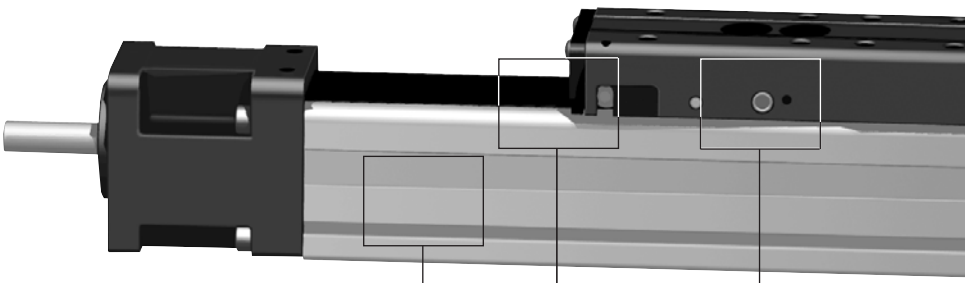
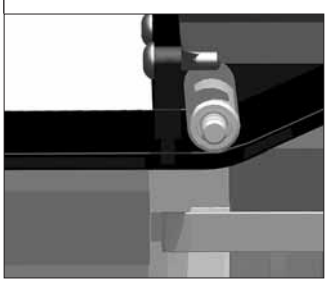
WIESEL *POWER*Line®, WIESEL *DYNA*Line® with ball screw drive

Innovative solutions, down to the very last detail

WIESEL *POWER*Line®
WM40

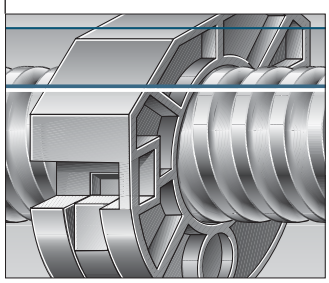
The linear drive unit for miniaturized applications. High performance with extremly small dimensions. The NEFF ball screw drive in combination with the high precision linear guide allows precise positioning.





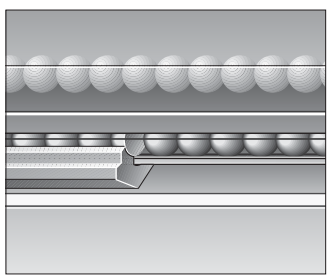
Patented sealing strip

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



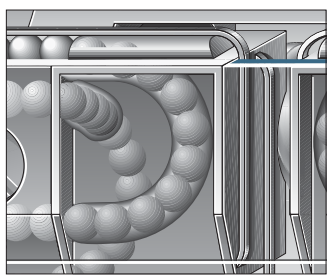
Screw support

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.

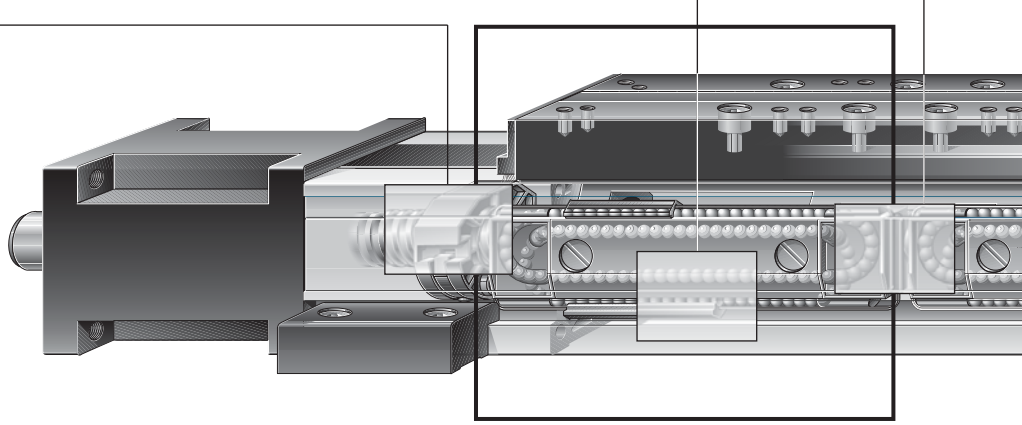


Ball cage*

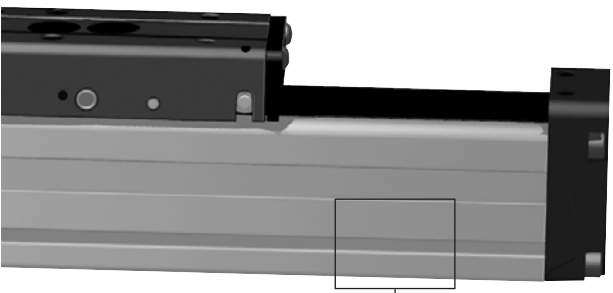
The ball's of the linear guides are protected by a ball cage. They can be replaced quickly and safely.

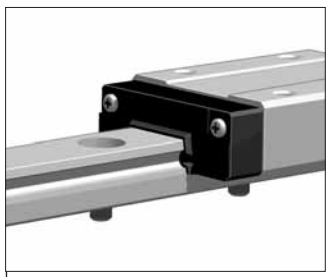
WIESEL *POWER*Line®
WM60, WM80, WM120

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.



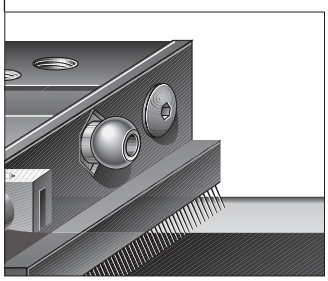
WIESEL *POWER*Line® detail





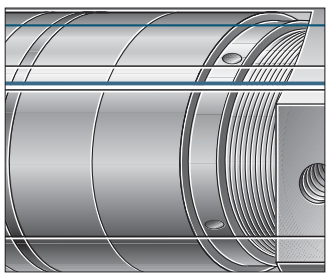
Linear guides

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.



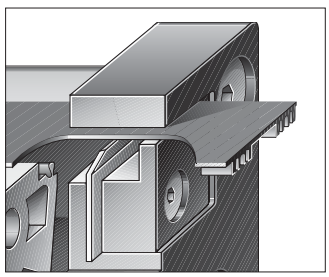
Central lubrication – a standard feature.

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.



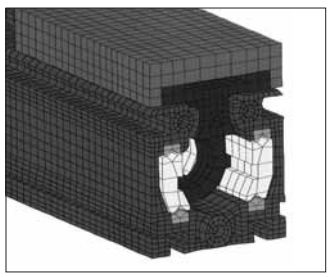
Optimized ball screw drive

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



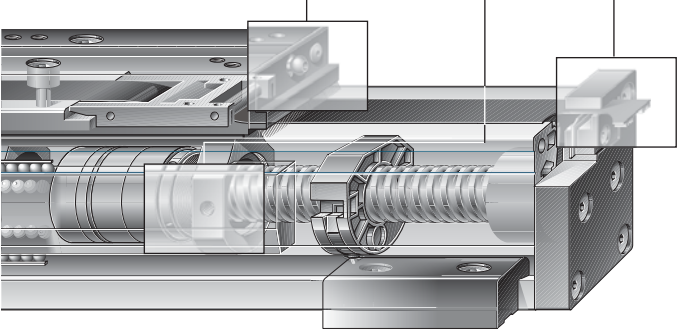
Self-adjusting third-generation cover strip

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.

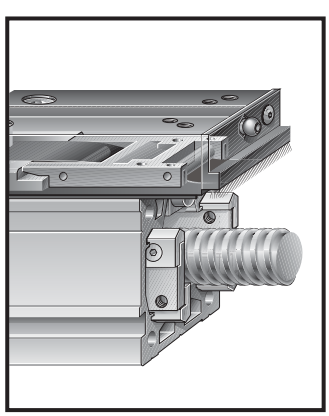


FEA-optimized design

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*®

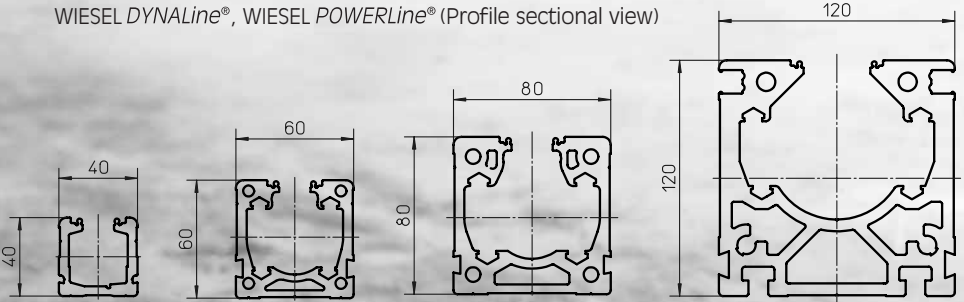


WIESEL *DYNA*Line® detail

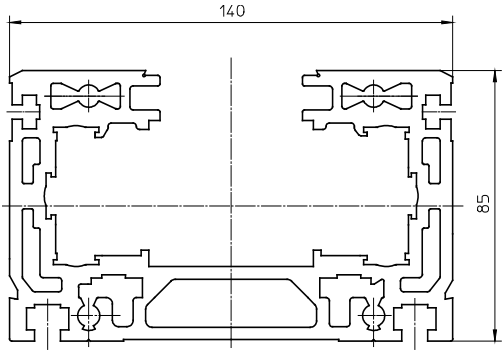
WIESEL *DYNA*Line® WV60, WV80, WV120

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 *DYNALine*®, WIESEL *POWERLine*® (Profile sectional view)



Tolrances of outer dimensions according to DIN 17615 part 3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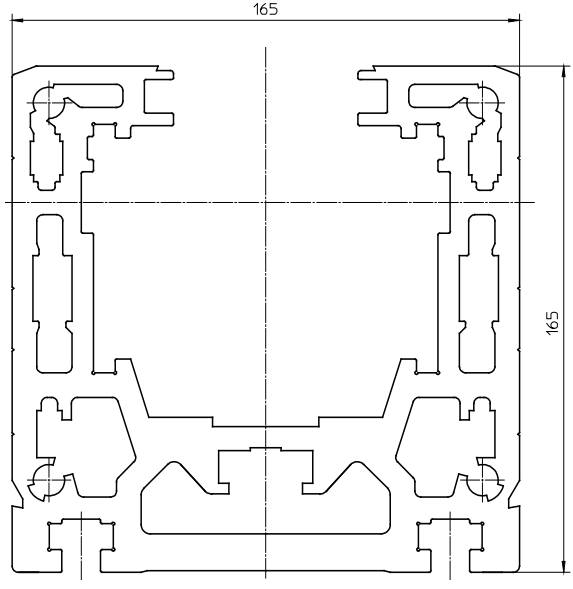
85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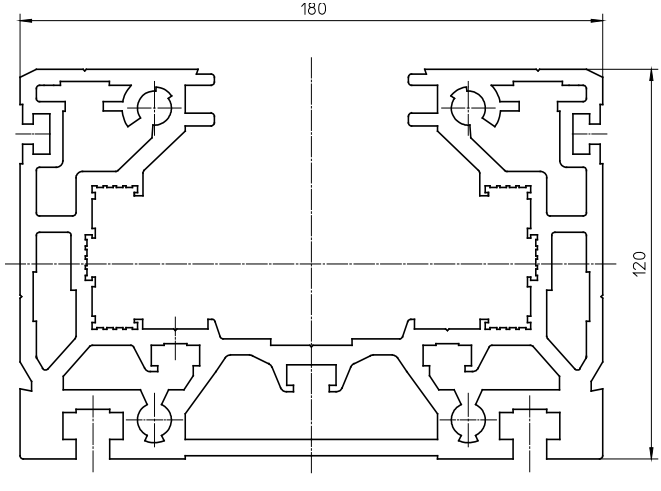
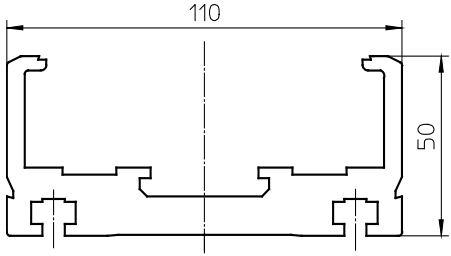
165


180
120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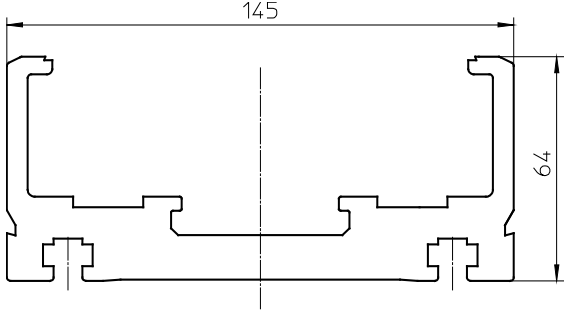
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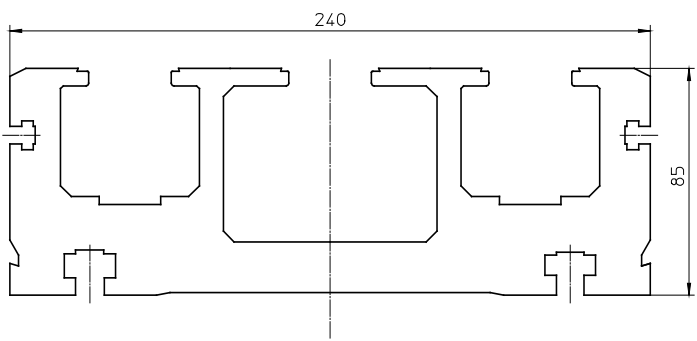
64


240
85

Drive selections
for linear drive units with screw drive

Feed force F_x [N]

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

Acceleration force F_a [N]

$$F_a = m \cdot a$$

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

Power from torque and rotational speed [kW]

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

Definitions

M_A	= Required drive moment [Nm]	m	= 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	$1.13 \cdot 10^{-5}$

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

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

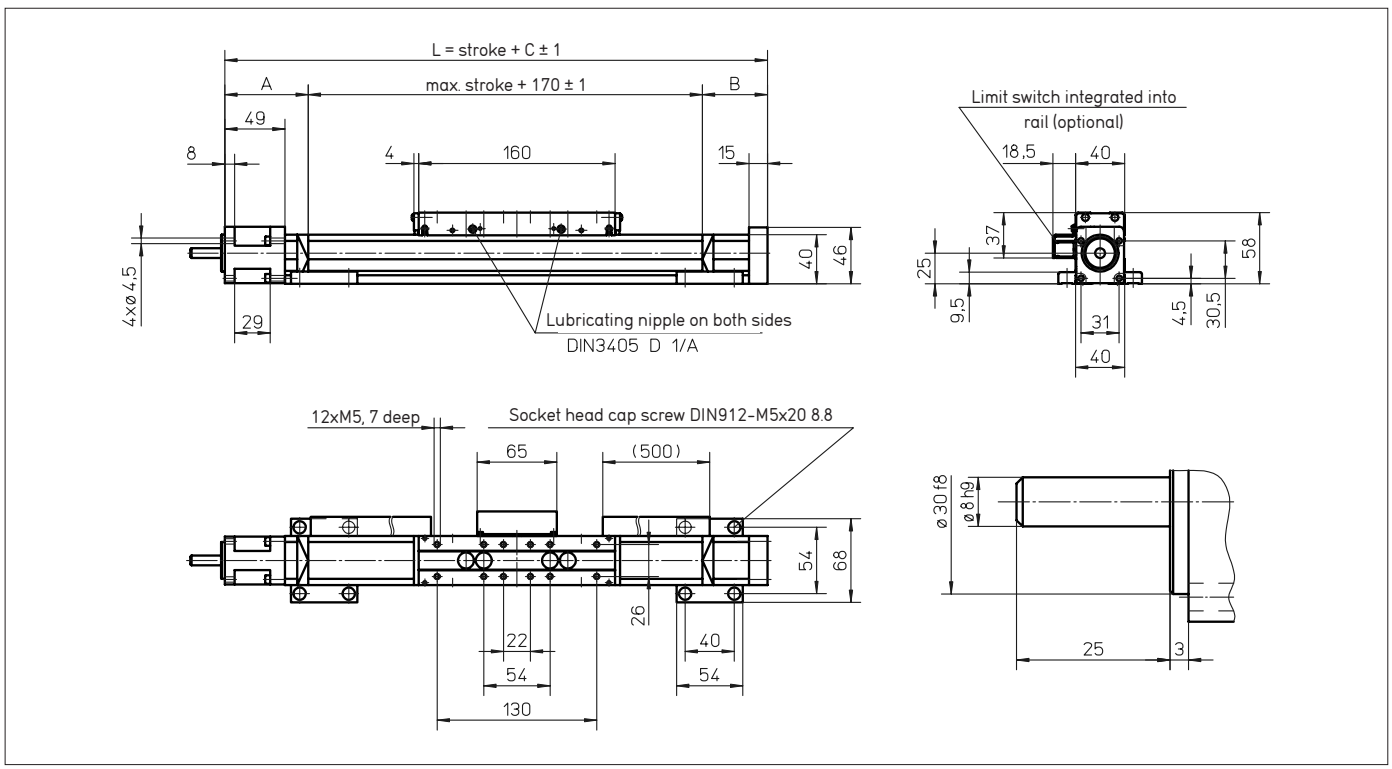
The mechanical drive and the guidance of the WIESEL® are well protected against dirt by means of the patented cover strip. In cases of heavy dirt and dust particles, an additional bellow is recommended. Upon request.

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.

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: Iy 10.8 · 10^4 mm⁴
  Iz 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

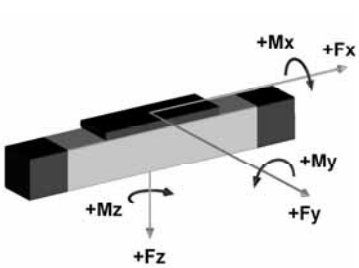
Idle torques [Nm]

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

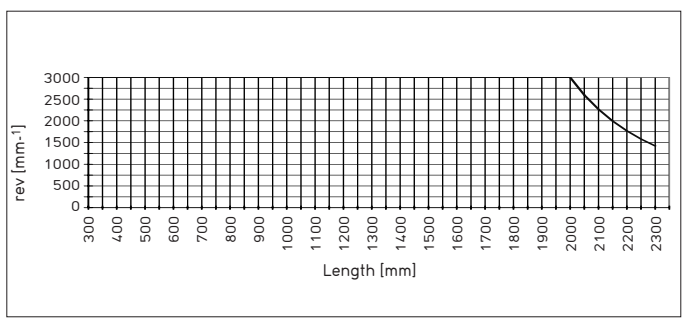
Loads and load moments



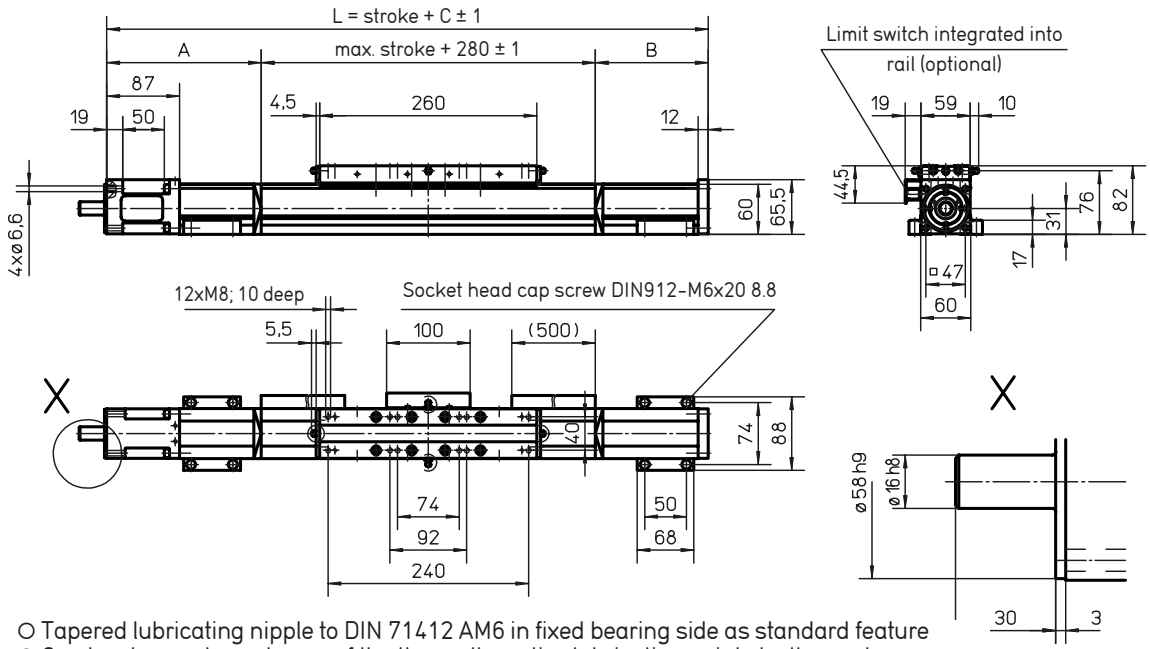
Load	dynam. [N]
Fx drive	1000
Fy	450
± Fz	600

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

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



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



○ 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

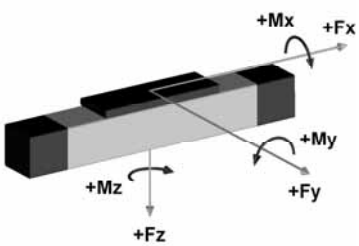
- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.01 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Pretensioned ball screw
  Diameter: 20 mm
  Lead: 5, 20, 50 mm
- Stroke length: up to 11.000 mm
  with pitch 50 mm
  max. 5000 mm
- Power bridge: 260 or 450 mm long
  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 KA0 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



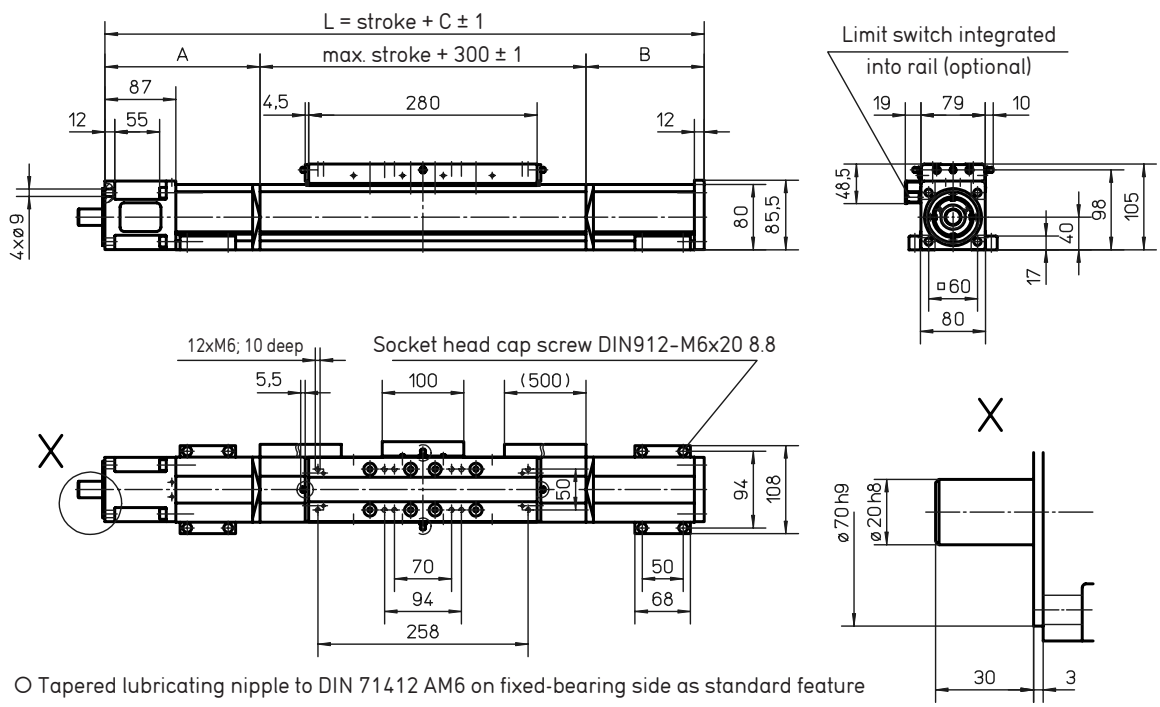
Load	dynam. [N]
Fx drive	4000
Fy	2000
± Fz	2000

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

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



○ 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

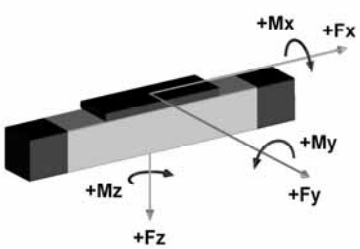
- Linear speed: max. 2.5 m/s
- Repeatability: ± 0.01 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Pretensioned ball screw
  Diameter: 25 mm
  Lead: 5, 10, 20, 50 mm
- Stroke length: up to 11.000 mm
  with pitch 50 mm
  max. 5000 mm
- Power bridge: 280 or 450 mm long
  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



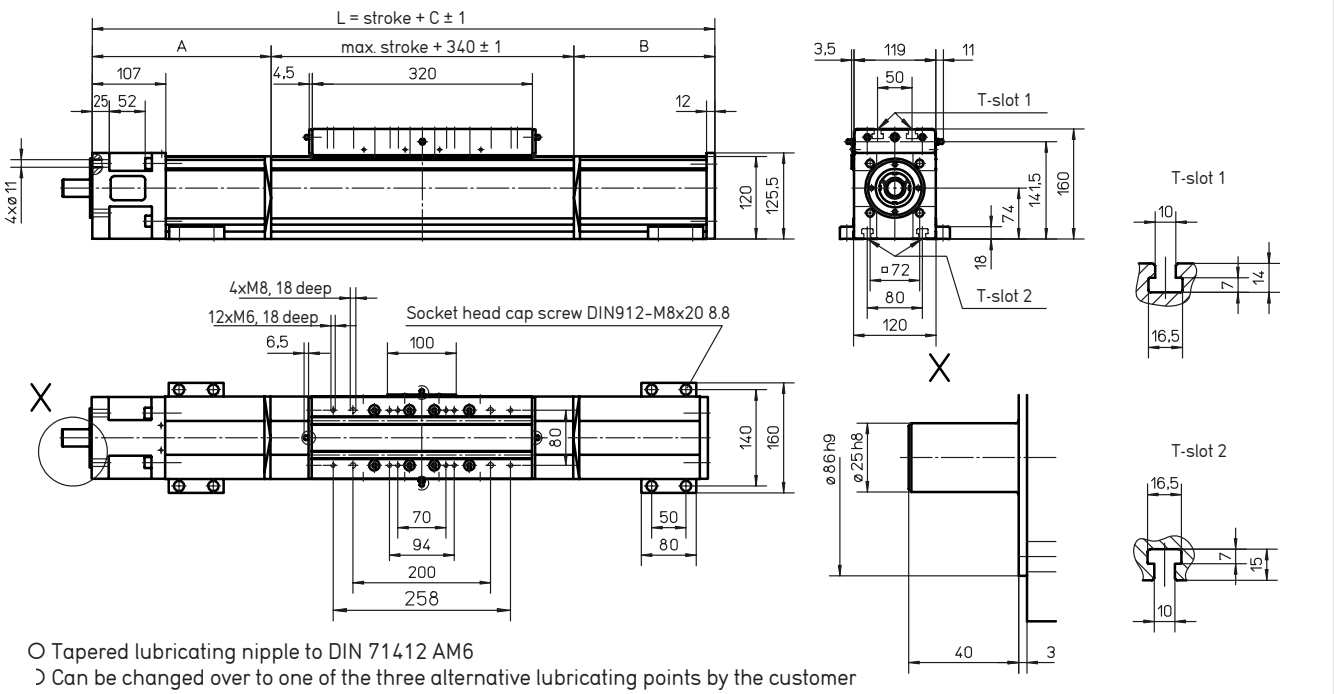
Load	dynam. [N]
Fx Drive	5000
Fy	3000
± Fz	3000

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

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



Technical data

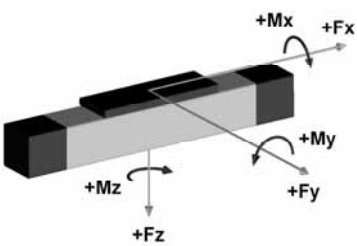
- Linear speed: max. 2.0 m/s
- Repeatability: ± 0.01 mm
- Acceleration: max. 20 m/s²
- Rotational speed: max. 3000 rpm
- Drive element: Pretensioned ball screw
  Diameter: 32 mm
  Lead: 5, 10, 20, 40 mm
- Stroke length: up to 11.000 mm
  with pitch 40 mm
  max. 5000 mm
- Power bridge: 320 or 500 mm long
  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 KA0 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

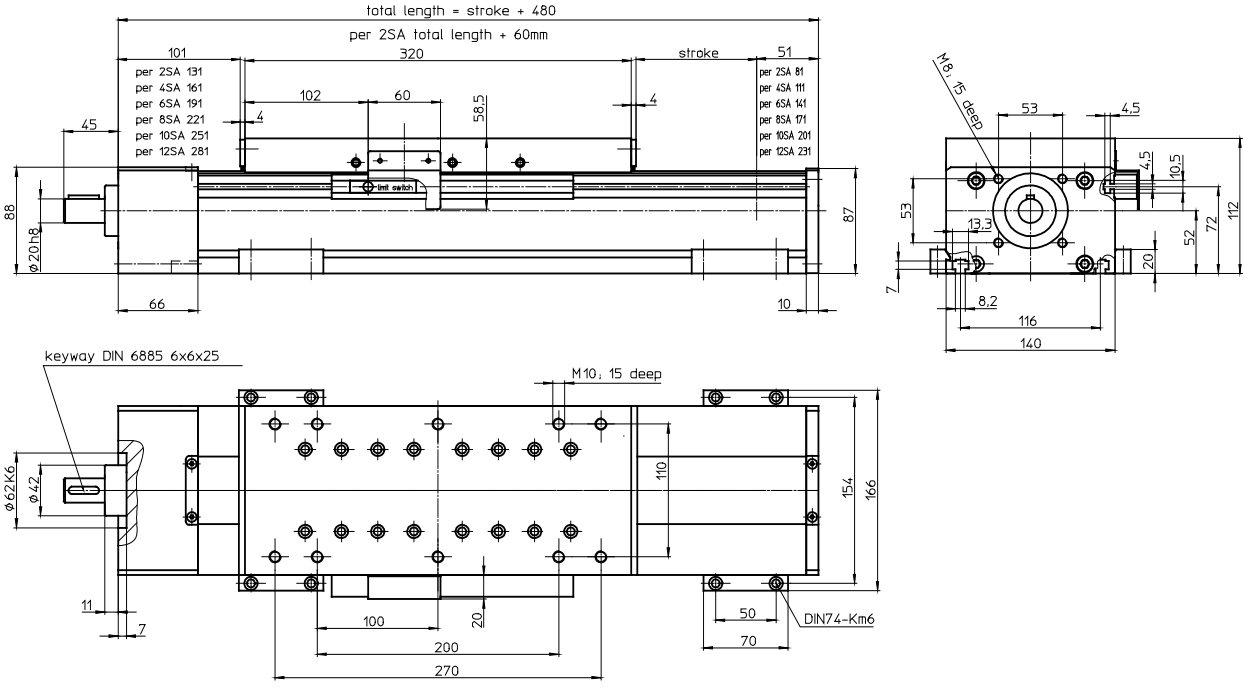


Load	dynam. [N]
Fx drive	12000
Fx drive 3240	8000
Fy	6000
± Fz	6000
Load moment	**dynam. [Nm]**
Mx	500
My[1)]	600
Mz[1)]	600

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

with ball screw, trapezoidal screw, roller guideway or double linear guide



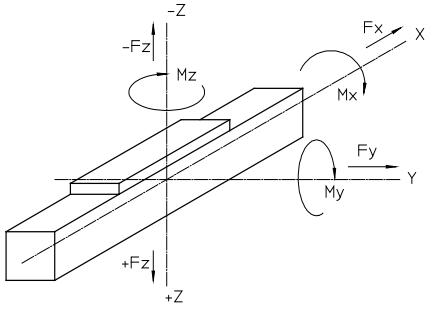
Weights

	SRS	SSS
Basic length, no stroke:	14.00 kg	15.00 kg
100 mm stroke:	1.40 kg	1.90 kg
Carriage:	6.20 kg	7.00 kg
Idle torque:	1.00 Nm	1.50 Nm

Technical data

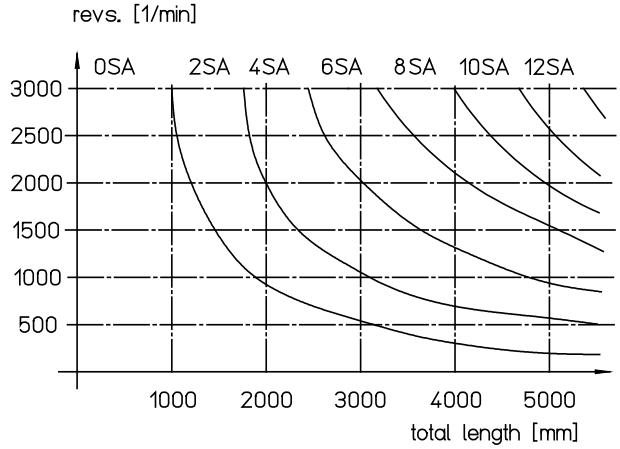
Linear speed:	0.1 - 2.5 m/s **
Repeatability:	± 0.03 mm (ball screw)
Acceleration:	max. 20 m/s²
Mass inertia:	2.2 kgcm²/m
Drive element:	***ball screw drive:***
	diameter: 25 mm
	pitch: 5, 10, 25, 50 mm
	trapezoidal screw:
	diameter: 24 mm
	pitch: 5 mm
Total length:	up to 5400 mm (longer on request)

Loads and load moments



Type	with roller guideway (SRS)	with linear guide (SSS)
Load	dynamic [N]	dynamic [N]
Fx **	6000	6000
Fy	2500	2500
Fz	5000	6000
-Fz	3000	4000
Load moment	dynamic [Nm]	dynamic [Nm]
Mx	350	500
My	700	1000
Mz	700	1000

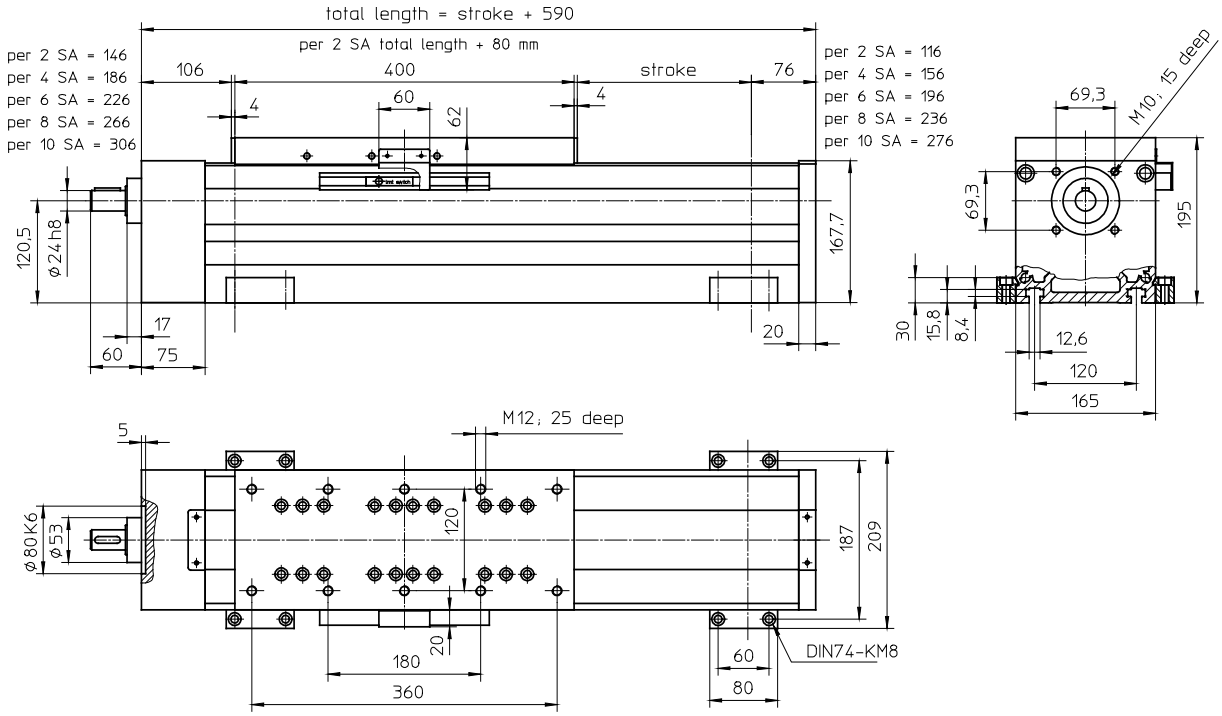
Screw supports SA



* MM only for pitch 5 / 10 / 25 possible

** max. data for ball screw 2510

with ball screw, trapezoidal screw and integrated linear guide



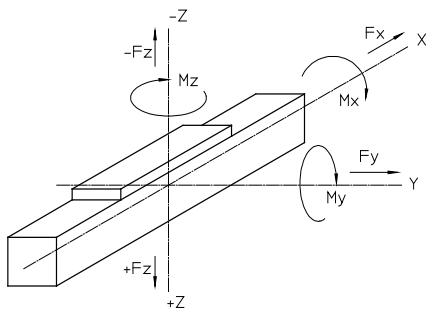
Weights

	SSS
Basic length, no stroke:	37.90 kg
100 mm stroke:	4.20 kg
Carriage:	11.50 kg
Idle torque:	3.00 Nm

Technical data

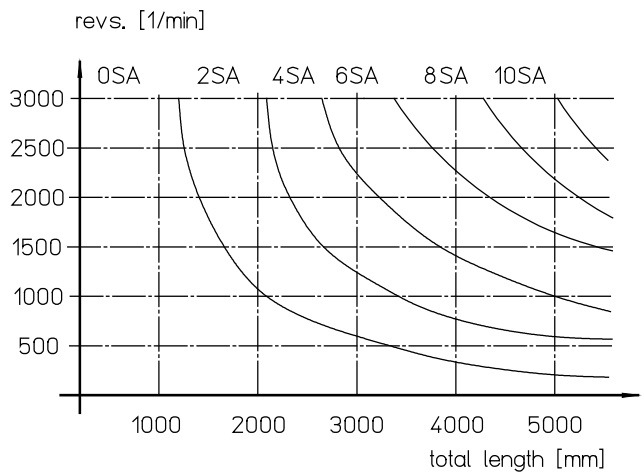
Linear speed:	0.1 – 2 m/s **
Repeatability:	± 0.03 mm (ball screw)
Acceleration:	max. 20 m/s²
Mass inertia:	13 kgcm²/m
Drive element:	***ball screw drive:***
	diameter: 40 mm
	pitch: 5, 10, 20, 40 mm
	trapezoidal screw:
	diameter: 40 mm
	pitch: 7 mm
Total length:	up to 5500 mm (longer on request)

Loads and load moments



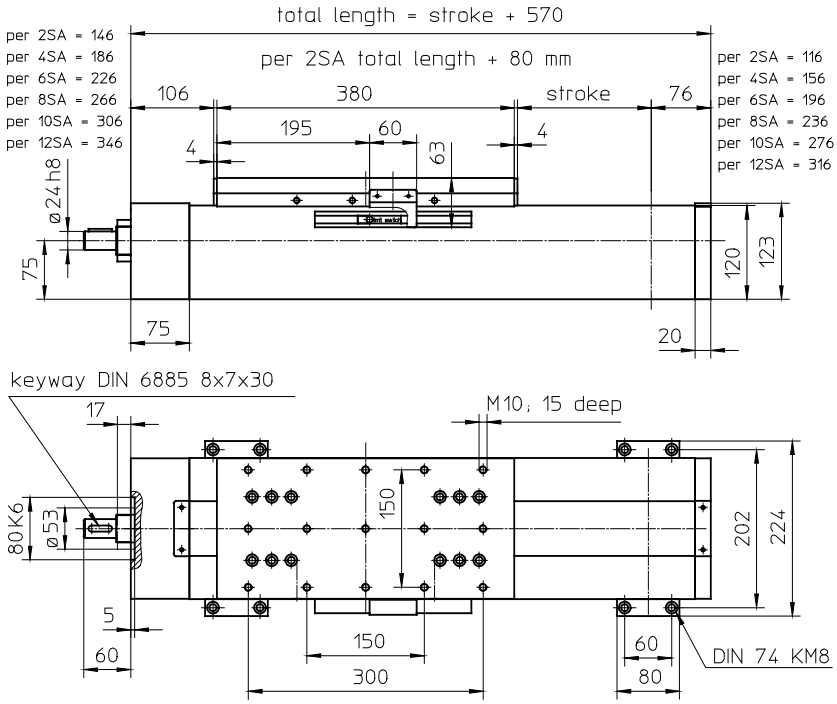
Type	with linear guide (SSS)
Load	dynamic [N]
Fx **	18000
Fy	5000
Fz	15000
-Fz	8000
Load moment	dynamic [Nm]
Mx	700
My	1400
Mz	1100

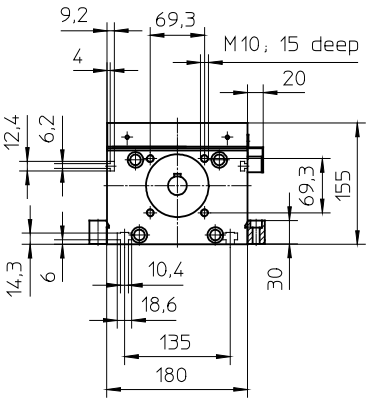
Screw supports (SA)



** max. data for ball screw 4010

with ball screw, trapezoidal screw, roller guideway or double linear guide





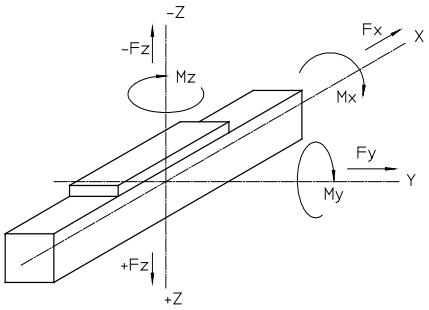
Weights

	SRS	SSS
Basic length, no stroke:	22.00 kg	25.00 kg
100 mm stroke:	2.50 kg	2.80 kg
Carriage:	9.00 kg	10.00 kg
Idle torque:	1.80 Nm	2.50 Nm

Technical data

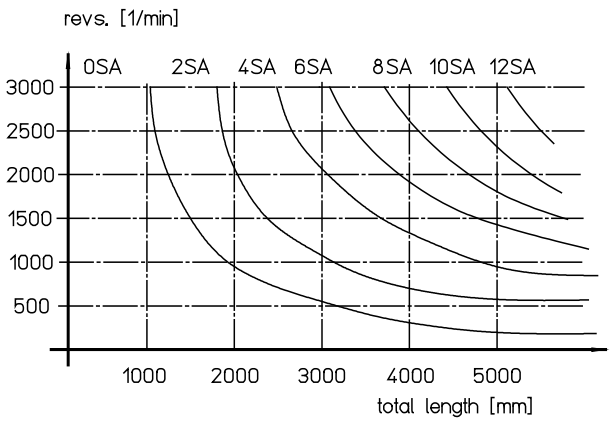
Linear speed:	0.1 – 2 m/s **
Repeatability:	± 0.03 mm (ball screw)
Acceleration:	max. 20 m/s²
Mass inertia:	6 kgcm²/m
Drive element:	***ball screw drive:*** diameter: 32 mm, pitch: 5, 10, 20, 40 mm
	trapezoidal screw: diameter: 32 mm, pitch: 6 mm
Total length:	up to 5500 mm (longer on request)

Loads and load moments



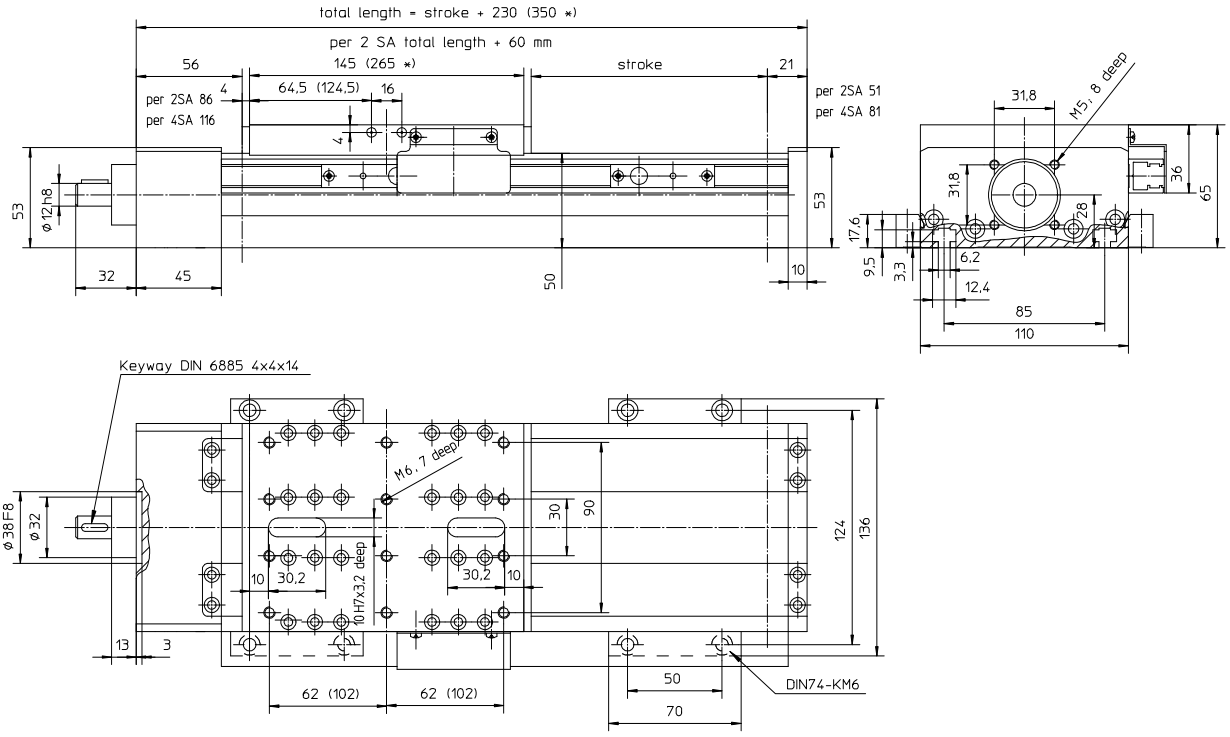
Type	with roller guideway (SRS)	with linear guide (SSS)
Load	dynamic [N]	dynamic [N]
Fx **	12000	12000
Fy	3000	6000
Fz	6000	12000
-Fz	4000	6000
Load moment	dynamic [Nm]	dynamic [Nm]
Mx	800	1500
My	1200	3000
Mz	800	1500

Screw supports (SA)



** max. data for ball screw 3210

with ball screw and integrated double linear guide



Weights

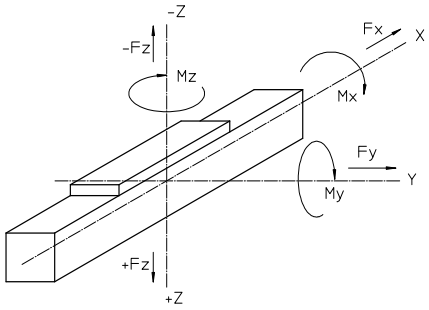
Basic length, no stroke:	6.20 kg
100 mm stroke:	0.75 kg
Carriage:	3.20 kg
Idle torque:	0.90 Nm

SSS

Technical data

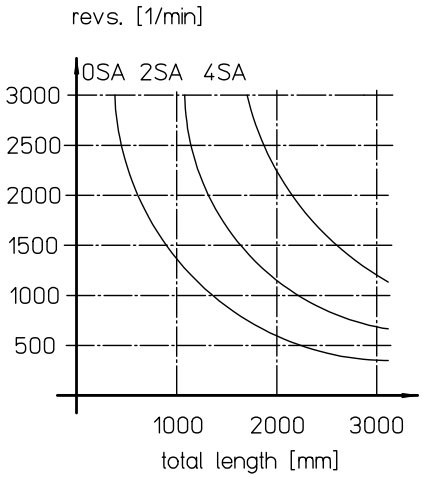
Linear speed:	0.1 – 1.0 m/s **
Repeatability:	± 0.03 mm (ball screw)
Acceleration:	max. 20 m/s²
Mass inertia:	1.15 kgcm²/m
Drive element:	***ball screw drive:*** diameter: 16 mm pitch: 5, 10, 20 mm
Total length:	up to 1500 mm

Loads and load moments



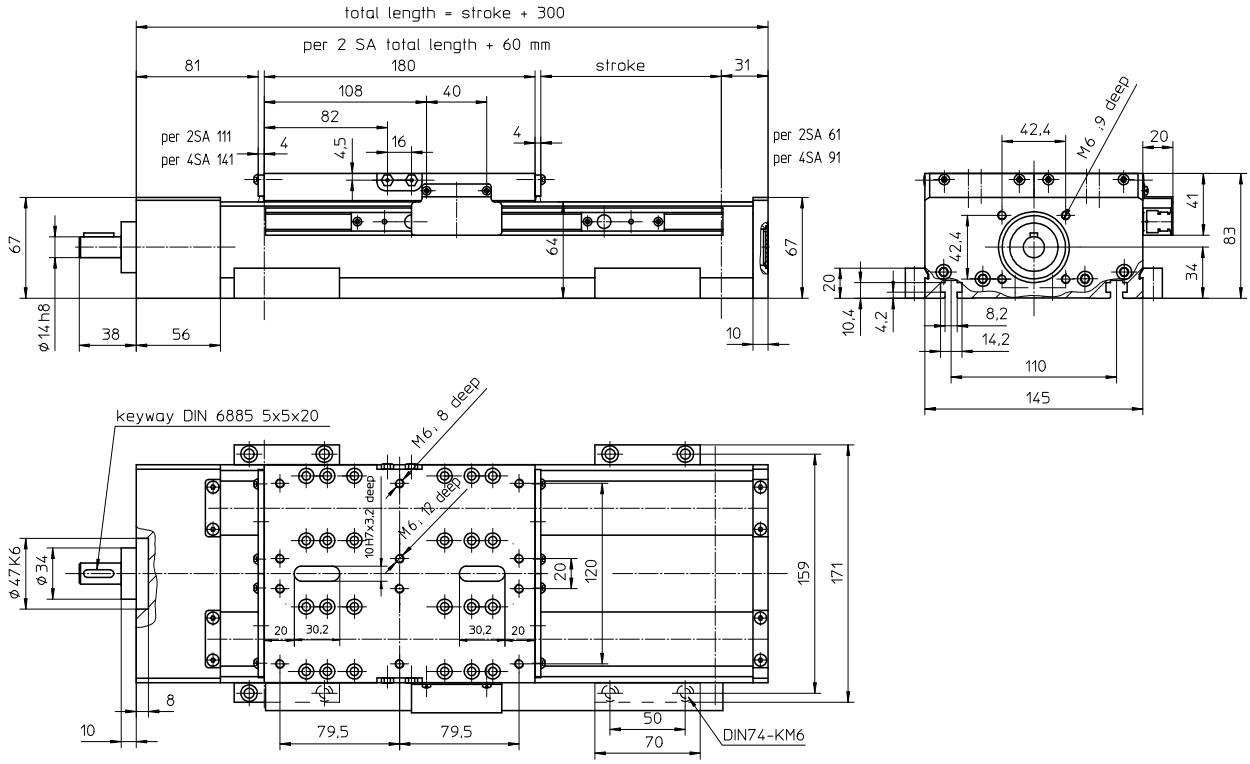
Type	with linear motion guide (SSS)
Load	dynamic [N]
Fx **	2000
Fy	1200
Fz	3000
-Fz	1500
Load moment	dynamic [Nm]
Mx	500
My	650
Mz	650

Screw supports SA



* data in ( ) refers to 265 mm long carriage
** max. data for ball screw 1620

with ball screw and integrated double linear guide



Weights

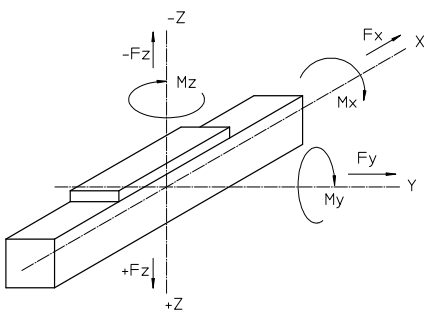
SSS

Basic length, no stroke:	13.50 kg
100 mm stroke:	1.50 kg
Carriage:	5.80 kg
Idle torque:	1.10 Nm

Technical data

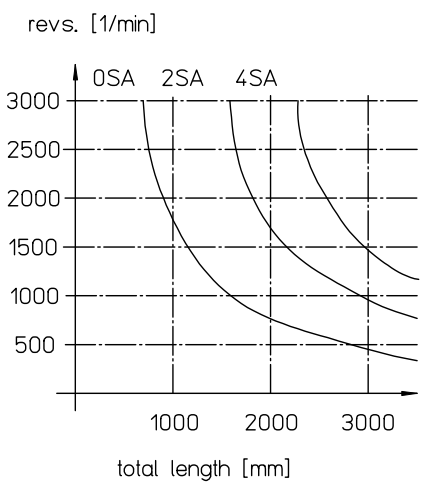
Linear speed:	0.1 - 2.5 m/s **
Repeatability:	± 0.03 mm (ball screw)
Acceleration:	max. 20 m/s²
Mass inertia:	2.1 kgcm²/m
Drive element:	***ball screw drive:***
	diameter: 25 mm
	pitch: 5, 10, 25, 50 mm
Total length:	up to 2000 mm

Loads and load moments



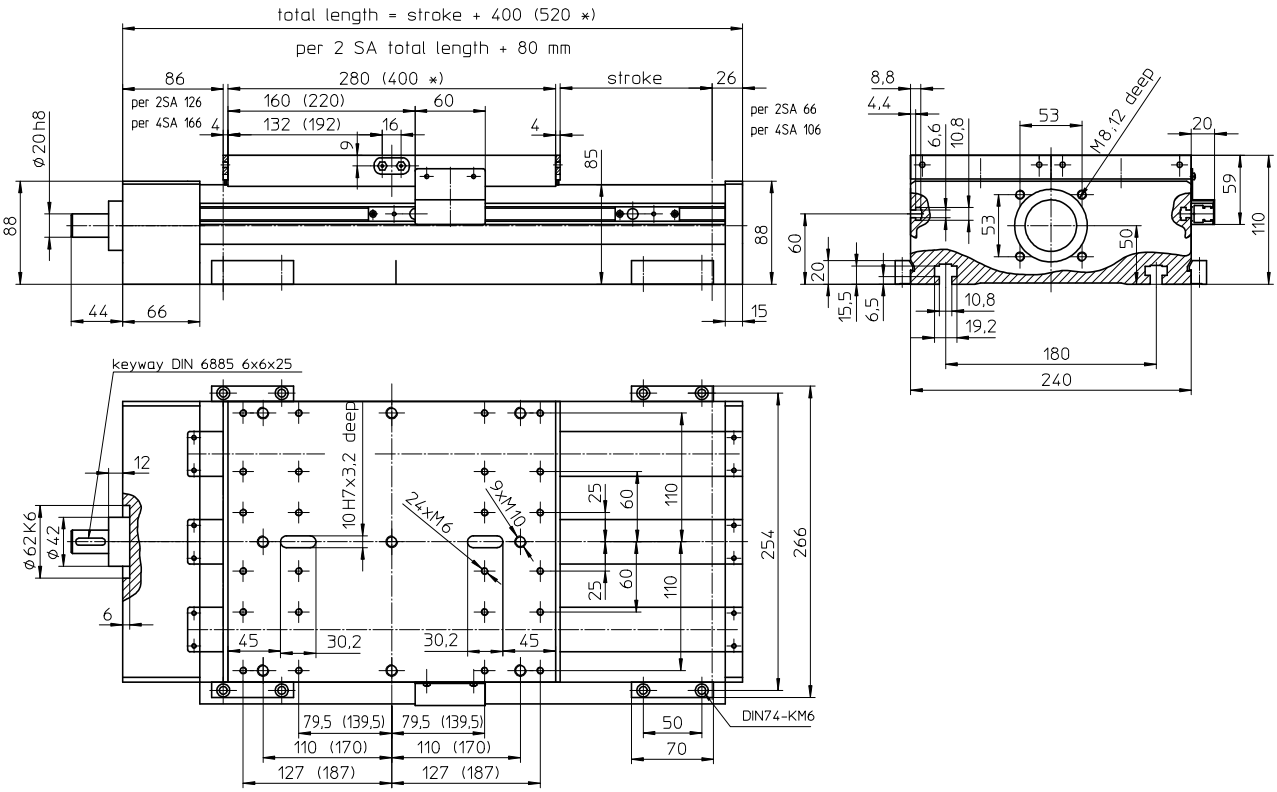
Type	with linear guide (SSS)
Load	dynamic [N]
Fx	6000
Fy	2500
Fz	5000
-Fz	3000
Load moment	dynamic [Nm]
Mx	800
My	1000
Mz	1000

Screw supports SA



** max. data for ball screw 2550

with ball screw and integrated double linear guide



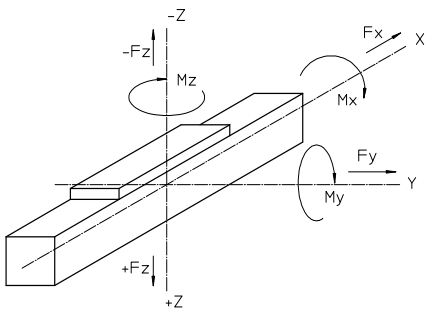
Weights

	SSS
Basic length, no stroke:	26.00 kg
100 mm stroke:	3.40 kg
Carriage:	10.20 kg
Idle torque:	2.80 Nm

Technical data

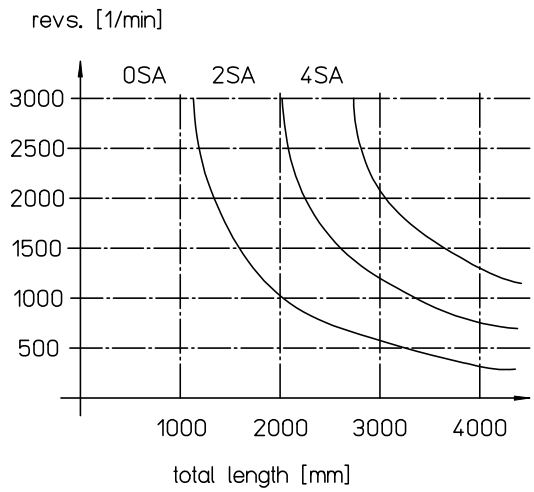
Linear speed:	0.1 - 2.0 m/s **
Repeatability:	± 0.03 mm (ball screw)
Acceleration:	max. 20 m/s²
Mass inertia:	4.5 kgcm²/m
Drive element:	***ball screw drive:*** diameter: 32 mm pitch: 5, 10, 20, 40 mm
Total length:	up to 4000 mm

Loads and load moments



Type	with linear guide (SSS)
Load	dynamic [N]
Fx	12000
Fy	6000
Fz	12000
-Fz	8000
Load moment	dynamic [Nm]
Mx	4500
My	6000
Mz	4500

Screw supports SA



* data in ( ) refers to 400 mm long carriage
** max. data for ball screw 3240