- from inside (by lifting the cover strip) threaded M6, length of the tapped through hole: 12 mm



Order Code see page 125

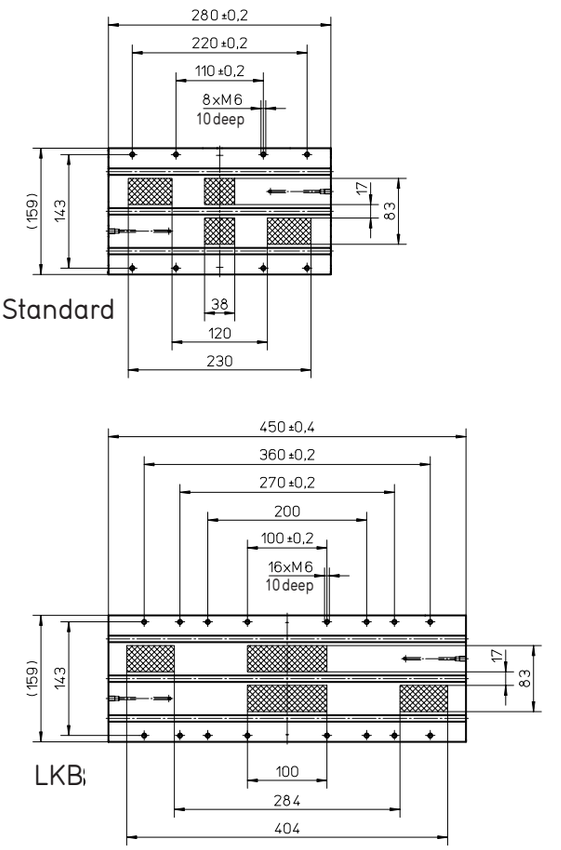
LKB Long power bridge

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 WIESEL® unit:
L_{tot} = Stroke + C + ΔKb

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

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



Size	Δ Kb	Length of power bridge [mm]	My [Nm]	Mz [Nm]
MLSM 60 KGT	170	450	940	940
MLSH 60 ZRT	170	450	585	585

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 aluminium profile. The distance between supports should be reduced in order to minimize this deformation.

Order Code see page 125

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 the WIESEL®:
L_{tot} = Stroke + C + L_A

C = Specific additional length [mm]
(see technical data of the respective WIESEL®)

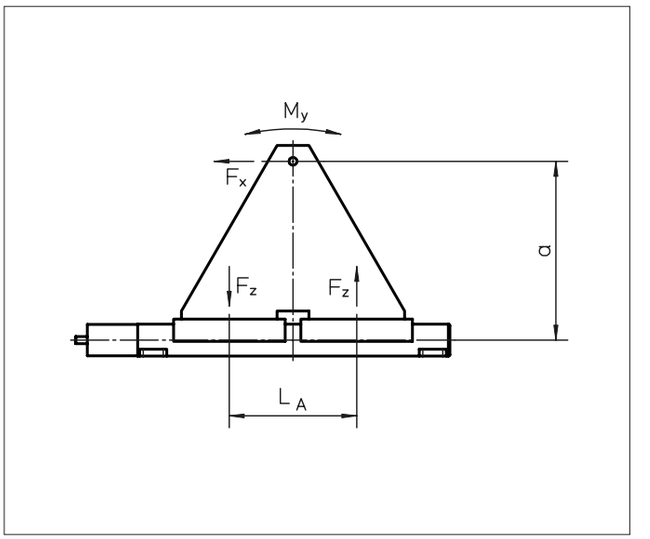
Minimum center distance between driven and free-sliding power bridge (given for standard power bridge)

Size	L_A [mm]
MLSH 60 KGT	290
MLSM 60 ZRT	320

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

Size	F [N]
MLSH 60 ZRT	40
MLSM 60 KGT	270

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



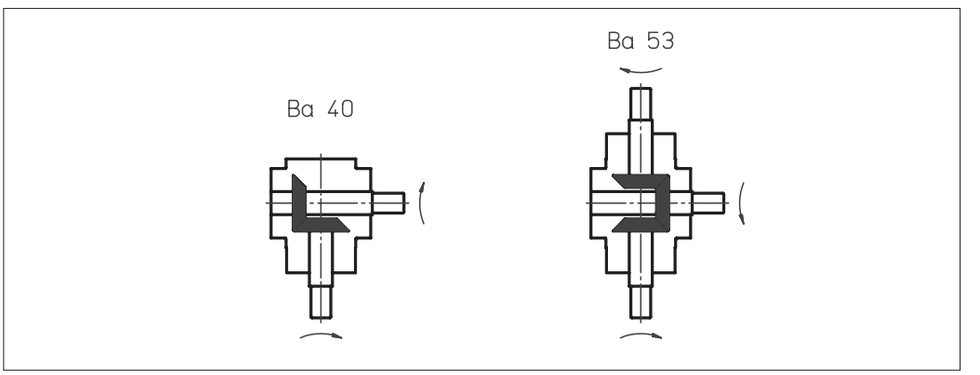
Order code see page 126

Accessories for WIESEL *FORCE*Line®
Bevel gearbox

NEFF® Antriebstechnik · Automation

KRG Bevel gearbox

Bevel gearboxes are used to install a motor at right angles to the linear drive unit or to operate two linear drive units in parallel.
A specific gearbox size is assigned to each WIESEL® model. The two gearbox sizes Ba 53 and Ba 40 with transmission ratios of 1:1 and 2:1 are available as standard.



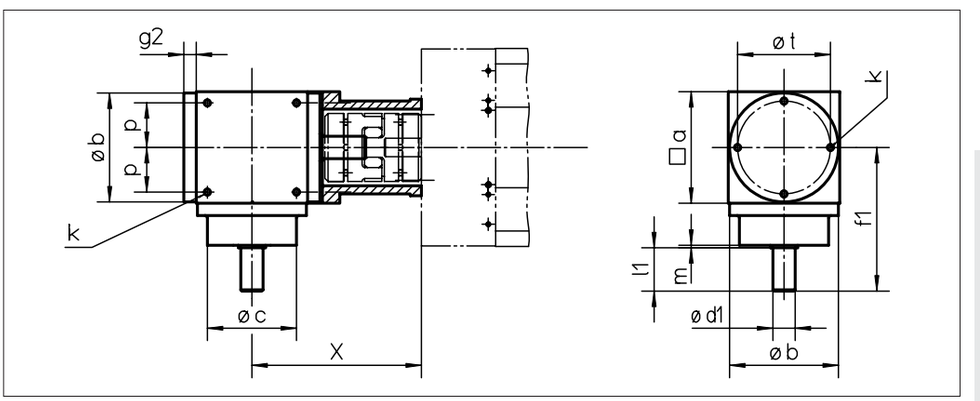
Technical data (for both versions)

Size	M_{max} Output [Nm]		n_{max} Input	M_{idle} [Nm]		Gear factor η	J [kgcm²] i = 1 : 1		J [kgcm²] i = 2 : 1		Weight [kg] i = 1 : 1		Weight [kg] i = 2 : 1		Max. angular backlash
	1 : 1	2 : 1	[1/min]	Ba 40	Ba 53		Ba 40	Ba 53	Ba 40	Ba 53	Ba 40	Ba 53	Ba 40	Ba 53	[angular min]
VL1	28	28	3000	0.15	0.30	0.97	3.58	3.96	0.88	1.26	5.50	6.50	5.50	6.50	10
VL2	60	60	3000	0.30	0.50	0.97	12.02	13.69	4.21	5.88	12.00	15.00	12.00	15.00	10

M_{max} = Maximum torque at the output shaft [Nm]
n_{max} = Maximal input speed [1/min]
M_{idle} = Idle torque [Nm]
J = Mass interia referred to the input shaft [kgcm²]

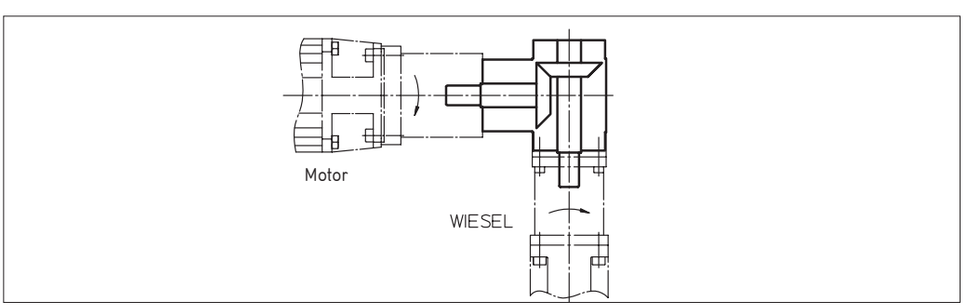
Mounting position

WIESEL® gearbox VL–Ba 40



WIESEL®-model/gearbox	Dimensions [mm]											
	a	b	c	d1	f1	g2	k	l1	m	p	t	x
MLSM 60 KGT-VL1-Ba 40	90	90	60	18	122	12	M8	35	2	35	75	143
MLSM 60 KGT-VL2-Ba 40	120	120	80	25	162	15	M10	45	2	50	100	170

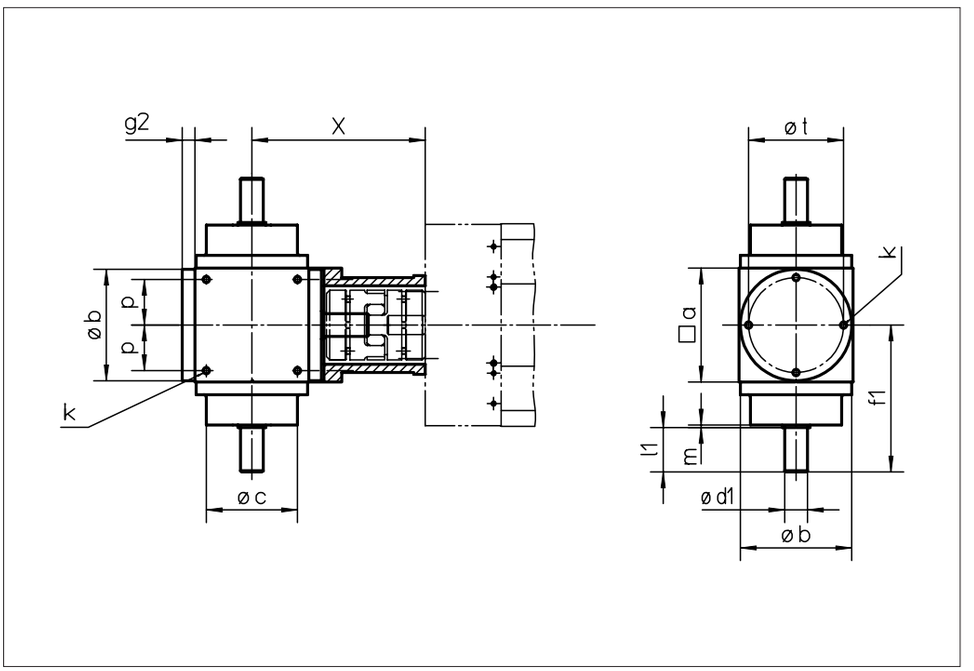
Direction of rotation



Order code see page 125

Mounting position

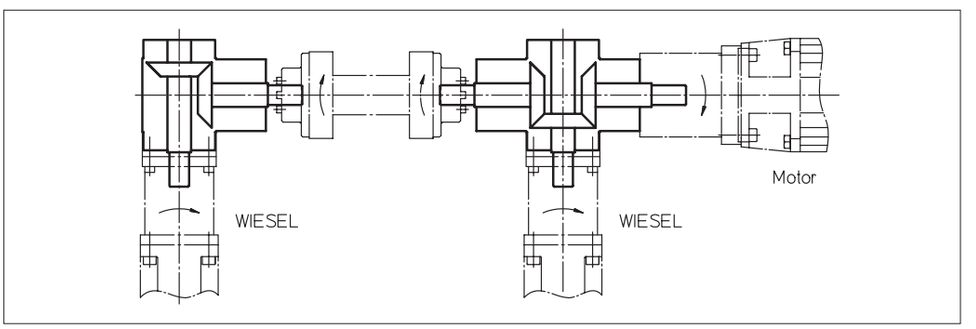
WIESEL®-gearbox VL-Ba 53



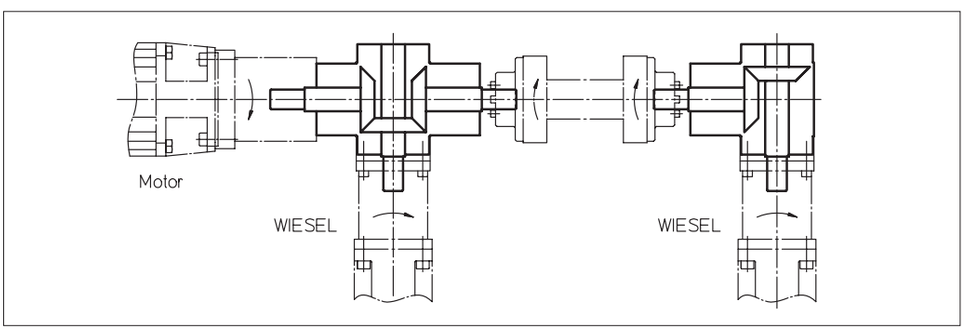
WIESEL®-model/gearbox	Dimensions [mm]											
	a	b	c	d1	f1	g2	k	l1	m	p	t	x
MLSM 60 KGT-VL1-Ba 53	90	90	60	18	122	12	M8	35	2	35	75	143
MLSM 60 KGT-VL2-Ba 53	120	120	80	25	162	15	M10	45	2	56	100	170

Direction of rotation

Motor right



Motor left



Order code see page 125

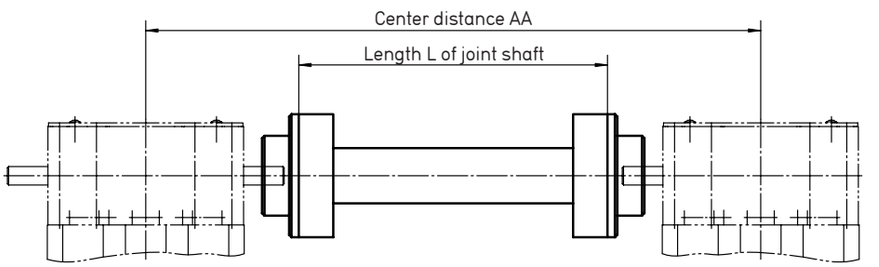
Accessories for WIESEL *FORCE*Line®
Universal joint shaft

NEFF® Antriebstechnik · Automation

GX Universal joint shaft for MLSH

The GX universal joint shaft connects two WIESEl® units with toothed belt drive (MLSH) or ball screw drive (MLSM) and mounted bevel gearboxes in parallel. The universal joint shaft transmits the torque from one WIESEl® to another.
Long connecting shafts should be supported over their length. The required pillow blocks are available on request.

Universal joint shaft GZ:
on request – for high demands on quiet running and speed (center part with eccentric ring).



with 2x DKWN

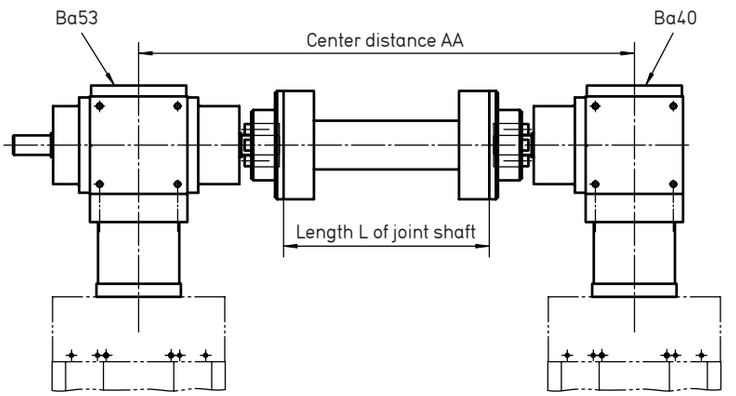
MLSH60 with GX4: L = AA – 249

with 2x key way

MLSH60 with GX4: L = AA – 225

GX Universal joint shaft for MLSM

Calculation of the overall length as a function of the center distance



MLSM60-VL1 Ba53/VL1 Ba40 GX4 with 2 DKWN tensioners L= AA – 259
MLSM60-VL2 Ba53/VL2 Ba40 GX8 with 2 DKWN tensioners L= AA – 353

Technical Data

Size	M1[1]	M2[2]	m1[3]	m2[4]	J1[5]	J2[6]	M_A[7]
GX4	60	75	2.31	1.61	21.4	7.63	4.9
GX8	120	200	3.55	2.16	78	18.58	16.5

[1] Transmittable torque [Nm]
[2] Max. torque on the tensioning element [Nm]
[3] Weight without middle part [kg]
[4] Weight of middle part in [kg/m]
[5] Mass inertia of the two connecors [kgcm2]
[6] Mass inertia of the shaft [kgcm2/m]
[7] Starting torque of the tensioning screws of the DKWN tensioning element [Nm]

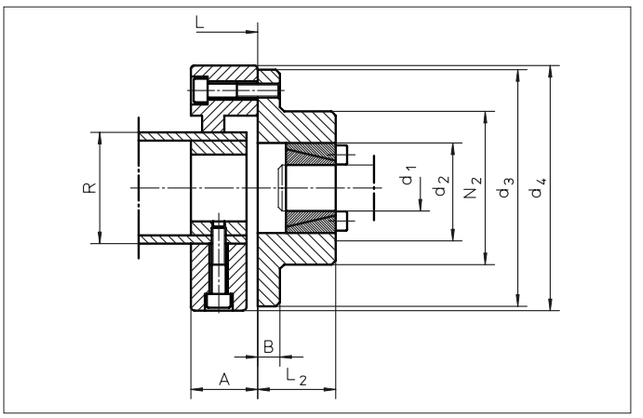
Order code see page 125

Accessories for WIESEL *FORCE*Line®
Universal joint shaft/Timing belt drive

NEFF® Antriebstechnik · Automation

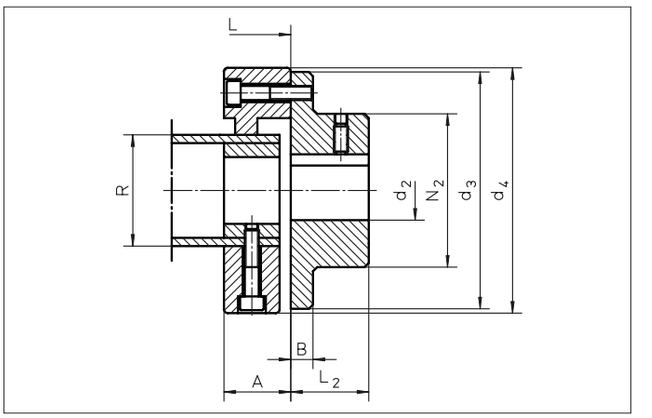
Execution with tensioner (standard)

Size	Dimensions [mm]								
	A	B	d_1	d_2	d_3	d_4	L_2	N_2	R
GX4	28	8	18	36	100	100	30	65	45
GX8	32	10	25	47	120	125	42	80	60



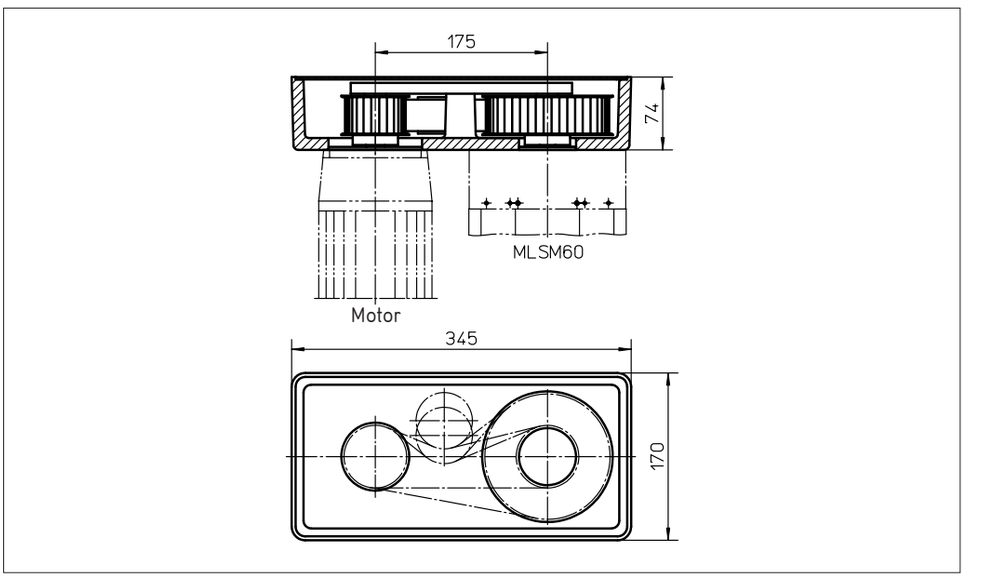
Execution with key way (on request)

Size	Dimensions [mm]								
	A	B	$d_{2min.}$	$d_{2max.}$	d_3	d_4	L_2	N_2	R
GX4	28	8	16	45	100	100	30	65	45
GX8	32	10	20	55	120	125	42	80	60



RT Timing belt drive

The RT80 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.



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
RT80	30	3000	ca. 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 the input shaft [kgcm²]

Order code see page 126

Accessories for WIESEL *FORCE*Line®
Mechanical limit switches

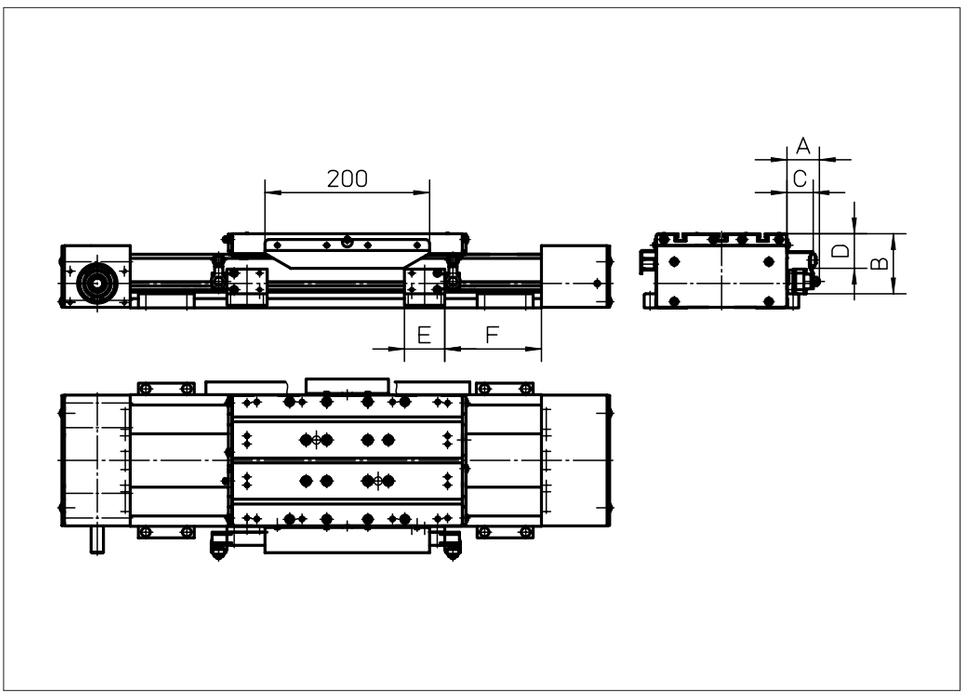
Antriebstechnik · Automation

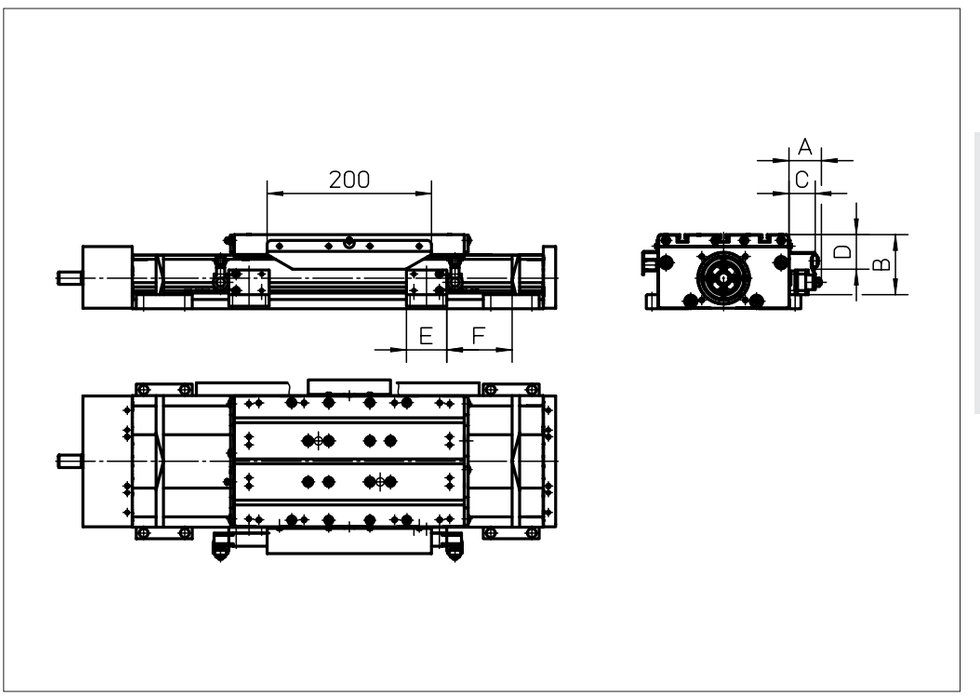
ES Mechanical limit switches

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 aluminium profile.
The adjustment of the limit switch is enabled by moving the bracket (incl. the switch) in the KAO-groove.

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
Cable length:
1 m, Id.-Nr. 6715450281
5 m, Id.-Nr. 6715450290
10 m, Id.-Nr. 6715450299





Note: In the area of the attachment plates for the mechanical limit switches, the linear unit cannot be attached with the KAO brackets. Safety limit switches serve to reliably switch off the power supply to the drive when the limit switch is actuated. If they are approached at high speed, they cannot prevent an overstepping of the permitted range of travel. Other drive or controlside measures must be taken to ensure that the area of the end positions is approached only at low speed.

Size	Dimensions [mm]					
	A	B	C	D	E	F
MLSM60 KGT	40	73	32	42	104	50
MLSH60 ZRT	40	73	32	42	104	50

Order code see page 126

ADG Shaft encoder attachment

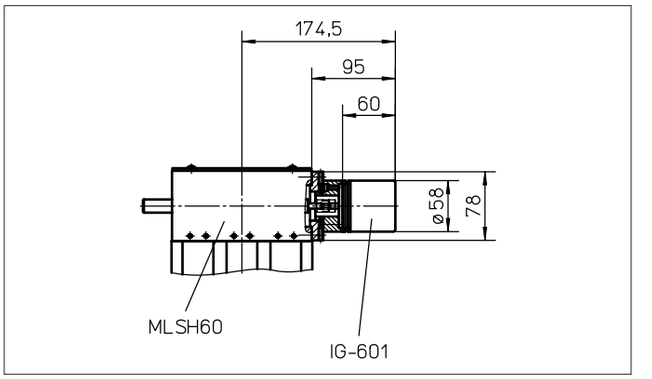
Incremental shaft encoders can be used to measure the linear travel of ball screws. This is achieved by mounting the shaft encoder on the movable bearing end of the WIESEL® shaft (MLSM).
IG601 incremental shaft encoders with puls counts between 100 and 2500 are used by NEFF as standard elements.
Two output circuits are basically possible:
– GE = Push-pull output, 10 – 30 V
– LD = Line driver. antivalent, as per RS 422 (5V ± 10%)

Detailed information can be found on page 109.

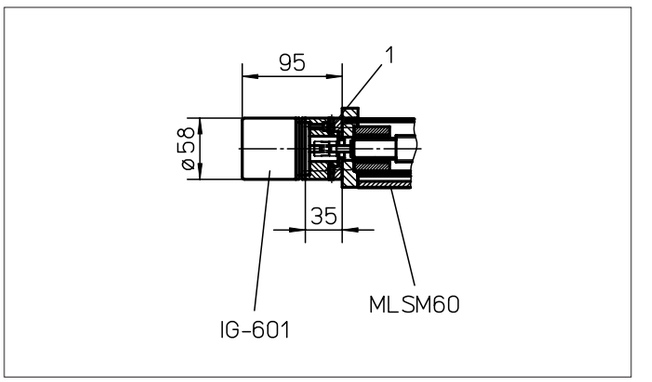
The shaft encoder is connected to the WIESEL® via two-piece adapter flange and a coupling. It can be adjusted to the required reference point (1) by loosening the threaded studs.

Absolute-value encoders on request.

G601 mounted on MLSH 60 ZRT



IG601 mounted on MLSM 60 KGT



Order code see page 125

NEFF®
Antriebstechnik · Automation

Drive technology

Linear drive unit and electric drive from a single source – what do you get out of it?

Motors from NEFF complement the WIESEL® units to powerful compact drive packages.
For high precision and dynamic applications the use of servo drives is recommended.

For applications with lower requirements three-phase AC-motors or spur geared motors can be used.

What you can gain from NEFF's drive technology:

Optimum price/performance ratio
System, linear drive unit and drive are all perfectly matched – everything from a single source.

Function reliability guaranteed!
Every drive is assembled, parameterized and subjected to a trial run at NEFF.

No hidden costs
Calculation, planning, choice of components and parameterization are all handled by NEFF.

One contact
For all drive questions from calculation up to maintenance and service you have one responsible competent partner.

Note

The offerings presented here are the standard program for the German market. As a rule, the international NEFF partners have a different range of motors and gears.

Digital AC-servo drives

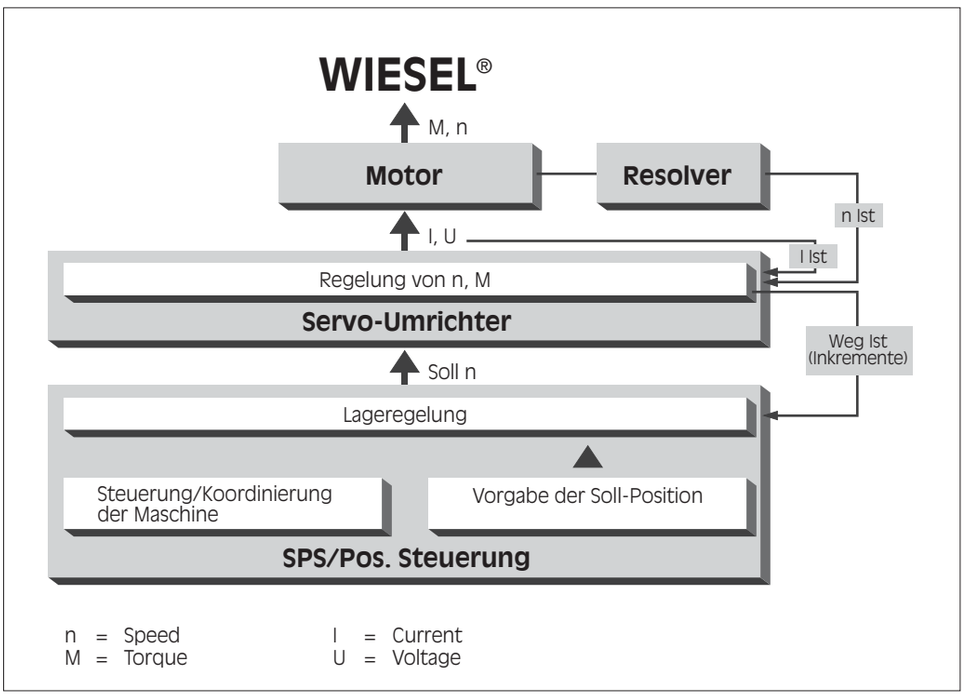
Your type of problem:
Demanding handling tasks such as:

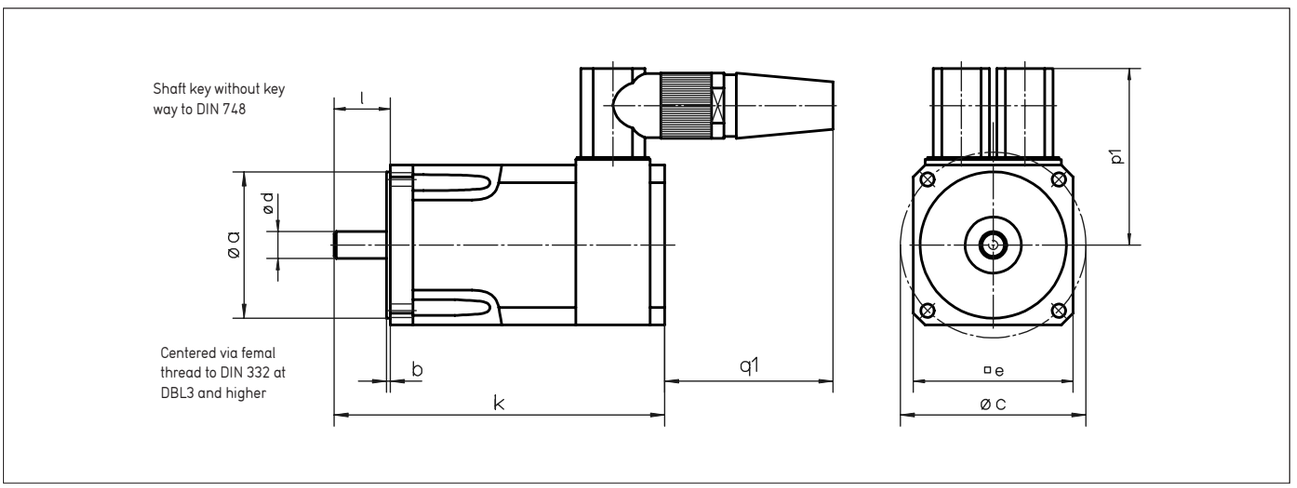
- Precise positioning
- Highly dynamic cycles
- Placing of elements
- Spraying/coating

Features of the drive concept

- Direct connection to the main power supply 230 V - 400 V
- Sinusoidal commutation and resolver integrated into motor to provide information on position
- Optional high resolution feedback device: sine-cosine encoder or absolute encoder
- PC Software for parameterization and diagnosis
- Numerous different interface options (position control integrated into converter)
- Built in a production line certified to DIN ISO 9001
- Documented conformity to CE standards

Components and transmission of signals



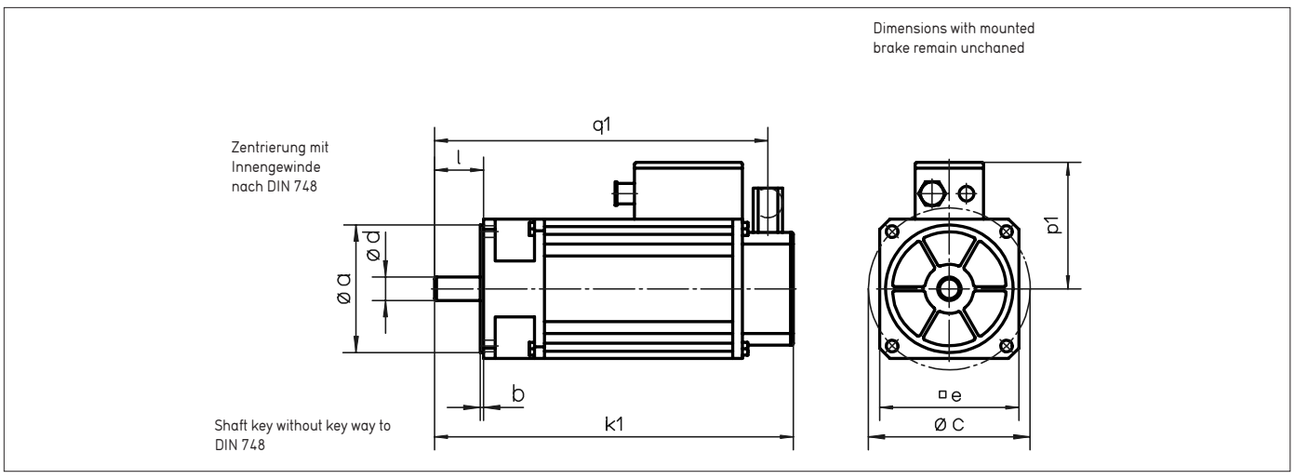


Technical data

Motor	Dimensions [mm]									
	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	l [mm]	K without brake	K with brake	q1	p1
DBL2 H00040	40	2,5	63	9	55	20	122	155	80	65
DBL3 H00130	60	2,5	90	11	75	23	134	167	80	70
DBL3 M00190	60	2,5	90	11	75	23	152	185	80	70
DBL3 N00300	60	2,5	90	14	75	30	188	221	80	70
DBL4 N00530	95	3	115	19	105	40	185	217	80	81
DBL4 N00750	95	3	115	19	105	40	230	262	80	81
DBL5 N01050	130	3,5	165	24	142	50	220	263	80	83
DBL5 N01700	130	3,5	165	24	142	50	271	314	80	83
DBL6 N02200	180	3,5	215	24	190	50	243	289	80	-
DBL7 N03200	180	4	215	32	190	58	263	307	-	91

Motor	Mo [Nm]	Mn [Nm]	Io [A]	Jmot [kgcm²]	Gmot [kg]	Mbr [Nm]	Ibr [A]	Jbr [kgcm²]	Gbr [kg]
DBL2 H00040	0,4	0,34	0,93	0,08	1,1	1,2	0,35	0,07	0,3
DBL3 H00130	1,3	1,1	1,75	0,8	2,3	2,5	0,6	0,38	0,4
DBL3 M00190	1,9	1,6	1,5	1	2,5	2,5	0,6	0,38	0,4
DBL3 N00300	3	2,6	2,1	1,7	4	2,5	0,6	0,38	0,4
DBL4 N00530	5,3	4,6	3,2	2,8	5,7	5	0,7	1,06	0,8
DBL4 N00750	7,5	6,5	4,1	4,3	7,6	5	0,7	1,06	0,8
DBL5 N01050	10,5	8,5	6,5	8,1	9,8	12	0,8	3,6	1,5
DBL5 N01700	17	14	10,4	11,3	14	12	0,8	3,6	1,5
DBL6 N02200	22	16	15,1	25,1	21,5	20	0,95	9,5	2,8
DBL7 N03200	32	23	20	114,1	32,5	20	0,95	9,5	3,3

Mo = Torque at stop of motor
Mn = Nominal torque
Io = Current at stop of motor
Jmot = Mass moment of inertia of rotor
Gmot = Weight of motor
Mbr = Braking (stopping) torque
Ibr = Current consumption of brake
Jbr = Mass moment of inertia of brake
Gbr = Weight of brake

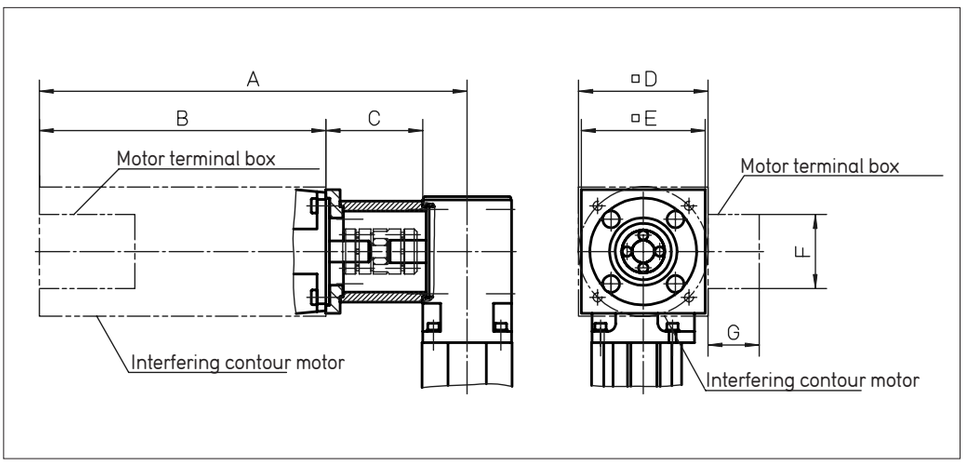


Technical data

Motor	Dimensions [mm]								
	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	l [mm]	k [mm]	q1	p1
6SM45S	80	3	63	14	90	30	195	175	95
6SM45M	80	3	90	14	90	30	220	200	95
6SM45L	80	3	90	14	90	30	270	250	95
6SM56S	95	3	90	19	105	40	255	229	103
6SM56M	95	3	100	19	105	40	295	269	103
6SM56L	95	3	115	19	105	40	335	309	103
6SM71K	130	3.5	115	24	142	50	316	290	129
6SM71S	130	3.5	165	24	142	50	366	340	129
6SM71M	130	3.5	165	24	142	50	416	390	129
6SM100K	180	4	215	32	190	58	367	341	174
6SM100S	180	4	215	32	190	58	415	389	174
6SM100M	180	4	215	32	190	58	463	437	174
6SM100L	180	4	215	32	190	58	511	485	174

Motor	Mo [Nm]	Mn [Nm]	Io [A]	Jmot [kgcm²]	Gmot [kg]	Mbr [Nm]	Ibr [A]	Jbr [kgcm²]	Gbr [kg]
6SM45S	0.85	0.7	1.3	1.5	4.5	6.5	0.7	1.06	0.6
6SM45M	1.7	1.6	1.5	2.1	5.5	6.5	0.7	1.06	0.6
6SM45L	3.2	2.9	2.6	3.4	6.5	6.5	0.7	1.06	0.6
6SM56S	3.8	3.6	3.1	5.2	6.1	12.0	0.75	3.6	1.1
6SM56M	7.0	6.4	5.2	10.0	8.0	12.0	0.75	3.6	1.1
6SM56L	10.0	8.4	7.1	15.0	10.3	12.0	0.75	3.6	1.1
6SM71K	10.5	9.5	8.5	22.0	11.7	20.0	1.0	9.5	1.9
6SM71S	16.5	13.4	12.4	36.0	15.8	20.0	1.0	9.5	1.9
6SM71M	22.0	16.3	15.8	50.0	20.0	20.0	1.0	9.5	1.9
6SM100K	25.0	19.9	18.8	74.0	26.0	60.0	2.1	57.5	5.4
6SM100S	36.0	24.6	26.7	108.0	33.0	60.0	2.1	57.5	5.4
6SM100M	46.0	27.1	35.0	141.0	40.0	60.0	2.1	57.5	5.4
6SM100L	57.0	28.0	42.0	175.0	49.0	60.0	2.1	57.5	5.4

Motor attachment to linear drive unit



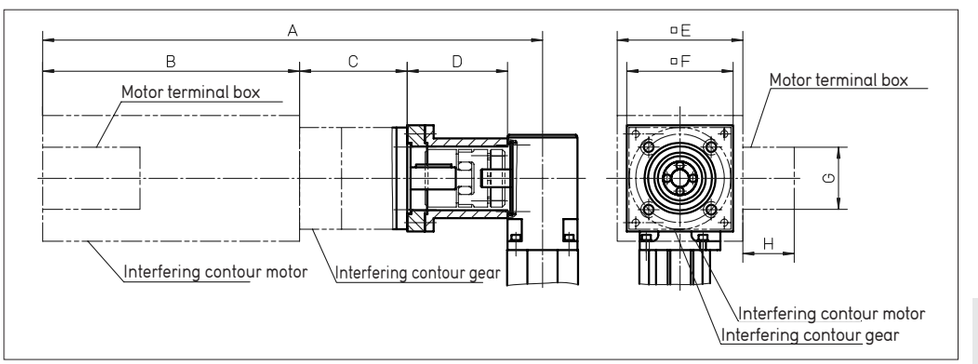
Technical data

Size	Motor	Dimensions [mm]						
		A	B	C	D	E	F	G
WH40	6SM45M	278	190	68	90	90	66	50
WH50	6SM45L	333	240	68	90	90	66	46
WH50	6SM56M	361	255	81	115	100	66	46
WH80	6SM56L	423	295	88	115	100	66	46
WH80	6SM71M	504	366	98	142	140	70	58
WH120	6SM71M	536	366	110	142	140	70	58
WH120	6SM100S	535	357	118	190	200	135	79

Attachment of gear motor to linear drive unit

Prefered ratios of the listed gears

PLE-series:	SP-series:
i = 3 : 1	i = 4 : 1
5 : 1	5 : 1
10 : 1	7 : 1
	10 : 1

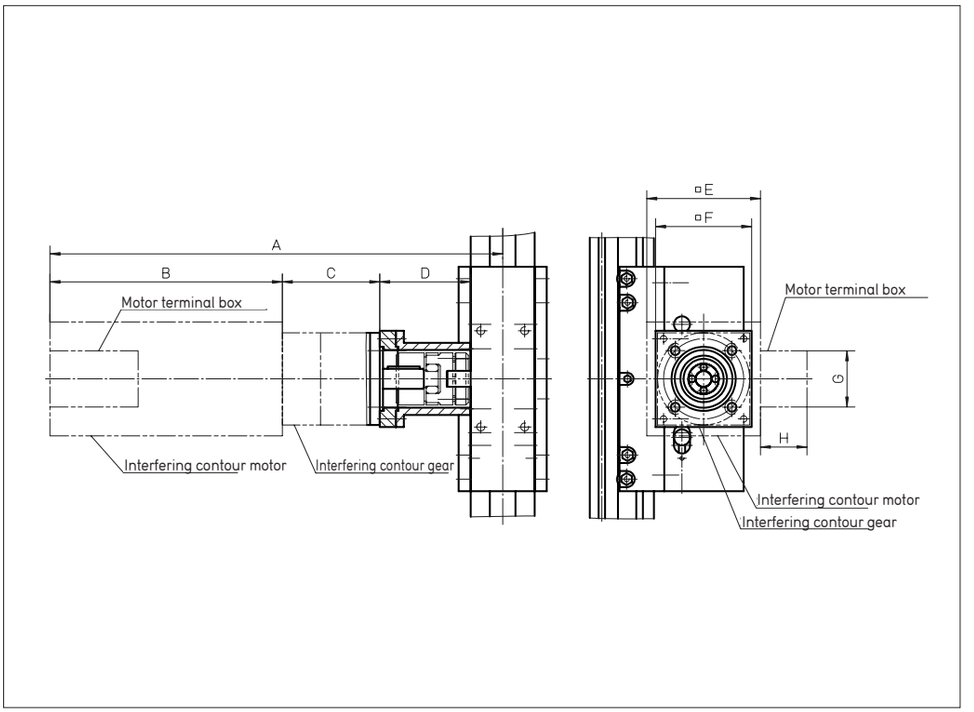


Size	Gear	Motor	Dimensions [mm]							
			A	B	C	D	E	F	G	H
WH40	LP050	DBL 2H00040	252	102	67	63	55	55	54	35
WH40	LP050	DBL 3H00130	266	111	72	63	75	75	62	32
WH50	LP050	DBL 2H00040	257	102	67	63	55	55	54	35
WH50	LP050	DBL 3H00130	271	111	72	63	75	75	62	32
WH50	LP070	6SM45M	382	190	90	77	90	80	66	46
WH80	LP090	6SM45L	476	240	102	94	90	90	66	46
WH80	LP090	6SM56M	501	255	112	94	115	90	66	46
WH80	LP120	6SM56L	595	295	130	130	115	130	66	46
WH80	LP155	6SM71S	639	266	159	174	142	120	70	58
WH120	SP140	6SM71K	652	266	145	181	150	142	70	58
WH120	SP140	6SM71M	702	316	145	181	150	142	70	58

Drive technology
Servo technology – Attachment to WIESEL® with toothed belt drive

Antriebstechnik · Automation

Attachment of gear motor to linear drive unit Z-axis



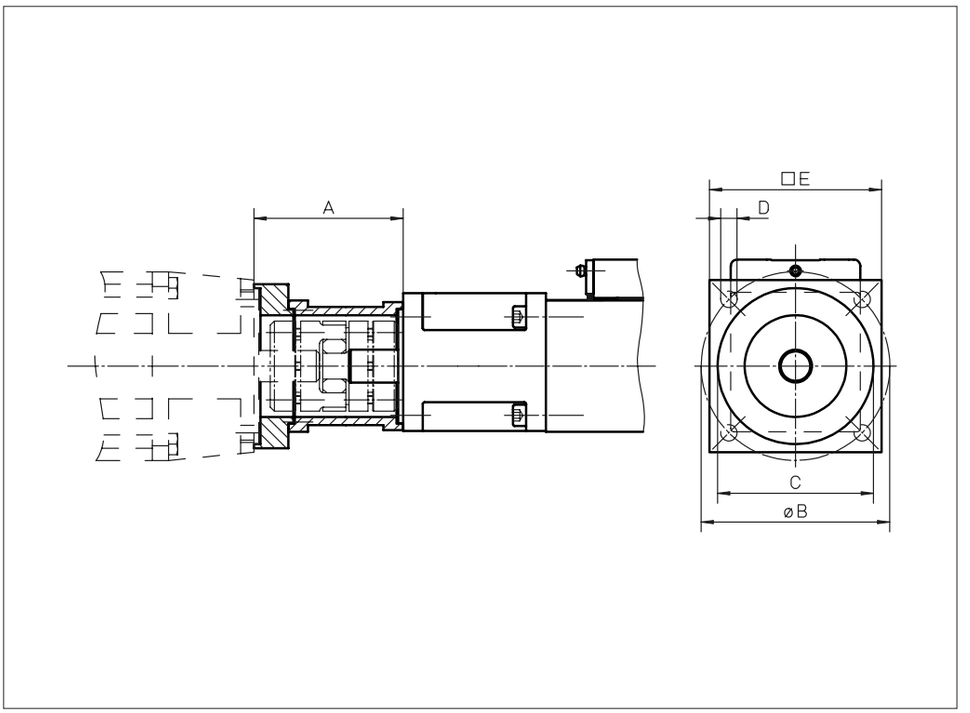
Technical data

Size	Gear	Motor	Dimensions [mm]							
			A	B	C	D	E	F	G	H
WHZ50	LP050	DBL3 H00130-00	379	134	69.5	65	75	60	–	32
WHZ50	LP050	DBL3 H00130-01	412	167	69.5	65	75	60	–	32
WHZ50	LP070	6SM45M	467	190	90	77	90	80	66	46
WHZ80	LP090	6SM45L	476	240	102	94	90	120	66	46
WHZ80	LP090	6SM56M	501	255	112	94	115	120	66	46
WHZ80	LP120	6SM56L	on request							
WHZ80	LP155	6SM71S	on request							

Drive technology
Servo technology – Attachment to WIESEL® with screw drive

Antriebstechnik · Automation

Motor attachment to linear drive unit



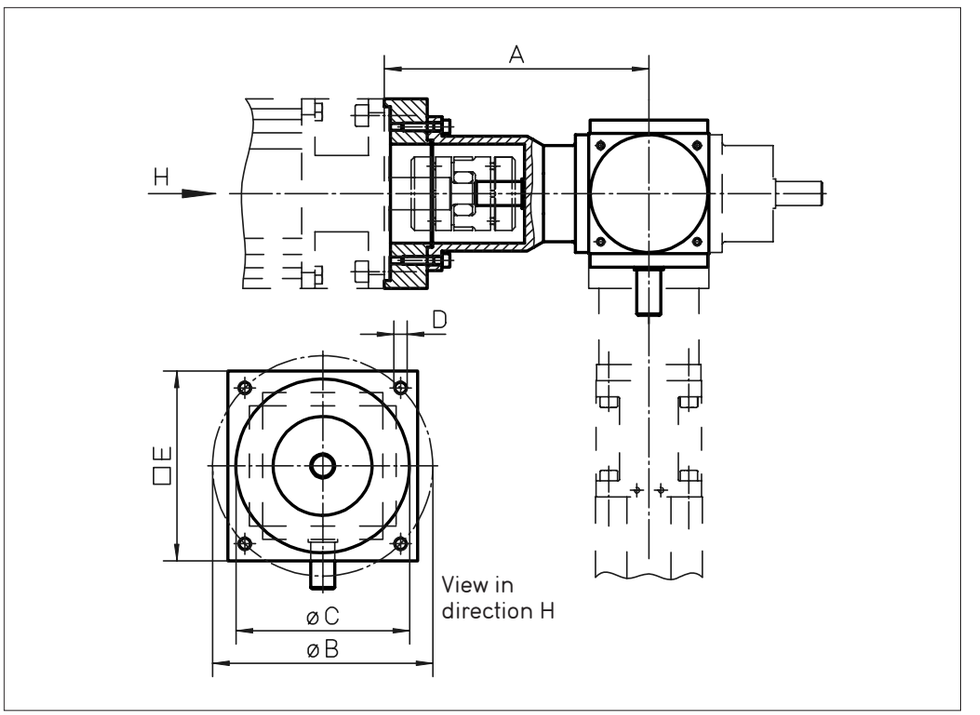
Technical data

Size	Motor	Dimensions [mm]				
		A	B	C	D	E
WM40	DBL3	64	90	60	M5	75
WM/WV/WZ 60	6SM45	79	100	80	M6	90
WM/WV/WZ 60	6SM56	89	115	95	M8	100
WM/WV/WZ 80	6SM56	91	115	95	M8	100
WM/WV/WZ 80	6SM71	101	165	130	M10	140
WM/WV120	6SM71	113	165	130	M10	140
WM/WV120	6SM100	121	215	180	M12	190
W00	DBL3	55	90	60	M5	75
W02	6SM45	70	100	80	M6	90
W02	6SM56	80	115	95	M8	105

Drive technology
Servo technology – Attachment to WIESEL® with screw drive

Antriebstechnik · Automation

Motor attachment to bevel gearbox



Technical data

Size	Gear	Motor	Dimensions [mm]				
			A	B	C	D	E
WM40	VL0	DBL3	136	90	60	M5	80
WM/WV/WZ 60	VL1	6SM45	168	100	80	M6	110
WM/WV/WZ 60	VL1	6SM56	180	115	95	M8	110
WM/WV/WZ 60	VL1	6SM71	190	165	130	M10	140
WM/WV/WZ 80	VL1	6SM56	180	115	95	M8	110
WM/WV/WZ 80	VL1	6SM71	190	165	130	M10	140
WM/WV/WZ 80	VL1	6SM100	200	215	180	M12	190
WM/WV 120	VL2	6SM71	232	165	130	M10	150
WM/WV 120	VL2	6SM100	240	215	180	M12	190
W02	KLL	6SM45	80	100	80	M6	90
W02	KLL	6SM56	80	115	95	M8	105

Digital servo frequency converter

The appliances from the new series Servostar™ 600 are fully digital servo converters of high performance to head for our brushless synchrone servo-motors from the series 6 SM with resolver.

The Servostar™-converters cover a power range of up to approx. 12 kW respective 13.9 kVA.

Detailed information on request.

Your needs	Our solutions
economic installation	– compact dimensions – suitable for 300 mm switchgear cabinets – exclusive use of plug-in, screw-type connections
reduced wiring requirements	– all filters integrated No external filters required for CE – all shielding connections directly to the amplifier
simple operation	– 2-key operation and 3-character LED-display on the front panel – Windows™ user software with an oscilloscope function for current and speed
world-wide usability	– meets all CE standards. UL and ULC pending – can be connected to all international supplies from 230 V to 480 V + 10 %
precise contol and exact positioning	– feedback from: - high-resolution sine-cosine encoder - high resolution absolute position encoder – high performance servo loops (current rate update, 62 µs)
high flexibility	– freely programmable for individual drive tasks

Technical data

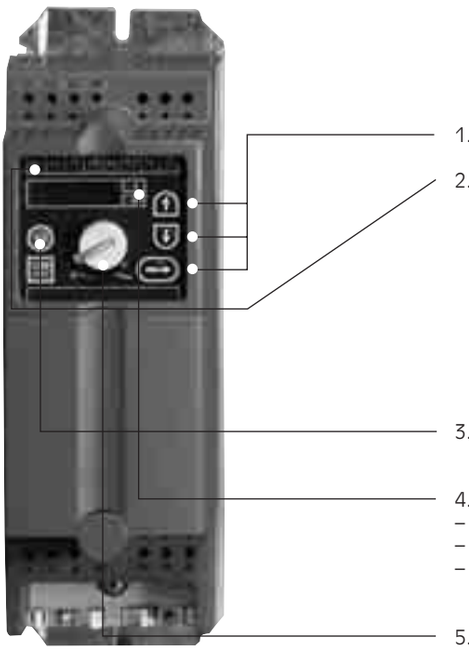
		Servostar™ 600							
Norminal Data	DIM	601 1.5 A	603 3 A	606 6 A	610 10 A	614 14 A	620 20 A	640 40 A	670 70 A
Rated supply voltage	V~	3 x 230 V $_{-10\ \%}$...480 V $_{+10\ \%}$. 50...60 Hz							
Rated installed power for S1 operation	kVA	1	2	4.2	6.9	10	13.9	30	50
Rated DC-link voltage	V=	310...675							
Rated output current (effective value 3%)	A_{rms}	1.5	3	6	10	14	20	40	70
Peak output current (for approx. 5 sec, 3%)	A_{rms}	3	6	12	20	28	40	80	140
Continuous internal ballast power (RBint)	W	80	80	200	200	200	200	external	external
Continuous external ballast power (RBext)max..	kW	0.5	0.5	1.5	1.5	1.5	2.5	6	6

MOVITRAC® 07 Series Frequency Converters

Frequency converters are used to drive rotary-current motors at varying revs. They are also capable of starting and stopping rotary-current motors at predefined acceleration or deceleration rates via adjustable ramp functions. This results in well-defined, reproducible stopping distances, a prerequisite for exact, gentle positioning.

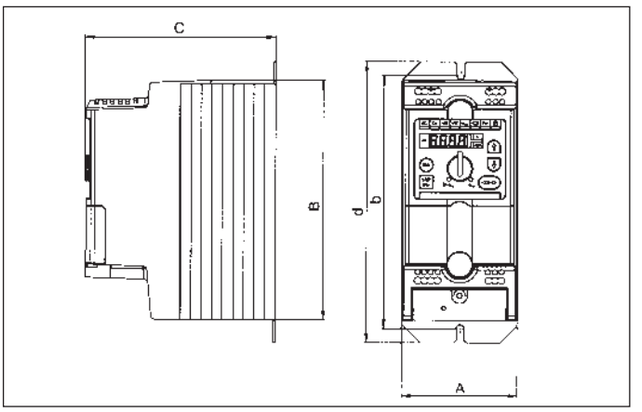
The devices have an integrated radio interference suppressor. This means that the EMC guideline for interference caused by cables is fulfilled with no additional effort.

With vertical axes, a ballast resistor is required to absorb the braking energy. Different braking resistors are available for different versions of converter with different power ratings.

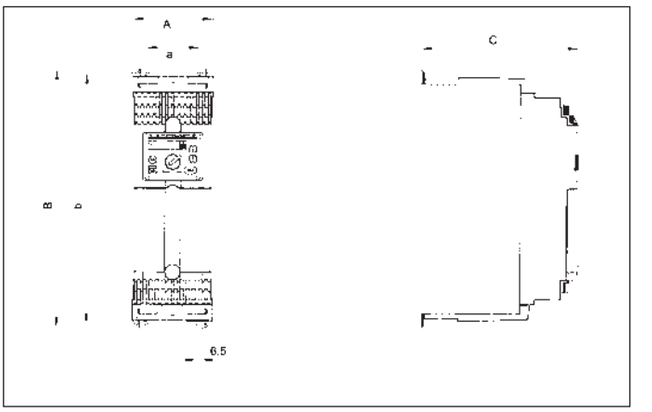


1. Operating buttons
2. Symbols for function menu
   - Acceleration ramp
   - Deceleration ramp
   - Fixed set point n11
   - Fixed set point n12
   - Maximum revs
   - Motor start
   - Converter parameters
   - Manual set point setter
3. START/STOP
4. Select displayed value
   - Actual revs
   - Apparent output current
   - Converter status
5. Set-point potentiometer

Dimensions of MOVITRAC® 07, sizes OS, OM, OL



Dimensions of MOVITRAC® 07, sizes 1, 2S



Dimensions of MOVITRAC® 07

Type	A [mm]	B [mm]	C [mm]	b [mm]	d [mm]	Size	Weight [kg]
MC07A-004	90	185	150	196 (M5)	220	OS	1,5
MC07A-008	90	185	150	196 (M5)	220	OS	1,5
MC07A-015	90	295	150	306 (M5)	330	OL	2,5
MC07A-015\3	90	295	150	306 (M5)	330	OL	2,5
MC07A-022\3	90	295	150	306 (M5)	330	OL	2,5
MC07A-030\3	90	295	150	306 (M5)	330	OL	2,5
MC07A-040\3	90	295	150	306 (M5)	330	OL	2,5
MC07A-055\3	105	335	205	325 (M5)		2S	5
MC07A-075\3	105	335	205	325 (M5)		2S	5
MC07A-110\3	130	335	196	300 (M5)		2	6,6

For proper cooling, provide for 100 mm of free space above and below. Free space at the sides is not required; the units can be installed side by side.

Whether standard U/f control process or VFC field-oriented regulation (sensorless) – the MOVITRAC® 07 can be used with both. High overload resistance, integrated protection and monitoring functions, and an increased temperature range are also standard. For optimum motor protection, the MOVITRAC® 07 offers an integrated evaluation unit for the motor temperature sensor. In addition, the PI series controller allows independent control of process parameters such as flow volume or pressure.

The UBP11A parameter module being an external parameter storage unit, allows not only backup of parameter data but also the copying of existing parameter sets to other frequency converters. With only two function buttons, the parameter module is absolutely user-friendly. All operating states are, of course, indicated by LEDs. Even storage has been thought through. The parameter module is simply plugged to the front of the frequency converter.

Selection data, MOVITRAC® 07

Mains voltage 1 AC 200V – 240V +/- 10%, 50/60 Hz +/- 5%

Converter type	Recom. Motor power for 2-4 pole motors [kW]	Nominal input current [A]	Nominal output current [A]	Short-time current [A]	Braking resistor [Type]	Braking resistor [Ohms/kW]	Integrated mains filter [Class]
MC07A-004	0,09-0,37	6,1	2,5	3,7	BW072-005	72/0,5	B
MC07A-008	0,55-0,75	9,9	4,2	6,3	BW072-005	72/0,5	B
MC07A-015	1,1-1,5	16,7	7,3	10,9	BW072-005	72/0,5	B

Mains voltage 3 AC 380V – 500V +/- 10%, 50/60 Hz +/- 5%

Converter type	Recom. Motor power for 2-4 pole motors [kW]	Nominal input current [A]	Nominal output current [A]	Short-time current [A]	Braking resistor [Type]	Braking resistor [Ohms/kW]	Integrated mains filter [Class]
MC07A-015\3	0,75-1,5	3,6	4	6	BW072-005	72/0,5	A
MC07A-022\3	2,2	5	5,5	8,2	BW268	68/1,2	A
MC07A-030\3	3	6,3	7	10,5	BW268	68/1,2	A
MC07A-040\3	4	8,6	9,5	14,2	BW268	68/1,2	A
MC07A-055\3	5,5	11,3	12,5	18,7	BW247	47/2,0	A
MC07A-075\3	7,5	14,4	16	24	BW347	47/3,0	A
MC07A-110\3	9,2-11,0	21,6	24	36	BW039-50	39/5,0	A

The field-bus gateway makes child's play of communications between up to 8 MOVITRAC®:

Unit concept:
- External field-bus gateway (field bus ➔ SBus)
- Switch-cabinet unit IP20

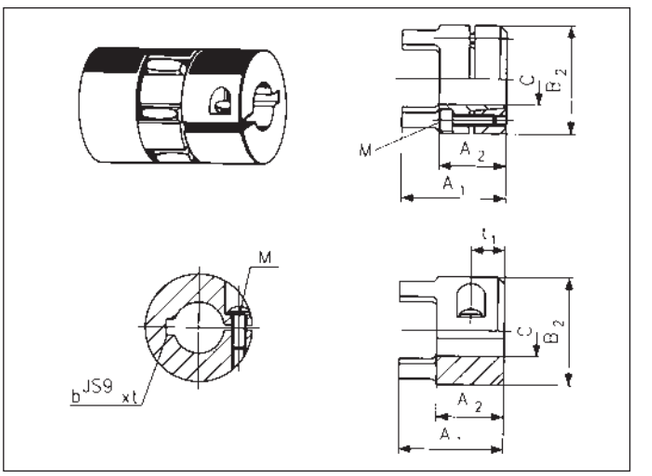
Unit versions:
- UFP11A ➔ PROFIBUS
- UFD11A ➔ DeviceNet
- UFI11A ➔ INTERBUS

Elastic Couplings GS

Elastic couplings transmit torque, and compensate for any slight offset between shafts, or slight axial displacement or alteration of angle. The elastic preloading when assembled allows backlash-free transmission of movement when torque is low (e.g. in measurement systems). The coupling consists of two half-couplings (KH), each of which can have different drillings and a toothed ring (ZK) within the same dimensions.
The GS version corresponds to the former AGS version.

Executions:
2.0 Split, without groove
2.1 Split one side with key way
2.6 Split both sides with key way
6.0 Straining-ring hub with finished holes according to ISO fit H7 for shafts with K6

Material:
Hub: Aluminium
Tensioning ring: (Execution 6.0) Steel
Toothed ring: Plastic material



Product/type	Dimensions [mm]					Starting torque, of attachment tensioning screw [Nm]		Weight at max. bore
Execution 2.0/2.1	A_1	A_2	B_2	ø C	M_1		t_1	
KH-GS 7	14	7	14	see table below	M2	0.37	3.5	0.003
KH-GS 14	22.5	11	30		M3	1.34	5	0.019
KH-GS 19/24	39	25	40		M6	10.5	12	0.077
KH-GS 24/28	46	30	55		M6	10.5	12	0.174
KH-GS 28/38	52.5	35	65		M8	25	15	0.262
Execution 6.0								
KH-GS 14	30	18.5	30		M3	1.34	–	0.049
KH-GS 19/24	39	25	40		M4	2.9	–	0.120
KH-GS 24/28	46	30	55		M5	6	–	0.280
KH-GS 28/38	52.5	35	65		M6	6	–	0.450

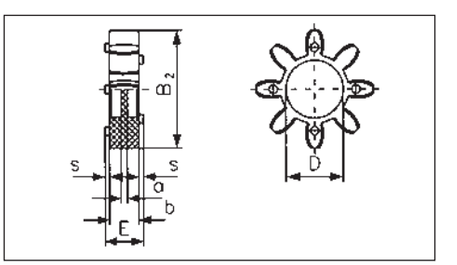
Available bore diameters

Exe.	Size	ø 4	ø 5	ø 6	ø 7	ø 8	ø 9	ø 10	ø 11	ø 12	ø 14	ø 15	ø 16	ø 18	ø 19	ø 20	ø 22	ø 24	ø 25	ø 28	ø 30	ø 32	ø 35
2.0	GS7	•	•	•	•																		
2.0	GS14		•	•		•	•	•	•	•	•	•											
2.1	GS14					•		•		•	•												
2.1	GS19/24									•	•	•	•	•	•								
2.6	GS24/28														•	•		•	•				
2.6	GS28/38															•		•	•		•	•	•
6.0	GS14										•												
6.0	GS19/24							•			•	•	•		•								
6.0	GS24/28														•	•	•	•	•				
6.0	GS28/38																•	•	•	•	•	•	•

Other diameters upon request

Toothed ring ZK-GS

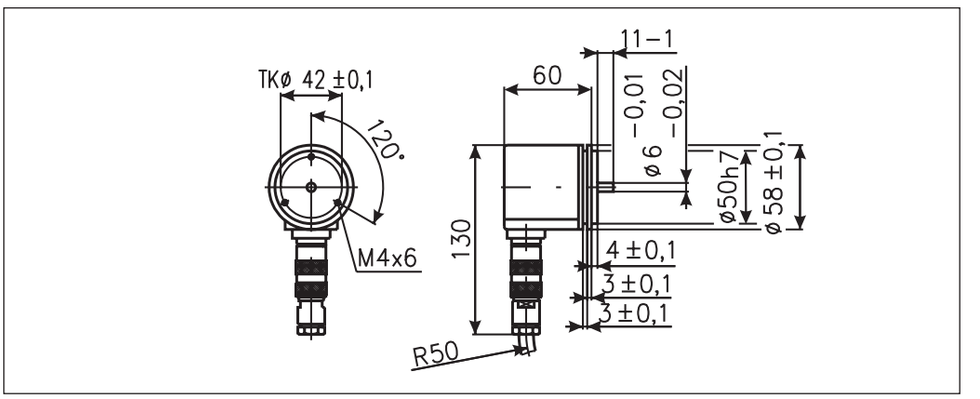
Product/type	Dimensions [mm]						Weight [kg/p.P.]
	B_2	E	b	s	D	a	
ZK-GS-7	14	8	6	1	–	–	0.006
ZK-GS-14	30	13	10	1.5	10.5	2	0.004
ZK-GS-19	40	16	12	2	18	3	0.007
ZK-GS-24	55	18	14	2	27	3	0.017
ZK-GS-28	65	20	16	2	30	4	0.029



Incremental Shaft Encoder IG

Incremental shaft encoders are used in conjunction with screw drives, toothed belts, etc. to measure distances.

Material:
Housing aluminium, shaft steel
Type:
GE push-pull, 10-30 V,
LD line driver 5 V ± 10%
according to RS 422 standard



Product	No. of pulses/revs.	Voltage [V]	Output stage	Weight [kg per piece]
IG 601	100	5	LD	0.30
IG 601	100	10–30	GE	0.30
IG 601	200	5	LD	0.30
IG 601	200	10–30	GE	0.30
IG 601	500	5	LD	0.30
IG 601	500	10–30	GE	0.30
IG 601	600	5	LD	0.30
IG 601	600	10–30	GE	0.30
IG 601	1000	5	LD	0.30
IG 601	1250	5	LD	0.30
IG 601	1500	5	LD	0.30
IG 601	2000	5	LD	0.30
IG 601	2500	5	LD	0.30

Absolute incremental shaft encoders on request

Connector STE

Counter-connector for shaft encoder

Product	Pole	Protection system IP	Execution	Line entrance	Application	Weight
STE 001	12	67	jack	straight	Shaft encoder IG 601	0.04

General accessories
Inductive proximity switch

Antriebstechnik · Automation

EN Inductive proximity switch

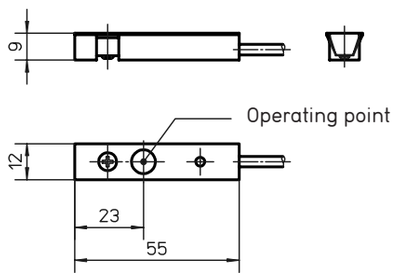
Inductive proximity switches are used to shut down the electric drive before the mechanical limit position has been reached.

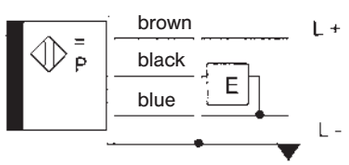
The braking path depends on the linear speed and time-lag. This path must at least be allowed between the operating point of the proximity switch and the actual mechanical limit position.
Inductive proximity switches are also used to identify reference points or to signal operating points to the control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

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.



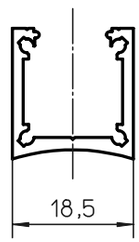


Size	Type	Cable length [m]	Weight [kg]
EN2	O-normally closed	2	0.04
EN2	S-normally open	2	0.04
EN2	O-normally closed	10	0.19
EN2	S-normally open	10	0.19

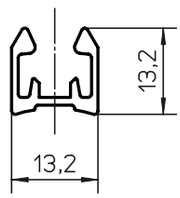
ENT Limit switch bracket

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.

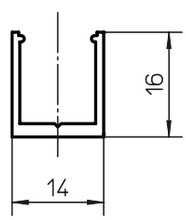
ENT 18.5 x 20



ENT 13.2 x 13.2



ENT 14 x 16

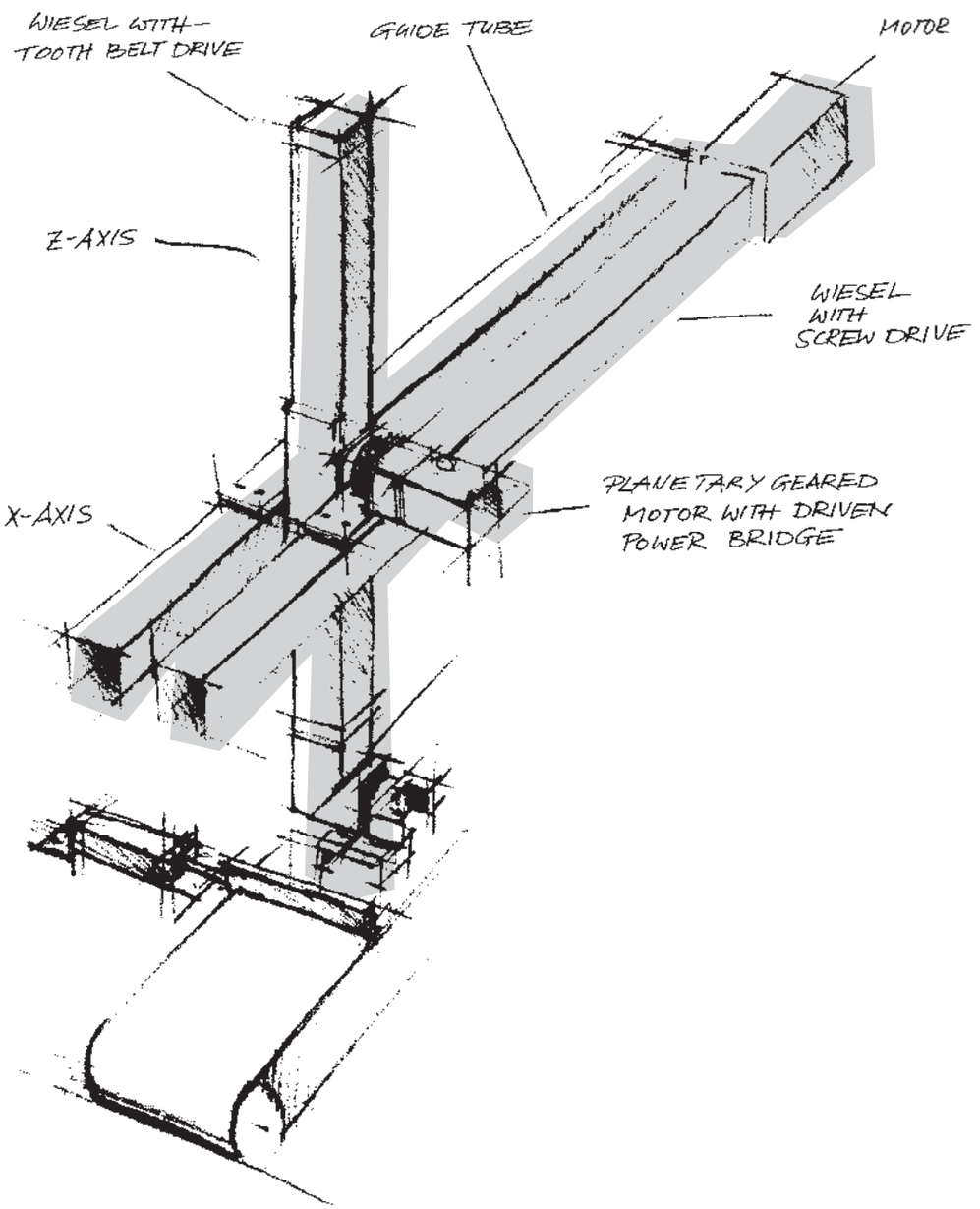


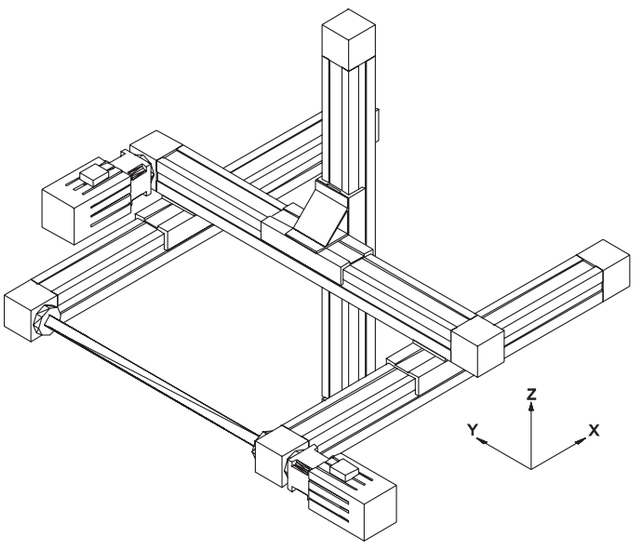
Size	Type
W02	ENT 18.5 x 20
W00	ENT 13.2 x 13.2
WH40/50/80/120	ENT 14 x 16
WHZ50/80	ENT 14 x 16
WM40/60/80	ENT 14 x 16
WV60/80	ENT 14 x 16
WZ60/80	ENT 14 x 16
MLSM 60 KGT	ENT 14 x 16
MLSH 60 ZRT	ENT 14 x 16

System Connecting Brackets SVW
System Attachment Plates SBP

The program allows the solid connection of NEFF linear axis from power bridge to power bridge. All NEFF linear drive units may be linked in different positions relative to one another.
The program is suitable for simple and medium applications and offers complete bracket packages (WPs) for individual combinations of connections. They include all parts necessary for installation, such as screws, KAO mounting brackets and groove stones.
Material: AlZn4, 5Mg1

The joining elements can only transfer the maximum forces and moments from the specified linear unit. 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.

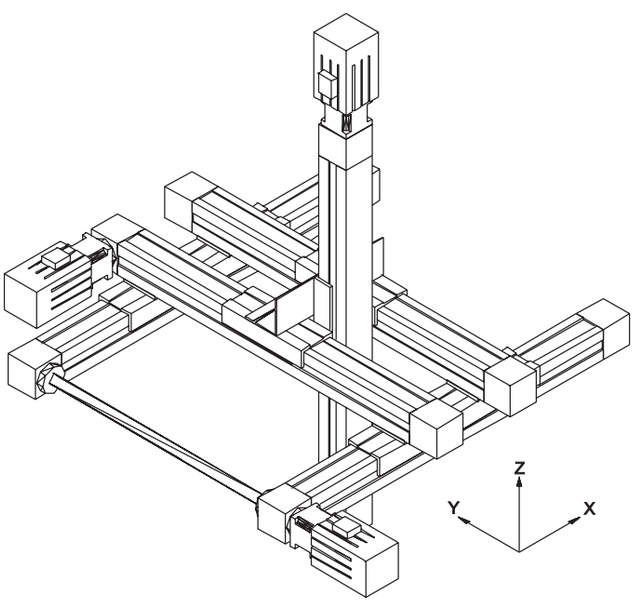




3 Axis Standard Portal, 2X 1Y 1Z

Type	Size	2XN**	1Y	1Z	Complete KAO System brackets (x-y)
WP	SVW01	WH40	WH40	WM40	●
WP	SVW02	WH50	WH50	WHZ50	
WP	SVW02	WH50	WH50	WM40	
WP	SVW03	WH80	WH80	WHZ80	
WP	SVW03	WH80	WH80	WM60	
WP	SVW03	WH120	WH120	WM80	
WP	SVW03	WH120	WH80	WHZ80	
WP	SVW01	WM40	WM40	WM40	●
WP	SVW04	WM60	WM60	WM40	●
WP	SVW05	WM120	WM120	WM80	

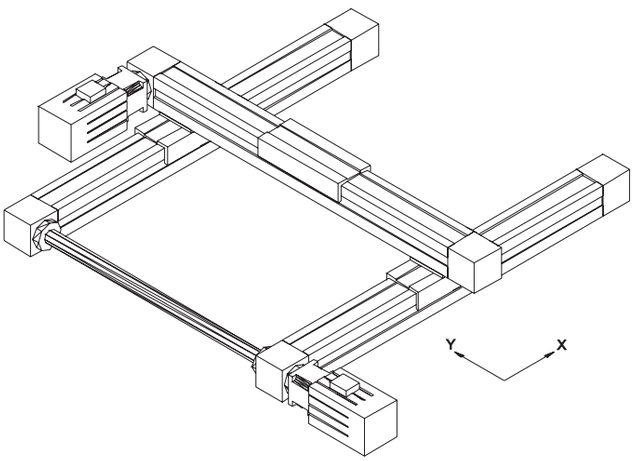
**) 2XN = 2 X-axis parallel arrangement



3 Axis Standard Portal, 2X 2Y 1Z

Type	Size	2XN**	2Y	1Z	Complete KAO System brackets (x-y)
WP	SVW06	WH40*	WH40	WM40	●
WP	SVW07	WH50*	WH50	WHZ50	
WP	SVW07	WH50*	WH50	WM40	
WP	SVW08	WH80*	WH80	WHZ80	
WP	SVW08	WH80*	WH80	WM60	
WP	SVW08/SBP02	WH120*	WH80	WM80	
WP	SVW08/SBP02	WH120*	WH80	WHZ80	
WP	SVW06	WM40*	WM40	WM40	●
WP	SVW07	WM60	WM60	WM40	●
WP	SVW07/SBP01	WM80	WM60	WM60	
WP	SVW07	WM80	WM80	WM60	
WP	SVW07	WM120	WM80	WM60	

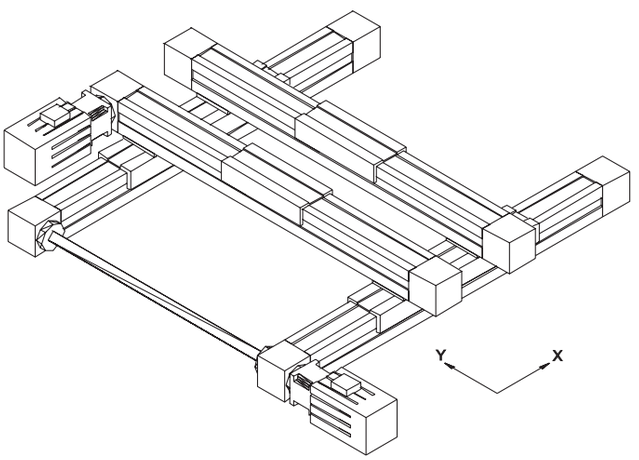
*) X-axis only in conjunction with long power bridge LKB.
**) 2XN = 2 X-axis parallel arrangement



2 Axis Standard Portal, 2X 1Y

Type	Size	2XN**	1Y	Complete KAO System brackets (x-y)
		WH40	WH40	●
		WH50	WH50	●
		WH80	WH80	
		WH120	WH80	
		WH120	WH120	
		WM40	WM40	●
		WM60	WM60	●
WP	SBP01	WM80	WM60	
		WM80	WM80	
		WM120	WM80	
		WM120	WM120	

**) 2XN = 2 X-axis parallel arrangement

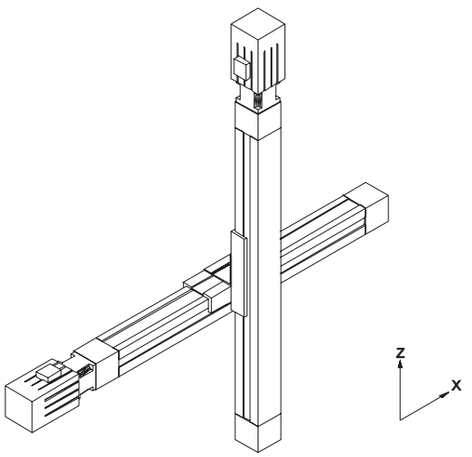


2 Axis Standard Portal, 2X 2Y

Type	Size	2XN**	2Y	Complete KAO System brackets (x-y)
		WH40*	WH40	●
		WH50*	WH50	●
		WH80*	WH50	●
		WH80*	WH80	
WP	SBP02	WH120*	WH80	
		WM40*	WM40	●
		WM60	WM60	●
WP	SBP01	WM80	WM60	
		WM80	WM80	
		WM120	WM80	

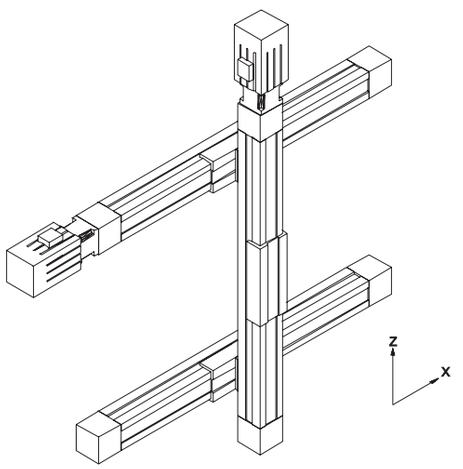
*) X-axis only in conjunction with long power bridge LKB.
**) 2XN = 2 X-axis parallel arrangement

General accessories
Connecting Elements



2 Axis Standard Portal, 1X 1Z

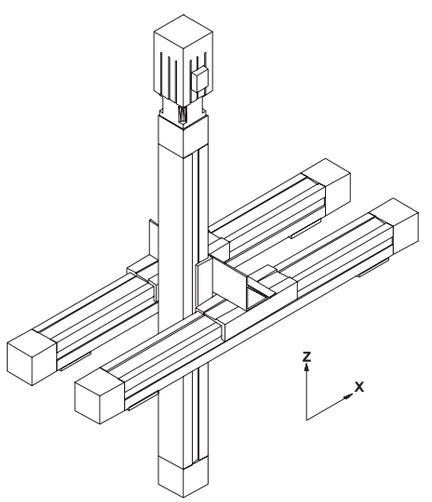
Type	Size	1X	1Z
WP	SVW02	WH50	WM40
WP	SVW03	WH80	WM60
WP	SVW03	WH80	WHZ80
WP	SVW03	WH120	WHZ80
WP	SVW03	WH120	WM80
WP	SVW04	WM60	WM40
WP	SVW05	WM120	WM80



2 Axis Standard Portal, 2X interlinked, 1Z

2XU*)	1Y	Complete KAO System brackets (x-y)
WM60	WM60	●
WM80	WM80	

*) 2XU = 2 X-axis among one another

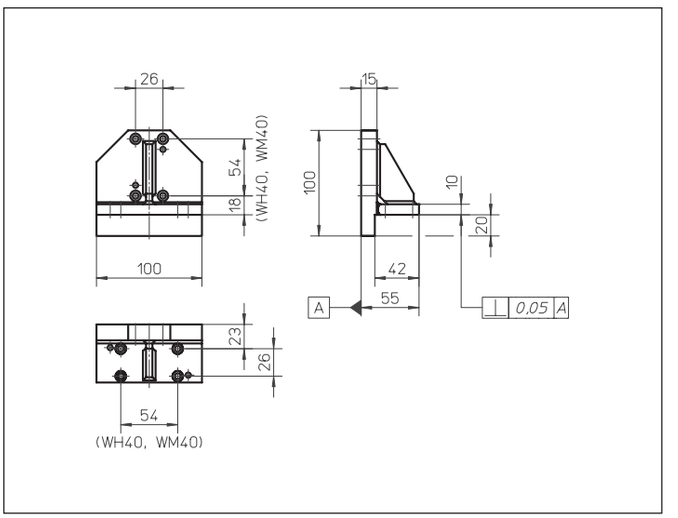


2 Axis Standard Portal, 2X side-by-side, 1Z

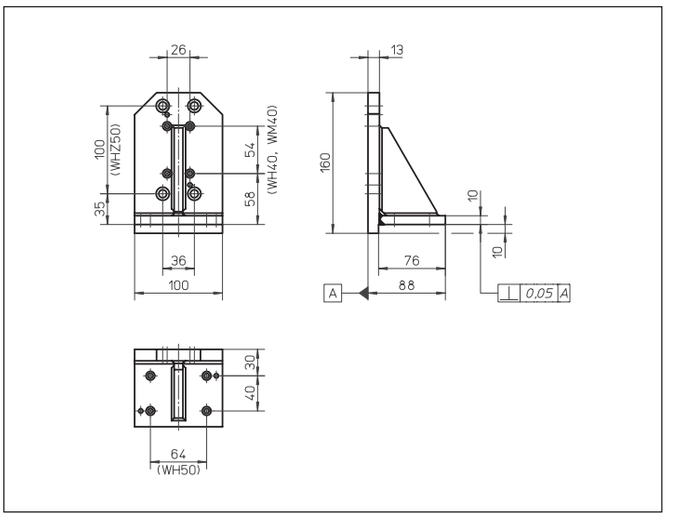
Type	Size	2XN*)	1Z
WP	SVW06	WH40	WM40
WP	SVW07	WH50	WHZ50
WP	SVW08	WH80	WM60
WP	SVW08	WH80	WHZ80
WP	SVW07	WM60	WM60
WP	SVW07	WM80	WM60

*) 2XN = 2 X-axis parallel arrangement

System connecting bracket SVW 1



System connecting bracket SVW 2



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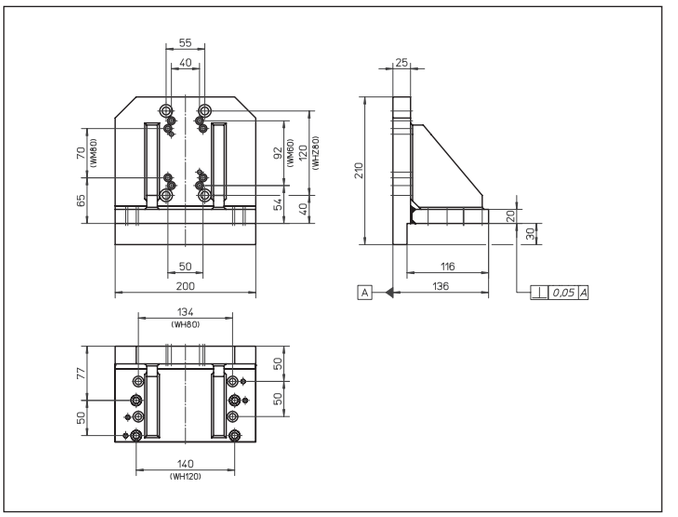
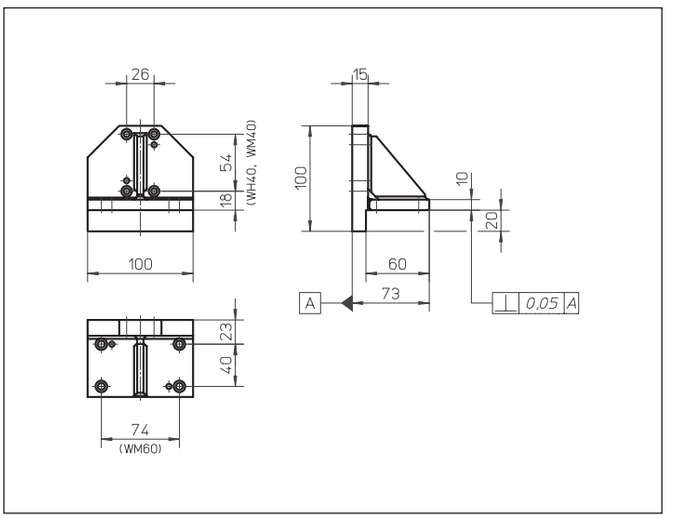
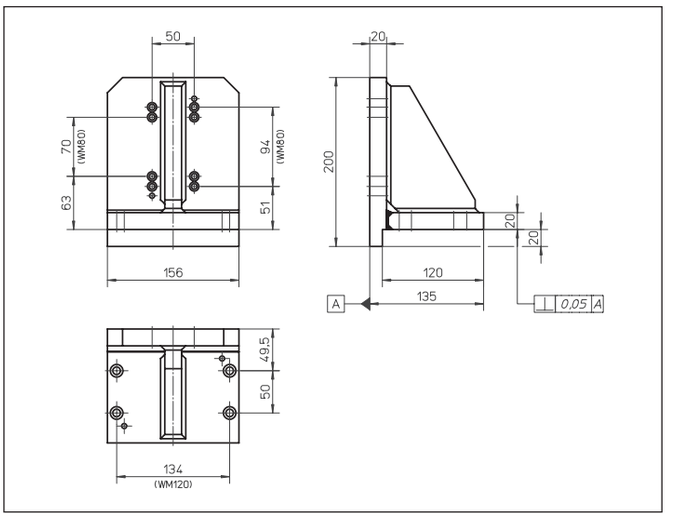


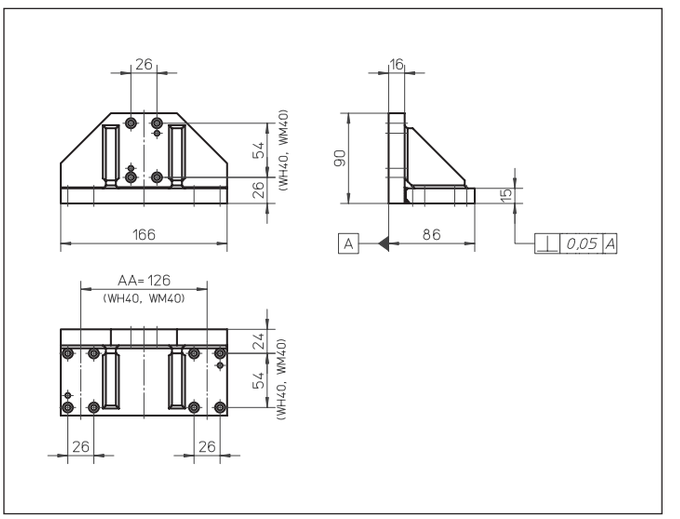
System connecting bracket SVW 4



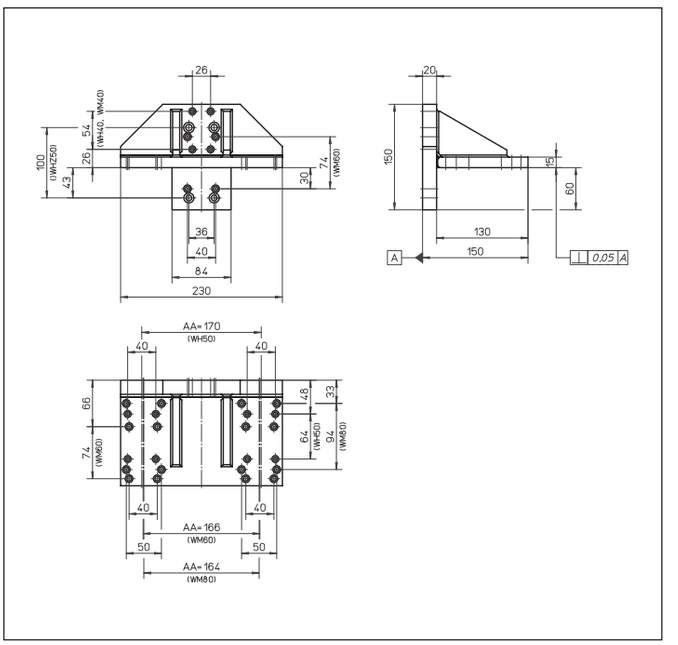
System connecting bracket SVW 5



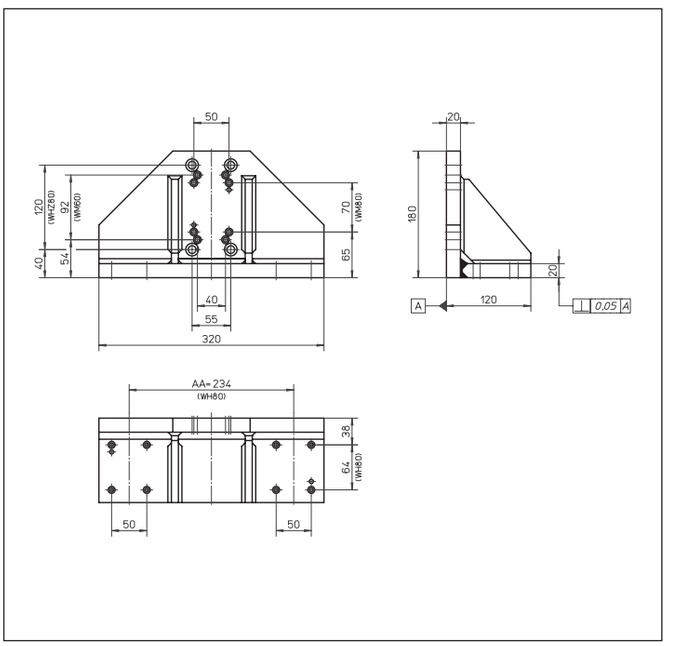
System connecting bracket SVW 6



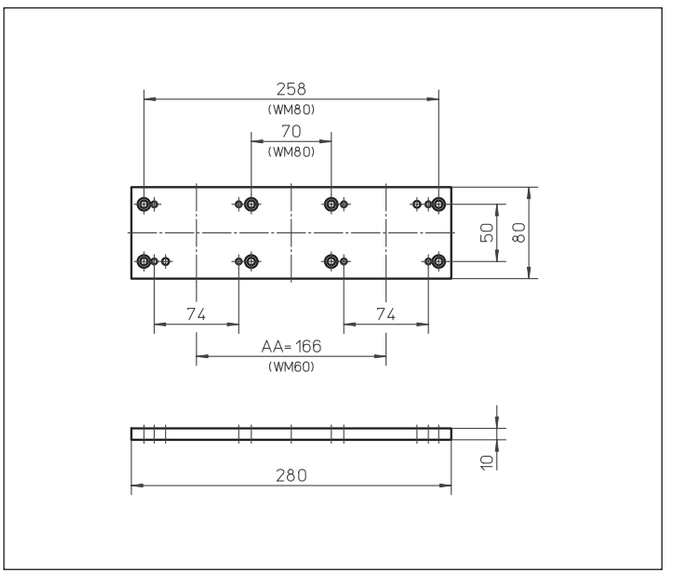
System connecting bracket SVW 7



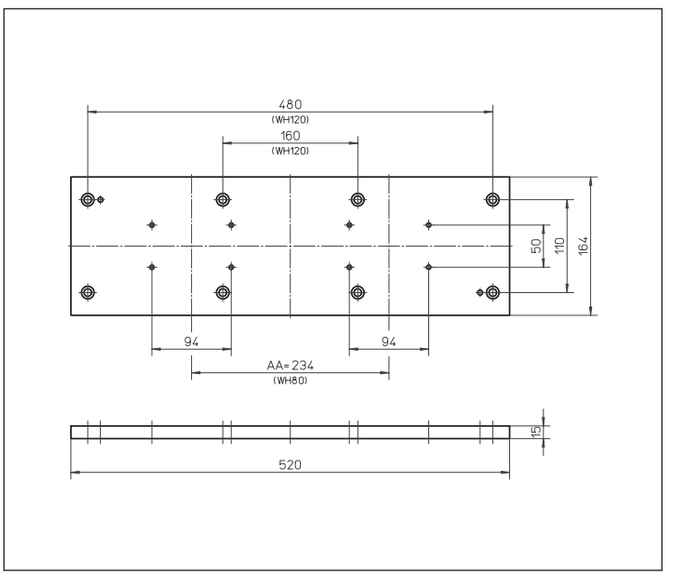
System connecting bracket SVW 8



System attachment plate SBP 1



System attachment plate SBP 2



The NEFF CD-ROM
Design assistance at a mouse-click

Antriebstechnik · Automation

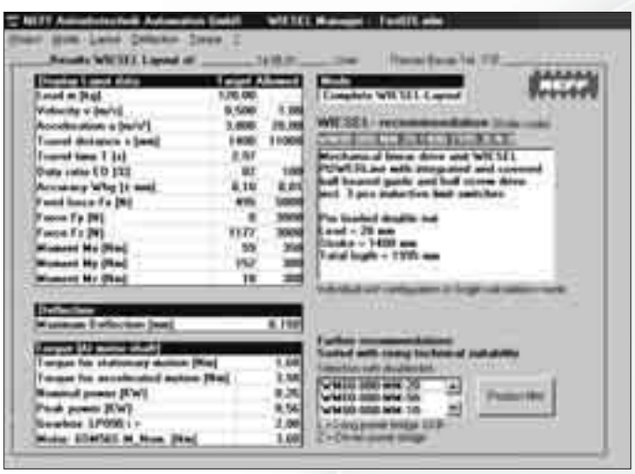
The current NEFF CD-ROM presents the following topics:

WIESEL *Manager*
This shows how easy it is to select and calculate all NEFF linear units: with the WIESEL *Manager* programme.

- Enter your required parameters, and the programme suggests the optimum NEFF linear unit – including price calculation and drive dimensions.
- Inspect each individual technical parameter of the unit that the programme has selected.
- Profit from time savings of up to 80% for design and calculation.

The capabilities and advantages of WIESEL *Manager*

1. Complete project status:
   Documented design
2. Calculation of all design criteria:
   Safety in calculation
3. Drive dimensioning:
   Complete drive solution



CAD-Data

Integrate the CAD data of the NEFF products that you have selected directly into your design. Available for the product programmes:

- WIESEL® mechanical linear drive units
- MULI® and JUMBO® screw jacks

Assembly and maintenance instructions

Any questions about the installation or maintenance of a NEFF product? You will find maintenance instructions with the information you need on the NEFF CD-ROM.

Order the current NEFF CD-ROM free of charge, using the form on Page 128. You will also find this information at www.neffaa.de.

Load Ratings WIESEL®

Antriebstechnik · Automation

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} [1] P=4 [N]	C_{KGM} [1] P=5 [N]	C_{KGM} [1] P=10 [N]	C_{KGM} [1] P=20 [N]	C_{KGM} [1] P=40 [N]	C_{KGM} [1] P=50 [N]	C_{FS} [2] Y [N]	C_{FS} [2] Z [N]	C_{KB} [3] [N]	L_{FS} [2] X [mm]	L_{FS} [2] 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	–	4400	–	–	–	–	(2x) 2786	(2x) 3397	–	87	–
WM60-370 ZRT	–	–	–	–	–	–	(2x) 12964	(2x) 11934	–	–	35
WM60-370	–	10500	–	11600	–	8400	(2x) 12964	(2x) 11934	–	–	35
WM60	–	10500	–	11600	–	8400	(4x) 11495	(4x) 10581	–	141.7	35
WM60-500	–	10500	–	11600	–	8400	(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	–	12300	13200	13000	–	15400	(2x) 18723	(2x) 17919	–	–	49.75
WM80	–	12300	13200	13000	–	15400	(4x) 14356	(4x) 13739	–	154	49.75
WM120	–	21500	33400	29700	14900	–	(4x) 18723	(4x) 17919	–	186	80.75
WV60	–	10500	–	11600	–	8400	–	–	–	–	–
WV80	–	12300	13200	13000	–	15400	–	–	–	–	–
WV120	–	21500	33400	29700	14900	–	–	–	–	–	–
WZ60	–	10500	–	11600	–	8400	(2x) 12964	(2x) 11934	8300	–	35.00
WZ80	–	12300	13200	13000	–	15400	(2x) 18723	(2x) 17919	13700	–	49.75
W00	4300	4400	–	–	–	–	–	–	–	–	–
W02	–	10500	–	11600	–	–	–	–	–	–	–
MLSH60	–	–	–	–	–	–	–	–	–	190	102.5
MLSM60	–	12300	13200	13000	–	15400	(4x) 13770	(4x)13770	–	163	105

[1] Ball nut
[2] Guide system
[3] Ball sleeve

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

Drive selection
for linear drive units with toothed belt drive

Antriebstechnik · Automation

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

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. mass 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. mass tooth belt [kg/m]
WHZ50	0.1	6.906E-05	0.055
WHZ80	0.1	5.026E-04	0.114
WM60 ZRT	0.1	2.127E-05	0.074
WM80 ZRT	0.1	1.115E-04	0.158
MLSH60 ZRT	0.1	4.604E-05	0.114

[1] Total mass m = mass to be moved + mass of power bridge [3] + mass of toothed belt

Mass of toothed belt = spec. mass of tooth belt [kg/m] · 2[4] · $\frac{\text{WIESEL®-lenght [mm]}}{1000}$

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

Drive selections
for linear drive units with screw drive

Antriebstechnik · Automation

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

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.

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

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

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

M_A Total =

Friction factor μ

Type	Values for μ lubricated
WIESEL *POWERLine*® WM40	0.05
WIESEL *POWERLine*® WM60/80/120 WIESEL *VARIOLine*® WZ60/80 WIESEL *FORCELine*® MLSM60 KGT	0.1
WIESEL *DYNALine*®	Friction value of the external guide
WIESEL® W00/W02	0.3

Mass moment of inertia j_{sp}

Type	P [mm]	j_{sp}[kgm²/m]
WIESEL *POWERLine*® WM60 WIESEL *DYNALine*® WV60 WIESEL *VARIOLine*® WZ60 WIESEL® W02	5, 20, 50	$8.8 \cdot 10^{-5}$
WIESEL *POWERLine*® WM80 WIESEL *DYNALine*® WV80 WIESEL *VARIOLine*® WZ80 WIESEL *FORCELine*® MLSM60 KGT	5, 10, 20, 50	$2.25 \cdot 10^{-4}$
WIESEL *POWERLine*® WM120 WIESEL *DYNALine*® WV120	5 10, 20, 40	$6.41 \cdot 10^{-4}$ $6.28 \cdot 10^{-4}$
WIESEL *POWERLine*® W00/WM40	5	$1.13 \cdot 10^{-5}$

Order information
WIESEL *SPEED*Line®

Antriebstechnik · Automation

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
370 = Short guide system
500 = Right/Left execution

4. Drive type
ZR = toothed belt drive

5. Pitch
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	- 1200	- 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. Pitch
120 mm/revolution

6. max. stroke
1500 mm

7. Total length
1940 mm

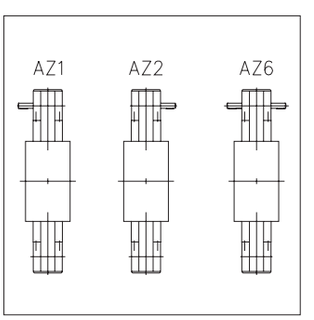
8. Execution of drive shaft
AZ1/plain

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.

Order information
WIESEL *POWER*Line®, WIESEL *DYNA*Line®, WIESEL *VARIO*Line®

Antriebstechnik · Automation

Structure of the order code:

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

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

2. Size
40. 60. 80 and 120
WZ only 60 and 80

3. Design model
000 = Standard
190 = Guide tube (only WM)
370 = Short guide system
500 = Right/left execution (only WM)

4. Drive type
M = Single nut (only for WM40. -370,WZ)
MM = Ball screw drive with pretensioned nut unit
ZR = Toothed 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) (Not for WZ)
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

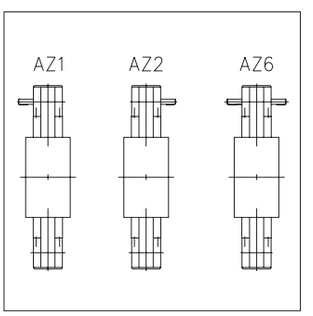
7. Total length
1260 mm

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



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.

Order information
WIESEL® W0, Connecting elements

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WIESEL® W0

W 0 0	-	0 0 0	-		-		-		-		-		-	
1.		2.		3.		4.		5.		6.		7.		8.

1. Product/size

2. Design model
000 = Standard

3. Drive type
M = single lead nut/ball screw drive
TK = trapezoidal screw drive with plastic lead nut

4. Lead
TGT[1] 4, 8, 12 mm
KGT[2] 5 mm

5. Total stroke
[mm]

6. Total length
[mm]

7. Mountable accessories
e.g. end dampers (ED)/ inductive limit switches (EN)

9. Special model
0 = without
1 = with

[1] Trapezoidal screw
[2] Ball screw

W 0 2	-	0 0 0	-		-		-		-		-	S A	-		-	
1.		2.		3.		4.		5.		6.		7.		8.		9.

1. Product/size

2. Design model
000 = Standard

3. Drive type
M = single lead nut
MM = double lead nut/ ball screw drive
TR = trapezoidal screw drive with red bronze lead nut
TK = trapezoidal screw drive with plastic lead nut

4. Lead
TGT[1] 4, 8, 16 mm
KGT[2] 5, 20 mm

5. Total stroke
[mm]

6. Total length
[mm]

7. Number of spindle supports

8. Mountable accessories
e.g. end dampers (ED)/ inductive limit switches (EN)

9. Special model
0 = without
1 = with

[1] Trapezoidal screw
[2] Ball screw

Connecting Elements

W P	-	2 X N	-	W H 4 0	-	2 Y	-	W H 4 0	-	1 Z	-	W M 4 0
1.		2.		3.		4.		5.		6.		7.

1. Bracket package

2. Number and position of the linear drive units in x-axis
N = in parallel
U = among one another

3. Linear drive unit
WH40

4. Number and position of the linear drive units in y-axis

5. Linear drive unit
WH40

6. Number and position of the linear drive units in z-axis

7. Linear drive unit
WH40

Note:
In the area of the attachment plates for the mechanical limit switches, the linear unit cannot be attached with the KA0 strips. Safety limit switches serve to reliably switch off the power supply to the drive when the limit switch is actuated. If they are approached at high speed, they cannot prevent an over-stepping of the permitted range of travel. Other drive or controlside measures must be taken to ensure that the area of the end positions is approached only at low speed.

Order information
WIESEL *FORCE*Line®

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Structure of the order code:

M L S	_	_ _	-	_	-	_ _	-	_ _	-	_ _ _ _	-	_ _ _ _	-	_	-	_	_ _	-	_	_	-	_	-	_ _	-	_
1.	2.	3.		4.		5.		6.		7.		8.		9.		10.	11. a | b		12.	13.		14.		15.		16.

Ordering example:

M L S	M	6 0	-	A	-	M M	-	0 5	-	0 8 0 0	-	1 2 9 5	-	N	-	1	G 0	-	3	I	-	0	-	0 1	-	0
1.	2.	3.		4.		5.		6.		7.		8.		9.		10.	11. a | b		12.	13.		14.		15.		16.

1. Product
MLS = WIESEL *FORCELine*®

2. Guide System
M = Ball recirculating guide system
H = Roller guide

3. Size
60

4. Design model
A = Standard, four guide rails
B = Guide tube, four guide rails

5. Drive type
MM = Ball screw drive, preloaded, double nut
ZR = Toothed belt drive

6. Lead/Pitch
MM = 05, 10, 20, 50 mm

7. Max. linear travel
[mm]

8. Total length
[mm]

9. Power bridge
N = Standard
L = Long power bridge
Z = Additional free siding power bridge

10. Drive shaft
1 = Drive shaft standard (with ZR side 1)
2 = Drive shaft side 2 (only with ZR)
3 = Drive shaft both side 1 + 2, with MM second shaft end

11. Drive shaft version
G = plain
N = with keyway
W = shaft end prepared for mounting of a shaft encoder
11.a Execution side 1 (see graphic below)
11.b Execution side 2 (see graphic below)

12. Number of limit switches
x pieces

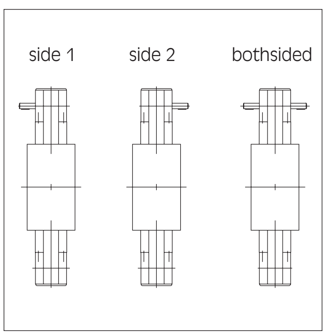
13. Type of limit switch
O = without
I = induktive

14. Mechanical limit switches
O = without
S = Mounted limit switches

15. Mounted bevel gearboxes
00 = without
01 = Bevel gearbox VL1 Ba40 1:1 (only KG)
02 = Bevel gearbox VL1 Ba53 1:1 (only KG)
03 = Bevel gearbox VL1 Ba40 2:1 (only KG)
04 = Bevel gearbox VL1 Ba53 2:1 (only KG)
05 = Bevel gearbox VL2 Ba40 1:1 (only KG)
06 = Bevel gearbox VL2 Ba53 1:1 (only KG)
07 = Bevel gearbox VL2 Ba40 2:1 (only KG)
08 = Bevel gearbox VL2 Ba53 2:1 (only KG)

16. Special model
0 = No
1 = Briefly described in words

Definition of the drive shaft within the order code
(for MLS with tooth belt drive)



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

Definition of the drive shaft within the order code
11.a = side 1
11.b = side 2
11.a+b = both sided

Inquiry data
Ask our specialists!

NEFF® Antriebstechnik · Automation

Date: _____

Company: _____

Street: _____

Postcode/Town: _____

Contact: _____

Department: _____

Telephone: _____

Fax: _____

e-mail: _____

Your requirements

Travel

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

❑ Three-phase asynchronous motor and frenquency converter

Control system

Requirements: _____

Additional information on application

Accessories (please mark)

❑ FA Felt wipers (only for WH50/80/120)
❑ 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)
❑ 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)
❑ MGK Motor adapter flange and coupling
❑ EN Inductive limit switch (specify number and version)

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The following abreviations show you which international service partner offers each product group:
ML = Mechanical linear drive units
SHG = Worm gear screw jacks
GT = Screw drives

Australia

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e-mail: cft@internet.dk
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(GT)

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(ML)

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West Midlands B 76 1 AP
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Cale Lane
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(ML)

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Maconochie Road
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GB-AB43 8TE, Scotland
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Notes

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This is how we understand service

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